WILCOM®

EMBROIDERY STUDIO e4.5

Reference Manual

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Chapter 1
Introduction

Welcome to EmbroideryStudio e4, the leading design software application for the decorated goods industry. Combining both the embroidery capabilities of Wilcom software with the graphical capabilities of the CorelDRAW® Graphics Suite, no other product provides the flexibility of EmbroideryStudio in creating designs for both embroidery and multi-decoration. While supporting multi-decoration, the product is tailored to the requirements of the embroidery specialist who requires a powerful toolset to create and edit high-quality, production-ready embroidery.

Note: Screen illustrations in this publication are intended as representations only. Depending on your software model or product level, screen layouts generated by the software may differ slightly. Similarly, samples used to illustrate software features and capabilities may not be exactly duplicable in your product model.

Product models

EmbroideryStudio consists of five standard product models with over 20 optional 'Elements'. Standard products are powerful, well featured, professional embroidery applications. Additional Elements are available at extra-cost. Some Elements are provided as standard in higher product models.

EmbroideryStudio product models

The EmbroideryStudio e4 product suite consists of these product models:

Model	Capabilities	Applications
ES Designing	^ Professional digitizing and graphic design, lettering, and editing. It supports the full range of optional ES Elements. Some are included as standard.	Larger logo embroidery businesses with digitizing
ES Digitizing	* Professional embroidery digitizing.	Fashion and textile production digitizing
^ Includes CorelDRAW® Graphics Suite as standard. * Only available in certain countries.		

Model	Capabilities	Applications
ES Decorating	^ Professional lettering, customization and editing. Auto-digitizing and simple manual digitizing. Includes some ES Elements.	Small embroidery shops – replaces DecoStudio
ES Editing	Full lettering, customization, editing, with machine connections.	Logos, retail shops, production shops
ES Lettering	Full lettering, customization, with machine connections.	Logos, retail shops
^ Includes CorelDRAW® Graphics Suite as standard. * Only available in certain countries.		

Note: To identify sources of information relevant to your model and any additional elements you may have activated, see Product differentiation table.

Integration with CorelDRAW®

CorelDRAW® Graphics Suite is bundled as standard with some product models. 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. For a full description of the tools, refer to the online help available from the **Graphics** mode **Help** menu.

CorelDRAW® and its sister product, Corel PHOTO-PAINT® can also be run as standalone applications. CorelDRAW® Graphics Suite features 'best-of-breed' bitmap-to-vector tracing, enhanced illustration capabilities, photo-editing together with a library of professional clipart images.

CorelDRAW® Standard Membership also provides access to content – clipart, fonts, stock photos, templates – via the built-in **Corel CONNECT**.

Modular elements

EmbroideryStudio offers optional 'Elements' for Creativity, Production, and Specialty processes. The EmbroideryStudio e4 product suite consists of these product models:

Product models		Applications
1	ES Designing	^ Larger logo embroidery businesses with digitizing
2	ES Digitizing	* Fashion and textile production digitizing
3	ES Decorating	^ Small embroidery shops – replaces DecoStudio
^ Includes CorelDRAW® Graphics Suite as standard. * Only available in certain countries.		

Product models	Applications
4 ES Editing	Logos, retail shops, production shops
5 ES Lettering	Logos, retail shops
^ Includes CorelDRAW® Graphics Suite as standard. * Only available in certain countries.	

Optional ES Elements for each category – Creativity, Production, and Specialty – are shown below. Some are included as standard in certain product models.

Element			1	2	3	4	5
Creativity							
	Shading & Open Fills	Add depth and dimension to your embroidery with powerful shadows, shades and open fills.	○	○	–	–	–
	Curved Fills	Create unique, flowing stitch patterns that add motion and dimension to any closed object.	○	○	–	–	–
	Maze Fills	Automatically fill large areas with double-spiral stitching that never crosses itself.	○	○	–	–	–
	Spiral Fills	Create open stitching that follows the contours of a shape for some interesting visual effects.	○	○	–	–	–
	String Stitch	Create outline or filled shapes with overlapping 'string art' stitching to hold mirror pieces or for decorative effects. Known as 'Paghadi' in India.	○	–	–	–	–
	Freehand	Create embroidery the most natural way – as if you were drawing with pen and paper.	●	○	–	–	–
	Hand Stitch	Create hand-stitch effects which combine randomized spacing and stitch angles for a more organic look. Apply to satin, tatami, run, backstitch, and other stitch types.	●	○	○	–	–
	Motifs	Create motif runs and both single and double motif fills. Apply 3D Warp distortion. Create and reuse motif patterns.	○	○	–	–	–
1 ES Designing 2 ES Digitizing 3 ES Decorating 4 ES Editing 5 ES Lettering ● Included as standard ○ Modular 'element'							

Element			1	2	3	4	5
	Motif Runs Advanced	Create advanced motif runs with variable or gradient motif size and spacing effects. Motifs can also conform to varying size column shapes.	○	–	–	–	–
	Custom Splits	Add carving, embossing and other dimensional effects to your embroidery.	○	○	–	–	–
	Photo Flash	Convert black and white, grayscale and color images into embroidery.	○	○	○	–	–
	Reef PhotoStitch	Convert photos into embroidered designs in seconds. Automatically fill large areas with open stitching reminiscent of a coral reef.	○	○	○	–	–
Productivity							
	Team Names Advanced	Save lettering layouts for reuse. With different logos and lettering, reuse makes teamname design simpler and faster.	○	○	○	○	○
	Offsets Advanced	Embolden logos, badges and other designs with distinctive, colorful borders.	○	○	○	–	–
	Auto Shaping	Use auto-shaping tools to weld, flatten, intersect, and other shaping operations to give you accuracy and speed.	●	○	–	–	–
	Auto Arrangements	Automatically create reflecting borders, and wrap reflections around a center point to create wreath or kaleidoscope effects.	○	○	–	–	–
	Kiosk Mode	Use at retail outlets where fast and simple personalization of standard design layouts is required in consultation with customers.	●	●	●	○	○
Specialty							
	Embroidery-Connect	Quickly and easily send, scan, and queue your embroidery designs for production. EmbroideryHub networking software is included as standard. EmbroideryConnect WiFi devices are available for purchase.	●	●	●	●	●
	Single Sequin	Create artistic sequin designs with sequin runs and sequin fills for single sequin machines using automated predefined fixing stitches.	○	○	○	–	–

1 ES Designing 2 ES Digitizing 3 ES Decorating 4 ES Editing 5 ES Lettering
● Included as standard ○ Modular 'element'

Element			1	2	3	4	5
	Sequins Advanced	Create embroidery files for single and twin-sequin dispensing machines.	○	○	–	–	–
	Beading	Provides support for beading devices. Classic fixing methods available: upright, flat, and sideways.	○	○	–	–	–
	Bling	Use any combination of stones, sizes and colors to light up your design. Includes bling lettering.	●	○	●	–	–
	Virtual Decoration	Bring the look of embroidery to your printed designs. Includes high resolution TrueView images. Print in CorelDRAW Graphics.	●	○	●	–	–
	Font Creator	Match logo type exactly or create unique ones all your own.	○	○	–	–	–
	Chenille	Add chenille embroidery capabilities to a lockstitch embroidery digitizing system.	○	○	–	–	–
	Schiffli	Create and prepare lacework and emblems precisely and efficiently.	○	○	–	–	–

1 ES Designing 2 ES Digitizing 3 ES Decorating 4 ES Editing 5 ES Lettering
● Included as standard ○ Modular 'element'

Included features

For details of the features included with each Element, click the links in the table below.

Creativity

Element		Features	Reference
	Shading & Open Fills	Cross Stitch Fill	Cross stitch fills
		Stipple Fill	Stippling effects
		Accordion Spacing	Accordion spacing
		Color Blending	Color blends
	Curved Fills	Liquid Effect	Create curved fills with Liquid Effect
		Florentine Effect	Create curved fills with Florentine Effect
		Contour Stitch	Contoured fills

Element	Features	Reference
Maze Fills	Maze Fill	Maze fills
Spiral Fills	Spiral Fill	Spiral fills
String Stitch	String	String stitching
Freehand	Freehand	Freehand embroidery
Hand Stitch	Hand Stitch	Hand stitch effect
Motifs	Full Motif Fill	Motif fills
	Motif Run	Motif runs
	Create Motif	Custom motifs
	3D Warp	Enveloped motif fills
Motif Runs Advanced	Motif Run	Create graded motif runs
	Motif Column	Create graded motif columns
Custom Splits	Flexi Split	Flexi-splits
	Carving Stamp	Creating patterns with custom splits
	User Defined Split	
Photo Flash	Photo Flash	Auto-digitize with Photo Flash
	Color PhotoStitch	Auto-digitize with Color PhotoStitch
Reef PhotoStitch	Reef PhotoStitch	Auto-digitize with Reef PhotoStitch

Production

Element	Features	Reference
Team Names Advanced	Save As Teamname Template	Teamname templates

Element		Features	Reference
	Offsets Advanced	Outlines & Offsets	Generating outlines & offsets
	Auto Shaping	Shaping Tools	Shaping objects
	Auto Arrangements	Mirror Merge	Mirroring & reflecting selections
	Kiosk Mode	Lettering Kiosk	Lettering Kiosk

Specialty

Element		Features	Reference
	Embroidery-Connect	EmbroideryHub EmbroideryConnect	Machine Networking
	Single Sequin	Sequin Run	Digitizing sequin runs
		Sequin Fill	Creating sequin fills
	Sequins Advanced	Advanced Sequin	Advanced Sequins
		Sequin Fill	Creating sequin fills
		Twin Sequin	Creating multi-sequin runs
		Multi Sequin	
	Beading	Bead Run	Bead Embroidery
	Bling	Create Bling	Bling Digitizing
		Bling Lettering	Creating bling lettering
	Virtual Decoration	Capture Virtual Decoration Bitmap	Virtual embroidery
	Font Creator	Create Letter	Creating custom fonts
		Convert TrueType Font	Converting TrueType fonts to embroidery
	Chenille	Chenille	Chenille Supplement
	Schiffli	Schiffli	Schiffli Supplement

System requirements

Before you install, or if you experience operating problems, make sure that your computer meets the system requirements.

PC specifications

Check CPU/RAM as well as hard disk space. The table below provides minimum system requirements.

Component		Minimum	Recommended
CPU		Intel® Core i3 (3rd Gen or later) or AMD Athlon™ FX-6350 or later	Latest Generation Intel Core i7 processor (4.0 GHz +)
Operating system	‡	Microsoft Windows 10 64-bit Edition	Microsoft Windows 10 64-bit Edition with the latest updates
Browser		IE 11.0 or later	Microsoft Edge or later
Memory		8 GB	32 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 (1600 x 900)	• Support for Highest Color (32bit) and resolution (1920 x 1080 or higher) • 2 GB or more of graphics memory (non-integrated)
Monitor	¥	1600 x 900 screen resolution	Dual monitors capable of displaying 1920 x 1080 screen resolution
Mouse		USB mouse	USB mouse
USB port		Required for software installation and security device.	
Sound card		Required for online video help.	
Internet connection		Required for: • Product activation and registration • Periodic software updates • Access to news, community, product blog, tutorials, and product documentation • During installation, to download Windows features.	

Supported operating systems ‡

Since EmbroideryStudio no longer supports Windows® 32-bit operating systems, we recommend updating to Windows® 10 (64-bit edition) with latest updates installed. You will, however, need to uninstall any earlier versions of CorelDRAW® Graphics Suite. For latest operating system information, visit the Wilcom Support Center at help.wilcom.com.

Free hard disk space †

EmbroideryStudio occupies up to 5GB of hard disk space, depending on options installed. CorelDRAW® Graphics Suite also takes up an additional 3GB. However, you need additional free space for your applications to run smoothly.

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 1600 x 900 with a font size of 100% or 125% should be acceptable.

Power plan

For best performance make sure your PC is set to high performance power plan.
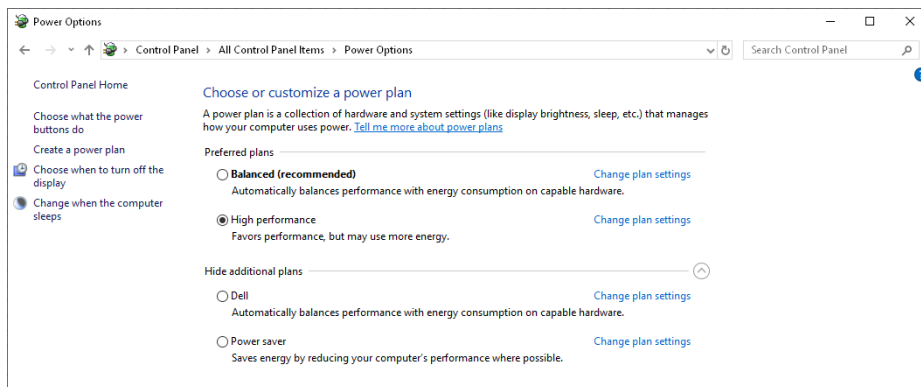
Product installation & registration

EmbroideryStudio products are supplied both as packaged and downloadable products. Packaged software installation is supplied on USB memory stick, not DVD.

To install and register the product

1 Close all open programs but leave Windows running.
2 Insert the EmbroideryStudio installation USB memory stick into the USB port.

   The installation will automatically run. If not, manually open the **setup.exe** found in the installation folder.
3 Follow the on-screen instructions and attach the dongle when prompted.
4 Upon successful installation of the software and any additional Windows files, the **Installation Complete** screen appears.
5 Click **Finish**. The computer will reboot. The software can then be used with the security dongle attached.

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Note: CorelDRAW® Graphics Suite may be installed together with Windows .NET Framework. To ensure that CorelDRAW® Graphics Suite 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.

Security & registration

Don't forget to register your copy of EmbroideryStudio Product registration is required to validate the warranty. Also, by registering you will have access to:

◄ Wilcom support
◄ Live and recorded online training (as it becomes available)
◄ Information about product updates, events and special offers.

⊘

Note: CorelDRAW® needs to be registered before it can be used by EmbroideryStudio. Registration provides CorelDRAW® Standard Membership which gives you access to content – clipart, fonts, stock photos, templates – via Corel CONNECT. It also gives you access to the latest CorelDRAW® updates.

Software updates

> ⌂ Click Mode > Home to return to the Home screen to get started with a new design, or access tutorials and other product information.

Use the **My Wilcom** page of the **Home** screen to check your current system status. This page provides details of your Wilcom license, including product level, version, as well as any compatible or enabled

Elements. Whenever you access this page, the software will check for latest software updates.
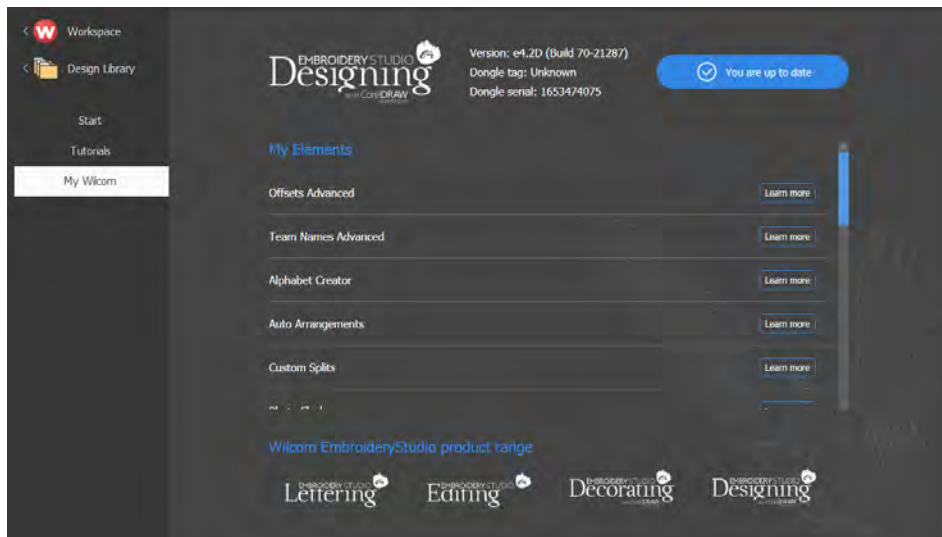
Tip: You can deactivate automatic updates via the **Options** dialog. When deactivated, you will need to run the **Help > Check for Updates** command. See Other general options for details.

Security device

EmbroideryStudio e4 is supplied with a hardware dongle.

◀ Software is activated online and requires an occasional Internet refresh.

◀ End-user registration and details are required.

◀ Continuous Internet connection is not required for use of the software.

Caution: NVIDIA nForce motherboards are not fully compatible with the security dongle.

Multi-user network dongle

EmbroideryStudio e4 continues to provide network dongle support. This means:

◀ Licensed for set number of simultaneous users

◀ Ideal for educational institutions and corporate users

◀ Any ES e4 product model, including DesignWorkflow can be run

- ◀ All systems on the network are same product and options
- ◀ Three models of network dongle to support up to 10, 50, 250 users
- ◀ Can also use individual dongles for other products – if a local dongle is plugged into the machine, it will be favored over the network dongle.

Uninstalling the software

If for any reason you need to uninstall EmbroideryStudio, make sure you do so via the MS Windows® **Control Panel > Programs and Features**. Select a Wilcom program from the list – either EmbroideryStudio (main application), Nova PDF Printer, Nova PDF SDK COM, Wilcom PDF Printer, and/or the Wilcom Shell Extension.

Choose Wilcom application to uninstall
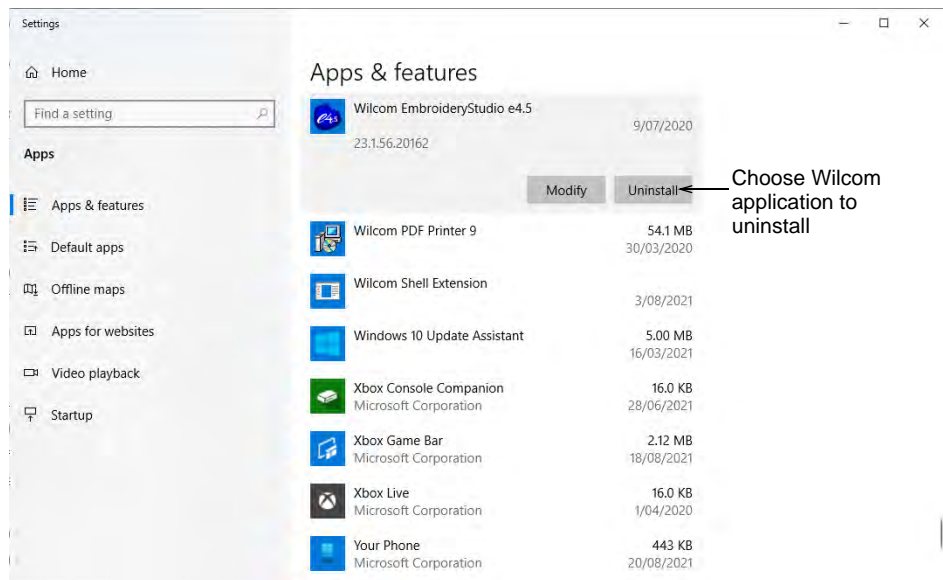
Note, however, the side effects of removing ancillary programs but not the main application:

- ◀ Nova PDF: No PDF printing from EmbroideryStudio.
- ◀ Wilcom Shell Extension: No thumbnails/design info displayed in **File Explorer** or **Design Library**.

Resources & support

EmbroideryStudio provides various ways to access information about the software and how to use it.

Help
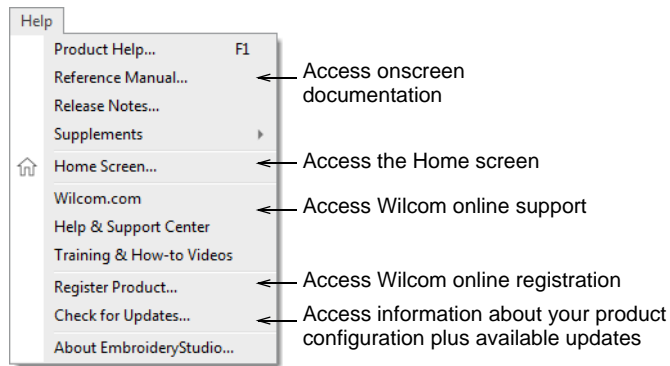| Product Help... | F1 |
Reference Manual...	← Access onscreen documentation
Release Notes...	
Supplements	▶
⌂ Home Screen...	← Access the Home screen
Wilcom.com	← Access Wilcom online support
Help & Support Center	
Training & How-to Videos	
Register Product...	← Access Wilcom online registration
Check for Updates...	← Access information about your product configuration plus available updates
About EmbroideryStudio...	

Product documentation

Product documentation is provided in two formats — HTML Help and Adobe Acrobat (PDF). Components include release notes, reference manual, online help, as well as various supplements.

Release notes

Release notes provide details of new features and major and minor improvements in the software, as well as known limitations and 'workarounds'.

Online help

Online help provides quick access to general information on EmbroideryStudio features and step-by-step instructions. There are two types available — **Wilcom Workspace** Help and **CorelDRAW Graphics** Help. The latter can be accessed from the **CorelDRAW Graphics** Help menu.

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Tip: Context-Sensitive Help is available for tools and dialogs by pressing the F1 key.

Reference manual

The reference manual can be accessed from the EmbroideryStudio **Help** menu or MS Windows® **Programs** folder. You can read it with Adobe Acrobat™ Reader which can be downloaded from the Adobe website. It can also be downloaded from the online help home page.

User guide

A printed user guide is available on demand at a small cost. It is intended as a convenience for beginner and intermediate users. It is not a complete description of software capabilities.

Note: Screen illustrations in the documentation are representations, not exact duplicates of screen layouts generated by the software. Procedural descriptions may vary slightly from your installation, depending on current settings.

Manual supplements

The EmbroideryStudio installation also installs a number of online supplements depending on your product options. These are generally used in conjunction with the User Manual.

Access supplemental documentation
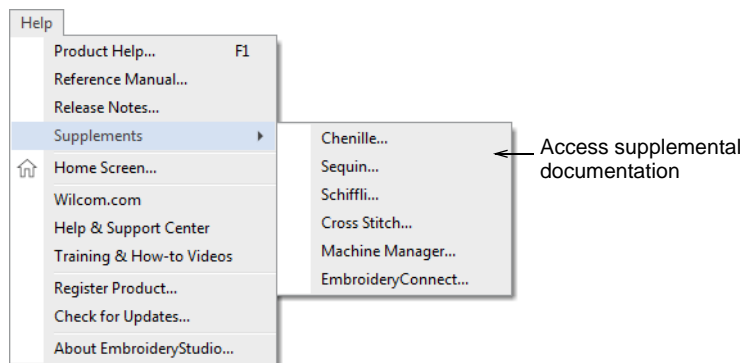
Chenille

This supplement is supplied with the Chenille Option. It documents:

◀ Chenille features within EmbroideryStudio
◀ Chenille machines, including chain, moss, needle height
◀ Chenille stitch types and effects.

Sequin

This supplement is supplied with the ES Sequin Option. It documents:

◀ Setting up sequin mode
◀ Creating sequin runs and fills
◀ Converting objects to sequins
◀ Setting up twin-sequin designs
◀ Modifying sequin designs
◀ Digitizing individual sequins

Schiffli

The manual is supplied with the Schiffli Option. It documents:

◀ Schiffli features within EmbroideryStudio
◀ Read/output to Schiffli files
◀ Schiffli disk utilities, Fixpat, Defced.

Cross Stitch

This supplement is supplied with the ES Cross Stitch Option. It documents:

◀ Manual and automatic cross stitch digitizing
◀ Cross stitch editing
◀ Cross stitch lettering
◀ Handling cross stitch design files.

Machine Manager

This supplement documents the following product capabilities:

◀ Machine Manager Direct Connect
◀ Feedback from machines
◀ Machine activity reporting
◀ Technical details of machine network setup.

EmbroideryConnect

An **EmbroideryConnect** machine network allows for wireless design transfer to embroidery machines that have a USB port. When activated in EmbroideryStudio, you can send machine files via a standard WiFi network to a compatible WiFi USB Stick plugged into the machine. This supplement describes setup and usage.

Online support

You can access online sales and support information easily from the **Help** menu. You will need a correctly configured web browser together with web access.

To access online support

◀ The Wilcom.com link provides commercial information about Wilcom products and services.
◀ The Help & Support link provides access to various online support services. You need to be a registered user of the product.
◀ The Training & How-to Videos link provides access to online video demonstrations.

◄ The Wilcom Community provides official Wilcom news and announcements, community ideas and feedback, as well as community self-help.

CorelDRAW® Graphics Suite support

CorelDRAW® Graphics Suite is bundled as standard with some product models. CorelDRAW® needs to be registered before it can be used by EmbroideryStudio. Registration gives you access to the latest CorelDRAW® updates. Registered users of this site can participate in forums as well as comment and rate blogs and galleries. Some forums are in local languages. Access the CorelDRAW Community site via the **CorelDRAW Graphics > Help** menu.
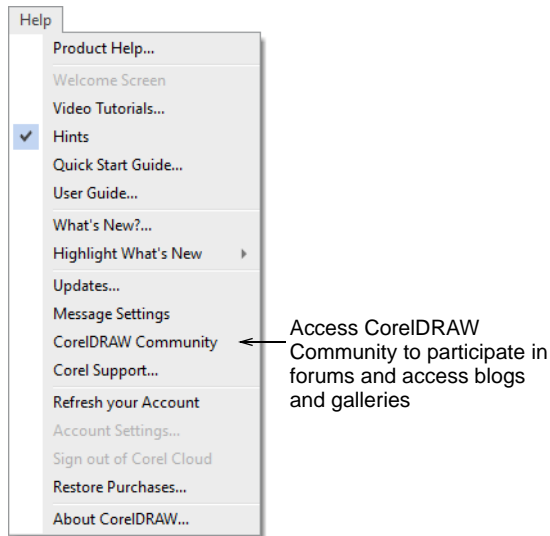
Access CorelDRAW Community to participate in forums and access blogs and galleries

Note: For a detailed description of the CorelDRAW® Graphics Suite interface, refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **CorelDRAW Graphics Help** menu.

Chapter 2
Designing with EmbroideryStudio

Embroidery design with EmbroideryStudio consists of turning basic artwork shapes into embroidery designs. EmbroideryStudio gives you the flexibility of creating embroidery objects using artwork as backdrops, or of directly converting digital artwork. You can take a mixed-mode approach as well, doing the bulk of the design by means of automatic conversion, followed by touch-ups and edits using the suite of EmbroideryStudio embroidery digitizing tools.

Artwork & designs

High quality embroidery starts with good design and forward planning.

Artwork

Electronic artwork in both bitmap and vector formats can be inserted, pasted or scanned into EmbroideryStudio for use as digitizing templates or 'backdrops'. Likely sources include:
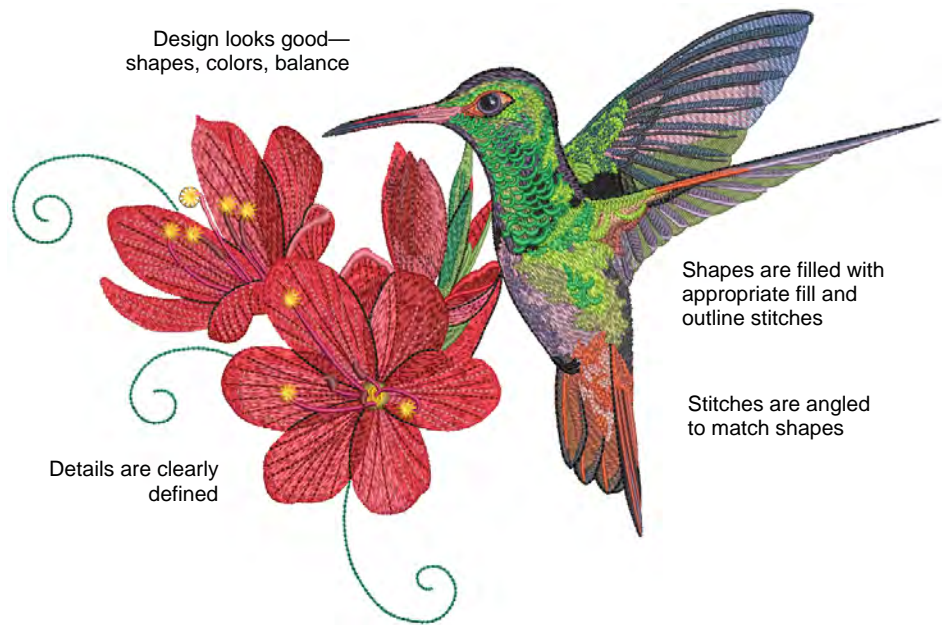
◀ Internet and CD clipart libraries
◀ Business cards, post cards and wrapping paper
◀ Samples in the **Design Library**
◀ Books of embroidery patterns
◀ Children's story books
◀ Printed table cloths or tea towels
◀ Original artwork – e.g. children's drawings.

Unless you are an experienced digitizer, do not use complicated artwork. Also, be sure to check the copyright of any images you have not created yourself. If unsure, contact the relevant supplier to seek their permission.

Good design

Keep the following points in mind when digitizing your design and assessing the final output:

Design looks good—
shapes, colors, balance

Shapes are filled with
appropriate fill and
outline stitches

Stitches are angled
to match shapes

Details are clearly
defined

The stitched-out design should also have the following characteristics:

◀ Design looks good – shapes, colors, balance
◀ Shapes are filled with correct fill and outline stitches
◀ Details are clearly defined
◀ Stitches are neat, smooth and even
◀ Stitches angles follow design shapes
◀ Lettering is clear and easy to read
◀ The design stitches out efficiently on the machine
◀ Shapes are stitched correctly – no unwanted gaps
◀ The fabric has not puckered around the stitched areas
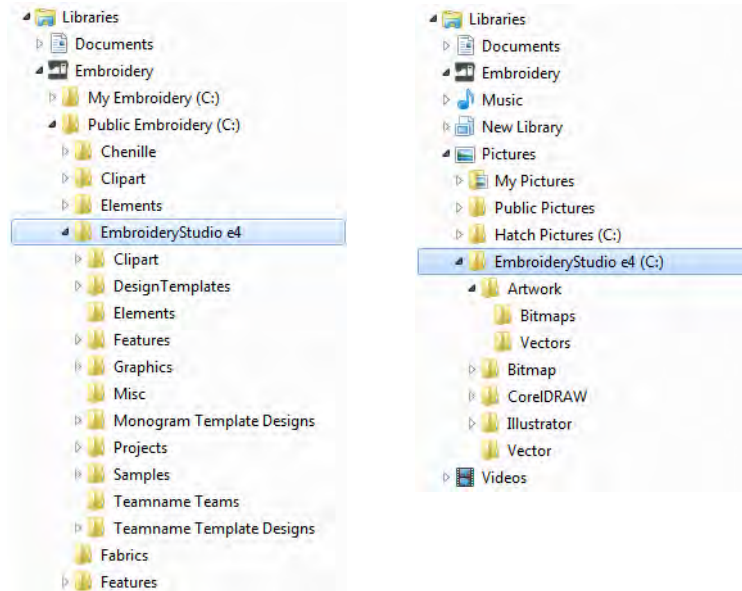◀ The design is free of loose ends.

💡
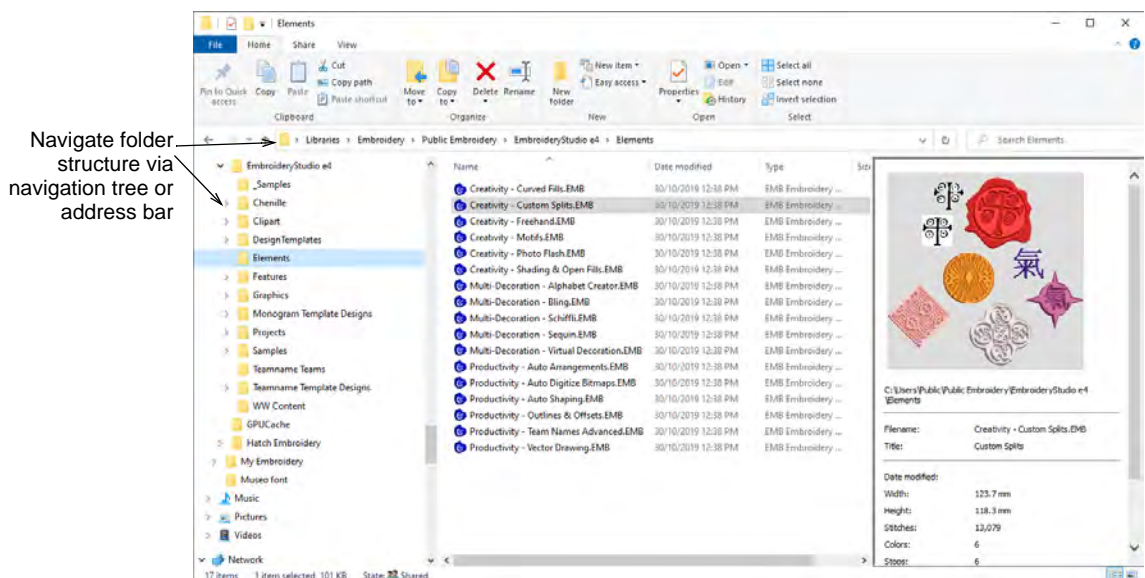**Tip:** Good design is enhanced by the use of correct backing, tension and a good quality embroidery machine.

Sample designs & artwork

EmbroideryStudio contains hundreds of ready-to-stitch designs, including attractive ornaments, samples and digitizing backdrops. Design

files (EMB 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 is to spend some time exploring these designs and getting to know what's available. EmbroideryStudio includes its own **Design Library** design management application to view and manage your embroidery designs. Alternatively, explore design folders using **File Explorer**. See also Design Management.

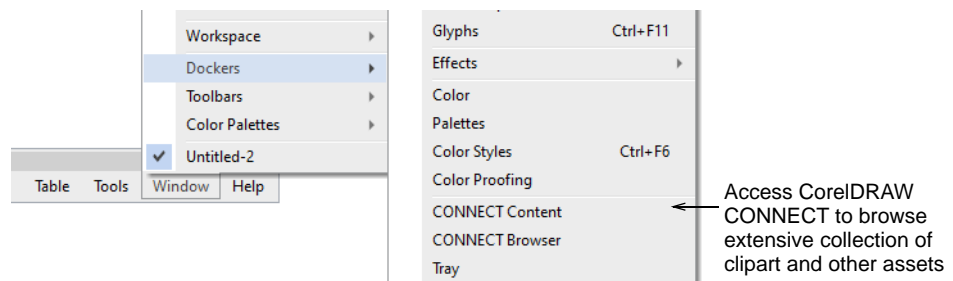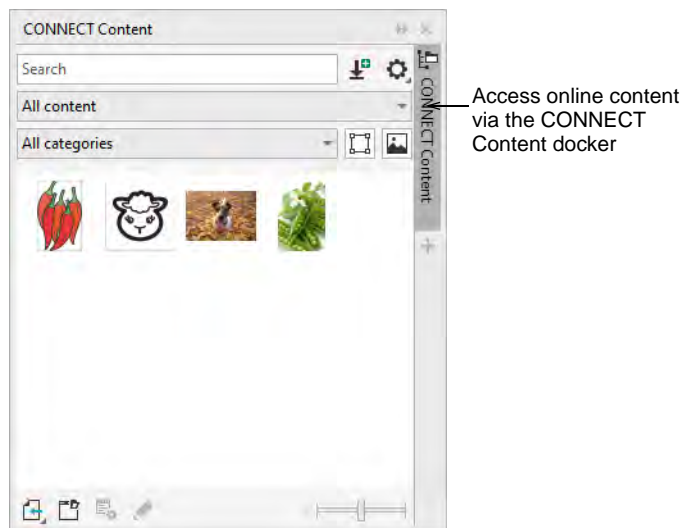Navigate folder structure via navigation tree or address bar

⚠️

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.

CorelDRAW resources

CorelDRAW® Graphics Suite is bundled as standard with some product models. CorelDRAW® Standard Membership provides access to content – clipart, fonts, stock photos, templates – via **Corel CONNECT**. Clipart and other content can be accessed via the program group. It can also be accessed via the built-in **CONNECT Content** docker in **CorelDRAW Graphics**.

Access CorelDRAW CONNECT to browse extensive collection of clipart and other assets

Go to **Window > Dockers > CONNECT Content** to open the docker.

Access online content via the CONNECT Content docker

Get familiar with the many clipart samples available to you. Many can be adapted for use with embroidery design, either as digitizing backdrops or direct conversion.

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

Embroidery creation techniques

Depending on your level of product, there are two fundamental design modes in EmbroideryStudio:

‣ **CorelDRAW Graphics**: This mode allows you to create or edit graphic designs using the CorelDRAW® Graphics Suite toolset.

‣ **Wilcom Workspace**: This mode allows you to create and edit embroidery designs using an embroidery digitizing toolset.

🖉

Note: For a full description of the CorelDRAW® Graphics Suite tools, refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **Help** menu.
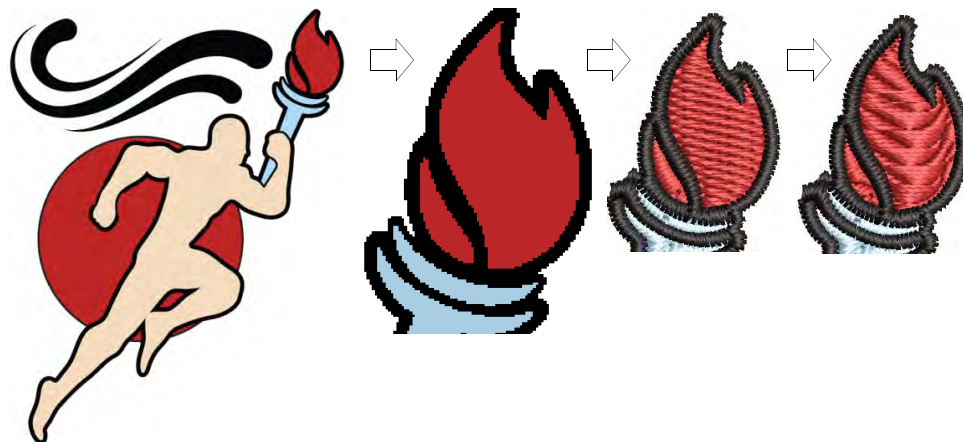
Using electronic artwork

There are two broad categories of artwork file, both of which can be imported into EmbroideryStudio for use as digitizing backdrops – vector and bitmap. **CorelDRAW Graphics** supports the automatic and semi-automatic digitizing of both bitmap images and vector graphics. The quality of the resulting embroidery greatly depends on the type and quality of the original artwork.
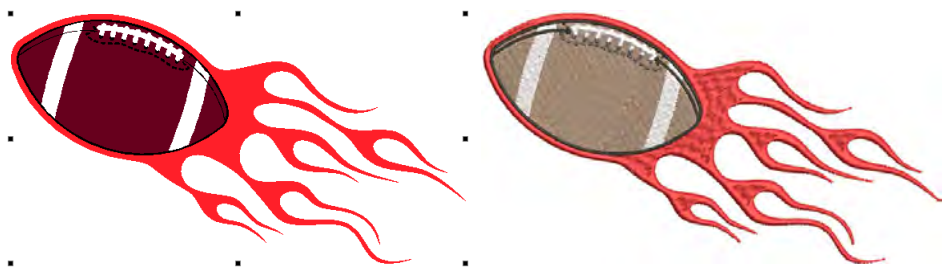

Preparing images for digitizing

Generally speaking, vector graphics preserve the picture quality when resized, whereas bitmap images cause problems of pixelation and image degradation when enlarged or scaled down. In order to make bitmap images more suitable for automatic digitizing, EmbroideryStudio

provides image processing capabilities. See Digitizing with Bitmaps for details.

Digitizing shapes manually

You trace shapes and lines over electronic artwork using various digitizing on 'input' methods. Using a bitmap image in this way is like using an enlargement drawing on a digitizing tablet, except that everything is done on screen. See Embroidery digitizing for details.
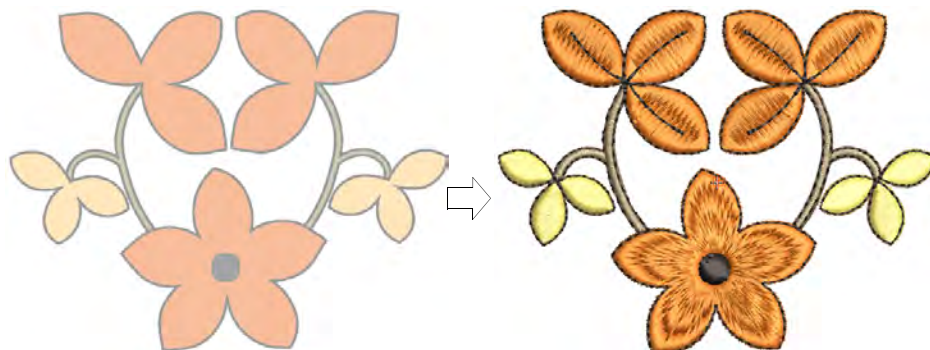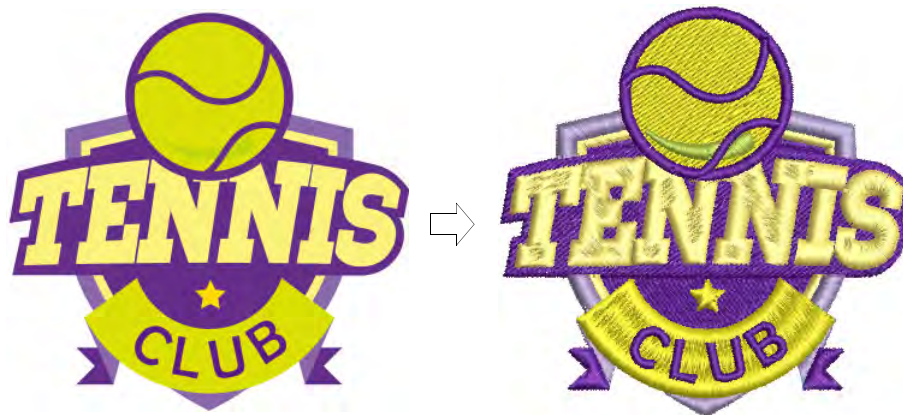

Converting artwork to embroidery

EmbroideryStudio lets you convert vector objects directly to embroidery objects. In fact, entire vector designs can be converted to embroidery. You can modify these designs as you wish. You can also convert

embroidery to vector graphics. See Convert objects with CorelDRAW Graphics for details.

Tip: CorelDRAW® Graphics Suite lets you trace bitmaps to convert them to fully editable and scalable vector graphics. You can trace scanned sketches, artwork, digital photos, and logos and easily integrate them into your designs.

Object-based embroidery

In EmbroideryStudio, you build designs from basic shapes or 'embroidery objects'. They are called 'objects' because they are discrete entities which can be manipulated independently of each other. These are like ordinary vector 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.

Note: In EmbroideryStudio, vector and embroidery objects are in fact inter-convertible since they share many of the same characteristics. See also Convert objects with CorelDRAW Graphics.

Design shapes and stitching sequence

The embroidery objects comprising a design form a stitching sequence. Before creating an embroidery design, it is good practice to analyze and plan shapes and stitching sequence in advance. Shapes need to be clearly defined to make them easy to embroider. The best ones have relatively

constant width, with smooth edges, no sharp turns and no small, protruding details. Outlines and details should always be stitched last.
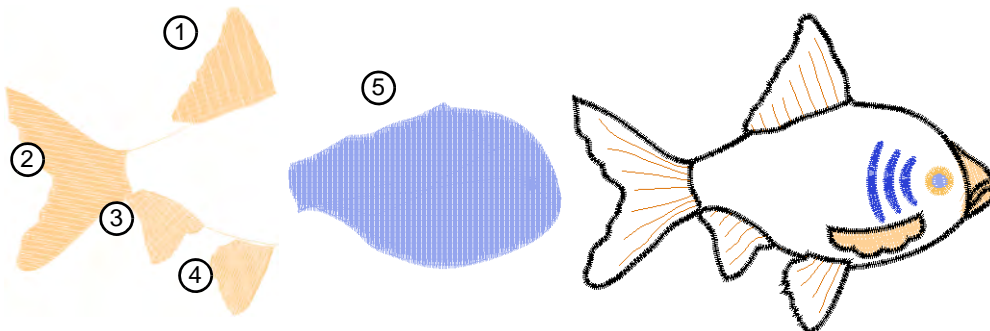
If you are digitizing manually, objects are stitched out in the order they were created. In other words, the digitizing sequence defines the stitching sequence. If you have converted an electronic design, EmbroideryStudio uses automatic sequencing to create the optimum stitching sequence. Auto-sequencing attempts to generate embroidery designs which are economical to produce, with minimal down time, and accurate registration of textures and colors.

Mixed-mode approach

If you take a mixed-mode approach, you may do the bulk of the design by means of automatic conversion, and touch-ups and edits using the suite of EmbroideryStudio embroidery digitizing tools. In addition, you can always manually adjust the stitching sequence to improve the stitchout, for example, to minimize color changes. See also Automatic digitizing.

Object viewing and selection

EmbroideryStudio provides many viewing modes to make it easier to work with your designs. View a design at actual size or zoom in for more detail. Pan a design instead of scrolling, or quickly change between one view and the last. Show or hide outlines, stitches themselves, or view designs in TrueView™.

Understanding stitching sequence

When working with embroidery designs, you can check the stitching sequence by 'traveling' through it by means of color blocks, embroidery objects, or even stitch-by-stitch. Alternatively, simulate the actual embroidery design stitchout on screen. You can also preview designs in different colors on different backgrounds by selecting from predefined colorways. See Viewing stitching sequence for details.

Selecting embroidery objects

EmbroideryStudio provides various ways to select embroidery objects. Modify the design as a whole or select individual objects for more precise modification. The **Color-Object List** provides an easy way to select objects and colors in a design and access their properties. Use it also to group and ungroup, lock and unlock, and show and hide objects. See Selecting objects for details.
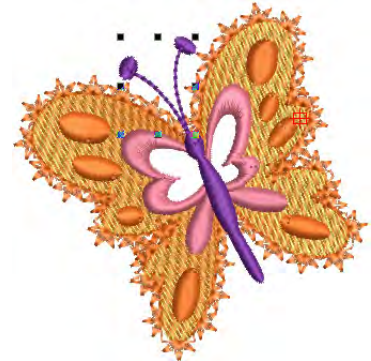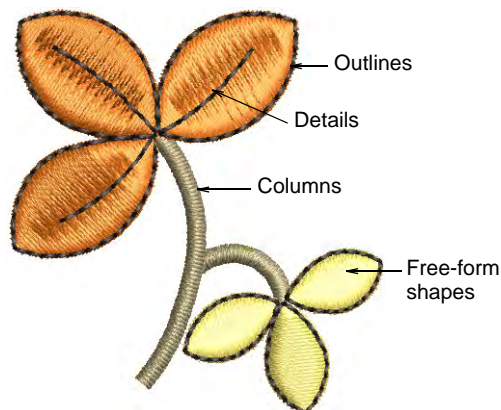
Digitizing embroidery shapes

In addition to the automated and semi-automated techniques EmbroideryStudio provides for creating embroidery designs, it also contains a suite of manual digitizing tools. These are similar to graphics tools except that the end result are embroidery rather than vector objects. It is important to be familiar with manual digitizing methods in order to fully understand the process, the types of objects created, and the problems associated with embroidery digitizing.

Digitizing simple & complex shapes

There are tools for digitizing filled shapes with turning stitches and fixed stitch angles, with or without holes. There are also tools for creating

columns and borders of fixed or varying width. See Embroidery digitizing for details.

Digitizing outlines & details

EmbroideryStudio provides tools for creating outline stitching of varying thicknesses and styles. They are typically used to add outlines and details to designs. There are tools for creating simple run stitching as well as decorative outlines using predefined motifs. Backstitch is an older-style, adaptable stitch which can be used for delicate outlines. Stemstitch is thicker and can be used to mimic hand-sewn embroidery. Occasionally you may even need to digitize individual stitches. See Digitizing outlines & details for details.

Stitch types

The most important property of all embroidery objects is their stitch type. The software uses object outlines and the associated stitch type to generate stitches. Whenever you reshape, transform or scale an object, stitches are automatically regenerated. See Stitch Types for details.

Threads & colorways

When digitizing, you select thread colors for objects from the color palette. This contains a selection of colors tailored to each design or color scheme. The particular 'colorway' represents the actual thread colors in

which a design will be stitched. You can define multiple color schemes and switch between them. See Colorways for details.
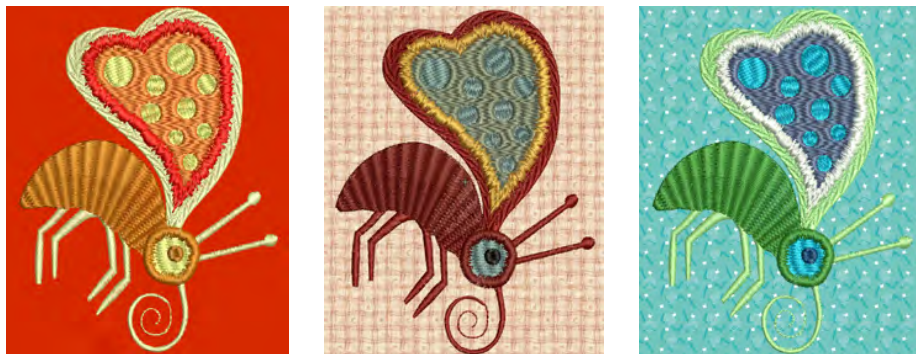
For each colorway you define, you can select colors from commercial thread charts or define your own. Search for particular threads by specific code. Automatic thread color matching helps you locate thread colors based on closest match across one or several thread charts. You can also match thread colors from imported graphics – vector or bitmap.

Design backgrounds

EmbroideryStudio also lets you set the background color, fabric, or product of the current colorway for more realistic previews and presentations. The background is saved with the colorway. See Fabric & product backgrounds for details.

Properties, fabrics, styles & templates

Object properties are stored with each object whenever you save a design. These properties determine how stitches will be regenerated whenever you reshape, transform or scale an object or entire design.

Default properties are stored with the design template and form the basis of all new designs. These may be overridden by fabric settings which are automatically adjusted to suit different fabric types. These in turn may be overridden by individual property settings determined by the digitizer. See Object Properties for details.

Underlays & pull compensation

Embroidery stitches pull fabric inward where needles penetrate. This can cause fabric to pucker, stitch bunching, and/or unsightly gaps to appear in the embroidery. EmbroideryStudio includes many techniques for achieving smooth, even placement of stitches, and the elimination of gaps in designs.
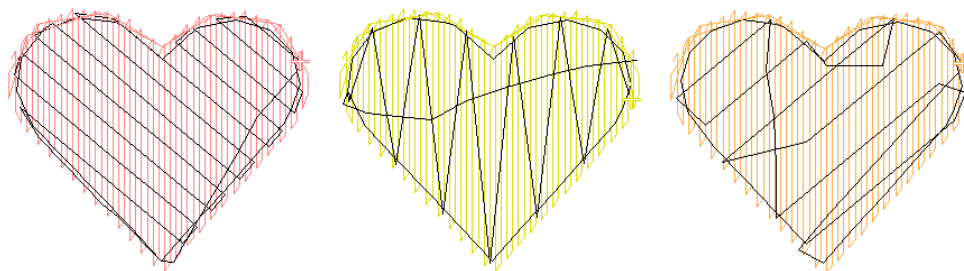
For an object to sew out correctly, it must have correct stitch spacing, sufficient pull compensation, together with a suitable underlay for the particular combination of cover stitch type, object type, object shape, and fabric. See Underlay & Pull Compensation for details.

Embroidery connectors

Connectors link objects in a design. They can be run stitches or jumps. Travel runs are typically used to connect segments **within** filled objects. You can use automatic settings to generate connectors, trims and tie-offs, or add them manually. You can change connector settings for a whole design or selected objects. If you prefer to add tie-offs and trims as you digitize, you can turn off automatic connectors altogether.

EmbroideryStudio also allows you to automatically connect first and last stitches of a design. This makes it easy to position the needle before stitching, and reduces the chance of it hitting the frame. See Embroidery Connectors for details.

Automatic digitizing

Depending on your product level, EmbroideryStudio offers a variety of complementary tools and techniques for automatically digitizing suitably prepared artwork.

Auto-tracing bitmap artwork

Use **Auto Trace To Vectors** to create vector outlines from bitmap images. You can then convert these to embroidery objects using a variety of input methods. **Auto Trace To Vectors** can find holes in shapes – both inside and outside boundaries are detected. See Auto-tracing bitmap artwork for details.
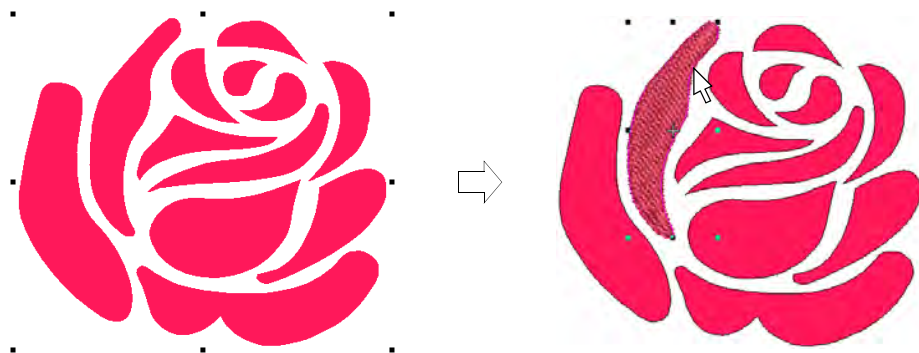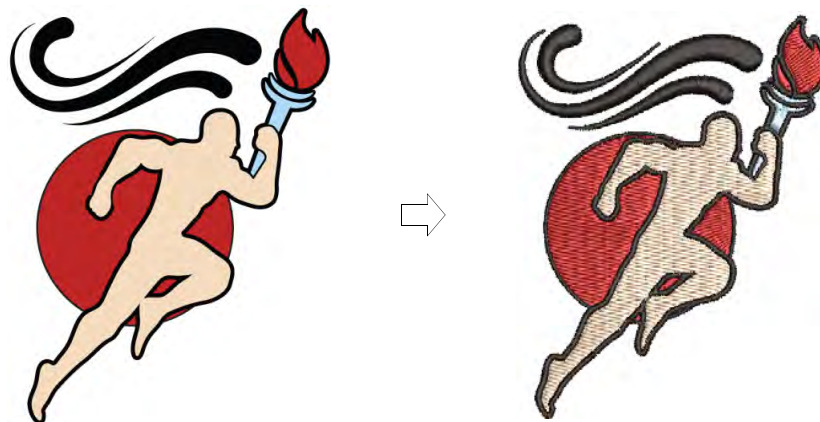
Auto-digitizing image shapes

Auto-Digitizing tools provide everything necessary to digitize shapes in bitmap images and vector graphics automatically without using manual digitizing methods. See Auto-digitize individual shapes for details.
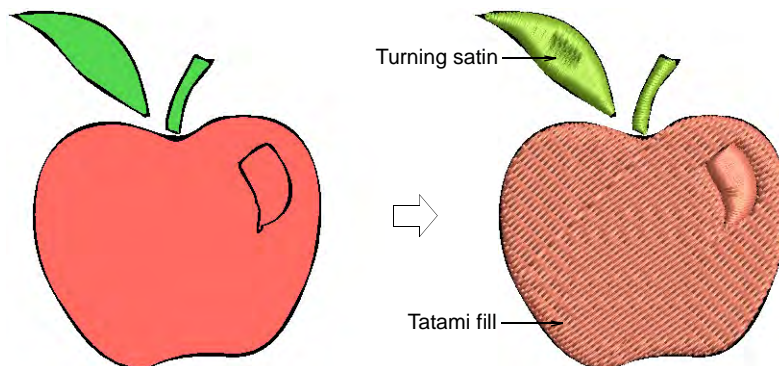
Auto-digitizing entire images

Smart Design automatically converts whole bitmap images to fully digitized embroidery. See Auto-digitize entire designs for details.

Auto-digitizing photographs

Use **Color PhotoStitch** or **Photo Flash** to create embroidery from photographs and other images. While **Photo Flash** 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. See Auto-digitizing photographs for details.

Modifying designs

After digitizing a design, you can modify it as a whole, edit individual objects or even individual stitches.

Combining & resequencing objects

EmbroideryStudio provides various techniques for combining and sequencing objects. You can add to designs by duplicating and copying objects. Combine designs. Resequence objects in designs to minimize color changes and optimize production.

The stitching sequence naturally occurs in the order in which an embroidery design is digitized or assembled. When converting a graphic design to an embroidery design, EmbroideryStudio decides the stitching sequence according to its own internal logic. Either way, you may, for reasons of aesthetics or production efficiency, want to adjust it. The **Color-Object List** displays a sequential list of objects grouped by object and color. It provides an easy way to group, cut, copy and paste, and resequence selected objects and color blocks. EmbroideryStudio also allows you to create 'branched objects'. Like-objects are thereby resequenced, connectors minimized, components grouped, and stitches regenerated. Underlay can be applied to all. See Combining Objects for details.

Arranging, scaling & transforming objects

You can change the position, size and orientation of objects in a design by moving, scaling and transforming them. Group objects together to apply universal changes, or lock them to avoid unintentional modification. Modify objects directly on screen or via their object properties. Access commonly used functions via the Color-Object List. See Transforming Objects for details.
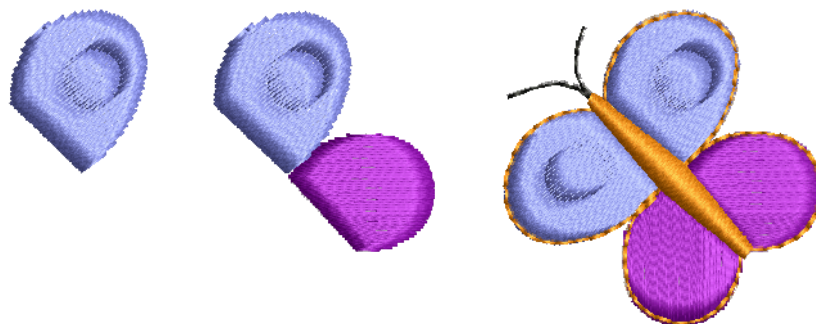
Reshaping and converting objects

EmbroideryStudio offers a number of techniques for reshaping embroidery objects, all with the one tool. Sometimes you may need to cut, split or break up complex or compound objects in order to fine-tune them. Various tools are available for this purpose. As well as reshaping object outlines, you can add and adjust stitch angles, a property unique to embroidery objects. You can also change the entry and exit points of

individual objects which is important if you are digitizing manually or resequencing embroidery objects. See Reshaping Objects for details.


Optimizing stitch quality

When it comes to embroidery production, the current stitch density may not be perfect for certain fabrics or threads. Or you may want to make production cheaper by reducing overall stitch count. After scaling operations, for example, designs may contain small stitches which can damage fabric and cause thread or needle breakage. Sharp corners may cause stitch bunching which can create hard spots in the embroidery and damage fabric or needle. Embroidery machines have a maximum possible stitch length which is determined by the physical frame movement. If long Satin stitches exceed this, they are broken into smaller stitches. EmbroideryStudio helps you resolve these issues with a number of specialized techniques for optimizing stitching quality for different design types and production requirements. See Optimizing Stitch Quality for details.
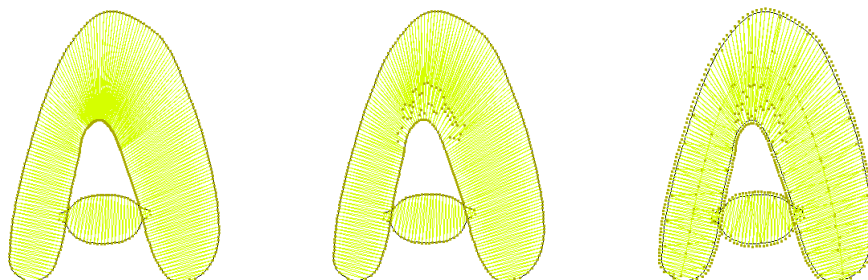
Editing stitches & machine functions

EmbroideryStudio automatically generates stitches from design outlines and properties. This means you can scale, transform, and reshape native designs without compromising stitch density or quality.

However, EmbroideryStudio also lets you edit individual stitches. You may need to do this, for example, when working with 'stitch' files which do not contain outline data. Like stitches, machine functions are inserted automatically whenever you digitize objects and specify object properties. They are stored with the embroidery object and updated whenever it is modified. However, EmbroideryStudio also lets you manually insert machine functions and modify them. This flexibility allows you to adapt designs to almost any machine requirement. See Stitches & Machine Functions for details.
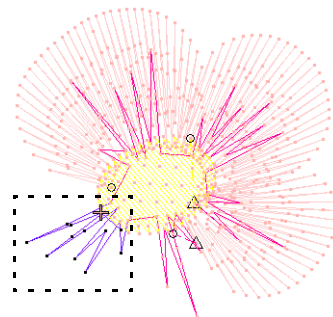
Advanced digitizing

EmbroideryStudio provides specialized productivity features as well as special effects and digitizing techniques.

Productivity techniques

Specialized digitizing features help to save digitizing time. EmbroideryStudio provides special input tools for circles, stars, and rings, as well as methods for creating repeated or 'backtracked' outlines. Remove underlying layers of stitching in overlapping objects to reduce stitch counts and prevent a build-up of stitches.

EmbroideryStudio also provides tools for quickly creating outlines based on existing filled shapes, and vice versa. Add decorative borders such as rectangles, ovals, and shields to designs or selected objects using the **Borders** library. See Productivity Techniques for details.

Decorative stitch effects

EmbroideryStudio provides many artistic effects and stitch types to create textured and contoured fill stitching. Create designs with a hand-drawn appearance, something which is difficult to achieve through conventional digitizing methods.

Create rough edges, shading effects, or imitate fur and other fluffy textures. Stippling provides a method for creating textured fills of run stitching which meanders more or less randomly within a border.

Vary stitch spacing between dense and open fill, producing shading and color effects which are difficult to achieve manually. Create interesting perspective, shading and color effects by blending two colored layers. Add cross stitching to fill large areas with low stitch counts. See Specialty Stitching for details.

Textured & patterned fills

EmbroideryStudio provides special tools for creating textured effects from needle penetrations. Apply offset fractions and partition lines to tatami fills to create split-line patterns. Alternatively, use **Program Split** or **Flexi Split** to create decorative fills from predefined patterns of needle

penetrations. Select from the library or create your own. See Patterned Stitching for details.

The **Carving Stamp** feature allows you to define a pattern of needle penetrations using a 'carving stamp' as a template. With **User-Defined Split**, create your own split lines when you want to add detail to filled objects. See Creating patterns with carving stamps for details.

Curved fills

Create interesting curved effects by shaping needle penetrations to follow the contour of digitized lines. EmbroideryStudio provides a variety of techniques to create curved fills.
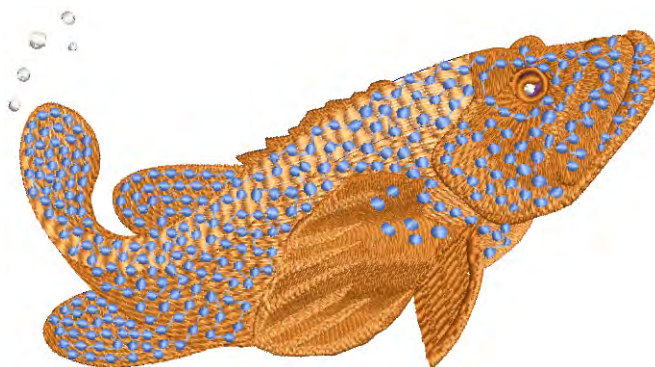
Contour is a curved fill stitch type – stitches follow the contours of a shape, creating a contoured, light and shade effect. **Flexi Split** is a decorative effect where one or more lines of a program split pattern are used in the object fill. **Radial Fill** generates radial turning stitching in several stitch types such as **Satin** and **Tatami** stitch. Use **Florentine Effect** or **Liquid Effect** to create interesting curved effects by shaping

needle penetrations to follow the contour of digitized lines. See Curved Stitching for details.

Motif runs & fills

Motifs are predefined design elements, such as hearts, leaves or border patterns. They generally consist of one or more simple objects, and are stored in a special motif set. The EmbroideryStudio **Motif** tools allow you to use motifs to create ornamental runs and textured fills. Use the ones provided with the software or create your own. Motifs can be scaled, rotated and mirrored in the same way as other objects. You can even use them to create interesting three dimensional effects. See Motif Stitching for details.
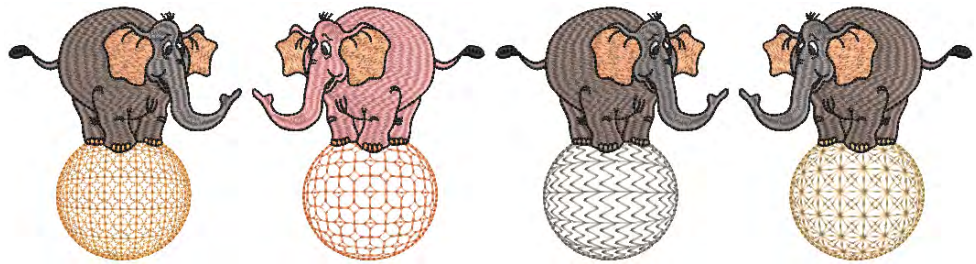
Embroidery lettering

Create top-quality lettering quickly and simply. EmbroideryStudio provides a large range of scalable closest-join font styles and multi-color and fancy fonts to choose from.

Creating embroidery lettering

Create high-quality embroidery lettering quickly and simply. EmbroideryStudio provides a large range of scalable fonts to choose from. Add embroidery lettering directly to designs or convert from **CorelDRAW Graphics**. Apply formatting just like a word processor, including italics, bolding, and right/left justification. Change values for

the whole text or individual letters. See Creating Embroidery Lettering for details.

Editing embroidery lettering

EmbroideryStudio gives you interactive and precise numeric control over many settings affecting lettering objects. Adjust both individual letters and lettering objects as a whole. Apply horizontal, vertical, and curved baselines. Modify baseline type, length, radius and angle, as well as position. You can even define the rotation angle of letters relative to the baseline or the design itself. See Editing Embroidery Lettering for details.
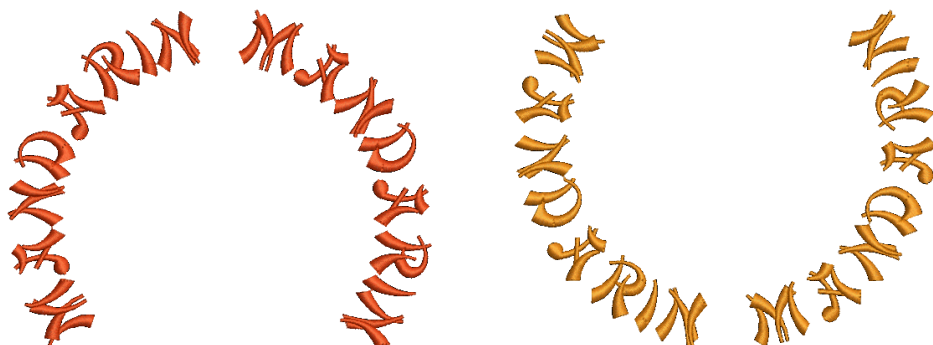
Advanced lettering techniques

Add special characters and symbols to your lettering. By default, lettering objects are filled with **Satin** stitch. Apply other basic fill stitch types as with all embroidery objects.

Specify the sequence in which letters are stitched to minimize registration problems. The automatic kerning feature improves lettering appearance and legibility by fine-tuning spacings between character pairs.

Alternatively, fine-tune letter spacing according to the number of characters per object. This is particularly useful with Asian fonts. Lettering appearance and quality can be improved with the correct underlay. See Advanced Embroidery Lettering for details.

Apply **Lettering Art** effects to make letters bulge or arch, stretch or compress. Many styles are available from the **Lettering Art** gallery. You can fine-tune preset shapes as preferred. Edit lettering text in envelopes the same way as normal lettering. See Creating special effects with lettering art for details.

Team lettering

The **Team Names** feature lets you create designs with multiple names. For example, you can use the same logo with different names for sports teams or corporate uniforms, without having to create multiple copies of the same design. Names are stored in lists that can be accessed from any design. You can add to these lists, or remove names at any time.

Depending on how you want to stitch out, you can choose to save and stitch names and designs separately, or together. See Team Names for details.

Monograms

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 predefined monogram styles, border shapes and ornaments, together with a set of tools to help you place these elements in creative and decorative ways. See Monogramming for details.

Custom fonts

Turn any TrueType font installed on your system into an embroidery font. The automatic kerning feature improves lettering appearance and legibility by fine-tuning spacings between character pairs. Sometimes you find that you want to reshape a letter to improve its appearance, perhaps to suit a particular lettering height. EmbroideryStudio lets you save the letter as an alternative version. In fact you can save multiple versions of the same letter within the same font. You can even create your own custom fonts or modify an existing font for special applications. Even merge letters from two or more fonts. See Custom Lettering for details.

Mixed decoration

EmbroideryStudio provides support for various multi-decoration techniques, including print.

Appliqué digitizing

Automatically create all the stitching you need for appliqué using the **Appliqué** tool. Up to four layers of stitching – guide runs, cutting lines, tack stitches and cover stitches – can be generated for any appliqué object, depending on current settings. You can also extract appliqué shapes from a design to output to a cutter or separate file. See Appliqué Embroidery for details.

Sequin digitizing

Some embroidery machines are equipped with a sequin dispenser that drops sequins onto the garment as it stitches. EmbroideryStudio allows you to digitize sequined designs for compatible machines. A dedicated set of sequin tools lets you digitize sequin fills, outlines, or individual sequin drops.

EmbroideryStudio also supports the creation of twin-sequin designs for twin-sequin-capable machines. EmbroideryStudio also provides a dedicated tool for automatically converting sequin artwork in the form of a vector file to sequin runs. See Sequin Embroidery for details.
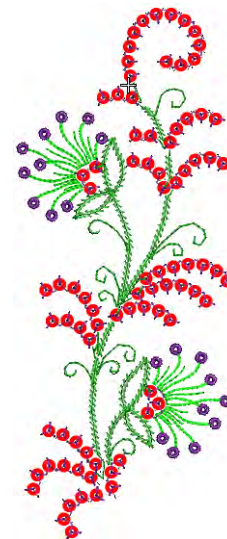
Bling digitizing

Bling refers to decorative objects placed on garments or templates, either on their own or in combination with other design elements. Bling is supplied in varying sizes, shapes, colors and materials. It goes under various names such as diamante, rhinestones, eyelets, ribbons, charms, crystals, glitz, nailheads, studs, etc.

EmbroideryStudio lets you create bling and embroidery multi-decoration designs with the **Bling** toolset. This tool lets you create and visualize bling embellishments in combination with other decorative elements. See Bling Digitizing for details.

Chenille digitizing

EmbroideryStudio provides an option to add special chenille embroidery capabilities to a lockstitch embroidery digitizing system. These **Chenille** features include chenille embroidery machine formats, stitch types and effects, as well as chenille-specific object properties. Chenille can be

added to all levels of product. See separate Chenille Supplement for details.

Multi-decoration export

The **Multi-Decoration File Export** (MDFE) capability allows you to export the different file formats involved in a multi-decoration design production with a single command option. The system recognizes whether a design element is embroidery, graphics, appliqué, or bling. It displays each element in an export dialog with a list of corresponding file types to choose from. See Exporting multiple decoration files for details.

Files, machines, & design processing

Design processing and encoding involve all the important, back-end operations of embroidery design and manufacture. This is where you actually output your designs to machine, disk, printer, cutter, and so on. For this, you will need an understanding of embroidery file types as well as different machine formats. Depending on your setup, you will also need an understanding of traditional storage media such as embroidery disks.

Printing designs

From the same design file, you can output a production worksheet for the embroidery machine operator. Designers frequently want to distribute their designs for viewing in real colors, in TrueView™ or otherwise, with or without fabric or product backgrounds. EmbroideryStudio allows you to customize information in the format you require for production worksheets and/or approval sheets. You can specify the data to print, graphics to include, zoom factor, and general options such as company name. You can use a color printer or plotter to produce your worksheets. See Design Reports for details.

Outputting designs

You can output embroidery designs for actual stitchout in a variety of ways – sending directly to machine for stitching, or saving to specific

machine formats and/or to embroidery disk. See Embroidery Output for details.

Reading files of different formats

By default EmbroideryStudio saves to its native file format, EMB. This format contains all information necessary both for stitching a design and for later modification. When opening designs created or saved in other formats, EmbroideryStudio converts them internally to EMB format. They can then be modified using the full range of EmbroideryStudio features. Depending on the file type, you may need to provide additional information to assist EmbroideryStudio in the conversion process. See Machine Files for details.

Manual objects with no outlines and manual stitches only

Hooping designs

Devices made from wood, plastic, or steel, hoops are used to tightly grip fabric and stabilizer between an inner and outer ring. Designed to hold fabric taut against the machine bed for embroidering, they attach to the machine's frame. Fabrics must be hooped before stitching out on the machine. EmbroideryStudio allows you to select from a wide range of standard factory-supplied hoops. If you are using a hoop which does not appear in the hoop library, you can define your own from scratch or based on a standard hoop. See Design Hooping for details.

Machine formats

Different embroidery machines speak different languages. They have their own control commands for the various machine functions. Before you can stitch a design, it must be in a format which can be understood by the embroidery machine. When you select a machine format, EmbroideryStudio uses it to translate digitized designs into a specific machine-readable form. If required, you can customize machine formats to meet specific machine requirements. See Machine Formats for details.

Hardware & software setup

In order to work with your particular equipment, EmbroideryStudio needs to be properly configured. You may also want to configure the software to your particular design requirements.

Setting up hardware

You will need to connect peripheral devices for use with EmbroideryStudio. These may include digitizing tablets, plotters, printers, appliqué cutters, scanners and embroidery machines. Different devices are set up in different ways – some in MS Windows®, via the **Control Panel**, others within EmbroideryStudio itself. See Hardware Settings for details.

Changing system settings

EmbroideryStudio 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. See System Settings for details.

Managing designs with Design Library

EmbroideryStudio comes equipped with its own built-in **Design Library** for managing your embroidery designs across your entire local network. Use it to browse design and artwork files stored on your local PC or company network. **Design Library** capabilities make it fast and practical for daily commercial use, avoiding the need to switch to and from **File Explorer**. It recognizes all file formats used by EmbroideryStudio. It also

makes it easy to search, sort and browse all embroidery designs on your network.
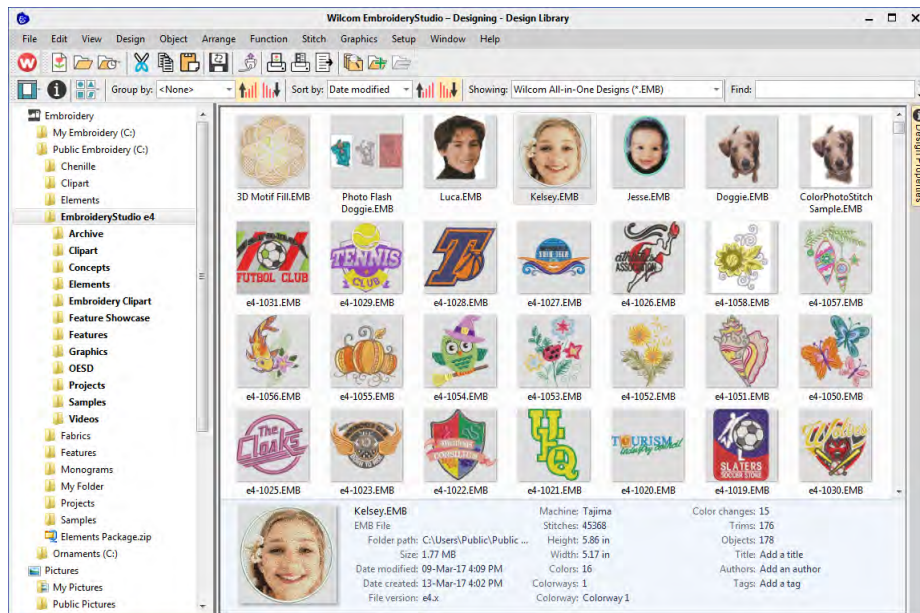
In a nutshell, **Design Library** lets you:

◀ Search for designs – including artwork files – anywhere on your local hard drive, network drives, or external devices such as USB or ZIP drive.

◀ Preview design information in the preview pane.

◀ Search for designs by various means, including known design information.

◀ Create an organizing structure for easy categorization.

◀ Batch-convert selected design files to all commercial embroidery formats such as DST, EXP, SEW, and others.

◀ Print selected designs or send them to embroidery machine for stitchout.

◀ Use **Design Library** to handle job orders.

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 **Design Library** as well as adjusting viewing settings. It also covers browsing for and accessing designs in folders. See Design Management for details.

Note: Design Library helps you manage designs in folders. It is not a multi-user database for company-wide design management. For this type of requirement, refer to the DesignWorkflow User Manual.

PART I

OBJECT-BASED EMBROIDERY

Embroidery design with EmbroideryStudio consists of turning basic artwork shapes into embroidery designs. EmbroideryStudio gives you the flexibility of creating embroidery objects using artwork as backdrops, or of directly converting digital artwork. You can take a mixed mode approach as well, doing the bulk of the design by means of automatic conversion, followed by touch-ups and edits using the suite of EmbroideryStudio embroidery digitizing tools.

Basic procedures

This section describes how to open EmbroideryStudio and start using the commands and tools. It also explains how to open designs as well as create new ones. It describes how to display the grid and rulers, and measure distances on screen. And it also covers how to select machine formats for different output. See Basic Procedures for details.

Viewing designs

This section explains design viewing modes as well as the various design viewing settings, including design colorways. Techniques for viewing the stitching sequence are described as well as how to selectively view design color blocks. Viewing design information, including production worksheets, is also covered. See Viewing Designs for details.

Threads & charts

This section describes how to select colors from the **Color** toolbar 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 Threads & Charts for details.

Chapter 3
Basic Procedures

EmbroideryStudio software is an MS Windows®-based product incorporating many of the conventions with which most PC users are already familiar. EmbroideryStudio integrates with CorelDRAW® Graphics Suite into a single application, allowing users to create, not just embroidery, but true, multi-decoration designs.

Operating modes

Double-click to start EmbroideryStudio.

Open EmbroideryStudio using the desktop icon or the MS Windows® **Start** menu. The application has one workspace or 'design window' but

you interact with it in different operating modes. These can be accessed via the **Modes** toolbar.

Wilcom Workspace

Switch to Wilcom Workspace to access full embroidery creation and editing toolset.

Press <F1> for more help

Switch between operating modes

CorelDRAW Graphics

Switch to CorelDRAW Graphics to access full graphic creation and editing toolset.

Press <F1> for more help
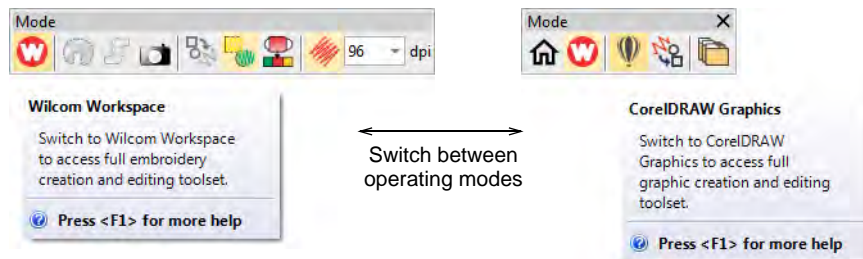
The main modes you'll be accessing are:

Mode	Function
Home	With this mode you can return to the Home screen to access new designs, or access tutorials and other product information.
Wilcom Workspace	This mode allows you to create and edit embroidery objects using an embroidery digitizing toolset.
CorelDRAW Graphics	This mode allows you to create and edit vector objects using the CorelDRAW® Graphics Suite toolset.
Design Library	This mode allows you to manage designs and job orders.

Caution: You need to calibrate your monitor so that designs at 1:1 scale appear at real size. Do this when you first install EmbroideryStudio or whenever you change your monitor. See Calibrating the monitor for details.

Home screen

Click Mode > Home to return to the Home screen to get started with a new design, or access tutorials and other product information.

The **Home** screen loads when EmbroideryStudio starts, offering you quick access to recently opened designs, as well as value-add content, including tutorial videos and the latest Community Forum and Product Blog posts. You can also browse 'My Wilcom' which provides details of

your Wilcom license, including product level, version, as well as any compatible or enabled Elements.
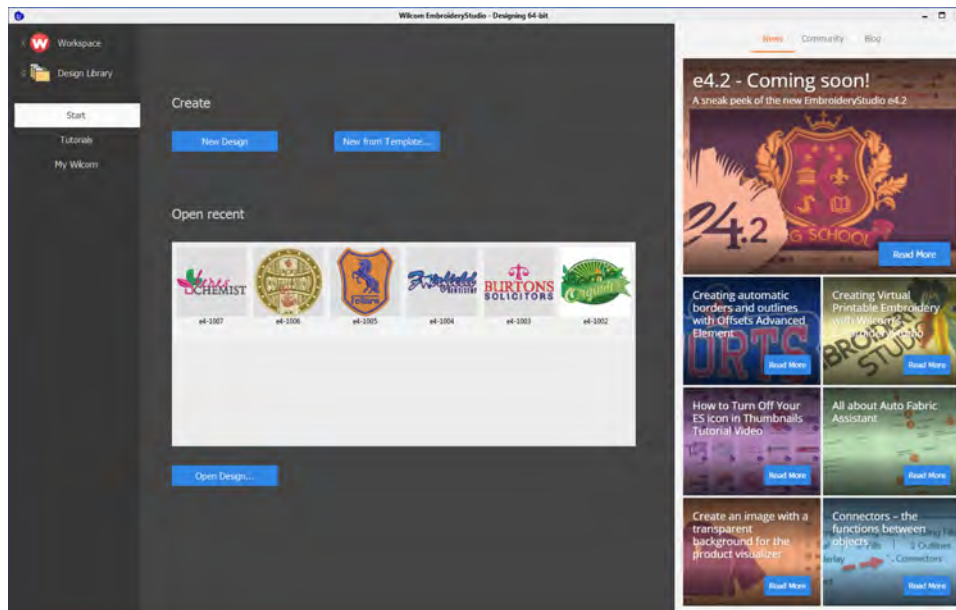
💡
Tip: You can deactivate the **Home** screen from running on startup via the **Options** dialog. See Other general options for details.

Related topics...

◀ Open designs
◀ Create designs from templates

Wilcom Workspace window

Use Mode > Wilcom Workspace to digitize and edit embroidery designs. Display embroidery as well as artwork. View designs realistically in 3D simulation.

When you open EmbroideryStudio, it appears by default in **Wilcom Workspace** window with a new, blank design displayed. This mode allows you to create and edit embroidery objects using the embroidery digitizing toolset. The screen image below shows the more prominent

toolbars in EmbroideryStudio. Depending on your product level, you will have access to some or all of these options.
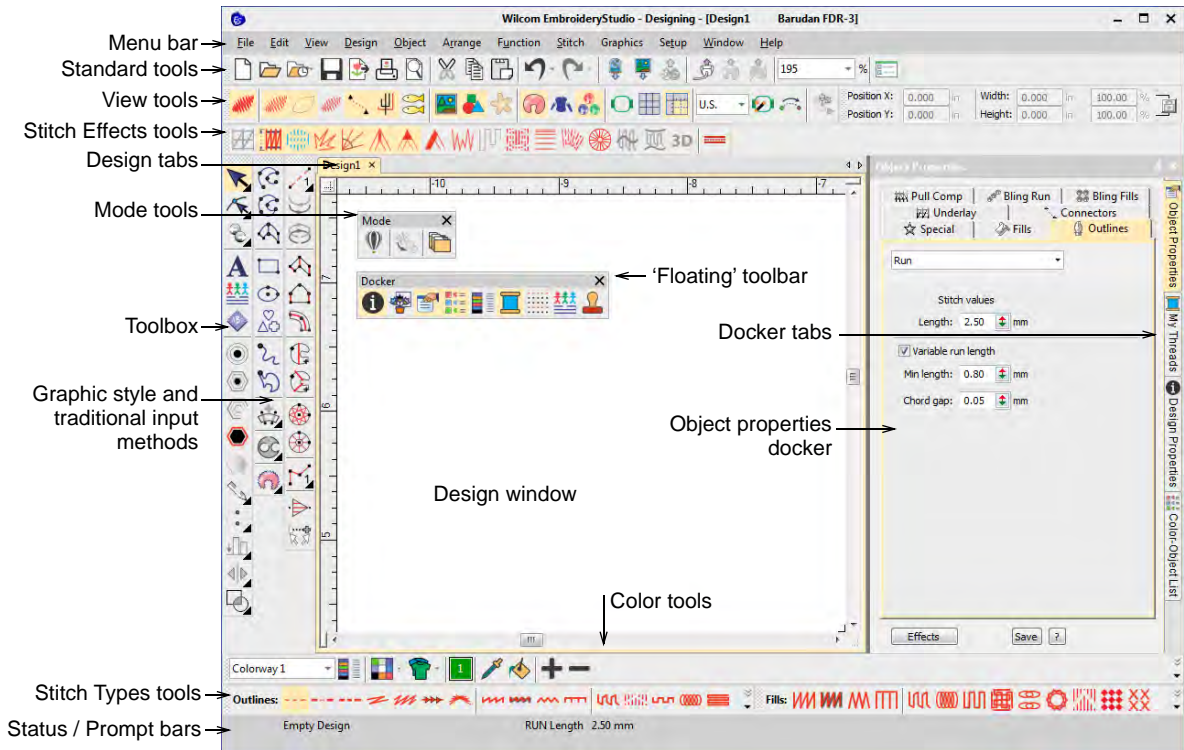
Use this mode when you want to create embroidery from digitizing 'backdrops'. Various types of image file can be loaded in EmbroideryStudio. **Wilcom Workspace** also offers a graphical representation of what the final embroidery will look like. Use **TrueView™** together with a background fabric to see how your design will look when stitched out. Some of the more prominent **Wilcom Workspace** interface elements include:

Element	Description
Menu bar	This contains the application menus such as File, Edit, View, etc.
Mode toolbar	This contains tools and icons which are visible in both Wilcom Workspace and CorelDRAW Graphics.
Standard toolbar	This contains commonly used tools and commands which are specific to and only visible in Wilcom Workspace.
View toolbar	This contains commands for viewing embroidery designs – e.g. as design outlines, by stitches, by machine functions, as they will stitch out on the fabric – either separately or in combination.

Element	Description
Stitch Types toolbars	This contains tools which determine the stitch types which can be applied to embroidery objects, including Satin, Tatami, Motif Fill, etc.
Stitch Effects toolbar	This contains tools for modifying or improving stitch quality, including applying automatic underlay to selected objects.
Toolboxes	Depending on the product model, there are up to three 'toolboxes' – Toolbox, Graphics Digitizing, and Traditional Digitizing. Between them, toolboxes contain all the embroidery digitizing/editing tools specific to and visible only in Wilcom Workspace.
Color toolbar	This contains the embroidery color palette which is specific to and visible only in Wilcom Workspace.
Status / Prompt bars	These contain current status information and prompts which are visible only in Wilcom Workspace. See below.
Docker	Wilcom Workspace includes 'dockers' – Object Properties, Color-Object List, Color Palette Editor, and others. These stay open as long as you need them.
Design Window	This contains the main work area where you create and edit embroidery objects as well as graphics objects when you switch to CorelDRAW Graphics.

◀ Customize the design window by showing or hiding the grid, changing the grid dimensions, as well as showing and hiding toolbars.
◀ 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.
◀ EmbroideryStudio allows you the choice of large or small button icons with or without text names.

Related topics...

◀ Change backgrounds
◀ Toolbar display options
◀ Access object properties
◀ Display grids, rulers & guides
◀ Quick reference

Design tabs

EmbroideryStudio allows you to switch between open designs by means of design tabs. This also makes it easy to copy/paste between designs, including drag and drop operations.

Design tabs
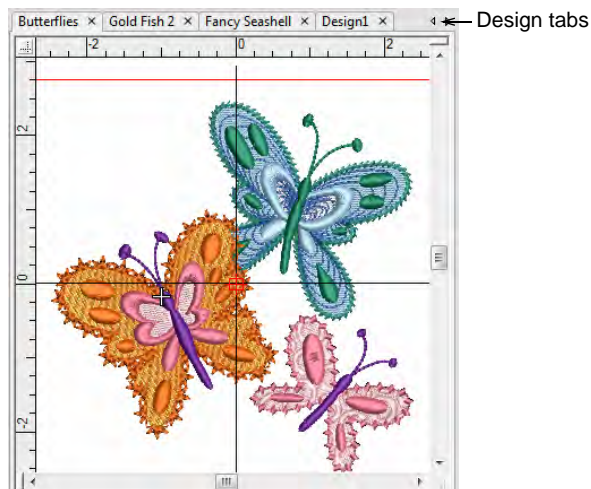
Related topics...

◀ Set up multiple views
◀ Quick reference

Status & Prompt bars

The **Status** and **Prompt** bars at the bottom of the **Wilcom Workspace** design window provides continuous display of current cursor position status as well as instructions for use of selected tools.
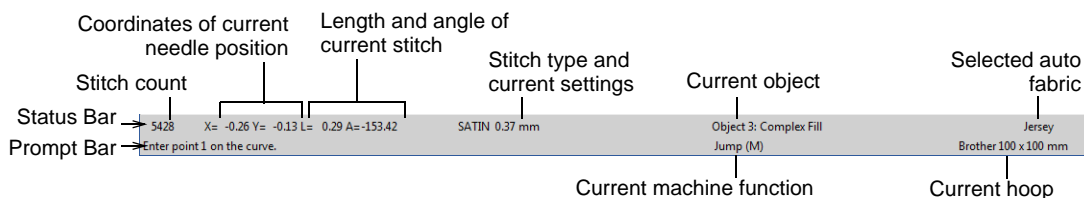
Information includes:

Item	Details
Prompt	Guides you through use of selected functions.
Stitch count	Total number of stitches in design.
Design size	Width and height.
Coordinates	Coordinates of current needle position (X/Y), and length (L) and angle (A) of current stitch.

Item	Details
Current fabric	Fabric settings take into account the type of fabric you are stitching on.

Related topics...

◀ Pointer position display

◀ Change fabrics

CorelDRAW Graphics window

> 🎈 Use Mode > CorelDRAW Graphics to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.
>
> 〰️ In Graphics mode, click Mode > Show Embroidery to show or hide embroidery components.

CorelDRAW Graphics window includes the entire suite of CorelDRAW® Graphics Suite drawing tools. This mode allows you to create and edit vector graphics using the **CorelDRAW Graphics** toolset which offers many sophisticated techniques for drafting outlines and shapes onscreen.
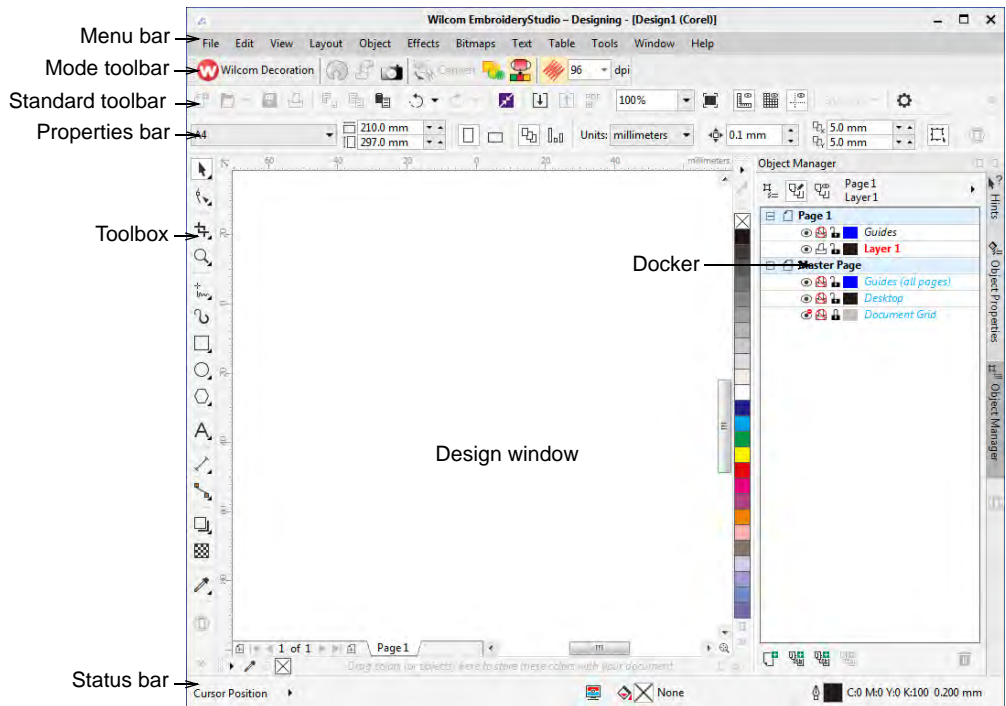
In addition to the CorelDRAW® Graphics Suite toolset, **CorelDRAW Graphics** provides capabilities to convert vectors and vector text directly to embroidery objects. Imported vector graphics or created text can be converted directly to embroidery designs. You can use **CorelDRAW Graphics** to insert 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'. Here are some of the prominent **CorelDRAW Graphics** interface elements.

Element	Description
Menu bar	This contains application menus such as File, Edit, View, etc.
Mode toolbar	This contains the universal tools and icons which are visible in both Wilcom Workspace and CorelDRAW Graphics windows.
Standard toolbar	This contains commonly used tools and commands which are specific to and only visible in CorelDRAW Graphics.
Properties bar	This contains the commands and controls that relate to the active tool in the Toolbox or active object in the design window in CorelDRAW Graphics.
Toolbox	This contains the drawing/editing tools specific to and visible only in CorelDRAW Graphics.
Design window	This contains the main work area where you create and edit graphics objects as well as embroidery objects when you switch to Wilcom Workspace.
Color palette	This contains the graphics color palette which is specific to and only visible in CorelDRAW Graphics.
Docker	In CorelDRAW Graphics, this contains graphics-specific dockers.
Status bar	This contains current status information visible only in the CorelDRAW Graphics.

For a detailed description of the CorelDRAW® Graphics Suite interface, refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **Help** menu.

Note: CorelDRAW® needs to be registered before it can be used by EmbroideryStudio. Registration provides CorelDRAW® Standard Membership which gives you access to content – clipart, fonts, stock photos, templates – via Corel CONNECT. It also gives you access to the latest CorelDRAW® updates.

Related topics...

◀ Loading bitmap artwork

Design library

> Click Mode > Design Library to open a window from which to search and manage designs and job orders.

Design Library is a design or job order management tool. Use it to browse design and artwork files stored on your local PC or company network. **Design Library** capabilities make it fast and practical for daily commercial use, avoiding the need to switch to and from **File Explorer**. It recognizes all file formats used by EmbroideryStudio.
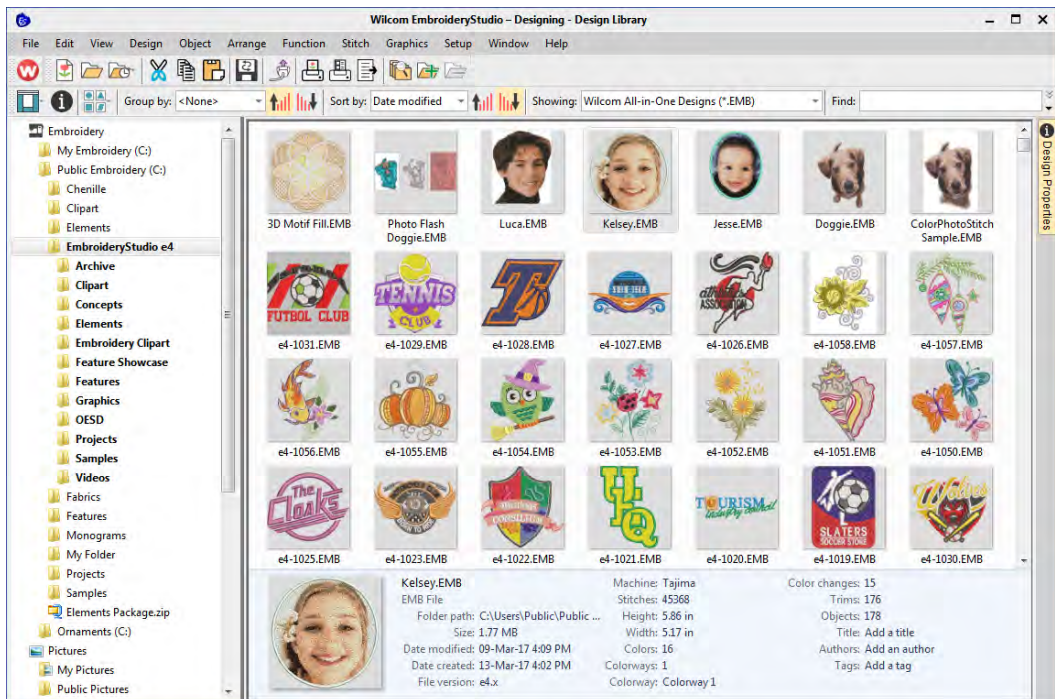
Design Library is installed with sample designs in EMB format. These show various stitching techniques and effects, including 'multi-decoration' and multiple colorways. When starting out as a new user, make sure to spend time exploring these designs.

Related topics...

Toolbars & dockers

The EmbroideryStudio design window provides 'dockers' for key functions. **Wilcom Workspace** has docking panes for **Color-Object List**, **Object Properties**, **Overview Window**, and so on. All panes are dockable on either side of the design window.

Access toolbars

Toolbars provide quick and easy access to most EmbroideryStudio commands. Show or hide them at your convenience. As you get more familiar with the system, you may prefer menu and keyboard commands.

To access toolbars

◀ Select **Window > Toolbars** or right-click the docking area at the top or left of the design window. The **Toolbars** menu opens.

	Bling
	Chenille
✔	Color
✔	CorelDRAW - Wilcom Interaction
✔	Docker
	Function
✔	Graphics Digitizing
	Legacy Features
✔	Prompt Bar
✔	Property Bar
	Schiffli
	Sequence
	Sequin
✔	Standard
✔	Status

Select toolbars to display
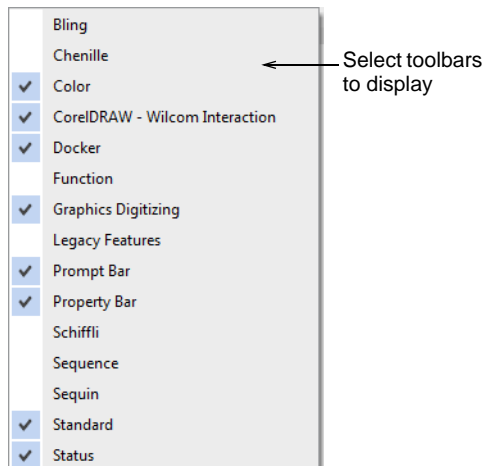
◀ Click to activate one or many.

Related topics...

◀ EmbroideryStudio toolbars

Work with dockers

Use Docker > Color-Object List to view and sequence design objects.

Use Docker > Object Properties to preset properties or adjust properties of selected objects.

	Use Docker > Colorway Editor to assign thread colors to color palette and define colorways.

In **Wilcom Workspace** mode, there are three important dockers:

Docker	Description
Object Properties	The most important is the Object Properties docker. Use it together with the Property Bar to access properties of selected embroidery objects.
Color-Object List	The Color-Object List offers an easy way to selectively view and resequence color blocks and objects.
Colorway Editor	When you create a new design, it includes a single default colorway called 'Colorway 1'. The Colorway Editor allows you to edit default colors, add extra color slots as required, and set up additional colorways.

Access dockers via the **Docker** toolbar or **Window** menu. They can be docked on either side of the screen.
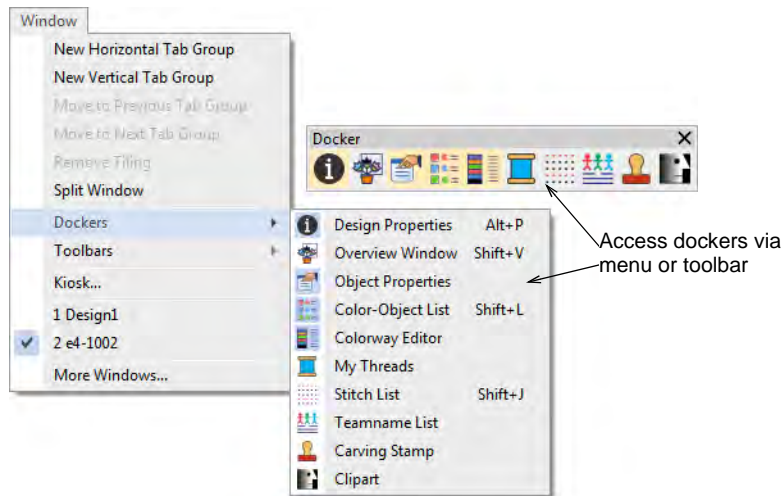
All dockers can be fixed or minimized. Dockers may also be 'floated' by dragging the caption bar to the design window or double-clicking it when

'pinned' in place. Dockers can be 'nested' to increase available workspace. When nested, tabs for each docker appear down the side.

Hover docker over title bar of another

Click and drag tab to float docker

Click tab to view docker
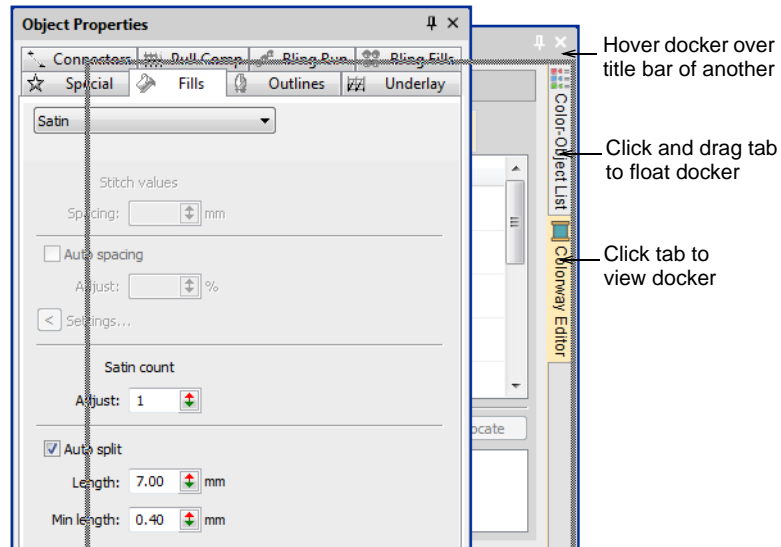
Toggle **Auto Hide** next to the **X** close button. Docking panes automatically retract when not in use. By hovering the mouse over the tab, a minimized docker will 'fly out', allowing you to access its functions.

Double-click title bar to return to docked state

Enable/disable auto-hide
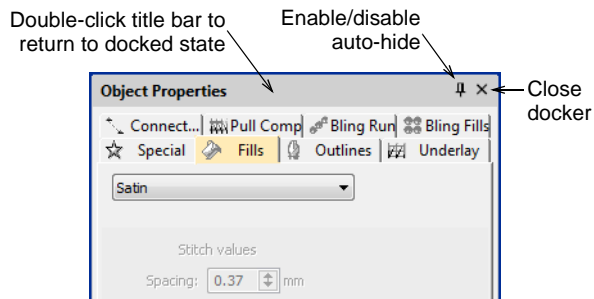
Close docker

Related topics...

◀ Access object properties
◀ View selected color blocks
◀ Colorways

Access object properties

Use Docker > Object Properties to set properties of selected objects.

The most important docker is **Object Properties**. Use it together with the **Property Bar** to access the properties of selected embroidery objects.

To access object properties

1 Open the **Object Properties** docker by any of the following means:

- ◀ Click the **Object Properties** tool.
- ◀ Double-click an object in the design window.
- ◀ Right-click an object and select from the popup menu.
- ◀ Right-click an object in the **Color-Object List** and select from the popup menu.
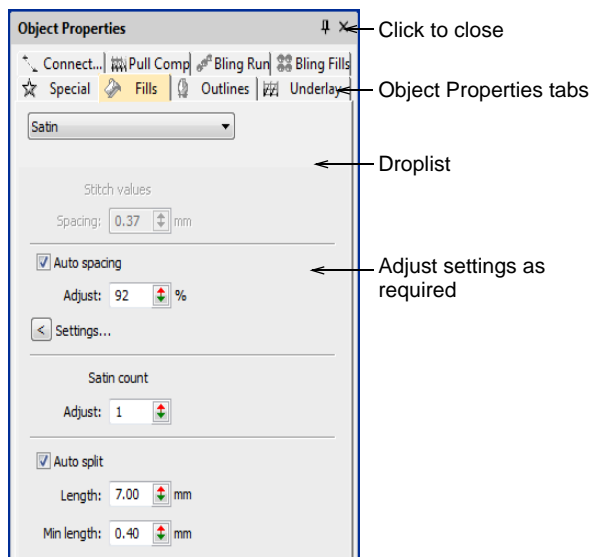
2 Select a tab to access the properties to adjust.

3 Adjust general properties – width, height, position – by means of the **Property Bar**. Press **Enter** to apply. Press **Esc** to discard changes.
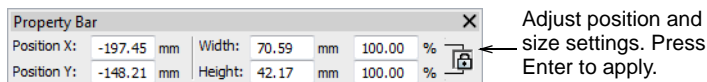
💡
Tip: You can specify units of measurement when entering values into a measurement control.

Related topics...

- ◀ Working with object properties
- ◀ Set measurement units

Embroidery machine formats

Different embroidery machines speak different languages. They have their own control commands for the various machine functions. When you create a design, you need to select a format corresponding to the embroidery machine you intend to use. EmbroideryStudio uses the format to translate digitized designs into a specific machine-readable form. You don't, however, need to change a design's 'native machine format' in order to output to a different machine. If a selected machine format does not support a particular function in the design, it is simply ignored on output.

To select a machine format

◀ Select **Design > Select Machine Format**.

Select machine format

Click to create new format

Click to adjust settings
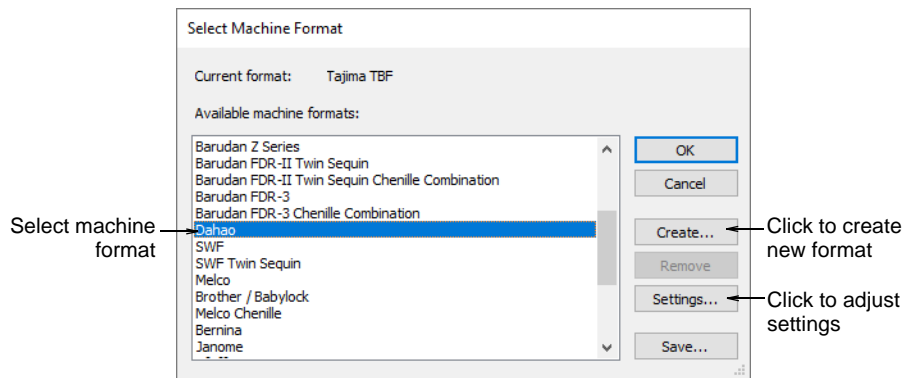
◀ Select the required machine format from the list.

Note: You can change the machine format itself if machine values do not correspond precisely to your particular machine. Or you can create a new format based on a selected one.

Related topics...

◀ Supported machine types
◀ Embroidery Output
◀ Machine Formats
◀ Selecting sequin mode
◀ Custom machine formats

Embroidery file formats

Embroidery designs are saved in one of two formats – 'design' (outline) or 'machine' (stitch) file format.

Note: For details of the formats supported by EmbroideryStudio, see Embroidery file formats.

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.

Embroidery objects with outlines and stitch properties

Design files can be scaled, transformed and reshaped without affecting stitch density or quality. After modification, you can choose to save your design to EMB format, or to a different format altogether.

Note: Some design files, such as Wilcom INP and Gunold PCH, contain incomplete information. Old format ESD designs are somewhere between an design file and a machine file. They contain stitch data, information about selected stitch types, densities, and machine functions. They do not, however, contain information about shapes and lines. ESD files require object/outline recognition if you want to perform object editing in EmbroideryStudio.

Related topics...

◂ Embroidery file formats
◂ Wilcom INP format
◂ Gunold PCH format

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. Machine or 'stitch' files 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. Or they are converted when saving to disk or memory stick.

Manual objects

When they are read into EmbroideryStudio, machine files do not contain object information such as outlines or stitch types, but present the design as a collection of stitch blocks called 'manual objects'. Manual objects are created wherever machine functions – e.g. color changes or trims – are detected in the design. They have only general and connector properties. Manual objects, in turn, consist of individual stitches, called 'manual stitches'.

Manual objects with no outlines and manual stitches only

Related topics...

◀ Opening machine files
◀ Using embroidery disks
◀ Embroidery file formats
◀ Exporting designs for machine

File sources

While embroidery files are broadly classified as 'design' (outline) or 'machine' (stitch), EmbroideryStudio internally tags files as belonging to

one of four types – native design (A), imported outlines (B), processed stitches (C), or imported stitches (D).

Grade	Description
A	Pure embroidery file created in EmbroideryStudio or similar software. These files contain objects, outlines and stitches.
B	Designs read from an outline format such as GNC and saved in ART / EMB / JAN format. Such designs cannot be read directly by EmbroideryStudio but once converted, they are treated as Grade B designs.
C	Designs read from machine files – EXP, DST, PES, etc – where stitches have been converted to objects.
D	Designs read from machine files where stitches have NOT been converted to objects.

Native EMB designs as well as ART and JAN files are all 'Grade A' embroidery formats read and written by EmbroideryStudio. They are called 'Grade A' because they contain a complete set of design information in a single file – object outlines, properties, stitches, thread colors, thumbnail image, and comments. There are three other grades of embroidery file. It goes without saying that only Grade A files provide 100% perfect scaling and transformation.

Note: For information about the source of a design file, refer to the **Design Information** docker.

Related topics...

◀ View design details in EmbroideryStudio

Working with design files

EmbroideryStudio handles all commercial and home stitch file formats. In fact native EMB files are read and written by leading home embroidery systems.

Whenever you start EmbroideryStudio, a new file – **Design1** – is automatically created. By default, **Design1** is based on the NORMAL template. Templates contain preset styles, default settings or objects, to make digitizing quicker and easier. EmbroideryStudio also provides a set of optimized fabric settings so that the software will take into account the type of fabric you are stitching on.

Open designs

Use Standard > Open Design to open an existing design.

Use Standard > Open Recent Designs to open a design from a list of recently opened designs.

EmbroideryStudio opens a comprehensive range of both 'outline' and 'machine' files.

To open a design

◀ Click the **Open Design** icon.

Supported design and machine files
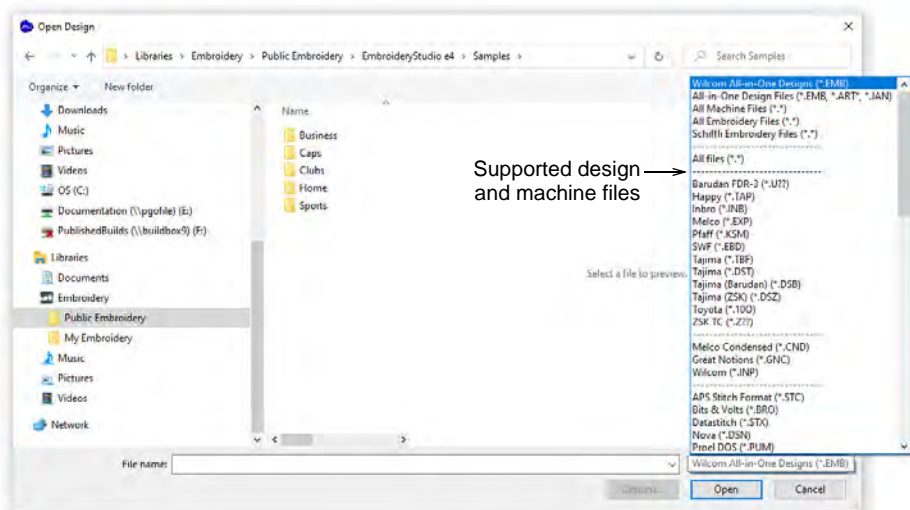
◀ Navigate to the design folder. The dialog filter defaults to 'Wilcom All-in-One' designs which displays all native EMB design files. Adjust the filter as required…

Filter	Files
All-in-one design files	All design files supported by EmbroideryStudio including JAN and ART.

Filter	Files
All machine files	Filter by machine file format only. No design files.
All embroidery files	All supported 'design' and 'machine' files.

◀ Select a design or designs.

　　◀ To select a range, hold down **Shift** then select first and last.
　　◀ To select multiple items, hold down **Ctrl** and click.

💡
Tip: For more information about a selected file, right-click and select **Properties** from the popup menu.

◀ For file types other than EMB or ESD, click **Options** and adjust recognition options as preferred.

◀ Click **Open**.

◀ Optionally, select **Design > Auto Fabric** to apply preferred fabric settings.

Tick to activate → Apply auto fabric

Choose a fabric type
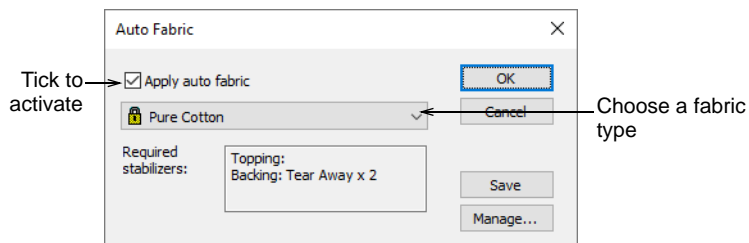
◀ Whenever you want to work on a recently opened design, use the **Open Recent Designs** for quick access.

Quickly access any recently opened designs
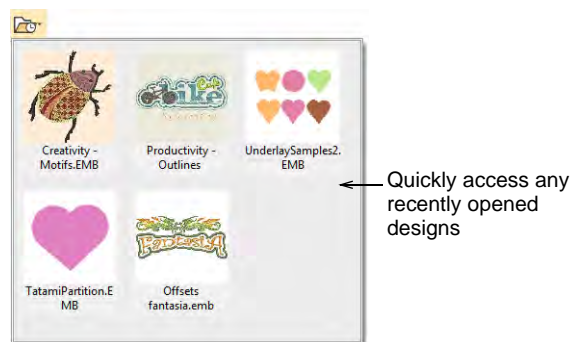
◀ If the **Backup Copy** option is active, a backup copy of the current design file is automatically created in its **previously** saved form. Access the backup folder via the **File > Open Backup Design** command.

Tip: You can also open designs from proprietary embroidery disks, or read them from paper tape.

Related topics...
◀ Automatic save & backup options
◀ Viewing design information
◀ Working with fabrics
◀ Using embroidery disks
◀ Embroidery file formats
◀ Embroidery file formats

Create designs from templates

 Use Standard > New Design to start a blank design based on the currently selected template. Hold down Shift and click to open New from Template dialog.

Templates are special files used to store styles, default properties, as well as fabric settings. Although the NORMAL template settings are suitable for a range of fabrics, selecting an auto fabric further adjusts settings.

To create a design based on a template

1 Select **File > New from Template** or, holding down the **Shift** key, click **New Design**. The **New from Template** dialog opens.

Choose a template

Activate auto fabrics and choose a target fabric

Set background color and swatch

Choose a target machine format

Save as default
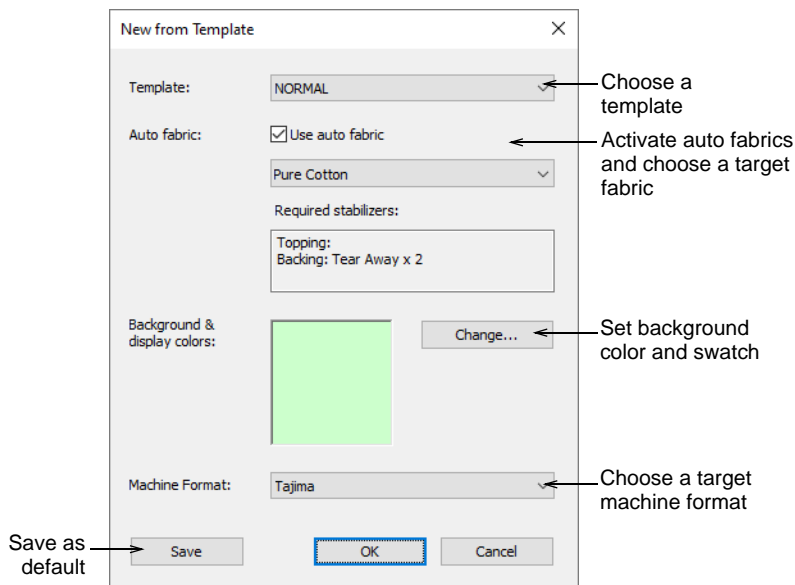
2 Select a template from the droplist. When you create a file based on a template, its settings are copied to the new design.

3 If you want, additionally, to use fabric settings, tick the checkbox. From the droplist, choose a fabric type nearest the one you intend to work with.

4 Optionally, choose a background to match the selected auto fabric.

5 Choose a target machine from the droplist. You normally decide which machine format to use before you start. However, formats can be changed at any time.

💡
Tip: You can customize or add formats to suit the target machine.

6 Click **OK** to accept. A blank design opens in the design window based on the selected template. Settings will apply to all newly created embroidery objects. Any selected fabric is displayed in the **Status Bar**.

💡
Tip: The **New from Template** option is activated by default. Turn it off if you prefer work without predefined fabric settings.

Related topics...

◀ Working with templates
◀ Working with fabrics
◀ Other general options
◀ Machine Formats

Save & close designs

💾 Use Standard > Save Design to save the current design. Right-click to open the Save As dialog.

The **Save Design** option allows you to save a design to the latest native EMB 'all-in-one' format. To save designs to previous formats, choose **File > Save As**.

Choose an output file format
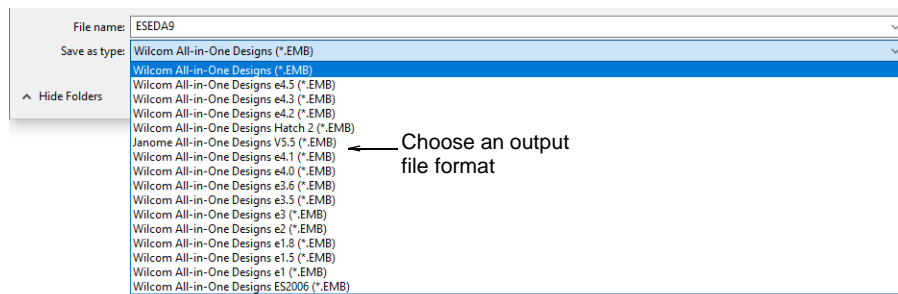
Native EMB files contain a complete set of design information in a single 'all-in-one' file – object outlines and properties, actual stitches and machine functions, thread colors, a picture icon, summary information, and more. Even the original design bitmap image can be included in EMB format. Only native EMB files provide 100% perfect scaling and transformation. EmbroideryStudio lets you save designs in various native EMB formats. This can be important if your suppliers or clients use previous versions of Wilcom software.

⚠

Caution: If a design feature is not available in the selected file type, it will be converted. For example, **Flexi Split** stitching may be changed to plain tatami. If the design contains a bitmap using a color depth unsupported by the selected file type, it will be removed from the resulting file.

Closing designs

To close designs, use the commands in the **File** menu to close open designs individually or all together. Alternatively, use the design tabs to close open designs.

Design tabs – click X to close

Close current or all open designs
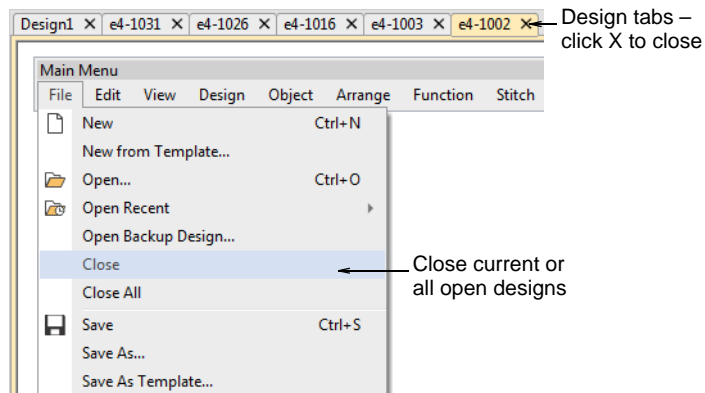
Design thumbnail display

Design thumbnails reflect display settings at the time of saving. When a design is saved, the design thumbnail is generated using all visible

objects as well as the current design background. If you have bitmap or vector display turned on, these too appear in the thumbnail.
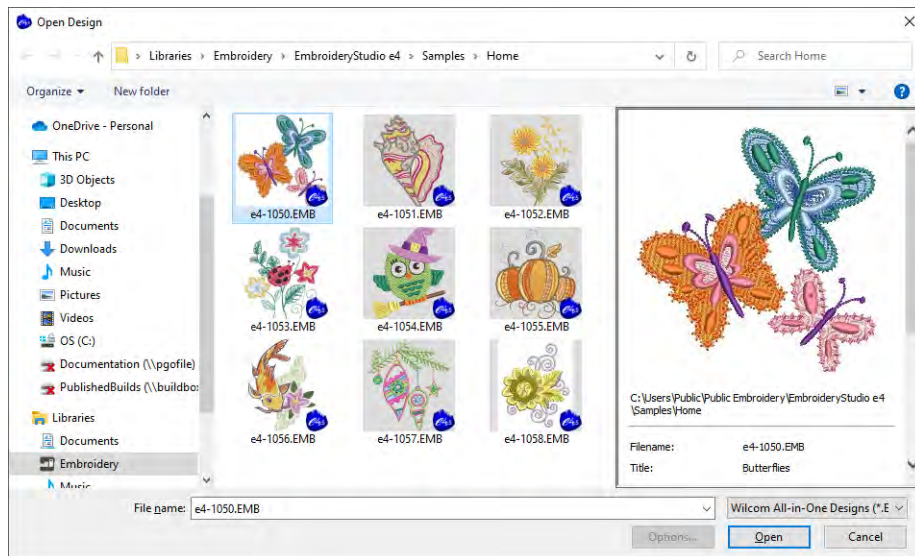
Related topics...

◀ Exporting designs for machine
◀ View embroidery components
◀ Using embroidery disks
◀ Machine Formats
◀ Embroidery file formats

Send designs as email attachments

> 📂 Use Standard > Open Design to send a design as an email attachment.

You can attach designs to emails from the design window or via the **Open Design** dialog.

To send designs as email attachments

◀ With the design open in the design window, select **File > Send via Email**.

◀ Alternatively, click the **Open Design** icon. Select the file to send, then right-click it. The popup menu appears. Select **Send To > Mail Recipient**.

Your default email system is launched and a new email created with the design file attached.

Select Send To > Mail Recipient
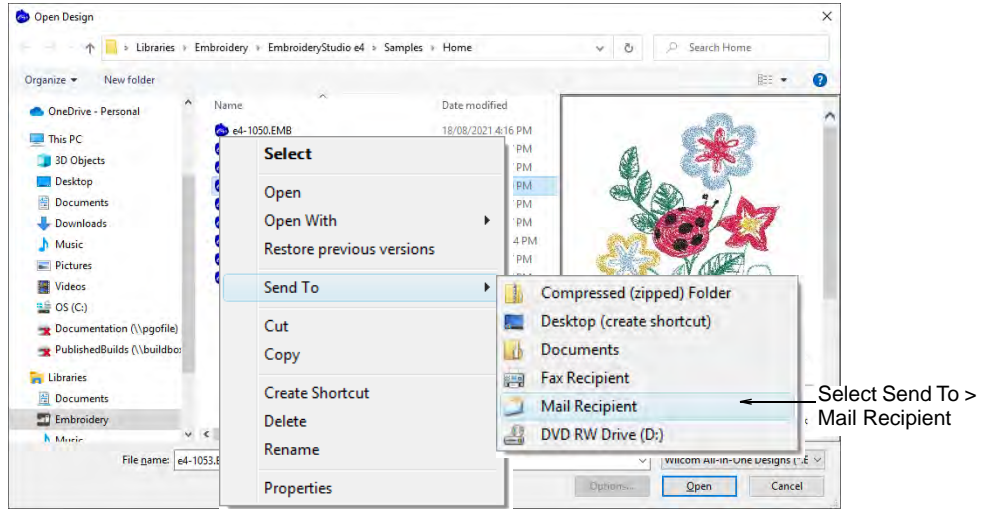
◀ Enter mailing details and send.

◀ Optionally, to output a design as a bitmap, select **File > Capture Design Bitmap**.

Select output option
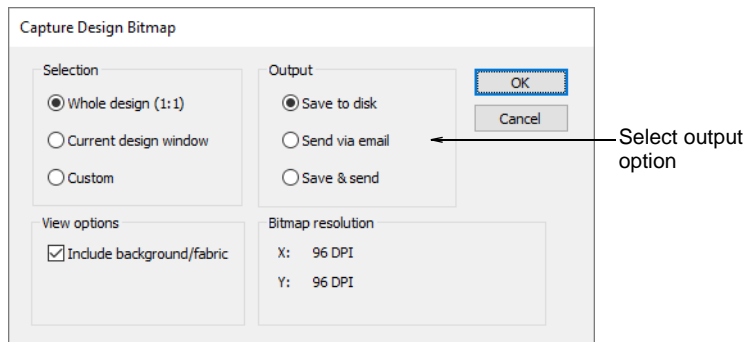
Related topics...

◀ Outputting designs as images

Selecting objects

EmbroideryStudio provides various ways to select embroidery objects. It supports point & click, selection marquee and multiple object selection. The **Color-Object List** provides an easy way to select objects and colors and access their properties.
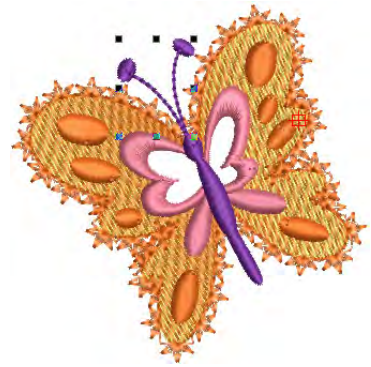
💡
Tip: Depending on your background, you can change display colors for unsewn stitches, selected objects, object outline, grid and guides. See also Change display colors.

Related topics...

◀ Select objects with selection tools
◀ Select objects with Color-Object List

Select objects with selection tools

![arrow]	Use Select > Select Object to select individual objects as well as groups or ranges of objects.
![freehand]	Use Select > Freehand Select to select object at current by drawing a freehand line.
![polygon]	Click Select > Polygon Select to select objects with a selection marquee.
![polyline]	Click Select > Polyline Select to draw a line through the object to select.

Use selection tools to select individual objects as well as groups or ranges of objects.

To select objects

◀ The simplest way to select an object is to point and click with the **Select Object** tool activated. Selection handles appear around selected objects.

Click first object   Ctrl +   Hold down Ctrl and click another object

OR

Shift +   Hold down Shift and click last object
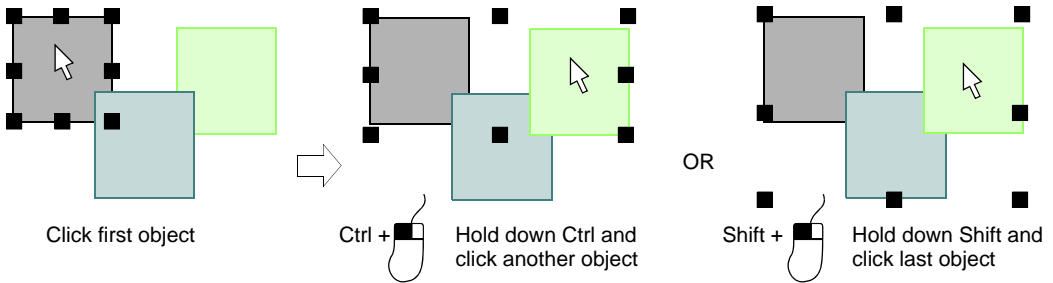
◀ To select multiple items, hold down **Ctrl** as you click. To select a range, hold down **Shift** as you click.

◀ Alternatively, drag a selection marquee around the objects you want to select.

Drag a selection marquee around objects to select
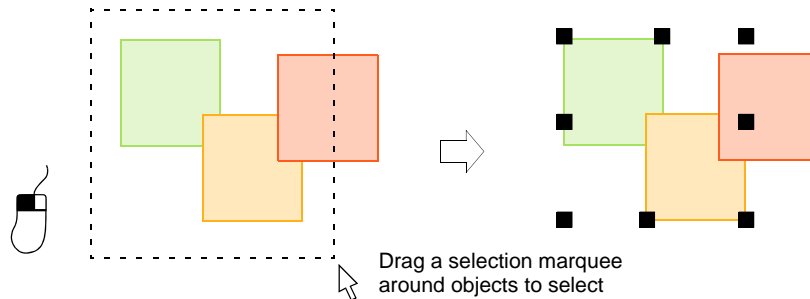
◀ Where you have a mixture of objects – outline, closed-fill, open-fill – click through holes or gaps to select objects beneath.

◀ Alternatively, use the **Freehand Select** tool to draw a freeline around the object/s you want to select. Press **Enter** to close.

Draw a freeline around object/s to select
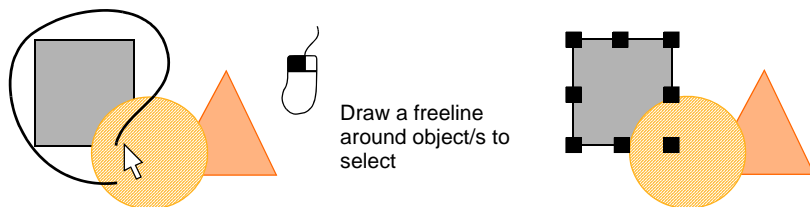
◀ Alternatively, use the **Polygon Select** tool to mark reference points around the object/s you want to select. Press **Enter** to close.

Mark reference points around object/s to select
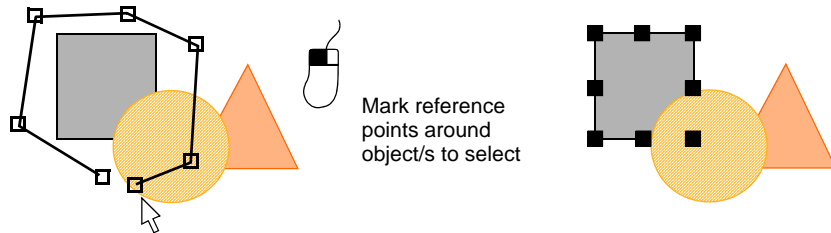
◀ Or use **Polyline Select** to mark two or more reference points to create a line touching all objects you want to select.

Mark two reference points
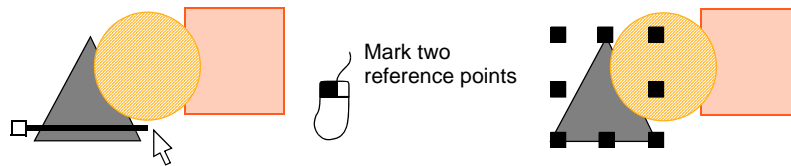
◀ To select an object which is sitting behind another filled object, hold down the **2** key and click until the underlying object is selected.

◀ To select all objects, select **Edit > Select All** or press **Ctrl+A**. Selection handles appear around the entire design.

◀ Deselect objects by any of the following means:

   ◀ To remove an object from a selection, hold down **Ctrl** and click.

   ◀ To deselect all, click an empty area of the background or a different object.

   ◀ Alternatively, press **Esc** or **X** to deselect all or select **Edit > Deselect All**.

Tip: EmbroideryStudio also provides a method for you to select individual objects within grouped objects. See Select objects within groups for details.

Select objects with Color-Object List

Use Docker > Color-Object List to toggle the Color-Object List on/off. Use it to view and sequence objects in a design.

The **Color-Object List** offers an easy way to select objects and selectively view them. It is synchronized with the design window, dynamically updating whenever you edit.

To select objects by Color-Object List

◀ Click the **Color-Object List** icon to open the docker. A separate icon for each color block and each object in the design appears in order of stitching.

Total color block count

Total objects in design

Object icon
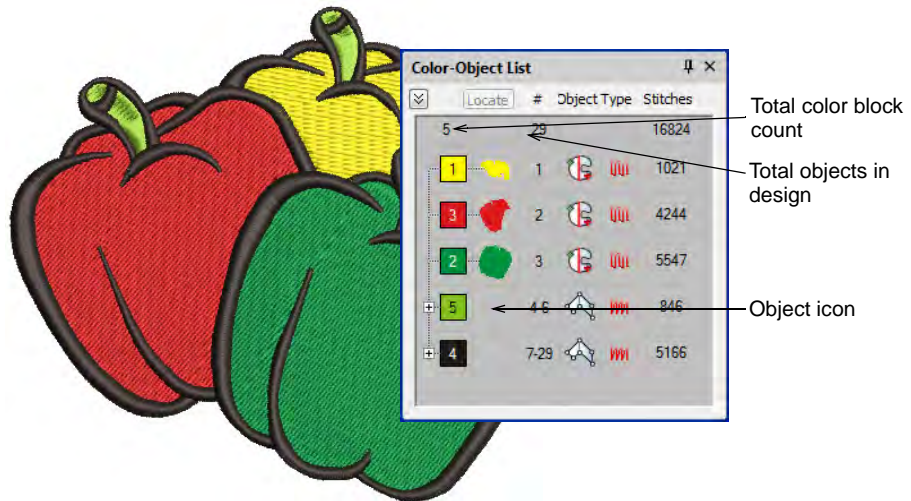
◀ Click a 'node' to open or close a color block and see its components.

Click to open/close all color block nodes

Click to open/close individual color block node

Blue border appears around selected objects

Right-click any object or color block, and Select All
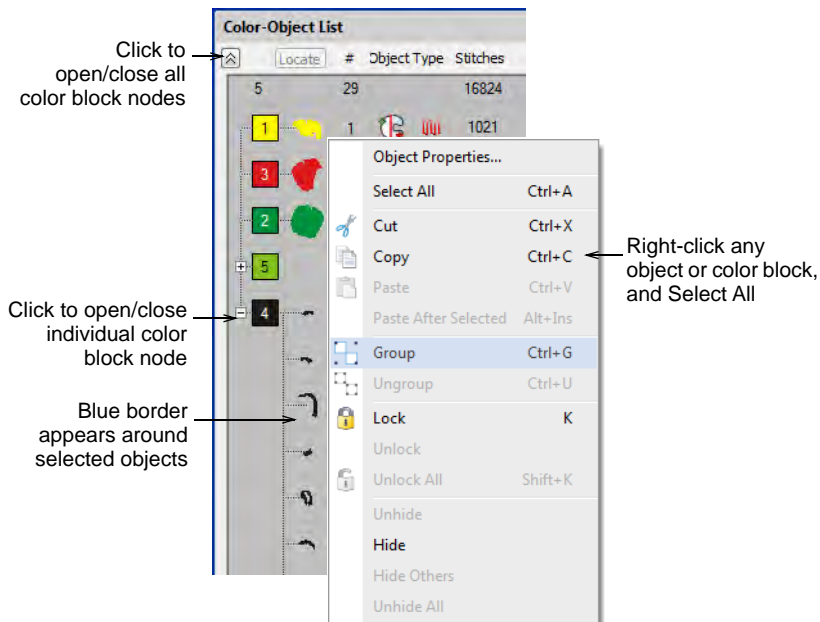
◀ Click an icon to select a color block and/or individual objects.

    ◀ To select a range of items, hold down **Shift** as you click.

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

◀ To select all items, right-click and choose **Select All** from the popup menu.

Ⓘ
Note: You can also use the **Color-Object List** to group and lock objects as well as cut, copy and paste, resequence, and branch objects. See Combining Objects for details.

Measurements

EmbroideryStudio provides a set of grid lines to help accurately align or size embroidery objects.

Display grids, rulers & guides

▦	Click View > Show Grid to show or hide the grid. Right-click for settings.
▦	Click View > Show Rulers and Guides to show or hide rulers and guides. Right-click for settings.
⊡	Drag the ruler zero point to reset a new ruler zero point.

Use grid lines to help accurately align or size embroidery objects. Default grid spacing is 10mm x 10mm. Invoke rulers to accurately position and scale objects. The unit of measurement – mm or inches – defaults to the regional settings in the MS Windows® Control Panel.

To display grids, rulers and guides

◀ Click the **Show Grid** icon or press **Shift+G**. Right-click for settings. You can change grid spacing, select a reference point and turn **Snap to Grid** on or off in the **Options** dialog.
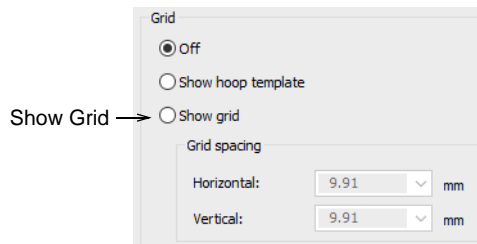
◀ Click the **Show Rulers & Guides** icon or press **Ctrl+R**.

Click-and-drag to reset ruler zero point

Click-and-drag to reposition guides

Click ruler to create new guide

Drag guide off ruler to remove
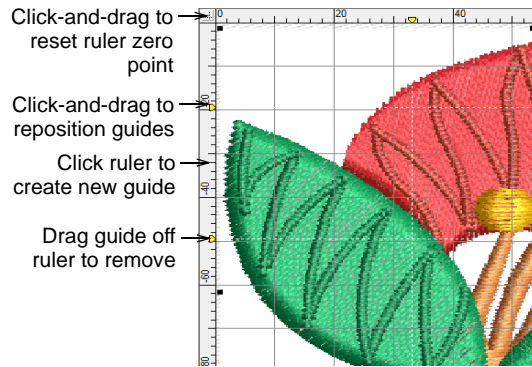
◀ Reset the ruler zero point by clicking and dragging the button in the top left-hand corner of the ruler.

◀ To create a guide, click 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 zero point and click **OK**.

Enter precise offset from zero point
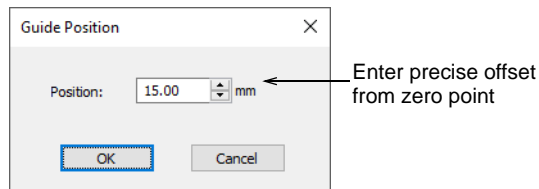
◀ To remove a guide, drag the yellow guide handle off the design window.

◀ Optionally, turn on the **Snap to...** feature via the **Options** dialog.

Select to display grid → Select to snap design points to grid → Show rulers and guides →
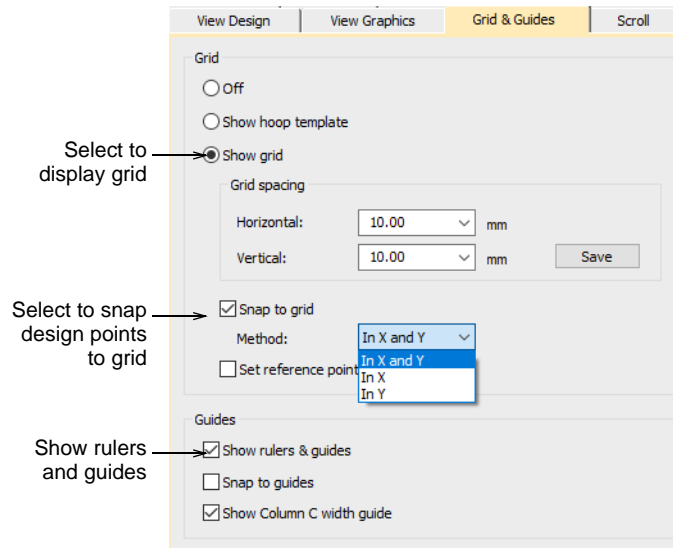
◀ You can also change the color of grid and guidelines via the
Background & Display Colors dialog.

Related topics...
◀ Grid display options
◀ Change display colors
◀ Selecting hoops manually

Set measurement units

The first time you run EmbroideryStudio, the measurement system will
default to whatever the operating system is using. However, you can
change measurement units from within EmbroideryStudio.

Select desired measurement unit
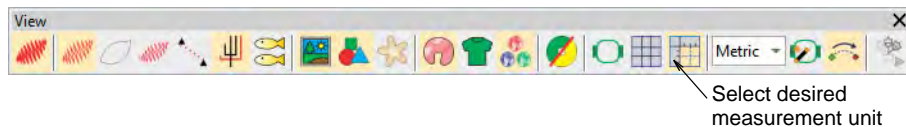
Note: Technically, when you select 'U.S.', you will get the imperial
measurement system – inches, feet, and yards. Inch rulers are displayed
in 1/16, 1/8, ¼, ½, and 1" divisions. The grid size can be set in decimal
inches.

Ripple-on effects

Changing the measurement system will change the units used by most controls.

Measurement units display

Length: 2.788 in
Angle: 0.09°
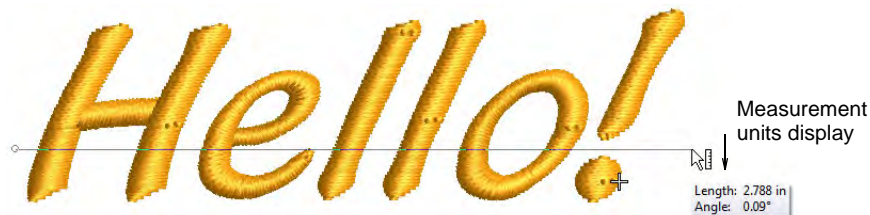
Relevant fields also appear in the selected unit of measurement – e.g. **Design Information** docker as well as **Production Worksheet**.

| Summary | Design | Order | Thread Colors | Stitching | Run Time |

Filename:	Twin Sequin Flower 1.EMB
Title:	Twin Sequin Flower 1
Height:	145.8 mm
Width:	148.9 mm
Stitches:	6,470
Colors:	3
Stops:	3
Colorways:	1

Selected measurement unit displayed
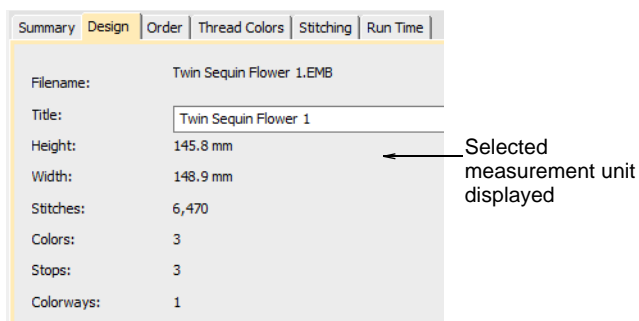
There are, however, exceptions to this rule:

◄ Stitch List: this used to be displayed in inches for U.S. systems. But these are stitch lengths, so must always be in mm.

◄ Stitch length and density controls remain in mm regardless of measurement system. These controls reflect the machine functions as industrial machines are always in millimeters.

| ☆ Special | 🖉 Fills | 🖉 Outlines | 🖉 Underlay |

Run

Stitch values

Length: 2.50 ↕ mm

☑ Variable run length

Min length: 0.80 ↕ mm

Chord gap: 0.05 ↕ mm

Stitch length and density controls remain in mm
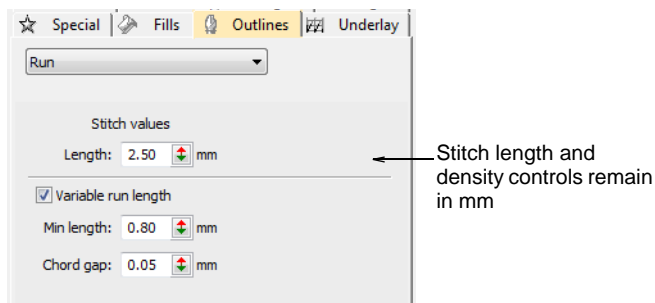
Specify measurement units on-the-fly

Alternatively, you can specify units of measurement when typing values into a measurement control. EmbroideryStudio automatically converts the value.
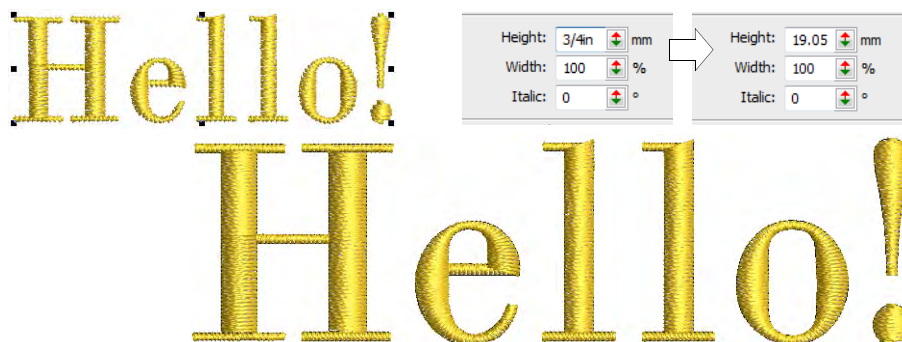
For example, if a US customer orders lettering in inches – say ¾" – and the digitizing is to be done in metric, you can enter '3/4in' or '3/4 in' into the **Lettering Height** field and it is automatically converted to 19.05mm.

Note: EmbroideryStudio supports both proper and improper fractions – e.g. '1 1/3' as well as '4/3'. It does not, however, support mixed units – e.g. 1'3". Nor does it display values as fractions **after** they are entered, only during.

Supported units

Supported units include:

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

Tip: EmbroideryStudio also allows entering units in text form, both English and the language the software is currently running in.

Related topics...

◀ Grid display options
◀ View design details in EmbroideryStudio
◀ Create lettering with object properties
◀ Select stitches with the Stitch List

Measure distances on screen

Measure the distance between two points on screen using the **Measure** command. View measurements in the **Status** bar or tooltip.

💡
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 on screen

1 Select **View > Measure** or press **M** and click the start point.

2 Move the pointer to the end point and hold the mouse still. If activated, length and angle measurements appear in a tooltip.

Measurements appear as tooltip
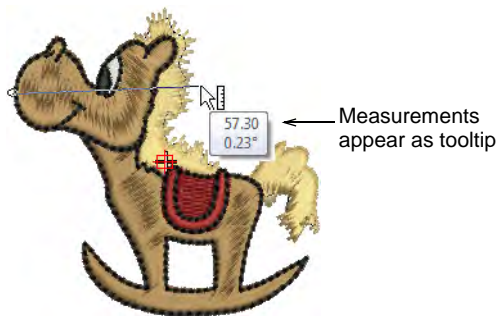
The following information displays in the **Status Bar**:

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

X= 4.82 Y= -6.42 L= 8.03 A= -53.07

Measurements are shown in millimeters or inches according to selection.

3 Press **Esc** again to exit the command.

Related topics...

◀ Other general options

Chapter 4
Viewing Designs

EmbroideryStudio provides many viewing features to make it easier to work with your design. Use zoom and pan functions to study design details. Toggle between 'artistic' and 'technical' views. You can also preview designs in different colors on different fabrics by means of 'colorways'.

EmbroideryStudio provides design information in various forms. Approval and production sheets provide essential information such as design previews, size, color sequence information and any special instructions.

Viewing design components

EmbroideryStudio provides many viewing modes to make it easier to work with your design. View a design at actual size or zoom in for more details. Pan across instead of scrolling, or quickly change between current and previous views.

Note: You need to calibrate your monitor so that designs at 1:1 scale appear at real size. Do this when you first install EmbroideryStudio or whenever you change your monitor. Go to **Setup > Calibrate Screen**.

View embroidery components

When you open an embroidery design in EmbroideryStudio, toggles on the **View** toolbar allow you to alternate between 'artistic' and 'technical' views. Use **TrueView** for presentation purposes. You can include it on

approval sheets, or capture it as a bitmap to send via email or publish to a website.

Design viewing toggles
Hover cursor for tooltips
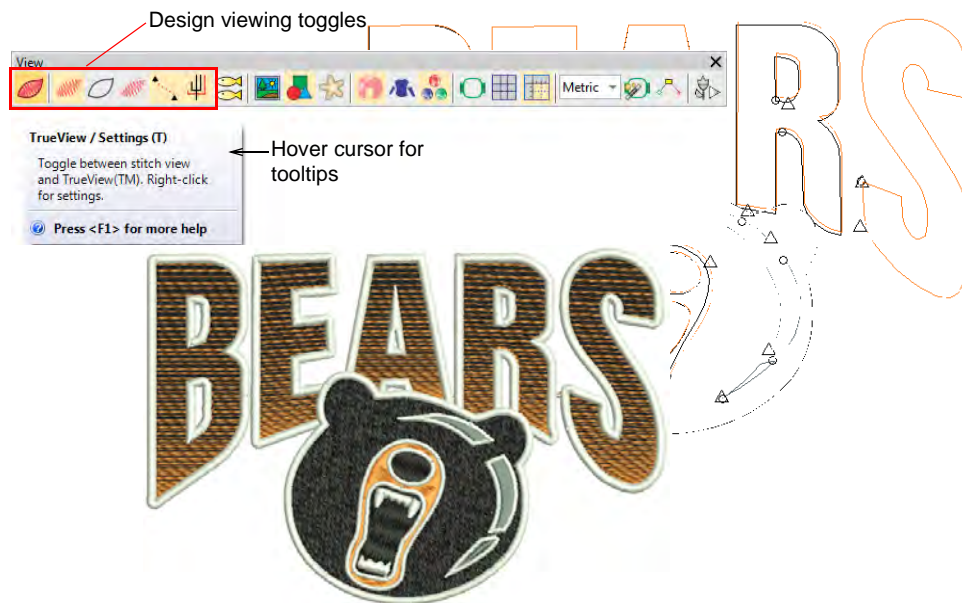
Use these toggles, singly or in combination, to focus on design details. For example, view design outlines, stitches, needle points, or even machine functions such as trims and tie-offs. You can also turn on connectors in stitch view. How you use the view options will depend largely on whether you are editing a design or checking for production readiness.

Note: Design thumbnails reflect display settings at the time of saving. When a design is saved, the design thumbnail is generated using all visible objects as well as the current design background. If you have bitmap or vector display turned on, these too appear in the thumbnail. See also Save & close designs.

Shortcut keys

Available shortcut keys include:

	TrueView	Toggle between stitch view and TrueView™.	T
	Show Stitches	Toggle embroidery stitching display.	S
	Show Outlines	Toggle object outlines.	L
	Show Needle Points	Toggle needle points to select stitches for editing.	. (period)

	Show Connectors	Toggle connecting stitches to help position entry and exit points.	Shift+C
	Show Functions	Toggle display of machine functions such as trims and tie-offs.	Shift+F

Tip: Depending on the design background, you can change display colors for selected objects, unsewn stitches, etc.
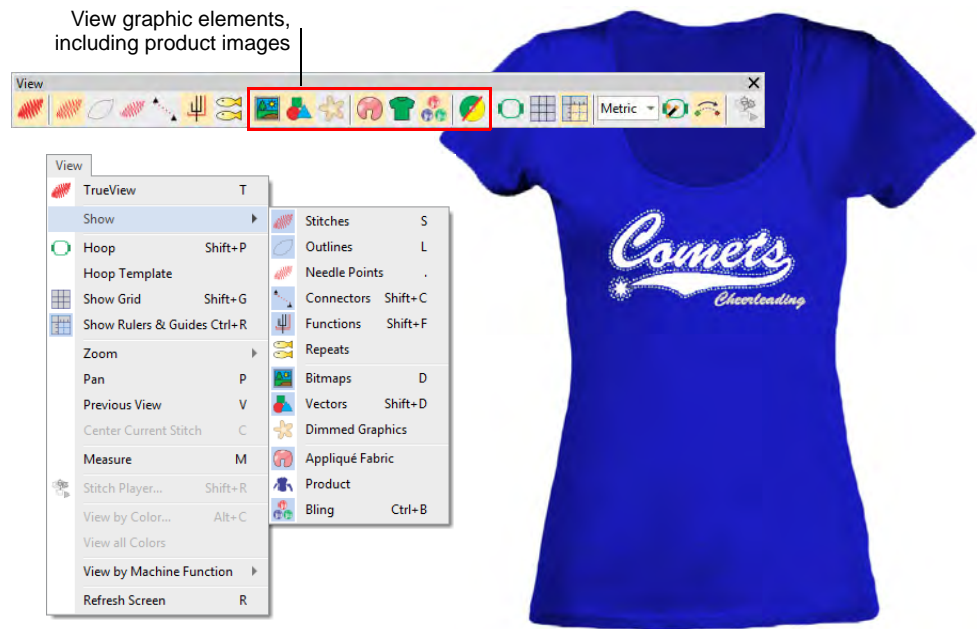
Related topics...

◀ View options

◀ Change display colors

View graphical components

Apart from embroidery, EMB designs may include other components such as bitmap images, vector graphics, appliqué fabrics, product backdrops, and rhinestones or 'bling'. These can also be turned on or off as desired.

View graphic elements, including product images

◀ Toggle the **Show Bitmaps** and/or **Show Vectors** icons to selectively view both vector and bitmap images.

Vector graphic together with bitmap image
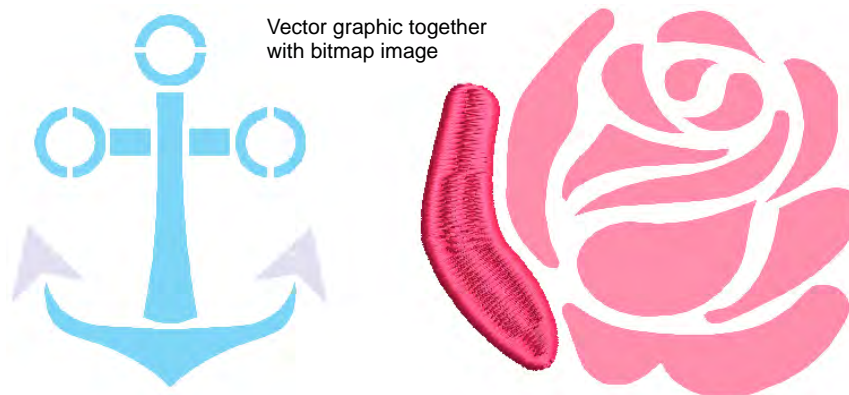
◀ Click **Dim Artwork** to dim the onscreen image to view stitches more clearly when digitizing. The command applies both to bitmap and vector graphics.

◀ To lock an image in place, select and press **K**.

◀ Click the **Show Appliqué Fabric** icon to toggle display of appliqué fabric on/off.

Appliqué fabric On

Appliqué fabric Off
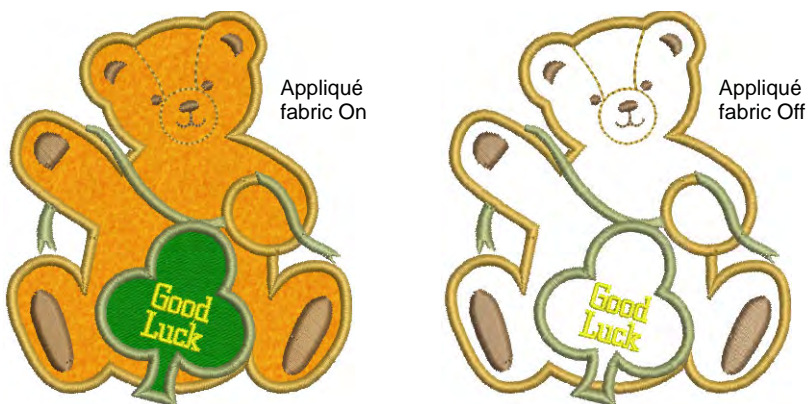
◀ Use **Show Bling** to visualize any bling components present in a design.

Bling components in TrueView

◀ Use **Show Functions** to visualize any sequin components present in the design.

Sequins in TrueView

Sequins turned off
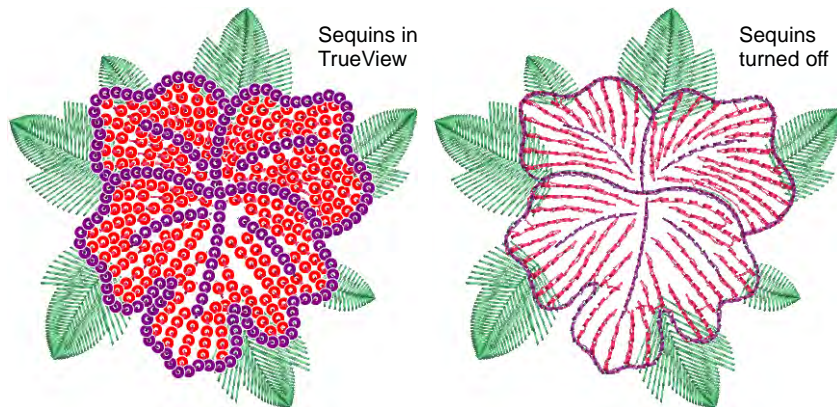
◀ Similarly, beading can be viewed while **Show Functions** is toggled on.

Beading in TrueView

Beading turned off
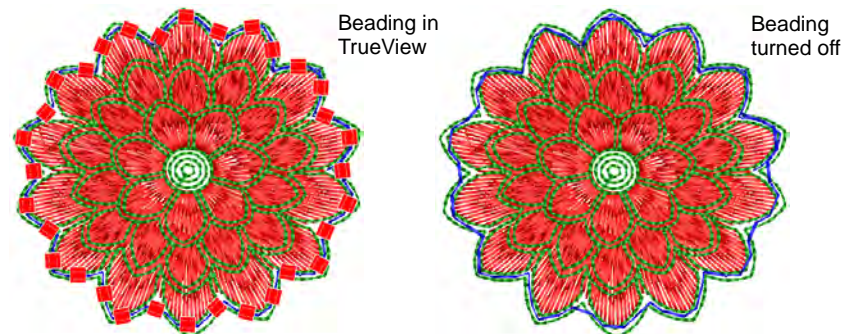
Tip: Depending on view options set in the **Options** dialog, images display in full color, or dimmed.

Zoom & pan designs

🔍	Click Zoom > Zoom to invoke zoom mode. Zoom in or out via left and right mouse clicks, or drag a selection marquee to view design detail.
①	Click Zoom > Zoom 1:1 to display a design at actual size.
🔍	Click Zoom > Zoom to Fit to display the whole design in the design window.
🔍	Click Zoom > Zoom to Selected to magnify only selected objects.
149 ▾	Select Zoom > Zoom Factor from the droplist or key in a zoom factor and press Enter.

Zoom tools allow you to magnify your view of the design by zooming in on individual stitches or details. The easiest way to zoom is via the mouse wheel. This defaults to 1.25x increments. The zoom factor can be adjusted in the **Options > Scroll** tab. Zoom tools are also available from

the **View** menu and **Zoom** toolbar. Experiment with the available options.

Zoom tools available from menu and from toolbar
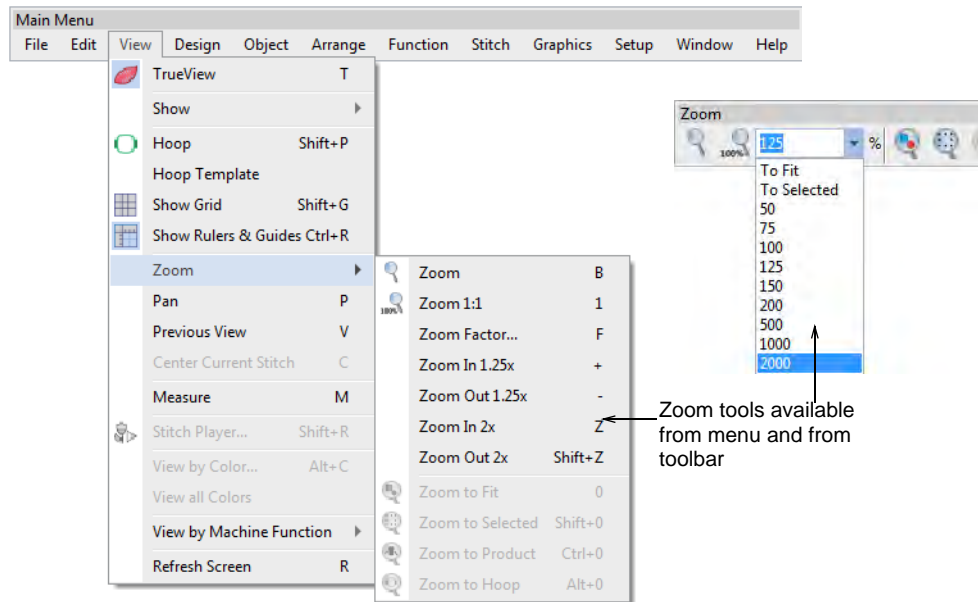
Use shortcuts keys as indicated in the menus. For instance, to zoom in on a section of design, select **View > Zoom** or press **B**, and drag a marquee around the zoom area. To display the whole design, select **View > Zoom to Fit** or press **0**.

Drag selection marquee around area to zoom
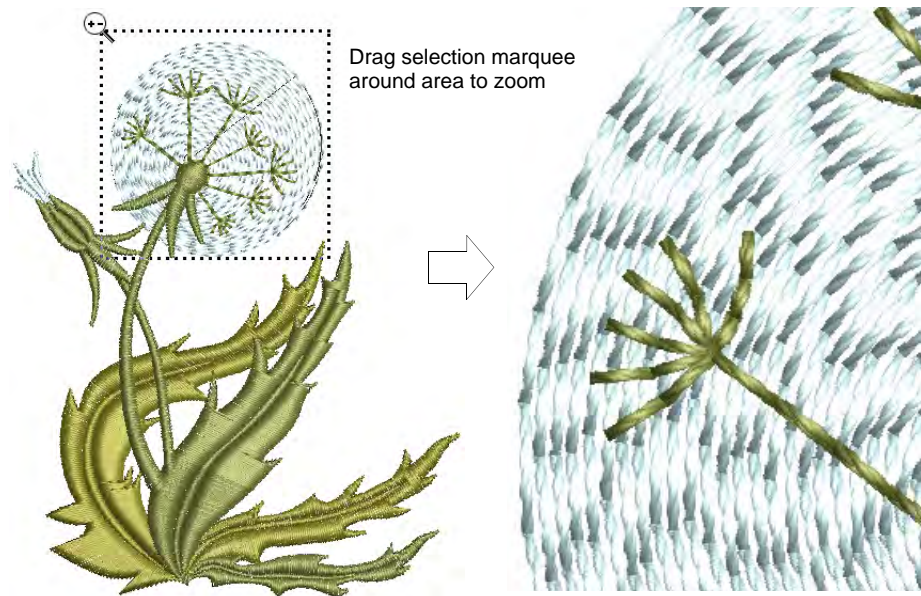
◀ To display stitches at a particular scale, select a zoom scale from the droplist or key in a zoom factor and press **Enter**. Alternatively, select **View > Zoom Factor** (or press **F**). In the **Zoom Factor** dialog, enter a scale as a fraction of the actual size, where '1' = '100%', '1.5' = '150%', etc.

Enter scale as fraction of actual size →

Zoom Factor		
Scale:	3.00	OK
		Cancel
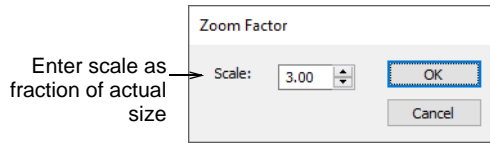
◀ To pan across a design, select **View > Pan** or press **P** and use the 'grabbing hand' tool.

Click and drag to pan across design
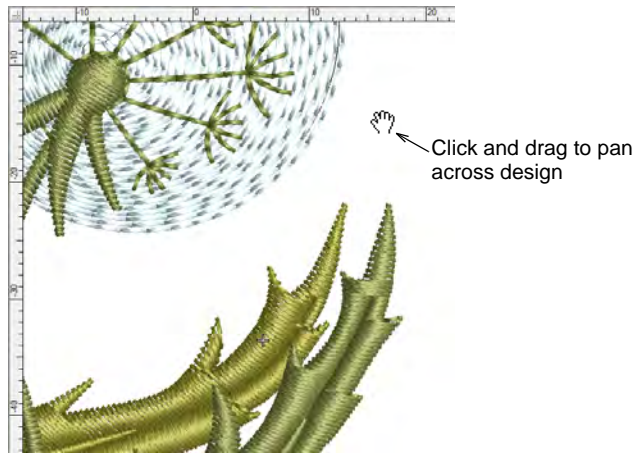
Set up multiple views

EmbroideryStudio gives you multiple views of the same design. It also allows you to switch between open designs by means of design tabs. This also makes it easy to copy/paste between designs, including drag and drop operations.

To set up multiple views

◀ Use the **Window** menu commands to set up groups of tabs as preferred.

Use commands to set up tab groups
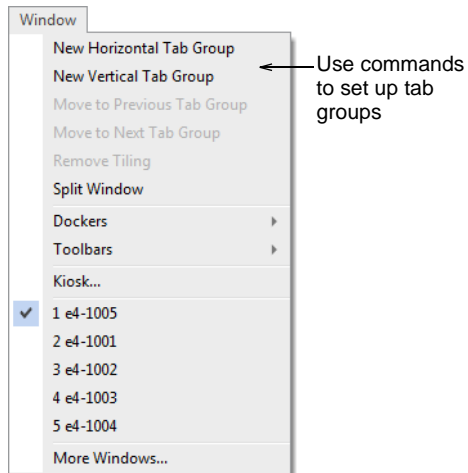
◀ Set up vertical or horizontal tabbed groups.
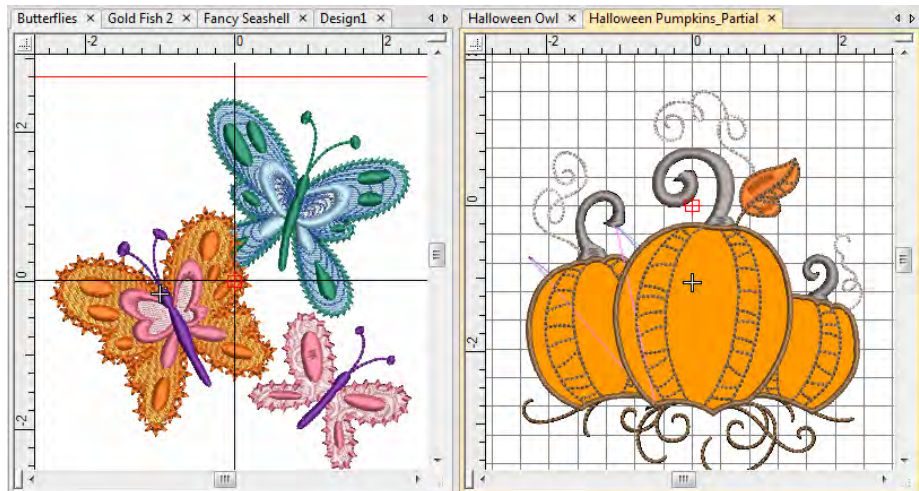
‣ To create multiple views of a single window, use the **Window > Split Window** command. Adjust view settings for each pane.

Double-click to remove split bars

‣ Use the **Remove Tiling** command to return the design window to normal display mode.

💡
Tip: After certain operations you may need to refresh the screen for a clearer display. Select **View > Refresh Screen** or press **R**.

Work with the Overview Window

> Use Docker > Overview Window to toggle window display on/off. Use it to view a thumbnail of the design.

Use the **Overview Window** to view a thumbnail of the design. Use it to pan and zoom the design when working at high zoom factors. Set view settings independently to the design window.

Click for zoom box
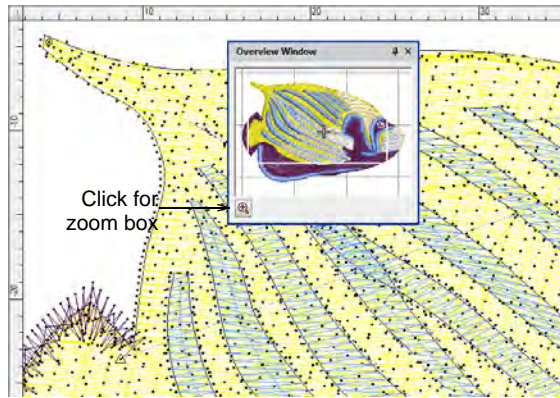
◄ To zoom in or out, click the **Zoom** button at the bottom of the window and drag a selection marquee around the area to zoom.

Drag selection marquee around area to zoom
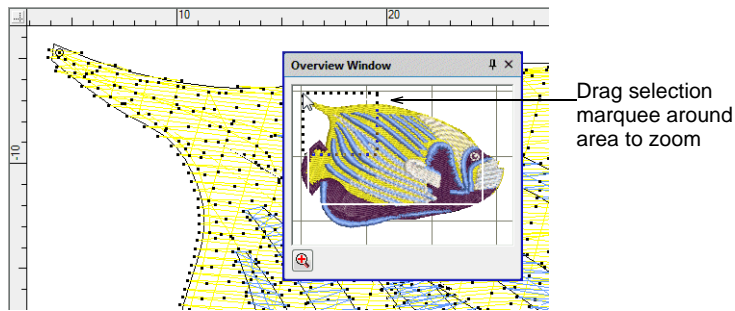
◄ To pan across the design, click and drag the zoom box.

Drag zoom box to pan across design
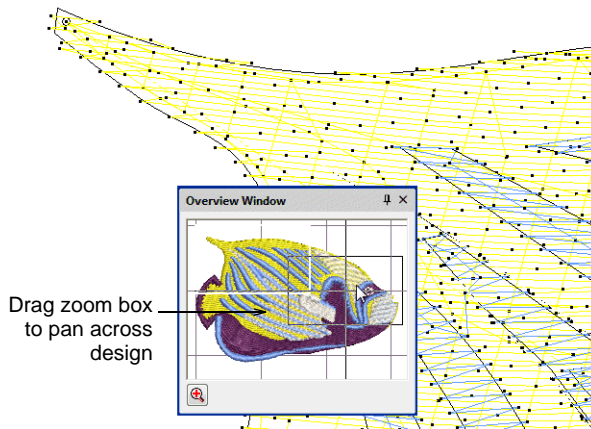
◀ To change the view settings for the **Overview Window**, click it to make it the active window.
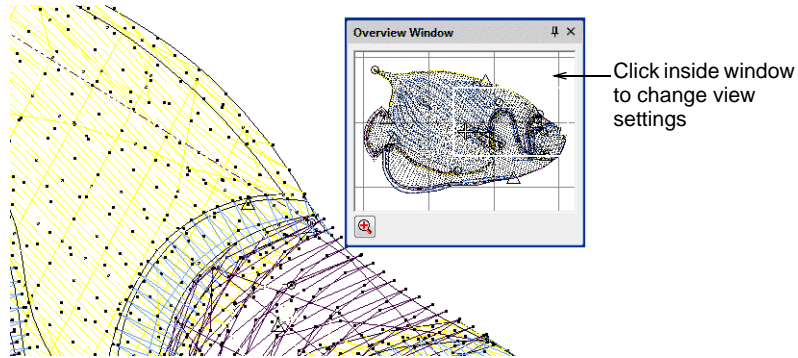
Click inside window to change view settings

Viewing objects & color blocks

EmbroideryStudio provides many techniques for selectively hiding or viewing embroidery objects or color blocks.

The **Color-Object List** offers an easy way to selectively view color blocks and embroidery objects. This is useful when re-sequencing.

View selected objects

![arrow]	Use Select > Select Object to select individual objects as well as groups or ranges of objects.
![icon]	Use Docker > Color-Object List to toggle the Color-Object List display on and off. Use to view and sequence objects in a design.

EmbroideryStudio provides many techniques for hiding or showing selected embroidery objects in the design window.

To view selected objects

◄ Select the objects you want to view.

Select objects to view

◄ Press **Shift+S**. All other objects are hidden. They can be revealed again via the **Color-Object List** popup menu.

All other objects hidden

Select to unhide objects
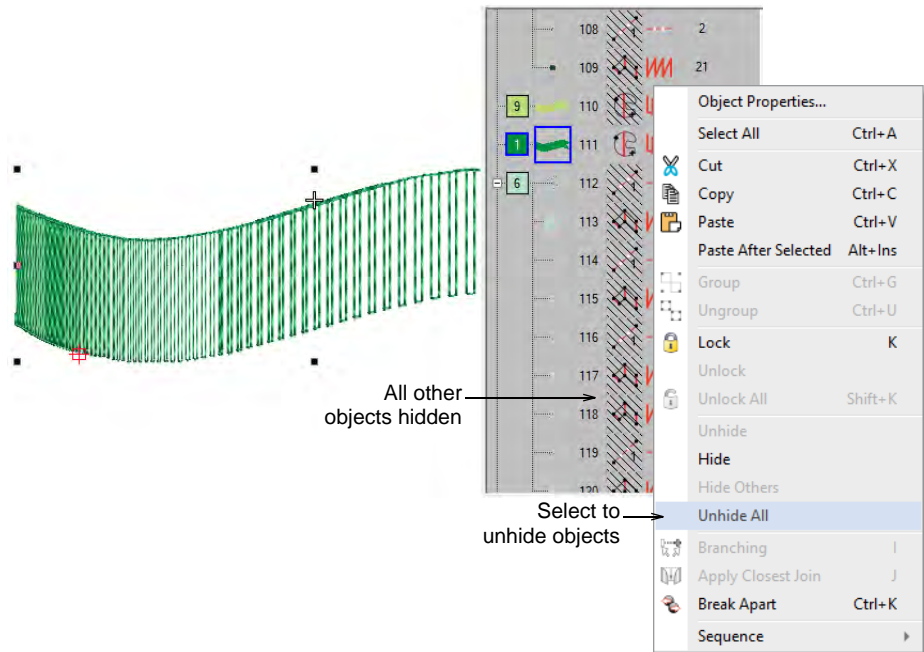
◀ Alternatively, to temporarily hide other objects, select the object you want to view and click and hold the **Locate** button.

Click and hold to isolate selected blocks

Select object/s to view
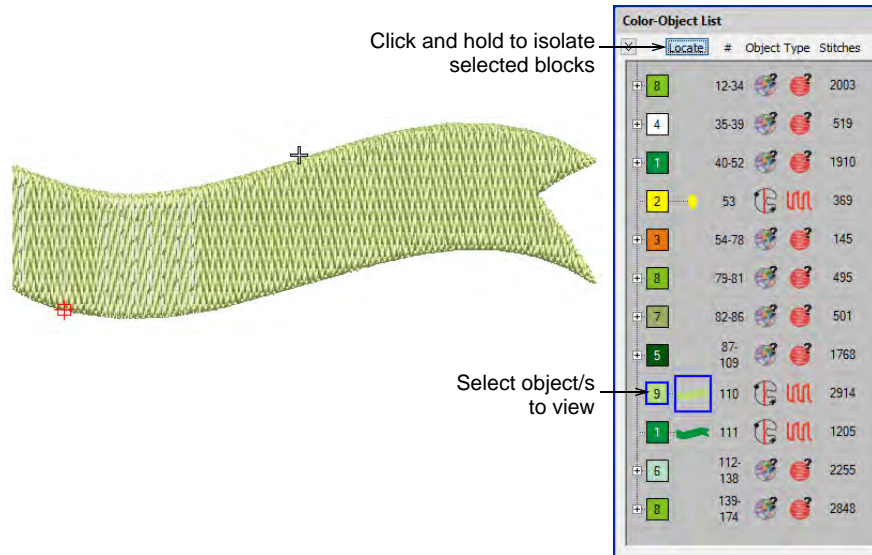
◀ To display the selected object full-screen, press **Shift+0** (zero).

◀ To return to the previous view, select **View > Previous View** or press **V**.

◀ To re-display the entire design, press **Esc** followed by **Shift+S**.

◀ To redraw the screen, select **View > Refresh Screen** or press **R**.

◀ Optionally, select the **Options** icon in the **Standard** toolbar, or select **Setup > Options > View Design** tab, to toggle options for selective display of embroidery objects:

Select viewing options
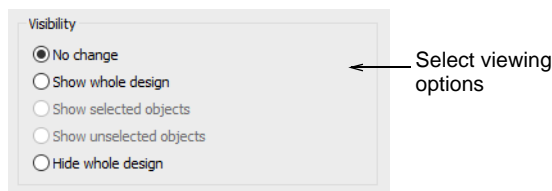
Options include:

Option	Function
No change	The display remains the same as before.
Show whole design	All embroidery objects in the design are visible.
Show selected objects	Only objects that are currently selected are visible.

Option	Function
Show unselected objects	The reverse of the above option. Only objects that are currently 'unselected' are visible.
Hide whole design	All embroidery objects in the design are hidden.

Related topics...

◀ Selecting objects
◀ Selecting objects by color or stitch type
◀ Sequencing embroidery objects

View selected color blocks

Use Docker > Color-Object List to toggle the Color-Object List display on and off. Use to view and sequence objects in a design.

Use Color > Colorway Editor to assign thread colors to color blocks in the design.

A color block corresponds to a color stop in the design. It may contain a single object or group of like-objects – e.g. 'ropes'. Or it may be comprised of different objects of like-color – e.g. 'ropes and birds'. The **Color-Object List** offers an easy way to selectively view color blocks and embroidery objects. The **View by Color** function also lets you view objects by color. The **Colorway Editor** provides another method for selective viewing of color blocks.

To view selected color blocks

◀ Click the **Color-Object List** icon. The **Color-Object List** can be docked to the either side of the design window, or floated in any position.

◀ Click the switch to view the list by color block.

Click to toggle color blocks

Total color blocks, objects and stitches in design

◀ Select a color block or blocks and click **Locate** and hold.

Click and hold to isolate selected blocks

Select color block/s to view

◀ Selectively hide or 'unhide' selected color blocks and embroidery objects using popup menu commands.

Use commands to selectively hide or show color blocks and objects
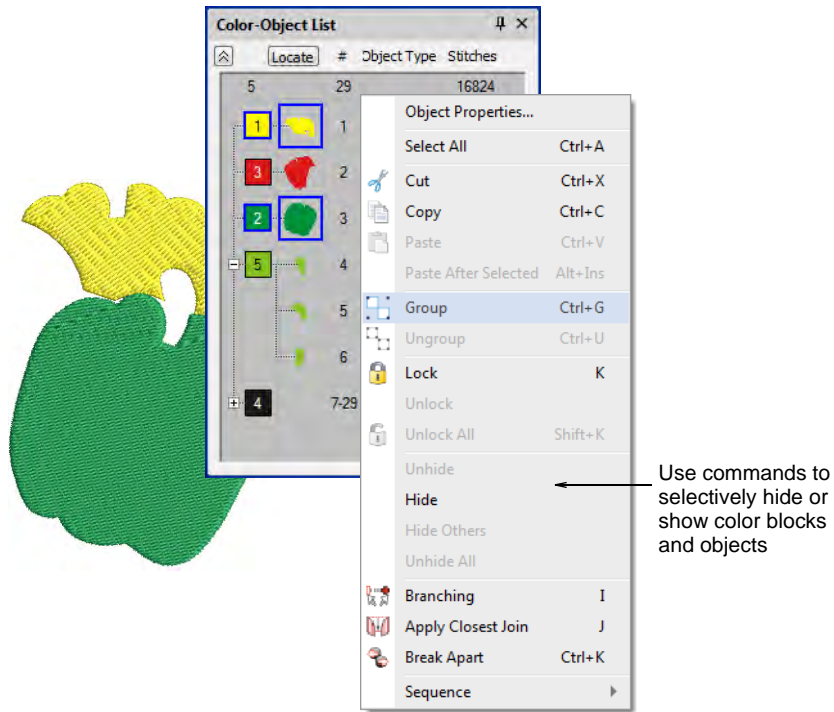
◀ Alternatively, to isolate a color block in the design window, click and hold it in the **Color** toolbar. First press **Esc** to deselect all objects.

Click and hold with no objects selected

◀ Alternatively, select **View > View by Color**. Select the colors you want to view. This function will not work with grouped objects.

Select color blocks to view
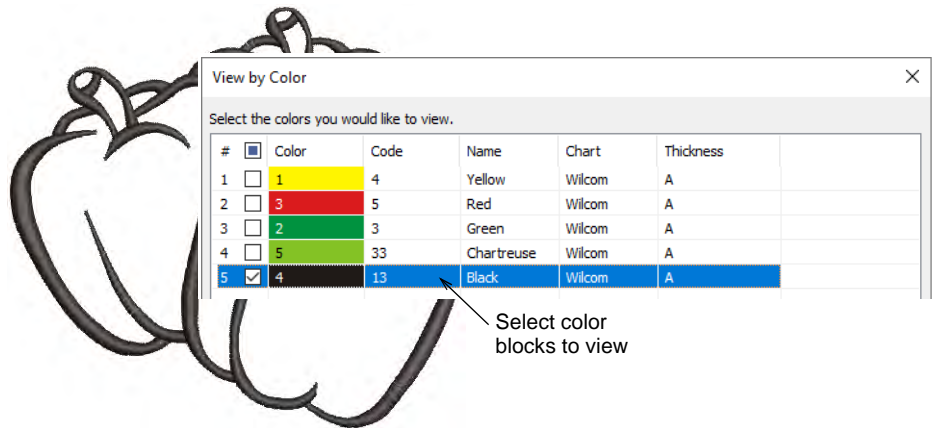
◀ Alternatively, click the **Colorway Editor**. Select a color block and click **Locate** and hold.

Select color block

Click and hold to locate selected color block
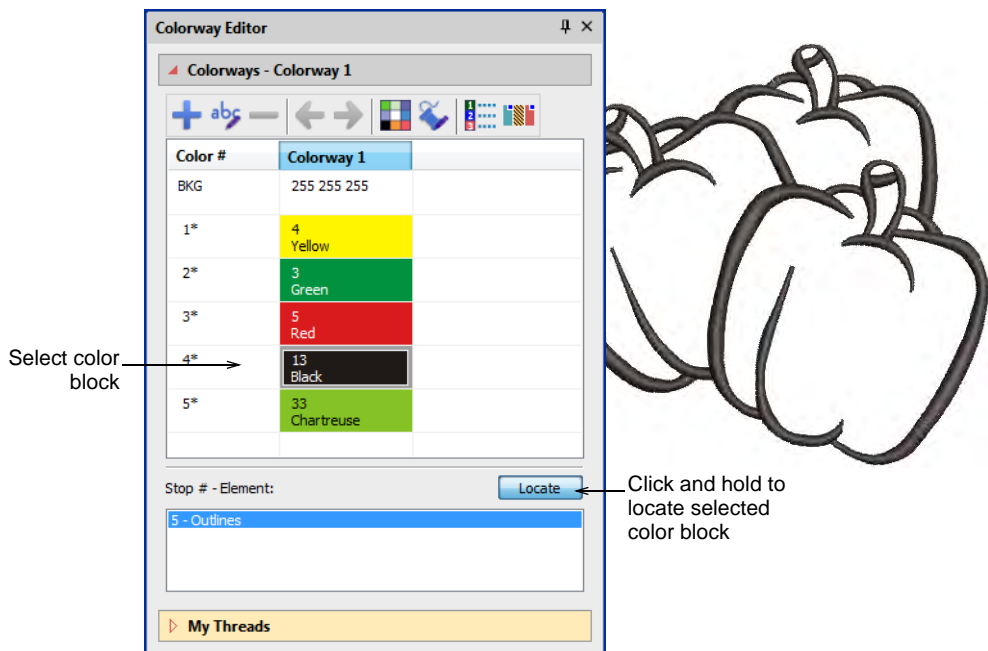
◀ To reveal all hidden objects press **Esc** followed by press **Shift+S** or select **View > View all Colors**.

Related topics...

◀ Selecting objects

Viewing stitching sequence

When checking embroidery designs, you will want to understand the stitching sequence in order to ensure efficient stitchout on the machine. 'Travel' through designs by color block, embroidery object, or even stitch-by-stitch. Alternatively, simulate the stitchout on screen.

💡
Tip: Depending on your design background, you can change display colors for unsewn stitches. See Change display colors for details.

Simulate design stitchouts

> 🌼 Use View > Stitch Player to simulate embroidery design stitchout on screen.

Stitch Player is an important tool in EmbroideryStudio. 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. This is important if you intend to make multiple stitchouts.

To simulate the design stitchout

◀ Choose a design view to visualize your design. **Stitch Player** can be run with or without TrueView™.

◀ Click **Stitch Player** or press **Shift+R**.

Set starting point

Stitch Player

| 5708 |

Set design to pause
at color changes,
stops or trims

960 s/m

Color Change
Stop
Trim

Use video controls to
run stitch player

Adjust redraw
speed
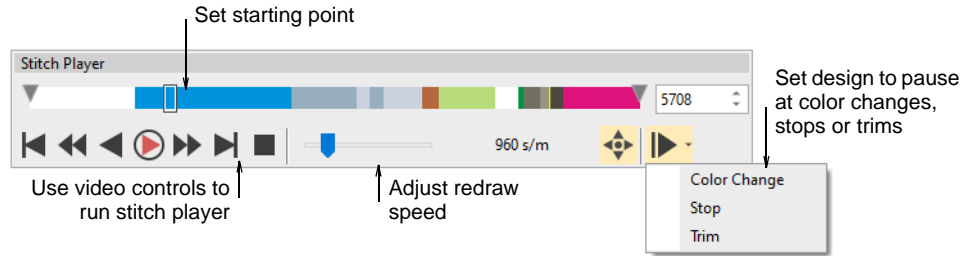
◀ Optionally, use the slider bar to move the starting point.

◀ Use the controls to stitch forwards or backwards through the design. Typical 'media player' buttons are available for play, pause, rewind operations.

◀ Use the **Auto Pause** control to set stop points – by color change, stop, or trim.

◀ To redraw a section of design, specify a start and end stitch using the tabs.

Set stitch range to redraw section of design

Stitch Player

| 24879 |

960 s/m

Toggle Auto Scroll to view
at high zoom factors
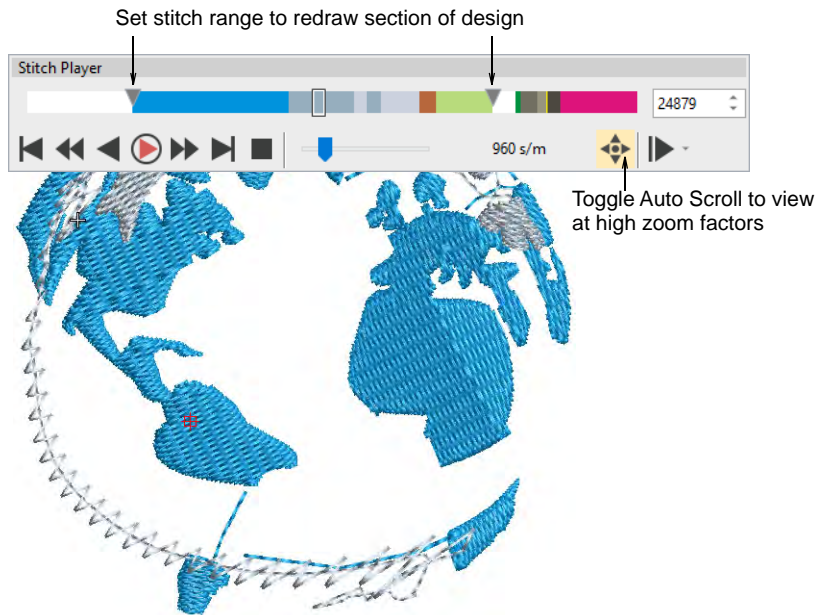
◀ Use **Auto Scroll** when running **Stitch Player** at high zoom factors.

💡
Tip: Depending on your background, you can change display colors for unsewn stitches, selected objects, object outline, grid and guides.

Travel through designs

It is useful to be able to view the stitching sequence color-by-color, object-by-object, or even stitch-by-stitch. The **Travel** toolbar provides all tools required to do so. Travel forwards or backwards with any button by right or left mouse-clicks. Traveling can be initiated from any stitch in the design. The current needle position is marked by a white cross or 'needle position marker'. The current stitch number is displayed in the **Status Bar**.

To travel through a design

◀ Turn off **TrueView™** and press the **Esc** to ensure no object is selected.

Use 'travel' tools to move through every component of a design
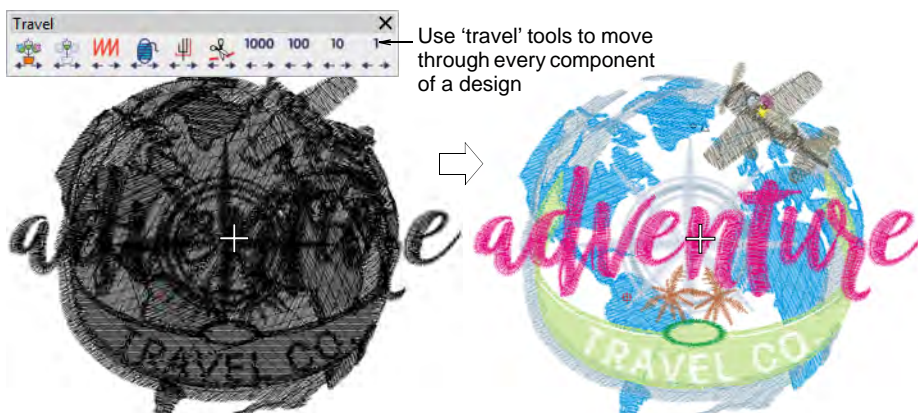
◀ Travel to the start of the design by clicking the **Start/End Design** icon or pressing the **Home** key.

◀ Use the **Travel by Stitch** functions to travel forwards or backwards through the stitching sequence. Use left or right mouse-clicks or arrow keys – ⬅ or ➡, ⬆ or ⬇. Alternatively, to travel by 1000 stitches, press **Shift + Num+** or **Shift + Num-**.

Travel to previous stitch   Travel to next stitch
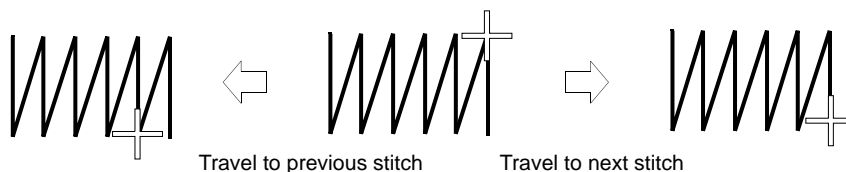
◀ To travel by color, click/right-click **Travel by Color**. This is useful if you need to locate a specific color change in order to insert an object or delete it from the stitching sequence.

◀ To travel by object, click/right-click **Travel by Object**. Alternatively, press **Tab** or **Shift+Tab**.

◀ To travel by machine function, click/right-click the **Travel by Function** tool. Alternatively, press **Ctrl+Page Up** or **Ctrl+Page Down**. The needle point will stop at every jump, trim, and color change in the design.

◀ It is sometimes easier to use **Travel by Trim** to travel by trim functions alone – e.g. when checking for unnecessary trims. Alternatively, press **Ctrl + Left Arrow** or **Ctrl + Right Arrow**. Turn on **Show Connectors** and **Show Functions** to view while traveling.

Travel by trims with connectors and functions showing
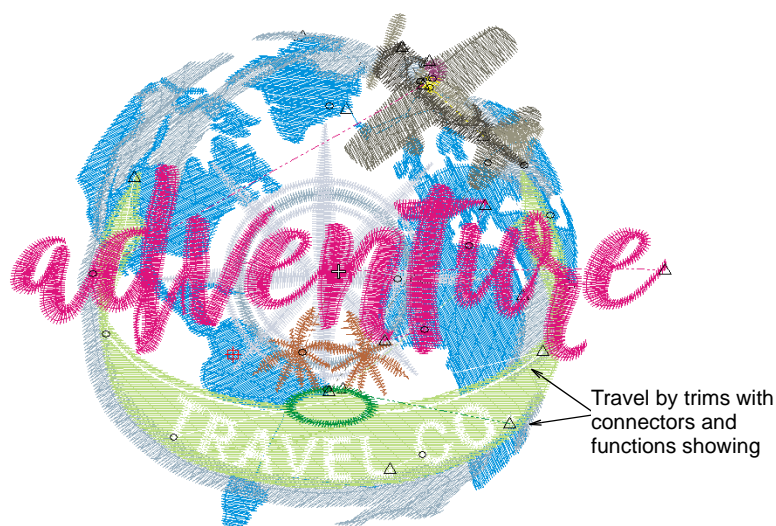
Tip: While traveling through a design or editing stitches, click the **Select Current** icon or press **Shift+0** to select the object associated with the current cursor position.

Related topics...

◀ View selected color blocks

◀ Nest objects

Select objects while traveling

Click Select > Select Object together with the Ctrl key to select objects as you travel through a design.

 Left/right-click Travel > Travel by Object to travel to previous or next object.

 Click Select > Select Current to select the object associated with the current cursor position.

Traveling is usually associated with checking the stitching sequence. You can select objects as you 'travel' through a design using the **Ctrl** key.

To select objects while traveling

◂ Click the **Select Object** icon.

◂ Use the **Travel by Object** tool or **Tab** and **Shift+Tab** buttons to travel forwards or backwards by object. See Travel through designs for details.
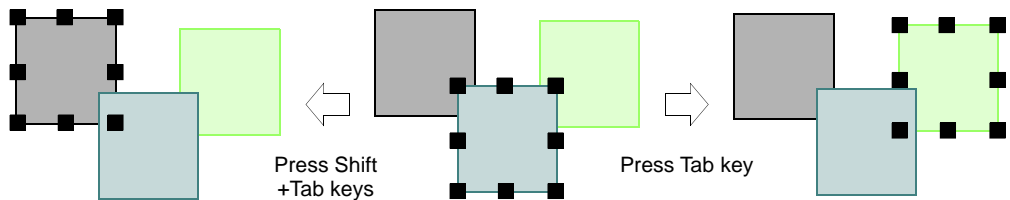
Press Shift +Tab keys   Press Tab key

◂ Click the **Select Current** icon or press **Shift+0** to select the object associated with the current cursor position.

◂ Hold down the **Ctrl** key to select an object as you travel through it.

Viewing colorways

A 'colorway' is a color scheme or palette of thread colors. It may also include a background color, fabric sample, or a product image. In EmbroideryStudio, you can define multiple colorways for the one design. This means you can stitch out the same design in different colors on

different fabrics. You can also print multiple colorways, icons of color blocks, and design backgrounds with the production worksheet.
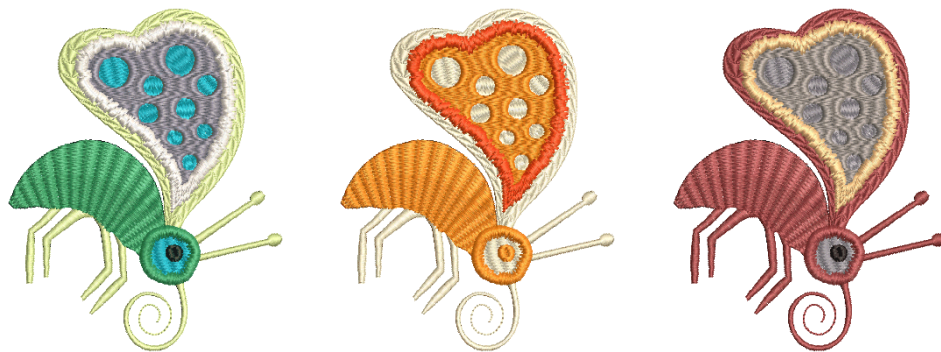
Switch colorways

Blue	Use Color > Current Colorway dropdown to select a new color scheme for design.
	Use Color > Colorway Editor to assign thread colors to slots in the color palette.

In EmbroideryStudio, you can preview the same design in different colors on different fabrics.

To switch colorways

◀ Open a design with multiple colorways.
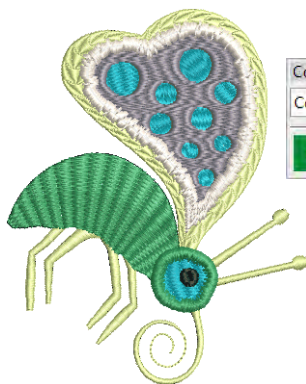
◀ Select a colorway from the droplist.

Select colorway
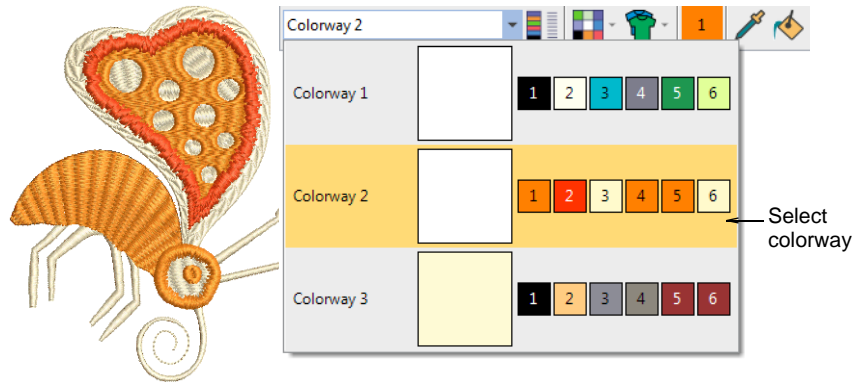
◀ Alternatively, use the **Colorway Editor** to toggle between colorways.

Select colorway

Double-click to edit background or product image
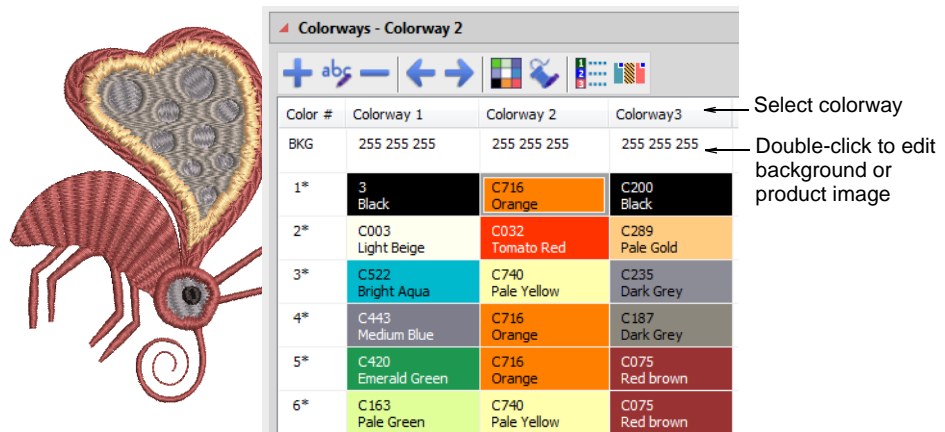
Related topics...

◀ Colorways
◀ Change backgrounds

Change backgrounds

Click Color > Background & Display Colors split arrow to change the background color of the current colorway.

Use Color > Product Visualizer to choose a garment or product backdrop on which to position your decoration.

Click View > Show Product to toggle product image on/off. Right-click to open the Product Visualizer docker.

EmbroideryStudio lets you set the background color, fabric, or product of each colorway for more realistic previews and presentations.
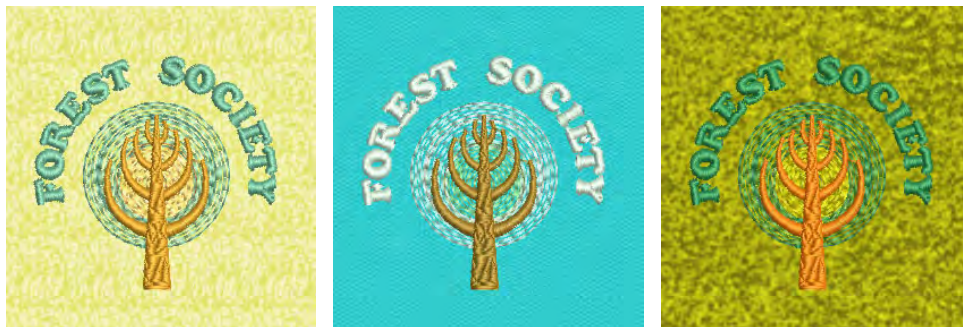
To change backgrounds

‹ Open the design and select a colorway.

Select a colorway
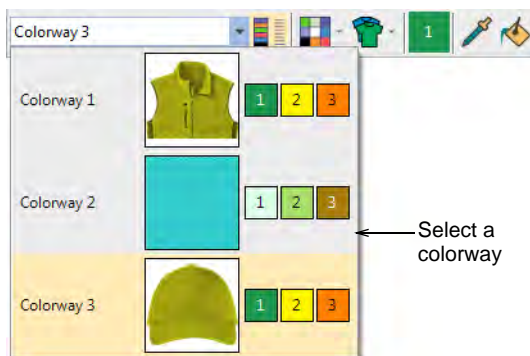
‹ Use **View > Show Product** to toggle on or off any product image that may be included in the colorway.

‹ Click the droplist next to the **Background & Display Colors** icon.

  ‹ Change color via the **Background Color** popout menu.

Click arrow to invoke popup menu

Select background color
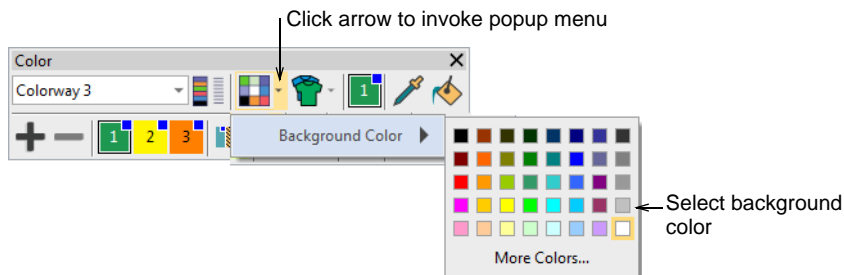
◀ If your colorway includes a background fabric, change color via the **Fabric Color** popout menu.

Change fabric colors
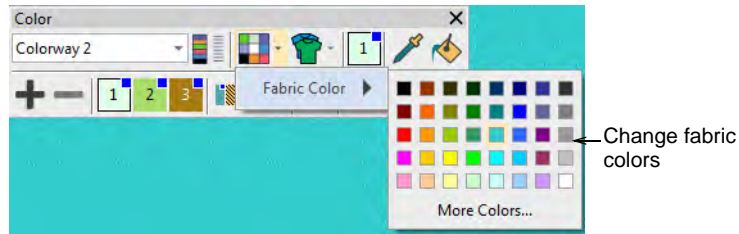
◀ If your colorway includes an article or product, open the **Product Visualizer** droplist and change color via the **Product Color** popout menu.

Change product color
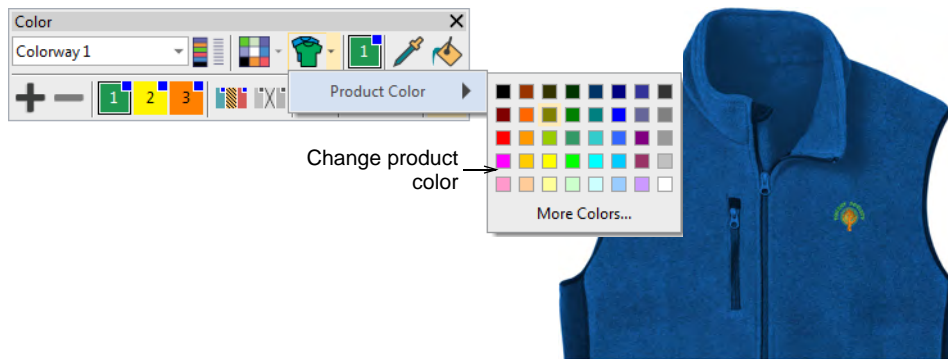
💡
Tip: Click **Background & Display Colors** or **Product Visualizer** icons to preset any of these options.

Related topics...

◀ Add colorways
◀ Fabric & product backgrounds

Change display colors

Use Color > Background & Display Colors (or Colorway Editor docker) to change design background presets for the current colorway.

In addition to background color or fabric, display colors for borer holes, unsewn and selected stitches, object outlines and grid are part of the colorway definition. Change them if the default display color is not visible

against the current colorway. The **Background & Display Colors** dialog includes a **Display Colors** panel.

Select display colors to change
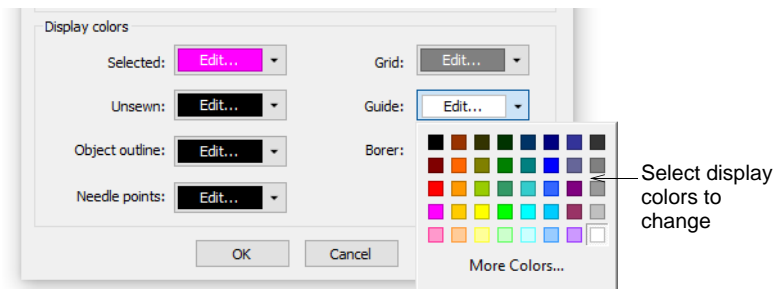
Adjust colors as required for:

Display item	Description
Selected	Selected objects or stitches.
Unsewn	Unsewn stitches as they appear when traveling through the design.
Object outline	Object outlines as they appear when Show Outlines is activated. See View embroidery components for details.
Needle points	Change needle point display color according to current background. See also View embroidery components.
Grid	Depending on the colorway, you may need to adjust grid display colors in order to view them against the background color. See also Measurements.
Guides	Depending on the colorway, you may need to adjust guide display colors in order to view them against the background color. See also Measurements.
Borer	Borer points. These are machine functions which only appear when Show Functions is activated. See View embroidery components for details.

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

Black needle points
against white
background
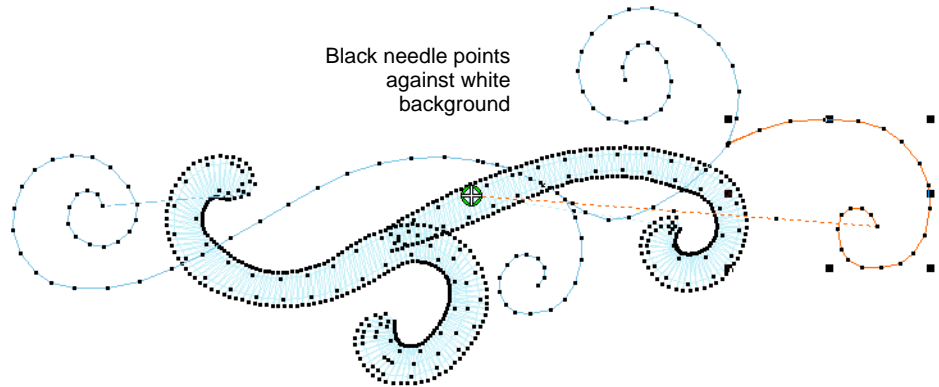
Related topics...

‹ Add colorways
‹ Fabric & product backgrounds
‹ Working with templates

Viewing design repeats

> Use View > Show Repeats to toggle design repeats display. Right-click for settings.

Many customers make traditional garments such as sarees which employ continuous and sometimes overlapping designs. It is important to be able to see these designs together with their repeats. The **Show Repeats** function displays repeating designs, including sequins, in both **TrueView**

and stitch view. You can view a design, even while digitizing, with any number of repeats. The number can be a whole number or fractional.

Vertical distance, user-defined

Horizontal distance, user-defined or automatically calculated
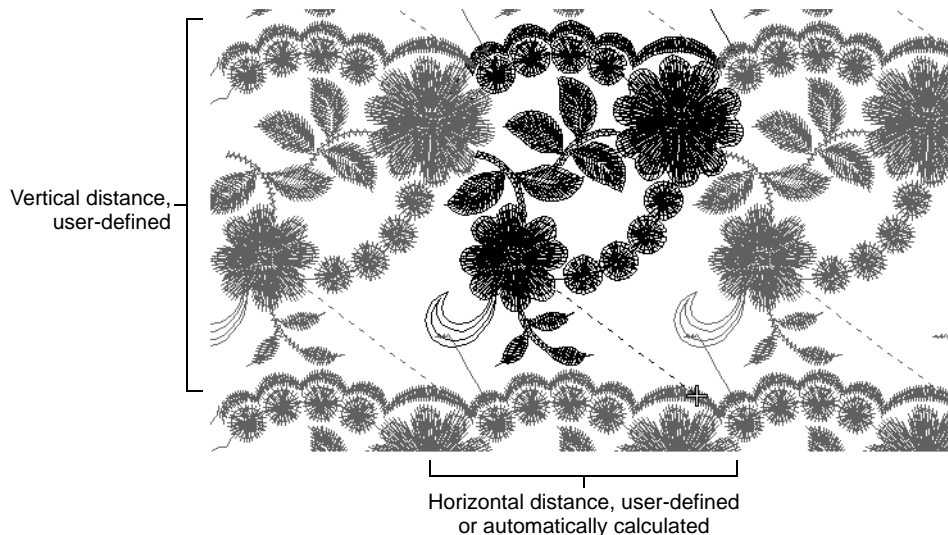
Note: It is important that the artwork you use is properly sized and in the correct horizontal position. Always check the position of your artwork before starting to digitize.

To view design repeats

‣ Set your units of measurement as required.

Note: Stitch length and density controls remain in mm regardless of measurement system. These controls reflect the machine functions as industrial machines are always in millimeters.

‣ The first time you use the feature, right-click the **Show Repeats** tool or press shortcut **W** to access the **Repeats** dialog.

Select Show Repeats

Enter required number of horizontal repeats

Enter distance between horizontal repeats

Enter required number of vertical repeats

Enter distance between vertical repeats
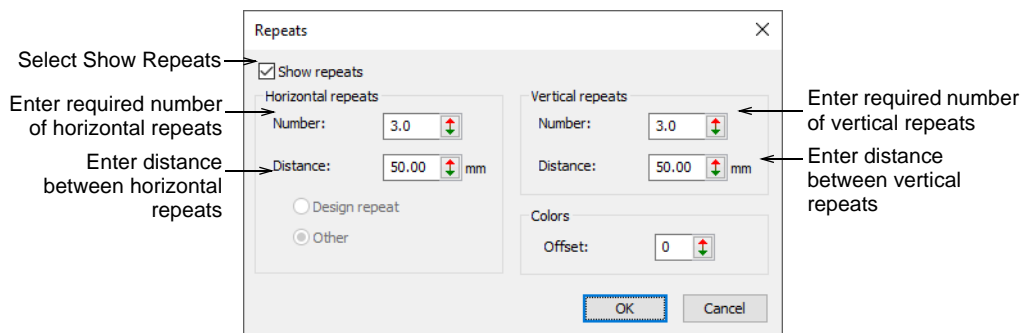
◀ Select the **Show Repeats** checkbox to activate the feature.

◀ Set the distance between horizontal repeats. This will always be expressed in millimeters. Depending on the template, different options are available:

Option	Function
Design repeat	This option is only available with the Schiffli template. Repeat distance is fixed. This is typically a factor – x1, x2, x3, etc – of needle distance. See Schiffli Supplement for details.
Other	When selected, you need to manually enter a repeat distance in mm. This is typically used when doing continuous design work on multihead machines. The figure will generally correspond to the distance between machine heads – e.g. 135 mm – or factors thereof.

◀ Enter the number of horizontal repeats. Repeats are balanced around the source design. This means that whole designs are displayed only for odd integer (1, 3, 5) numbers of repeats.

Repeat	Effect
1.0	The original design only is displayed.
1.2	• The original design is displayed, plus • 0.1 of the design on either side of the original.
2.0	• The original design is displayed, plus • 0.5 of the design to either side of the original. The repeat pattern looks like this:][][.
2.9	• The original design is displayed, plus • 0.95 of the design to either side of the original.
3.0	• the original design is displayed, plus • a complete copy of the design to either side of the original. The repeat pattern looks like this: [][][].

◀ Vertical distance is not constrained by needle or head distance. Vertical distance will be a function of design height. Set vertical distance and number of repeats as preferred.

◀ To help distinguish the source design from repeat patterns, Use the **Colors** option to display repeats in different colors. Enter a color offset to indicate where you want to start the first repeat color. Let's say you have a 4-color design using palette colors 1, 2, 3, 4. If you set color offset to 5, repeat colors will display as 5, 6, 7, 8.

◀ Use the **Show Repeats** icon to toggle design repeats on or off.

Source design

Related topics...
◀ Preparing artwork for continuous embroidery
◀ Set measurement units

Viewing design information

You can obtain design information in a variety of ways and formats –
before opening the EMB file via **File Explorer** and from the **Design
Information** docker. See also Preview design reports.

View design details in EmbroideryStudio

> ⓘ Use Docker > Design Information to view and modify design details prior to
> design approval or stitchout.

You can check design details via the **Design Information** docker. This
is always advisable prior to design approval or stitchout. The opening tab
contains information about design height, width, stitch count, colors, and
so on. On other tabs, summary and order information may be provided
by the digitizer or sales team. The information is printed with approval

sheets and production worksheets. Choose a file and select **Design > Design Information**.

Use tabs to view other design information, including orders and machine runtime estimates

Provide descriptive name as preferred
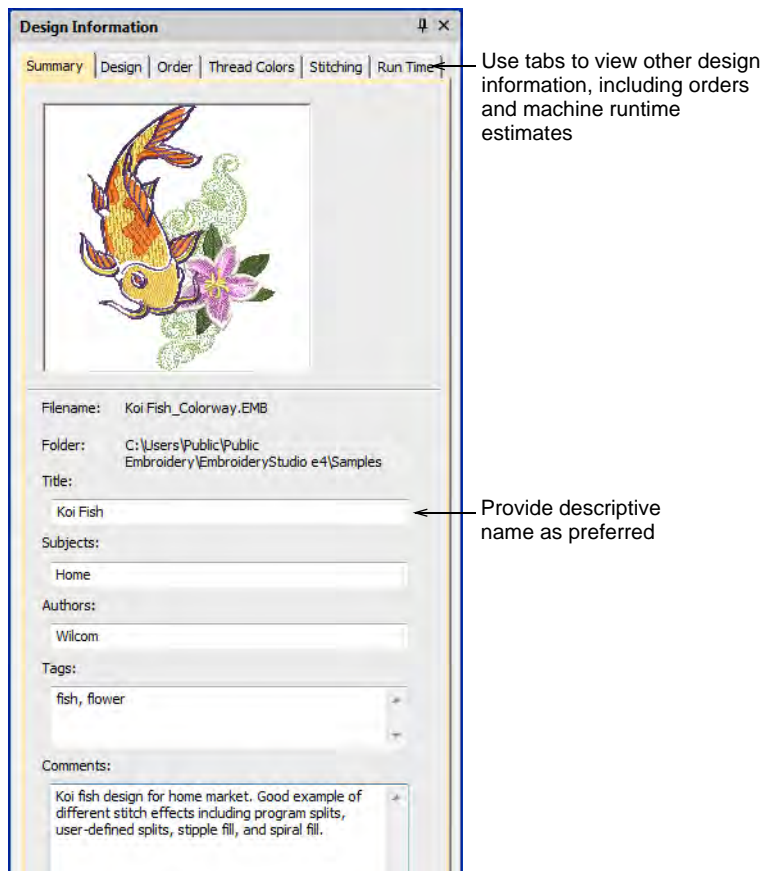
Related topics...

◀ Viewing & managing design information

◀ Managing quotes & orders

View design details in File Explorer

Even without opening EMB files, you can check software version number and other design details via **File Explorer**. This same dialog can be accessed from within the **Open** dialog in EmbroideryStudio as well as the **Design Library**.

To view design details in File Explorer

◀ In **File Explorer**, right-click an EMB file and select **Properties** from the popup menu.

The **Properties** dialog displays with an **EMB** tab. View general file information, such as file size and modification dates, together with design information such as stitch count, number of stops and color changes, as well as machine format.

Dedicated EMB properties tab
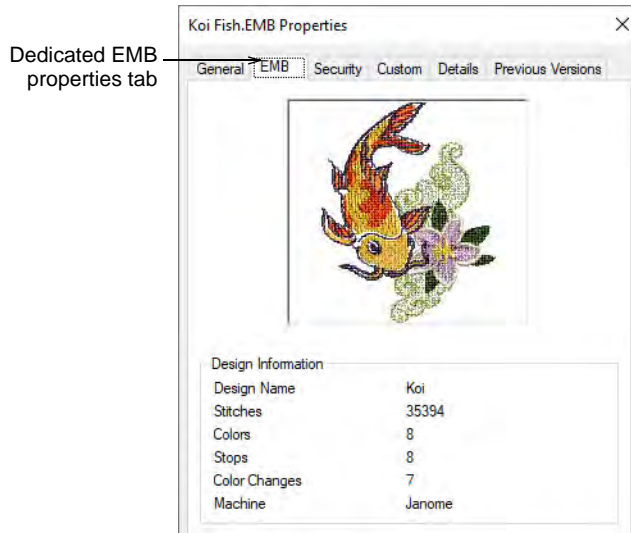
The **Custom** tab shares information with the **Design Information > Summary** docker in EmbroideryStudio.

Use Custom tab to provide additional file information
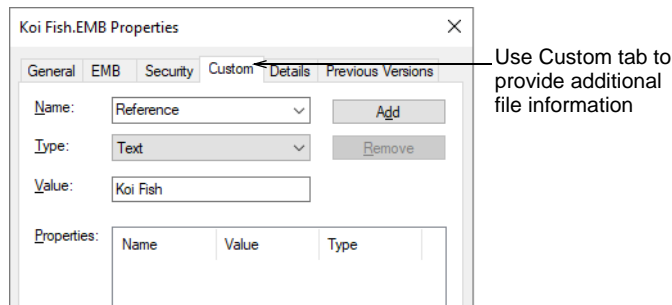
Related topics...

◂ Viewing & managing design information

Preview design reports

Click Standard > Print Preview to preview the production worksheet on screen.

Approval sheets and production worksheets contain all or some of the design details contained in the **Design Information** docker. Approval sheets are intended for customers, not production staff. Customers can

see what they are ordering and approve accordingly. Production worksheets are intended for production staff. All production-related information, such as bobbin length, design size, garment fabric, etc, is provided.

To preview a design report

‣ Click the **Print Preview** icon.

Choose a print option

Modify report options

Click Close to return to design window

Order details
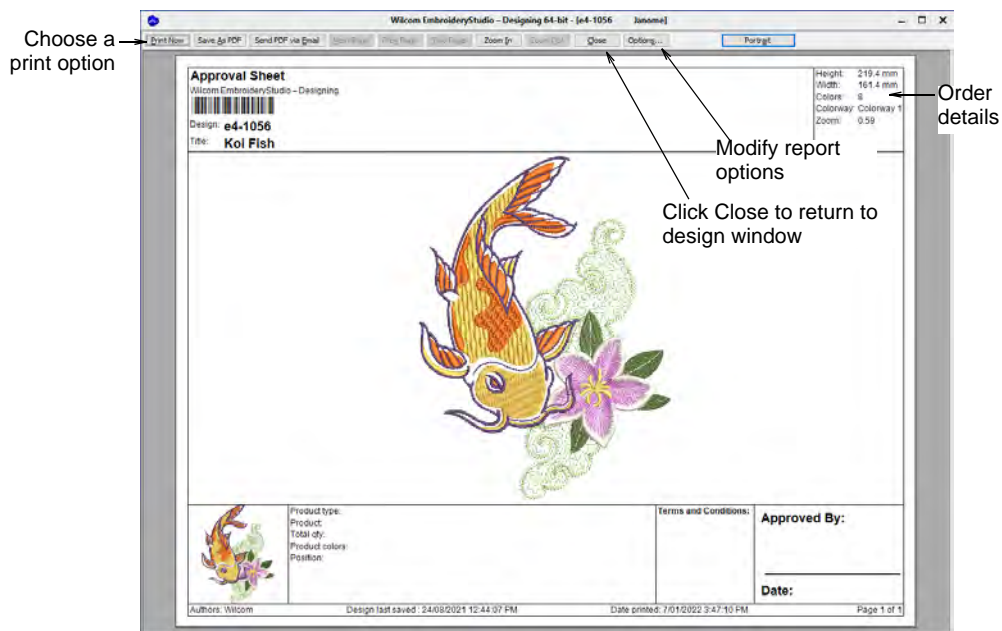
‣ To change paper orientation, click **Landscape** or **Portrait**. Large designs may be displayed over a number of pages.

‣ To change included information and set printing/plotting preferences, click **Options**. Here you can choose the report type – e.g. Approval sheet.

‣ To print the design, choose an option:

Option	Function
Print Now	Send the design report to your local printer.
Save as PDF	Save the report as a PDF document. You are prompted to save to the hard drive or network location.
Send PDF via Email	Send the report – usually an approval sheet – as a PDF attachment to your local email client.

‣ To close the preview, click **Close**.

Related topics…

◄ Viewing & managing design information
◄ Printing design reports
◄ Customizing design reports

Chapter 5
Threads & Charts

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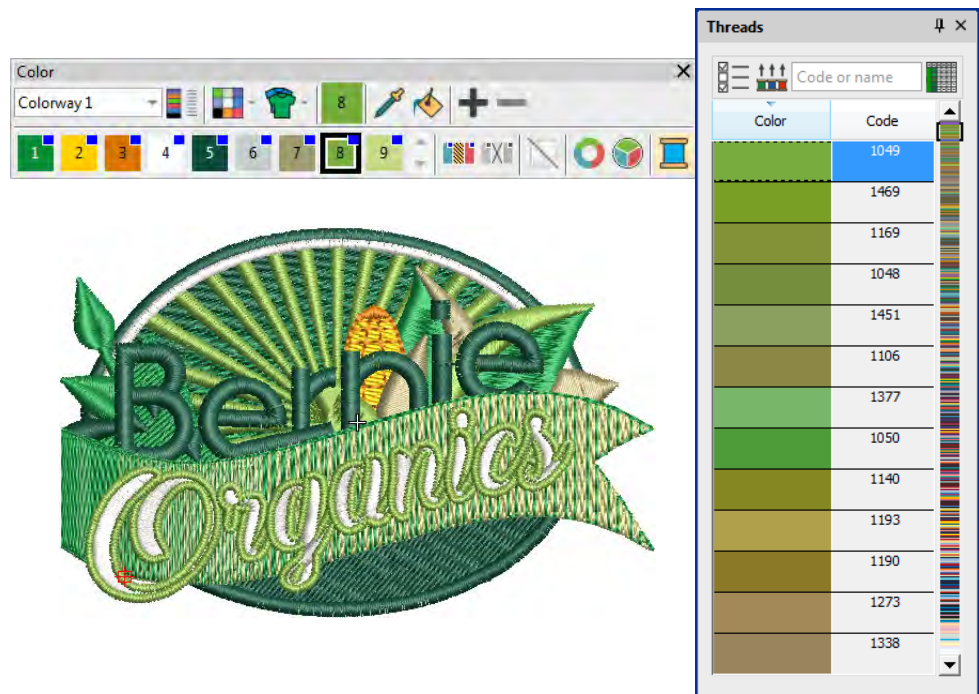
You can select colors from commercial thread charts containing a range of colors from different manufacturers. To save time when setting up new color schemes, you can create your own thread chart using your favorite or most frequently used colors. In EmbroideryStudio you can search for particular threads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

This section describes how to select colors from the **Color** toolbar 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.

Choosing threads

The color palette contains a selection of colors tailored to each design or colorway. New objects are created using the currently selected color. You can change colors at any stage. Machine functions are automatically inserted in the stitching sequence whenever you assign a color. Typically you will want to assign actual thread colors to the **Color** toolbar in these circumstances…

◀ When you create a design, it includes a single default colorway. Using the NORMAL template, 'Colorway 1' contains default colors, unassigned to any thread chart.

◀ When you convert vector graphics in **CorelDRAW Graphics**, colors are appended to the color palette as unassigned RGB values (if **Match to Embroidery Palette** is off).

◀ When you use the **Color Wheel** to create new color combinations, RGB values are added to the color palette.

◀ When you auto-digitize a bitmap, RGB values can be automatically matched to actual threads or simply added to the color palette.

◀ If you read a machine file, unassigned colors will be appended to the color palette.

◀ If you receive a design which uses colors from a thread chart you don't have, you may want to match them to a preferred thread chart.

In EmbroideryStudio you can search for threads in one or several charts and assign them manually or automatically.

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.

Select thread colors

🖌	Use Color > Pick Color to pick up a color from an existing object and make it current.
6	Use Color > Current Color to view current color.
🔶	Use Color > Apply Current Color to apply the currently selected palette color to embroidery objects.
➕	Use Color > Add Color to add a color to the end of the color palette.
➖	Use Color > Remove Color to remove an unused color from the end of the color palette.

Use Color > Hide Unused Colors to show or hide all unused colors in the color palette.

Use Color > Remove Unused Colors to remove all unused colors from the color palette.

New objects are digitized using the current color on the **Color** toolbar. You can change colors at any time.

To select thread colors

◀ Press **Esc** to deselect all objects.

◀ Click a color in the **Color** toolbar to make it current. Alternatively, pick a color from the design with the **Pick Color** tool. The current color is shown on the toolbar and highlighted in the palette with a black square.
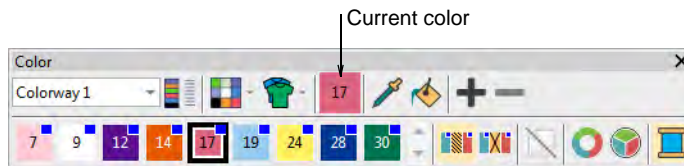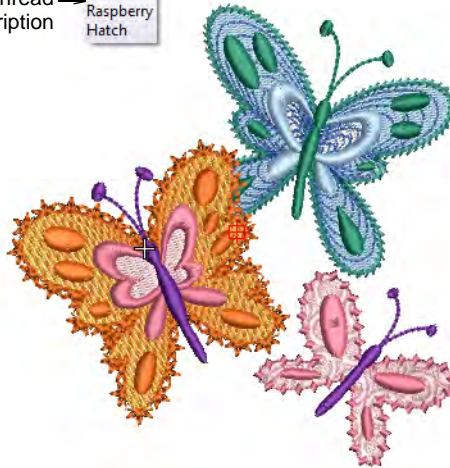
◀ Hover the mouse pointer over a color to view the thread code, thread name, and thread chart in a tooltip.

◂ To isolate a color block in the design window, click and hold it in the **Color** toolbar. First press **Esc** to deselect all objects.

Click and hold to isolate the color block
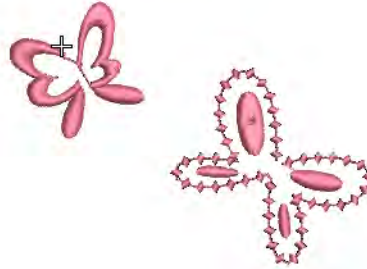
◂ Select object/s you want to recolor. Alternatively, select a color block in the **Color-Object List**.

Select objects or color block to recolor
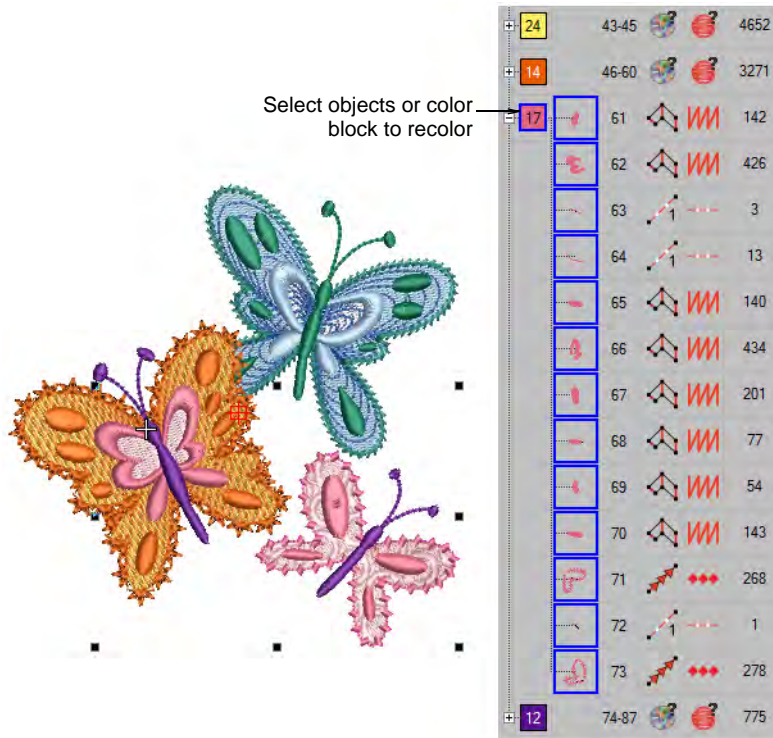
◀ Select a color from the palette. Alternatively, transfer a used color to other objects with the **Apply Current Color** tool.

Click to select a new color
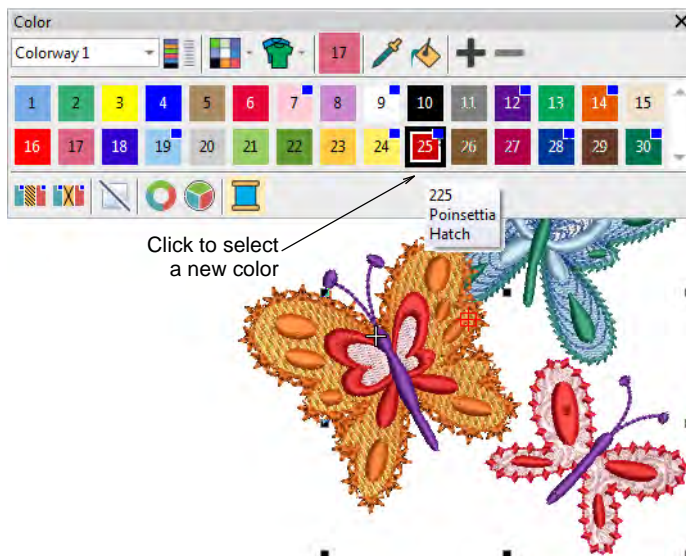
◀ Use the +/- buttons to add or remove color slots as needed.

◀ Use the **Hide** or **Remove Unused Colors** controls as preferred to compact the palette.

Related topics...

◀ Change color schemes

Assign thread colors

🧵	Use Color > Threads to search for and match threads from different charts, and assign for use.
➕	Use Color > Add Color to add a new color slot to the color palette.
☰	Use Color > Colorway Editor to assign thread colors to slots in the color palette.
☷	Use Threads > Select Thread Charts to select the thread chart/s you currently have available for use.
⬆	Use Threads > Assign Thread to assign selected thread to the highlighted color in the current colorway.
↑↑↑	Use Threads > Match All to match threads from the current chart/s to all color slots in the current colorway.

The supplied charts represent the brands of threads that EmbroideryStudio supports. Each chart includes a range of thread colors together with code, brand and description. You can search for a thread by code or description and assign it to a selected design color slot. Alternatively, let the software match design colors to threads in the current thread chart/s.

To assign thread colors

◀ Press **Esc** to deselect all objects. The currently selected (default) color is shown in the toolbar.

Current color
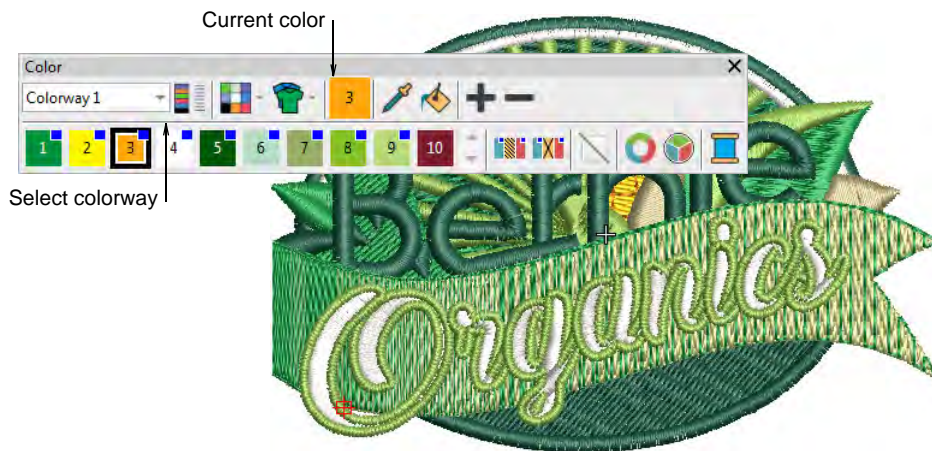
Select colorway

◀ Select a colorway and click the **Threads** icon. Alternatively, right-click a color in the palette. The docker opens.

Click to open thread charts

Assign preferred thread chart/s
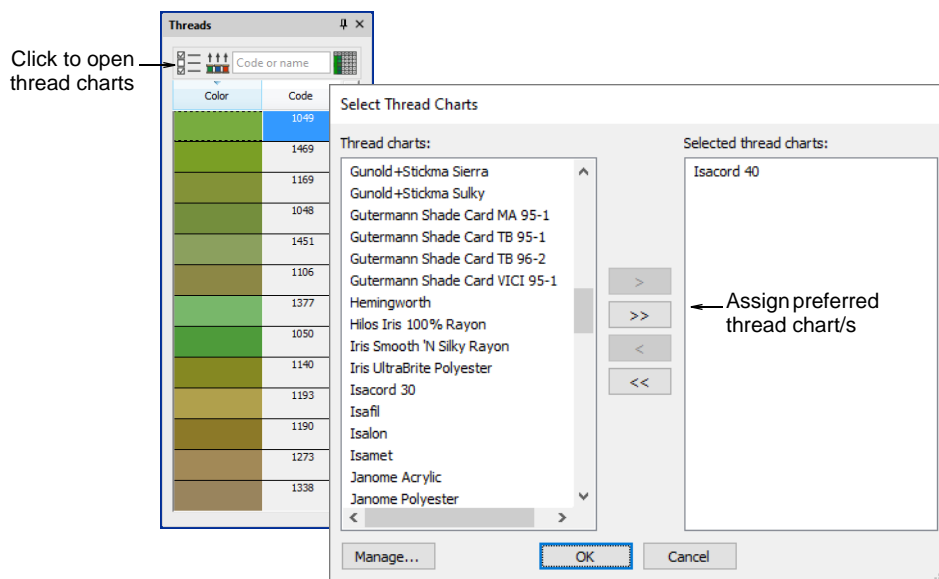
◄ Click the **Select Thread Charts** button to access the thread chart listing.

◄ Choose the chart/s you prefer or currently have available and click **OK**.

◄ Click a color in the **Color** toolbar to make it current. The **Threads** list updates automatically.

◄ Alternatively, click **Add Color** to add a new color slot to the color palette and make it current.
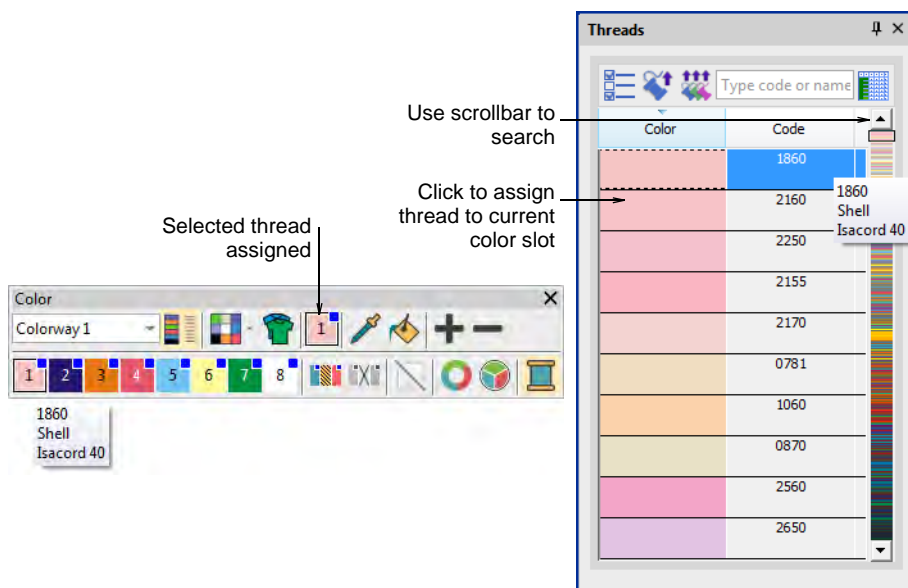
◄ Use the scrollbar to refine your search. Or, in the **Search** field, enter the first few characters of the required code or name. The code is the identification number of a thread color in a brand. The system searches for the closest match and displays it in the thread color list.

◄ Double-click or click **Assign Thread** to assign a thread to the current color slot in the current colorway.

◄ Alternatively, use **Match All** to assign threads from the current chart/s to all color slots in the current colorway.

◄ Check the thread assignments in the **Color** toolbar by hovering the pointer over the slots.

◄ Optionally, click **Remove Unused Colors** to remove unused colors.

Note: The **Remove Unused Colors** tool is disabled for machine formats that use needle addressing – i.e. that have **Color Change** set as **Needle No** in the **Machine Format Settings** dialog.

Thread usage estimates

In order to obtain more precise thread usage estimates, you can adjust fabric thickness to suit the target fabric. This may be necessary if you are planning a large production run. Settings are generally fine-tuned on a case-by-case basis. However, adjusted settings can also be saved to the current template.

To estimate total thread usage

1 Select **Design > Design Information > Stitching** tab.

Filename:	Koi Fish_Colorway.EMB
Title:	Koi Fish
Auto fabric:	Pure Cotton
Required stabilizers:	Topping: / Backing: Tear Away x 2
Design area:	35,411.0 mm²
Total thread:	177.53 m
Total bobbin:	61.08 m
	Length Calculation

Click to calculate thread and bobbin length
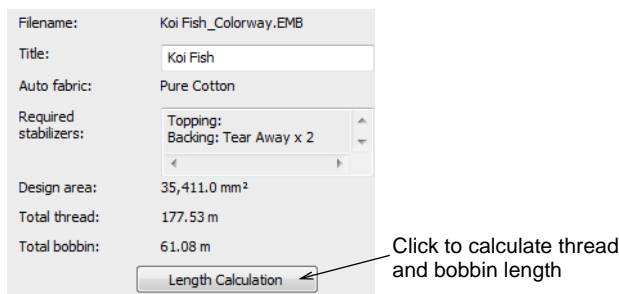
2 Click **Length Calculation**.

Length Calculation	×
Top thread fabric thickness:	1.00 mm
Bobbin thread length:	100 %
OK Cancel Save	

Enter target fabric thickness

Enter bobbin thread length as a %
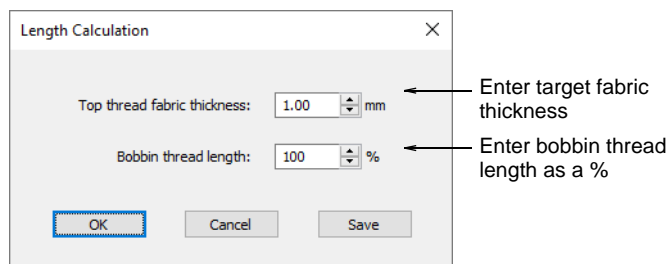
3 Enter the thickness of the target fabric.

4 Adjust the bobbin thread length according to the mixture of thread types in the design.

This factor provides a simple mechanism for a more accurate bobbin thread length estimate. The default value (100%) is suitable for a design with a mixture of stitch types. If the design is all **Run** stitches or all **Tatami**, more bobbin thread will be used and the factor can be increased say to 125%. If the design is all **Satin** stitch, the factor can be reduced to say 65%.

5 Click **OK**. The **Total Thread** and **Total Bobbin** values are adjusted to take into account fabric thickness on total thread requirement.

6 Optionally, click **Save** to save revised settings to the current template.

Recoloring consecutive objects

You can change the color of consecutive objects of the same color at the same time.

To recolor consecutive objects

◀ Select the first object in the sequence to recolor.
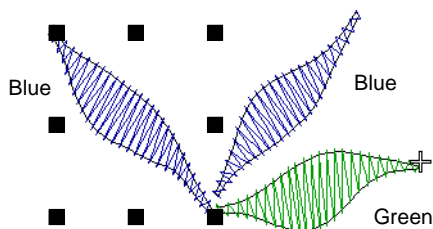
◀ Select **Object > Set Color**. The **Set Color** dialog opens.
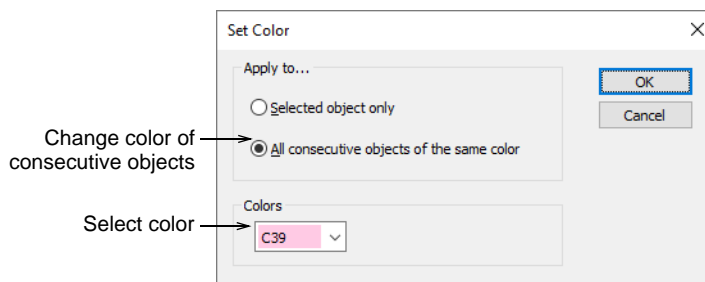
◀ Select the **All consecutive objects of the same color** option.

◀ Select a color from the list and click **OK**.
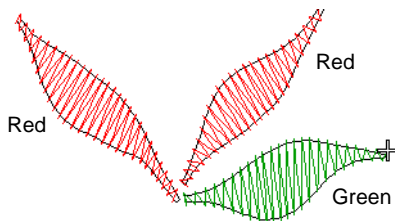
Managing thread charts

Thread charts in EmbroideryStudio 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.

Edit thread colors

Use Color > Colorway Editor to modify threads in selected colorways.

Use Colorway Editor > Edit Color to modify thread information for the currently selected palette color.

You can always change code, name, chart, thickness or thread colors. For example, in Schiffli work, you may want to change text labels to Parts A, B and C to reflect the pattern arrangements when printing. These labels appear on the production worksheet both in the stop sequence and in **Color Film** printout. Alternatively, you may want to edit colors in a colorway before you assign actual threads.

To edit thread colors

◀ Open the **Colorway Editor** and select your colorway. If already open, the **Threads** docker closes automatically.

Click to view thread details

Select thread to edit

◀ Select the thread to edit and double-click or click **Edit Color**. Alternatively, double-click a palette slot in the **Color** toolbar.

Edit thread details →

Click to select or mix color
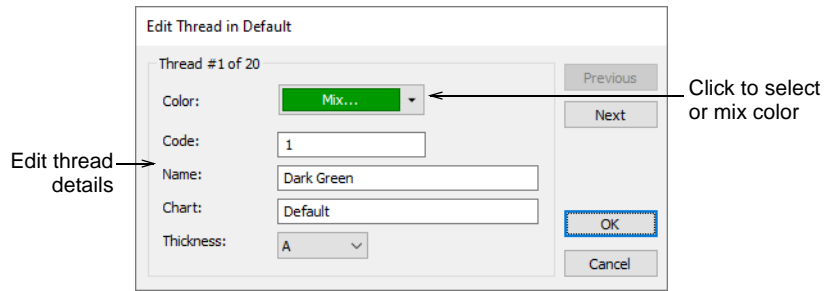
◀ Edit thread details as required.

Note: When a color is changed, all objects using that color update immediately, whether selected or not. All other objects in the design are unchanged.

Related topics...

◀ Creating colorways
◀ Assign thread colors
◀ Modify thread details
◀ Printing design reports

Create & modify thread charts

Use Color > Colorway Editor to create new thread charts.

EmbroideryStudio lets you define your own charts. When you create a thread chart, you are creating a store of colors for future use. Select names that will help you remember the charts or help you sort frequently-used charts to the top of the list. Rename or remove charts at any time.

To create a new thread chart

◀ Select **Manage Thread Charts** via the **Setup** menu. Alternatively, click the **Select Thread Charts** button in the **Colorway Editor**.

Click to open thread charts

Click to modify thread charts
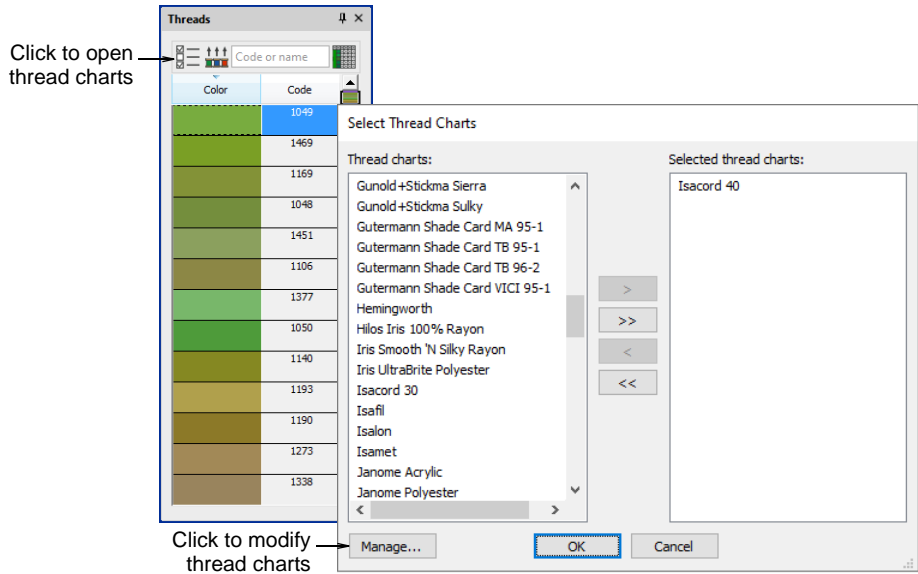
◀ Click **Manage**. The **Manage Thread Charts** dialog opens displaying the current thread chart.

Click to create new chart
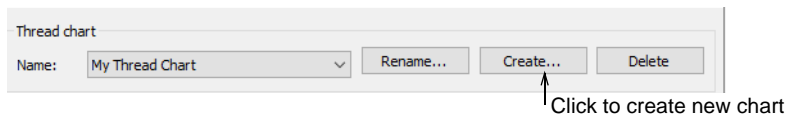
◀ Click **Create**. The **Create Thread Chart** dialog opens.

Enter new name
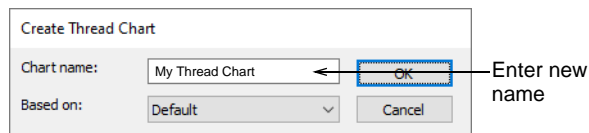
◀ Enter a name for the chart and click **OK**. The new chart is created, ready for you to add colors.
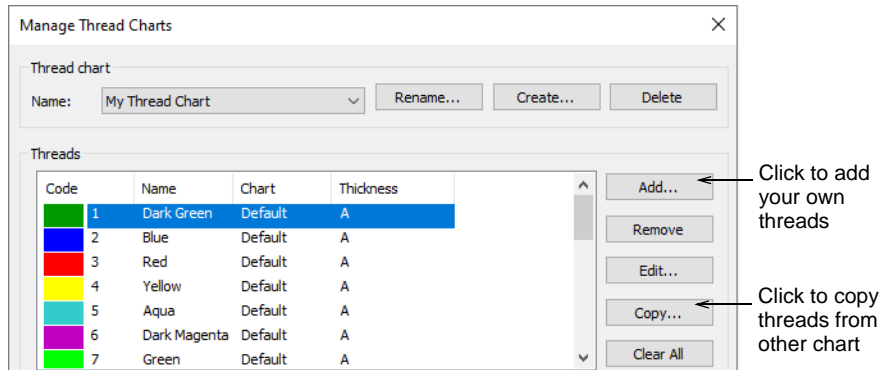
◀ Click **Delete** to remove the entire chart.
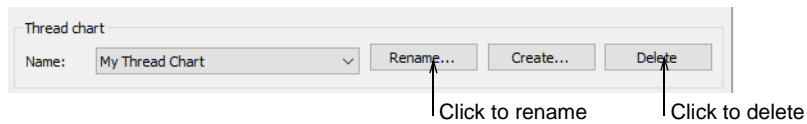
◀ Click **Rename** to change names.
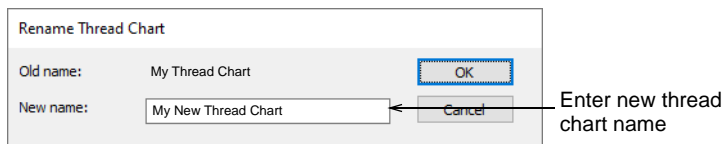
⚠
Caution: Be careful when deleting thread charts. If you delete the wrong chart you will need to reinstall EmbroideryStudio to restore it.

Related topics...

◀ Modify thread details
◀ Copy colors between charts
◀ Definine custom thread chart files

Copy colors between charts

> ▤ Use Color > Colorway Editor to modify existing charts.

Copy colors between charts to create your own charts from existing threads.

To copy colors between charts

1 Select **Setup > Manage Thread Charts**. Alternatively, click the **Select Thread Charts** button in the **Colorway Editor** and click **Manage**.

Select thread chart

Click to create new chart

Click to copy threads from other charts
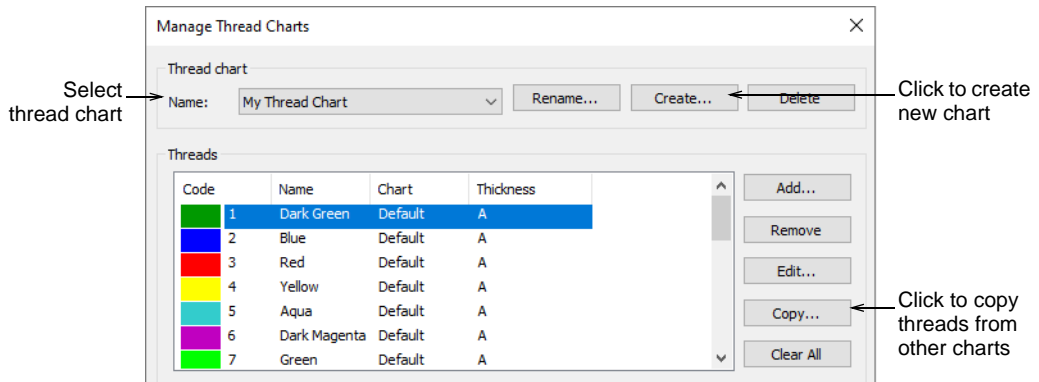
2 Create a new chart or open an existing one from the **Name** list.

3 Click **Copy**. The **Copy Thread Chart** dialog opens.

Select thread chart

Select color to copy
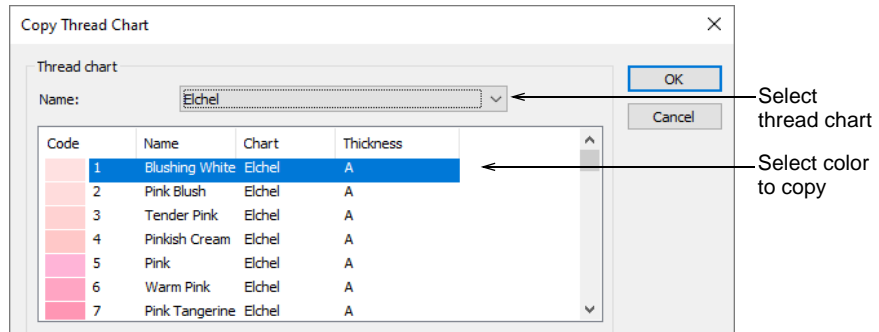
4 Select the source chart from the **Name** list.

5 Select the color/s you want to copy. Use **Ctrl** or **Shift** keys to copy a group or range of colors.

6 Click **OK**. All colors are copied to the new chart.

Modify thread details

Use Color > Colorway Editor to modify existing charts.

You can copy colors from other charts or mix them yourself. You can also set the code, description, brand, and thickness of existing threads. Remove obsolete thread colors for good housekeeping.

To modify thread details

◄ Select **Setup > Manage Thread Charts**. Alternatively, click the **Select Thread Charts** button in the **Colorway Editor** and click **Manage**.

Select thread chart
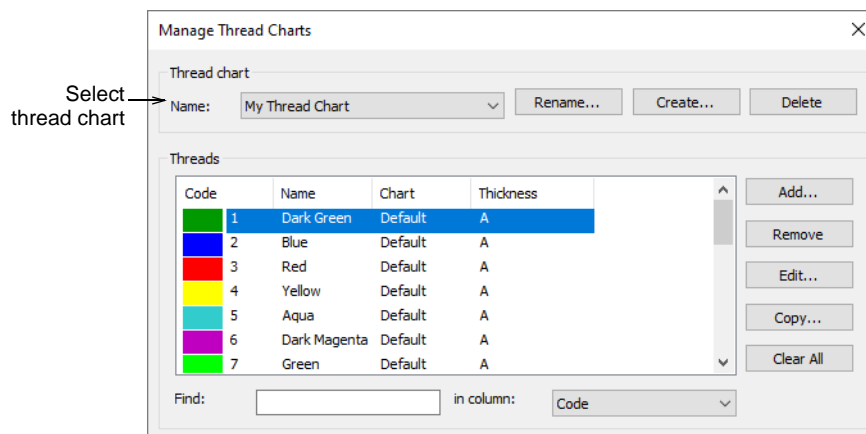
◄ Create a new chart or open an existing one from the **Name** list.

◄ Click **Add** to add your own colors or **Edit** to change selected thread details.

Enter thread details

Select thread thickness

Click to select or mix color
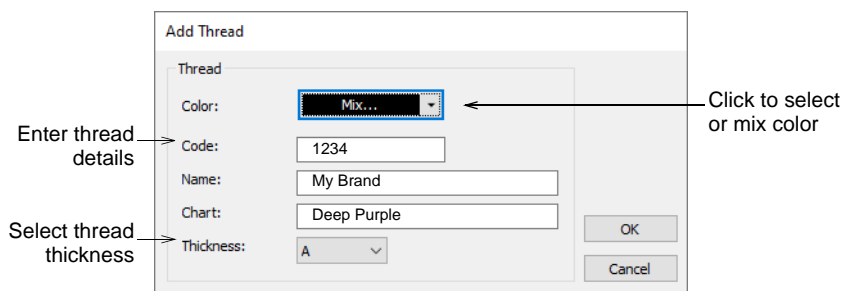
◄ Enter code, name, and chart for the thread color.

Code is the identification number of a thread color in a brand.

◄ Select the appropriate thread thickness. These values are added to or subtracted from values used in the Auto Spacing table for specific stitch lengths.

Thickness	Description	Default
A	Normal embroidery thread (approx. denier 40)	0.01
B	Thicker than normal (approx. denier 30)	0.03
C	Finer than normal (approx. denier 80)	-0.03

Thickness	Description	Default
D	Very fine (approx. denier 100)	-0.06

💡
Tip: Lighter weight threads do not run so well in a production environment as the machines need to be slowed down in order to avoid thread breaks. However, lighter weight threads are good for very small lettering and fine-detail designs.

◀ Click **More Colors** in the droplist to see more colors or to mix your own.

◀ Remove threads as required:

    ◀ Click **Remove** to remove individual threads.

    ◀ Click **Clear All** to remove all threads.

Related topics...

◀ Satin auto-spacing

Definine custom thread chart files

While you can define custom thread charts within EmbroideryStudio, you can also share custom charts in CSV format directly. Files need to be configured as shown...

Standard TCH file format

The data that needs to be included is:

◀ Thread number

◀ Brand name

◀ Thread name

◀ Thread thickness – A, B, C, or D

◀ Thread RGB value.

A CSV file formatted in this way can be read directly by the software. However, you need to change the file extension to 'TCH' and save it to the correct custom asset location on your hard drive.

Save default thread charts to template

You can save your default thread chart by selecting it in the **Colorway Editor** and saving to the NORMAL template. Alternatively you can save a dedicated template for the particular thread chart and stitch settings you are using.

Overwrite existing template or create new one
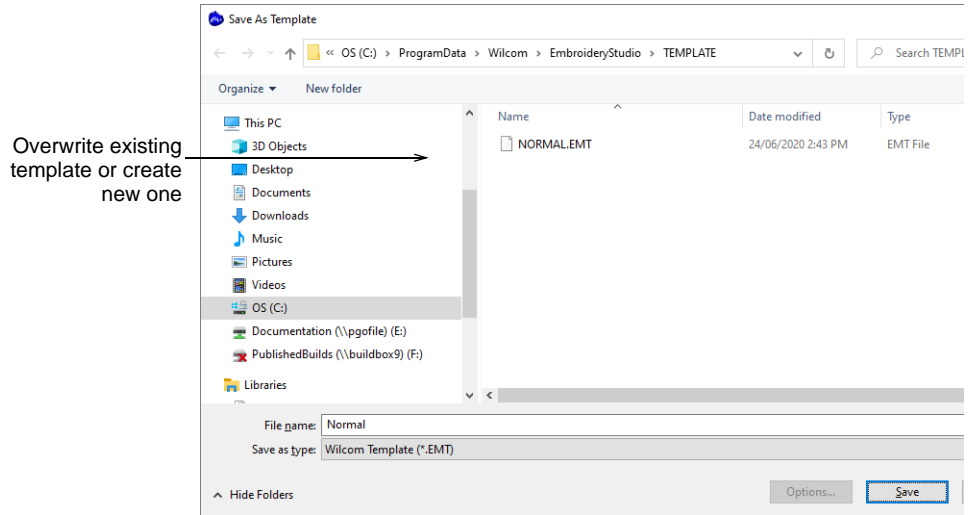
PART II
HARDWARE & SOFTWARE SETUP

In order to work with your particular equipment, EmbroideryStudio needs to be properly configured. You may also want to configure the software to your particular design requirements.

System settings

This section describes how to change the TrueView™ display, grid spacing and positioning, and Design Window scrolling options. It also describes how to save designs automatically as you work. There is also information about how to adjust the pointer position display, paste position options, and other general options. See System Settings for details.

Hardware settings

This section describes how to set up digitizing tablets and embroidery machines. It also describes how to calibrate the monitor. See Hardware Settings for details.

Machine formats

This section describes how to select a machine format for a design and output it using other formats. It also explains how to customize machine formats to meet your machine's specific requirements. See Machine Formats for details.

Chapter 6
System Settings

EmbroideryStudio 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.
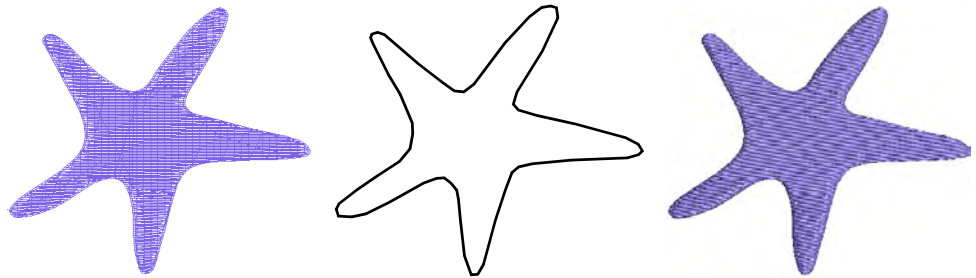
General options

The **General** tab of the **Options** dialog provides a miscellaneous group of system settings including automatic save and backup, pointer position display, color handling for inserted files, paste position options, toolbar display, and others.
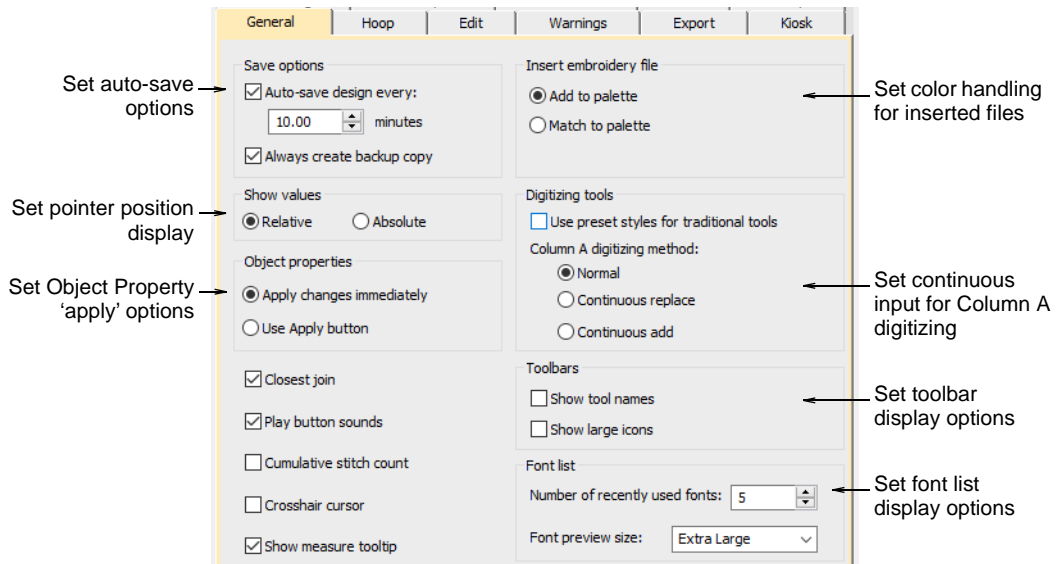
Set auto-save options

Set pointer position display

Set Object Property 'apply' options

Set color handling for inserted files

Set continuous input for Column A digitizing

Set toolbar display options

Set font list display options

Automatic save & backup options

Save your work automatically at regular intervals using **Auto Save**. This protects you in the event of hardware or software failure.

Select to auto-save designs ———→ Save options
☑ Auto-save design every:
   10.00 ↕ minutes
Select to auto-backup designs ———→ ☑ Always create backup copy
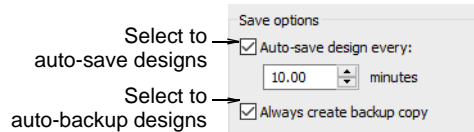
Auto save

The **Auto Save** function creates a temporary file with the extension EMA in the RECOVER folder. This is automatically restored when EmbroideryStudio is restarted after a computer crash. You can access these files manually by browsing to the RECOVER folder and renaming files from EMA to EMB.

Backup copy

If the **Backup Copy** checkbox is ticked, a backup copy of the current design file is automatically created in its **previously** saved form. This protects you from overwriting the design with unintended changes – e.g. using the **Save** option instead of **Save As** to save a modified design. The backup copy is saved in the BACKUP folder with the original file name and native file format. Access backup files manually by browsing to the BACKUP folder.

⚠

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. Backup files should be kept in a separate physical location, preferably off-site. Access the backup folder via the **File > Open Backup Design** command.

Related topics...

◄ Custom asset locations

Pointer position display

When you move the mouse or digitizer puck, the pointer position is displayed in the **Status** bar at the bottom of the screen. Use the **Options**

> General tab to display the pointer position as a relative or absolute value.

Select relative or absolute pointer position →

Show values
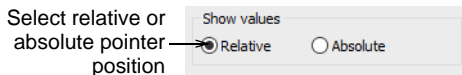
⊙ Relative ○ Absolute

Select a **Relative** or **Absolute** pointer setting:

Option	Function
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.

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 two points, while **A** is the angle of that line, relative to the horizontal. You can measure onscreen distances using the values in the **Status Bar**. You can also use the **Measure** function (M).

Length = 33.47 mm

• 2

Y = 17.38 mm

X = 28.61 mm

1 •

Length = 33.47 mm

• 1

Y = -17.38 mm

X = -28.61 mm

2 •

X: horizontal   Y: vertical   L: length   A: angle

Status bar   X= 4.82 Y= -6.42 L= 8.03 A= -53.07
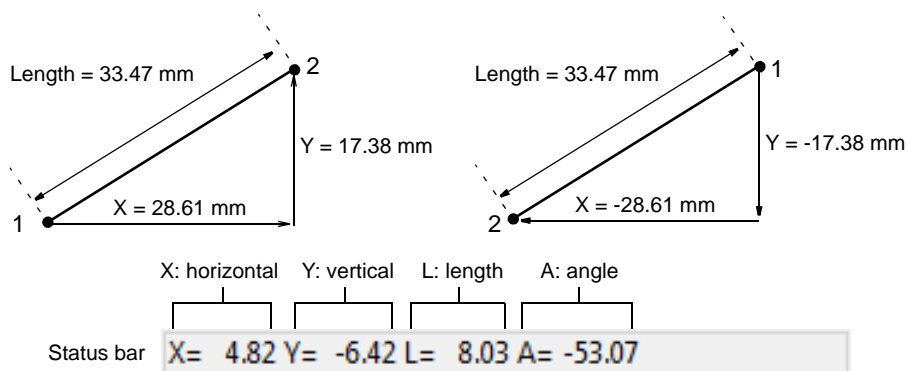
A negative **X** value indicates that the second point was placed to the left of the first. A negative **Y** value displays when the second point is below the first. Negative angles indicate angles of more than 180° – e.g. an angle of -60° is equal to 300°.

• 2

A=30°

1 •

90°

135°   45°

180° ———— 0°

-135°   -45°

-90°
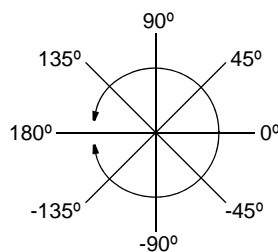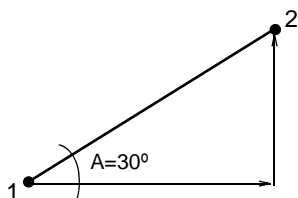
Thread color handling for inserted files

> Use Standard > Options to access application options for design view, grid & guides, and other settings.

Whenever you copy and paste or insert an embroidery design or element from one file to another, the respective color palettes are merged. You have the option of **adding** the source palette to the target palette or of **matching** the source palette to the nearest colors in the target palette.

Colors added to palette

Colors matched to palette
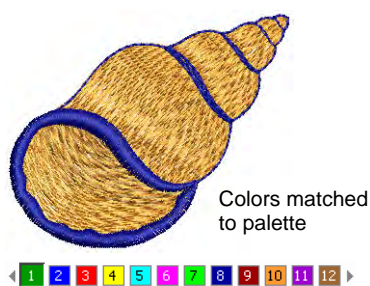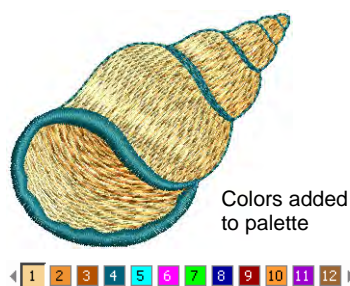
Click the **Options** icon or select **Setup > Options** and select the **General** tab.
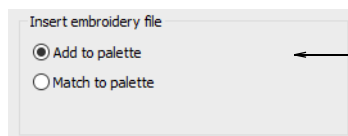
Select inserted embroidery file option

Select an inserted embroidery file option:

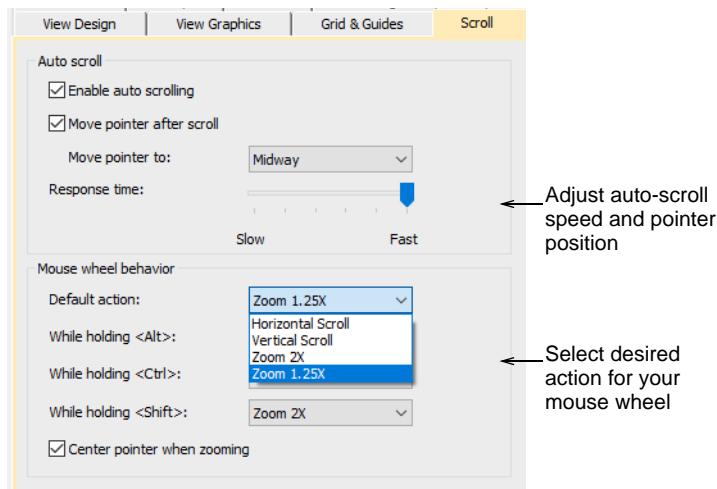| Option	Function
Add to palette	Unique colors in the design are added to the current color palette.
Match to palette	When you insert a design, colors are matched to the current color palette. The system finds the nearest match based first on RGB values, and then on Brand and Code.

Paste & duplicate options

> Use Standard > Options to access application options for design view, grid & guides, and other settings.

You can control where an object is positioned when pasted. If you are pasting within the same design, the default is the same position from which the object was copied or cut. Other options are available.

Pasted / duplicated objects offset from original
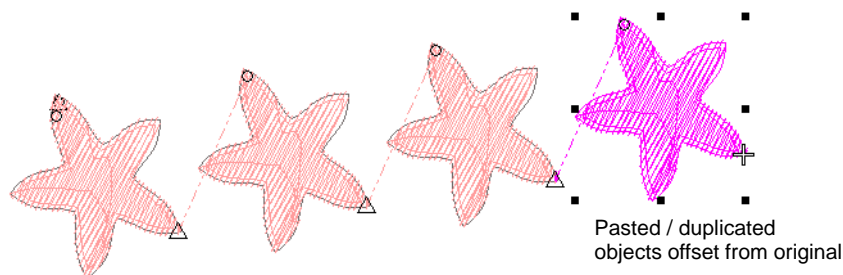
Click the **Options** icon or select **Setup > Options** and select the **Edit** tab. Set **Paste** and **Duplicate with offset** settings independently of each other as preferred.

Select paste position setting

Select duplicate position setting
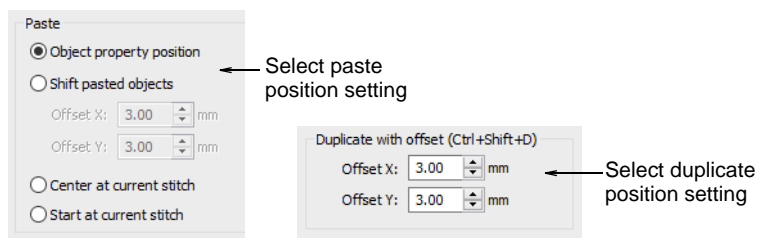
Paste settings include:

Option	Function
Object property position	Objects are pasted according to the coordinates in the Object Properties docker.
Shift pasted objects	Objects are pasted slightly offset from their original position. Adjust offset distance as preferred.
Center at current stitch	Objects are centered at the current needle position marker.
Start at current stitch	Objects are positioned after the current needle position marker.

Duplicate position settings apply only to normal **Ctrl+Shift+D** operations. Cloning by right-click and drag will override these settings temporarily. **Ctrl+D** operations will assume the 'quick clone' value.

Note: Paste and duplicate options control the physical position of the object in the design, not its position in the stitching sequence.

Digitizing presets

> Use Standard > Options to access application options for digitizing tools.

The **Continuous Input** setting provides a simple and efficient way of digitizing a single Column A object comprised of separately stitched sections.
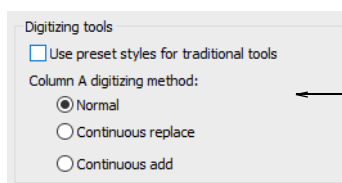
Set continuous input for Column A digitizing

Five preset styles are included for use with the 'Use preset styles for traditional tools' option. These apply to the Column A, Column B, Column C, Complex Fill, and Complex Turning tools. When the option is checked, default stitch type and underlay conform to the associated style. If you change stitch type or underlay, this applies throughout the current session. When the checkbox is unticked, current settings are used.

Traditional tool	Cover	Underlay 1	Underlay 2
Column A/B/C	Satin	Edge run	Zigzag
Complex/Turning fill	Tatami	Edge run	Tatami

Toolbar display options

> Use Standard > Options to access application options for design view, grid & guides, and other settings.

You can adjust toolbar appearance via the **Options > General** tab. Choose between large or small button icons, with or without short names.
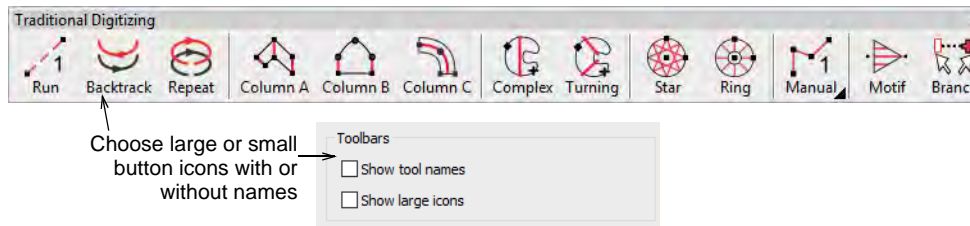
Choose large or small button icons with or without names

Toolbars
☐ Show tool names
☐ Show large icons

Font list display options

Use Standard > Options to access application options for design view, grid & guides, and other settings.

You can set the size of your font preview via the **Options > General** tab. You can also adjust the number of recently used fonts.

Font list
Number of recently used fonts: 5

Set number of recent fonts shown in font list

Font preview size: Extra Large
Small
Medium
Large
Extra Large
Huge

Set font preview size
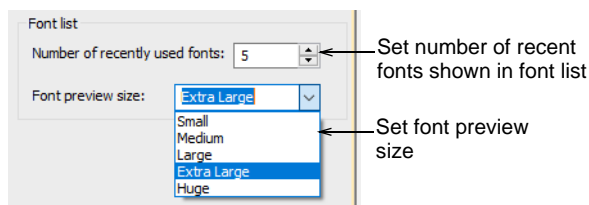
Related topics...

◀ Select embroidery fonts

Object property apply options

Use Standard > Options to access application options for design view, grid & guides, and other settings.

The most important dialog in EmbroideryStudio is the **Object Properties** docker. By default, modified object properties to take effect immediately. Alternatively, set the default to apply changes by means of an **Apply** button at the bottom of the docker. Click the **Options** icon or select **Setup > Options** and select the **General** tab.

Select object properties default

Object properties
◉ Apply changes immediately
○ Use Apply button
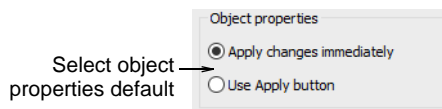
Other general options

Use Standard > Options to access application options for design view, grid & guides, and other settings.

Miscellaneous other system settings available via the **Options > General** tab:

Select other general options → Closest join
Play button sounds
Cumulative stitch count
Crosshair cursor
Show measure tooltip
Show Home Screen on startup
Check for updates on startup
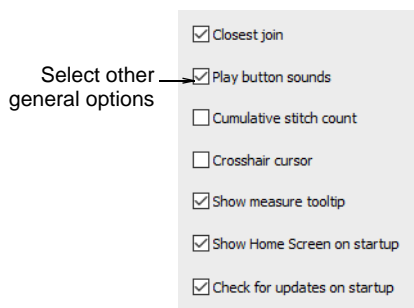
These options include:

Option	Function
Closest join	The Closest Join method (the default) automatically calculates closest join between objects while digitizing. When deactivated, entry/exit points of all newly digitized objects are set manually. See Embroidery digitizing for details.
Play button sounds	Enables beeping sounds made by the software in response to mouse clicks and pressing Enter or Spacebar keys while digitizing.
Cumulative stitch count	Displays stitch count as a cumulative total in the Stop Sequence tab of the Information docker. See also View design details in EmbroideryStudio.
Crosshair cursor	Changes the default cursor pointer to crosshairs for more precise positioning. It is best used together with the grid.
Show measure tooltip	Shows length and angle in a tooltip when measuring distances on screen. See Measure distances on screen for details.
Show Home Screen on startup	When activated, the Home Screen always displays when the software starts up. See Home screen for details.

Option	Function
Check for updates	When activated, the software will check at every startup whether updates are available. It will also check whenever you access the My Wilcom page from the Home Screen. When deactivated, you will need to run the Help > Check for Updates command.

💡
Tip: Use the measure tooltip in combination with the crosshair cursor on for more accurate measurements.

View options

You can preset viewing options for embroidery design elements as well as graphics.

Design viewing options

> Use Standard > Options to access application options for design view, grid & guides, and other settings.

EmbroideryStudio lets you preset options to show or hide design elements such as stitches, outlines, and background fabric. You can also change TrueView™ settings for different viewing effects.

To set design viewing options

◀ Click the **Options** icon or select **Setup > Options** and select the **View Design** tab.

Select design elements to display
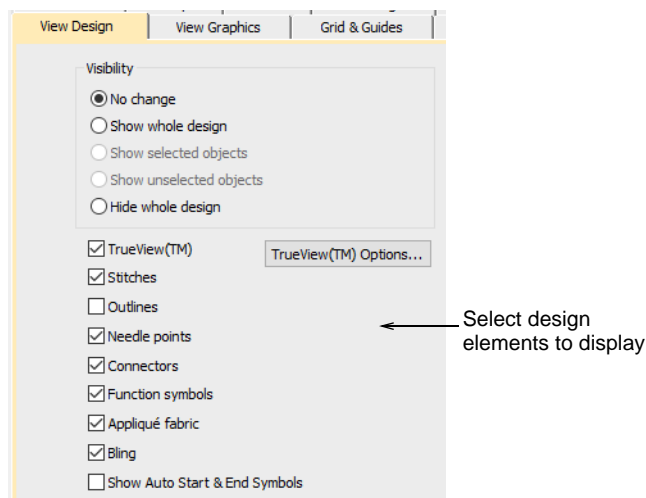
◀ Select viewing options to display. These control the same toggles as the **View** toolbar. The difference is that the selections you make here affect default system settings.

◀ Click **TrueView Options** to adjust TrueView™ settings.

TrueView(TM) Options

Thread thickness: Thick   ⟵————Select thread thickness

Light source: Corner   ⟵————Select light source

[OK]   [Cancel]
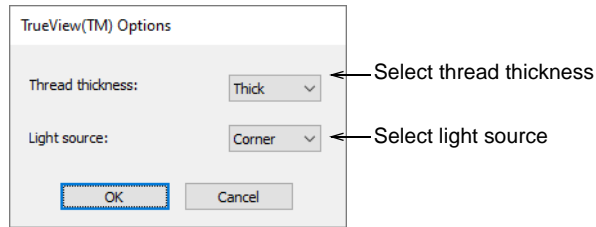
◀ Adjust thread thickness and light source for preferred TrueView™ appearance. These settings also affect the appearance of printed TrueView™ 'virtual decoration'.
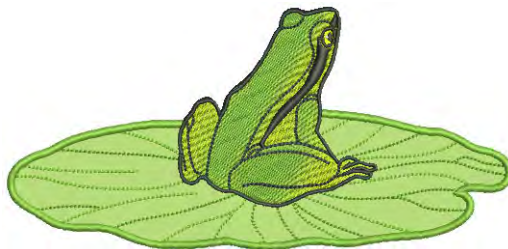
TrueView™ – thick thread, light above   TrueView™ – thin thread, corner light
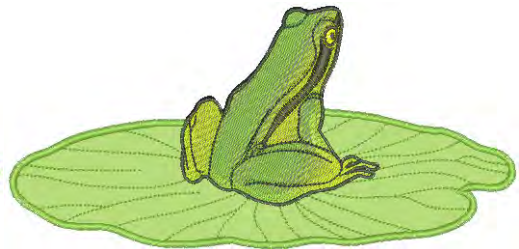
Note: This **Thread Thickness** setting only affects the TrueView™ display, not actual thread thickness values.

Related topics...

◀ View embroidery components
◀ Viewing design components
◀ Outputting designs as images

Image viewing options

🖼	Use View > Show Bitmaps to show and hide bitmap images. Right-click to set image display options.
🔺	Use View > Show Vectors to show and hide vector graphics. Right-click to set image display options.
❀	Use View > Dim Artwork to dim graphic backdrops to show stitches more clearly for digitizing.

You can dim bitmap image backdrops to make it easier to view stitches. You can also show colored vector graphics as outlines only.

To set image viewing options

◀ Right-click either the **Show Bitmap** or **Show Vectors** icon. The **Options > View Graphics** dialog opens.
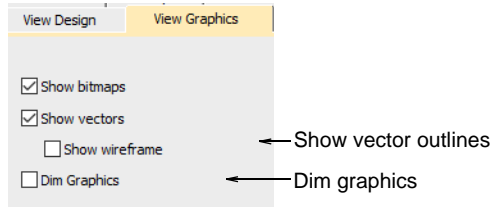
◀ To dim a bitmap image backdrop, select the **Dim Graphics** checkbox.

Original bitmap image

Dimmed bitmap image

◀ To view a colored vector graphic as outlines, select the **Show Wireframe** checkbox.

Original vector graphic

Vector outlines only
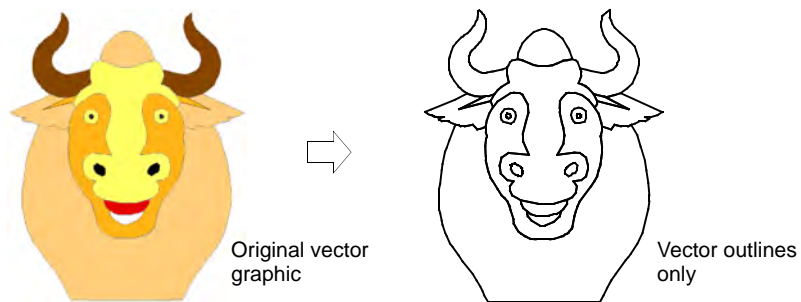
Show auto-start & end points

The stitch cursor always appears at the end of the last digitized object. On the **View Design** tab, auto-start & end symbols – a green circle and a red cross – can also be activated.
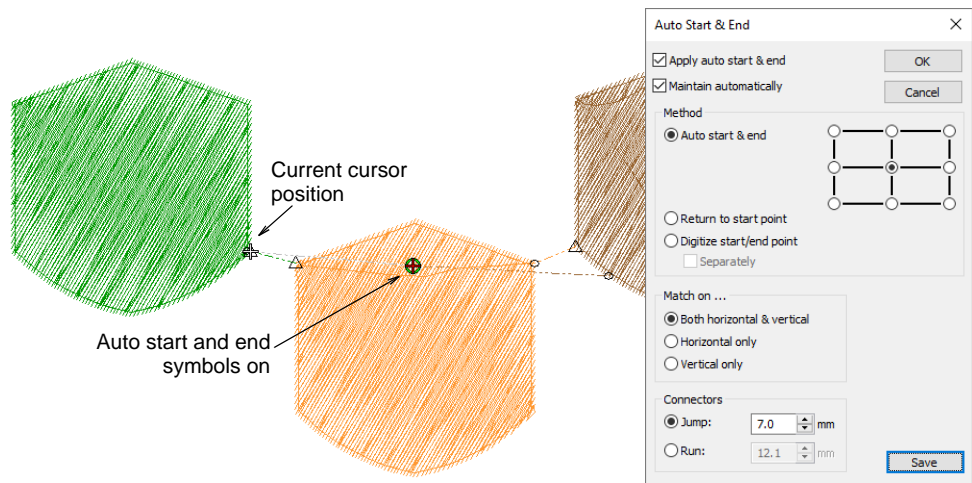
Current cursor position

Auto start and end symbols on

Grid display options

EmbroideryStudio provides a set of grid lines to help accurately align or size embroidery objects. The **Show Rulers and Guides** feature lets you accurately place and align objects. When a design is saved, the ruler zero point and guide positions are saved with it.

Grid display options

⊞	Click View > Show Grid to show or hide the grid. Right-click for settings.
⊞	Click View > Show Rulers and Guides to show or hide rulers and guides. Right-click for settings.
⊡	Drag the Ruler Zero Point to reset a new ruler zero point.

Adjust grid spacing depending on the size of design you are working with. Use the **Snap to Grid** feature to align objects with the nearest grid lines. Checkboxes control the same toggles as the **View** toolbar. The difference is that the selections you make here affect default system settings next time you run EmbroideryStudio.

To adjust grid display

◀ Right-click **Show Grid**. The **Options > Grid & Guides** dialog opens.

Enter grid spacings →

Set zero point of your design →

Click to save for current template ←
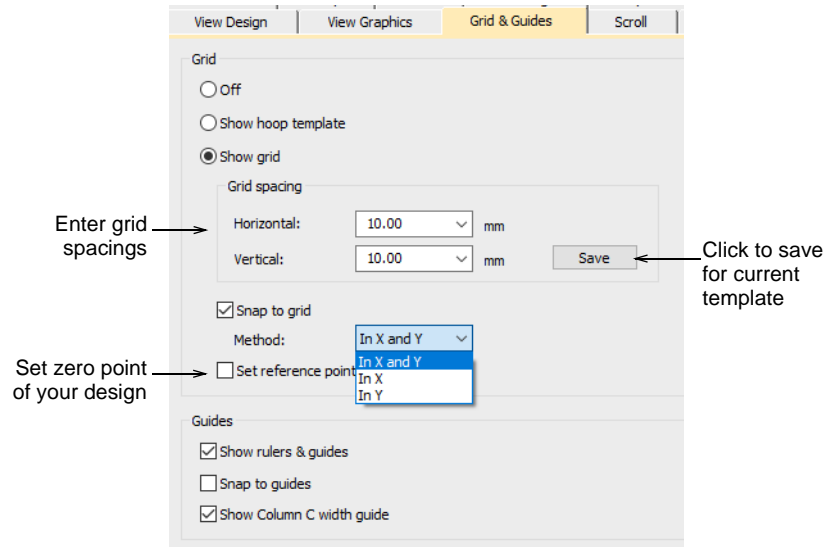
◀ Enter **Grid Spacing** values for horizontal and vertical grid lines. To save grid spacing to the current template, click **Save**.
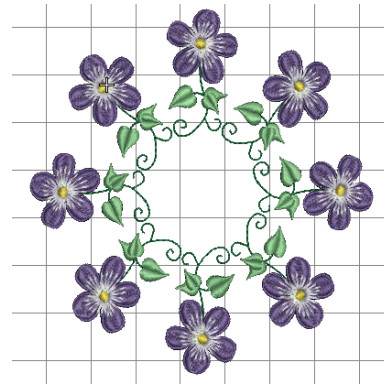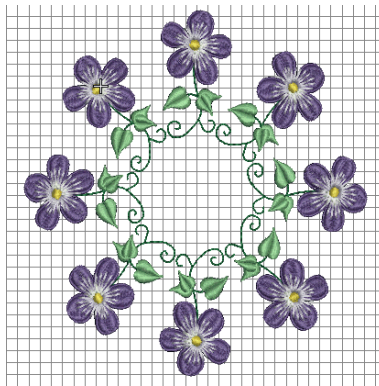
◀ Select the **Snap to Grid** checkbox as required. Reference points, control points or leading edges of objects snap to grid during digitizing, sizing, reshaping, or positioning operations.
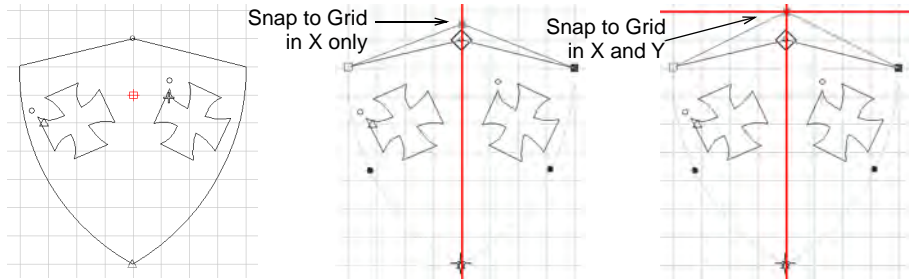
◀ Choose a snap method. You can choose whether to activate in X or Y axes or both.

◀ Select the **Set Reference Point** checkbox to set the zero point of the rule. For example, you can set the grid reference point to the design center. This is easier and faster than moving the whole design. When you close the dialog, you are prompted to mark the zero point of your design.

💡
Tip: To temporarily disable **Snap to Grid** as you digitize, hold down **Alt**.

Related topics...

◀ Display grids, rulers & guides

Ruler & guide display options

> Right-click View > Show Rulers & Guides to set the Snap to Grid and Snap to Guides options.

Rulers and guides are activated by the **Show Rulers & Guides** toggle. The unit of measurement – mm or inches – defaults to the regional settings in the MS Windows® Control Panel. The ruler scale adjusts with

the current zoom setting. Guides can be used separately or in addition to grid lines for detailed work.

Guides can be set separately or in addition to grid lines

Column C width guide activated
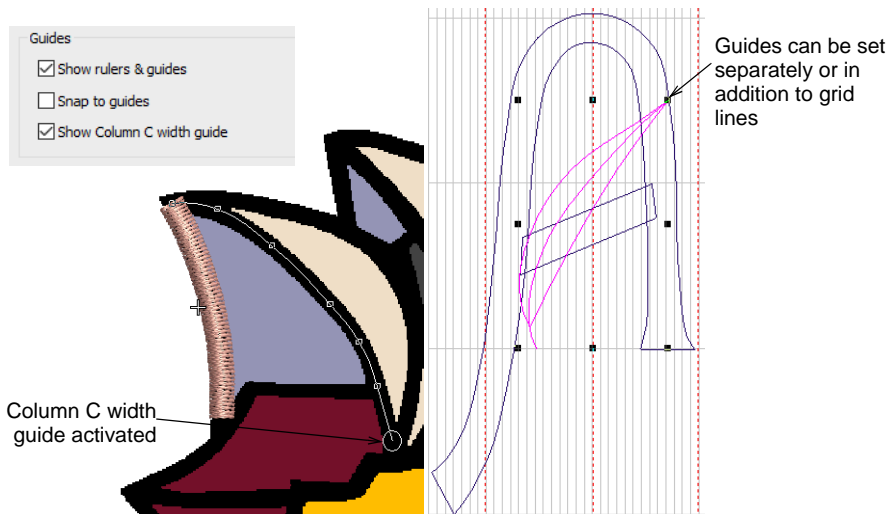
Snap to Guides can be set for guides independently of grid lines. Reference points, control points or leading edges of objects snap to guides during digitizing, sizing, reshaping, or positioning operations. To temporarily disable **Snap to Guides** as you digitize, hold down **Alt**.

The **Show Column C Width Guide** option activates a special cursor with the **Column C** tool. A circle appears at the cursor position corresponding to the width setting in the **Object Properties** docker. This is useful when digitizing a border based on a background image. When the offset is biased, two circles are shown, one for each side.

Note: To gain the benefit of the width guide, you must accept the current width setting by pressing **Enter**, rather than digitizing reference points after finishing the centerline.

Related topics...

◀ Display grids, rulers & guides
◀ Set measurement units
◀ Digitizing regular columns

Scroll options

Use Standard > Options to access application options for design view, grid & guides, and other settings.

The **Options > Scroll** tab lets you to control mouse pointer and mouse wheel behavior. Use **Auto Scroll** to scroll automatically while digitizing. This can be more convenient than using panning or scroll bars, especially when working on large designs. The dialog also lets you set four different mouse wheel behaviors.

To set scroll options

◀ Click the **Options** icon or select **Setup > Options** and select the **Scroll** tab.

Adjust auto-scroll speed and pointer position

Select desired action for your mouse wheel

◀ Adjust **Auto Scroll** options as needed. The effect only becomes apparent when you start to digitize. The design window automatically follows the current cursor position.

Option	Function
Auto scroll	Tick to enable automatic scrolling while digitizing.
Move pointer after scroll	Set pointer position after each scrolling action:
	Center: Use this setting for large movements.
	Midway: Use this setting for smaller movements – e.g. when zooming into a small area of the design.
	Corner: Use this setting for slow scrolling.
Response time	Adjust scrolling speed.

💡
Tip: Hold down the **Shift** key to temporarily deactivate **Auto Scroll**. Use the **Ctrl+Shift+A** key combination to toggle **Auto Scroll** on/off.

◀ Tick **Center pointer when zooming** to ensure that the pointer stays centered on screen at all times.

Reshape options

Stitch generation during reshaping operations can slow down your system. **Reshape** options let you choose whether stitches are generated immediately or only after **Enter** is pressed. This tab also controls node dragging behavior in **Reshape** operations as well as re-sequencing behavior in cutting operations with the **Knife** tool.

To set automatic stitch generation options

◀ Right-click the **Reshape Object** icon. The **Options > Reshape** dialog opens.

Select object types for immediate stitch generation →

Generate stitches immediately for...
☑ Lettering
☑ Motif runs
☑ Other objects
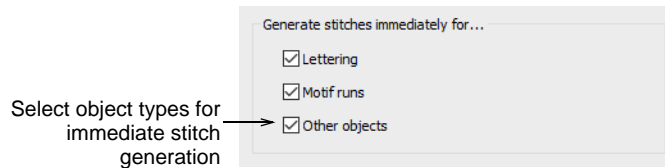
◀ Select options for generating stitches immediately after reshaping operations – i.e. for lettering objects, motif runs, and/or other objects. If left unchecked, any reshaping changes made are not updated until **Enter** is pressed.

◀ Select your preferred left mouse drag node behavior – **Traditional** or **Bézier**.
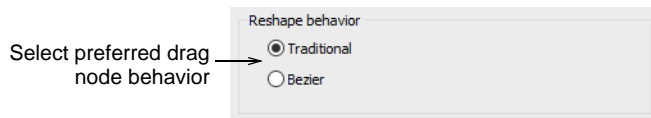
Select preferred drag node behavior →

Reshape behavior
◉ Traditional
○ Bezier

Generally, 'bézier' node dragging preserves the shape of the curve more closely.

Original curve | Bézier curve | Traditional curve
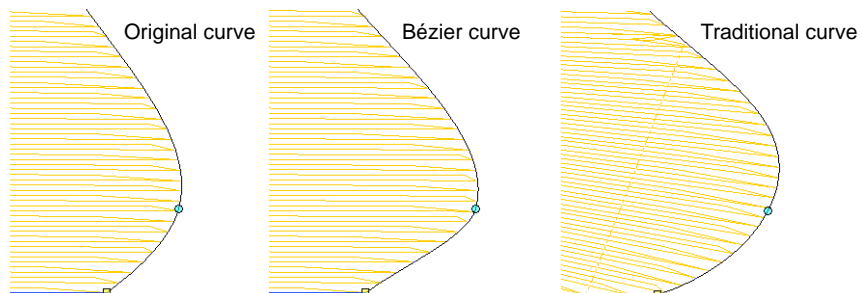
◀ Select your preferred object-cutting reordering behavior.

Select preferred object cutting reordering behavior

How Knife manages fragments
- ⊙ Reorders, creates travels
- ○ Reorders, creates no travels
- ○ Creates branched object
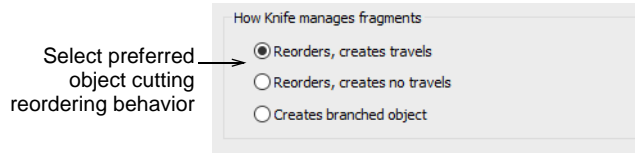
EmbroideryStudio orders object fragments resulting from cutting operations with the **Knife** tool into a closest-join sequence that preserves the source object's entry and exit points. There are three possible ways of reordering fragment objects:

◀ Reorder and create travel runs between objects separated by gap.
◀ Reorder, trimming between separated objects where necessary, but creating no travel runs.
◀ Combine fragments into a single branched object corresponding to the source object.

The option you choose will affect all **Knife** tool cutting operations.

💡
Tip: The **Break Apart** tool allows you to split branched objects, including objects resulting from cutting operations, into their component parts.

Related topics…
◀ Reshape objects with Bézier controls
◀ Cut shapes manually
◀ Break apart composite objects

Warning options

Use Standard > Options to access application options for design view, grid & guides, and other settings.

Some warning messages may become distracting. You may want to switch such warnings off but still be able to re-activate them at a later

time. The **Options** dialog includes a **Warnings** tab which allows you to re- or de-activate specific warning messages as desired.

Select warning options to include / exclude
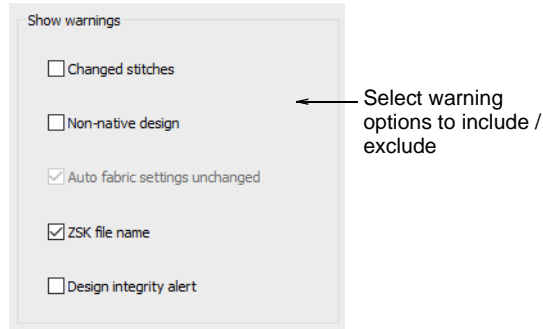
Warning messages include:

◀ **Changed Stitches**: This appears when sending designs to **Stitch Manager**, depending on whether stitches need to be regenerated to comply with a changed machine format.
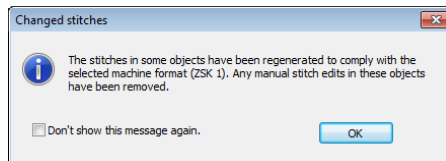
◀ **Non-Native Design**: This appears when opening 'machine files' of unknown origin. Machine files cannot be scaled by more than approximately ±5% since their stitch count does not change. By contrast, design or 'outline' files such as native EMB, can be scaled by any factor as stitches are dynamically regenerated.
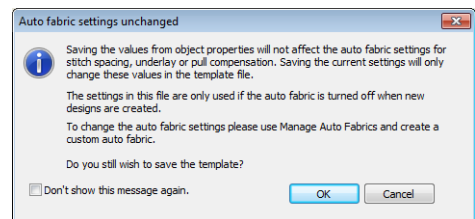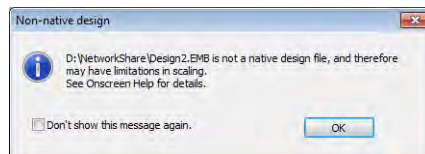
◀ **Fabric Settings Unchanged**: This appears if you have chosen to work with an auto-fabric and wish to save changes made to object properties. Any changes are saved to the template, not to the fabric itself. Such changes are overridden by current fabric settings.

◀ **ZSK File Name**: This appears if you try to save a design to ZSK TC format with an alphanumeric file name. ZSK machines require 8-digit filenames.
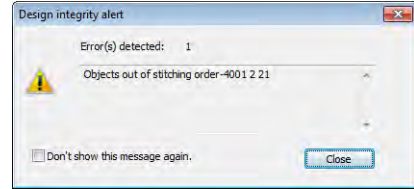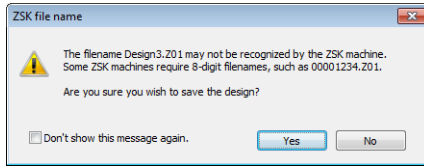
◀ **Design Integrity Alert**: This appears if the software detects a problem with the design file. If you see an alert, you should use **Undo** to return the design to an error-free state. Save the design. Then save a separate instance of the design up to the point the alert is generated. Send both designs to Wilcom Support for analysis.

Note: Turning off this message also turns off design integrity checking.

Related topics...

◀ Send designs to Stitch Manager
◀ Working with fabrics
◀ Embroidery file formats

Chapter 7
Hardware Settings

You will need to connect peripheral devices for use with
EmbroideryStudio. These may include digitizing tablets, plotters,
printers, appliqué cutters, scanners and embroidery machines. Different
devices are set up in different ways – some in MS Windows®, via the
Control Panel, others within EmbroideryStudio itself.

EmbroideryStudio provides alternate means for sending designs directly
to machine. Depending on your hardware, you can send designs directly
using **Stitch Manager**, **Machine Manager**, or **Connection Manager**.
Machine Manager is described in a separate **Supplement**.

Tip: 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. See a PC technician about your
requirements.

Calibrating the monitor

You need to calibrate your monitor so that designs at 1:1 scale appear at real size. Do this when you first install EmbroideryStudio or whenever you change your monitor.

To calibrate the monitor

1 Select **Setup > Calibrate Screen**.
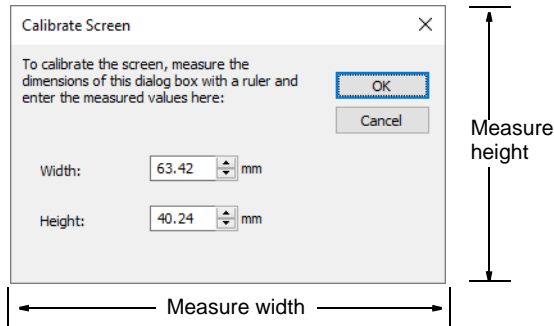
2 Measure the height and width of the dialog box.

3 Enter the measurement in the **Width** and **Height** fields.

4 Click **OK**.

Related topics...

◄ Viewing Designs

Peripheral device connections

Peripheral devices can be connected to your computer via USB port, serial port, parallel port, specialized network card, or Ethernet network. Local area networks (LANs) commonly use Ethernet networks for machine connection.

Note: 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.

USB ports

Most machines now use USB port connection. They appear just like a disk drive on your PC so there is no need to configure communication parameters as for serial or parallel port connections. Some machines such as Janome MB-4 and Barudan are supplied with propriety connection software. EmbroideryStudio supports connection to these

machines via the **Connection Manager** option. See Setting up machines for Connection Manager for details.

Serial ports

PC serial COM ports are male connectors, and can be either 9-pin or 25-pin. They are named COM1, COM2, COM3, etc. You must be able to identify the ports on your computer. (If in doubt, consult a PC technician.) When you set up a device that is connected via a serial port, you need to enter the serial port settings in EmbroideryStudio as part of the setup procedure. See also Enter serial port settings.

The following table provides standard settings for various devices. They are a guide only. Settings for the same device may vary according to manufacturer. Check the documentation supplied with the device before setting up.

Device	Port	Baud	Hand-shaking	Data bits	Stop bits	Parity
Digitizer	COM1	9600	None	8	1	None
Plotter	COM2	9600	XOn/XOff	8	1	None
Tape Punch	COM2	4800	XOn/XOff	8	1	None
Tape Reader	COM2	4800	XOn/XOff	8	1	None
Embroidery Machine	COM2	9600	Hardware	8	1	None

Tip: 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. See a PC technician about your requirements.

Setting up machines for Connection Manager

Newer machines use USB port connection. They appear as a disk drive on the PC. As such there is no need to set up communication parameters as for serial or parallel port connections. Some machines such as Janome MB-4 and Barudan LEM, are supplied with propriety connection software. To integrate with EmbroideryStudio, the relevant software needs to be installed on the same machine. Discuss with your machine supplier for details.

Set up machines

Use Standard > Send to Connection Manager to connect to supported machines via proprietary machine software.

EmbroideryStudio supports various machine models. Some can be connected by cable directly to your PC via USB port. Others require files to be placed in a specific network location or 'watching folder'. Older-style machines do not support direct connection but they do read ATA PC cards and/or USB memory sticks. **Connection Manager** provides a method of connection to machines that appear as removable media or make use of third-party connection software. Once set up in EmbroideryStudio, a single click is sufficient to send the design to machine.

To set up a machine

1 Select **Setup > Connection Manager Setup**. Alternatively, click the **Send to Connection Manager** icon on the **Standard** toolbar. If no connections currently exist, a message appears.
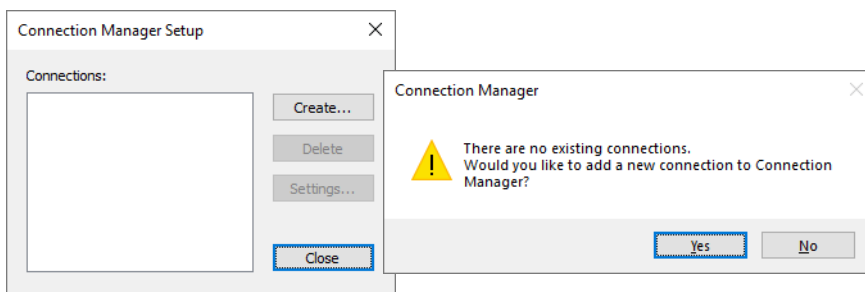
2 Click **Yes** or **Create** to start setting up your connections. The **Connection Settings** dialog opens.

Select connection type

Select file type required by machine

Set 'watching folder'

Enter unique connection name
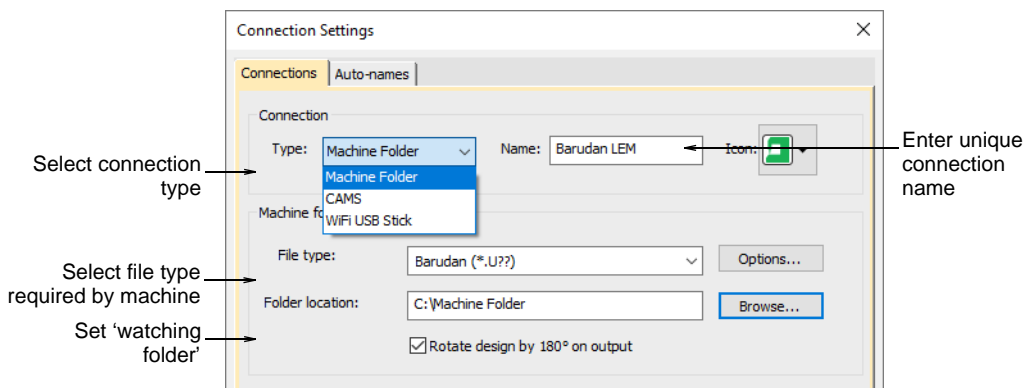
3 Select the connection type. Choose from:
   ◀ Machine folder – e.g. Barudan DFS, HappyLink/LAN, Brother PR series, etc
   ◀ Janome MB-4
   ◀ CAMS (rhinestone placement machine).

4 Enter a unique name for the connection. This identifies the quick-access button on **Standard** toolbar and appears in the tooltip.

5 Choose an icon to identify the specific connection.

Select an icon to identify connection

Specify file format options

Tick to automatically rotate designs on output
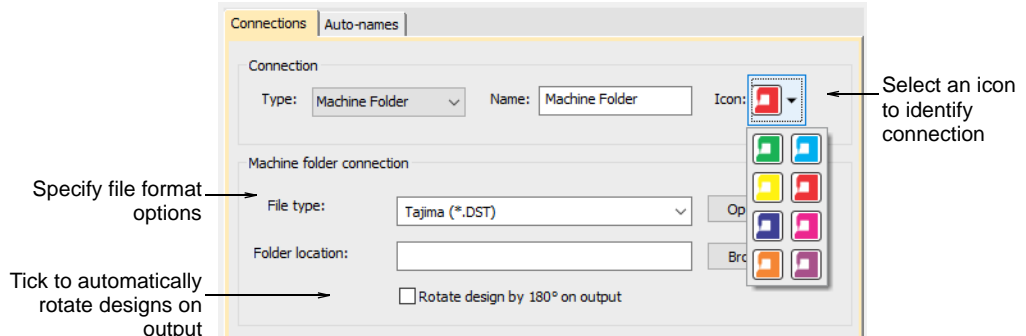
6 Select the file type required by the machine. Depending on the chosen file type, the **Options** button may become available. This allows you to set up specific file format options from within **Connection Manager** without having to go to the **Save As** dialog.

7 Enter or browse to a folder location on the network or PC which has been set up for the specific machine.

For example, if you choose to connect to a Barudan LEM design server, this allows you to set up a 'watching folder' which the server monitors for design files (U?? format). It then systematically converts to PRJ for machine communication. When you output a design, **Connection Manager** saves it to this folder in the specified format.

Locate or create machine-specific folder
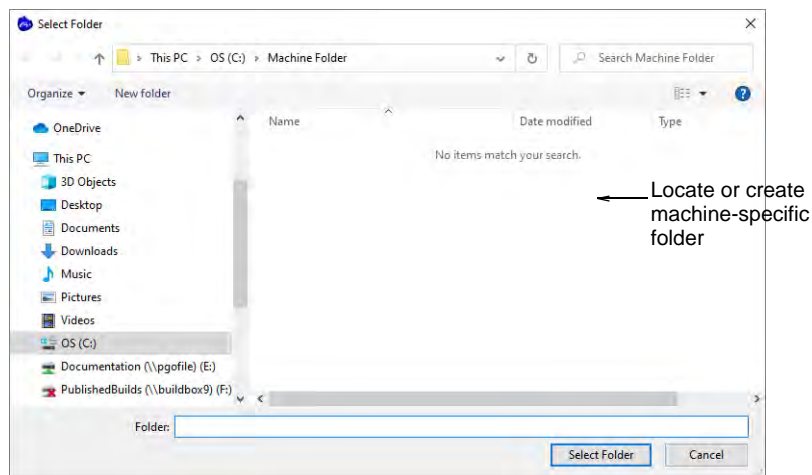
8 Optionally, tick the checkbox to rotate designs by 180° on output for cap applications. If ticked, all designs sent to that connection will be automatically rotated.

Tick for cap applications
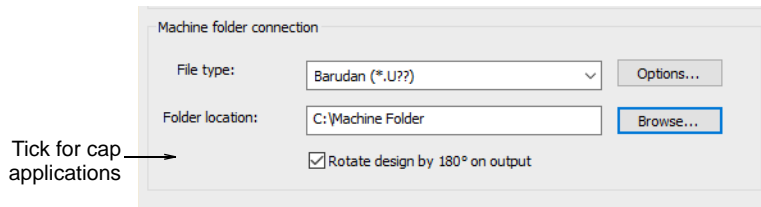
9 Click **OK** when complete. The new connection appears on the **Standard** toolbar.

Quick-access button for machine connection

Send to Machine Folder / Settings

Send the current design directly to 'Machine Folder'. Right click to change the settings for this connection. Right-click for settings.

🔘 **Press <F1> for more help**

10 Repeat steps to set up more machine connections. As more machines are created, more quick-access buttons are added to the **Standard** toolbar. Each can be assigned its own identifying color.

Each connection is assigned a unique color
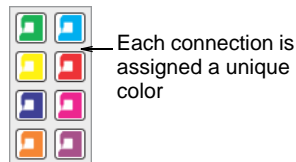
All machines connections you define are listed in the **Connection Manager Setup** dialog. From here they can be updated or removed from the system.
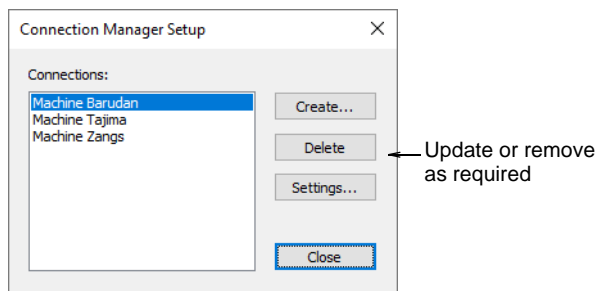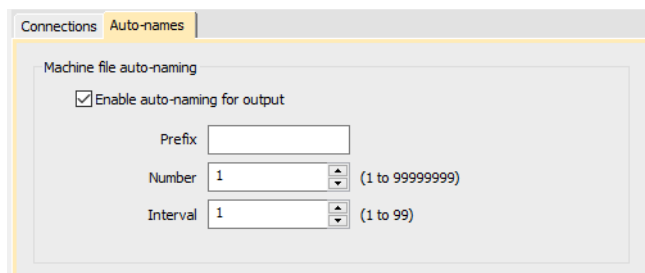
Update or remove as required

Automatic machine file naming

Connection Manager provides an option for automatic machine file naming. When enabled, the specified filename format is used for all machine connections established in **Connection Manager**.

Where...

Setting	Details
Filename format	Filenames take the format <prefix><number>.<extension>
Prefix	ASCII only, no Unicode characters. No Windows reserved characters. Length limit 8 characters.
Number	Numeric only. This sets the starting number. Range 1–99,999,999.
Interval	Interval is numeric only and sets the number to increment each time a file is generated – e.g. '5', '10', etc. Range is 1–99.

Note: When enabled, Kiosk also uses this auto-name specification for all machine files. If not enabled, it uses the kiosk machine file definition.

Setting up machines for Stitch Manager

Before sending designs via **Stitch Manager**, you must first configure the machine in EmbroideryStudio. Add machines, change existing machine settings, or delete machines no longer in use. Newer machines use USB

connection. EmbroideryStudio supports connection to these machines via the **Connection Manager** option.

Set up machines

> ⚙ Use Legacy Features > Hardware Setup to set up a machine connection with name, port, and protocol.

To set up a machine you need to define a name, the port it is attached to, and the protocol it uses. For every machine, you need to select the machine format it supports.

To set up machines

1 Connect the embroidery machine using the instructions that came with the machine. Carefully note the port settings.

2 Run EmbroideryStudio. The port settings must now be entered in EmbroideryStudio **Hardware Setup**.

3 Select **Legacy Features > Hardware Setup**.

Select Direct Machine Connection

Select machine connection to delete

Click to add machine

Click to access machine settings
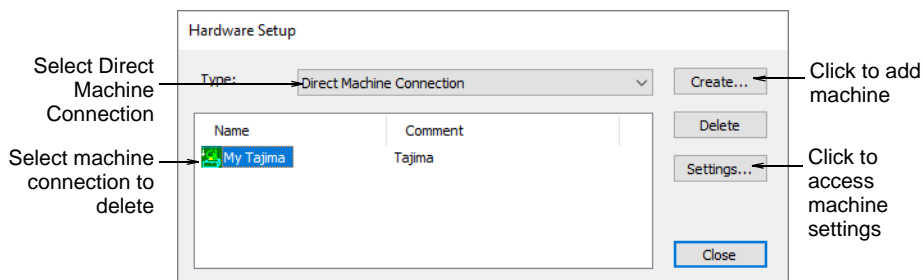
4 From the **Type** list, select **Direct Machine Connection**.

‹ To add a new machine, click **Create**.

‹ To change the settings of an existing machine, select it, then click **Settings**.

The **Embroidery Machine Connection** dialog opens.

Enter machine name

Select COM port and protocol

Click to access serial port settings
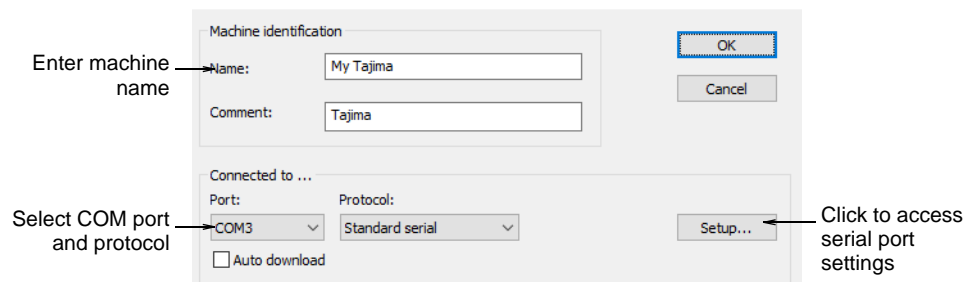
5 Use the **Name** and **Comment** fields to uniquely identify the machine connection.

6 From the **Port** list, select the serial (COM) or parallel (LPT) port to which the machine is connected.

7 From the **Protocol** list, select the protocol for the connection between the computer and embroidery machine.

See the documentation supplied with the embroidery machine to determine the appropriate connection.

8 Click **Setup** to access the serial port settings.

These settings **must** be the same as those set on the embroidery machine, or EmbroideryStudio will not be able to communicate with it.

9 Select **Auto Download** to directly download designs to the assigned machine. Deselect it to confirm before sending.

10 In the **Machine Type** panel, select the compatible machine formats.

To do this, select compatible machine types in the **Available** list, and click > to move them to the **For this machine** list.

Select machine type

Machine types supported by your machine

Click arrow buttons to swap machine types between fields
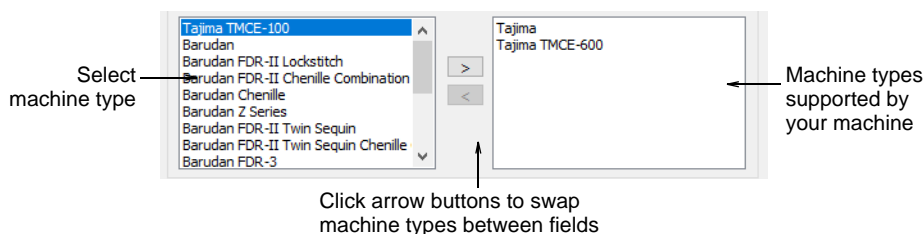
Note: Machine format values can be added or changed if required.

11 Click **OK** to return to the **Hardware Setup** dialog.

12 Click **Close**. All machine connections you define are listed in the **Hardware Setup** dialog. From here they can be updated or removed from the system.

Select Direct Machine Connection

Select machine to update

Update or remove as required
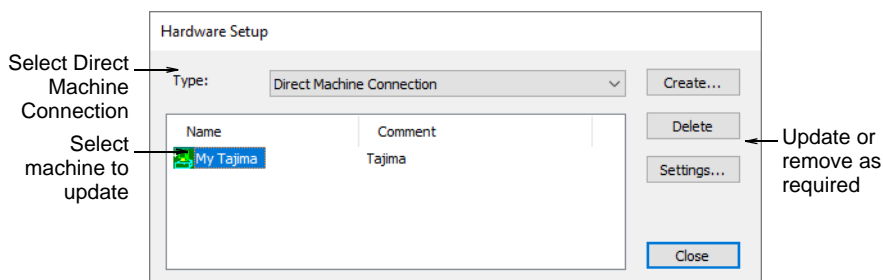
Note: Once machine setup is complete, you can stitch out a design via **Stitch Manager without** changing the original design format.

Enter serial port settings

> Use Legacy Features > Hardware Setup to set up a machine connection with name, port, and protocol.

PC serial COM ports are male connectors, and can be either 9-pin or 25-pin. They are named COM1, COM2, COM3, etc. When you set up a digitizer or machine that is connected via a serial port, you need to enter the serial port settings in EmbroideryStudio.

Note: You must be able to identify the ports on your computer. If in doubt, consult a PC technician.

To enter serial port settings

1 Select **Legacy Features > Hardware Setup**.
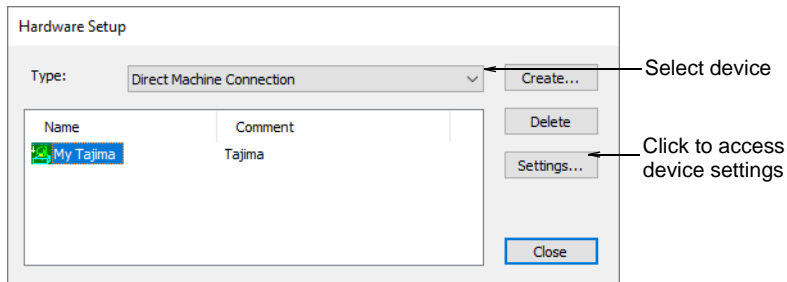
2 Select a device from the **Type** list and select an item in the **Name** column, then click **Settings**. The **<Device> Setup** dialog opens.
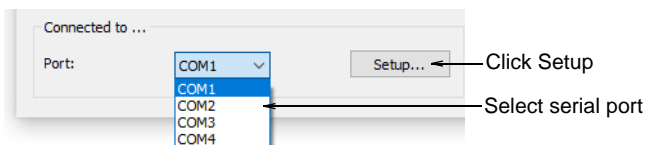
3 In the **Connected To** panel, select a serial port from the **Port** list.

4 Click **Setup**. The **Serial Port Setup** dialog opens.

Enter port settings for embroidery machine or selected device
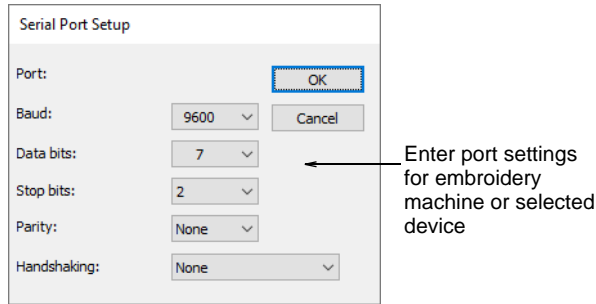
5 Enter the **Baud** rate, **Data Bits**, **Stop Bits** and **Parity** and **Handshaking** settings for the device.

6 Click **OK**.

Note: The port settings **must** match those of the embroidery machine or selected device. The type of handshaking **must** match the type of cable you are using. Check the communications setup section of the documentation that came with the device.

Related topics...

◀ Connecting digitizing tablets
◀ Serial ports

Doing runtime estimates

EmbroideryStudio provides a **Runtime Analyst** feature for calculating estimated running times for embroidery files using specified RPM values and other runtime parameters. These are used on a design-by-design basis to determine scheduling, running costs, and payments for production staff. Output can be used by any third-party software such as ERP or accounting systems.

Typical usage

Information can be made available to various stakeholders for payroll, estimations, and scheduling. For instance:

◀ The designer creates a new design and saves as EMB and/or machine file such as U11.
◀ EmbroideryStudio automatically calculates running time.
◀ Calculated results are saved to CSV file in a designated file location.
◀ The payroll department accesses the CSV file and calculates pay rates for the design. For example:
  ◀ A payroll clerk may need to find out what the runtime will be for a given job in order to pay the machine operator.

◀ A manager may need to provide an accurate runtime estimate for any given design so the payroll department is able to process machine operator payments.

◀ The ERP system accesses the CSV file for estimation and scheduling purposes.

◀ Runtime information may be communicated to a machine operator who needs to know the runtime estimate for a specific job.

Configure machine runtime settings

You can set up multiple named machines for the purposes of runtime analysis with specific parameters such as 'fast speed', 'slow speed', 'trim time', 'color change time', etc.

To configure machine runtime settings

1 Select **Setup > Machine Runtime Setup**. Or run the command from the **Design Information > Runtime** tab. The **Machine Runtime Setup** dialog opens. The dialog lists all machines currently defined for the purposes of runtime analysis.

Create a new runtime definition
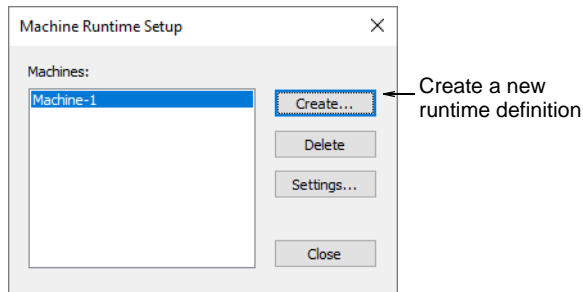
2 Click **Create** to set up a new runtime definition. The **Machine Runtime Settings** dialog opens.

3 Use the **Name** and **Comment** fields to uniquely identify the machine or machine class.

The class may be based on machine model. However different machines of the same model may be set up for different purposes – e.g. to run at different speeds. If so, you'll need to set up different classes to suit.

Note: Machine types set up here are independent of machines defined in **Connection Manager Setup** or **Embroidery Machine Connection** dialogs.

4 Create a runtime definition for the machine. Parameters are based on machine specs, controller feedback, and/or empirical observation:

Option	Function
Normal (high) speed	The speed at which the machine normally sews. Normally available from machine specs.
Slow speed	The slowest speed at which the machine runs. Normally available from machine specs.
Slow above	The length of stitch above which the machine slows down. This value is automatically adjusted according to speed settings, in particular slow speed. Should be available from the machine specs.
Trim time	The time the machine takes to perform a trim. May be available from machine specs or empirical observation.
Color change time	Same as for trim time.

Option	Function
Stop time	Time spent stopping in order to place fabric, foam, etc. This is normally determined through empirical observation. The number of heads on the machine will be a determining factor – e.g. 16 heads x 6 secs each.
Design start time	Time the machine takes to go from stop to normal speed – e.g. it may stitch a number of slow stitches to start off. May be available from machine specs or empirical observation.
Design end time	Stopping time – the machine may slow down and then travel to the center of the hoop before actually stopping.

5 Click **OK**. All machines or machine classes you define are listed in the **Machine Runtime Setup** dialog. From here they can be updated or removed from the system.
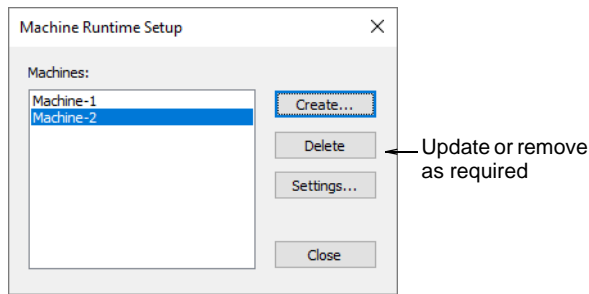
Update or remove as required

Output design information to CSV

> **i** Use Docker > Design Information to view and modify design details prior to design approval or stitchout.

Design information, including runtime estimates and relevant parameters, can be output to CSV file for later use by third-party applications. New data is appended to the file.

Estimated running times

Once your machines or machine classes have been defined, estimated running time for a specific embroidery file is displayed in the **Design**

Information > Runtime tab. This tab lists available machines together with estimated runtimes for the current design.

Estimated runtime per machine for current design
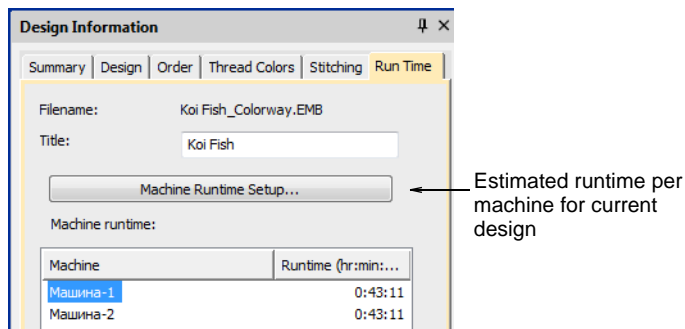
Related topics...

◄ Runtime tab

Cost of fabric parameters

An **Design Area** field on the **Stitching** tab shows the total design area. It is calculated by multiplying design width and height, not actual stitched area. This figure is used to estimate the cost of fabric or 3D foam that can be used in the design.

Total area used to estimate cost of fabric or 3D foam
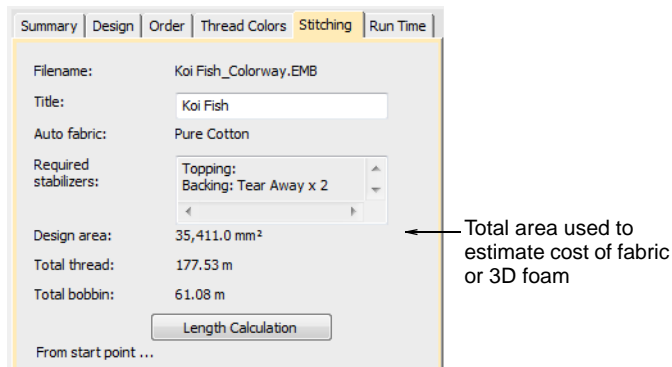
Export options

Design information can be written whenever the design is saved or recorded to DesignWorkflow database. An **Options > Export** tab allows you to preset these options.

Automatically record runtime data to CSV file
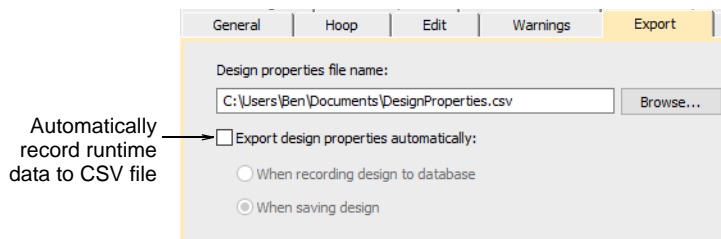
Manual export

The **File > Export Design Information** command allows you to output current design information and machine runtime settings to CSV file.

Manually output design information, including runtime data
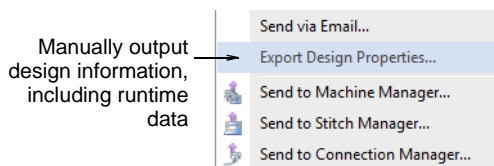
The CSV output file includes the following fields. The first group derives from the **Design Information > Design** and **Stitching** tabs. The second group derives from **Machine Runtime Settings**.

Field	Description
Date	Date and time of exporting properties.
Design data	**Derived from design tab**
File name	Name design saved under.
Machine format	Machine format of design.
Stitches	Total number of stitches in design.
Colors	Total number of thread colors in design.
Color changes	Total color changes – may or may not coincide with number of colors.
Stops	Number of machine stops in design.
Trims	Number of trims in design.
Sequins	Number of sequins in design.
Bling	Number of individual rhinestones in design.
Height (mm)	Height of sewing area - derived from design extents.
Width (mm)	Width of sewing area - derived from design extents.

Field	Description
Stitching data	**Derived from stitching tab**
Total thread (m)	Total length of thread used in design.
Design area (mm²)	Area covered by design - calculated according to design extents.
Runtime data	**Derived from runtime settings tab**
Below / Above	Number of stitches stitched at slow and high speed according to 'slow above' parameter. Combined numbers should equate to 'Stitches' value.
Machine	Machine as shown on Machine Runtime Setup dialog. If there are multiple machines defined, a separate line entry appears for each.
Normal (high) speed (RPM)	Runtime setting as shown on Machine Runtime Settings dialog.
Slow speed (RPM)	Ditto
Slow above (mm)	Ditto
Trim time (sec)	Ditto
Color change time (sec)	Ditto
Stop time (sec)	Ditto
Design start time (sec)	Ditto
Design end time (sec)	Ditto
Runtime (min:sec)	Calculated runtime of this design according to particular machine as shown on Design Information > Runtime tab. If there are multiple machines defined, a separate line entry appears for each.

Related topics...

◀ Viewing design information

Print runtime estimates

The **Production Worksheet** prints runtime information. Three fields pertaining to the information appear under the **Blocks** tab – 'Area', 'Total thread' and 'Machine runtime'.
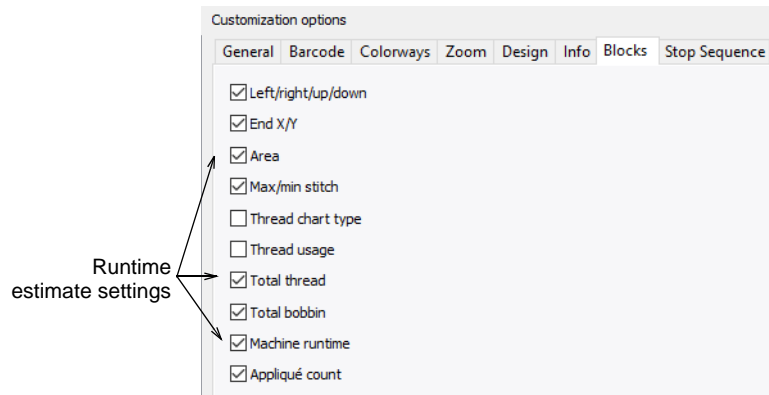
The **Machine runtime** checkbox is only available if the feature is available in the software. If there are no machines set up, checking 'Machine runtime' has no effect as there is nothing to print. **Total thread** prints the information of the same name in the **Design Information** docker. This information is included in both **Production Worksheet** and **Production Summary**.

Related topics...

◄ Viewing design information
◄ Customizing design reports
◄ Printing design reports

Setting up scanners

EmbroideryStudio supports WIA-compatible scanners. Some scanners will not work with EmbroideryStudio 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 EmbroideryStudio.

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 EmbroideryStudio.

4 Select **Setup > Scanner Setup**. The **Select Source** dialog opens displaying a list of scanner drivers loaded on your computer.

Select scanning driver →

Select Source	×
Sources:	
Corel Image Source	
Corel Image Source 5	
Logitech ScanMan	

Select

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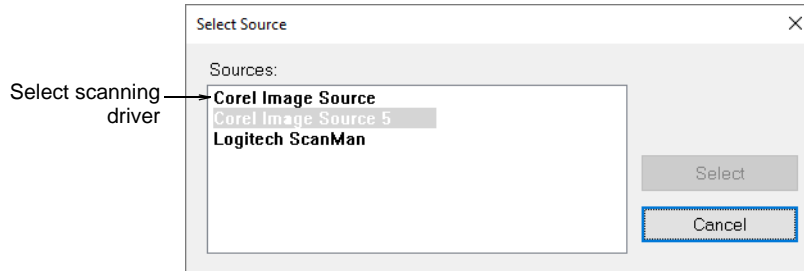
5 Select the scanning driver to use, then click **Select**.

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

Connecting digitizing tablets

You can use a digitizing tablet and puck with EmbroideryStudio as an alternative to digitizing directly on-screen. To use a tablet, you place an enlargement drawing on the active area, and use the puck to mark reference points.

WACOM Intuos3 digitizing table featuring 1024 levels of pressure sensitivity and pen tilt sensitivity. Can be used with a normal mouse or lens cursor

⚠
Caution: EmbroideryStudio cannot use the MS Windows®-compatible drivers of some tablets – e.g. GTCO and Calcomp tablets. Earlier versions of WinTab do not free up the COM port, even when it is not in use. This

means EmbroideryStudio is unable to communicate with the digitizing tablet. Check with the tablet manufacturer to obtain a version of tablet software which will free the port when not in use. Alternatively, the software may disable or uninstall WinTab, or use another COM port when working with EmbroideryStudio.

Set up digitizing tablets

> Use Legacy Features > Hardware Setup to set up a machine connection with name, port, and protocol.

EmbroideryStudio can only support one tablet at a time. The format and the preferred pointer display mode must be specified.

To set up a digitizing tablet

1 Connect the digitizing tablet and puck using the accompanying instructions, and run EmbroideryStudio.

2 Select **Legacy Features > Hardware Setup**.

Select Digitizer

Click to access digitizer settings
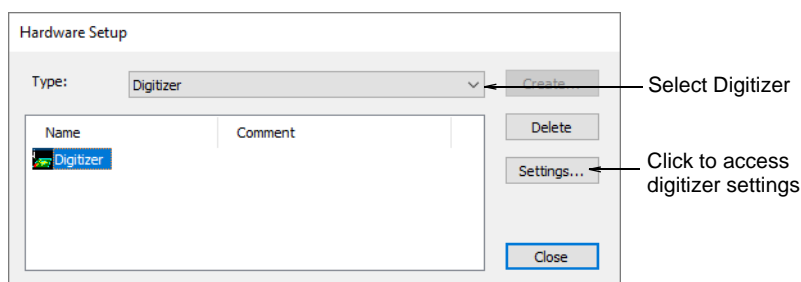
3 From the **Type** list, select **Digitizer**.

4 Click **Settings**. The **Digitizer Setup** dialog opens.

- Enter name → Name: Digitizer
- Select digitizer format → List of formats: Auto detect
- Select input mode → Input mode:
- Select COM port → Port:
- Click to access serial port settings → Setup...
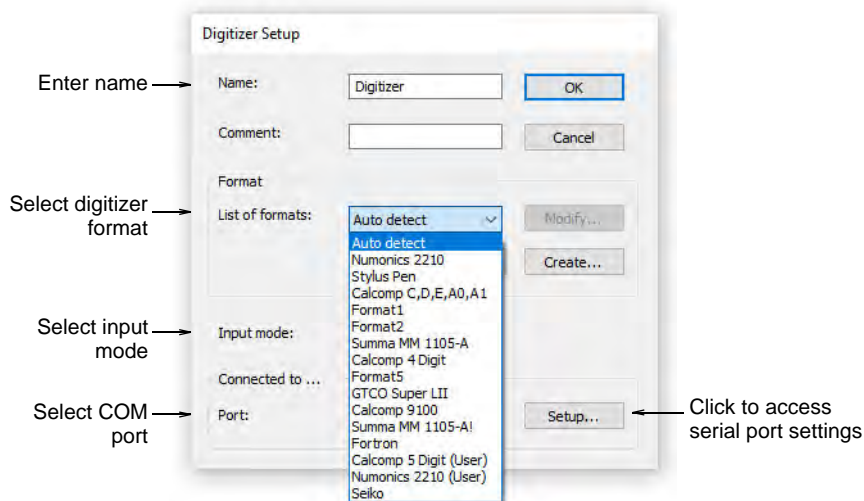
5 Use the **Name** and **Comment** fields to uniquely identify the digitizing tablet.

6 In the **Format** panel, select a digitizer format.

Select from standard digitizer formats or select **Auto Detect** to automatically match the format to the connected digitizer. Not all digitizers can be automatically detected by EmbroideryStudio. For these tablets, you can define a new format or modify existing format settings.

7 From the **Input Mode** list, select **Point** or **Stream**.

This setting **must** be the same as the one you specified on the digitizing tablet:

Mode	Function
Point	In this mode, the pointer position on screen is only updated when you click a button on the puck.
Stream	In this mode, the pointer position is continuously updated. When you move the digitizer puck on the tablet, the pointer moves on screen.

8 From the **Port** list, select the COM port to which the digitizer is connected.

Digitizing tablets generally connect to COM1 but can connect to any available serial COM port.

9 Click **Setup** to access the serial port settings. These settings **must** be the same as those set on the digitizing tablet, or EmbroideryStudio will not be able to communicate with it.

Note: If you use **Stream** mode, you need to set the digitizer to transmit at 20 data packets per second or less. The baud rate for the digitizing tablet and serial port must both be set to 9600 baud.

Caution: To avoid loss of data at high speed, it is important to set up the tablet correctly. If it can only transmit at greater than 20 data packets per second, reduce the baud rate of the tablet from 9600 baud to 2400 baud.

10 Click **OK** then **Close**.

Related topics...

◀ Customize digitizing tablet formats

◀ Serial ports

Customize digitizing tablet formats

If the digitizing tablet format you require is not preset in EmbroideryStudio, you can create a new format, or modify an existing format to match the output of your tablet. Before starting, review the digitizing tablet documentation.

Caution: This functionality is provided for advanced users with knowledge of the data protocols supported by their digitizing tablet. Only use it if your digitizing tablet does not work with any existing formats.

To customize a digitizing tablet format

1 Access the **Digitizer Setup** dialog.
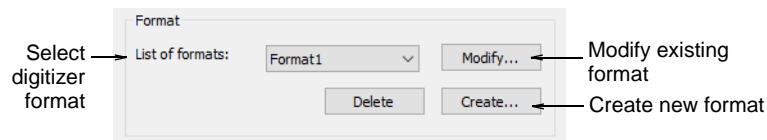
2 In the **Format** panel:

◀ To modify an existing format, select the format and click **Modify**.

◀ To define a new format, click **Create**. The **Custom Digitizer Setup** dialog opens.
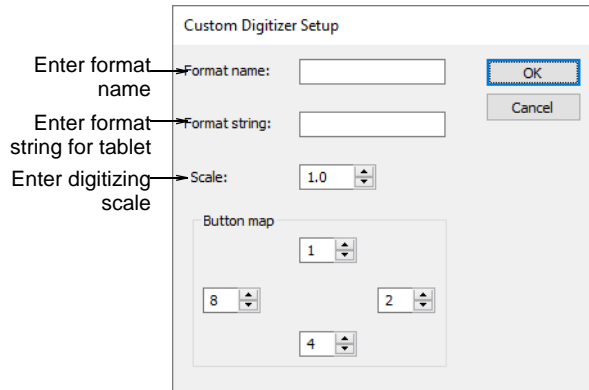
3 In the **Format Name** field, enter a name for the new or modified format.

4 In the **Format String** field, enter the format string your digitizing tablet outputs.

Obtain this information from the digitizing tablet documentation.

5 In the **Scale** field, enter the scale at which you are digitizing. For example, a scale of 3.0 means your on-screen design will be one third the size you digitize on the tablet.

6 Click **OK**.

Related topics...

◀ Set up digitizing tablets

Prepare enlargement drawings

When you digitize with a tablet, you use an enlargement drawing to trace the shapes and outlines of the design in the same way you use backdrops on-screen. Before you start, you need to prepare the enlargement drawing.

To prepare an enlargement drawing

1 Convert the artwork to a technical drawing.

Generally the drawing will be three times larger than the final embroidery.

💡
Tip: If the drawing is in hard copy, scale it using a transparency projector or photocopier. If you used a graphics application to create the artwork, scale it before you print it out.

2 Modify the drawing to make it suitable for embroidery:

◀ Define shapes that can be easily filled with stitches.

◀ Overlap and distort shapes to compensate for push-pull.

◀ Draw digitizing guidelines – e.g. stitch angle lines.

3 Draw origin and rotation reference points.

These points set the position and orientation of the enlargement drawing on the digitizing tablet.

💡

Tip: If the drawing is bigger than the digitizing tablet, enter additional points to help you shift the drawing as you digitize.

4 Write the name and scale of the enlargement drawing for future reference.
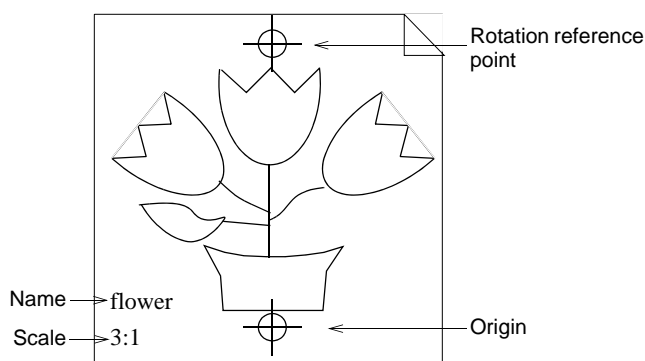
Related topics...

◀ Shift enlargement drawings

Register enlargement drawings

When you place an enlargement drawing on the digitizing tablet, you need to register it so EmbroideryStudio can interpret the design. To register an enlargement drawing, enter the scale, and digitize the origin and rotation points on the tablet. The origin and rotation points should be marked on the enlargement drawing. If they are not, you need to draw them in.

To register an enlargement drawing

1 Select **Setup > Tablet Setup**.

Enter drawing scale →

Select Save as defaults →
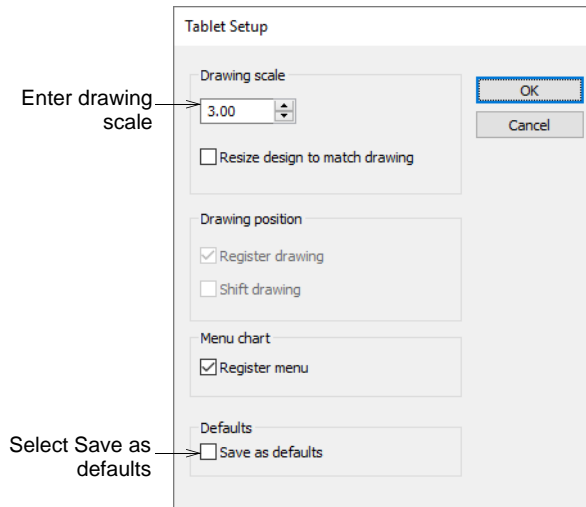
2 In the **Drawing Scale** panel, enter the scale of the enlargement drawing. To calculate the scale, divide the height the enlargement drawing by the required height of the final embroidery. Enlargement drawings are generally prepared at a scale of **3.00**.

3 Tick the **Save as defaults** checkbox. This saves the registration information for this drawing so you do not have to re-register each time you resume digitizing.

4 Click **OK** and place the enlargement drawing on the digitizing tablet.

5 Click the origin and rotation points of the drawing with **Button 1** of the digitizing puck. This completes the registration.

Rotation reference point

flower
3:1

Origin
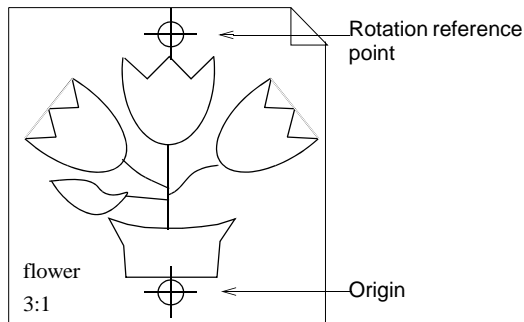
Change drawing scales

You can change drawing scale during digitizing. When you change scale, EmbroideryStudio automatically resizes object outlines and regenerates the stitches.

To change the drawing scale

1 Select **Setup > Tablet Setup**.

Enter new drawing scale →
Tick to resize design to drawing size →

> **Drawing scale**
> 3.00
> ☑ Resize design to match drawing
>
> **Drawing position**
> ☐ Register drawing
> ☐ Shift drawing
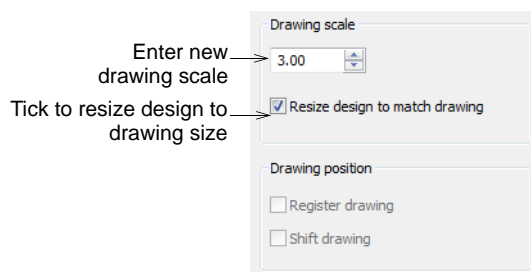
2 Enter the new drawing scale. To calculate the scale, divide the height the enlargement drawing by the required height of the final embroidery. Enlargement drawings are generally prepared at a scale of **3.00**.

3 Tick the **Resize Design to Match Drawing** checkbox.

4 Tick the **Register Drawing** checkbox.

5 Click **OK**.

6 Digitize the origin and the rotation reference points to re-register at the new size. The design is resized to the new scale.

Shift enlargement drawings

If the drawing is bigger than the digitizing tablet, you can move it across the tablet and continue digitizing. To move a drawing you need to draw, and digitize, two additional reference points.

To shift an enlargement drawing

1 Draw additional reference points on the enlargement drawing.

Position the points so that they will be on the active part of the digitizing tablet both before and after the move.

💡
Tip: If you are shifting the drawing up or down, draw the additional reference points horizontally. If you are shifting left or right, draw them vertically.

2 Select **Setup > Tablet Setup**.
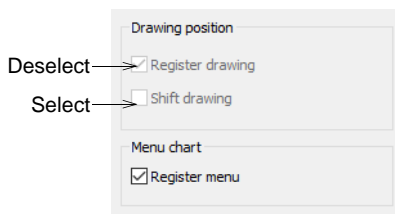
3 Tick the **Shift Drawing** checkbox.

4 Untick the **Register Drawing** checkbox and click **OK**.

5 Click the additional reference points with **Button 1** on the digitizing puck.
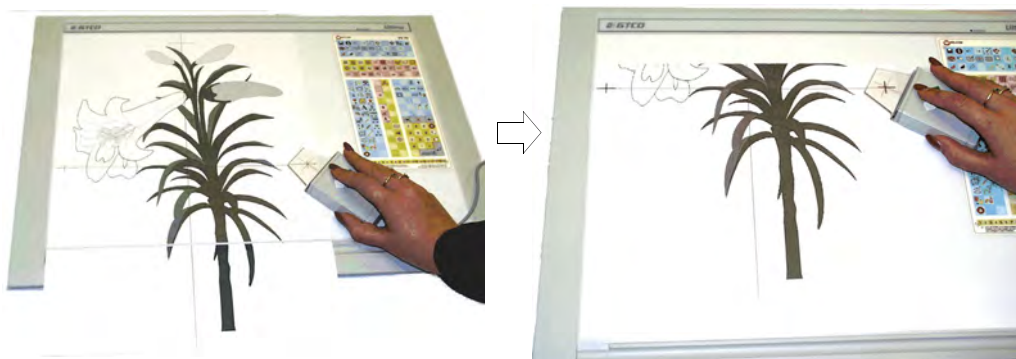
6 Move the drawing so that the part you want to digitize next is over the active area of the digitizing tablet, and click the additional reference points again. The drawing is re-registered in the new position.

Use digitizing pucks

With a digitizing tablet, you generally use a puck instead of a mouse to mark reference points.

To use a digitizing puck

◀ Position the cross-hairs of the puck over a point on the enlargement drawing then press one of the four buttons.

Function	Button	Mouse or keyb'd equivalent	Description
Digitize corner point	1	⬚	Digitize corner reference point when digitizing outlines.
Digitize curve point	2	⬚	Digitize curve reference point when digitizing outlines.

Function	Button	Mouse or keyb'd equivalent	Description
Terminate omitting last stitch	3	M	• Terminate input omitting last stitch – i.e. the fill is terminated on the opposite side as the last input point. • Toggle between selected fill stitch type and input method, and the Run input tool.
Terminate including last stitch	4	R	• Terminate input including last stitch – i.e. the fill is terminated on the same side as the last input point. • Toggle between selected fill stitch type and input method, and the Manual input tool.

Chapter 8
Machine Formats

Different embroidery machines speak different languages. They have their own control commands for machine functions. Before you can stitch a design, it must be in a format which can be understood by the machine. When you select a machine format, EmbroideryStudio uses it to translate digitized designs into a specific machine-readable form. If required, you can customize machine formats to meet specific machine requirements.

Standard machine formats

Different machines require different settings. When you select a machine format, EmbroideryStudio uses it to translate digitized designs into a specific machine-readable form. Common formats include Barudan, Brother, Happy, Marco, Meistergram, Melco, Pfaff, Stellar, Tajima, Toyota, Ultramatic and ZSK. Typical modifiable values include stitch and jump length, trim functions and color change functions.

Stitch & jump length settings

With most machines you can set maximum frame movement, minimum stitch length to recognize, and automatic jump length.

To set stitch and jump length

1 Open a design.

2 Access the **Machine Format Settings > Standard** dialog. Only fields relevant to the selected machine format will appear.

Maximum stitch:	12.7	mm	Adjust stitch and
Minimum stitch:	0.3	mm	jump settings
Maximum jump:	12.7	mm	
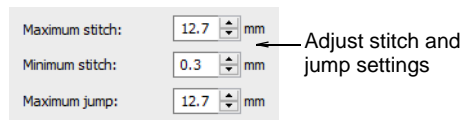
3 In the **Maximum Stitch** field, enter the maximum stitch length to allow.

The value you enter depends on the tape code used by your machine:

◀ Binary coding system: 12.7 mm – e.g. Barudan machines

◀ Ternary coding system: 12.1 mm – e.g. Tajima machines.

4 In the **Minimum Stitch** field, enter the minimum stitch length to allow.

This sets the default **Small Stitches** value. Generally the minimum stitch length is increased for dense materials and thick threads to prevent thread breakage.

5 In the **Maximum Jump** field, enter the maximum jump length to allow.

This sets the default Auto Jump value. Shorter jump values generally improve stitch quality and reduce wear on the machine but may increase stitch-out time.

6 Click **Save** then **Close**.

Related topics...

◀ Embroidery machine formats

◀ Eliminating small stitches

Trim functions

With some machine formats you can specify how to format and interpret trim functions. Some machines understand specific trim codes. Others

interpret multiple jumps as a trim function. Machines without an automatic trimmer may not know how to interpret trim functions, and may even shift the design when a trim code is encountered. For these machines you need to deselect the **Output Trims** checkbox so that trim functions are ignored when the design is stitched.

To set trim functions

1 Open a design.

2 Access the **Machine Format Settings > Standard** dialog. Only fields relevant to the selected machine format will appear.

Select to output trim functions

Select trim function format
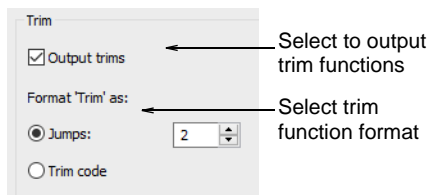
3 In the **Trim** panel, select the **Output Trims** checkbox to include trim functions when outputting to the selected machine.

If you deselect the checkbox, trim functions are not removed from the design but simply ignored during output.

4 Specify the trim format to use:

Option	Function
Jumps	Use for machines that interpret multiple jumps as trims. Enter the required number of jumps.
Trim code	For machines that interpret explicit trim commands.

5 Click **Save** then **Close**.

Related topics...

◀ Embroidery machine formats

Color-change functions

Machines interpret Color Change functions differently – either as a Needle Number or Stop function. Basically, the following rules apply:

◀ Single-needle machines simply stop when a Color Change or Stop function is encountered.

◀ Some multi-needle machines default to the next color without stopping.

◀ Some multi-needle machines support direct needle addressing.

Stop functions

Stop functions allow the operator to manually change threads. They are generally used with machines that only have one needle. Stop functions are sometimes combined with Jump functions to indicate color changes.

Color-change functions

For those machines that support them, Color Change functions tell the machine to move to the next needle whenever a CC function is encountered. The machine must have the correct thread colors loaded according to the production worksheet.

Needle-number functions

For needle addressing machines, each color 'slot' on the color palette corresponds to a needle number. Needle Number functions are sometimes combined with Jump functions to indicate color changes.

Thread chart

Thread list

Color/needle sequence

For needle addressing machines, you need to specify how many needles are on the machine. This tells the machine how often it needs to stop for the operator to change threads. For example, for a design with 15 colors to be stitched out on a machine with five needles, it must stop after every three color changes in order for the operator to change threads.

To set color change functions

1 Open a design.

2 Access the **Machine Format Settings > Standard** dialog. Only fields relevant to the selected machine format will appear.

Select method to interpret color change functions

Enter number of needles

Select optional functions as required
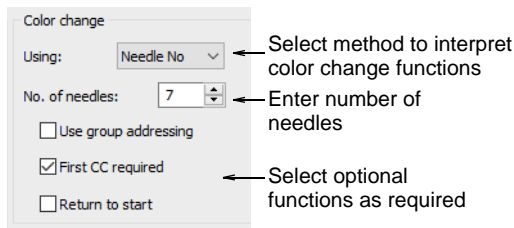
3 In the **Color Change** panel, select a method for interpreting color-change functions:

Method	Converts color-change functions to...
Needle no	Needle Number functions
Stops	Stop functions
Stop & jump	Stop and Jump functions
Needle no & jumps	Needle Number and Jump functions

4 For needle-addressing machines, enter the number of needles on the machine in the **No of Needles** field.

5 Optionally, select the **Use Group Addressing** checkbox.

Some machines can group two heads together so you can stitch a design using needles from both heads. For example, if a machine has two heads and nine needles per head, the machine moves the hoop from the first head under the second head, which allows you to stitch 18 colors without a manual change.

Note: If this is the case, enter the **combined** number of needles on the machine in the **No of Needles** field.

6 Optionally, select the **First CC required** checkbox.

Some machines require a **First CC** code to initialize the machine and bring the head back to the first color change needle position.

7 Optionally, select the **Return to Start** checkbox.

This returns the needle to the start of design, preparing the machine for the repeat run.

8 Click **Save** then **Close**.

Related topics...

◀ Embroidery machine formats

Borer functions

Some embroidery machines are equipped with a borer. The borer often replaces one of the needles. You need to specify the needle position of the borer and its offset value. Borers are often 'knife' attachments where the cutting position is offset ±12 mm from the main needle. Before the machine starts, the frame moves so that the borer is in the correct position. This extra frame movement compensates for the borer offset. Some machines automatically adjust for this offset when a Borer In function is encountered. These machines should have an offset value of 0. Similarly, if you are using a boring needle (instead of a knife), you do not need an offset value. See your machine manual for details.

To set borer functions

1 Open a design.

2 Access the **Machine Format Settings > Standard** dialog. Only fields relevant to the selected machine format will appear.

Boring
Offset: -12.0 mm ← Enter borer offset
Needle number: 0 ← Enter needle number of borer
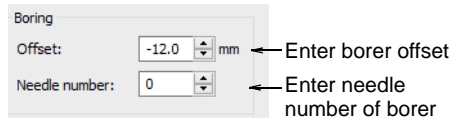
3 In the **Boring** panel, enter the required borer offset.

◄ If your machine automatically inserts an offset when a Borer In function is encountered, enter an offset of 0 mm.

◄ If your machine requires an offset value, enter an offset of ±12.0 mm.

4 Enter the needle number to which the borer is attached.

5 Click **Save** then **Close**.

Related topics...

◄ Embroidery machine formats

◄ Boring

End-of-design functions

Some machines require an explicit **End of Design** function code in order to recognize when the end of the design has been reached. Some machines do not understand the **End of Design** function code, requiring a **Stop** code instead. For example, Tajima machines recognize the explicit **End of Design** function code while Happy machines require a simple Stop.

To set end-of-design functions

1 Open a design.

2 Access the **Machine Format Settings > Standard** dialog. Only fields relevant to the selected machine format will appear.

Select end-of-design option
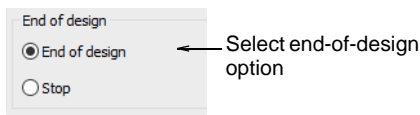
3 In the **End of Design** panel, select the appropriate option for your machine:

Option	Function
End of design	Some machines require an explicit End of Design function code – e.g. some Tajima machines.
Stop	Some machines require a Stop code instead – e.g. Happy machines.

4 Click **Save** then **Close**.

Related topics...

◀ Embroidery machine formats

◀ Start/end-of-design sequence

Advanced machine formats

The **Advanced** tab provides access to additional machine format options. Again, the available settings depend on the selected machine format. You can set the color change sequence, insert special codes for start or end of a design, and enter speed settings. There are also miscellaneous settings, including whether to change fabric tension during boring, and whether to rewind tape when stitching is complete. Use the **Machine Format Settings** dialog to define values to allow when outputting to a specific machine format.

Note: Not **all** values described here are available for all machine formats. Use these instructions to enter values that apply to your selected format. Only change **Advanced** values if you are familiar with the codes used by your embroidery machine. See your embroidery machine manual for more information.

Color-change sequence

Some machines cannot interpret color-change functions unless they form part of a 'color change sequence' made up of empty stitches and empty jumps before and after each color change. Check your machine requirements to determine whether you need to enter color-change sequence values.

Color Change Sequence in Stitch List matches sequence defined in Machine Format Settings Advanced tab

In the **Advanced** tab, the **Color Change Sequence** panel reads from top to bottom, in the order the codes appear in the sequence. The first two fields show the number of empty stitches and empty jumps to insert **before** the color change. The other fields show the empty jumps and empty stitches to insert **after** the function.

Related topics...

◀ Embroidery machine formats

Start/end-of-design sequence

In addition to an End of Design function, some machines require extra empty stitches and empty jumps in order to stitch the start and end of a design. Other machines require a Stop function. Depending on the machine type, you may also require functions to initialize the machine or trigger a frame-out after stitching.

Enter number of Empty Jumps and Stitches to insert at start of design

Enter number of Empty Stitches and Jumps to insert at end of design

Where available, the **Set Needle Number** option initializes the machine and brings the head back to the first color change needle position.

Select to initialize machine and bring head back to first ⟶ needle position

Start of design
0,0:   0
☑ Set needle number
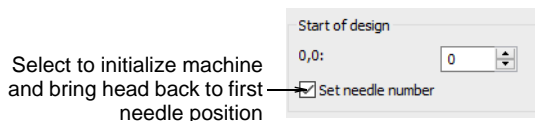
Where available, the **Frame Out** option triggers the frame to exit after stitching the design.

End of design
0,0:   0
0,0 jump: 0

Select to trigger frame to exit after ⟶ ☑ Frame out
stitch out
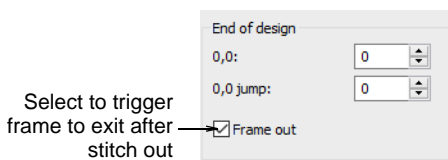
Note: Remember that these fields show the number of **extra** codes you want to insert in addition to default settings.

Related topics...

◂ Embroidery machine formats

Speed options

Some machines can stitch at different speeds. Depending on your machine, you may then be able to select different speeds to use when you start stitching or for when the borer is engaged.

Speed
☐ Boring auto speed changes: ⟵ Select and adjust
Start: Fast   speed options
Fast: Speed2
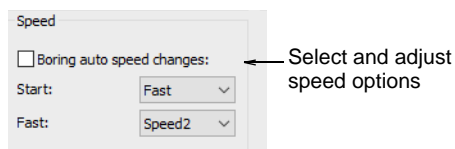
Where available, the **Boring Auto Speed Changes** option in the **Advanced** tab slows the machine automatically whenever the borer is engaged. From the **Start** list, select the preferred starting speed – **Fast** or **Slow**. From the **Fast** list, select the faster setting on your machine – **Speed 1** or **Speed 2**. Check your machine manual for details.
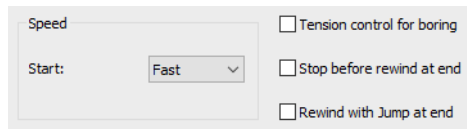
Related topics...

◂ Embroidery machine formats

Miscellaneous advanced options

Depending on the machine format, you may also be able to select whether to reduce the tension on the fabric while boring, and indicate whether to rewind the tape when stitching is complete.

Where available, set the following as needed:

Option	Function
Tension control for boring	This option reduces the fabric tension when the borer is engaged.
Stop before rewind at end	This option stops the machine at the end of the design and rewinds the tape.
Rewind with Jump at end	This option inserts a jump at the end of the design and rewinds the tape.

Related topics...

◀ Embroidery machine formats
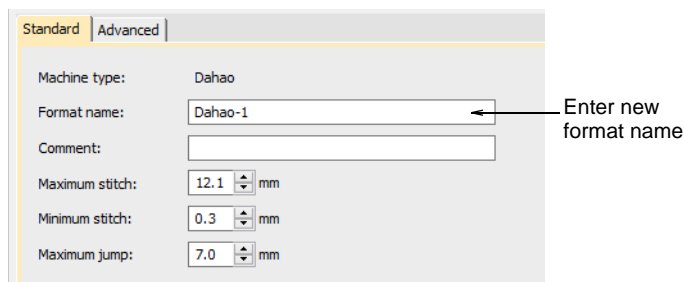
Custom machine formats

EmbroideryStudio provides standard formats for most machines. However, if your machine is different, you may need to customize the machine format settings. For example, if you have different models of the same type of embroidery machine, different functions may require different values.

Click to create custom format

Click to create design format
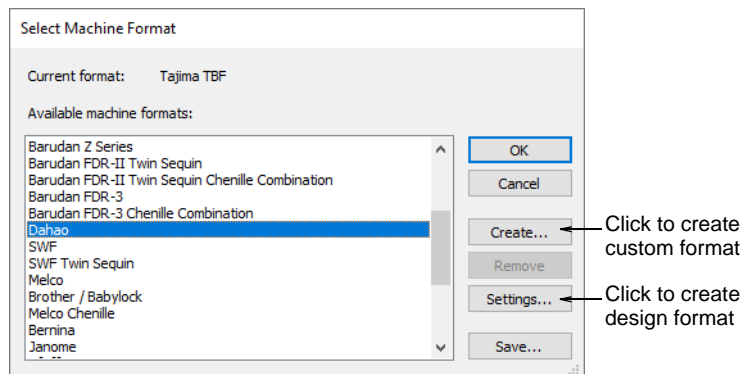
Creating custom formats

You can create a new machine format based on a standard machine format, and make it available to all designs.

Enter new format name

◄ In the **Format Name** field, enter a name for the new format – e.g. **Melco-1**.

◄ In the **Comment** field, enter any information that will help you identify the machine format – e.g. **No Trim**.

◄ Adjust **Standard** and **Advanced** machine format settings as needed.

Creating design-specific formats

You can create a custom machine format for use with the current design. You cannot change the **Name** or **Comment** fields. The custom machine format is automatically named using the original machine format and design name – e.g. **Melco-Design1**.

Note: If necessary, you can update the standard machine format itself. However, you should only do this if the original values are no longer used.

Related topics...

◄ Embroidery machine formats
◄ Standard machine formats
◄ Advanced machine formats

PART III

EMBROIDERY DIGITIZING

In EmbroideryStudio, you build designs from basic shapes or 'embroidery objects'. These are like ordinary vector 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.

Stitch types

This section explains how to select stitch types for your various fills, including how to create Satin fills, Tatami, Motif, and Contour fills, and how to adjust stitch settings for best results. It also describes how to create Zigzag and E Stitch fills and borders. See Stitch Types for details.

Digitizing shapes

This section discusses the automatic conversion of vector to embroidery objects. It also deals with manual digitizing methods, including digitizing free shapes, simple borders, and complex column shapes. See Digitizing Shapes for details.

Object properties

This section explains how to change property settings in a design, as well as how to apply and adjust fabric settings. It also explains how to create and maintain styles and templates in EmbroideryStudio. See Object Properties for details.

Colorways

When digitizing, you select colors from the color palette. This contains a selection of colors which can be tailored to each design or color scheme. The particular 'colorway' represents the actual thread colors in which a design will be stitched. You can define multiple color schemes and switch between them. See Colorways for details.

Chapter 9
Stitch Types

All embroidery objects in EmbroideryStudio contain defining settings or properties. Some, such as size and position, are common to all objects, while others are specific to object type. The most important property of all is stitch type. The software uses object outlines and the associated stitch type to generate stitches. Whenever you reshape, transform or scale an object, stitches are regenerated according to current settings.

Stitch types divide broadly into two categories – outlines and fills. Different stitch types suit different shapes. Some stitch types are suitable for both outlines or fills. Others are dedicated to one or other purpose. A stitch type can be selected together with a digitizing method or applied afterwards. Whenever you create an object from scratch, it takes the currently selected stitch type.

Simple outlines

EmbroideryStudio provides tools for creating outline stitching of varying thicknesses and styles. They are typically used to add borders and pickout runs. There are tools for creating simple run stitching as well as a wide variety of decorative outlines. Outline stitch types can be interchanged.

Simple run stitching

Use **Run** to digitize lines of simple run stitching. Use **Triple Run** for emphasis. This stitch type is typically used for thicker borders and outlines. **Sculpture Run** creates thick-thin alternating single and triple stitching for a hand-stitched look. Adjust stitch length, chord gap, stitch repetitions, and other settings via the **Object Properties** docker.
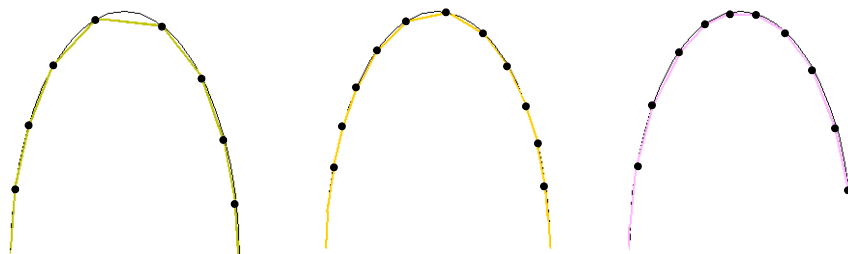
Tips for use...

◄ Both **Traditional Digitizing** and **Graphics Digitizing** toolbars contain tools for digitizing outlines. These tools place a row of stitching along a digitized line.

◄ EmbroideryStudio provides tools for automatically generating outlines.

◄ Use **Backtrack** and **Repeat** to reinforce outlines while specifying the direction of the stitching.

◄ Swap outline types at any time, including vector outlines. Vector objects of course have no stitch properties. Satin outline width can be controlled via object properties or using the **Reshape** tool.
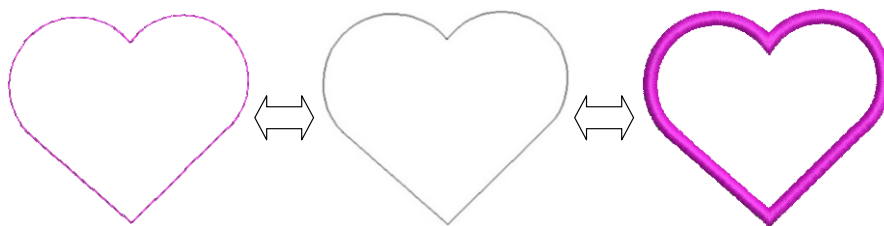
Stitch length settings

> Use Outline Stitch Types > Run to place a row of single run stitches along a digitized line. Right-click for settings.

For run stitch and other outline stitches, stitch length can be adjusted to suit the shape.

To adjust stitch length

◀ Right-click the icon to access object properties.
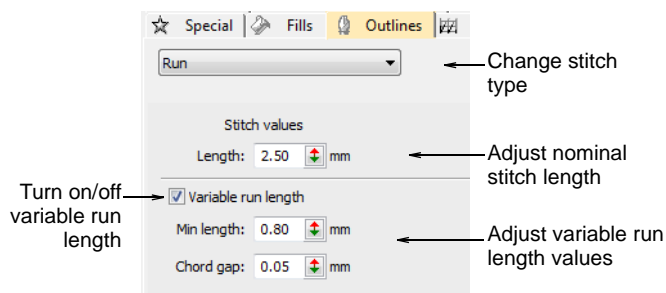
◀ To set a fixed stitch length, adjust the **Length** field. For sharp curves, reduce length – e.g. 1.8 mm – so that the stitches follow the line more closely. Mimic hand-made embroidery by increasing length to, say, 4.0 mm.
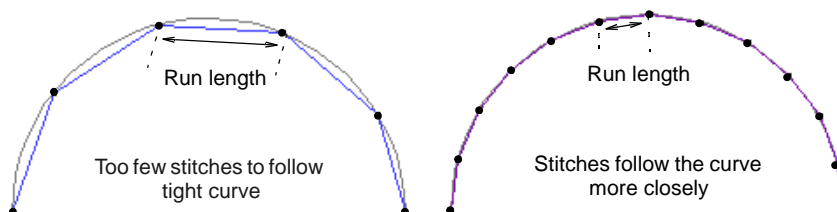
◀ Alternatively, automatically shorten stitches to follow tight curves with the **Variable Run Length** option.

◀ In the **Chord Gap** field, enter the maximum distance to allow between the digitized outline and the stitches.

| Fixed run length | Variable run length: 2 mm | Variable run length: 0.07 mm (default) |
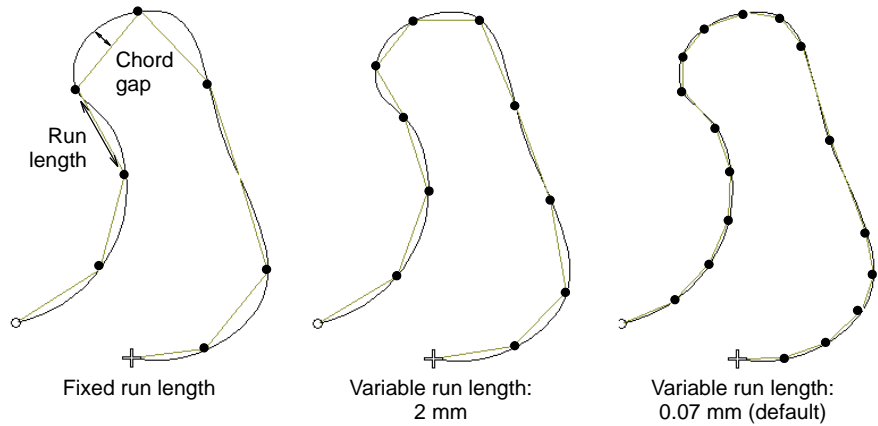
◀ In the **Min Len** field, enter the minimum stitch length to allow. Stitch length will not reduce to less than this value, even if the chord gap is exceeded.

Run count setting

Use Outline Stitch Types > Triple Run to place a triple row of run stitches along a digitized line. Right-click for settings.

By default, **Triple Run** repeats each stitch three times. You can change the number of repetitions by adjusting the **Run Count** value.
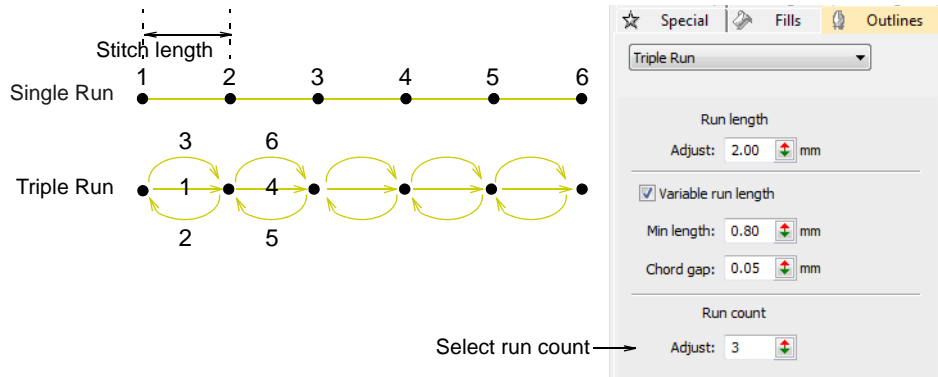
🔘
Tip: Use **Backtrack** and **Repeat** to reinforce outlines while specifying the direction of the stitching. See Reinforce outlines for details.

Sculpture run settings

 Use Outline Stitch Types > Sculpture Run to create a thick-thin outline alternating single and triple stitches for a hand-stitched look.

Sculpture Run provides independent stitch length parameters for alternating stitches. This is handy for creating a hand-stitched look. Apply to open or closed shapes. Default alternating values are equal but can be independently set – e.g. A=2.5 mm and B=1.5 mm. Also, the number of A/B repeats can be independently set. The default setting is #A=3, #B=1.
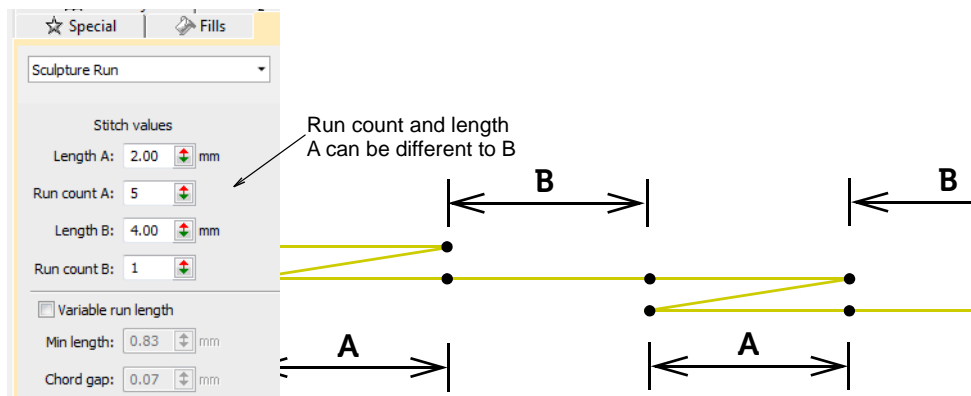
Satin stitching

Satin is one of those stitch types which can be used for thicker borders or for fills. It is well-suited to narrow shapes where each stitch spans the width of the column. Because there are generally no needle penetrations breaking up the fill, satin stitch gives a glossy, high-quality appearance.

Tip: The Auto Split and Auto Jump features help you to control long satin stitches. See Optimizing long satin stitches for details.

Applying satin stitch

WW	Use Fill Stitch Types > Satin to apply satin stitch to new or selected narrow columns and shapes. Right-click for settings.
mm	Use Outline Stitch Types > Satin to create thicker borders or columns of even thickness. Right-click for settings.
WW	Use Fill Stitch Types > Satin Raised to create raised surfaces – can be applied to lettering or used with trapunto for quilting effects. Right-click for settings.
mm	Use Outline Stitch Types > Satin Raised to create raised satin borders – can be used with outlines for quilting effects. Right-click for settings.

In EmbroideryStudio, the **Auto Spacing** option is turned on by default. For most purposes, this option avoids thread breaks and creates visually appealing columns of satin stitches.
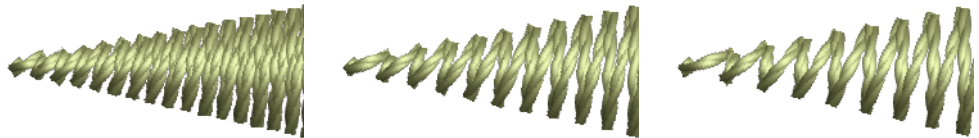
If a column is too wide, stitches may be loose and not cover the fabric properly. Conversely, in very narrow columns, stitch density may be too high and needle penetrations damage the fabric. Adjust stitch density by setting a fixed spacing, or let **Auto Spacing** calculate spacings wherever column width changes.

To apply satin stitch with auto-spacing

1 Select the digitizing method you want to use – e.g. Column C.

2 Select **Satin** and create an embroidery object. Alternatively, select an existing embroidery object and click **Satin**.

3 Right-click the **Satin** icon to access object properties.

Select Auto Spacing →
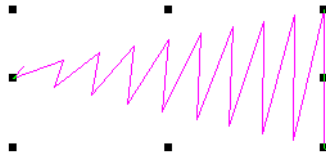
Adjust density percentage →
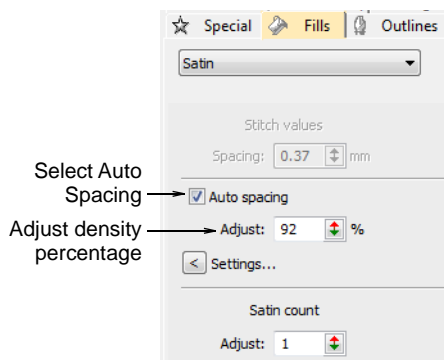
4 Tick **Auto Spacing** if not already checked.

5 Adjust **Stitch Density** for more or less open fills.

| >100% – fewer stitches | 100% – no adjustment | <100% – more stitches |
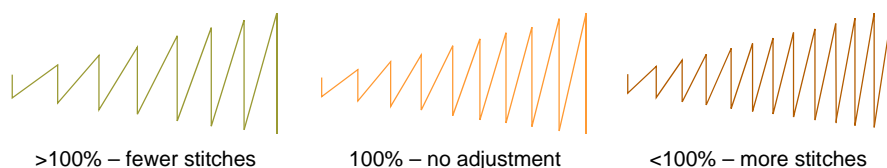
Density is given as a percentage of preset values:

◀ To decrease, increase the percentage – e.g. to 110-115%.

◀ To increase, decrease the percentage – e.g. to 90-85%.

75% generally produces high quality embroidery. An increased stitch count means the design will take longer and be more expensive to stitch.

6 Press **Enter** or click **Apply**.

Note: For even more precise results, you can adjust **Auto Spacing** settings.

Related topics...

◀ Embroidery digitizing

◀ Satin auto-spacing

Satin auto-spacing

 Use Fill Stitch Types > Satin to apply satin stitch to new or selected narrow columns and shapes. Right-click for settings.

Use Outline Stitch Types > Satin to create thicker borders or columns of even thickness. Right-click for settings.

Use Fill Stitch Types > Satin Raised to create raised surfaces – can be applied to lettering or used with trapunto for quilting effects. Right-click for settings.

Use Outline Stitch Types > Satin Raised to create raised satin borders – can be used with outlines for quilting effects. Right-click for settings.

Adjust **Auto Spacing** to specify how rapidly spacing changes and by how much. You can also specify spacing offsets to adjust for different thread types. These settings are intended for digitizing experts. You will usually want to save modified settings to a template.

Fixed spacing

Auto spacing

Spacing 2

Spacing 1
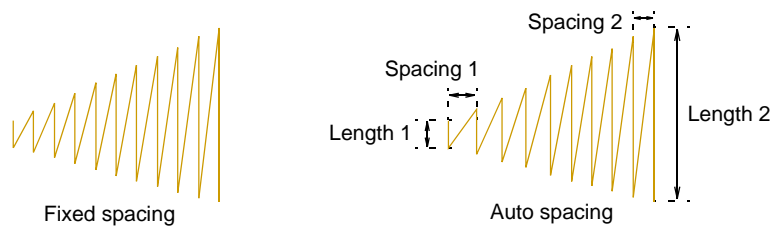
Length 1

Length 2

To adjust auto-spacing settings

1 Right-click the **Satin** icon to access object properties.

Select Auto Spacing

Click to adjust Auto Spacing values
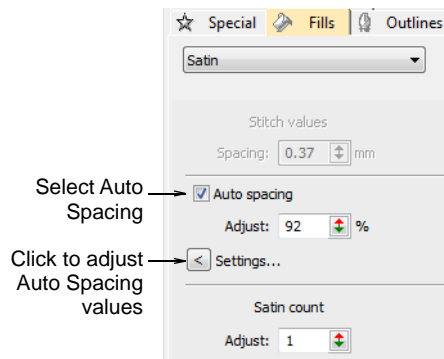
2 Click **Settings**. The **Auto Spacing Settings** dialog opens.

Adjust stitch length values → (points to Length column)

Adjust spacing values → (points to Spacing column)

Enter spacing offsets for each thread type ← (points to Spacing offset section)
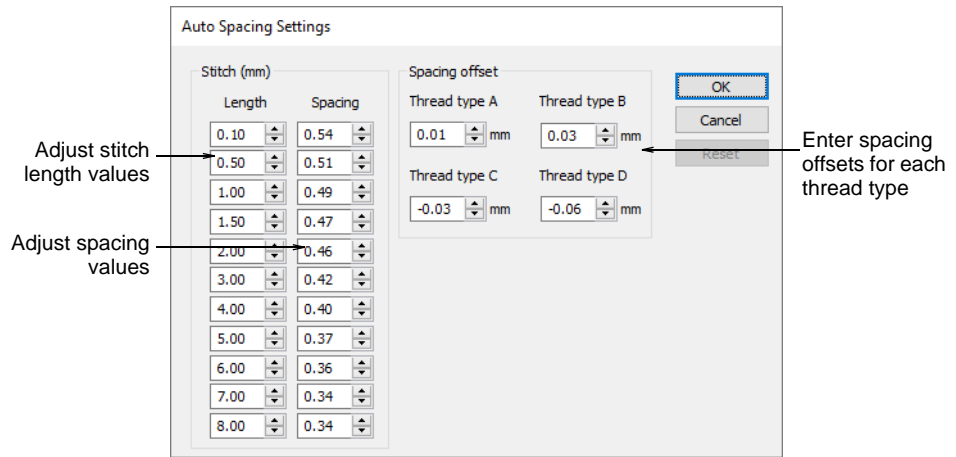
3 Adjust stitch settings in the **Stitch** panel:

Setting	Function
Length	These values define the increments by which spacing is adjusted. The smaller the distance between each length, the more rapidly stitching changes from open to dense. Each length must be greater than the preceding.
Spacing	These values define the spacing corresponding to each stitch length. See below.
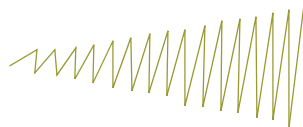
Default spacing values
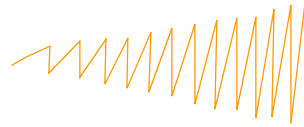
Custom spacing values

4 Adjust spacing offsets for different thread types.

The offset determines the amount by which stitch settings will be adjusted for different thread thicknesses.

Thickness	Description	Default
A	Normal embroidery thread (approx. denier 40)	0.01
B	Thicker than normal (approx. denier 30)	0.03
C	Finer than normal (approx. denier 80)	-0.03
D	Very fine (approx. denier 100)	-0.06

Note: You assign the thread type in the **Add Thread** dialog. Stitch spacing of the assigned thread type is automatically adjusted according to the values set there.

5 Click **OK**.

Related topics...

◀ Working with templates

◀ Modify thread details

Satin fixed spacing

MM	Use Fill Stitch Types > Satin to apply satin stitch to new or selected narrow columns and shapes. Right-click for settings.
nnn	Use Outline Stitch Types > Satin to create thicker borders or columns of even thickness. Right-click for settings.
MM	Use Fill Stitch Types > Satin Raised to create raised surfaces – can be applied to lettering or used with trapunto for quilting effects. Right-click for settings.
nnn	Use Outline Stitch Types > Satin Raised to create raised satin borders – can be used with outlines for quilting effects. Right-click for settings.

In EmbroideryStudio, the **Auto Spacing** option is turned on by default. Sometimes, however, you may want to control the exact spacing of satin columns. Fixed spacing is sometimes used, for example, for decorative effects – e.g. very open spacing over, say, a tatami background. These effects cannot be achieved with **Auto Spacing**.

Tip: If you are using a digitizing tablet, you can quickly switch between preset styles with different spacing settings. Each button on the puck accesses the next preset style. For example, clicking button 1 accesses <PRESET_SATIN_1>.

To apply satin stitch with fixed spacing

1 Select the digitizing method you want to use – e.g. Column C.

2 Select **Satin** and create an embroidery object. Alternatively, select an existing embroidery object and click **Satin**.
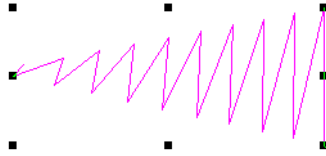
3 Right-click the **Satin** icon to access object properties.
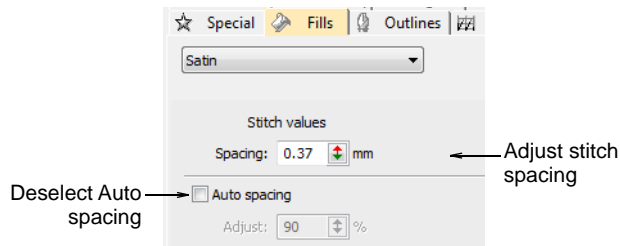
4 Untick **Auto Spacing**.

5 In the **Spacing** field, enter a fixed spacing:

- ◀ To increase density, enter a smaller value.
- ◀ To reduce density, enter a larger value.

| Stitch spacing 0.5 mm | Stitch spacing 0.7 mm | Stitch spacing 0.9 mm |
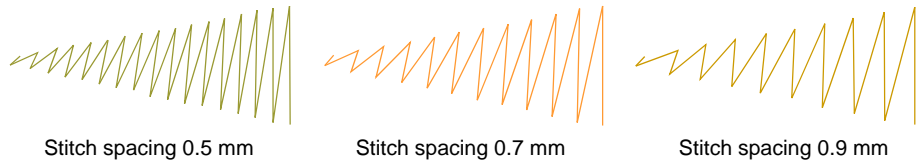
6 Press **Enter** or click **Apply**.

Related topics...

- ◀ Embroidery digitizing

Satin stitch count

⋀⋀	Use Fill Stitch Types > Satin to apply satin stitch to new or selected narrow columns and shapes. Right-click for settings.
⋀⋀	Use Fill Stitch Types > Satin Raised to create raised surfaces – can be applied to lettering or used with trapunto for quilting effects. Right-click for settings.
⋀⋀	Use Outline Stitch Types > Satin to create thicker borders or columns of even thickness. Right-click for settings.

Satin Raised is often used for folk designs to mimic handmade embroidery that uses thicker thread. If you require thicker stitches, set the satin stitch to repeat itself multiple times. Use **Satin Raised** to create raised surfaces consisting of multiple layers of satin stitching. This can also be applied successfully to some styles of font for a raised embroidery surface.

To adjust satin stitch count

◀ Right-click the **Satin** icon to access object properties.

Adjust satin count →

Adjust satin layers →
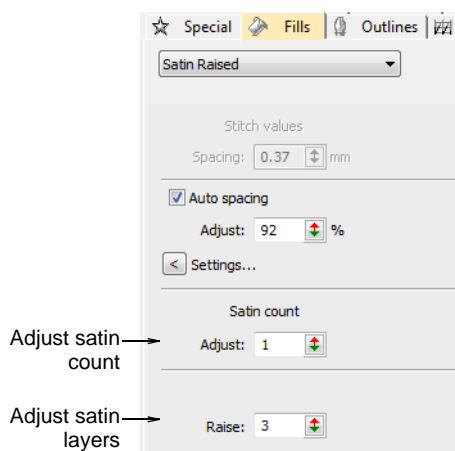
◀ Enter the number of repetitions in the **Satin Count** field.

Caution: Using a value higher than 10 may cause thread breaks, depending on the design, fabric, or thread tension.

◀ With **Satin Raised** you can also adjust the number of layers of stitching.

Increase satin count for more layers
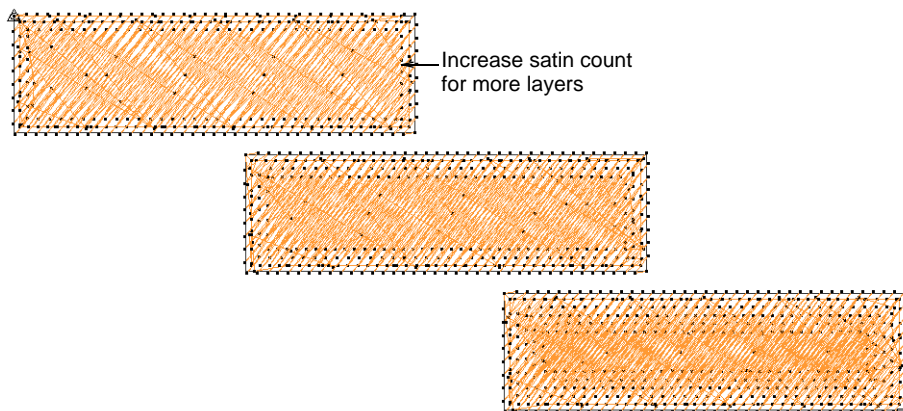
◀ Press **Enter** or click **Apply**.

💡
Tip: When you increase satin stitch count, you should also increase the spacing to avoid bunching and thread breaks.

Related topics...
◀ Satin fixed spacing
◀ Optimizing long satin stitches
◀ Applying stitch types & effects to lettering

Tatami stitching

Tatami stitch consists of rows of run stitches and is suitable for filling large shapes. Stitch offsets in each row are used to eliminate horizontal split lines.

Tatami density

Tatami stitch density is determined by the distance between each row of stitches. Sometimes row spacing is increased to create more open stitching for backgrounds and special effects.
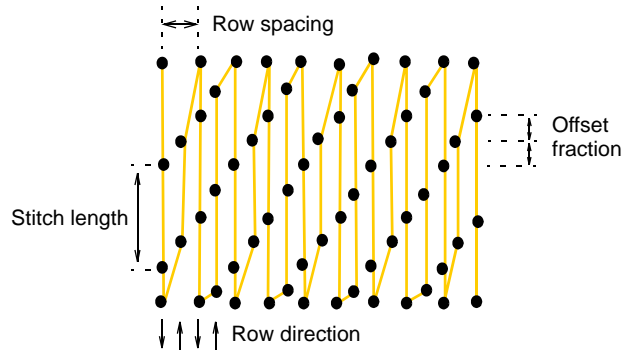
🔆
Tip: When you increase stitch spacing, **Auto Underlay** should be turned off. If too open, you may also find that travel runs and overlapping segments spoil the effect. The **Trapunto** effect automatically moves underlying travel runs to the edges of an object so that they can't be seen.

To set tatami density

1 Select the digitizing method you want to use – e.g. **Complex Turning**.

2 Select **Tatami** and create an embroidery object. Alternatively, select an existing embroidery object and click **Tatami**.
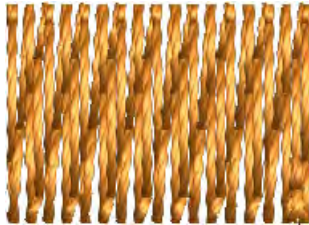
3 Right-click the **Tatami** icon to access object properties.
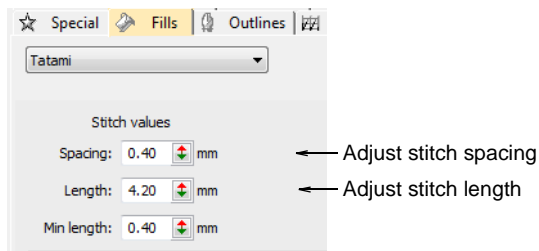
4 Adjust **Spacing** as required. For increased density, enter a smaller value. For more open stitching, enter a larger value.

| Spacing: 0.4 mm | Spacing: 0.6 mm | Spacing: 0.8 mm |
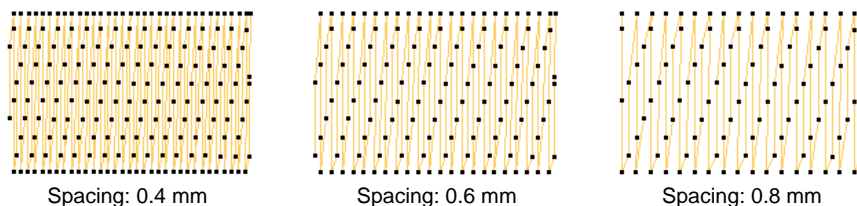
5 Adjust **Length** as required.

| Length: 4.5 mm | Length: 2 mm | Length: 1 mm |
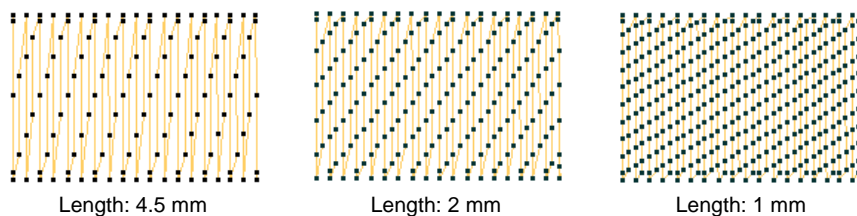
6 In the **Min length** field, enter the length of the shortest stitch to be generated.

Length: 4 mm
Minimum stitch: 0.4 mm

Length: 4 mm
Minimum stitch: 0.8 mm

Length: 4 mm
Minimum stitch: 1.2 mm
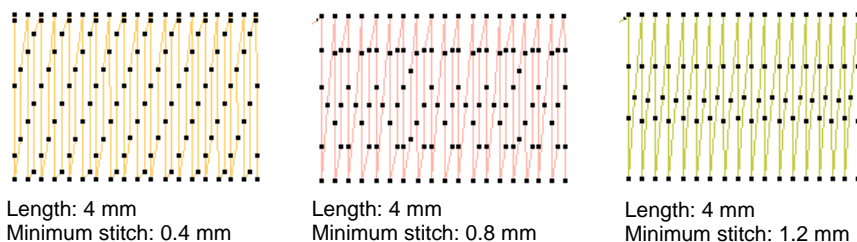
7 Adjust other settings as desired.

8 Press **Enter** or click **Apply**.

Related topics...

◀ Embroidery digitizing

Other tatami settings

Tatami settings also allow you to control needle offsets for more even distribution of needle points or for patterned effects. Choose a different backstitch type to control edge stitching.

Offsets

With tatami fills you can specify how each row is offset in order to create patterns formed by needle penetrations. You do this by adjusting either offset fractions or partition lines.

Adjust offsets to create patterned effects

Adjust backstitch to control appearance of borders
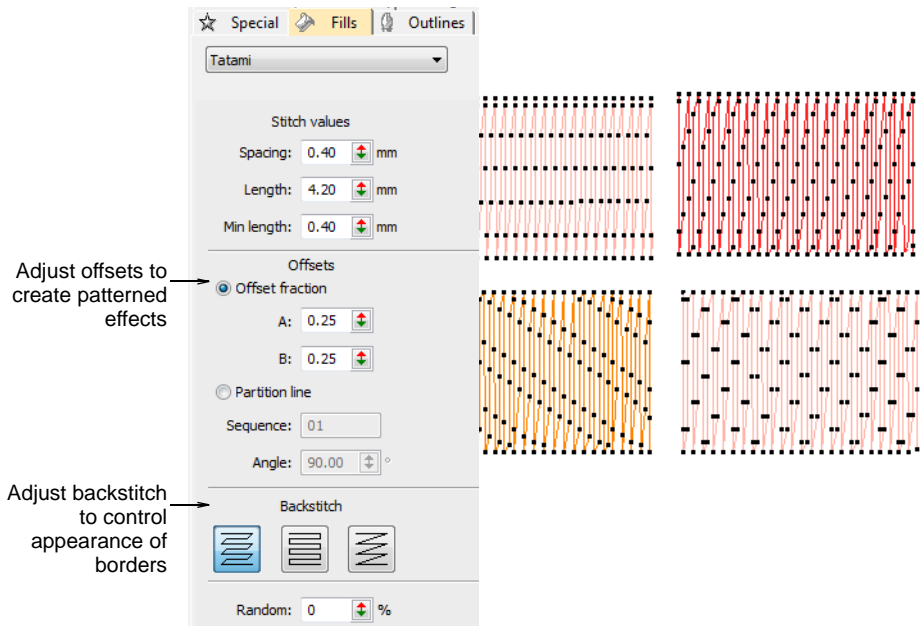
Tip: Using a **Random** factor you can eliminate the split line patterns formed by regular needle penetrations and distribute stitches randomly inside a shape.

Backstitch

Tatami backstitch is the term used for every second row of stitches in a tatami fill. There are three types available – **Standard**, **Borderline**, and **Diagonal**.

| Standard backstitch | Borderline backstitch | Diagonal backstitch |
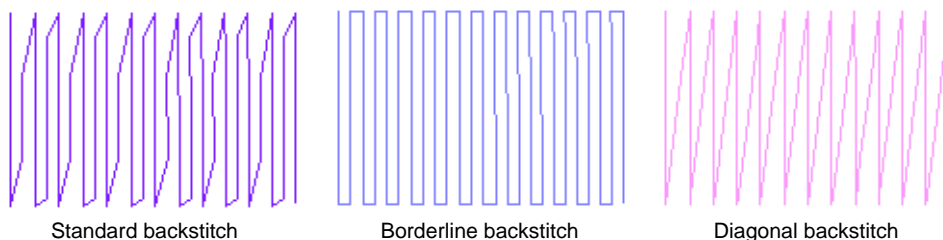
The table below describes the differences:

Type	Notes
Standard backstitch	Because the rows are different lengths, there are fewer small stitches at the edge of the shape, reducing possible damage to the fabric. Standard backstitch is suitable for high density fills.
Borderline backstitch	With lower density fills, borderline backstitch creates a smooth, well-defined edge. Borderline backstitch is also called Trapunto style.
Diagonal backstitch	The backward rows are diagonal, directly connecting the forward rows. Diagonal backstitch is suitable for turning shapes, and gives good results with Jagged Edge.

Related topics...

◀ Creating textures with tatami offsets
◀ Create random patterns
◀ Trapunto open stitching
◀ Jagged edges

Decorative embroidery

EmbroideryStudio provides many techniques for embellishing the basic stitch types covered in this section. Some are treated as stitch types in their own right – both outline and fill – and appear on the **Stitch Types**

toolbars. Others can be applied as stitch effects. In all cases, the digitizing techniques are similar. See also Digitizing Shapes.

Fill and outline stitch types

Graphical and traditional digitizing tools

Stitch effects applied in addition to stitch types

Thread colors applied in addition to stitch types
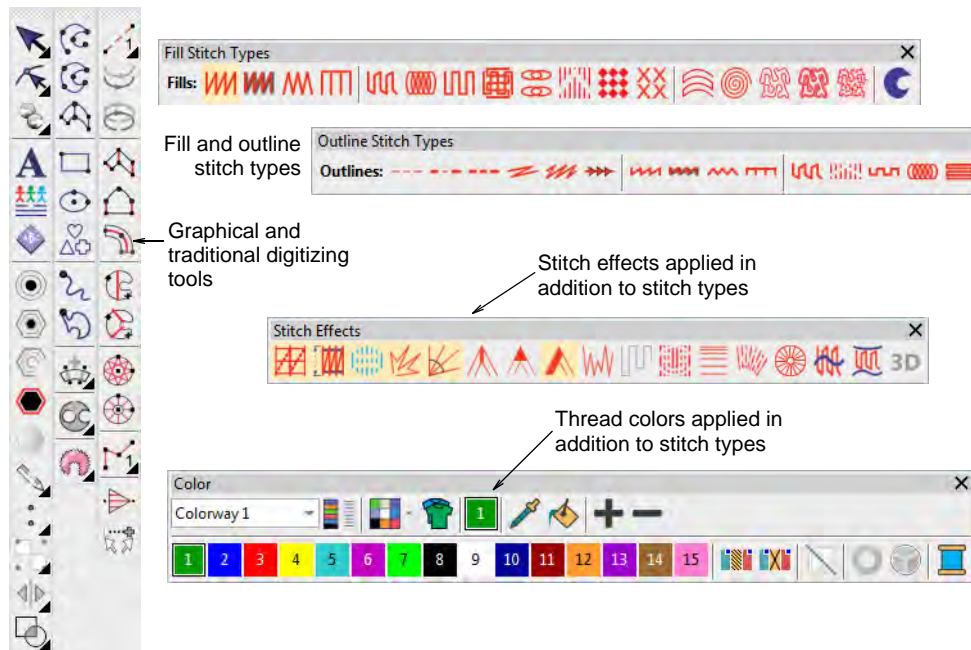
Decorative outlines

> Use Outline Stitch Types > Backstitch to place a row of backstitches along a digitized line. Right-click for settings.
>
> Use Outline Stitch Types > Stemstitch to place a row of stemstitches along a digitized line. Right-click for settings.

While simple run stitching is typically used to add borders and pickout runs, there are stitch types for creating decorative outlines. Backstitch is an older-style, adaptable stitch which can be used for delicate outlines. Stemstitch is thicker and can be used to mimic hand-sewn embroidery. Digitize decorative outlines as you would a **Run** stitch outline.

To create decorative runs

‹ For more delicate outlines, use **Backstitch**. Backstitch is an older-style, adaptable stitch which follows intricate curves well.

‹ **Backstitch** settings allow you to specify exact stitch length, chord gap, thickness and overlap values as well as number of strokes. **Length**, **Min Length**, and **Chord Gap** values work like the **Variable Run Length** option.

Run length: 1.5 mm

Stitch thickness: 0.25 mm

Strokes: 5
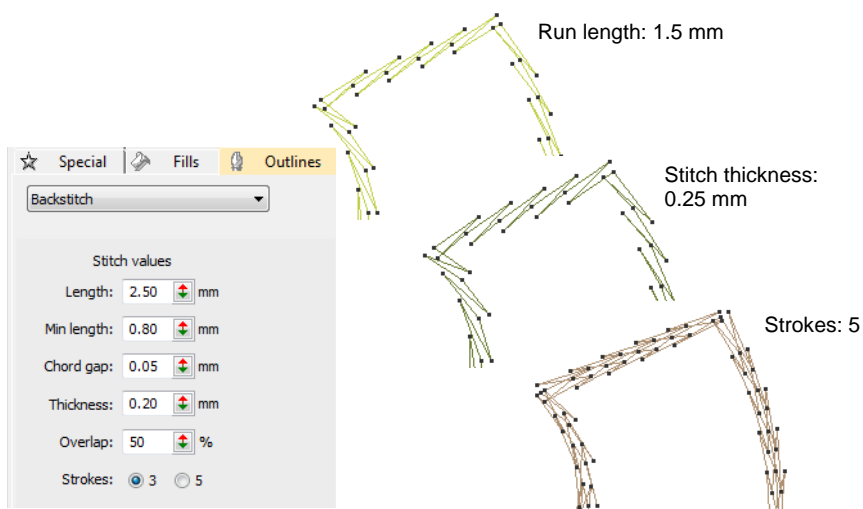
‹ For thicker, decorative lines, use **Stemstitch**. Stemstitch can be used to mimic hand-sewn embroidery. It is used for stems and vines with other decorative stitches, or as an outline for satin or motif fills.
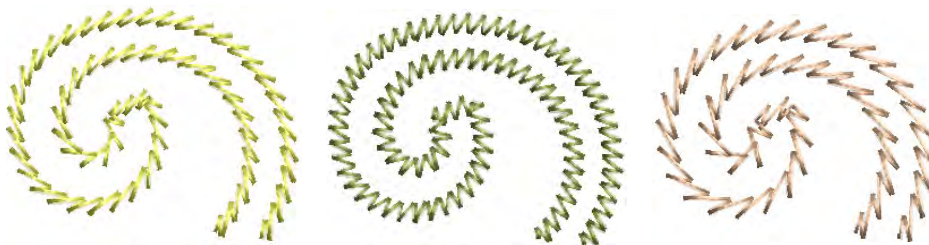
◀ **Stemstitch** settings allow you to specify exact stitch and line thickness, spacing and overlap values as well as thickness (number of strokes).

Line thickness: 1.5 mm

Spacing: 1.2 mm

Angle: 90°
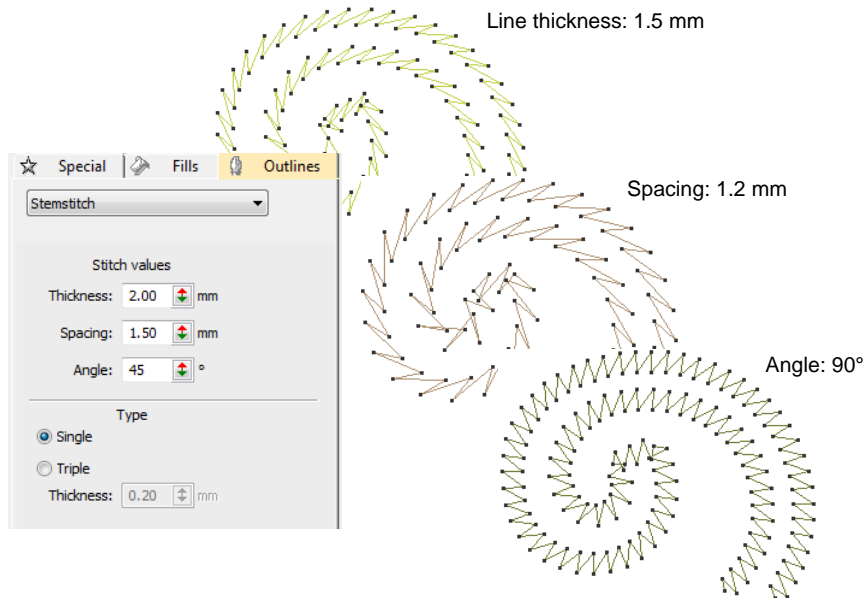
Note: For **Triple** stitching, you can also adjust **Stitch Thickness**.

Related topics...

◀ Embroidery digitizing
◀ Digitizing outlines & details
◀ Converting designs with CorelDRAW Graphics

Border stitching

Click Outline Stitch Types > Zigzag to create open borders or columns of even width for an open 'sawtooth' effect. Right-click for settings.

Use Outline Stitch Types > E Stitch to create open borders or columns of even width for an open 'comb' effect. Right-click for settings.

Use Outline Stitch Types > Square to create open borders or columns of even width for an open 'toothed' effect. Right-click for settings.

The **Stitch Types** toolbars include **Zigzag**, **E Stitch**, and **Square**. All can be used to create borders around appliqués and other embroidery objects. They can also be used for decorative effects or open fills where

fewer stitches are required. Zigzag and double zigzag stitches are also frequently used as underlays. See also Decorative borders.
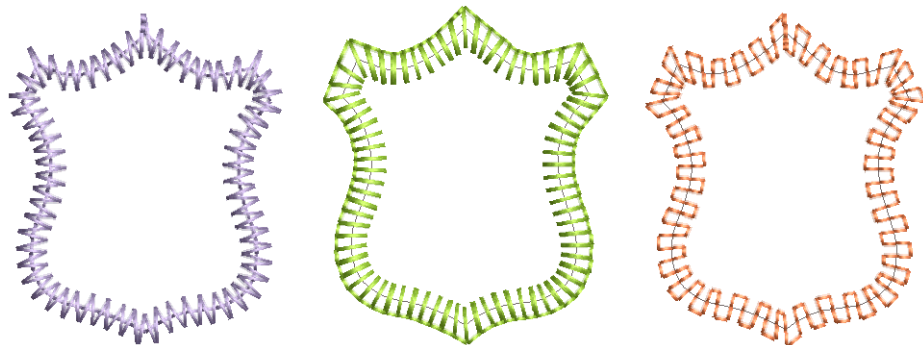
Patterned stitching

	Use Fill Stitch Types > Program Split to create decorative fill stitches where needle penetrations form a tiled pattern.
	Use Outline Stitch Types > Program Split to create borders or columns of even width for decorative needle penetration patterns. Right-click for settings.

EmbroideryStudio provides tools for creating patterns with needle penetrations. Apply offset fractions or partition lines to tatami fills for a variety of split-line effects. Alternatively, use **Program Split** or **Flexi Split** to create decorative fills from predefined patterns. Select from the library or create your own. The **Carving Stamp** feature allows you to define patterns using a 'carving stamp' as a template. Use it also to

create your own split lines when you want to add detail to filled objects. See also Patterned Stitching.

Choose from the pattern library
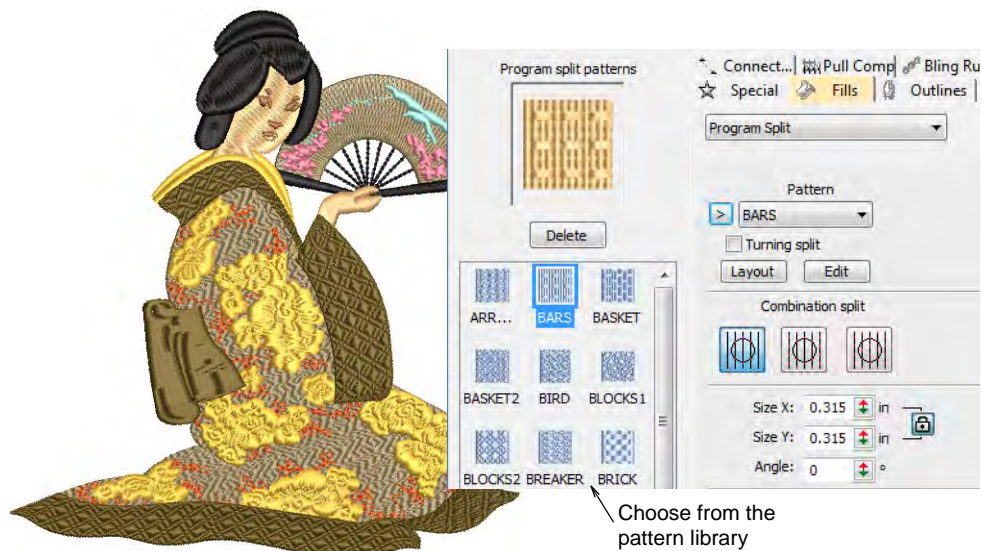
Related topics...

◀ Creating textures with tatami offsets
◀ Creating textures with program splits
◀ Creating patterns with custom splits
◀ Creating patterns with carving stamps

Curved stitching

EmbroideryStudio provides a variety of stitch types and techniques for creating curved stitching effects. These follow the contours of a shape

and can be used to give a sense of depth and movement to your stitching. Some can be used with borders as well as fills. See also Curved Stitching.

Curved stitch effects covered in the related topics below include:

Feature		Overview
	Contour	Stitches follow the contours of a shape, creating a contoured, light and shade effect.
	Offset	Similar to Contour in following the contours of a shape. It can be used in combination with turning stitches.
	Spiral Fill	Works best with simple shapes without holes or islands. Use it with either fixed or variable length run stitching.
	Radial Fill	Generates radial turning stitching in several stitch types such as Satin, Tatami and Program Split.
	Flexi Split	Decorative effect where one or more lines of a program split pattern are molded to the object shape.
	Florentine / Liquid	Create interesting curved effects by getting needle penetrations to follow the contour of digitized lines.

Related topics…
◂ Contoured fills
◂ Offset fills
◂ Spiral fills
◂ Radial fills
◂ Flexi-splits
◂ Curved fills

Specialty stitching

EmbroideryStudio provides many specialty effects and stitch types to create artistic fills. These can be used to create more organic, naturalistic stitching. They can be used to create textures like feathers or wool. Use them also to create open stitching with low stitch counts. See also Specialty Stitching.

Specialty stitch effects covered in the related topics below include:

Feature		Overview
🐍	Freehand	Create designs with a hand-drawn appearance, something which is difficult to achieve through conventional digitizing methods. See Freehand embroidery for details.
🪡	Hand Stitch	Create hand-stitch effects which combine randomized stitch length, angle and count. See Hand stitch effect for details.
〰️	Jagged Edge	Create rough edges, shading effects, or imitate fur and other fluffy textures. See Jagged edges for details.
🧵	Stipple	Create textured fills of run stitching which meanders more or less randomly within a border. See Stippling effects for details.
◎	Maze Fill	Create maze-like stitching which follows object contours for open fills. See Maze fills for details.
⚙️	String	Ideally suited to creating craftstitch fills as well as delicate borders. Can be used as a border for fixing ornamental mirrors and sequins. See String stitching for details.
Ⓜ	Zigzag	Create fills or open borders or columns of even width for an open 'sawtooth' effect. See Decorative borders for details.

Feature		Overview
⊞	E Stitch	Create fills or open borders or columns of even width for an open 'comb' effect. See Decorative borders for details.
⊞	Trapunto	Move internal travel runs to the edges of an object so that they can't be seen through open stitching. See Trapunto open stitching for details.
≡	Accordion Spacing	Vary stitch spacing between dense and open fill, producing gradient and shading effects. See Accordion spacing for details.
⬡	Color Blending	Like Accordion Spacing but used to create color blends where two colors are merged from one to another using a mixture of dense and open fill. See Color blends for details.
⑳	Chenille	Incorporate stitch patterns traditionally associated with chenille work – Square, Double Square, Coil, and Island Coil. See Chenille patterns for details.
XX XX	Cross Stitch	Fill large areas with cross stitching on an invisible grid that applies to all design objects. See Cross stitch fills for details.

Motif stitching

Use Outline Stitch Types > Motif Run to create a string of motifs along a digitized line.

Use Fill Stitch Types > Motif Fill to create decorative fills using embroidery motifs to form repeating patterns. Right-click for settings.

Use Traditional Digitizing > Use Motif to add motifs to design one-by-one. Rotate, scale, or mirror as you add.

Motifs are predefined design elements, such as hearts, leaves or border patterns. They generally consist of one or more simple objects, and are stored in a special motif set. Motifs can be used for ornamental outlines and patterned fills. Use the ones provided with the software or create your own. Motifs can be scaled, rotated and mirrored in the same way as

other objects. You can even use them to create interesting three dimensional effects. See also Motif Stitching.
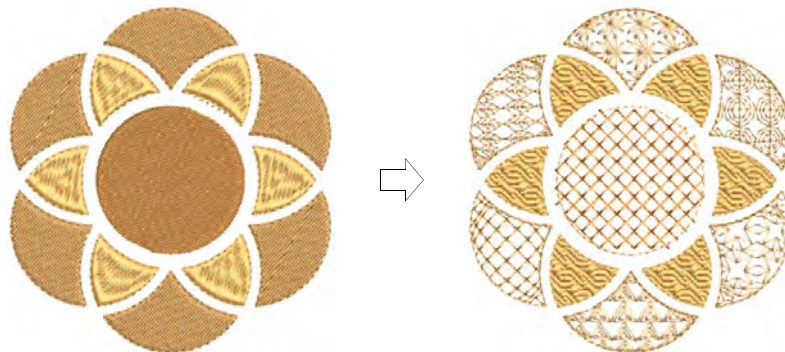
Note: Auto Underlay is deactivated with this feature and stitch angle has no effect.

Related topics...

◀ Selecting & placing motifs
◀ Motif runs
◀ Motif fills

Chapter 10
Digitizing Shapes

In EmbroideryStudio, you build designs from basic shapes or embroidery objects. These are like ordinary vector graphics in that they have 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 of an embroidery object is its stitch type. Different stitch types are suited to different shapes.

💡
Tip: EmbroideryStudio also lets you convert vector objects directly to embroidery objects. In fact, entire vector designs can be converted to embroidery. See also Convert objects with CorelDRAW Graphics.

Embroidery digitizing

The process of creating embroidery objects on screen is called 'digitizing'. Like design creation in **CorelDRAW Graphics**, this involves the use of

'input' or 'digitizing' methods. In fact, digitizing tools in EmbroideryStudio can be used to generate both embroidery objects and vector objects.
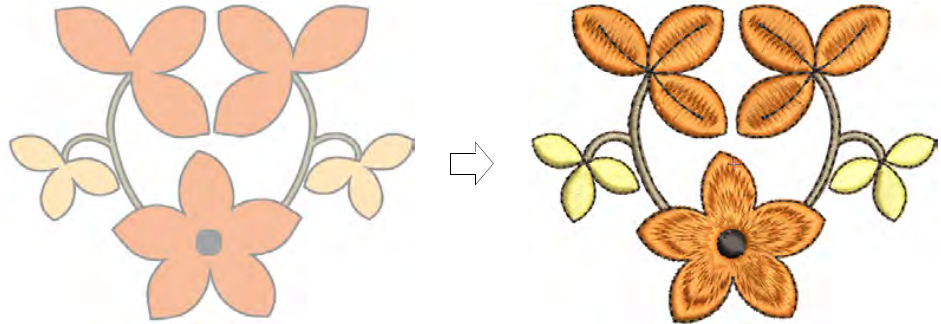
Tip: The CorelDRAW® Graphics Suite of curve-line digitizing tools such as **B-Spline Curve**, **Freehand**, **Bézier**, **Pen**, etc, are very useful. Objects created with these tools can be converted directly to embroidery. See also Convert objects with CorelDRAW Graphics.

Digitizing methods

EmbroideryStudio provides an outline/fill digitizing paradigm similar to **CorelDRAW® Graphics Suite** and other graphics applications. This makes embroidery digitizing easy for those coming from a graphic design background. It also makes it easy to convert between outlines and fills generally. For those coming from an embroidery background, the toolset

also provides traditional 'power digitizing' methods professional digitizers are familiar with.

Fill and outline stitch types

Graphical and traditional digitizing tools

Stitch effects applied in addition to stitch types

Thread colors applied in addition to stitch types
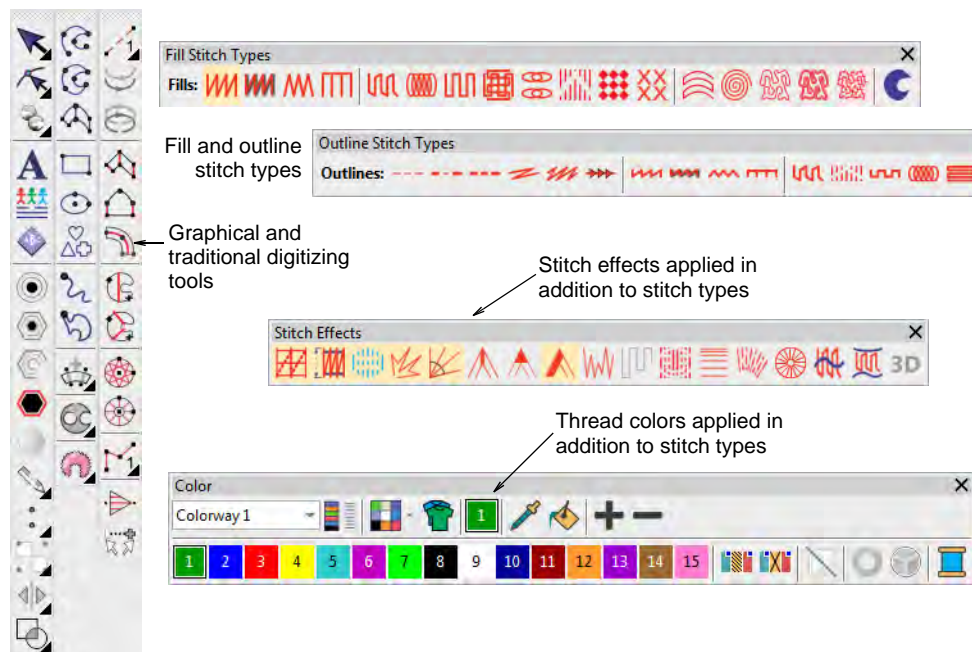
Digitizing toolset

The toolset you will typically use for digitizing work includes some or all of the following:

Toolbar	Function
Graphics Digitizing	Select a digitizing method – either graphical or traditional, open or closed.
Traditional Digitizing	
Outlines	Select a stitch type – either outline or fill. Both open and closed shapes may be treated as outlines. Only closed shapes can be used in conjunction with fill stitching.
Fills	
Stitch Effects	Select a stitch effect to apply as you digitize – e.g. smart corners. These can be modified at any time.
Color	Select a thread color to apply as you digitize. Colors in the palette may or may not be assigned to actual threads. It makes no difference when you digitize.

Graphics digitizing

The graphics approach to digitizing is similar to **CorelDRAW® Graphics Suite** or other graphics applications. It provides one set of

tools to create shapes which can be stitched as outlines or fills. You assign a stitch type to a shape by selecting from the **Stitch Types** toolbars.

Traditional digitizing

Traditional digitizing methods divide into three main categories – 'free shapes', 'column shapes', and 'outlines'.
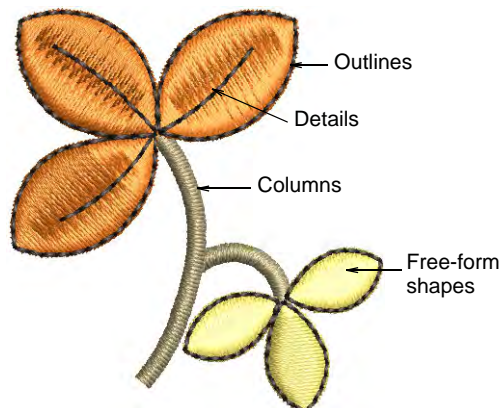
EmbroideryStudio also provides special time-saving input tools for creating stars and rings. See Digitize stars & rings for details.

Tip: Traditional methods also include 'manual' digitizing tools. Use these to add individual stitches, either singly or three stitch layers at a time. See Digitizing manual stitches for details.

Digitizing methods

Different digitizing tools are suited to different shapes or design elements. Whichever approach you take – graphical or traditional – methods divide broadly into two categories – open or closed – and two types – outline or fill. No stitch type, effect, or thread color is set in stone. Object properties can be modified at any time.
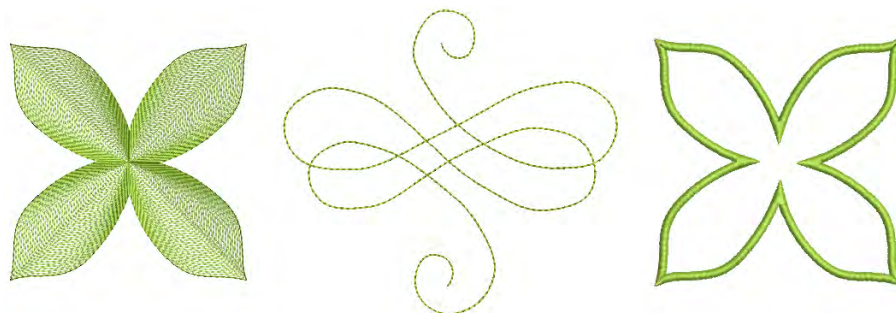
Whenever you select a traditional digitizing tool, instructions in the **Prompt Bar** guide you through the process. Because these tools use an

embroidery digitizing paradigm, you may be prompted to add multiple boundaries for holes, stitch angles, and/or start and end points. Refer to the prompts until the tool becomes familiar to you.

Stitch count

Status Bar → | 5428 | X= -0.26 Y= -0.13 L= 0.29 A= -153.42 | SATIN 0.37 mm | Object 3: Complex Fill | Jersey |
Prompt Bar → | Enter point 1 on the curve. | | | Jump (M) | Brother 100 x 100 mm |
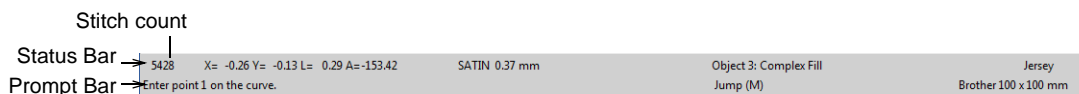
Underlays

Embroidery appearance and quality depends a lot on underlay which serves as a foundation for cover stitching. Underlay settings are stored with each object in the same way as other object properties. They are regenerated whenever the object is scaled or transformed. When **Auto Fabric** is turned on, a default underlay is applied, based on fabric settings. When **Auto Fabric** is turned off, an underlay is still applied but it is based on the digitizing method.
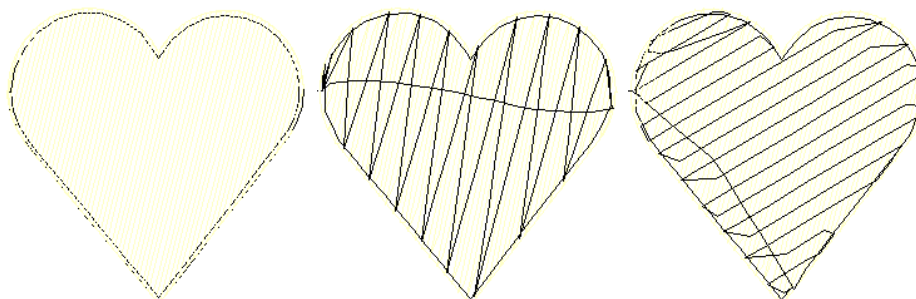
Tips for use...

◀ Change settings of most tools by right-clicking and adjusting values in the **Object Properties** docker.
◀ Use the **Prompt Bar** to help you digitize.
◀ If you make a mistake, press **Backspace** to delete the last point.
◀ Press **Esc** to undo all new points. Press **Esc** again to exit digitizing mode.
◀ Use **Auto Scroll** to scroll automatically within the design window while digitizing.
◀ Hold down the **Shift** key to temporarily deactivate **Auto Scroll**.
◀ Use the **Ctrl+Shift+A** key combination to quickly toggle **Auto Scroll** on/off.

💡
Tip: The **Show Repeats** function displays repeating designs, including sequins, in both **TrueView** and stitch view. You can view an existing design, even while digitizing, with any number of repeats.

Switching between fill & outline

You can switch between a fill stitch input method and **Digitize Run** or **Manual** by means of shortcut keys.

◀ Press **Enter** to switch between a fill stitch digitizing method and **Manual**.

◀ Press **Spacebar** to switch between a fill stitch digitizing method and **Digitize Run**.

💡

Tip: After digitizing, most object types can be easily inter-converted.

Related topics...

◀ Scroll options
◀ Viewing design repeats
◀ Creating free-form shapes
◀ Digitizing regular columns
◀ Simple outlines
◀ Stabilizing with automatic underlay
◀ Digitize stars & rings
◀ Freehand embroidery
◀ Digitizing manual stitches
◀ Keyboard shortcuts

Reference points & reshape nodes

Once you have selected a digitizing method, you create shapes by marking points along an outline.
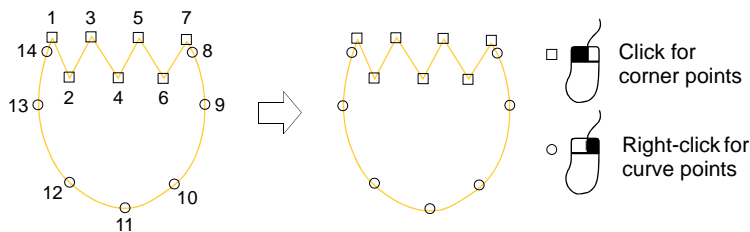
Use the left mouse button for corner points and right mouse button for curve points. Bézier control handles are available when you come to modify a shape.
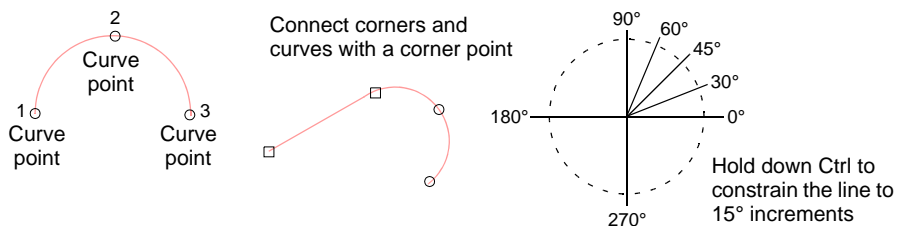
A few general rules apply:

◄ To constrain the line to 15° increments, hold down **Ctrl** as you digitize.

◄ For a perfect circular arc, mark three points with a right-click, and press **Enter**.

◇	Entry point
┼	Exit point
■	Corner reshape node
●	Curve reshape node
╱	Control handle
■	Stitch angle points
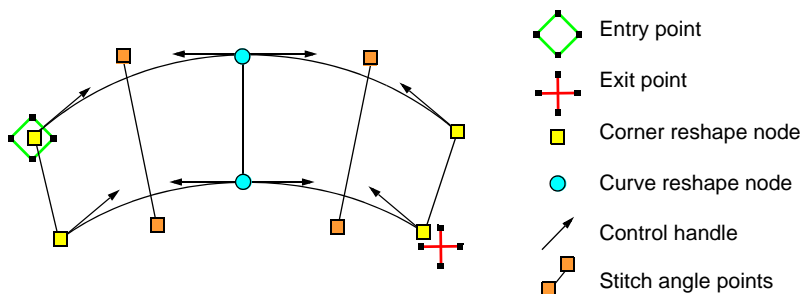
The reference points you mark when digitizing a shape become its 'control points'. These vary slightly with the object type. Most points can be added, deleted, or moved. Corner and curve points can be interchanged. Some control points such as entry and exit points cannot be deleted.

Related topics...

◄ Reshaping Objects

◄ Reshaping embroidery objects

Join methods

When you are digitizing closed objects, the **Closest Join** method automatically calculates connector points. When deactivated, all newly

digitized objects are joined by the **As Digitized** method. This means that you manually specify entry and exit points while digitizing.

Closest Join off   Closest Join on
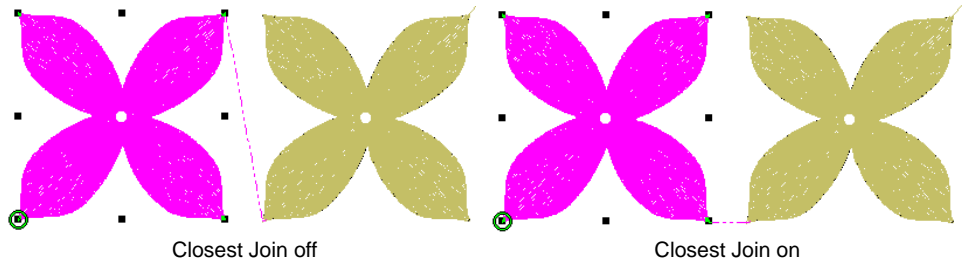
💡
Tip: The **Apply Closest Join** feature allows you to (re-)apply closest join to objects after editing.

Related topics...

◀ Other general options

◀ Apply closest join

Generate stitches

📊 Use Stitch > Generate Stitches to generate stitches for selected objects.

With **Generate Stitches** on (the default), stitches are calculated for new objects whenever you press **Enter**. They are also updated whenever you scale, transform or move the object. If speed is an issue, you can digitize objects with **Generate Stitches** off.

To generate stitches...

◀ To generate stitches for new or selected objects, select **Stitch > Generate Stitches** or press **G**.

Press G to generate stitches
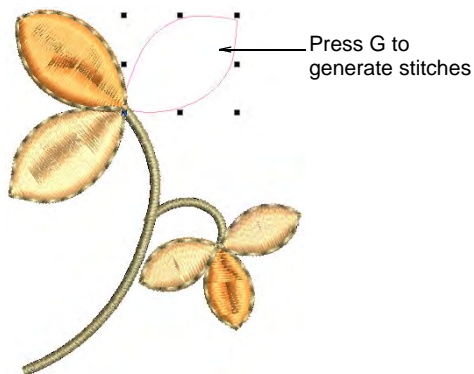
◀ To remove stitches, or digitize without generating stitches, deselect **Stitch > Generate Stitches** or press **G** again.

💡
Tip: Make sure **Show Outlines** is selected, otherwise stitchless objects will not be visible.

Related topics...

◀ Reshape options
◀ Change backgrounds

Digitizing with graphical tools

The graphics approach to digitizing is similar to **CorelDRAW® Graphics Suite** or other graphics applications. Assign a stitch type to shapes from the **Stitch Types** toolbars. Graphics digitizing tools are set to default values. To adjust the resulting objects, use the stitch angle, reshape, and hole tools.

✒
Note: The **Graphics Digitizing** toolbar also contains 'freehand' tools to create 'drawing' embroidery outlines and fills directly on screen. See Freehand embroidery for details.

Related topics...

◀ Digitize regular shapes
◀ Digitize open & closed shapes

Digitize regular shapes

> Use Graphics Digitizing > Rectangle to digitize rectangle or square objects. Press <Ctrl> for a square.
>
> Use Graphics Digitizing > Ellipse to digitize ellipse or circle objects.

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

Squares & rectangles

Digitize squares and rectangles with a few clicks of the **Rectangle** tool. Use any fill or outline stitch type.
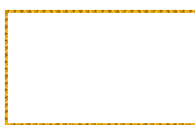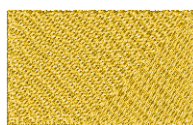
| Single | Satin | Tatami | Motif Run | Splits |
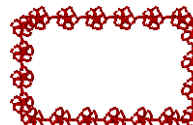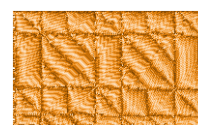
Click to mark a corner. Drag the pointer and click to define the opposite corner. To create a square, hold the **Ctrl** key down whilst dragging the pointer.
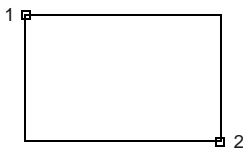
Circles & ovals

Digitize filled circles and ellipses with a few clicks with the **Ellipse** tool. You can use any stitch type, including outlines. Contour stitch looks most effective with long, narrow ovals.
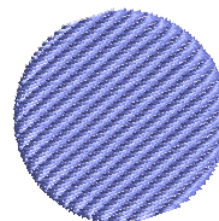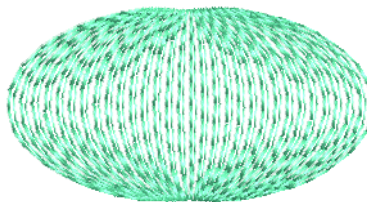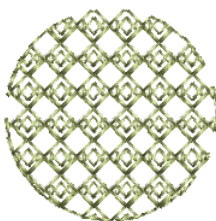
To digitize circles or ellipses, click to mark the center and click again to set the radius, and press **Enter**. This point becomes the entry point. To

create an oval, click a third time to mark the second radius point, and press **Enter**.
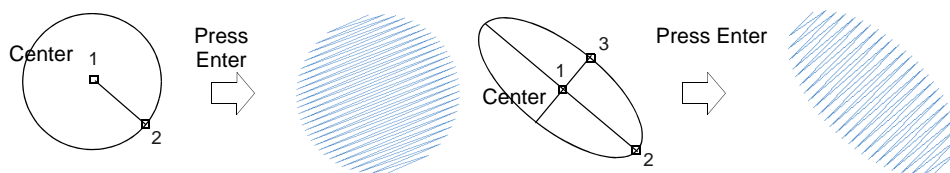
Digitize open & closed shapes

> ⓒ Use Graphics Digitizing > Digitize Open Shape to digitize open shapes. Press <Ctrl> to constrain.
>
> ⓒ Use Graphics Digitizing > Digitize Closed Shape to digitize closed shapes. Press <Ctrl> to create a square.

Use the **Digitize Open Shape** tool to digitize open shapes with any kind of outline stitch. **Digitize Open Shape** places a row of stitches along a digitized line. This tool is typically used to add borders or details to designs. Digitize free-form closed shapes with the **Digitize Closed Shape** tool. This tool can be used with either outline or fill stitch types.
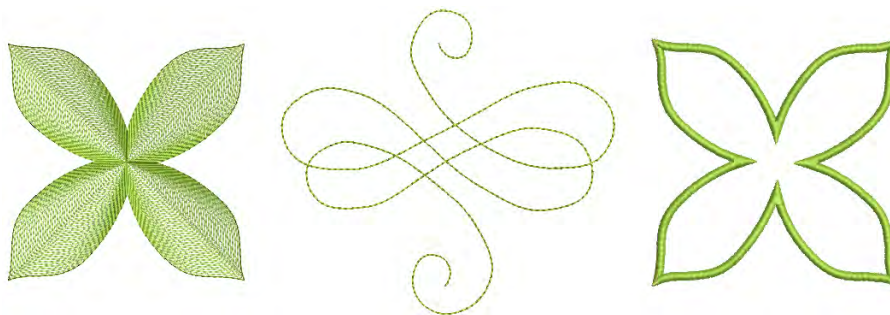
💡
Tip: To create both an outline and a fill, create the fill first, then select and duplicate the object and convert the duplicate to an outline, which is stitched after the fill.

To digitize an open or closed shape...

◀ Select a tool – open or closed shape – together with a suitable stitch type – outline for open, outline or fill for closed.

◀ Choose a color from the **Color** toolbar. The palette contains a selection of colors which can be tailored to each design or color scheme.

◀ Digitize the shape by marking reference points:

  ◀ Click to enter corner points.

  ◀ Right-click to enter curve points.
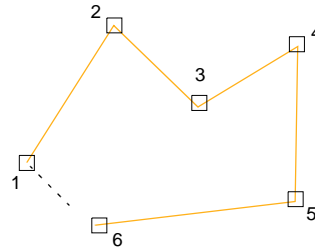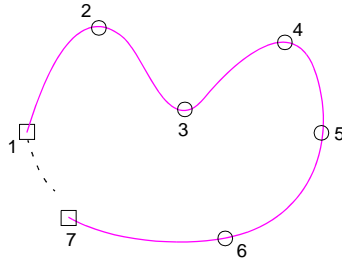
💡 **Tip:** Follow the prompts in the **Prompt Bar** to help you digitize. If you make a mistake, press **Backspace** to delete the last reference point, then continue adding reference points or press **Esc** to delete all the points so you can start again.

◀ Press **Enter** to complete a shape. With the **Digitize Closed Shape** tool, the shape will be closed with the same type of reference point as the last you digitized – i.e. corner or curve. To close with a different type of reference point, mark the last on top of the first and press **Enter**.

◀ If you decide to close an open object, use **Edit > Close Curve...** commands to close using straight or curved points.

Open object   Close object -   Close object -
                     Curve Line   Straight Line
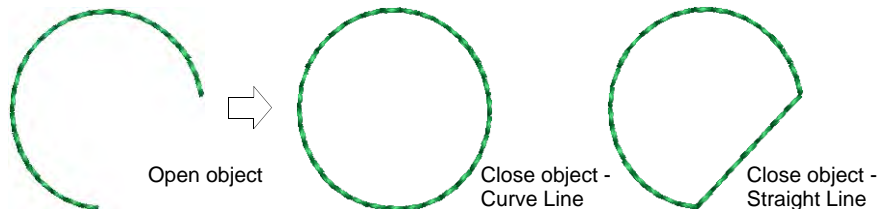
◀ Press **Esc** to deselect the tool.

📝 **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 **Prompt Bar**.

Related topics...

◀ Choosing threads

◀ Other general options

Digitizing outlines & details

Use Outline > Digitize Run to place a row of single or triple run stitches along a digitized line.

EmbroideryStudio provides tools for creating outline stitching of varying thickness and styles. These tools place a row of stitching along a digitized line. They are typically used for adding outlines and details. They can also be used for decorative effect.

To digitize outlines and details...

◀ Select a suitable input tool together with an outline stitch type.

Choose input method and outline stitch type
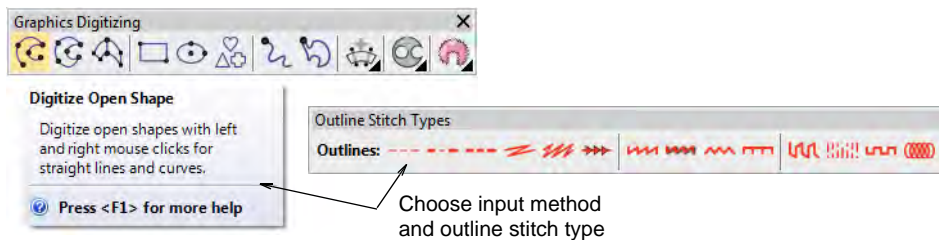
◀ Alternatively, choose a traditional outline input method from the **Outline** tools.

Choose outline input method
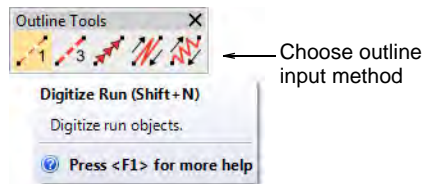
◀ In addition to **Run** and **Triple Run**, traditional methods include:

	Use Motif Run to place a row of motifs along a digitized line.
	Use Backstitch to place a row of backstitches along a digitized line.
	Use Stemstitch to place a row of stemstitches along a digitized line.

◀ Choose a color from the **Color** toolbar. You can change colors at any time.
◀ Digitize the shape by marking reference points:
  ◀ Left-click for corner points.
  ◀ Right-click for curve points.
  ◀ To constrain the line to 15° increments, hold down **Ctrl** as you digitize.
  ◀ For a perfect circular arc, mark three points with a right-click.
  ◀ Where curves connect – either to a straight line or another curve – click to mark the connection point.

  💡
  Tip: If you make a mistake, press **Backspace** to delete the last point. Press **Esc** to undo all new points. Press **Esc** again to exit digitizing mode.

◀ Press **Enter** to finish.
◀ To view stitches better, use the **View** toolbar to turn on or off backdrops.
◀ Optionally, use **Edit > Close Curve…** commands to close an object using straight or curved points.

◀ Optionally, double-click the object to access object properties.
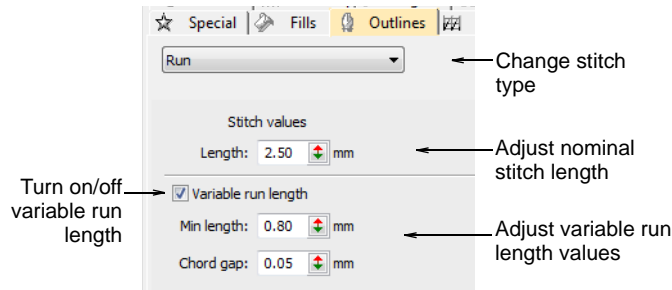
Turn on/off variable run length → (Turn on/off variable run length)

Change stitch type

Adjust nominal stitch length

Adjust variable run length values

◀ To set a fixed stitch length, adjust the **Length** field. For sharp curves, reduce length – e.g. 1.8 mm – so that the stitches follow the line more closely. Alternatively, automatically shorten stitches to follow tight curves with the **Variable Run Length** option.

Run length

Too few stitches to follow tight curve

Run length

Stitches follow the curve more closely
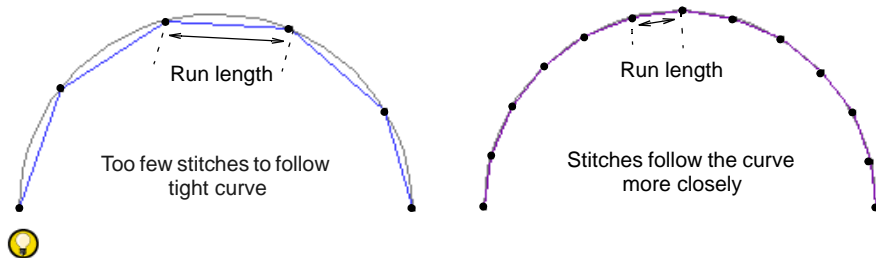
Tip: Use **Auto Scroll** to scroll automatically within the design window while digitizing. Hold down the **Shift** key to temporarily deactivate **Auto Scroll**. Use the **Ctrl+Shift+A** key combination to quickly toggle **Auto Scroll** on/off.

Related topics...

◀ Simple outlines
◀ Choosing threads
◀ Other general options
◀ View graphical components
◀ Scroll options
◀ Minimizing connectors

Digitizing regular columns

Use **Column C** to digitize columns and borders of fixed width. **Column C** is usually used with satin stitch but other outline stitch types are available for use. See also Satin stitching.
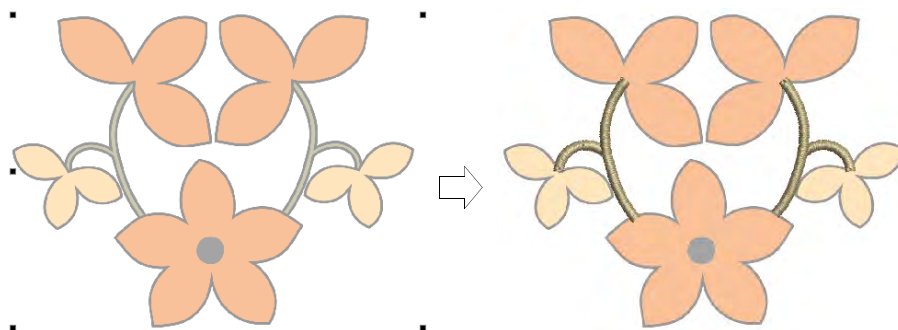
💡
Tip: You can toggle between **Column C** and **Digitize Run** by pressing the **Spacebar**. See also Convert objects with CorelDRAW Graphics.

Create columns & borders

> 🖋 Use Traditional Digitizing > Column C to digitize columns or borders of fixed width. Right-click for settings.

Digitize columns and borders of fixed width with the **Column C** tool.

To create columns and borders...

1 Insert some artwork to use as a digitizing backdrop.
2 Select a color and stitch type – e.g. Satin.
3 Select **Column C** and mark corner or curve points around the outline of the shape.
   ◀ Click to enter corner points.
   ◀ Right-click to enter curve points.
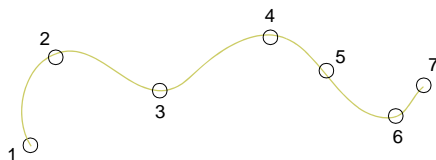
💡
Tip: The **Show Column C width guide** setting in the **Options** dialog activates a special cursor. This is useful when digitizing a border based on a background image.

4 To close the shape, enter the last point on top of the first.

5 Press **Enter**.

6 Specify column width:

◄ To use the default width – as set in the **Object Properties > Special > Column C** docker – press **Enter**.

◄ To specify a width, mark two additional points. By default, stitches are positioned around the center of the digitized line.

Digitize column width anywhere in design window
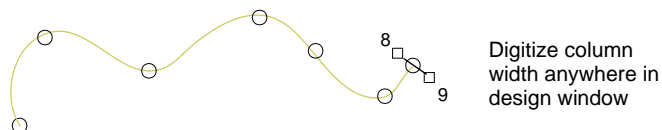
◄ To specify an offset, right-click reference points instead of left-clicking.

Left-click reference points

Right-click reference points
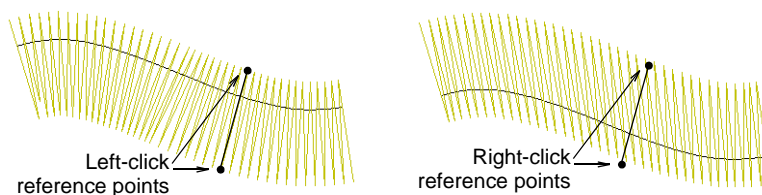
7 Press **Enter** to finish.

Related topics...

◄ Stitch Types
◄ Ruler & guide display options
◄ Reshape Column C objects

Adjust column width & offset

> Use Traditional Digitizing > Column C to digitize columns or borders of fixed width. Right-click for settings.

By default, stitches are positioned around the center of an Column C object. Set an exact offset via **Object Properties**. You can also set an exact width.

To adjust column width and offset…

◀ Double-click an Column C object or right-click the tool to access object properties.

Adjust column width
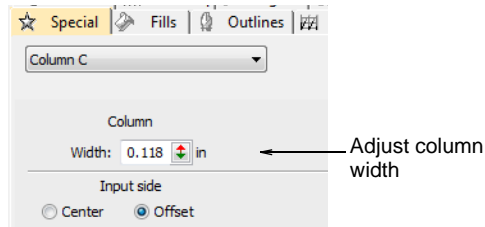
◀ Enter a column **Width**.
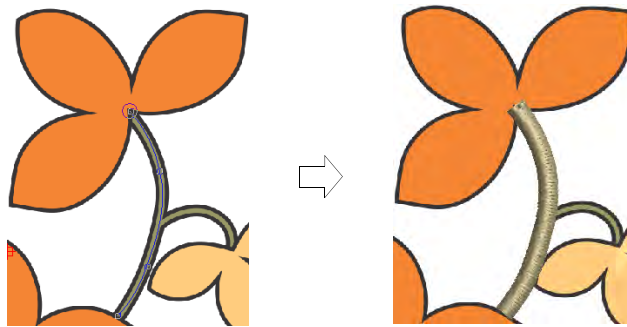
◀ In the **Input Side** panel, select **Offset**.

Select offset

Set offsets either side
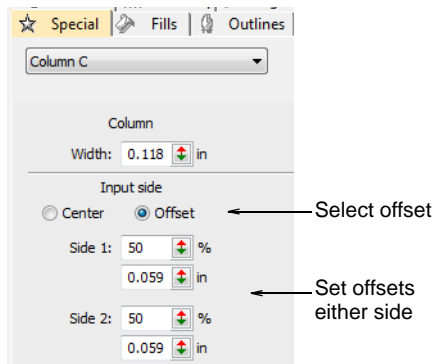
◀ Set an offset in either **Side 1** or **Side 2** field.

Offset: 25%

Offset: 75%
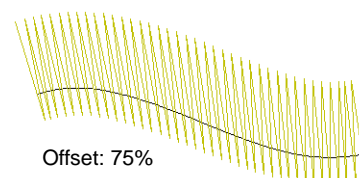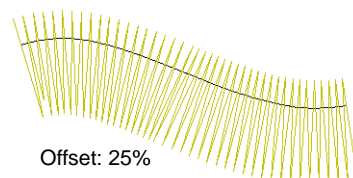
Tip: You can also change the width of Column C objects by adjusting control points with the **Reshape** tool.

Related topics...

◀ Ruler & guide display options
◀ Reshaping embroidery objects

Set corner fractions

Use Traditional Digitizing > Column C to digitize columns or borders of fixed width. Right-click for settings.

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. You can control the way stitches turn in Column C objects by adjusting the 'corner fraction'.

To set corner fractions...

◀ Double-click a Column C object or right-click the tool to access object properties.

Adjust corner fraction
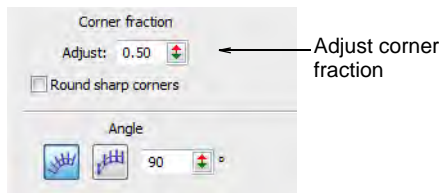
◀ Enter a new corner fraction in the **Corner Fraction** field.

   ◀ Increasing the fraction spreads the turn over more stitches.
   ◀ Decreasing the fraction reduces the number of stitches that turn.

Corner fraction 0.8   Corner fraction 0.5   Corner fraction 0.25
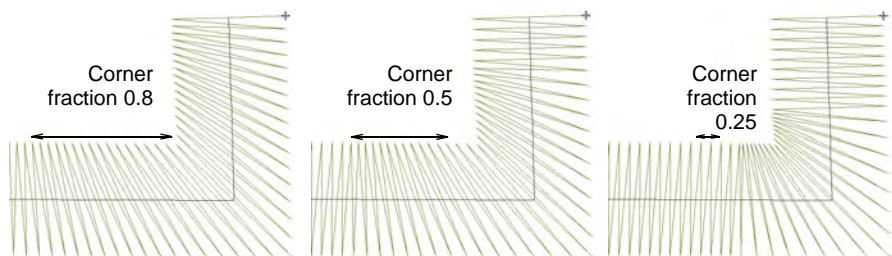
Tip: Round Sharp Corners is also available for Column C objects to give you the option of sharp or round points.

Set angles & orientation

> Use Traditional Digitizing > Column C to digitize columns or borders of fixed width. Right-click for settings.

The **Column C** tool provides control of stitching angle and orientation.

Default Column C
stitch angles

Slanted Column C
stitch angles

Column C parallel
stitching

Column C stitch
angle and
orientation
controls
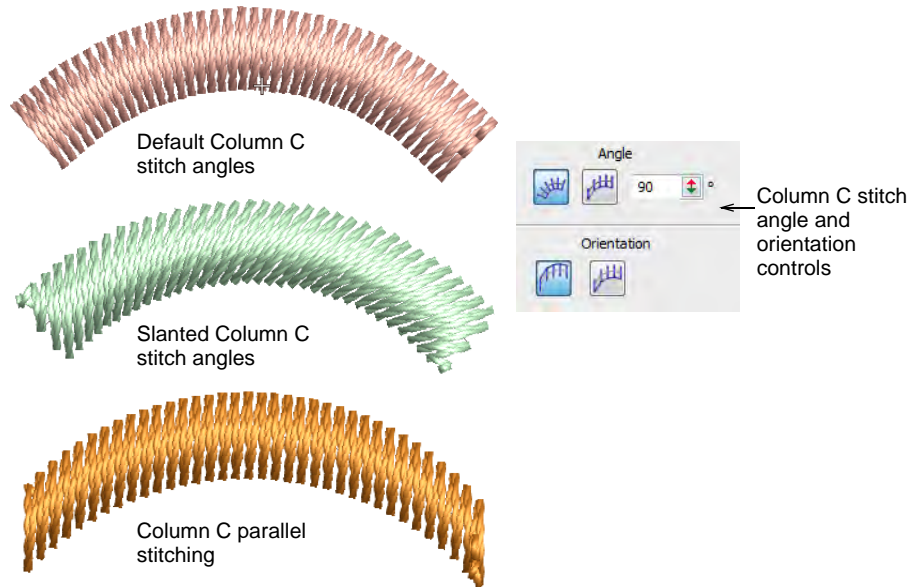
Angle and **Orientation** controls allow you to:

◀ Control the angle of stitches relative to baseline.

◀ Create parallel stitching and control the angle relative to the horizontal. Use it to create calligraphy-like stitching in conjunction with **Freehand**.
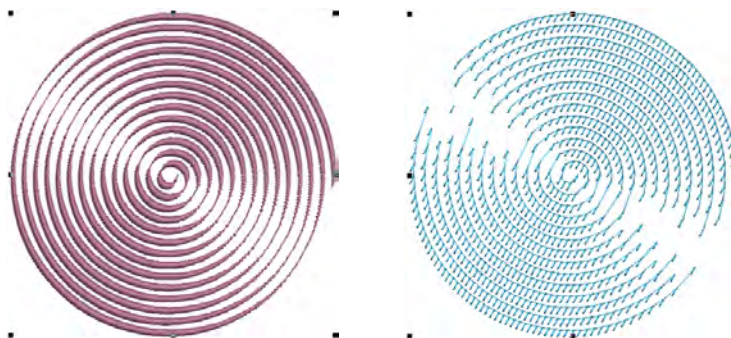
◀ Control orientation to set which side to start stitching on. This is most useful for **E Stitch**.
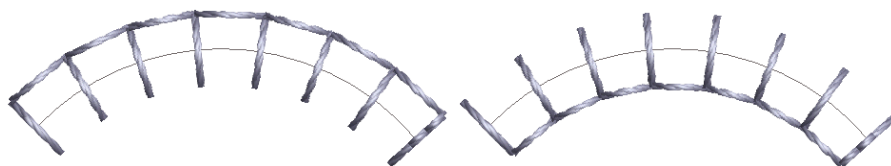
Related topics...

◀ Freehand embroidery
◀ Reshape Column C objects

Digitizing irregular columns

In addition to **Column C**, both **Traditional Digitizing** and **Graphics Digitizing** toolbars provide tools for creating column shapes and borders of varying width.

Note: EmbroideryStudio lets you convert between Complex Fill and Column A or Column B objects. See Converting designs with CorelDRAW Graphics for details.

Digitize columns of varying width

> Use Traditional Digitizing > Column A to create columns of varying width and stitch angle. Right-click for settings.
>
> Use Graphics Digitizing > Digitize Column to create columns of varying width and stitch angle. Right-click for settings.

Use the **Column A** or **Digitize Column** tools to digitize columns of varying width and stitch angle.

To digitize columns of varying width...

1 Click the **Column A** or **Digitize Column** icon.

2 Select a color and stitch type – e.g. Satin.

3 Digitize the column by marking points on alternate sides of the column.

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

The control points in a pair do not have to be the same type. For example, one can be a corner point, the other a curve.
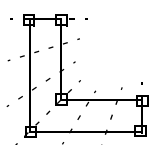
Stitches change angle through the entire shape
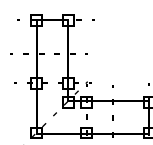
Stitches remain parallel between parallel stitch angles

Tip: If you make a mistake, press **Backspace** to delete the last point. Press **Esc** to undo all new points. Press **Esc** again to exit digitizing mode.

4 When you have finished digitizing, either:

- ◄ Press **Enter** to keep the last stitch and place the exit point at the last point you digitized, or
- ◄ Press **Spacebar** to omit the last stitch and place the exit point on the opposite side of the column.

Start
Press Enter

OR

Finish

Start
Press Spacebar
Finish
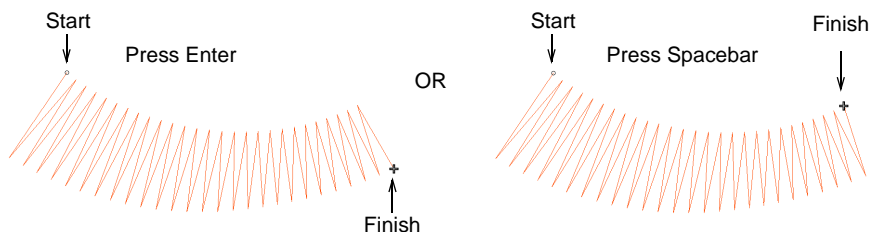
Related topics...

◄ Stitch Types

Create smooth joins

Use Traditional Digitizing > Column A together with 'continuous input' to create single objects comprising separately stitched sections.

> Use Standard > Options to access application options for design view, grid & guides, and other settings.

The 'continuous input' option provides a simple and efficient way of digitizing a single Column A object comprised of separately stitched sections. The objects so created can be deleted or edited using standard reshape tools.

To create smooth joins...

1 Click the **Options** icon or select **Setup > Options** and click the **General** tab.

Select continuous input method
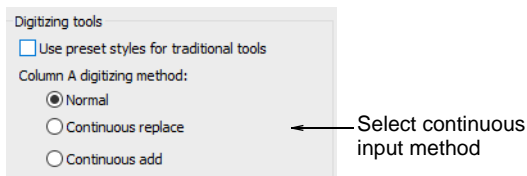
2 Select a continuous input method:
- **Normal**: Use this for non-continuous input.
- **Continuous replace**: Use this to continue digitizing the same object after each **Enter** keypress. Any properties you change during digitizing will affect the entire object, not just the section you are working on.

First section created

Second section 'smooth joined' to first as a single object
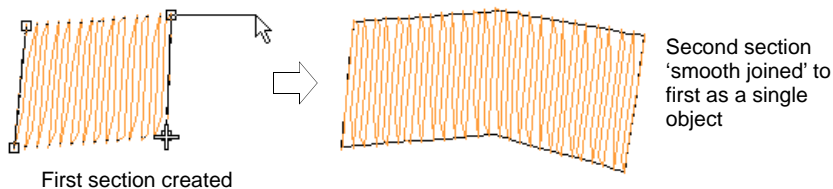
- **Continuous add**: Use this to join objects of different size where different stitch types are used – e.g. a narrow section of satin stitch joining to a larger section of tatami.

First section created

Second section 'smooth joined' to first – two sections become separate objects
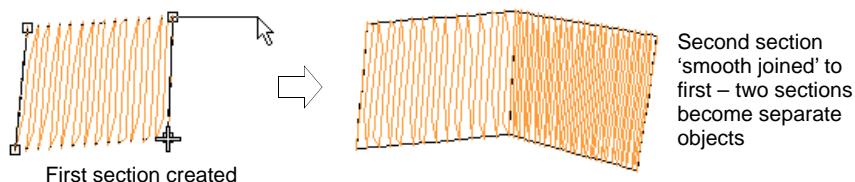
3 Click **OK**.

4 Digitize the Column A object. When you press **Enter**, the digitized object fills with stitches. The input tool is still active.

5 If you are using **Continuous Add** mode, you can select another stitch type at this point.

💡
Tip: To stop the screen scrolling while moving the mouse, hold down **Shift** and click the stitch type button you require.

6 Recommence digitizing where you left off and press **Enter** when you have finished.

If you are using **Continuous Add** mode, the new section is a new object. This means that, while the two sections are smoothly joined, they can have different properties, including stitch type.

💡
Tip: To start a new object without joining to the previous object, click the **Column A** icon again.

Related topics...
◀ Digitize columns of varying width

Digitize columns of turning stitches

🔶 Use Traditional Digitizing > Column B to create asymmetrical columns of turning stitches, where opposite sides are different shapes. Right-click for settings.

Use the **Column B** tool to digitize shapes where one side is different to the other, especially where one side requires more points than the other. Stitches turn evenly throughout the entire shape.
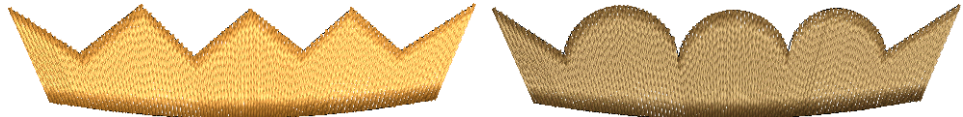
To digitize asymmetric columns...
1 Click the **Column B** icon.
2 Select a color and stitch type – e.g. Satin.
3 Digitize the first side of the shape – i.e. top or left – by marking points.
  ◀ Click to enter corner points.
  ◀ Right-click to enter curve points.
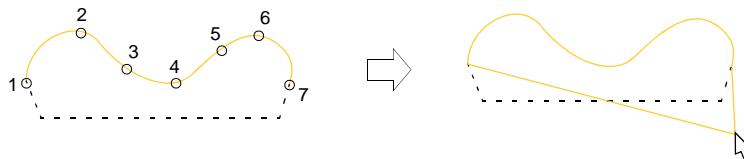
Tip: If you make a mistake, press **Backspace** to delete the last point. Press **Esc** to undo all new points. Press **Esc** again to exit digitizing mode.

4 Press **Enter**.

An elastic line attaches to the pointer, ready for you to digitize the second side of the shape.

5 Digitize the second – i.e. bottom or right – side of the object.

Press Enter or Spacebar

Stitches turn evenly

9   10
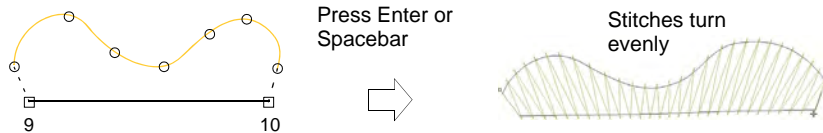
Tip: Stitch angles vary from tightly turning fills to parallel fills, depending on the ends of the shape – the more 'pointy', the tighter the stitch angles.

| Turning fill | Sloping fill | Parallel fill |
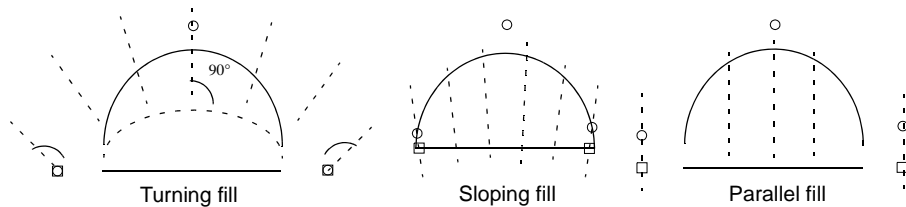
6 When you have finished digitizing the shape, either:

◀ Press **Enter** to keep the last stitch and place the exit point at the last point you digitized, or

◀ Press **Spacebar** to omit the last stitch and place the exit point on the opposite side of the column.

Related topics...

◀ Stitch Types

Creating free-form shapes

In EmbroideryStudio, you digitize free shapes with turning stitches with the all-purpose **Complex Turning** tool. Use the **Complex Fill** tool for

free shapes with fixed stitch angles. By digitizing further internal boundaries, you can create shapes with holes in them.

Boundaries in complex shapes should not overlap or intersect. The shapes below, for example, cannot be successfully digitized.

| Boundaries overlap | Boundary overlaps itself | Hole within hole |

Tip: You can create new objects from existing boundaries using the **Fill Holes** feature. Alternatively, you can use other objects to cut holes. See Removing underlying stitching and Fill holes for details.

Digitize free-form shapes

| | Use Traditional Digitizing > Complex Fill to digitize filled shapes with a single stitch angle. Right-click for settings. |
| | Use Traditional Digitizing > Complex Turning to digitize filled shapes with turning stitch angles. Right-click for settings. |

Digitize free-form shapes with **Complex Fill** or with **Complex Turning**. The method is essentially the same:

◀ Digitize the shape
◀ Define entry and exit points
◀ Define stitch angle/s. **Complex Turning** lets you create multiple stitch angles.

To digitize a free-form shape...

1 Insert artwork to use as a digitizing backdrop. Make sure **Show Bitmaps** or **Show Vectors** are toggled on or press **0** (zero) to see artwork on screen.

2 Select a color and stitch type.

3 Select a tool and mark corner or curve points around the outline of the shape.

◀ Click to enter corner points.

◀ Right-click to enter curve points.

Tip: If you make a mistake, press **Backspace** to delete the last point. Press **Esc** to undo all new points. Press **Esc** again to exit digitizing mode.

4 Close the shape:

◀ To close with the same type of point as the last entered – i.e. corner or curve – press **Enter**.

◀ To close using a different type of point, mark the last on top of the first and press **Enter**.

Press Enter – the object is closed automatically

Last point marked on top of first with right button
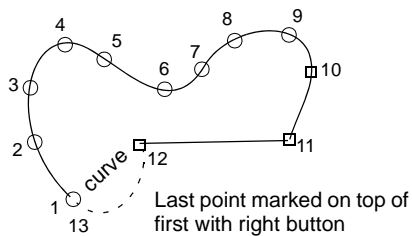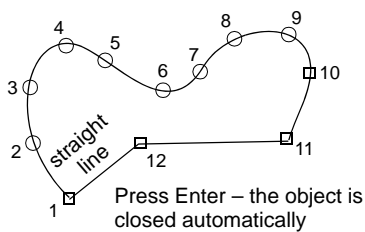
5 Optionally, digitize additional (internal) boundaries in the same way and press **Enter**.
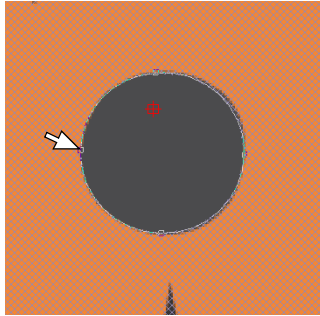
6 Define entry and exit points by marking two points outside the object boundary and press **Enter**. The **Closest Join** method (the default) automatically calculates closest join between objects while digitizing. When deactivated, entry and exit points need to be set manually.
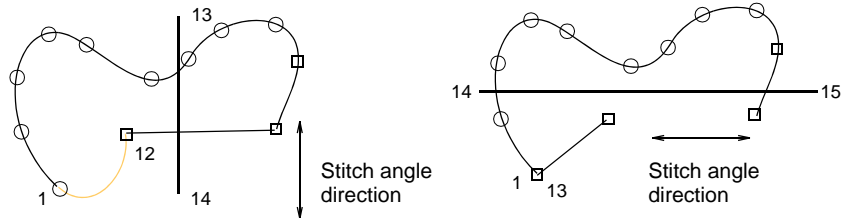
💡
Tip: If you choose to digitize entry/exit points manually, place them opposite each other on the boundary in order to minimize travel stitching. Then define the stitch angle to be perpendicular to the line between entry and exit points.

7 Mark stitch angles:

◄ If you are using **Complex Fill**, mark two points.
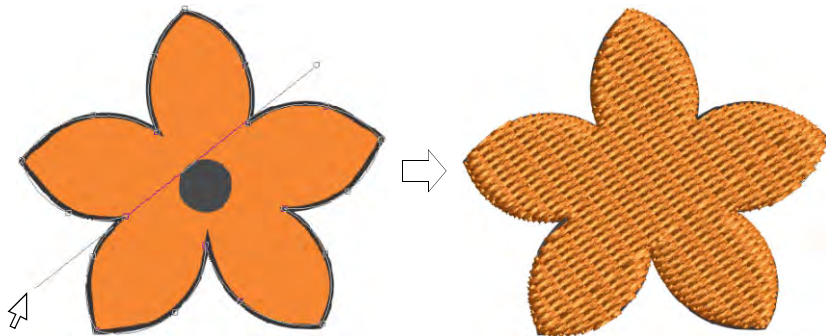
◀ If you are using **Complex Turning**, add more stitch angles as desired. Stitch angles may intersect over any holes you have digitized.
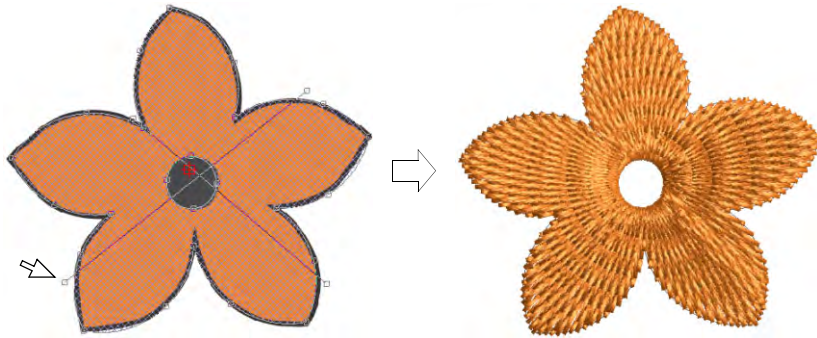
◀ Alternatively, press **Enter** to accept calculated stitch angles. Or press **Spacebar** to discard calculated stitch angles and accept a single default stitch angle.
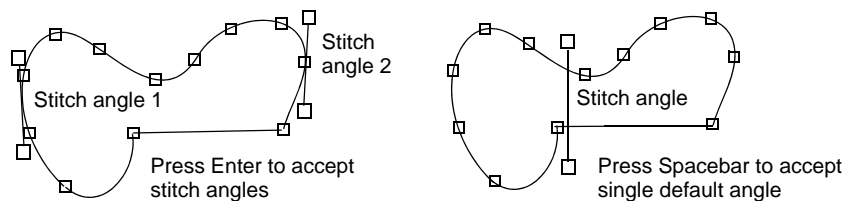
Tip: You can adjust and/or add stitch angles using the **Reshape Object** tool.

8 Press **Enter**. Free shapes generally stitch out in several segments, joined by travel runs. However, all segments and boundaries are part of the same object.

Tip: To view stitches better, toggle off **Show Bitmaps** (press **D**).

Related topics...

◀ View graphical components
◀ Stitch Types
◀ Choosing threads
◀ Add holes to free-form shapes
◀ Other general options
◀ Adjusting stitch angles
◀ Stabilizing with automatic underlay

Add holes to free-form shapes

> Use Traditional Digitizing > Complex Fill to digitize filled shapes with a single stitch angle. Right-click for settings.
>
> Use Traditional Digitizing > Complex Turning to digitize filled shapes with turning stitch angles. Right-click for settings.

While EmbroideryStudio provides dedicated tools for cutting and filling holes in existing objects, it also lets you add holes to closed shapes as you digitize.

To add holes to free-form shapes...

◄ Use one of the free-form digitizing tools to create your shape. Simply follow the prompts to add holes as you digitize. Alternatively, select the final object and click the associated free-shape tool. Points display around the object outline.

◄ Digitize additional holes making sure they do not overlap. Press **Enter** each time.
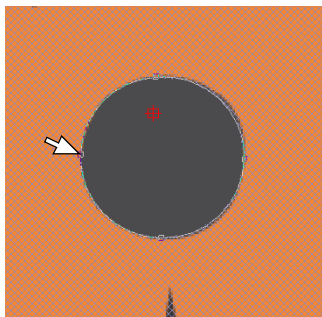
◄ If you make a mistake, press **Backspace** to delete the last point. Press **Esc** to undo all new points.
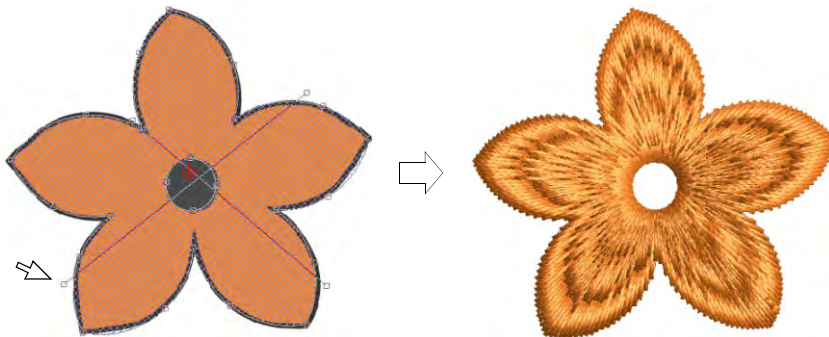
◄ When you have digitized all additional holes, press **Enter** again.

💡

Tip: To remove unwanted holes, select the object and use the **Reshape Object** tool to delete control points around the hole.

Related topics...

◀ Adding & filling holes
◀ Reshaping embroidery objects
◀ Removing underlying stitching

Set nominal angles

> 🔲 Use Traditional Digitizing > Complex Fill to digitize filled shapes with a single stitch angle. Right-click for settings.
>
> 🔲 Use Traditional Digitizing > Complex Turning to digitize filled shapes with turning stitch angles. Right-click for settings.

You can change the stitch angle of Complex Fill objects using object properties. By definition, Complex Turning objects contain multiple stitch angles. However, they also have a property called the 'nominal angle'.

To set the nominal angle...

◀ Double-click a free-shape object to access object properties.

Adjust nominal angle
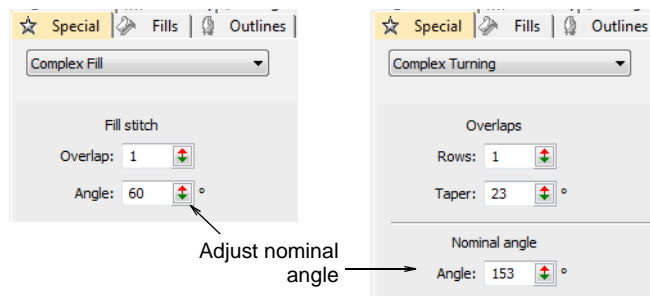
◀ In the **Angle** or **Nominal Angle** field, enter a stitch angle.

Angle: 90°   Angle: 0°
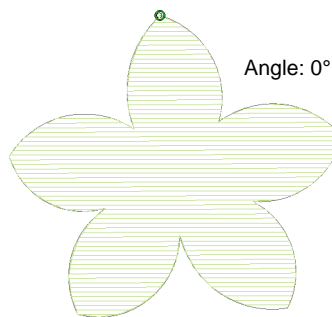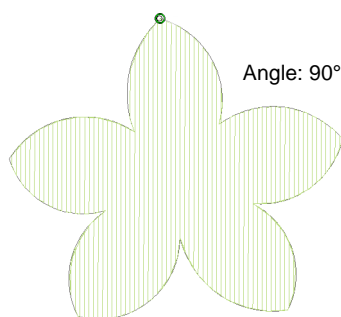
Note: The 'nominal angle' in a Complex Turning object only takes effect if multiple stitch angles are irreconcilable – it then reverts to parallel stitching in the direction of the nominal angle. The nominal angle also affects certain underlay styles.

Tip: You can adjust stitch angles of free-form objects interactively using the **Stitch Angles** tool.

Related topics...

◀ Stabilizing with automatic underlay

◀ Adjusting stitch angles

Adjust segment overlaps

	Use Traditional Digitizing > Complex Fill to digitize filled shapes with a single stitch angle. Right-click for settings.
	Use Traditional Digitizing > Complex Turning to digitize filled shapes with turning stitch angles. Right-click for settings.

Free shapes generally stitch out in several segments, joined by travel runs. Where segments within an object meet, the push-pull effect on the fabric during stitching may cause gaps to appear. These gaps can be prevented by adding overlapping rows.

To adjust segment overlaps...

◀ Double-click a free-shape object to access object properties.

Enter required overlap
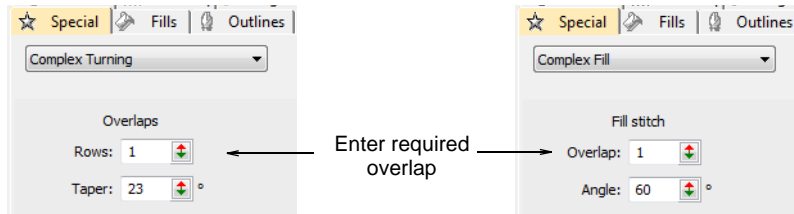
◀ Adjust the number of overlapping rows where segments join. An overlap of '1 row' means no overlap between segments. An overlap of '2 rows' means that the segment is extended by one extra row of stitches.

No overlap row

Overlap rows 5
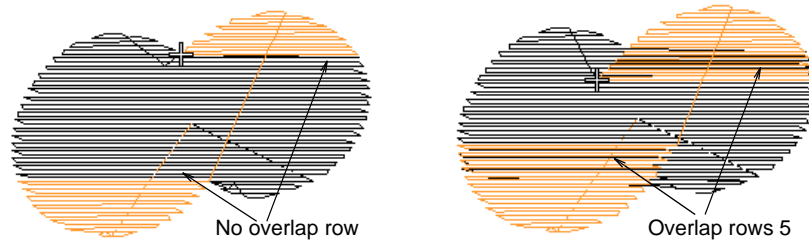
◀ With Complex Turning objects, you can also adjust the taper angle. This value limits the width of overlaps. It defaults to 22.5° with a range of 15° to 90°.

Taper angle: 22.5°

Taper angle: 90°
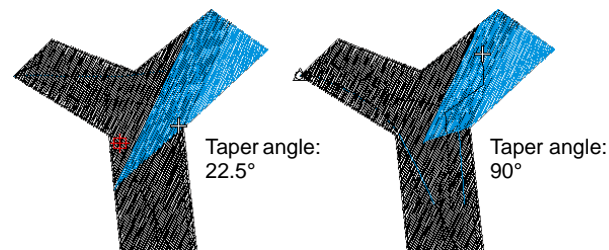
Adjust travel margins

> Use Traditional Digitizing > Complex Turning to digitize filled shapes with turning stitch angles. Right-click for settings.

When dealing with complex shapes with multiple segments, you may want to keep travel runs away from the boundary for various reasons. If, for instance, you are using **Jagged Edge** effect, the travel might become

visible through shortened stitches. For this reason, you can specify a margin.

To adjust travel margins...

◀ Select an object.

Travel run too
close to edge
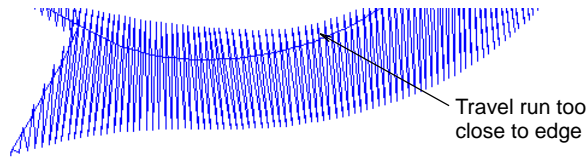
◀ Right-click the **Complex Turning** icon to access object properties.

Travel run closer to
center of shape

Adjust travel
margin
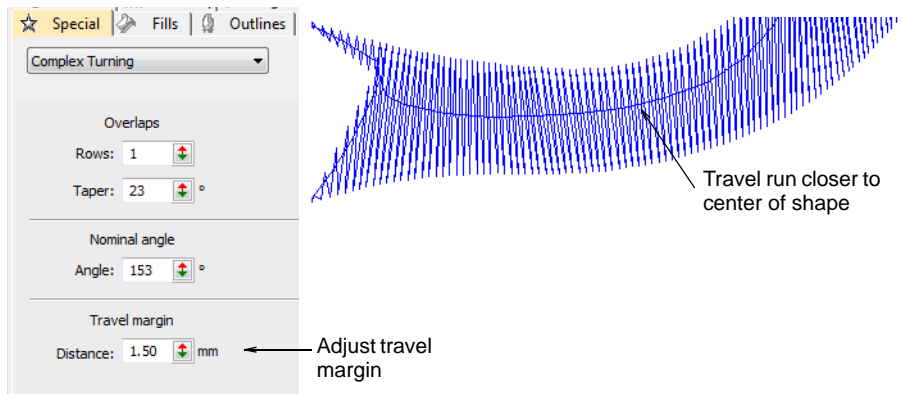
◀ Adjust the travel margin in the **Distance** field.

Chapter 11
Object Properties

Every object you create in EmbroideryStudio has a unique set of properties that are stored with it whenever you save the design. These properties define general characteristics such as size and position, as well as embroidery-specific characteristics such as stitch type and density. The stitch properties determine how stitches will be regenerated when you reshape, transform or scale the object.
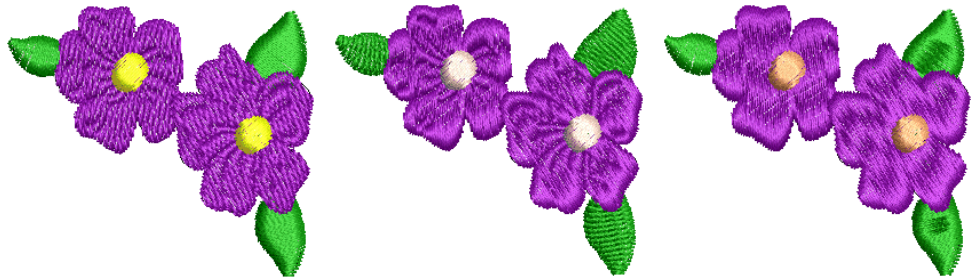
This section explains how to change property settings in a design, as well as how to apply and adjust fabric settings. It also explains how to create and maintain styles and templates in EmbroideryStudio.

Basic concepts

Base properties or 'defaults' are stored with the design template and form the basis of all new designs. These may be overridden by fabric settings which are adjusted to suit different fabric types. These in turn may be overridden by individual property settings.

Actual settings

Each object has its own unique set of properties. Actual object properties are those settings stored with each object in the design. These may or may not be the same as the defaults.

Default settings

Default or starting property settings are the ones stored with the design template and/or selected fabric (if activated). These are automatically applied to any newly created objects in the design.

Current settings

You can define 'current' settings to influence all the objects you create in the current design. Simply change property settings in the **Object Properties** docker with no objects selected. These settings then apply to all new objects.

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. Alternatively, you can make a selected object's 'actual' properties 'current' for all new objects. You can also apply current settings to existing objects.

When you close a design, current settings are not automatically saved to the template. You can save them as the new default settings of the current template or to another template altogether. Or you may be able to save them as a custom fabric.

Fabric settings

Matching object properties to the intended fabric is critical for good quality designs. Fabric settings are a subset of settings stored in the template which are fine-tuned to different fabric types. Although the NORMAL template settings are suitable for a range of fabrics, selecting a matching fabric automatically customizes object properties to the intended fabric.

Styles

A style is a group of property settings stored under a unique name. You can save any combination of settings to a style. This makes it easy to apply these settings to selected embroidery and lettering objects. When you apply a style to an object, style settings replace current properties. Any properties not specified by the style, retain their current settings.

Templates

Templates are special files used to store styles, default properties, as well as default fabric settings. Use templates when digitizing frequently-used design types to save time re-adjusting current property settings.

Working with object properties

When you start a new design, EmbroideryStudio uses the default settings associated with the chosen fabric (if activated). Other property settings are stored with the design template. You can override most settings on an object-by-object basis. For this reason, EmbroideryStudio distinguishes three sets of object properties – **default**, **actual** and **current**.

Change current settings

Use Docker > Object Properties to preset properties or adjust properties of selected objects.

Whenever you change current settings, these automatically apply to any new objects you create. If you know which settings you require before digitizing, you can preset them.

To change current settings

◀ With no objects selected, click the **Object Properties** icon.

Click to close

Object Properties tabs

Select stitch type

Modify settings as required

Click to save modified settings to the current template

Click to access another set of tabs
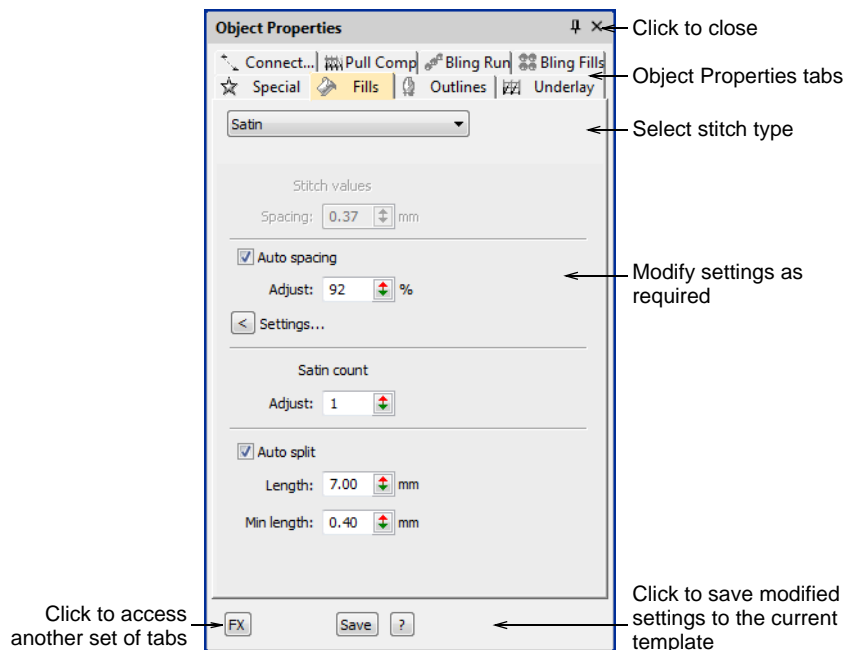
◀ Select a tab to view current settings – e.g. **Fills**.

◀ Select an item from the droplist – e.g. **Fills > Satin** – to access those properties.

◀ Use droplists, radio buttons and checkboxes to choose options. Key in precise values or use the popup slider.

'Radio' buttons are
mutually exclusive

Click 'swivel' button
to invoke slider
control

After clicking
'swivel' button, drag
popup slider to set
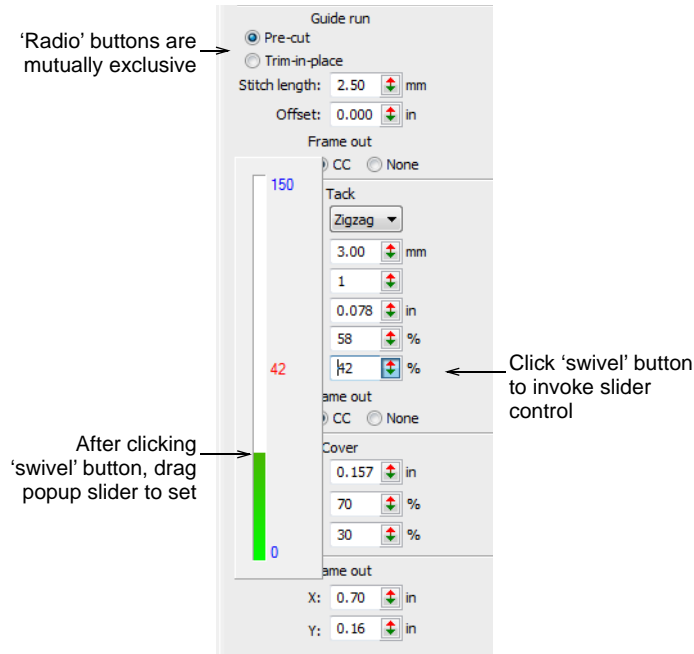
Tip: The slider has two operating modes – **Normal** and **Accelerated**. Holding down the **Ctrl** key puts it in **Accelerated** mode.

◀ Click the **FX** button to access a further set of tabs and modify settings as required.

◀ Press **Enter** to confirm changes. Modified settings are now current for all new objects. You can apply them to existing objects by means of the **Apply Current Properties** tool.

◀ Optionally, click **Save**. The object properties are saved to the **current** template. These will apply to any new objects in any design based on this template.

Change object properties

Use Docker > Object Properties to preset properties or adjust properties of selected objects.

You can change an object's properties at any time without affecting those of any other object **not** currently selected. Some properties can be modified on screen – for example, you can change size by scaling an object with selection handles. Other properties, such as stitch spacing or length, are modified via the **Object Properties** docker.

To change object properties

◀ Select the object/s whose properties you want to change.

◀ Use any of the interactive techniques for scaling, transforming, or reshaping selected object/s.

◀ Adjust general properties – width, height, position – by means of the **Property Bar**. Press **Enter** to confirm or **Esc** to discard.

Adjust properties and press Enter
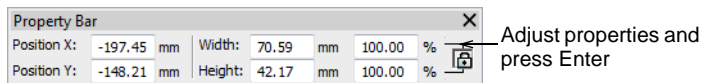
◀ Double-click an object to access object properties.

Click to close

Object Properties tabs

Droplist

Modify settings as preferred

Click to access another set of tabs

Click to save modified settings to the current template
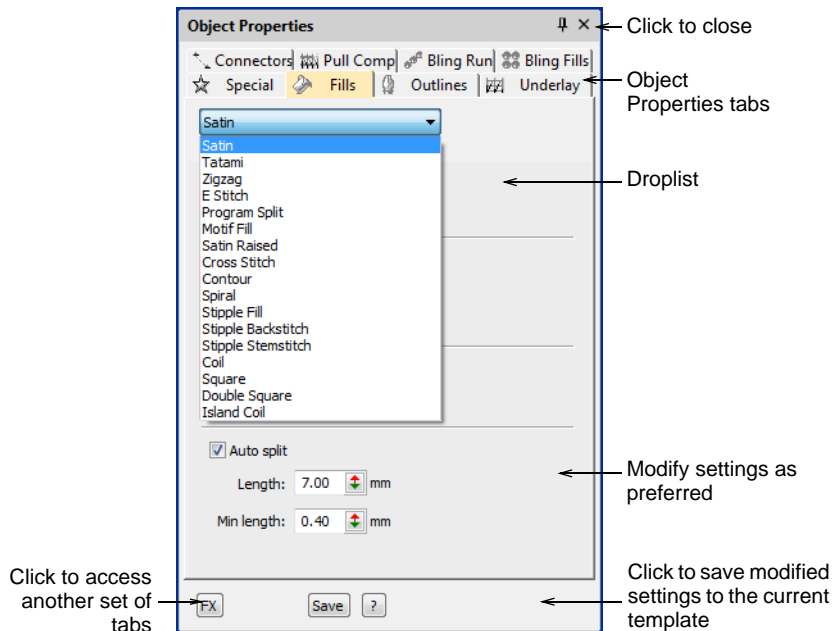
◀ Select a tab and to access available properties.

If you select more than one object, the **Object Properties** docker only displays settings relevant to all. If selected objects have different values for the same setting – e.g. stitch length – the field will be blank. If you enter a new value, it applies to all selected objects.

◄ Click the **FX** button to access a further set of tabs.

◄ Press **Enter** to apply changes to selected object/s.
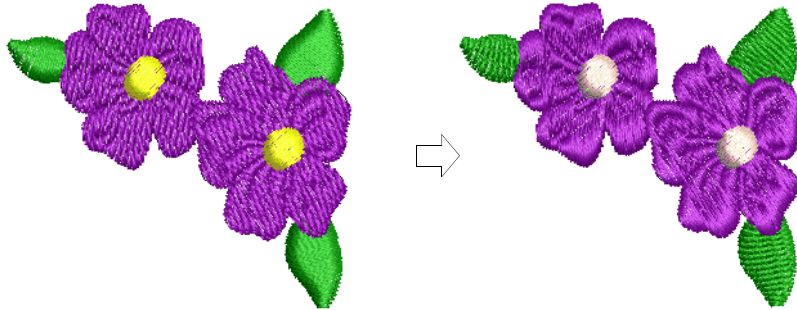
◄ Some properties, such as **Auto Underlay**, are applied by means of toolbar buttons. When the button is selected, that tool's settings are current.

◄ Optionally, click **Save**. The object properties are saved to the **current** template. These will apply to any new objects in any design based on this template.

Related topics...

◄ Access object properties
◄ Transforming Objects
◄ Working with templates
◄ Reshaping Objects

Copy properties

> Click Styles > Make Properties Current to make the properties of a selected object current for the design.
>
> Use Styles > Apply Current Properties to apply current settings to selected objects.

You can make a selected object's 'actual' properties 'current' for all new objects or apply them to existing objects.

To copy properties

◄ Select the object whose properties you want to make current.

◀ Click the **Make Properties Current** icon. Alternatively, right-click the selected object and choose the **Make Properties Current** command in the popup menu.

	Object Properties...	
	Zoom to Selected	Shift+0
	Cut	Ctrl+X
	Copy	Ctrl+C
	Paste	Ctrl+V
	Paste After Selected	Alt+Ins
	Paste Special	▶
	Duplicate	Ctrl+D
	Duplicate with Offset	Ctrl+Shift+D
	Delete	Del
	Reverse	▶
	Transform	▶
	Make Properties Current	
	Apply Current Properties	
	Apply Favorite Style	▶
	Apply Style...	

Copy properties from one object to another using these commands
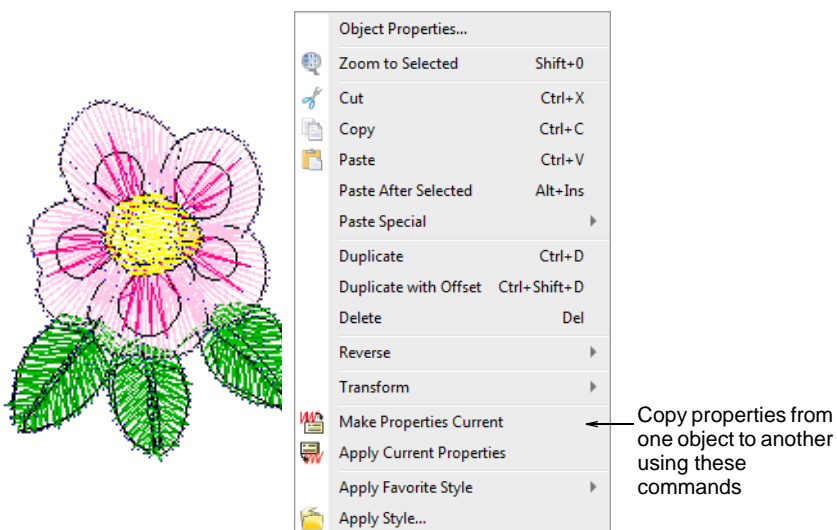
◀ Select the object/s whose properties you want to change.

◀ Click the **Apply Current Properties** icon. Alternatively, right-click the selected object and choose the **Apply Current Properties** command in the popup menu.
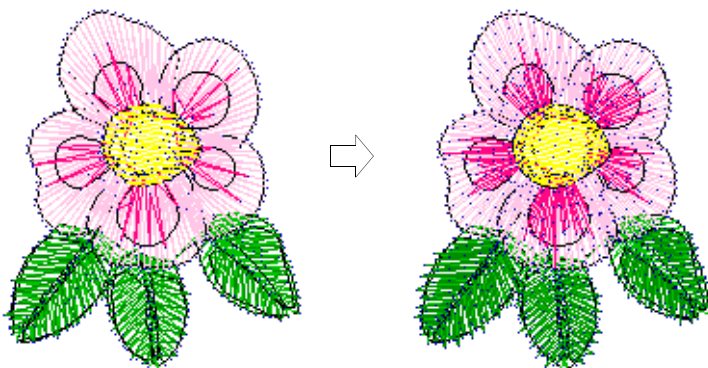
Working with fabrics

Embroidery stitches pull fabric inward where the needle penetrates. This can cause fabric to pucker and gaps to appear. 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.
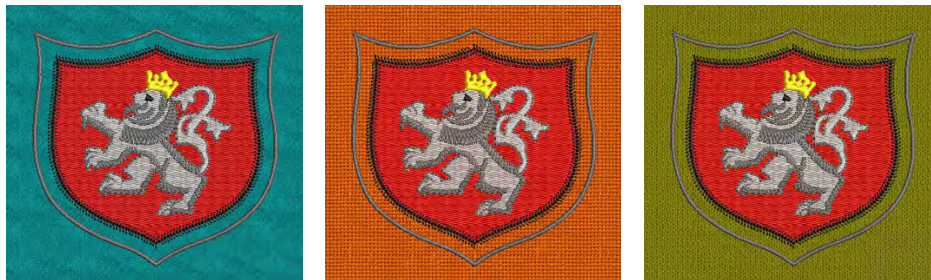
EmbroideryStudio provides a set of customized fabric settings so the software will take into account the type of fabric you are stitching on. Fabrics are a critical element of designs and are controlled separately from template values. Fabric settings are fewer in number than those contained in templates.

Change fabrics

Normally you choose a fabric when you start a design although you can change it at any stage. Fabric settings affect all object types other than motif fills, appliqué, and run stitches.

To change fabrics

1 Select **Design > Auto Fabric**.

Activate auto-fabrics

Choose a fabric type
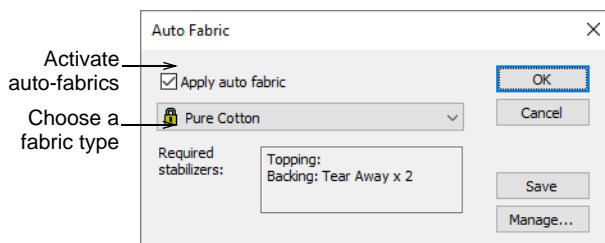
2 Tick the **Apply Auto Fabric** checkbox to activate the feature. Conversely, you can turn off auto fabrics at any stage. You are prompted to confirm the decision.
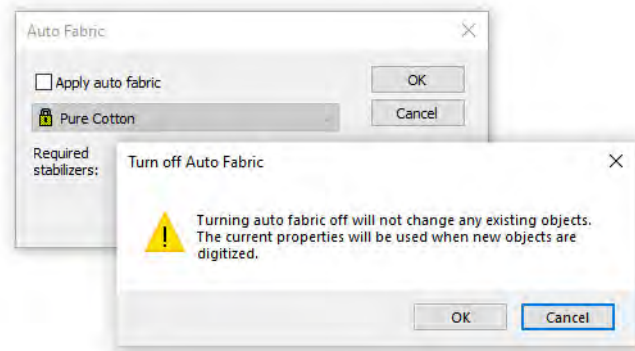
3 From the list, choose a fabric type matching or nearest to the fabric you intend to work with.

4 Click **OK**.

The selected fabric is displayed in the **Status** bar. If you choose to apply an auto fabric to a design with no previous fabric, you are prompted to apply it to new objects only or to existing objects as well.

Tick to turn on auto fabric

Click OK to activate

Choose how to apply auto fabric
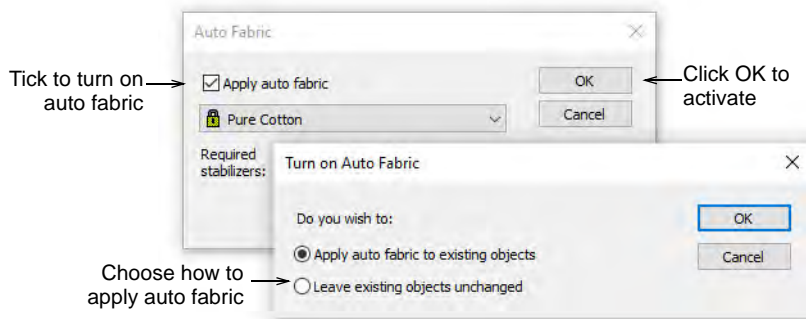
Note: Changing the current **Auto Fabric** will affect all colorways in the design. However, the converse is not the case. While colorways allow you to select different fabric swatches for different colorways, these have no bearing on **Auto Fabric** settings. However, the background **Fabric** option is 'aware' of **Auto Fabric** selection. Consequently, the **Browse** button takes you to an assortment of swatches relevant to your current fabric selection.

Related topics...

◄ Create designs from templates

Manage fabrics

In addition to predefined fabric settings, you can create your own custom fabrics to suit particular needs. You can also modify, rename or delete custom fabrics.

To create a new fabric

1 Select **Setup > Manage Auto Fabrics**.

   If you already have custom fabrics defined, you have the option of editing, renaming, or deleting.
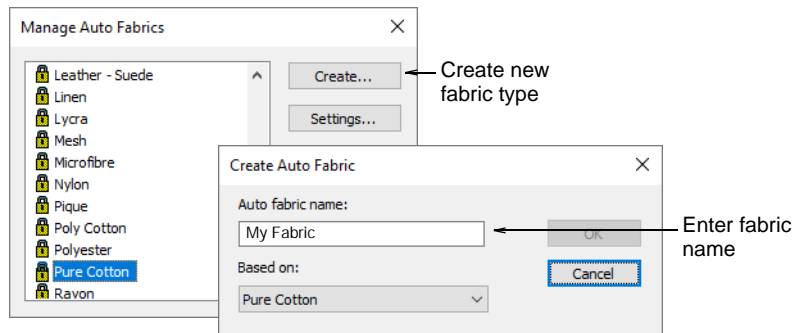
2 To create a new fabric type, click **Create**.

3 Enter a new fabric name. If you want to base the new fabric on default settings, select blank.

4 Click **OK**.

   The **Auto Fabric Settings** dialog opens. This dialog allows you to set the fabric values for four object groups – Tatami/Program Split, Wide Satin, Narrow Satin, and Lettering – as well as enter details of any recommended stabilizers.

To set tatami/program split values

◀ Click the tab to access **Tatami/Program Split Fill** settings. These will become the defaults for Tatami and Program Split objects.

Adjust Tatami/Prog Split values for new fabric
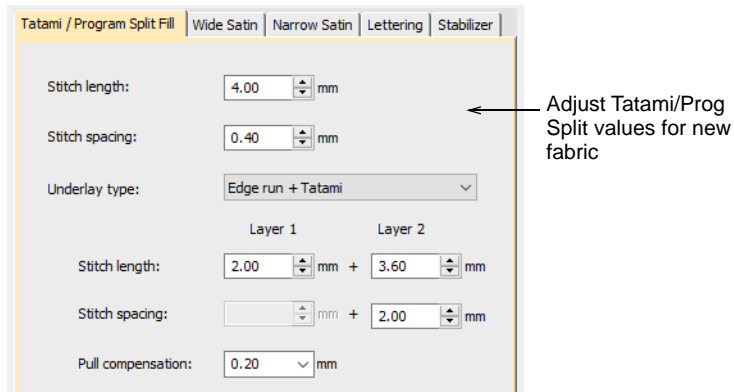
◀ Adjust **Length** and **Spacing** settings for your Tatami / Program Split Fill objects as required:

  ◀ **Tatami** stitch consists of rows of run stitches and is suitable for filling large, irregular shapes. See Tatami stitching for details.
  ◀ **Program Split** is a decorative stitch type. Use it to fill wide and large areas with artistic effects while keeping the appearance of a solid field of stitching. See Creating textures with program splits for details.

◀ Set a suitable underlay type for Tatami/Program Split objects. See Stabilizing with automatic underlay for details.

◀ Set a pull compensation allowance for these objects. See Compensating for fabric stretch for details.
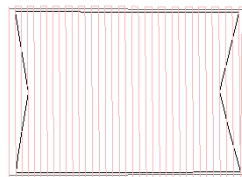
Fabric: Denim
Pull Comp: Low
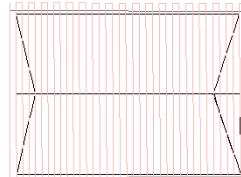
Fabric: Silk
Pull Comp: Medium
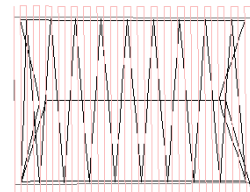
Fabric: Terry Toweling
Pull Comp: High

To set satin object values

◀ Click the tab to access **Wide Satin** settings. These settings will become the defaults for larger Satin objects.

Adjust Wide Satin values for new fabric
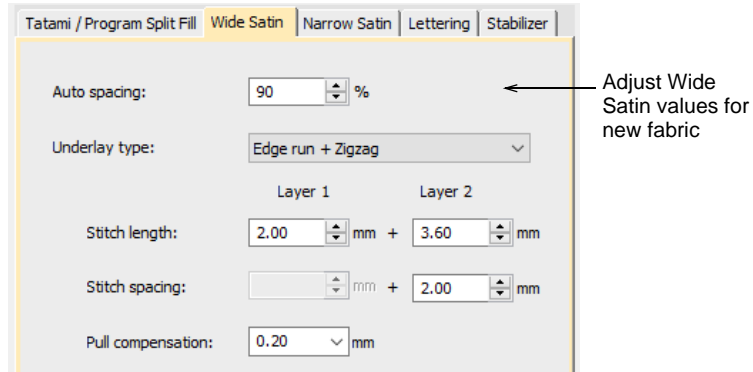
◀ Adjust the **Wide Satin** settings as you did for Tatami / Program Split objects. See Satin stitching for details.

Instead of **Stitch Length** and **Stitch Spacing** settings, you have a single density setting which is controlled by a slider bar.

◀ Click the tab to access the **Narrow Satin** settings and adjust as you did for Wide Satin objects. Generally, narrow objects will require a different underlay type. See Satin stitching for details.

Adjust Narrow Satin values for new fabric
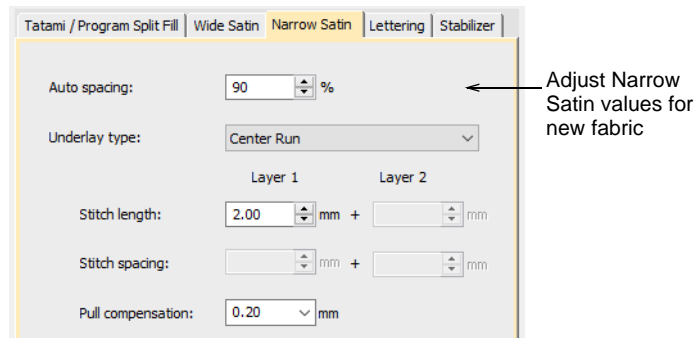
To set lettering object values

◀ Click the tab to access **Lettering** settings.

Adjust Lettering values for new fabric
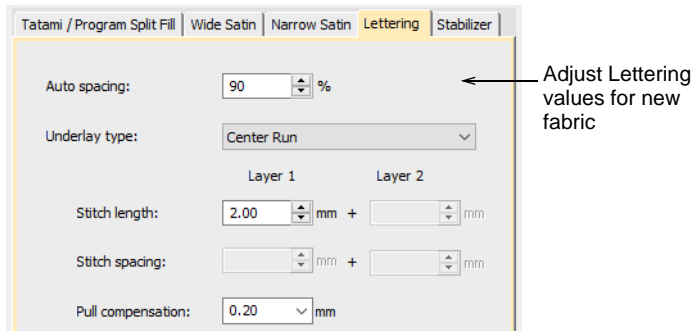
◀ Adjust settings as you did for Satin objects. See Applying stitch types & effects to lettering for details.

To set stabilizer settings

◀ Click the tab to access **Stabilizer** settings.

Adjust stabilizer values for new fabric
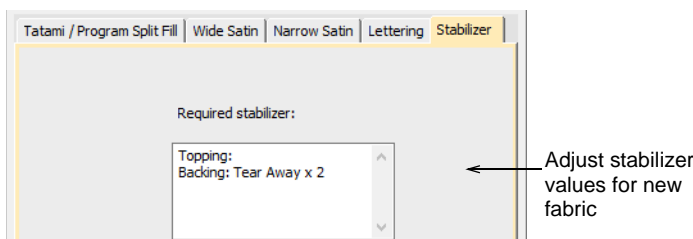
◀ Key in one or more recommended stabilizer(s) together with a description or any other relevant information for the custom fabric. This information will be displayed in the **Choose Fabric** dialog. See Change fabrics for details.

Working with styles

A style is a group of property settings stored under a unique name. This makes it easy to apply them to selected embroidery and lettering objects. Use the **Styles** toolbar to apply styles to selected objects. The tools also allow you to set and apply current settings. Styles you tag as 'favorites' are each assigned an icon on the toolbar.

Styles are stored with the design template. The NORMAL template provides a selection of preset styles for you to use. Each template may

contain specific styles for different types of embroidery. See also Working with templates.

Apply styles

Use Styles > Apply Style to apply a style from the template to new or selected objects.

Use Styles > Favorite Styles to apply preferred styles to new or selected objects.

When you apply a style, the settings overwrite current settings. Any properties not specified in the style, retain their current settings.

To apply styles

◀ If available, click the **Favorite Style** icon assigned to the style you want to use.

    ◀ If an object is selected, the style settings are applied to it alone.

    ◀ If no object is selected, the style settings become **current** and apply to any new objects you create.
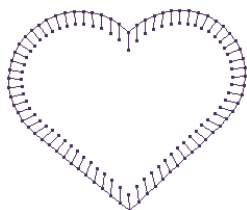
| Style 1, E stitch spacing 0.75 mm | Style 2, E stitch spacing 1.25 mm | Style 3, E stitch spacing 1.75 mm |
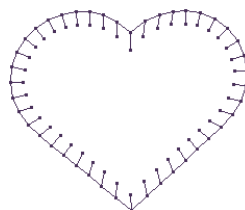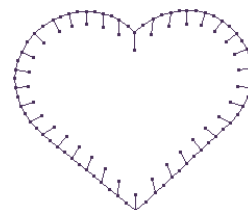
◀ Alternatively, click the **Apply Style** icon.
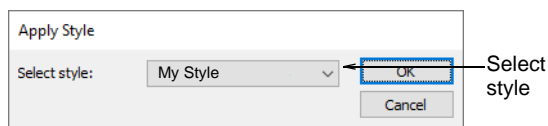
◀ Select a style from the droplist and click **OK**.

Tip: If you are using a digitizing tablet, you can quickly switch between preset styles. Each button on the puck accesses the next preset style with different spacing settings. For example, clicking Button **1** accesses <PRESET_SATIN_1>.

Define styles

Define new styles for a design template, either from scratch or based on an existing style or object. New styles are saved to the current template.

To define a style

1 To base the new style on an existing object, select it now. To base it on **current** settings, make sure no objects are selected.

2 Select **Setup > Manage Styles**.
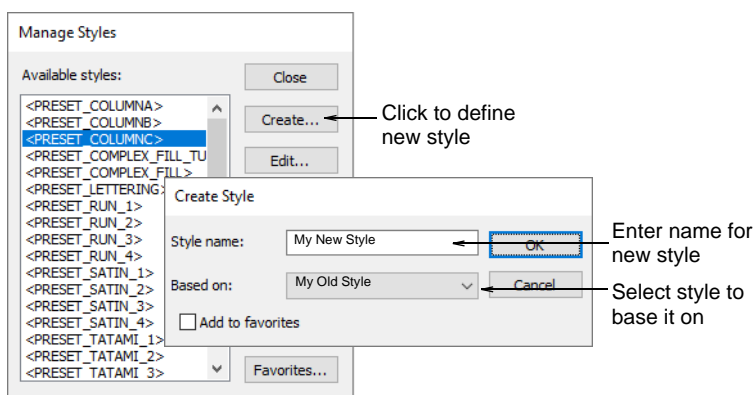
3 Click **Create**.

4 Enter a new style name. Choose how you want to base your style:

◄ If you want to base the new style on default settings – current or selected object – select blank.

◄ If you want to base it on an existing style, select from the droplist.

5 If you want the new style to be added to the **Style** toolbar, tick the **Favorites** checkbox.

6 Click **OK**. The **Object Properties** docker opens.

7 Update properties as required.

◄ If you want to apply current settings, click **Apply**.

◄ Otherwise, update those settings you want to change. You don't have to enter values in **all** fields, only those you specifically wish to store.

8 Press **Enter**. The new style is saved to the current template.

Modify styles

The **Setup > Manage Styles** function allows you to modify styles, including the factory presets in the NORMAL template. You can merge settings from one style to another. You can rename a style without affecting its settings. You can also remove any unwanted styles from a template.
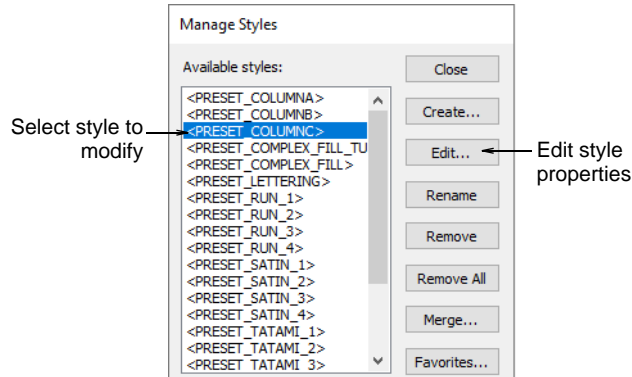
Select a style from the list and modify using the available buttons:

Function	Description
Edit	Edit styles as you would a selected object. See Change current settings for details.
Rename	Rename a style at any time. Select names that will help you remember the style or help you sort frequently-used styles to the top of the list.
Remove / All	Remove unwanted styles from the current template. The style is removed from the list of style names. To remove all styles from a template click Remove All.
Merge	Copy settings from one style to another via the Merge With Style dialog. When you merge, settings from the second style overwrite the first.
Favorites	You can assign up to ten favorite styles to tool icons on the Styles toolbar. See Assign favorites for details.

💡
Tip: At some stage, you may want to revert to the original style settings in the NORMAL template. See Revert to the NORMAL template for details.

Assign favorites

You can assign up to ten favorite styles to tool icons on the **Styles** toolbar. To apply the style, you then simply select the tool.

To assign a favorite style

1 Select **Setup > Manage Styles**.

Organize
favorite styles
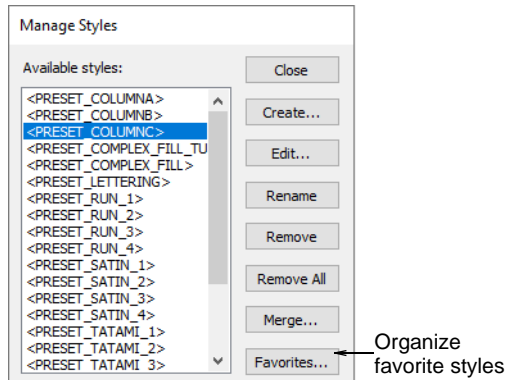
2 Click **Favorites**. The **Manage Favorites** dialog opens.
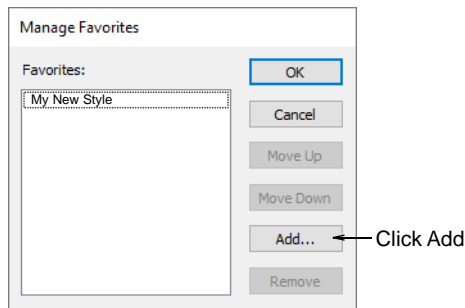
Click Add

3 Click **Add**. The **Add To Favorites** dialog opens.
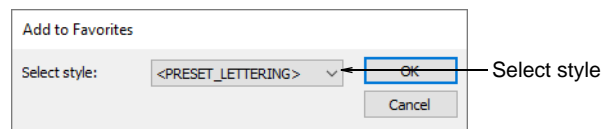
Select style

4 Select a style from the droplist and click **OK**.

5 Change the order in which the favorites will appear on the **Styles** toolbar using **Move Up** and **Move Down**.

6 Close out the dialogs. Styles are assigned in the order they appear in the **Manage Favorites** dialog. The tool tip for each button shows the style name.

Working with templates

Templates are special files used to store fabrics, styles and default settings. Use templates when digitizing frequently-used design types so

that you do not have to set the current settings 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 settings. Or it may have special density, pull compensation or underlay settings to suit different fabrics.

The NORMAL template

The NORMAL template is the default template supplied with the software. It contains current property settings as well as a selection of preset styles. These styles include variations on the current property settings. For example, <PRESET_SATIN_1> and <PRESET_SATIN_2> contains different stitch spacing settings for Satin stitches. You can view and modify the settings for these styles at any time. See Modify styles for details.

Note: If necessary, you can revert to the original NORMAL template after modifying it. See Revert to the NORMAL template for details.

Using design templates

When you start a new design from the **File > New** menu, a list of the available templates appears in the **New** dialog. If you select the **New** tool on the **Standard** toolbar, the NORMAL template is applied by default. See Create designs from templates for details.

Save current properties to a template

Use Docker > Object Properties to preset properties or adjust properties of selected objects.

You can easily save current settings to the current template.

To save current properties to a template

◄ To use the **current** property settings, deselect all objects, then click the **Object Properties** icon.

◄ To use the settings of a favorite style, click the button with no objects selected.

◄ Open the **Object Properties** docker.
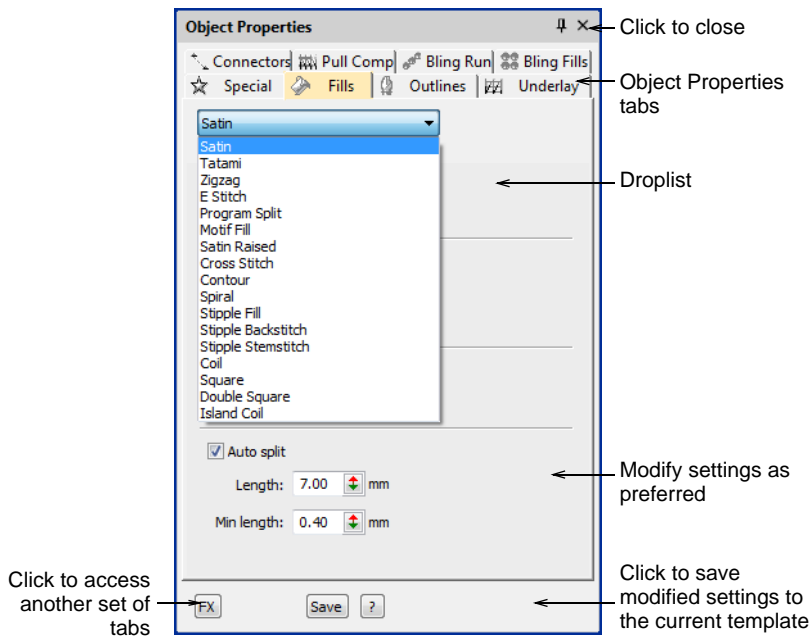
◄ Make any further adjustments as required.

◄ Click **Save**. Current settings are saved to the template as the new defaults.

💡
Tip: To save more than one set of property settings to the template, save them as styles.

Related topics...

◄ Working with object properties
◄ Define styles

Create design templates

You create templates from designs containing the required objects and property settings. Simply save the design, or elements of it, as a template. Templates look the same as design files, but use the file extension **EMT**.

To create a design template

1 Start a new design or open an existing one.

2 Adjust the property settings, styles, and effects as required.

3 Add the objects and lettering to be included in the template. For instance, you may want to include sample lettering using different baselines. Simply overtype the sample text when using the template.

4 Select **File > Save As**. The **Save as Template** dialog opens onto the **Template** folder.

Enter a name for your custom template
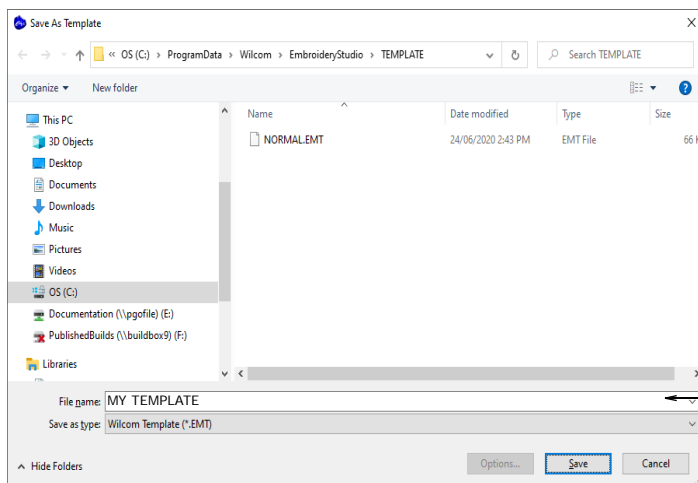
5 Select **Design Templates (EMT)** from **Save as type** list.

EmbroideryStudio automatically opens the **C:\Program Files\Wilcom\EmbroideryStudio_e4.5\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 and click **Save**. The template is ready for use.

💡
Tip: The **File** menu provides separate commands for saving monogram and team name templates. See related topics below.

Related topics...

◀ Working with baselines
◀ Monogram designs

Modify 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.

To modify design templates

1 Select **File > Open**. The **Open** dialog opens.

2 Navigate to the **C:\Program Files\Wilcom\EmbroideryStudio_e4.5\Template** folder.

3 Select **Templates (EMT)** from the **Files of type** list. The available template files display.

4 Select the template you want to modify and click **Open**.

5 Modify property settings, styles and other settings as required.

6 Select **File > Save As**. The **Save As** dialog opens.

7 From the **Save as type** list, select **Templates (EMT)**.

8 Enter a name and click **Save**. The modified template is ready for use.

Note: Delete templates in the same way as you would any other MS Windows® file, using **File Explorer**.

Revert to the NORMAL template

If you modify the NORMAL template supplied with EmbroideryStudio, 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 EmbroideryStudio.

2 Click the MS Windows® **Start** button and navigate to the **Wilcom** EmbroideryStudio group.

3 Select **Revert**. The **Revert to Factory Settings** dialog opens.
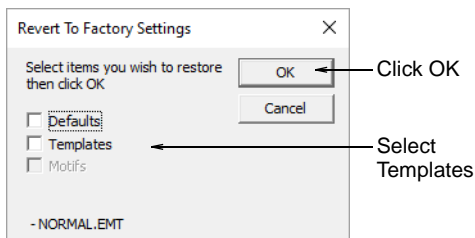
4 Select the **Templates** checkbox and click **OK**. The original settings for the NORMAL template are restored.

Chapter 12
Colorways

When digitizing, you select colors from a color palette. These can be tailored to each design or color scheme. The particular 'colorway' represents the actual thread colors in which a design will be stitched. EmbroideryStudio lets you define multiple color schemes and switch between them.
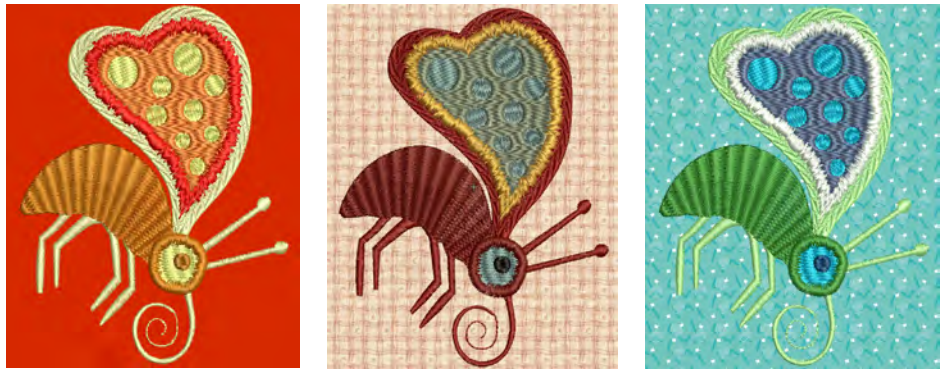
For each colorway you define, you can select colors from commercial thread charts or define your own. Search for particular threads by specific code. Locate thread colors based on closest match across one or several thread charts.

EmbroideryStudio also lets you set the background color, fabric, or product of the current colorway for more realistic previews and presentations. The background and product are saved with the colorway.

Note: You can also print multiple colorways, design background and product, and icons of color blocks in the production worksheet. See also Printing design reports.

Creating colorways

EmbroideryStudio provides various techniques for selecting and changing colorways manually or generating them automatically.

⚠️
Caution: Due to differences in computer monitors and video cards, onscreen colors should only be used as guides. Always check thread colors against the actual thread chart you intend to use.

Add colorways

📊	Use Color > Colorway Editor to add or edit colorways.
➕	Use Colorway Editor > Create Colorway to add a new colorway to the design.

When you create a new design, it contains a single default colorway called 'Colorway 1'. You can add a virtually unlimited number of colorways to the design using the same or different thread sets. Preview designs in different colors on different fabrics. Colorways are saved with the design in EMB format. They can also be saved to an EMT template file for use in future designs. They cannot, however, be saved with machine files.

💡
Tip: Other settings are included as part of the colorway definition – background color, fabric, or product, as well as display colors for borer symbols, unsewn stitches, selected objects, object outlines and the grid.

To add a colorway

◀ Open the design and click the **Colorway Editor** icon.

Click to create
new colorway

Click to toggle
single or multiple
colorway display
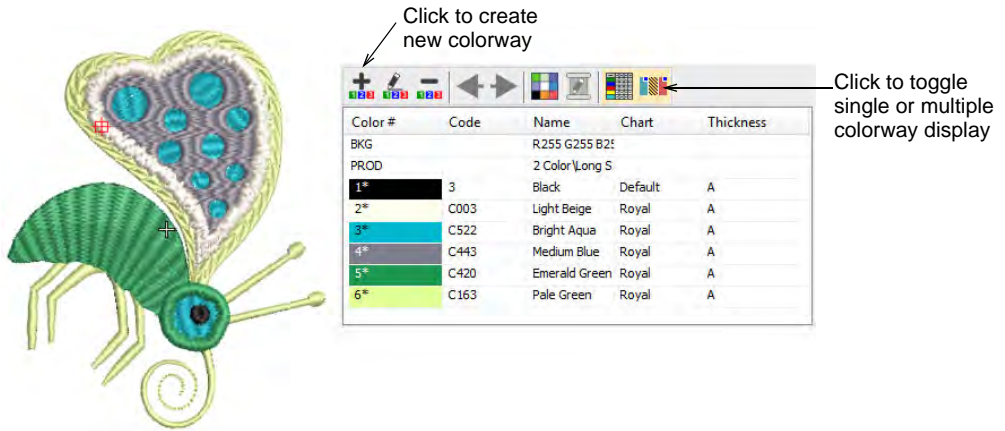
◀ Click the **Create Colorway** icon.

Enter new
colorway name
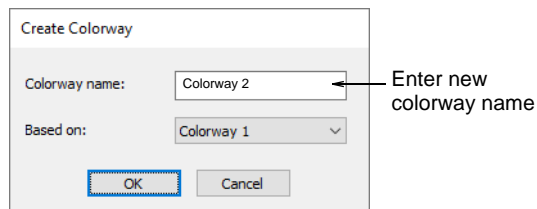
◀ Enter a new colorway name – e.g. 'Colorway 2'. The new colorway will use the current colorway as a starting point.

New colorway added
based on current
colorway
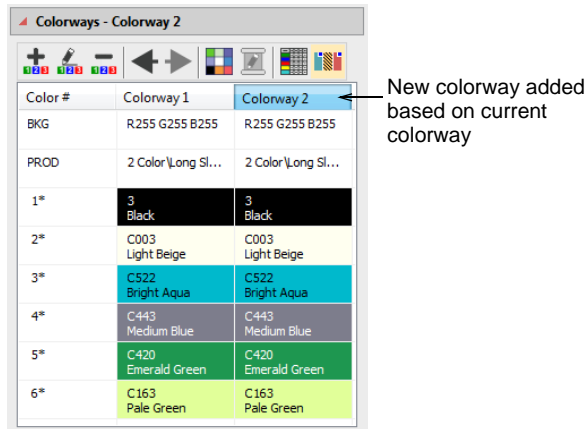
◄ Assign colors from available threads to selected color slots.

Assign threads to new colorway
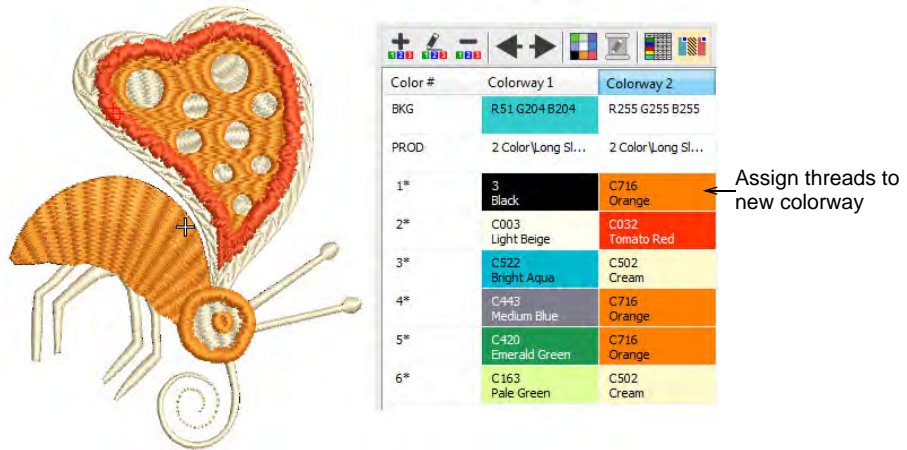
Note: As dark-colored threads cover light-colored fabrics better than vice versa, different densities may be required when changing from one colorway to another. Colorways do not automatically compensate for different densities. These must be adjusted manually.

◄ Use the internal toolbar to edit:

🖊	Give the colorway a unique name for easy identification in the droplist and production worksheet – e.g. a name which reflects the background fabric.
➖	Remove a colorway from the design.
🎨	Change the colorway background fabric and/or color.

Tip: If you change the background in **Colorway 1** and save it to your template, it will display like this at start up.

Tip: You can also match thread colors from imported graphics – vector or bitmap.

Related topics...

◄ Viewing colorways
◄ Assign thread colors
◄ Add & match image colors
◄ Set fabric backgrounds
◄ Printing design reports

Change color schemes

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

The color tools allow you to quickly re-color entire designs. Their main purpose is to create new 'colorways' quickly and easily in order to 'spice up' old designs or place them on a different fabric.

To change color schemes

◀ Optionally, add a new colorway for your new color scheme. See Add colorways for details.

New colorway

◄ Use the **Cycle Used Colors** tool to try out different combinations using threads already in the design.

Cycle through used colors
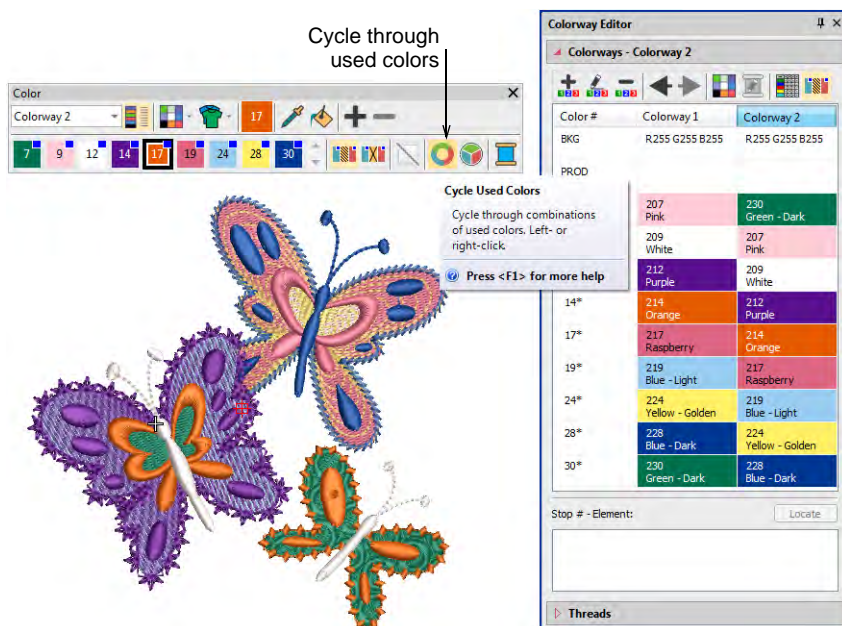
◄ Alternatively, select **Color Wheel**. This allows you to cycle through many color combinations using preset color schemes including **Analogous**, **Complementary**, **Harmonious**, etc.

Choose a color scheme

Double-click any slot to set base color

Click and drag base color node to adjust all
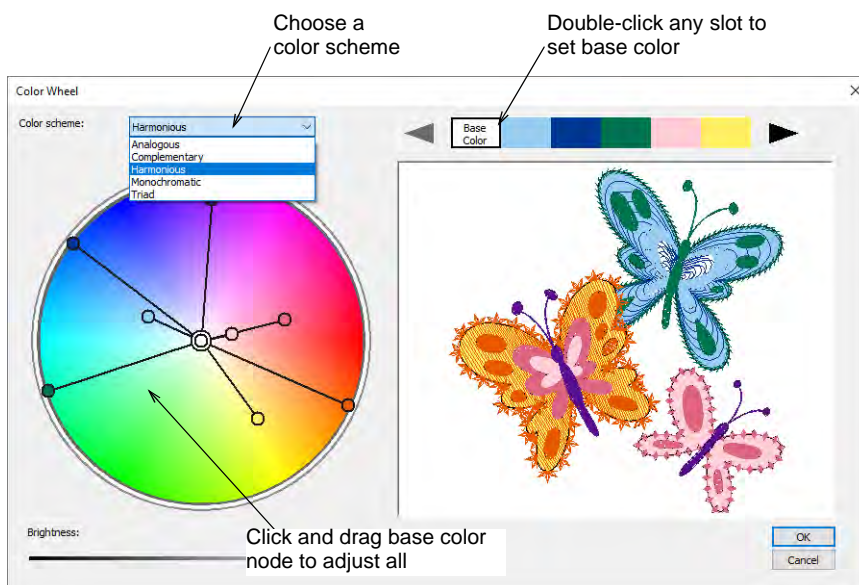
◀ Click and drag the 'base color' node to test combinations against different background colors. You can make any color the base color by double-clicking in the palette at the top of the dialog.

◀ Each color node can be further individually adjusted.

Adjust base node to change all colors proportionately

Adjust individual nodes as required
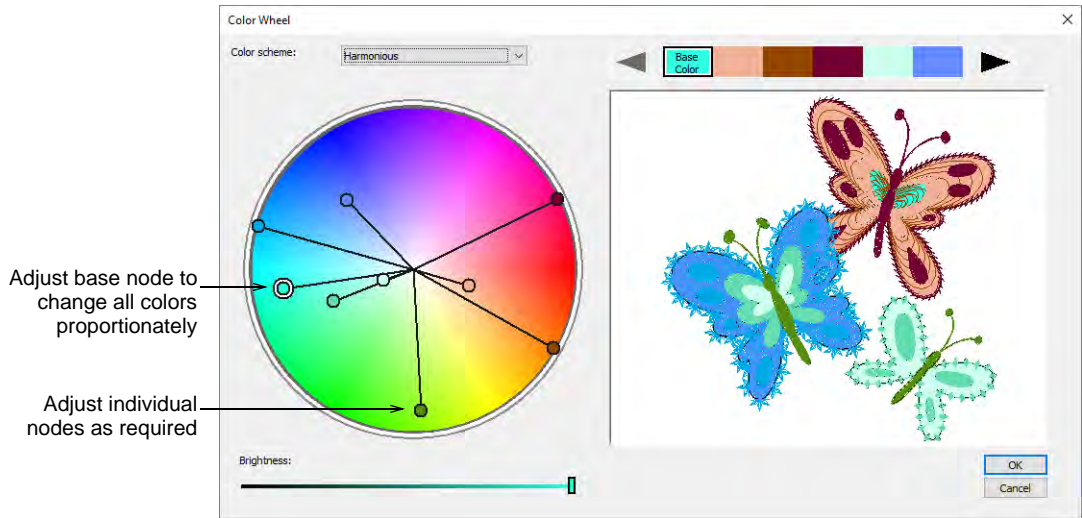
◀ To adjust the brightness of the entire design, select the base color node and adjust the **Brightness** control.

◀ Click **OK** to apply changes. New colors are added to the palette as RGB values.

Palette updated with new colors

R17 G142 B23
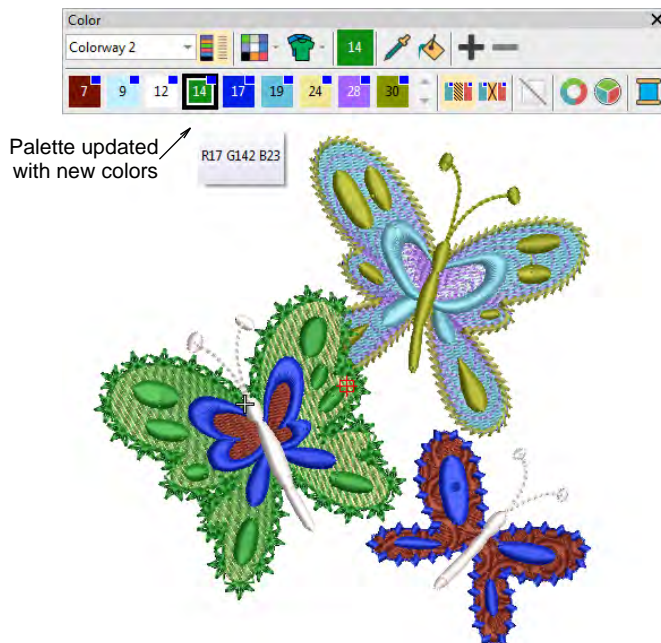
◀ Match and assign thread colors manually or use the **Match All** function.

Color blocks & stop sequence

A color block corresponds to a color change in the design. It may be comprised of one or more same-color objects. These may form a single group – e.g. 'ropes' – or more – e.g. 'ropes and birds'. Each color block, or 'element', can be given a descriptive name for easy identification. These can be included on the production worksheet. Together this information is known as the 'stop sequence'. The operator generally uses

it to ensure that correct colors are used in the correct sequence during production.
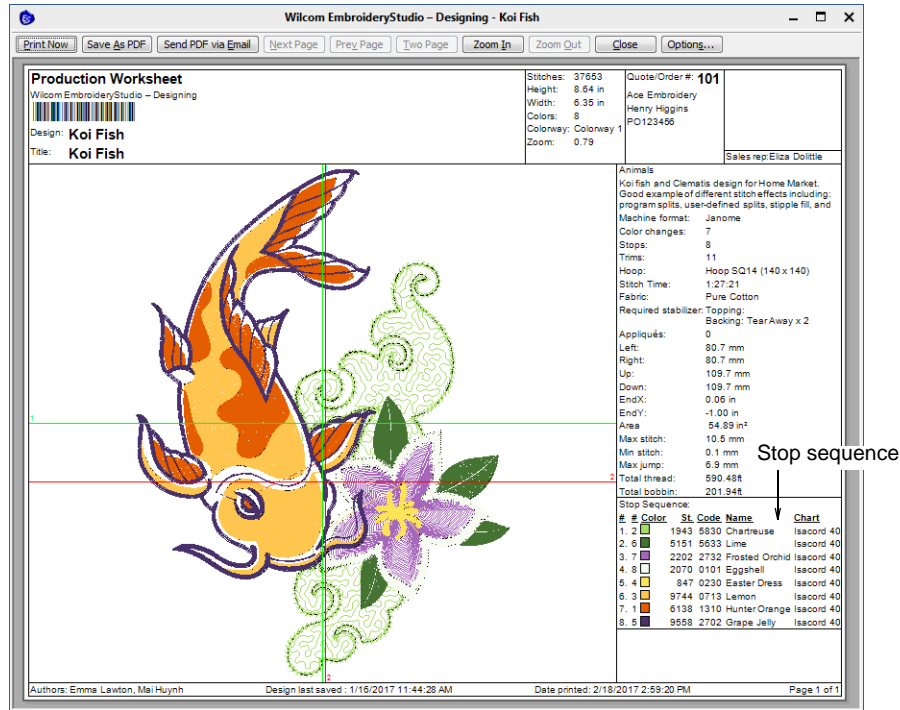
Note: The **Color-Object List** shows the same sequential list of objects, grouped by 'color block'.

Design thread colors

> ⓘ Use Docker > Design Information to view and modify design details prior to design approval or stitchout.

The **Thread Colors** tab displays the color sequence and stitch counts for each design 'element'. Elements equate to color changes. The tab also

provides thread usage estimates which may be used for costings as well as production requirements.

Edit element names for each color block as necessary

Data is extracted from the design file and, apart from the **Element** column, cannot be modified.

Field	Function
Filename	File name of the selected design. This will often be a number or alphanumeric format for easy cataloging.
Title	Defaults to filename. Add a more descriptive name for easy searching. This name appears on the approval sheet or worksheet.
Stitches	Indicates total stitch count for design.
Colors	Indicates number of thread colors involved in the design.
Colorways	Number of colorways in the design.

Field	Function
Current colorway	Use the droplist to change colorways, if available. When choosing a different colorway, the thumbnail and stop sequence list are updated.

The table at the bottom lists all color changes in the design as they will appear on the production worksheet. It provides the following details:

Field	Function
Stop #	The machine stop corresponding to the color change.
Color	Indicates color slot number of the color in color palette.
Element	User-defined name to identify each color block.
Stitches	There is a stitch count for each element in the design. You can show this as a discrete stitch count or a cumulative stitch count.
Length	Meterage of thread required per color.
Code	Color code as registered in the thread chart.
Name	Color name appearing in thread chart.
Chart	Brand name of thread chart used.
Thickness	A: Normal embroidery thread (approx. denier 40) B: Thicker than normal (approx. denier 30) C: Finer than normal (approx. denier 80) D: Very fine (approx. denier 100)

Related topics...

◀ Name design elements
◀ Assign thread colors
◀ Thread usage estimates
◀ Modify thread details
◀ Other general options

Name design elements

Use Docker > Colorway Editor to add or edit colorways.

Use Docker > Design Information to view and modify design details prior to design approval or stitchout.

You can view color blocks in the **Colorway Editor**. Named color blocks are known as design 'elements'. This information is saved with the design and printed on production worksheets as an aid for machine operators.

To name design elements

◀ Click the **Colorway Editor** icon to access the **Colorway Editor**.

Select color block

Click and hold to locate selected color block

Enter descriptive name for selected color block

◀ Select a color and click and hold **Locate** to view in isolation. Elements corresponding to the color are listed below. If there is more than one, select and click **Locate**.

◀ Double-click the **Element** field and enter a descriptive name – e.g. 'Stems'.

◀ To check design elements, select **Design > Design Information > Thread Colors**.

Edit element names for each color block →

Stop sequence:

Click on 'Element' to add or edit the element name.

Stop #	Color	Element	Stitches	Length	Code	Name	Chart	Thickness
1	21	Water plants	1,931	9.54m	221	Green - Light	Hatch	A
2	43	Orchid leaves	5,091	19.04m	5944	Backyard Green	Isacord...	A
3	45	Orchid petals	2,202	10.37m	2810	Orchid	Isacord...	A
4	46	Orchid outline	2,053	11.93m	0101	Eggshell	Isacord...	A
5	24	Orchid stamen	783	3.45m	224	Yellow - Golden	Hatch	A
6	23	Fish body	9,696	49.90m	223	Gold	Hatch	A
7	14	Fish fins	6,074	35.89m	214	Orange	Hatch	A
8	33	Fish outline	8,999	36.61m	2702	Grape Jelly	Isacord...	A

◀ In the **Element** fields, edit names for each color block as desired. This information can be included on the production worksheet.

Related topics...
◀ Assign thread colors
◀ View selected color blocks
◀ Printing design reports
◀ Customizing design reports

Split color blocks

Use Color > Colorway Editor to assign thread colors to slots in the color palette.

Use Color > Split Palette Color to create a new color slot with the same thread specification as the selected slot.

A color block corresponds to a color stop in the design. It may comprise a single object or group of like-color objects – e.g. 'ropes and birds'. In one colorway you may want to assign the same thread to all items in the color block, while in another you may want to assign different colors. The **Split Palette Color** tool makes this possible.

To split a color block

1 Open the design and select a colorway.

2 Open the **Colorway Editor**.
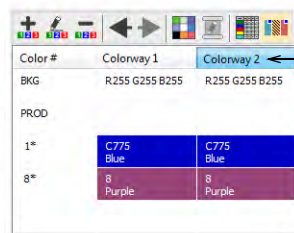
3 Create a new colorway or select one to edit.

4 Select the object/s you want to split. The **Split Palette Color** button is activated.
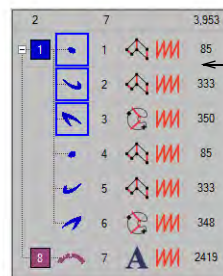
Select object/s to be split to a separate color block

5 Click the **Split Palette Color** icon. A new color slot of the same color is added to the color palette. Selected objects are assigned to the new palette position.
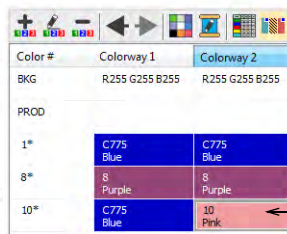
Assign a color to new color block

6 Assign a new color to the slot. The colors of other colorways remain unaffected. By default, the new color slot is placed at the end of the palette. This, however, does not affect the stitching sequence.

Stitching sequence unchanged
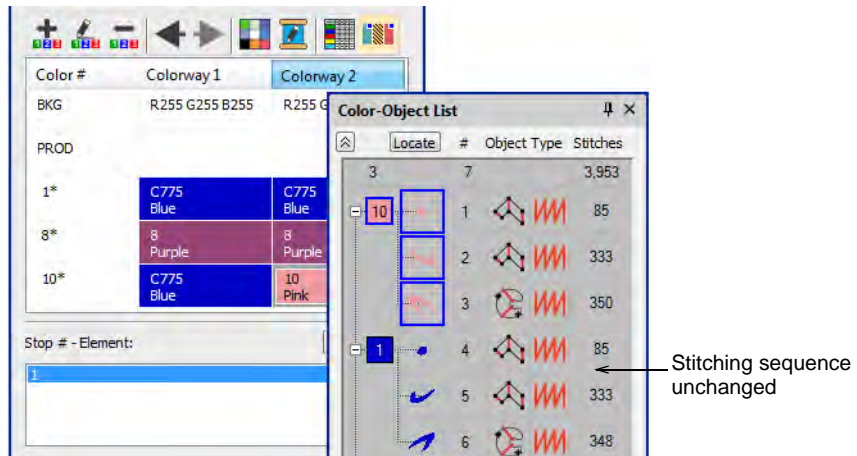
Related topics...

◀ Assign thread colors

Fabric & product backgrounds

EmbroideryStudio lets you set background color, fabric, or product backdrop for more realistic previews and presentations. The background is saved with the colorway.

Tip: While you can change background colors, fabrics, and even products, this does not automatically affect current fabric settings. See Working with fabrics for details.

Set fabric backgrounds

 Use Color > Background & Display Colors (or Colorway Editor docker) to change design background presets for the current colorway.

EmbroideryStudio lets you set the colorway background for more realistic previews and presentations. These can be included on approval or production sheets. Choose from an assortment of swatches, or if you have your own, import them into your design. Almost any artwork can be used – photos, magazine pictures, clipart images, and even fabric samples. The background is saved with the colorway.

To set the background

◀ Open the design and select a colorway.
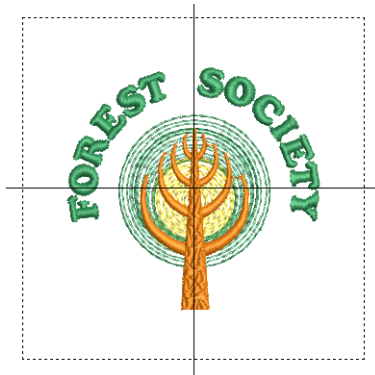
◀ Click **Background & Display Colors** icon.
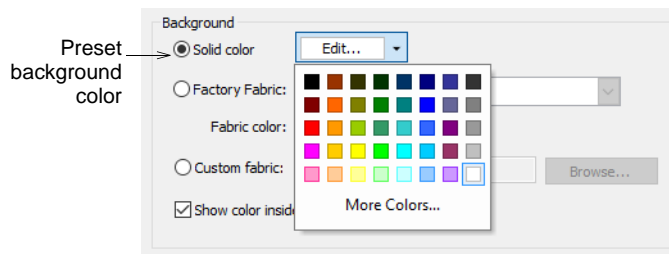
◀ To set a background color, select from the palette in the droplist.

◀ You can, if you prefer, color only the background inside the hoop, leaving the rest of the design window a neutral color.

◀ To set a background fabric, select **Factory Fabric**.

Choose a background fabric

Choose fabric color
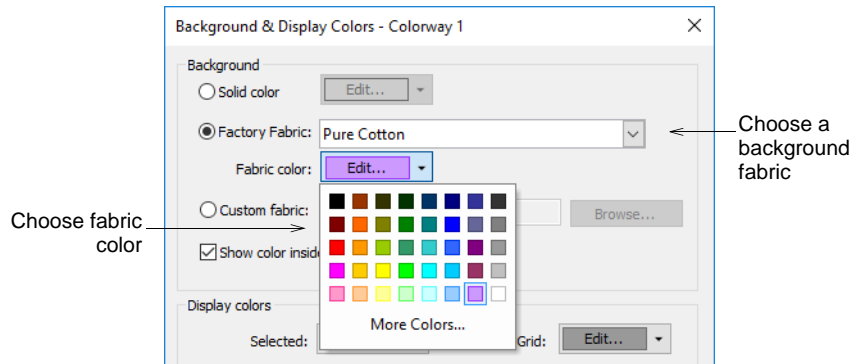
◀ Click the **Fabric** droplist for more options.

Select background fabric
and color as desired
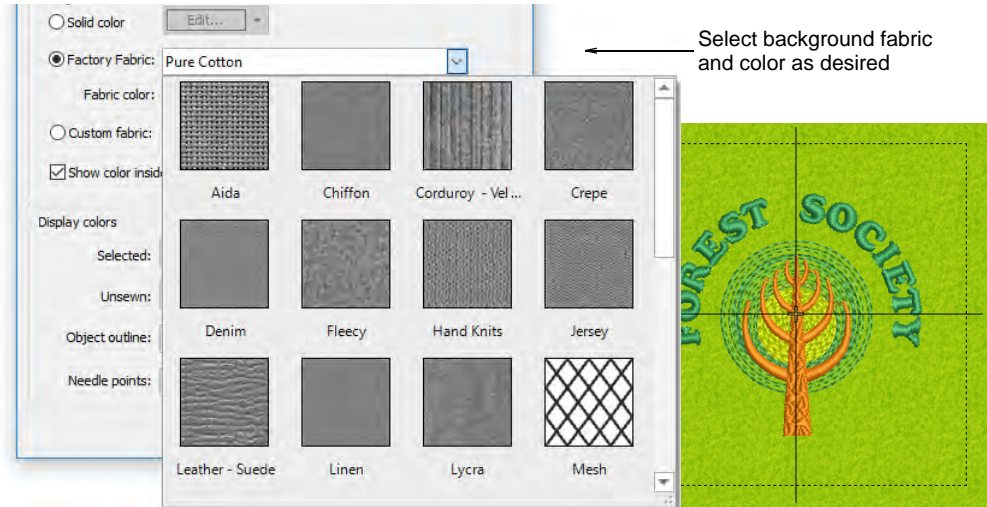
◀ Alternatively, to choose a custom swatch, select **Custom Fabric** and
click **Browse**.

Tick Custom to
choose your own
fabric swatch

Click Browse to locate
custom fabric swatch
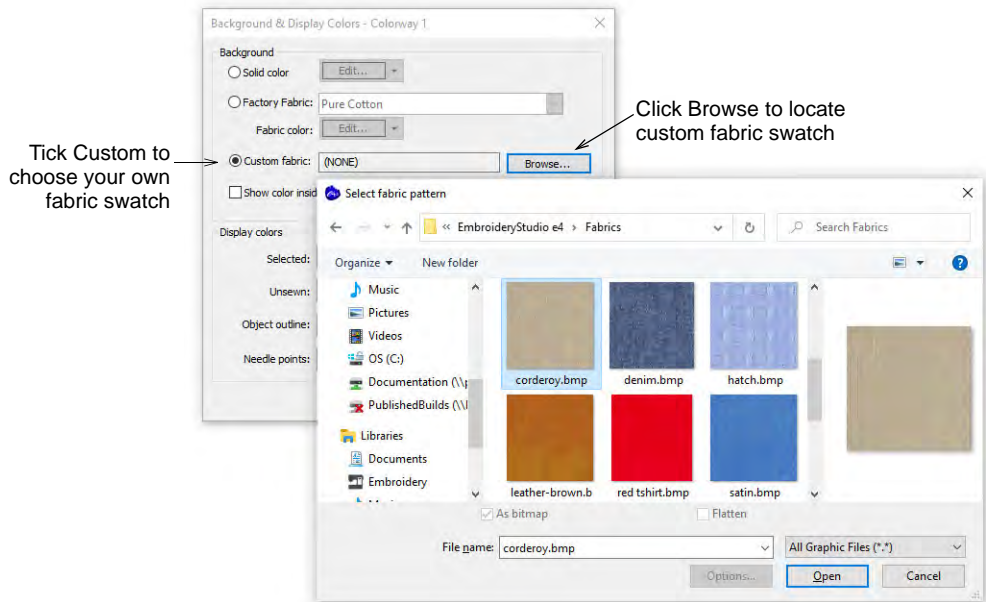
◀ Click **OK**.
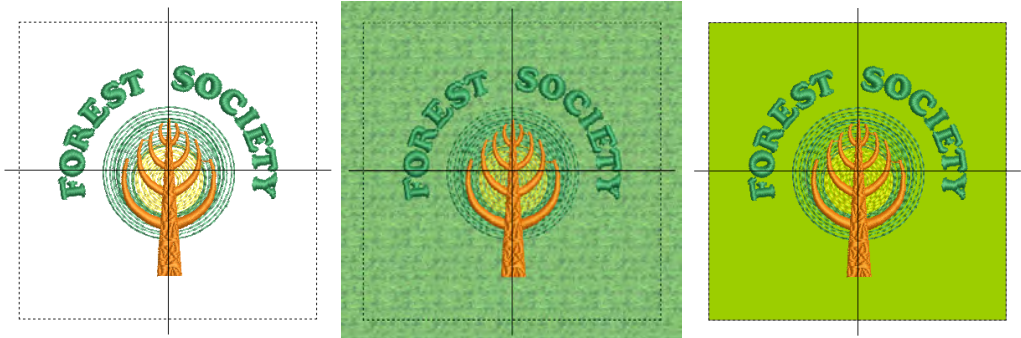
📵
Note: If you change the background in **Colorway 1** and save your template, it will always display like this at start up.

Related topics...

◀ Add colorways
◀ Working with fabrics
◀ Visualize products
◀ Preparing artwork for scanning

Visualize products

👕	Use Color > Product Visualizer to choose a garment or product backdrop on which to position your decoration.
👕	Click View > Show Product to toggle current product display. Right-click for Product Visualizer settings.
🔍	Use Zoom > Zoom to Product to view the entire product in the design window.

EmbroideryStudio allows you to choose a garment or product backdrop on which to position decorations. This feature is mainly used to display location, size and overall appearance for visualization and customer

approval purposes. Production worksheets provide an option to print approval sheets with or without garment backdrops.

Choose colors for each product type. The software provides a library of garments of common brands and styles. Up to three layers of color are supported for multi-color garments.

To visualize a product

◀ Open the design and select a colorway.

◀ Click the **Product Visualizer** icon. The docker appears.

Optionally toggle
product image on/off
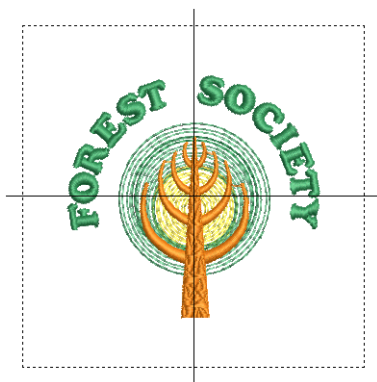
Select a
product folder
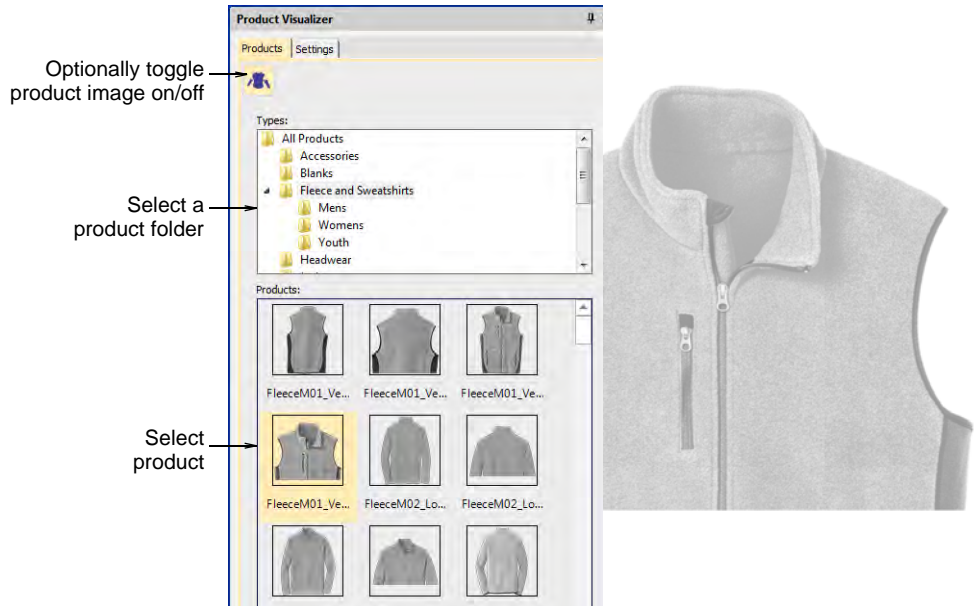
Select
product

◀ Select a category and click a garment or product to select. The product image is centered in the design window at the default scale.

◀ Optionally, a **Custom** option allows you to import custom product images. These need to be prepared as grayscale images. They need to be correctly sized.

◀ Switch to the **Settings** tab. This lets you color, size, and position the product in the design window.

If a multi-layer
product image is
selected, customize
colors for each layer

Click to apply
color
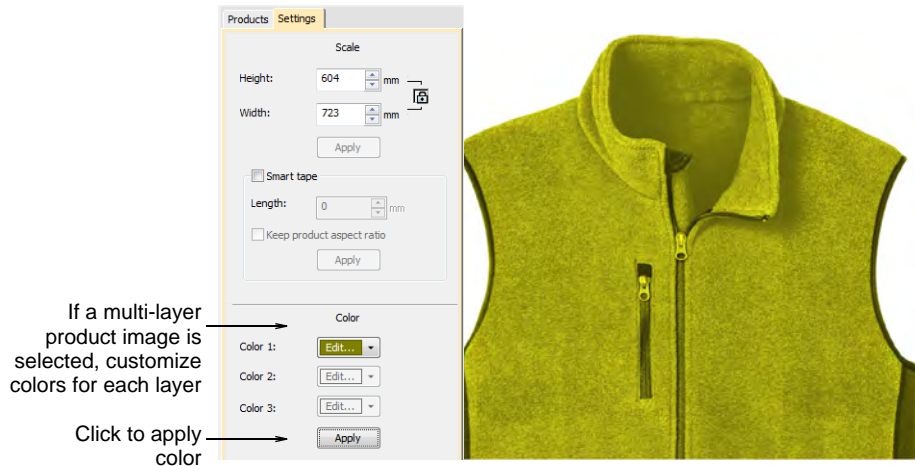
◀ Scale the product image as necessary. Scale should be adjusted according to actual garment size – XS, S, M, L, XL, or XXL.

◀ Optionally, use the **Smart Tape** function to measure, say, shoulder size against the ruler. Adjust the **Length** field and press **Apply** to resize the product image accordingly. Use the **Keep proportions** setting as appropriate.

Measure garment to determine real-world size

Scale product image as necessary

Alternatively, enter known dimension and click Apply to resize product image
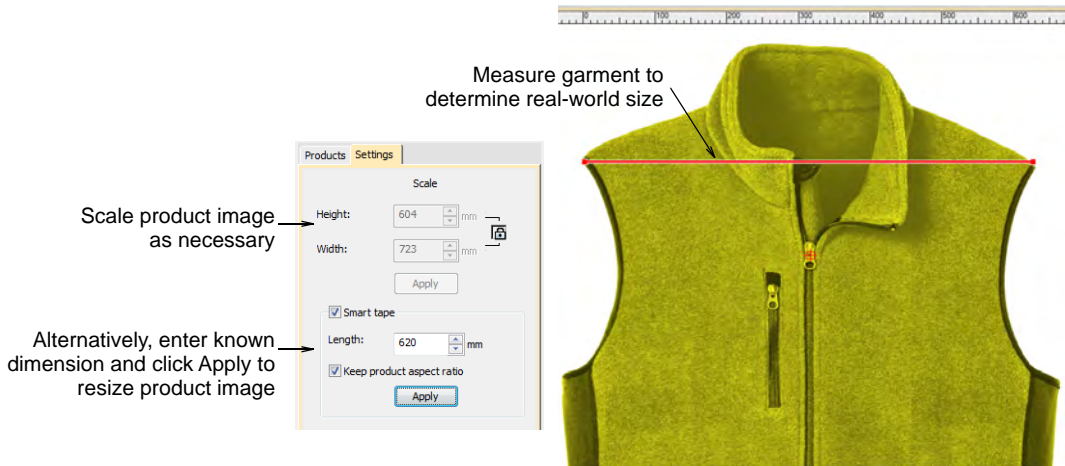
◀ Finally, position the design on the product image. Press **Ctrl+A** to select and drag or use arrow keys to nudge.

Position product image in relation to design

Alternatively, position design on product image

◀ Alternatively, position the product image in relation to the design. By default, the center is placed at the design origin. The 'X' and 'Y' fields display 0,0.

　◀ Enter values directly into the 'X' and 'Y' fields to move the image center to the new location.

　◀ Use the nudge control buttons to move the image incrementally.

◀ To toggle the product background on/off, click the **Show Product** icon.

◀ To change colors 'on-the-fly', use the **Product Visualizer** droplist and change fabric colors via the **Product Color** popout menu.

Change product color
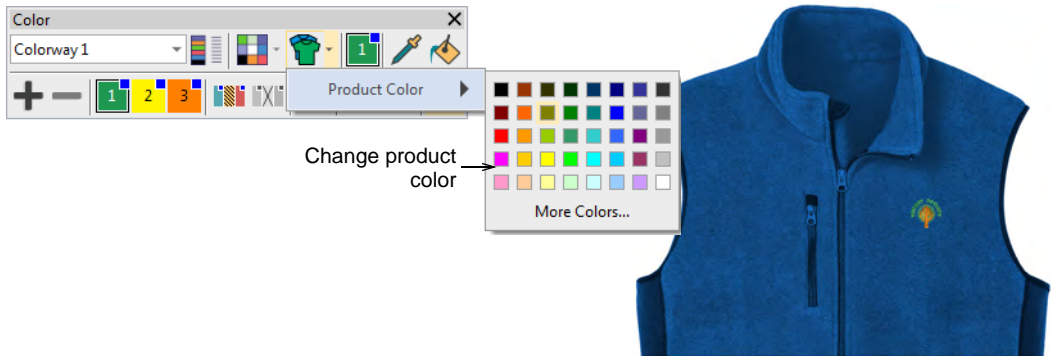
Related topics...

◀ Printing design reports
◀ Product Visualizer Templates

PART IV
MODIFYING DESIGNS

After digitizing a design, you can modify it as a whole, edit individual objects or even individual stitches.

Combining objects

This section describes how to combine objects and designs by copying and pasting, duplicating, and inserting techniques. It also describes how to resequence objects by cut-and-paste, by color, and with the Color-Object List. Automatic branching of grouped objects is also covered. See Combining Objects for details.

Transforming objects

This section describes how to position objects, how to lock and group, align and space objects, as well as how to scale, rotate, skew, and mirror objects in a design. See Transforming Objects for details.

Productivity techniques

EmbroideryStudio provides input tools for stars and rings and other preset shapes. There are special tools for cutting holes in objects as well as filling them. There are also tools for generating outlines based on existing shapes. In addition, EmbroideryStudio provides powerful tools for mirroring and reflecting selections or entire designs. See Productivity Techniques for details.

Reshaping objects

This section describes how to reshape objects with control points, how to break up objects, how to adjust and add stitch angles, as well as how to change entry and exit points of objects in a stitching sequence. It also covers conversion of one embroidery object to another. See Reshaping Objects for details.

Stitches & machine functions

This section deals with selecting and editing stitches, and converting selected stitches to objects. It also includes instructions for inserting, checking, editing and clearing manually-inserted functions. How to edit stitches and functions using the Stitch List is also covered. It also

explains manual digitizing techniques. See Stitches & Machine Functions for details.

Chapter 13
Combining Objects

EmbroideryStudio provides various techniques for combining and sequencing objects. You can add to designs by duplicating and copying objects. Resequence objects in designs to minimize color changes and optimize production.

The stitching sequence naturally occurs in the order in which an embroidery design is digitized or assembled. When converting a graphic design to an embroidery design, EmbroideryStudio decides the stitching sequence according to its own internal logic. Either way, you may, for reasons of aesthetics or production efficiency, want to adjust it.

The **Color-Object List** displays a sequential list of objects grouped by object and color. It provides an easy way to group, cut, copy and paste, and resequence selected objects and color blocks.

Combining objects & designs

Objects can be combined to create composite designs. They can be inserted from disk, copied and pasted via the MS Windows® clipboard for, or duplicated within the same design.

Insert designs

Click Standard > Import Embroidery to import embroidery design file into current design.

EmbroideryStudio 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 into 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 them as separate colors, you need to change one or other before importing.

💡
Tip: If you don't know the origin of a design you are editing, you can insert it into a blank design file so that it acquires known fabric settings.

To insert designs
1 Open the source design.

2 Optionally, travel to the position in the stitching sequence where you want to insert the design. Otherwise, the inserted design will be placed at the end of the stitching sequence.

3 Select **Standard > Import Embroidery**. File type defaults to the native 'all-in-one' EMB format but any supported embroidery file can be used.
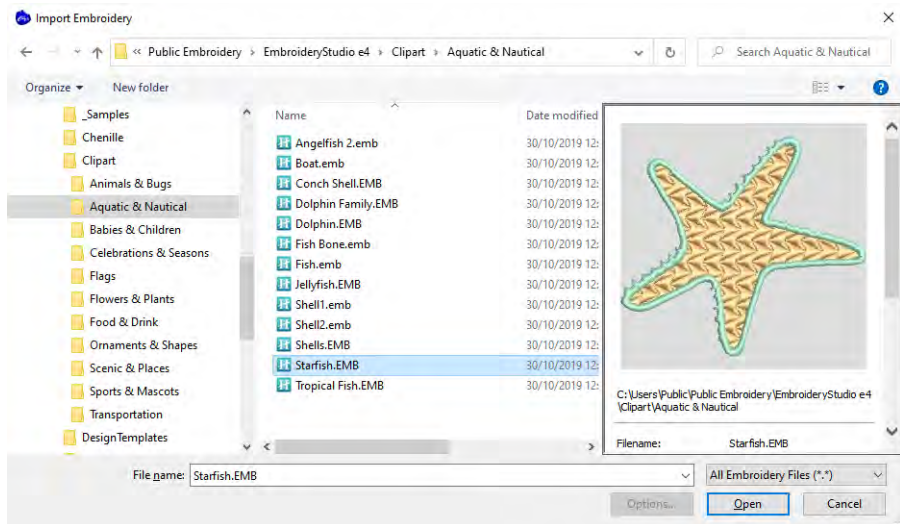
4 Select the design file to insert, and click **Open**. The design is inserted at the current needle position. By default, colors are added to the palette.
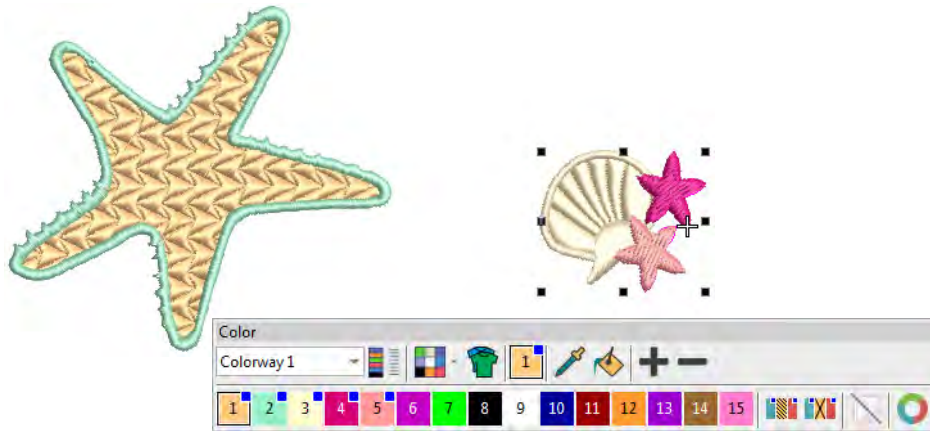
5 Scale and position the inserted design as required. To ensure that all the objects in the inserted design stay together, group it first.
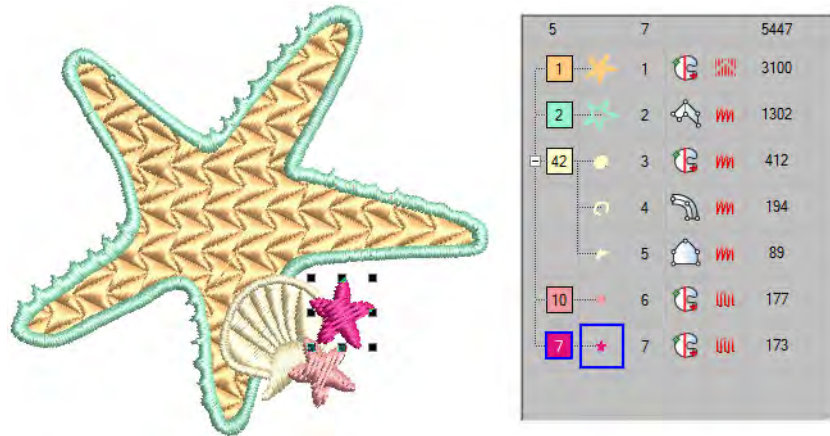
6 Sequence colors for efficient stitchout.

Note: The **Options > General** tab provides another setting – 'Match to palette' – which matches inserted design colors to the current palette.

Related topics...

◀ Inserting designs with Embroidery Clipart
◀ Thread color handling for inserted files
◀ Sequencing embroidery objects

Copy & paste objects

> ✂ Click Standard > Cut to remove selected objects to the clipboard.
>
> 📋 Click Standard > Copy to copy selected objects to the clipboard.
>
> 📋 Click Standard > Paste to paste copied objects to a design.

You can copy objects to create multiple, identical objects, or to insert objects from other designs. Cut-and-paste action changes the stitching sequence in the design.

To copy and paste objects

◀ Select the object (or objects) and click **Copy** or press **Ctrl+C**. The selected object is copied to the clipboard.

◀ Optionally, change **Insert Embroidery File** options via the **Options > General** dialog. By default, when you insert a design, colors are added to the color palette.
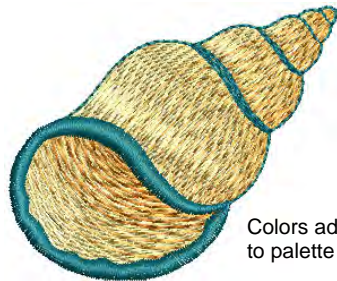
Colors added to palette
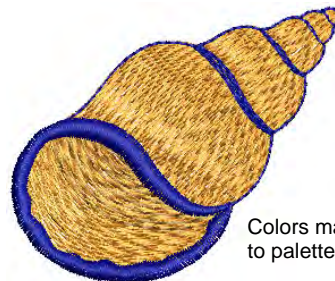
Colors matched to palette

◀ Optionally, change **Paste** options via the **Options > Edit** dialog.

◀ Optionally, travel to the position in the stitching sequence where you want to insert the object/s. Otherwise, it will be placed at the end of the stitching sequence.

◀ Click the **Paste** icon. The object is pasted according to current settings.

◄ Alternatively, use the **Paste After Selected** command to override current defaults and paste directly after the selected object in the stitching sequence.

Override current default settings

Override current settings
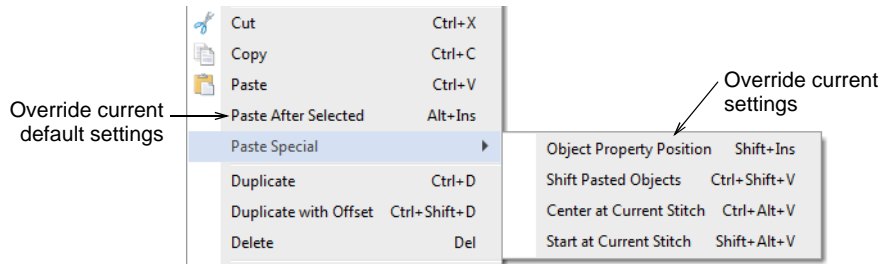
◄ Alternatively, use the **Paste Special** flyout to override current paste position settings. Shortcut keys are available. Make sure there is only one copy of an object at any one position. If an object is pasted twice in the same position, it will be stitched twice.

Related topics...

◄ Paste & duplicate options
◄ Thread color handling for inserted files
◄ Sequencing embroidery objects
◄ Transforming Objects

Duplicate & clone objects

> ↖ Use Select > Select Object to select and clone objects.

Objects can be duplicated rather than copied. When duplicated, the object is not copied to the clipboard. This preserves the current contents of the clipboard. They can also be 'cloned'.

To duplicate or clone objects

◄ Select an object or objects.
◄ Optionally, travel to the point in the stitching sequence where you want to place the duplicate. Otherwise, the duplicate object will be included at the end of the stitching sequence.

◀ It is handy to be able to 'quick clone' objects. Select the object and, holding down the right mouse button, drag to a new position. Hold down **Ctrl** to constrain movements horizontally or vertically.

Right-click object   Drag-and-drop   Object duplicated
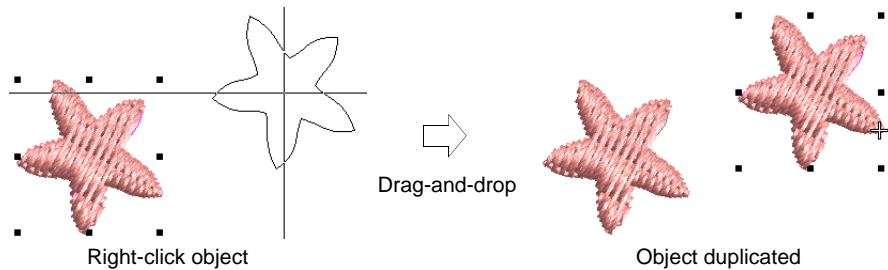
◀ Optionally, select **Edit > Duplicate** or press **Ctrl+D** to keeping duplicating the last cloned object. This means you can step-repeat duplicate objects.

◀ Optionally, press **Ctrl+Shift+D** to duplicate with a preset offset. Adjust this setting via the **Options > Edit** dialog.

Set duplicate offsets
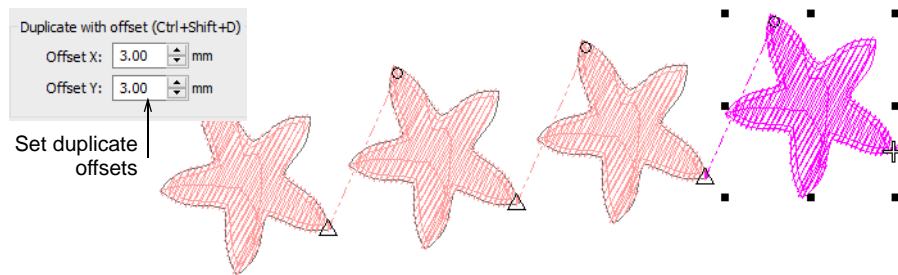
🔅
Tip: Clone objects to another window by the same method. To temporarily deactivate automatic scrolling, hold down the **Shift** key while dragging. Use the **Window > New Tab Group** commands to view multiple design tabs at the same time.

Related topics...

◀ Paste & duplicate options

◀ Travel through designs

◀ Set up multiple views

Nest objects

EmbroideryStudio lets you 'nest' one object inside another at an exact point of the stitching sequence. This feature is useful with motifs and

other designs where long connectors may be generated. It also helps reduce overall numbers of objects, minimizing trims and tie-offs.
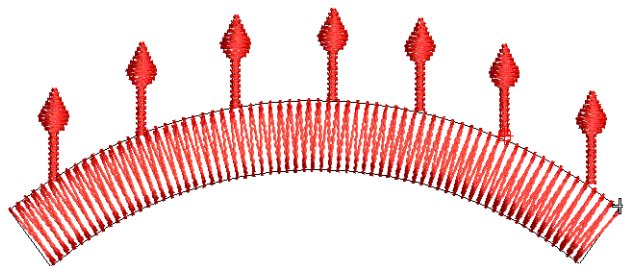
To nest objects

1 Travel through the object until the needle position marker is positioned where you want to insert the new object.

Travel to insertion
point and paste object
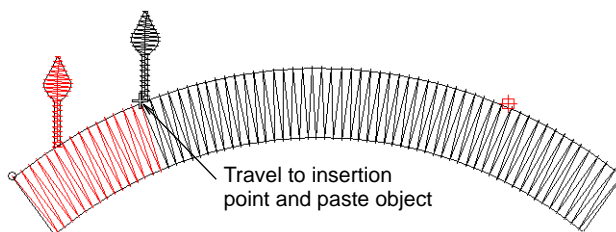
2 Either digitize the new object or copy and paste. The object is 'nested' inside the stitching sequence. All required functions are automatically added.

3 Use arrow keys to fine-tune placement of the new object.

Related topics...

◀ Paste & duplicate options

Grouping & locking objects

EmbroideryStudio lets you group objects together for group modifications. Ungroup whenever you need to work with the component objects. You can also lock objects to prevent them from being moved or modified by accident.

Group & ungroup objects

Use Arrange > Group to group selected objects.

Use Arrange > Ungroup to ungroup selected objects.

Group objects, or an entire design, to keep them together for moving, scaling and transforming actions. With grouped objects you can also apply global changes, saving time and ensuring consistency. When you have finished making changes to a group, you can ungroup and work with the component objects.

To group or ungroup objects

◀ Select objects and click the **Group** icon or press **Ctrl+G**.

Selected objects are combined. This group can be selected, moved, resized and transformed as a single object.
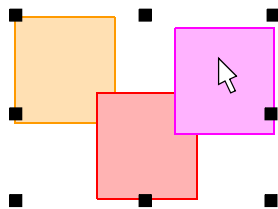
Select, move, resize, or transform grouped objects as single object

◀ To ungroup, select and click **Ungroup** or press **Ctrl+U**.
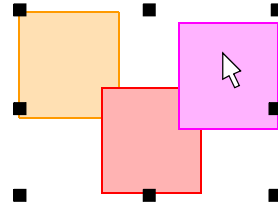
Objects ungrouped and deselected
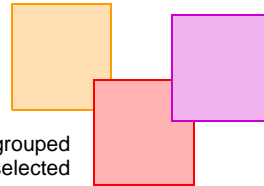
Tip: The **Color-Object List** provides an easy way to select objects in designs and access their properties. Use it to group, lock, and hide objects.

Click to open or close node

Group/ungroup objects
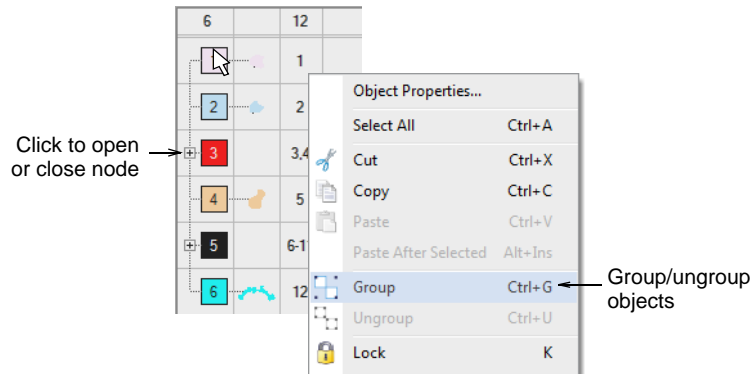
Related topics...

◀ Select objects with selection tools
◀ Sequence with the Color-Object List

Lock & unlock objects

> Use Arrange > Lock to lock selected objects.
>
> Use Arrange > Unlock All to unlock all locked objects in a design.

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.

To lock or unlock objects

◀ Select objects and click the **Lock** icon or press **K**.

Selection handles disappear, indicating that the object can no longer be selected or modified.

◀ To unlock objects, click the **Unlock All** icon or press **Shift+K**.

💡

Tip: The **Color-Object List** provides an easy way to select objects in designs and access their properties. Use it to group, lock, and hide objects.

Click to open or close node

Lock/unlock objects
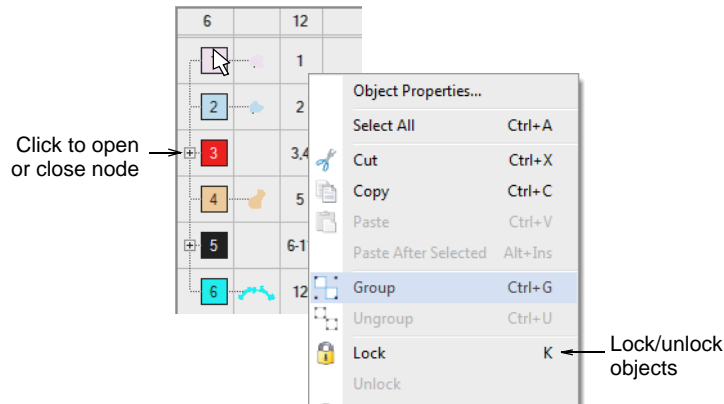
Related topics...

◀ Select objects with selection tools
◀ Sequence with the Color-Object List

Select objects within groups

Use Select > Select Object to select individual objects as well as groups or ranges of objects.

EmbroideryStudio provides a method for selecting individual objects within object groupings. 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**.

Entire design grouped
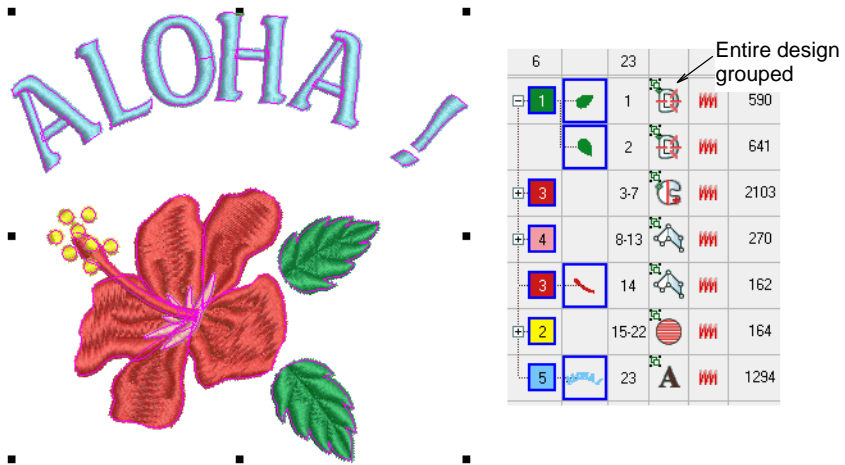
◀ Use **Alt+Click** to select a single object within a group.

◀ Use **Ctrl** or **Shift** keys in combination with **Alt** to select multiple objects or a range of objects within a group.

Individual objects selected within a group
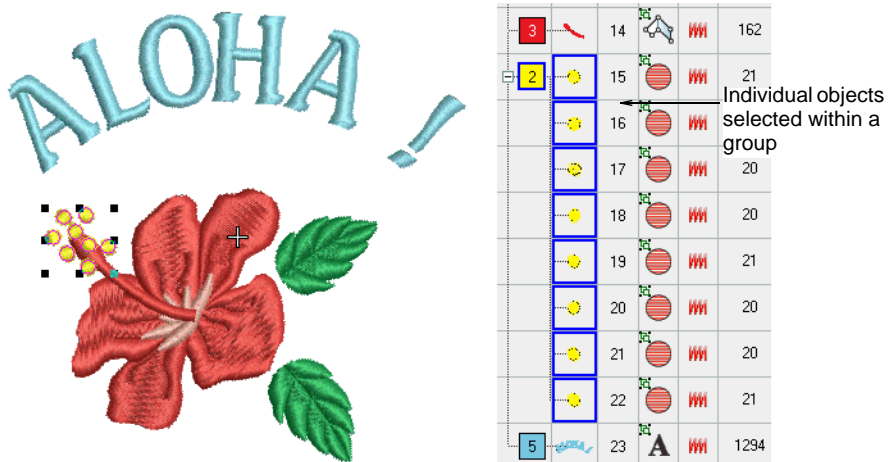
◀ Use **Alt+Drag** to select by 'selection marquee'.

◀ Use **Alt+Polygon/Polyline** to isolate objects as you select.

◀ Within the **Color-Object List**, use the same techniques to:

  ◀ 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).

Note: Once an object (or more) is selected, all properties, stitching and otherwise, can be changed 'inside' the group without the need to ungroup/regroup.

Selecting objects by color or stitch type

You can select embroidery objects of the same color or stitch type with a single command.

Select objects by color

You can select embroidery objects of the same color with a single command.

To select objects by color

◀ Select **Edit > Select by Color**.
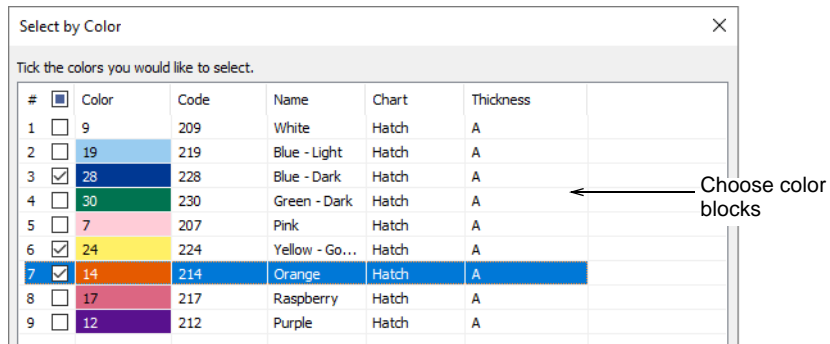
◀ Select color blocks from the list and click **OK**. All objects using the selected colors are selected in the design.
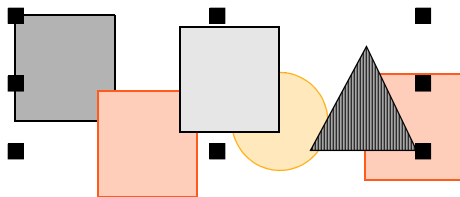
Select objects by stitch type

You can select embroidery objects of the same stitch type with a single command.

To select objects by stitch type

1 Select **Edit > Select by Stitch Type**. The **Select by Stitch Type** dialog opens.
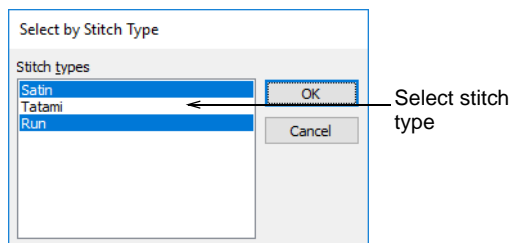
2 Select a stitch type from the list.
   - ◀ To select a range of stitch types, hold down **Shift** as you click.
   - ◀ To select multiple stitch types, hold down **Ctrl** as you click.

3 Click **OK**. Objects using the selected stitch types are selected in the design.
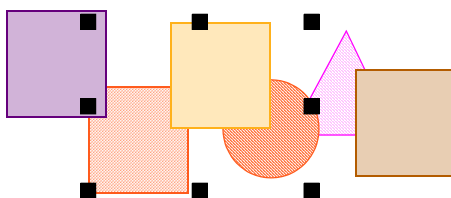
Related topics...
◀ Select objects by color

Sequencing embroidery objects

The embroidery objects comprising a design form a 'stitching sequence'. 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.
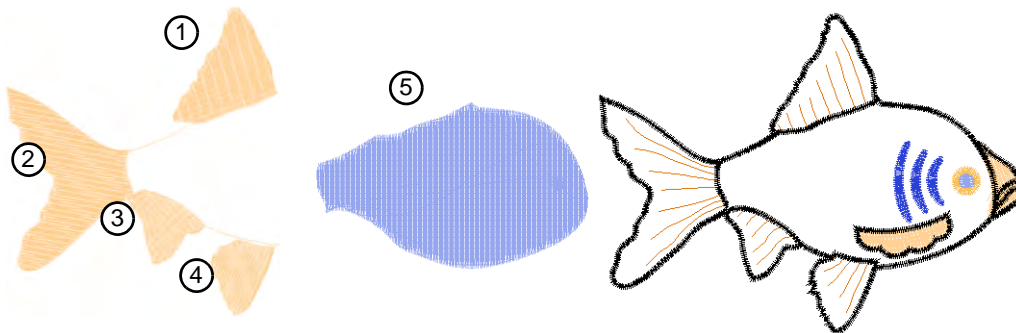
If you are digitizing manually in **Wilcom Workspace**, objects are stitched in the order in which they were created. If you have converted a design directly from **CorelDRAW Graphics** to **Wilcom Workspace**, EmbroideryStudio uses automatic sequencing to determine the stitching sequence. You can always manually adjust the sequence to improve the stitchout – e.g. to minimize color changes.

💡
Tip: Entry and exit points should also be checked when resequencing objects in a design. See also Adjust entry/exit points. See also Minimizing connectors.

Sequence by cut-and-paste

> ✂ Click Standard > Cut to cut a selected object or objects and place them on the clipboard.
>
> 📋 Click Standard > 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 its physical location.

To sequence objects by cut-and-paste

1 Select the object (or objects) to resequence.

2 Click the **Cut** icon. The selected object is removed to the clipboard.

Completed design – center stitched first

Object cut to clipboard
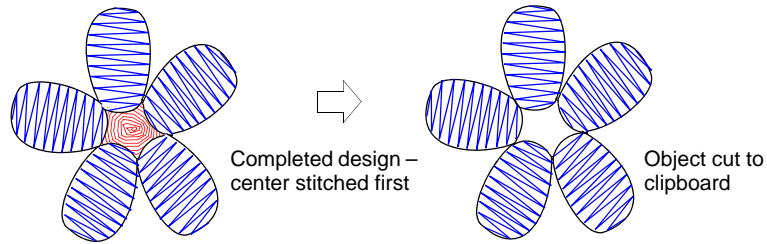
3 Travel to the point in the stitching sequence where you want to paste the object. You can place it between other objects or 'nest' it within another object.

4 Click the **Paste** icon. The object is pasted according to current settings.
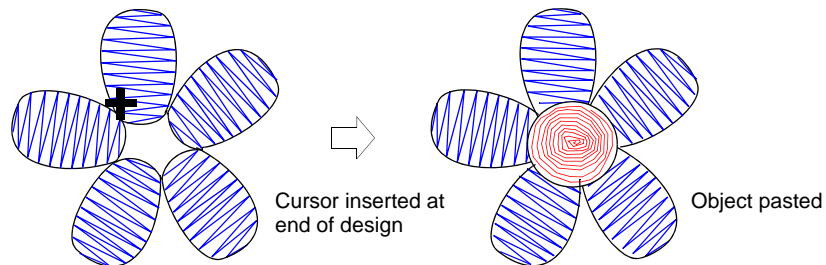
Cursor inserted at end of design

Object pasted

◄ Alternatively, use the **Paste After Selected** command to override current defaults and paste directly after the selected object in the stitching sequence.

Override current default settings

Override current settings
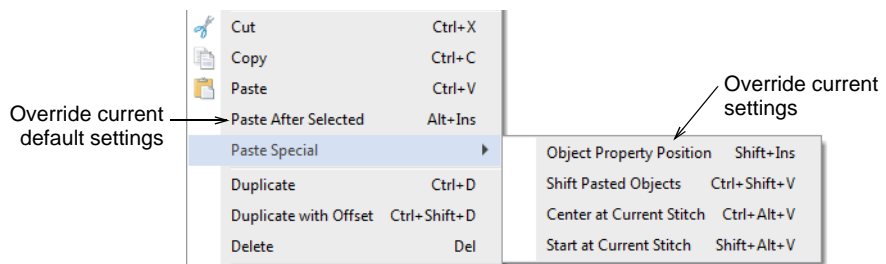
Note: Make sure there is only one copy of an object at any one position.

If an object is pasted twice in the same position, it will be stitched twice.

Related topics...

◄ Viewing stitching sequence

◄ Nest objects

Sequence with the Color-Object List

> 🔳 Use Docker > Color-Object List to resequence objects.

The **Color-Object List** provides an easy way to select objects in designs and access their properties.

To sequence with the Color-Object List

1 Click the **Color-Object List** icon.

Click-and-drag object to new position
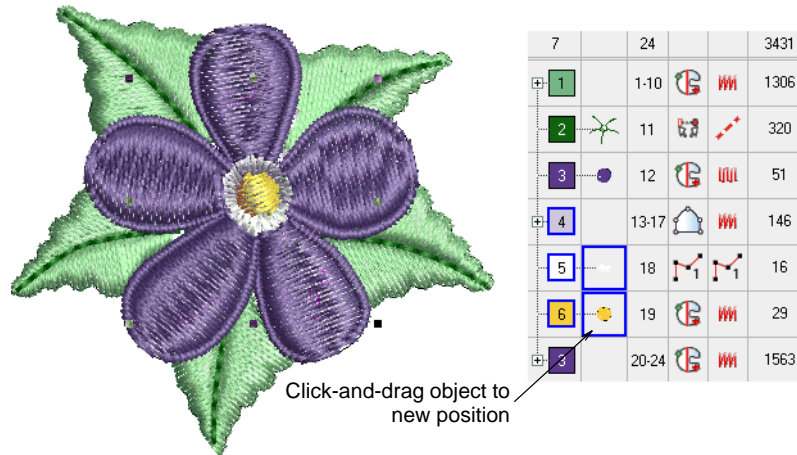
2 Select the color block or object to resequence.
   - ◀ To select a range of items, hold down **Shift** as you click.
   - ◀ To select multiple items, hold down **Ctrl** as you click.

3 Click-and-drag selected objects to reposition them.

Drop object into
new position
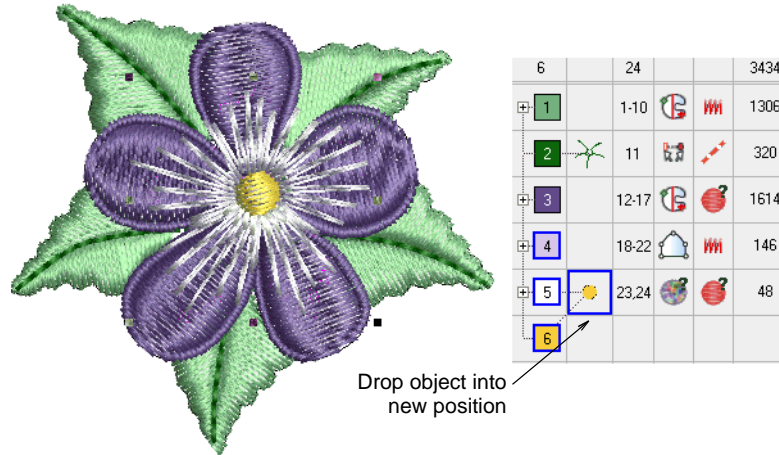
💡
Tip: You can also use the **Color-Object List** to group, lock, and hide objects.

Sequence selected objects

▲	Use Sequence > Back 1 Object to move a selection back one object in the stitching sequence.
▼	Use Sequence > Forward 1 Object to move a selection forward one object in the stitching sequence.
⏫	Use Sequence > Back 1 Color to move a selection back one color in the stitching sequence.
⏬	Use Sequence > Forward 1 Color to move a selection forward one color in the stitching sequence.
⏫	Use Sequence > Move to Start to move a selection to start of stitching sequence.
⏬	Use Sequence > Move to End to move a selection to end of stitching sequence.

The **Sequence** toolbar provides a convenient means for sequencing selected objects. Use it in conjunction with the **Color-Object List**.

Alternatively, use the popup menu **Sequence** option to resequence objects 'on-the-fly'. The same options can be accessed from the **Color-Object List** popup menu.
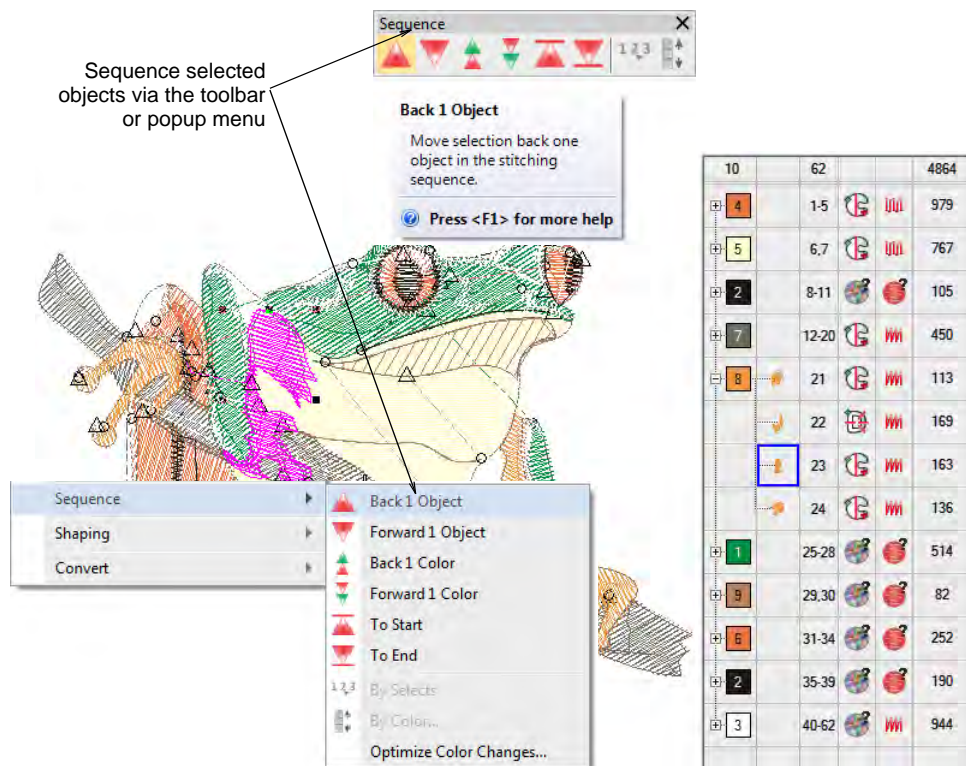
Sequence selected objects via the toolbar or popup menu

Back 1 Object

Move selection back one object in the stitching sequence.

Press <F1> for more help

Sequence ▸ Back 1 Object
Shaping ▸ Forward 1 Object
Convert ▸ Back 1 Color
          Forward 1 Color
          To Start
          To End
          By Selects
          By Color...
          Optimize Color Changes...

Tip: Entry and exit points should also be checked when you are resequencing objects in a design.

Related topics...

◀ Adjust entry/exit points
◀ Minimizing connectors

Auto-sequence entire designs

The **Optimize Color Changes** feature improves the quality and efficiency of the stitchout by minimizing the number of color changes and trims. All existing overlaps are preserved by the operation. Grouped objects are not ungrouped but different colored objects are optimally sequenced regardless of grouping.

To auto-sequence an entire design

◀ Open or create a design and select objects to resequence.
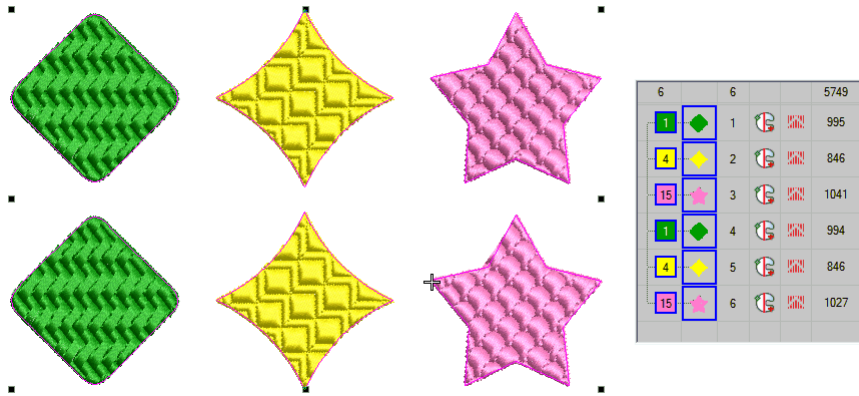
◀ Select **Arrange > Sequence > Optimize Color Changes** or use the popup menu in the **Color-Object List**.
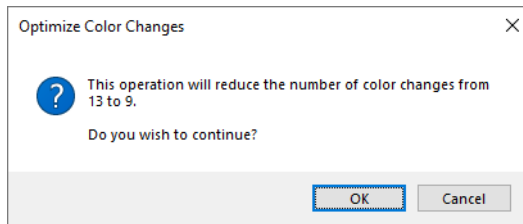
◀ Click **OK** to confirm. The system analyzes all selected objects and calculates optimal color changes and trims.
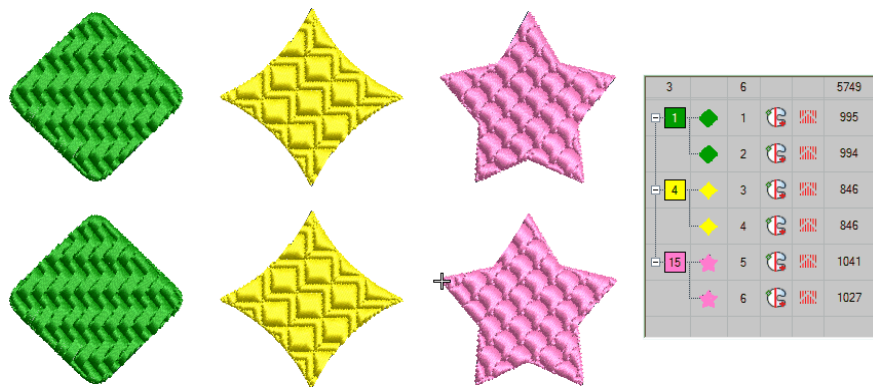
Tip: The **Undo** command will reverse the effect of any sequencing changes.

Sequence by color

🔳	Use Sequence > Sequence by Color to resequence all blocks of like color.

The **Sequence by Color** feature lets you resequence all objects in a design by color. This technique resequences **all** color blocks of the same color.

To sequence by color

◀ Select the objects to resequence or press **Ctrl+A** to select the entire design.

◀ Click the **Sequence by Color** icon or select **Arrange > Sequence > By Color**. The **Sequence by Color** dialog opens listing colors in the selected objects.
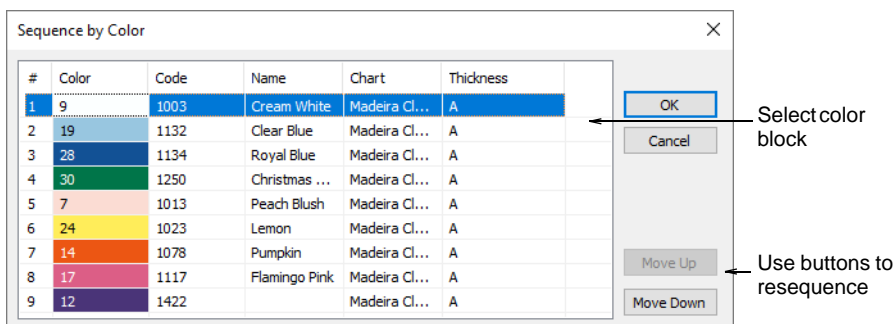
◀ Select a color and click **Move Up** or **Move Down** to change its position in the sequence.

🚫

Note: If you need to sequence separate color blocks, use the **Color-Object List**.

Sequence by selection order

123	Use Sequence > 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

◂ Select the first object you want to resequence.

Select objects in order to be stitched
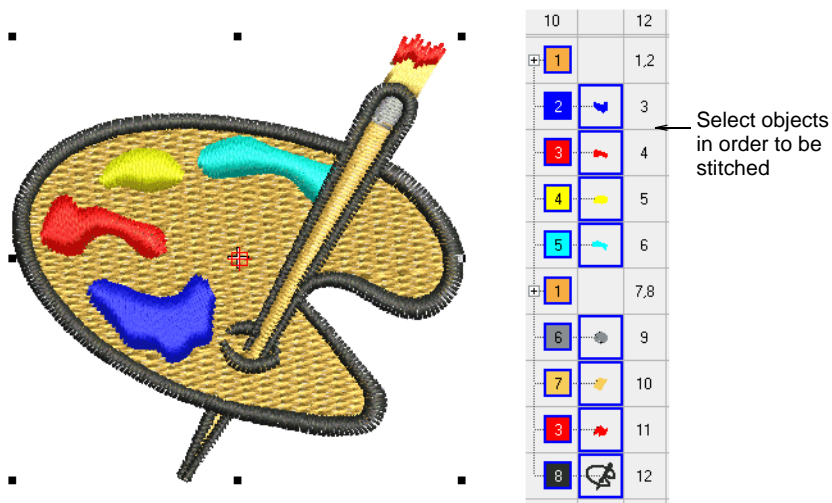
◂ Holding down **Ctrl**, select subsequent objects. Select each object in the order you want it to stitch out. Do this directly on-screen or via the **Color-Object List**.

◂ With objects still selected, select **Arrange > Sequence > By Selects** or click the **Sequence by Selects** icon. The objects are resequenced in the selection order.
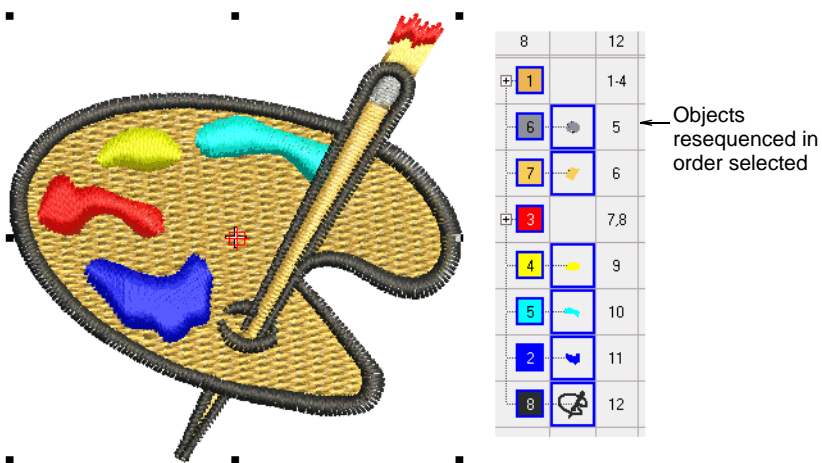
Objects resequenced in order selected

💡
Tip: Entry and exit points should also be checked when you are resequencing objects in a design.

Related topics...

◂ Adjust entry/exit points
◂ Minimizing connectors

Sequence by number

> Use Docker > Color-Object List to resequence objects.

You can resequence objects numerically in the **Color-Object List**. Use it to move an object to a position between consecutive members of a color block. This technique is used primarily with designs containing many objects where precise object sequencing is important.

To sequence objects by number

1 Click the **Color-Object List** icon.

2 Right-click an object in the list.

3 Select **Sequence > By Number** from the popup menu. The **Sequence by Number** dialog opens.
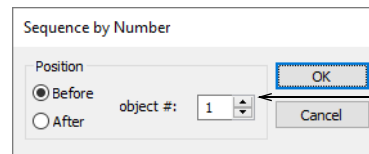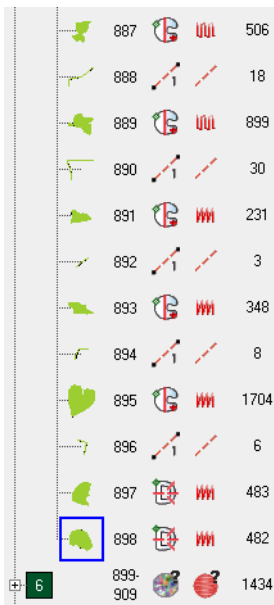
Enter number of target object

Sequence selected object by number
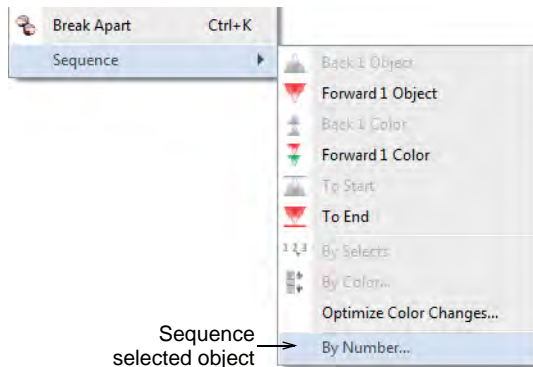
4 Enter the number of the object **before** which you want to position your selected object.

Note: If you prefer to position the selected object **after** a selected number – e.g. to make it the last object in the list – select **After Position**.

5 Click **OK**. The selected object will be placed in the new position and all other objects resequenced accordingly.

Chapter 14
Transforming Objects

Change position, size and orientation of objects by moving, scaling and transforming them. Modify objects directly on screen or via their object properties. Mirror objects or entire designs. Create design 'wreathes' or borders. Create design arrays for efficient stitchout.
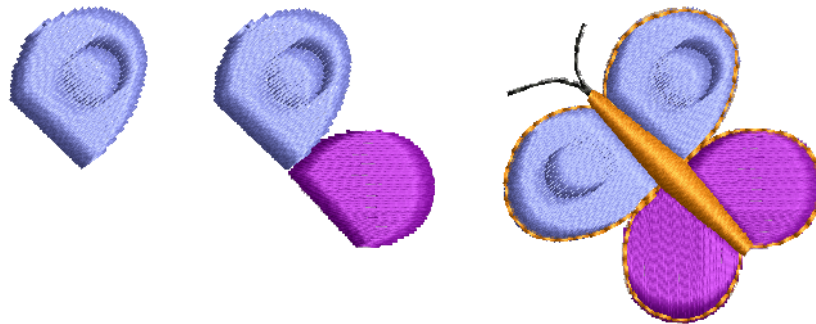
Note: The scalability and stitching quality of a design ultimately depend on its original source – **Native Design**, **Imported Outlines**, **Processed Stitches**, or **Imported Stitches**. Only EMB designs contain the complete set of design information required for 100% perfect scaling and transformation. See also Embroidery file formats.

Arranging objects

Position objects using the mouse to drag and drop, or 'nudge' them with arrow keys. Alternatively, specify X:Y coordinates in the **Property bar**. EmbroideryStudio also provides tools to align objects relative to each other, or distribute them evenly within the design.
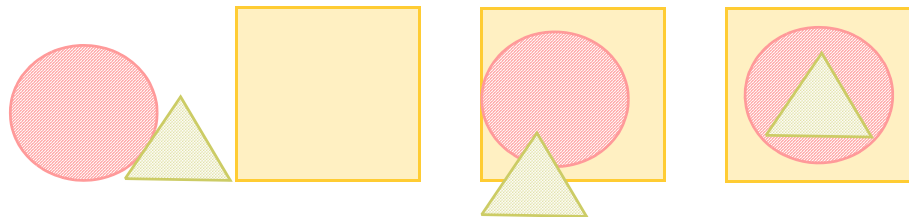
Position objects

The simplest way to move an object is to drag-and-drop to a new position.

To position objects

◀ Select the objects to move and click-and-drag to a new position.

Use cross-hair cursor
to center object
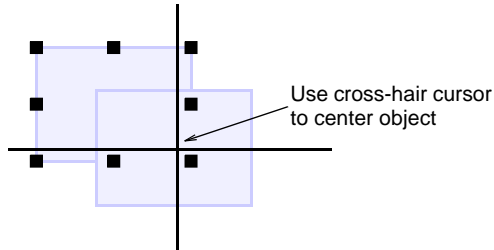
◀ For more accurate positioning, use the arrow keys to 'nudge' selected objects.

Tip: With no objects selected, using arrow keys will travel through the design.

◀ For even more accurate positioning, enter X:Y coordinates in the **Property Bar**. The selection is centered over the coordinates you set.

Enter exact coordinates

Property Bar					×
Position X:	-197.45 mm	Width:	70.59 mm	100.00 %	
Position Y:	-148.21 mm	Height:	42.17 mm	100.00 %	
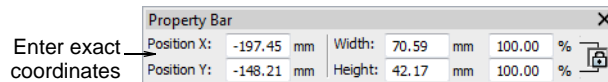
Tip: Zoom in to make small adjustments. The distance the object moves depends on the current zoom factor.

Related topics...

◀ Select objects with selection tools

Align objects

Use Arrange > Align Left to left-align selected objects.

Use Arrange > Align Centers Vertically to align the centers of selected objects vertically.

Use Arrange > Align Right to right-align selected objects.

	Use Arrange > Align Top to top-align selected objects.
	Use Arrange > Align Centers Horizontally to align the centers of selected objects horizontally.
	Use Arrange > Align Bottom to bottom-align selected objects.
	Use Arrange > Align Centers to align selected objects through their centers.

You can align selected objects to the left, right, top, bottom or center of a specified object.

To align objects

◀ Select the objects you want to align.

◀ Select the object you want to align with.

◀ Click an alignment tool or select **Arrange > Align > ...**.
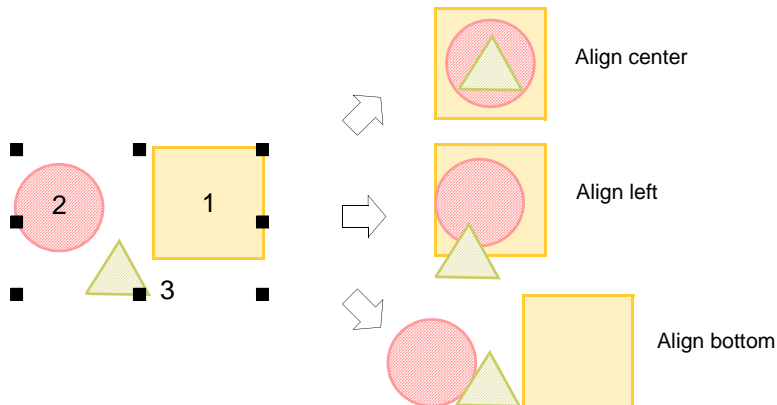
Note: Objects are aligned with the last selected object. When all objects are selected using **Ctrl+A** or a selection marquee, they are aligned with the last object in the sequence.

Related topics...

◀ Select objects with selection tools

Distribute objects evenly

	Use Arrange > Space Evenly Across to distribute selected objects evenly across the screen.

Use Arrange > Space Evenly Down to distribute selected objects evenly down the screen.

You can automatically distribute selected objects with even spacing between them, both vertically or horizontally.

To distribute objects evenly

◀ Select the objects you want to distribute.

◀ Click a spacing tool or select **Arrange > Space Evenly > ...**.
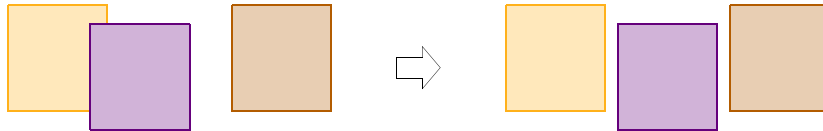
Note: The tools all become enabled when three or more objects are selected.

Related topics...

◀ Select objects with selection tools

Scaling objects

You can scale objects by dragging selection handles, specifying exact dimensions in the **Property bar**, or by setting a distance between reference points on the design. As an object is scaled, the stitch count changes to preserve the current spacing.
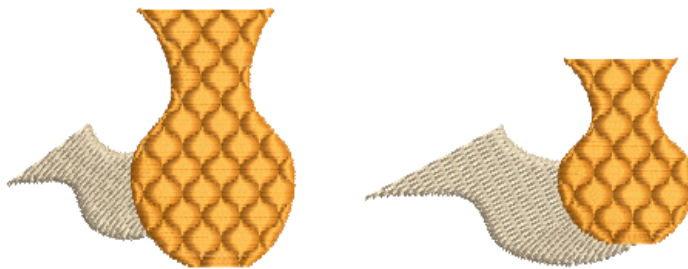
Note: Only EMB designs contain the complete set of design information for 100% perfect scaling and transformation.

Scale objects interactively

You can change height and width of an object, or scale it proportionally using selection handles. Scale objects individually, or select multiple objects and scale them together. Use the tooltips as a guide.

To scale objects interactively

◀ Select the objects to scale.

Scale proportionally — Drag

Scale freely in both directions — Ctrl + drag
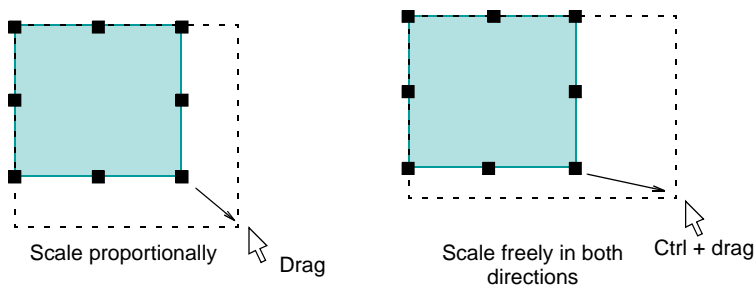
◀ To scale height and width proportionally, use a corner handle.

💡
Tip: By default, objects scale proportionally. To scale freely in vertical and horizontal planes, hold down **Ctrl** as you drag.

◀ To change the height or width, use the center handles.

Drag
Scale vertically

Scale horizontally
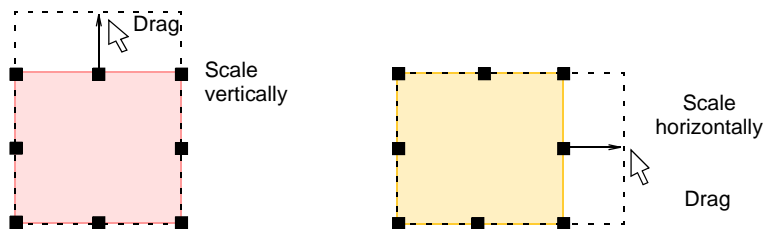
Drag

◀ To scale proportionally around an anchor point, hold down **Shift** as you drag.

Shift + drag

Scale horizontally in both directions

Scale proportionally about center

Shift + drag
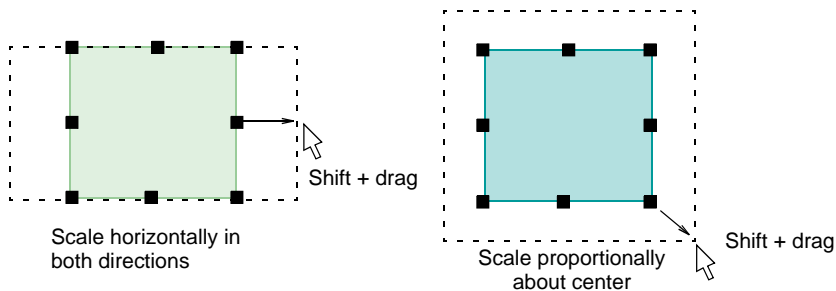
Scale objects numerically

You can scale artwork, selected objects or a whole design by means of object properties. With design files (EMB), this allows stitches to be regenerated while preserving the original stitch density. An exact size may not be achieved due to pull compensation being added to stitches after scaling operations.

⚠️

Caution: If you scale a machine file by more than ±10%, however, changes to stitch density will affect the design quality.

To scale objects numerically

1 Select the objects or design to scale.

2 In the **Property Bar**, either:

◀ Enter an exact height and width, or

◀ Enter the new height and width as a percentage of current dimensions.

Enter dimensions as exact
values or as a percentage

Property Bar							
Position X:	-197.45	mm	Width:	70.59	mm	100.00	%
Position Y:	-148.21	mm	Height:	42.17	mm	100.00	%

Lock aspect
ratio toggle

💡
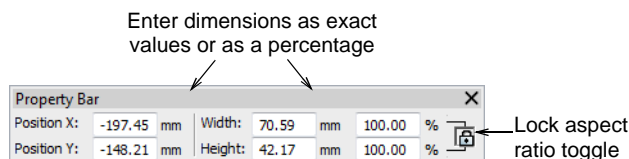
Tip: Toggle **Lock Aspect Ratio** to preserve aspect ratio.

3 Press **Enter** to apply.
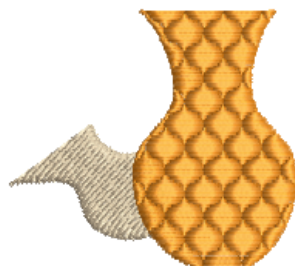
Vase scaled
Width: 120% Height: 140%
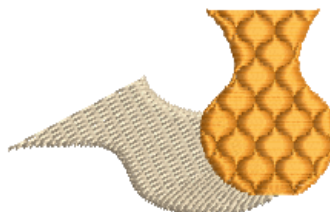
Shadow scaled
Width: 140% Height: 120%

📝

Note: After scaling, the new object size is reset to 100%.

Related topics...

◀ Embroidery file formats

Scale objects by reference line

You can scale an object or design by marking reference points and
specifying a line length.

To scale an object by reference line

1 Select the objects or design to scale.

2 Select **Edit > Transform > Transform by Reference Line
Numerically**.

You are prompted to enter start and end points. You will have already
decided which two points in the object or design will form the
reference line.

Click to mark the
reference points
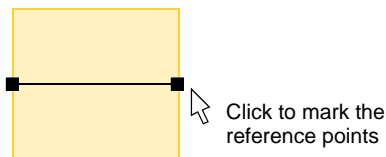
3 Click to mark the reference points. Press **Ctrl** to constrain the angle of
the axis to 15° increments.

4 Alternatively, press **Enter** twice to use the default reference line. The
Transform by Reference Line dialog opens.

Select Resize
to checkbox

Specify
size
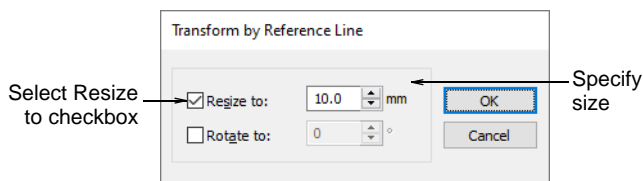
5 Select the **Resize to** checkbox, and enter the required distance
between reference points.

6 Click **OK**.

Make objects the same size

Click Arrange > Make Same Width and Height to scale an object or design to the same size as a reference object.

You can scale objects to the same size as a reference object. Resize height or width or both.

To make objects the same size

1 Select the objects to resize.

2 Select the object that is the size you require.

3 Click a sizing tool or select **Arrange > Make Same Size > ...**

Make same width

Make same height

Make same width and height
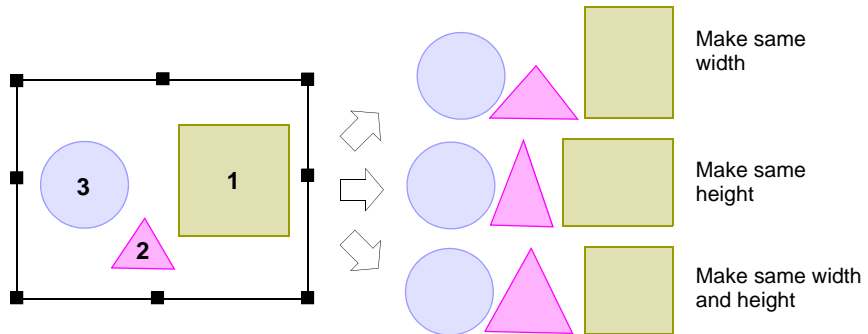
Note: Objects are resized with reference to the last object selected. If all objects are selected by using **Ctrl+A** or a selection marquee, they are resized with reference to the last object in the sequence.

Rotating objects

You can rotate objects directly on screen or by setting an exact rotation angle.

Rotate objects interactively

When you select an object, selection handles display at its extremities. When you click the object again, the handles change to rotation handles. Use the tooltips as a guide.

To rotate objects interactively

1 Select the objects to rotate.

2 Click a second time. Rotation handles appear at the corners and an anchor point at the center.

Click second time

Rotation handle

Anchor point

Skew handle
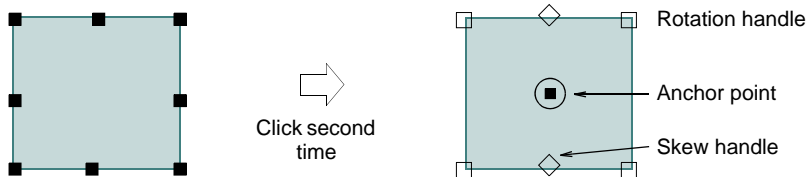
3 Optionally, drag the anchor point to any position.

Drag corner point to rotate
about the anchor point

Anchor point repositioned

Drag corner point to rotate
about the anchor point
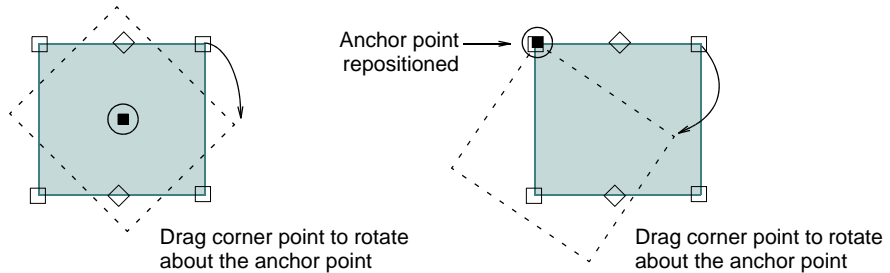
4 Click-and-drag a rotation handle in either direction.

Rotate objects numerically

Click Transform > Rotate Right 15° to rotate selected objects by 15° in a clockwise direction.

Click Transform > Rotate Left 15° to rotate selected objects by 15° in a counter-clockwise direction.

Use Transform > Rotate to rotate selected objects by an exact amount (in degrees).

You can rotate selected objects in 15° increments or by entering an exact value using the **Transform** toolbar.

To rotate an object numerically

◄ Select objects to rotate.

◄ To rotate in 15° increments, click one of the **Rotate 15°** icons.
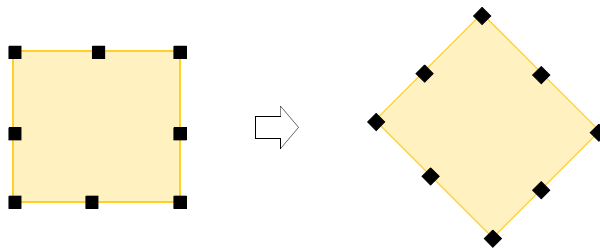
◄ To rotate by an exact amount, enter an exact angle in the **Rotate** field and press **Enter**.

Rotate objects by reference line

> Use Transform > Transform by Reference Line Freely to rotate selected objects with the aid of reference points alone.

The **Transform by Reference Line Freely** tool lets you rotate selected objects with the aid of reference points alone. This technique is useful if you want to duplicate and rotate objects around an anchor point – e.g. the petals of a flower.

To rotate an object by reference line

1 Select objects to rotate.

2 Select **Edit > Transform > Transform by Reference Line Freely**.

3 Follow the prompt line:

‣ Click the first reference point. This becomes the anchor point for the rotation.

‣ Click a second reference point. An outline attaches to the pointer.
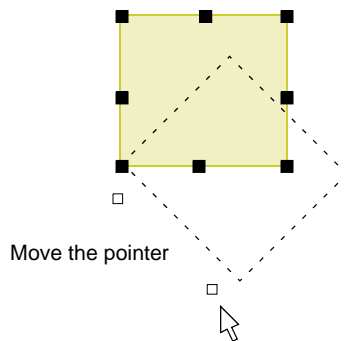
Move the pointer

‣ Optionally, press **Ctrl** to constrain the angle of the axis to 15° increments.

‣ Click the anchor point. The pointer then aligns itself with the second reference point.

‣ Click a guide point for the required rotation position. Use coordinates on the **Status** bar for exact alignment.

Rotate objects by reference line and angle

> Use Transform > Transform by Reference Line Numerically to transform selected objects using a combination of reference points and numeric values.

The **Transform** tool provides another method for transforming selected objects using a combination of reference points and numeric values. This provides a very accurate technique for rotating selected objects.

To rotate objects by reference line and angle

1 Select the objects to rotate.

2 Decide which two points in the object or design will form the reference line. This should be a significant line – e.g. one which must be perfectly horizontal or vertical in the final design.

3 Select **Edit > Transform > Transform by Reference Line Numerically**.

Select Rotate to → / Enter absolute rotation angle in degrees
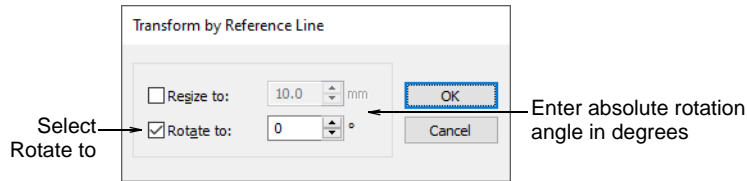
4 Select the **Rotate to** checkbox, and enter the rotation angle of the reference line. For example, to rotate the image so it aligns with the horizontal axis, enter a value of 0°. The **Angle** field accepts angles from 0 to ±180 degrees.

| Select rotation angle – e.g. 0° | Digitize reference line – align with base of object | Reference line set to angle specified in dialog |
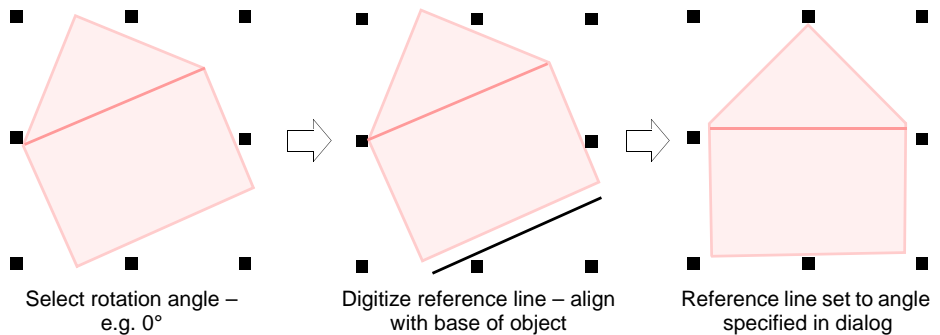
5 Click **OK**.

6 Click to mark the start and end points of the reference line.

Press **Ctrl** to constrain the angle of the axis to 15° increments. Alternatively, press **Enter** twice to use a horizontal reference line by default.

Skewing objects

> Use Transform > Skew to skew selected objects by an exact amount (in degrees).
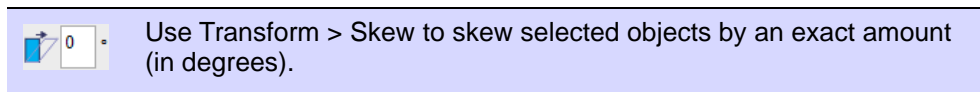
You can skew objects directly on screen or by setting an exact skew angle.
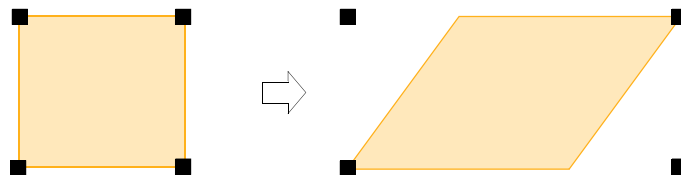
To skew objects

1 Select the objects to skew.

2 Click the object a second time. Skew handles are diamond-shaped and appear at the center-top and bottom of the object.

Click second time

Rotation handle

Anchor point

Skew handle
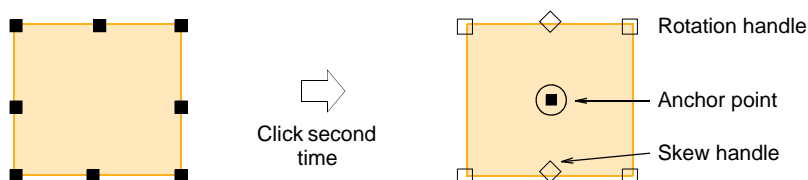
3 Drag handles left or right.

Drag skew handle left or right
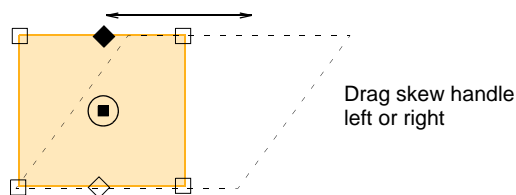
🔘
Tip: Alternatively, to skew by an exact amount, enter an exact angle in the **Skew** field on the **Transform** toolbar and press **Enter**.

Mirroring objects

Fashion and textile designs often use copied and mirrored design elements. In EmbroideryStudio you can mirror objects horizontally or vertically by means of the **Transform** toolbar. You can also mirror around a defined axis using a reference line.

🔘
Tip: The **Mirror Merge** tools allow you to duplicate and transform selected embroidery objects, as well as merge them into a single object. This feature is often used in making fashion or textile designs. See Mirroring & reflecting selections for details.

Flip objects horizontally & vertically

 Click Transform > Mirror Horizontal to flip selected objects in the horizontal plane.

 Click Transform > Mirror Vertical to flip selected objects in the vertical plane.

You can mirror selected objects horizontally or vertically using the **Mirror** tools. Select objects to mirror and click a **Mirror** icon. For productivity, shortcut keys are available for mirror operations.
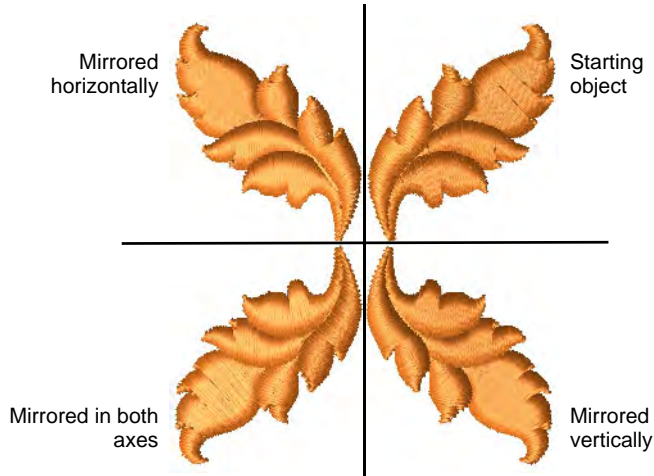
Related topics...

◀ Create multiple reflections

Mirror objects around an axis

 Use Transform > Mirror by Reference Line to mirror objects around a defined axis using a reference line.

Use **Mirror by Reference Line** to mirror objects around a reference line.

To mirror objects around an axis

◀ Select the objects to mirror.

◀ Select the **Mirror by Reference Line** icon or select **Edit > Transform > Mirror by Reference Line**.

Starting object
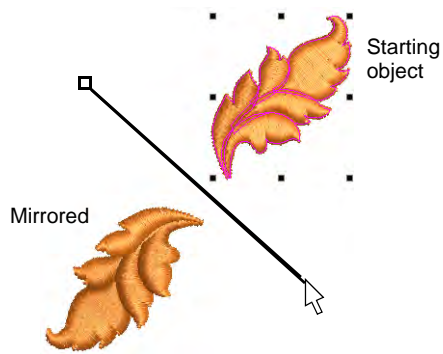
Mirrored

◀ Click to mark two reference points of the mirror axis.
◀ Press **Ctrl** to constrain the angle of the axis to 15° increments.

Chapter 15
Productivity Techniques

Specialized features help to save digitizing time. EmbroideryStudio provides input tools for stars and rings and other preset shapes. Add decorative borders from a **Borders** library. EmbroideryStudio provides special tools for cutting holes in objects as well as filling them. There are also tools for generating outlines based on existing shapes.

In addition, EmbroideryStudio provides powerful tools for mirroring and reflecting selections or entire designs for the creation of decorative wreaths or borders. The same toolset can be used to create perfectly symmetrical objects or designs. Alternatively, create arrays of designs, such as badges, automatically resequenced for faster stitchout.

Adding preset shapes

EmbroideryStudio provides a number of productivity tools for quickly creating predefined shapes for use as borders and design objects, both

embroidered and vector. These tools can be particularly useful for logo design and embroidered badge work.

Add design borders

 Use Toolbox > Add Borders to add borders to designs (or selected objects) with or without lettering.

Add decorative borders such as rectangles, ovals, and shields to designs or selected objects using the **Borders** library.

To add decorative borders to designs

1 Open a design and click the **Add Borders** icon.

Select border

Adjust border width
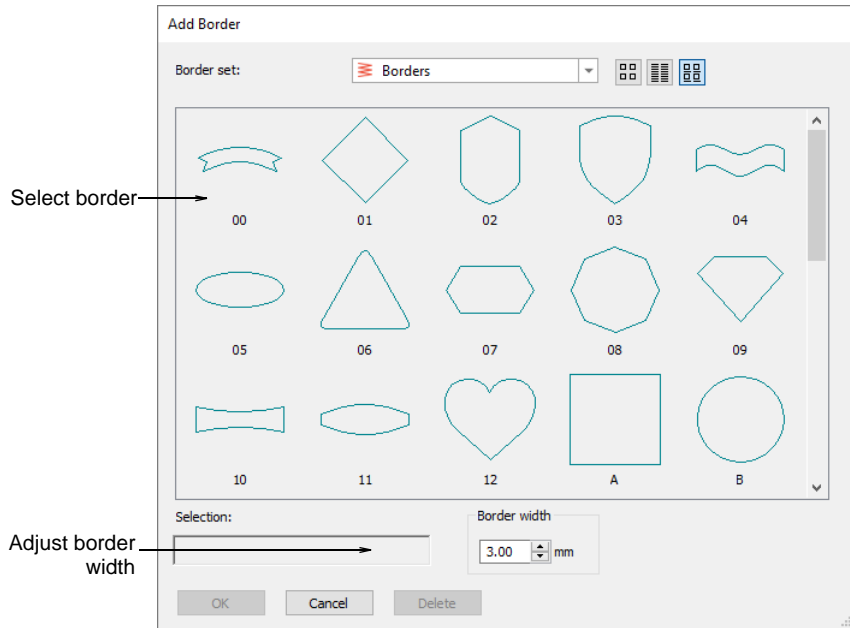
Tip: By selecting individual objects, you can add borders to these rather than the entire design.

2 Select a border and adjust **Border Width** as required. The default is 3.00 mm.

3 Click **OK**.

4 Edit borders in the normal way – change thread color, adjust border size, etc.

Tip: By default, borders scale proportionally. To resize proportionally around a central anchor point, hold down **Shift** as you drag. To scale freely in vertical and horizontal planes, hold down **Ctrl** as you drag.

Digitize stars & rings

Use Traditional Digitizing > Star to digitize star shapes filled with Zigzag stitching.

Use Traditional Digitizing > Ring to digitize circle and oval-shaped rings.

The **Traditional Digitizing** toolbar provides special time-saving tools for creating embroidered rings and stars or 'French dots'.

Stars

Digitize circles and ovals which use turning zigzag stitches to create a 'Star' or 'French dot' using the **Star** tool.
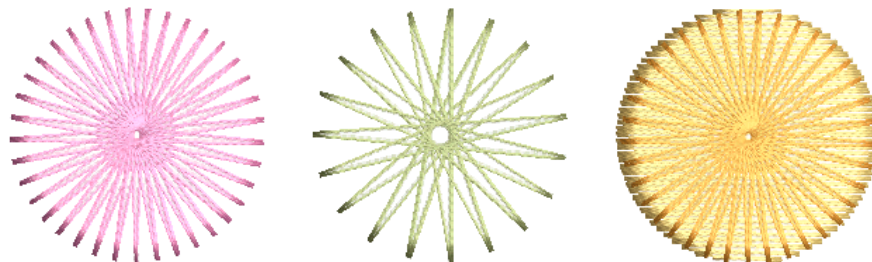
To digitize stars, click to mark the center and click again to set the radius. This point becomes the entry point. To create an oval star, mark a second radius point, then press **Enter**.
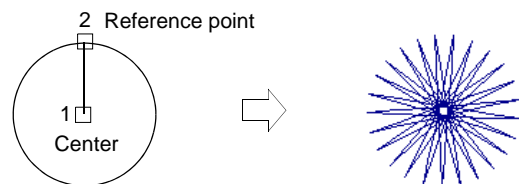
Rings

Create rings by digitizing circles and ovals within each other using the **Ring** tool. Use different combinations of inner and outer boundary shapes to create different effects.
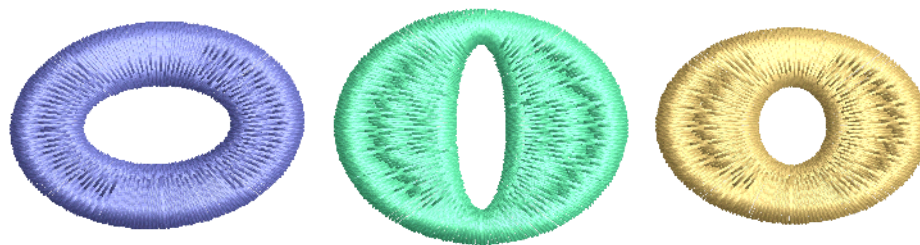
To digitize rings, digitize the inner boundary of the ring first either as a circle or an oval. Digitize the outer boundary of the ring in the same way and press **Enter**.
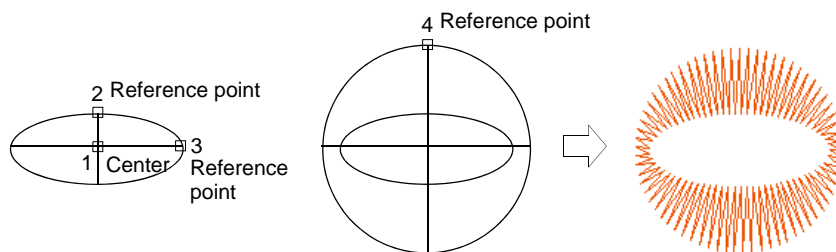
You can digitize rings with a variety of fill stitch types. Contour stitch is well suited to rings, as it runs stitches around the ring in a spiral pattern.
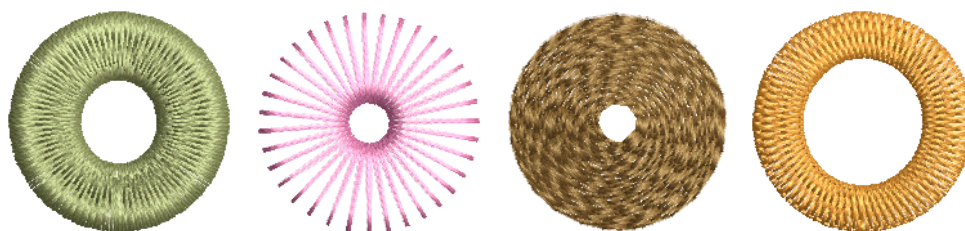
Related topics...

◀ Reshaping stars & rings

Digitize basic shapes

> Use Graphics Digitizing > Basic Shapes to digitize basic shapes. Press <Ctrl> to maintain aspect ratio. Press <Shift> to center at the first point.

The **Graphics Digitizing** toolbar provides a dedicated **Basic Shapes** tool which allows you to quickly create design objects from a library of preset shapes. These can be created as vector objects, or you can apply the full range of outline and fill stitch types. These can be useful when creating logo designs or embroidered badges. Available shapes are

exactly the same as for preset borders. Use **Ctrl** and **Shift** keys, alone or in combination, to maintain aspect ratio and center point.

Click to insert →
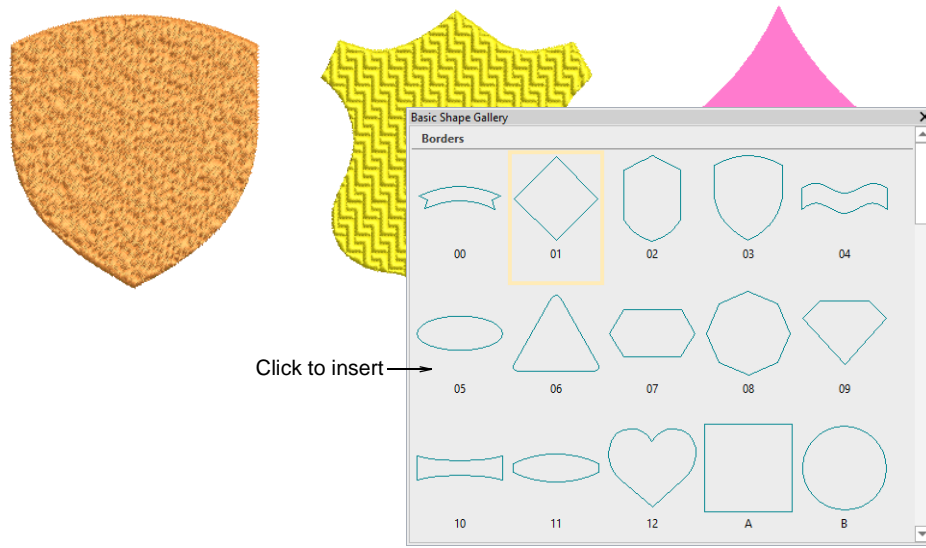
Related topics...

◀ Reshaping embroidery objects

Adding & filling holes

EmbroideryStudio provides special tools for cutting holes in objects as well as filling them.

Add & remove holes

> Use Graphics Digitizing > Hole > Add Holes to cut holes in filled objects.
>
> Use Graphics Digitizing > Hole > Remove Holes to remove holes from selected objects.

With EmbroideryStudio you can cut holes in selected closed objects with a single stitch angle using the **Add Holes** tool. The complementary **Remove Holes** tool allows you to remove unwanted holes in closed objects.

To add or remove holes

◀ Select the object to modify.

◀ Click the **Add Holes** icon. Reference points display around the object outline.

◀ Digitize additional boundaries for the object. Press **Enter** after each boundary.
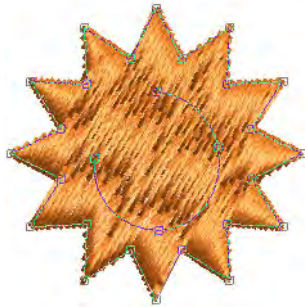
◀ Press **Enter**.

◀ Optionally, add turning stitch angles to the object.
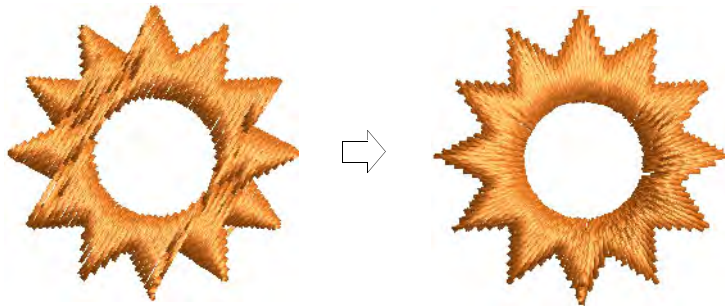
Note: To remove all internal boundaries from a closed object, select it and click **Remove Holes**.

Related topics...

◀ Add holes to free-form shapes

◀ Removing underlying stitching

◀ Adjusting stitch angles

Fill holes

Use Graphics Digitizing > Hole > Fill Holes to fill holes formed by existing boundaries, without having to re-digitize the shape – choose to fill the hole exactly or offset it.

Create new objects with the **Fill Holes** feature. This lets you fill holes formed by existing boundaries, without having to re-digitize the shape.
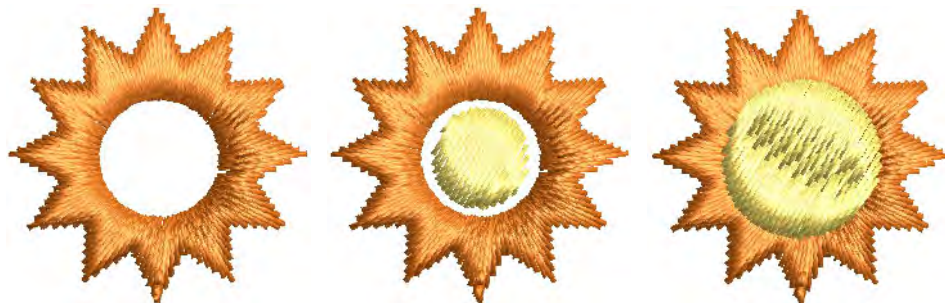
To fill holes

1 Select a source object and click the **Fill Holes** icon.

Enter required underlap
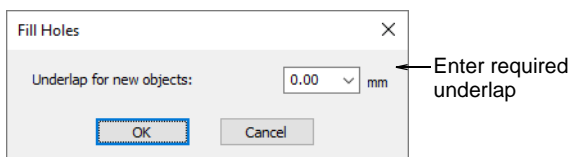
2 Enter an **underlap** value.

| Source object | Underlap: 0.00 | Underlap: -1.00 | Underlap: 1.00 |
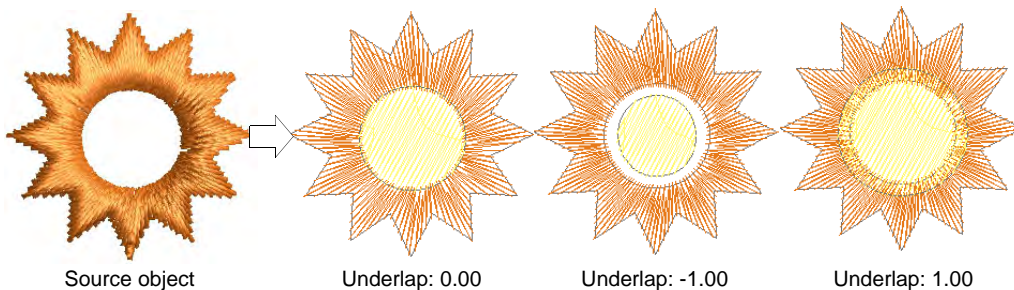
◀ To cover holes exactly, accept the default value of **0.00**.

◀ To leave a gap between the filled holes and the original object, enter a negative underlap – e.g. **-1.00**.

◀ To overlap the filled holes and the original object, enter a positive underlap – e.g. **1.00**.

3 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.

Generating outlines & offsets

EmbroideryStudio provides tools for quickly generating outlines and filled areas based on existing boundaries. The **Outlines & Offsets** feature creates outlines and offset objects from closed objects with both fixed and variable spacings.

Simple offsets

Use Toolbox > Simple Offsets to create simple outlines for any filled embroidery or closed vector object.

When available, the **Simple Offsets** feature allows you to quickly create outline stitching around selected objects or entire designs with a variety of outline styles.

To create outlines and borders

1 Select a source object/s and click the **Simple Offsets** icon.

Choose offset object type

2 Adjust the settings as required:

Option	Function
Spacing	Set an outline offset in mm. This may be zero or even a negative value.
Number of offsets	Specify multiple outlines – up to 99.
Object type	Choice of outline object types: Run, Triple Run or Column C.
Offsets for holes	Option to exclude or include outlines for any holes in the selected object.

3 Click **OK** to apply settings. The design outline is stitched in the current palette color using current properties. Change settings as required.

💡
Tip: You can use **Simple Offsets** to create outlines around entire designs, including lettering.
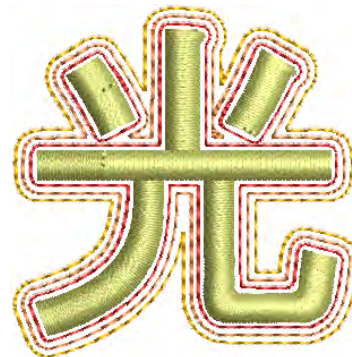
Create outlines & offsets

◉ Use Toolbox > Outlines & Offsets to create outlines and offsets of any type for any filled embroidery or closed vector object.

Use the **Outlines & Offsets** tool to add outline stitching to selected objects or entire designs with a complete range of outline styles. Any closed shape can be used, including vector objects, runs, or any filled shapes.

Outlines

The **Outlines & Offsets** dialog divides into two panels for outlines and offsets. Use the outlines panel to generate outlines around single or multiple selected objects. The droplist includes the full range of outline

stitch types. For each selected object, the software generates outlines and inserts them immediately after in the stitching sequence.

Generate outline objects around single or multiple selects
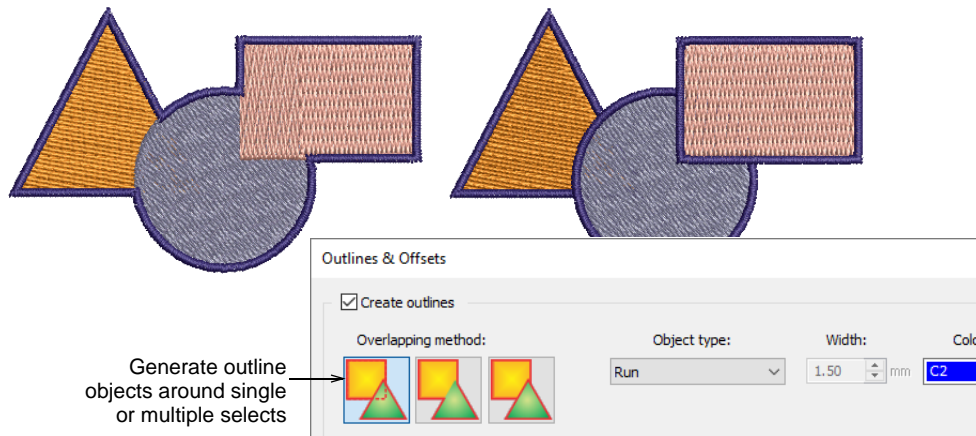
The **Overlapping Method** determines how outlines will overlap:

Overlap method		Details
	Individual	All generated outlines are full outlines.
	Common	Intersecting outlines are combined into a single outline.
	Trimmed	Overlapped portions are trimmed by overlapping objects.

Offsets

The offsets panel allows you to generate single or multiple offsets in any combination of styles, colors, and spacings. Any closed shapes can be used, including vector objects, runs, or any filled shapes. You have the option of preserving source objects.

Use icons to lock settings in place

Define offset pattern

Specify number of patterns
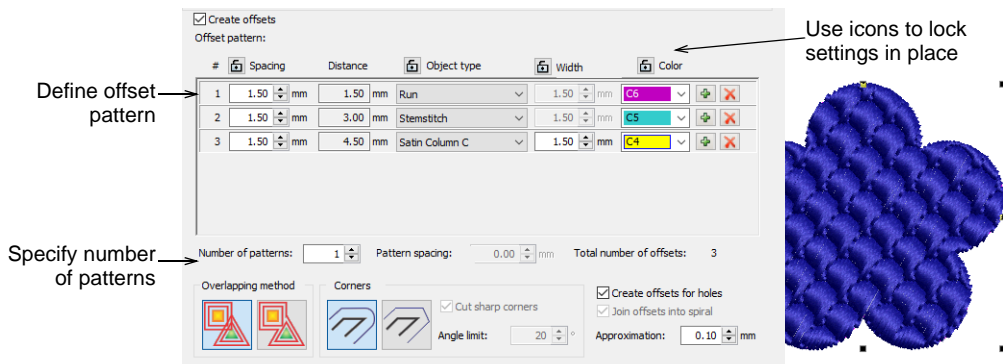
◀ Tick **Create offsets** and define an offset pattern in the **Offset Pattern** panel. Each row defines a single offset. For each, specify an object type – e.g. Run – a spacing in millimeters – e.g. 1mm – and a color. Remember that each spacing is calculated from the previous object.
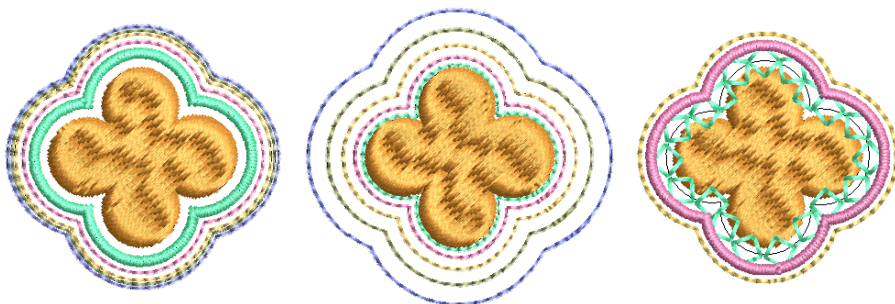
◀ Use the + buttons to add offsets to a pattern. Use the **Lock** icons to lock settings in place.
◀ Specify pattern repeats in the **Number of patterns** field. Adjust spacing between pattern repeats in the **Pattern spacing** field.
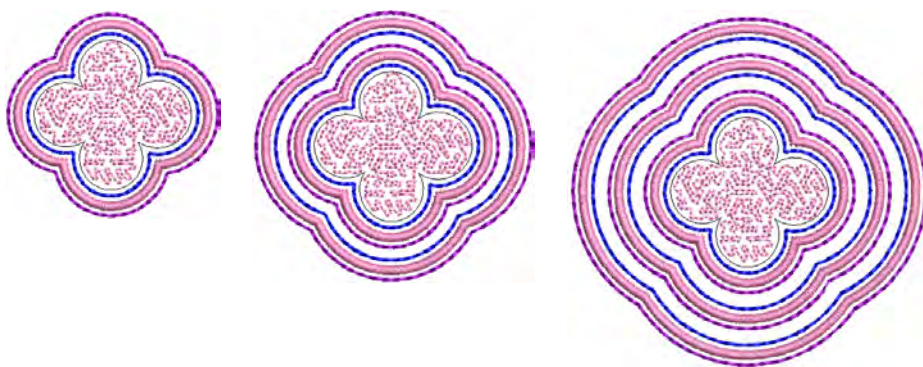
◀ Tick the **Create offsets for holes** checkbox as appropriate.
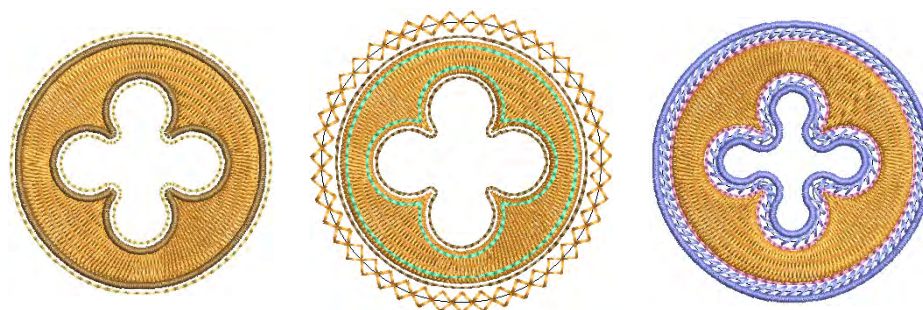
◄ Use the **Overlapping method** options to determine offsets for multiple selections.
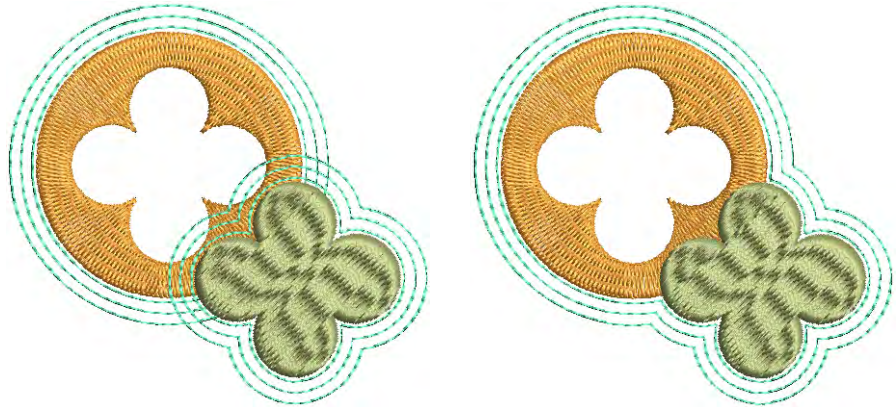
◄ Tick the **Join offsets into spiral** checkbox to create a continuous spiral around the source object.

◄ Select rounded or squared corners as preferred. The squared option allows you to adjust the angle limit – first select **Cut Sharp Corners** and set required angle value.

| Squared | Squared
Angle limit: 20° | Squared
Angle limit: 30° | Rounded |
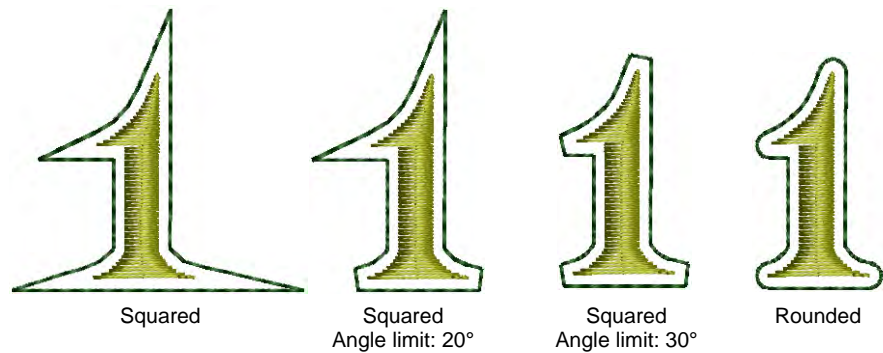
◄ Adjust the **Approximation** setting as required. This controls the smoothness of the generated object outline – the larger the value, the

more approximate the curve. If the value is set to zero, the generated outline is unsmoothed. This is suitable for use with cutting machines.

| Approximation: 0 mm | Approximation: 0.3 mm | Approximation: 0.6 mm |

Note: By default, source objects are preserved. If you choose not to, the offset object replaces the original in the same position in the stitching order. Start and end points of the resultant object will be as close as possible to those of the source object.

Create negative offsets

Use Toolbox > Outlines & Offsets to create outlines and offsets of any type for any filled embroidery or closed vector object.

The **Outlines & Offsets** tool allows you to specify both negative and positive offsets.
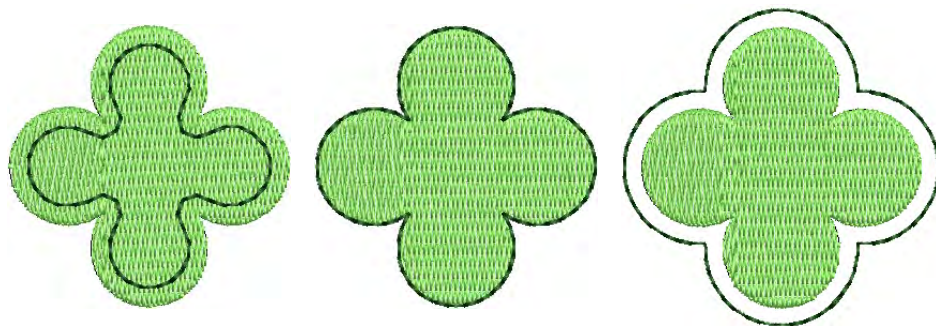
To create negative offsets

1 Select a source object/s and click the **Outlines & Offsets** icon.

Set negative spacing → (diagram)
Specify number of patterns → (diagram)
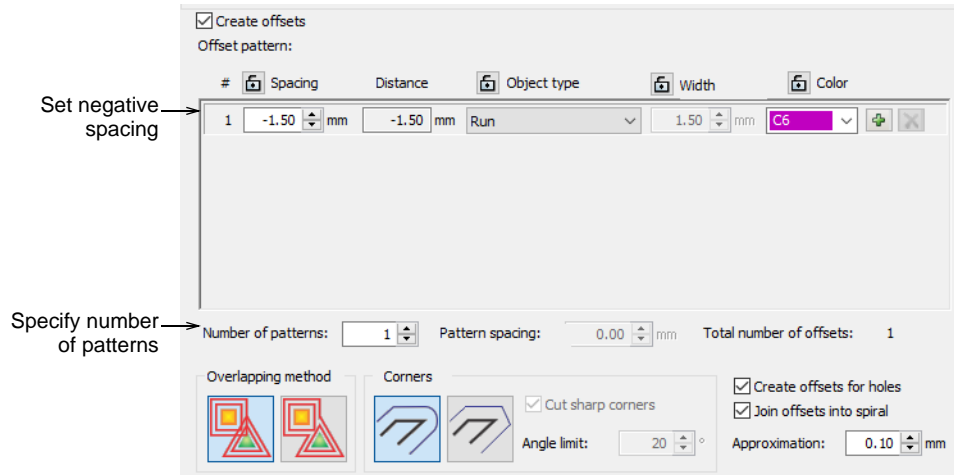
◀ Tick **Create offsets** and define a simple offset object in the **Offset Pattern** panel.

◀ Set the required offset in millimeters:
  ◀ To center the offset object over the original, enter a value of **0.00**.
  ◀ To position the offset object outside the original, enter a positive offset – e.g. **1.00**.
  ◀ To position the offset object inside the original, enter a negative offset – e.g. **-1.00**.
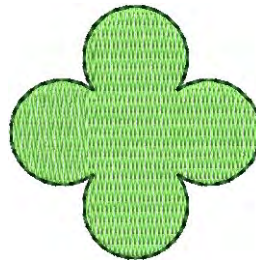
| Negative Offset | Zero Offset | Positive Offset |
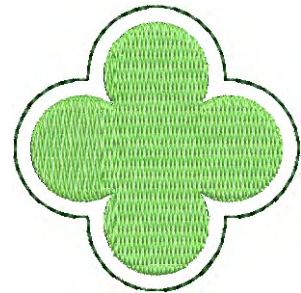
◀ If you want multiple offsets, enter a value in the **Number of patterns** field.

◀ Select **Pattern spacing** and enter the required offset in millimeters. Offsets are always offset in a positive direction, even if you have

entered a negative number. Spacing is calculated from the previous object, not the source object.
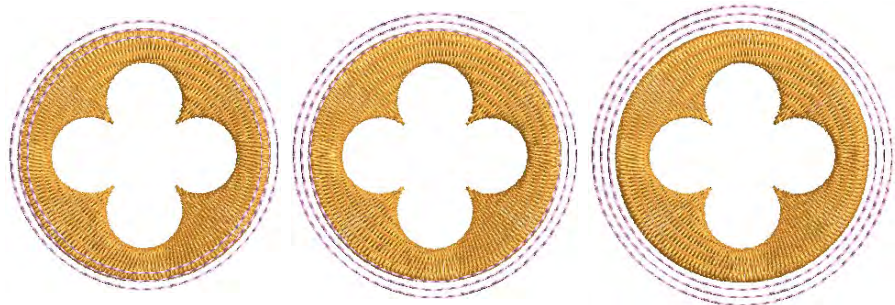
Offset spacing: -1.5mm
Number of patterns: 3
Pattern spacing: 3mm

Offset spacing: 0mm
Number of patterns: 3
Pattern spacing: 1.5mm

Offset spacing: 1.5mm
Number of patterns: 3
Pattern spacing: 0mm

Note: As an alternative to the above technique, you can define your negative offsets entirely as a single offset pattern. Note how you set up the spacings.

Create offsets with open objects

> Use Toolbox > Open Offsets to create precise offsets for any open embroidery or vector object.
>
> Use Toolbox > Outlines & Offsets to create closed offsets for open embroidery or vector objects.

The **Open Offsets** tool allows you to generate parallel offsets from any open shape. Offset lines are calculated at a specified distance for a specified number, one side or other side, or both sides.

Define offset pattern
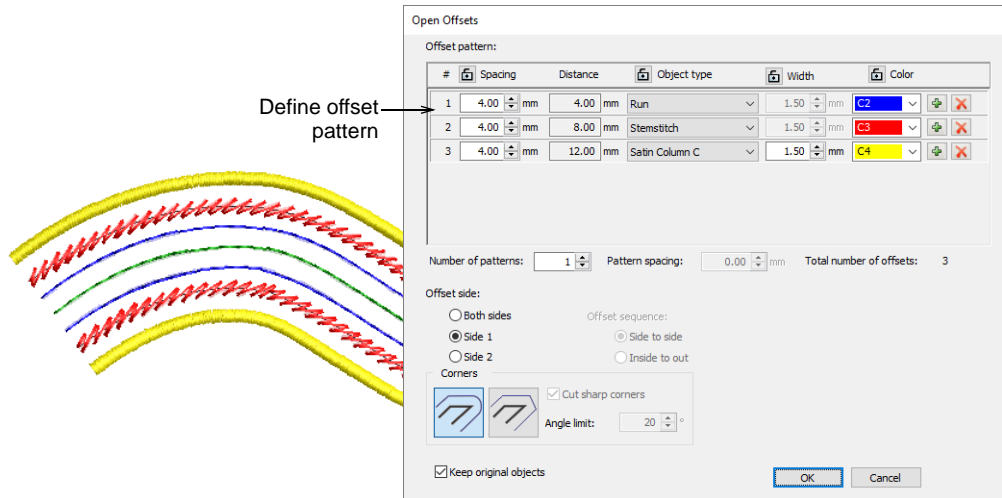
You can use the **Outlines & Offsets** tool with open objects to create closed offsets as shown. Select rounded or squared corners as preferred. The squared option allows you to adjust the angle limit – first select **Cut Sharp Corners** and set required angle value.
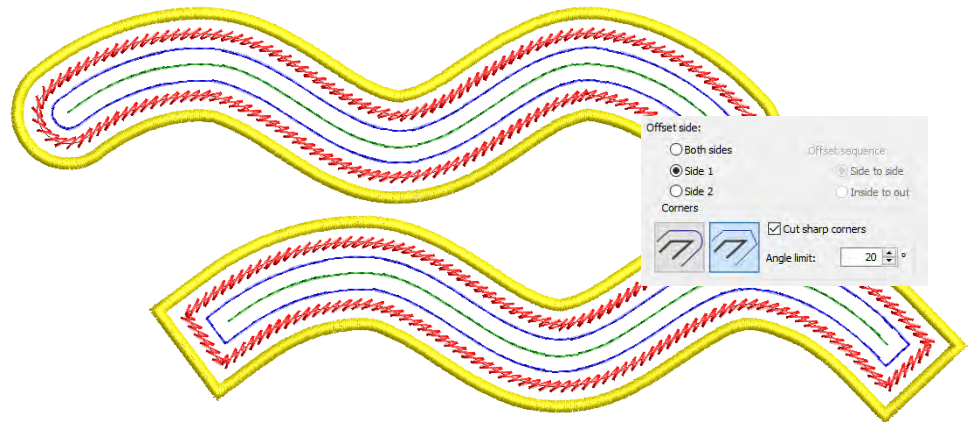
Mirroring & reflecting selections

The **Mirror Merge** tools allow you to duplicate and transform selected objects, as well as merge them into a single object. Use them to create wreaths or decorative borders. Or use them to create perfectly

symmetrical objects. Color blocks are automatically resequenced to minimize unnecessary color changes.

Mirror selections horizontally & vertically

Use Mirror Merge > **Mirror Copy Horizontal** to duplicate and mirror objects or designs in the horizontal plane.

Use Mirror Merge > **Mirror Copy Vertical** to duplicate and mirror objects or designs in the vertical plane.

Use Mirror Merge > **Mirror Copy Horizontal & Vertical** to duplicate and mirror objects or designs simultaneously in both planes.

Use the **Mirror Copy Horizontal** and **Vertical** tools to duplicate and mirror selections simultaneously. Simply select objects and click a tool to

duplicate and mirror in any plane. Click to mark the reflection point and press **Enter** to confirm.
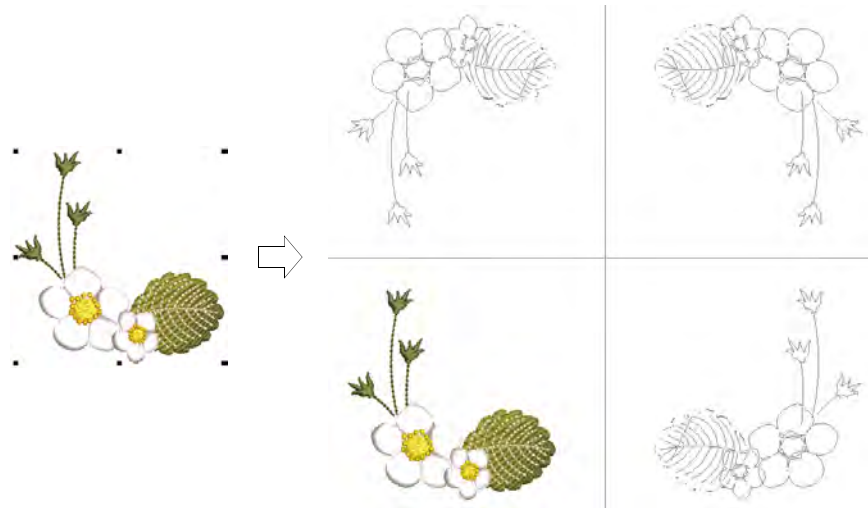
The **Mirror Merge** tools can also be used, as the name suggests, to merge mirrored objects into a single object. If duplicates overlap the original, you are prompted to merge objects. Use this feature to merge duplicates into a perfectly symmetrical object such as a face or heart.

| Source object | Object reflected | Reflected objects merged |
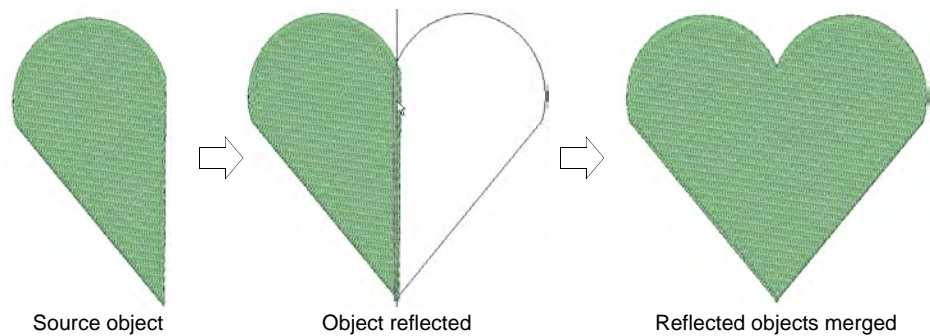
Create multiple reflections

Use Mirror Merge > Reflect to duplicate and mirror objects or designs.

Use the **Reflect** tool to duplicate and mirror designs simultaneously. Set any number of rows or columns. The feature is often used in making fashion or textile designs. The limit for allowable wreath points is 100.

To create reflected objects

1 Select the object or design.

2 Click the **Reflect** icon. The associated settings are activated.

3 Move the pointer to position duplicates.

Set precise column and row spacings

Set no. of columns   Set no. of rows
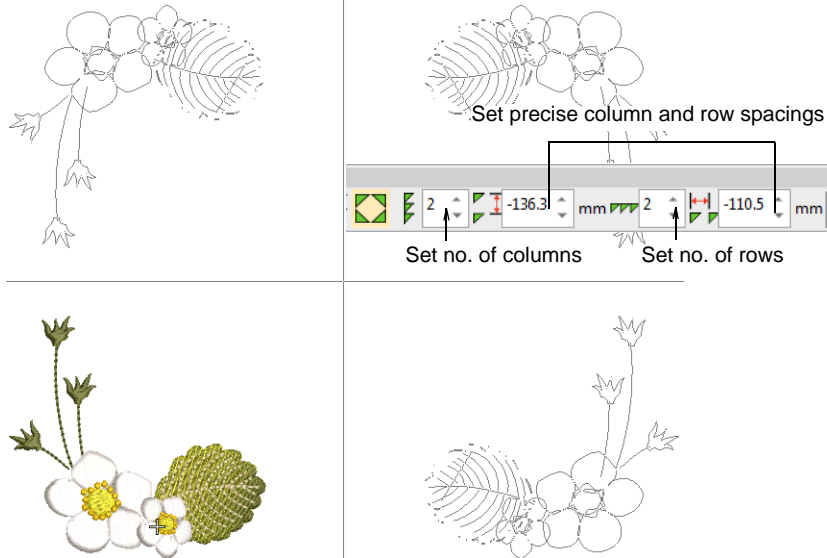
💡
Tip: Press **Shift** to disable **Auto-Scroll** while using **Mirror Merge**.

4 Adjust the number of columns and rows required in the settings toolbar. Tab from field to field to enter values.

5 For more precise positioning, adjust spacing settings. Press **Enter** to confirm.

6 Click to mark the reflection point and press **Enter** to confirm.
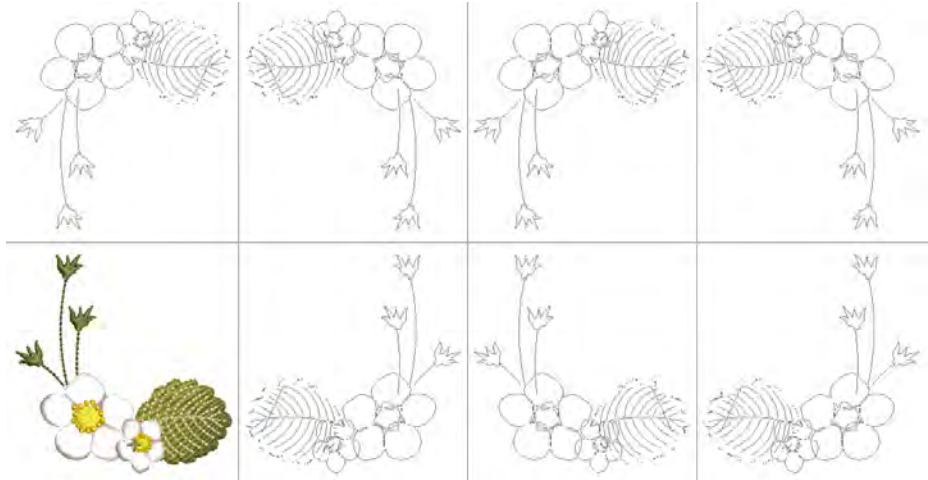
Note: Color blocks are automatically resequenced to minimize unnecessary color changes.

Related topics...

◄ Duplicate & clone objects

Create wreaths

Use Mirror Merge > Wreath to duplicate objects around a center point.

Use Mirror Merge > Kaleidoscope to mirror paired objects in a wreath.

Use the **Wreath** tool to duplicate objects around a center point. The **Kaleidoscope** toggle mirrors the selection as well. Color blocks are automatically resequenced to minimize unnecessary color changes.

To create wreaths

1 Select the object or design.

2 Click the **Wreath** icon. The associated settings are activated.

3 Move the pointer. Optionally, click the **Kaleidoscope** toggle to mirror duplicates.

4 Enter the number of wreath points. Because objects are mirrored, **Kaleidoscope** works best with an even number.

Click toggle to mirror duplicates

Set precise distance

Set precise angle

Enter no. of wreath points
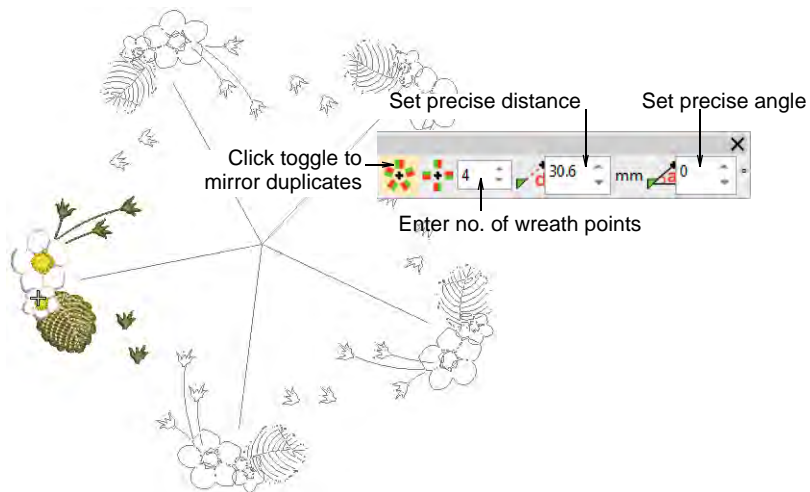
5 Move the pointer to position duplicates. Hold down **Ctrl** to constrain the reference line to 45° increments.

6 For more precise positioning, adjust **Distance** and **Angle** settings. Tab from field to field to enter values. Press **Enter** to confirm.

Note: Distance and angle are measured from the center of the source to the center of the wreath or kaleidoscope.

7 Click to mark the reflection point and press **Enter** to confirm. The selection is duplicated and distributed around the center point.

Five-point wreath

Six-point kaleidoscope
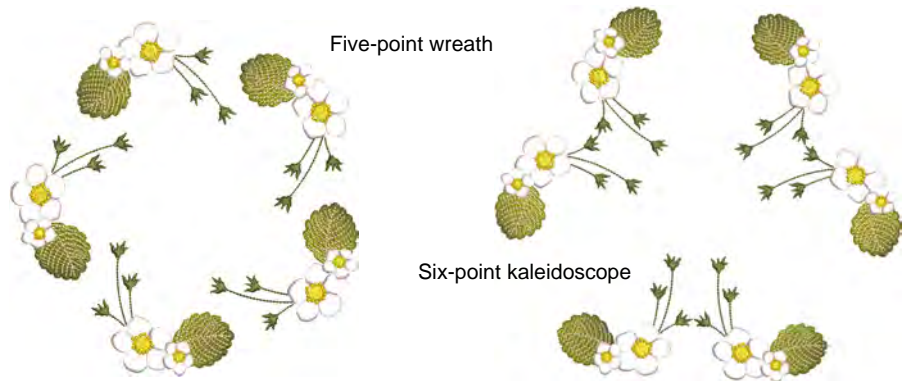
Note: If the duplicates overlap the original, you are prompted to merge objects.

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 faster stitchouts. Color blocks are automatically resequenced to minimize unnecessary color changes.

To create design arrays

◄ Select the object or design.

◄ Click the **Array** icon. The associated settings are activated.

◄ As you move the pointer, duplicate outlines move accordingly. Press **Shift** to disable **Auto-Scroll** while using **Mirror Merge**.

◀ Set the number of columns and rows. Tab from field to field to enter values.

Set precise column and row spacings

Set no. of columns   Set no. of rows
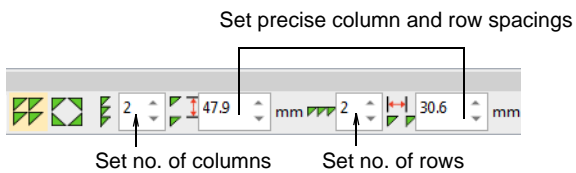
◀ Move the pointer to position duplicates.
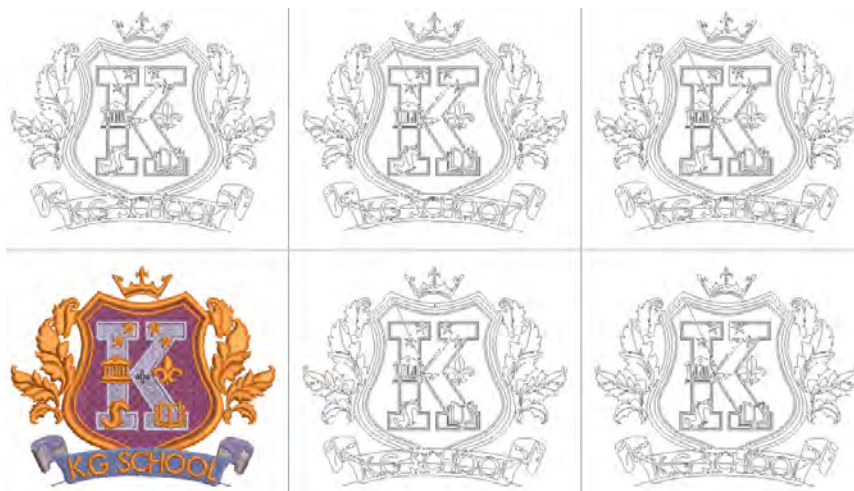
◀ Click to mark the anchor point or press **Enter** to confirm.

Color blocks resequenced
to eliminate unnecessary
color changes
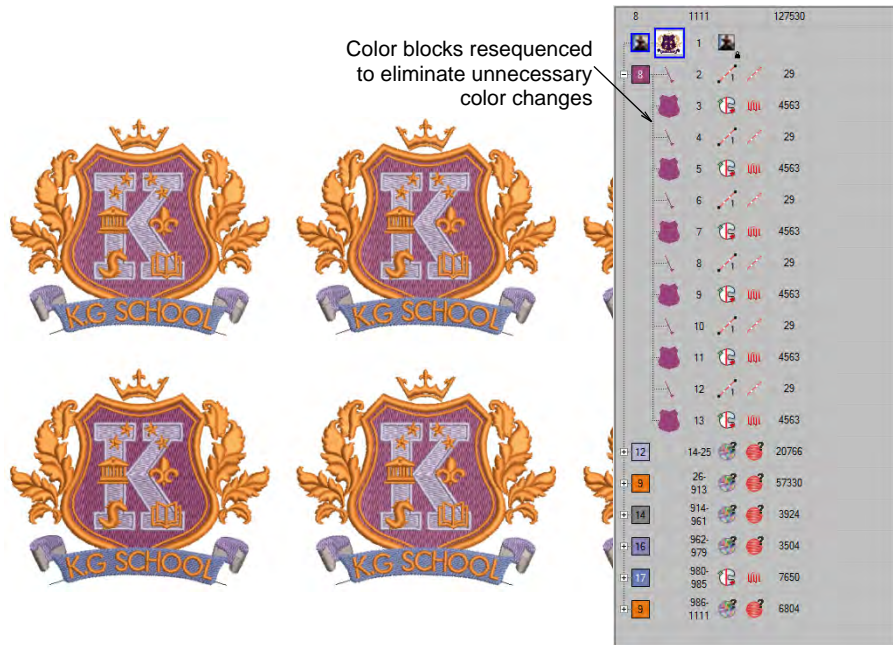
◀ Optionally, for more precise positioning, adjust spacing settings. Press **Enter** to confirm.

Chapter 16
Reshaping Objects

EmbroideryStudio offers a number of techniques for reshaping embroidery objects, all with the one tool. Sometimes you may need to cut, split or break up complex or compound objects in order to fine-tune them. Various tools are available for this purpose. As well as reshaping object outlines, you can add and adjust stitch angles, a property unique to embroidery objects. You can also change the entry and exit points of individual objects which is important if you are digitizing manually or resequencing embroidery objects.
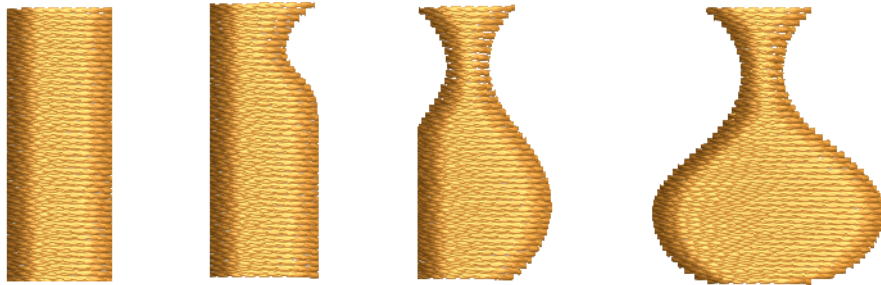
Reshaping embroidery objects

The reference points you mark when digitizing a shape become its 'control points'. Most control points can be added, deleted, or moved. Corner and curve points can be swapped. Some, such as entry and exit points, cannot be deleted.

◇ Entry point

╬ Exit point

▫ Corner reshape-node

● Curve reshape-node

↗ Control handle

▫ Stitch angle points
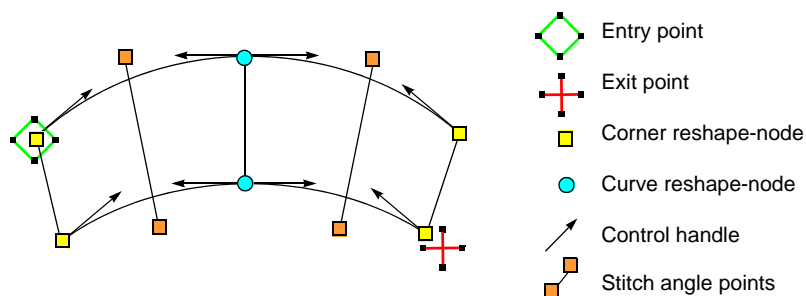
View control points

 Use Reshape > Reshape Object to reshape selected objects, edit stitch angles, and adjust entry/exit points.

 Use Reshape Views > Show Reshape Nodes to toggle on/off reshape nodes for selected objects.

 Use Reshape Views > Show Bézier Handles to toggle on/off Bézier handles for selected objects.

 Use Reshape Views > Show Stitch Angles to toggle on/off stitch angles for selected objects.

 Use Reshape Views > Show Entry/Exit Points to toggle on/off entry/exit points for selected objects – respectively, green diamond and red cross markers.

The **Reshape Object** tool is important in EmbroideryStudio. Use it whenever you want to change object shapes. Use it also to edit stitch angles as well as entry and exit points.

To view control points

◂ Select an object and click **Reshape Object**. Control points appear together with **Reshape Views** toolbar.
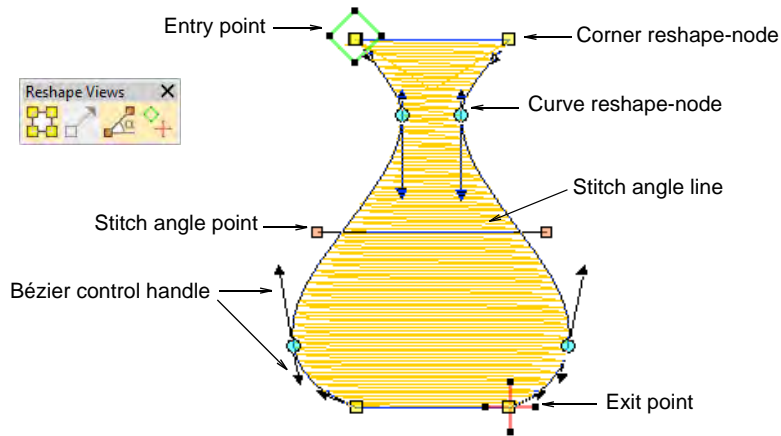
💡
Tip: Most control points can be added, deleted, or moved. Corner and curve points can be swapped. Entry/exit points, however, cannot be deleted.

◀ Use the **Reshape Views** toolbar to selectively display control points.

| Show Reshape Nodes | Show Bézier Handles | Show Stitch Angles | Show Entry/Exit |
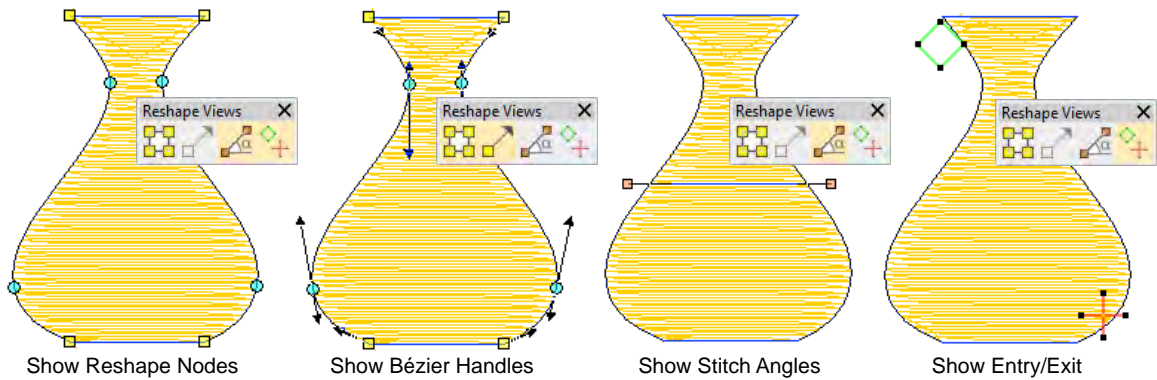
◀ **Show Reshape Nodes**: Use hotkey combination **Alt+N** to toggle. See Reshape objects with reshape-nodes for details.

◀ **Show Bézier Handles**: See Reshape objects with Bézier controls for details. See also Reshape options.

◀ **Show Stitch Angles**: Use hotkey combination **Alt+A** to toggle. See Adjusting stitch angles for details.

◀ **Show Entry/Exit**: See Adjust entry/exit points for details.

◀ To view next or previous objects, press **Tab** or **Shift+Tab** keys. Any changes to objects are confirmed.

Shift + Tab   Tab
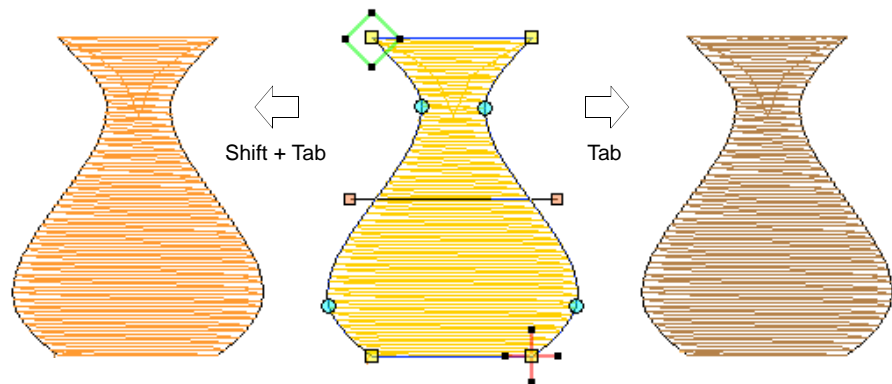
Related topics...

◀ Reshape objects with reshape-nodes
◀ Reshape objects with Bézier controls
◀ Reshape options
◀ Adjusting stitch angles
◀ Smoothing curves

Reshape objects with reshape-nodes

> Use Reshape > Reshape Object to reshape selected objects by means of control points.
>
> Use Reshape Views > Show Reshape Nodes to toggle reshape-node display when using the Reshape Object tool.
>
> Use View > Show Stitches to toggle embroidery stitching display on or off.

Change object shapes with the **Reshape Object** tool.

To reshape objects with reshape-nodes

◀ Select an object and click **Reshape Object**. Control points appear together with **Reshape Views** toolbar.

◀ Toggle on **Show Reshape Nodes** and toggle off other icons.

◀ Optionally, press **S** to turn off stitch display and turn back on when you are ready to regenerate stitches.

◀ Add nodes as required:
  ◀ Left-click to add a corner node.
  ◀ Right-click to add a curve node.
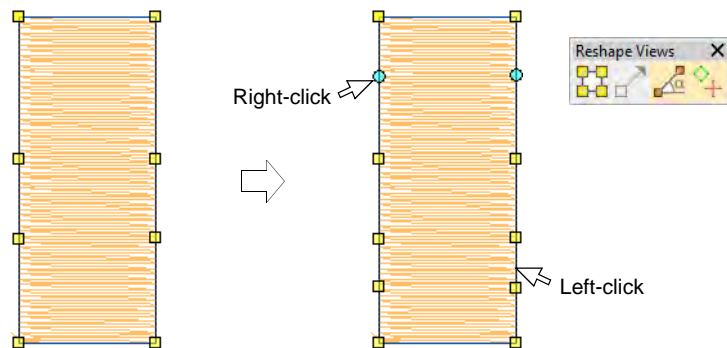
◀ Select reshape-nodes as follows:
  ◀ Click a single node.
  ◀ Click-and-drag a selection marquee around a group of nodes.

◀ Use **Ctrl** or **Shift** keys to select multiple nodes. Left-clicking or right-clicking in closed shapes reverses the direction of the selection.

Click to select – hold down Ctrl to select multiple nodes

Drag selection marquee around reshape-nodes to select

OR

Hold down Shift and right or left-click to select range of nodes
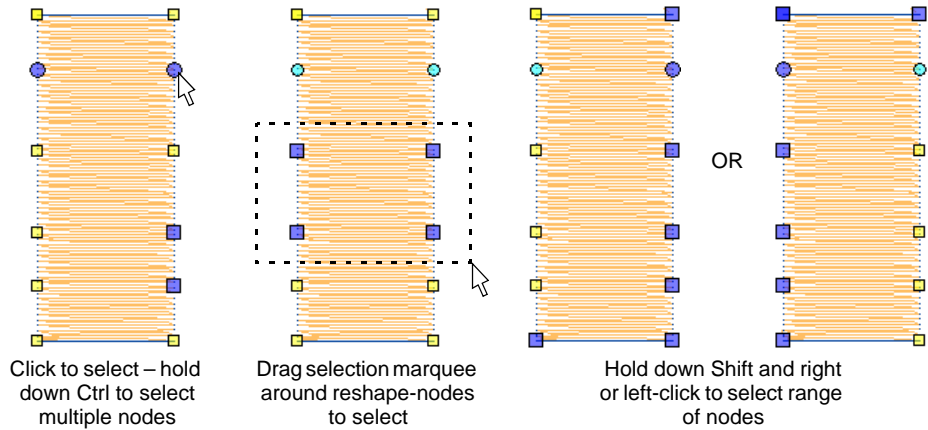
◀ Adjust reshape-node position by dragging along the outline.

Drag reshape-nodes
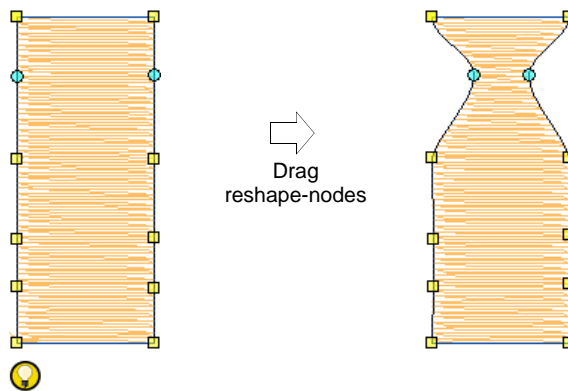
Tip: Use the arrow keys to 'nudge' selected nodes.

◀ Press **Delete** to remove unwanted nodes.

Delete reshape-nodes and toggle between corners and curves
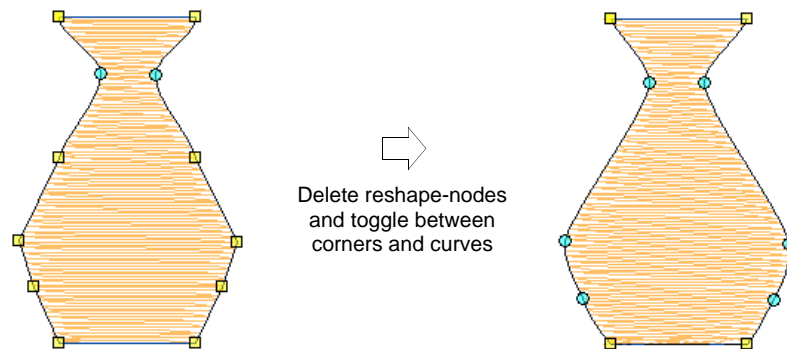
◀ Press **Spacebar** to toggle between corner and curve nodes.

◀ Press **Esc** to cancel changes. Press **Esc** again to exit **Reshape** mode.

Ⓔ
Note: You can also adjust stitch angles as well as change entry and exit points.

Reshape objects with Bézier controls

> ◤ Use Reshape > Reshape Object to reshape selected objects by means of control points.
>
> ▦ Use Reshape Views > Show Reshape Nodes to toggle reshape-node display when using the Reshape Object tool.
>
> ◹ Use Reshape Views > Show Bézier Handles to toggle Bézier control handle display when using the Reshape Object tool.

When EmbroideryStudio converts a vector graphic, it preserves nodes and control points. CorelDRAW® Graphics Suite uses Bézier curves. In **Wilcom Workspace** you can work with reshape-nodes or Bézier control points.

To reshape objects with Bézier controls

1 Select an object and click **Reshape Object**. Control points appear together with **Reshape Views** toolbar.

2 Toggle on **Show Reshape Nodes** together with **Show Bézier Handles**.

3 Reshape objects in one of two ways:

◀ Drag the control handle to reshape the curve around reshape-nodes.

Bézier control handle

Curve point

Drag control handle to reshape curve

◀ Adjust reshape-node position by dragging along the outline.
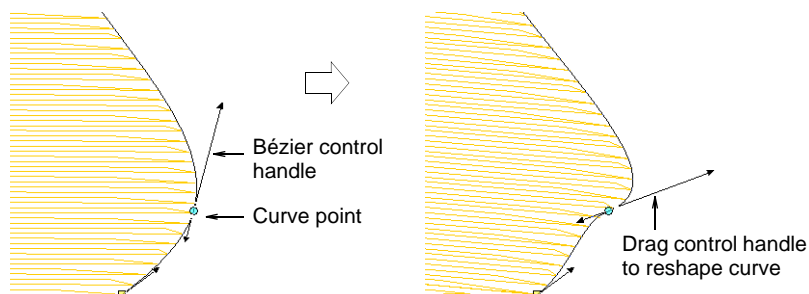
Original curve   Bézier curve   Traditional curve
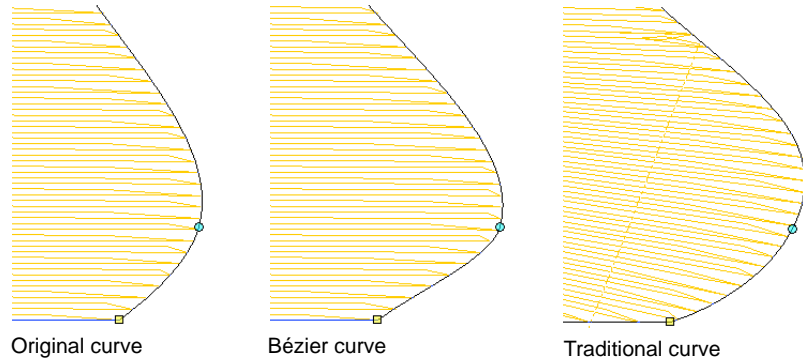
Note: Generally, bézier node dragging preserves the shape of the curve more accurately.

4 Release the mouse and/or press **Enter** to finish. Again depending on system settings, stitches are generated as soon as the reshape-nodes are moved or after **Enter** is pressed.

Tip: Press **Spacebar** to toggle between corner and curve reshape-nodes.

Related topics...

◀ Reshape options

Reshape Column C objects

Use Reshape > Reshape Object to add stitch angles to selected objects.

Reshaping operations for Column C objects are handled a little differently to other embroidery objects.

Hold down Shift and Alt keypress combinations to control Column C reshaping operations

Side 2: 50% (w=1.51 mm)
A=44°, W=3.03 mm
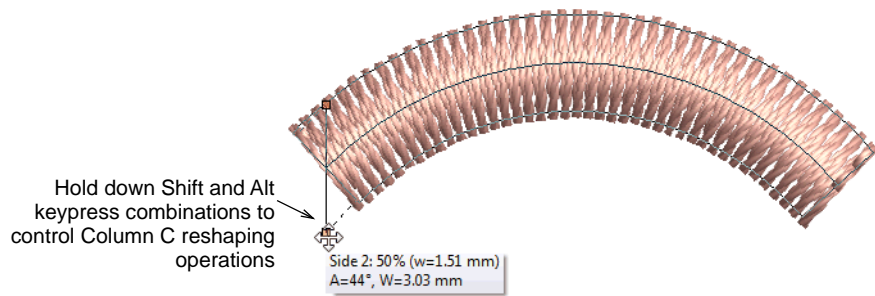
- ◄ With the **Reshape** tool activated, drag reshape handles to control object width.
- ◄ Hold down **Alt** and drag to adjust offsets.
- ◄ Hold down **Shift** and drag to adjust angles.

Related topics...
- ◄ Digitizing regular columns
- ◄ Set angles & orientation
- ◄ Ruler & guide display options

Reshaping stars & rings

For objects created with the **Star** or **Ring** tools, reshape using default control points only.

Reshape star objects

> ⬉ Use Reshape > Reshape Object to reshape circle and star objects.

Change circle/star objects from circles to ovals using the **Reshape Object** tool.
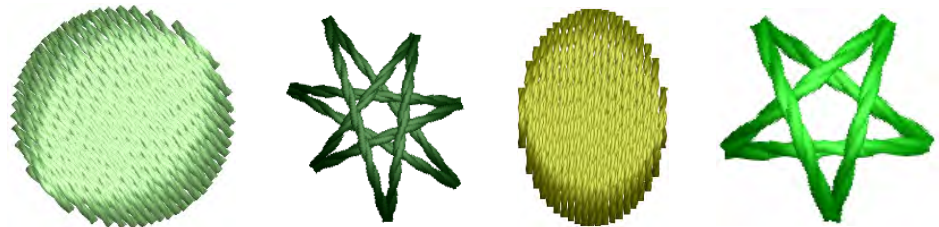
To reshape star objects

◀ Select an object and click **Reshape Object**. Circle/star objects have two reshape-nodes (for radius and orientation), a center point (to reposition), and an entry point.

◀ Use reshape nodes to change object radius, orientation, and position.

Click-and-drag reshape-node
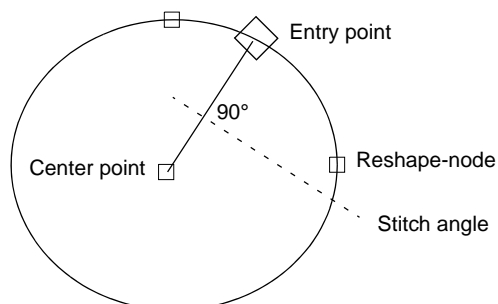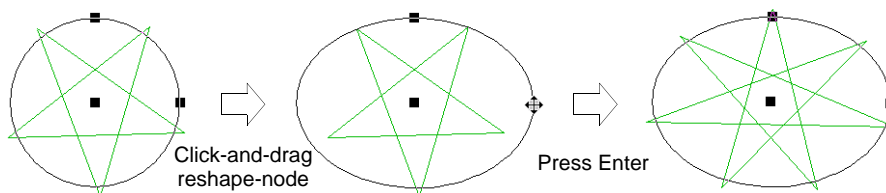
Press Enter

💡
Tip: Change the stitch angle of circle objects by moving the entry point.

◀ Press **Enter**.

💡
Tip: To scale a circle without changing it to an oval, select it with the **Select Object** tool, and use selection handles.

Related topics...

◀ Digitize stars & rings

Reshape ring objects

Use Reshape > Reshape Object to reshape ring objects.

You can reshape the inner and outer boundaries of ring objects with the **Reshape Object** tool.
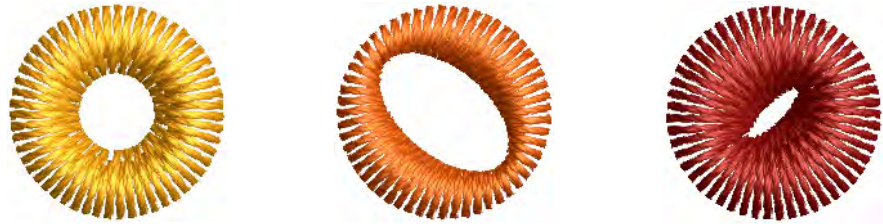
To reshape ring objects

◀ Select an object and click **Reshape Object**.

Center point may not be visible
Entry point
Reshape-node

◀ Use reshape nodes to change object radius, orientation, and position.

Click-and-drag reshape-node
Press Enter
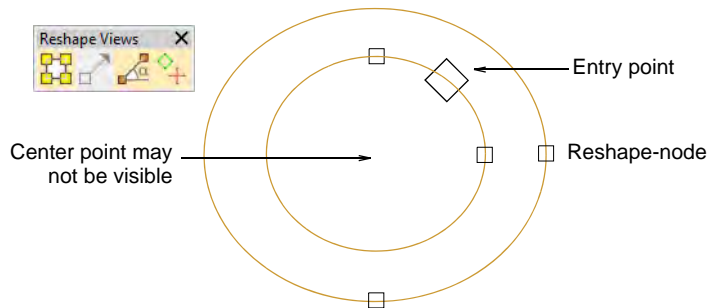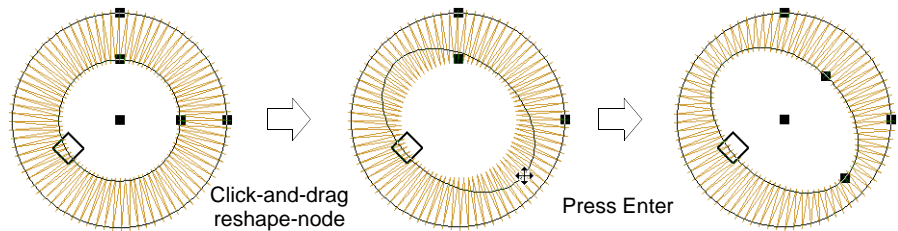
◀ Use reshape nodes to offset boundaries. Center points are generally on top of each other to begin with, and may not be visible.

Click-and-drag center point
Press Enter

Applying envelopes

	Apply Envelope > Bridge Envelope to make objects bulge or arch.
	Apply Envelope > Pennant Envelope to make objects compress.
	Apply Envelope > Perspective Envelope to make objects stretch.
	Apply Envelope > Diamond Envelope to make objects bulge or compress.

Four types of **Envelope** effect are available – **Bridge**, **Pennant**, **Perspective** and **Diamond**. Envelopes are typically applied to lettering objects, but they can also be applied to other types of embroidery object.

To apply an envelope

1 Select the lettering object you want to distort. To apply an envelope to several objects, group them first, then apply the envelope.

2 Select **Edit > Envelope**.
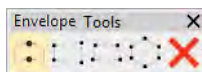
Choose an envelope

3 Select an envelope type from among the following alternatives:

| Bridge | Pennant | Perspective | Diamond |

Shaping handles display around the envelope outline.

Bridge reshape handles
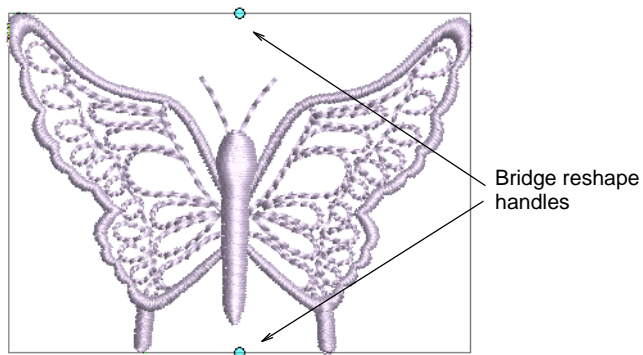
4 Drag handles up or down to shape the object.

◀ To move two handles in opposite directions, hold the **Shift** key down while dragging.

Shift + drag
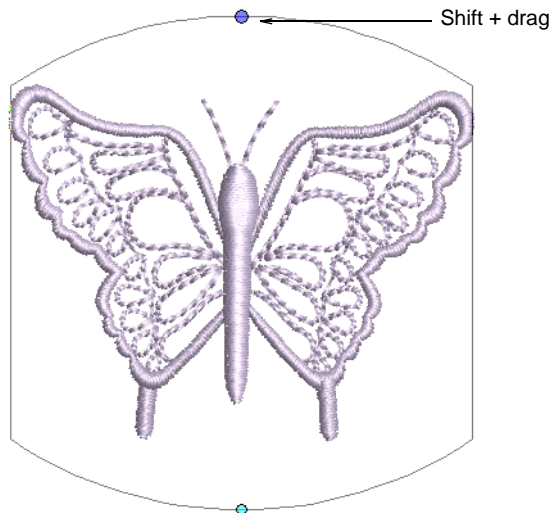
◀ To move handles in the same direction, hold down the **Ctrl** key while dragging.

Ctrl + drag
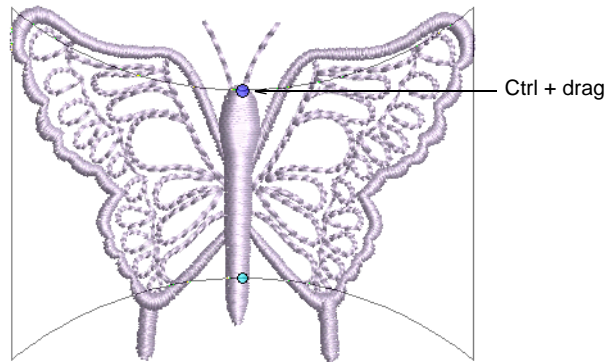
5 Press **Esc** to finish.

Related topics...

◀ Creating special effects with lettering art

Splitting objects

EmbroideryStudio lets you split branched objects – monograms, appliqués, lettering, etc – into their components. You can even split manual objects with **Process Stitches** in order to convert sections to outline objects.

Break apart composite objects

> Use Edit > Break Apart to split composite objects – monograms, appliqués, lettering, etc – into component objects.

The **Break Apart** tool allows you to break up composite objects – monograms, appliqués, lettering, etc. The effect on these objects is similar to ungrouping.

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 break apart a composite object

1 Select the object you want to break apart – e.g. branched object, appliqué, monogram, lettering, etc.
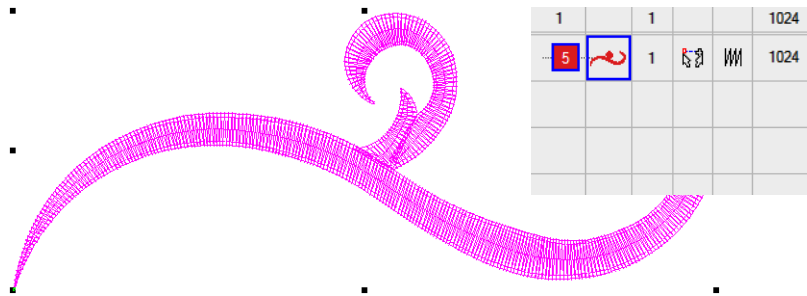
2 Click the **Break Apart** icon or select **Arrange > Break Apart**. The branched object is split into component objects.
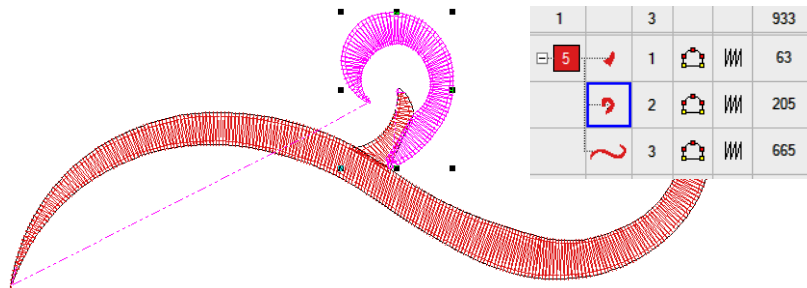
Tip: To modify individual objects – e.g. to change the stitching sequence of monogram borders – use the **Color-Object List** to ungroup and resequence.

Tip: Applying the **Break Apart** function to a lettering object breaks it into a logical stitching sequence while maintaining lettering object characteristics.

Related topics...

◀ Splitting objects

Cut shapes manually

> 🔪 Use 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 shapes into smaller fragments. It has the advantage over **Split Object** and **Divide** tools of allowing you to digitize temporary cut lines. Cut objects are generated with stitching – parallel or turning – appropriate to their shape. The tool cuts both filled and 'fillable' vector objects as well as embroidery objects. Run objects can also be cut with the **Knife** tool.
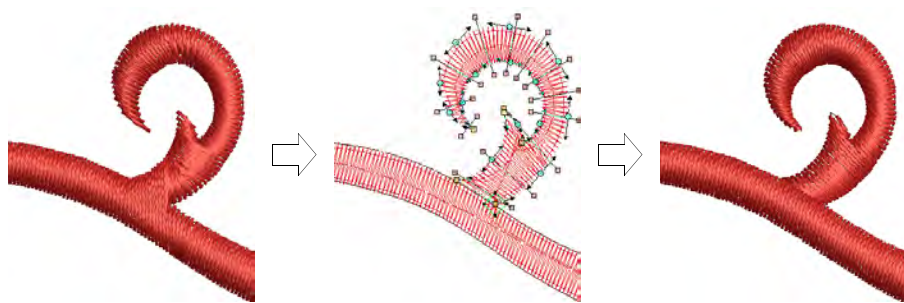
The **Knife** tool has two modes of operation:

◀ With nothing selected, it will cut **all** objects under the knife.
◀ With selected objects, it will only cut those within the selection.

To cut shapes manually

1 Select one or more suitable objects for cutting.

Object needs cutting at this point to avoid awkward stitch angles
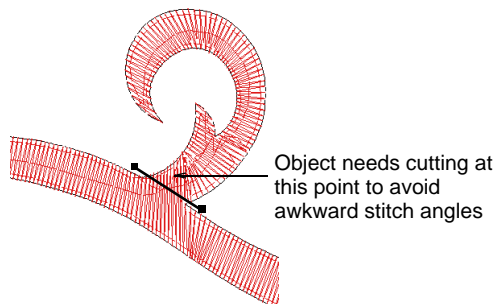
2 Click the **Knife** tool. The cursor changes to a knife icon.

3 Digitize a cutting line – left-click for corner points, right-click for curve points – and press **Enter**.

Source object separated into two adjoining objects
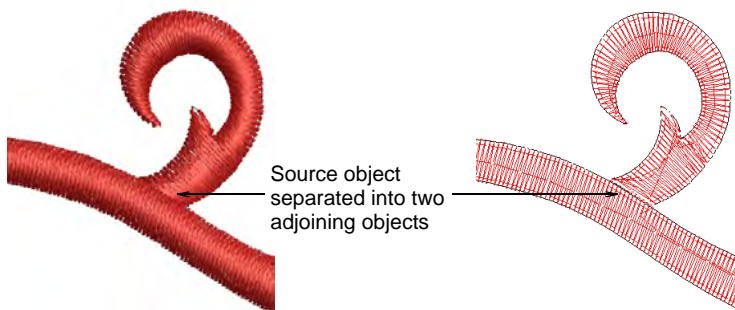
4 Manually adjust object overlaps using the **Reshape Object** tool.

Note: By default EmbroideryStudio orders fragments into a closest-join sequence that preserves the source object's entry and exit points. The **Options > Reshape** dialog offers other ways of managing cut fragments.
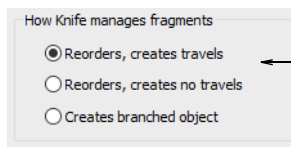
Adjust Knife tool behavior

Note: When you select a lettering object to cut, the object is highlighted with a thick magenta outline. See Converting TrueType fonts to embroidery for details.

Lettering object highlighted for cutting

Related topics...

Cut shapes automatically

Use Edit > Automatic Knife to automatically slice Complex Fill and Complex Turning embroidery objects into smaller turning stitch and single angle objects with automatic overlaps.

The **Automatic Knife** tool assists semi-automated digitizing of vector artwork. When objects have clean boundaries, EmbroideryStudio fragments them automatically and generates good quality stitching in most cases. It also operates on Complex Fill and Complex Turning embroidery objects.
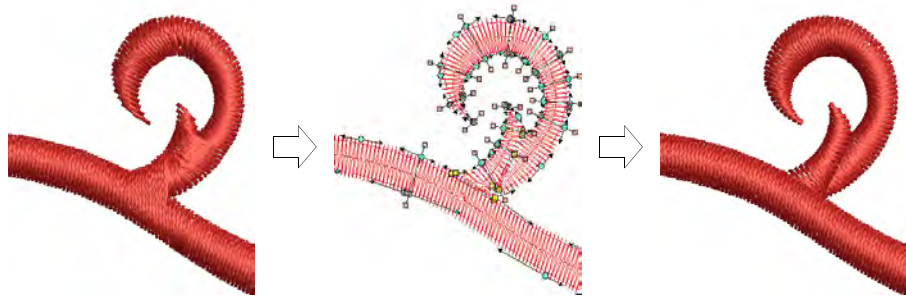
To cut shapes automatically

1 Select one or more suitable objects for cutting.

Object needs cutting at this point to avoid awkward stitch angles
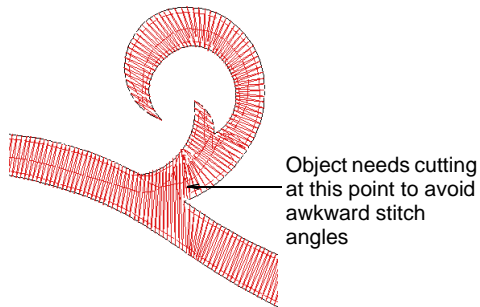
2 Click the **Automatic Knife** icon.

EmbroideryStudio cuts the selected object automatically, discarding any unwanted fragments.

Overlaps created between fragment objects at junctions
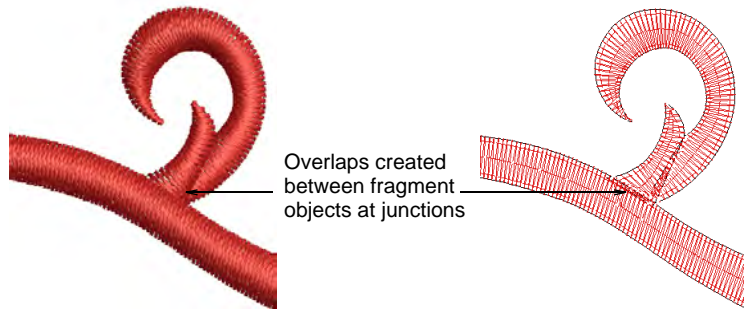
For each source object, EmbroideryStudio:

◀ Creates turning-stitch objects as well as single-angle objects where appropriate.
◀ Creates overlaps at junctions between objects.
◀ Branches adjoining objects.

Related topics...

◀ Automatic branching
◀ Break apart composite objects

Shaping objects

When working with overlapping vector or embroidery objects, you can merge, trim or split them using the **Shaping** tools. All 'shaped' embroidery objects convert to Complex Fill or Complex Turning. Vector objects remain as vector objects unless combined with embroidery objects. You have the option of preserving source objects. You also have the option of adding overlaps to objects resulting from **Flatten** or **Divide** operations.
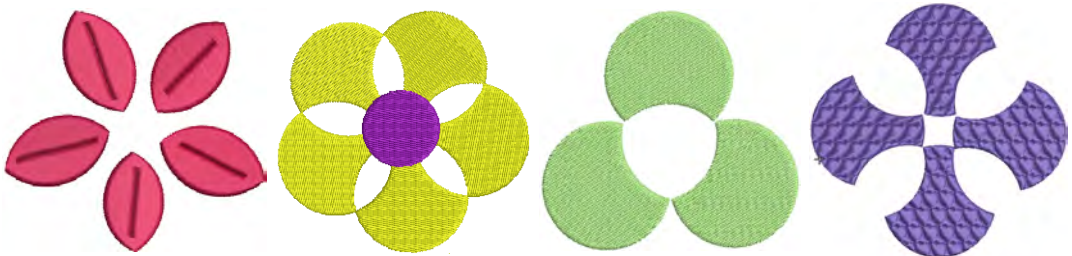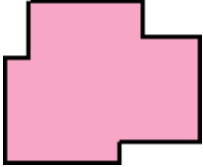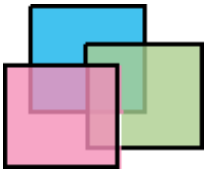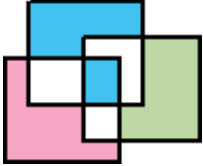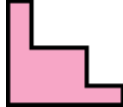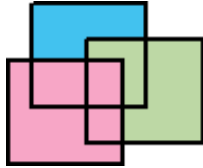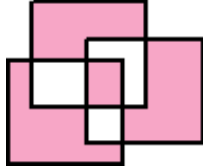
Related topics...

◀ Merge vector & embroidery objects
◀ Trim vector & embroidery objects

◀ Split vector & embroidery objects

◀ Preserve original objects

Shaping tools summary table

Source	Tool	Result	Description
	Weld		Selected objects are combined into a single object. The resulting object takes the properties – stitch color and type, etc – of the topmost object.
	Flatten		Only areas unique to each selected object are retained. All overlapping areas are removed.
	Intersect		Only areas common to all selected objects are retained. All non-overlapping areas are removed.
	Exclude		Areas where pairs of selected objects overlap are removed, starting from the topmost object.

Source	Tool	Result	Description
	Front-Back		The topmost object is retained, but all of the areas overlapping with other selected objects are removed.
	Back-Front		The bottommost object is retained, but all of the areas overlapping with other selected objects are removed.
	Divide		The objects are split wherever overlaps occur and all hidden areas are removed.
	Combine		Areas where pairs of selected objects overlap are removed, starting from the topmost object. All resulting objects share the properties – stitch color and type, etc – of the topmost object.

Merge vector & embroidery objects

> Use Shaping > Weld to merge overlapping objects into a single 'flattened' object.
>
> Use Shaping > Combine to merge the properties of overlapping objects and trim overlapping areas.

Merge selected objects using the **Weld** or **Combine** tools.

To merge vector and embroidery objects

◀ Select vector or embroidery objects to shape.

◀ Use **Weld** to merge overlapping objects into a single 'flattened' object.

Weld applied to petals
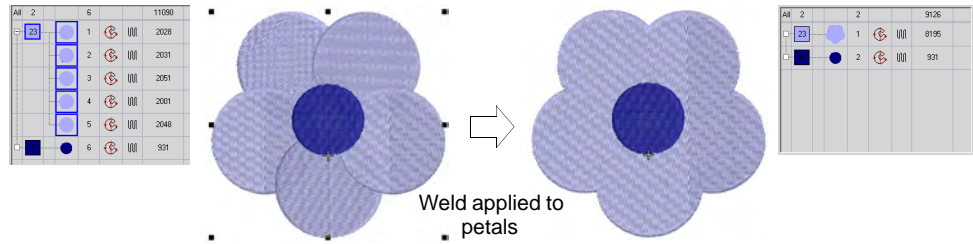
◀ Make symmetrical shapes by digitizing one half, duplicating and reflecting, then welding the duplicate shapes.

Weld applied
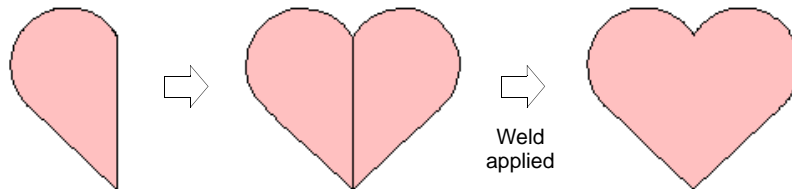
◀ Use **Combine** to convert embroidery objects into multiple objects sharing the properties – stitch color and type, etc – of the **topmost** object.

Combine applied to petals
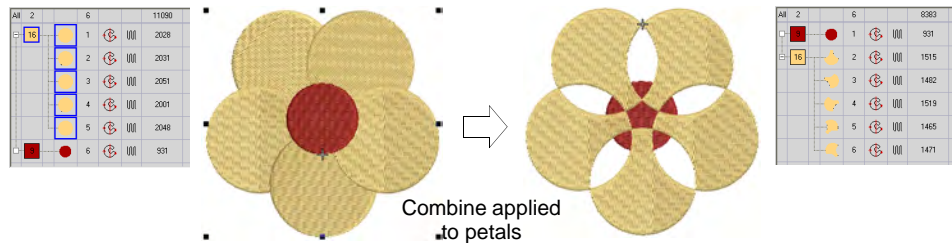
If drawing tools are used as the input method, **Combine** converts vector objects to a single complex shape.

Combine applied to petals
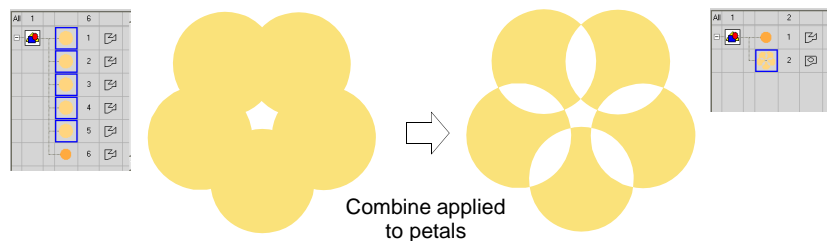
Tip: Cut objects in half by drawing a line through them and applying **Divide**. Apply **Combine** to create closed objects or **Weld** to fuse two objects.

Weld + Run applied to resulting objects

Weld + Run + Combine applied to resulting objects

Divide applied
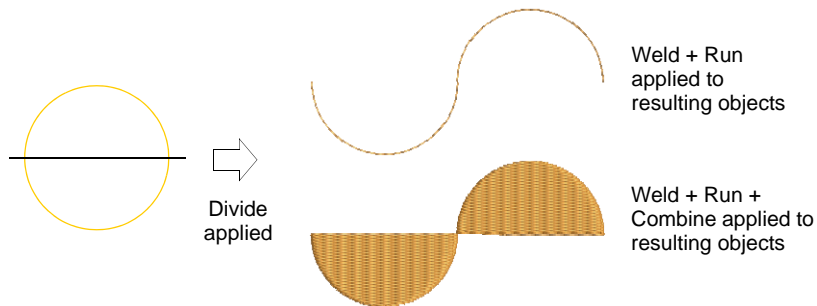
Trim vector & embroidery objects

	Use Shaping > Intersect to trim overlapping areas so that only those intersected by all selected objects remain.
	Use Shaping > Exclude to trim overlapping objects and preserve their individual properties.
	Use Shaping > Front-Back to trim overlapping objects so that only non-overlapped areas of the topmost object remain.
	Use Shaping > Back-Front to trim overlapping objects so that only non-overlapped areas of the bottommost object remain.

Trim selected objects using the **Intersect**, **Exclude**, **Front-Back** or **Back-Front** tools.
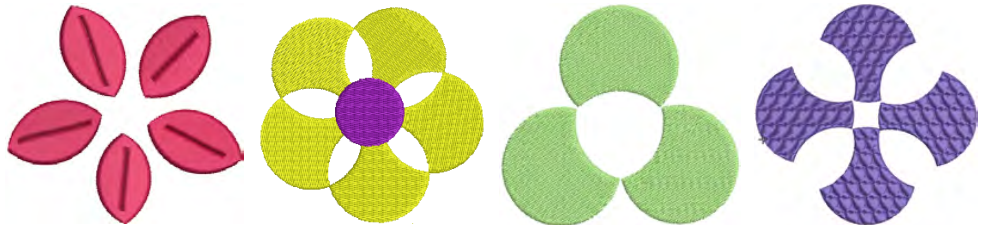
To trim vector and embroidery objects

◀ Select vector or embroidery objects to shape.

◀ Use **Intersect** to trim overlapping areas so that only those intersected by **all** selected objects remain.

Intersect applied
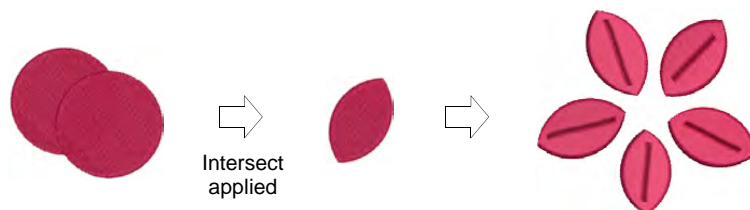
◀ Use **Exclude** to trim overlapping objects and preserve their individual properties. The result is similar to **Combine** except that object properties are not merged.

Exclude applied to petals
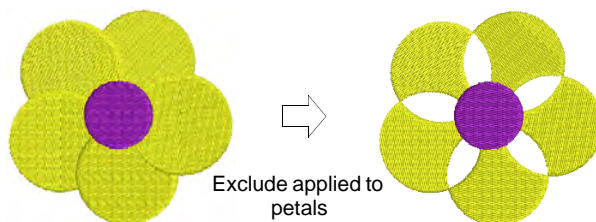
Tip: Use **Exclude** to cut holes in Complex Fill objects.

◀ Use **Front-Back** to trim overlapping objects so that only non-overlapped areas of the topmost object remain.

Front-Back applied

◀ Use **Back-Front** to trim overlapping objects so that only non-overlapped areas of the bottommost object remain.

Back-Front applied
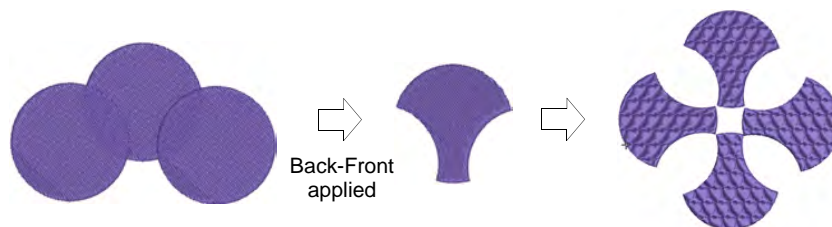
Tip: Use the **Remove Overlaps** feature to maintain shapes but remove the underlying layer of stitching.

Split vector & embroidery objects
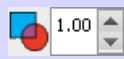
 Use Shaping > Overlap to adjust the overlaps of objects resulting from Flatten or Divide shaping operations.

 Use Shaping > Flatten to trim all overlaps while retaining the original objects.

 Use Shaping > Divide to split selected objects into separate adjoining objects wherever they intersect with other selected objects.

Split selected objects using the **Flatten** or **Divide** tools. These tools preserve the outlines of the original shapes. The **Overlap** setting allows you to add overlaps to objects resulting from **Flatten** or **Divide** shaping operations.
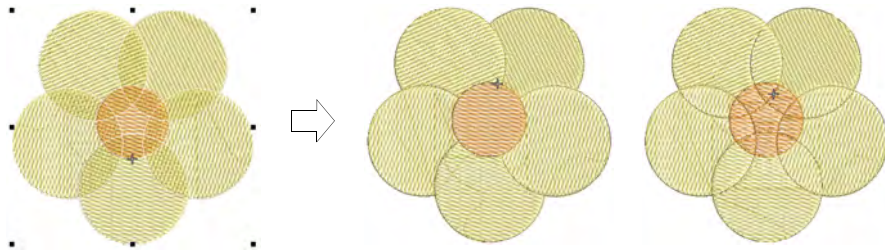
To split vector and embroidery objects

◀ Select the vector or embroidery objects to shape.

◀ Click **Flatten** to trim all overlaps while retaining the original objects.
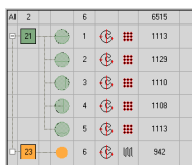
Flatten applied
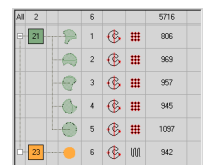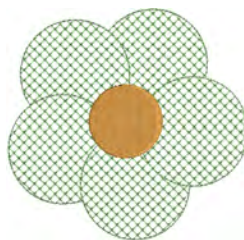
◀ Click **Divide** to split selected objects into separate adjoining objects. All overlapped areas become discrete objects.

Divide applied
(petals only)
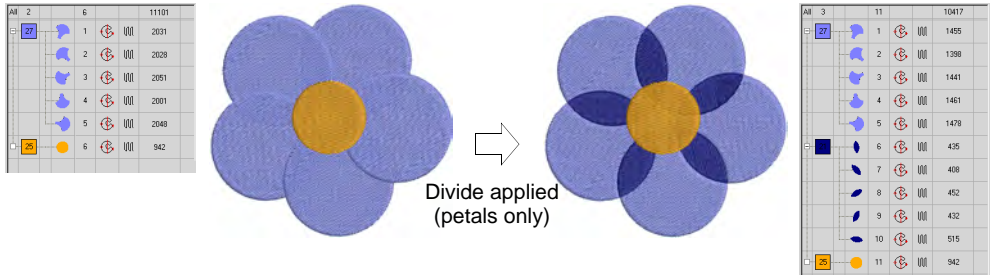
◀ Use the **Overlap** feature to add overlaps to the objects resulting from **Flatten** or **Divide** shaping operations.
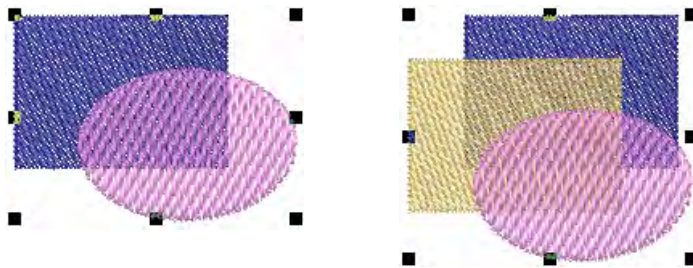
The **Overlap range** is from 0.00 to 5.00 mm with increments of 0.01 mm. The default overlap is 0.50 mm.

| Source objects | Flatten: 0.00 mm | Flatten: 2.00 mm |
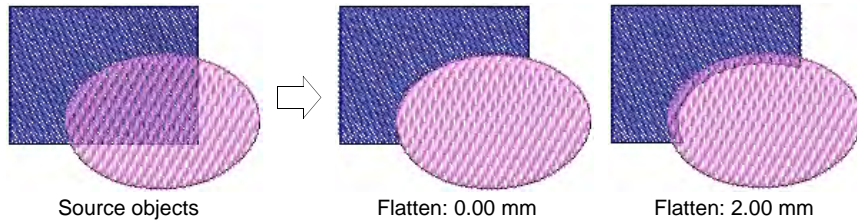
The border of a third object in the stitching order is extended where it touches the other two layers of objects. And so on.

| Source objects | Flatten: 0.00 mm | Flatten: 2.00 mm |

Preserve original objects

The **Keep Original Objects** is a toggle which affects the behavior of all the other shaping tools. While it is active, all selected source objects of all shaping operations are preserved. The resultant objects are inserted **after** the last source object in the stitching sequence.
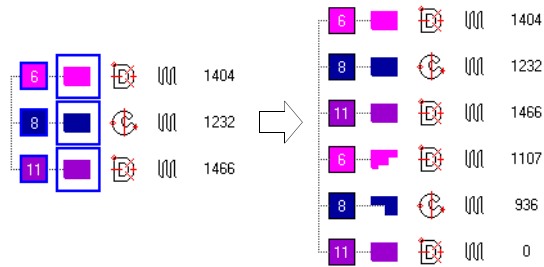
Chapter 17
Stitches & Machine Functions

EmbroideryStudio automatically generates stitches from design outlines and properties. This means you can scale, transform, and reshape native designs without compromising stitch density or quality. However, EmbroideryStudio also lets you edit individual stitches. You may need to do this, for example, when working with 'stitch' files which do not contain outline data.

Like stitches, machine functions are inserted automatically whenever you digitize objects and specify object properties. They are stored with the embroidery object and updated whenever it is modified. However, EmbroideryStudio also lets you manually insert machine functions. This flexibility allows you to adapt designs to almost any machine requirement. See Machine Files for details.

Occasionally you may need to digitize individual stitches. Use these sparingly.

You can also use manual stitching together with machine functions to create boring holes. Holes are cut in the fabric, producing an effect similar to lace.

Selecting & editing stitches

The **Stitch Edit** tool lets you select individual stitches or groups of stitches directly or via the **Stitch List**.

Caution: When you insert stitches manually, you must maintain them manually. For this reason, only insert stitches if they cannot be added automatically.

Select stitches by needle point

Use Stitch > Stitch Edit to select individual stitches for editing.

> Click View > Show Needle Points to show or hide the needle points in a design.

Select individual stitches in **Stitch Edit** mode.

To select stitches by needle point

◀ Click the **Stitch Edit** icon and zoom into the area you want to edit.

◀ Click **Show Needle Points** for easier selection.

◀ Click a needle point.
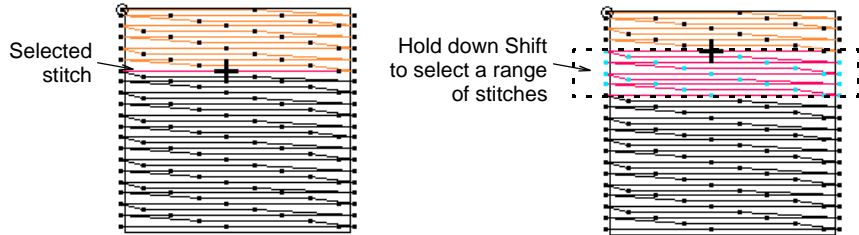
Selected stitch

Hold down Shift to select a range of stitches

◀ Use keyboard shortcuts to aid selection:

◀ To select a range, hold down **Shift** as you select.

◀ To select multiple stitches, hold down **Ctrl** as you select.

◀ Alternatively, drag a selection marquee around stitches.

Selection marquee
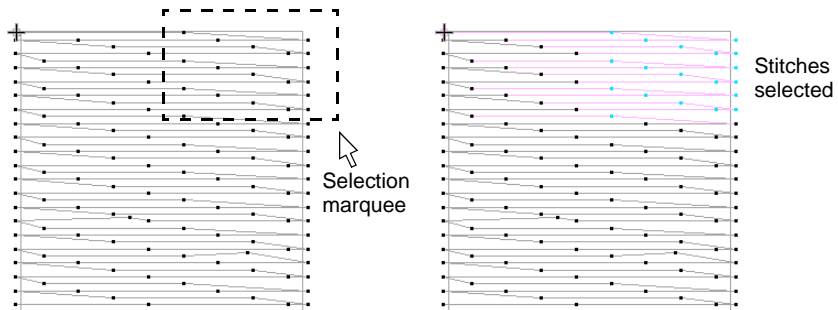
Stitches selected

◀ Deselect by either means:

◀ Press **Esc**.

◀ Select **Edit > Deselect All**.

💡
Tip: While editing stitches, use the **Selects On/Off** command to select stitches while traveling.

Related topics...

◀ Select stitches while traveling

Select stitches with the Stitch List

> Use Docker > Stitch List to toggle Stitch List display on and off. Use it to select individual stitches.

You can view and select individual stitches by means of the **Stitch List**.

To select stitches with the Stitch List

◀ Click the **Stitch List** icon.

The **Stitch List** opens. It shows stitch position coordinates and function information – e.g. whether the stitch is a jump. It also shows the length of every stitch in the design.

Stitch List shows position coordinates, function information, and individual stitch lengths

Change Stitch List text and background colors

◀ Right-click to access popup menu options. For example, display text in black by selecting **Black Text** or in the associated stitch color by selecting **Colored Text**.

◀ Click a stitch to select it. Stitches selected in the **Stitch List** are also selected in the design, and vice versa.

Selected stitches

◀ Use keyboard shortcuts to aid selection:

◀ To select a range, hold down **Shift** as you select.

◀ To select multiple stitches, hold down **Ctrl** as you select.

Related topics...

◀ Filtering stitches & functions

Select stitches while traveling

 Use Stitch > Stitch Edit to select individual stitches for editing.

 Select Stitch > Selects On/Off to select a range of stitches as you travel through the design.

Select a range of stitches by traveling by stitch with **Selects On/Off** activated. This command adds stitches to the selection as you travel through the stitching sequence.

To select stitches while traveling

◀ Click the **Stitch Edit** icon.

◀ Zoom into the area you want to edit and click a needle point.

Travel to the first stitch
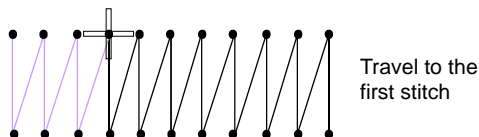
◀ Select **Stitch > Selects On/Off** or press **Q**.

◀ Travel through the design using arrow keys or **Travel** tools. As you travel, stitches are added to the selection.

Travel 10 Stitches tool used
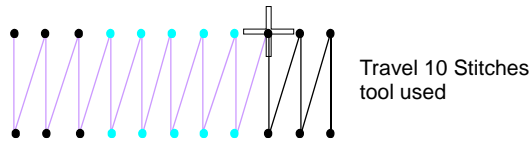
◀ Press **Q** again to toggle off stitch selection.

Insert stitches

> Use Stitch > Stitch Edit to insert stitches in an object.

You can insert stitches in an object to fill gaps. Inserted stitches are considered part of the object. They will, however, be lost if the object's stitches are regenerated. Where possible, edit object properties rather than individual stitches. For example, to increase stitch density, reduce spacing rather than insert stitches.

To insert stitches

1 Click the **Stitch Edit** icon and zoom into the area you want to edit.

2 Select a needlepoint.

Right-click

3 Move the mouse pointer where you want to insert the new stitch, and right-click.

Note: Inserting stitches is different from creating stitches using the **Manual** input method. With this tool you create a separate object, with its own properties and connectors.

Edit stitches

> Use Stitch > Stitch Edit to select individual stitches for moving.

> Use Docker > Stitch List to toggle Stitch List display on/off. Use it to edit coordinates of individual stitches.

You can move or delete individual or groups of selected stitches.

To edit stitches

◀ Click the **Stitch Edit** icon and zoom into the area you want to edit.

◀ Select stitches and drag them to a new position.

Shadow outline

Drag selected stitch to new position
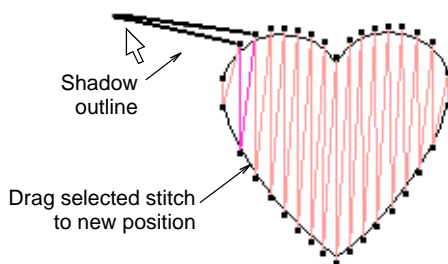
◀ Select a stitch or stitches and press **Delete**.

Select stitches

Press Delete
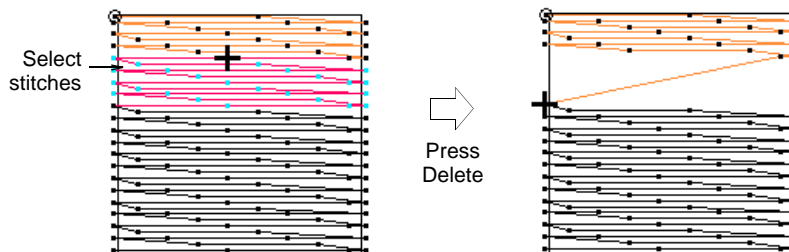
◄ Open the **Stitch List** and double-click the stitch coordinate you want to edit.

#	X	Y	L	Func
2438	-0.15	-0.04	0.16	
2439	-0.03	-0.01	0.03	TieOff
2440	0.04	0.01	0.04	(used)
2441	0.04	0.01	0.04	(used)
2442	-0.04	-0.01	0.04	(used)
2443	-0.02	-0.01	0.03	(used)
2444	0.00	0.00	0.00	Color (5) (empty)
2445	0.26	0.05	0.26	jump
2446	0.27	0.04	0.28	jump
2447	0.27	0.04	0.28	jump
2448	0.27	0.04	0.28	jump
2449	0.27	0.04	0.28	jump
2450	0.27	0.04	0.28	jump
2451	0.27	0.04	0.28	jump
2452	0.27	0.04	0.28	jump
2453	0.27	0.04	0.28	jump
2454	0.27	0.04	0.28	jump
2455	0.27	0.04	0.28	
2456	0.01	-0.00	0.01	
2457	-0.09	-0.03	0.09	
2458	-0.09	-0.01	0.09	

Enter new stitch coordinates as required

◄ Enter new coordinates in the **X** and **Y** fields and press **Enter**. The new coordinates will change the location of the stitch end point.

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.

Related topics...

◄ Reshaping Objects
◄ Select stitches with the Stitch List

Splitting objects

〰 ← →	Use Travel > Travel by Segment to move stitch cursor to the next/previous segment. Left/right click.
1 ← →	Use Travel > Travel 1 Stitch to move stitch cursor forwards/backwards 1 stitch at a time. Left/right click.
〰 〰↓	Use Stitch > Split Object to split object in two at current needle position. Use with Travel by Stitch functions.

Use the **Split Object** command to split most embroidery objects. Run objects may also be split but Complex Fill and Complex Turning objects may not.
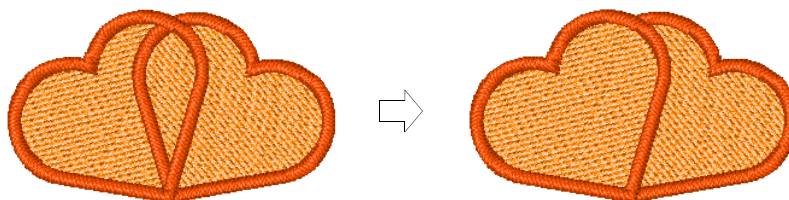
To split objects

◀ Use the Travel by Segment or Travel by Stitch functions to move to the stitch where you want to split the object. See also Travel through designs.

◀ Select **Stitch > Split Object**.

Split object deleted
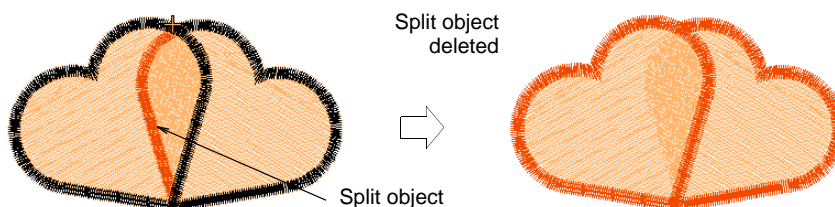
Split object

💡
Tip: You can convert any split manual objects to outline objects with **Process Stitches**.

Related topics...

◀ Adjusting stitch densities
◀ Travel through designs
◀ Converting stitches to objects

Editing machine functions

Most machine functions are inserted automatically whenever you select commands or specify object properties. They are stored with the embroidery object and updated whenever it is modified. However, EmbroideryStudio lets you insert machine functions manually. Depending on the current machine format, different functions are available. The most common types are described below. See your machine manual for further details. See also Embroidery machine formats.

⚠
Caution: Machine functions which are manually inserted into non-manual objects – e.g. Column A, Complex Fill, etc – need to be

maintained manually. If an object's stitches are regenerated for any reason, manually inserted machine functions may be moved to another point in the stitch sequence. For this reason, only insert functions manually if they cannot be added automatically.

Machine function types

EmbroideryStudio lets you manually insert color changes, thread trims, jumps, machine stops, needles in and out, and boring functions, depending on the selected machine format.

Color Change functions

Color Change functions tell the machine to use the next thread color in the design. They are automatically inserted when you select a new color from the color palette. See Assign thread colors for details.

Note: You only need to insert manual color change functions if you cannot recolor using standard methods – for example, when using multiple colors within a single object.

Trim functions

Trim functions instruct machines with trimmers to cut connecting threads before moving to the next object. You insert trims automatically by setting connector values or using the **Trim** tool. See Automatic trim settings and Add trims for details.

If you need additional trims, you can insert the functions manually.

Note: If a machine does not have a trimmer, the Trim function is ignored. Depending on the machine format, the Trim function may be a code or a sequence of jumps. See Trim functions for details.

Stop functions

If you want the embroidery machine to stop for any reason during stitching, you need to manually insert a Stop function in the stitching sequence.

Tip: Because a Stop function may be inserted for various reasons, you should record the purpose of the stop on the production worksheet to assist the machine operator.

Jump functions

Jump functions cause frame movements without needle penetrations and are used to move smoothly from one part of a design to another. There are various methods for automatically entering Jump functions.

◀ Apply Auto Jump to preserve long stitches. See Preserve long stitches for details.
◀ Digitize individual jumps by right-clicking the **Manual** icon. See Digitizing manual stitches for details.
◀ Select jumps as connectors. See Use jumps as connectors for details.
◀ Create jump connectors manually by digitizing with **Penetrations** deselected. See Add jumps with penetrations off for details.

If you need additional jumps, you can insert the functions manually.

Begin/End Jump functions

The Begin/End Jump functions (formerly known as Needle Out/In) instruct the machine whether or not to use needle penetrations. You insert these functions automatically using the **Penetrations** tool (formerly known as Needles In). See Add jumps with penetrations off for details.

If you need additional Begin/End Jump functions, you can insert them manually.

Note: Remember to insert a End Jump function to instruct the machine to resume normal stitching.

Borer In/Out functions

Borer In/Out functions are available for embroidery machines equipped with a borer. They instruct the machine when to use the boring knife or tool instead of a needle. You insert these functions automatically using the **Borers** tool (formerly known as Borers In). See also Boring.

If you need additional Borer In or Out functions, you can insert them manually.

Sequin On/Off functions

Sequin On and Sequin Off functions are available for embroidery machines that are equipped with a sequin dispenser. The Sequin On function generally instructs the machine to physically lower the sequin dispenser into position for sequins to be placed (fed and cut). These functions are automatically inserted when using the **Sequin** tools. See Sequin Embroidery for details.

If you need additional Sequin On or Sequin Off functions, you can insert them manually. See Insert sequin drops for details.

Some machines, notably Schiffli, use only explicit Drop Sequin functions. These instruct the machine to drop a sequin on the fabric for stitching. Schiffli machines, for example, do not require Sequin On/Off functions. See the ES Schiffli User Manual Supplement for details.

Insert machine functions manually

> Use Docker > Stitch List to toggle Stitch List display on/off. Use it to insert machine functions directly into the stitching sequence.

> *fx* Click Function > Insert Function to insert machine function at current stitch cursor position.

You can insert machine functions manually by means of the **Insert Function** dialog. Depending on your machine's requirements, you will either add the function to the current stitch, or insert it on an empty stitch or empty jump. For some machines you will also need to add empty stitches or empty jumps on either side of some functions. See your machine manual for details.

Caution: When you insert machine functions manually, you must maintain them manually. For this reason, only insert manual functions if they cannot be added automatically.

To insert machine functions manually

◀ Open the **Stitch List** and locate the position in the stitching sequence where you want to insert the machine function. Alternatively, use the travel functions to locate the insertion point. The function name appears in the **Prompt Bar**.

Select Insert Function
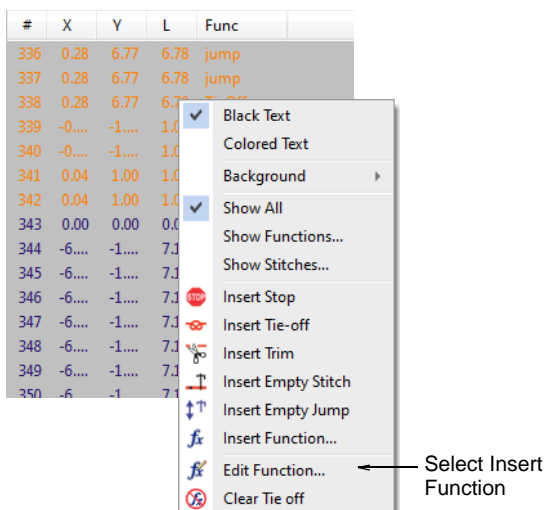
◀ Right-click the stitch and select **Insert Function** from the popup menu.

Alternatively, click the **Insert Function** icon or select **Function > Insert Function**.

Select from functions available for selected machine format →

Insert Function   ✕

Available functions: Sequence:

Color change   Func   Insert Before
Trim   Add
Jump (M)
Stop   Insert After
Empty
Empty Jump   Remove
Borer In
Borer Out
Sequin On
Sequin Off
Drop Sequin

○ Insert on empty stitch   Component: OK
◉ Add to current stitch   empty
                                   empty jump   Cancel
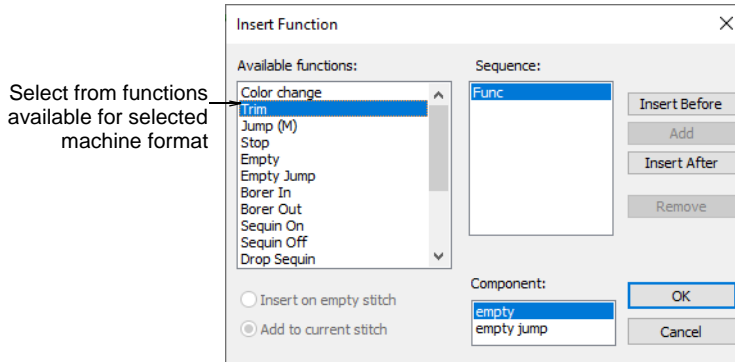
◄ From the **Available Functions** list, select the function you want to insert. Available functions and their options depend on the current machine format.

💡
Tip: It is faster to digitize individual jumps – Jump(M) – by right-clicking with the **Manual** input method selected. If you want the whole object to consist of jumps, deselect the **Penetrations** icon.

◄ If available, choose an insertion method. With some functions you can choose whether to insert on the current stitch or on an empty stitch.

◄ To insert additional empty stitches or empty jumps, select one or other in the **Component** field.

Depending on your machine, you may need to insert additional empty stitches or empty jumps before or after the selected function. For example, before a particular **Stop** function, you may need to insert a number of empty jumps. See your machine manual for details.

◄ Use the buttons to insert additional components before or after the selected function.

Click **Insert Before** if you need the empty stitch/jump to precede the selected function.

◄ To insert multiple empty stitches or jumps, click **Add**. The selected function, together with any additional empty stitches or jumps, appears in the **Sequence** panel.

Additional empty stitches inserted before and after selected function
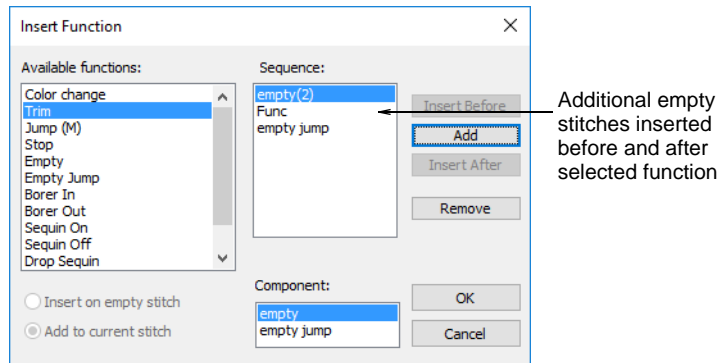
◄ Click **OK** to insert. The selected function, together with any additional empty stitches or jumps, is added at the current needle position. The name of the inserted function appears in the **Prompt Bar**.

Additional empty jumps inserted before and after selected function

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Related topics...

◄ Create designs from templates
◄ Travel through designs
◄ Select stitches with the Stitch List
◄ Add jumps with penetrations off

Edit machine functions manually

> Use Docker > Stitch List to toggle Stitch List display on/off. Use it to edit machine function encoding and to clear machine functions.

> Click Function > Clear Function to remove machine functions at current stitch cursor position.

$f\!x$　Click **Function > Edit Function** to edit machine function at current stitch cursor position.

You can edit the encoding of machine functions by changing the number or sequence of empty stitches or empty jumps that appear around them. Some machines require a specific number of empty stitches or empty jumps in combination with a function in order to interpret it correctly. You may need to edit functions if they were inserted incorrectly or the machine format has changed.

Note: Both automatic and manually-inserted functions can be removed. Functions added by EmbroideryStudio are automatically updated if an object is modified or the machine format changes. Manually inserted machine functions are not automatically removed or updated. You generally only need to edit manually inserted machine functions. If a function is no longer required, it must be manually cleared from the design.

To edit machine functions manually

◂ Open the **Stitch List** and locate the position in the stitching sequence where you want to insert the machine function. Alternatively, use the travel functions to locate the insertion point. The function name appears in the **Prompt Bar**.

Edit selected machine function

◂ To remove the function altogether, select **Clear <function>** from the popup menu.

◀ If a stitch includes more than one machine function – e.g. Trim and Tie-off – the **Clear <function>** command will invoke the **Clear Function** dialog. Use this to selectively clear functions as desired.

Select functions to clear
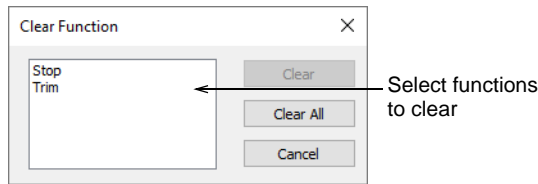
◀ Right-click the function and select **Edit Function** from the popup menu. Alternatively, click the **Edit Function** icon or select **Function > Edit Function**. The **Sequence** panel shows the current format of the selected function.
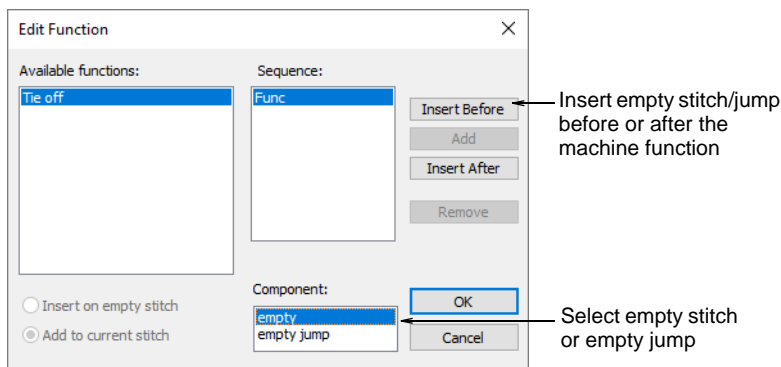
Insert empty stitch/jump before or after the machine function

Select empty stitch or empty jump

◀ To insert additional empty stitches or empty jumps, select one or other in the **Component** field.

◀ Use the buttons to insert additional components before or after the selected function. Click **Insert Before** if you need the empty stitch/jump to precede the selected function.

◀ To insert multiple empty stitches or jumps, click **Add**.

◀ To delete an empty stitch or empty jump from the sequence, select and click **Remove**.

Related topics...

◀ Travel through designs

Filtering stitches & functions

You can use the **Stitch List** to help locate stitches and machine functions for editing. The **Stitch List** displays stitch number, stitch coordinates, stitch length, stitch function, stitch color. When you select a stitch in the list, it is simultaneously selected in your design.

Filter stitches by function

You can apply a filter to the **Stitch List** so that only stitches associated with specific functions appear in the list.

To filter stitches by function

1 Open the **Stitch List**.
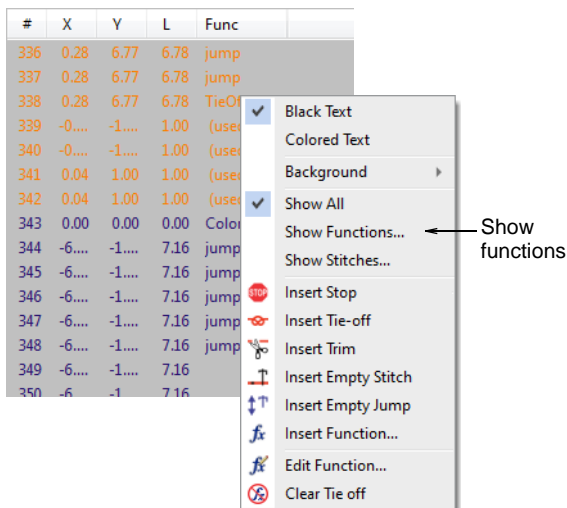
Show functions

2 Right-click a stitch and select **Show Functions** from the popup menu.

Select functions to show
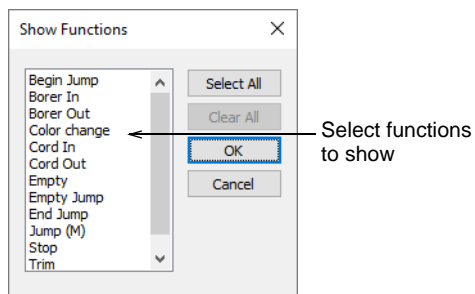
3 Select the functions you want to show.

Tip: To select multiple functions, use **Ctrl** or **Shift** keys as you click. Click **Select All** to show all function types.

4 Click **OK**. Selected functions are displayed in the list.

#	X	Y	L	Func
195	0.00	0.00	0.00	(empty)
196	0.00	0.00	0.00	(empty)
197	0.00	0.00	0.00	(empty)
199	0.00	0.00	0.00	(empty)
200	0.00	0.00	0.00	(empty)
207	0.00	0.00	0.00	(empty)
208	0.00	0.00	0.00	(empty)

Only selected functions are displayed

Tip: To display the text in the associated stitch color, select **Colored Text** from the popup menu.

5 To show all stitches again, right-click in the **Stitch List** and select **Show All** from the popup menu.

Related topics...

◄ Select stitches with the Stitch List

Filter stitches by stitch length

> Use Docker > Stitch List to toggle Stitch List display on/off. Use it to display only stitches of a certain length.

You can apply a filter to the **Stitch List** so that only stitches of a certain length appear in the list. The main use of this feature is to find stitches which cause production problems, such as short stitches (e.g. < 1.0 mm).

To filter stitches by stitch length

1 Open the **Stitch List**.

#	X	Y	L	Func
336	0.28	6.77	6.78	jump
337	0.28	6.77	6.78	jump
338	0.28	6.77	6.78	TieOff
339	-0....	-1....	1.00	(used
340	-0....	-1....	1.00	(used
341	0.04	1.00	1.00	(used
342	0.04	1.00	1.00	(used
343	0.00	0.00	0.00	Color
344	-6....	-1....	7.16	jump
345	-6....	-1....	7.16	jump
346	-6....	-1....	7.16	jump
347	-6....	-1....	7.16	jump
348	-6....	-1....	7.16	jump
349	-6....	-1....	7.16	
350	-6	-1	7.16	

Popup menu:
- ✓ Black Text
- Colored Text
- Background ►
- ✓ Show All
- Show Functions...
- Show Stitches... ← Show stitches
- Insert Stop
- Insert Tie-off
- Insert Trim
- Insert Empty Stitch
- Insert Empty Jump
- Insert Function...
- Edit Function...
- Clear Tie off

2 Right-click a stitch and select **Show Stitches** from the popup menu. The **Show Stitches** dialog opens.

Select stitch range to show
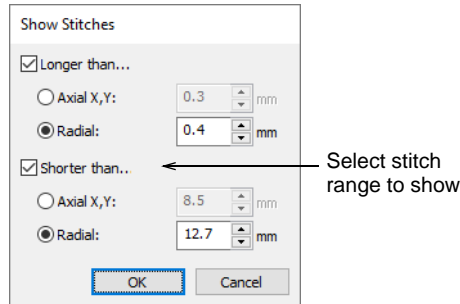
3 Select the range of stitch lengths you want to show:

Option	Function
Radial	Corresponds to the actual stitch length.
Axial X,Y	Corresponds to the horizontal and vertical frame movements.

4 Click **OK**. Only the selected stitches are displayed in the list.

Only selected stitches are displayed

Tip: To display the text in the associated stitch color, select **Colored Text** from the popup menu.

5 To show all stitches again, right-click in the **Stitch List** and select **Show All** from the popup menu.

Related topics...

Digitizing manual stitches

Use Traditional Digitizing > Manual to digitize individual 'manual' stitches.

 Use Traditional Digitizing > Triple Manual to digitize triple 'manual' stitches.

Occasionally you may need to digitize individual stitches. Use these sparingly, for example, to add a few details to a finished design. Digitize individual stitches with the **Manual** method. You can enter single manual stitches, or enter three stitch layers at a time with the **Triple Manual** tool. Manual stitches digitized together form a single embroidery object. The only properties of manual objects are general and connector properties. They are not well suited to scaling and transforming actions. Use them sparingly, for example to add a few stitches to a finished design.

Caution: Manual stitches are not well suited to scaling and transforming actions as the stitches have no associated properties. Use them sparingly.

To digitize individual stitches

1 Click the **Manual** or **Triple Manual** icon.

2 Click to mark the start of the stitch and again to mark its end.

The end-point becomes the beginning of the next stitch.

3 Continue marking stitch points until the manual stitch object is complete.

Use the left mouse button
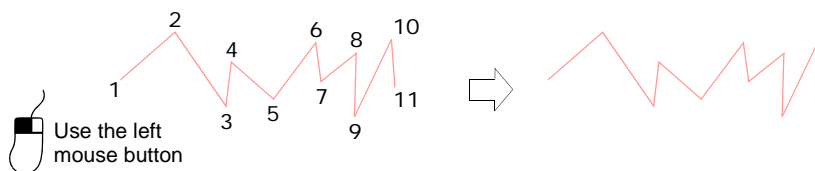
Tip: Stitches that are too long will automatically become jump stitches, but you can also create jumps manually by right-clicking as you digitize.
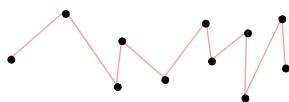
Click for manual stitches
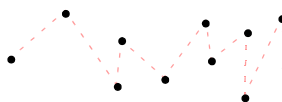
Right-click for jumps

Tip: You can also use manual stitching together with machine functions to create boring holes. If your embroidery machine is

equipped with a boring knife or needle, you can use the **Borers** tool to turn needle penetrations into boring holes, regardless of selected stitch type. Holes are cut in the fabric, producing an effect similar to lace.

Related topics...

◀ Use jumps as connectors

◀ Boring

Converting stitches to objects

By default, machine files are converted to outlines and objects upon opening. If you only want to convert selected parts of a design, you can open the file without object/outline recognition and process only the required stitch blocks. If you want to scale a design, edit an outline or change a stitch type, then the design or selected elements must be first converted into 'objects'.

💡
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. To improve the quality of a machine file, it is often better to edit stitches before conversion. See also Opening machine files.

Recognize object outlines

Use Stitch > Stitch Edit together with Recognize Objects/Outlines to turn selected stitches into an embroidery object.

New or revised object outlines can be recognized after stitch edits have been made. This is useful with machine files which have been opened without **Object/Outline** recognition. You may do this to preserve the original stitching in most of the design, while modifying a single section of it. You may also want to turn edited stitches into an embroidery object in order to preserve the edits.

To recognize object outlines

1 Click the **Stitch Edit** icon and select the individual stitches you want to process.
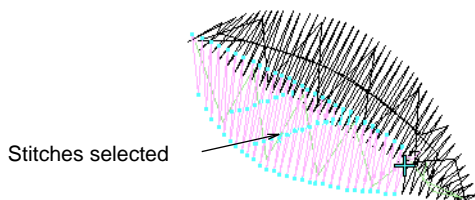
Stitches selected

2 Select **Stitch > Recognize Objects/Outlines**. The selected stitches are converted to objects.

Objects and
outlines created
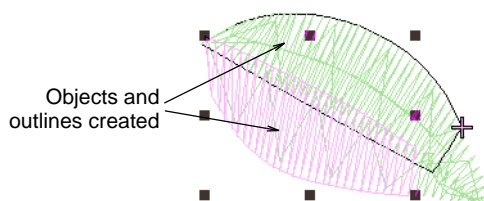
Related topics...

◀ Opening machine files
◀ Selecting & editing stitches

Process manual stitches

Use Stitch > Process Stitches to adjust stitch density of and/or scale whole or selected parts.

You can process manual stitches to recognize outlines or adjust size and stitch density. You can also use the **Process Stitches** feature to change stitch count and density for the whole design, or for objects of a particular stitch type only.

🔘
Tip: You can also split larger manual objects into smaller objects, and process them individually.

To process manual stitches

1 Open a machine file without object/outline recognition.
2 Edit parts of the design as required.

3 Select the part of the design you want to process. You can select the whole design or individual manual objects.

Manual object
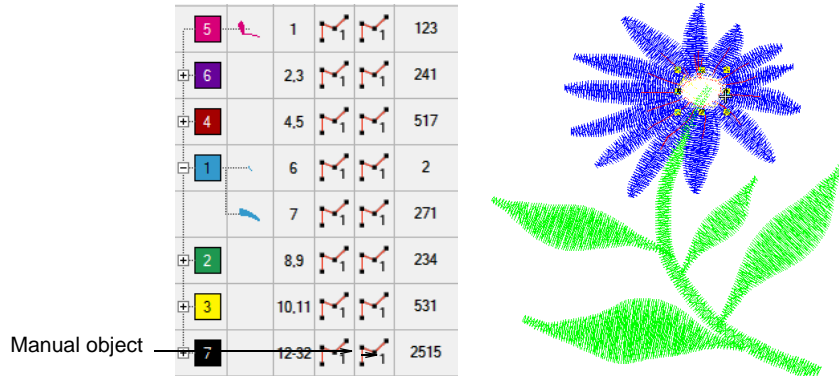
4 Select **Stitch > Process Stitches**. The **Process Stitches** dialog opens.

Enter target stitch count

Click to access advanced recognition options

Adjust stitch densities

Adjust Pull Compensation
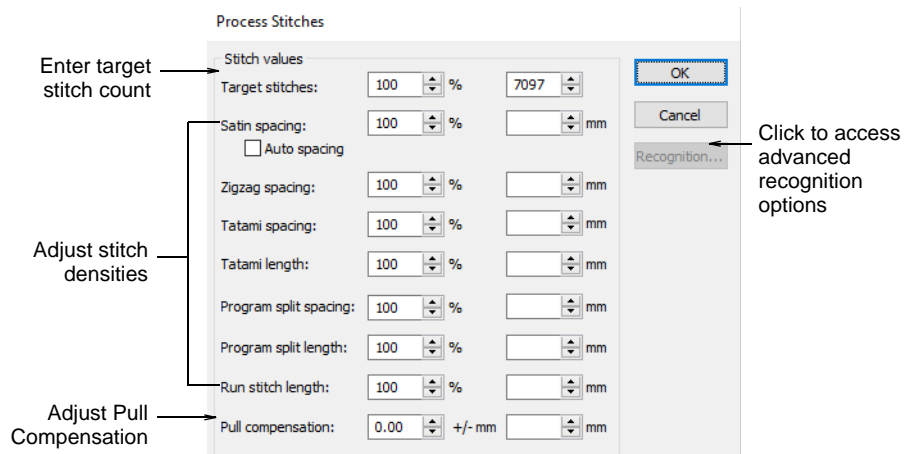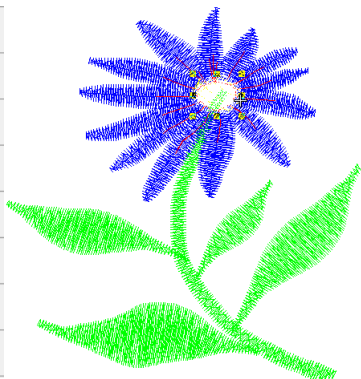
5 In the **Stitch Values** panel, enter the number of **Target Stitches** as either a percentage or absolute value (in millimeters).

6 Adjust the density for each stitch type as required. You can change the density for selected objects and/or for specific stitch types only.

7 Click **Recognition** to set advanced recognition options as required.

8 Click **OK**. Selected objects are processed and converted to Column A or Run objects with fill or outline stitch properties as well as general and connector properties. If an object is not recognized, it remains a

manual object with general and connector properties only. In this
case, the target stitch count may not be reached.

Manual object converted to
Column A and Run
objects, or left as Manual

Note: Process Stitches adds the missing information to the file, but
does not change the stitches.

Related topics...

◄ Adjusting stitch densities
◄ Splitting objects
◄ Advanced recognition settings

PART V
STITCH QUALITY

EmbroideryStudio provides many settings to ensure high quality stitchout on any fabric. For instance, to sew out correctly, an object 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. **Auto Fabric** provides a set of customized fabric settings so the software will take into account the type of fabric you are stitching on. However, you can override these on an object-by-object basis as necessary. See also Working with fabrics.

Underlays & pull compensation

This section describes how to set and adjust automatic underlays. It also deals compensating for fabric stretch with automatic pull compensation. See Underlay & Pull Compensation for details.

Optimizing stitch quality

This section describes how to adjust stitch density as well as eliminate small stitches. It also explains controlling corner stitching and reducing stitch bunching. Optimizing long satin stitches is also covered. See Optimizing Stitch Quality for details.

Embroidery connectors

This section describes how to add connectors, tie-offs and trims to your designs. It also describes adjusting settings for automatic connectors, including the stitch length for travel runs. It also deals with setting automatic start and end points. See Embroidery Connectors for details.

Chapter 18
Underlay & Pull Compensation

Embroidery stitches pull fabric inward where needles penetrate. This can cause fabric to pucker, stitch bunching, and/or unsightly gaps to appear in the embroidery. EmbroideryStudio includes many techniques for achieving smooth, even placement of stitches, and the elimination of gaps in designs.
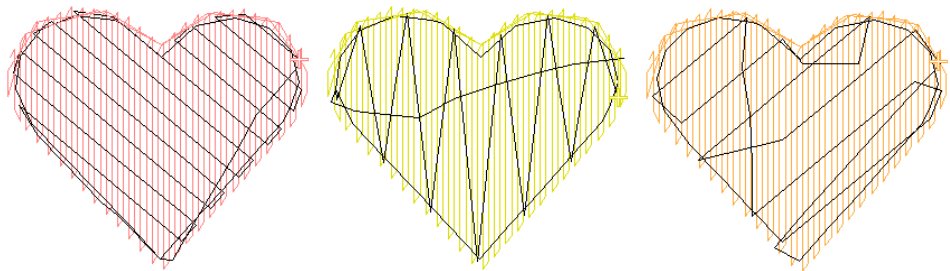
For an object to sew out correctly, it must have correct stitch spacing, sufficient pull compensation, together with a suitable underlay for the particular combination of cover stitch type, object type, object shape, and fabric.

Note: EmbroideryStudio provides a set of optimized fabric settings that take into account the type of fabric you are stitching on. These settings are all object properties, some of which are entirely automated and some which you have control over. See Object Properties for details.

Stabilizing with automatic underlay

Embroidery appearance and quality depends a lot on underlay which serves as a foundation for the cover stitching. Without an underlay, embroidery lies flat on the underlying fabric which can often show through. New digitizers might be tempted to increase stitch density but it is much more effective to apply an automatic underlay. Although it increases the stitch count, underlay helps to stabilize fabrics and reduce puckering and pulling especially on larger designs. It also provides 'loft', raising cover stitches and preventing them from sinking into soft fabrics. It can also prepare a napped fabric by flattening it.

Underlay types

Different underlays suit different shapes and different fabrics. Larger areas and stretchy fabrics such as knits and pique generally need more underlay than smaller areas and firm fabrics such as drill or leather. Smaller objects may use a single layer of underlay. Larger objects may combine two layers.
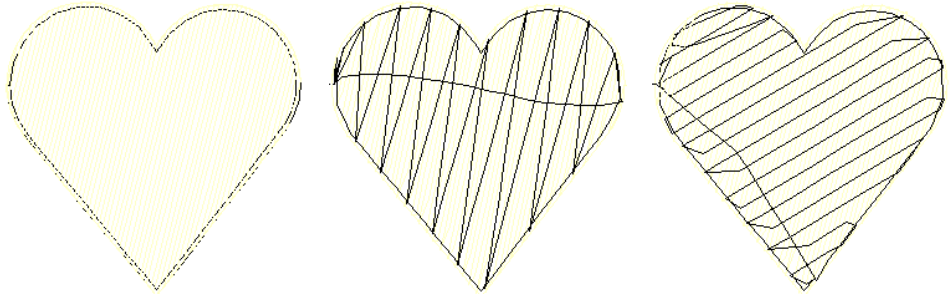
Underlay settings are stored with each object the same way as other object properties. They are regenerated whenever the object is scaled or transformed. They are stored separately from, and do not affect, cover stitch settings.

Default underlay values

Default underlay values are derived from three possible sources:

◀ When **Auto Fabric** is turned on, a default underlay is applied, based on current fabric settings.
◀ When **Auto Fabric** is turned off and the 'use preset styles' option is turned on, style definitions are used. See Digitizing presets for details.
◀ When **Auto Fabric** is turned off and the 'use preset styles' option is turned off, template values are used. See Working with templates for details.

Related topics...

◀ Digitizing presets
◀ Working with fabrics
◀ Working with object properties
◀ Setting lettering underlay

Apply automatic underlay

Use Stitch Effects > Auto Underlay to strengthen and stabilize embroidery designs with automatic underlays. Right-click for settings.

EmbroideryStudio provides a wide selection of underlay types to choose from. Use a single layer of underlay, or for more support, combine two underlay types. The underlay you choose is determined by the shape and size of object, fabric type, and purpose it is to serve. EmbroideryStudio lets you set values to suit different fabrics, lettering appearance and size.

To apply automatic underlay

◀ Toggle underlays on/off with the **Auto Underlay** button.

◀ Without objects selected, right-click the **Auto Underlay** icon to change current settings.

◀ With objects selected, right-click the **Auto Underlay** icon to change settings for those objects.
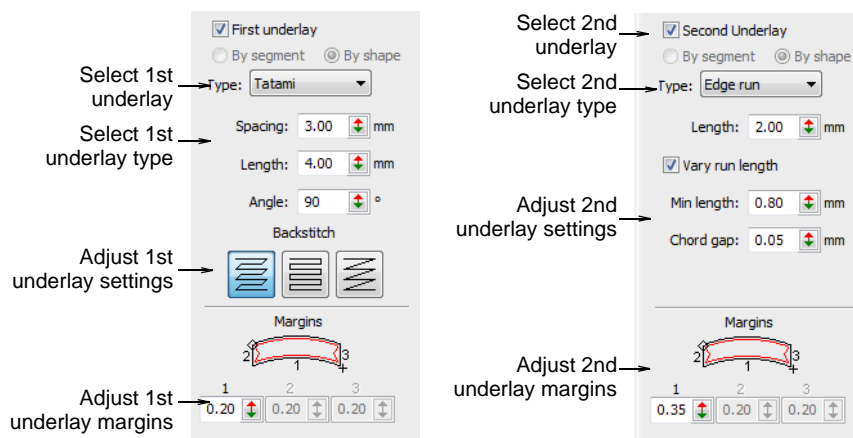
◀ For a single underlay, tick the **First Underlay** checkbox and choose an underlay type from the droplist.

First underlay: Edge Run (Column B object)

First underlay: Edge Run (Complex Fill object)

First underlay: Edge Run (Complex Turning object)
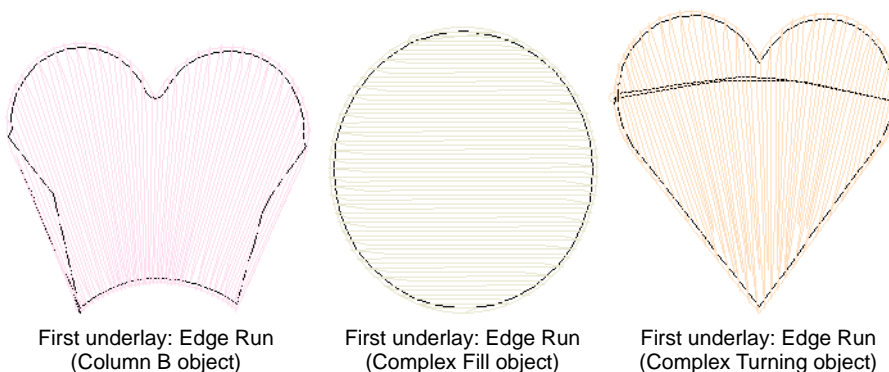
◀ For a double-underlay, tick the **Second Underlay** checkbox and choose a second underlay type.

| 2nd underlay: Zigzag | 2nd underlay: Tatami | 2nd underlay: Double Zigzag |

Underlay by segment or by shape

Free shapes generally stitch out in several segments, joined by travel runs. However, all segments and boundaries are part of the same object. With the exception of lettering objects, underlay is normally applied segment-by-segment before any cover stitches are sewn.

Branched Complex Turning with Edge + Center Run underlay 'by segment'

Stitch count: 1060

Branched Complex Turning with Edge + Center Run underlay 'by shape'

Stitch count: 957
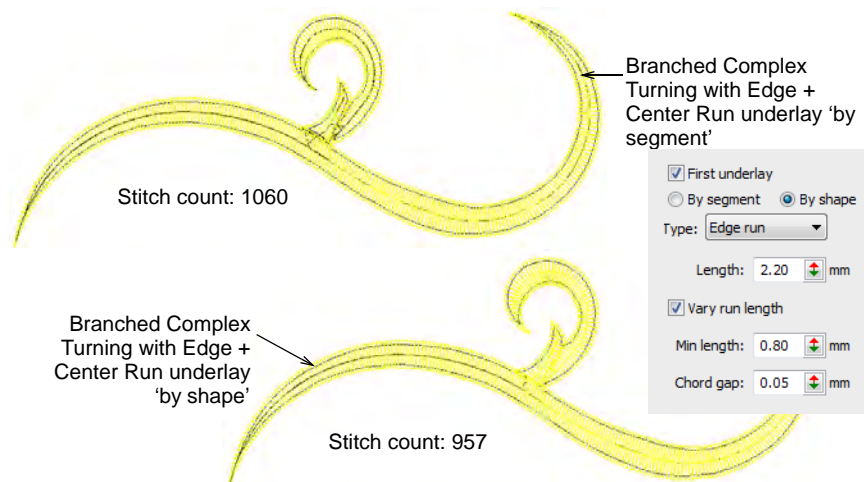
'By shape' underlay is applied to lettering objects by default. However, it can also be applied to objects such as Complex Turning as well as branched objects. This has the effect of calculating an underlay for the whole shape rather than each segment. This in turn reduces bunching,

travel runs, and overall stitch count. Depending on the size of object, however, registration issues may come into play.

Underlay margins

 Right-click Stitch Effects > Auto Underlay to adjust underlay margins.

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.
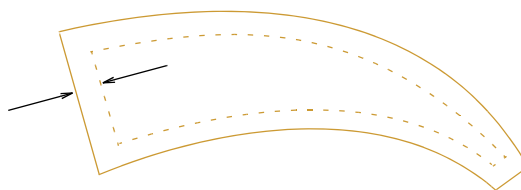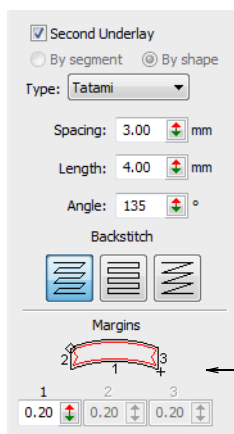
Adjust margins to prevent underlay stitches from extending to far

◀ For Column A, Column B, Column C and Lettering objects, enter margins in the **1:**, **2:** and **3:** fields, using the diagram as a guide.
◀ For Complex Fill objects, enter a margin in the **1:** field only. Values in the other fields will be ignored.
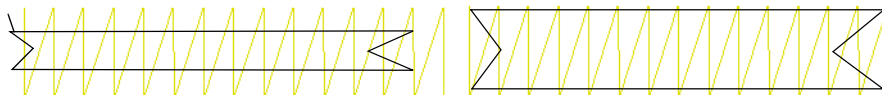
Mgn 1: 0.8 mm, Mgn 2: 0.2 mm, Mgn 3: 0.4 mm

All margins: 0.1 mm

◀ If you are joining two columns, use a negative value at the joining end. The underlay will extend outside the cover stitching, allowing for smooth joining of the columns.
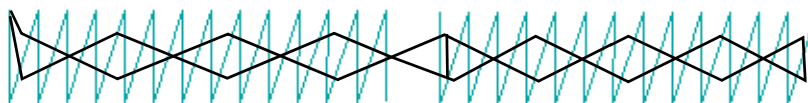
Two columns joined

Run stitch underlay settings

 Right-click Stitch Effects > Auto Underlay to adjust Center Run and Edge Run underlay settings.

Center Run 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 Run** places stitches around the edge of an object. Use Edge Run together with the zigzag or tatami underlays when digitizing large shapes.
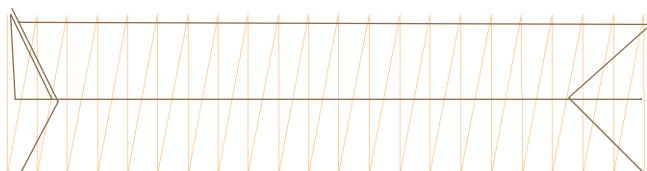
Center Run and Edge Run underlays used together
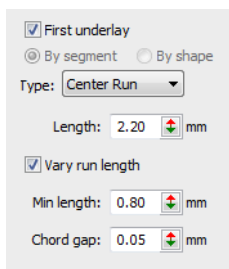
◀ Enter a stitch length for each underlay type. The samples below show the difference between fixed and variable run lengths.
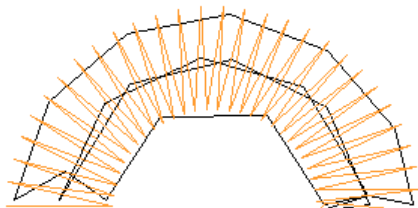
Edge Run and Center Run underlay with 2.5 mm stitch length
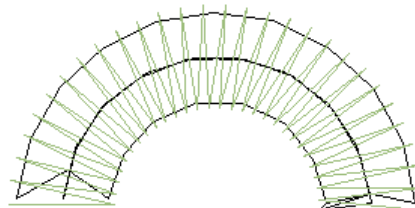
Edge Run and Center Run underlay with variable run length

◀ Adjust stitch length to ensure underlay stitches follow curves and are not visible in the final embroidery.

Option	Function
Length	Sets the maximum length of each stitch.
Vary run length	If enabled, specify minimum stitch length and chord gap values. The chord gap is the distance between digitized curve and underlay stitch. This determines how closely stitches follow digitized lines.

Related topics...

◀ Adjust column width

Tatami underlay settings

Tatami underlay is used to stabilize large, filled shapes. It resembles an extremely open tatami fill stitch, where rows of stitches are placed across the object to create the underlay. **Tatami** underlay is often used together with **Edge Run**, especially for Complex Fill objects under tatami cover stitching.

Tatami stitch with Edge Run & Tatami underlay

Direction of underlay

Direction of cover stitching
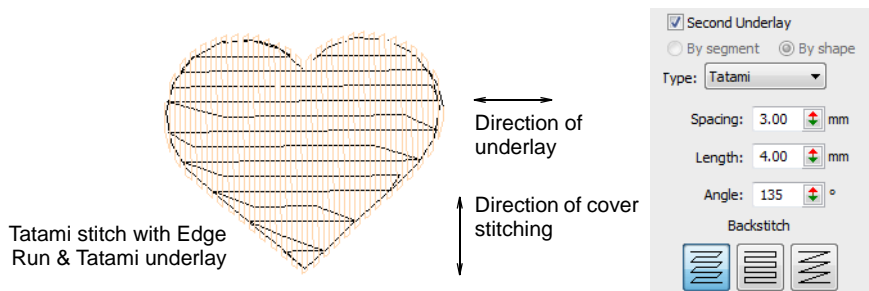
◀ Adjust stitch spacing and length settings for tatami underlay in the same way as for tatami fill stitches.

Spacing: 3mm

Spacing: 2mm
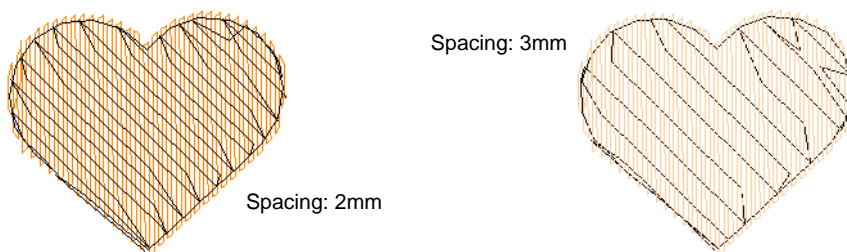
◀ Select the backstitch type you require and, for Complex Fill objects, set the stitch angle of the underlay stitches. Underlay stitch angle should run counter to cover stitching.

Angle: 45⁰

Angle: 135⁰
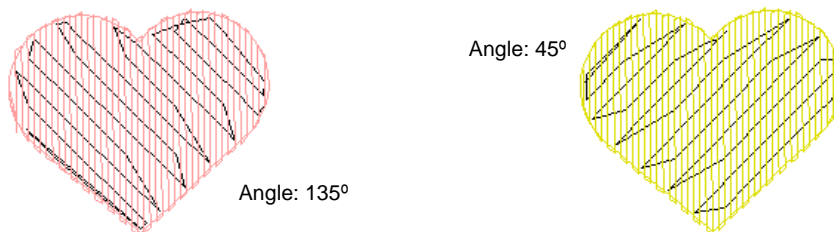
◀ For extra support with very soft or elastic fabrics, try using **Double Tatami** in combination with **Edge Run**. Adjust stitch angle so that

Double Tatami provides symmetrical slanting in forward and backward directions. This should result in a 'cross-hatch' effect. In addition, it can give a raised surface similar to 'puff embroidery'.

Tatami stitch with Edge Run & Double Tatami underlay

Adjust angle for slanted double tatami underlay
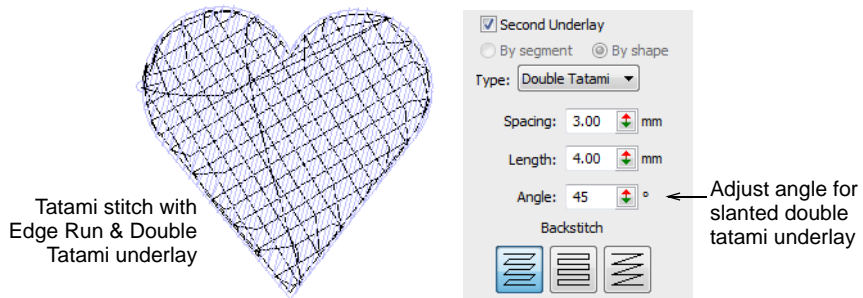
Tip: Increase the margin as necessary to prevent underlay stitches from extending outside the cover stitches.

Related topics...

◄ Tatami density
◄ Other tatami settings
◄ Object property apply options
◄ Underlay margins

Zigzag underlay settings

Right-click Stitch Effects > Auto Underlay to adjust Zigzag and Double Zigzag underlay settings.

Use **Zigzag** and **Double Zigzag** underlay stitching to support wide columns. You can combine Zigzag or Double Zigzag with Center Run or Edge Run underlays. These underlays are best used under Satin cover stitching.
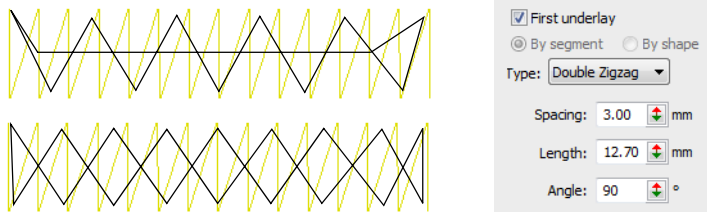
Adjust the required spacing and length for each underlay type.

Spacing: 3.0 mm	Spacing: 4.0 mm
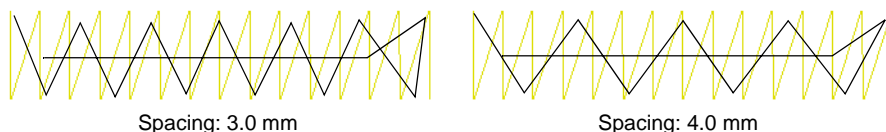
EmbroideryStudio allows you to slant **Zigzag** underlay to create what is sometimes called 'stemstitch underlay'. This can be applied to Column A, B, C, and lettering objects.
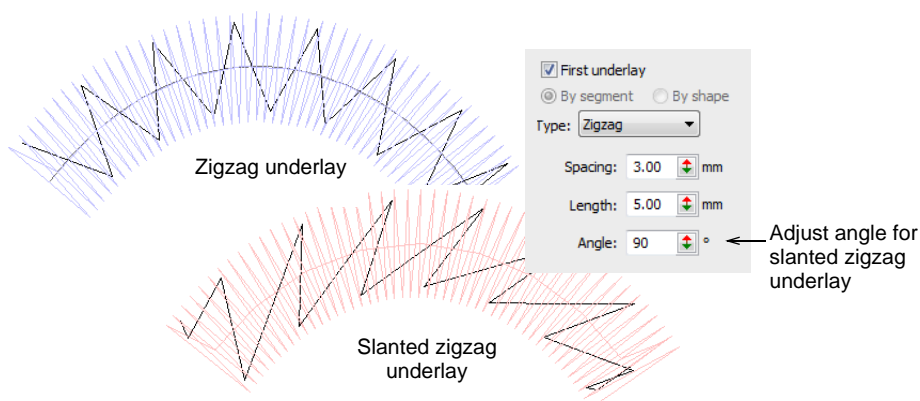
Normal zigzag underlay runs in a similar direction to satin cover stitching causing it to 'sink'. **Double Zigzag** provides symmetrical slanting in forward and backward directions resulting in a 'cross-hatch' effect. This may provide more support than single zigzag. In addition, it can give a raised effect similar to 'puff embroidery'.
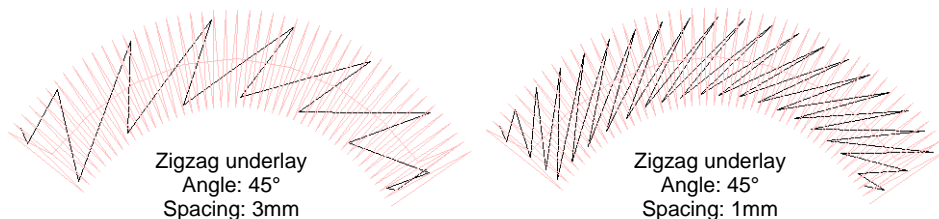
Double Zigzag too can be slanted to create even more loft.

⚠️
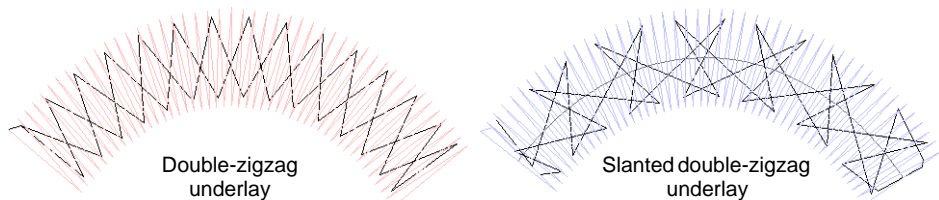
Caution: When using very small angles for slanted underlays, they can extend outside object boundaries.

Related topics...

◀ Adjust column width
◀ Underlay margins
◀ Setting lettering underlay
◀ Open stitching

Compensating for fabric stretch

Embroidery stitches tend to pull fabric inwards where the needle penetrates. This can cause fabric to pucker and gaps to appear in the embroidery. Experienced digitizers can manually compensate for pull by overlapping objects as they digitize. Automatic pull compensation, however, counters the pull effect by 'overstitching' outlines of filled shapes on the sides where the needle penetrates.
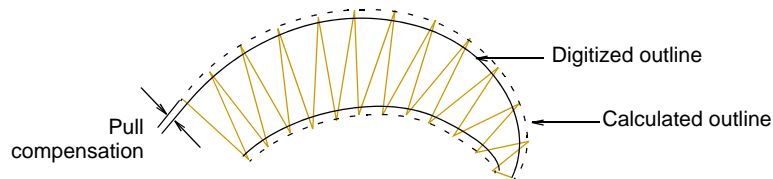
Adjust overstitching by varying pull compensation in the **Object Properties** docker. This is handy if you want to stitch a design on fabrics with varying degrees of stretch.

💡
Tip: Applying underlay stitching, and using appropriate backing and topping when stitching out can also reduce the push-pull effect.

Apply automatic pull compensation

> 🪡 Use Stitch Effects > Pull Compensation to automatically compensate for fabric stretch. Right-click for settings.

Apply automatic pull compensation to objects in your design and adjust as part of your quality checks prior to stitchout.

To apply automatic pull compensation

◀ Toggle automatic pull compensation on/off via the **Pull Compensation** button.

◀ Without objects selected, right-click the **Pull Compensation** icon to change current settings.

◀ With objects selected, right-click the **Pull Compensation** icon to change settings for those objects.

Select Pull Compensation and enter an overstitch allowance
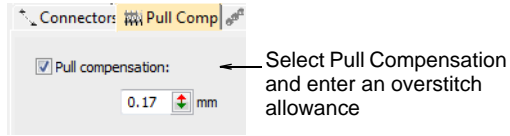
◀ Enter an overstitch allowance (in millimeters).
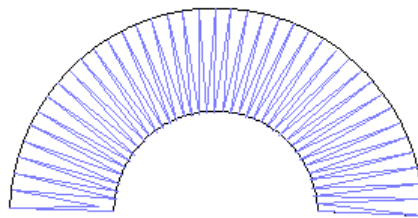
Pull Compensation: 0.0 mm   Pull Compensation: 0.6 mm
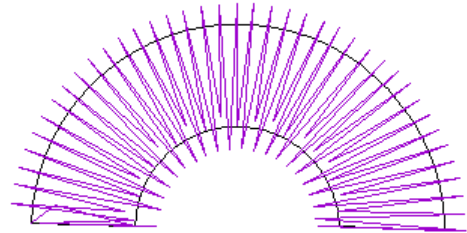
Appropriate pull compensation settings vary with the type of fabric – stretchy, pile, etc – hooping method – tight or loosely hooped – and size of embroidery object – wide or narrow columns. Use the following table as a guideline.

Fabric	Pull compensation (mm)
drills, cotton	0.20
T-shirt	0.35
fleece, jumper	0.40
lettering	0.2 - 0.3

Related topics...

◀ Working with fabrics
◀ Working with object properties

Adjust column width

Right-click Stitch Effects > Pull Compensation to adjust column width setting.

The **Column Width** setting adjusts the width of columnar shapes, allowing you to change the column width at every point by a constant

amount in the direction of stitching. The purpose is to 'fatten' or 'thin' a column, for example, in order to create 'bold' lettering. See also Format lettering.

💡
Tip: Reduce column width if you need to allow the underlay to extend outside the object boundary.

To adjust column width

◀ Right-click the **Pull Compensation** icon to access object properties.

Select Column Width and enter column width adjustment
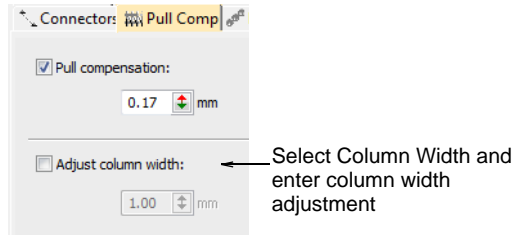
◀ Select the **Column Width** checkbox and adjust as necessary.
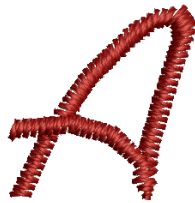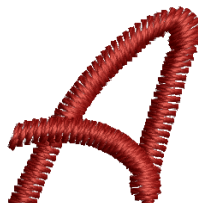
| Column width: -1 | No adjustment | Column width: +1 |
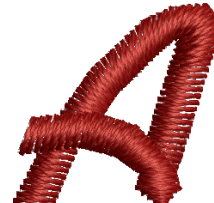
Related topics...

◀ Apply automatic pull compensation

Chapter 19
Optimizing Stitch Quality

When it comes to embroidery production, the current stitch density may not be perfect for certain fabrics or threads. Or you may want to make production cheaper by reducing overall stitch count. After scaling operations, for example, designs may contain small stitches which can damage fabric and cause thread or needle breakage. Sharp corners may cause stitch bunching which can create hard spots in the embroidery and damage fabric or needle.

Embroidery machines have a maximum possible stitch length which is determined by the physical frame movement. If long satin stitches exceed this, they are broken into smaller stitches.

EmbroideryStudio helps you resolve all these issues with a number of specialized techniques for optimizing stitching quality for different design types and production requirements.

Controlling stitch direction

Sometimes you need to control stitching direction in order to minimize trims, push-pull effect, improve stitching efficiency, and/or reinforce outlines. **Backtrack** and **Repeat** allow you to reinforce outlines while specifying stitching direction. The **Reverse Curves** command allows you to reverse stitching direction without duplication.

Reverse stitch direction

> Use Edit > Reverse > Reverse Curves to reverse stitch direction in vector or closed embroidery objects.

Stitching direction can affect embroidery quality because of the push-pull effect. The **Reverse Curves** command lets you control the push-pull effect by reversing stitch direction. It can be applied to open as well as closed outline objects. To reverse stitch direction, select an object and apply **Edit > Reverse Curves**. The command is also available from the popup (right-click) menu.

Column C object with Jagged Edge

Reverse Curve applied
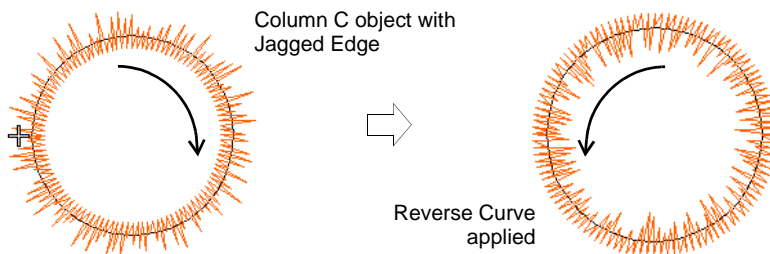
Reverse Curves can be applied to Run, E Stitch, Column C, Motif Run, and Sequin Run. It can also affect the stitching direction of Jagged Edge, Contour Stitch, Tatami offsets, and Flexi Split patterns.

💡
Tip: Vector objects too can be reversed. The effect on vector objects is only visible when they are converted to embroidery.

Reinforce outlines

> Use Traditional Digitizing > Backtrack to reinforce an outline, stitching it in the reverse direction to the original.
>
> Use Traditional Digitizing > Repeat to duplicate an outline in the same direction – typically used with closed shapes.

Use **Backtrack** and **Repeat** to reinforce outlines. Backtrack stitches in reverse direction to the original. It is typically used to make run stitch outlines thicker without creating unwanted connecting stitches. **Repeat** duplicates the original stitching direction and is typically used with closed shapes.

To reinforce outlines

1 Select the outline (or outlines) to reinforce.

2 Click the **Backtrack** or **Repeat** icon as required:

◀ **Backtrack** for open shapes

◀ **Repeat** for closed shapes.

The object is duplicated and placed over the original. It is positioned after the original in the stitching sequence.
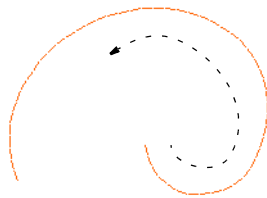
Backtrack for
open shapes
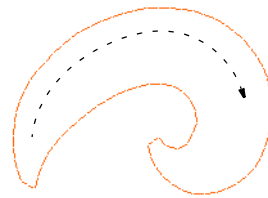
Repeat for
closed shapes

3 Check that the object has been duplicated by using one of the following methods:

◀ Check the stitch count in the **Status Bar**.

◀ Use **Stitch Player**.

◀ Travel through the stitches.

Note: If you use **Repeat** for open shapes, a connecting stitch is inserted from the end to the start of the next object which will require trimming.

Related topics...

◀ Simulate design stitchouts

◀ Viewing stitching sequence

Removing underlying stitching

Use Appliqué > Remove Overlaps to remove underlying layer of stitching in overlapping objects using the selected object as a 'cutter'. Right-click for settings.

Use the **Remove Overlaps** command to remove underlying stitching in overlapping objects. This helps to reduce stitch count and prevent a build-up of stitches.
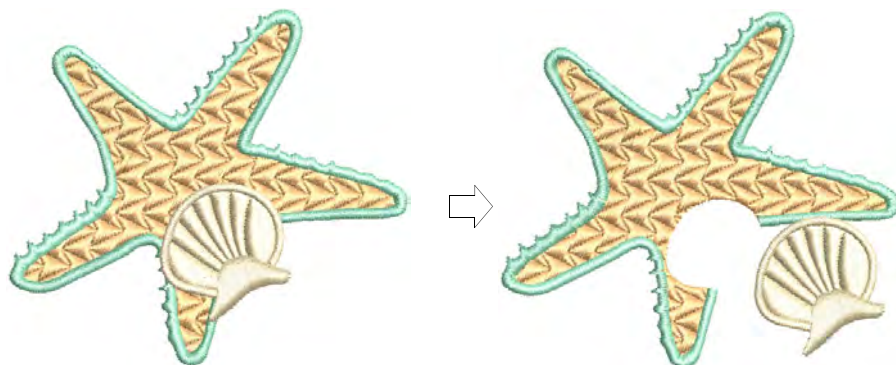
To remove underlying stitching

◄ Select one or more 'cutters'.
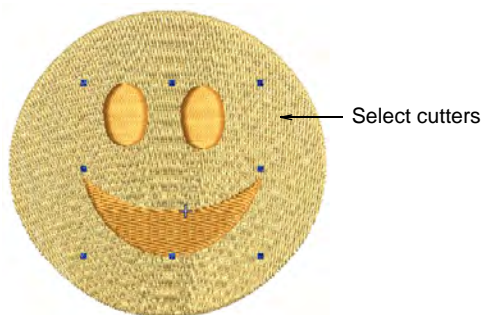
Select cutters

◄ Click the **Remove Overlaps** icon. Underlying stitching is removed using default settings. Alternatively, select **Arrange > Remove Overlaps** to access settings or right-click the tool.

Set 'cutter' values

Enter amount of overlap

Enter size of smallest permissible object
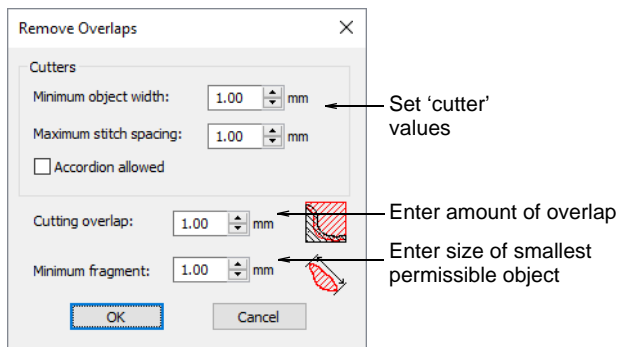
◀ In the **Cutters** panel, adjust minimum object width and maximum stitch spacing as desired.

These settings are useful if, for example, you choose an entire design as a cutter and wish to exclude objects, such as borders or details, less than a certain width. The **Maximum Stitch Spacing** setting allows you to exclude background stitches of a certain density.

◀ Select **Accordion Allowed** to include Accordion Spacing objects. By default, the software treats these objects as backgrounds and excludes them from the cutting operation.

◀ Enter the amount of overlap required in the **Cutting Overlaps** field.

Specify cutting overlap – e.g. 2.0mm
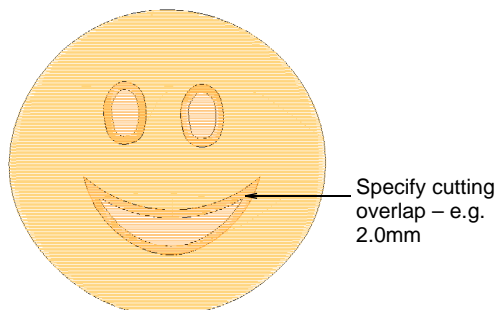
◀ In the **Minimum Fragments** field, enter the size of the smallest object that will be produced after cutting. This eliminates the generation of small objects and unnecessary color changes.

◀ Click **OK**. Underlaying stitching is removed.
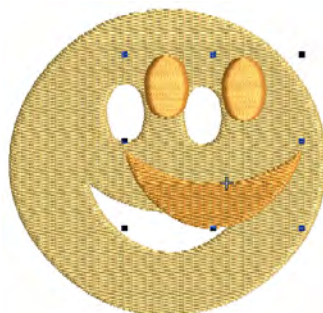
Tip: You can use an entire design as a cutter excluding objects, such as borders or details, less than a certain width.

Related topics...

◀ Create partial cover appliqué

Adjusting stitch angles

Stitch angle adjustments depend on object type. With Complex Fill objects you can set a single stitch angle for the entire object. You can add multiple stitch angles with the **Stitch Angles** tool. You can also adjust stitch angles with the **Reshape Object** tool.
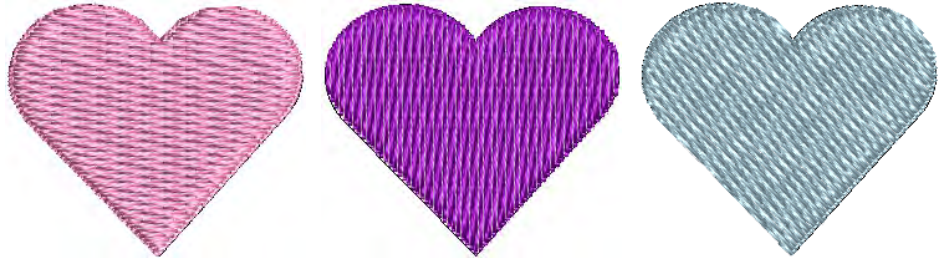
Add angles in stitch angles mode

⚓	Use Graphics Digitizing > Stitch Angles to add stitch angles to selected objects.
⚓	Use Graphics Digitizing > Remove Stitch Angles to remove stitch angles from closed objects with turning stitches.

Add stitch angles to most embroidery objects interactively using the **Stitch Angles** tool. Create embroidery objects by adding stitch angles directly to vector objects.
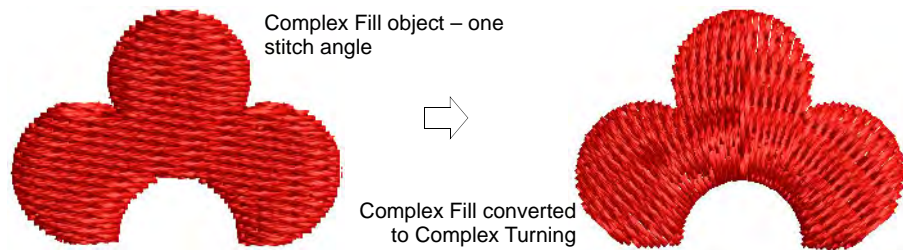
Complex Fill object – one stitch angle

Complex Fill converted to Complex Turning

To add stitch angles in stitch angles mode

1 Select an object and click **Stitch Angles**.

Complex Fill object   Stitch angles added
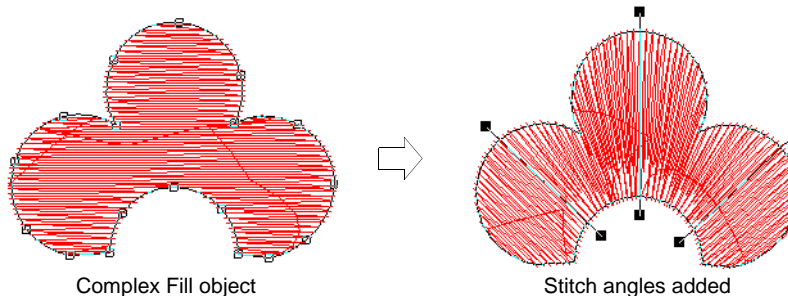
2 Digitize stitch angles so that they intersect two sides of the object.
3 Press **Enter**. The object is displayed in **Reshape** mode.
4 Holding down the **Ctrl** key, click the outline wherever you want to place an additional stitch angle.

Column A object   Column B object
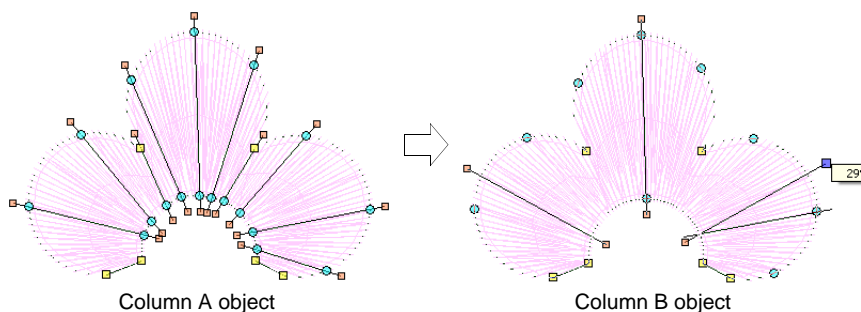
Note: To remove all except the default stitch angle, select the object and click **Remove Stitch Angles**.

Add stitch angles in Reshape mode

Use Reshape > Reshape Object to add stitch angles to selected objects.

Use Reshape Views > Show Stitch Angles to toggle stitch angle display when using the Reshape Object tool.

Adjust or add stitch angles to embroidery objects interactively using the **Reshape Object** tool.

To add stitch angles in Reshape mode

1 Select the object.

2 Click the **Reshape Object** icon and click **Show Stitch Angles** to view only these control points.

Column A object   Column B object
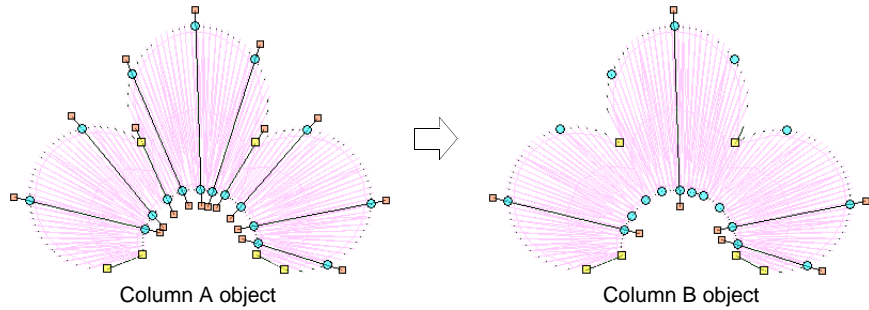
3 Click-and-drag stitch angle points to adjust.

Column A object   Column B object
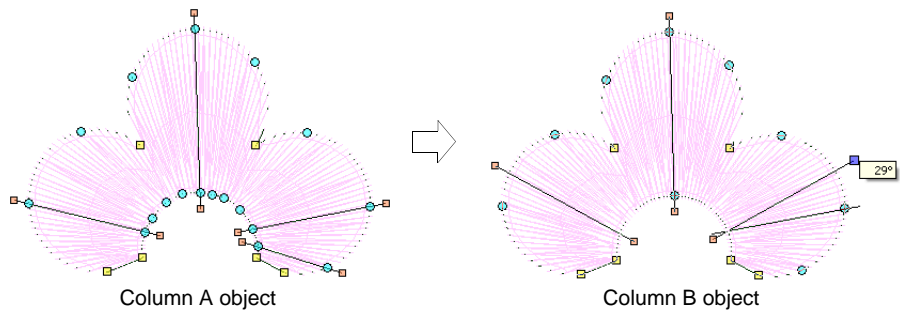
💡
Tip: Column A objects automatically convert to Column B as soon as you add or adjust a stitch angle. You cannot add stitch angles to Complex Fill objects in **Reshape** mode.

4 Holding down the **Ctrl** key, click the outline wherever you want to place an additional stitch angle.

5 Press **Enter**.

Related topics...

◄ Converting designs with CorelDRAW Graphics

Adjusting stitch densities

> Use Stitch > Process Stitches to adjust stitch density of and/or scale the whole or selected parts of a design.

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 make production cheaper by reducing the overall stitch count. The **Process Stitches** feature lets you change the density of all stitch types (except manual

stitch) across the whole or selected parts of a design. It also lets you adjust the density of selected stitch types. You can even use the feature to scale a design.

To adjust overall stitch density

◀ Select the design or objects you want to process.

◀ Click **Process Stitches** icon.

Enter target stitch count →
Select auto spacing →
Adjust stitch densities →
Adjust pull compensation →
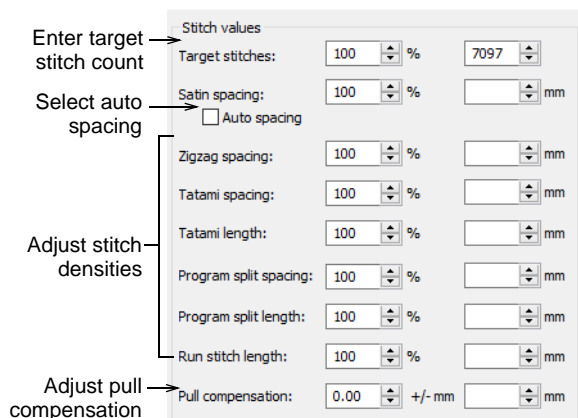
◀ In the **Stitch Values** panel:

  ◀ Enter **Target Stitches** either as a percentage or absolute value. This automatically adjusts density of each stitch type required to achieve the target stitch count.

  ◀ Optionally, adjust density for each stitch type. You can select spacing or length as a percentage of the original – from 10% to 1000% – or as an absolute value – e.g. in millimeters. If you do not want to change the density of a certain stitch type, leave it as 100%.

  ◀ Select the checkbox if you want to use Auto Spacing for satin stitching. If the checkbox is cleared, Auto Spacing will be removed from all selected satin objects and will change to fixed spacing. If the checkbox is dimmed, original Auto Spacing values are retained.

◀ In the **Pull Compensation** field, enter an amount by which to overstitch (or understitch) in order to compensate for fabric pull.

◀ In the **Dimensions** panel, adjust **Width** and **Height** values to scale selected objects.

Adjust width and height settings to scale →
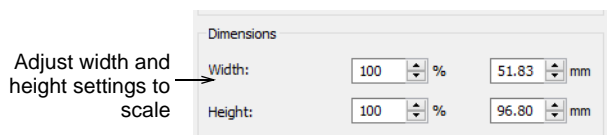
◀ Click **OK** to apply. Stitches for Tatami, Satin, Run, Zigzag, and Program Split objects are regenerated.

Tatami stitches

Program Split

100%: 5195 stitches   20%: 987 stitches   Tatami stitch spacing reduced (density increased)
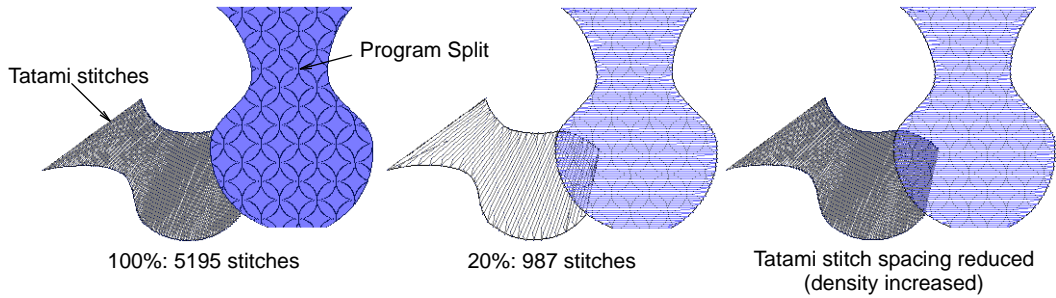
Note: If a design was originally created in EmbroideryStudio, or was converted into objects, changes you make through the **Process Stitches** dialog will change properties of selected objects. You can check changes via the **Object Properties** docker.

Related topics...
◀ Satin stitching
◀ Working with fabrics
◀ Compensating for fabric stretch
◀ Scale objects numerically

Eliminating small stitches

Small stitches can damage fabric and cause thread or needle breakage. Before you stitch out, unwanted small stitches can be automatically removed. The filter can be applied continuously, on output only, or never.

To eliminate small stitches
◀ Select **Design > Remove Small Stitches**.

Remove Small Stitches

Remove Small Stitches
○ Never
○ On output   Minimum stitch length:
◉ Always   [0.3] ⬍ mm   → Enter minimum stitch length to keep

        OK   Cancel
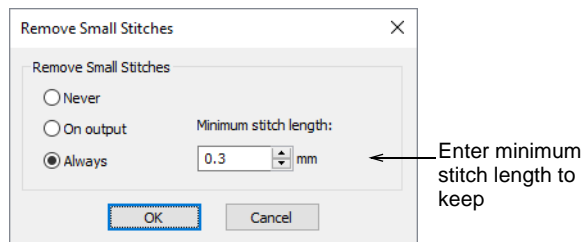
◀ Choose your preferred option:
  ◀ When set to 'Always', the filter will be automatically applied in the background whenever objects are edited or digitized.

◀ When set to 'On Output', the filter is only applied when printing or outputting files.

◀ Enter the minimum stitch length you want to preserve.

◀ Click **OK** to confirm.

◀ Check the **Status Bar** for the new stitch count.

Related topics...
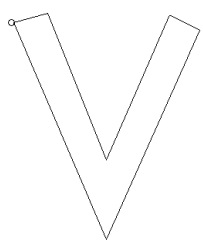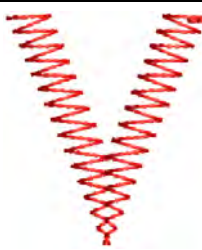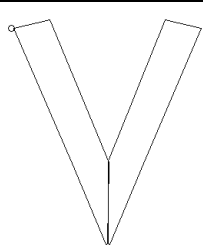
◀ Other general options
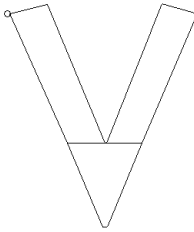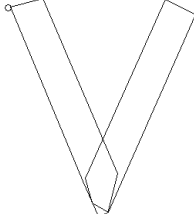
Controlling corner stitching

The quality and style 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. The Smart Corners feature helps you control sharp corners in Column A and Column C objects.

Corner handling methods
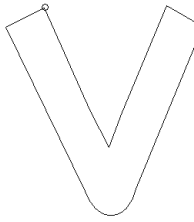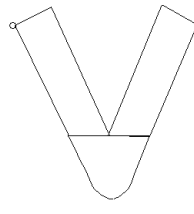
The following approaches can apply to both appliqué and standard satin (Column C) columns.

Method	Sample	Outline	Description
No corner			Stitches curve around corners – standard Column C corner handling.
Mitre corner			Corners are formed by two segments that join in a sharp point.

Method	Sample	Outline	Description
Cap corner			Corner is capped by an extra segment – cap stitching remains parallel to the column.
Lap corner			Corner broken into two segments.

Corner rounding

A **Round Sharp Corners** option is available for Column C objects which can also be applied to sharp corners. The option is only available in conjunction with the Smart Corners effect. It is typically used with the **Cap Corner** option.

Method	Sample	Outline	Description
Rounded corner			Corner is sewn in one segment, with turning stitching, forming a round corner on the outer boundary.
Rounded cap corner			The corner is sewn in three segments forming a round corner on the outside boundary.

Apply Smart Corners

 Use Stitch Effects > Mitre Corners to create sharp lines at intersections of two columns. Right-click to adjust settings.

 Use Stitch Effects > Cap Corners with very sharp corners to generate fewer stitches. Right-click to adjust settings.

 Use Stitch Effects > Lap Corners for 'Tidori' style stitching. Right-click to adjust settings.

Use the **Smart Corners** feature to reduce the number of stitches and risk of bunched, distorted embroidery in sharp corners. **Mitre Corners** creates a sharp line at the intersection of two columns. Use it primarily for corner angles of 20° to 45°. **Cap Corners** is suitable for very sharp corners as it generates fewer stitches. **Lap Corners** is suitable for 'Tidori' style stitching. It can be applied to Column C and appliqué objects.

To apply Smart Corners

◀ Click a **Smart Corners** icon with or without objects selected. With no objects selected, smart corners are automatically generated for all new objects. Corners are based on current properties.

Lap corners   Mitre corners   Cap corners
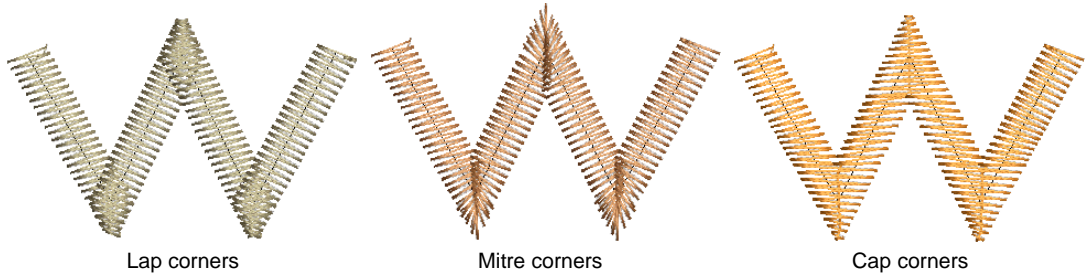
◀ Click again to turn off the effect.

Note: You can also combine **Smart Corners** in Column C objects with sharp corner rounding.

Related topics...

◀ Adjust smart corner settings
◀ Round sharp corners
◀ Appliqué Embroidery

Adjust smart corner settings

 Use Stitch Effects > Mitre Corners to create sharp lines at intersections of two columns. Right-click to adjust settings.

 Use Stitch Effects > Cap Corners with very sharp corners to generate fewer stitches. Right-click to adjust settings.

 Use Stitch Effects > Lap Corners for 'Tidori' style stitching. Right-click to adjust settings.

You can set different angles at which **Smart Corners** will be applied, and specify overlap and stitch length allowances. Right-click a **Smart Corners** icon to access object properties.
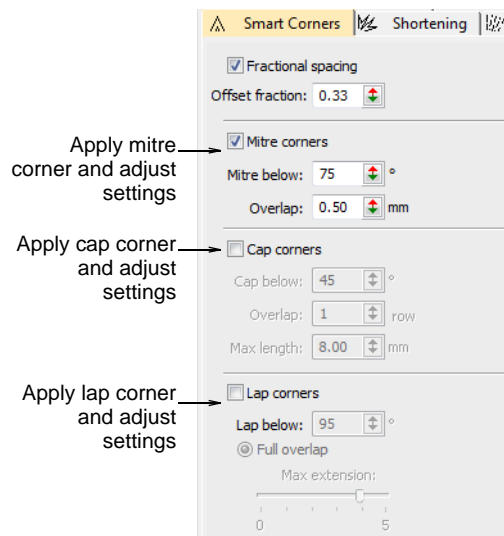
Cap corners

Cap provides the following settings:

◀ **Cap below**: angle below which to apply capped corners – any corners greater than this are not capped. The default is cap below 20°.
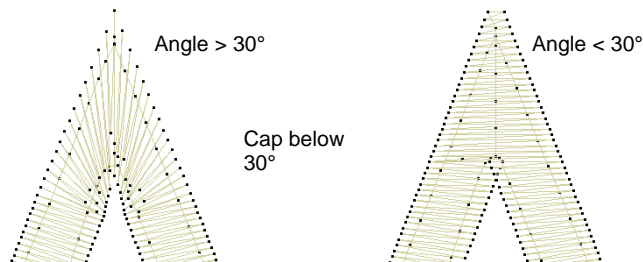
◄ **Overlap**: number of overlapping rows to allow where the sections of the cap join.

Capping
overlap: 1

Capping
overlap: 8

Capping overlap
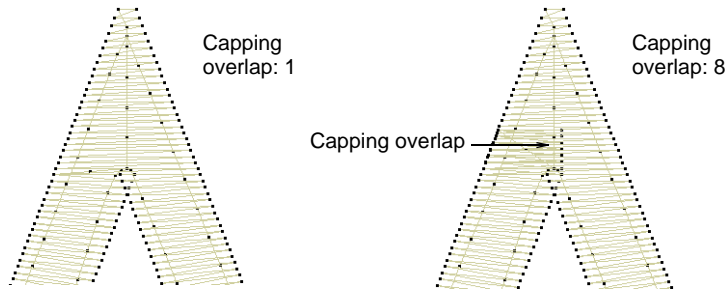
◄ **Max length**: maximum length of cap stitches. **Cap Corners** with stitches exceeding this length will become **Mitre Corners**. This prevents long and short stitches appearing next to each other.

Mitre corners

Mitre provides the following settings:

◄ **Mitre below**: angle below which to apply **Mitre Corner** – any corners greater than this are not mitred. The default is lap below 45°.

Angle > 40°

Angle < 40°

Mitre below
angle: 40°
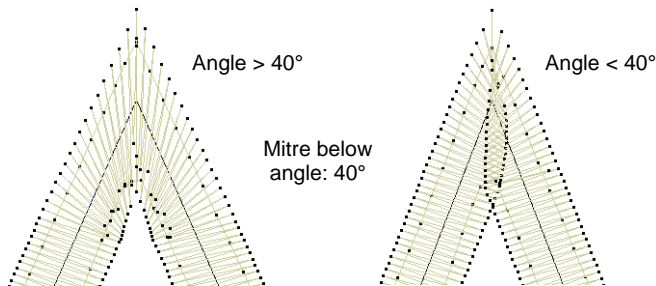
◄ **Overlap**: distance by which stitches are allowed to overlap in the center of the corner.

Mitre overlap:
0.5 mm

Mitre overlap:
1.5 mm
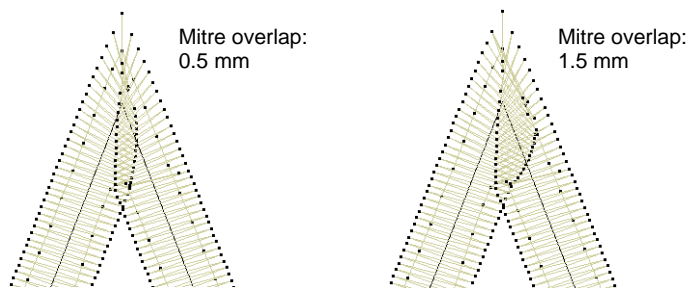
Tip: You can use **Mitre Corner** and **Cap Corner** options together. For example, you may want a corner less than 75° to be mitred but less than 45° to be capped.

Lap corners

The **Lap Corners** feature provides good technical stitching in tight corners, as well as creative stitching effects. You have a choice of full overlap or split overlap methods, object-by-object. The split overlap method provides a variable amount of overlap at the corner. The **Lap Below** setting applies to either method and defines the angle below which **Lap Corner** will take effect. Any corners greater than this are not lapped. The default is lap below 110°.

Lap below: 45°

Not lapped

Full overlap,
Angle < 45°

Split overlap,
Angle < 45°

Angle > 45°
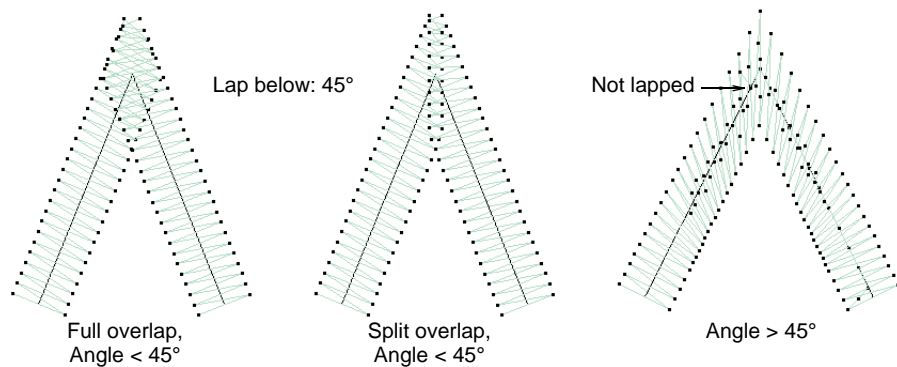
With scalloped shapes, lap corners will always be applied since the corner angle approaches zero.

Lap corners
always applied
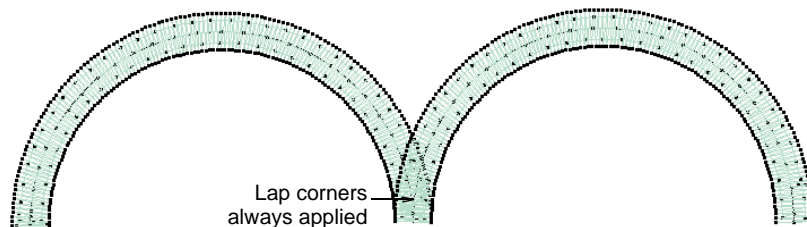
Full overlap

Full Overlap provides a **Max Extension** setting. Technically, this is the extension of the corner point from the curve as a percentage of width. When set to zero, this setting achieves a blunting effect.

Extension = 0

Extension > 0
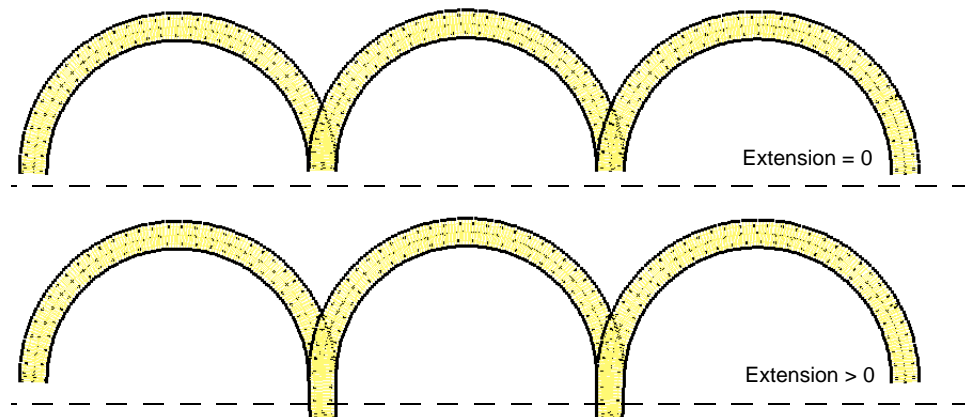
Split overlap

When enabled, **Split Overlap** provides the following settings:

‹ **Overlap**: This setting provides a selectable amount of overlap between the two parts of a lapped corner. The effect is similar to a mitre corner but with different stitching.

Lap below: 45°

Overlap: 0.5mm   Overlap: 2mm   Overlap: 3mm
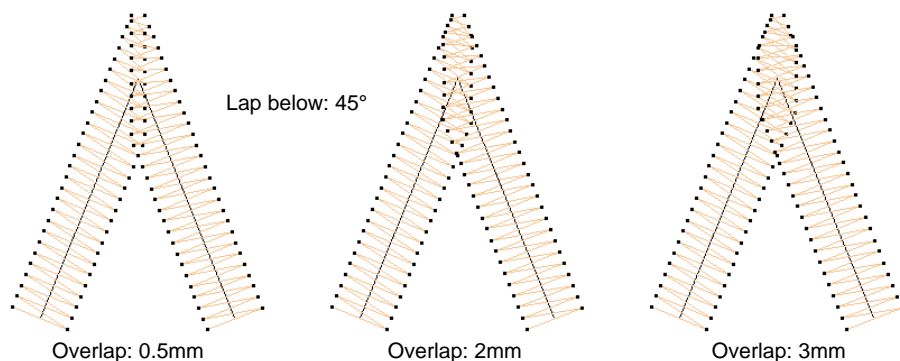
‹ **Max curve extension**: extension of corner point from curve as a percentage of width. Curve shapes can have flat full or selectable

pointed split overlaps. This parameter achieves a blunting effect, with similar practical application as round sharp corners.

Extension = 0

Extension > 0
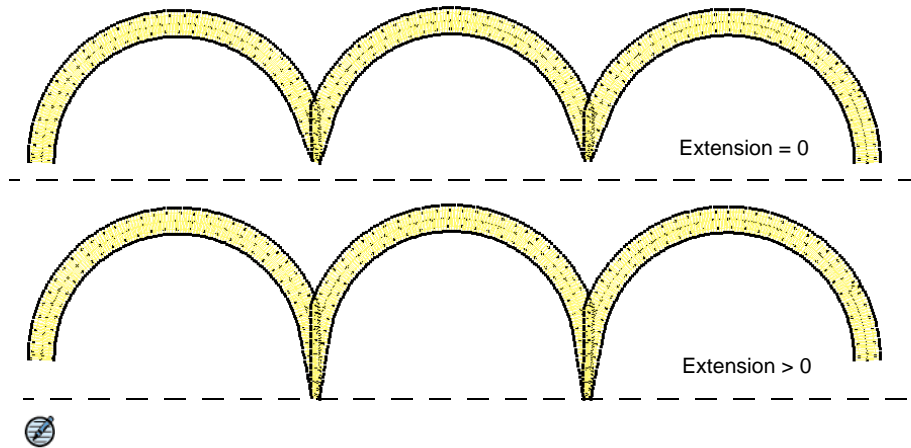
Note: The **Lap Corners** effect is incompatible with mitre or cap corners. Turning it on will switch off the other two.

Related topics...

◀ Set corner fractions

Round sharp corners

Right-click Traditional Digitizing > Column C to set sharp corner rounding.

A **Round Sharp Corners** option is available for Column C objects and can be applied to sharp corners. The option is only available in conjunction with the Smart Corners effect. It is typically used with the **Cap Corner** option.

To round sharp corners

1 Double-click a Column C object or right-click the tool to access object properties.

Select Round
Sharp Corners
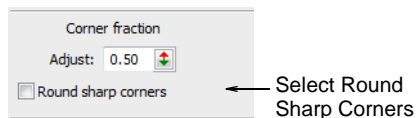
2 Select the **Round Sharp Corners** checkbox.

3 Press **Enter** or click **Apply**.
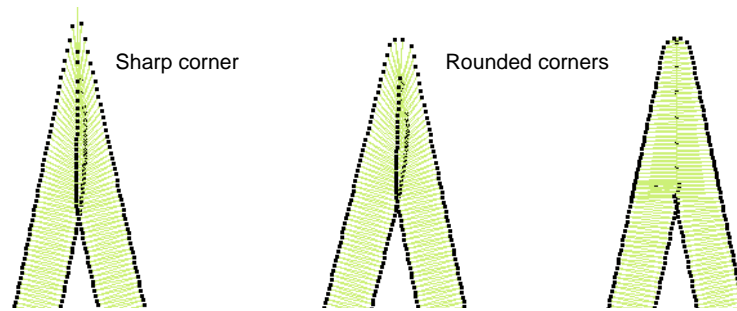
Sharp corner

Rounded corners

Reducing 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. The longer the stitches, the worse the problem.

With **Fractional Spacing**, EmbroideryStudio calculates spacing settings from a specified point called the 'offset fraction'. Changing it adjusts stitch spacing at inside and outside edges.

Offset fraction: 0.00
0.33
0.66
1.00

Outside edge
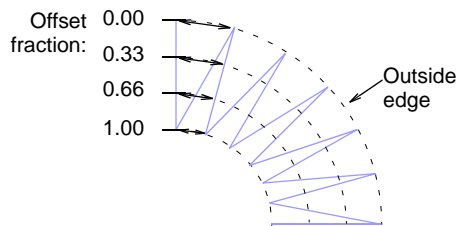
Stitch **Shortening** reduces the length of some stitches in sharp turns so that needle penetrations are distributed evenly, creating smoother stitching.

Stitch bunching reduced on curves
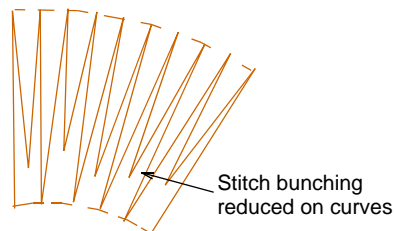
Apply fractional spacing

> ⊭ Use Stitch Effects > Fractional Spacing to even out stitch density along outside and inside edges. Right-click to adjust fractional spacing settings.

Apply fractional spacing to curved shapes to even out stitch density along outside and inside edges. Fractional spacing is particularly useful for columns of satin stitches with sharp turns. For best results, combine stitch shortening and fractional spacing effects.
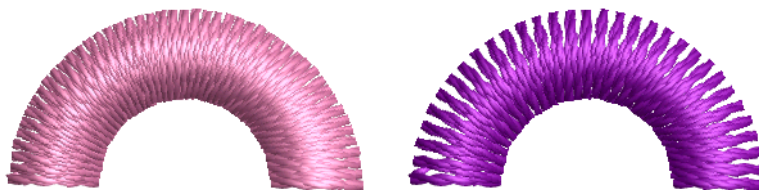
To apply fractional spacing

◄ Right-click the **Fractional Spacing** icon with or without objects selected to access object properties.
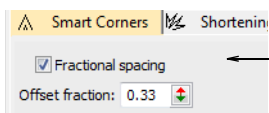
⟵ Select fractional spacing and enter an offset fraction

◄ Select the **Fractional Spacing** checkbox.

◄ In the **Offset Fraction** field, enter an offset as a fraction of column width, where the outside edge is **0.00** and inside edge **1.00**.

59 stitches — Offset fraction 0.00

49 stitches — Offset fraction 0.33

43 stitches — Offset fraction 0.66
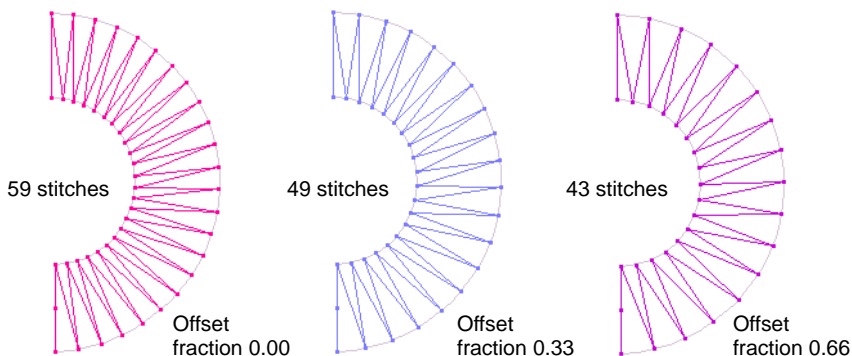
Tip: An offset fraction of 0.33 generates fewer stitches than standard spacing, reducing bunching along the inside edge. An offset fraction of 0.66 eliminates bunching on the inside edge, but may produce insufficient stitches to cover the fabric.

Apply stitch shortening

> ![icon] Use Stitch Effects > Shortening to reduce stitch bunching in tight curves by shortening some stitches on the inside edge. Right-click to adjust stitch shortening settings.

Apply stitch shortening to sharp corners to decrease density on the inside edge. Default settings suit most designs. Advanced users can override with custom settings.
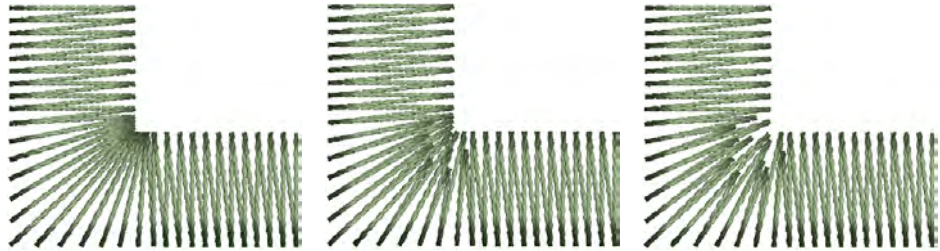
To apply stitch shortening

◀ Right-click the **Shortening** icon with or without objects selected to access object properties.

Select shortening
Adjust shortening settings
Access further settings
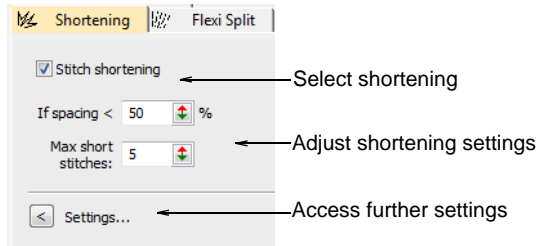
◀ In the **If spacing <** field, enter the minimum spacing permitted between stitches (as % of nominal spacing) before automatic shortening takes effect.

If spacing < 90%   If spacing < 40%
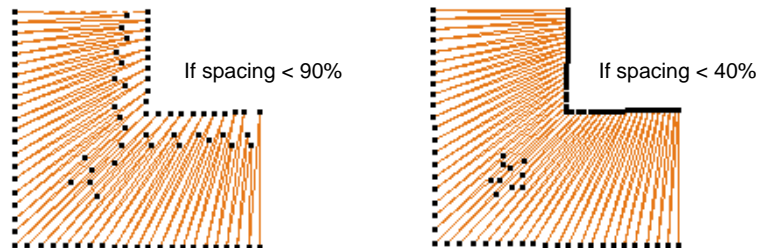
◀ Enter the maximum number of consecutive short stitches to allow, up to a limit of five.

A higher number allows smoother distribution of needle penetrations in tight curves and reduces stitch bunching.

Max no. of short stitches: 1

Max no. of short stitches: 5
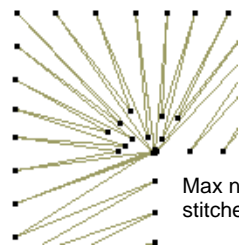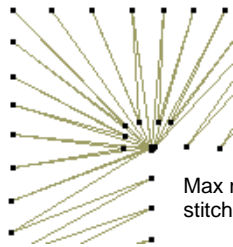
◀ Click the **Settings** button. The **Stitch Shortening Settings** dialog opens. Here you can define individual lengths of consecutive short stitches as a percentage of the original.

Define length of short stitches relative to original stitch length

Randomize shortening pattern

◀ A value of 80% means that stitches are shortened **to** 80% of the original length, not **by** 80%. The smaller the percentage, the shorter the stitch.

Max no. of short stitches: 1
Shorten stitch length to: 80%

Max no. of short stitches: 1
Shorten stitch length to: 50%
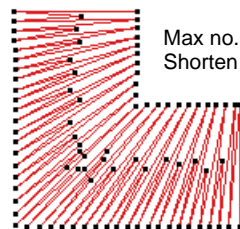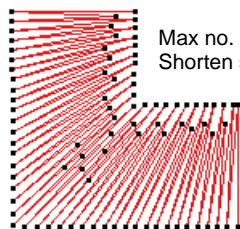
◀ If you allow three short stitches, you need only fill in the first three rows. If you allow five short stitches, fill in all five rows. If only one short stitch is generated between normal stitches, the value in Row 1 will apply. If two consecutive short stitches are generated, the

values in Row 2 will apply to 1st and 2nd stitch respectively. And so on up the scale.
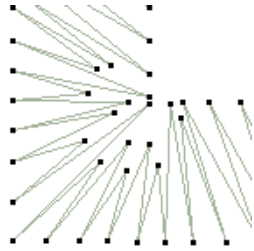
Max no. of short stitches: 5
Shorten stitch length to: 50%
Row 1: 90
Row 2: 70 60
Row 3: 55 85 55
Row 4: 55 85 75 55
Row 5: 55 70 45 70 55
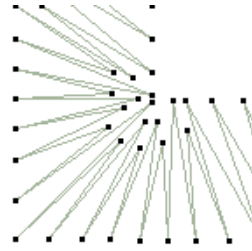
Max no. of short stitches: 5
Shorten stitch length to: 50%
Row 1: 80
Row 2: 85 70
Row 3: 70 90 70
Row 4: 70 90 80 70
Row 5: 70 85 65 85 70

💡
Tip: For best results use a jagged pattern between consecutive stitches.

◀ Select the **Randomize** checkbox to randomize the shortening pattern values. This will eliminate unwanted lines appearing in regular curves.
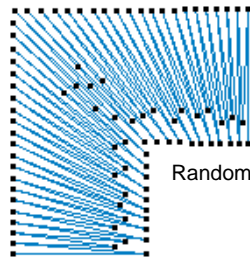
Randomize ON
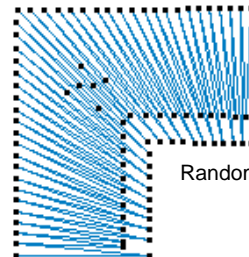
Randomize OFF

Optimizing long satin stitches

Embroidery machines have a maximum possible stitch length which is determined by the physical frame movement. If a stitch exceeds this, it is generally broken into smaller stitches of equal length. The line formed by needle penetrations can affect the appearance of the embroidery, especially satin fills. **Auto Split** breaks 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.
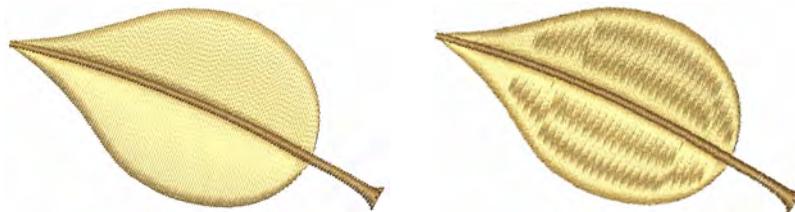
If you want to preserve the satin effect – for example, if only a few stitches are too long – you can use **Auto Jump** instead. This preserves long stitches in an object by turning them into a series of jumps. **Auto Split** must be turned off for **Auto Jump** to take effect. **Auto Jump** is applied by default to connectors.
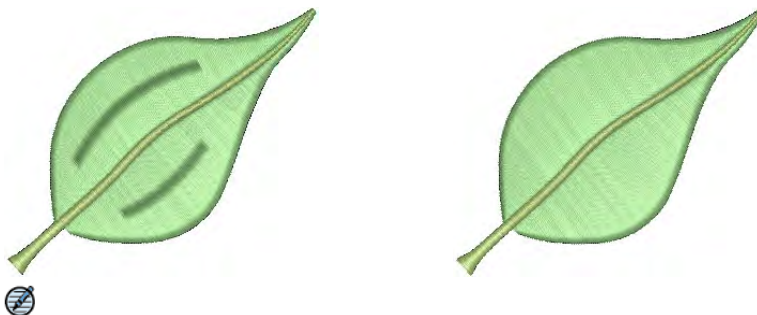
Note: The maximum frame movement is defined in the software by format values. See Standard machine formats for details.

Split satin stitches

> **WW** Right-click Fill Stitch Types > Satin to apply Auto Split to new or selected satin objects.

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

To split satin stitches

1 Click the **Satin** icon with or without objects selected to access object properties.

— Select Auto Split

— Adjust max and min stitch lengths
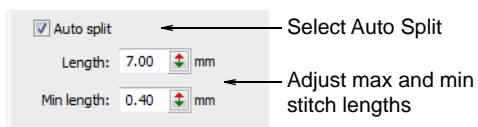
2 Select the **Auto Split** checkbox.

3 Enter a maximum satin stitch length to allow before **Auto Split** is applied.

Stitches that exceed this value will be split into smaller stitches. This value can be smaller than the maximum stitch generally used in the design.
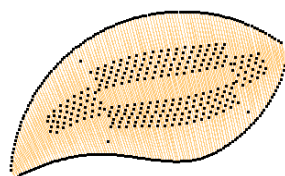
Length: 5 mm
Min length: 0.4 mm
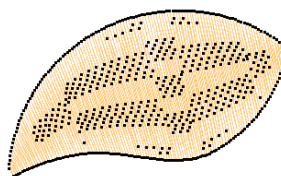
Length: 4 mm
Min length: 0.4 mm
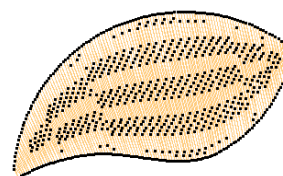
Length: 3 mm
Min length: 0.4 mm

Tip: Use a length of 7.00 mm to preserve the satin effect.

4 In the **Min length** field, enter the shortest stitch that can be generated when using **Auto Split**.
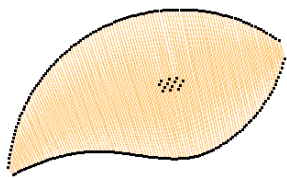
Length: 4 mm
Min length: 5 mm
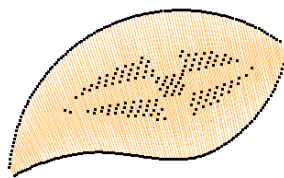
Length: 4 mm
Min length: 3 mm
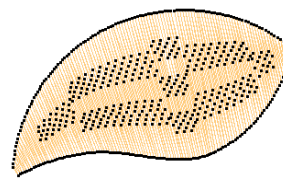
Length: 4 mm
Min length: 1 mm

5 Press **Enter** or click **Apply**.

💡

Tip: As an alternative to **Auto Split**, try a textured tatami fill or Program Split. Or, use **User Defined Split** to manage split lines in satin fills.

| With Tatami | With Program Split | With User Defined Split |

Related topics…

◀ Use jumps as connectors
◀ Patterned Stitching

Preserve long stitches

▦ Use Stitch Effects > Auto Jump to preserve long stitches in new and selected objects. Right-click to adjust settings.

Apply **Auto Jump** to satin objects with stitches that exceed the maximum stitch length. If the cover stitches are short, extending them with a jump makes them looser and thus more effectively raised off the fabric. **Auto Jump** can be used, for example, with manually digitized underlays. It can also be used to create quilted effects, for example, by applying it to satin areas that are over-stitched with Run stitch or Motif Fill.
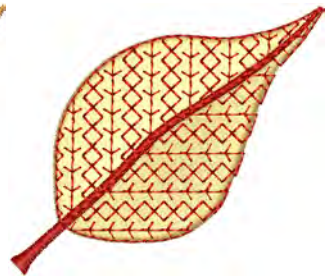
To preserve long stitches

1 Right-click the **Auto Jump** icon with or without objects selected to access object properties.

Select Auto Jump

Enter maximum stitch and jump length settings

Select calculation method
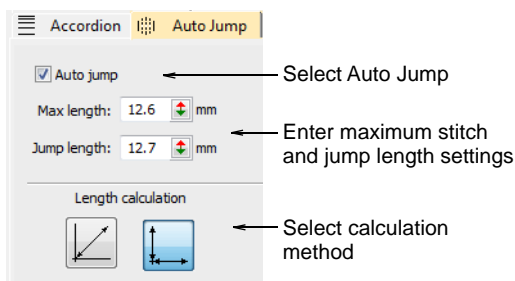
2 Select the **Auto Jump** checkbox.

3 In the **Max length** field, enter the maximum stitch length to allow. Stitches exceeding this value will have **Auto Jump** applied.

Note: This value must be smaller than or equal to the maximum stitch length possible for the selected format.

4 Adjust **Jump length** as required.

Smaller jumps increase the time required to stitch out, but move the frame more smoothly across the design.

5 Choose a **Length calculation** method:

Option	Function
Along radius	Measures the distance between two consecutive needle penetrations.
Along axis	Measures either the horizontal or vertical movement required for the stitch.
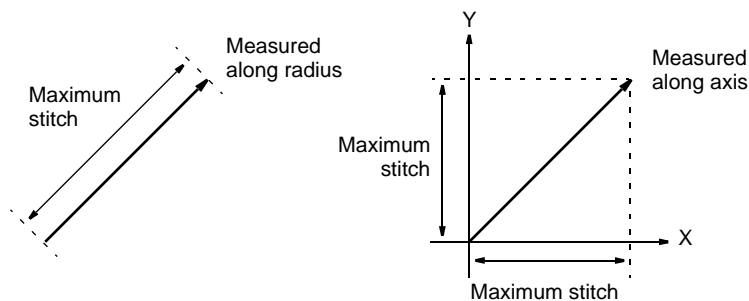
The option you select depends on the way your machine measures stitch length. See your machine documentation for details.

6 Press **Enter** or click **Apply**.

NO jump stitches – additional needle penetrations

Jump stitches – not trimmed

⚠️
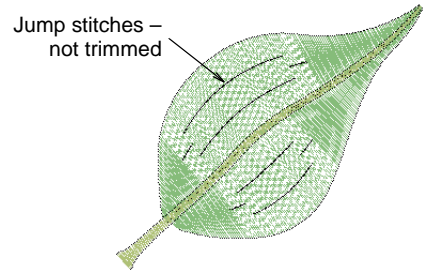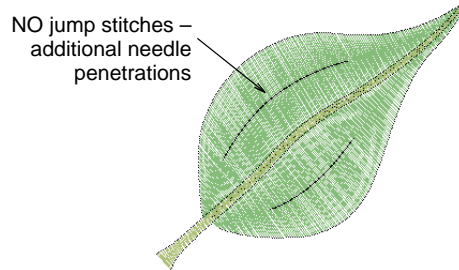
Caution: Many machines trim by jumps. Thus, to prevent the trimmers being activated, usually only one or two jumps between needle penetrations may be used.

Related topics...

◀ Stabilizing with automatic underlay
◀ Trim functions
◀ Standard machine formats

Chapter 20
Embroidery Connectors

Connectors link objects in a design. They can be run stitches or jumps. Travel runs are also used to connect segments **within** filled objects.

You can use automatic settings to generate connectors, trims and tie-offs, or add them manually. You can change connector settings for a whole design or selected objects. If you prefer to add tie-offs and trims as you digitize, you can turn off automatic connectors altogether. For Schiffli work, for example, you are advised to add connectors manually rather than rely on automatic settings.

EmbroideryStudio also allows you to create 'branched objects'. Like-objects are thereby resequenced, connectors minimized, components grouped, and stitches regenerated. Underlay can be applied to all.

You can also set first and last stitches of a design. This makes it easy to position the needle before stitching, and reduces the chance of it hitting the frame.

This section describes how to add connectors, tie-offs and trims to your designs. It also describes adjusting settings for automatic connectors, including the stitch length for travel runs. It also deals with setting automatic start and end points.

Types of connectors

The type of connector you use depends on whether you want it to be visible in the final design. The default connector setting in EmbroideryStudio is for jumps.

Jumps

Jumps move the frame from one part of the design to another without needle penetrations. You can use automatic jumps as connectors between embroidery objects. The connecting thread generally needs to be tied-off and trimmed. The default connector jump length is the same as that set for Auto Jump.

Tip: You can also digitize jumps manually using the **Penetrations** function or with **Manual** stitch.

Runs

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. If objects are adjacent and connectors will be hidden, they can be used. You can change the stitch length of travel runs to ensure they do not protrude from the cover stitching. You may also adjust the travel run length to reduce the stitch count.

Note: While you can control the properties of run connectors **between** objects, you generally cannot control connectors **within** objects. Lettering and motif run objects are the exception.

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.

Trims

If you are using a machine with an automatic trimmer, the trim function 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.
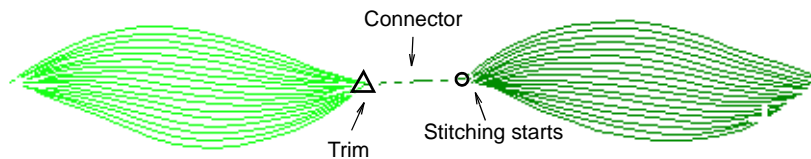
Related topics...

◄ Add jumps with penetrations off
◄ Digitizing manual stitches
◄ Adjusting travel run stitch length

Using automatic connectors

EmbroideryStudio lets you generate automatic connectors based on settings in the **Object Properties > Connectors** docker. You can change connector settings for a whole design or selected objects. If you prefer to add tie-offs and trims as you digitize, you can turn off automatic connectors altogether. For Schiffli work, you are advised to add connectors manually rather than rely on the automatic settings. Automatic connectors are turned off in the Schiffli template. See Adding connectors manually for details.

💡
Tip: The **Branching** 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. See Automatic branching for details.

Use jumps as connectors

📑 Use Docker > Object Properties to toggle the Object Properties docker on/off. Use it to set jumps as connectors.

You can use automatic jumps as connectors between embroidery objects. Jumps move the frame from one part of the design to another without needle penetrations. You generally need to tie-off and trim the connecting thread.

To use jumps as connectors

1 Click the **Object Properties** icon and select the **Connectors** tab.

Select connector method

Select 'Jump' and enter distance

Adjust 'trim after' settings

Adjust 'tie-in' and 'tie-off' settings
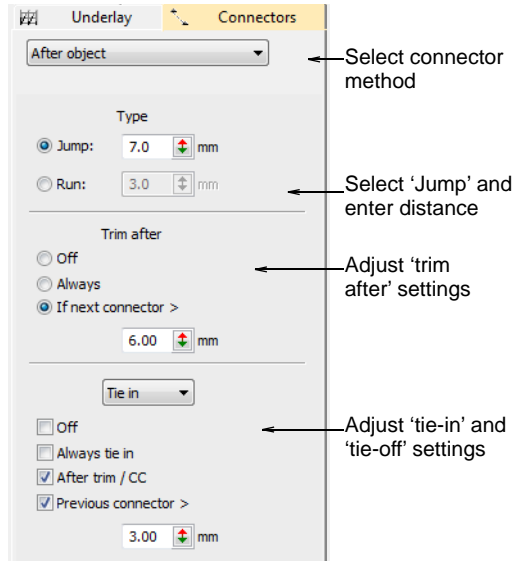
2 Select a connector method:

Option	Function
After object	Adjust connectors immediately following the current object.
Inside object	Adjust connectors joining components of lettering objects or motif runs. This setting also applies to disconnected parts of branched objects. It does not apply to segments within an object.

3 Select **Jump** and enter a distance for each frame movement. Shorter jump values generally improve stitch quality and reduce wear on the machine but may increase stitch-out time.

4 Adjust trims and ties as required:

Option	Function
Trim after	You can choose to turn off automatic trimming, to always trim connecting stitches, or to trim only when the connecting stitch is longer than a specified value.
Tie in	Tie-in stitches are inserted at the start of objects to prevent stitches from unraveling. You generally use them when the previous connector is trimmed.

Option	Function
Tie off	With trims, stitches need to be tied off so the thread can be trimmed without unraveling. Select between automatic tie-off methods to set preferred default.

💡
Tip: You can also digitize jumps manually using the **Penetrations** function.

Related topics...

◀ Adjusting travel run stitch length
◀ Stitch & jump length settings
◀ Add jumps with penetrations off

Use runs as connectors

> 📋 Use Docker > Object Properties to toggle the Object Properties docker on/off. Use it to set runs as connectors.

You can use runs of single stitches to connect objects in a design. Because runs cannot be trimmed, they are visible on the final embroidery, unless another object is digitized to cover them.
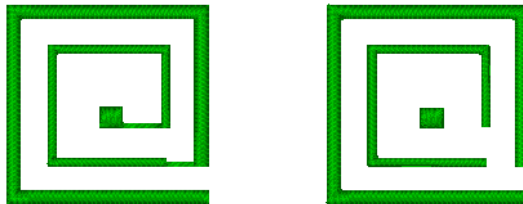
To use runs as connectors

1 Click the **Object Properties** icon and select the **Connectors** tab.

Select connector method

Select Run and adjust stitch length

Adjust tie-in settings
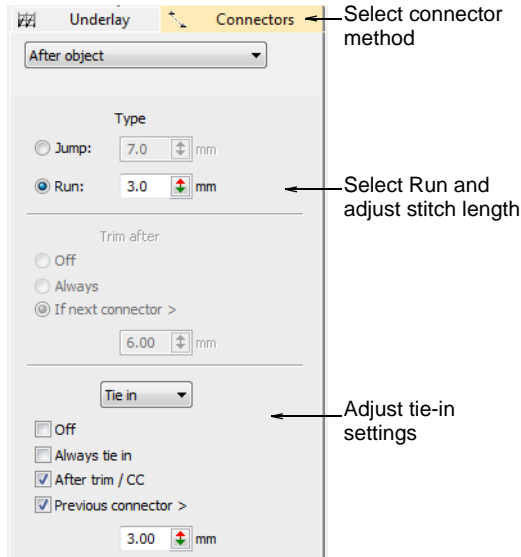
2 Select a connector method:

Option	Function
After object	Allows you to adjust settings of connectors immediately following the current object.
Inside object	Allows you to adjust settings of connectors joining letters within a lettering object, and motifs within motif runs. This setting also applies to disconnected parts of branched objects. It does not apply to segments within an object.

3 Select **Run** and enter a length for the connecting run stitches.

4 Adjust **Tie In** settings as required. The **Tie Off** and **Trim After** options are disabled as they do not apply to travel runs.

Related topics...

◀ Adjusting travel run stitch length

Automatic tie-in settings

Use Docker > Object Properties to toggle the Object Properties docker on/off.

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-in with four stitches
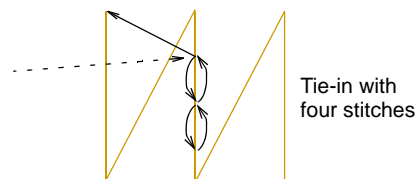
To adjust tie-in settings

1 Click the **Object Properties** icon.

2 Select the **Connectors** tab.

Adjust tie-in settings
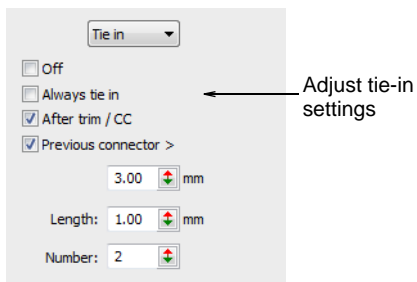
3 Select **Tie In** from the list and select a tie-in option:

Option	Function
Off	No tie-ins are inserted.
Always tie in	Tie-ins are inserted before the object.
After Trim/CC	Tie-ins are inserted after trims and color changes.
Previous connector	Tie-ins are inserted when the previous connector exceeds the length you specify.

4 Set tie-in values:

Option	Function
Length	Determines length of tie-in stitches.
Number	Determines number of tie-in stitches to generate.

Automatic tie-off settings

 Use Docker > Object Properties to toggle the Object Properties docker on/off.

With trims, stitches need to be tied off so the thread can be trimmed without unraveling. Select between automatic tie-off methods to set preferred default.

Method 1 with four stitches

Method 1 with two stitches

Method 3 with 2 stitches

Method 2 with four stitches

Method 2 is generally more visually pleasing on smaller objects and satin columns. With this method, however, stitches sew on top of each other with the consequent risk of thread breakage. On larger areas, the safer alternative is Method 1. Method 3 provides an alternative method for hiding tie-offs along existing stitch lines.

💡
Tip: For narrow shapes or columns – e.g. small lettering – use only one tie-off stitch. You may also decrease the stitch length.

To adjust tie-off settings

1 Click the **Object Properties** icon and select the **Connectors** tab.

Adjust tie-off settings

Select a tie-off method
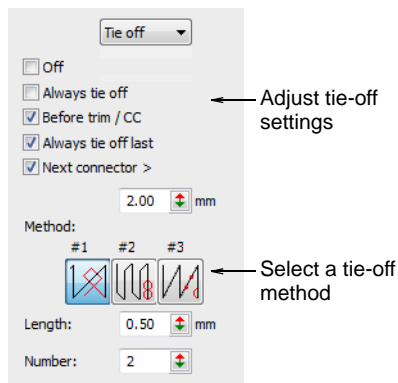
2 In the **Tie Off** panel, select a tie-off option:

Option	Function
Off	No tie-off is inserted. By selecting this option, you need to add tie-off functions manually. See Add tie-offs for details.
Always tie off	A tie-off is inserted after the object.
Before trim / color change	A tie-off is inserted before a trim or color change.
Always tie off last	A tie-off is inserted if the object is the last one in the design.
Next connector longer than	A tie-off is inserted if the next connector exceeds the specified length.

3 Select a default tie-off method. The system will apply this method where it can but switch where necessary, depending on stitch spacing and type.

Method	Function
1	Adds a specified number of small stitches between the last two stitching lines. Generally used with dense fills.
2	Adds a specified number of small stitches up and back down the last stitching line. Generally used with open fills where it is less visible.
3	Splits the second-last stitching line into three equal stitches. Also adds a specified number of small stitches back up the last stitching line.

4 Set the tie-off values:

Option	Function
Length	Determines length of tie-off stitches.
Number	Determines number of tie-off stitches to generate.

Automatic trim settings

Use Docker > Object Properties to toggle the Object Properties docker on/off.

You can choose to turn off automatic trimming, to always trim connecting stitches, or to trim only when the connecting stitch is longer than a specified value.

To adjust automatic trim settings

1 Click the **Object Properties** icon and select the **Connectors** tab.

Adjust 'trim after' settings
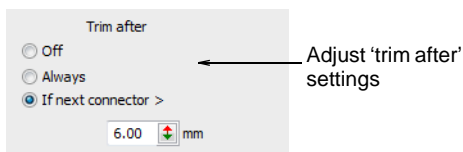
2 In the **Trim After** panel, select a trim option:

Option	Function
Off	No trims are inserted. This feature is useful if trimming causes your machine to slow down, or the needle to lose the thread. You can either add trim functions yourself, or trim the final embroidery by hand.
Always trim	Trims are inserted after the object.
Trim if next connector is longer than	Trims are inserted if the next connector exceeds the length you specify.

Tip: Usually, connectors shorter than 3 mm are not visible on the final embroidery. You may sometimes require a smaller value – e.g. if the thread color contrasts with the background color.

Adding connectors manually

You can add tie-offs and trims to a design manually using the **Tie Off**, **Trim** and **Empty Stitch** tools. While generally not recommended and less efficient than using automatic connectors, this method does give you more control over the final design. For example, some machine formats are unable to read functions that appear on a normal stitch. For these machines, you need to add trim, tie-off and other machine functions to an **Empty Stitch** or **Empty Jump**. You may also need to add one or more empty stitches or empty jumps to either side of a function for the machine to read it correctly.

Note: For Schiffli work, you are advised to add connectors manually rather than rely on the automatic settings. Automatic connectors are turned off by default in the Schiffli template.

Add tie-offs

> Click Function > Insert Tie-Off to insert a tie-off.

You can add tie-offs in your design using the **Tie-Off** tool. This provides a semi-automated technique for adding tie-offs as an alternative to digitizing them with manual stitches. Tie-offs are usually added before a trim at the end of an object. Generally you will follow a tie-off with a trim.

To add a tie-off

1 Travel to the object you want to tie-off.

2 Click the **Insert Tie-off** icon. A **Tie-off** function is inserted.

The default number of tie-off stitches is two. This means the needle backtracks twice and returns to the insertion point. Adjust this value in the **Object Properties > Connectors** docker.

💡
Tip: You can also insert machine functions manually using the **Insert Machine Function** dialog.

Related topics...

◀ Viewing stitching sequence
◀ Add trims
◀ Insert machine functions manually
◀ Automatic tie-off settings

Add trims

> Click Function > Insert Trim to insert a trim.

You can add trims in your design using the **Trim** tool. When you add a trim in this way, the trim function is added to the current stitch. Some machines require empty stitches or empty jumps on either side of the trim. If this is the case for the machine you want to stitch to, you will need to insert them.

💡
Tip: Make sure that all stitches you trim have been tied in and off, otherwise stitches will not be secured.

To add a trim

1 Travel to the needle position where you want to trim the thread.

2 Click the **Insert Trim** icon. A trim function is inserted at the current needle position.
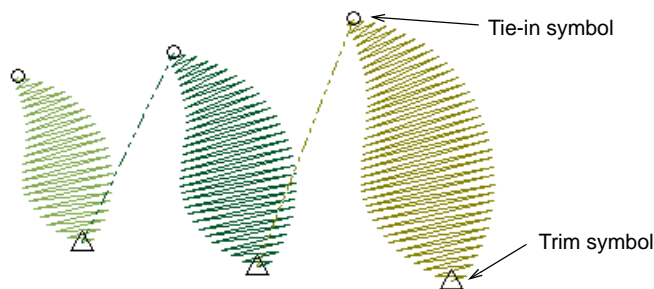
Tie-in symbol

Trim symbol

💡
Tip: You can also insert machine functions manually using the **Insert Machine Function** dialog.

Related topics...

◂ Travel through designs

◂ Insert machine functions manually

Add empty stitches & jumps

⬚	Click Function > Insert Empty Stitch to insert an empty stitch.
⬚	Click Function > Insert Empty Jump to insert an empty jump.
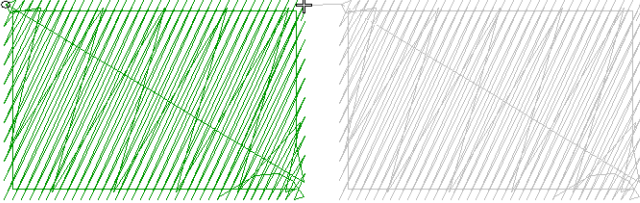
Empty stitch is a tight (zero length) lockstitch used together with, or as an alternative to, tie-in and tie-off stitches. Use empty stitches instead of tie-ins or tie-offs for objects filled with light density stitching where standard tie-ins and tie-offs may be visible. Also, use empty stitches or empty jumps when required by the selected machine format.

To add empty stitches and jumps

1 Travel to the needle position where you want to trim the thread.

2 Click the **Insert Empty Stitch** icon to insert an empty stitch.

3 Click the **Insert Empty Jump** icon to insert an empty jump.

#	X	Y	L	Func
210	2.42	5.46	5.97	
211	-1.61	-3.27	3.64	
212	-2.68	-5.46	6.08	
213	2.04	4.59	5.02	
214	2.26	5.07	5.55	
215	-0.07	-0.16	0.17	TieOff
216	0.07	-0.29	0.29	(used)
217	-0.22	-0.45	0.50	(used)
218	0.22	0.45	0.50	(used)
219	-0.07	0.29	0.29	(used)
220	0.00	0.00	0.00	(empty)
221	1.83	0.06	1.83	
222	0.00	0.00	0.00	(empty), jump
223	1.82	-1.09	2.12	
224	1.82	-1.09	2.12	
225	1.82	-1.09	2.12	
226	1.82	-1.09	2.12	
227	1.82	-1.09	2.12	
228	1.82	-1.09	2.12	
229	1.82	-1.09	2.12	

Empty functions added to stitching sequence

Tip: You can also insert machine functions manually using the **Insert Machine Function** dialog.

Related topics...

◀ Travel through designs

◀ Insert machine functions manually

Add jumps with penetrations off

Deselect Function > Penetrations to create jumps with needles or borers out.

You can create jump connectors manually in a design by digitizing with penetrations off. The **Penetrations** tool prevents the needle from penetrating the fabric, forcing the machine to move across the design in a series of jumps. You can use **Penetrations** with any input method.

To add a jump with penetrations off

1 Select an input method – e.g. **Run**.

2 Deselect **Penetrations**.

3 Digitize the connector in the usual way for the selected input method.

The jumps are saved together as an embroidery object.

Penetrations off – jump stitches   Satin   Jumps   Tatami
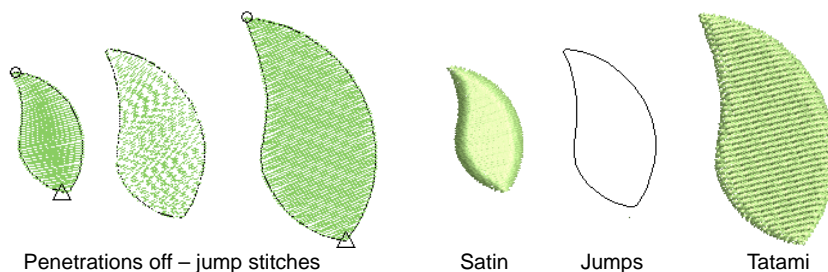
Adjusting travel run stitch length

> Use Docker > Object Properties to toggle the Object Properties docker on/off. Use it to set the travel run stitch length.

Travel runs are usually used to connect segments within filled objects. They are usually covered by fill stitches when the object is stitched out. You can adjust the travel run length to reduce the stitch count.

To adjust travel run stitch length

1 Click the **Object Properties** icon.

2 Select the **Special** tab and **Travel Run** from the list.

Adjust travel run length
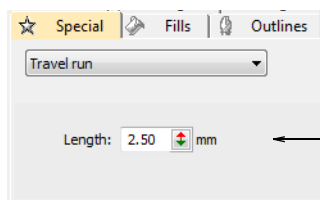
3 Enter a value in the **Length** field as required.

Travel Run length: 1 mm

Travel Run length: 3 mm
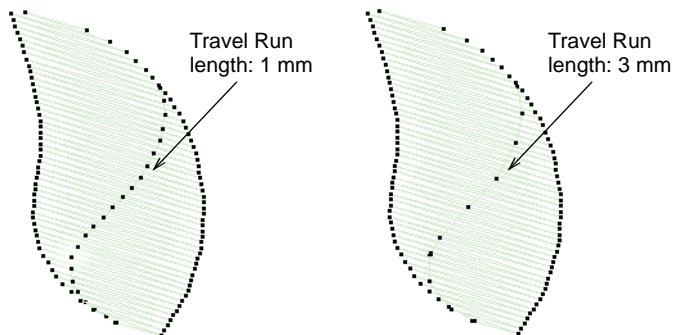
Tip: Increase stitch length to reduce the stitch count. Travel Run automatically varies the stitch length on tight curves.

Keeping or omitting last stitches

 Click Reshape > Keep Last Stitch to keep the last stitch in a column.

 Click Reshape > Omit Last Stitch to omit the last stitch in a column.

If you are digitizing adjoining columns, you can keep or omit the last stitch in the first column to achieve a smoother join or shorter connecting stitches.

Columns smoothly joined

Columns with unwanted space
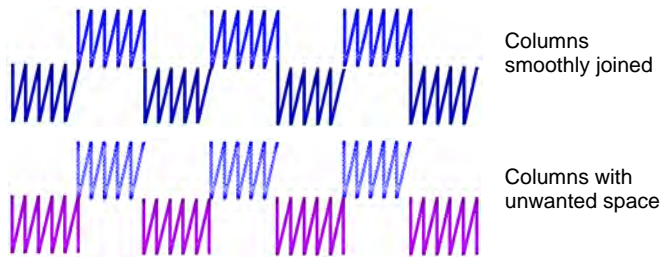
Note: This feature only applies when the exit point is at the end of the column – i.e. the default exit point. Moving the exit point using the **Reshape Object** tool overrides the **Keep Last Stitch/Omit Last Stitch** command.

To keep or omit the last stitch

◄ To keep the last stitch, select the object and click the **Keep Last Stitch** icon.

◄ To omit the last stitch, select the object and right-click the **Omit Last Stitch** icon.

Press Enter – last stitch kept

Press Spacebar – last stitch omitted
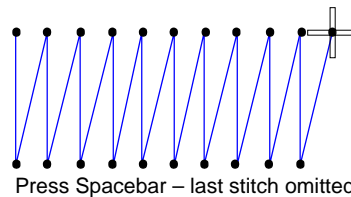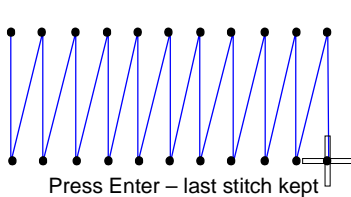
Tip: Alternatively press **Spacebar** to omit the last stitch or **Enter** keep it.

Minimizing connectors

Designs stitch out more efficiently when the connectors between objects are short. This also reduces the number of trims in a design. EmbroideryStudio has a **Closest Join** method which is set via the **Setup (or Standard toolbar) > Options > General** tab. When activated (the default), entry and exit points of objects are automatically placed when the user digitizes new objects.
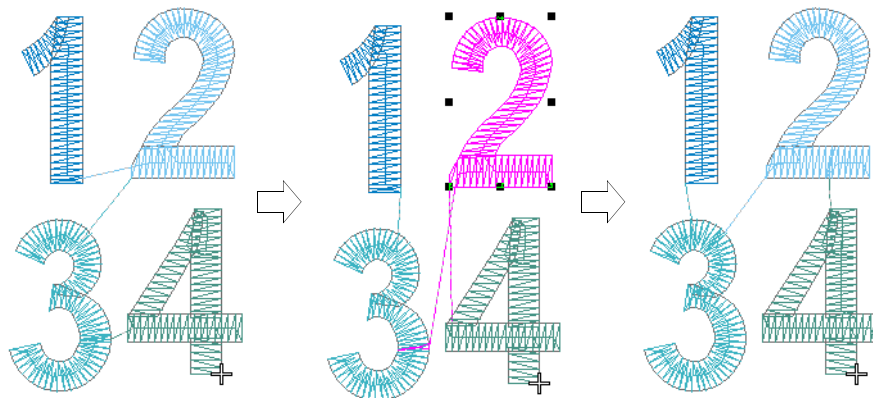
However, closest joins are **not** automatically maintained when objects are moved, re-sequenced, or edited. The **Apply Closest Join** feature allows you to (re-)apply closest joins to objects after editing. EmbroideryStudio also allows you to manually change entry and exit points of individual objects.

Adjust entry/exit points

Use Reshape Object to adjust the entry and exit points of selected objects.

Use Reshape Views > Show Entry/Exit Points to toggle entry/exit point display when using the Reshape Object tool.

EmbroideryStudio allows you to manually change entry and exit points of individual objects. Entry and exit points should always be checked if you are re-sequencing objects in a design.
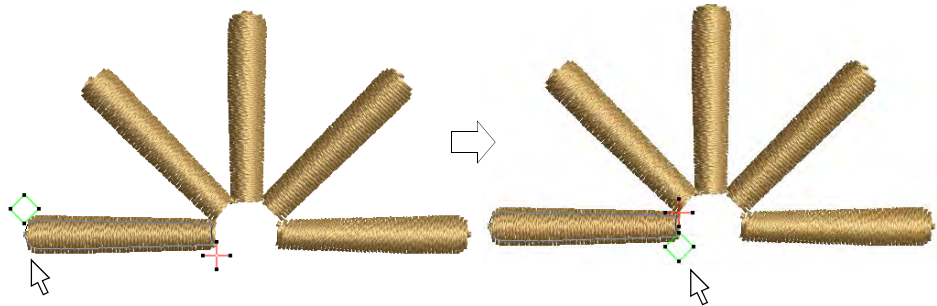
💡
Tip: Closest joins are not automatically maintained when objects are moved, re-sequenced, or edited. The **Apply Closest Join** feature allows you to automatically re-apply closest joins to objects after editing.

To adjust entry/exit points

◄ Select an object and click **Reshape Object**.

◄ Click **Show Entry/Exit** to view only entry and exit points.

◄ To view next or previous objects, press **Tab** or **Shift+Tab** keys. Any changes to objects are confirmed.

◄ Select entry or exit points of adjoining objects and drag into close proximity.
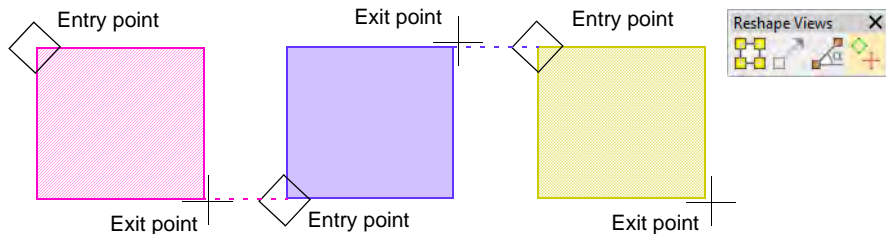
◄ Press **Enter**.

💡
Tip: If you are digitizing adjoining columns, optionally keep or omit the last stitch in the first column to achieve a smoother join or shorter connecting stitches.

Related topics...

◄ Sequencing embroidery objects
◄ Keeping or omitting last stitches
◄ Other general options

Apply closest join

> Use Arrange > Apply Closest Join to (re-)apply closest join to objects after editing.

When you are digitizing closed objects, the **Closest Join** method automatically calculates the closest join between them, saving you having to think about entry and exit points. The **Apply Closest Join** feature allows you to (re-)apply closest join to objects after editing. The command may be accessed via:

◀ Toolbar button on the **Arrange** toolbar
◀ **Arrange** menu
◀ Design Window popup menu
◀ Color-Object List popup menu
◀ Shortcut key (J)

Note: The **Apply Closest Join** command is only enabled when two or more embroidery objects are selected.

To apply closest join

◀ Digitize embroidery objects as required.

  If the **Closest Join** method has been activated via the **Setup (or Standard toolbar) > Options > General** docker, entry and exit points of objects are automatically joined at the closest point.

4		4				494
21	1	1	A	⋙		80
22	2	2	A	⋙		128
28	3	3	A	⋙		141
29	4	4	A	⋙		145

Objects joined at closest point
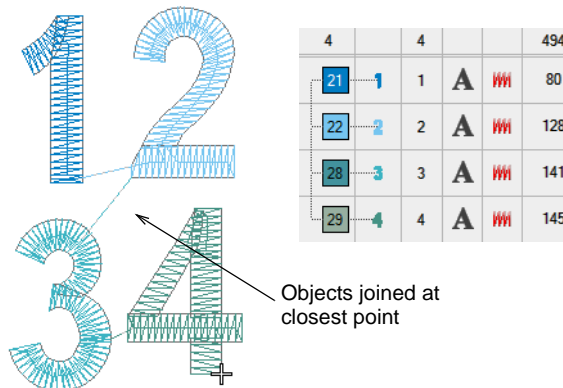
◀ Move, reshape, and/or resequence objects in the design as required.

Closest join is not recalculated automatically – long connectors may result.

Long connectors may result after resequencing
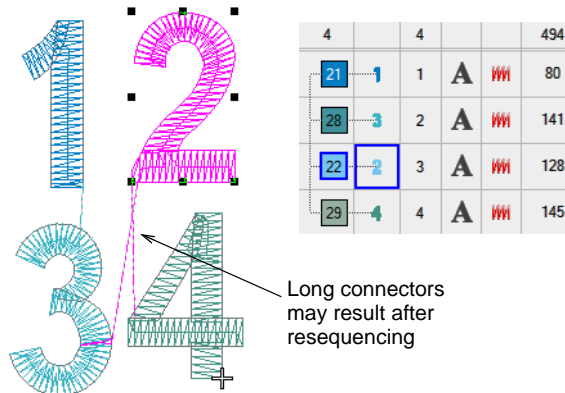
◀ Select all objects in the sequence and reapply closest join – click **Apply Closest Join** or choose the command from the popup menu.

Selected embroidery objects are regenerated and **Closest Join** applied.

Closest joins recalculated
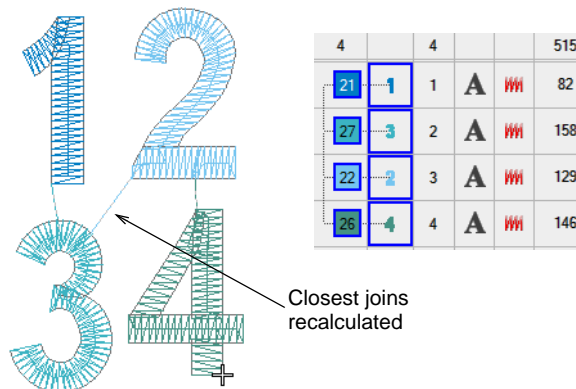
Caution: Any non-sequential embroidery objects in the selection will cause a message to be displayed:

Tip: Apply **Closest Join** also to generated offset objects.

Closest joins recalculated
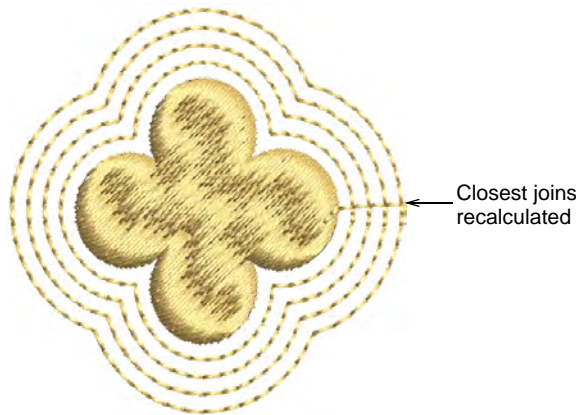
Related topics...

◀ Other general options

◀ Generating outlines & offsets

Closest join limitations

The **Apply Closest Join** feature is not applicable to all objects in all circumstances. Note the following limitations.

Stitch regeneration

Closest Join requires the complete stitch regeneration of the objects – the whole object, not just connectors. Stitch regeneration has its limitations:

◀ Recognized objects – i.e. opened from machine files – may generate poor or incorrect embroidery.

◀ Manual (unrecognized) objects cannot be changed by stitch regeneration. Thus **Closest Join** will not work properly for them.

◀ Manual stitch edits to objects will be lost.

◀ Inserted and recognized machine functions may be mistakenly regenerated on the underlay.

◀ Nested objects are not supported. They will become un-nested and placed after the object in which they were originally nested. This may not produce ideal sequence.

Run objects

The **Closest Join** technique is not as powerful as **Branching** for run objects. **Closest Join** will not produce a nicely-merged double-run, so connectors are only possible at the ends of the run, not in the middle. The best it can do is swap the ends of the runs.

Branched run objects

Closest-join run objects
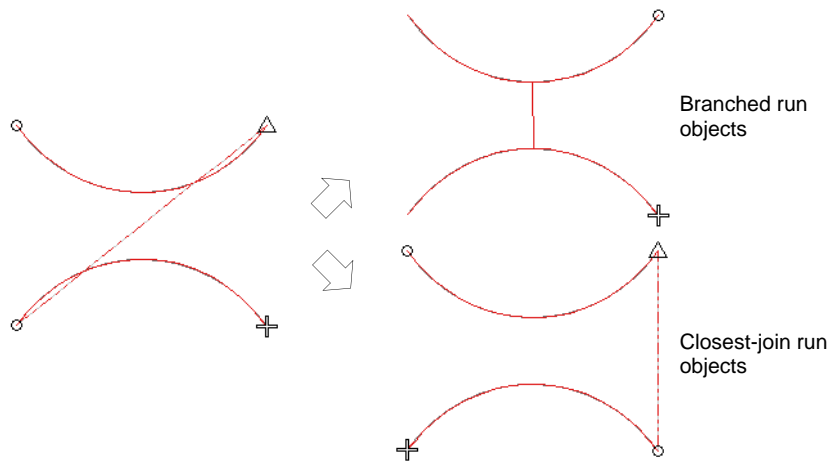
Automatic branching

The **Branching** feature lets you digitize like objects – e.g. the fingers of a hand, sections of a custom letter – without having to think about the

most efficient stitching sequence and joins. Apply **Branching** to join touching or overlapping objects to form a single 'branched object'.

Characteristics of branched objects

◀ Objects are resequenced, connectors minimized, component objects grouped, and stitches regenerated.

◀ When dissimilar objects are selected, any which cannot be branched are omitted.

◀ All component objects are grouped and selectable as one.

◀ Branched objects can be reshaped.

◀ There is a single entry and one exit point but all component objects have individual reshape points.

◀ Branched objects preserve their component object properties while sharing the color of the first object in the sequence.
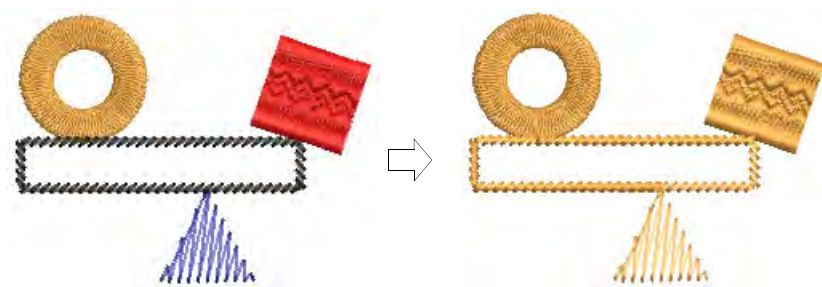
◀ Branching works with any combination of the following object types – Run, Column A, Column B, Column C, Complex Fill and Complex Turning. Objects with Motif Run and Motif Fill cannot be used.

◀ Stitch types can be re-assigned via the toolbar.

Apply automatic branching

Click Arrange > Branching to automatically sequence and group like embroidery objects.

Apply **Branching** to selected objects. These become a single branched object.
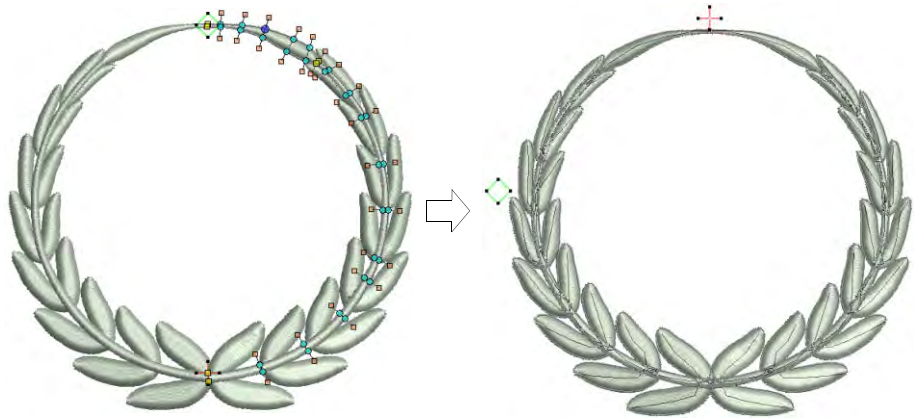
To apply automatic branching

1 Select the objects.
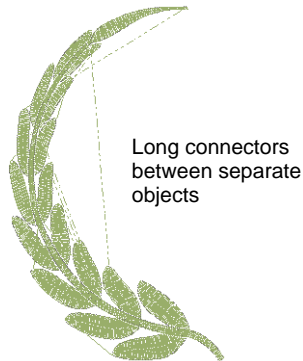
Long connectors between separate objects

Note: The function is only available if more than one object of any suitable type is selected.

2 Click the **Branching** icon. EmbroideryStudio will prompt you to digitize entry and exit points.

3 Digitize entry and exit points, or press **Enter** twice to accept the defaults.

Component objects are grouped and share the color of the first branched object. Objects are resequenced, connectors minimized, and stitches regenerated.

Objects resequenced,
connectors minimized

4 Travel through the branched object to check stitching.

Related topics...

◀ Travel through designs

Branch objects with the Color-Object List

> Use Docker > Color-Object List to branch selected objects in a design.

The **Color-Object List** provides an easy way to select objects in designs and access their properties. You can use it to branch like objects in a design.

To apply branching with the Color-Object List

1 Click the **Color-Object List** icon.

2 Select objects in the **Color-Object List**.

3 Right-click and select **Branching** from the popup menu.
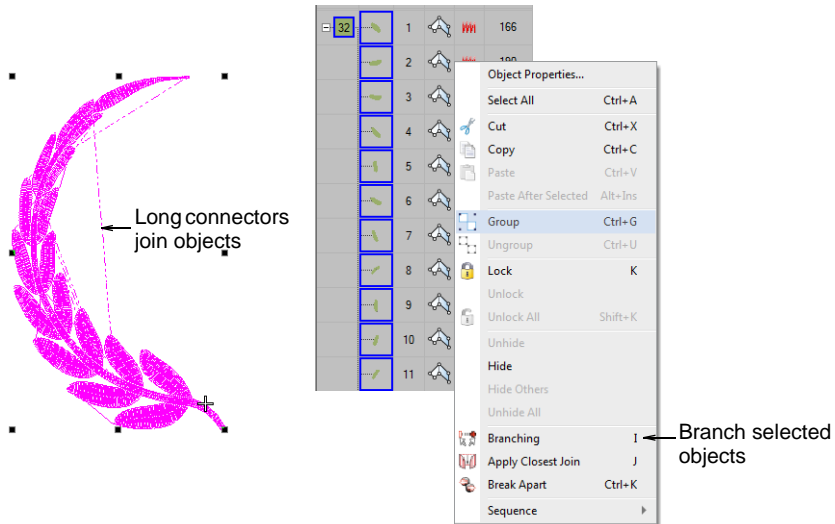
Long connectors join objects

Branch selected objects

Note: The function is only available if more than one object of any suitable type is selected.

4 Digitize entry and exit points, or press **Enter** twice to accept the defaults.

Component objects are grouped and share the color of the first branched object. Objects are resequenced, connectors minimized, and stitches regenerated.

Long connectors eliminated

Selected objects grouped into single branched object
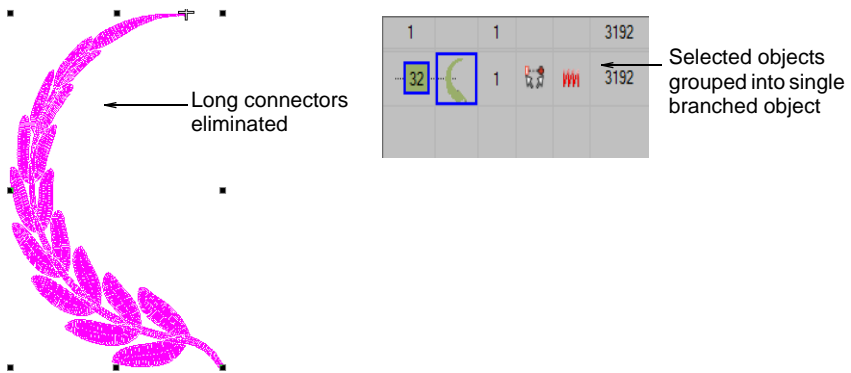
Tip: Use the **Color-Object List** also to cut, copy and paste, group and ungroup, lock and unlock, and show and hide objects, as well as resequence objects.

Related topics...

◀ Combining Objects

Apply automatic underlay to branched objects

> Right-click Stitch Effects > Auto Underlay to select an underlay type to apply to branched objects.

Because **Branching** combines objects to form a single branched object, you may be able to apply a single underlay to the entire object. The technique works well with Column A or Column B objects.
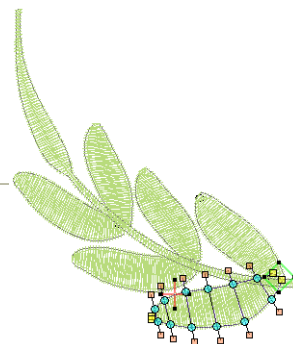
To apply automatic underlay to branched objects

1 Select the branched object and right-click **Auto Underlay**.

Select First Underlay

Select underlay type
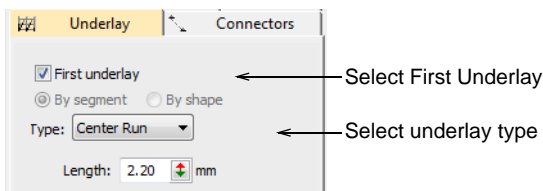
2 Select the **First Underlay** checkbox and select an underlay type.
3 Optionally, add a second underlay.
4 Press **Enter** or click **Apply**. Underlay stitches are automatically generated for the branched object.

Entire underlay stitched first

Cover stitched second
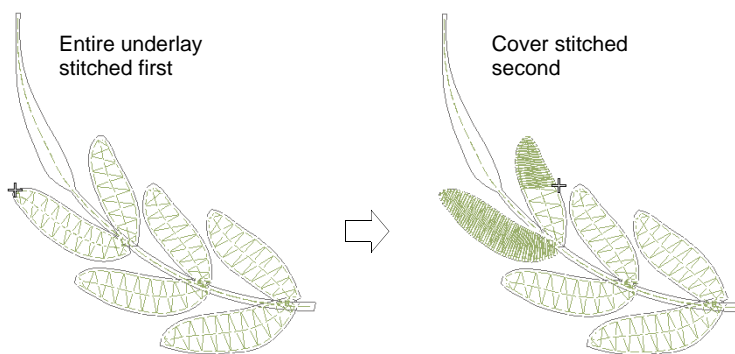
Note: If component objects are touching or overlapping, the underlay is first stitched out for the whole branched object followed by the cover stitch.

Related topics...

◀ Viewing stitching sequence

PART VI

DECORATIVE EMBROIDERY

EmbroideryStudio provides many features for the creation of motif runs and fills, textured and patterned fills, open stitching, and curved fills.

Patterned stitching

This section explains how to create textures with tatami offsets and program splits. Create your own and add them to a custom library. Creating stitch patterns with carving stamps is covered as well as adding details with user-defined splits. See Patterned Stitching for details.

Curved stitching

This section covers contoured fills and flexi-splits. It also covers the creation of radial fill effects and curved fills. See Curved Stitching for details.

Specialty stitching

This section describes how to create jagged or fluffy edges as well as open stitching with trapunto effect. It also describes how to create stippling and cross stitching, as well as accordion spacing, and color blending effects. Creating curved fills with 'Florentine' and 'liquid' effects is also covered. See Specialty Stitching for details.

Motif stitching

This section describes how to insert motifs into your design, and how to rotate, mirror and scale them. It explains how to manage motifs, including how to create your own motifs and motif sets. It also describes how to create both motif runs and motif fills, as well as how to apply 3D effects to motif fills. See Motif Stitching for details.

Chapter 21
Patterned Stitching

EmbroideryStudio provides tools for creating patterns with needle penetrations. Apply offset fractions or partition lines to tatami fills for a variety of split-line effects. Alternatively, use **Program Split** or **Flexi Split** to create decorative fills from predefined patterns. Select from the library or create your own.

The **Carving Stamp** feature allows you to define patterns using a 'carving stamp' as a template. Use it also to create your own split lines when you want to add detail to filled objects.

This section explains how to create textures with tatami offsets and program splits. Create your own and add them to a custom library. Creating stitch patterns with carving stamps is covered as well as adding details with user-defined splits.

Creating textures with tatami offsets

With tatami fills you can create patterns of needle penetrations. With only two offsets available, the number of patterns is limited, but even with small offsets, visible lines are produced. Partition lines, with up to eight offsets, can create more patterns. Using a **random factor** you can distribute needle penetrations randomly.

Tip: Auto Split can be used to create special textures in satin stitches as an alternative to tatami fill. See Split satin stitches for details.

Create offset patterns

Use Fill Stitch Types > Tatami to create fills for larger irregular shapes. Right-click for settings.

The tatami offset default settings are designed to create a uniformly flat and smooth surface. The texture is like a woven tatami mat without obvious split lines. By manipulating offset fractions, you can create stitch penetrations which are more clearly visible.
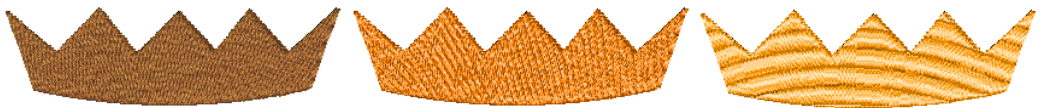
Tip: By adjusting offsets, you can also improve the quality of turning tatami where the pattern may be disturbed by non-parallel stitches. Changing the offsets can reduce this interference.

To create offset patterns...

1 Right-click the **Tatami** icon to access object properties.

Specify offset fractions for alternate rows
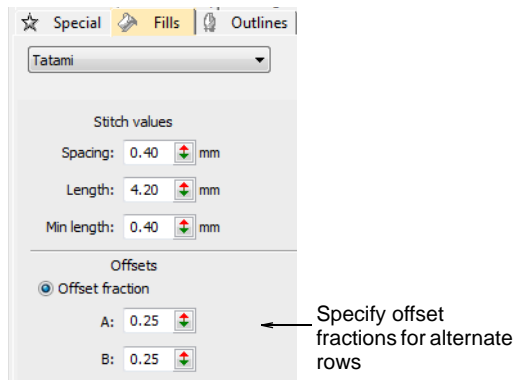
2 Select the **Offset Fraction** option. To control needle penetrations you set offset fractions for both forward and backward rows.

3 In **A** and **B** fields, experiment with offset fraction values. Offsets are defined as fractions of stitch length – e.g. 0.3 = 30%.
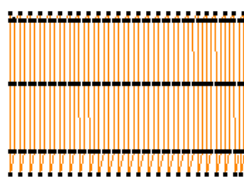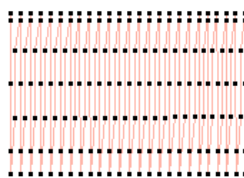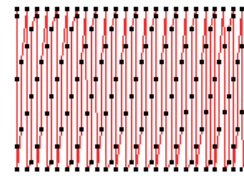
| A=0.00, B=0.00 | A=0.50, B=0.50 | A=0.25, B=0.25 |

| A=0.50, B=0.25 | A=0.30, B=0.60 | A=0.40, B=0.00 |
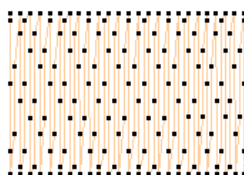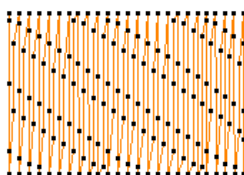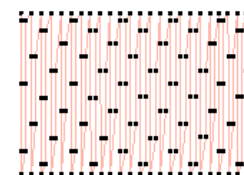
◄ **Even stitching**: set both fields to 0.25.

◄ **Strong horizontal lines**: set both fields to 0.00 or 1.00. The distance between each line of needle penetrations is the stitch length.

◄ **Light horizontal lines**: set both fields to 0.5. Lines are produced at half stitch-length intervals.
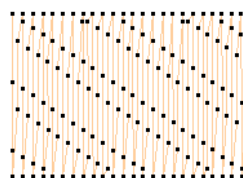
| Offset: A=0.3, B=0.6
Stitch length: 4 mm | Offset: A=0.3, B=0.6
Stitch length: 3 mm | Offset: A=0.3, B=0.6
Stitch length: 2 mm |
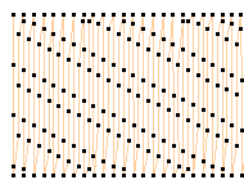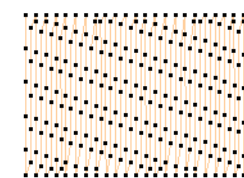
◄ **Diagonal lines**: set both fields to any value **other than 0.00, 0.50** and **1.00**. Diagonal lines are less noticeable than horizontal or vertical lines. Vary both values to change the angle of the lines and the distance between them.

◄ **Other**: set one field to **0.00**, and experiment with the other values to place the needle penetrations on the forward and backward rows close to each other, but with different effects.

Note: If A-B offsets add up to 1.0, lines will be horizontal. If the sum is less than 1.0, lines will slope down, more and they slope up. The mirror image of 'A=0.3 and B=0.6' is 'A=0.7 and B=0.4'.
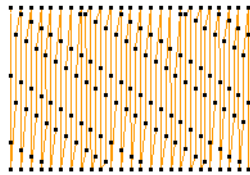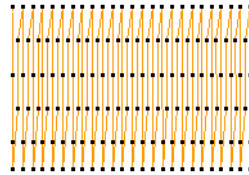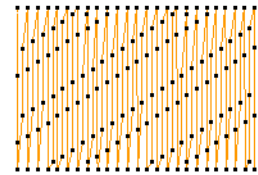
| A=0.30, B=0.60 | A=0.50, B=0.50 | A=0.70, B=0.40 |

Tip: Tatami patterns can be combined with curved fills for interesting effects.

Related topics...

◀ Curved fills

Create partition line patterns

Use Fill Stitch Types > Tatami to create fills for larger irregular shapes. Right-click for settings.

The **Partition Line** feature provides an alternative method for offsetting needle penetrations in tatami fills. The **Object Properties > Fills > Tatami** docker allows you to set partition lines. Two parameters can be set – **Sequence** and **Angle**.
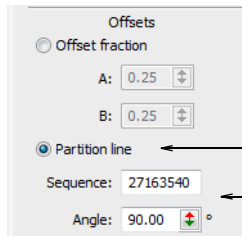
Select Partition Line

Enter partition sequence and grid angle

Sequence

Partition Line allows you to specify up to eight tatami offsets. In any pattern, number of rows is determined by number of digits in the sequence.
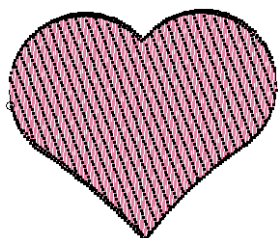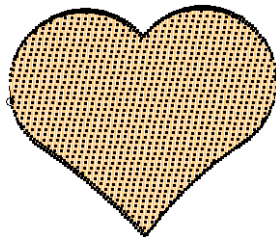
Sequence: 11   Sequence: 012   Sequence: 01
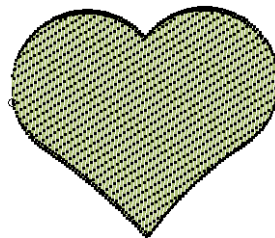
Each stitch length is split into 'knots' numbered anywhere from 0 to 7. A partition sequence number of '20163' would translate to the following pattern:
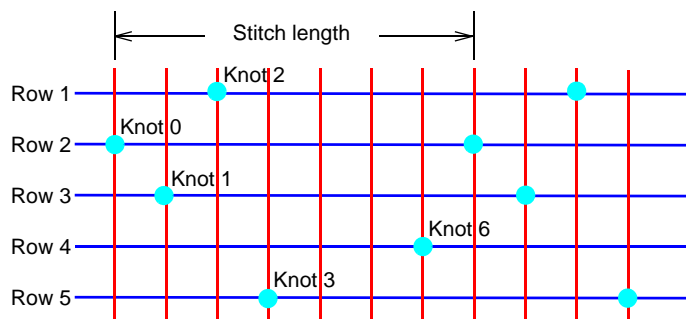
Angle

You can skew the grid formed by the partition knots to further vary the needle penetrations. In the **Angle** field, specify a grid angle.
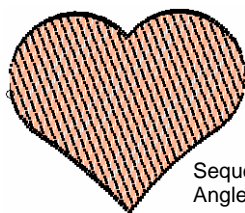
Sequence: 11   Sequence: 11   Sequence: 11
Angle: 0   Angle: 45   Angle: 90
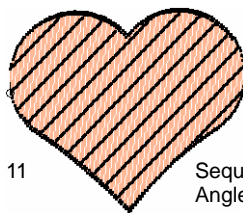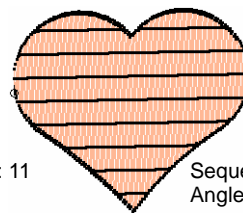
Tip: Tatami patterns can be combined with curved fills for interesting effects.

Related topics...

◀ Curved fills

Create random patterns

Use Fill Stitch Types > Tatami to create fills for larger irregular shapes. Right-click for settings.

Using a random factor you can eliminate the split line patterns formed by regular needle penetrations and distribute the stitches randomly inside the shape. This can create interesting mottled effects.
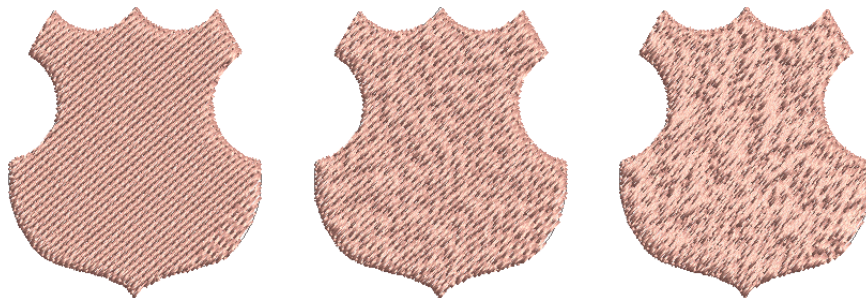
To create random patterns...

◄ Right-click the **Tatami** icon to access object properties.

Enter a random factor
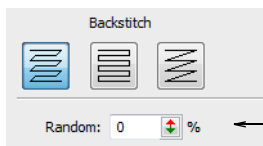
◄ In the **Random** field, specify a random factor between 0% and 100%.
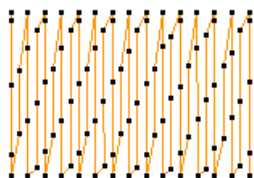
Random factor: 10%
Offset fraction A: 0.25, B: 0.25
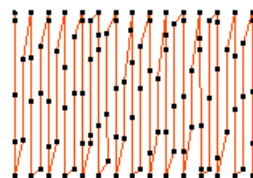
Random factor: 50%
Offset fraction A: 0.25, B: 0.25
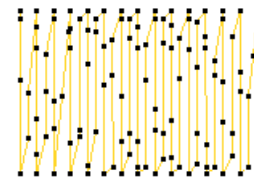
Random factor: 100%
Offset fraction A: 0.25, B: 0.25

Tip: A value of around 50% generally gives good results.

Creating textures with program splits

Program Split is a decorative fill stitch where needle penetrations form a tiled pattern. Select a predefined pattern or create your own.
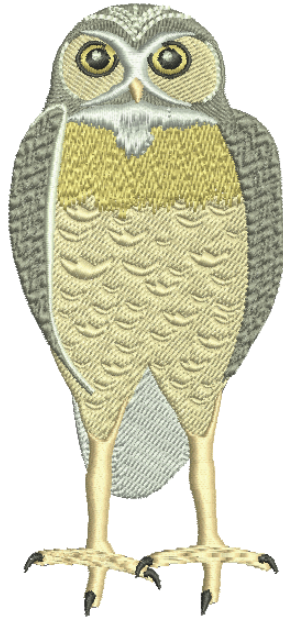
Apply program splits

	Use Fill Stitch Types > Program Split to create decorative fill stitches where needle penetrations form a tiled pattern. Right-click for settings.
	Use Outline Stitch Types > Program Split to create borders or columns of even width for decorative needle penetration patterns. Right-click for settings.

You can apply **Program Split** to a wide variety of objects. You can adjust these either before or after applying the effect. Choose from a library of split patterns.

Note: Digitize the stitch angle carefully when creating objects with program splits. If rows are parallel with pattern lines, they will rarely intersect and the pattern may not be visible. A 45° stitch angle is suitable for most patterns.

To apply program splits...

◀ Click the **Program Split** icon. **Program Split** stitching is applied to new or selected objects, based on current settings.

◀ Right-click the **Program Split** icon to access object properties.

◀ Select a pattern from the droplist. Alternatively, click the arrow button to access the pattern library.
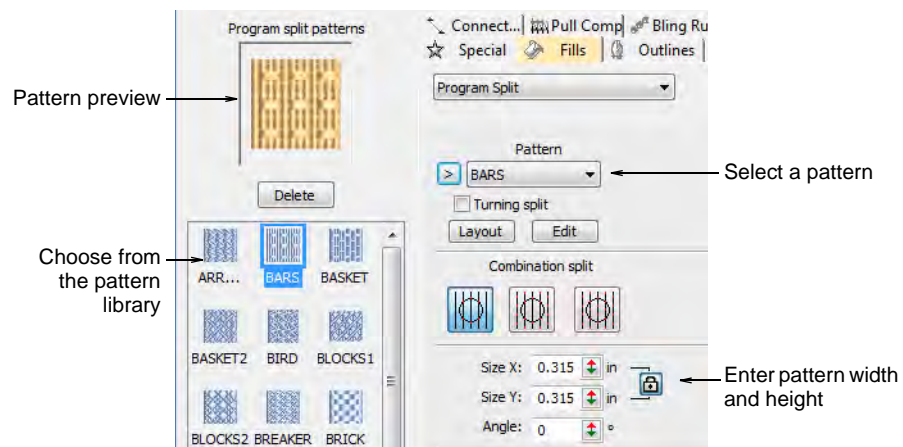
◀ Adjust pattern size via **Size X/Y** fields. The scaling lock maintains aspect ratio. Use the **Angle** setting to orientate the pattern within the shape.
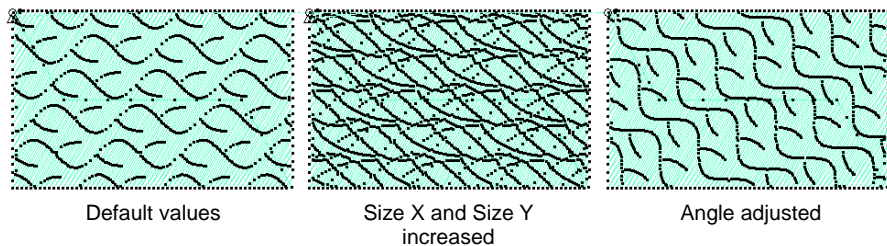
| Default values | Size X and Size Y increased | Angle adjusted |

Tip: Tatami patterns can be combined with curved fills for interesting effects.

Apply combination splits

 Use Fill Stitch Types > Program Split to create decorative fill stitches where needle penetrations form a tiled pattern.

 Use Outline Stitch Types > Program Split to create borders or columns of even width for decorative needle penetration patterns. Right-click for settings.

Standard program split consists of a satin foreground and background – i.e. Satin-in-Satin. If patterns do not overlap you may get jump stitches or gaps occurring in the background. In this case, you can select from different combinations of satin and tatami stitches.
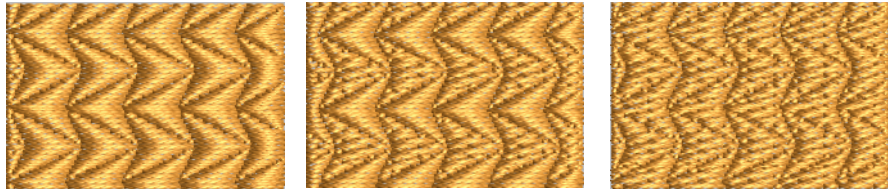
To apply combination splits...

1 Right-click the **Program Split** icon to access object properties.
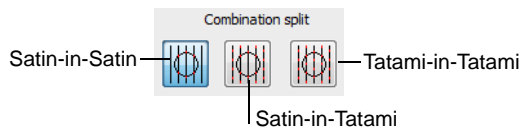
2 In the **Combination Split** panel, click the desired option:

Satin-in-Satin   Satin-in-Tatami   Tatami-in-Tatami
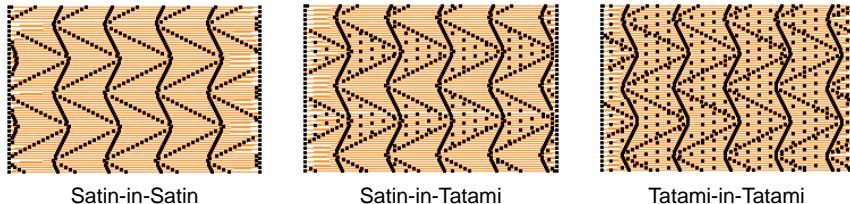
Options include:

Option	Function
Satin-in-Satin	This is the standard program split stitch type, which produces the smallest number of stitches.
Satin-in-Tatami	Use this option to avoid long stitches when the patterns are small but column and row spacings are wide.
Tatami-in-Tatami	Both foreground and background use tatami. Select this option for large objects and patterns to avoid long stitches.

Program split settings

Use Fill Stitch Types > Program Split to create decorative fill stitches where needle penetrations form a tiled pattern.

Use Outline Stitch Types > Program Split to create borders or columns of even width for decorative needle penetration patterns. Right-click for settings.

You can adjust program splits both interactively on screen and via object properties.

Column & row spacing

Column and row spacing settings determine distance between grid lines. Patterns are placed at intersection points – the center of each pattern coincides with an intersection.
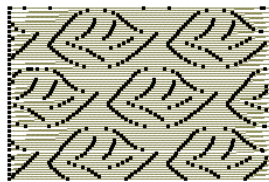
Default spacing values   Column spacing increased   Row spacing decreased
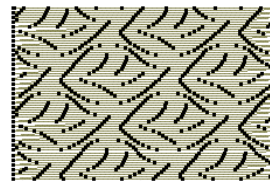
The initial settings define a simple grid, where the spacing equals the dimensions of the pattern. The row offset is set to 0.00 mm so columns and rows are perpendicular.

Set column spacing and offset values

Set row spacing and offset values
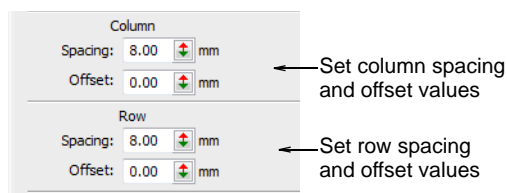
Column & row offsets

With all three program split combinations – **Satin-in-Satin**, **Satin-in-Tatami** and **Tatami-in-Tatami** – you can vary the pattern by applying offset settings to rows and/or columns. You can also provide background texture with tatami stitch offsets.

If both offsets are set to '0', grid lines are perfectly vertical and horizontal. As a rule, it only makes sense to use values between 0 and half the pattern size. For example, if the pattern is 8 mm, select row and column offsets between 0 mm and 4 mm.

| Column offset: 0.00 | Column offset: 1.00 | Column offset: 2.50 |

| Row offset: 0.00 | Row offset: 1.00 | Row offset: 2.50 |
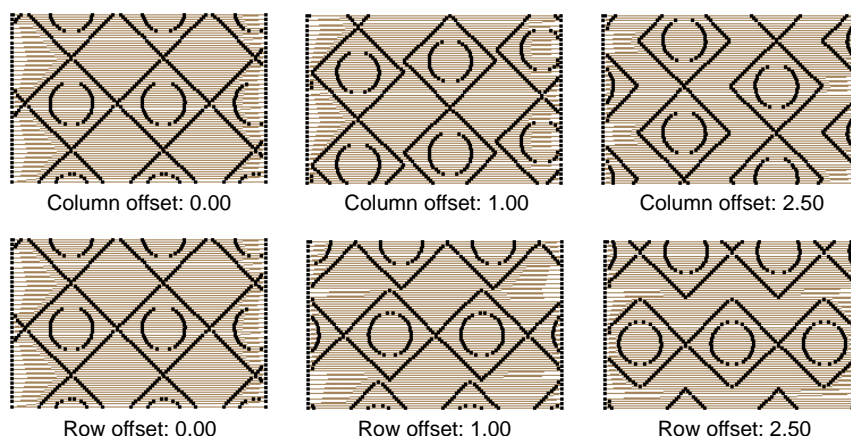
Stitch settings

Specify stitch length, minimum stitch length and spacing settings for program split objects, in the same way as for other fill stitch types. You

can eliminate unwanted patterns and distribute stitches evenly within a shape using a random factor.

Adjust stitch spacing, length and minimum length

Enter random factor
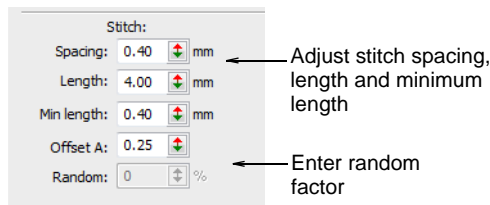
In the **Stitch Spacing** field, enter the required spacing. For tatami this is the distance between two forward rows of stitches, for satin, the distance between each forward stitch.

Default spacing values   Stitch spacing increased   Stitch spacing decreased
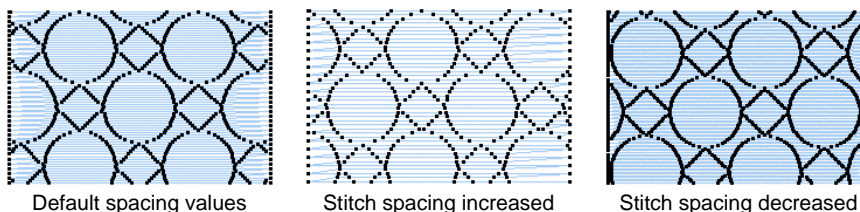
Enter a value in the **Random** field – specify a factor between 0% and 100%. The random factor does not affect the deliberate needle penetrations that form the pattern. Values of around 50% generally give good results.

Random factor: 0%   Random factor: 25%   Random factor: 90%
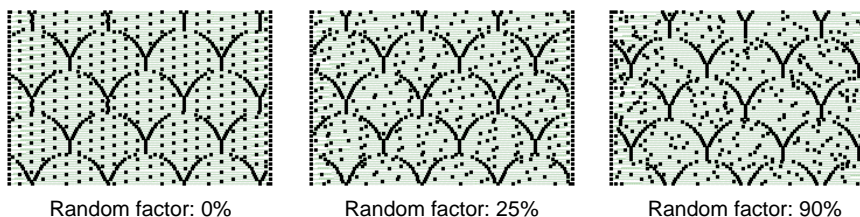
Tatami stitch offsets

When using Satin-in-Tatami or Tatami-in-Tatami, you can also control tatami stitch offsets.

Tatami is mainly used to avoid long stitches, so it should not have a distinct appearance which may obscure the program split pattern. Therefore, typical offsets are in the range 0.2 mm to 0.4 mm.
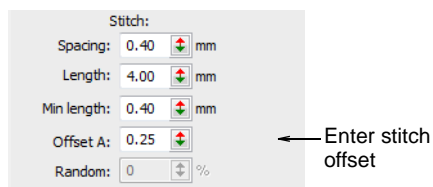
Enter a stitch offset in the **Stitch > Offset A** field. This offset controls where the needle penetrations line up for each row of stitching.

| Offset A: 0.00 | Offset A: 0.25 | Offset A: 0.50 |
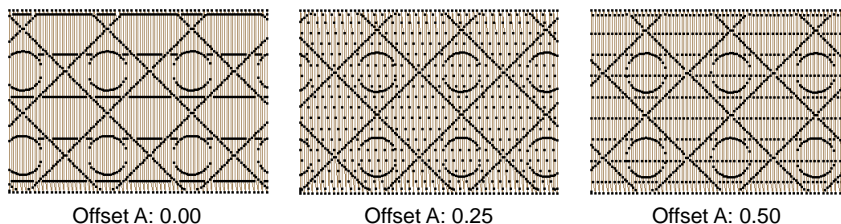
Related topics...

◄ Creating textures with tatami offsets

Lay out program splits on-screen

Use Fill Stitch Types > Program Split to create decorative fill stitches where needle penetrations form a tiled pattern.

Use Outline Stitch Types > Program Split to create borders or columns of even width for decorative needle penetration patterns. Right-click for settings.

You lay out program splits on-screen in a similar way to Motif Fills by using 'guide patterns' to scale, space, transform and offset the entire pattern fill.

To lay out program splits on-screen...

1 Right-click the **Program Split** icon to access object properties.

Select pattern

Click to change pattern layout
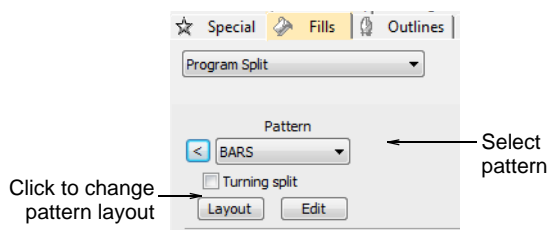
2 Select a pattern from the droplist. Alternatively, click the arrow button to access the pattern library.

3 Click **Layout**. Three blue guide patterns allow you to change the layout.

Use top guide pattern to change row spacing, row offset, and to scale patterns

Use middle guide pattern to move, rotate, skew, and scale patterns

Use side guide pattern to change column spacing, and to scale patterns
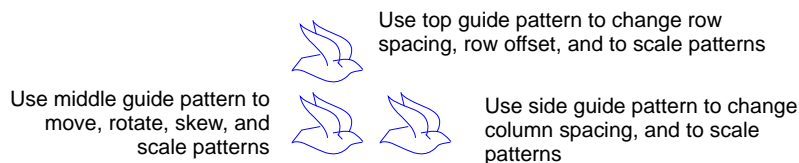
4 Adjust the guide patterns to achieve the desired effect:

◄ Move patterns by selecting the middle guide pattern and dragging.

◄ Scale patterns by selecting a guide pattern and dragging selection handles.

Drag the pattern

Scale proportionally

Scale horizontally

Scale vertically
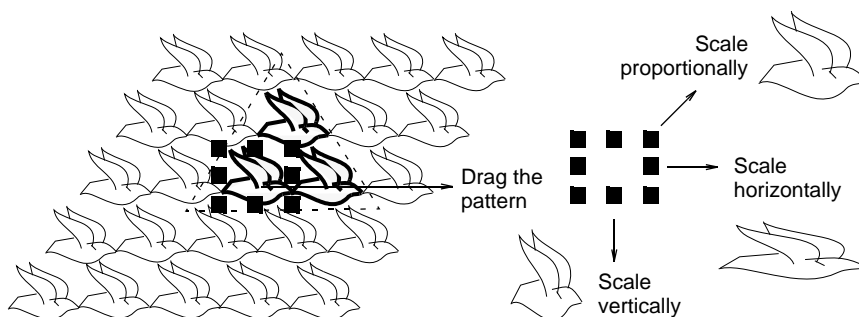
◄ Rotate patterns by clicking the middle guide twice to display the rotation handles. Click a corner handle and drag to rotate.

◀ Skew patterns by clicking the middle guide twice, then dragging the skew handles.

Rotate

Anchor

Skew
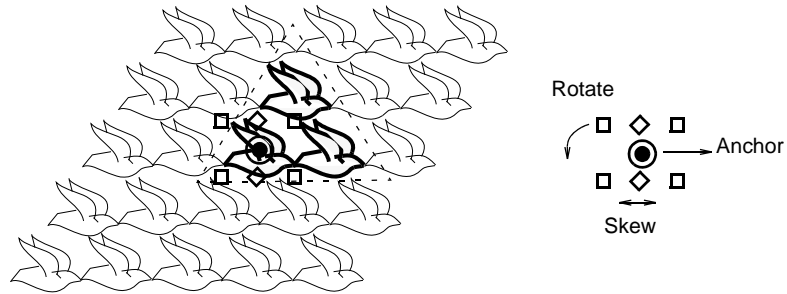
◀ Change column spacing by selecting the side guide and dragging it left or right.
◀ Change column offset by selecting the side guide and dragging it up or down.

Change column spacing
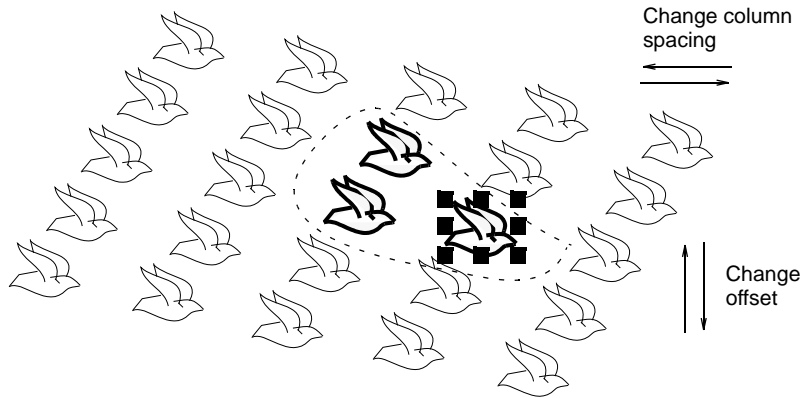
Change offset

◀ Change row spacing and offsets in the same way as columns.
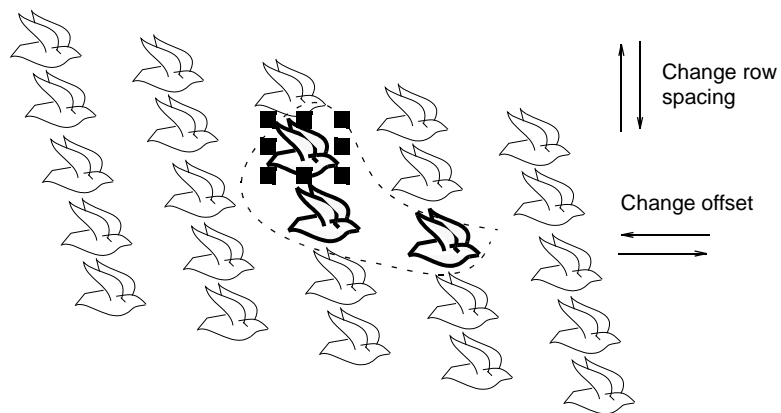
Change row spacing

Change offset

5 Press **Enter** to apply.

Creating patterns with custom splits

Make your own patterns to use in **Program Split** fills. The same patterns can also be used with **Flexi Split** effects.

Make split patterns

Make your own patterns to use in program split fills. Create patterns from the outlines of embroidery objects or from drawing objects. Patterns you create can also be used for **Flexi Split** effects.

To make a split pattern…

1 Select the object (or objects) you want to use for the pattern.

2 Select **Object > Create Program Split**.

Enter pattern name
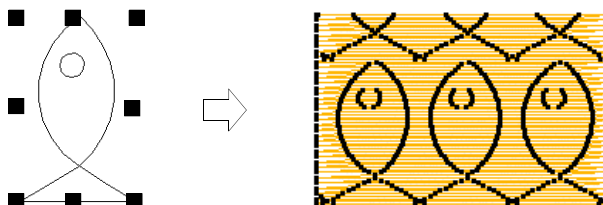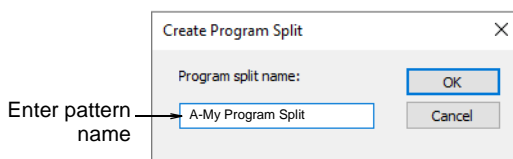
3 Enter a name in the **Create Program Split** dialog.

4 Click **OK**. The new pattern is automatically selected in the **Pattern** list.

Edit split patterns

Editing a pattern changes the actual pattern, not just the object layout.

To edit a split pattern...

1 Right-click the **Program Split** icon to access object properties.

Select pattern

Click to edit pattern
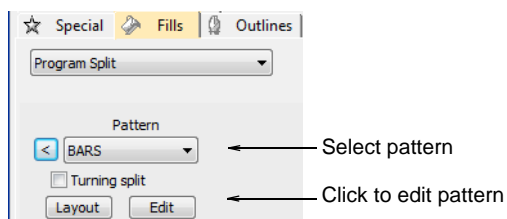
2 Select a pattern and click **Edit**.

Edit pattern
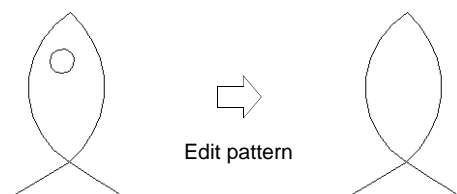
3 Press **Shift+0** to zoom in on the pattern.
4 Scale, transform or reshape the pattern as required.
5 Select **Object > Create Program Split** with the pattern selected.

Enter pattern name
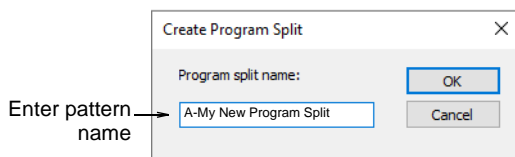
6 Enter a name for the pattern in the **Create Program Split** dialog.
  ◀ To create a pattern based on the old one, enter a new name.
  ◀ To overwrite the original pattern, enter the name of the original.
7 Click **OK**. The pattern is automatically selected in the **Pattern** list.

User-defined splits

 Use Traditional Digitizing > Complex Fill to digitize filled shapes with a single stitch angle. Right-click for settings.

 Use Stitch Effects > User-Defined Split to create your own split line effects. Right-click to adjust settings.

 Use Reshape > Reshape Object to reshape selected objects, edit stitch angles, and adjust entry/exit points.

The **User-Defined Split** function lets you add detail to filled objects by digitizing lines of needle penetrations called 'split lines'. Split lines are stored as object properties. They are preserved when stitches are regenerated even if you apply a different stitch type.

To create new objects with user-defined splits...

1 Select a fill input method such as **Complex Fill** and suitable stitch type.

2 Click the **User-Defined Split** icon.

3 Digitize the object boundaries, entry and exit points and stitch angle as you normally would, following the prompts in the Prompt Line.

Digitize object outline
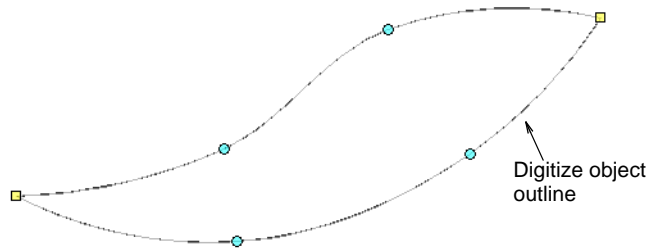
When you have completed the object, you will be prompted to digitize the split line.

```
3,943      X= 17.19 Y= -16.81 L= 24.04 A= -44.35          SATIN 0.38 mm
Enter point 1 on curve 1 or Press <Enter> to use default user-defined split
```

4 Digitize the split line or press **Enter** to accept the default. Repeat this step for any additional split lines.

Digitize split line
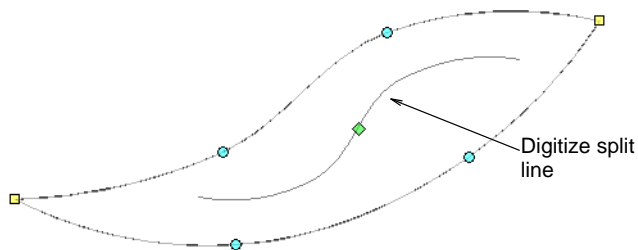
5 If you have accepted the default, click **Reshape Object**. Click the diamond control point in the center of the split line to invoke resizing control points. Use these to resize, rotate, or reposition the split line.

Reshape Views

Click diamond control point to invoke resizing control points
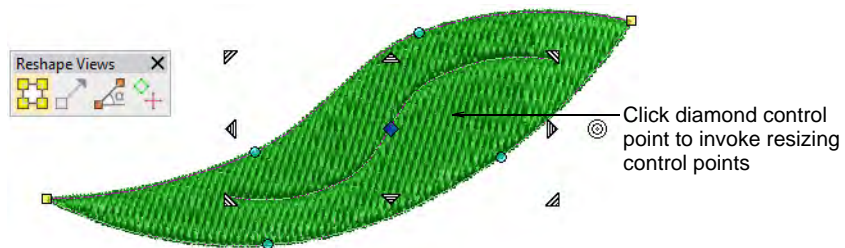
6 Alternatively, click the split line at any point. Control points appear together with **Reshape Views** toolbar. Use these to reshape the split

line like any outline object. Note that the split line can extend beyond the object itself.

Reshape split line like any outline object
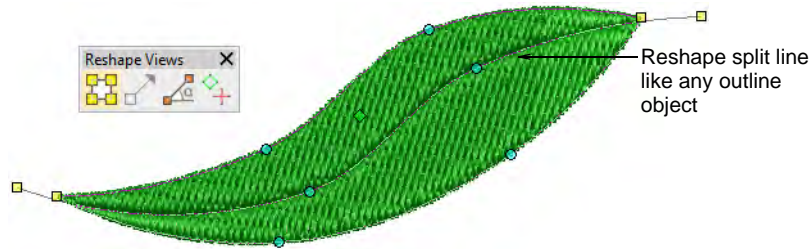
7 Press **Esc** to complete.

Tips for use...

◄ User-defined split can be applied to various stitch types – most commonly tatami, satin, or possibly zigzag.

◄ If using it with satin, it's best to turn off auto-split.

◄ For best results, split lines should be approximately perpendicular to the stitch angle.
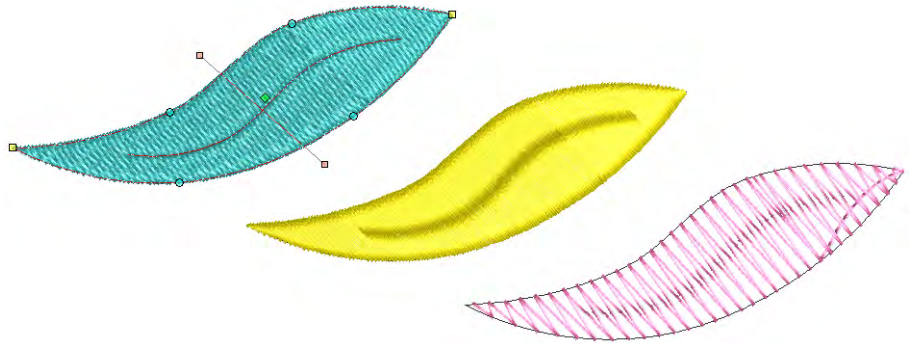
Related topics...

◄ Reshaping embroidery objects
◄ Digitize custom splits

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 or embroidery shape.

Carving Stamp docker

The **Carving Stamp** docker contains four tabs as shown...

Select a tab
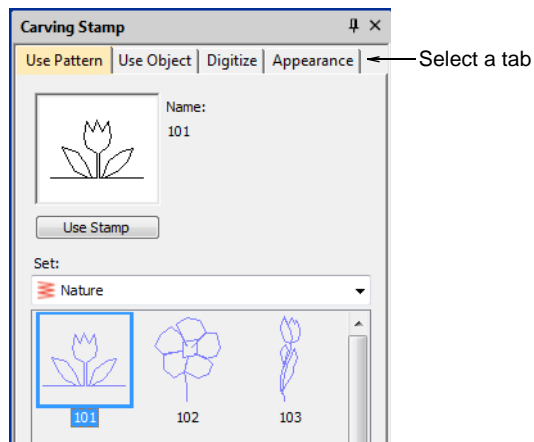
These tabs provide the following functionality:

Tab	Lets you...
Use Pattern	Select and apply predefined stamp patterns to selected objects.
Use Object	Use selected outlines as a temporary stamp. These can include vector graphics.
Digitize	Digitize custom splits 'on the fly'.
Appearance	Soften or intensify the effect.

Apply predefined patterns

Use Docker > Carving Stamp to define a pattern of needle penetrations using a 'carving stamp' as a template.

The **Use Pattern** tab lets you select and apply predefined stamp patterns. 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.

To apply predefined patterns...

1 Select an embroidery object or not as required.

2 Click the **Carving Stamp** icon. The **Use Pattern** tab is open by default.

Select a pattern set

Select a stamp to use
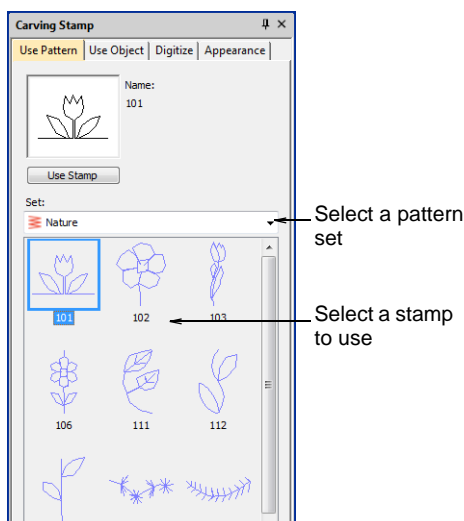
3 Select a pattern set from the **Set** list. The droplist contains predefined pattern sets as well as custom sets. Many are shared with other features such as **Monogramming**.

4 Select a predefined stamp pattern. A thumbnail appears in the preview panel and the **Use Stamp** button is enabled.

5 Click the **Use Stamp** button and move the mouse pointer to the design window.

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.
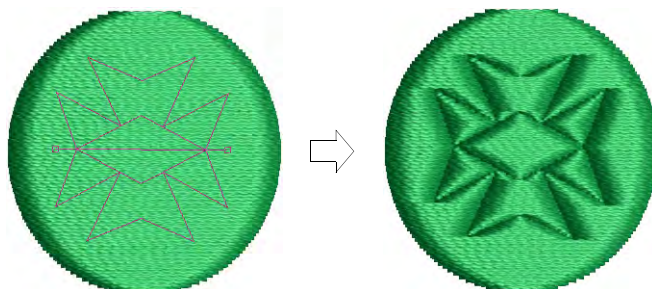
8 Swivel the pattern about the anchor point to the desired guide point position.

9 Optionally, with the **Shift** key pressed, resize the stamp while moving the mouse pointer.

10 Click the mouse button.

 ◀ If you have pre-selected an object or objects, the stamp pattern is applied only to those objects.

 ◀ If no objects are pre-selected, the stamp pattern is applied to any underlying objects.

11 Press **Esc** to exit the feature.

⌀

Note: The **Rename** and **Delete** buttons are enabled whenever a custom stamp is selected. When the **Rename** button is clicked, the **Rename Split Pattern** dialog opens.

Enter name for new library set

💡
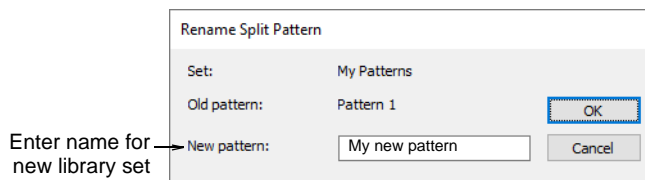
Tip: Use the **Softened Stamp** and **Raised Stamp** options on the **Appearance** tab to soften or accentuate the effect.

Related topics...

 ◀ Add stamps to a library

 ◀ Carving stamp appearance

Use objects as carving stamps

> Use Docker > Carving Stamp to define a pattern of needle penetrations using a 'carving stamp' as a template.

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. You can use vector or embroidery objects as a basis for stamps.

To use an object as a carving stamp...

1 Choose an embroidery object or vector object to serve as your stamp.

2 Click the **Carving Stamp** icon and select the **Use Object** tab.

Select 'Use Object' tab
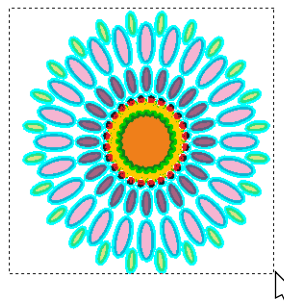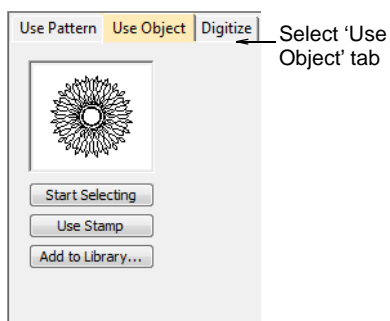
3 Click the **Start Selecting** button. Any pre-selected objects remain selected.

4 Hover the mouse over any object in the design window.

5 Click the **Use Stamp** button to apply the selection as a carving stamp.

6 Optionally, click the **Add to Library** button to add the selection to the library for future reference.

💡
Tip: You can also use lettering, embroidery or TrueType, as an input to stamp creation.

Select character to use as stamp
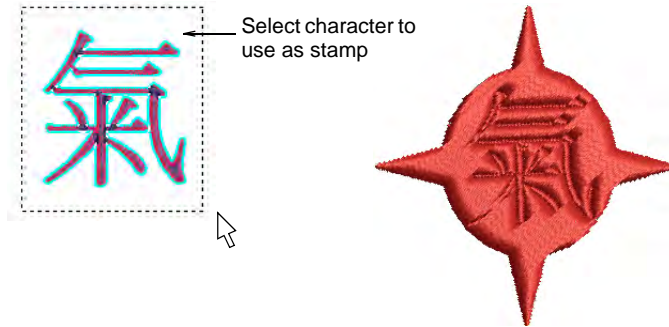
💡
Tip: If you want to use a bitmap image, you can convert to vector format in **CorelDRAW Graphics** using the **Bitmaps > Outline Trace** command set.

Related topics...

◀ Add stamps to a library

Digitize custom splits

> Use Docker > Carving Stamp to define a pattern of needle penetrations using a 'carving stamp' as a template.

The **Digitize** tab allows you to digitize split lines and directly apply in situ or to any applicable objects in the design window.
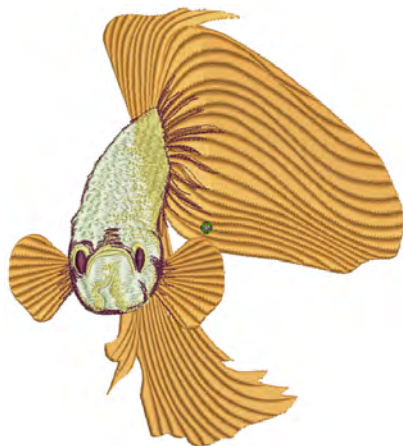
To digitize custom splits...

1 Select an embroidery object or not as required. If embroidery objects are pre-selected, digitized stamps will apply only to these objects.
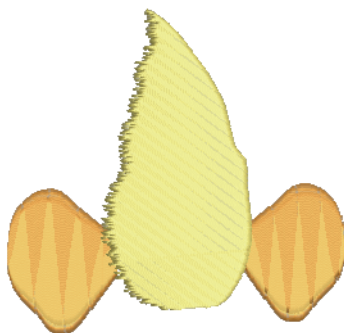
2 Click the **Carving Stamp** icon and select the **Digitize** tab of the dialog.

Click to start digitizing
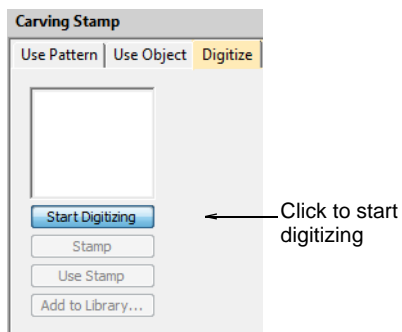
3 Click the **Start Digitizing** button. You are prompted to enter a starting point for the stamp outline.
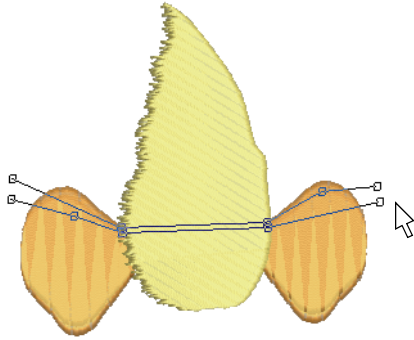
4 Digitize split lines:

◀ 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.

Stamp applied with object/s selected
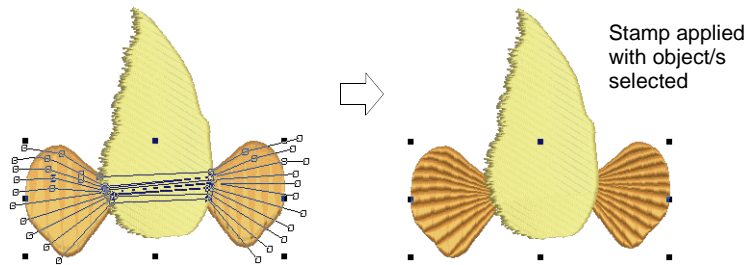
◀ Alternatively, use **Stamp** to apply the stamp to applicable objects with no object/s selected. Every object beneath the stamp is affected.

Stamp applied with no object/s selected
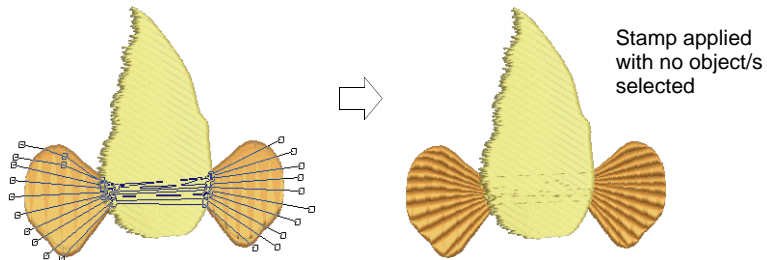
◀ Click the **Use Stamp** button to position the stamp. You are prompted to enter an anchor point as with predefined patterns.
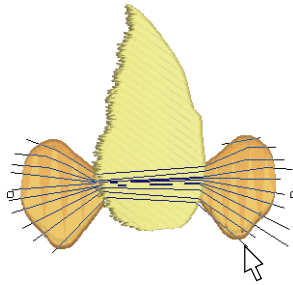
6 Optionally, click the **Add to Library** button to add the selection to the library for future reference.

Add stamps to a library

> Use Docker > Carving Stamp to define a pattern of needle penetrations using a 'carving stamp' as a template.

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.

Tip: The **Carving Stamp** feature can only use vector or embroidery objects as a basis for stamps. If you want to use a bitmap image, you can convert to vector format in **CorelDRAW Graphics** using the **Bitmaps > Outline Trace** command set.

To add a stamp to a library...

1 Select an object which you want to add to the library as a custom stamp.

◀ Digitize carving stamps on the spot using the **Carving Stamp > Digitize** tab.

◀ Define carving stamps using the **Carving Stamp > Use Object** tab.

Bitmap converted using Graphic mode Bitmaps > Outline Trace command

Click to add to library
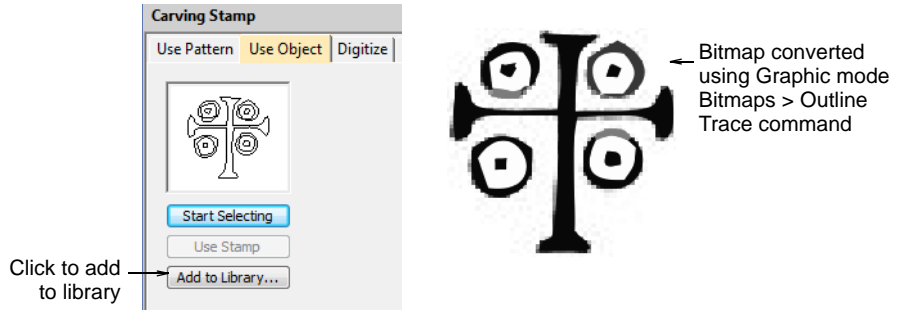
2 On either of these tabs, click the enabled **Add to Library** button. The **Create Split Pattern** dialog opens.

Select library set from droplist

Enter name for new stamp
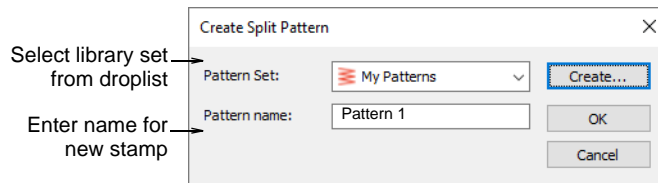
3 Select a set from the droplist or click the **Create** button to create a new library.

If you chose to create a new library set, use the **New Pattern 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.

Enter name for new library set
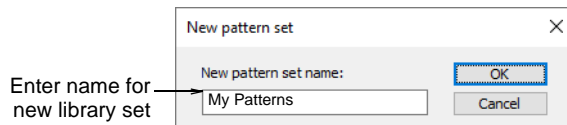
4 Enter a new stamp name and click **OK**. You are prompted to digitize the first reference point in the design window.

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.

Enter first reference point
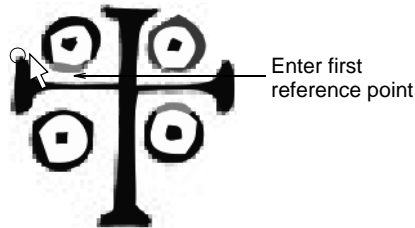
6 Enter the second reference point:
   ◀ Press **Enter** to have the reference point created automatically.
   ◀ Move the mouse pointer to the position you want to use as the **guide point** during manual stamp placement and left-click.

Enter second reference point
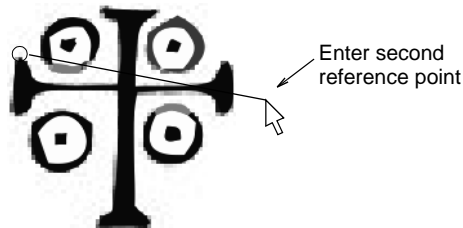
7 Click **OK**. The newly created stamp is displayed in the stamp list when the **Use Pattern** tab is selected.

Note: The **Rename** and **Delete** buttons are enabled in the **Use Patterns** tab whenever a custom stamp is selected.

Related topics...
◀ Digitize custom splits
◀ Use objects as carving stamps
◀ Apply predefined patterns

Carving stamp appearance

Use Docker > Carving Stamp to define a pattern of needle penetrations using a 'carving stamp' as a template.

The **Appearance** tab of the **Carving Stamp** docker provides settings which can help to soften or intensify the effect.

Appearance options
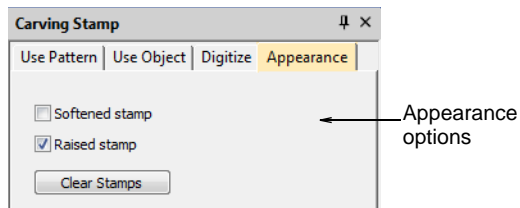
◀ Checking the **Softened Stamp** checkbox causes any existing stamp/s to be softened.

Unadjusted appearance   Softened appearance   Raised appearance
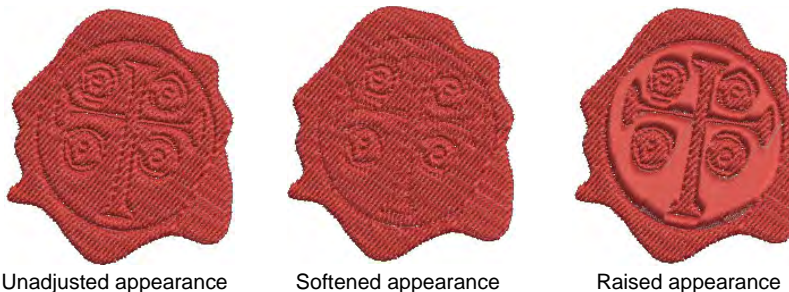
◀ Checking the **Raised Stamp** checkbox cause any splits within the combined closed boundaries of a carving stamp to be removed.

Note: Clicking the **Clear All Stamps** button will cause all existing stamps to be removed from selected objects.

Reshape carving stamps

> Use Reshape > Reshape Object to reshape selected objects by means of control points.
>
> Use Reshape Views > Show Reshape Nodes to toggle reshape-node display when using the Reshape Object tool.

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...

◀ Select an embroidery object in **Reshape** mode with carving stamps applied. A diamond selection handle is displayed at the center of each stamp.

Click a diamond selection handle
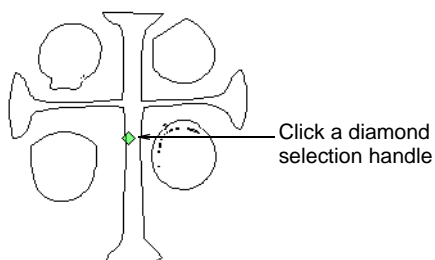
◀ Select the diamond selection handle. Another set of sizing, stretching and rotation handles appears.
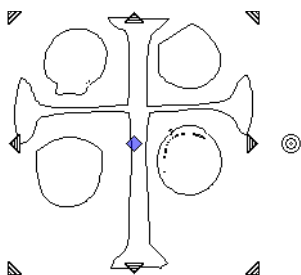
◀ Drag the diamond to move the stamp. Holding down the **Ctrl** key will constrain the movement to the horizontal or vertical axis.

Drag diamond
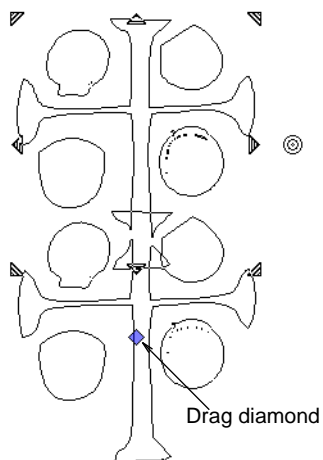
◀ Drag a corner sizing handle to scale the stamp.

Drag corner
sizing handle
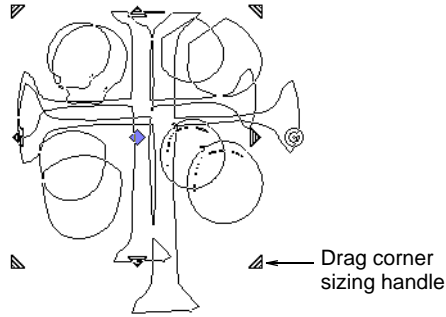
    ◀ Hold down the **Shift** key to scale stamp from the center.
    ◀ Hold down the **Ctrl** key to scale stamp proportionally.
    ◀ Hold down both **Ctrl** and **Shift** keys while dragging a corner sizing handle to scale stamp proportionally about the center.

◀ Drag a stretching handle to stretch the stamp. Hold down the **Shift** key to stretch from the center.

Drag stretching
handle

Drag rotation
handle
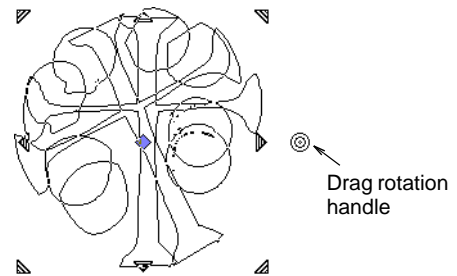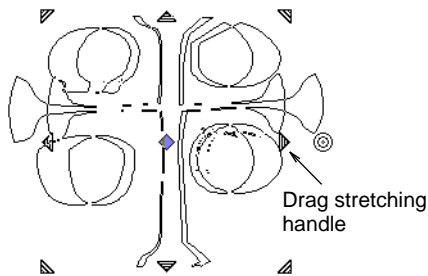
◀ Drag the rotation handle to rotate the stamp.
◀ Click the stamp outline to display control points. Use these to reshape the stamp.
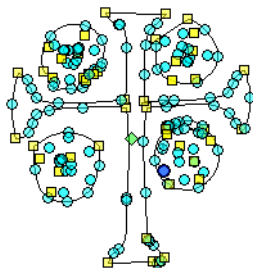
Chapter 22
Curved Stitching

EmbroideryStudio provides a variety of stitch types and techniques for creating curved stitching effects. These follow the contours of a shape and can be used to give a sense of depth and movement to your stitching. Some can be used with borders as well as fills.

Curved stitch effects covered in this section include:

Feature		Overview
	Contour	Stitches follow the contours of a shape, creating a contoured, light and shade effect.
	Offset	Similar to Contour in following the contours of a shape. It can be used in combination with turning stitches.
	Spiral Fill	Works best with simple shapes without holes or islands. Use it with either fixed or variable length run stitching.
	Radial Fill	Generates radial turning stitching with various stitch types including satin, tatami and program splits.
	Flexi Split	Decorative effect where one or more lines of a program split pattern are molded to the object shape.
	Florentine / Liquid	Create interesting curved effects by shaping needle penetrations to follow the contour of digitized lines.

Contoured fills

Contour is a curved fill stitch type which can be applied to Column A/B or Circle/Ring objects. It can also be used for outline stitching. Stitches follow the contours of a shape, creating a contoured, light and shade effect. Use it to create a sense of movement in contrast to flatter fills created by tatami stitching.

Digitize contour fills

Use Outline Stitch Types > Contour to create outlines which follow object contours, creating a curved, light-and-shade effect. Right-click for settings.

Use Fill Stitch Types > Contour to create fills which follow object contours, creating a curved, light-and-shade effect. Right-click for settings.

Use Traditional Digitizing > Column A to create columns of varying width and stitch angle. Right-click for settings.

Use Traditional Digitizing > Column B to create asymmetrical columns of turning stitches, where opposite sides are different shapes. Right-click for settings.

Use Graphics Digitizing > Ellipse to digitize ellipse or circle embroidery objects.

The **Object Properties > Fills > Contour** tab offers the following contour stitch options. There are three types of contour stitching which

can be applied to most closed objects – **Standard**, **Spiral** and **Even Density**.

Select contour type

Select backstitch type
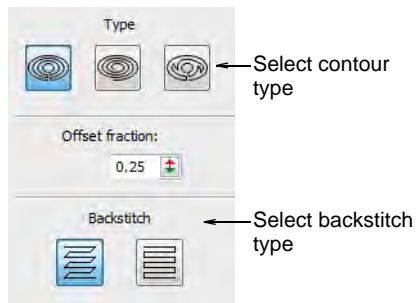
Standard contour

	Standard	Lays rows of stitches back and forth along a shape, perpendicular to the digitized stitch angle.

The number of stitch lines is constant, so stitching is denser where the shape narrows, and more open where the shape widens.
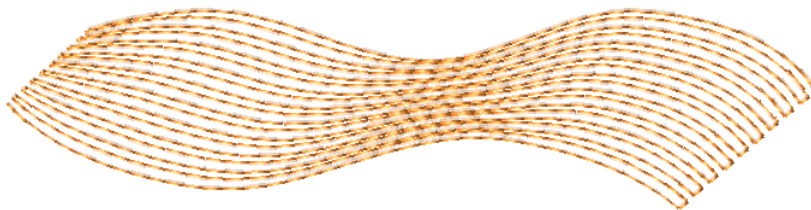
Spiral contour

	Spiral	Creates a single, continuous line of stitching that spirals around to fill the shape.

Spiral is typically used for rings and borders, it is also suitable for other closed shapes.
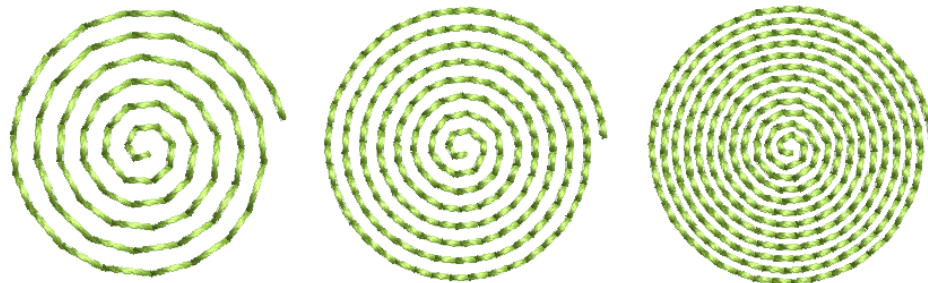
Spiral Contour can only be used with closed shapes with two outlines such as rings. If a shape is not properly closed, it will be filled with **Standard Contour** instead.

💡

Tip: To fill a solid shape with **Spiral Contour**, create a closed object with a very small hole at the center. For example, to create a circle filled with **Spiral Contour**, digitize a thick ring with a very small inner boundary.

Even density contour

🔘	Even Density	Maintains even density across shapes which vary in width.

Even Density is ideally suited to shapes of variable width. Contour stitching follows the shape with uniform stitch density.

Standard   Even density

⚠️
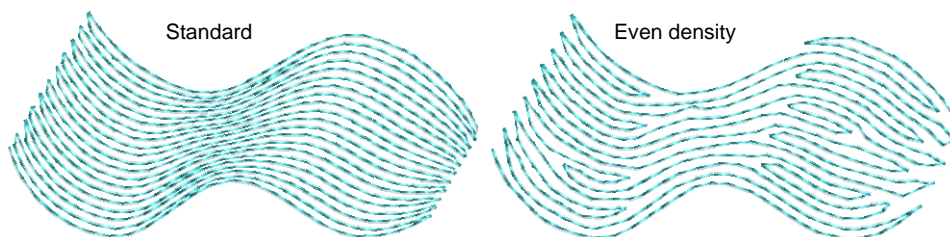
Caution: EmbroideryStudio may not generate even-density contour stitching in certain shapes. Stitching will revert to standard contour stitching.

Backstitch

The **Backstitch** panel offers a choice of two backstitch styles – **Standard** and **Borderline**.

Borderline
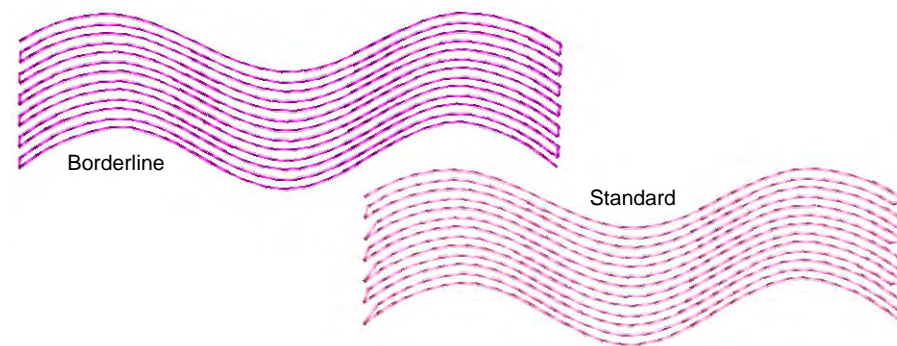
Standard

The term 'backstitch' refers to every second row of stitches in the fill. The choice depends on style – dense or less dense.

Backstitch		Function
	Standard	Creates backstitch rows that are slightly shorter than the forward rows, reducing small stitches. Suitable for high density fills.
	Borderline	Creates parallel backstitch rows to give a smooth, well-defined edge. Suitable for lower density fills.

If spacing is small, **Borderline** backstitch will not be applied. This prevents damage to the fabric from too many small stitches.

💡
Tip: When you digitize shapes with pointed ends – e.g. leaves, diamonds, stars – cut the ends to prevent the stitches from bunching.

Stitch bunching at sharp ends
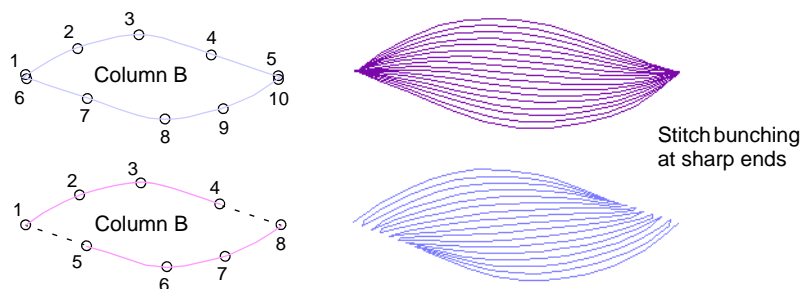
Contour stitch settings

	Use Stitch Types > Outlines > Contour to create outlines which follow object contours, creating a curved, light-and-shade effect. Right-click for settings.
	Use Stitch Types > Fills > Contour to create fills which follow object contours, creating a curved, light-and-shade effect. Right-click for settings.

Adjust stitch length, spacing and offset fraction for **Contour** fills.

To adjust contour stitch settings

◀ Right-click the **Contour** icon to access object properties.
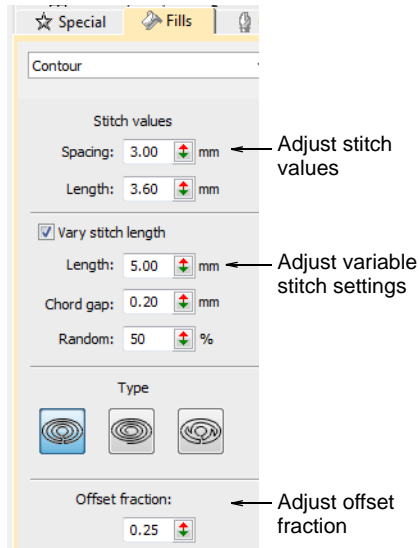
◀ The **Spacing** setting has the most conspicuous effect on contour fills. Use it to adjust between dense and more open fills. The spacing value sets the widest part of the shape. As the shape narrows, spacing decreases.
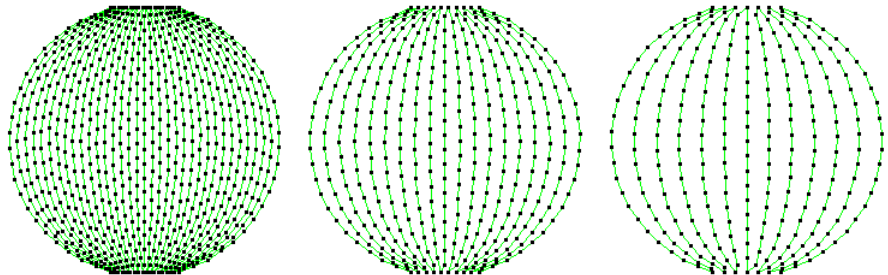
◀ While it has no conspicuous effect on fill appearance, the **Length** setting helps to distribute stitches evenly throughout the shape.
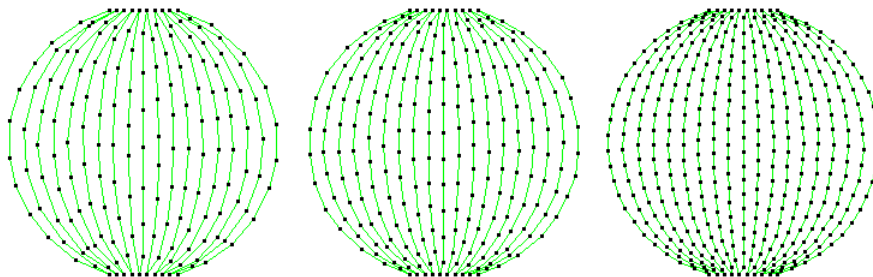
◀ The **Offset Fraction** controls the pattern of needle penetrations to achieve even distribution of stitches and prevent needle penetrations from forming unwanted lines. Try different settings to find the optimal distribution of needle points.
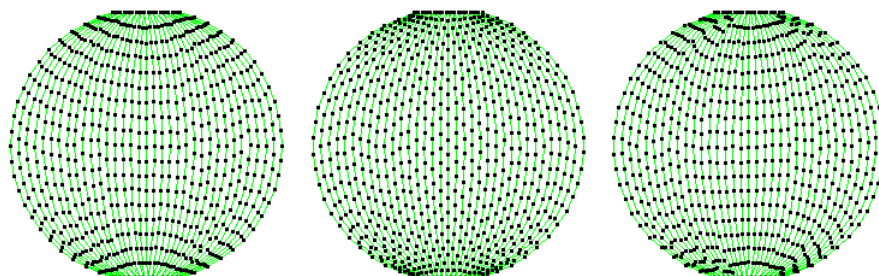
Optimal distribution

◀ Activate **Vary Stitch Length** as preferred. Stitch length is automatically adjusted on corners for more even curves. Settings are the same as simple run stitching.

Variable ON   Variable OFF
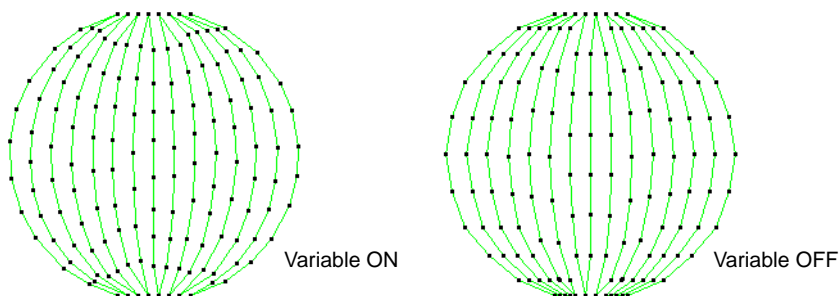
Related topics...

◀ Digitizing methods
◀ Simple run stitching
◀ Tatami density

Offset fills

> Use Fill Stitch Types > Offset Fill to create offset fill stitching in any closed shape.

Offset Fill is similar to **Contour** in that it produces a curved fill stitch type which follows the contours of the shape. However, it can be applied to complex fill objects as well as turning stitch objects. It is fully editable in that it dynamically recalculates offsets as you reshape. Like **Contour**, it is best used for open fills with low stitch counts. Stitch angles have no effect on the fill pattern.

When applied to shapes of varying width, **Offset** fill is similar to **Contour > Even Density** in producing an even distribution of needle penetrations, avoiding stitch bunching in narrower sections.

Offset fill

Contour even density fill
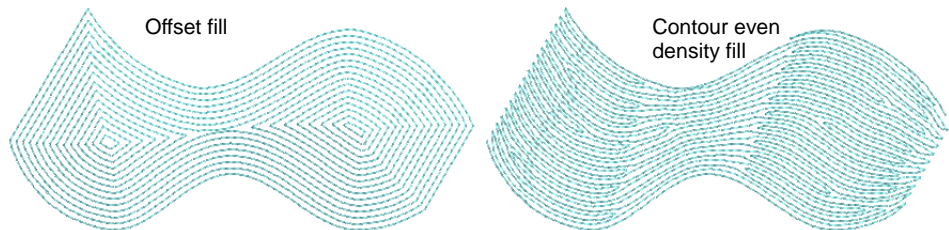
Offset fill settings are similar to **Contour** fill. The **Spacing** setting has the most conspicuous effect for creating less or more open fills.

Adjust stitch values →

Adjust variable stitch settings →
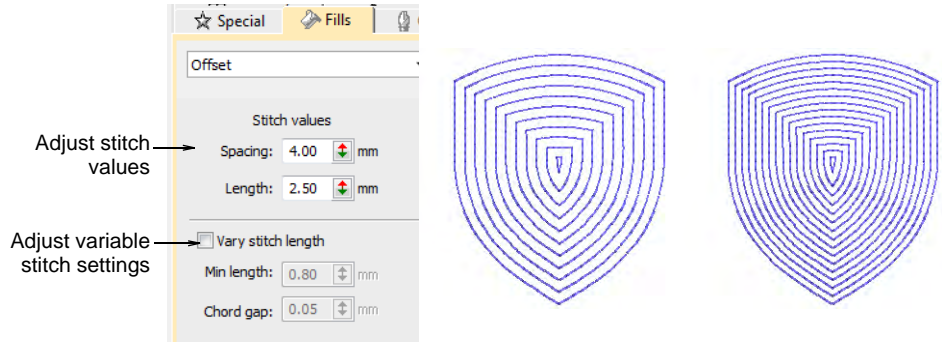
Related topics...

◄ Digitizing methods
◄ Maze fills
◄ Simple run stitching
◄ Tatami density
◄ Stitch length settings

Spiral fills

Use Fill Stitch Types > Spiral Fill to create spiral stitching from the center of any closed object.

Use **Spiral Fill** to create open stitching that follows the contours of a shape. It is useful when trying to emphasize movement in your digitizing. It works best with simple shapes that can be stitched in a single segment without holes or islands. Use it with either fixed or variable length run stitching. With longer shapes, it may generate stitches that go outside the perimeter of the object, but this can provide for some interesting visual effects. Different stitch types can be used – sculpture, backstitch,

stemstitch, or run stitch. Similarly, basic spiral fills can be converted to outlines such as motif run, satin outline, sequin run, and bling run.

To create a spiral fill

◀ Create or select a closed shape and click **Spiral Fill**.
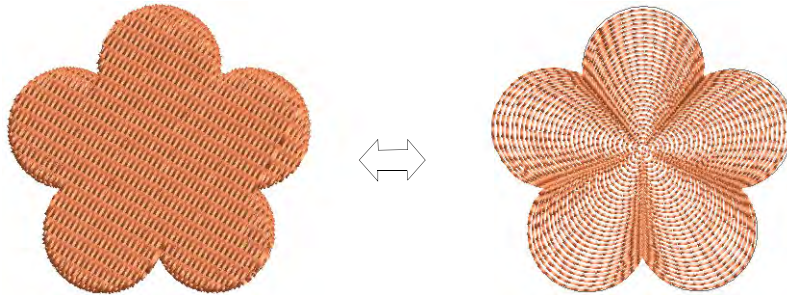
◀ To change settings, double-click or right-click the object to access object properties.

Select stitch type

Adjust spacing and length values
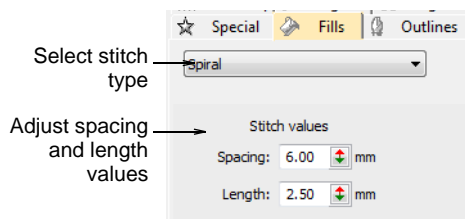
Note: Stitch angle has no effect on the pattern layout.

◀ Adjust spiral **Stitch settings** as desired:

◂ Adjust **Stitch length** for smoother or sharper curves.
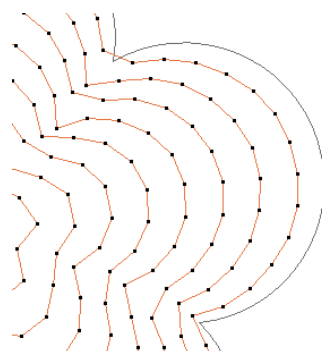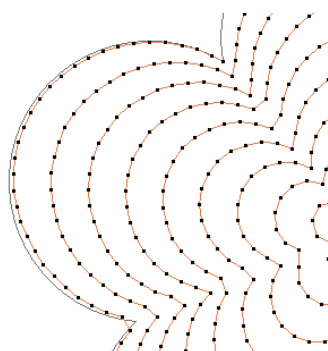
Stitch length: 2.0 mm   Stitch Length: 1.0 mm

◂ Adjust **Stitch spacing** for denser or more open stitching.
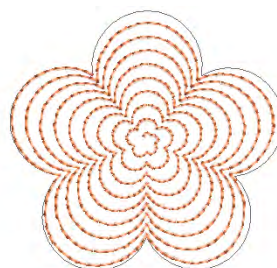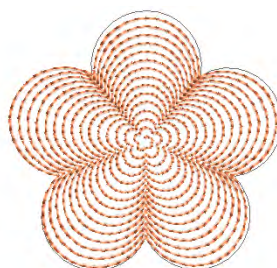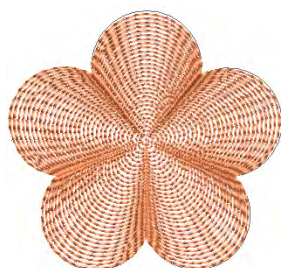
Note: If the object already has a hole, this is ignored when spiral is applied. It returns when other stitch types are applied.
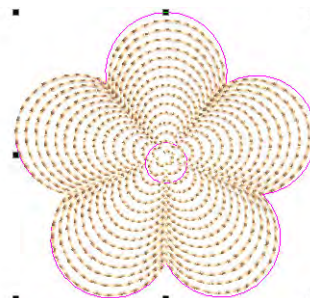
Tip: The center of the spiral can be reshaped or moved with the **Reshape Object** tool. Some interesting visual effects can be achieved. You can even move it outside the object outline.
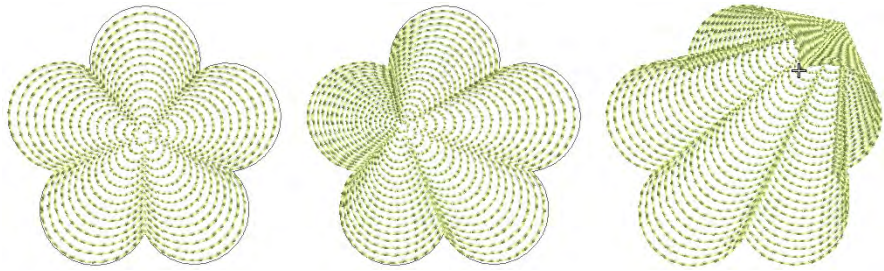
Related topics...

◀ Digitizing methods

Radial fills

🌸 Use Stitch Effects > Radial Fill to create radial turning stitching with various stitch types including satin, tatami and program splits. Can be applied to ring shapes.

🔸 Click Reshape > Reshape Object to view the reshape nodes of a selected object.

Radial Fill creates radial turning stitching in either **Satin**, **Tatami** or **Program Split** objects. Stitches are generated from the outside edge to the geometric center. The center can be shifted. The effect may be on or off while digitizing. Operations such as **Mirror Merge** or **Remove Overlaps** preserve the effect.
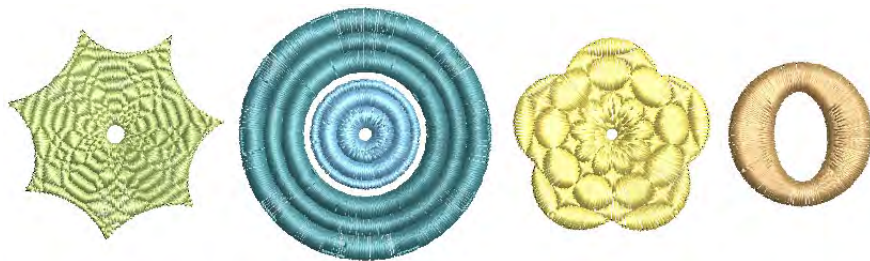
To create a radial fill

◀ Select a closed-object and click the **Radial Fill** icon.
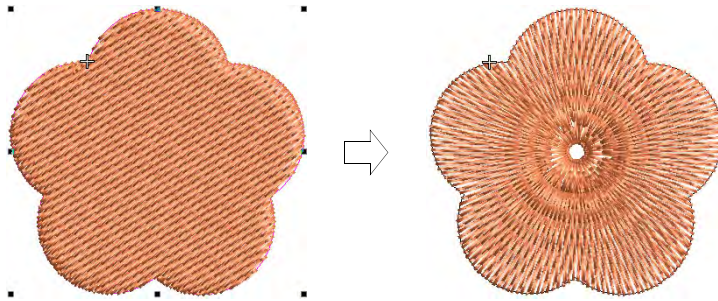
◀ To modify, select and click **Reshape Object**. In **Reshape** mode, you can:

  ◀ Move the center point of the radial stitching.
  ◀ Set the size of the center hole.
  ◀ Edit the hole shape for circle/ellipse.
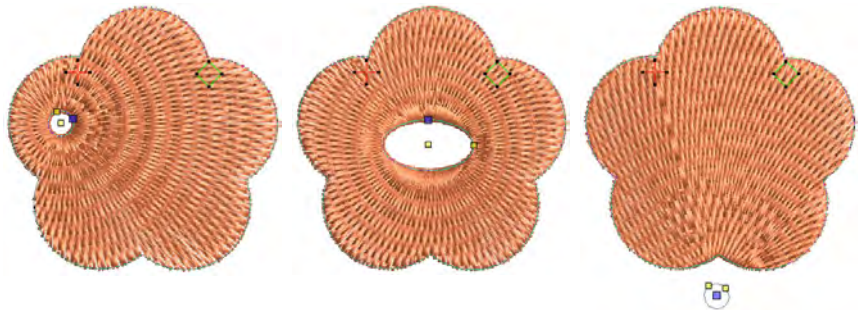
  ◀ Alternatively, hole properties can be changed via **Object Properties**.

Adjust hole dimensions
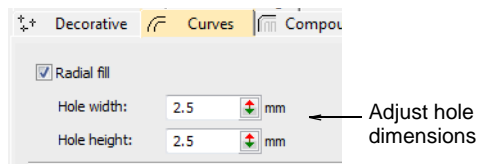
💡 **Tip:** Like **Spiral Fill** stitch, the center of **Radial Fill** effect can be moved outside the shape or into an included hole to achieve a different effect, without losing the original shape.

◀ Optionally, apply **Satin**, **Program Split** and/or **Jagged Edge** together with **Radial Fill**.

◀ Press **Enter** to apply, **Esc** to finish.

Note: You are not able to directly edit stitch angles generated by **Radial Fill**. But you can apply **Break Apart** and edit the resulting turning angle closed object. See also Break apart composite objects.
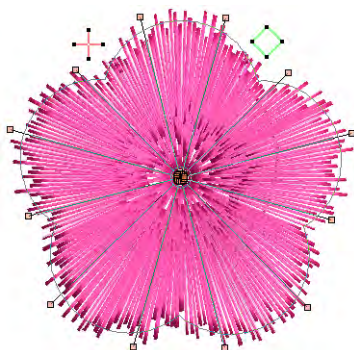
Tips for use...

Not all patterns and stitch settings or objects (size specific) are suitable for **Radial 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 **Jagged 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 Run** underlay with smaller objects, to help reduce the number of stitches at the object center.

◀ **Radial Fill** can be applied to ring shapes. The center of the radial effect will lie within the hole of the ring. Use **Reshape** to adjust as necessary.

Flexi-splits

Use Stitch Effects > Flexi Split to create decorative split patterns following stitch angles and scaled according to object width. Right-click for settings.

Flexi Split is a decorative effect where one or more lines of a program split pattern are used in the object fill. It is both a patterned and curved fill. 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 **Flexi Split** to a wide variety of object and stitch types. Use existing patterns or create your own.

To apply the Flexi Split

◀ Select an object and click the **Flexi Split** icon.
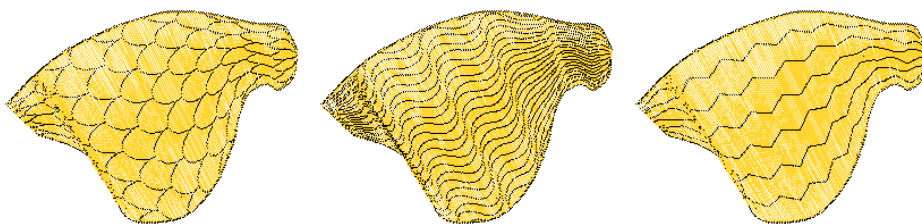
◀ Right-click to access properties.
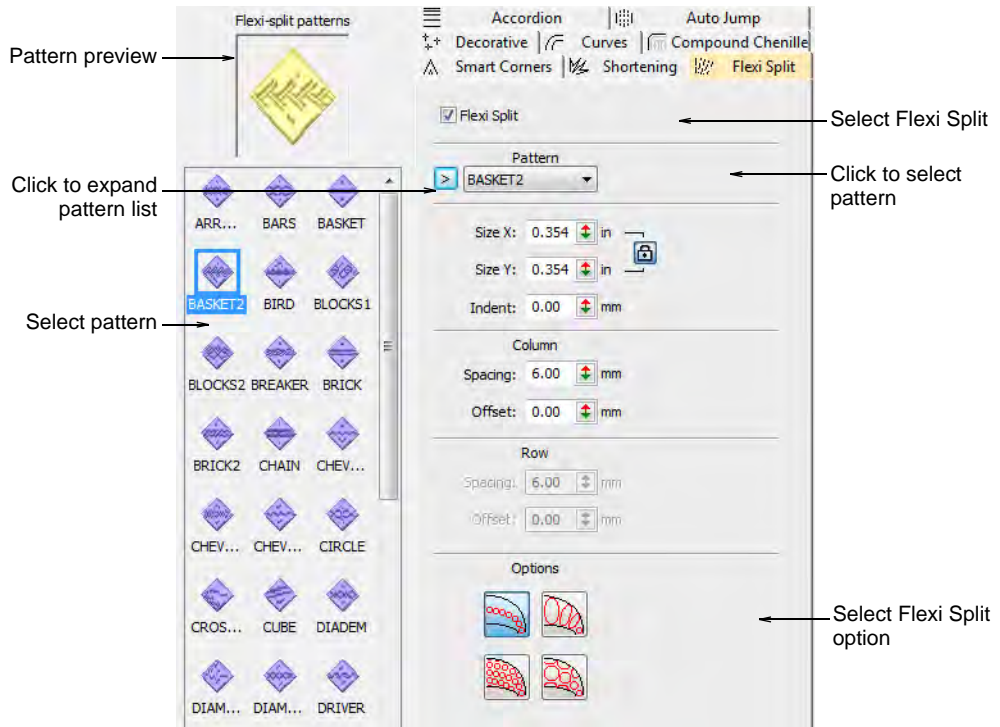
Pattern preview ⟶

Click to expand pattern list ⟶

Select pattern ⟶
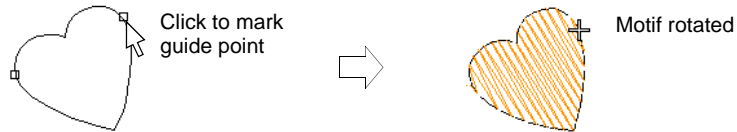
Select Flexi Split ⟶

Click to select pattern ⟶

Select Flexi Split option ⟶

◀ Select a pattern from the droplist. Alternatively, click the arrow button to access the pattern library.

◀ Select one of four options.
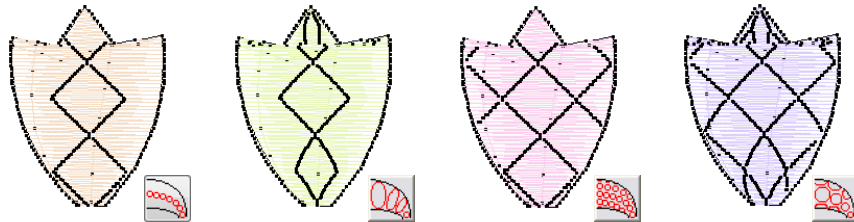
◄ Adjust **Flexi Split** settings to vary size, shape indent, spacing and pattern offsets.

Enter dimensions of largest pattern →

Size X: 0.354 ⬍ in
Size Y: 0.354 ⬍ in 🔒

Indent: 0.00 ⬍ mm ← Enter distance between first pattern and first stitch line

Column

Enter spacing and offsets →

Spacing: 6.00 ⬍ mm
Offset: 0.00 ⬍ mm
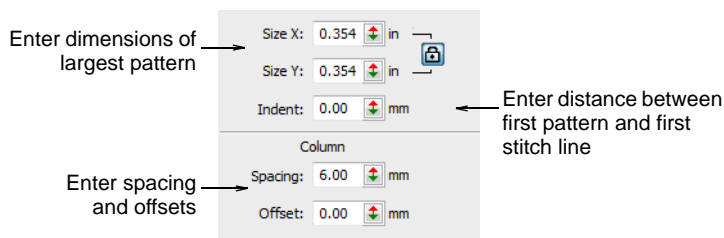
◄ In the **Size X** and **Size Y** fields, enter dimensions of the largest pattern in the effect. The scaling lock maintains aspect ratio.

◄ In the **Indent** field, enter the distance between the first pattern and the first stitch line.
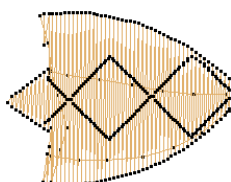
| Default indent values | Indent: 2 mm | Indent: 4 mm |
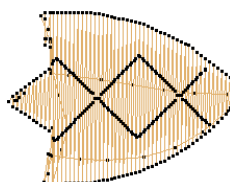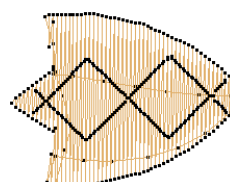
◄ In the **Column** panel, enter spacing and offset settings as required:
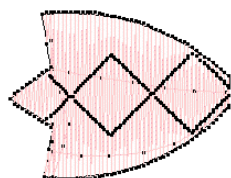
| Default column values | Column spacing decreased | Column offset value changed |
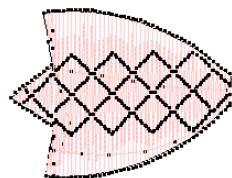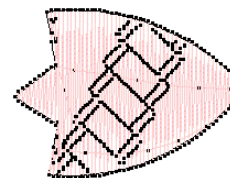
◄ If you selected an option that uses more than one row of patterns, the fields in the **Row** panel are available.
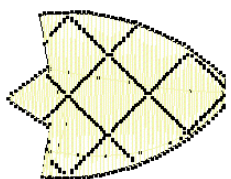
| Default column and row values | Column and row spacing decreased | Row offset value changed |
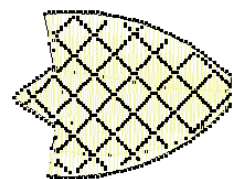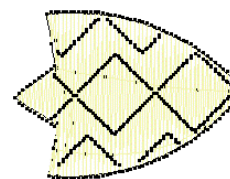
Related topics...

◄ Make split patterns

Curved fills

To create a flowing stitch effect, apply **Florentine Effect**. Stitches follow a digitized line but maintain uniform density and needle penetrations. **Liquid Effect** is similar to **Florentine Effect** except that you enter twin guidelines for stitches to follow.

Create curved fills with Florentine Effect

	Use Traditional Digitizing > Complex Fill to digitize filled shapes with a single stitch angle. Right-click for settings.
	Use Graphics Digitizing > Digitize Closed Shape to digitize closed shapes. Press <Ctrl> to create a square.
	Use Stitch Effects > Florentine Effect to create custom curved stitching.
	Use Reshape > Reshape Object to adjust control points of the guideline.

While you can apply **Florentine Effect** to any closed shape, it is generally used in conjunction with **Complex Fill** or **Close Shape** input methods. This is because **Florentine Effect** overrides any stitch angles already applying. You can apply the effect while digitizing or to existing objects.

To create a curved fill with Florentine Effect

◀ Choose an input method and a suitable stitch type. **Florentine Effect** works well with satin, tatami, or even program splits.

◀ Click the **Florentine Effect** icon.

◀ Digitize boundaries and entry and exit points of the object following the prompts.

◀ Digitize the guideline you want stitches to follow and press **Enter**. The guideline must intersect both sides of the object, have at least three points, and must not overlap itself. Curves generally give better results than sharp corners.
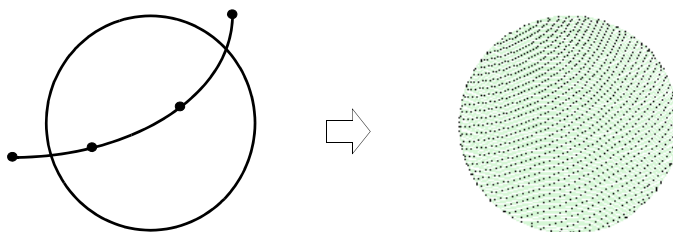
◀ Use the **Reshape Object** tool to modify the guideline.
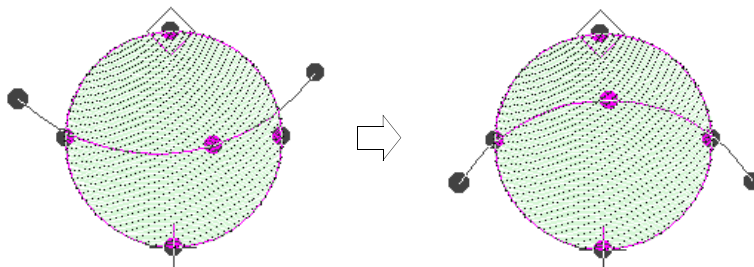
Tips for use...

◀ For best results, use smaller stitch lengths – e.g. 4.00 mm or less.

◀ With satin stitch, turn off auto-splits.

◀ Curved fill effects work better with open stitching.

◀ They can also work well with **Accordion Spacing**.
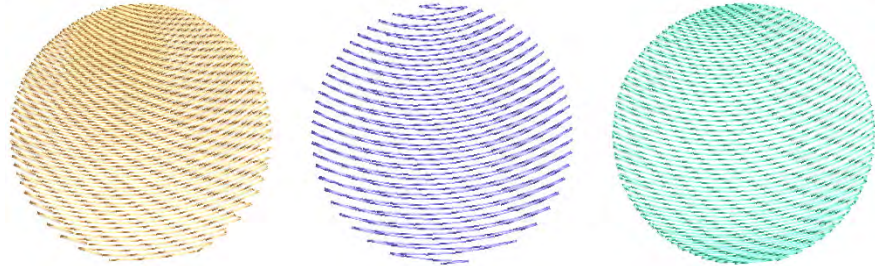
Related topics…

◀ Digitizing Shapes
◀ Stitch Types
◀ Contoured fills
◀ Accordion spacing
◀ Apply curved fills to existing objects
◀ Reshaping embroidery objects

Create curved fills with Liquid Effect

Use Traditional Digitizing > Complex Fill to digitize filled shapes with a single stitch angle. Right-click for settings.

Use Graphics Digitizing > Digitize Closed Shape to digitize closed shapes. Press <Ctrl> to create a square.

Use Stitch Effects > Liquid Effect to create curved stitch effects with two guidelines.

Use Reshape > Reshape Object to adjust control points of the guideline.

Liquid Effect works the same ways **Florentine Effect** except that you enter twin guidelines. Turning stitches are distributed evenly between guidelines to produce smooth curves. **Liquid Effect** guidelines are

digitized **outside** the object, rather than **over**. While you can apply the effect to any closed shape, it overrides any existing stitch angles.

To create a curved fill with Liquid Effect

1 Choose a suitable input method and stitch type, and click **Liquid Effect**.

2 Digitize outline, entry and exit points following the prompts. You are not prompted to digitize a stitch angle.

3 Digitize the first guideline around the outside of the object. You must enter at least three reference points.
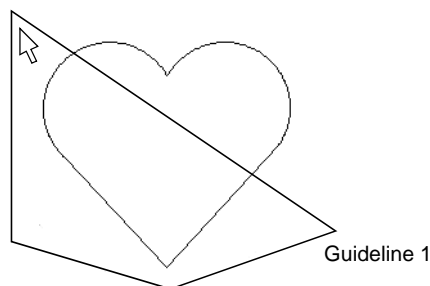
Guideline 1

4 Press **Enter**. You are prompted to enter a second guideline. Elastic lines appear joining the two guidelines.

5 Digitize the second in the same direction as the first, marking at least three reference points.

Note: The two guidelines must not overlap or intersect the object outline.

6 Press **Enter** to apply.
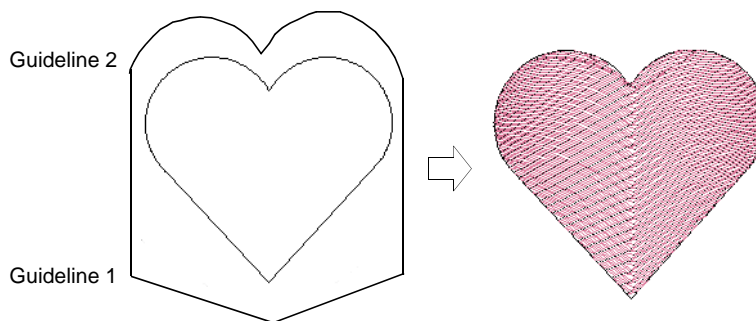
💡
Tip: Use the **Reshape Object** tool to modify guidelines.
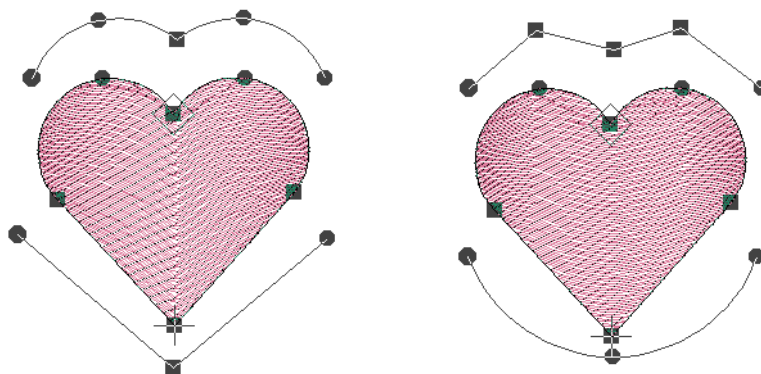
Related topics...

◀ Digitizing Shapes

◀ Stitch Types

◀ Reshaping embroidery objects

Adjust curved fill settings

🔺 Right-click Stitch Effects > Florentine Effect to adjust settings.

🔺 Right-click Stitch Effects > Liquid Effect to adjust settings.

In a curved fill, stitch lengths vary to map the needle point pattern to the curve. You choose between **Nominal** and **Maximum** stitch length calculation.

Nominal

Maximum
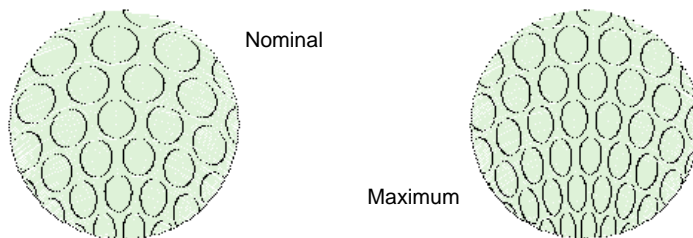
To adjust curved fill settings

◄ Right-click a **Florentine Effect** or **Liquid Effect** icon to access object properties.

Select Florentine Effect
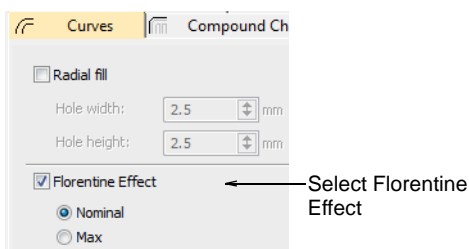
◄ Select a preferred stitch length calculation:

Option	Function
Nominal	Average length of fill stitches matches the current Stitch Length setting. This generates roughly the same number of fill stitches as with normal stitching.
Max	Longest stitch matches the Stitch Length setting. This generally produces smoother curves than Nominal, but the stitch count is higher. Use Max when the curve is tight with respect to the stitch length.

Apply curved fills to existing objects

 Use Stitch Effects > Florentine Effect to apply curve stitching to existing objects.

 Use Stitch Effects > Liquid Effect to apply curve stitching to existing objects.

Apply **Florentine Effect** to existing complex fill objects. The effect can also be applied to Column A/B objects. You can also apply **Liquid Effect** to existing objects.

To apply a curved fill to an existing object

1 Select an object and select a curve fill method.

2 With the object still selected, click the **Reshape Object** icon. A default guideline with three corner control points appears.
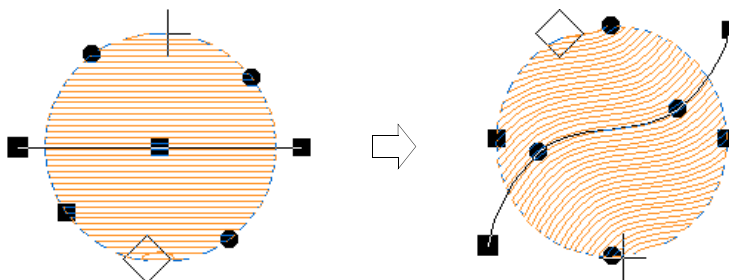
3 Reshape guidelines in the normal way by moving, adding, changing or deleting reference points.

4 Press **Enter**. EmbroideryStudio regenerates stitches along the new curve.

5 Turn on TrueView™ or click the **Show Needle Points** icon to view the results.

Related topics...

◀ Reshaping embroidery objects

Apply curved lines to multiple objects

You can apply **Florentine Effect** or **Liquid Effect** to multiple objects in a design. All objects share the same curved line.

To apply a curved line to multiple objects

1 Using the **Digitize Run** tool, digitize a guideline for the curve to follow. Digitize a second line if you want to apply **Liquid Effect**.
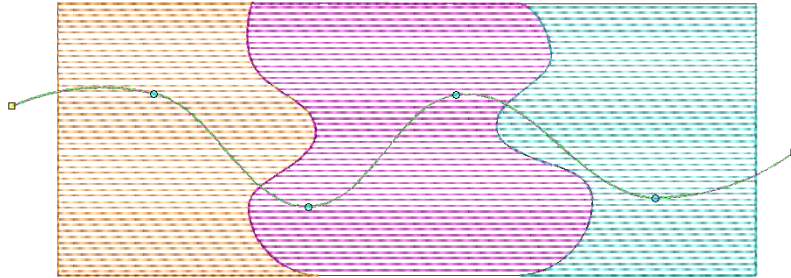
2 With the guideline selected, select **Object > Use for Florentine Effect**. This tags the digitized run as the default curve line.

💡
Tip: With two guidelines selected, the **Object > Use for Liquid Effect** command becomes available.

3 Select an object and click the **Florentine Effect** icon. Notice that the turning stitches follow the guideline.
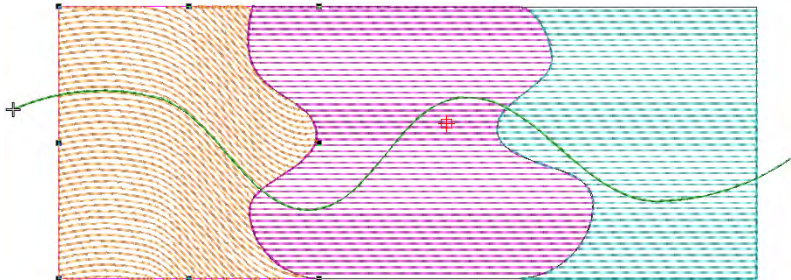
4 Apply to the other objects in the same way. Notice that the turning stitches again follow the original guideline.
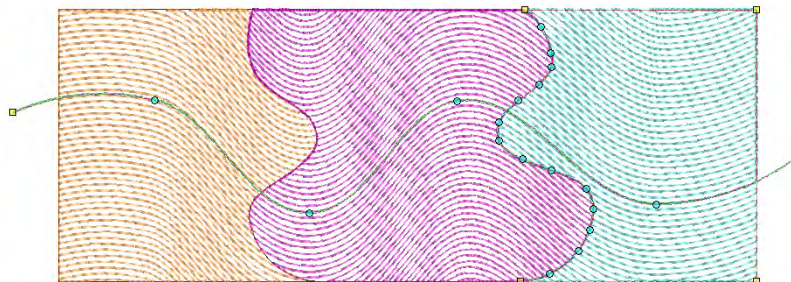
5 Press **Esc** to complete. Optionally, delete the original run object if not required as part of the design.

💡
Tip: Turn on TrueView™ or use the **Show Needle Points** tool to view the results.

Related topics...

◀ Digitizing outlines & details

Chapter 23
Motif Stitching

Motifs are predefined design elements, such as hearts, leaves or border patterns. They generally consist of one or more simple objects, and are stored in special motif sets.

Motifs can be used for ornamental outlines and patterned fills or even on their own. Motifs can be scaled, rotated and mirrored in the same way as other objects. You can even use them to create interesting three dimensional effects.

Whether using them in runs, fills, or individually, motifs can be selected from predefined motif sets. Other ornament types can be used as motifs. You can even define your own, including motifs derived from cross stitching.

Selecting & placing motifs

|	
✦✦✦	Use Outline Stitch Types > Motif Run to create a string of motifs along a digitized line.
▓▓▓	Use Fill Stitch Types > Motif Fill to create decorative fills using embroidery motifs to form repeating patterns. Right-click for settings.
▷	Use Traditional Digitizing > Use Motif to add motifs to design one-by-one. Rotate, scale, or mirror as you add.

You select motifs for use in runs, fills, or individually, via the **Object Properties** docker.
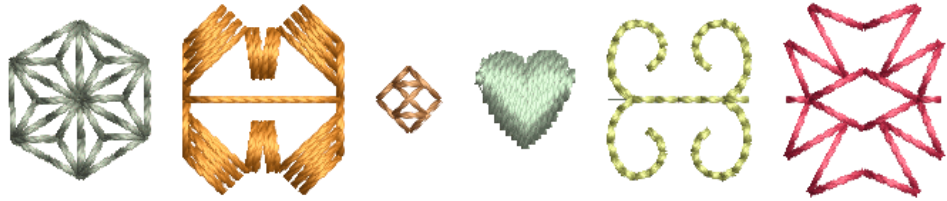
Motifs are commonly used in decorative outlines or open fills. However, you can add them to your design one-by-one. Rotate, scale, or mirror them as you add or edit them like any other object.

To select a motif

◀ Right-click the **Motif Run** icon to access object properties.
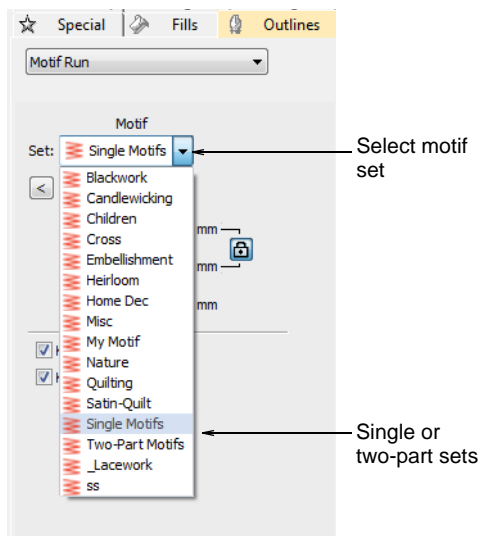
◀ Select a motif set from the droplist. There are two sets specific to motifs – single or two-part. However, you can use any other available set.

◀ Select a pattern from the droplist. Alternatively, click the arrow button to access the motif library.

Motif preview

Select motif from library

Select motif from droplist or click arrow to open library
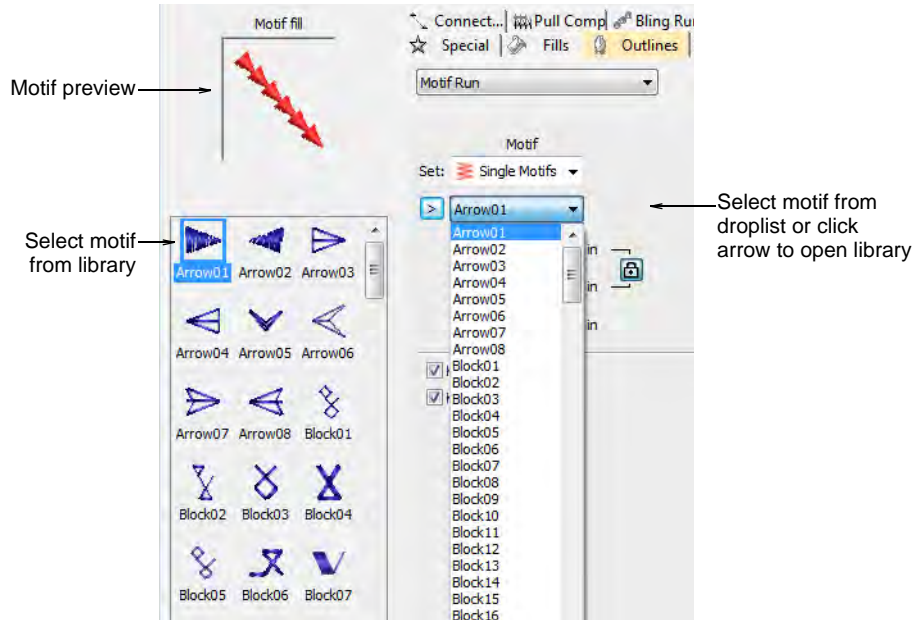
◀ Select **Use Motif**. A motif outline appears attached to the mouse pointer.
◀ Click to mark an anchor point.

Click to mark anchor point
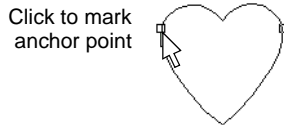
◀ Drag the mouse to rotate, scale, or mirror:

◀ To rotate, move the pointer then click again.

Click to mark guide point

Motif rotated

◀ To mirror the motif, right-click.

Right-click to mark guide point and mirror motif

Motif rotated and mirrored

◀ To scale the motif, press **Shift**, move the pointer, then click again.

Hold down Shift to resize the motif

Hold down Ctrl to constrain rotation angles

Motif rotated and scaled
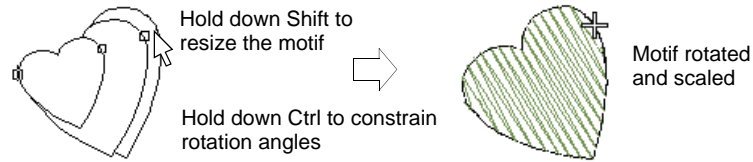
◀ Repeat as required. Stitches are generated automatically.

Insert anchor point

Insert guide point

Repeat as required
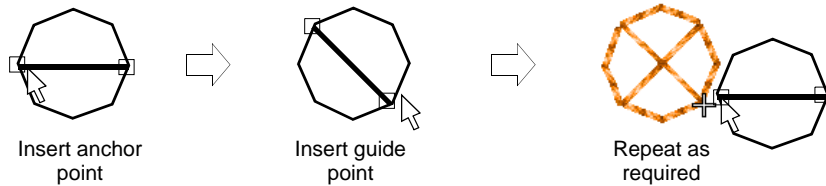
◀ Alternatively, press **Enter** to accept default position and settings.

◀ Press **Esc** to finish.

Tip: You can create motifs from patterns made in **ES Cross Stitch** and use them to create a cross stitch sampler. See **Cross Stitch Supplement** for details.

Motifs created from cross stitching
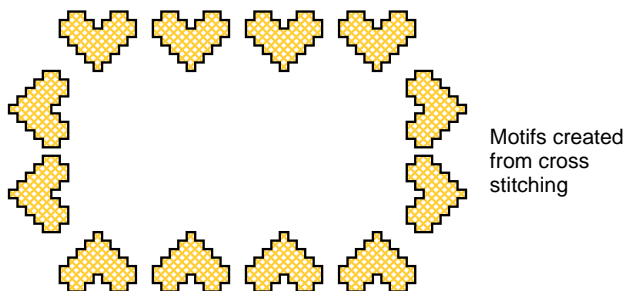
Related topics...

◀ Motif runs
◀ Motif fills

Motif runs

Motif Run is a stitch type that forms repeated motifs along a digitized line. It is typically used for decorative borders or special effects.

Digitize motif runs

◆◆◆	Use Outline Stitch Types > Motif Run to create a string of motifs along a digitized line.
🅖	Use Graphics Digitizing > Digitize Open Shape to digitize open shapes.
🅖	Use Graphics Digitizing > Digitize Closed Shape to digitize closed shapes.
🖋	Use Outlines > Motif Run to place a row of motifs along a digitized line.

Motif runs can be digitized as open or closed objects with graphical or traditional digitizing tools. Pretty much any digitizing tool can be used, including **Freehand**. Motif runs have some different properties to other decorative outline stitches. You can modify rotation angle, orientation and scale, and vary motif spacing.
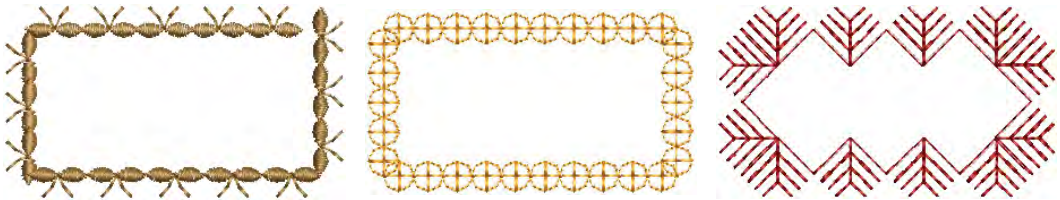
To digitize motif runs

◀ Double-click or right-click the **Motif Run** icon to access object properties and select the motif you require.

◀ Select a motif set and the motif you want to use.
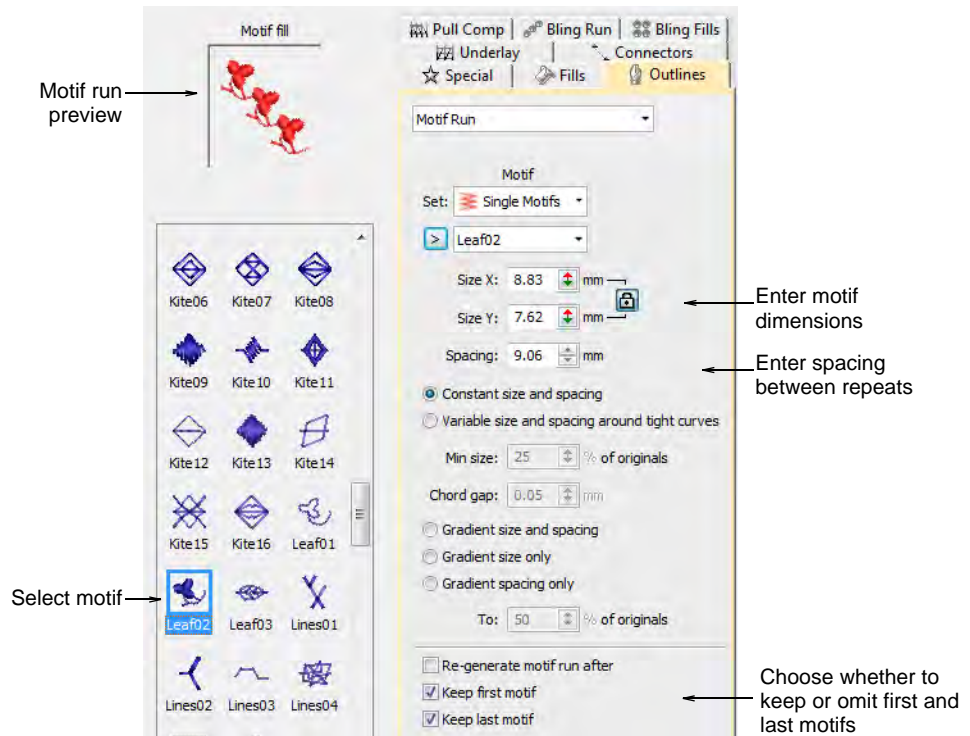
Tip: Select a motif with **no** object selected and click **Apply** to make the selection current. Use it with the **Use Motif** tool.

◀ Select a digitizing tool such as **Digitize Open Shape** or **Digitize Closed Shape** to create a string of motifs along a digitized line:

◀ To use default size and orientation, press **Enter**.

◀ Use the **Size** fields to adjust motif dimensions. The scaling lock maintains aspect ratio.

◄ Use the **Spacing** field to control repeat distance.

Initial spacing   Spacing
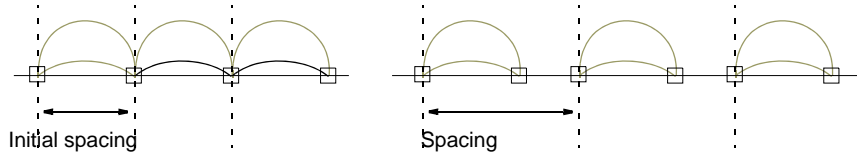
◄ Optionally, use the **Reverse Curves** command in the popup menu to change motif orientation.
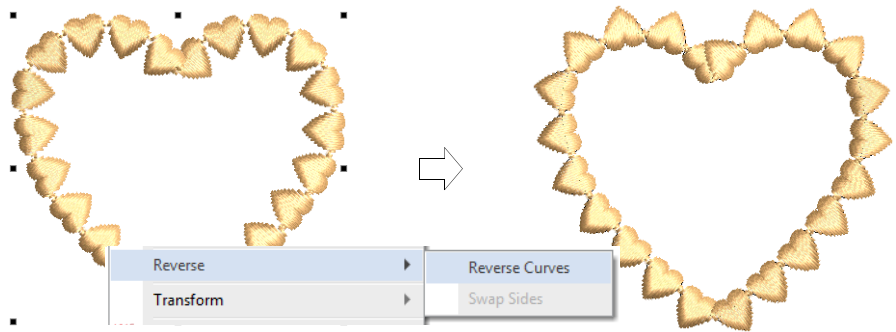
◄ Choose whether to keep or omit first and last motifs to avoid overlaps.

First and last motifs kept

First motif kept, last motif omitted
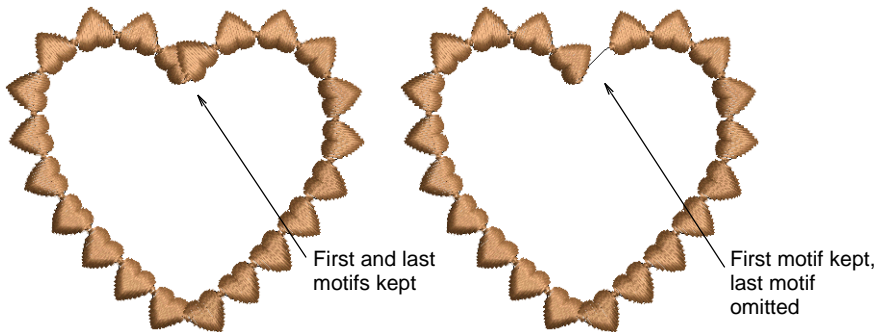
◄ Press **Enter** or click **Apply**.

Create graded motif runs

In some products, size and spacing settings allow you to automatically grade motif size and spacing in motif runs from a specified starting size to finishing size.

Set starting size

Select grading option
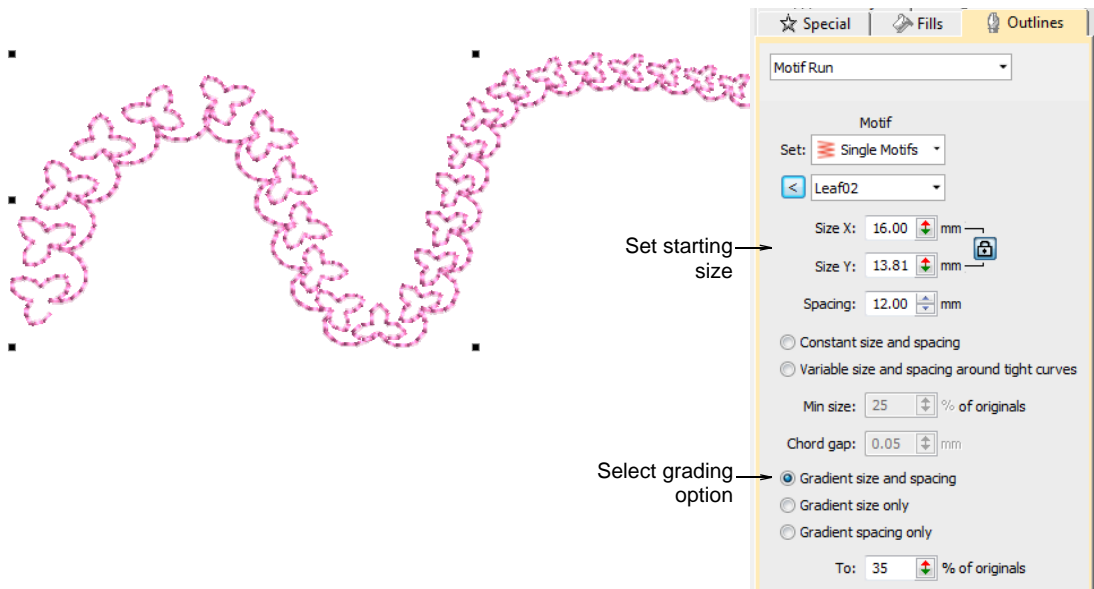
Options include:

◀ Grade motif size proportionally or maintain constant size.

◀ Grade motif spacing proportionally or maintain constant spacing.

◀ Vary motif size and spacing on tight curves. This option automatically reduces motif size and spacing in proportion to the sharpness of the

curve, similar to variable run stitch length. Also similar, the 'chord length' setting controls how closely motifs follow the curve.

Vary motif size and spacing on tight curves
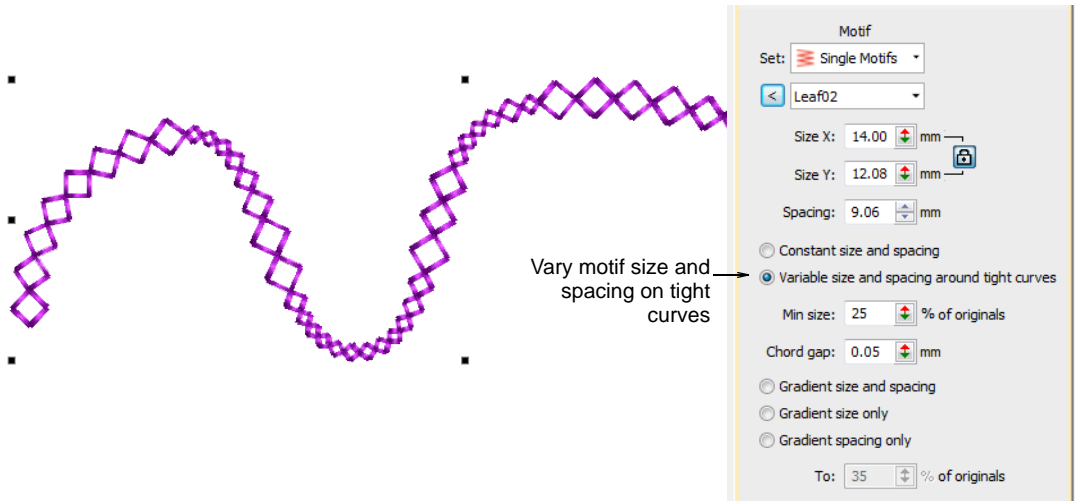
Reshape motif runs

> Use Reshape > Reshape Object to reshape selected motif run objects.

Motif runs can be reshaped like other embroidery object, but special control points are provided.

To reshape a motif run

◀ Select a motif run object and click the **Reshape Object** icon. Control points appear around the motifs.
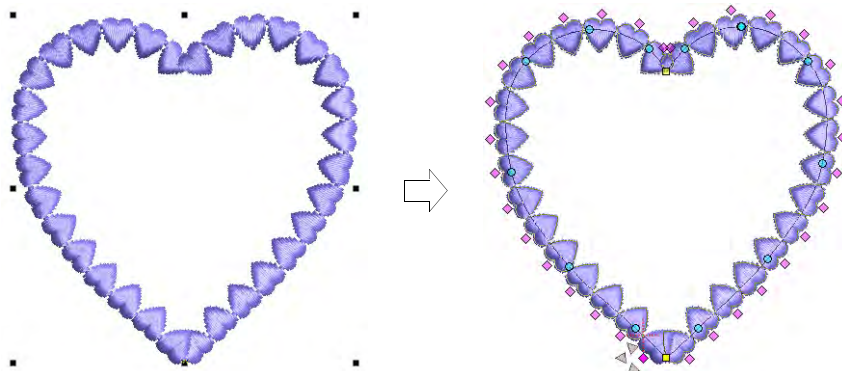
◀ Adjust object size like any other object using sizing handles.

Click and drag handles to resize and reshape whole object

Click and drag sizing handle
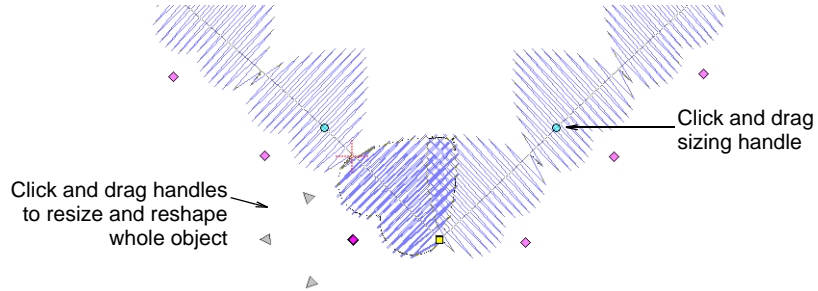
◀ Click the diamond control point of a motif to activate reshape nodes. Use these to fine-tune individual motifs. Each one can be rotated, skewed, or resized respectively.

Angle: 10°

Click to activate reshape nodes

Click and drag control handles to reshape individual motifs
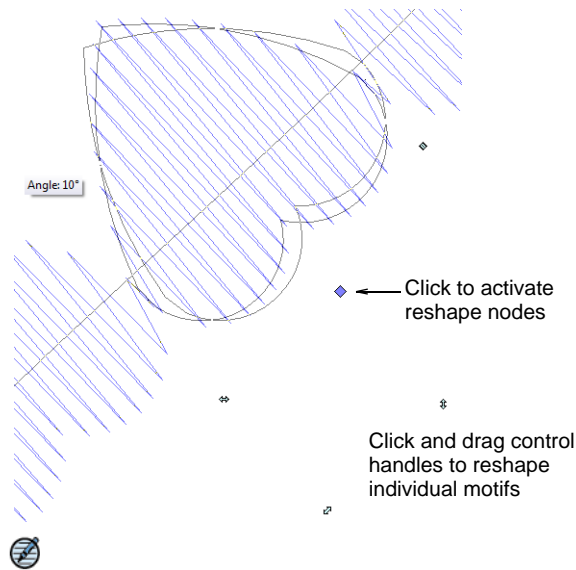
Note: A 'Regenerate motif run' checkbox forces the system to regenerate motif runs based on current settings whenever an object is scaled or skewed. When left unchecked, the system will not

re-generate and the number of motifs will remain unchanged after the transformation.

Regenerate after transformation — Re-generate motif run after

Motif run regenerated – motif size and spacing maintained
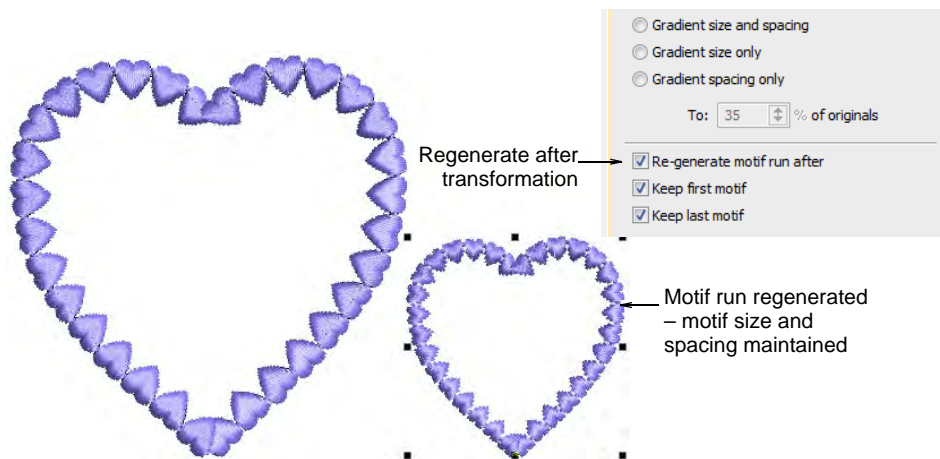
◀ Press **Esc** to finish.

Related topics...

◀ Reshaping Objects

Motif fills

Motif Fill is a decorative stitch used for filling closed objects. This feature repeats motifs in parallel rows to fill the shape. It is generally used for open stitching and special effects. Alternatively, it can be layered over top of solid stitching backgrounds. You can select different motifs for forward and backward rows. You can create motif layouts onscreen or via object properties. **Auto Underlay** is deactivated with motif fills and stitch angle has no effect.

Digitize motif fills

Use Fill Stitch Types > Motif Fill to create decorative fills using embroidery motifs to form repeating patterns. Right-click for settings.

Use Traditional Digitizing > Complex Fill to digitize filled shapes with a single stitch angle. Right-click for settings.

Digitize closed objects with **Motif Fill** or apply it to existing objects. Pretty much any closed digitizing tool can be used, including **Freehand Closed Shape**. Stitch angles are ignored. Select from a wide range of motifs. Mix and match different motifs for forward and backward rows, or use the same motif for each. There is a special **Two-Part Motifs** set which contains complementary paired motifs.

To digitize a motif fill

◀ Click **Motif Fill** and select a closed digitizing tool.

◀ Double-click the object or right-click the **Motif Fill** icon to access object properties.

Select motif for forward row

Select motif set to select from for forward row

Select motif for backward row

Select motif set to select from for backward row
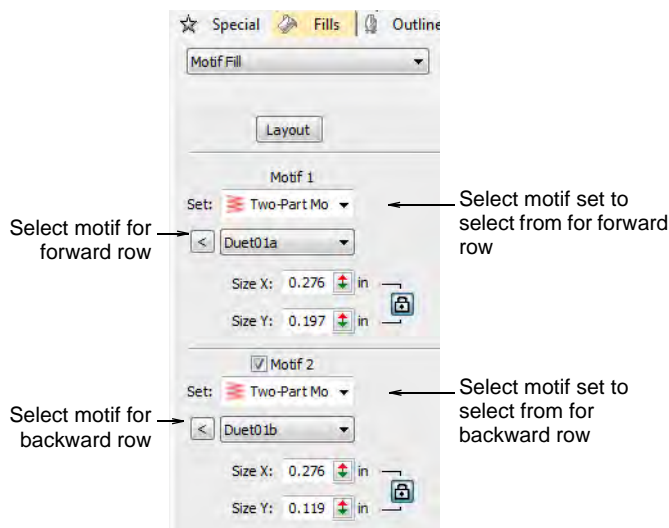
◀ In the **Motif 1** panel, select a motif set and pattern from the library. For single rows, use the **Single Motifs** set. You can also use monogram ornaments or even define your own sets.
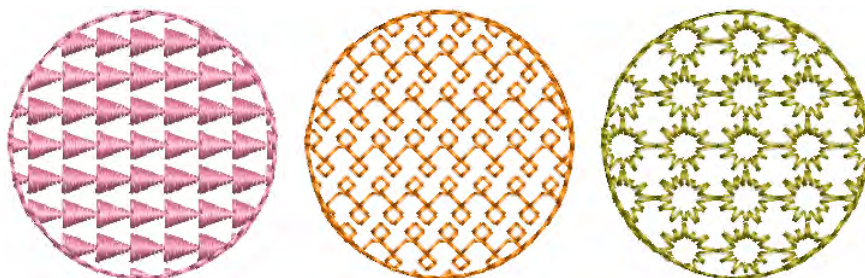
◀ If you want different motifs for forward and backward rows, select the **Motif 2** checkbox. For best results, use the **Two-Part Motifs** set for both.

◀ In the **Motif 2** panel, select a complementary motif. The predefined two-part motif set is specially designed to provide complementary motifs for forward and backward rows – e.g. 'Duet01a' and 'Duet01b'.
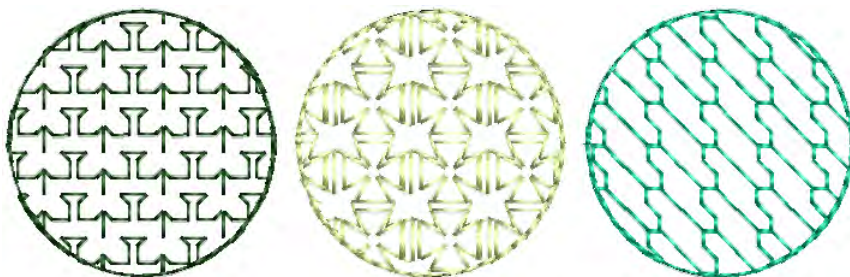
💡
Tip: As an alternative, you can generate layers of colored motifs by duplicating an object and selecting a different color and/or motif.
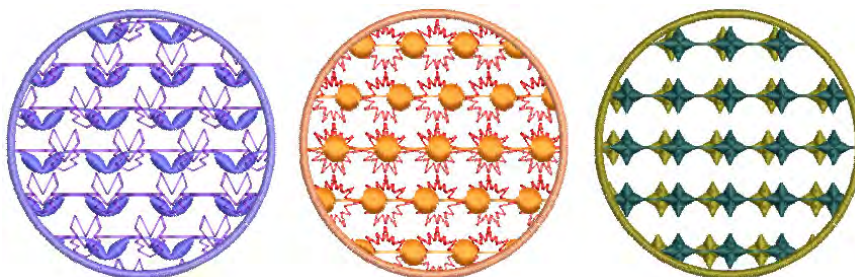
Related topics...

◀ Motif scaling

Motif fill settings

> 🔴 Use Fill Stitch Types > Motif Fill to create decorative fills using embroidery motifs to form repeating patterns. Right-click for settings.

You can adjust motif fills both interactively on screen and via object properties.

Spacing & offsets

You can adjust the exact row, column and spacing settings for motif fills. The default settings define a simple grid where the spacing equals the

motif dimensions. The row offset is set to 0.00 mm so columns and rows are perpendicular.
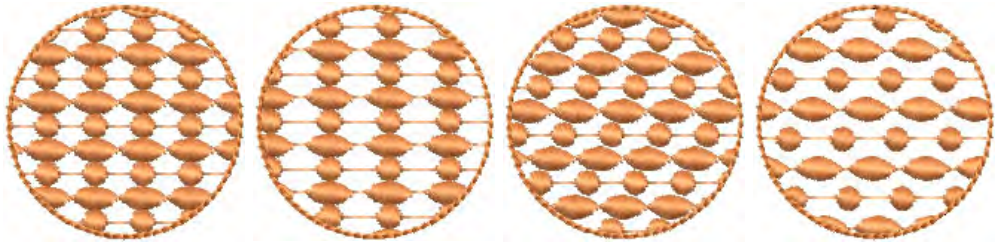
◀ To adjust spacing and offset settings, open the **Object Properties > Fills > Motif Fill** dialog.

Enter column spacing

Enter row spacing and offset

Scale and clip motifs to fit shape
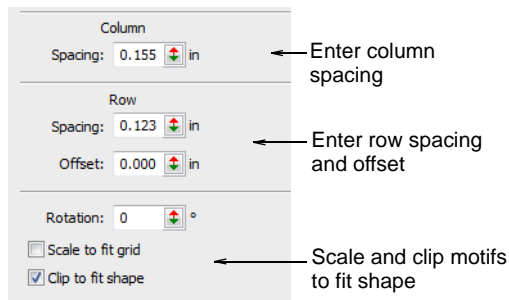
◀ Adjust column and row spacing as well as row offsets.
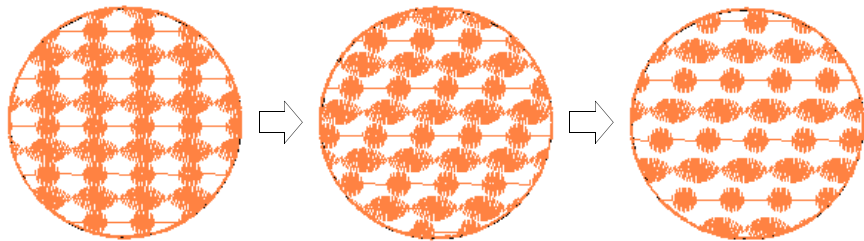
◀ Select the **Scale to fit grid** checkbox to scale motifs to exactly fit the grid squares.

◀ Select the **Clip to fit shape** checkbox to clip motifs that do not fit the shape.
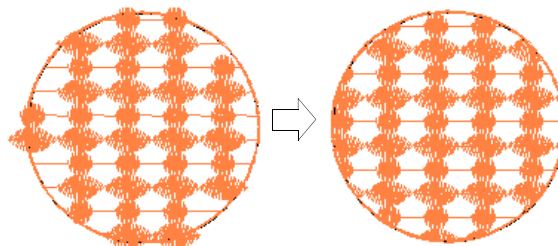
Motif scaling

You can set the exact size of motifs in a fill. You can also scale **Motif 1** and **Motif 2** motifs independently. Adjust **Size** controls in the **Object Properties > Fills > Motif Fill** dialog.
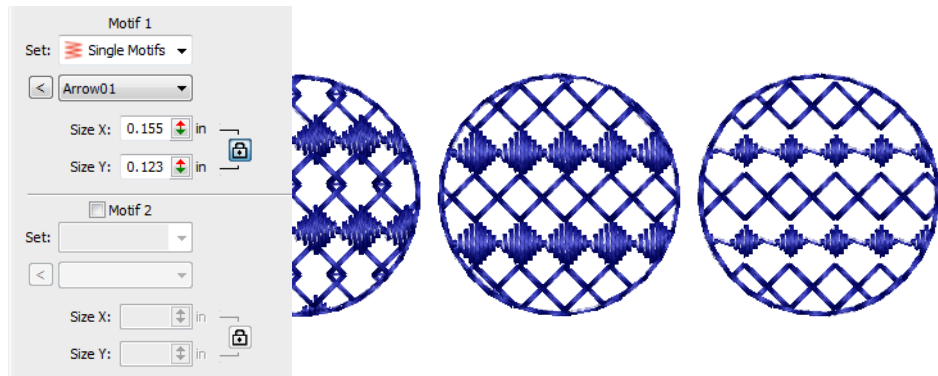
Motif rotation

The rotation angle defines the orientation of the entire motif fill pattern. It overrides the stitch angle you set when digitizing the shape with **Complex Fill**. Enter a rotation angle in the **Object Properties** docker.
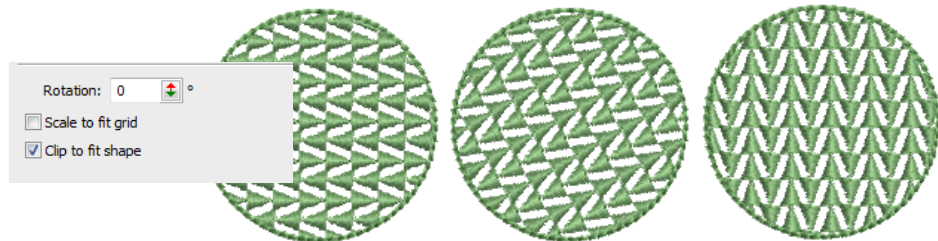
Lay out motif fills on-screen

> ▦ Use Fill Stitch Types > Motif Fill to create decorative fills using embroidery motifs to form repeating patterns. Right-click for settings.

Lay out motif fills on-screen in a similar way to program splits by using 'guide motifs' to scale, space, transform and offset the entire fill. There

are three blue guide motifs. Each guide motif lets you change a different element of the layout. Stitch angle has no effect on motif layouts.
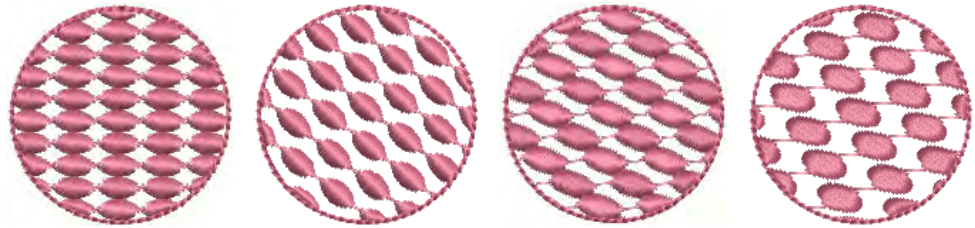
Generally you define a layout before digitizing. If it is important to align motifs with the object boundary, digitize the object using current settings, and change the layout afterwards.

To lay out motif fills on-screen

1 Right-click the **Motif Fill** icon to access object properties.

Click to lay out selected motif
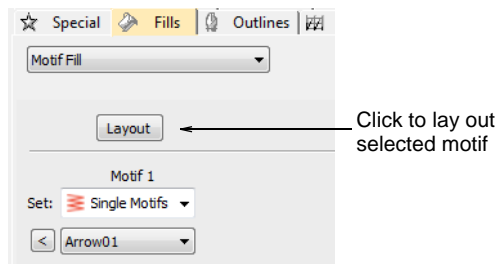
2 Select a motif set and motif and click **Layout**. Sample and guide motifs appear in the design window. Zoom in to select the correct guide motif.

Use top guide motif to change row spacing, row offset, and to scale motifs

Use middle guide motif to move, rotate, skew, and scale motifs

Use side guide motif to change column spacing, and to scale motifs
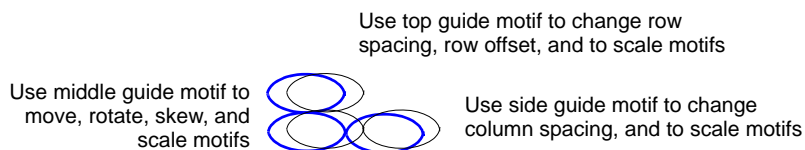
3 Adjust the guide motifs to achieve the effect you require:

◀ Move motifs by selecting the middle guide motif and dragging it to a new position.

◀ Scale motifs by selecting a guide motif and resizing it using the selection handles.
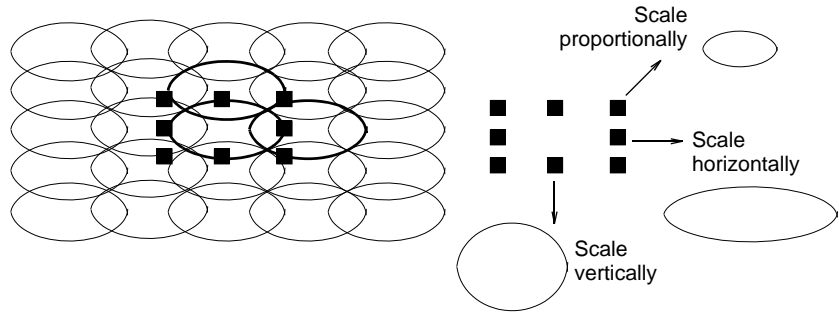
◀ Rotate motifs by clicking the middle guide twice to display the rotation handles. Click a corner handle and drag to rotate.
◀ Skew motifs by clicking the middle guide twice, then dragging the skew handles.
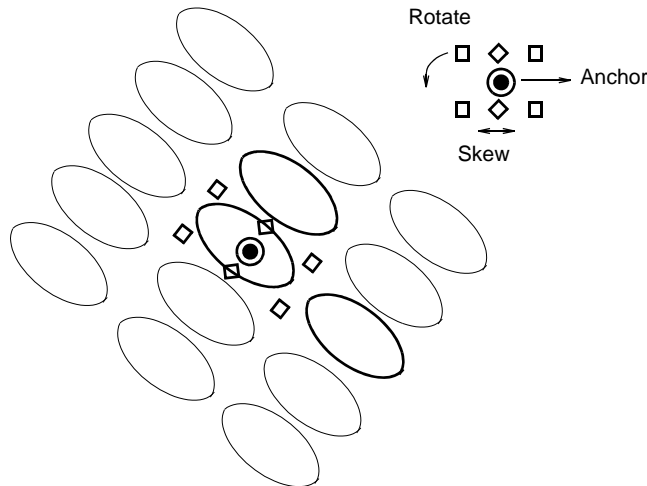
◀ Change column spacing by selecting the side guide and dragging it left or right.
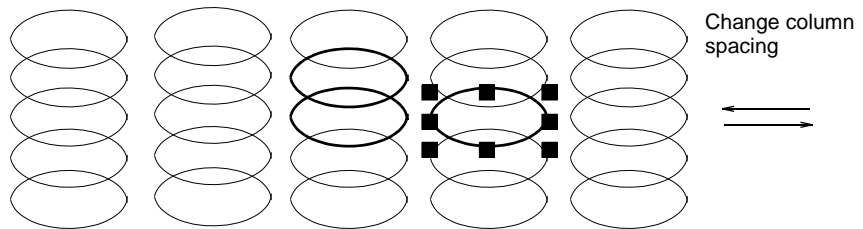
◀ Change row spacing by selecting the top guide and dragging it up or down.

◀ Change row offset by selecting the top guide and dragging it left or right.

Change row spacing

Change offset
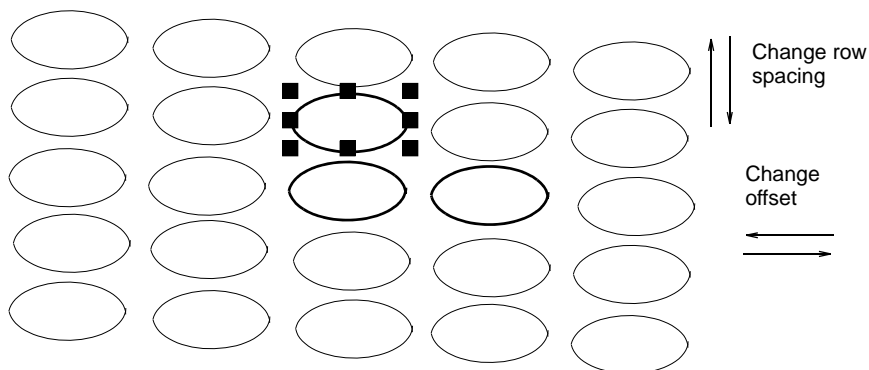
Note: **Motif Fill** does not have a column offset since motifs are connected along each row. Instead you can rotate the layout to achieve a similar effect.

4 Press **Esc** to finish. The size and layout settings you select become current settings.

Tip: To revert to the original factory settings, run the **Revert** utility. Alternatively, enter the values manually in the **Object Properties > Fills > Motif Fill** and click **Save**.

Related topics...

◀ Lay out program splits on-screen

Enveloped motif fills

EmbroideryStudio provides techniques for 'sculpting' motif fills to create three dimensional effects. Create graded columns of motif stitching. Or make motif fills appear concave or convex. You can also create perspective effects.
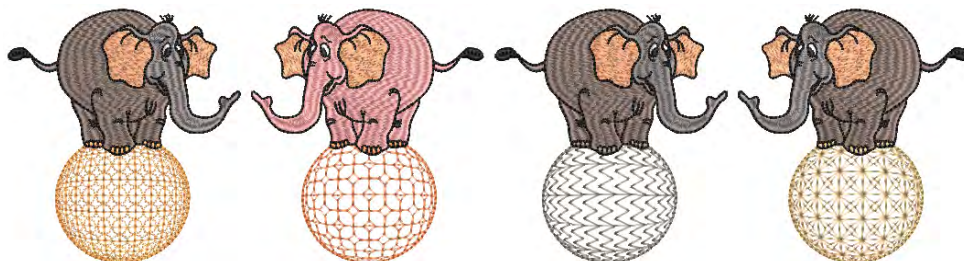
Tip: Small stitches may be generated along the edge of objects employing these effects. You can remove these automatically. See Eliminating small stitches for details.

Create graded motif columns

 Use Fill Stitch Types > Motif Column to place motifs along the center line of a column shape and resize to fit the shape. Right-clicking for settings.

The **Motif Column** feature allows you to create graded columns of motif stitching. Motifs dynamically resize to fit varying widths. Similar in concept to flexi-split with turning satin, you digitize a tapering shape using, for example, **Column A**. Apply **Motif Column** and select a motif. Motifs are automatically 'enveloped' to fit to the shape.
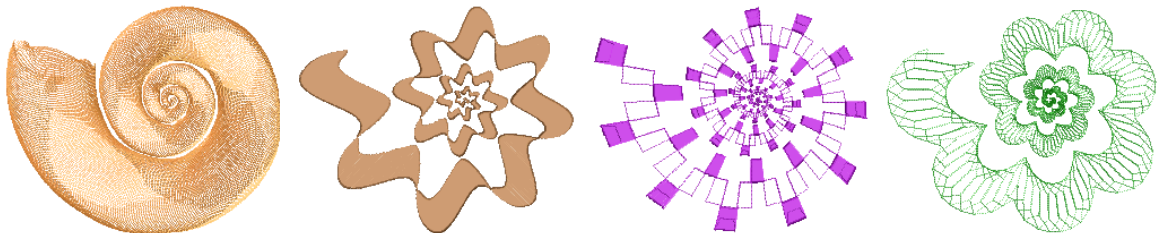
Right-clicking the **Motif Column** tool opens the **Object Properties** docker with its dedicated **Motif Column** fill stitch settings. Choose motifs

from any one of the available libraries. Mirror motifs around their own axis internal to the shape.

Motif Column settings for proportional or fixed spacings

Mirror motifs internal to the shape
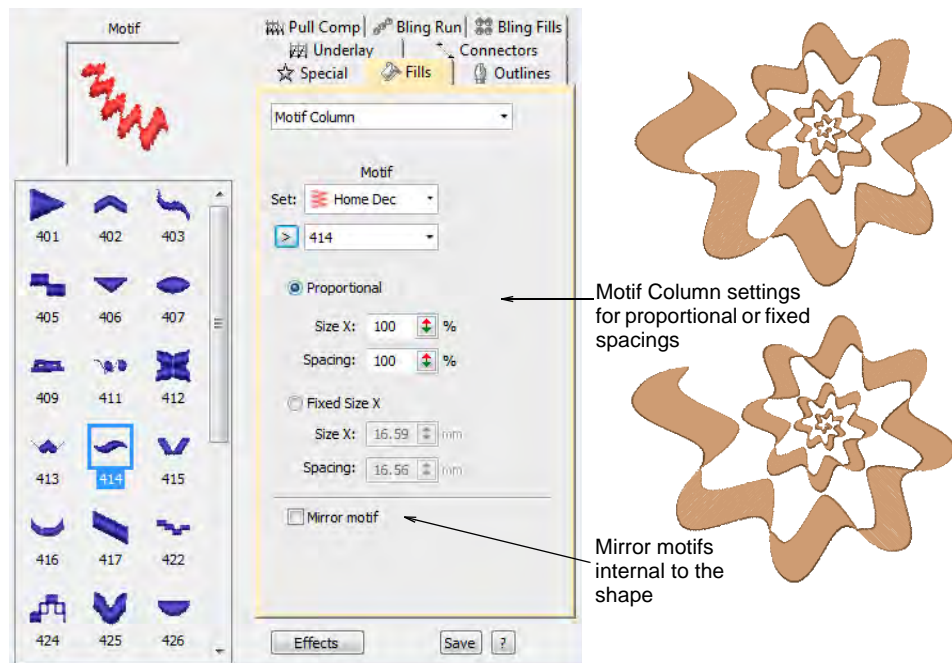
Choose between proportional or fixed spacings. Fixed spacing maintains constant motif width throughout the shape.

Proportional spacing scales entire motif throughout

Fixed spacing locks width (size x) throughout
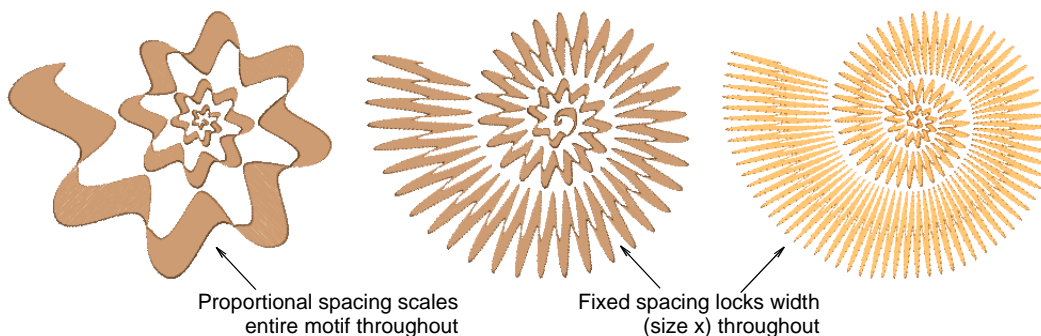
Caution: Stitches are ungenerated when branching two Column A objects together with **Motif Column**.

Create convex & concave effects

3D Click Stitch Effects > 3D Warp to apply 3D effects to selected motif fills. Right-click to change settings.

Use Reshape > Reshape Object to reshape selected 3D Warp objects.

Using **Globe In** with **3D Warp** gives a concave effect by increasing motif size and spacing around a center point. **Globe Out** gives a convex effect by decreasing motif size and spacing. You can apply the effect to an entire object, or to a specified part of the fill.
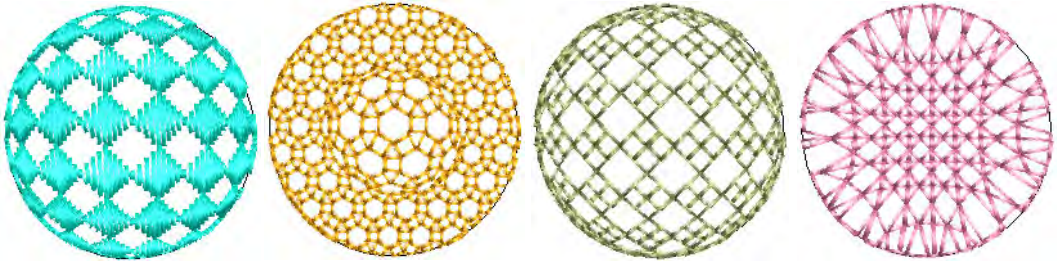
To create convex and concave effects

◀ Select a motif fill object and right-click the **3D Warp** icon. The **Object Properties > Curve** docker opens.

Select 3D Warp

Select Globe In or Globe Out
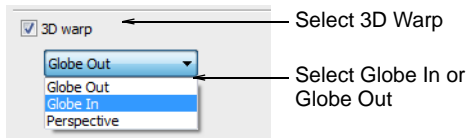
◀ Select the **3D Warp** checkbox, and select **Globe In** or **Globe Out** from the list.

◀ Press **Enter** or click **Apply**. The **Globe In** or **Out** effect is applied to the selected object.

Complex FIll object with Motif Fill

Globe In applied

OR

Globe Out applied
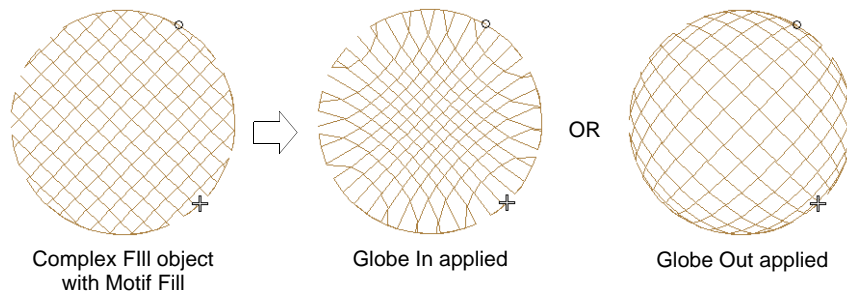
◀ To make further adjustments, click **Reshape Object** with the object selected. A guide frame appears with three control points.

Click-and-drag control point

Click-and-drag to reposition frame
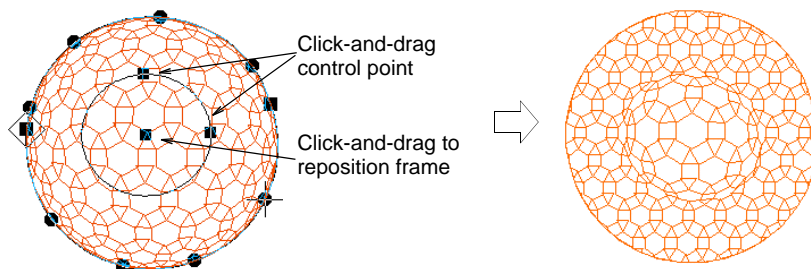
◀ Adjust the control points to:
  ◀ Change frame height
  ◀ Change frame width
  ◀ Reposition frame.

💡
Tip: You can generate layers of colored motifs by duplicating an object and selecting a different color. For example, after filling a shape with circles, you can create a second layer, offset it, and apply a different color. You can then apply effects such as **Globe Out** to the whole motif fill.
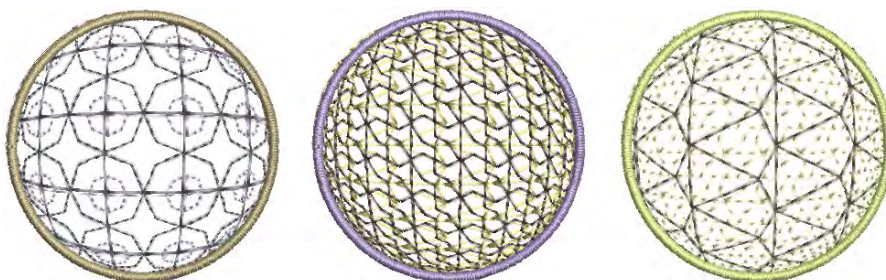
Create perspective effects

3D	Click Stitch Effects > 3D Warp to apply 3D effects to selected motif fills. Right-click to change settings.
⬉	Use Reshape > Reshape Object to reshape selected 3D Warp objects.

Use **Perspective** with **3D Warp** to create a perspective effect by exaggerating relative sizes.
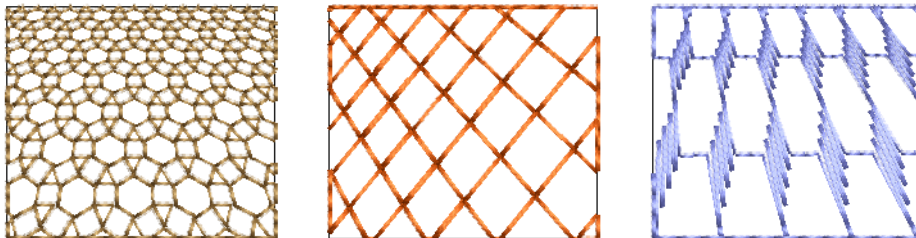
To create perspective effects

◀ Select a motif fill object and right-click the **3D Warp** icon. The **Object Properties > Curve** docker opens.
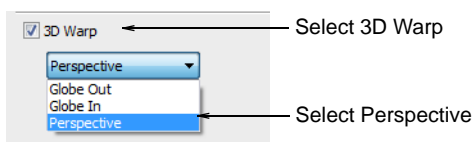
◀ Select the **3D Warp** checkbox, and select **Perspective** from the list.

◀ Press **Enter** or click **Apply**.

◀ Click the **Reshape** icon. A guide frame appears around the object.

Select object and click Reshape
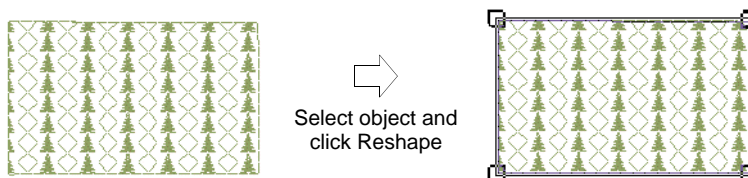
◀ Adjust the frame to move the guidelines closer together or further apart.

◀ Press **Enter** or click **Apply**.

Adjust frame and press Enter
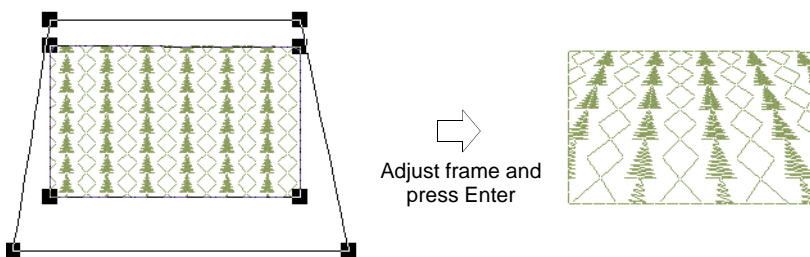
Note: The guide frame must not cross the outer boundary of the shape, and cannot be inside the shape.

Custom motifs

EmbroideryStudio provides a function for creating custom motifs for use in motif runs and fills, or as individual motif placements.
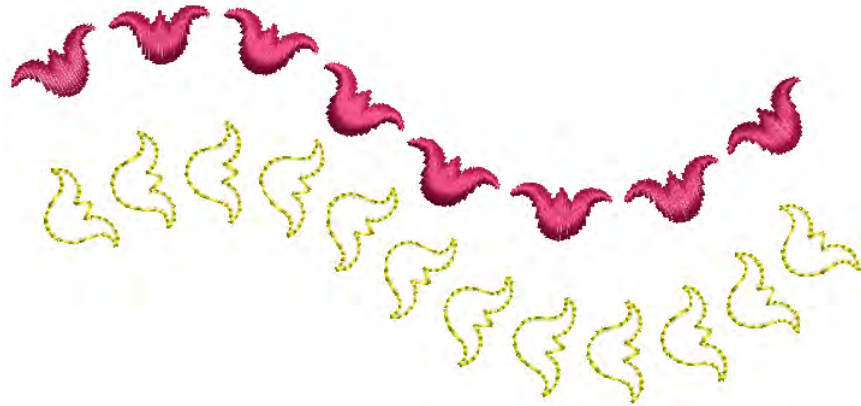
💡
Tip: A motif may include color changes, trims, and even different stitch types. However, remember that whenever used in a motif run or fill, each motif must be stitched individually in sequence. Optionally, they may be broken apart and manually resequenced.

Create & save motifs

The **Create Motif** function lets you save your own motifs for future use. Custom motifs are saved in custom 'motif sets'.

To create and save a motif

1 Create or choose the object you want to save as a motif. This may be an outline or a filled object.

Length: 6.43 mm
Angle: -90.00°
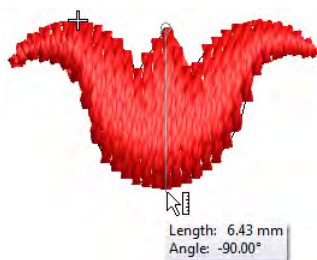
2 Adjust stitch angles as required, and turn off any underlays.
3 Scale to a suitable nominal size for practical use – e.g. 5-10 mm. Bear in mind that motif size can be adjusted within the run or fill.

4 Duplicate and align the motif as you want it to appear in a motif run. Use **Alignment** tools for precise arrangement.

Determine nominal layout

5 Once you have determined the layout, select objects and apply **Closest Join**. Use the middle motif to determine reference points.
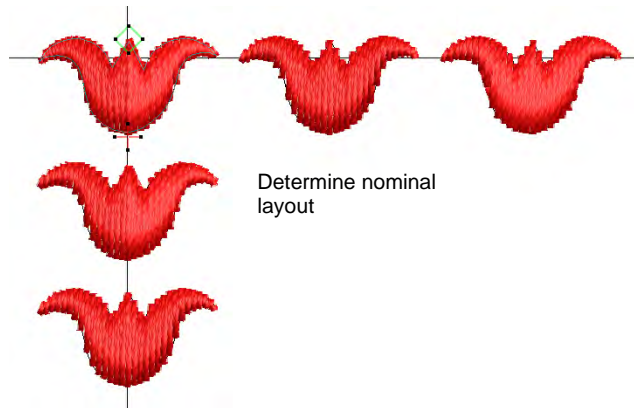
Entry and exit points should align with reference points

6 Select the motif and choose **Object > Create Motif**.

Select motif set → Motif set:

Enter motif name → Motif name:

Remove or include machine functions → ☑ Remove color changes ☑ Remove other functions
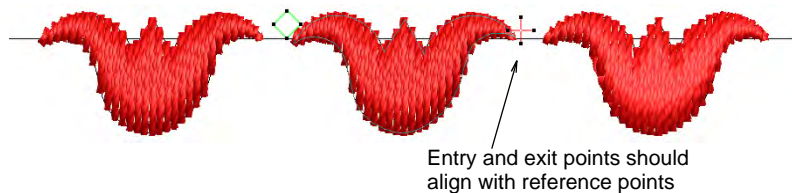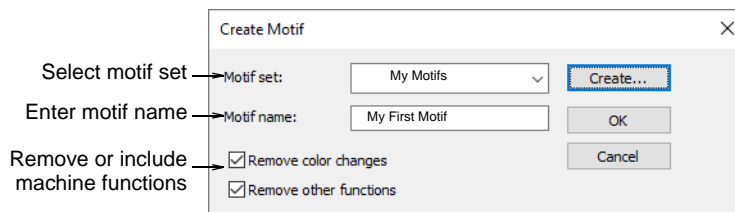
7 Select a custom motif set from the droplist and enter a name in the **Motif Name** field.

◀ Optionally, click **Create**. The **Create Motif Set** dialog opens.

Enter name for custom motif set
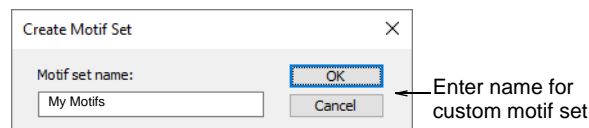
◀ Enter a name for the new motif set and click **OK**. The **Motif Set** is ready for use. Motif sets are stored in the program folder **...\Userletw**.

8 Choose how to handle any included machine functions:

- ◄ If you have created a multi-color motif, untick the **Remove color changes** option. This ensures that color changes are preserved.
- ◄ If you have created a motif with explicit trims, untick the **Remove other functions** option. This ensures that trims are preserved.

9 Click **OK**.

10 Click two reference points for the motif. These should coincide with entry and exit points.

- ◄ Reference points determine default motif orientation. They also determine default spacing between motifs.
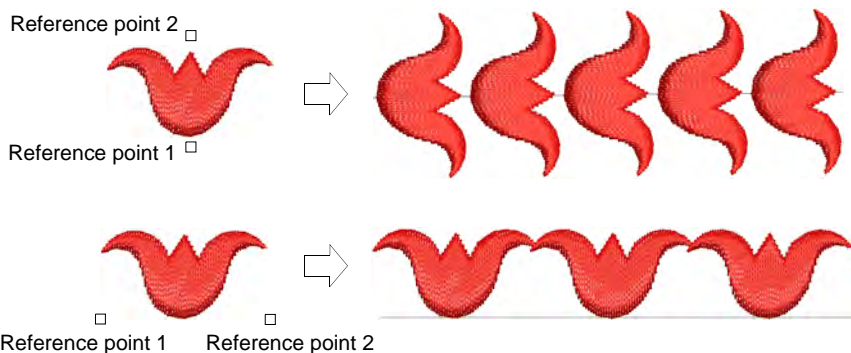
- ◄ With individual motifs, reference point 1 becomes the anchor point. Reference point 2 becomes the rotation point.

Rotation direction
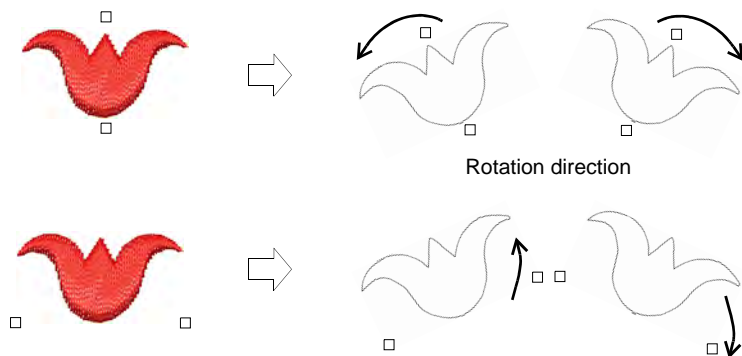
11 Click **OK**. The motif is ready for use. Check to make sure connectors align with the direction of travel.

Connectors aligned with direction of travel

Connectors not aligned with direction of travel
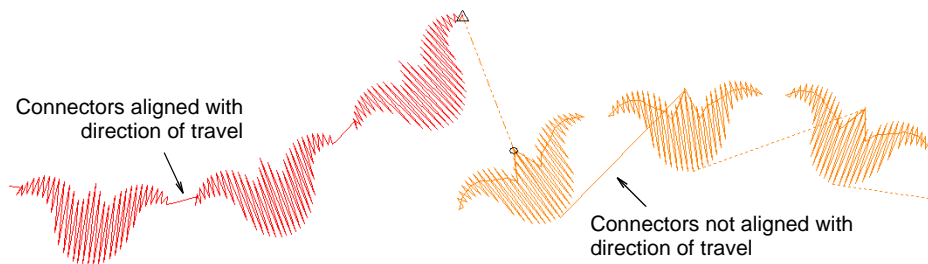
Manage custom motifs

Manage your custom motif sets via the **Manage Motifs** command.

To manage custom motifs

◀ Select the **Setup > Manage Motifs** command. The dialog opens.

Modify motif set

Modify selected motif
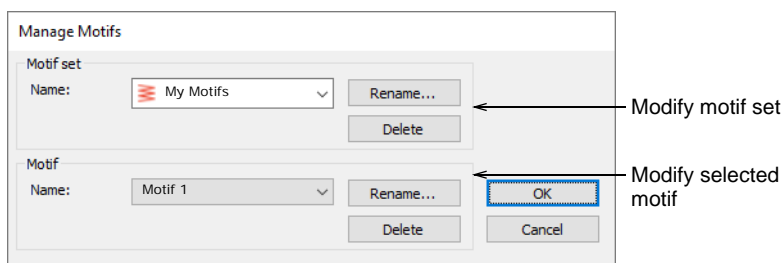
◀ Select the motif set you want to modify from the droplist.

◀ Select a motif from the **Motif** group.

◀ Use the **Rename** and **Delete** buttons to modify as required.

Chapter 24
Specialty Stitching

EmbroideryStudio provides many specialty effects and stitch types to create artistic fills. These can be used to create more organic, naturalistic stitching. They can be used to create textures like feathers or wool. Use them to create open stitching with low stitch counts.

Specialty stitch effects covered in this section include:

Feature		Overview
	Freehand	Create designs with a hand-drawn appearance, something which is difficult to achieve through conventional digitizing methods.
	Hand Stitch	Create hand-stitch effects which combine randomized stitch length, angle and count.
	Jagged Edge	Create rough edges, shading effects, or imitate fur and other fluffy textures.
	Stipple	Create textured fills of run stitching which meanders more or less randomly within a border.

Feature		Overview
⊚	Maze Fill	Create maze-like stitching which follows object contours for open fills.
✿	String	Create craftstitch fills as well as delicate borders. Can be used as a border for fixing ornamental mirrors and sequins.
ᚗ	Zigzag	Create fills or open borders or columns of even width for an open 'sawtooth' effect.
⫫	E Stitch	Create fills or open borders or columns of even width for an open 'comb' effect.
⫰	Trapunto	Move internal travel runs to the edges of an object so that they can't be seen through open stitching.
☰	Accordion Spacing	Vary stitch spacing between dense and open fill, producing gradient and shading effects.
⬡	Color Blending	Create color blends where two colors are merged from one to another using a mixture of dense and open fill.
▥	Chenille	Utilize stitch patterns traditionally associated with chenille work – Square, Double Square, Coil, and Island Coil.
✕✕	Cross Stitch	Fill large areas with cross stitching on an invisible grid that applies to all design objects.

Freehand embroidery

The **Freehand** feature provides functionality similar to CorelDRAW® Graphics Suite **Freehand** and **Polyline** tools. **Freehand** has many benefits. It lets you create designs with a hand-drawn appearance, something which is difficult to achieve through conventional digitizing methods. The aim is to mimic the fluid and free-flowing effects formed by means of freehand stitching techniques.

Freehand stitching techniques

Use Graphics Digitizing > Freehand Open Shape to draw 'freehand' outlines on screen.

> Use Graphics Digitizing > Freehand Closed Shape to draw 'freehand' closed objects on screen.

Any of the outline stitch types can be used with **Freehand** open and closed curves. When **Open Shape** is selected, the **Stitch Types** toolbars offer a choice of Run, Triple Run, and other outline stitch types. When the **Closed Shape** tool is selected, the toolbar offers the full range of stitch types, both outline and fill. In addition, an ancillary **Freehand Smoothing** toolbar gives you control over freehand lines.

The possibilities offered by these options for creative, artistic expression are limitless. Especially when used with stylus pen tablets. Techniques include stitching on top of photographic images or detailed line drawings.
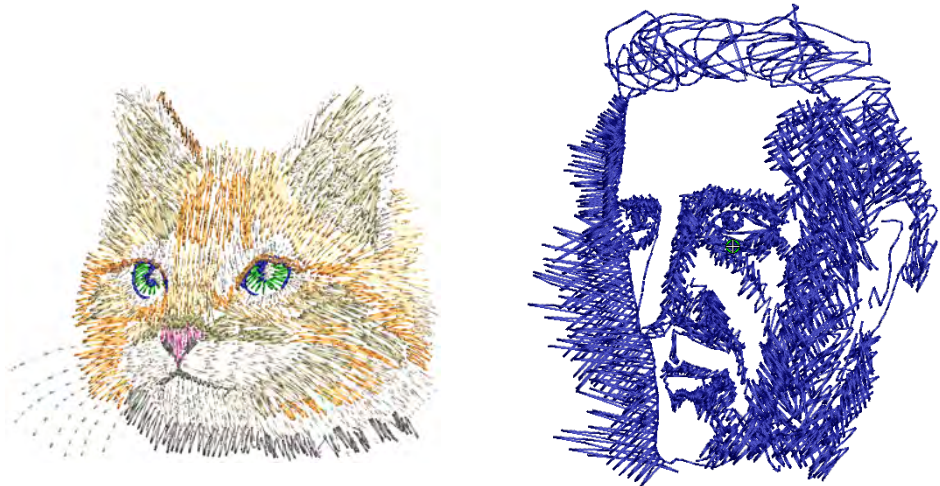
Alternatively, designs resembling pencil or charcoal sketches can be digitized. Use the tools to create 'doodle' type drawing effects without following detailed artwork – for example, adding to a basic clipart design or decorative text and so on.

Related topics…

◀ Set angles & orientation

Create freehand lines

Use Graphics Digitizing > Freehand Open Shape to draw 'freehand' outlines on screen.

Use Graphics Digitizing > Freehand Closed Shape to draw 'freehand' closed objects on screen.

Accessed from the **Graphics Digitizing** toolbar, the freehand feature is deployed in two forms: 'Open Shape' and 'Closed Shape'. As with other digitizing tools, freehand tools can be used in conjunction with all stitch types. With these tools, however, you draw objects directly onscreen. It is thus possible to produce artistic effects similar to free-motion machine embroidery or 'thread painting'.

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

To create freehand lines

◀ When digitizing with the **Freehand** tools, the **Auto Scroll** option needs to be turned off. Use the **Ctrl+Shift+A** key combination to toggle on/off.

◀ Create open outlines with the **Freehand Open Shape** tool. Select any outline stitch and click and drag to draw. Release to finish.

◀ Try creating embroidered calligraphy by combining the **Freehand Open Shape** tool with **Column C** angle and orientation controls.

◀ To create closed outlines, use the **Freehand Closed Shape** tool in conjunction with an outline stitch.
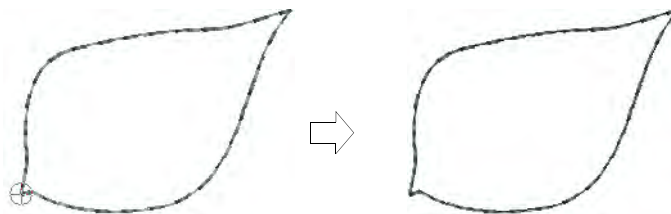
◀ To create closed fills, use the **Freehand Closed Shape** tool in conjunction with a fill stitch.
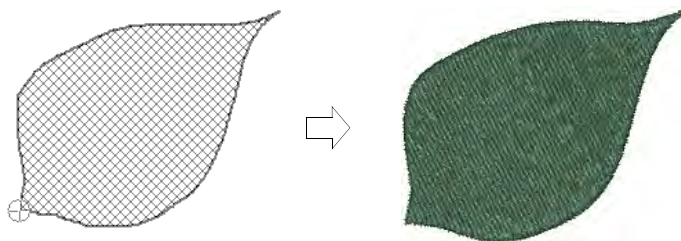
◀ If you want to close an open object, use the **Edit > Close Curve with…** command with the option of using straight or curved points.

Open object

Close Curve with Curve Line

Close Curve with Straight Line
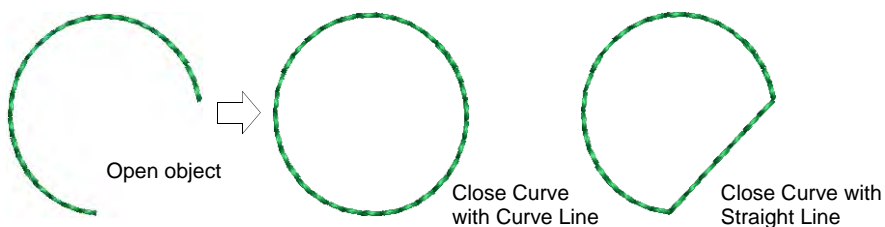
Related topics…

◀ Scroll options
◀ Set angles & orientation

Adjust freehand line smoothness

Use Graphics Digitizing > Freehand Open Shape to draw 'freehand' outlines on screen.

Use Graphics Digitizing > Freehand Closed Shape to draw 'freehand' closed objects on screen.

The **Freehand** tools have a special cursor. Adjust settings via the **Freehand Smoothing** toolbar. Also adjust curve 'smoothing' as you digitize.

To adjust freehand line smoothness

◀ Create a freehand design using outline and/or filled objects. The **Freehand Smoothing** toolbar opens.
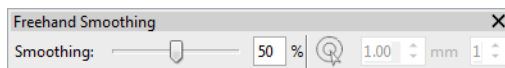
◀ Adjust the freehand cursor as required:

Tool	Function
	Use to toggle on/off freehand guide cursor.
1.00 ↕ mm	Use to set the size of the inner circle in millimeters.
2 ↕	Use to set the number of circles in the cursor. If the inner circle radius is 2mm, each additional guide circle is offset by 2mm.

◀ Adjust freehand line 'smoothness' by means of the slider bar. This controls the number of control points generated. Alternatively, adjust smoothing by means of the percentage value.

No smoothing   With smoothing
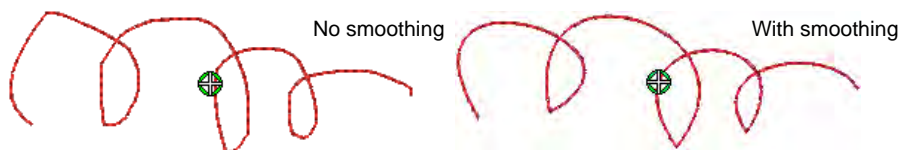
◀ View and edit **Freehand** control points in **Reshape** mode.

No smoothing   With smoothing
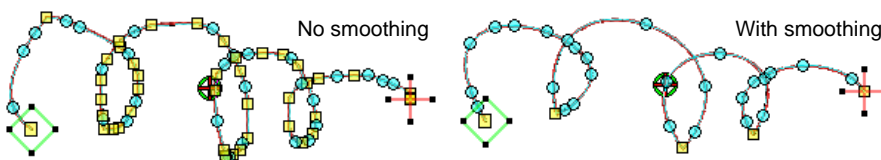
◀ If you want to erase a portion of a line, press and hold the **Shift** key while dragging backward over the line before releasing the mouse.

Hold the Shift key and drag back
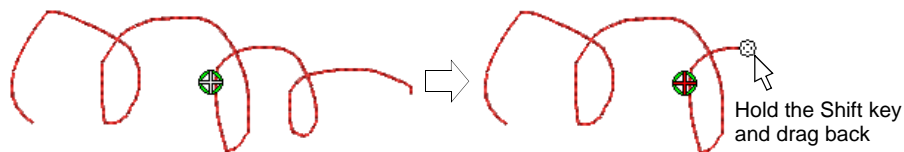
◀ Alternatively, press the **Backspace** key. The last point digitized is removed.

◀ 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** tools can be reshaped in the same way as objects created via conventional methods.

Related topics...

◀ Create freehand lines
◀ Reshaping embroidery objects

Organic stitching

EmbroideryStudio provides tools for creating more natural, 'organic' stitching styles with the **Hand Stitch** and **Jagged Edge** effects. These can be applied to satin, tatami, run, backstitch, and other stitch types, to imitate hand stitching as well as imitate fur and other fluffy textures. **String** stitch type is ideally suited to creating craftstitch fills as well as delicate borders.
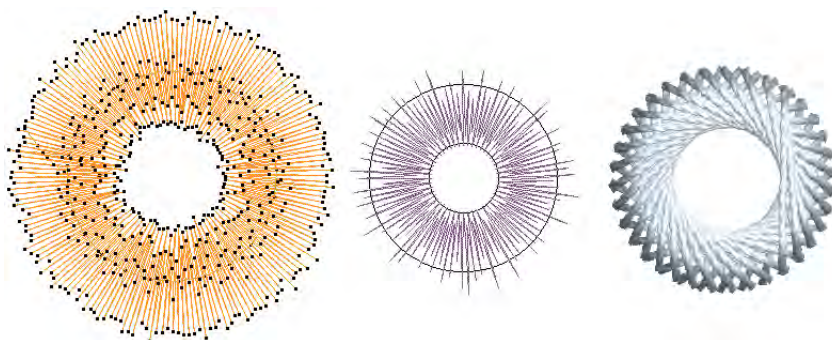
Hand stitch effect

Use Stitch Effects > Hand Stitch to create hand-stitch effects which combine randomized stitch length, angle and count. Can be applied to satin, tatami, run, backstitch, and other stitch types.

Fashion trends sometimes favor a more organic look which is very hard to achieve with normal design tools. With **Hand Stitch**, you can create effects which combine randomized stitch length, angle and count.

To apply hand stitch effect

1 Choose the object you want to apply the effect to or toggle on **Hand Stitch** effect before you start digitizing. It can be applied to satin, tatami, run, backstitch, and other stitch types.

2 Click the **Hand Stitch** icon. The effect is applied based on current settings.

3 Right-click the **Hand Stitch** icon to access object properties.
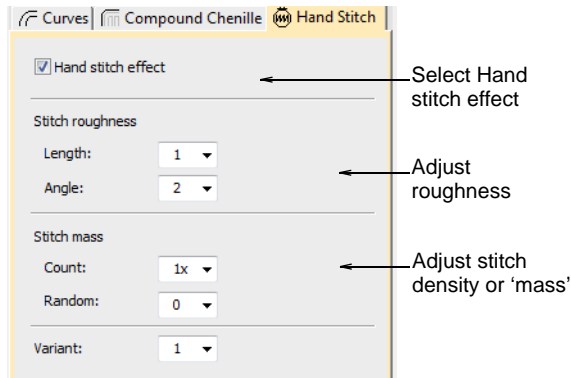
4 Adjust stitch roughness settings to diminish or exaggerate the effect:

◀ In the **Length** field, enter a value between 0 and 5 to set stitch-length variation. '0' indicates that no change is applied to current stitch settings.

Length: 0   Length: 3   Length: 5
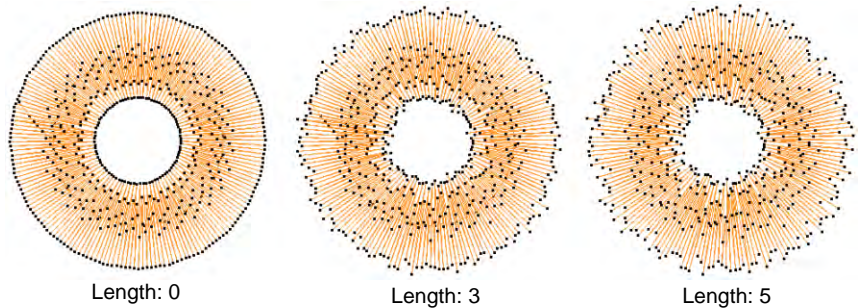
◀ In the **Angle** field, enter a value between 0 and 5 to set stitch-angle variation.

Angle: 0   Angle: 3   Angle: 5
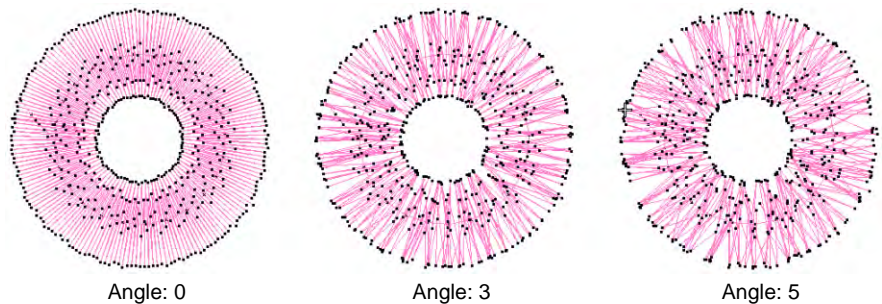
5 Adjust stitch mass settings to diminish or exaggerate stitch mass:

◄ In the **Count** field, select a multiplication factor to increase hand-stitch density.
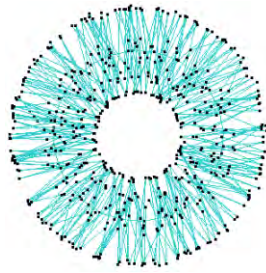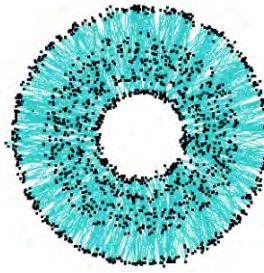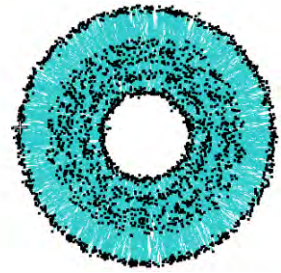
| Count: 1x | Count: 3x | Count: 5x |

◄ In the **Random** field, select a value between 1 and 5 to set a random factor for the stitch count. The system randomly adds or sometimes removes stitches when Count > 1x, usually resulting in increased stitch mass. (When count is 1x, no stitches are removed but some are added.)
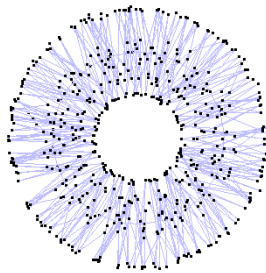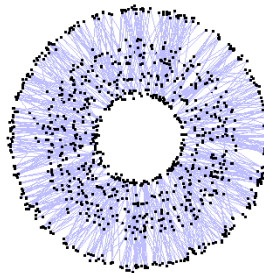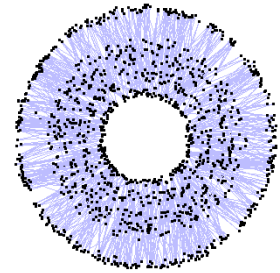
| Random: 0 | Random: 3 | Random: 5 |

6 Optionally, in the **Variant** field, enter a value between 1 and 10 to experiment with variants of the same roughness and mass settings.
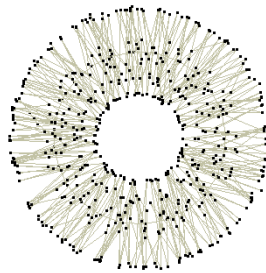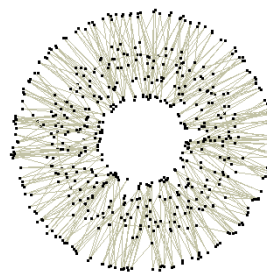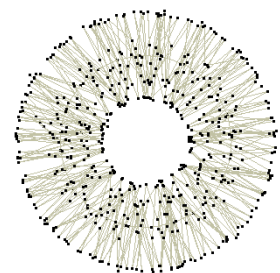
| Variant: 1 | Variant: 6 | Variant: 10 |

💡
Tip: Make any further adjustments necessary to the underlying stitch type. For instance, when using **Satin** stitch, you may want to increase stitch spacing as well as use a lighter underlay.

◀ For hand-stitching, embroiderers tend to use 'long & short' satin stitching or contoured runs to fill a large area. This is the effect we are aiming for.

◀ When used with satin stitching, **Hand Stitch** effect works best with **Auto Split** turned off. However, when used with higher stitch roughness 'length' settings, jump stitches are sometimes generated as this setting affects stitch length.

◀ For smaller objects, turn off underlay.

◀ More stitch spacing is needed for higher stitch counts to avoid stitch bunching.

◀ Tatami fill is not so well suited for use with **Hand Stitch** effect. If you want to use it, try using a random factor to eliminate split-line patterns.

Jagged edges

> Use Stitch Effects > Jagged Edge to create rough edges, shading effects, or imitate fur and other fluffy textures along one or more sides of selected objects.

Use **Jagged Edge** to create rough edges, shading effects, or imitate fur and other fluffy textures.

To apply Jagged Edge

◀ Choose the object you want to apply the effect to or toggle on before you start digitizing. It can be applied to satin or tatami fills with or without program splits. It doesn't work with **Contour stitch**.

◀ Click the **Jagged Edge** icon. The effect is applied based on current **Jagged Edge** and stitch settings.
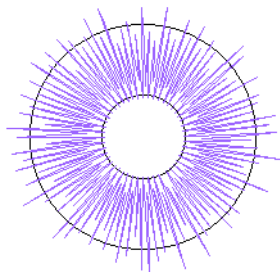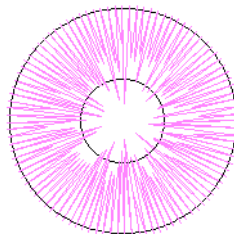
| Side 1 jagged | Side 2 jagged | Both sides jagged |
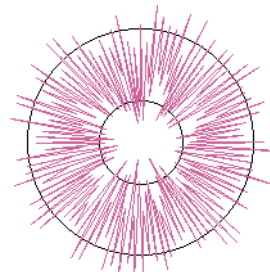
💡
Tip: For objects filled with tatami, use diagonal backstitch for best results.

◄ Right-click the **Jagged Edge** icon to access object properties.

Select Jagged Edge

Adjust roughness
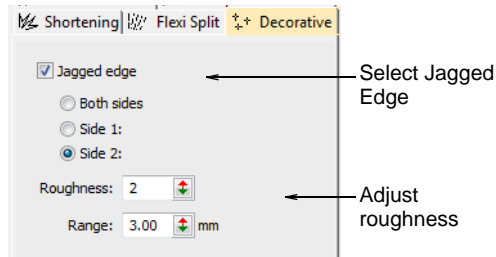
◄ Select a side – Side 1, Side 2, or Both Sides.

Side 2   Both Sides   Side 1
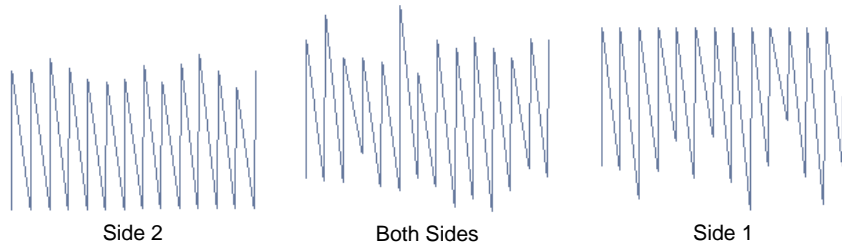
◄ In the **Roughness** field, enter a value between 1 and 10 to set the degree of jaggedness.

Roughness: 1
Range: 5

Roughness: 5
Range: 5

Roughness: 10
Range: 5
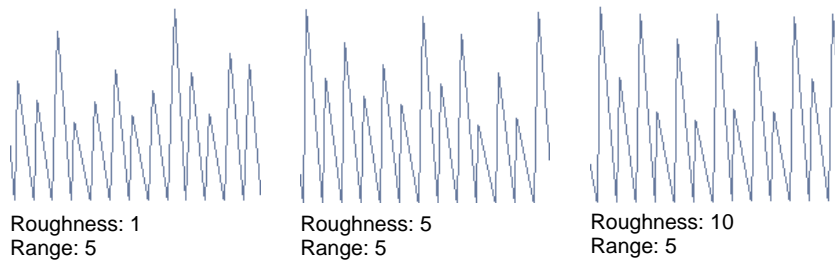
◄ In the **Range** field, enter the margin within which you want stitches to fall.

Range: 1.5

Range: 4
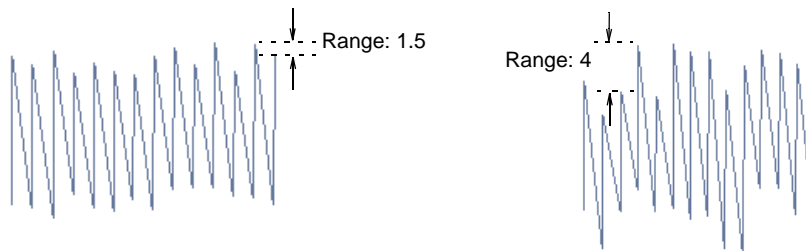
Related topics...

◄ Other tatami settings

String stitching

⚙	Use Fill Stitch Types > String to create string craftstitch fills. Apply to closed shapes.
⚡	Use Outline Stitch Types > String to create string craftstitch outlines for delicate borders. Apply to open or closed shapes.
⁄₁	Use Traditional Digitizing > Digitize Run to create row of single stitches along a digitized line.
⬭	Use Traditional Digitizing > Complex Fill to digitize filled shapes with a single stitch angle. Right-click for settings.
⊛	Use Traditional Digitizing > Ring to digitize circle and oval-shaped rings.

String Stitch has its origins in India where it is known as 'Paghadi'. This is commonly used to hold down small mirrors in intricate fabric designs. **String Stitch** mimics the overlapping 'string art' of Paghadi stitching. It too can be used to secure mirrors or sequins. Or it can be used for decorative effects such filling leaf-like shapes with elongated stitching. It comes in two forms – outlines and fills – and can be applied to open or closed shapes.
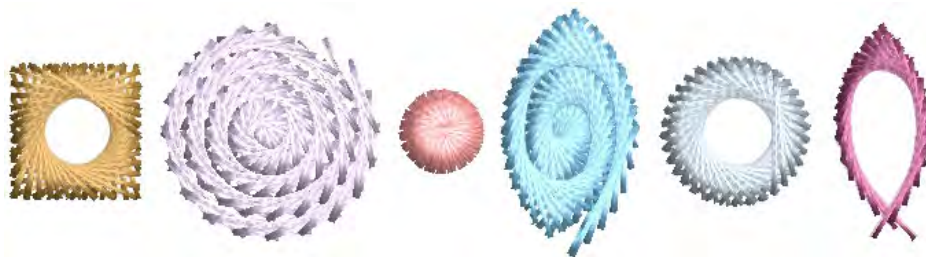
Most **String** stitch effects can be achieved by quite simple means. Since stitch angles have no effect, you can digitize most shapes with simple tools such as **Run** or **Complex Fill**. **String** outline provides spacing and chord length settings for control of outline density and thickness.

Reversing entry and exit points will also affect the direction of stitch overlaps.
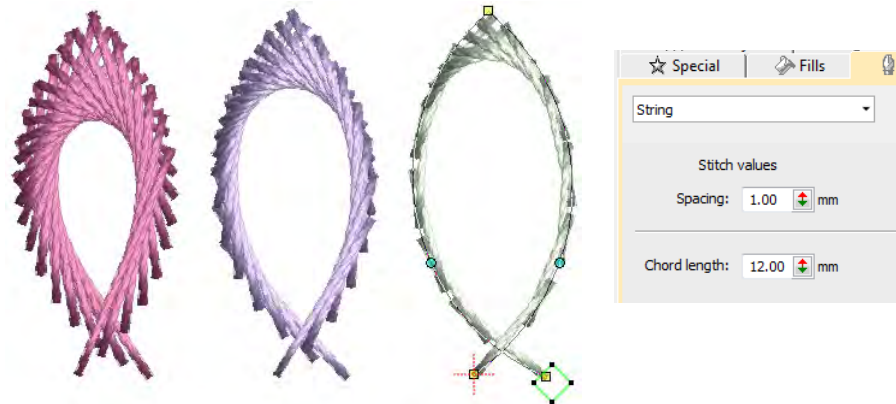
String fill provides a spacing setting for control of stitch density. Thickness is determined by the shape. Try using it with both closed objects and objects with holes such as **Ring** objects. Direction of stitch overlaps is controlled by the **Direction** setting.
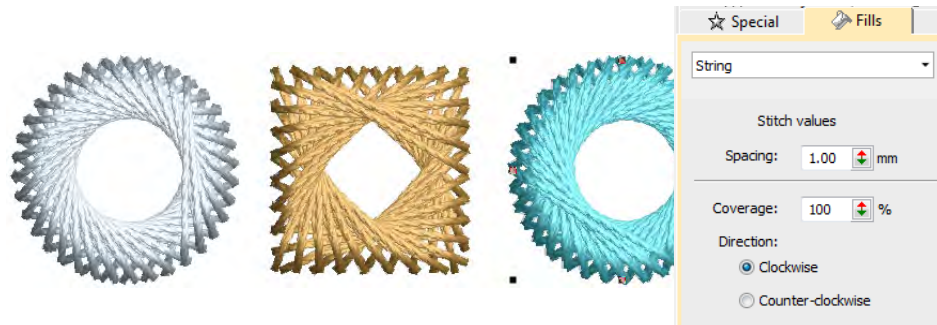
The **Coverage** setting can be used create partial covers such as the ones below. Control orientation either via the **Direction** setting or by changing entry/exit points.

Related topics…

◀ Digitizing outlines & details

◀ Creating free-form shapes

Open stitching

EmbroideryStudio provides various stitch types and effects to create open stitching. These can be used to provide interesting textures and low stitch counts for larger embroidered areas.
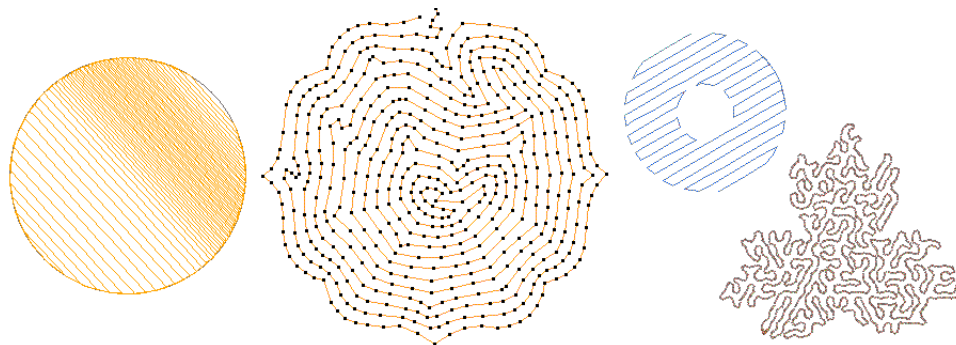
Decorative borders

∧∧∧	Click Outline Stitch Types > Zigzag to create open borders or columns of even width for an open 'sawtooth' effect. Right-click for settings.
⊓⊓⊓	Use Outline Stitch Types > E Stitch to create open borders or columns of even width for an open 'comb' effect. Right-click for settings.
⊔⊓⊔	Use Outline Stitch Types > Square to create open borders or columns of even width for an open 'toothed' effect. Right-click for settings.

The **Stitch Types** toolbars include **Zigzag**, **E Stitch**, and **Square**. All can be used to create borders around appliqués and other embroidery objects. They can also be used for decorative effects or open fills where fewer stitches are required. Zigzag and double zigzag stitches are also frequently used as underlays.

To create decorative borders

◀ Select the digitizing method you want to use – open or closed.

◀ Select an outline or fill stitch type and create the embroidery object. Alternatively, select an existing object and apply a stitch type.
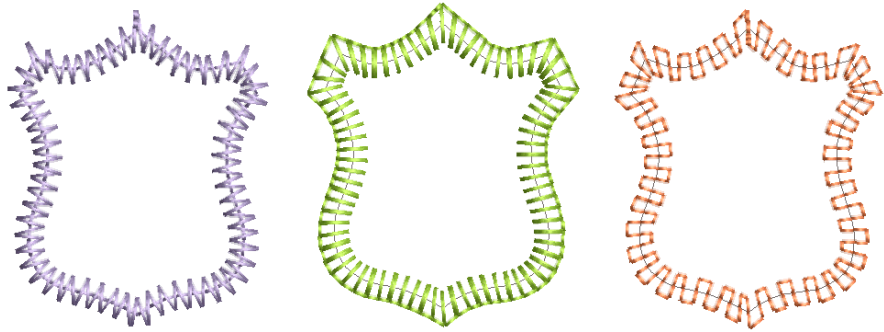
◀ Double-click the object or right-click the icon to access object properties. These give you control over stitch spacing, length, and run count values.

Adjust stitch spacing
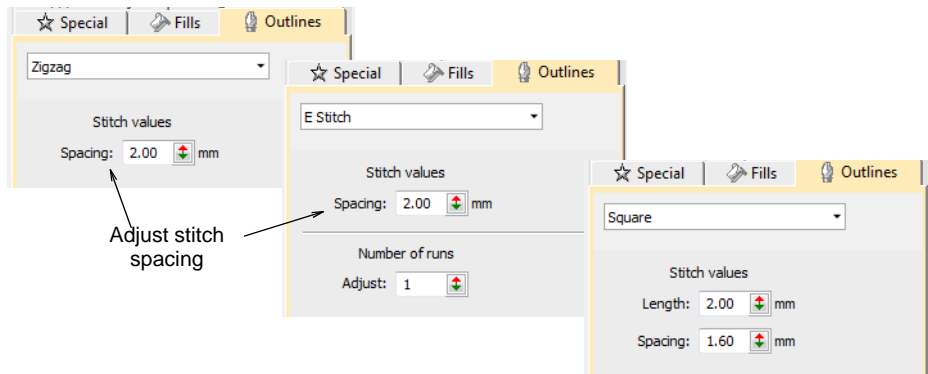
◀ Adjust **Spacing** for more or less dense outlines.
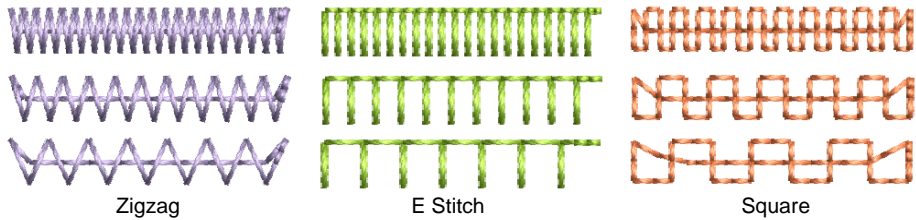
| Zigzag | E Stitch | Square |

◀ Create parallel stitching and control the angle relative to the horizontal. Use it to create calligraphy-like stitching.
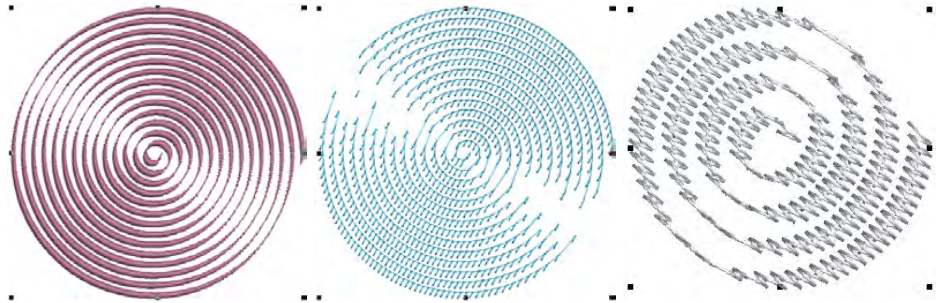
◀ **E Stitch** also lets you set the number of runs:

1 run

E Stitch spacing

3 runs

E Stitch spacing
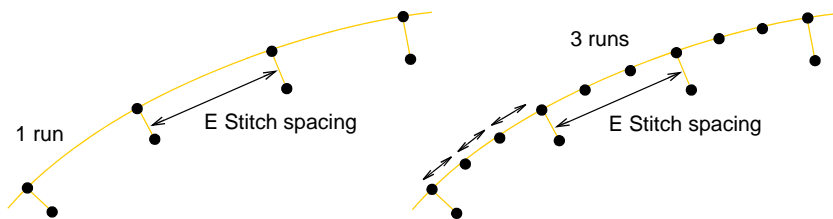
Related topics...

◀ Chenille patterns
◀ Zigzag underlay settings
◀ Embroidery digitizing
◀ Digitizing regular columns
◀ Trapunto open stitching
◀ Appliqué Embroidery

Stippling effects

Use Fill Stitch Types > Stipple Fill to create stippled fills of run stitching which meanders more or less randomly within a border. Right-click for settings.

Use Fill Stitch Types > Stipple Backstitch to create a backstitch fill which meanders randomly within a border. Right-click for settings.

Use Fill Stitch Types > Stipple Stemstitch to create a stemstitch fill which meanders randomly within a border. Right-click for settings.

Stippling is a method for creating textured fills of run stitching which meanders more or less randomly within a border. It can be applied to any closed objects. Stitch angle has no effect.
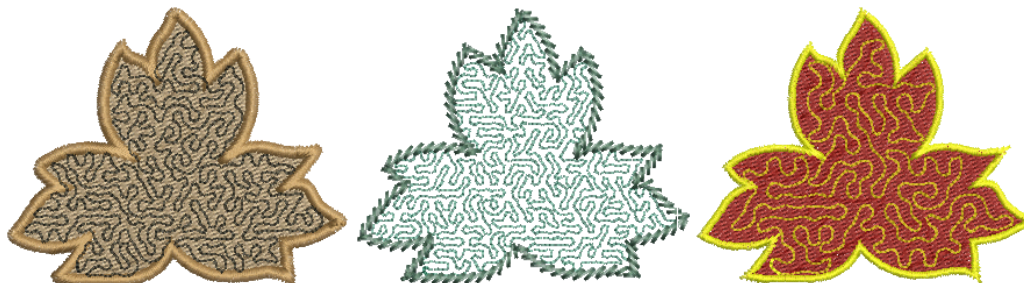
To create a stippling fill

◄ Choose the object you want to apply the stitch type to or toggle on before you start digitizing. It can be applied to any closed object.
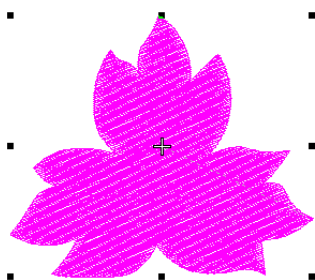
◄ Click the **Stipple Fill** icon. Stipple fill is applied and the **Object Properties** docker opens.
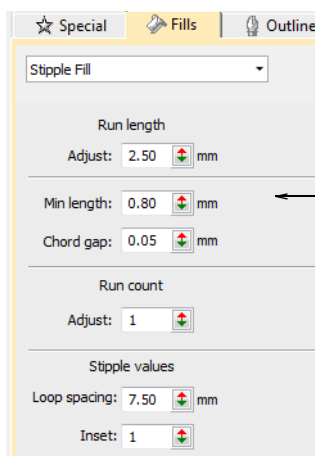
Adjust stipple settings

◂ Adjust **Run Length** as required.

Stitch length: 0.25 mm   Stitch Length: 0.75 mm   Stitch Length: 1.5 mm
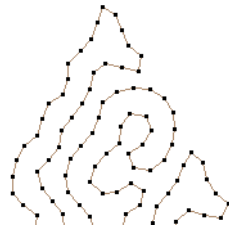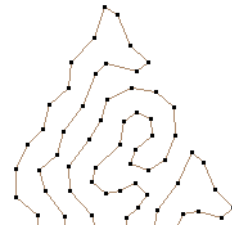
◂ Adjust **Min Length** (minimum stitch length) and **Chord Gap** as required.

Min length: 0.1 mm   Min length: 0.4 mm   Min length: 0.7 mm
Chord Gap: 0.01 mm   Chord Gap: 0.03 mm   Chord Gap: 0.05 mm
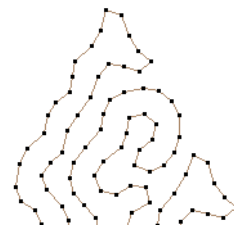
◂ Adjust **Run Count** setting for a thicker line.

◂ Adjust **Loop Spacing** as required.

Loop Spacing: 1.0 mm   Loop Spacing: 2.0 mm   Loop Spacing: 3.0 mm

‣ Set a margin from the object outline by adjusting the **Inset** value.

| Inset: 1.0 mm | Inset: 3.0 mm | Inset: 5.0 mm |

‣ Use **Stipple Stemstitch** and **Stipple Backstitch** as preferred.

| Stipple Stemstitch | Stipple Backstitch | Stipple with Satin |

Related topics...

‣ Break apart composite objects

Maze fills

> Use Fill Stitch Types > Maze Fill to create maze-like stitching which follows object contours for open fills. Right-click for settings.

Automatically fill large areas with double-spiral stitching that never crosses itself with **Maze Fill**.

To create a maze fill

◀ Choose the object you want to apply the stitch to or toggle on before you start digitizing. Stitch angles have no effect on this stitch type.

◀ Click the **Maze Fill** icon. The result is based on current settings.

◀ Right-click the **Maze Fill** icon to access object properties.

To the right of the dialog, labels point to:
- Set maze spacing
- Set maze smoothing
- Set maze stitching direction
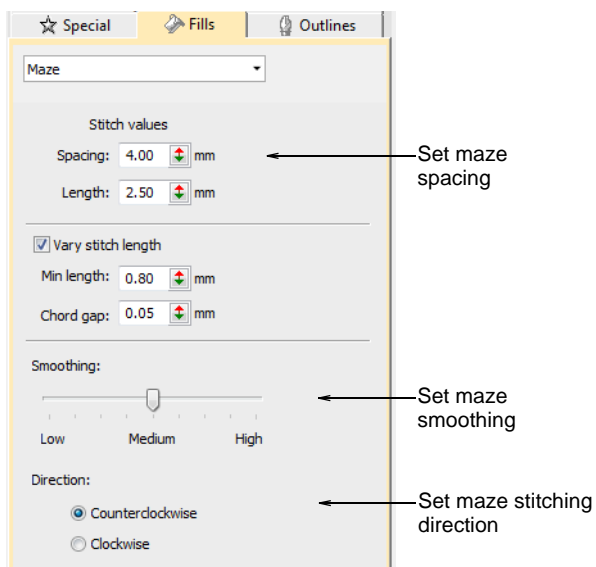
◀ To set a nominal stitch length, adjust the **Length** field. To automatically shorten stitches to follow tight curves, activate the **Variable Run Length** option. Because this fill type creates double-spiral stitching, these settings are essentially the same as **Run** stitch.

◀ Adjust **Spacing** to create more or less open stitching.

| Spacing: 2.0 mm | Spacing: 1.5 mm | Spacing: 1.0 mm |
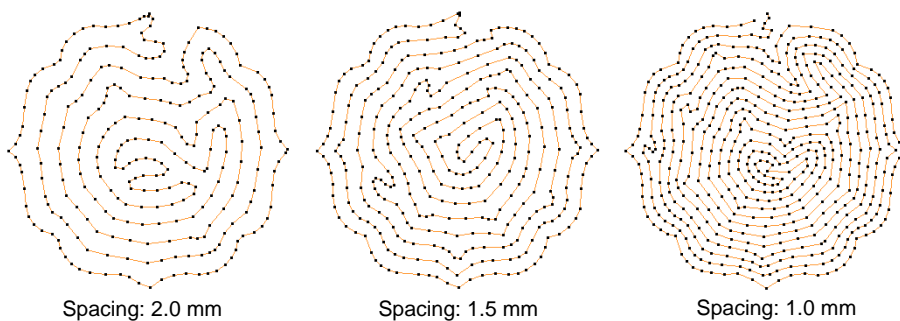
◀ Adjust **Smoothing** for more or less even curves.
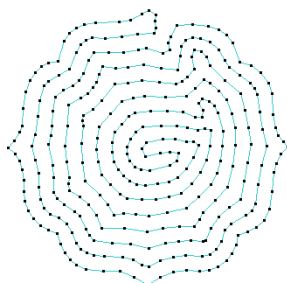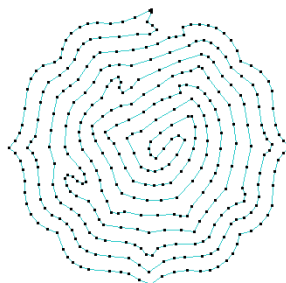
| Smoothing: Low | Smoothing: Medium | Smoothing: High |
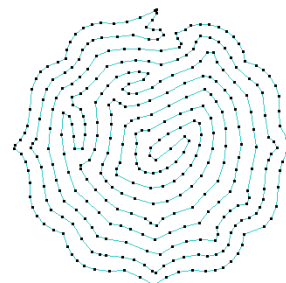
◀ Adjust **Direction** to reverse stitch direction.
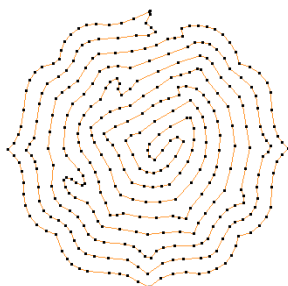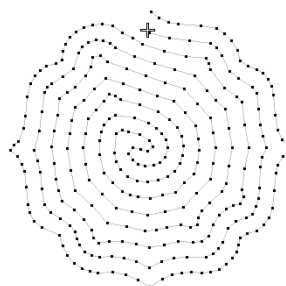
| Direction: Counterclockwise | Direction: Clockwise |

Tip: Maze Fill uses single run stitch for the fill. If you want a thicker stitch type, use **Break Apart** to turn the object into an outline and then apply a different stitch type.
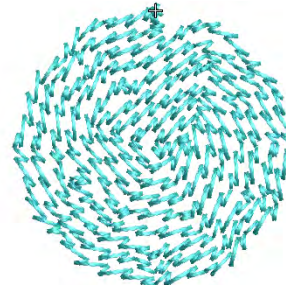
Related topics...

◀ Digitizing outlines & details
◀ Offset fills

Trapunto open stitching

> Use Stitch Effects > Trapunto to force underlying travel runs to the edges of a selected object. Right-click to adjust Trapunto settings.

The **Trapunto** effect automatically moves underlying travel runs to the edges of an object so they can't be seen. It is available with complex fill objects using tatami stitching. In EmbroideryStudio, the effect is typically used in combination with open stitching to fill backgrounds or for shading effects. Without it, travel runs, spacing variations and overlapping rows between segments are visible and can spoil the effect.
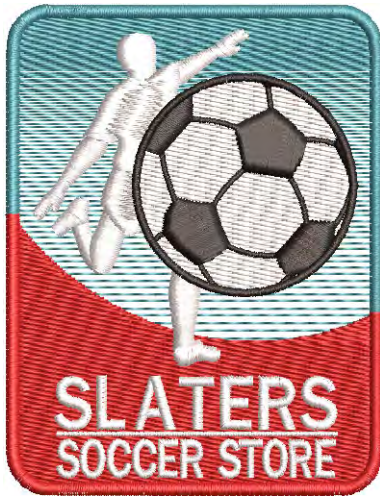
Accordion Spacing extends the usefulness of Trapunto by providing a simple way to produce variation in a filled pattern and the illusion of depth. Trapunto and Accordion Spacing can also be combined with Liquid and Florentine effects to produce curved color blending.

To create open stitching with trapunto

1 With or without a complex fill object selected, right-click the **Tatami** icon to access object properties.
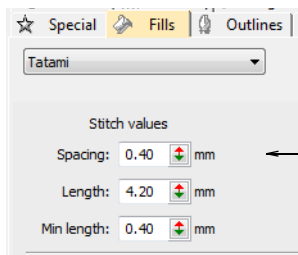
2 In the **Spacing** field, enter the required stitch spacing. The larger the value, the more open the spacing.
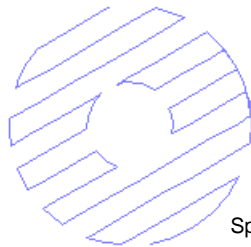
Spacing: 5 mm   Spacing: 3 mm
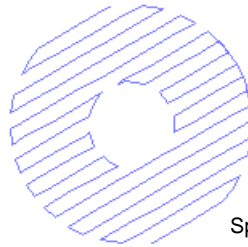
3 Press **Enter**.

4 With the complex fill object selected, click the **Trapunto** icon.

Travel runs and overlapping rows are removed and consistent row spacing applied.
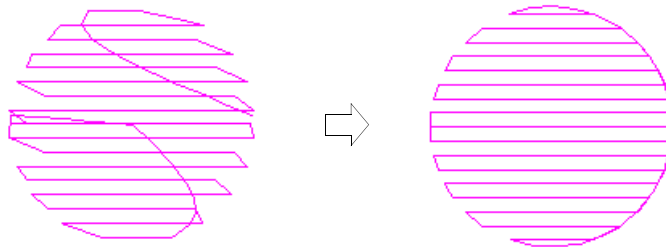
Note: Trapunto effect overrides whatever tatami backstitch settings currently apply.

Related topics...

◀ Other tatami settings
◀ Color blends
◀ Curved fills

Gradient stitching

EmbroideryStudio provides tools for varying stitch spacing between dense and open fill, producing gradient and shading effects which are difficult to achieve manually. Create color blends combining two gradients

which merge smoothly from one to another using a mixture of dense and open fill.
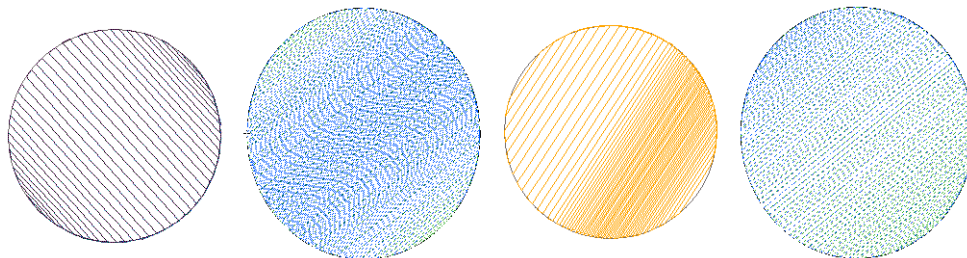
Accordion spacing

Click Stitch Effects > Accordion Spacing to create perspective and shading effects. Right-click to adjust settings.

The **Accordion Spacing** feature varies stitch spacing between dense and open fill, producing gradient and shading effects which are difficult to achieve manually. It provides a simple way to produce variation in a filled pattern and the illusion of depth. It is best used with tatami fill. When applied, current settings – including Auto Spacing and Fractional Spacing – are ignored. However, other settings still apply, including stitch angle.

To apply accordion spacing

◄ Click the **Accordion Spacing** icon. The effect is applied to new or selected objects, based on the current **Accordion Spacing** settings.

💡
Tip: Because of the open stitch, **Accordion Spacing** is best used without **Auto Underlay**.

◀ Right-click the **Accordion Spacing** icon to access object properties.

Select spacing effect

Adjust spacing settings
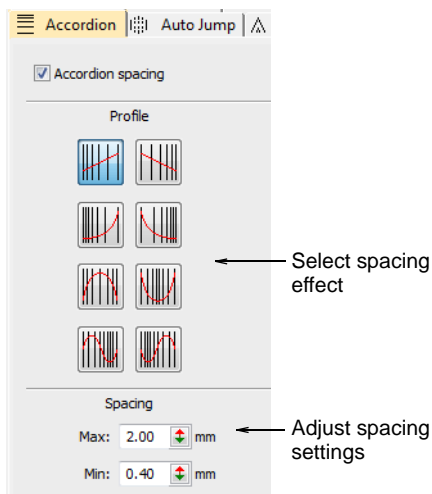
◀ In the **Profile** panel, select a spacing effect.
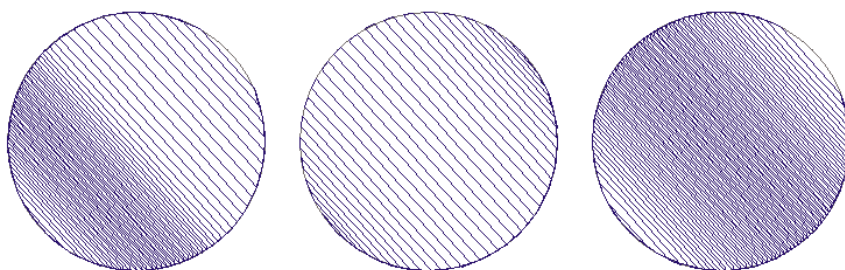
◀ In the **Spacing** panel, adjust spacing values:

Maximum spacing

Minimum spacing
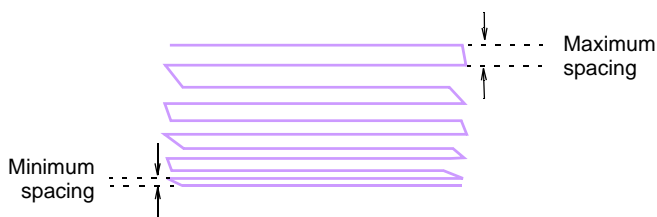
◀ Use the **Reshape** tool to adjust the angle of the gradient fill. See also Adjusting stitch angles.
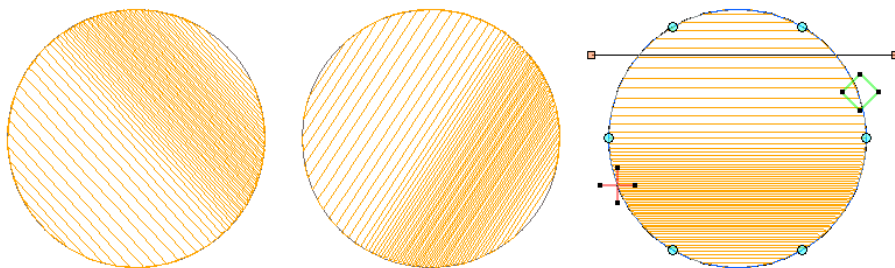
Tip: Apply **Trapunto** effect to force underlying travel runs to the edges of an object so that they can't be seen through open stitching. It's also a good idea to turn off **Auto Underlay**.

Related topics...

◀ Apply automatic underlay

◀ Trapunto open stitching

Color blends

Use Toolbox > Color Blending to generate color blends, perspective effects and shading in selected objects.

From sunsets to wood grains, **Color Blending** creates interesting color blends. Use it with standard tatami to create depth and shading. Two colors are merged smoothly from one to another using a mixture of dense and open fill.

The effect is generally applied to **Complex Fill** objects. Curved blends can be created with **Column A**, **B** or **C** objects. Objects can be resized, rotated and skewed without losing the color blending effect. However,

editing a color-blended object is limited. The two components must first be ungrouped and separate objects edited according to **Accordion Spacing** settings such as color, profile, and spacing.

To create a color blend

◀ Select your tatami object and click the **Color Blending** icon. The **Color Blending** dialog opens.
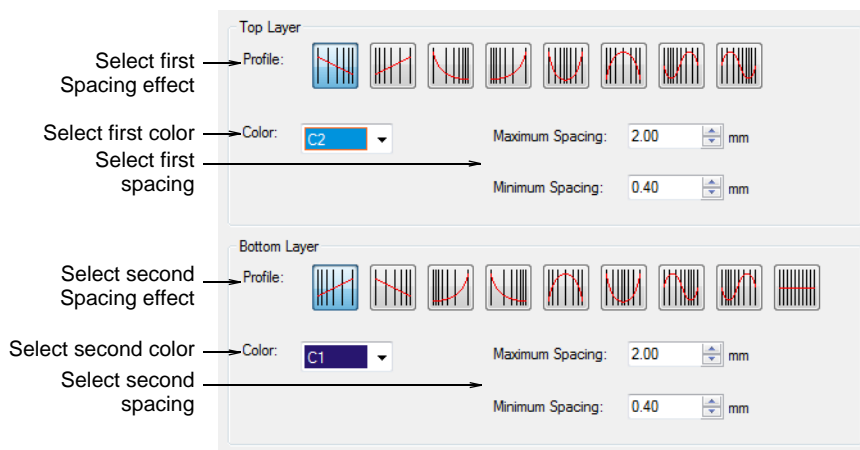
◀ Select complementary profiles for top and bottom layers. Generally you will want to use opposites but you can also mix and match completely different profiles.

◀ Choose complementary colors for each layer and adjust spacing settings. Generally, you will want to use the same values so that rows blend into one another.
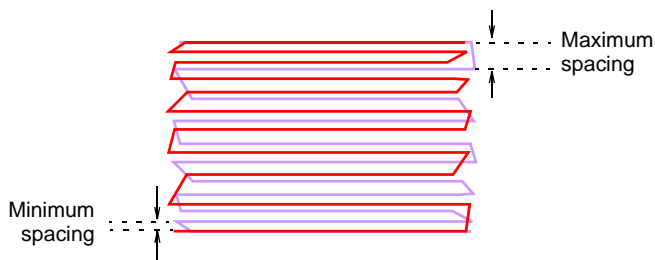
◀ Click **OK** to generate.

Note: To prevent underlay stitching from showing through, **Auto Underlay** is deselected by default and **Trapunto** effect applied.

To adjust settings

◀ Select the blended object and press **Ctrl+U** to ungroup.

◀ Select a component object and change color as required.

◀ Double-click the object to open **Object Properties**.

◀ Click the **FX** button and select the **Accordion** tab.

Select spacing effect

Adjust spacing settings
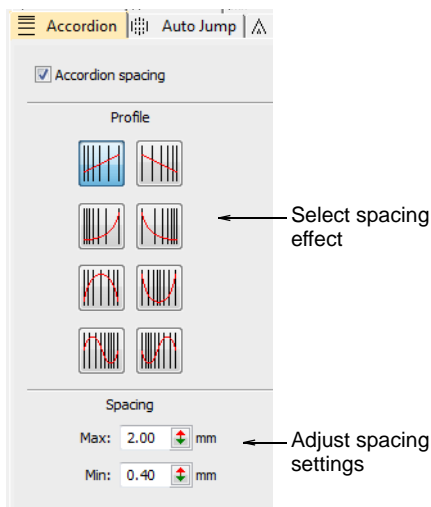
◀ Select a profile and adjust spacing as preferred.

| Linear Profile | Exponential Profile | Convex Profile | Wave Profile |
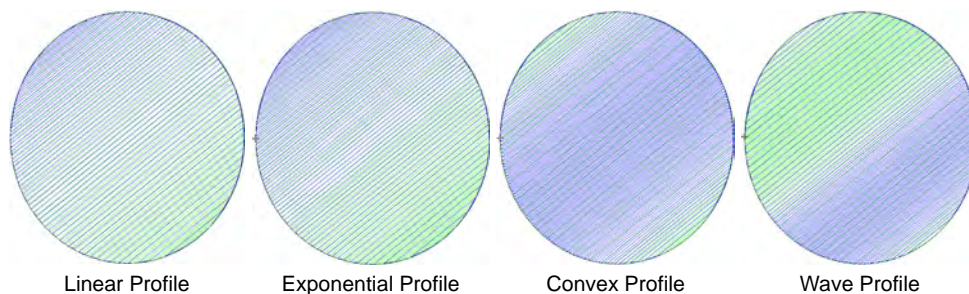
◀ Repeat the process for the second object and re-group both.

Related topics...

◀ Stabilizing with automatic underlay

◀ Trapunto open stitching

◀ Accordion spacing

Chenille patterns

EmbroideryStudio provides a number of stitch patterns traditionally associated with chenille work – **Square**, **Double Square**, **Coil**, and

Island Coil. The pattern you use depends on the input tool used as well as object shape, size and the effect you want to achieve.

Island Coil for texture

Coil stitching for perspective and depth
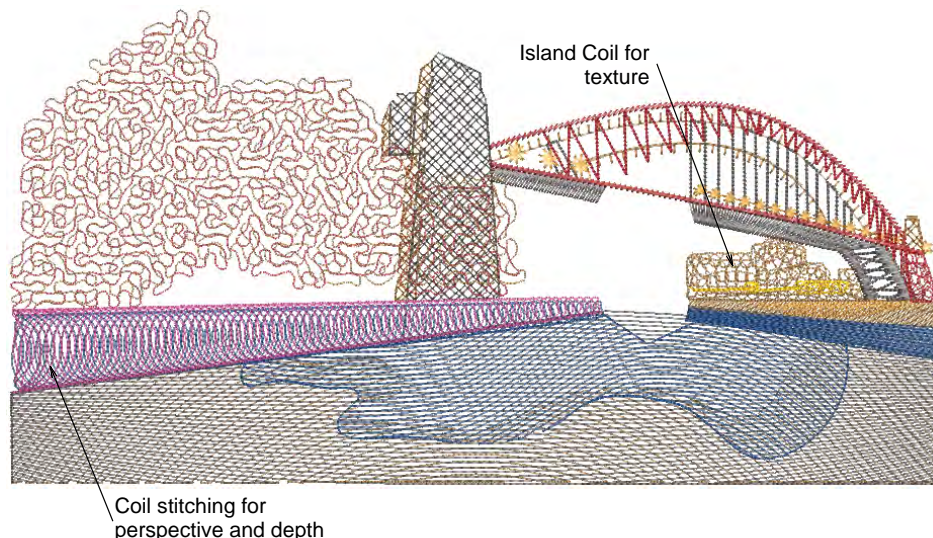
While these patterns are normally used with chenille designs, they can also be used as decorative lockstitch pattern types. Of course lockstitch machines can't produce actual chenille chain or moss stitching, except with the aid of a 'Simple Chenille' device. However, the patterns themselves can create forms of decorative, open stitching.

Coil stitching

Coil stitching is more similar to **Satin** and is suitable for use with most closed-object input methods. Stitches are generated in spirals.

Coil stitch

Use Outline Stitch Types > Coil to create borders or columns of even width for an open 'coil' effect. Right-click to adjust settings.

Use Fill Stitch Types > Coil to stitch narrow shapes or columns where each stitch traverses the column width. Right-click to adjust settings.

Coil fill is suited to narrow shapes or columns where each stitch traverses the width of the column. It provides a convenient way to fill an area with open stitching. Stitches are generated along curved lines and coils generate consistent stitch length even over different widths. This

produces a smooth finish which does not unravel easily. **Coil** is generally applied to objects created with **Column A**, **Column B** and **Column C**.

Column C + Coil

Column B + Coil
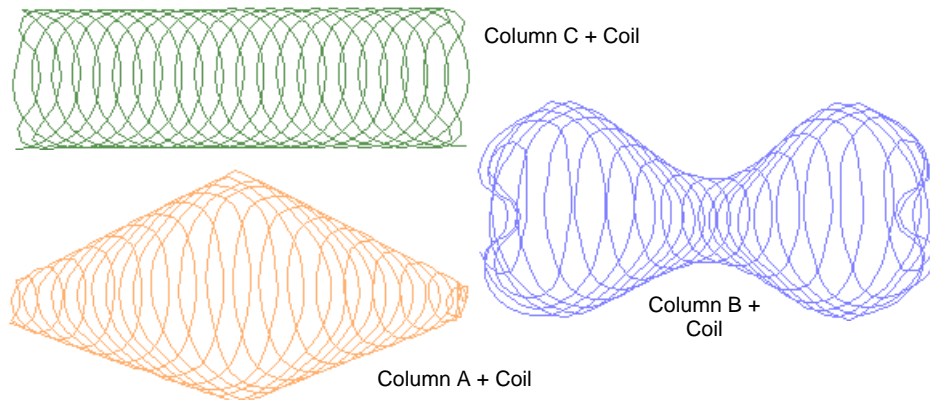
Column A + Coil

You can adjust **Coil** settings for stitch length, coil spacing and width.

Coil spacing

Stitch length

Coil width
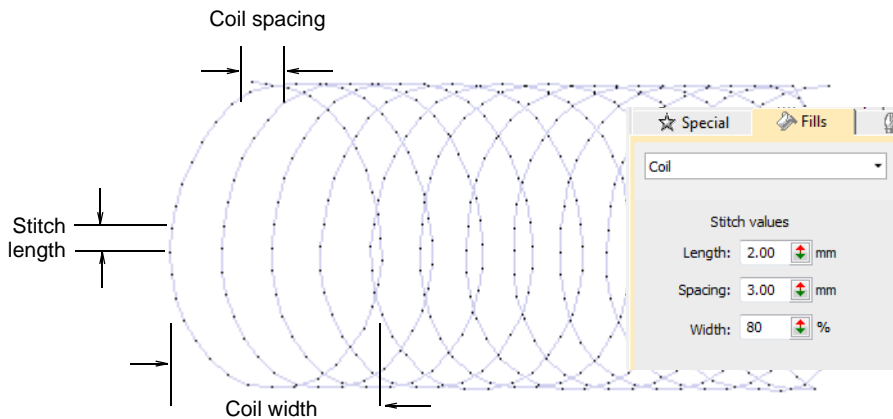
Column A/B objects can be used with variable width **Coil** stitching, while complex fill objects will default to **Island Coil**.

Column A/B with Coil

Complex fill with Island Coil
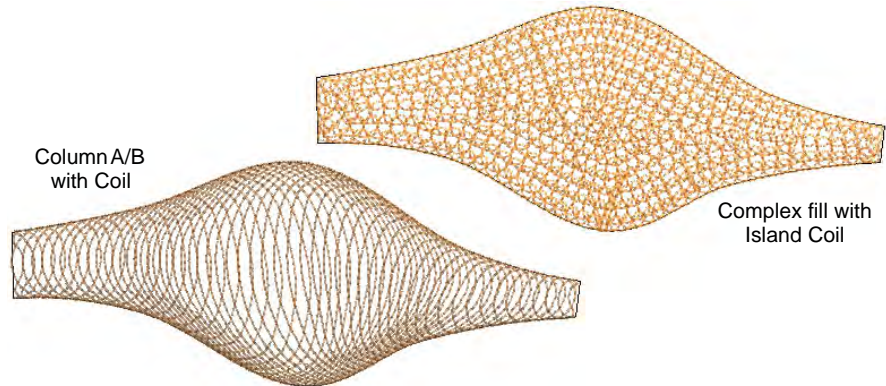
Similarly, Column C objects can be used with variable width stitching.

Column C with Coil
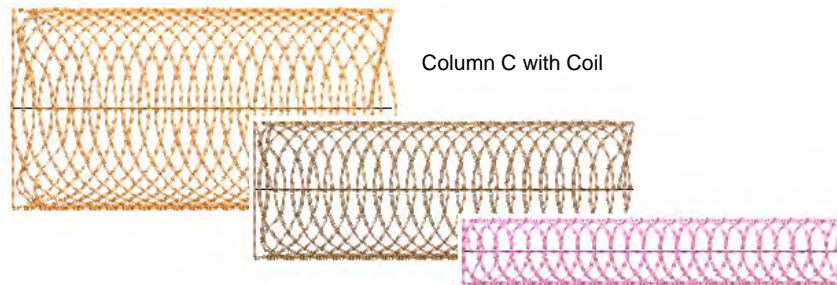
Island Coil fill stitch

> Use Fill Stitch Types > Island Coil to fill large objects with concentric rows of coil stitching, simulating the circular motion of hand-chenille embroidery. Right-click to adjust settings.

Island Coil is used to fill larger closed areas. This technique allows complex shapes to be filled with concentric rows of coil stitching, simulating the circular motion of hand-chenille embroidery. With chenille,

this is commonly used with looped **Moss** stitching. Stitch angles have no effect on this stitch type.
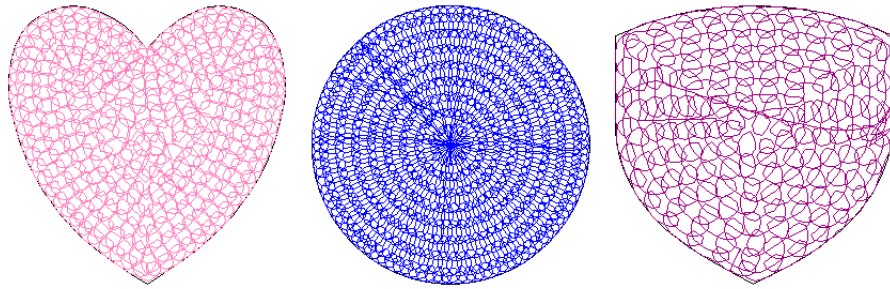
You can adjust a variety of **Island Coil** settings, including – stitch length, coil width, coil spacing, coil height and coil overlap.
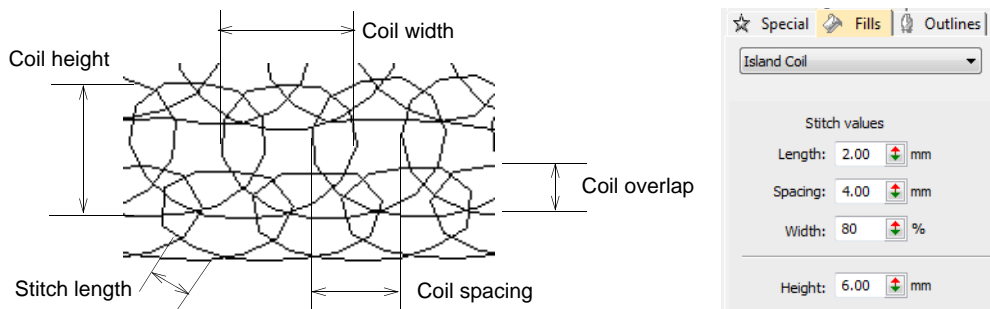
◀ Juggle spacing and width values for a more or less dense chenille look. Width is set as a percentage of coil spacing value. The smaller the value, the tighter the coils.

◀ Adjust coil height as preferred. In chenille work, this value affects loop size.

◀ Adjust coil overlap as preferred. This controls loop spacing and thus fill density.

Square stitching

Square stitching is closer to **Tatami** and is suitable for use with most closed-object input methods. It can be used for borders like **Zigzag** and **E Stitch**, or it can be used as a substitute for **Tatami** in more open fills. **Double Square** is commonly used in chenille work with **Moss** stitching. It is suitable for larger areas.

Square stitch

Use Outline Stitch Types > Square to create open borders or columns of even width for an open 'toothed' effect. Right-click for settings.

> Use Fill Stitch Types > Square to create open straight parallel fills. Right-click for settings.

Square is suitable for narrow objects digitized with most closed-object input methods. You can fill areas diagonally, or on the horizontal and vertical. All stitches generated along a row are of same length. However, some shorter stitches are generated where the shape is narrow and between rows of stitching. You could obtain a similar effect using open tatami with borderline backstitch, but **Square** stitch makes it simpler to achieve. Use it to create a 'chenille look' using cord and adjusting the presser foot height to create loops.

Column C + Square

Column B + Square

Column A + Square
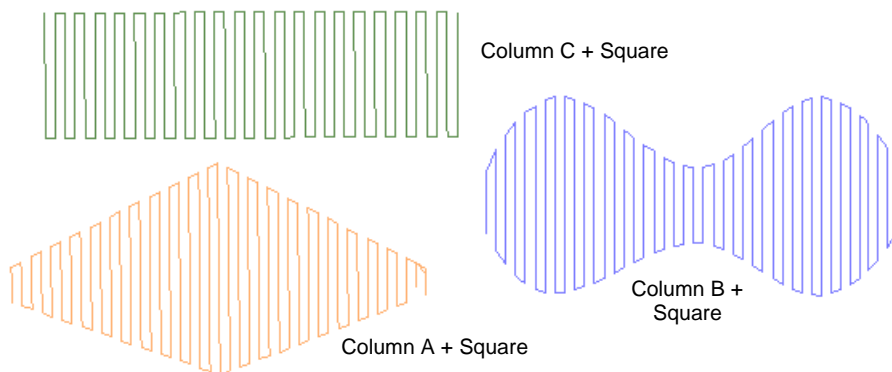
You can set the **Square** stitch values for stitch length and spacing.

Stitch spacing

Stitch length

Stitch angle

Special   Fills

Square

Stitch values

Length: 2.00 mm

Spacing: 1.60 mm
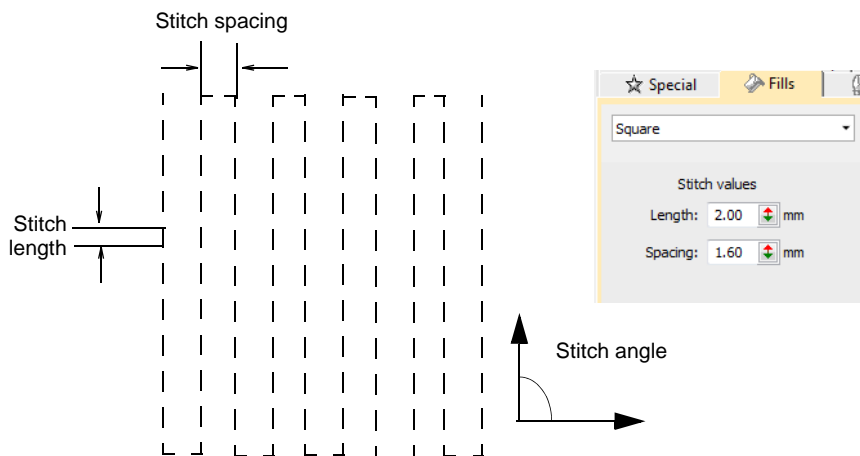
Tip: Limit travel runs showing through the stitching by changing entry and exit points to reduce segmentation within the shape.

Double Square stitch

Use Fill Stitch Types > Double Square to create grid fills. Apply closed shapes. Right-click for settings.

As an alternative to **Island Coil**, larger areas can be filled using **Double Square**. It is made up of two layers of **Square** stitching. With chenille work, this too is suitable for use with looped **Moss** stitching.
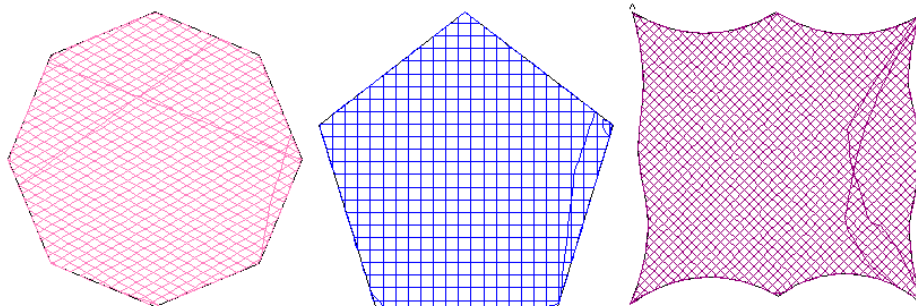
You can adjust stitch length, spacing, and the angle of the second **Double Square** layer. Spacing determines the space between stitch lines. Stitch length is the gap between needle points.
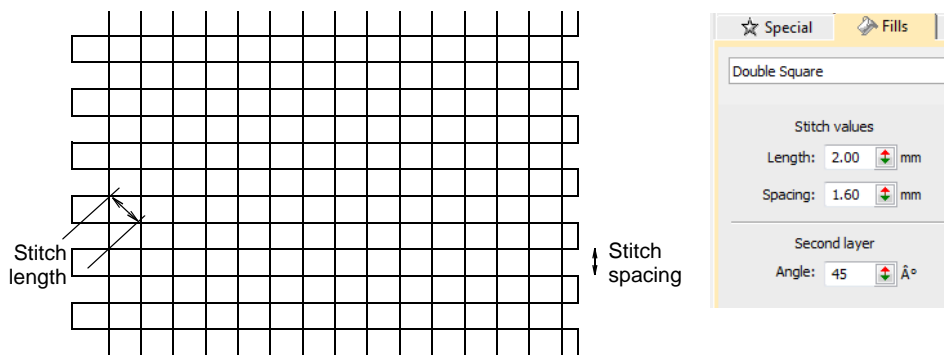
The angle of the first layer is defined by **Complex Fill** object properties. The **Double Square** properties give you the angle of the second layer in relation to the first – default, 90°. Thus, if the first is 30°, the second will be 120°.

Tip: Like **Square** stitch, you can use **Double Square** to create a 'chenille look' using cord and adjusting the presser foot height to create loops. Double square creates a denser fill.

Cross stitch fills

 Use Fill Stitch Types > Cross Stitch to fill large areas with cross stitching on an invisible grid that applies to all design objects.

Cross stitching is a popular technique for filling large areas with low stitch counts. Cross stitch is also sometimes combined with appliqué. **Cross Stitch** fill is something like **Motif Fill** but is generated differently.
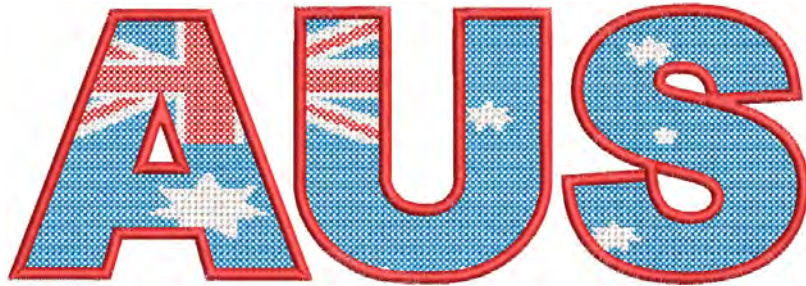
Crosses in different objects align when using the same fabric count. This is because cross stitch fills are generated on an invisible grid, not referenced to the individual object. Fractional crosses are generated at object boundaries in order to avoid gaps forming. **Cross Stitch** fill uses travel runs under and along the cross stitching.

Note: Cross Stitch fill is a stitch type in its own right but does not replace the ES Cross Stitch application available via the **File** menu. See also EmbroideryStudio Cross Stitch Supplement.

To create a cross stitch fill

◀ Create or select a closed-object and click the **Cross Stitch** icon.

Current **Cross Stitch** settings are applied. **Auto Underlay** and **Pull Compensation** are automatically deactivated. Stitch angle has no effect on the pattern layout.

◀ To change settings, double-click or right-click the object/s to access object properties.

Cross Stitch settings
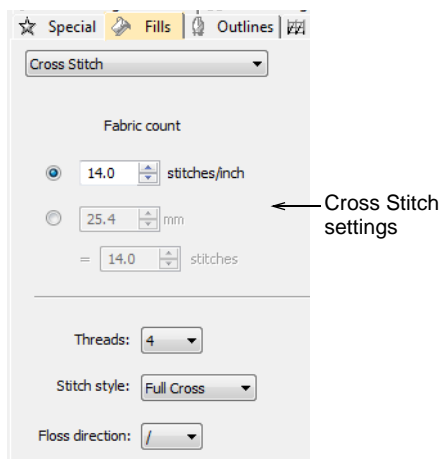
◀ Adjust **Fabric Count** settings to match the fabric size you are working with.
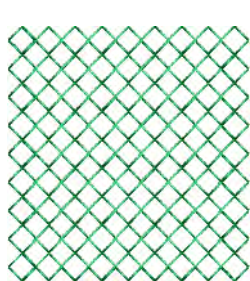
Fabric count: 6.0 stitches/inch
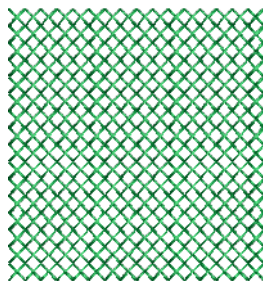
Fabric count: 10.0 stitches/inch
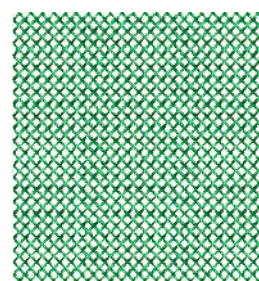
Fabric count: 14.0 stitches/inch

◀ Choose a stitch style.
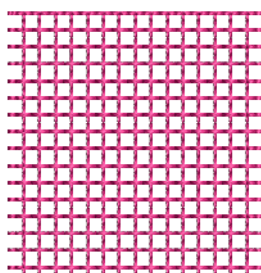
Stitch style: Upright Cross
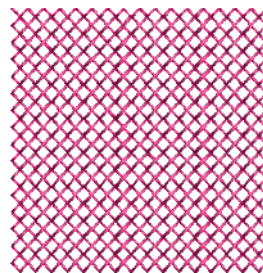
Stitch style: Full Cross

◀ Adjust other cross stitch settings as desired:

Option	Function
Fabric count	Controls the size of cross specified as a counted fabric rather than an actual cross size.
Threads	Sets thread count – e.g. 2, 4 or 6 – which determined number of times thread passes over the same cross in order to make it bulkier.
Stitch style	Full cross (X), diagonal (\), or upright (+).
Floss direction	Controls direction of top leg of the cross – forward or backward for diagonal full crosses, horizontal or vertical for upright full crosses.

Tip: The cross stitch grid is not displayed but you can set the background grid to the cross size to get a better idea. Use **Snap to Grid** to ensure that your object outlines line up with the cross stitch grid.

Related topics...

◀ Motif fills
◀ Embroidery digitizing
◀ Grid display options

EMBROIDERY LETTERING

Create top-quality lettering quickly and simply. EmbroideryStudio provides a large range of scalable closest-join font styles and multi-color and fancy embroidery fonts to choose from.

Creating embroidery lettering

This section describes how to add lettering, apply lettering baselines, change letter formatting, and adjust letter size and spacing. See Creating Embroidery Lettering for details.

Editing embroidery lettering

This section describes how to edit lettering text. It also explains how to scale and transform lettering objects. It also covers adjusting individual letters as well as reshaping baselines on screen. See Editing Embroidery Lettering for details.

Advanced embroidery lettering

This section shows you how to add special characters and symbols. It describes changing lettering stitch types in lettering objects, and adjusting lettering stitch angles. It also explains how to adjust the lettering stitching sequence as well as lettering join method. Automatic letter kerning and letter spacing are discussed. Lettering underlay is also discussed. It also describes how to create special effects with envelopes. See Advanced Embroidery Lettering for details.

Team names

This section shows you how to set up name groups and create team name designs. It also describes how to modify team name designs and output them in a variety of ways. See Team Names 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. See Monogramming for details.

Custom lettering

This section describes how to create embroidery fonts from TrueType fonts. Automatic letter kerning and user-refined fonts are explained. The section also describes how to create and modify your own custom fonts

and letters. Font merging is also explained. See Custom Lettering for details.

Lettering kiosk

The lettering kiosk provides a set of predefined design layouts and the ability to easily personalize them by modifying text and color. You can create your own layouts as well. Designs can be sent to machine from the kiosk via a single button press. See Lettering Kiosk for details.

Chapter 25
Creating Embroidery Lettering

Create high-quality embroidery lettering quickly and simply. EmbroideryStudio provides a large range of scalable fonts to choose from. Add embroidery lettering directly to designs or convert from **CorelDRAW Graphics**. Apply formatting just like a word processor, including italics, bolding, and right/left justification. Change values for the whole text or individual letters.

This section describes how to add lettering, apply lettering baselines, change letter formatting, and adjust letter size and spacing.

Creating lettering with CorelDRAW Graphics

Use Mode > Tag Fill as Turning Satin to tag narrow shapes for conversion to turning stitching.

Use Mode > Convert Graphics to Embroidery to convert selected graphics to embroidery and switch to Wilcom Workspace.

Some EmbroideryStudio product levels include CorelDRAW® Graphics Suite as standard. This allows you to add and format TrueType lettering in **CorelDRAW Graphics**. This can then be converted to either embroidery lettering or embroidery objects.

Note: For a detailed description of the CorelDRAW® Graphics Suite interface, access the **Help** menu in **CorelDRAW Graphics** mode.

To create lettering with CorelDRAW Graphics
1 Switch to **CorelDRAW Graphics**.

2 Create a CorelDRAW® Graphics Suite text object and select it.
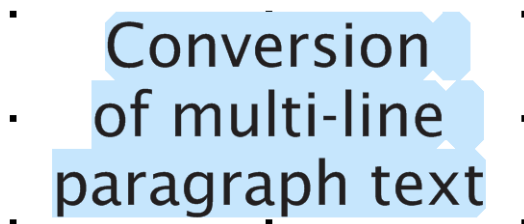
3 Click **Convert Graphics to Embroidery**. **Wilcom Workspace** opens in a few moments and the converted embroidery lettering displays. Change to a native embroidery font and adjust settings as desired.

◀ You can create lettering along any shape of baseline in **CorelDRAW Graphics** and convert to embroidery lettering.
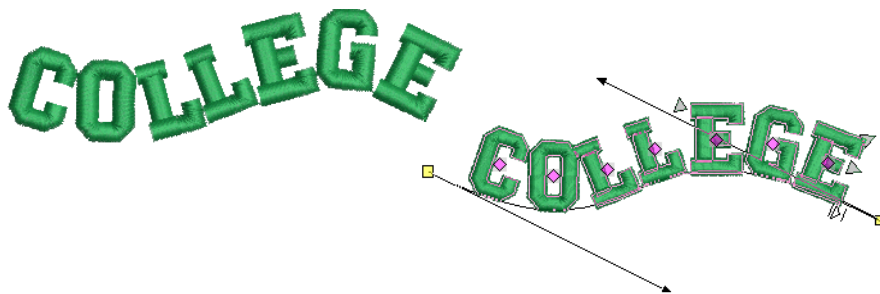
◀ You can also convert multi-line paragraph text with left, center, or right justification.

Tip: If you are not satisfied with the results of lettering conversion and want to preserve the precise appearance of the original text, try converting to curves first and then to plain embroidery. Right-click and

select **Convert to Curve**. Optionally, use **Tag Fill as Turning Satin** to tag letters for conversion to turning stitching.

Convert to curves first
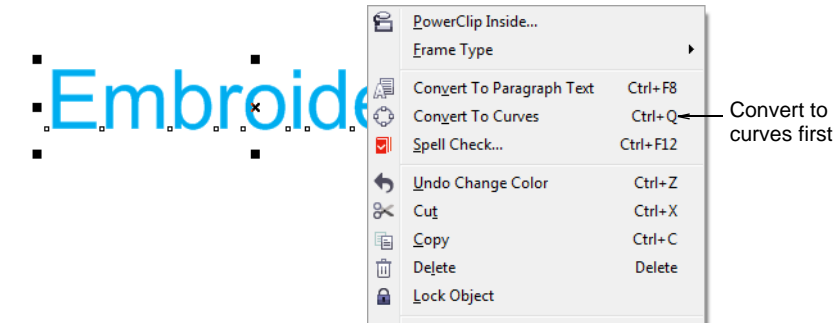
Related topics...

◀ Operating modes
◀ Editing text
◀ Adjusting baselines

Creating embroidery lettering

You can add lettering to a design by typing it directly on-screen or entering it via the **Object Properties** docker.

Select embroidery fonts

EmbroideryStudio offers a range of purpose-built embroidery fonts optimized for embroidery design work. Tick the **Preview** checkbox for a preview of fonts prior to selection.
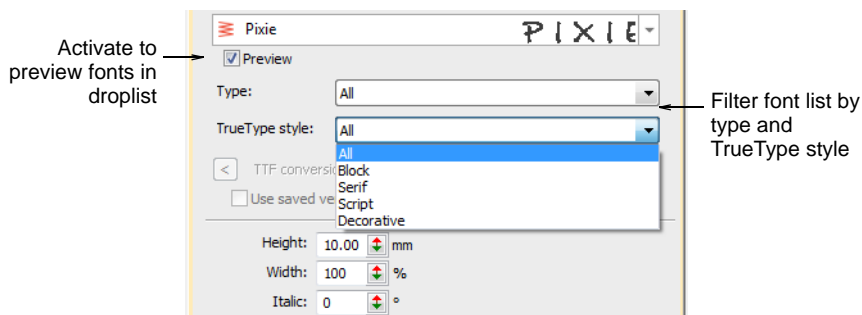
Use the droplists to filter the font list by type and by TrueType style:

◄ Choose a font type: Embroidery, TrueType, or All.
◄ Choose a TrueType font style: Block, Serif, Script, Decorative, or All. These only apply to TrueType fonts.

Font selection

The font list remembers the previously selected font, allowing you to continue searching from this point.
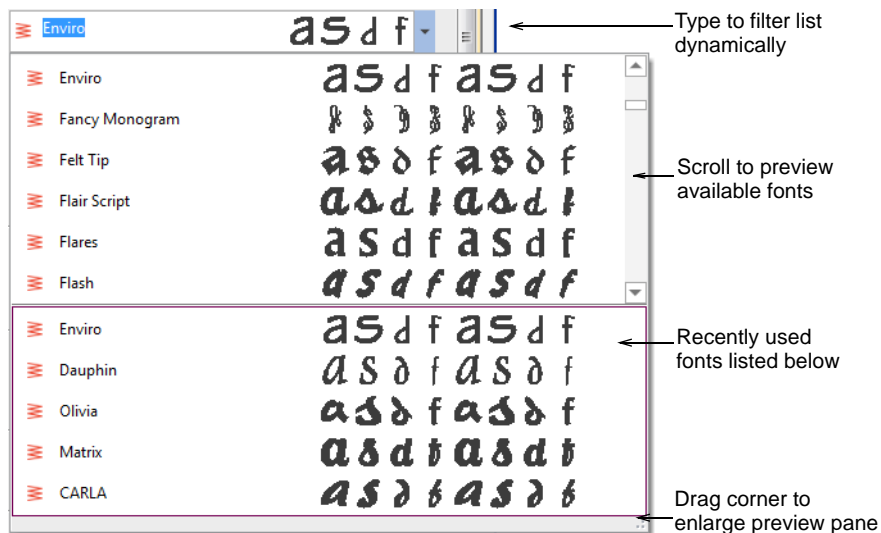
◄ First up, the font list provides a preview of recently used fonts. This can be adjusted.
◄ With no lettering object selected, the preview displays the name of the font. Otherwise, it will show the selected text.

- ◄ If you know what you are looking for, simply start typing the font name and the list will update dynamically.
- ◄ The preview pane can be enlarged as necessary.

Font list settings

You can set the size of your font preview via the **Options > General** tab. You can also adjust the number of recently used fonts.

Set number of recent fonts shown in font list

Set font preview size
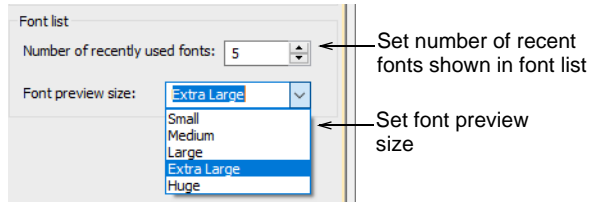
Conversion of TrueType and OpenType fonts

In addition to dedicated embroidery fonts, EmbroideryStudio also converts any TrueType or OpenType font on your system on-the-fly into an embroidery font. This is an important feature for Asian fonts which may contain several thousand characters.

Scroll to preview available TrueType fonts
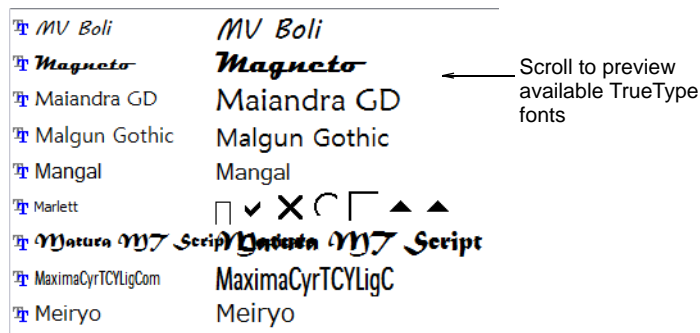
The process is automatic. The result is similar to manually digitized fonts although the quality may not be quite as good. It depends on the original shapes. Narrower serif type fonts produce better results than blocked fonts. See also Converting TrueType fonts to embroidery.

Support for complex text layouts

EmbroideryStudio provides support for 'complex text layout' (right-to-left) and non-European scripts including Arabic, Hebrew, and Thai. With 'RTL languages' like Arabic and Hebrew, the order of characters is correctly rendered in the generated lettering objects. Complex text rendering is also supported in other languages which include combined characters. See also Converting TrueType fonts to embroidery.

الكتابة العربية

כתב עברי

อักษรไทย

Tip: It is also possible to select TrueType fonts in CorelDRAW® Graphics Suite and convert them on-the-fly via **Convert** tool.

Recommended sizes

For best results when stitching, do not exceed the recommended maximum or minimum sizes. Note, however, that recommended heights refer to UPPER CASE letters. Most embroidery fonts 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. You may need to increase the size of lower-case characters to suit the embroidery.

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. Not **all** characters are available in **all** fonts.

Bling lettering

EmbroideryStudio also provides dedicated **Bling Lettering**.

Bling-specific fonts
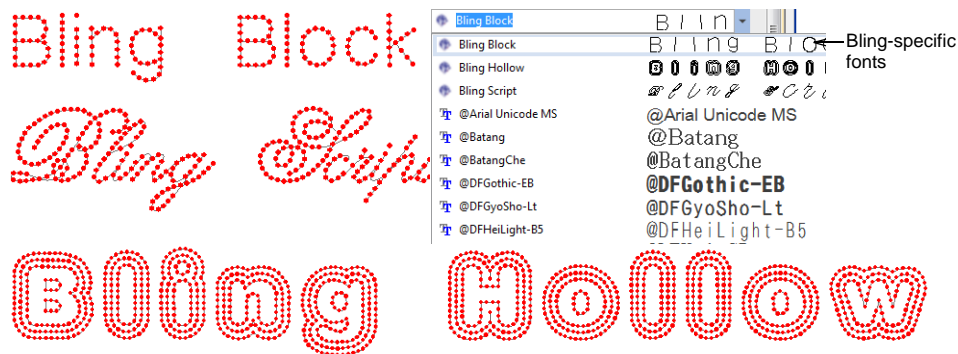
Related topics...

◀ Adjust dimensions
◀ General options
◀ Creating lettering with CorelDRAW Graphics
◀ Adding special characters
◀ Creating bling lettering
◀ Standard Fonts

Add embroidery lettering on-screen

> **A** Use Toolbox > Lettering to create embroidery lettering directly on-screen. Right-click to access settings.

If it is not essential to fit letters precisely to a certain area, you can type them directly on-screen as with a word processor. Current settings are used. You can also modify lettering objects directly on-screen to achieve various artistic effects.

To add embroidery lettering on-screen

◀ Click the **Lettering** icon.
◀ Select a color from the **Color** toolbar.
◀ Click an insertion point and start typing. To start a new line, press **Shift+Enter**.

◀ Press **Enter** to complete.

Note: 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.

Related topics...

◀ Working with baselines

Create lettering with object properties

 Right-click Toolbox > Lettering to enter text in the docker and adjust settings for embroidery lettering.

Using the **Object Properties** docker, you can specify letter formatting before adding it to the design. This is the more traditional method and is useful with more complex designs. EmbroideryStudio provides a font range suitable for many applications. Select from the supplied embroidery fonts or convert TrueType or OpenType fonts installed on your system.

To create lettering with object properties

1 Right-click the **Lettering** icon to access object properties.

Enter text → Arial Rounded

Click to create text → Create Text

Select font → Arial Rounded

Filter font list → TrueType style: All

Adjust formatting → Height / Width / Italic

Choose baseline → Free Line
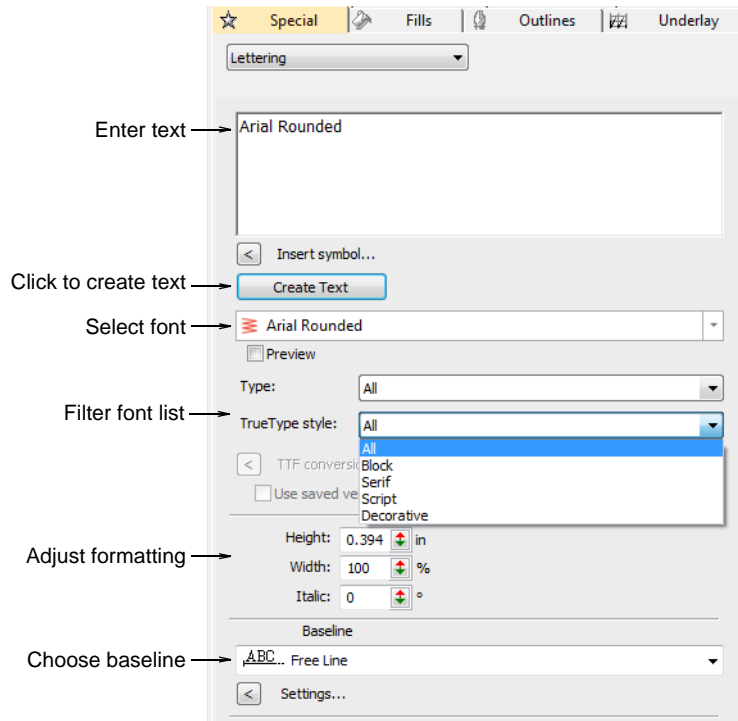
2 Enter the text you want to embroider in the text entry panel. To start a new line, press **Enter**.

3 Select a font from the **Font** droplist. To filter the list:

◀ Choose a font type: Embroidery, TrueType, or All.

◀ Choose a TrueType font style: Block, Serif, Script, Decorative, or All. These only apply to TrueType fonts.

◀ Type two (or more) characters of the font name to further filter the list.

Scroll to preview available fonts

Scroll down to access recently used fonts
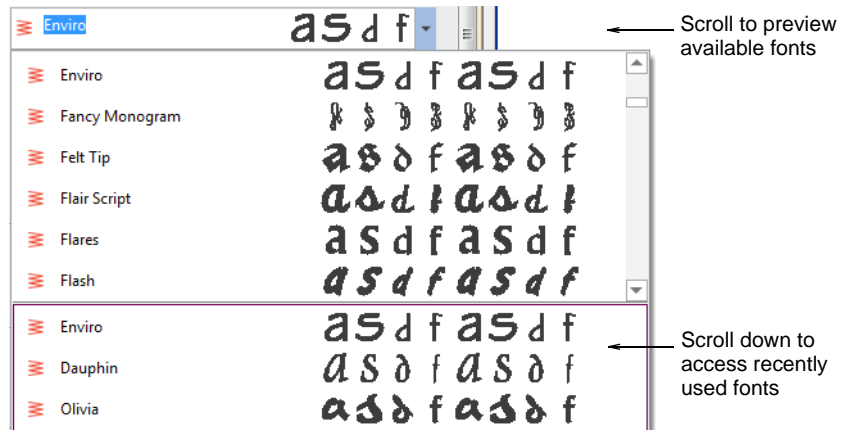
Tip: Check min/max recommendations for each font and stay within them for best results. See Standard Fonts for details.

4 Select a baseline from the droplist. Baselines determine the shape of lettering objects in a design.

Select baseline style
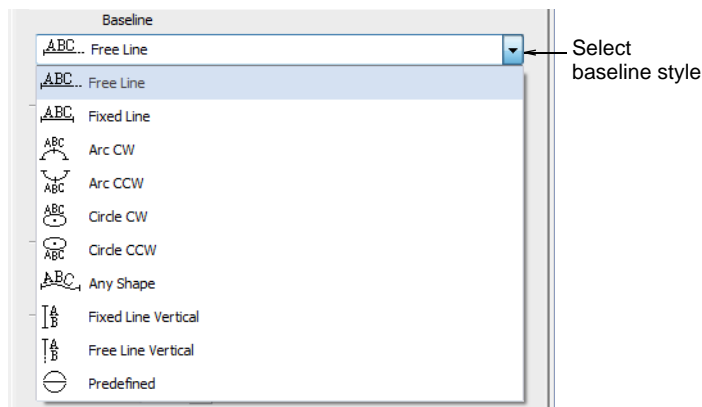
5 Click **Create Text** in the docker.

6 Click on screen to place the lettering, or mark reference points for the selected baseline.

7 Press **Enter** to generate. Letters are filled with stitches according to current settings in the **Object Properties** docker. Change these at any time.

Tip: Lettering appearance and quality depends a lot on underlay which serves as a foundation for cover stitching.

Related topics...

◀ Select embroidery fonts
◀ Standard Fonts
◀ Working with baselines
◀ Format lettering
◀ Setting lettering underlay
◀ Converting TrueType fonts to embroidery

Adjusting lettering properties

Letter height, width, italic and justification can all be controlled via object properties. Letter, word and line spacings can also be controlled via properties. Letter spacing is calculated automatically according to justification – left, right, center, or fully justified.

Format lettering

Change current formatting settings before or after adding lettering. You can slant letters to left or right for an italic effect. Use the justification setting – left, right, center, or fully justified – to align lettering along the baseline.

To format lettering

1 Create a new lettering object and select it.

2 If not already open, double-click to open the **Object Properties > Special > Lettering** dialog.

Adjust lettering height
Adjust lettering width as percentage
Adjust letter slant angle
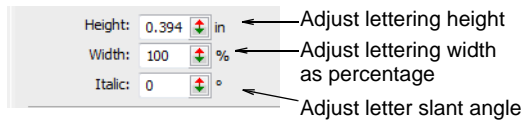
3 Adjust lettering height and width using the slider controls.

Tip: Say, for example, you are using the metric measurement system so your lettering heights are in mm. And say you get an order for ¾" lettering. Simply enter '3/4in' or '3/4 in' into the **Lettering Height** field and it is automatically converted to 19.05mm.

4 Enter an angle, ±45°, in the **Italic** field to create slanted lettering – 0° is equivalent to no italics.

Italic angle 25°   Italic angle 0°   Italic angle -10°

5 Select a justification setting as required – **Left**, **Right, Center**, or **Full**.

Tip: When the justification setting is **Full**, letters are evenly distributed along the baseline. To change spacing for fully justified lettering, simply change baseline length.

6 To make bold lettering, select the **Pull Comp** tab.
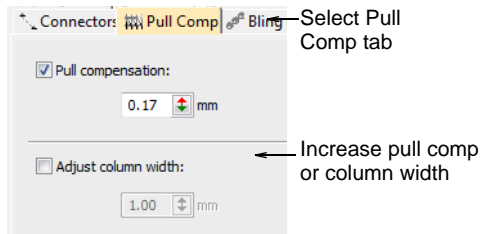
7 Select column width or pull comp options as required.

Related topics...

◄ Create lettering with object properties
◄ Creating special effects with lettering art
◄ Set measurement units
◄ Compensating for fabric stretch

Adjust spacing settings

You can adjust letter, word and line spacings via object properties.

◂ Double-click a selected lettering object or right-click the **Lettering** icon to access object properties.

Enter values as absolutes (mm) or percentages
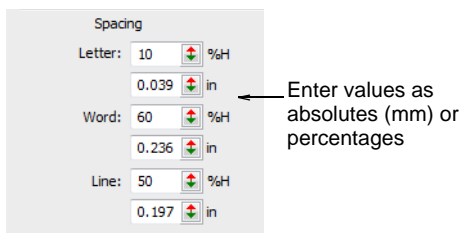
◂ Enter **Spacing** values as absolute values (mm) or percentages of the height.

　◂ **Letter Spacing**: the space between letters.

　◂ **Word Spacing**: the space between words.

　◂ **Line Spacing**: the space between lines.

Tip: If you want to remove spacing between words, set **Word Spacing** to 0%.

Adjust letter spacings on-screen

Use Reshape > Reshape Object to change letter spacing.

Spacing between letters is calculated automatically as a percentage of letter height. In most cases the default spacing is adequate. Sometimes you may want to control the overall letter spread to fit a particular location. Similarly, you can change the space between lines in a multiple-line lettering object using the **Reshape Object** tool. Sometimes 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 letter spacings on-screen

◄ Select the lettering object and click the **Reshape Object** icon.

Drag letter spacing control point

Width: 4.755 in 120%
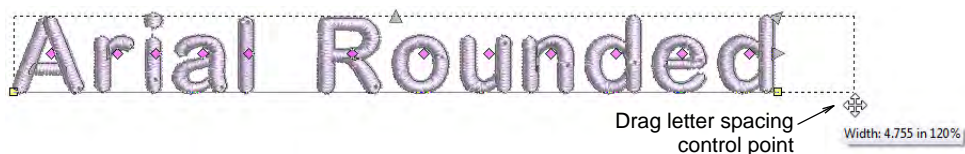
◄ Drag the letter spacing control point left or right to adjust the spacing of all letters along the baseline.

◄ Release the mouse button to complete and press **Esc**.

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Tip: When the justification setting is **Full**, letters are evenly distributed along the baseline. To change the spacing for fully justified lettering, simply change the length of the baseline.

◄ Drag the line spacing control point up or down to change line spacing.

Drag line spacing control point
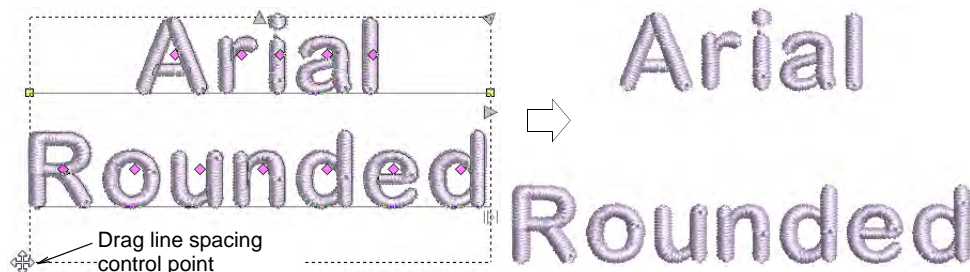
◄ Release the mouse button to complete and press **Esc**.

◀ Click the diamond control point in the center of the letter. To select multiple letters or a range of letters, hold down **Ctrl** or **Shift** as you select.
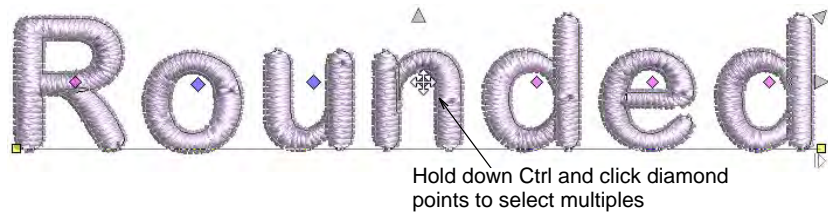
Hold down Ctrl and click diamond points to select multiples

◀ Drag selected letter/s along the baseline or use arrow keys to adjust the spacing.

Drag or use arrow keys to fine-tune kerning
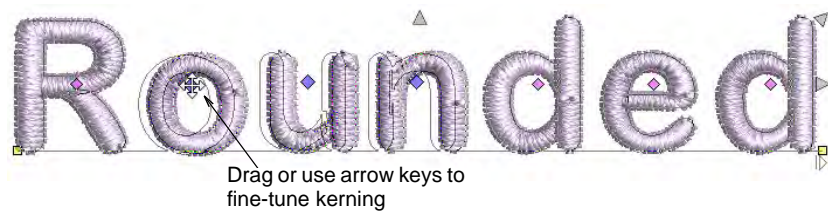
💡
Tip: Alternatively, to move multiple letters, right-click the diamond control point of the first letter and drag. All letters to the end of the line move as one.

◀ Release the mouse button to complete and press **Esc**.

Related topics...

◀ Setting automatic letter kerning
◀ Setting automatic letter spacing
◀ Adjusting individual letters

Working with baselines

Baselines determine the shape of lettering objects. You can place lettering on a straight horizontal or vertical line, curve lettering around a circle or arc, or digitize your own baseline. You can digitize baselines

on-screen or, if you are working from an enlargement drawing, on a digitizing tablet.

Apply baselines

> **A** Right-click Toolbox > Lettering to select baselines and adjust baseline settings.

With the exception of **Free Line** and **Free Line Vertical**, baselines allow you to set the final length of the finished lettering. Once you have placed a baseline, EmbroideryStudio attempts to fit all the letters without altering baseline length. EmbroideryStudio gives you interactive and numeric control over many baseline settings.

To apply a baseline

‹ Double-click a selected lettering object or right-click the **Lettering** icon to access object properties.

Select baseline style
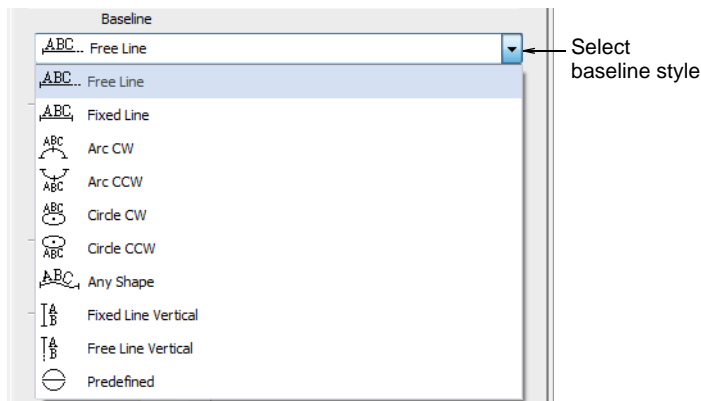
‹ Select a baseline from the list. Options include:
  ‹ Horizontal – **Free Line** and **Fixed Line**
  ‹ Vertical – **Free Line Vertical** and **Fixed Line Vertical**

Fixed Line baselines allow you to set the final length of the finished lettering. Free Line baselines expand to fit the letters you enter.

With vertical baselines, 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 right to left to suit Asian languages. For Western languages, vertical lettering is best suited to uppercase because descenders in lowercase letters are not accommodated in the letter spacing.

◄ Arc – **Arc CW** and **Arc CCW**: By default, letters are positioned **above** the **Arc CW** and **below** the **Arc CCW** baseline. They are also centered by default. Hold down the **Ctrl** key to constrain the line to 15° increments.

Arc clockwise

Arc anti-clockwise
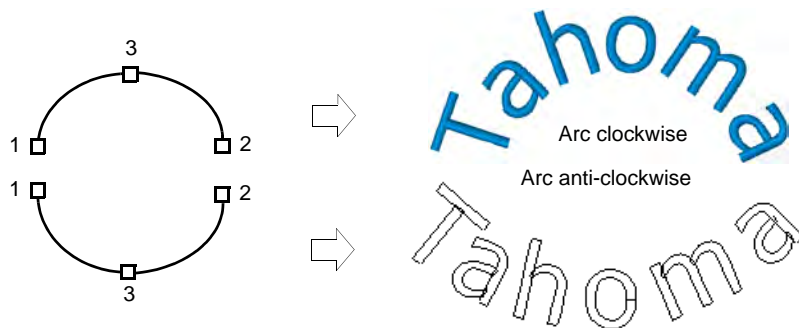
Depending on the order in which you mark the reference points, the text will be placed left to right, or right to left.

◄ Circle – **Circle CW** and **Circle CCW**: Place letters around a full circle or oval. Mark a point on the circumference to define the radius. Mark

a third point to define an ellipse or press **Enter** directly for a perfect circle. Hold down the **Ctrl** key to constrain the line to 15° increments.

💡
Tip: Adjust circle and arc baseline settings for more precise numeric control over radius (X and Y), as well as tilt, justification, and arc angles.

◀ Custom: 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.
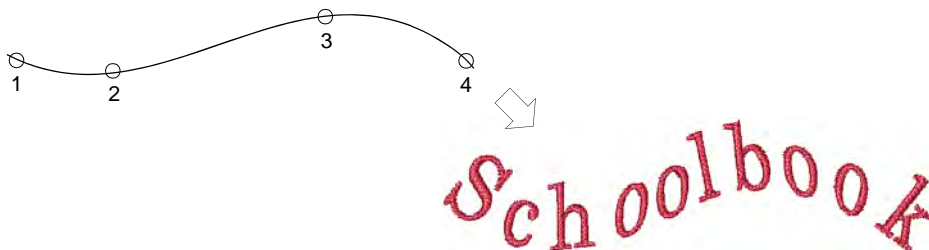
💡
Tip: If the baseline has tight curves, or sharp corners, letters may overlap. For best results, only mark curve points and digitize lines which have shallow, gentle curves.

◀ Predefined: This technique is typically used for creating logos.

◀ Adjust baseline settings in the **Baseline Settings** dialog.

Use predefined baselines

Use **Predefined** baselines to quickly create three rows of lettering, or two rows surrounding a design object. This technique is typically used for creating logos.

To use a predefined baseline

1 With no objects selected, right-click the **Lettering** icon to access object properties.

Enter two or three lines of text →

Select options and adjust settings →
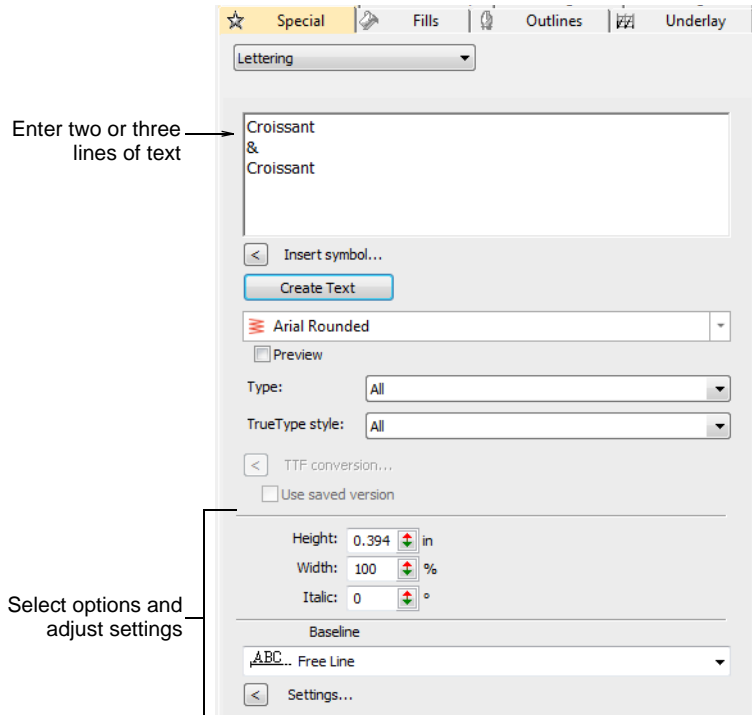
2 Enter two or three lines of text in the text entry panel. To start a new line of lettering, press **Enter**.

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Tip: If you want to insert a logo or design between the top and bottom lines, leave the middle line of text blank.

3 Select the font and adjust other settings you require.

4 Select **Predefined** from the baseline list and click **OK**.

Select 'Predefined'
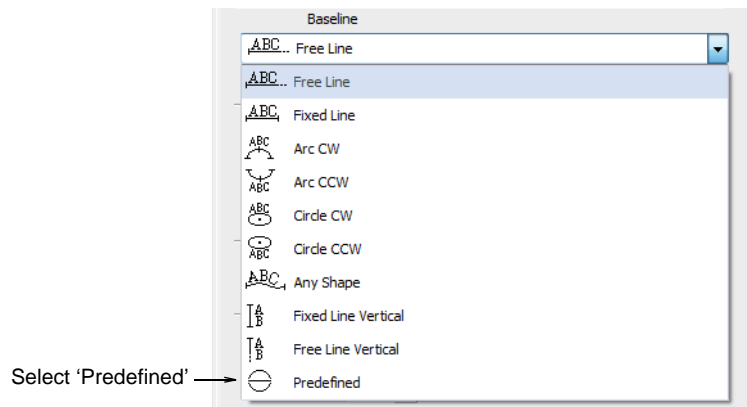
5 Click where you want to place the lettering and drag the cursor downward.

💡
Tip: Hold down the **Ctrl** key to constrain the line to 15° increments.

6 Click to enter a point on the circumference of the circle.

7 Mark another point if you want to create an oval, or press **Enter** for a circular baseline. The lines of text are generated and dispersed around the baseline you have defined. Each line of text becomes a separate lettering object.
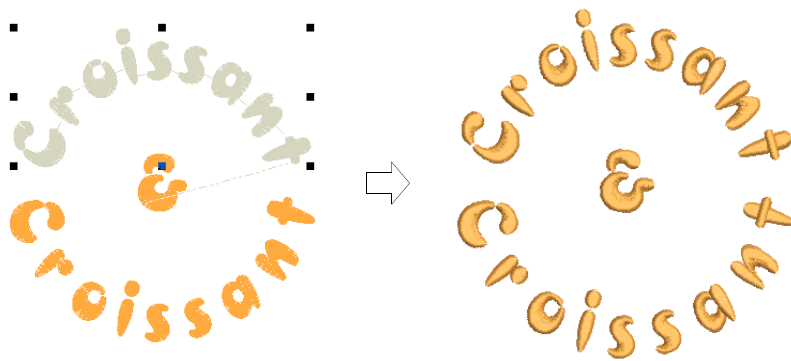
Related topics...

◀ Select embroidery fonts
◀ Format lettering

Chapter 26
Editing Embroidery Lettering

EmbroideryStudio gives you interactive and precise numeric control over many settings affecting lettering objects. Adjust both individual letters and lettering objects as a whole. Apply horizontal, vertical, and curved baselines. Modify baseline type, length, radius and angle, as well as position. You can even define the rotation angle of letters relative to the baseline or the design itself.

This section describes how to edit lettering text. It also explains how to scale and transform lettering objects. It also covers adjusting individual letters as well as reshaping baselines on screen.

Editing text

A   Use Toolbox > Lettering to edit lettering on screen.

When you have created a lettering object, you can select it and make changes to it interactively or by adjusting object properties.

To edit text

◀ Click **Lettering** and then click inside the lettering object. An I-beam appears.
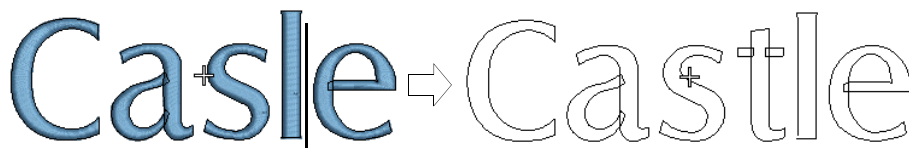
◀ Edit the text as required. The lettering shows its wireframe.

◀ Press **Shift+Enter** to start a new line. Press **Enter** to complete.

◀ Alternatively, double-click the lettering object. The **Object Properties > Special > Lettering** docker opens.
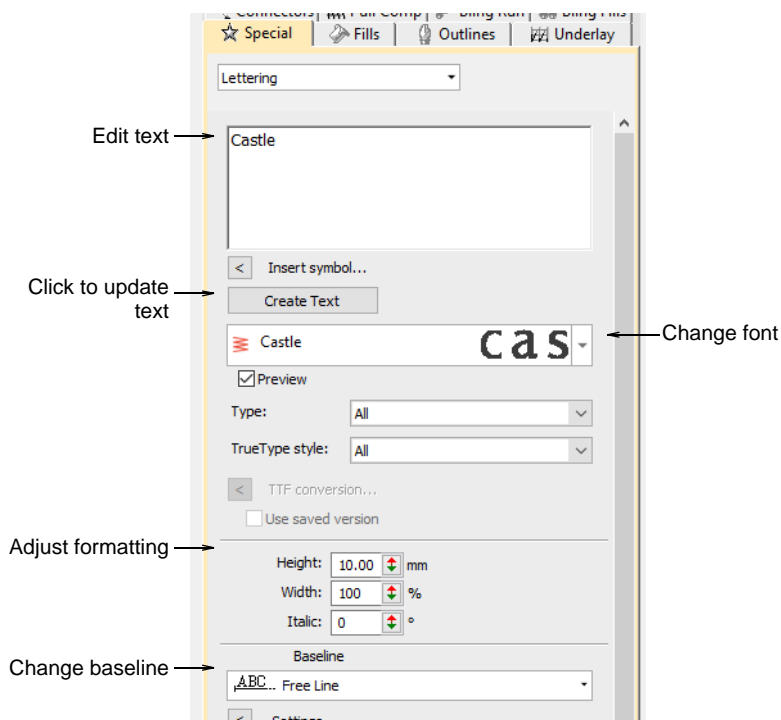
◀ Edit the text in the text entry panel and make any other adjustments you require.

◀ Click the **Update Text** button.

Related topics...

◀ Format lettering

◀ Applying stitch types & effects to lettering

Modifying lettering

When you first create lettering, it may be too big or too small. Size can be adjusted interactively or by adjusting object properties. Lettering objects can also be skewed and rotated.

Tip: The size of lettering will determine the type of underlay you need to apply. Lettering with heights under 5 mm should not have underlay. Letters 6 mm to 10 mm can have a center-run underlay applied. Lettering larger than 10 mm is large enough for edge-run underlay. See Setting lettering underlay for details.

Adjust dimensions

> **A** Use Toolbox > Lettering to adjust letter height and width.

You can scale lettering objects vertically, horizontally and proportionally using the general properties or via the **Special** tab of the **Object Properties** docker.

To adjust dimensions

◀ Select the lettering object. The current dimensions appear in the **Property Bar**.

Adjust width and height settings — Position X: 3.654 in | Width: 2.523 in | 100.00 % — Lock to resize proportionately
Position Y: 0.879 in | Height: 0.727 in | 100.00 %

◀ Adjust width and height settings either as absolute values (mm) or as a percentage of current settings.

◀ Press **Enter**.

Original

Width and height 125%

◀ Alternatively, double-click the lettering object to access object properties.

Height: 10.00 mm — Adjust lettering height in millimeters
Width: 100 % — Adjust lettering width as percentage
Italic: 0 °
Baseline
ABC... Free Line
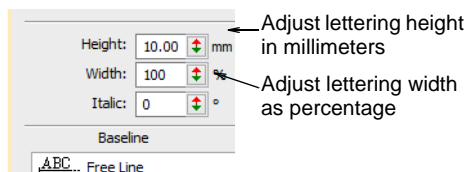
◀ In the **Height** field enter the height of your lettering object in millimeters.

◀ Enter the width of your lettering object in the **Width** field as a percentage of the height.

　◀ For wide letters, increase the percentage – e.g. 140%.
　◀ For narrow letters, decrease the percentage – e.g. 70%.

Width 100%　　　　Width 70%　　　　Width 140%

Note: Letter height can vary between roughly 5mm and 200mm. For recommended sizes, see Standard Fonts.

Related topics...

◀ Transforming Objects
◀ Reshaping Objects

Scale lettering

You can scale your lettering objects vertically, horizontally and proportionally with the **Select Object** tool. You can scale your lettering objects vertically, horizontally and proportionally with the **Reshape Object** tool.

To scale lettering

‹ Click **Select Object** and select the lettering object.

Drag to resize vertically   Drag to resize proportionally

Drag to resize horizontally

‹ Click-and-drag one of the selection handles to resize the object horizontally, vertically or proportionally.

Drag

‹ Alternatively, click **Reshape Object**.

Drag to resize vertically

Drag to resize proportionally
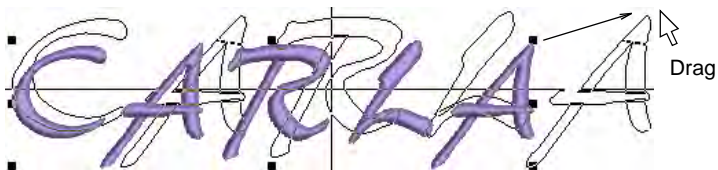
Drag to resize horizontally
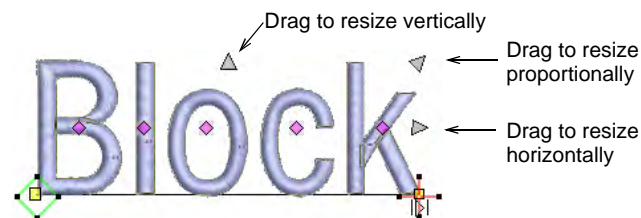
◀ Click-and-drag one of the dark triangular control points to resize the object horizontally, vertically or proportionally.

Drag

◀ Release the mouse to complete and press **Esc**.

Related topics...

◀ Transforming Objects
◀ Reshaping Objects

Transform lettering

 Use Select > Select Object to transform lettering objects on screen.

 Use Reshape > Reshape Object to rotate lettering objects on screen.

Apart from scaling, you can use the **Select Object** and **Reshape Object** tools to skew and rotate lettering objects.

To transform lettering

◀ Click **Select Object** and select the lettering object.
◀ Click the lettering object again. Another set of control points appears. These let you rotate and skew the lettering object.

Rotation point
Drag to skew
Drag to rotate
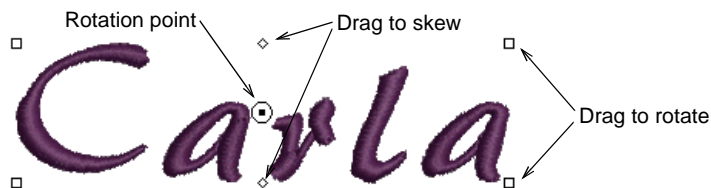
◀ Click-and-drag diamond-shaped control points to skew the lettering object.
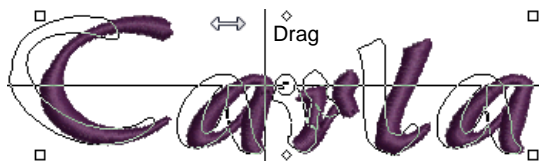
◀ Click-and-drag hollow square control points to rotate the lettering object.
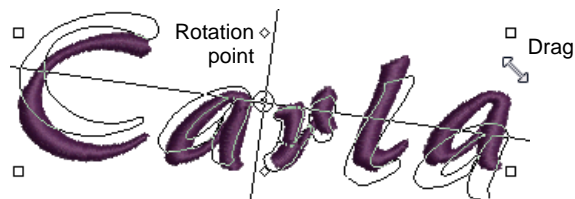
◀ Click-and-drag the rotation point itself to a new position before rotating.
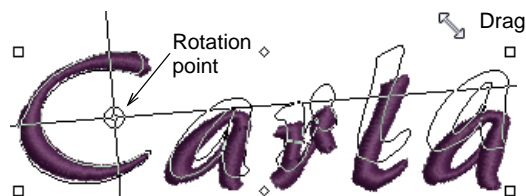
◀ Alternatively, click **Reshape Object**.

◀ Click-and-drag up or down one of the solid square control points on the baseline to slant the lettering object.

◀ Release the mouse 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, as well as reshape them. You can also recolor letters individually.

Reposition letters

> ![cursor icon] Use Reshape > 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
1 Select the lettering object and click **Reshape Object**.
2 Click the diamond control point.

To select multiple letters, hold down **Ctrl** or **Shift** as you select.

Click diamond control points
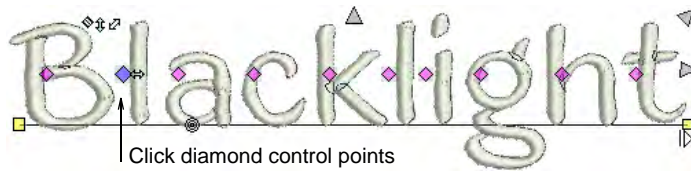
3 Click-and-drag the letter/s to the new position:
- ◀ To move horizontally, drag along the baseline.
- ◀ To move vertically, hold down **Shift** as you drag.
- ◀ To move the letter freely, hold down **Ctrl** as you drag.

4 Release the mouse to complete and press **Esc**.

Related topics...

◀ Adjust letter spacings on-screen

Transform letters

> Use Reshape > 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

1 Select the lettering object and click **Reshape Object**.
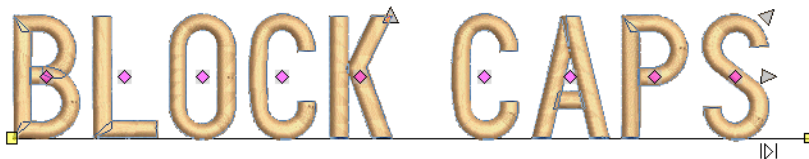
2 Click the diamond control point. Another set of reshape nodes appear around the letter.
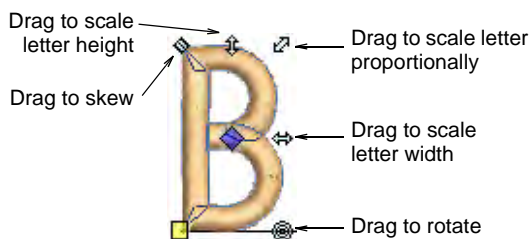
3 Click-and-drag a reshape node around the letter to transform it.
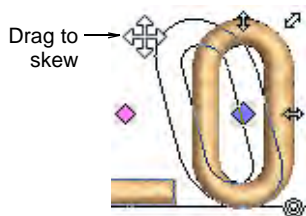
4 Press **Esc** to finish.

Reshape letters

Use Reshape > Reshape Object to reshape individual letters on screen.

Create special lettering effects by reshaping letter outlines with the **Reshape Object** tool.

To reshape letters

1 Select the lettering object and click **Reshape Object**.

2 Click the letter outline. Control points appear around the outline. Selectively turn off control points as required.

Click letter outline
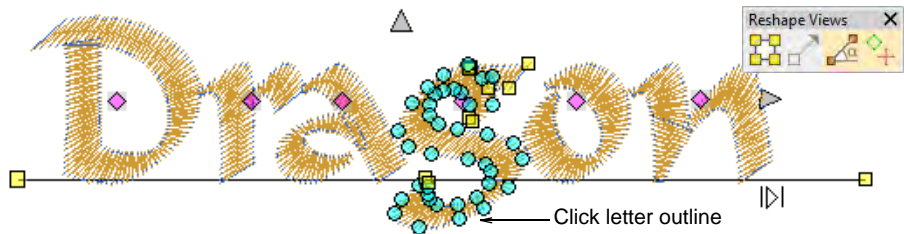
3 Select reshape nodes by any of the following means:

◀ Drag a selection marquee around the reshape nodes you require.

◀ To select multiple nodes, hold down **Ctrl** or **Shift** as you select.

Draw selection marquee to select group of nodes

Hold down Ctrl and click to select individual nodes

Hold down Shift and left- or right-click to select range
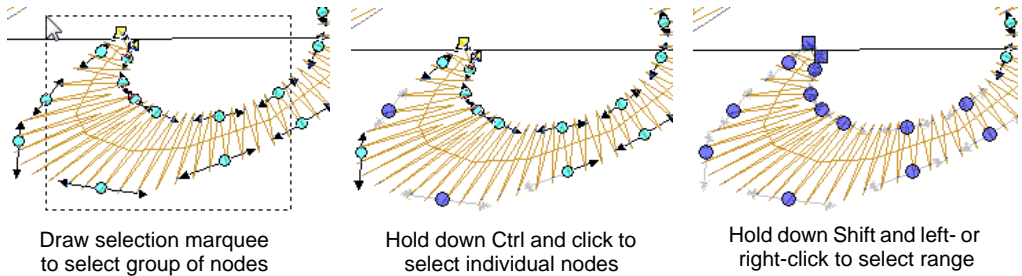
4 Reshape the letter like any other object and press **Enter**.

Reshape by adding, deleting and dragging reshape nodes
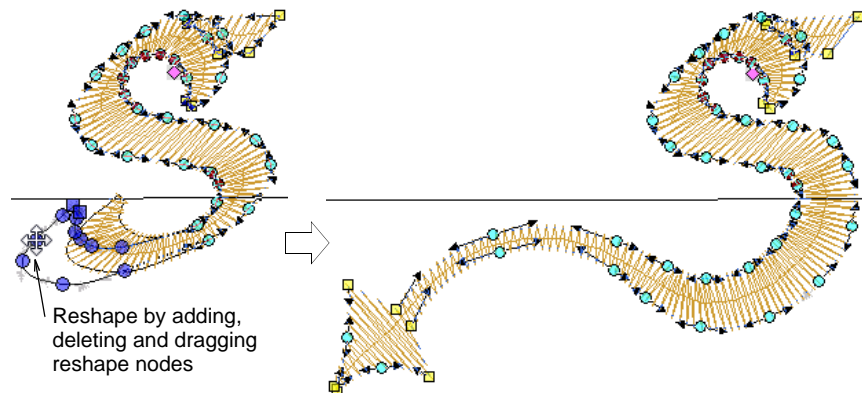
Tip: Press **Spacebar** to toggle between selected corner and curve reshape-nodes.

5 Adjust stitch angles as required and press **Enter**.
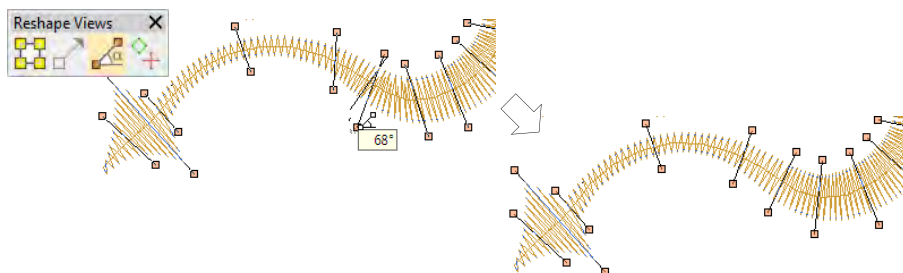
💡
Tip: Holding down the **Ctrl** key, click the outline wherever you want to place an additional stitch angle.

6 Adjust entry/exit points as required and press **Enter**.

Adjust entry/exit points
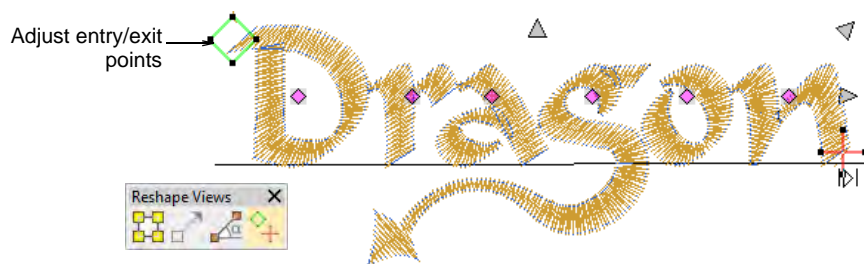
7 Press **Esc** to finish.

🚫
Note: Custom fonts are saved in ESA format to in the USERLETW folder within the local EmbroideryStudio installation. If you want to adjust converted characters or add special characters to a custom font, you can do so via the **Create Letter** function.

Related topics...

◀ Adjusting stitch angles
◀ Smoothing curves
◀ Reshaping embroidery objects
◀ Create custom letters
◀ Save custom letters

Recolor letters

 Use Toolbox > Lettering to recolor letters on screen.

EmbroideryStudio lets you change the color of individual letters.

To recolor individual letters

1 Click **Lettering** then click the lettering object.
2 Select a letter (or letters) by dragging the cursor over the letter.

Drag cursor over
letter to select

3 Click a color on the **Color** toolbar.
4 Press **Enter**.

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.

Related topics...

◄ Create lettering with object properties

Adjusting baselines

Baselines can be modified after placement either directly on-screen or via the **Object Properties > Special > Lettering** docker. With the exception of **Free Line** and **Free Line Vertical**, baselines allow you to set the final length of the finished lettering. Once you have placed a baseline, EmbroideryStudio attempts to fit all the letters without altering the baseline length.

Tip: As a baseline is filled with letters, letter spacing decreases. Eventually, letters may overlap. If so, you can adjust the baseline length to accommodate them, or change the lettering width in the **Object Properties > Special > Lettering** docker.

Reshape baselines interactively

Use Reshape > Reshape Object to reshape lettering baselines.

Baselines can be adjusted with the **Reshape Object** tool. Depending on baseline type, you can adjust angles, lengths, and sizes. You can change curve radii and justification points. You can completely reshape **Any Shape** baselines.

To reshape a baseline interactively

1 Select the lettering object and click **Reshape Object**.

Tip: The large diamond and cross represent start and end points. Toggle them off to access baseline controls.

◀ Change angles of straight baselines by dragging square control points at either end.

Drag up/down to change
baseline angle

Angle: 5°
Length: 3.535 in 101%

◀ Create an arc baseline from a circular one by dragging the hollow square control point.

Drag along circumference to
change baseline length

Drag left or right to change
circle baseline to arc
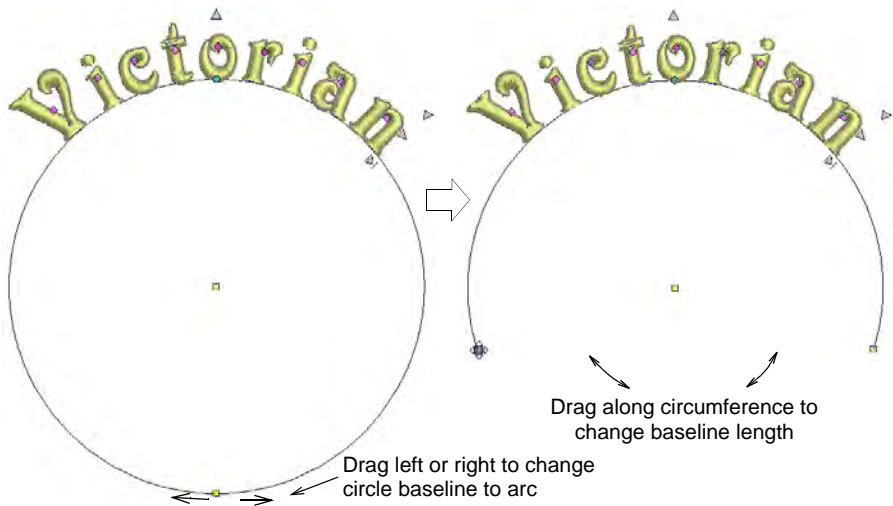
◀ Change lettering orientation of arc baselines by dragging the solid square control points at either end.

Tip: Letter positions depend on justification – left, center, right or justified. If the baseline becomes too short, letters may overlap.

◀ Change the radius by dragging the solid square control point in the center of the circle.

Drag up or down to change radius of curve
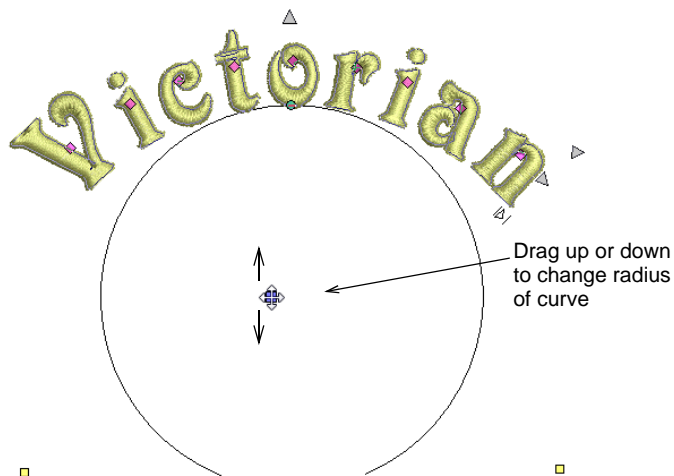
◀ Alternatively, change the radius by dragging the control point in the center of the baseline.

Drag up or down to change radius of curve
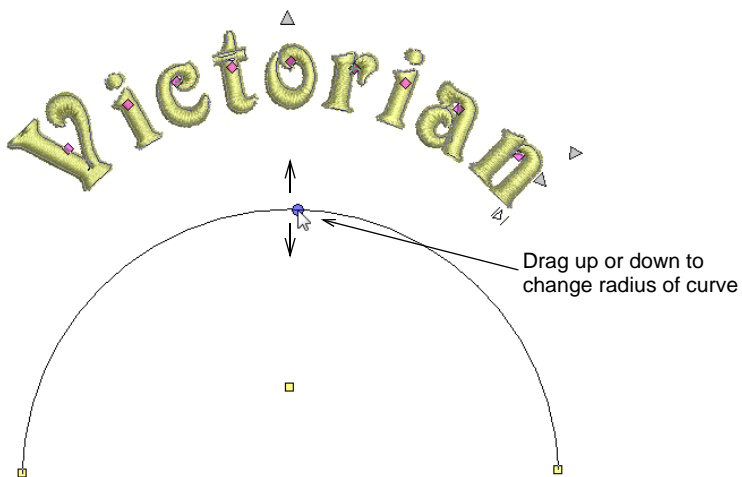
◀ Adjust **Any Shape** baselines by adding, deleting, changing or moving reference points like any embroidery object.

Left or right-click on the baseline to add

◀ To reshape, left-click to bend the line at an **angle**, right-click to bend into a **curve**.

◀ To re-position, drag any one of the baseline control points up or down.

Drag to change curvature
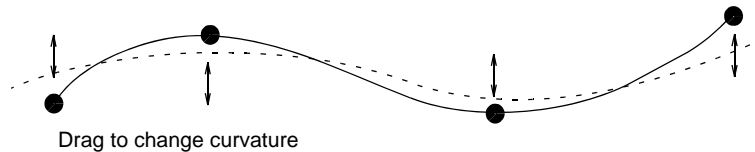
◀ To delete, select a control point and press **Delete**.

◀ To change straight to curve, or curve to straight, select the control point and press **Spacebar**.

◀ Press **Esc** to finish.

Related topics...

◀ Adjust fixed-width baseline settings

◀ Adjust curved baseline settings

◀ Reshape letters

◀ Reshaping embroidery objects

Adjust fixed-width baseline settings

A Use Toolbox > Lettering to adjust baseline settings.

A free-line baseline does not have a fixed or pre-determined length – the baseline extends as long as you keep adding letters. A fixed-line baseline

has a fixed length which you can digitize or specify numerically. Various options are available to handle text that extends beyond the baseline.

Tip: Precise control over baseline width is important when combined with **Team Names** when you want to ensure all names fit within the same area such as a pocket.

To adjust fixed-width baseline settings

1 Double-click a selected lettering object/s to access object properties.

Click to lay out baseline

2 Click **Settings**. The **Baseline Settings** dialog opens. Options depend on baseline type.

Adjust length and angle values

Select auto frame style

Select baseline position
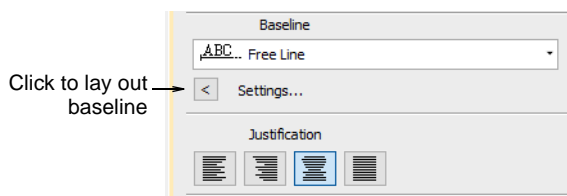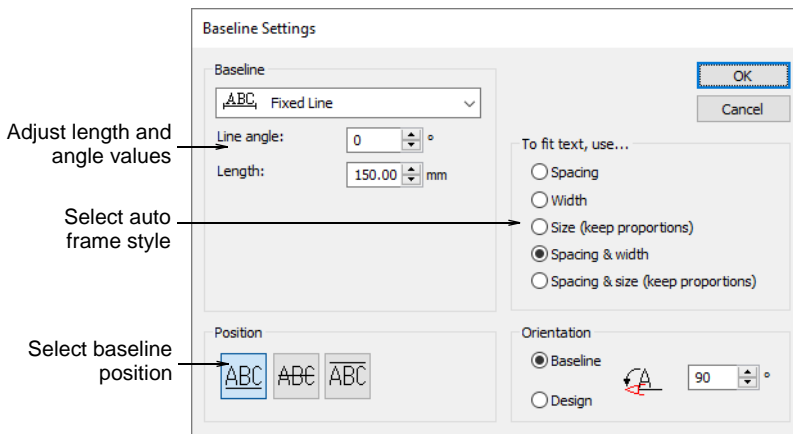
3 Select a horizontal, vertical, or arc baseline from the list.

4 Adjust the **Length** value as required.

Fixed-line baselines allow control over line length as well as options for handling text which does not fit the baseline. This is particularly useful for multiple 'team' names. Free-line baselines only allow you to adjust the **Line Angle** value.

5 For fixed-line baselines, select an 'auto-frame' style:

◀ **Spacing**: Letter size and width stays the same and letters are spaced evenly along the baseline. Letters may overlap if the text is too wide.

◀ **Width**: The width of each letter is reduced and the original spacing kept.

◀ **Size (Keep Proportions)**: Letter width and height is reduced proportionally but the original spacing remains.

◀ **Spacing and Width**: Letter width and spacing is reduced.

◀ **Spacing and Size (Keep Proportions)**: Letter width, height and spacing is reduced proportionally.

6 Adjust the **Line Angle** as required. Enter the exact angle of baseline to the horizontal axis.

7 Select a baseline position.

Baseline below	Baseline centered	Baseline above

When creating lettering for a badge, for example:

- ◀ For lettering above the badge, select a baseline below.
- ◀ For lettering below the badge, select a baseline above.
- ◀ For horizontal lettering through the middle of the badge, select a centered baseline.

8 Specify the letter, word and line spacing as required.

9 Select a letter orientation.

10 Click **OK** to return to **Object Properties > Special**.

Related topics...

- ◀ Apply baselines
- ◀ Adjust spacing settings
- ◀ Adjusting baselines
- ◀ Creating simple teamname designs

Adjust curved baseline settings

A Use Toolbox > Lettering to adjust baseline settings.

Adjust baseline settings for more precise numeric control over radius (X and Y), as well as tilt, justification, and arc angles.

To adjust curved baseline settings

1 Double-click a selected lettering object/s to access object properties.

2 Click **Settings**. The **Baseline Settings** dialog opens. Options depend on baseline type.
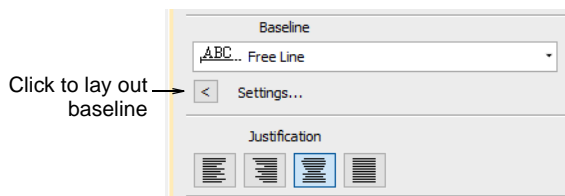
Adjust Tilt, Radius X,
Radius Y, Justification
and Arc Angle values
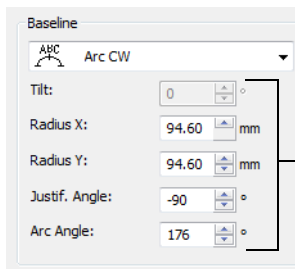
3 Select a circle or arc baseline type from the list. The **Tilt, Radius X**, **Radius Y**, **Justification Angle** and **Arc Angle** fields are activated.

4 Adjust these values as required:

◄ **Radius X**: default radius of the baseline arc (X-axis).

◄ **Radius Y**: default radius of the baseline arc (Y-axis).

Radius X: 50
Radius Y: 50

Radius X: 100
Radius Y: 50

Radius X: 50
Radius Y: 100

◄ **Tilt**: angle of the baseline relative to the horizontal axis.

Tilt angle 0°

Tilt angle 45°

Note: The **Tilt** field is activated when **Radius X** and **Radius Y** values are different.

◀ **Justification Angle**: angle of the vertical axis through the lettering object relative to the horizontal axis.

Justification angle 90°

Justification angle 45°

◀ **Arc Angle**: angle between radii connecting ends of baseline to center of arc. This constrains the baseline so the text falls within the arc specified.
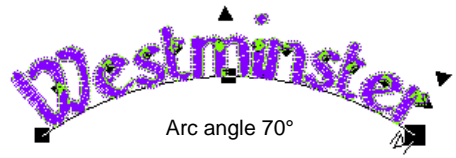
Arc angle 100°

Arc angle 70°

Tip: Precise control over baseline width is important when combined with **Team Names** when you want to ensure all names fit within the same area such as a pocket. A fixed width on arch baselines can be set by adjusting **Arch Angle** value in the **Baseline** panel.

5 Select a baseline position.

 Baseline below

 Baseline centered
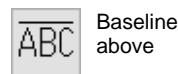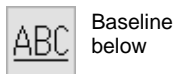
 Baseline above

When digitizing lettering for a badge, for example:

◀ For lettering above, select a clockwise circle or arc with baseline below.
◀ For lettering below, select a counterclockwise circle or arc with baseline above.
◀ For horizontal lettering through the middle of the badge, select a fixed line with baseline centered.

6 For fixed-line baselines, select an 'auto-frame' style.

7 Specify the letter, word and line spacing as required.

8 Select a letter orientation.

9 Click **OK** to return to **Object Properties > Special > Lettering** docker.

Related topics...

◀ Adjust fixed-width baseline settings
◀ Adjust letter spacings on-screen
◀ Adjusting baselines
◀ Creating simple teamname designs

Change letter orientation

You can define the rotation angle of letters relative to the baseline or the design itself. The latter lets you keep letters vertical regardless of baseline angle in order to achieve a 'staircase effect'.

To change letter orientation

1 Right-click the **Lettering** icon or double-click selected lettering object/s to access object properties.

Click to lay out baseline
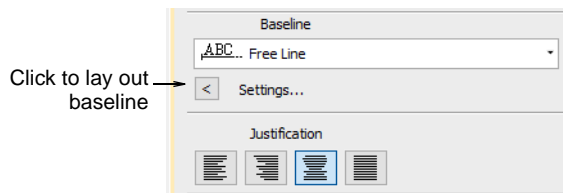
2 Click **Settings** to open the **Baseline Settings** dialog.
3 Select an **Orientation** setting.

Select orientation relative to baseline or design

Set orientation angle
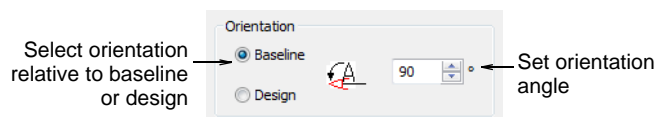
◀ **Baseline**: orients letters relative to the lettering baseline.
◀ **Design**: orients letters relative to the horizontal.

4 Enter an orientation angle.

Baseline angle: 0º
Orientation: 10º to baseline

Baseline angle: 0º
Orientation: 60º to design
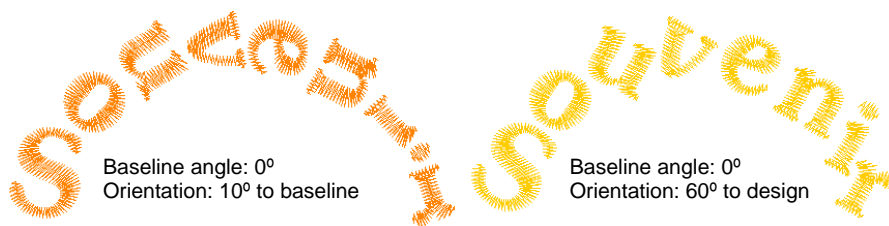
5 Click **OK** to return to **Object Properties > Special > Lettering** docker.

Breaking apart lettering

> Use Edit > Break Apart to split composite objects – monograms, appliqués, lettering, etc – 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.

Lettering broken apart into logical stitching sequence
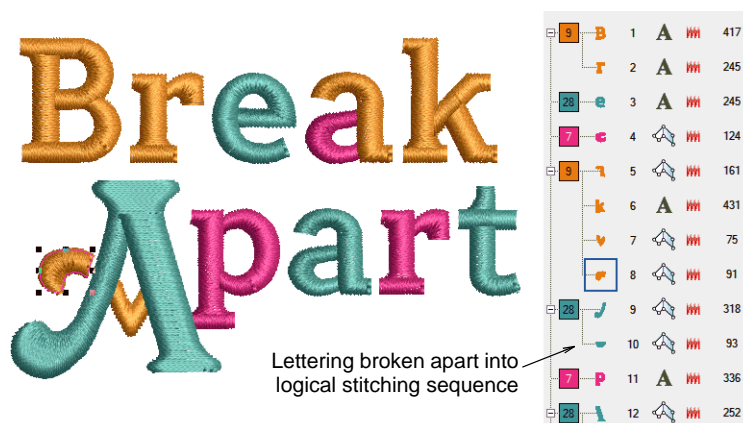
Sequence logic is as follows:

◀ 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. Only general embroidery object properties remain.
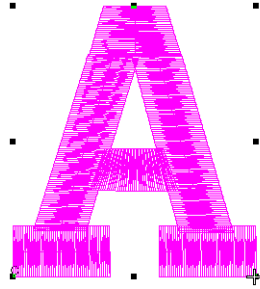
Individual letter with full lettering object properties
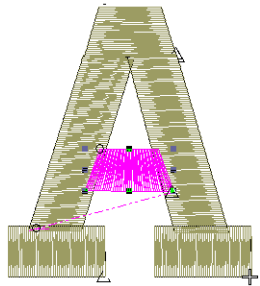
Individual letter broken into separate embroidery patches

Properties of each patch can be separately edited

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.

Related topics...

◀ Break apart composite objects

Chapter 27
Advanced Embroidery Lettering

EmbroideryStudio provides a variety of advanced editing techniques for fine-tuning lettering designs. Add special characters and symbols as desired. By default, lettering objects are filled with **Satin**. Apply other basic fill stitch types as with all embroidery objects.

Specify the sequence in which letters are stitched to minimize registration problems. The automatic kerning feature improves lettering appearance and legibility by fine-tuning spacings between character pairs. Alternatively, fine-tune letter spacing according to the number of characters per lettering object. This is particularly useful with Asian fonts. Lettering appearance and quality can be improved by the correct selection of underlay. Apply **Envelope** effects to lettering objects to make them bulge or arch, stretch or compress.

This section shows you how to add special characters and symbols. It describes changing lettering stitch types in lettering objects, and adjusting lettering stitch angles. It also explains how to adjust the lettering stitching sequence as well as lettering join method. Automatic letter kerning and letter spacing are discussed. Lettering underlay is also discussed. It also describes how to create special effects with envelopes.

Adding special characters

Embroidery and TrueType fonts generally contain many more characters than are available via keyboard. In EmbroideryStudio, you can add special characters and symbols directly through the **Select Symbols** dialog or by means of the MS Windows® **Character Map**.

Insert symbols

> **A** Use Toolbox > Lettering to add special characters and symbols. Right-click to select lettering options.

Add special characters and symbols to your lettering designs.

!"#$%&'()*+/@

To insert symbols

1 Right-click the **Lettering** icon to access object properties.

Click to insert symbols →
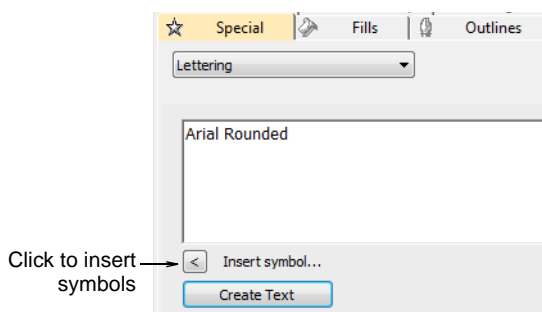
> **Tip:** If you already know the keyboard shortcut for a symbol, you can add it by entering the combination on screen or in the docker.

2 Click **Insert Symbol**.

Select font or symbol set

Toggle display settings

Select symbols

Selected symbols →

Click to add →
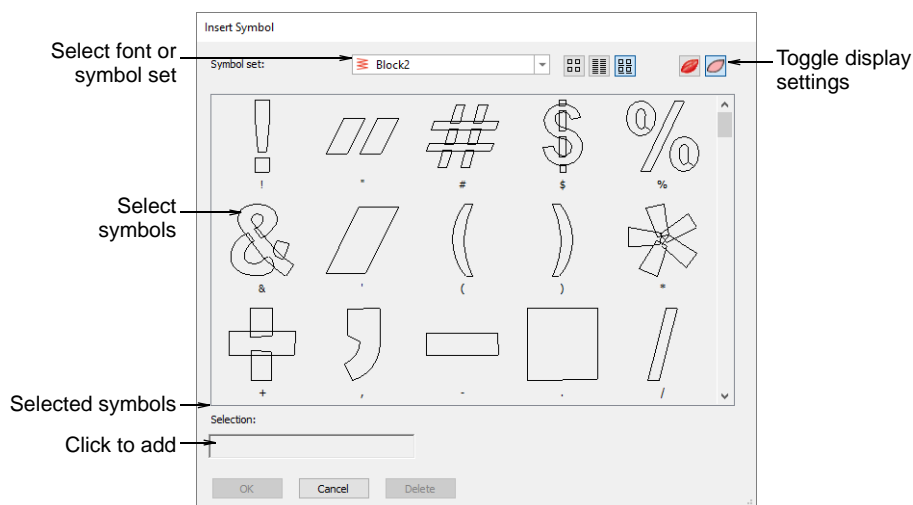
3 Select a font or symbol set from the **Symbol set** list.

4 Select the symbols you want to use. Selected symbols are displayed in the **Selection** field.

5 Click **OK**. The selected symbols are displayed in the text entry panel of the **Object Properties > Special > Lettering** docker.

Create flair script designs

> **A** Use Toolbox > Lettering to add special characters and symbols. Right-click to select lettering options.

Flair script is a special font which allows you to add decorative flairs to the end of text objects, mimicking flamboyant handwriting flourishes.

To create a flair script design

1 Right-click the **Lettering** icon to access object properties.
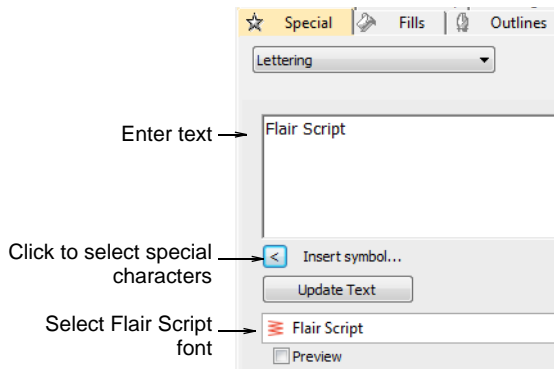
2 Select **Flair Script** from the **Font** list.

3 Enter the text you want to embroider in the text entry panel.

4 Click **Insert Symbol**.

Select flourish →

Corresponding → keystrokes
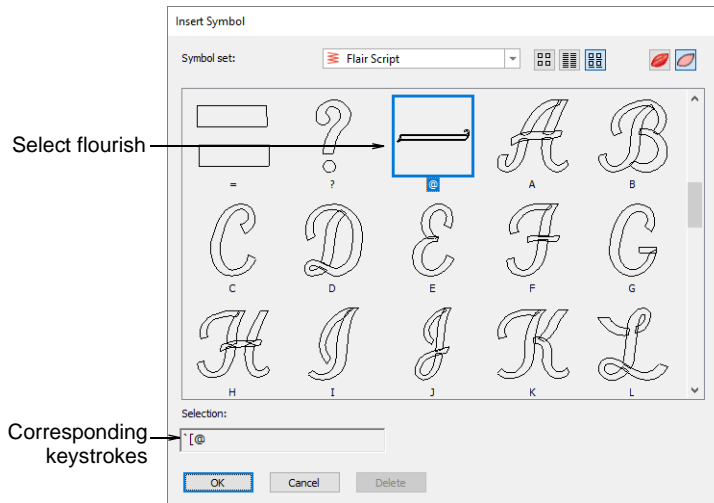
5 Select the flourish you want to use. Scroll down for more options.

6 Click **OK** to close the dialog. The selected characters are displayed in the text entry panel.

Flourish added
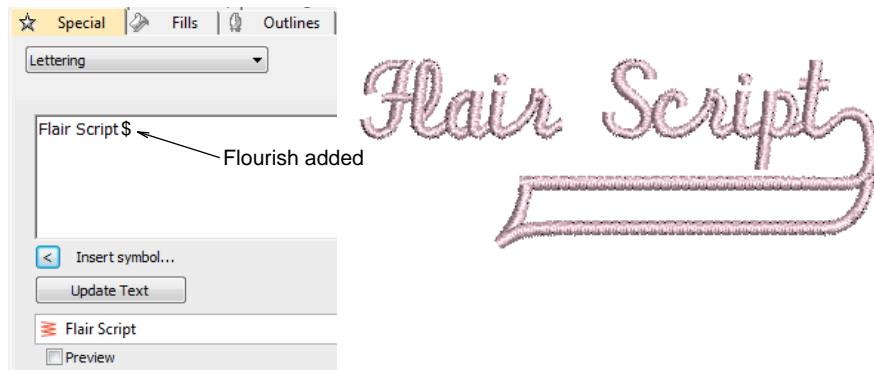
7 Adjust lettering settings as required and click **OK**.

8 Click an insertion point or mark reference points for the selected baseline.

9 Press **Enter**.

💡
Tip: Experiment with different flourishes to obtain the look you want.

Add monogram lettering

In addition to the dedicated **Monogramming** feature, EmbroideryStudio allows you to create monogramming designs using special monogram fonts. See also Monogramming.

To add monogram lettering

1 Right-click the **Lettering** icon to access object properties.

Click to select fancy lettering characters →

Select monogram font →
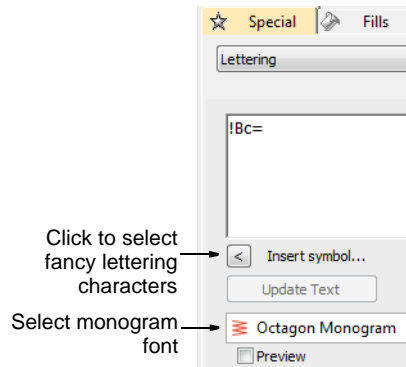
2 Select a suitable monogram font such as Octagon Monogram. See also Standard Fonts.

3 Click **Insert Symbol**. The **Insert Symbol** dialog opens.

Select viewing mode

Select character

Corresponding keystrokes
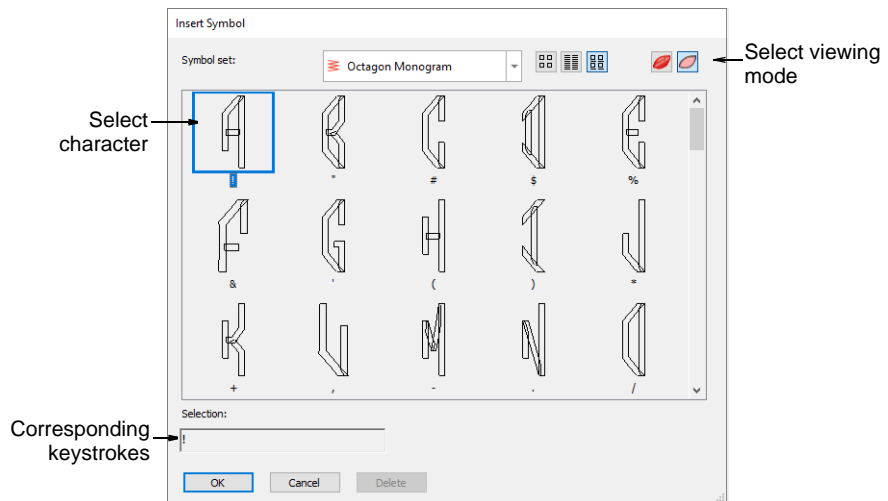
💡
Tip: When you select a character, a keystroke appears in the **Selection** field. This indicates the key combination required to type the character directly on-screen.

4 Select a left-facing letter. Octagon Monogram, for example, has three sets of each letter, one for the left side, one for the middle and one for the right side. When selecting letters, you need to ensure letter orientation is correct.

5 Select a middle letter and then a right-facing letter.

6 Select a border if required.

Select border
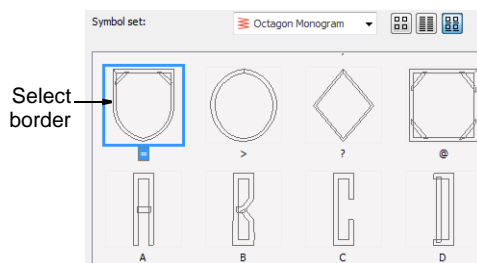
7 Click **OK**. The selected characters are displayed in the text entry panel.

8 Click **Create Text**.

Tip: If you want the letters in your monogram to be different colors, select and recolor one-by-one.

Use 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.

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**.

Select font — Font :
Select symbols or double-click
U+0021: Exclamation Mark
Selected symbols displayed — Characters to copy :
Click to copy
Click to select
U+0021: Exclamation Mark
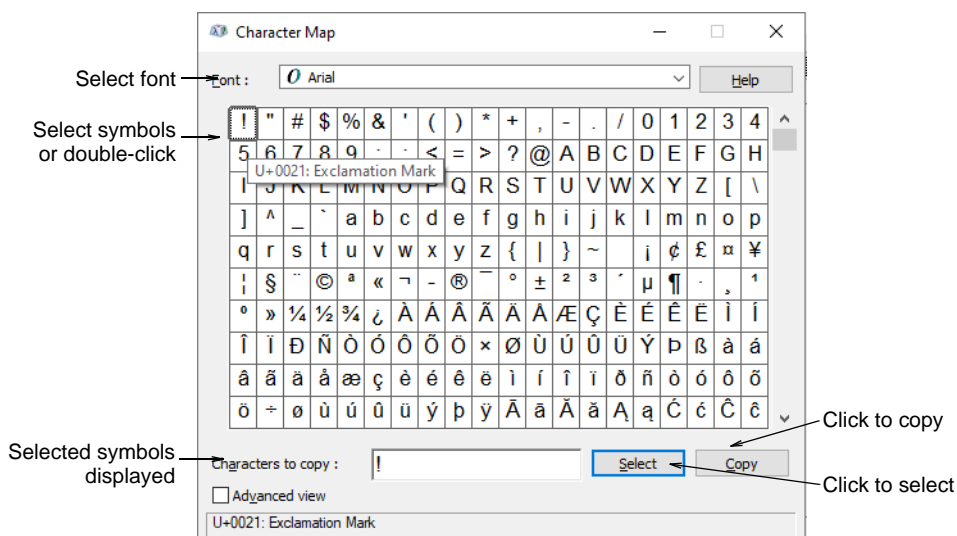
2 Select a font from droplist.

3 Double-click a character, or select it and press **Select**. The character/s appear in the **Characters to copy** field.

4 Click **Copy** to copy the character to the clipboard.

5 Paste it into the text entry panel of the **Object Properties > Special > Lettering** docker. To do this, click inside the text entry panel and press **Ctrl+V** or right-click to open the popup menu.

Tip: You can also paste characters and symbols into an external graphics program to use as the basis for creating your own custom characters.

Applying stitch types & effects to lettering

By default, lettering objects are filled with **Satin** stitch. You can apply other fill stitch types such as **Tatami** or **Program Split** as well as stitch effects such as **Jagged Edge**. See Stitch Types for details.

⊘

Note: Lettering values are stored in the <PRESET_LETTERING> style in the Normal template. Changing these does not affect the values of other objects. Do not delete or rename this style. See Working with styles for details.

Satin lettering

〰	Use Fill Stitch Types > Satin to apply satin stitch to new or selected narrow columns and shapes. Right-click for settings.
〰	Use Fill Stitch Types > Satin Raised to create raised surfaces – can be applied to lettering or used with trapunto for quilting effects. Right-click for settings.

By default, lettering objects are filled with **Satin** stitch. Because there are generally no needle penetrations breaking up the fill, satin stitch creates a glossy, high-quality effect suitable for most lettering.

Auto Spacing ON
Stitch Density 100 %

Auto Spacing OFF
Stitch Spacing 0.6 mm

Auto Spacing ON
Stitch Density 60 %
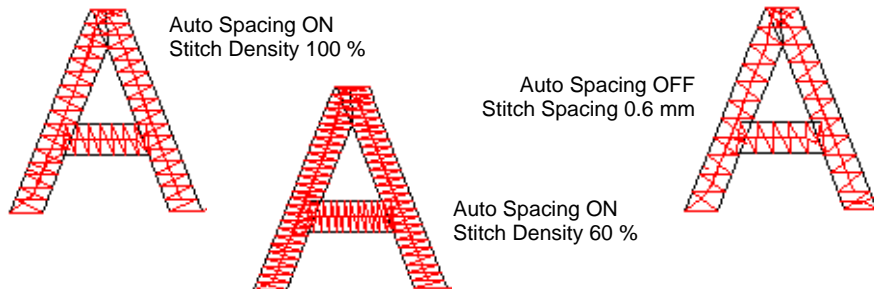
Satin Raised can be applied successfully to some styles of font for a raised embroidery surface. Outlines can be added with the **Outlines & Offsets** tool for use with quilted designs. Traditionally, trapunto utilizes two or more layers, the underside of which is slit and

padded, producing a raised surface on the quilt. Lay the second layer over **Satin Raised** lettering and stitch down with trapunto outlines.

Note: EmbroideryStudio also includes as standard a number of dedicated 3D fonts.

Related topics...

◀ Satin stitching

◀ Standard Fonts

◀ Generating outlines & offsets

Tatami lettering

Use Fill Stitch Types > Tatami to create fills for larger irregular shapes. Right-click for settings.

You can fill lettering shapes with **Tatami** stitching. This may be suitable for filling larger lettering shapes.

Stitch Spacing 0.4 mm
Stitch Length 5 mm

Stitch Spacing 0.4 mm
Stitch Length 2 mm

Stitch Spacing 0.6 mm
Stitch Length 3 mm

Zigzag lettering

Use Fill Stitch Types > Zigzag to create fills with an open 'sawtooth' effect. Right-click for settings.

Zigzag stitch can be applied to lettering for any open stitching effect.

Related topics...

◀ Open stitching

◀ Standard Fonts

Patterned lettering

> Use Fill Stitch Types > Program Split to create decorative fill stitches where needle penetrations form a tiled pattern.

Try applying **Program Split** to lettering. This too may be suitable for filling larger lettering shapes or for special effects. Density is determined by stitch spacing.

Related topics...

◀ Creating textures with program splits

Jagged edge lettering

> Use Stitch Effects > Jagged Edge to create rough edges, shading effects, or imitate fur and other fluffy textures along one or more sides of selected objects.

Jagged Edge can be used with lettering objects for special 'spooky' effects or fluffy textures.
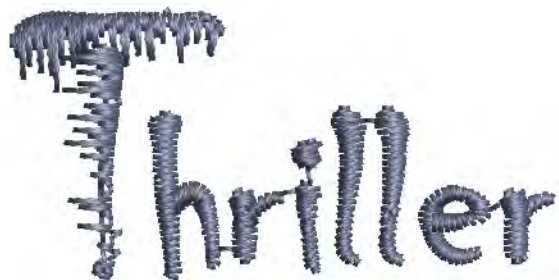
Related topics...

◀ Jagged edges

Creating special effects with lettering art

A	Use Toolbox > Lettering to edit letters on-screen.
✎	Use Reshape > Reshape Object to reshape selected objects by means of control points.

Apply **Lettering Art** effects to make letters bulge or arch, stretch or compress. Many styles are available from the **Lettering Art** gallery. You can fine-tune preset shapes as preferred. Edit lettering text in envelopes the same way as normal lettering. Return lettering to its original shape by removing the envelope altogether.

To create lettering art effects

◀ Create a lettering object.

◀ Double-click the object to access its properties.

◀ Scroll through the **Lettering Art** list or click **More** to access the gallery. You can tear it off for easy access.

Scroll or click More button to access gallery

Click to apply a predefined shape
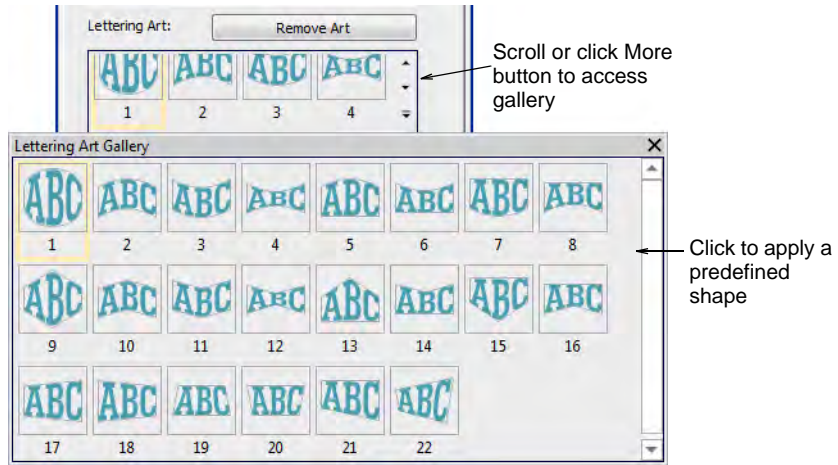
◀ Select a shape from the gallery.

◀ Click again to access rotation control handles.

◀ Use **Reshape Object** to fine-tune the envelope shape.

Drag nodes to reshape
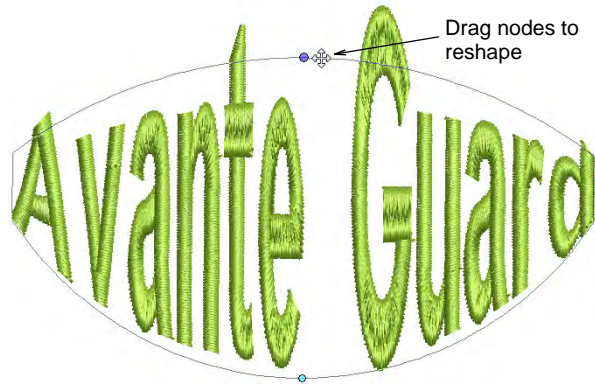
◀ Drag control handles to adjust:
  ◀ To move two handles in opposite directions, hold **Shift** while dragging.
  ◀ To move handles in the same direction, hold **Ctrl** while dragging.
◀ Press **Esc** to finish.
◀ To edit, click the **Lettering** icon with the object selected. Duplicate letters appear below.

Edit duplicate letters and press Enter

◀ Click inside the duplicate and edit text as desired. Press **Enter** to confirm.

◀ To return an object to its original shape, click **Remove Art**.

Click to remove effect
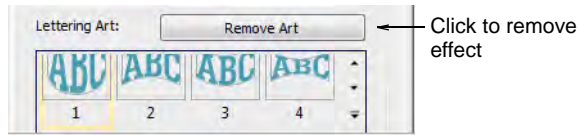
Related topics...

◀ Applying envelopes

Setting stitching sequence & join method

You can specify the sequence in which letters are stitched to minimize registration problems such as on caps or difficult fabrics. While the **Closest Join** method is recommended in most cases to minimize trims, you may sometimes want to use the **As Digitized** setting with fonts which include multiple colors, multiple stitch types, or special effects.

Adjust letter sequencing

> **A** Click Toolbox > Lettering to adjust the lettering stitching sequence.

You can specify the sequence in which letters are stitched to minimize registration problems such as on caps or difficult fabrics. For example, the **Center Out** option is especially useful when stitching on caps. There are also options for multiple lines of lettering which are useful for machines without trimmers.

To adjust letter sequencing

1 Right-click the **Lettering** icon or double-click selected lettering object/s to access object properties.

Click Sequence

2 Click **Sequence**. The **Letter Sequence** dialog opens.

Adjust single line stitching sequence →

Adjust multiple line stitching sequence →
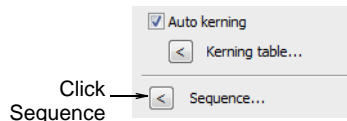
3 Select a stitching sequence. Options include:

◀ **In-line**: Select whether you want the lettering to be stitched left-to-right or right-to-left in each line.

Stitched right-to-left   Stitched left-to-right
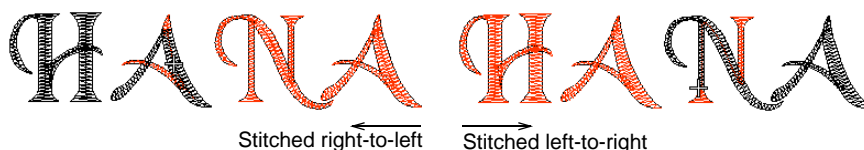
◀ **Center-out**: Select this checkbox if you want the lettering stitched from center out.

Right side stitched first   Left side stitched first
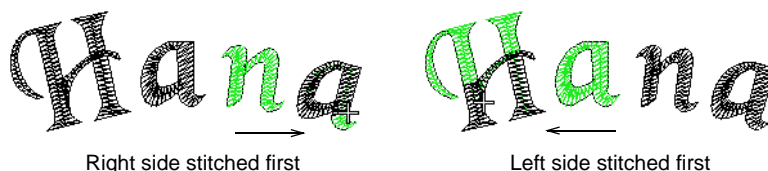
◀ **Line-by-line**: Choose whether you want multiple lines to stitch top-to-bottom or bottom-to-top.

Stitched top-to-bottom

Stitched bottom-to-top
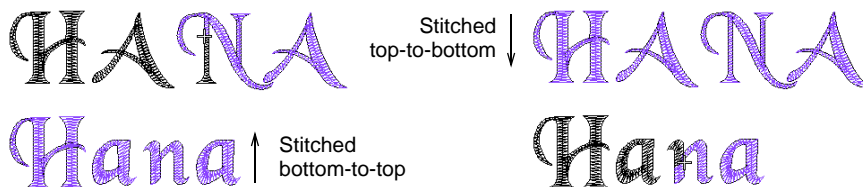
Note: You can combine both **In-line** and **Line-by-line** sequencing options.

4 Click **OK** to return to the **Special** tab.

> ☺
>
> **Tip:** Travel through your design to check the stitching sequence. See Travel through designs for details.

Change lettering join method

> **A** Use Toolbox > Lettering to change the lettering join stitch method.

The lettering stitch method is preset to give the best results for each font. In most cases, **Closest Join** is recommended in order to minimize trims.
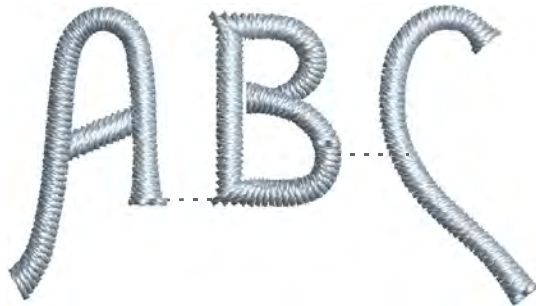
Lettering objects normally consist of one stitch type and one color only. However, the **As Digitized** join method together with **Original Stitch Values** setting can be used with special fonts which combine several stitch types – e.g. **Satin** with **Run**, or **Tatami**, or **Motifs**. The **As Digitized** setting can also be used with fonts which include multiple colors or special effects. Such fonts may include machine functions, as for two-color fonts, or run stitches as part of the cover stitching.

To change the lettering join method

1 Right-click the **Lettering** icon or double-click selected lettering object/s to access object properties.

2 Click **Sequence**. The **Letter Sequence** dialog opens.

Select join method

Select original stitch values
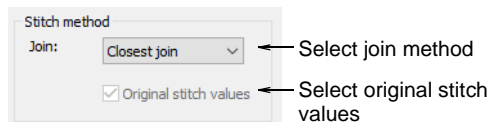
3 Select a stitch method from the droplist:

| Bottom join | Closest join | As digitized |
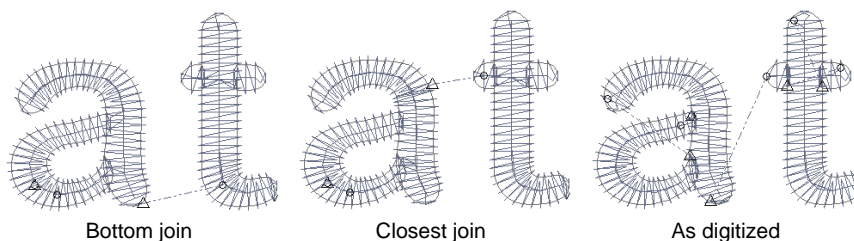
Options include:

Option	Function
Bottom join	Letters are joined along the baseline. Use it when stitching on towelling – joins are hidden in the pile.
Closest join	Letters are joined at the closest point. Use it to minimize trims.
As digitized	Letters are joined the same way they were originally digitized. Use it with fonts combining different fill stitch types or special effects.

4 Select the **Original stitch values** checkbox as required.

This setting is only available if the **As Digitized** join type is selected. Use it with special fonts which combine several stitch types. If not selected, these letters will be stitched with a single stitch type.

| Closest join | As digitized – original stitch values not selected | As digitized – original stitch values selected |
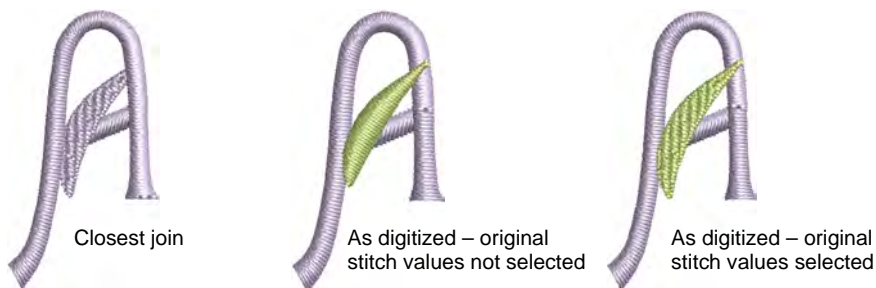
5 Click **OK** to return to the **Special** tab.

Note: For recommended stitch and join methods, see Standard Fonts.

Setting automatic letter kerning

The automatic kerning feature improves lettering appearance and legibility by fine-tuning spacings between character pairs. Typically, spacing between certain pairs looks uneven due to the optical illusion formed by mixing straight lines with curves. Automatic kerning optimizes spacing between lettering pairs according to preset values. While it works

very well without customization, advanced users can customize these values as they wish. Kerning tables can even be copied from similar MS Windows® fonts.

Tip: For more information about kerning, see the Windows Dev Center topic on Justification, Kerning, and Spacing.

Apply automatic kerning

Right-click Toolbox > Lettering to adjust automatic kerning for selected lettering objects.

The automatic kerning option is accessed by means of the **Object Properties** docker.

To apply automatic kerning

1 Double-click a lettering object to access object properties.
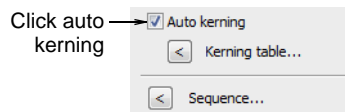
Click auto kerning

2 Scroll down to the **Spacing** panel. If a kerning table exists for the selected embroidery font or TrueType font, the **Auto Kerning** checkbox is enabled and selected by default.

3 Select **Auto Kerning** as required and click **Apply**.

Related topics...

◀ Setting automatic letter spacing

Manage kerning tables

A kerning table is an array of kerning values for every possible pair of letters in the font. The **Kerning Table** command accesses a dialog used to manage kerning tables. You can copy tables from one font – embroidery or TrueType – to another or remove its kerning table altogether.

Note: TrueType kerning tables cannot be replaced, added to, or modified in any way. You can, however, convert a TrueType font to an embroidery font and add or modify a kerning table as required.

To manage kerning tables

1 Open the **Object Properties > Special > Lettering** docker.

2 Select a font from the droplist.
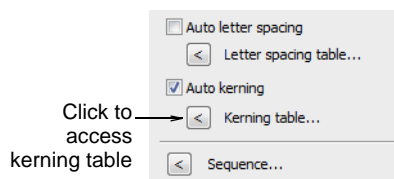
3 Scroll down and click the **Kerning Table** button. The **Kerning Table** dialog opens with the current (target) embroidery font displayed. The droplist displays all fonts that contain kerning tables.
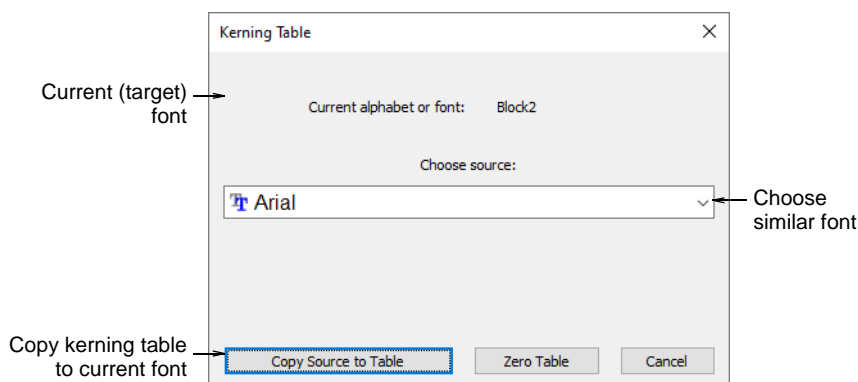
4 Choose a suitable font or TrueType font from the list and click **Copy Source to Table** to load its kerning table to the current embroidery font.

The **Zero Table** command is enabled if the current (target) font already has a kerning table.

Edit kerning values

> Use Reshape > Reshape Object to reshape selected objects, edit stitch angles, and adjust start/end points.

You have created a lettering object which has **Auto Kerning** toggled on. Use this procedure to update kerning settings for contiguous pairs of letters.

To edit kerning values

1 Select a lettering object with automatic kerning and click the **Reshape** icon.
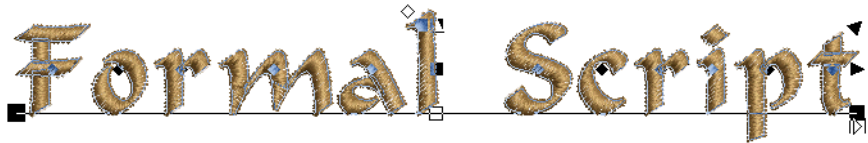
2 Click the diamond control point in the center of the letter.

3 Drag selected letter/s along the baseline or use arrow keys to adjust the spacing. Alternatively, to move multiple letters, right-click the diamond control point of the first letter and drag. All letters to the end of the line move as one.

4 Repeat as many times as necessary to fine-tune all letter spacings in the object.

5 Select one or more blocks of contiguous letters by **Ctrl**-clicking their diamond control points or dragging a selection box around them.

6 Select **Object > Update Kerning Settings**. The operation will affect letter spacing of all new lettering objects.

7 Click **OK**.

A new kerning value is generated for each contiguous pair of letters, and written to the associated kerning table.

Setting automatic letter spacing

The **Auto Letter Spacing** feature allows you to fine-tune letter spacing according to the number of characters per lettering object. When activated, EmbroideryStudio automatically spaces letters according to a predefined spacing table. For example, in a five-character lettering object, spacing may be set to 2mm, while in a three-character lettering object, it may be increased to, say, 3mm.

Without auto letter spacing

With auto letter spacing
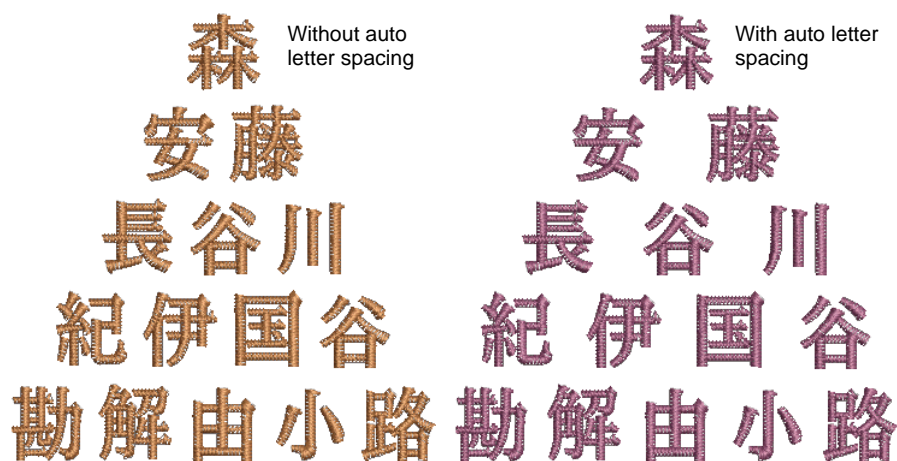
To apply automatic letter spacing

1 Create or select a lettering object and double-click to access object properties.

Auto letter spacing unticked by default
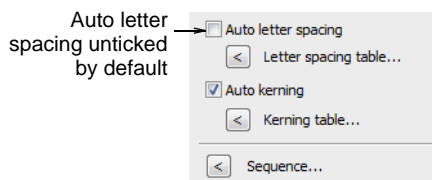
2 Select a baseline for use with **Auto Letter Spacing**. Automatic letter spacing is available for all baselines. However, with fixed-line and arc baselines, automatic spacing only works with **Width** and **Size** options selected.

3 Tick the **Auto Letter Spacing** checkbox.

4 Click the **Letter Spacing Table** button. The **Letter Spacing Table** dialog contains a matrix of settings for lettering objects of two to six or more characters.
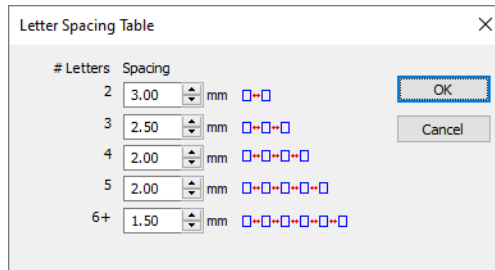
5 Adjust spacings for each character grouping. The topmost field for two characters has a range of 0.10mm to 100.00mm.

6 Click **OK**. With the **Auto Letter Spacing** checkbox checked:

◀ For a lettering object with more than one line of text, the system will use the longest line of text for the letter spacing.

Single line of text – uses predefined character length for letter spacing

Multiple lines of text – uses character length of longest line for letter spacing – in this case, 3
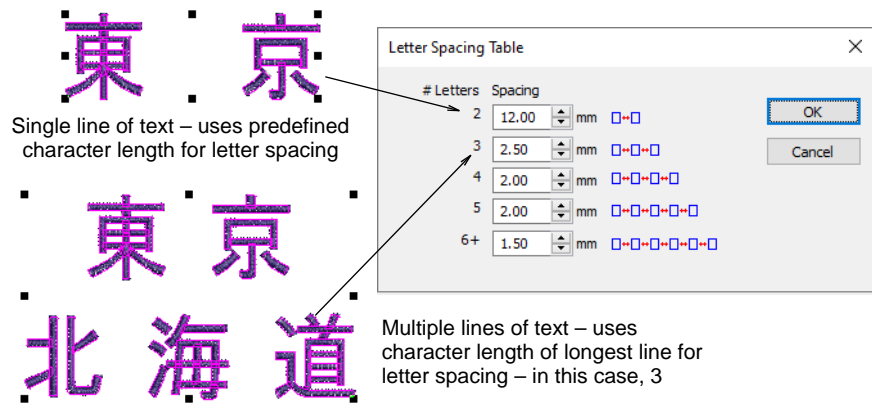
◀ The letter spacing table will not change even if individual letters are resized in **Reshape** mode.

Letter resized - spacing stays the same
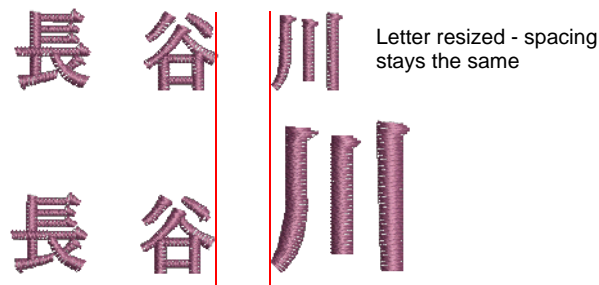
> 💡
>
> **Tip:** The **Auto Letter Spacing** feature also works with the **Team Names** feature. Any 'name frame' can have a specified letter spacing just as it can assume any other lettering property.

Related topics...

◀ Setting automatic letter kerning

◀ Adjusting baselines

◀ Creating simple teamname designs

Setting lettering underlay

> 🎞 Right-click Stitch Effects > Auto Underlay to adjust lettering underlay settings.

Lettering appearance and quality depends a lot on underlay which serves as a foundation for cover stitching. As well as stabilizing, underlay also provides 'loft', raising cover stitches and preventing them from sinking into soft fabrics. It can also prepare a napped fabric by flattening it.

Most lettering used in designs is 15 mm high or less. The columns at such sizes are less than 3 mm wide for normal – not heavy or block – fonts. Such objects are best served with a single **Center Run** or **Edge Run** underlay. Here are a few rules of thumb:

◀ Lettering with heights under 5 mm should not have underlay.

◀ Letters 6 mm to 10 mm can have a center-run underlay applied.

◀ Lettering larger than 10 mm is large enough for edge-run underlay.

◀ Large letters for jacket backs and so on can use a second layer of underlay. Double-zigzag is sometimes used to give added loft.

To set lettering underlay

1 Select a lettering object.

2 Right-click the **Auto Underlay** icon to access object properties.

Select 1st underlay and optionally select 'by shape'

Select Edge Run (or Center Run)

Adjust fixed or variable run length
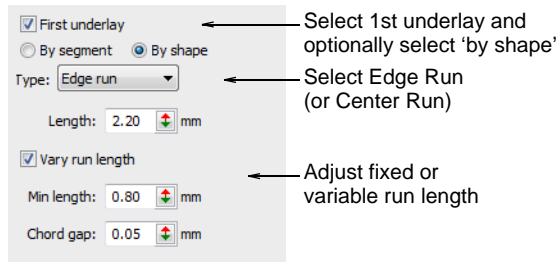
3 Select the **First Underlay** checkbox and select **Center Run** or **Edge Run** as the first underlay type. If you select **Edge Run**, a further **By Shape** option becomes available. When activated, underlay is applied to the lettering object as a whole.

4 Select the **By Segment** or **By Shape** option as required.

Segments comprising letter   Underlay 'by segment'   Underlay 'by shape'
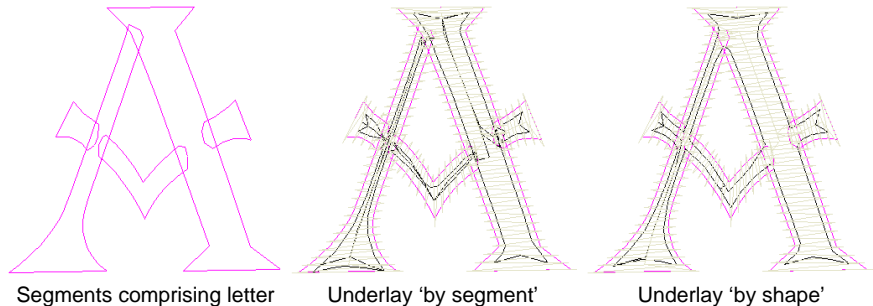
Note: With most embroidery objects, underlay is stitched segment-by-segment before cover stitches are sewn. Lettering underlay, however, defaults to a single **By Shape > Edge Run** underlay, except 'As Digitized' lettering. This has the effect of calculating an underlay for the entire shape rather than each segment comprising it. This in turn reduces bunching, travel runs, and overall stitch count.

5 Enter the required length values for each underlay type.

6 If you are using zigzag underlay, adjust stitch angles to create a 'cross-hatch' effect. This may provide more support than single zigzag.

| Default Zigzag | Slanted Zigzag | Slanted Double Zigzag |

7 Press **Enter** or click **Apply**.

💡
Tip: Run **Stitch Player** to see how the underlay will stitch out.

Related topics...

Chapter 28
Team Names

The **Team Names** feature lets you create designs with multiple names. For example, you can use the same logo with different names for sports teams or corporate uniforms, without having to create multiple copies of the same design. Depending on how you want to stitch out, you can choose to save and stitch names and designs separately, or together.

This section shows you how to set up teams and create teamname designs. It also describes how to modify teamname designs and output them in a variety of ways.

Creating simple teamname designs

Create simple teamname designs by keying names directly into the **Team Names** docker. Alternatively, import names from a tab-delimited text file. By default, teamname objects consist of a single baseline with three names. Add or remove name columns as desired.

Create teamname objects

 Use Toolbox or Docker > Team Names to associate multiple names with a design.

To associate team members with a design, you create a variable 'teamname object'. Either key in the names of the team members directly, or import from a list provided by the customer.

To create a teamname object

◀ Open the design you want to use.

◀ Click the **Team Names** icon to access the docker. By default, the teamname object will consist of a single baseline with three names.

Click a cell and start typing
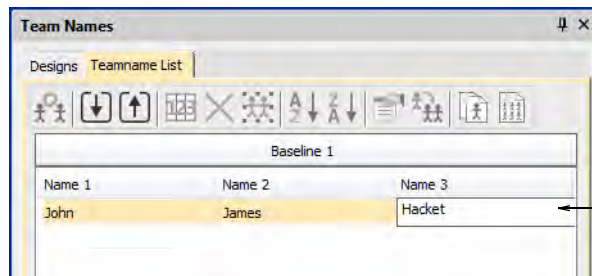
◀ If you are happy with the default layout, simply click a cell and start typing. Press **Tab** or **Shift+Tab** to move back and forth through name fields.

◀ Alternatively, use the **Teamname List** tools to add names, delete names, etc:

Tool		Function
	Manage Teams	Manage teams and team members for future use. See below.
	Import Team Members	Import or export a list of team members in either TXT or CSV format. Names must be comma delimited.
	Export Team Members	

Tool		Function
	Name Order	Change default naming order or include/exclude names as required.
	Remove Selected	Delete selected rows or the entire member list.
	Select All	Select all list members for modification or positioning.
	Sort Ascending	Sort a selected column in ascending or descending order.
	Sort Descending	

◄ Optionally, click the **Import Team Members** button to import team members from a list possibly provided by the customer. The list must be comma delimited.

Import names as TXT or CSV
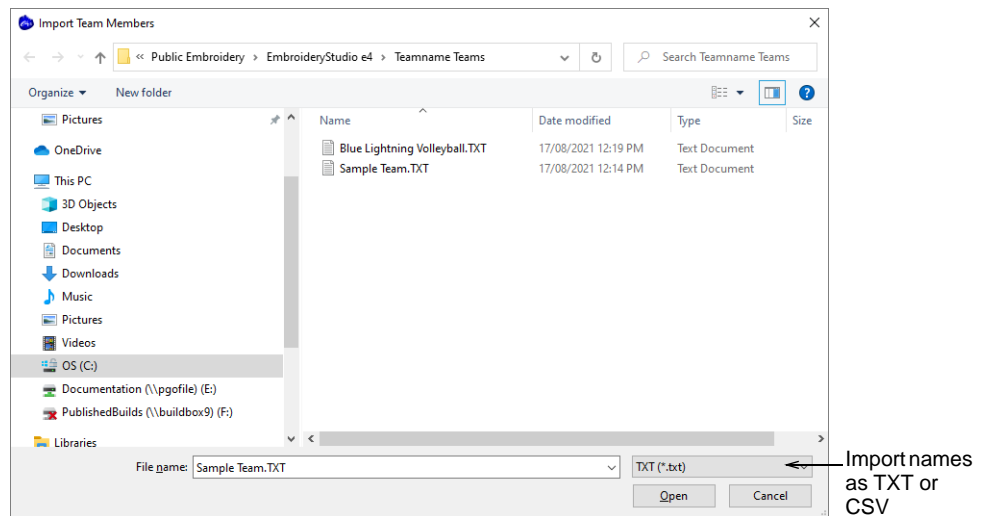
💡 **Tip:** When you import a teamname list you can import it from anywhere. However, you cannot use the **Manage Teams** dialog effectively with it unless it is saved in the 'Teamname Teams' system folder. See Managing teams for details.

◀ Click the **Name Order** button if you want to change the default naming order. Use it, for example, to put surnames first or limit which names are included – e.g first and third.

Change name order as desired
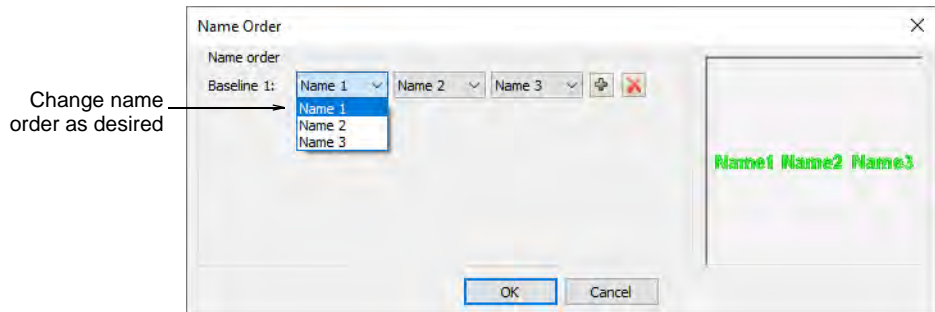
◀ Click **OK** and enter reference points as prompted.

Choose a name to view on-screen
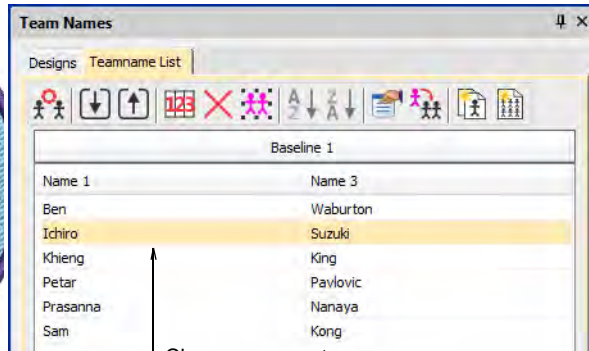
◀ Select all names and select **Stitch > Generate Stitches** or press **G**.
◀ Select names one-by-one to view them in the design.

Related topics...
◀ Managing teams
◀ Teamname templates
◀ Apply baselines

Import teamname lists with additional fields

> Use Team Names > Import Team Members to import a list of team members in either TXT or CSV format. Names must be comma delimited.

A 'size' field is often added to teamname lists even though it does not form part of the design. While the size field doesn't appear in the design, it is added to each design name when generated. This allows machinists to ensure they are using the right size garment for the specified name.

To view size fields in the **Manage Teams** dialog, first save the teamname file in CSV or TXT format to the **Teamname Teams** folder as shown. Don't use sub-folders.

Navigate to teamnames folder

Save to Teamname Teams folder
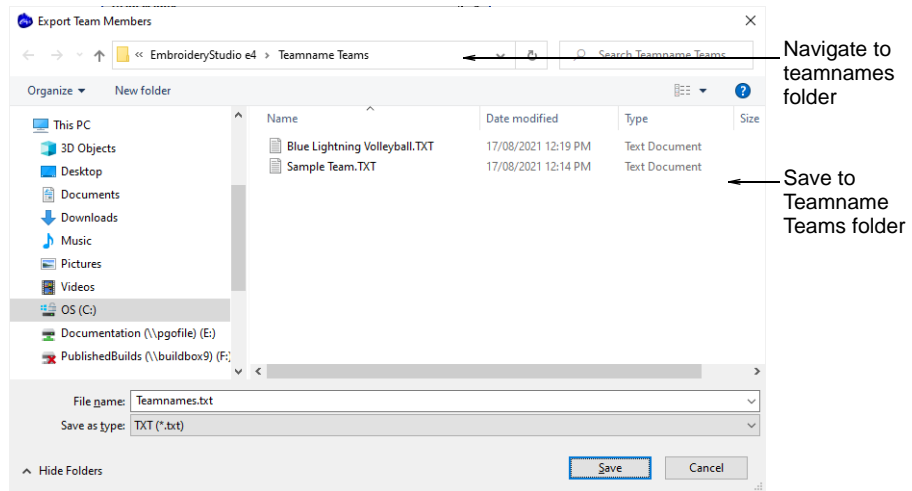
Open the **Manage Teams** dialog and select the file name from the **Teams** droplist. All fields will be imported...
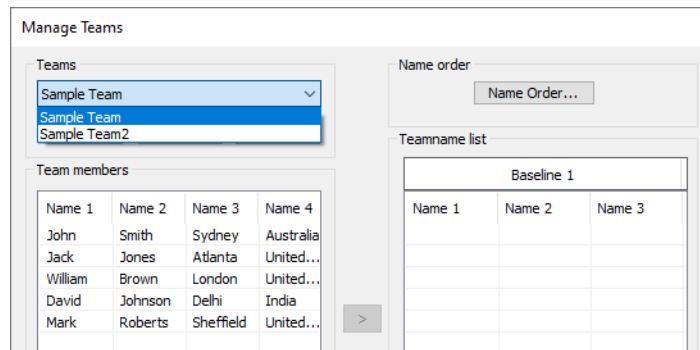
Teamname templates

The **Team Names** feature allows you to use predefined layouts or create your own. These layouts may consist of single or multiple baselines, each with one or more names.

Use templates with teamname designs

> Use Toolbox or Docker > Team Names to select a layout for your teamname design.

When creating teamname designs, you can use a preset layout or a custom layout based on artwork you may have received.

To use a template with a teamname design

◄ Open the design you want to use.

◄ Click the **Team Names** icon to access the docker and choose the **Designs** tab. This tab includes template samples as well as any

custom designs saved as teamname templates. These may contain more than one baseline.

Select a design category and choose a template
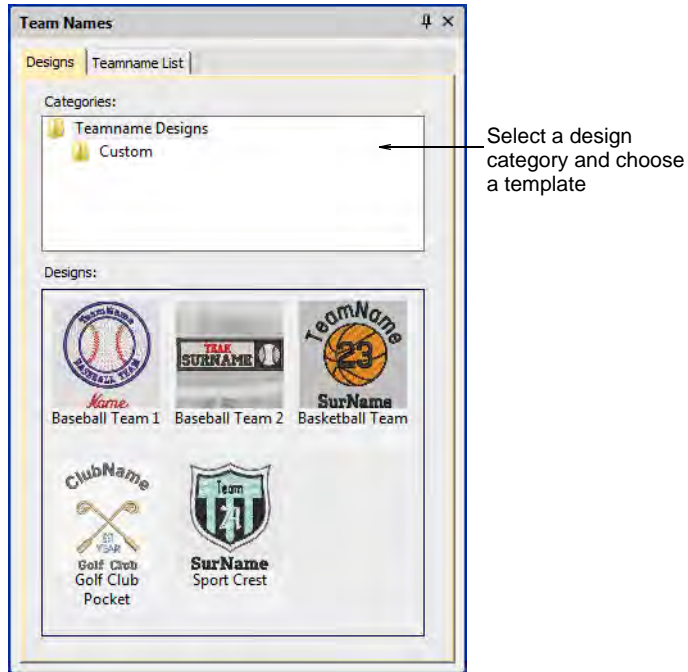
◀ Choose a template on which to base your intended layout.

◀ If you haven't already entered the names, switch to the **Teamname List** and key in or import the names to use. The sample below uses two sets of names on separate baselines.

Choose a name to view on-screen
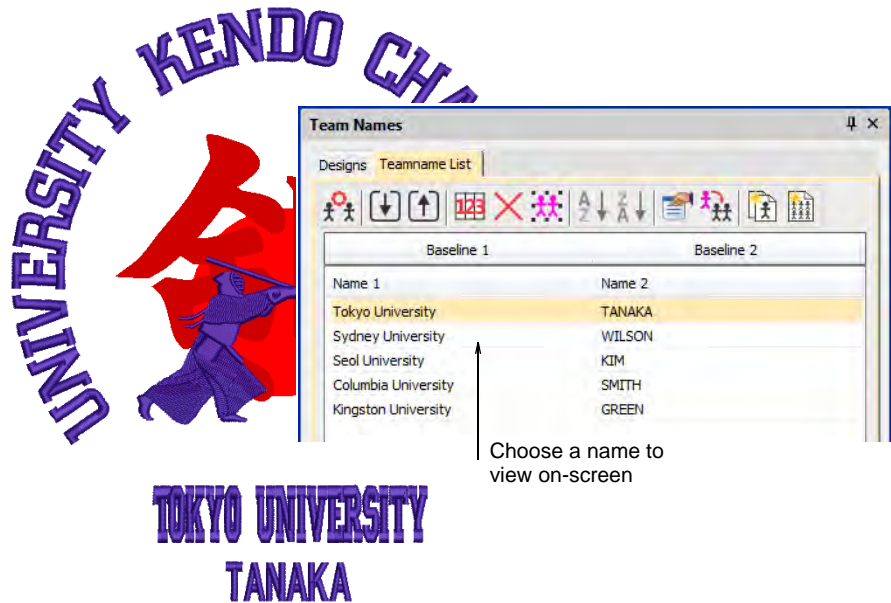
◀ Press **G** to generate stitching and use arrow keys to 'nudge' the lettering into position.

◀ Use the **Teamname List** to select and view individual team members.

◀ To reposition or modify a lettering object within a teamname object, first hold down the **Alt** key and click to select it.

Hold down Alt key to select and reposition
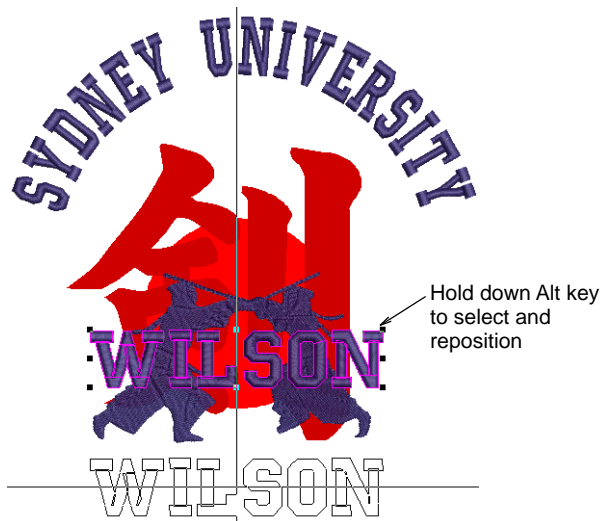
◀ Edit lettering object properties as desired.

Edit properties and
apply to all as
desired

Create custom templates

Typically, you will receive a brief and possibly artwork from a customer. Before you even import the names, you may prefer to mock up the design for approval purposes. This same design can then be saved as a teamname template.

To create a custom template

1 Import any artwork needed for your template.

2 Add any lettering elements you want to use. Include any 'static' elements which won't change in the eventual teamname design.

3 Optionally, give generic names to any text which will form part of the eventual teamname design – 'TEAM NAME'.

Key in generic names for eventual teamname objects
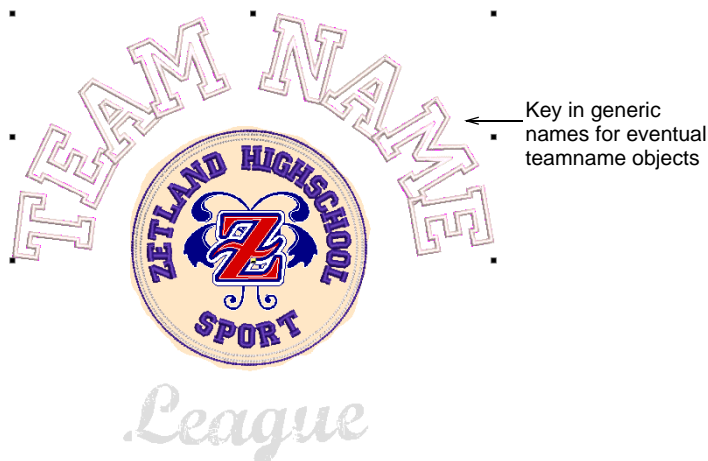
4 Select any lettering that is to remain static – e.g. 'Zetland Highshool' – and lock by pressing the **K** shortcut. When the template is opened, the locked text will be excluded from the teamname object.

Select static text and press K to lock
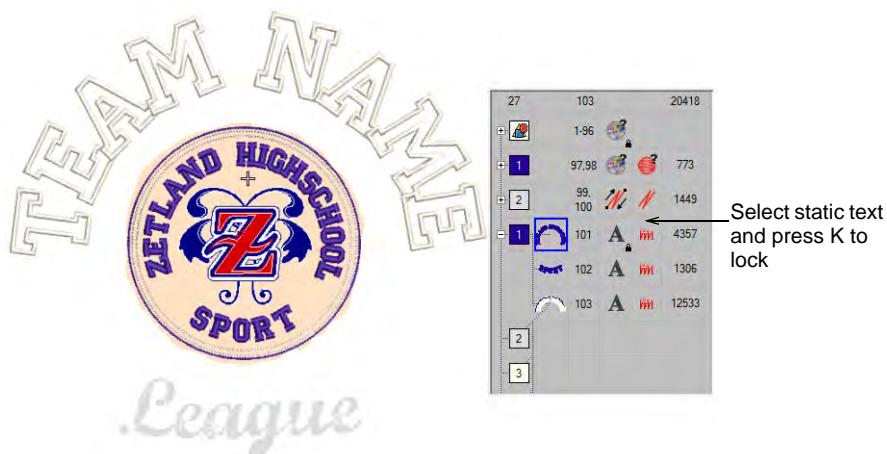
5 Select **File > Save As Teamname Template**, enter a name for the layout – e.g. 'Zetland High' – and click **OK**. The dialog opens onto the

Custom teamname templates folder. When you save here, the design will appear in the **Designs** tab under the **Custom** folder.

Navigate to teamname templates folder

Save to custom templates folder

Enter template name
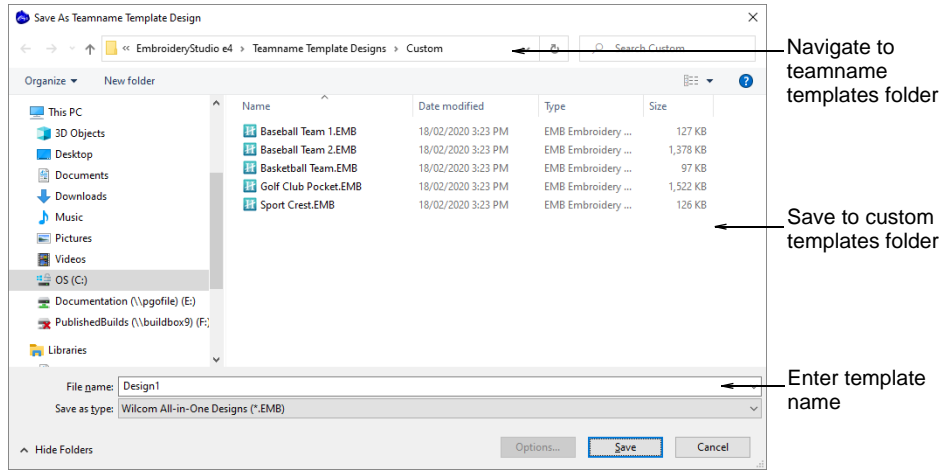
6 To test your template, open a new design tab and click the **Team Names** icon to access the docker. Go to **Designs > Custom** to locate your template. Once opened, the unlocked text will be interpreted as a teamname object.

Choose a name to view on-screen
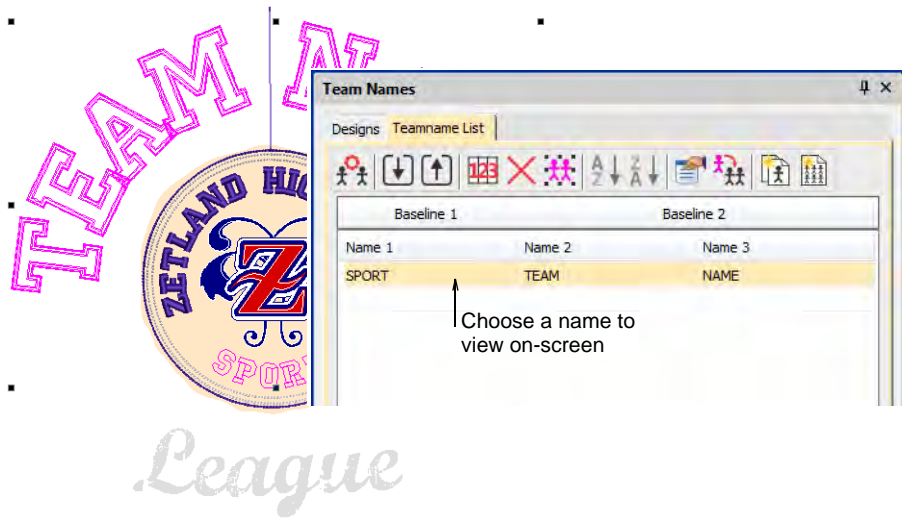
7 Edit the text as you would any other teamname template.

Related topics...

◀ Creating simple teamname designs
◀ Use templates with teamname designs

Modifying teamname designs

> Use Toolbox > Team Names to add/remove team members and edit individual names.
>
> Right-click Toolbox > Lettering to edit lettering on-screen.

You can preview individual team names as they will be stitched out. Add or delete names, sort teamname lists, and change properties of team members. Set properties such as font, size or color for each name. You can also set properties for an entire column of names.

To modify a teamname design

‹ Open a teamname design and click the **Team Names** icon. By default all names are selected.
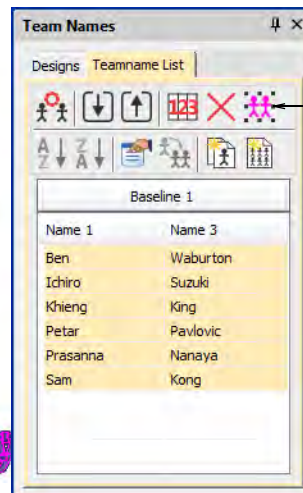
Select all team members

◀ Adjust positioning of the teamname group as desired.

◀ View team names in any of the following ways:

◀ Select a name.

◀ Use arrows keys to scroll up and down the list to view each name in turn.

Select name to view on-screen

◄ Click list header to select a column of names – use **Sort** buttons to sort lists in ascending or descending alphabetical order.

Click to select column

Click again to sort column alphabetically
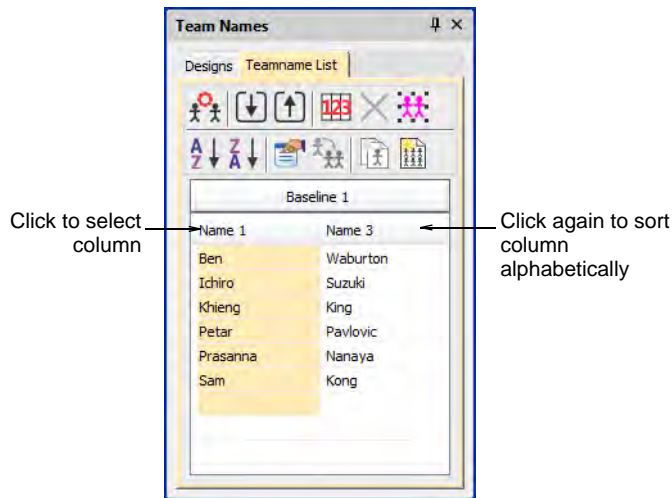
◄ Click a cell to select an individual name in the **Teamname List**.

Select and edit individual name
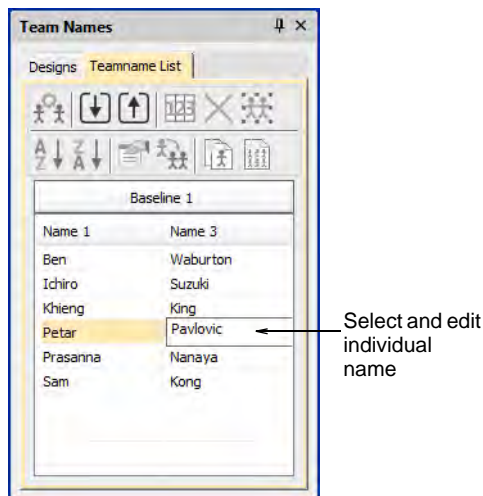
◄ Edit selected names on-screen as you would any other lettering object – e.g. adjust letter kerning.

◄ Adjust lettering baselines as you would any other lettering object. For example, select an 'auto-frame' style for fixed line baselines.

◀ Use the **Teamname List** tools to add names, delete names, change properties, as required:

Tool		Function
	Manage Teams	Manage teams and team members for future use.
	Remove	Delete selected rows or the entire member list.
	Select All	Select all list members for modification or positioning.
	Sort Ascending	Sort a selected column in ascending or descending order.
	Sort Descending	
	Object Properties	Edit properties of selected rows, columns or all list members.
	Apply to All	Copy one team member's properties to all members.
	Create Designs	Create individual designs for each member.
	Teamname Matrix	Create a matrix of all teamname designs, sequenced for efficient stitchout. See below.

◀ To view and/or edit member properties, click **Object Properties**.

Edit text for individual name

Change font

Adjust name settings
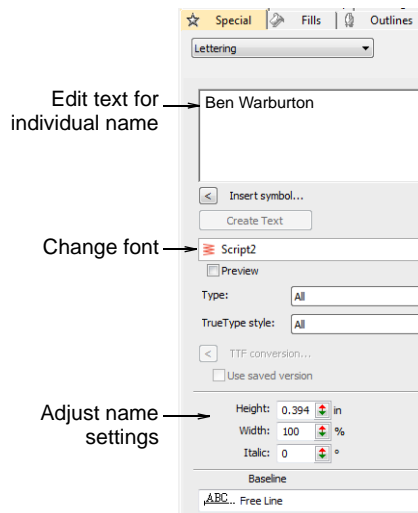
> 💡
> **Tip:** By default a space is inserted between names. To remove this space, set the **Word Spacing** value in the **Layout** dialog to 0%.

Related topics...

◀ Creating simple teamname designs

◀ Adjust spacing settings

◀ Editing Embroidery Lettering

◀ Adjust fixed-width baseline settings

Managing teams

> 👥 Use Toolbox or Docker > Team Names to associate multiple names with a design.
>
> ⬆️ Use Team Names > Export Team Members to export a list of team members in either TXT or CSV format.
>
> 👥 Use Team Names > Manage Teams to manage teams and team members for future use.

A teamname object may contain all names in a given team, or a subset of those names. You can even combine members from different teams.

To manage teams

◀ Open a teamname design and click the **Team Names** icon. By default all names are selected.

◀ To save a team for future use, click the **Export Team Members** icon in the **Teamname List**. The dialog will open onto a public folder

containing all your teams – a single file, either TXT or CSV, for each team.

Dialog opens to Public Embroidery

Save to Teamname Teams folder

Enter team name
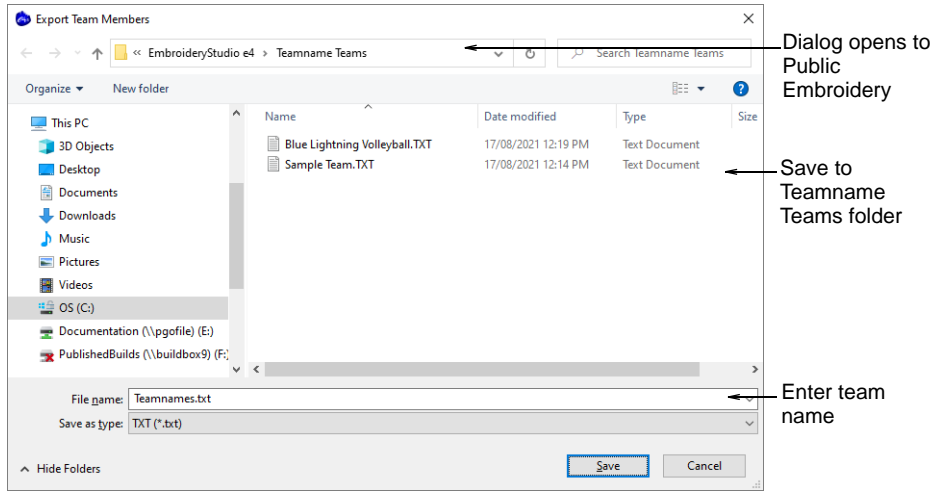
◀ Click the **Manage Teams** icon to access the dialog. The **Team Members** panel will default to the last opened team.

Manage teams

Manage current teamname list
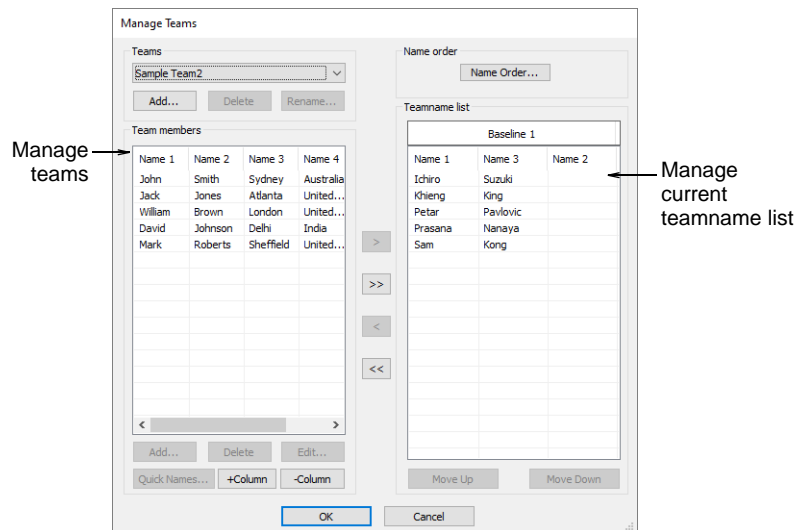
◀ To view the team you have just exported, select from the **Teams** droplist.

Select team →

Edit names as required →

Use controls to add, delete or edit team members →
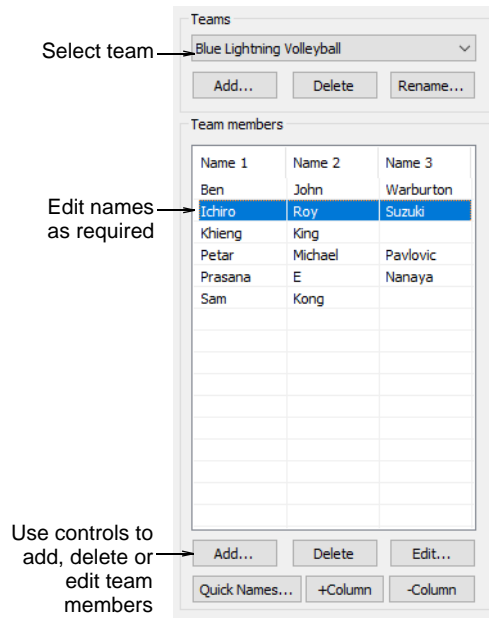
◀ Use the **+Column** or **-Column** buttons to establish the number of names for each team member – the default is three (3).

◀ Select names to associate with the design. To select multiple names, hold down **Ctrl** or **Shift** as you select.

◀ Edit the list as necessary by means of **Delete** and **Edit** buttons.

◀ Add team members one-by-one or as a group:

◀ To add a single name, click **Add** in the **Team Members** panel.

Add name
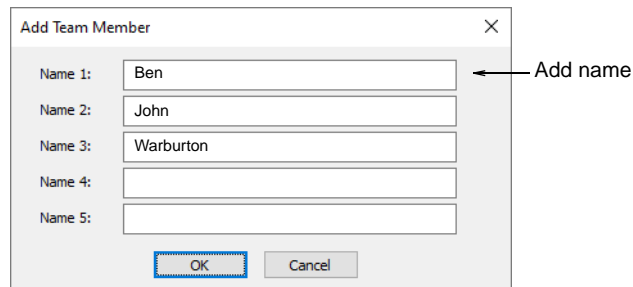
◀ To add a group of names, click **Quick Names**. Enter names in the format **Name 1, Name 2, Name 3**.

Enter names
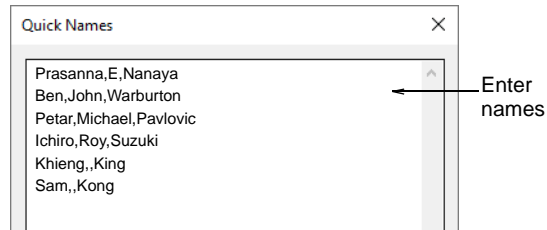
Tip: You can type in the names, or paste them in from a text file. Each name must be separated by a comma. There is no need for a space.

◀ Click **OK**. The new names are added to the **Team Members** list.

◀ Transfer names, selectively or all together, to the **Teamname list** using the arrow buttons. You can even transfer names from different teams to the same list.

Adjust name order for current design

List of names used in current design

Use controls to transfer names between lists

Use buttons to move selected names
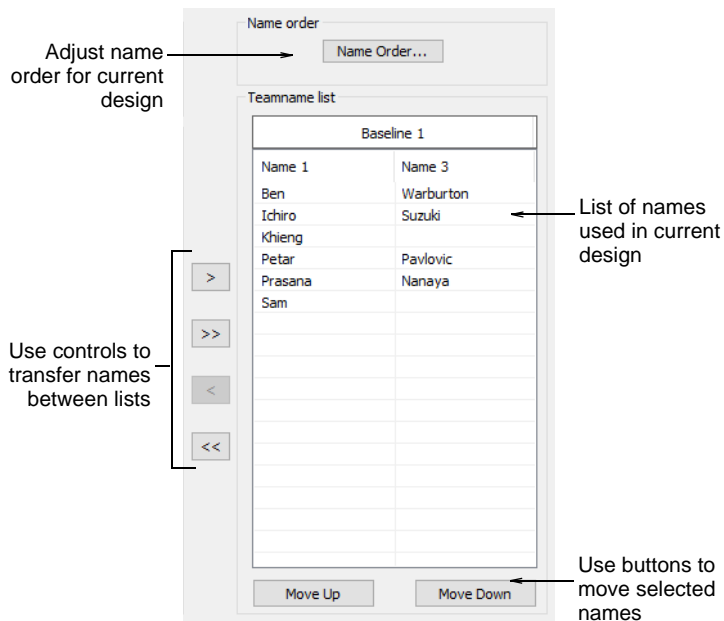
◀ Edit the list as desired:

    ◀ Sort names alphabetically by column.

    ◀ Sequence names – this will determine their stitching order.

    ◀ Remove names from the list.

◀ Click the **Name Order** button if you want to change the default naming order. Use it, for example, to put surnames first or limit which names are included – e.g first and third.

Change name order as desired
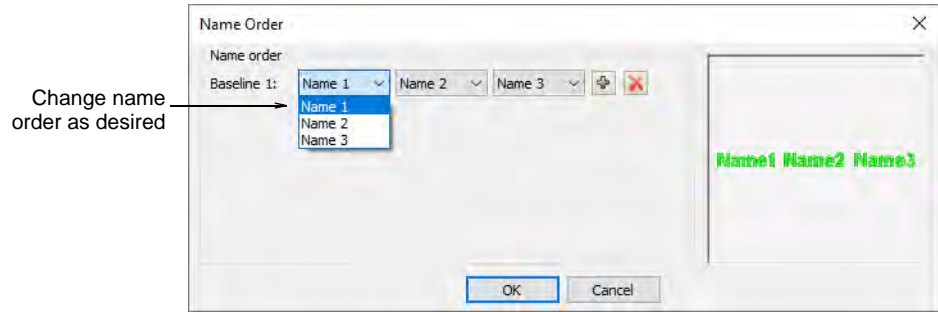
Outputting teamname designs

You can create individual designs from each name in a teamname design. Alternatively, you can create a matrix of names optimized for batch stitching.

For output, you can generate machine files consisting of:

◀ Both design and names
◀ Design in one file and names in another, or
◀ Design and names in individual files.

Create separate designs

> Use Toolbox or Docker > Team Names to add/remove team members and edit individual names.

You can create individual designs from each name in a teamname design.

To create separate designs

1 Open a design and click the **Team Names** icon. By default all member names are selected.

Select names to output

Click to create individual designs
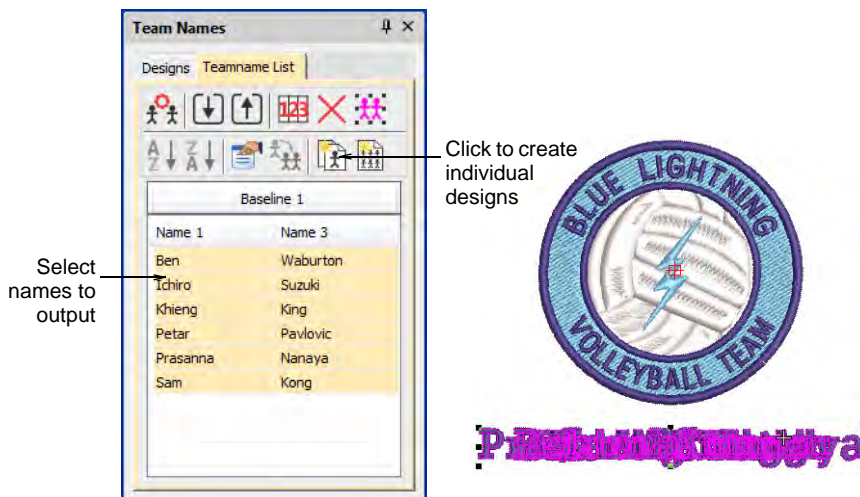
2 Select names to output – click **Select All** or use **Ctrl** and **Shift** keys to selectively choose.

3 To create individual embroidery designs for each team member, click **Create Designs**. Designs are generated for each name. The name is now a normal lettering object.

4 Save each design out individually.

Create a matrix of designs

> Use Team Names docker > Teamname Matrix to automatically create a matrix of all names in a teamname object together with their corresponding design.

The **Teamname Matrix** function allows you to create a matrix of names optimized for batch stitching. Minimize the number of color changes created by the matrix operation.

To create a matrix of designs

1 Open a teamname design.

2 Select everything you want to include and click the **Teamname Matrix** icon in the **Teamname List** tools.

The number of rows and columns in the matrix are automatically calculated according to number of team names, row and column height settings, and the physical area of the hoop. More than one hooping may be calculated.

Adjust hoop width and height

Adjust row and column settings

Calculated rows and columns

Select to minimize color changes

Select stitching sequence
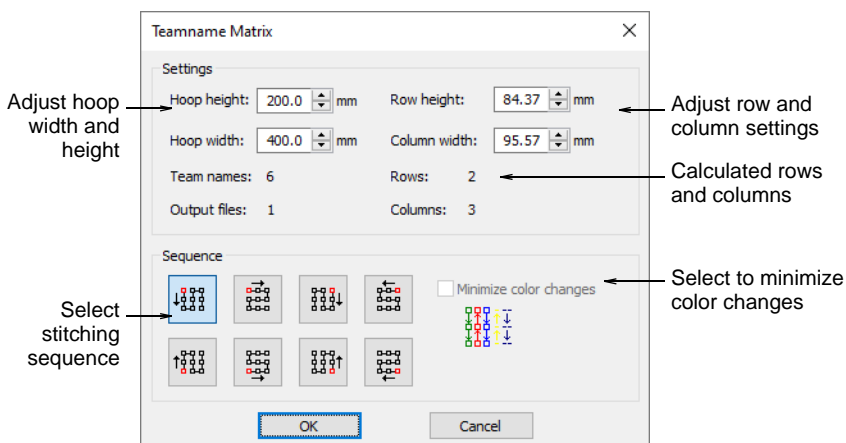
3 Adjust height and width settings to match the intended hoop.

4 Adjust row height and column width to set the gap for most efficient stitchout.

Increase settings if you want to enlarge the gap between designs. Calculated fields are updated, including number of rows/columns and output files.

5 Select a **Sequence** option. Each option indicates a possible stitching sequence for the entire matrix.

6 Optionally, select the **Minimize Color Changes** checkbox. When selected, the entire matrix is resequenced by color.

7 Click **OK**. A new file is created containing the number of team names that will fit into the specified hoop – i.e. number of rows multiplied by number of columns. If needed, another file is created to accommodate additional names. The **Output Files** field indicates the total number of files.

Output teamname designs

When you output a teamname design, you need to define how it is to be generated as a machine file. You can generate files that include:

◀ Both design and names in a single file
◀ Design in one file and names in another, or
◀ Individual files for each name plus design.

You set these options whenever you save the file in machine format or output directly to machine.

Access output options

You access the **Save Options > Team Names** dialog in any of these ways:

◀ Select **File > Export Machine File**, choose a machine file format – e.g. DST – from the **Save as type** droplist, and click **Options**.
◀ Select **File > Record in Database**, choose a machine file format – e.g. DST – from the **Save as type** droplist, and click **Options**.
◀ Select **Legacy Features > Disk > Save As > Options**.

◀ Select **Legacy Features > Send to Machine Manager > Options**.

◀ Select **Legacy Features > Send to Stitch Manager > Options**.

◀ Select **File > Send to Connection Manager > Options**.

Auto start/end method options enabled for all output options
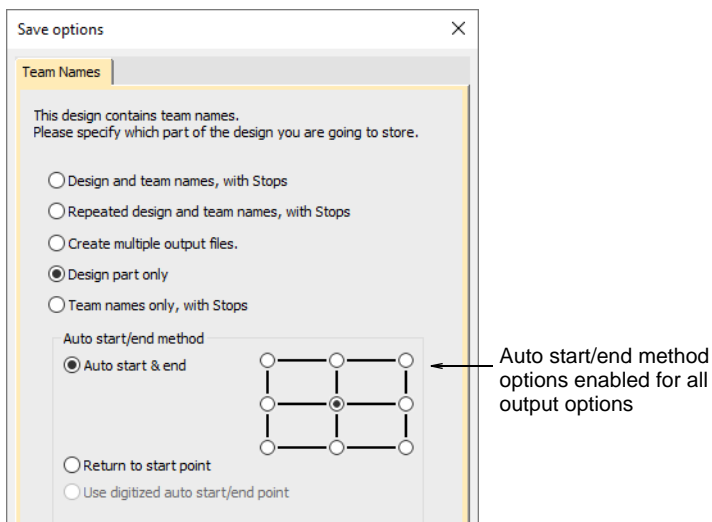
Output options

The following output options are available to you:

Option	Function
Design and team names, with Stops	Creates a single machine file including one copy of the design and all names. Stops are inserted after the design, and between the names – i.e. Design Stop TeamMember1 Stop TeamMember2 Stop, etc.
Repeated design and team names, with Stops	Creates a single machine file with multiple copies of the design, and all names. Stops are inserted after each static design/name combination – e.g. Design + TeamMember1 Stop Design + TeamMember2 Stop.
Create multiple output files	Creates separate files for each name, each of which includes a copy of the static part of the design. When stitching to ES Machine Manager, each file is queued separately.
Design part only	Creates a file containing only the static part of the design.
Team names only, with Stops	Creates a single file containing only the names, separated by stops. This means that after each machine stop, you can change frames.

Available centering methods

The **Auto Start and End** feature is available to specify first and last stitches in a design. This makes it easy to position the needle before

stitching, and reduces the chance of the needle hitting the side of the frame.

Method	Description
Auto Start and End	Auto Start and End is automatically turned on during Team Names output, defaulting to Center-Center. Select one of the nine preset end points.
Return to Start Point	Creates a connecting stitch from the end point to the start point.
Use Digitized Auto Start/End Point	This option is primarily used with multi-decoration designs where you want to strictly define the start/end point of the embroidery component. It is only available if there are already digitized start and end points in the design.

The trouble comes when you try to set a common start and end point for team names.

Auto alignment off   Auto alignment on
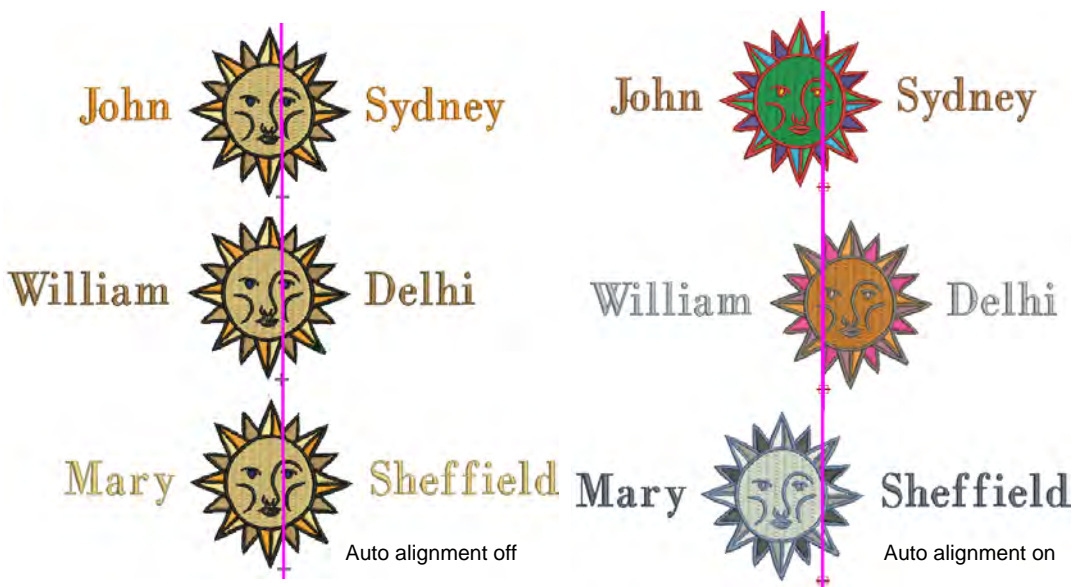
Teamname designs, however, can be stitched in a consistent location on the garment irrespective of name length. Select either output option:

◀ 'Repeated design and team names, with Stops', or
◀ 'Team names only, with Stops'.

And select one of the nine **Auto Start and End** preset end points.

The purpose of auto-alignment is to allow 'name frame' layouts and optional repeated designs to be stitched in a consistent location on the garment where names are of varying lengths.

Related topics…

◀ Send designs to Stitch Manager

◀ Setting auto start & end

Chapter 29
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 predefined 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.

Monogram designs

> Use Toolbox > Monogramming to create personalized monograms using a selection of predefined monogramming styles, border shapes and ornaments.

You build monograms using the **Monogramming** docker. The simplest way to get started is to select a monogram template from the **Designs** tab. This tab gives you a selection of design templates ranging from lettering only, with borders or with ornaments. The **Custom** folder

contains your custom templates. Select a design template from the display panel and modify as required via the other tabs.

Select monogram type and choose a design template

Use Custom folder for custom designs
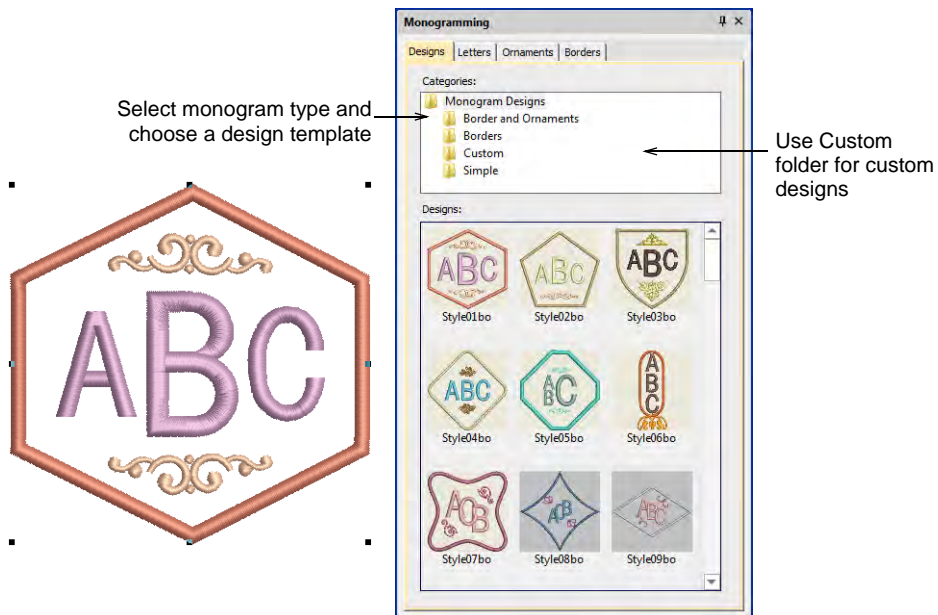
Note that the monogramming design is grouped in the **Color-Object List** docker. It is treated as a single, composite object. It can only be

edited via the **Monogramming** docker. It cannot be ungrouped but it can be broken apart into its components. See also Breaking apart lettering.

Monogram grouped as composite object

Break apart composite objects
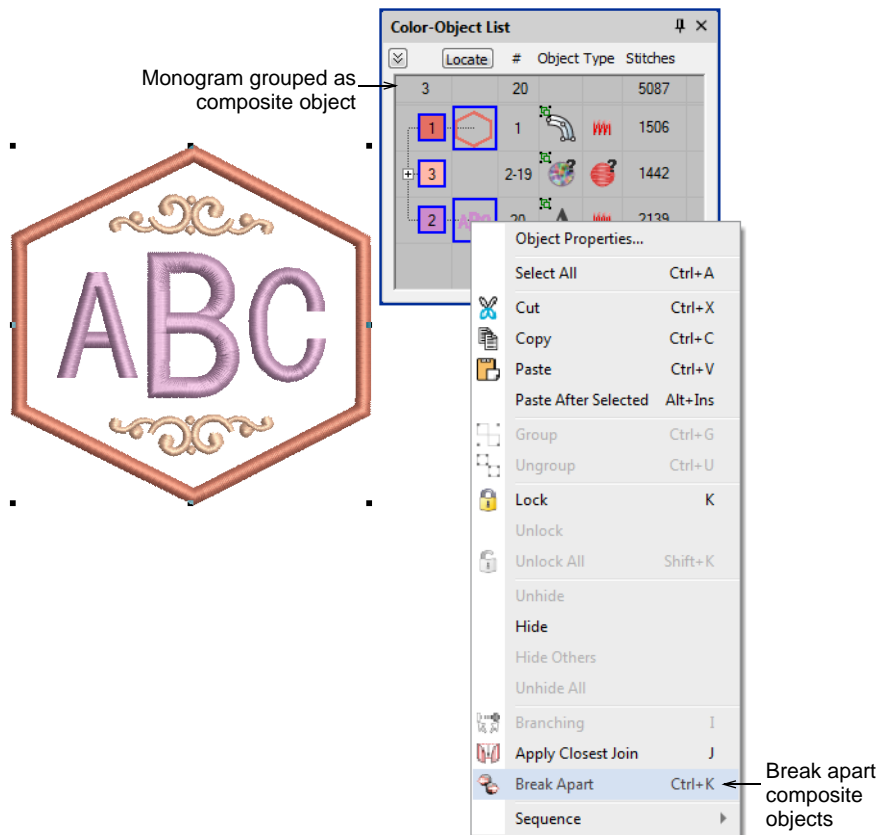
However, if all you want to do is recolor monogram elements, you can select them individually without breaking apart the monogram. Simply hold down **Alt** and click the object.

Use Alt key to select and recolor
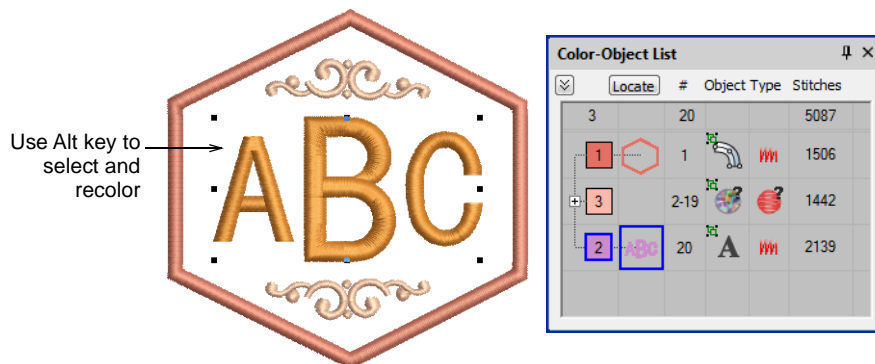
If you want to save a design as a template for future use, use the **File > Save as Monogram Template** command. The dialog opens onto the

Custom monogram designs folder. When you save here, the design will appear in the **Designs** tab under the **Custom** folder.

Enter a name for your custom template
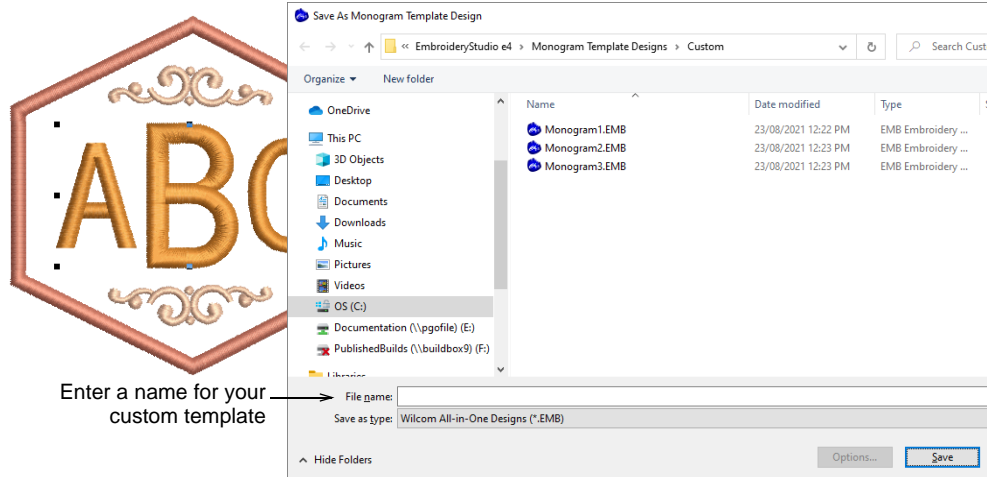
Monogram lettering

Use Toolbox > Monogramming to create personalized monograms using a selection of predefined monogramming styles, border shapes and ornaments.

The **Letters** tab of the **Monogramming** docker allows you to create personalized monograms with initials, including special characters and symbols, or unlimited lines of characters.

The **Letters** tab provides similar options to the **Lettering** tab of the **Object Properties** docker. 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 provides a selection of styles to choose from.

Choose lettering style

Choose lettering font
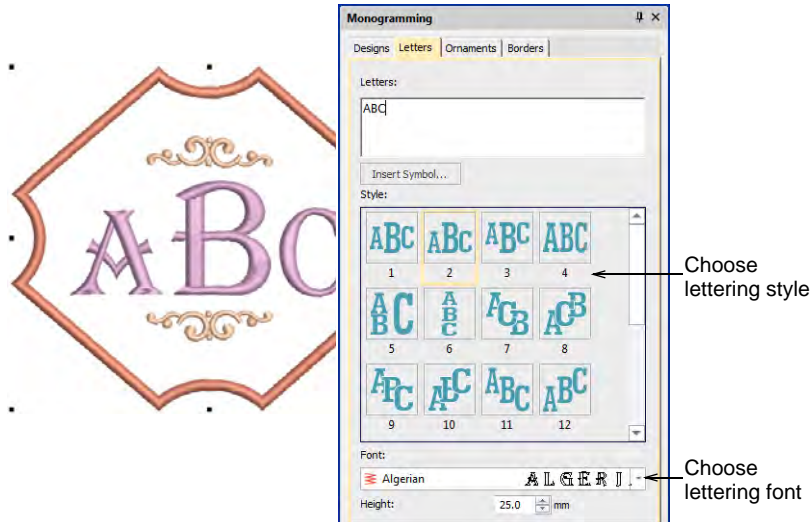
In place of single letters, the same tab allows you to enter multiple lines.

Enter multiple lines of text

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 rotate individual letters or the entire baseline.

Access advanced settings

Access full set of object properties
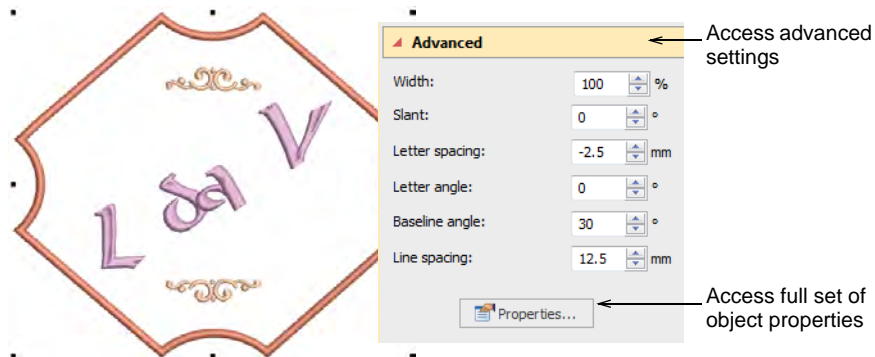
Click **Properties** to make any further adjustments – e.g. stitch type. The default values for monogram lettering are different from those for conventional lettering. All settings can, however, be controlled via the **Object Properties** docker. See also Create lettering with object properties.

Monogram ornaments

> Use Digitize > Monogramming to create personalized monograms using a selection of predefined 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.

Modify 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.

Add, delete, or change ornaments

Choose preset placement pattern
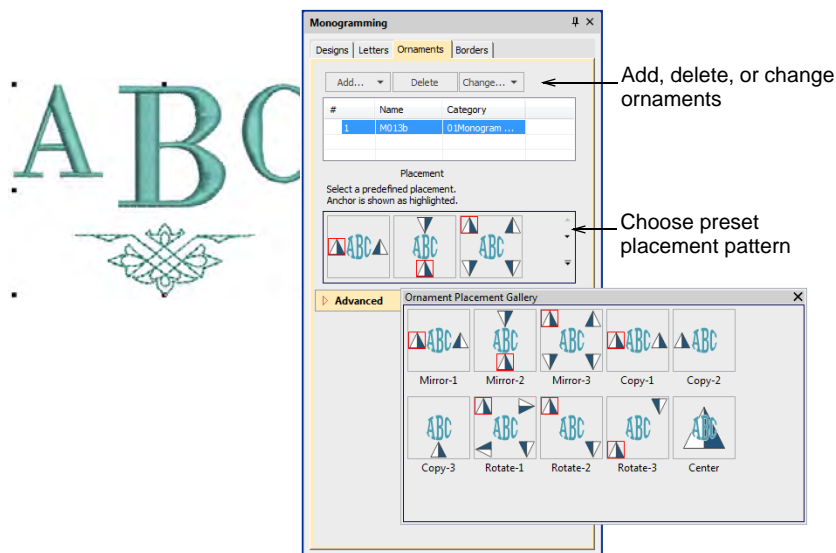
Choose from a range of preset placement patterns, including **Mirrors**, **Duplicates**, and **Cycle**. Note that the pyramid icon indicates not only the placement but also the orientation of the pattern in both horizontal and vertical planes.

If the preset pattern gallery doesn't quite give you what you are looking for, open the **Advanced** panel. These settings give you precise control over ornament placement, size, rotation, orientation, and margin.

Access advanced settings

Fine-tune ornament placement, size, rotation, orientation, and margin
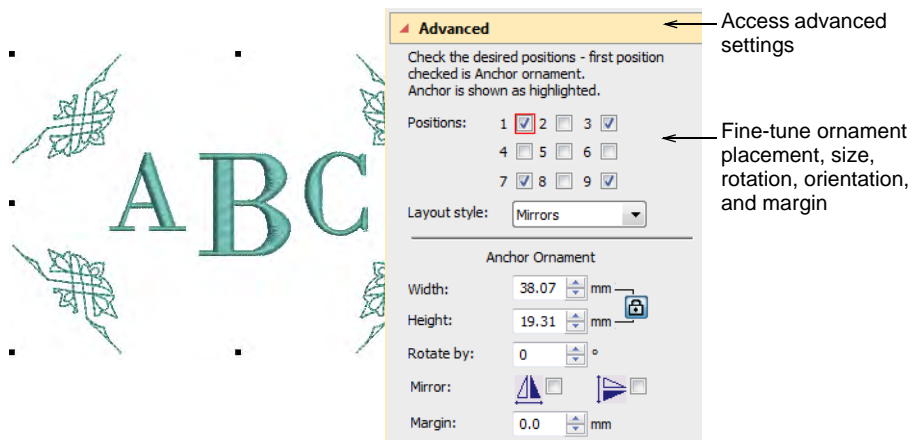
Add ornaments

You can add up to ten ornament sets to a monogram design and change them at any time. Any available motif set can be used.

Choose ornaments from any available motif set
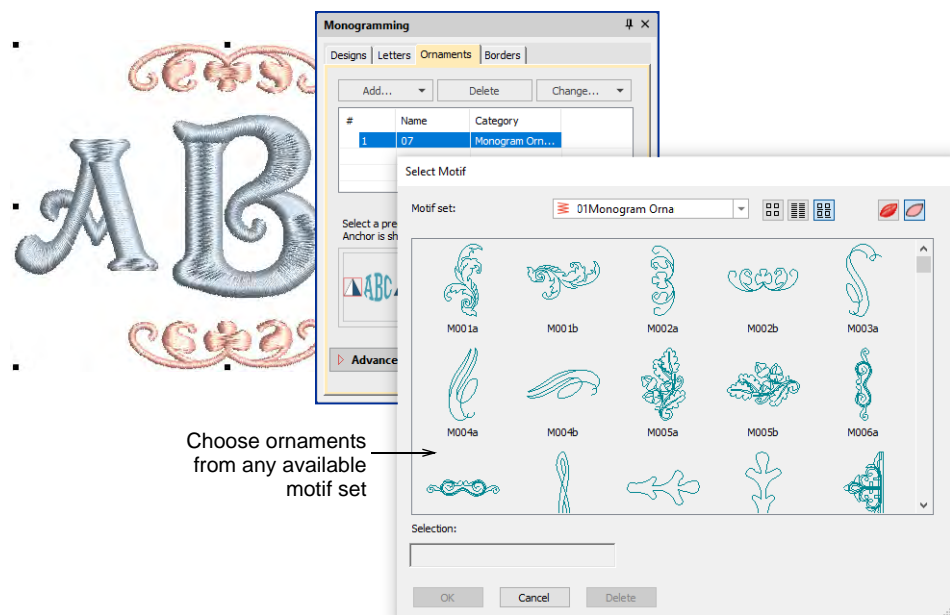
A set of ornamental designs is also available. These are stored in their own **Ornaments** folder.
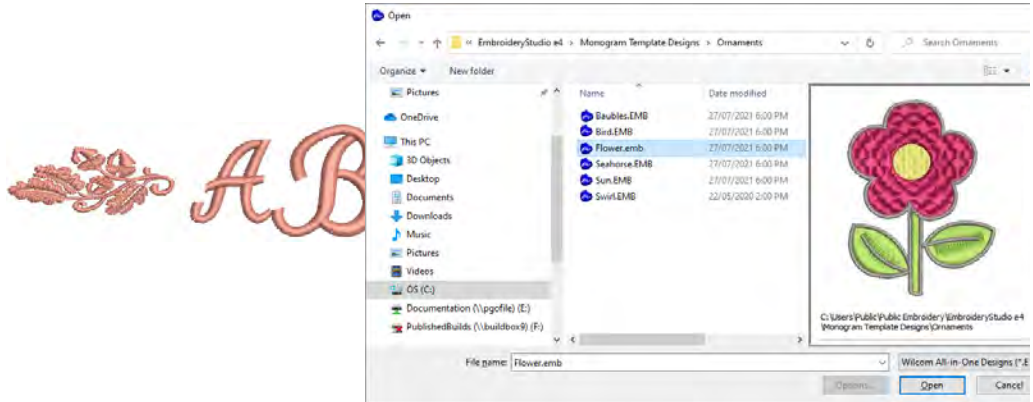
Use the checkboxes to add up to eight instances of a selected ornament. These are arranged according to ornament placements relative to the lettering.

Access advanced settings

Anchor position highlighted in red
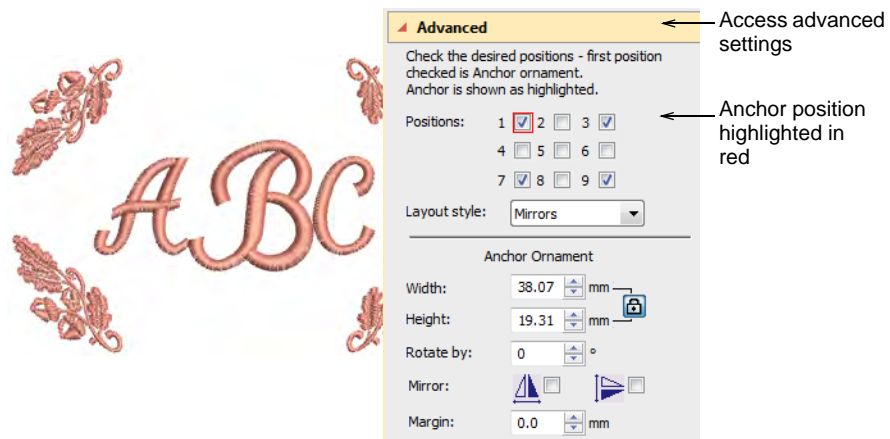
The first selected serves as the 'anchor' position (highlighted in red). All other ornaments are sized, rotated and mirrored in relation to it. Use the **Width** and **Height** fields to change ornament dimensions. The **Lock Aspect Ratio** toggle forces width and height to maintain their proportions. Use the **Margin** setting to offset ornaments from the lettering.

Create single ornament layouts

Use **Position #5** to insert an ornament as a standalone component 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.

Position ornament relative to lettering object
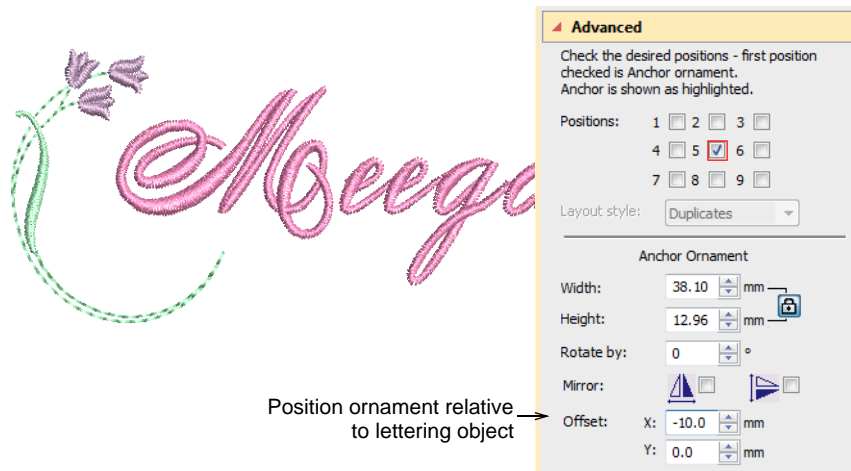
Use the **X** and **Y** fields in the **Offset** panel to position the ornament horizontally or vertically relative to the lettering object. These settings specify the position of the ornament center relative to the center of the lettering object.

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 components, you can select them individually without breaking apart the monogram. Simply hold down **Alt** and click the object.

Monogram borders

You can add up to four borders of the same shape to a monogram design.

Change 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.
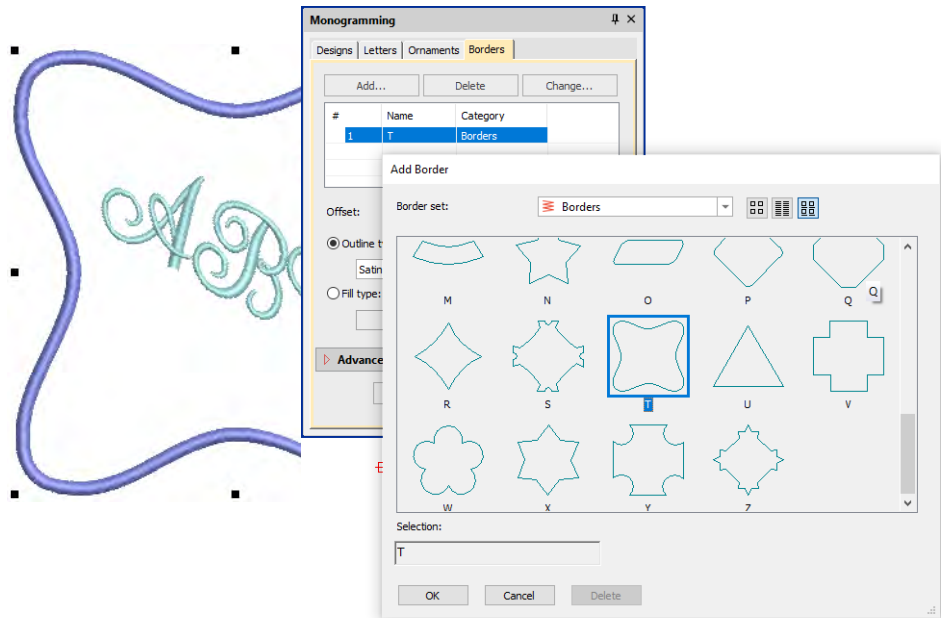
Adjust border shape & offset

Use the **Aspect Ratio** settings to adjust height and width proportions.

Adjust aspect ratio to change border proportions
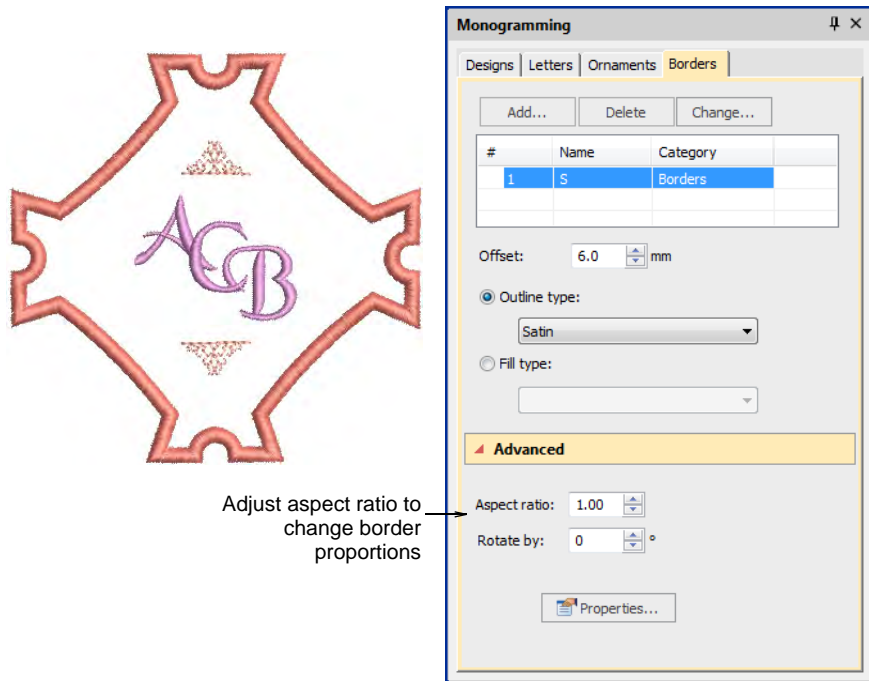
Use the **Offset** field to fine-tune margins between lettering and border, and between border and border.
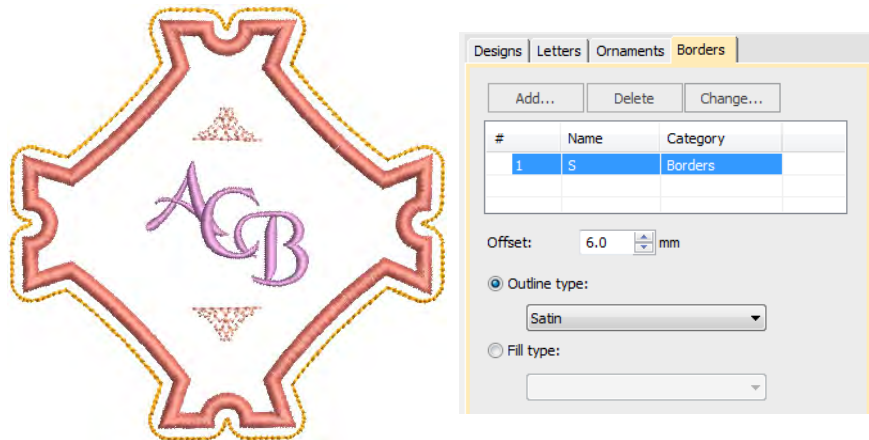
Use the **Rotate** field to re-orientate the border as desired.
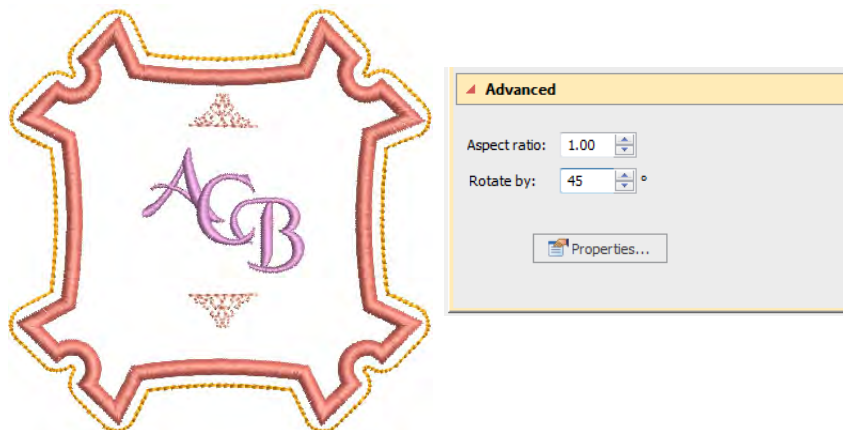
Add multiple borders

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.
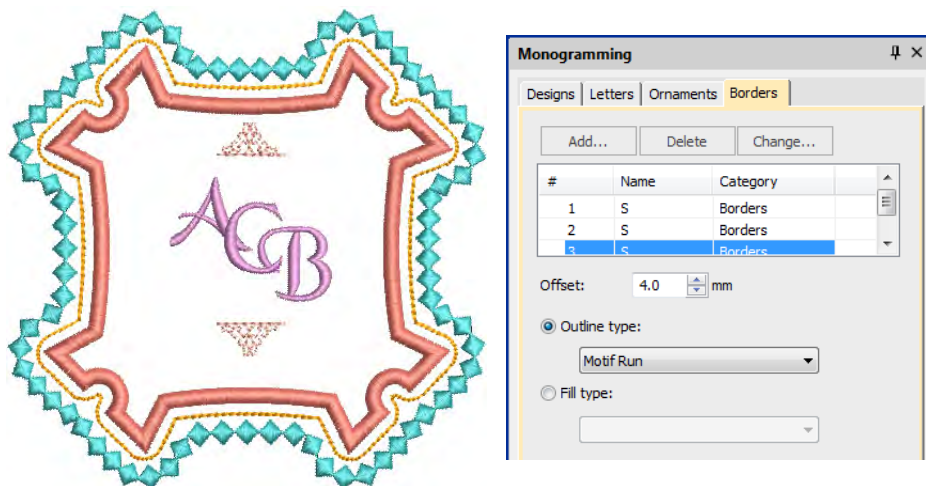
Use the **Stitch Type** buttons to change to line or fill stitch type for selected borders. Satin Line is the default stitch type. All line and fill stitch

types available in the software can be used as borders. Click the **Properties** button to make further adjustments.
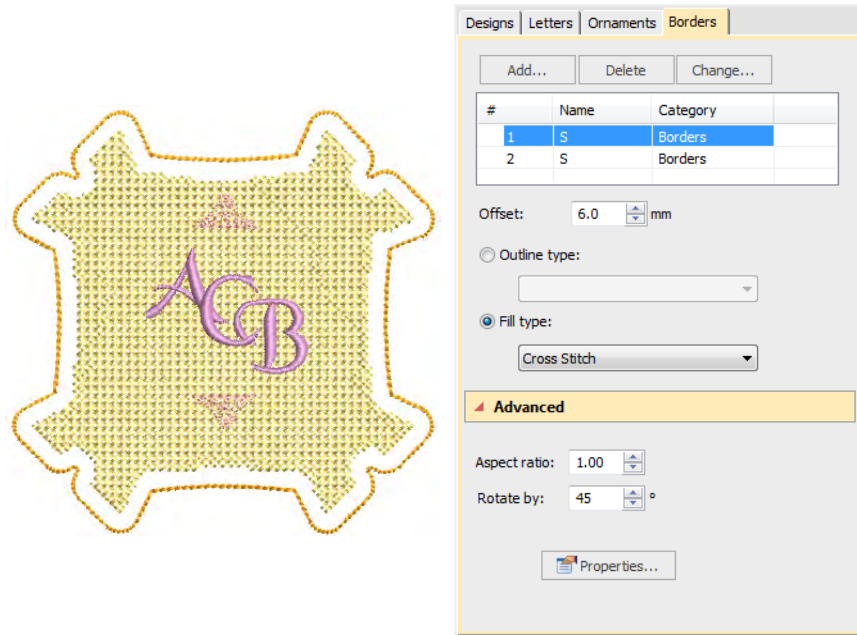
Remember, if you want to recolor monogram elements, you can select them individually without breaking apart the monogram. Simply hold down **Alt** and click the object.

Chapter 30
Custom Lettering

Turn any TrueType font installed on your system into an embroidery font. Sometimes you find that you want to reshape a letter to improve its appearance, perhaps to suit a particular lettering height. EmbroideryStudio lets you save the letter as an alternative version. You can even create custom fonts or modify an existing font for special applications. Even merge letters from two or more fonts.

This section describes how to create new embroidery fonts from TrueType fonts. Automatic letter kerning and user-refined fonts are explained. It also describes how to create, modify, and merge your custom fonts and letters.

Converting TrueType fonts to embroidery

The **Convert TrueType Font** feature lets you convert any TrueType font installed on your system to an embroidery font. You can do this 'on-the-fly' or convert entire fonts for later use. This is an important

feature for Asian fonts which may contain several thousands of characters.

The process is fully automatic. Lettering shapes are 'cut' into Column A or Column B embroidery objects. Overlaps and stroke order are detected and stitch angles defined. The result is similar to manually digitized fonts although the quality may not be quite as good. The quality greatly depends on the original shapes, narrower serif type fonts producing better results than blocked fonts.

💡
Tip: The simplest option for creating custom embroidery fonts is to use the built-in **Convert TrueType Font** feature. This lets you convert any TrueType font installed on your system to an embroidery font. See Custom Fonts for details.

Convert letters on-the-fly

A	Use Toolbox > Lettering to add TrueType lettering directly on-screen. Right-click to set the formatting values for new or selected lettering objects.

You can convert individual TrueType letters 'on-the-fly' and add them directly to a design through the **Object Properties** docker.

💡
Tip: If your product level allows it, you can add and format TrueType lettering in **CorelDRAW Graphics**. This can then be converted to either embroidery lettering or embroidery objects.

To convert TrueType letters on-the-fly

1 Right-click the **Lettering** icon to access object properties.

Enter text →

Select TT font →

Set conversion values →
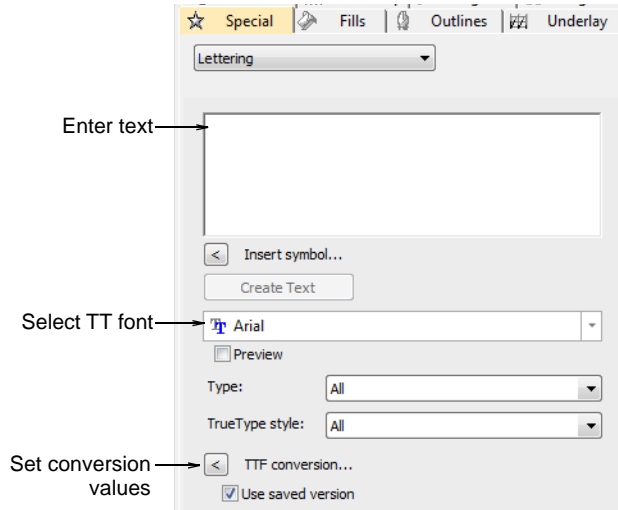
2 Select a TrueType font from the droplist.

3 Enter the text you want to embroider.

4 Optionally, click **TTF Conversion** to adjust conversion settings. Whenever you choose a TrueType font in the **Object Properties** docker, calculated settings are used by default. As always, conversion settings can be further refined by the user.

Select lettering style →

Select Turning Strokes for variable stitch angle →

Select Complex Fill for fixed stitch angle →
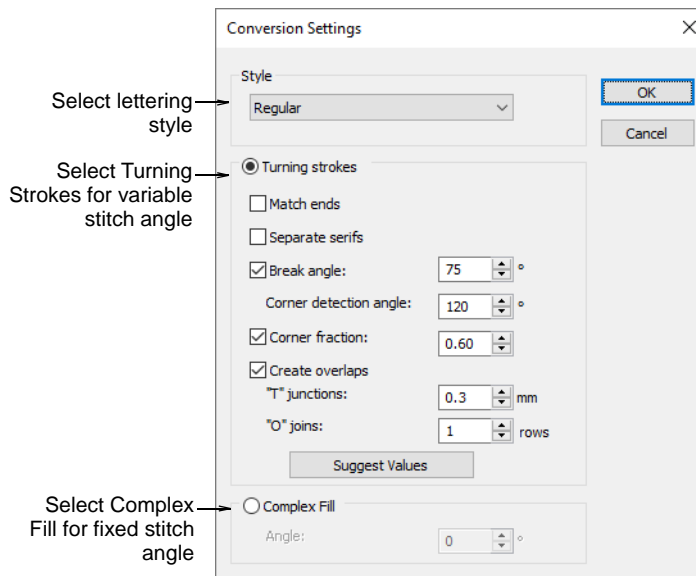
5 Click **OK** to return to the **Object Properties > Special > Lettering** docker.

6 Select a baseline, adjust letter height and spacings, and click **Create Text**.

7 Click an insertion point to create text on-screen.

Related topics...

◀ Converting & editing TrueType fonts
◀ Experiment with conversion settings
◀ Refine turning stroke options
◀ Creating lettering with CorelDRAW Graphics

Convert TrueType fonts

The **Convert TrueType Font** feature lets you convert any suitable TrueType font installed on your system into an embroidery font. Converted letters can be filled with parallel or turning stitches. Conversion happens fairly quickly, although Asian fonts may take longer.

To convert a TrueType font

◀ Select **Setup > Convert TrueType Font**. The **Convert TrueType Font** dialog opens.

Select font

Select font style

Set values

Enter font name

Choose character set
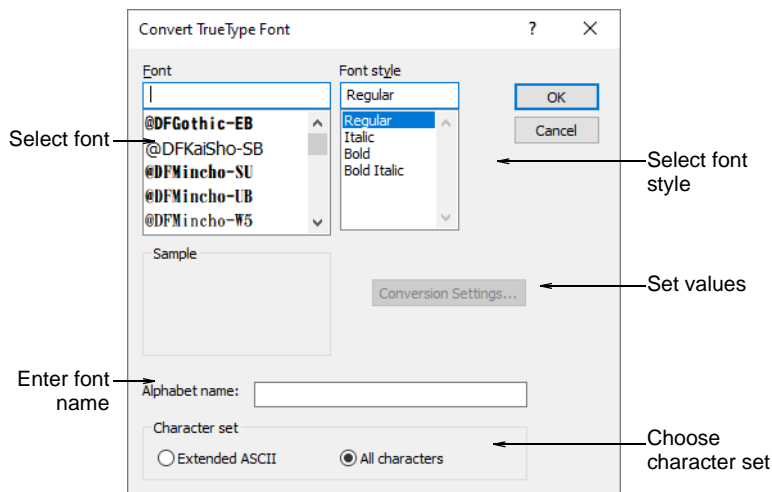
◀ Select the font to be converted and font style. The entire embroidery font will be created in the selected style.

◀ Enter a **Font Name** if you want to override the default.

◀ Choose whether to convert **All Characters** or **Extended ASCII** character sets. The standard character set contains alphanumeric characters only. It excludes punctuation marks and other special characters.

◀ Optionally, click **Conversion Settings** to adjust conversion settings.
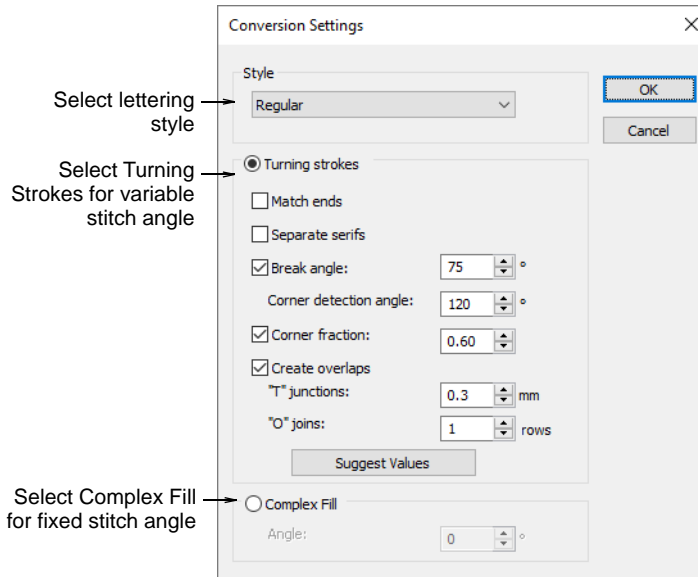
Select lettering style → (Style: Regular)

Select Turning Strokes for variable stitch angle → (Turning strokes)

Select Complex Fill for fixed stitch angle → (Complex Fill)

Conversion Settings dialog:
Style: Regular

◉ Turning strokes
☐ Match ends
☐ Separate serifs
☑ Break angle: 75 °
   Corner detection angle: 120 °
☑ Corner fraction: 0.60
☑ Create overlaps
   "T" junctions: 0.3 mm
   "O" joins: 1 rows
   Suggest Values

○ Complex Fill
   Angle: 0 °

OK / Cancel

◀ Specify whether to convert as **Turning Strokes** or **Complex Fill**.

This will depend in part on font type – whether serif or non-serif, whether script or block. If you want stitching to follow letter contours, select **Turning Strokes**. The **Complex Fill** option provides a single fixed stitch angle.

◀ With the **Turning Strokes** option, there are many more settings. Presets are automatically adjusted according to selected font characteristics – e.g. whether serif or sans serif, whether block or script. Try the defaults to start with.

◀ Click **OK**.

◀ To check, right-click the **Lettering** icon to open the **Object Properties > Special > Lettering** docker. The newly converted font will be selected by default and available for use.

Note: Custom fonts are saved in ESA format to the 'Fonts' folder within the Windows 'ProgramData' folder. They can be copied and distributed for use by others. If you want to adjust converted characters or add special characters to a custom font, you can do so via the **Create Letter** function.

Related topics...
◀ Converting & editing TrueType fonts
◀ Refine turning stroke options
◀ Edit & repackage generated letters

Creating user-refined letters

Sometimes you find that you want to reshape a letter to improve its appearance, perhaps to suit a particular lettering height. EmbroideryStudio lets you save the letter as an alternative version. In fact you can save multiple versions of the same letter within the same font. Each version can have a unique height range. When using the letter in a design, the height setting will automatically determine which version is used. The feature thereby allows you to permanently record fixes to particular lettering problems and thereafter automatically apply them.

Note: The software preserves all user-refined letters when a new version is installed. Only factory default letters are overwritten.

Save user-refined letters

> Use Reshape > Reshape Object to reshape selected objects, edit stitch angles, and adjust start/end points.

User-refined letters are saved via the **Create User-Refined Letter** option. This is enabled only if a native letter or converted TrueType font letter is currently highlighted in the design window or selected in **Reshape** mode. One and only one letter may be saved at a time.

To save a user-refined letter

1 Create a lettering object with an embroidery font.

2 Size the object and reshape the letter as required. The **Stitch Angle** and **Reshape Object** tools let you add, delete, or adjust stitch angles.

In the example below, the letter 'a' tends to close over at reduced sizes. You may want to open it up. By saving it as a user-refined letter,

any changes made will be automatically applied to new lettering objects using the font in the specified size range.

Default 'a' too narrow at smaller size

Letter 'a' opened up at smaller size
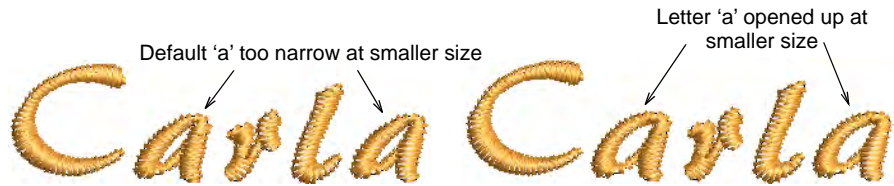
3 Still in **Reshape** mode, select the modified letter by clicking the diamond control point.

Select modified letter
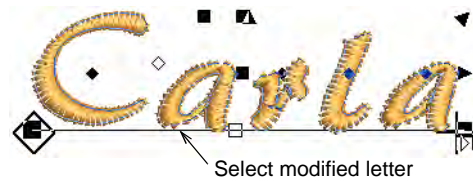
4 Select **Object > Create User-Refined Letter**.

Create User-Refined Letter

User-refined letters enable you to have multiple versions of the same letter. Each version has a unique height range. When using the letter in a design, the height of the letter will automatically determine which version is used.

Height range

For what height range should this version be used?

◉ All (existing versions will be disabled)

○ Greater than: 8.30 mm ← Specify the height range

○ Less than: 8.30 mm

Name

What name should this version be given? The name is only used in the "Manage User-Refined Letters" command. It can help you to distinguish this version from factory versions or other user-refined versions.

User 1 ← Name the new version

OK   Cancel

5 Set a height range for the letter:

Option	Function
All	The letter will be used at all letter heights (effectively replacing the factory default).
Greater than	The letter will only be at heights greater than that specified.
Less than	The letter will only be at heights less than that specified.

6 Give the new letter a unique name that you can easily identify – by default, the new version is given the name 'User 1'.

7 Click **OK**.

Default letter 'a'

Modified letter 'a'

Select to use user-refined letters

Changes applied to both letters
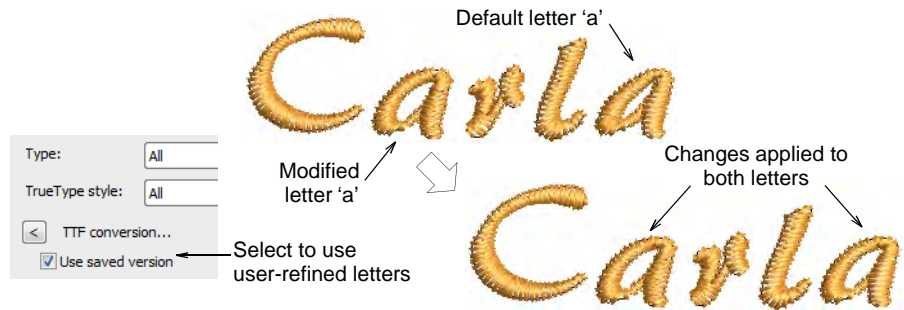
8 To apply changes to all the same letters in the selected object, select the **Use saved version** checkbox in the **Object Properties > Special > Lettering** docker.

Related topics...

◀ Creating Embroidery Lettering
◀ Reshape letters
◀ Adjusting stitch angles
◀ Select embroidery fonts

Manage user-refined letters

User-refined letters are managed via the **Manage User-Refined Letters** option. This menu item is only enabled when a lettering object with a font containing user-refined letters is currently selected.

To manage user-refined letters

◀ While the letter is selected, select **Setup > Manage User-Refined Letters**.

The original factory default letter is identified by the name 'Factory'. For converted TrueType font letters, the word 'Convert' appears instead of 'Factory'.

Click and rename version as required

Select letter version to include in font

Scroll to next or previous letter

Swap height ranges by moving selected version up or down

Adjust height range for the selected letter version
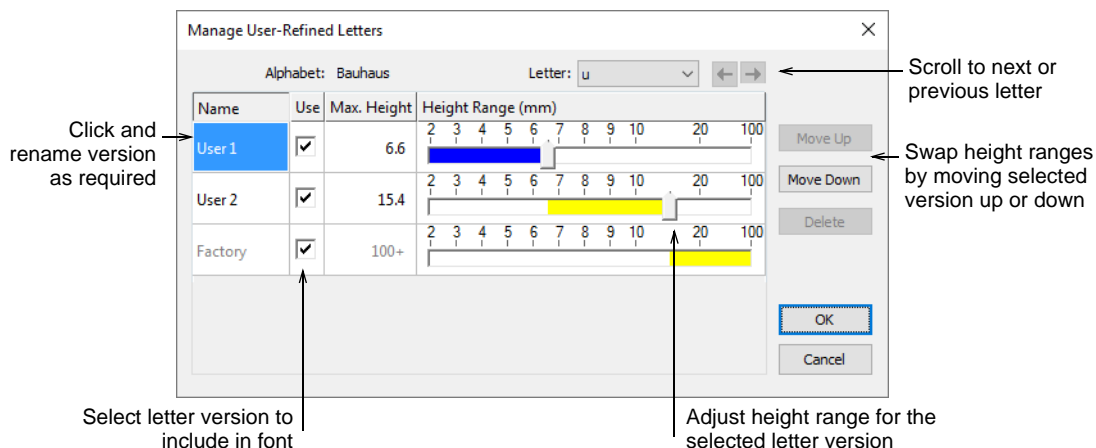
◀ Use left/right arrow buttons or droplist to select a user-refined letter.

◀ Click and rename any version except 'Factory' or 'Convert'.

◀ Delete any selected version name except 'Factory'.

◀ Untick the **Use** checkbox if you want to temporarily exclude a letter.

◀ Swap height ranges with the **Move Up/Down** buttons and adjust them by means of slider bars.

Creating custom fonts

EmbroideryStudio provides methods for defining custom embroidery fonts. You can digitize letters from backdrop images, convert vector objects, or digitize freehand using any of the input method tools. You can use artwork from sources such as calligraphy books. You can also copy characters and symbols from the MS Windows® **Character Map** into an external graphics program. Here you can modify them as you like, save them to a graphics file, and use it as a design backdrop. See also Use the Character Map.

Ⓔ

Note: You can also create new embroidery fonts by converting TrueType fonts. See also Converting TrueType fonts to embroidery.

Custom font considerations

You can use artwork to create letters in the same way you do other objects. Before digitizing, however, establish whether the letter shapes

are suitable for embroidery, and determine reference height and baseline for the font. Letters are generally 20 to 40 mm in height.

⚠️

Caution: Because of copyright laws, you cannot simply select letters from an existing embroidery font and save them to another font.

Letter shapes

For best results, letter columns should be of similar width, without tight curves or sharp corners, or very fine, very wide, or curved serifs.

Differences in column width too great

Serifs too long and fine

Corners too sharp

Reference height and baseline

Reference height is the maximum height of capital letters. Although there may be subtle differences between upper and lower case letters, it is a useful guide for digitizing. Place letters along a standard baseline to help digitize at a standard height. Draw in the baseline if you are digitizing from artwork, or use a grid line as your guide. Descenders in letters such as **y** or **g** generally fall below the baseline.

Letter height

Baseline

💡

Tip: Use **E** or **H** as reference letters to determine the height and baseline for the font. These letters work well because they sit on the baseline and do not extend above the standard cap-height.

Letter spacing and width

Letter width varies with letter shape and spacing. When you digitize letters, you enter two reference points to mark the width, and a third to mark height.
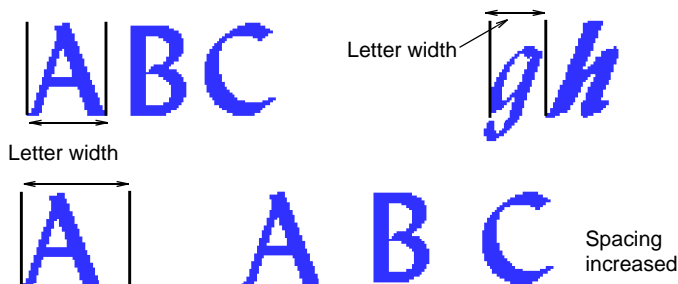
Default spacing affects 'kerning' or spacing across all letters. Additional width can be added as spacing around individual letters.

Tip: For italic styles, you may need some overlap between letter extents.

Letter sequencing

Letter stitching sequence is based on the join type you select when saving the font. If you use the **Closest Join** or **Bottom Join** methods, EmbroideryStudio applies automatic branching to letters. In this case, you don't need to worry about the direction individual letter strokes will stitch in. When branching is applied, EmbroideryStudio determines where each stroke starts and ends, adding travel runs as necessary.

However, it is good practice to digitize strokes in the direction they are most likely to be stitched in. It is also important to specify the stroke order as this is maintained when sequencing is calculated.

If you want to specify the stitching sequence and connectors yourself, digitize the letter exactly as you want it stitched. You then need to select **As Digitized** as the join method.

The lettering stitch method should be preset to give the best results for each font. In most cases, **Closest Join** is recommended in order to minimize trims. Bear in mind though that the join method can be changed by the end user.

___

Related topics...

◀ Change lettering join method

Create custom letters

Use Edit > Break Apart to split composite objects – monograms, appliqués, lettering, etc – into component objects.

Use Reshape > Reshape Object to reshape custom letters.

You create or modify letters for a custom font just like other embroidery objects. Custom letters can be made up of multiple objects, and may be letters, numbers, symbols or even pictures. To change the shape of an existing letter, you must first break it apart. The letter reverts to embroidery objects, and letter properties such as font type and baseline are lost. When you have finished modifying, you have to enter these details again.

To create a custom letter

1 Import the starting point for your custom letter. You can use various methods:

◀ Import and size suitable artwork. Letters are generally 20 to 40 mm in height.

◀ Select a TrueType font in CorelDRAW Graphics, key in the letter or letters you want to use, and switch back to Wilcom Workspace.

◀ Pre-convert an entire TrueType font using the **Convert TrueType Font** feature.

◀ Select an existing embroidery font and key in the letter or letters you want to use.

2 If you use an existing embroidery font as a starting point, you must first **Break Apart** to revert the letter to normal embroidery objects. Letter properties such as font type and baseline are lost.

3 Select an input method.

◀ If you are digitizing the sequence and connectors manually, use any input method.

◀ If you want the letter to be automatically resequenced with **Closest Join** or **Bottom Join**, use Column A, Column B, Column C and Complex Fill objects.

4 Select a stitch type. Most letters use satin or tatami.

5 Digitize each section of the letter.

◀ Create an 'underlap' to bind two strokes together. Underlaps should be about a third of the stroke width or less, but may be half for thin strokes.
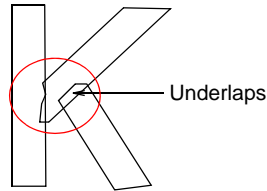
Underlaps

◀ Try to avoid having more than two strokes on top of each other as this causes thread buildup and can lead to thread breaks. Sometimes modifying the shape can improve it.

◀ Sometimes it is helpful to angle the ends of underlaps so that a few stitches are 'caught' by the overlapping stroke.

Overlap / underlap
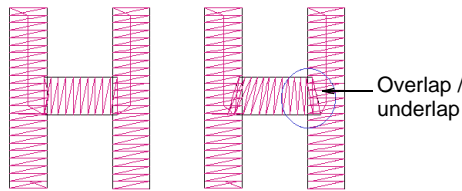
◀ Where a stroke crosses another stroke, such as in the letter **t**, one stroke is commonly broken into two parts. For thin objects, you may digitize the above stroke in one piece, crossing over or under the other.
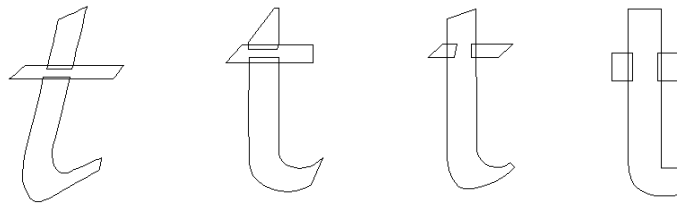
6 Adjust existing outlines using the **Reshape Object** tool if necessary.
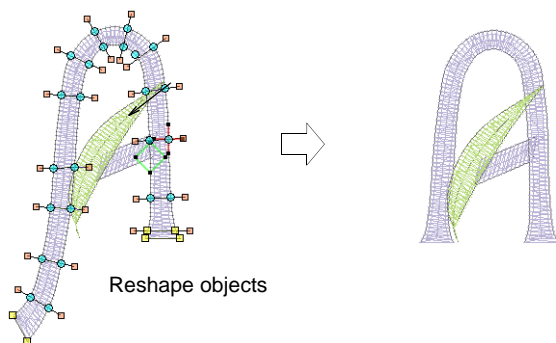
Reshape objects

7 When the letter is the correct shape, you can now save it as a custom letter.

Related topics...

◄ Insert bitmap images
◄ Convert TrueType fonts
◄ Reshape letters
◄ Break apart composite objects
◄ Save custom letters

Save custom letters

When you create a new letter, you need to select a font for it, give it a name, specify its height, and indicate whether to preserve any machine functions. You also need to indicate its spacing settings by digitizing reference points on-screen.

⚠

Caution: Do not use the tilde (~) symbol when naming letters. This is a special character for entering letters with multiple-character names.

To save custom letters

1 Select the objects that make up your newly digitized or modified letter.
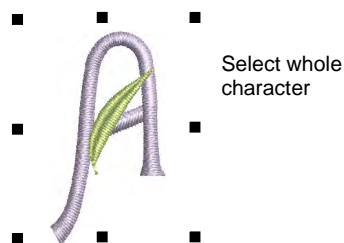
Select whole character

2 Select **Object > Create Letter**.

Select font —
Enter letter name —
Enter reference height —
Select to set height on-screen —
Deselect to include functions —

3 Select a font from the droplist.

4 Enter a name for the letter in the **Letter** field.

For example, if you digitized the letter **H**, enter 'H' in the **Letter** field.

💡
Tip: You can create names with multiple characters to identify special letters – e.g. 'Star' for a star symbol, or 'e-acute' for **é**.

5 In the **Reference Height** field, enter a height for the letter.

The letter is recorded at this height regardless of its original size. You can also set height on-screen by selecting the **Digitize Reference Height** checkbox. When you return to the design window, you are prompted to digitize the height. If you select **Digitize Reference Height**, the value in the **Reference Height** field is ignored. Letters are generally 20 to 40 mm in height.

6 Deselect **Remove Functions** only if you want to keep any machine functions in the object.

The letter may, for example, include deliberate color changes or other machine functions. Such letters require the **As Digitized** join type.

7 Click **OK**.

8 Click to mark two reference points for letter width and baseline.

The distance between reference points determines the letter width, including any spacing either side of the letter. This then determines 'standard spacing' between letters.
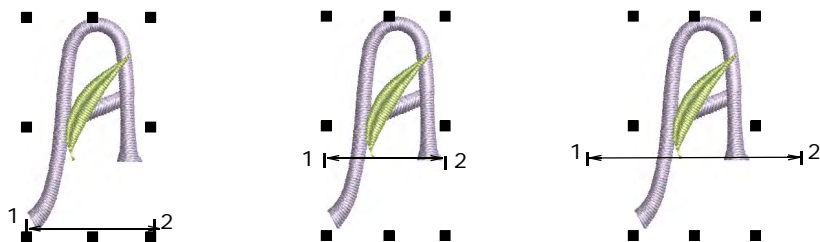
Note: The reference points you digitize also determine where the letter sits on the baseline.

9 If you selected **Digitize Reference Height** in the **Create Letter** dialog, you are prompted to digitize a third reference point to mark letter height.

A message confirms that the letter has been saved to current font.

Related topics...

◀ Select custom fonts
◀ Create custom letters
◀ Save custom fonts
◀ Select custom fonts
◀ Change lettering join method
◀ Letter spacing and width
◀ Reference height and baseline

Save custom fonts

Use custom fonts to store any letters you create. To make a new font, you name it and set the default spacing and join type for adjacent letters. You also specify the file type.

To save custom fonts

1 Digitize the objects that make up the new letter, and select them.

Select whole letter

2 Select **Object > Create Letter**.

Click to create new font
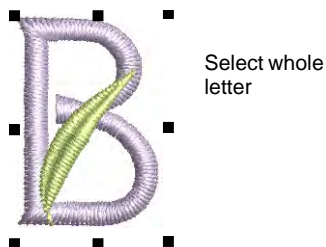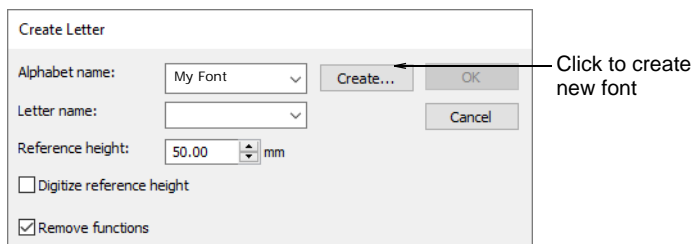
3 Click **Create**. The **Create Alphabet** dialog opens.

Enter font name ——▶ Alphabet name:

Enter default spacing ——▶ Default letter spacing:

Select join method ——▶ Default join type:
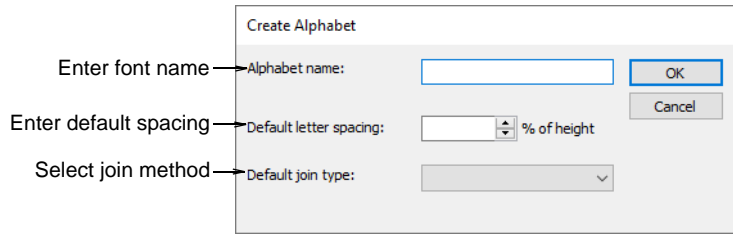
4 Enter a name for your new font.

5 Enter spacing in the **Default Letter Spacing** field. As a rule of thumb:

◀ Use 8-10% for standard fonts such as block and serif styles.

◀ Use 0% for script-style fonts.

6 Select a method of joining adjacent letters in the **Default Join Type** list.

Option	Function
As digitized	Preserves the original stitching sequence of each letter as it was digitized, as well as any stitch types and machine functions used in its creation.
Closest join	Resequences entry and exit points in adjacent letters to join them at the closest point.
Bottom join	Resequences entry and exit points in adjacent letters to create a connector along the lettering baseline.

Note: The lettering stitch method should be preset to give the best results. In most cases, **Closest Join** is recommended in order to minimize trims. Bear in mind though that the join method can be changed by the end user.

7 Click **OK**.

8 Enter additional values for the selected letter in the **Create Letter** dialog.

Related topics...

◀ Create custom letters

◀ Change lettering join method

◀ Save custom letters

Select custom fonts

A Right-click Toolbox > Lettering to select a custom font.

To use a custom font, select it like any other font. If a letter has a multi-character name, you can only access it from the **Lettering** dialog using the special tilde (~) symbol.

To select custom fonts

1 Right-click the **Lettering** icon to access object properties.
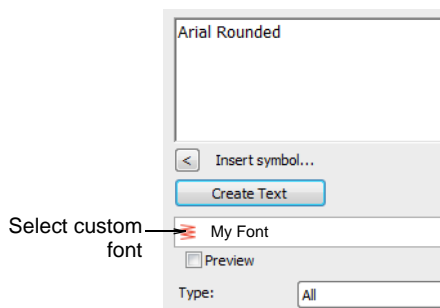
Select custom font

2 Select a custom font from the droplist.
3 Enter the names of the letters you want to use in the text box.
   ◄ If the letter name is a single character – e.g. 'A' – enter that character.
   ◄ If the letter name consists of more than one character – e.g. 'Star' – enter a tilde (~) followed by the letter name.

   💡
   Tip: Combine letters that use single or multiple characters in their name by prefacing the single character with two tildes – e.g. **~Star~~A~Star**.

4 Set the formatting values as you would for other lettering objects.

Manage fonts

Modify custom fonts by changing names, default letter spacings and join types. If a font is no longer required, delete it. To modify fonts, select **Setup > Manage Alphabets**.

Select font → (Name: My Font) — Click to rename font (Rename...) / OK / Delete / Cancel

Select letter → (Letter: Name:)
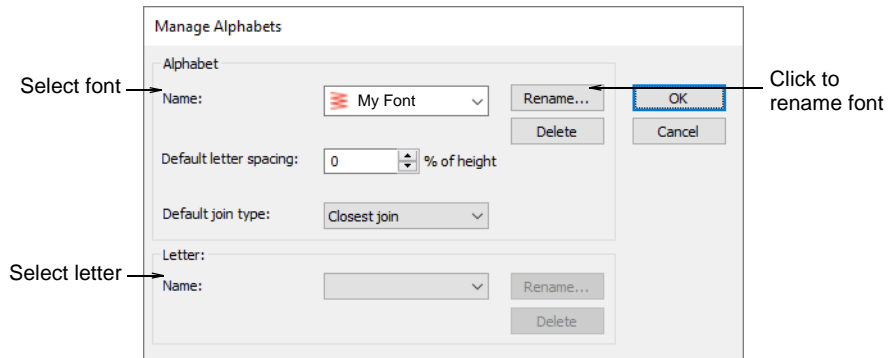
Use this dialog to:

◄ Rename a custom font.

Enter new name
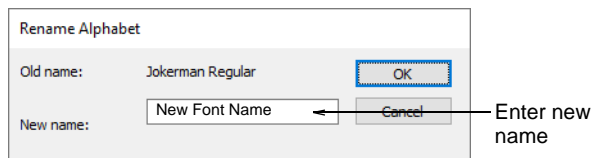
◄ Delete a font.
◄ Change default letter spacing.
◄ Change the default join type.
◄ Delete or rename selected letters. You can use names with more than one character.

Enter new name
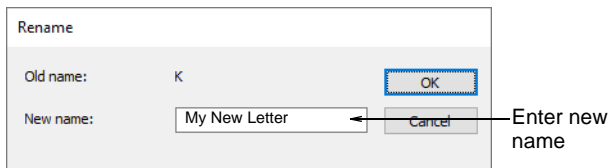
Related topics...

◄ Adjust spacing settings
◄ Setting stitching sequence & join method

Merging fonts

You can merge letters from two or more fonts with the stand-alone font merging utility. Files to be merged must be placed in the EmbroideryStudio **userletw** folder of your installation.

To merge fonts

1 Select **Start > Programs > MS-DOS Prompt**.

2 When the command prompt appears, change to the BIN directory of your EmbroideryStudio installation. This is usually:

C:\Program Files\Wilcom\EmbroideryStudio_e4.5\BIN

3 Choose whether to automatically overwrite or receive prompt.

◀ To automatically overwrite the letters in the first file with letters of the same name from the other file(s), type:
alphcat.exe file1.ESA file2.ESA file3.ESA.

◀ To receive a prompt message before a letter is overwritten, type:
alphcat.exe file1.ESA file2.ESA file3.ESA /Y.
Press **Y** or **N** to confirm whether to overwrite.

4 Click **Yes** to merge.

Chapter 31
Lettering Kiosk

EmbroideryStudio provides an easy-to-use **Kiosk** capability for cap and other embroidery. The lettering kiosk is primarily intended for use at retail outlets where fast and simple personalization of standard design layouts is required in consultation with customers.
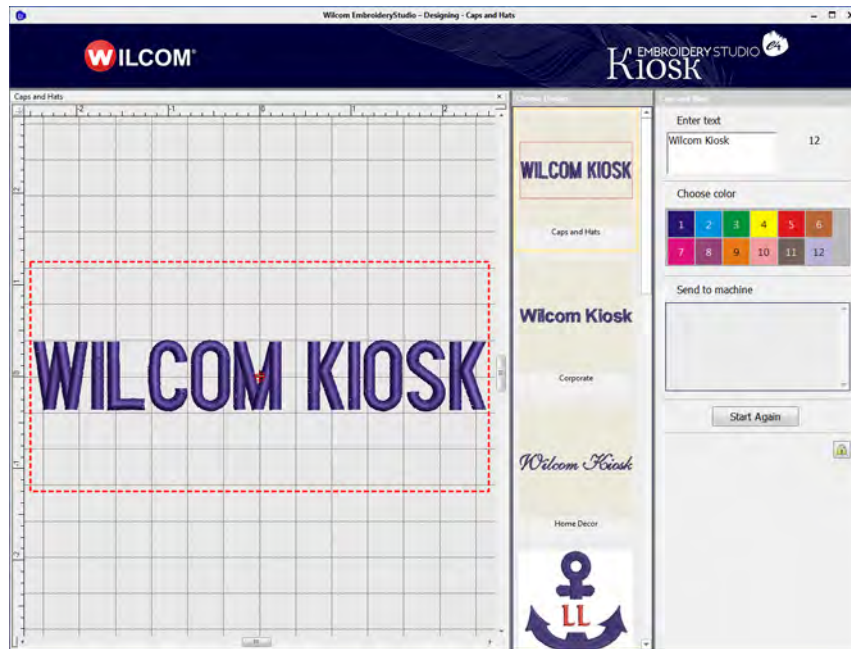
The benefits to retail staff are:

◀ Minimal training time
◀ Minimal production errors
◀ Improved customer satisfaction
◀ Increased productivity
◀ Easy configuration for changing requirements
◀ Support for several brands of machine
◀ Simplicity of kiosk mode together with full embroidery lettering capabilities for supervisors.

The lettering kiosk provides a set of predefined design layouts and the ability to easily personalize them by modifying text and color. You can create your own layouts as well. Designs can be sent to machine from the kiosk via a single button press.

Operations summary

Here are some steps to get you up-and-running quickly with the lettering kiosk.

Configure the kiosk settings

1 Run the EmbroideryStudio software:
   ◀ You need the Kiosk Element enabled.
   ◀ There is no special setting required for kiosk mode.
2 Configure the kiosk design layouts:
   ◀ Located under C:\Program Files\Wilcom\EmbroideryStudio_e4.0\Kiosk\Designs
   ◀ Set palette colors in the design layouts to match the thread colors and needle assignments used on your machines. See Set up thread colors for details.
   ◀ Check the fonts and stitch settings being used.
3 Configure the machine connections for the kiosk:
   ◀ Select **Setup > Connection Manager Setup**.
4 Configure the kiosk password:
   ◀ Select **Setup > Options > Kiosk**.
   ◀ Enable 'Lock Kiosk'.
   ◀ Set a password.
5 Configure character count limits. See Configure kiosk character count limits for details.

Switch to and from kiosk mode

1 To switch to kiosk mode, select menu command **Window > Kiosk…**
2 Type the kiosk password to enter into kiosk mode.
3 To close the application while in kiosk mode, click on the red **X** button in upper right corner.
   When you restart EmbroideryStudio, it will automatically re-start in kiosk mode directly.
4 To return to the EmbroideryStudio screen, click **Exit Kiosk** and key in the password if prompted.

Operate the software in kiosk mode

1 Select a layout from the design chooser.

2 Key in a name. Lettering adjusts to fit the allowed space. By default, a maximum of 16 characters is allowed. See Configure kiosk character count limits for details.

3 Change fonts by selecting a different design layout.

4 Select a thread color.

5 When finished, click a button to send the design to the machine:

   ◀ Stitching starts and ends at the bottom center of the allowable embroidery area.

   ◀ The design is auto-rotated 180° for the machine, according to connection settings. See Set up machine connections for details.

   ◀ A machine file is created and sent to the folder set in the **Connection Settings** dialog.

   ◀ The file name uses the text to be embroidered.

6 Click **Start Again** for the next name.

Operating modes

The **Lettering Kiosk** has all the capabilities and functionality of a commercial kiosk system together with EmbroideryStudio embroidery functionality.

Screen modes

In **Wilcom Workspace** mode, supervisors can use the full range of software capabilities to fine-tune settings. All adjustments can be saved

to a template ready for use when the software is run in kiosk mode. Onscreen help is available via the **Help** menu.

Kiosk screen mode

A password configuration setting allows supervisors to bypass the EmbroideryStudio screen and run the software in kiosk mode by default.

Operators normally work in this screen and never need to leave it. In fact, they cannot exit without, optionally, a supervisor password.

Kiosk mode includes a 56-color default palette together with a number of packaged designs. However, in practice you will want to limit the palette to the colors available on your machines. The screen is divided into three functional areas apart from the banner at the top.

Choose design panel

The **Choose Design** panel is positioned on the left side. It contains a set of predefined design layouts to choose from. It is easily extensible with other supervisor-created designs.

Working design area

A working design area in the middle is optimized for 1366 x 768 resolution. It includes a dotted line indicating the maximum stitching boundary.

Customization panel

The customization panel on the right allows the operator to easily customize designs by changing color and text of the selected layout. The supervisor can pre-configure the number and values of standard colors to match the thread color setup on the machines. Custom designs can be sent to one of several attached embroidery machines.

Send to machine

Machines are pre-configured by the supervisor – typically up to 6. Color-coded buttons easily identify machine by number and machine name. The supervisor can set color-coded icons for each machine brand. For example:

◀ Brother - Cyan
◀ Barudan - Navy Blue
◀ SWF - Red

Normal Kiosk operation

Once in kiosk mode, typical operation will flow as follows.

To operate the kiosk

◀ Choose a design layout from prepared templates in the left panel.

Choose a design layout

◀ Enter a new name in the text field and press **Enter**.

Enter new name

Default 9-color design palette

Send design to a machine
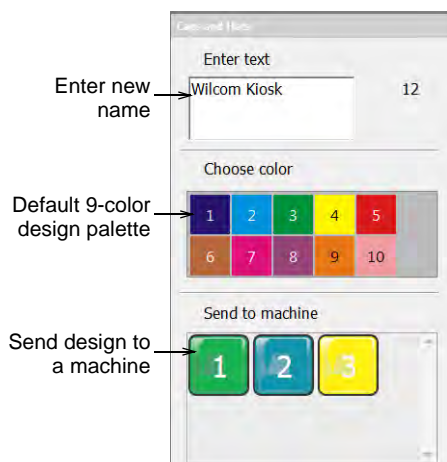
This text automatically replaces default text. By default, a maximum of 16 characters is allowed.

Input text replaces default text

◀ Click in design window and zoom in / out by the following means:
  ◀ Press **1** for actual size.
  ◀ Press **O** to show all.
  ◀ Use the mouse scroll wheel to zoom.
  ◀ Click **Start Again** to return to default view.
◀ Choose a thread color from the list of available colors.
  You can switch layouts and colors as desired and text will be preserved.

Template switched

◀ When you are satisfied with the design, press a **Send to Machine** button. A separate button is present for each machine configured on the system.

◀ Press **Start Again** to create another design. The current design is automatically saved to the watching folder with a filename equal to text name.

Note: If the operator does not press **Start Again** but instead selects a new design layout, the new design overrides the current one, preserving any typed text.

◀ To exit kiosk mode altogether, press the lock icon. Normally you are prompted for a supervisor password.

Related topics...

◀ Set up machine connections
◀ Configuration options for supervisors

Troubleshooting long descenders

Some characters may extend slightly beyond the allowable stitching area. This usually happens with script fonts or characters with long descenders or ascenders such as the 'k' in this example. This problem is easily fixed by adding a space after the final character.

Long descender extends beyond stitching area

Add space after final character

Creating two-line lettering

Kiosk mode allows two-lines of text to be entered and edited. The text box in the control panel supports single- or multi-lines depending on the selected layout. Two-line layouts need to be predefined and saved to the designs folder. When using a multi-line layout, the first **Enter** keypress

will create another line. The next will confirm text entry as for a single-line layout.

Edit two-line design layout
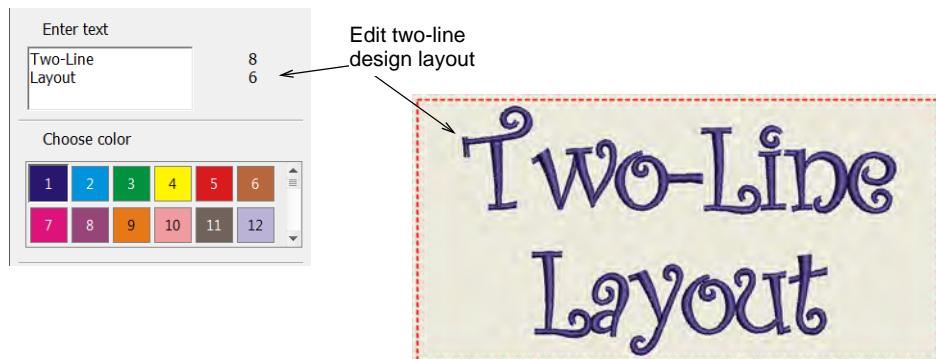
Note: If you switch design layouts, the system will attempt to preserve user-entered text between single- and multi- line designs. For example, switching from single to double, the original line of text will be copied to the first line. The second will be empty.

Personalizing monograms

The lettering kiosk also supports customization of monogram objects. Only text can be changed in **Kiosk** mode. Monogram templates can be created and added to the kiosk.

Personalize monogram text

Configuration options for supervisors

When first running EmbroideryStudio e4, supervisors have access to EmbroideryStudio operations. In this mode, they can use the full range of software capabilities to fine-tune settings. Primarily, supervisors are concerned with:

◀ Creating a password for the kiosk
◀ Setting up machine connections
◀ Setting up thread colors
◀ Configure kiosk character count limits

Create kiosk passwords

> Use Standard > Options to access application options for kiosk and other settings.

Supervisors can lock the kiosk to protect against unauthorized use. They can later temporarily unlock the kiosk in order to edit designs or change other settings.

To create a password for the kiosk

1 Click the **Options** icon or select **Setup > Options**. Click the **Kiosk** tab.

Tick to lock kiosk and activate password

Enter password for kiosk access
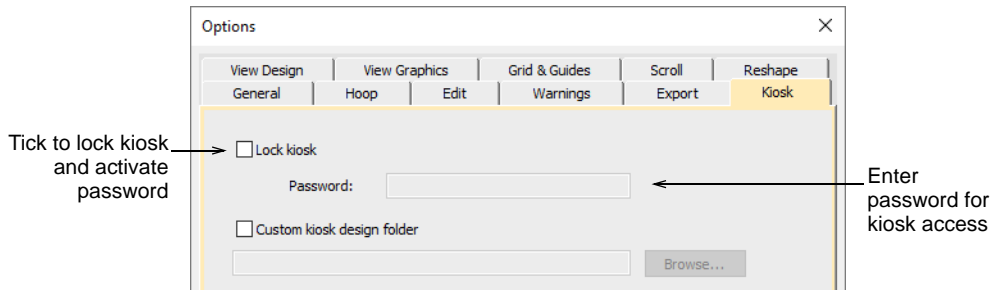
2 Enter a secure password and click **OK**.
3 Select **Window > Kiosk** start the kiosk. You will be prompted to enter the password.

Enter password for kiosk access
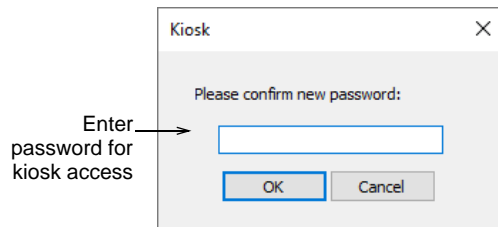
Note: You can return to **Options** dialog at any time to change or remove password protection. If you forget the password, you will need to run the Revert program from the EmbroideryStudio program group to restore factory defaults.

Run Revert to restore defaults
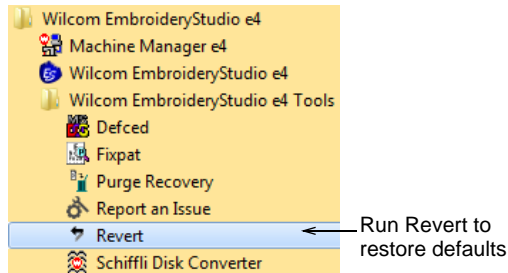
Set up machine connections

Connection Manager allows you to connect to most later model machines. These machines often require files to be placed in a specific network location or 'watching folder'. Once set up in EmbroideryStudio, a single click from the kiosk is sufficient to send the design to machine. Each configured machine:

◀ has a unique name and assigned button

◀ has a unique folder to which designs can be sent so they can be accessed from the machine control panel or third-party connection software.

To set up machine connections

1 Select **Setup > Connection Manager Setup**.

Click to create a new connection
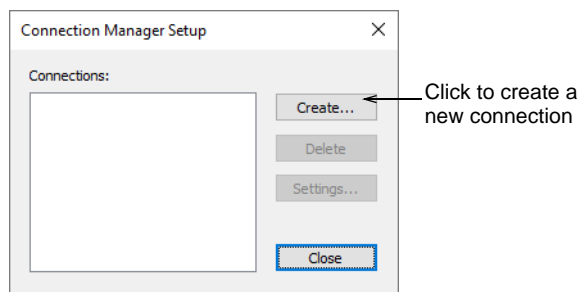
2 Click **Create** to set up a connection. The **Connection Settings** dialog opens.

Select connection type

Enter unique machine name

Choose a color to identify the machine

Set 'watching folder'

Select file type required by machine

Tick if the machine is to be used for cap production
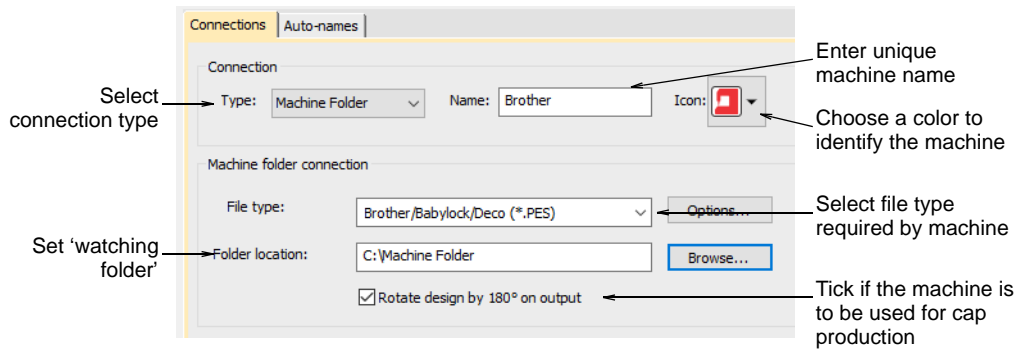
3 Make sure the connection type is set to 'Machine Folder'. Watching folders should already have been set up for each machine on the network.

4 Enter a unique machine name – e.g. 'Brother PR600 Mach 1'.

5 Choose a colored icon from the droplist to identify the machine in kiosk mode.

6 Select the file type required by the machine. Each machine type uses a different file format:

Machine	Format
Brother	PES
SWF	DST
Barudan	U??

7 If the file type requires it – e.g. PES – click the **Options** button to preset file options such as version type.

8 Enter or browse to a folder location on the network or PC which has been set up for the specific machine. When you output a design, **Connection Manager** saves it to this folder in the specified file format.

9 If the machine is intended for cap designs, tick the **Rotate design by 180°** option.

10 Click **OK** when complete.

11 Repeat as many times as you have machines to connect. Connections can be edited or removed at any time.

Delete or edit connections as required
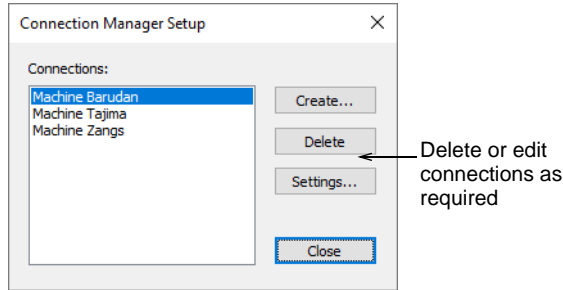
New machine connections appear as prominent buttons in the customization panel of the kiosk.

Color-coded machine buttons
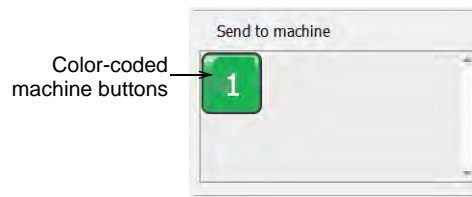
Set up thread colors

Use Standard > Open to open an existing design.

Use Standard > Save Design to save the current design. Right-click to open the Save As dialog.

Thread colors are set up for each design layout. All three sample designs need to be edited according to the requirements of your machine setups.

To set up thread colors

1 Click the **Open** icon. The **Open** dialog opens.
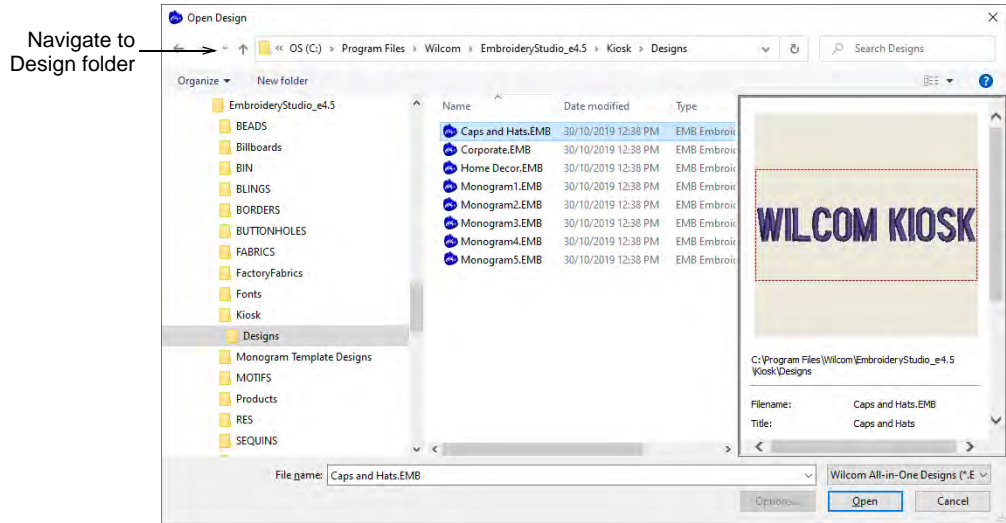
Navigate to Design folder

2 Navigate to the **Designs** folder of your EmbroideryStudio e4 installation:

C:\Program Files\Wilcom\EmbroideryStudio_e4.0\Kiosk\Designs

Alternatively, specify your own folder.

3 Select a design to edit and click **Open**.

4 Use the **Color Palette** tools to add or remove colors according to the thread setup on your machine/s.

Add or remove colors

Open Editor

5 Open the **Threads** docker and select your thread chart.

Click to open thread charts →

Assign preferred thread chart/s
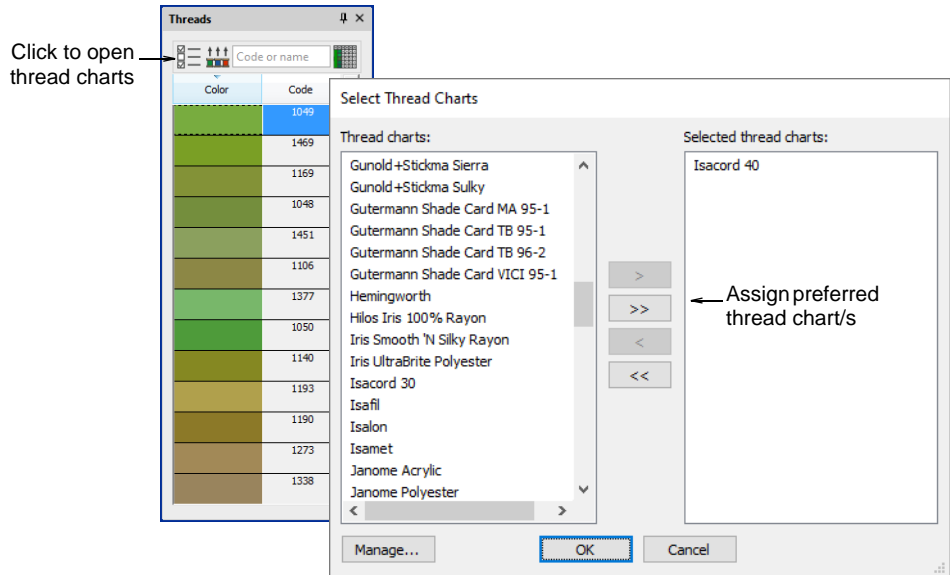
6 Assign threads to the palette with the **Match All** button. Alternatively, select threads corresponding to the thread setup on your machine, and assign these. The design layout defaults to the first color in the palette. The tooltip tells you the corresponding thread of each color.

Default color

7 Click **Save** to save the file in the design folder. The modified palette for this design will appear in the kiosk when you next run it.

Related topics...

◀ Change design location

Configure kiosk character count limits

> Use Standard > Options to access application options for kiosk and other settings.

Different scenarios may lead to variations in the number of characters allowed. The commercial requirement is for 16 characters per line, but the software allows you to change that limit. For example, maximum characters when buying online may be limited to 10, while baby-size caps may be less than 16. Optionally, the supervisor can limit the number of characters allowed in kiosk mode.

Note: Spaces between words count as characters. However, extra spaces are allowed at the start and end of a line without compromising the character count.

To configure the kiosk character count limit

◀ Click the **Options** icon or select **Setup > Options**. Click the **Kiosk** tab.

Tick to restrict text length → / Set character limit
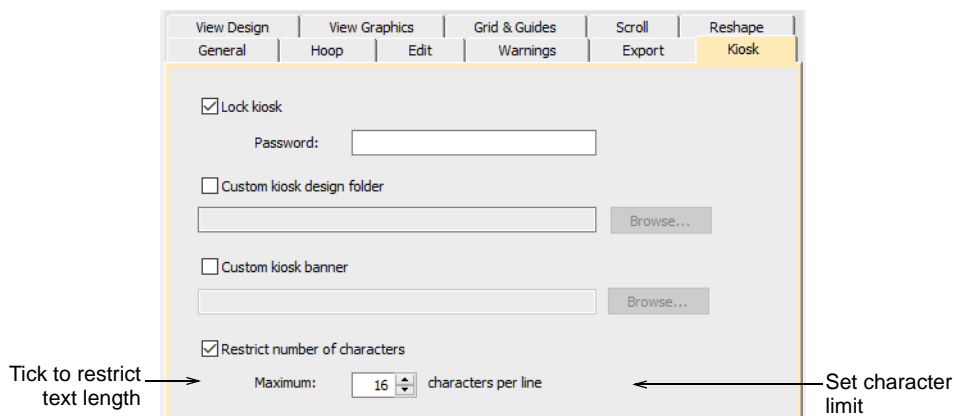
◀ Tick the **Restrict number of characters** option and set the maximum number of characters – e.g. 16.

When the number of characters is limited by this option, the kiosk shows the number used vs the number available – e.g. '5 / 16'. Where a two-line design is selected, the limit is shown for each line.

Enter text

Two-Line	8
Layout	6

Kiosk shows number used vs number available per line

Choose color

1	2	3	4	5	6
7	8	9	10	11	12
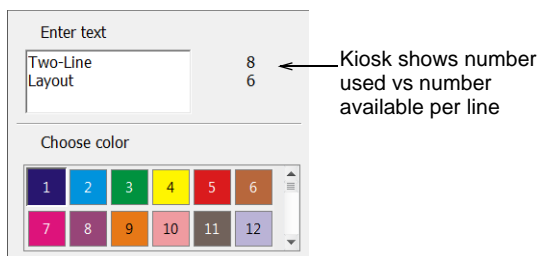
Related topics...

◂ Troubleshooting long descenders

Change design location

> Use Standard > Options to access application options for kiosk and other settings.

The default kiosk design folder is located within the EmbroideryStudio e4 folder structure. This may not be convenient for you if you are dealing with numbers of custom designs. You can easily change the folder location to any on your kiosk hard drive or network. If you have more than one kiosk set up, they can all reference the same design folder.

To change the design location

◂ Click the **Options** icon or select **Setup > Options**. Click the **Kiosk** tab.

View Design	View Graphics	Grid & Guides	Scroll	Reshape
General	Hoop	Edit	Warnings	Export	Kiosk

☐ Lock kiosk

Password:

☑ Custom kiosk design folder

Tick to activate custom Design folder → C:\My Kiosk Designs   Browse...   ← Browse for folder location

☐ Custom kiosk banner
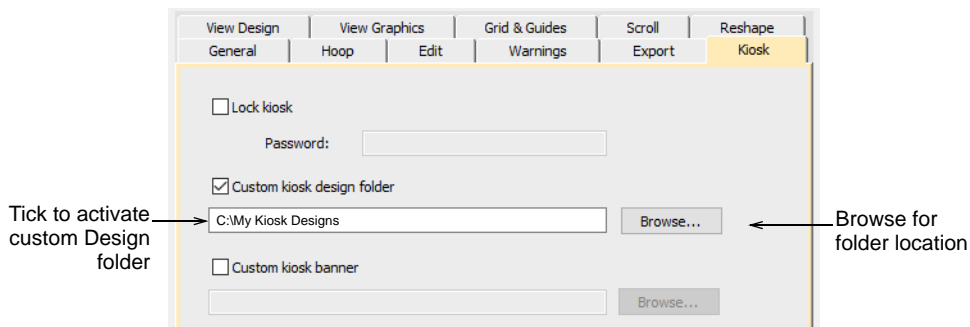
Browse...

◂ Tick the **Custom kiosk design folder** option and browse for the folder on your local drive or network. This then becomes the default

kiosk design folder. Any EMB designs kept in this location will appear in the kiosk design chooser.

Customize kiosk banners

> Use Standard > Options to access application options for kiosk and other settings.

Like the kiosk **Design** folder, the default kiosk banner is located within the EmbroideryStudio folder structure. If you want to modify the banner in any way – e.g. with a specific location name – it is a simple matter to access the banner and update it. Alternatively, you can copy the modified banner to a separate location on your kiosk hard disk or network location and reference it there. If you have more than one kiosk set up, they can all reference the same banner.

To customize the kiosk banner

1 Navigate to the 'Kiosk' folder of your EmbroideryStudio e4 installation:

    C:\Program Files\Wilcom\EmbroideryStudio_e4.0\Kiosk\

    Here you will find the default kiosk banner – dimensions 1200 x 100 pixels.

2 Customize the banner as required:
    ◀ Either replace the current image with one of the same dimensions.
    ◀ Edit the current banner in any graphics or paint program and save to the same location.
    ◀ Copy the banner to the same or another location and edit as desired.

    If you move the banner to another location, you need to update the software settings as follows:

3 Click the **Options** icon or select **Setup > Options**. Click the **Kiosk** tab.

Tick to activate custom banner

Browse for folder location
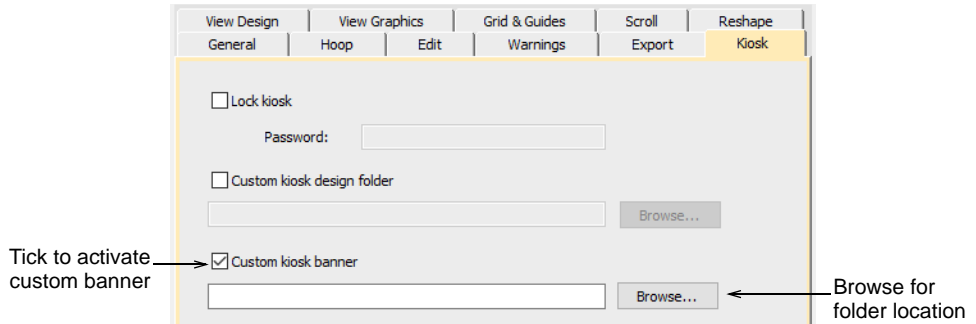
4 Tick the **Custom kiosk banner** option and browse to the folder on your local drive or network.

Navigate to folder location

Select custom banner
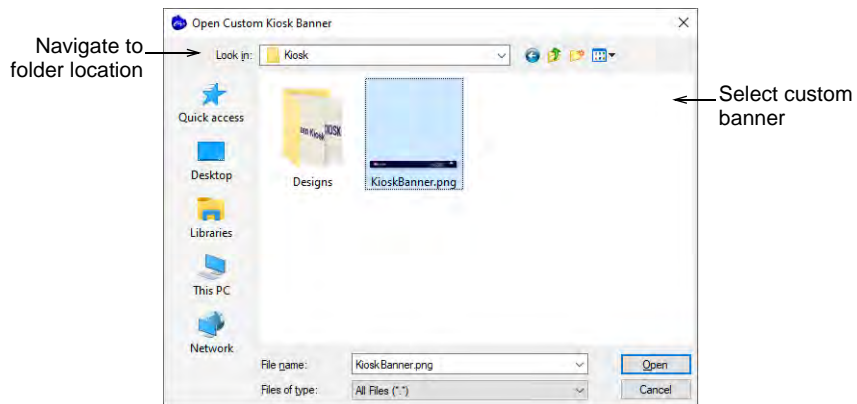
5 Select the custom banner file and click **Open**. This then becomes the default banner which the kiosk will reference.

Creating custom design layouts

Various techniques are available to add your own design layouts to EmbroideryStudio.

Create new layouts from old

Use Standard > Open to open an existing design.

Use Standard > Save Design to save the current design. Right-click to open the Save As dialog.

To create custom design layouts is not very different to setting up thread colors. The simplest approach is to base a new design on an existing one in order to preserve stitch settings and design scale. You can change colors, fonts and stitch settings as required.

To create a new layout from an old one

1 Click the **Open** icon. The **Open** dialog opens.
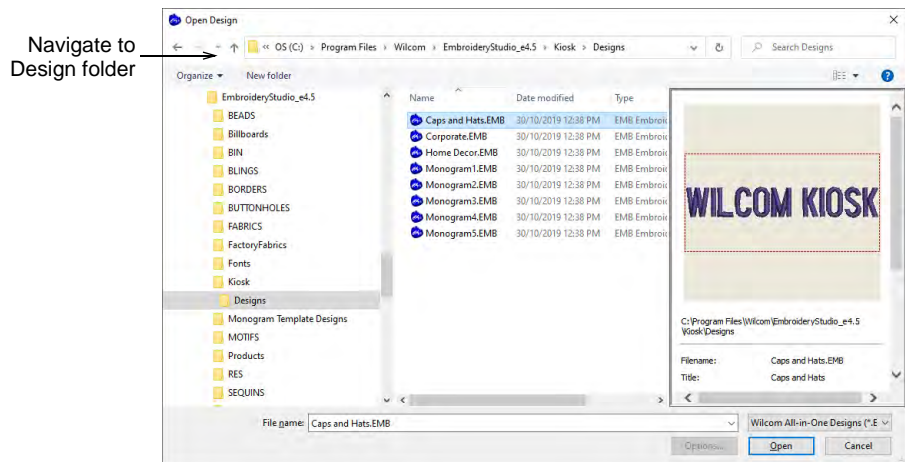
Navigate to Design folder

2 Navigate to the **Designs** folder of your EmbroideryStudio e4 installation:

C:\Program Files\Wilcom\EmbroideryStudio_e4.0\Kiosk\Designs

Alternatively, specify your own folder.

3 Select a design to edit and click **Open**.

4 Before you do anything else, select **File > Save As** and save the design under a different name.

5 Double-click the design to open its properties.

Edit default text →

Choose font from droplist →
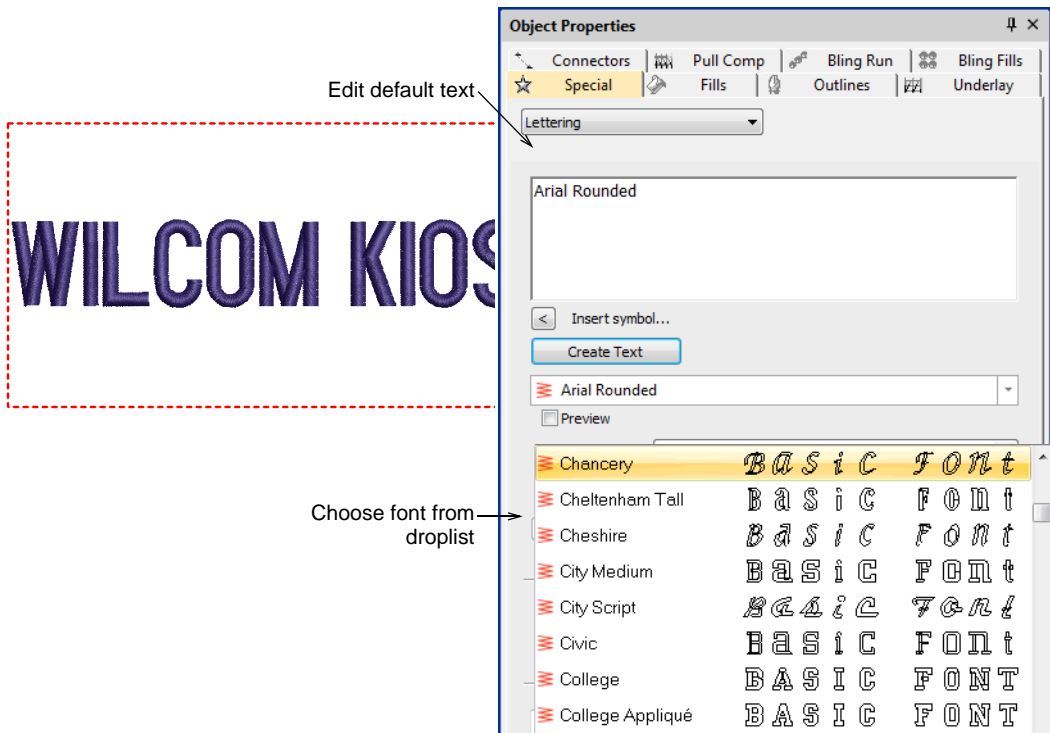
6 Edit the default text and select an alternative font from the droplist as desired.

7 Click the **Update Text** button to view the result on screen.

8 Change default thread color as desired. The design will appear in the kiosk design chooser when you next run it.

Related topics...

◀ Change design location

Create layouts based on templates

Alternatively, you have access to complete EmbroideryStudio capabilities to create designs from scratch. Onscreen help is provided via the **Help** menu.

To create a layout based on a template

◄ If you are creating a design from scratch, use the **File > New from Template** command.
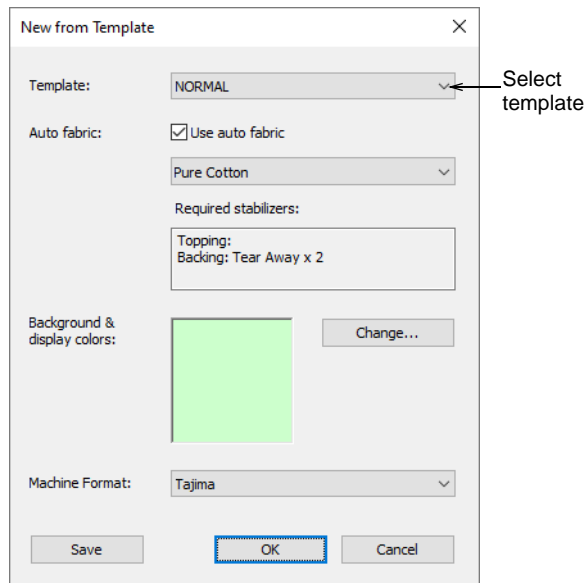
Select template

◄ Select a kiosk template if you have set one up. For example, you may set up your template to include a stitching boundary defining the area

to work within, say, for cap designs. This can be drawn in **CorelDRAW Graphics**. You might also want to include a product image.

Kiosk stitching boundary
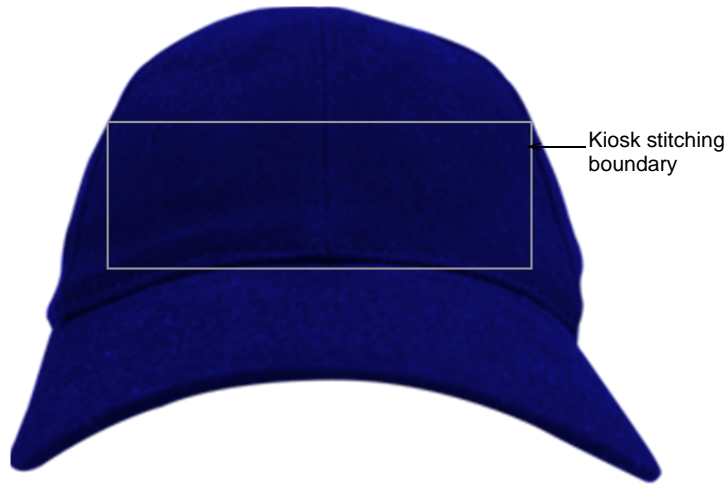
◀ Select the **Lettering** tool and create the text you require. Adjust settings such as font, dimensions, etc.

Use 'Fixed Line' baseline
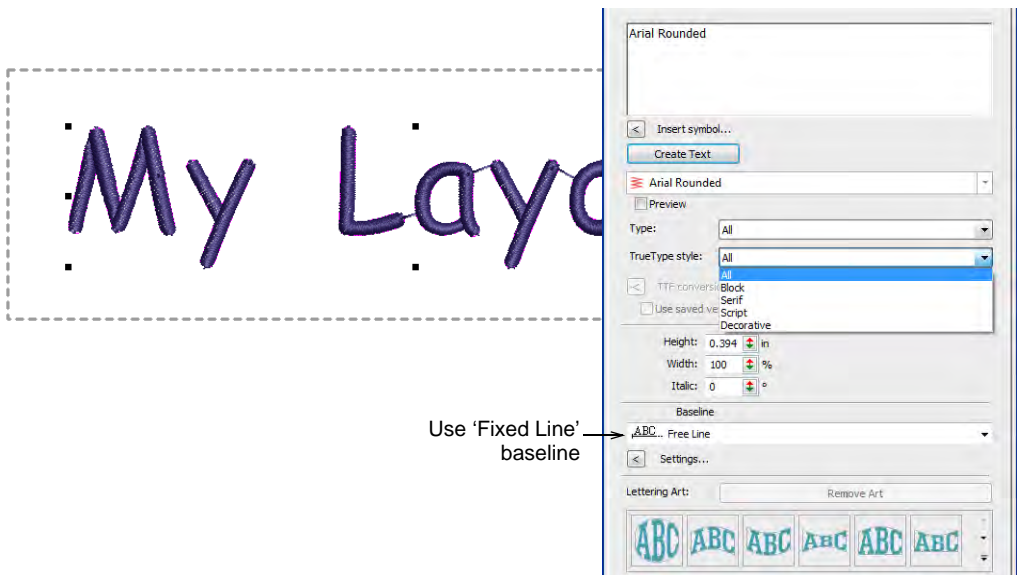
Note: To ensure that text remains within the allowable boundary, it is safest to use the **Fixed Line** baseline.

◀ Change thread color as desired.
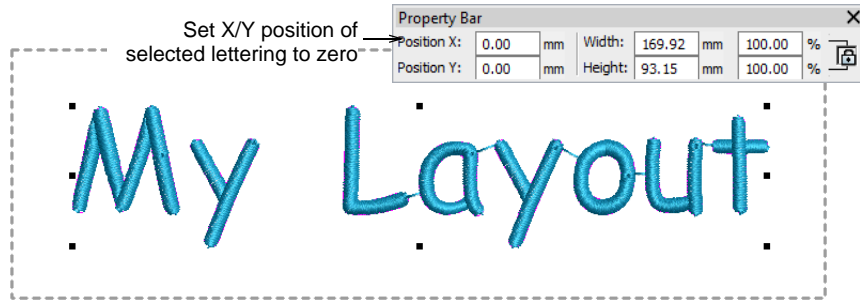
Set X/Y position of
selected lettering to zero

Property Bar								✕
Position X:	0.00	mm	Width:	169.92	mm	100.00	%	
Position Y:	0.00	mm	Height:	93.15	mm	100.00	%	

My Layout

◀ Set the lettering object position to zero (0,0) as shown. This will ensure that the lettering layout automatically centers itself in the allowable stitching area.

◀ When you are happy with the result, click **Save**.

The file must be saved to the EmbroideryStudio e4 **Designs** folder:

C:\Program Files\Wilcom\EmbroideryStudio_e4.0\Kiosk\Designs

Alternatively, set your own designs folder.

◀ The design will appear in the kiosk design chooser when you next run it.

Related topics...

◀ Set up thread colors
◀ Change design location

Create layouts with included design motifs

> **A** Use Toolbox > Lettering to create embroidery lettering directly on-screen. Right-click to access settings.
>
> Click Standard > Import Embroidery to import embroidery design file into current design.

For special occasions, you may want to create a kiosk layout which includes a special motif – for instance, St Patrick's Day, with a Shamrock at the start of the lettering. These motifs need to be about the size of a capital letter. Together with the lettering, they need to fit within the allowable stitching boundary.

To create a layout with an included design motif

1 Create a layout from scratch or based on an existing layout. See above.

2 Import a suitable design motif using the **Import Embroidery** command. See main help system for details.

3 Place the motif and key in the default lettering.

4 Double-click the lettering and set left justification in **Object Properties**. Alternatively, if you place the motif on the right, set justification to right.

Select left justification

5 When you are happy with the result, click **Save**.

The file must be saved to the EmbroideryStudio e4 **Designs** folder:

C:\Program Files\Wilcom\EmbroideryStudio_e4.0\Kiosk\Designs

Alternatively, set your own designs folder.

6 The design will appear in the kiosk design chooser when you next run it. The whole design, including motif and lettering, is auto-centered immediately after text is updated in kiosk mode.

Related topics...

◀ Change design location

Include design backdrops

> Use Color > Product Visualizer to choose a garment or product backdrop on which to position your decoration.

> Click View > Show Product to toggle current product display. Right-click for Product Visualizer settings.

> Use Zoom > Zoom to Product to view the entire product in the design window.

It's a simple matter to include a design backdrop to your design layout – e.g. a cap.

To include a design backdrop

◀ Click the **Product Visualizer** icon. The docker appears.
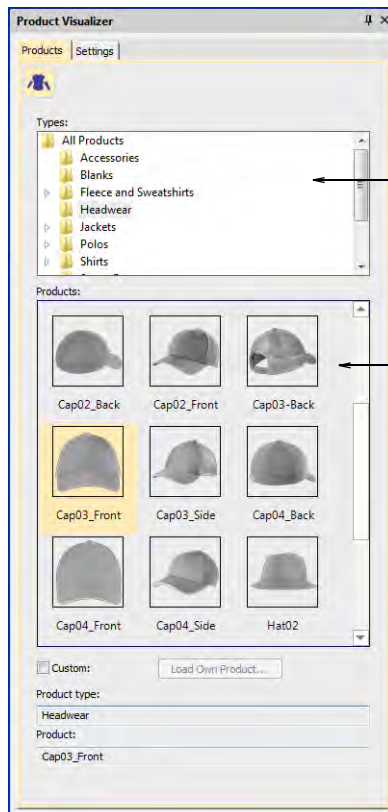
Select a product folder

Select product

◀ Select a product image – e.g. cap – and set color as desired.

◂ Set the lettering object position to zero (0,0) as shown. This will ensure that the lettering layout automatically centers itself in the allowable stitching area.

Set X/Y position of selected lettering to zero

Digitize start and end point at base of design
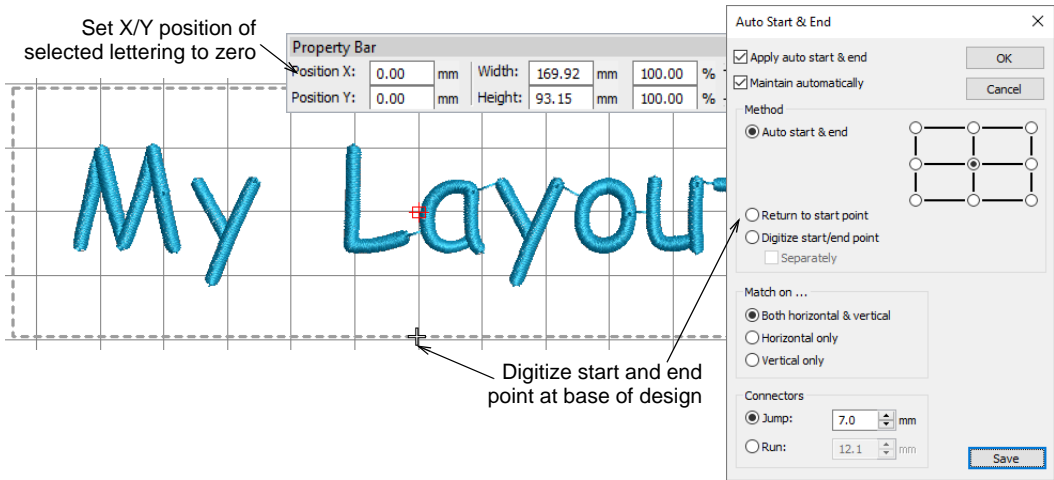
◂ As the lettering object and stitching boundary may not be in the correct position for the backdrop, click the **Auto Start & End** icon and digitize a start and end point as shown.

Note: The stitching boundary is locked in the template. It has to be unlocked to be moved.

◂ When you are happy with the result, click **Save**.

The file must be saved to the EmbroideryStudio e4 **Designs** folder:

C:\Program Files\Wilcom\EmbroideryStudio_e4.0\Kiosk\Designs

Alternatively, set your own designs folder.

◀ The design will appear in the kiosk design chooser when you next run it.

New design listed in kiosk chooser ——▶

Related topics...

◀ Change design location
◀ Visualize products

PART VIII
DIGITIZING WITH ARTWORK

There are two broad categories of artwork file, both of which can be imported into EmbroideryStudio 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 bitmaps

This section describes how to prepare images for automatic digitizing. It explains how to insert bitmap images as well as how to edit them, including cropping, editing in third-party applications, and smoothing. It also explains how to prepare both outlined and non-outlined images. See Digitizing with Bitmaps for details.

Digitizing with vectors

This section describes how to create drawing objects using the drawing tools as well as how to import them from third-party applications. It also explains how to merge, trim and split overlapping drawing or embroidery objects using the shaping tools. See Digitizing with Vectors for details.

Automatic digitizing

This section describes how to automatically convert bitmap images to embroidery objects and complete designs, as well as how to create embroidery from grayscale images. See Automatic Digitizing for details.

Chapter 32
Digitizing with Bitmaps

EmbroideryStudio supports the automatic and semi-automatic digitizing of both bitmap images and vector graphics. The quality of the resulting designs greatly depends on the type and quality of the original artwork. Generally speaking, vector graphics preserve the picture quality when resized, whereas bitmap images cause problems of pixelation and image degradation when enlarged or scaled down. You can 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'. In order to make bitmap images more suitable for automatic digitizing, EmbroideryStudio provides image processing capabilities.
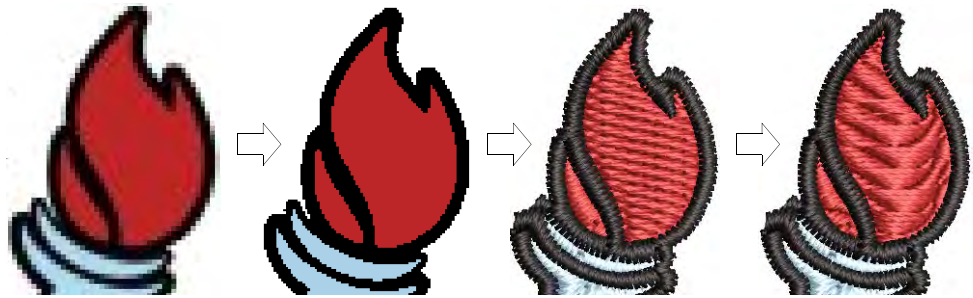
Note: CorelDRAW Graphics includes the latest CorelDRAW® Graphics Suite drawing tools. These offer many sophisticated techniques for drafting outlines and shapes on screen. Vector graphics so created can be directly converted to embroidery objects or even entire designs. For a full description of the CorelDRAW® tools, refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **Help** menu.

Choosing suitable artwork

For both manual and automatic embroidery 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).

| Clean image with well-defined outlines | Clean image with well-defined color blocks | Complex image, needs editing to remove background and improve outlines |
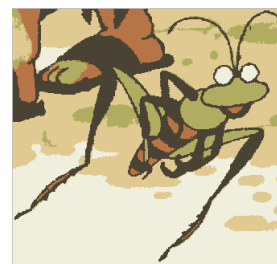
Best results are produced with images of the type found in clipart libraries or created from scratch in CorelDRAW®. EmbroideryStudio can work with images from other sources but they require some preparation. This is because most commonly available images are **not** made up of solid colors. Scanners introduce noise, while graphics packages perform 'dithering' and 'anti-aliasing' to improve image print quality.

Photographic images

Embroidery 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. For best results, use sharp images with well-defined subjects and contrasting shades.

You can also use **Photo Flash** to create embroidery from photographs or other images, color or grayscale. **Photo Flash** designs consist of rows of stitches of varying spacing settings. The effect resembles the output of a line printer. See also Auto-digitize with Photo Flash.

An extension of **Photo Flash**, you can also use **Color PhotoStitch** to create embroidery from photos. While **Photo Flash** 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. See also Auto-digitize with Color PhotoStitch.

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 embroidery 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 all fall into this category.

Noisy images typically need to be prepared by reducing the color count and sharpening the outlines. See also Preparing artwork for scanning.
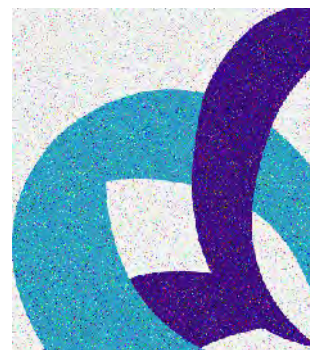
Image containing a lot of scanner 'noise'

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.
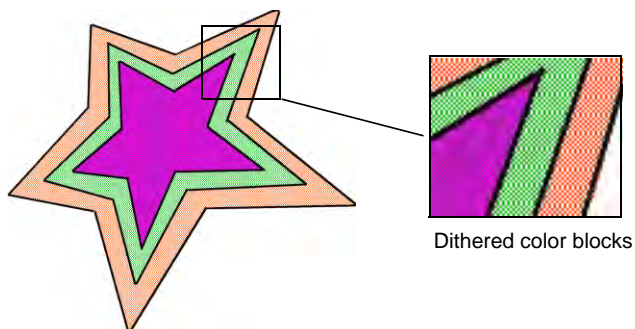
Dithered color blocks

Like noisy images, dithered images need to be color-reduced before use. Be aware, however, that while EmbroideryStudio can process dithered colors within a defined outline, it does not work so well with non-outlined images.

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.

Color depth

When loaded into EmbroideryStudio, images are automatically reduced to 256 colors or less. The main reason is to provide acceptable performance for automatic digitizing.

256 colors sounds a lot for embroidery needs and, in practice, a 256 color image may look quite similar to a 24-bit RGB image. The appearance and quality differences can only be observed by zooming in. The 256-image will be dithered to improve its appearance at a distance. However, this feature is also responsible for single color pixels and small areas, which effectively create image noise. This in turn can affect the quality of automatically generated embroidery.

Guidelines

Bear in mind the following key points when selecting artwork for auto-digitizing:

◀ Use 300 DPI high-resolution images, NOT low-res 96 DPI.
◀ Do not use anti-aliasing.
◀ Do use PNG format, not JPG.
◀ Do use transparent backgrounds.
◀ If the image does not conform to these settings, return to the original vector artwork and generate a bitmap that includes them.

Image preparation techniques

Before converting artwork to vector graphics, you frequently need to clean it up. To work effectively, the **Convert** function requires solid color images as input. You can improve artwork with the bitmap editing tools.

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

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
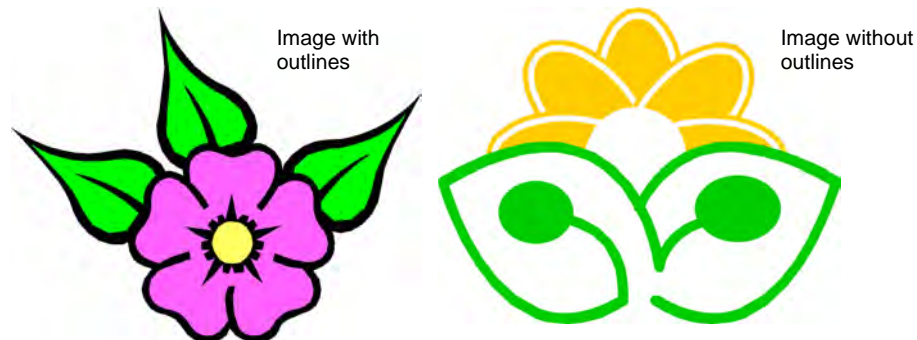
Image cleanup

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 processing. 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 any noise and anti-aliasing present. This in turn helps minimize the number of trims and color changes required in the resulting embroidery design. Color reduction should only be applied if the loss of detail does not affect the image shapes. Before 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.

Before color reduction

After color reduction
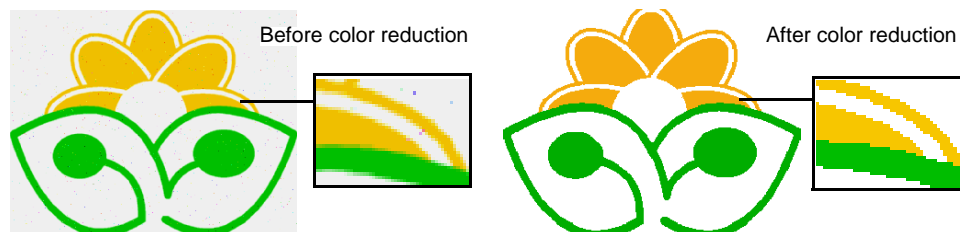
If you are scanning images, make sure you scan them correctly for best results. See also Preparing artwork for scanning.

Image scanned in RGB color mode, then colors reduced to 6

Image scanned in 256 color mode, then colors reduced to 6

Be aware that some techniques are better for removing noise and anti-aliasing but not so good for processing dithering in non-outlined images. See also Choosing suitable artwork.
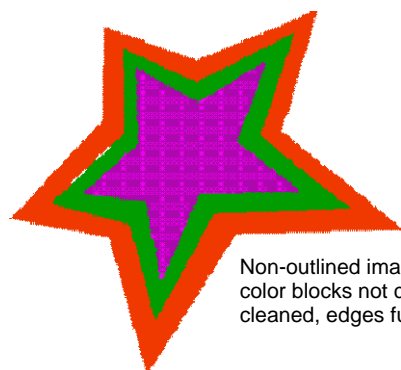
Non-outlined image – dithered color blocks not completely cleaned, edges fuzzy
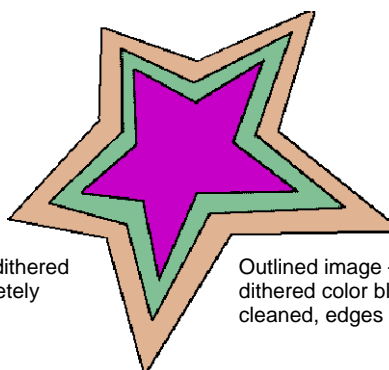
Outlined image – dithered color blocks cleaned, edges sharp

Outline sharpening

Outline sharpening means emphasizing outlines bordering distinct color blocks. These may have been indistinct in the original or made so by the scanning process. Outline sharpening is important for vectorizing because it makes it easier for EmbroideryStudio to identify areas for conversion to embroidery.

Before outline sharpening

After outline sharpening

Some images have solid outlines but they may be indistinct or incomplete. These need to be rectified with the **CorelDRAW Graphics** bitmap editing tools prior to vector tracing. Refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **Help** menu.

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 vectorization because it makes it easier for EmbroideryStudio to identify solid color blocks to become embroidery objects in the resulting design. It also cleans up blurred or mottled areas of color.

Image before noise filtering, mottled color

Image after noise filtering, single colors
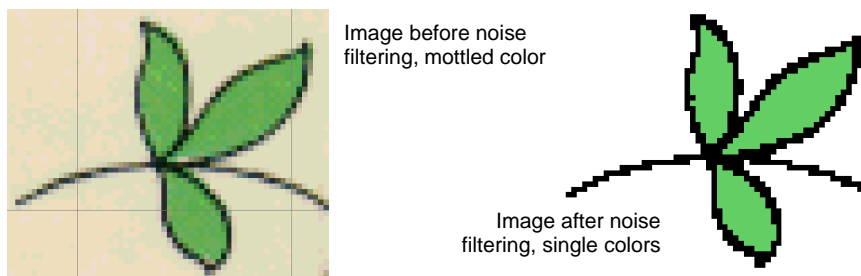
Image preparation summary

Action	Outlined image	Non-outlined image	Photograph
Scan artwork	• Scan in RGB mode • Use sharpening	• Scan in RGB mode • No sharpening	Scan in RGB mode
Scan line drawing	Scan in two color mode	-	-
Touch up graphics	• Crop • Add or edit outlines • Edit colors • Remove noise	• Crop • Edit image shapes • Edit colors • Remove noise	• Crop • Convert to grayscale • Remove background • Lighten or darken • Adjust contrast
Adjust bitmap	• Adjust lightness or darkness of outlines manually.	• Adjust lightness or darkness of outlines manually.	• Adjust lightness or darkness of outlines manually.

Action	Outlined image	Non-outlined image	Photograph
Prepare bitmaps	Adjust lightness or darkness of outlines. Automatically: • blend each outlined block into a single color • remove anti-aliasing, noise and dithering • sharpen outlines.	Reduce colors to a specified number. Automatically: • reduce each block to a single color • remove anti-aliasing, noise and dithering • remove colors less than specified area.	-
Vectorize bitmaps	CorelDRAW Graphics provides the latest CorelDRAW® drawing tools. These offer many sophisticated techniques for drafting outlines and shapes on screen. Refer to the electronic User Guide available via the Windows Start > Programs group. Alternatively, use the online help available from the Help menu.		
Convert vectors directly	EmbroideryStudio provides techniques for both converting vectors directly to embroidery as well as manual digitizing of prepared artwork. See Digitizing Shapes for details.		
Digitize automatically	• Manual • Auto-Digitizing • Instant Smart Design • Smart Design	• Manual • Auto-Digitizing • Instant Smart Design • Smart Design	• Photo Flash • Color PhotoStitch

Preparing artwork for scanning

If you have existing artwork, you can scan it in **CorelDRAW Graphics** with a WIA-compatible (Windows Image Acquisition) scanner using the 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.

With embroidery design, less is more. You don't 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. 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.

✐

Note: For a full description of how to scan images into CorelDRAW® Graphics Suite, refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **Help** menu.

Scanning resolution

Most scanners require you to enter scanning resolution information. Resolution determines the number of dots per inch (DPI) used to create an image. 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.

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 equivalent 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 equivalent 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. The color count can be reduced once the image is loaded into the software. EmbroideryStudio can use the extra information to produce a better image than one scanned at 256 colors.
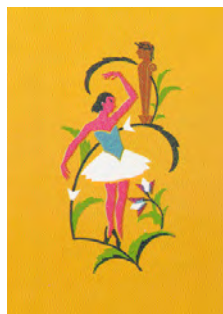
Scanned in 256 color mode
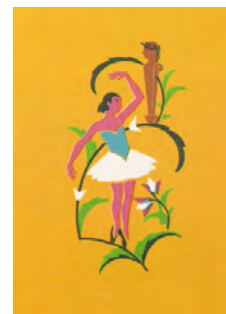
Scanned in RGB color mode (millions of colors)

◀ Do not scan color images in CMYK (Cyan, Magenta, Yellow, and Black) mode as this is only used for images that will be printed – colors may be different to RGB colors.

◀ If the image needs to be rotated, do so while scanning. Rotating 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. Sharpening accentuates these differences which makes the image edges more defined. It does not

increase image details but makes them more obvious. In general, use sharpening with well-defined outlines. Don't use it with non-outlined images.

Scanned with sharpening

Scanned without sharpening
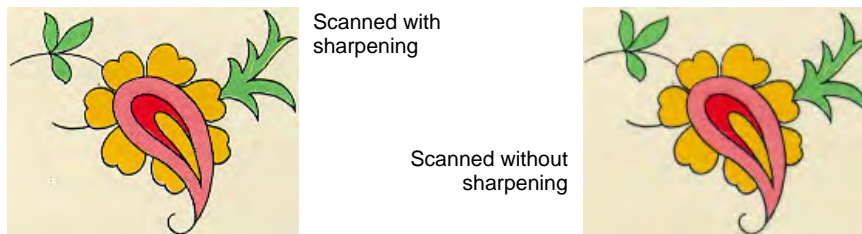
Loading bitmap artwork

Bitmap images of different formats can be scanned or 'loaded' into EmbroideryStudio 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.

Sample designs & artwork

EmbroideryStudio contains hundreds of ready-to-stitch designs, including attractive ornaments, samples and digitizing backdrops. Design

files (EMB 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 is to spend some time exploring these designs and getting to know what's available. EmbroideryStudio includes its own **Design Library** design management application to view and manage your embroidery designs. Alternatively, explore design folders using **File Explorer**. See also Design Management.

Navigate folder structure via navigation tree or address bar

![note icon]

Note: CorelDRAW® needs to be registered before it can be used by EmbroideryStudio. Registration gives you access to the latest CorelDRAW® updates. It also provides CorelDRAW® Standard Membership which gives you access to content – clipart, fonts, stock photos, templates – via Corel CONNECT.

![caution icon]

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.

Scan images

You can scan images directly into EmbroideryStudio for use as digitizing backdrops. The scanning feature in EmbroideryStudio allows you to use most WIA-compatible scanners. You can use any scanning software provided that it can save the image in one of the compatible formats.

![tip icon]

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.

To scan an image

1 Set up your scanner.

2 Prepare the artwork for scanning.

3 Select **File > Scan Graphic**.

4 Choose a scanning mode and resolution. 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.

5 Preview the image in the scanning program.

6 Select the area to be scanned and scan the image.

7 Save the scanned picture in a compatible format picture file to your **My Designs** folder.

![note icon]

Note: Scanned drawings are bitmaps and must be saved separately from the design file or they will be lost when you close the design.

Related topics...

◀ Fabric & product backgrounds

◀ Setting up scanners

◀ Save artwork

◀ Preparing artwork for scanning

Insert bitmap images

> Use Standard > Import Graphic to import artwork into current design as a backdrop for manual or automatic digitizing.
>
> Use View > Show Bitmaps to toggle bitmap images on or off. Right-click for settings.

Bitmap images of various formats can be imported or pasted into EmbroideryStudio for use as digitizing backdrops.

💡
Tip: If you are editing images in a third-party graphics application, you can copy and paste into EmbroideryStudio via the Windows clipboard.

To import a bitmap image

1 Click the **Import Graphic** icon or select **File > Import Graphic**.

Filter list as preferred
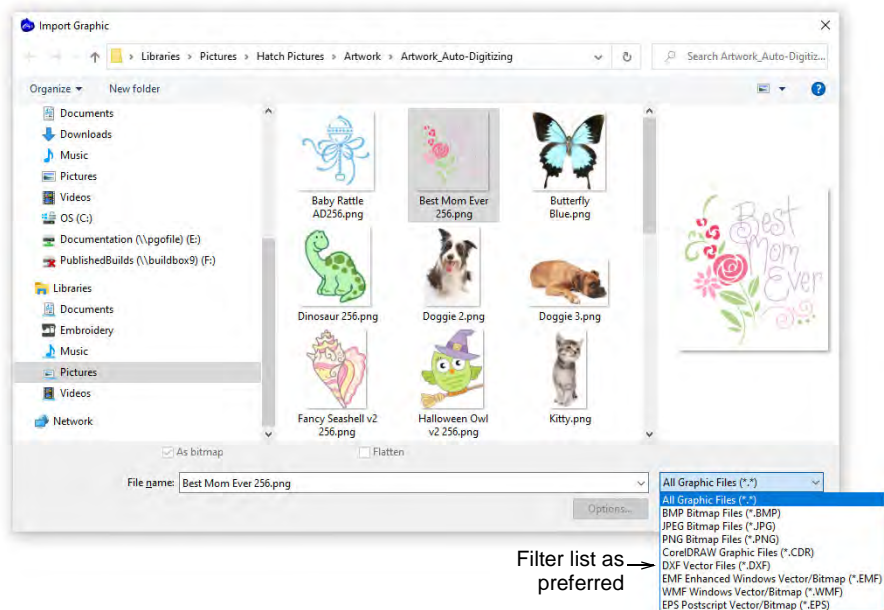
2 Navigate to the graphics folder. The dialog defaults to 'All graphic files' which displays all supported file types, bitmap and vector.

3 Filter the **Files of Type** list as required – e.g. 'BMP'.

Note: While 'All graphic files' includes both vector and bitmap formats, for native CDR and other vector file types, use the CorelDRAW® Graphics Suite import function.

4 Select a file and click **Open**.

5 Scale and transform the image on-screen or via the **Property** and **Transform** toolbars.

Scale and transform images like embroidery objects
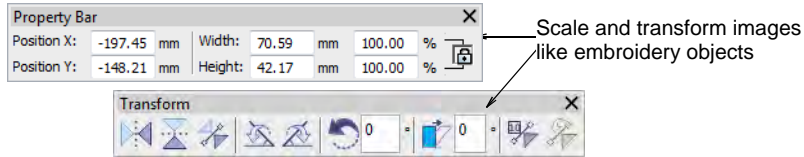
Tip: Use **Auto Trace To Vectors** to create vector outlines from bitmap images. You can then convert these to embroidery objects using a variety of input methods. **Auto Trace To Vectors** can find holes in shapes – both inside and outside boundaries are detected.

Related topics...

‹ Operating modes

‹ Auto-tracing bitmap artwork

‹ Supported machine types

Open graphic files directly

	Click Mode > Design Library to open the Design Library window from which to search and manage designs and job orders.
	Use Manage Designs > New From Selected to create new designs based on designs selected in Design Library.

Artwork can be opened in EmbroideryStudio in both vector and bitmap (raster) formats via **Design Library**. Samples of both file types are installed with EmbroideryStudio in the **Pictures** library as shown below.

Filter by graphic file
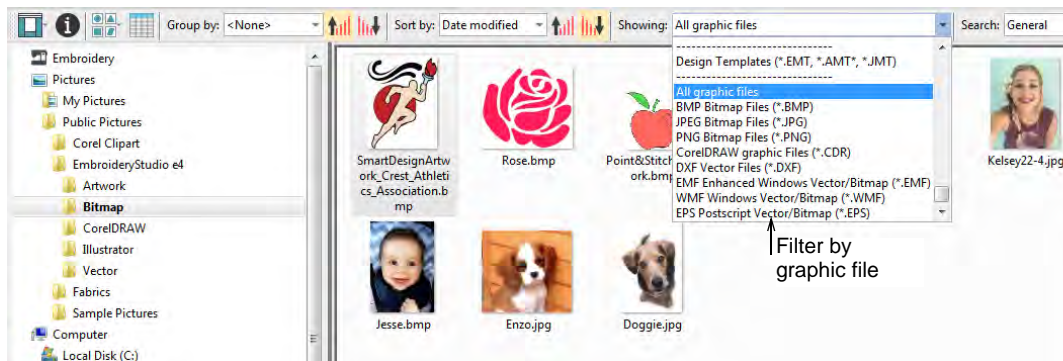
The **New from Selected** command can also be used to open graphics files, including Corel CDR. With CDR, a new file is opened in EmbroideryStudio before switching to CorelDRAW Graphics.

Related topics...

◄ Combining objects & designs
◄ Opening designs from Design Library
◄ Working with templates

Add & match image colors

You can manually match colors from an inserted bitmap or vector graphic to thread colors in selected chart/s. Alternatively, simply add raw image colors to the palette for later matching.

To add and match image colors

◀ Insert a bitmap image for use as a digitizing backdrop.

Default palette colors
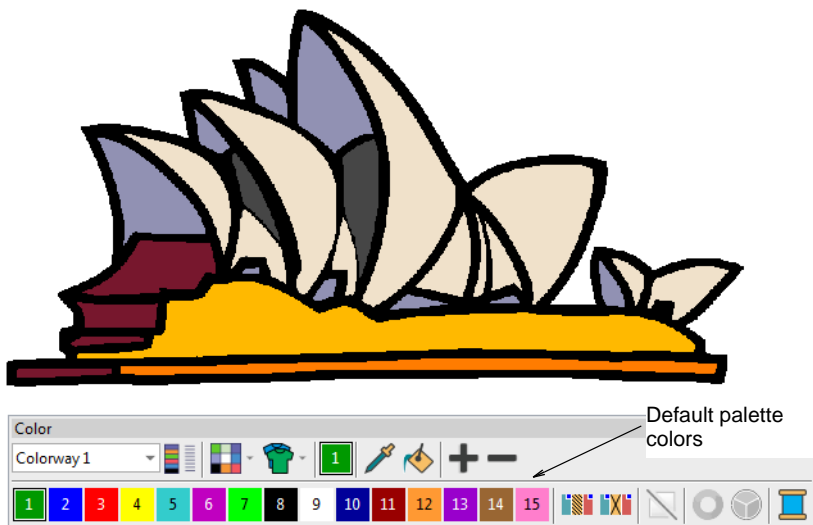
◀ Select **Graphics > Add Bitmap Colors**. The **Prepare Bitmap Colors** dialog opens by default.
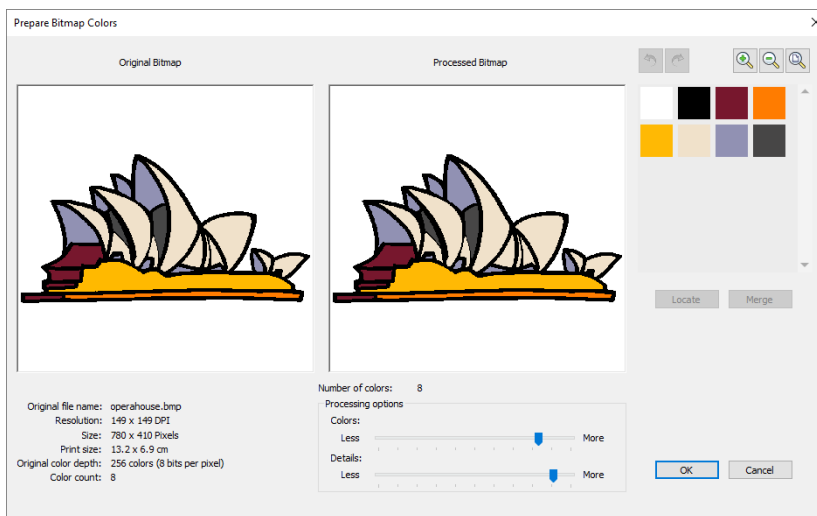
◀ Reduce design colors to the minimum necessary before adding to the color palette. Click **OK** to confirm.

◀ Selected colors are displayed in the **Add Bitmap Colors** dialog.

Colors read from bitmap

Default color palette

Click OK to add image colors to palette
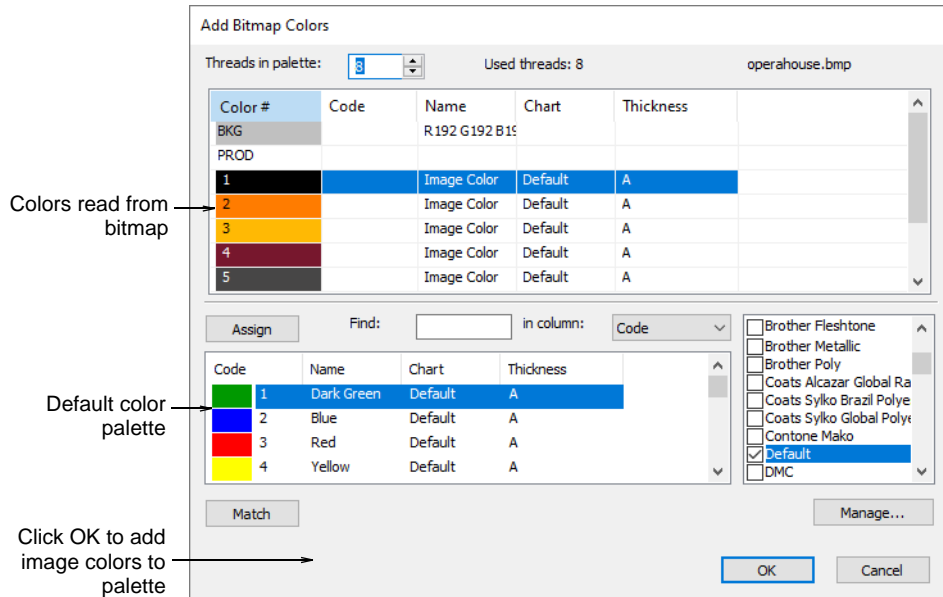
◀ To add the image colors directly to current colorway, simply click **OK**. The raw image (RGB) colors are transferred. These can be used as is and thread-matched at any time.

Image Color Default ◀— Raw image colors added to palette

◀ Alternatively, to make thread selections straight away, select the thread chart/s to use from panel.

◀ Select an image color and click **Match**. The system searches for the closest match in the selected chart/s and displays them in the thread color list.

◀ To assign the thread color, double-click or click **Assign**.

◀ Repeat until all colors you intend to use in the design have been matched.

Select color to match

Click to assign

Matched colors listed

Click to match

Select thread chart/s
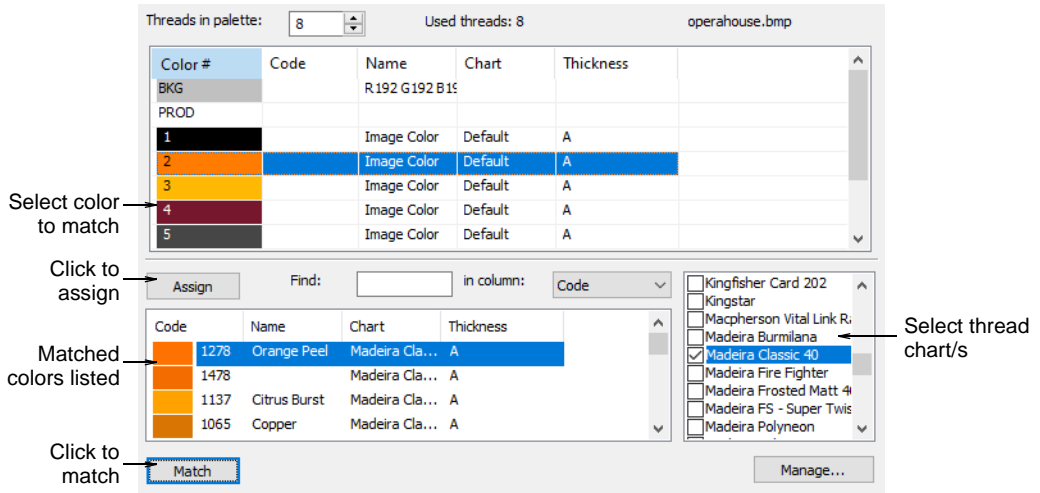
◀ Click **OK**. The selected threads are assigned to the current colorway.

Selected threads assigned to palette

⊘
Note: The maximum number of new thread colors which can be added to the color palette from a bitmap is 128.

Related topics...

◀ Preparing images for auto-digitizing
◀ Auto-digitize individual shapes
◀ Insert bitmap images

Preparing artwork for digitizing

EmbroideryStudio allows you to crop bitmap images prior to use. You can also open images directly in third-party bitmap editing packages or use in-built CorelDRAW® Graphics Suite. Within EmbroideryStudio you can set general properties such as size and position. You can also scale and transform bitmap images although it may be best to do this during scanning.

Note: CorelDRAW Graphics provides the latest CorelDRAW®
Graphics Suite drawing tools. These offer techniques for inserting and
manipulating bitmap images, including vector tracing. Vector objects can
then be converted to embroidery designs. See also Operating modes.

Image transparencies

Support is provided for transparent backgrounds in 24 bit and 32 bit
images.

Source bitmap with
transparent
background

Imported into
EmbroideryStudio

If an image contains a transparent background:

◀ The background is automatically excluded from auto-digitizing.
◀ The image is automatically cropped to its visible extents.

Caution: Avoid using images that contain semi-transparent or
transparent pixels **within** image color areas as these cause poor results
when reducing the color count. The resulting pixels may end up as holes
inside the image or significantly reduce color areas to the point where
they are unnecessarily removed from the embroidery results.

Crop bitmap images

	Use Auto-Digitizing > Crop Bitmap to crop bitmap artwork for use with auto-digitizing.
	Click Auto-Digitizing > Remove Crop to remove any crop areas applying to selected artwork.

> ⬚✓ Click Auto-Digitizing > Finalize Crop to make the cropping permanent. Once finalized, the cropping cannot be removed.

Before using bitmap images for design purposes, crop them to remove unnecessary detail and save processing time. EmbroideryStudio allows you to 'soft crop' images which means that you can redefine or remove the cropping area at any stage.

To crop a bitmap image

◀ Scan or import the image to use.

◀ Select the image and choose a cropping tool from the **Crop Bitmap** droplist. The same options are available under the **Graphic** menu.

Select cropping method
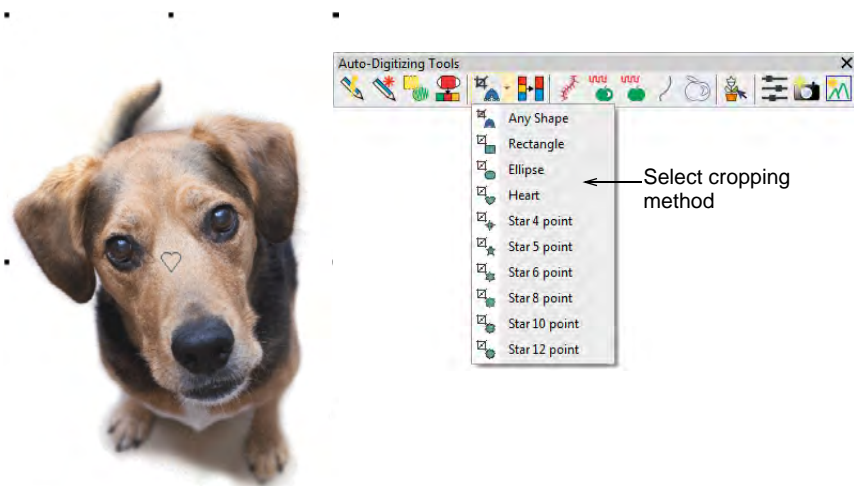
◀ Click and drag the selected shape around the area to be cropped. Alternatively, use the **Any Shape** method to digitize a cropping shape.
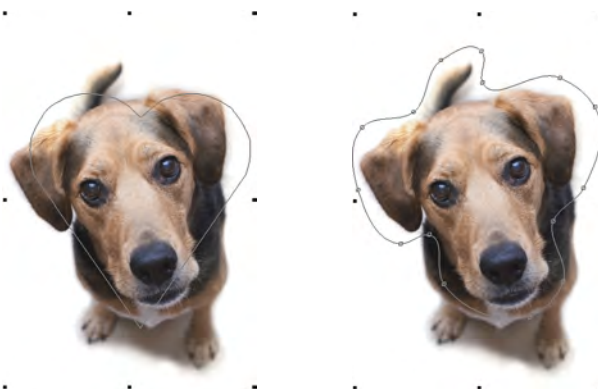
◀ Reshape or transform the cropping shape with the **Reshape** tool.
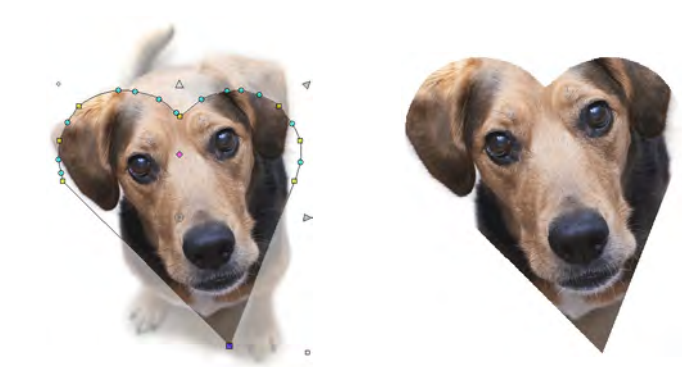
◀ Click **Select Object** or press **Esc** to close.

◀ To remove a cropping area, select all reshape nodes and press **Delete**.

◀ Use the **Graphics > Finalize Crop** command to crop an image to its new visible extents. When you create a cropped area, it is considered 'temporary' and can be reshaped at will. By using the **Finalize Crop** command, you make the crop permanent. The only way to go back is via the **Undo** command or by reinserting the original bitmap.

Related topics...

◀ Insert bitmap images

◀ Reshaping embroidery objects

Touch up bitmaps

Sometimes you need to edit bitmap images directly in a third-party graphics package. You would normally do this in order to eliminate backgrounds, flood-fill solid areas with color, add or reinforce outlines, or close gaps. From within EmbroideryStudio you can open images directly in MS Paint, Corel PHOTO-PAINT®, or Paint Shop Pro™. Images updated in this way are automatically re-imported into EmbroideryStudio.

To touch up a bitmap

1 Select the image.
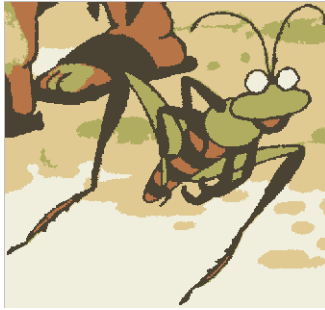
Background may be
cleaned and eyes
added

2 Select **Graphics > Edit Using >…**. The image opens in the select graphics package.

3 Edit the image and save.
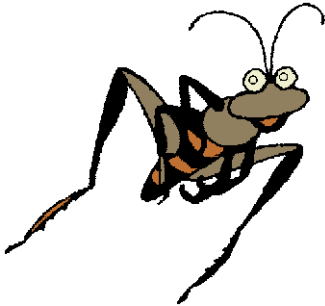
Background cleaned
and eyes added

Note: If you return to EmbroideryStudio before closing the image in the graphics package, it is overlaid with stripes.
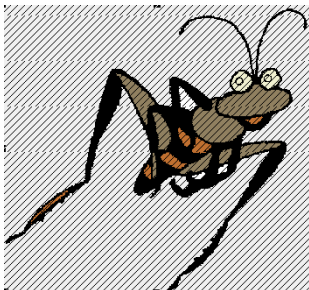
File still open in the
graphics package

4 Return to the graphics package and select either **File > Close** or **File > Exit & Return <Filename>**. In EmbroideryStudio, the stripes will disappear.

Smooth bitmap images

When you scale or transform backdrops, the quality is sometimes reduced – e.g. thin straight lines become jagged or distorted. EmbroideryStudio allows you to smooth an image before and after scaling or transforming, making it easy to digitize.

To smooth a bitmap image

◀ Select the image and double-click to access object properties.

Select required smoothing option
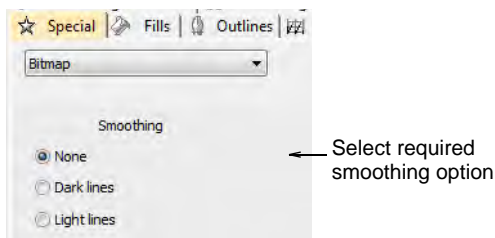
◀ Select the desired smoothing option, depending on whether the majority of lines in the image are light or dark.

No smoothing   Light lines smoothed   Dark lines smoothed

◀ Optionally, scale and transform the image on-screen or via the **Property** and **Transform** toolbars.
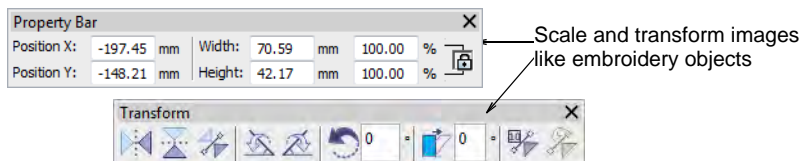
Scale and transform images like embroidery objects

Save artwork

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 EMB file. After editing in EmbroideryStudio or third-party graphics application, you may want to save the image out as a separate file.

To save artwork

1 Scan or load the image you want to use.

2 Still in **CorelDRAW Graphics** mode, select the image.
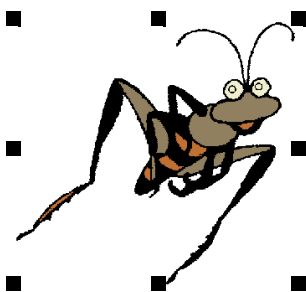
3 Select **File > Export**. The **Export** dialog opens.
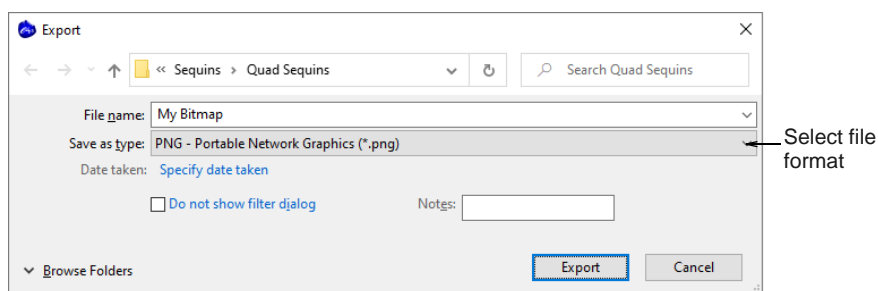
Select file format

4 Choose a suitable file format from the droplist – e.g. BMP or PNG.

5 Select an export folder, then select a format from the **Save as type** droplist.

6 Enter a file name and click **Export**.

Note: This file is not referenced by the EMB file. Any further changes to it are not reflected in the embedded image.

Preparing images for auto-digitizing

The **Auto-Digitizing** tools provide everything necessary to automatically digitize electronic artwork and photographs. Results depend greatly on the resolution, color depth, and quality of source images. For best results, use crisp images with well-defined subjects and strong contrasts. In addition a degree of preparation is needed. This may involve preparation using third-party graphics applications such CorelDRAW Graphics. Tools are also available within Wilcom Workspace.

Prepare bitmaps for auto-digitizing

> Use Auto-Digitizing > Prepare Bitmap Colors to reduce the number of colors and remove image 'noise' in non-outlined images.

The **Auto-Digitizing** tools provide everything necessary to automatically digitize shapes in electronic artwork without using manual input methods. Even if your artwork looks ready to stitch when inserted

into the software, however, it will need to be image-processed before conversion.
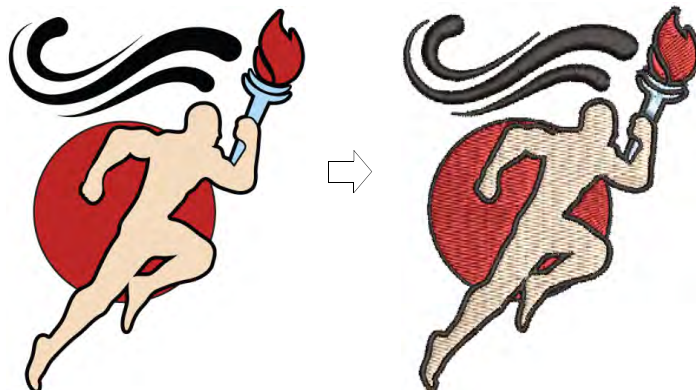
Use the **Prepare Bitmap Colors** tool to prepare images for automatic digitizing. This function automatically flattens colors, sharpens outlines, and reduces 'noise'. Areas enclosed by a black outline are reduced to a single color. This makes it easier for the software to recognize distinct areas in the artwork. These areas then become the embroidery objects of the finished design.

To prepare bitmaps for auto-digitizing

◀ Scan or import the image to use. Depending on the quality of the scanned image, you may need to touch it up manually before processing in EmbroideryStudio. You would normally do this in order to eliminate backgrounds, flood-fill solid areas with color, add or reinforce outlines, or close gaps.

◀ Depending on the source, you may find dithering, anti-aliasing, or other sources of 'noise' in the image. If it contains outlines, these will generally be blurred by anti-aliasing.

Outlines blurred by anti-aliasing
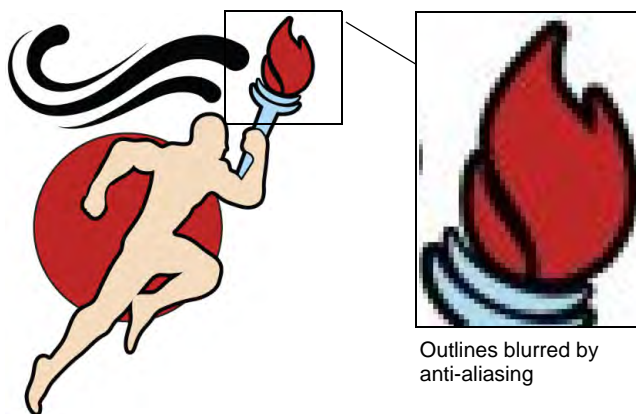
◀ Select the image and click the **Prepare Bitmap Colors** icon. The image appears in both 'before' and 'after' preview panels. Note the number of colors in the original. The software automatically detects the main color blocks and reduces colors accordingly.
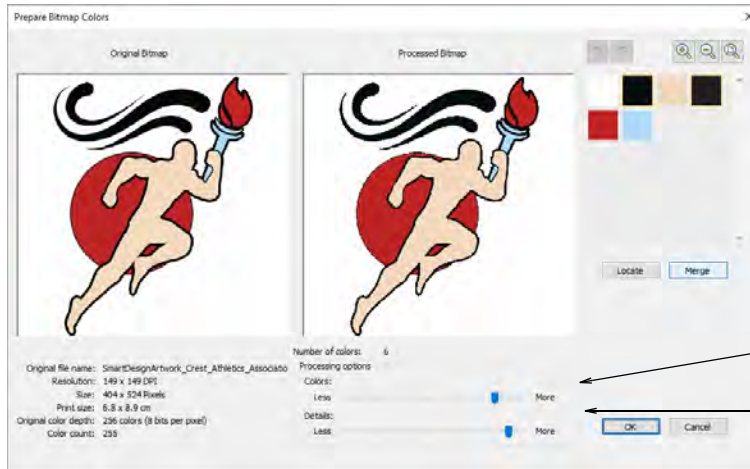
Set desired color count

Set 'granularity' of source image for processing

◀ If there appear to be too few colors to provide the detail you want, use **Processing options** to increase the color count.
◀ Manually locate and merge like-colors as necessary:
  ◀ Holding the **Ctrl** key, click like-colors to select.
  ◀ Click and hold **Locate** to preview.
  ◀ Click **Merge** to merge like-colors into a single color.
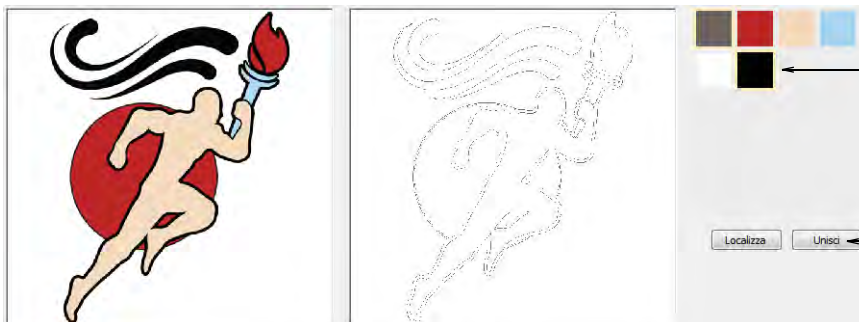
Ctrl + click to select multiples

Click to merge selected colors

◀ Use the scroll button on your mouse to zoom in and inspect details.

Scroll to zoom in and inspect detail

◀ Adjust the **Details** slider to control number of details and resultant objects.

While this setting doesn't affect the image, it affects the embroidery result by filtering out smaller areas of color. 'More' generally results in greater detail and number of objects. 'Fewer' generally results in fewer details and objects. It is useful for 'noisy' images with lots of small areas. It works well with JPG files which are inherently more noisy.

◀ Click **OK** to process the image. Image colors should be reduced as per the preview. The artwork can now be auto-digitized.

Outlines sharpened and noise reduced
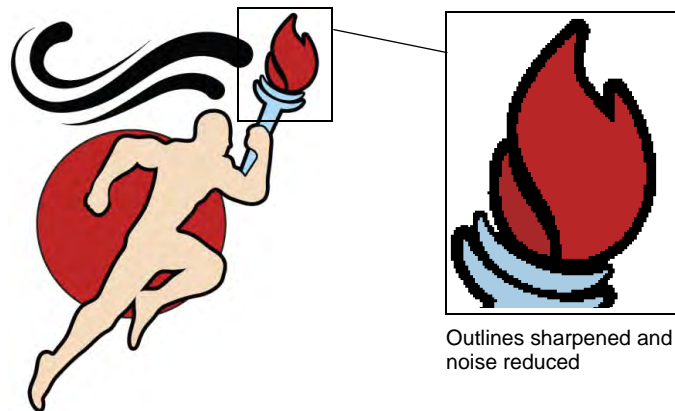
Related topics...

◀ Graphics and multi-decoration file formats
◀ Scan images
◀ Insert bitmap images
◀ Crop bitmap images
◀ Touch up bitmaps
◀ View graphical components
◀ Auto-digitizing photographs

Prepare photos for auto-digitizing

![icon]	Use Auto-Digitizing > Prepare Bitmap Colors to reduce the number of colors and remove image 'noise' in non-outlined images.
![icon]	Use Auto-Digitizing > Adjust Bitmap to adjust image lightness and contrast in preparation for auto-digitizing.
![icon]	Use Auto-Digitizing > Crop Bitmap to crop bitmap artwork for use with auto-digitizing.
![icon]	Use Mode > CorelDRAW Graphics to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.

A degree of preparation is needed for any of the photographic auto-digitizing techniques. For best results, use crisp images with well-defined subjects and strong contrasts.

To prepare photos for auto-digitizing

◀ Scan or insert the photo you want to use. For best stitching results, images are better imported via the **CorelDRAW Graphics** than **Wilcom Workspace**.

◀ If you cannot see the image, turn on **Show Bitmaps**.

◀ Optionally, crop the image.

◀ Size the photo for its intended purpose. Optimal size is 150mm x 150mm or about 6" x 6". 210mm is about the limit for optimal results.

You may be prompted to resize when you run one of the **PhotoStitch** features.
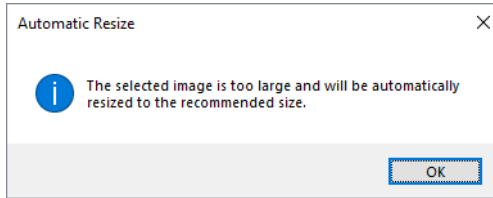
◀ If your graphics application supports it, try re-sampling the image while resizing.

◀ Optionally, use the **Prepare Bitmap Colors** tool to reduce the number of colors and remove image 'noise'.

Set desired color count

Set 'granularity' of source image for processing
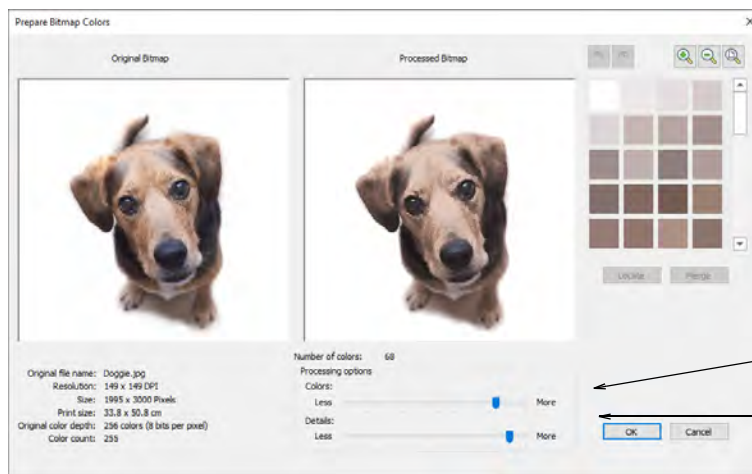
◀ Optionally, use **Adjust Bitmap** to adjust basic lightness and contrast.

Adjust image lightness and contrast
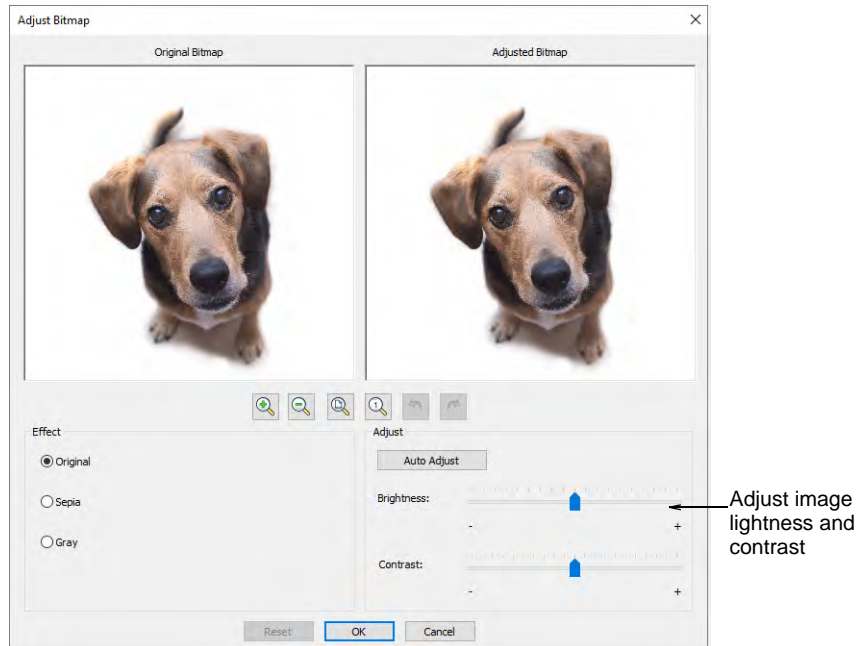
◀ First, try clicking **Auto Adjust** to allow the software to optimize image settings. This works well most of the time. Use **Brightness** and **Contrast** settings to sharpen the image further.

◀ Optionally, click **Reset** to return the image to default settings.

◀ Choose between image variations:

Option	Function
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	Grayscale images are ones composed exclusively of shades of gray, varying from black at the weakest intensity to white at the strongest.

◀ Optionally, switch to **Graphics Mode** for alternative pre-processing.

Edit bitmap for auto digitizing
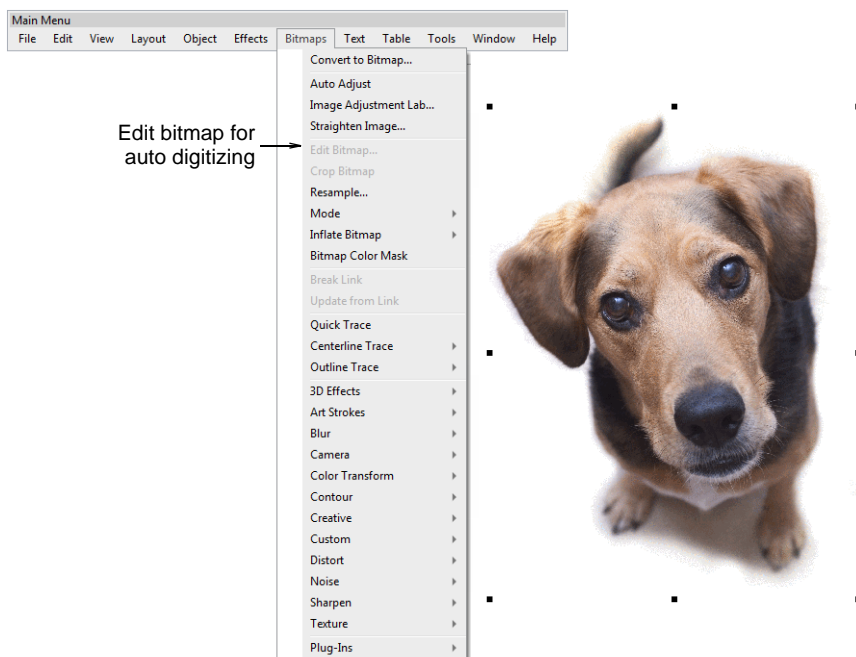
◀ For the full range of image adjustment techniques, use a dedicated graphics program like Corel PHOTO-PAINT®. If installed, the **Edit Bitmap** option is available.

Related topics...

◀ Scan images
◀ Insert bitmap images
◀ Crop bitmap images
◀ Touch up bitmaps
◀ View graphical components
◀ Auto-digitizing photographs

Preparing artwork for continuous embroidery

Many customers make traditional garments such as sarees which employ continuous and sometimes overlapping designs. It is important that artwork used for continuous embroidery is properly sized and orientated. When doing continuous designs on multihead systems, horizontal

distance will generally be a function of the gap between machine heads
– e.g. 135 mm.
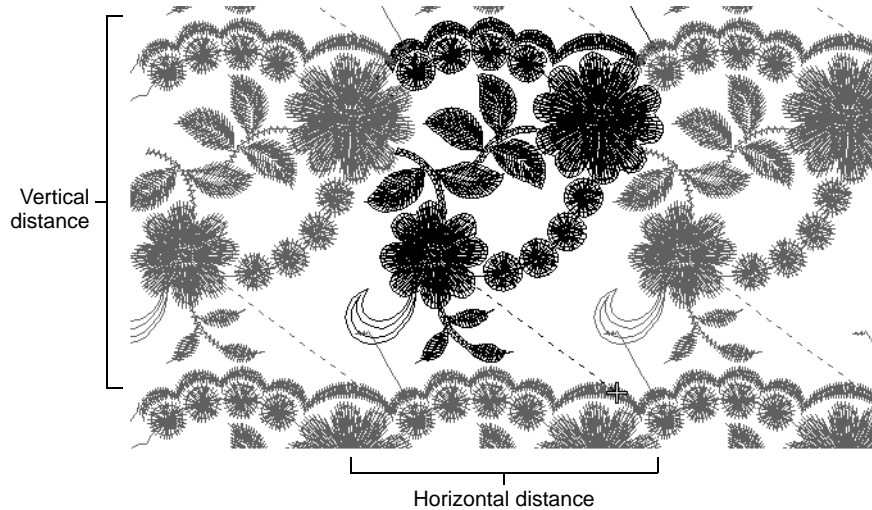
There are two main sources of artwork for continuous embroidery:

◀ Enlargement drawings. These are typically used with a digitizing
  tablet. See the Schiffli Supplement for details.
◀ Scanned images or graphics files from third-party software. These are
  used for on-screen digitizing.

The same considerations apply for both types of artwork. However, while
with enlargement drawings you adjust drawing scale, with electronic
artwork, you adjust on-screen image size and rotation. Generally
electronic artwork will be prepared to exact dimensions. To check a
design repeat, you need to measure the distance between two repeat
points. You will need to choose clearly identifiable points on the design
which are easy to identify.

To adjust an image to repeat

◀ Scan or insert your artwork as you would a normal digitizing backdrop.
  If you have prepared your artwork in **CorelDRAW Graphics**, switch
  to **Wilcom Workspace**.

◀ Select **View > Measure**. Click the first (left) repeat reference point, then place the cursor over the second point.

Repeat reference point

Repeat reference point
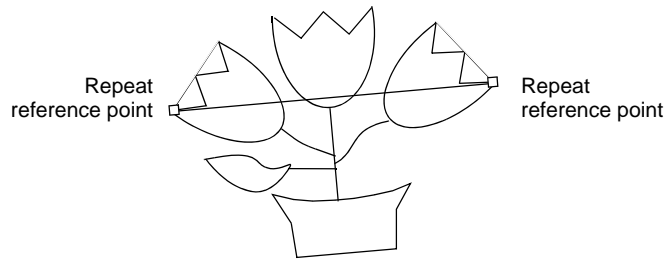
◀ Check the **X** and **Y** values and the angle. If the angle is not zero the image may need to be rotated. You can decide the acceptable tolerance. Small errors are usually acceptable. Usually 0.3mm in real size is the smallest error the human eye can discern.

5°
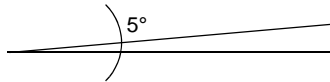
◀ If you need to rotate it, select the image and enter the exact rotation setting in the **Transform** toolbar.

Enter exact rotation value – e.g. -5°
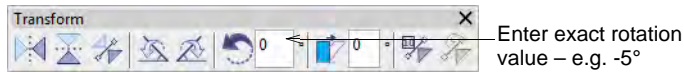
Caution: Rotation of bitmap images can reduce definition. For better quality, go back to the source application and adjust artwork there. Or, in the case of scanned artwork, adjust it on the scanner and re-scan.

◀ Once rotation is fixed, measure the two points again and compare the **X** value with the **Design Repeat** value. Again you need to decide what tolerance is acceptable. First you need to calculate the necessary scale factor, which is:

Scale Factor = (Measured Repeat (X) ÷ Design Repeat) × 100%

If the image needs to be enlarged by 10%, you will get 110% or a similar value. If it needs to be reduced by 5%, you will get 95% or similar.

◀ If necessary, adjust dimensions by a percentage in **Property Bar**.
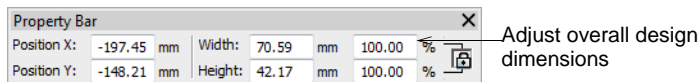
Adjust overall design dimensions

Tip: The **Show Repeats** function displays repeating designs, including sequins, in both **TrueView** and stitch view. You can view a design, even while digitizing, with any number of repeats.

Related topics...

◀ Viewing design repeats

Chapter 33
Digitizing with Vectors

There are two fundamental design modes in EmbroideryStudio:

◄ **Wilcom Workspace**: This mode allows you to create and edit embroidery objects using an embroidery digitizing toolset.

◄ **CorelDRAW Graphics**: This mode allows you to create and edit vector objects using the CorelDRAW® Graphics Suite toolset.
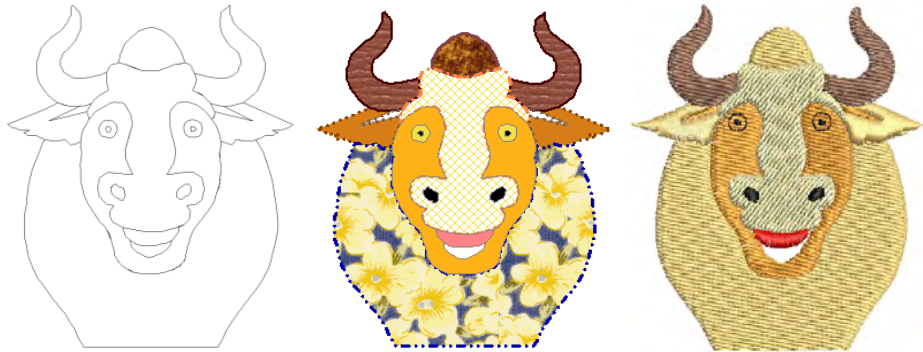
Wilcom Workspace also provides tools for drawing shapes and outlines directly on screen. In this mode, you can also import or paste third-party vector graphics such as clipart for use as digitizing backdrops. Scale and transform them in the same way as embroidery objects. You can also select colors for vector object outlines and fills.

The **Auto Trace To Vectors** feature lets you convert scanned artwork to vector objects. You can then convert these to embroidery objects using a variety of input methods.

When working with overlapping vector or embroidery objects, merge, trim or split them using **Shaping** tools.

CorelDRAW Graphics includes the entire suite of CorelDRAW® Graphics Suite drawing tools which offer many sophisticated techniques for drafting outlines and shapes on screen. Vector graphics so created can be directly converted to embroidery objects or even entire designs. Alternatively, you can insert or paste third-party vector graphics such as clipart for use in embroidery designs. Or, insert, paste or scan bitmap artwork for use as digitizing templates or 'backdrops'.

⊙

Tip: For a full description of the CorelDRAW® Graphics Suite tools, refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **Help** menu.

This section describes how to create vector objects using the digitizing tools as well as how to import them from third-party applications. It also explains how to merge, trim and split overlapping vector or embroidery objects using the shaping tools.

Creating vector shapes in EmbroideryStudio

EmbroideryStudio lets you 'draft' shapes and outlines on screen. You can set colors for outlines as well as fills. Vector objects can be converted to embroidery objects with the application of manual input methods and stitch types. See also Convert objects with CorelDRAW Graphics.

⊘

Note: Depending on your product level, EmbroideryStudio includes the CorelDRAW® Graphics Suite drawing tools which offer many techniques for drafting outlines and shapes on screen. See also Operating modes.

Create vectors

⊙	Use Graphics Digitizing > Digitize Open Shape to digitize open shapes. Press <Ctrl> to constrain.
⊙	Use Graphics Digitizing > Digitize Closed Shape to digitize closed shapes. Press <Ctrl> to constrain.
⊙	Use Graphics Digitizing > Ellipse to digitize ellipse or circle embroidery objects.
▢	Use Graphics Digitizing > Rectangle to digitize rectangle or square embroidery objects. Press <Ctrl> to constrain.
♡△✿	Use Graphics Digitizing > Basic Shapes to digitize basic shapes. Press <Ctrl> to maintain aspect ratio. Press <Shift> to center at the first point.
⊙	Use Outline Stitch Types > Vector Outline to create vector outlines with no stitch properties applying.
◖	Use Fill Stitch Types > Vector Fill to create vector fills with no stitch properties applying.

Use the **Graphics Digitizing** tools to create vector objects directly in EmbroideryStudio. Digitizing vector outlines and fills is like digitizing any other objects except that they have no stitch properties applying.
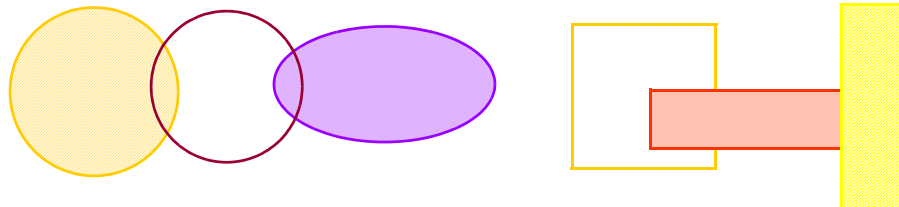
To create vectors

◀ Select **Vector Outline** or **Vector Fill** as your stitch type.

◀ Draw straight lines in your design using either **Digitize Open Shape** or **Digitize Closed Shape** digitizing tools. Enter start and end points. To constrain the line vertically, horizontally or in 15° angles, press **Ctrl** as you mark the end point.

◀ Draw lines of any shape using the same tools. Enter reference points to create the shape you want – left-click for corner points, right-click for curve points.
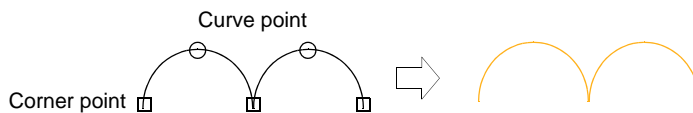
◀ When you create closed shapes with the **Digitize Closed Shape** drawing tool, press **Enter** to close the shape.
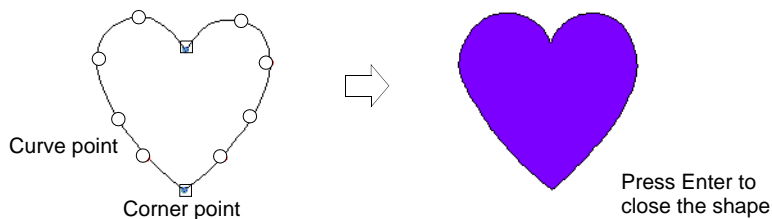
◀ Draw rectangles and squares using the **Rectangle** tool. To draw a square, hold down **Ctrl** as you move the pointer.
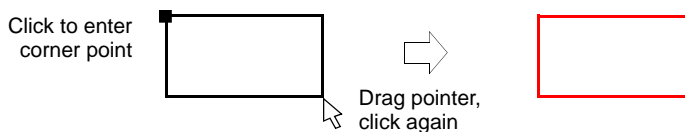
◀ Draw circles and ellipses using the **Ellipse** tool.

◀ To draw a perfect circle, press **Enter**.

◀ To draw an ellipse, move the pointer again, then mark a second radius point when the outline is the required size. Press **Enter**.

Click to enter center point

Drag pointer

Press Enter for circle or mark a point for ellipse
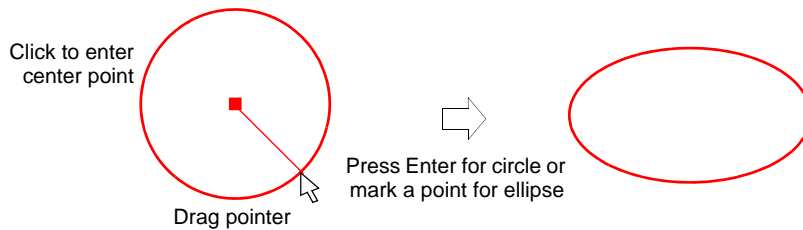
◀ Press **Enter** to close a shape.

Color vectors

> Use Docker > Object Properties to toggle the Object Properties docker on/off. Use it to select colors for vector outlines and fills.

EmbroideryStudio lets you set colors for vector outlines as well as fills. Coloring makes vector objects easier to interpret. For example, a solid fill color might suggest Satin or Tatami, while a fill pattern may be interpreted as Motif Fill or Program Split.

To color vectors

1 Create or insert a vector graphic.

Vector graphic

2 Ungroup the vector objects as necessary.

3 Select a vector object, right-click and select **Properties** from the popup menu. The **Object Properties** docker opens.

4 To change the outline color of the selected object, adjust the settings in the **Line** panel:

◀ Select an outline style from the **Style** list.

◀ Select an outline width from the **Width** field.

◀ Click **Color** and select an outline color from the **Color** dialog.

Select outline style → Style:
Select outline width → Width: 0.000 in
Select outline color → Color:
No fill currently selected → Pattern fill
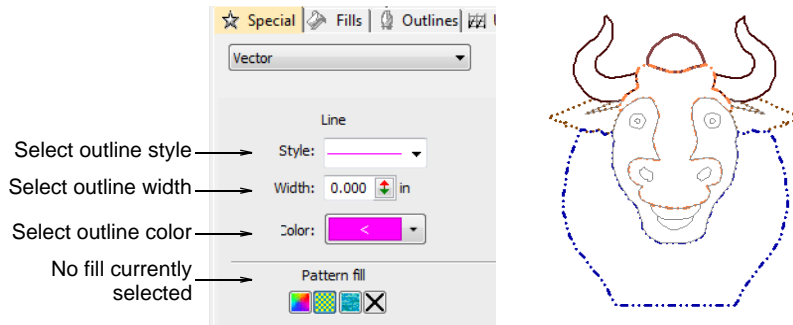
5 To fill the selected object with a solid color, select the **Solid Fill** icon and click the **Color** droplist to access the colors.

Select solid fill →
Color:
Click to choose color →
More Colors...
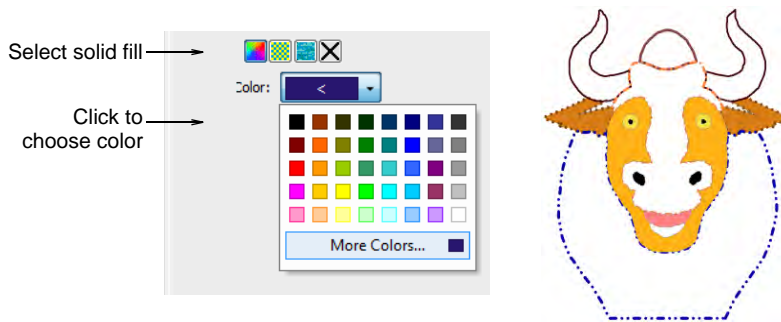
6 To fill the selected object with a pattern fill, select the **Pattern Fill** icon and adjust the settings:

◀ Select a pattern style from the droplist.

◀ Select a foreground color via the **Front** button.

◀ Make the background transparent as required or choose a color via the **Back** button.

Select pattern fill → Style:
Select pattern style → Front:
Back transparent
Select colors for pattern foreground and background → Back
More Colors...
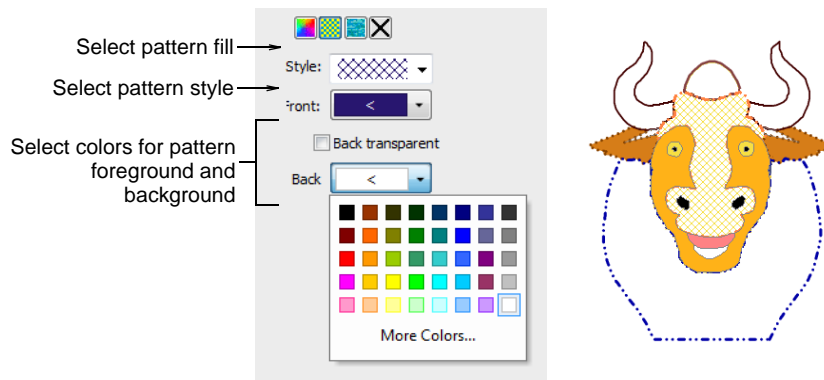
7 To fill the selected object with a bitmap – e.g. a fabric texture – select the **Bitmap Fill** icon and click the **Load** button to insert an image file via the **Open** dialog.

Select bitmap fill
Click to load image file
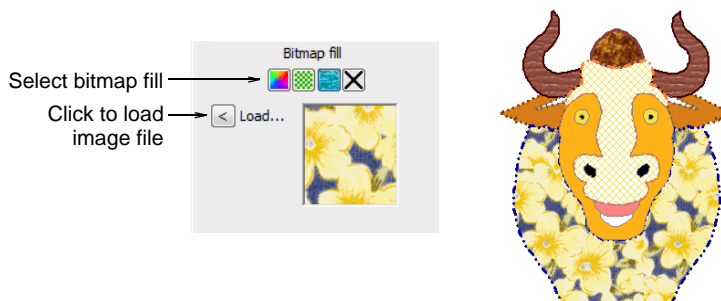
Note: To view the changes in the production worksheet, select **File > Print Preview**. In the **Options > Design** tab select the **Vectors** checkbox.

Related topics...

◀ Insert vector graphics
◀ Customizing design reports
◀ Design options

Loading vector artwork

Vector graphics of different formats can be inserted or 'loaded' into EmbroideryStudio for use as digitizing backdrops or for conversion to embroidery. Vectors can be inserted directly into **Wilcom Workspace** or via **CorelDRAW Graphics**.
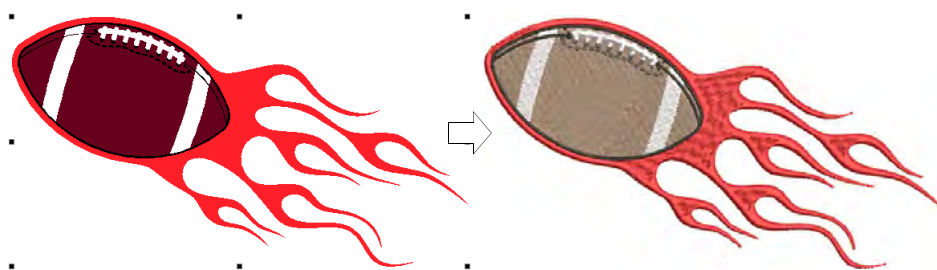
Tip: CorelDRAW® Graphics Suite is bundled as standard with some product models. CorelDRAW® and its sister product, Corel PHOTO-PAINT® can also be run as standalone applications. CorelDRAW® Graphics Suite features 'best-of-breed' bitmap-to-vector tracing,

enhanced illustration capabilities, photo-editing together with a library of professional clipart images. CorelDRAW® needs to be registered before it can be used by EmbroideryStudio.

Insert vector graphics

 Use Standard > Import Graphic to import vector graphic or bitmap image into current design

 Use View > Show Vectors to show or hide any vector artwork included in the design. Right-click for settings.

Vector graphics from third-party applications can be inserted into EmbroideryStudio in a variety of native and interchange vector formats. You can also import some vector graphics as bitmaps. You can convert vector graphics to embroidery objects using a variety of input methods or with the Auto-Digitizing tools.

To insert a vector graphic

1 Create a new file in EmbroideryStudio or open the design file into which you want to insert the vector graphic.

2 Click the **Import Graphic** icon or select **File > Import Graphic**.
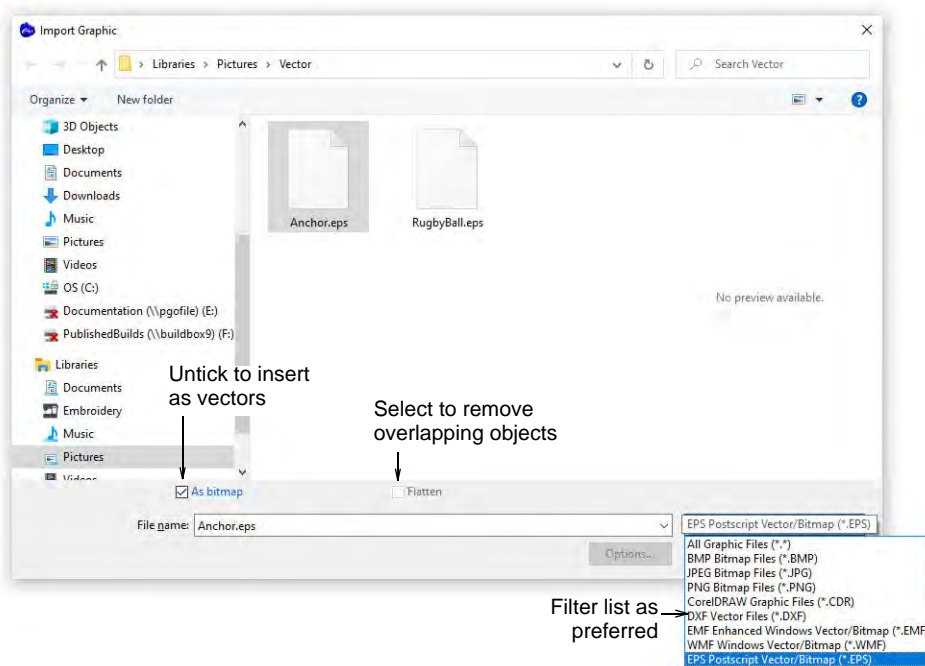
3 Navigate to the graphics folder. The dialog defaults to 'All graphic files' which displays all supported file types – BMP, PNG, EPS, etc. Change

the **Files of type** setting if you want to filter on a specific file type – e.g. EPS.

⊘

Note: While 'All Graphic Files' includes both vector and bitmap formats, for native CDR and other vector file types, use the CorelDRAW® Graphics Suite import function.

4 If you are working with DXF files:

◄ Click **Options**. The **DXF File Options** dialog opens.

Select unit of measurement
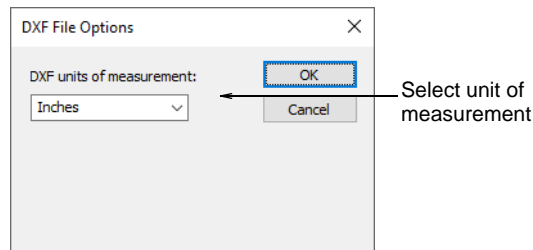
◄ Select **Inches** or **Millimeters** from the **Units of Measurement** list and click **OK**. If this information is not specified, the vector graphic may not display at the correct size.

5 Select the **As Bitmap** checkbox to insert the vector graphic as a bitmap image.

Imported as vector graphic – individual objects can be selected

Imported as bitmap image – individual objects cannot be selected

⊘
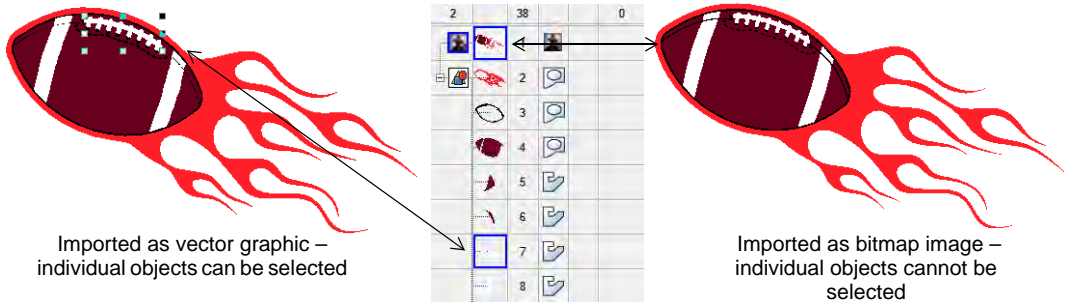
Note: DXF files cannot be imported as bitmaps.

6 Select the **Flatten** checkbox to remove any overlapping areas from the vector graphic.

Hidden areas removed

Hidden areas preserved

Vector objects 'flattened'

Vector objects not 'flattened'
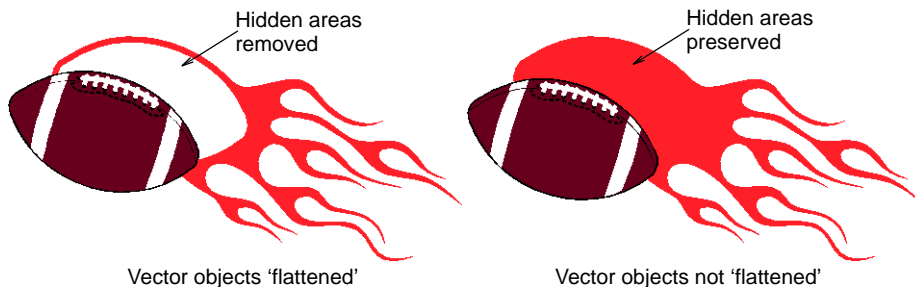
7 Select the **Preview** checkbox to see a preview of the vector graphic.

8 Click **Open** to insert the vector graphic into the design window.

Tip: You can also paste vectors directly into EmbroideryStudio through the MS Windows® clipboard.

Related topics...

◀ Operating modes

◀ Converting designs with CorelDRAW Graphics

◀ Auto-digitize individual shapes

Import vector graphics

Use Mode > CorelDRAW Graphics to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.

Use Standard > Import to import a file to the active document in CorelDRAW Graphics.

Use View > Show Vectors to show or hide any vector artwork included in the design such as CorelDRAW® clipart. Right-click for settings.

You can load vector artwork of various formats via **CorelDRAW Graphics** for use as digitizing backdrops for manual or automatic digitizing. You can also use this technique to insert bitmaps.

Note: CorelDRAW® needs to be registered before it can be used by EmbroideryStudio. Registration provides CorelDRAW® Standard Membership which gives you access to content – clipart, fonts, stock photos, templates – via Corel CONNECT.

To import a vector graphic

1 Switch to CorelDRAW Graphics and click **Import** on the **Standard** toolbar.

Select format
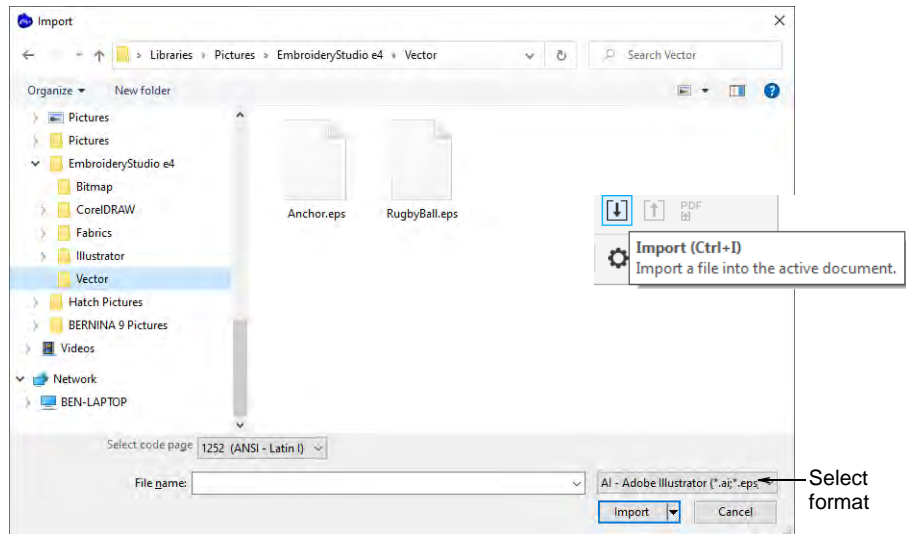
2 Select a folder and select a file type from the **Files of Type** list – e.g. EPS.

Select required format
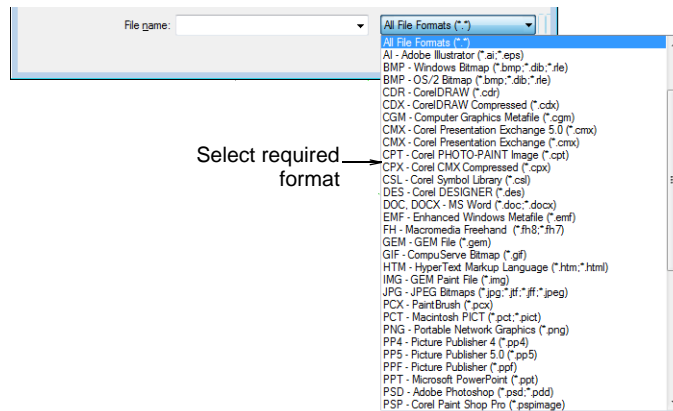
3 Select a file and click **Import**. The **Import EPS** dialog opens. You are prompted to import text as pure text or as vector curves.

Import text as text or curves
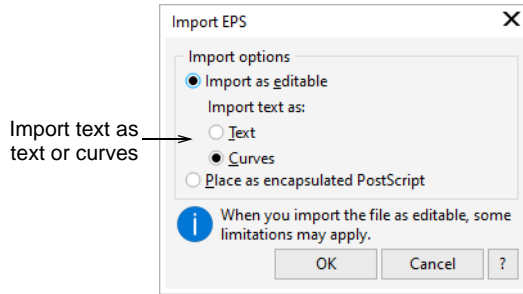
4 Position the cursor in the design window and press **Enter**.

5 Choose a digitizing technique:

◀ Convert vectors to embroidery: See Convert objects with CorelDRAW Graphics for details.

◀ Switch to **Wilcom Workspace** and use the artwork as a digitizing backdrop: See Digitizing methods for details.

Note: If you cannot see the image you loaded in **Wilcom Workspace**, make sure **Show Vectors** icon is toggled on.

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.

Related topics...

◀ Operating modes
◀ Change backgrounds
◀ Grouping & locking objects
◀ Converting designs with CorelDRAW Graphics
◀ Auto-digitize individual shapes

Auto-tracing bitmap artwork

> Use Auto-Digitizing > Auto Trace To Vectors to convert artwork to vector objects for conversion to embroidery objects.

Use **Auto Trace To Vectors** to create vector outlines from bitmap images. You can then convert these to embroidery objects using a variety of input methods. **Auto Trace To Vectors** can find holes in shapes – both inside and outside boundaries are detected.

Tip: Once digitized in EmbroideryStudio, embroidery designs can be output as vectors. These can be opened in **CorelDRAW Graphics**. See also Exporting embroidery as vectors.

To auto-trace bitmap artwork

1 Scan or insert a bitmap image.
2 Select the image and process it using the **Prepare Bitmap Colors** tool.
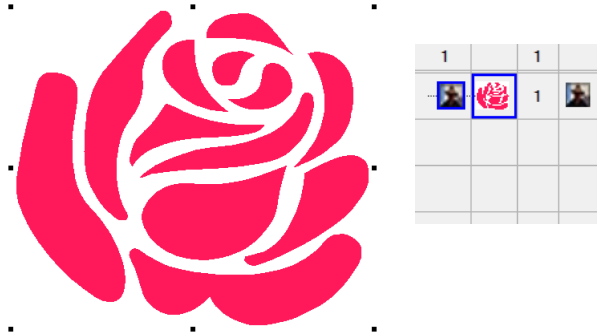
3 Click the **Auto Trace To Vectors** icon. The design is automatically traced into vectors, both outlines and filled shapes.

Bitmap converted to vector outlines and filled shapes
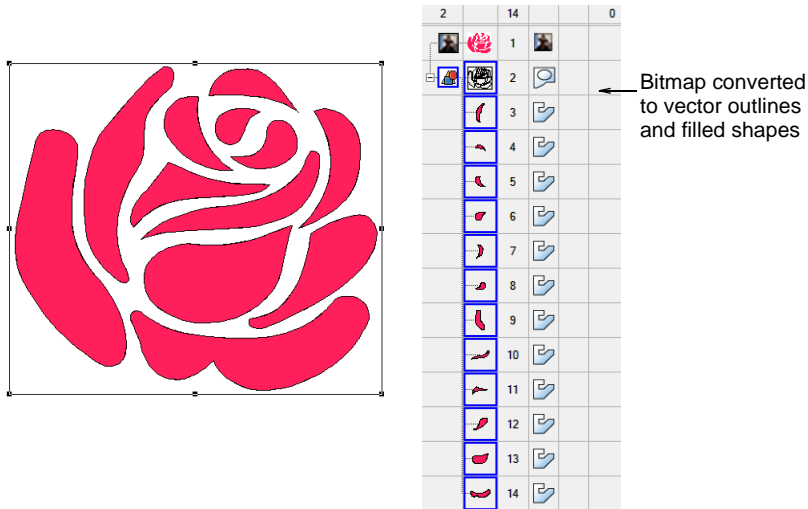
Note: If the bitmap needs preliminary color reduction, clicking **Auto Trace To Vectors** takes you directly to the **Prepare Bitmap Colors** dialog.

4 Select the shape/s you want to convert to embroidery and convert using any of the available techniques.

Convert vectors to embroidery
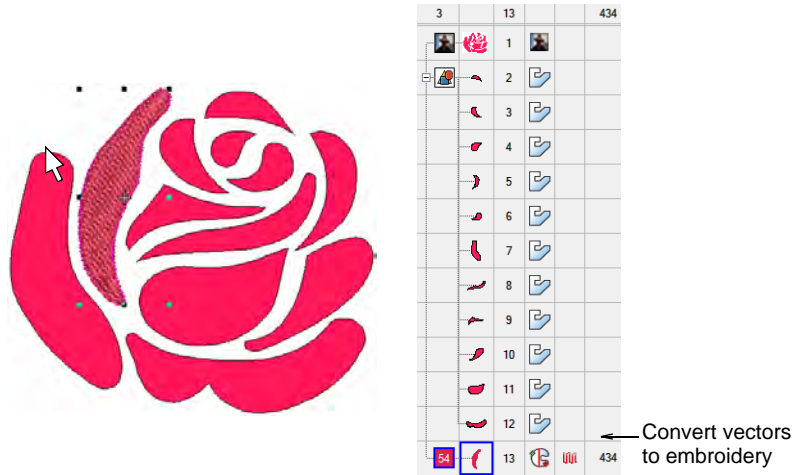
Related topics...

◀ Converting designs with CorelDRAW Graphics
◀ Insert bitmap images
◀ Preparing images for auto-digitizing

Smoothing curves

> Use Reshape > Reshape Object in combination with Edit > Smooth Curves to remove unnecessary reshape-nodes from vector graphic objects.

Both vector and 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 applies curve 'smoothing' to embroidery as well as vector 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 Optionally, click **Reshape Object** to view reshape-nodes around the outline.

Reshape-nodes reduced to minimum necessary
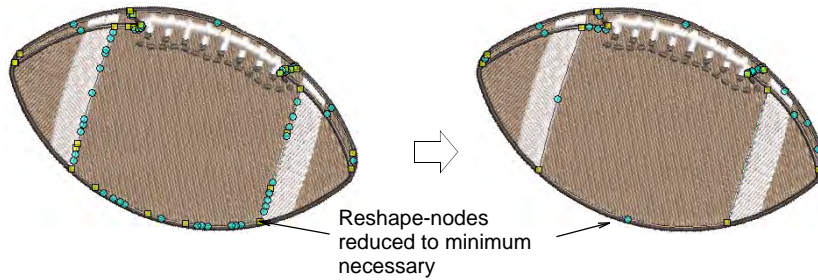
3 Select **Edit > Smooth Curves**.

Enter smoothing precision value
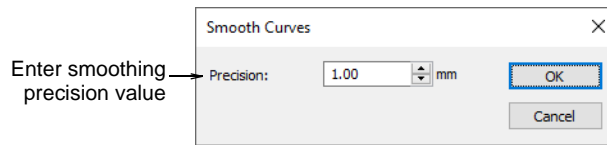
4 Adjust the **Precision** field. This value controls how closely the smoothed outline follows the original. The larger the precision value, the fewer the reshape-nodes.

5 Click **OK**.

Visualizing vector graphics

> Use View > Show Vectors to show or hide any vector artwork included in the design such as CorelDRAW® clipart. Right-click for settings.
>
> Use View > Show Repeats to toggle design repeats display. Right-click for settings.

Vectors can be viewed in a variety of ways in **Wilcom Workspace**. Toggle vectors on or off with the **Show Vectors** icon. View vectors in the

Color-Object List. Click **Locate** to isolate selected vector objects on-screen.

Click to view selected vector object

Vector drawing objects
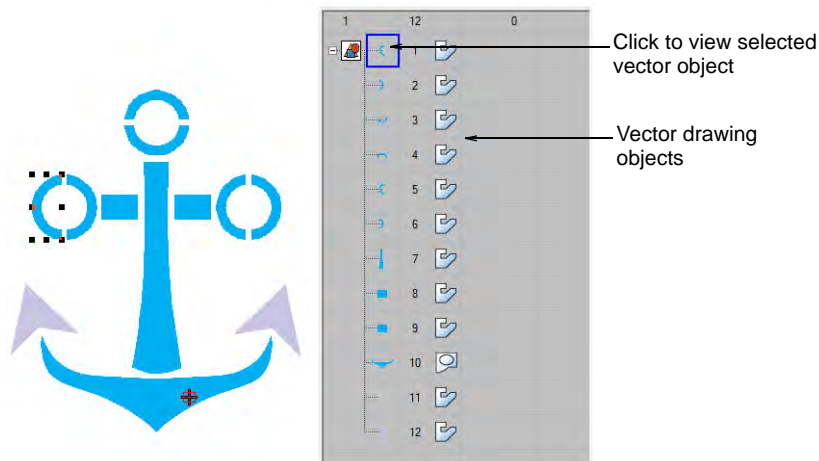
Vector graphics can also be visualized using **Show Repeats**. This can be useful when digitizing continuous embroidery designs.

Show repeats for more accurate digitizing
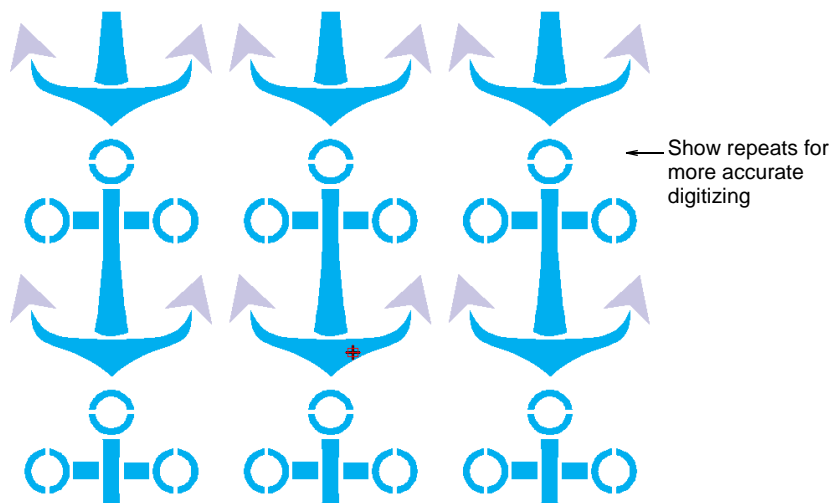
Related topics...

◀ Viewing design repeats

Chapter 34
Automatic Digitizing

EmbroideryStudio provides a variety of complementary tools and techniques to automatically and semi-automatically digitize suitably prepared artwork and photographs.
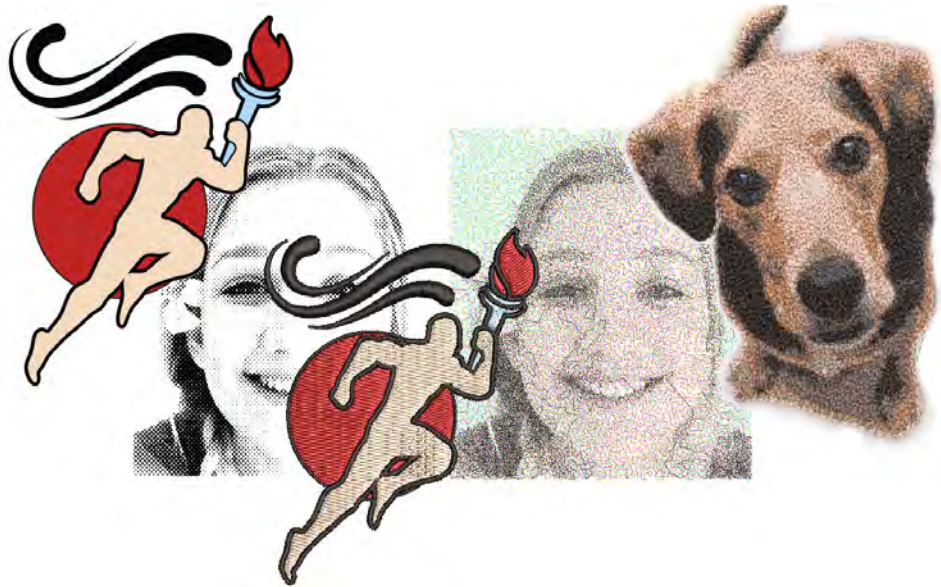
Auto-digitizing features covered in this section include:

Feature		Overview
	Convert	The Convert feature lets you convert vector objects directly to embroidery objects. And vice versa. Entire designs can be converted in either direction.
	Auto-Digitizing	The Auto-Digitizing tools provide everything necessary to digitize shapes in graphics automatically without using manual digitizing methods.
	Smart Design	The Smart Design feature automatically converts bitmap images to embroidery.

Feature		Overview
	Photo Flash	The Photo Flash feature creates embroidery designs from photographs and other grayscale bitmap images. The effect resembles the output of a line printer.
	Reef PhotoStitch	The Reef PhotoStitch feature also creates embroidery designs from photographs and other bitmap images. The features creates open stitching reminiscent of a coral reef.
	Color PhotoStitch	The Color PhotoStitch feature creates embroidery from photographs and other images. It produces variegated stitching using multiple thread colors.

This section describes how to automatically convert graphics to embroidery objects and complete designs using a variety of techniques, as well as how to create embroidery from grayscale images and photographs.

Loading & presetting artwork

 Use Auto-Digitizing > Color Matching Method to preselect a thread matching method.

 Use Auto-Digitizing > Crop Bitmap to crop bitmap artwork for use with auto-digitizing.

Artwork can be inserted, pasted or scanned into EmbroideryStudio for use as digitizing backdrops. For both manual and automatic digitizing purposes, 'clean' images, sometimes referred to as 'cartoons', work best. The auto-digitizing tools handle both bitmap and vector formats.

To load & preset artwork for auto-digitizing...

1 Import the artwork. Whether you're working with bitmap or vector graphics, you need to prepare them first:
   ◀ Scan or insert a bitmap image. If you are using a bitmap image as input, it will need to be image-processed before conversion.
   ◀ Insert or create a vector graphic. If you are using a vector graphic as input, you can remove overlapping objects by 'merging' them. This eliminates overlapping stitching when vector objects are converted.
2 Whether you're working with bitmap or vector graphics as input, you may want to prepare them first:
   ◀ If you are using a bitmap image, it can be image-processed before conversion.

◀ If you are using a vector graphic, you can remove overlapping objects by 'merging' them. This eliminates overlapping stitching when vector objects are converted.

3 Size the image to the preferred dimensions for your target article.
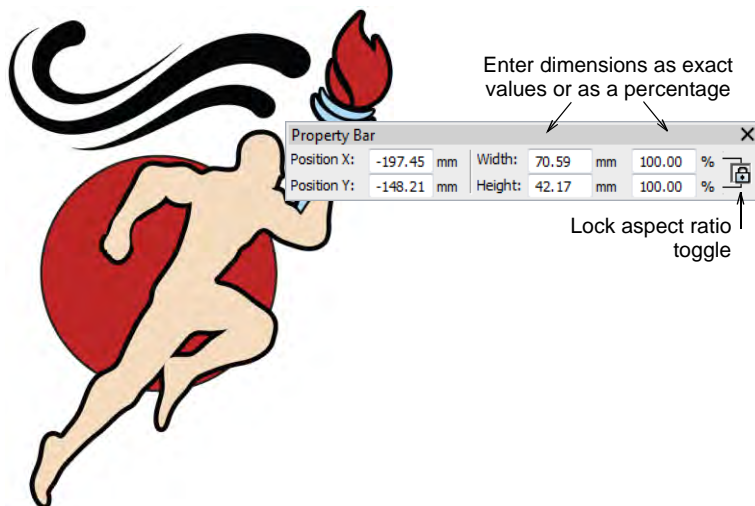
Enter dimensions as exact values or as a percentage

Lock aspect ratio toggle

4 Optionally, select **Design > Auto Fabric** to apply preferred fabric settings.

Tick to activate

Choose a fabric type
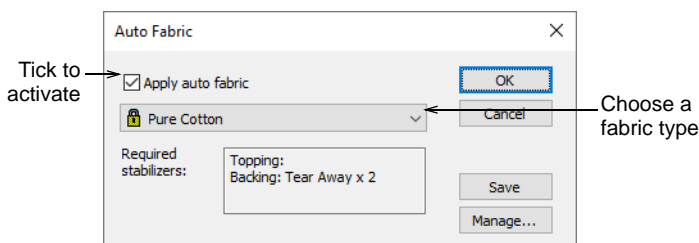
5 Crop the image as desired using the **Crop Bitmap** tools.

6 Optionally, click **Color Matching Method** and decide how you want to handle color matching.

Choose a thread matching method

Select one or more thread charts to match to
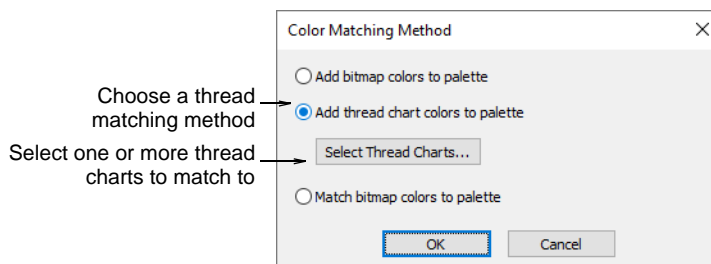
You have three options:

- ◀ Add bitmap colors directly to the design palette (default).
- ◀ Choose a chart and match bitmap colors to actual threads. Click the **Select Thread Charts** button to access thread charts.
- ◀ Or, match bitmap colors to the nearest colors in the design palette.

💡
Tip: Various techniques are available for changing design colors from the **Design Colors** toolbar.

Related topics...

- ◀ Graphics and multi-decoration file formats
- ◀ Loading bitmap artwork
- ◀ Loading vector artwork
- ◀ Preparing artwork for digitizing
- ◀ Preparing images for auto-digitizing
- ◀ Add & match image colors
- ◀ Working with fabrics
- ◀ Choosing threads

Converting designs with CorelDRAW Graphics

EmbroideryStudio lets you convert vector graphics directly to embroidery objects using a variety of techniques. Similarly, you can convert embroidery designs or objects to vector graphics. You can also quickly convert between different embroidery objects.

Convert objects with CorelDRAW Graphics

🖼	Use Mode > Tag Fill as Turning Satin to tag narrow shapes for conversion to turning stitching.
🖼	Use Mode > Match to Embroidery Palette to toggle on/off thread color matching for converted vector objects.
📷	Use Mode > Tag as Photo Flash to convert photos to Photo Flash embroidery from CorelDRAW Graphics.
🖼	Use Mode > Convert Embroidery to Graphics to convert selected embroidery to graphics and switch to CorelDRAW Graphics.
🖼	Use Mode > Convert Graphics to Embroidery to convert selected graphics to embroidery and switch to Wilcom Workspace.
🖼	Use Mode > Keep Graphic Objects to retain original artwork during conversion.

Some EmbroideryStudio product levels include CorelDRAW®
Graphics Suite as standard. This lets you convert vector objects directly
to embroidery objects via **CorelDRAW Graphics**. You can also convert
embroidery to vector objects. Individual objects or whole designs can be
converted. Bitmaps can also be used.

To convert graphic and embroidery objects...

◀ Open a vector or embroidery design, depending on which mode you
are working in – **CorelDRAW Graphics** or **Wilcom Workspace**.
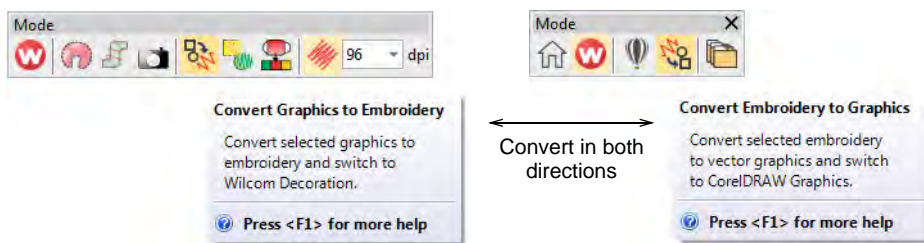
The **Convert** function is located on the **Mode** toolbar. Behavior
depends on the operating mode:

◀ In **CorelDRAW Graphics**, selected vector objects are converted to
embroidery and displayed in **Wilcom Workspace**.
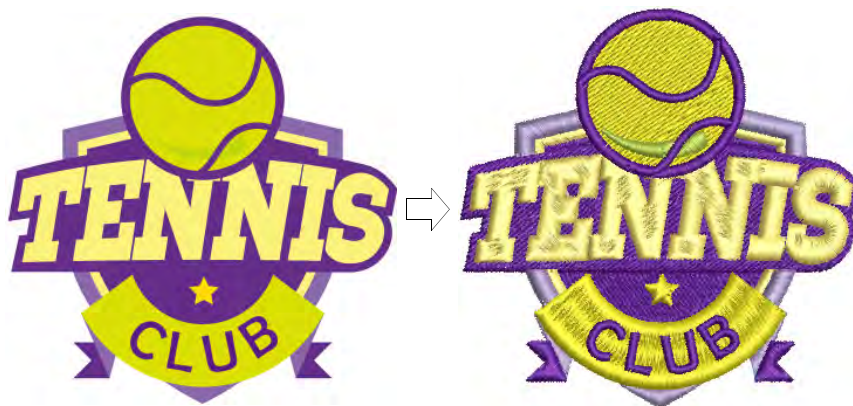
◀ In **Wilcom Workspace**, selected embroidery objects are
converted to vector objects and displayed in **CorelDRAW
Graphics**.

◀ If you want to keep a copy of the original vector objects, click the
Keep Graphic Objects toggle in **CorelDRAW Graphics**.

◀ Use the **Match to Embroidery Palette** tool to toggle on/off thread
color matching.

◀ When turned on, converted vector objects are assigned the nearest
matching thread color in the current color palette.

◂ When turned off, a new thread color is added to the palette based on the vector color.

◂ Optionally, activate **Tag Fill as Turning Satin**. This produces a branched object as shown below.

Without turning satin   With turning satin

💡
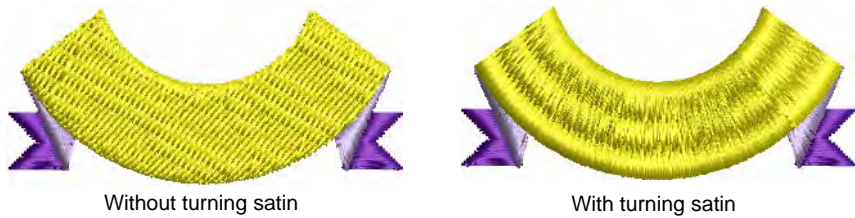
Tip: Vectors can also be converted to appliqué as well as to lettering. See also Creating lettering with CorelDRAW Graphics.

Vectors converted to lettering
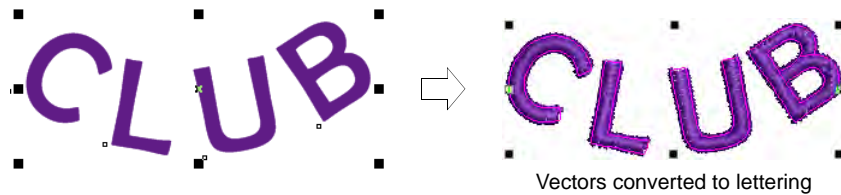
Related topics...

◂ Working with design files

◂ Creating lettering with CorelDRAW Graphics

◂ Convert vector graphics to appliqué

Convert objects with Wilcom Workspace

You can convert vector objects to embroidery objects by right-clicking a selected object and select **Convert > ...** from the popup menu.

Choose a conversion target
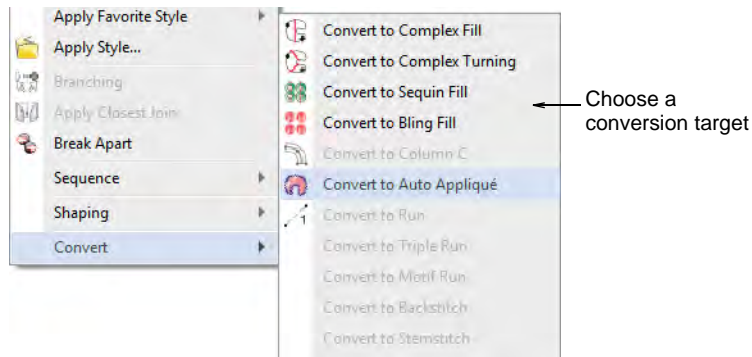
The resulting object takes the current stitch type, color and object properties set for that digitizing method. Vector objects can be converted to appliqué. You can also create objects with turning stitches by adding stitch angles directly to vector objects.
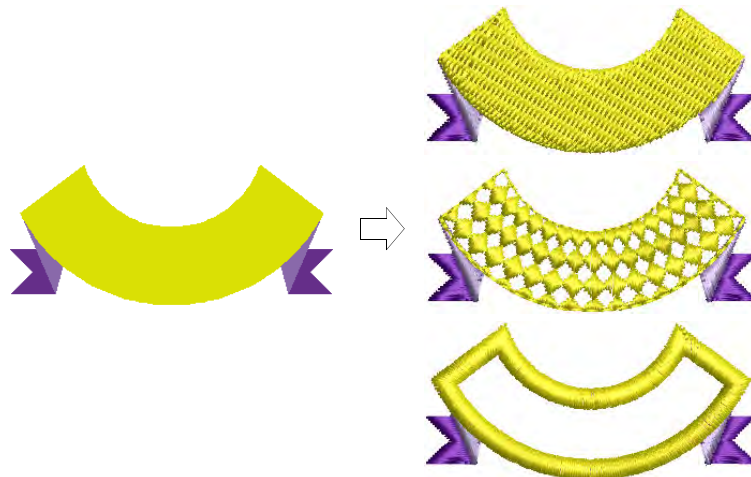
You can easily convert objects from Column A/B to Complex Fill or Complex Turning. This is useful for editing. For example, as curved fill effects can only be used with Complex Fill objects, you can add them to Column A/B shapes by first converting to Complex Fill. Also when scaling designs, an Column A/B shape may become too big for Turning Satin. By converting to Complex Fill or Complex Turning, you can apply fixed or turning Tatami or some other fill stitch type.

You can change an Appliqué or vector object to a complex fill object in the same way. You can also convert **Complex Fill** to **Complex Turning**. If you convert to **Complex Turning**, you are prompted to enter more than one stitch angle line and press **Enter**.

Enter angle points

Press Enter
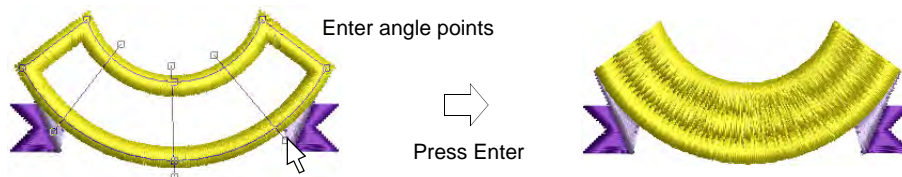
Note: If a current stitch type is not applicable to the target object – e.g. **Contour** stitch – **Satin** will be substituted. If the underlay type is not applicable – e.g. **Center Run – Zigzag** will be used.

Related topics...

◀ Adjusting stitch angles
◀ Convert embroidery objects to appliqué

Auto-digitizing artwork

The quality of auto-digitized designs greatly depends on the type and quality of the original artwork. Generally speaking, vector graphics preserve image quality when resized, whereas bitmaps cause problems of pixelation and image degradation when enlarged or scaled down. In order to make bitmap images more suitable for automatic digitizing, EmbroideryStudio also provides image processing capabilities and links to graphics packages.
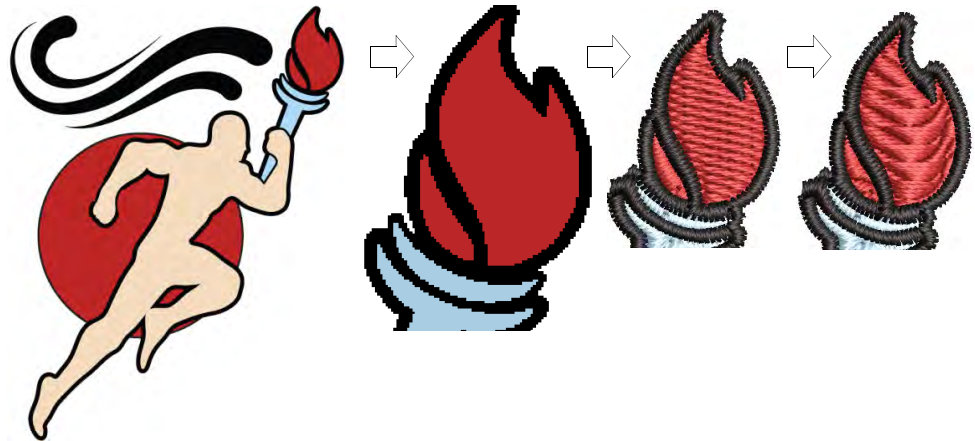
Auto-digitize 'instant embroidery'

Use Auto-Digitizing > Color Matching Method to preselect a thread matching method.

Use Auto-Digitizing > Instant Smart Design to automatically create embroidery from imported artwork instantly.

Use Auto-Digitizing > Keep Graphic Objects to retain original artwork during conversion.

In essence, creating an embroidery design with the **Instant Smart Design** tool is simply a matter of selecting the image you want to convert, and clicking the tool. EmbroideryStudio automatically determines colors to treat as fills or outlines, or omit altogether. And it chooses the most suitable stitch types to apply with default settings. This is very useful for stitch estimates. The tool handles both bitmap and vector formats.

To auto-digitize 'instant embroidery'...

1 Load and preset the artwork as necessary.

Insert artwork to auto-digitize

Default color palette
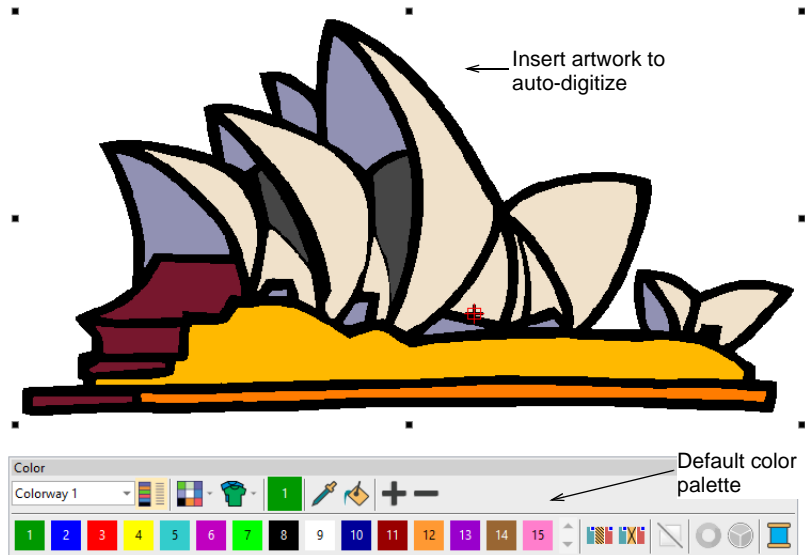
2 Optionally, choose a color matching method.

3 Click **Instant Smart Design** and study the result.

Artwork colors added to palette

By default, artwork colors are added to the palette. If you have chosen to match artwork colors, you might obtain a result like this…

Artwork colors matched to palette

4 Edit the result as preferred – e.g. change colors, change stitch types, delete any unwanted background stitching, etc.

◀ Use the **Color-Object List** and/or **Sequence** toolbar to optimize the stitch sequence of your auto-digitized objects.

◀ Use the **Closest Join** and/or the **Reshape** tool to minimize connectors.

◀ Toggle underlays on/off with the **Auto Underlay** button.

Auto-digitize entire designs

Use Auto-Digitizing > Smart Design to create embroidery designs directly from imported artwork.

Use Auto-Digitizing > Keep Graphic Objects to retain original artwork during conversion.

For more control over object conversion, use the **Smart Design** method. This can recognize shapes in artwork and allow you to preset suitable stitch types for conversion. **Smart Design** determines stitching sequence based on closest join. Artwork is effectively 'batch processed' to create the many embroidery objects that make up a design. The tool handles both bitmap and vector formats.

To auto-digitize entire designs…

1 Load and preset the artwork as necessary.

Enter dimensions as exact values or as a percentage

Lock aspect ratio toggle
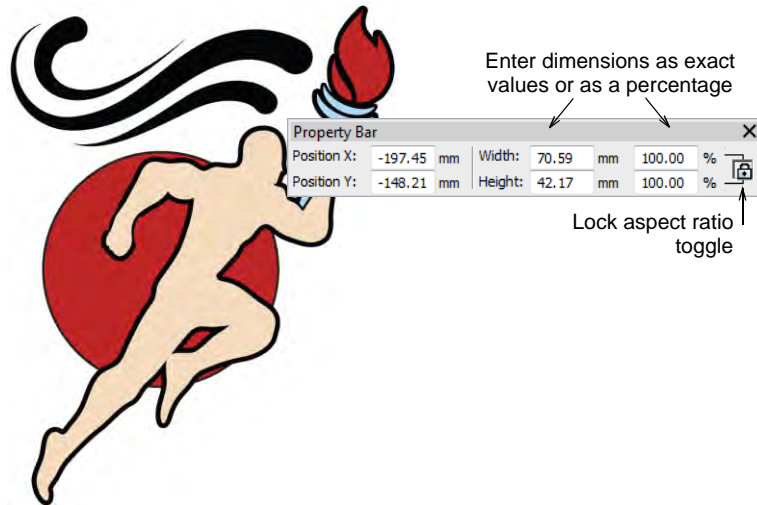
2 Select the image and click **Smart Design**.

If the image requires preprocessing, the software displays the **Prepare Bitmap Colors** dialog. See Preparing images for auto-digitizing for details.

Next, the **Smart Design** dialog opens. Image colors are automatically sequenced and backgrounds omitted altogether.

Tick to omit unwanted colors

Click to view selected colors in the design
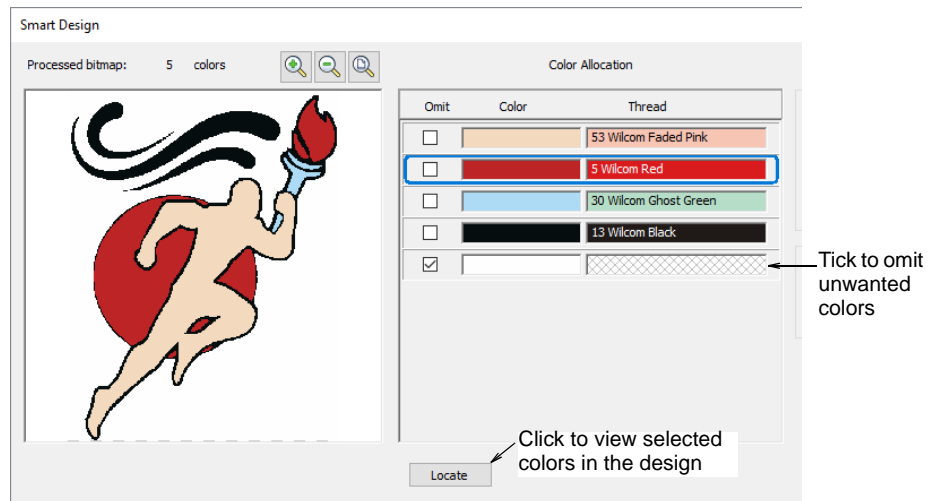
3 Use the **Color Allocation** panel to omit unwanted colors. Use the **Locate** button to isolate selected colors.

White background color omitted

All colors omitted except black
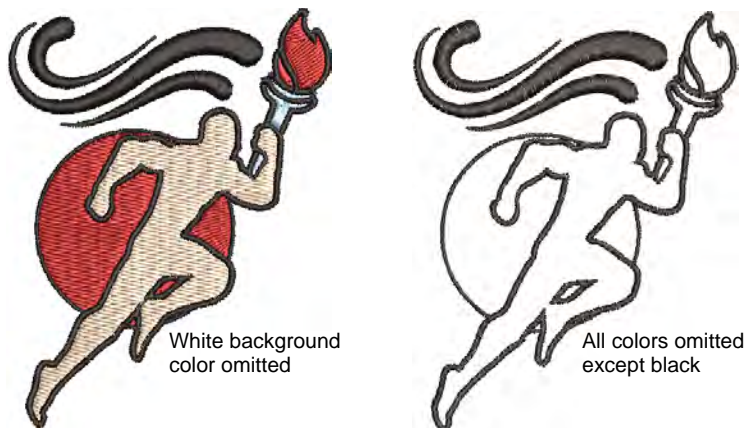
4 Select a conversion method for color processing. By default, bitmap colors are added to the current colorway. Optionally, select a specific thread chart to match to or match colors to the current palette.

Image colors added to palette

Image colors matched to nearest thread colors

Specify preferred color handling
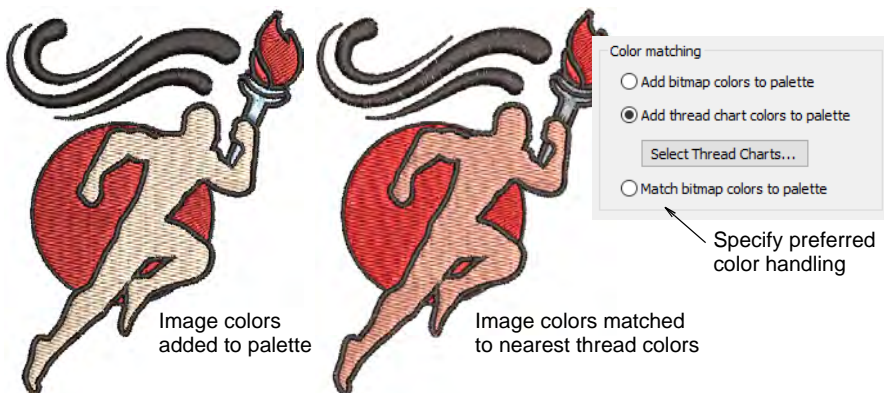
5 Optionally, add outlines to all detected shapes. Tick **Add outlines** and select a palette color from the droplist. This has the effect of reinforcing all color blocks with continuous, branched running stitches.

Include outlines as preferred and choose color

6 Click **OK** to process the image.

Outlines added to
all color blocks

Colors omitted and
outlines only generated
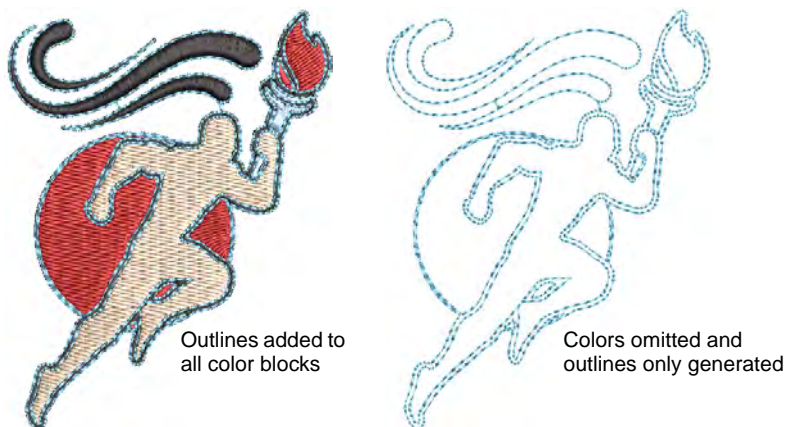
7 Edit object properties as preferred, including colors, stitch types, and so on. Even convert run outlines to satin borders.

◀ Use the **Color-Object List** and/or **Sequence** toolbar to optimize the stitch sequence of your auto-digitized objects.

◀ Use the **Closest Join** and/or the **Reshape** tool to minimize connectors.

◀ Toggle underlays on/off with the **Auto Underlay** button.

Related topics...

◀ Loading & presetting artwork
◀ Crop bitmap images
◀ Preparing images for auto-digitizing
◀ Sequencing embroidery objects
◀ Reshaping embroidery objects
◀ Merge vector & embroidery objects
◀ Minimizing connectors
◀ Stabilizing with automatic underlay

Auto-digitize individual shapes

Use Auto-Digitizing > Color Matching Method to preselect a thread matching method.

Use Auto-Digitizing > Turning Satin Object to fill narrow column shapes with turning stitch angles.

Use Auto-Digitizing > Tatami Fill Object with Holes to fill large areas with tatami stitching, preserving any holes.

	Use Auto-Digitizing > Tatami Fill Object to fill large areas with tatami stitching, ignoring any holes.
	Use Auto-Digitizing > Centerline Run Object to create centerlines in narrow shapes with run stitching.
	Use Auto-Digitizing > Outline Run Object to create outlines of run stitching.

The **Auto-Digitizing** tools provide everything necessary to automatically digitize shapes in electronic artwork – both bitmap and vector – without using manual digitizing methods. These tools are useful for turning scanned images into embroidery designs that do not require particular artistic effects or embroidery-specific knowledge. If you are using a vector graphic, it must include a fill color. **Auto-Digitizing** can be used to create tatami fills as well as objects with turning satin. Use it also to digitize outlines and details with run stitching. Current properties are applied.

To auto-digitize individual shapes...

1 Load and preset the artwork as necessary.

Enter dimensions as exact values or as a percentage

Lock aspect ratio toggle
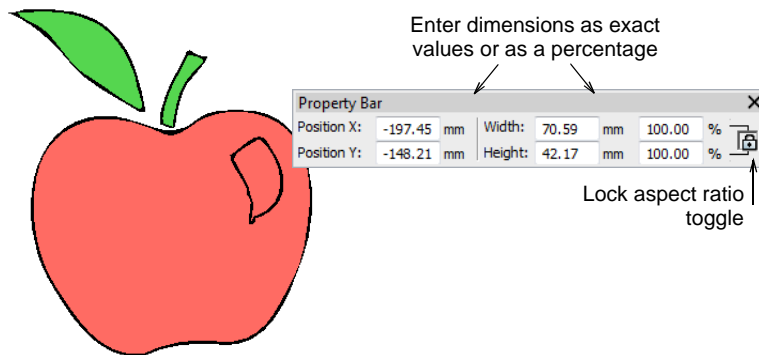
2 Select an auto-digitizing fill method:
- ◀ Use **Tatami Fill Object with Holes** for large areas, preserving any holes within them.
- ◀ If you want holes ignored, use **Tatami Fill Object**.
- ◀ Use **Turning Satin Object** to digitize narrow turning shapes with satin stitch.

3 Click the shapes you want to digitize. Stitches are generated according to current settings.

Turning satin

Tatami fill
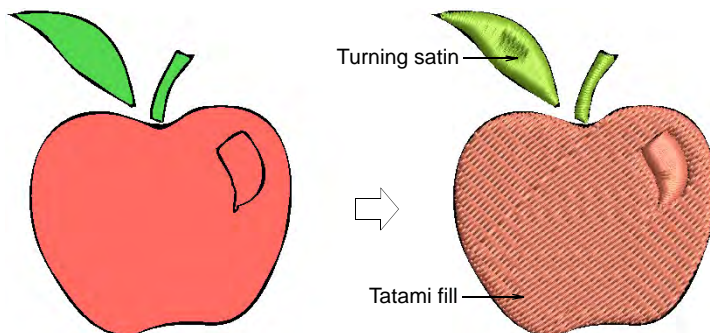
4 Optionally, edit object properties, including colors, stitch angles, entry/exit points and so on.

Edit object properties as preferred
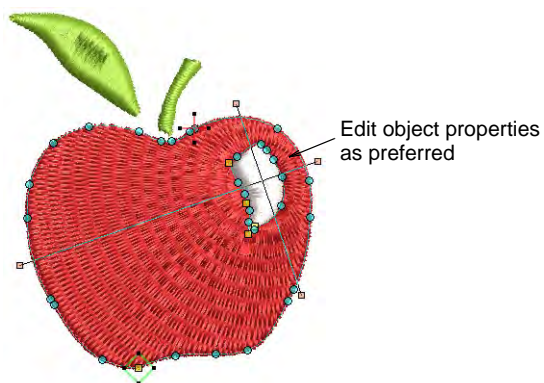
To auto-digitize outlines and details...

1 Select an auto-digitizing outline method:

◀ Use **Centerline Run Object** to create centerlines in narrow shapes with run stitching.

◀ Use **Outline Run Object** to create outlines of run stitching.

2 Again click the shapes you want to digitize. Stitches are generated according to current stitch settings.
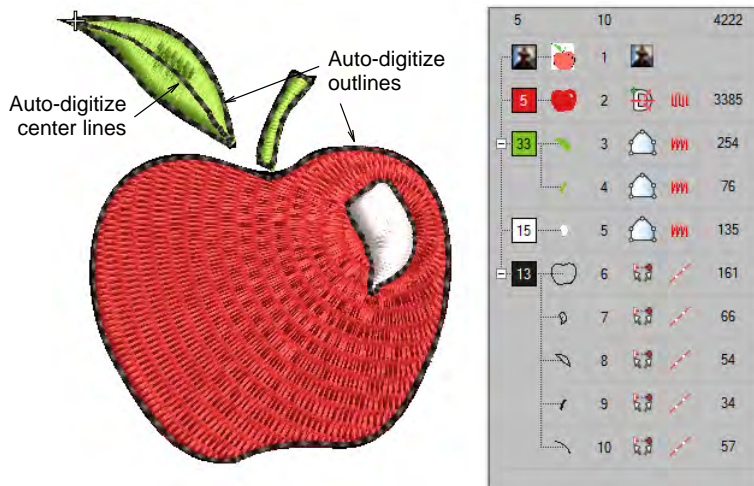
To edit the result…

◀ Edit the result as preferred – e.g. change colors, change stitch types, delete any unwanted background stitching, etc.

    ◀ Use the **Color-Object List** and/or **Sequence** toolbar to optimize the stitch sequence of your auto-digitized objects.

    ◀ Use the **Closest Join** and/or the **Reshape** tool to minimize connectors.

    ◀ Toggle underlays on/off with the **Auto Underlay** button.

Related topics…

◀ Loading & presetting artwork
◀ Crop bitmap images
◀ Preparing images for auto-digitizing
◀ Sequencing embroidery objects
◀ Reshaping embroidery objects
◀ Merge vector & embroidery objects
◀ Minimizing connectors
◀ Stabilizing with automatic underlay

Auto-digitizing photographs

EmbroideryStudio provides dedicated techniques for auto-digitizing photographs. Both colored and grayscale photos can be used as input.

Feature		Overview
	Photo Flash	The Photo Flash feature creates embroidery designs from photographs and other grayscale bitmap images. The effect resembles the output of a line printer.
	Reef PhotoStitch	The Reef PhotoStitch feature also creates embroidery designs from photographs and other bitmap images. The features creates open stitching reminiscent of a coral reef.
	Color PhotoStitch	The Color PhotoStitch feature creates embroidery from photographs and other images. It produces variegated stitching using multiple thread colors.

 Tip: Results depend greatly on the resolution, color depth, and quality of source images. For best results, use crisp images with well-defined subjects and strong contrasts. In addition a degree of preparation is needed. This may involve preparation using third-party graphics applications such CorelDRAW Graphics. Tools are also available within Wilcom Workspace. See also Prepare photos for auto-digitizing.

Auto-digitize with Photo Flash

> Use Auto-Digitizing > Photo Flash to create embroidery designs directly from photographs.

Use **Photo Flash** to create embroidery from photographs or other images, color or grayscale. Color images are automatically converted to grayscale. **Photo Flash** designs consist of rows of stitches of varying spacing settings. The effect resembles the output of a line printer.
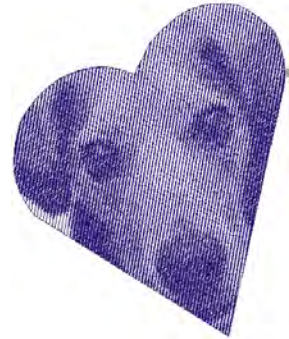
To create embroidery with Photo Flash...

1 Insert the bitmap image in your design and scale it to the required size.
2 Crop the image as desired using the **Crop Bitmap** tools.

3 With the bitmap still selected, click the **Photo Flash** icon to access object properties.

Select resolution (row spacing)

Select positive or negative image
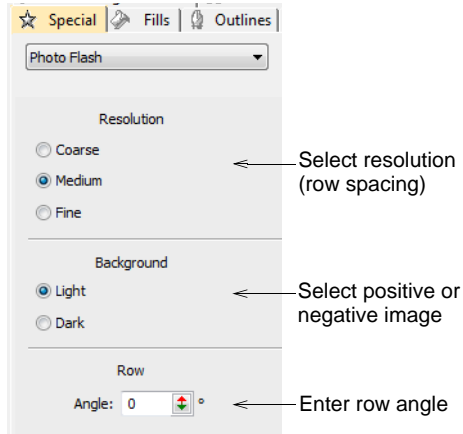
Enter row angle

4 In the **Resolution** panel, select a resolution option – Coarse, Medium, or Fine.

| Fine resolution | Medium resolution | Coarse resolution |
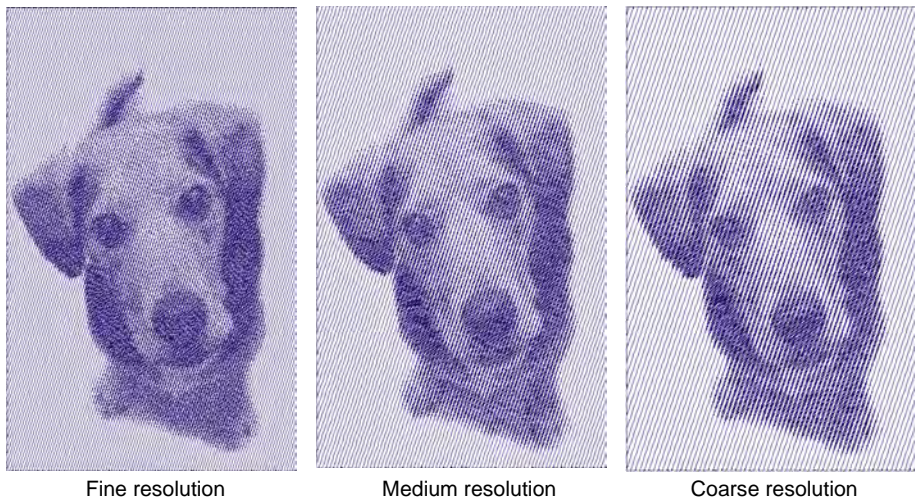
Note: The coarser the resolution the more spacing between rows.

5 In the **Row** panel, enter a new angle as required.

Row Angle: 0°   Row Angle: 90°

6 In the **Background** panel, select a background option:

Option	Function
Light	Applies the maximum row width value to the lightest part of the image.
Dark	Applies the maximum row width to the darkest part of the image.

💡
Tip: The option you select usually depends on whether the fabric is light or dark. The **Dark** option produces a negative of the image.

Light background   Dark background

7 Select the **Fills** tab and adjust the stitch spacing and skew angle as required.

Adjust stitch values
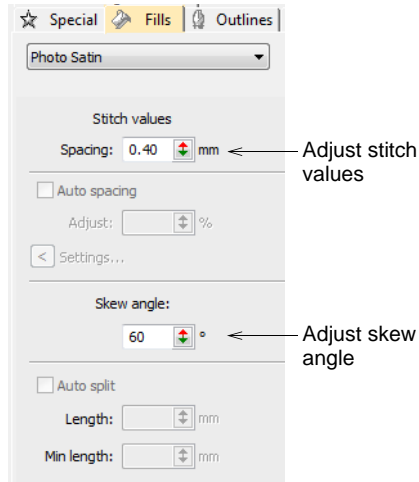
Adjust skew angle

The **Skew Angle** determines the angle of the stitches.

Skew angle: 0°

Skew angle: 45°
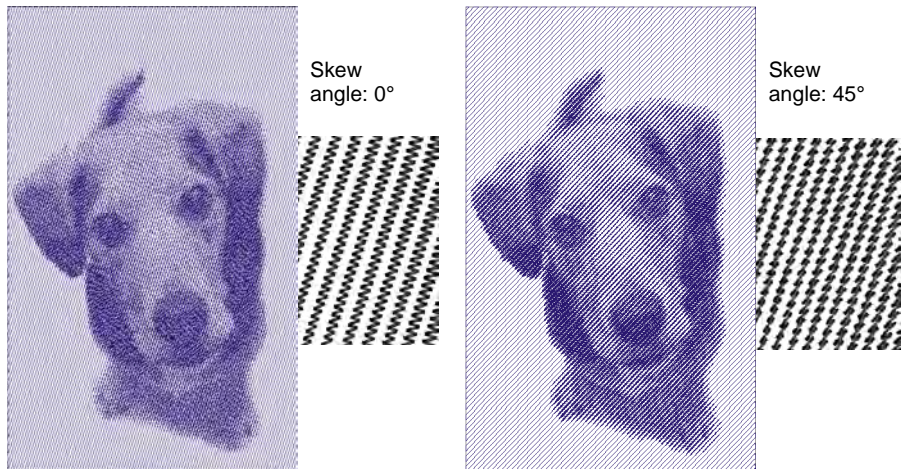
Tip: Use **TrueView™** for a more accurate representation of the stitching.

8 Fine-tune **Auto Spacing** and **Auto Split** settings as required.

◀ The **Auto Spacing** option automatically adjusts stitch spacing according to column width. For columns of varying width, **Auto Spacing** automatically adjusts the stitch spacing wherever the column changes width.

◀ **Auto Split** breaks 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.

9 Press **Enter** or click **Apply**.

If you have defined a 'soft crop' for your bitmap, EmbroideryStudio generates stitches for that area. Otherwise stitches are generated for the entire bitmap.

⊘

Note: In **CorelDRAW Graphics**, the **Mode** toolbar also includes a **Tag as Photo Flash** icon which allows you to convert photos to **Photo Flash** embroidery.

Related topics...

◀ Insert bitmap images

◀ Crop bitmap images

◀ Prepare photos for auto-digitizing

◀ Satin fixed spacing

◀ Applying satin stitch

◀ Split satin stitches

Auto-digitize with Reef PhotoStitch

🌺	Use Auto-Digitizing > Reef PhotoStitch to turn photographs into a single embroidery field resembling a coral reef.
▱	Use Auto-Digitizing > Crop Bitmap to crop bitmap artwork for use with auto-digitizing.

Reef PhotoStitch expands on the **Photo Flash** auto-digitizing method to convert photos into embroidered designs. Automatically fill large areas with open stitching reminiscent of a coral reef. Adjust to the stitch resolution of choice.

To create embroidery with Reef PhotoStitch...

1 Insert the bitmap image in your design and scale it to the required size.

2 Crop the image as desired using the **Crop Bitmap** tools.

3 With the image selected, click **Reef PhotoStitch**.

Adjust grayscale image

Adjust reef stitch density and color
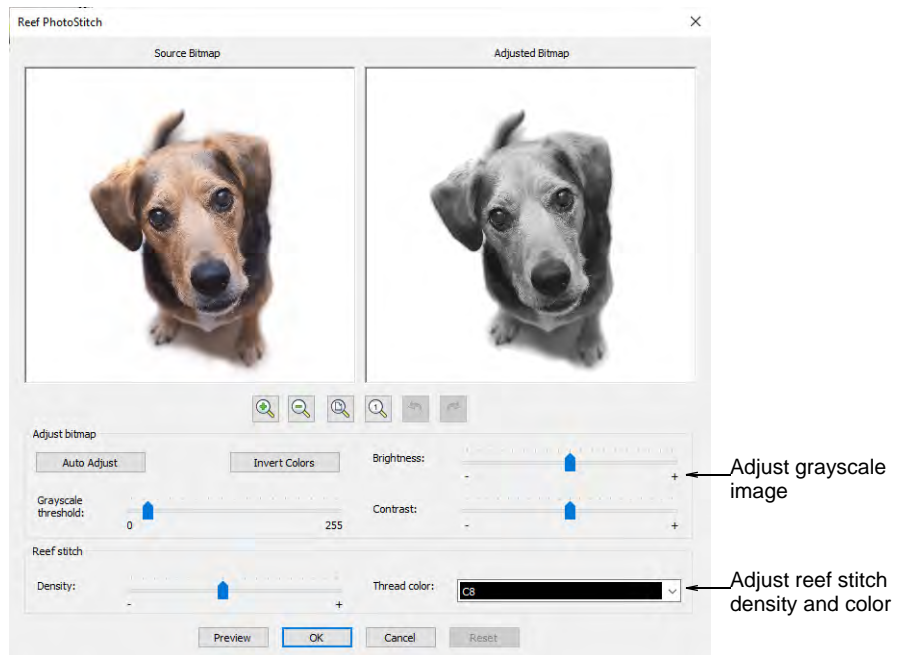
4 Adjust the grayscale image settings as preferred:

    ◀ Click **Auto Adjust** to allow the software to optimize image settings for automatic digitizing.

    ◀ Use **Brightness** and **Contrast** settings to further differentiate stitched and unstitched areas.

    ◀ Use the **Grayscale threshold** setting to further filter the number of gray tones in the image.

    ◀ Click **Invert Colors** to create an image negative.

    ◀ Click **Reset** to return the adjusted bitmap to the default grayscale image.

5 Use the zoom buttons to examine the image preview in detail. Alternatively, holding down the **Ctrl** key, zoom in and out with the mouse wheel.
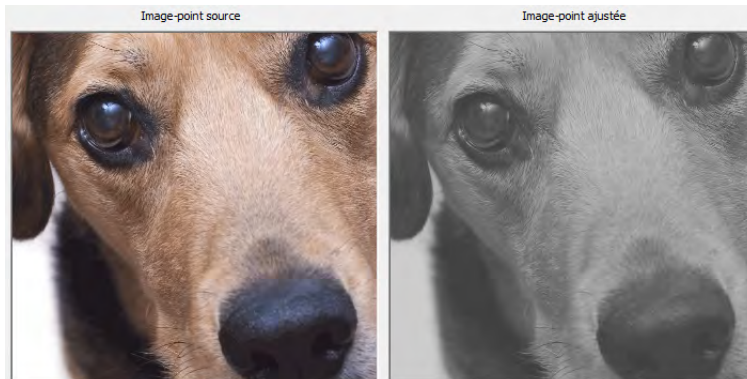
6 Adjust reef stitch settings as preferred:

◀ Adjust **Density** to create more dense or more open stitching, similar to **Loop Spacing** in stipple stitching. The highest density value may result in thread breaks.

◀ Select the thread color you wish to apply to the end result.

7 Use **Preview** to generate temporary stitching without closing the dialog. Move the dialog as necessary in order to preview the result in the design window. Further adjust settings until you obtain the look you want and click **OK** to confirm.
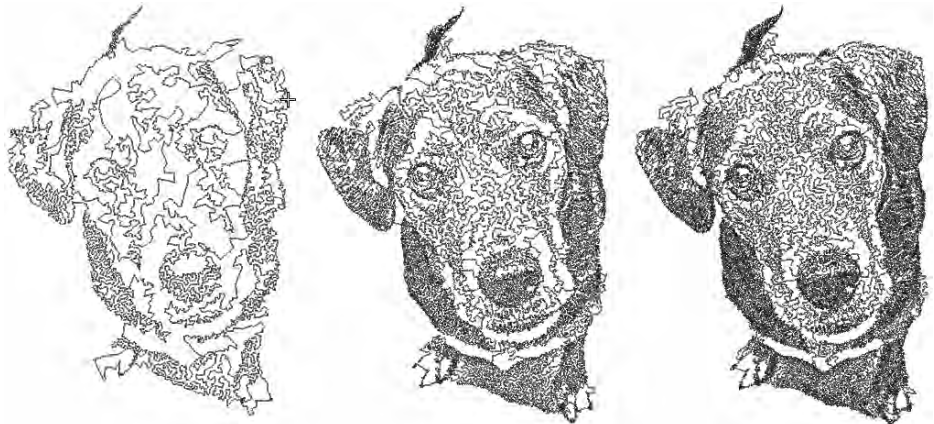
Tips for use…

◀ Use crisp images with well-defined subjects and strong contrasts.

◀ For denser stitching, try combining different outputs and different colors.

◀ Posterizing effects may produce good results at lower thresholds. In Corel PHOTO-PAINT, this is available via **Image > Transform Posterize**.

◀ Try applying filters such as Stucki, Jarvis and Crosshatch effects.
   ◀ In Corel PHOTO-PAINT Stucki and Jarvis are available via **Image > Convert to Black and White** (1-bit). Adjust intensity as necessary.
   ◀ Crosshatch is available via **Effects > Art Strokes > Pen & Ink**.

◀ An interesting technique is offered by applying a halftone filter. In the sample below, the image is split into separate CMYK channels and **Reef PhotoStitch** applied to each one. In Corel PHOTO-PAINT select **Image > Convert to CMYK Color** and **Image > Split Channels To > CMYK**.

Related topics...

◀ Insert bitmap images

◀ Crop bitmap images

◀ Prepare photos for auto-digitizing

Auto-digitize with Color PhotoStitch

Use **Standard > Import Graphic** to import artwork into current design as a backdrop for manual or automatic digitizing.

Use **View > Show Bitmaps** to toggle bitmap images on or off. Right-click for settings.

Use **Auto-Digitizing > Crop Bitmap** to crop bitmap artwork for use with auto-digitizing.

Use **Auto-Digitizing > Adjust Bitmap** to adjust image lightness and contrast in preparation for auto-digitizing.

Use **Auto-Digitizing > 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 **Photo Flash** 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.

To process the image...

1 Insert the bitmap image in your design and scale it to the required size.

2 Crop the image as desired using the **Crop Bitmap** tools.

3 With the image selected, click **Color PhotoStitch**.

Set required number of thread colors

Choose a color matching method
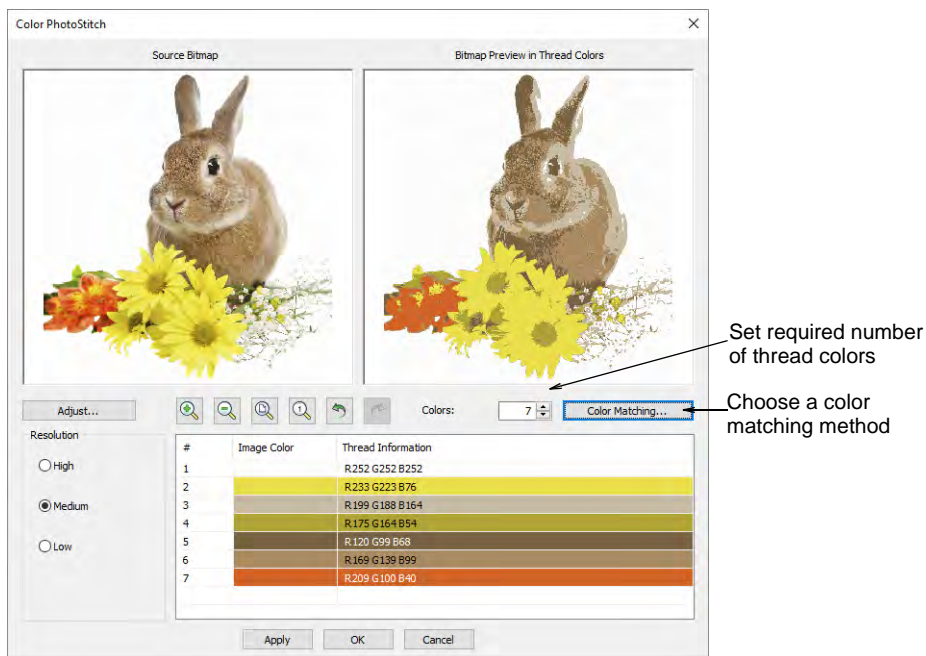
Note: Support is provided for transparent backgrounds in 24 bit and 32 bit images.

4 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.

5 Use the zoom buttons to examine the previews in detail. You can also zoom in and out with the mouse wheel.

6 Optionally, adjust stitching resolution to high, medium, or low. High resolution allows greater detail but with a higher stitch count.
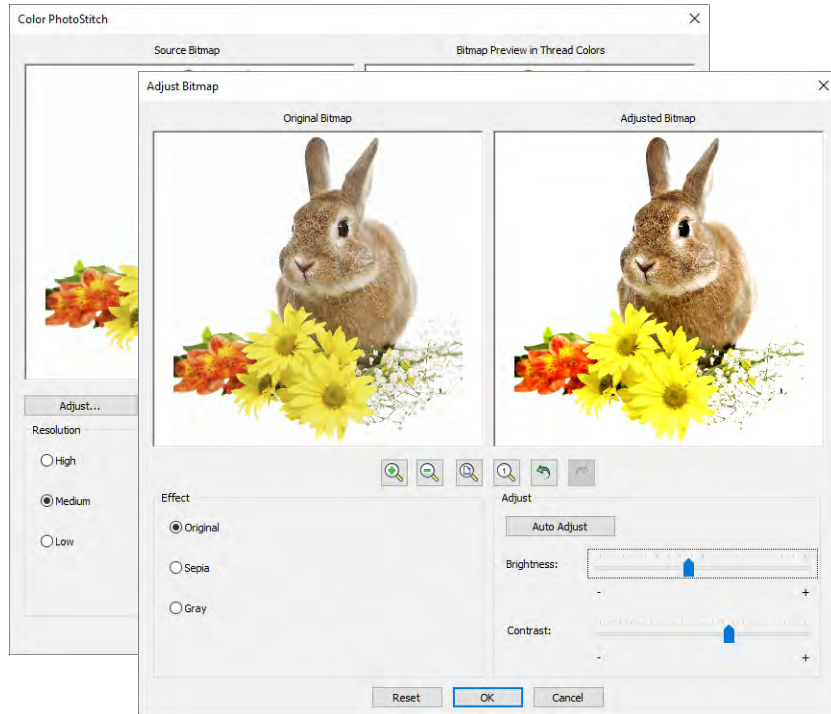
7 Click **Adjust Bitmap** for further options:
- ◀ Click **Auto Adjust** to allow the software to optimize image settings for automatic digitizing.
- ◀ Use **Brightness** and **Contrast** settings to further differentiate darker and lighter areas of stitching.
- ◀ Click **Reset** to return adjusted settings to default image settings.

8 Choose between several image variations:

Option	Function
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	Grayscale images are ones composed exclusively of shades of gray, varying from black at the weakest intensity to white at the strongest.

9 Use **Color Matching** to assign image colors to the color palette for manual thread matching. This ensures the best representation. Alternatively, automatically match them to the current color palette or

current thread chart. Select one or more available thread charts to match to.

Choose a thread matching method

Select one or more thread charts to match to
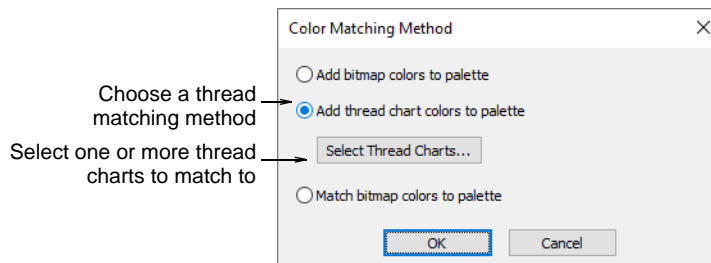
10 Use **Apply** to generate temporary stitching without closing the dialog. Further adjust settings until you obtain the result you want and click **OK** to confirm.

Click Apply to generate preview
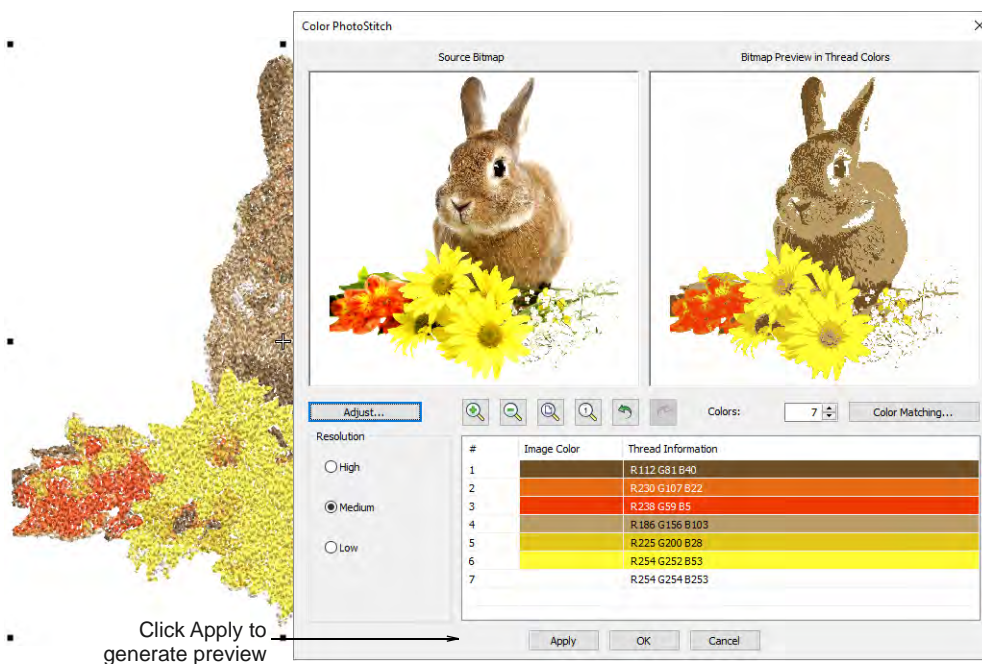
To edit the result...

◀ Check the results with **TrueView™** on and off. Turn connector stitching on and off. For better visualization, set TrueView™ viewing options to thin thread.

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 necessary using the **Color-Object List**.

Manually merge thread colors as necessary
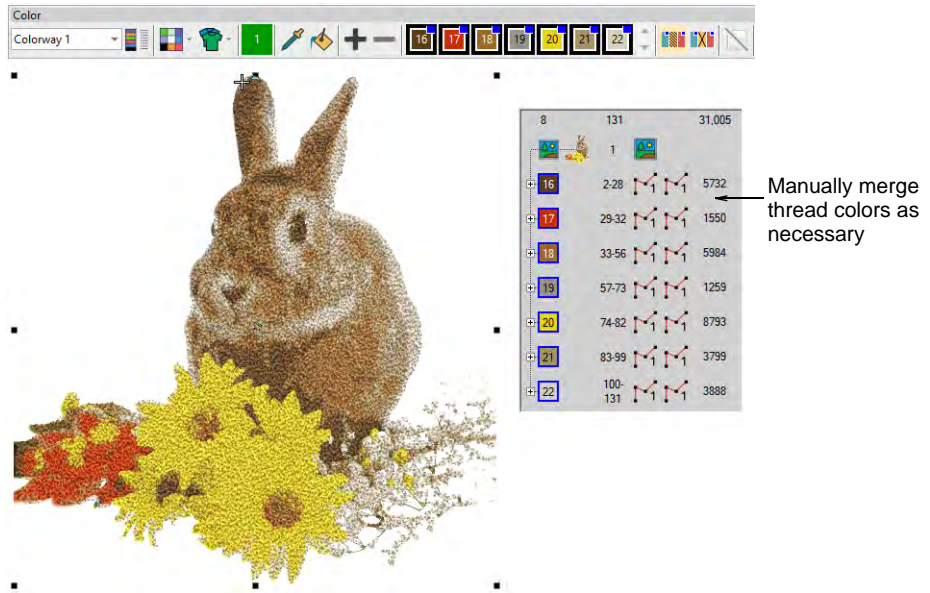
◀ If you have added RGB colors to the color palette, open the **Color-Object List** and **Threads** dockers side-by-side, and select the thread charts you have available from the **Select Thread Charts** dialog.

Select each color block in turn, check the closest match in **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.

Related topics...

◀ Insert bitmap images
◀ Crop bitmap images
◀ Prepare photos for auto-digitizing

PART IX
EMBROIDERY PRODUCTION

Design processing and encoding involve all the important, back-end operations of embroidery design and manufacture. This is where you actually output your designs to machine, disk, printer, cutter, and so on. For this, you will need an understanding of embroidery file types as well as different machine formats. Depending on your setup, you will also need an understanding of traditional storage media such as embroidery disks.

Design hooping

This section deals with selecting and centering hoops, both manually and automatically. It also covers defining and editing custom hoops. See Design Hooping for details.

Design reports

From the same EMB design file, you can output production worksheets or approval sheets for machine operators or customers respectively. This section describes how to create production worksheets and approval sheets as well as how to send designs as email attachments. See Design Reports for details.

Machine files

This section describes the different conversion options for opening and saving stitch and outline design formats. It also provides details about the processing of Melco CND outline files, including color merging, as well as reassigning colors to both stitch and Melco CND files. See Machine Files for details.

Embroidery output

This section describes how to stitch designs out with the Stitch Manager and with Connection Manager utilities. It also explains how to save designs for machine, how to read and write to embroidery disk. It also deals with exporting multi-decoration files. See Embroidery Output for details.

Machine networking

A Wilcom EmbroideryConnect machine network provides for wireless design transfer to embroidery machines with a USB port. When activated in the EmbroideryStudio software, you can send machine files wirelessly

via a standard WiFi network to a compatible EmbroideryConnect device plugged into the machine. See Machine Networking for details.

Chapter 35
Design Hooping

Devices made from wood, plastic, or steel, hoops are used to tightly grip fabric and stabilizer between an inner and outer ring. Designed to hold fabric taut against the machine bed for embroidering, they attach to the machine's frame. Fabrics must be hooped before stitching out. EmbroideryStudio allows you to select from a wide range of standard factory-supplied hoops. You can also define your own from scratch or based on a standard hoop.

The **Auto Hoop** feature allows you to:

◀ Prompt EmbroideryStudio to select a hoop from a hoop library.
◀ Show/hide the selected hoop in the design window and design preview area of the production worksheet. See also Print reports.
◀ Create/edit/delete user-defined hoops with circle, oval, rectangle, round rectangle, or square shapes.
◀ Zoom-to-hoop in the design window and print preview.

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.

Many hoops also come with a clear plastic template overlay. These include alignment lines, with tiny holes which allow you to create positioning marks. Hoop template display can be toggled on or off independently of the hoop itself.

Uses in the software…

◀ Templates include alignment and registration guide markings. These can help production staff align the design in the hoop.
◀ Templates can also be 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.

Setting up hoop lists

Click View > Show Hoop to turn hoop display on or off. Right-click to change hoop settings.

A range of commercial brands is available for a wide variety of design types. Configure the **My Hoops** list to include only those hoops you currently have available for use. If you are using a hoop that is not in the hoops list, you can define your own and save it for later use.

Note: The **Auto Hoop** feature only selects hoops from the **My Hoops** list. Thus you need to set up this list before **Auto Hoop** is available for use.

To set up a hoop list

◀ Right-click the **Show Hoop** icon. The first time you run it, the **Options** dialog will open with the **My Hoops** dialog already opened. Otherwise, click the **My Hoops** button.

Click to set up your own hoop list
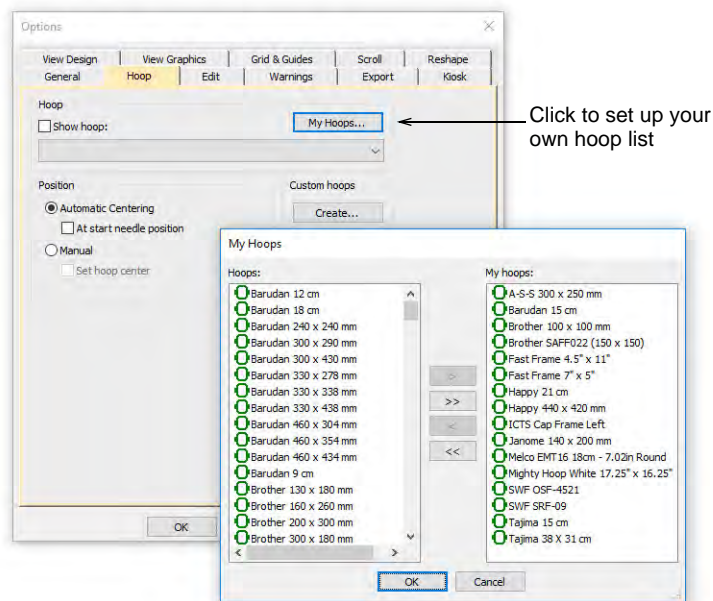
◀ Use the **My Hoops** dialog to set up your own list of available hoops. Select from the listed hoops and use the arrow buttons to assign.
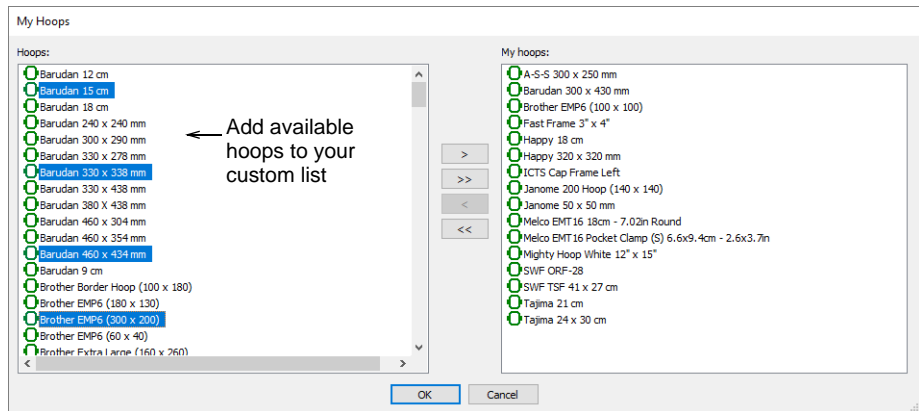
◀ Click **OK** to confirm. Only selected hoops will be available for manual or automatic selection.

💡
Tip: You may be working with hoops which don't appear in the standard hoop list. Define your own hoops using circle, oval, rectangle, and other shapes.

Related topics...

◀ Selecting hoops automatically
◀ Creating custom hoops

Setting auto start & end

🔄 Use View > Auto Start & End to toggle the Auto Start & End function on/off according to the current settings. Right-click to adjust settings.

Before stitchout, some embroidery machines require you to position the hoop precisely in relation to the needle. The **Auto Start & End** feature is available to connect first and last stitches in a design. This makes it easy to position the needle before stitching, and reduces the chance of the needle hitting the side of the frame.

✍
Note: Machines which auto-center designs around design extents will ignore the **Auto Start & End** setting.

To set automatic start & end points

◀ Right-click **Auto Start & End**.

Select 'Apply auto start & end'
Select centering method
Select preset end point
Click to enter separate start and end points
Specify how to match connecting stitches
Specify the connector type
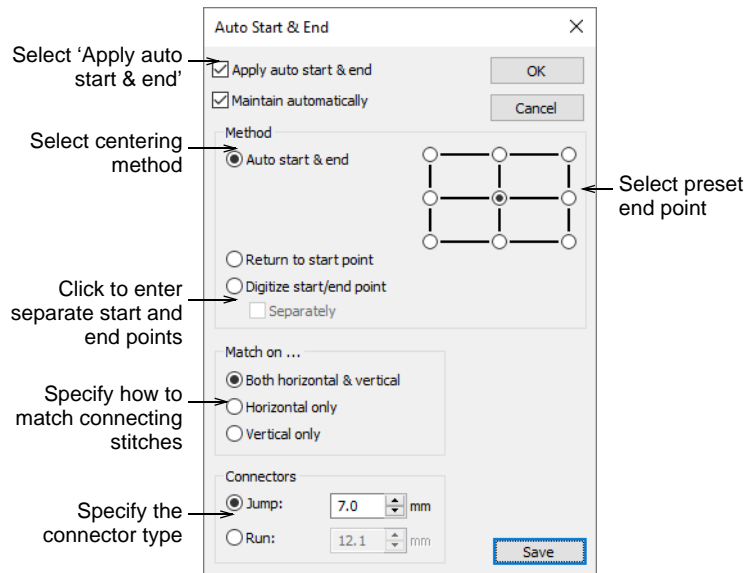
◀ Select the **Apply** checkbox to connect first and last stitches in the design.

◀ Select **Maintain automatically** to maintain the design center after modifying the design.

◀ Select a centering method:

Method	Function
Auto start and end	By default, connecting stitches are created from the start and end points to the center of the design. Select one of the nine preset end points.
Return to start point	Creates a connecting stitch from the end point to the start point.
Digitize start/end point	Primarily used with multi-decoration designs where you want to strictly define the start/end point of the embroidery component. If you select this, you are prompted to select the point after clicking OK. Tick the 'Separately' checkbox to create separate start and end points.

◀ Select to match connecting stitches on the **Horizontal** plane, **Vertical** plane or both in the **Match On** panel.
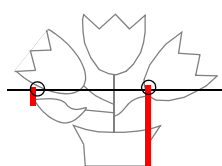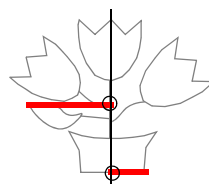
| Match on vertical | Match on horizontal | Match on both |
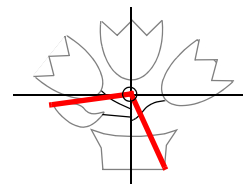
◀ Select the type and length of the connecting stitches in the **Connectors** panel.

◀ Click **OK** to confirm. Connectors – travel runs or jumps – are inserted as specified, before first and after last stitches of the design.

Tip: Auto-start & end symbols – a green circle and a red cross – can be activated via the **Options > View Design** tab. See Show auto-start & end points for details.

Caution: Problems may occur when you try to set a common start and end point for team names.

Related topics...

◀ Design viewing options

◀ Types of connectors

◀ Outputting teamname designs

Selecting hoops automatically

Click View > Auto Hoop to prompt the system to select a suitable hoop automatically.

The simplest way to hoop a design is to prompt the system to select a hoop for you. **Auto Hoop** finds the smallest hoop which can accommodate the entire design. **Auto Hoop** only selects hoops from the **My Hoops** list thus only ever suggesting a hoop you have pre-selected as available for use.

To select a hoop automatically

◀ Open your design and click the **Auto Hoop** icon or access the command from **Design > Auto Hoop** menu. From amongst its library of predefined hoops, EmbroideryStudio looks for a suitable hoop.

◀ If the **My Hoops** list is empty, the system prompts you to create a custom list.
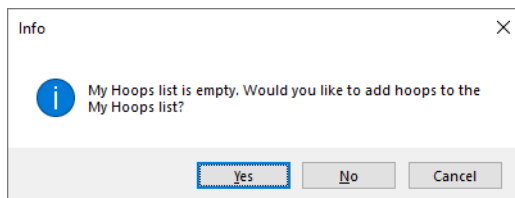
◀ If the system cannot find a suitable hoop with a stitching area adapted to the current embroidery design, it displays a message with the option to create a new hoop, either automatically or manually.
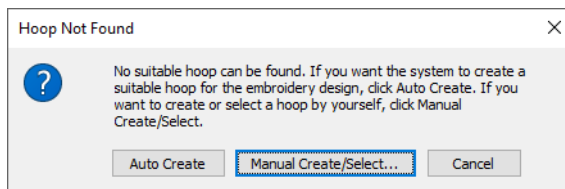
◀ Click **Auto Create** if you want the system to generate a suitable hoop. EmbroideryStudio will create either a circular or rectangular hoop to

best suit design dimensions. It will also name it accordingly – e.g.
'Circle 100mm'.

‹ Click **Manual Create/Select** if you want to define your own hoop
template to suit a specific hoop type you may have.

‹ Optionally, select **View > Zoom > Zoom to Hoop** or press **Alt+0** to
view the entire hoop in the design window.

‹ Optionally, turn on the **Hoop Template** display via the **View** menu.
Templates can be used instead of grids. The template, especially when

printed in the worksheet, provides a means for aligning the design in the hoop at the correct location and orientation.

Related topics...

◀ Setting up hoop lists
◀ Define custom hoops

Selecting hoops manually

Click View > Show Hoop to turn hoop display on or off. Right-click to change hoop settings.

Click Zoom > Zoom To Hoop to view entire hoop in the design window.

From your **My Hoops** list, you can manually select your preferred hoop. Generally you will want to select the smallest hoop which will accommodate your design. This will hold the fabric tight while stitching. When you output your design, most machines will automatically center the design within the hoop according to its geometric extents. Some machines will center designs in the hoop at the start needle position. For these machines, you can set a starting point using **Auto Start & End** settings.

For display purposes, EmbroideryStudio will generally ensure that the design is centered in the hoop. However, you can use the manual option to lock the hoop position onscreen. This means it won't automatically center while you are digitizing. It's always a good idea, however, to turn

auto-centering back on to check that the design will fit within the selected hoop.

To change hoops

‹ Open your design and click the **Show Hoop** icon. The current hoop is displayed. It may be too big or too small for your design.
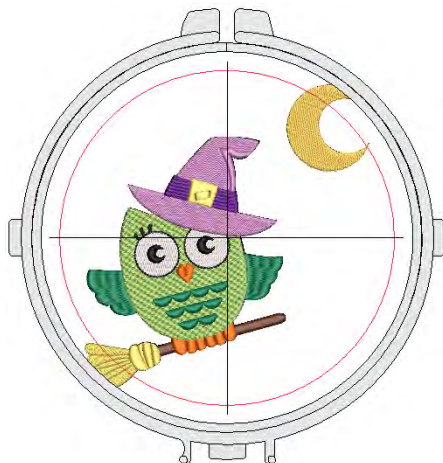
‹ Right-click the icon. The **Options > Hoop** dialog opens.

Choose preferred hoop
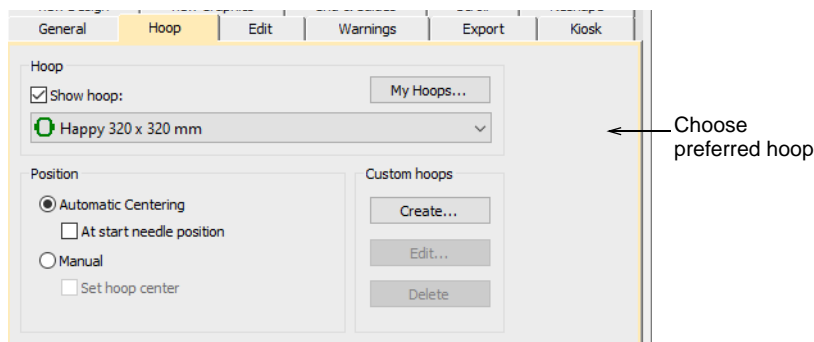
‹ Select a hoop from the **My Hoops** list. Configure the list to include only those hoops you currently have available for use via the **My Hoops** function.

‹ In the **Position** panel, choose how you want the hoop to be positioned on the machine:

◀ **Automatic centering**: Ensure that design is always centered onscreen within the hoop.

Design automatically centered after editing
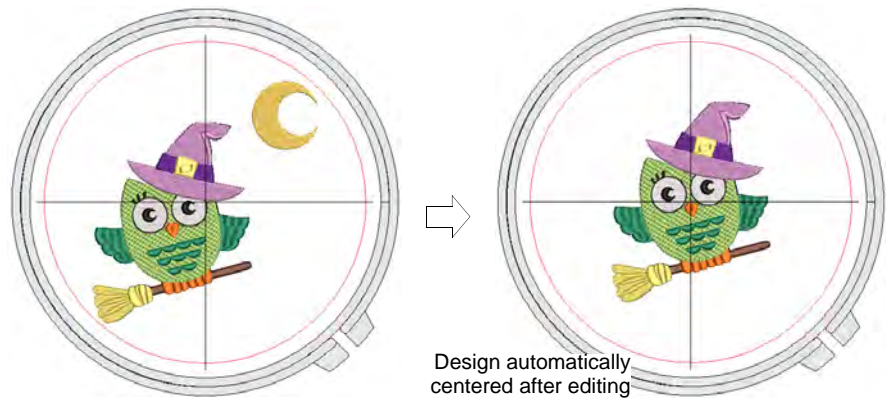
Normally the hoop will center itself around the geometric center of the design. However, you have the option of centering around the start needle position. This option is usually used on conjunction with **Auto Start & End** settings.

◀ **Manual**: Use the manual option to make sure the hoop display does not move from its original position. This means it won't automatically center while you're digitizing. This may be important if you are combining embroidery with print or if you want to stitch out in certain locations like chest pockets.

Design remains in same position
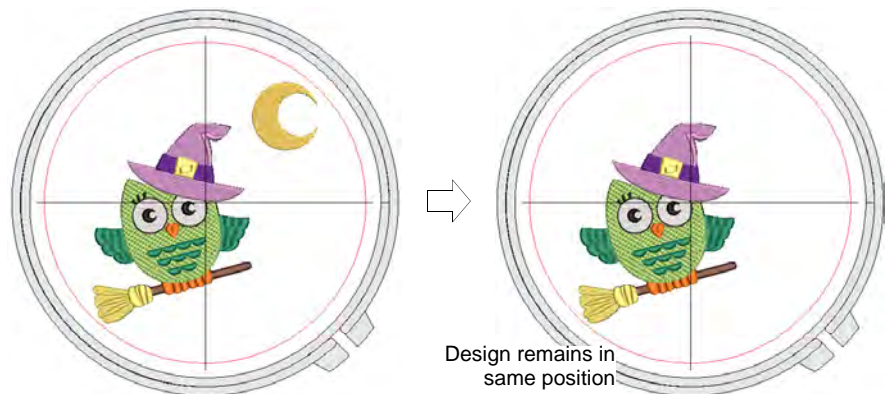
◀ **Manual > Set hoop center**: Digitize a point on the design that the hoop will center around.

◀ Click **OK**. If you selected **Set Hoop Center**, click a point where you want to center the hoop.

◀ Use the **View** toolbar to turn on/off hoop.

◀ Optionally, click the **Zoom to Hoop** icon, select **View > Zoom > Zoom to Hoop** or press **Alt+0** to view the entire hoop in the design window.

◀ Optionally, turn on the **Hoop Template** display via the **Options** dialog or **View** menu. The template may be used to help position your design within the hoop.

Show the hoop template
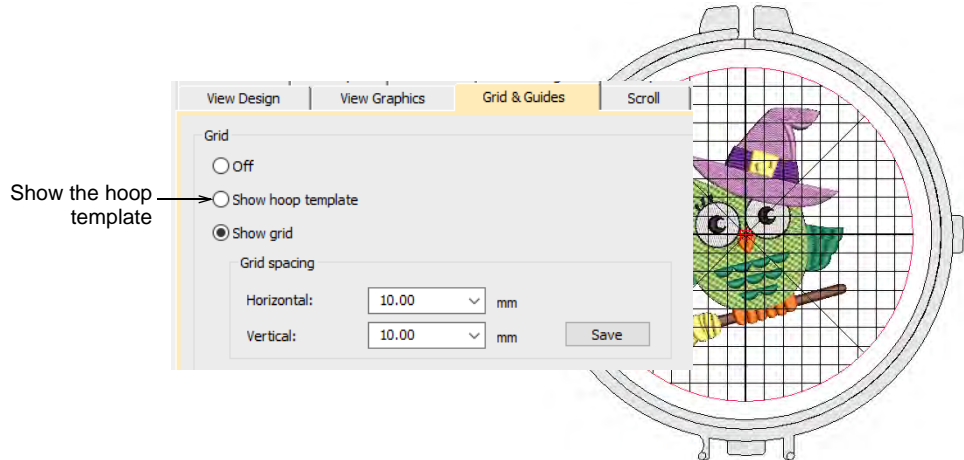
Tip: You can include the hoop template in the production worksheet, together with alignment and registration guide markings. This allows you to cut out the printed design and align it within the hoop. Use the template markings to align it to physical hoop template.

Related topics...

◀ Display grids, rulers & guides

◀ Scroll options

Creating custom hoops

You may be working with hoops which don't appear in the standard hoop list. Define your own hoops using circle, oval, rectangle, and other shapes.
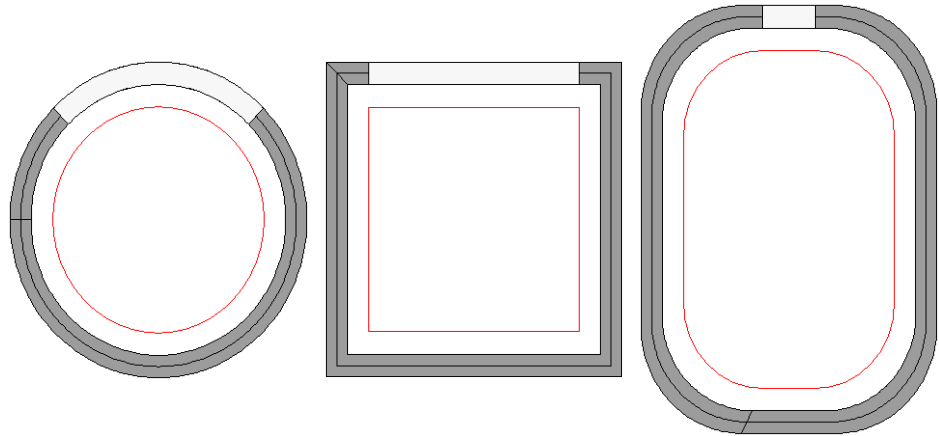
Define custom hoops

> Click View > Show Hoop to turn hoop display on or off. Right-click to change hoop settings.

If you are using a hoop size that is not in the hoop list, you can define a custom hoop to conform to the dimensions of any physically existing hoops you may be using. Various formats are available to define anything from rectangular, oval, circle, to square hoops.

To define a custom hoop

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

Create new hoop
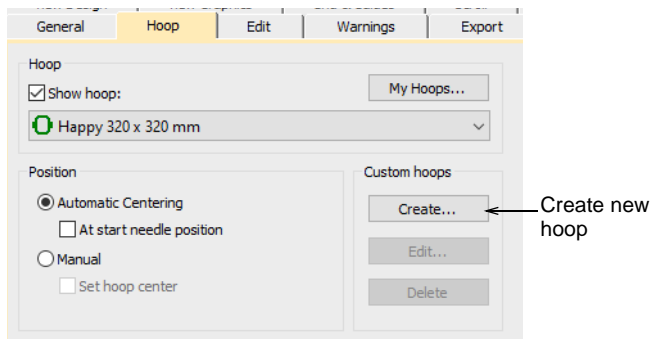
2 Click **Create**. The **Create Hoop** dialog opens.

Select required format →
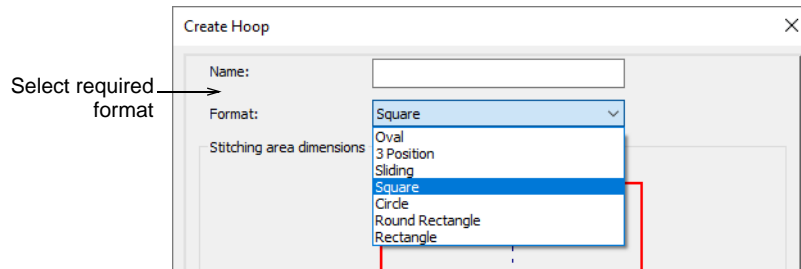
3 Select the required format for your hoop from the droplist – e.g. rectangle, circle, etc.

4 In the **Stitching Area Dimensions** panel, enter the dimensional characteristics of the stitching area:

◀ **Circle**: Circle stitching areas only require a **Diameter** to be specified.

Enter required diameter →
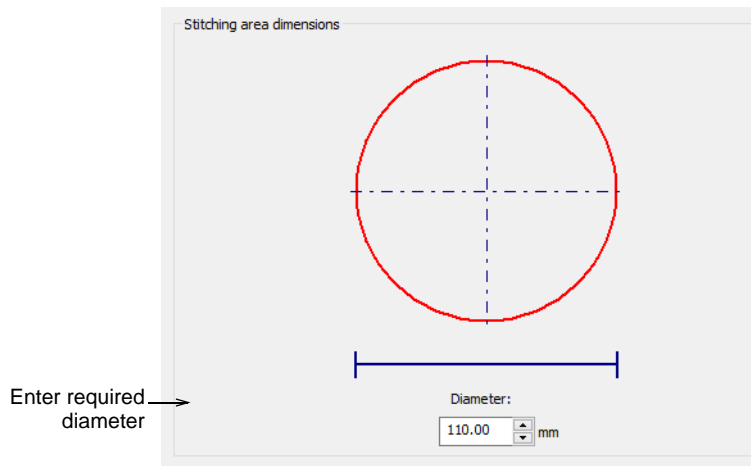
◀ **Square**: Square stitching areas only require a **Width** to be specified.

Enter required width →
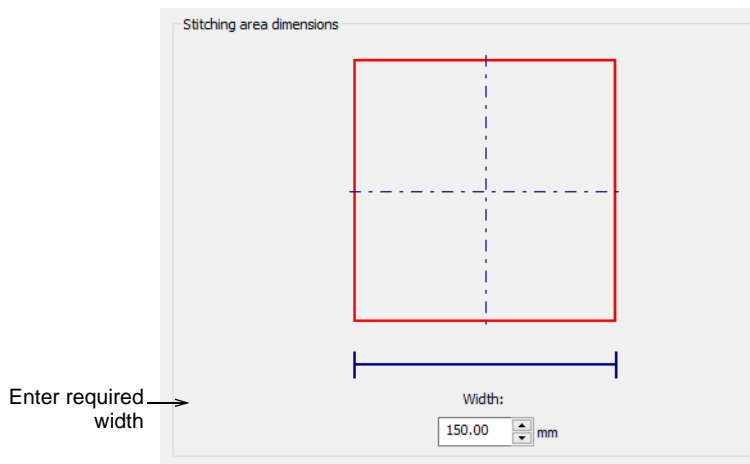
◀ **Rectangle**: Rectangular stitching areas require **Height** and **Width** dimensions.

Enter required dimensions →

◀ **Oval**: Oval stitching areas require three dimensions – **Total Height**, **Rectangle Height**, and **Width**.

Enter required dimensions
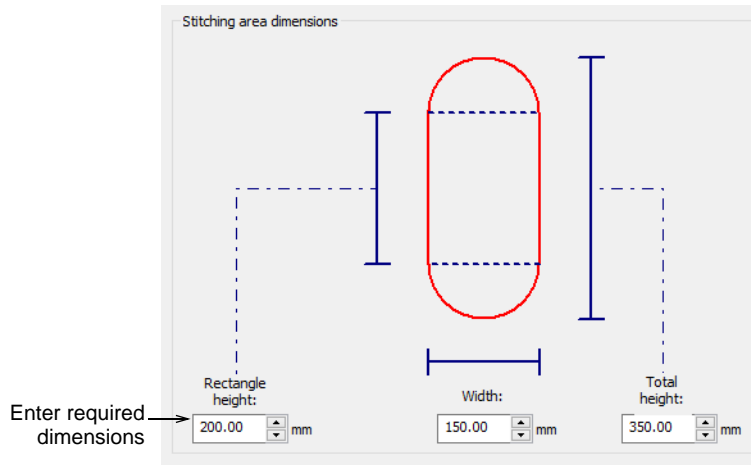
◀ **Round Rectangle**: Similar to oval stitching areas, round rectangles require three dimensions – **Height**, **Width**, and **Corner Radius**. The greater the radius, the rounder the corner.

Enter required dimensions
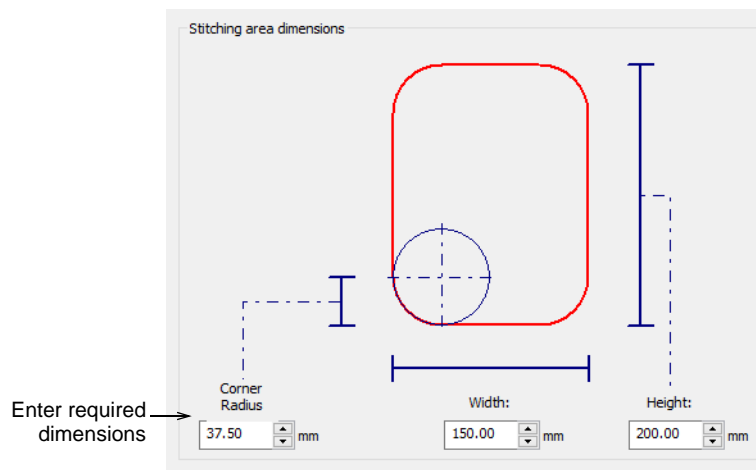
5 Click **Save Hoop** or **Save Hoop As**. The **Save Hoop As** dialog opens.
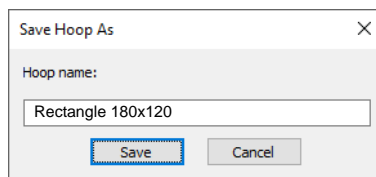
6 Give your hoop a meaningful name – e.g. 'Rectangle 180x120'.

7 Click **Save**. Your user-defined hoop is now available for use along with the system-defined hoops.

Edit custom hoops

> Click View > Show Hoop to turn hoop display on or off. Right-click to change hoop settings.

You can edit and delete custom hoops as required – both those you have defined yourself and those created by the system. Only custom hoops can be modified or removed, not those from the existing library.

To edit a hoop

◀ Right-click the **Show Hoop** icon. The **Options > Hoop** dialog opens.

Edit or delete custom hoops
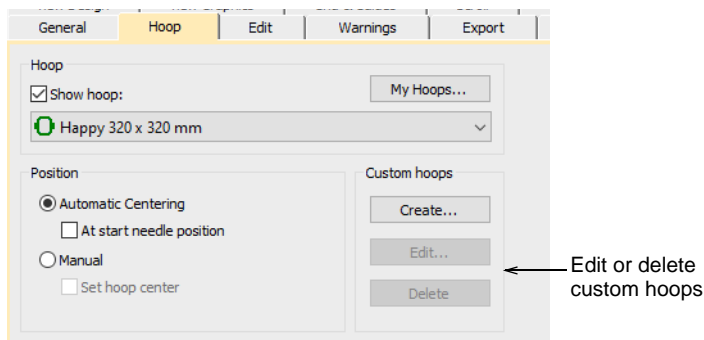
◀ Select the hoop you want to edit or delete from the **My Hoops** list.

◀ Click **Delete** then **OK** to confirm. The hoop is permanently removed.

◄ Click **Edit**. The **Create Hoop** dialog opens. The same dialog is used for editing as for defining hoops.

Edit dimensions as required →
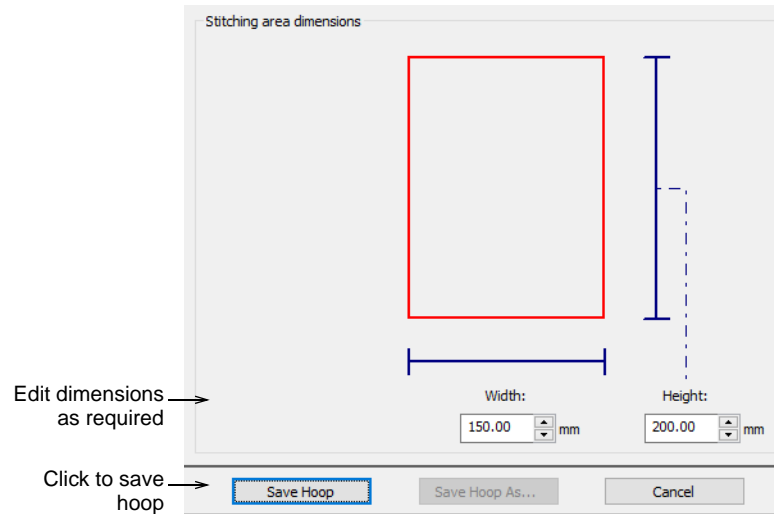
Click to save hoop →

◄ Enter new dimensions and click the **Save Hoop** button.

Related topics...

◄ Define custom hoops

Chapter 36
Design Reports

From the same EMB design file, you can output production worksheets or approval sheets for machine operators or customers respectively.

EmbroideryStudio allows you to customize information in the format you require. The printing capability also allows you to:

◀ Personalize worksheets with company name and logo
◀ Print approval sheets with or without design details
◀ Display the assigned hoop
◀ Visualize on selected fabric/garment
◀ Include selected colorways.

Optionally, email production worksheets in PDF format with the embroidery file as an attachment in a specified format – e.g. EMB or DST, etc. Screen images may also be captured in PNG format to distribute designs for viewing in real colors.

Outputting designs as images

Designers frequently want to distribute their designs for viewing in real colors, in **TrueView™** or otherwise, with or without fabric backgrounds. This might be for stock design sales purposes, for approval of digitized designs, or for presentation on the web or in catalogs. Screen images are captured in PNG format because it supports transparency.

To output a design as an image

1 Open the embroidery design.
2 Select **File > Capture Design Bitmap**.

Select image selection option → | Select Output option

Select to include background color or fabric → | Check bitmap resolution
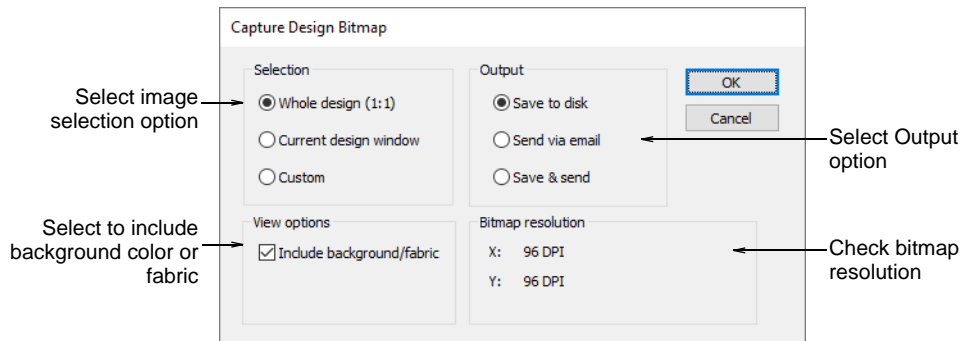
3 Select a **Selection** option:

Option	Function
Whole design (1:1)	Captures the screen image in a ratio of 1:1.
Current design window	Captures the screen image at the currently selected zoom factor.
Custom	Lets you specify a capture area. You are prompted to define the area to capture.

Draw marquee around selection area
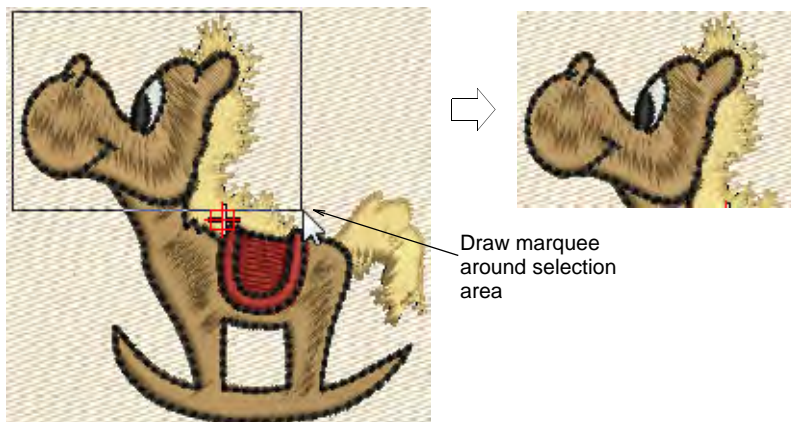
4 Select an **Output** option:

Option	Function
Save to disk	Save screen capture to disk. The Save Capture Screen dialog allows you to select a location, name and format for the captured design image.
Send via email	Lets you send the screen capture as an email. A new email message opens with the image attached. This option only works with the default MAPI compliant desktop email. It won't work with email apps or other clients that don't support the MAPI standard. Generally, this means MS Outlook email clients only.
Save & send	Lets you both save to hard disk and send as an email attachment.

5 Select **Include background/fabric** to include the background color or fabric with the screen capture.

Image captured as Whole Design (1:1) with background fabric

Note: Bitmap resolution defaults to current screen resolution. Properly calibrated, this figure should be approximately 96 DPI.

Printing design reports

EmbroideryStudio allows you to print designs in various predefined formats. The most common are the approval sheet and the production worksheet. Approval sheets are usually sent to the client for confirmation prior to production. The production worksheet is the link between designer and embroidery machine operator. It contains a design preview as well as essential production information, including design size, color sequence and special instructions. Reports can be output as hard copy or in electronic (PDF) format.

Caution: If certain thread colors are not available on your printer, they may be mapped to a different color, including white. Print the design in TrueView™ color, or black and white, or turn off color mapping. See your printer manual for more information.

Print reports

Use Docker > Design Information to view and modify design details prior to design approval or stitchout.

Use Standard > Print to print production worksheets for the current design using the current settings.

Create a hard copy of your design report using a printer or plotter. Alternatively create soft copy in PDF format. Optionally, send it directly as an email attachment. Preview the report prior to printing.

To print a report

1 Before printing, it's a good idea to check design information to make sure all details are up-to-date.

2 Click the **Print** icon or select **File > Print**.

Click to select / customize report

Click to preview worksheet
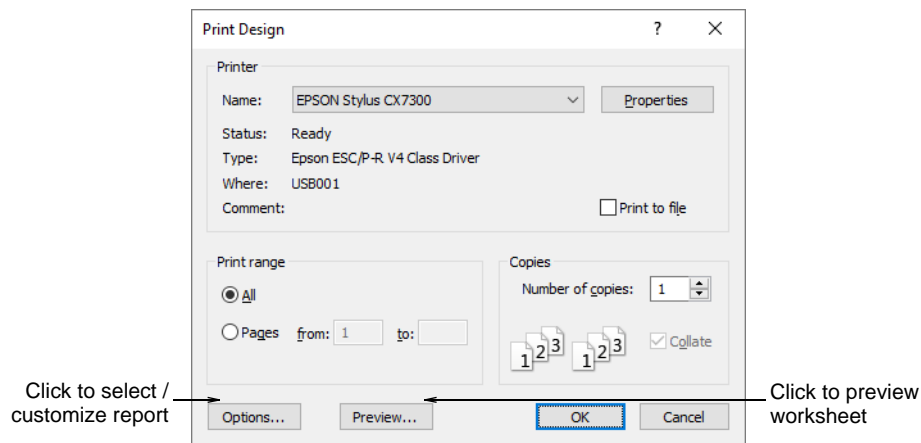
3 Select the printer or plotter you want to use and required number of copies.

4 To select a report type, click the **Options** button. The **Print Options** dialog opens.

Select report type/s

Select tabs to customize report details
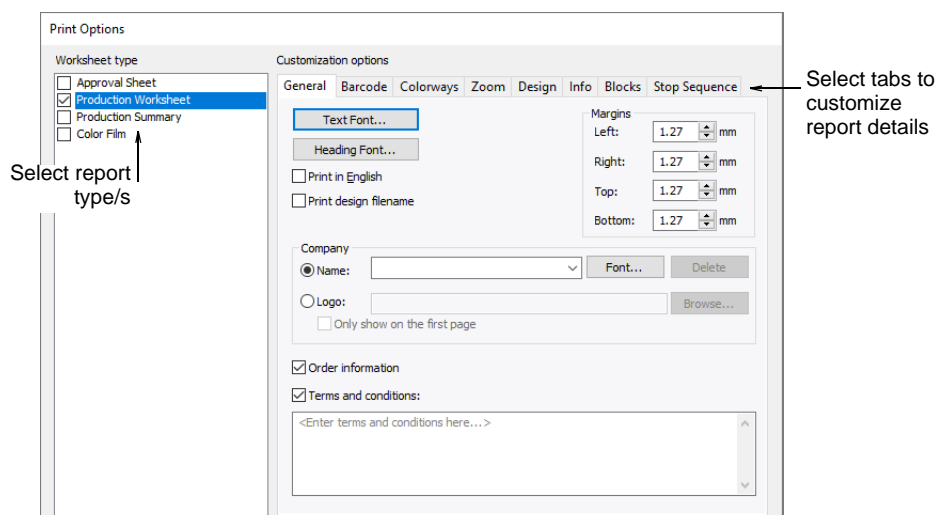
5 Select a report type in the **Print** panel. Multiple reports can be batched as part of the same print run. Tick the checkbox next to each.

6 Select tabs to customize report details as required. Tabs vary with the report type.

7 Click **OK** to close **Print Options**.

8 If you are using a plotter, click **Properties**, and set pen colors to correspond with the thread colors in the design.

Note: Refer to your plotter manual for information on setting up pen colors.

9 Click **Preview** to inspect the report before sending to print.

Choose a print option

Click Close to return to design window

Modify report options

Production information and threadup details

10 To print the design, choose an option:

◀ **Print Now**: Click to send the design report to your local printer.

◀ **Save as PDF**: Click to save the report as a PDF document. You are prompted to save to the hard drive or network location.

◀ **Send PDF via Email**: Click to send the report – usually an approval sheet – as a PDF attachment to your local email client. The PDF is

automatically identified by customer name, order number, and current date.

Approval sheet attached to email for customer review
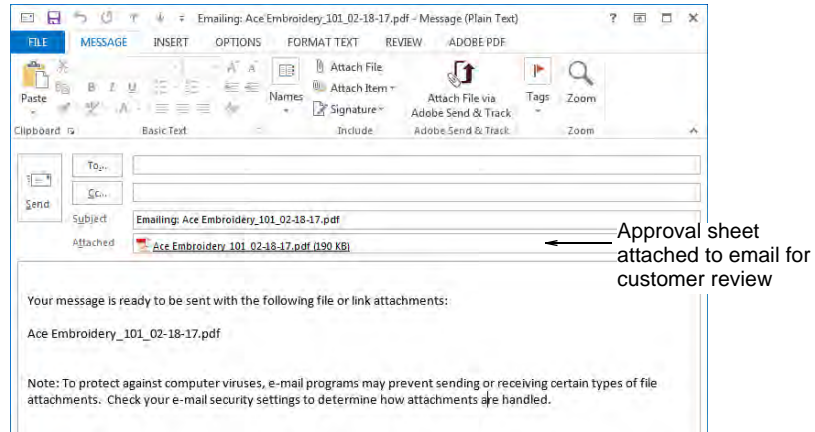
Related topics...

◀ Viewing & managing design information

◀ Customizing design reports

Report types

In addition to production worksheets, EmbroideryStudio provides a number of predefined report types including approval sheets, product summaries, color films, and appliqué patterns.

Select report type
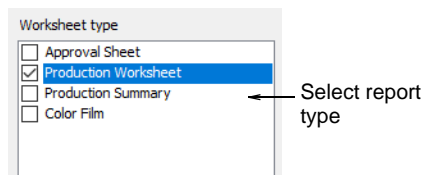
Report types include:

Report type	Function
Approval sheet	This is intended for the customer, not production staff. Customers can see what they are ordering and approve accordingly.
Production worksheet	This is intended for production staff. All production-related information, such as bobbin length, design size, garment fabric, etc, is provided.
Production summary	This provides two summary tables of the design and associated colorways – a Colorway Summary together with a Design Summary.
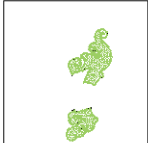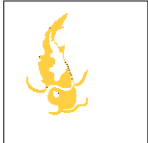
Report type	Function
Appliqué patterns	This shows appliqué patterns – cutter information – isolated from the design. This tells the operator which appliqué pieces are to be included.

Color films

This report type lets you print color blocks in the design as they appear in the **Color-Object List**. It provides color block information so that production staff can see each stitch color in order of stitchout. Separate color films are printed for selected colorways on the last page of the worksheet.

Related topics...

◀ Customizing design reports
◀ Print appliqué patterns

Customizing design reports

For each report type you select, tabs allow you to further customize report details. Tabs vary with the report type. The **Production Worksheet** actually provides a superset of all available options.

Select report type/s

Select tab to customize report details

Include order information on approval sheets
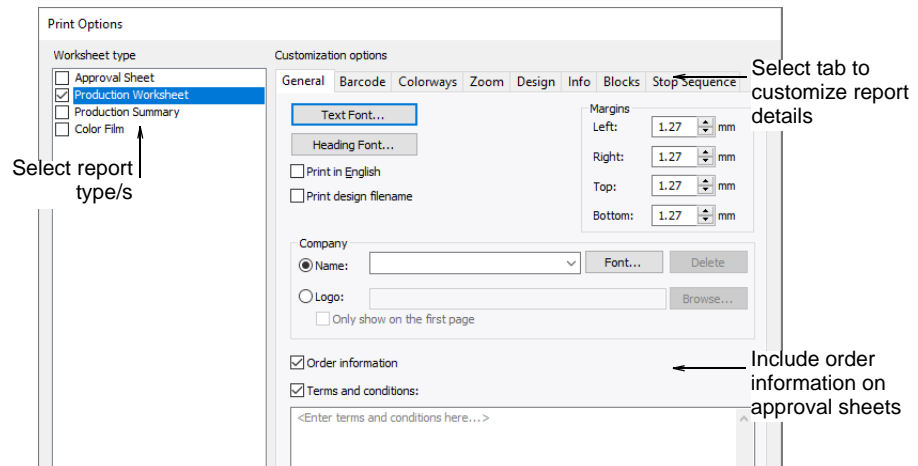
Report tabs

Below is a superset of all tabs available for different report types. The **Production Worksheet** includes all tabs. Other reports contain a subset.

General options

Reports generally have the following customizable layout:

◀ Standard header/footer, incorporating company name/logo, customer name, colorway name, user-specified fonts, margin control, etc
◀ Company name/logo
◀ Page numbers
◀ Barcode in header – available for all report types
◀ Multiple vertical 'full info' strips allocated on a single page if zoom parameters allow. Alternatively, there is a **Start New Page** option on **Info** tab to force the layout to start vertical info strips on a separate page.

The **General** tab includes the following layout settings:

Option	Function
Text / heading font	Set parameters for all text and headings appearing in the report – e.g. Arial for print, Verdana for online reports.

Option	Function
Print in English	Useful when printing to plotters where the device driver does not support the character set you require. Deselecting the checkbox prints the report in the language of the operating system.
Print design filename	Include the filename of the current design in the header of the product report.
Margins	Add a margin between the edge of the page and the content of the report. The page size itself is set via the Print dialog.
Company	Include your company name on the report. Enter a name and/or attach a company logo. If you have already entered one or more company names into the system, select from the droplist. Optionally, print the logo on the first page only.
Order information	Include customer name and order details.
Terms and Conditions	Include terms and conditions of use relating to your company designs. See below.

Terms & conditions

Terms and conditions text is stored in an internal defaults file. The only way to update the text and save it for later use it to do the following:

1 Open a new design sheet and digitize a simple object.

2 Open **Print Preview** and click **Options**.

3 Select the **Approval Sheet** report type.

4 Key in your own **Terms & Conditions** and close print preview.

5 Close the software – don't save the temporary design.

After restart, each time the approval sheet is used, it contains the updated Terms & Conditions.

Barcode options

Some machines read barcodes in order to load designs. Typically, the digitizer will send the design to machine memory or database, then print out a worksheet. The operator will take the worksheet, scan the barcode,

and the machine will load the associated file. The **Barcode** tab allows you to specify a standard format based on design name or a custom format.

Specify preferred barcode format
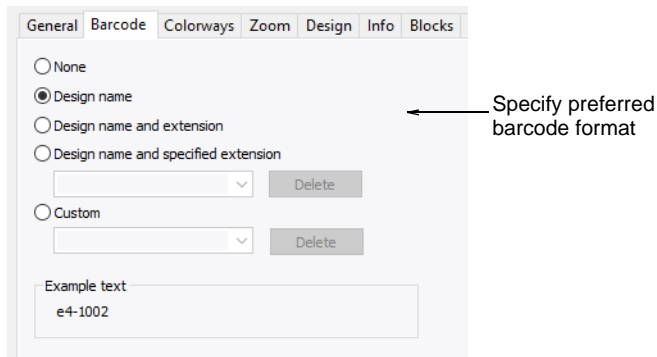
Many companies are switching to barcode readers on embroidery machines to 'pull' designs from Windows network locations rather than having the computer 'push' them to the machine. In addition to design name, some machines require the file extension. Amongst the barcode options, you can choose to include the current file extension or nominate one of your choice – e.g. 'DST'.

The 'custom' option is provided in case you have other barcode requirements – e.g. for pricing purposes.

Colorway options

The **Colorways** tab allows you to include or exclude selected colorways for the current design.

Select colorway display for printout

Select Selected

Hold down <Ctrl> to select multiple items
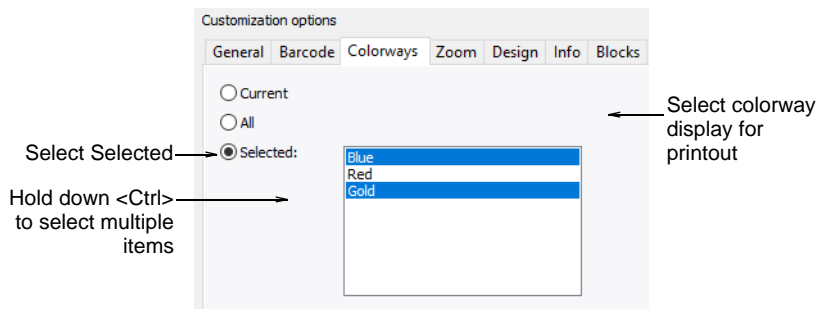
Separate sheets are generated for each selected colorway.
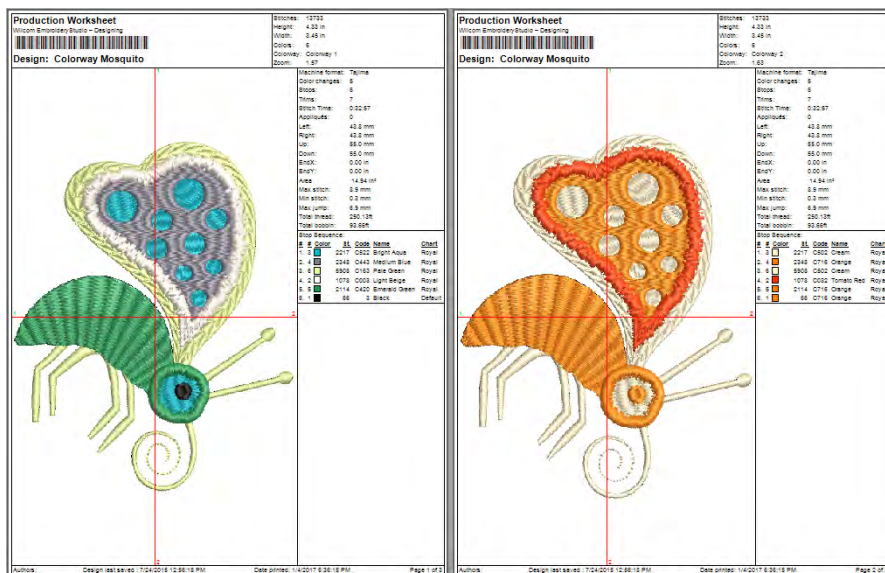
If the **Production Summary** report type is selected, the **Colorway Summary** table is printed together with the **Design Summary** table. You can also print color blocks in the **Colorway Summary** table by selecting the **Show Colors in Summary** option in the **Stop Sequence** tab.

Design summary table

Colorway summary table
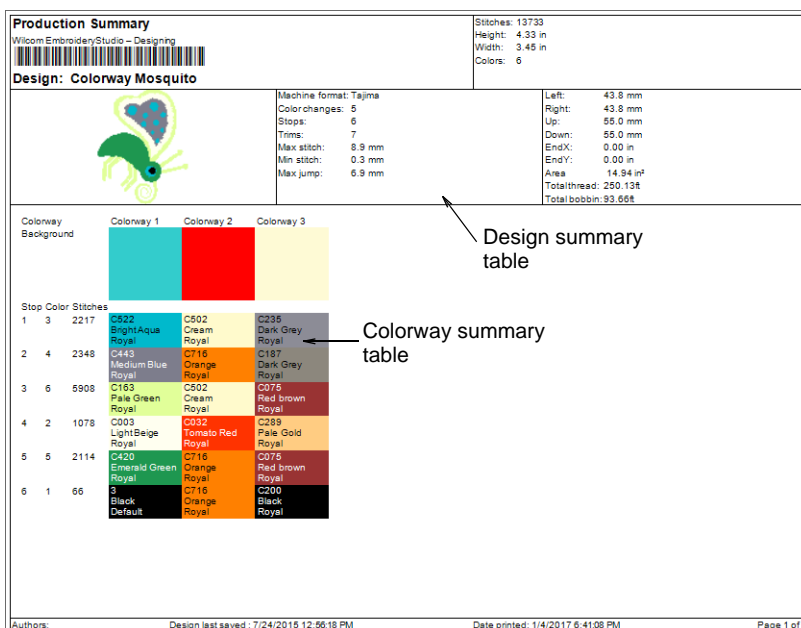
Use the **Design** tab to include background or product with the colorway.

Include background or product on worksheet
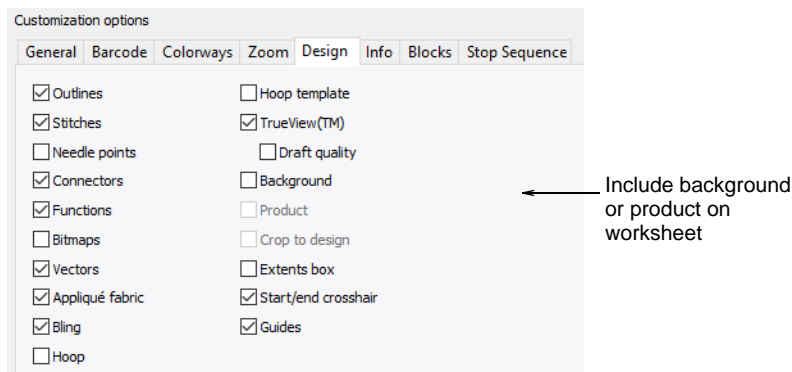
Tip: Select **Crop to Design** to crop the empty space around the design.

Zoom options

The **Zoom** tab lets you set a zoom factor for the design preview and physical printout.

Set design zoom factor for current printout

Customizable options include:

Option	Function
Zoom 1.1	Shows design at actual size.
Zoom to fit	Scales design to fill available space on the printout.
Zoom to product	Scales whole product to fill available space on the printout.
Custom	Sets a specific zoom factor.

Related topics...

◀ Visualize products

Design options

The **Design** tab allows you to toggle on/off the same options available on the **View** toolbar. Print designs in TrueView™ or stitch only, with needle

points, connectors, etc, or without. Include background fabric or color as preferred.
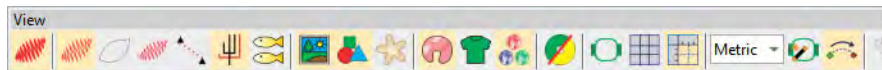
Include the hoop with or without the template. Templates include alignment and registration guide markings. These can help production staff align the design in the hoop. You can also include the product backdrop which can guide staff in correct placement.

Select embroidery components to display

Tick to display sequins (and other machine functions)

Tick to include bling components

Click to access design repeats
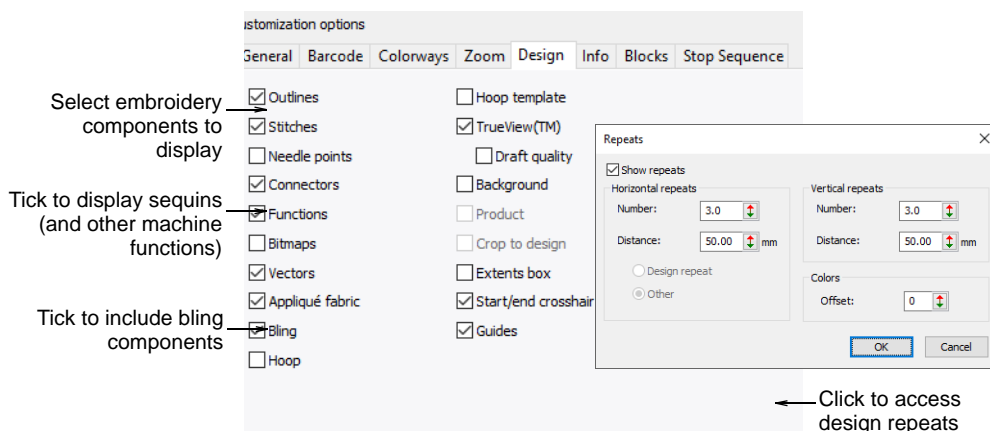
Print all types of multi-decoration supported by EmbroideryStudio, either separately or in combination. Click the **Repeats** button to access the dialog and set repeating design options.

Related topics...

◀ Viewing design components
◀ Viewing design repeats
◀ Hoops & templates

Embroidery components

To display embroidery components, select from amongst **Outlines**, **Stitches**, **Needle Points**, **Connectors**, **TrueView** in the **Design** tab. For **TrueView** to display, you must also have **Stitches** selected.
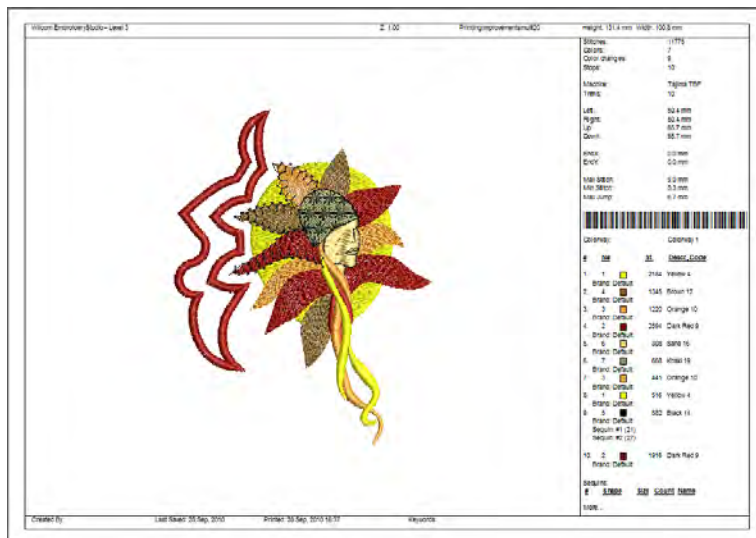
Print only

To display print components only, select between **Bitmaps** and **Vectors**.
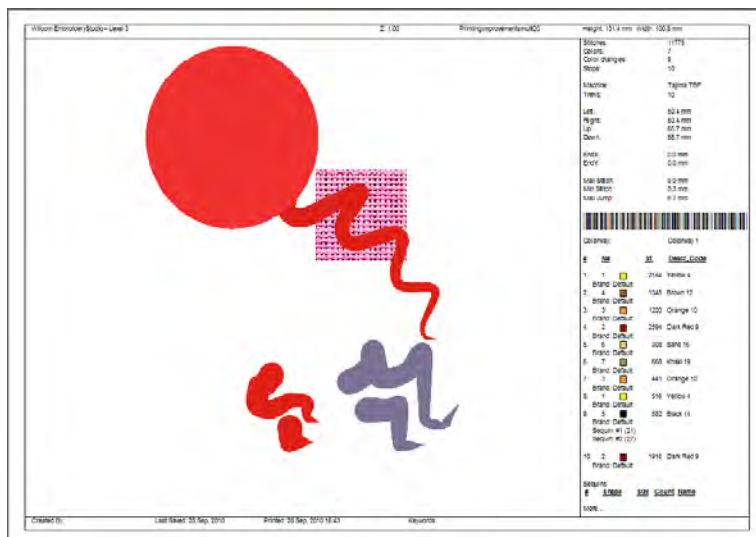
Sequin components

To display sequin components, select **Functions** in the **Design** tab. A sequin production summary shows color, size and quantities by sequin device as well as a summary on the first page.
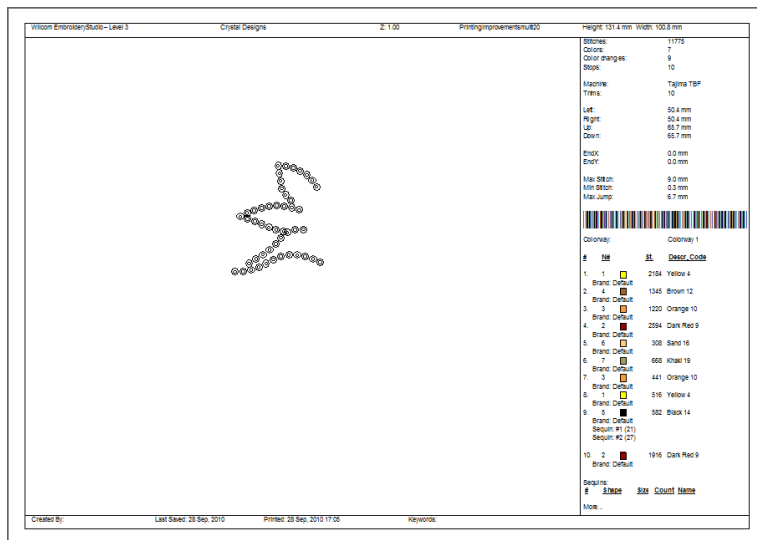
Bling components

To display bling components, select **Bling** in the **Design** tab. The bling production summary shows stone colors, sizes, and quantities as well as a summary on the first page.

![Note icon]
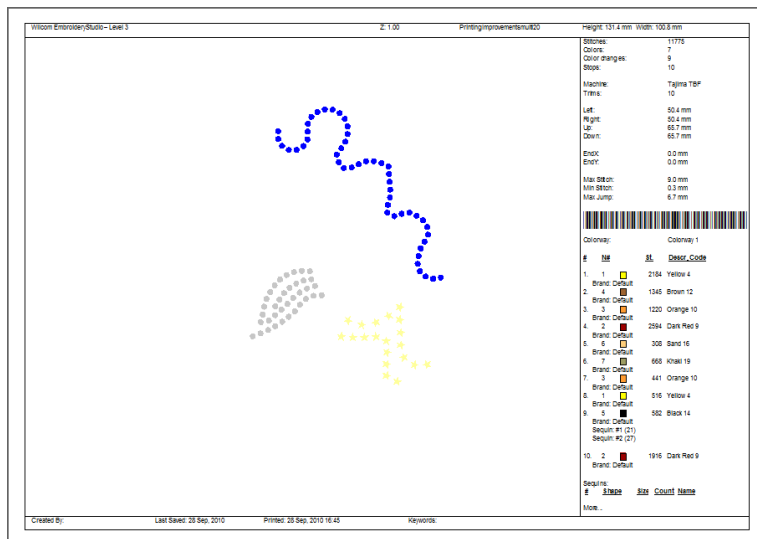
Note: When bling is output as multiple files, each color is separated into different templates for flood-filling with selected rhinestones.

Related topics...

◀ Output to bling cutter

Design backgrounds

The **Design** tab also provides options to display design backgrounds – e.g. fabric, product, and/or hoop.

Amongst background options, you can set:

Option	Function
Hoop	Include the selected hoop, whether or not currently displayed on screen.
Hoop template	Templates include alignment and registration guide markings. These help align the design in the hoop.
Background	Include any background currently displayed – color or fabric.
Crop to design	Crop any background to the extends of the design, rather than the full page.
Product	Garment or product backdrop on which to position the design. Use it to display location, size and overall appearance for visualization or approval purposes.
Extents box	Place an outline around the design to delineate its full extents.

Option	Function
Start/end crosshair	Print a cross hair across the design indicating design start and end points.
Guides	When contrasting colors are used in the colorway for guide and background colors, guides can be turned off.
Standard	Reset printing options to default values.
As Window	Set printing options as per current settings in the design window.

Related topics...

◀ Fabric & product backgrounds
◀ Hoops & templates
◀ Setting auto start & end

Information options

The **Info** tab lets you filter information to include on production worksheets.

Set information to include on production worksheets
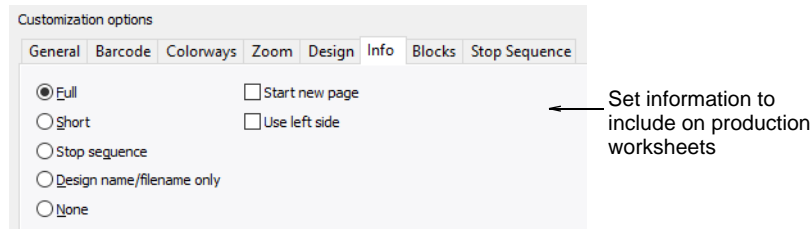
Customizable options include:

Option	Function
Full	Includes all design and production information included in the Design Information docker. This information can be further filtered via the Blocks tab.
Short	Includes only default header and footer information. Usually used in conjunction with full size design in order to visualize on garment. See also Zoom tab.
Stop sequence	Includes only stop sequence information on the worksheet. This information can be further filtered via the Stop Sequence tab.
Design name / filename only	Includes the design filename as the printout information without any other text.
None	Eliminates design details altogether and suppresses display of default header and footer information – again, can be used in conjunction with full size design in order to visualize on garment. See also Zoom tab.

Option	Function
Start new page	Prints design details on a separate sheet.
Use left side	Displays the information column on the left side of the page (rather than the default right-hand side).

💡
Tip: Worksheets include information entered into the **Design Information > Summary** tab, including comments but excluding keywords. See also Viewing & managing design information.

Blocks options

The **Blocks** tab lets you further filter production information available on the **Design Information** docker for inclusion in the printout.

Set detailed
production information
for inclusion

Select design statistics to include on the worksheet:

Option	Function
Left / right / up / down	Depending on where the design start/end point has been set, these figures indicate the distance from that point.
End X / Y	The coordinates of the last stitch.
Area	Total area covered by design – used for estimating hoop sizes, fabric requirements, 3D foam, or whether design will fit target location.
Max / min stitch	The maximum and minimum stitch lengths, and maximum jump stitch length in the design.
Thread chart type	The name of the thread chart used in the design. All required brands for used threads are displayed in a comma-separated list.
Thread usage	Meterage of thread required per color.
Total thread	Indicates total meterage of top thread required to stitch out the design.

Option	Function
Total bobbin	Total meterage of bottom (bobbin) thread required to stitch out the design.
Machine runtime	This checkbox is only available if the feature is available in the software. If there are no machines set up, checking 'Machine runtime' has no effect as there is nothing to print.

Here is a sample production worksheet with all options selected:

Related topics...

◄ Viewing & managing design information
◄ Assign thread colors
◄ Doing runtime estimates
◄ Design Hooping
◄ Setting auto start & end

Stop sequence options

The **Stop Sequence** tab lets you further filter production information available on the **Design Information** docker for inclusion in the printout.

Choose stop sequence information for inclusion
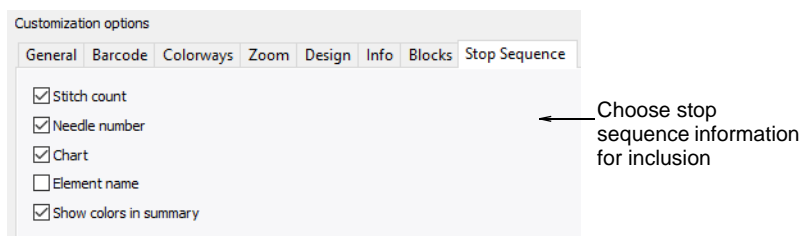
Select the statistics for each color block:

Option	Function
Stitch count	Include number of stitches per color.
Needle number	Include needle number corresponding to each color change. This is only really relevant to needle-addressing machines.
Chart	Brand name of thread chart used.
Element name	User-defined name to identify each color block.
Show colors in summary	Include color samples in a colorway summary table.

Here is a sample production worksheet with all options selected:

If the **Production Summary** report type is selected, the **Colorway Summary** table is printed together with the **Design Summary** table. You can also print color blocks in the **Colorway Summary** table by

selecting the **Show Colors in Summary** option in the **Stop Sequence** tab.

Colorway				Yellow	Pink	Blue
Fabric Color						
Stop	Color	Element	Stitches			
1	3		154	3 Default Red	C714 Royal Pink	C131 Royal Marine Blue
2	9		73	9 Default White	9 Default White	9 Default White
3	1		6084	2 Default Sand	C050 Royal Dark Mauve	C111 Royal Medium Blue
4	4		316	4 Default Yellow	C096 Royal Ultra Marine	C096 Royal Ultra Marine
5	3		144	3 Default Red	C714 Royal Pink	C131 Royal Marine Blue
6	8		3271	8 Default Black	8 Default Black	8 Default Black

Colors displayed in colorway summary table

Related topics…

◀ Viewing & managing design information
◀ Name design elements
◀ Colorway options

Chapter 37
Machine Files

By default EmbroideryStudio saves to its native file format, EMB. This format contains all information necessary both for stitching a design and for later modification. When opening designs created or saved in other formats, EmbroideryStudio converts them internally to EMB format. They can then be modified using the full range of EmbroideryStudio features. Depending on the file type, you may need to provide additional information to assist EmbroideryStudio in the conversion process.
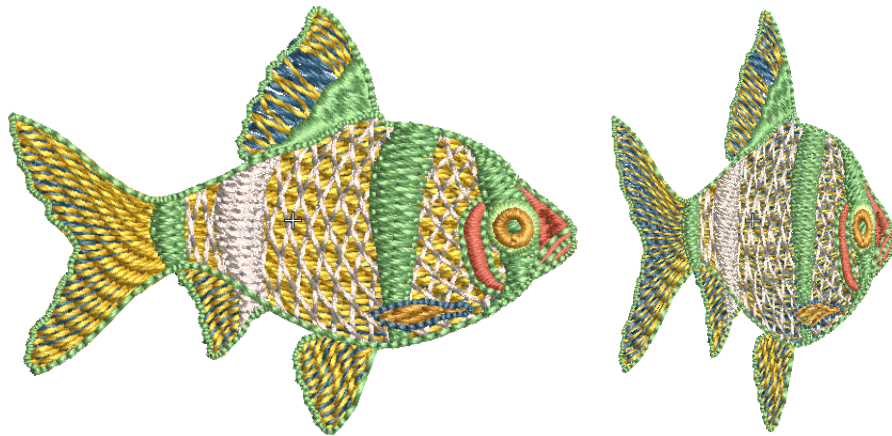
Opening machine files

If you want to scale a design, edit an outline or change a stitch type, then the design or selected elements must be first converted into 'objects'. By default, machine files are converted to outlines and objects upon opening. Open options should reflect how the design was originally digitized, not how you want it now. Experiment with the settings to get the best results.

💡
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. To improve the quality of a machine file, it is sometimes better to edit stitches before conversion.

Object recognition

Machine files are generally not suited to modification because stitches are not regenerated. However, EmbroideryStudio can interpret object outlines, stitch types and spacing from stitch data with some success. In this way, you can re-constitute old tape format files and other machine file formats for modification in EmbroideryStudio. These 'recognized' designs can be scaled with stitches recalculated for the new outlines. Processing is effective for most machine files but cannot produce the same level of quality as original outlines and may not handle some fancy stitches.

When you convert a machine file to design file format, EmbroideryStudio reads stitch data stitch-by-stitch according to the needle penetration points. It recognizes stitch types, spacing and length values, stitch effects, and can determine object outlines. Stitch types are assigned as Satin, Tatami, or Program Split depending on the pattern of needle penetrations.

With Tatami, EmbroideryStudio recognizes stitch spacing and length, and applies a random factor. If a design is converted from ESD format, Zigzag and Triple Run objects are also recognized. If an object is not recognized, it becomes (or remains) a manual object with general and connector properties only. As such, it will not scale well.

Recognized object outlines and stitch values are stored as object properties in EmbroideryStudio. This means you can scale and transform recognized designs in the usual way. You can also change the stitch density of the whole or selected parts of a design, and/or of certain stitch types.

By default, machine files are converted to outlines and objects upon opening but you can also choose to open them **without** recognition. Designs opened in this way can be output for stitching in another format. Or you can edit stitches and add new elements. For such purposes, you do not need to retrieve information about how the design was created.

You can scale machine files which have been opened without object/outline recognition. However, because the stitch count does not change, the density increases or decreases with the design size. Thus you should not scale machine files by more than ±10% or some areas may be too thickly or too thinly covered.

Original stitch design

Scaled stitch design opened without object/outline recognition

![Note icon]

Note: With or without object/outline recognition, machine files can be saved in EMB format once they are opened in EmbroideryStudio.

Open machine files

When you open machine files **with** object/outline recognition, you can set options to determine how the design will convert. Options vary with file type. Alternatively, by opening a machine file **without** recognition, stitch data is preserved. This allows you to perform minor stitch edits and scaling operations without compromising the original machine file. Alternatively, you can process the whole or selected parts of a design after opening and editing.

To open machine files with or without object recognition

1 Open a file from hard disk or read it from embroidery disk.
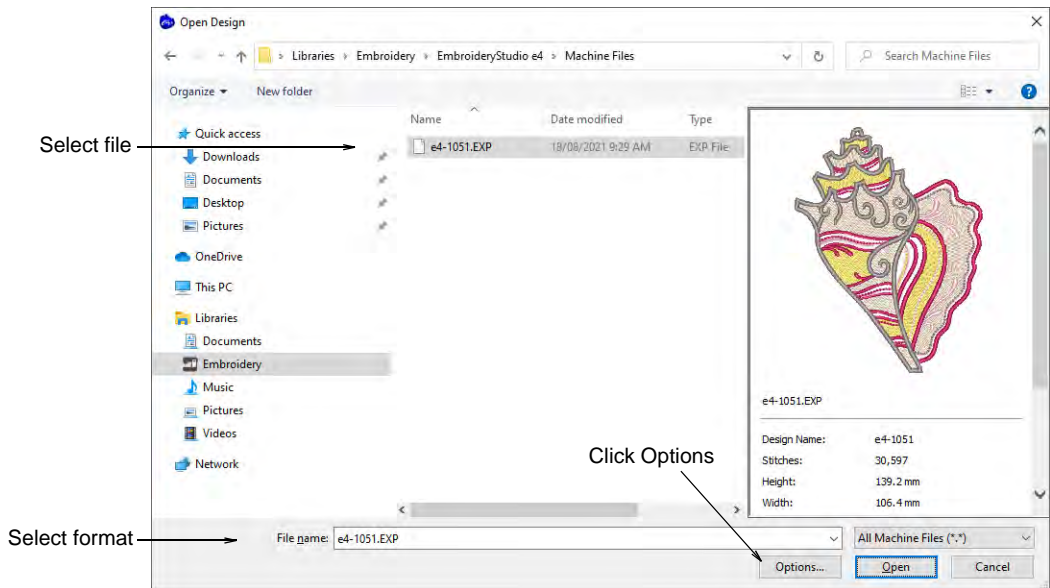
2 Select a machine file format from the **Files of type** list and select the file to open.

3 Click **Options**. Depending on the file type selected, different options are available.

Select machine format

Select output type for stop codes

Choose whether to recognize objects/outlines in the design

Enter number of jumps as trims
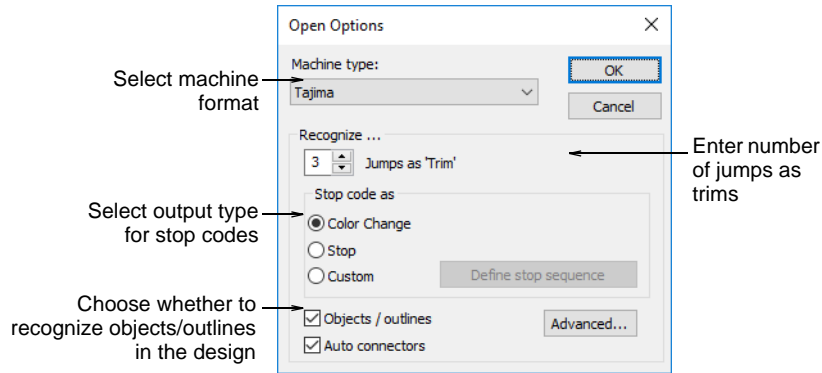
4 Select or deselect the **Objects/Outlines** checkbox.

Remember, when you open machine files **without** object/outline recognition, 'manual objects' are created wherever machine functions – e.g. color changes or trims – are detected in the design. They have only general and connector properties.

5 Select a different machine format from the **Machine Type** list as required.

The machine type will default to one suggested by the file format – e.g. DST will be interpreted as Tajima. However, you can choose to convert the file to a different machine format – e.g. Barudan.

6 Enter the number of jumps to recognize as trims.

When EmbroideryStudio encounters this number of consecutive jumps, it will convert them to a Trim function. If this value is different from the original design, Trim functions will be not be inserted correctly.

7 Use the **Stop code as** panel to select the output type for stop codes:

Option	Function
Color change	Stop codes are interpreted as 'Next Color' commands. The next color is selected from the default color palette.
Stops	Stop codes are interpreted as 'Explicit Stop' commands. The machine stops stitching.
Custom	Lets you map thread colors to every stop code in the file. This means you can color code machine files which do not contain needle addressing information. See Reassigning colors to machine files for details.

8 Toggle the **Automatic Connectors** checkbox as required.

Option	Function
On	Open appropriate designs with automatic connectors without having to use object/outline recognition.
Off	Open designs with connectors recognized as manual objects. This avoids stitch editing problems caused by automatic connectors – recommended for open fills.

9 Check the status of your embroidery machine. Then select the correct setting – **Speed1** or **Speed2** – from the list (if available).

On some Barudan machines there is a speed switch. Depending on its position, fast is assigned as either **Speed1** or **Speed2**. For example, if you select **Speed1**, each fast speed function will be translated into a **Speed1** command.

Select required speed
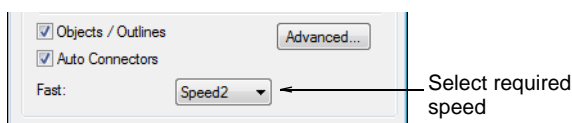
10 Click **Advanced** to set advanced recognition options.

11 Click **OK** and then **Open**.

If you have ticked the **Objects/Outlines** checkbox, the design is processed and converted to embroidery objects with fill or outline stitch properties as well as general and connector properties. If an object is not recognized, it becomes a manual object with general and connector properties only.
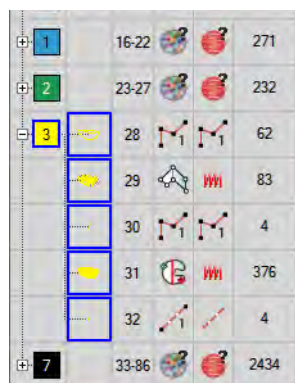
Design opened with recognition – mixed embroidery and manual objects
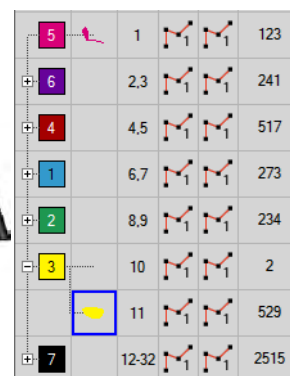
Design opened without recognition – manual objects only

If you have opened without recognition, you can output the design without change or perform minor scaling and transforming actions

without losing the original stitch information. Alternatively, you can process the whole or selected parts of a design after editing.

Related topics...

◄ Machine Formats
◄ Recognize object outlines
◄ Adjusting stitch densities
◄ Using embroidery disks
◄ Gunold PCH format
◄ Wilcom INP format

Advanced recognition settings

You can fine-tune how EmbroideryStudio converts machine files using advanced recognition options. By default, EmbroideryStudio converts stitches as Tatami, Satin, or Run stitches according to the settings in the **Recognition - Advanced Options** dialog. You can change these values, or choose not to convert certain stitch types at all. Generally, the default settings provide the best results for the most frequently used fill styles – Tatami and Satin – their properties – stitch length and spacing – and edge effects, such as stitch shortening. Default settings, however, cannot always guarantee the best results as the variety of embroidery designs is virtually unlimited.

Original design opened without stitch recognition

Opened with stitch recognition – pattern splits recognized as Tatami
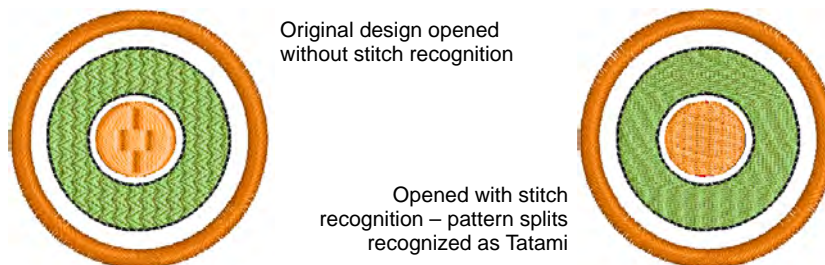
To adjust advanced recognition settings

1 Access the **Open Options** dialog and click **Advanced**.

The **Recognition - Advanced Options** dialog opens.

Select to recognize Tatami stitches

Select to recognize random needle penetrations

Select to recognize Satin stitches

Select to recognize Run stitches

Set space and stitch length rounding

Select to recognize Jagged Edges

Select to recognize Splits

Select Segments Resolution and Merging Factors
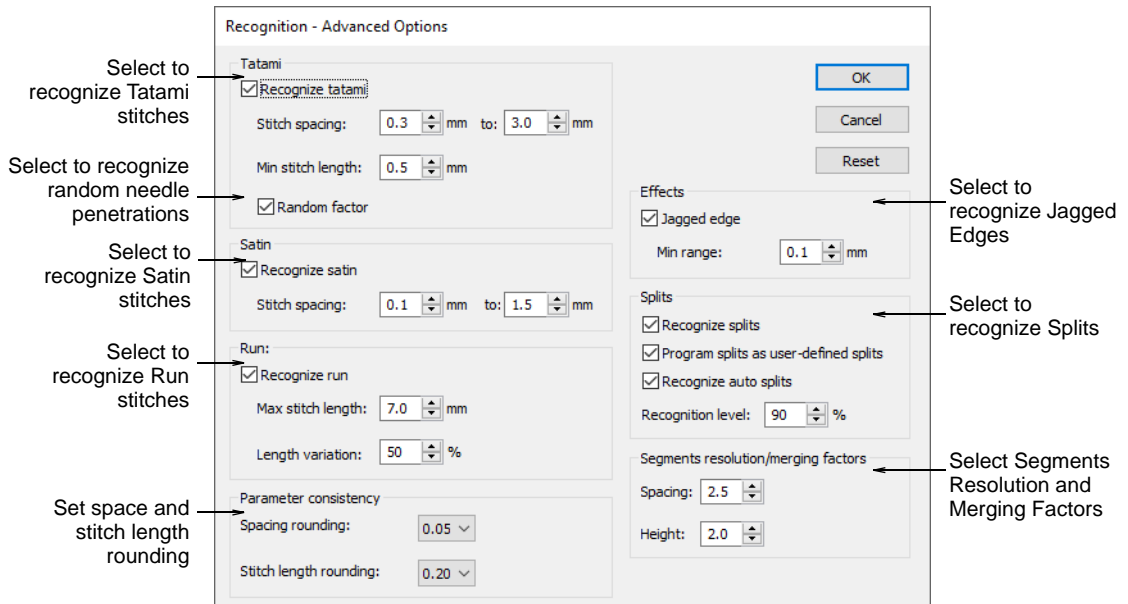
To adjust Tatami recognition settings

◄ In the **Tatami** panel, select **Recognize tatami** in order to process tatami fills, and adjust conversion options:

Option	Function
Stitch spacing	Enter spacing range to recognize. If the row spacing falls outside this range it will not be converted to tatami.
Min stitch length	Enter minimum stitch length to recognize as tatami.
Random factor	Select to allow for random needle penetrations. Tip: Deselect the Recognize Splits checkbox to detect Random Factor more accurately.
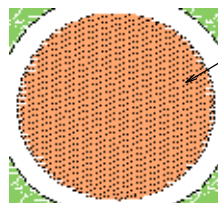
Tatami spacing range 0.4 mm to 1.5 mm, Random factor not selected
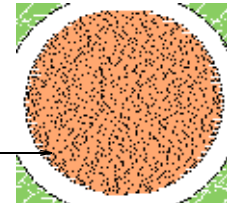
Tatami spacing range 0.4 mm to 1.5 mm, Random factor selected

To adjust Satin recognition settings

◀ In the **Satin** panel, select **Recognize satin** in order to process satin stitching, and adjust stitch spacings as required. If the row spacing falls outside the specified range it will not be converted to satin.

Spacing range 0.5 mm to 5.0 mm

Spacing range 0.1 mm to 2.0 mm
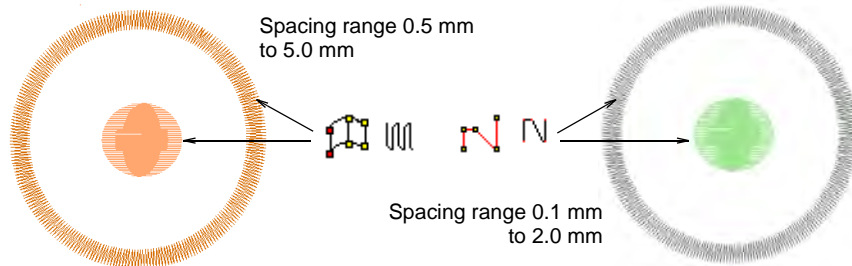
To adjust Run recognition settings

◀ In the **Run** panel, select **Recognize run** in order to process run stitching, and adjust conversion options as required:

Option	Function
Max stitch length	Enter maximum stitch length to recognize.
Length variation	Enter percentage by which stitch length can vary in run objects.

Max stitch length: 4 mm
Length variation: 10%

Max stitch length: 4 mm
Length variation: 90%
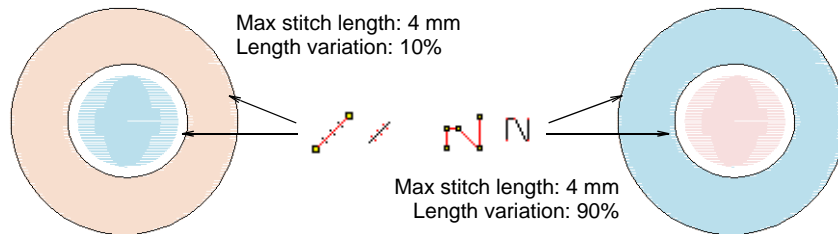
To adjust Complex Fill recognition settings

◀ In the **Parameter consistency** panel, set options for complex fill segment recognition:

Option	Function
Spacing rounding	Enter rounding value for stitch spacings – 'snaps' spacing values in Tatami and Satin fills to specified increments.
Stitch length rounding	Enter rounding value for stitch lengths – 'snaps' stitch length values in Tatami fills to specified increments.

For example, if the Tatami minimum stitch length is 4 mm, and **Stitch length rounding** is 0.4 mm, stitches from 3.80 to 4.20 mm are 'snapped' to 4.0 mm, and recognized as Tatami.
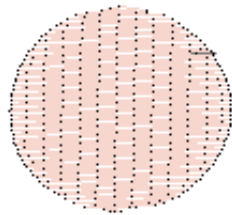
Tatami Spacing range: 0.4 mm to 1.5 mm,
Spacing rounding: 0.01 mm,
Stitch length rounding: 0.2 mm
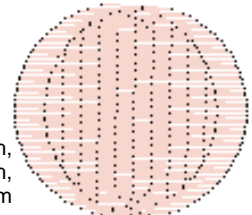
Tatami Spacing range: 0.4 mm to 1.5 mm,
Spacing rounding: 0.05 mm,
Stitch length rounding:0.5 mm

To adjust stitch effects recognition settings

◄ In the **Effects** panel, select **Jagged** in order to recognize the **Jagged edge** effect. Specify a minimum range in millimeters – anything variation greater than this value will be recognized as **Jagged edge**.
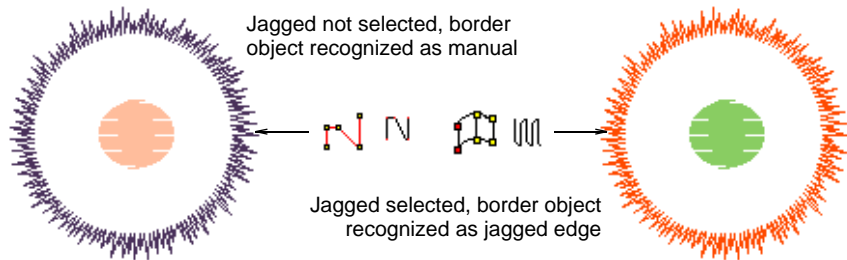
Jagged not selected, border object recognized as manual

Jagged selected, border object recognized as jagged edge

◀ In the **Splits** panel, select **Recognize splits** to recognize splits in tatami fills, and adjust conversion options as required:

Option	Function
Program splits as user defined splits	Recognize split patterns as user-defined splits. Note, however, that user-defined splits are scaled when the design is scaled. This results in stitch lengths getting longer as the design is enlarged, thus limiting scaling. With native program splits, on the other hand, patterns – shape, size and spacing – remain the same after objects are scaled.
Recognize auto splits	Recognize Auto Splits in Satin objects. Otherwise, patterns created with Auto Split will be recognized as Tatami.
Recognition level	Restrict recognition of Program Splits by increasing percentage. Decrease to increase recognition. A low percentage number will detect more areas as Satin with User Defined Split than Tatami.

User Defined Split

Auto Split
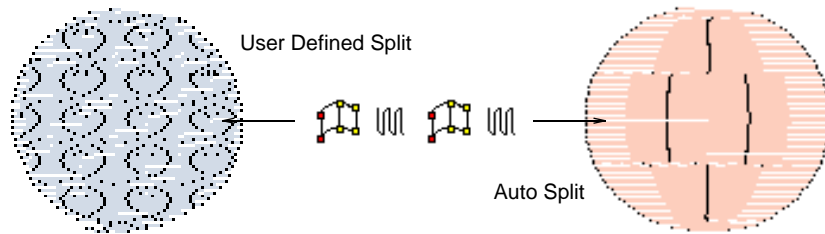
Tip: Program splits are reliably recognized when patterns are not overlapping. Split patterns can be complex, so the recognition process can take up to five times longer with this option.

To adjust segment recognition settings

◀ In the **Segments resolution/merging factors** panel, enter values to fine-tune the recognition of segments and objects:

Option	Function
Spacing	This value expresses the ratio between stitch spacings in adjacent stitch blocks – e.g. adjacent spacings of 0.6 mm and 1.0 mm gives a ratio of 1.67. A value of 2.0 in the Spacing field means that these stitch blocks will be recognized as one segment or object. A value of 1.5 means that they will not. The default value is 3.0. Normal Satin and Tatami stitching ranges in spacing from 0.3 to 0.6 mm, so most continuous sections of stitching of the same type will not be split. To preserve spacing variations for color-blended designs and more artistic designs, you may need to reduce the spacing factor. In manually punched designs which include stitching with irregular spacing, segment breaks can be reduced by increasing the factor.
Height	This value expresses the ratio between heights of stitch blocks. It is important in recognizing Complex Fill shapes, particularly with holes.

💡
Tip: Generally, the lower these values, the larger the number of segments/objects likely to be identified. Normally you want to obtain design information with a minimum number of identified segments/objects. In practice there is always a compromise between design recognition quality and the minimum number of correctly identified segments/objects.

Spacing: 0.5 mm, Height: 2 mm

Spacing: 3 mm, Height: 4 mm

Recognized objects shown in different colors
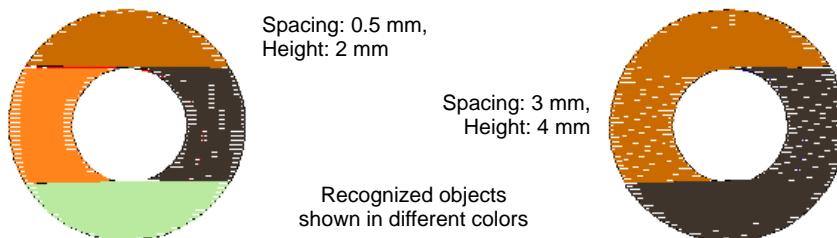
◀ Click **OK**.

💡
Tip: To revert to the original conversion settings, click **Reset**.

Related topics...

◀ Open machine files

Reassigning colors to machine files

When you open a machine file or CND file, a design without color code assignment automatically uses the default color palette. You can, however, map thread colors to every Color Stop code in the file. This means that **before** opening the file you can color-code designs which do not contain needle addressing information.

Without color code assignment

With color code assignment

Note: In order to assign colors correctly, you need to consult a production worksheet for the necessary color sequence information.

To reassign colors to a machine file

1 Select **File > Open**. The **Open** dialog opens.

2 Select a machine file or CND design and click **Options**.

If you've selected a machine file, the **Open Options** dialog opens. If CND, the **Condensed File Input Settings** dialog opens. This procedure is the same.

Machine file

Select Define Stop Sequence

CND file

Select Define Stop Sequence
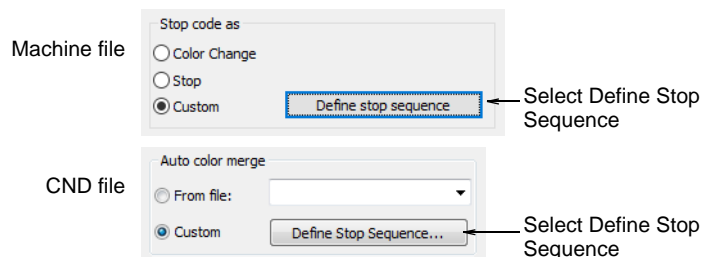
3 Select **Custom** and click **Define stop sequence**.

The **Define Stop Sequence** dialog opens. Initially the **Building stop sequence** panel is empty.
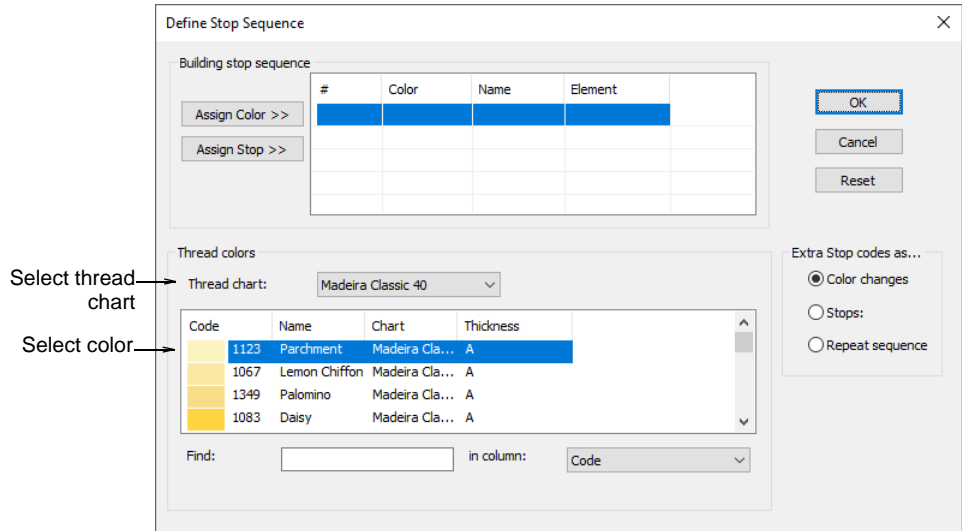
4 Select a thread chart and first color.
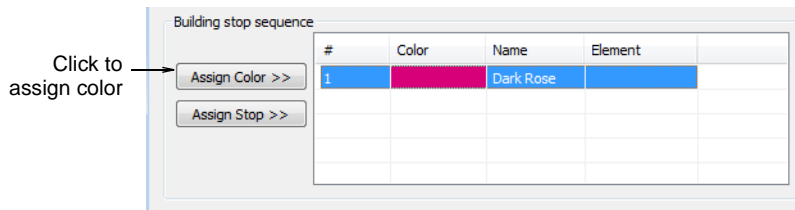
5 Click **Assign Color**. The color and the description are entered at the current Stop in the **Building stop sequence** grid.

⬡

Note: The selection moves to the next color in the thread chart. Two consecutive same colors are not allowed and **Assign Color** is disabled.

6 Click **Assign Stop** to enter an explicit Stop code.

Stop is entered in the **Description** field.
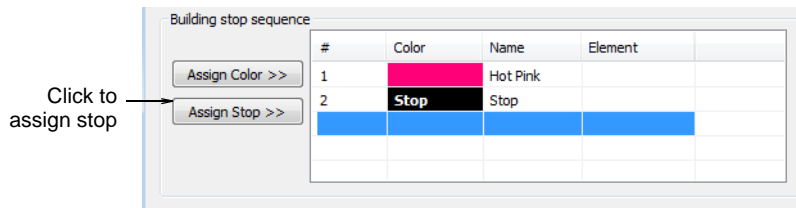
Note: A **Stop Sequence Warning** message displays if a redundant color function is assigned. Press **Delete** to delete a selected entry in the stop sequence. Click **Reset** to delete all the entries.

Choose how extra stops are to be interpreted
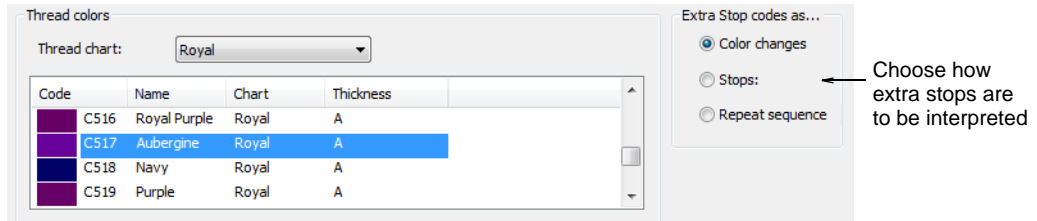
7 Use the **Extra Stop codes as** panel to select the output type for extra stop codes:

Option	Function
Color changes	Extra Stop codes are interpreted as 'Next Color' commands. The next color is selected from the default color palette.
Stops	Extra Stop codes are interpreted as 'Explicit Stop' commands. The machine stops stitching.
Repeat sequence	If you select fewer colors than the design requires, the selected colors are repeated. For example, if your design requires four colors and you've only selected two in the Building Stop Sequence list, colors 3 & 4 will be the same as original colors 1 & 2.

8 Repeat the operation as many times as indicated in the production worksheet.

9 Click **OK**. The design will have the desired colors and the correct number of Color Changes.

Note: You can convert color changes to an explicit Stop Code. You can also remove Color Stops by assigning the same color number to consecutive color blocks.

Related topics...

◀ Read CND files with color-merge TXT file

Reading Melco CND design files

Melco Condensed (CND) is the native file format of Melco embroidery digitizing software. CND files store only digitized outlines and stitch values. When you open CND designs in EmbroideryStudio, these outlines are scaled and stitches recalculated to preserve density.

EmbroideryStudio recognizes all Melco machine functions and stitch types, including Partition Lines and Complex Fill, and automatically converts them to EMB format. However, CND files do not contain specialty features such as Pull Compensation or Auto Spacing, nor do they include actual stitches, thread colors, or design icons.

Convert CND files to EMB

There are several versions of CND, all of which can be read by EmbroideryStudio. While these designs scale accurately, the number and placement of stitches may differ somewhat from the original design. You may notice some difference (±10%) in the stitch counts between original and converted files. This is because of differences in the software methods used to calculate stitches. EmbroideryStudio cannot interpret certain specialty features of CND design objects because there is no direct equivalent. However, stock designs do not normally use these features and will generally convert without problem.

When you open Melco CND files, the Melco stitch types used in the design are converted to EmbroideryStudio stitch types – satin, run, tatami, etc. You can change conversion settings to adjust spacing, stitch length, effects and defaults applied to EmbroideryStudio stitch types. You can also set scaling values to open the design at a different size to the original.

To convert a CND file to EMB

1 Open the file from your hard disk, or read it from tape or embroidery disk.

Select file

Select CND format
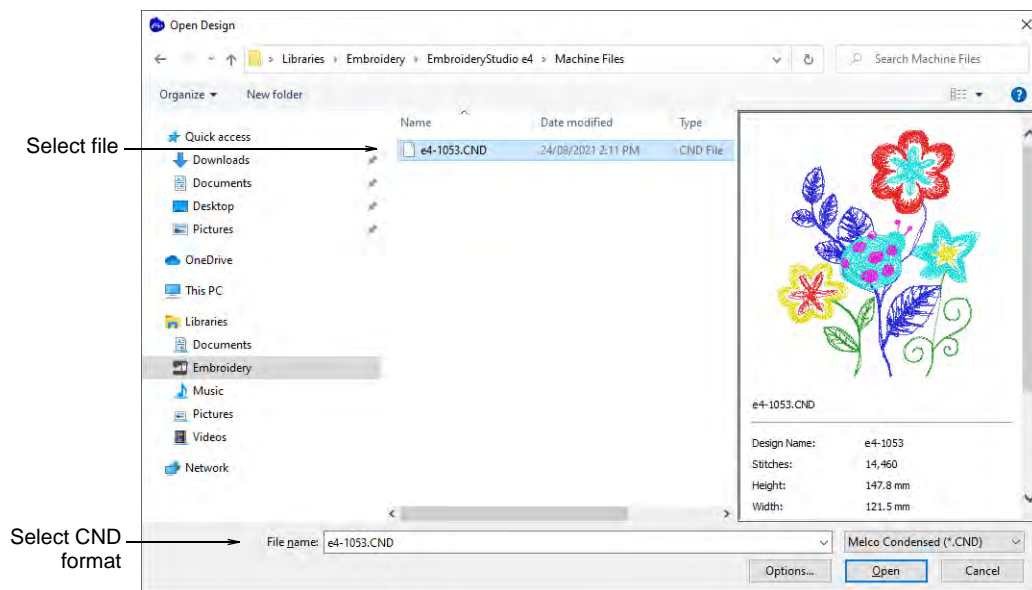
2 Select the **Melco (CND)** file to open and click **Options**. The **Condensed File Input Settings** dialog opens.

Enter scale values →

Adjust stitch values →

Select Auto Color Merge option →

Select effects to apply →

Adjust default values →
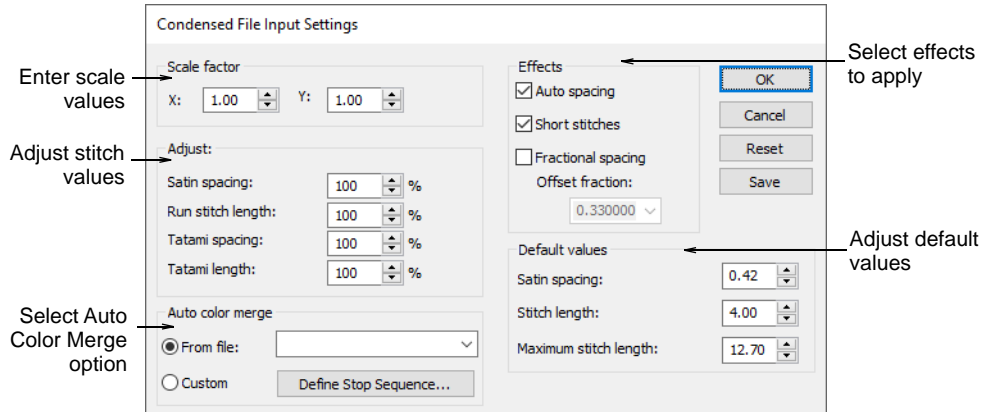
3 In the **Scale factor** panel, enter the scale at which you want to open the design.

New dimensions are expressed as a ratio of the original design size. For example, to scale to 120% of the original, enter a scale factor of 1.2 in each field.

Scale factor
X: 1.00
Y: 1.00

Scale factor
X: 0.50
Y: 1.00
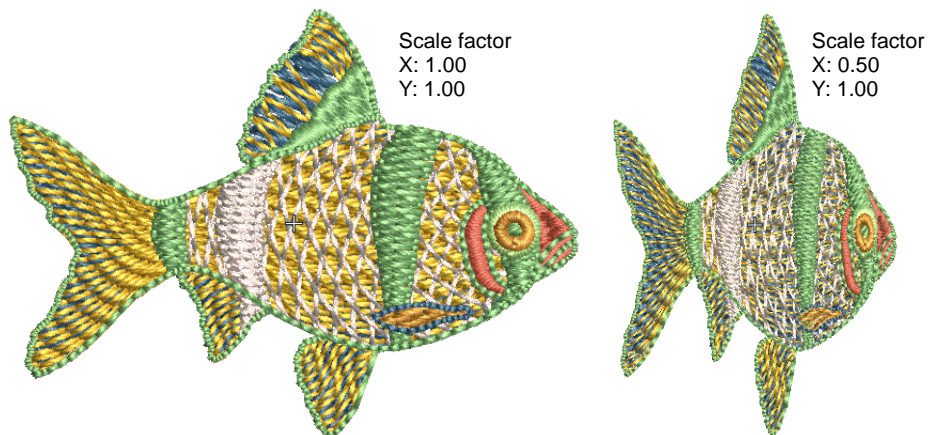
4 In the **Adjust** panel, enter spacing and length values to apply to the design as a percentage of original values. You can adjust satin spacing, run stitch length as well as tatami spacing and length.

5 In the **Auto color merge** panel, choose whether you want to read thread color information from CND files. This ensures that stitches are displayed in the correct colors when converted to EMB.

6 In the **Effects** panel, select the effects you want to apply to the design.

For information about these, see the relevant sections of the manual:

Option	Function
Auto spacing	Auto Spacing automatically adjusts stitch spacing wherever a column changes width. See Applying satin stitch for details.
Short stitches	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. Stitch shortening reduces the length of some stitches in sharp turns so that the needle penetrations are distributed evenly, creating smoother stitching. See Apply stitch shortening for details.
Fractional spacing	With Fractional Spacing, EmbroideryStudio calculates spacing settings from a specified point called the offset fraction. This lies between the outside and inside edges of the shape. You can change the offset fraction to adjust stitch spacing at inside and outside edges. See Apply fractional spacing for details.

7 In the **Default values** panel, adjust the default values for **Satin spacing**, **Stitch length** and **Maximum stitch length** as required.

If the CND design was created with values different to the factory settings, you can override them in these fields.

◀ To save new settings as defaults, click **Save**.

◀ To revert to the Melco factory settings, click **Reset**.

8 Click **OK** and then **Open**.

The selected design opens in the design window. You can scale the design directly on screen or via the **Object Properties** docker. You can also rotate, mirror and skew the design.

💡
Tip: Before CND designs are stitched out, an EXP format file is created. The EXP stores the actual stitches and can be stitched directly. This file too can be opened in EmbroideryStudio.

Related topics...

◀ Save designs in Melco CND format
◀ Reassigning colors to machine files
◀ Opening machine files
◀ Save designs in Melco CND format
◀ Conversion of Melco CND format to Wilcom EMB

Read CND files with color-merge TXT file

While CND files contain no thread color information themselves, the **Auto color merge** feature can read thread colors for CND files from an

associated TXT file. Thus stitches are displayed in the correct colors when they are converted to EMB. **Auto color merge** reads and interprets a TXT file containing colors from a named thread chart. You must specify the thread chart used when the design was originally created in EDS (or other design software).

To read CND files with color-merge TXT file

1 Select **File > Open**. The **Open** dialog opens.

2 Select a CND design and click **Options**. The **Condensed File Input Settings** dialog opens.

Select thread chart
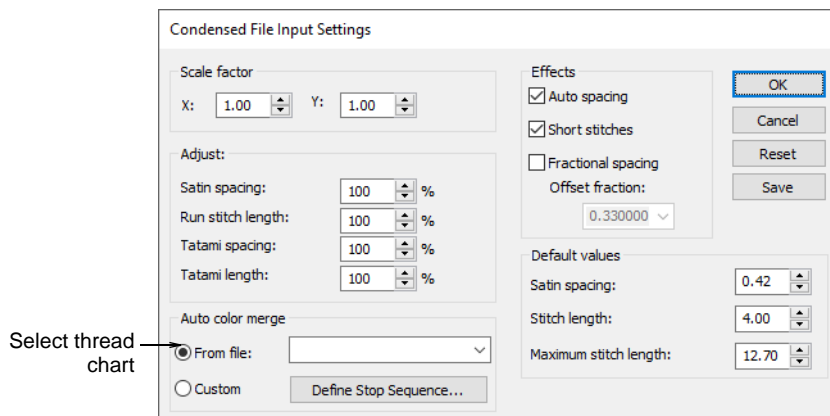
3 Select **From file** in the **Auto color merge** panel, and select a corresponding thread chart from the **Auto color merge** droplist.

Any thread color named in the text file must correspond to a color in the selected thread chart. If not, it will default to black.

4 Click **OK**. The design opens, the stitches appear in the correct thread colors, and the color palette displays the selected thread chart.
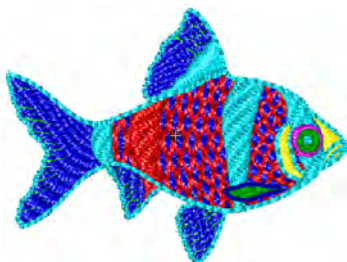
No chart selected – default
colors assigned

One color not correctly matched –
defaults to black
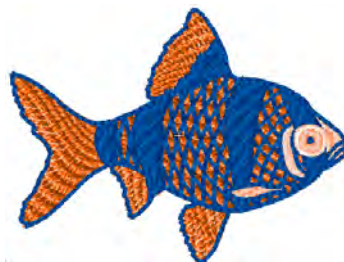
Original colors correctly
assigned from text file

Related topics...

◀ Reassigning colors to machine files

◀ Create a color-merge TXT file

Create a color-merge TXT file

Auto color merge reads and interprets a TXT file containing colors from a named thread chart. You can create this text file manually with a text editor such as MS Notepad. The text file must have the same file name as the CND file – e.g. Fish.TXT and Fish.CND. Both files must reside in the same folder. For the **Auto color merge** function to work correctly, information in the text file must be entered in a certain format. A typical text file might look like this:

```
Fish
Uses curve effects
File: Fish
55.9mmW X 74.5mmH
ST: 6,780
Colors: 8
1. Tropical Sunset
2. Saffron
3. Pale powder Blue
4. Tropical Sunset
5. Pale powder Blue
Curve effect
6. Tropical White
7. Tropical Sunset
8. Pale powder Blue
```

Text file structure

All text files contain some or all of the following elements.

Txt file item	Mandatory	Description	Example
Design name		This is the name of the design as it appears in File > Information > Design Information > Subject.	Fish
Comments		Lines inserted here appear under File > Information > Design Information > Comments.	Uses curve effects
File name	●	This is the file name of the CND design file. The file extension should not be included.	File: Fish
Design size		Enter the expected design size for the design. The actual design size is derived from the software.	55.9mmW X 74.5mmH
Stitch count		Enter the expected stitch count for the design. The actual stitch count is derived from the software.	ST: 6,780
Number of colors	●	States the total number of colors in the design.	Colors: 8
Thread name 1	●	Enter the first thread name. The name of the thread is searched against the Thread Chart. The thread name is shown in the File > Design Information > Stop Sequence tab.	1. Tropical Sunset

Txt file item	Mandatory	Description	Example
Thread name 2	●	Enter the second thread name.	2. Saffron
Thread name 3	●	Enter the third thread name.	3. Pale Powder Blue
Thread name 4	●	Enter the fourth thread name.	4. Tropical Sunset
Thread name 5	●	Add any extra threads to this list.	5. Pale Powder Blue
Thread comments		Place comments below the relevant thread number.	Curve effect
Thread name 6	●		6. Tropical White
Thread name 7	●		7. Tropical Sunset
Thread name 8	●		8. Pale Powder Blue

Chapter 38
Embroidery Output

Once an embroidery design is complete, you can output for actual stitchout in a variety of ways – sending directly to machine for stitching, or saving to specific machine formats and/or to embroidery disk.

Tip: From the same design file, you can also output a production worksheet for the embroidery machine operator. See Design Reports for details.

Sending designs to machine

EmbroideryStudio provides alternative means for sending designs directly to machine. Depending on your software options, you can stitch to machine using **Stitch Manager**, **Machine Manager**, or **Connection Manager**. Newer machines use USB or Wired-Wireless network connections. EmbroideryStudio supports these connections via the

Connection Manager. Older-style machines generally use serial port connections. EmbroideryStudio supports connection to these machines via the **Stitch Manager**.

⌀

Note: Machine Manager and its operations are described in a separate supplement.

Send designs to Connection Manager

> Use Standard > Send to Connection Manager to connect to supported machines via proprietary machine software.

Newer machines use USB or Wired-Wireless network connections. They can appear as a disk drive or be setup to read designs from a folder on the PC. Some machines such as Janome MB-4 and Barudan LEM are supplied with propriety connection software. EmbroideryStudio supports connection to these machines via **Connection Manager**. Each machine connection:

◀ Has a unique name and 'quick-access' button
◀ May have a unique folder to which designs can be sent. From here they can be accessed from the machine control panel or third-party connection software.

To send a design to Connection Manager

◀ Ensure that the target machine is correctly connected to your PC. See your machine documentation for details.
◀ If a connection already exists, click the quick-access button to send the design to a predefined location.

Quick access button for existing machine connection

Send to Machine Folder-1 / Settings

Send the current design directly to 'Machine Folder-1'. Right click to change the settings for this connection. Right-click for settings.

ⓘ **Press <F1> for more help**
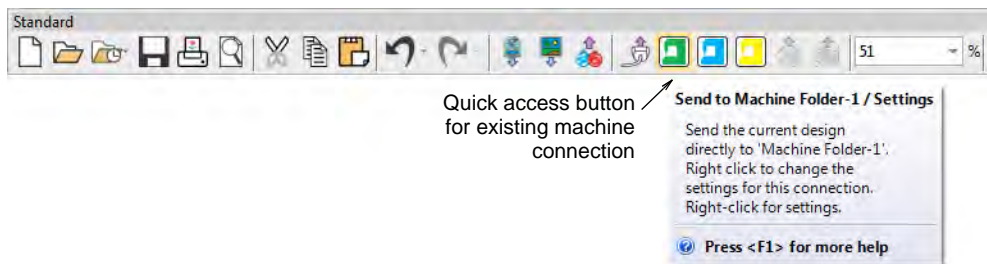
◀ Alternatively, click the **Send to Connection Manager** icon.
  ◀ If no connections currently exist, you will be prompted to set one up. See Setting up machines for Connection Manager for details.

◀ If a connection already exists, the dialog opens.

Select a connection → [dialog]

Click to send → Send

Click to set up another connection ← Setup...
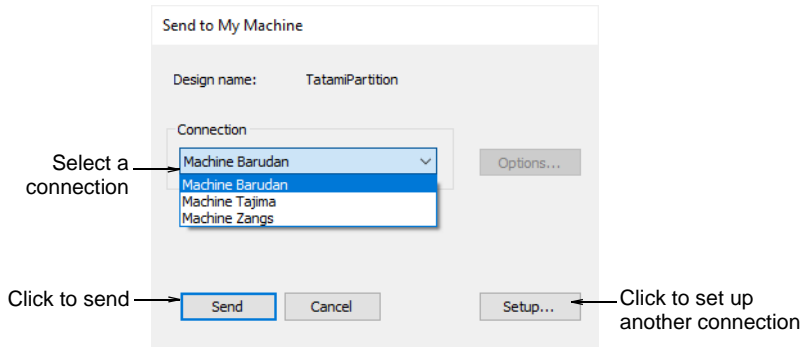
◀ Select a connection from the droplist and click **Send**.

◀ Using the machine controller or third-party connection software, access the design from the network or PC folder.

◀ Load or send the design and stitch it on the machine.

Related topics...

◀ Setting up machines for Connection Manager

◀ Embroidery file formats

Send designs to EmbroideryConnect

Use Standard > Send to EmbroideryConnect to send the current design to a named EmbroideryConnect device.

Use Standard > Queue Design to send the current design to the EmbroideryConnect design queue where they can be 'pulled' from the machine.

Once you have set up one or more EmbroideryConnect devices on your network, you have the choice of 'pushing' designs or 'pulling' them from the EmbroideryHub. The **Send to EmbroideryConnect** button allows you to send a design to a named EC device. Alternatively, use the **Queue**

Design to 'push' designs to a queue where they can be 'pulled' from the machine itself.

Related topics...

◀ Sending designs to EmbroideryConnect
◀ Machine Networking

Send designs to Stitch Manager

> Use Legacy Features > Send to Stitch Manager to send a design to any supported embroidery machine without changing the original design format.

Once a design is complete, you can stitch it out to **any** supported embroidery machine **without** changing design format. If a selected machine does not support a particular function included in the design, it is simply ignored. When you send several designs in a row, they are automatically queued and stitched out one at a time.

To send a design to Stitch Manager

1 Ensure that the target machine is correctly connected to your PC. See your machine documentation for details.

Note: Before you can send designs for stitching, you must also configure the machine in EmbroideryStudio.

2 Open a design.

3 Click the **Send to Stitch Manager** icon. The dialog opens.

Select embroidery machine →

Select machine format →
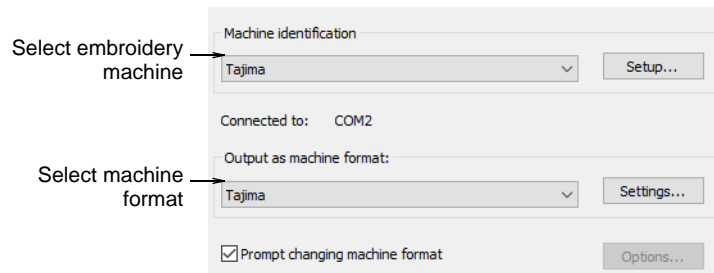
4 From the **Machine Identification** list, select an embroidery machine. Click **Setup** to modify machine settings as required.

5 From the **Output as Machine format** list, select the correct machine format. Click **Values** to modify the machine format settings as required.

Note: This field is automatically updated if the target machine format is different to the current format. Select the **Prompt Changing Machine Format** checkbox if you want to be prompted when the **Output as Machine Format** field updates.

6 Click **OK** to return to the **Send to Stitch Manager** dialog.

7 Click **OK**. The **Stitch Manager** dialog opens listing the files to be stitched out.
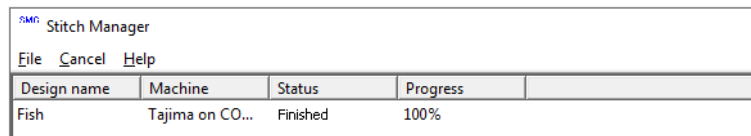
Tip: To delete a design from the queue, select it and click **Cancel**.

Related topics...

◀ Hardware Settings

◀ Setting up machines for Stitch Manager

◀ Embroidery machine formats

◀ Standard machine formats

◀ Embroidery file formats

Exporting designs for machine

Different embroidery machines understand different languages. Each has its own control commands. Before you can stitch out a design, it must be in a format which can be interpreted by the machine. Machine or 'stitch'

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. Or they are converted when saving to disk or memory stick.

Note: The **Design Library** conversion function allows you to batch-convert to and from all EMB and other supported design file types. It also batch-converts many machine file formats such as DST, EXP, SEW. See also Converting designs.

Export designs to machine file

 Use Standard > Export Machine File to export the current design to a machine file for stitching.

Converting an open design to machine file format is as simple as choosing **File > Export Machine File**. EmbroideryStudio reads and converts all popular formats. Designs originally created in EmbroideryStudio generally give the best results. Other file types may not have all the data necessary for successful conversion.

Choose a machine file format
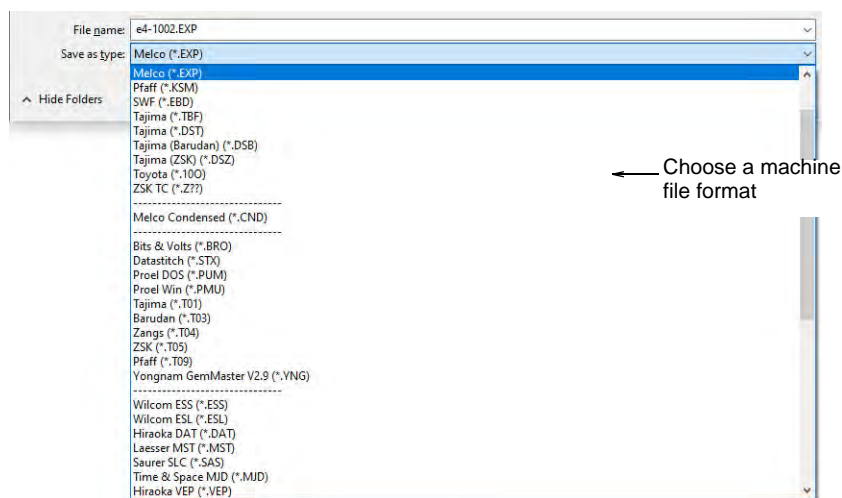
For older machines, you can also save designs to proprietary embroidery disk. See Using embroidery disks for details.

Caution: If a design feature is not available in the file type you select, it will be converted – e.g. **Flexi Split** stitching may be changed to plain Tatami.

Related topics...

◀ Converting designs
◀ Send designs to Connection Manager
◀ Using embroidery disks
◀ Machine Formats
◀ Embroidery file formats

Save designs in Melco CND format

You can save files to Melco CND format from EmbroideryStudio. Some stitch quality features, stitch types, and decorative fills and effects do not convert well. If you intend to save a file in CND format, you should only use input methods, stitch types and effects that are compatible with Melco EDS-III software.

Trim functions

Superstar-compatible machines do not have trimmers. If you want to stitch a design to a machine without trimmers, set machine values to **not** output Trim codes. Then digitize the design for manual trimming. Early versions of CND do not support Melco Trim codes. In this case, set the machine format values to output Trims as Jumps.

Turning Tatami fills

When you save to CND format, you need to specify how to convert turning tatami stitches. Objects with curving tatami stitches – e.g. Column A objects – are not supported by early versions of CND format. For Superstar-compatible machines, turning tatami stitches are simply converted to **Walk** stitches, the EDS equivalent of Manual. For earlier machines, turning tatami fills need to be converted to normal tatami – i.e. with a single stitch angle – then to Normal Fill, the EDS equivalent of normal tatami.

To save designs in Melco CND format

1 Select **File > Export Machine File**. The **Export Design** dialog opens.

Choose Melco CND file format
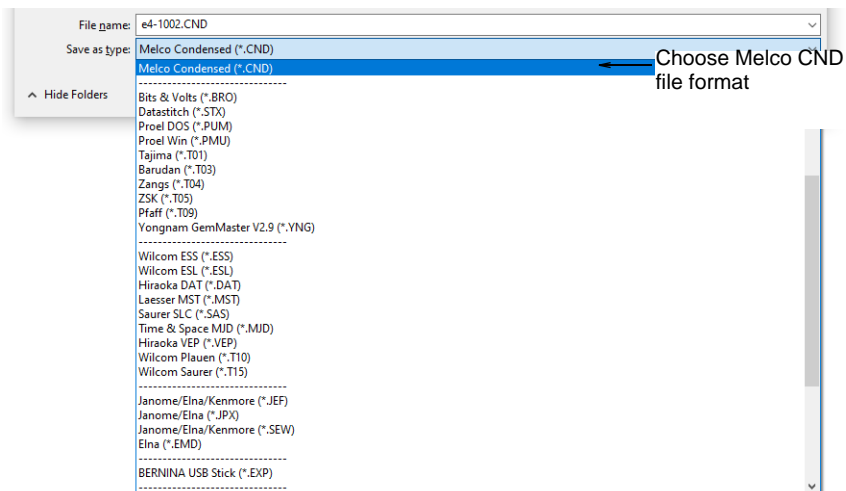
2 Choose **Melco CND** from the **Files of Type** list.

3 In the **File name** field, enter a name for the design.

4 Click **Options**. The **Save Options** dialog opens.

Select required option
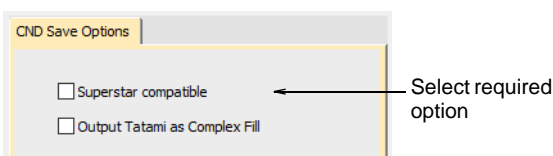
5 Select the required option for converting **Turning Tatami** fills:

Option	Function
Superstar Compatible	Converts turning tatami to Walk (EDS equivalent of Manual). Complex Fill tatami is output as Normal Fill (EDS equivalent of tatami). Superstar-compatible machines do not have trimmers.
Output Tatami as Complex Fill	Converts turning tatami fills to normal tatami – i.e. with a single stitch angle – then to EDS Normal Fill.

Note: These functions are also available when you send a CND design for stitching.

6 Click **OK** and then **Save**.

Save designs in Singer CSD format

The **CSD Save Options** allows you to select between CSD Type I and Type II.

To save designs in Singer CSD format

1 Select **File > Export Machine File**. The **Export Design** dialog opens.

Choose Singer CSD file format
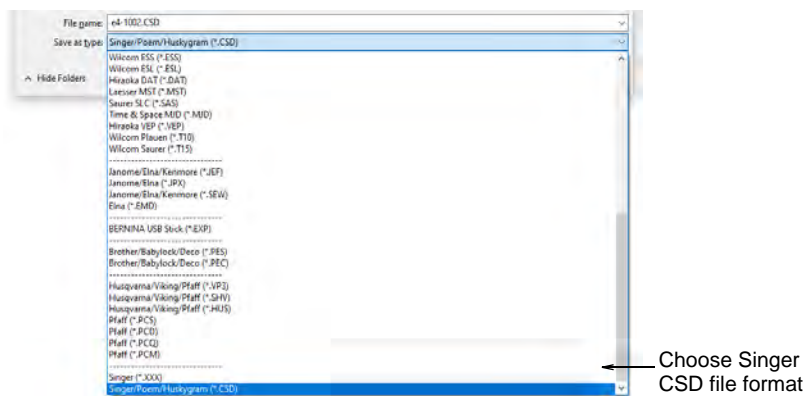
2 Select **CSD** from the **Files of Type** list.

3 In the **File name** field, enter a name for the design.

4 Click **Options**. The **Save Options** dialog opens.

Select CSD file type option
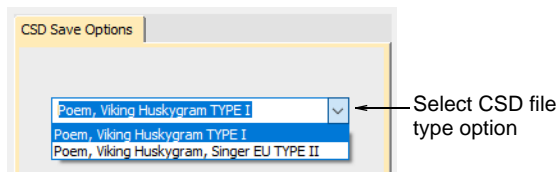
5 Select the required CSD file type option.

◀ Type II was introduced in CS 1.2B software for the POEM machine.

◀ Type II is also used by the Singer EU software for the POEM machine.

◀ Type II files also store thread color RGB values and an icon of the design.

6 Click **OK** and then **Save**.

Using embroidery disks

Paper tape is the traditional medium for storing designs in stitch data format. Embroidery disks, which largely replaced paper tape, are specially formatted floppy disks used to transfer designs from computer to older embroidery machines. You can format embroidery disks and save designs to them from within EmbroideryStudio. The format you use will depend on the machine. Designs are generally stored in stitch data format, although Melco CND, for example, is a 'condensed' file format.

You can also open designs from embroidery disks of various formats directly into EmbroideryStudio. Once read, you can output them without change, modify them and output them in the original format, or save them as EMB file. You can optionally convert them into objects. After conversion, a design can be scaled and changed. See also Opening machine files.

Read designs from embroidery disk

> 🖫   Use Legacy Features > Embroidery Disk to open designs from or save to proprietary embroidery disk formats.

You can open designs of other formats from specially formatted 1.44 Mb DS/HD (Double-Sided High-Density) embroidery disks.

To read designs from embroidery disk

1 Insert the embroidery disk in your computer's floppy disk drive.

2 Select **Embroidery Disk > Open**.

Select 'Open'
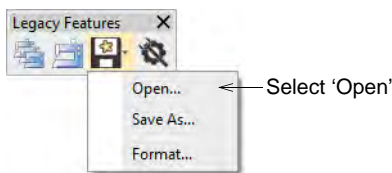
The **Open Embroidery Disk** dialog opens.
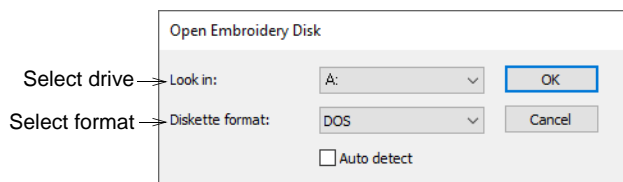
Select drive → Look in:

Select format → Diskette format:

3 From the **Look In** list, select the floppy disk drive.

4 Select the disk format. Either:

◀ Select the format from the **Diskette Format** list.

◀ Select the **Auto Detect** checkbox and let EmbroideryStudio automatically determine the format. This generally takes longer.

5 Click **OK**. The **Open From Embroidery Disk** dialog opens.
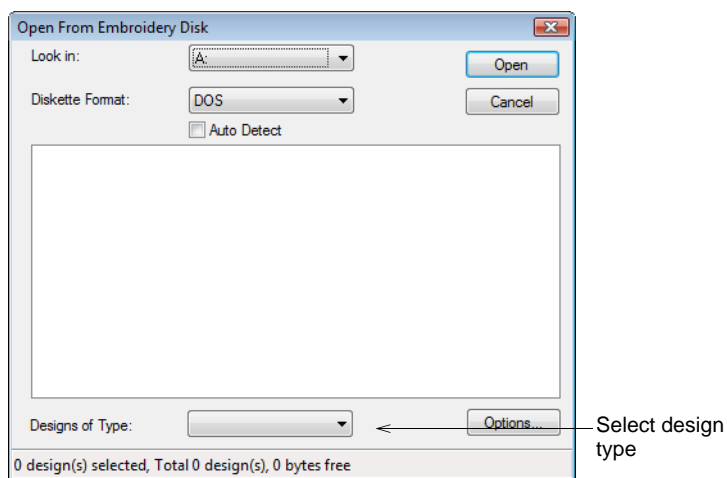
Select design type

6 From the **Designs of Type** list, select a design type. Any designs saved on disk are listed in the panel. If no designs are listed, make sure that the correct drive and disk format are selected.

Note: If the **Options** button is available, you can set recognition options for the design.

7 Click **Open**.

Format embroidery disks

Use Legacy Features > Embroidery Disk to format proprietary embroidery disks.

Embroidery disks must be formatted to suit the embroidery machine you intend to use or it will not be able to read the design. Older computers generally have a High Density 1.44 Mb drive. Most embroidery machines use High Density disks so there is usually no problem with transferring designs. See your machine manual for details.

To format embroidery disks

1 Insert a 3.5" floppy disk of the correct density in your computer's floppy disk drive.

Note: Use the disk type required by the embroidery machine, not the computer.

2 Select **Embroidery Disk > Format**.

Select 'Format'

The **Format Embroidery Disk** dialog opens.
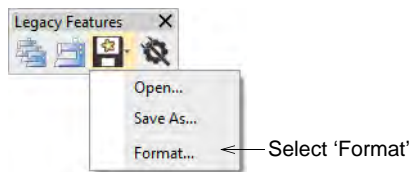
Select drive
Select format
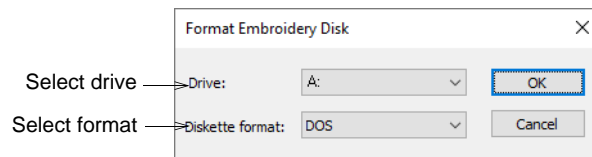
3 From the **Drive** list, select the floppy disk drive.

4 From the **Diskette Format** list, select the required disk format.

5 Click **OK** to confirm. The **Format** dialog opens. This is a MS Windows® system dialog and may vary with the particular operating system you are using.

Select storage capacity

Uncheck quick format
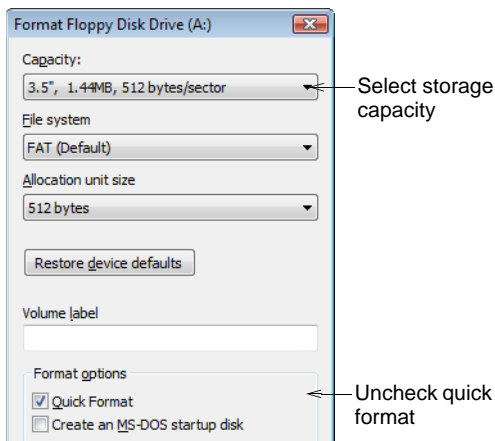
6 From the **Capacity** list, select the disk storage capacity.

7 In the **Format Options** panel, select the 'full format' option. **Quick Format** erases all data from the disk but does not reformat it. Uncheck the option to reformat a blank disk. See your MS Windows® manual for details.

8 Click **Start**. A progress bar appears. You are prompted when formatting is complete.

Note: If you have trouble with formatting a Melco embroidery disk, check if your floppy disk drive can read and write single density floppy disks.

Write designs to embroidery disk

 Use Legacy Features > Embroidery Disk to open designs from or save to proprietary embroidery disk formats.

Save designs to embroidery disk to stitch out on a specific machine. When you save to a new format, the design is converted to encode the machine functions and commands supported by the particular machine.

To write designs to embroidery disk

1 Insert the embroidery disk in your computer's floppy disk drive.

2 Select **Embroidery Disk > Save As**.
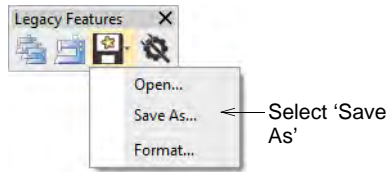
Select 'Save As'

The **Save to Embroidery Disk** dialog opens.
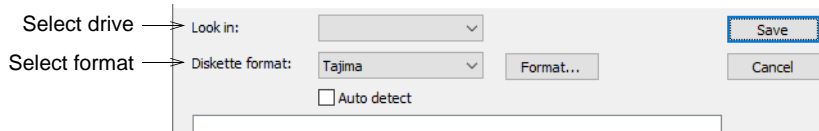
Select drive
Select format

3 From the **Look In** list, select the floppy disk drive.

4 Select the disk format. Either:

◄ Select the format from the **Diskette Format** list.

◄ Select the **Auto Detect** checkbox and let EmbroideryStudio automatically determine the format.

Any designs already saved on disk are listed in the panel.

Note: If the disk is not formatted, or its format is not correct, click **Format**.

5 In the **Design Name** field, enter a name for the design.

6 In the **Filename** field, enter a name for the design file.

Enter file number if required
Enter machine format and design file type
Enter design name
Enter file name
Click to view or modify settings
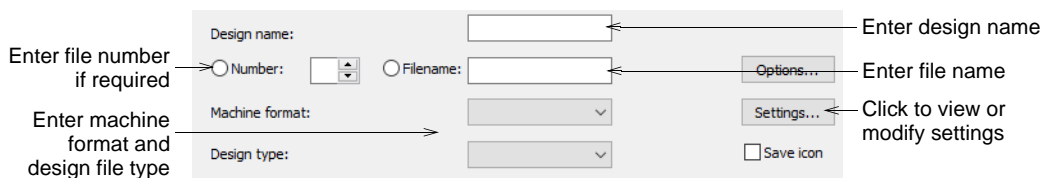
7 If the **Number** field is enabled, enter a file number.

Not all machine formats require this information. This option is grayed out if the file naming mechanism is not supported by the particular embroidery disk type. Tajima uses a free-form file name, so both a numbering system and a text file name system are supported, as seen in the dialog.

8 From the **Machine Format** list, select a machine format.

Some machines can read different formats. For example, some Tajima machines can read Barudan as well as Tajima.

Tip: To view or modify machine format settings, click **Values**.

9 From the **Design Type** list, select the file type to save to embroidery disk. Only one file type is generally available.

10 If available, select the **Save Icon** checkbox to include a thumbnail image of the design with the design file.

This icon appears in the machine control panel during stitch-out.

11 Click **Save**.

⚠️

Caution: Wait until the light on the floppy disk drive stops flashing before removing the disk.

Related topics...

◄ Standard machine formats

Chapter 39
Machine Networking

The EmbroideryConnect capability allows you to wirelessly transfer embroidery designs from EmbroideryStudio to USB-enabled embroidery machines. Machine files are automatically generated and sent via a standard WiFi network to an EmbroideryConnect device plugged into a compatible machine. Design transfers are securely encrypted.

Most modern embroidery machines like Tajima, Barudan, Happy, ZSK, Ricoma and SWF, can read files from a standard USB memory stick. With EmbroideryConnect, there is no need for serial ports, different interface methods, or machine cabling.

The EC device is of great potential benefit to commercial embroiderers who want to network any brand of commercial or 'prosumer' embroidery machines and need a choice of 'push' or 'pull' wireless transfer methods. Benefits can also be found for retail kiosk operators.

This section presents an overview of the product concepts, installation, configuration, and basic usage for EmbroideryConnect.

Network overview

In a nutshell, EmbroideryConnect allows users to wirelessly transfer embroidery designs from EmbroideryStudio to multiple USB-enabled embroidery machines. It is an ideal solution for small to medium size embroidery manufacturers. EmbroideryConnect is designed to meet the following usage requirements:

◀ EmbroideryStudio user wants to be able to send a design from PC directly to a nominated machine.
◀ EmbroideryStudio user wants to 'push' a design to a queue for eventual production.
◀ Machine operator wants to 'pull' a nominated design to embroidery machine from the design queue.

Note: The EmbroideryConnect device only supports Windows 10.

What is an EmbroideryConnect network?

The concept behind the EmbroideryConnect network is described by the following diagram...

WiFi Router

Operator 'pulls' barcoded design to embroidery machine from design queue

Embroidery machine 1

EmbroideryHub converts design to machine file for target machine

Embroidery machine 2

Embroidery machine 'n'

Ethernet LAN

Designer sends design to named embroidery machine OR to EmbroideryHub design queue

ES User 1   ES User 'n'
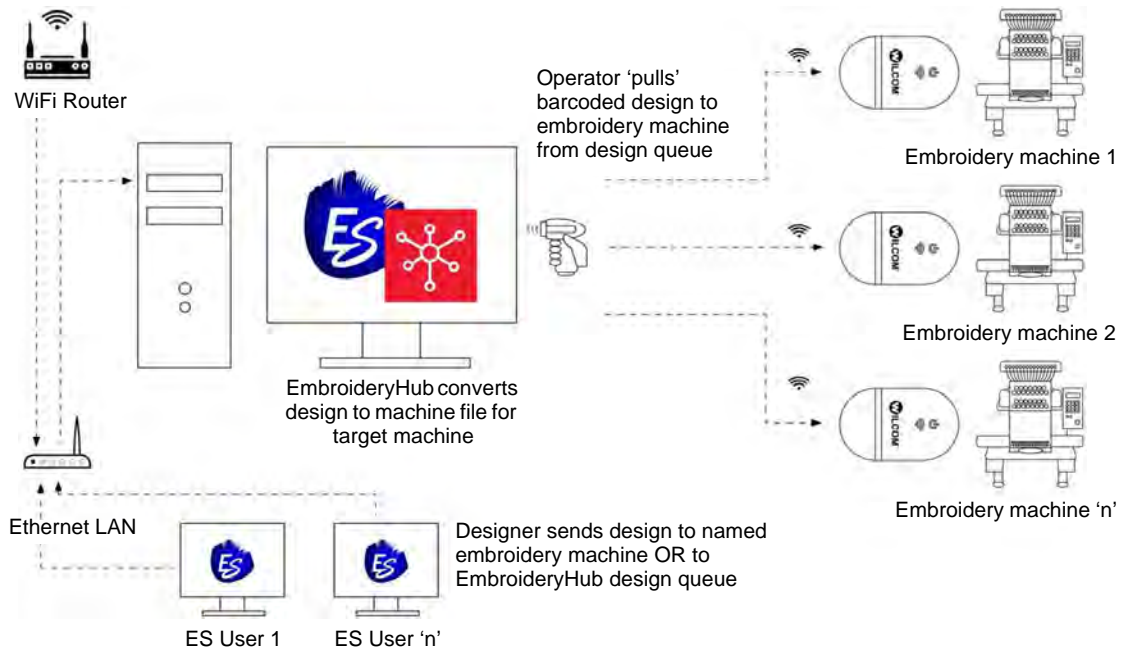
Note: Anyone on the same EmbroideryConnect network who has EmbroideryStudio running can send a design to an EC device or design queue on an EmbroideryHub. However, there can only be **one** EmbroideryHub running on the same network.

End-user benefits

What are the benefits of the EmbroideryConnect capability?

Simple and easy to use...
- Easy to install and configure.
- Connect to existing WiFi and eliminate complicated network setup and configuration.
- Plug into any USB-enabled embroidery machine.
- Wireless design transfer – no need for network cables.
- Mix and match different brands of machine on the same network.

The right design, every time...
- Machine file automatically generated on output.
- Convenient operation with the pull method. No risk of selecting wrong design for the order.

Safe and secure...
- Correct design loaded to the correct embroidery machine.
- Designs encrypted during transfer and, optionally, removed automatically from the design queue.
- Optionally, designs deleted from the EC device when disconnected.

Usage scenarios

There are two basic ways of setting up an EmbroideryConnect network using either a single PC or multiple PCs.

Scenario 1: Single PC

If you are using a single PC to create, edit, and manage your designs as well as serve machine files to your embroidery machine/s, you will need both EmbroideryStudio and EmbroideryHub running.

Scenario 2: Multiple PCs

If you are using two or more PCs to create your designs and a dedicated PC to serve your machine files, you will need:

◀ EmbroideryStudio with EmbroideryHub running on PC 1.
◀ EmbroideryStudio running on PC 2, PC 3, etc.

Design files may be saved anywhere on your network. These are sent to the EmbroideryHub where they are converted to machine files and sent to the EmbroideryConnect network.

Tip: Visit the Wilcom Support Center at www.wilcom.com.au/support for a current list of compatible machines.

EmbroideryConnect components

The system employs the following components...

Component	Details
EmbroideryConnect WiFi device	A Wilcom-supplied WiFi device – one per machine.
EmbroideryHub PC	A nominated PC will act as the EmbroideryHub. This PC should remain on at all times. All designs are routed through it to embroidery machines connected to the EmbroideryConnect network.
EmbroideryHub	EmbroideryHub software is activated on the dedicated PC… • Designers can send (push) designs to connected machine(s) running the EC device. • Alternatively, designers can send designs to the EmbroideryHub queue. • Machine operators can request (pull) specific design from the queue via barcode reader connected to the EC device.
EmbroideryStudio users	Other EmbroideryStudio users can send designs to machines via the EmbroideryHub. All EmbroideryConnect devices on the network will appear for selection in a machine list. There is no need for shared folders, etc.
EmbroideryStudio dongle	EmbroideryHub will only run if there's an EmbroideryStudio dongle plugged into the EmbroideryHub PC or there is an EmbroideryStudio network dongle on the same network.

Third-party components

To set up an EmbroideryConnect network, some third-party hardware items are also required...

Component	Details
USB-capable embroidery machines	• Able to read designs from USB memory stick. • Preferably with the USB port built into the control panel. Add-on USB converters in old machines may not be compatible.
Compatible WiFi router	See below for details.
Barcode reader	Optional.
Windows Administrator privileges	Access must be configured by a user who has full administrator privileges and is part of a Windows 'Workgroup' or 'Domain' network.

WiFi router compatibility requirements

Note the following WiFi router requirements to be compatible with the EC device:

Requirement	Details
Standard security protocol	The WiFi router must use one of the standard security protocols: WEP or WPA/WPA2 Personal. Security type 'none' or 'unsecured' is not supported at present. A WiFi password is mandatory.
Support for WLAN Protocol 802.11 G	The WiFi router needs to support WLAN Protocol 802.11 G in the 2.4 Ghz band. The EC device will not connect to a WiFi router using the 5 Ghz band. If unsure, consult the documentation provided with your router.
WiFi network name	You must know the WiFi network name (SSID) and WiFi router password (key). We recommend using a SSID (network name) that contains only alphanumeric characters – letters and numbers.
WiFi coverage	WiFi coverage must be sufficient to serve the entire production area.

EmbroideryConnect device

A separate EmbroideryConnect device is needed for each embroidery machine on the network. Designs can be 'pushed' to a named device or 'pulled' via barcode reader at each machine.

Device features

Device features are summarized below:

Item	Description
EmbroideryConnect device	The device itself is small and compact. It can plug directly into an embroidery machine USB port or via USB extender cable.
USB-C connection	USB-C connection at top to connect device to PC or embroidery machine.

Item	Description
USB-A connection	Separate USB-A input port for USB barcode reader.
Device state indicator	The device displays basic status information. See below for details.
Power from USB	No separate power supply needed – power is drawn from USB port.

Tip: The EC device comes with 3M mounting strips to attach it to the target machine.

EC device states

The EC device indicates various devices states. The following table explains the color coding...

When…	Status light	Status
Attaching device to machine	Solid green	Device is running smoothly so machines can access designs.
Scanning barcode	Flashing orange	Barcode scan failed. Scanned file not found in design queue.
	Flashing purple	Device cannot connect to EmbroideryHub for design request.
Sending design to device	Flashing yellow	Device is unmounted.
	Flashing orange	Sent file already exists on device.
	Flashing red	Error occurred.

EmbroideryConnect setup

	Double-click to start EmbroideryHub.

Setting up an EmbroideryConnect network is easy...

◀ A single device is required for each embroidery machine.
◀ A dedicated network PC acts as the 'hub' and runs the EmbroideryHub software.
◀ All devices are configured to the EmbroideryHub PC.
◀ All secondary PCs access the EmbroideryConnect network via the EmbroideryHub.

To configure an EmbroideryConnect device

1 Ensure the 'hub' PC has an active internet connection.
2 Start EmbroideryHub from the program group or desktop.

Open the
EmbroideryHub
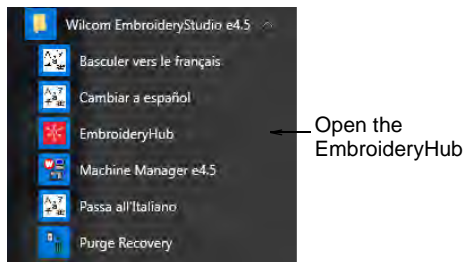
When first run, the device list in the EmbroideryHub main window is empty.

Add a new
EmbroideryConnect device

3 Plug the EC device into the computer via the USB-C port located at the top.

Connect
EmbroideryConnect
device to PC

Power LED solid green and
WiFi LED flashing blue

4 Ensure all lights are in 'Setup' mode. When the power LED is solid green and the WiFi LED is flashing blue, the device has finished booting. This generally takes about 60 seconds.

WiFi LED flashing blue
indicates 'Setup' mode
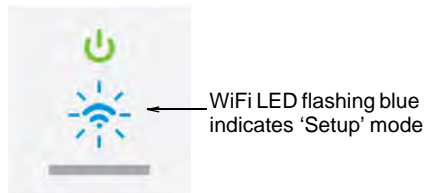
5 Click **Add New EmbroideryConnect** and follow the setup wizard prompts.

◀ If an unconfigured EC device is detected, the process will open the wizard directly and take you to the next step.

◀ If no EC device is detected, the dialog below will appear. Check the device is correctly attached and has finished booting. Click **Next** when the button becomes available.
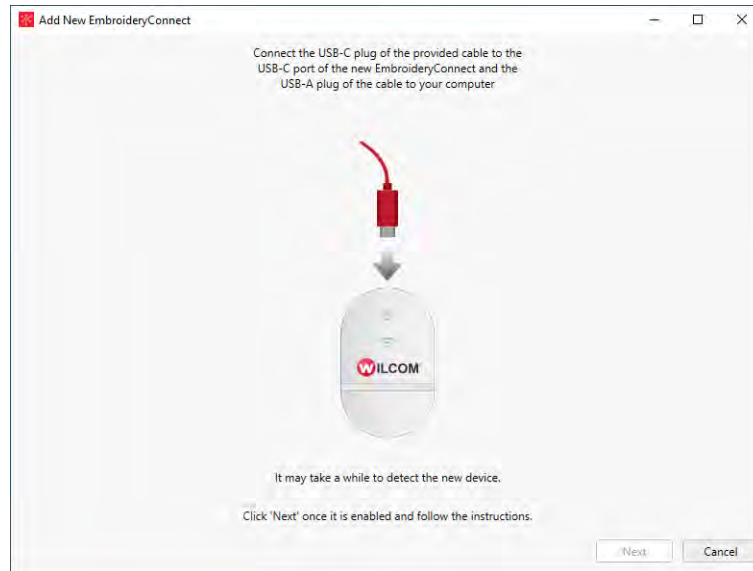
◀ If more than two unconfigured EC device are connected, the dialog below will appear. The code displayed corresponds to the tag number on back of the device. Select a device and click **Setup**.

Select EC device
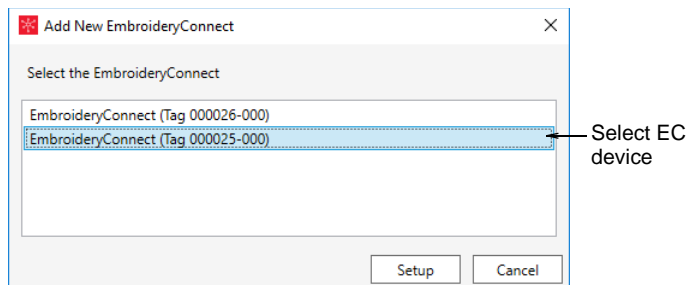
6 When prompted, select your WiFi network and click **Next**.

Select your WiFi network
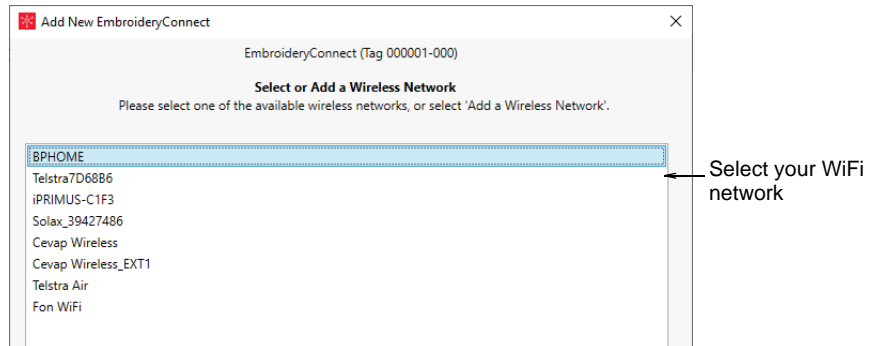
7 Enter the WiFi password and click **Next**.

Enter WiFi password
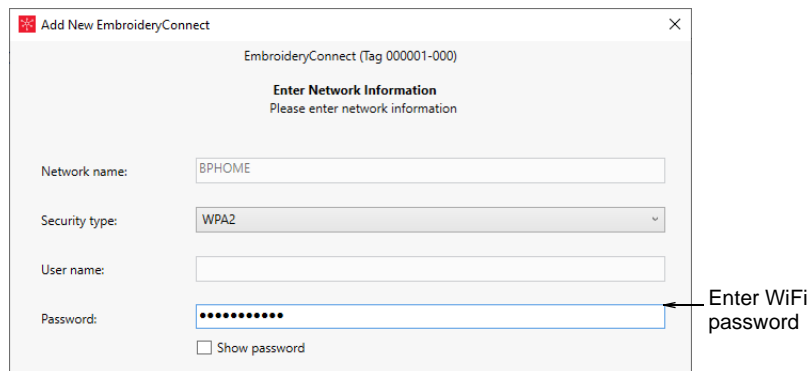
8 Identify the EmbroideryConnect device and specify output options.

Name the EmbroideryConnect device

Specify the EmbroideryConnect folder
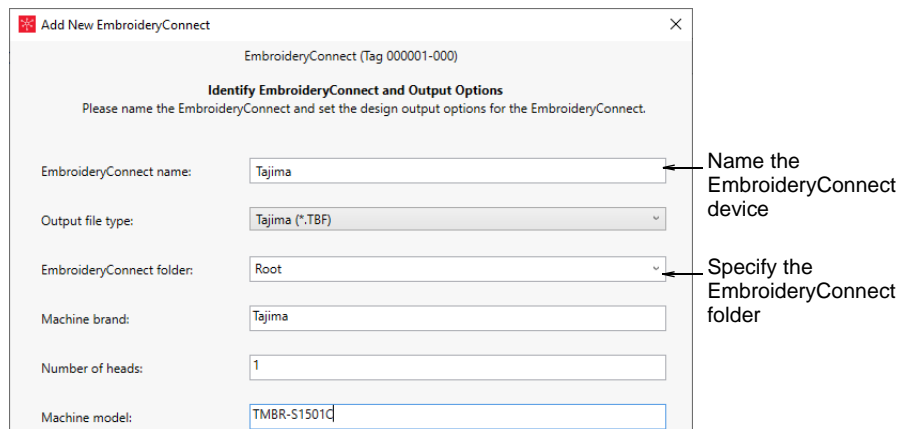
Options include:

Option	Function
EmbroideryConnect name	Give the device a unique name associated with the connected machine – e.g. 'Tajima #2'.
Output file type	Specify the machine file type for the selected machine – e.g. *.TBF. Design files will be converted on-the-fly to this format.
EmbroideryConnect folder	Specify the folder on the device if different to the 'root' folder. Machine requirements are the same as those for sending a design via normal USB stick.
Machine brand	This field is simply descriptive to help identify the machine associated with the EC device.
Number of heads	This is a descriptive field.
Machine model	This is a descriptive field.

9 Click **Finish**.

EmbroideryConnect device connecting to EmbroideryHub

10 Wait for the EC device to connect to the network and EmbroideryHub. The blue WiFi LED will flash and then turn solid blue when it has successfully connected.

WiFi LED solid blue indicates 'Ready' mode
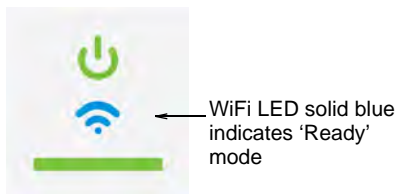
Connection takes about 60 seconds depending on network traffic.

EmbroideryConnect device now connected to EmbroideryHub

11 Once configured, remove the EC device from the EmbroideryHub PC and connect it to the target machine.

Connect EmbroideryConnect device to machine
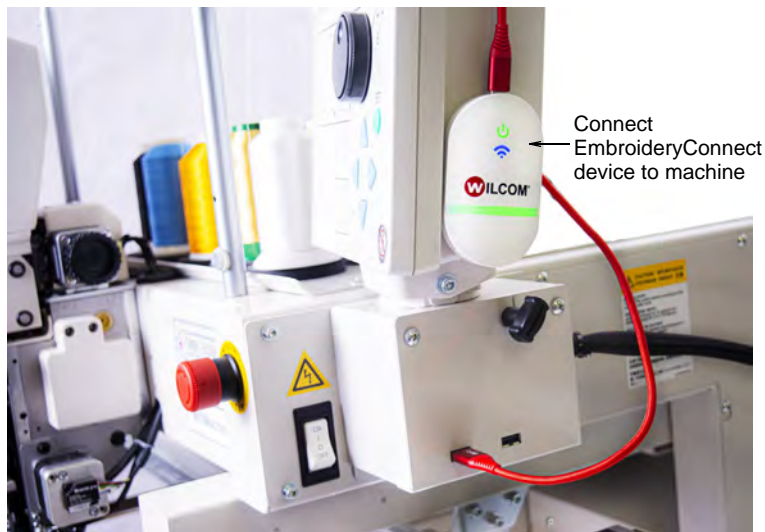
💡
Tip: The EC device comes with 3M mounting strips to attach it to the machine.

12 Again, ensure all lights return to 'Ready' mode. You can now send designs to this device from EmbroideryStudio.

13 Configure your other devices in the same way.

Click to toggle list view and icon view

Add a new EmbroideryConnect device
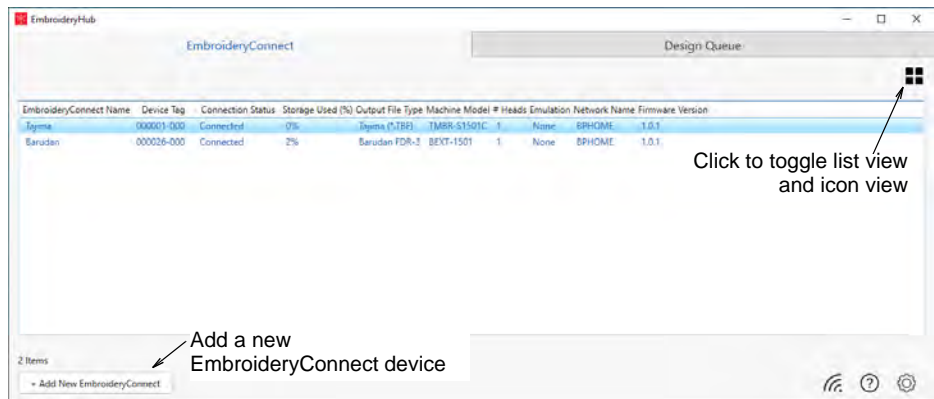
Note: The EmbroideryHub needs to remain active at all times in order to manage the design flow to all connected EmbroideryConnect devices.

Basic device settings

Once your devices are set up and connected to the target machines, you can further configure or modify them at any time. There is no need to re-attach the EC device to the EmbroideryHub PC. Settings can be modified across the network. Double-click the device icon in the main window to access settings.

Double-click device icon to access settings
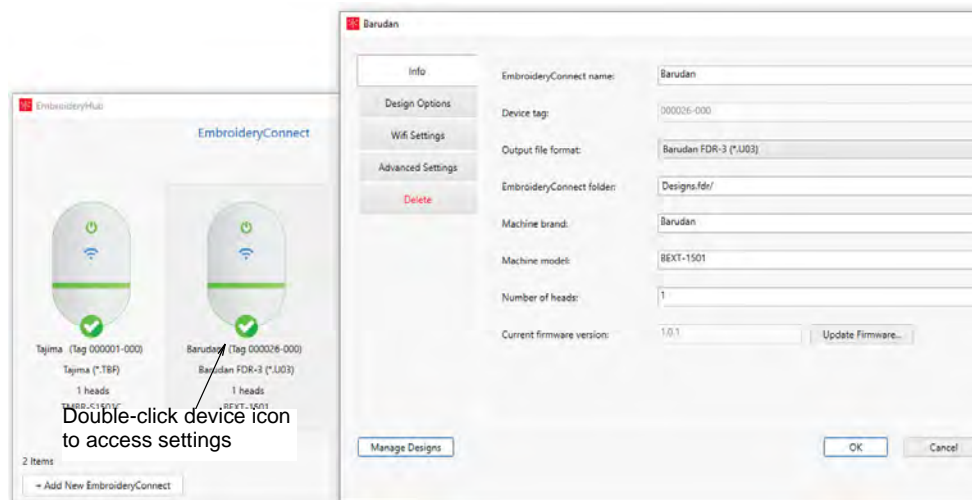
Device details

Access the **Info** tab to modify details provided during the setup procedure. Here you can change device name, output file type, and other details…

Edit device name, output format, and other details

Note: Use 'Rotate design by 180° on output' to auto-rotate the design by 180° when output to machine file on a connected EC device. If the machine is dedicated for cap designs, tick this option.

Design options

Access the **Design Options** tab to manage design options. All design transfers are securely encrypted across the EmbroideryConnect network. Various options are available for handling design transfers…

Set design transfer options

Apply settings to all devices

Design options can be modified as preferred for this EC device...

Option	Function
Keep designs when powered off	By default, designs stay on the device unless you remove them in the Manage Designs window. When unticked, designs are cleared from the device so they can't be copied.
Replace designs on barcode read request	When ticked, whenever the operator does a barcode scan to fetch a design, EmbroideryConnect will delete all existing designs on the device before transferring the scanned design. Some users only want one design on the device at any given time.
Apply to all	Click to apply the same settings to all EmbroideryConnect devices configured on the EmbroideryHub.

WiFi settings

The main reason for accessing the **WiFi Settings** tab is to update the network password...

Update password as necessary

Delete EC device

Access the **Delete** tab to remove a selected EC device from EmbroideryHub.

Delete EC device from EmbroideryHub

Advanced device settings

Access the **Advanced Settings** tab to update USB memory size settings and machine compatibility settings as needed...

Update memory size settings

Update machine compatibility settings
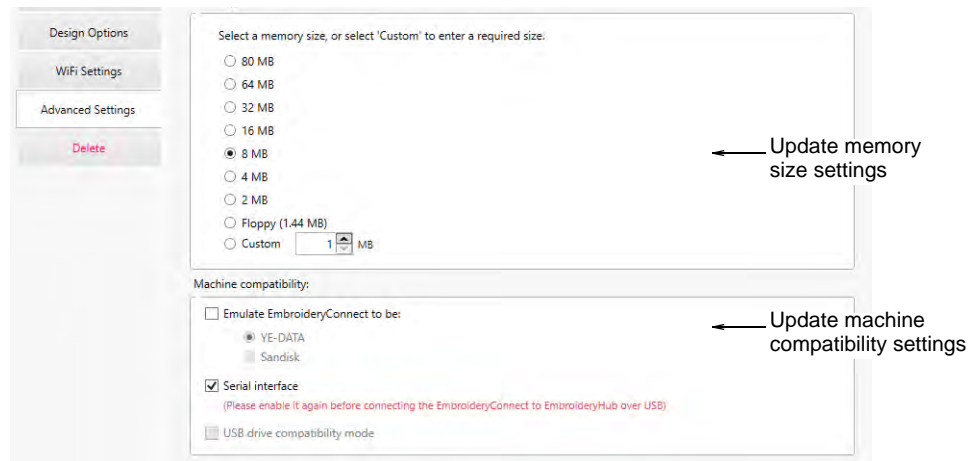
Configuring EC device memory size

The default capacity of the EC device is 8MB. Most machines accept this size of USB memory stick. Some older machines require smaller sizes such as 4MB or Floppy disk size (1.44 Mb). It can take up to 30 seconds for changes to be made.

Update memory size settings according to machine requirements
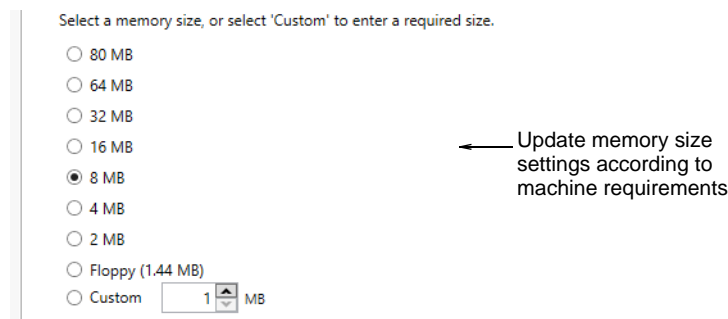
⚠ **Caution:** If you choose floppy memory mode (1.44 Mb), it may not work on newer machines.

You can confirm the change in memory size when the EC device is connected to the PC.

Default RAM disk size
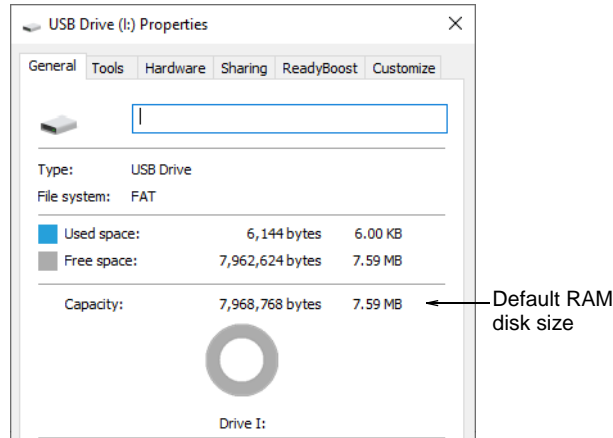
Tweaking machine compatibility

A number of machine compatibility options are available under **Advanced Settings**. It may be necessary to enable one or other of these to ensure compatibility between your machine controller and the EC device. If for any reason you lose WiFi connection to the EC device, the only way to reconfigure it is to perform a 'hard reset'. See for details.

Emulating other devices

EmbroideryConnect can emulate other types of device. Some machines can only read designs from YE-DATA or Sandisk. For example, Tajima TEJT-II-C embroidery machines require these types of device. EmbroideryConnect can be set to emulate them.

Emulate other devices according to machine compatibility requirements
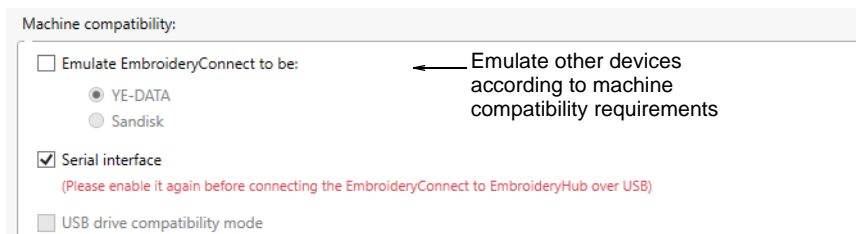
Disabling serial interface

By default, EmbroideryConnect devices have the USB serial interface enabled in order to configure them on EmbroideryHub. It is best to leave the setting activated in case you need to reconfigure the device. However, if the embroidery machine has a problem with WiFi and serial

interface, you may need to disable it. With the EC device connected, the machine may lock up and display an unexpected message.
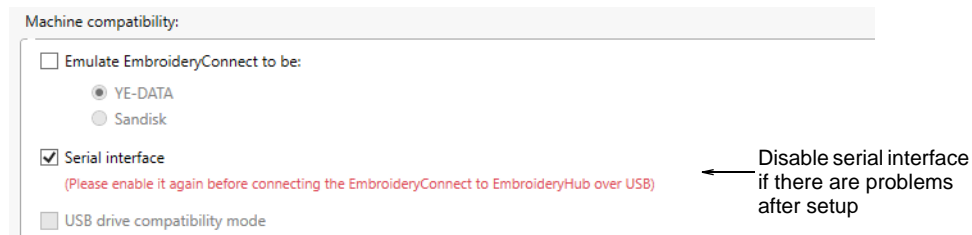
Untick the **Serial interface** function and click **OK**. You will receive the following warning…
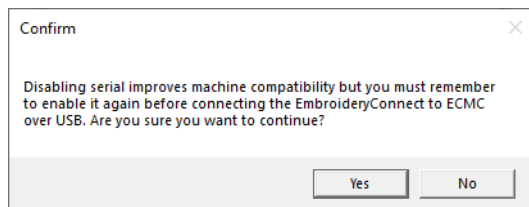
Note: If you turn off the serial interface and subsequently lose WiFi connection to the EC device, the only way to reconfigure it is to perform a 'hard reset'. See If you have created a folder structure, double-click the '..' at the top of the list to move up a folder level. for details.

USB drive compatibility mode

There's an option to run the EC device in 'USB drive compatibility mode'. This may improve machine compatibility in some cases. For instance, if you are using Tajima X16 controllers or machines like Janome MB-4 and Janome MC12000:

◄ Tick both 'USB drive compatibility' and 'disable serial interface'. In other words, USB drive compatibility should be enabled and serial interface disabled.

◄ Only do this after the device has been set up and is working.

◄ If you reset the device for any reason, make sure 'disable serial interface' is unticked.

Note: The option is grayed out if the device does not have firmware version 1.0.1 or greater.

Configuring sub-folders for Barudan machines

Sometimes you may need to specify a folder on the device which is different to the 'root'. Different machines have different requirements.

For example, 'MyDesign.fdr/'. These are the same as requirements for sending a design via a USB stick. Make sure you include a 'slash' (/) at the end.

Specify the EC folder on device
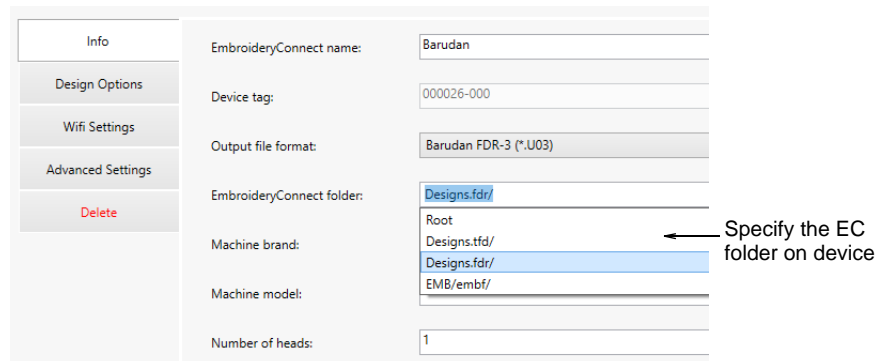
If the EC device will be used with a Barudan machine, a special sub-folder must be configured. Barudan machines will not read designs from the root folder of any USB stick. You can edit the folder structure on the EC device whenever necessary.

Adjusting proxy & network adapter settings

Normally you will not need to touch proxy and network adapter settings. However, the **Advanced Settings** dialog exists to resolve any issues. For instance, proxy settings of the EmbroideryHub PC may not match those of the local network. Or, if the PC has multiple network adapter connections – e.g. both a wired Ethernet connection and a WiFi connection – conflicts may arise. To access settings, click the 'cog' button in the lower right corner of the main screen.

Access proxy server settings
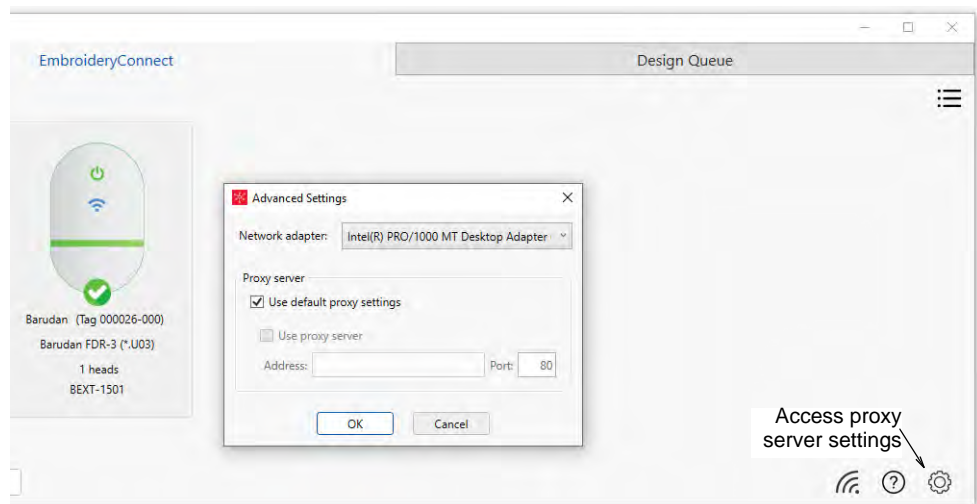
Proxy settings

Default proxy settings are set in the Windows **Internet Options** dialog. Keep ticked for most situations. If you are using two networks with different proxy requirements, this may cause '504 errors' to occur with the devices. You will need to untick default settings and use the other controls to specify the proxy configuration for your EmbroideryConnect network.

Network adapter settings

The network adapter should be left on default most of the time. It's only needed when there are multiple adapters connected to two different networks **and** there are device connectivity issues. If you have two adapters and find that the devices consistently switch from 'Connected' to 'Disconnected', select the adapter connected to the EmbroideryConnect network. EmbroideryHub should also be restarted.

Sending designs to EmbroideryConnect

Once you have configured one or more devices on your EmbroideryConnect network, you have the choice of sending designs to a named device or 'pushing' them to a queue where they can be 'pulled' from the machine itself. You can use any PC running EmbroideryStudio on your local WiFi network to send designs.
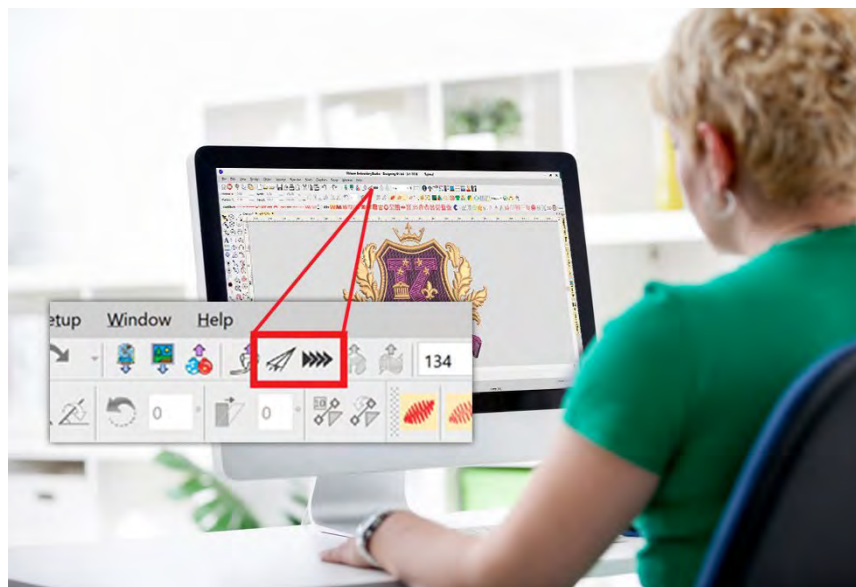
Send designs to EmbroideryConnect device

> ◁ Use Standard > Send to EmbroideryConnect to send the current design to a named EmbroideryConnect device.

Open EmbroideryStudio and load the design or designs you want to send to EmbroideryConnect.

To send a design to an EmbroideryConnect device

◀ Select a design tab and click the **Send to EmbroideryConnect** icon. The dialog will show a list of named devices connected to the network.

Choose preferred machine / device
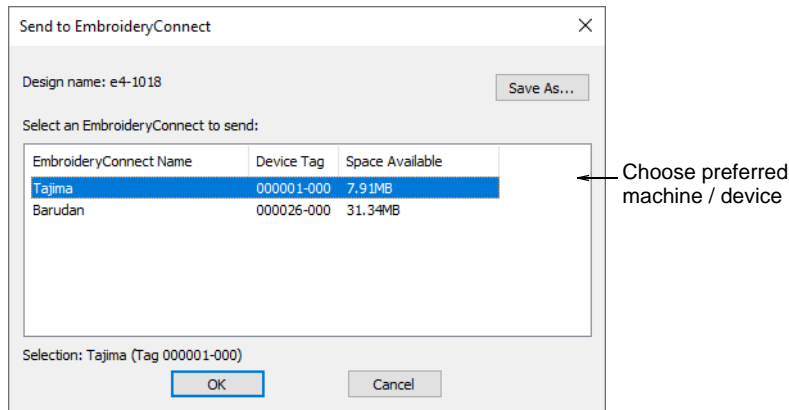
◀ Choose your preferred device and click **OK**. The design will be automatically converted to the corresponding machine file format and sent to the EC device. Here it can be loaded into machine memory for stitching.
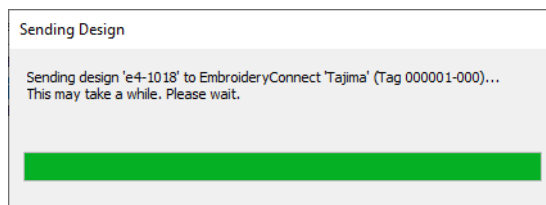
◀ Repeat for all designs you want to send to named devices connected to the network.

Push designs to EmbroideryConnect design queue

> ⯈⯈⯈ Use Standard > Queue Design to send the current design to the EmbroideryConnect design queue where they can be 'pulled' from the machine.

Open EmbroideryStudio and load the design or designs you want to send to EmbroideryHub. When you 'push' a design to a queue, you don't know (or care) which machine it gets stitched on. Different production environments have different methods. The bigger and busier the concern, the more likely you are to use the 'push' method.

Attach barcode reader to EC USB port

To push a design to the EmbroideryConnect design queue

◄ Click a design tab and click the **Queue Design** icon. A confirmation message will appear indicating that the design is in the queue.
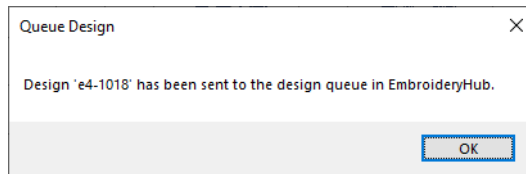
◄ An error check prevents you from sending multiples of the same design to the queue.
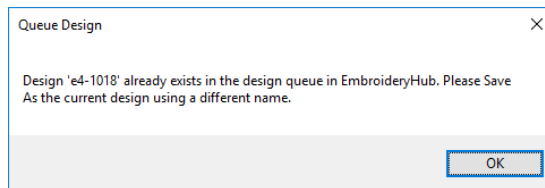
◄ Repeat for all designs you want to queue up in preparation for production.

◄ On the machine itself, the operator can 'pull' designs to the EC device by means of a barcode reader attached to the USB port. Scan the barcode printed on the production worksheet. The design will be pulled

from the queue to the EC device. Here it can be loaded into machine memory for production.

View & manage designs on EmbroideryHub

From EmbroideryHub, you can view and manage designs sent both to particular machines as well as to the design queue.

To view and manage designs on EmbroideryHub

◀ Open EmbroideryHub on the EmbroideryHub PC.

Manage designs for the chosen EC device

Manage designs in the EmbroideryHub design queue

◀ Click the **Design Queue** tab to view queued designs in EmbroideryHub. Here you can delete designs as necessary.

Delete designs from the queue as necessary
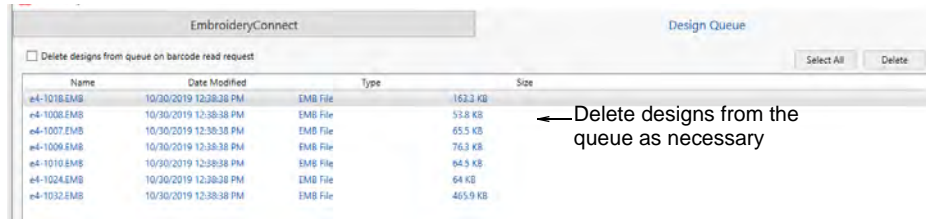
◀ If you want to view designs sent to the chosen EC device, click the **Manage Designs** button on the device settings dialog.

Manage designs currently sent to the device
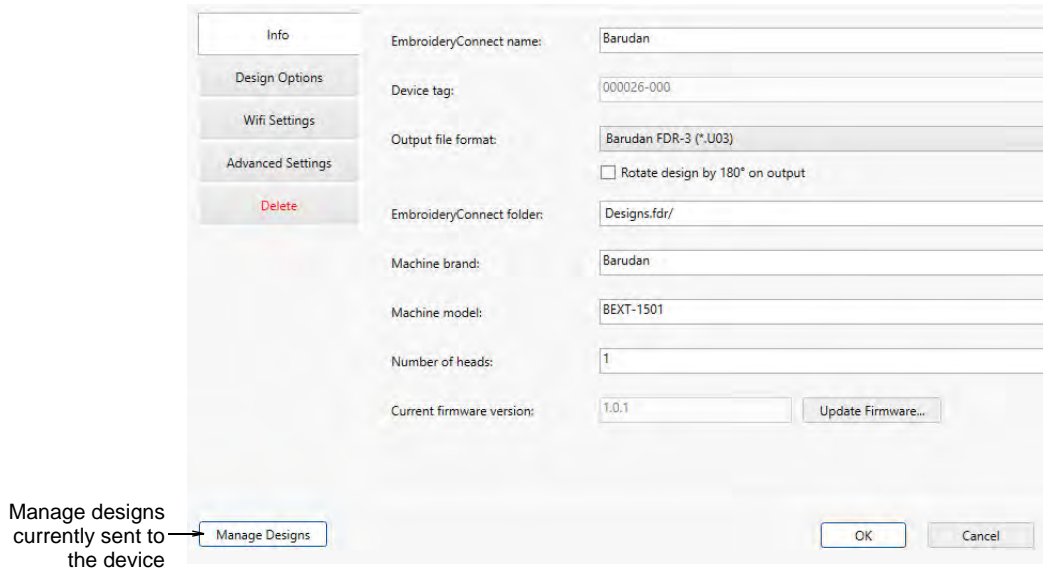
◀ A list of designs pending production on the target machine is displayed. Here you create new folders, and rename or delete designs as preferred.

Manage designs currently sent to the device
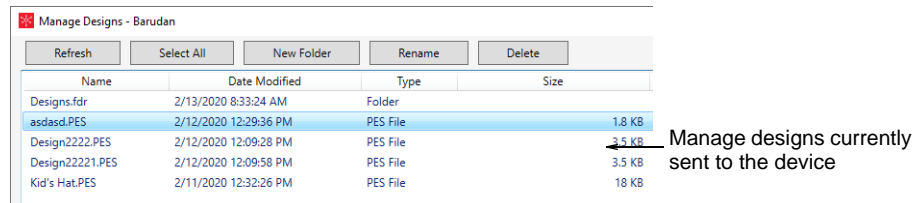
💡
Tip: If you have created a folder structure, double-click the '..' at the top of the list to move up a folder level.

Troubleshooting EmbroideryConnect

If experiencing problems using the EmbroideryConnect device, double check that it connects to the WiFi and EmbroideryHub correctly.

◀ The Power and WiFi LEDs on the EC device will be both on and solid if connected.

◀ If they flash briefly and then fade out, the EC device is not connected.

If a mistake lies in the configuration settings, simply start again and double-check the settings.

Reset the device

If you turn off the serial interface and subsequently lose WiFi connection to the EC device, the only way to reconfigure it is to perform a 'hard reset'. Power up the device and insert a hairpin into the **Reset** aperture on the side. Hold it for 10 seconds. This restores the device to whatever firmware it was initially programmed with. The EC device must then be reconfigured using EmbroideryHub.

Reset EmbroideryConnect device to factory defaults

Tip: If this doesn't solve the problem, go to the Help & Support site and check for updates.

Update the firmware

The Help & Support site will periodically publish firmware updates for the EC device. These may fix known compatibility problems for certain machines or support new features and fixes to the device. Any updates should not compromise your existing setup.

To update the firmware

1 Open EmbroideryHub, access the device settings, and ensure 'Serial interface' is activated.

Ensure serial interface is ticked
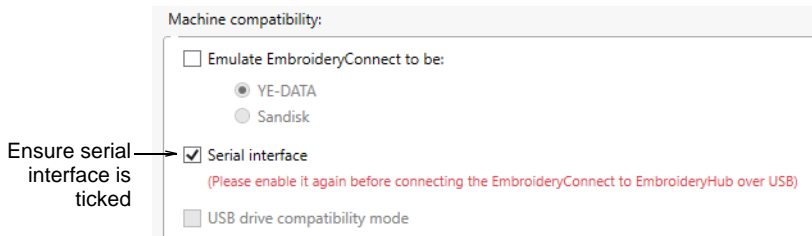
2 Download and install the latest version of EmbroideryStudio from the Wilcom Help & Support site, if not already installed.

3 Save a copy of the firmware update file to the EmbroideryHub PC. This will have been sent to you or downloaded from the Help & Support site. Firmware files have a '.WIL' extension which is an encrypted format.

4 Plug the EC device into the computer via the USB-C port located at the top.

Connect EmbroideryConnect device to PC

Power LED solid green and WiFi LED flashing blue

Note: Devices configured to '1.0.0' must be re-attached to the EmbroideryHub PC for the update to work properly. For all other updates, there is no need. Settings can be modified across the network.

5 Double-click the device icon in the EmbroideryHub main window to access device settings.

Manage settings for the chosen EC device

Update the firmware for the chosen device
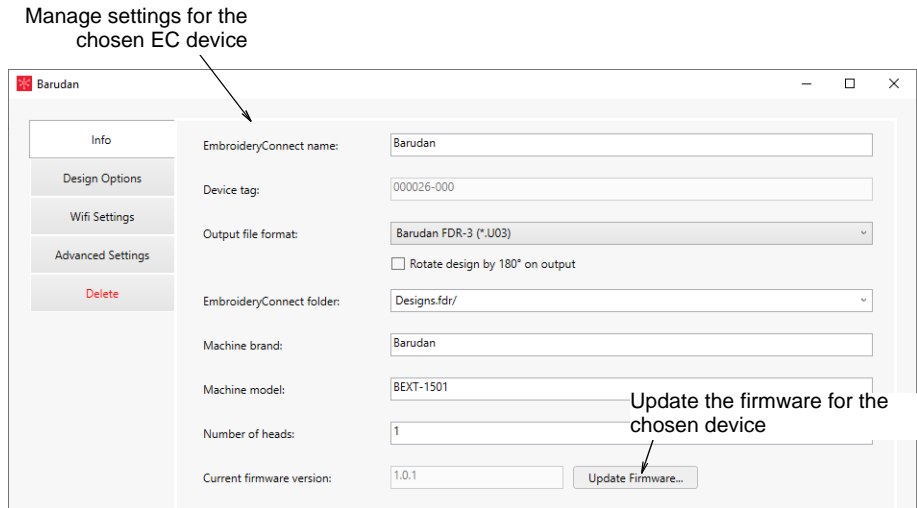
6 On the **Info** tab, click the **Update** button to access the **Update Firmware** dialog.
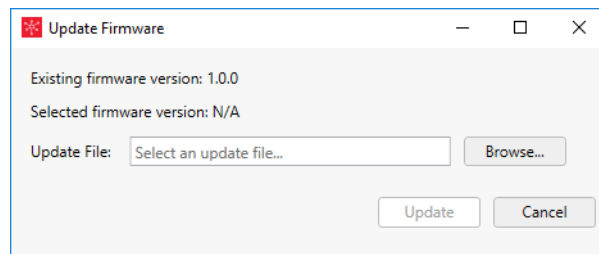
7 Click the **Browse** button and locate the firmware update file in the save location.

8 Click **Update** to proceed. A confirmation message warns you that all design files will be cleared from the device.
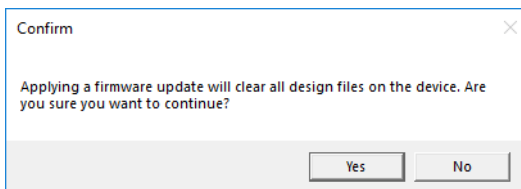
9 Click **Yes** to proceed. Progress messages will tell you the current status of the firmware update.
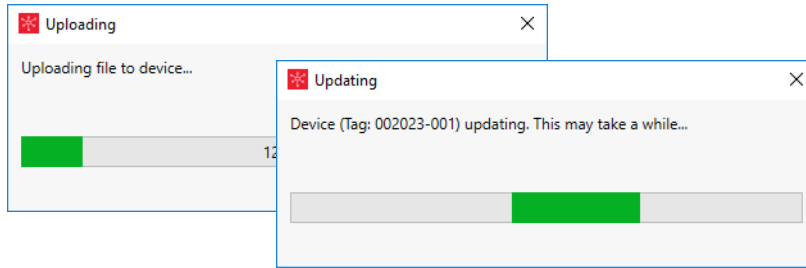
10 Once you have confirmation that the EC device is updating, you can close the device settings dialog and move to the next device. No need to wait until the current one has finished updating. Each device must be individually updated.

PART X
FILE MANAGEMENT

EmbroideryStudio allows you to create files or 'assets' of various kinds during normal use. The most important of these are your actual embroidery designs. But there are other assets you may create, such as design templates, custom motifs and borders. These are preserved from installation to installation, whether installing a new version of EmbroideryStudio or a software update.

Design management

Design Library is a design management tool. Use it to browse design and artwork files stored on your local PC or company network. Design Library capabilities make it fast and practical for daily commercial use, avoiding the need to switch to and from **File Explorer**. It recognizes all file formats used by EmbroideryStudio. It also makes it easy to search, sort and browse all embroidery designs on your network. See Design Management for details.

Asset management

It's a good idea to familiarize yourself with the locations and file names of your custom assets as a protection in case of computer crash, in order to share assets, and in cases where you need to manually copy the contents of your asset folders to the new locations. See Asset Management for details.

Product templates

EmbroideryStudio allows you to choose a garment or product backdrop on which to position decorations. This feature is mainly used to display location, size and overall appearance for visualization and customer approval purposes. You can add your own single-color and multi-color product templates to the software by following the method outlined in this section. See Product Visualizer Templates for details.

Standard fonts

The tables in this section display all embroidery fonts that are standard with EmbroideryStudio. See Standard Fonts for details.

Custom fonts

EmbroideryStudio provides options for creating custom embroidery fonts. You can create entire embroidery fonts from converted TrueType

fonts. You can digitize letters from backdrop images, convert vector objects, or digitize freehand using any of the input methods. You can use artwork from sources such as calligraphy books or TrueType fonts. See Custom Fonts for details.

Machine, file & disk types

This section provides details of the file and disk types supported by EmbroideryStudio. Details are also provided about the conversion of Melco CND, Wilcom INP, and Gunold PCH design formats to and from EMB. The section also provides details of vector and bitmap (raster) formats. See Machine, File & Disk Types for details.

Chapter 40
Design Management

Design Library is a design management tool. Use it to browse design and artwork files stored on your PC or local network. **Design Library** capabilities make it fast and practical for daily commercial use, avoiding the need to switch to and from **File Explorer**. It recognizes all file formats used by EmbroideryStudio. It also makes it easy to search, sort and browse all embroidery designs on your network.
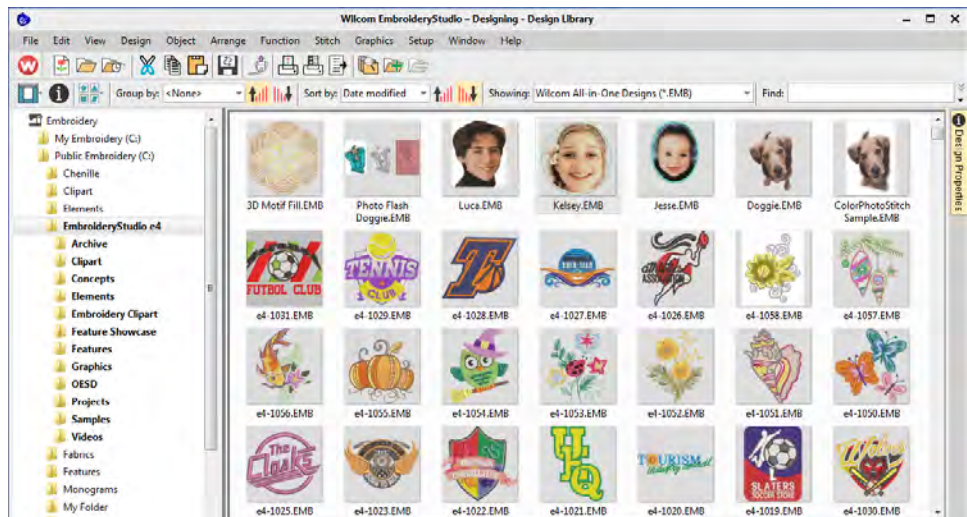
If you are already familiar with **File Explorer**, the interface will be quite intuitive to you. But there are some differences. **Design Library** is a 'virtual library' in that any designs on your system can be located and displayed within the navigation pane. Any folder containing embroidery designs which resides on your hard disk, external storage device, or local network can be included in the navigation pane. In a nutshell, **Design Library** lets you:

◀ Search for designs – including artwork files – anywhere on your local hard drive, network drives, or external devices such as USB or ZIP drive.
◀ Search by various means, including summary information such as design title, subject, authors, tags, etc. Order information can also be associated with any supported design file.

◀ Preview design information in the preview pane or **Design Information** docker.

◀ Create an organizing structure for easy categorization. Add to or remove design folders from your 'virtual library'.

◀ Record and manage quotes, orders, and approvals.

◀ Batch-convert selected design files to all commercial embroidery formats such as DST, EXP, SEW, and others.

◀ Print selected designs or send them for stitchout to embroidery machine or to folders which machines can access for stitching.

◀ Use **Design Library** to handle quotes, orders, and approvals.

🔻

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.

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Note: CorelDRAW® needs to be registered before it can be used by EmbroideryStudio. Registration gives you access to the latest CorelDRAW® updates. It also provides CorelDRAW® Standard Membership which gives you access to content – clipart, fonts, stock photos, templates – via Corel CONNECT.

Design library layout

The **Design Library** is accessed from the **Mode** toolbar.
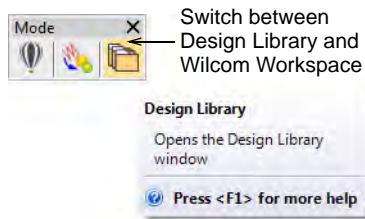
The library has five main components – toolbars, navigation pane, design display area, details pane, and **Design Information** docker. The appearance will differ somewhat depending on your operating system.
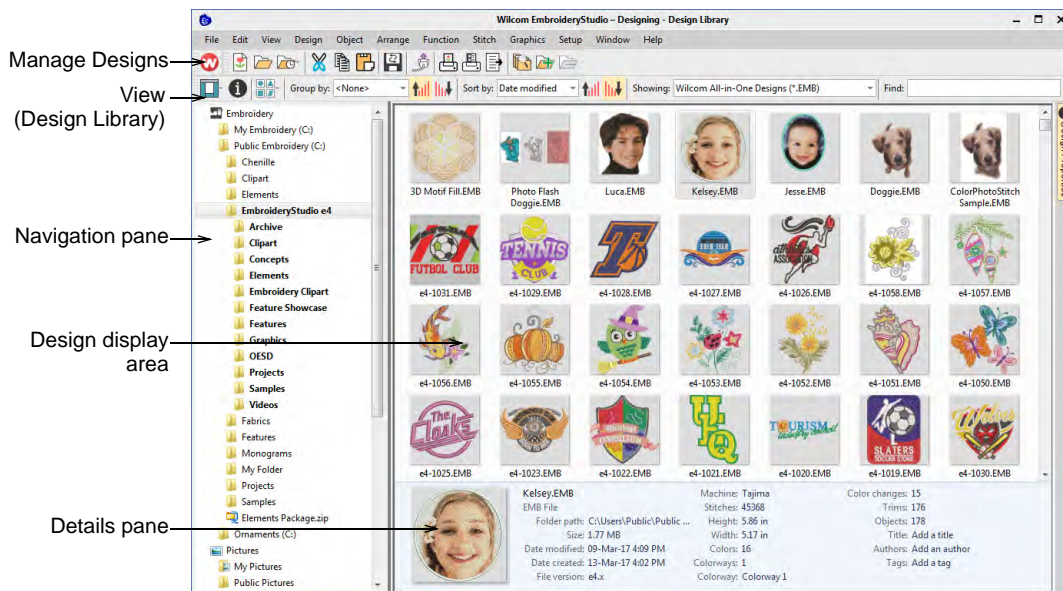
Library components are summarized as follows...

Component	Function
Navigation pane	The navigation pane in the Design Library is not an exact duplicate of your File Explorer folder structure. It is selective in that it only contains folders relevant to embroidery design and multi-decoration. Select and add any folder on your PC or network to view supported file types.
Design display area	The design display area shows any designs in selected folders corresponding to the filter selected or search criteria entered in the View (Design Library) toolbar. • Use the toolbar to filter the design display. • Right-click selected designs to access a popup menu. Use it to cut, copy and delete without leaving the software. • Use it also to zip designs and folders.
Details pane	When a design is selected, summary information is displayed in the preview pane.
Design Information docker	Check design details via this docker. This is always advisable prior to design approval or stitchout. Summary and order information may be provided by the digitizer or sales team. This information can be printed with approval sheets and production worksheets.

Component	Function
Toolbars	
Mode	Switch to Wilcom Workspace to digitize and edit embroidery designs.
Manage designs	Open selected or recent designs, cut, copy and paste them, convert them, print them, or output them to any connected embroidery machine or data media.
View (Design Library)	Search or sort the entire embroidery library or any chosen folders on any criteria selected. Find and manage folders containing designs.

Viewing designs in network folders

Click Mode > Design Library to open the Design Library window from which to search and catalogue designs as well as quotes, orders, and approvals.

Use View > Layout to toggle navigation pane, details pane, and/or preview pane display.

Navigating to design folders with **Design Library** is similar to browsing with **File Explorer**. Your access to design folders on your local network is only limited by access rights determined by your System Administrator. View any supported file type residing in design folders. Designs can be searched, sorted, grouped, and browsed by customer or order. Click the

Design Library icon on the Mode toolbar. **Design Library** opens in its own window.
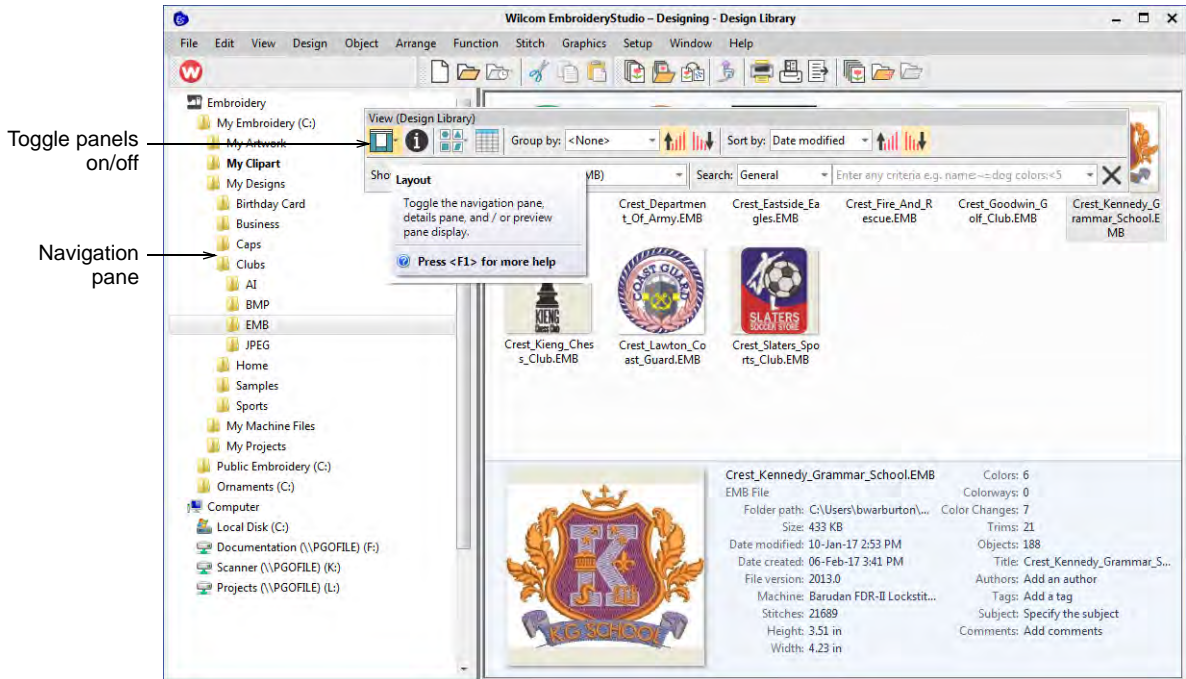
Design Library is 'virtual' in the sense that any designs on your system can be located and displayed within the library. This folder acts as a container which appears in **File Explorer** amongst your other Windows libraries.
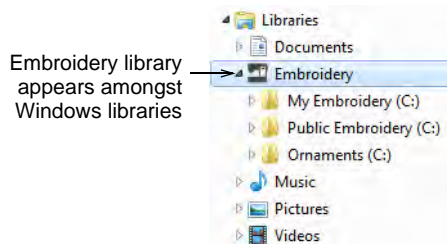
You can add folders both in **File Explorer** and in the **Design Library** itself. The initial folder structure is created by your installation. However,

any folders on your local network which contain embroidery designs or artwork can potentially be included and viewed in **Design Library**.

Navigate folder structure via navigation tree or address bar
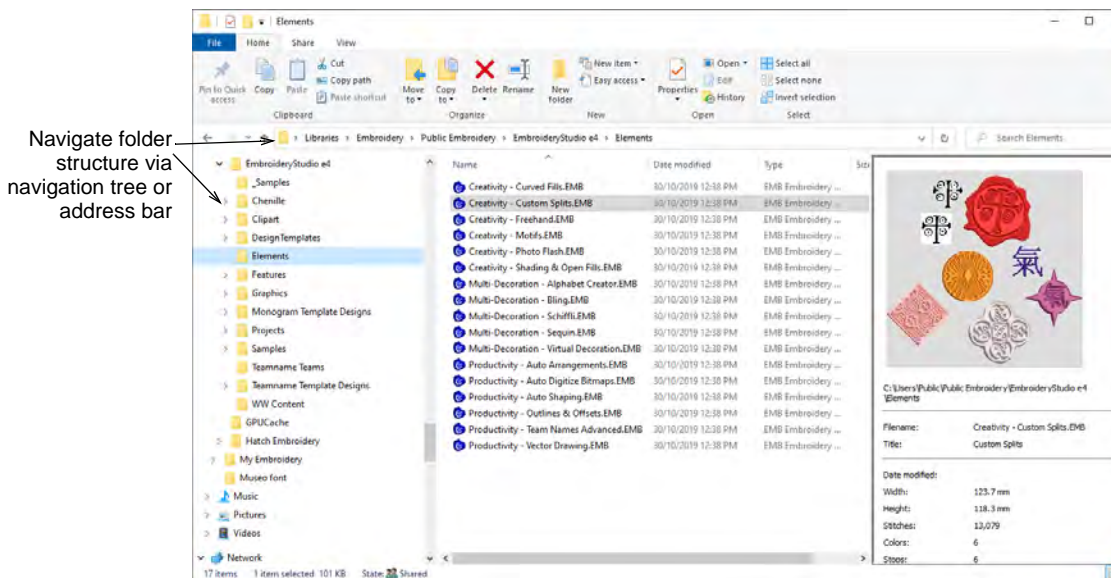
💡
Tip: Like **File Explorer**, the **Design Library** display can be refreshed with a simple **F5** keypress.

Change design display

Use View > Change View to select thumbnails only, thumbnails with stitching details, or summary information only.

Use the **Manage Designs** toolbar to control display of the navigation pane as well as thumbnail appearance. Use the **Change View** droplist to display designs in the preferred format.

Display designs as icons or lists
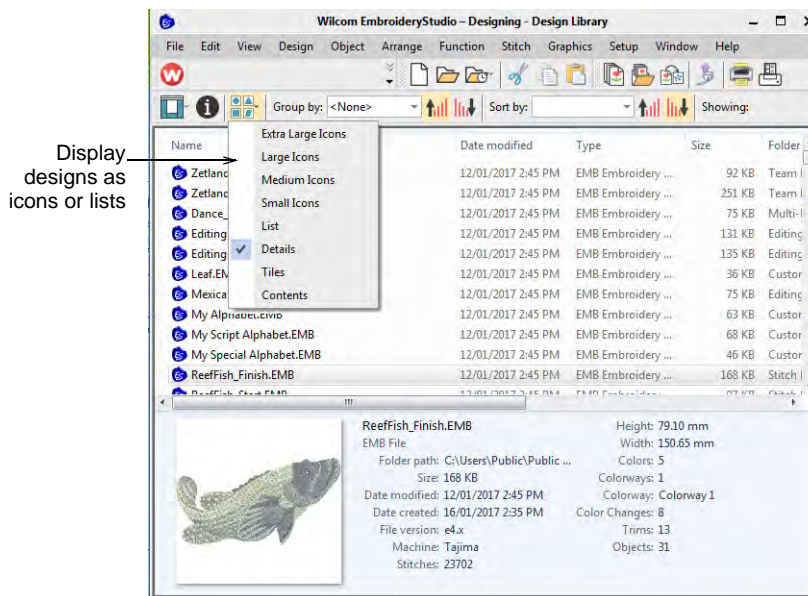
💡
Tip: The **Design Library** display can be refreshed with a simple **F5** keypress, the same as **File Explorer**.

View design details

> Use View > Reset Detail Columns to reset the columns displayed in details view to the default layout.

Default detail columns vary by file type and are controlled by MS Windows®. **Design Library**, however, provides additional columns for data derived from embroidery files. These may include design status,

customer, order date, etc. Such details are primarily intended for use with EMB but can also apply to other embroidery formats.

Embroidery data listed by default

When viewing design lists in **Details** view, columns can be arranged in any order and with a variety of criteria. Sometimes Windows will reset detail columns to Windows defaults, even for EMB files. To return to the default layout, simply click the **Reset Detail Columns** button.

Group & sort designs

Various mechanisms are available for you to sort and group design listings…

Use droplists and toggles to sort

Click column headers in

The **Group** and **Sort** by droplists also provide a convenient mechanism for managing orders…

Group and sort by same or mixed criteria
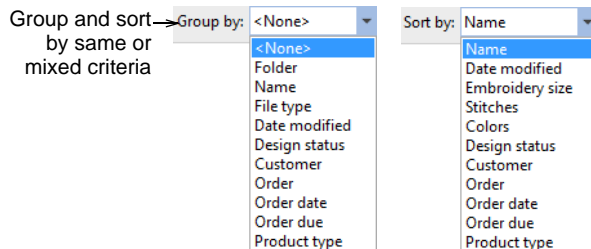
View zipped designs

View designs in zipped folders. The limitation is that the contents of zipped folders cannot be viewed as thumbnail images.

Access zipped folders
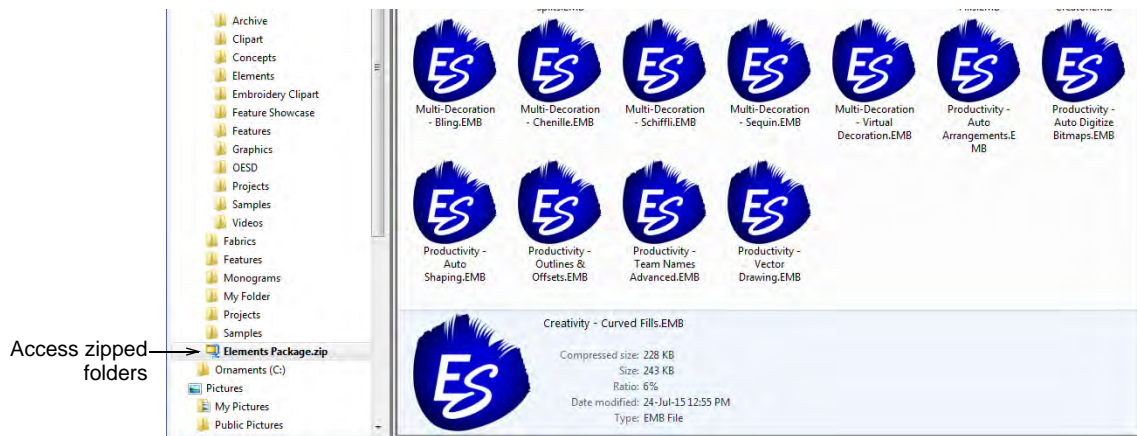
Related topics...

◀ Embroidery file formats

Opening designs from Design Library

Embroidery files fall into two broad categories – 'design files' and 'machine files'. Design files are ones you open and modify in **Wilcom**

Workspace. Machine files are generally ones you send to machine for production. There is some inter-convertibility between the two formats.
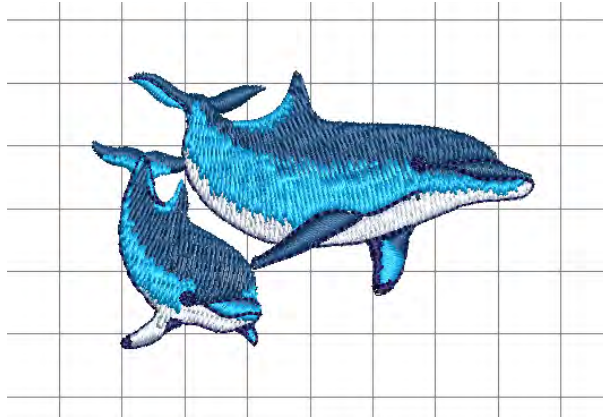
Related topics...

◀ Filtering designs

◀ Opening design files

◀ Opening new files from existing

◀ Opening machine files

Filtering designs

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

Filter designs by file type
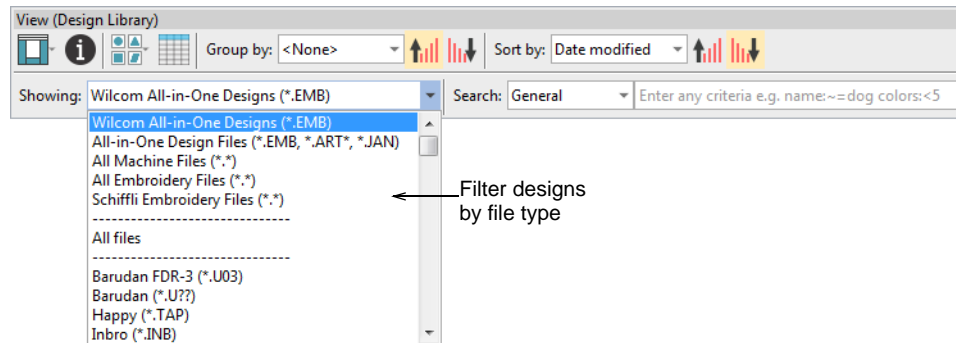
The **Design Library** can filter:

◀ All Wilcom-supported design files: EMB, ART, JAN

◀ All machine formats such as DST, EXP, JEF, etc.

◀ All artwork files read by EmbroideryStudio, both vector and bitmap

Opening design files

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

Design files, also known as 'all-in-one' or 'outline' 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.

Select single or multiple designs for opening
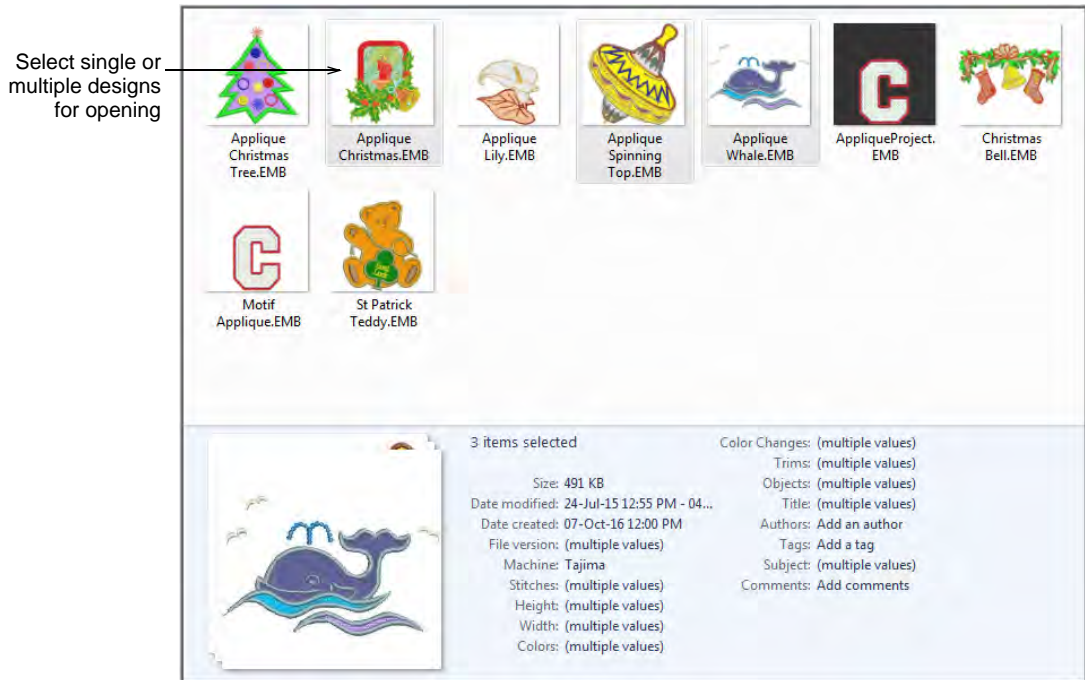
Using the **Design Library**, you have the option of opening one or more selected designs in their own design tabs. Simply select a design or designs by holding down **Ctrl** as you click, and then click **Open Selected**.

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.

Opening 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.

Manual objects with no outlines and manual stitches only

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.

Related topics...

◀ Machine Files

Opening graphic files

Artwork can be opened in EmbroideryStudio in both vector and bitmap (raster) formats via **Design Library**. Samples of both file types are installed with EmbroideryStudio in the **Pictures** library as shown below.

Filter by
graphic file
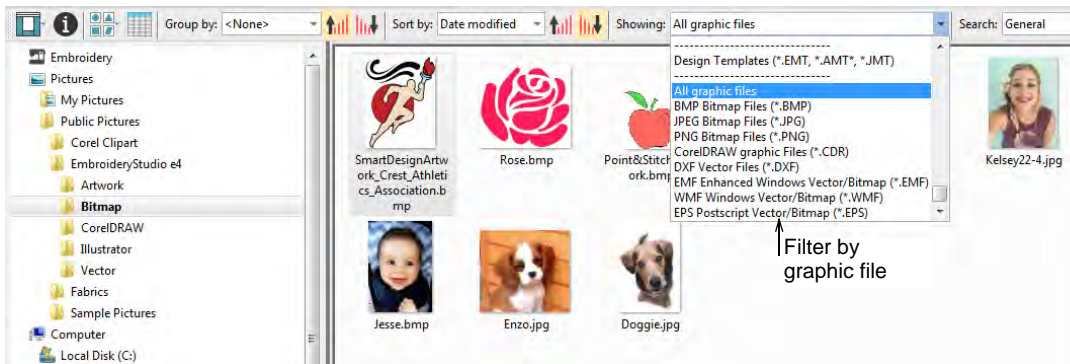
Extended support for CDR files

Design Library provides extended support for Corel CDR files. This includes:

◀ Right-click to access Windows operations – **Open**, **Open With** – directly into CorelDRAW Graphics. Or double-click to open a selected CDR file using the default template.

◀ Drag-and-drop from File Explorer into CorelDRAW Graphics.

◀ Drag-and-drop into Wilcom Workspace.

◀ Drag-and-drop into standalone CorelDRAW® Graphics Suite.

Note: For a full description of image file formats supported by CorelDRAW® Graphics Suite, refer to the CorelDRAW® Graphics Suite electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **Help** menu.

Related topics...

◀ Digitizing with Bitmaps

Opening new files from existing

> Use Manage Designs > New from Selected to create new designs based on designs selected in Design Library.

Instead of opening the original designs, you can use **New from Selected**. The only difference for practical purposes is that this command creates a copy which opens in a new design tab, thus

preserving the original design file. Left-clicking uses the default template. Right-clicking allows you to select a different template from the dialog. Selection is remembered and used the next time the command is invoked.
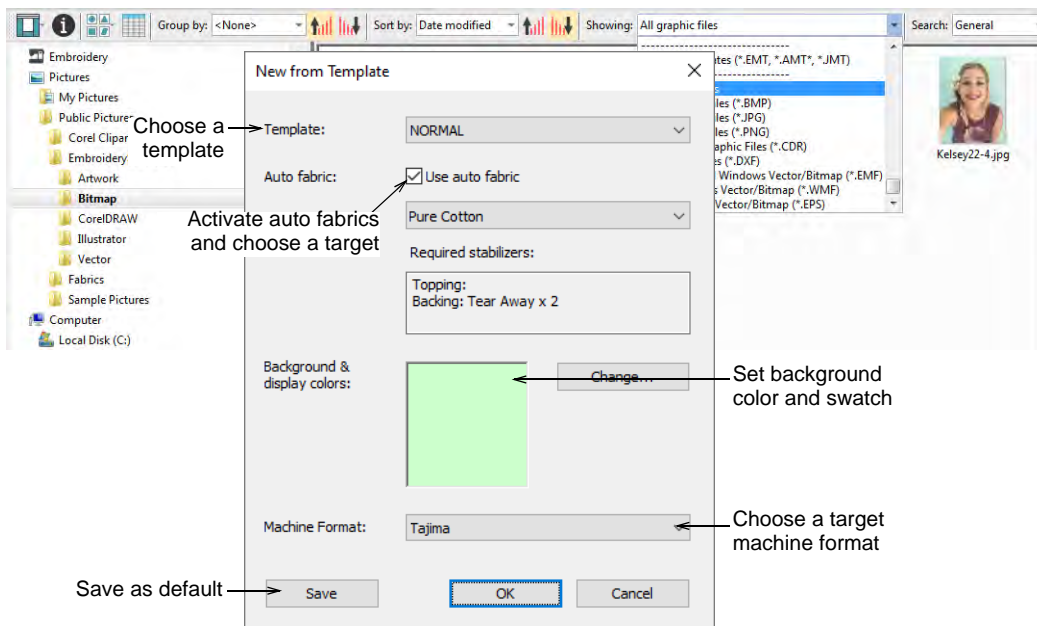
Choose a template → Template:

Activate auto fabrics and choose a target

Set background color and swatch

Choose a target machine format

Save as default →

The **New from Selected** command can also be used to open graphics files, including Corel CDR. With CDR, a new file is opened in EmbroideryStudio before switching to CorelDRAW Graphics.

💡
Tip: If you want to open one design into another, an **Import Embroidery** function is available in **Wilcom Workspace**. Combine designs or design elements into a single design layout.

Related topics...

◀ Combining objects & designs
◀ Working with templates

Inserting designs with Embroidery Clipart

> Use Docker > Embroidery Clipart to toggle the docker display. Use it to record and recover re-usable embroidery elements.

The **Embroidery Clipart** feature is a powerful productivity tool which allows you to recycle commonly used elements. When you install

EmbroideryStudio, the **Embroidery Clipart** feature is installed with **Design Library** together with a sample clipart library.
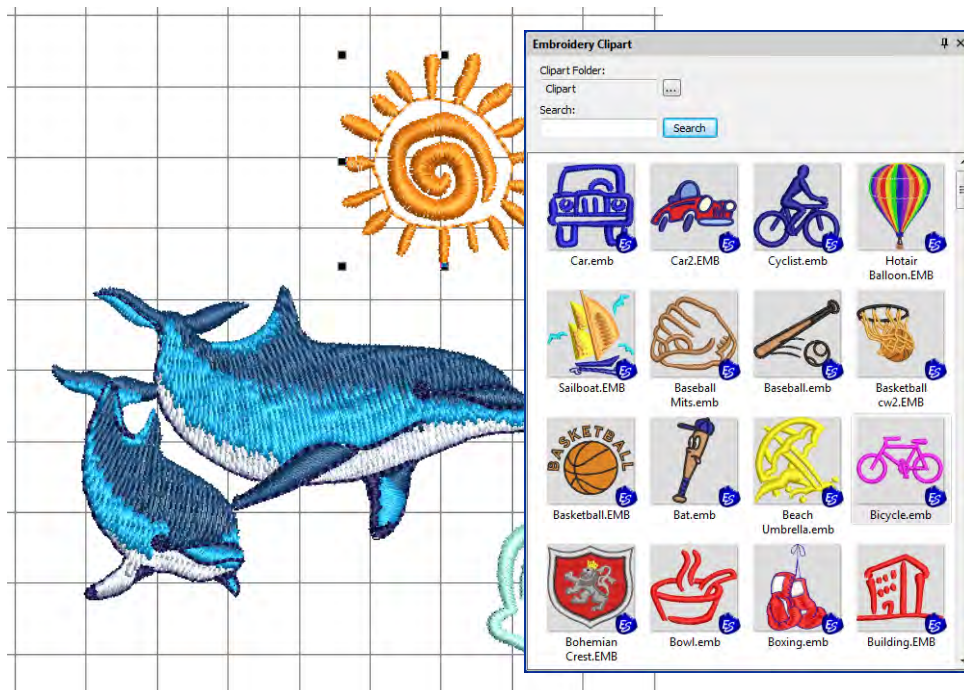
Use the **Search** functionality to filter your list according to name, keywords, number of colors, or number of stitches, etc. Once a suitable design element is located, simply drag-and-drop it as 'embroidery clipart' into the current project. Scale to suit the design. Stitch colors are added to the **Color** toolbar.

Use the **Browse** button to change to any **Design Library** folder on your system. For example, you may want to put together a design such as a wreath with components such as ribbons, leaves, fruit and flowers. With the clipart library this becomes a simple task.

Use **Design Library** to manage design elements in your clipart folders. Use **Design Information** to assign names and keywords to each design element you save. Keywords play an important part in organizing a growing clipart library. Finding a suitable element can take time but keywords narrow the selection. Any number of keywords can be assigned to the same clipart element. See below.

Related topics...

◀ Combining objects & designs

◀ Insert designs

Viewing & managing design information

> 🛈 Use View (Design Library) > Design Information to view and modify design details prior to design approval or stitchout.

Manage and check design details via the **Design Information** docker. This is always advisable when receiving orders or prior to design approval or stitchout. Summary and order information may be provided by the digitizer or sales team. This information can be printed on approval sheets and production worksheets. Choose a file and select **Design Information** via the **View** toolbar or **Design** menu.
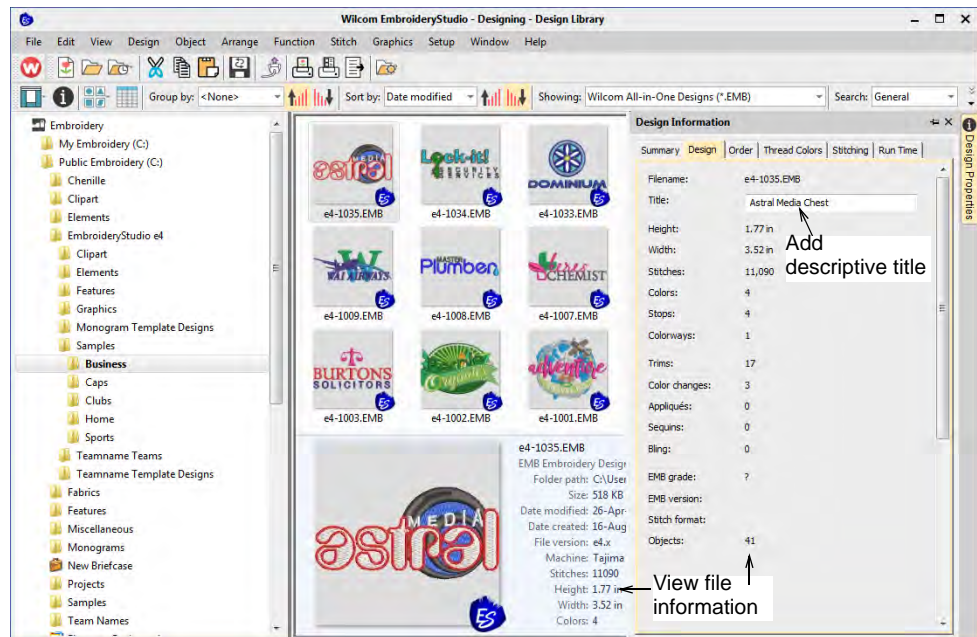
All designs in **Design Library** can be tagged for easy search and find. Summary information such as design title, subject, authors, tags, is fully customizable. Order information can also be associated with any supported design file. All additional information is saved with the actual design file and can be viewed in any software that can read EMB files. It is often desirable to edit design details within the **Design Library** without having to open in the design window. This also enables customer service staff to enter/change details without modifying the embroidery design itself.

⚠️
Caution: When updating information in the **Design Information** docker, it may take some time for the index to update before you can search on that data.

Summary tab

Summary information about a design can be viewed and edited in the **Summary** tab. Generally this information is used to improve searchability. Use the information to search and filter designs by author, title, or subject. Tags can be added to improve searchability. Information can be added in the docker itself or in the **Details** pane (if activated). Click **Save** to save details with the design file.

Edit design summary information for design reports
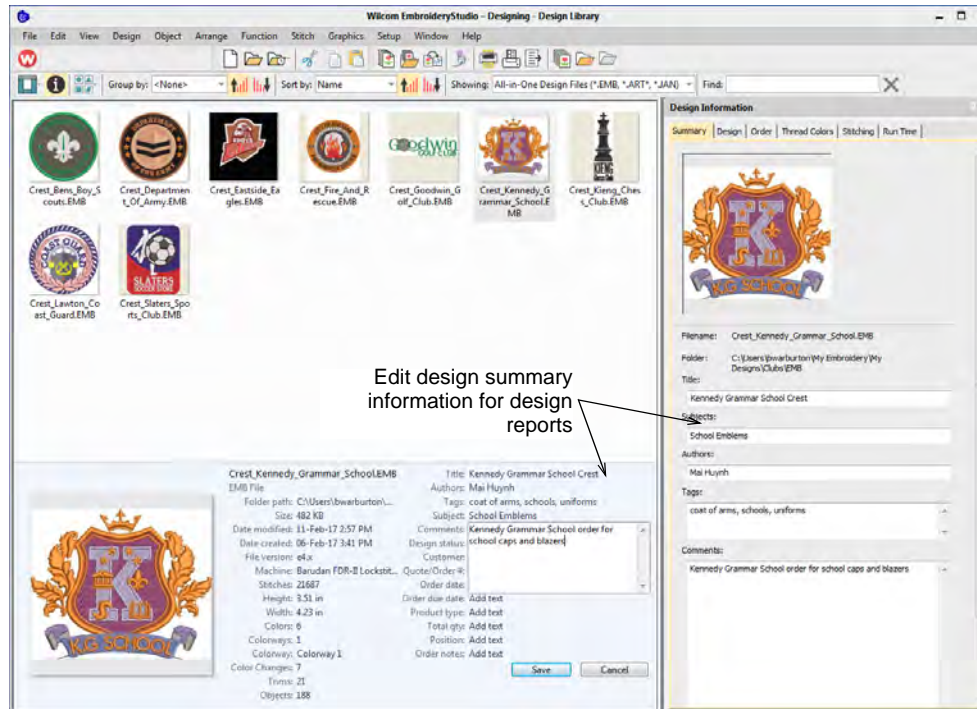
Click a field and enter any text which will help you or others identify the design at a later date. All information on this tab is also included in the production worksheet. Information types include:

Field	Description
Title	Defaults to filename. Add a more descriptive name for easy searching. This name appears on the approval sheet or worksheet.
Subjects	This may conform to the primary category by which the design is cataloged – e.g. the name of the containing folder.
Authors	Name of digitizer and/or designer – appears in production worksheet footer.
Tags	Keywords for potential Design Library searches.

Field	Description
Comments	These comments are included in the production worksheet and are intended for production staff. They may include instructions for machine operators.

Related topics...

◀ Preview design reports

Design tab

Select the **Design** tab to view design details such as height, width, stitch count and colors. The data is extracted from the design file and, apart from design title, cannot be modified.

Fields include:

Field	Description
Filename	File name of the selected design. This will often be a number or alphanumeric format for easy cataloging.

Field	Description
Title	Defaults to filename. Add a more descriptive name for easy searching. This name appears on the approval sheet or worksheet.
Height / width	Total height and width of design extents.
Stitches	Total stitch count for design.
Colors	Number of thread colors involved in the design.
Stops	Normally color changes are associated with Stop functions. Depending on machine format, however, the design may include an additional last stop to ensure the machine returns to the starting needle for the next run.
Colorways	Number of colorways in the design.
Trims	Number of trims in the design. Generally, you will try to minimize the number of trims.
Color changes	Number of color changes required to stitch out design.
Appliqués	Number of appliqué objects in the design (if any).
Sequins	Number of sequins in the design (if any).
Bling	Number of bling objects in the design (if any).
EMB grade	While embroidery files are broadly classified as 'design' (oultine) or 'machine' (stitch), the software internally tags each as belonging to one of four types – native design (A), imported outlines (B), processed stitches (C), or imported stitches (D).
EMB version	The version of EmbroideryStudio the file was created in – e.g. ES e4.
Machine format	The current machine format applying to the file. This generally corresponds to the target machine last used to stitch out the design.
Objects	Indicates total number of objects in the design.
Sequin details	Lists any sequins used in the design and their respective numbers.

Related topics...

◀ Embroidery machine formats
◀ Design Hooping
◀ Using automatic connectors
◀ Embroidery file formats

Order tab

Order information is saved directly with the design file. This allows embroidery orders to be managed via the designs they use without the

need for a commercial database. The information is included on approval
sheets.

Order information
included on approval
sheets

Date picker controls use
regional settings for date
format

Stores a list of
customers for use
between sessions

Add or delete
sizes

Add or delete
colors

Tips for use...

◀ All fields in the **Design Information** docker can be read and written
in **Design Library**.

◀ Use **Save** and **Reset** buttons to ensure that updated fields are saved.

◀ The **Color/Size/Qty** table is included in the approval and production
worksheets.

   ◀ Click buttons to add rows and columns.

   ◀ Double-click to edit labels.

◀ Numeric displays use locale settings.

◀ Date fields use locale settings.

Thread Colors tab

The **Thread Colors** tab displays the color sequence and stitch counts for each design 'element'. Elements equate to color changes. The tab also provides thread usage estimates which may be used for costings as well as production requirements. This information cannot be viewed in **Design Library**. The design first needs to be opened in **Wilcom Workspace**.

Thread color details not availabe in Design Library
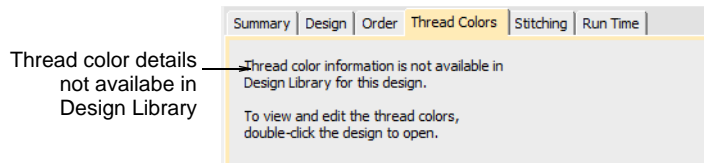
Related topics...

Stitching tab

The **Stitching** tab displays technical stitching details mainly of use to machine operators. Information includes such details as target fabric, required stabilizers, as well as total thread estimates. These may be used

for costings as well as production requirements. Bobbin length calculation can be further refined if you are planning a large production run.

Design information – not editable
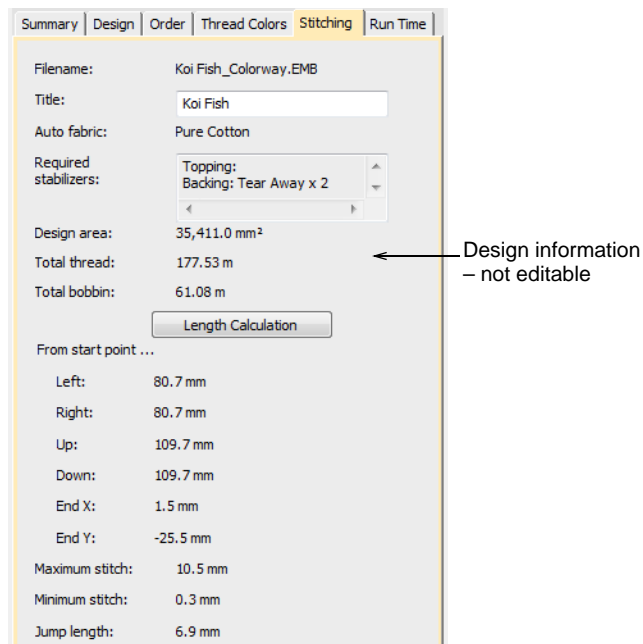
Data is extracted from the design file and, apart from title and bobbin length calculation, cannot be modified.

Field	Description
Filename	File name of the selected design. This will often be a number or alphanumeric format for easy cataloging.
Title	Defaults to filename. Add a more descriptive name for easy searching. This name appears on the approval sheet or worksheet.
Auto fabric	Predefined fabric settings used in current design.
Required stabilizer	Indicates recommended stabilizer(s) for selected fabric type.
Design area	Total area covered by design – used for estimating hoop sizes, fabric requirements, 3D foam, or whether design will fit target location.
Total thread	Indicates total meterage of top thread required to stitch out the design.
Total bobbin	Indicates total meterage of bottom (bobbin) thread required to stitch out the design. These figures may be required for inventory control depending on business practices.
Length calculation	Allows you to revise thread usage estimates according to target fabric thickness.

Field	Description
Left / right / up / down	Depending on where the design start/end point has been set, these figures indicate the distance from that point.
Max/min stitch / jump length	The maximum and minimum stitch lengths, and maximum jump stitch length in the design.

Related topics...

◀ Working with fabrics
◀ Manage fabrics
◀ Thread usage estimates
◀ Design Hooping

Runtime tab

Once your machines have been defined, running times are displayed in the **Design > Design Information** dialog **Runtime** tab. This tab lists available machines together with estimated runtimes based on stitch count and machine criteria. Runtime estimate, based on selected machine, can also be included in the production worksheet. This information cannot be viewed in **Design Library**. The design first needs to be opened in **Wilcom Workspace**.

Runtime details not availabe in Design Library
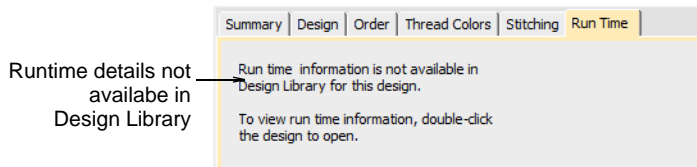
Related topics...

◀ Doing runtime estimates
◀ Managing quotes & orders

Locating designs in the library

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

Searching the library

Design Library allows for fast searching of designs on shared local network drives. This is important for businesses with multiple computers

and multiple users creating and accessing EMB, machine files, or graphic files.
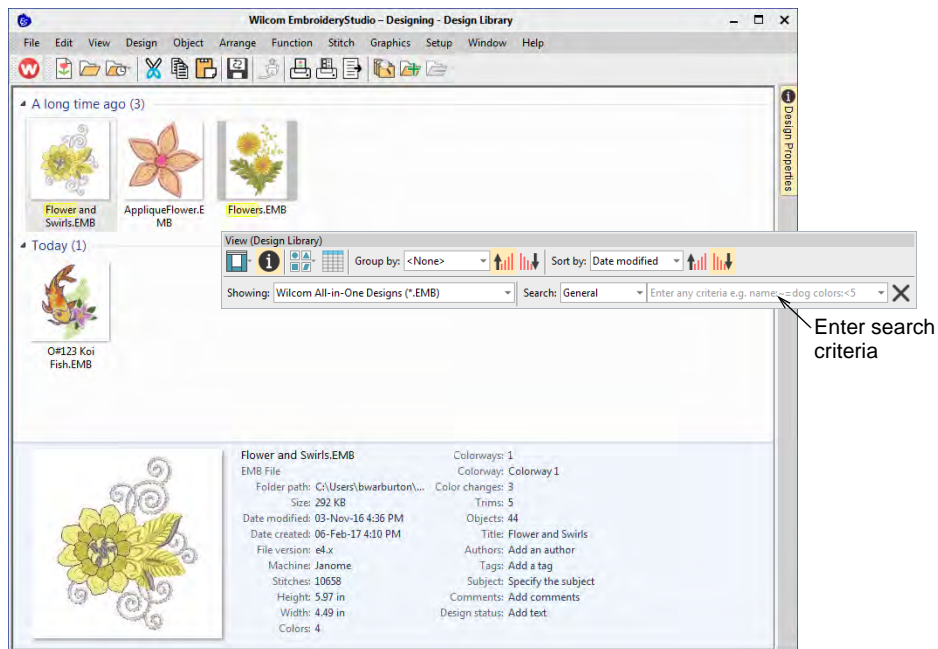
Use the **View** toolbar to search for names or keywords or sort designs by name, create date, and other criteria. The **Search** field is very powerful.

Search criteria

In fact you can search on any criterion displayed on the preview pane. To begin with, select a file type to search on, and select criteria from the droplists.
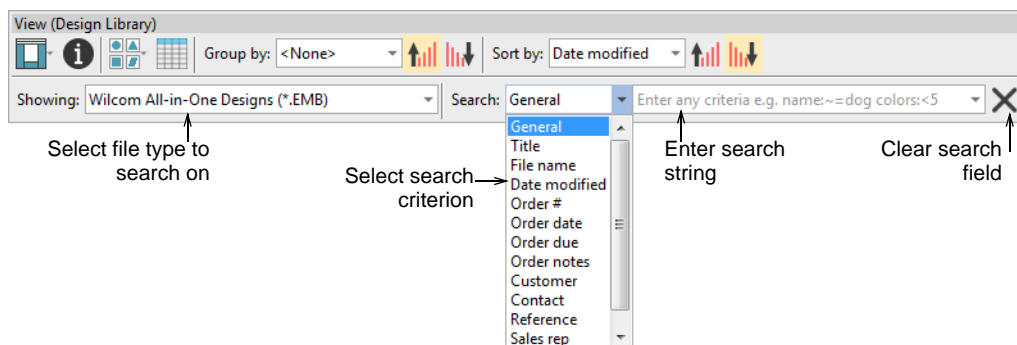
Searchable fields include common commercial categories:

◂ General
◂ Title

- ◀ File name
- ◀ Date modified
- ◀ Order #
- ◀ Order date
- ◀ Order due
- ◀ Order notes
- ◀ Customer
- ◀ Contact
- ◀ Reference
- ◀ Sales rep
- ◀ Design status

Once you have selected a search criteria – e.g. 'Order due' – select further criteria from the second droplist.

Select further → search criterion
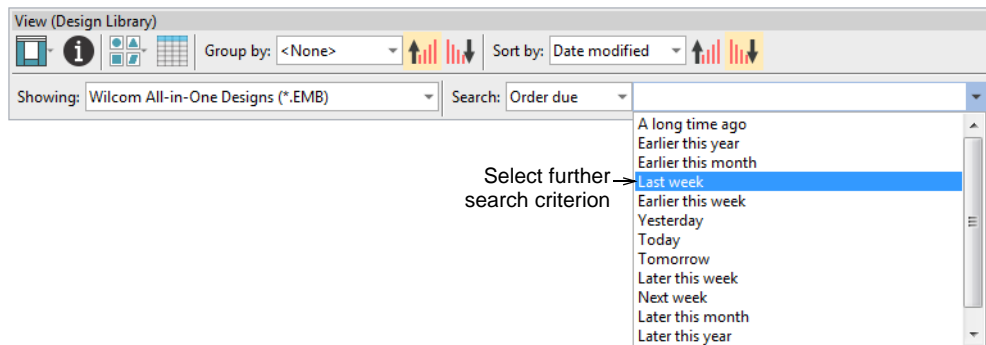
Search strings

Optionally, enter search strings directly into the search field – e.g. 'colors<5' – meaning, 'fewer than 5 colors'. Search strings default to 'CONTAINS' not 'EQUALS' unless you enter a different criteria.

There is also an 'All' criterion which allows you to do perform advanced queries using the Windows Search syntax such as:

author:"Wilcom" colors:<5 stitches:<3000

This will narrow the search to only those designs which:

- ◀ have been authored by 'Wilcom'
- ◀ have less than 5 colors, and
- ◀ have less than 3000 stitches.

Make sure you use correct syntax. Each field name must include a colon (:) after the name. Any names, such as 'Wilcom', need to be placed between double quotes – "Wilcom". Use the **Clear** button to clear the **Find** field before conducting another search.

Reserved terms

Certain terms are 'hard-coded' in the design file. When conducting searches in languages other than English, you need to make sure that these 'reserved' terms are entered in English. Note that the following are not natively available in the Operating System and will always appear in English:

◀ Colors
◀ Height
◀ Machine
◀ Objects
◀ Stitches
◀ Trims
◀ Width

Note: Search criteria with two words needs to be entered without spaces as shown:

Search criteria	Enter...
Color changes	Colorchanges
Design status	Designstatus
Order date	Orderdate
Order due date	Orderduedate
Order notes	Ordernotes
Product colors	Productcolors
Product type	Producttype
Sales rep	Salesrep

Note: When searching on non-reserved terms, you can search for two words separated by spaces and the search will turn up all designs with **either** word. If you want to find designs with **both** words, add a + between them – e.g. koi+fish. If you want an **exact** match, you need to include inverted commas in the search string – e.g "my design".

Adding folders to the library

 Use Manage Designs > Manage Embroidery Library Locations to add or remove existing folders from the Embroidery Library, enabling fast searching and filtering.

Remember that the **Design Library** is a 'virtual library' in Windows. When you add or remove folders from the navigation pane, this only

affects the **Design Library**. It does not affect the folder structure on your hard drive or network. To add design folders to your library, use the **Manage Embroidery Library Locations** function to locate folders containing designs anywhere on your local network.

Add design folders from the local network
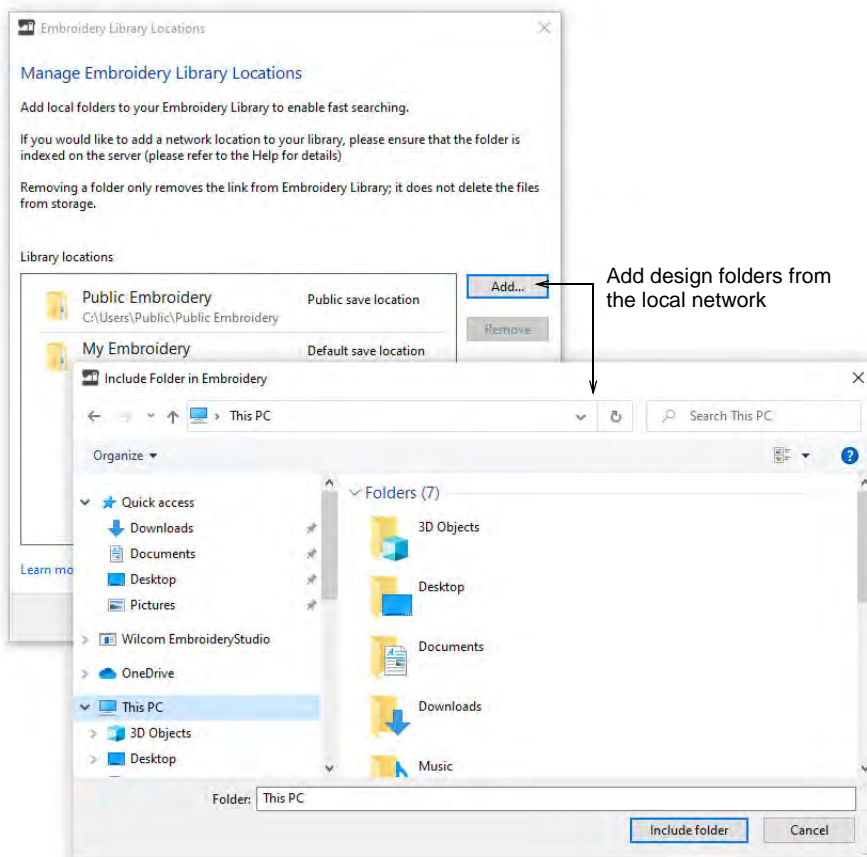
Use the **Remove** button to remove a folder from the **Design Library**. All subordinate folders will disappear from the navigation pane. The same functionality is also available via popup menu.

Remove location from the library
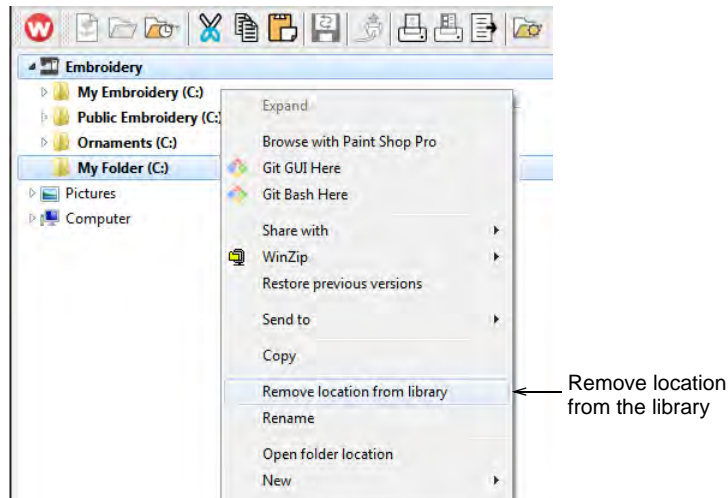
Fast searching on shared network drives

For businesses with multiple computers reading and writing EMB or machine format designs, there is usually a need to store designs in shared network folders. You may want to set up a company server as a central repository for all design files. Connect any folders on the server to each client PC via **Design Library**. **Design Library** relies on Windows indexing to ensure fast searching.

To set up fast searching on shared network drives

◄ For the Windows file server, make sure you have the Windows Search service running. You will need a minimum of Windows Server 2008 on the server to enable fast-search indexing. You will also need some version of EmbroideryStudio installed.

◀ Add the design folder to be shared with the indexing function. Go to **Control Panel > Indexing Options > Modify** and select the correct path.

Select design folder to share on the network
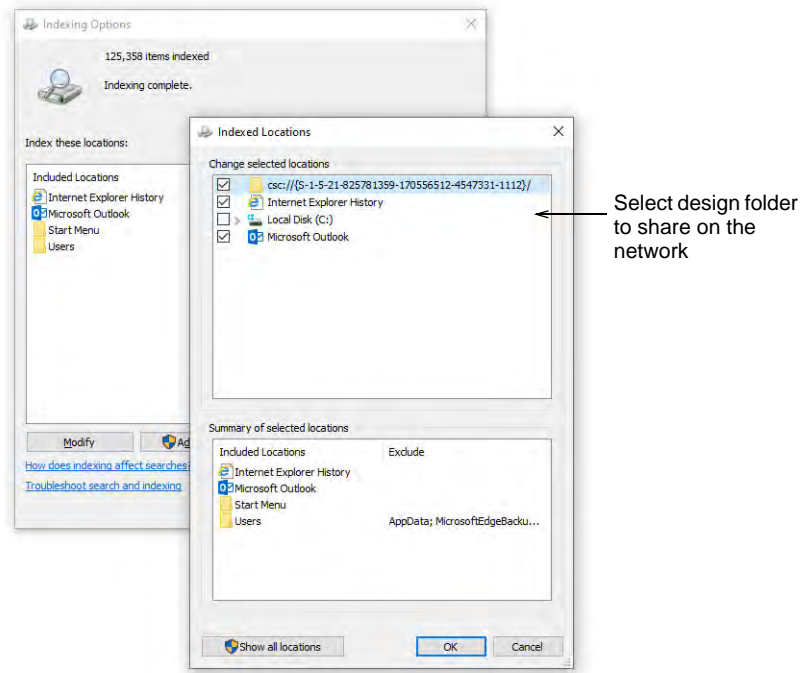
◀ Install EmbroideryStudio so that the Shell Extension is registered. This allows the server to index additional embroidery file properties.

◀ Once the server has finished indexing the folder, then, for every PC using the file server, add the design folder to **Design Library**. See above.

Note: Fast searching will not work with NAS type devices as they are non-windows based operating systems.

Managing quotes & orders

The **Design Library** provides a practical and simple method of recording and managing quotes, orders, and approvals. It is oriented mainly to 'Custom Logo' commercial embroidery, where a design needs to be stitched on a specified garment in a defined location. Order information is saved directly with the design file. This allows quotes and orders to be

managed via the designs they use without the complications of a separate database.

Enter and edit order details
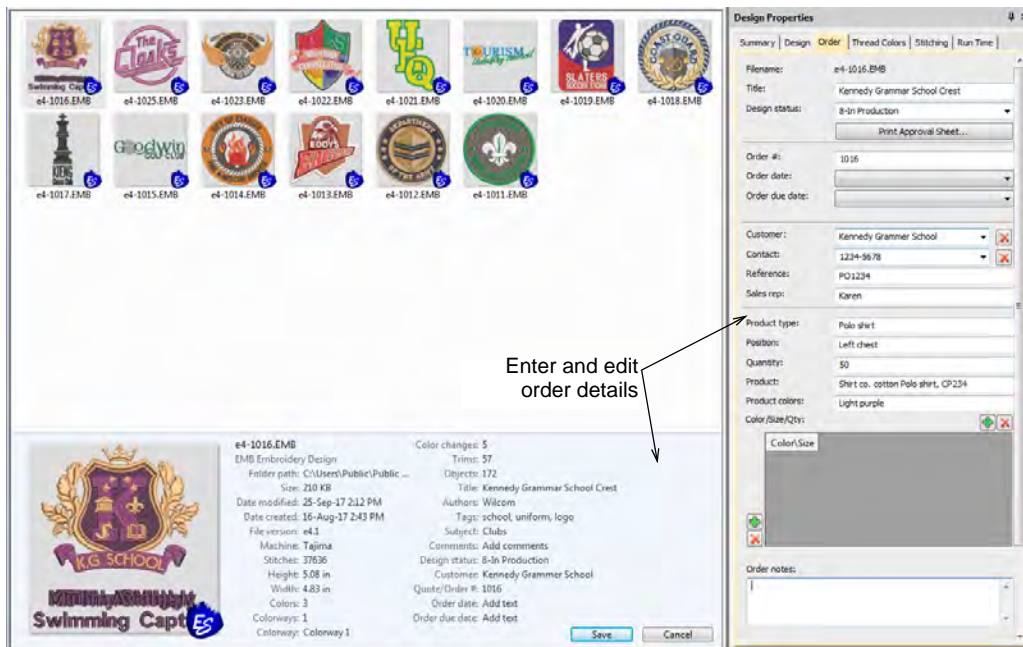
Order details

Basic order details are stored as EMB file properties. Any alphanumeric information can be entered. Fields include:

Field	Details
Filename	File name of the selected design. This will often be a number or alphanumeric format for easy cataloging.
Title	Defaults to filename. Add a more descriptive name for easy searching. This name appears on the approval sheet or worksheet.
Design status	Use 'design status' for digitizing and approvals – e.g. 'Logged', 'Verified', 'In Progress', 'For Review', 'Approved'.
Print approval sheet	Takes you to Approval Sheet print preview directly. You have the option of sending to a printer, printing a PDF, or sending by email.
Order details	
Order #	Embroidery company's quote/order number
Order date	Date the order was placed
Order due date	Date the completed order is due

Field	Details
Order notes	Internal notes for the sales/order staff. They do not appear anywhere other than here. The comments in the summary tab are included in the production worksheet and are intended for production staff.
Customer details	
Customer	Customer name and/or ID
Contact	Customer contact person
Reference	Customer reference / PO order or similar
Sales rep	Name of salesman dealing with the customer
Product details	
Product type	Garment or article type – e.g. Polo Shirt
Position	Position of design on the product
Quantity	Total number of pieces to be stitched with design
Product	Brand, style code, product name
Product colors	May include product color code or name.
Color / Size / Qty	Matrix of product color, size, quantity for the product

🔆
Tip: Companies can and should establish guidelines for staff to enter consistent information. No checking or enforcement is done by EmbroideryStudio.

Related topics...

◀ Printing design reports

Production jobs

A 'production job' in EmbroideryStudio is essentially one design on one garment. It is defined as:

◀ A discrete embroidery design
◀ To be stitched on a specified product in a specified location
◀ For a specific order number relating to a specific customer on a specific order date
◀ For a specified order quantity, broken down by color / size / quantity.

A customer order might sometimes require multiple production jobs. If so, you use separate EMB files for each job in the order. To see all jobs for a specific order, list designs by order # or customer, etc.

Multiple production jobs in one order

If a customer order requires multiple production jobs, separate EMB design files are created for each one. You can handle this in one of two ways. Either define a different internal order number for each job with a common stem. For example:

Job	Order #	File Name
1	12345-1	DesignFile
2	12345-2	DesignFile

Alternatively, use the same order number and distinguish the job by file name. For example:

Job	Order #	File Name
1	12345	DesignFile-1
2	12345	DesignFile-2

Design status

Design Status is managed by company staff who change the status manually when relevant. Designs can be searched, grouped, and managed by status. The droplist contains the following default values:

Status	Usage
1-Requested	Customer Service or Sales requests a new design to be digitized.
2-Assigned	Digitizing manager assigns to an embroidery digitizer.
3-Digitized	Digitizer finishes – design is ready for internal review.
4-Not Ok	Digitizing was checked and found faulty – needs to be fixed.
5-Ok	Digitizing was checked and found ok – Sales rep to send to customer for checking and approval.
6-Sent to Customer	Sales rep has sent the design to customer for approval.
7-Approved	Sales rep records customer approval.
8-In Production	Production manager indicates the job is in production.
9-Job Done	Production manager signs off when production job is done.

A staff member sets the status to indicate what he has done, not what is to happen next. Other staff monitor status via the **Design Library** in order to know when they are supposed to take subsequent action, and update status when they have done so.

Grouping & sorting production jobs

Company staff can use **Design Library** to see all jobs related to one order by searching or sorting by order number. You can also:

◀ Group by: Design Status, Customer, Order, Order Date, Order Due, Product Type

◀ Sort by: Design Status, Customer, Order, Order Date, Order Due, Product Type

Order tracking

Order tracking typically involves some or all of the following steps:

◀ Staff enter basic order details and status in **EmbroideryStudio** and save as an EMB design file:
  ◀ Either a new file which serves as a design request to be digitized, or
  ◀ An already digitized EMB design which is to be used for the new order.

◀ **Design Library** automatically indexes order and design details for quick search and find.

◀ Staff use **Design Library** to view and manage designs as well as quotes, orders, and approvals. Browse, list, or search for designs by:
  ◀ Customer
  ◀ Order
  ◀ Date
  ◀ Size
  ◀ Design name
  ◀ Description, etc

◀ Order details are printed on approval sheets and emailed for customer approval.

◀ Order details are printed on production worksheets for production staff.

◀ Staff use design status to track and manage order workflow, including list of designs:
  ◀ To be digitized
  ◀ Awaiting customer approval
  ◀ Ready for production, etc.

Name	Title	Date	Design Status	Customer	Order #	Order Date	Order Due	Quantity	Product Type
B0002.EMB	Wilcom Logo for Polos	21/11/2016 11:51 AM	Requested	Wilcom Int	12346	21 Nov 2016	28 Nov 2016	24	Polo
B0001.EMB	HV1 Motif Fill Title	14/11/2016 3:40 PM	Requested	Wilcom Int	12345	10/11/2016	28/11/2016	12	Polo Shirt

Order tracking by job role

Various job roles within the organization may be involved in preparing and managing orders.

All staff

All staff who have access to **Design Library** can:

◀ Easily search and view designs
◀ Manage and modify design information
◀ Create design requests
◀ Create or modify actual designs
◀ Update design status.

Sales & customer service staff

Embroidery sales and customer service staff will use this kind of workflow:

◀ Create new design requests and enter order details in new or existing designs.
◀ Determine stitch estimates to help determine pricing for quotations.
◀ Visualize artwork or digitized design on the product to be embroidered.
◀ Estimate design run-time and job-time.
◀ Email approval sheets to customers for approval.
◀ Track status of designs and customer approvals.
◀ Release approved jobs for digitizing and/or production.

Digitizing managers & staff

Digitizing managers and staff will use this kind of workflow to plan and manage the design process:

◀ Review orders by customer, order, or date.
◀ Use 'design status' for digitizing and approvals. Staff update status manually as necessary.
◀ Designs can be searched, grouped, and managed by status.
◀ Track and manage internal checking status of newly digitized or modified designs.
◀ Track and manage previous and new designs by customer, order, date and other job details.

Production managers & staff

Production managers and staff will use this kind of workflow to plan and manage production jobs:

◀ Review orders which have been approved for production.
◀ Check order details including:
  ◀ which designs to use for which order
  ◀ how many pieces to embroider on what products and in what position
  ◀ color/size/quantity details.

◀ Estimate design run-time and job-time.

◀ Help plan production schedules from order-due date, design statistics, and job quantities.

Converting designs

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

By default EmbroideryStudio saves designs to its native EMB format. This contains all information necessary both for stitching a design and for later modification. The **Design Library** conversion function allows you to batch-convert to and from all EMB and other supported design file types. It also batch-converts many machine file formats such as DST, EXP, SEW.

To convert designs

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

Select target folder

Select machine file formats to convert
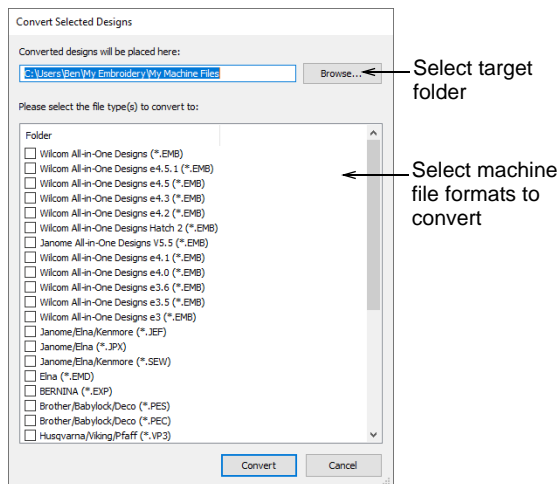
◀ Select the file types you want to convert to.

◀ 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.

Related topics...

◀ Send designs to Connection Manager

◀ Machine Files

Outputting selected designs

Send designs to machine for stitching via **Connection Manager**. Create hard copy reports of a selected designs using a printer or plotter. Report types may include production worksheets, appliqué patterns, color films, as well as catalogs and lists of selected designs.

Sending designs to machine

> Use Manage Designs > Send to Connection Manager to stitch out the design selected in Embroidery Library.

EmbroideryStudio supports various machine models. Some can be connected by cable directly to your PC via USB port. Others require files to be placed in a specific network location or 'watching folder'. Older-style machines do not support direct connection but they do read ATA PC cards and/or USB memory sticks. **Connection Manager** provides a method of connection to machines that appear as removable media or make use of third-party connection software. Once set up in EmbroideryStudio, a single click is sufficient to send the design to machine.

Note: You can only send one design at a time via **Connection Manager**.

Related topics...
◀ Setting up machines for Connection Manager
◀ Machine Files
◀ Machine Formats

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.

To print selected designs
◀ Sort the designs to be printed using **Sort**.
◀ Select a design and click the **Print Selected** icon. The **Print Design** dialog opens.

◀ To customize the printout, click **Options**.
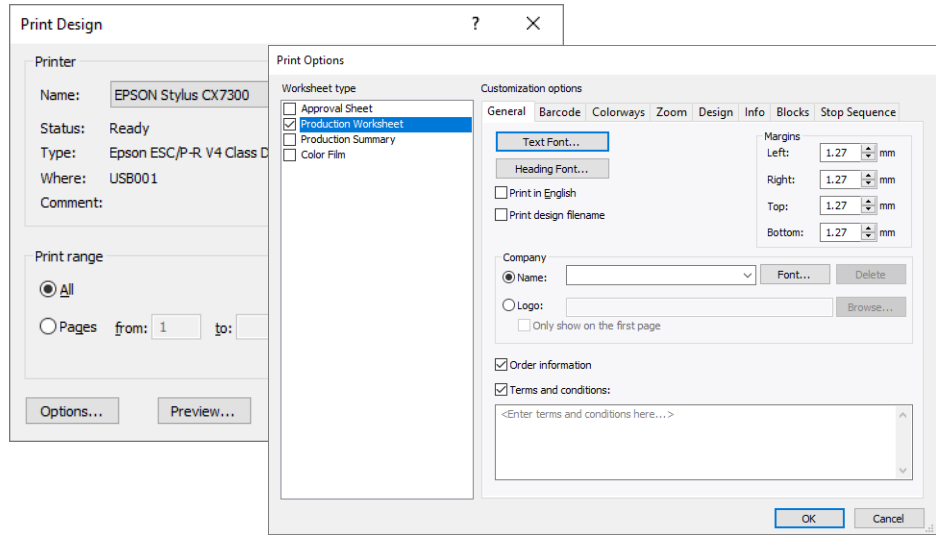
◀ Set design report options to include the information you want in the format you require.

Option	Function
Approval sheet	This is intended for the customer, not production staff. Customers can see what they are ordering and approve accordingly.
Production worksheet	This is intended for production staff. All production-related information, such as bobbin length, design size, garment fabric, etc, is provided.
Production summary	This provides two summary tables of the design and associated colorways – a Colorway Summary together with a Design Summary.
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.

◀ The **Worksheet type** panel provides options for further customization.

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

To print a design catalog

1 Open **Design Library** and filter designs as desired.
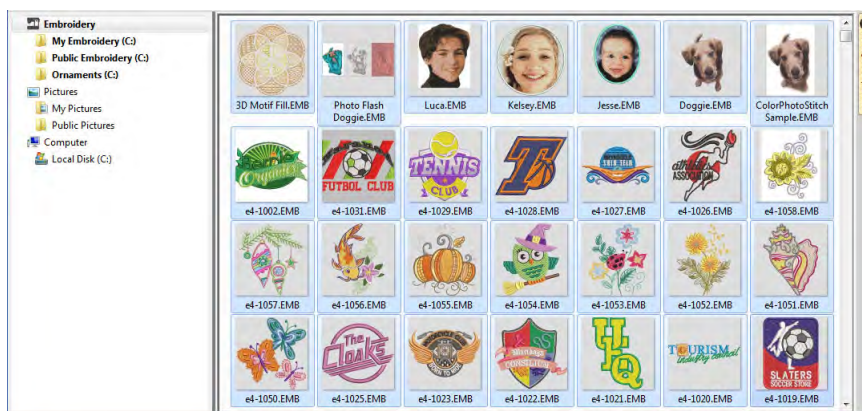
2 Select the designs you want to include in the catalog.

3 Select **Manage Designs > Print Selected to Catalog**. The **Print Catalog Options** dialog opens.
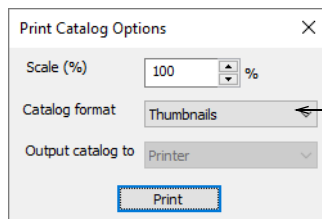
Choose thumbnails with or without design details

4 Adjust settings as preferred:

◀ Change **Scale (%)** to adjust thumbnail size.
◀ Select a catalog format – thumbnails with or without design details.
◀ Choose output target – PDF file or actual printer.

5 Click **Print**. The **Print Design** dialog opens.
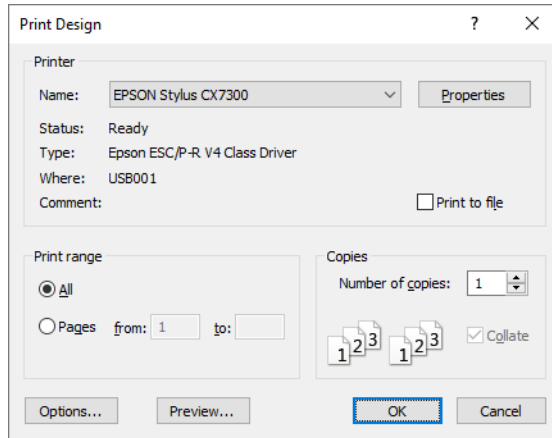
6 Click **Preview** to view the catalog.
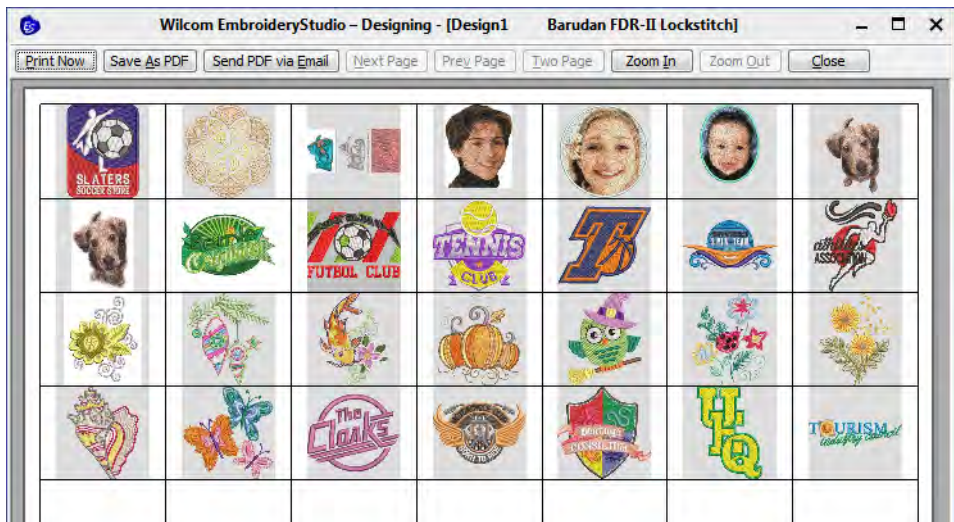
7 To print the design, choose an option:

Option	Purpose
Print now	Click to send the design report to your local printer.
Save as PDF	Click to save the report as a PDF document. You are prompted to save to the hard drive or network location.
Send PDF via email	Click to send the report – usually an approval sheet – as a PDF attachment to your local email client. The PDF is automatically identified by customer name, order number, and current date.

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

Related topics...

◀ Group & sort designs

◀ Printing design reports

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.

To export a design list

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

◀ Open the **Design Library** and select a design folder.

◀ Sort and filter the designs to export.

◀ Select all files to include in the export list.

◀ 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.

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

Chapter 41
Asset Management

EmbroideryStudio allows you to create files or 'assets' of various kinds during normal use. The most important of these are your actual embroidery designs. But there are other assets you may create, such as design templates, custom motifs and fonts, etc. These are preserved from installation to installation, whether installing a new version of EmbroideryStudio or a software update.
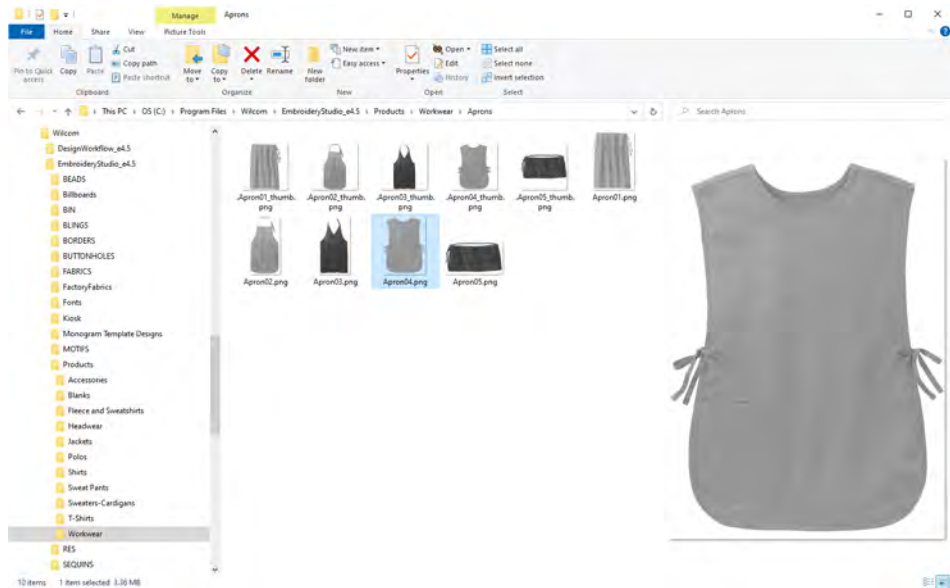
It's a good idea to familiarize yourself with the locations and file names of your custom assets for various reasons…

◀ In the first instance, you should back up your custom assets in case of computer crash.

◀ Also, you may want to share assets with other EmbroideryStudio users, or install third-party assets such as custom fonts.

◀ Finally, if you want to install your software to a new computer, you will need to manually copy the contents of your asset folders to the new locations.

🔵

Tip: If you are installing your existing setup to a new PC, it's a good idea to create a single ZIP file of all your custom data and pre-install it to the new computer before installing EmbroideryStudio.

Custom assets in EmbroideryStudio

The table below summarizes the custom assets you will create and need to manage in EmbroideryStudio…

Design files

Assets	Description
Embroidery designs	The built-in Design Library makes it easy to search, sort and browse all embroidery designs on your network. Any folder containing embroidery designs can be included in the navigation tree. See Design Management for details.
Machine files	Similarly, the Design Library makes it easy to search, sort and browse all machine files on your system. See Design Management for details.
Artwork	Artwork files may also be managed with the Design Library. Sample files are installed by default to the standard Windows 'Pictures' library. See Design Management for details.
Recovery files	The Auto Save function creates a temporary file with the extension EMA in the RECOVER folder. This is automatically restored when EmbroideryStudio is restarted after a computer crash. You can access these files manually by browsing to the folder and renaming files from EMA to EMB.
Backup files	If the Backup Copy option is activated, a backup copy of the current design file is automatically created in its previously saved form. The backup copy is saved in the BACKUP folder with the original file name and native file format.

Design presets

Assets	Description
Design templates	Templates are special files used to store fabrics, objects and default settings. Use templates when digitizing frequently-used design types so that you do not have to adjust current settings every time. See Working with templates for details.
Styles	A style is a group of property settings stored under a unique name. This makes it easy to apply them to selected embroidery and lettering objects. Define new styles for a design template, either from scratch or based on an existing style or object. See Working with styles for details.

Assets	Description
Auto fabrics	Normally you choose a fabric when you start a design although you can change it at any stage. Fabric settings affect all object types other than motif fills, appliqué, and run stitches. In addition to predefined fabric settings, you can create your own custom fabrics to suit particular needs. See Working with fabrics for details.

Lettering assets

Assets	Description
Fonts	EmbroideryStudio provides methods for defining custom and 'user-refined' embroidery fonts. You can digitize letters from backdrop images, convert vector objects, or digitize freehand using any of the input method tools. See Custom Lettering for details.
Monogram templates	You build monograms using the Monogramming docker. The simplest way to get started is to select a monogram template from the Designs tab. The Custom folder contains your custom templates. See Monogram designs for details.
Teamname teams	A teamname design may include names from predefined teams which can be used any number of times. You can even combine members from different teams. See Managing teams for details.
Teamname templates	When creating teamname designs, you can use a preset layout or a custom layout based on artwork you may have received. Typically, you will receive a brief and possibly artwork from a customer. This design can be saved for reuse as a teamname template. See Create custom templates for details.
Kiosk templates	EmbroideryStudio provides an easy-to-use lettering 'kiosk' capability for cap and other embroidery. The kiosk is primarily intended for retail outlets where fast and simple personalization is required. The kiosk provides a set of predefined design layouts. You can create your own layouts for use in the kiosk. The default banner can also be customized. See Lettering Kiosk for details.

Stitch presets

Assets	Description
Motifs	Motif stamps are ready-made design elements, such as hearts, leaves or geometric patterns which are contained in libraries or 'sets'. You can define your own stamps for individual use or for use in motif runs or fills. See Custom motifs for details.

Assets	Description
Program splits	Program Split is a decorative fill stitch where needle penetrations form a tiled pattern. Make your own patterns to use in Program Split fills. The same patterns can also be used with Flexi Split effects. See Creating patterns with custom splits for details.
Carving stamps	The Carving Stamp feature 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. You can use vector or embroidery objects as a basis for stamps. See Add stamps to a library for details.

Other assets

Assets	Description
Hoops	The software allows you to define your own hoops and save for later use or associate with a custom machine type. Custom hoops are needed because new hoops become available for sewing machines more frequently than the software is updated. See Creating custom hoops for details.
Machine formats	EmbroideryStudio provides standard formats for most machines. However, if your machine is different, you may need to customize the machine format settings. See Custom machine formats for details.
Products	EmbroideryStudio lets you choose a garment or product backdrop on which to position your decoration. Use it to display location, size and overall appearance for visualization and approval purposes. It is possible to create custom product backdrops for use in your business. See Product Visualizer Templates for details.
Thread charts	The thread charts contained in the software represent the many different brands and colors of thread available. You can modify thread charts to reflect the threads you are currently using. You can even create your own. See Create & modify thread charts for details.

Note: In order to preserve any custom assets, do not uninstall your existing version of EmbroideryStudio. Any new updates can be installed over top of your existing installation. If you want to move your EmbroideryStudio to another PC, you will need to manually transfer any custom assets you have created or received from third parties.

Custom asset locations

Custom data – including custom fabrics, templates, motifs, borders, and fonts – is stored in dedicated folders. In EmbroideryStudio, custom locations divide into two broad categories – program data and user data.

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Note: Some data folders will only be created when the software is opened for the first time after restarting your system.

Program data

Program data is written the Windows 'ProgramData' folder whenever you modify a standard EmbroideryStudio asset such as auto fabrics. This folder is located here: **C:\ProgramData\Wilcom\EmbroideryStudio**. Asset files are then located in the following sub-folders…

Custom asset	Location	File types
Auto fabrics	..\RES\AutoFabric	userdefined.autost
Backup files	..\BACKUP	*.EMB
Borders	..\BORDERS	*.ESA
Carving stamps	..\STAMPS	*.ESA
Fonts	..\Fonts	*.ESA
Hoops	..\RES\Hoops	USRHOOPS.DSC
Kiosk	..\Kiosk	*.EMB, *.PNG
Machine formats	..\RES\Machines	UserMachineModels.txt
Motifs	..\MOTIFS	*.ESA
Program splits	..\TEMPLATE	*.EMT
Recovery files	..\RECOVER	*.EMA
Styles	..\TEMPLATE	*.EMT
Templates	..\TEMPLATE	*.EMT
Thread charts	..\RES\ThreadCharts	*.TCH

Embroidery data

Embroidery data includes any design or machine files. Theoretically, this data can be housed anywhere on your network. By default, it is installed here: **C:\Users\Public\Public Embroidery**. Files are then classified into the following sub-folders…

Custom asset	Location	File types
Embroidery designs	..\EmbroideryStudio e4	*.EMB, *.ART, *.JAN, etc

Custom asset	Location	File types
Machine files	..\Machine Files	*.DST, *.U??, *.TAP, etc
Monogram templates	..\EmbroideryStudio e4\Monogram Template Designs\Custom	*.EMB
Teamname teams	..\EmbroideryStudio e4\Teamname Teams	*.TXT
Teamname templates	..\EmbroideryStudio e4\Teamname Template Designs\Custom	*.EMB

Image data

Image data includes any artwork files. Theoretically, this data can be housed anywhere on your network. By default, it is installed here: **C:\Users\Public\Pictures**. Files are then classified into the following sub-folders…

Custom asset	Location	File types
Artwork	..\EmbroideryStudio e4	*.JPG, *.BMP, *.PNG, *.CDR, *.AI, *.EPS, etc
Fabric patterns	..\Fabrics	*.JPG, *.BMP

Product backdrops

EmbroideryStudio allows you to choose a garment or product backdrop on which to position decorations. The **Product Visualizer** feature is used to display location, size and overall appearance for visualization and customer approval purposes. You can add your own single-color and multi-color product templates to the software. See Product Visualizer Templates for details.

As assets, product backdrops fall between the stools. They are PNG artwork files but they are considered 'program data'. They have their own dedicated location here:

C:\Program Files\Wilcom\EmbroideryStudio\Products

Navigating to assets

Using **File Explorer**, you can navigate to the precise location of your EmbroideryStudio assets with the navigation tree on the left of the

window, or simply by typing or copying the path name into the address field and pressing **Enter**.

Navigate folder structure via navigation tree or address bar
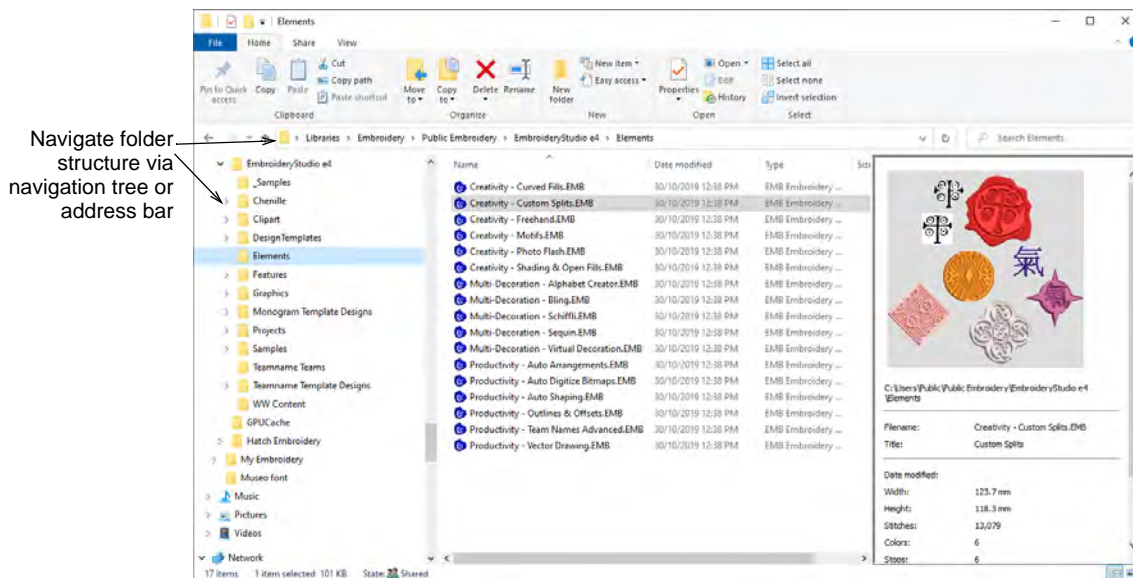
Whenever you install updates or upgrades to your existing software, the above folder structure, together with any custom assets, will be preserved. However, if you install your software to another PC, you will need to manually copy the contents of these folders to the new location.

Note: The **C:\ProgramData** folder may be hidden on some PCs depending on the permissions of the user who is logged in. See Showing hidden folders for details.

Personal designs & artwork

Amongst your most important assets are of course your embroidery designs and any artwork files you may use. These can potentially be saved anywhere on your system. By default however…

◂ Any designs, cutting files, or machine files that you save from EmbroideryStudio will be saved by default to the 'Public Embroidery' folder at this location …

C:\Users\<USER>\Public Embroidery\EmbroideryStudio\

◂ Similarly, any artwork you save from EmbroideryStudio will be saved by default to the 'Pictures' folder at this location…

```
C:\Users\<USER>\Pictures\EmbroideryStudio\
```
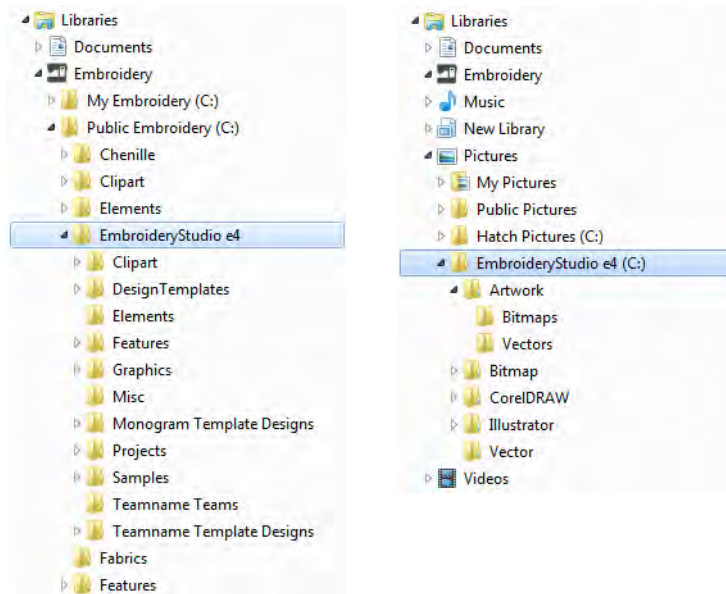

Whenever you install updates or upgrades to your existing software, the folder structure will be preserved. However, if you install your software to another PC, you will need to manually copy the contents of the 'Embroidery' and 'Pictures' folders to the new location.

Showing hidden folders

If you need to manually copy the contents of your asset folders to a new location, you may find that the **C:\ProgramData** folder is hidden on your PC, depending on the permissions of the login you are using.

To show hidden folders

◀ Open the **View** tab in **File Explorer** as shown.

Tick to show
'ProgramData' folder
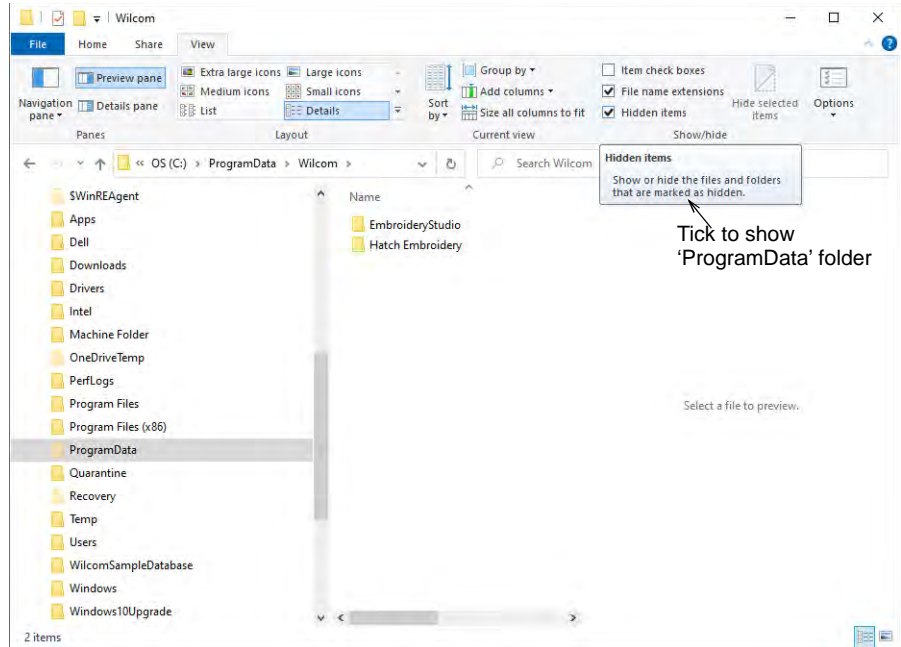
◀ Tick the **Hidden files** option. This will reveal the 'ProgramData' folder and all its contents.

Chapter 42
Product Visualizer Templates

EmbroideryStudio allows you to choose a garment or product backdrop on which to position decorations. The **Product Visualizer** feature is used to display location, size and overall appearance for visualization and customer approval purposes. Production worksheets provide an option to print approval sheets with or without garment backdrops.

Choose colors for each product type. The software provides a library of garments of common brands and styles. Most garments use only one color but multi-color products with up to three layers are supported. You can add your own single-color and multi-color product templates to the software by following the method outlined in this section.

Preparing samples

This topic deals with the technique of preparing source images for deployment in EmbroideryStudio as product templates for **Product Visualizer**. The most common scenario when creating product templates is a single-color product image.

Choose suitable source images

A lot depends on the quality of the source image you choose for use as a product backdrop. As a starting point, you need high resolution photos of the garment you want to use – e.g. front and back. While images are

intended mainly for onscreen viewing, they may also be printed on approval sheets.

Size

If you take a small product image and blow it up to actual size, it will not gain in quality or resolution. There needs to be enough image data (DPI) to display the image satisfactorily at actual size. For optimum quality you need an image with:

◀ Real-world dimensions that represent the garment at actual size – e.g. 60 cms wide x 90 cms high

◀ Minimum of 96 DPI, ideally closer to 160 DPI.

Color depth

Make sure you are using an RGB (24 bit color) photo. Commonly used formats include RAW, PNG, TIFF or JPG.

Note: As well as reasonably high resolution photos, you need a good photo editor. Most screenshots in this document are taken from Corel PhotoPaint which is bundled with EmbroideryStudio.

Crop the image

Remove unnecessary border pixels by cropping. This makes it easier to set the correct real-world size.

Set image size

Scale the image to real world size using a tool such as the **Resample** dialog below.
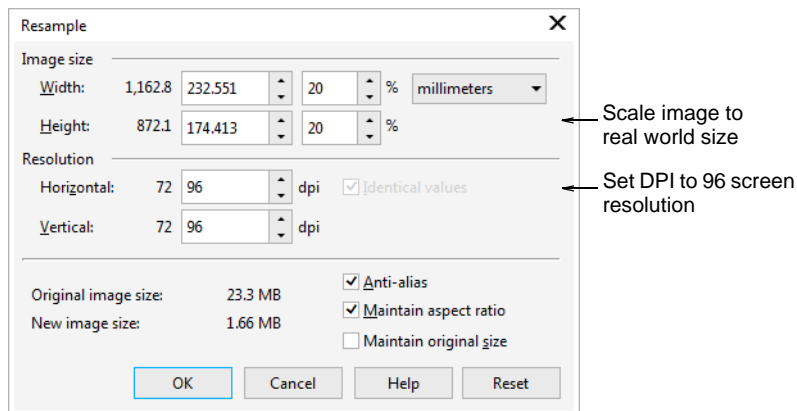
Indicative settings:

◄ Untick the 'Maintain original size' checkbox.

◄ Make sure 'aspect ratio' is locked.

◄ Change either width or height to match the physical size of the garment or article. For example, height = 50cm. The new size needs to be equal to or less than original. If not, the resolution will be too low and the image will be pixelated.

◄ Change the resolution to 96 DPI or higher. Packaged product images are set to 96 DPI for standard screen resolution. However, new monitors are capable of higher resolutions such as 160 DPI.

◄ Ideally, the original file size (total number of pixels) should be maintained so the image does not lose data (quality).

Note: Simply increasing the DPI to 96 will not add resolution to a low-res image. It will only duplicate existing pixels.

Set transparency

Because you want product images to display correctly on any color background, you need to make the image background transparent. Make sure anti-aliasing is activated. Image edges will appear smoother. The transparent background usually appears as a gray checker pattern. If you are using Corel PhotoPaint, follow these steps...

To set the transparency

1 Choose **Magic Wand Mask**.

Choose Magic Wand Mask
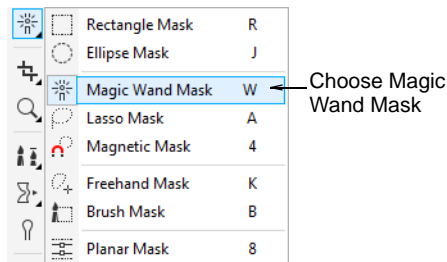
2 Click the background to select the whole area.

3 If needed, click the + button to add more area until you have selected the whole background.

Click to add more area
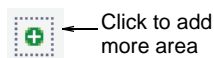
4 Adjust the 'Tolerance' setting to limit the range of colors included in the transparency. If the background is too similar to the foreground, this can become problematic.

5 Click **Invert Mask**. The garment alone will be selected.

Click to select garment alone
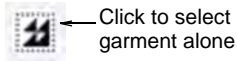
6 Select **Object > Create > Cut Selection**.

7 In the **Object Manager**, select the background and click **Delete**.

Select and click Delete
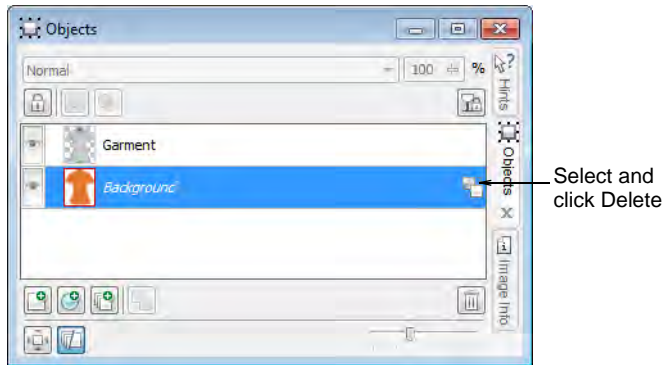
8 The garment will be appear on a gray and white checker pattern. This means the background is transparent.

Background is transparent
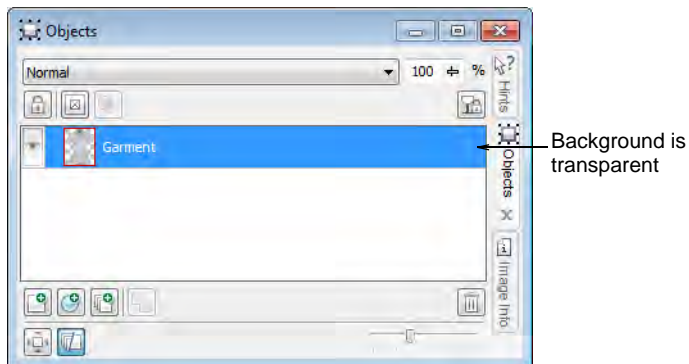
Converting to grayscale

Product images which are added to the software need to be grayscale, as shown below. These are then colored in EmbroideryStudio according to user requirements.

Convert to grayscale

Convert the selected image to grayscale making sure that transparency is preserved.
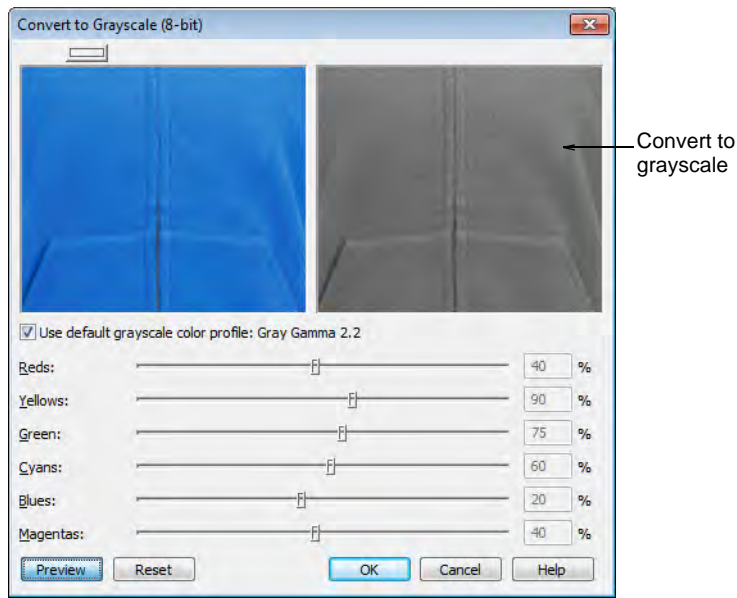
Convert to grayscale

Adjust image brightness and contrast

Generally speaking, the middle gray becomes the selected color and lighter and darker grays become shades of that color. For this reason we need to ensure that the image is correctly balanced in terms of brightness and contrast.

Balance brightness and contrast
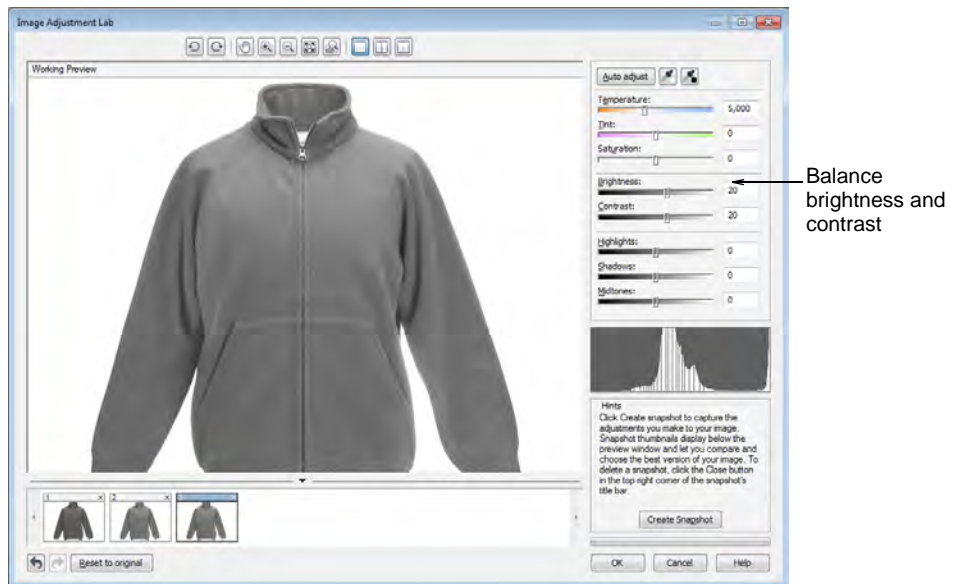
Use a luminance histogram to assess where brightness and contrast lie on the graph. You want to have a good spread of dark and light shades

of gray, providing good contrast. The histogram curve should be centered around the middle.
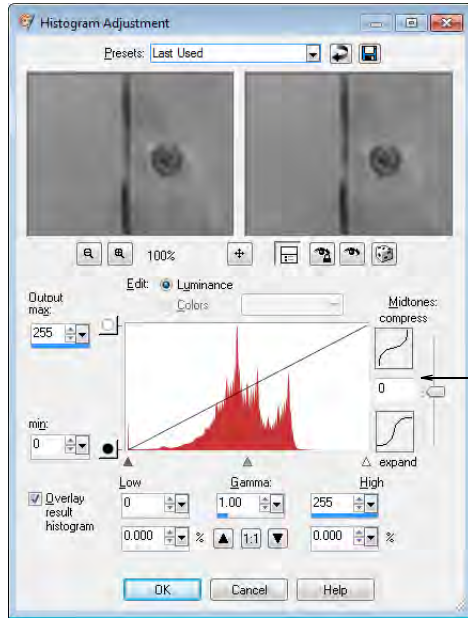
Histogram curve should be centered around the middle

Save as PNG

Finally, save as PNG format. This format supports transparency.
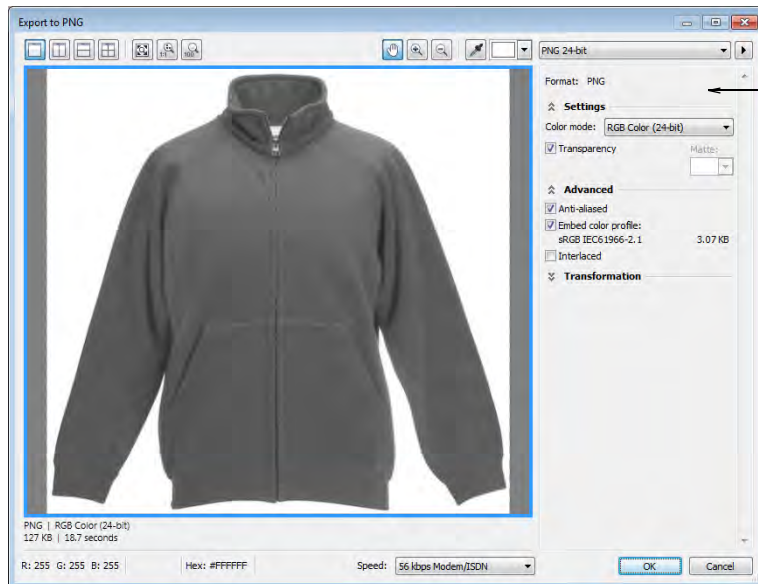
Save as PNG format

Preparing multi-color samples

Most garments use only one color but you will find products with two or even three colors. This topic deals with the technique of preparing source images for deployment in EmbroideryStudio as multi-color product templates for the product visualizer.

You follow exactly the same procedure as for single-color designs, except that you need to separate your multi-color image before converting to grayscale.

Prepare the layers

In order for EmbroideryStudio to detect the number of colors used in your garment, you need to separate the photo into different layers for each. The typical photo tool used to separate colors is the masking tool.
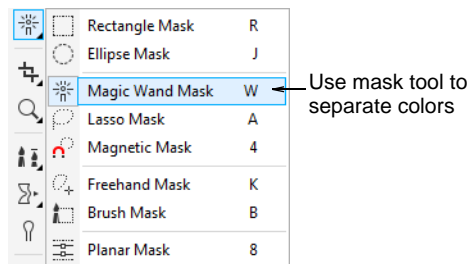
Tip: Some graphics packages refer to 'objects' rather than 'layers'.

Resulting layers

For example, let's say you need to separate a T-shirt which employs two colors. The resulting layers (or objects) would look like this:

Make sure the background of each layer is transparent.

Layer rules

The following rules apply to a multi-color shirt. Variations on the same approach should be applied to other products such as multi-color caps.

◀ The body color should always be the layer 1 file.
◀ Sleeves / collar, if present, should always be the layer 2 file.
◀ Any other trims and tipping should always be the layer 3 file, unless there is no layer 2.
◀ Each layer must be saved as a separate grayscale PNG file.
◀ Each PNG file needs to have identical dimensions, DPI, etc.

💡
Tip: it is important to first create the layers / masks, objects, etc, and then convert the resulting images to grayscale / desaturated.

Convert to grayscale

Convert the resulting objects to grayscale making sure that transparency is preserved. Remember, you want to have a good spread of dark and light shades of gray, providing good contrast.

The layers can then be colored separately in EmbroideryStudio.

Save your layers

Once you have finished separating the photo into different layers, you will need to save each as a separate file and copy all resulting files in a particular folder.

File format

Each layer must be saved in PNG format. If you have worked your layers correctly, each will have a transparent background that usually appears as a gray checker pattern.

File naming

Naming conventions:

◀ Layer1 file name needs to take the form 'FileName.png' – e.g. 'Vest.png'.

◀ Layer2 file name takes the form 'FileName2.png' – e.g. 'Vest2.png'.

◀ Layer3 file name takes the form 'FileName3.png' – e.g. 'Vest3.png'.

Note: The first name doesn't need a number and will be name that identifies the garment in **Product Visualizer**.

Deploying product templates

Having created your product images, you are now ready to deploy and test them. There's no need to restart EmbroideryStudio. Open **Product Visualizer** and select your new product in the **Products** tab.

Copy to folder location

All image files need to be saved in the same location…

◀ Navigate to the following location:
C:\Program Files\Wilcom\EmbroideryStudio_e4.x\Products
Garments are organized by number of colors and garment type – e.g. 2 colors, Caps, Kids, etc.
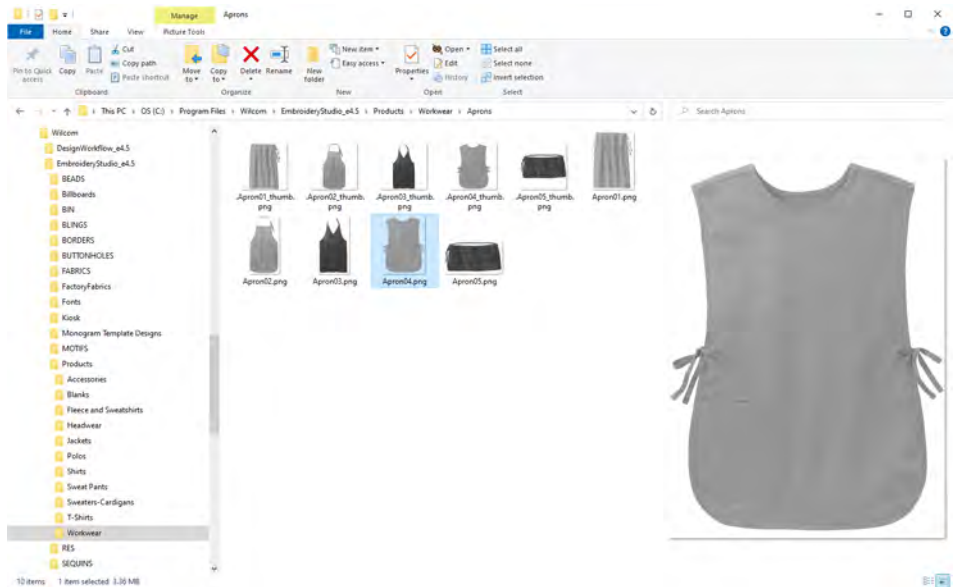
◀ Create your own sub-folders as necessary and copy in your prepared image files.

Note: The file name will be the name that identifies the garment in **Product Visualizer**.

Related topics...

◀ Custom asset locations

Test product templates

 Use Color > Product Visualizer to choose a garment or product backdrop on which to position your decoration.

 Click View > Show Product to toggle current product display. Right-click for Product Visualizer settings.

 Use Zoom > Zoom to Product to view the entire product in the design window.

While you can create separate templates for different garment sizes, EmbroideryStudio assumes a 'Large' size garment. This can be further scaled within EmbroideryStudio to arrive at an exact size for display purposes.
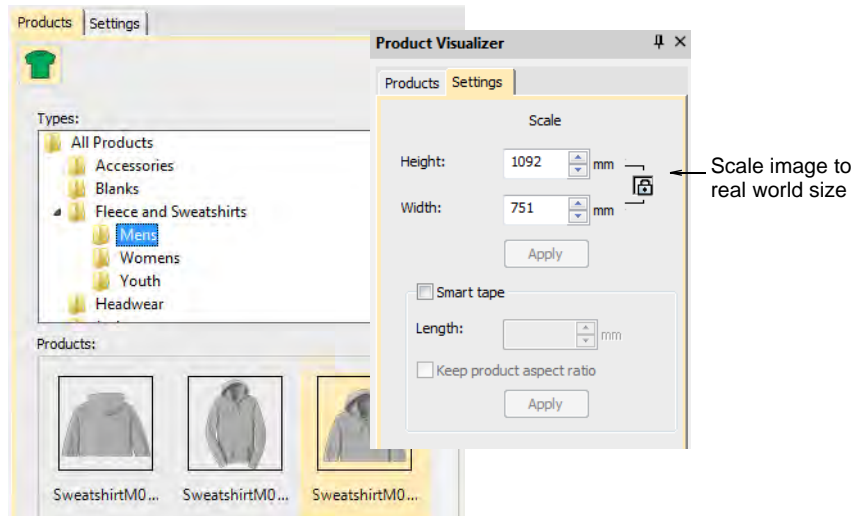
Apply different colors and see how they look on screen. For best results, try the first two rows of the color selector. These less saturated colors

usually color well. Highly saturated colors like bright red, cyan, and magenta tend to wash out the product image.

Try first two rows to start with
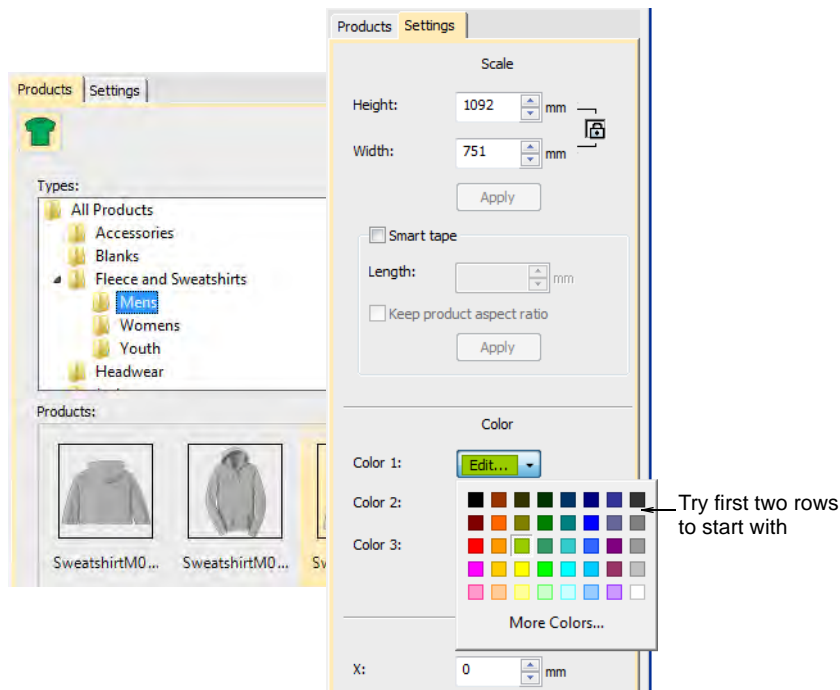
Try selecting product colors on-the-fly using the **Color Palette** flyout:

Select color product backdrops on-the-fly
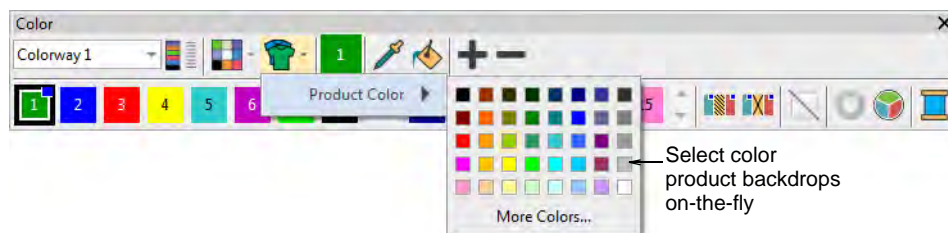
Related topics...

◀ Visualize products

Chapter 43
Standard Fonts

The tables below display all embroidery fonts that are standard with EmbroideryStudio.

Roman fonts

Roman character fonts include:

3D fonts	Created especially for use with foam – commonly used on caps as foam is not suitable for washing.
Appliqué fonts	Created especially for appliqué, containing all the required outline, tack and cover stitches. Great for use on large scale and to reduce stitch count.
Bling fonts	Created especially for rhinestone and diamantes. They are vector format.
Block fonts	San-serif typeface style, very common with names and business logos. A great style for embroidery as it is clear and easy to read.
Chenille fonts	Created especially for chenille embroidery but only suitable if your machine supports it. Commonly used for sport and street wear.
Faux chenille fonts	It is possible to modify Stipple Stemstitch Fill settings for a denser coverage. Combined with a thicker yarn such as Madeira's Burmilana thread, it is possible to achieve a chenille effect. These dedicated fonts utilize this proven technique to create 'faux chenille' lettering.
Fancy fonts	Anything that is not 'blocky' can be used in a decorative way, depending on the style of logo.
Monogram fonts	Especially designed for monogramming purposes – commonly used for creating initials popular with gifts such as towels and linen.
Outline fonts	Commonly used for sports wear, on back of jackets. Work best at larger scale.
Run stitch fonts	Commonly used for small lettering, anything under 5mm and where satin column are not suitable.
Script fonts	Fluid strokes where characters connect, resembling a hand written style.

Serif fonts	Older style font which includes an embellishment at the ends of the stroke, popular with sportswear.
Small fonts	Fonts which are 6mm and below, including satin stitch columns with push and pull adjustments.
Special fonts	Graphical, multi-colors and fill effects are some of the things that are associated with special fonts. Commonly used for decorative purposes.
Two-color fonts	Each character contains two colors. Commonly used for sports wear, on back of jackets. Work best at larger scale.

Non-Roman fonts

Non-Roman character fonts include:

◀ Cyrillic fonts
◀ Hebrew fonts
◀ Japanese fonts

Minimum & maximum sizes

For best results when stitching, do not exceed the recommended maximum or minimum sizes. Note, however, that recommended maximum and minimum heights refer to UPPER CASE letters. Most embroidery fonts 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. You may need to increase the size of the lower-case characters to suit the embroidery.

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 join method is preset to give the best results for each font. 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 as they were digitized. Use it with fonts combining different fill stitch types or special effects.

Roman fonts

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
3D fonts						
3D Block2 ^	ABCDEF abcdef 0123456789	0.6	15	1.2	30	AD
3D Brush Script ^	ABCDEF abcdef 0123456789	0.8	20	1.6	40	AD
3D Emphatic ^	ABCDEF abcdef 0123456789	0.8	20	2.4	60	AD
3D Futuro ^	ABCDEF abcdef 0123456789	0.8	20	1.0	25	AD
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
3D London ^		0.8	20	1.2	30	AD
3D Monoglyceride ^		0.8	20	1.2	30	AD
3D Sofachrome ^		0.55	15	0.8	20	AD
Appliqué fonts						
College Appliqué		1.0	25	3.2	80	AD
Crest Appliqué		-	-	-	-	AD
Glory Appliqué		1.2	30	4.0	100	AD
Bling fonts						
Bling Block		-	-	-	-	AD
Bling Hollow		-	-	-	-	AD
Bling Script		-	-	-	-	AD
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Block fonts						
Advent ^	ABCDEFGHIJK 0123456789	0.4	10	2.0	50	CJ
Albert ^	ABCDEF abcdef 0123456789	0.4	10	0.8	20	CJ
Angle Block	ABCDEF abcdef 0123456789	0.4	10	4.0	100	CJ
Architect	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Arial Rounded	ABCDEF abcdef 0123456789	0.3	7	1.8	45	CJ
Art Block	ABCDEF abcdef 0123456789	0.4	10	3.0	75	CJ
Athletica	ABCDEFGHIJK 0123456789	0.4	10	3.0	75	CJ
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Avant Garde	ABCDEF abcdef 0123456789	0.2	5	2.4	60	CJ
Avatar	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Bauhaus	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Block1	ABCDEF abcdef 0123456789	0.25	6	1.8	45	CJ
Block2	ABCDEF abcdef 0123456789	0.25	6	2.4	60	CJ
Block2-Auto	ABCDEF abcdef 0123456789	0.2	5	2.2	55	CJ
Block Caps	ABCDEFGHIJK 0123456789	0.2	5	2.0	50	CJ
Bounty ^	ABCDEF abcdef 0123456789	0.4	10	1.2	30	CJ

^ New to ES e4

Font	Sample		Recommended sizes				Join method
			Min		Max		
			in.	mm	in.	mm	
Bravo	^	ABCDEF abcdef 0123456789	0.32	8	3.0	75	CJ
Castle		ABCDEF abcdef 0123456789	0.25	6	2.0	50	CJ
Folio Condensed		ABCDEF abcdef 0123456789	0.3	7	2.0	50	CJ
Futura		ABCDEF abcdef 0123456789	0.25	6	2.4	60	CJ
Goudy Sans		ABCDEF abcdef 0123456789	0.25	6	1.6	40	CJ
Gypsy	^	ABCDEF abcdef 0123456789	0.25	6	1.0	25	CJ
Handel Gothic		ABCDEF abcdef 0123456789	0.3	8	2.0	50	CJ
Helvetica		ABCDEF abcdef 0123456789	0.25	6	2.4	60	CJ

^ New to ES e4

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Impress	ABCDEF abcdef 0123456789	0.3	7	1.6	40	CJ
Informal	ABCDEFGHIJK 0123456789	0.25	6	1.2	30	CJ
Jolt	ABCDEF abcdef 0123456789	0.4	10	12.0	50	CJ
Kabel	ABCDEF abcdef 0123456789	0.25	6	2.4	60	CJ
Lazer	ABCDEFGHIJK 0123456789	0.25	6	2.0	50	CJ
Legal Block	ABCDEFGHIJK 0123456789	0.25	6	2.0	50	CJ
Lydian	ABCDEF abcdef 0123456789	0.3	7	2.0	50	CJ
Meister Block	ABCDEF abcdef 0123456789	0.4	10	2.2	55	CJ

^ New to ES e4

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
Microgramma	ABCDEF abcdef 0123456789	0.25	6	2.4	60	CJ
Microscan	ABCDEF abcdef 0123456789	0.3	7	1.6	40	CJ
Monoglyceride ^	ABCDEF abcdef 0123456789	0.4	10	2.4	60	CJ
Monoglyceride Bold ^	ABCDEF abcdef 0123456789	0.4	10	2.4	60	CJ
Narrow Block	ABCDEF abcdef 0123456789	0.6	15	4.0	100	CJ
Round Block	ABCDEF abcdef 0123456789	0.8	20	1.4	35	CJ
Slim Block	ABCDEFGHIJK 0123456789	0.8	20	8.0	200	CJ
Sofachrome ^	ABCDEFGHI 0123456789	0.4	10	2.0	50	CJ
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Spatial ^	ABCDEF abcdef 0123456789	0.4	10	0.8	20	CJ
Square Block ^	ABCDEF abcdef 0123456789	0.4	10	2.7	70	CJ
Stencil Block	ABCDEFGHIJK 0123456789	0.4	10	3.0	75	CJ
Super Block	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Swiss	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Tahoma	ABCDEF abcdef 0123456789	0.25	6	1.6	40	CJ
Text Block	ABCDEF abcdef 0123456789	0.3	7	1.8	45	CJ
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Urbane	ABCDEF abcdef 0123456789	0.25	6	1.6	40	CJ
Utility Block	ABCDEF abcdef 0123456789	0.3	7	4.0	100	CJ
Veranda	ABCDEF abcdef 0123456789	0.25	6	2.4	60	CJ
Yama ^	ABCDEF abcdef 0123456789	0.25	6	1.4	35	CJ
Chenille fonts						
CH 2Color Numbers	01234 56789	2	50	5	125	AD
CH 2inch Pennant Script	ABCDE abcde	2	50	2	50	AD
CH 3inch Pennant Script	ABCDE abcde	3	75	3	75	AD
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
CH 3.5inch Shadow Nos		3.5	87	3.5	87	AD
CH 6inch 3D-Block		6	150	6	150	AD
CH Chenille Block		2	50	6	150	AD
CH Playbill		4	100	6	150	AD
CH Prince Athletic		2	50	6	150	AD
^ New to ES e4						

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
CH Square Block		2	50	6	150	AD
CH Tall Pennant Script		3	75	4	100	AD
Faux chenille fonts						
Yale		2	50	4	100	AD
Vermicelli		2	50	4	100	AD
Fancy fonts						
Agatha		0.4	10	1.6	40	CJ
Anaconda		0.3	8	2.0	50	CJ
Arnold		0.4	10	2.0	50	CJ
^ New to ES e4						
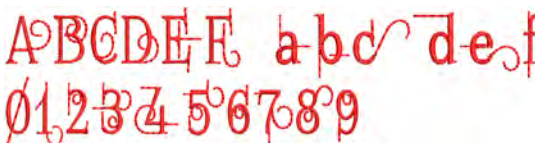
| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Blacklight	*ABCDEF abcdef 0123456789*	0.25	6	2.4	60	CJ
Carla	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ
Charcuterie ^	ABCDEF abcdef 0123456789	0.8	20	2.5	60	CJ
Cheshire	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Columbo	ABCDEF abcdef 0123456789	0.3	8	1.2	30	CJ
Comics	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Crayfish ^	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ
Crevasse ^	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ

^ New to ES e4

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
Croissant	ABCDEF abcdef 0123456789	0.25	6	2.0	50	CJ
Curly	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Dotti ^	ABCDEFGHIJK 0123456789	0.4	10	2.0	50	CJ
Dr Zeus ^	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Enchantment	ABCDEf abcdef 0123456789	0.4	10	1.6	40	CJ
Energy	ABCDEF abcdef 0123456789	0.3	8	2.4	60	CJ
Enviro	ABCDEF abcdef 0123456789	0.5	12	3.0	75	CJ

^ New to ES e4

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
Felt Tip	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ
Flash	*ABCDEF abcdef 0123456789*	0.25	6	2.4	60	CJ
Flourish Light ^	*ABCDEF abcdef 0123456789*	0.6	15	2.0	50	AD
Free Style	*ABCDEF abcdef 0123456789*	0.4	10	1.6	40	CJ
Gaelic	*ABCDEF abcdef 0123456789*	0.44	11	2.0	50	CJ
Hana	*ABCDEF abcdef 0123456789*	0.5	12	2.0	50	CJ
Handicraft	*ABCDEF abcdef 0123456789*	0.3	8	2.5	65	CJ
^ New to ES e4						

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Hobo	ABCDEF abcdef 0123456789	0.25	6	1.6	40	CJ
Kids	ABCDEF abcdef 0123456789	0.5	12	1.2	30	CJ
Kindergarten Block	ABCDEFGHIJK 0123456789	0.4	10	3.6	90	CJ
Lariat	ABCDEF abcdef 0123456789	0.48	12	1.2	30	CJ
Locker ^	ABCDEF abcdef 0123456789	0.6	15	1.6	40	CJ
Lublik	ABCDEF abcdef 0123456789	0.4	10	3.0	75	CJ
Mandarin	ABCDEFGHIJK 0123456789	0.3	8	2.0	50	CJ
Market	ABCDEF abcdef 0123456789	0.4	10	1.2	30	CJ

^ New to ES e4

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Matisse		0.4	10	1.6	40	CJ
Old English		0.4	10	2.0	50	CJ
Olivia		0.3	7	1.6	40	CJ
Orient Express		0.4	10	3.0	75	CJ
Pacific North West ^		0.32	8	2.4	60	CJ
Pastille ^		0.4	10	0.8	20	CJ
Pixie		0.5	12	1.2	30	CJ

^ New to ES e4

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
Racer	*ABCDEF abcdef 0123456789*	0.3	8	1.4	35	CJ
Speedy	*ABCDEF abcdef 0123456789*	0.3	8	1.2	30	CJ
Sports ^	*ABCDEFGHIJK 0123456789*	0.4	10	2.7	70	CJ
Staccato	*ABCDEF abcdef 0123456789*	0.4	10	0.6	15	CJ
Thriller	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ
Toddler	*ABCDEF abcdef 0123456789*	0.6	15	2.0	50	CJ
Toon	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ

^ New to ES e4

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Victorian		0.3	7	1.0	25	CJ
Viking		0.35	9	2.0	50	CJ
Western		0.4	10	1.4	35	CJ
Western Serif		0.3	7	1.8	45	CJ
Westminster		0.25	6	2.4	60	CJ
Woodstock		0.3	8	2.0	50	CJ
Monogram fonts						
Fancy Monogram		1.0	25	5.0	125	CJ
Octagon Monogram		0.7	18	6.0	150	CJ
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
Point Monogram		0.7	18	6.0	150	CJ
Seal Monogram		0.7	18	6.0	150	CJ
Outline fonts						
Detex Normal		0.4	9	2.0	50	CJ
Discoteque		0.4	10	2.0	50	CJ
Futura Outline		0.6	16	2.0	50	CJ
News Outline		1.2	30	3.0	75	CJ
Outline Block		0.75	18	4.0	100	CJ
^ New to ES e4						

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Petrol Shadow	ABCDEFGHIJK 0123456789	0.8	20	2.0	50	CJ
Swiss Run Hollow	ABCDEFGHIJK 0123456789	0.6	15	4.0	100	AD
Swiss Run Satin	ABCDEFGHIJK 0123456789	1.0	25	3.0	75	AD
Turncoat ^	ABCDEF abcdef 0123456789	0.8	20	3.1	80	BJ
Run stitch fonts						
Run Block	ABCDEF abcdef 0123456789	0.2	5	0.25	6	AD
Run Cardigan	ABCDEF abcdef 0123456789	0.2	5	0.5	12	AD
Run Freehand	ABCDEF abcdef 0123456789	0.2	5	0.5	12	AD
^ New to ES e4						

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Run Liberty	*ABCDEF abcdef 0123456789*	0.2	5	0.5	12	AD
Run Murray Hill	*ABCDEF abcdef 0123456789*	0.2	5	0.5	12	AD
Run Script	*ABCDEF abcdef 0123456789*	0.2	5	0.25	6	AD
Script fonts						
Ballantines Script	*ABCDEF abcdef 0123456789*	0.5	12	2.0	50	CJ
Book Script	*ABCDEF abcdef 0123456789*	1.0	25	2.2	55	CJ
Cayman	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ
Chancery	*ABCDEF abcdef 0123456789*	0.3	8	2.4	60	CJ
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
City Script	ABCDEF abcdef 0123456789	0.3	8	2.4	60	CJ
Crescent Script	ABCDEF abcdef 0123456789	0.6	15	1.4	35	CJ
Easy Script	ABCDEF abcdef 0123456789	0.3	7	2.4	60	CJ
Edwardian Script	ABCDEF abcdef 0123456789	0.6	15	3.0	75	CJ
Formal Script	ABCDEF abcdef 0123456789	0.3	7	1.4	35	CJ
Handy Script	ABCDEF abcdef 0123456789	0.5	12	3.0	75	CJ
Italian Script	ABCDEF abcdef 0123456789	0.4	10	4.0	100	CJ
Karin Script	ABCDEF abcdef 0123456789	0.5	12	2.0	50	CJ
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
Lila ^	*ABCDEF abcdef 0123456789*	0.4	10	1.5	35	CJ
Memo Script	*ABCDEF abcdef 0123456789*	0.25	6	1.0	25	CJ
Moly ^	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ
Poetic Script	*ABCDEF abcdef 0123456789*	0.6	15	3.1	80	CJ
Pomander ^	*ABCDEF abcdef 0123456789*	0.35	8	2.4	60	CJ
Python Script ^	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ
Royale	*ABCDEF abcdef 0123456789*	0.5	12	2.4	60	CJ
Script1	*ABCDEF abcdef 0123456789*	0.5	12	3.0	75	CJ

^ New to ES e4

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
Script2	*ABCDEF abcdef 0123456789*	0.3	8	2.0	50	CJ
Script3	*ABCDEF abcdef 0123456789*	0.5	12	4.0	100	CJ
Script4	*ABCDEF abcdef 0123456789*	0.8	20	3.2	80	CJ
Script5 ^	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ
Script6 ^	*ABCDEF abcdef 0123456789*	0.4	10	2.0	50	CJ
Script7 ^	*ABCDEF abcdef 0123456789*	0.6	15	2.7	70	CJ
Script8 ^	*ABCDEF abcdef 0123456789*	0.6	15	2.7	70	CJ
Upright Script	*ABCDEF abcdef 0123456789*	0.5	12	2.0	50	CJ

^ New to ES e4

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Vivid Script ^	*ABCDEF abcdef 0123456789*	0.5	12	2.0	50	CJ
Serif fonts						
Adelle	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Algerian	ABCDEFGHIJK 0123456789	0.3	8	1.2	30	CJ
Bodoni	ABCDEF abcdef 0123456789	0.3	7	2.0	50	CJ
Casual Serif	ABCDEF abcdef 0123456789	0.5	12	2.2	55	CJ
Centurion	ABCDEF abcdef 0123456789	0.5	12	2.4	60	CJ
Cheltenham Tall	ABCDEF abcdef 0123456789	0.3	7	2.0	50	CJ
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
City Medium	ABCDEF abcdef 0123456789	0.25	6	3.0	75	CJ
Civic	ABCDEF abcdef 0123456789	0.3	8	2.0	50	CJ
College	ABCDEFGHIJK 0123456789	0.25	6	1.4	35	CJ
Copperplate	ABCDEFGHIJK 0123456789	0.25	6	1.6	40	CJ
Dauphin	ABCDEF abcdef 0123456789	0.3	8	2.4	60	CJ
Flares	ABCDEF abcdef 0123456789	0.3	7	1.6	40	CJ
Garamond	ABCDEF abcdef 0123456789	0.3	7	2.0	50	CJ
Krone	ABCDEF abcdef 0123456789	0.3	8	1.6	40	CJ
^ New to ES e4						

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Matrix	*ABCDEF abcdef 0123456789*	0.4	10	1.6	40	CJ
Museo	ABCDEF abcdef 0123456789	0.4	10	1.2	30	CJ
Scope ^	ABCDEF abcdef 0123456789	0.4	10	1.6	40	CJ
Schoolbook	ABCDEF abcdef 0123456789	0.3	8	2.0	50	CJ
Seagull	ABCDEF abcdef 0123456789	0.3	7	1.8	45	CJ
Serif1	ABCDEF abcdef 0123456789	0.25	6	1.2	30	CJ
Serif2	ABCDEF abcdef 0123456789	0.3	8	1.2	30	CJ
Serif3	ABCDEF abcdef 0123456789	0.25	6	2.4	60	CJ

^ New to ES e4

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Serif4	ABCDEF abcdef 0123456789	0.4	10	2.0	50	CJ
Souvenir	ABCDEF abcdef 0123456789	0.25	6	1.6	40	CJ
Times Roman	ABCDEF abcdef 0123456789	0.25	6	1.6	40	CJ
Typewriter	ABCDEF abcdef 0123456789	0.5	12	2.0	50	CJ
Small fonts						
Helvetica Small	ABCDEF abcdef 0123456789	0.2	5	0.3	7	CJ
Micro Block	ABCDEFGHIJK 0123456789	0.2	5	0.3	8	CJ
Minature Block	ABCDEF abcdef 0123456789	0.2	5	0.25	6	CJ
Sm Cooper	ABCDEF abcdef 0123456789	2.4	6	2.0	50	CJ
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Sm HighTower	*ABCDEF abcdef 0123456789*	0.2	5	0.25	6	CJ
Sm Script	*ABCDEF abcdef 0123456789*	0.2	5	0.25	6	CJ
Small Block1	ABCDEF abcdef 0123456789	0.2	5	0.25	6	CJ
Small Block2	ABCDEF abcdef 0123456789	0.2	5	0.25	6	CJ
Small Serif 1	ABCDEF abcdef 0123456789	0.2	5	0.25	6	CJ
Times Small	ABCDEF abcdef 0123456789	0.2	5	0.25	6	CJ
Special fonts						
Antique Rose ^	ABCDEFG HIJKLMN	1.2	30	4.0	100	AD
Crests		-	-	-	-	AD
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		**Max**		
		in.	mm	in.	mm	
Flair Script		0.75	10	3.2	80	CJ
Tusj		0.8	20	4.0	100	AD
Two-color fonts						
2 Col Arial Shadow		0.6	15	2.0	50	AD
2 Col Plain Script		0.5	12	2.0	50	AD
Border Block 2		0.5	12	1.6	40	AD
Dextor		0.5	12	2.0	50	AD
English Village ^		0.6	15	4.0	100	AD
^ New to ES e4						

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Futura Border 2 C	ABCDEFGHIJK 0123456789	0.65	16	2.0	50	AD
Shadow Street ^	ABCDEF abcdef 0123456789	0.6	15	4.0	100	AD

^ New to ES e4

Non-Roman fonts

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Cyrillic fonts						
Greek	ΑΒΧΔΕΦ αβχδεφ 0123456789	0.3	8	2.0	50	CJ
Greek Script	ΑΒΧΔΕΦΓ ΗΙΘΚΛΜΝ	0.48	12	4.0	100	CJ
Greek Spionic	ΑΒΓΔΕΖ αβγδεζ 0123456789	0.4	10	2.4	60	CJ
Jikharev	АБЦДЕФ абцдеф 0123456789	0.4	10	1.8	45	CJ

| Font | Sample | Recommended sizes | | | | Join method |
| | | Min | | Max | | |
		in.	mm	in.	mm	
Russian Textbook	АБЦДЕФ абцдеф 0123456789	0.3	8	1.8	45	CJ
Hebrew fonts						
Hebrew Chaya	אבגדהווזחטיך 0123456789	0.3	8	1.6	40	CJ
Japanese fonts						
Japanese Kaisho	光公功効勾厚口后向坑 垢好孔孝宏工巧幸広庚	0.32	8	2.7	70	CJ
Heisei Gosic	平成ゴシック あいうえおアイウエオ	0.4	10	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
Heisei Kaisho	平成楷書 あいうえおアイウエオ	0.32	8	2.7	70	CJ
Heisei Kantei	平成勘亭 あいうえおアイウエオ	0.4	10	2.7	70	CJ
Heisei Maru Gosic	平成丸ゴシック あいうえおアイウエオ	0.4	10	2.7	70	CJ

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Heisei Mincho	平成明朝 あいうえおアイウエオ	0.4	10	2.7	70	CJ

Note: Japanese fonts (3000 characters each) are available for download from www.wilcom.com for customers who wish to use them.

Chapter 44
Custom Fonts

EmbroideryStudio provides options for creating custom embroidery fonts. You can create entire embroidery fonts from converted TrueType fonts. You can digitize letters from backdrop images, convert vector objects, or digitize freehand using any of the input methods. You can use artwork from sources such as calligraphy books or TrueType fonts.
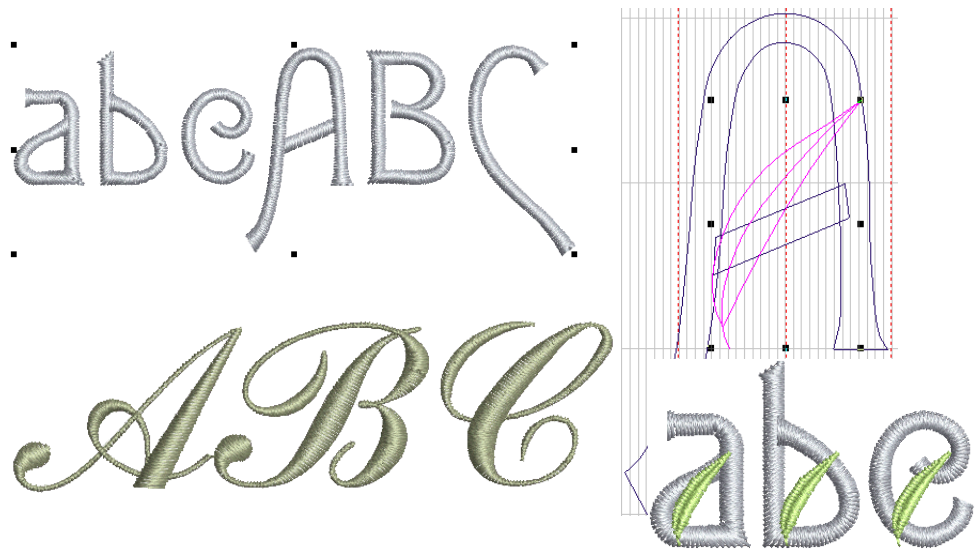
In this section we show how to convert and modify TrueType fonts. We digitize embroidery lettering from scratch for inclusion as a custom font. We adapt an existing font to a decorative, multicolor font. We also take a script font and turn it into a custom embroidery font.

Tip: Source files and sample custom fonts used in this section are included in the **Projects > Custom Fonts** folder.
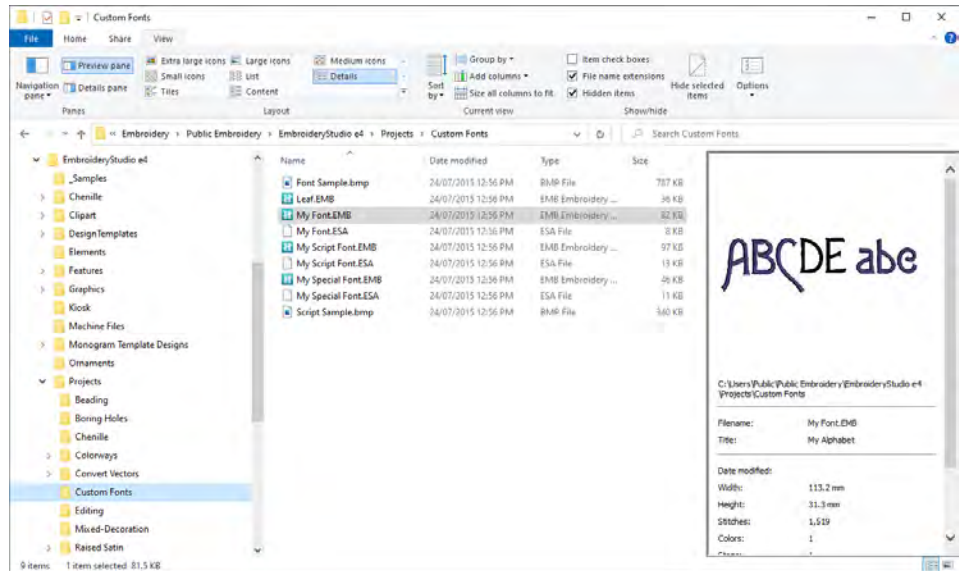
Font considerations

You can use artwork to create font letters in the same way as you do other objects. Before digitizing, however, establish whether the letter shapes are suitable for embroidery, and determine reference height and baseline for the font.

Letter shapes

For best results, letter columns should be of similar width, without tight curves or sharp corners, or very fine, very wide, or curved serifs.

Differences in column width too great

Serifs too long and fine

Corners too sharp

Reference height and baseline

Reference height is the maximum height of capital letters. Although there may be subtle differences between upper and lower case letters, it is a useful guide for digitizing.

Place letters along a standard baseline to help digitize at a standard height. Draw in the baseline if you are digitizing from artwork, or use a grid line as your guide. Descenders in letters such as **y** or **g** generally fall below the baseline.

Tip: Use **E** or **H** as reference letters to determine the height and baseline for the font. These letters work well because they sit on the baseline and do not extend above the standard cap-height.

Letter spacing and width

Letter width varies with letter shape and spacing. When you digitize letters, you enter two reference points to mark the width.
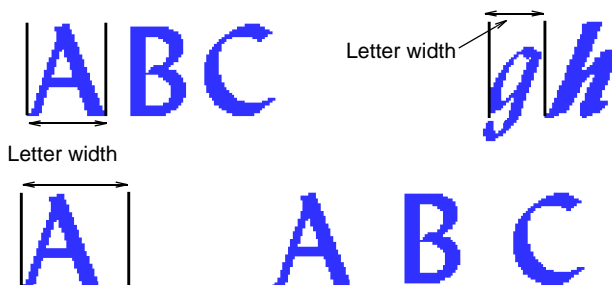
Default spacing affects 'kerning' or spacing across all letters. This is set when packing the font. It is not advisable to add spacing around individual letters when digitizing reference points.

Tip: Certain digitizing rules apply when creating script fonts, mainly to ensure that the tail of each letter joins seamlessly with the next letter.

Letter sequencing

Letter stitching sequence is based on the join type used when saving the font. If you use **Closest Join** or **Bottom Join**, EmbroideryStudio applies automatic branching. This determines where each stroke starts and ends, adding travel runs as necessary.

However, it is good practice to digitize strokes in the direction they are most likely to be stitched in. It is also important to specify the stroke order as this is maintained when sequencing is calculated.

If you want to specify the stitching sequence and connectors yourself, digitize the letter exactly as you want it stitched. You then need to select **As Digitized** as the font join method.

Converting & editing TrueType fonts

The simplest option for creating custom embroidery fonts is to use the built-in **Convert TrueType Font** feature. This lets you convert any TrueType font installed on your system to an embroidery font.

The process is fully automatic. Lettering shapes are 'cut' into Column A or Column B embroidery objects. Overlaps and stroke order are detected and stitch angles defined. The result is similar to manually digitized fonts although the quality may not be quite as good. The quality greatly depends on the original shapes, narrower serif type fonts producing better results than blocked fonts.

Experiment with conversion settings

> **A** Use Toolbox > Lettering to add TrueType lettering directly on-screen. Right-click to set the formatting values for new or selected lettering objects.

The process of converting TrueType fonts to embroidery begins by converting individual letters 'on-the-fly' and experimenting with conversion settings.

To convert TrueType letters on-the-fly

1 Right-click the **Lettering** icon to access object properties.

Enter text → (text field showing "Lucinda Sans")

Select TT font → Lucida Sans

Set conversion values → TTF conversion...
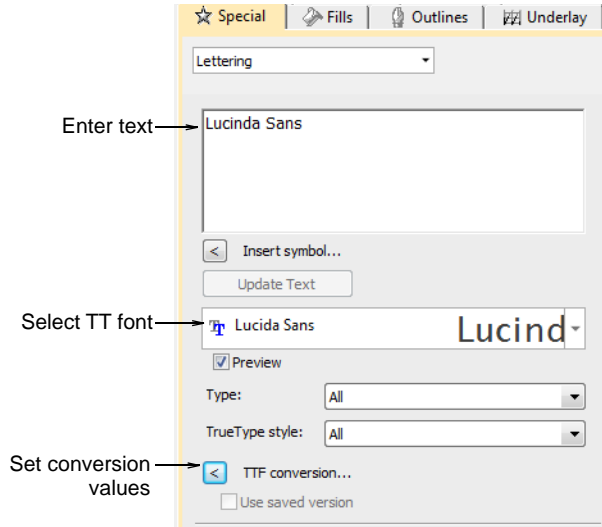
2 Select a TrueType font from the droplist.

3 Enter some sample text which mixes capitals and lower-case letters, with and without extenders.

4 Click **TTF Conversion** to access conversion settings.

Select lettering style – regular, bold, etc

Select Turning Strokes for turning stitch angles

Select Complex Fill for fixed stitch angle
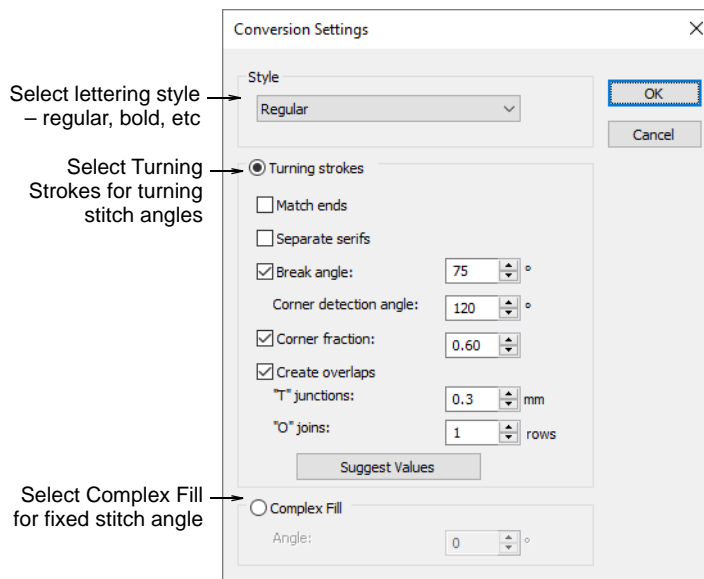
5 First of all, select a lettering style, if available, from the **Style** list – e.g. Regular, Bold, Italic. The entire embroidery font will be created in the selected style. This option may not be available for all fonts.

Regular

Bold

Italic

6 Specify whether to convert as **Turning Strokes** or **Complex Fill**.

This will depend in part on font type – whether serif or non-serif, whether script or block. If you want stitching to follow letter contours, select **Turning Strokes**. The **Complex Fill** option provides a single fixed stitch angle.

Turning strokes   Fixed angle

7 If in doubt, experiment with both settings. Create a sample of each – fixed and turning. Because lettering is converted on-the-fly, you can select the generated lettering and further adjust settings.

Adjust Complex Fill stitch angle for preferred result

8 With the **Complex Fill** option, try adjusting stitch angle and regenerating the sample until you find the optimum angle.

9 With the **Turning Strokes** option, there are many more settings. Presets are automatically adjusted according to selected font characteristics – e.g. whether serif or sans serif, whether block or script. Try the defaults to start with.

Return to suggested values

10 Zoom in to study the stitching and object formation. Decide which style to use – turning or complex fill. If unsatisfied with generated **Turning Strokes**, experiment further with the settings. See below.

Related topics...

◀ Creating lettering with CorelDRAW Graphics

◀ Refine turning stroke options

Refine turning stroke options

With **Turning Strokes**, preset values are automatically adjusted according to selected font characteristics – e.g. whether serif or sans

serif, whether block or script. If unsatisfied with the presets, experiment further with the below settings.

Optimize conversion settings for Turning Strokes

Return to suggested values
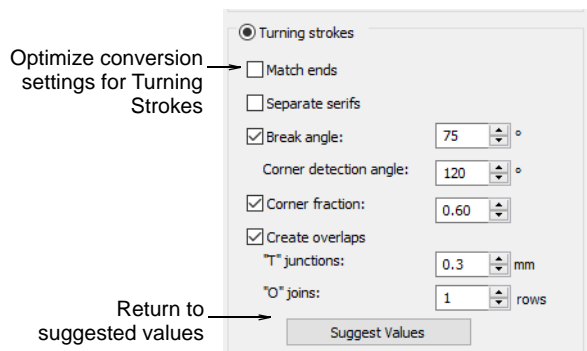
💡
Tip: Click **Suggest Values** if you need to return to suggested settings at any time.

Match ends

Select the **Match Ends** checkbox to keep stitch angles parallel to the end of the stroke. This option will override any corner detection and corner fraction where parallel stitching applies.
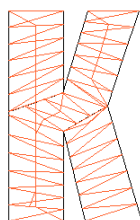
Match Ends OFF
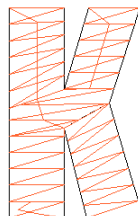
Match Ends ON – stitches parallel to baseline

Stitch angles in strokes should normally be perpendicular to the stroke, but the exceptions are letters like **K**, **X**, **Y** with short slanted strokes. In these cases it is better to keep the stitch angle parallel to the end of the stroke.

Separate serifs

Select the **Separate Serifs** checkbox if you are converting a serif font.

Separate serifs OFF
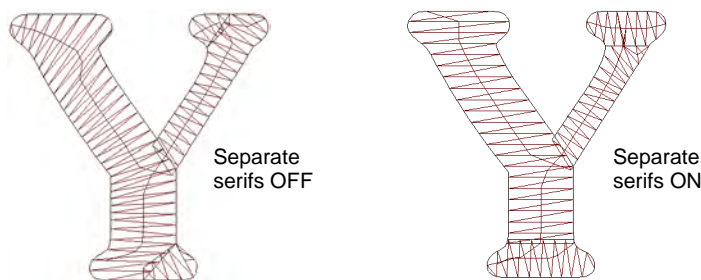
Separate serifs ON

As the serifs are made into separate strokes, this option is better used with larger lettering where serifs are greater than 0.8 mm in breadth.

Break angle

Select the **Break Angle** checkbox to apply a cap to sharp angles. This effect is similar to Smart Corners – if the stroke bends sharply, like the letter **A** or **V**, it will be split or capped.

Break angle OFF – no split

Break angle 87º
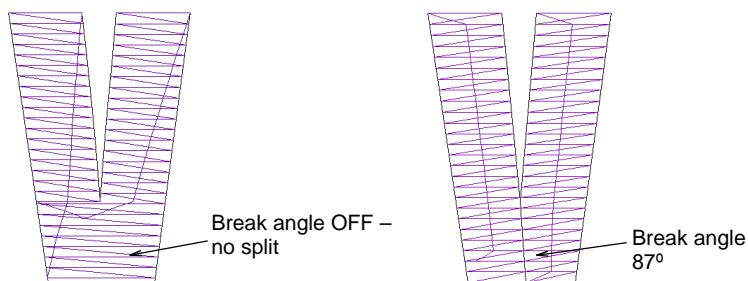
Corner detection

Fine-tune processing of corners with these settings:

◀ **Corner Detection Angle** specifies the angle which will identify a corner in the letter. This is more important for getting well-defined small letters. Note, however, that EmbroideryStudio automatically inserts stitch angles where needed in order to obtain smooth turning stitches. These generally occur at locations where the shape changes significantly in direction or width.

◀ **Corner Fraction** specifies fractional spacing at corners. It is used to create smooth transitions of stitch angle at corners, shape ends, or where a shape changes in width or curvature significantly.
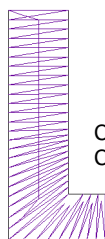
Corner detection angle 150º
Corner fraction 0.6 mm
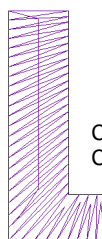
Corner detection angle 30º
Corner fraction 1.0 mm

Create overlaps

Select the **Create Overlaps** checkbox to prevent gaps forming between segments. You can fine-tune the overlaps by setting values in the **'T' junctions** and **'O' junctions** fields.
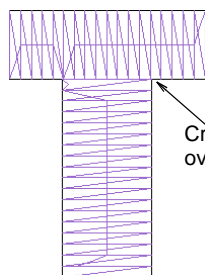
Create
overlaps OFF
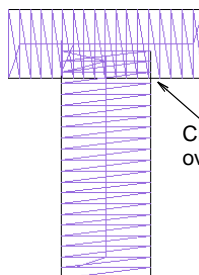
Create
overlaps ON

Convert entire TrueType font

Once you have arrived at conversion settings that suit your chosen TrueType font, go ahead and convert the entire font. Custom fonts are saved in ESA format to the 'Fonts' folder within the Windows 'ProgramData' folder. Conversion happens quickly although Asian fonts may take longer. They can be copied and distributed for use by others.

To convert a TrueType font

1 Select **Setup > Convert TrueType Font**. The **Convert TrueType Font** dialog opens.
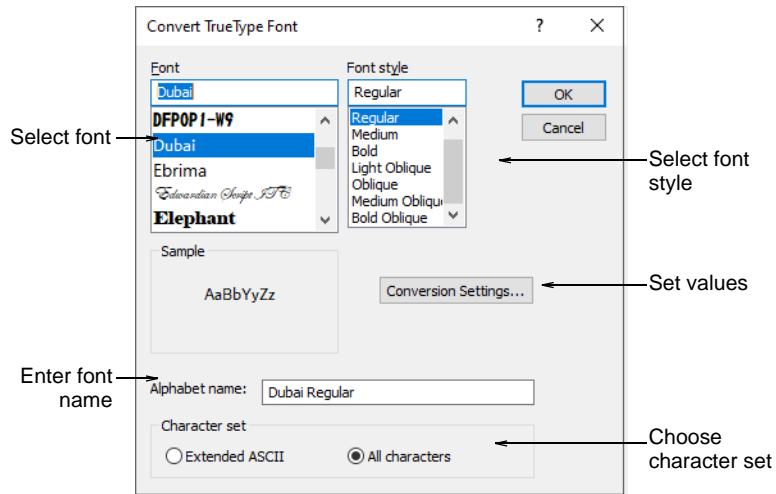
2 Select the font to be converted together with a font style – e.g. Regular, Bold, Italic. The entire embroidery font will be created in the selected style.

3 Enter a **Font Name** if you want to override the default.

4 Choose whether to convert **All Characters** or **Extended ASCII** character sets. The standard character set contains alphanumeric characters only. It excludes punctuation marks and other special characters.

5 Click **Conversion Settings**. As always, these can be further refined.

Select Turning Strokes for turning stitch angles

Optimize conversion settings for Turning Strokes

Select Complex Fill for fixed stitch angle
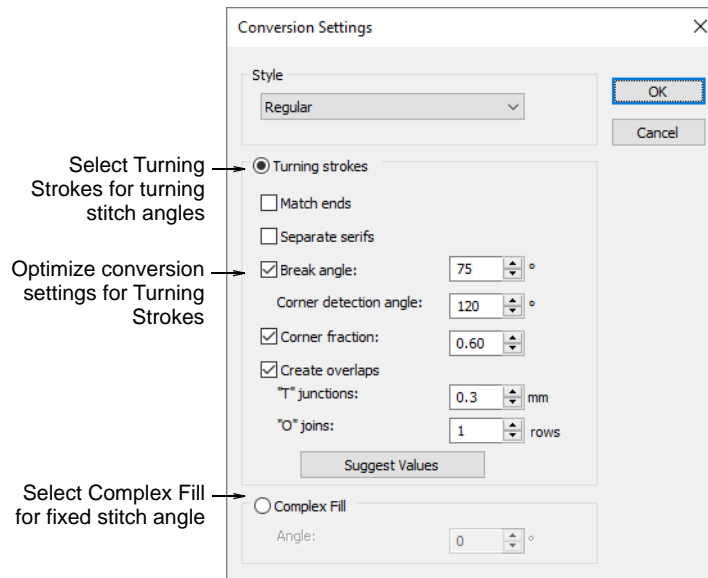
6 Adjust settings according to your experiments with on-the-fly font conversion.

7 Click **OK**. A confirmation will appear when the process is complete.
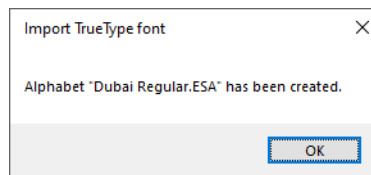
8 To check, right-click the **Lettering** icon to open the **Object Properties > Special > Lettering** docker. The newly converted font will be selected by default and available for use.

Test converted TT font
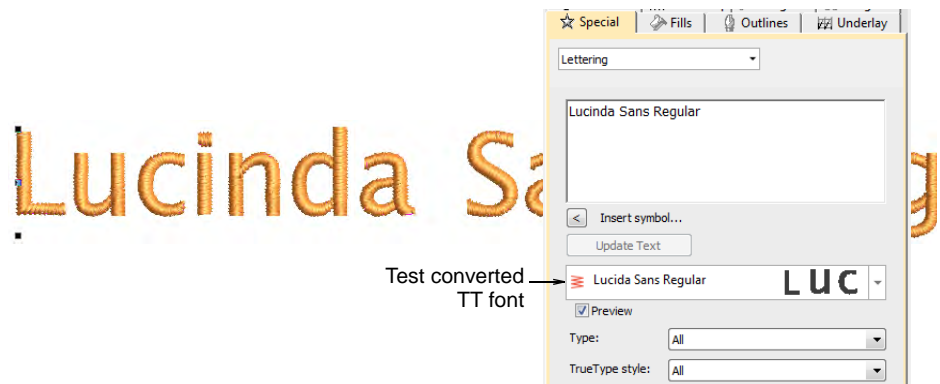
Edit & repackage generated letters

Use **Edit > Break Apart** to split composite objects – monograms, appliqués, lettering, etc – into component objects.

Use **Reshape > Reshape Object** to reshape selected objects by means of control points.

Use **Edit > Knife** to cut objects along a digitized line, preserving stitch settings and colors in resulting objects.

Use **Arrange > Apply Closest Join** to (re-)apply closest join to objects after editing.

The process of TrueType font conversion is fully automatic. Lettering shapes are 'cut' into Column A or Column B objects. Overlaps and stroke order are detected and stitch angles defined. If you find that some shapes can be improved, you have the option of editing and repackaging individually.

To edit & repackage generated letters

1 First set up a grid and save the file for future reference. Whenever you need to fix or edit characters, the grid helps with reference.

Set up grid spacing in the **Options** dialog via **Setup > Options > Grid & Guides**. Turn on **Snap to Guides**. Set vertical spacing to 10mm and horizontal spacing to 0.50 mm.
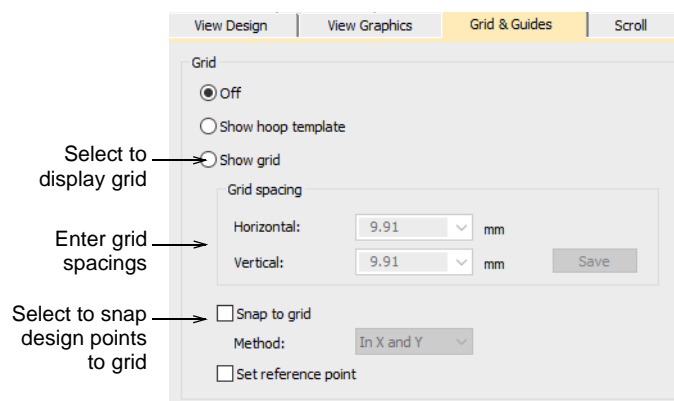
2 Generate a sample and study the letters. The complete font set depends on whether you have chosen to convert **All Characters** or **Extended ASCII**. The standard character set contains alphanumeric characters only.

Sample letters to modify
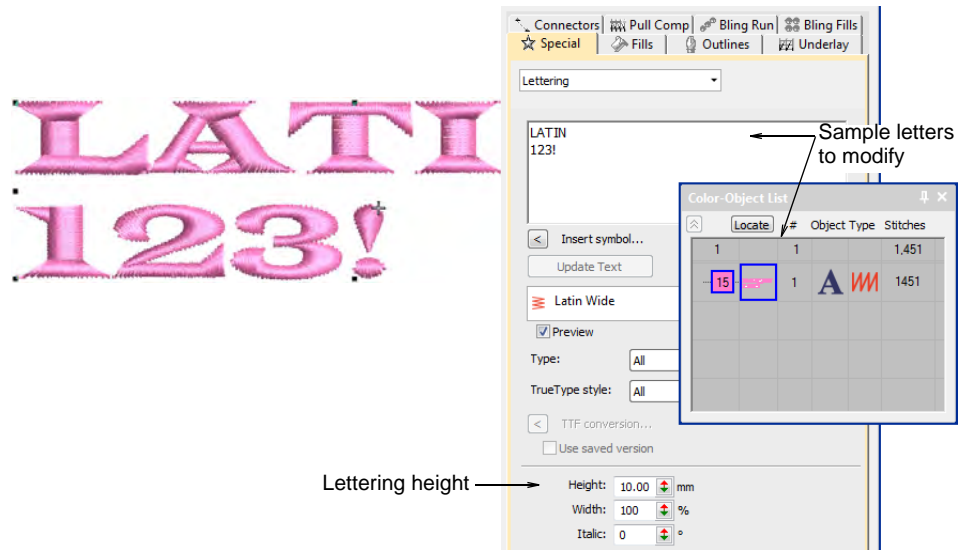
Lettering height

🔅
Tip: You only need to generate those characters that you want to edit and repackage. You can do this over time.

3 Note the lettering height. Normally this will default to 10mm but set it to whatever height you prefer to work with.

4 Before you start editing, turn off underlay. When you repackage, characters should be without underlay.

Turn off lettering underlay
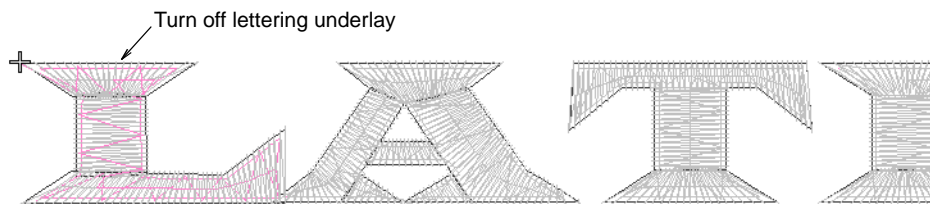
5 Break apart the font, line-by-line and letter-by-letter, until you arrive at the component objects.

Break apart letters into
component objects
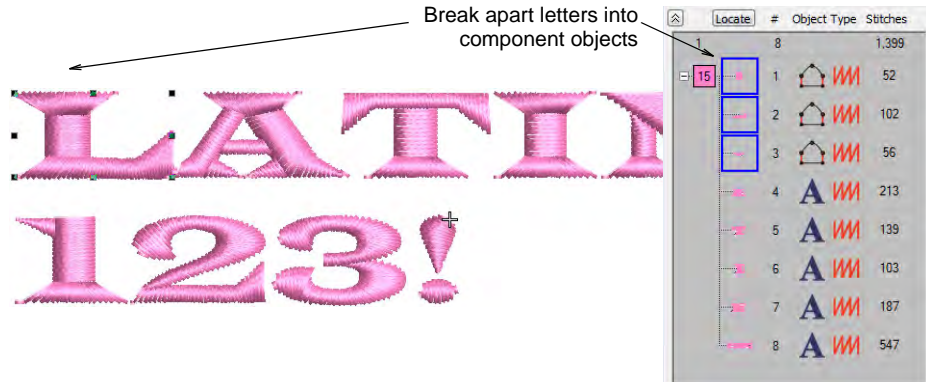
6 Zoom in to edit letter shapes with the **Reshape Object** and **Knife** tools.

◀ Typically you will want to add or remove control points, adjust overlaps, and resequence component objects.

Reshape and/or
resequence as
needed
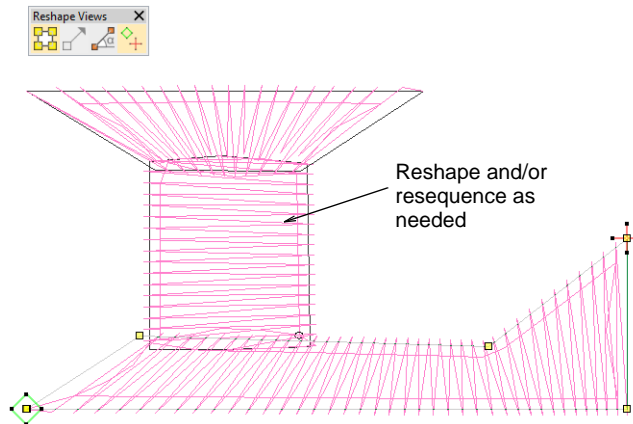
◀ Optionally, you may use the **Knife** tool to cut objects into smaller overlapping strokes for better stitchability.

Cut objects into overlapping strokes
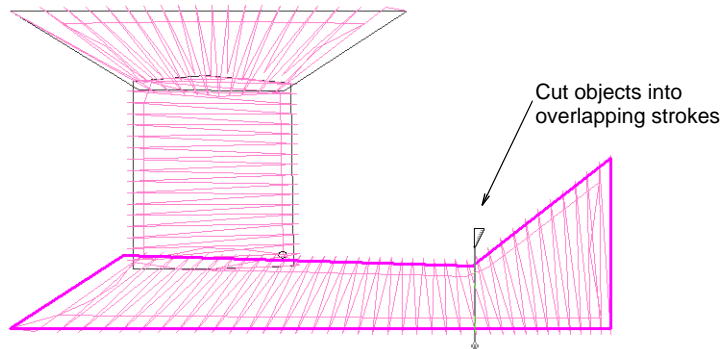
7 When you have edited the letter to your satisfaction, select all component objects and apply closest join.

Apply closest join to component objects
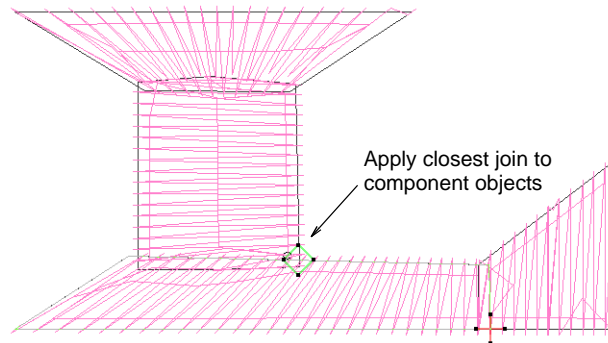
8 Repackage the edited letter to the converted embroidery font. Select letter components and save using the **Object > Create Letter** command.

Select font →

Enter letter name →

Enter reference → height

Create Letter

Alphabet name:	Latin Wide	Create...	OK
Letter name:	L		Cancel
Reference height:	50.00 mm		

☐ Digitize reference height

☑ Remove functions
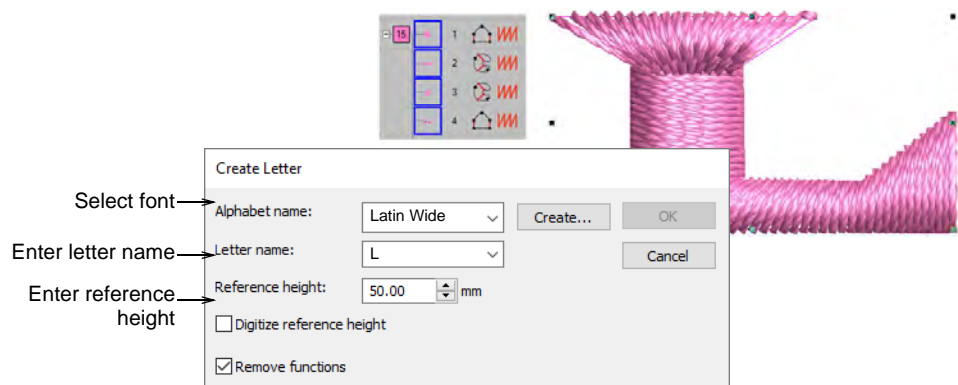
9 In the dialog, specify…

Field	Action
Font name	Select the converted font from the droplist.
Letter name	This should be the actual character – e.g. 'L'.
Reference height	This needs to be the height of the sample letter – e.g. 10mm.

10 Click **OK**. The following warning will appear…
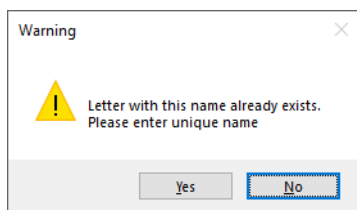
11 Click **Yes** to proceed and enter a reference line as prompted.

Click twice to enter reference line
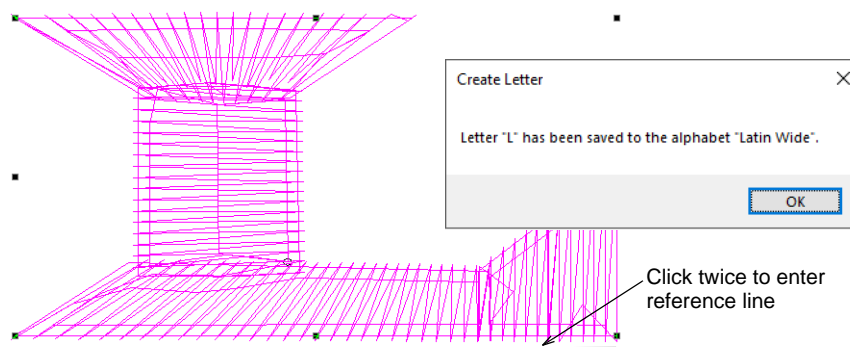
12 Add any other modified letters to your converted TrueType font in the same way.

13 Test your updated font via **Object Properties > Lettering**. Note that changes are preserved and underlay automatically added to the repackaged characters. Test at different font heights.
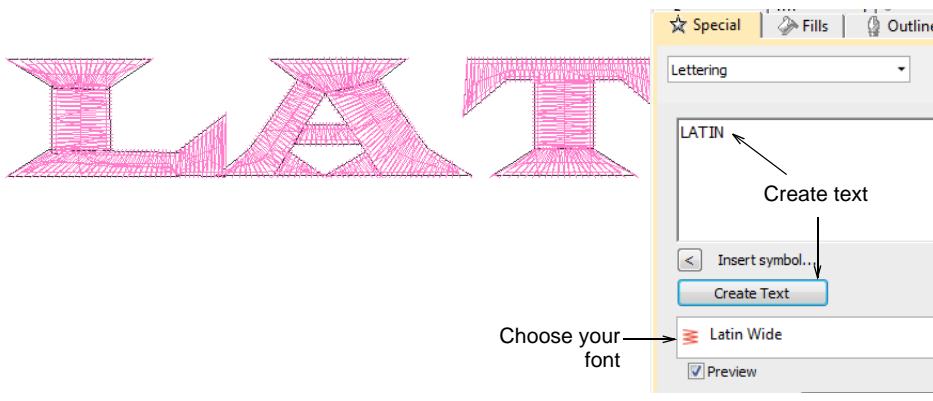
Related topics...

◀ Breaking apart lettering
◀ Splitting objects
◀ Reshape letters
◀ Apply closest join
◀ Create custom letters
◀ Save custom letters
◀ Save custom fonts
◀ Manage fonts

Digitizing custom fonts

You digitize letters for a custom font just like other embroidery objects. Custom letters can be made up of multiple objects, and may be letters, numbers, symbols or even pictures. We will be creating a font for a nominal height of 20 mm.

Set fabric, background & machine format

Use Standard > New to start a blank design based on the currently selected template. Hold down Shift and click to open New from Template dialog.

Click View > Show Product to toggle product image on/off. Right-click to open the Product Visualizer docker.

Open EmbroideryStudio from the desktop icon or Windows **Start** menu. From the **Home** screen, click **New from Template**. Otherwise, select **File > New from Template** or, holding down the **Shift** key, click **New**. Since we are stitching out on a polo shirt, choose 'Pure Cotton' (the default). Select a suitable machine format – e.g. Tajima – and click **OK**.

Set up grid & guides

First we need to set up a grid to assist when digitizing embroidery letters. Guidelines also help when setting reference points. Set up grid spacing in the **Options** dialog via **Setup > Options > Grid & Guides**. Turn on **Snap to Guides**. Set vertical spacing to 10mm and horizontal spacing to

0.50 mm. The narrow horizontal spacing helps to digitize more accurate reference points.

Select to display grid

Enter grid spacings

Select to snap design points to grid

Click to save for current template
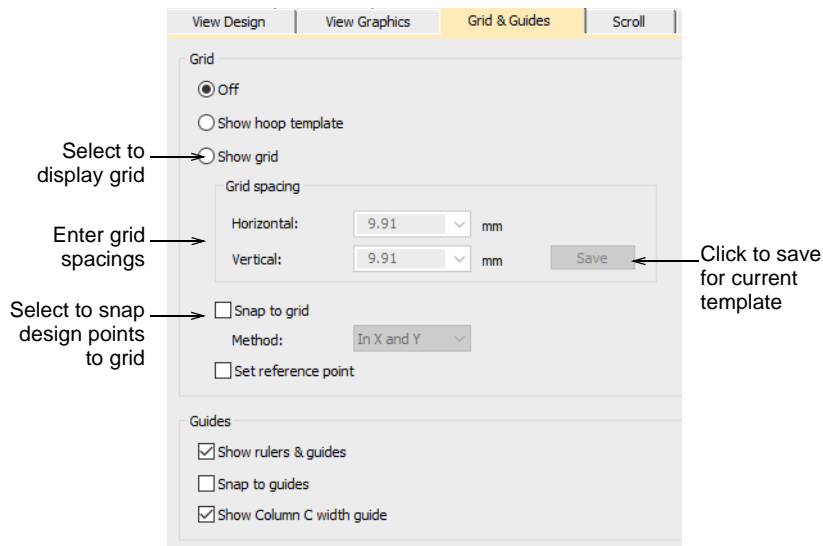
Tip: If you are planning to do more custom font digitizing, it may be worth setting up a template dedicated to the task.

Related topics...

◀ Grid display options

◀ Working with templates

Import & size the backdrop

> Use Standard > Import Graphic to import vector graphic or bitmap image into current design

Click the **Import Graphic** icon or select **File > Import Graphic** and navigate to **Projects > Custom Fonts** within the installed C:\UsersPublic\Public Embroidery\EmbroideryStudio e4 folder. If necessary, select BMP from the **Files of Type** list. Select 'Sample

Font.bmp' and click **Open**. Save the design to your local hard drive as an EMB file.

Choose sample font
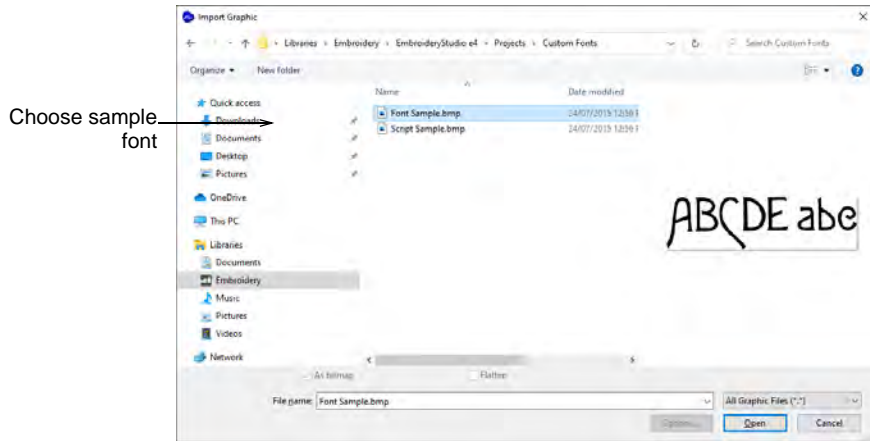
Use the grid to size the backdrop. Remember, we are creating a font for a nominal height of 20 mm. Use **E** as a reference letter to determine the height of the font.

Use letter E as a reference letter when scaling

Set ruler zero point on baseline
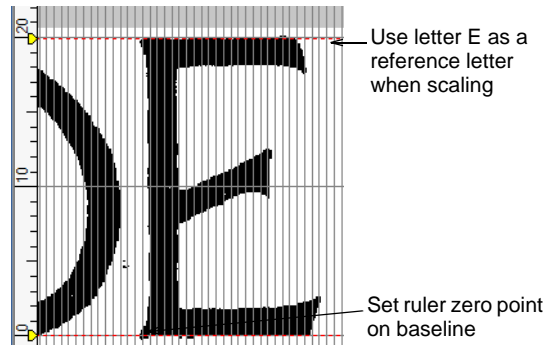
Related topics...

◂ Insert bitmap images
◂ Scaling objects

Digitize the letters

> Use Traditional Digitizing > Column A to create columns of varying width and stitch angle. Right-click for settings.

> Use Fill Stitch Types > Satin to apply satin stitch to new or selected narrow columns and shapes. Right-click for settings.

Use Outline Stitch Types > Satin to create thicker borders or columns of even thickness. Right-click for settings.

In this project we are going to create sample letters using uppercase A, B, C and lowercase a, b and c. Start digitizing letters using **Column A** with Satin stitch. Make sure you create sufficient underlap to bind letter strokes together. No underlay or pull compensation is required. This is added when you create actual lettering with the custom font. Make sure you strokes are digitized in the sequence they will be stitched out. Generally, you don't need to worry about connections between strokes. This is automatically handled when packing the font.

Underlap

Stitch first
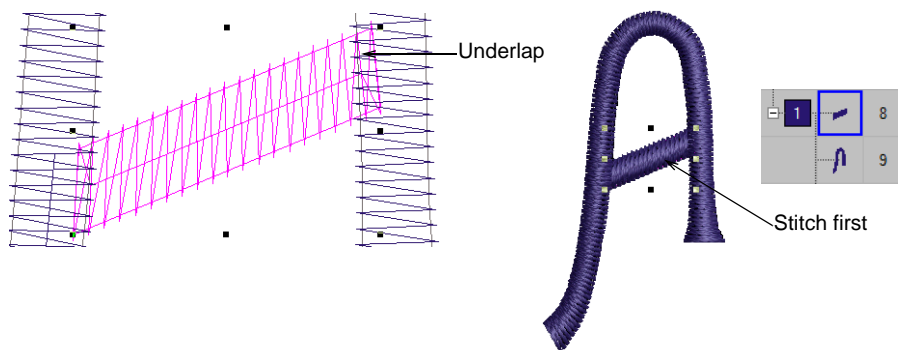
Tip: Use **Vector** tools to draw guidelines for more accurate digitizing.

Draw guides with drawing tools
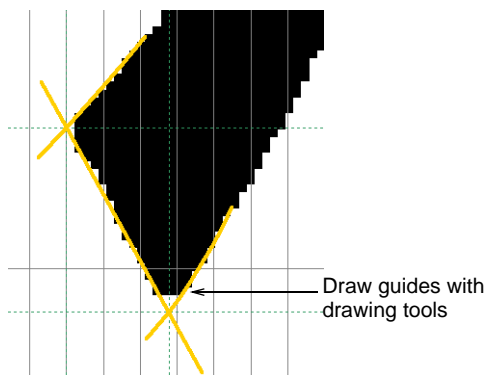
Related topics...

◀ Creating custom fonts

Save custom font & letters

When you save a new letter, you need to create a font for it, give it a name, specify its height, and indicate whether to preserve any machine

functions. You also need to set letter width by marking reference points on-screen.

Create font

Select a letter and choose **Object > Create Letter**. Since this is the first letter to be saved, create and name a custom font. Click **Create** in the **Create Letter** dialog to access the **Create Font** dialog. Enter a font name – e.g. 'My Font'. Set default letter spacing – e.g. 10% – and select **Closest Join** as the default join type.
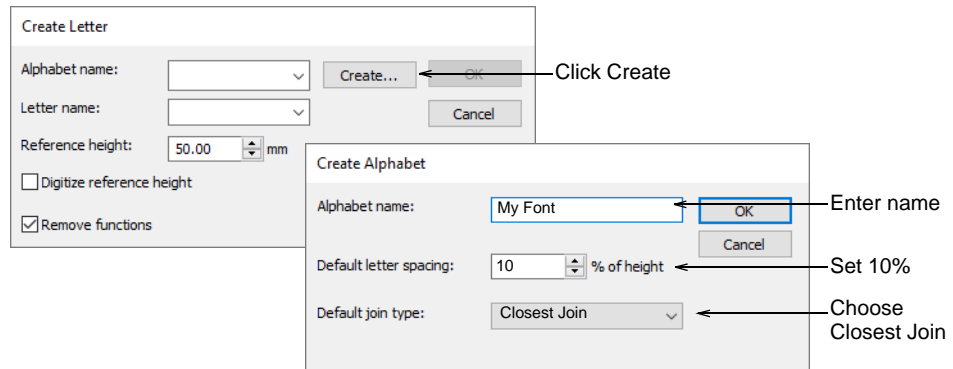
Save custom letter

Back in the **Create Letter** dialog, enter a name for the letter – e.g. 'A'. Set the **Reference Height** to, say, 20mm. Digitize reference points. Imagine there is a box around the letter marking the extents. Reference points are where the box and the baseline meet.
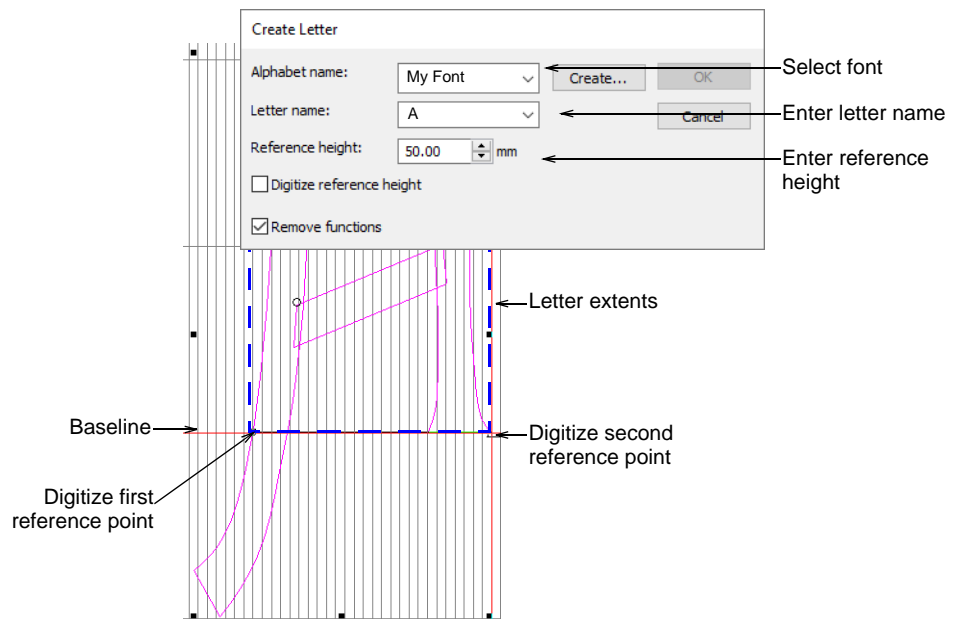
Add more letters to your custom font in the same way.

Test the font

> **A** Use Toolbox > Lettering to add lettering directly on screen.

Once you have finished packing it, test your custom font by creating embroidery lettering via **Object Properties > Lettering**. Choose your custom font from the dropdown menu.
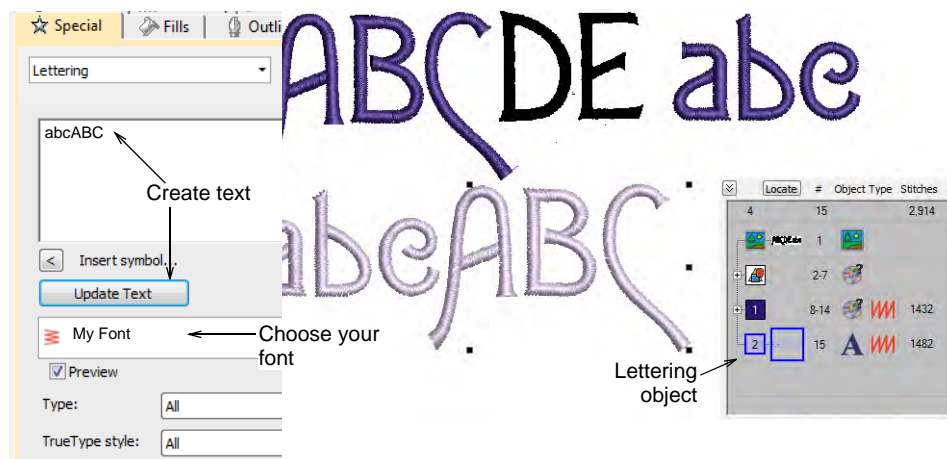
💡
Tip: Compare your design with the sample 'My Font.EMB' included in the **Projects > Custom Fonts** folder.

Creating multicolor fonts

Lettering objects normally consist of one stitch type and one color only. However, the **As Digitized** join method can be used to create special fonts with multiple colors or special effects. We will now use this method

to create a variation of our custom font by adding an embellishment to each letter.
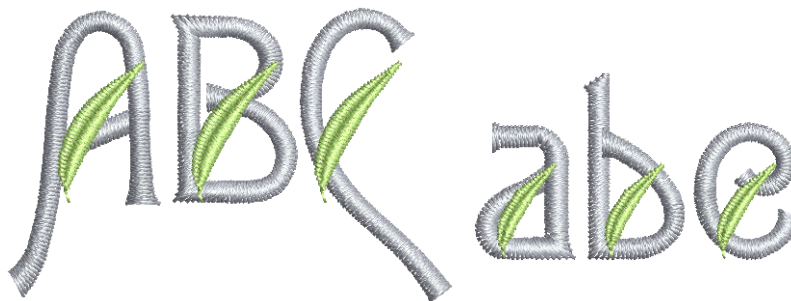
Import the embroidery ornament

Import the embroidery ornament using the **File > Import Embroidery** command. Navigate to **Projects > Custom Fonts** folder. If necessary, select EMB from the **Files of Type** list. Select 'Leaf.Emb'.

Select embroidery ornament
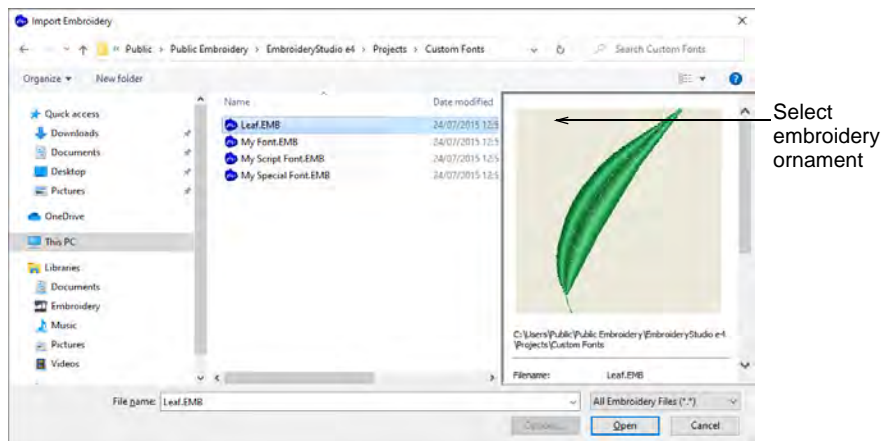
Edit the font

Duplicate the leaf and resize in the **Property Bar**. Making sure the aspect ratio is locked, adjust heights as necessary – in this case, 15mm for uppercase ornaments and 10mm for lowercase. Choose the colors you want to use for leaf and letters – e.g. moon green and powder blue. Place

the ornament as shown. Duplicate by right-clicking and dragging to the next letter. Remove overlaps as required.
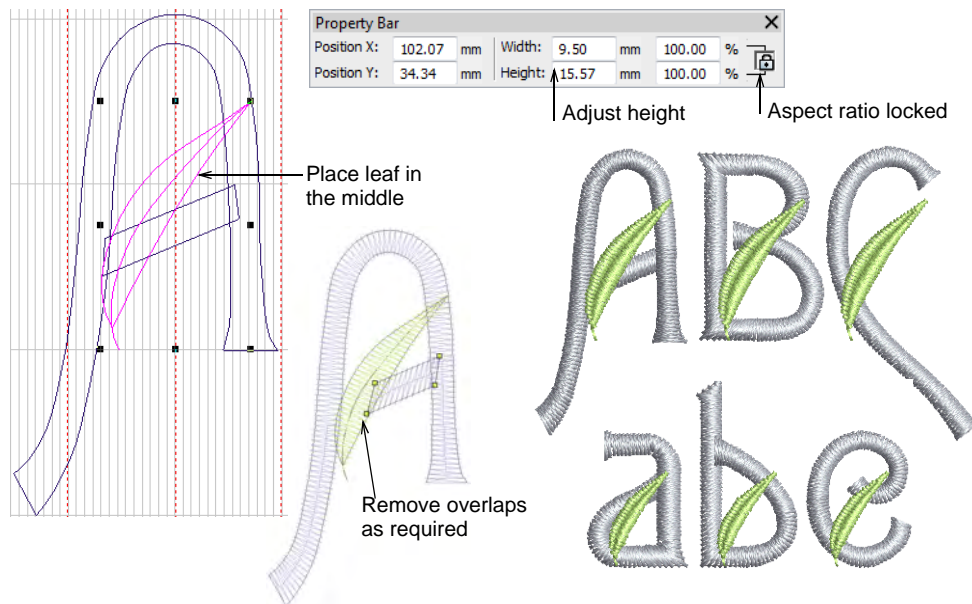
Related topics...

Save custom font & letters

Select all components of the custom letter and save using the **Object > Create Letter** command. Create a new font for your multicolor custom font – e.g. 'My Special Font'. This time choose **As Digitized** as the default join type. Enter letter name and reference height as before, and untick

the **Remove Functions** checkbox. We want to preserve the color changes.
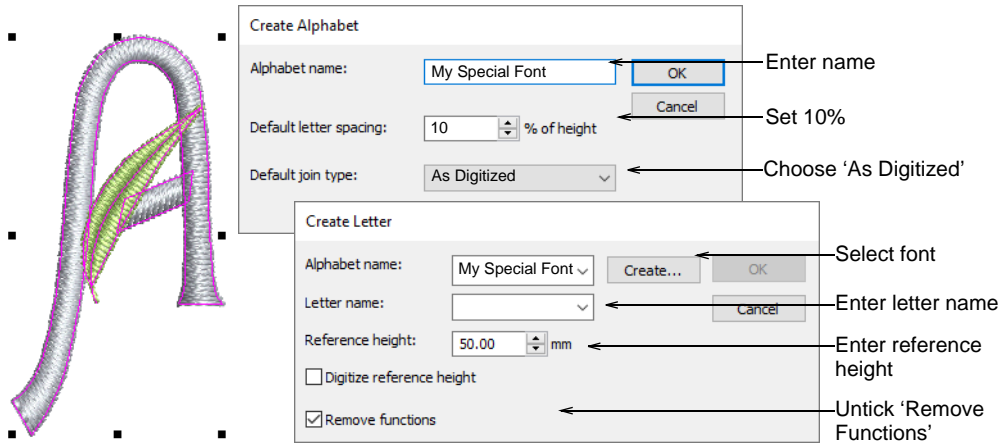
Enter name
Set 10%
Choose 'As Digitized'
Select font
Enter letter name
Enter reference height
Untick 'Remove Functions'

Related topics...

◀ Create custom letters
◀ Save custom letters
◀ Save custom fonts
◀ Manage fonts

Test the font

> **A** Use Toolbox > Lettering to add lettering directly on screen.

Again test your custom font via **Object Properties > Lettering**. Choose your custom font from the dropdown menu.

Create text
Choose your font
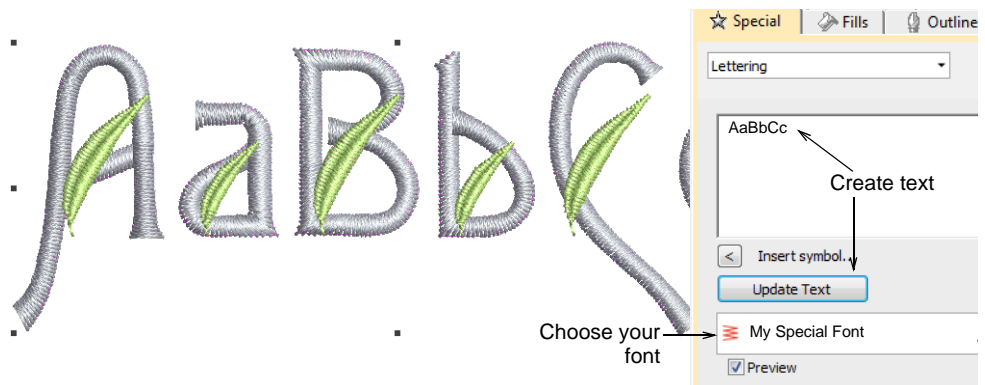
Notice that the lettering object preserves the 'as digitized' color changes within each letter. Use the **Break Apart** command to resequence like-color objects in the **Color-Object List** so they stitch out together.

Like-color objects stitch out together

💡
Tip: Compare your design with the sample 'My Special Font.EMB' included in the **Projects > Custom Fonts** folder.

Related topics...

◄ Create lettering with object properties

Digitizing script fonts

Now we are going to make a script font. Certain digitizing rules apply when creating script fonts, mainly to ensure that the tail of each letter joins seamlessly with the next letter.

Set fabric, background & machine format

Use Standard > New to start a blank design based on the currently selected template. Hold down Shift and click to open New from Template dialog.

Click View > Show Product to toggle product image on/off. Right-click to open the Product Visualizer docker.

Open EmbroideryStudio from the desktop icon or Windows **Start** menu. From the **Home** screen, click **New from Template**. Otherwise, select **File > New from Template** or, holding down the **Shift** key, click **New**. Since we are stitching out on a polo shirt, choose 'Pure Cotton' (the default). Select a suitable machine format – e.g. Tajima – and click **OK**.

Import & size the backdrop

> Use Standard > Import Graphic to import vector graphic or bitmap image into current design

Click the **Import Graphic** icon or select **File > Import Graphic** and navigate to **Projects > Custom Fonts** within the installed C:\UsersPublic\Public Embroidery\EmbroideryStudio e4 folder. Open the 'Sample Script.bmp' and set up the grid. Check the backdrop height. It

should be 25mm which is the font size we are going to make. Save the design as an EMB file.
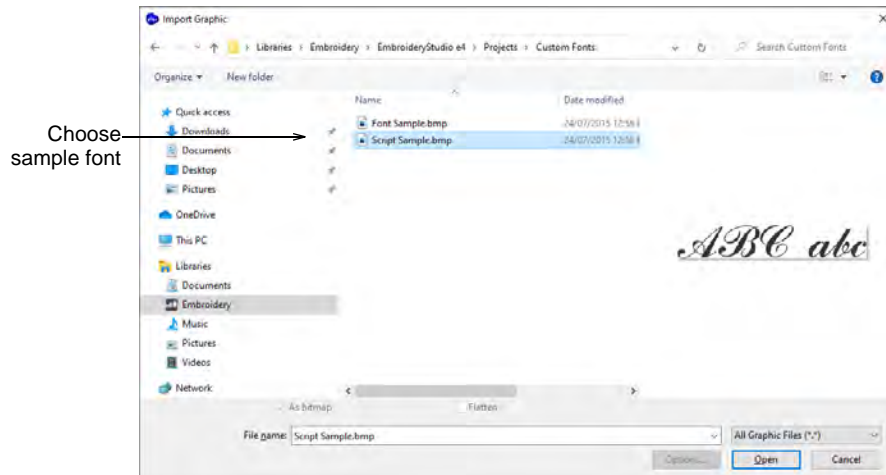
Choose sample font

Digitize the letters

> Use Traditional Digitizing > Column A to create columns of varying width and stitch angle. Right-click for settings.
>
> Use Fill Stitch Types > Satin to apply satin stitch to new or selected narrow columns and shapes. Right-click for settings.
>
> Use Outline Stitch Types > Satin to create thicker borders or columns of even thickness. Right-click for settings.

Digitize letters as you did the custom font. For script fonts, the tail of each letter has to coincide with the initial stroke of the next in order to create a seamless join. Drag a guideline into position to mark the 'join line'.
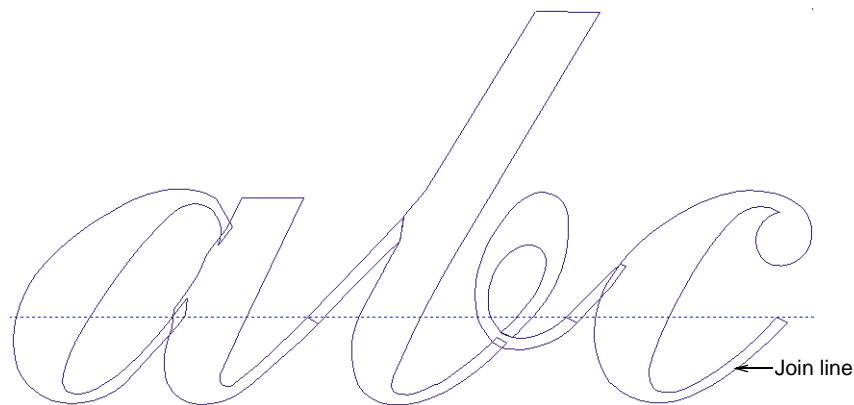
Join line

Drag a guideline to intersect the join line on the inside edge of the stroke. Turn on 'Snap to Guides' in the **Options > Grids & Guides** tab. Make sure reference points of adjacent letters coincide with this point.

Stroke thickness guidelines

Join line

Guideline intersects inside edge
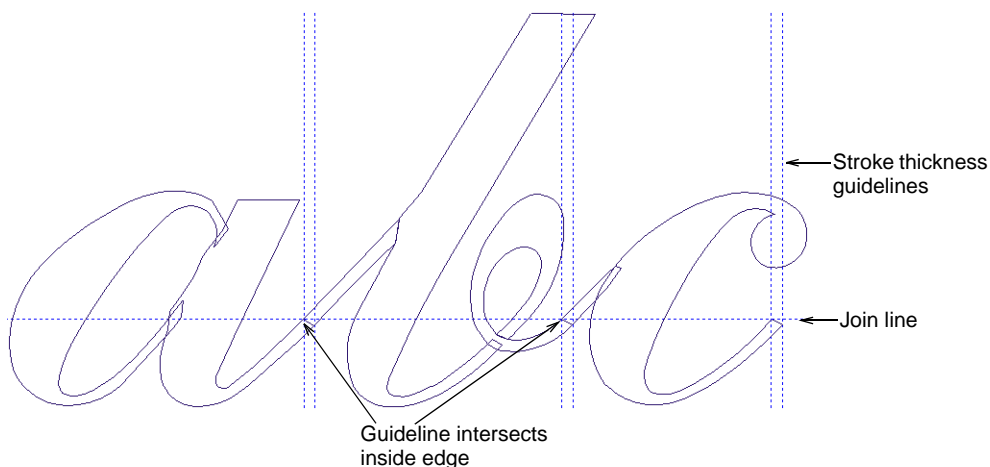
The join edge should be approximately perpendicular to the slope. No need for overlap on narrow strokes as pull compensation will provide sufficient overlap.

Join edge perpendicular to slope
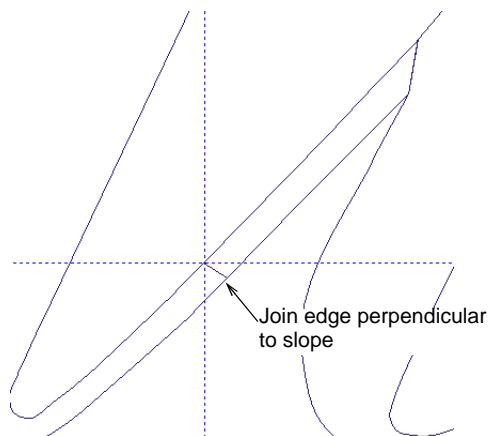
Don't worry about connecting stitches between objects. EmbroideryStudio automatically handles this when you save with the **Closest Join** method.

Save custom font & letters

To define reference points for italic fonts, draw a slope angle guideline and clone it to mark letter extents as shown. The guideline for the reference points always intersects the inside edge of the join as shown.

Slope angle guidelines

Digitized reference points coincide at intersection of join line and inside edge of stroke

Reference points
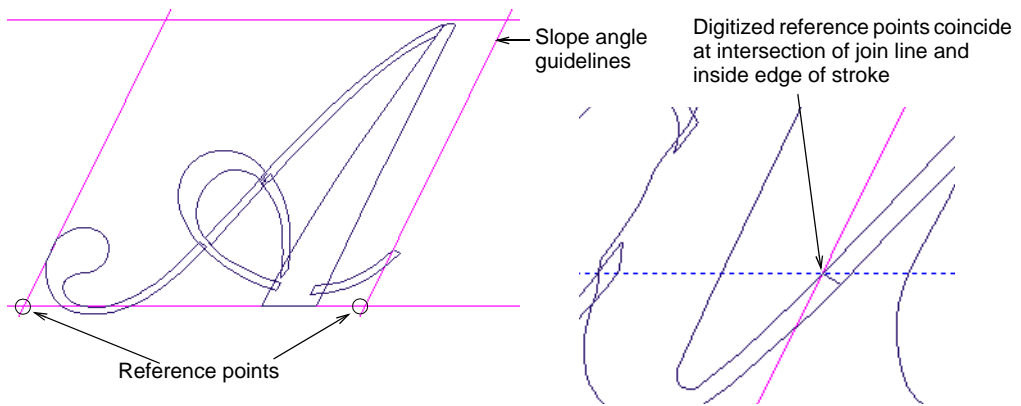
As before, select a letter and apply the **Create Letter** command. Create and name your script font. Set default spacing to 0% and select **Closest Join** as the default join type. Enter the letter name and set reference height to 25 mm. As always, digitize reference points.
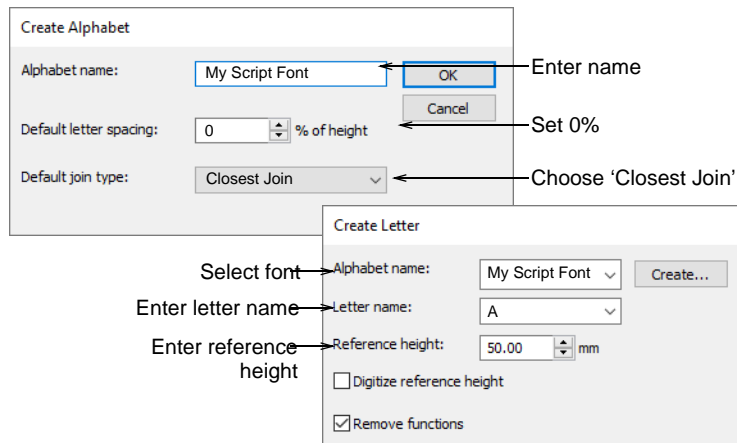
Enter name

Set 0%

Choose 'Closest Join'

Select font

Enter letter name

Enter reference height

Related topics...

◀ Create custom letters
◀ Save custom letters
◀ Save custom fonts
◀ Manage fonts

Test the font

> **A** Use Toolbox > Lettering to add lettering directly on screen.

Again, once you have finished packing the letters, test them by creating some lettering via **Object Properties > Lettering**. Choose your script font from the dropdown menu.

Choose your font
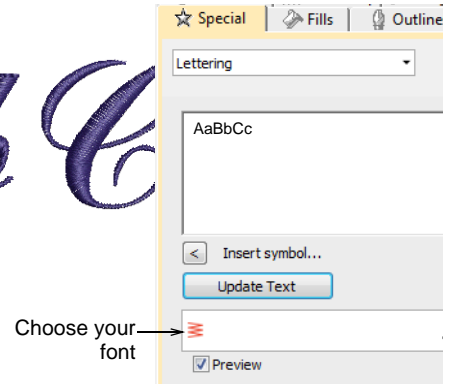
Tip: Compare your design with the sample 'My Script Font.EMB' included in the **Projects > Custom Fonts** folder.

Related topics...

◀ Create lettering with object properties

Chapter 45
Machine, File & Disk Types

This section provides details of the file and disk types supported by EmbroideryStudio. Details are also provided about the conversion of Melco CND, Wilcom INP, and Gunold PCH design formats to and from EMB. The section also provides details of vector and bitmap (raster) formats.

In conjunction with CorelDRAW® Graphics Suite, EmbroideryStudio reads and writes a wide variety of related and sometimes complementary decoration processes or techniques. See also Exporting multiple decoration files.

Note: There are many additional Schiffli file formats to suit specific Schiffli machines. EmbroideryStudio supports the most important of these. See the ES Schiffli User Manual Supplement for details.

Supported machine types

The table shows the machine types supported by EmbroideryStudio. Make sure you first check the recommended connection settings for your particular machine. If you don't have a record of the connection settings required to set up your embroidery machine, a list can be found at the Wilcom Support Center. This provides connection information for all the machines listed in this table. See Hardware Settings for details.

Machine format	Description	Machine files
Tajima		
Tajima	Use this format for main types of Tajima machines.	DST, EMX, T01, TAP
Tajima TBF	Use this format for Tajima needle addressing capable machines. TBF (Tajima Binary Format) file format is a more intelligent machine format which holds needle addressing information. The design needs to be digitized using this machine format for it to run on Tajima machines with a twin-sequin attachment.	TBF
Tajima TMCE-100	Use this format for Chenille-enabled Tajima machines.	DST, T01

Machine format	Description	Machine files
Tajima TMCE-600	Use this format for Chenille-enabled Tajima machines.	DST, T01
Barudan		
Barudan	Use this format for many Barudan machines. It supports up to 9 needles. The Barudan format is suitable for paper tape, FMC disks, and the DSB file format.	DSB, T03, TAP, U??, XXX
Barudan Chenille	Use this format for the older BELM - A3C series of Barudan Chenille Machines with 5 Chenille colors. Newer models use Barudan FDR-II Chenille Combination.	DSB, T03, U??
Barudan Z Series	Use this format for Barudan Z series machines with 10 or more needles.	DSB, T03, U??
Barudan FDR-II Lockstitch	Use this format for BED* series lockstitch machines and is the standard for all new Barudan lockstitch machine models. It supports up to 15 needles and optional sequin attachments.	U??
Barudan FDR-II Chenille Combination	This format is used for newer models of Barudan Chenille machines supporting 6 chenille colors such as the BEDYH and BEDSH. Using this format, you can digitize pure Chenille or even a combination of Chenille and Lockstitch in the one design.	U??
Barudan FDR-II Twin Sequin	This is a Barudan twin sequin machine. The design needs to be digitized using this machine format for it to run on Barudan machine with a twin-sequin attachment.	U??
Barudan FDR-II Twin Sequin Chenille Combination	This is a Barudan twin sequin and Chenille combination machine. The design needs to be digitized using this machine format for it to run on Barudan machine with a twin-sequin and chenille attachment.	U??
Barudan FDR-3	The FDR-3 file supports correct color thread display in its thumbnail in both Design Library and on the Barudan machine to help eliminate costly production errors resulting from incorrect colors. Save actual thread color info in your machine files and view correct color and thread codes (.U03) instead of default software colors.	U??
Barudan FDR-3 Chenille Combination	Use this format for newer models of Barudan Chenille machines supporting embroidery on flat items, embroidery on thick fabric, loop and chain stitches, add-on sequin devices, etc.	U??
Melco		

Machine format	Description	Machine files
Melco	Use this format for main types of Melco machines.	ARX, CSD, DSN, DST, EMD, STX
Melco Chenille	Use this format for Melco-enabled Chenille machines.	STX
SWF		
SWF	Use this format for main types of SWF machines.	DST
SWF Twin Sequin		DST, EBD
ZSK		
ZSK 1	Use this format for ZSK machines that have 7 or fewer needles – generally those older than 1991.	DSZ, T05, TAP
ZSK 2	Use this format for ZSK machines that have more than 7 needles and those characterized by a single-top thread trimmer.	DSZ, T05, TAP
ZSK TC	Use this format for ZSK machines that accept Transport Code Disks (DOS format disks).	Z??
Other		
BERNINA	Use this format for all BERNINA machines.	CSD, DST, ARX, EMD, EXP, GNC, HUS, JEF, PCD, PCM, PCQ, PCS, PEC, PES, SEW, SHV, VIP, VIP3, XXX
Brother / Babylock		PEC, PES
Dahao		DST, DHA, DHB, DHP,
Happy		TAP
Inbro	Use this format for main types of Inbro machines.	INB
Janome	Use this format for all Janome machines.	CSD, DST, EMD, EMX, EXP, HUS, JEF, JEF+, JXP, PCD, PCM, PCQ, PCS, PEC, PES, SEW, VIP, VIP3, XXX
Melco	Use this format for all Melco machines.	ARX, BRO, CND, CSD, EMX, EXP, GNC, HUS, JEF, PCD, PCM, PCQ, PCS, PEC, PES, PMU, PUM, SEW, STX, VIP, VIP3, XXX
Melco Chenille		EXP, STX
Pfaff	Use this format for main types of Pfaff machines.	KSM, T09
Pocket		DPS

Machine format	Description	Machine files
Schiffli	Use this format for Schiffli machines.	DAT, DHT, ESL, ESS, MUD, MST, PAT, SAS, T11, T12, T13, T18, T20, T22, VDT, VEP
Toyota	Use this format for main types of Toyota machines.	10O
Zangs	Use this format for Zangs and Marco brand machines and pre-1988 ZSK machines without trimmers.	DSZ, T04, TAP

Note: If not already a member of the WSC, you will need to register as a licensed user of Wilcom software. See www.wilcom.com/support for details.

Graphics and multi-decoration file formats

Artwork can be imported into EmbroideryStudio in both vector and bitmap (raster) formats. See Digitizing with Bitmaps for details.

Supported vector file formats

EmbroideryStudio supports the following vector graphic formats:

Extension	Format	Read	Write
AI	Adobe Illustrator	●	●
CDR	CorelDRAW	●	●
CDT	CorelDRAW Template	●	●
CGM	Computer Graphics Metafile	●	●
CLK	Corel R.A.V.E.	●	●
CMX	Corel Presentation Exchange 5.0	●	●
CSL	Corel Symbol Library	●	●
DES	Corel Designer	●	●
DWG	AutoCAD	●	●
DXF	AutoCAD	●	●
EMF	Enhanced Metafile	●	●
EPS	Encapsulated Postscript	●	●
FMV	Frame Vector Metafile	●	●
PLT	HPGL Plotter File	●	●
PS	Postscript	●	
SVG	Scalable Vector Graphics	●	●

Extension	Format	Read	Write
WMF	Windows Metafile	●	●

Supported bitmap file formats

EmbroideryStudio supports the following bitmap image formats:

Extension	Format	Read	Write
BMP	Windows Bitmap	●	●
GEM	GEM file	●	●
JPEG	JPEG Group	●	●
JPG	JPEG File Interchange	●	●
PAT	Pattern File	●	●
PCT	Macintosh PICT	●	●
PCX	PC Paintbrush	●	●
PNG	Portable Network Graphics	●	●
SVGZ	Compressed SVG	●	●
TIFF	Tagged Image Format	●	●
WMF	Windows Metafile	●	●
WPG	Corel WordPerfect Graphic	●	●

Note: For a full description of image file formats supported by CorelDRAW® Graphics Suite, refer to the CorelDRAW® Graphics Suite electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **Help** menu. See Digitizing with Bitmaps for details.

Embroidery file formats

There are two types of embroidery file format:

File type	Description
Design	Design files usually contain digitized shapes and lines, selected stitch types and stitch values and effects.
Machine	Machine files generally contain stitches and machine functions and are only suited to specific embroidery machines.

Wilcom file formats

EmbroideryStudio uses its own native EMB embroidery file format which combines the advantages of design files and machine files. Outlines, stitches, thread colors, and other data are stored together. Outlines mean the file can be scaled and manipulated on an object basis while the stitch data preserves manual stitch-by-stitch edits and touchups. Features of most third-party formats are supported. Variants and precursors of the EMB file format are also shown in the table below.

Extension		Format	Read	Write
EMB		EmbroideryStudio design file (up to & including ES e4.5)	●	●
EMC		Clipart files	●	●
EMX	^	Wilcom Cross Stitch	●	
ESD	†	Wilcom DOS format	●	
ESL		Wilcom ESL	●	●
ESS		Wilcom ESS (Schiffli)	●	●
INP	‡	Wilcom condensed format	●	
Legacy formats *				
T01		Tajima (Wilcom DST format)	●	●
T03		Barudan (Wilcom DSB format)	●	●
T04		Zangs	●	●
T05		ZSK (Wilcom DSZ format)	●	●
T09		Pfaff (Wilcom KSM format)	●	●
T10		Wilcom Plauen	●	●
T15		Wilcom Saurer	●	●

Tips for use...

◀ ^ Can only be written by ES Cross Stitch application.

◀ † ESD is the native file format of DOS ES, the precursor to the current EmbroideryStudio. It is actually a machine file format with stitch blocks, stitch types and parameters, and an icon. It has few of the advantages of the current EMB file format.

◀ ‡ Wilcom INP is the native file format of Wilcom Computer Embroidery Design software. It is a design file format but it contains no stitch data. Wilcom INP designs can be directly converted to EMB files although EmbroideryStudio interprets some of the stitch types differently. See Wilcom INP format for details.

Supported design file formats

EmbroideryStudio supports the following design file (condensed) formats:

Extension	Format	Read	Write
ART	artista V4.0 design files	●	
ART42	Explorations project file	●	
ART?0	BERNINA Embroidery Software file	●	
CND	Melco condensed file	●	●
GNC	Great Notions	●	
JAN	Janome Embroidery Software file	●	
PCH	Gunold APS design format	●	

Note: See below for conversion details when reading these files into EMB format or writing to CND format. See Melco CND format and Gunold PCH format.

Design template formats

EmbroideryStudio supports the following design template formats:

Extension	Format	Read	Write
EMT	Wilcom ES templates	●	●
AMT	artista V4.0 template	●	
AMT42	Explorations template	●	
JMT	Janome Embroidery Software template	●	

Supported machine file formats

EmbroideryStudio supports the following machine file (expanded) formats:

Extension	Format	Read	Write
10O	Toyota	●	●

† includes needle addressing data ¥ Two options – ZSK1 and ZSK2 (see note) § TAP and MON files are written together – TAP is the machine file, MON the header file.£ Used with Transport Code Disks (see note)

Extension		Format	Read	Write
ARX		artista (cross stitch)	●	
BRO		Bits & Volts	●	
CSD		Singer / Poem / Huskygram	●	●
DAT		Hiraoka DAT	●	●
DSB	†	Barudan (Tajima machine format)	●	●
DSN		Nova	●	
DST		Tajima	●	●
DSZ	¥	ZSK (Tajima machine format)	●	●
EBD		SWF	●	●
EMD		Elna	●	●
EXP		Melco / BERNINA USB Stick	●	●
HUS		Husqvarna / Viking / Pfaff	●	●
INB		Inbro	●	●
JEF		Janome / Elna / Kenmore	●	●
JPX		Janome / Elna (cross stitch)	●	●
KSM		Pfaff	●	●
MJD		Time & Space	●	●
MST		Laesser	●	●
PCD		Pfaff	●	●
PCM		Pfaff	●	●
PCQ		Pfaff	●	●
PCS		Pfaff	●	●
PEC		Brother / Babylock / Deco	●	●
PES		Brother / Babylock / Deco	●	●
PMU		Proel, ProWin (Proel TSI)	●	
PUM		Proel, ProFlex (Proel TSI)	●	
SAS		Saurer SLC	●	●
SEW		Janome / Elna / Kenmore	●	●
SHV		Husqvarna / Viking / Pfaff	●	●
STC		Gunold APS	●	
STX		Datastitch	●	
TAP	§	Happy	●	●

† includes needle addressing data ¥ Two options – ZSK1 and ZSK2 (see note) § TAP and MON files are written together – TAP is the machine file, MON the header file.£ Used with Transport Code Disks (see note)

Extension		Format	Read	Write
TBF		Tajima	●	●
U??	†	Barudan	●	●
VEP		Hiraoka		●
VP3		Husqvarna / Viking / Pfaff	●	●
XXX	†	Singer	●	●
Z??	£	ZSK TC	●	●

† includes needle addressing data ¥ Two options – ZSK1 and ZSK2 (see note) § TAP and MON files are written together – TAP is the machine file, MON the header file.£ Used with Transport Code Disks (see note)

Supported bling file formats

EmbroideryStudio supports the following rhinestone file formats:

Extension	Format	Read	Write
YNG	Yongnam GemMaster v2.9	●	●

Note: The YNG file format can be read by EmbroideryStudio and sent directly to CAMS machine. See Send bling to CAMS machine for details.

Melco CND format

Melco Condensed (CND) is the native file format of the Melco embroidery digitizing software. CND files store only digitized outlines and stitch values. See also Reading Melco CND design files.

Conversion of Melco CND format to Wilcom EMB

When you open CND designs in EmbroideryStudio, outlines are scaled and stitches recalculated to preserve density. EmbroideryStudio recognizes all Melco machine functions and stitch types, including Partition Lines and Complex Fill, and automatically converts them to EMB format. This table details how Melco features are converted.

Melco CND	EMB	Notes
Stitch Types		
Column Stitches	Column A, Satin stitch	

Melco CND	EMB	Notes
Simple Fill	Complex Fill, Tatami	The stitch angle is determined by the longest stitchline.
Complex Fill	Complex Fill	Melco EDS Complex Fill are recognized and converted to EmbroideryStudio Complex Fill.
Column Fill	Column A, Tatami fill	
Walk	Run	
Bean Stitch	Triple Run	
Singleline Column Input, Centerline	Column C	
Singleline Column Input, Left Line / Right Line	Column C Side 1 / Side 2	
Partition Lines	Tatami partition lines	
Underlays		
Complex Underlay	Tatami underlay in Complex Fill object	
Edge Walk	Edge Run	
Center Walk	Center Run	Column stitches only
Narrow Column	Zigzag	
Machine functions		
Needle Up	Jump, Begin Jump	
Reset Stitch	End Jump	
Manual Lock Stitch		Added in Tie Off
Automatic Lock Stitch	Tie In, Tie Off	If Automatic Lock Stitch is set for every Color Change, and at the start and end of the design, tie off and tie in stitches are inserted in the EMB design.
Chain	Chain	
Moss	Moss	
Needle Height	Needle Height	
Slow	Slow	
Fast	Fast	
Borer In/Out	Borer In/Out	
Sequin On/Off	Sequin On/Off	

Conversion of Wilcom EMB format to Melco CND

You can save files to Melco CND format from EmbroideryStudio. Designs originally created in EmbroideryStudio generally give the best results. Other file types may not have all the data necessary for successful conversion. This table details how EmbroideryStudio stitch types and effects are converted to CND format.

💡
Tip: When you convert to CND, many EmbroideryStudio effects will be lost. If it is important to preserve the effects, save in Melco EXP machine format instead. Alternatively, turn off all effects before saving to CND format. See also Best EmbroideryStudio input methods for Melco CND output.

EMB	Melco CND	Notes
Stitch types		
Manual	Walk	
Run	Walk	
Triple Run	Bean Stitch	Only if the design is an original Wilcom EMB design
Triple Run (run count > 3)	Bean Stitch	Reverts to Triple Run (run count = 3).
Satin stitch	Column Fill	
Tatami - standard	Fill Stitch	Use Complex Fill to make sure that the stitch lines are parallel.
Tatami - with random factor applied	Walk	
Tatami - with sharply turning stitches	Walk or Complex Fill	Changes to Walk if Superstar compatible, otherwise Complex Fill with a fixed angle.
Tatami - with slightly turning stitches	Fill Stitch, several sections	The shape is divided into several sections, filled with parallel Fill Stitch. There may be small gaps between these sections.
Zigzag	Walk	Density is not preserved when the design is scaled.
E Stitch (Inputs A, B & C)	Column Stitches	
E Stitch (Complex Fill)	Walk	
Stitch settings		
Run length	Set length	CND Walk stitch length is the same as EMB Run stitch length.

EMB	Melco CND	Notes
Tatami length and spacing	Fill or Complex Fill settings	The length and density of Fill Stitches will be the same as EMB Tatami length and spacing.
Underlays		
Center Run		
Edge Run	Walk	Uses CND Auto Underlay.
Zigzag		
Double Zigzag		
Zigzag (for objects with Satin cover only)	Narrow Column	
Effects		
Accordion Spacing	Not preserved	The effect is lost.
Motif Fill	Not preserved	The effect is lost.
Contour Stitch	Not preserved	The effect is lost.
Flexi Split	Not preserved	The effect is lost.
Auto Split	Not preserved	The effect is lost.
Jagged Edge	Not preserved	The effect is lost.
Trapunto style	Not preserved	The effect is lost.
Program Split	Not preserved	The effect is lost.
User Defined Split	Not preserved	The effect is lost.
Photo Flash	Walk	Density is not preserved when the design is scaled.
Quality features		
Pull Compensation	Not preserved	The original shape is preserved. The effect is lost.
Fractional Spacing	Not preserved	In EmbroideryStudio, turn on Fractional Spacing and set it to 0.5mm. Although there is no direct equivalent in CND, effectively it uses a fixed fractional spacing with a value equal to 0.5.
Stitch Shortening	Not preserved	Outlines are more accurately recognized if Stitch Shortening is turned off.
Auto Spacing	Not preserved	Auto Spacing is converted to fixed spacing, based on the average space value. It is best to turn off Auto Spacing when digitizing a design for CND.

EMB	Melco CND	Notes
Smart Corners	Not preserved	Avoid digitizing pointed ends.
Machine functions		
Color Change / Stop functions	Color Change / Stop	Functions inserted on stitches inside objects are not converted.
Empty	Walk	Two MK1 points are repeated at the current position.
Jump	Needle Up	
Needle Up	Needle Up	
Tie In (Lettering)	Walk	
Tie Off	Walk	
End Jump	Reset Stitch	
Begin Jump	Needle Up	
Needle Height	Needle Height	
Moss	Moss	
Chain	Chain	
Trim	Trim	The ability to output without Trim function does not apply to this version.

Best EmbroideryStudio input methods for Melco CND output

This table details which input methods give the best results when digitizing a design for Melco EDS-III CND output.

Input method	Compatibility	Notes
Column A, B, C	OK	Use with Satin only.
Complex Fill	OK	Only use with Tatami fill. Do not digitize pointed ends as they will be 'squared off' during conversion. Cut off pointed ends with a straight line, parallel to the stitch angle, to avoid conversion problems.
Complex Turning	Not recommended	Complex Turning objects are separated into a single object per segment. Conversions may produce undesired results.
Circle	OK	
Ring	Not recommended	The exit point will be on the wrong side of the shape.
Star	Not recommended	The stitches are output as Walk.

Input method	Compatibility	Notes
End - Keep Last Stitch	OK	The exit point should always be on the opposite side to the entry point.
End - Omit Last Stitch	Do not use	Start digitizing the next shape on the opposite side instead.

Gunold PCH format

PCH 'Punch and Stitch' is the native file format of the Gunold Embroidery Design software. Gunold PCH designs can be directly converted to EMB files although EmbroideryStudio interprets some of the stitch types differently. This table details how Gunold PCH features are converted to EMB format.

Gunold PCH	EMB
Outline types	
Parallel	Column A
Serial	Column C
Block Outline	Complex Fill
Run	Run
Incline	Run
Manual	Manual
Stitch types	
Satin	Satin
Ceding	Tatami
Random Ceding	Tatami with random factor applied
Step	Tatami
Piping	Contour
OBI	Tatami
Zigzag	Zigzag
Cross	not supported
Photo	not supported
Satin underlays	
none	none
Single	Center Run
Edge	Edge Run
Zigzag	Zigzag

Gunold PCH	EMB
Cross	Zigzag
Edge Zigzag	Edge Run + Zigzag
Edge Cross	Edge Run + Zigzag
Netting	Double Zigzag
Double Zigzag	Double Zigzag
Triple Zigzag	Double Zigzag
Step / block fill levels	
Complex Fill	Holes in Complex Fill
Form Fill	User Defined Split in Complex Fill
Vector Fill	User Defined Split in Complex Fill
Block Fill	Program Split in Complex Fill
Miscellaneous	
Branches	Grouped object (uses lettering sequence algorithm)
Random - side 1 / side 2	Jagged Edge effect
Pitch	Stitch Spacing
Length	Stitch length
Stitch angle	Complex Fill stitch angle
U turn	Backtrack
Compensation	Pull Compensation
Corner mode	Smart Corners
Short / Long	Stitch Shortening
Square backstitch Satin Step	Straight stitch Trapunto
Styles	Motifs
Patterns	none

Wilcom INP format

Wilcom INP is the native file format of Wilcom Computer Embroidery Design software. Wilcom INP designs can be directly converted to EMB files although EmbroideryStudio interprets some of the stitch types

differently. This table details how Wilcom INP features are converted to EMB format.

Wilcom INP	EMB	Notes
Auto Spacing	Auto Spacing	Values are different. Can be changed before stitching.
Backtrack/Repeat section/marked	Separate objects are added.	Functions are supported correctly.
Backup Lock	Satin tie off	
Borderline Tatami	Borderline Tatami	
Borer In/Out	Borer In/Out	
CED Block lettering	Block2 font	Font can be changed after conversion.
CED Block, Jump out	Block2 font	Manual edits and trimming
Circle	Circle	
ES Cross Stitch	Paths imported as Run objects only	Change the stitch type to Motif Run to generate cross stitch.
Delete Stitch	Manual only, ignored for other stitch types	Can be edited
Family of Curves Split	Satin, single curve as split line	Noticeably different from Satin. You can copy imported curve to get multiple curves. Alternating number is ignored.
Geflecht	Standard Tatami	Can be edited
Matching Tatami	Non-matching Tatami	Complex Fill will have matching Tatami.
Motifs	Patches	Normal objects
Needle In/Out	End/Begin Jump	
Other Multihead Machine Functions	Stop (with info label)	For example, Insert Appliqué is converted to Stop.
Program Stitch	Manual stitch	
Ring	Ring	
Scattered Tatami	Tatami with random factor applied	Will look slightly different
Schiffli Functions	Stepp/Blatt only, others are ignored	
Slow/Fast	Slow/Fast	
Split Alternate	Tatami	

Wilcom INP	EMB	Notes
Split Stitch	Standard Tatami	Looks different but can be edited
Tajima style Lock	Tajima tie off	OK most of the time
Tourenblat	E Stitch	Looks different, so that it is easy to locate and edit
Trim/Tie In/Tie Off	Connector properties	
Turn fill (spacing measured along shape boundary)	Turning fill (generally fewer stitches)	Will look different but can be re-digitized in smaller sections
Underlays – slant	Zigzag underlay	Can be added manually
Underlays, 3 or 4 layers	Two underlays only	Can be edited

Supported embroidery disk formats

You can write designs to disks which are formatted for a specific embroidery machine. The disk can then be read through the machine's Floppy Disk Reader. The following formats are supported:

Format	Density	Read	Write
Barudan 2HD	DS/HD	●	●
Barudan S-FMC	DS/HD	●	●
DOS	DS/HD	●	●
Happy	DS/HD	●	●
Tajima	DS/HD	●	●
Toyota	DS/HD	●	●
ZSK TC	DS/HD	●	●

PART XI
APPLIED DECORATION

EmbroideryStudio provides support for various multi-decoration techniques, including print.

Mixed decoration

Virtual embroidery can be printed on garments as is or in combination with graphic design or even embroidery. It may have other uses such as advertising, posters, murals, billboards, etc. The **Cording** function allows you to designate run stitching which is to form the cording. The **Beading** feature provides support for beading devices. See Mixed Decoration for details.

Sequin embroidery

This section describes how to set up sequin palettes for sequin designs and how to visualize sequin designs. It explains how to create single-sequin as well as multi-sequin runs. It also covers sequin fixings as well as reshaping and editing. See Sequin Embroidery for details.

Advanced sequins

This section describes how create sequin fills, both single- and multi-sequin, with and without borders. It discusses fancy sequin fills as well as flip sequins. It also covers editing sequin fills and converting objects to sequins. It deals with single sequin digitizing and custom sequins as well as outputting sequin designs. See Advanced Sequins for details.

Bling digitizing

This section describes how to digitize with rhinestones. It covers setting up bling palettes and describes creating bling runs and fills. It also deals with modifying bling objects and bling text. See Bling Digitizing for details.

Appliqué embroidery

This section describes different techniques for creating appliqué including how to convert vector graphics to appliqué, how to digitize appliqué objects from scratch, as well as how to convert Complex Turning objects to appliqué. It also covers creating partial cover appliqué for overlapping objects as well as how to break up multiple appliqué and recombine components for efficient stitchout. See Appliqué Embroidery for details.

Multi-decoration output

Designs digitized in EmbroideryStudio and CorelDRAW® can be output in a variety of ways, both via the **Wilcom Workspace** and **CorelDRAW Graphics**. This section covers printing designs in CorelDRAW Graphics as well as exporting designs as vectors. It also covers the **Export Multi-Decoration Files** capability as well as outputting appliqué and bling to machines. See Multi-Decoration Output for details.

Chapter 46
Mixed Decoration

Once digitized in EmbroideryStudio, you can output designs both as actual embroidery and 'virtual embroidery'. The software provides high resolution digital print **TrueView** for this medium.

Virtual embroidery can be printed on garments as is or in combination with graphic design or even embroidery. It may have other uses such as advertising, posters, murals, billboards, etc. All types of substrates can be used. Production processes include:

◄ Screen printing
◄ Dye sublimation
◄ Direct-to-garment printing (DTG)
◄ Heat transfer
◄ Wide format printing
◄ Vinyl cut (printed)

EmbroideryStudio provides support for many other decoration types. Some machines provide devices for cording or beading. The **Cording**

function allows you to designate run stitching which is to form the cording. The **Borers** tool is available to turn needle penetrations into boring holes, regardless of selected stitch type. Holes are cut in the fabric, producing an effect similar to lace.

Virtual embroidery

EmbroideryStudio provides high resolution **TrueView** for 'virtual embroidery'. This is a technique that can provide commercial flexibility for many different processes.

Image resolution depends on a specified DPI (Dots Per Inch). Maximum DPI for printers varies between 600 and 2880 DPI. For garments, good results can be obtained within a range of 200 to 400 DPI. Higher resolutions are available for printing on paper, photo paper, canvas, fabrics, glass, mugs, plaques, wood, metal, etc.

Screen images are typically captured in PNG format because this supports transparency. Most DTG printers and other printing techniques use RIP (Raster Image Processor) software which can use any raster image that supports transparency, including PNG format. Output files can be used as is or as input to any graphic or photo editing software.

Output embroidery as virtual decoration

Click View > TrueView to toggle between stitch view and TrueView™. Right-click for settings.

Click View > Show Product to toggle product image on/off. Right-click to open the Product Visualizer docker.

If all you want to do is output the embroidery portion of a design as a high resolution virtual decoration, the process is simple.

To output virtual embroidery decoration

◀ Open your EMB design file.

◀ Optionally, turn on TrueView™ to visualize the embroidery component. The image produced is always in TrueView™ even if the **TrueView** setting is off. The **Options > View Design** settings will affect the final appearance of the virtual embroidery. You may want to adjust these.

◀ Optionally, toggle on the product image to visualize the resulting virtual decoration on the target garment. Make any size adjustments needed.

◀ Select **File > Capture Virtual Decoration Bitmap**.

Select a suitable bitmap resolution

Note physical dimensions of print-ready file
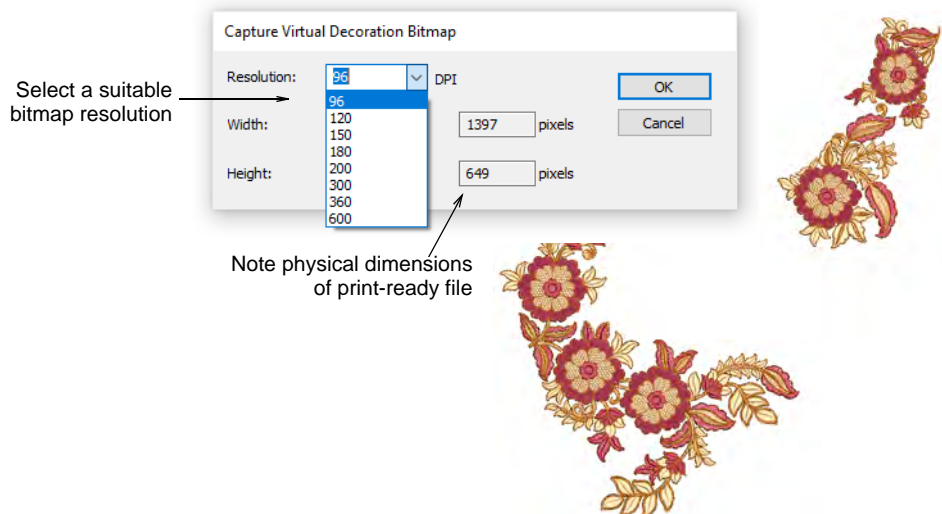
◀ Select a suitable resolution – e.g. 300 DPI. This setting determines the detail at which the TrueView™ image will be rendered. You can override presets by keying in a higher resolution as required – e.g. 1200 DPI. Width and height settings update automatically.

◀ Click **OK** to save a PNG file of the design. Only the embroidery portion of the design is output to PNG file. This file can now be printed to garment or other media.

Note: For the purposes of virtual decoration, sequins and bling can be included in the output.

Related topics...

◀ Viewing design components
◀ View options
◀ Fabric & product backgrounds

Output combined virtual embroidery & print

Click View > TrueView to toggle between stitch view and TrueView™. Right-click for settings.

Click View > Show Product to toggle product image on/off. Right-click to open the Product Visualizer docker.

Use Mode > CorelDRAW Graphics to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.

In Graphics mode, click Mode > Show Embroidery to show or hide embroidery components.

To produce a combined embroidery decoration plus graphics, use the following procedure. Don't use the **Export Multi-Decoration Files**

command for this scenario as it doesn't support virtual embroidery as print.

To create combined virtual embroidery and print decoration

◀ Open your EMB design file.

◀ Optionally, turn on TrueView™ to visualize the embroidery component. Use **Options > View Design** to make any adjustments to TrueView™ settings.

◀ Toggle on any graphic elements – bitmap or vector.

◀ Optionally, toggle on the product image to visualize the resulting virtual decoration on the target garment. Make any size adjustments needed.

To output the virtual decoration

◀ Switch to **CorelDRAW Graphics**.

◄ In **Graphics** mode, click **Show Embroidery** to toggle on the embroidery component.

Select a suitable bitmap resolution
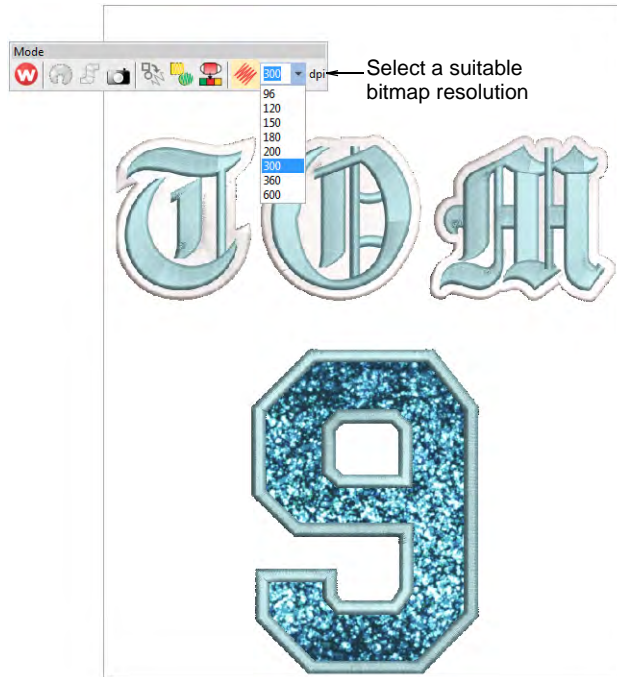
◄ Select a bitmap resolution – e.g. 300 DPI – from the **Mode** toolbar. You can override presets by keying in a higher resolution as required – e.g. 1200 DPI. Width and height settings update automatically.

💡
Tip: This setting determines the detail at which the TrueView™ image will be rendered. Maximum DPI for printers can vary between 600 and 2880 DPI. For general purposes such as printing on T shirts, good results can be obtained within a range of 200 to 400 DPI. Higher resolutions may be necessary for other substrates or media.

◄ Select **File > Export > PNG** to export a high resolution file for printing or similar.

Select PNG file format
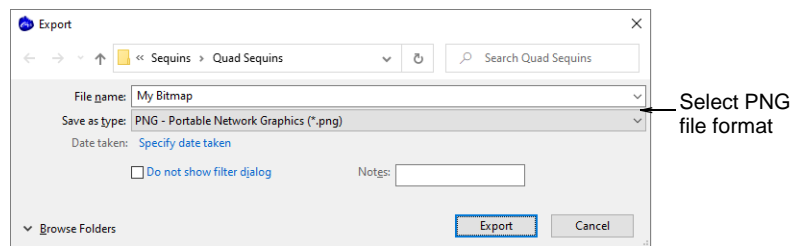
◀ Click **Export**. The **Export to PNG** dialog opens.

Adjust transparency
and other settings
as required

Set output DPI
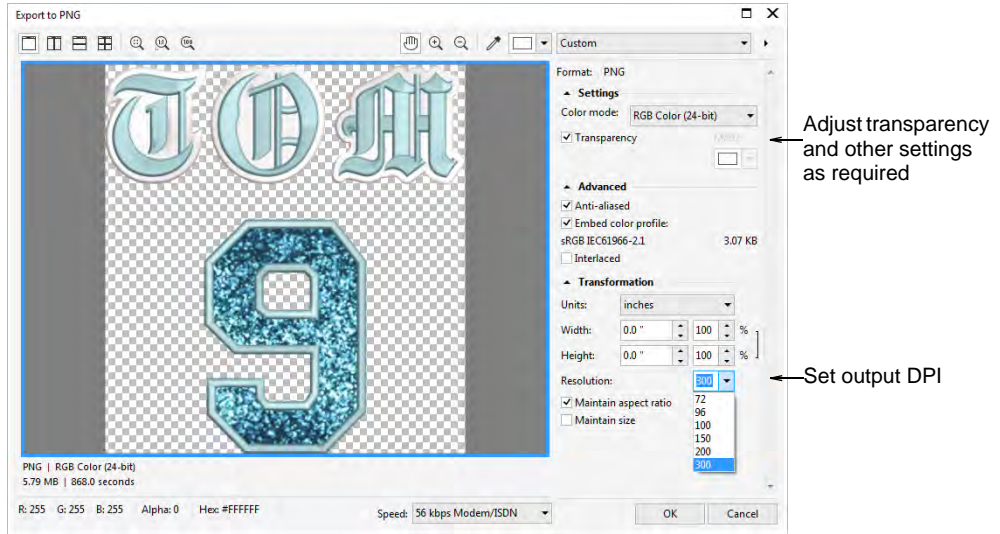
◀ Adjust transparency, anti-aliasing, and DPI settings as required. The DPI setting in this dialog does not affect the DPI resolution of the TrueView™ rendering. It only affects the DPI of the actual output file. Normally you would want to set the TrueView™ rendering and output resolution to be the same value. You can override presets by keying in a higher resolution as required – e.g. 1200 DPI.

◀ Click **OK** to export.

Related topics...
◀ Viewing design components
◀ View options
◀ Fabric & product backgrounds

Output combined virtual & actual embroidery

	Click View > TrueView to toggle between stitch view and TrueView™. Right-click for settings.
	Use Standard > Import Graphic to import artwork into current design as a backdrop for manual or automatic digitizing.
	Use View > Show Bitmaps to toggle bitmap images on or off. Right-click for settings.
	Use View > Auto Start & End to toggle the Auto Start & End function on/off according to the current settings. Right-click to adjust settings.

Combining actual and virtual embroidery offers interesting possibilities. This technique can be used artistically or to add texture and depth to a printed design. It may also be used to lower costs for large production runs while maintaining the appearance of actual embroidery.

Typically, you will create a virtual embroidery print of an entire design and then overlay real embroidery on some parts of it. Alternatively, you may add embroidery elements such as lettering or team names over a printed design. It is even possible to embroider the whole design in white thread and print virtual embroidery over the top. To produce a design as real embroidery plus virtual embroidery, you have two options – via Wilcom Workspace or via CorelDRAW Graphics.

To create combined actual embroidery and print decoration

◄ Create a virtual decoration of your embroidery design. See previous.

◀ Import the PNG file into a new blank design via **File > Import Graphic**.

◀ Add the actual embroidery portion of the design. This may be a portion of the original design. Or it may be a new component such as lettering or even **Team Names**.

◀ Right-click **Auto Start & End**.

Set start and
end point
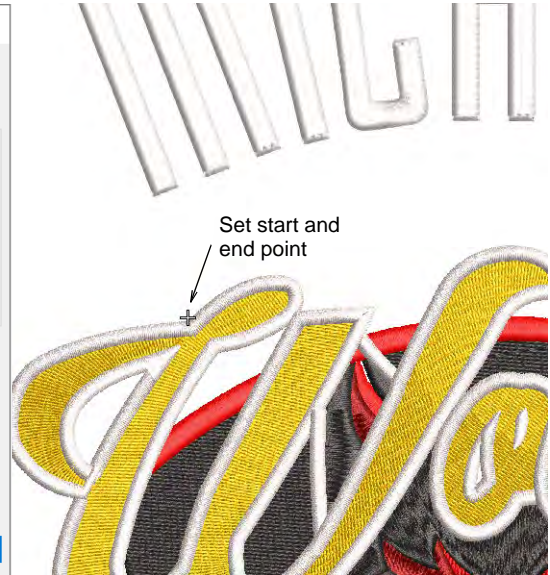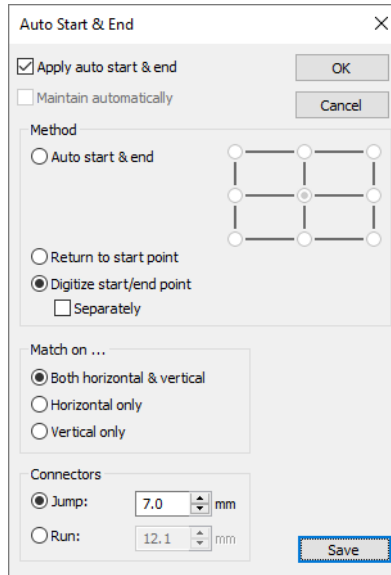
◀ Choose **Digitize start/end point** and click **OK**. EmbroideryStudio
prompts you to click a point where you want the design to start and
end.

◀ Set a point to which you can easily align the needle. When you stitch
out the embroidery component, the needle will start and end at this
point.

Option 1: Export both files together

◀ Select the **File > Export Multi-Decoration Files** command.
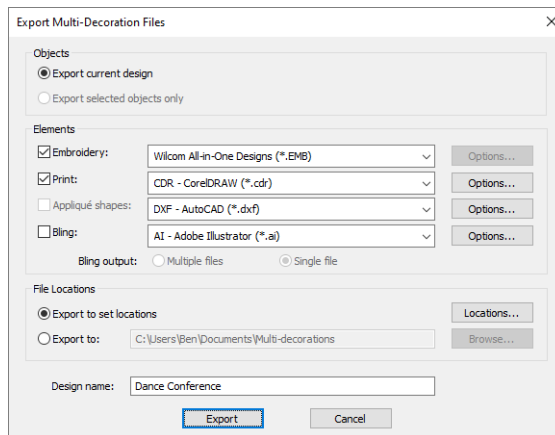
Select embroidery
and print file formats
to export

◀ Split out the embroidery production and graphics print files and select the formats to export – e.g. DST and PNG.

Note: If you choose PNG, it will default to the CorelDRAW default setting of 300 DPI. This can be changed via the CorelDRAW **Options** dialog.

Change bitmap file export resolution as required
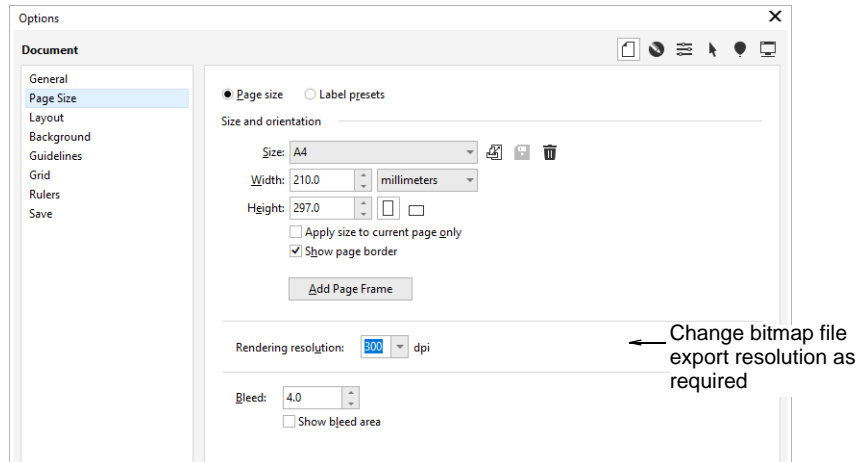
Option 2: Export files separately

◀ To obtain the embroidery production file, select **File > Export Machine File** from the Wilcom Workspace and choose a suitable machine file format – e.g. DST.

◀ To obtain the graphics production file, switch to **CorelDRAW Graphics**:

◀ Turn off the embroidery display.

◀ Select **File > Export > PNG** to export the print file for graphics only.

Related topics...

◀ Output embroidery as virtual decoration
◀ Viewing design components
◀ View options
◀ Creating simple teamname designs
◀ Fabric & product backgrounds
◀ Exporting multiple decoration files

Cording

Cording refers to the technique of fixing a thick cord or yarn onto a fabric, usually for decorative purposes. Digitizers frequently want to see the

cord line so that while they digitize, they don't overstitch on sharp turns. The **Cording** function allows you to designate the run stitching which is to form the cording.

Designing for cording

Cording designs are made up of running stitch outlines. Bear in mind:

◀ Create the design with run stitching to define the cording pattern.

◀ Run stitching may cross over itself or other objects in a continuous fashion. It is best to avoid long runs of overlapping cord.

◀ However, cording should be, as much as possible, continuous, as the cord cannot be trimmed by machine trimmer, only by hand.

◀ Consequently, any disconnected cording sections must be digitized in different colors so the machine will stop to allow for manual trimming.

◀ It is ok to have sharp corners but avoid extremes.

◀ It is possible to combine regular embroidery and cording in the same design.

◀ Conversely, it is possible to create cording-only designs with no other embroidery stitching.

Producing cording on the machine

To perform cording in combination with embroidery…

◀ Stitch data from the design file stops the machine as required. On the production worksheet, a 'Stop' is displayed with an additional color swatch indicating 'CORD'. This prompts the machine operator to switch to cording.

◀ 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 cording device, in shapes defined by the stitch data.

- At the end of a section of cording, the machine stops so that you can trim the cord.
- When **Cording** is applied, a Cord In/Out function is inserted into the stitch sequence. Some machines have a specific cording function which is output when saving to machine file – e.g. Barudan FDR-3 file format or Schiffli machines that support cording. For machines that don't have an explicit cording function, the software outputs a Stop code.
- During production, the needle penetrates either side of the cord, not through the center. As a consequence, the cord is pushed one way or the other.
- Relevant production information is also recorded on the design worksheet:
  - Cord size and color
  - Length of cord required
  - The stop sequence shows when to start cording, trim cording, and end cording.

Create cording designs

---	Use Outline Stitch Types > Run to place a row of single run stitches along a digitized line. Right-click for settings.
≡≡≡	Use Stitch Effects > Cording to apply the cording effect to new or selected objects with run stitching.
⫶⫶⫶	Click View > Show Needle Points to show or hide the needle points in embroidery stitching.

To create a cording design in EmbroideryStudio, follow this process:

- Digitize a cording design by digitizing a run with **Cording** turned on. Any suitable input method can be used together with **Run** stitch.
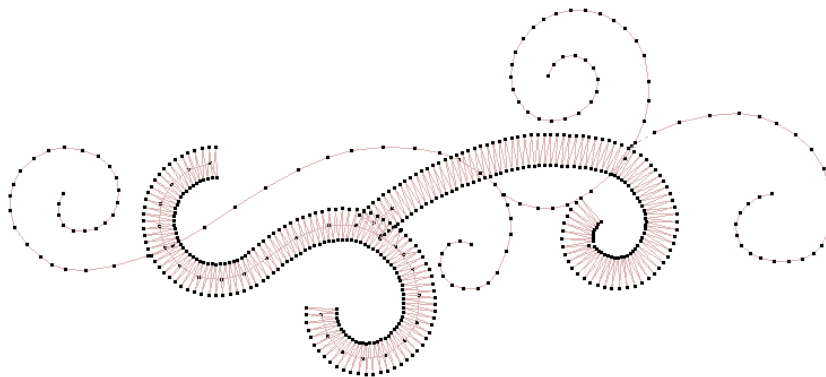
◀ Alternatively, select a run stitch object and apply the **Cording** effect. The cord is displayed as a graphic line. It takes the color of the run stitching. This allows designers to check technical correctness and better visualize a corded design look.

◀ Turn on needle points. Adjust display colors as necessary.
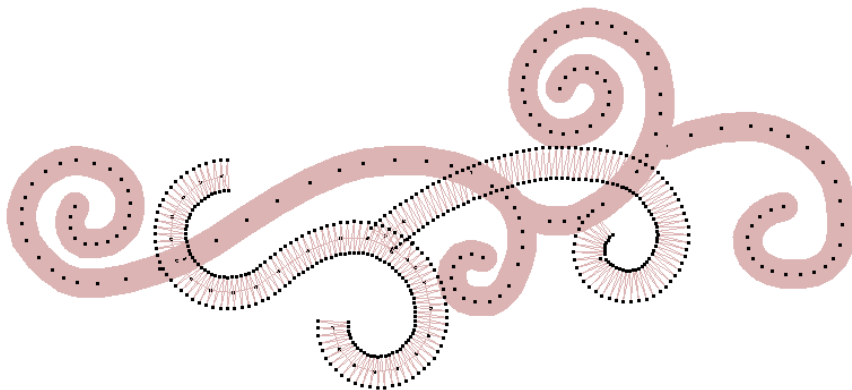
◀ Avoid or minimize jumps/connectors between different cording objects in the design. Don't use jumps for automatic connectors.

◀ Avoid or minimize cording crossing over itself.

◀ It is possible to use some fill stitch methods for cording if you set object properties for open density with no underlay. You can then break apart the object and apply **Run** together with **Cording**.
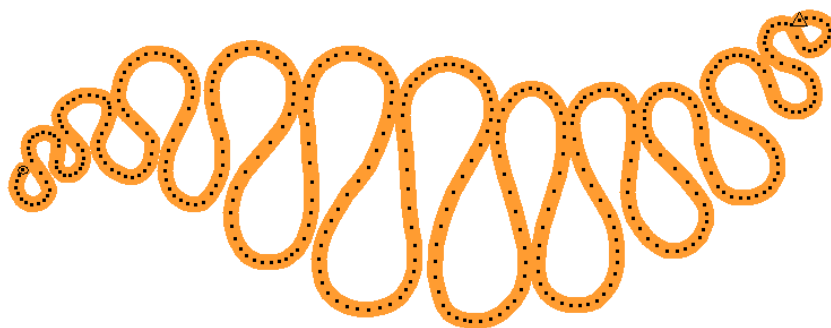
Idea Some machines have a specific cording function which is output when saving to machine file – e.g. Barudan FDR-3 file format or Schiffli

machines that support cording. For machines that don't have an explicit cording function, the software outputs a Stop code.

#	X	Y	L	Func
0				Start, Cord In
1	0.00	0.00	0.00	Color (#4) (Needle #C04) (empty)
2	1.58	0.96	1.84	
3	1.64	0.68	1.78	
4	2.02	0.43	2.07	
5	1.98	0.13	1.98	
6	1.39	-0.20	1.40	
7	1.17	-0.43	1.24	
8	1.29	-0.81	1.52	
9	1.04	-0.99	1.43	
10	0.82	-1.29	1.53	
11	0.38	-1.26	1.31	
12	0.11	-1.62	1.62	
13	-0.16	-1.34	1.34	
14	-0.41	-0.92	1.01	
15	-0.59	-0.59	0.83	
16	-0.73	-0.33	0.80	
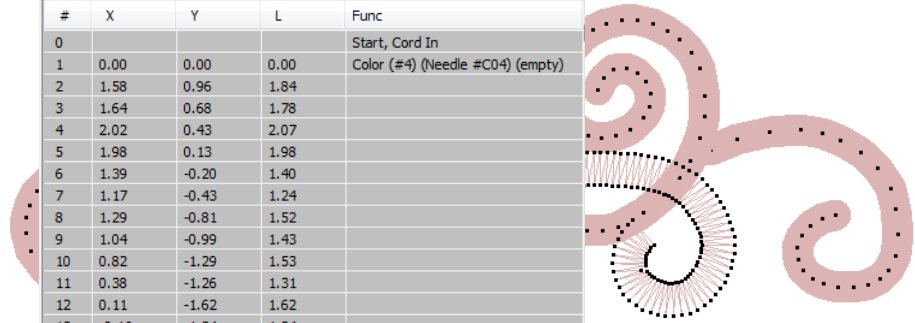
Related topics...

◀ Viewing design components
◀ Change display colors

Boring

Borer embroidery remains a popular technique for cutting holes in fabric to produce an effect similar to lace. If your embroidery machine is equipped with a boring knife or needle, the **Borers** function is available

to turn needle penetrations into boring holes, regardless of selected stitch type. Holes are cut in the fabric, producing an effect similar to lace.
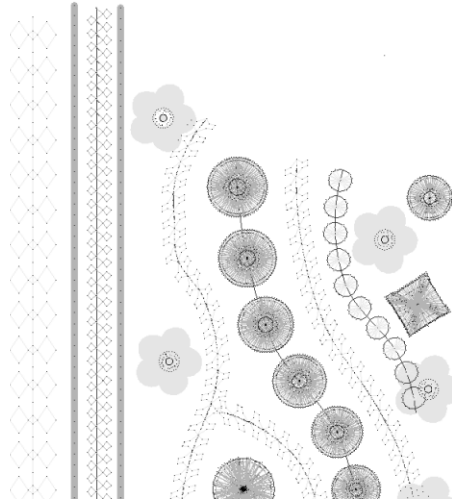
Prototype boring

Borer digitizing is a difficult skill to master. You will need to experiment with your machine and stitch width and spacing settings to achieve reliable results. Bear in mind that before putting any boring into production, everything needs to be carefully stitch tested, edited, and tested again. It all depends on the effect you want to achieve and the machine you are using.
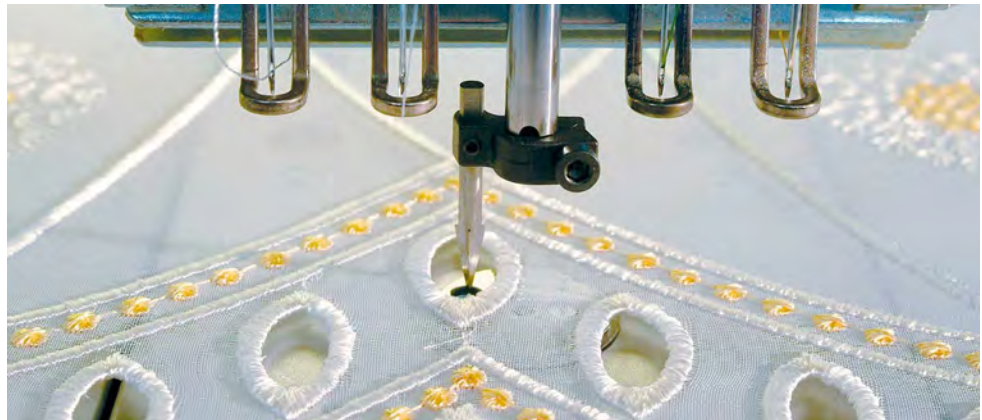
Of critical importance are the following considerations:

Fabric type	How to achieve the same look with different fabrics? Typically, stitches and borer cuts will be slightly different.
Hole shape	Which cutting technique to use for circle, oval, square, etc?
Borer cut	How big should the cut be and how many penetrations are necessary?
Cover stitch	How wide and how dense does the covering need to be?

⊘

Note: This topic provides advice on how to approach boring with EmbroideryStudio. Without stitch testing however, we only can provide the theory.

Select machine format

Borers are often 'knife' attachments which are offset from the main needle. Before boring starts, the frame moves so that the borer is in the correct position. This movement compensates for the borer offset.

Check your machine user guide. If it is capable of boring, you may add a borer knife or needle and activate the borer function. For older Tajima models, there is a 'Borer' dip switch in the control panel. For newer models, there is a 'Borer' function among the machine settings.

Here is a standard Tajima borer set. The borer knife is mounted inside the rubber tube, and the borer set is mounted on the needle bar. On the machine, there is a hole filled with a small rubber mat to buffer the borer.

Select the format for the target machine you are using. For instance, Tajima, Barudan, SWF, Dahao, Happy, ZSK2. The needle position of the

borer and its offset value are specified in the **Machine Format Settings** dialog as part of the machine format definition.

The default setting for Tajima and Dahao formats is for a 'knife' attachment, where the cutting position is offset ±12 mm from the main needle line. This offset is only expressed when you save your design to a stitch format like DST.

If you are using a boring needle instead of a knife, no offset is required. Some machines automatically adjust the offset when a Borer In function is encountered. These require a value of '0'. This too should be part of the machine format definition, but you may need to adjust it manually. See your machine manual for details.

Note: With Tajima and Barudan machines the **Borers** function inserts a **Stop** which allows the machine to change to the needle position that uses the boring attachment. The machine must be correctly programmed to use the correct needle position.

Related topics...
◀ Machine Formats
◀ Borer functions
◀ Custom machine formats

Digitize boring holes

	Use Function > Penetrations together with Borers to digitize boring holes.
	Use Function > Borers to activate the boring function.
	Use Traditional Digitizing > Run to digitize an outline around the shape you want to bore.
	Use Traditional Digitizing > Manual to digitize boring holes.
	Use Traditional Digitizing > Column A to digitize border stitching around the holes.

With **Borers** selected, each needle penetration becomes a borer cut, regardless of selected stitch type. Boring holes are generally stabilized with zigzag to prevent fraying and movement, and bordered with satin stitches.

Whether you are digitizing for borer knife or needle, the technique is the same.
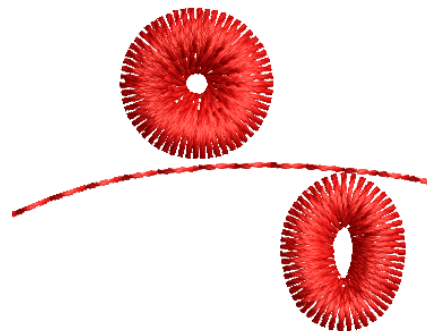
To digitize the boring hole

1 Ensure **Penetrations** is on.

2 Open the **Stitch List** to visualize what is happening at the stitch level.

3 Click the **Run** icon and digitize a stabilizing run around the borer hole. This helps prevent the fabric from tearing.

Open Stitch List to study machine functions →

#	X	Y	L	Func
356	1.06	0.67	1.24	
357	1.15	0.48	1.24	TieOff, Trim
358	-0.58	-0.24	0.62	(used)
359	-0.58	-0.24	0.62	(used)
360	0.58	0.24	0.62	(used)
361	0.58	0.24	0.62	(used)
362	0.01	-0.66	0.66	(jump)
363	0.01	-0.65	0.65	(jump)
364	0.01	-0.66	0.66	(jump) (offset)
365	0.01	-0.65	0.65	(offset), jump
366	0.00	0.00	0.00	Borer In (empty)
367	0.00	0.00	0.00	
368	0.05	-0.99	0.99	
369	0.05	-0.99	0.99	
370	0.05	-0.99	0.99	
371	0.05	-0.99	0.99	
372	0.05	-0.99	0.99	
373	0.05	-0.99	0.99	
374	0.05	-0.99	0.99	
375	0.05	-0.99	0.99	
376	0.05	-0.99	0.99	
377	-0.15	4.45	4.45	
378	-0.19	0.98	0.99	
379	-0.19	0.98	0.99	
380	0.19	-0.98	0.99	
381	0.19	-0.98	0.99	(offset), jump
382	0.00	0.00	0.00	(offset) (empty), jump
383	0.00	0.00	0.00	(offset) (empty), jump
384	0.00	0.00	0.00	Borer Out (empty)
385	0.00	0.00	0.00	
386	-1.46	7.28	7.43	
387	1.40	-7.29	7.42	

Digitize outline with Run stitch

4 Click the **Borers** icon. A machine function is inserted to indicate the change from stitching to boring.

5 Using the **Run** tool, digitize cutting lines. For a round hole, two intersecting lines are sufficient. For an oval hole, digitize a single cutting line.

Diamond shapes represent borer cuts on the fabric. Size indicates depth of cut. They do not appear in TrueView™.

Digitize boring holes with Run or Manual stitch

Digitize a single cutting line for an oval hole
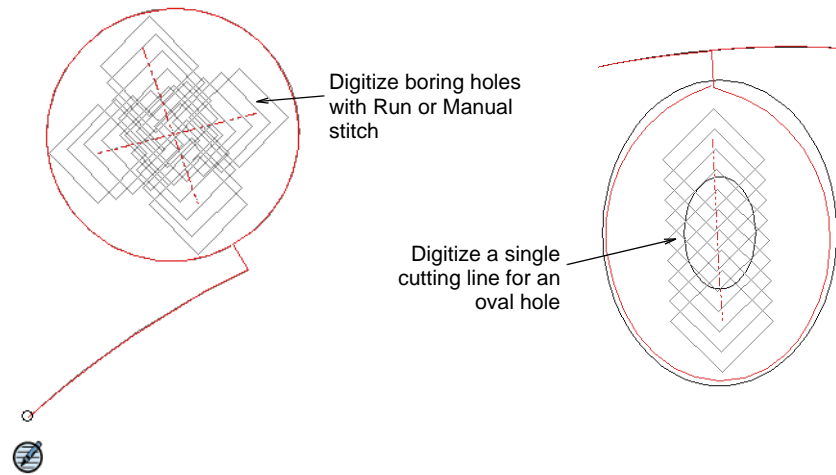
Note: Some digitizers prefer to use the **Manual** tool. Each stitch you digitize becomes a boring hole. Bear in mind though that holes digitized in this way cannot be scaled.

6 Reduce **Run** length to 1.0-1.5 mm to place borer penetrations closer together. This ensures a clean cut.

7 Because the boring knife does not require tie-in and tie-off stitches, deactivate these functions via **Object Properties > Connectors**.

8 Click **Borers** again to deselect it. This returns you to normal stitching. You now need to stabilize the fabric and create borders by stitching around them with zigzag and satin cover stitches.

To stabilize the hole

1 Using **Zigzag** stitch, digitize around the hole with **Column A** or, if you have it, the **Ring** tool.

Digitize reinforcement with Column A and Zigzag
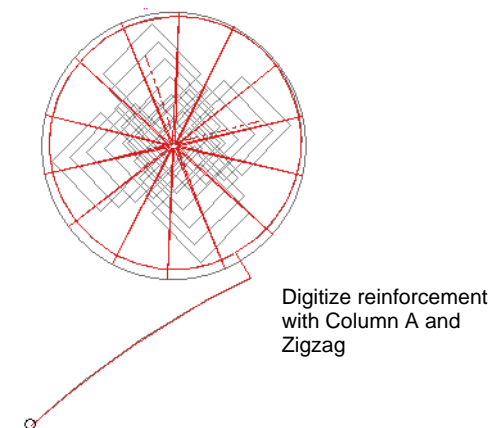
2 Turn off underlay and adjust stitch length to around 3mm.

3 Place the inside edge close to the hole center so it 'wraps' the fabric.

4 In the **Stitch List** you will see Borer In and Borer Out functions whenever the borer knife is engaged.

To create cover stitching

1 Digitize the cover stitching with **Column A** and **Satin**. Or, as a shortcut, duplicate the zigzag object and apply satin stitch.

2 Again, ensure underlay is turned off.

Digitize cover with Column A and Satin
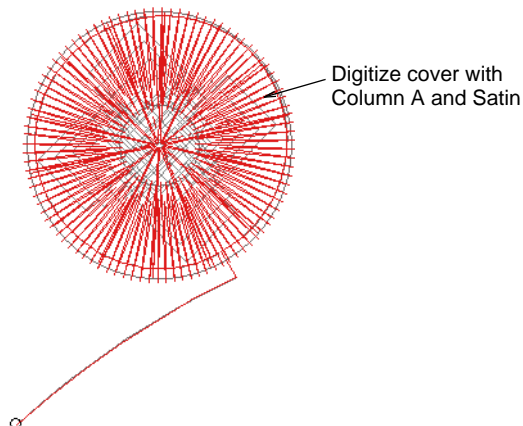
3 Use **Align Centers** to align all objects.

4 Try experimenting with other styles of cover stitching:

◀ For a more open style, try **Zigzag** on its own by decreasing stitch spacing to around 1mm.

Zigzag cover with 1mm spacing
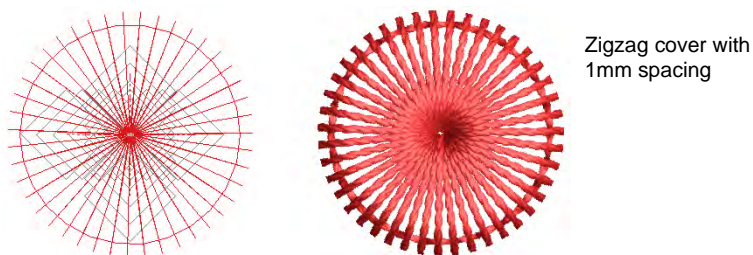
◀ For a more organic look, try applying **Hand Stitch** effect to **Zigzag** cover stitching.
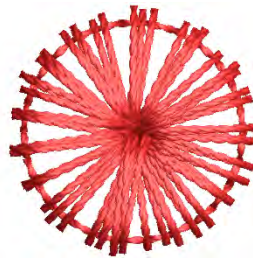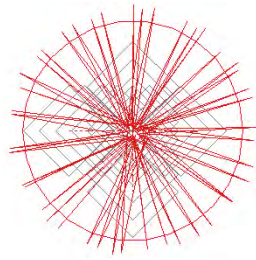
Zigzag cover with
Hand Stitch effect

◀ Or for denser cover, try **Hand Stitch** with **Satin** cover.
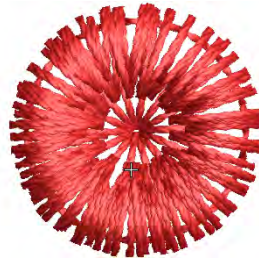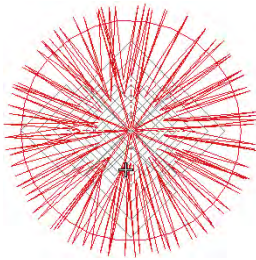
Satin cover with
Hand Stitch effect

◀ Pagadhi or **String** stitch may also provide interesting cover for boring holes, both round and square.
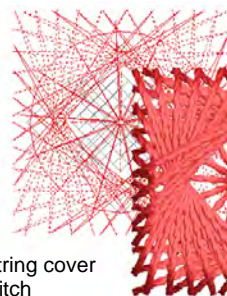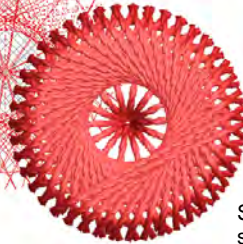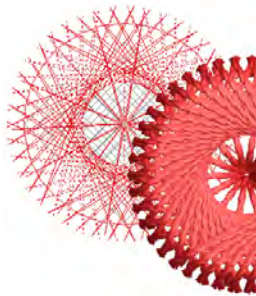
String cover
stitch

◀ Here we see an experimental square borer hole design. With sharp corners, stitching tends to pull fabric inward. We try to compensate for this by angling corners outwards.
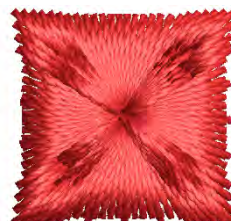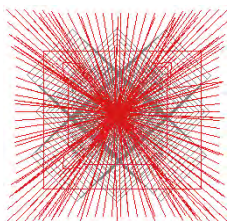
Experimental square
borer hole with
angled corners

Combine boring with other techniques

Here are a few tips for combining boring with other embroidery techniques…

◀ Typically you will want to combine boring holes with other stitch types and effects such as **Stemstitch**, **Contour**, and **Motif Run**.
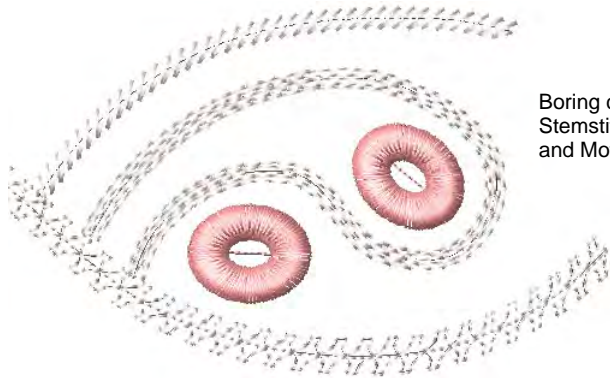
Boring combined with Stemstitch, Contour, and Motif Run

◀ **String** stitch can also be used to good effect with borer designs as custom motif runs.

Boring combined with custom String stitch motif run
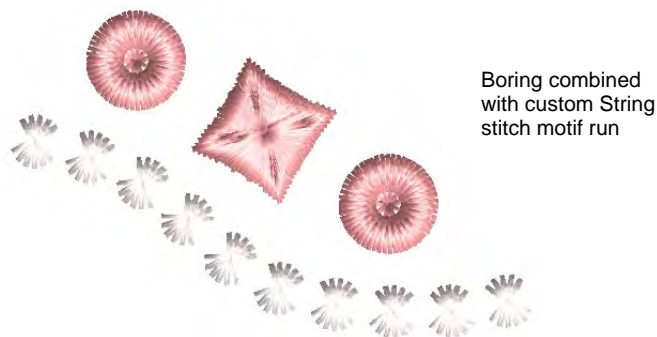
◀ If your machine supports it, you can combine boring with cording or tape embroidery. You may also be able to combine borer holes with appliqué objects such as floral motifs.

Combine with cording and appliqué
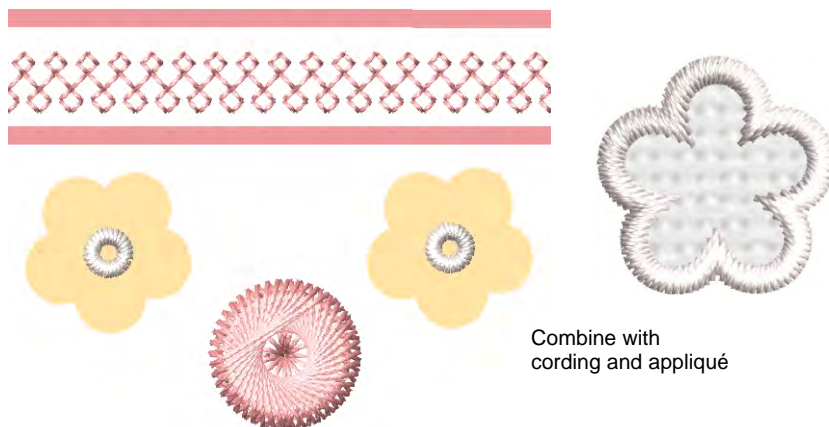
Related topics...

◀ Contoured fills
◀ Decorative outlines
◀ String stitching
◀ Cording
◀ Creating appliqué embroidery

Productivity techniques

Here are a few tips for getting more out of your boring holes...

Recycling boring holes

Once you have designed and tested boring holes that work, you can save them as custom motifs for re-use. Make sure **Remove other functions** is turned off to preserve cutting lines.

Save borer hole as custom motif
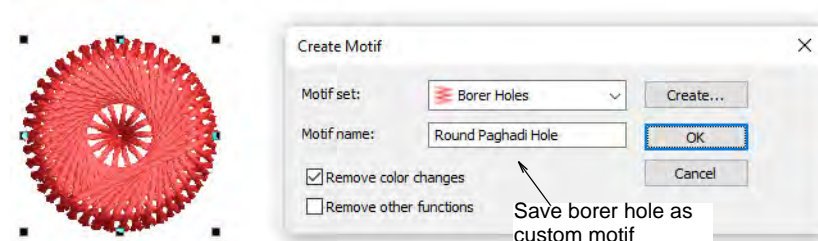
Once you have set up a library of borer holes, these are available for use with the **Use Motif** tool. The advantage of this technique is that boring holes can be easily scaled and rotated into position. Check, however, that scaling does not affect the ratio of knife cut to zigzag and cover stitching.

Reuse borer holes from custom motif library
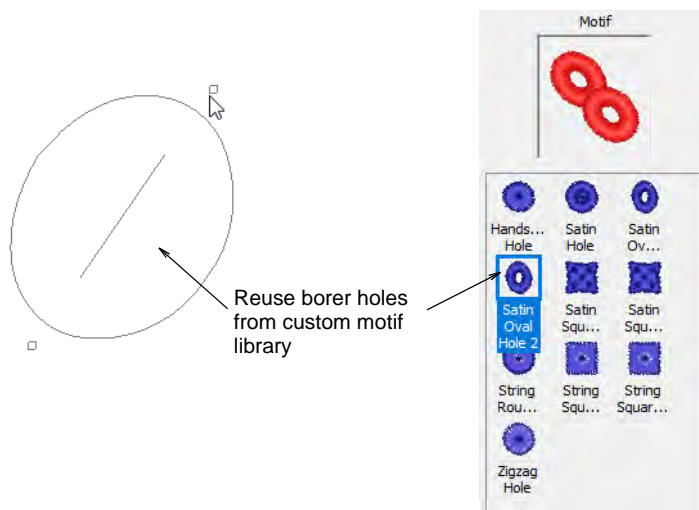
Resequencing boring holes for production

When it comes to actual production, borer holes are usually cut in groups for faster production. The components need to be sequenced for borer

cuts to occur in neat, close groupings. Since individual motifs appear as grouped objects, ungroup them and resequence components as needed.

Ungroup and resequence borer hole components for efficient stitchout
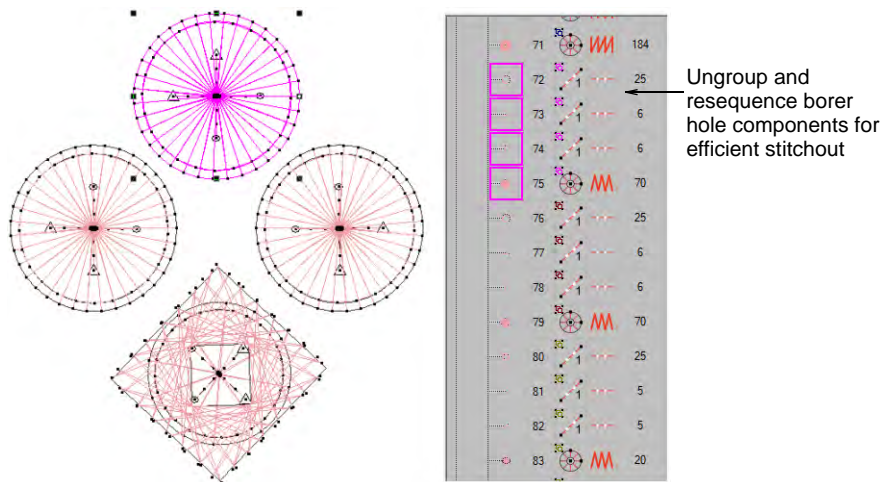
Of course by cutting first and then applying tackdown and cover stitching, you risk registration errors. You need to decide between quality vs productivity. For large production runs, productivity is a high priority and constrained by production cost.

⚠

Caution: Depending on production type, you will again need to test the design sequence carefully before starting a production run.

Related topics...

◀ Custom motifs
◀ Sequencing embroidery objects

Boring output

Export the machine file corresponding to your selected machine format:

◀ Tajima - DST
◀ Barudan - U??
◀ SWF - EBD
◀ Dahao - DST
◀ Happy - TAP
◀ ZSK2 - Z??

When exporting to Tajima or Barudan machine file, boring functions are encoded as color changes. These allow the machine to switch to the boring attachment. The machine must be correctly programmed.

In addition to color change codes, the software adds a vertical offset of ±12mm as Jumps wherever it encounters a 'Borer In' or 'Borer Out' function. These are interpreted on the machine as:

◀ Borer In: Stop code with -12mm off-set
◀ Borer Out: Stop code with +12mm offset.

Boring offset expressed in machine file
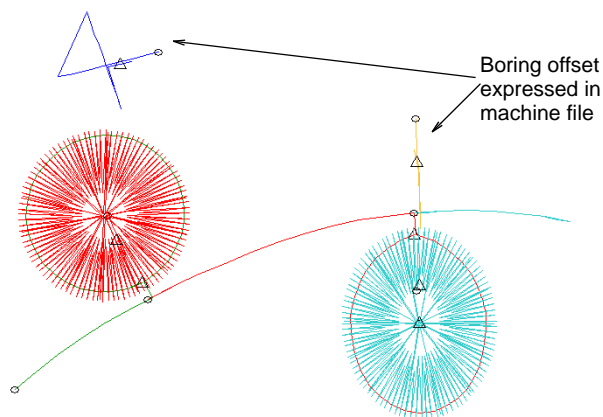
For Tajima DST, the needle bar sequence is set on the control panel by the machine operator. If the needle bar sequence is incorrect, the fabric is ruined. In the **Production Worksheet**, needle bars are indicated in the color sequence.

Related topics...

◀ Exporting designs for machine
◀ Printing design reports

Chapter 47
Sequin Embroidery

Some embroidery machines are equipped with devices that can drop sequins onto the garment as it stitches. EmbroideryStudio allows you to digitize sequin designs for compatible machines. There is also a dedicated tool for automatically converting sequin artwork to sequin runs.

This section describes how to set up sequin palettes and how to visualize sequin designs. It explains how to create single-sequin as well as multi-sequin runs. It also covers sequin fixings as well as reshaping and editing.

Selecting sequin mode

Before using the **Sequin** tools, you need a machine format that supports sequin output. You can then set up a dedicated sequin palette from a list of predefined or custom shapes and sizes.

Machine capabilities

Machine capabilities vary widely. Some machines only support single-sequin devices. These may be mounted on the first or last needle, or sometimes both. Some machines support twin-sequin devices. These too can be mounted on first and last needles. Newer machines can support multi-sequin devices. These may perform consecutive sequin feeds – one at a time whilst stitching. Some may allow 'stack feeding',

where multiple sequins are dropped and secured with a single fixing stitch.
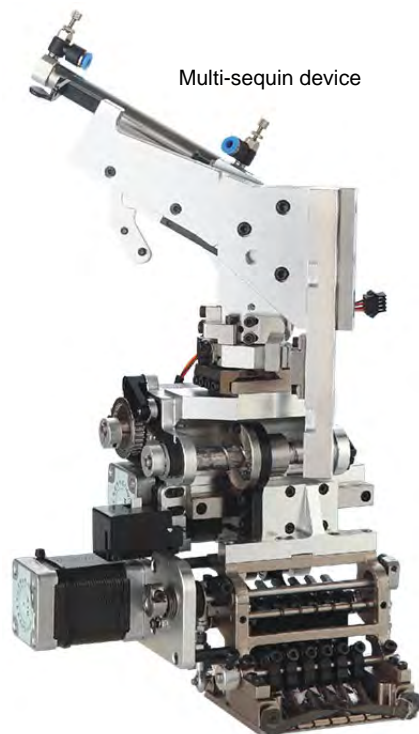
Multi-sequin device
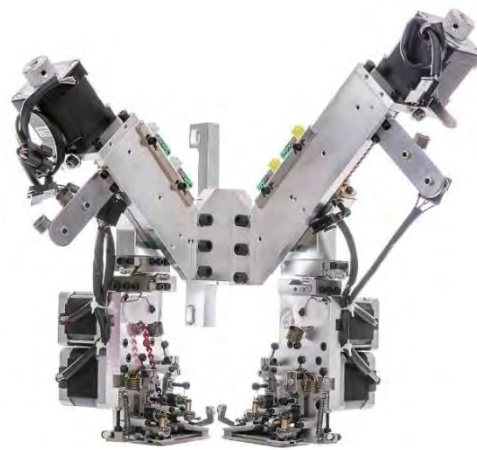
Double twin-sequin device with stack sequin capability

In summary, the main sequin device configurations include…

◂ Machines supporting one sequin per device. These feed only one sequin at a time.
◂ Machines supporting one or two devices per machine head, usually on first or last needles.
◂ Machines supporting twin-sequin devices with no stack feeding – e.g. Barudan FDR-II Twin Sequin, Tajima TBF, SWF Twin Sequin.
◂ Machines supporting twin-sequin devices or even double twin-sequin devices with stack feeding – e.g. Dahao.
◂ Machines supporting multiple sequins per device – four, six, eight, and possibly more sequins – with or without stack feeding.

⊘

Note: An increasing number of machines support multiple decoration types including sequins in combination with chenille, beading, cording, and others.

Single- vs twin-sequins

Single and twin configurations still represent the most common type used in sequin production. Even then, different configurations and design types are possible:

Configuration	Design type
Single-sequin device on one needle	The simplest configuration possible, this allows you to produce designs incorporating single-sequin fills, runs, and individual sequin drops.
Single-sequin device on two needles	Usually mounted on first and last needles, this setup allows you to incorporate two types of single-sequin fills, runs, and sequin drops.
Twin-sequin device on one needle	This configuration allows you to incorporate twin-sequin runs and fills. Some configurations (Dahao) also allow twin stacking.
Twin-sequin device on two needles	This configuration allows you to incorporate two types of twin-sequin runs and fills. Again, some may allow twin stacking.
Double twin-sequin device on one needle	This configuration allows you to incorporate two types of twin-sequin or quad-sequin runs and fills, as well as twin or quad stacking.

Note: The kinds of design work you can do with two single-sequin devices and a single twin-sequin device are different. The twin single-sequin setup will allow you to include runs and fills of either sequin, but not both together in the same run or fill.

Sequin machine formats

Before using the **Sequin** tools, you need to choose a suitable machine format. Only some machine formats support beading – e.g. Barudan FDR-3, Dahao, Tajima TBF, and SWF Twin Sequin. Refer to your machine manual for information about support for this type of decoration.

Note: For machine formats that have no sequin capability, the sequin palette will display. However, if you attempt to create a sequin object, fixing stitches will be digitized without sequin drops.

Dahao machine format

EmbroideryStudio supports the Dahao machine format which in turn supports multi-sequin devices. Up to eight (8) sequins can be defined per device. The Dahao controller is used on many Chinese machines.

When you select Dahao as your machine type, Dahao multi-sequin DST file format is available on output. The **Drop Sequin** functions are inserted according to Dahao multi-sequin requirements.

The actual Dahao definition for multi-sequin drops is this: one Jump signifies drop sequin A, two Jumps on the same spot mean drop sequin B, three Jumps signify a sequin C drop, and so on.

Dahao control panels include a protocol to interpret this encoding. Tajima machines, on the other hand, strictly follow the DST file specification. Namely, one Jump per sequin drop.

Note: The Dahao controller is configured according to the capabilities of the particular sequin device. The digitizer needs to know what the device is capable of – e.g. whether capable of sequin stacking, etc.

Select sequin-capable machines

Before you can use the **Sequin** tools, you need to choose a suitable machine format.

To select a sequin-capable machine

1 Select **Design > Select Machine Format**.
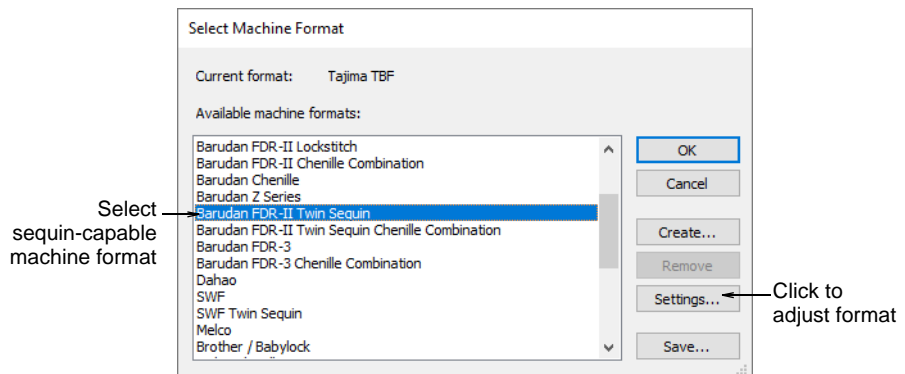
2 From the **Available Machine Formats** list, select a sequin-capable machine format – e.g. Schiffli, Tajima, Barudan, SWF, ZSK, etc.

3 Click **OK**. Default sequins appear in the sequin palette. It is ready to be configured. If you have selected a twin-sequin-capable machine, sequins are displayed in pairs.
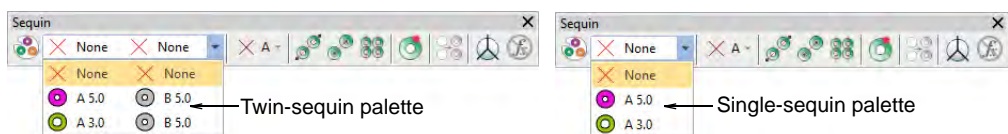
Note: Different machines require different presets. Typical modifiable values include stitch and jump length, trim functions and color change functions. Use the **Machine Format Settings** dialog to customize values if outputting to a specific machine format.
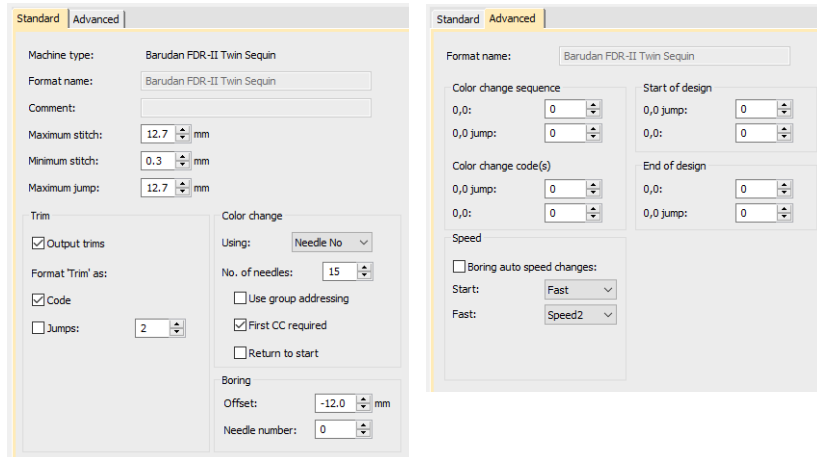
Related topics...

◀ Embroidery machine formats

◀ Exporting designs for machine

◀ Creating multi-sequin runs

Visualizing sequin designs

	Click View > TrueView to toggle between stitch view and TrueView™. Right-click for settings.
	Use View > Show Stitches to toggle embroidery stitching display. Right-click for settings.
	Use View > Show Functions to toggle display of machine function symbols. Right-click for settings.

Sequins can be viewed in **TrueView** or stitch view while **Show Functions** is toggled on.

Sequins in TrueView
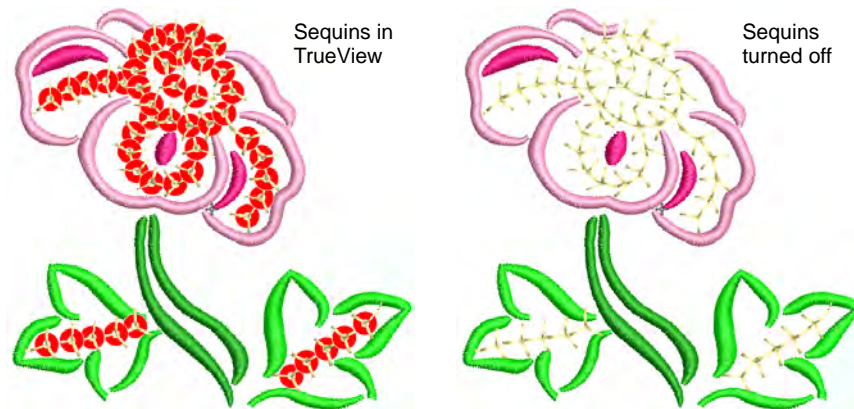
Sequins turned off

Both sequins and fixing stitches appear in their selected colors and can be turned on or off via **Show Functions** and **Show Stitches** toggles.

Sequins in stitch view

Sequins when traveling
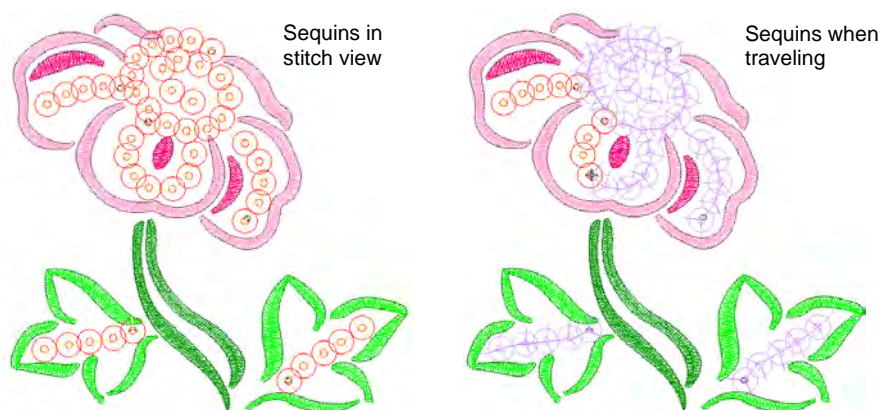
When traveling through a sequin design, 'undropped' sequins appear in the 'unsewn' color defined in the **Background & Display Colors** dialog.

💡
Tip: The **Show Repeats** function displays repeating designs, including sequins, in both **TrueView** and stitch view. You can view a design, even while digitizing, with any number of repeats.

Related topics…

◀ Travel through designs
◀ Viewing design repeats
◀ Change display colors

Setting up sequin palettes
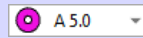
Use Sequin > Sequin Palette to select from a default or user-defined palette of sequin shapes for the current design.

Use Sequin > Sequin Palette Editor to select shapes from a sequin library, and define sequin colors and sizes.

The **Sequin Palette Editor** lets you prepare a palette of sequins according to capabilities of your chosen machine. The palette editor lets you define as many devices as your machine supports or you require for the design. Choose sequins from a library of predefined shapes or define your own. Once set up, the palette is available for use from the **Sequin** toolbar and **Object Properties**.

To set up a sequin palette

1 Select the machine format that supports the machine you are using or the design type you want to create.

2 Click the **Sequin Palette Editor** icon. Fields are arranged so that parameters for each sequin can be viewed at once.
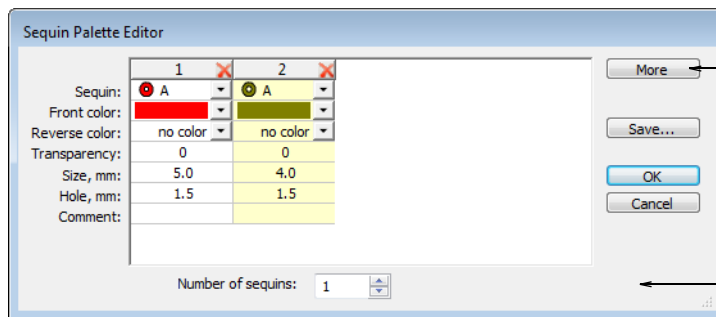
3 Set the number of sequins available per device. Depending on machine type, up to eight (8) sequins may be supported. If you have chosen a twin-sequin machine, this value is limited to 2.

4 Use the **More** button to add devices. Click **X** in the column header to remove.

Select sequin shape from the droplist
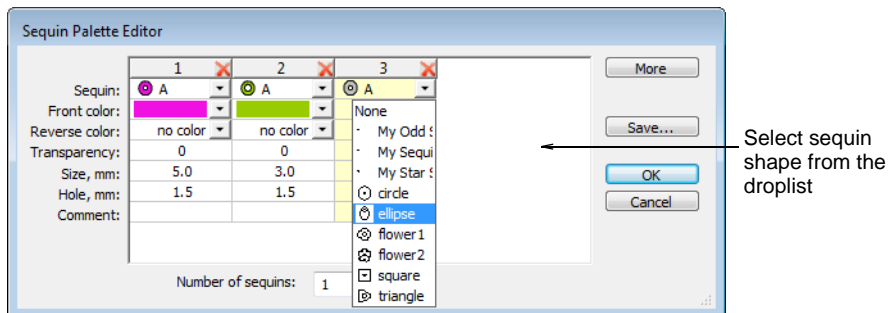
Typical configurations include:

Device	Configuration
1 x Single sequin	A
2 x Single sequin	A / A
1 x Twin sequin	AB
2 x Twin sequin	AB / AB
1 x Double twin (Dahao)	ABCD
2 x Double twin (Dahao)	ABCD / ABCD
1 x Multi-sequin (6, 8, 12, etc)	ABCDEF...

Note: Typically the machine operator will use Needle 1 to position the starting point. Thus single devices are usually mounted on the last needle. In terms of software configuration, it makes no difference.

5 Select predefined or custom sequin shapes from the droplist.

6 Set color and size for each sequin as well as hole size. Colors can be defined for front and reverse sides as well as a transparency factor for translucent sequins.

Click to select color

More colors available
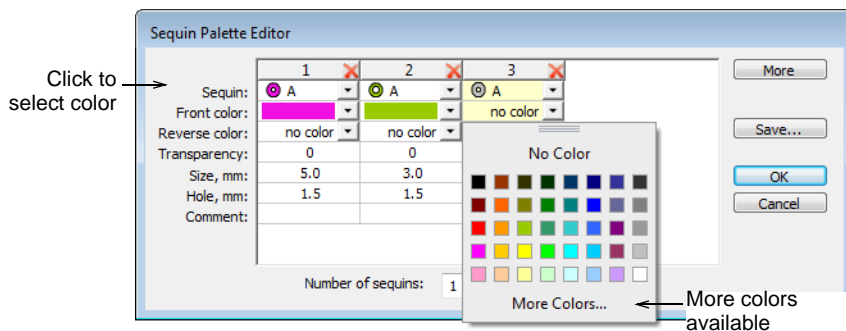
7 If you are using reversible or 'flip' sequins, define the reverse color as well. Flip sequins are generally used with twin- or multi-sequin machines, but may be used on their own.

Define reverse color for flip sequins
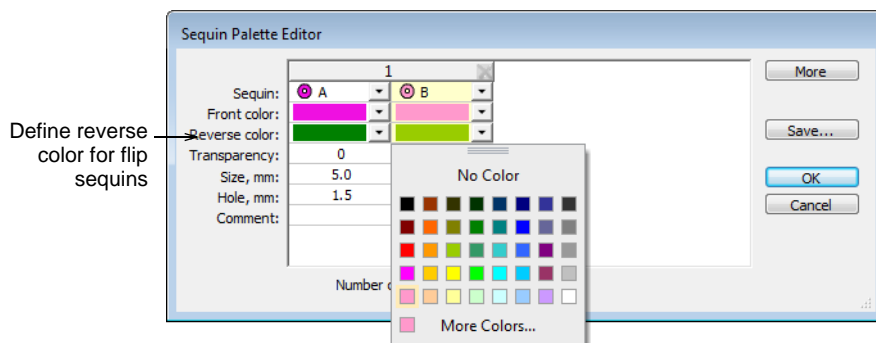
8 If you are using transparent sequins, define a transparency factor from 0 to 90 for each sequin.

Transparencies defined for better visualization
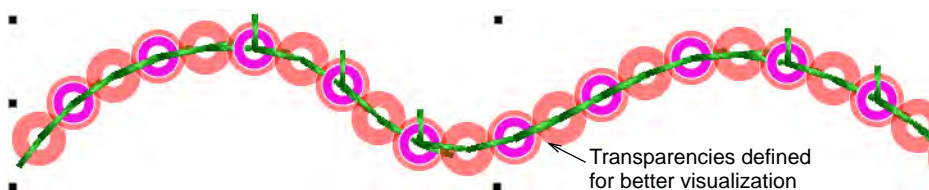
◀ Click **OK**. Sequins are available for selection.

Twin-sequin palette

Single-sequin palette

◀ Permutations for sequin stacks are automatically calculated and displayed in the **Manual Sequin** droplist and **Object Properties**.
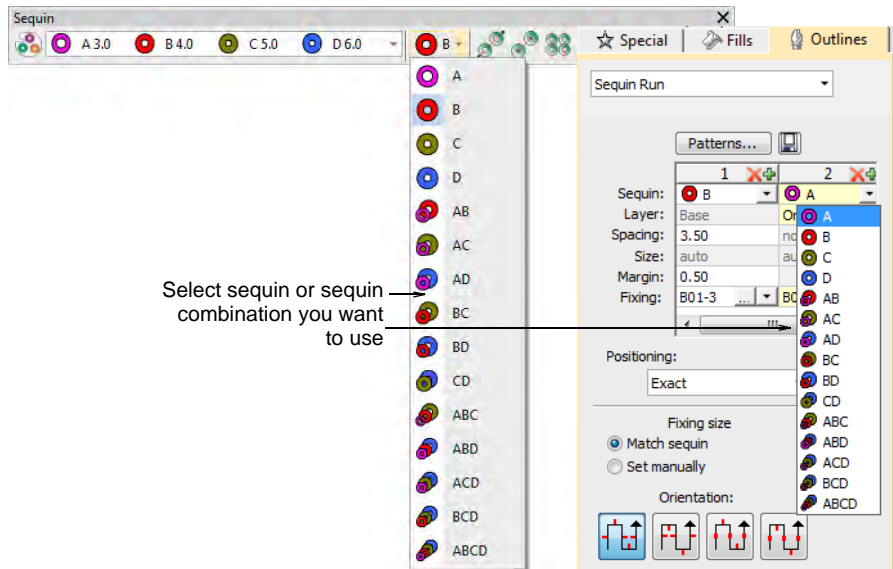
Select sequin or sequin combination you want to use

💡
Tip: The digitizer needs to know the machine capabilities by heart. If an unsupported combination is selected – e.g. four sequin stack feeding – the drop code is ignored on the machine.

Related topics...

◀ Select sequin-capable machines
◀ Creating multi-sequin runs

Digitizing sequin runs

Use Sequin > Sequin Run Auto to create a string of sequins along a digitized line according to current settings.

Use Sequin > Sequin Run Manual to manually digitize sequin-drops along a digitized line.
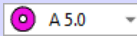
Use Sequin > Sequin Palette to select from a user-defined palette of sequin shapes for the current design.

EmbroideryStudio provides tools for creating a string of sequins along a digitized line according to preset spacings or as marked by the digitizer.
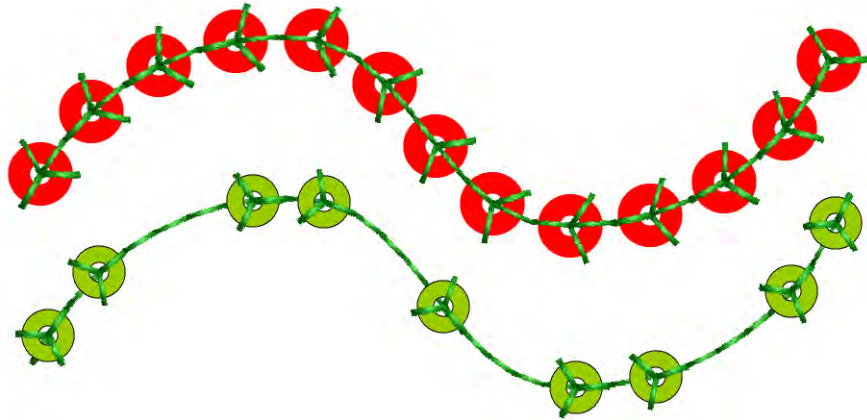
Digitize sequin runs as you would motif runs. If you use the manual method, you define spacings between sequin-drops with every click you make. If you use the automatic method, sequin-drops are calculated according to current settings.

To digitize a sequin run

◀ Select a sequin-capable machine from the **Select Machine Format** dialog.

◀ Define your palette and select a sequin shape from the droplist. For simplicity, we show a single-sequin setup.
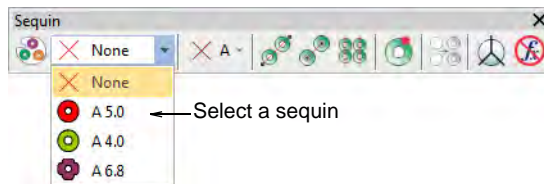
◄ To digitize a scalable sequin run, use the **Sequin Run Auto** tool. Enter reference points – left-click for corner points, right-click for curve points.

Digitize outline – left-click corner points, right-click curve points

A
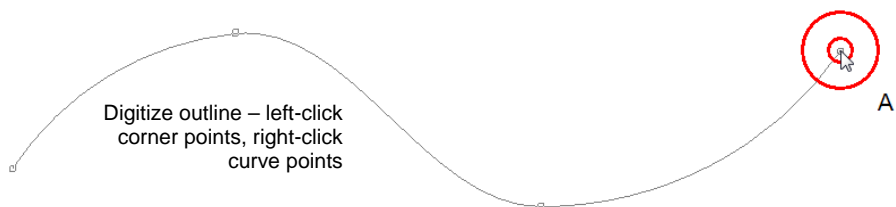
◄ Press **Enter** to complete. Sequin drops are automatically generated along with their fixing stitches. Automatic sequin runs can be scaled.

Sequin drops and fixing stitches generated automatically
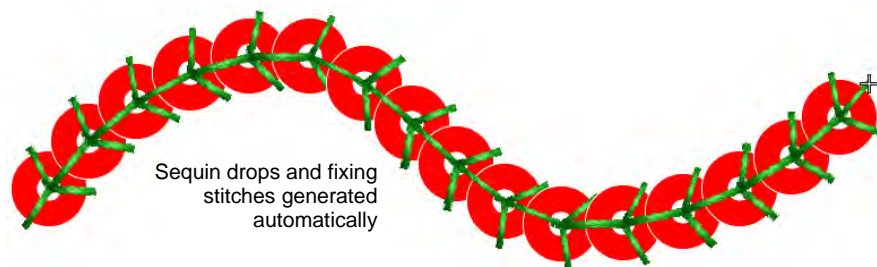
💡
Tip: You can convert a normal run to sequin run by selecting and clicking the **Sequin Run Auto** tool.

◄ Alternatively, to control the exact placement of your sequin drops, use the **Sequin Run Manual** tool. Digitize individual sequin drops with left and right mouse clicks.

Digitize outline – left-click corner points, right-click curve points

A
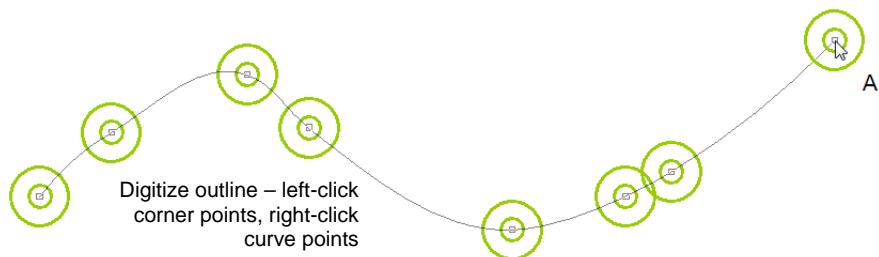
◀ Press **Enter** to complete. Sequin drops are generated at each reference point. Connecting and fixing stitches are automatically generated.

Sequin drops and fixing
stitches automatically
generated
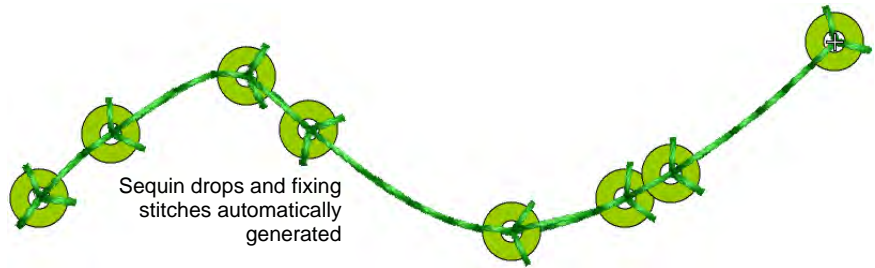
◀ Double-click to access object properties. Change sequins and adjust spacing properties as necessary.

Enter nominal spacing

Change fixing stitches

Select positioning method
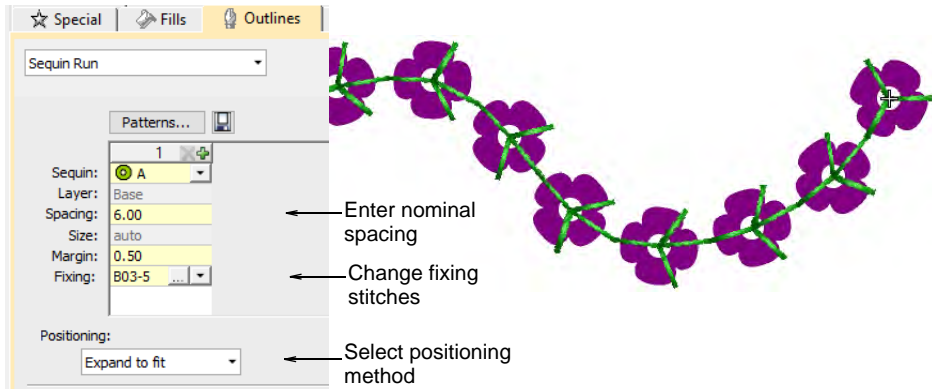
◀ In the **Spacing** field, enter a nominal spacing. This is measured from the center to center. Minimum spacing is automatically calculated.
◀ Select a **Positioning** method from the droplist:

Option	Function
Exact	Uses nominal spacing. This may result in gap formation at the end of the path.
Expand to fit	Expands nominal spacing to evenly spread sequin distribution.
Contract to fit	Contracts nominal spacing to evenly spread sequin distribution, resulting in an extra sequin.
Manual	Turns any sequin run into a manual run so that the number of sequins won't change during editing.

Note: If you change a manual sequin run to exact spacing, all sequin drops are recalculated and manual placements lost.

◀ To change fixing stitches, click the button in the **Fixing** field. The docker expands to show a library of fixing stitch types. See below.

Related topics...

Sequin fixings

EmbroideryStudio provides a library of predefined fixing stitches for use with sequin runs or fills. Just as you can digitize sequin drops manually or allow the system to calculate them for you, you can manually set fixing size or allow the system to determine it according to sequin shape. And just as you can define custom sequin shapes, you can also define custom fixing stitches to support multi-head sequin devices.

Fixing stitch color

Generally digitizers reserve a single thread color for all sequins, regardless of sequin color. Transparent thread is often used on the machine in order to avoid differences between thread color and sequin color.

Fixing type

The choice of fixing stitch really depends on customer requirements. Some may want sequin placements to withstand repeated washing. Others may want to save on stitches to reduce production costs. As the digitizer, you would typically consider the cost of embroidery production against sequin weight in order to find a balance.

Decorative fixings

Fixing stitches are not generally part of the decoration. They are there simply to fix sequins to the fabric. That said, **Sequin Run** has potential as a decorative stitch in its own right. For this purpose you can select **None** in the **Sequin Palette**. This option is best used with the **Sequin Drop Direction** set to **Any**.

Apply sequin fixings
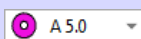
🔘 A 5.0 ▾	Use Sequin > Sequin Palette to select from a user-defined palette of sequin shapes for the current design.

You can select sequins before or after digitizing. Similarly, you can preset fixing stitches or change them at any stage.
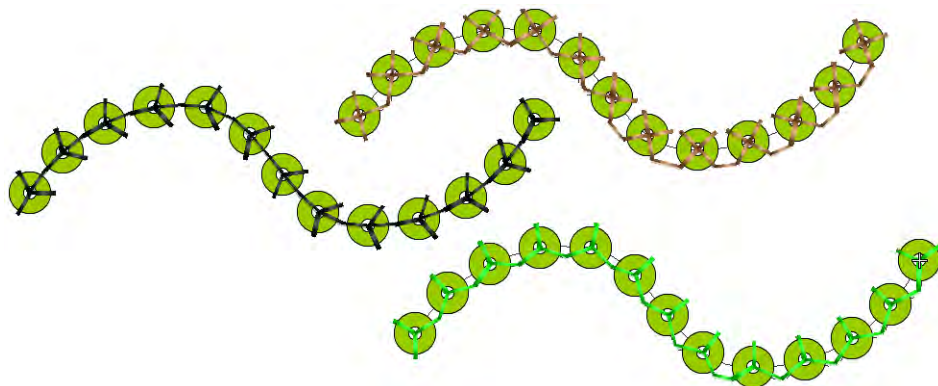
💡
Tip: Digitizers sometimes want to generate a sequin run and overlay it with a plain run so that sequins are more securely fixed. Another reason for backtracking is to avoid jump stitches between objects. The **Backtrack/Repeat** tool is enabled for sequin-run objects. When applied, EmbroideryStudio generates manual stitches but leaves other functions unaffected. See also Controlling stitch direction.

To apply sequin fixing stitches

◀ To change fixing stitches, double-click to access object properties.

Click to change fixing stitch
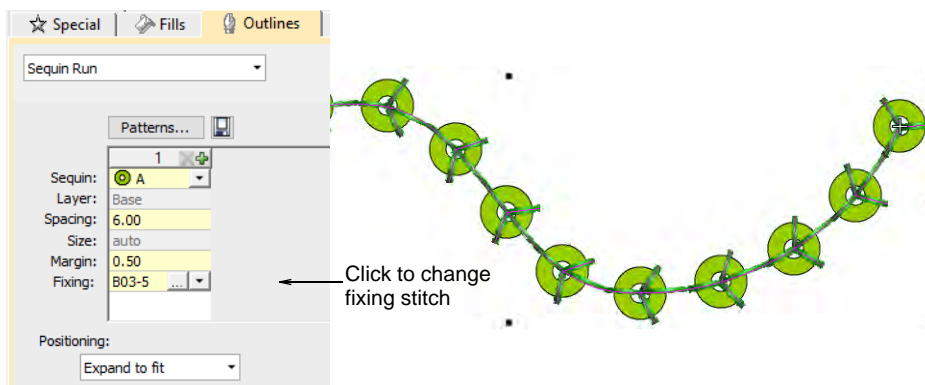
◀ Click the **Chooser** button in the **Fixing** field. The docker expands to reveal a library of fixing stitch types.

Fixing stitch preview

Select fixing stitch type

Adjust fixing stitch size if manual option selected

Choose method for setting fixing size
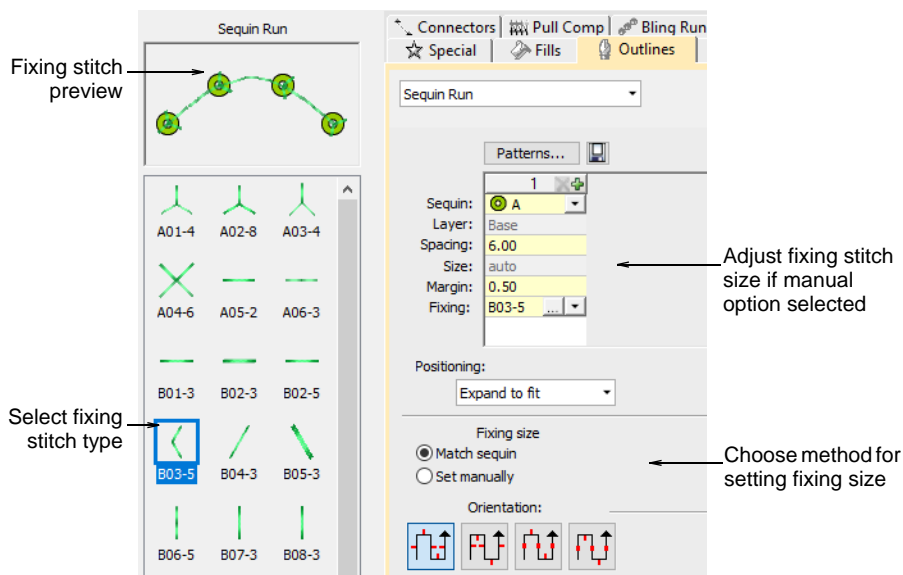
◀ Select the preferred type.
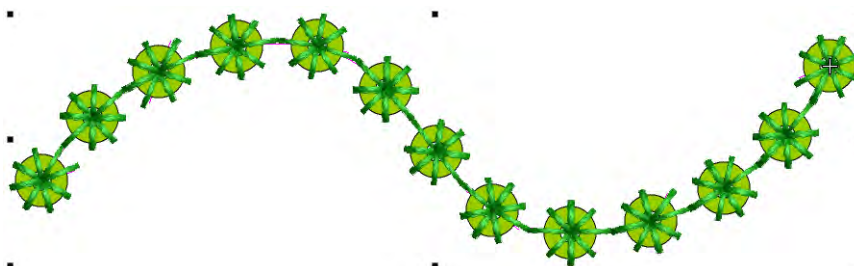
◀ To adjust fixing stitch size, select a method:

Method	Function
Match sequin	Automatically sets a margin around the sequin so that fixing stitches don't punch too close.
Set manually	Enables the Size field and lets you set a fixing stitch size independent of sequin size.

◀ If you choose the manual option, specify a value in the **Size** field. Size is measured from the center of the sequin. Enter a value from 2.50mm to 30.00mm.
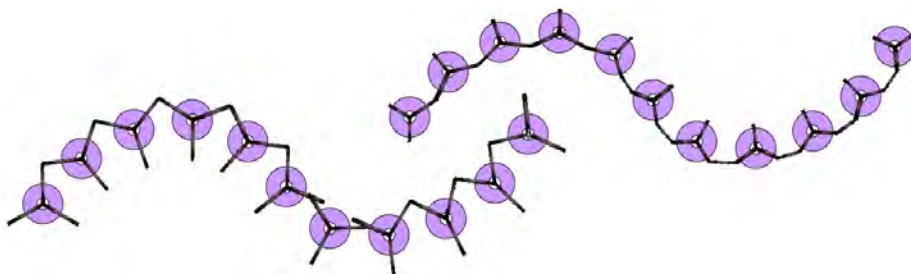
◀ If you have chosen automatic matching, specify a margin for the fixing stitch in the **Margin** field. Enter a value from 0.20mm to 2.00mm. This ensures that the fixing stitch does not punch too close to the sequin.

◀ If you have chosen an eccentric sequin shape such as 'ellipse', fixing stitches automatically adapt to fit.
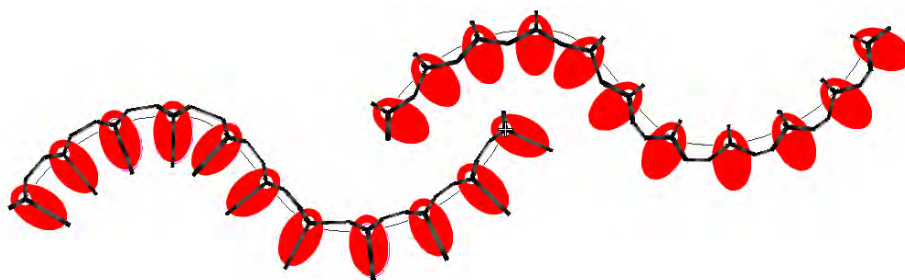
◀ To adjust fixing orientation, choose one of the preset directions – left/right, up/down.
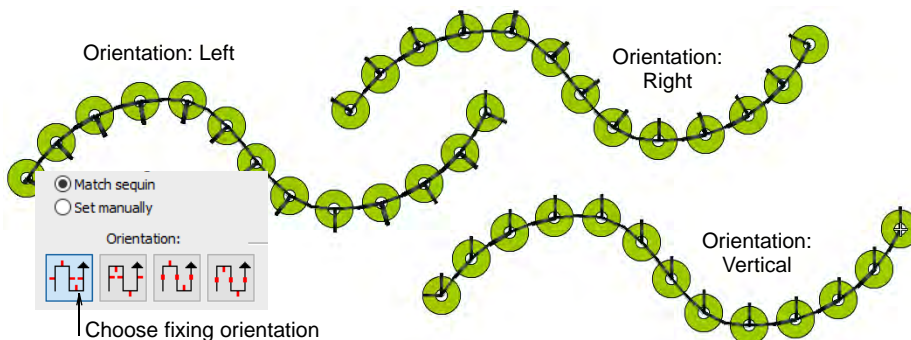
Related topics...

◀ Create sequin fixings

Set drop-stitch direction

There is an option to ensure that the initial fixing stitch **before** the sequin drop is placed **opposite** the feeding direction, as recommended by the machine manufacturer. Otherwise, the sequin may be deflected by the thread. If the needle then misses the center of the sequin because of incorrect placement, the embroidery material, needle or needle plates may be damaged. In multihead machines, sequins are fed from the front or 'south' which means that the initial fixing stitch or 'drop stitch' should be placed on the 'north' side (the default). In Schiffli machines, the opposite is the case.
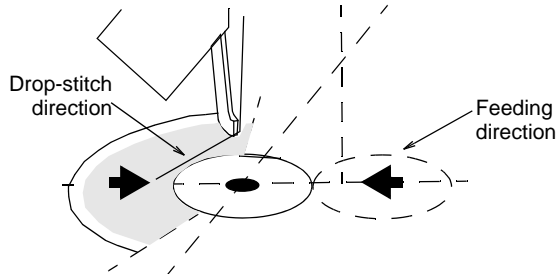
To set the drop-stitch direction

1 Select a sequin-run object and double-click to access object properties.
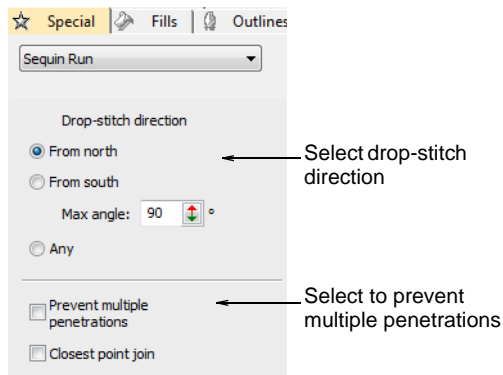
2 Select the drop-stitch direction to ensure that the initial fixing stitch is opposite the feeding direction:

Drop-stitch direction	Feeding direction
From north	Front or 'south' – which is the case in multihead machines.
From south	The top or 'north' – which is the case in Schiffli machines.

Drop direction 'From North': initial fixing stitch always placed above, and sequin fed from 'south'

Drop direction 'From South': initial fixing stitch always placed below, and sequin fed from 'north'
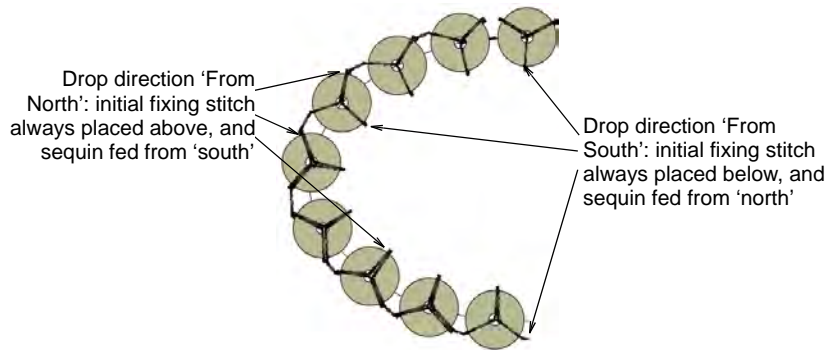
⚠️ **Caution:** With the **Any** option, direction is not important. This option generates the least number of fixing stitches but may not be suitable for your sequin device. Check your machine documentation.

3 Enter a **Max Angle** to specify an angular range within which drop-stitch will fall.

You can set the value for either north or south fixing stitches. The default is 90° but this can be increased or decreased depending on the capabilities of your machine.

Drop stitch direction set to North or South

Set maximum allowable angle for placement of fixing stitch
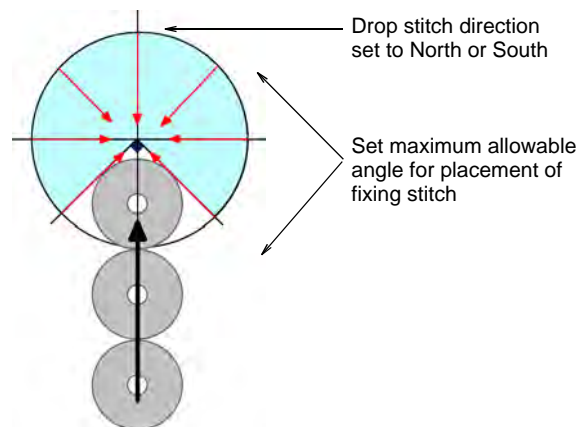
4 Select the **Prevent multiple penetrations** option as required.

This option is used to minimize penetrations at the same point, and to generate Schiffli-compatible fixing stitching. If you select the Schiffli template, the option is 'on' by default. When set to 'off', some fixing stitches will have multiple penetrations at the same point, both at the sequin center and outer edge.

Prevent multiple penetrations on

Prevent multiple penetrations off
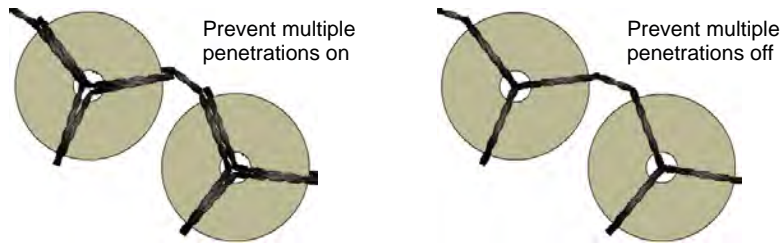
5 Select the **Closest point join** option as required.

By default, this option is off, meaning that the system connects the exit leg of the fixing stitch motif, wherever it happens to be, to the entry leg of the next fixing stitch motif, again wherever it happens to be. That is, unless the connector exceeds the maximum sequin stitch. Choose the **Closest point join** option if you want to **always** connect fixing stitch motifs from the leg closest to the nearest leg of the next fixing stitch motif.

Creating multi-sequin runs

EmbroideryStudio enables the creation of multi-sequin designs for supported machines. Create and visualize predefined patterns of sequin runs. These may comprise multiple sequins of different size, color, and shape.
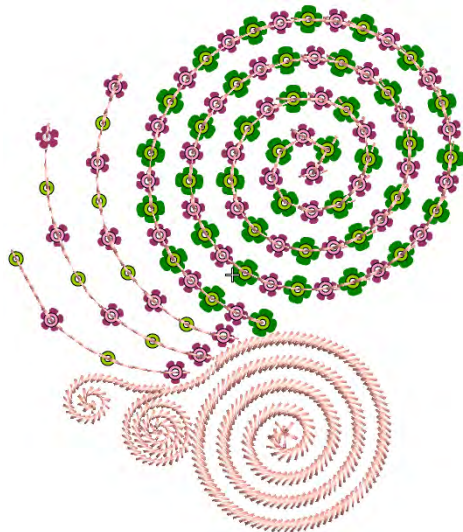
Tip: Twin-sequin mode also allows you to convert vector artwork to twin-sequin outlines. See also Convert sequin artwork.

Stacked sequins

|	
	Use Sequin > Manual Sequin to digitize individual sequins.
	Use Sequin > Sequin Run Auto to create a string of sequins along a digitized line according to current settings.
	Use Sequin > Sequin Run Manual to manually digitize sequin-drops along a digitized line.
	Use Sequin > Sequin Fill to digitize and fill large, irregular shapes with sequins.

For those machines that support it, EmbroideryStudio allows you to define multiple sequin drops on the same needle.
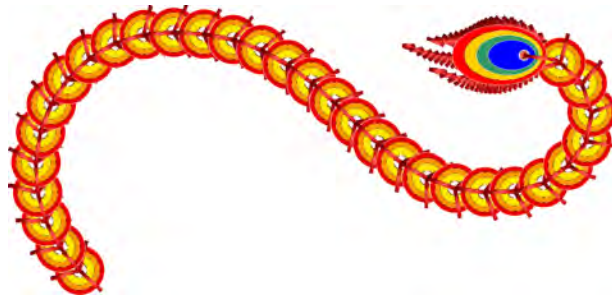
Stacked sequins can be used with **Manual Sequin** and **Sequin Run** digitizing methods. Permutations are automatically defined according to the sequin palette.
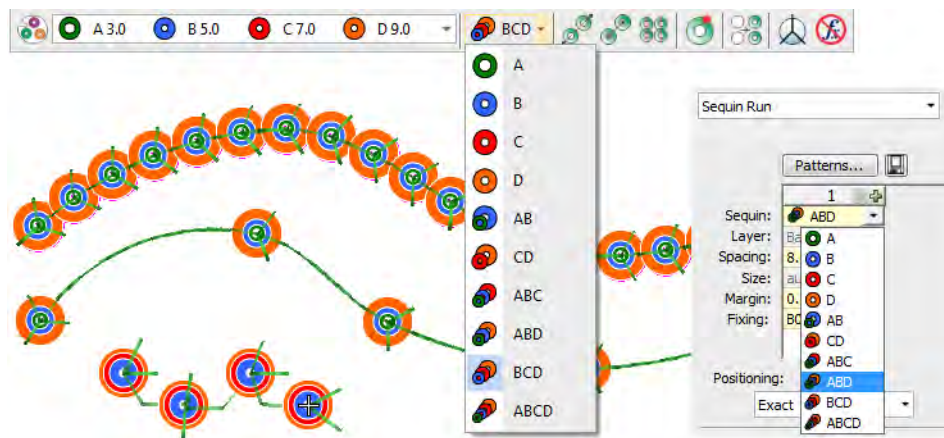
For those machines that support it, fixing stitches are only applied after all sequins have been dropped. In the case of many twin-sequin machines, the first sequin is dropped, fixed in place, and another dropped on top and stitched again.

Note: If you choose a stacked sequin configuration that the sequin device does not support, the machine will simply ignore that particular drop code.

Related topics...

◀ Setting up sequin palettes
◀ Digitizing sequin runs
◀ Digitize sequin drops with fixings

Apply multi-sequin run patterns

Use Sequin > Sequin Run Auto to create a string of sequins along a digitized line according to current settings.

Use Sequin > Sequin Palette to select from a user-defined palette of sequin shapes for the current design.

In EmbroideryStudio, you select multi-sequin patterns from a pattern library. While patterns can be used with single sequins, they make more sense when applied to multi-sequin palettes.
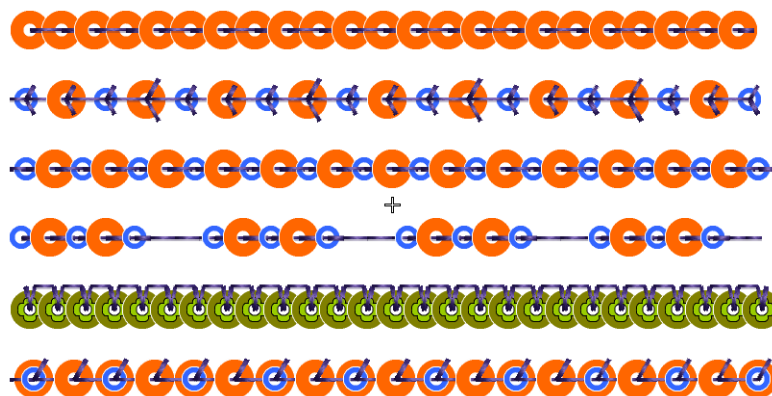
To apply a multi-sequin run pattern

◀ Optionally, choose an existing sequin run and open **Object Properties**.

Click to access pattern library
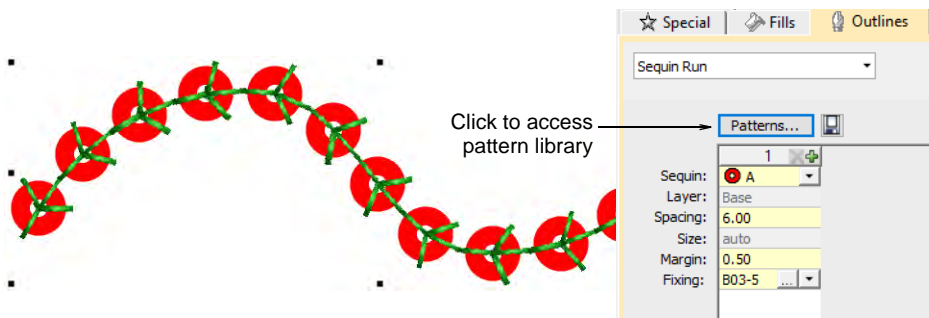
◀ Go to the **Outlines > Sequin Run** tab and click the **Patterns** button to access the library.

◀ Select a pattern from the menu. A preview is displayed.

Click to select pattern from droplist

Make selected pattern current

Select alternative sequin pair

Click to apply selected sequin pair

Preview of selected pattern
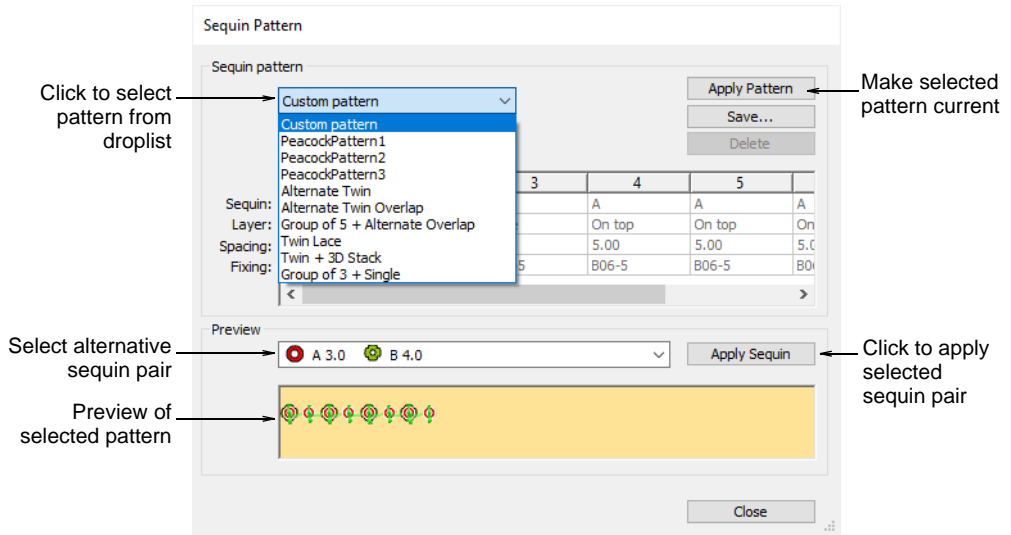
◀ Click **Apply Pattern** to make the selected pattern current. The pattern is immediately applied to any selected sequin-run objects.
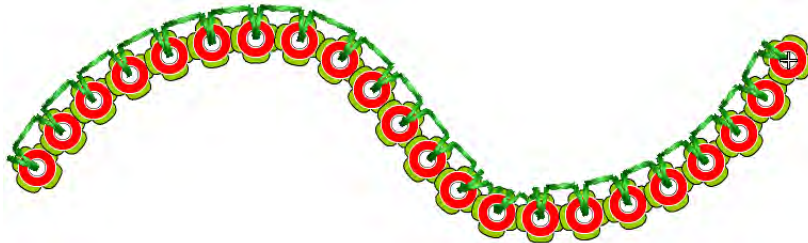
◀ Optionally, select a different sequin combination from the **Preview Panel** droplist and click **Apply Sequin**.

Change sequin pairs
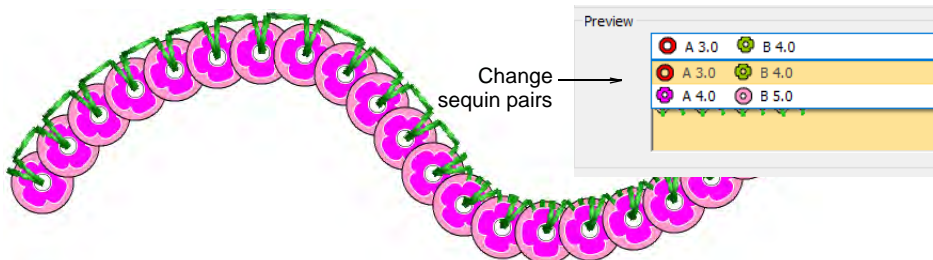
◀ Using the **Sequin Run Auto** tool, create your runs. The same pattern will apply until you change it.
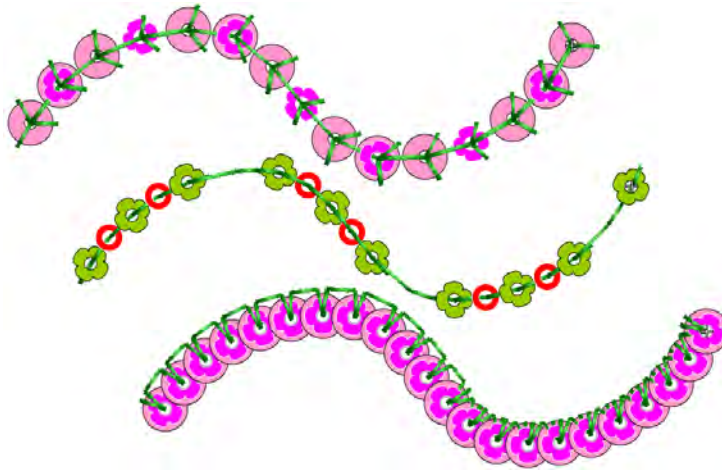
◀ Optionally, use the **Pattern** table in the **Object Properties** docker to define your own patterns. See below.

◀ Optionally, make a selected object's properties current, including multi-sequin patterns, and apply them to existing objects.

Copy and paste multi-sequin patterns from one object to another
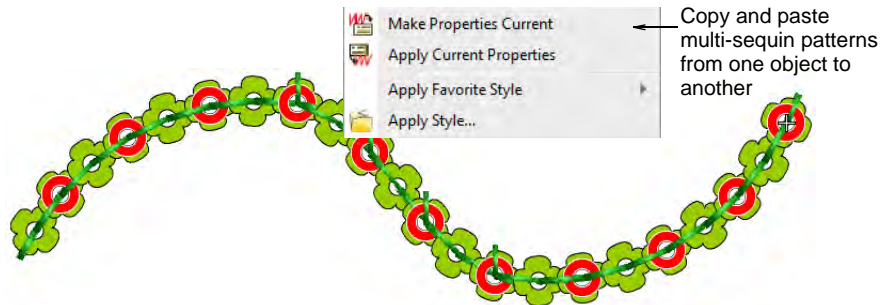
Related topics...

◀ Select sequin-capable machines
◀ Selecting sequin mode
◀ Digitizing sequin runs
◀ Creating multi-sequin runs
◀ Copy properties

Create multi-sequin run patterns

> Use Sequin > Sequin Run Auto to create a string of sequins along a digitized line according to current settings.

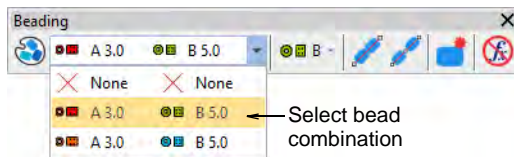> Use Docker > Object Properties to toggle the docker on/off. Set properties for the current design.

With EmbroideryStudio, you can create sequin run patterns and, optionally, save them to a pattern library for later use. Depending on machine capabilities, patterns may involve twin- or multi-sequin drops, with or without sequin stacking.

Fixing stitches

With sequin patterns, the software actually allows you to apply a different fixing type to each sequin. Normally however, you would use the same fixing for all sequins in the pattern. Typically you would consider the cost of embroidery production against sequin weight in order to find a balance. The fewer stitches used, the lower the production cost. At the same time, you want sequins to stay in place during use or washing.

Sequin stacks

For stacked sequins, pattern setup depends on machine capabilities. With Dahao format, the sequin stack is dropped and secured with a single fixing stitch. For non-Dahao machine formats, the first sequin is dropped, secured, and another dropped on top and stitched again.
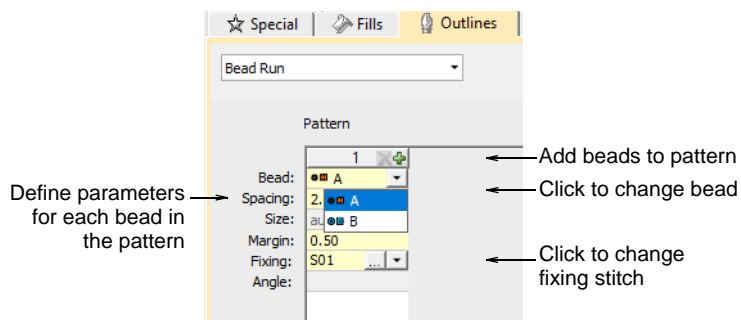
To create a multi-sequin run pattern

◀ Create a sequin-run object with **Sequin Run Auto** or select an existing object. This allows you to preview your pattern as you go.
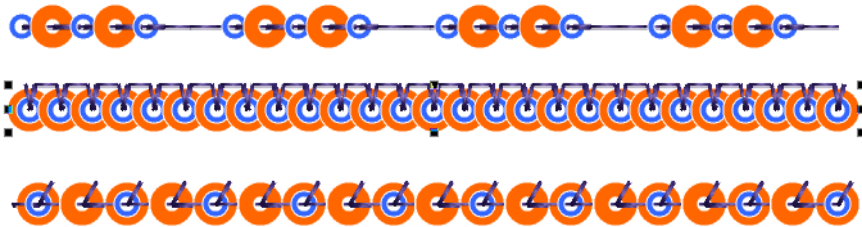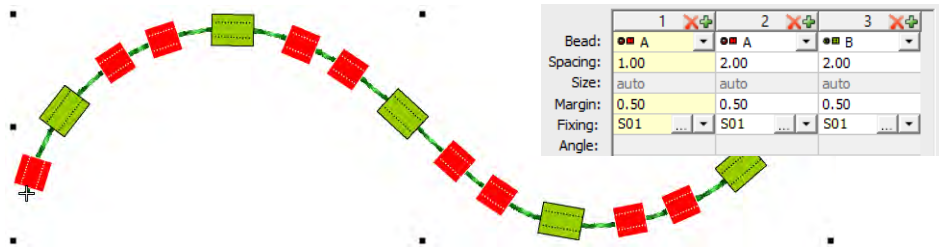

◀ Select the sequin combination you want to use.
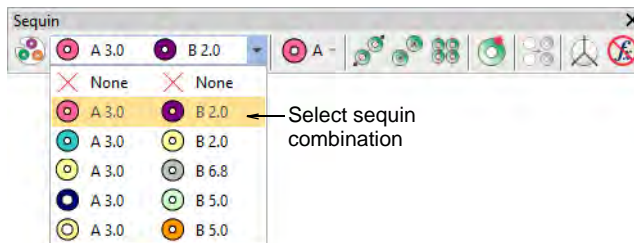
◀ Open **Object Properties**. The **Pattern** table displays sequins currently in use.

Define parameters for each sequin in the pattern →

Add sequins to pattern

Click to change sequin

Click to change fixing stitch
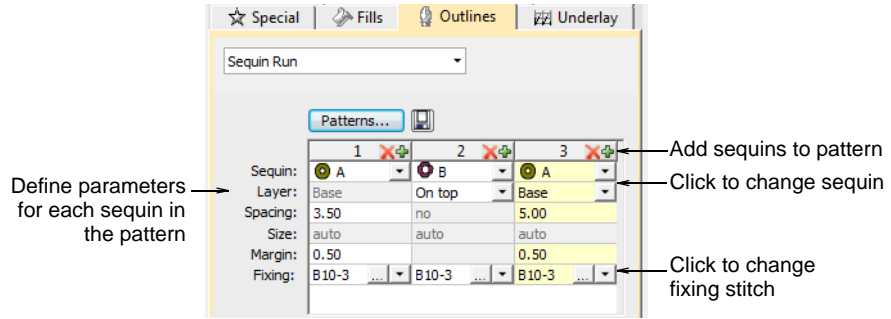
◀ Add or remove sequins via the **+** and **X** buttons in the column header.

◀ Select a sequin from the droplist. The selected sample updates immediately.

◀ If your machine format supports it – e.g. Tajima TBF, Barudan FDR II or 3, SWF Twin Sequin, etc – you can set up stack sequins using the **Layer** field. Specify whether the sequin is to be stacked ('on top') or to form a new 'base'.

Set sequin placement – 'base' or 'on top'
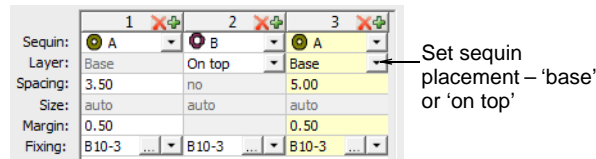
◀ With Dahao format, you can choose sequin stacks from the combinations in the droplist. In this case, two or even three sequins can be dropped simultaneously and locked with a single fixing stitch.
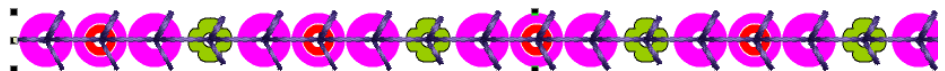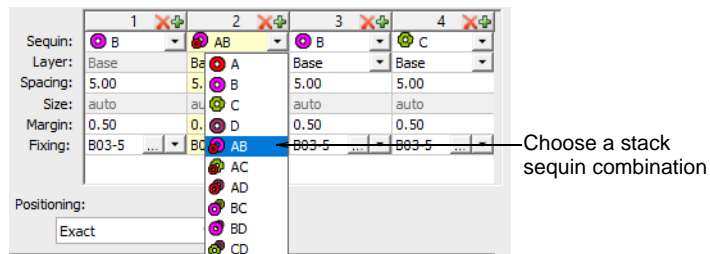
Choose a stack sequin combination

> 💡
> **Tip:** The digitizer needs to know the machine capabilities by heart. If an unsupported combination is selected – e.g. four sequin stack feeding – the drop code is ignored on the machine.

◀ In the **Spacing** field, enter a nominal spacing for each sequin. Spacing is measured from the center of one sequin to the center of the next.
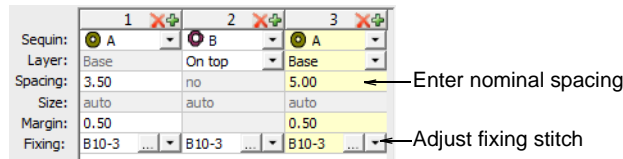
— Enter nominal spacing
— Adjust fixing stitch

◀ In the **Fixing** field, select the type of fixing you want. Generally you'll use the same fixing for all sequins in the pattern.

◀ When satisfied with the sequin-run pattern, click **Save** to record the pattern for future use.

Click to save pattern
Enter pattern name
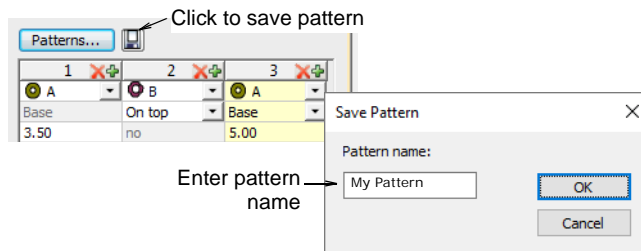
◀ Enter a name for the pattern and click **OK**. It is now available in the **Sequin Pattern** dialog.

Related topics...

◀ Select sequin-capable machines
◀ Digitizing sequin runs
◀ Apply multi-sequin run patterns

Editing sequin runs

> ➤ Use Select > Select Object to resize objects using selection handles.
>
> ➤ Use Reshape > Reshape Object to reshape selected sequin-run objects.

You have complete control over scaling and reshaping sequin-run objects. You can also manually fine-tune sequin spacings as well as remove or add individual sequins. You can even edit individual fixing stitches.

Note: Performing manual edits to sequin-run objects automatically deselects all options. If you reset to **Exact**, **Contract to fit**, or **Expand to fit**, all manual edits are lost and sequin drops recalculated.

To edit a sequin run

◀ Scale sequin-run objects by clicking and dragging selection handles, or by adjusting general properties.

◀ If the object is created with the **Sequin Run Auto** tool, the sequin drops are automatically recalculated.

Sequin drops regenerated according to current settings
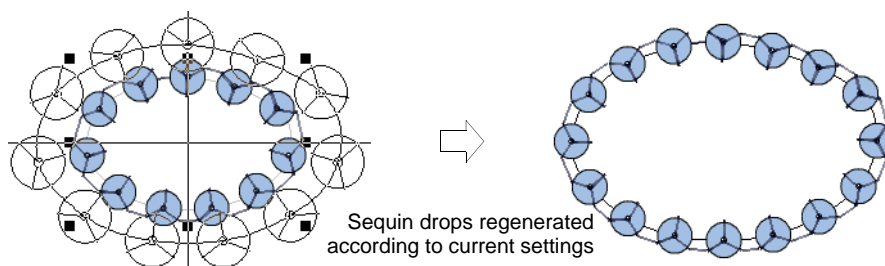
◀ If the object is created with the **Sequin Run Manual** tool, the original number of sequin drops is preserved.

Original number of sequin drops preserved
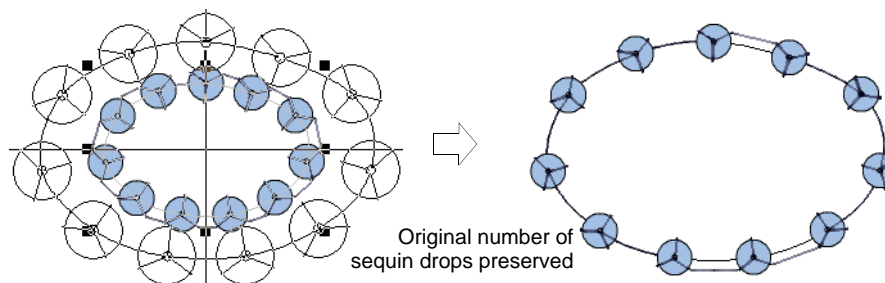
◀ Reshape sequin run lines with the **Reshape** tool. Add reshape nodes by left- or right-clicking the outline.
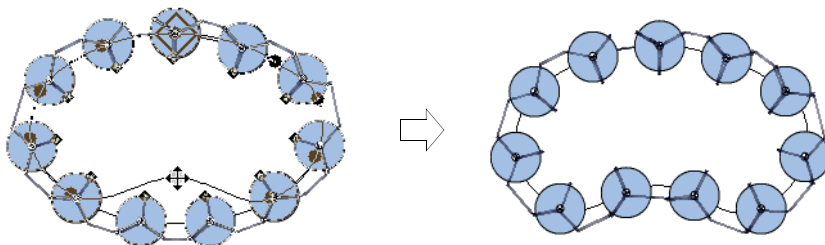
◀ Fine-tune individual sequin spacings with the **Sequin Edit** tool – click-and-drag a diamond control point. Hold down **Shift** or **Ctrl** keys to select a range or multiple control points.

Click-and-drag spacing handle
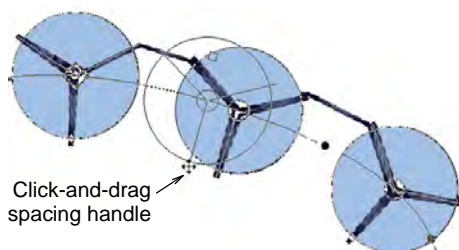
◀ Delete selected sequins by pressing **Delete**.

Click a diamond control point and press Delete
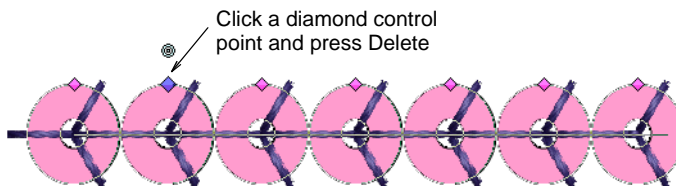
◀ Add sequins by holding down the **Alt** key and clicking the run. If you are in multi-sequin mode, select options, including stack sequins, from the popup menu.

Hold down Alt key and click

Select a sequin shape from the popup menu
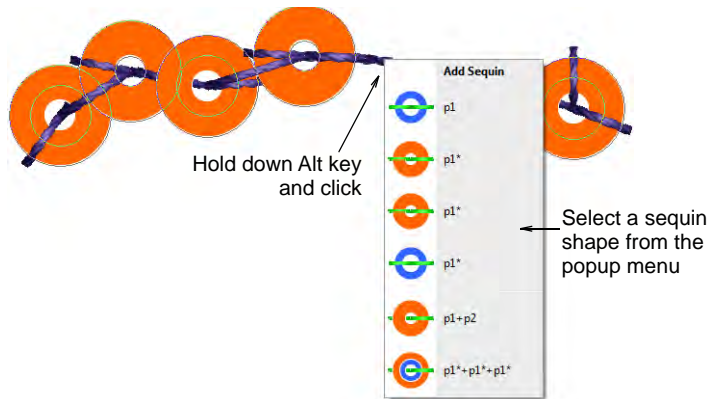
◀ To replace a sequin in multi-sequin mode, click a diamond control point and select an alternative from the **Manual Sequin** droplist.

Replace sequin with selection from droplist
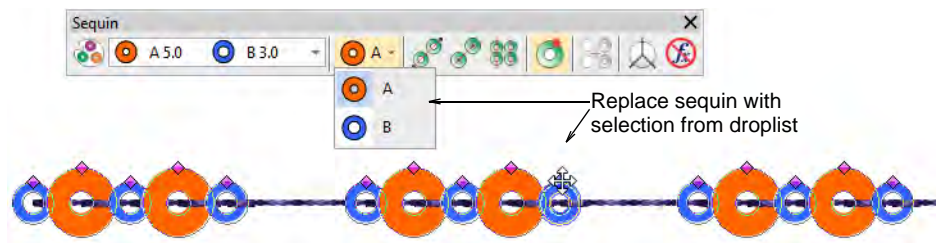
◀ In multi-sequin mode, right-click a diamond control point while modifying a particular sequin. Options include: removing the sequin, replacing it, adding another sequin on top or beneath.

Replace sequin with selection from menu
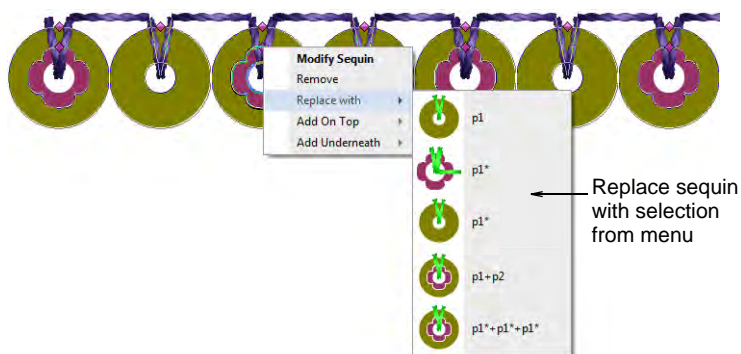
Related topics...

◀ Scaling objects
◀ Reshaping embroidery objects

Chapter 48
Advanced Sequins

Some embroidery machines are equipped with devices that can drop sequins onto the garment as it stitches. Machine capabilities vary widely. Some machines only support single-sequin devices. Some machines support twin-sequin devices. Newer machines can support multi-sequin devices. These may perform consecutive sequin feeds – one at a time whilst stitching. Some may allow 'stack feeding', where multiple sequins are dropped and secured with a single fixing stitch.

This section describes how create sequin fills, both single- and multi-sequin, with and without borders. It discusses fancy sequin fills as well as flip sequins. It also covers editing sequin fills and converting objects to sequins. It deals with single sequin digitizing and custom sequins as well as outputting sequin designs.

Creating sequin fills

The **Sequin Fill** feature provides a means of filling complex shapes with sequins generally arranged in columns. The fill can also include a border,

with or without a margin. This can be made from the same or a different sequin and is a property of the object.
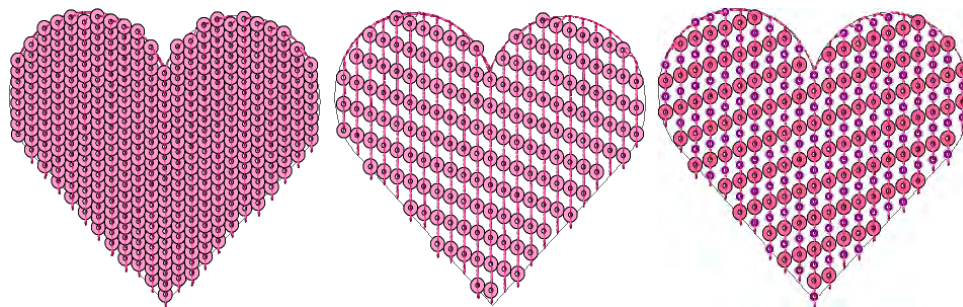
Sequin fills are tied together by run stitches and travel runs. Travels are placed along the object outline. Sequin centers never fall outside the object outline. Sequin fixing stitches, however, can lie outside the outline depending on current settings.

💡
Tip: The **Show Repeats** function displays repeating designs, including sequins, in both **TrueView** and stitch view. You can view a design, even while digitizing, with any number of repeats. See also Viewing design repeats.

Digitize sequin fills

Use Sequin > Sequin Fill to digitize and fill large, irregular shapes with sequins.

Before you can use the **Sequin** tools, you need to choose a suitable machine format. Similarly, you need to prepare a palette of sequins according to capabilities of your chosen machine. See Selecting sequin mode for details.

Once set up, the palette is available for use from the **Sequin** toolbar and **Object Properties**. Digitizing sequin-fill objects is essentially the same as digitizing complex fill objects.
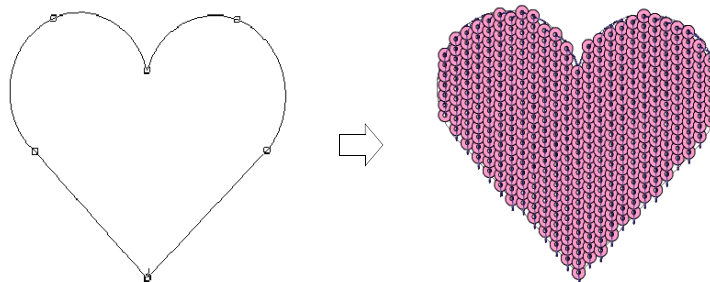
Double-clicking the object will invoke **Object Properties** similar to sequin run properties. See Digitizing sequin runs for details.

Sequin layout settings control overall appearance of sequin fills

Control fill margin with or without border

Add a border as preferred

Control sequin settings for both fills and borders

Control fixings for both fills and borders
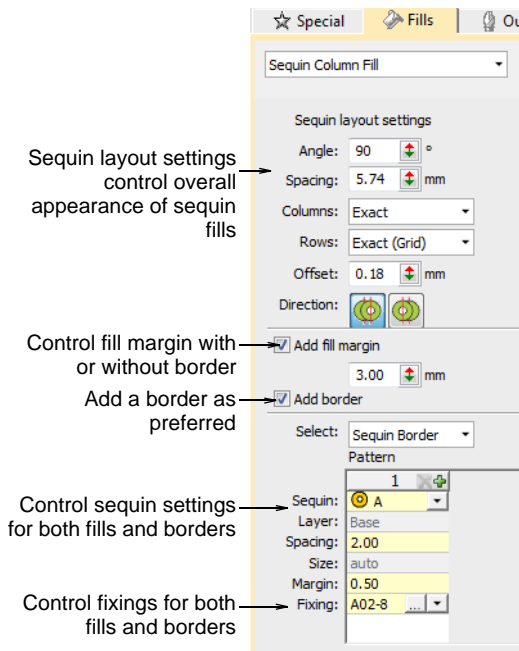
Controls available on the **Fills > Sequin Column Fill** tab for patterns and fixing stitches are summarized below.

Control	Description
Sequin layout settings	Use these settings to control the overall layout of the fill grid, including angle, sequin spacings, and offsets within the grid. See Adjust sequin layouts for details.
Fill margin	Include a fill margin or not as required. No sequin will have its center placed outside the fill margin. Usually used with a border but not necessarily. See Adjust sequin layouts for details.
Add border	Sequin fills can include a border, with or without a margin. The border is a property of the object. See Fancy sequin fills for details.
Select	Determines what patterns are displayed: • Sequin Fill: displays the fill pattern • Sequin Run: displays the border pattern. All other controls work the same as for Sequin Run.

Fixing stitches are selected in the same way as for sequin runs. For sequin fills, we recommend the simplest fixing stitch available – C01-1.

Use the simplest fixing stitch
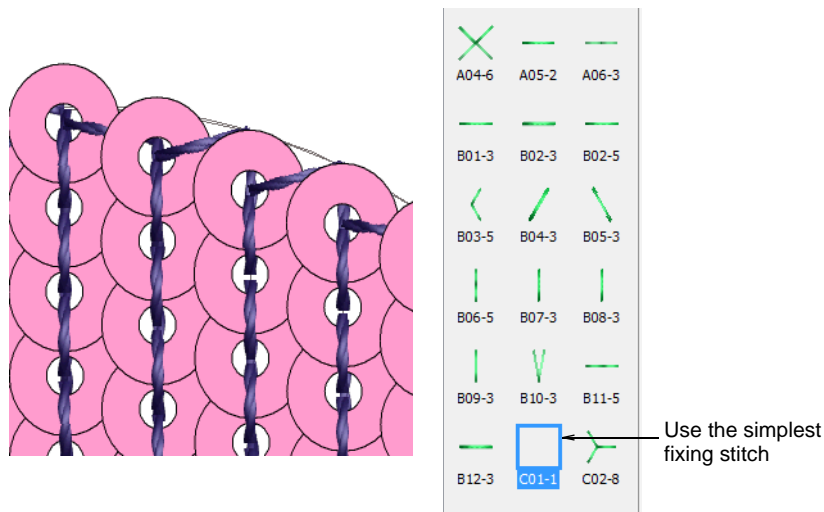
Related topics...

◀ Selecting sequin mode
◀ Digitizing sequin runs
◀ Sequin fixings
◀ Creating free-form shapes

Adjust sequin layouts

> 🔳 Use Sequin > Sequin Fill to digitize and fill large, irregular shapes with sequins.

Use sequin layout settings to control the overall layout of the fill grid, including angle, sequin spacings, and offsets within the grid.

Adjust sequin layout

Independent control of column and row spacings

Set margin
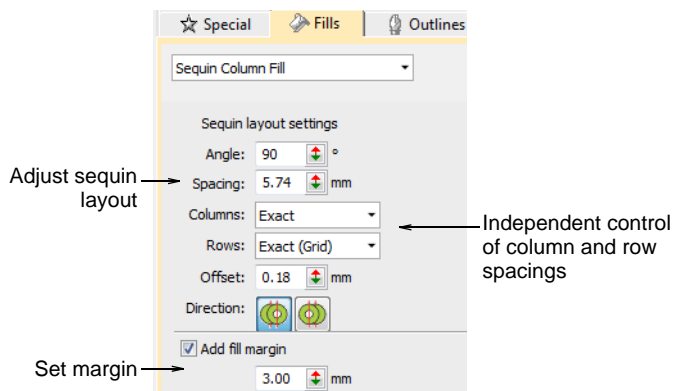
Sequin Fill provides independent control of column and row spacings. Set the nominal spacing in the **Spacing** field. You have the option of expanding or contracting spacings in rows or columns. Each line is adjusted independently. The aim is to make sequins follow to the edge of the shape as closely as possible. This is less important if you add a border to the fill.

To adjust sequin layouts

◀ Adjust **Angle** as shown:

Angle: 45°   Angle: 90°
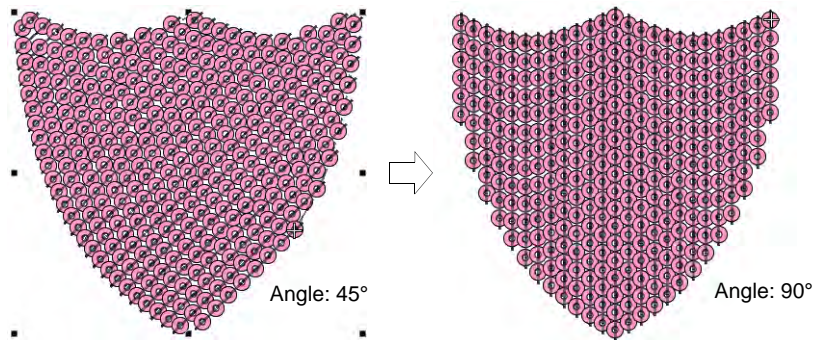
◀ Adjust **Spacing** as shown. This setting controls column spacing, not row spacing.

Spacing: Default   Spacing: 5 mm
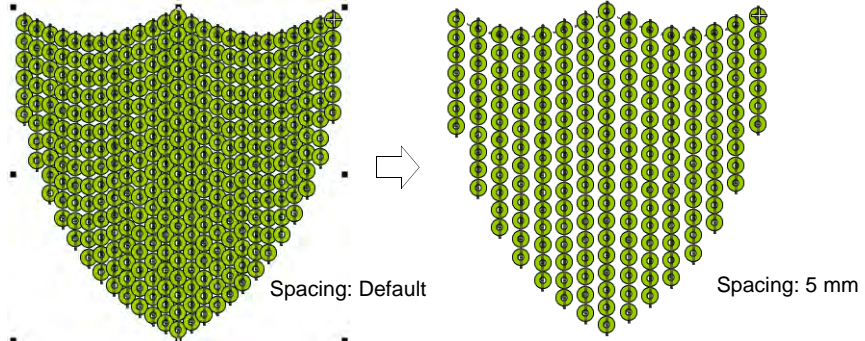
◀ Use **Columns** and **Rows** settings to make sequins fit the grid or adjust line-by-line to fit the shape. This is less important if you add a border to the fill.

Exact columns and rows

Adjusted columns and rows
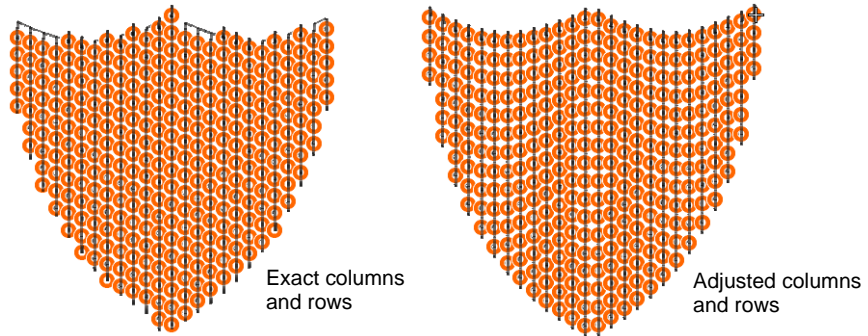
◀ Adjust **Offset** as shown. This only works if you have set **Rows** to 'exact' spacing.

Offset: 0 mm

Offset: 5 mm
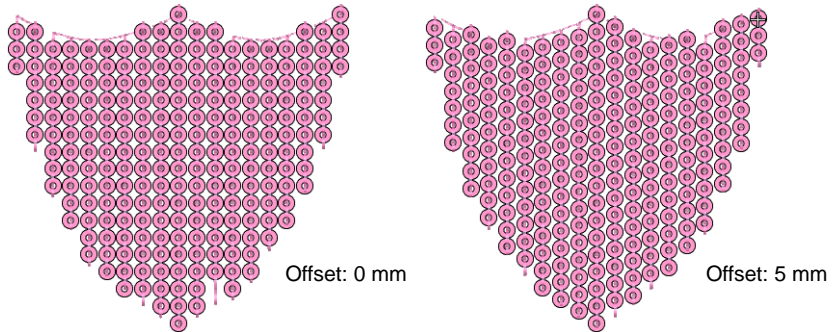
◀ Adjust **Direction** as shown. This does not affect sequin layout, but it does affect stitching order, whether left-to-right or right-to-left. It may affect the appearance of fixing stitches.

Layout: left-to-right

Layout: right-to-left
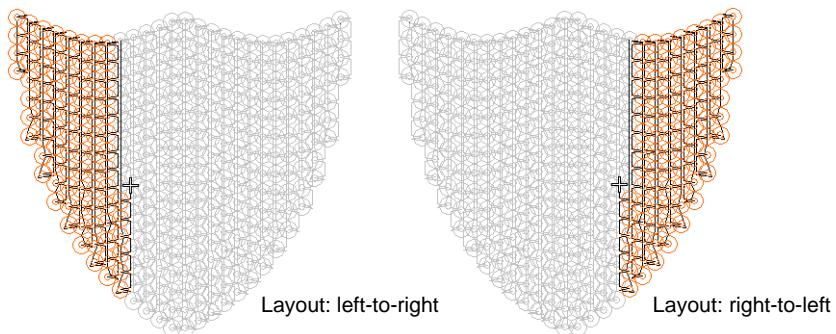
◀ Activate **Add Fill Margin** and adjust setting as necessary. This is generally used in conjunction with the **Add border** option. See below.
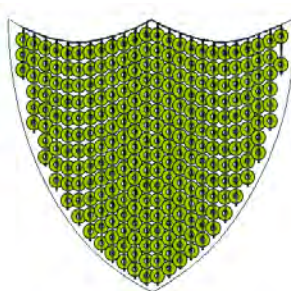
| No margin | Margin added | Margin with border |
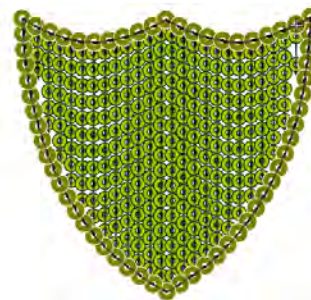
Adding sequin borders

Sequin fills can include a border, with or without a margin. The border is a property of the object. If a twin-sequin capable machine is selected, the border and fill can differ. They can be comprised of single sequins or sequin patterns.
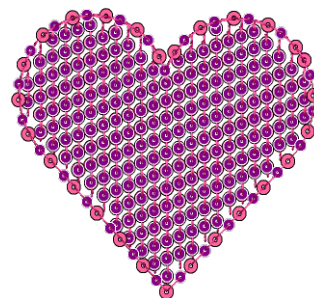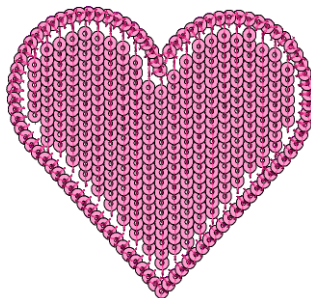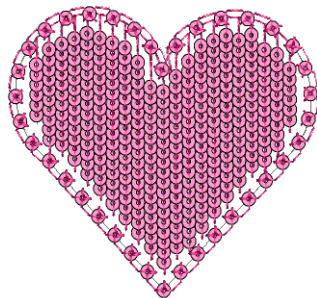
To add a sequin border

◀ Select a sequin-fill object and double-click to access object properties.

Tick border option → Tick the Add border checkbox

Adjust fill margin → 3.00 mm

Select Sequin Border → Select: Sequin Border

Enter nominal spacing → Spacing: 2.00

Click to change fixing stitch → Fixing: A02-8

Adjust fixing stitch size manually or automatically → Match sequin / Set manually
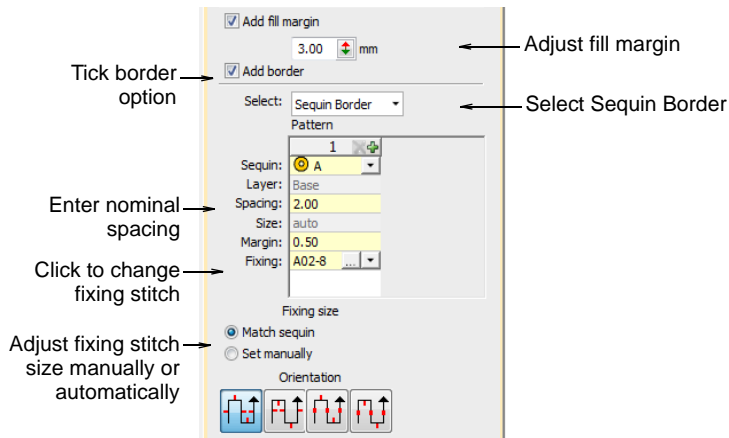
◀ Tick the **Add Border** checkbox and select **Sequin Border** from the droplist.

◀ Adjust sequin shape as shown. This can be the same or different to the sequin fill if you have a twin-sequin capable machine.

Sequin fill with same type border

Sequin fill with different type border
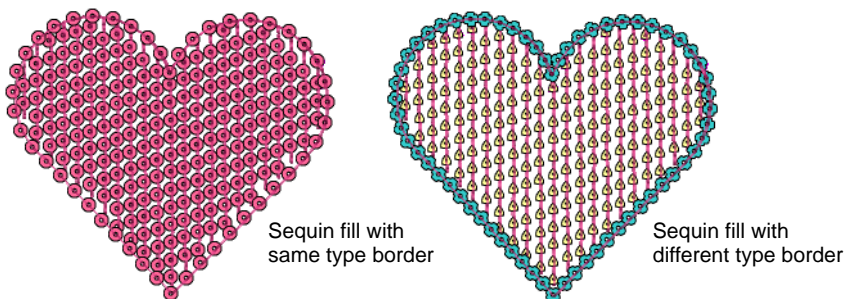
◀ Adjust the fill margin and border spacing as shown.
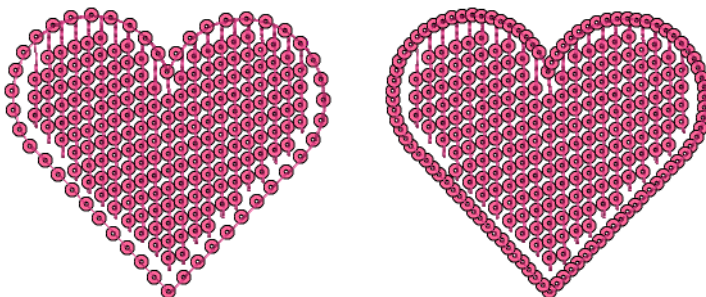
◀ Set sequin border fixing stitch direction as shown.

Fixing stitch direction: clockwise

Fixing stitch direction: counter clockwise

Adjust fixing stitch direction
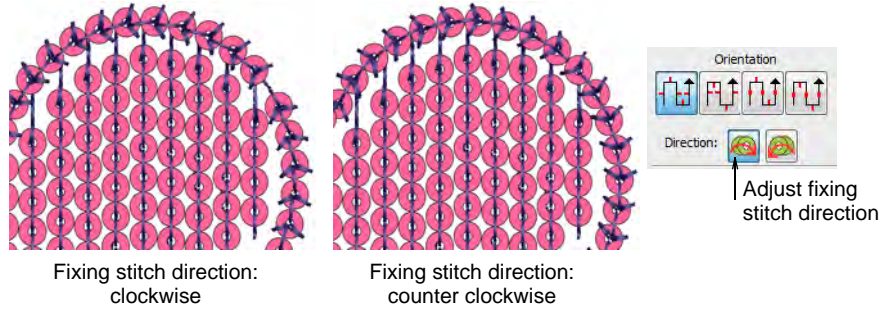
Related topics...

◀ Digitizing sequin runs
◀ Sequin fixings

Special sequin fills

EmbroideryStudio provides techniques for creating special sequin fills, including reversible or 'flip' sequins and scalable sequin stipple fill.
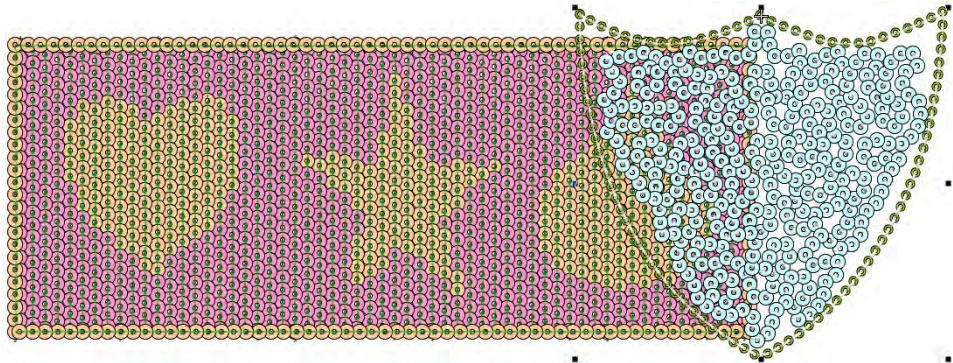
Fancy sequin fills

> 🔲 Use Sequin > Sequin Fill to digitize and fill large, irregular shapes with sequins.

EmbroideryStudio allows you to create fancy sequin fills by a variety of methods.
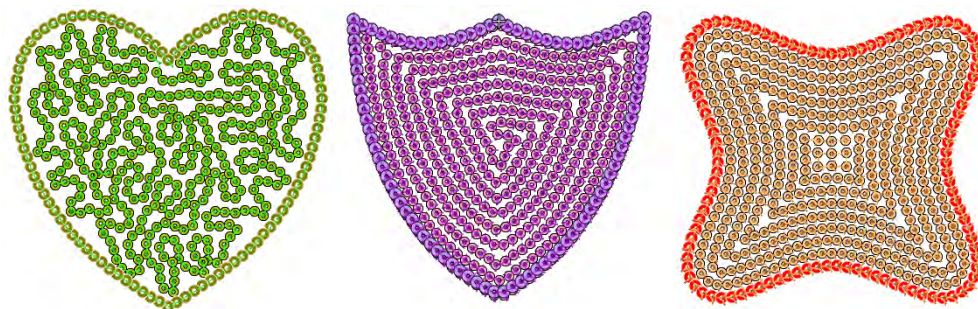
Create variegated stipple fills automatically with single or multi-color sequin patterns. These objects are fully scalable and can be reshaped like any embroidery object. For stipple fills, sequin borders are activated by default.

Select sequin stipple fill type

Set loop spacing as for embroidered stipple fills

Sequin border activated by default
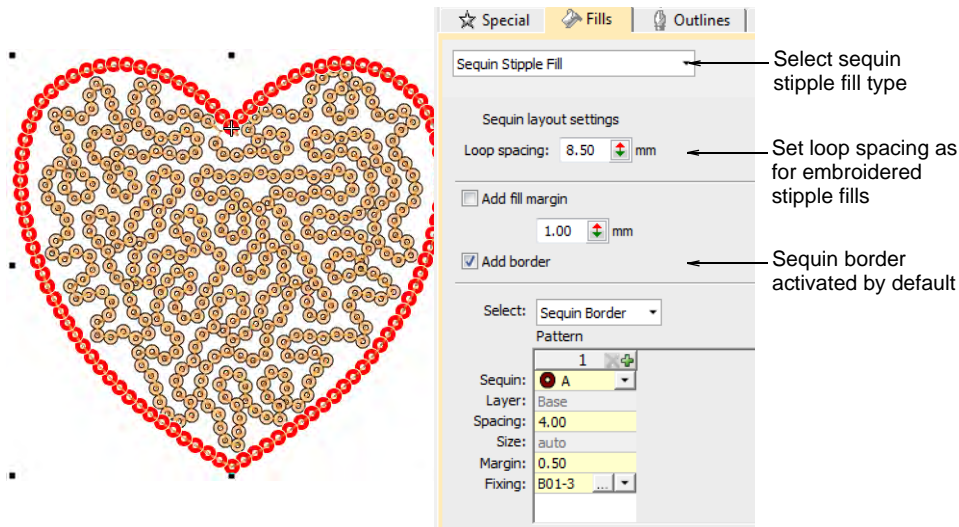
You can create other fancy sequin fills by the conversion method. This is technically a 'workaround' since it does not produce a scalable sequin object. However, if your design requires it, you can first create the desired shape using, for example, **Maze** or **Offset** fill. Set spacing sufficient to accommodate the sequins you want to use. Then break apart and convert the resulting run objects to sequin runs. These can be

grouped. But note what happens when you scale the object – sequins are recalculated for each run, but the gap between lines increases.

Maze fill converted to sequin run

Offset fill converted to sequin runs

Grouped object scaled
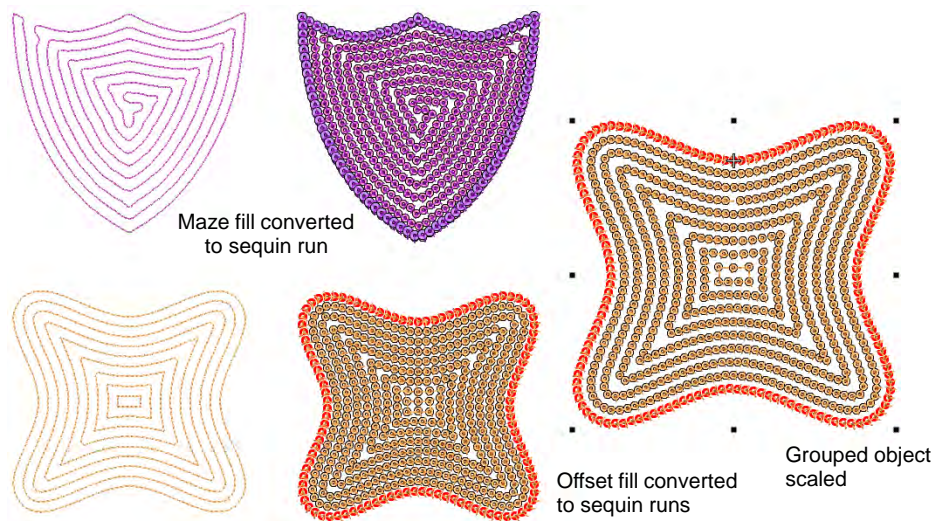
Related topics...

◀ Convert objects with Wilcom Workspace
◀ Break apart composite objects
◀ Stippling effects
◀ Maze fills
◀ Offset fills

Flip sequins

⊥	Use View > Show Functions to toggle display of machine function symbols. Right-click for settings.
🪶	Use View > Show Stitches to toggle embroidery stitching display. Right-click for settings.
88	Use Sequin > Sequin Fill to digitize and fill large, irregular shapes with sequins.
🔶	Use Docker > Carving Stamp to define a pattern of needle penetrations using a 'carving stamp' as a template.
🚫	Use View > Flip Sequins to toggle between front and reverse sides of sequin runs and fills in reversible sequin designs. Define colors in the Sequin Palette Editor.

Flip sequins, also known as reversible sequins, create a color-changing effect which is very fashionable. Beginning with children's wear, flip

sequins have found a wide variety of applications, from reversible sequin shirts, pillow cases, bags, cases, note books, and more. Their use is simple – swipe up or down to reveal the reverse side with sometimes surprising effects. Flip sequins have also found their way into high fashion.

Sequin Fill can be used in combination with **Carving Stamp** to digitize twin-sequin fills with predefined twin sequin assignments. The stamp pattern takes the color of the other sequin in the currently selected pair. Use the **Reshape** tool to size, rotate and reshape stamp patterns.
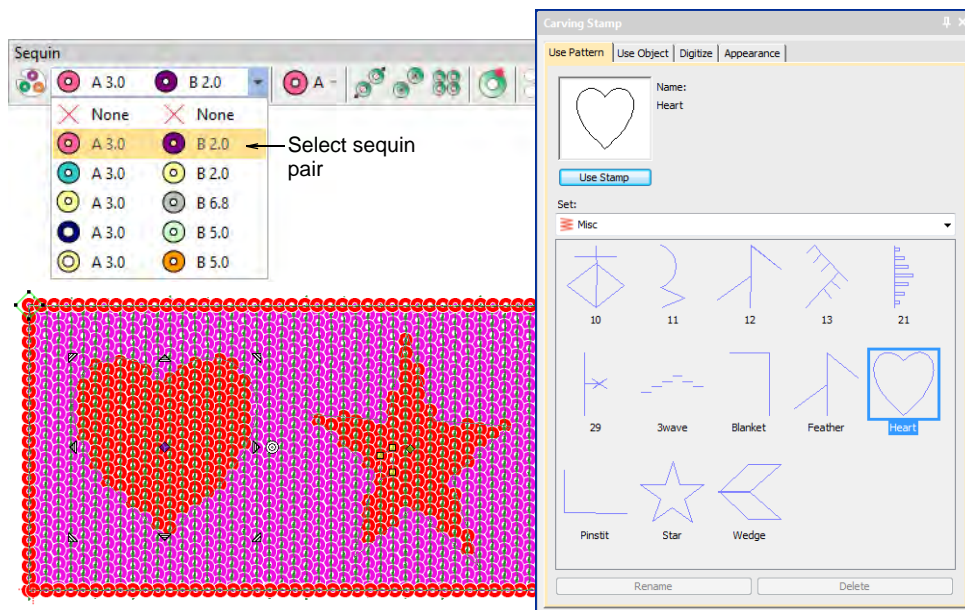
If you have defined reversible or 'flip' sequins, click the **Flip Sequin** control to view the reverse image as it will appear on stitchout.
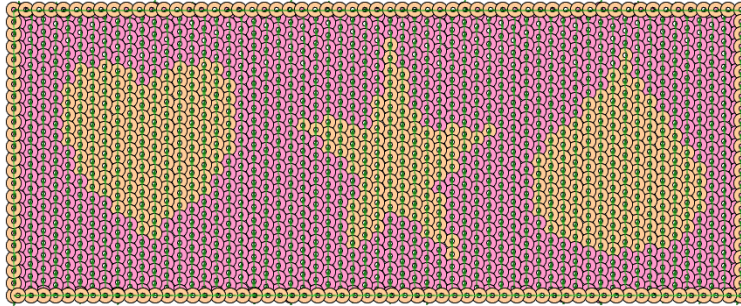
Related topics...

Creating multi-sequin fills

> Use Docker > Object Properties to toggle the docker on/off. Set properties for the current design.

If you have a twin- or multi-sequin capable machine, you can use the **Pattern** control to create patterned borders and/or fills. Use it also to control sequin spacing independently of line spacing. Most controls work the same as for **Sequin Run**. The process is essentially the same as for multi-sequin run patterns, except that you can't save them for later use.

Tip: Twin-sequin mode also allows you to convert vector objects to twin-sequin outlines. See also Convert sequin artwork.

To create multi-sequin fill patterns

◄ Open **Object Properties** and define a fill pattern as you would for a sequin run.

Define fill pattern

◄ Change sequin combinations as desired.

Select sequin pair

◀ If your machine format allows it, define sequin layers as you would for a sequin run, one sequin serving as the 'base', and the other dropped 'on top'.

Define sequin layers
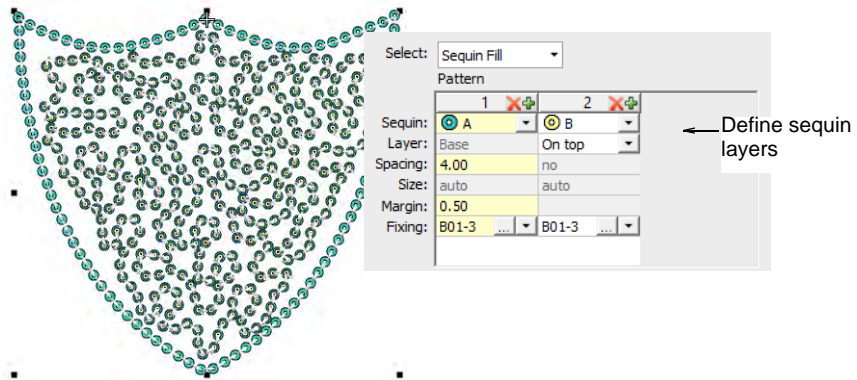
◀ With Dahao format, choose sequin stacks from the combinations in the droplist.
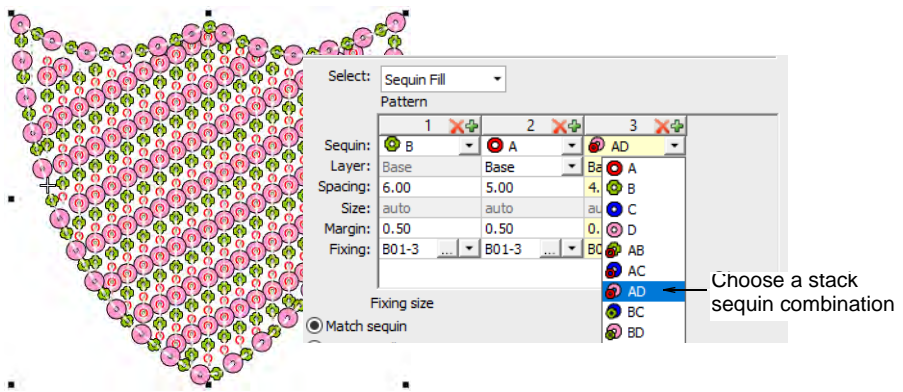
Choose a stack sequin combination

Note: If you choose a stacked sequin configuration that the sequin device does not support, the machine will simply ignore that particular drop code.

◀ Optionally, make a selected object's properties current, including multi-sequin patterns, and apply them to existing objects.

Copy and paste multi-sequin patterns from one object to another
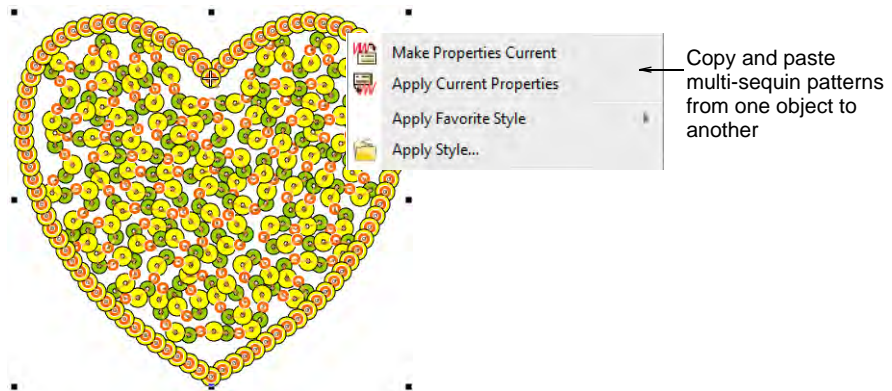
Related topics...

◀ Creating multi-sequin runs
◀ Sequin fixings

Editing sequin fills

> Use Reshape > Reshape Object to reshape selected objects by means of control points.
>
> Use Sequin > Sequin Edit to fine-tune placement of individual sequins.

Either by means of object properties or the **Reshape Object** tool, you can control the overall shape of sequin fills as well as their layout. You can also set entry and exit points to avoid excessive needle penetrations.
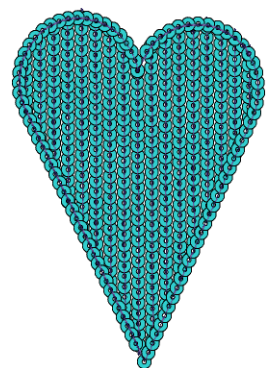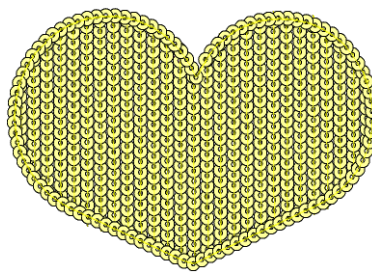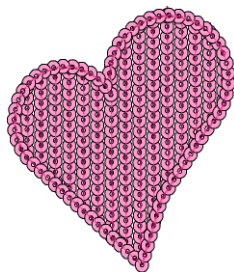
To reshape and edit a sequin fill

◀ Select a sequin-fill object and click the **Reshape** icon.

Use reshape nodes
to reshape outline
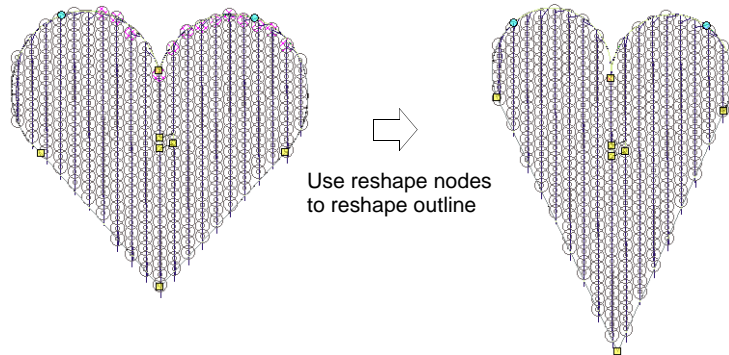
◀ Adjust overall shape like any embroidery object.

◀ Use the three central control points to adjust sequin layout settings interactively. These control **Direction Angle**, **Spacing**, and **Offset** settings. Pattern spacing is also influenced.

Adjust sequin layout
settings interactively
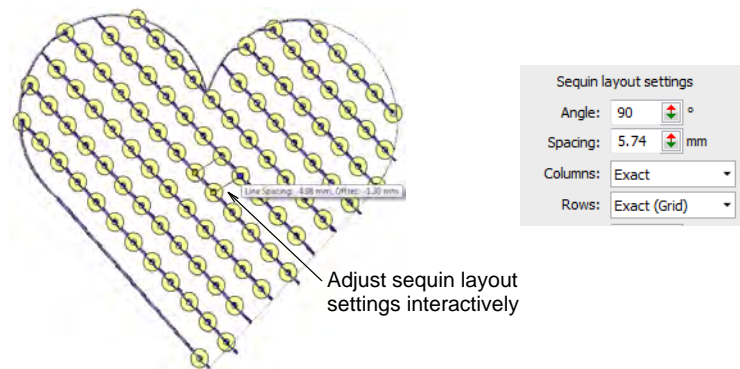
Pattern spacing is also controlled numerically via the **Patterns** panel.

| Line spacing: 3mm | Line spacing: 5mm | Line angle: 125° |
| Offset: 1mm | Offset: 4mm | Pattern spacing: 8mm |

Needle
penetrations
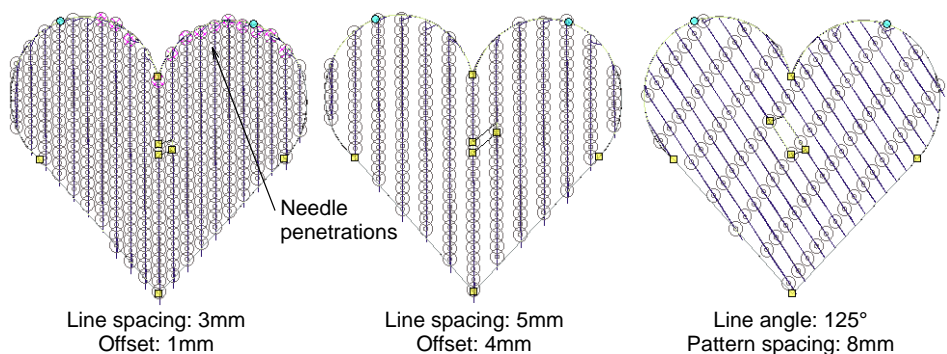
◀ Adjustments can cause needle penetrations to occur within sequins. Affected sequins are highlighted in pink. Adjust layout and/or entry/exit points to minimize unwanted needle penetrations.
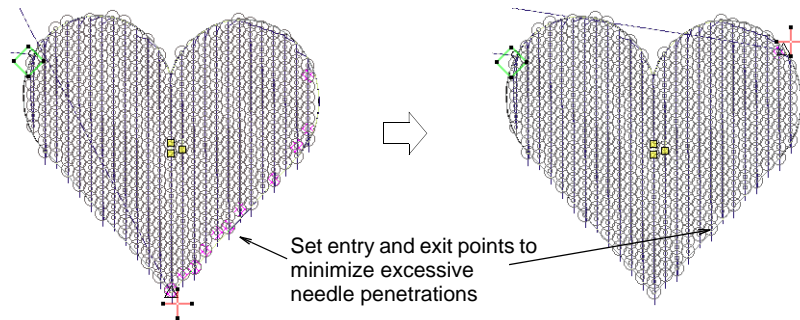
Set entry and exit points to minimize excessive needle penetrations

◀ Fine-tune individual sequin spacings with the **Sequin Edit** tool – click-and-drag a diamond control point.

◀ Holes can be digitized in sequin-fill objects in the same way as any free shape.

Sequin fills can contain holes

Related topics...

◀ Reshaping embroidery objects

◀ Editing sequin runs

◀ Creating free-form shapes

Converting objects to sequins

Most objects in EmbroideryStudio are inter-convertible. Open and closed sequin objects are no exception. Any open object – Run, Stemstitch, Motif Run, Freehand, Column C, Vector – can be quickly converted to sequin run. Similarly, any closed object – Column A/B, Complex Turning, or Complex – can be converted to sequin fill. EmbroideryStudio also

provides a dedicated tool for automatically converting sequin artwork in the form of a vector file to sequin runs.
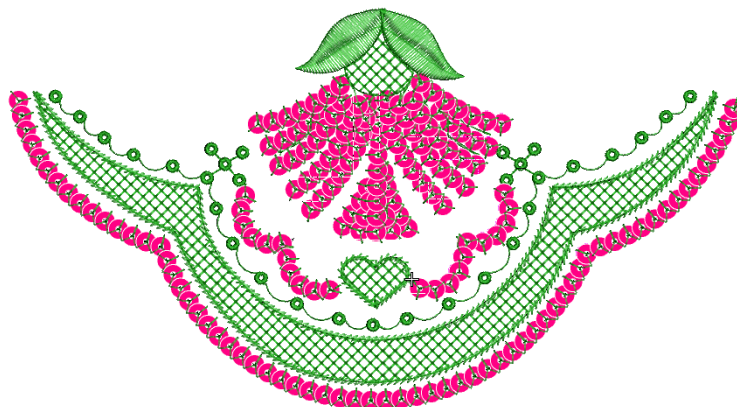
Convert embroidery objects to sequins

 Use Sequin > Sequin Run Auto to create a string of sequins along a digitized line according to current settings.

 Use Sequin > Sequin Fill to digitize and fill large, irregular shapes with sequins.

Convert any open object – Run, Stemstitch, Motif Run, Freehand, Column C, Vector – to sequin run.
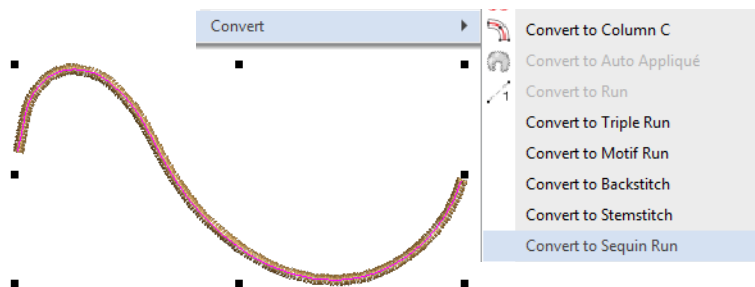
Right-click and select **Convert > Convert to Sequin Run**. Alternatively, simply click the **Sequin Run Auto** icon.
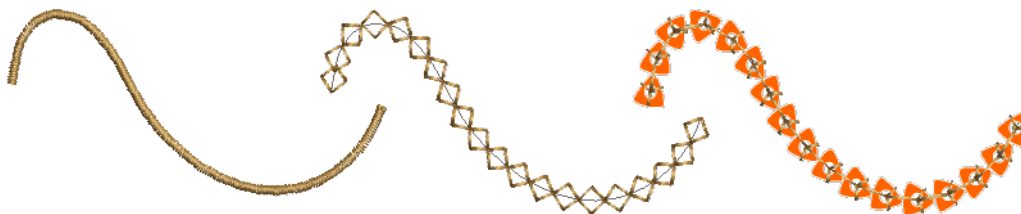
Similarly, convert any closed object – Column A/B, Complex Turning, or Complex – to sequin fill.
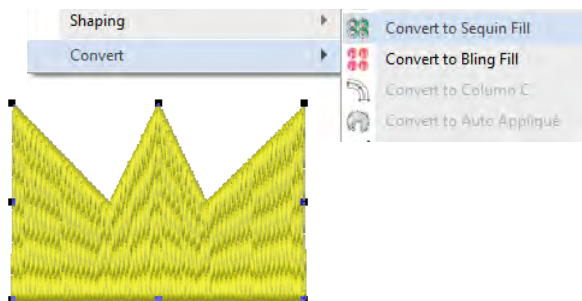
Right-click and select **Convert > Convert to Sequin Fill**. Or click the **Sequin Fill** icon.
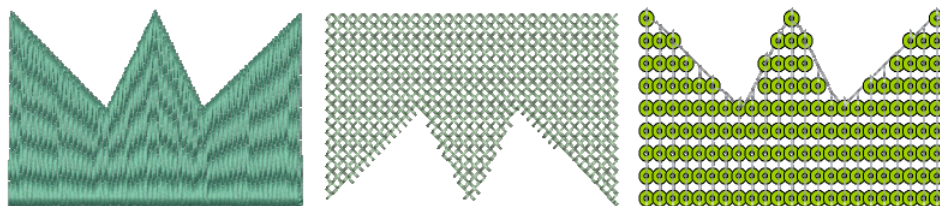
Convert sequin artwork

 Use Sequin > Vectors to Sequins to create a sequin run from a set of sequin vector objects selected by intersecting line.

Frequently, artwork for sequin designs is independently created by a specialist designer and supplied to the embroidery digitizer as a vector file. The **Vectors to Sequins** tool is available for just this purpose. A sequin run is automatically created from a set of vector objects representing sequins. Fixing stitches are generated automatically according to current settings. If you are digitizing twin-sequin runs,

EmbroideryStudio will generate sequin drops according to the currently selected sequin run pattern.
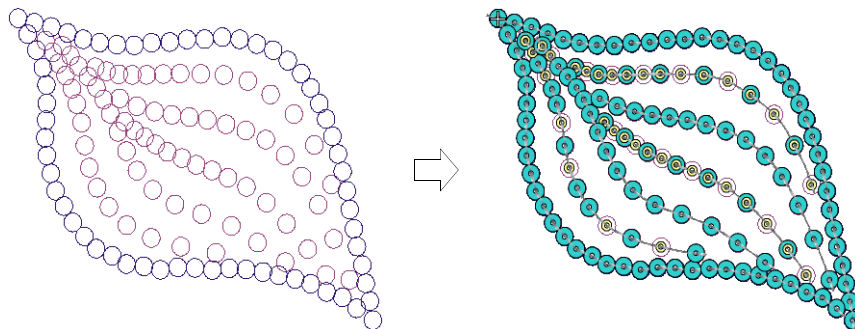
To convert sequin artwork

1 Select a machine format that supports sequin mode via the **Select Machine Format** dialog.

2 Insert the sequin artwork into the design.

Properly designed artwork will contain vector objects centered on the exact locations required for sequins in the design.

3 Select the sequin shape you want to use from the droplist in the **Sequin Palette**.

Select single sequin
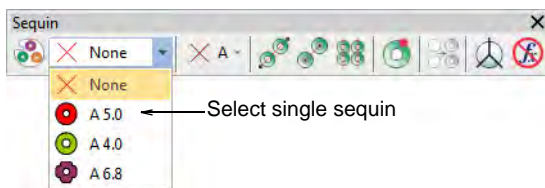
4 Select the **Vectors to Sequins** icon.

5 Click the sequin graphic which will start the sequin run.

Digitize connecting line passing through all sequin graphics
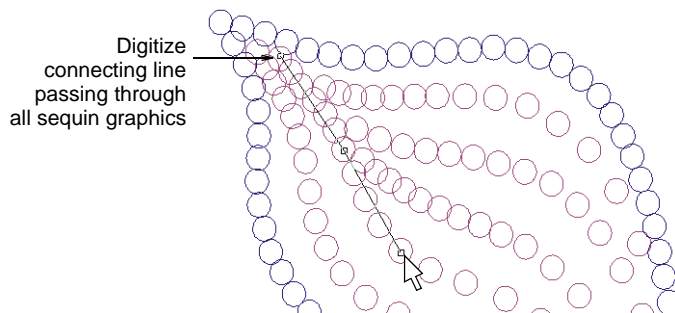
6 Digitize a line connecting all sequins to be included in the sequin run.

The line only needs to touch the sequin object somewhere within its boundary. Left-click for corner points, right-click for curve points.

7 Press **Enter**.

A sequin run is generated along a curve that passes through the center of each sequin graphic with sequin objects positioned at these centers. Current properties are applied and the object is set to 'manual' by default. The generated curve contains a reshape node at each sequin position.

Sequin Run automatically generated

Reshape nodes generated at each sequin drop
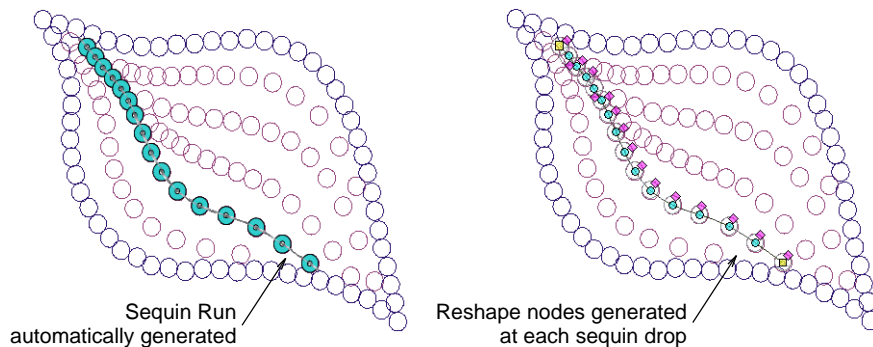
Tip: If you are running twin-sequin mode and preset a sequin pattern in **Object Properties**, this pattern is applied to the converted sequin objects while sequin spacing is preserved as per the artwork.

Pattern applied
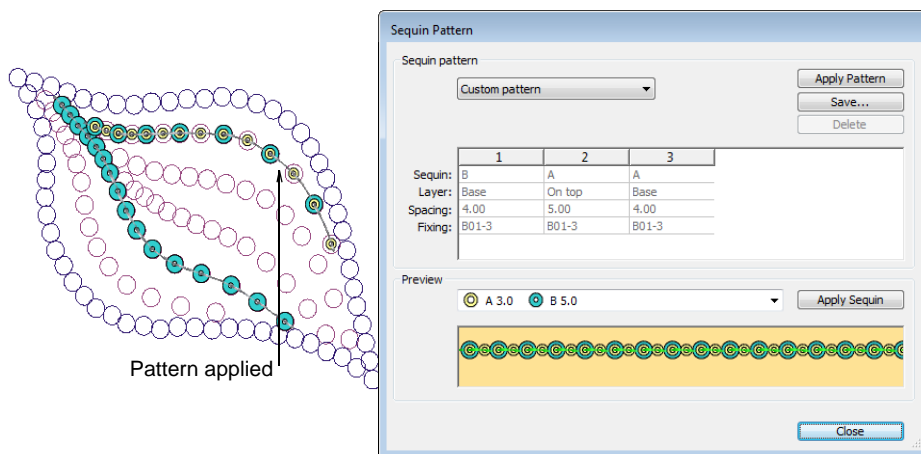
Related topics...

◀ Select sequin-capable machines

◀ Creating multi-sequin runs

Manual sequin digitizing

If you require precise control over the positioning and encoding of your sequin drops, EmbroideryStudio provides manual techniques for this

purpose. Digitize your own sequin drops with fixings. Or even insert individual sequin-drop functions while traveling through the design.
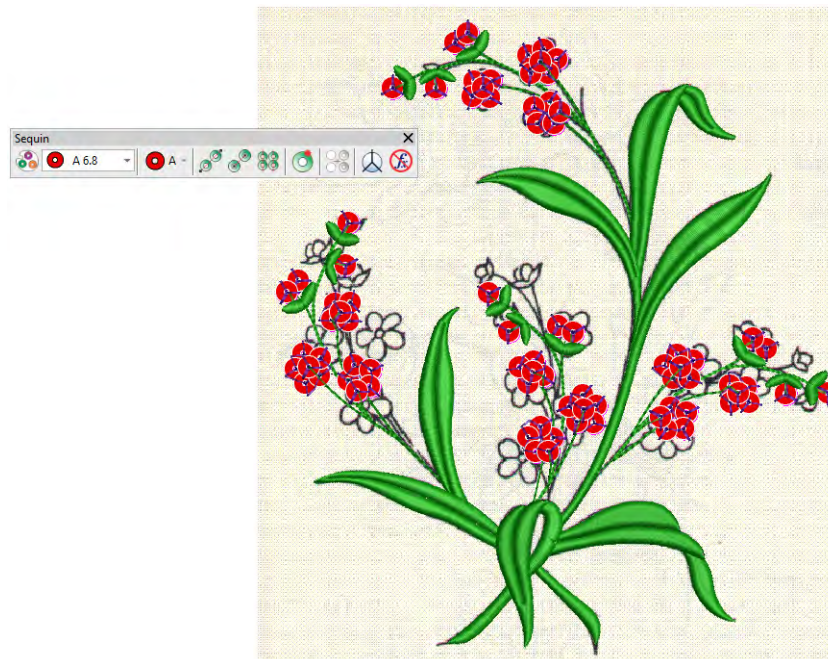
Digitize sequin drops with fixings

 Use Sequin > Manual Sequin to digitize individual sequins.

The **Manual Sequin** input method allows you individual control over sequin placement and fixing stitches. Create decorative outlines and patterns manually using sequins from the selection list. To add a sequin to the stitching sequence, simply drop it onto the design and secure it with manual stitches. Manual sequin stitching is a difficult digitizing skill to master and you need to plan the stitching sequence carefully in order to minimize unnecessary stitches. Experiment with your machine and stitch length and spacing settings to achieve the desired result.

Note: Sequin mode is supported in Schiffli, Tajima, Barudan and ZSK embroidery machine formats. Before you can use **Sequin** mode, you
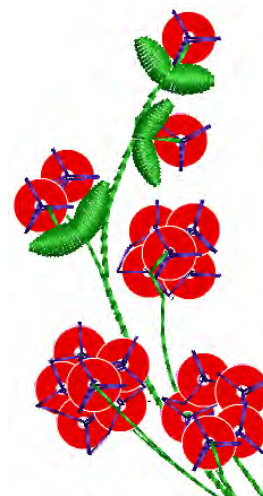
must select a machine format that supports it. Similarly, before you can use **Twin-Sequin** mode, you must select a suitable machine format.

To digitize sequin drops with fixing stitches

◀ Select a machine format that supports sequin mode via the **Select Machine Format** dialog.

◀ Set up your palette in the **Sequin Palette Editor** according to the machine type – single, twin, multi-sequin – that you have selected.
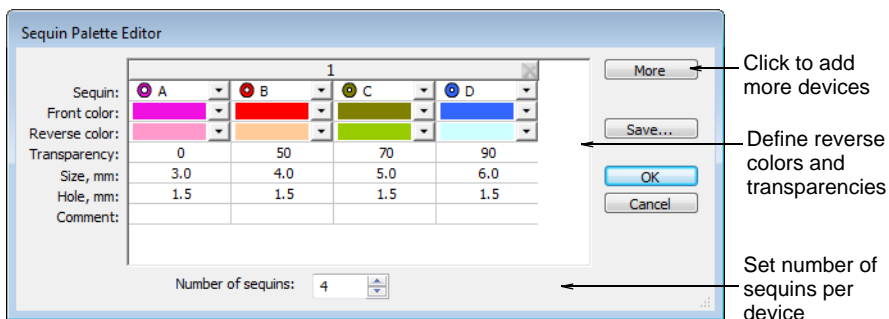
◀ Select a color for the fixing stitching from the **Color** toolbar.

◀ Click the **Manual Sequin** icon. If your machine format supports it, stack sequin permutations are displayed in the droplist.
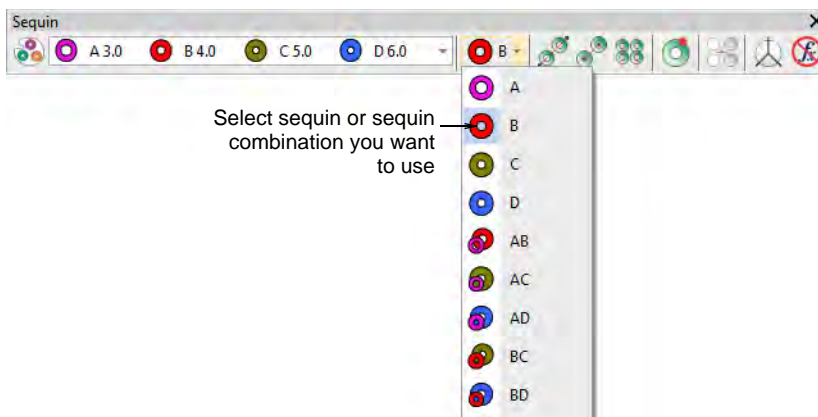
◀ Select the sequin or combination you want to use.

◀ Left-click to begin your manual sequin placement. It must start with at least one stitch.

💡
Tip: Zoom in for more accurate digitizing.

◀ Right-click to drop a sequin. A sequin outline appears.

Right-click to 'drop' sequin

Left-click to digitize fixing stitches

A
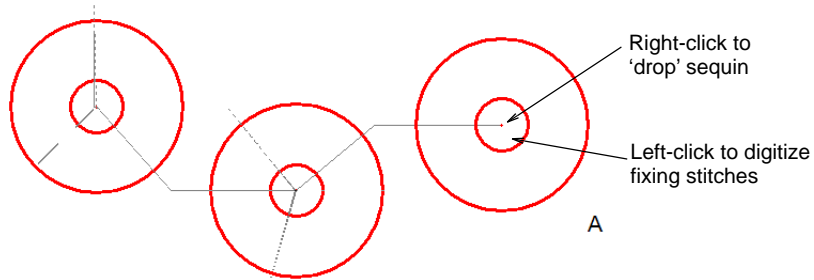
◀ Left-click to digitize fixing stitches around the sequin to secure it.

Three stitches in the shape of a 'Y' are generally used. The needle points of each stitch must be placed precisely to ensure that sequins are not pierced by the needle when stitching.

Continue digitizing – right-click for sequin drops, left-click for fixing stitches
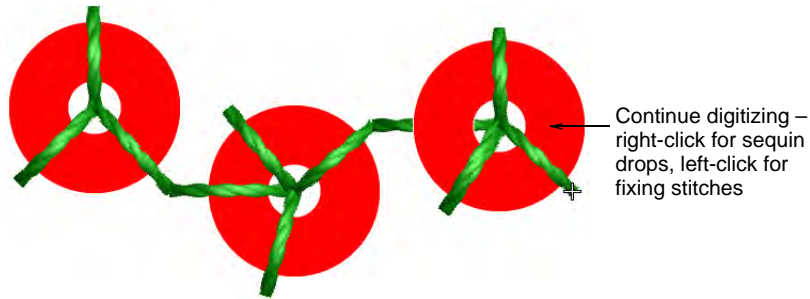
Tip: If you make a mistake while digitizing, press **Backspace** to retrace your steps.

◀ If you have activated twin- or multi-sequin mode, press the **Tab** key to switch between available sequin shapes while digitizing.

Press Tab to change sequins

D
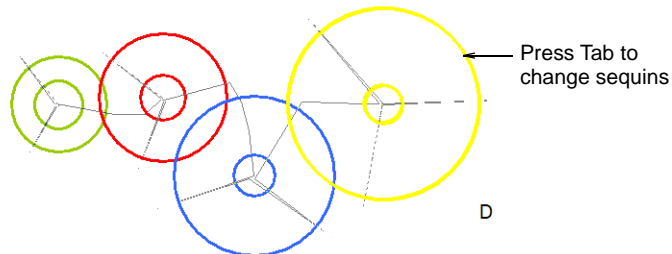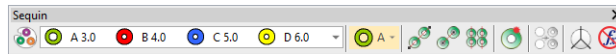
◀ If you have set up a palette for a machine with two single-sequin devices, you need to press **Enter** before changing sequins in the palette droplist.

Press Enter before selecting second sequin
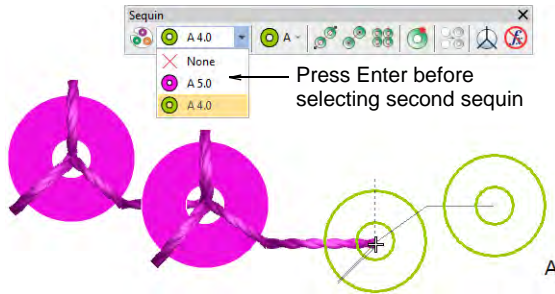
◀ Continue digitizing manually in the same way – right-click to add a sequin, left-click to digitize fixing stitches. Press **Enter** to finish.

Related topics...

◀ Select sequin-capable machines
◀ Setting up sequin palettes
◀ Creating multi-sequin runs

Insert sequin drops

	Use Outline > Digitize Run to place a row of single or triple run stitches along a digitized line.
	Use Outline Stitch Types > Motif Run to create a string of motifs along a digitized line.
	Use Docker > Stitch List to toggle Stitch List display on and off. Use it to select individual stitches.
	Use Travel > Travel 1 Stitch to move stitch cursor forwards/backwards 1 stitch at a time. Left/right click.
	Use Sequin > Drop Sequin to drop a sequin at the current needle position. For twin-sequin machines, left-click to drop a left-sequin, right-click to drop a right-sequin.
	Click Function > Insert Function to insert machine function at current stitch cursor position.
	Use Sequin > Clear Function to remove any sequin functions from the current needle position.

> Use Traditional Digitizing > Backtrack to reinforce an outline, stitching it in the reverse direction to the original.

In preference to the **Manual Sequin** tool, some digitizers flesh out designs using **Run** or **Triple Run** or even **Motif Run** and then travel through it, dropping sequins manually as and where required. The running stitch itself works as fixing stitch. It can be reinforced with **Backtrack**. This technique can be used with single or multi-sequins.
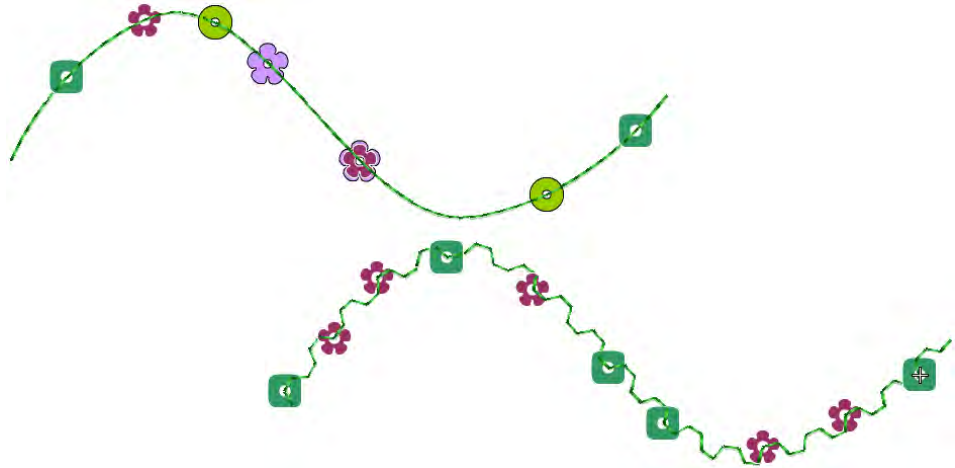
To insert sequin drops

1 Select a machine format that supports sequin mode via the **Select Machine Format** dialog.
2 Set up your sequin palette – single, twin, quad, etc – according to machine capabilities.
3 Set a fixed run length to suit the sequin type/s you are using.
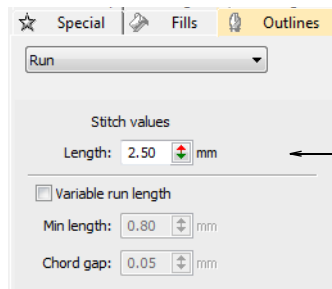
Set run length to suit sequins

4 Choose a digitizing method to create the design or pattern you want.
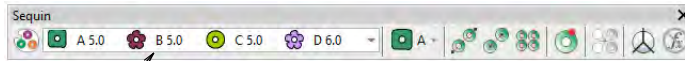
Quad palette available
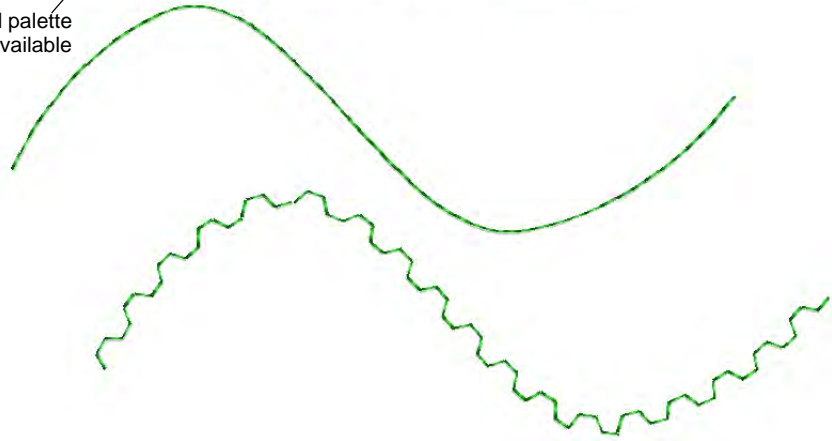
5 Optionally, open the **Stitch List**.

6 Press the **Home** button and travel through the design using arrow keys or **Travel** tools.

7 Travel to the insertion point and press the 'hotkey' **5**. Alternatively, click the **Drop Sequin** button.

Drop Sequin function inserted

Sequin dropped

...	X	Y	L	Func
15	1.19	2.17	2.47	
16	1.29	2.11	2.47	
17	1.44	2.02	2.48	
18	0.00	0.00	0.00	(Sel Seq 1) (empty)
19	1.52	1.96	2.47	Drop Sequin (A)
20	1.63	1.86	2.47	
21	1.76	1.74	2.47	
22	1.73	1.56	2.32	
23	1.94	1.54	2.47	
24	2.06	1.37	2.47	
25	1.83	1.10	2.13	
26	2.21	1.13	2.47	
27	1.98	0.74	2.12	
28	1.74	0.31	1.77	
29	1.62	0.02	1.62	
30	1.63	-0.23	1.64	
31	1.66	-0.48	1.72	
32	1.78	-0.77	1.93	
33	2.14	-1.24	2.47	
34	2.00	-1.47	2.48	
35	1.88	-1.61	2.47	

8 If you are using a twin-sequin palette, press the hotkey **6** to drop the other sequin. Alternatively, right-click the **Drop Sequin** button.

Second sequin dropped
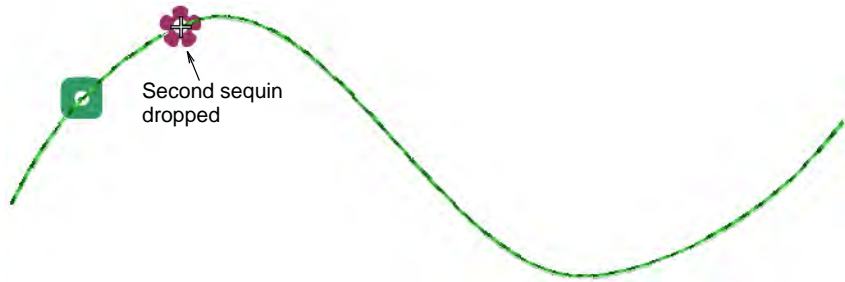
9 If you are using a multi-sequin palette, select **Insert Function** from the toolbar or the **Stitch List** popup menu.

Travel to drop point

Select Insert Function
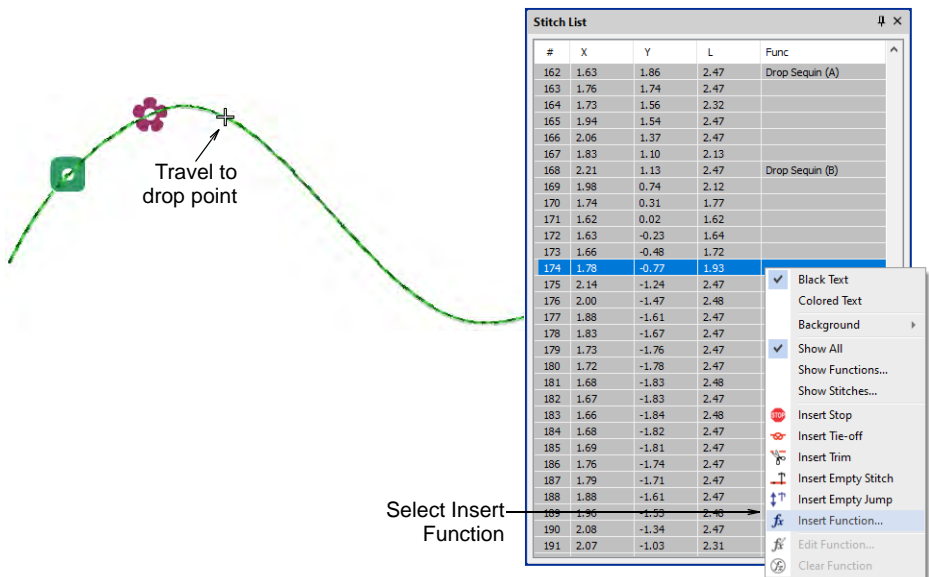
10 From the **Functions** list, select **Drop Sequin**. Depending on machine requirements, you will either add the function to the current stitch, or

insert it on an empty stitch or empty jump. See your machine manual for details.

Select Drop Sequin function

Insert additional empties as necessary
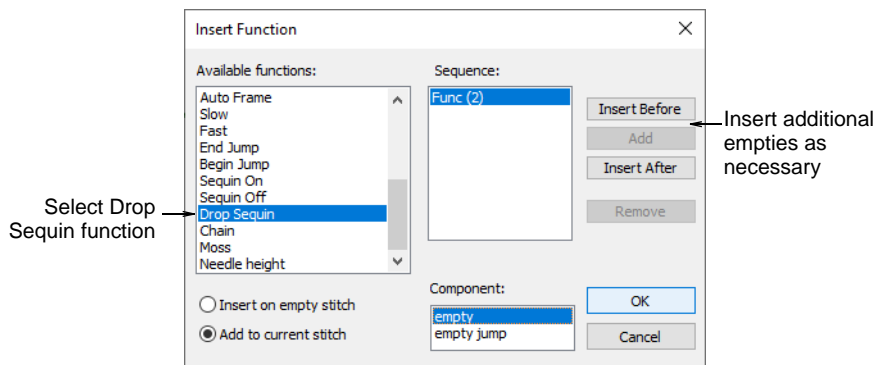
11 When the **Drop Sequin** function is correctly defined, click **OK**. The **Select Sequin** dialog opens showing available sequins.

Choose preferred sequin or combination
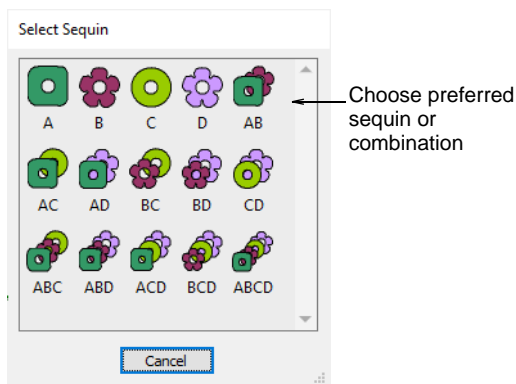
12 Choose a preferred sequin. The **Drop Sequin** function, together with any additional empty stitches or jumps, is added at the current needle position.

13 Continue traveling and inserting sequins by the same methods.

Travel and insert additional sequin drops
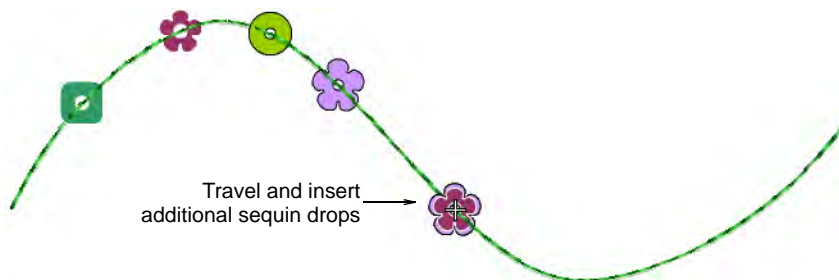
14 To delete a sequin drop, travel to the location and press **4**. Alternatively, click the **Clear Sequin** button.

> 💡
> **Tip:** If you are using **Triple Run**, the repeat stitch will tack down your sequin drop. If you are using **Single Run**, you can use the **Backtrack** tool to tack down the sequin drops.

Related topics...

◀ Select sequin-capable machines
◀ Travel through designs
◀ Insert machine functions manually

Custom sequins

EmbroideryStudio supports custom sequin shapes with offset holes. Such sequin shapes can be utilized for flipping sequins on the fabric to form two different sequin fill patterns. Alternatively, you may be working with sequins which don't appear in the standard sequin library. Define your own sequins using circle, oval, rectangle, or other shapes.

Create sequin shapes

⊙	Use Graphics Digitizing > Ellipse to digitize ellipse or circle vector outlines.
♡△✿	Use Graphics Digitizing > Basic Shapes to digitize basic shapes. Press <Ctrl> to maintain aspect ratio. Press <Shift> to center at the first point.
☾	Use Outline Stitch Types > Vector Outline to create vector outlines with no stitch properties applying.

The software allows you to define your own sequin shapes with their own hole position.

To create a custom sequin

1 Create a sequin shape using vectors only. The **Ellipse** or even **Basic Shapes** tools can be useful. Outline and hole must be digitized as separate objects.

Position hole as required
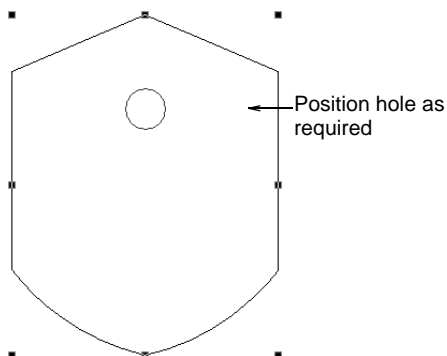
2 Position the hole.
3 Size the sequin shape to a nominal size – e.g. 1.5mm.
4 Select both objects and choose **Object > Create Sequin Shape**.

Enter a sequin name
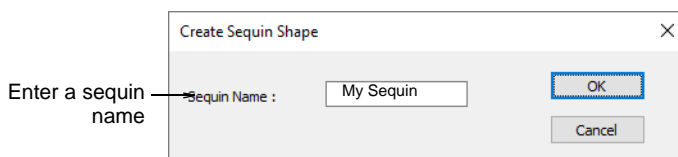
5 Give your sequin a name and click **OK** to save. The custom shape is available from the sequin droplist for use in sequin palettes. Use it in sequin runs or fills.
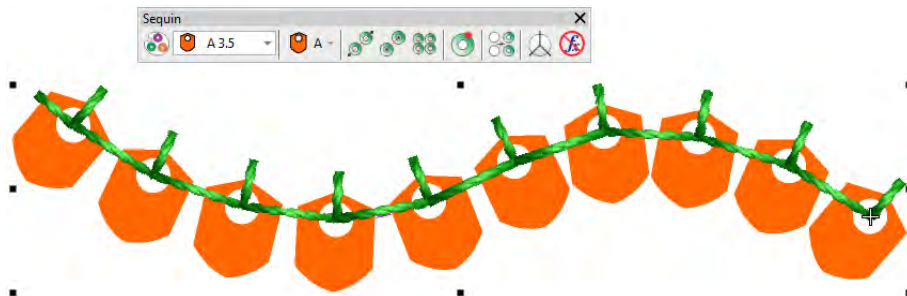
Tip: Use the **Setup > Manage Sequin Shape** command to rename or delete custom sequin shapes from the library.
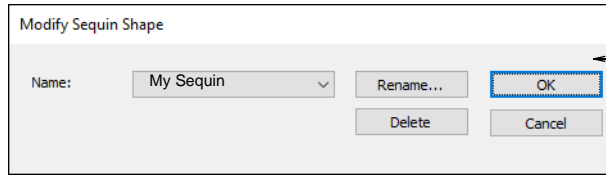
Rename or delete custom sequin shapes

Related topics...

◀ Create vectors
◀ Digitize stars & rings
◀ Digitize basic shapes
◀ Manage custom motifs

Create sequin fixings

Just as you can define custom sequin shapes, you can define custom fixing stitches to support multi-head sequin devices. Some limitations might exist for older more complicated sequin devices. Access the dialog via the **Object > Create Sequin Fixing** command.

Name your fixing stitch

Follow instructions

Set angle to define snap lines

Custom fixing stitch added to library
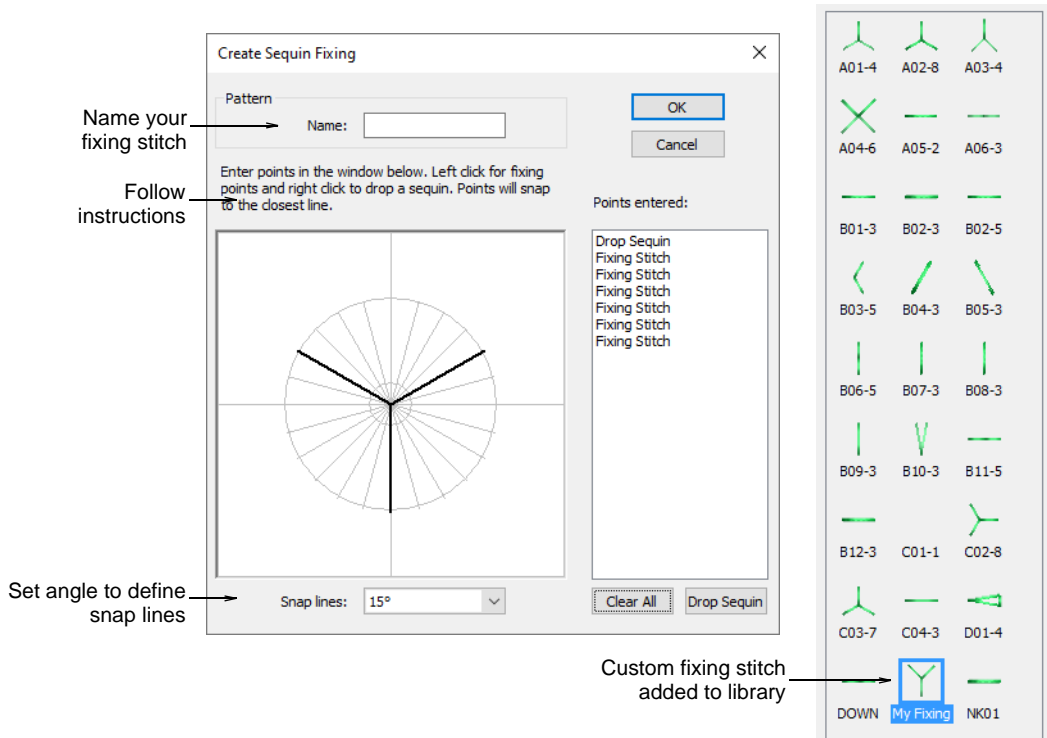
Custom sequin fixings mean you can:

◀ Create multiple layers of stitching for decorative effects, sometimes in different thread colors (Barudan).
◀ Reduce stitch counts in large sequin designs.
◀ Accommodate specific fixing requirements.
◀ Accommodate new capabilities – e.g. offset holes.

💡
Tip: If you have chosen an eccentric sequin shape such as an 'ellipse', fixing stitches automatically adapt to fit.
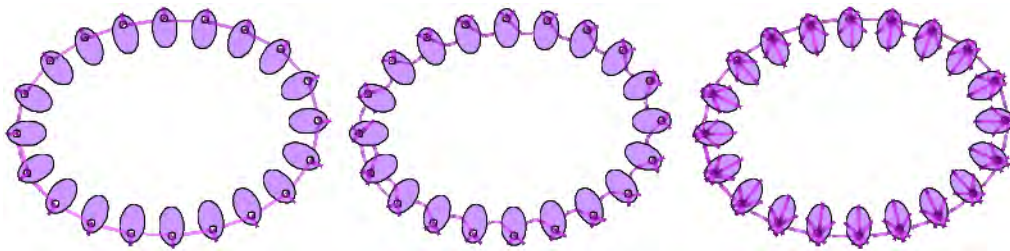
💡
Tip: Use the **Setup > Manage Sequin Fixing** command to rename or delete custom sequin fixings from the library.

Outputting sequin designs

> ℹ️ Use Docker > Design Information to view and modify design details prior to design approval or stitchout.
>
> 🔍 Click Standard > Print Preview to preview the production worksheet on screen.
>
> 📤 Use Standard > Export Machine File to export the current design to a machine file for stitching.

Once your sequin design is ready for production, check all design details via the **Design Information** docker. The **Design** tab provides a summary of all sequins used in the design creation.

Sequin details listed on Design tab
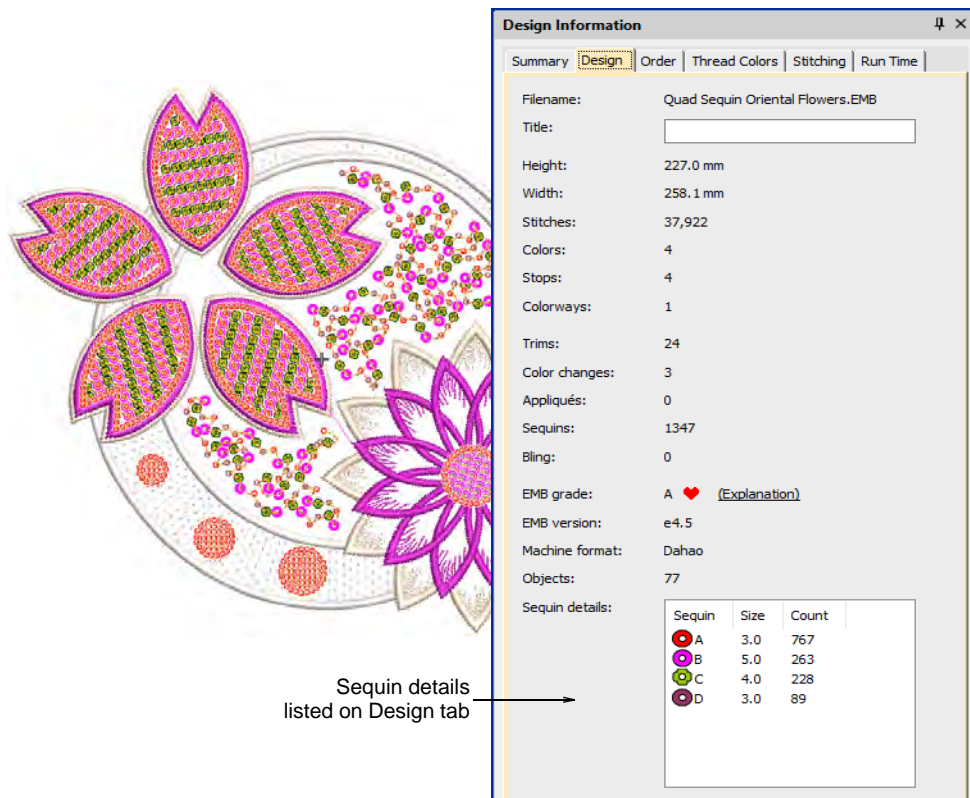
When you come to output your design to machine file, make sure you are using the correct file format. EmbroideryStudio currently supports the following…

Machine format	File format
Barudan FDR-3	U??
Barudan FDR-3 Chenille Combination	U??
Barudan FDR-II Twin Sequin	U??
Barudan FDR-II Twin Sequin Chenille Combination	U??
Dahao	DST (Dahao)
Schiffli	ESS
SWF	DST

Machine format	File format
SWF Twin Sequin	EBD
Tajima	DST
Tajima TBF	TBF
ZSK	ZSK

When you select Dahao multi-sequin DST as you output file format, the **Drop Sequin** functions are inserted according to Dahao multi-sequin requirements. Dahao control panels include a protocol to interpret this encoding. Tajima machines, on the other hand, strictly follow the DST file specification.

Note: For machine formats that have no sequin capability, the sequin palette will display. However, if you attempt to create a sequin object, fixing stitches will be digitized without sequin drops. No sequins appear.

Create a hard copy of your production worksheet to provide thread and sequin information for the machine operator.

Related topics...

◀ Printing design reports
◀ Exporting designs for machine

Chapter 49
Bead Embroidery

Bead embroidery is a type of applied decoration where beads, like sequins, are stitched rather than glued to fabric, suede, or leather. Unlike woven, knitted, and crocheted beading, embroidered beading does not form part of the fabric structure. Traditionally, it has been used on garments and decorative textiles. Accessories such as handbags or belt buckles may also be embellished with bead embroidery. As may household items such as pillowcases or cushions.

Embroidery machines can be equipped with a device that drops beads onto fabric as it stitches, similar in principle to sequin embroidery. EmbroideryStudio includes a **Beading** capability which supports beading devices. A library of beads of different size, shape and color, is available, together with fixing stitches supporting classic upright, flat and sideways beading.

This section describes how to set up bead palettes and how to visualize bead designs. It explains how to create single-bead as well as multi-bead runs. It also covers bead fixings as well as reshaping and editing. It also deals with individual bead drops.

Beading mode

Before using the **Bead** tools, you must select a machine format that supports bead output. You can then set up a dedicated palette for your

design from a list of shapes. Each can be adjusted in size, height and color.
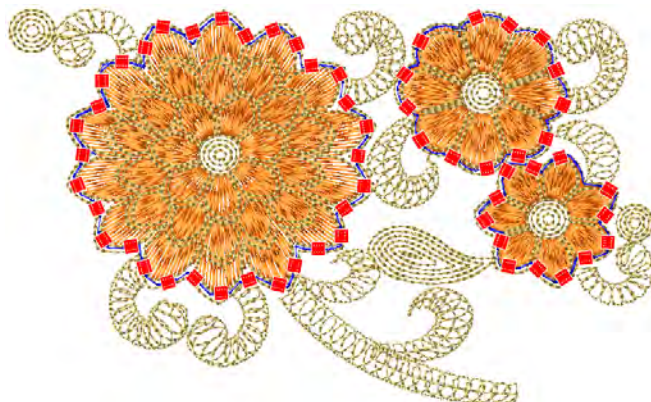
Machine beading

Capabilities vary but bead devices are not as varied as sequin devices. There are two categories: bead tape and loose beads. For both types of setup, twin-bead configurations are currently the most popular.
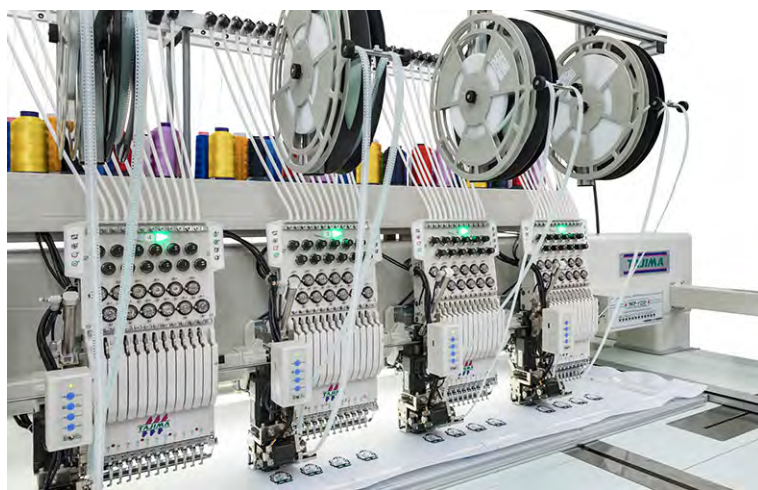
Twin-bead tape device

Twin-beading loose bead device

Bead tapes, like sequin reels, provide controlled placement of beads on fabric. With loose beads, containers hold them on top of the dispenser. This method is not quite as reliable as beads on tape.
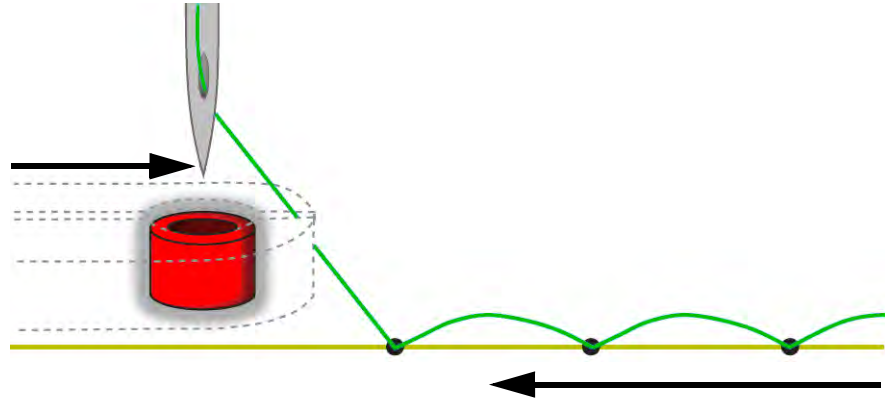
Various layout methods are available on the machine. EmbroideryStudio supports the classic fixing stitch types – 'upright', 'flat', and 'sideways' – as well as decorative variants.

Related topics...

◀ Embroidery machine formats

Select bead-capable machines

Before using the **Bead** tools, you need to choose a suitable machine format. Only some machine formats support beading – e.g. Tajima TBF, Dahao and SWF Twin Sequin. Refer to your machine manual for information about support for this type of decoration.

Note: For machine formats that have no bead capability, the bead palette will display. However, if you attempt to create a bead object, fixing stitches will be digitized without bead drops.

To select a bead-capable machine

1 Select **Design > Select Machine Format**.

Select bead-capable machine format

Modify format as necessary
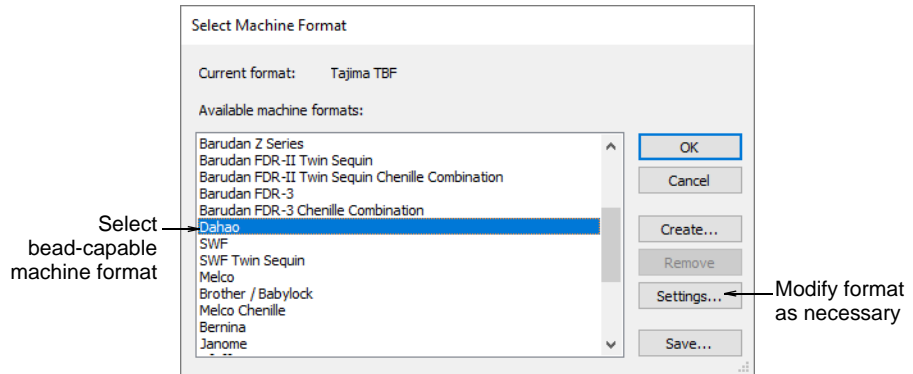
2 From the **Available Machine Formats** list, select a bead-capable machine format – e.g. Tajima TBF, Dahao.

3 Click **OK**. Default bead shapes are now available for selection from the **Bead Palette**. If you have selected a twin-bead-capable machine, bead shapes and sizes are displayed in pairs. Up to eight (8) beads can be supported when the Dahao machine format is selected.

Twin-bead palette

Single-bead palette

Note: Different machines require different presets. Typical modifiable values include stitch and jump length, trim functions and color change functions. Use the **Machine Format Settings** dialog to customize values if outputting to a specific machine format.
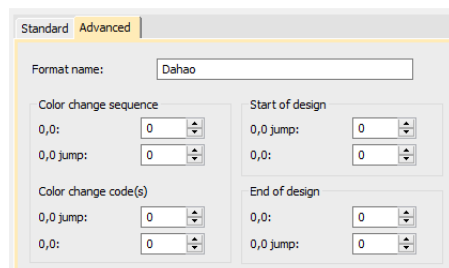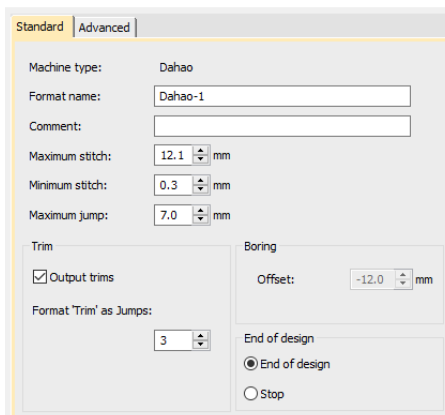
Visualize bead designs

Click View > TrueView to toggle between stitch view and TrueView™.
Right-click for settings.

Use View > Show Stitches to toggle embroidery stitching display.
Right-click for settings.

Use View > Show Functions to toggle display of machine function symbols.
Right-click for settings.

Beading can be viewed in **TrueView** or stitch view while **Show Functions** is toggled on.

Beading in TrueView
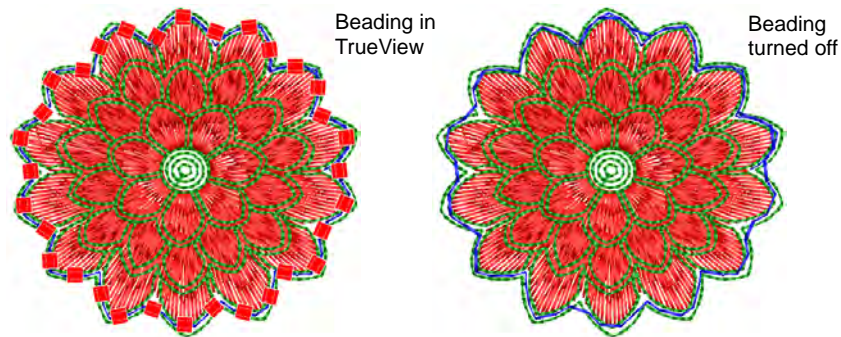
Beading turned off

Both beads and fixing stitches appear in their selected colors and can be turned on or off via **Show Functions** and **Show Stitches** toggles.

Beading in stitch view

'Undropped' beads when traveling
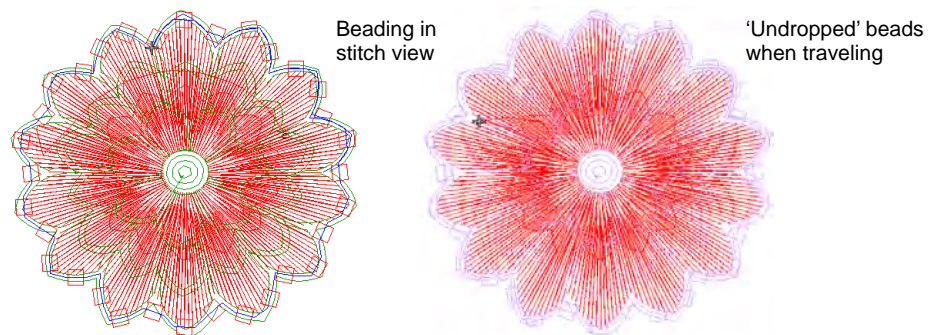
When traveling through a beading design, 'undropped' beads appear in the 'unsewn' color defined in the **Background & Display Colors** dialog.

Creating bead runs

EmbroideryStudio provides tools for creating a string of beads along a digitized line according to preset spacings or as marked by the digitizer.
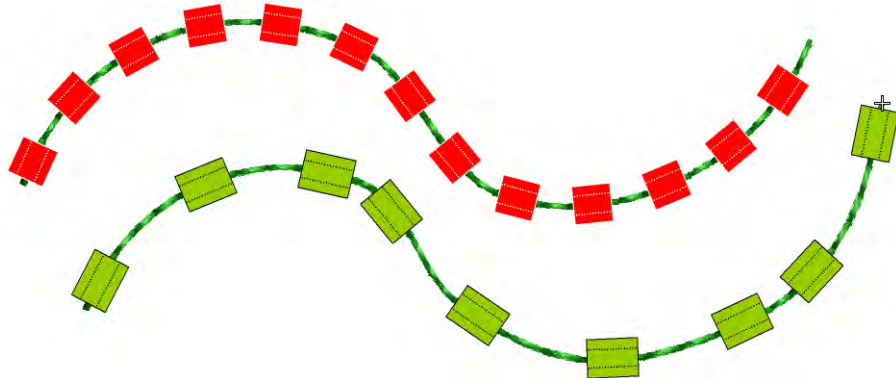
Digitize bead runs as you would do sequin runs. If you use the manual method, you define spacings between bead-drops with every click you make. If you use the automatic method, bead-drops are calculated according to current **Bead Run** object properties.

Set up bead palette

> Use Bead > Bead Palette Editor to select shapes from a bead library, and define bead colors and sizes.

Use the **Bead Palette Editor** to prepare a palette of beads for use according to your machine capabilities. Bead devices are normally attached to the first or last needle of the machine head.

To set up a bead palette

1 Select the machine format that supports the machine you are using.

2 Click the **Bead Palette Editor** icon. Fields for each bead are arranged in tabular form.

Click to add
more devices

Set number of
beads per device
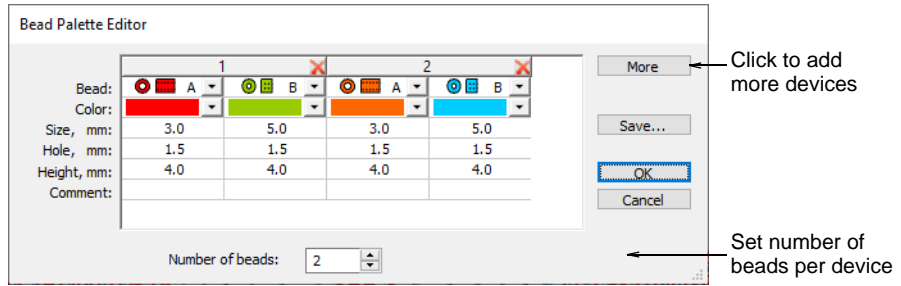
3 Set the number of beads available per device. Depending on machine type, up to eight (8) beads may be supported. If you have chosen a twin-bead machine, this value is limited to 2.

4 Use the **More** button to add devices. Click **X** in the column header to remove.

Select bead
shape from the
droplist
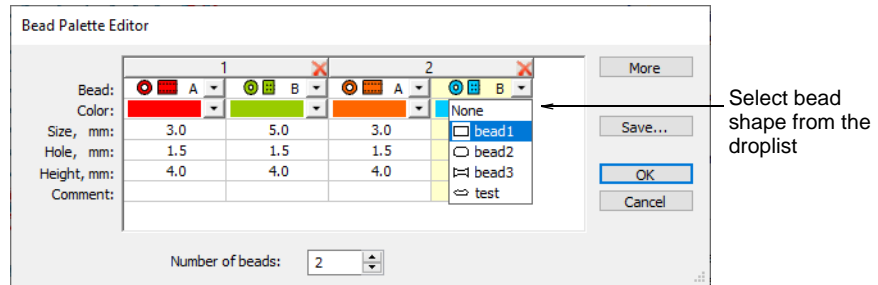
5 Select a bead from the droplist.

6 Set color, bead and hole size, as well as height.

Click to
select color

More colors
available
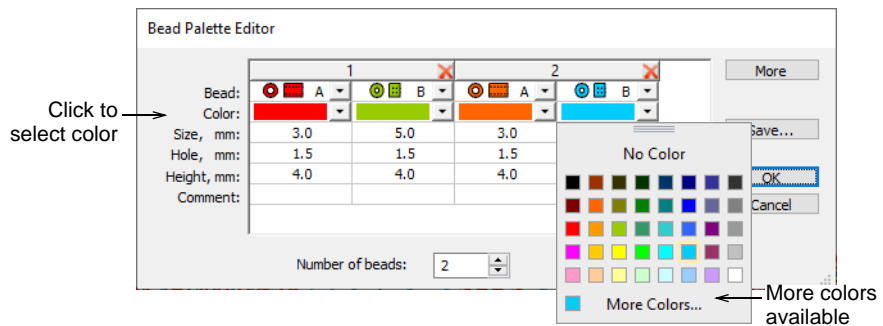
7 Set up other beads in the same way, and click **OK**. Beads are available for selection.

Beads available per device
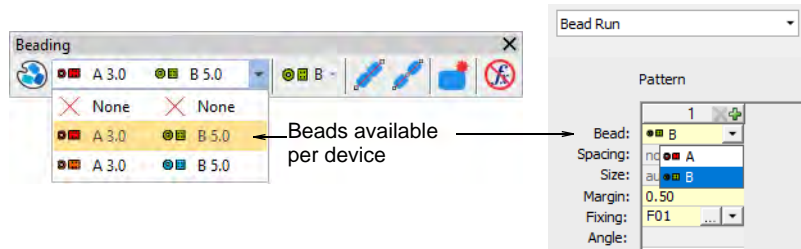
Related topics...

◀ Select bead-capable machines

Digitize bead runs

> Use Bead > Bead Run Auto to create a string of beads along a digitized line according to current settings.
>
> Use Bead > Bead Run Manual to manually digitize bead-drops along a digitized line.
>
> Use Bead > Bead Palette to select from a user-defined palette of bead shapes for the current design.
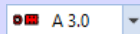
Normally beads are stitched last, after motifs and other embroidery are complete. With the **Bead Run** tools you have the option of digitizing individual bead drops or letting the system generate them for you. Automatic bead runs can be scaled.

To digitize a bead run

1 Select a bead-capable machine from the **Select Machine Format** dialog.

2 Define your palette and select bead shapes you want to use from the droplist, in this case a twin-bead setup.

Beads available per device
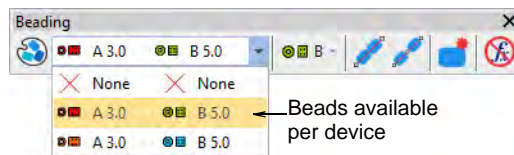
To digitize automatic bead placements

◀ To digitize a scalable bead run, use the **Bead Run Auto** tool. Enter reference points – left-click for corner points, right-click for curve points.

Digitize outline – left-click corner points, right-click curve points

A
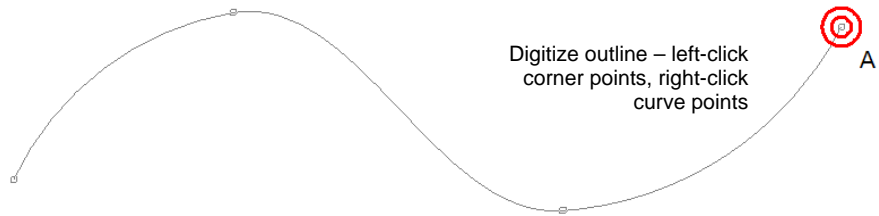
◀ Press **Enter** to complete. Bead drops are automatically generated along with fixing stitches according to current **Bead Run** object properties.

Bead drops and fixing stitches generated automatically
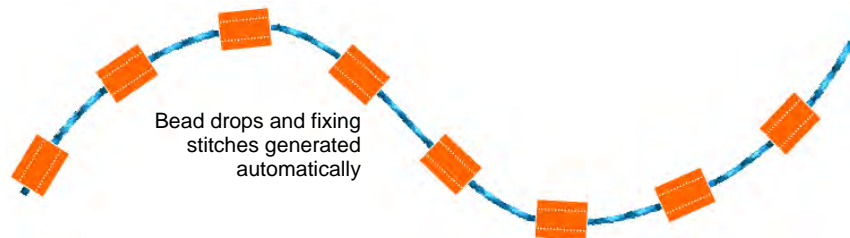
💡
Tip: You can convert a normal run to bead run by selecting and clicking the **Bead Run Auto** tool.

◀ Double-click the object to access properties and swap beads as preferred.

Swap beads
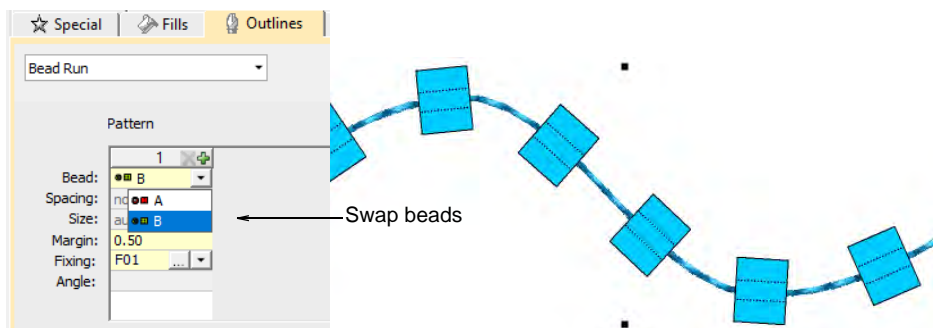
‣ In the **Spacing** field, enter a nominal spacing. By default, this is measured 'along baseline', from one bead drop to the next. Minimum spacing is automatically calculated.

Enter nominal spacing
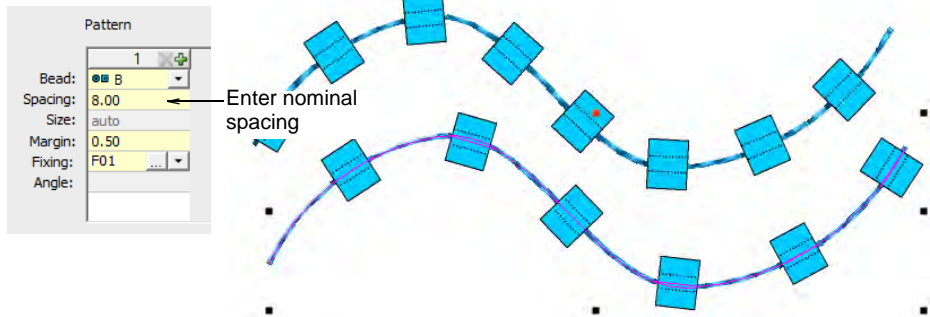
‣ Adjust **Positioning** method as preferred:
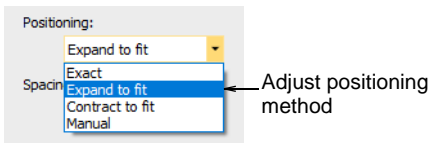
Adjust positioning method

‣ **Exact**: Uses nominal spacing. This may result in gap formation at the end of the path.

Exact
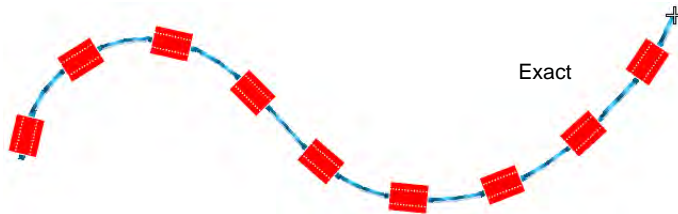
‣ **Expand to fit**: Expands spacing to evenly spread bead distribution.

Expand to fit
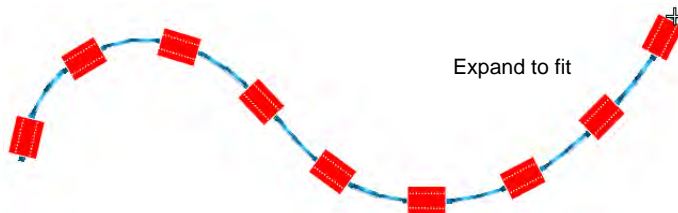
◄ **Contract to fit**: Contracts spacing to evenly spread bead distribution, sometimes resulting in an extra bead.

Contract to fit
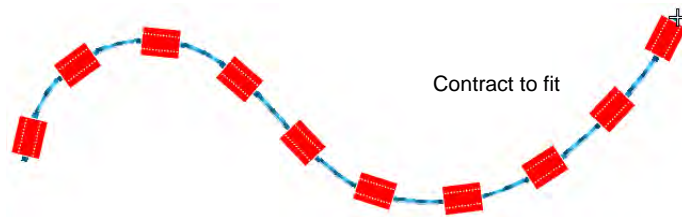
◄ **Manual**: Turns bead run to 'manual' so that the number of beads won't change when scaling.

◄ Change the **Spacing measure** as necessary in order to prevent bead bunching.

Along baseline

Choose spacing method

Between shapes
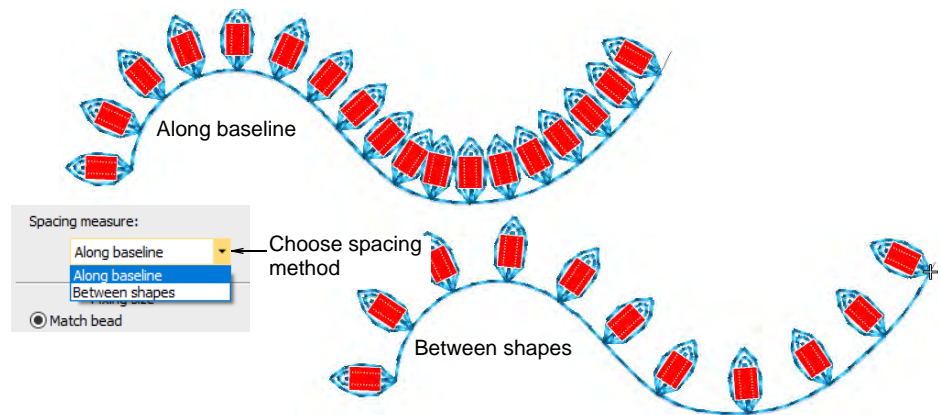
◄ Use **Angle** to orientate beads in relation to the run line. Fixing stitches are adjusted accordingly.

Enter bead angle
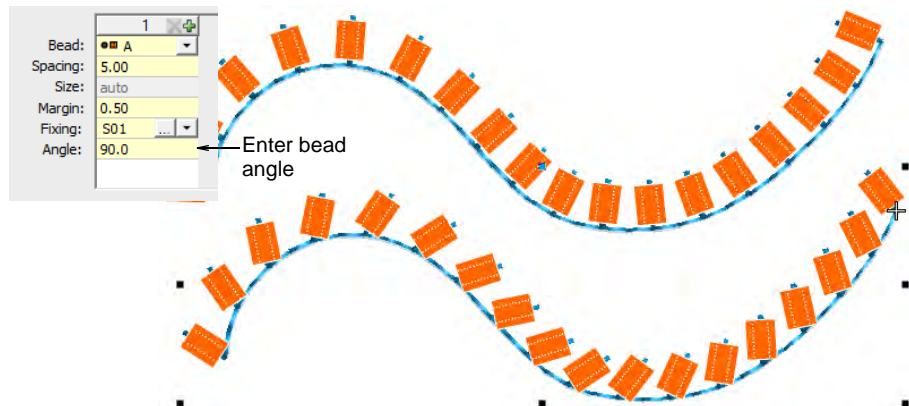
◀ Set **Angle** to -90° to flip bead orientation.
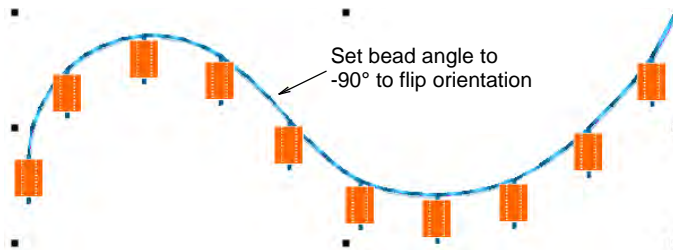
Set bead angle to
-90° to flip orientation

◀ To change fixing stitches, click the '…' button in the **Fixing** field. The docker expands to display a library of fixing stitch types. See below.

To digitize manual bead placements

◀ Alternatively, to control the exact placement of your bead drops, use the **Bead Run Manual** tool. Digitize individual bead drops with left and right mouse-clicks.

Digitize outline – left-click corner points, right-click curve points

B
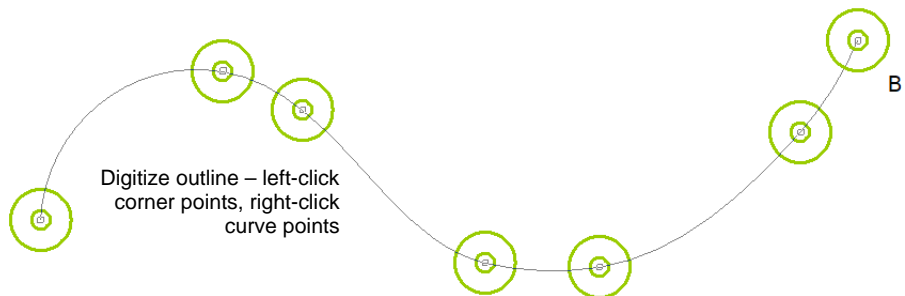
◀ Press **Enter** to complete. Bead drops are generated at each reference point. Connecting and fixing stitches are automatically generated.

Bead drops and fixing stitches automatically generated
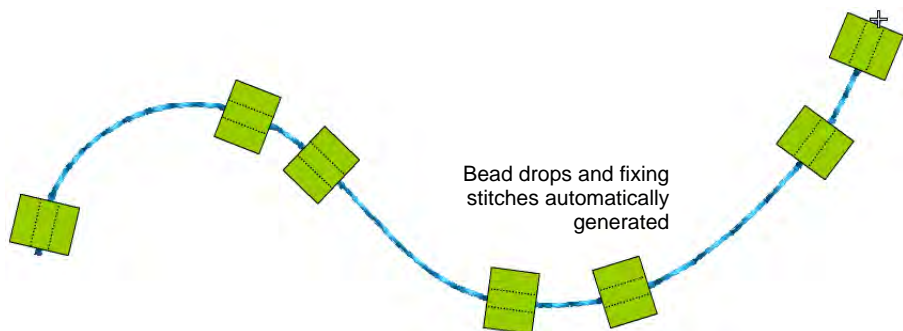
Note: Manual placements can be reset by choosing a different **Positioning** method. If you change to exact spacing, all drops are recalculated and manual placements lost.

Create patterned bead runs

> Use Bead > Bead Run Auto to create a string of beads along a digitized line according to current settings.

> Use Docker > Object Properties to toggle the docker on/off. Set properties for the current design.

With EmbroideryStudio, you can create bead run patterns for immediate use. Patterns generally involve multi-bead drops.

To create a patterned bead run

‹ Create a bead-run object with **Bead Run Auto** or select an existing object. This allows you to preview your pattern as you go.
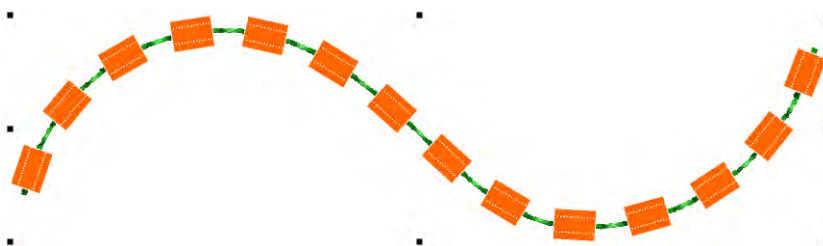
‹ Select the bead combination you want to use.

Select bead combination

‹ Open **Object Properties**. The **Pattern** table displays beads currently available.

Define parameters for each bead in the pattern

Add beads to pattern

Click to change bead

Click to change fixing stitch

‹ Add or remove beads via the **+** and **X** buttons in the column header.

◀ Select a bead from the droplist. The selected sample updates immediately.

◀ In the **Spacing** field, enter a nominal spacing for each bead. By default, spacing is measured along the digitized line.

	1	2	3
Bead:	●■ A	●■ A	●■ B
Spacing:	1.00	2.00	2.00
Size:	auto	auto	auto
Margin:	0.50	0.50	0.50
Fixing:	S01	S01	S01
Angle:			

◀ In the **Fixing** field, select the type of fixing you want. Generally you'll use the same fixing for all beads in the pattern.

Bead fixings

EmbroideryStudio provides a library of predefined fixing stitches for use with bead runs. Generally digitizers reserve a single thread color for all beads, regardless of bead color. Transparent thread is often used in order to avoid differences between thread color and bead color. Various layout methods are available. EmbroideryStudio supports the classic types – 'upright', 'flat', and 'sideways' – as well as variants. Fixing stitches are generally not part of the decoration.

Upright

Flat
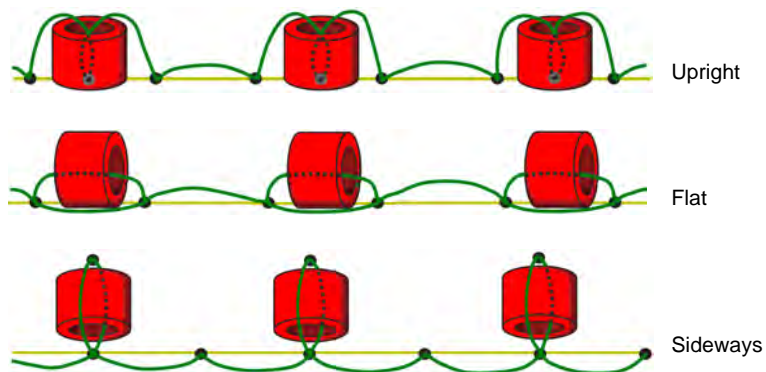
Sideways

Bead fixing considerations

Fixing type is independent of device type. The bead is always dropped in the same way. Fixing stitches control bead orientation. However, different machines and dispensers have their own production requirements and idiosyncrasies.
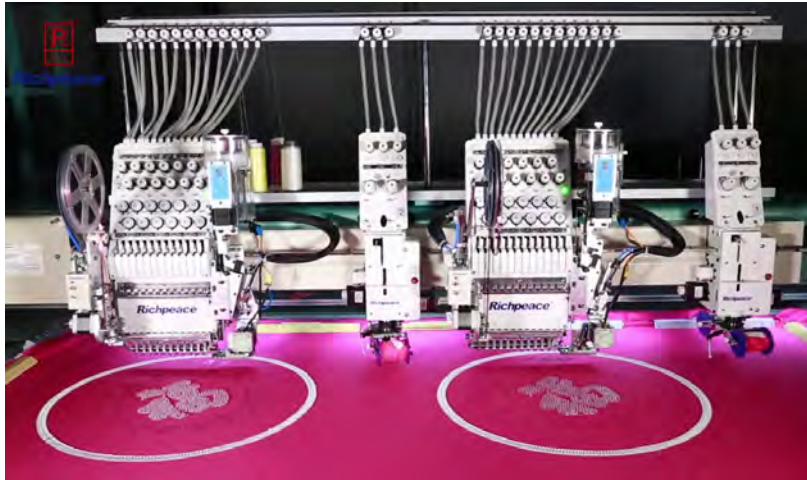
Bead production vs sequin production

Bead production is more exacting than sequin production. While sequin devices used to have similar issues, they have matured to the point where they can manage all kinds of fixing types at high speed. Moreover, sequin materials are more forgiving. Needle penetrations do not generally cause serious problems. The minimum commercial operating speed for bead production is 800 rpm or higher. Typical problems which can occur at high speed:

◀ Beads are missed
◀ Beads are smashed
◀ Needles are broken.

Testing for high speed production

You may need to modify or 'tweak' predefined fixing types provided by the software in order to run reliably at high speed. This will involve testing on the machine. While fixing stitches in EmbroideryStudio automatically adapt to bead size, each bead type will need to be tested separately. Generally speaking, bead production can be stabilized when running machines at low speed, say, 600 rpm. This is suitable for testing.

A typical scenario might be:

◀ Develop a bead embroidery design.
◀ Carry out a sampling test at low speed.
◀ Test at production speed in order to calculate costs.

◀ Assess whether bead fixing meets high speed requirements – e.g. beads are missed or smashed.
◀ Adjust bead fixings and test again.

Options for editing bead fixings

Options available in EmbroideryStudio for bead designers are:

◀ Modify or 'tweak' fixing stitches by means of object properties. This may involve:

  ◀ Trying out different fixing stitch types
  ◀ Testing automatic as well as fixed spacings
  ◀ Modifying margin settings.

◀ Edit bead fixings with the **Bead Edit** tool.
◀ Digitize bead drops with the **Manual Bead** tool.
◀ Insert bead drops with the **Insert Function** capability.
◀ Create your own bead fixings and save them as custom motifs.

Apply bead fixings

⬛ A 3.0 ▾	Use Bead > Bead Palette to select from a user-defined palette of bead shapes for the current design.

You can select beads before or after digitizing. Similarly, you can preset fixing stitches or change them at any stage.
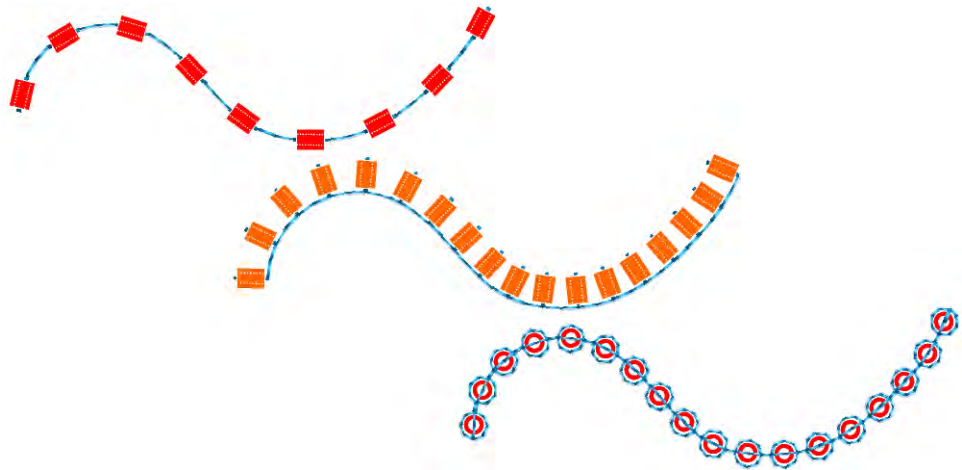
To apply bead fixing stitches

‹ To change fixing stitches, double-click to access object properties.
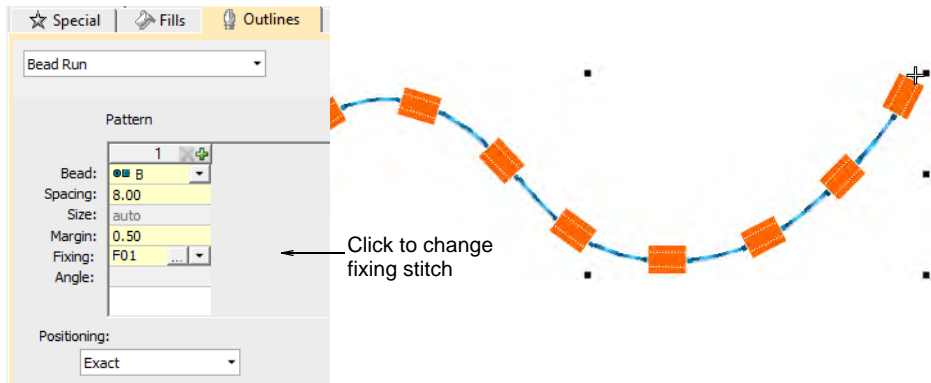
Click to change fixing stitch

‹ Click the '**…**' button in the **Fixing** field. The docker expands to display a library of fixing stitch types.

Fixing stitch preview

Select fixing stitch type

Adjust fixing stitch size if manual option selected

Choose fixing size method
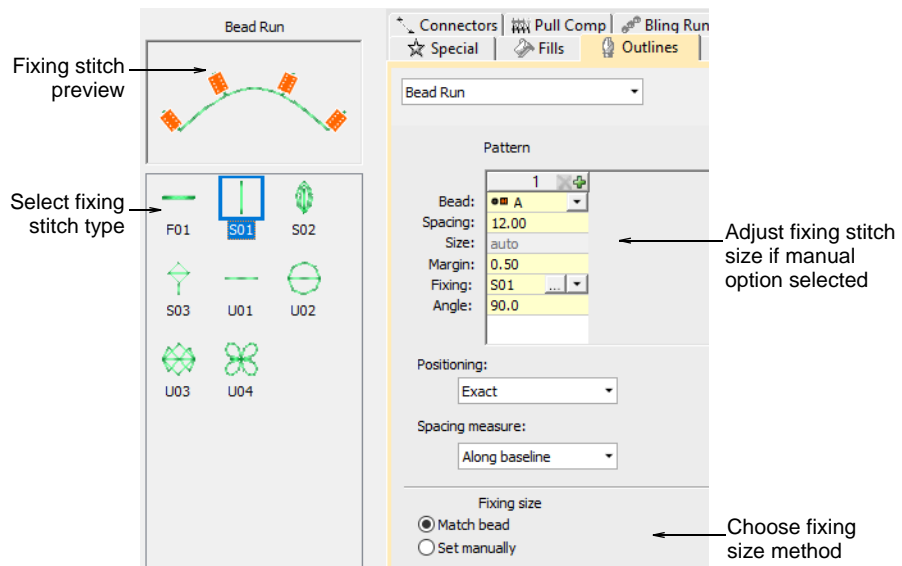
◀ Select the preferred style – 'upright', 'flat', 'sideways'.
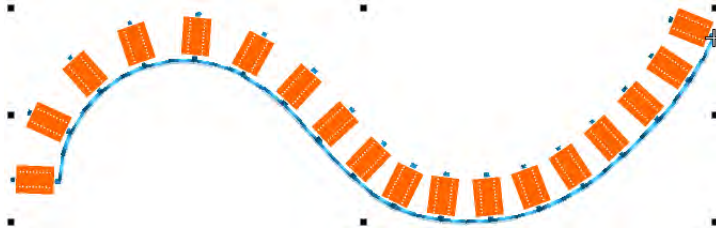
◀ To adjust fixing stitch size, select a method:

Method	Function
Match bead	Automatically sets a margin around the bead so that fixing stitches don't punch too close.
Set manually	Activates the Size field and lets you set a fixing stitch size independent of bead size.

◀ If you choose 'set manually', specify a value in the **Size** field. Size is measured from the center of the bead. Enter a value from 2.50mm to 30.00mm.

Set fixed fixing size

◀ If you choose automatic matching, specify a margin for the fixing stitch in the **Margin** field. Enter a value from 0.20mm to 2.00mm. This ensures that the fixing stitch does not punch too close to the bead.

◀ To adjust fixing orientation, choose one of the preset directions –
left/right, up/down.

Orientation: Left

Orientation: Vertical

Orientation: Right

Orientation:

Choose fixing
orientation
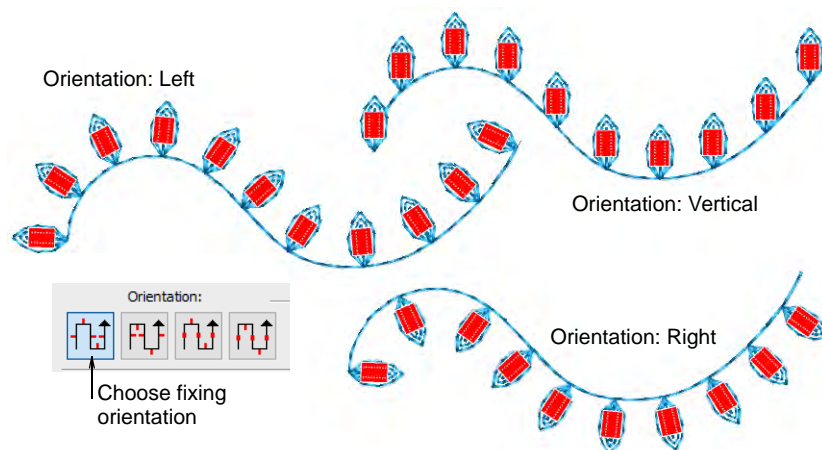
Editing bead runs

Bead-run objects can be edited like any other embroidery object.
Parameters can be adjusted via object properties, or bead runs reshaped
and edited, right down to individual bead orientations and fixings.
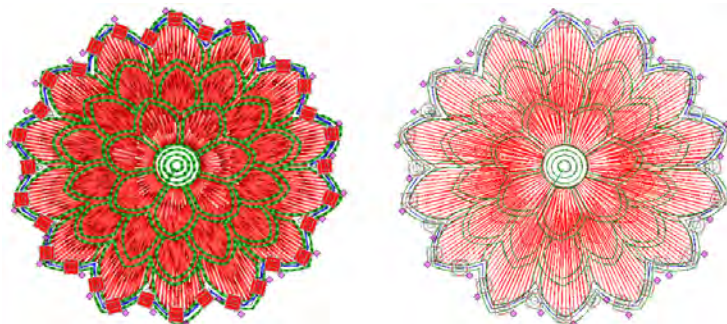
Convert objects to bead runs

> Use Bead > Bead Run Auto to create a string of beads along a digitized line
> according to current settings.

Most objects in EmbroideryStudio are inter-convertible. Bead runs are no
exception. Any outline object – Run, Stemstitch, Motif Run, Freehand,
Column C, Vector – can be quickly converted to bead run.

To convert an object to a bead run

◄ Select the object – Run, Stemstitch, Motif Run, Freehand, Column C, or Vector.

◄ Right-click and select **Convert > Convert to Bead Run**.
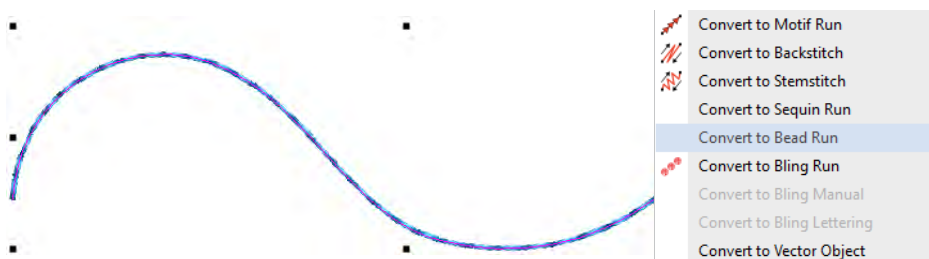
◄ Alternatively, click the **Bead Run Auto** icon.
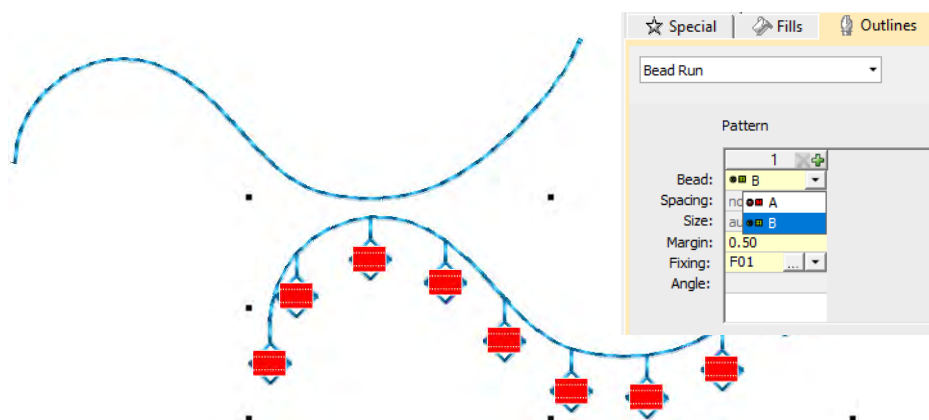
◄ Double-click to access object properties.

Edit bead runs

 Use Select > Select Object to resize objects using selection handles.

 Use Reshape > Reshape Object to reshape selected bead-run objects.

 Use Bead > Bead Edit to fine-tune placement of individual beads.

You have complete control over editing bead-run objects, from scaling to adding or removing individual beads. You can also manually fine-tune bead spacing and orienation. You can even edit individual fixing stitches.

Tip: Performing manual edits automatically sets bead positioning to **Manual**. If you reset to **Exact**, **Contract to fit**, or **Expand to fit**, all manual edits are lost.

To edit a bead run

◄ Scale bead-run objects by clicking and dragging selection handles, or by adjusting general properties.

   ◄ With **Bead Run Auto** objects, bead drops are automatically recalculated.

Bead drops regenerated according to current settings
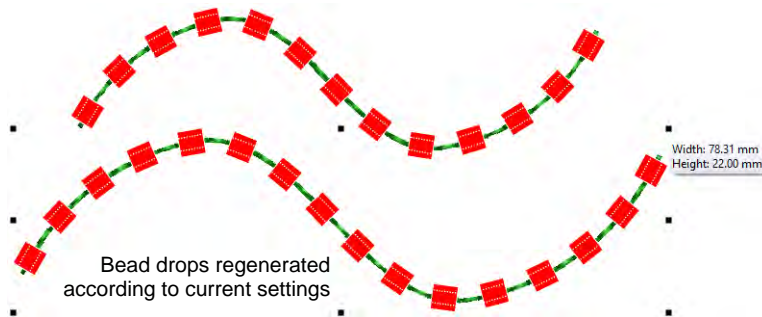
   ◄ With **Bead Run Manual** objects, the original number of bead drops is preserved while spacing is increased.

Original number of bead drops preserved
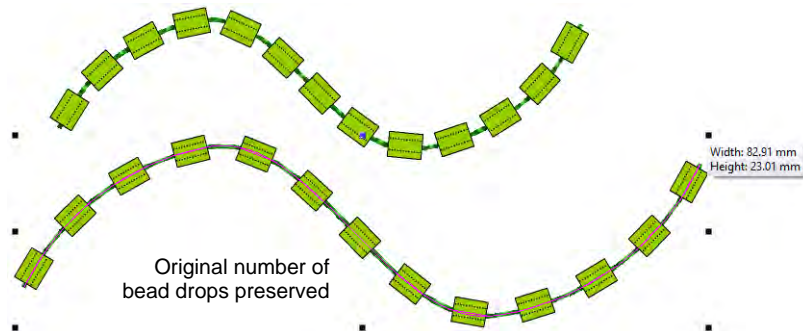
◄ Edit bead runs with **Reshape**:

   ◄ Add nodes by left- or right-clicking the outline.
   ◄ To remove a node, select and press **Delete**.

◀ Click-and-drag to move the start point. To reverse stitch direction, apply **Edit > Reverse > Reverse Curves**.

Add or delete nodes

Click-and-drag to move start point
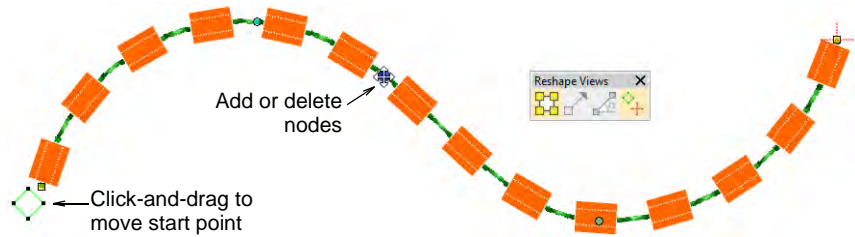
◀ Fine-tune individual bead spacings with the **Bead Edit** tool. Click-and-drag a diamond control point. Hold down **Shift** or **Ctrl** keys to select a range or multiple control points.

Click-and-drag spacing handle
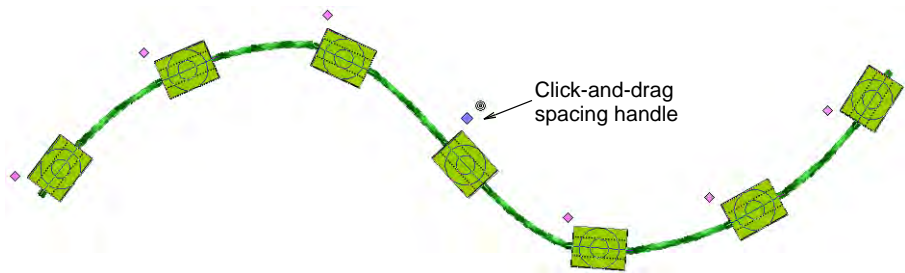
◀ Remove selected beads by pressing **Delete** or via the popup menu. Use the same menu to replace individual beads from the current palette.

Right-click to access popup menu
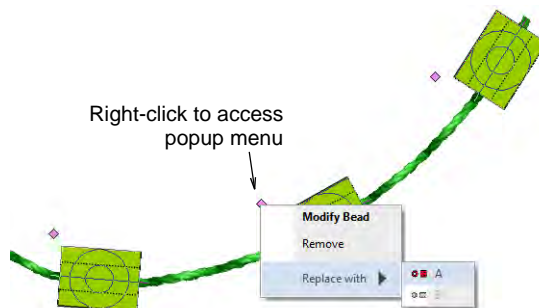
◀ Add beads from the popup menu by holding down the **Alt** key and clicking the bead run.

Hold <Alt> and click to add beads

Add Bead
A
B

◀ To rotate an individual bead, click the diamond control point. Use the rotation handle to orient the bead as necessary.

Click-and-drag rotation handle
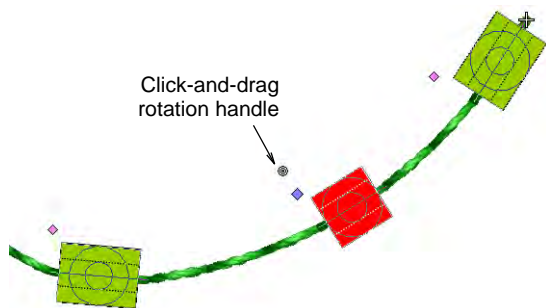
◀ Click the bead to activate fixing stitches. Use the handles to fine-tune as necessary.

Click-and-drag to reposition fixing stitches
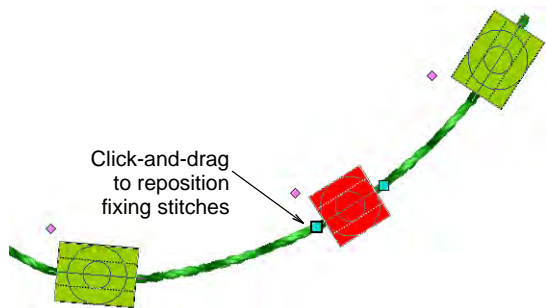
Related topics...

◀ Scaling objects
◀ Reshaping embroidery objects

Manual bead digitizing

If you require precise control over the positioning and encoding of your bead drops, EmbroideryStudio provides manual techniques for this purpose. Digitize your own bead drops with fixings. Even insert individual bead-drop functions while traveling through the design. Or create your own bead fixings for use as custom motifs.
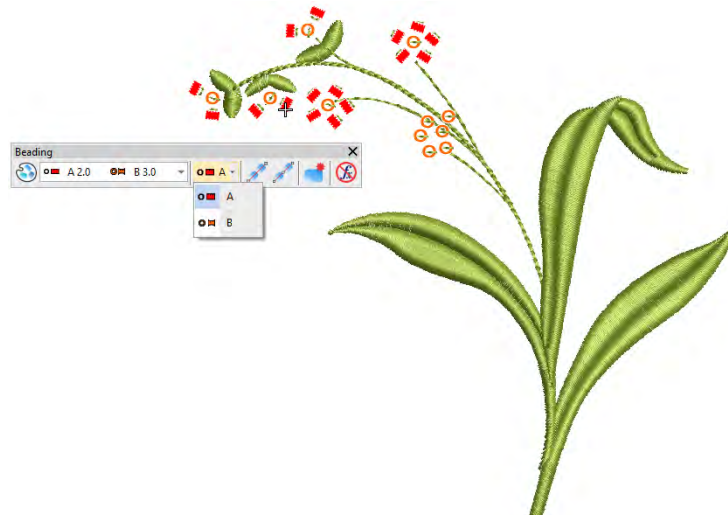
Digitize manual bead drops

 Use Bead > Manual Bead to digitize individual beads.

The **Manual Bead** input method allows you individual control over bead placement and fixing stitches. Create decorative bead placements or 'clusters' using beads from the palette. To add a bead to the stitching sequence, simply drop it onto the design and secure it with manual stitches.
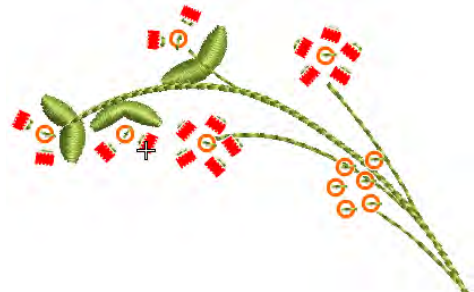
Note: Manual bead stitching is a difficult digitizing skill to master and you need to plan the stitching sequence carefully in order to minimize unnecessary stitches. Experiment with your machine and stitch length and spacing settings to achieve the desired result.

To digitize manual bead drops

1 Select a machine format that supports bead mode via the **Select Machine Format** dialog. See Select bead-capable machines for details.

2 Set up your palette in the **Bead Palette Editor** according to the machine type – single, twin, multi-bead – that you have selected.

3 Select a color for the fixing stitch from the **Color** toolbar.

4 Click the **Manual Bead** icon. If you have activated twin-bead mode, bead options are displayed in the droplist.

Beads available per device

Tip: Zoom in for more accurate digitizing. Hold down **Ctrl+Shift** to constrain the cursor to horizontal and vertical directions, or 15° increments.

5 Select a bead and left-click to begin your manual bead placement. It must start with at least one stitch. How you proceed depends on the layout style you are aiming for. The most common is 'flat':
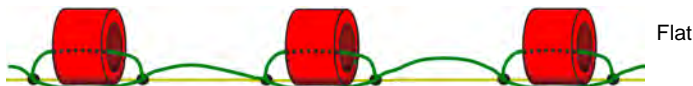
Flat

6 One technique for creating a 'flat' fixing stitch is as follows:

◄ Click-stitch forward as manual run stitching.

◄ Move forward one bead length and right-click to drop a bead. An outline appears.

◄ Click-stitch backwards. This stitch is going through the hole and will pull the bead back and down.

◄ Click-stitch forward across the bead to the drop point.

Click-stitch forward as manual run

Right-click to drop bead

Click-stitch backwards and then forwards

A
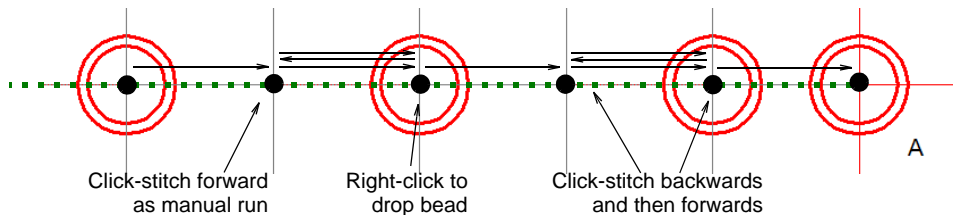
◄ Click-stitch forward as manual run stitching until you reach the next drop point.

> **Tip:** If you make a mistake while digitizing, press **Backspace** to retrace your steps.

7 Continue digitizing manually in the same way – right-click to drop a bead, left-click to digitize fixing stitches. Press **Enter** to finish.

Continue digitizing –
right-click for bead drops,
left-click for fixing stitches

> **Tip:** Remember to test your beading drops on the machine at normal speed (low-to-medium) and then at high speed. Differences will show up at high speed.

8 If you have activated multi-bead mode, press the **Tab** key to switch between available bead shapes while digitizing.

Press <Tab> to
switch beads

B
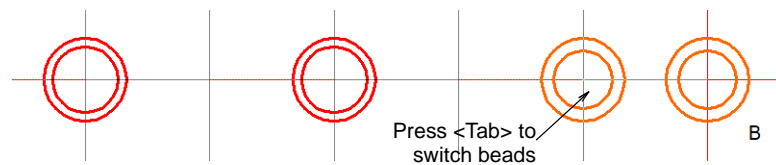
9 Press **Enter** to finish.

> **Tip:** Typically, you combine manual bead drops with **Run** stitch. Use **Run** to 'map out' the design and use **Manual Bead** to digitize individual bead drops or 'bead clusters'.

To digitize sideways fixing stitches

The recommended technique for creating a 'sideways' layout is similar in principle to 'flat'.
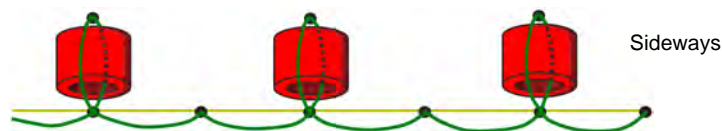
Sideways

1 Click-stitch forward as manual run stitching.

2 Turn sideways at the point you want to drop the bead.

3 Move forward one bead length and right-click to drop the bead. A bead outline appears.

4 Click-stitch backwards. This stitch is going through the hole and will pull the bead back and down.

Right-click to drop bead

Click-stitch one stitch back to secure

A
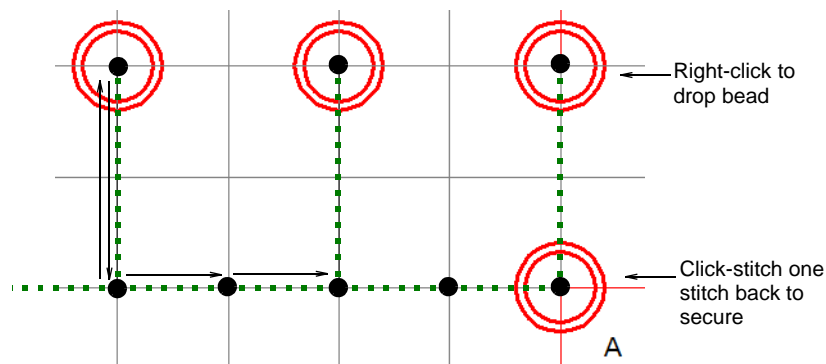
5 Click-stitch forward as manual run stitching until you reach the point of the next bead drop.

6 Press **Enter** to finish.

Press <Enter> to finish
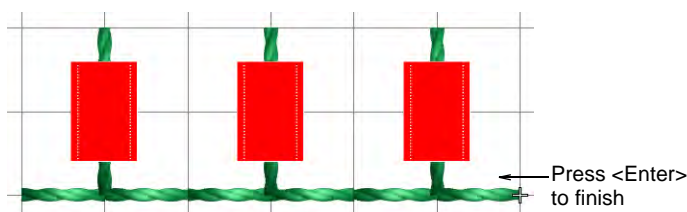
To digitize upright fixing stitches

Below is the 'classic' upright layout. In this procedure we add some stitch reinforcement to help position the bead.

Upright

1 Click-stitch forward as manual run stitching.

2 Optionally, click-stitch a bead surround in manual run stitching. This will help 'seat' the upright bead.

3 Right-click in the center of the surround to drop the bead. A bead outline appears.

4 Click-stitch forwards to the edge of the bead surround. This stitch is going through the hole and will secure the bead in the upright position.

Click-stitch a bead surround to 'seat' the bead drop

Right-click to drop bead

Click-stitch to secure the upright bead
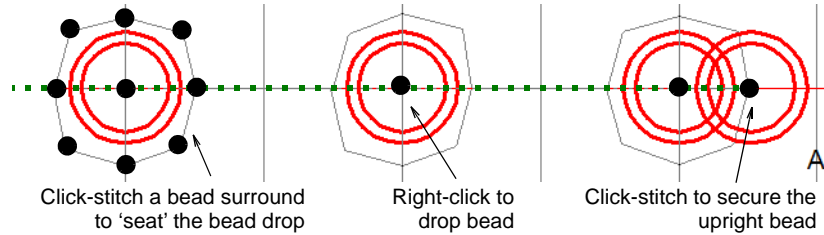
5 Click-stitch forward as manual run stitching until you reach the point of the next bead surround.

6 Press **Enter** to finish.

Press <Enter> to finish
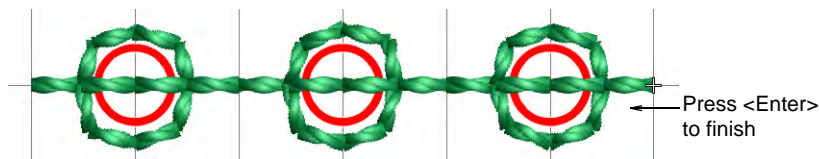
Related topics...

◀ Select bead-capable machines

◀ Beading mode

Insert bead drops

⟋1	Use Outline > Digitize Run to place a row of single or triple run stitches along a digitized line.
◆◆◆	Use Outline Stitch Types > Motif Run to create a string of motifs along a digitized line.
⠿	Use Docker > Stitch List to toggle Stitch List display on and off. Use it to select individual stitches.
1↔	Use Travel > Travel 1 Stitch to move stitch cursor forwards/backwards 1 stitch at a time. Left/right click.
fx	Click Function > Insert Function to insert machine function at current stitch cursor position.
ⓕₓ	Use Bead > Clear Function to remove any bead functions from the current needle position.

In preference to the **Manual Bead** tool, some digitizers flesh out designs using **Run** or **Motif Run** and then travel through it, dropping beads

manually as and where required. This technique can be used with single or multi-beads.
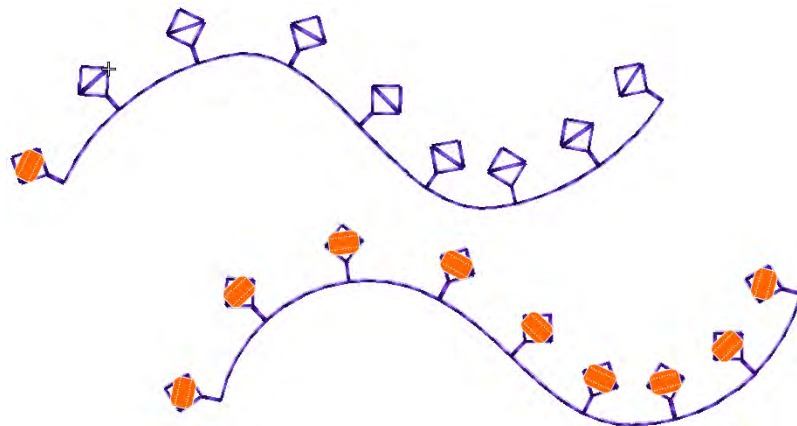
To insert bead drops

1 Select a machine format that supports bead mode via the **Select Machine Format** dialog.

2 Set up your bead palette – single or more – according to machine capabilities.

3 Set a fixed run length to suit the bead type/s you are using.

Set run length to suit beads
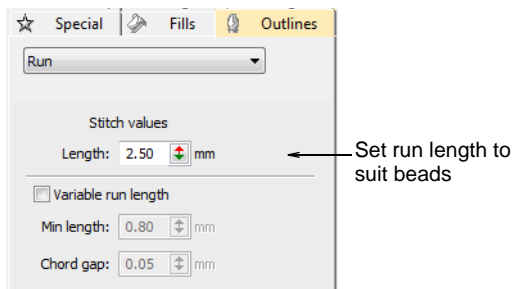
4 Create the design or pattern you want and choose the bead or beads to use.

Twin-bead palette available

5 Optionally, open the **Stitch List**.
6 Press the **Home** button and travel through the design using arrow keys or **Travel** tools.
7 Travel to the insertion point and select **Insert Function** from the toolbar or **Stitch List** popup menu.

Travel to insertion point
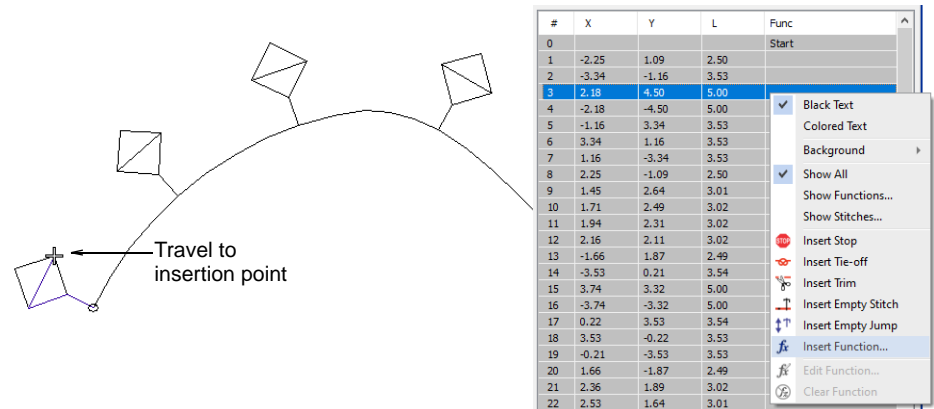
8 From the **Functions** list, select **Drop Bead**. Depending on machine requirements, you will either add the function to the current stitch, or

insert it on an empty stitch or empty jump. See your machine manual for details.

Select Drop Bead function

Insert additional empties as necessary
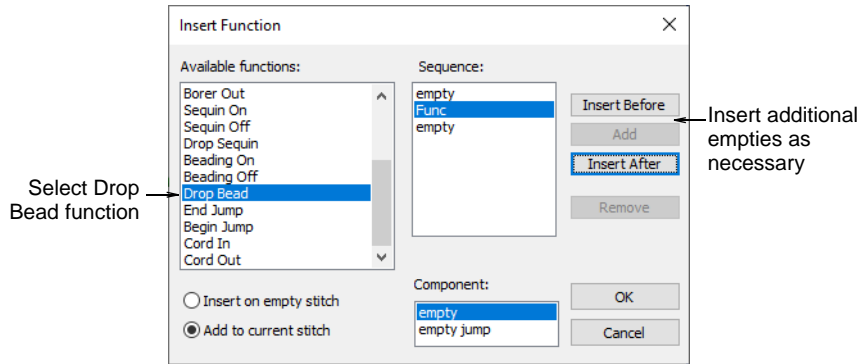
9 When the **Drop Bead** function is correctly defined, click **OK**. The **Select Bead** dialog opens showing available beads.

Choose preferred bead
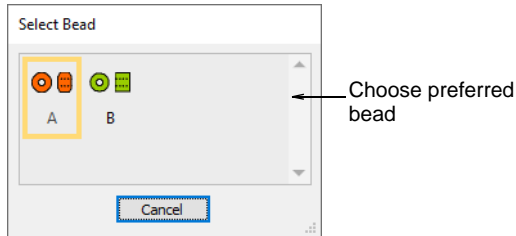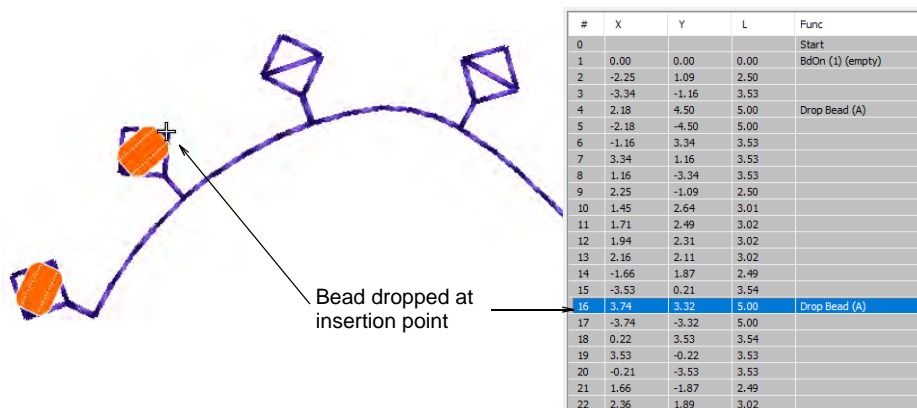
10 Choose a preferred bead. The **Drop Bead** function, together with any additional empty stitches or jumps, is added at the current needle position.

Bead dropped at insertion point
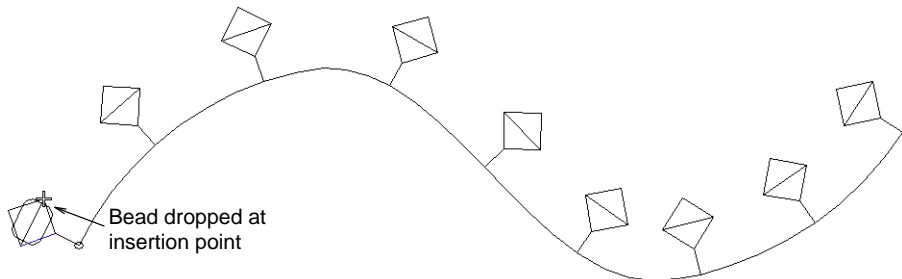
11 Continue traveling and inserting beads by the same method.

#	X	Y	L	Func
0				Start
1	0.00	0.00	0.00	BdOn (1) (empty)
2	-2.25	1.09	2.50	
3	-3.34	-1.16	3.53	
4	2.18	4.50	5.00	Drop Bead (A)
5	-2.18	-4.50	5.00	
6	-1.16	3.34	3.53	
7	3.34	1.16	3.53	
8	1.16	-3.34	3.53	
9	2.25	-1.09	2.50	
10	1.45	2.64	3.01	
11	1.71	2.49	3.02	
12	1.94	2.31	3.02	
13	2.16	2.11	3.02	
14	-1.66	1.87	2.49	
15	-3.53	0.21	3.54	
16	3.74	3.32	5.00	Drop Bead (A)
17	-3.74	-3.32	5.00	
18	0.22	3.53	3.54	
19	3.53	-0.22	3.53	
20	-0.21	-3.53	3.53	
21	1.66	-1.87	2.49	
22	2.36	1.89	3.02	

Bead dropped at insertion point

12 To delete a bead drop, travel to the location and click the **Clear Bead** icon.

Related topics...

◀ Digitizing outlines & details
◀ Motif runs
◀ Select bead-capable machines
◀ Travel through designs
◀ Insert machine functions manually

Custom bead motifs

Use Traditional Digitizing > Use Motif to add motifs to design one-by-one. Rotate, scale, or mirror as you add.

Use Outline Stitch Types > Motif Run to create a string of motifs along a digitized line.

Another technique for deploying custom bead fixings is to save them as motifs and use them singly or in motif runs. The **Create Motif** function

lets you save your own motifs for future use. Custom motifs are saved in custom 'motif sets'.
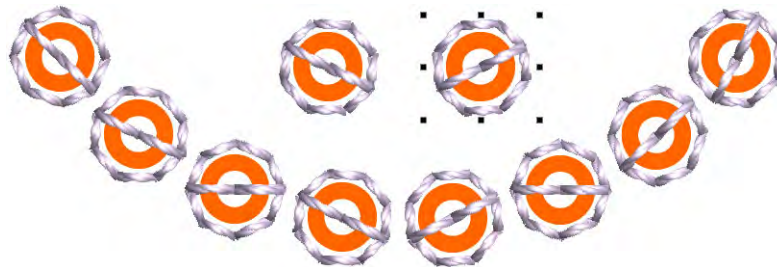
To create and save a motif

1 Create your custom bead and fixing stitch or edit an existing one.
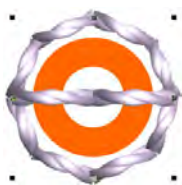
2 Duplicate and align the motif as you want it to appear in a motif run. Use **Alignment** tools for precise arrangement.

Determine nominal layout

3 Once you have determined the layout, select objects and apply **Closest Join**. Use the middle motif to determine reference points.

4 Select the motif and choose **Object > Create Motif**.

Select motif set → Motif set:

Enter motif name → Motif name:

Deselect 'Remove other functions'
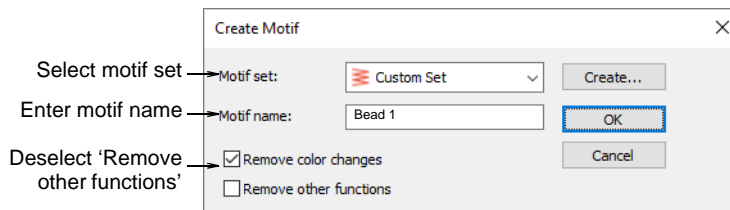
5 Select a custom motif set from the droplist and enter a name in the **Motif Name** field.

6 Deselect the **Remove other functions** option. This ensures that beads are preserved.

7 Click **OK**.

8 Click two reference points for the bead motif. These should coincide with entry and exit points.

Mark reference points
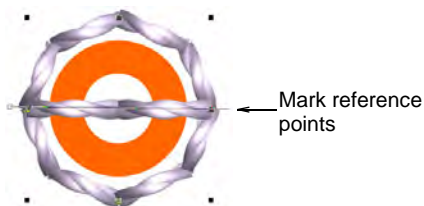
9 Use you custom bead and fixing in bead runs or individual placements.

Create individual bead placements as preferred
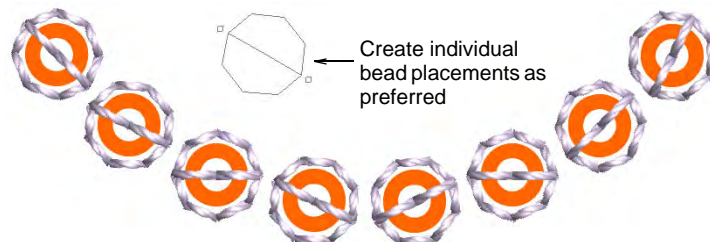
Related topics...

◀ Custom motifs
◀ Selecting & placing motifs
◀ Motif runs

Bead encoding & decoding

In EmbroideryStudio, dedicated 'Bead' functions are used for bead designs. Analogous functions exist for sequins.

Dedicated sequin and bead functions in EmbroideryStudio
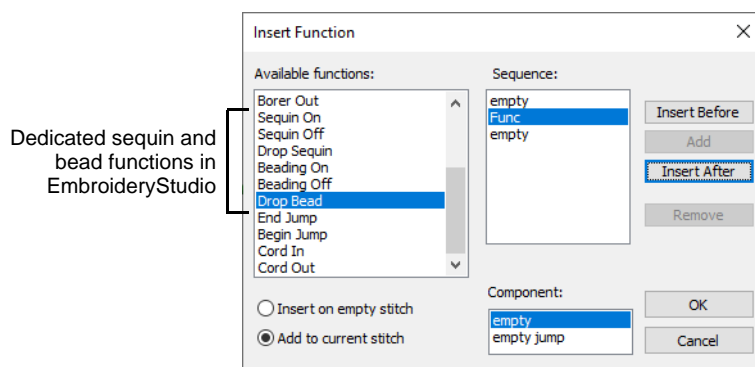
When exporting to Tajima DST file format, both 'Drop Bead' and 'Drop Sequin' functions are replaced by Jump codes. When exporting to DST format with Dahao as your selected machine format, the machine file

employs a modified protocol for non-standard use of Jump codes. This is a modified Dahao-specific DST format.

Dahao machine controller

Encode beads as sequins

You do not need to be concerned with machine file encoding unless your design contains both sequins and beads. Since both object types are encoded the same way in the machine file, you need to explicitly map beads and sequins to respective 'slots' on the machine. You do this on output via the **Save Options** dialog. Droplists on the **Save Options > Beading** tab are available whenever you export as Tajima DST with Dahao as your current machine format.

Encode beads as sequin functions on the machine
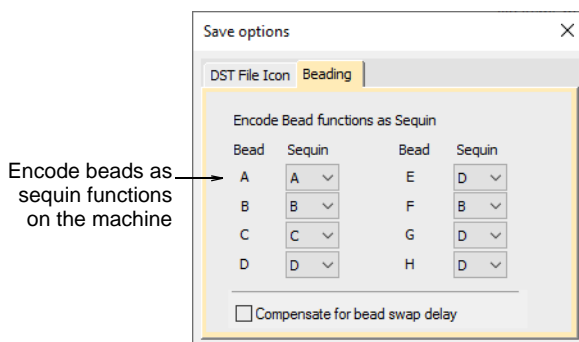
Let's say your design contains two (2) sequins and two (2) beads. And let's say your machine is configured with sequins in Slots A and B, and beads in Slots C and D. On the **Beading** tab, Bead A must map to Sequin C and Bead B to Sequin D. Then the Dahao controller will be able to correctly distinguish sequins from beads on stitchout.

Note that this mapping is not indicated on the production worksheet since it only affects the machine file, not the source design file. This means the designer must communicate the correct mapping to the machine

operator (or vice versa) according to how sequins and beads are configured. It is important to make sure that mappings do not intersect. For instance, you do not want both Bead A and Sequin A to be allocated to Slot A.

Note: DST files can only encode up to four (4) sequins and/or beads. This means that if you have, say, 3 sequins and 5 beads in the same design, mapping will not work. You will run out of slots.

Compensate for bead-switch delay

Some machine configurations have a specific deficiency when it comes to beading. Namely, they are one step late when switching beads. When controllers encounter a command to drop Bead X, the machine will drop whatever bead is in the picker and only then make the switch.

To correct the error, you must compensate by employing a 'preemptive bead swap'. This will shift bead changes by one step. By ticking **Compensate for bead swap delay**, the first line becomes re-encoded as shown…
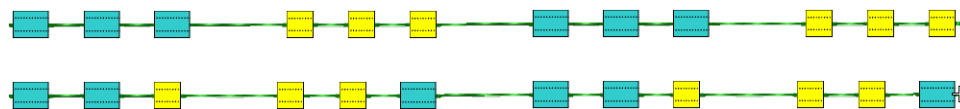
Note: Installation engineers will be able to advise if it is necessary to compensate for 'bead shift'.

Decode sequins as beads

The **Open Options** dialog provides an inverse set of controls to decode machine files which have been encoded by means of the **Save Options > Beading** mechanism. The **Open Options > Conversion Details** tab allows you to decode sequin functions as beading when opening these formats using Dahao target machine.

Decode sequins as bead functions in the software

Restore sequence from bead swap where necessary
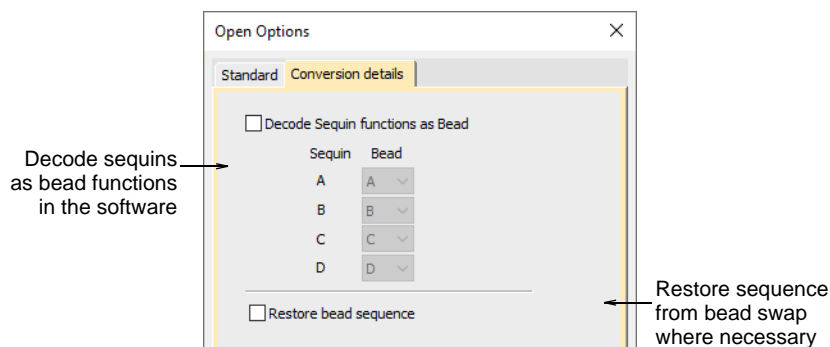
Note: When you open a Tajima DST file, the software only shows the **Standard** tab. When you choose 'Dahao' from the machine type droplist, the **Conversion Details** tab becomes available.

Related topics...

◀ Select bead-capable machines
◀ Opening machine files
◀ Exporting designs for machine

Chapter 50
Bling Digitizing

Bling refers to decorative objects placed on garments or templates, either on their own or in combination with other design elements. Bling is supplied in varying sizes, shapes, colors and materials. It goes under names such as diamante, rhinestones, eyelets, ribbons, charms, crystals, glitz, nailheads, studs, etc. EmbroideryStudio lets you add bling to multi-decoration designs with the **Bling** toolset. This allows you to create and visualize bling embellishments in combination with other decorative elements.

Bling production processes

The **Bling** feature allows digitizers to create patterns of bling runs or fills with editing capabilities similar to those of the **Sequin** toolset. The single biggest difference between **Sequin** and **Bling** is that individual rhinestones are not allowed to overlap or be too close together. Another difference is that there is no stitching associated with bling.

Bling, rhinestones, crystals, and glitz are interchangeable terms referring to decorative objects placed on garments or templates. They are supplied in various sizes, shapes, colors and materials.

There are two basic processes for creating bling designs:

◄ Hot-fix template production
◄ Direct-to-garment production

Hot-fix template production

Hot-fix templates can be produced in two ways:

◄ **Bling template**: This is the design layout on which rhinestones are initially placed prior to transfer. The template is created by cutters or engravers. Rhinestones are placed onto the template by a manual flood-fill process and then manually transferred to transfer tape.
◄ **Bling transfer**: In a semi-automatic process, bling is placed directly onto transfer tape (or sheet) by machine. Examples are IOline CrystalPress and CAMS machines. The bling design is ready for heat transfer to the final product – e.g. a T-shirt.

Direct-to-garment bling production

Direct-to-garment bling production is supported by many machines. Automatic rhinestone transfer machines are designed for high speed, high volume production. They enable users to fix any type of rhinestones, studs, and so forth directly to any type of fabric.

Tip: If you have neither CAMS automatic rhinestone placement machine nor a direct-connect cutting machine, you can use the **Convert Bling for Production** command to convert bling objects to vector shapes. These can be then output to vector file for use by third-party applications. See Outputting bling for details.

Cutting data

Cutting data sent to machine consists solely of vectors which describe the location, size, and shape of the bling in the template. There are no

connecting lines or data that do not relate directly to the placement of the bling. For example:

Original Bling Fill

Result in CorelDRAW Graphics after conversion
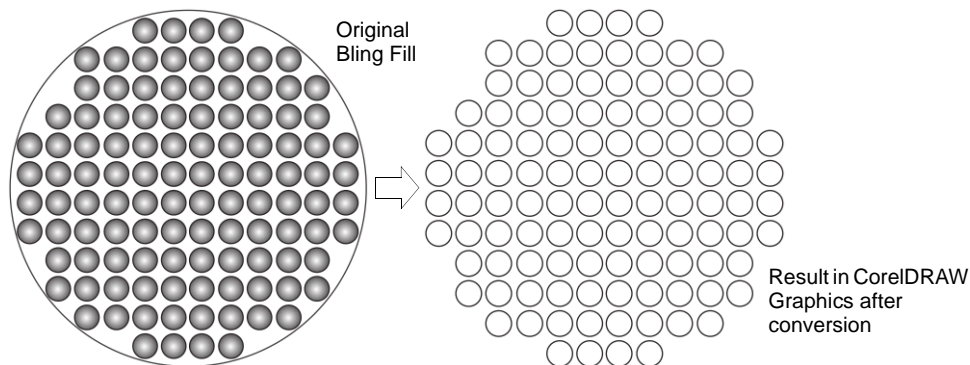
Bling templates

Bling templates must have holes cut to suit the bling size to be used. Below is a table of stone size to hole size. 'SS' stands for 'Stone Size'.

Stone size	Hole size (mm)
SS04	1.7
SS05	1.9
SS06	2
SS07	2.3
SS08	2.5
SS09	2.7
SS10	2.9
SS12	3.2
SS16	4
SS20	5
SS30	6.5
SS34	7.3
SS40	8.7
SS48	11.4
SS60	14.3

The **Bling** toolbar contains the following tools:
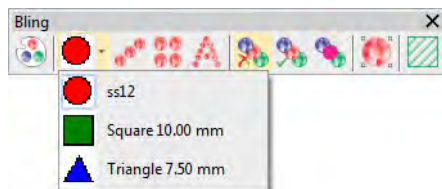
Bling objects have properties like normal embroidery objects. The **Object Properties** docker contains two tabs called **Bling Fill** and **Bling Run** to handle these properties. Editable properties include bling type – size, shape color, facets – patterns, fill density, angle and layout. **Bling** features include:

◀ Similar functionality to the **Sequin** tool.

◀ predefined library of rhinestone shapes.

◀ Tools to create outline and fill patterns.

◀ Controls to adjust placement of stones to avoid overlaps.

◀ Tools to convert vector outlines to bling patterns.

◀ Commands to create cut files to send to cutting machine – similar to appliqué.

◀ Inclusion of bling count by size and color on production worksheet.

Setting up bling palettes

> Use Bling > Bling Palette Editor to select and configure rhinestone shapes from a pattern library.

The **Bling Palette Editor** lets you prepare a palette of rhinestones for use in the current design. Once set up, the palette is available for use in **Object Properties** or from the **Bling** toolbar.

To define a bling palette

◀ Click the **Bling Palette Editor** icon.

Fields are arranged in tabular form so that parameters for each rhinestone type can be viewed at once.

Click to add rhinestone types

Adjust bling dimensions
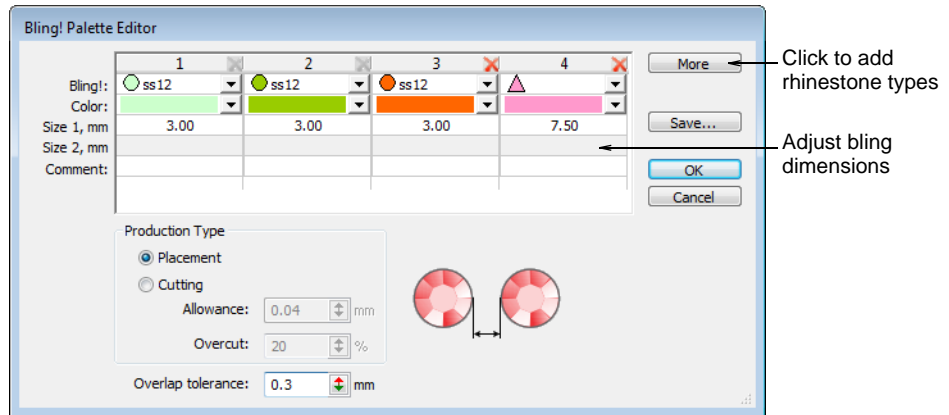
Note: The controls available in the **Bling Palette Editor** are similar to those available in the **Sequin Palette Editor**.

◀ Click the **More** button to add new entries as required.

◀ Use the **Bling** droplist to select rhinestone type and size – e.g. 'Round ss12'.

The droplist displays rhinestones available for use in both runs and fills. The code specifies a size range displayed at the bottom of the popup – e.g. 'ss12' falls within a size range of 3.00-3.20 mm.

Select rhinestone shape and size

Indicates size range for selected bling
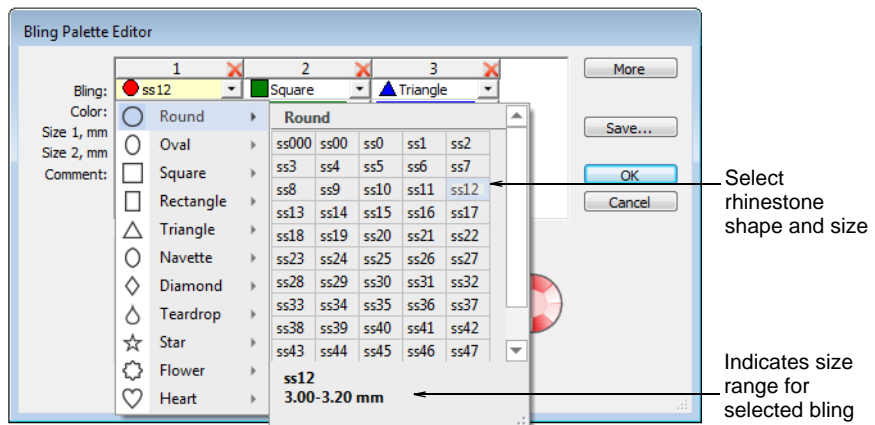
◀ Edit bling colors and sizes as required. The controls are summarized below.

Control	Function
Color	Change colors by clicking the drop-arrow and accessing the color selection palette. Choose from a range of both standard and non-standard colors, or mix your own.
Size1/Size2	These are editable fields which control bling dimensions. Circles, squares, stars, flowers and triangles (equilateral) have editable width. All other shapes have both editable width and height. The units of measurement are determined by the user. See also Set measurement units.
Comment	Comment is a free text field limited to a maximum of 128 characters.
Production type	If you are using a cutting machine, you can adjust the 'cutting allowance' for rhinestones to easily fit the cut holes in the stencil. See below.
Overlap tolerance	Set the minimum allowable distance between stones. Once set, the software controls placement so that no stones are placed closer than this value. See also Edit bling-fill objects.
Save	Save the palette to the file system for use in another session.

◀ Define a **Production Type** for the bling palette:

  ◀ **Placement**: If you have an automatic or semi-automatic machine, choose this option.

  ◀ **Cutting**: If you have a cutting machine, you will need to cut holes in the template material a little bigger than the rhinestone size you intend to use. You can set an **Allowance** value, say 0.04mm, for rhinestones to easily fit within the cut holes of the stencil.

Adjust cutting allowance – e.g. 0.04mm
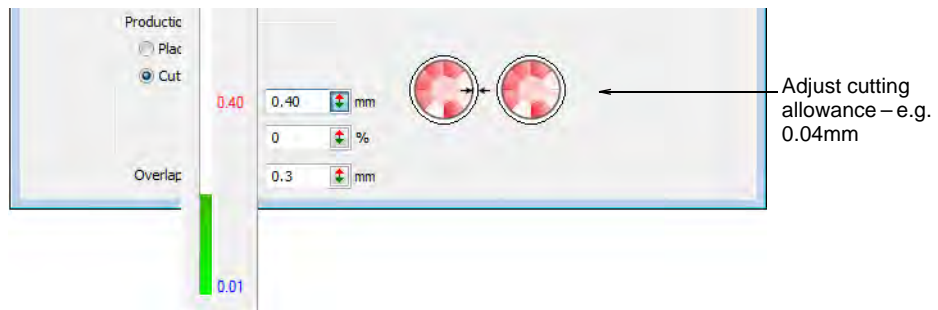
  ◀ Set an **Overcut** allowance (as a percentage) as necessary. This determines extra distance the knife needs to travel to ensure a

clean cut. You may need to experiment with this setting depending on the cutting machine you are using.

Overcut allowance

Set overcut percentage
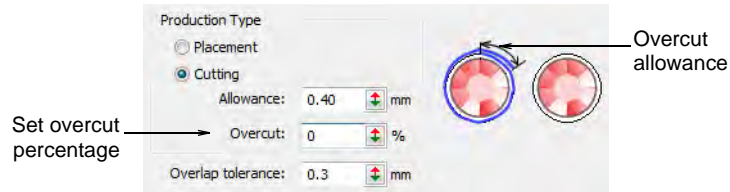
Note: Bling objects exported to a cutter retain color information, and cutting outlines have hairline width.
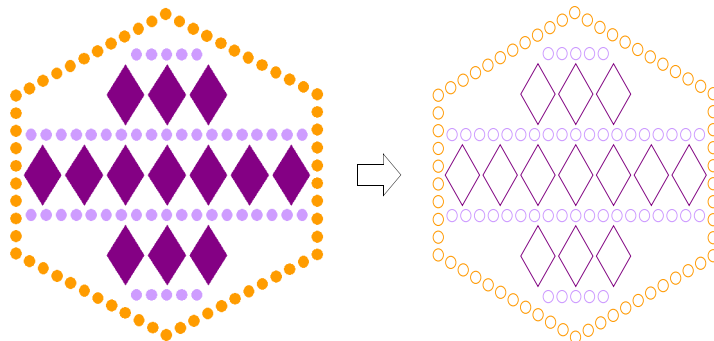
◀ Click **OK** to confirm. Rhinestone shapes are now available for use in **Object Properties** or from the **Bling Manual** palette.

Rhinestone shapes available for Bling Manual
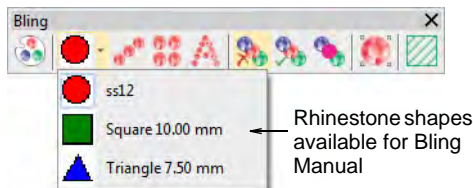
Tip: Click **Save** to save bling palette to the current template. You might consider setting up a dedicated bling template.
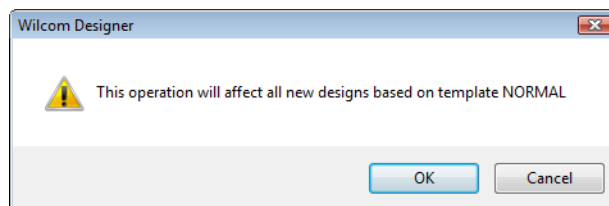
Creating bling runs & fills

The **Bling** feature provides tools for creating bling runs as well as fills. The fill can include a border, with or without a margin. You have the option of digitizing individual rhinestone 'drops' with the manual method.
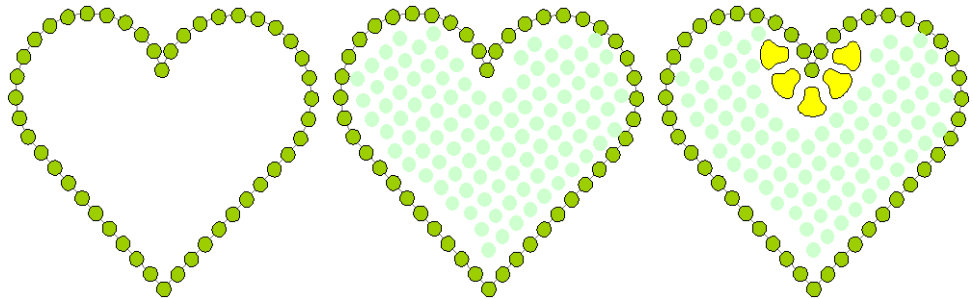
Digitize bling runs

	Use Bling > Bling Run Auto to create a string of rhinestones along a digitized line according to current settings.
	Use View > Show Bling to toggle bling display on/off.
	Use Bling > Show Bling Work Area to visualize the design within the work area of the selected machine model.

Use the **Bling Run Auto** method to create a string of rhinestones along a digitized line. There are two available types – **Simple Run** (same size

stones) and **Pattern Run** (different sizes following a regular pattern). The system automatically generates drops according to current settings.

Simple bling run

Bling outline

Bling pattern run
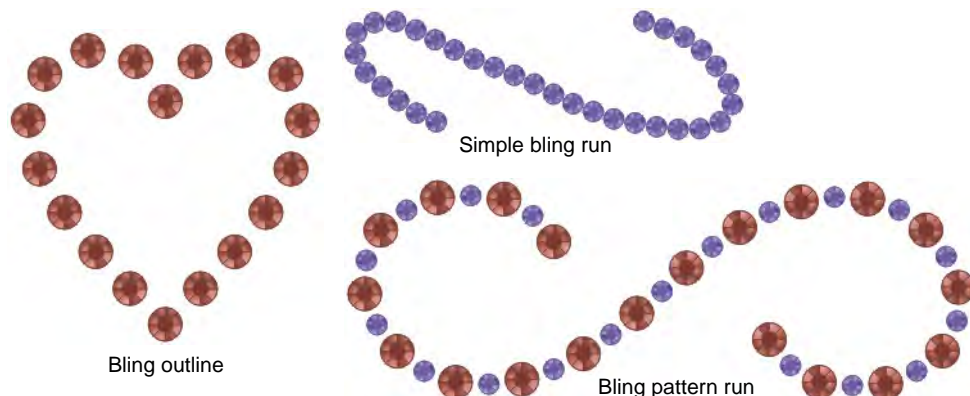
To digitize a bling run

1 Set up the bling palette if you haven't already done so.

2 Optionally, toggle on **Show Bling Work Area** to visualize the design within the work area of the selected machine model.

3 Click the **Bling Run Auto** icon.

4 Digitize the line as you would for a normal run object – left-click for corner points, right-click for curve points.

Press Enter

Digitize outline – left-click corner points, right-click curve points
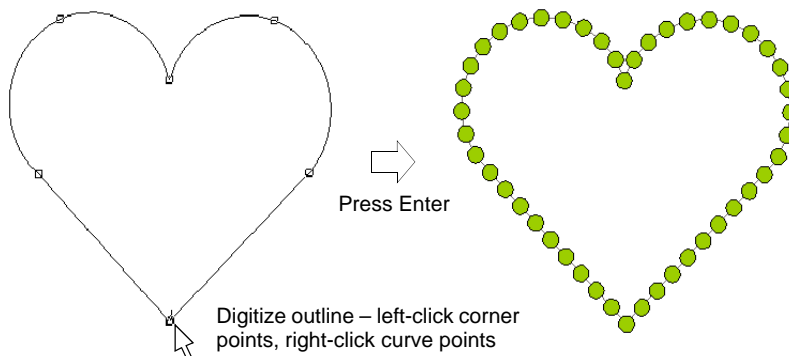
5 Press **Enter** to finish. Rhinestones are automatically generated. Spacings can be individually adjusted.

6 Double-click the object to view properties. The **Object Properties** docker opens at the **Bling Run** tab.

Select run type →

Hover over bling row to display summary information – type, SS (stone size) or actual size, color name, shape and facet

Position bling along curve according to selected option →

Orientate bling to object outline

Summary of bling used in selected object →
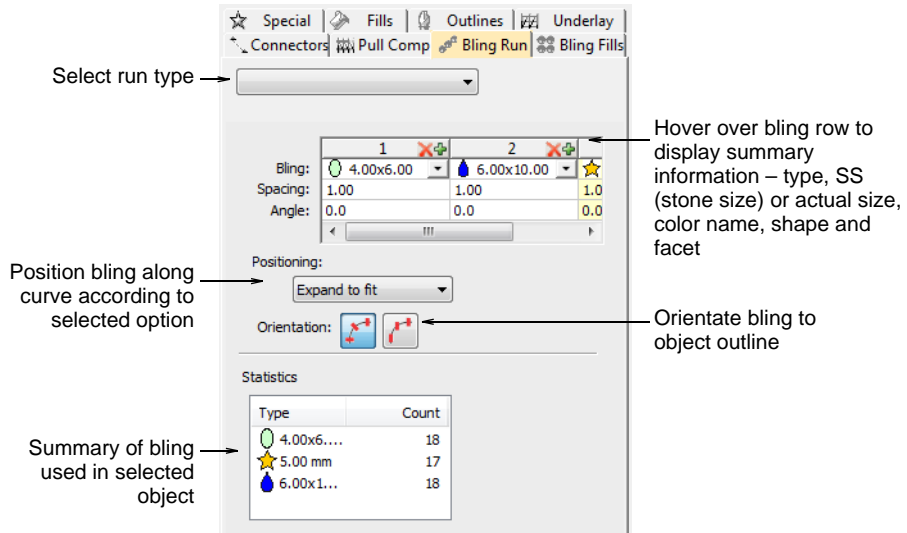
Available controls are summarized below.

Control	Function
Pattern Editor	Use to create bling run patterns. Click '+' in the pattern editor and select the desired rhinestone shape from the droplist.
Positioning	Place rhinestones along the curve and adjust placement to meet selected criteria:
	Exact: places bling along curve according to specified spacing.
	Expand to fit: places as many bling as possible along each curve segment where spacing is never less than specified. With this option, there are always rhinestones at each cusp point.
	Compact: non-circular rhinestones are placed such that minimal distance between is equal to specified spacing.
	Manual: allows manual distribution of rhinestones along curve.
Orientation	Place rhinestones either relative to object baseline or absolute (fixed 'north') orientation.
Statistics	Summary information: type, SS (stone size), color, shape, count (for the selected object). If multiple objects are selected, bling information for all selected objects is displayed.

7 Use pattern settings as for sequin runs to create simple or variegated bling runs.
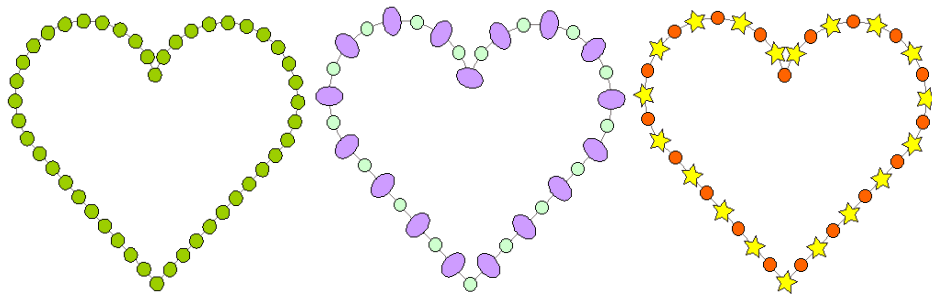
8 Set bling orientation to baseline or fixed angle.

Angle to baseline

Angle to horizontal line
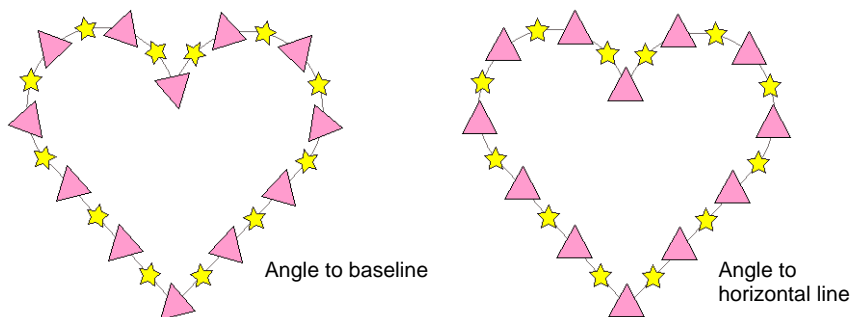
💡
Tip: The **Backtrack/Repeat** tool is enabled for bling-run objects.

Related topics...

◀ Setting up bling palettes
◀ Send bling to CAMS machine
◀ Digitizing sequin runs
◀ Digitizing outlines & details
◀ Reinforce outlines

Place rhinestones manually

> 🔴 ▾ Use Bling > Bling Manual to digitize individual bling drops. Select from a user-defined palette of rhinestone shapes.

You have the option of digitizing individual rhinestone 'drops' with the manual method.

To place rhinestones manually

‹ Click **Bling Manual** and select the bling type you want from the droplist.

Click Bling Manual
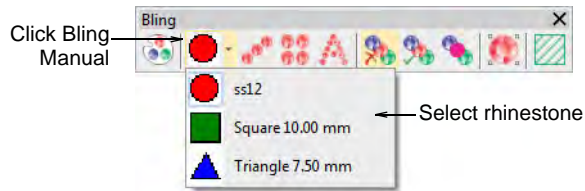
Select rhinestone

‹ Digitize individual rhinestones by left-clicking. If you make a mistake, press **Backspace**.

Use handle to adjust angle
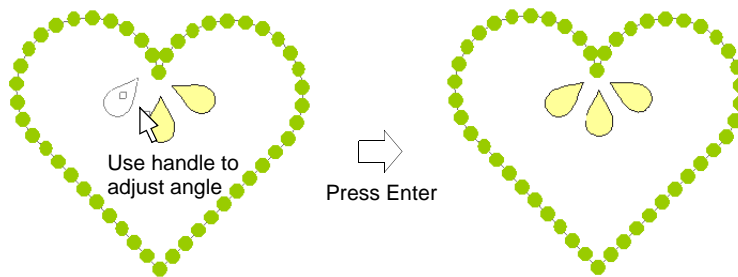
Press Enter

‹ Holding down the **Shift** key, use the handle to adjust rhinestone orientation as you digitize.

‹ Press **Enter** to finish.

Create bling fills

> Use Bling > Bling Fill to digitize complex shapes (with or without holes) filled with bling.
>
> Activate Bling > Automatic Overlap Removal if you want to automatically remove unwanted overlapping bling items from a bling object.
>
> Activate Bling > No Automatic Overlap Removal if you don't want to automatically remove overlapping bling items from a bling object.
>
> Activate Bling > Highlight Bling Overlaps if you want to highlight overlapping bling items in a bling object – i.e. if you want to edit manually.
>
> Use View > Show Bling to toggle bling display on/off.
>
> Use Bling > Show Bling Work Area to visualize the design within the work area of the selected machine model.

The **Bling Fill** feature provides a means of filling complex shapes with bling arranged in columns. Bling fill types include **Column Fill** (straight grid, angled grid) and **Contour Fill**.
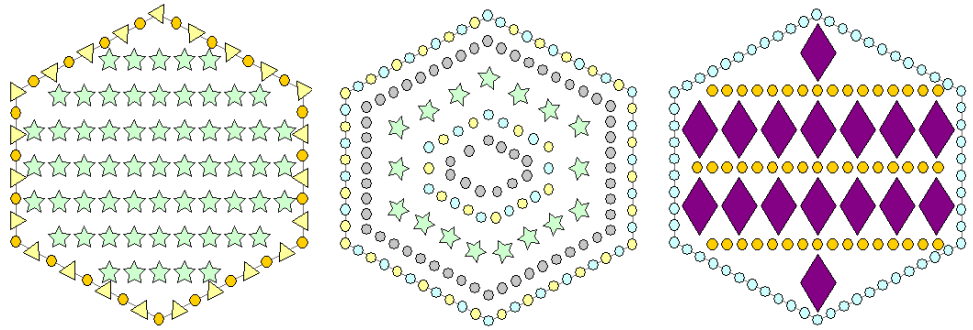
💡
Tip: You can create offset objects from bling-fill objects. All the same options are available as are available for embroidery objects, plus the ability to create bling fills and runs.

To create a bling fill

1 Optionally, toggle on **Show Bling Work Area** to visualize the design within the work area of the selected machine model.

2 Click the **Bling Fill** button.

3 Digitize control points for a closed object in the same way as **Complex Fill**.

Bling-fill object with Column Fill type and Follow Outlines enabled
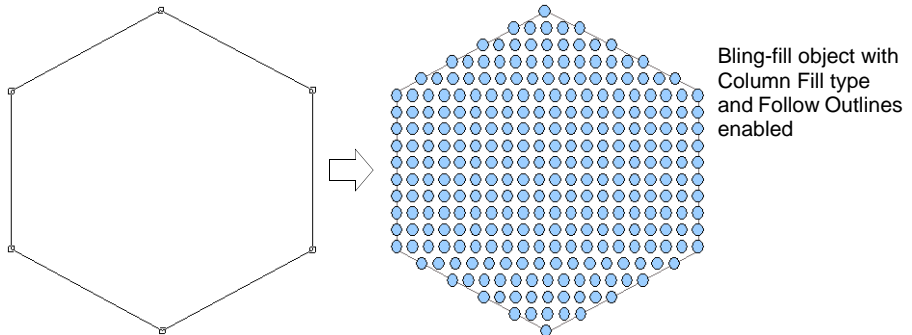
4 Press **Enter** to close the shape. You are prompted to create another boundary.

5 Press **Enter** twice to finish the object.

6 Double-click the object to view properties. The **Object Properties** docker opens at the **Bling Fills** tab.

Select fill type → Bling Column Fill

Adjust fill angle

Shift fill in relation to object outline

Force fill to follow object outlines

Select fill pattern type

Bling fill editor: Hover over bling row to display summary information – type, SS (stone size) or actual size, color name, shape and facet

Add border to selected bling-fill object

Set margin between bling border and fill

Border pattern editor: Hover over bling row to display summary information – type, SS (stone size) or actual size, color name, shape and facet

Orientate bling to object outline

Summary of bling used in selected object

7 Select a fill type – **Column Fill** or **Contour Fill**.
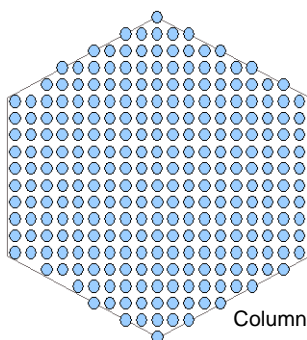
Column Fill type
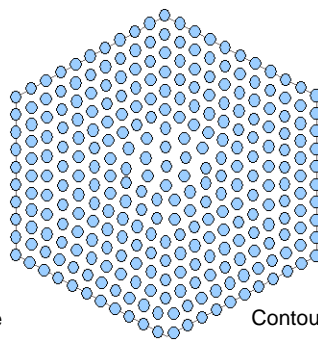
Contour Fill type

8 Adjust angles and shift as required – these settings are only available with **Column Fill**.
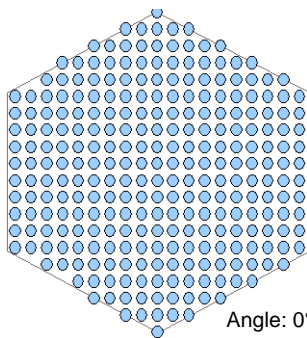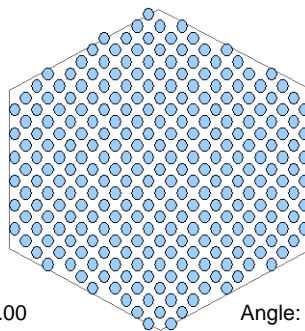
Angle: 0°, Shift: 0.00   Angle: 45°, Shift: 0.00

9 Use pattern settings as for sequin fills to create simple or multiline bling fills:

◀ For a simple fill, set the fill type to **Simple** and adjust pattern as desired.
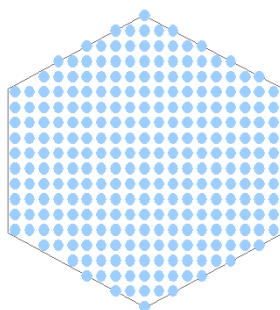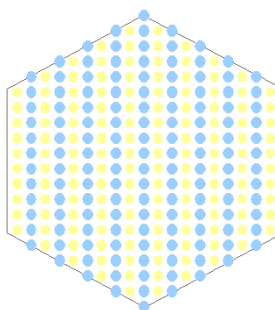
Simple fill – 1 shape   Simple fill – 2 shapes   Simple fill – 3 shapes
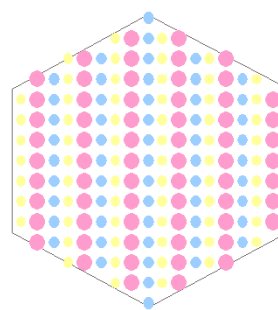
◀ For a more complex, variegated fill, set the fill type to **Multiline** and adjust pattern for each line as desired.
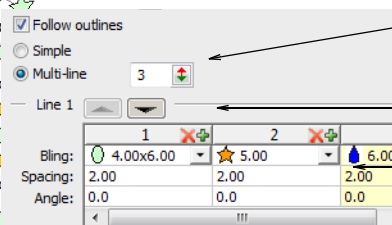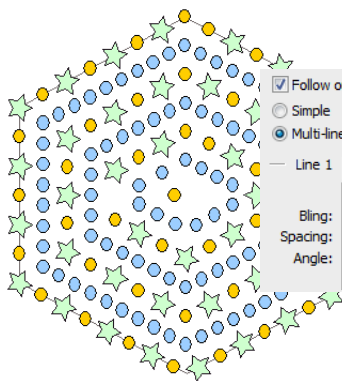
Set required number of pattern lines

Scroll between lines

Edit line pattern as desired

10 Adjust line spacing settings as required.
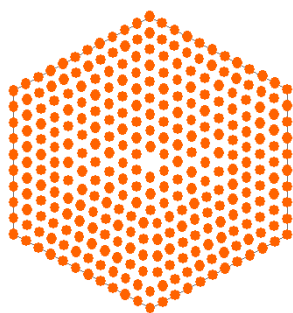
Contour fill
Line spacing: 1mm
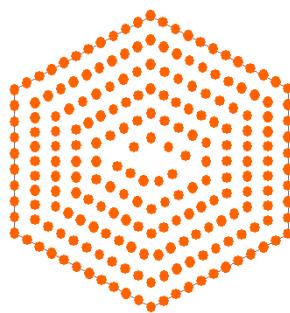
Contour fill
Line spacing: 3mm
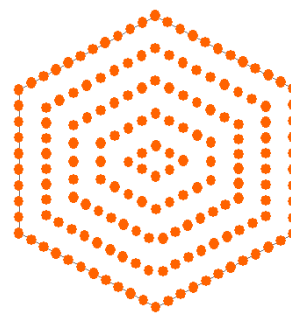
Contour fill
Line spacing: 5mm

11 Add borders as required. See below

💡
Tip: By default, **Automatic Overlap Removal** is selected in order to automatically remove unwanted items from overlapping bling objects. Choose another option if you want to manually edit rhinestone overlaps.
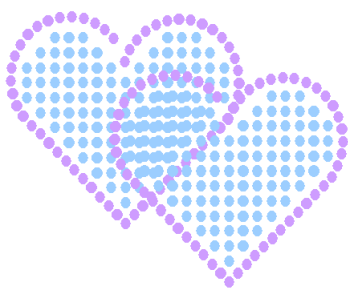
No automatic overlap removal
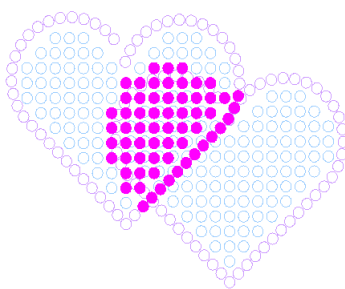
Highlight bling overlaps
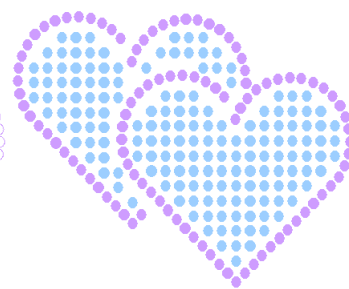
Automatic overlap removal

📝
Note: Bling overlaps are determined by the **Overlap Tolerance** setting. This defines the minimum allowable distance between stones.

Bling fill summary

Controls available on the **Bling Fill** tab are summarized below.

Control	Description
Fill type	Available fill types include: Column Fill, Contour Fill. Respectively, these fill a shape with columns along which patterns are repeated, or contours where patterns are repeated along a contoured path.

Control	Description
Layout	Bling-fill objects exist in one of two 'layout' states: Auto and Manual. In the Auto state, bling fills are automatically re-generated whenever an object is scaled or reshaped. In the Manual state, the bling count does not change during transformations. See also Modifying bling objects.
Angle	Changes the angle of the column fill. This is only applicable to Column Fill.
Shift	Moves the entire fill pattern in relation to the object outline. This can be used to achieve a more even fill placement. Acceptable values are between ±0.5.
Follow outlines	Expands the space between bling in each line of fill in order to follow the object outline. This results in a stronger outline demarcation. It is only applicable to Column Fill and works in conjunction with borders. See Add bling borders for details.
Pattern editor	Use to create bling patterns as either single-line or multi-line patterns. Create patterns by clicking '+' in the pattern editor and selecting bling from the palette. Multi-line patterns are created similarly, but each time the number of lines increases, a new tab is added to the pattern editor. This allows a new pattern to be added. See also Creating sequin fills.
Line spacing	Set the distance between the currently active line tab and the next line in the pattern. This can be the same or different for each and every line. By default, this value is the same for each.
Border	When checked, this adds a border to any selected bling-fill object. You can also create a pattern for the border similarly to single-line patterns for bling fills.
Margin	Add a margin to rhinestones forming the border. Smaller border margins result in a larger number of rhinestones in the fill.
Orientation	Place bling in the border either relative to the object baseline or at an absolute (fixed 'north') orientation.
Statistics	View the following information: type, SS (stone size), color, shape, count (for the selected object). If multiple objects are selected, then bling information will be displayed for all selected objects. You can re-order the columns as needed.

Related topics...

◀ Send bling to CAMS machine
◀ Setting up bling palettes
◀ Creating sequin fills
◀ Creating multi-sequin fills

Add bling borders

Like sequin fills, bling fills can also include a border, with or without a margin. The border can be made from different or same rhinestones and is a property of the bling-fill object.
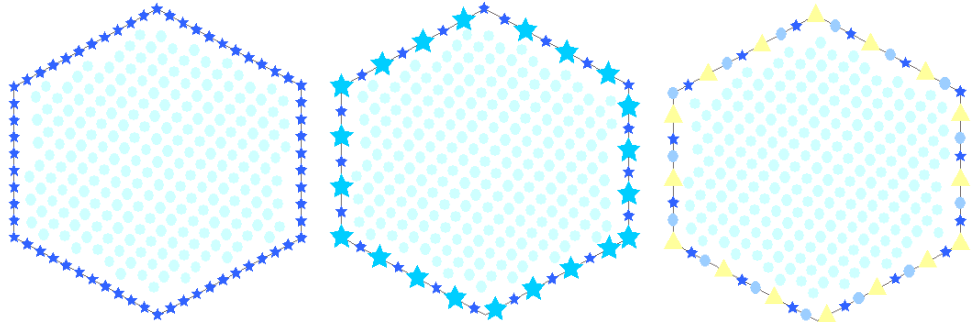
To add a border or changing border properties

1 Select the bling-fill object and tick the **Border** checkbox.
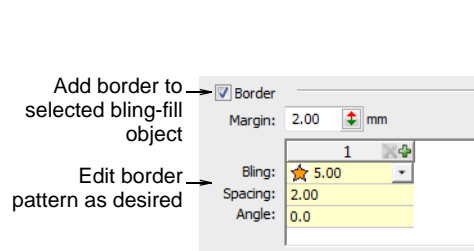
2 Use pattern settings to create simple or variegated bling borders.

3 Select the bling margin as required.

A border margin is created by adding an 'offset' to each individual bling item in the border. Smaller border margins result in a larger number of rhinestones in the fill as shown.
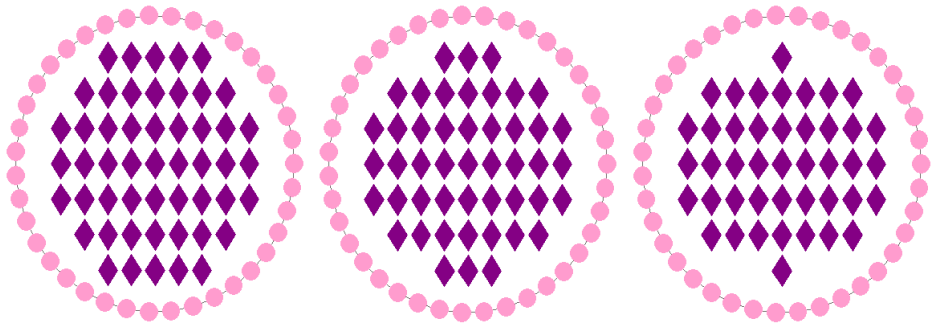
Modifying bling objects

Bling-fill objects can be scaled and reshaped like any embroidery object. When reshaping, resizing or editing an object/design, the software automatically recalculates the number of stones but does not resize them. The **Bling** toolset also provides tools for editing rhinestones individually.
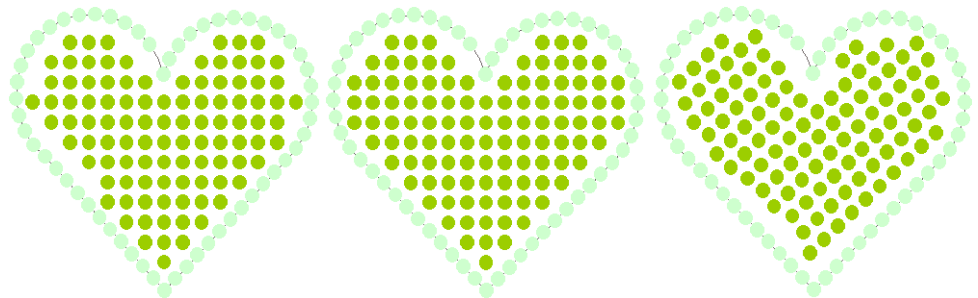
💡
Tip: Object properties for bling-run and bling-fill objects can be copied and applied to other objects. This is done via the **Make Properties Current** and **Apply Current Properties** commands.

Transform bling-fill objects

> 🖱 Use Select > Select Object to resize objects using selection handles.

Bling-fill objects can be scaled and transformed like any embroidery object with one difference. Bling-fill objects exist in one of two 'layout' states: **Auto** and **Manual**. In the **Auto** state, bling fills are automatically re-generated whenever an object is scaled or reshaped. In the **Manual** state, the bling count does not change during transformations.

To transform a bling-fill object

‹ Select the bling-fill object and check the **Layout** setting.

Check layout state

‹ Scale as desired.

Type	Count
◯ 3.00 mm	74
◯ 3.00 mm	192

Layout: Manual
Bling count unchanged

Type	Count
◯ 3.00 mm	95
◯ 3.00 mm	327
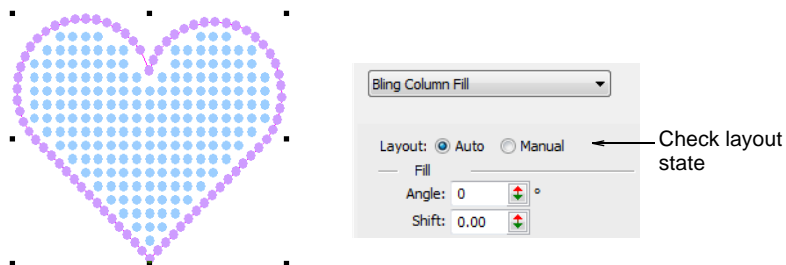
Layout: Auto
Bling fill regenerated
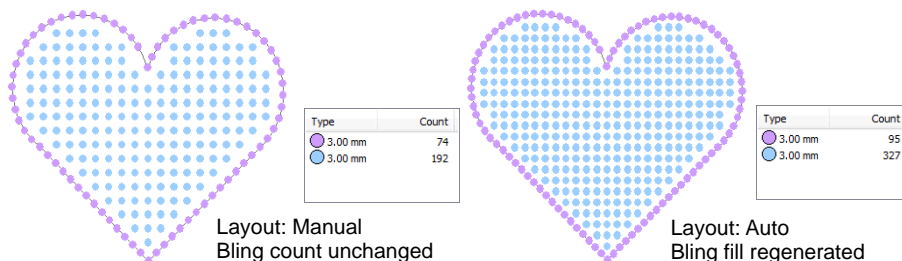
‹ Similarly, skew as desired.

Layout: Manual
Bling count unchanged

Layout: Auto
Bling fill regenerated
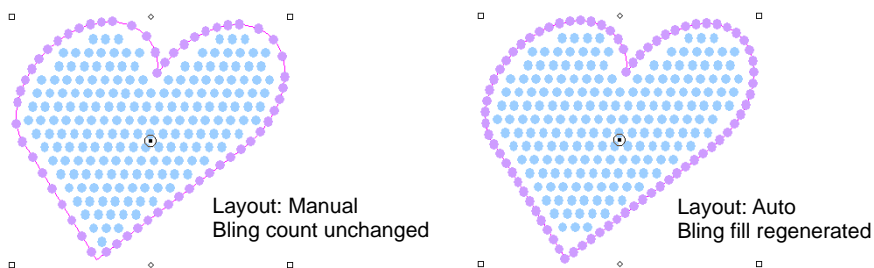
Related topics...

‹ Transforming Objects

Reshape bling-fill objects

Use Select > Select Object to resize objects using selection handles.

Use Reshape > Reshape Object to reshape selected bling run objects.

When reshaping a bling-fill object you can reshape object outlines in the normal way. When **Column Fill** is applied, you can graphically change the fill angle and curve line as well.

To reshape a bling-fill object

◄ Select the bling-fill object.
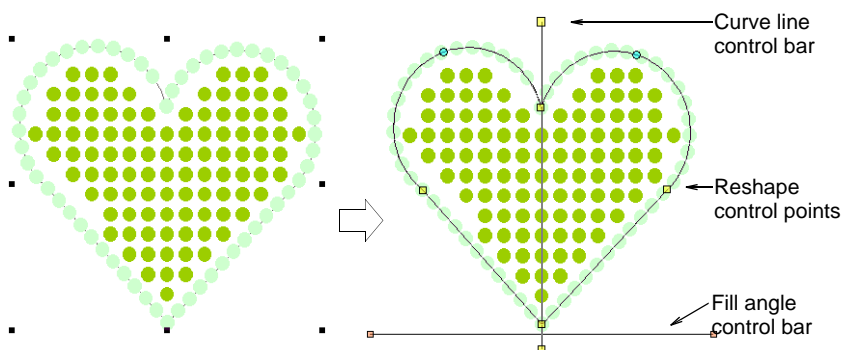
◄ Click the **Reshape** icon or press the **H** key.

Control points appear around the object outline. If column fill is selected, two other control bars appear – one (orange handles) to control fill angle, and the other (yellow handles) to control curve lines.

◄ Reshape the outline in the normal way.

In this case, we adjust the outline only slightly to improve the bling fill coverage.
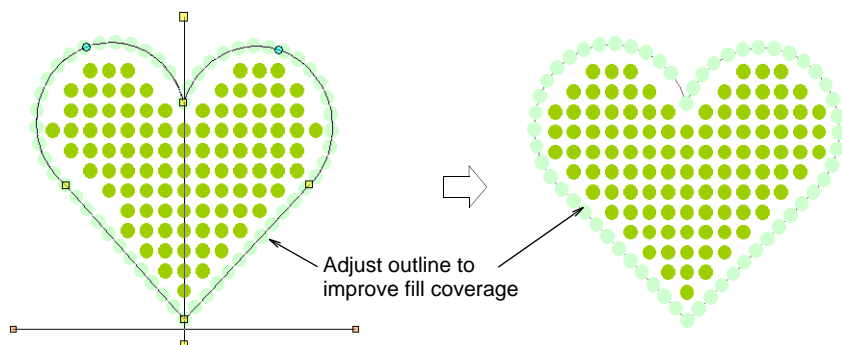
◀ Adjust fill angle control as desired.

Drag orange bar to adjust fill angle
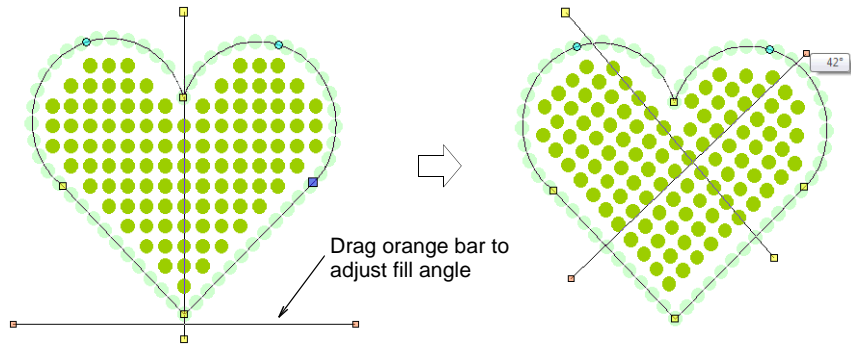
◀ Adjust curve line control as desired.

Right or left-click anywhere along the line to add curve or angle points. Curve line adjustments have no effect on object properties.

Click to create curve or angle point
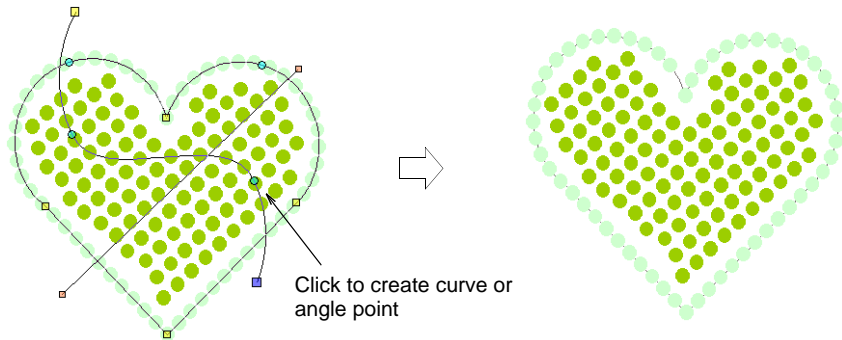
Edit bling-fill objects

Use Bling > Bling Edit to edit bling items individually.

Activate Bling > Automatic Overlap Removal if you want to automatically remove unwanted overlapping bling items from a bling object.

Activate Bling > No Automatic Overlap Removal if you don't want to automatically remove overlapping bling items from a bling object.

Activate Bling > Highlight Bling Overlaps if you want to highlight overlapping bling items in a bling object – i.e. if you want to edit manually.

The **Bling** toolset provides tools for editing rhinestones individually. The following operations are applicable to bling run, bling fill, and bling manual objects.

To edit a bling-fill object

◂ Select the bling-fill object and click the **Bling Edit** icon. Selection handles change.
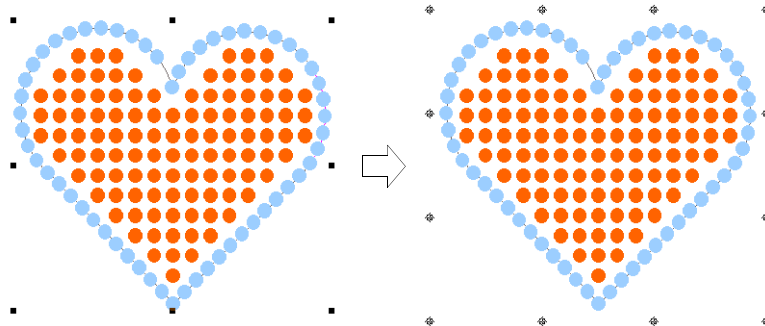
◂ Select rhinestones individually within the object.

Use the **Ctrl** key to select multiples.
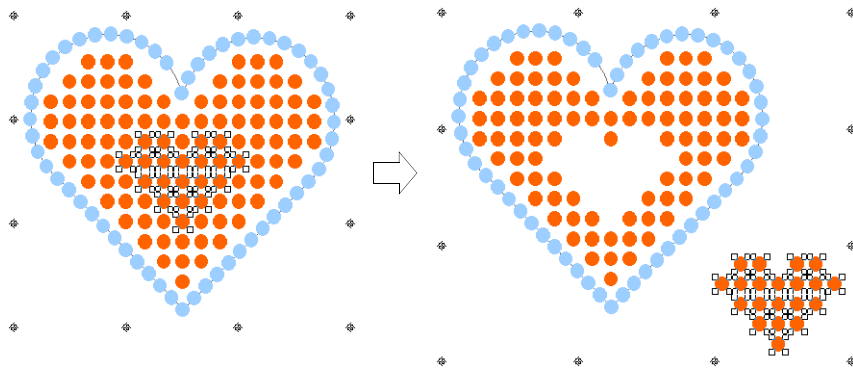
◂ Delete or reposition selected rhinestones as desired.

◀ Select rhinestones and right-click to replace by means of the popup menu.
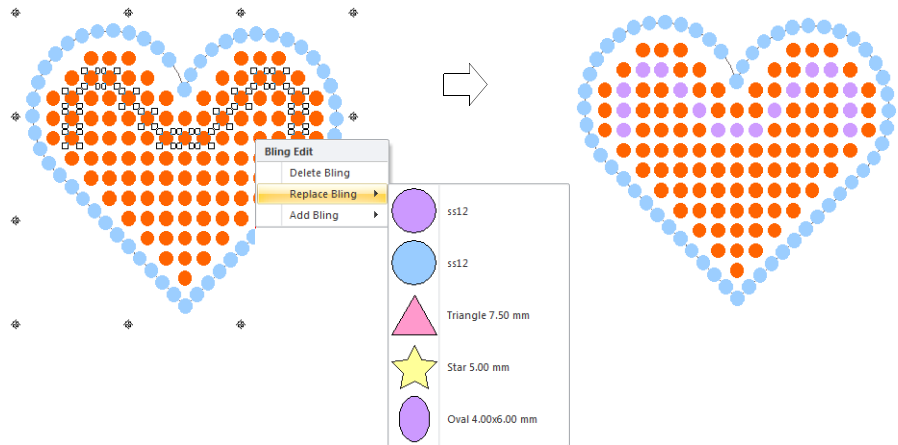
◀ Use the same popup menu to delete or add rhinestones.

These operations are treated as manual edits. The object's layout status is automatically changed to **Manual**. This means that bling count does not change during object transformations.

💡
Tip: By default, **Automatic Overlap Removal** is selected in order to automatically remove unwanted items from overlapping bling objects. Choose another option if you want to manually edit rhinestone overlaps.

| No Automatic Overlap Removal | Highlight Bling Overlaps | Automatic Overlap Removal |
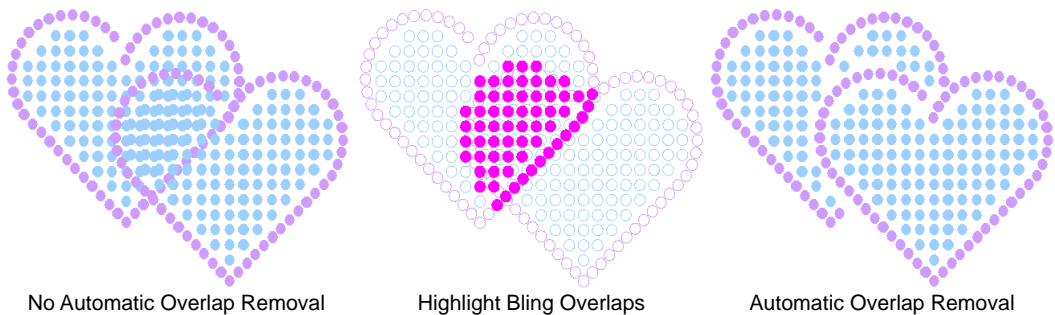
🚫
Note: Bling overlaps are determined by the **Overlap Tolerance** setting. This defines the minimum allowable distance between stones.

Convert objects to bling

Any closed object can be converted to a bling-fill object. Similarly, any outline object – closed or open – can be converted to bling-run.

To convert an object to bling

◄ Right-click a fill object and select **Convert > Convert to Bling Fill**.
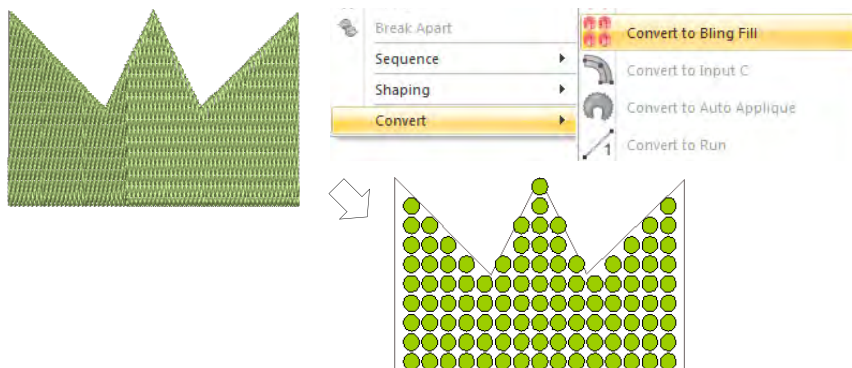
◄ Alternatively, click the **Bling Fill** button on the **Bling** toolbar.
◄ Similarly right-click a run object and select **Convert > Convert to Bling Run**.
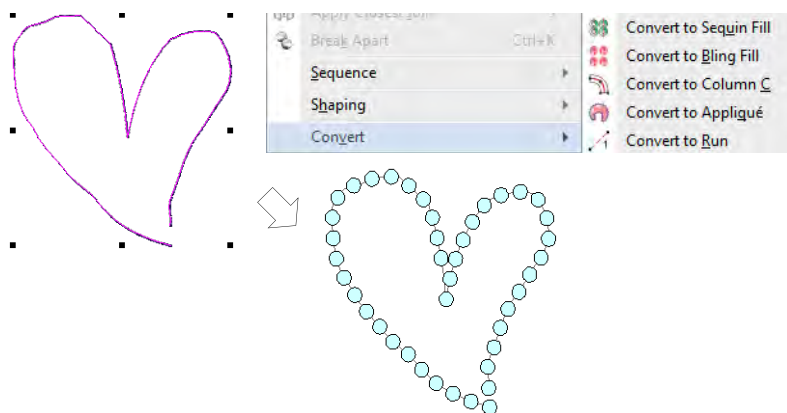
Tip: You can also create objects with the **Freehand Embroidery** tools which can be converted to bling-fill objects.
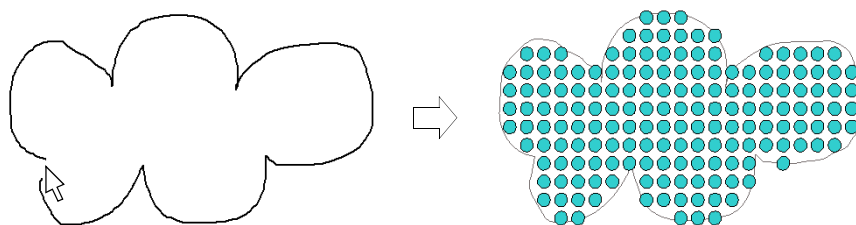
Creating bling lettering

> Use Bling > Bling Lettering to create bling lettering onscreen using native bling fonts, embroidery fonts, or TrueType fonts. Right-click for settings.

Use the dedicated **Bling Lettering** tool to create lettering in the same way as embroidery lettering. Use the same properties as embroidery lettering. Depending on the font, you also have access to **Bling Run** or **Bling Fill** properties. Alternatively, various techniques exist to create bling text without lettering properties.

To create bling lettering

◀ Select the **Bling Lettering** tool and select a font from the **Special > Lettering** tab. For best results, use native bling fonts.

Bling-specific fonts

◀ Digitize bling lettering as you would embroidery lettering.
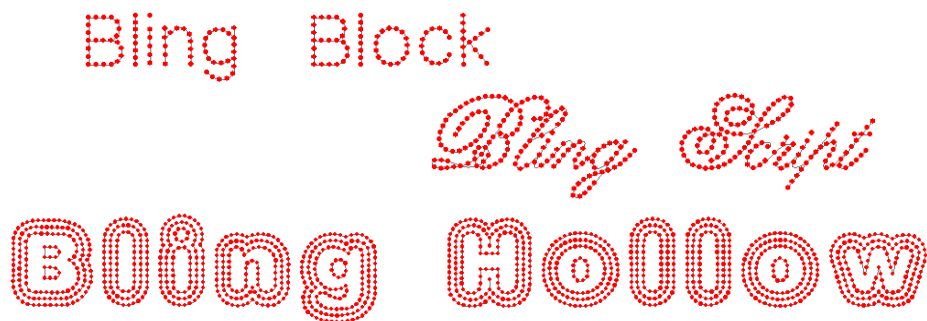
◀ Adjust properties as for embroidery lettering including size, slant, etc.
◀ Change font type. Use embroidery fonts or TrueType fonts with bling as desired.

◀ Alternatively, select an existing embroidery lettering object and convert to **Bling Run** or **Bling Fill**.
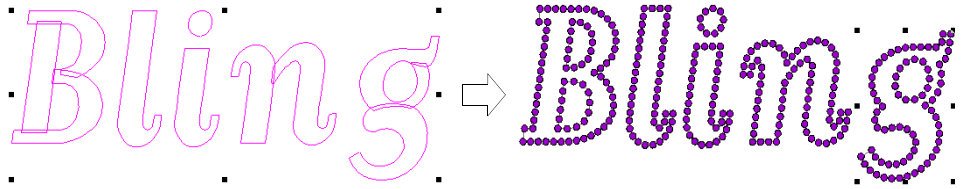
◀ Create a TrueType object and convert to **Bling Run** or **Bling Fill**.
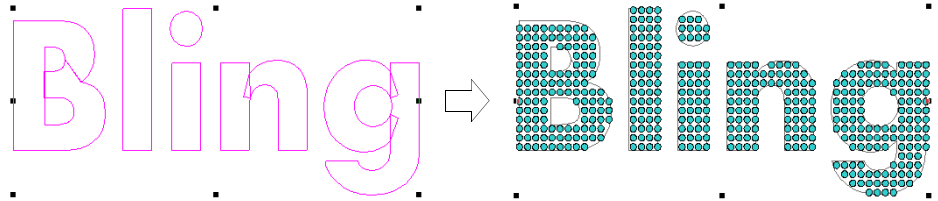
◀ Create a lettering object in **CorelDRAW Graphics**, change to **Wilcom Workspace**, use **Centerline Run Object** to trace the letters, and convert to **Bling Run**.

Select all objects and apply
Centerline Run Object
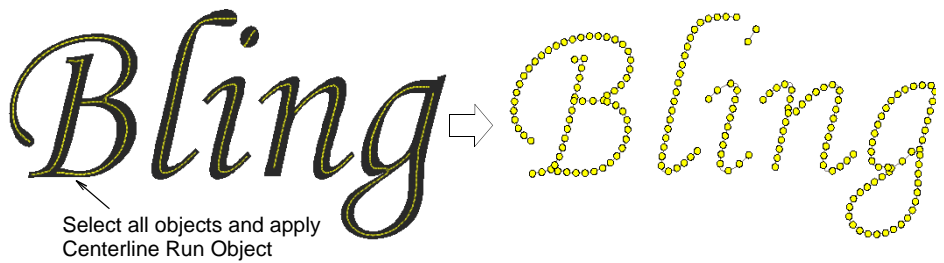
◀ Depending on the font type you are using, adjust bling automatic fills or outlines for **Bling Fill** or **Bling Run**.

Related topics...

◀ Creating embroidery lettering
◀ Editing text
◀ Creating bling runs & fills

Outputting bling

EmbroideryStudio supports a number of methods for exporting bling for production. Options include:

Output method	Details
CAMS machine	If you have a CAMS automatic rhinestone placement machine, use the dedicated CAMS connection.
Placement file	Alternatively, export your bling design to YNG format to be read by your placement machine.
Bling cutter	Send bling shapes direct to any supported cutting machine.
Vector file	Convert bling shapes to vectors in order to cut bling templates.

The **Export Multi-Decoration Files** capability allows you to output files for multi-decoration designs. The system recognizes whether a component is embroidery, graphic, appliqué, or bling.

Related topics...

◀ Outputting bling for production
◀ Exporting multiple decoration files

Chapter 51
Appliqué Embroidery

Automatically create all the stitching you need for appliqué using the **Appliqué** tools. Up to four layers of stitching – guide runs, cutting lines, tack stitches and cover stitches – can be generated for any appliqué object.

Print a copy of appliqué patterns to use in cutting out fabric pieces. Each piece is numbered according to the stitching sequence. You can also output appliqué shapes to cutter or separate file.

Creating appliqué embroidery

Use the **Appliqué** tools to generate all the stitching you require for appliqué objects.

💡
Tip: If you want to pre-set appliqué settings, right-click the **Appliqué** icon with no objects selected. When property values are changed, settings will apply to all newly created appliqué objects in the current session. See Working with object properties for details.

Convert vector graphics to appliqué

> 🎨 Use Mode > Tag as Appliqué to tag a vector object for conversion to appliqué.

Use Mode > Convert Graphics to Embroidery to convert selected graphics to embroidery and switch to Wilcom Workspace.

In **CorelDRAW Graphics**, the **Tag as Appliqué** button allows you to tag selected vector objects for conversion to appliqué.
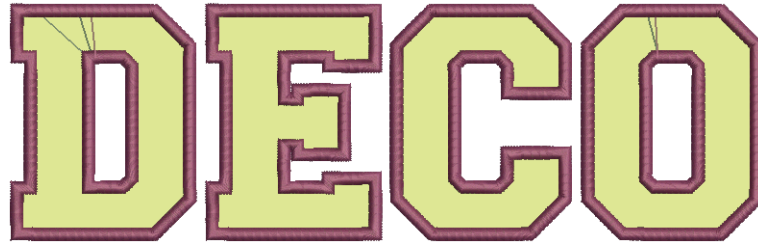
To convert a vector graphic to an appliqué object...

1 Create or open a vector graphic in **CorelDRAW Graphics** and select it.

2 Click **Tag As Appliqué**. The object is tagged for conversion with a thick dotted outline. The CorelDRAW® **Object Manager** also indicates which objects have been tagged as appliqué.

Object appears with thick dotted outline
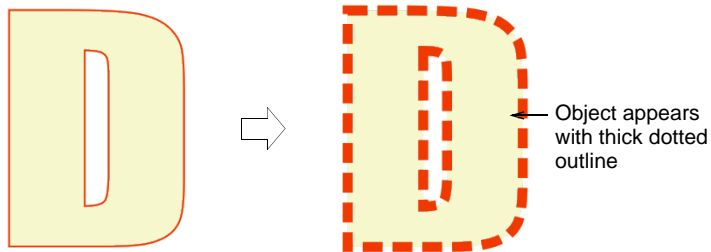
3 Click **Convert Graphics to Embroidery**. EmbroideryStudio automatically converts the vector object to appliqué and switches to **Wilcom Workspace**.

Red appliqué cover stitch generated

Fill color remains the same
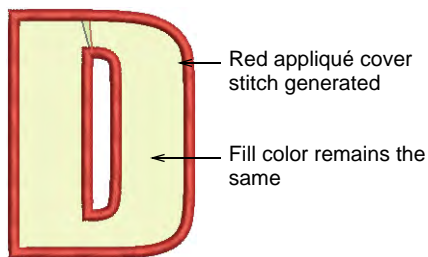
Note: When present, vector fill properties are maintained in **Wilcom Workspace** to give the appearance of a fabric patch. Otherwise, fills are rendered in gray.

Pattern fill   Grey fill   Texture fill
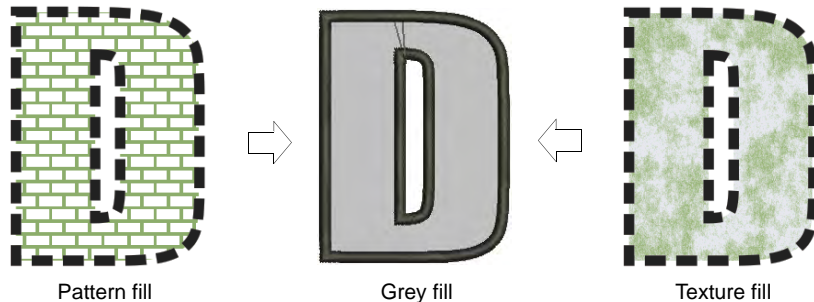
Note: The success of the conversion can be affected by font size as a proportion of cover stitch width. Where the cover stitch is too thick for the resulting object, it may be ignored.
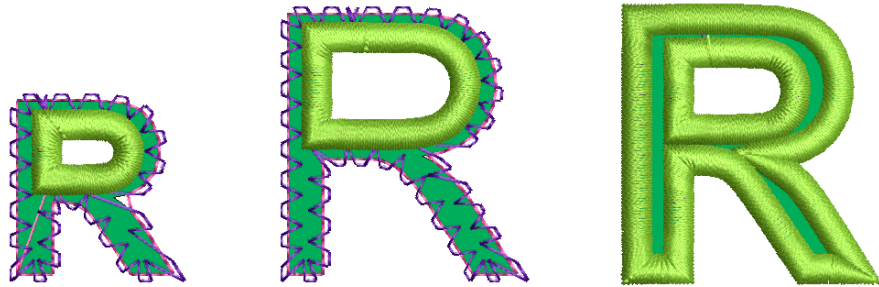
Related topics...

◀ Adjusting appliqué settings

◀ Cut appliqué shapes

Digitize appliqué objects

 Use Appliqué > Appliqué to digitize appliqué objects with up to four layers of stitching – guide runs, cutting lines, tack stitches, and cover stitches.

 Use Appliqué > Appliqué without Holes to digitize single-boundary appliqué objects with up to four layers of stitching – guide runs, cutting lines, tack stitches, and cover stitches.

Use **Appliqué** to produce the stitching you require for appliqué objects. Up to four layers of stitching – guide runs, cutting lines, tack stitches and cover stitches – can be generated. When you stitch out an appliqué object, the machine stops between layers. **Appliqué** also allows you to set a frame-out position which shifts the hoop from under the needle, making it easier to place and trim appliqué patches.

To digitize appliqué objects

1 Click the **Appliqué** icon and digitize the boundary of the shape. Follow the prompts. If you make a mistake, press **Backspace** to delete the last reference point.

💡
Tip: If you only need to create a single-boundary appliqué object, you may prefer to use the **Appliqué without Holes** tool.

2 Press **Enter** to close the shape. You can create another appliqué object at this stage.

3 Press **Enter** again.

4 Click the outline to set entry and exit points or press **Enter** to accept defaults.

5 If prompted to do so, mark the frame-out position or press **Enter** to accept the default.

Frame-out commands are specified as a **Stop** function or **Color Change** respectively. They can be set after guide run and/or tack stitch.

Mark frame-out position
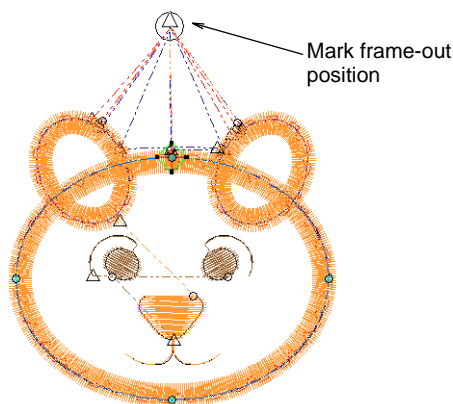
6 Press **Enter**. Up to four layers of stitching – guide run, cutting line, tack and cover – are generated, depending on current settings.

Satin cover stitch
Zigzag tack stitch
Guide run and cutting line
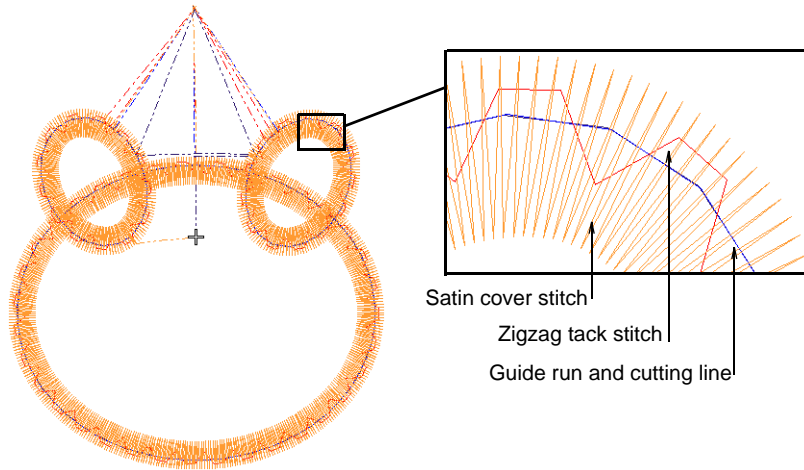
7 Double-click the appliqué object to check the settings.

Adjust fabric swatch settings

Adjust guide run settings

Adjust tack stitch settings

Adjust cover stitch settings
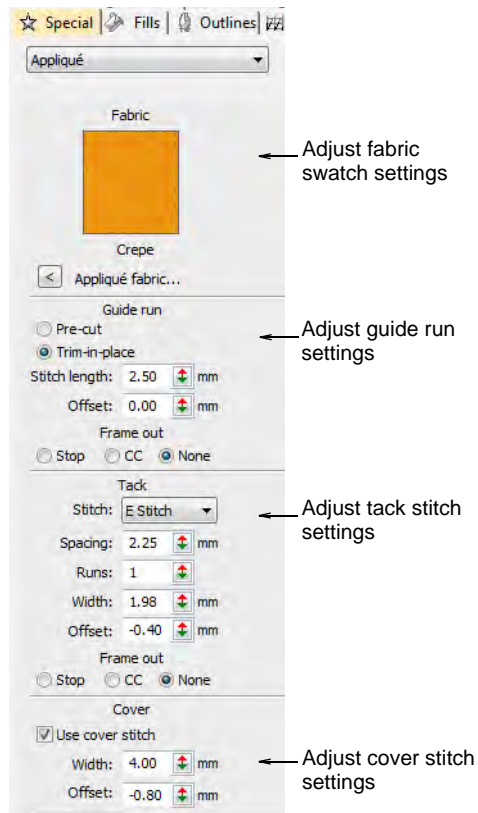
8 Adjust settings as required:

◀ Fabric swatch: See Add fabric swatches to appliqué for details.

◀ Guide run: See Adjust guide run settings for details.

◀ Tack stitch: See Adjust tack stitch settings for details.

◀ Cover stitch: See Adjust cover stitch settings for details.

9 Optionally, apply Smart Corners to appliqué objects.

10 Optionally, run **Stitch Player** or use the travel tools to check the appliqué stitching sequence.

Related topics...

◀ Embroidery digitizing

◀ Adjust frame-out positions

◀ Controlling corner stitching

◀ Viewing stitching sequence

◀ Cut appliqué shapes

Convert embroidery objects to appliqué

You can convert complex fill and other objects to appliqué by adding entry, exit points and frame-out position.
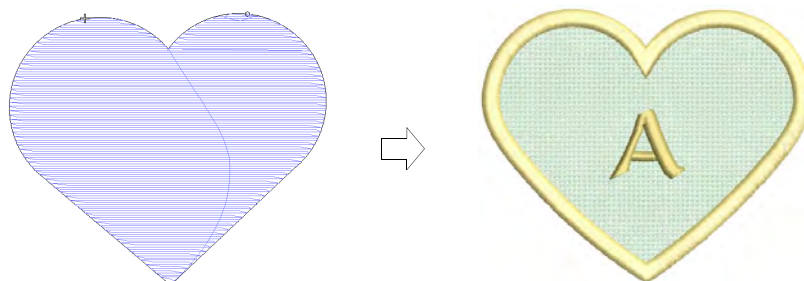
To convert embroidery objects to appliqué

1 Right-click an object and select **Convert** and the icon from the popup menu.

Select to convert to appliqué object
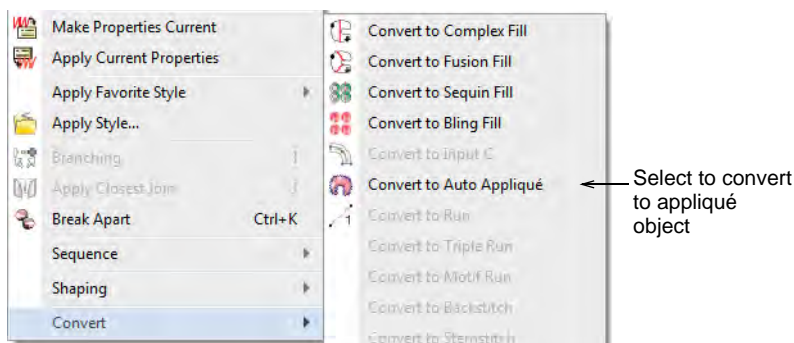
2 Click the outline to set the stitch entry and exit points or press **Enter** to accept the defaults.

3 Mark a frame out position or press **Enter** to accept the default.

The object is converted and stitches regenerated.

Complex Turning object

Entry and exit points

Frame-out position
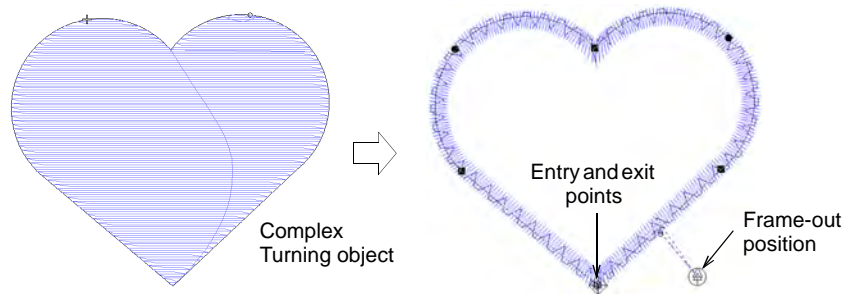
Related topics...

◀ Cut appliqué shapes

Adjusting appliqué settings

Whether you create appliqué from scratch using the **Appliqué** tool, or convert existing vector graphics or Complex Turning objects, EmbroideryStudio produces all the stitching you need. Up to four layers – guide runs, cutting lines, tack stitches and cover stitches – can be generated. Each of these layers can be adjusted via **Object Properties**.

Satin cover stitch

Zigzag tack stitch

Guide run and cutting line
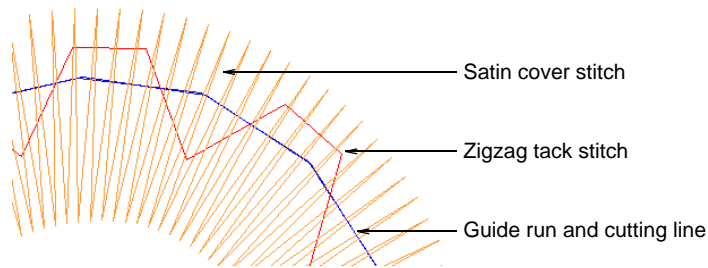
When you stitch out an appliqué object, the machine stops between layers. EmbroideryStudio also allows you to pre-set a frame-out movement which shifts the hoop from under the needle, making it easier to place and trim appliqué shapes.

💡
Tip: If you want to pre-set appliqué settings, right-click the **Appliqué** icon with no objects selected. When property values are changed, settings will apply to all newly created appliqué objects in the current session. See Working with object properties for details.

Add fabric swatches to appliqué

Right-click Appliqué > Appliqué to choose fabric swatch for selected appliqué objects.

Use View > Show Appliqué Fabric to toggle the appliqué fabric display on/off.

EmbroideryStudio lets you select a fabric swatch for appliqué objects. The swatch becomes a property of the object. Choose from amongst the included 'factory' swatches or choose a scanned sample of the fabric you want to use. Use the **Show Appliqué Fabric** toggle to turn it on or off.

Click to choose fabric swatch for selected objects
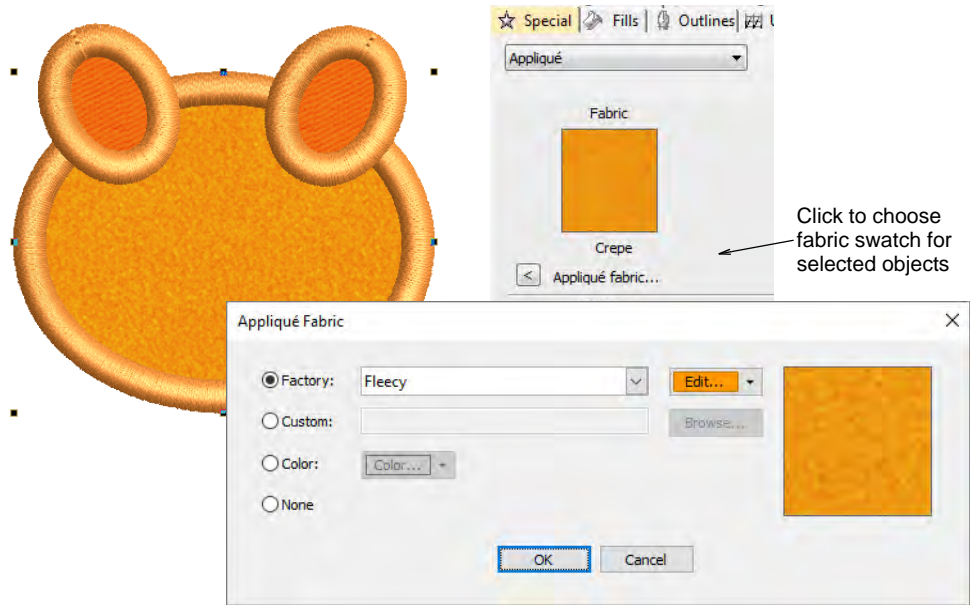
Adjust guide run settings

Right-click Appliqué > Appliqué to adjust guide run settings.

Right-click Appliqué > Appliqué without Holes to adjust guide run settings.

The guide run is the first layer to be stitched and is used to position appliqué fabric on the background material. An extra cutting line can be added if the fabric is to be trimmed in position. You can also specify a frame-out movement in order to place the appliqué patch.

To adjust guide run settings

◀ Double-click the appliqué object to access object properties.

Select cutting method
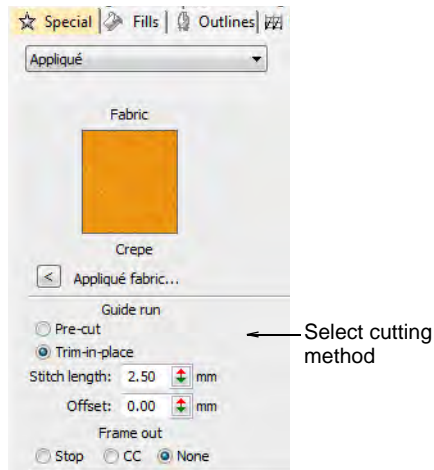
◀ Select a cutting method:

Option	Function
Pre-cut	No cutting line is generated. This assumes you have a pre-cut appliqué patch ready to be placed in position.
Trim-in-place	An additional cutting line is generated.

A cutting line allows trim the fabric after the cutting line has been stitched.

Guide run

Cutting line

Tack stitches

Cover stitches
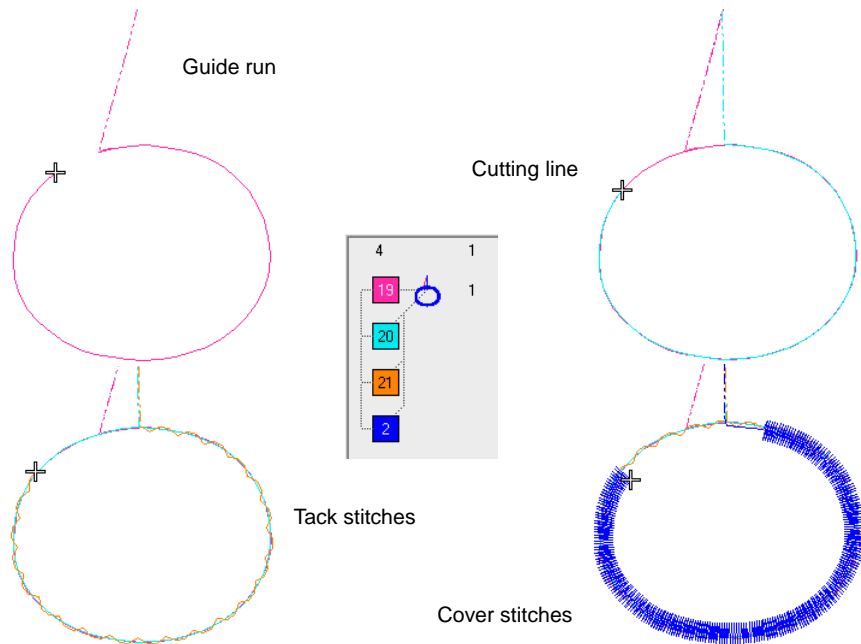
◀ Optionally, adjust **Stitch length** and **Offset** values in the **Guide Run** panel. A negative offset moves the guide run within the outline, a positive value moves it outside.

Offset: 1 mm   Offset: -1 mm   Offset: 0 mm
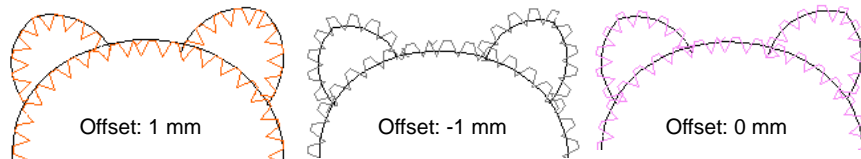
◀ Optionally, set a **Frame Out** after the guide run in order to place the appliqué patch. Depending on the machine you are working with – multi-head or single-head – the frame-out command must be specified as a **Stop** function or **Color Change** respectively.

Related topics...

◀ Adjust frame-out positions
◀ Digitize appliqué objects

Adjust tack stitch settings

 Right-click Appliqué > Appliqué to adjust tack stitch settings.

 Right-click Appliqué > Appliqué without Holes to adjust tack stitch settings.

Tacking is used to fix appliqué shapes to a background fabric before cover stitching is applied. You can adjust settings or omit this layer altogether. You can also specify a frame-out movement in order to trim the appliqué patch.

To adjust tack stitch settings

◀ Double-click an appliqué object to access object properties.

Select tack stitch type

Adjust tack stitch spacing
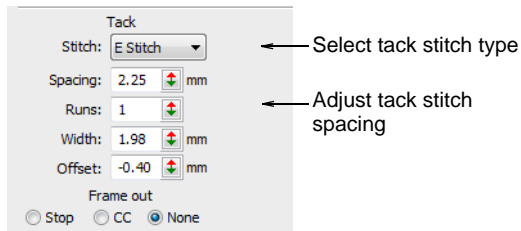
◀ In the **Tack** panel, select a tack stitch type from the droplist. Alternatively, select **None**.
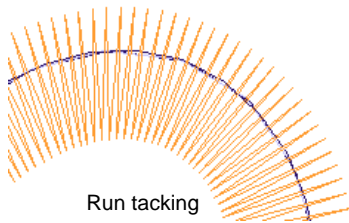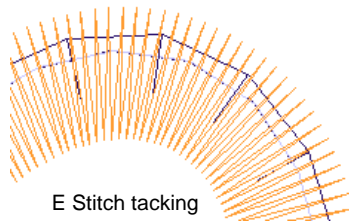
Run tacking   E Stitch tacking   Zigzag tacking
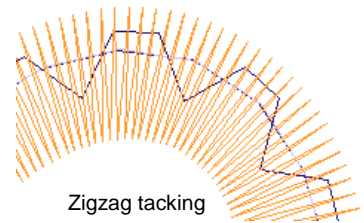
◀ Adjust tack stitch settings according to selected stitch type:

Option	Function
Length	Stitch length value for Run stitch.
Runs	E Stitch only. Number of runs between stitches.
Spacing	Stitch spacing value for E Stitch and Zigzag.
Count	Number of stitch repetitions for Zigzag only.
Width	Column width value for Zigzag and E Stitch.
Offset	Run stitch only. Negative offset value moves the tack stitching within the outline, a positive value moves it outside.

Zigzag spacing: 3mm

Zigzag spacing: 1.5mm
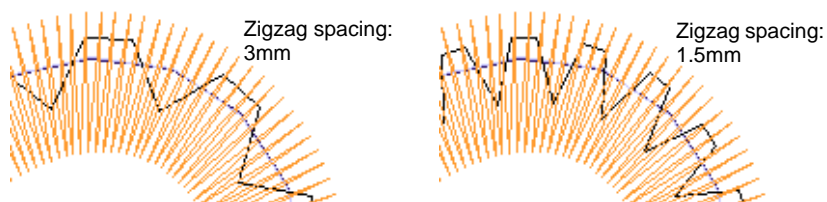
◀ Optionally, adjust **Offset** values. A negative offset moves the tack stitch inwards relative to the guide run. A positive value moves it outwards.

Negative offset   No offset   Positive offset
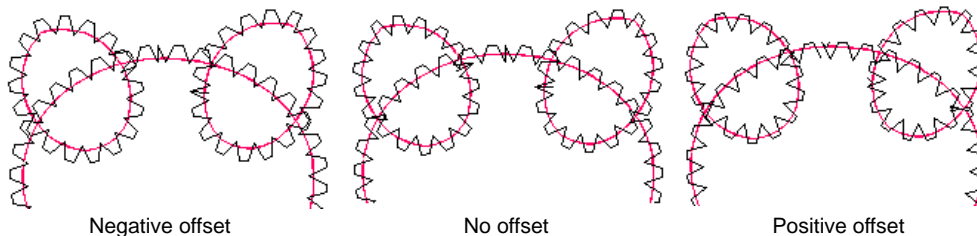
◀ Optionally, set a **Frame Out** after the tack stitching in order to trim the appliqué patch. Depending on the machine you are working with – multi-head or single-head – the frame-out command must be specified as a **Stop** function or **Color Change** respectively.

Adjust cover stitch settings

Right-click Appliqué > Appliqué to adjust cover stitch settings.

Right-click Appliqué > Appliqué without Holes to adjust cover stitch settings.

The cover stitch is generally the satin border around the appliqué shape. However, you don't have to include it. Optionally, you can change the cover stitch type to zigzag, E stitch or raised satin. You can also adjust width and offset relative to other appliqué components.

To adjust cover stitch settings

◀ Double-click an appliqué object to access object properties.

◀ Optionally, turn off cover stitching via the checkbox.

Adjust cover stitch settings

◀ Adjust cover stitch **Width** as preferred.

Cover stitch width: 3.0mm

Cover stitch width: 1.5mm

◀ Optionally, adjust **Offset** values. A negative offset moves the border inwards relative to the tack stitch. A positive value moves it outwards.
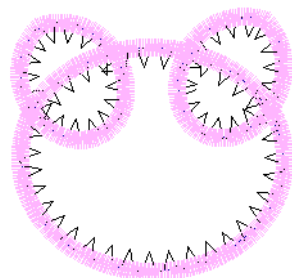
Positive offset
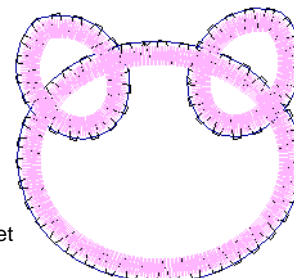
Negative offset

◀ For more or less dense cover stitching, change stitch types via the **Object Properties > Fill** tab. Adjust **Spacing** values accordingly.

Change cover stitch type
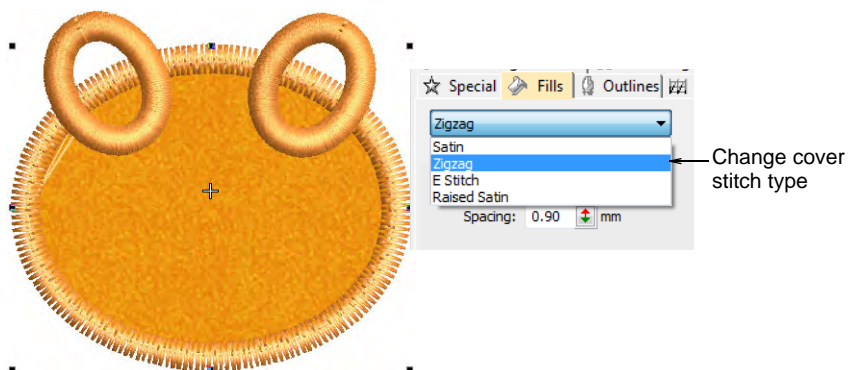
Adjust frame-out positions

Right-click Appliqué > Appliqué to adjust frame-out settings.

Right-click Appliqué > Appliqué without Holes to adjust frame-out settings.

Use Reshape > Reshape Object to reposition frame-out marker.

When stitching out appliqué objects, you can set a frame-out position after the guide run and/or tack stitch. This shifts the hoop out from under the needle, making it easier to place and trim the appliqué. Depending on the machine you are working with – multi-head or single-head – the frame-out command must be specified as a **Stop** function or **Color Change** respectively.

To adjust the frame-out position
◀ Select the object and click the **Reshape Object** icon.

Control points appear along with the **Reshape Views** toolbar. Appliqué objects include a frame-out position marker. **Show Entry/Exit Points** must be activated to view it.

Frame-out position marker

Frame-out zero point
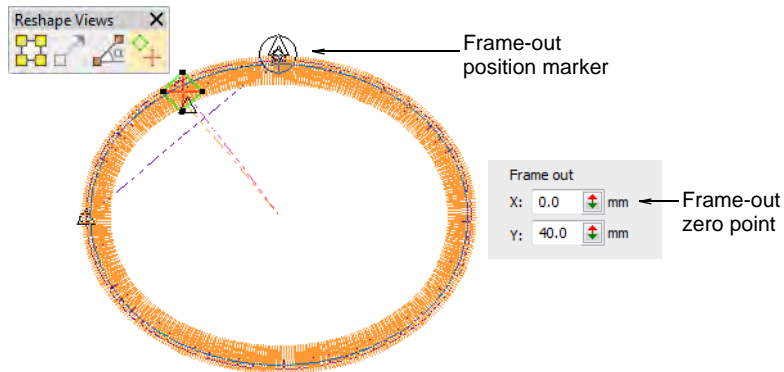
◀ Click and drag the frame-out marker to the required position.

Click and drag frame-out position marker
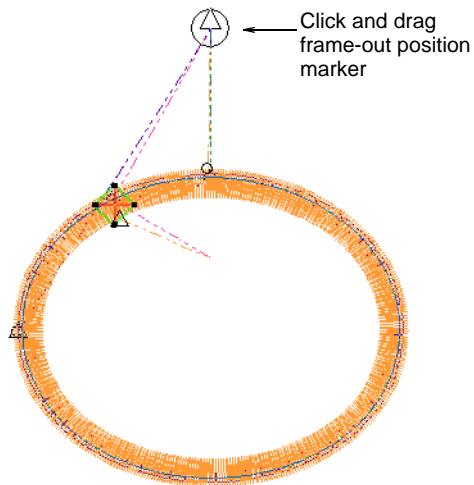
◀ If you are using **Object Properties**, the **Frame Out** panel lets you specify frame-out coordinates in relation to the top center of the design, which is the zero point.

Related topics...

◀ Reshaping embroidery objects

Combining appliqué

When you come to combine more than one appliqué object in the one design, you will encounter issues to do with overlapping objects and appliqué sequencing. EmbroideryStudio provides tools to help.
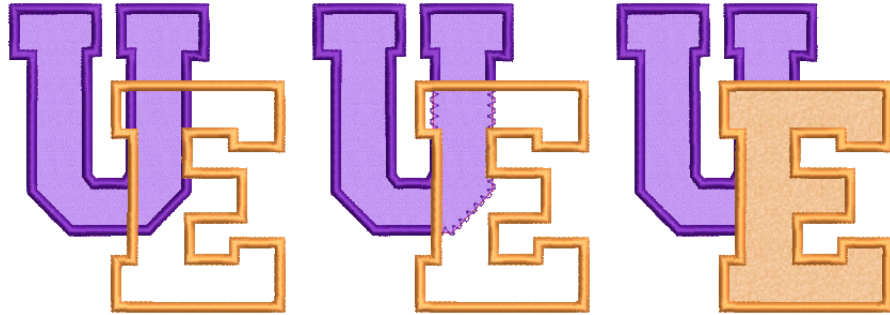
Create partial cover appliqué

	Use Appliqué > Appliqué to digitize partial cover appliqué objects.
	Right-click Appliqué > Appliqué without Holes to digitize partial cover appliqué objects.
	Use Appliqué > Partial Appliqué to create partial cover stitching for overlapping appliqué objects.
	Use Appliqué > Remove Overlaps to remove underlying layer of stitching in overlapping objects using the selected object as a 'cutter'. Right-click for settings.

You can create appliqué objects with partial cover stitching without doubling-up borders with **Partial Appliqué**. In combination with the **Remove Overlaps** tool, you can remove all underlying stitching.

To create partial cover appliqué

◀ Digitize appliqué shapes with **Appliqué**.

Appliqué objects overlap
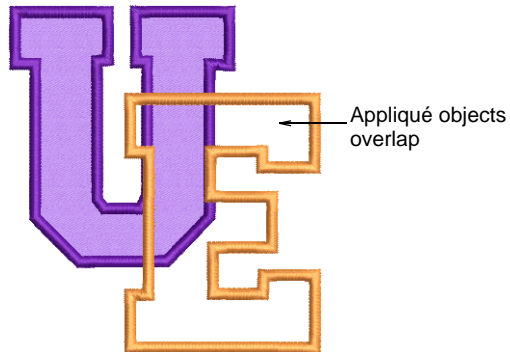
◀ If you only want to remove underlying cover stitching, select **both** objects and click **Partial Appliqué**. Cover stitches are generated in a clockwise direction between start and end points, leaving the rest of the boundary unstitched.

Underlaying cover stitching removed
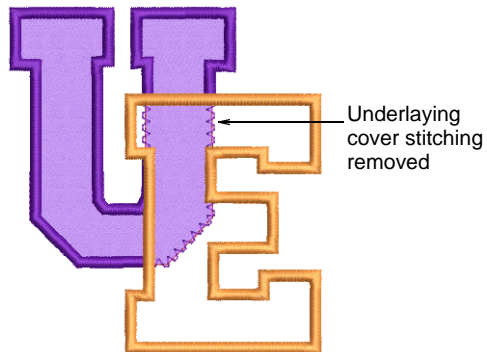
◀ If you want to remove all underlying stitching, first select the 'cutter' object and select **Arrange > Remove Overlaps** or right-click the tool.

Set the overlap to half the width of the cover stitching
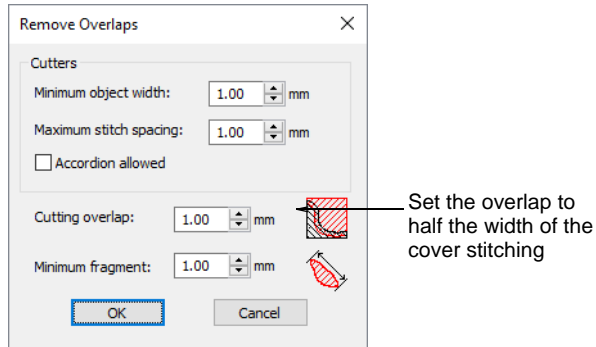
◀ Set the cutting overlap to half the width of the cover stitching – e.g. 2mm – and click **OK**.

Underlying stitching removed
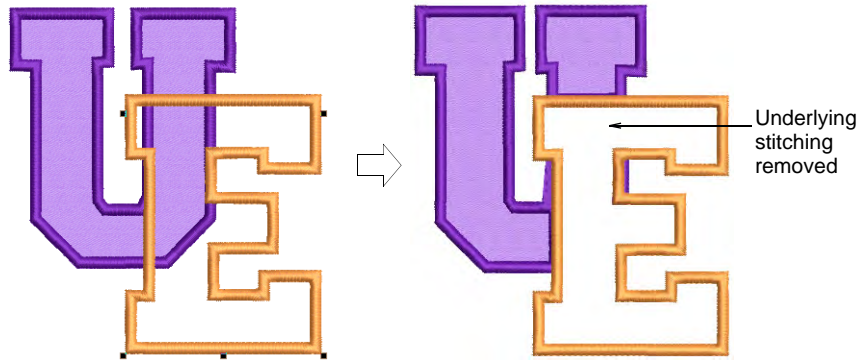
◀ Select **all** objects and click **Partial Appliqué** to remove underlapping cover stitching.

Unwanted cover stitching removed
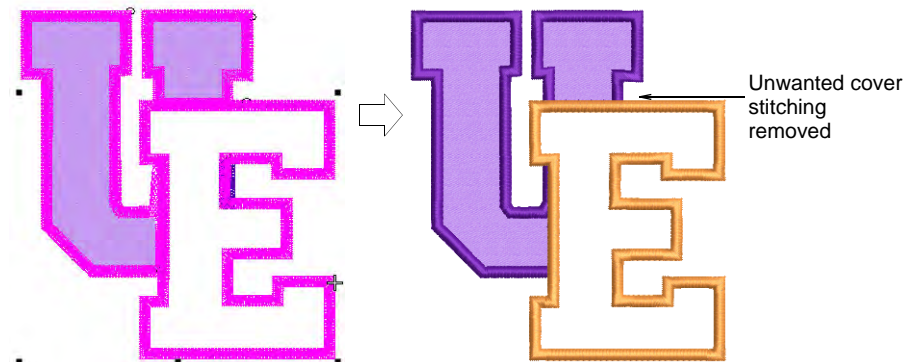
◀ Remove any unwanted fragments and zoom in to check the overlaps.

Cover stitching removed at overlaps
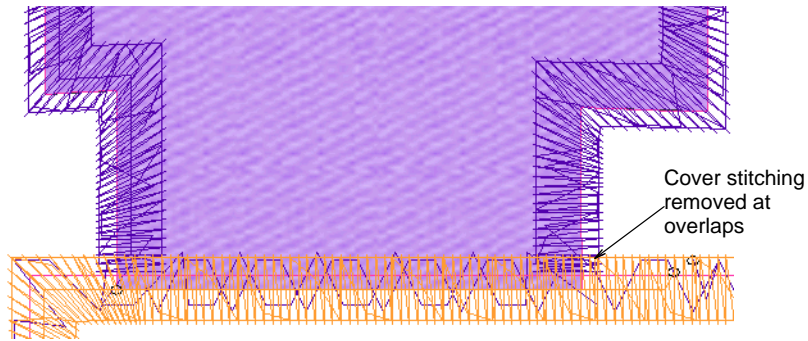
Related topics...

◀ Digitize appliqué objects

◀ Removing underlying stitching

Resequence appliqué components

> Use Appliqué > Combine Appliqué Components to break apart multiple appliqué objects into component objects and combine and resequence them for efficient stitchout.

The **Combine Appliqué Components** tool breaks multiple appliqué objects into their components – guide runs, cutting lines, tack stitches and cover stitches – and combines and resequences them for efficient stitchout. The end result is that the guide run of all appliqué objects is stitched in one pass, followed by the tack stitch and then cover stitch. A single frame-out movement occurs after guide run and tack stitch components.

To resequence appliqué components

1 Select a group of appliqué objects. The **Combine Appliqué Components** tool is activated.

6		2			7018
4	🧵	1	🔔	〰	3234
6					
2					
4	🧵	2	🔔	〰	3784
6					
3					

Each appliqué object digitized and stitched out in its entirety
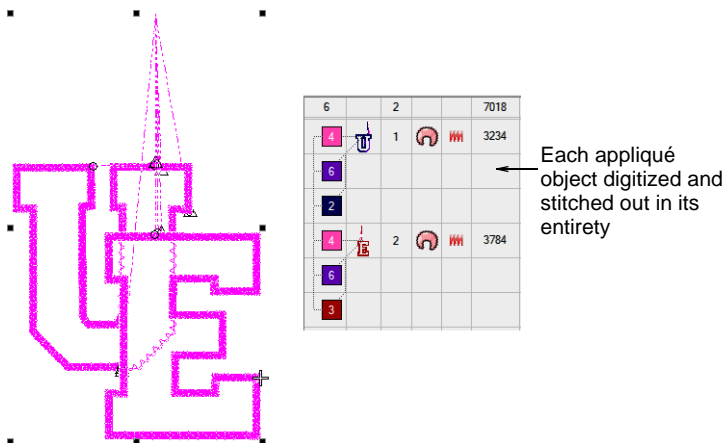
2 Click **Combine Appliqué Components**. A message box warns that the appliqué objects will be broken apart and recommends that you save the design before proceeding.

3 Click **OK** to confirm. The selected appliqué objects are broken apart and same components – guide runs, cutting lines, tack stitches and cover stitches – combined and resequenced.

4		9			6844
4	🧵	1	⟋₁	⟋	205
	🧵	2	⟋₁	⟋	205
		3	M₁	M₁	0
6	🧵	4	🐚	〰	357
	🧵	5	🐚	〰	336
		6	M₁	M₁	0
2	🧵	7	🐚	〰	754
	🧵	8	🐚	〰	1842
3	🧵	9	🐚	〰	3145

Thread colors of each appliqué object recombined and resequenced for efficient stitchout
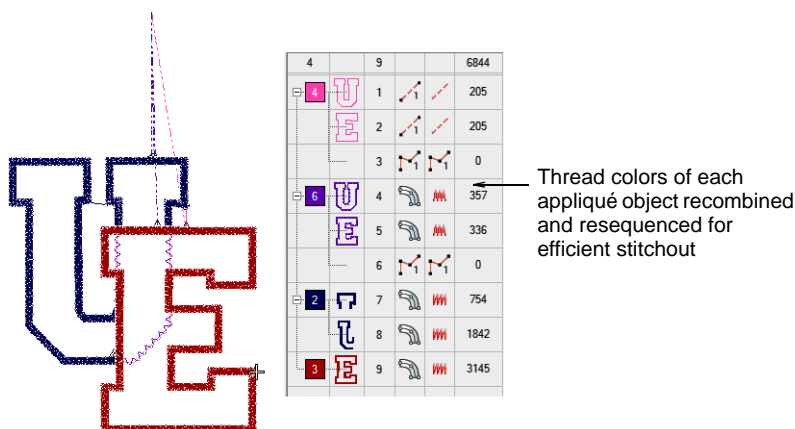
Outputting appliqué

Print a copy of appliqué patterns to use in cutting out fabric pieces. Alternatively, use **Send to Appliqué Cutter** to send appliqué shapes from a design file to a laser cutter.

Tip: CorelDRAW Graphics also lets you output objects as a vector file. This can then be downloaded to a laser cutter using CorelDRAW® Graphics Suite. For a full description of the CorelDRAW® Graphics Suite tools, refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the onscreen help available from the **Help** menu.

Related topics...

◀ Print appliqué patterns

◀ Cut appliqué shapes

Chapter 52
Multi-Decoration Output

Designs digitized in EmbroideryStudio and CorelDRAW® can be output in a variety of ways, both via the **Wilcom Workspace** and **CorelDRAW Graphics**.
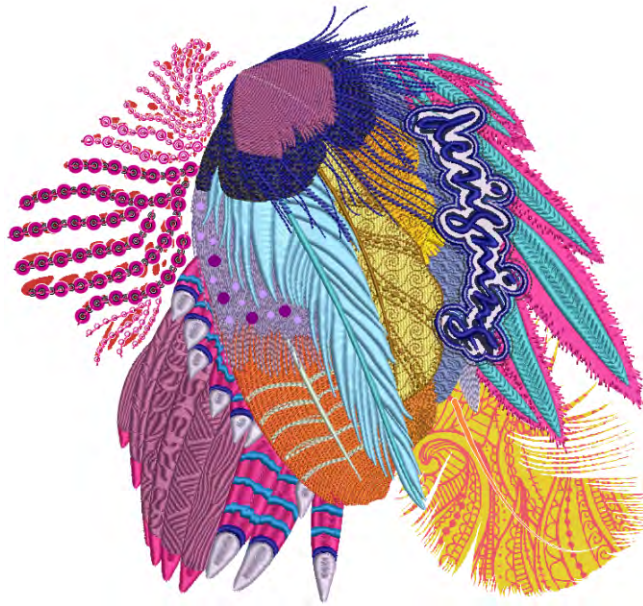
Firstly, EmbroideryStudio provides a 'one-stop-shop' for the output of mixed decoration. The **Export Multi-Decoration Files** capability allows you to output multi-decoration components for various processes. It can provide:

◀ Direct input to required machines – the most efficient method – or
◀ A file format which can be used by the machine's supporting software.

This feature is accessed via a menu command in both **Wilcom Workspace** and **CorelDRAW Graphics** – **File > Export Multi-Decoration Files**.

For machines that support direct connection, there are two commands:

◀ **File > Send to Appliqué Cutter**
◀ **File > Send to Bling Cutter**

In order to output all multi-decoration components, it may be necessary to use more than one of these commands.

◀

Multi-decoration types

In addition to normal embroidery (including sequins), the mixed decoration export capability supports all the following types of media, both singly and in combination.

Print designs

In the context of multi-decoration design, a portion may need to be output to a printing process for inclusion on the article. This component may be referred to as 'print' or 'graphics'. The most commonly used commercial printing processes are:

◀ Screen printing
◀ Sublimation
◀ Direct-to-garment (DTG)
◀ Heat-transfer printing

Direct-to-garment

Direct-to-garment printing is handled like most other printing from a PC: The print image is sent to the DTG printer through the MS Windows®

print manager via a print driver. The image generally has a transparent background for DTG printing. DTG printing requires heat fixing to make the garment washable.

Sublimation

Sublimation printing is similar to DTG printing but the process uses solid inks which give a more even gradation of color compared to the liquid inks used in DTG printing. With sublimation printing, inks are printed onto a release paper and then transferred to fabric or other surface.

Sublimation means a change from a solid to gaseous state and back to a solid without becoming liquid. Thus dye particles migrate from the paper as a gas, to bond with a polymer – fabric or other material – and become solid again. The transfer is effected using high heat (205°C) and pressure, thus guaranteeing that the image penetrates and becomes an integral part of the substrate.

Screen printing

Screen printing is a more complex process than DTG, requiring the creation of a screen for each 'spot color' making up the design. Spot or 'direct' colors can be identified as a special ink or Pantone or other. There may be multiple screens for each one, depending on how the design is layered.

Heat-transfer printing

A fourth process, which is less likely to be used in the garment industry, employs heat transfer paper. Graphics are printed and then heat-fixed to a substrate using an iron or heat-press. Printers that support heat transfer media generally provide an automatic mirror function as the image must be mirrored in order to be heat-transferred to the substrate. Heat-transfer is the preferred process for point-of-merchandising substrates or media such as mugs, pens, etc.

Related topics...

◀ Outputting designs as images
◀ Virtual embroidery

Appliqué designs

Appliqué is a decoration or ornament made from cut pieces of one material applied to the surface of another. Pieces may be fixed to one another using an embroidered border of satin, raised satin, or none. Appliqué cutting is supported in EmbroideryStudio by outputting vectors that describe the appliqué material. The information can be sent directly to a supported MS Windows® cutter or output to printed templates for manual cutting of appliqué shapes.

Bling designs

Bling, rhinestones, crystals, and glitz are interchangeable terms referring to decorative objects placed on garments or templates. They are supplied in various sizes, shapes, colors and materials. There are two basic processes for creating bling designs:

◀ Hot-fix template production
◀ Direct-to-garment production

Hot-fix template production

Hot-fix templates can be produced in two ways:

◀ **Bling template**: This is the design layout on which rhinestones are initially placed prior to transfer. The template is created by cutters or engravers. Rhinestones are placed onto the template by a manual flood-fill process and then manually transferred to transfer tape.

◀ **Bling transfer**: In a semi-automatic process, bling is placed directly onto transfer tape (or sheet) by machine. Examples are IOline CrystalPress and CAMS machines. The bling design is ready for heat transfer to the final product – e.g. a T-shirt.

Direct-to-garment bling production

Direct-to-garment bling production is supported by many machines. Automatic rhinestone transfer machines are designed for high speed, high volume production. They enable users to fix any type of rhinestones, studs, and so forth directly to any type of fabric.

💡
Tip: If you have neither CAMS automatic rhinestone placement machine nor a direct-connect cutting machine, you can use the **Convert Bling for Production** command to convert bling objects to vector shapes. These can be then output to vector file for use by third-party applications. See Outputting bling for details.

Printing designs in CorelDRAW Graphics

To send a multi-decoration design to production, you generally print the digital art design before stitching the embroidery. To do this, you first

need to hide the embroidery because you don't want it printing on the digital art printer.

🖅

Note: EmbroideryStudio includes as standard the entire suite of CorelDRAW® Graphics Suite drawing tools which offer many techniques for drafting outlines and shapes on screen. Refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use online help available from the **Help** menu.

To print a design in CorelDRAW Graphics

1 Switch to **CorelDRAW Graphics**.

2 Toggle off **Show Embroidery** to hide any embroidery objects.

3 Click the **Print** icon on the **Standard** toolbar. The **Print** dialog opens.

4 Adjust print settings as required and click **Print Preview** button to preview. Otherwise click **Print** button to print.

The design is printed with or without embroidery objects showing depending on whether the **Show Embroidery** button is toggled on or off.

5 To sew embroidery over top of the printed design, switch to **Wilcom Workspace** and toggle off **Show Graphics**.

Stitching should align on garment with digitally printed part of design

💡
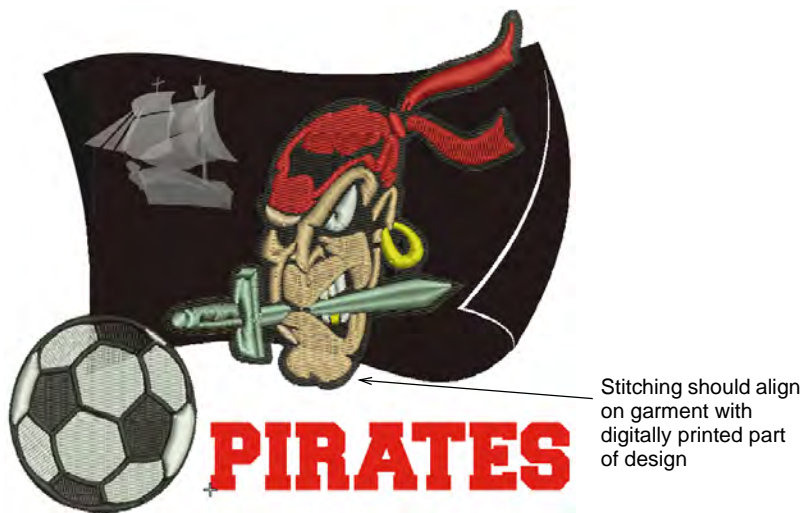
Tip: Make sure you align the needle with a manually digitized start and end point to ensure that stitching aligns with the digitally printed part of the design.

Related topics…

◄ Operating modes

Exporting embroidery as vectors

Once digitized in EmbroideryStudio, embroidery designs can be output as vectors. These can be opened in **CorelDRAW Graphics**. This can serve various purposes such as appliqué cutting, multimedia, screen printing, and so on. The **Export Design as Vector** command exports whole designs or selected objects only. Included bitmaps will remain as bitmaps in the resultant file.

To export embroidery as vectors

1 Open the embroidery design for export.

2 Optionally, select particular objects for export.

3 Choose **File > Export Design as Vector**.

Choose file format
and export
location
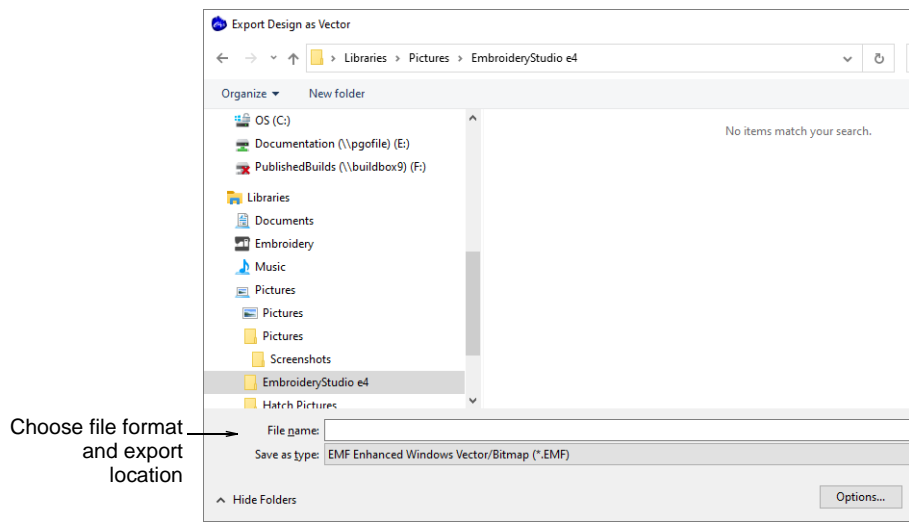
4 Choose a file format – EPS or EMF – and export location.
5 Once saved, open in **CorelDRAW Graphics** or third-party application for further processing.

Related topics...

◀ Creating vector shapes in EmbroideryStudio
◀ Loading vector artwork

Exporting multiple decoration files

EmbroideryStudio allows all multi-decoration components to be exported as file formats suitable for the particular process or machine. Apart from embroidery, EmbroideryStudio supports design output for a number of related and sometimes complementary decoration processes. Namely, bling (rhinestone) designs, printed designs, as well as appliqué designs.

Export design components

> Use Standard > Export Multi-Decoration Files to export all design components requiring different production processes.

The **Export Multi-Decoration Files** capability allows you to output files for multi-decoration designs. The system recognizes whether a component is embroidery, graphic, appliqué, or bling. This, in turn, helps to increase the profitability of 'quantity 1' articles. It can provide:

◀ Direct input to supported machines, as this is the most efficient method, or
◀ A file format which can be used directly by the machine's supporting software.

Note: If the printer, appliqué, or bling machine is directly supported, this procedure is not required. For example, cutting appliqués or outputting bling templates have their own procedures.

To export design components

1 Open the multi-decoration design you want to output.

2 Click the **Export Multi-Decoration Files** icon.

Output all available design objects

Optionally, select specific design components

Adjust export location as necessary

Name export files if different to design file name

Export Multi-Decoration Files	✕

Objects
- ◉ Export current design
- ○ Export selected objects only

Elements
- ☑ Embroidery: Wilcom All-in-One Designs (*.EMB) — Options...
- ☐ Print: CDR - CorelDRAW (*.cdr) — Options...
- ☐ Appliqué shapes: DXF - AutoCAD (*.dxf) — Options...
- ☐ Bling: AI - Adobe Illustrator (*.ai) — Options...
- Bling output: ○ Multiple files ◉ Single file

File Locations
- ◉ Export to set locations — Locations...
- ○ Export to: C:\Users\Ben\Documents\Multi-decorations — Browse...

Design name: e4-1002

Export | Cancel

3 Select **Export Current Design** if you want to output all design objects.

This is the default option and, unless you have pre-selected certain objects for inclusion, the **only** option.

4 Optionally, select the multi-decoration components you want to export by ticking the relevant checkbox in the **Elements** pane.

5 If you have selected **Bling** as one of your export components, optionally select **Multiple Files** or **Single File**.

When **Multiple Files** is selected, different bling types – i.e. by size, color, and/or shape – will be output to separate files. Multiple file

output is important for the manual flood-fill method of creating rhinestone templates.
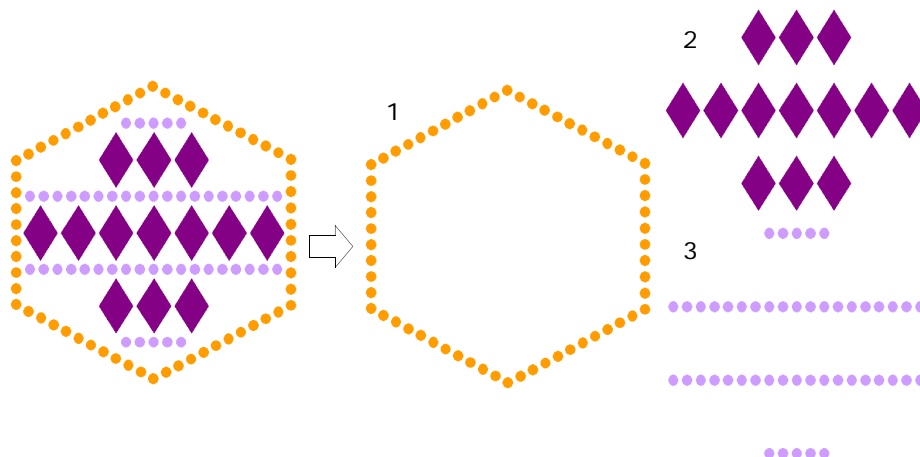
💡 **Tip:** Depending on your cutting machine, you may choose to export cutting outlines only. Preset in the **Bling Palette Editor**. Bling objects exported this way retain color information, and cutting outlines have hairline width.
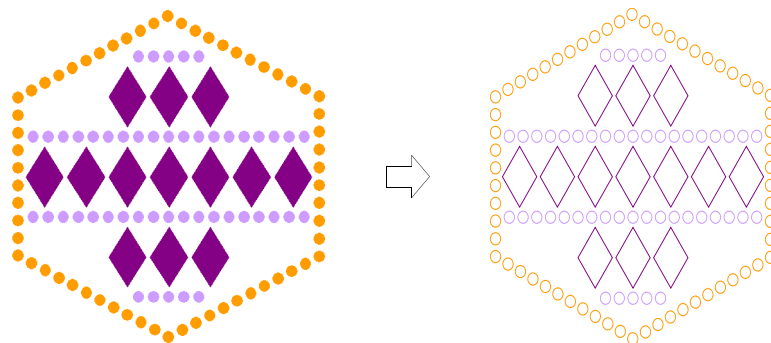
6 For each component, select required file types from the droplist.

If you select an embroidery format, an associated **Options** button may be enabled. For bling, you can choose AI format for semi-automatic machines. For any other cutting machines, you can save directly to CDR format.

7 Optionally, click the **Options** button if available.

If no options are set, the system uses default options for each file format. If a selected file type is PNG, design components are exported with transparency on. Defaults are as follows:

◀ Color mode: RGB color (24Bit)
◀ Transparency: On

◀ Anti-alias: On

◀ Maintain aspect ratio: On

◀ Resolution: 300 DPI

The default DPI setting can be changed via the CorelDRAW **Options** dialog.

Change bitmap file export resolution as required
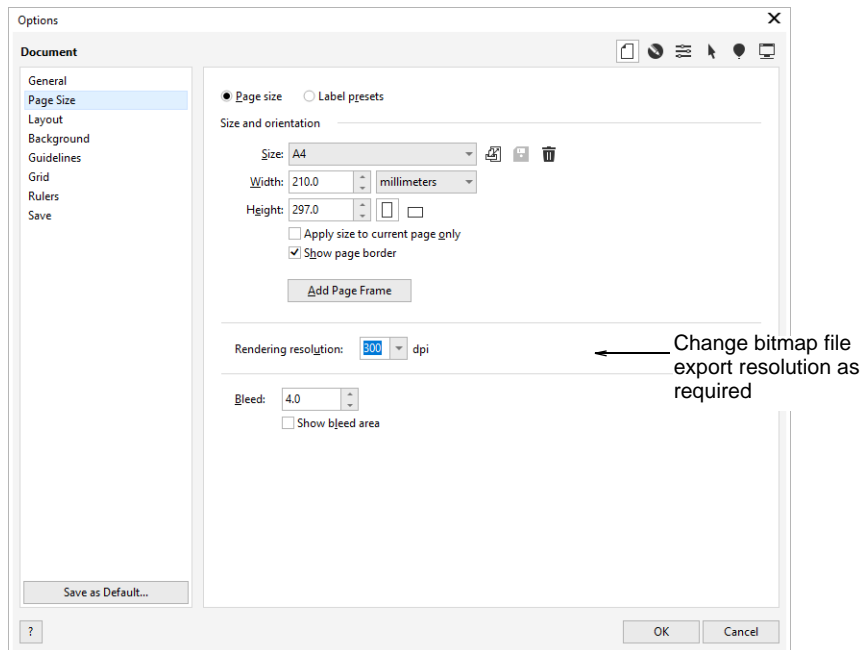
8 Select an export location:

◀ **Export to set locations** (the default): preset locations for different files. In some production environments, each file is placed in a network location where it can be used by the operator of that process.

◀ **Export to**: specify a location for all files – e.g. external USB stick. Folders are rarely changed once established, but occasionally they may need to be adjusted or temporarily overridden.

9 Optionally, enter a filename to be used by all selected multi-decoration components. If no filename is entered, the system will use the design filename by default.

10 Click **Export**. The system writes all selected components to their specified location/s.

◀ If no file types have been selected, the **Locations** dialog will display. You can set default file types at this stage or cancel out.

◀ If files have the same file extension and location, filenames will be created with a component suffix.

◀ If a file/s already exists in target folder/s, the system will give you the option to overwrite, skip, or cancel the process.
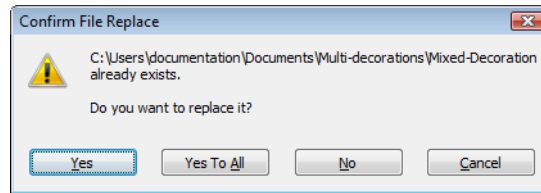
◀ If the embroidery file output contains team names, the system will display the team names **Output Option** dialog.

Related topics...

◀ Exporting multiple decoration files
◀ Set export locations
◀ File naming conventions
◀ Embroidery file formats
◀ Supported machine types
◀ Output to bling cutter
◀ Cut appliqué shapes
◀ Setting up bling palettes
◀ Outputting teamname designs

Set export locations

> Use Standard > Export Multi-Decoration Files to export all design components requiring different production processes.

In some production environments, each file is placed in a specific location where it can be used by the operator of that process. For example, the Tajima Machine Network requires all files to be placed in a specific folder so they can be seen directly by the machine. Similarly, file formats used in any given process do not change unless the process changes – for example, if a machine is replaced. Use the following procedure when you want to set export defaults for the **Export Multi-Decoration Files** process.

To set export locations

1 Run the **Export Multi-Decoration Files** procedure.

Set default file export locations
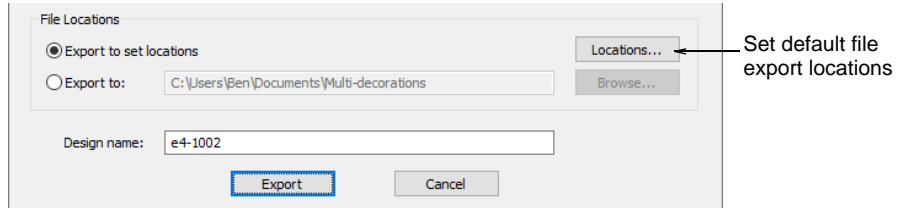
2 To set or change the default multi-decoration file export settings, click the **Locations** button.

Default file export locations
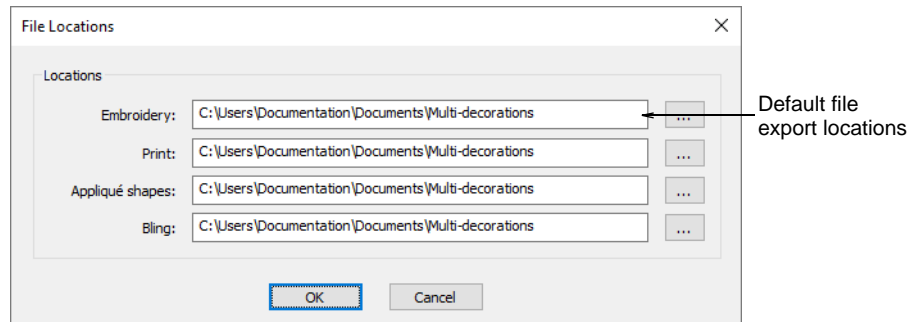
3 Select file locations via the browse (…) button for each design component.

4 Click **OK** to finish.

Once set, your settings are remembered for each successive session.

Tip: Preset locations can be overridden for one-off exports – e.g. to USB stick – by means of the **Export to** option.

Override preset locations
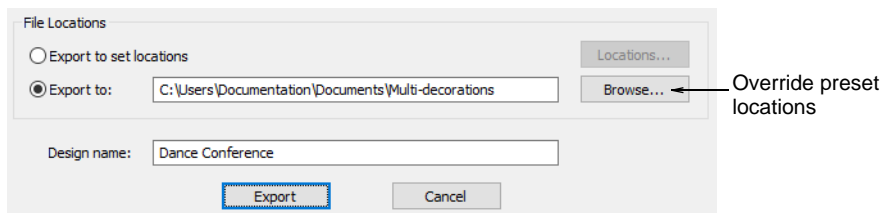
Related topics...

◄ Export design components

Export selected objects

> Use Standard > Export Multi-Decoration Files to export all design components requiring different production processes.

On occasion, you may want to export only selected objects from your multi-decoration design. The **Export Multi-Decoration Files** capability allows you to pre-select objects in the design window.

To export selected objects

1 Open or create a multi-decoration design.

2 Select the individual objects you want to export. In the example below, we will export the word 'Cheerleading' only.

3 Click the **Export Multi-Decoration Files** icon.

Select 'Export Selected Objects Only'
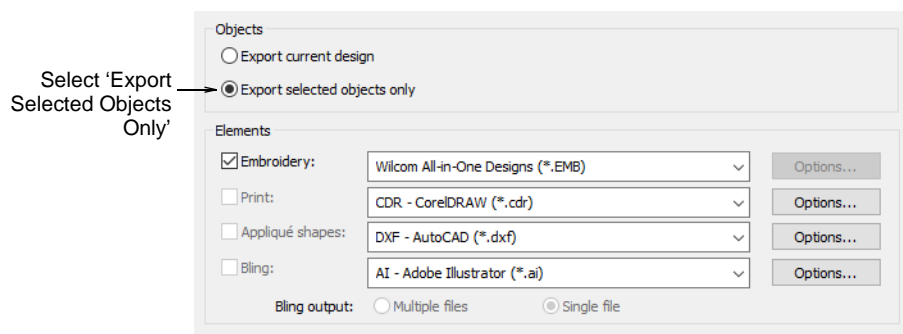
4 Select the **Export Selected Objects Only** option. This checkbox will appear only if you have selected objects in the design window.

5 Make location adjustments as necessary and click **Export**. Only selected objects are exported to file.

File naming conventions

By default, the **Design name** field will take the current design name – e.g. 'Design1'. You can change it if you wish. This name is applied to all files exported with the **Export Multi-Decoration Files** dialog.

If exported files for any components have the same selected file extension and location, the file name will be automatically suffixed as follows:

Design Element	Suffix
Embroidery	_EMB
Graphics	_GFX
Appliqué	_APQ
Bling	_BLG (for a single file)

Example

The single multi-decoration file – 'Design1.EMB' – contains embroidery, graphic, appliqué, and bling components. Depending on chosen file types, you will see file names of the following kind:

Design Element	File Type	File Name
Embroidery	Wilcom EMB	Design1_EMB.EMB
Graphic	CorelDRAW	Design1_GFX.CDR
Appliqué	AutoCAD	Design1_APQ.DXF

Design Element	File Type	File Name
Bling	Adobe Illustrator	Design1_BLG.AI

Bling multi-file output

When bling objects in a design contain rhinestones of different size, shape, and/or color, and the **Multiple Files** output option is selected in the **Settings** dialog, files will take a suffix of the following form:

◀ <filename>_SSx_<color>
◀ <filename>_SSx_<color>_<shape_name>
◀ <filename>_<color>_<shape_name>_<XxY>

For example, consider a design with the following bling types:

Bling type	Output filename
Navette 8 x 4mm with color Emerald	Design1_Emerald_Navette_8x4.PLT
Flower SS16 with color Crystal	Design1_SS16_Crystal_Flower.PLT
SS04 with color Aquamarine	Design1_SS04_Aquamarine.PLT

💡
Tip: The print preview shows which rhinestones are in which file.

Related topics...

◀ Embroidery file formats
◀ Output to bling cutter

Outputting appliqué for production

Print a copy of appliqué patterns to use in cutting out fabric pieces. Alternatively, use **Send to Appliqué Cutter** to send appliqué shapes from a design file to a laser cutter.

💡
Tip: CorelDRAW Graphics also lets you output objects as a vector file. This can then be downloaded to a laser cutter using CorelDRAW® Graphics Suite. For a full description of the CorelDRAW® Graphics Suite tools, refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the onscreen help available from the **Help** menu.

Print appliqué patterns

Print appliqué patterns for use in cutting out fabric pieces. Each piece is numbered according to stitching sequence. One copy of placement

outlines is printed at 100% scaling, with each outline separated for use in cutting the fabric.

To print an appliqué pattern

1 Create or open an appliqué design.
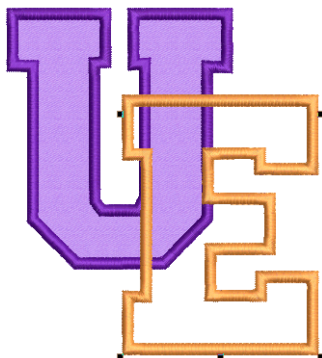
2 Select **File > Print Preview** and click the **Options** icon.

Select appliqué patterns report
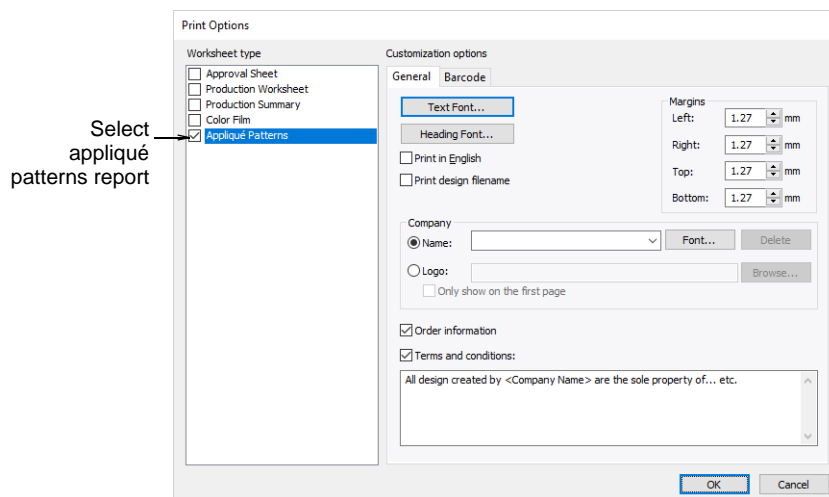
3 Select **Appliqué Patterns** report type.

4 Set **General** options and click **OK**. Each appliqué pattern is numbered according to the stitching sequence. Stitch count and colors are displayed.
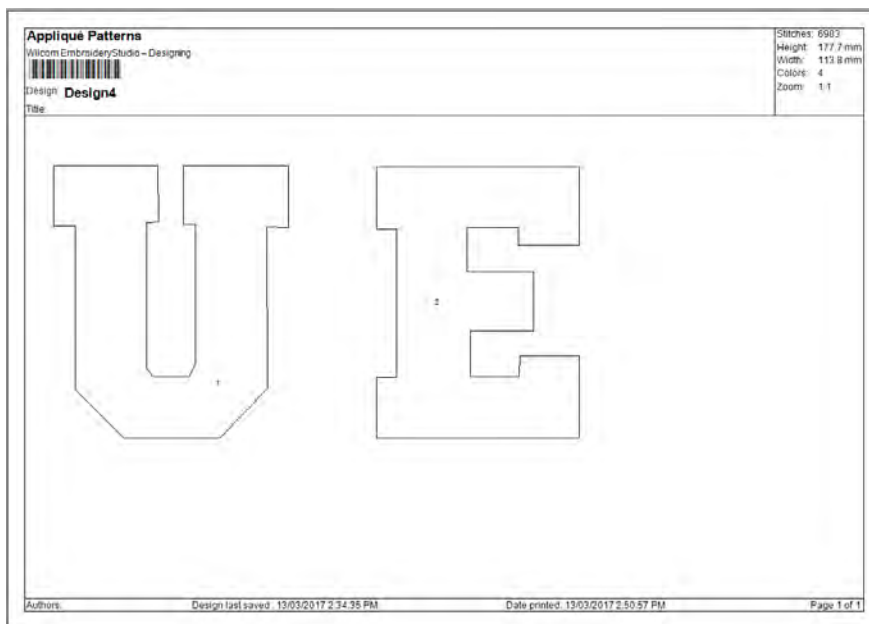
5 Click **Print Now** to output appliqué shapes to printer.

Related topics...

◀ Customizing design reports

Cut appliqué shapes

> Use Standard > Send to Appliqué Cutter to send appliqué shapes from design file to laser cutter.

EmbroideryStudio can extract outlines from a design and send them to a laser cutter. This procedure is employed when the cutter is supported directly by a MS Windows® driver. Only shapes defining the actual appliqué fabric are sent.

Note: Before you send appliqué shapes to a cutter, make sure it is set up on your system with the correct MS Windows® (printer) driver. Some cutters – e.g. Ioline – use a standard driver for HP-7475 plotters. Once the driver is installed in MS Windows®, there is no need for a separate hardware setup in EmbroideryStudio.

To output appliqué shapes

1 Create or open an appliqué design.
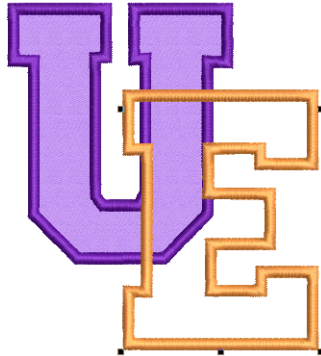
2 Click **Send to Appliqué Cutter** or select **File > Send to Appliqué Cutter**.

Click to preview worksheet
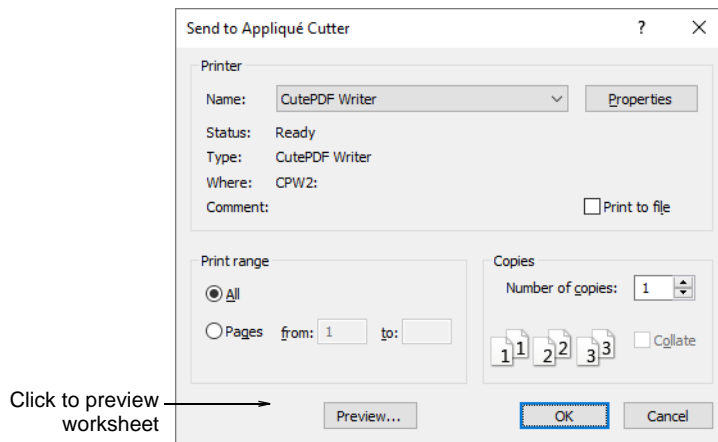
3 From the **Name** list, select the appliqué cutter. For more information, refer to the User Manual of the particular cutter you are using.

4 Click **Preview** to preview the pattern. The **Print Preview** dialog opens showing every appliqué shape in the order of the stitching sequence.
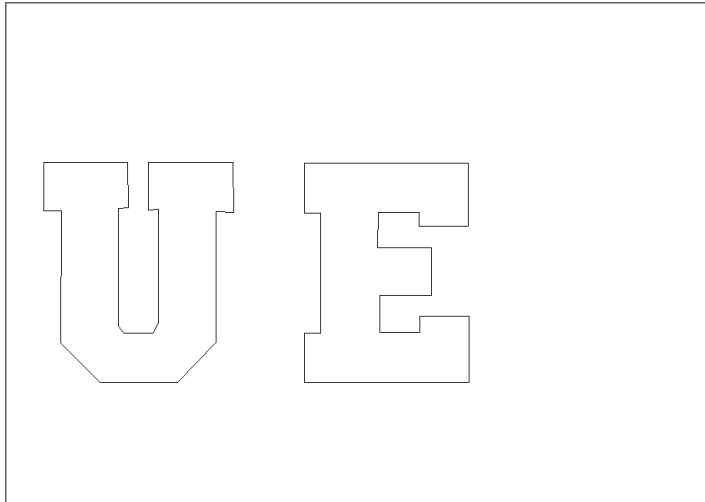
5 Click **Print Now** to output appliqué shapes to cutter.

Outputting bling for production

EmbroideryStudio supports a number of methods for exporting bling for production. Options include:

Output method	Details
CAMS machine	If you have a CAMS automatic rhinestone placement machine, use the dedicated CAMS connection.
Placement file	Alternatively, export your bling design to YNG format to be read by your placement machine.
Bling cutter	Send bling shapes direct to any supported cutting machine.
Vector file	Convert bling shapes to vectors in order to cut bling templates.

Note: The **Export Multi-Decoration Files** capability allows you to output files for multi-decoration designs. The system recognizes whether a component is embroidery, graphic, appliqué, or bling. See also Exporting multiple decoration files.

Caution: Bling designs can be saved to earlier versions of EMB. However, bling objects will convert to vector objects.

Send bling to CAMS machine

> Use Bling > Show Bling Work Area to visualize the design within the work area of the selected machine model.
>
> Use Standard > Send to Connection Manager to connect to supported machines via proprietary machine software.

EmbroideryStudio supports direct connection to CAMS automatic rhinestone placement machines. A general procedure is outlined below.

Note: Before executing the procedure, it is important that the machine drivers for your CAMS machine be properly installed. They need to be installed and the machine connected before setting up the COM port. Refer to your machine documentation.

To select bling machine

1 Select the machine you want to connect to via the **Setup > Bling Machine Setup** command.

Select your machine model
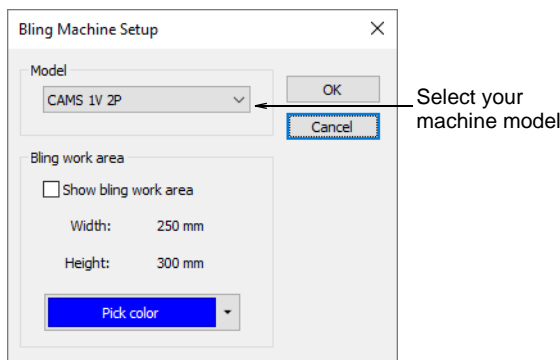
2 In the **Model** panel, select the machine model you are using.
3 Activate the **Bling Work Area** to visualize the design within the work area of the selected machine model.

4 Set the color of the work area as desired.
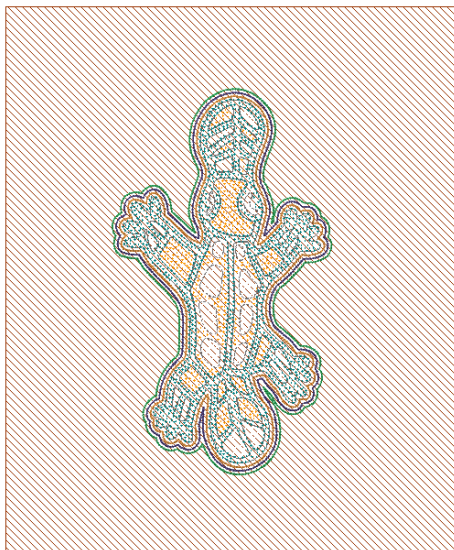
To send to Connection Manager

1 From the **Standard** toolbar, click the **Send to Connection Manager** button.
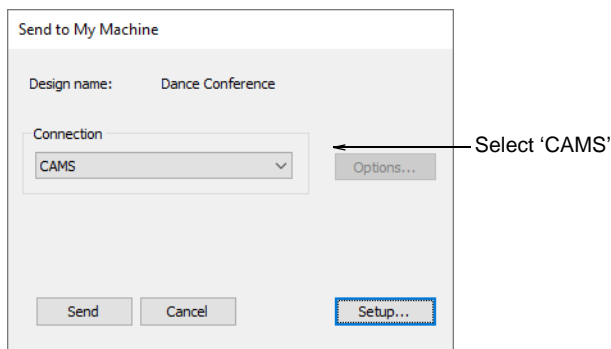
Select 'CAMS'

2 From the **Connection Manager** droplist, select 'CAMS'.

3 Click the **Setup** button. The **CAMS Setup** dialog opens.

Check communications port and baud rate settings
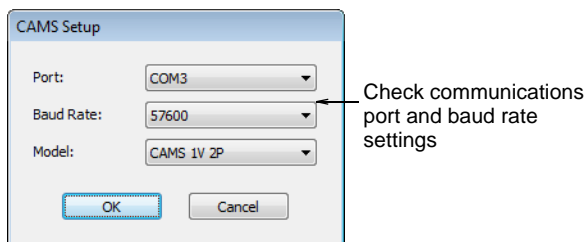
4 Check the communications port and baud rate settings.

If you are using an 'old school' serial connection, the COM port in the software should match the port to which the cable is connected. If you are using a USB connection, the COM port in EmbroideryStudio must match the 'virtual' COM port assigned to it. You can find this in **Windows Control Panel > Device Manager**.

If using a USB connection, COM port setting must match 'virtual' COM port assigned to it

If you are using a USB connection and the COM port is not available for selection in EmbroideryStudio, you need to verify that your hardware drivers have been correctly installed and are up-to-date. Check your machine documentation for details.

The baud rate in EmbroideryStudio must match the baud rate at which the machine was configured to read the data. This is normally 57600 (the system default). However, you can confirm the value when you prepare the machine to receive data. The baud rate will be displayed on the machine console.

The model will default to the machine selected via the **Setup > Bling Machine Setup** function. You can change it here if required.

5 Click **OK**. The **Send to CAMS Machine** dialog opens.

Assign bling to available feeders on CAMS machine
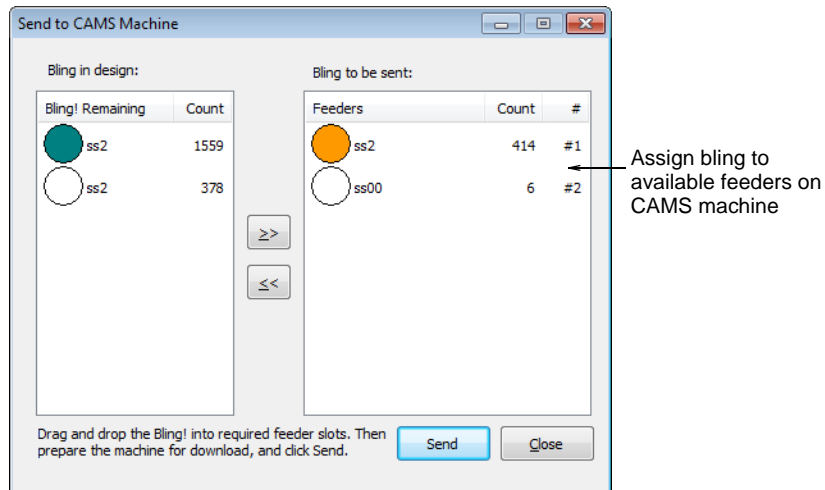
6 Use this dialog to assign bling in the design to the available feeders on the CAMS machine.

7 Prepare the machine to receive data and click the **Send** button.

⚠️

Caution: If you try to send something before the machine is 'Ready', it may fail to read the next design.

To export to bling placement file

◀ If your placement machine is not directly connected to the PC, use the **Export Machine File** option to output to Yongnam YNG format. This can loaded onto the machine via memory stick.

Select YNG format
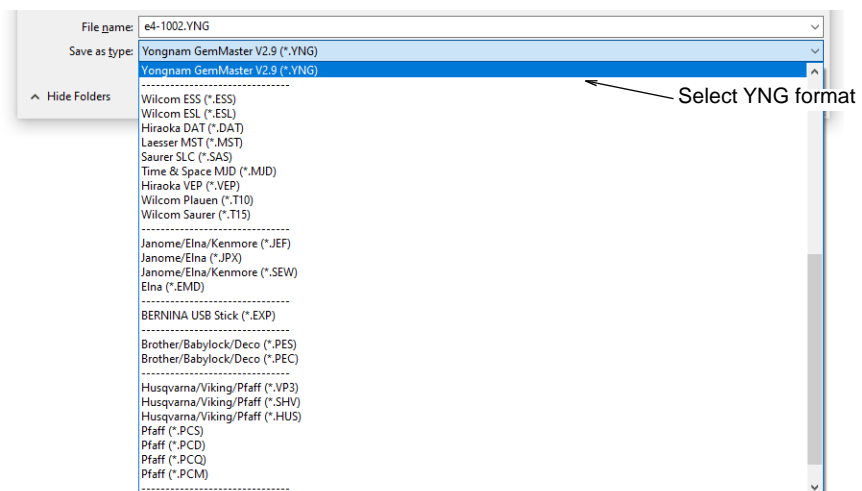
Suggested workflow

The precise workflow you follow will depend on the number of feeders available on the selected machine. For example, if you have a machine with two feeders which is currently set up to feed SS6 on Feeder #1 and SS10 on Feeder #2, and wish to output a design which contains SS6, SS8, SS10, you may do so like this:

◀ Drag SS6 to Feeder #1.
◀ Drag SS10 to Feeder #2.
◀ Prepare the machine for download.
◀ When the machine is 'Ready' for download, click **Send**.
◀ When the machine has finished receiving the file, run the machine to place all the SS6 and SS10 stones.
◀ Once the run is completed on the machine, replace the SS6 feeder on the machine with the SS8 feeder.
◀ In the software, drag SS8 to Feeder #1 (where you had previously dragged the SS6).
◀ Prepare the machine for download again.
◀ When the machine is again 'Ready', click **Send**.
◀ When the machine has finished receiving the file, run it in order to add the SS8 stones to the design already containing the stones from the previous run.

Depending on the number of bling types used in the design and number of available feeders, you may need to send bling more than once. You will be prompted if you exit before all bling has been sent to machine.
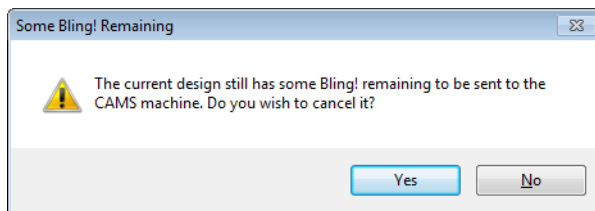
Related topics...

◀ Send designs to Connection Manager

Output to bling cutter

> Use Standard > Send to Bling Cutter to send vectors for any bling in a multi-decoration design to a supported cutting machine.

The **Send to Bling Cutter** function sends vectors for any bling in a multi-decoration design directly to a cutting machine. Use it with any bling template cutter supported by MS Windows®.
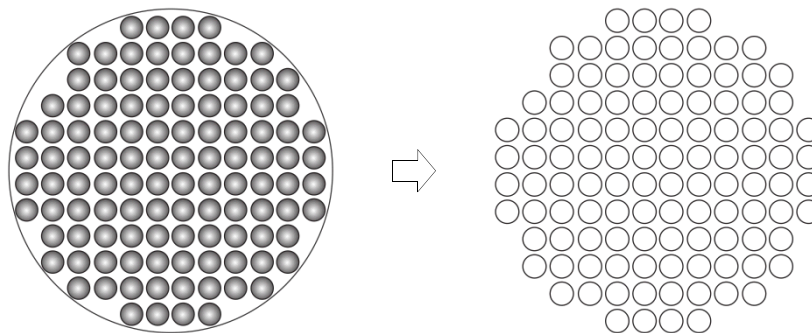
To output to a bling cutter

1 Open or create a multi-decoration design. A cutting or engraving machine must be connected to the PC and configured to receive data.

2 Click the **Send to Bling Cutter** icon or select **File > Send to Bling Cutter**. The **Send to Bling Cutter** dialog opens.

Select bling cutter or suitable printer →

Select if you want to print to file

Click to preview printable parts of design
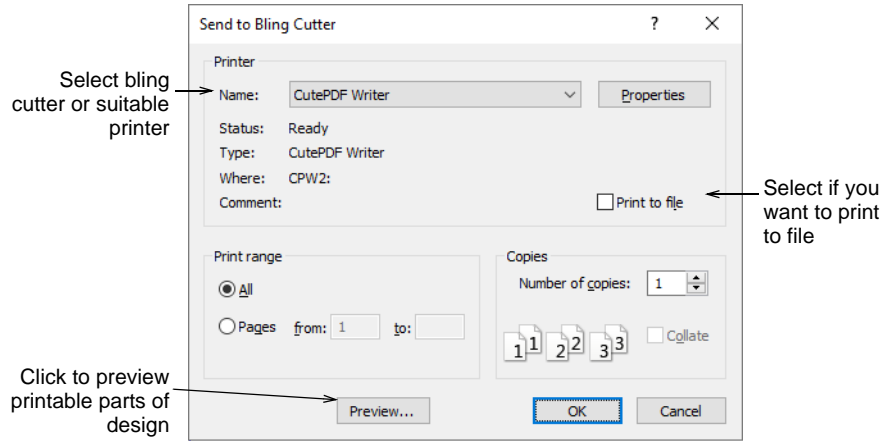
3 Select your bling cutter from the droplist or select a suitable printer.
4 Select the **Print to file** option if you want to print the design to file.
5 Click **Properties** and check your output settings.
6 For a realistic view click the **Preview** button.
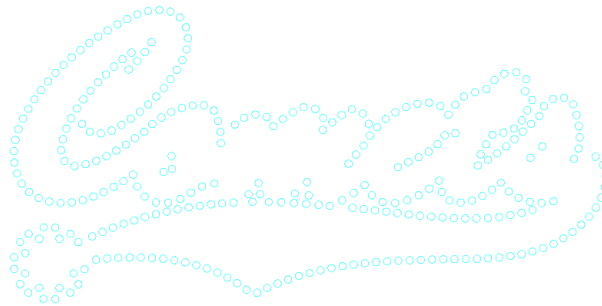
Note: In multi-bling designs, each color is separated into different templates for flood-filling.
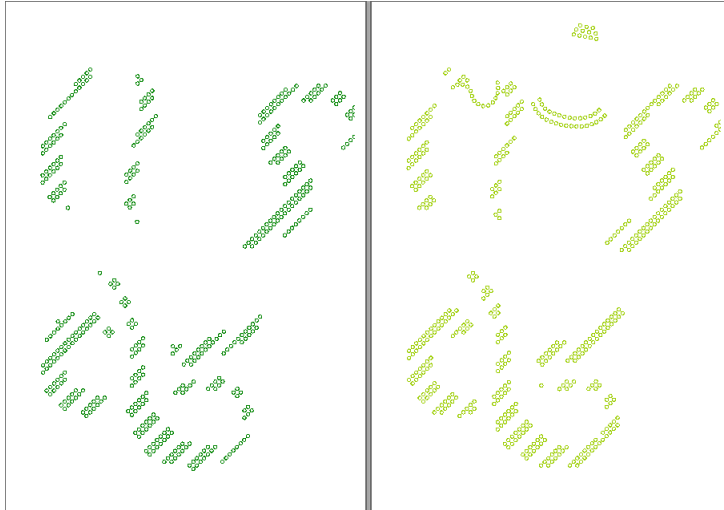
7 Click **OK** to send the bling templates to bling cutter or to file.

The bling cutting/engraving information is sent to machine in the required format. The machine cuts the desired template/s. The cutting data consists solely of vectors which describe the location, size, and shape of the bling in the template. There are no connecting lines or data that do not relate directly to bling placement.

Tip: A bling production summary shows stone colors, sizes, and quantities as well as a summary on the first page.

Related topics...

◀ Set up machines
◀ Print reports
◀ Customizing design reports

Convert bling for production

If you have neither CAMS automatic rhinestone placement machine nor a direct-connect cutting machine, you can use the **Convert Bling for**

Production command to convert bling objects to vector shapes. These can be then output to vector file for use by third-party applications.

Single bling object

Convert bling for production
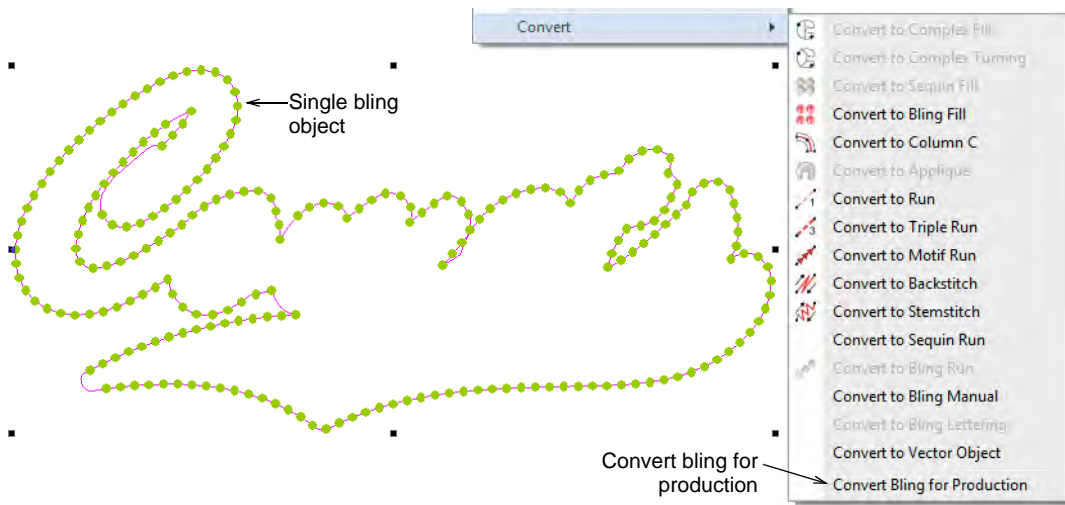
Once converted, individual bling shapes can be exported as a printable file – for example, EMF or EPS – via the **File > Export Design as Vector** command. This in turn can be imported into cutting software as a bling template.

Converted bling shapes

Export converted bling shapes as vectors
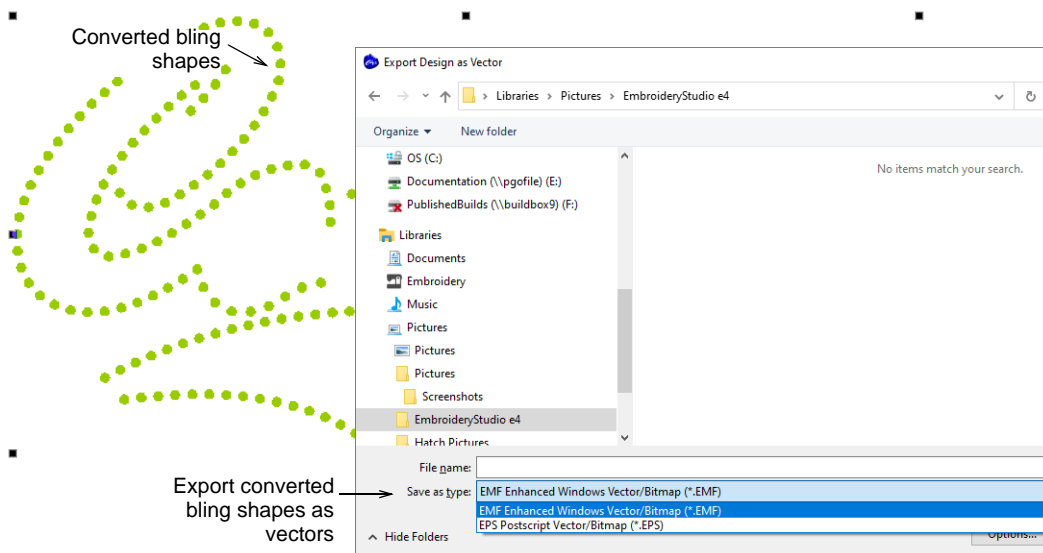
If your software level supports CorelDRAW Graphics, you can export the vector shapes to other formats, including SVG, FCM, DXF, and many

others. These too can be used to cut a template sheet for bling design. Switch to CorelDRAW Graphics and use the **File > Export** command.
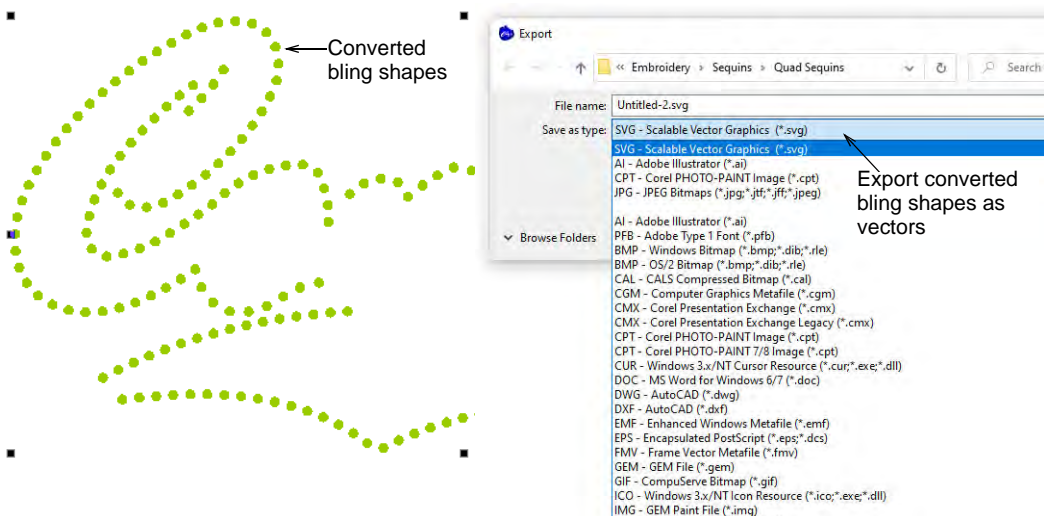
Converted bling shapes

Export converted bling shapes as vectors

Note: The **Export Multi-Decoration Files** capability allows you to output files for multi-decoration designs. The system recognizes whether a component is embroidery, graphic, appliqué, or bling. See also Exporting multiple decoration files.

PART XII
PRODUCT DIFFERENTIATION TABLE

Product differentiation table

The Product Differentiation Table below itemizes features which are relevant to each product model. The EmbroideryStudio e4 product suite consists of these product models:

Product models		Capabilities	Applications
1	ES Designing	^ Professional digitizing and graphic design, lettering, and editing. It supports the full range of optional ES Elements. Some are included as standard.	Larger logo embroidery businesses with digitizing
2	ES Digitizing	* Professional embroidery digitizing.	Fashion and textile production digitizing
3	ES Decorating	^ Professional lettering, customization and editing. Auto-digitizing and simple manual digitizing. Includes some ES Elements.	Small embroidery shops – replaces DecoStudio
4	ES Editing	Full lettering, customization, editing, with machine connections.	Logos, retail shops, production shops
5	ES Lettering	Full lettering, customization, with machine connections.	Logos, retail shops
^ Includes CorelDRAW® Graphics Suite as standard. * Only available in certain countries.			

While every effort has been made to maintain the Product Differentiation Table up to the current release, late changes may not be precisely reflected. For purchasing advice, please visit the website or talk to a Wilcom representative.

● Included as standard ○ Modular 'Element' **L** Limited functionality ^ New to ES e4 * Improved in ES e4

Capability	Feature		Product models					Reference
			1	**2**	**3**	**4**	**5**	
Basics								**Basic Procedures**
Switch design modes	CorelDRAW Graphics	*	●		●			Operating modes
Access Design Library	Design Library	^	●	●	●	●	●	Design library
View object properties	Object Properties		●	●	●	●	L	Access object properties
Select machine format		*	●	●	●	●	●	Embroidery machine formats
Open embroidery design file		*	●	●	●	●	●	Open designs
1 ES Designing 2 ES Digitizing 3 ES Decorating 4 ES Editing 5 ES Lettering ● Included as standard ○ Modular 'Element' **L** Limited functionality ^ New to ES e4 * Improved in ES e4								

Capability	Feature	Product models					Reference
		1	2	3	4	5	
Create design based on template	New from Template	●	●	●	●	●	Create designs from templates
Save embroidery design file	Save Design *	●	●	●	●	●	Save & close designs
Send design as email attachment		●	●	●	●	●	Send designs as email attachments
Select design objects	*	●	●	●	●	L	Selecting objects
Display grids, rulers and guides	Show Rulers & Guides *	●	●	●	●	●	Display grids, rulers & guides
Set measurement units		●	●	●	●	●	Set measurement units
Measure distances on screen		●	●	●	●	●	Measure distances on screen
View designs							**Viewing Designs**
View embroidery components		●	●	●	●	●	View embroidery components
View graphical components	*	●	●	●	●	●	View graphical components
Zoom and pan across designs	Zoom *	●	●	●	●	●	Zoom & pan designs
View multiple designs	*	●	●	●	●	●	Set up multiple views
Show design in Overview window	Overview Window	●	●	●	●	●	Work with the Overview Window
Simulate design stitchouts	Stitch Player *	●	●	●	●	●	Simulate design stitchouts
Travel through designs	Travel Tools	●	●	●	●	●	Travel through designs
Show multiple colorways	Current Colorway	●	●	●	●	●	Switch colorways
Change backgrounds and display colors	Background & Display Colors *	●	●	●	●	●	Change backgrounds
View color blocks and design objects	Color-Object List	●	●	●	●		View selected color blocks
View design repeats	Show Repeats	●	●	●	●	●	Viewing design repeats
View design details	Design Information *	●	●	●	●	●	Viewing design information
View design report	Print Preview *	●	●	●	●	●	Preview design reports
Manage threads							**Threads & Charts**
Select thread colors	Color palette *	●	●	●	●	●	Select thread colors
Assign thread colors	*	●	●	●	●	●	Assign thread colors
Edit thread colors		●	●	●	●	●	Edit thread colors
Create & modify thread charts		●	●	●	●	●	Managing thread charts

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● Included as standard ○ Modular 'Element' **L** Limited functionality ^ New to ES e4 * Improved in ES e4

Capability	Feature	Product models					Reference
		1	**2**	**3**	**4**	**5**	
System settings							**System Settings**
Set view options		●	●	●	●	●	View options
Set grid options		●	●	●	●	●	Grid display options
Mouse scroll/zoom control		●	●	●	●	●	Scroll options
Set reshape options		●	●	●	●	●	Reshape options
Set automatic save and backup options		●	●	●	●	●	Automatic save & backup options
Set pointer position display		●	●	●	●	●	Pointer position display
Set inserted embroidery file options		●	●	●	●	●	Thread color handling for inserted files
Set paste & duplicate options	*	●	●	●	●	●	Paste & duplicate options
Set digitizing tool options	*	●	●	●	●	●	Digitizing presets
Set toolbar display options	^	●	●	●	●	●	Toolbar display options
Set Object Property 'apply' options		●	●	●	●	●	Object property apply options
Set other general options		●	●	●	●	●	Other general options
Set warning options		●	●	●	●	●	Warning options
Hardware							**Hardware Settings**
Connect to machine via Connection Manager	Connection Manager	●	●	●	●	●	Setting up machines for Connection Manager
Connect to machine via Stitch Manager	Stitch Manager	●	●	●	●	●	Setting up machines for Stitch Manager
Perform runtime estimates	Runtime Analyst	●	●	●	●	●	Doing runtime estimates
Connect to scanner		●	●	●			Setting up scanners
Connect to digitizing tablet		●	●				Connecting digitizing tablets
Machine formats							**Machine Formats**
Modify standard machine formats		●	●	●	●	●	Standard machine formats
Adjust advanced machine format settings (color change sequence, start/end design, speed)		●	●	●	●	●	Advanced machine formats

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● Included as standard ○ Modular 'Element' **L** Limited functionality ^ New to ES e4 * Improved in ES e4

Capability	Feature		Product models					Reference
			1	2	3	4	5	
Create custom machine formats			●	●	●	●	●	Custom machine formats
Stitch types								**Stitch Types**
Create simple outline stitching	Run, etc	*	●	●	●	●	L	Simple outlines
Create 'sculpture' runs (bead stitching)	Sculpture Run	*	●	●				Sculpture run settings
Create decorative outlines	Backstitch, Stemstitch	*	●	●				Decorative outlines
Create satin borders and fills	Satin, Raised Satin	*	●	●	L	L	L	Satin stitching
Create tatami borders and fills	Tatami	*	●	●	●	L	L	Tatami stitching
Digitize shapes								**Digitizing Shapes**
Digitize with graphical tools	Graphics Digitizing	*	●	●	●			Digitizing with graphical tools
Digitize outlines and details	Digitize Run, etc	*	●	●	●	●	●	Digitizing outlines & details
Digitize regular columns	Column C	*	●	●				Digitizing regular columns
Digitize irregular columns	Column A/B	*	●	●				Digitizing irregular columns
Create free-form shapes	Complex Turning / Complex Fill	*	●	●				Creating free-form shapes
Object properties								**Object Properties**
Modify current property settings			●	●	●	●	●	Change current settings
Change object properties			●	●	●	●	●	Change object properties
Make selected object properties current	Make Properties Current		●	●	●			Copy properties
Change & manage fabrics	Auto Fabric		●	●	●	●	●	Working with fabrics
Define & apply styles	Styles		●	●				Working with styles
Create design templates	Save as Template	*	●	●	●	●	●	Create design templates
Colorways								**Colorways**
Add colorways	Colorway Editor	*	●	●	●	●	●	Add colorways
Change color schemes	Color Wheel	^	●	●				Change color schemes
Name design elements			●	●	●	●	●	Name design elements
Split color blocks	Split Palette Color		●	●	●	●	●	Split color blocks

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● Included as standard ○ Modular 'Element' **L** Limited functionality ^ New to ES e4 * Improved in ES e4

Capability	Feature		1	2	3	4	5	Reference
Set backgrounds	Background & Display Colors	*	●	●	●	●	●	Set fabric backgrounds
Visualize products	Product Visualizer	*	●	●	●	●	●	Visualize products
Productivity tools								**Productivity Techniques**
Add decorative borders to designs	Add Borders	*	●	●	●	●	●	Add design borders
Create embroidered stars & rings	Star/Ring		●	●				Digitize stars & rings
Digitize basic shapes	Basic Shapes	^	●	●				Digitize basic shapes
Add or remove holes in objects	Add Holes	^	●	●	●			Add & remove holes
Fill holes in objects	Fill Holes		●	●	●			Fill holes
Create simple offsets	Simple Offsets		●	●	●			Simple offsets
Create multiple offset outlines & offsets	Outlines & Offsets	*	○	○	○			Create outlines & offsets
Create offsets with open objects	Open Offsets	^	○	○				Create offsets with open objects
Create automatic wreaths	Mirror-Merge	*	○	○				Mirroring & reflecting selections
Create design arrays	Mirror-Merge Array	*	○	○				Creating design arrays
Combine & sequence objects								**Combining Objects**
Combine objects and designs – copy, paste, clone, etc		*	●	●	●	●	●	Combining objects & designs
Group & lock objects	Group/Lock		●	●	●	●		Grouping & locking objects
Select objects by color or stitch type		*	●	●	●	●		Selecting objects by color or stitch type
Resequence embroidery objects			●	●	●	●		Sequencing embroidery objects
Auto-sequence entire design	Optimize Color Changes	^	●	●	●	●		Auto-sequence entire designs
Transform objects								**Transforming Objects**
Position, align & distribute objects			●	●	●	●	●	Arranging objects
Scale objects			●	●	●	●	●	Scaling objects
Rotate objects	Rotate		●	●	●	●	●	Rotating objects
Skew objects	Skew		●	●	●	●	●	Skewing objects

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● Included as standard ○ Modular 'Element' **L** Limited functionality ^ New to ES e4 * Improved in ES e4

Capability	Feature		1	2	3	4	5	Reference
Mirror objects	Mirror		●	●	●	●	●	Mirroring objects
Reshape objects								**Reshaping Objects**
Reshape embroidery objects	Reshape Object		●	●	●	●	L	Reshaping embroidery objects
Reshape star & ring objects	Reshape Object		●	●	●	●		Reshaping stars & rings
Apply envelopes to embroidery objects	Envelopes	*	●	●	●	●	●	Applying envelopes
Break apart branched objects	Break Apart		●	●	●	●		Break apart composite objects
Cut shapes manually	Knife		●	●	●			Cut shapes manually
Cut shapes automatically	Automatic Knife		●	●	●			Cut shapes automatically
Shape vector / embroidery objects – merging, splitting, trimming, etc	Shaping Tools		○	○				Shaping objects
Stitches & machine functions								**Stitches & Machine Functions**
Insert, move or delete individual stitches	Stitch Edit		●	●	●	●	●	Selecting & editing stitches
Split embroidery objects	Split Object		●	●	●	●		Splitting objects
Insert/edit/clear machine functions	Insert Function		●	●	●	●	●	Editing machine functions
Edit stitches and functions with Stitch List	Stitch List		●	●	●	●		Edit machine functions manually
Digitize individual stitches	Manual		●	●				Digitizing manual stitches
Convert selected stitches to objects	Process Stitches		●	●				Converting stitches to objects
Underlays & pull compensation								**Underlay & Pull Compensation**
Apply automatic underlay	Auto Underlay	*	●	●	●	●	●	Stabilizing with automatic underlay
Apply underlay by shape	Auto Underlay		●	●	●	●	●	Underlay by segment or by shape
Create slanted zigzag & double zigzag underlay			●	●	●	●	●	Zigzag underlay settings
Apply pull compensation	Pull Compensation		●	●	●	●	●	Compensating for fabric stretch
Stitch quality								**Optimizing Stitch Quality**
Reverse stitch direction	Reverse Curves		●	●				Reverse stitch direction
Reinforce outlines	Backtrack / Repeat	*	●	●				Reinforce outlines

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● Included as standard ○ Modular 'Element' **L** Limited functionality ^ New to ES e4 * Improved in ES e4

Capability	Feature		Product models					Reference
			1	**2**	**3**	**4**	**5**	
Remove underlying stitching	Remove Overlaps	*	●	●	●			Removing underlying stitching
Adjust stitch angles	Stitch Angles	*	●	●	●			Adjusting stitch angles
Adjust stitch density	Process Stitches		●	●				Adjusting stitch densities
Remove small stitches automatically	Small Stitches		●	●	●	●	●	Eliminating small stitches
Control corner stitching	Smart Corners	*	●	●	L	L	L	Controlling corner stitching
Reduce stitch bunching	Shortening		●	●	●	●	●	Reducing stitch bunching
Split long stitches	Auto Split		●	●	●	●	●	Split satin stitches
Preserve long stitches	Auto Jump		●	●	●	●	●	Preserve long stitches
Embroidery connectors								**Embroidery Connectors**
Apply automatic connectors	Connectors		●	●	●	●	●	Using automatic connectors
Add tie-offs & trims manually	Tie Off	*	●	●	●	●	●	Adding connectors manually
Keep/omit last stitches	Keep/Omit Last Stitch		●	●				Keeping or omitting last stitches
Adjust entry/exit points	Show Entry/Exit		●	●	●	●	L	Adjust entry/exit points
Apply closest join	Closest Join		●	●	●	●	L	Apply closest join
Automatic object sequencing	Branching		●	●				Automatic branching
Patterned stitching								**Patterned Stitching**
Create textures with Tatami offsets	Tatami Offset		●	●	●	●	L	Creating textures with tatami offsets
Create textures with program splits	Program Split		●	●				Creating textures with program splits
Create custom splits	User-Defined Split		○	○				User-defined splits
Create custom stitch patterns	Carving Stamp		○	○				Creating patterns with carving stamps
Curved stitching								**Curved Stitching**
Create contoured stitching	Contour	*	○	○				Contoured fills
Create offset fills	Offset Fill	^	○	○				Offset fills
Create spiral fills	Spiral Fill	^	○	○				Spiral fills
Create radial fills	Radial Fill	^	●	●				Radial fills
Create textures with flexi-splits	Flexi Split		○	○				Flexi-splits

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Capability	Feature	Product models					Reference
		1	2	3	4	5	
Create curved fills	Florentine Effect / Liquid Effect	○	○				Curved fills
Motif stitching							**Motif Stitching**
Place single motifs	Use Motif	○	○				Selecting & placing motifs
Create motif runs	Motif Run	○	○				Motif runs
Create graded motif runs	Motif Run ^	○	○				Create graded motif runs
Create motif fills	Motif Fill	L	L	L			Motif fills
Create 3D effects with motif fills	3D Warp	○	○				Enveloped motif fills
Create graded motif columns	Motif Column ^	○	○				Create graded motif columns
Create motifs & motif sets		○	○				Custom motifs
Specialty stitching							**Specialty Stitching**
Create freehand embroidery	Freehand Embroidery *	●	○				Freehand embroidery
Create jagged edges	Jagged Edge	●	●				Jagged edges
Create zigzag and E-stitch borders and fills	Zigzag, E Stitch *	●	●	●			Decorative borders
Create textures with stippling	Stipple	○	○				Stippling effects
Create open stitching with trapunto	Trapunto	●	●	●			Trapunto open stitching
Create accordion spacing effects	Accordion Spacing	○	○				Accordion spacing
Create color blending effects	Color Blending	○	○				Color blends
Create string stitching	String ^	○	○				String stitching
Create chenille-type patterns	Square, Coil *	●	●				Chenille patterns
Create cross stitch fills	Cross Stitch	○	○				Cross stitch fills
Embroidery lettering							**Embroidery Lettering**
Create lettering in CorelDRAW Graphics	CorelDRAW Graphics	●		●			Creating lettering with CorelDRAW Graphics
Create lettering in Wilcom Workspace	Lettering *	●	●	●	●	●	Creating embroidery lettering
Format lettering – italic, bold, justified, etc		●	●	●	●	●	Adjusting lettering properties

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Capability	Feature	Product models					Reference
		1	**2**	**3**	**4**	**5**	
Add baselines – horizontal, vertical, arc, circle, custom		●	●	●	●	●	Working with baselines
Edit lettering text	Lettering	●	●	●	●	●	Editing text
Scale and transform lettering objects		●	●	●	●	●	Modifying lettering
Adjust individual letters – reposition, transform, reshape, recolor		●	●	●	●	●	Adjusting individual letters
Adjust and reshape baselines		●	●	●	●	●	Adjusting baselines
Break apart lettering	Break Apart	●	●	●	●		Breaking apart lettering
Add special characters	Insert Symbol	●	●	●	●	●	Adding special characters
Set lettering stitch types – Satin, Tatami, etc	Stitch Types	●	●	●	●	●	Applying stitch types & effects to lettering
Create special effects with lettering art	Lettering Art	^ ●	●	●	●	●	Creating special effects with lettering art
Adjust lettering stitching sequence	Letter Sequence	●	●	●	●	●	Adjust letter sequencing
Change lettering join method	Letter Sequence	●	●	●	●	●	Change lettering join method
Automatic letter kerning	Auto Kerning	●	●	●	●	●	Setting automatic letter kerning
Apply automatic letter spacing	Auto Letter Spacing	●	●	●	●	●	Setting automatic letter spacing
Apply lettering underlay	Auto Underlay	●	●	●	●	●	Setting lettering underlay
Team names & monograms							**Team Names & Monogramming**
Add multiple names to designs	Team Names	* ●	●	●	●	●	Creating simple teamname designs
Create teamname templates	Team Names	* ○	○	○			Teamname templates
Output team-name designs	Team Names	●	●	●	●	●	Outputting teamname designs
Create monogram designs	Monogramming	* ●	●	●	●	●	Monogramming
Custom lettering							**Custom Lettering**
Convert TrueType fonts to embroidery fonts	Convert TTF	* ○	○				Converting TrueType fonts to embroidery
User-refined letters		●	●	●	●	●	Creating user-refined letters
Create custom fonts		○	○				Creating custom fonts
Merge fonts		●	●	●	●	●	Merging fonts

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Capability	Feature	Product models					Reference
		1	**2**	**3**	**4**	**5**	
Lettering kiosk							**Lettering Kiosk**
Configuration options for supervisors		●	●	●	○	○	Configuration options for supervisors
Create custom design layouts		●	●	●	○	○	Creating custom design layouts
Digitize with bitmaps							**Digitizing with Bitmaps**
Insert / paste bitmap images	Import Graphic	●	●	●	●	●	Insert bitmap images
Crop bitmap images	Crop Bitmap	* ●	●	●			Crop bitmap images
Edit bitmap images in third-party applications		●	●	●			Touch up bitmaps
Smooth bitmap images		●	●	●	●	●	Smooth bitmap images
Save artwork	CorelDRAW Graphics	●		●			Save artwork
Prepare artwork for auto-digitizing	Prepare Bitmap Colors	* ●	●	●			Preparing images for auto-digitizing
Add and match image colors	Add Bitmap Colors	●	●	●	●	●	Add & match image colors
Digitize with vectors							**Digitizing with Vectors**
Create vector outlines and fills	Drawing Tools	* ●	●	●			Creating vector shapes in EmbroideryStudio
Color vector objects		●	●	●			Color vectors
Insert / paste vector graphics	Import Graphic	●	●	●	L	L	Loading vector artwork
Convert artwork to vector graphic	Auto Trace To Vectors	●	●	●			Auto-tracing bitmap artwork
Smooth curves	Smooth Curves	●	●				Smoothing curves
Show/hide vector graphics		●	●	●	●	●	Visualizing vector graphics
Automatic digitizing							**Automatic Digitizing**
Inter-convert graphics and embroidery objects	CorelDRAW Graphics	●		●			Convert objects with CorelDRAW Graphics
Convert between embroidery objects – Run, Column C, etc.	Convert	●	●	●			Converting designs with CorelDRAW Graphics
Digitize shapes with Auto-Digitizing	Auto-Digitizing	●	●	●			Auto-digitize individual shapes

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Capability	Feature		1	2	3	4	5	Reference
			Product models					**Reference**
Match palette colors to an image	Color Matching Method	*	●	●	●			Auto-digitize individual shapes
Convert bitmaps with Smart Design	Smart Design	*	●	●	●			Auto-digitize entire designs
Auto-digitizing bitmap and vector shapes	Auto-Digitizing		●	●	●			Auto-digitize individual shapes
Convert photos to line embroidery	Photo Flash		○	○	○			Auto-digitize with Photo Flash
Convert photos to 'coral' embroidery	Reef PhotoStitch	^	○	○	○			Auto-digitize with Reef PhotoStitch
Convert photos to color embroidery	Color PhotoStitch	^	○	○	○			Auto-digitize with Color PhotoStitch
Design management								**Design Management**
View designs in network folders		^	●	●	●	●	●	Viewing designs in network folders
Open designs from Design Library	Design Library	^	●	●	●	●	●	Opening designs from Design Library
Insert designs with Embroidery Clipart	Embroidery Clipart	^	●	●				Inserting designs with Embroidery Clipart
Search for designs		^	●	●	●	●	●	Searching the library
Manage folders		^	●	●	●	●	●	Adding folders to the library
Manage design information		^	●	●	●	●	●	Viewing & managing design information
Manage job orders		^	●	●	●	●	●	Managing quotes & orders
Convert designs		^	●	●	●	●	●	Converting designs
Output selected designs		^	●	●	●	●	●	Outputting selected designs
Design hooping								**Design Hooping**
Set up custom hoop lists			●	●	●	●	●	Setting up hoop lists
Set auto start & end			●	●	●	●	●	Setting auto start & end
Select hoops automatically	Auto Hoop		●	●	●	●	●	Selecting hoops automatically
Select hoops manually	Show Hoop	*	●	●	●	●	●	Selecting hoops manually
Create custom hoops			●	●	●	●	●	Creating custom hoops

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Capability	Feature	Product models					Reference
		1	2	3	4	5	
Embroidery output							**Embroidery Output**
Send designs to Connection Manager	Connection Manager	●	●	●	●	●	Send designs to Connection Manager
WiFi USB machine networking	EmbroideryConnect ^	●	●	●	●	●	Send designs to EmbroideryConnect
Send designs to Stitch Manager	Stitch Manager	●	●	●	●	●	Send designs to Stitch Manager
Export designs for machine	*	●	●	●	●	●	Exporting designs for machine
Read/write embroidery disk		●	●	●	●	●	Using embroidery disks
Send designs to Machine Manager		●	●	●	●	●	Machine Manager Supplement
Design reports							**Design Reports**
Output designs as images		●	●	●	●	●	Outputting designs as images
Print/plot design reports	*	●	●	●	●	●	Printing design reports
Save or send design as PDF	^	●	●	●	●	●	Printing design reports
Customize report information	*	●	●	●	●	●	Customizing design reports
Print multiple colorways		●	●	●	●	●	Customizing design reports
Print color blocks		●	●	●	●	●	Customizing design reports
Machine files							**Machine Files**
Convert machine files to EMB format		●	●	●	●	●	Opening machine files
Open/save designs in Melco CND format		●	●	●	●	●	Reading Melco CND design files
Color merge Melco CND files		●	●	●	●	●	Create a color-merge TXT file
Reassign colors to stitch / CND files		●	●	●	●	●	Reassigning colors to machine files
Machine networking	EmbroideryConnect						**Machine Networking**
EmbroideryConnect setup		●	●	●	●	●	EmbroideryConnect setup
Basic device settings		●	●	●	●	●	Basic device settings
Advanced device settings		●	●	●	●	●	Advanced device settings
Send designs to EmbroideryConnect		●	●	●	●	●	Sending designs to EmbroideryConnect

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Capability	Feature	Product models					Reference
		1	2	3	4	5	
Chenille embroidery	Chenille						**Chenille Embroidery**
Digitize for chenille			○	○			Digitizing for chenille
Visualize chenille stitching			○	○			Visualizing chenille stitching
Open & save chenille designs			○	○			Open & save chenille designs
Create compound chenille			○	○			Creating compound chenille
Create chain-stitch fills			○	○			Creating chain-stitch fills
Create narrow chenille shapes			○	○			Creating narrow chenille shapes
Create chenille borders			○	○			Creating chenille borders
Control needle heights			○	○			Controlling needle heights
Add lettering to chenille designs			○	○			Adding lettering to chenille designs
Chenille machine formats			○	○			Chenille machine formats
Output chenille designs			○	○			Outputting chenille designs
Mixed decoration							**Mixed Decoration**
Save designs as 'virtual decoration'	Virtual embroidery		●	○	●		Virtual embroidery
Add cording	Cording	^	●	●			Cording
Boring	Manual		●	●			Boring
Sequins							**Sequin Embroidery**
Select sequin mode			○	○			Selecting sequin mode
Visualize sequin designs			○	○			Visualizing sequin designs
Set up custom sequin palette			○	○			Setting up sequin palettes
Create sequin runs	Sequin Run		○	○			Digitizing sequin runs
Change sequin fixings			○	○			Sequin fixings
Create multi-sequin runs	Sequin Run		○	○			Creating multi-sequin runs
Create sequin fills	Sequin Fill	*	○	○			Creating sequin fills
Create multi-sequin fills	Sequin Fill	*	○	○			Creating multi-sequin fills
Scale & reshape sequin fills			○	○			Editing sequin fills
Pattern stamp re-coloring of twin-sequin fills		^	○	○			Flip sequins
Convert objects to sequins			○	○			Converting objects to sequins

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Capability	Feature		1	2	3	4	5	Reference
Digitize individual sequins	Sequin Manual		○	○				Manual sequin digitizing
Create custom sequins		^	○	○				Custom sequins
Beading								**Bead Embroidery**
Set up beading mode		^	○	○				Beading mode
Create bead runs	Bead Run	^	○	○				Creating bead runs
Change bead fixings		^	○	○				Bead fixings
Edit bead runs		^	○	○				Editing bead runs
Digitize individual beads	Manual Bead	^	○	○				Manual bead digitizing
Bling								**Bling Digitizing**
Set up bling palettes	Bling		●	○	●			Setting up bling palettes
Create bling runs and fills	Bling		●	○	●			Creating bling runs & fills
Add bling borders	Bling		●	○	●			Add bling borders
Place rhinestones manually	Bling		●	○	●			Place rhinestones manually
Modify bling objects	Bling		●	○	●			Modifying bling objects
Create bling lettering	Bling		●	○	●			Creating bling lettering
Appliqué								**Appliqué Embroidery**
Convert vector graphics to appliqué	Convert Graphics to Embroidery		●		●			Convert vector graphics to appliqué
Create appliqué designs	Appliqué	*	●	●	●			Creating appliqué embroidery
Add fabric swatches to appliqué objects	Appliqué		●	●	●			Add fabric swatches to appliqué
Create partial appliqué shapes	Partial Appliqué		●	●				Create partial cover appliqué
Recombine and resequence multiple appliqué for efficient stitchout	Combine Appliqué Components		●	●	●			Combining appliqué
Multi-decoration output								**Multi-Decoration Output**
Print designs in CorelDRAW Graphics	CorelDRAW Graphics		●	○	●			Printing designs in CorelDRAW Graphics
Export embroidery as vectors			●	●	●			Exporting embroidery as vectors
Export multi-decoration files			●					Exporting multiple decoration files

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Capability	Feature	Product models					Reference
		1	**2**	**3**	**4**	**5**	
Print / cut appliqué patterns	Appliqué	●	●	●			Outputting appliqué for production
Output bling for production	Bling	●	○	●			Outputting bling for production

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PART XIII
QUICK REFERENCE

Quick reference

There are two fundamental design modes in EmbroideryStudio:

Wilcom Workspace

This mode allows you to create and edit embroidery objects using the embroidery digitizing toolset.
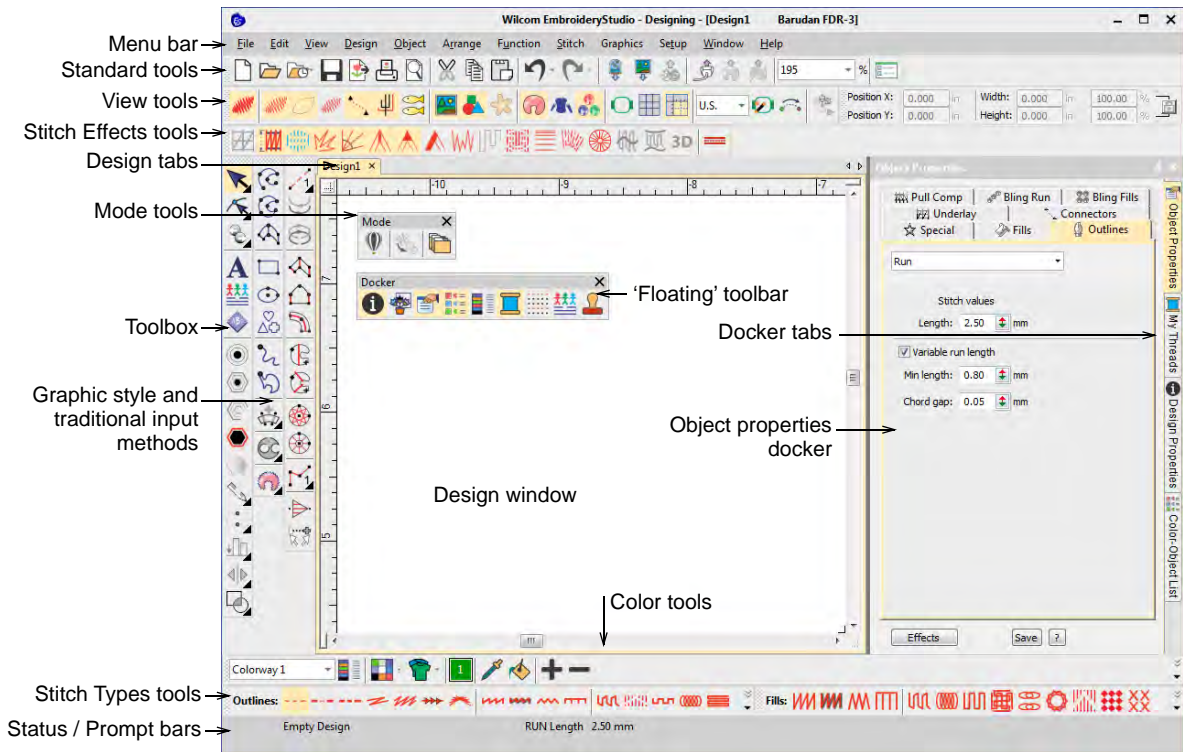
CorelDRAW Graphics

This mode allows you to create and edit vector objects using the CorelDRAW® Graphics Suite toolset. For a detailed description of the **CorelDRAW Graphics** interface, refer to the electronic User Guide available via the MS Windows® **Start > Programs** group. Alternatively, use the online help available from the **Help** menu.

EmbroideryStudio menus

The EmbroideryStudio design window menu bar contains the pulldown menus described below. Some commands are also available as toolbar buttons.

Tip: 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 design	Create new blank design based on a fabric or template.
New from template	Create new design from a template.
Open design	Open existing design.

Open recent	Most recently used files listed – select to open file.
Open backup design	Opens directly onto the backup folder for quick access to backup files in case of software failure.
Close	Close current design window.
Close all	Close all open design windows.
Save	Save current design.
Save as	Save current design with a different name, location or design file format.
Save as template	Save current design as a design template for future use.
Save as monogram template	Save current design as a monogram template for future use with the Monogramming tool.
Save as teamname template	Save current design as a teamname template for future use with the Team Names tool.
Export machine file	Convert current design to a machine format other than your selected machine.
Print	Print the current design.
Print preview	Display design worksheet/approval sheet – print from preview window.
Import embroidery	Insert one design into another to create combined design. Color palettes are also combined. Colors with same RGB values are automatically identified as having the same thread color.
Import graphic	Import artwork into current design as a backdrop for manual or automatic digitizing.
Scan graphic	Scan images directly into EmbroideryStudio.
Export design as vector	Save design as vectors in EMF or WMF format.
Export multi-decoration files	Export mixed decoration design components as file formats for use by control software or machine.
Record in database	If you have DesignWorkflow installed, record an open design to the database.
Capture design bitmap	Save design image as bitmap exactly as it appears on screen.

Capture virtual decoration bitmap	Output high resolution digital print TrueView for 'virtual embroidery'.
Send via email	Send design as email attachment.
Export design properties	Output current design information and machine runtime settings to CSV file.
Send to Connection Manager	Connect to supported machines via proprietary machine software.
Send to Embroidery Connect	Send current design to named EmbroideryConnect device.
Queue design	Send current design to EmbroideryConnect design queue to be 'pulled' from machine.
Send to appliqué cutter	Send appliqué shapes from design file to laser cutter.
Send to bling cutter	Send vectors for any bling in any multi-decoration design to a supported cutting machine. Configure the machine via Setup.
Cross stitch	Access Cross Stitch application.
Exit	Close all open designs and exit program.

Edit menu

Undo	Undo previous action.
Redo	Redo previously undone action.
Cut	Cut selection and place on Clipboard.
Copy	Copy selection and place on Clipboard.
Paste	Paste contents of Clipboard. Options available in Options > Edit tab.
Paste after selected	Override current defaults and paste directly after selected object in the stitching sequence.
Paste special >	Override current Paste setting and select from paste options available in Options > Edit tab.
Duplicate	Duplicate selected objects within the design (rather than copy to clipboard).

Duplicate with offset	Duplicate an object with an offset. Adjust settings via the Options > Edit dialog.	Zoom 1:1	Display design at actual size.
		Zoom factor	Set precise viewing scale.
Delete	Delete selected objects.	Zoom in / out 1.25x	Zoom in and out in smaller increments to 'slow down' mouse-wheel scrolling.
Select / deselect all	Select or deselect all objects in a design.		
Select by color / stitch type	Select all objects of the same color or same stitch type.	Zoom in / out 2x	Display design at twice/half current size.
		Zoom to fit	Display whole design or only selected embroidery objects in design window.
Close curve with straight line / curve line	Close an open outline with a straight or a curved line.		
		Zoom to selected	View selected objects in the design window.
Reverse >	Control push-pull effect by reversing stitch direction – affects stitching direction of Jagged Edge, Contour Stitch and E Stitch objects. Can also affect Tatami offsets, as well as Flexi Split and Motif Run orientation.	Zoom to product	View entire product in the design window.
		Zoom to hoop	View entire hoop in the design window.
		Pan	Pan across the current design.
		Previous view	Return to previous view.
Smooth curves	Apply curve 'smoothing' to both embroidery and vector objects.	Center current stitch	Center the design window at the current stitch cursor position.
Transform >	Transform selected objects using combination of reference points and numeric values. Rotate selected objects with aid of reference points alone.	Measure	Measure distance between two points on screen.
		Stitch player	Simulate embroidery design stitchout on screen.
		View by color	View embroidery objects by color – e.g. when resequencing objects.
Envelope >	Apply Bridge, Pennant, Perspective, and Diamond effects to lettering objects.	View all colors	Show all colors after activating View by Color.
		View by machine function >	View machine Chenille and Schiffli functions – Chain/Moss, Stepp/Blatt, etc.

View menu

		Refresh screen	Refresh screen display.
TrueView	Toggle between normal (stitch) view and TrueView™.		

Design menu

Show >	Access same design viewing commands as available on View toolbar.	Design properties	Display design information such as size and number of stitches, and add comments to print to worksheet.
Hoop	Show / hide hoop display.		
Hoop template	Show hoop template as an alternative to grid lines, in order to align design at correct location and orientation.	Select machine format	Select machine format corresponding to embroidery machine you intend to use.
		Machine format settings	Define values to encode when outputting to a specific machine format.
Show grid	Toggle on/off grid display.		
Show rulers & guides	Toggle on/off rulers and guides.		
Zoom >	Zoom in to selected area of the design.		

Auto fabric	Change current fabric type and associated settings.
Auto hoop	Prompt system to select a suitable hoop from My Hoops list.
Background & display colors	Access Background & Display Colors dialog for background colors, swatches, and product templates.
Auto start & end	Access automatic design start/end settings.
Remove small stitches	Automatically remove unwanted small stitches.
Repeats	Use in combination with the Show Repeats tool to access settings for use with continuous and overlapping designs.
Design repeat	Same as Repeats command but only works for Schiffli machines.

Object menu

Make properties current	Make properties of a selected object current for the design.
Apply current properties	Apply current settings to selected objects.
Apply favorite style	Assign up to 10 favorite styles via Manage Styles. Select object and click button to apply.
Apply style	Apply predefined style to selected objects.
Use for Florentine / Liquid effect	Make guidelines for Florentine or Liquid effects.
Create motif	Add individual motifs to a design. Save own motifs for future use.
Create program split	Turn embroidery or drawing objects into patterns for use in Program Split fills.
Create letter	Access command used in custom fonts. See Custom Lettering for details.
Create user-refined letter	Save a reshaped letter as a 'user-refined letter'. Only available when selected in Reshape mode.

Update kerning settings	Update kerning settings for contiguous pairs of selected letters of the same font. Only available when Automatic Kerning is in use.
Create sequin shape	Define your own sequin shapes with their own hole position and size. Save to a custom sequin library.
Create sequin fixing	Define custom fixing stitches to support multi-head sequin devices.
Set color	Change color of consecutive objects of same color.

Arrange menu

Group / Ungroup	Group or ungroup selected objects.
Lock / Unlock all	Lock selected objects or unlock all objects in a design.
Branching	Automatically sequence and group like embroidery objects.
Apply closest join	Join selected objects at the closest point. Re-apply closest join after editing.
Break apart	Split branched objects – monograms, appliqués, lettering, etc – into components. Allows each to be edited individually.
Sequence >	Resequence selected objects in order selected, or resequence objects by color to reduce color changes.
Align >	
Space evenly >	Same functions as the Arrange toolbar. See Arrange tools for details.
Make same size >	
Shaping >	Same functions as the Shaping toolbar.
Remove overlaps	Remove the underlying layer of stitching in overlapping objects.

Function menu

Penetrations	Toggle Penetrations function on/off. Engage needles or borers, or disengage to create jumps.
Borers	Toggle Borers function on/off.

Insert Stop	Insert Stop function at current stitch cursor position.	Remove crop	Remove crop.
Insert Tie-off	Insert a tie-off.	Finalize crop	Turns a 'virtual crop' into a 'hard crop' by reducing an image to its new visible extents.
Insert Trim	Insert a trim.		
Insert Empty stitch	Insert an empty stitch.	Prepare bitmap colors	Prepare bitmap images for automatic digitizing.
Insert Empty jump	Insert an empty jump.	Edit using >	Edit bitmaps using Paint, Corel PHOTO-PAINT, or Paint Shop Pro.
Insert function	Insert machine function at current stitch cursor position.	Turning satin object	Fill narrow column shapes with turning stitching.
Clear function	Remove machine functions from the current stitch cursor position.	Tatami fill object with holes	Fill large shapes with tatami stitching, preserving any holes
Edit function	Edit machine function at current stitch cursor position.	Tatami fill object	Fill large shapes with tatami stitching, ignoring any holes.

Stitch menu

Generate stitches	Generate stitches for selected objects.	Centerline run object	Create centerlines in narrow shapes with Run stitching.
Stitch edit selection	Select a range of objects as you travel through the design.	Outline run object	Create outlines around shapes with Run stitching.
Process stitches	Adjust stitch density of and/or scale whole or selected parts.	Auto trace to vectors	Convert artwork to vector objects. These can be converted to embroidery objects.
Recognize objects / outlines	Recognize new or revised object outlines after stitch editing – use with machine files opened without object/outline recognition.	Adjust bitmap	Adjust image lightness and contrast.
		Photo Flash	Create whole embroidery designs directly from photographs.
Split object	Split object in two at current needle position. Use with Travel by Stitch functions.	Color PhotoStitch	Automatically turn photographs and other bitmap artwork into multi-colored embroidery.

Graphics menu

Import graphic	Import artwork into current design as a backdrop for manual or automatic digitizing.	Reef PhotoStitch	Automatically turn photographs into reef-like embroidery.
		Add bitmap colors	Assign matching thread colors from selected chart/s to the current colorway.
Instant smart design	Automatically create embroidery from imported artwork instantly.		
Smart design	Create whole embroidery designs directly from imported artwork.		

Setup menu

Keep graphic objects	Retain original artwork during conversion.	Options	Access current settings for design window object display.
Color matching method	Match colors from inserted bitmap or vector graphic to thread colors in selected chart/s	Manage thread charts	Define your own thread charts. When you create a thread chart, you are creating a store of colors for future use.
Crop bitmap	Crop bitmap images to remove unnecessary detail and save processing time.	Manage auto fabrics	Modify existing fabric definitions and create new ones.

Manage styles	Define new styles for a template, either from scratch or based on an existing style or object.
My hoops	Configure My Hoop list to include only hoops available for use.
Manage motifs	Manage your custom motif sets.
Manage user-refined letters	Adjust height range and other settings for custom 'user-refined' letters.
Manage sequin fixing	Rename or delete custom sequin fixings from the library. See also Object > Create Sequin Fixing.
Manage sequin shape	Rename or delete custom sequin shapes from the library. See also Object > Create Sequin Shape.
Manage alphabets	Modify custom alphabets by changing names, default letter spacings and join types.
Convert TrueType font	Convert a TrueType font to an embroidery font.
Calibrate screen	Set up your monitor.
Connection Manager setup	Connect to machines that appear as removable media or make use of third-party connection software.
Tablet setup	Set up digitizing tablet.
Scanner setup	Set up Scanner.
Bling machine setup	Set up direct connection to CAMS automatic rhinestone placement machine.
Machine runtime setup	Set up multiple named machines for the purposes of runtime analysis.
Security device setup	Show/set security device.

Window menu

New tab group...	Split the design window into a second tab group, either vertical or horizontal. Each tab group can contain multiple designs.
Move to tab group...	Move a current design to the other design tab. Can also be dragged to the other design group.

Remove tiling	Remove tab groups and split windows and return to a single design window.
Split window	Split design tab into multiple views of the same design.
Dockers >	Show/hide dockers to optimize working area.
Toolbars >	Show/hide toolbars to optimize working area.
Kiosk	Lettering kiosk capability for cap and other embroidery for use at retail outlets where simple personalization of standard design layouts is required.
More windows	View more open windows.

Help menu

EmbroideryStudio provides various ways to access information about the software and how to use it via the **Help** menu. See Resources & support for details.

EmbroideryStudio toolbars

The **Wilcom Workspace** contains the toolbars described below. Some tools are shortcuts to pulldown menu commands. Details of optional toolbars are provided in the onscreen documentation.

Note: Only the most commonly used toolbars are on by default.

Standard tools

The **Standard** toolbar contains commonly used tools and commands, specific to and only visible in **Wilcom Workspace**.

	New design	Create a new design file.
	Open design	Open an existing embroidery design.
	Open recent designs	Open a design from a list of recently opened designs.

	Save design	Save the current design file.
	Export machine file	Export the current design to a machine file for stitching.
	Print	Print the current design file.
	Print preview	Preview design worksheet/approval sheet. Print from preview window.
	Cut	Cut selection and place on Clipboard.
	Copy	Copy selection and place on Clipboard.
	Paste	Paste contents of Clipboard. Options available in Options > Edit tab.
	Undo	Undo previous action.
	Redo	Redo previously undone action.
	Import embroidery	Import embroidery design file into current design.
	Import graphic	Import artwork into current design as a backdrop for manual or automatic digitizing.
	Export multi-decoration files	Export mixed decoration design components as file formats for use by control software or machine.
	Send to Connection Manager	Send current design to machine via proprietary machine software.
	Send to Embroidery Connect	Send the current design to a named EmbroideryConnect device.
	Queue Design	Send the current design to the EmbroideryConnect design queue.
	Send to appliqué cutter	Send appliqué shapes from design file to laser cutter.
	Send to bling cutter	Send vectors for any bling in a multi-decoration design to a supported cutting machine. Configure the machine via Setup.

		Zoom Scale: Select zoom scale from droplist
	Options	Access application options for design view, grid & guides, and other settings.

Property bar

Adjust general object properties – width, height, position – by means of the **Property Bar**. Changes to the values are applied by pressing **Enter** on the keyboard. They are discarded when you press **Esc** or click anywhere outside the fields. See Access object properties for details.
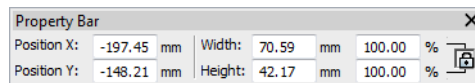
Status & Prompt bars

The **Status** and **Prompt** bars provide continuous display of current cursor position status as well as instructions for use of selected tools. See Operating modes for details.

View tools

Use the **View** tools to visualize your designs – e.g. as design outlines, by stitches, by machine functions, as they will stitch out on the fabric. Right-click to access settings. See also Viewing Designs.

	TrueView	Toggle between stitch view and TrueView™.
	Show stitches	Toggle embroidery stitching display.
	Show outlines	Toggle object outlines display.
	Show needle points	Toggle needle point display.
	Show connectors	Toggle connecting stitch display.
	Show functions	Toggle display of machine function symbols.

	Show repeats	Toggle design repeats display.
	Show bitmaps	Toggle bitmap images on or off.
	Show vectors	Toggle vector graphic display.
	Dim artwork	Dim graphic backdrops to show stitches more clearly for digitizing.
	Show appliqué fabric	Toggle appliqué fabric display.
	Show product	Toggle current product display. Right-click for Product Visualizer settings.
	Show bling	Toggle rhinestone (bling) display.
	Flip Sequins	Toggle between front and reverse sides of sequin runs and fills in reversible sequin designs.
	Show hoop	Toggle hoop display.
	Show grid	Toggle grid display.
	Show rulers & guides	Toggle rulers & guides display.
Metric ▾		Measurement units: Change measurement units within software without changing system settings.
	Auto hoop	Prompt system to select a hoop from My Hoops list. Right-click Show Hoops for settings.
	Auto start & end	Set auto start and end points for entire design.
	Stitch player	Simulate embroidery design stitchout on screen.

Zoom tools

Use the **Zoom** tools to magnify the design view by zooming in on individual stitches or details. See Zoom & pan designs for details.

	Zoom	Zoom in or out via left and right mouse clicks, or drag a selection marquee to view design detail.
	Zoom 1:1	Display design at actual size.
149 ▾		Zoom factor: Select zoom scale from the droplist or key in a zoom factor and press Enter.
	Zoom to fit	Display whole design in design window.
	Zoom to selected	Magnify only selected objects.
	Zoom to product	View entire product in the design window.
	Zoom to hoop	Display entire hoop in the design window.

Mode tools

The **Mode** tools control interactions between **Wilcom Workspace** and **CorelDRAW Graphics**.

	Home	Revisit the Home screen to get started with a new design, or access tutorials and other product information.
	Wilcom Workspace	Access full embroidery creation and editing toolset.
	CorelDRAW Graphics	Access full graphic creation and editing toolset.
	Design Library	Open the Design Library window from which to search and catalogue designs as well as quotes, orders, and approvals.
	Convert embroidery to graphics	Convert selected embroidery to vector graphics and switch to CorelDRAW Graphics.
	Convert graphics to embroidery	Convert selected graphics to embroidery and switch to Wilcom Workspace.

	Tag as appliqué	Tag vector lettering for conversion to appliqué embroidery lettering with turning stitching.	

	Tag as appliqué	Tag vector lettering for conversion to appliqué embroidery lettering with turning stitching.
	Tag fill as turning satin	Use this tag only for narrow vector objects, such as lettering-like vectors.
	Tag as Photo Flash	Convert photos to Photo Flash embroidery.
	Keep graphic objects	Keep original objects after conversion.
	Match to embroidery palette	Toggle thread-color matching for converted vector objects.
	Show embroidery	Toggle embroidery object display.
`96 ▾ dpi`		Virtual Decoration Quality: set the rendering quality of embroidery TrueView for a virtual decoration.

Docker tools

Use the **Docker** tools to toggle modeless dialogs (dockers) on or off. See also Work with dockers.

	Design information	Access design details including job order details.
	Overview window	Toggle Overview Window display. View and pan thumbnail of current design.
	Object properties	Toggle Object Properties display. Use it to preset properties or adjust for selected objects.
	Color-object list	Toggle Color-Object List display. View and sequence design objects.
	Colorway editor	Toggle Colorway Editor display. Assign thread colors to color palette and define colorways.
	Threads	Show or hide the Threads docker to find threads from different charts and change design colors.

	Stitch list	Toggle Stitch List display. Use it to view, filter and select stitches.
	Team names	Toggle Teamname List display. Use it to view and edit individual team names.
	Carving stamp	Toggle Carving Stamp display. Create needle penetrations using a 'carving stamp' as template.
	Embroidery clipart	Toggle the docker display. Use it to record and recover re-usable embroidery elements.

Color tools

The **Color** toolbar contains a palette specific to and only visible in **Wilcom Workspace**. See Choosing threads for details.

`Blue ▾`		Current Colorway: switch between predefined colorways. Define via Colorway Editor.
	Colorway editor	Toggle Colorway Editor display. Use it to assign thread colors to color palette and define colorways.
	Background & display colors	Change design background and display color presets for the current colorway.
	Product visualizer	Toggle Product Visualizer docker display. Use it to edit the current product in the design window.
	Current color	Shows the current color.
	Pick color	Pick up a color from the design window and make it current.
	Apply current color	Apply the current color to embroidery objects.
	Add color	Add color slot to palette. Edit via the Colorway Editor.
	Remove color	Remove unused last color slot from color palette.
	Hide unused colors	Show or hide all unused colors in the color palette.

	Remove unused colors	Remove unused colors from the palette.
	Split palette color	Split selected color into two color slots. Normally used with multiple colorways.
	Cycle used colors	Cycle through combinations of used colors. Left- or right-click.
	Color wheel	Access Color Wheel to test combinations of related colors.
	Threads	Show or hide the Threads docker to find threads from different charts and change design colors.

Colorway Editor

The **Colorway Editor** contains tools for editing colorways.

	Create colorway	Add a new colorway to the design.
	Rename colorway	Rename selected colorway.
	Delete colorway	Delete selected colorway.
	Move colorway left	Move selected colorway in Colorway Editor to right or left.
	Move colorway right	
	Background & display colors	Change design background and display color presets for the current colorway.
	Edit color	Edit specification and color of the selected color slot.
	Show colorway details	Toggle display between current colorway and all colorways.
	Hide unused colors	Show or hide all unused colors in the color palette.

Toolbox tools

The **Toolbox** contains embroidery digitizing/editing tools specific to and visible only in **Wilcom Workspace**. By default, the

Toolbox docks vertically to the left of screen but can be floated, re-configured, and docked like any other toolbar.

	Select	See Selection tools for details.
	Reshape	See Reshape tools for details.
	Edit	See Edit tools for details.
	Lettering	Create embroidery lettering onscreen using native embroidery fonts or TrueType fonts. Right-click for settings.
	Team names	Toggle Teamname List display. Use it to view and edit individual team names.
	Monogram-ming	Create monograms using a selection of predefined monogramming styles, border shapes and ornaments.
	Simple offsets	Create simple outlines for any filled embroidery or closed vector object.
	Outlines & offsets	Create outlines and offsets of any type for any filled embroidery or closed vector object.
	Open offsets	Create precise offsets for any open embroidery or vector object.
	Add border	Add borders to designs (or selected objects) from a border library.
	Color blending	Generate color blends, perspective effects and shading in selected objects.
	Auto-digitizing	See Property bar for details.
	Envelope	See Envelope tools for details.
	Arrange	See Arrange tools for details.
	Shaping	See Shaping tools for details.

Selection tools

Use the **Select** tools to select embroidery objects in a variety of ways. See Selecting objects for details.

	Select object	Click to select individual objects. Use with Ctrl or Shift keys to select groups or ranges of objects. Drag a selection marquee to select multiple objects.
	Freehand select	Select object by drawing a freehand line around it.
	Select current	Select object at current cursor position.
	Polygon select	Select objects by digitizing a selection marquee around them.
	Polyline select	Select objects by digitizing a line through them.

Reshape tools

Use the **Reshape** tools to reshape objects with control points as well as edit individual stitches. See Reshaping embroidery objects for details. See also Stitches & Machine Functions.

	Reshape object	Reshape selected objects, edit stitch angles, and adjust entry/exit points.
	Show reshape nodes	Toggle reshape nodes for selected objects.
	Show bézier handles	Toggle Bézier handles for selected objects. (Only available when the Bézier reshape option is selected in the Options > Reshape tab.)
	Show stitch angles	Toggle stitch angles for selected objects.
	Show entry/exit	Toggle entry (green diamond) and exit (red cross) points for selected objects.
	Stitch edit	Select individual stitches for editing.

	Keep last stitch	Keep last stitch in a column.
	Omit last stitch	Omit last stitch in a column.

Edit tools

Use the **Edit** tools for object editing operations. See Reshaping Objects for details.

	Break apart	Split branched objects – monograms, appliqués, lettering, etc – into components. Allows each to be edited individually.
	Knife	Cut objects along a digitized line, preserving stitch settings and colors.
	Automatic knife	Slice large objects into smaller ones with automatic overlaps.

Envelope tools

Envelopes are typically applied to lettering objects, but they can also be applied to other types of embroidery object. See Applying envelopes for details.

	Bridge envelope	Make lettering object to make it bulge or arch.
	Pennant envelope	Make objects compress.
	Perspective envelope	Make objects bulge or stretch.
	Diamond envelope	Make objects bulge or compress.
	Delete envelope	Delete envelopes from selected objects.

Arrange tools

Use the **Arrange** tools for moving, aligning and distributing objects, as well as grouping and locking operations. See Transforming Objects for details.

	Group	Group selected objects.
	Ungroup	Ungroup selected grouped objects.

🔒	Lock	Lock selected objects.
🔓	Unlock all	Unlock all locked objects in design.
	Branching	Automatically sequence and group like embroidery objects.
	Apply closest join	Join selected objects at the closest point. Re-apply closest join after editing.
	Break apart	Split branched objects – monograms, appliqués, lettering, etc – into components. Allows each to be edited individually.
	Align left	Left-align selected objects.
	Align centers vertically	Align centers of selected objects vertically.
	Align right	Right-align selected objects.
	Align top	Align tops of selected objects.
	Align centers horizontally	Align centers of selected objects horizontally.
	Align bottom	Align bottoms of selected objects.
	Align centers	Align selected objects through their centers.
	Space evenly across	Distribute selected objects evenly across design window.
	Space evenly down	Distribute selected objects evenly down design window.
	Make same width	Scale selected object/s to same width as last-selected reference object.
	Make same height	Scale selected object/s to same height as last-selected reference object.
	Make same width & height	Scale selected object/s to same size as last-selected reference object.

Traditional digitizing tools

The **Traditional Digitizing** toolset provides all the input methods embroidery digitizers are familiar with. Traditional digitizing methods divide into three main categories – 'free shapes', 'column shapes', and 'outlines'. See also Embroidery digitizing.

	Outlines	See Outline tools for details.
	Backtrack	Reinforce an outline, stitching it in the reverse direction to the original.
	Repeat	Duplicate an outline in the same direction – typically used with closed shapes.
	Column A	Digitize column of turning stitches of varying width.
	Column B	Digitize column of turning stitches, where opposite sides are different.
	Column C	Digitize column or border of fixed width.
	Complex fill	Digitize filled shape with a single stitch angle in the current stitch type – outline only.
	Complex turning	Digitize filled shape with turning stitches in the current stitch type – outline only.
	Star	Digitize star shape filled with zigzag stitching.
	Ring	Digitize circle and oval-shaped ring.
	Manual	See Manual stitch tools for details.
	Use motif	Add motifs to design one-by-one. Rotate, scale, or mirror as you add.
	Branching	Automatically sequence and group like embroidery objects.

Outline tools

Use the **Outline** tools for digitizing embroidery outlines. See Digitizing outlines & details for details.

	Digitize run	Place a row of single or triple run stitches along a digitized line.
	Triple run	

	Motif Run	Place a row of motifs along a digitized line.
	Backstitch	Place a row of backstitches along a digitized line.
	Stemstitch	Place a row of stemstitches along a digitized line.

Manual stitch tools

The **Manual** tools are used for digitizing individual stitches. Enter single stitches or three stitch layers at a time. See Digitizing manual stitches for details.

	Manual	Digitize individual 'manual' stitches. Manual objects have no outlines, only stitches. Stitch density does not change.
	Triple manual	Digitize triple 'manual' stitches. Manual objects have no outlines, only stitches. Stitch density does not change.

Graphics digitizing tools

Graphics Digitizing tools operate in a similar way to **CorelDRAW® Graphics Suite** or other graphics applications. Assign a stitch type to a digitized shape from **Outline Stitch** or **Fill Stitch** toolbars. See also Digitizing with graphical tools. See also Appliqué Embroidery.

	Digitize open shape	Digitize open object in the current stitch type – outline only.
	Digitize closed shape	Digitize closed object in the current stitch type – outline or fill.
	Digitize column	Digitize column of varying width in the current stitch type – outline or fill.
	Rectangle	Digitize rectangle or square in the current stitch type – outline or fill. Press <Ctrl> to constrain.
	Ellipse	Digitize ellipse or circle in the current stitch type – outline or fill.

	Basic shapes	Digitize basic shapes. Press <Ctrl> to keep the proportion of the shape. Press <Shift> to center at the first point entered.
	Freehand open shape	Draw open freehand object in the current stitch type – outline only.
	Freehand closed shape	Draw closed freehand object in the current stitch type – outline or fill.
	Stitch angles	See Stitch angle tools for details.
	Holes	See Hole tools for details.
	Appliqué	See Appliqué tools for details.

Stitch angle tools

Add or remove stitch angles with the **Stitch Angle** tools. See Adjusting stitch angles for details.

	Stitch angles	Add stitch angles to selected objects.
	Remove stitch angles	Remove stitch angles from closed objects with turning stitches.

Hole tools

Hole tools are used to cut as well as fill holes in embroidery objects. See Adding & filling holes for details.

	Add holes	Add hole/s to selected filled object.
	Remove holes	Remove hole/s from selected object.
	Fill holes	Fill hole/s in selected object. Choose an exact fit or offset the edges.

Appliqué tools

Appliqué tools are specialized for appliqué work. Use them to create appliqué objects, resequence objects for efficient stitchout, as well as generate partial cover stitching for

overlapping appliqué. See Appliqué Embroidery for details.

	Appliqué	Digitize appliqué object with up to four layers of stitching – guide runs, cutting lines, tack stitches, and cover stitches.
	Appliqué without holes	Digitize single-boundary appliqué object with up to four layers of stitching – guide runs, cutting lines, tack stitches, and cover stitches.
	Combine appliqué	Combine and sequence components of selected appliqué objects for efficient stitchout.
	Partial appliqué	Create partial cover stitching for overlapping appliqué objects.
	Remove overlaps	Remove underlying layer of stitching in overlapping objects using the selected object as a 'cutter'.

Auto-digitizing tools

Auto-Digitizing tools provide everything necessary to automatically digitize shapes in electronic artwork, both bitmap and vector, without using manual input methods. See Auto-digitize individual shapes for details.

	Instant smart design	Automatically create embroidery from imported artwork instantly.
	Smart design	Create whole embroidery designs directly from imported artwork.
	Keep graphic objects	Retain the original artwork during conversion.
	Color matching method	Toggle thread color matching for auto digitizing.
	Crop bitmap	Crop bitmap artwork for use with auto-digitizing tools.
	Remove crop	Click to remove cropping area.
	Finalize crop	Make cropping permanent. Once finalized, cropping cannot be removed.

	Prepare bitmap colors	Prepare bitmap images for automatic digitizing.
	Turning satin object	Fill narrow column shapes with turning stitching.
	Tatami fill object with holes	Fill large areas with tatami stitching, preserving any holes.
	Tatami fill object	Fill large areas with tatami stitching, ignoring any holes.
	Centerline run object	Create centerlines in narrow shapes with Run stitching.
	Outline run object	Create outlines around shapes with Run stitching.
	Auto trace to vectors	Convert artwork to vector objects. These can be converted to embroidery objects.
	Adjust bitmap	Adjust image lightness and contrast in preparation for auto-digitizing.
	Photo Flash	Create whole embroidery designs directly from photographs.
	Color PhotoStitch	Automatically turn grayscale or color photograph into embroidery.
	Reef PhotoStitch	Automatically turn photographs into reef-like embroidery.

Stitch type tools

The **Stitch Type** toolbars provide a range of basic outline and fill stitch types as well as those of a more artistic or decorative nature. Outlines stitches can generally be applied to open or closed shapes. Right-click to access stitch settings. See also Stitch Types.

Outline stitches

	Run	Create single stitch run outlines and details.
	Sculpture run	Create alternating triple-single stitch run for a hand-stitched look.
	Triple run	Create heavier triple stitch outlines and details.

	Backstitch	Create traditional backstitch outlines for delicate borders.
	Stemstitch	Create traditional stemstitch outlines for decorative details such as stems and vines.
	Motif run	Create ornamental craftstitch outlines. Choose from a motif library.
	String	Create string craftstitch outlines for delicate borders.
	Satin	Create glossy satin borders or columns of even width.
	Satin raised	Create layered satin borders or columns of even width for a raised surface.
	Zigzag	Create borders or columns of even width for an open 'sawtooth' effect.
	E stitch	Create borders or columns of even width for an open 'comb' effect.
	Tatami	Create borders or columns of even width for different needle penetration patterns.
	Program split	Create borders or columns of even width for decorative needle penetration patterns.
	Square	Create borders or columns of even width for an open 'toothed' effect.
	Coil	Create borders or columns of even width for an open 'coil' effect.
	Contour	Use for contoured stitching following borders or columns of even width.
	Vector outline	Create vector outlines without stitch properties.

Fill stitches

	Satin	Create glossy satin fills for narrow shapes.
	Satin raised	Create layered satin fills for a raised surface.
	Zigzag	Create zigzag fills for an open 'sawtooth' effect.
	E stitch	Create E stitches for an open 'comb' effect.
	Tatami	Create solid stitching for large shapes with different needle penetration patterns.
	Coil	Create open coil fills.
	Square	Create open straight parallel fills.
	Double square	Create grid fills.
	Island coil	Create concentric rows of coil fills.
	String	Create string craftstitch fills.
	Program split	Create solid decorative fills using needle penetrations to form tiled patterns.
	Motif	Create decorative fills using embroidery motifs to form repeating patterns. Choose from a motif library.
	Motif column	Place motifs along the center line of a column shape and resize to fit. Right-clicking for settings.
	Cross stitch	Fill large areas with cross stitching on an invisible grid that applies to all design objects.
	Contour	Create curved fills where stitches follow contours of a shape.
	Spiral	Create spiral stitching radiating from the center of the object.
	Maze Fill	Create maze-like stitching which follows object contours for open fills.
	Offset	Create offset fill stitching in any closed shape.
	Stipple	Create a stipple fill which meanders randomly within a shape.
	Stipple backstitch	Create a stipple backstitch fill which meanders randomly within a shape.

	Stipple stemstitch	Create a stipple stemstitch fill which meanders randomly within a shape.
	Vector fill	Create vector fills without stitch properties.

Stitch effect tools

Use the **Stitch Effects** tools for modifying or improving stitch quality, including applying automatic underlay to selected objects. Right-click for settings.

	Auto underlay	Generate automatic underlay for selected objects.
	Pull compensation	Apply to selected objects to compensate for fabric stretch.
	Auto jump	Preserve long stitches in new and selected objects.
	Shortening	Reduce stitch bunching in tight curves by shortening stitches along inside edge.
	Fractional spacing	Even out stitch density along inside and outside edges.
	Mitre corners	Create sharp mitre corners at intersections.
	Cap corners	Create capped corners for fewer stitches.
	Lap corners	Create 'Tidori' style corner stitching.
	Jagged edge	Create rough edges, shading effects, or imitate fur and other fluffy textures in selected objects.
	Trapunto	Force underlying travel runs to the edges of selected objects. Use with open stitching.
	User-defined split	Create custom split-line effects.
	Accordion spacing	Create perspective and shading effects with stitch spacing varying between dense and open fill.

	Flexi split	Create decorative split patterns following stitch angles and scaled according to object width.
	Radial fill	Create radial turning stitching with various stitch types including satin, tatami and program splits. Can be applied to ring shapes.
	Florentine effect	Create custom curve-line stitching with a single guideline.
	Liquid effect	Create custom curve-line stitching with twin guidelines.
3D	3D Warp	Create 3D effects in selected motif fills.
	Hand Stitch Effect	Create hand-stitch effects which combine randomized stitch length, angle and count.
	Cording	Apply cording effect to new or selected objects with run stitching.

Mirror-merge tools

Mirror Merge tools allow you to duplicate and transform selected embroidery objects, as well as merge them into a single object. See Mirroring objects for details.

	Mirror copy horizontal	Duplicate and mirror horizontally and merge overlapping objects (optional).
	Mirror copy vertical	Duplicate and mirror vertically and merge overlapping objects (optional).
	Mirror copy horizontal & vertical	Duplicate and 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. Create decorative borders.
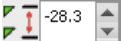
	Wreath	Duplicate objects around a center point. Create wreath designs.
	Kaleidoscope	Mirror paired objects in a wreath.

Mirror merge settings
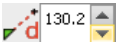
	`2`	Rows: Set number of rows in the array.
	`-28.3`	Row spacing: Set spacing between rows in the array.
	`2`	Columns: Set number of columns in the array.
	`113.7`	Column spacing: Set spacing between column in the array.
	`4`	Wreath points: Set number of duplicates (including source). Kaleidoscope works best with an even number.
	`130.2` `-35`	Set precise distance and angle – measured from center of source object to center of wreath or kaleidoscope.

Shaping tools

When working with overlapping vector or embroidery objects, you can merge, trim or split them with the **Shaping** tools. See Shaping objects for details.

	Weld	Merge selected overlapping objects into a single 'flattened' object.
	Intersect	Trim selected overlapping objects so that only intersected areas remain.
	Exclude	Trim selected overlapping objects and preserve individual properties.
	Front-back	Trim selected overlapping objects so that only non-overlapping areas of the topmost object remain.
	Back-front	Trim selected overlapping objects so that only non-overlapping areas of the bottommost object remain.

	Flatten	Trim all overlaps in selected overlapping objects.
	Divide	Split selected objects into separate adjoining objects wherever they intersect.
	Combine	Merge properties of selected overlapping objects and trim overlapping areas.
	Keep original objects	Keep original objects after shaping operations.
	`1.00`	Overlap: Adjust object overlaps resulting from Flatten or Divide shaping operations.

Sequence tools

Sequence tools are used to resequence selected objects. Use them in conjunction with the **Color-Object List**. See Sequencing embroidery objects for details.

	Back 1 object	Move a selection back one object in the stitching sequence.
	Forward 1 object	Move a selection forward one object in the stitching sequence.
	Back 1 color	Move a selection back one color in the stitching sequence.
	Forward 1 color	Move a selection forward one color in the stitching sequence.
	Move to start	Move a selection to start of stitching sequence.
	Move to end	Move a selection to end of stitching sequence.
	Sequence by selects	Resequence objects in the order selected.
	Sequence by color	Resequence all blocks of like color. (To maintain separate color blocks, use the Color-Object List.)

Transform tools

Use the **Transform** tools to mirror, rotate and skew objects. See Transforming Objects for details.

	Mirror horizontal	Flip selected objects horizontally.
	Mirror vertical	Flip selected objects vertically.
	Mirror by reference line	Mirror objects around a defined axis using a reference line.
	Rotate left 15°	Rotate selected objects by 15° in counter-clockwise direction.
	Rotate right 15°	Rotate selected objects by 15° in clockwise direction.
		Rotate: Rotate selected objects by specified amount – positive or negative – in degrees.
		Skew: Skew selected objects by specified amount – positive or negative – in degrees.
	Transform by reference line numerically	Transform selected objects using a combination of reference points and numeric values.
	Transform by reference line freely	Rotate selected objects with the aid of reference points alone.

Styles tools

Use the **Styles** toolbar to apply predefined styles to a design. The tools let you:

‹ Apply current settings to selected objects
‹ Change current settings, and
‹ Apply styles to selected objects.

The styles you select as 'favorites' are each assigned a tool icon on the toolbar. See Working with styles for details.

	Make properties current	Make properties of a selected object current for the design.
	Apply current properties	Apply current settings to selected objects.
	Favorite style	Assign up to 10 favorite styles via Manage Styles. Select object and click button to apply.
	Apply style	Apply predefined style to selected objects.

Stitch editing tools

Use the **Stitch** tools for stitch editing and processing operations. See also Stitches & Machine Functions.

	Generate stitches	Generate stitches for selected objects.
	Stitch edit	Select individual stitches for editing.
	Selects on / off	Select a range of objects as you travel through the design.
	Process stitches	Adjust stitch density of and/or scale whole or selected parts.
	Split object	Split object in two at current needle position. Use with Travel by Stitch functions.

Function tools

Use the **Function** tools to insert machine functions manually. See Stitches & Machine Functions for details.

	Penetrations	Toggle Penetrations function. Engage needles or borers, or disengage to create jumps.
	Borers	Toggle Borers function. Use for cutting holes in fabric.
	Insert Stop	Insert Stop function at current stitch cursor position.
	Insert Tie-off	Insert Tie-off function at current stitch cursor position.
	Insert Trim	Insert Trim function at current stitch cursor position.
	Insert Empty stitch	Insert Empty stitch function at current stitch cursor position.
	Insert Empty jump	Insert Empty jump function at current stitch cursor position.
	Insert function	Insert machine function at current stitch cursor position.

	Clear function	Remove machine functions from current stitch cursor position.
	Edit function	Edit machine function at current stitch cursor position.
	Slow	Insert Slow function to decrease machine speed.
	Fast	Insert Fast function to increase machine speed.

Warning: When you insert stitches or machine functions manually, you must maintain them manually. If an object's stitches are regenerated for any reason, all stitch editing and machine functions are lost.

Legacy feature tools

Newer machines use USB and wired or wireless network connections. Older machines use serial ports or even proprietary embroidery disks. Use the **Legacy Features** for connecting to older style machines. See Embroidery Output for details.

	Send to Machine Manager	Send multiple designs to machine from EmbroideryStudio or DesignWorkflow and view or manage job queues.
	Send to Stitch Manager	Send current design direct to embroidery machine for production.
	Embroidery disk	Open designs from or save to proprietary embroidery disk formats.
	Hardware setup	Set up a machine connection with name, port, and protocol.

Travel tools

Use the **Travel** tools to view the stitching sequence of a design color-by-color, object-by-object, or stitch-by-stitch. Traveling can be initiated from any stitch in a design. See Viewing stitching sequence for details.

	Start / end design	Move stitch cursor to the start/end of design. Left/right-click.
	Travel by object	Move stitch cursor to the next/previous object. Left/right-click.
	Travel by segment	Move stitch cursor to the next/previous segment. Left/right click.
	Travel by color	Move stitch cursor to the next/previous color change. Left/right click.
	Travel by function	Move stitch cursor to the next/previous machine function. Left/right click.
	Travel by trim	Move stitch cursor to the next/previous Trim function. Left/right click.
	Travel 1000 stitches	Move stitch cursor forwards/backwards 1000 stitches at a time. Left/right click.
	Travel 100 stitches	Move stitch cursor forwards/backwards 100 stitches at a time. Left/right click.
	Travel 10 stitches	Move stitch cursor forwards/backwards 10 stitches at a time. Left/right click.
	Travel 1 stitch	Move stitch cursor forwards/backwards 1 stitch at a time. Left/right click.

Sequin tools

Use the **Sequin** tools to digitize sequined designs for compatible machines. There are also tools for creating boring holes. See Sequin Embroidery for details.

	Sequin palette editor	Select sequins for the design from a sequin library.
A 5.0		Sequin Palette: Select sequin shapes for the current design.
A	Manual sequin	Digitize individual sequin drops. Right-click for settings.

	Left sequin	Switch to left sequin when digitizing twin-sequin designs.
	Right sequin	Switch to right sequin when digitizing twin-sequin designs.
	Sequin run auto	Create a string of sequins along a digitized line. Right-click for settings.
	Sequin run manual	Digitize sequin-drops along a digitized line. Right-click for settings.
	Sequin fill	Digitize and fill larger shapes with sequins. Right-click for settings.
	Sequin edit	Fine-tune placement of individual sequins within selected sequin objects.
	Vectors to sequins	Create sequin runs from sequin artwork. Digitize a guideline connecting the sequins to include within a run.
	Drop sequin	Drop a sequin at the current needle position. For twin-sequin machines, left-click to drop a left-sequin, right-click to drop a right-sequin.
	Clear function	Remove any sequin functions from the current needle position.

Bead tools

Use the **Bead** tools to create bead runs as well as fills for compatible machines. See Bead Embroidery for details.

	Bead palette editor	Select shapes from a bead library, and define bead colors and sizes.
	Manual bead	Digitize individual beads.
	Bead run auto	Create a string of beads along a digitized line according to current settings.
	Bead run manual	Manually digitize bead-drops along a digitized line.
	Bead edit	Fine-tune placement of individual beads.
	Clear function	Remove any bead functions from the current needle position.

Bling tools

Use the **Bling** tools to create bling runs as well as fills for compatible machines. See Bling Digitizing for details.

	Bling palette editor	Select rhinestones for the design from a bling library.
	Bling manual	Digitize individual bling drops.
	Bling run auto	Create a string of rhinestones along a digitized line. Right-click for settings.
	Bling fill	Digitize and fill larger shapes with rhinestones. Right-click for settings.
	Bling lettering	Create bling lettering onscreen using native embroidery fonts or TrueType fonts. Right-click for settings.
	Automatic overlap removal	Toggle on to remove excess rhinestones in overlapping Bling objects.
	No automatic overlap removal	Toggle on to preserve rhinestones in overlapping Bling objects.
	Highlight bling overlaps	Toggle on to highlight overlapping rhinestones. Use with manual edits.
	Bling edit	Fine-tune placement of individual rhinestones within selected Bling objects.
	Show bling work area	Visualize design within the work area of the selected machine model. Right-click for settings.

Chenille tools

If you have the **Chenille** option installed, the Wilcom Workspace will include a **Chenille** toolbar containing specific Chenille stitch types and machine functions. See

Chenille User Manual Supplement for details.

⚡	Chain	Create decorative stitching resembling links of a chain – used for outlines and borders as well as monograms.
⚡	Moss	Create dense cover using looped stitch typical of Chenille raised stitching – best with simple shapes.
⚡	Needle height	Control height of loop formed when sewing Moss stitch as well as width of Chain stitch.
⚡	Compound chenille	Use with Complex Fill to automatically generate Moss or Chain stitch run-arounds for complex shapes. Right-click to adjust offsets.
⚡	View by Chain / Moss	View Chenille objects to allow easy identification of Chain and Moss elements – lockstitch in green, Chain in blue, Moss in red.

Schiffli tools

If you have the **Schiffli** option installed, the Wilcom Workspace will include a **Schiffli** toolbar containing specific Schiffli stitch types and machine functions. See Schiffli User Manual Supplement for details.

⚡	Blatt	Reduce thread tension.
⚡	Stepp	Increase thread tension.
⚡	End jump	Engage needles or borers.
⚡	Begin jump	Disengage needles or borers.
⚡	Slow	Decrease machine speed.
⚡	Fast	Increase machine speed.
⚡	Borer in	Engage borer.
⚡	Borer out	Disengage borer.

`7 ▾`		Borer depth: Determine borer hole size – valid depths are 1-13 for Plauen and 0-12 for Saurer.
⚡	RPM-	Decrease turning speed of machine.
⚡	RPM+	Increase turning speed of machine.
⚡	Fadenleiter-	Decrease Fadenleiter stroke by one increment.
⚡	Fadenleiter+	Increase Fadenleiter stroke by one increment.
⚡	Thread brake-	Decrease thread brake pressure.
⚡	Thread brake+	Increase thread brake pressure.
⚡	Drop sequin	Trigger a sequin drop.
⚡	Schiffli arrangement	Split designs into color blocks arranged into logical parts.

Manage design tools

Use the **Manage Designs** tools for fast searching of designs on shared network drives. This is important for businesses with multiple computers and multiple users creating and accessing EMB or machine format designs. See Design Management for details.

⚡	New from selected	Create new designs from a chosen template based on selected designs and/or bitmaps.
⚡	Open selected	Open all designs currently selected in the Design Library.
⚡	Open recent designs	Open a design from a list of recently opened designs.
⚡	Cut	Cut selection and place it on the clipboard.
⚡	Copy	Copy selection and place it on the clipboard.
⚡	Paste	Paste contents of the clipboard.

	Convert selected designs	Convert all designs currently selected in the Design Library to different file formats.
	Send to Connection Manager	Send a selected design to a connected and configured embroidery machine via proprietary machine software.
	Print selected	Print all designs currently selected in the Design Library to a connected and configured printer.
	Print selected to catalog	Print all designs currently selected in the Design Library to an HTML catalog.
	Export design list	Export a list of all design files visible in the Embroidery Library, together with associated design information, to CSV or TXT file.
	Manage embroidery library locations	Add or remove existing folders from the Embroidery Library, to enable fast searching and filtering.

View (Design Library) tools

Design Library allows for fast searching of designs on shared network drives. The **View** (Design Library) toolbar contains functions for quick search, sort, and location of designs on your company network. See Design Management for details.

	Layout	Toggle the navigation pane, details pane, and/or preview pane display.
	Design information	Toggle the Design information docker display. Use it to view or change design details, including order information.
	Change view	Change current view of design lists.
	Reset detail columns	Reset columns displayed in details view to the default layout.
Group by: `<None>`		Group by: Group the current list of designs by selected property and sort order.
	Ascending order	Sort designs in ascending or descending order.
	Descending order	
Sort by:		Sort by: Sort the current list of designs by selected property and sort order.
Showing: All-in-One Design Files		Showing: Filter the current list of designs by file type.
Search: General Enter any		Search: Filter designs based on specified search criteria – e.g. stitch range.

Keyboard shortcuts

In addition to shortcut keys, standard MS Windows® **Alt** key shortcuts apply in some cases. Use the **Alt** key with the letter underlined in the menu. To cancel an operation, press **Esc** twice.

General functions

To...	Press
open design	Ctrl+O or Alt+F+O
close design	Alt+F+C
export machine file	Shift+E
open Lettering dialog	A
open online help	F1
print design	Ctrl+P or Alt+F+P
save design	Ctrl+S
save as	Alt+F+A
send design to EmbroideryConnect	Shift+Alt+S
send design to EC Queue	Shift+Alt+Q
start new design	Ctrl+N
toggle Color-Object List	Shift+L
toggle Design Information docker	Alt+P
toggle Grid	Shift+G
toggle Overview window	Shift+V
toggle Stitch List	Shift+J
toggle measure tooltip	Ctrl+I
measure distance on-screen	M
cancel command	Esc
redo command	Ctrl+Y
undo command	Ctrl+Z
exit application	Alt+F4

Digitizing functions

To...	Press	or
activate Auto Trace To Vectors for selected artwork	Ctrl+M	
activate Branching	I	
activate Complex Turning	F2	
activate Complex Fill	F3	
activate Column A	F4	Shift+A
activate Column B	F5	
activate Column C	F6	
activate Backtrack		Shift+X
activate Appliqué	F7	

Digitizing functions (cont)

To...	Press	or
activate Single Run	F8	Shift+N
activate Triple Run	F9	
activate Motif Run	F10	
activate Backstitch	F11	
activate Stemstitch	F12	
apply Satin stitch	Shift+I	
apply Tatami stitch	Shift+M	
delete last input point	←Bksp	
finish digitizing object (keep last stitch)	Enter↵	
finish digitizing object (omit last stitch)	Spacebar	
finish digitizing free shape boundary	Enter↵	
generate stitches	G	
make combined vector object	Shift+H	
switch between fill and run stitch	Spacebar	
switch between fill and manual stitch	Enter↵	

Selecting objects

To...	Press
activate Select Object tool	O
deactivate Select Object tool	Esc
select all objects	Ctrl+A
deselect all objects	Esc or X
activate Polygon Select tool	Ctrl+L
select by color	Ctrl+Alt+A
select object at current needle position	Shift+O
select multiple objects	Ctrl+🖱
select range of objects	Shift+🖱
select next object	Tab⇆
select previous object	Shift+Tab⇆
select object beneath	2+🖱
add next object to selection	Ctrl+Tab⇆
add previous object to selection	Ctrl+Shift+Tab⇆
group selected objects	Ctrl+G
ungroup selected objects	Ctrl+U
* Stitch Edit tool selected	

Selecting objects (cont)

To...	Press
lock selected object	$\boxed{K}$
unlock all locked objects	$\boxed{Shift}+\boxed{K}$
* Stitch Edit tool selected	

Viewing designs

To...	Press
toggle TrueView™ on/off	$\boxed{T}$
toggle stitches	$\boxed{S}$
toggle outlines	$\boxed{L}$
toggle needle points	† $\boxed{.}$
toggle connectors	$\boxed{Shift}+\boxed{C}$
toggle function symbols	$\boxed{Shift}+\boxed{F}$
view by color	$\boxed{Alt}+\boxed{C}$
hide others	$\boxed{Shift}+\boxed{S}$
toggle bitmaps	$\boxed{D}$
toggle vectors	$\boxed{Shift}+\boxed{D}$
zoom (marquee)	$\boxed{B}$
zoom to 1:1 scale (100%)	$\boxed{1}$
specify zoom factor	$\boxed{F}$
zoom in 2X	$\boxed{Z}$
zoom out 2X	$\boxed{Shift}+\boxed{Z}$
zoom to all design	* $\boxed{0}$
zoom to selected objects	* $\boxed{Shift}+\boxed{0}$
zoom to product	* $\boxed{Ctrl}+\boxed{0}$
zoom to hoop	* $\boxed{Alt}+\boxed{0}$
zoom box in Overview window	$\boxed{Shift}+\boxed{B}$
activate panning	$\boxed{P}$
deactivate (temporarily) Auto Scroll	^ $\boxed{Shift}$
toggle Auto Scroll on/off	$\boxed{Ctrl}+\boxed{Shift}+\boxed{A}$
center current stitch in Design Window	$\boxed{C}$
return to previous view	$\boxed{V}$
redraw (refresh) screen	$\boxed{R}$
† Period * Zero ^ Hold down	

Viewing stitching sequence

To travel...	Press
activate Stitch Player	$\boxed{Shift}+\boxed{R}$
to start of design	$\boxed{Home}$
to end of design	$\boxed{End}$
^ No object selected † Numeric keypad only, no object selected	

Viewing stitching sequence

To travel...	Press
to next color	$\boxed{PgDn}$
to previous color	$\boxed{PgUp}$
to next object	$\boxed{Ctrl}+\boxed{T}$
to previous object	$\boxed{Shift}+\boxed{T}$
to next segment	^ $\boxed{Ctrl}+\boxed{\rightarrow}$
to previous segment	^ $\boxed{Ctrl}+\boxed{\leftarrow}$
to next function	^ $\boxed{Ctrl}+\boxed{PgDn}$
to previous function	^ $\boxed{Ctrl}+\boxed{PgUp}$
to next trim	^ $\boxed{Alt}+\boxed{\rightarrow}$
to previous trim	^ $\boxed{Alt}+\boxed{\leftarrow}$
1 stitch forward	^ $\boxed{\rightarrow}$
1 stitch backward	^ $\boxed{\leftarrow}$
10 stitches forward	^ $\boxed{\downarrow}$
10 stitches backward	^ $\boxed{\uparrow}$
100 stitches forward	† $\boxed{+}$
100 stitches backward	† $\boxed{-}$
1000 stitches forward	† $\boxed{Shift}+\boxed{+}$
1000 stitches backward	† $\boxed{Shift}+\boxed{-}$
^ No object selected † Numeric keypad only, no object selected	

Cutting & pasting objects

To...	Press	or
cut object	$\boxed{Ctrl}+\boxed{X}$	$\boxed{Shift}+\boxed{Delete}$
copy object	$\boxed{Ctrl}+\boxed{C}$	$\boxed{Ctrl}+\boxed{Ins}$
paste object	$\boxed{Ctrl}+\boxed{V}$	$\boxed{Shift}+\boxed{Ins}$
duplicate object	$\boxed{Ctrl}+\boxed{D}$	
duplicate with offset	$\boxed{Ctrl}+\boxed{Shift}+\boxed{D}$	
paste special > object property position	$\boxed{Shift}+\boxed{Ins}$	
paste special > shift pasted objects	$\boxed{Ctrl}+\boxed{Shift}+\boxed{V}$	
paste special > center at current stitch	$\boxed{Ctrl}+\boxed{Alt}+\boxed{V}$	
paste special > start at current stitch	$\boxed{Shift}+\boxed{Alt}+\boxed{V}$	
delete selected objects or last object	$\boxed{Delete}$	

Modifying objects

To...	Press or click
activate Reshape Object tool	[H]
activate Show Stitch Angles tool	[Alt]+[A]
activate Show Reshape Nodes tool	[Alt]+[N]
activate Stitch Angles tool	[Ctrl]+[H]
add outlines and/or offsets	[Ctrl]+[Shift]+[O]
add stitch angles (Complex Turning)	[Ctrl]+[H]
change reshape node type	^ 🖰+[Space]
check design integrity	[!]
maintain proportions while resizing	† [Shift]+↔🖰
mirror horizontally	[Ctrl]+[1]
mirror vertically	[Alt]+[1]
move selected object horizontally or vertically	* [Ctrl]+↔🖰
nudge selected object	🖰+[↑] [↓] [←] [→]
remove overlaps	[Ctrl]+[Shift]+[E]
toggle Auto Underlay on/off	[U]
* Drag object † Drag handle ^ Select control point	

Schiffli functions

To...	Press
insert Blatt/Stepp function	[[ ] [ ]]
insert Fadenleiter Plus/Minus	[<] [>]
insert Boring Tension Start/End	[/] [\]
insert RPM Plus/Minus	[:] ["]
change Schiffli borer depth	[;]
show Schiffli repeats	[W]

Editing stitches (Stitch Edit mode)

To...	Press or click
activate Stitch Edit tool	[E]
toggle stitch selection	[Q]
toggle stitch selection while traveling by stitches	[Tab⇆]

Glossary

1OO: Machine file format native to Toyota machines.

3D Warp: 3D Warp is used with Motif Fill to create three dimensional effects. You can make shapes appear concave or convex using Globe In or Globe Out. You can also create distance effects using Perspective.

ABC Pattern Arrangements: See Pattern Arrangements (ABC).

Accordion spacing: 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.

Acetate: A salt or ester of acetic acid of cellulose made into a synthetic filament, yarn, or fabric.

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.

Aetze: The breaking down or dissolving of a base fabric on which a lace pattern has been stitched, leaving only the stitched threads. Or lace processing – 'wet aetze' involving a caustic soda bath or 'dry aetze' involving heat.

Aetzing: The process of eliminating the base fabric to make Schiffli laces, leaving only the threads remaining.

Allover: Continuous embroidery which covers all of the goods from selvage to selvage.

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. In Schiffli embroidery, appliqué refers to an embroidered motif, hand-cut or aetzed away from base fabric.

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 format.

Artwork: Bitmap image or vector graphic used as a digitizing template. See also Bitmap image and Vector graphic.

Artwork preparation: See Image preparation.

Aufsatz: The last stitch of a design before it repeats itself.

ARX: ES 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.

Auto-digitizing: Toolset used to create embroidery designs by automatically digitizing blocks of color in electronic images, or converting vector outlines directly to embroidery objects. See also Smart Design.

Auto kerning: For lettering objects, auto-kerning involves looking up in a 'kerning table'. This specifies the spacing adjustments for each pairwise combination of letters so that whenever a predefined pair occurs, the letter spacing is automatically adjusted.

Auto scroll: The Auto Scroll feature automatically scrolls the screen while you are digitizing.

Auto spacing: Auto Spacing only affects Satin stitch. It adjusts stitch spacing according to column width.

Auto split: Auto Split 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. Auto Split looks more Satin-like and works well with turning stitches, creating soft lines and a little more depth.

Auto start and end: Before stitching, some embroidery machines require you to position the starting needle exactly above the first needle

penetration point. Use Auto Start and End to connect the first and last stitches in the design. This makes it easy to position the needle before stitching, and reduces the chance of the needle hitting the side of the frame.

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 also Pull compensation.

Automatic stitch shortening: Reduces stitch bunching at sharp corners. See also Stitch shortening.

Auto Trace: Auto Trace is used to convert bitmap images to vector drawings.

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 MS Windows® clipboard.

Background: EmbroideryStudio lets you change the background color of the design workspace 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. A backing can be hooped with the item or placed between the machine throat plate and hooped garment. 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 also Topping.

Backstitch: Backstitch is an input method which can be used for delicate outlines. This stitch follows intricate curves well. It is also is the term used for every second row of stitches in a Tatami fill. See also Standard backstitch, Borderline backstitch, and Diagonal backstitch.

Backtrack: Use Backtrack and Repeat to reinforce outlines while specifying the direction of the stitching. Backtrack stitches in reverse direction to the original. It is typically used to make run stitch outlines thicker without creating unwanted connecting stitches. Repeat duplicates the original stitch direction and is typically used with closed shapes.

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.

Batting: A layer of padded material between the front and back fabric to add thickness and substance.

Begin jump function: Begin Jump functions instruct the machine not to use needle penetrations. When encoded in an output file, it normally converts to a Needle In function. See also End Jump function.

Bézier curve: Vector shape produced according to principles invented by French

engineer, Pierre Bézier. A Bézier curve consists of a series of segments with shapes generated by cubic functions. Each segment is bounded by nodes, and its curvature is affected by a control point associated with the node at each end. The displacement and direction of the control point from the node are parameters from which the cubic curve shape is derived.

Bitmap: Also known as raster images, bitmaps are electronic images made up of dots or 'pixels', in contrast to vector 'outlines'. Each pixel is mapped to a location in an image and has numerical color values. Typically created in paint programs, bitmaps have file extensions such as BMP, JPG, GIF, TIF and PCX. When enlarged or scaled down, vector drawings preserve image quality while bitmap images generally cause problems of pixelation and image degradation. See also Pixels.

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.

Blatt stitch: Schiffli term meaning 'to feed the yarn', thereby producing a long zigzag stitch with threads lying close together. Adapted for Multihead use. See also Satin stitch.

Blending: See Color Blending.

Bling: Refers to decorative objects placed on a garment or template. They are supplied in various sizes, shapes, colors and materials. Often referred to as rhinestones.

Block: The basic unit of a quilt top.

BMP: MS 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 thread length: This factor provides a simple mechanism for a more accurate bobbin thread length estimate. The default value (100%) is suitable for a design with a mixture of stitch types. If the design is all run stitches or all tatami, more bobbin thread will be used and the factor can be increased say to 125%. If the design is all satin stitch, the factor can be reduced to say 65%.

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.

Borderline backstitch: The rows are approximately parallel. With lower density fills, borderline backstitch creates a smooth, well-defined edge. Borderline backstitch is also called Trapunto style. See also Backstitch.

Borer: Borer is a sharp instrument attached to embroidery machines to puncture fabrics. Schiffli machines have built-in borer knives under the needle line which can cut different sized holes in fabric.

Borer depth: You can choose the numbering system for specifying Borer depth – Plauen where one is the base and seven (7) the normal middle position and Saurer where the base is zero and the normal middle position is six (6).

Borer depth function: The Borer Depth function controls the size of the boring hole. The deeper the borer cuts, the larger the hole. The borer depth on Schiffli machines is changed one value at a time. Thus a change in depth of three (3) units will be automatically distributed by Schiffli to three (3) stitches.

Borer functions: Borer In/Out functions are available for embroidery machines equipped with a borer. They instruct the machine when to use the boring knife or tool instead of a needle.

Boring: 'Open-work' incorporated into embroidered designs. A sharp-pointed instrument punctures, or bores, the fabric, and stitches are made around the opening to enclose the raw edges.

Boring tension functions: Start/End Boring Tension functions instruct servo thread machines to feed less thread for stitching in boring holes. For Hiraoka TNS Ein, it overrides/restores Stepp/Blatt tension.

Bounding box: The dotted rectangle that appears when you select a range of items.

Branching: The Branching 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.

BRO: Bits & Volts file format.

Candlewicking: A traditional white-on-white embroidery technique, usually done on white linen or cotton fabric with heavy cotton threads.

Card: A paper tape to control the frame. Various sizes for Schiffli machines, 7 channel for multihead. See also Jacquard card.

Cap Corner: A type of Smart Corner. Cap corners are used for very sharp corners as they produce fewer stitches.

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.

CED: A data condensed file format.

Center at current stitch: The object will be placed with its center at the needle position marker.

Center run underlay: Center Run 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).

Chain stitch: Stitch that resembles a chain link, formed with one thread fed from the bottom side of the fabric. Done on a manual or computerized machine with a hook that functions like a needle.

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.

Chenille: Form of embroidery in which a loop (moss) stitch is formed on the top side of the fabric. Uses heavy yarns of wool, cotton or acrylic. Created by a chain stitch machine that has been adjusted to form this stitch type. Also known as 'loop piling'.

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.

CND: Melco Condensed (CND) is the native file format of the Melco embroidery digitizing software. CND files store only digitized outlines and stitch values.

Color blending: Digitizing technique which creates interesting perspective, shading and color effects by blending colored layers. Two colors are

merged smoothly from one to another using a mixture of dense and open fill.

Color block: A color block or 'element' corresponds to a color change in the design. It may be comprised of one or more same-color objects. These may form a single group – e.g. 'ropes' – or more – e.g. 'ropes and birds'. Each color block, or element, can be given a descriptive name for easy identification. These then appear on the production worksheet. The operator generally uses them to ensure correct colors are used during production. The Color-Object List provides a sequential list of objects as digitized, grouped by 'color block'. This list shows a separate icon for all color blocks and objects used in the design. The Color Palette Editor also shows a list of color blocks.

Color-change function: Color-change functions tell the Schiffli machine to change thread color. In RCC/INC machines, the command also moves the frame under the next selected needle. They are automatically inserted when you select a new color from the color palette.

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.

Colorways: Colorways are multiple color schemes for the

same design. They are made up of colors defined in 'color blocks' which may be created in EmbroideryStudio or similar design program, or may be selected from a patent color system such as Chromatone or Pantone.

Column: Narrow, long, curving shape.

Column A: An input method used 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.

Column B: An input method used to digitize shapes where one side is different to the other, especially where one side requires more reference points than the other. Stitches turn evenly throughout the entire shape. You can use any fill stitch type except Motif Fill.

Column C: An input method used to digitize columns of fixed width. It is typically used for digitizing borders and outlines of larger shapes. You can digitize columns to create thick lines or borders. Column C is typically used with Satin stitch.

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.

Combination Split: Use of different combinations of Satin and Tatami stitches in Program Split to create various effects with the same pattern. There are three Combination Split options – Satin in Satin, Satin in Tatami and Tatami in Tatami.

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.

Complex Fill: 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 Complex Fill objects.

Complex Turning: This is an input method used to digitize complex shapes with turning stitches. Many shapes can be digitized with this tool. Create objects using left and right clicks to mark reference points to form the boundary outlines. By digitizing boundaries within shapes, you can create filled objects with holes.

Condensed file: See Design file.

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.

Connection Manager: A software feature to allow the sending of files to shared folders.

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. However, automatic connectors are not recommended for Schiffli designs because machine functions cannot be placed on connector stitches (stitches in the Needle Out position).

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.

Control panel: The panel on an embroidery machine by which the operator sets up the machine for embroidery production.

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 Column A, Column B, Column 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.

Cord functions: Cord In/Out functions tell the machine to engage or disengage the cord device.

Cording: Cording is a technique which employs a single decorative cord laid on fabric and attached with transparent zigzag stitches. It forms relatively simple, low-stitch-count designs featuring lots of swirls and curves. Raised cording is achieved by sewing the garment around the cord from the wrong side. The result is a self-fabric raised effect. Different widths of cording are available to provide a wide

range of looks. A special attachment is required for the embroidery machine.

Cord-in-lay: A special apparatus to automatically lay on cord or ribbons on a Schiffli machine.

Cover stitch: Cover stitch is the border around an appliqué shape. You can control various settings including cover stitch type – Satin or E Stitch – 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. Various companies offer this technology under names like the Magic Box™ from Oklahoma Embroidery. 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.

Crest: An embroidered motif like an emblem, an insignia or a Coat of Arms.

Crystals: See Bling.

CPU: Central Processing Unit.

CSD: POEM/Singer/Huskygram file format

Current 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.

Custom: Lets you map thread colors to every stop code in the file. This means you can color-code machine file designs which do not contain needle addressing information, before opening the file.

Custom fonts: Custom fonts are made up of letters, numbers or symbols you digitize.

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.

Cut appliqué: See Back appliqué.

Cutter: See Appliqué cutter.

Cutting lines: A second line of run stitches that forms a guide when trimming the fabric of an appliqué patch.

DAT: DAT is the machine file extension used with Hiraoka, Laesser, and Wilcom SPES formats.

Default object properties: See Default values.

Default values: predefined 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.

Density: See Stitch density or Thread density.

Design: A 'design' is a file in the native embroidery format – e.g. EMB, JAN, ART – of embroidery digitizing software. The design source may be a stitch 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: Design files, also known as 'all-in-one' or 'outline' files, are high-level formats which contain object outlines, object properties and stitch data. Examples include CND, GNC, INP and PCH. When you open a design file in EmbroideryStudio, corresponding stitch types, input methods and effects are applied. Design files can be scaled, transformed and reshaped without affecting stitch density or quality. See also Machine file.

Design object: See Objects.

Design information: 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 repeat: A Schiffli design is repeated horizontally as many times as it fits across the frame. Repeat values increment in multiples of 4 to a maximum of 96. For example, the design can be stitched by every needle (Repeat=4/4), every second needle (Repeat=8/4), or every third needle (Repeat=12/4), and so on.

Design source: While embroidery files are broadly classified as 'design' (outline) or 'machine' (stitch), EmbroideryStudio internally tags files as belonging to one of four types–Native Design, Imported Outlines, Processed Stitches, or Imported Stitches. See also Design information.

Design template: See Template.

Design Workspace: The design workspace is where designs are displayed for viewing and modification.

DW Administrator: It is the DW Administrator who is generally responsible for the high-level setup of DesignWorkflow databases. The DW Administrator determines who gets access to databases, what users can see and do, and who defines the categories under which information will be stored. The DW Administrator is generally the manager of the company's design section. This person has the necessary background knowledge and authority to control what goes into databases and how the information is to be used.

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 Smart Design.

Diagonal backstitch: The backward rows are diagonal, directly connecting the forward rows. Diagonal backstitch is suitable for turning shapes, and gives good results with Jagged Edge. See also Backstitch.

Dialog: An onscreen 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.

Digitizer: Usually refers to the person punching or digitizing the design. Digitizer can also refer to the digitizing tablet used by the digitizer. See also Digitizing tablet.

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'. See also Punching.

Digitizing puck: With a digitizing tablet, you generally use a puck instead of a mouse to mark reference points and select commands from the menu chart.

Digitizing tablet: Design device used by digitizers to plot needle penetrations for embroidery designs. Sometimes used as an alternative to digitizing directly on-screen. Typically, a pencil drawing of the design is enlarged and then taped to this tablet. The digitizer then uses a device known as a puck to indicate stitch types, shapes, underlay and actual needle penetrations.

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.

Direct-to-garment printing: DTG is performed like most other printing from a PC. The print image is sent to the DTG printer through the MS Windows® print manager using a print driver. The image must have a transparent background for DTG printing. DTG printing requires heat fixing to make the images washable.

Disk: See Floppy disk.

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.

Docker: 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.

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 split alternate: A variant of Tatami split. See User Defined Split.

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.

Drawing object: See Vector object.

Drawing package: Software application that creates or allows you to edit vector graphics made up of separate individual vector objects. Vector graphics can be scaled with no loss of sharpness. Examples of vector editing programs are Adobe Illustrator, MacroMedia Freehand and Corel Draw. See also Graphics application.

Droplist : A single-line dialog box control that opens to display a list of choices.

Drop sequin function: The Drop Sequin function is available for embroidery machines equipped with a sequin dispenser. It instructs the machine when to drop a sequin on the fabric for stitching.

DSB: Barudan file format. Basically the same as the T03 tape file but wit a 'header' in front so that it can be written to floppy disk – i.e. it is the floppy disk version of the T03 file.

DST: Machine file format native to Tajima machines.

DSZ: ZSK stitch or 'expanded' file format.

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.

DXF: AutoCAD vector graphic format.

E Stitch: Widely used for tacking down appliqués as a decorative border. The stitches form a comb pattern.

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.

Electronic artwork: There are two broad categories of artwork file, both of which can be imported into EmbroideryStudio for use as digitizing backdrops – vector and bitmap. To create good quality embroidery, you need to choose or create suitable artwork of either format.

Element: An element, in software terms, is a color block consisting of sequential, same-color objects. You can assign names to elements which then appear on the production worksheet. The operator generally uses these to make sure colors are correct during production. See also Production worksheet.

EMB: Design file format native to Wilcom ES. EMB designs contain 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, summary information, and more. Even the original design bitmap image can be included in EMB format. Only native EMB files provide 100% perfect scaling and transformation.

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'.

Emblem work: Many Schiffli machines are used for creating emblems or logos. This work, however, uses only a small subset of the available functions of the Schiffli machine. Typically, for example, emblem work does not contain the bored holes or long Satin stitches which occur in lace designs. Emblem work is also stitched on Multihead machines.

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-looms and Schiffli machines with hundreds of needles to high-speed, computerized multihead machines.

EmbroideryConnect device: Wilcom-supplied device to enable connection of USB-enabled embroidery machines to an EmbroideryConnect machine network via a WiFi router.

Embroidery disk: Embroidery disks are specially formatted floppy disks used to transfer designs from computer to embroidery machine. You can format embroidery disks and save designs to them from within EmbroideryStudio. The format you use will depend on the selected embroidery machine. You can also open designs from embroidery disk directly into EmbroideryStudio.

Embroidery objects: In embroidery design, you build designs from basic shapes or 'embroidery objects'. They are called 'objects' because they are discrete entities which can be selected and manipulated independently of each other. They are like ordinary vector objects in that they have certain characteristics or 'properties' such as color, size, position, and so on. They also have properties unique to embroidery such as stitch type and density. See also Vector objects.

Embroidery thread: See Thread.

Emery roller: The Schiffli roller on which threads are twisted and tensioned.

Empty function: An 'empty stitch', or non-data stitch, is an industry term for any stitch with a zero movement (0, 0). However, EmbroideryStudio distinguishes between intentional empty stitches related to the machine

functioning, and unintentional empty stitches, which can occur in small or pointed parts of shapes. An empty function is an empty stitch that the system processes as a machine function. It is not removed by the small stitch filter and is preserved when stitches are regenerated or the design is resized. See also Empty stitch.

Empty jump: You create empty jumps (0,0) manually in EmbroideryStudio by digitizing with Penetrations Out. This prevents the needle from penetrating the fabric, forcing the machine to move across the design in a series of jumps. Also, use empty stitches or empty jumps when required by the selected machine format. See also Empty stitch.

End Jump function: End Jump functions instruct the machine to use needle penetrations. When encoded in an output file, it normally converts to a Needle In function. See also Begin Jump function.

Empty stitch: Empty stitch is a tight (zero length) lockstitch, used together with, or as an alternative to, tie-in and tie-off stitches, particularly in objects filled with light density stitching where standard tie-ins and tie-offs may be visible. Also, use empty stitches or empty jumps when required by the selected machine format. See also Empty jump and Empty function.

EMX: Wilcom cross stitch file format.

End X/Y: The coordinates of the last stitch.

Enlargement drawing: The technical drawing, usually six times larger than the original design, indicating the stitches to be digitized. When you digitize with a tablet, you use an enlargement drawing to trace the shapes and outlines of the design in the same way you use backdrops on-screen. Before you start, you need to prepare

the enlargement drawing. See also Digitizing tablet.

Enlarger: The draftsman or designer who draws the technical drawing for the puncher to follow.

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.

Envelope: Special effect which makes objects bulge or arch, stretch or compress. Envelope is typically applied to lettering objects, but can also be applied to other types of embroidery object.

EPS (Encapsulated PostScript): A standard file format for importing and exporting PostScript language files among applications in a variety of environments. An ESP file is a PostScript file which describes a single page, usually an illustration. In general, the purpose of the EPS file is to be included (encapsulated) in another PostScript file and can contain any combination of text, graphics and images. EPS files normally include a small, low-resolution TIFF, or vector-based MS Windows® metafile image preview, as it will appear on a printed page.

ESD: Native DOS format of Wilcom DOS ES – contains stitch data, like stitch types and densities, which permits better processing. ESD in later versions contains lettering objects with outlines.

ESL: ESL is a file used to produce any Wilcom Schiffli Tnn file from EmbroideryStudio. It is read but not written by the Schiffli Converter to produce RCC Tnn files.

ESS: ESS is the primary machine file format for Wilcom-developed Schiffli servo control systems. When the ESS file is read directly by a Wilcom Electronic Servo System (WESS), high data resolution

and stitch accuracy are possible.

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.

Expanded file format: See Machine file.

Expanded tape: An expanded tape which has every stitch of the design punched.

Extension: See File extension.

Fabrics: Fabrics have many properties, the main one being elasticity or 'fabric stretch'. Surface texture, if present, is another property that requires different underlay types. When you choose a fabric for use with a particular design, the system pre-loads settings optimized for that fabric. These can be overridden on an object-by-object basis. See also Fabric settings.

Fabric settings: predefined fabric settings include settings for all full-coverage stitch types. For each stitch type, spacing is preset. Additionally, the quality effects of pull compensation and underlay are also preset for each stitch type. Push, warping, and shearing are reduced by suitable underlay for the stitch type and fabric. Decorative effects such as Motif Fill are not affected when fabric settings are changed.

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.

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.

Fadenleiter: Fadenleiter is a mechanism on some Schiffli machines for controlling the feed and tension of yarns.

Fadenleiter functions: Fadenleiter +/- functions instruct the machine to increase or decrease Fadenleiter stroke one increment. This means increasing or decreasing thread feed because the section is getting wider/narrower.

FDR: An embroidery disk format native to Barudan machines.

Festoon: Festoon is a mechanism on some Schiffli machines for reinforcing edges on scallops, etc, for a strong cutting edge. It is also the name of a stitch type.

Festoon functions: Festoon In/Out functions instruct the machine to engage or disengage the festoon device.

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 Geflect 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.

FIXPAT: The FIXPAT (Fix Pattern) utility is a conventional Schiffli visual-editing program which displays the tape file in the Jacquard card format with holes. The program is good for safety-checking designs and can be useful as a fast editor for known problem patterns as well as direct function editing.

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.

Float: Longer-than-normal Satin stitches that lay on top of a design, or the stitches made when the needle is disconnecting from the design, later removed.

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.

Florentine effect: With Florentine Effect you can curve Complex Fill along a digitized line to create flowing stitch effects. The stitches follow the digitized line but maintain uniform density and needle penetration patterns.

FMC: An embroidery disk format native to Barudan machines.

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, including letters, numbers and other typographic symbols, of the same design and style. Sometimes called 'alphabet', even if it includes non-letter characters. See also Lettering.

Following: The directions drawn on the enlargement by the designer as a guide for the puncher's advancement and sequence in punching.

Fox test: Method of testing thread tension and soundness of timing. Sew the word FOX in one-inch Satin stitch block letters with each needle bar, then examine the reverse side for skipped stitches and correctly balanced ratio of top thread to bobbin thread. The correct balance is generally considered to be a one-third ratio of bobbin thread to two-thirds top thread. These letters are used because they require the movement of the pantograph in all directions, increasing the likelihood that the beginnings of timing irregularities will be discovered.

Fractional spacing: Fractional spacing is used to place stitches more evenly in curved shapes, producing better quality embroidery with fewer stitches. Fractional spacing is particularly useful for columns of Satin stitches with sharp turns.

Frame: Holding device to secure fabric under an embroidery head for stitching. May employ a number of means to maintain stability during the embroidery process, including clamps, vacuum devices, magnets, or springs. See also Hoop.

Frame-out position: When you stitch out appliqué objects, you can set a frame-out position. This shifts the hoop out from under the needle, making it easier to place and trim the appliqué shapes. The frame out settings determine

the distance and direction of the hoop movement.

Free Line baseline: Free Line is the only type of baseline which does not have a fixed or pre-determined length. When you choose Free Line, the baseline will extend as long as you keep adding letters. You only need to mark its start point. See also Baseline.

French inch: The French inch is a measurement used for spacing needles on the Schiffli machines (c. 27mm). See also Needle spacing.

Fringe: Threads that are cut and hang loosely from the edge of a design.

Function: See Machine Function.

Geflect stitch: Geflect refers to light or heavy stitching used to fill in an area of a design with run stitches. It is also known as Ceeding or Tatami. See also Fill stitch.

Generic Shiffli machine format: Because there are many types of Schiffli machine, individual settings can be quite different even though the capabilities are the same. To deal with this, Schiffli uses the concept of the 'Generic Schiffli Machine'. The Schiffli generic machine format supports functions required for a wide range of machine types.

Glitz: See Bling.

Graphics application: Software application that creates or allows you to edit bitmap images and/or vector graphics. See also Paint package and Drawing package.

CorelDRAW Graphics: An operating mode in which the CorelDRAW® Graphics Suite application is active.

Gradient Fill: An 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.

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 runs: 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 pre-cut appliqué patches on the background material. See also Appliqué.

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.

Heat transfer printing: A process which is sometimes used in the production of a printed design for commercial use employs heat transfer paper to which graphics are printed. This is then heat-fixed to a garment using an iron or heat-press. The process falls into the same category as printing. Printers that support heat transfer media in most cases provide an automatic mirror function in the printer driver as the image must be printed in reverse in order to be heat-transferred to a garment. See also Direct-to-garment printing.

Heinzle: Heinzle is a Schiffli disk format.

Heirloom embroidery: Embroidered goods designed to be passed down from generation to generation.

Hiraoka DAT: Hiraoka DAT is a Schiffli disk version of the Plauen card format for Hiraoka machine.

Hoop: Device made from wood, plastic or steel used to tightly grip fabric and stabilizer between an inner and outer ring. Designed to hold fabric taut against the machine bed for embroidering, it attaches to machine's frame.

Hooping: The process of placing the fabric and/or stabilizer into the embroidery hoop. One of the most common reasons for a poorly stitched design is improper hooping.

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 beneath. The toolboxes which appear in the left of the screen are composed of icons.

Image editing program: See Graphics application.

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.

Imported outlines: Designs read from non-EMB outline – CND or PCH – where stitches have been generated in EmbroideryStudio (or equivalent) from original outlines and stitching data.

Imported stitches: Designs read from stitch or 'expanded' files, with or without outline recognition, but stitches have not been regenerated through stitch processing. Note that if you change a stitch design – e.g. add a lettering object – the status changes to 'Processed Stitches' even though the imported stitches may not have been regenerated.

INC: Individual Needle Control (INC) was a mechanism originally developed for Saurer Pentamat machines whereby each needle/borer position across the whole machine could be activated or de-activated individually, either under program or manual control.

INP: Wilcom condensed file format.

Input method: See Digitizing tool.

Jacquard card: Historically Schiffli designs were stored on Jacquard cards of which there are two types – Plauen and Saurer. Named after Joseph M Jacquard, inventor of the Jacquard loom, Jacquard cards contain a stitch-by-stitch interpretation of the design together with machine functions, exactly as the embroidery machine will read it, encoded as a series of holes. Later applied to 68 mm tape used to program automated embroidery machines. See also Tape code.

Jagged edge: Technique for creating rough edges, to create shading effects, or to imitate fur or other fluffy textures in your design.

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. In Schiffli terms a Jump stitch means a frame movement in Needle Out mode.

Jump function: Jump(M) functions cause frame movements without needle penetrations and are used to move smoothly from one part of 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. Such work typically uses boring. It is the most widely used application for Schiffli machines.

LAN: Local Area Network – a wired network of interconnected PCs and other network enabled devices such as printers.

Letter spacing: The space between adjacent letters.

Letters: Initials or name making up a monogram. Letters of a font.

Lettering: Embroidery using letters or words. Lettering commonly called 'keyboard lettering' may be created from predefined 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.

Lockstitch machines: Both Schiffli and Multihead machines are lockstitch machines, forming stitches in the same way as a home sewing machine. Lockstitch operations involve two threads – top and bottom. The top thread is driven by a needle, the bottom by a shuttle. The bottom thread 'locks' the top thread in place, hence the name 'lockstitch'. See also Multihead lockstitch machine.

Logical machine functions: Schiffli makes a distinction between 'logical' and 'physical' machine functions. The logical machine function is what you, the digitizer, want to perform – for example, start or stop boring. Logical functions are saved as 'object properties' in the native Wilcom EMB design file.

Logo: Name, symbol or trademark of a company or organization. Short for logotype.

Looms: See Schiffli.

Loom run: The stitching of one complete pattern in one row on a Schiffli machine.

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 Design file.

Machine format: Different embroidery machines understand different languages. They have their own control commands for the various machine functions. Before you can stitch a design, it must be in a format which can be understood by the target machine. Common formats

include Barudan, Brother, Fortran, Happy, Marco, Meistergram, Melco, Pfaff, Stellar, Tajima, Toyota, Ultramatic and ZSK.

Machine function: Machine functions are commands for a specific embroidery machine. These include color changes, thread trims, jumps, machine stops, needles in/out, and boring begin/end. Schiffli makes a distinction between 'logical' and 'physical' machine functions. See also Logical machine functions and Physical machine functions.

Machine unit: The 'machine unit' is the smallest frame movement which the embroidery machine can perform. In Schiffli machines there are three types – Plauen (1/6 mm or 0.1667mm), Saurer (0.1mm), and hi-resolution WESS.

Machine setup: Before you can send designs for stitching, you must configure the machine in EmbroideryStudio. You can add machines, change settings for machines already set up, or delete machines that are no longer required.

Magic wand: Technique for creating embroidery designs by automatically digitizing color blocks in electronic images.

Manual object: When you open a stitch format file without outline recognition, it becomes a single 'manual' object. This object consists of individual needle penetration points and has only general and connector properties. When you transform (scale, rotate, mirror) a manual object, the original stitch density does not change.

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.

Minimum stitch length: The minimum movement of the hoop. It is measured between needle penetration points. See also Max/Min stitch.

Mirror: Duplication of an object in the Y and/or X axis. The location and orientation of the mirrored stitches are determined by location and angle of the axis of reflection relative to the position of the original stitches.

Mirror-merge: Mirror-Merge Array can create multiple copies of designs, such as badges, spaced in rows and columns for faster stitchouts. Mirror-Merge Reflect can duplicate and mirror designs simultaneously. You can use it to quickly create borders or merge duplicates into a symmetrical object such as a heart. Mirror-Merge Wreath can duplicate objects around a center point. The Kaleidoscope tool works like Wreath but mirrors objects as well.

Mitre corner: A type of Smart Corner. Mitre Corners create a sharp line at the intersection of the two columns.

They are designed primarily for corners between 75° and 90°. See also Smart Corners.

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.

Modem: Unit to telegraphically send computer information from one computer to another.

Monitor: In computer terms, a device that accepts video signals from a computer and displays information. Monitors generally employ cathode-ray tubes or flat-panel displays to project images. In practice, the terms monitor and display are used interchangably. In digitizing terms, the monitor is where digitizing or stitching progress can be followed, stitch-by-stitch.

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.

Moss stitch: Chenille-type stitch. See Chenille.

Motif: predefined design elements, such as hearts, leaves or border patterns, that can be quickly inserted into a design. Motifs generally consist of one or more simple objects, and are stored in a special motif set.

Motif Fill: Motif Fill is a decorative fill stitch with which you can fill larger shapes. Depending on your software's capabilities, you can also create special or three dimensional effects.

Motif run: Motifs which are linked together along a digitized line. You can create decorative outlines using any motif from the list.

Motif set: Motifs are stored in 'motif sets' similar to fonts. There are two predefined motif

sets. One contains single motifs for fills which use the same pattern in both forward and backward rows. The other set is intended for use with two-part motifs which use complementary patterns for forward and backward rows. You can also define your own 'motif sets' to organize and classify motifs of your own creation.

Mouse: A device, equipped with control buttons and designed to roll about on the table next to the keyboard. As the mouse moves, its circuits relay signals that move a pointer on the screen.

MST: MST is a Laesser file type. It includes same stitch data as Laesser DAT. (Not supported in Schiffli ES e4.)

Multicolored designs: Multicolored designs contain more than one color. Most Schiffli machines do not support automatic color change. That is, there is no mechanism to activate individual or groups of needles. Thus multicolored designs are expensive to produce because operators need to manually trim the threads and re-thread the needles.

Multihead lockstitch machine: Multihead lockstitch machines have a horizontal frame. The needles are vertical, and are grouped in heads. They are mainly used for stitching individual items – e.g. badges, garments, which are stretched in separate hoops attached to the frame under each head. A multihead machine can have up to 24 heads, and each head can have up to 20 or more needles. Thread change and trims can be done automatically. See also Lockstitch machine.

Multi-appliqué: A type of appliqué object composed of more than one piece of fabric and bordered by various types of embroidery objects.

Native designs: Native designs refer to designs created

in EmbroideryStudio software (or equivalent).

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 may come with a) sharp points for piercing heavy, tightly woven fabric, b) ball points which glide between fibers of knit, or c) a variety of specialty points, such as wedge points, which are used for leather.

Needle addressing: Some machines support 'needle addressing'. Needle numbers correspond to slots in the color palette. Each color in the design corresponds to a needle number. Older multi-needle machines simply move to the next needle whenever a color-change function is encountered. In either case, the machine must have the correct thread colors loaded for each needle to stitch out correctly.

Needle in/needle out functions: The Needle In and Needle Out functions instruct the machine whether or not to use needle penetrations. You can enter these functions automatically using the Penetrations tool.

Needle points: You can view needle points in a design to check density or, for instance, to select stitches for editing.

Needle spacing: Needle spacing is the distance between adjacent needles of a Schiffli embroidery machine. Typical values are 27.07 mm and 27.04mm. The software lets you set up and adjust this value

to suit the type of machine which will stitch the design.

Nesting: Nesting lets you create or insert an object at an exact point of the stitching sequence. You can 'nest' an object in the middle of another object's stitching sequence to prevent long connectors being generated.

Network: To link embroidery machines via a central computer and disk-drive system, usually via a modem or network card. A group of machines linked via a central computer.

Network folder location: The logical location of a folder on a network. Contains the PC name together with the folder name – e.g. \\My PC\EmbroideryMachine1.

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: The NORMAL template is the default template supplied with the software. It contains current property settings as well as a selection of preset styles. These styles include variations on the current property settings. For example, <PRESET_SATIN_1> and <PRESET_SATIN_2> contains different stitch spacing settings for Satin stitches. You can view and modify the settings for these styles at any time. See also Templates.

Objects: In computer science, 'objects' are regarded as any discrete item that can be selected and manipulated, such as an onscreen graphic. In object-oriented programming, objects include data and the procedures necessary to operate on that data. See also Embroidery objects.

Object outline: See Design file.

Object properties: All embroidery objects in EmbroideryStudio 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. The most important property of all embroidery objects is stitch type.

Object recognition: See Outline recognition.

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.

Offset Object: Software function used to create new outlines from the outlines of selected objects.

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.

Options: Options provide software with extra functionality that can be purchased by registered owners of the product.

Outline file: See Design file.

Outline recognition: When you convert a machine file to outline format, EmbroideryStudio reads the data stitch-by-stitch according to the needle penetration points. The software then 'recognizes' stitch types, spacing and length values, stitch effects, and can determine object outlines.

Outline stitch: Stitch such as Run or Satin used to outline an embroidery object.

Overall embroidery: Overall embroidery is embroidery which covers the entire fabric. This includes lacework where the backing fabric is actually removed after manufacture. Overall embroidery is typical of Schiffli manufacture, less common with Multihead.

Overshoot: Overshooting is a technique used by Schiffli punchers to reduce distortion of fabric by pulling more thread from the cone and reducing the pulling force of the thread.

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 workspace.

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®. See also Graphics application.

Pan: Use Pan to view parts of a design which are not currently visible in the design workspace.

Paper tape: Traditional recording media used in the embroidery industry is the paper tape. The tape coding process produces the final design in stitch format – a stitch-by-stitch interpretation of the design – exactly as the embroidery machine will read it. Now largely replaced by floppy disk, tapes are still used by older machines. More specifically, stitch data paper tapes are eight-channel paper tapes which, in effect, are hard copies of 8 bit binary code.

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.

Partial appliqué: Technique to create appliqué objects with partial cover stitching to create an overlapping effect without doubling-up borders.

Partition lines: Partition Lines is a method for offsetting needle penetrations in Tatami fills, used, like Tatami Offset Fractions, to create needle penetration patterns or textures in stitched embroidery.

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.

PAT: PAT is a Saurer SHC file type.

Patch: The fabric piece use in appliqué.

Pattern: The design, card, punching, tape, disc, or enlargement.

PCH: Gunold design or 'outline' file format.

PCX: PC Paintbrush bitmap image format.

PDF: Portable Document Format. Used to view the Online Manual in Acrobat Reader.

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 Arrangement (ABC): Some Schiffli embroidery machines can read designs in which repeated parts are stored only once in the design file and only the repeat instructions are given to the machine. EmbroideryStudio provides tools to define pattern arrangements and output to specific formats which support the feature.

Pattern outline: See Motif Run.

Pause function: The Pause function is a conditional Stop, always on an empty stitch. It is interpreted by the machine according to the machine operator preferences.

PEN: PEN is a Saurer Pentamat Station file type. (Not supported in Schiffli e3.0.)

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.

Penetrations: The Needle In and Needle Out functions instruct the machine whether or not to use needle penetrations. You can enter these functions automatically using the Penetrations tool.

Pentamat: An advanced Schiffli individual needle and borer switching system available on Saurer and Laesser Machines.

Peripheral: Any device connected to a computer which is to some degree controlled by the computer – e.g. an embroidery machine or printer.

Physical machine functions: When outputting designs, Schiffli translates design data into stitches and machine functions that the target machine will understand. The functions that the machine understands are called 'physical' machine functions.

Piecing: The business of sewing patches together into patchwork blocks.

Pixel: A dot. For example, dots of light that make up the image on a computer screen.

The more pixels in a given area – that is, the smaller and closer together they are – the higher the resolution.

Pixelation: An effect which occurs when a bitmap image is enlarged so that the individual pixels are obvious to the eye.

Placement lines: See Guide runs.

Plauen: Plauen is the area in Germany where Schiffli machines originated. It now identifies a type of Schiffli machine and Jacquard punched card encoding. It is also known by the names of other manufacturers such as Hiraoka, Comerio, Zangs, etc, who copied and modified the original design. The Plauen machine requires the hook to be held in the right hand for threading.

PLS: PLS is a Saurer SLC file type.

PMU: PMU is a Proel stitch or 'expanded' file format.

PNG: Portable Network Graphics vector graphic format.

PNN: PNN is a Plot file used in SPES. (Not supported in Schiffli e3.0.)

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 workspace.

Print preview: Use to preview design and design information before printing a Production Worksheet. The design is displayed as it will be printed.

Process: The Process feature lets you adjust the density of one or more stitch types across the whole or selected parts of a design. Change stitch density in order to stitch on a different fabric or with a different thread. Alternatively, you may want to make production cheaper by reducing the overall stitch count. Processing a machine file is similar to converting it to a design file when opening except that you can process only selected objects or stitches.

Processed stitches: Designs read from stitch or 'expanded' files where stitches have been regenerated by processing.

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.

Program split: 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.

Properties: See Object properties.

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.

PS: Postscript vector format.

Puck: See Digitizing puck.

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.

Punching: Conversion of artwork into a series of commands to be read by an embroidery machine's computer or controller. The term refers to an earlier method of machine embroidery whereby designs are 'punched' to paper tape. A part of the machine, called an automat, reads the paper tape or Jacquards punched with holes representing stitches, pantograph movements and other commands. While still capable of producing paper tape, many digitizing systems now store this information on disk formats. See also Digitizing.

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. Specifically, the stitching of patterns into the quilt layers to add strength and decoration to a quilt. Stitching includes top, batting, and backing, to form decorative patterns on the quilt surface and hold the layers together.

RAM: Random Access Memory, computer chip maintaining memory.

Random factor: You can eliminate unwanted patterns and distribute stitches evenly within a shape using a random factor. Apply random factors to Tatami Partition lines or Program Splits. You can use this effect to imitate different textures such as fur, grass, leaves, etc.

Raster image: See Bitmap image.

Read: To open a design which has been written on a design card or to an embroidery machine.

Reader/writer: A device that allows you to download/upload designs to and from a design card. Cards can be purchased from your dealer or from designers on the net. Cards can have designs on them or are blank for you to read/write from/to. The cards are inserted into the embroidery module attached to a sewing machine. The R/W will allow you to have the PC and sewing machine quite separate from one another.

Recognition: See Outline recognition.

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.

Reduce colors: See Image preparation.

Reference point: A point that can be aligned with the grid. For example, you can set the grid reference point to the design center. This is easier and faster than moving the whole design.

Refresh: See Redraw.

Registration: Correct registration is achieved when all stitches and design elements line up correctly.

Relative Pointer Setting: This setting shows the pointer position as an absolute value from the first needle point of the design. Useful for checking that the design fits a given area.

Relative: The distance the pointer is from a previously marked point, or from the previous stitch point.

Repeat: Layout used for making emblems or designs on a fabric span that are repeated at regular intervals. The design repeat is defined by the distance between needles – the point at which the design repeats itself.

Repeat color change (RCC): A Repeat Color Change (RCC) is a mechanism on some Schiffli machines to change the pattern of active needles in order to modify the repeat pattern and/or thread color.

Repeat sequence: If you select fewer colors than the design requires, the selected colors are repeated. For example, if your design requires four colors and you've only selected two in the Building Stop Sequence list, colors 3 and 4 will be the same as original colors 1 and 2.

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-Object List.

Resizing: See Scaling.

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.

Rhinestones: See Bling.

Rhinestone template: This is the design layout on which rhinestones are initially placed for creation of a 'rhinestone transfer'. This is what is created from the cutters or engravers.

Rhinestone transfer: This is the rhinestone design ready for heat transfer to the final product – e.g. a T-shirt.

RPM functions: RPM +/- functions instruct the machine to increase or decrease machine speed in increments from current or normal.

Right-click: To press and release the right mouse button. See also Click.

Rollover: The point at which the fabric is shifted – loosened and reset – vertically to continue stitching. Common on long fabric Schiffli machines.

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.

Run stitch: Run stitch, also known as '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.

SAS: SAS is a Saurer SLC, Saurer SLC RCC, Saurer SLC Standard or Saurer Pentamat file format.

Sash: A fabric strip that separates blocks in a setting, framing them and making the quilt larger.

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.

Saurer: Saurer is a Schiffli machine brand and type as well as a Jacquard card encoding format. The format has three variants with support added for more modern RCC and Pentamat machines. Sometimes it is referred to as the 'left hand machine' because the threading requires the hook to be held in the left hand.

Saurer SHC: SHC is a high level code format which is designed to be machine independent in order to control both Saurer and Plauen type mechanisms. The format supports thread trimming.

Saurer SLC: SLC is a Saurer low level code format for Schiffli designs.

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.

Scale factor: This option allows you to automatically scale CND designs as you load them. For example, to scale the imported design to 120% of the original, you would enter a scale factor of 1.2.

Scaling: Ability to enlarge or reduce a design in size. In stitch or 'expanded' format, most scaling is limited to ±5% because the stitch count remains constant despite final design size. In design or 'outline' 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.

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 72 dpi (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.

Schiffli card: Plauen or Saurer type Jacquard card.

Schiffli card image: Jacquard card electronic encoding produces a 'tape file' which is essentially an electronic 'image' of the card. Schiffli outputs two tape file formats – T10 (for Plauen) and T15 (for Saurer). See also Tape code.

Schiffli disk: Schiffli disks include Saurer SLC/SHC, Heinzle, Hiraoka, and Laesser.

Schiffli machine: Commercial embroidery machine that utilizes the combination of needle and shuttle to form a stitch. Massive in size. Some schiffli machines – also known as looms – weigh 10 tons and have up to 1024 needles. Most Schiffli machines do not have automatic thread trim or automatic color change. Excellent for emblem production, the creation of lace, embroidery production on oversized items and production orders of very large quantities.

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 EmbroideryStudio, whenever you change your monitor, or adjust your monitor's horizontal or vertical controls.

Screen printing: Screen printing is a more complex process than direct-to-garment, requiring the creation of a screen for each of the spot colors (Pantone) that make up the design. There may be multiple screens for each spot color, depending on how the design is layered. See also Direct-to-garment printing.

Screen resolution: See Pixels.

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 EmbroideryStudio 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.

Segments: Filled embroidery objects are generally built as several discrete 'segments'. Travel runs are typically used to connect them. All segments, however, form part of the same object. Where they meet, the push-pull effect on the fabric during stitchout may cause gaps to appear.

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.

Sequins: Sequins are small plastic disks with a hole usually in the center. They are stored on reels joined one-to-another by a weak link. They are stitched onto fabric by mechanical placement in the path of the sewing needle.

Sequin attachment: Sequin attachments are computerized or manual machine devices which apply sequins by stitching, glue or heat.

Sequin mode: Sequin mode enables quick digitizing of Drop Sequin functions. See also Drop Sequin functions.

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.

Serif: In typography, serifs are semi-structural elements on the ends of strokes that make up letters and symbols. A typeface that has serifs is called a serif typeface. A typeface without serifs is called sans-serif.

Sharpen edges: Tool used to prepare outlined images for automatic digitizing. Sharpen Edges automatically sharpens outlines and reduces noise. Areas enclosed by a black outline are reduced to a single color. 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.

Short stitch: Digitizing technique that places shorter stitches in curves and corners to avoid an unnecessarily bulky build-up of 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.

Side movement: The distance the frame can move horizontally on a Schiffli machine, measured in quarters.

Side stick: Adjustable bars with pins on each end of the Schiffli frame to hang or pin the ends of the goods being spanned.

Sizing handles: See Selection handles.

Skew handles: See Rotation handles.

Slow Redraw: Use to redraw your design slowly. Slow Redraw lets you view the stitching and color sequence of a design in slow motion.

Small stitches: Use the Small Stitch Filter to remove unwanted small stitches from a design automatically.

Smart corners: Sharp points in a shape may cause a bunching of stitches and needle penetrations which can create a hard spot in the embroidery and may damage the fabric or needle. Smart Corners helps you control sharp corners in Column A and Column C objects. See also Mitre Corner and Cap Corner.

Smart design: Toolset used to create embroidery designs by automatically digitizing electronic images. Smart Design automatically converts bitmap images to fully digitized embroidery with little or no intervention. See also Auto-Digitizing.

Software: Programs, such as MS Windows® and EmbroideryStudio, which run your computer.

Span: The prepared goods ready to load the Schiffli machine. It may contain many yards of goods.

Span cloth: Fabric attached permanently to the roller of the Schiffli machine with pins onto which the fabrics are attached.

Spangles: See Sequins.

Spanning: The loading of the goods on the frame, placing it under tension preparatory for embroidery.

Specialty fill: A fill stitch capability that produces a fill with a 'relief' or motif design 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.

Spiral contour: Spiral Contour creates a single, continuous line of stitching that spirals around to fill the shape.

Typically, it is used for rings and borders, but it is also suitable for other closed shapes. See also Contour stitch.

Split alternate: Split Alternate is a variation of Tatami split. See also User Defined Split.

Split object: You can split embroidery objects that were created with the Column A, Column B, and Column C tools, if Satin or Tatami, or Program Split is the selected stitch type.

SPI: Stitches per inch – system for measuring density or the number of Satin stitches in an inch of embroidery.

SPM: Stitches per minute – system for measuring the running speed of an embroidery machine.

SR/SD: Melco Star format. 'Star' and 'Superstar' are types of Melco machine (quite old now).

Stabilizer: See Backing.

Standard backstitch: The rows are approximately parallel, with every backstitch row slightly shorter than the forward row. Because the rows are different lengths, there are fewer small stitches at the edge of the shape, reducing possible damage to the fabric. Standard backstitch is suitable for high density fills. See also Backstitch.

Standard Contour: Standard Contour creates rows of stitches across the shape, perpendicular to the digitized stitch angle. The number of stitch lines is constant, so the stitching is denser where the shape is narrower, and more open where the shape is wider. See also Contour stitch.

Start/End Boring Tension functions: See Boring Tension functions.

Station: See Repeat Color Change (RCC).

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.

STC: Gunold stitch or 'expanded' file format.

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 Motif 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. May also refer to the thread spanning one needle penetration and 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 EmbroideryStudio one stitch is considered one machine revolution. See also Design information.

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 file: See Machine file.

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 List: The Stitch List displays stitch number, stitch coordinates, stitch length, stitch function, stitch color. When you select a stitch in the list, it is simultaneously selected in your design.

Stitch processing: The calculation of stitch information by means of specialized software, allowing scaling of expanded format designs with density compensation.

Stitch processor: A patented software feature developed by Wilcom International P/L. Stitch Processor is a function of the software which interprets 'raw' stitch data and converts it into objects that the software can recognize.

Stitch-pull: See Push-Pull.

Stitch type: Three basic stitch types are available with lockstitch machines – Run, Satin and Tatami (Weave). EmbroideryStudio provides many variants of these.

Stitch shortening: When a shape takes a sharp turn, the spacing of stitches on the inside of the shape decreases rapidly. This results in bunching on the inside and gaps on the outside of the shape. The longer the stitch, the worse the problem. Automatic Stitch Shortening solves this problem by eliminating thread bunching. The embroidery has smooth, even stitch spacing throughout. It also reduces thread breakages during production.

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.

Stitch-to-machine: The software lets you send a design directly to the embroidery machine for stitching if it is connected to your computer.

Stitching direction: Stitching direction can affect embroidery quality because of the Push-Pull effect. Only closed embroidery objects can be reversed.

Stitching sequence: The embroidery objects in a design form a stitching sequence. Initially, objects are stitched in the order in which they were created or the design assembled. You can change the position of a selected object by cutting it, then pasting it somewhere else in the sequence, or by using the Resequence command. You can also resequence objects by color or with the Color-Object List.

Stock designs: Embroidery designs readily available on disk or proprietary embroidery card. Digitized embroidery designs that are commercially available for general use by embroiderers.

Stop code: Stop codes are interpreted as 'explicit stops'. The machine stops stitching.

Stop function: If you want the embroidery machine to stop for any special reason while stitching a design, you need to insert a Stop function in the stitching sequence. If there are Stops in a design, these can be read into EmbroideryStudio as either a Color-change function or a Stop function.

Straight stitch machine:
Machine, which features needles that move up and down in one spot. The pantograph pushes the design along. The majority of commercial embroidery machines use this type of needle movement.

STX: Datastitch stitch or 'expanded' file format.

Stuepfel: Stuepfel is a Schiffli machine attachment for cleaning out holes after boring.

Stuepfel functions: Stuepfel In/Out functions instruct the machine when to switch to the Stuepfel device from the borer. Borer In engages both the borer and the Stuepfel.

Styles: A style is a group of property settings stored under a unique name. You can save any combination of settings to a style. This makes it easy to apply these settings to selected embroidery and lettering objects. When you apply a style to an object, the style settings replace its current properties. Any properties not specified in the style, retain their current settings.

Sublimation: Sublimation means a change from a solid to gaseous state and back to a solid without becoming liquid. Thus dye particles migrate from the paper as a gas, to bond with a polymer – fabric or other material – and become solid again. The transfer is effected using high heat (205°C) and pressure, thus guaranteeing that the image penetrates and becomes an integral part of the substrate.

Sublimation printing:
Sublimation is similar to DTG printing but the process uses solid inks which give a more even gradation of color rather than the liquid inks in DTG printing. With sublimation printing, inks are printed onto a release paper and then transferred onto a fabric or other surface.

Supported machine type:
A machine is 'supported' by the software either via a direct implementation in the software for a specific machine or via the MS Windows® operating system – e.g. a MS Windows® supported printer or MS Windows® supported cutter.

Swiss embroidery: Satin stitch embroidery. Also recalls the origins of automated embroidery in Switzerland, where the Schiffli embroidery machine was developed in the 1800s by Isaak Groebli. Embroidery remains a government-supported industry in Switzerland today.

System administrator: The System Administrator is responsible for the entire Enterprise Network and security. In smaller enterprises, the System Administrator is also usually responsible for database administrations.

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.

T03: T03 is an old paper tape version of Barudan file.

T10: T10 is a Wilcom Plauen Schiffli format used to punch cards or as input to Electrocard or converted to floppy disk formats.

T11: T11 is a Wilcom Plauen RCC Zangs Schiffli format.

T12: T12 is a Wilcom Plauen - RCC Hiraoka Schiffli format.

T13: T13 is a Wilcom Plauen - RCC Comerio Schiffli format.

T15: T15 is a Wilcom Saurer Schiffli format used to punch cards or as input to Electrocard

or converted to floppy disk formats.

T16: T16 is a Saurer B Schiffli format.

T18: T18 is a Wilcom Saurer RCC Schiffli format.

T19: T19 is a Wilcom Saurer B - RCC Schiffli format.

T20: T20 is a Wilcom Saurer Pentamat Schiffli format.

T21: T21 is a Wilcom Saurer B Pentamat Schiffli format.

T22: T22 is a Wilcom Plauen Pentamat Schiffli format.

Tablet: See Digitizing tablet.

Tackdown: Zigzag stitch, placed after placement and cutting lines, and used to fix appliqué patches to the background fabric before cover stitching is applied.

Tape: See Paper tape.

Tape code: More recently, the recording media used in the embroidery industry has been the paper tape. Jacquard card electronic encoding produces a 'tape file' which is essentially an electronic 'image' of the card. Schiffli outputs two tape file formats – T10 (for Plauen) and T15 (for Saurer). As the newer Schiffli machines can read floppy disks, there are various Schiffli machine floppy disk formats. You therefore need to convert the basic tape file to the required disk format.

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.

Tatami offset fractions:
With Tatami fills you can specify how each row is offset in order to create patterns formed by needle penetrations. You do this by adjusting either offset fractions or partition lines. By adjusting offset fractions, you

can create textured fills where the stitch penetrations are more clearly visible.

Tatami partition lines: With Tatami fills you can specify how each row is offset in order to create patterns formed by needle penetrations. Partition lines, with up to eight offsets, can create more patterns.

Tatami underlay: Tatami underlay is used to stabilize large, filled shapes. It resembles an extremely open Tatami fill stitch, where rows of stitches are placed across the object to create the underlay.

Team Names: The Team Names feature lets you create designs with multiple names. For example, you can use the same logo with different names for sports teams or corporate uniforms without having to create multiple copies of the same design.

Templates: Templates are special files used for storing styles and default property settings. The NORMAL template packaged with the software provides a selection of preset styles. You can modify these as required and save them back to the NORMAL template or to your own custom templates. Use these when digitizing frequently-used design types to save time re-adjusting the current property settings. For example, a custom template may include standard objects and sample lettering. It may simply have preferred stitch settings, lettering font and size, and colors set as current settings. Or it may have special density, pull compensation or underlay settings to suit different fabrics.

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 Brake functions: Thread Brake +/- functions instruct the machine when to increase or decrease tension one increment by Thread Brake.

Thread chart: Thread charts are lists of predefined 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 roller functions: Thread Roller +/- functions instruct the machine when to increase or decrease tension one increment by Thread Roller Feed (2S-55 RCC).

Thread cutting: The removal of 'floats', by hand or by machine.

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.

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 EmbroideryStudio 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'. See also Stabilizer.

Trapunto: Trapunto is a general term for open fill stitching, often used as a background or for filling large shapes. In EmbroideryStudio, Trapunto effect forces travel runs to the edges of objects so they do not show through open or loose stitching.

Travel runs: 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.

Trim function: 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.

Triple Run stitch: Triple Run repeats each Run stitch three (or more) times for a thick line. Typically used to add borders and pickout runs to designs.

Triple Satin: Triple Satin is often used for folk designs to mimic handmade embroidery that uses thicker thread. If you require thicker stitches, set the Satin stitch to repeat itself multiple times.

TrueType font: Digital font technology designed by Apple Computer and now used by both Apple and Microsoft in their operating systems.

TrueView™: TrueView™ provides you with a preview of how your embroidery will look when stitched out. It gives the screen image a three dimensional look.

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.

U?? Machine file format native to Barudan machines.

UDL file: DesignWorkflow uses the Microsoft Data Link (UDL) format to link to its databases. UDL files are similar to MS Windows® shortcuts, but they contain more information about where the actual database and all of its attendant files are located. Copies of UDL files can be shared, renamed and relocated so that many people can use the information. In effect, every user with DesignWorkflow can have their own UDL link to the same database.

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-capable embroidery machine: An embroidery machine which has a standard USB port built into the machine or machine control panel.

USB converter: A device which converts a standard serial connection port to a USB type A connection.

USB memory stick: Standard USB memory stick or simply 'USB stick' used for storing and transporting files.

USB port: Universal Serial Bus Connector – a connection on a computer where you plug in the dongle.

User-defined split: User-defined splits add details to filled objects via digitized lines of needle penetrations called 'split lines'. Split lines are stored as object properties. They are preserved when stitches are regenerated even if you apply a different stitch type.

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.

Variable stitch length: The software can automatically calculate the best length for each stitch with the Variable Run Length option. A chord gap value controls how closely the stitches follow the digitized lines.

VDT: VDT is a Hiraoka Schiffli format.

Vector graphic: Unlike raster images, vector graphics contain vector data. This is a collection of geometric shapes and lines that combine to make an image. Rather than pixels, such data is recorded as a set of mathematical formulas defining shapes such as rectangles, ellipses, curves, polygon stars, etc. These are created using vector graphics programs such as CorelDRAW® Graphics Suite. Vector graphics are scalable without distortion, and are usually much smaller than bitmap images. See also Bitmap image.

Vector object: Vector objects are derived from vector graphics and can be created in EmbroideryStudio or imported. In EmbroideryStudio 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 Vector graphics.

Vector text: A text object created using the CorelDRAW® Graphics Suite Text tool.

VEP: Hiraoka VEP file format is used extensively for Pattern Arrangements (ABC) on existing machines. VEP uses a small arrangement file which splits the different design parts – A is one file, B is a second file, C is a third file.

Watcher: The operator of the Schiffli machine who sets the pattern, twists the yarns, maintains the shuttles, loads and unloads the machines, performs the rollovers and watches for thread and needle breakage. The machine operator.

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.

WECS: WECS (Wilcom ElectroCard System) eliminates the need for Jacquard cards. WECS reads Wilcom machine files T10 and T15 and runs the Schiffli Automat directly. You therefore only need to save the design as a machine file to floppy disk.

Weight: When referring to T-shirts, the three standard weight divisions are mid-weight/value, heavyweight/premium, and super heavyweight.

WESS: WESS (Wilcom Electronic Servo System) replaces the Schiffli Automat and controls the frame movements directly by servo motors. It requires Wilcom ESS, Hiraoka DAT, Saurer SAS, T10 or T15 files on floppy disk as input and its method of operation is similar to WECS.

WIA: Windows Image Acquisition (WIA) is the still image acquisition platform in the Windows family of operating systems starting with Windows Millennium Edition (Windows Me) and Windows XP.

WiFi device: Device capable of connecting to a WiFi Router or wireless access point.

WiFi network name (SSID): Service Set Identifier (SSID) – the unique identifier attached to the information which is sent over a wireless local area network.

WiFi password (key): Password, passphrase or key (depending on the WiFi security type) that allows connection to the WiFi router or access point.

WiFi router: Device that provides basic network infrastructure for a home or small office network. Provides a wireless access point for many wireless devices for access to each other for access to the Internet as well as for file sharing and printing. Sometimes referred to simply as a Wireless Router.

WiFi USB machine network: A network of wirelessly connected, USB enabled embroidery machines and PCs.

Windows domain: a network of Windows PCs, also known as 'network domain', in which computers rely on a centralized authentication database. Users log into the domain and the access privileges are served from the central database which is controlled by a network administrator.

Windows workgroup: 'Workgroup' is Microsoft's term for a peer-to-peer local area network. Computers running Microsoft operating systems in the same workgroup may share files, printers, or Internet connection.

Wireless Access Point (WAP): A wireless access point or 'WAP' is a hardware device on a local area network (LAN) that allows wireless capable devices and wired networks to connect.

WLAN: Wireless Local Area Network or WiFi network.

WMF: MS Windows® Metafile vector format.

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.

XXX: Compucon stitch or 'expanded' file format in the professional market.

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.

ZSK: ZSK1 format is for older ZSK machines, generally those older than 1991. ZSK2 is for newer ZSK machines, those characterized by a single top thread trimmer. The trim is the most significant differentiating factor between the two types.

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