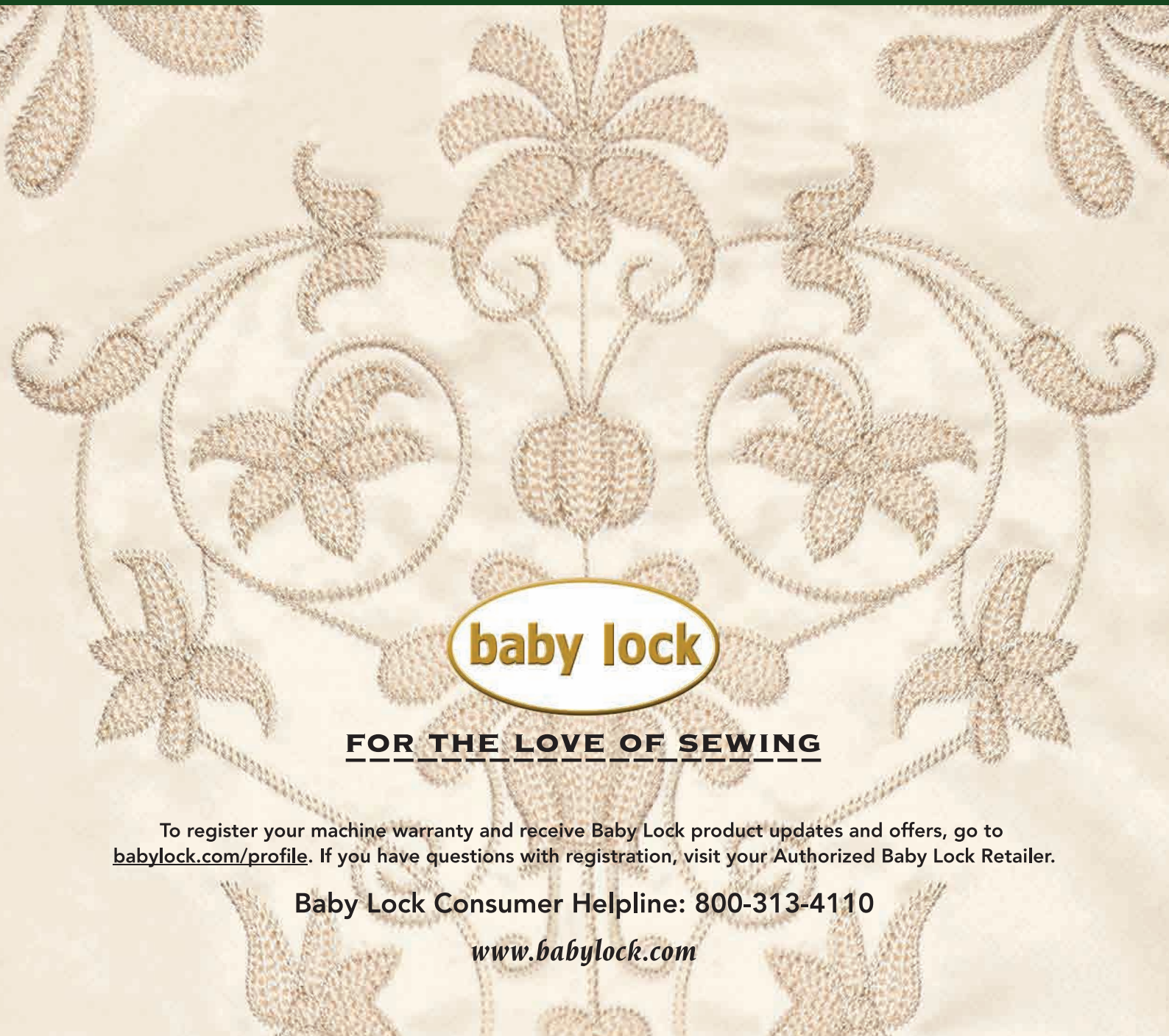
Destiny™ II

Instruction and Reference Guide

Model BLDY2



baby lock

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Chapter 5
Basic Embroidery

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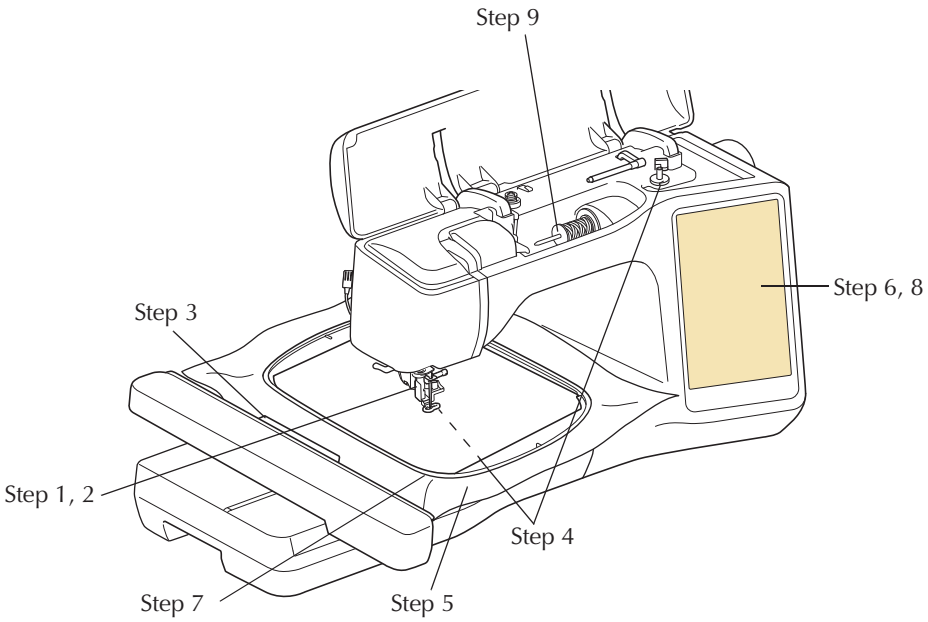
BEFORE EMBROIDERING

Embroidery Step by Step

Follow the steps below to prepare the machine for embroidery.



Step #	Aim	Action	Page
1	Presser foot attachment	Attach embroidery foot “W+”.	197
2	Checking the needle	Use needle 75/11 for embroidery. *	75
3	Embroidery unit attachment	Attach the embroidery unit.	197
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9	Embroidery thread setup	Set up embroidery thread according to the pattern.	60

* It is recommended that a 90/14 needle should be used when embroidering on heavy weight fabrics or stabilizing products (for example; denim, puffy foam, etc.). Ball point needle (golden colored) 90/14 is not recommended for embroidery.

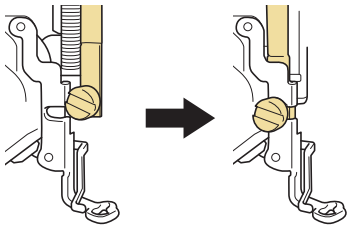
Attaching Embroidery Foot "W+" with LED pointer

⚠ CAUTION

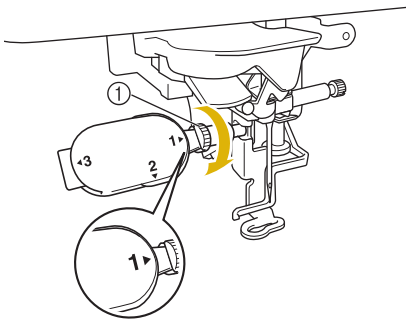
- When attaching a presser foot, always press on the screen. You may accidentally press the "Start/Stop" button and possibly cause injury.
- Be sure to use embroidery foot "W+" with LED pointer or "W" (optional) when doing embroidery. Using another presser foot may cause the needle to strike the presser foot, causing the needle to bend or break and possibly cause injury.

1. Remove the presser foot and presser foot holder. For details, refer to "CHANGING THE PRESSER FOOT" on page 68.
2. Position the embroidery foot "W+" with LED pointer on the presser foot bar by aligning the notch of the presser foot to the large screw.

Side view



3. Hold the embroidery foot in place with your right hand, and then use the included multi-purpose screwdriver to securely tighten the presser foot holder screw.

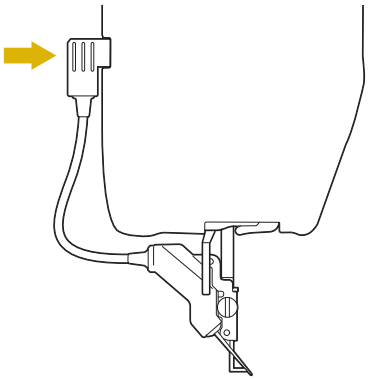


① Presser foot holder screw

⚠ CAUTION

- Use the included multi-purpose screwdriver to firmly tighten the screw of the presser foot holder. If the screw is loose, the needle may strike the presser foot and possibly cause injury.

4. Plug the connector of the embroidery foot "W+" with LED pointer into the jack on the back left side of your machine.



5. Press to unlock all keys and buttons.

→ All keys and operation buttons are unlocked, and the previous screen is displayed.

Attaching the Embroidery Unit

■ About the Embroidery Unit

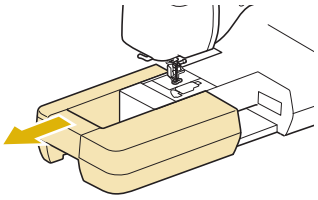
⚠ CAUTION

- Do not move the machine with the embroidery unit attached. The embroidery unit could fall off and cause injury.
- Keep your hands and foreign objects away from the embroidery carriage and frame when the machine is embroidering. Otherwise, injury may result.
- To avoid distorting your embroidery design, do not touch the embroidery carriage and frame when the machine is embroidering.

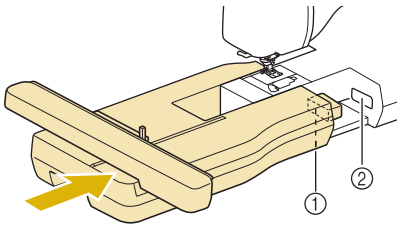
Note

- You can also sew utility/decorative stitches with the embroidery unit attached. Touch [home] and [stitch]. The feed dog will automatically raise for utility and decorative stitching.
- Be sure to turn off the power before installing the embroidery unit. Otherwise, the machine may be damaged.
- Do not touch the inner connector of the embroidery unit. The pins on the embroidery unit connection may be damaged.
- Do not apply strong force to the embroidery unit carriage or pick up the unit by the carriage. Otherwise, the embroidery unit may be damaged.
- Store the embroidery unit in a safe place to prevent damage to the unit.

1 Turn the main power to OFF, and remove the flat bed attachment.



2 Insert the embroidery unit connection into the machine connection port. Push lightly on the connection port cover until the unit clicks into place.



① Embroidery unit connection
② Machine connection port

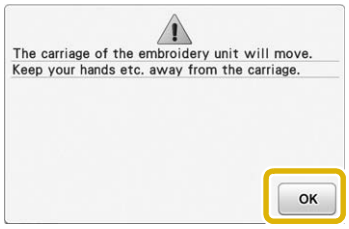
Note

- Be sure there is no gap between the embroidery unit and the sewing machine. If there is a gap, the embroidery patterns will not embroider with the correct registration.
- Do not push on the carriage when installing the embroidery unit onto the machine. Moving the carriage may damage the embroidery unit.

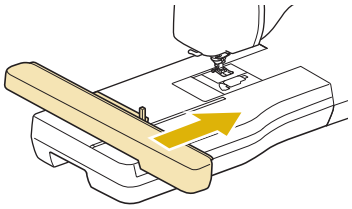
3 Turn the main power to ON.

→ The following message will appear.

4 Press [OK].



→ The carriage will move to the initialization position.



■ Removing the Embroidery Unit

1 Press [stitch], then press [unit].

→ The carriage will move to the removal position.

⚠ CAUTION

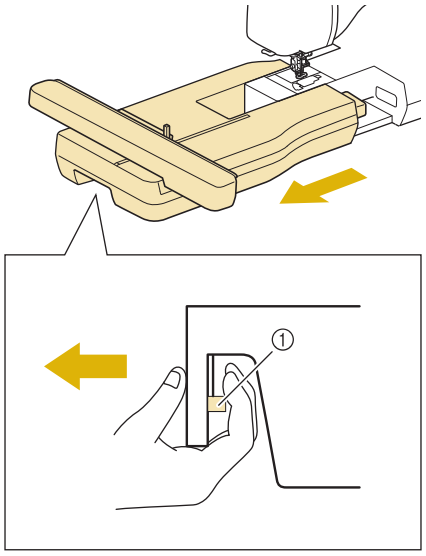
- **Always remove the embroidery frame before pressing [unit]. Otherwise, the frame may strike the embroidery foot, and possibly cause injury.**

2 Turn the main power to OFF.

Note

- Be sure to turn off the machine before removing the embroidery unit, otherwise damage to the machine may result.

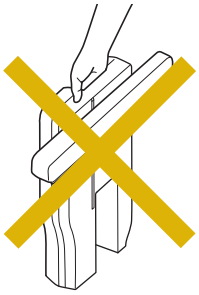
3 **Press the release button, and pull the embroidery unit away from the machine.**



① Release button

⚠ CAUTION

- **Do not carry the embroidery unit by holding the release button compartment.**

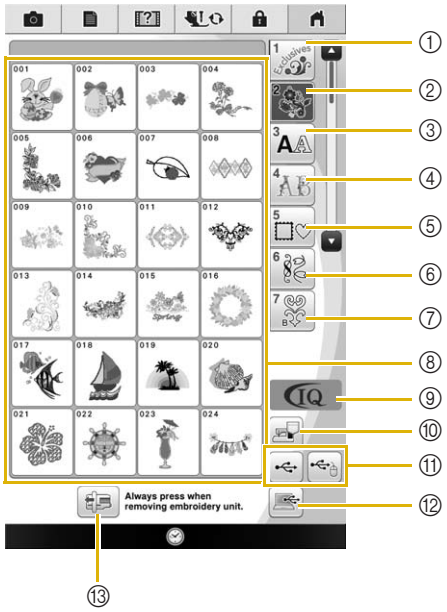


SELECTING PATTERNS

■ Copyright Information

The patterns stored in the machine and patterns sold separately are intended for private use only. Any public or commercial use of copyrighted patterns is an infringement of copyright law and is strictly prohibited.
There are many character and decorative embroidery patterns stored in the machine's memory (see the "QUICK REFERENCE GUIDE" for a full summary of patterns in the machine's memory). You can also use patterns sold separately.
Once the machine has finished the initialization and the carriage has moved to the start position, the pattern selection screen will display.

If another screen is displayed, press , then to display the screen below.



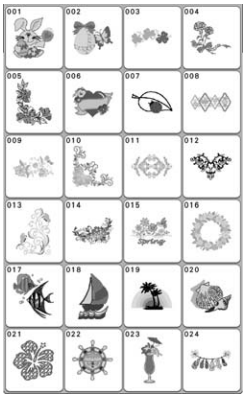
① "Baby Lock" Exclusives
② Embroidery patterns
③ Character patterns
④ Decorative alphabet patterns
⑤ Frame patterns
⑥ Utility embroidery patterns
⑦ Bobbin work patterns (see page 368)
⑧ Pattern type selection keys
⑨ IQ Designer (see page 324)
⑩ Patterns saved in the machine's memory (see page 301)
⑪ Patterns saved in USB media (see page 207)
⑫ Patterns saved on the computer (see page 208)
⑬ Press this key to position the embroidery unit for storage

■ Pattern Selection Screens

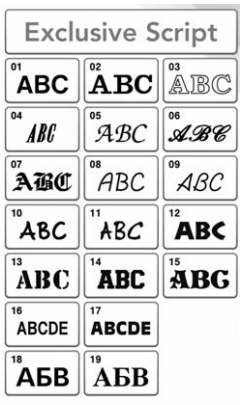
There are 7 categories of patterns in this machine.

1 "Baby Lock" Exclusives

2 Embroidery patterns

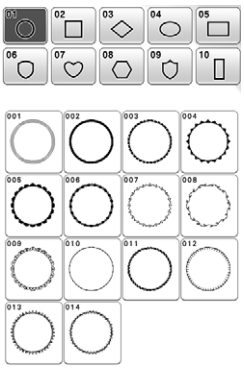


3 Alphabet characters

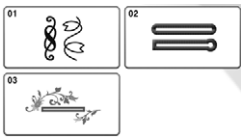


4 Floral alphabet patterns

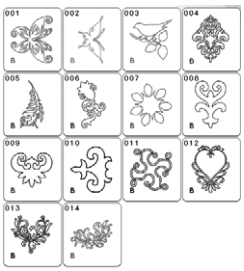
5 Frame patterns



6 Utility embroidery patterns



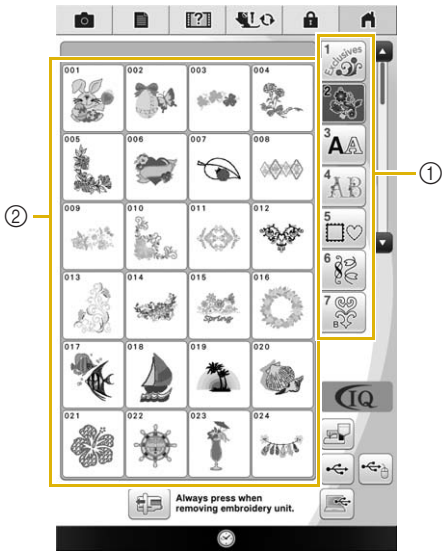
7 Bobbin work patterns



Selecting Embroidery Patterns/ Decorative Alphabet Patterns/ Utility Embroidery Patterns/ Bobbin Work Patterns

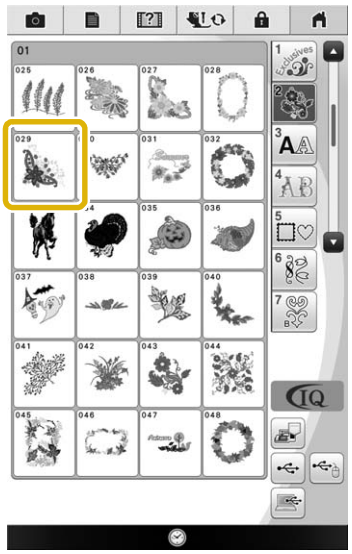
1 Press the category tab and then press the pattern type selection key or pattern key you want to embroider.

* Refer to "How to Create Bobbin Work" on page 318 about the bobbin work embroidery.



① Pattern category tab
② Pattern type/pattern selection key

2 Press the key of the pattern you want to embroider.



* Press ▼ to view the next page.

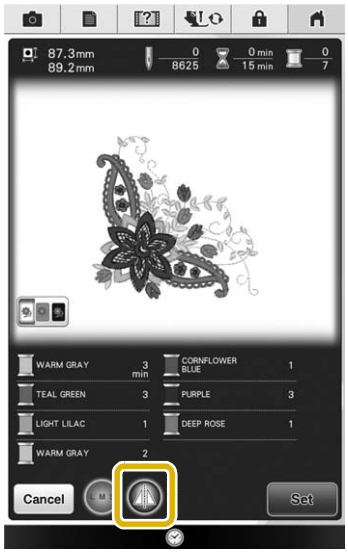
* Press ▲ to view the previous page.

* Press the category tab to return to the previous screen.

→ The selected pattern is displayed.

3 Press to create a mirror image of the pattern as needed.

* If a mistake has been made when selecting the pattern, press Cancel to return to the previous screen, and select the pattern you want to embroider.



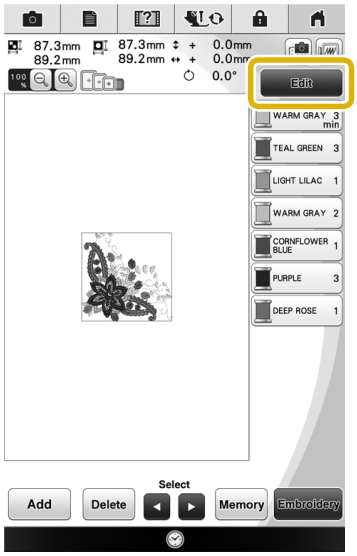
* Press to darken the screen background for the pattern with bright thread colors, to get a clearer image.

4 Press Set or touch the selected pattern.

→ The pattern selected is outlined in red on the "Edit" display.

5 Press Edit to edit the selected pattern.

* Refer to "EDITING PATTERNS" on page 210 about the "Edit" display.



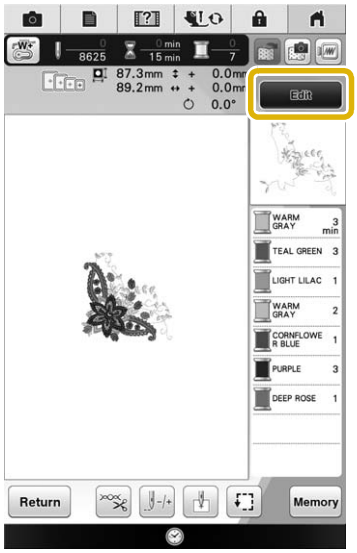
6 **Press Embroidery.**

→ The embroidering screen is displayed.

7 **Press Edit to edit the pattern before embroidering in this "Embroidery" screen.**

* Refer to "VIEWING THE EMBROIDERY SCREEN" on page 236.

* To return to the previous screen to select another pattern, press Return.



8 **Press the "Start/Stop" button to begin embroidering.**

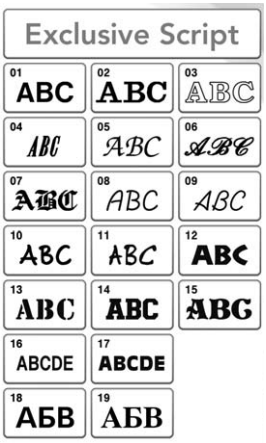
* See "Embroidering Patterns" on page 260.

Selecting Alphabet Character Patterns

Example: Entering "Blue Sky".

1 **Press AA.**

2 **Press the key of the font you want to embroider.**



3 **Press the tab to select a character type.**

4 **Press ABC and then enter "B".**

* If you want to change the size of a character, select the character and then press L M S to change the size. The size changes each time you press the key, from large to medium to small.

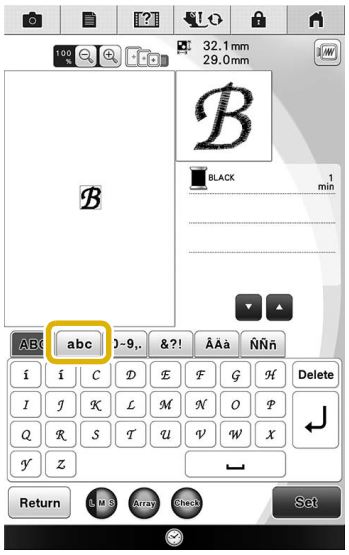
* If you make a mistake, press Delete to erase the mistake.

* If the pattern is too small to see clearly, you can use the Check key to check it.

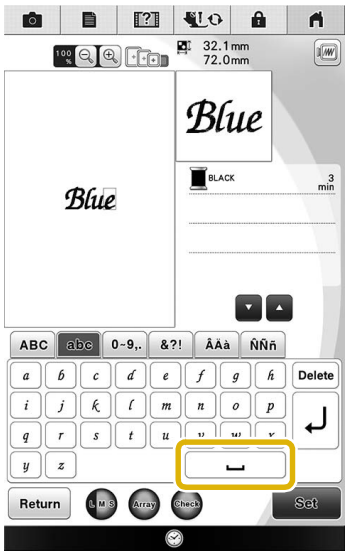
Memo

- If you continue adding characters after changing the size, the new characters will be entered in the new size.
- You cannot change the size of the entered characters after combining character stitch patterns.

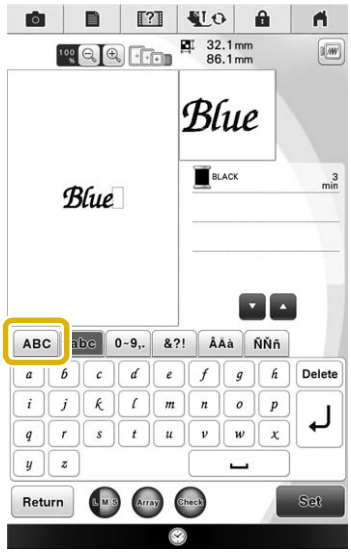
5 Press abc and enter “lue”.



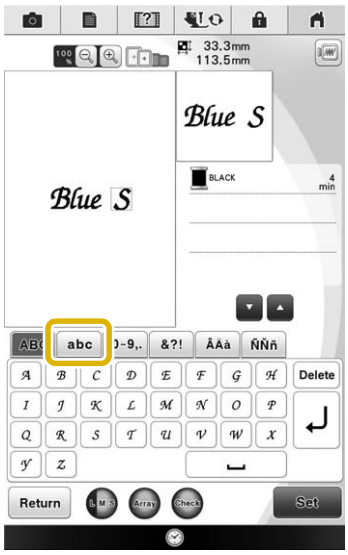
6 Press ␣ to enter a space.



7 Press ABC again and enter “S”.



8 Press abc and then enter “ky”.



9 Press Set.

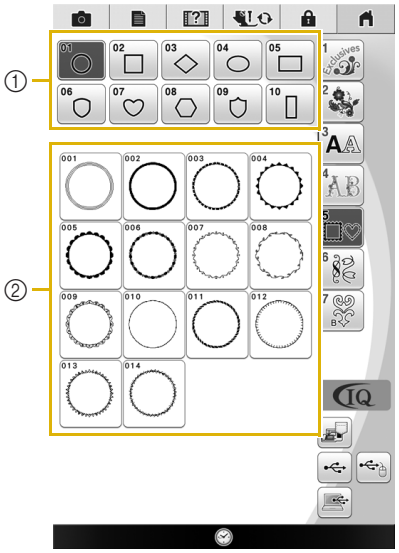
→ The embroidering screen is displayed.

10 **Follow the steps from 5 - 8 of “Selecting Embroidery Patterns/Decorative Alphabet Patterns/Utility Embroidery Patterns/ Bobbin Work Patterns” on page 202.**

Selecting Frame Patterns

1 **Press** .

2 **Press the key of the frame shape you want to embroider in the top part of the screen.**



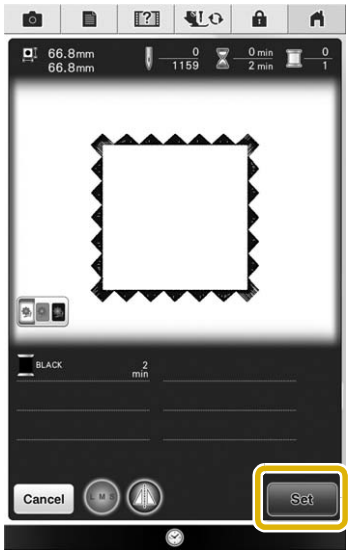
① Frame shapes
② Frame patterns
→ Various frame patterns are displayed at the bottom part of the screen.

3 **Press the key of the frame pattern you want to embroider.**

* If you make a mistake selecting the pattern, press the key of the pattern you want to embroider.

→ The selected pattern is displayed on the screen.

4 **Press** Set.



→ The embroidering screen is displayed.

5 **Follow the steps from 5 to 8 of "Selecting Embroidery Patterns/Decorative Alphabet Patterns/Utility Embroidery Patterns/ Bobbin Work Patterns" on page 202.**

Selecting Patterns from Embroidery Cards

■ About Embroidery Card Reader (Sold Separately) and USB Card Writer Module*

- Use only an embroidery card reader designed for this machine. Using an unauthorized embroidery card reader may cause your machine to operate incorrectly.

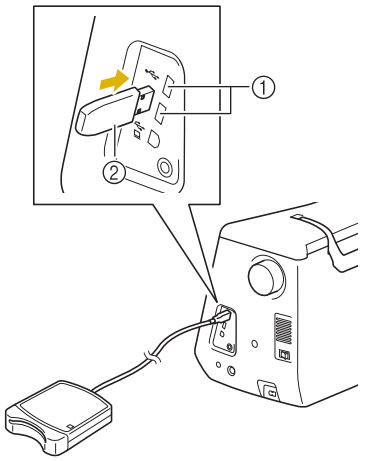
* If you have purchased the Palette 5 or higher, Palette Petite or Palette PTS, you can plug the included USB card writer module into the machine as an embroidery card reader, and recall patterns.

Note
- Embroidery patterns cannot be saved from the machine to an embroidery card inserted into a connected USB card writer module*.

■ About Embroidery Cards (Sold Separately)

- Use only embroidery cards manufactured for this machine. Using unauthorized cards may cause your machine to operate incorrectly.
- Embroidery cards sold in foreign countries cannot be used with this machine.
- Store embroidery cards in the hard case.

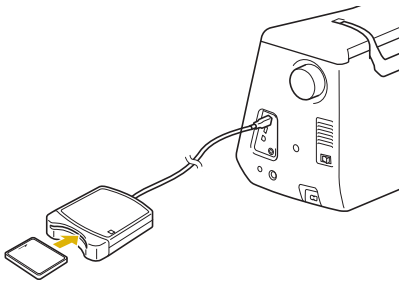
1 **Plug the optional embroidery card reader/ USB card writer module into the USB port on the machine.**



① USB port
② Embroidery card reader/USB card writer module

2 **Insert the card completely into the card reader/USB card writer module.**

* Insert the embroidery card so that the end with a printed arrow is facing up.



Note

- Two embroidery USB card readers/USB card writer modules cannot be used with this machine at the same time. If two embroidery USB card readers/USB card writer module are inserted, only the embroidery USB card reader/USB card writer module inserted first is detected.

3 **Press** .

→ The patterns on the embroidery card are displayed on the selection screen.

4 **Press the key of the pattern you want to recall.**

* Press Return to return to the original screen.

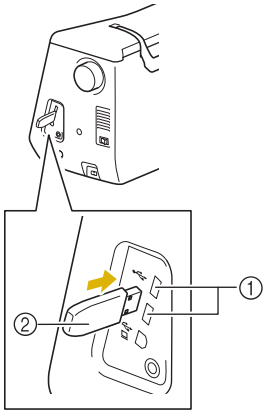
5 **Press** Set.

Recalling from USB Media

You can recall a specific embroidery pattern from either direct USB media or a folder in the USB media. If the pattern is in a folder, check each folder to find the embroidery pattern.

Note
- The processing speed may vary by quantity of data.

1 **Insert the USB media into the USB port on the machine.**

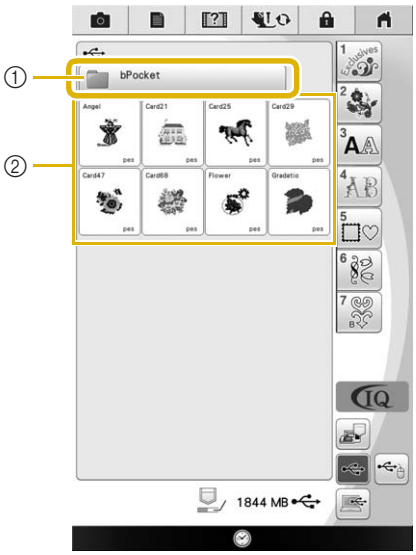


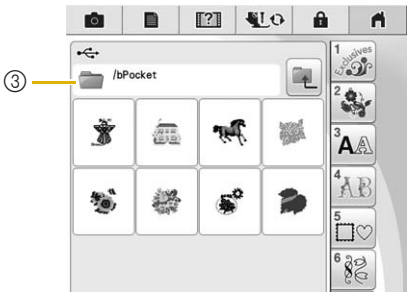
① USB port
② USB media

2 **Press [USB].**

→ Embroidery patterns and a folder in a top folder are displayed.

3 **Press [Folder] when there is a subfolder to sort two or more stitch patterns to USB media, the embroidery pattern in the subfolder is displayed.**





① Folder name
② Embroidery patterns in USB media
③ Path

* The path to show the current folder at the top of the list.
Embroidery patterns and subfolders within a folder are displayed.

* Press [Folder] to return to the previous folder.

* Use the computer to create folders. Folders cannot be created with the machine.

4 **Press the key of the pattern you want to retrieve.**

* Press [Cancel] to return to the original screen.

5 **Press Set.**

* Press Delete to delete the pattern from the USB media.

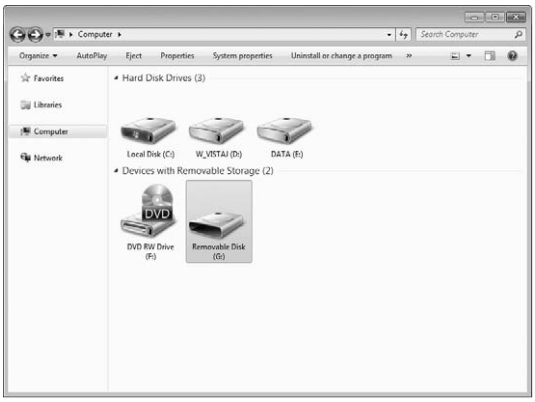
→ The Embroidery Edit screen is displayed.

Recalling from the Computer

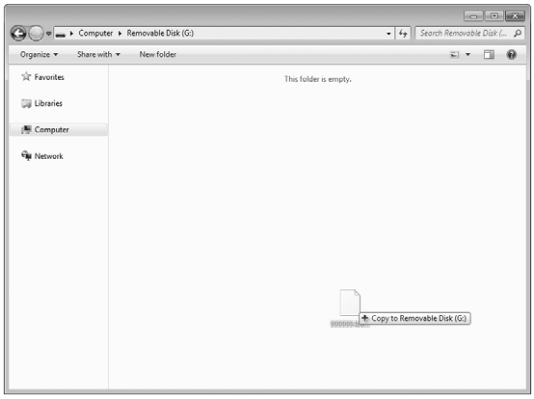
Refer to “Connecting Your Machine to the PC” on page 298 for the available computer operating systems.

1 **Plug the USB cable connector into the corresponding USB ports for the computer and for the machine (see page 300).**

2 **On the computer, open “Computer (My Computer)” then go to “Removable Disk”.**



3 **Move/copy the pattern data to “Removable Disk”.**



→ Pattern data in “Removable Disk” is written to the machine.

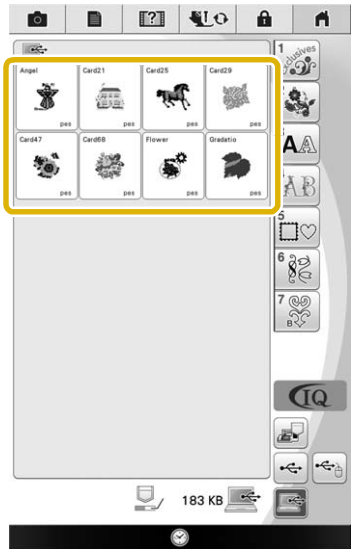
Note

- While data is being written, do not disconnect the USB cable.
- Do not create folders within “Removable Disk”. Since folders are not displayed, stitch pattern data within folders cannot be recalled.

4 **Press .**

→ The patterns in the computer are displayed on the selection screen.

5 **Press the key of the pattern you want to recall.**

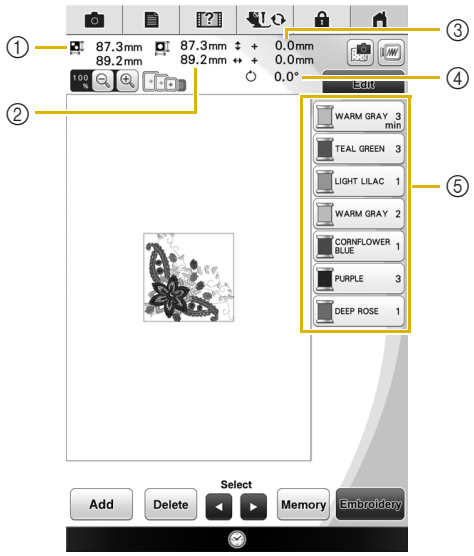


6 **Press Set.**

* Press Delete to delete the pattern from the computer.

→ The Embroidery Edit screen is displayed.

EDITING PATTERNS



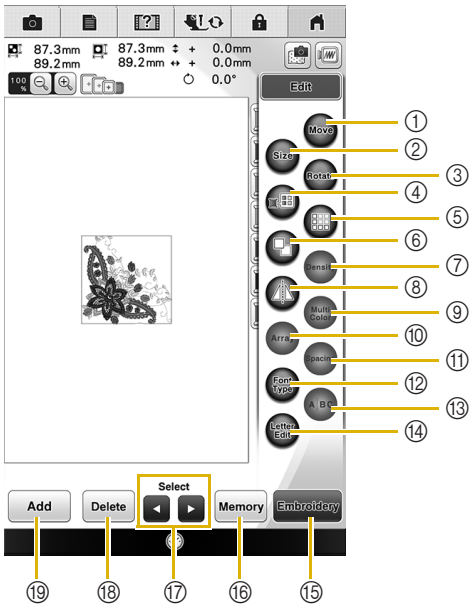
① Shows the size of the entire combined pattern.
② Shows the size of the pattern currently selected.
③ Shows the distance from the center of the frame.
④ Shows the degree of rotation for the pattern.
⑤ Shows the color sequence and stitching times of each step of the pattern currently selected.

Memo

- If a key display is darkened, you cannot use that function with the selected pattern.

■ Key Functions

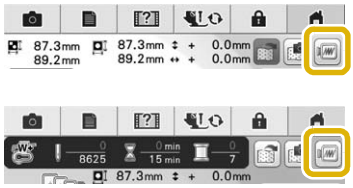
Using these keys, you can edit the pattern as you like. Press Edit to display the editing window.



No.	Display	Key Name	Explanation	Page
①	Move	Move key	Press to display the pattern moving window.	212
②	Size	Size key	Press this key to change the size of the pattern. Patterns can be enlarged or reduced.	214
③	Rotate	Rotate key	Press this key to rotate the pattern. You can rotate a pattern one degree, ten degrees or ninety degrees at a time.	213
④		Thread palette key	Press this key to change the colors of the displayed pattern.	222
⑤		Border key	Press this key to make and edit a repeating pattern.	229
⑥		Duplicate key	Press this key to duplicate a pattern.	235
⑦	Density	Density key	Press this key to change the density of frame patterns or character patterns.	217
⑧		Horizontal mirror image key	Press this key to make a horizontal mirror image of the selected pattern.	215
⑨	Multi Color	Multi color key	Press this key to change the color of individual characters in a pattern.	218
⑩	Array	Array key	Press this key to change the configuration of a character pattern.	219
⑪	Spacing	Character spacing key	Press this key to change the spacing of character patterns.	221
⑫	Font Type	Font Type key	Press to change the font type after entering all the characters.	216
⑬	A BC	Separate key	Press to display the pattern separate window. You can separate the combined character patterns to adjust the spacing or edit separately afterwards.	221
⑭	Letter Edit	Letter Edit key	Press to edit characters after entering all. You can change the size or font type.	216
⑮	Embroidery	Embroidery key	Press this key to call up the embroidering screen.	235
⑯	Memory	Memory key	Press this key to save a pattern in the machine's memory, USB media or a computer.	299, 300
⑰	Select	Pattern select key	When a combined pattern is selected, use these keys to select a part of the pattern to edit.	240
⑱	Delete	Delete key	Press this key to delete the selected pattern (the pattern outlined by the red box).	219
⑲	Add	Add key	Press this key to add another pattern to the editing pattern.	235

Previewing the Pattern

1 **Press** .



→ An image of the pattern as it will be embroidered appears.

2 **Press to select the frame used in the preview.**

* Frames displayed in dark gray cannot be selected.
* Press to enlarge the image of the pattern.
* The pattern can be sewn as it appears in the following display.

Memo

- You can begin sewing from this screen by pressing the “Start/Stop” button.

3 **Press** OK.

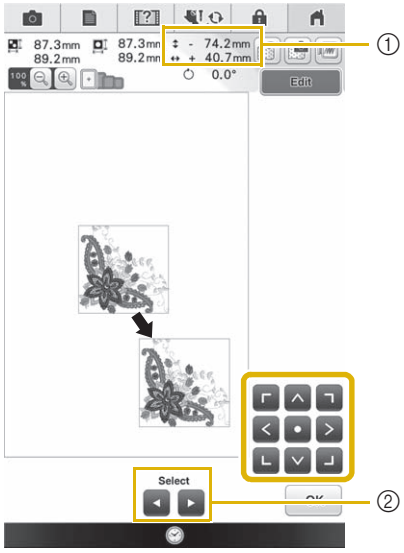
Moving the Pattern

The pattern can be moved to the desired position by dragging on the screen using your finger, the touch pen or connected mouse without displaying the editing window. If you need some fine adjustment, move the pattern from the editing window.

1 **Press Move to display the pattern move window.**

2 **Select the desired pattern by pressing , if there are several patterns on the screen.**

3 **Use to move the pattern in the direction shown by the arrow. Press to center the pattern.**



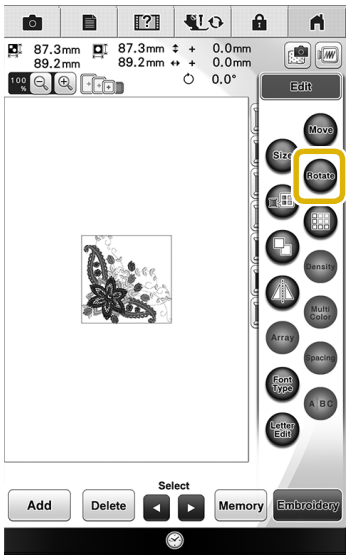
① Distance from the center
② Pattern select key

The pattern can also be moved by dragging it. If a USB mouse is connected, move the mouse to position the pointer on the desired pattern, and then select and drag the pattern. The pattern can also be dragged by selecting it directly in the screen with your finger or the touch pen.

4 **Press** OK.

Rotating the Pattern

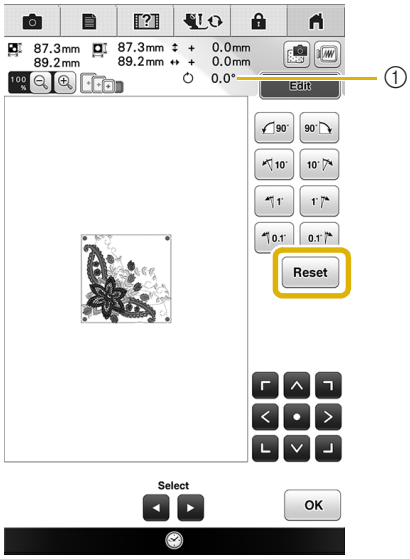
1 **Press** Rotate.



2 **Select the angle of rotation for the pattern.**

90°	Rotate the pattern 90 degrees to the left.
90°	Rotate the pattern 90 degrees to the right.
10°	Rotate the pattern 10 degrees to the left.
10°	Rotate the pattern 10 degrees to the right.
1°	Rotate the pattern 1 degree to the left.
1°	Rotate the pattern 1 degree to the right.
0.1°	Rotate the pattern 0.1 degree to the left.
0.1°	Rotate the pattern 0.1 degree to the right.

* Press Reset to return the pattern to its original position.



① Degree of rotation

0°

90°

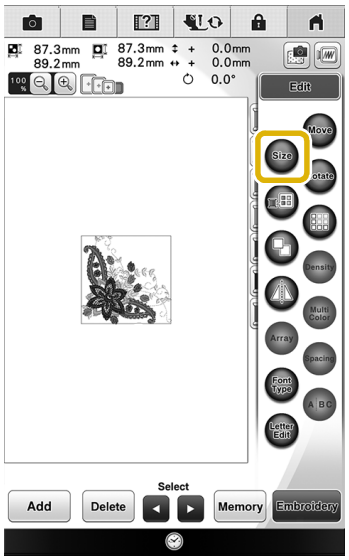
Memo

- You can rotate the pattern by rotating the mouse wheel. Rotate the mouse wheel away from you to rotate the pattern 10 degrees to the left. Rotate the mouse wheel toward you to rotate the pattern 10 degrees to the right.
- You can move patterns using on the window.

3 **Press** OK.

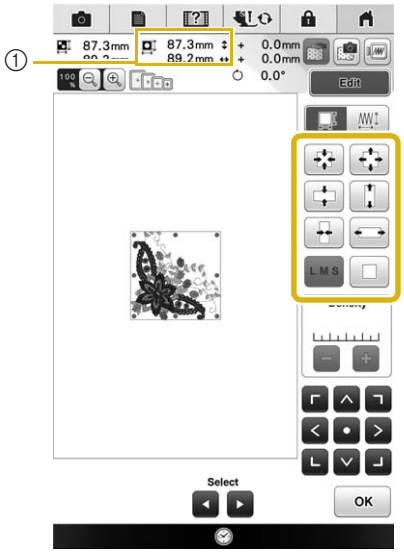
Changing the Size of the Pattern

1 **Press** .

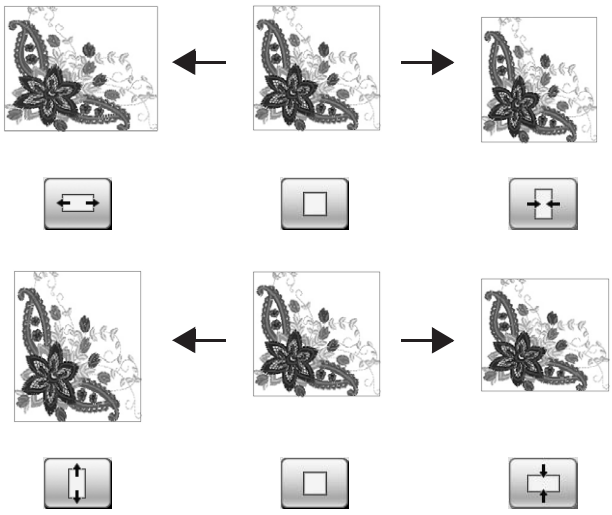


2 **Select the direction in which to change the size.**

	Enlarge the pattern proportionately.
	Decrease the pattern proportionately.
	Stretch the pattern horizontally.
	Decrease the pattern horizontally.
	Stretch the pattern vertically.
	Decrease the pattern vertically.
	Return the pattern to its original appearance.



① Size of the pattern



Memo

- Some patterns or characters can be enlarged more than others.
- Some patterns or characters can be enlarged to a greater degree if they are rotated 90 degrees.
- You can change the size of the pattern by rotating the mouse wheel. Rotate the mouse wheel away from you to shrink the pattern. Rotate the mouse wheel toward you to enlarge the pattern.
- You can move patterns using on the window.

3 **Press** OK.

■ Changing the Size and the Density of the Pattern

You can change the pattern size while maintaining the desired thread density. The machine recalculates the stitch density automatically. With this function, the pattern will be enlarged or reduced at a larger ratio than with normal pattern resizing.

Note

- Be sure to sew trial embroidery using same fabric and threads as project in order to check the sewing results.
- This function cannot be used with alphabet character patterns, frame patterns or border patterns. However, a border pattern can be edited after this function has been used.
- Patterns with a large number of stitches (about 100,001 or more) cannot be resized while maintaining a desired thread density. The maximum limit for the number of stitches differs depending on the data size of pattern.

1 Press [ ] [ ] in the size window.

* Press [ ] [ ]: When changing the size, the pattern keeps the original density.

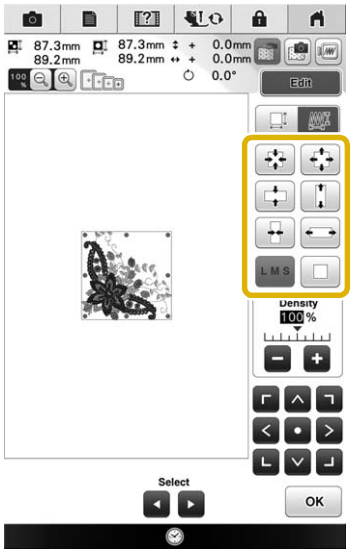
* Press [ ] [ ]: When you want to increase or decrease the density of the design.

2 Change the density.

* Press [−] to make the pattern less dense.

* Press [+] to make the pattern more dense.

3 Select the direction in which to change the size.



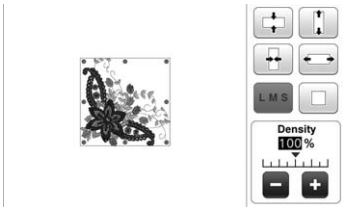
4 Press [OK].

Note

- If the pattern is enlarged and there is space between stitches, a better effect can be achieved by increasing the thread density.
- If the pattern is reduced and the stitching is too thick, a better effect can be achieved by reducing the thread density.

■ Changing the Size by Dragging

You can also change the pattern size by dragging the red point on the pattern image using your finger, touch pen or connected mouse.



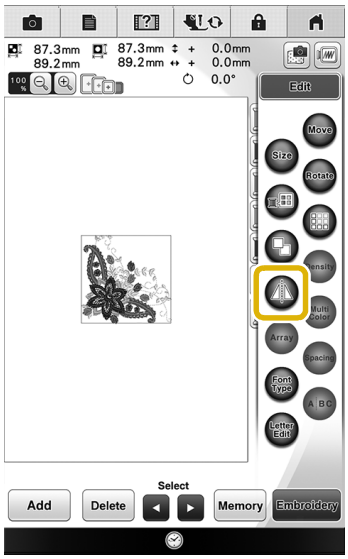
Note

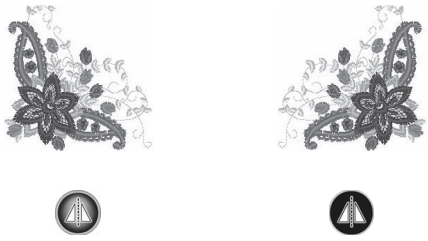
- You can change the pattern size with one finger. Using two or more fingers does not work.

Creating a Horizontal Mirror Image

Press [ ] so it appears as [ ] to create a horizontal mirror image of the selected pattern.

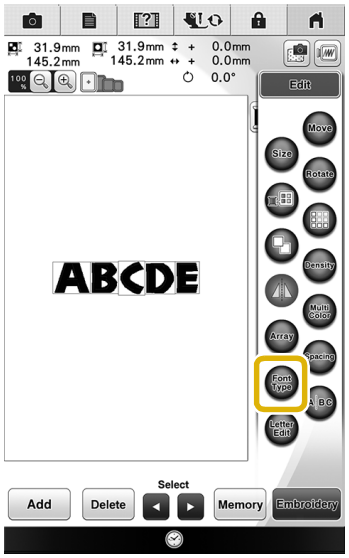
Press [ ] again to return the pattern to normal.





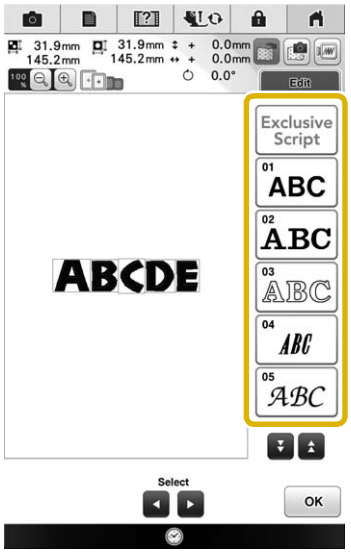
Changing Font Type

1 **Press** Font Type.



2 **Select the font type.**

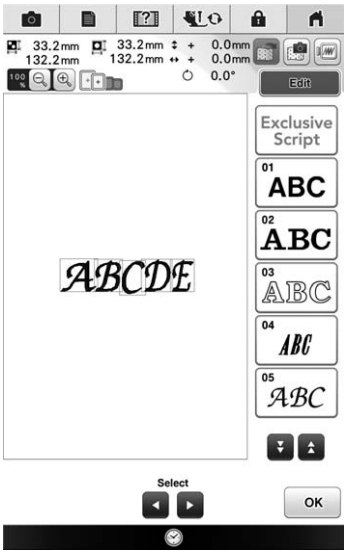
→ All the characters in the screen change into the selected font type.



* Press ▲▲ or ▼▼ to display the font type that is not on the screen.

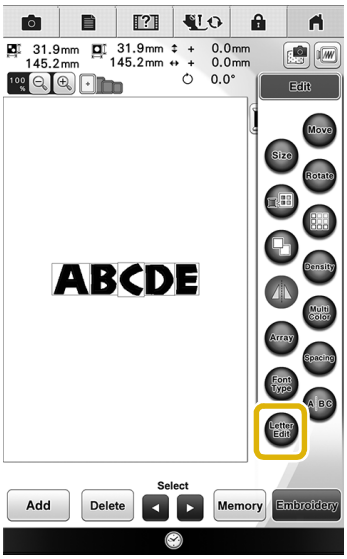
3 **Press** OK.

→ The new font is selected.



Editing Letters (Size/Font Type)

1 **Press** Letter Edit.

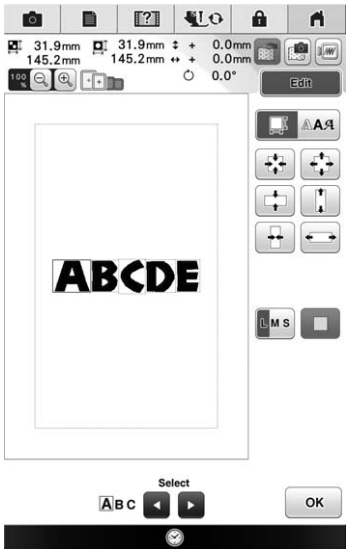


2 **Select a letter you want to edit by pressing ◀ or ▶.**

3 **Change the size of letters.**

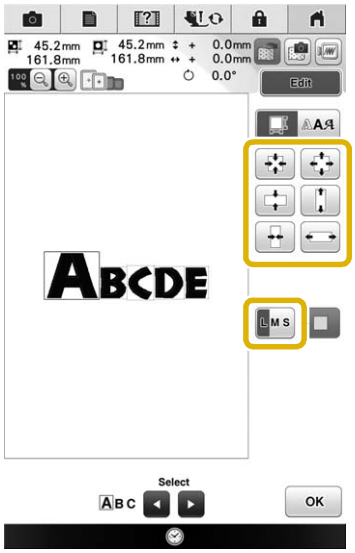
→ Selected letter will be resized.

* Press [AA] if the resize keys are not displayed.



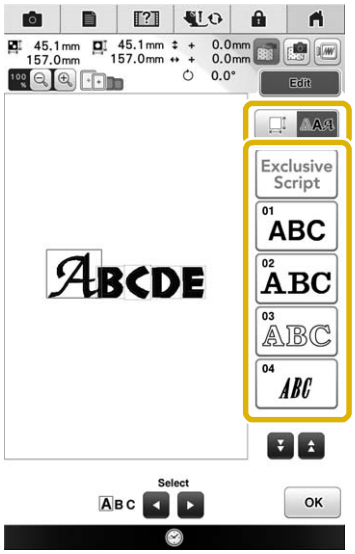
4 **Select the direction in which to change the size, or press [LMS].**

→ Refer to "Changing the Size of the Pattern" on page 214 about selecting the direction.



5 **Press [AA] to change font type, and then select the font type.**

→ Selected letter's font type will be changed.

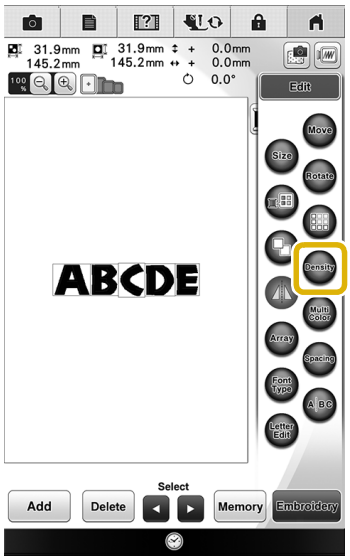


6 **Press [OK].**

Changing the Density (Alphabet Character and Frame Patterns Only)

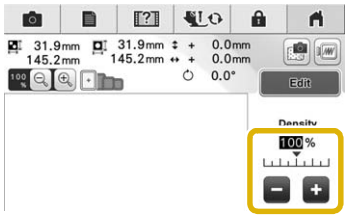
The thread density for some alphabet character and frame patterns can be changed.
A setting between 80% and 120% in 5% increments can be specified.

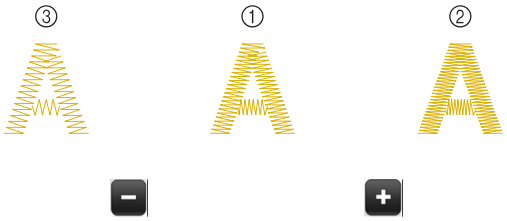
1 **Press [Density].**



2 **Change the density.**

* Press [−] to make the pattern less dense.
* Press [+] to make the pattern more dense.





① Normal
② Fine (stitches closer together)
③ Coarse (stitches farther apart)
→ The pattern density changes each time you press a button.

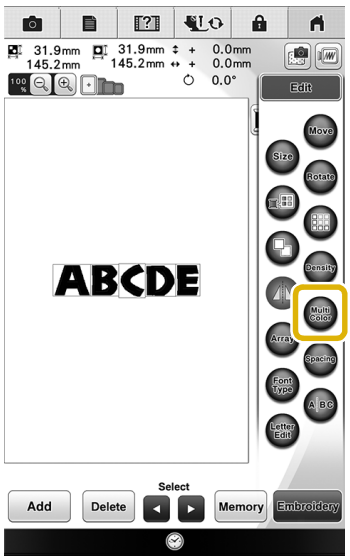
3 **Press** [OK].

Changing the Colors of Alphabet Character Patterns

Combined alphabet character patterns can be sewn with each letter in a different color. If "Multi Color" is set, the machine stops after each character is sewn so that the thread can be changed to a different color.

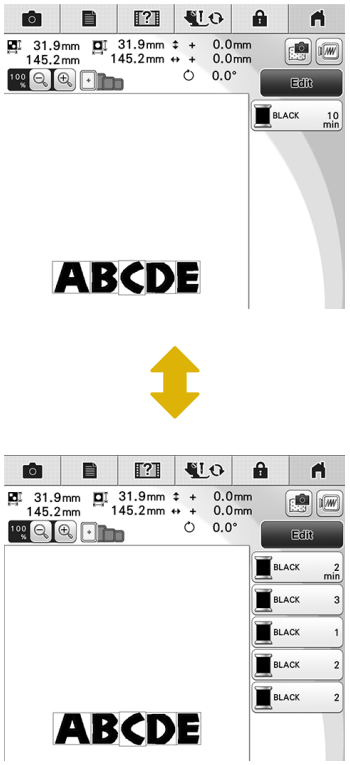
1 **Press** [Multi Color] **so that it appears as** [Multi Color].

* Press the key again to return to the original setting.



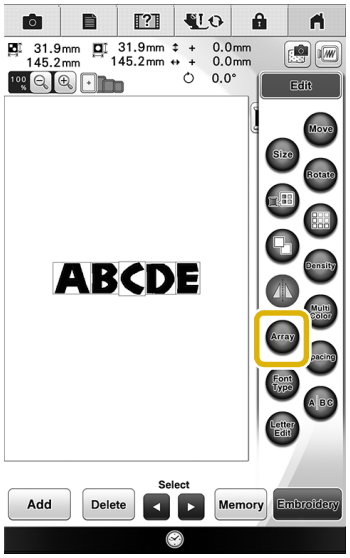
2 **Press** [Edit].

3 **After a character is sewn, change the thread color, and then sew the next character.**



Changing the Configuration of Alphabet Character Patterns

1 **Press** Array.

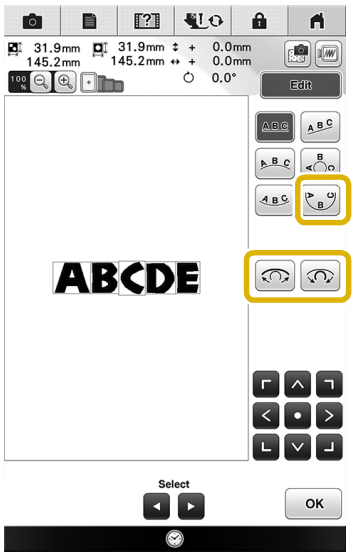


2 **Select the layout. (Example:**)

When selecting an arc, use **and** **to change the degree of the arc.**

* Press to make the arc flatter.

* Press to make the arc rounder.



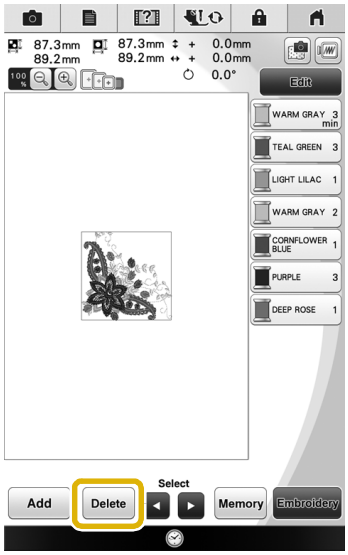
Memo

- When selecting , and change to and . You can increase or decrease the incline.
- You can move patterns using on the window.

3 **Press** OK.

Deleting the Pattern

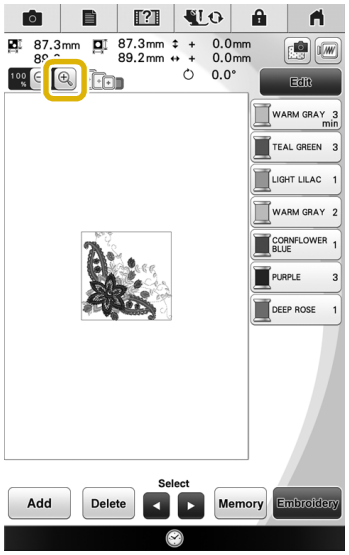
Press Delete to delete the pattern from the screen.



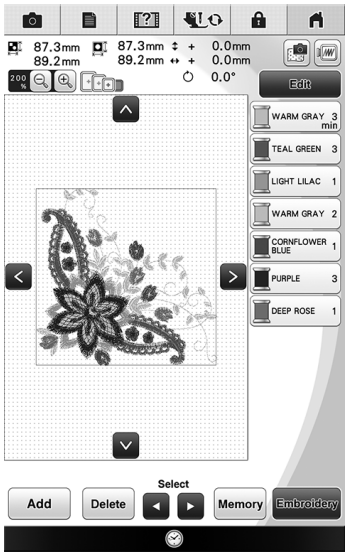
Displaying Patterns in the Screen Magnified

1 **Press to magnify the image.**

* The image is magnified by 125%, 150% and 200% as you press .



2 **Check the displayed pattern.**

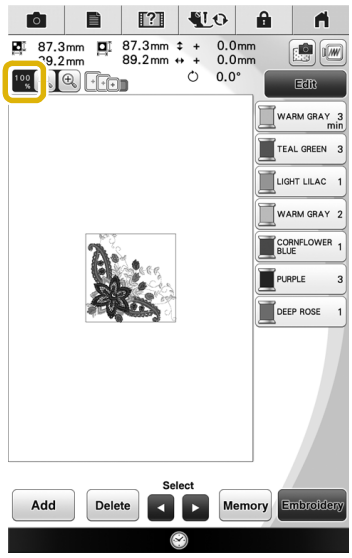


→ Use to scroll through the display in any direction.

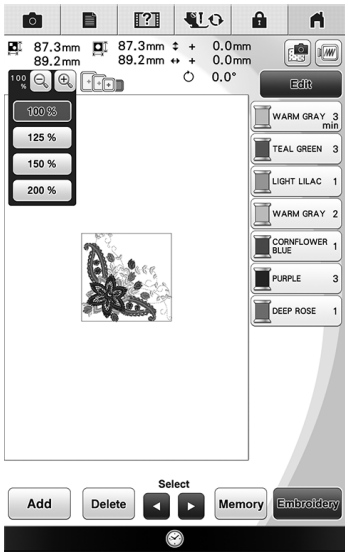
3 **Press to return the pattern image to the normal size (100%).**

■ Selecting the Percent of Magnification

1 **Press .**

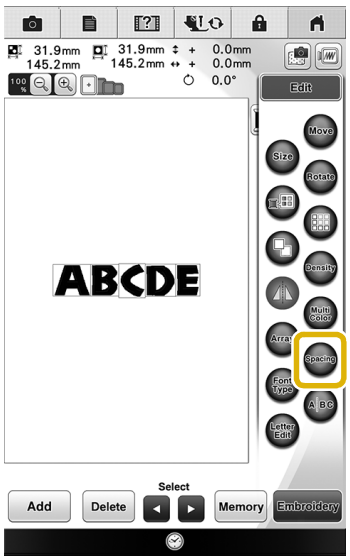


2 **Press the percent of magnification you desire.**



Changing Alphabet Character Spacing

1 **Press** Spacing.



2 **Select the spacing.**

* Press ‹ABC› to increase the character spacing.

* Press ›ABC‹ to decrease the character spacing.

* Press A B C to return the pattern to its original appearance.

A B C D E ⇔ ABCDE

‹ABC›　　›ABC‹

Memo

- You can move patterns using ↖ ↑ ↗ ← • → ↙ ↓ ↘ on the window.

3 **Press** OK.

Note

- It is not recommended to edit data and transfer to other or older version machines. Some features do not apply in other machines, so problems may occur.
- Character spacing can be reduced only when characters are arranged normally on a straight line.

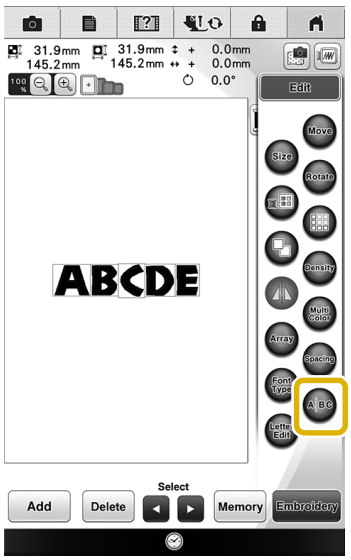
Memo

- The spacing between characters can be reduced to 50% of the narrowest character in the group.

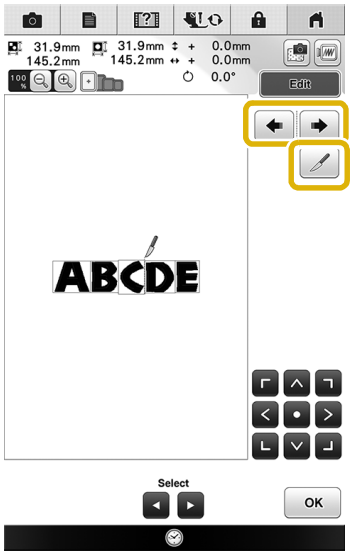
Separating Combined Character Patterns

Combined character patterns can be separated to adjust the character spacing or to separately edit the patterns after all characters have been entered.

1 **Press** A BC.



2 **Use [←] [→] to select where the pattern is to be separated, and then press [✎] to separate it. For this example, the pattern will be separated between "C" and "D".**



Note

- A separated character pattern cannot be combined again.

Memo

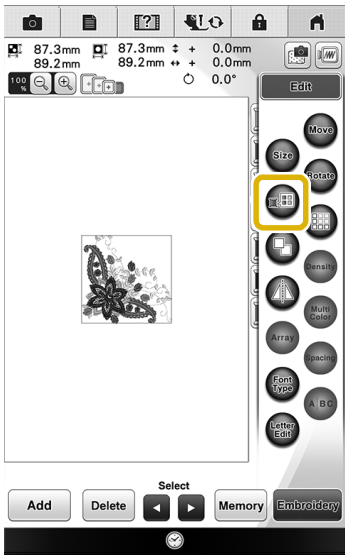
- You can move patterns using [⌜ ^ ⌝ / < • > / ⌞ v ⌟] on the window.

3 **Press [OK].**

Changing the Thread Color

You can change the thread color by moving the color to be changed to the top of the sewing order and selecting a new color from the thread colors in the machine.

1 **Press [🧵].**

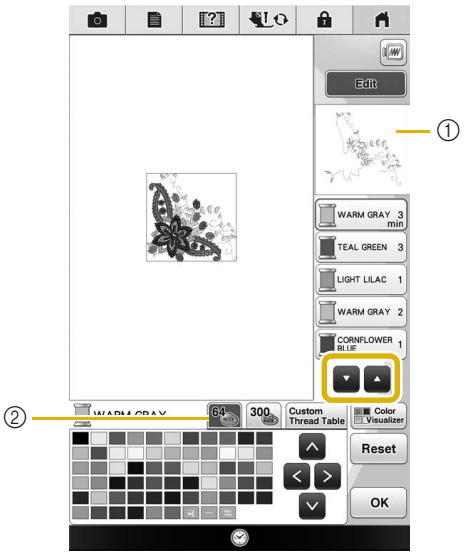


→ The thread color palette screen displays.

2 **Press the thread color key you want to change.**

* Press [▲] [▼] to display the thread color that is not on the screen.

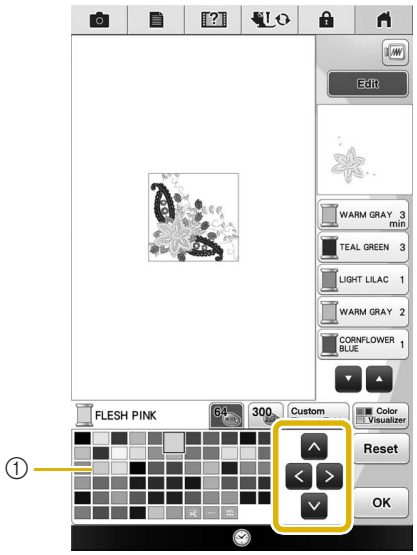
→ The selected thread color image is displayed.



① Selected thread color image
② 64 Embroidery thread color table

3 **Press ▲ ◀ ▶ ▼ or color tip to choose a new color from the color palette.**

* To return to the original color, press Reset. If multiple colors have been changed, this command will return all colors to their original colors.



① Color palette

→ The selected color appears at the top of the sewing order.

→ The display shows the changed colors.

4 **Press OK.**

Memo

- To select a color from the Custom Thread Table, “Choosing a Color from the Custom Thread Table” on page 226.

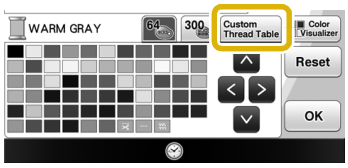
Creating a Custom Thread Table

You can create a custom thread table containing the thread colors that you most often use by selecting thread colors from the machine’s extensive list of thread colors from nine different thread brands. You can select any color and move the color to your custom thread table.

Note

- Some machines may already have an additional 300 Robison-Anton thread colors contained in the custom thread table. 300 Robison-Anton thread colors table data can be downloaded from our website “ www.babylock.com ”.

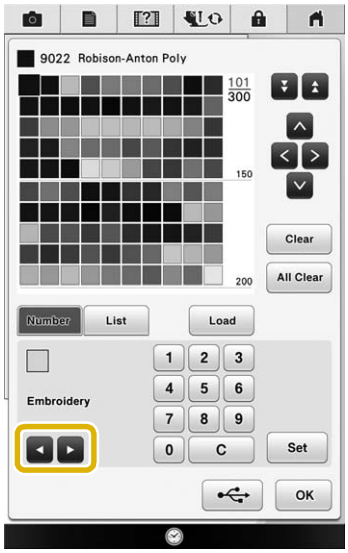
1 **Press and then press Custom Thread Table.**



2 **Use ▲ ◀ ▶ ▼ or press directly to choose where to add a color on the custom thread table.**

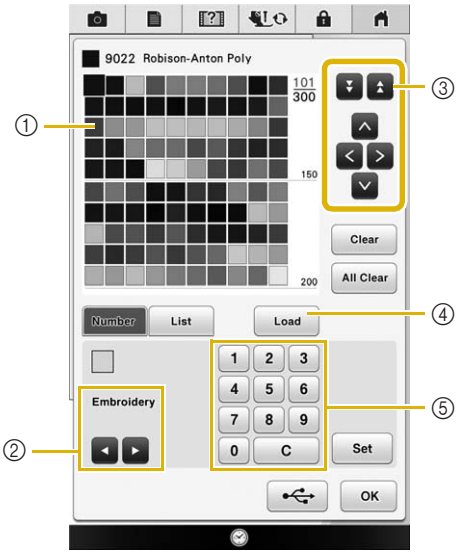
* You can scroll through 100 colors at a time using ⏫ and ⏬ on the custom thread table.

3 **Use ◀ ▶ to select one of the thread brands in the machine.**



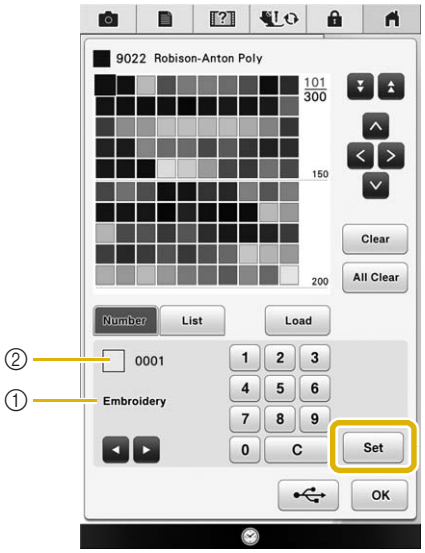
4 **Use 1 2 3 4 5 6 7 8 9 0 to enter a color's 4-digit number.**

* If you make a mistake, press C to erase the entered number, and then enter the correct number.



① Custom thread table
② Select the thread brand.
③ Choose where to add a color.
④ Press Load to recall the custom thread table data (see page 225).
⑤ Enter a color's 4-digit number.

5 **Press Set.**



① Thread brand
② Entered thread color number
→ The selected thread color is set in the custom thread table.

Note
- If Set is not pressed, the thread color number will not be changed.

6 **Repeat the previous steps until all desired thread colors are specified.**

* To delete a specified color from the palette, press Clear.
* To delete all the specified color from the palette, press All Clear.

Note
- You can save the created custom thread table data. Refer to "Saving the Custom Thread Table to USB media" on page 225 for the detailed procedure.

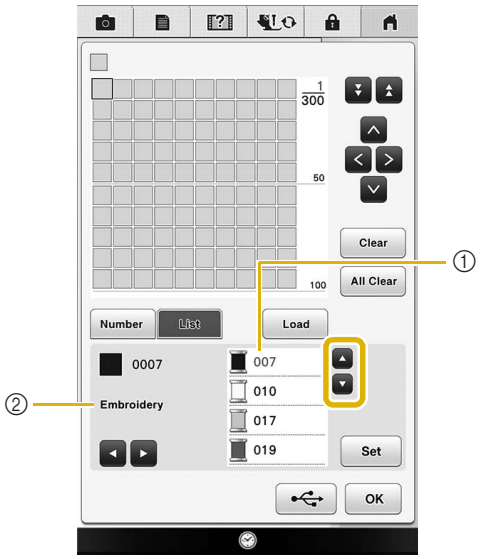
7 **Press OK.**

■ Adding a Color to the Custom Thread Table from the List

1 **Press and then press Custom Thread Table.**

2 **Press List to display the thread list.**

3 **Use ▲ ▼ to select a thread color.**



① Thread list
② Thread brand

4 **Press Set.**

5 **Repeat the previous steps until all desired thread colors are specified.**

* To delete a specified color from the palette, press Clear.

* To delete all the specified color from the palette, press All Clear.

6 **Press OK.**

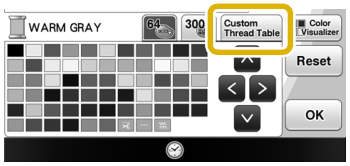
■ Saving the Custom Thread Table to USB media

You can save a custom thread table data file to USB media.

Note

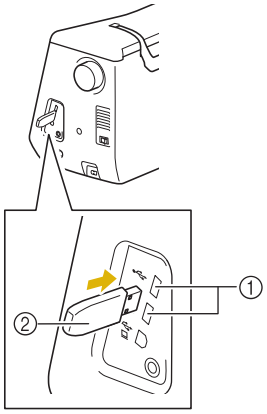
- Custom thread table data can only be saved to USB media. You cannot save the data in the machine's memory or to your computer.
- Custom thread table data is saved as ".pcp" data file.

1 **Press and then press Custom Thread Table.**



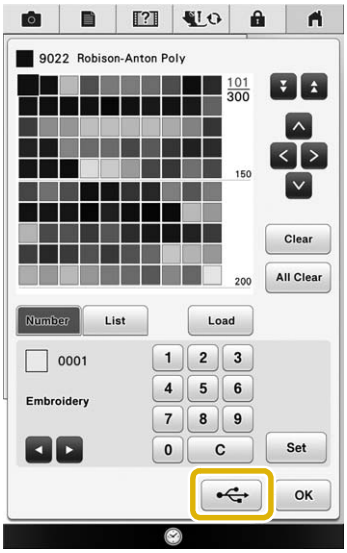
2 **Set your desired colors in the custom thread table according to the procedure in "Creating a Custom Thread Table" on page 223.**

3 **Insert the USB media into the USB port on the machine.**



① USB port
② USB media

4 **Press .**



→ Select the USB port, and then the "Saving" screen is displayed. When the data is saved, the display returns to the original screen automatically.

Note

- Do not insert or remove USB media while "Saving" screen is displayed. You will lose some or all of the data you are saving.

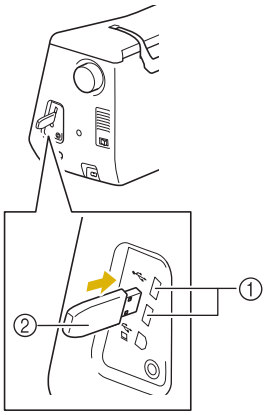
■ Recalling the Custom Thread Table data from USB media

You can recall a custom thread table data from USB media.

Note

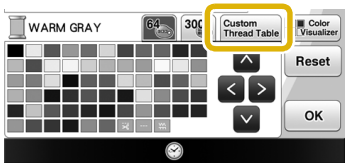
- Do not store two or more ".pcp" data file in USB media. You can only recall one custom thread table data at a time.

1 **Insert the USB media containing the custom thread table data into the USB port.**

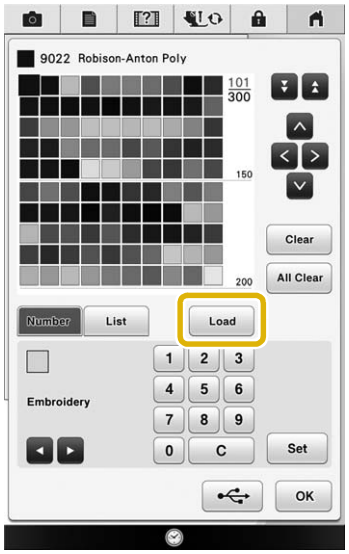


① USB port
② USB media

2 **Press** and then press Custom Thread Table.



3 **Press** Load.



→ The "Saving" screen is displayed. When the data is loaded to the machine, the display returns to the original screen automatically.

Note

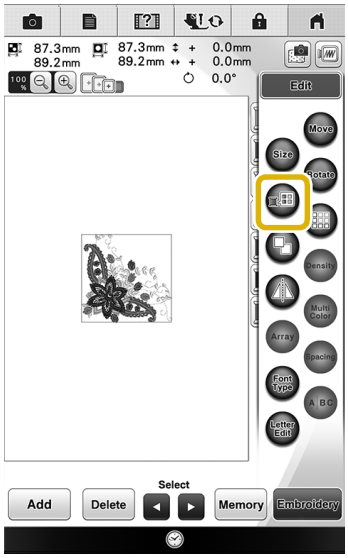
- Do not insert or remove USB media while "Saving" screen is displayed. You will lose some or all of the data you are saving.

4 **The recalled custom thread table is displayed on the screen.**

Choosing a Color from the Custom Thread Table

You can select a color from the up to 300 thread colors you have set in the custom thread table.

1 **Press** .



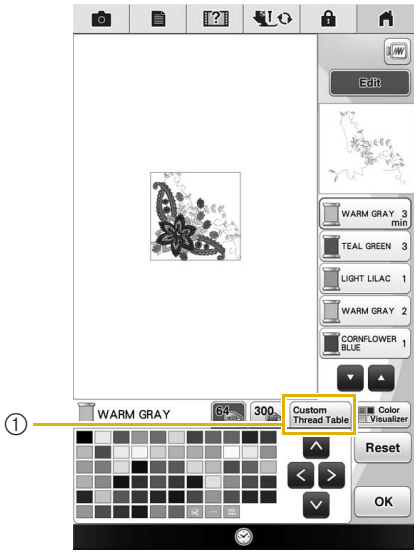
→ The thread color palette screen displays.

2 **Press the thread color key you want to change.**

* Press ▲ ▼ to display the thread color that is not on the screen.

→ The selected thread color image is displayed.

3 **Press** 300.

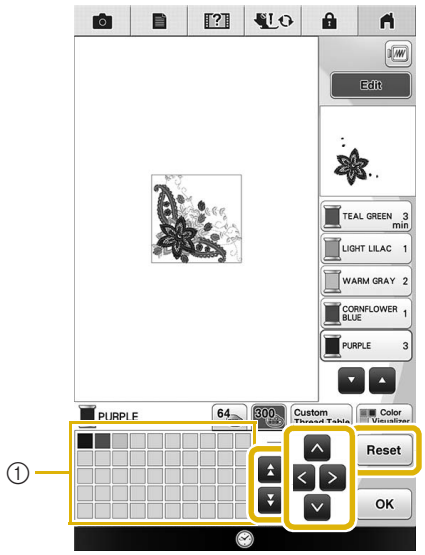


① Custom thread change key

→ The custom thread table will appear.

4 **Press ▲ ◀ ▶ ▼ to choose a new color from the custom thread table.**

* Use ▲ and ▼ to scroll through the custom thread table.
* Press Reset to return to the original color.
* You can choose colors from the custom thread table by directly touching the screen with the touch pen or your finger.



① Custom thread table

→ The display shows the changed colors.

5 **Press OK.**

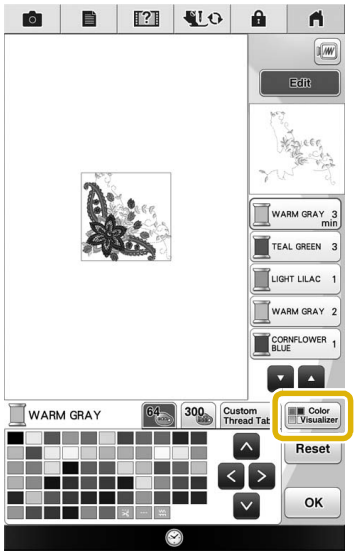
Find New Color Schemes With the Color Visualizer Function

With the color visualizer function, the machine suggests new color schemes for the embroidery pattern that you have selected. After you select the desired effect from the four available (“Random”, “Vivid”, “Gradient” and “Soft”), sample color schemes for the selected effect are displayed.

1 **Press .**

→ The thread color palette screen appears.

2 **Press Color Visualizer.**

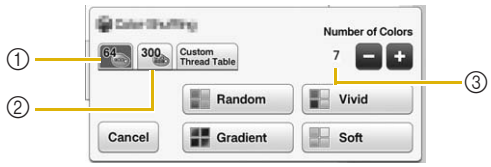


→ The color visualizer screen appears.

Note

- This function may not be available depending on the pattern you select (ex. a bordered embroidery pattern, a pattern which can not be flipped).
  If the alarm sounds when the color visualizer key is pressed, select another pattern.

3 **Select the color table and the number of colors you want to create the pattern with.**



① Thread table (64 colors)

② Custom thread table (300 colors)

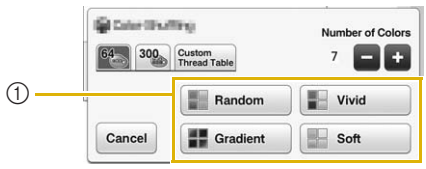
③ Number of colors to be used.

Note

- Selection for the desired number of colors must stay within the range for the number of thread changes for the pattern you selected.
- If an error message appears in this step, refer to page 394.

- If you have not set any color in the custom thread table, the color visualizer key will be grayed out. In that case, use the thread table (64 colors) instead or set some colors in the custom thread table. Refer to "Creating a Custom Thread Table" on page 223 for the detail.

4 Select the number of colors you want to use and then select the desired effect.



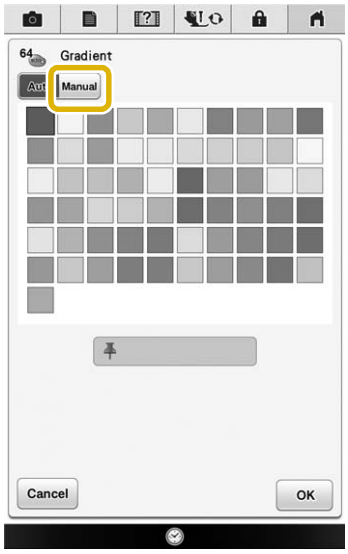
① Effects for schemes

→ If you select "Random" or "Gradient", the color specifying screen will appear.

* If you select "Vivid" or "Soft", proceed to step 6.

5 Press Manual and specify the thread color to use in the desired effect.

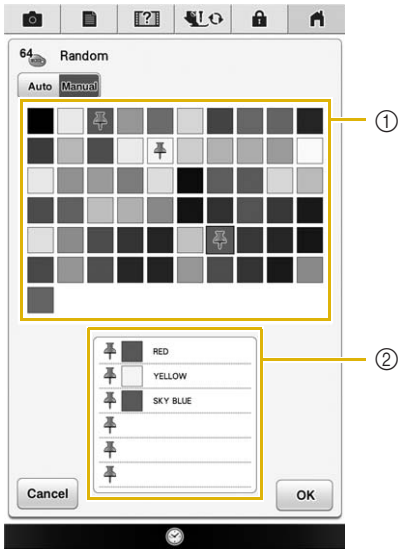
* If you don't need to specify the thread color, just set to Auto.



"Manual" setting for "Random"

You can select up to 6 colors to be used in the "Random" effect.

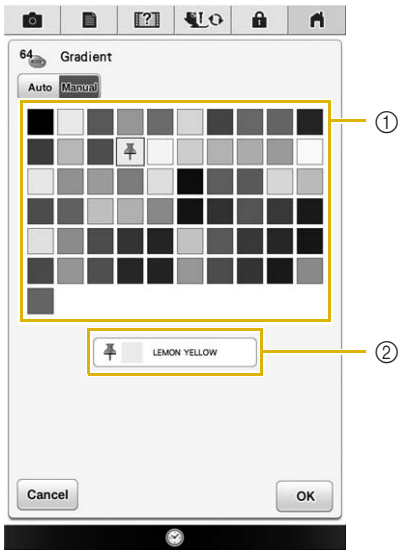
The effect will be created using the selected colors.



① Select colors from the pallet.

② Selected colors are listed.

"Manual" setting for "Gradient"
You can select one color to be used in the "Gradient" effect.
The effect will be created with a color you select.



① Select a color from the pallet.
② Selected color is displayed.

6 **Press** OK.

7 **Press the desired color scheme from samples.**

* Press Refresh to display the new schemes.

① Press to review the previous schemes.

Note
- Maximum 10 pages of schemes can be reviewed. After 10 pages of schemes, the oldest page is deleted every time you press Refresh.

8 **Press** Set **and then, select the displayed color scheme.**

* Press OK to return to the previous screen.
* You can continue selecting color schemes from the selected page prior to pressing Set.
* Press ◀ or ▶ to display the other color schemes.

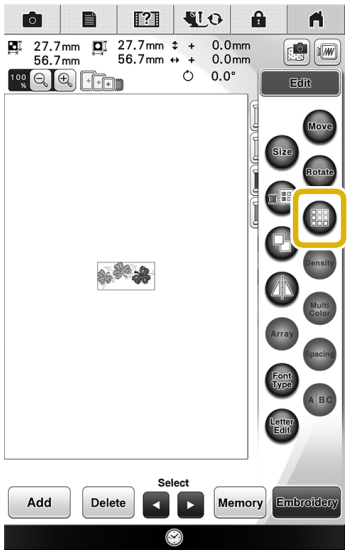
→ The thread color palette screen will appear.

Designing Repeated Patterns

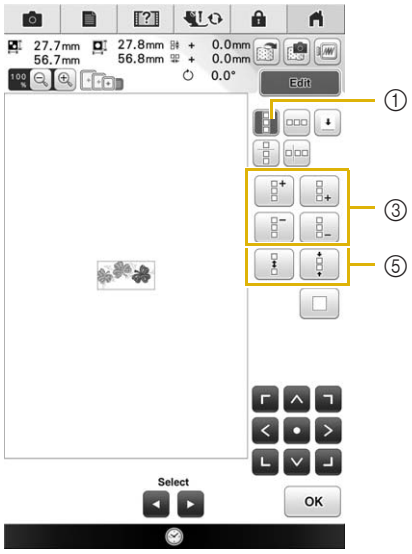
■ Sewing Repeated Patterns

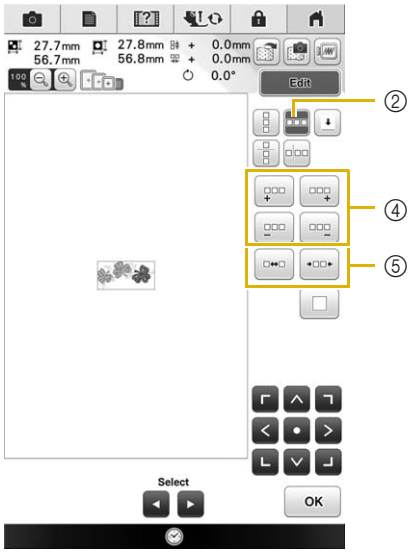
Using the border function, you can create stitches using repeated patterns. You can also adjust the spacing of the patterns within a repeated pattern stitch.

1 **Press** .



2 Select the direction in which the pattern will be repeated.





① Vertical direction
② Horizontal direction
③ Repeating and deleting vertical keys
④ Repeating and deleting horizontal keys
⑤ Spacing keys
→ The pattern direction indicator will change depending on the direction selected.

3 Use [□□□+] to repeat the pattern on the left and [□□□+] to repeat the pattern on the right.

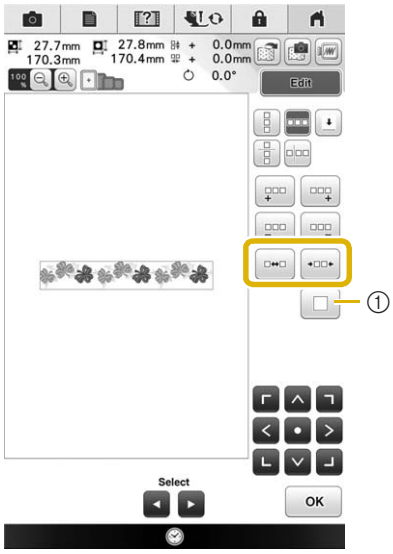
* To delete the left pattern, press [□□□−].

* To delete the right pattern, press [□□□−].

4 Adjust the spacing of the repeated pattern.

* To widen spacing, press [□↔□].

* To tighten spacing, press [→□□←].



① Press [□] to change a repeated pattern back to one single pattern.

Memo

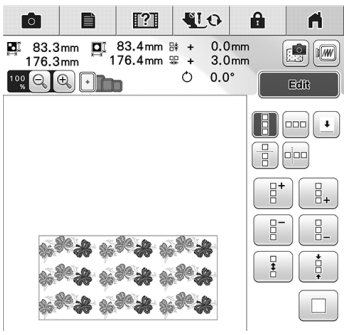
- You can only adjust the spacing of patterns included in the red frame.

5 Complete repeated patterns by repeating steps 2 through 4.

6 Press [OK].

Memo

- When there are two or more patterns, all patterns will be grouped together as one pattern in the red frame.



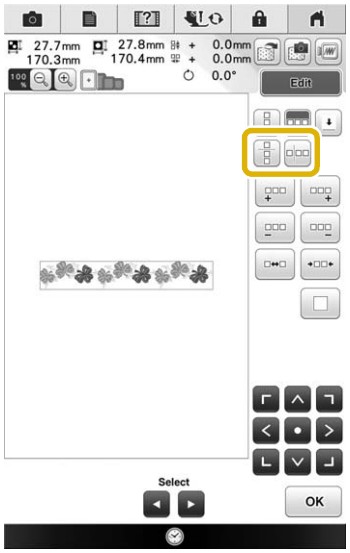
- When changing the direction in which the pattern will be repeated, all of the patterns in the red frame will automatically be grouped as one repeating unit. Press [□] to change a repeated pattern back to one single pattern. See the following section on how to repeat one element of a repeated pattern.

■ Repeating One Element of a Repeated Pattern

By using the Cut function, you can select one element of a repeated pattern and repeat only that single element. This function allows you to design complex repeated patterns.

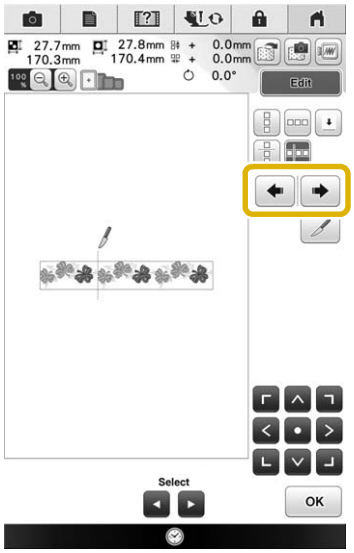
1 Choose the direction in which the repeated pattern will be cut.

* Press to cut horizontally.
* Press to cut vertically.



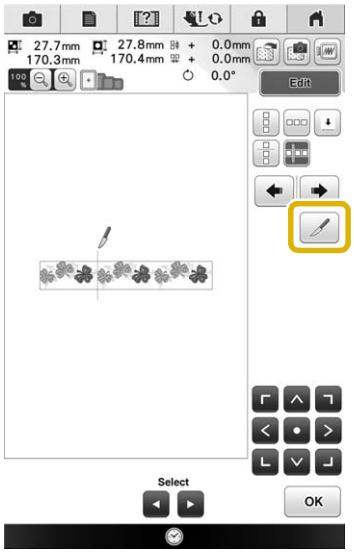
→ The pattern direction indicator will change depending on the direction selected.

2 Use and to select the cut line.



→ The cut line will move.

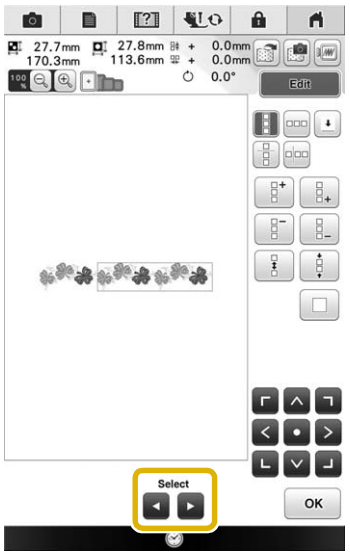
3 Press .



→ The repeated pattern will be divided into separate elements.

4 Press .

5 Use ◄ and ► to select the element to repeat.



6 Repeat the selected element.

7 Press OK.

Note

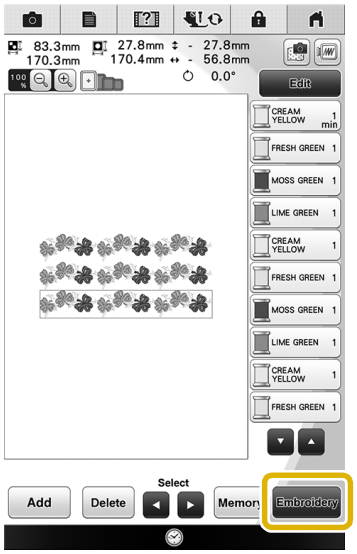
- Once you have cut a repeated pattern into separate elements, you cannot return to the original repeated pattern.
- Each element can be edited separately in the edit screen. See “Selecting combined embroidery patterns” on page 240.

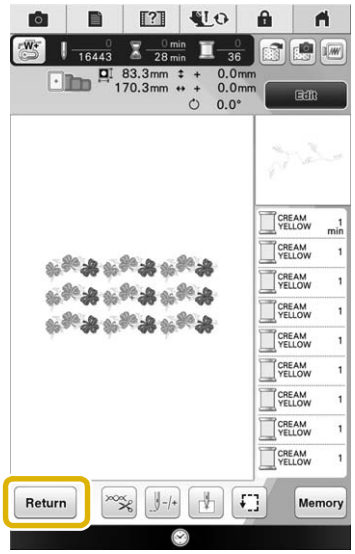
■ Color Sorting Repeated Patterns

Press Embroidery to automatically change the sewing order of colors in combined border embroidery patterns so that the same color can be continuously sewn. This allows you to continue sewing without repeatedly changing the upper thread or changing the sewing order manually.

Memo

- In combined stitch patterns that contain two or more border patterns or other patterns combined with border patterns, the sewing order of only the border patterns is changed.
- When a group of two or more patterns using border patterns is repeated, the sewing order is changed so that the same color can be sewn continuously in each pattern.





■ Assigning Thread Marks

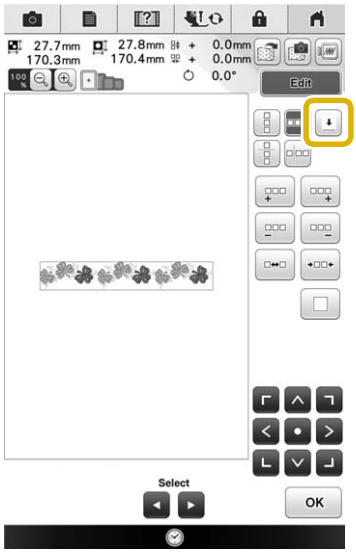
By sewing thread marks, you can easily align patterns when sewing a series. When sewing is finished on a pattern, a thread mark in the shape of an arrow will be sewn using the final thread. When sewing a series of patterns, use the point of this arrow for positioning the following designs to be sewn.

Memo

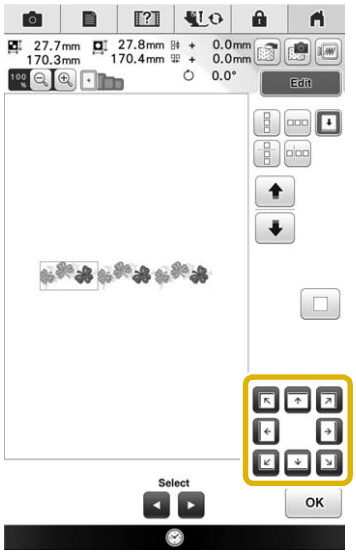
- When repeatedly sewing individual patterns, thread marks can be sewn around the perimeter of the pattern only.

1 **Press** .

2 **Press** .



3 **Press to select the thread mark to be sewn.**



Memo

- When there are two or more elements, use ◀ and ▶ or ⬅ and ➡ to select a pattern that you want to assign a thread mark(s) to.

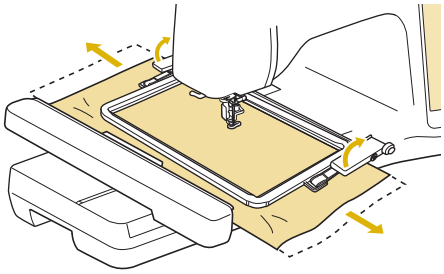
4 Press OK.

Embroidering the Pattern Repeatedly

After creating the repeated pattern, rehoop the embroidery frame and keep sewing for the next pattern.

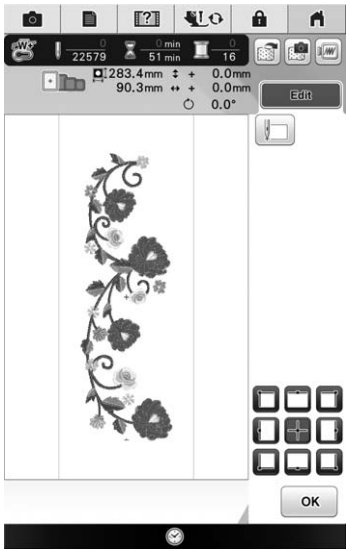
Memo

- The optional border frame allows you to easily rehoop the fabric without removing the embroidery frame from the machine.



1 **Select the boarder pattern with the thread mark at the center of the end of the pattern.**

* Refer to "Assigning Thread Marks" on page 232.



2 Press OK, then Embroidery.

3 **Press the "Start/Stop" button to begin embroidering.**

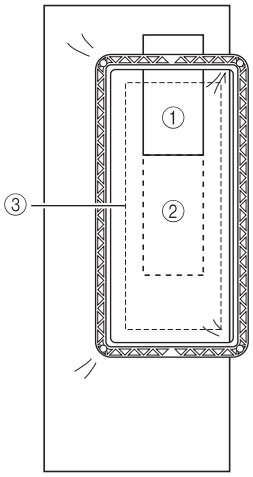
→ When embroidering is finished, the thread mark is sewn with the last thread color.

4 **Remove the embroidery frame.**

5 **Rehoop the fabric in the embroidery frame.**

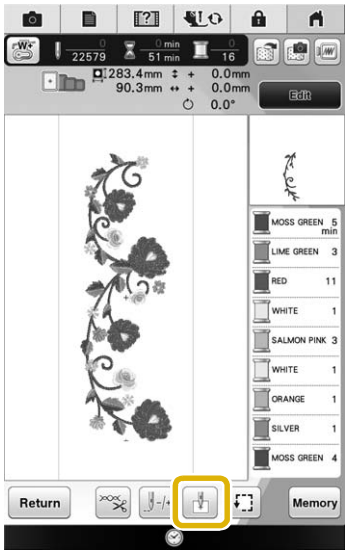
Note

- Adjust the position of the fabric so that the embroidering area for the next pattern is within the embroidering area of the embroidery sheet.

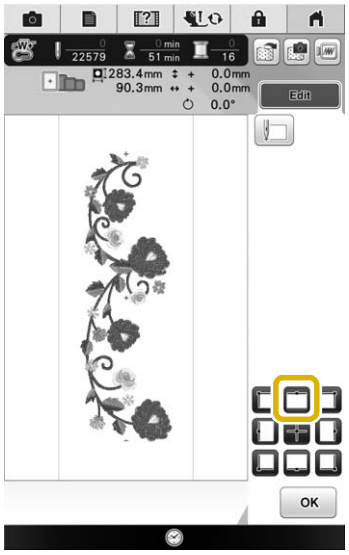


① Pattern embroidered first
② Position of pattern to be embroidered next
③ Embroidering area of embroidery sheet

6 **Attach the embroidery frame to the machine, and then touch .**



7 **Touch to set the starting point to the top center of the pattern.**

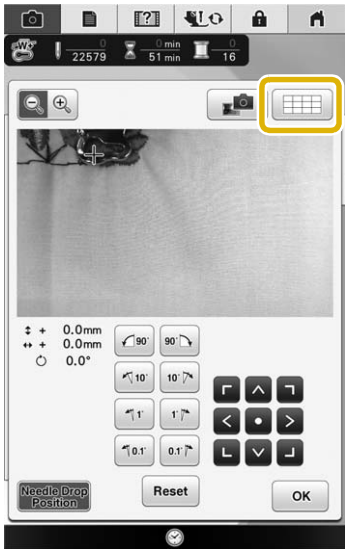


8 **Touch OK.**

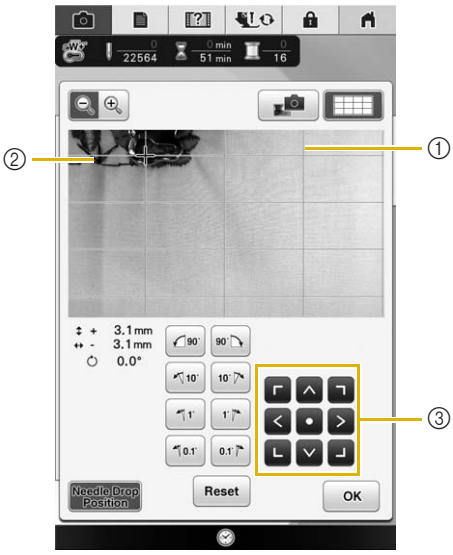
9 **Press the "Presser Foot Lifter" button to lower the presser foot.**

10 **Press .**

11 **Press .**



12 **Press the positioning keys to move the embroidery frame until the thread mark on the fabric is aligned on the starting point in the camera view window.**



① Grid lines
② Thread mark on the fabric
③ Positioning keys

Memo

- Press to enlarge the camera view. By enlarging the camera view, you can make a close adjustment for the needle drop position moving the embroidery frame little by little.

13 **If the pattern position cannot be aligned using the positioning keys, rehoop the fabric, and then try again to align the position with the positioning keys.**

> **Note**
> • When embroidering the repeated pattern, you cannot rotate the pattern in the camera view window. If the pattern is rotated in the camera view window, you cannot sew the pattern properly aligned even if the thread mark and the starting point are aligned in the camera view window.

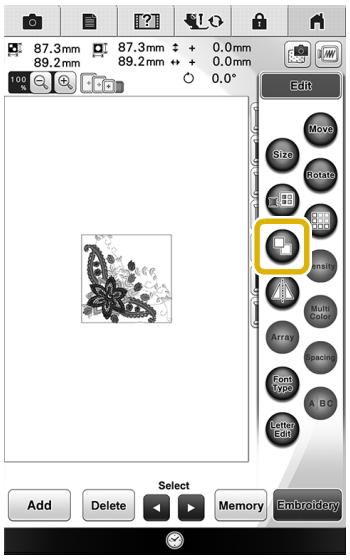
14 **Press** OK **to return to the previous screen.**

15 **Remove the thread mark.**

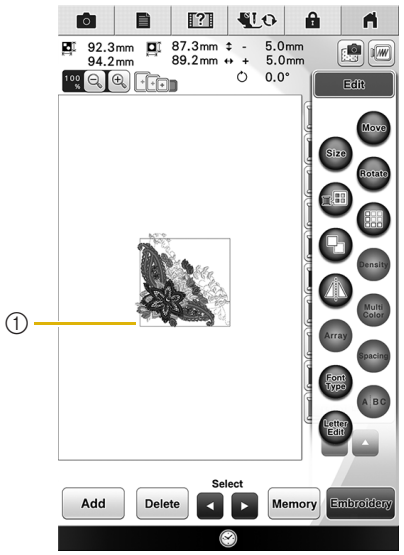
16 **Press the "Start/Stop" button to begin embroidering.**

Duplicating a Pattern

1 **Press** .



→ The duplicate is positioned over the original pattern.

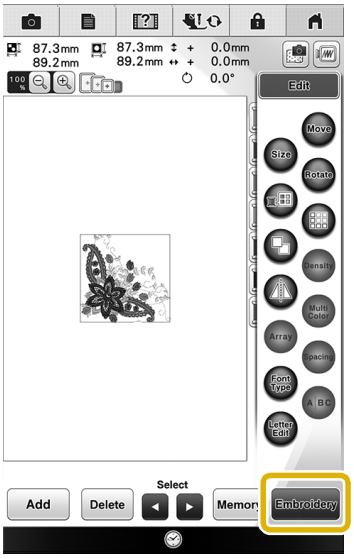


① Duplicated pattern

> **Note**
> • If multiple patterns are displayed in the screen, only the pattern selected using ◀ and ▶ is duplicated.
> • Move and edit each duplicated pattern individually.

After Editing

1 **Press** Embroidery.

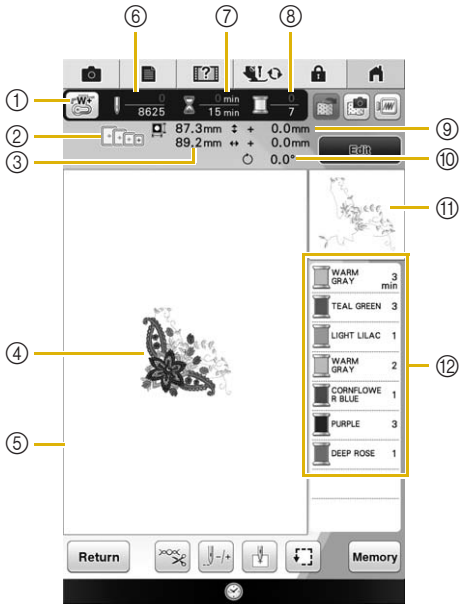


* To combine the pattern with other patterns, select Add (see page 238).

* See page 259 for more information about sewing patterns.

> **Memo**
> • If you want to return to the edit screen after pressing Embroidery, press Return.

VIEWING THE EMBROIDERY SCREEN



① Shows the presser foot code.
Attach embroidery foot “W+” with LED pointer or “W” (optional) for all embroidery projects. When the foot presser symbol is displayed on the screen, you are able to sew.

② Shows the embroidery frames that can be used for the selected pattern. Be sure to use the proper frame (see page 243).

③ Shows the size of the selected pattern.

④ Shows a preview of the selected pattern.

⑤ Shows the boundary for embroidering with the selected frame in the settings screen. (see page 292)

⑥ Shows how many stitches are in the selected pattern and how many stitches have been sewn so far.

⑦ Shows the time necessary to sew the pattern, and the time already spent sewing the pattern (not including time for changing and automatically trimming the thread).

⑧ Shows the number of colors in the selected pattern, and the number of the color currently being sewn.

⑨ Shows how far the sewing position is from the center (when you move the sewing position).

⑩ Shows the degree of rotation of the pattern.

⑪ Shows the part of the embroidery that will be sewn with the first thread color.

⑫ Shows the order for thread color changes and the embroidering time for each thread color.

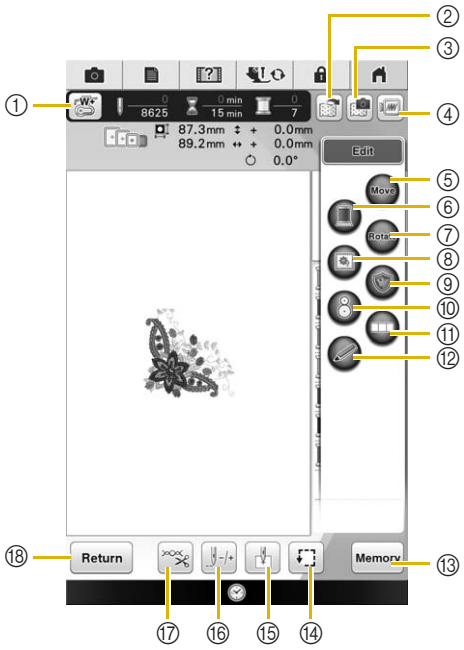
* The displayed time is the approximate time that will be required. The actual embroidering time may be longer than the displayed time, depending on the embroidery frame that is used. In addition, the amount of time required to change thread colors is not included.

Note

- There is an explanation of additional key functions on the next page.

■ Key Functions

Using these keys, you can move or rotate pattern, etc. Press Edit to display the editing window.



Note

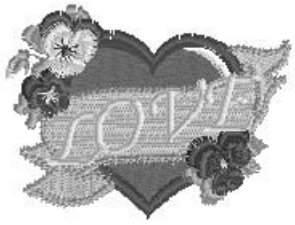
- Some operations or functions are not available for certain patterns. If the key display is darkened, you cannot use that function or operation with the selected pattern.

No.	Display	Key Name	Explanation	Page
①		Needle point check key	Press this key to check the needle drop point with the light of the LED pointer.	249
②		Fabric image save key	Press this key to save the currently displayed fabric image.	272
③		Fabric scan key	Press this key to scan the fabric to align the embroidery position.	272
④		Image key	Press this key for a preview of the sewn image.	212
⑤	Move	Move key	Press to display the pattern moving window.	212
⑥		Uninterrupted embroidery key	Press this key to embroider the selected pattern with a single color.	272
⑦	Rotate	Rotate key	Press this key to rotate the pattern. You can rotate a pattern 0.1 degree, 1 degree, 10 degrees or 90 degrees at a time.	213
⑧		Basting key	Press to add the basting stitch to the pattern. You can set the desired basting distance.	276
⑨		Appliqué key	Press to create an appliqué piece using the selected pattern.	277
⑩		Embroidery positioning key	Press this key to align the embroidering position using the built-in camera.	252
⑪		Pattern connect key	Press to start pattern connecting embroidering. You can connect the patterns accurately using the built-in camera.	307
⑫		Sensor function key	Press this key to use the sensor function.	254
⑬	Memory	Memory key	Press this key to save a pattern in the machine's memory, USB media or a computer.	299, 300
⑭		Trial key	Press this key to check the position of the pattern.The embroidery frame moves to the desired position so you can check that there is enough space to sew the pattern.	257
⑮		Starting point key	Press this key to move the needle start position to align the needle with the pattern position.	293, 294
⑯		Forward/Back key	Press this key to move the needle forward or back in the pattern; useful if the thread breaks while sewing or if you want to start again from the beginning.	267-269
⑰		Cut/Tension key	Press this key to specify automatic thread cutting, thread trimming or the thread tension. For embroidery, these functions are set automatically.	287-290
⑱	Return	Return key	Press this key to return to the pattern type selection screen.	—

COMBINING PATTERNS

Editing Combined Patterns

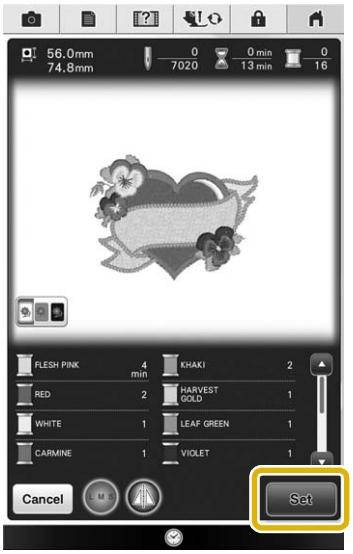
Example: Combining alphabet characters with an embroidery pattern and editing



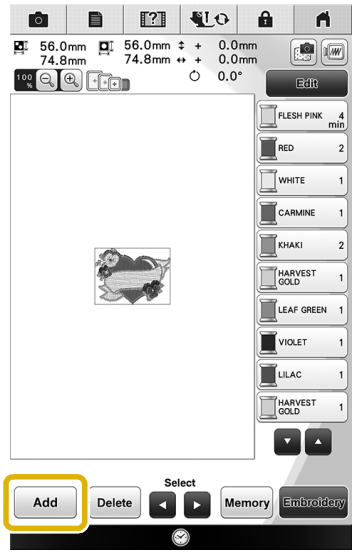
1 **Press** **to select an embroidery pattern.**

2 **Select** .

3 **Press** Set **or touch the selected pattern.**



4 **Press** Add **.**



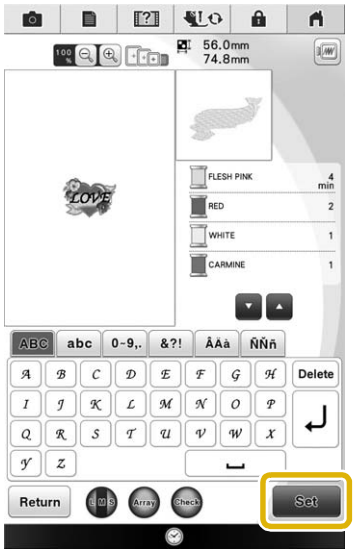
5 **Press** 3 AA **to enter the alphabet characters.**

* Press Return to return to the previous screen.

6 **Select** 05 ABC **and enter "LOVE".**

→ The characters you enter will be displayed in the center of the display.

7 **Press** Set **.**



8 **Press** Array **to change the layout of the characters. Press** OK **.**

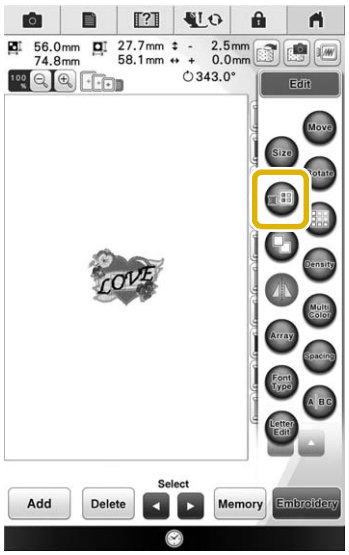
* See page 219 for more information about changing the layout.

9 **Use** ↖ ↑ ↗ ← ● → ↙ ↓ ↘ **to move the characters.**

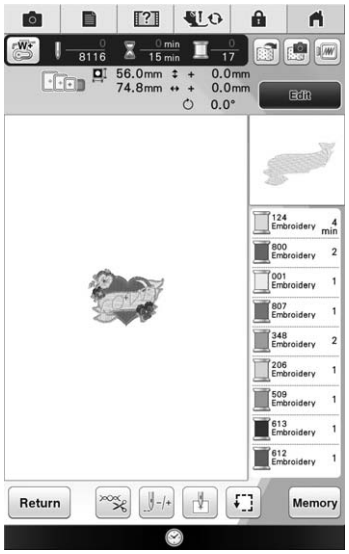
* With a USB mouse, your finger or the touch pen, drag the characters to move them.

10 **Press to change the color of the characters.**

* See page 222 for more information about changing the color.



11 **When all editing is finished, press Embroidery.**

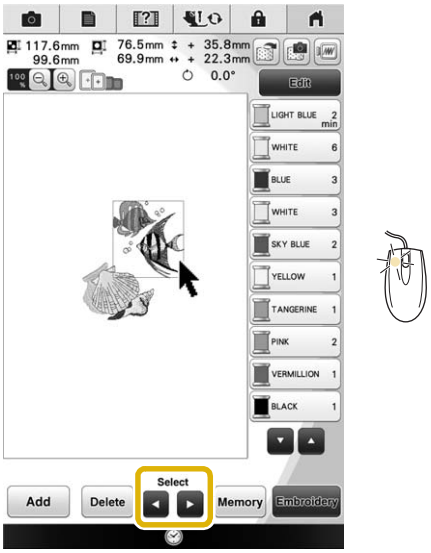


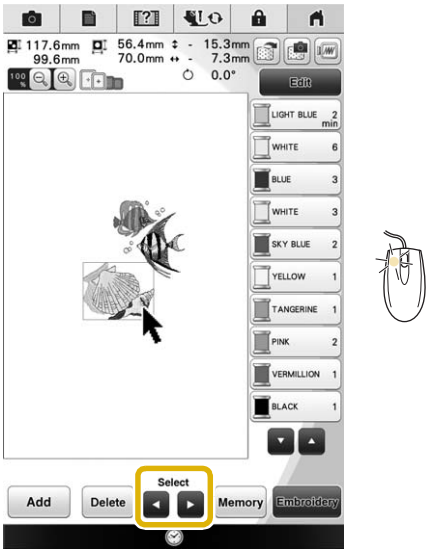
■ Selecting combined embroidery patterns

If multiple patterns have been combined, use Select to select the pattern to be edited. If a USB mouse is connected, the pattern can be selected by clicking it. Move the mouse to position the pointer over the desired pattern, and then click the left mouse button. In addition, patterns can be selected by directly touching the screen with your finger or touch pen.

Memo

- Use Select to select patterns that are overlapping and cannot be selected by clicking them or by touching the screen.





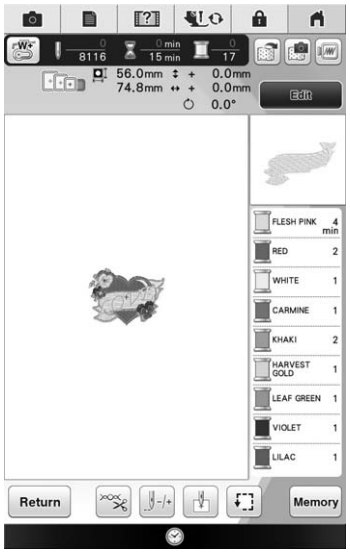
Sewing Combined Patterns

Combined patterns will be embroidered in the order they were entered. In this example, the embroidery order will be as follows:

Note

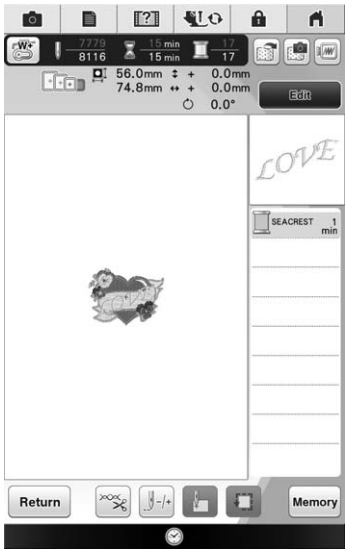
- Follow the directions in “Embroidering Patterns” on page 260.

1 **Embroider** **by following the color order on the right side of the display.**



→ After the hart are embroidered, the [+] cursor will move to the “LOVE” part of the pattern.

2 **Embroider** **.**



→ When “LOVE” is embroidered, the display returns to the embroidering screen.

PREPARING THE FABRIC

⚠ CAUTION

- **Use fabrics with a thickness of less than 3 mm (approx. 1/8 inch). Using fabrics thicker than 3 mm (approx. 1/8 inch) may cause the needle to break.**
- **When using layers with thicker batting etc., you can sew more attractive embroidery by adjusting the embroidery presser foot height in the embroidery settings screen (see below).**
- **In the case of thick terry cloth towels we recommend that you place a piece of water soluble stabilizer on the top surface of the towel. This will help to reduce the nap of the toweling and result in more attractive embroidery.**

Note

- Press , and select page 7 to use − and + in the “Embroidery Foot Height” display in the embroidery settings screen. Adjust the presser foot height for thick or puffy fabrics.

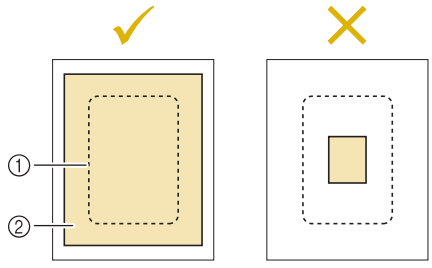
- To increase the space between the presser foot and the needle plate, set the “Embroidery Foot Height” to a larger number, 1.5 mm setting is used for most embroidery.

Attaching Iron-on Stabilizers (Backing) to the Fabric

⚠ CAUTION

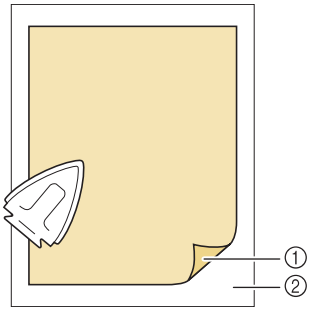
- **Always use a stabilizer material for embroidery when sewing stretch fabrics, lightweight fabrics, fabrics with a coarse weave, or fabrics which cause pattern shrinkage. Otherwise, the needle may break and cause injury. Not using a stabilizer material may result in a poor finish to your project.**

1 Use a piece of stabilizer which is larger than the embroidery frame being used.



① Size of the embroidery frame
② Iron-on stabilizer (backing)

2 Iron the iron-on stabilizer material to the wrong side of the fabric.



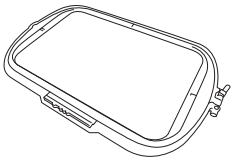
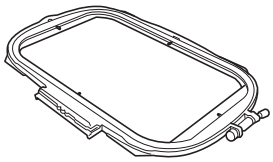
① Fusible side of stabilizer
② Fabric (wrong side)

Memo

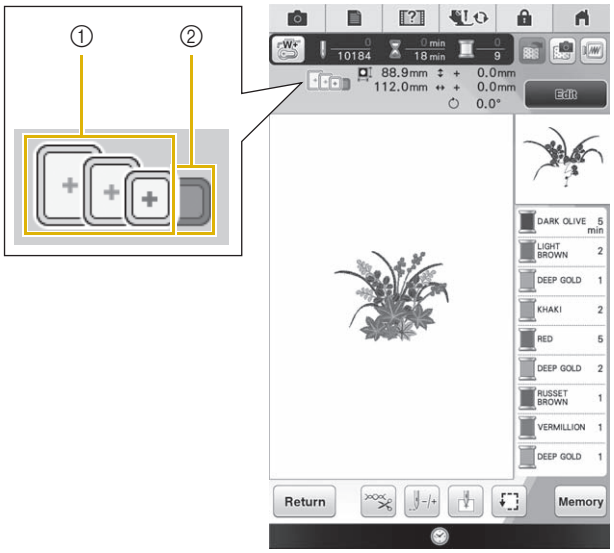
- When embroidering on thin fabrics such as organdy or lawn, or on napped fabrics such as towel or corduroy, use water soluble stabilizer (sold separately) for best results. The water soluble stabilizer material will dissolve completely in water, giving the project a more attractive finish.

Hooping the Fabric in the Embroidery Frame

■ Types of Embroidery Frames

Super large	Extra Large	Large	Medium
			
Embroidery field 36 cm × 24 cm (approx. 14 inches × 9-1/2 inches)	Embroidery field 30 cm × 20 cm (approx. 12 inches × 8 inches)	Embroidery field 18 cm × 13 cm (approx. 7 inches × 5 inches)	Embroidery field 10 cm × 10 cm (approx. 4 inches × 4 inches)
Use when embroidering patterns larger than 30 cm × 20 cm (approx. 12 inches × 8 inches).	Use when embroidering connected or combined characters or patterns, or when embroidering large patterns.	Use when embroidering patterns between 10 cm × 10 cm (approx. 4 inches × 4 inches) and 18 cm × 13 cm (approx. 7 inches × 5 inches).	Use when embroidering patterns under 10 cm × 10 cm (approx. 4 inches × 4 inches).

Other optional embroidery frames can be used. When choosing frames that do not appear on the screen, be sure to check the design size of the embroidery field of the optional frame. Check with your authorized Baby Lock retailer for frame compatibility.
Select a frame that matches the pattern size. Included frame options are displayed on the LCD.



① Highlighted: Can be used
② Shaded: Cannot be used

⚠ CAUTION

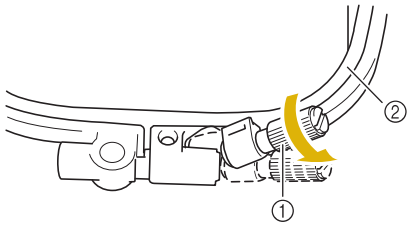
- **If you use a frame that is too small, the presser foot may strike the frame during sewing and cause injury.**

■ Inserting the Fabric

Note

- If the fabric is not securely held in the embroidery frame, the embroidery design will sew out poorly. Insert the fabric on a level surface, and gently stretch the fabric taut in the frame. Follow the steps below to insert the fabric correctly.

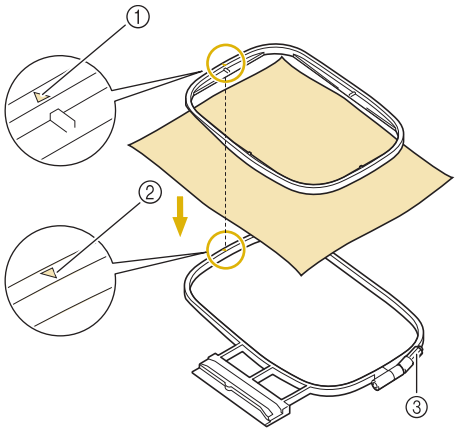
1 Lift-up and loosen the frame adjustment screw and remove the inner frame.



① Frame adjustment screw
② Inner frame

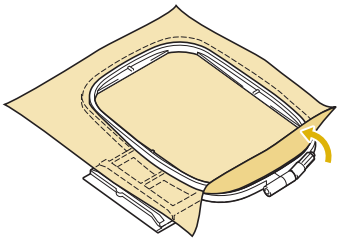
2 Lay the fabric right side up on top of the outer frame.

Re-insert the inner frame making sure to align the inner frame's △ with the outer frame's ▽ .



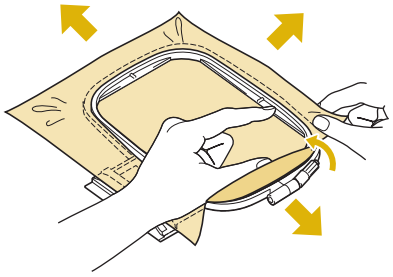
① Inner frame's △
② Outer frame's ▽
③ Frame adjustment screw

3 Slightly tighten the frame adjustment screw, and then remove the slack in the fabric by pulling on the edges and corners. Do not loosen the screw.

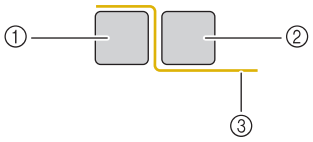


4 Gently stretch the fabric taut, and tighten the frame adjustment screw to keep the fabric from loosening after stretching.

* After stretching the fabric, make sure the fabric is taut.



* Make sure the inside and outside frames are even before you start embroidering.

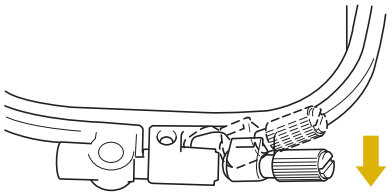


① Outer frame
② Inner frame
③ Fabric

Memo

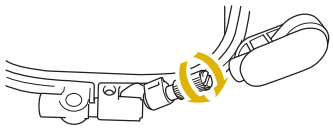
- Stretch the fabric from all four corners and all four edges. While stretching the fabric, tighten the frame adjustment screw.

5 Return the frame adjustment screw to its initial position.



Memo

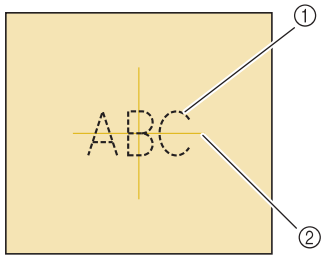
- You can use the included multi-purpose screw driver setting the position to “3”, when you loosen or tighten the frame adjustment screw.



■ Using the Embroidery Sheet

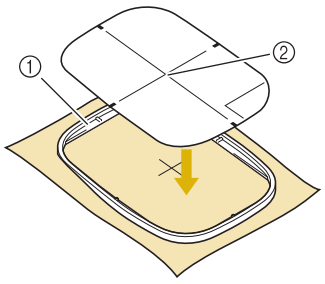
When you want to embroider the pattern in a particular place, use the embroidery sheet with the frame.

1 With a chalk pencil, mark the area of the fabric you want to embroider.



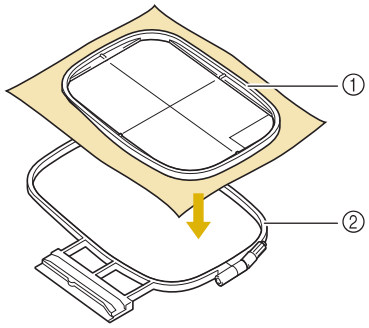
① Embroidery pattern
② Mark

2 Place the embroidery sheet on the inner frame. Align the guide lines on the embroidery sheet with the mark you made on the fabric.



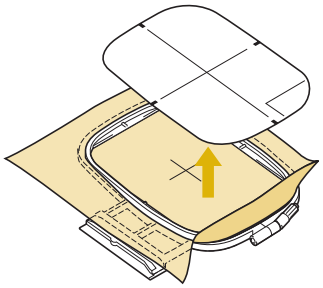
① Inner frame
② Guide line

3 Gently stretch the fabric so there are no folds or wrinkles, and press the inner frame into the outer frame.



① Inner frame
② Outer frame

4 Remove the embroidery sheet.

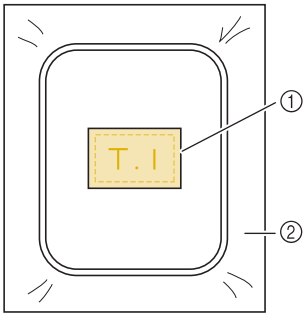


Embroidering Small Fabrics or Fabric Edges

Use an embroidery stabilizer to provide extra support. After embroidering, remove the stabilizer carefully. Attach the stabilizer as shown in the following examples. We recommend using a stabilizer for embroidery.

■ Embroidering Small Fabrics

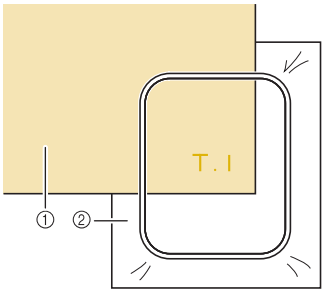
Use a temporary spray adhesive to adhere the small piece of fabric to the larger piece in the frame. If you do not wish to use a temporary spray adhesive, attach the stabilizer with a basting stitch.



① Fabric
② Stabilizer

■ Embroidering Edges or Corners

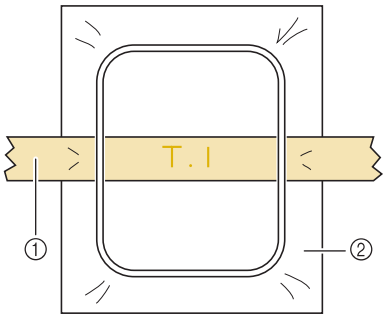
Use a temporary spray adhesive to adhere the small piece of fabric to the larger piece in the frame. If you do not wish to use a temporary spray adhesive, attach the stabilizer with a basting stitch.



① Fabric
② Stabilizer

■ Embroidering Ribbons or Tape

Secure with double-sided tape or a temporary spray adhesive.

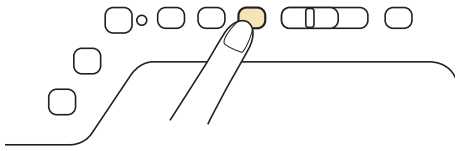


① Ribbon or tape
② Stabilizer

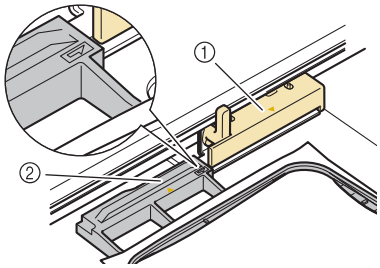
ATTACHING THE EMBROIDERY FRAME

Note
- Wind and insert the bobbin before attaching the embroidery frame.

1 **Press the "Presser Foot Lifter" button to raise the presser foot.**

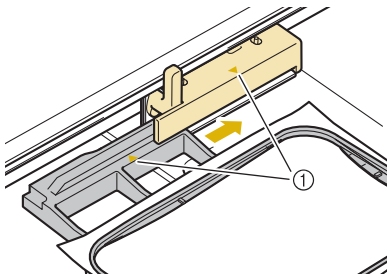


2 **Align the embroidery frame guide with the right edge of the embroidery frame holder.**



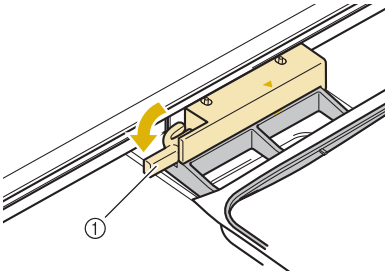
① Embroidery frame holder
② Embroidery frame guide

3 **Slide the embroidery frame into the holder, making sure to align the embroidery frame's △ with the holder's ▽.**



① Arrow mark

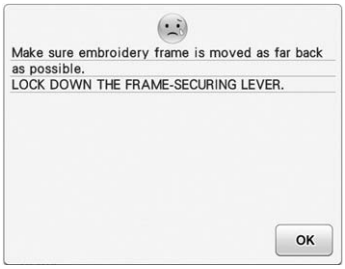
4 **Lower the frame-securing lever to be level with the frame to secure the embroidery frame in the embroidery frame holder.**



① Frame-securing lever

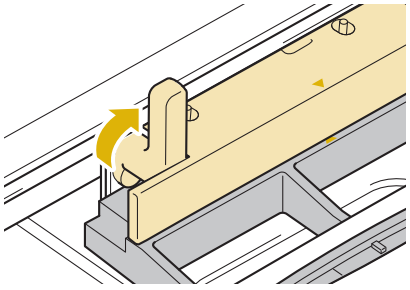
⚠ CAUTION

- **If the frame-securing lever is not lowered, the following message appears. You cannot start sewing until you lower the frame-securing lever.**

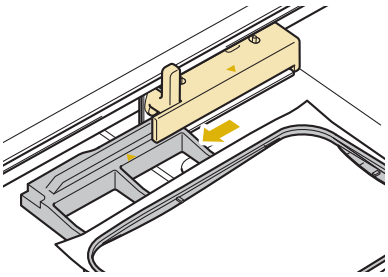


■ Removing the Embroidery Frame

1 **Raise the frame-securing lever.**



2 **Pull the embroidery frame toward you.**



CONFIRMING THE PATTERN POSITION

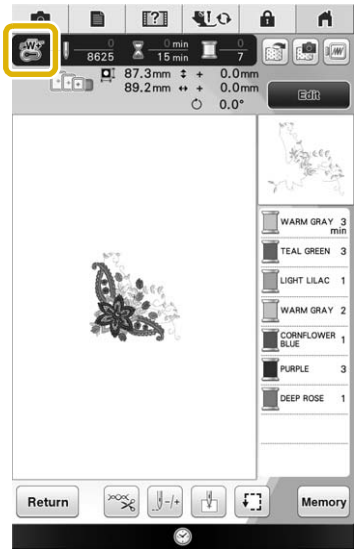
The pattern is normally positioned in the center of the embroidery frame. If the pattern needs to be repositioned for better placement on the garment, you can check the layout before starting embroidery.

Checking the Needle Drop Point With the Embroidery Foot "W+" with LED Pointer

With the embroidery foot "W+" with LED pointer, you can check the needle drop position before embroidering.

1 **Press [W+] in the embroidery screen.**

→ The LED pointer indicates the needle drop point.



Memo

- When the LED pointer is turned on, the presser foot height is automatically adjusted according to the fabric thickness.
- If [W+] is not displayed, you cannot use the LED pointer.

* The LED pointer turns off automatically by lowering the presser foot or returning to the previous page.

Note

- With bulky fabrics, the position may not be accurate due to the various depths of the fabrics.
- With fabric that has a very uneven surface such as quilting, the fabric thickness may not be correctly measured. In this case, the pointer indication should be used only as a reference.

■ Adjusting the LED Pointer

Adjust the LED pointer if it indicates a point different than the actual needle drop point. Before adjusting the LED pointer, mark the actual needle drop point on the fabric to be embroidered, and then hoop the fabric and attach the embroidery frame.

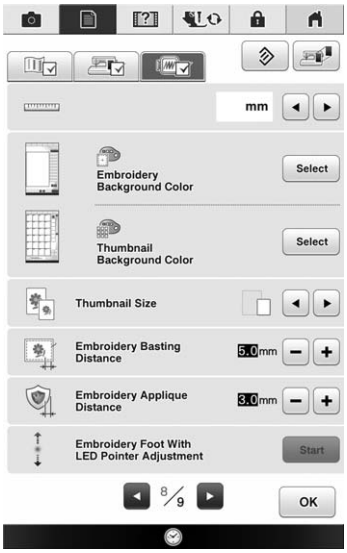
Note

- As a default, the key mentioned in the following procedures appear in light gray and is not available. To enable the key for specifying the settings, attach embroidery foot "W+" with LED pointer to the machine. The key is enabled after the embroidery foot is plugged in.

1 **Press [ ].**

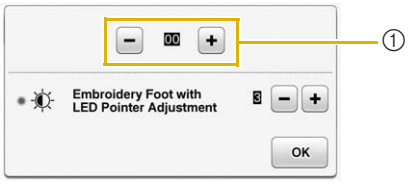
→ The settings screen appears.

2 **Display page 8 of the Embroidery settings screen.**



3 **Press [Start].**

→ The Embroidery Foot "W+" with LED Pointer Adjustment screen appears.



① LED pointer adjustment

Note

- The specified setting is saved in the machine's memory. This is useful for positioning during continuous embroidering.
- For normal use, return the setting to "00".

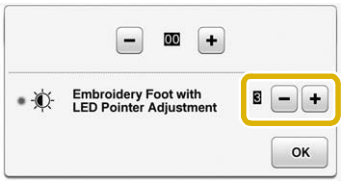
4 **Use − or + to adjust the LED pointer so that it indicates the actual needle drop point.**

5 **Press OK twice to return to the original screen.**

■ Adjusting the Brightness of the LED Pointer

1 **Follow the steps from 1 to 4 to display the embroidery foot with LED pointer adjustment screen.**

2 **Use − or + to adjust the brightness of the LED pointer.**

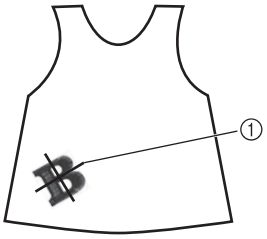


3 **Press OK twice to return to the original screen.**

Aligning the Embroidering Position Using the Built-In Camera

The camera built into this machine can be used to easily align the embroidering position. This is useful for patterns which need to be embroidered in a particular position as shown below.

1 **Use a chalk pencil to draw a cross at the desired embroidering location.**



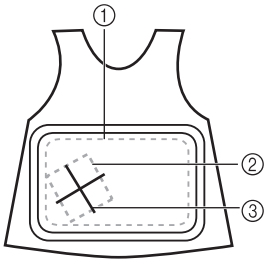
① Chalk pencil mark

* Display the grid lines or cross grid lines in the pattern display area to check the pattern orientation. (Refer to "Changing the Embroidery Frame Display" on page 292.)

2 **Hoop the fabric.**

Note

- When hooping the fabric in the embroidery frame, make sure that the embroidery pattern will fit within the embroidering area of the frame being used.

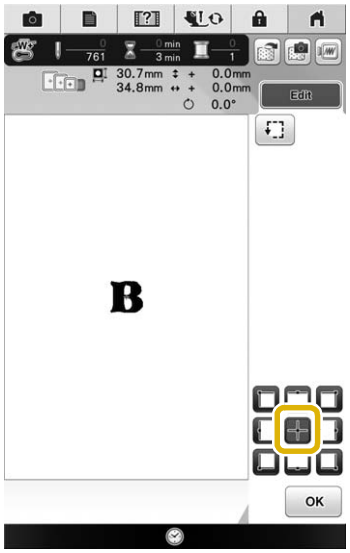


① Embroidering area
② Embroidery pattern size
③ Chalk pencil mark

3 **Select the pattern on your sewing machine and press Embroidery.**

4 Press [⊡] in the embroidering screen.

5 Press [✛] to set the starting point to the center of the pattern.

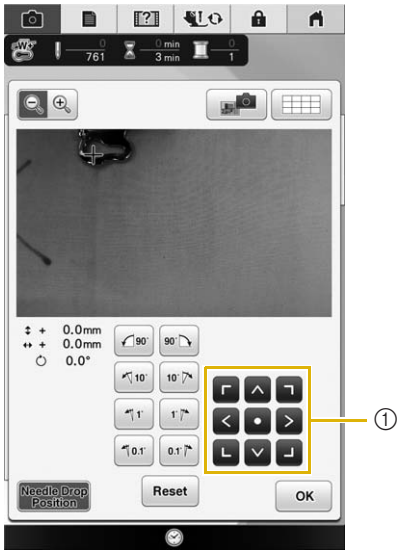


6 Press [OK].

7 Press the "Presser Foot Lifter" button to lower the presser foot.

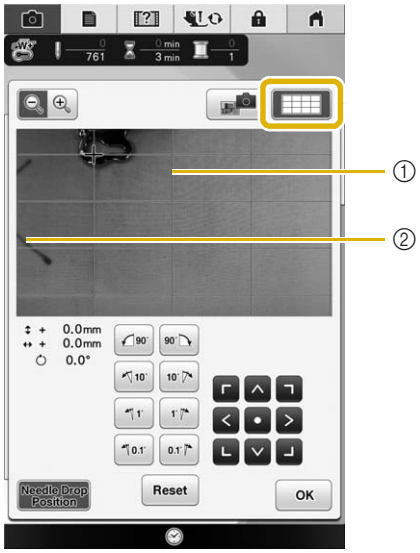
8 Press [📷].

9 Press the positioning keys to move the embroidery frame until the cross-shaped chalk mark drawn on the fabric is displayed in the camera view window.



① Positioning keys

10 Press [▦] to display the grid lines.

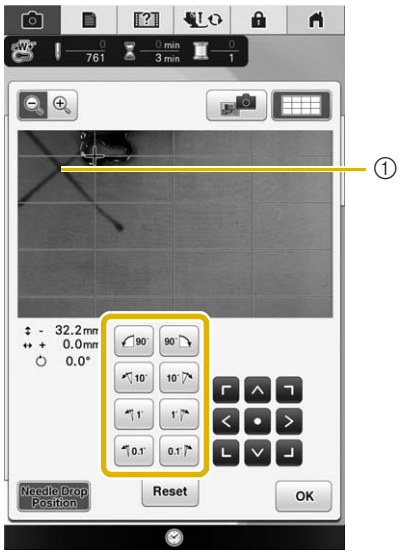


① Grid lines
② Chalk mark on the fabric

Memo

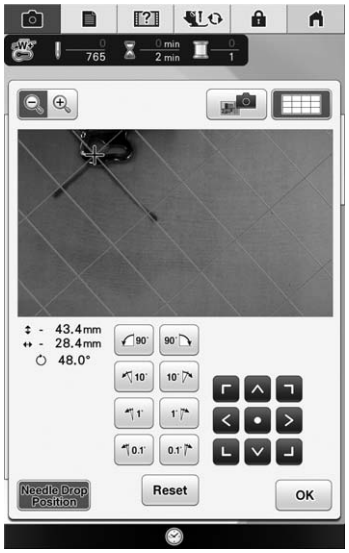
- Press [🔍] to enlarge the camera view. By enlarging the camera view, you can make a close adjustment for the center point of the pattern moving the embroidery frame little by little.

11 **Adjust the orientation of the pattern by pressing the orientation keys until the grid lines are parallel with the chalk mark drawn on the fabric. (Refer to "Rotating the Pattern" on page 213.)**



① Center point of the pattern

12 **Press the positioning keys to move the embroidery frame until the center point of the pattern in the camera view window is aligned with the chalk mark drawn on the fabric.**



13 **Press** OK **to return to the previous screen.**

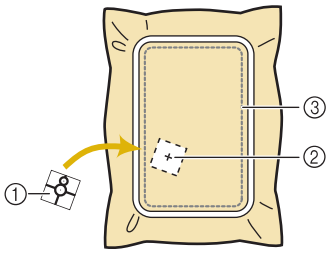
14 **Press the "Start/Stop" button to begin embroidering.**

* See "Embroidering Patterns" on page 260.

Using the Built-In Camera to Align the Embroidering Position

The embroidering position can easily be aligned using the machine's built-in camera and the included embroidery positioning sticker.

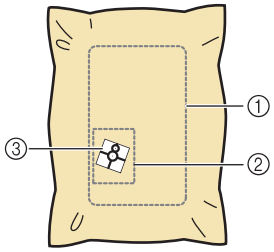
1 **Affix the embroidery positioning sticker to the location in the fabric to be embroidered. Place the embroidery positioning sticker so that the center of the larger circle is at the center or edge of the embroidery pattern.**



① Embroidery positioning sticker
② Center or edge of the embroidery pattern
③ Embroidery field

Note

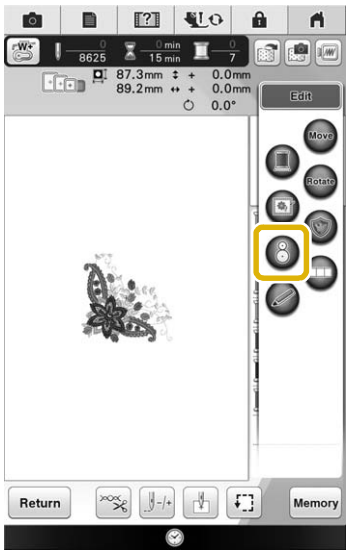
- When inserting the fabric in the embroidery frame, check that the embroidery pattern fits within the embroidery field for the frame that is used.



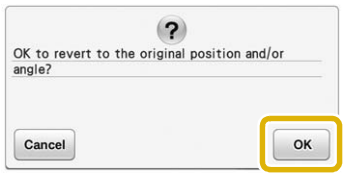
① Embroidery field
② Embroidery pattern
③ Embroidery positioning sticker

- Depending on the type of fabric that is used, a part of the embroidery positioning sticker may remain attached when it is peeled off. Before using the embroidery positioning sticker, check that it can be cleanly removed from a scrap piece of the fabric to be used.

2 Press Edit to display the editing window, and then press .

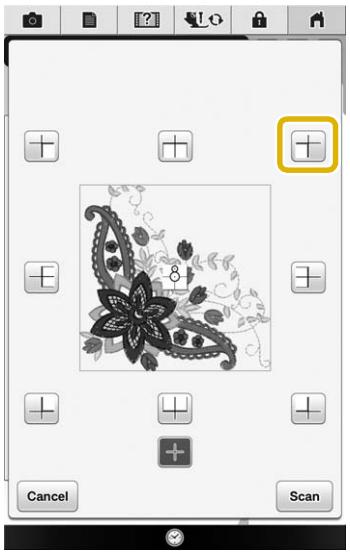


3 Following message appears. Press OK.



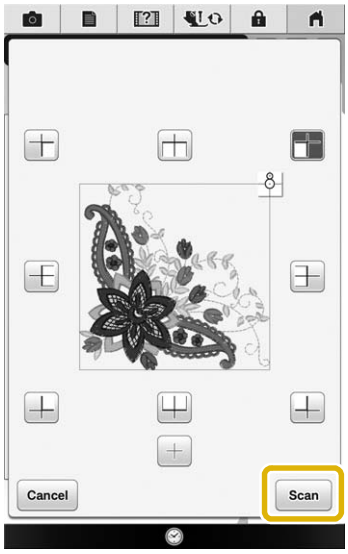
→ The embroidering position will return to the original position, even if you changed before.

4 Select the position you want to set as the reference point.



* Select ⊕ if you want to embroider referring the embroidery positioning sticker as the center of the pattern.

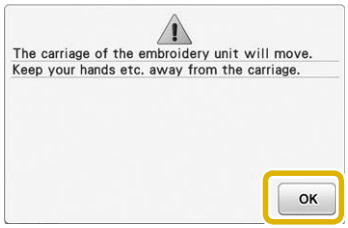
5 Press Scan.



Note

- Attach embroidery foot “W+” with LED pointer before pressing Scan. The embroidery foot “W+” lowers and check the fabric thickness, to help the built-in camera recognize the embroidery positioning sticker.

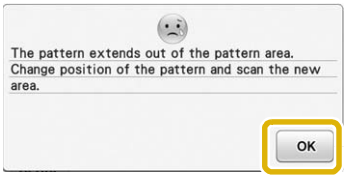
6 Following message appears. Press OK.



→ The built-in camera automatically searches for the embroidery positioning sticker, and then the carriage is moved so that the selected reference point of the embroidery pattern is aligned with the embroidery positioning sticker. The brightness of the machine light is dimmed while the built-in camera searches for the embroidery positioning sticker.

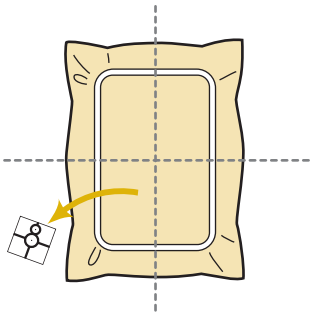
Note

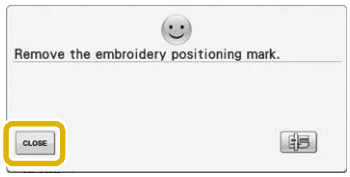
- If the following warning message appears, touch OK and reposition the embroidery positioning sticker so the pattern is within the embroidery field, and then press Scan again.



7 **A reminder message appears. Remove the embroidery positioning sticker from the fabric, and press** OK.

* To remove the embroidery positioning sticker more easily, press so that the embroidery frame moves slightly forward and away from under the needle. After the embroidery positioning sticker is removed, press OK.





8 **Press the "Start/Stop" button to begin embroidering.**

* See "Embroidering Patterns" on page 260.

Note

- After the included embroidery positioning stickers are used up, optional stickers are available. For details, refer to "Options" on page 22.

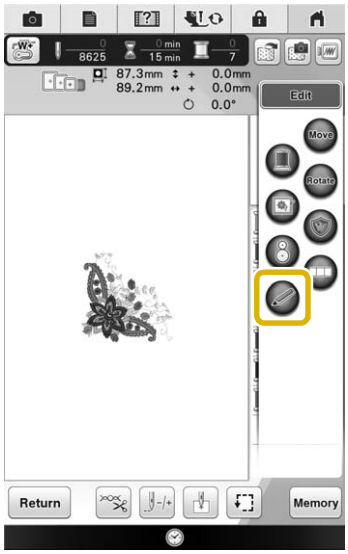
Specifying the Embroidering Position With the Sensor Pen

By using the sensor pen, the embroidering position can be adjusted to the desired location.

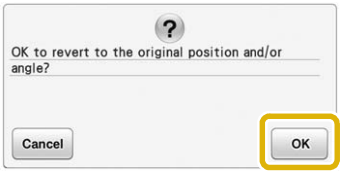
Note

- If the message "The carriage of the embroidery unit will move. Keep your hands etc. away from the carriage." appears during the operation, ensure safety, and then press OK.

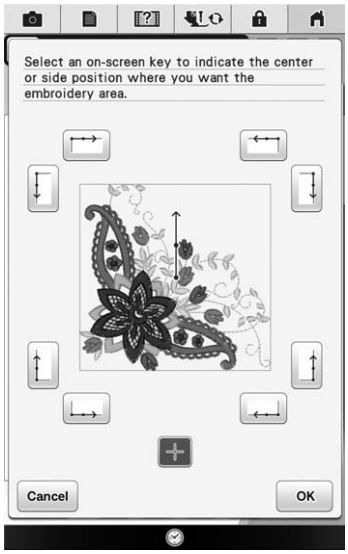
1 **Press** Edit**, and then** .



2 **Press** OK.



→ The embroidering position selection screen appears.

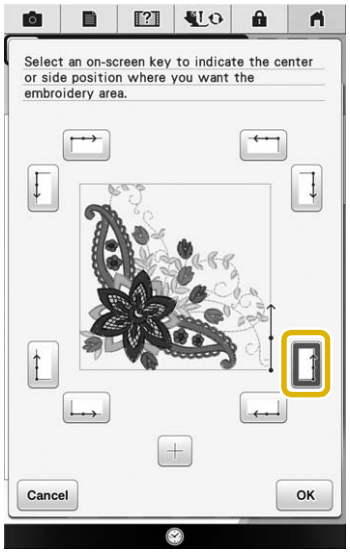


3 **Select the reference point for positioning the embroidery pattern.**

* To align the edge of the embroidery with a pattern or mark on the fabric, select the edge of design. If the center of the pattern to be embroidered is determined, select the center position.

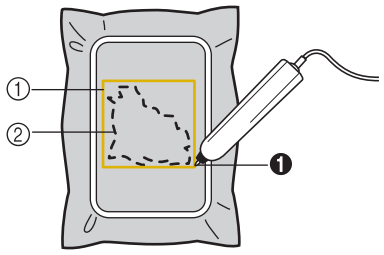
■ Selecting the Embroidering Position by the Pattern Edge

1 **From the keys on the screen, press the edge to be the reference for positioning.**



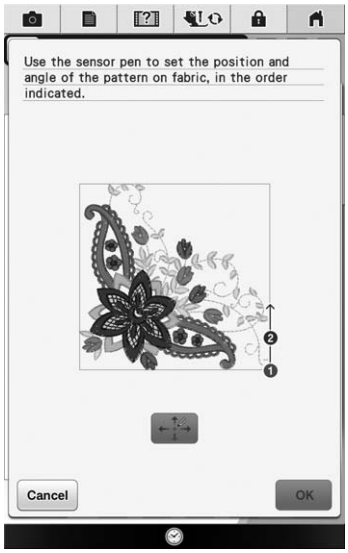
2 **Press** OK.

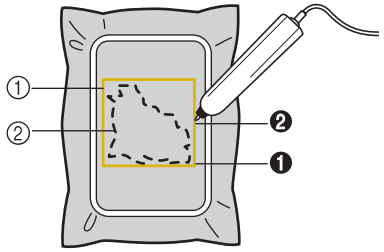
3 **With the sensor pen, touch the point on the fabric corresponding to corner ❶ in the screen.**



① Square of pattern edge
② Pattern position

4 **With the sensor pen, touch the point on the fabric corresponding to corner ❷ in the screen.**



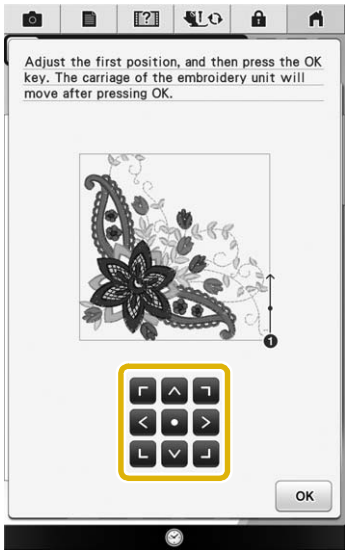


① Square of pattern edge
② Pattern position

5 **Press** ↔ **to adjust the positions.**

→ If you don't need to adjust the positions, continue to step 9.

6 Press to move the LED pointer on the fabric for adjusting the first position.



7 Press OK to apply the setting.

8 Press to move the LED pointer on the fabric for adjusting the second position.

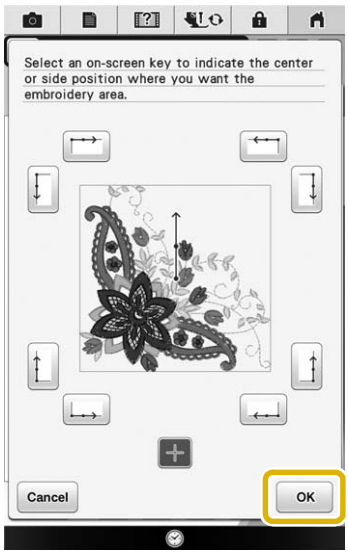
9 Press OK to apply the setting.

10 The preview in the screen is updated according to the specified embroidering position.

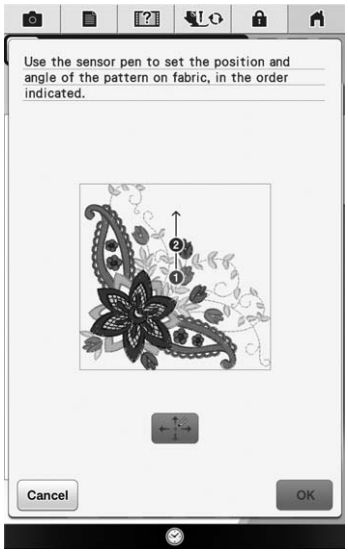
11 Press the "Start/Stop" button to start embroidering.

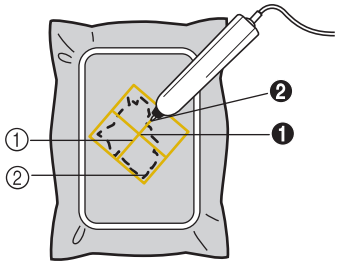
■ Selecting the Embroidering Position by the Pattern Center

1 Press OK in the following screen.



2 With the sensor pen, touch 2 points on the fabric corresponding to the numbers in the center of the embroidery pattern.



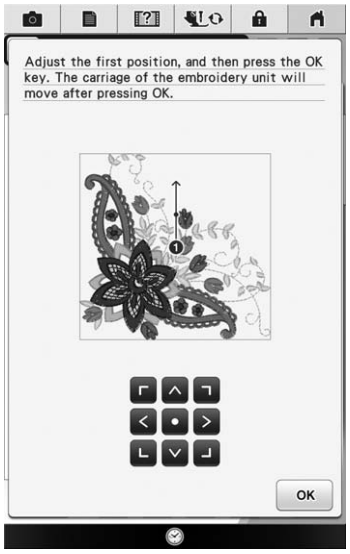


① Center line of the pattern
② Pattern position
→ Specified point number turns into red.

3 **Press [icon] to adjust the positions.**

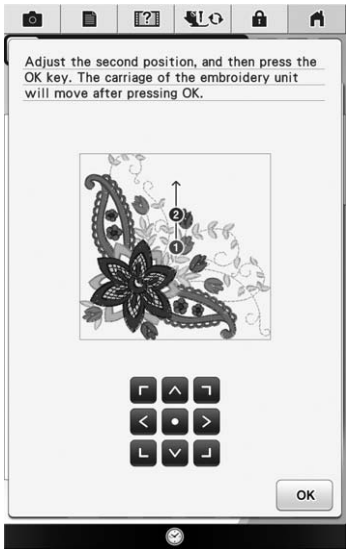
→ If you don't need to adjust the positions, continue to step 7.

4 **Press [icon] to move the LED pointer on the fabric for adjusting the first position.**



5 **Press OK to apply the setting.**

6 **Press [icon] to move the LED pointer on the fabric for adjusting the second position.**



7 **Press OK to apply the setting.**

8 **The preview in the screen is updated according to the specified embroidering position.**

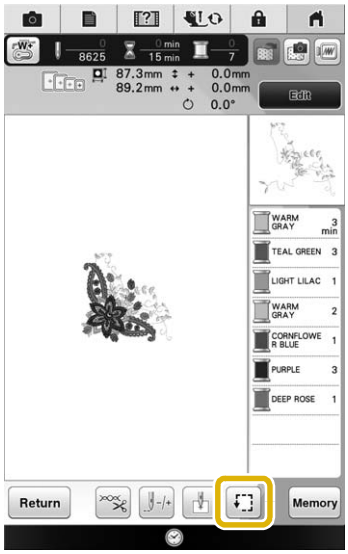
9 **Press the "Start/Stop" button to start embroidering.**

> **Note**
> - When using the sensor pen to specify the embroidering position, it may not be possible to exactly specify the desired location. In this case, move the embroidery frame to align the center of the pattern with the location indicated by the LED pointer.

Checking the Pattern Position

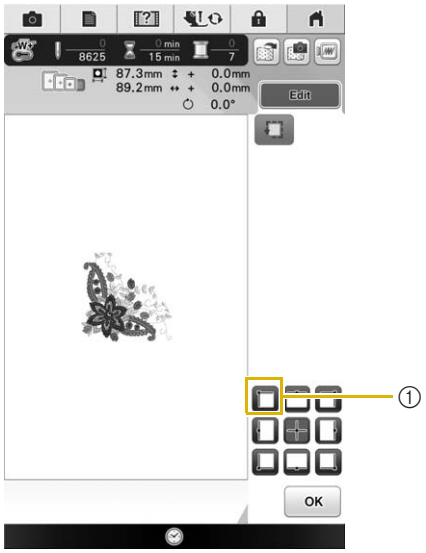
The embroidery frame moves and shows the pattern position. Watch the frame closely to make sure the pattern will be sewn in the right place.

1 **Press [icon].**



→ The following screen is displayed.

2 **From , press the key for the position that you want to check.**

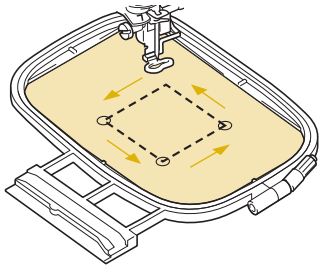


① Selected position

→ The needle will move to the selected position on the pattern.

Memo

- To see the entire embroidering area, press . The embroidery frame moves and shows the embroidery area.



⚠ CAUTION

- **Make sure the needle is up when the embroidery frame is moving. If the needle is down, it could break and result in injury.**

3 **Press OK.**

EMBROIDERING A PATTERN

Embroidering Attractive Finishes

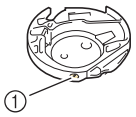
There are many factors that go into sewing beautiful embroidery. Using the appropriate stabilizer (see page 242) and hooping the fabric in the frame (see page 243) are two important factors mentioned earlier. Another important point is the appropriateness of the needle and thread being used. See the explanation of threads below. Included with this machine are two bobbin cases. Follow the explanation below.

Thread	**Upper thread**	Use embroidery thread intended for use with this machine. Other embroidery threads may not yield optimum results.
	Bobbin thread	Use embroidery bobbin thread intended for use with this machine.

Memo

- If you use threads other than those listed above, the embroidery may not sew out correctly.

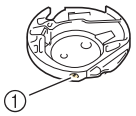
Bobbin case (recommended for sewing and for embroidering with included 60 weight bobbin thread)



① Standard bobbin case (green marking on the screw)

Standard bobbin case originally installed in the machine has a green marking on the screw. We recommend using the included embroidery bobbin thread with this bobbin case. Do not adjust the tension screw on this bobbin case with the green marked screw.

Bobbin case (for prewound or other embroidery bobbin threads)



① Bobbin case (no color on the screw)

The bobbin case with no color on the screw is set with tighter tension for embroidery with different weights of bobbin threads and a variety of embroidery techniques. This bobbin case is identified with a dark colored mark on the inside of the bobbin cavity. The tension screw on this case can be adjusted if necessary.

⚠ CAUTION

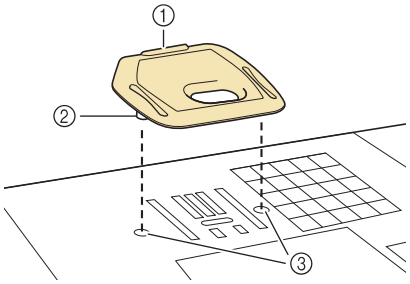
- **When embroidering on large garments (especially jackets or other heavy fabrics), do not let the fabric hang over the table. Otherwise, the embroidery unit cannot move freely and the embroidery frame may strike the needle, causing the needle to bend or break and possibly cause injury.**
  Place the fabric so that it does not hang off the table or hold the fabric to keep it from dragging.

Note

- Before embroidering, check that there is enough thread in the bobbin. If you start to sew your embroidery project without enough thread in the bobbin, you will need to rewind the bobbin in the middle of the embroidery pattern.
- Do not leave objects in the range of motion of the embroidery frame. The frame may strike the object and cause a poor finish to the embroidery pattern.
- When embroidering on large garments (especially jackets or other heavy fabrics), do not let the fabric hang over the table. Otherwise, the embroidery unit cannot move freely, and the pattern may not turn out as planned.

■ Embroidery Needle Plate Cover

Under some conditions, based on the type of fabric, stabilizer, or thread being used, there may be some looping in the upper thread. In this case, attach the included embroidery needle plate cover to the needle plate. Attach the cover by inserting the two projections on the underside of the cover into the notches on the needle plate as shown below.



① Groove
② Projection
③ Notch

To remove the embroidery needle plate cover, place your fingernail in the groove and lift the plate out.

⚠ CAUTION

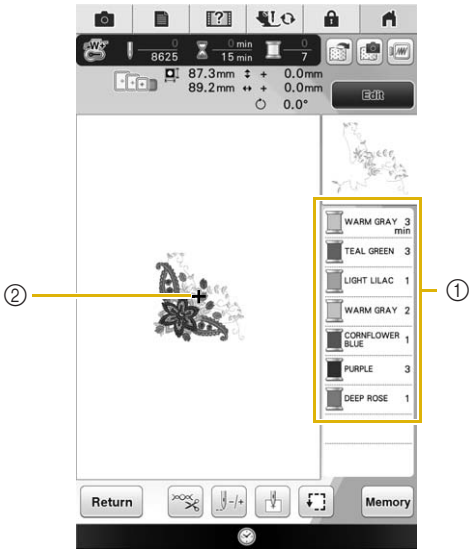
- **Push the embroidery needle plate cover as far as possible to attach it. If the embroidery needle plate cover is not securely attached, it may cause the needle to break.**

Note

- Do not use the embroidery needle plate cover for any applications other than embroidery.

Embroidering Patterns

Example:

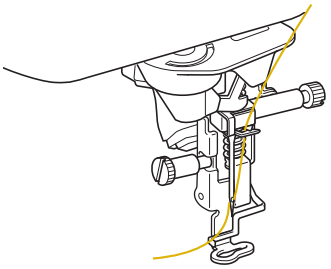


① Embroidery color order
② Cursor

Memo

- The [+] cursor moves over the pattern, showing which part of the pattern is being sewn.

1 Using the automatic needle threader, thread the machine for the first color.

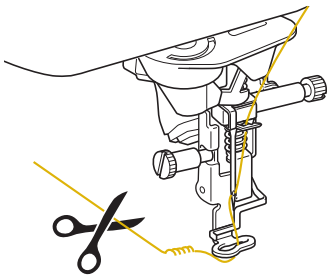


2 Lower the presser foot, then press the "Start/Stop" button to start embroidering.

→ When the first color is completely sewn, the machine will automatically trim the threads and stop. The presser foot will then automatically be raised. On the embroidery color order display, the next color will move to the top.

Memo

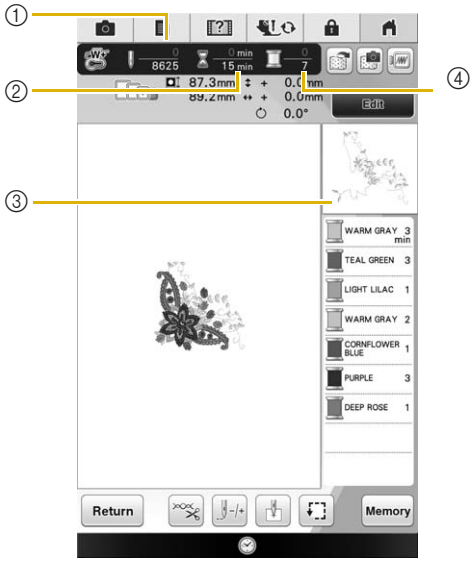
- If you want to get more attractive finishes, try the procedures below;
  - After 5-6 stitches, press the "Start/Stop" button again to stop the machine.
  - Trim the excess thread at the end of the seam. If the end of the seam is under the presser foot, raise the presser foot, then trim the excess thread.



- If there is thread left over from the beginning of sewing, it may be sewn over as you continue embroidering the pattern, making it very difficult to deal with the thread after the pattern is finished. Trim the threads at the beginning of each thread change.

3 Remove the thread for the first color from the machine. Thread the machine with the next color.

4 Repeat the same steps for embroidering the remaining colors.



① Current stitch numbers/Total stitch numbers
② Current time/Total time
③ The part of pattern embroider next
④ Embroidered colors/Total colors

→ When the last color is sewn, "Finished embroidering" will appear on the display. Press OK, and the display will return to the original screen.

Memo

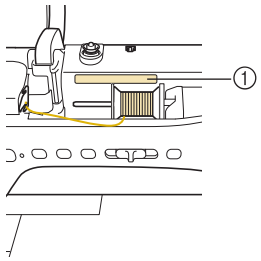
- The Thread Trimming Function is originally set to trim excess thread jumps (threads linking parts of the pattern, etc.). Depending on the type of thread and fabric that are used, an end of upper thread may remain on the surface of the fabric at the beginning of the stitching. After embroidering is finished, cut off this excess thread.
  If the setting has been turned off, trim the excess thread jumps using scissors after the pattern is finished.
  See page 290 for information on the thread trimming function.

Spool Stand LED

This machine is equipped with a spool stand LED. Its lighting status and color indicate the machine status and thread color for embroidering.

Memo

- Use the color in which the LED lights up as a guide. Since the actual embroidery thread color may differ slightly, be sure to also check the thread color number in the LCD.



① Spool stand LED

Lit	Lights up in thread color for embroidering
Lit (color changing)	Indicates thread spool replacement (then lights up in embroidery thread color)
Flashing (red)	Error
Flashing (green)	End of stitching

Memo

- When embroidering a pattern with uninterrupted embroidering, the LED lights up in gray.
- When embroidering an appliqué pattern, the LED light indicates no color while embroidering "APPLIQUE MATERIAL", "APPLIQUE POSITION" or "APPLIQUE".

■ When Not Using the Spool Stand LED

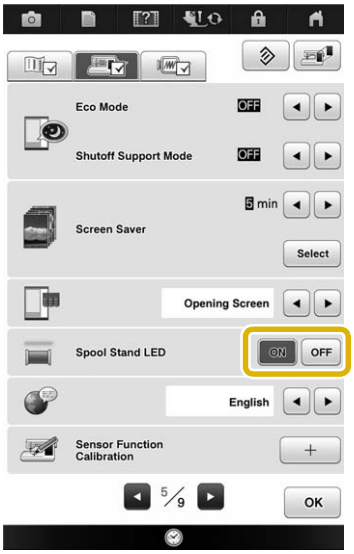
1 **Press .**

2 **Press .**

→ The General settings screen appears.

3 **Display page 5 of the Embroidery settings screen.**

4 **Set "Spool Stand LED" to "OFF".**



5 **Press OK to return to the original screen.**

Using Appliqués

This machine can sew patterns that contain an appliqué. Follow the procedure described below to sew patterns with (appliqué piece), (appliqué position) and (appliqué) in the embroidery color order display.

1. Create the appliqué piece.
↓
2. Sew the appliqué position on the base fabric.
↓
3. Affix the appliqué piece to the base fabric.
↓
4. Embroider the remainder of the pattern.

Required materials

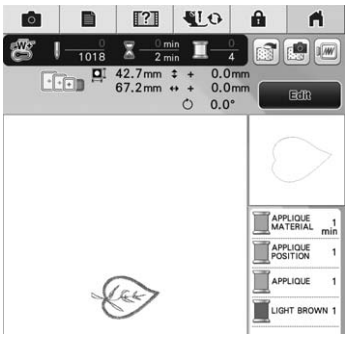
- Fabric for the appliqué piece
- Fabric for the appliqué base
- Stabilizer material
- Craft glue
- Embroidery thread

Note

- If (appliqué piece), (appliqué position) and (appliqué) appear in the embroidery color order display, the names and numbers of the thread colors to be used will not appear. Select the thread colors according to those in the appliqué pattern.

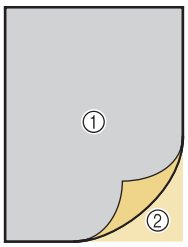
■ 1. Creating the Appliqué Piece

1 **Select the appliqué pattern, and then continue to the embroidering screen.**



2 **Attach stabilizer material to the wrong side of the appliqué fabric.**

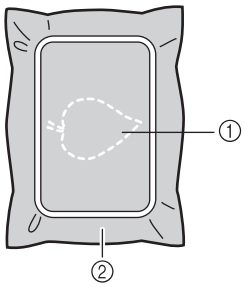
Hoop the fabric in the embroidery frame, and then attach the embroidery frame to the embroidery unit.



① Appliqué (cotton, felt, etc.)
② Stabilizer

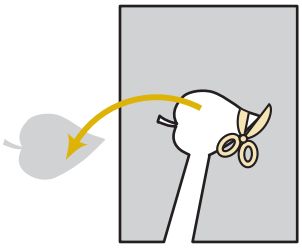
3 **Thread the machine with the embroidery thread, lower the presser foot lever, and then press the "Start/Stop" button to sew the cutting line of the appliqué piece.**

→ The outline of the appliqué piece is sewn, and then the machine stops.



① Cutting line for appliqué piece
② Fabric for appliqué piece

4 **Remove the fabric for the appliqué piece from the embroidery frame, and then carefully cut along the sewn cutting line.**



Note

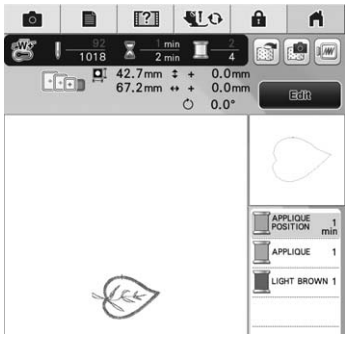
- If the appliqué piece is cut out along the inside of the cutting line, it may not be correctly attached to the fabric. Therefore, carefully cut out the appliqué piece along the cutting line.
- After cutting out the appliqué piece, carefully remove the thread.

■ 2. Sewing the Appliqué Position on the Base Fabric

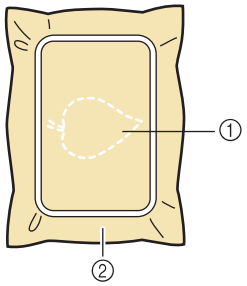
1 **Attach stabilizer material to the wrong side of the fabric for the appliqué base.**

Hoop the fabric in the embroidery frame, and then attach the embroidery frame to the embroidery unit.

2 **Thread the machine with the embroidery thread, lower the presser foot lever, and then press the "Start/Stop" button to sew the appliqué position.**



→ The position of the appliqué is sewn, and then the machine stops.



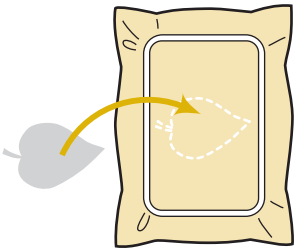
① Appliqué position
② Base fabric

3 **Remove the embroidery frame from the embroidery unit.**

Note
- Do not remove the base fabric from the embroidery frame until all sewing is finished.

■ 3. Affixing the Appliqué Piece to the Base Fabric

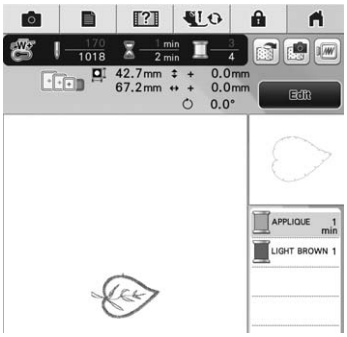
1 **Lightly apply craft glue to the back of the appliqué piece, and then attach it to the base fabric within the outline of the position sewn in step 2 of "2. Sewing the Appliqué Position on the Base Fabric".**



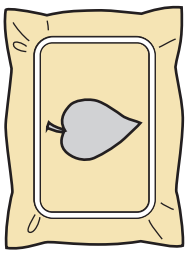
Note
- If the appliqué piece is not securely attached to the base fabric, the appliqué piece may lift off the base fabric during sewing, causing misalignment.
- If the appliqué piece cannot be attached to the base fabric with craft glue, securely baste it in place with basting stitches.
- If thin fabric is used for the appliqué piece, reinforce and secure it in place with an iron-on adhesive sheet. An iron can be used to attach the appliqué piece to the appliqué location.
- Do not remove the fabric from the embroidery frame when attaching the appliqué piece to the base fabric.

2 **After the appliqué piece is attached, reattach the embroidery frame to the machine.**

Thread the machine with the embroidery thread, lower the presser foot lever, and then press the "Start/Stop" button to sew the appliqué.



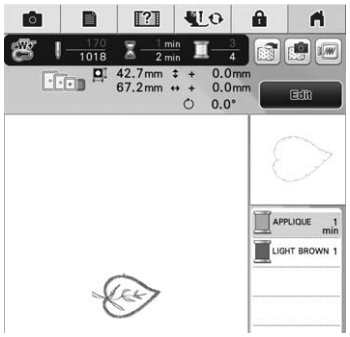
→ The appliqué piece is sewn to the base fabric, and then the machine stops.

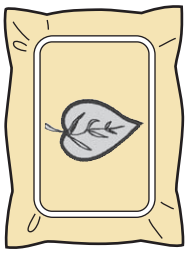


Memo
- Depending on the pattern that is selected, (appliqué piece), (appliqué position) and (appliqué) for all three steps may not appear. If (appliqué) appears as a color, embroider using thread of that color.

■ 4. Embroidering the Remainder of the Pattern

1 **Change the embroidery thread according to the embroidery color order display, and then finish embroidering the remainder of the pattern.**





Memo

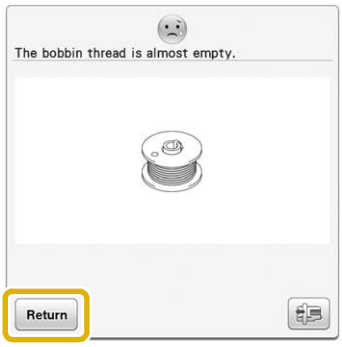
- Since glue may become attached to the presser foot, needle or needle plate, clean off any glue off after finishing embroidering the appliqué pattern.
- For best results, trim all excess threads each time the thread color is changed.

ADJUSTMENTS DURING THE EMBROIDERY PROCESS

Note
- Be careful not to bump the embroidery unit carriage or the presser foot when removing or attaching the embroidery frame. Otherwise, the pattern will not embroider correctly.

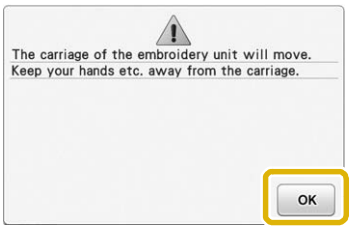
If the Bobbin Runs Out of Thread

When the bobbin begins to run out of thread during embroidering, the machine will stop and the message below will appear. Press [ ] and follow the directions below to rethread the lower threading. If very little sewing remains, you can embroider 10 final stitches without rethreading the machine by pressing [Return]. The machine will stop after sewing the 10 stitches.



Note
- If “Upper and Bobbin Thread Sensor” in the General settings screen of the machine setting mode is set to “OFF”, the message shown above does not appear.

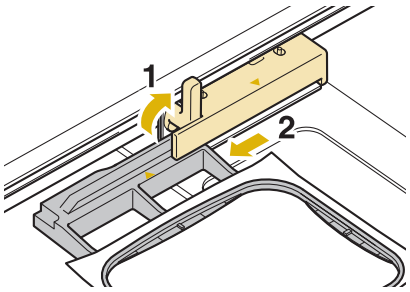
1 **Press [OK].**



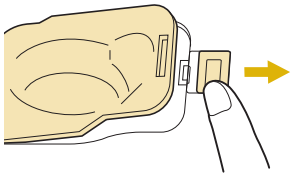
→ After the thread is automatically cut, the carriage will move.

2 **Unlock the frame-securing lever and remove the embroidery frame.**

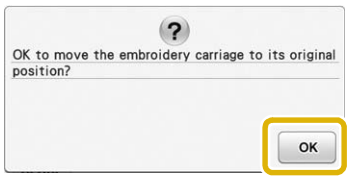
* Be careful not to apply strong force to the fabric at this time. Otherwise, the fabric may loosen in the frame.



3 **Insert a wound bobbin into the machine. (see page 57 for Setting the bobbin.)**



4 **Press [OK].**



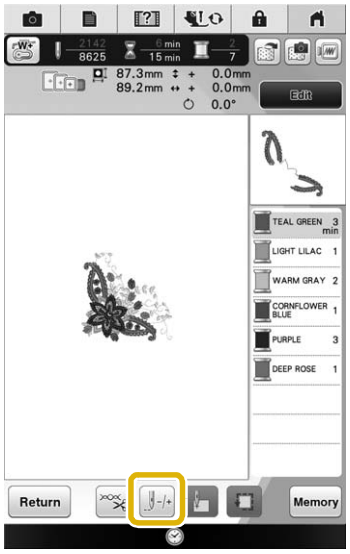
→ The carriage will return to its original position.

5 **Attach the embroidery frame.**

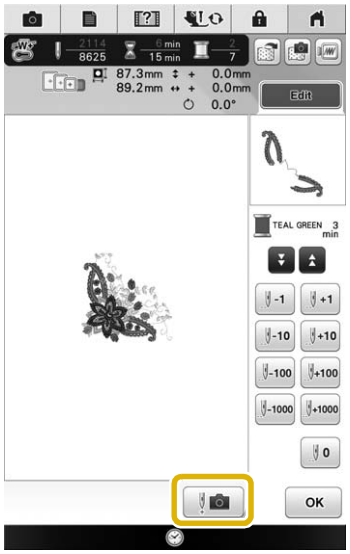
6 **To return to the spot in the pattern where you stopped sewing, follow steps 3 through 9 in the next section.**

If the Thread Breaks During Sewing

1. **Press the "Start/Stop" button to stop the machine.**
2. **If the upper thread is broken, redo the upper threading. If the bobbin thread is broken, press [ ] and follow the directions in steps 1 through 5 from the previous section to reset the bobbin.**
3. **Press [-/+].**



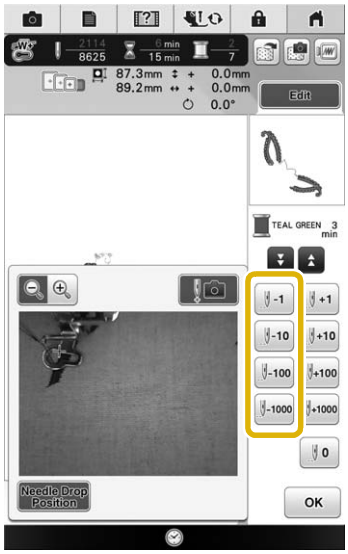
4. **Press the "Presser Foot Lifter" button to lower the presser foot.**
5. **Press [ ].**



→ The camera view window appears.

6. **Press [-1], [-10], [-100], or [-1000] to move the needle back the correct number of stitches before the spot where the thread broke.**

* If you cannot move back to the spot where the thread broke, press [▼] or [▲] to select the color and move to the beginning position of that color, then use [+1], [+10], [+100], or [+1000] to move ahead to slightly before where the thread broke.



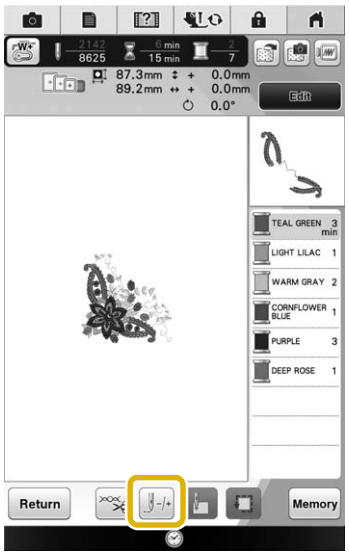
* Press [ ] to enlarge the image in the screen.

* Press [Needle Drop Position] to remove " ✚ " from the screen.

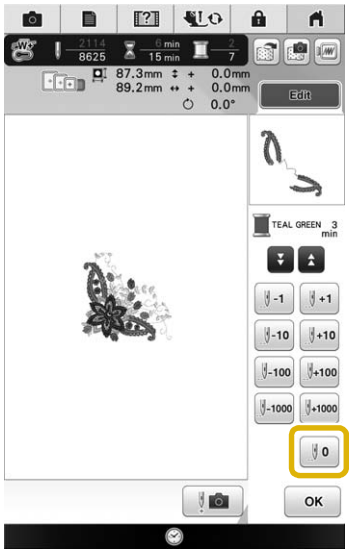
7. **Press [ ] to close the camera view window.**
8. **Press [OK] to return to the original screen.**
9. **Press the "Start/Stop" button to continue sewing.**

Restarting from the Beginning

1 **Press** [-/+].



2 **Press** [0].



→ The embroidery frame moves, returning the needle to the pattern's beginning position.

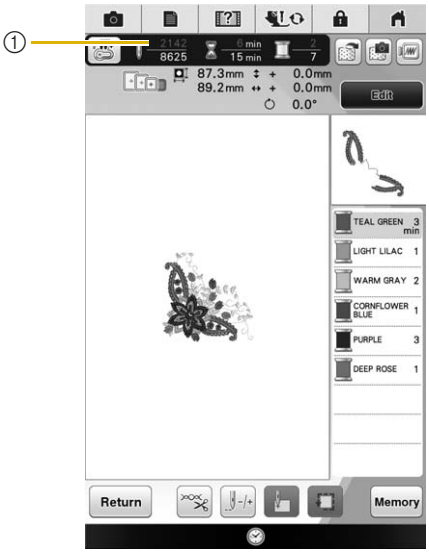
3 **Press the "Presser Foot Lifter" button to lower the presser foot and start sewing.**

Resuming Embroidery After Turning Off the Power

The current color and stitch number are saved when embroidery is stopped. The next time the machine is turned on, you have the option to continue or delete the pattern.

Memo

- Even if the power goes out in the middle of embroidery, the machine returns to the point where embroidery was stopped when the machine is turned on again.



① Current stitch number when embroidery was stopped

Note

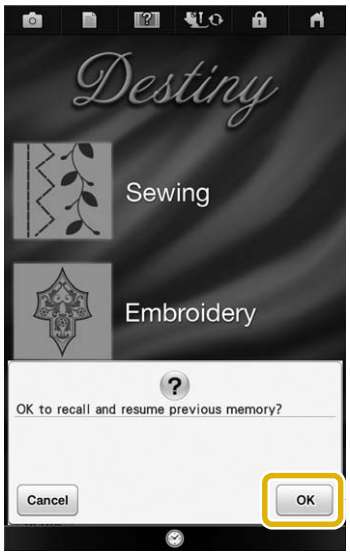
- Do not remove the embroidery unit or the memory will no longer remember your design.

1 **Turn the main power to ON.**

2 **Follow the instructions shown on the screen and remove the embroidery frame.**

→ The following message will appear.

3 Attach the embroidery frame and press OK.

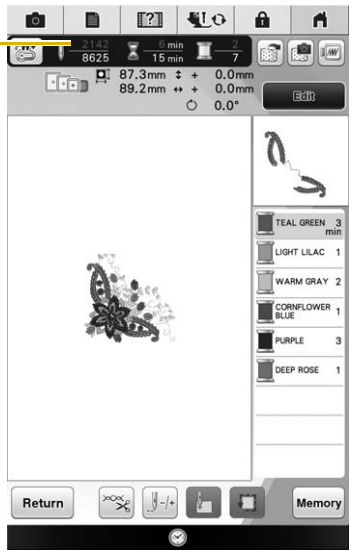


→ The previous embroidering screen displayed before the machine was turned off appears.

Memo

- If you want to start a new embroidery pattern, press Cancel so the pattern selection screen appears.

4 Continue embroidering.



① Stitch number when embroidery is resumed

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Advanced Embroidery

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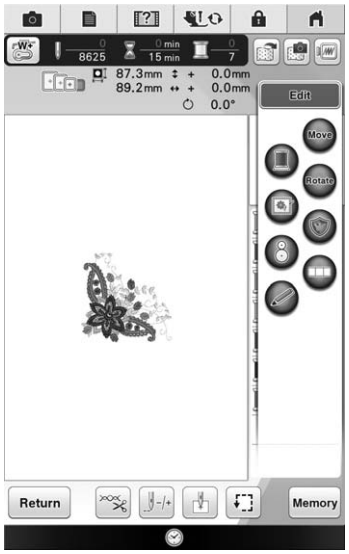
VARIOUS EMBROIDERING FUNCTIONS

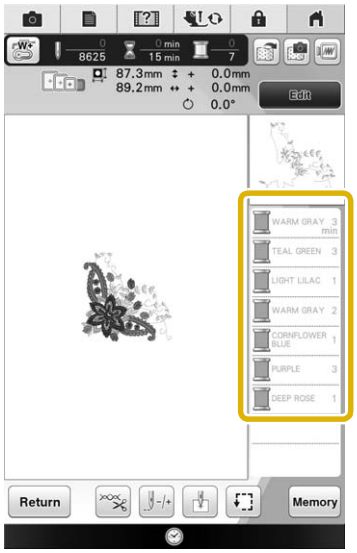
Uninterrupted Embroidering (Using a Single Color : Monochrome)

A selected pattern can be stitched out in one color instead of multicolor. The machine will continue till the pattern is completed.

1 **Press** .

* Press the key again to return to the original setting.





→ The thread color displayed on the screen will be grayed out.

Memo

- Even if uninterrupted embroidering has been set, the automatic thread cutting function and the thread trimming function can be used (see page 290 and 290).

Display the Fabric While Aligning the Embroidering Position

The fabric hooped in the embroidery frame can be displayed on the LCD so that the embroidery position can be easily aligned.

Example:

Note

- When embroidery frame (small: H 2 cm × W 6 cm (H 1 inch × W 2-1/2 inches) (optional)) is installed, the built-in camera cannot be used to align the embroidering position. Install medium embroidery frame or larger.
- For details on using thicker fabric such as quilting, refer to “Positioning the Pattern on Thick Fabric” (page 275).

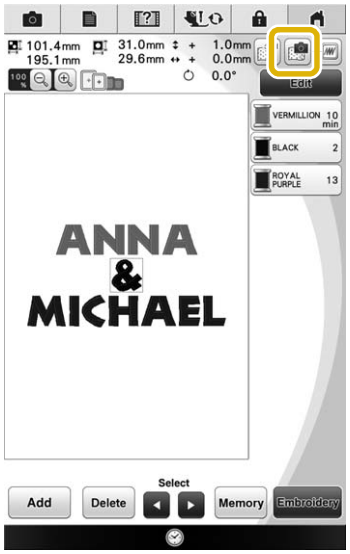
1 **Hoop the fabric in the embroidery frame, and then attach the frame to the embroidery machine.**

2 **Select the pattern, and then press** Set.

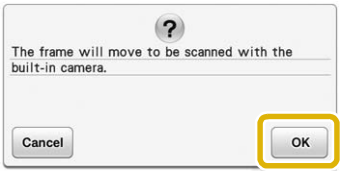
Note

- When using light to medium weight fabrics, check the settings screen to make sure “Fabric Thickness Sensor” is set to “OFF”.

3 **Press** .



4 **When the following message appears, press** OK.



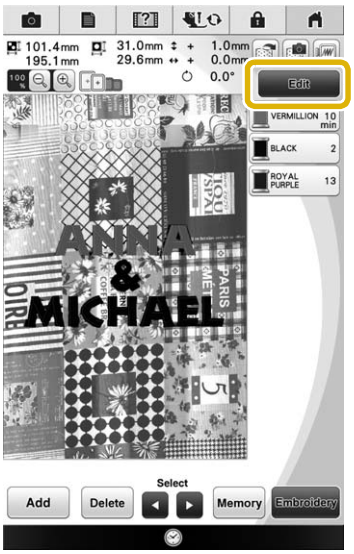
→ The embroidery frame moves so the fabric can be scanned.

Memo

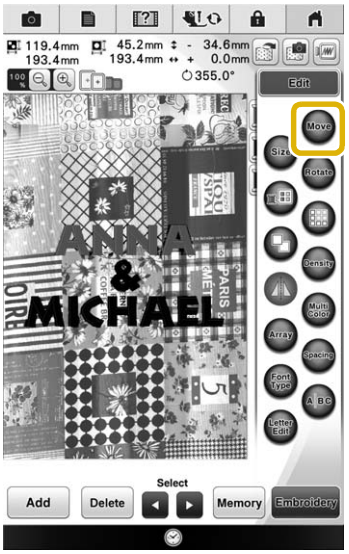
- If you do not wish the upper thread to be scanned together with the fabric, scan the fabric without the needle threaded with the upper thread.

5 **When the fabric appears as a background for the pattern, press** Edit **to display the editing window.**

* The pattern can be moved to the desired position by dragging on the screen using your finger, the touch pen or connected mouse without displaying the editing window. If you need some fine adjustment, move the pattern from the editing window.



6 **Press** Move **to display the pattern moving window.**



7 **Use to align the pattern to the desired embroidery position.**

8 **Press OK.**

Memo

- If necessary, press to display a preview in order to check the pattern position.

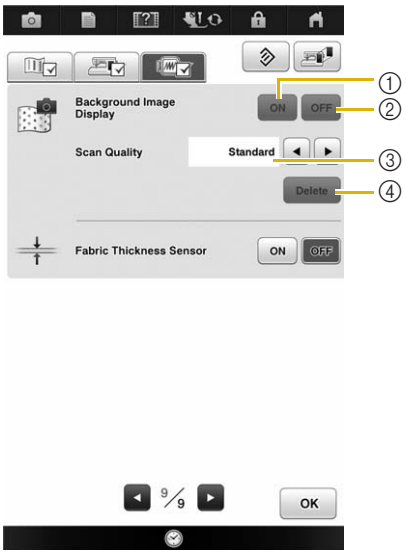
9 **Press the "Start/Stop" button to start embroidering.**

* See "Embroidering Patterns" on page 260.

→ When embroidery is finished, the fabric displayed in the background disappears.

■ Specify Fabric Display from the Settings Screen

Whether the fabric disappears or remains displayed can be specified from the settings screen.



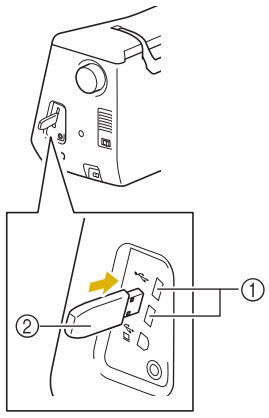
① Set to "ON" to leave the fabric displayed in the background.
② When set to "OFF", the background will disappear.
③ Set to "Fine" to scan clearer than setting to "Standard".
④ Press Delete to remove the background image completely.

Note

- The fabric background will remain if the embroidery is not finished. In this case, erase the background image from the settings screen.

■ Saving Scanned Image to USB Media

1 **Insert the USB media into the USB port on the machine.**



① USB port
② USB media

2 **Press and select the USB port to save image.**

→ After the short melody, the image file will be saved to the USB media.

3 **Remove the USB media, and then check the saved image using a computer.**

→ The files for scanned images are saved with the name "BG**.JPG" in a folder labeled "bPocket".

* "**" in the name "BG**.JPG" will automatically be replaced with a number between 00 and 99.

■ Positioning the Pattern on Thick Fabric

When positioning the pattern on thick fabric such as quilting, the fabric may not be detected correctly. In order for the fabric to be correctly detected, its thickness must first be measured.

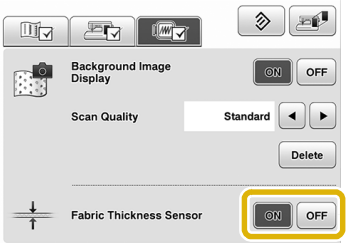
Memo

- This feature is functional only when the fabric is scanned. It will not affect embroidering if it is turned on with normal embroidery.

1 **Hoop the fabric in the embroidery frame, and then attach the frame to the embroidery machine.**

2 **Select the pattern, and then press Set.**

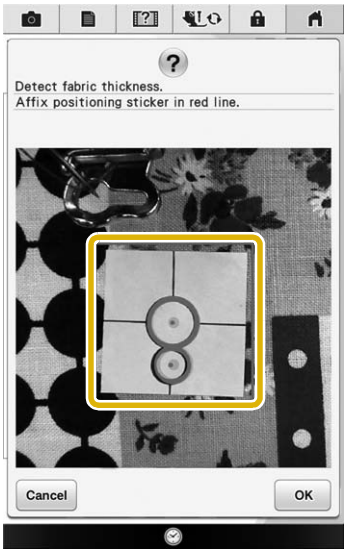
3 **Display page 9 of the Settings screen, and then set "Fabric Thickness Sensor" to "ON".**



4 **Press OK.**

5 **Press .**

6 **Affix the embroidery positioning sticker to the fabric within the area indicated by the red frame in the LCD, and then press OK.**



7 **When the following message appears, remove the embroidery positioning sticker, and then press OK.**

→ The embroidery frame is moved, and the embroidery positioning sticker affixed to the fabric is detected.

8 **Continue with step 7 on page 274 to align the pattern with the desired embroidery position.**

⚠ CAUTION

- **Use fabrics with a thickness of less than 3 mm (approx. 1/8 inch). Using fabrics thicker than 3 mm (approx. 1/8 inch) may cause the needle to break.**

Basting Embroidery

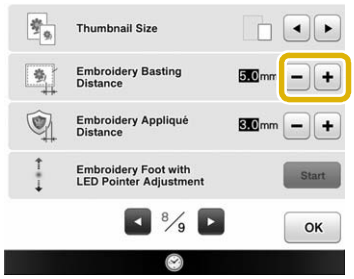
Before embroidering, basting stitches can be sewn along the outline of the pattern. This is useful for embroidering fabric that cannot have stabilizer material affixed with an iron or adhesive. By stitching stabilizer material to the fabric, shrinkage of the stitching or misaligned pattern can be minimized.

Note

- It is recommended to finish combining and editing the pattern before selecting the basting setting. If the pattern is edited after selecting the basting setting, the basting and pattern may become misaligned, and the basting under the pattern may be difficult to remove after embroidering is complete.

1 **Press .**

2 **Use − and + to specify the distance from the pattern to the basting stitching.**



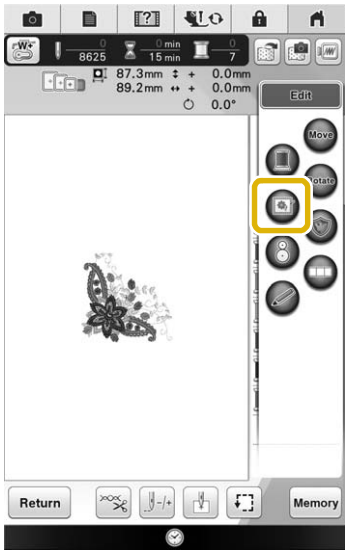
Memo

- The higher the setting, the farther the basting is from the pattern.
- The setting remains selected even if the machine is turned off.

3 **Press OK to return to the previous screen.**

4 **Press Embroidery.**

5 **Press to select the basting setting.**



Note

- When is pressed, the pattern is moved to the center. After selecting the basting setting, move the pattern to the desired position.

Memo

- To cancel the setting, press .
- If no pattern is selected, the key appears gray and cannot be selected.

→ Basting is added to the beginning of the sewing order.

6 **Press the "Start/Stop" button to begin embroidering.**

7 **When embroidering is finished, remove the basting stitching.**

Creating an Appliqué Piece

Appliqué pieces can be created from the built-in patterns and patterns on embroidery cards. This is convenient for fabrics that cannot be embroidered or when you wish to attach an appliqué to a garment.

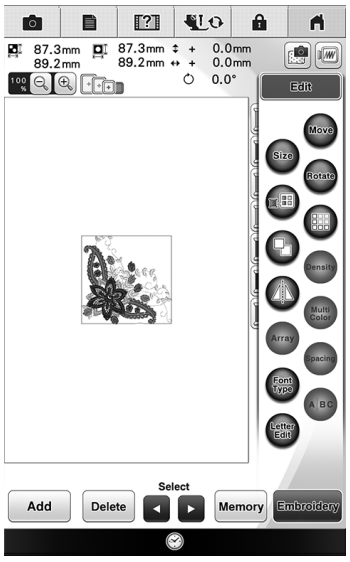
■ Creating an Appliqué Piece

The following pattern will be used to create an appliqué piece.

Note

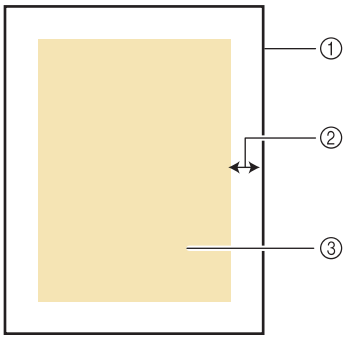
- Felt or denim fabrics are recommended to make the appliqué piece. Depending on the pattern and fabric used, lighter weight fabrics may cause the stitching to appear smaller.
- For best results, be sure to use stabilizer material for embroidering.
- Select a frame that matches the pattern size. Frame options are displayed on the LCD screen.
- When making appliqué pieces, do not use the border embroidery frame. Depending on the pattern density and fabric used, shrinkage of the stitching may occur.

1 **Select the pattern, and edit it if necessary.**



Note

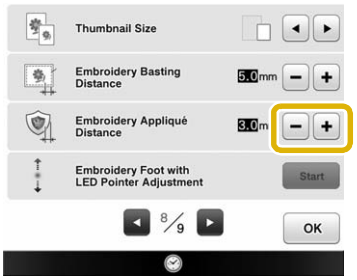
- Finish combining and editing the pattern before selecting the appliqué setting. If the pattern is edited after selecting the appliqué setting, the appliqué stitching and pattern may become misaligned.
- Since an outline is added, the pattern for an appliqué piece (when the appliqué setting is selected) will be larger than the original pattern. First, adjust the size and position of the pattern as shown below.



① Embroidering area
② Approx. 10 mm (3/8 inch)
③ Pattern size

2 **Press [ ] to display the settings screen.**

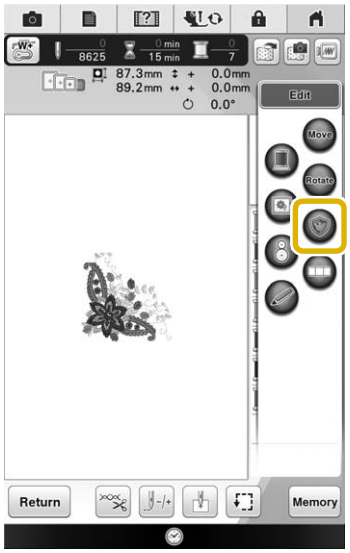
3 **Use [−] and [+] to specify the distance between the pattern and the appliqué outline.**



4 **Press [OK].**

5 **Press [Embroidery].**

6 **Press Edit and then, press to position the satin stitching around design.**



Note

- When is pressed, the pattern is moved to the center. After selecting the appliqué setting, move the pattern to the desired position.

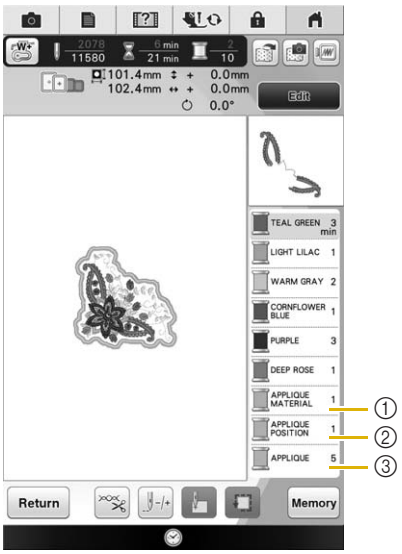
Memo

- To cancel the setting, press .
- If no pattern is selected, the key appears darkened and cannot be selected.

→ The steps for creating the appliqué piece are added to the sewing order.

Memo

- Three steps are added to the sewing order: appliqué cutting line, position of pattern placement on the garment, and appliqué stitching.



① Cutting line for appliqué
② Position of pattern placement on garment
③ Appliqué stitching

Note

- An appliqué piece cannot be created if the pattern is too large or too complicated or a combined pattern is separated. Even if the selected pattern fits within the embroidering area, the entire appliqué pattern may exceed the embroidering area when the outline is added. If an error message appears, select a different pattern or edit it.

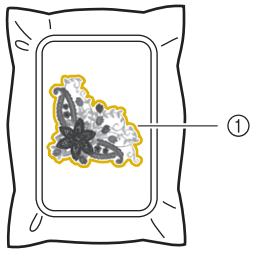
7 **Fuse or stick a piece of stabilizer to the back of the felt or denim fabric to be used as the appliqué piece.**

Note

- For best results, be sure to use stabilizer material for embroidering.

8 **Hoop the appliqué fabric in the embroidery frame, attach the embroidery frame to the machine, and then start embroidering.**

9 **After the pattern is embroidered, thread the machine with the thread for the cutting line, and then sew the cutting line (APPLIQUE MATERIAL).**

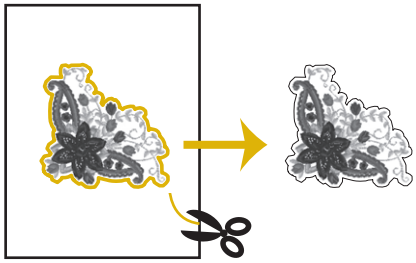


① Cutting line for appliqué

Memo

- We recommend using thread for the cutting line that is closest to the color of the fabric.

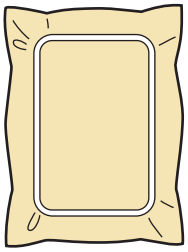
10 **Remove the appliqué material from the embroidery frame, and then carefully cut along the stitching. After cutting, carefully remove all of the cutting line thread.**



Note

- Depending on the pattern density and fabric used, there may be shrinking of the pattern or the appliqué may be misaligned with the placement line. We recommend cutting slightly outside of the cutting line.
- When using patterns that are vertically and horizontally symmetrical, use a chalk pencil to indicate the pattern orientation before cutting it out.
- Carefully cut out the pattern on the outline you just sewed. Do not cut inside the cutting line, otherwise the appliqué fabric will not be caught by the appliqué stitch.

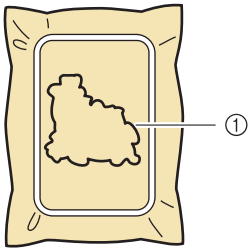
11 **Use two layers of adhesive water-soluble stabilizer material with their sticky sides together, and then hoop them in the embroidery frame.**



Note

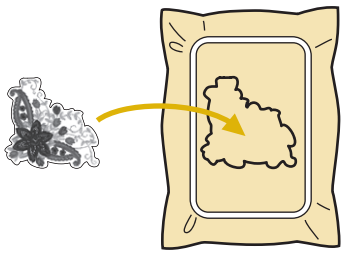
- If water-soluble stabilizer is used, it is not necessary to remove the stabilizer material after sewing the appliqué outline. To reduce shrinkage of the pattern, we recommend using water-soluble stabilizer.
- Put together two layers of water-soluble stabilizer, otherwise the stabilizer material may tear during embroidering.

12 **Thread the machine with the thread for the outline from step 14, and then sew the placement line for the appliqué position (APPLIQUE POSITION).**



① Pattern placement line

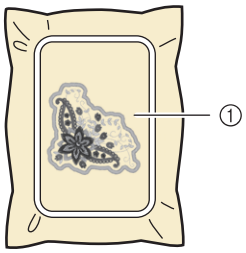
13 **Lightly apply glue or spray adhesive, and paste the appliqué piece so that it aligns with the placement line.**



Note

- Before pasting the appliqué piece down, make sure the appliqué piece is positioned correctly within the placement line.

14 **With the machine threaded using the thread for the outline from step 12, sew the outline (APPLIQUE).**



① Outline of appliqué piece

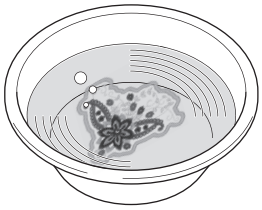
Memo

- The outline is sewn using satin stitching.
- Some glue may get onto the presser foot, needle, and needle plate at this time. Finish embroidering the appliqué pattern, and then clean off the glue.

15 **After embroidering is finished, remove the stabilizer material from the embroidery frame.**

16 **Use scissors to cut the excess water-soluble stabilizer from outside the appliqué outline.**

17 **Soak the appliqué piece in water to dissolve the water-soluble stabilizer.**



18 **Dry the appliqué piece, and then iron it if necessary.**

Note

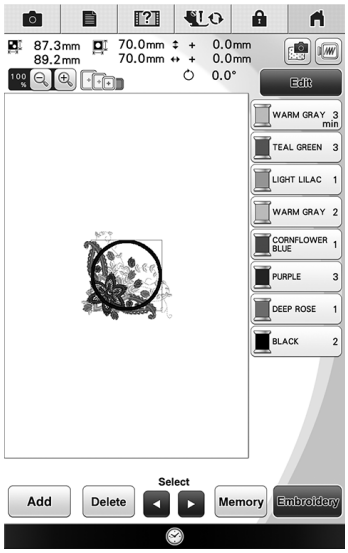
- Do not apply a strong force when ironing, otherwise the stitching may be damaged.

■ Using a Frame Pattern for the Outline

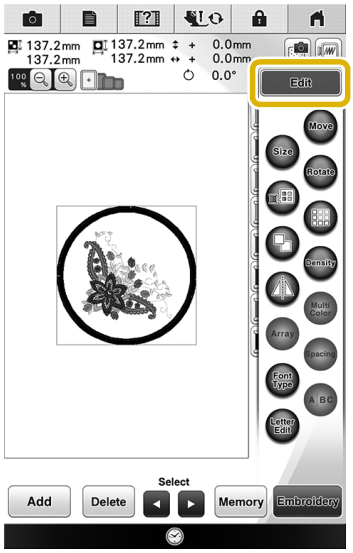
Using a frame pattern, the desired shape can be added as the outline of the appliqué. To select the desired frame, see “Selecting Frame Patterns” on page 205.

1 **Perform the operations described in steps 1 through 4 of “Creating an Appliqué Piece” on page 277.**

2 **Select the desired frame shape and pattern, and add it to the appliqué pattern.**

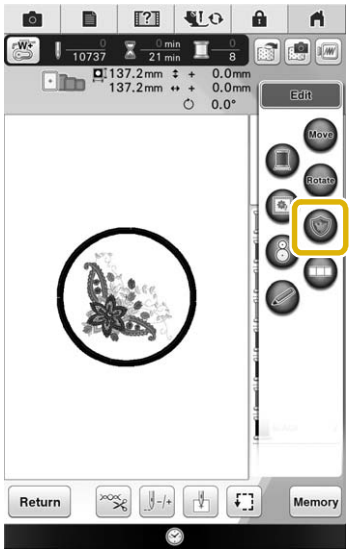


3 Press Edit to edit the frame pattern to fit the size of the appliqué pattern.



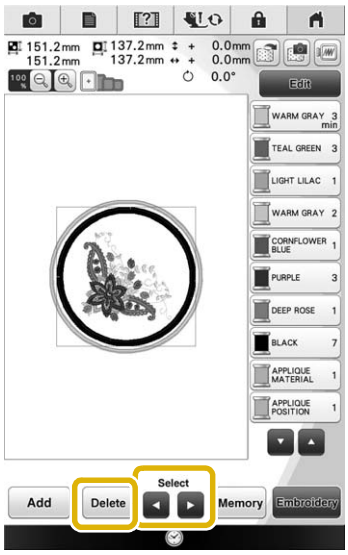
4 Press OK and then press Embroidery.

5 Press Edit, and then press to select the appliqué piece setting.



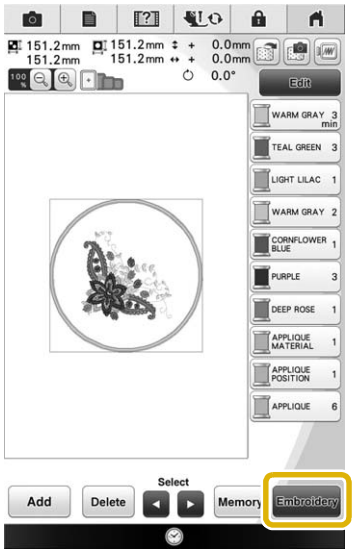
6 Press Return.

7 Use Select to select the frame pattern, and then press Delete and OK.



→ The frame pattern is deleted.

8 Press Embroidery.

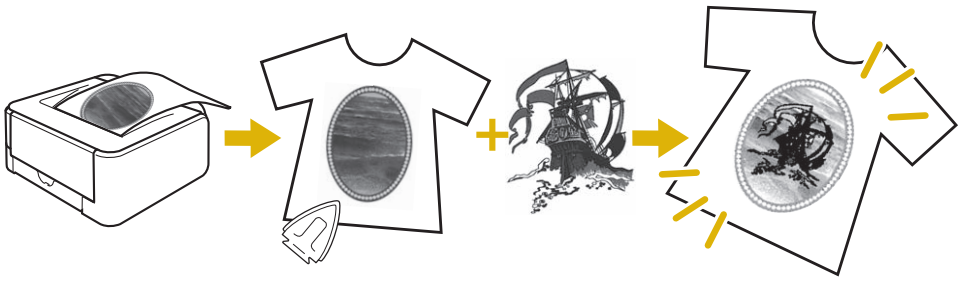


9 Continue with step 7 of "Creating an Appliqué Piece" on page 277 to complete the appliqué piece.

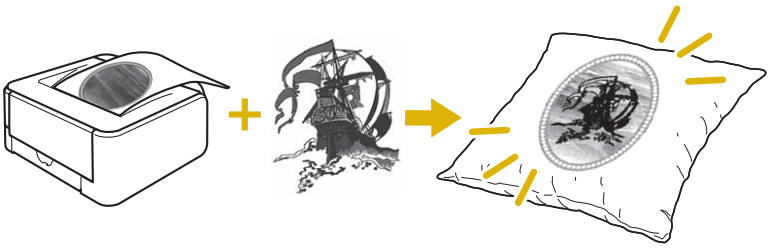
PRINT AND STITCH (COMBINING EMBROIDERY PATTERNS AND PRINTED DESIGNS)

Completed embroidery patterns combined with printed designs are built into this machine. Beautiful three-dimensional embroidered designs can be created by ironing a background onto fabric or printing it onto printable fabric, then sewing complementary embroidery on top of the background.

Using iron-on paper



Using printable fabric



Step1	**Select a pattern to be combined with the background image.** → See “Selecting a Pattern” on page 283.

Step2	**Output from the machine the background image and the positioning image.** → See “Outputting the Background Image and Positioning Image” on page 283.

Step3	**When using iron-on paper** With a printer, print the background onto iron-on paper, and print the embroidery position sheet on plain paper. Then, iron the background image onto fabric. **When using printable fabric** With a printer, print the background onto printable fabric, and print the embroidery position sheet on plain paper. → See “Printing the Background and Embroidery Position Sheet” on page 285.

Step4	**Hoop in the embroidery frame the fabric with the background image ironed on or printed, check the embroidering position, and then start embroidering.** → See “Sewing Embroidery Patterns” on page 286.

Note

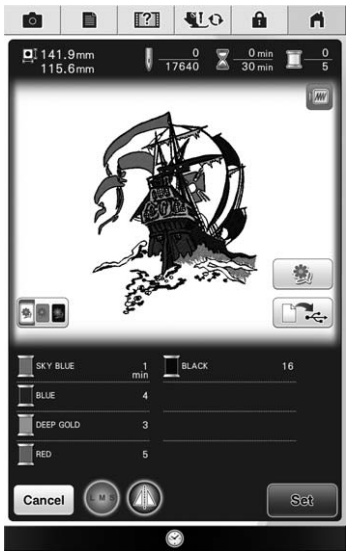
- Print the background and embroidery position sheet in their original dimensions. If an image is printed in a different size, the sizes of the embroidery pattern and background may not match. In addition, the built-in camera cannot detect the embroidery position mark. Make sure that the print settings are correctly specified.

Selecting a Pattern

Patterns combining embroidery and printed designs appears with [ ] and [ ].

Memo
- Refer to the Quick Reference Guide for the detail of patterns which enable this function.

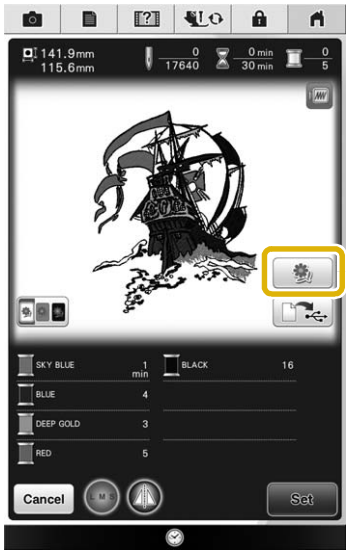
1 Select a pattern combining embroidery and printed designs.



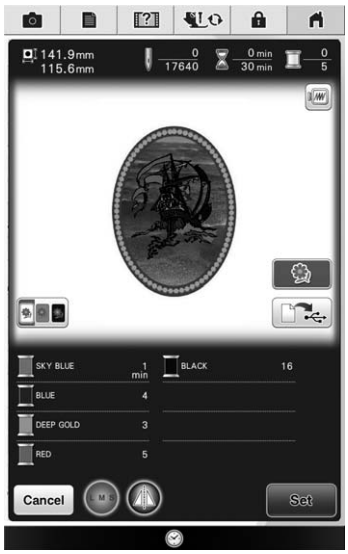
→ Only the embroidery pattern (not the background image of the selected embroidery pattern) is displayed.

■ Checking the Combined Image

Press [ ].



→ An image of the pattern combined with the background appears.



* To return to the image of only the embroidery design, press [ ].

Outputting the Background Image and Positioning Image

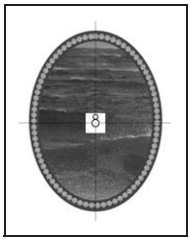
Use USB media or the computer to output the following three images from the machine.

* File name may differ depending on the PDF file selected.

- **[xxx]r.pdf (Example: E_1r.pdf)**
  An image flipped on a vertical axis (for an iron-on transfer)

- **[xxx]n.pdf (Example: E_1n.pdf)**
  An image that is not flipped (for printing on printable fabric)

- **[xxx]p.pdf (Example: E_1p.pdf)**
  An image that is not flipped, but has positioning marks attached (for positioning)



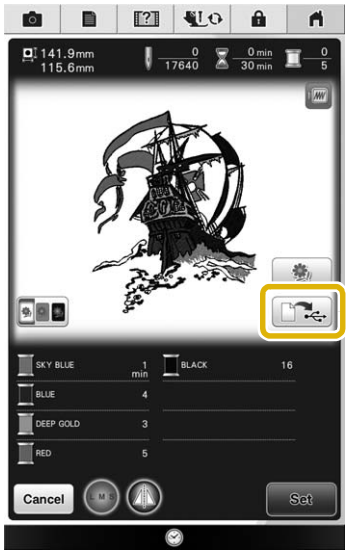
Note

- Print the background and embroidery position sheet in their original dimensions. If an image is printed in a different size, the sizes of the embroidery pattern and background may not match. In addition, the built-in camera cannot detect the embroidery position mark. Make sure that the print settings are correctly specified.
- When printing the PDF file of the image with positioning marks, specify the highest image quality possible for full-color printing. In addition, use matte printing paper. Due to poor printing conditions, the machine's built-in camera may not be able to correctly detect the positioning marks. (For details on printing, refer to the operating instructions for your printer.)

■ Using USB Media

1 **Insert the USB media into the primary (top) USB port on the machine.**

2 **Select the pattern, and then press .**



→ The select USB output screen appears.

3 **Press to select the USB port where the USB media is inserted.**

→ Two files of the background image only and one file for aligning embroidery into position are copied (PDF format) onto the USB media.

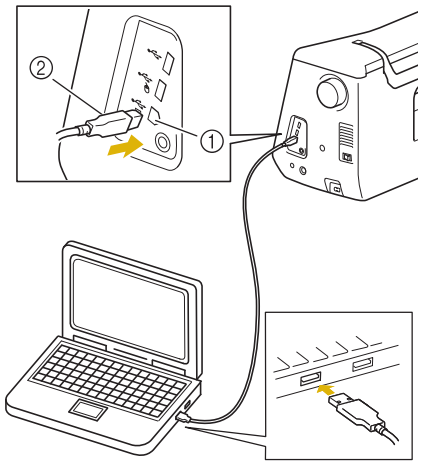
Memo

- Do not remove the USB media from the machine until data output is finished.

4 **Remove the USB media where the image data is saved from the machine, and then copy the image data from the USB media to the computer.**

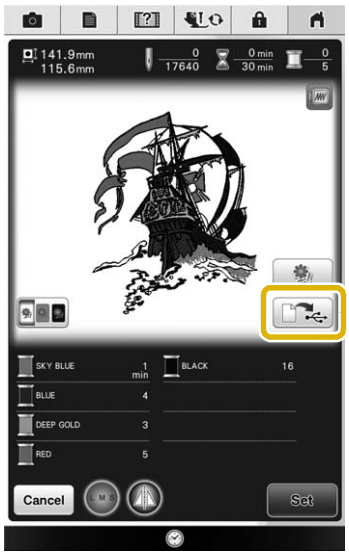
■ Using a USB Cable

1 **Plug the USB cable connectors into the corresponding USB ports on the computer and on the machine.**



① USB port for computer
② USB cable connector
→ The "Removable Disk" icon appears in "Computer (My Computer)" on the computer.

2 **Select the pattern, and then press .**



→ The select USB output screen appears.

3 **Press** .

→ Two files of the background image and one file for aligning embroidery into position are copied (PDF format) into "Removable Disk" under "Computer (My Computer)".

Memo
- Do not disconnect the USB cable from the machine until data output is finished.

4 **Copy the image data saved in "Removable Disk" into a different file before closing.**

Printing the Background and Embroidery Position Sheet

Print the PDF files of the background and embroidery position sheet. The background file that is printed differs depending on whether iron-on paper or printable fabric is used.

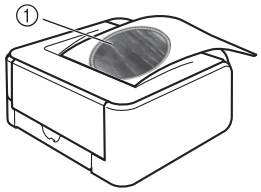
To view the PDF file, Adobe® Reader® is needed. If it is not installed on your computer, you can download it from the Adobe Systems website: http://www.adobe.com/

1 **Open the PDF file to be printed, click "File"-"Print", and then set "Page Scaling" to "None (100%)".**

Note
- Print the background and embroidery position sheet in their original dimensions. If an image is printed in a different size, the sizes of the embroidery pattern and background may not match. In addition, the built-in camera cannot detect the embroidery position mark. Make sure that the print settings are correctly specified.

2 **Print the background image.**

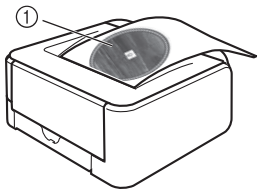
* When printing onto iron-on paper, print the file named E_1r.pdf (an image flipped on a vertical axis). When printing onto printable fabric, print the file named E_1n.pdf (an image that is not flipped).



① Background image

Note
- Before printing onto iron-on paper or printable fabric, we recommend performing a test print to check the print settings.
- For details on printing on iron-on transfer sheets or printable fabric, refer to the instructions for the iron-on transfer sheets and printable fabric.
- Some printers will automatically print an image flipped if an iron-on transfer sheet is selected as the paper. For details, refer to the instructions for the printer being used.

3 **Print the embroidery position sheet (file named E_1p.pdf) onto plain paper.**



① Embroidery position sheet

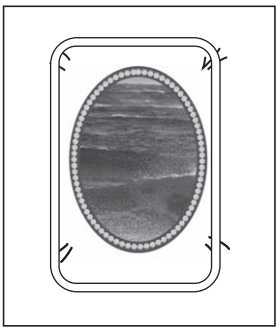
Note
- When printing the PDF file for the embroidery position sheet, specify the highest image quality possible for full-color printing. In addition, we recommend printing on matte paper. If this is not done, the built-in camera may not be able to correctly detect the embroidery positioning mark.

4 **If an iron-on transfer sheet is used, transfer the image onto fabric.**

Memo
- For details on transferring from iron-on transfer sheets, refer to the instructions for the iron-on transfer sheets.
- If necessary, cut the iron-on transfer sheet to the size of the pattern before transferring the image.

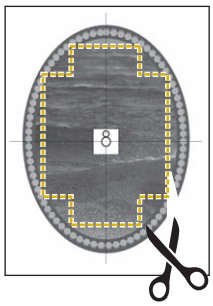
Sewing Embroidery Patterns

1 **Hoop in the embroidery frame the fabric with the background image ironed on.**

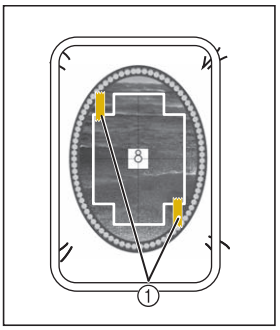


2 **Cut the paper printed with the center positioning image so it can easily be positioned aligned with the background image on the fabric.**

* Lines or color changes in the image can help you find the correct alignment position.



3 **Place the paper printed with the positioning image on top of the fabric so that the pattern is aligned, and then affix the paper to the fabric with cellophane tape to prevent the paper from moving.**



① Cellophane tape

4 **After checking that a pattern is selected, press Embroidery.**

→ The embroidering screen appears.

Note

- Before embroidering, check that the embroidery position sheet is perfectly aligned with the background.

5 **Align the embroidering position according to steps 2 through 13 of "Aligning the Embroidering Position Using the Built-In Camera" on page 250.**

6 **Remove the positioning sheet and press the "Start/Stop" button to begin embroidering.**

⚠ CAUTION

- **Before pressing the "Start/Stop" button to begin embroidering, remove the positioning sheet taped to the fabric in step 3.**

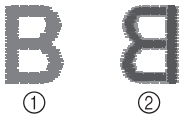
MAKING EMBROIDERY ADJUSTMENTS

Adjusting Thread Tension

When embroidering, the thread tension should be set so that the upper thread can slightly be seen on the wrong side of the fabric.

■ Correct Thread Tension

The pattern can be seen from the wrong side of the fabric. If the thread tension is not set correctly, the pattern will not finish well. The fabric may pucker or the thread may break.



① Right side
② Wrong side

Follow the operations described below to adjust thread tension according to the situation.

Note

- If the thread tension setting is made extremely weak, the machine may stop during sewing. This is not the sign of a malfunction. Increase the thread tension slightly, and begin sewing again.

Memo

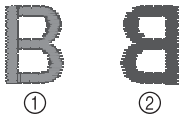
- If you turn the main power to OFF or select a different pattern, the thread tension will reset to the automatic setting.
- When you retrieve a saved pattern, the thread tension setting will be the same as when the pattern was saved.

■ Upper Thread is Too Tight

The tension of the upper thread is too tight, resulting in the bobbin thread being visible from the right side of the fabric.

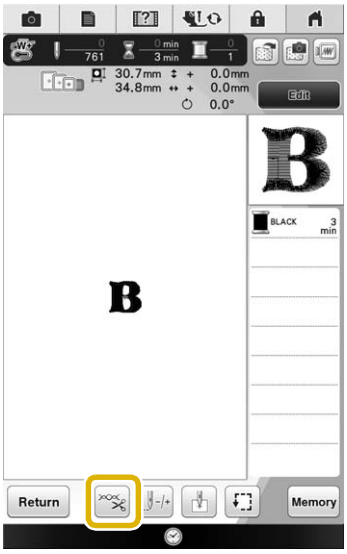
Note

- If the bobbin thread was incorrectly threaded, the upper thread may be too tight. In this case, refer to “Setting the Bobbin” (page 57) and rethread the bobbin thread.

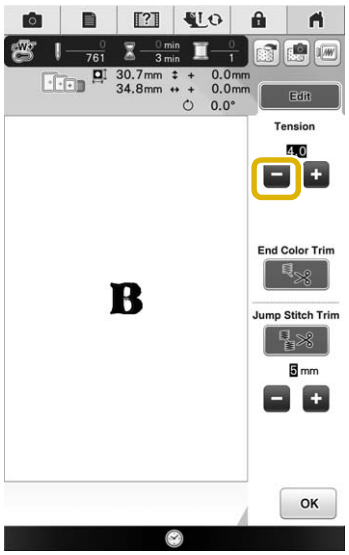


① Right side
② Wrong side

1 **Press** .



2 **Press [−] to weaken the upper thread tension. (The tension number will decrease.)**



3 **Press [OK].**

■ Upper Thread is Too Loose

The tension of the upper thread is too loose, resulting in a loose upper thread, loose thread locks, or loops appearing on the right side of the fabric.

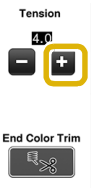
Note

- If the upper thread was incorrectly threaded, the upper thread may be too loose. In this case, refer to “Upper Threading” (page 60) and rethread the upper thread.

① Right side
② Wrong side

1 **Press [✂].**

2 **Press [+] to tighten the upper thread tension. (The tension number will increase.)**



3 **Press [OK].**

Note

- With “Embroidery Tension” on page 6/8 of the setting screen, the tension of the upper thread can be adjusted for embroidering. The selected setting will be applied to all patterns.
When embroidering, if the overall tension of the upper thread is too tight or too loose, adjust it from the setting screen. Press [+] to tighten the upper thread tension and press [−] to loosen the upper tension. If an individual embroidery pattern needs additional fine tuning, refer to “Adjusting Thread Tension” on page 287.

■ Adjusting Overall Upper Thread Tension

When embroidering, if the overall tension of the upper thread is too tight or too loose, adjust it from the setting screen.

1 **Press [ ] and [ ].**

2 **In the “Embroidery Tension”, use [+] [−] to adjust the upper thread tension.**

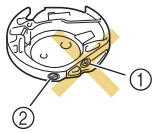
* Press [+] to tighten the upper thread tension.
* Press [−] to loosen the upper thread tension.

3 **Press [OK].**

Adjusting the Alternate Bobbin Case (with No Color on the Screw)

When using the embroidery bobbin thread provided, please be sure to choose the green marked bobbin case when performing utility stitch sewing and embroidery functions. When in the embroidery function mode, the alternate bobbin case (with no color on the screw) should be selected when substitute embroidery bobbin threads (other than what is accompanied with your machine) are being used. The alternate bobbin case (with no color on the screw) can be easily adjusted when bobbin tension changes are required to accommodate different bobbin threads. See “Sewing Attractive Finishes” on page 173.

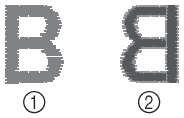
To adjust the bobbin tension for embroidery function, using the alternate bobbin case (with no color on the screw), turn the slotted screw (-) with a (small) screwdriver.



① Do not turn a phillips screw (+).
② Adjust with a screwdriver (small).

■ Correct Tension

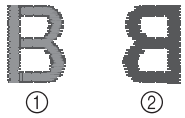
Upper thread slightly appears on the wrong side of fabric.



① Right side
② Wrong side

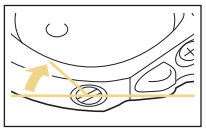
■ Bobbin Thread is Too Loose

Bobbin thread appears slightly on the right side of fabric.



① Right side
② Wrong side

If this occurs, turn the slotted screw (-) clockwise, being careful not to over-tighten the screw, approximately 30-45 degrees to increase bobbin tension.

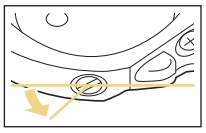


■ Bobbin Thread is Too Tight

Upper thread on the right side of fabric seems to be lifting/looping and bobbin thread is not seen on the wrong side of fabric.

① Right side
② Wrong side

If this occurs, turn the slotted screw (-) counterclockwise, being careful not to over-loosen the screw, approximately 30-45 degrees to decrease bobbin tension.



⚠ CAUTION

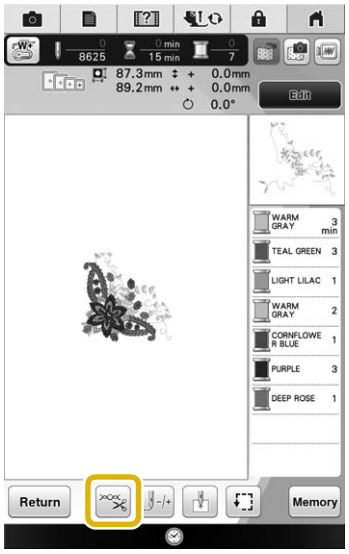
- **When adjusting the alternate bobbin case, be sure to remove the bobbin from the alternate bobbin case.**
- **DO NOT adjust the position of the phillips (+) screw on the alternate bobbin case as this may result in damage to the bobbin case, rendering it unusable.**
- **If the slotted screw (-) is difficult to turn, do not use force. Turning the screw too much or providing force in either (rotational) direction may cause damage to the bobbin case. Should damage occur, the bobbin case may not maintain proper tension.**

Using the Automatic Thread Cutting Function (End Color Trim)

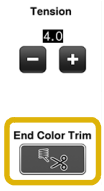
The automatic thread cutting function will cut the thread at the end of sewing each color. This function is initially turned on. To turn this function off, press key and then . This function can be turned on or off during embroidering.

* This setting returns to its default when the machine is turned off.

1 Press .



2 Press to turn off the automatic thread cutting function.



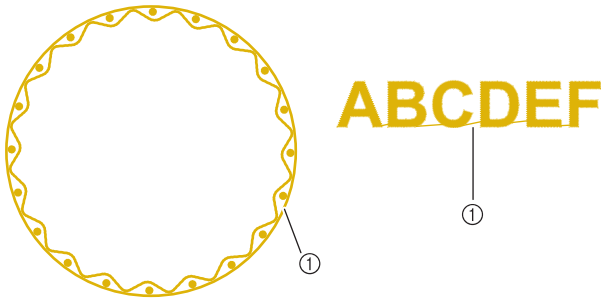
→ The key will display as .

* When one color thread is sewn, the machine will stop without cutting the thread.

Using the Thread Trimming Function (Jump Stitch Trim)

The thread trimming function will automatically trim any excess thread jumps within the color. This function is initially turned on. To turn this function off, press key and then . This function can be turned on or off during embroidering.

* Your customized setting remains after turning the machine off and on.

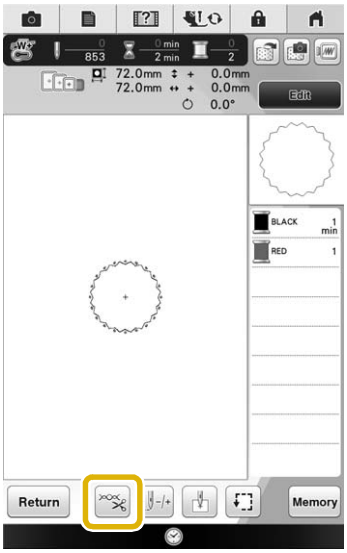


① Jump stitch

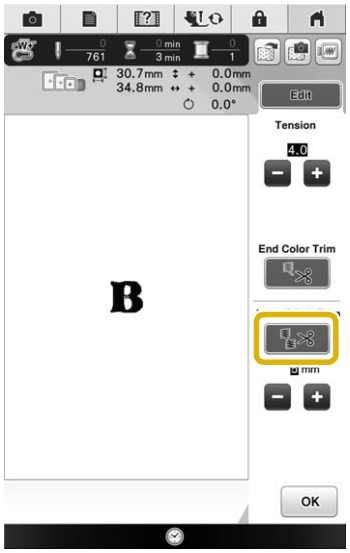
Note

- When this function is turned on, use the included ball point needle 75/11 for embroidering patterns with short jump stitches such as alphabet characters. Using other needles may cause the thread to break.

1 Press .



2 **Press [thread trim] to turn off the thread trimming function.**



→ The key will display as [thread trim].

* The machine will not trim the thread before moving to the next stitching.

■ Selecting the Length of Jump Stitch Not to Trim

When the thread trimming function [thread trim] is turned on, you can select the length of the jump stitch not to trim the thread. This function can be turned on or off during embroidering.
Select a setting from 5 mm to 50 mm in 5 mm increments.

* Your customized setting remains after turning the machine off and on.

Press [+] or [−] to select the length of jump stitch.

For example: Press [+] to select 25 mm (1 inch) and the machine will not trim a jump stitch of 25 mm or less before moving to the next stitching.

Note

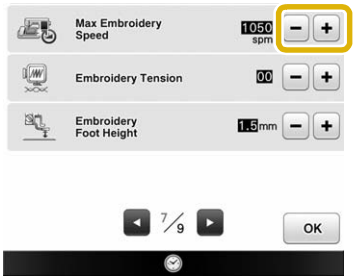
- If design has many trims it is recommended to select a higher jump stitch trim setting in order to reduce the amount of excess tails on backside of fabric.
- The higher number of the jump stitch length selected, the fewer number of times the machine will trim. In this case, more jump stitches remain on the surface of the fabric.

Adjusting the Embroidery Speed

1 **Press [ ] and [ ].**

2 **In the "Max Embroidery Speed", use [+] [−] to change the maximum embroidery speed.**

* You can choose from 8 different speed levels.



Memo

- SPM is the number of stitches sewn in one minute.
- Decrease the embroidery speed when embroidering on thin, thick, or heavy fabrics.
- The embroidery speed can be changed while embroidery is being sewn.
- The setting specified before the main power is set to OFF remains selected the next time that the machine is turned on.
- Decrease the embroidery speed to 600 spm when using a speciality thread like a metallic thread.

3 **Press [OK].**

Changing the Thread Color Display

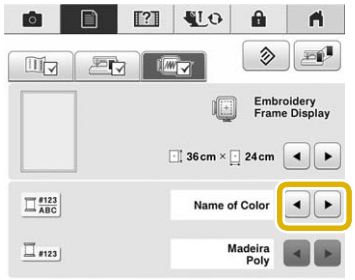
You can display the name of the thread colors or embroidery thread number.

Memo

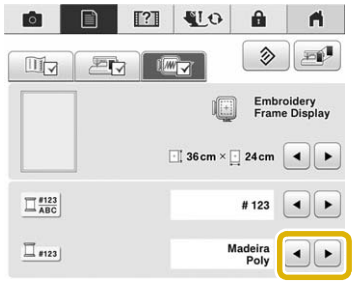
- Colors on the screen may vary slightly from actual spool colors.

1 **Press [ ] and then, press [ ].**

2 **In the "Thread Color Display", use ◄ ► to display the name of the thread colors or the embroidery thread number.**



3 **When the thread number #123 is displayed, use ◄ ► to select from six embroidery thread brands pictured below.**



Embroidery: Polyester thread

Country: Cotton thread*

Madeira Poly: Polyester thread

Madeira Rayon

Sulky

Robison-Anton: Polyester thread

* Depending on the country or area, cotton-like polyester thread is sold.

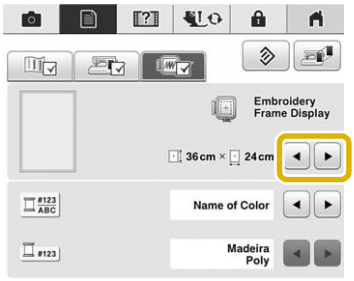
4 **Press OK.**

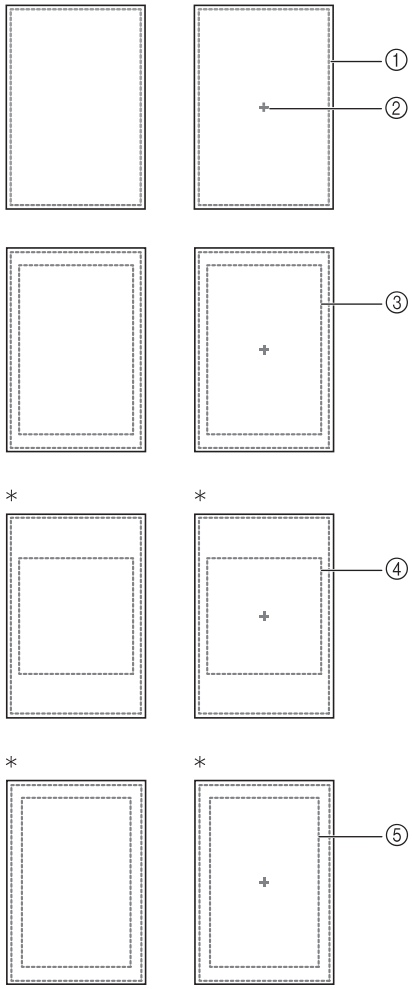
Changing the Embroidery Frame Display

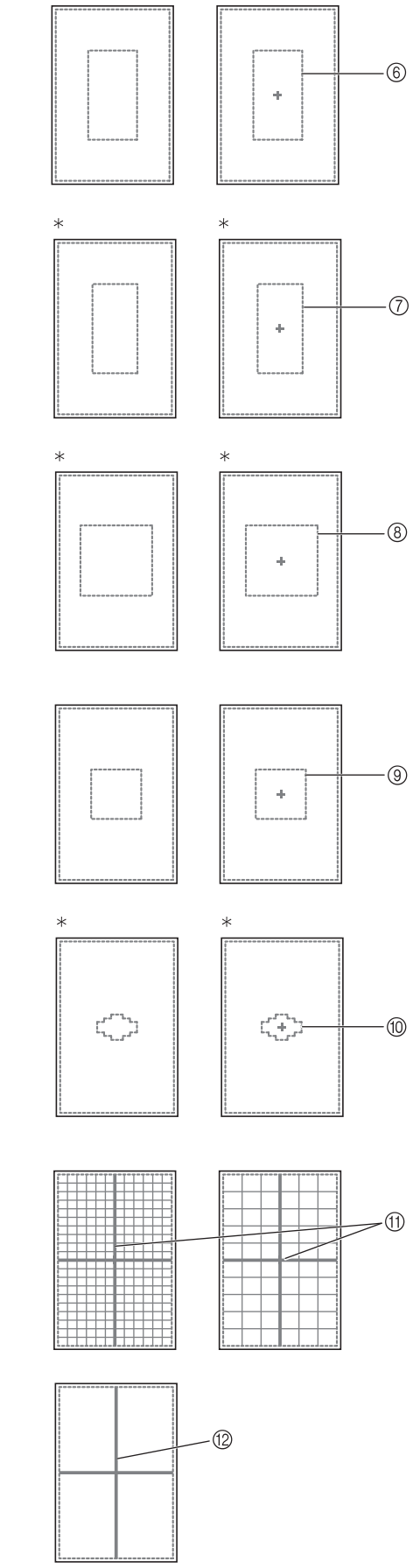
1 **Press [ ] and [ ].**

2 **In the "Embroidery Frame Display", use ◄ ► to change the embroidery frame display mode.**

* There are 23 choices.







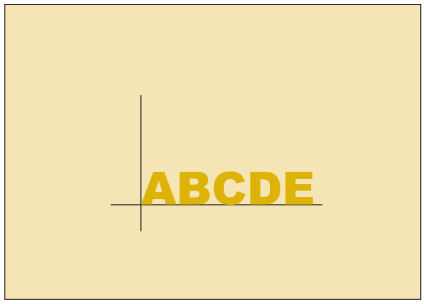
* For the optional embroidery frame.

① Super large frame embroidering area
36 cm × 24 cm (14 inches × 9-1/2 inches)
② Center mark
③ Extra large frame embroidering area 30 cm × 20 cm (12 inches × 8 inches)
④ Quilt frame embroidering area 20 cm × 20 cm (8 inches × 8 inches)
⑤ Extra large frame embroidering area 26 cm × 16 cm (10 inches × 6 inches)
⑥ Embroidery area for optional large embroidery frame
18 cm × 13 cm (7 inches × 5 inches)
⑦ Embroidering area for optional border embroidery frame
18 cm × 10 cm (7 inches × 4 inches)
⑧ Embroidering area for optional medium frame
15 cm × 15 cm (6 inches × 6 inches)
⑨ Medium frame embroidering area
10 cm × 10 cm (4 inches × 4 inches)
⑩ Small frame embroidering area
2 cm × 6 cm (1 inch × 2-1/2 inches)
⑪ Grid lines 10 mm (3/8 inch), 25 mm (1 inch)
⑫ Cross lines

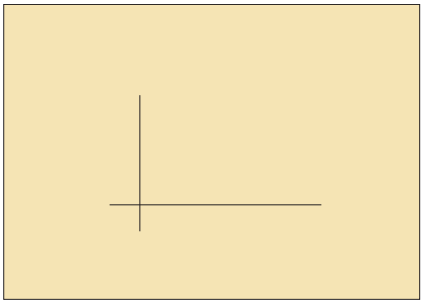
3 **Press** OK **.**

Aligning the Pattern and the Needle

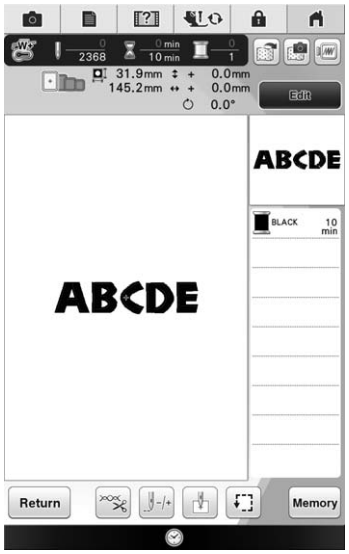
Example: Aligning the lower left side of a pattern and the needle



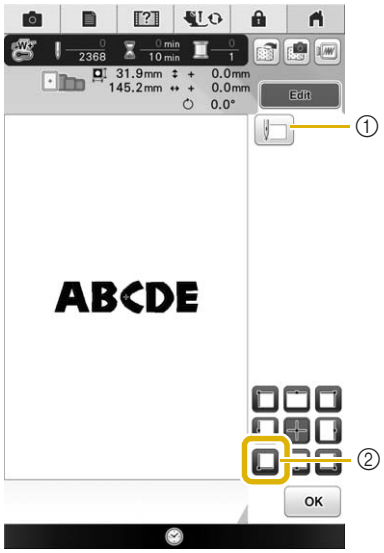
1 **Mark the embroidery start position on the fabric, as shown.**



2 **Press** .



3 **Press** .



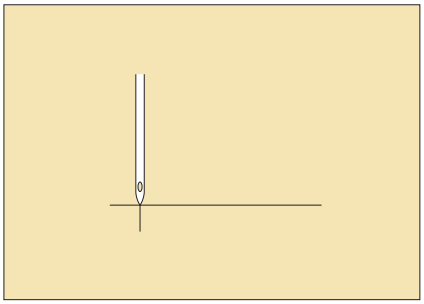
① This key is used for aligning linked characters (see page 294).

② Start position

→ The needle position moves to the bottom left corner of the pattern (the embroidery frame moves so that the needle is positioned correctly).

4 **Press** OK **and then, press** Move.

5 **Use** ◄ ▲ ► ▼ **to align the needle and the mark on the fabric, and begin embroidering the pattern.**



Memo

- You can use camera positioning function. For details, see “Aligning the Embroidering Position Using the Built-In Camera” on page 250.

Embroidering Linked Characters

Follow the procedure described below to embroider linked characters in a single row when the entire pattern extends beyond the embroidery frame.

Example: Linking “FG” to the characters “ABCDE”

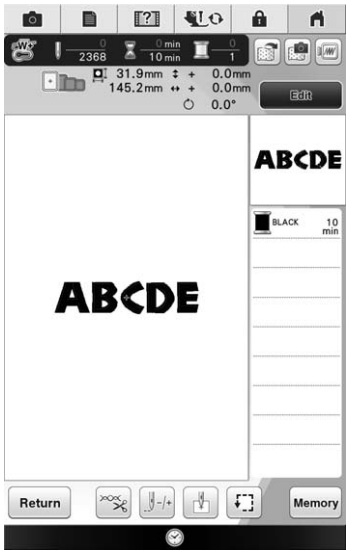
A B C D E F G

1 **Select the character patterns for “ABCDE”.**

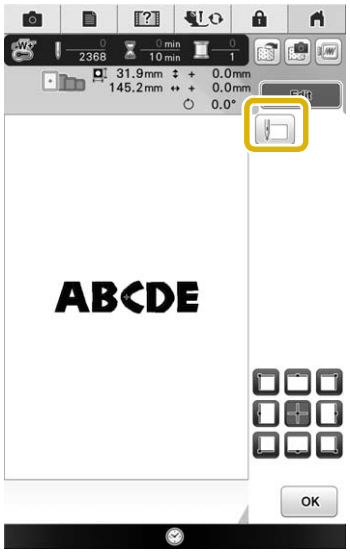
Note

- For details on selecting character patterns, refer to “Selecting Alphabet Character Patterns” on page 203.

2 **Press** .



3 **Press** .



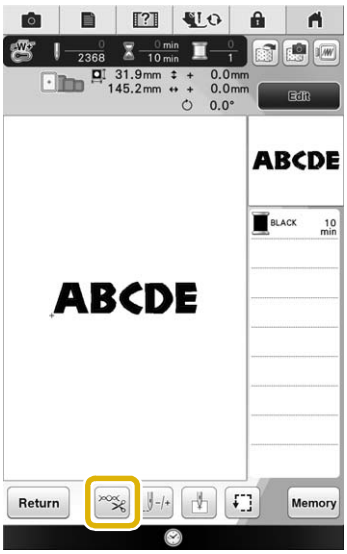
→ The needle is positioned in the lower-left corner of the pattern. The embroidery frame moves so that the needle is positioned correctly.

Note

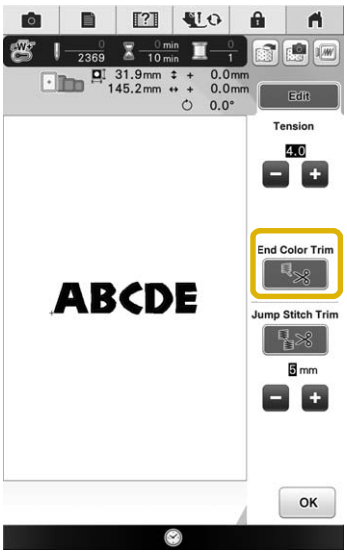
- To cancel the starting point setting and return the starting point to the center of the pattern, press .
- Use to select a different starting point for embroidering.

4 **Press** OK.

5 **Press** .

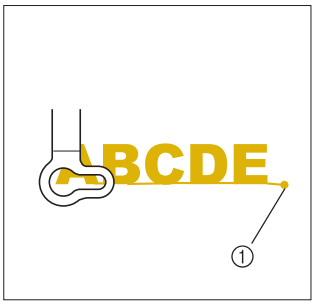


6 **Press** **to turn off the thread cutting function and then press** OK.



7 **Press the "Start/Stop" button.**

8 **After the characters are embroidered, cut the threads to a generous length, remove the embroidery frame, and then attach the embroidery frame again so that the remaining characters ("FG") can be embroidered.**



① End of the embroidering

9 **As in step 1, select the character patterns for "FG".**

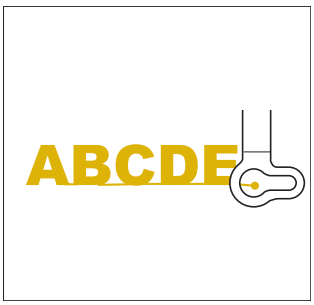
10 **Press** .

11 **Press** .

→ The needle is positioned in the lower-left corner of the pattern. The embroidery frame moves so that the needle is positioned correctly.

12 **Press** OK.

13 **Use to align the needle with the end of embroidering for the previous pattern.**



14 **Press the "Start/Stop" button to begin embroidering the remaining character patterns.**

Memo

- You can use camera positioning function. For details, see "Aligning the Embroidering Position Using the Built-In Camera" on page 250.

USING THE MEMORY FUNCTION

Embroidery Data Precautions

Observe the following precautions when using embroidery data other than that created and saved in this machine.

⚠ CAUTION

- **When using embroidery data other than our original patterns, the thread or needle may break when sewing with a stitch density that is too fine or when sewing three or more overlapping stitches. In that case, use one of our original data design systems to edit the embroidery data.**

■ Types of Embroidery Data that can be Used

- Only .pes,.pha,.phb,.phc, and .dst embroidery data files can be used with this machine. Using data other than that saved using our data design systems or sewing machines may cause the embroidery machine to malfunction.

■ Types of USB Devices/Media that can be Used

Stitch data can be saved to or recalled from USB media. Use media that meets the following specifications.

- USB Flash drive (USB Flash memory)
- USB Floppy disk drive

Stitch data can be recalled only.

- USB CD-ROM, CD-R, CD-RW drives

You can also use the following types of USB media with the optional USB Memory Card Reader/USB card writer module.

- Secure Digital (SD) Card
- CompactFlash
- Memory Stick
- Smart Media
- Multi Media Card (MMC)
- XD-Picture Card

Note

- The processing speed may vary by port selection and quantity of data stored.
- Some USB media may not be usable with this machine. Please visit our website for more details.
- The access lamp will begin blinking after inserting USB devices/media, and it will take about 5 to 6 seconds to recognize the devices/media. (Time will differ depending on the USB device/media).

Memo

- To create file folders, use a computer.
- Letters and numerals can be used in the file names. In addition, if the file name contains no more than eight characters, the entire file name will appear on the screen.
  If the file name is more than eight characters long, only the first six characters followed by "~" and a number appear as the file name.

■ Connecting Your Machine to the PC

- Compatible models:
  IBM PC with a USB port as standard equipment
  IBM PC-compatible computer equipped with a USB port as standard equipment
- Compatible operating systems:
  Microsoft Windows XP, Windows Vista, Windows 7, Windows 8

■ Precautions on Using the Computer to Create and Save Data

- If the name of the embroidery data file/folder cannot be identified, for example, because the name contains special characters, the file/folder is not displayed. If this occurs, change the name of the file/folder. We recommend using the 26 letters of the alphabet (uppercase and lowercase), the numbers 0 through 9,"-", and "_".
- If embroidery data larger than 360 mm (H) × 240 mm (W) (approx.14 inches (H) × 9-1/2 inches (W)) is selected, a message is shown asking if you wish to rotate the pattern 90 degrees.
  Even after being rotated 90 degrees, embroidery data larger than 360 mm (H) × 240 mm (W) (approx. 14 inches (H) × 9-1/2 inches (W)) cannot be used. (All designs must be within the 360 mm (H) × 240 mm (W) (approx. 14 inches (H) × 9-1/2 inches (W)) design field size.)
- .pes files saved with the number of stitches or the number of colors exceeding the specified limits cannot be displayed. The combined design can not exceed a maximum number of 600,000 stitches or a maximum number of 127 color changes (Above numbers are approximate, depending on the overall size of the design). Use one of our design software programs to edit the embroidery pattern so that it meets these specifications.
- Embroidery data stored in a folder created in USB media can be retrieved.
- Do not create folders in "Removable Disk" on a computer. If embroidery data is stored in a folder in "Removable Disk", that embroidery data cannot be retrieved by the machine.
- Even if the embroidery unit is not attached, the machine will recognize embroidery data.

■ Tajima (.dst) Embroidery Data

- .dst data is displayed in the pattern list screen by file name (the actual image cannot be displayed). Only the first eight characters of the file name can be displayed.
- Since Tajima (.dst) data does not contain specific thread color information, it is displayed with our default thread color sequence. Check the preview and change the thread colors as desired.

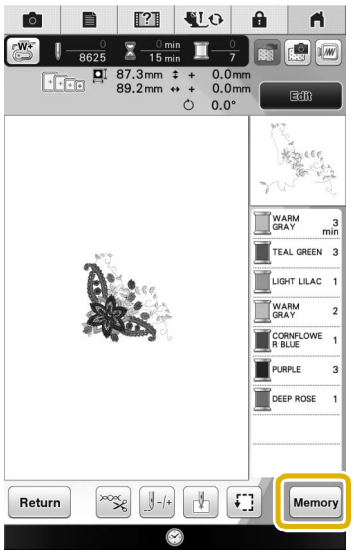
Saving Embroidery Patterns in the Machine's Memory

You can save embroidery patterns that you have customized and will use often; for example, your name, patterns that have been rotated or had the size changed, patterns that have had the sewing position changed, etc. A total of about 10 MB of patterns can be saved in the machine's memory.

Note
- Do not turn the main power to OFF while the "Saving" screen is displayed. You will lose the pattern you are saving.

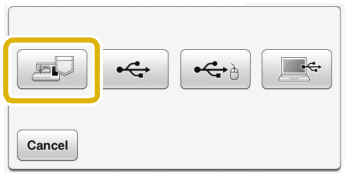
Memo
- It takes a few seconds to save a pattern to the machine's memory.
- See page 301 for information on retrieving a saved pattern.

1 Press Memory when the pattern you want to save is in the embroidering screen.



2 Press .

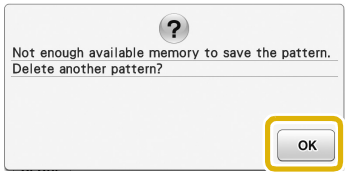
* Press Cancel to return to the original screen without saving.



→ The "Saving" screen is displayed. When the pattern is saved, the display returns to the original screen automatically.

■ If the Memory is Full

If the screen below displays, either the maximum number of patterns have been saved or the pattern you want to save takes a lot of memory, and the machine cannot save it. Press OK and delete a previously saved pattern, then you can save the current pattern. Refer to "Retrieving Patterns from the Machine's Memory" on page 301.

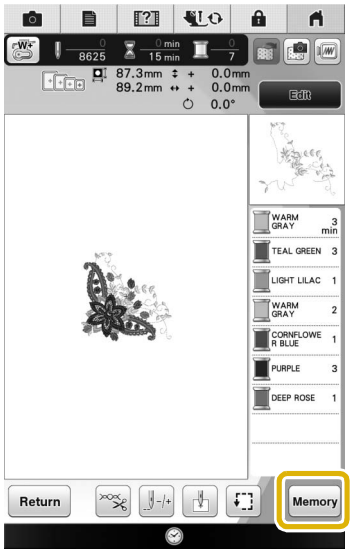


Saving Embroidery Patterns to USB Media

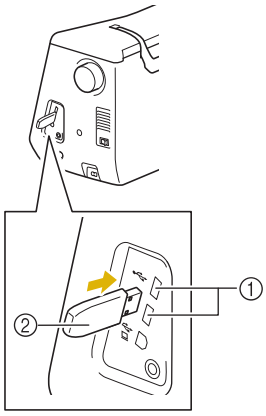
When sending embroidery patterns from the machine to USB media, plug the USB media into the machine's USB port.

Memo
- USB media is commercially available, but some USB media may not be usable with this machine. Please visit our website for more details.
- Depending on the type of USB media being used, either directly plug the USB device into the machine's USB port or plug the USB media Reader/Writer into the machine's USB port.
- The USB media can be inserted or removed at any time.

1 **Press Memory when the pattern you want to save is in the embroidering screen.**



2 **Insert the USB media into the USB port on the machine.**

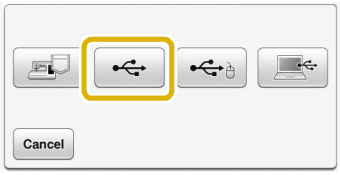


① USB port
② USB media

Note
- Do not insert anything other than USB media into the USB media port. Otherwise, the USB media drive may be damaged.

3 **Press .**

* Press Cancel to return to the original screen without saving.



→ The "Saving" screen is displayed. When the pattern is saved, the display returns to the original screen automatically.

Note
- Do not insert or remove USB media while "Saving" screen is displayed. You will lose some or all of the pattern you are saving.

Saving Embroidery Patterns in the Computer

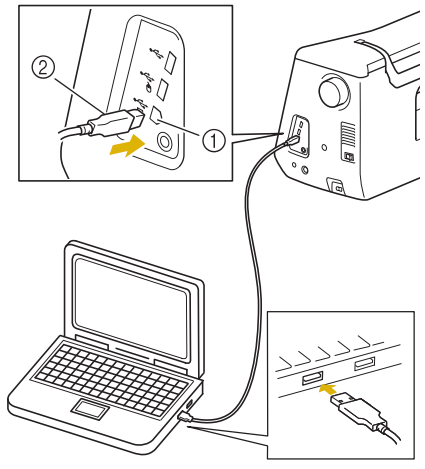
Using the included USB cable, the machine can be connected to your computer, and the embroidery patterns can be temporarily retrieved from and saved in the "Removable Disk" folder in your computer. A total of about 10 MB of embroidery patterns can be saved in the "Removable Disk", but the saved embroidery patterns are deleted when the machine is turned OFF.

Note
- Do not turn the main power to OFF while the "Saving" screen is displayed. You will lose the pattern you are saving.

1 **Plug the USB cable connector into the corresponding USB ports for the computer and for the machine.**

2 **Turn on your computer and select "Computer (My Computer)".**

* The USB cable can be plugged into the USB ports on the computer and embroidery machine whether or not they are turned on.

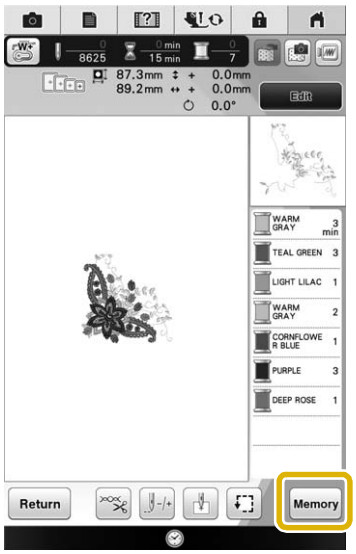


① USB port for computer
② USB cable connector
→ The "Removable Disk" icon will appear in "Computer (My Computer)" on the computer.

Note

- The connectors on the USB cable can only be inserted into a port in one direction. If it is difficult to insert the connector, do not insert it with force. Check the orientation of the connector.
- For details on the position of the USB port on the computer (or USB hub), refer to the instruction manual for the corresponding equipment.

3 **Press Memory when the pattern you want to save is in the embroidering screen.**

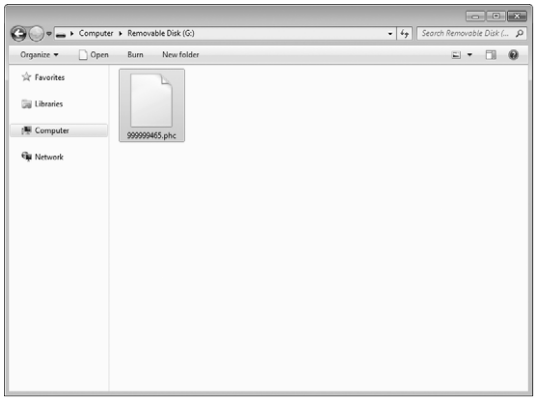


4 **Press .**

* Press Cancel to return to the original screen without saving.

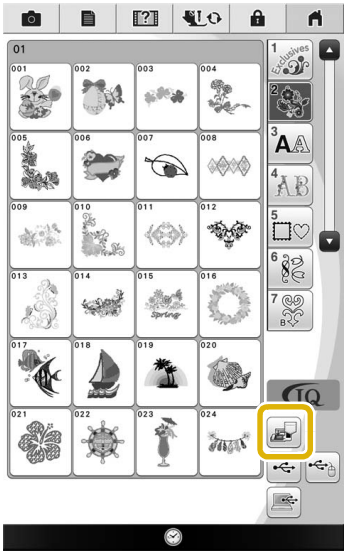
→ The pattern will be temporarily saved to "Removable Disk" under "Computer (My Computer)".

5 **Select the pattern's .phc file in "Removable Disk" and copy the file to the computer.**



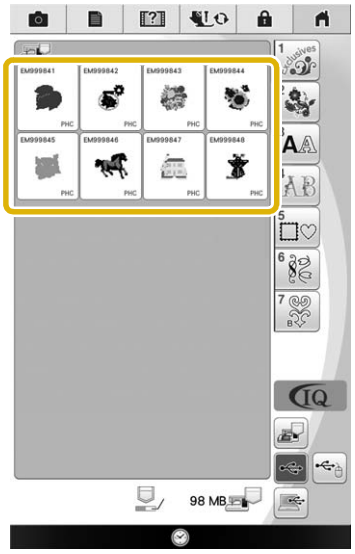
Retrieving Patterns from the Machine's Memory

1 **Press .**



→ The machine displays the patterns currently in the memory.

2 **Press the key of the pattern you want to retrieve.**



3 **Press Set.**

* Press Delete to delete the embroidery pattern.

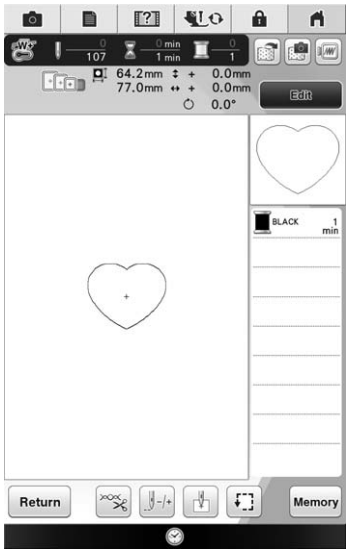
→ The embroidering screen is displayed.

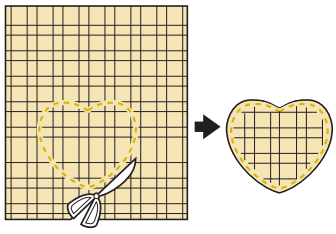
EMBROIDERY APPLICATIONS

Using a Frame Pattern to Make an Appliqué (1)

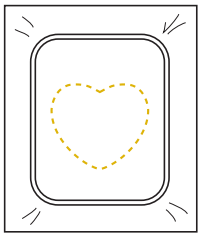
You can use framed patterns of the same size and shape to create an appliqué. Embroider one pattern with a straight stitch and one pattern with a satin stitch.

1 **Select a straight stitch frame pattern. Embroider the pattern onto the appliqué material, then cut neatly around the outside of the shape.**

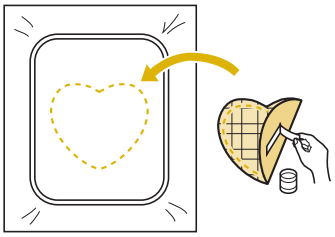




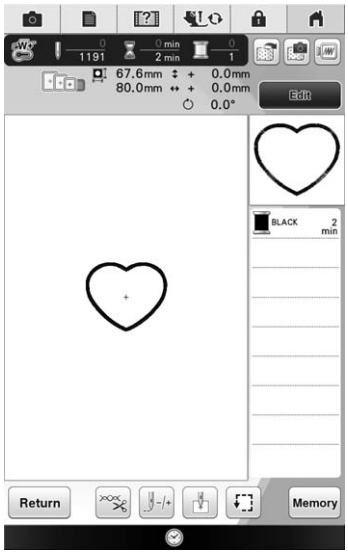
2 **Embroider the same pattern from step ① onto the base fabric.**



3 **Apply a thin layer of fabric glue or a temporary spray adhesive to the rear of the appliqué created in step ①. Attach the appliqué to the base fabric matching the shapes.**

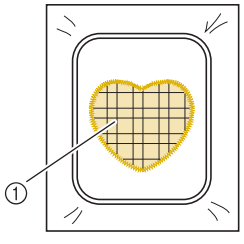


4 **Select the satin stitch frame pattern of the same shape as the appliqué. Embroider over the appliqué and base fabric from step ③ to create the appliqué.**



Note

- If you change the size or position of the patterns when selecting them, make a note of the size and location.

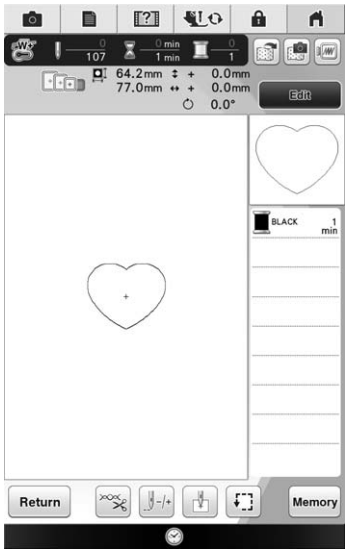


① Appliqué material

Using a Frame Pattern to Make an Appliqué (2)

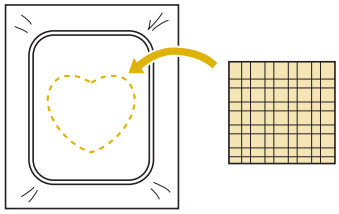
This is a second method to make appliqué using embroidery patterns. You do not have to change the fabric in the embroidery frame using this method. Embroider one pattern with a straight stitch and one pattern with a satin stitch.

1 **Select a straight stitch frame pattern, and embroider the pattern onto the base fabric.**

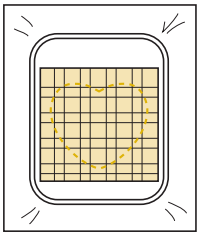


2 **Place the appliqué fabric over the pattern embroidered in step 1.**

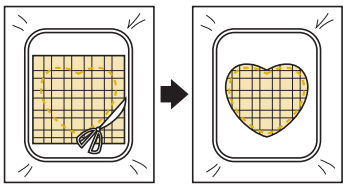
* Be sure that the appliqué fabric completely covers the seam.



3 **Embroider the same pattern on the appliqué fabric.**



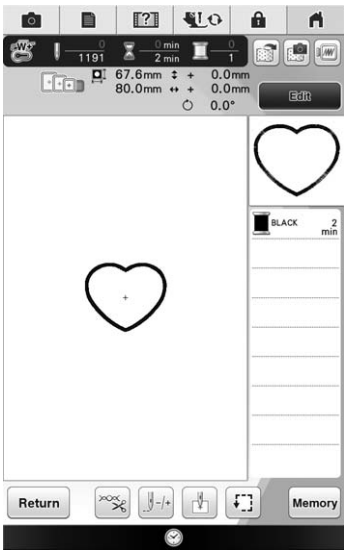
4 **Remove the embroidery frame from the embroidery unit, and cut around the outside of the stitches.**



Note

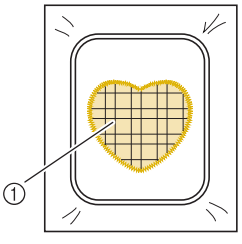
- Do not remove the fabric from the embroidery frame to cut it. Also, do not pull strongly on the fabric. Otherwise, the fabric may loosen in the frame.

5 **Select the satin stitch frame pattern of the same shape as the appliqué.**



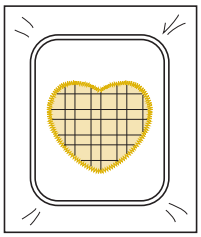
Note

- Do not change the size or position of the pattern.
- If you change the size or position of the patterns when selecting them, make a note of the size and location.



① Appliqué material

6 **Reattach the embroidery frame to the embroidery unit, and embroider the satin stitch pattern to create an appliqué.**



Sewing Split Embroidery Patterns

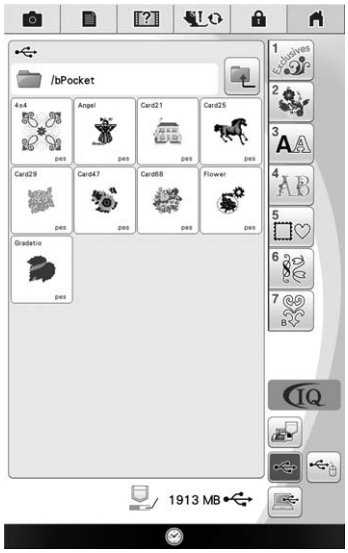
Split embroidery patterns created with Palette Ver.7 or later can be sewn. With split embroidery patterns, embroidery designs larger than the embroidery hoop are divided into multiple sections, which combine to create a single pattern after each section is sewn.

For details on creating split embroidery patterns and for more detailed sewing instructions, refer to the Instruction and Reference Guide included with Palette Ver.7 or later.

The following procedure describes how to read the split embroidery pattern shown below from USB media and embroider it.

1 **Connect to the machine the media containing the created split embroidery pattern, and then select the split embroidery pattern to be embroidered.**

* For details on recalling patterns, refer to “Selecting Patterns from Embroidery Cards” on page 205, “Recalling from USB Media” on page 207, or “Recalling from the Computer” on page 208.

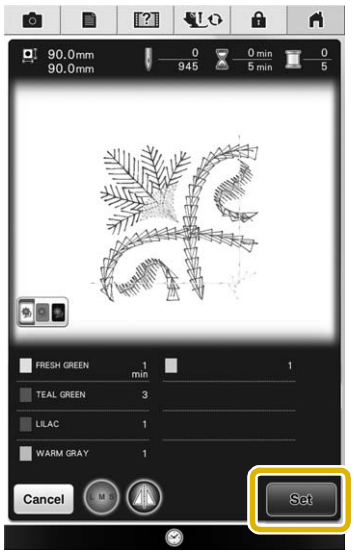


→ A screen appears so that a section of the split embroidery pattern can be selected.

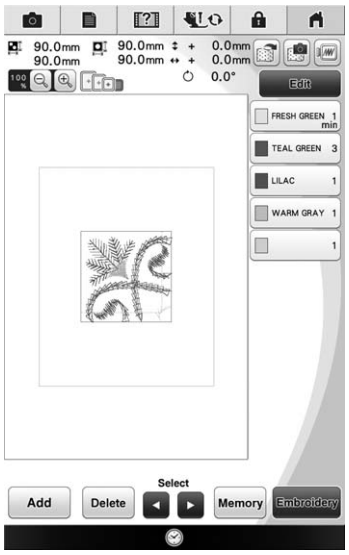
2 **Select section** **to be embroidered.**

* Select the sections in alphabetical order.
* A maximum of 12 sections can be displayed in one page. If there are 13 or more sections in the pattern, press ▲ or ▼ to display the previous or next page.

3 **Press Set.**



4 **If necessary, press Edit and edit the pattern. Press Embroidery to display the embroidery screen.**

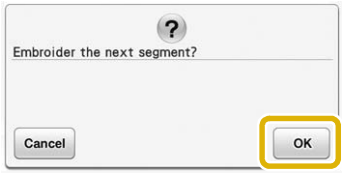


Memo

- The pattern can be rotated 90° to either the left or right when Rotate is pressed.

5 **Press the "Start/Stop" button to embroider the pattern section.**

6 **When embroidering is finished, the following screen appears. Press OK.**



→ A screen appears so that a section of the split embroidery pattern can be selected.

7 **Repeat steps 2 through 6 to embroider the remaining sections of the pattern.**

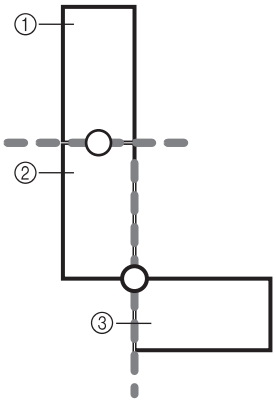
USING THE CAMERA TO CONNECT PATTERNS

Instead of using thread marks, the camera can be used to connect patterns in the Embroidery Edit screen. An area of 33 cm × 21 cm (12-1/2 inches × 8 inches) can be embroidered when the camera is used to connect patterns. Select the appropriate frame depending on the size of the embroidery. We recommend using the super large embroidery frame (36 cm × 24 cm (14 inches × 9-1/2 inches)) when using the camera to connect patterns. The small embroidery frame (2 cm × 6 cm (1 inch × 2-1/2 inches)) cannot be used with the camera function.

Note
- Split (Large-size) embroidery patterns cannot be used with this function.

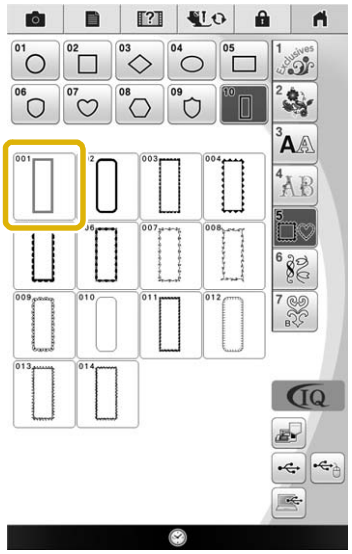
Connecting Three Patterns

Example:



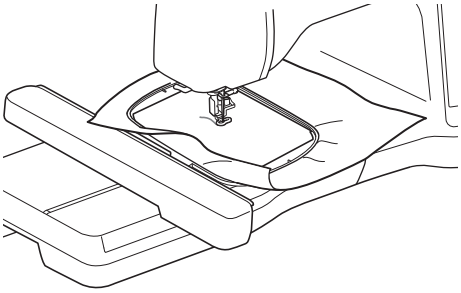
① Pattern A
② Pattern B
③ Pattern C

1 **Select the first pattern A, and then press Set.**



2 **Thread the machine with the upper thread and the bobbin thread.**

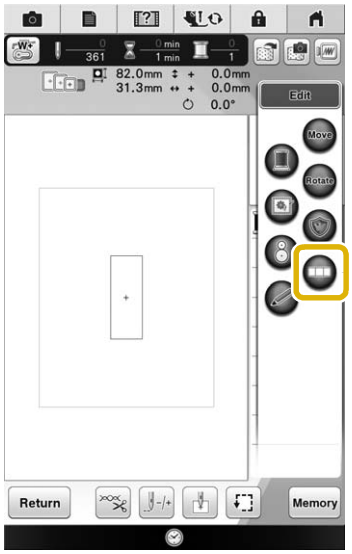
3 **Hoop fabric in the 18 cm × 13 cm (7-1/8 inches × 5-1/8 inches) embroidery frame, and then attach the frame to the embroidery machine.**



4 **Press Embroidery to display the embroidering screen.**

5 **Press Edit.**

6 **Press .**



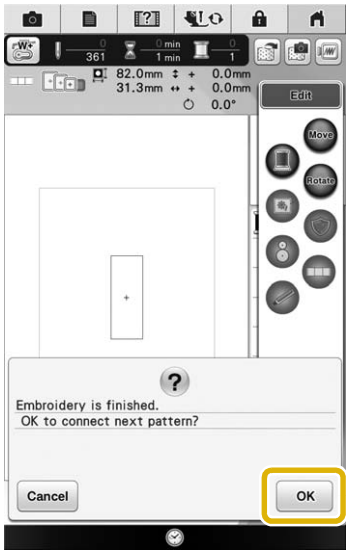
→ appears at the top left side of the screen, and then changes to .

Memo

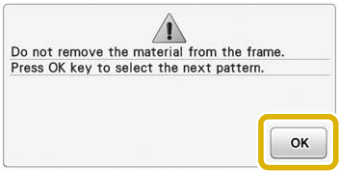
- can be pressed while embroidering.
- A pattern cannot be saved in the machine's memory while patterns are being connected.

7 **Lower the presser foot, and then embroider the first pattern.**

8 **After embroidering of the first pattern is finished, the following message appears. Press OK.**

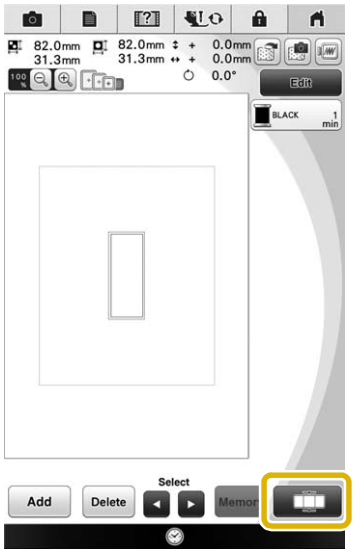


9 **When the following message appears, press OK.**



10 **Select the second pattern B, and then press Set.**

11 **Press , and then select how the patterns will be connected.**

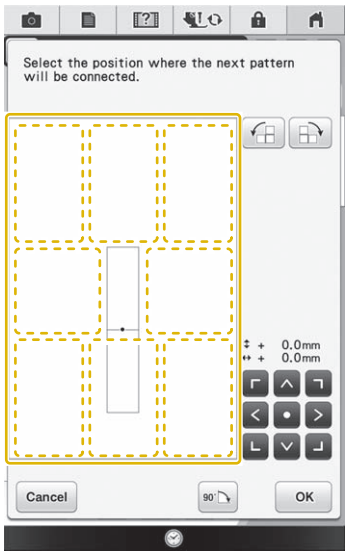


→ The pattern connection setting screen appears.

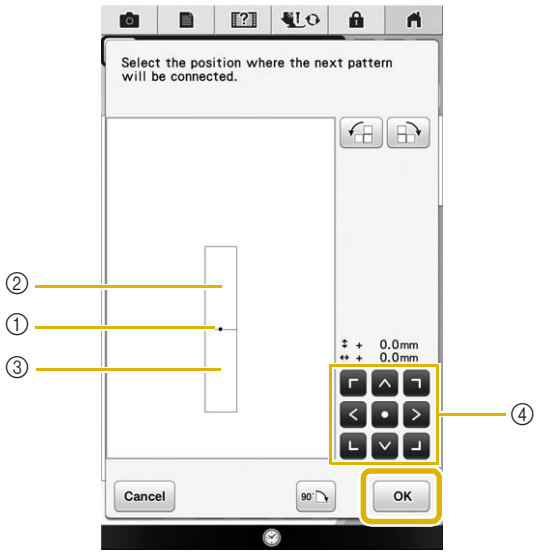
Memo

- You can edit the second pattern in this screen.

12 **Select the position of the second pattern by pressing on the screen. Press OK after specifying the position.**



* You can adjust the position of the second pattern using the keys described below.



① Connecting point
② First pattern A
③ Second pattern B
④ Press to move the second pattern.

	Press to rotate the second pattern in a clockwise arc referring the first pattern as a center.
	Press to rotate the second pattern in a counterclockwise arc referring the first pattern as a center.
	Rotate the second pattern 90 degree in a clockwise.

→ Message appears on screen and carriage will move after pressing OK.

Note

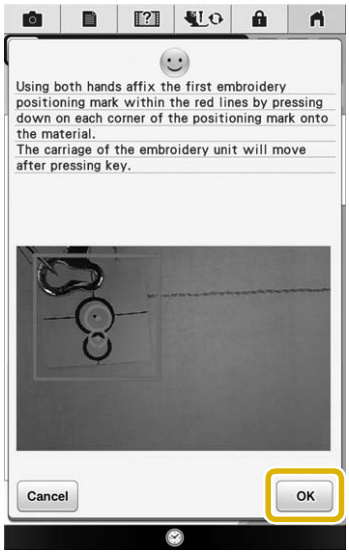
- The second pattern will be automatically connected to the first pattern without adjustment. Change the position of the second pattern manually using .
- The position of the second pattern can be moved using your finger or the included touch pen.
- Use , or if you want to align the pattern to the corner of the center of the first pattern, when changing the pattern's connecting position.

13 **Prepare two embroidery positioning stickers. Following the on-screen instructions to affix these two stickers to the fabric so that the positioning marks can be detected by the camera.**

Note

- Use the positioning stickers included with this product or purchase replacement stickers (BLSO-EPS) from your Baby Lock retailer. If any other sticker is used, the camera may not recognize it.
- The 182 mm × 257 mm (7 inches × 10 inches) embroidery positioning sticker sheet with strong adhesive is most appropriate for connecting patterns (BLSO-EPS). If any other positioning sticker is used, it may peel off. If the sticker peels off, the patterns cannot be connected.

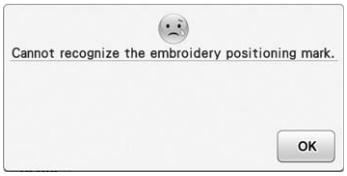
14 **Affix the first embroidery positioning sticker onto the fabric within the red lines that now appear on the screen of the machine by using both hands to press down on each corner of the sticker. Affix the sticker with the large circle to the top as shown on machine. Then, press OK.**

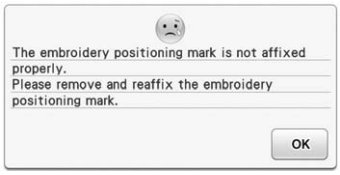


→ The camera detects the first positioning sticker.

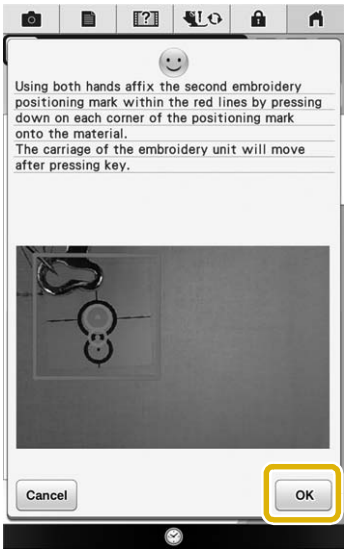
Note

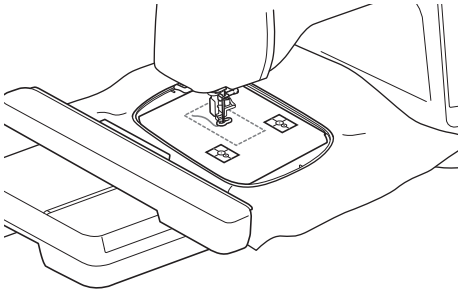
- Use new positioning stickers. If a sticker is reused, it may easily peel off. If the sticker peels off during this procedure, the patterns cannot be connected.
- Using fingers apply pressure to the corners of the positioning sticker to firmly affix it to the fabric. If the sticker is not firmly attached, the camera may incorrectly detect the sticker.
- If any of the following messages appear, reattach the positioning sticker in the correct position. Make sure that the sticker is affixed with the large circle at the top.





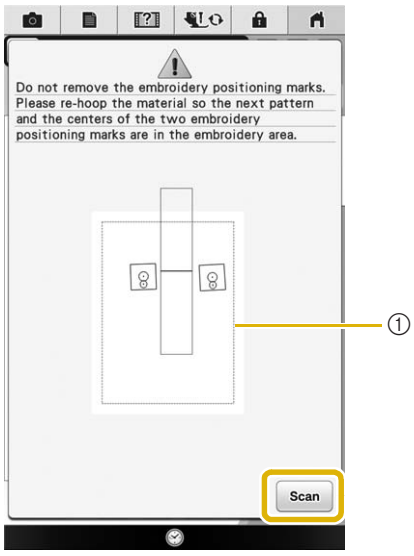
15 **Using both hands affix the second embroidery positioning mark within the red lines that now appear on the screen of the machine by pressing down on each corner of the positioning mark onto the material and then touch OK.**





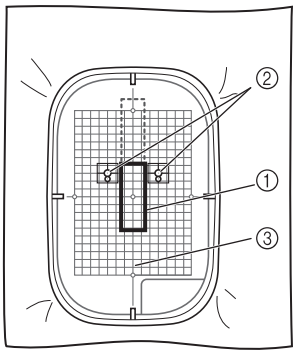
→ The camera detects the second positioning sticker.

16 **After the two positioning stickers have been detected, the following message appears.**



① Embroidering area

While making sure that the two positioning stickers do not peel off, remove the embroidery frame from the machine, and then rehoop the fabric. Be sure to hoop the fabric so the next pattern and both the positioning stickers are within the embroidery sewing area. Reattach the frame and press Scan.

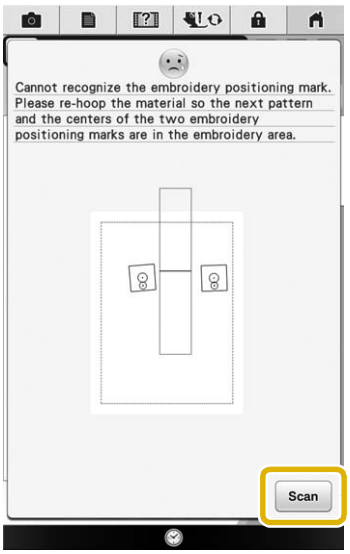


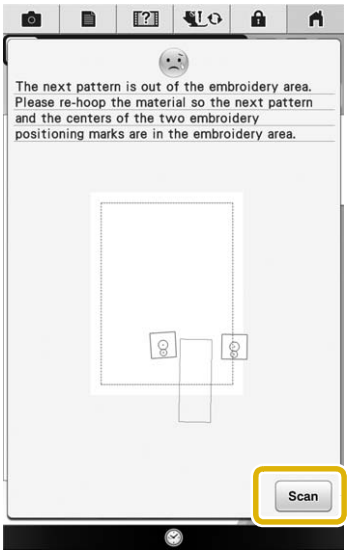
① Pattern to be embroidered next
② Centers of large circles for stickers
③ Embroidery sheet
→ The camera detects the two positioning stickers.

Note

- If either of the following messages appear, rehoop the fabric so that the next pattern and both the positioning stickers are within the embroidery sewing area as indicated in the screen.

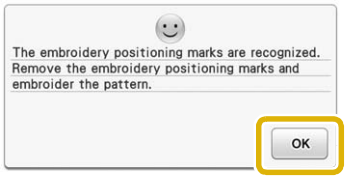
  Press OK to detect the positioning stickers.





- If the machine detects that the next pattern and the centers of the large circles of the two positioning stickers do not fit within the embroidering area, the operation will be paused. Follow the on-screen instructions to reposition the positioning stickers. Refer to “Changing the Position of a Sticker” on page 313 to reposition the stickers.
- If the sticker peels off during this procedure, the patterns cannot be connected. If this occurs, restart the procedure from the beginning.

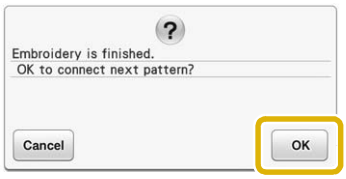
17 **After the positioning stickers have been detected, press OK, and then remove the stickers.**



18 **Lower the presser foot, and then embroider the second pattern.**

→ When embroidering is finished, the following message appears.

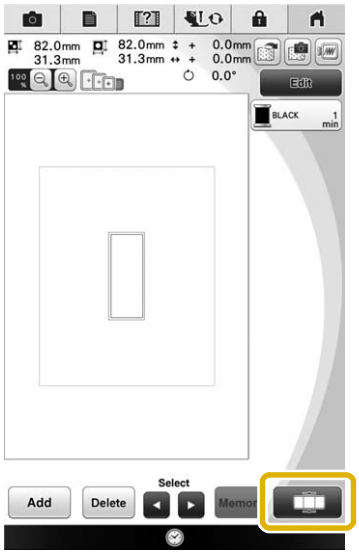
To connect a third pattern, press OK.



19 **When the following message appears, press OK.**

20 **Select the third pattern C, and press Set.**

21 **Press , and then select how the patterns will be connected.**



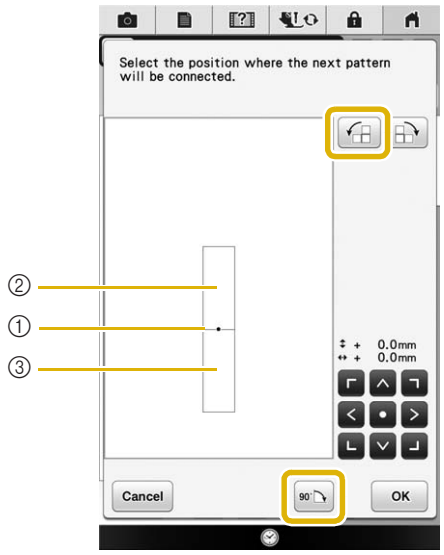
→ The pattern connection setting screen appears.

Memo

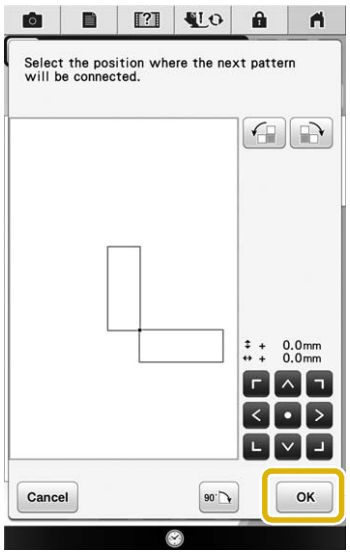
- You can edit the third pattern in this screen.

22 **Specify the position of the third pattern referring to the screen display.**

In this example, press 2 times and then, press . Press OK after specifying the position.



① Connecting point
② Second pattern B
③ Third pattern C



→ Message appears on screen and carriage will move after pressing OK.

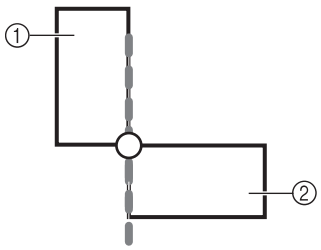
23 **Lower the presser foot, and then embroider the third pattern.**

→ When embroidering is finished, the following message appears. When finished connecting patterns, press Cancel.

→ After embroidering is finished, is no longer located at the top left of LCD screen.
The three patterns have been connected.

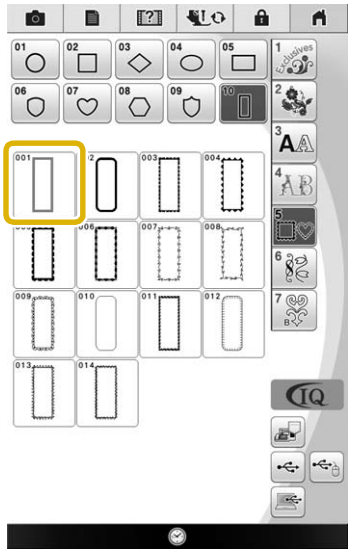
Changing the Position of a Sticker

If the selected pattern or positioning stickers for connecting the next pattern do not easily fit in the embroidering area, follow the on-screen instructions that appear after step 15 on page 310 in order to move the positioning stickers.
For an example, the on-screen instruction appears when you use the embroidery frame with a size of 10 cm × 10 cm (4 inches × 4 inches) to connect patterns as shown below.



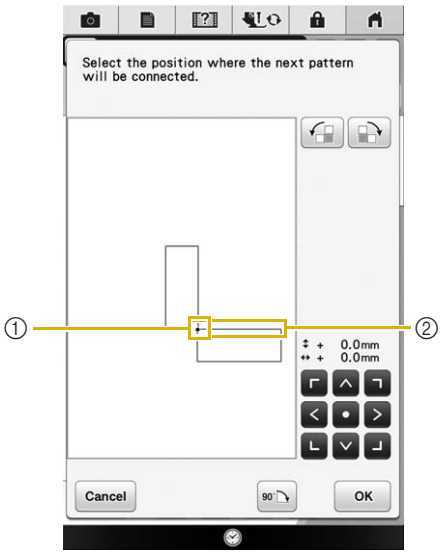
① Pattern A
② Pattern B

1 **Refer to steps 1 through 15 of "Connecting Three Patterns" using the embroidery frame with a size of 10 cm × 10 cm (4 inches × 4 inches) to embroider the first pattern and to connect the second pattern.**



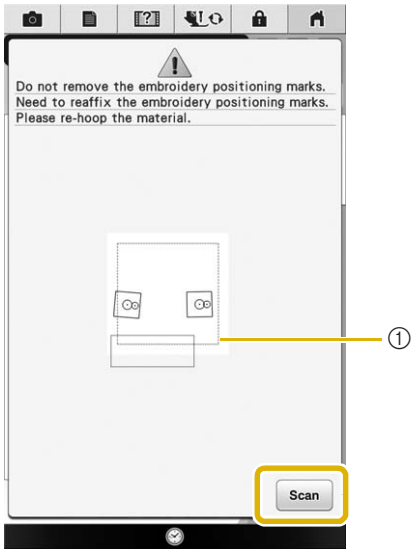
Note

- When referring to steps 1 through 15, make sure you change the reference edge and reference point to reflect this exercise.

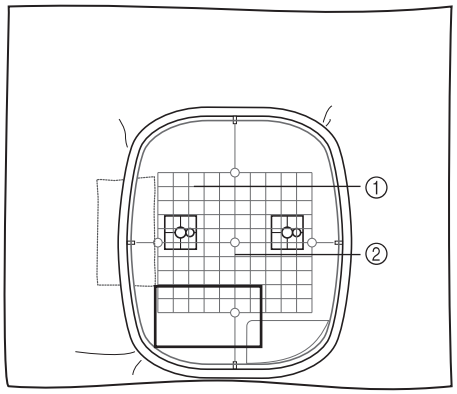


① Reference point
② Reference edge

2 **Following message appears in step 16 if the next pattern or affixed positioning stickers are close to being out of the embroidering area. Follow the instructions and then press OK.**



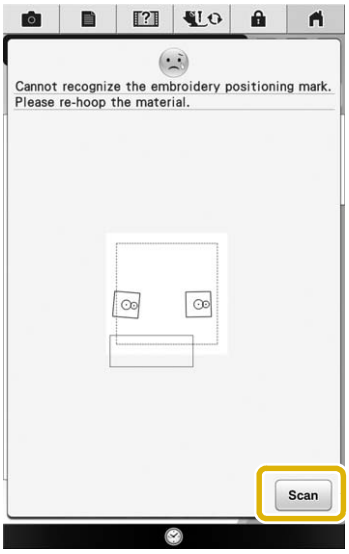
① Embroidering area



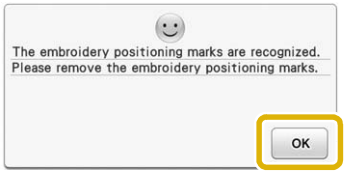
① Pattern to be embroidered next
② Embroidery sheet

Note

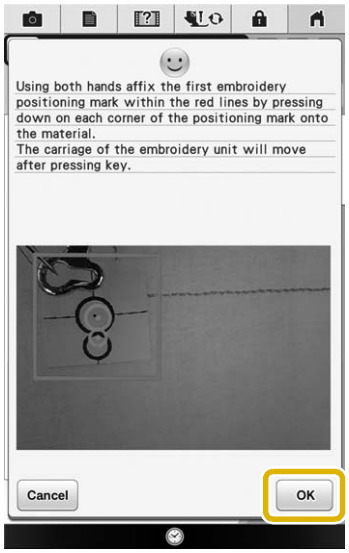
- If the following message appears, rehoop the fabric as indicated in the screen, and then press OK.



3 **After the sticker position is detected, press OK, and then remove the stickers.**

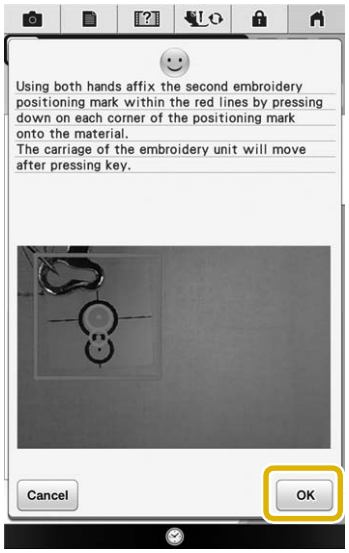


4 **Affix the two positioning stickers again according to the on-screen instructions so that the next pattern or positioning marks can fit in the embroidery area.**



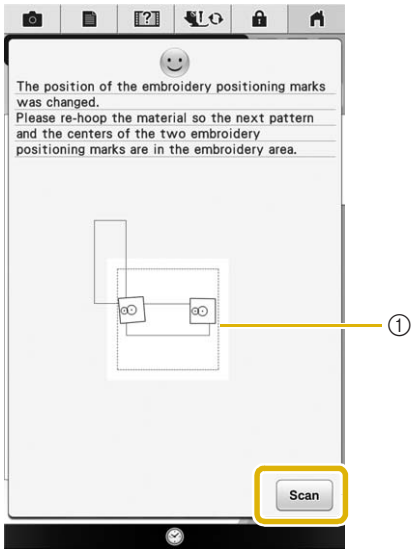
→ Press OK so that the camera detects the first positioning sticker.

5 **Affix the second sticker and then press** OK **.**

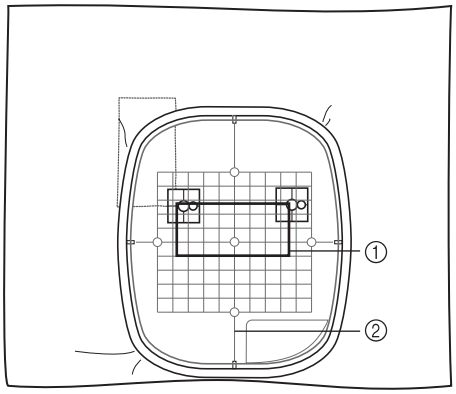


→ The camera detects the second positioning sticker.

6 **After the two positioning stickers have been detected, the following message appears. While making sure that the positioning stickers do not peel off, rehoop the fabric according to the example displayed on the on-screen instruction.**



① Embroidering area

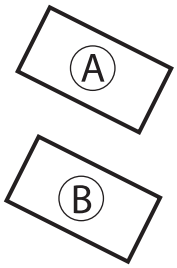


① Pattern to be embroidered next
② Embroidery sheet

7 **Continue the operation from step 17 on page 312 after pressing** OK **.**

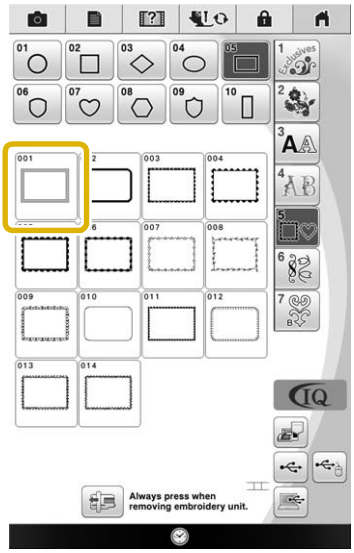
CONNECTING ROTATED PATTERNS

Greater design variations can be created by rotating patterns. The following procedure describes how to connect patterns that are rotated.



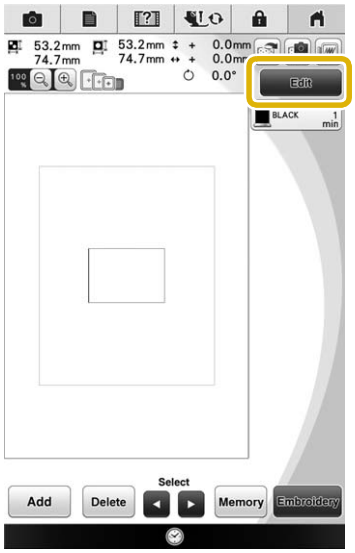
A: First pattern
B: Second pattern

1 **Select the pattern, and then press Set.**

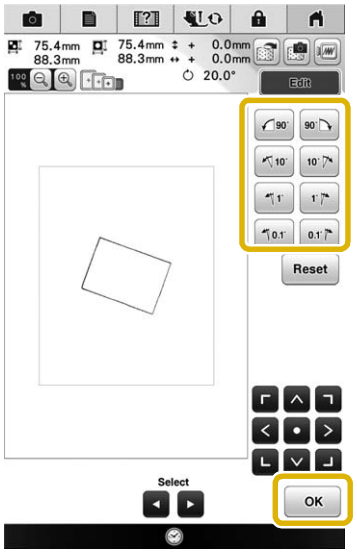


→ The pattern editing screen appears.

2 **Press Edit and then, press Rotate in the pattern editing screen.**



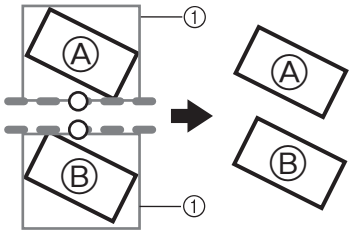
3 **Rotate the pattern, and then press OK.**



Note

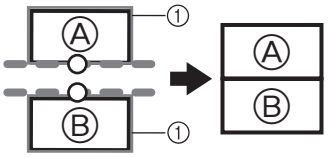
- Be sure to rotate the pattern from the pattern editing screen. The reference edge and reference point are specified along the smallest rectangle (not angled) that contains all patterns selected.

Rectangles and angled patterns



① Rectangle

Rectangles and patterns (not angled)



① Rectangle

- Pressing Rotate in the sewing screen changes the angle at which patterns are connected.

4 **Press Embroidery to display the sewing screen.**

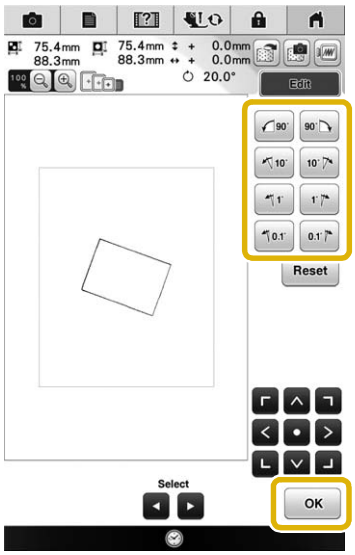
5 **Press Edit and then, press .**

6 **Refer to steps 7 through 9 of "Connecting Three Patterns" to embroider the first pattern.**

7 **Select the next pattern, and then press Set.**

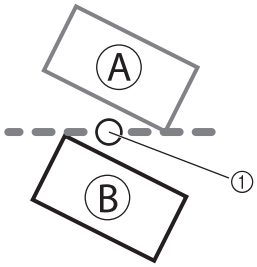
8 **Press Edit and then, press Rotate in the pattern editing screen.**

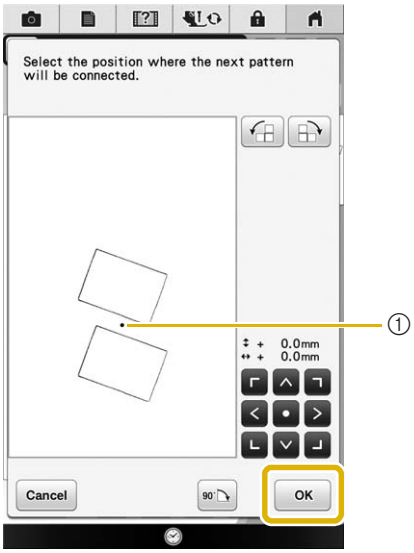
9 **Rotate the pattern to the same angle as the first pattern, and then press OK.**



10 **Press .**

11 **The pattern position does not need to be specified for this example. Press OK.**





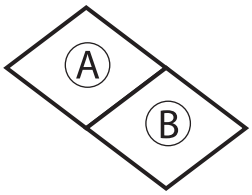
① Connecting point

→ Message appears on screen and carriage will move after pressing OK.

12 **Continue with step 13 of "Connecting Three Patterns" to finish connecting the patterns.**

Connecting Patterns to be Joined Along an Edge

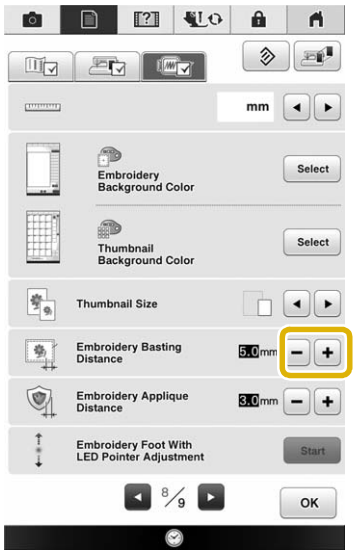
Greater design variations can be created by sliding the patterns being connected.
The following procedure describes how to use this function to connect patterns so they are joined along an edge. Before connecting the patterns, the basting function will be used to measure the distance that the pattern will be slid.



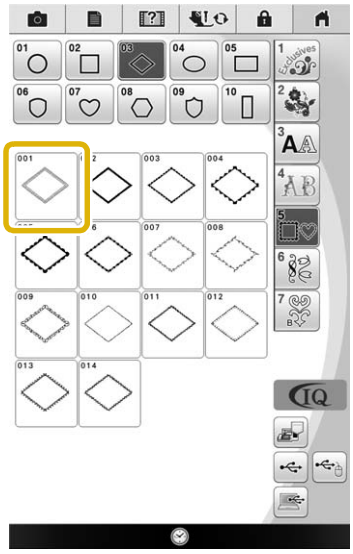
A: First pattern
B: Second pattern

■ Measuring the Distance That the Pattern Will Be Slid

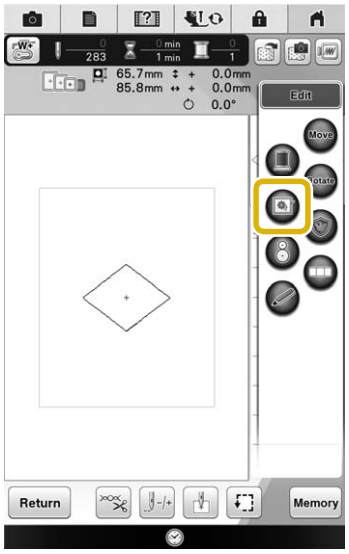
1 **Set "Embroidery Basting Distance" in the settings screen to "0.0".**



2 **Select the pattern whose slide distance is to be measured.**

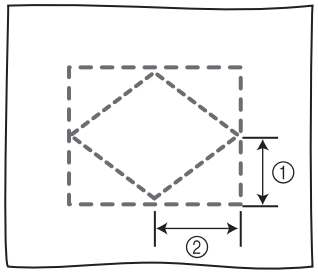


3 **Continue to the embroidery screen, and press Edit and then, press to select the basting function.**



→ changes to .

4 **After the pattern is sewn, remove the fabric from the frame, and then measure the distance that the pattern is to be slid.**



① Vertical: 32.8 mm
② Horizontal: 42.8 mm

■ Trial Sewing

Sew trial embroidery to check that the pattern will be slid the correct distance.

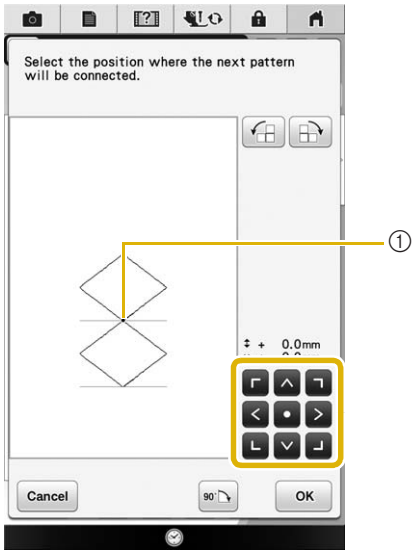
1 **Select the pattern, and then continue to the sewing screen.**

2 **Press** Edit **and then, press** **in the sewing screen.**

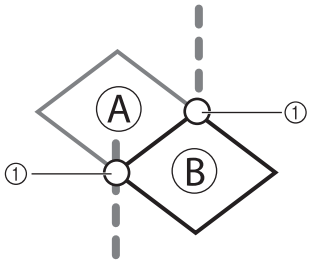
3 **Embroider the first pattern.**

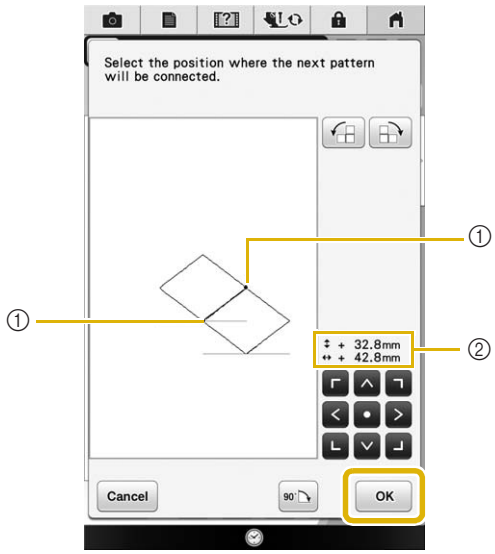
4 **Refer to steps 8 through 11 of "Connecting Three Patterns" on page 307 to select the next pattern.**

5 **Specify the position of the second pattern referring to the vertical/horizontal position measured in step 4 of "Measuring the Distance That the Pattern Will Be Slid" on page 318. Press** OK **after specifying the position.**



① Connecting point





① Connecting point
② Vertical/Horizontal position
→ Message appears on screen and carriage will move after pressing OK.

6 **Continue with step 13 of "Connecting Three Patterns" on page 309 to finish connecting the patterns.**

Note

- After checking that the trial embroidery results are satisfactory, sew the actual embroidery. If you decide to change the distance that the pattern is slid after checking the trial embroidery, change the settings selected in step 5.

RESUME FEATURE

If the machine is turned off while the pattern connecting function is being used, the machine will return to the operation indicated below when it is turned on again. The machine operation will differ depending on when it is turned off.

Example: When connecting two patterns

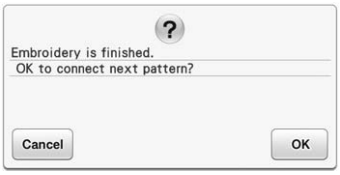
Select the first pattern. Press the pattern connection key .

Begin embroidering the first pattern.

↓

Finish embroidering the first pattern. (A)

If the machine is turned off during any operation in this box, the machine will return to (A) when it is turned on again.



↓

Select the second pattern.

↓

Press .

↓

Specify the reference point for connecting the pattern.

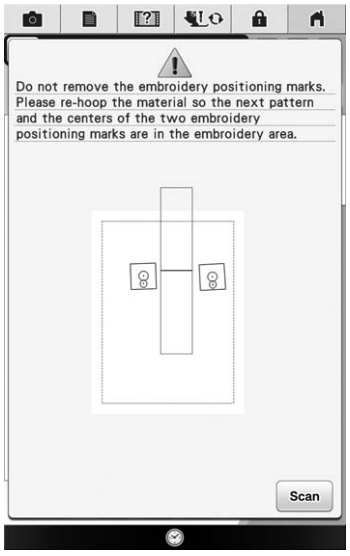
↓

Start detecting positioning stickers (2 locations).

↓

Finish detecting positioning stickers. (B)

If the machine is turned off during any operation in this box, the machine will return to (B) when it is turned on again.

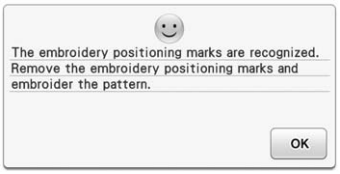


↓

Rehoop the fabric.

↓

Finish detecting positioning stickers (2 locations).



↓

Begin embroidering the second pattern.

↓

Finish embroidering the second pattern.

Chapter 7
IQ Designer

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ABOUT IQ DESIGNER

With IQ Designer, you can use below functions;

- hand-drawn functions - creating embroidery patterns by drawing on the LCD screen
- scanning functions - creating embroidery patterns by not only scanning object with built-in camera, but also imported data from USB media or computer.

You can also combine patterns that you have created with the machine's built-in patterns.

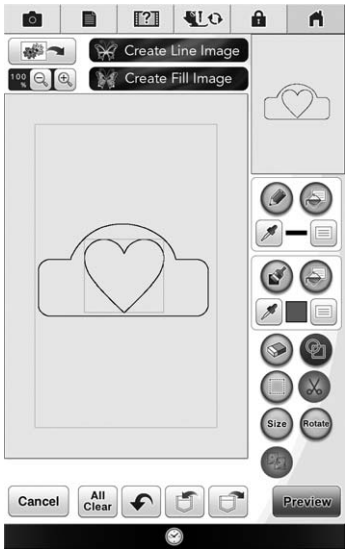
Start IQ Designer by pressing IQ in the home page screen or pressing IQ in the embroidery pattern selection screen.

⚠ CAUTION

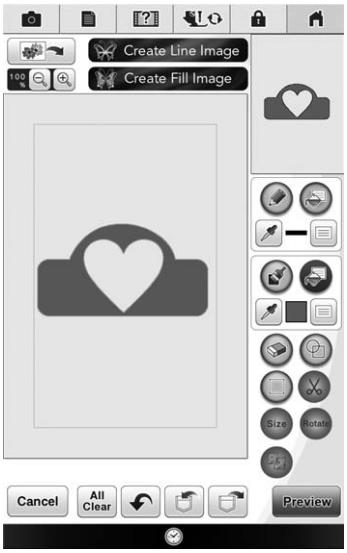
- **Only touch the screen with your finger or the pen (stylus) included with the sewing machine. Do not use a mechanical pencil, screwdriver or any other hard or sharp object. In addition, do not press the screen with extreme pressure. Otherwise the screen may be damaged.**
- **All or part of the screen may sometimes become darker or lighter due to changes in the surrounding temperature or other changes in the environment. This is not a sign of a malfunction. If the screen is difficult to read, adjust its brightness.**

Basics: Creating a Pattern

1. Draw a line drawing in the pattern drawing screen. (page 327)

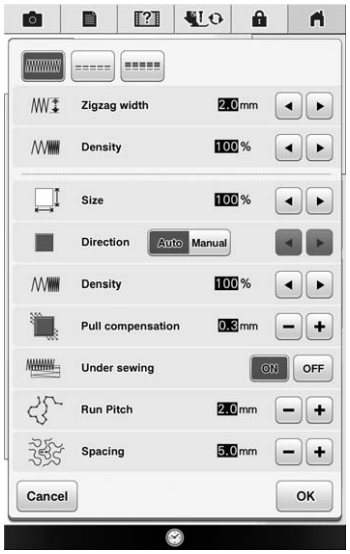


2. Add color to the pattern.

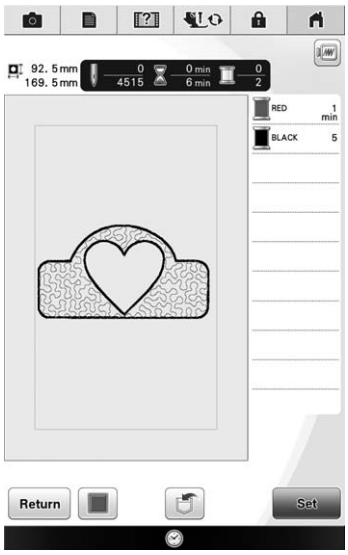


3. Select colors and stitching and add desired patterns to complete the pattern.

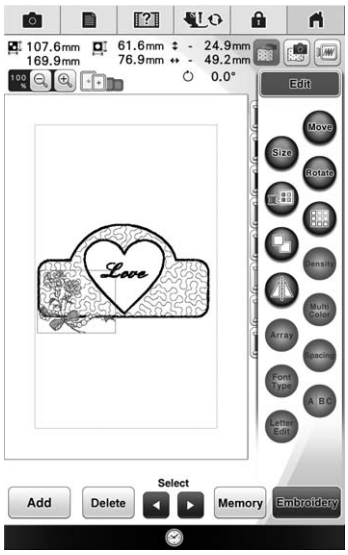
4. Specify stitching settings. (page 332)
Further customize your pattern by specifying embroidery stitching settings, such as satin stitch width and density and the sewing direction.



5. Convert image data to embroidery data.
The embroidery image preview screen appears. (page 334)

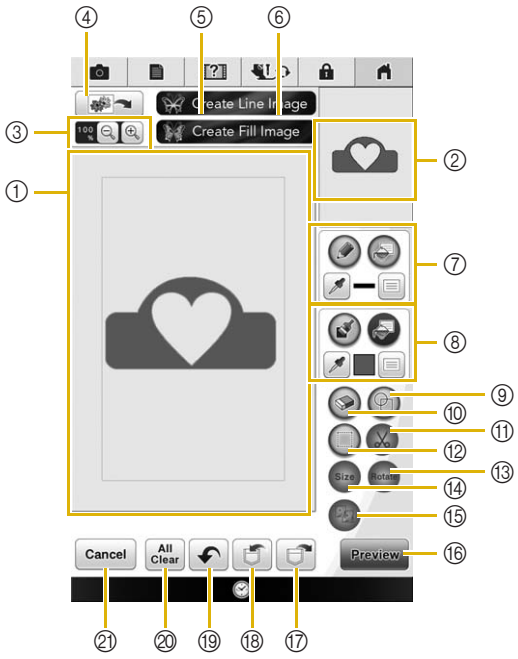


6. Edit the pattern in the embroidery edit screen, for example, by combining it with the machine's built-in patterns. (page 210)



→ Embroidering begins.

PATTERN DRAWING SCREEN



① Pattern drawing area
② Pattern preview area

Memo

- The actual dimension of the pattern area is the size of the embroidery frame, which is 36 cm × 24 cm (approx. 14 inches × 9-1/2 inches). The pattern you drew may be bigger than you expected. Please resize the pattern after converting the design to the embroidery pattern.
- When the pattern is enlarged so that only a part of it appears in the pattern drawing area, the entire pattern is displayed in the pattern preview area. The red frame in the pattern preview area indicates the part of the pattern displayed in the pattern drawing area. Move the red frame in the pattern preview area with the touch pen or your finger to display the corresponding area in the pattern drawing area.

■ Key functions

No.	Display	Key Name	Explanation	Page
③		Magnify key	Press this key to magnify the pattern by both 200% and 400% in the screen.	220
④		Image scan key	Press this key to scan the attached frame and display on the screen as the background while using the IQ Designer. You can scan the fabric as the background or scan the picture as the reference when creating the pattern.	—
⑤		Line design key	Press this key to scan the line drawing to edit and convert to the embroidery data using the built-in camera. You can also import the line drawing image from the USB media or the computer and create the embroidery design.	339
⑥		Illustration design key	Press this key to scan the illustration to edit and convert to the embroidery data using the built-in camera. You can also import the illustration from the USB media or the computer and create the embroidery design.	342
⑦		Line tool key	Draw lines and set the color. You can select the line type and color as you need.	327
⑧		Brush tool key	Paint with brush and set the color. You can select the brush type and color as you need. Painted lines and areas will be converted to the pattern embroidered with fill stitch.	328

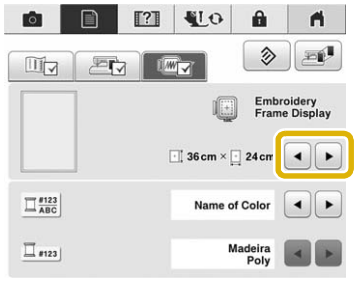
No.	Display	Key Name	Explanation	Page
⑨		Stamp key	Press this key to select the stamp shape for pattern drawing. You can set the fill/stroke setting.	329
⑩		Erase key	Press this key to erase lines and shapes that have been drawn. You can select the size/shape of the eraser.	330
⑪		Cut key	Press this key to cut out the selected section.	331
⑫		Select key	Press this key to select a section for moving by finger or pen, copying, deleting, changing size and rotating lines and shapes that have been drawn.	331
⑬	Rotate	Rotate key	Press this key to rotate the selected section.	331
⑭	Size	Size key	Press this key to change the size of the selected section.	331
⑮		Duplicate key	Press this key to duplicate the selected section.	—
⑯	Preview	Preview key	Press this key to convert the image data to embroidery data.	—
⑰		Recall key	Press this key to recall image data from the machine's memory, USB media or the computer.	—
⑱		Store key	Press this key to store the pattern being created.	—
⑲		Undo key	Press this key to undo the last operation that was performed and return to the previous operation. Each press of this key undoes one operation.	—
⑳	All Clear	All Clear key	Press this key to clear all the lines and shapes and start from the beginning.	—
㉑	Cancel	Cancel key	Press this key to end the IQ Designer. All lines and shaped are erased when you press this key.	—

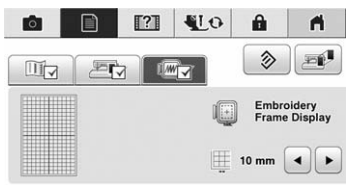
Before Creating Designs

The pattern preview displays the design smaller than the actual size. You can view the actual pattern size by setting the "Embroidery Frame Display".

1 **Press .**

2 **Select the grid line of the "Embroidery Frame Display".**

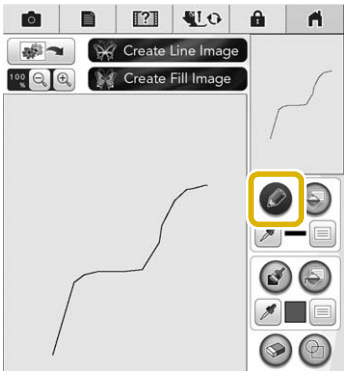




* Select the grid size 10 mm (3/8 inch) or 25 mm (1 inch).

Drawing Lines

1 **Press and draw lines.**



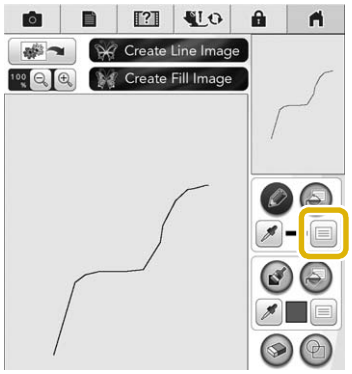
Memo

- All the regions will be displayed in pale, when is pressed, to clarify the drawing lines on the screen.

■ Setting the line types and colors

You can set or change the line types and colors anytime. You can also specify the line types and colors before drawing lines.

1 Press to set the line types and colors.



→ The Line/Color type settings screen appears.

① Line types

② Color selection: touch the color palette to activate the drawing pen color.

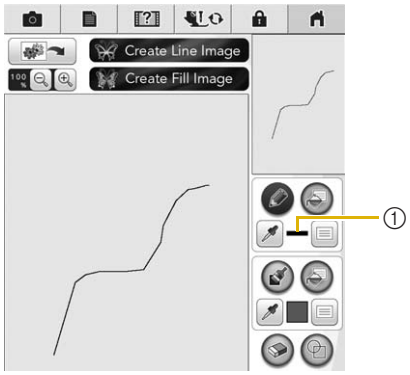
Line types

	Freehand line Select for opening the end. Select to closing the end automatically.
	Straight line with one stroke
	Straight line changing directions to the point you select. If the end point is created near the start point, a closed object will be created.

	Stitch line
	Line without stitch for creating a region. Created region will be defined by the gray line.

2 Press OK to return to the pattern drawing screen.

→ The color bar on the line tool key is changed to the selected color.



① Color bar

3 Press and press on the line to change color.

→ The connected line will be changed to the selected color.

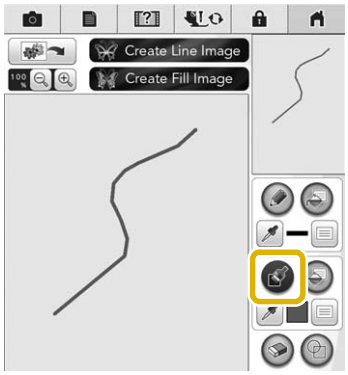
* You can pick the color from the line already drawn, press and select the desired color.

Memo

- Press to magnify the image when you cannot press on the line correctly.

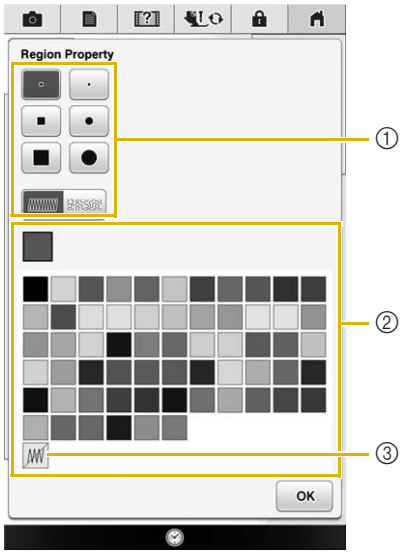
Drawing Regions

1 Press and draw with brush.



■ Setting the brush types and fill colors

1 **Press [≡] to set the brush types and fill colors.**



① Brush types
② Fill color selection: touch the color palette to activate the paint brush color.
③ Select [▦] when you don't want any fill stitch.

Brush shapes/sizes

■	Square brush	
●	Round brush	

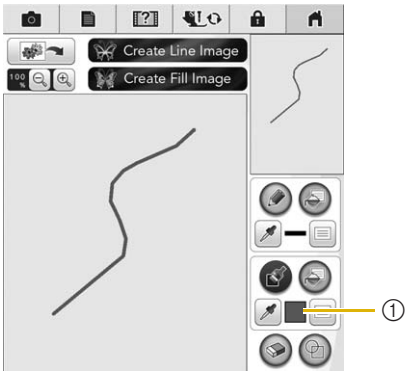
· ·	Small brush	
■ ●	Medium brush	
■ ●	Large brush	

Fill stitch types

	Fill stitch pattern
	Stippling pattern

2 **Press [OK] to return to the pattern drawing screen.**

→ The color bar on the brush tool key is changed to the selected color.



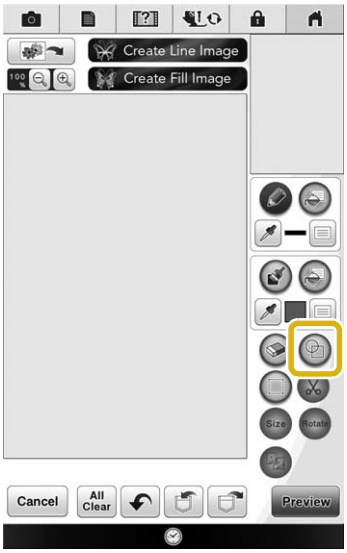
① Color bar

3 **Press [✎] and press on the brush line to change color and fill stitch types. You can also set the fill color/stitch type to the closed area that is made by lines and brush lines.**

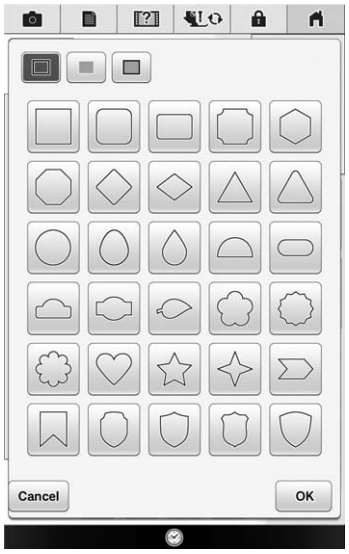
* You can pick the color from the brush line or the area already drawn, press [✒] and select the desired color.

Using the stamp key

1 **Press [⧉].**



2 **Select a stamp type and stamp shape.**



Stamp types

	Outline
	Fill stitch
	Outline and fill stitch

* Press Cancel to return to the pattern drawing screen.

3 **Press OK to set the selected stamp.**

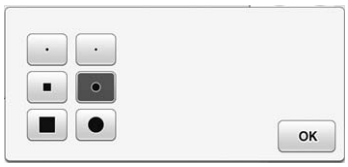
→ The pattern drawing screen is displayed.

* You can change size of, rotate or move the shape right after you create it by pressing Size or Rotate.

Using the erase key

1 **Press .**

2 **Select the size and shape of the eraser.**



3 **Press OK to set the selected erase.**

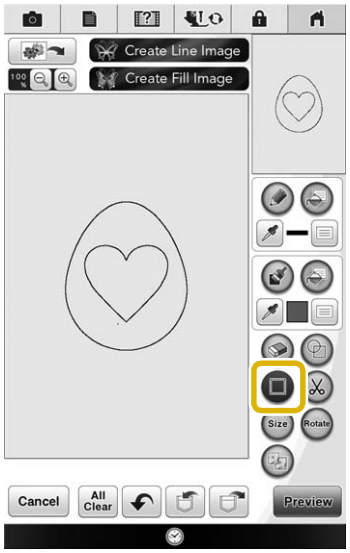
→ The pattern drawing screen is displayed.

4 **Drag along the area or line that you want to erase while the key appears as .**

Using the select key

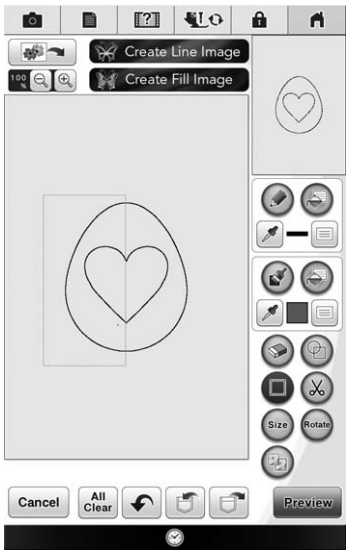
You can select the part of the design to move and/or edit. Some keys are available only after you select the part.

1 **Press .**



2 **Select the area you want to edit.**

→ Selected area is marked with red square.



3 **Edit the design with available keys. (See "Key functions" on page 326 for the details of each key function.)**

After Editing the Design

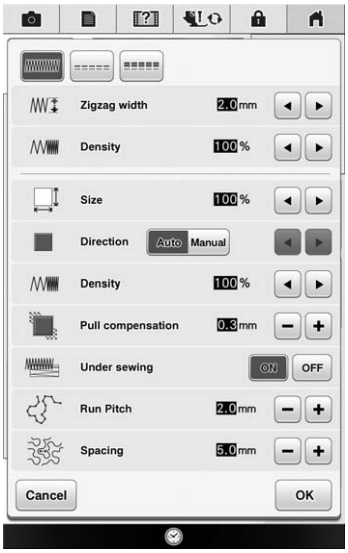
Press Preview to create the embroidery pattern.

Memo

- We recommend saving the IQ Designer pattern. You cannot return to the design screen after applying stitching settings and continuing to the embroidery edit screen.
- If the pattern is saved, you can start IQ Designer again and further edit the pattern or create a new pattern with the same design and different stitching settings applied.

STITCH SETTINGS SCREEN

Before creating the embroidery pattern, specify the stitch settings. Lines of the design are sewn with zigzag stitches, running stitches, or triple stitches, and areas are sewn with fill stitches or stippling stitches. Stitching of the areas were already selected in “Drawing Regions” on page 328, so specify values of detailed settings.
If the design data is saved, the settings can be changed after a trial embroidering.
After finished specifying the settings, press [OK] to check the preview of the pattern.



■ Line sew stitch settings

Select the type of the line sew stitch from zigzag stitch ( ), running stitch ( ) or triple stitch ( ).

Zigzag stitch

Zigzag width	Specifies the width of the satin stitches used to sew the lines of the design.
Density	Specifies the density of the satin stitches used to sew the lines of the design.

Running stitch /Triple stitch
* Both includes an under sewing.

Run Pitch	Specifies the length of the straight stitch of the design.

■ Fill stitch settings

Size	Increases/reduces the size of the pattern.
Direction	Specifies the sewing direction. Set to “Manual” when you have desired direction of fill stitch.
Density	Specifies the stitch density of fill stitch.
Pull compensation	Specifies to correct the shrinkage of the pattern by slightly shortening or lengthening the stitching. Change the setting after once you embroider the pattern and check the shrinkage.
Under sewing	Select if you need or not need the under sewing stabilize fabric.

■ Stippling stitch settings

Run Pitch	Specifies the length of a stitch of the fill stitch of the design.
Spacing	Specifies the spacing between the stitches when embroidering the stippling stitch.

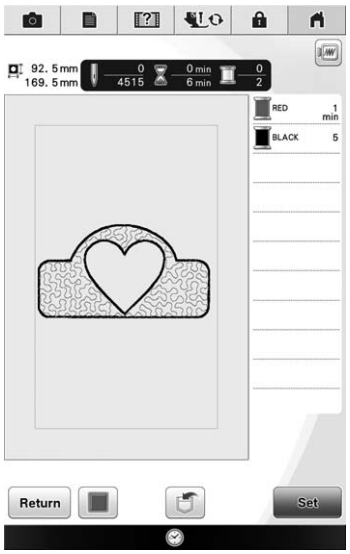
EMBROIDERY IMAGE PREVIEW SCREEN

You can check the total stitch number, embroidery time and spool thread color number to embroider the pattern. Press to check the pattern image with the embroidery frame.

Press Set to proceed to the embroidery edit screen.

Note

- Once you proceed to the embroidery edit screen, you cannot return to the previous page.



Press to change the stitch settings again.

Press to save the pattern as the embroidering data.

Press Return to return to the pattern drawing screen.

IQ DESIGNER WITH SCAN

Using the Scan Frame

1 **Prepare the desired drawing/illustration.**

⚠ CAUTION

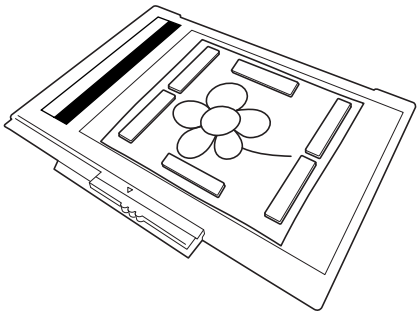
- **Do not set the fabric, the paper with crease or luster or the paper that is too thick or rolled up to the scan frame. Otherwise, the frame may strike the embroidery foot, and possibly cause injury.**

Memo

- Only one sheet of paper can be placed in the scanning frame per scan.

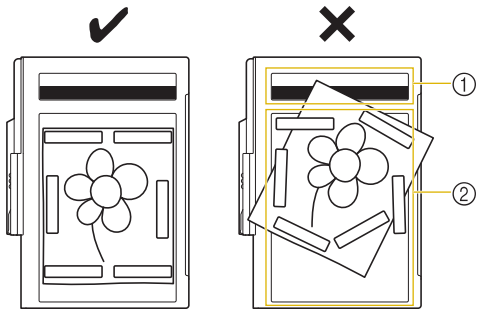
2 **Place the paper to be scanned in the scanning frame, and then secure the paper in place with the included magnets.**

* Place the magnets at six locations around the paper to secure it, making sure that the line drawing is not covered.



Note

- When placing the paper in the scanning frame, make sure that the white balance area is not hidden; otherwise, the drawing cannot be scanned correctly. At the same time, be sure to place the scan image within the scan area. The image out of the scan area will not be scanned.

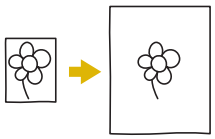


① White balance area
② Scan area

- Make sure that the white balance area or the scan area is not dirty or scratched; otherwise, the image cannot be scanned correctly.
- Be sure to use the included magnets. If any other magnets are used, they may become attached to the machine during scanning, or other problems, such as a misaligned scan image, may occur.
- Be sure to place the magnets so that they secure the paper firmly. If the paper is placed unevenly, the image cannot be scanned correctly.
- If the scanning frame is dirty, wipe it with a cloth dampened with a diluted neutral detergent solution.

Memo

- If you want to scan the small piece of paper that cannot be placed with the magnets, copy the image on the paper to the larger paper and place on the scan frame.



3 **Attach the embroidery unit to the machine, and then turn on the machine.**

* Refer to “Attaching the Embroidery Unit” on page 197.

4 **Press the “Presser Foot Lifter” button to raise the presser foot, and then press the “Needle Position” button to raise the needle.**

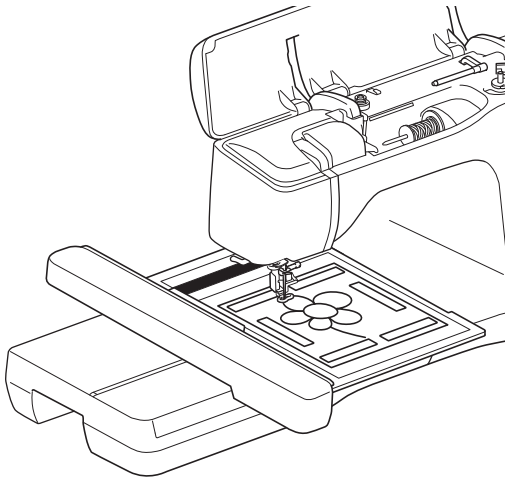
* The presser foot is not raised high enough when raised with the presser foot lever.

Note

- Make sure that presser foot and needle are fully raised. If scanning is started with the presser foot and needle lowered, the scanning frame may hit the machine, causing damage.

5 **After attaching the scanning frame to the embroidery unit, swing the frame-securing lever toward you to secure the frame.**

* *Refer to “ATTACHING THE EMBROIDERY FRAME” on page 247.



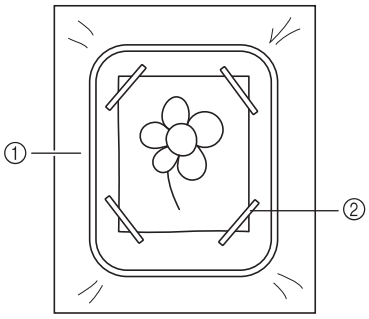
Note

- Unthread the machine to avoid having the thread slipping out of the needle or getting caught on the embroidery frame.
- Be sure not to attach the presser foot other than the embroidery foot “W+” or “W”, otherwise the presser foot will be scanned.

■ Scanning with an Embroidery Frame

Drawings and illustrations can also be scanned using an embroidery frame. Hoop the embroidery frame with fabric larger than the frame. Place the paper to be scanned on the fabric, and then secure it with tape.

When not using the scanning frame, prepare a line drawing that can easily be scanned.

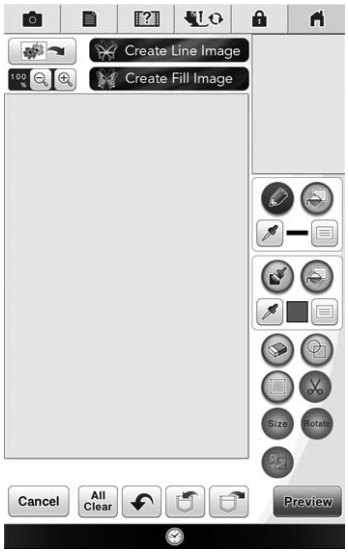


① Fabric
② Tape

Scanning to Trace Background Image

If you have a favorite picture or drawing, it can easily be traced on the scanned background image and you can create your own pattern.

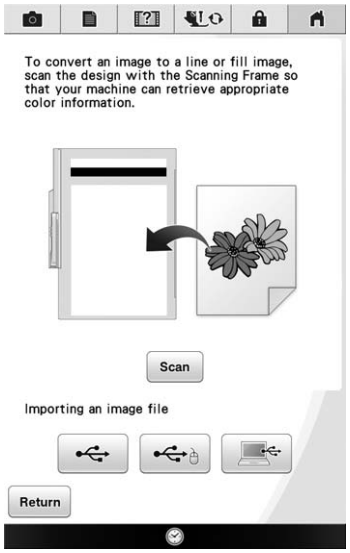
1 **Press** .



→ The image display screen appears.

2 **Set a picture to the scanning frame and attach to the machine. Refer to "Using the Scan Frame" on page 335.**

3 **Press** Scan.



Note

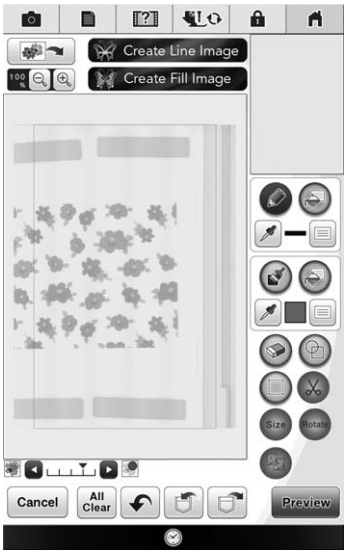
- When scanning starts, some of the machine lights will turn off in a certain circumstances, in order to increase the scan quality. The machine lights will return to their original brightness when scanning ends.
- You can import an image of 5 MB or smaller from USB media or a computer.

→ When the following message appears, press OK.

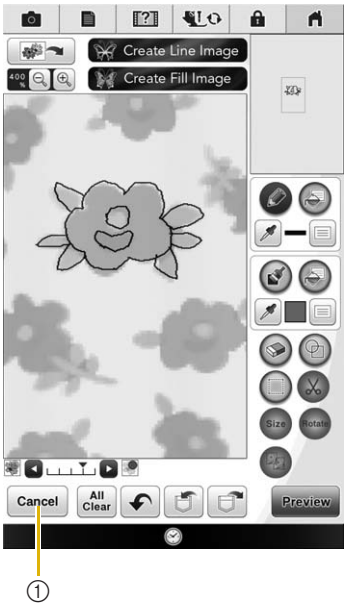
→ Scanning begins.

* To stop scanning and return to the screen in step 3, press Cancel.

4 **When scanning is finished, scanned image is displayed in dim in the pattern drawing area.**



5 **Trace the background image. Refer to "PATTERN DRAWING SCREEN" on page 326 about creating your pattern.**



① Transparency adjustment

* Press ▶ or ◀ to adjust the transparency of the background.

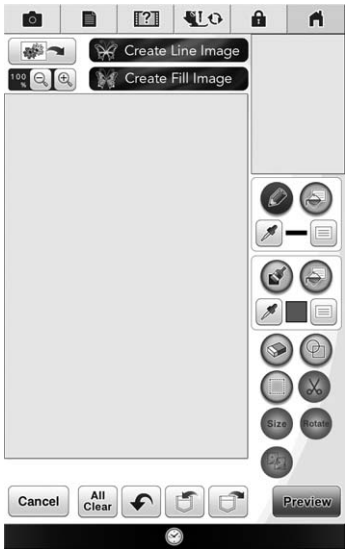
Each press of ▶ lightens the background, making the line pattern darker. Each press of ◀ darkens the background, making the line pattern lighter.

6 **After editing the pattern, follow the procedure from "After Editing the Design" on page 331.**

■ Importing the Background image

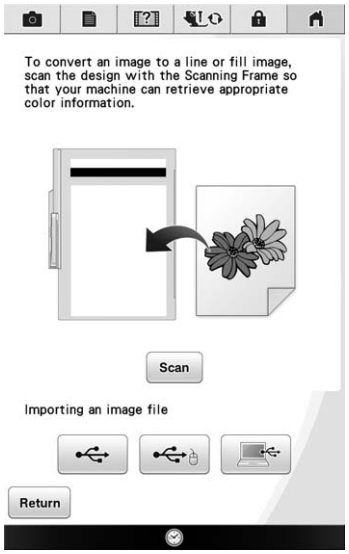
Prepare a data of your favorite picture that you want to create the pattern with. Save a data in the PC or USB media.

1 **Press** .

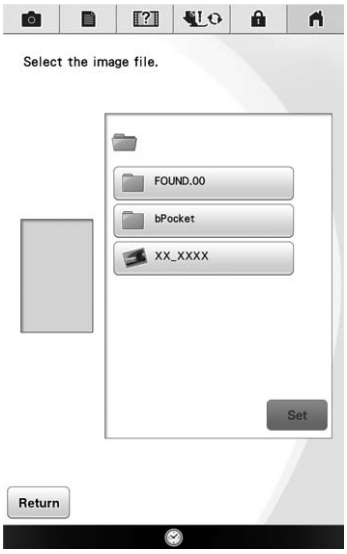


→ The image display screen appears.

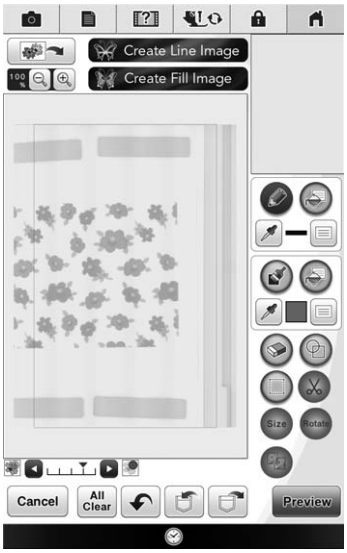
2 **Select the device you saved the data to.**



3 **Select the data, and then press** OK.

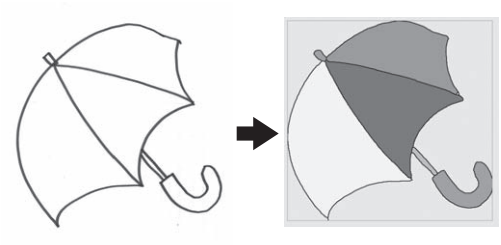


4 **The selected image is displayed in dim in the pattern drawing area.**



CREATING LINE IMAGE

Custom patterns can be created from drawings. You can create patterns by scanning your drawings using the included scan frame or importing an image from USB media or a computer.



Recommended line drawings for Line Scan

- Line drawings must be drawn clearly using lines with approximately 1 mm thickness.
- Line drawings should be drawn in a strong contrast.
- If the lines are too short or gathered in small space, they will not be scanned correctly.

Note

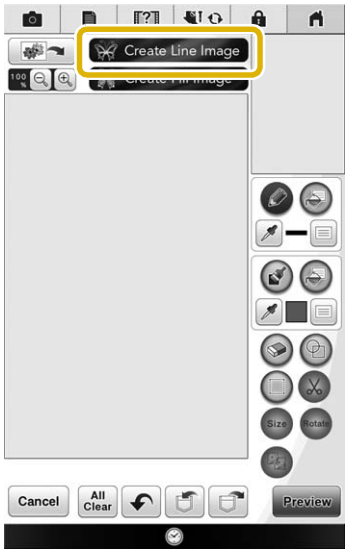
- For details on creating patterns using color illustrations, refer to “CREATING FILL IMAGE” on page 342.
- If you cannot scan the drawings as expected, you can edit the design in the IQ Designer. Refer to “PATTERN DRAWING SCREEN” on page 326.
- Line drawings are scanned without recognizing the thickness of lines. If you want to change the thickness of lines, specify in the Settings screen. Refer to “STITCH SETTINGS SCREEN” on page 332.
- Line drawings are scanned as black lines. If you want to change the colors, specify in the IQ Designer. Refer to “Drawing Regions” on page 328.

Using the Scanning Frame to Create a Pattern with Line Scan

1 **Press** IQ.

* You can also start the function by pressing IQ in “Embroidery” mode.

2 **Press** Create Line Image.

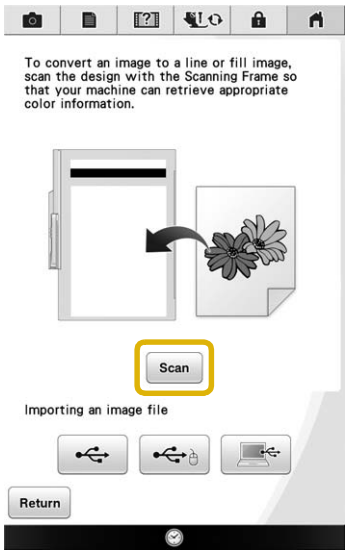


→ The image display screen appears.

3 **Press** Scan.

* To import an image from USB media or a computer, press , or . For details, refer to page 338.

* If you scan the image, make sure that the scan frame is attached to the machine. Refer to “Using the Scan Frame” on page 335.



Note

- When scanning starts, some of the machine lights will turn off in a certain circumstances, in order to increase the scan quality. The machine lights will return to their original brightness when scanning ends.
- You can import an image of 5 MB or smaller from USB media or a computer.

→ When the following message appears, press OK.

→ Scanning begins.

* To stop scanning and return to the screen in step 3, press Cancel.

4 When scanning is finished, specify the "Gray-Scale Detection level" on the screen if necessary.

The "Gray-Scale Detection level" can change the black and white threshold for the image.

* If you do not know how the settings should be changed, first continue the operation without specifying settings and check the results.

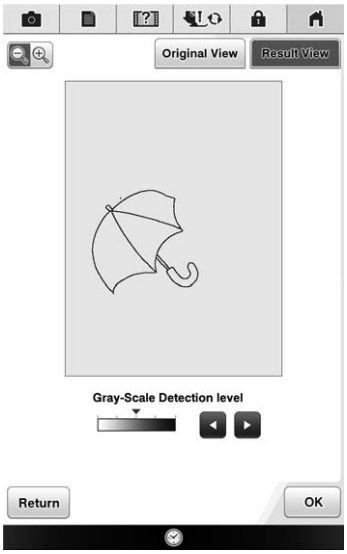
* To stop scanning and return to the screen in step 3, press Cancel. The scanned image will be deleted when you return to the previous screen.

5 Move to frame the image for the pattern.

6 Press OK.

→ The screen for confirming the converted image appears.

7 In the screen for confirming the converted image, you can adjust the "Gray-Scale Detection level" again, if necessary.



* If you do not know how the settings should be changed, first continue the operation without specifying settings and check the results.

* To enlarge the image, press .

* To display the image before being converted, press Original View. Compare the images before and after being converted, and then change the settings if necessary.

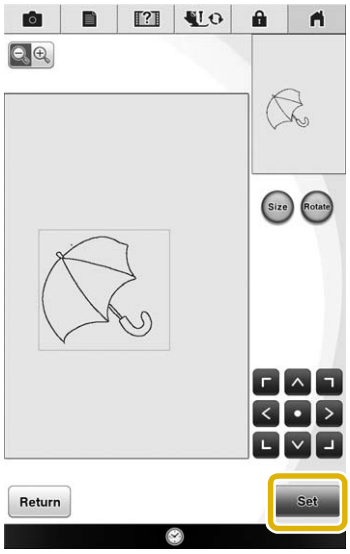
* To return to the previous screen, press Return.

→ After changes to the settings of "Detection level" is applied, OK changes to Retry. Press Retry to check that the image is as desired.

8 Press OK.

9 **Press Set.**

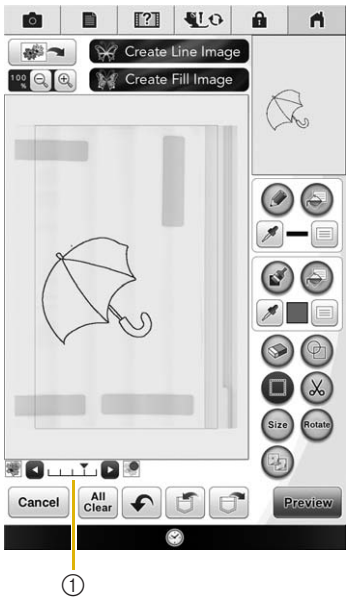
In this screen, the pattern can be resized, rotated or moved.



→ The pattern design editing screen for IQ Designer appears.

* To return to the previous screen, press Return.

10 **Follow the procedure described on page 210 to edit the pattern as desired.**



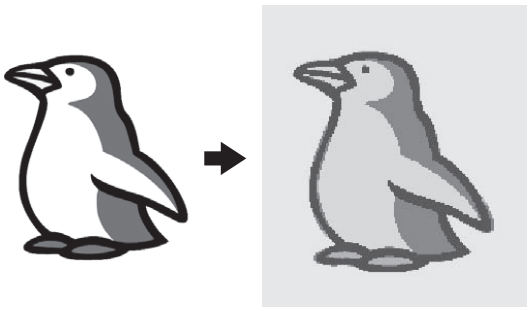
* The original image is displayed in the background. Use gauge ① to adjust the transparency of the background. Each press of ▶ lightens the background, making the line pattern darker. Each press of ◀ darkens the background, making the line pattern lighter.

Note

- During scanning, the small dots that appear and unnecessary lines can be erased.

CREATING FILL IMAGE

Custom patterns can be created from colored illustrations. You can create patterns by scanning an illustration using the included scanning frame or importing an image from USB media or a computer.



Recommended illustrations for Illustration Scan

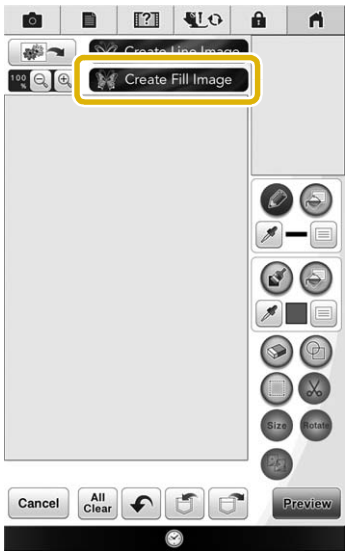
- Patterns that are clearly drawn, with no gradation, fading or blurriness.
- Patterns that are at least a 5 mm square
- Patterns that are extremely intricate design

Using the Scanning Frame to Create a Pattern with Illustration Scan

1 **Press** IQ.

* You can also start the function by pressing IQ in "Embroidery" mode.

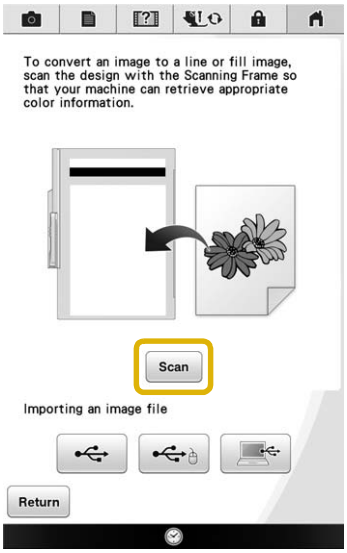
2 **Press** Create Fill Image.



→ The image display screen appears.

3 **Press** Scan.

* To import an image from USB media or the computer, press , , or .



Note

- When scanning starts, some of the machine lights will turn off in order to increase the scan quality. The machine lights will return to their original brightness when scanning ends.

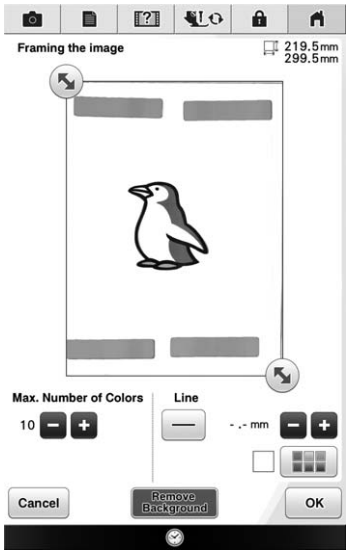
→ When the following message appears, press OK.

→ Scanning begins.

* To stop scanning and return to the screen in step 3, press Cancel.

4 **When scanning is finished, specify the necessary settings in the scan image confirmation screen.**

Change the settings to adjust the image so it can easily be converted to the desired pattern.

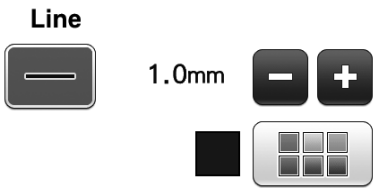


①	Max. Number of Colors	The number of colors in an image will reduced less than the number specified here, and then the outline will be extracted.
②	Remove Background	Select whether or not the background color will be included as one of the colors.
③	Line	Select whether or not the outline will be detected as a line. A thick outline can also be detected as a region. When detected as a line, the line thickness and color can be specified.

* To stop scanning and return to the screen in step 3, press Cancel.

Memo

- Press — to detect the outline.
  Line thickness can be specified from 1.0 mm (1/16 inch) to 5.0 mm (3/16 inch).



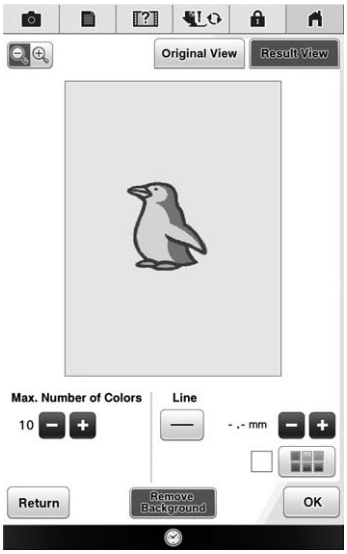
- By touching the scanned image, select the color that wanted to be detected as the outline.
- The moves to the point you touched.
  You can also move by using .

5 **Move to frame the image for the pattern.**

6 **Press OK.**

→ The screen for confirming the converted image appears.

7 **In the screen for confirming the converted image, adjust the image as necessary as in step 4.**



* To enlarge the image, press .

* To display the image before being converted, press Original View. Compare the images before and after being converted, and then change the settings if necessary.

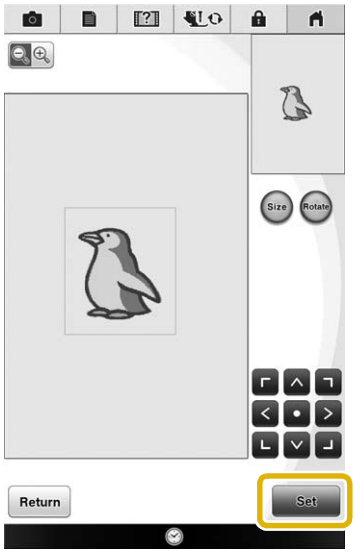
* To return to the previous screen, press Return.

→ After changes to the settings described above have been applied, OK changes to Retry. Press Retry to check that the image is as desired.

8 **Press OK.**

9 **Press Set.**

In this screen, the pattern can be resized, rotated or moved.



→ The pattern design editing screen for IQ Designer appears.

* To return to the previous screen, press Return.

10 **Follow the procedure described on page 210 to edit the pattern as desired.**

* The original image is displayed in the background. Use gauge ① to adjust the transparency of the background. Each press of ▶ lightens the background, making the illustration pattern darker. Each press of ◀ darkens the background, making the illustration pattern lighter.

Note

- During scanning, the small dots that appear and unnecessary lines can be erased.

STIPPLING

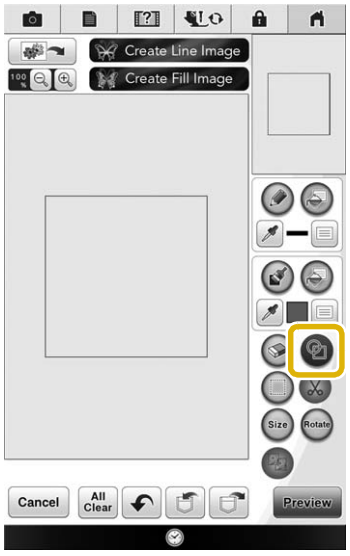
Basic Stippling with IQ Designer

Create a stippling design with the basic procedure.
Example:

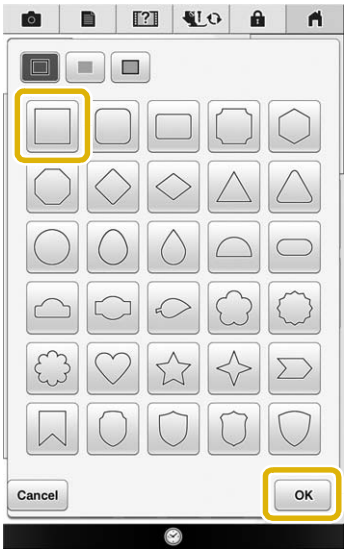
1 **Press** IQ.

* You can also start the function by pressing IQ in "Embroidery" mode.

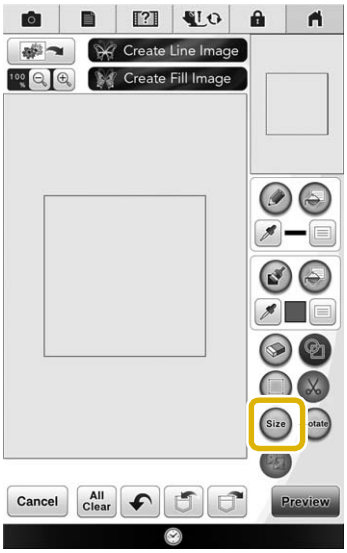
2 **Press** .



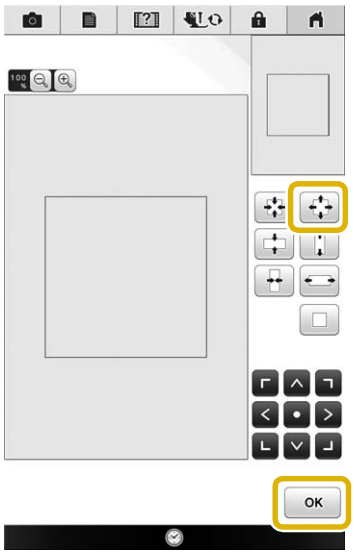
3 **Select the square shape, and then press** OK.



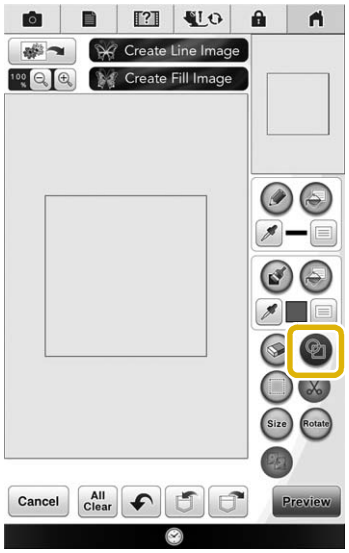
4 **Press** Size **to enlarge the square.**



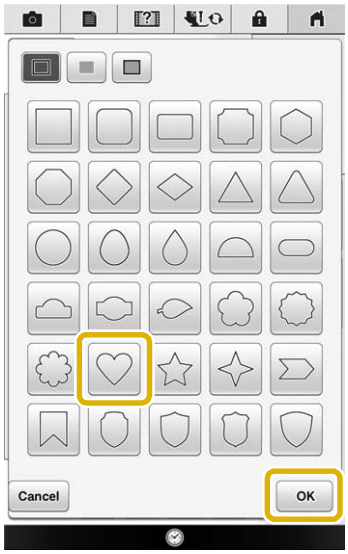
5 Press [move] 7 times, and then press [OK] for this example.



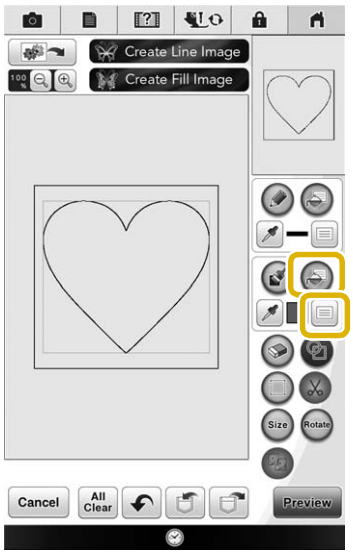
6 Press [create fill image].



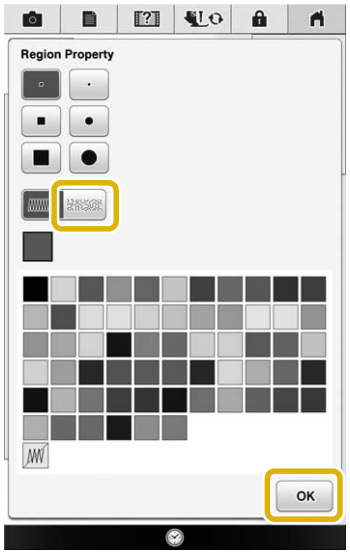
7 Select the heart shape, and then press [OK].



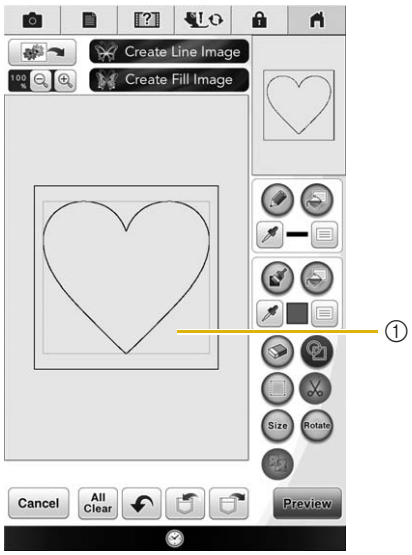
8 Press [create fill image], and then press [create line image].



9 **Press , and then select the stitch color. Press OK after setting the color.**

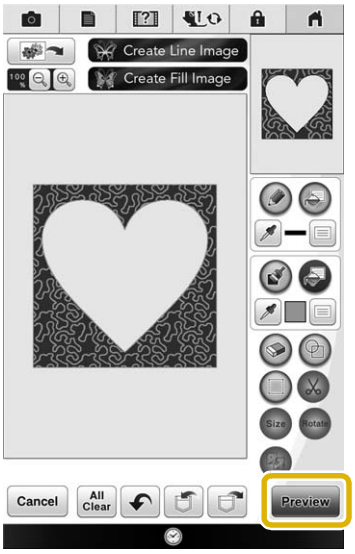


10 **Select the area you want to set stippling effect.**

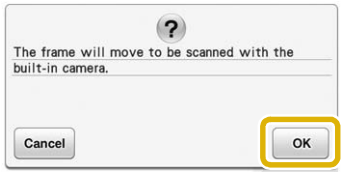


① Select this area.

11 **Press Preview.**

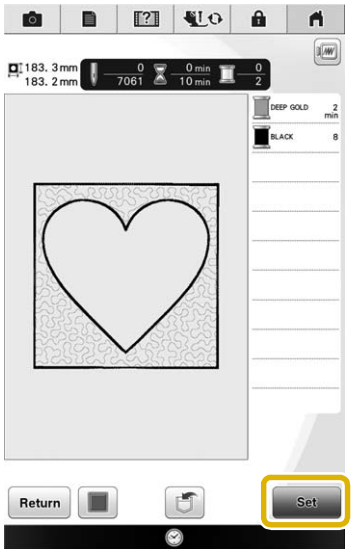


→ When the following message appears, press OK.

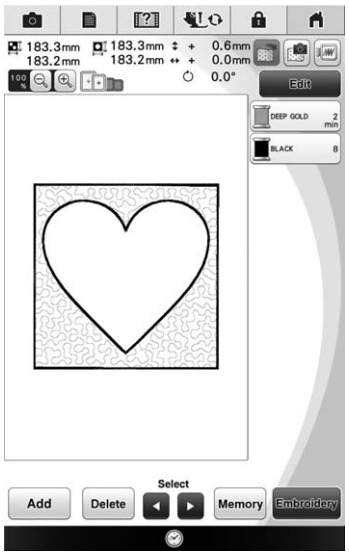


12 **Adjust the stippling settings to create the desired effect, and then press OK.**

13 **Press Set.**



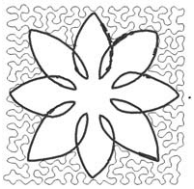
14 **Follow the procedure described on page 210 to edit the pattern as desired.**



Scanning Drawing to Create Stippling Pattern

Create the custom pattern with stippling design.

Example:

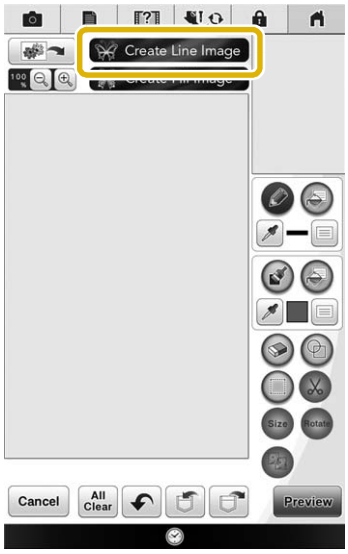


1 **Set the drawing to create the pattern to the scan frame.**

2 **Press IQ.**

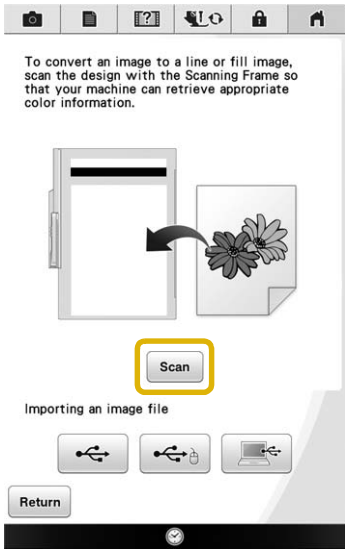
* You can also start the function by pressing IQ in "Embroidery" mode.

3 **Press Create Line Image.**



→ The image display screen appears.

4 **Set the scan frame to the machine, and then press Scan.**



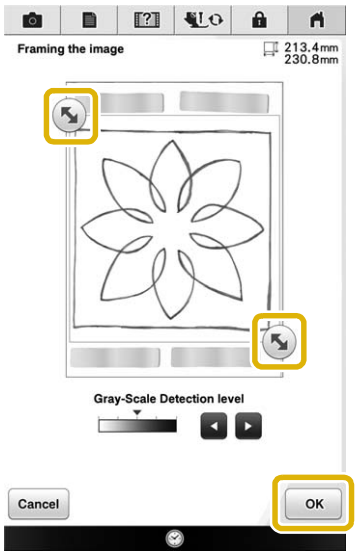
Note

- When scanning starts, some of the machine lights will turn off in a certain circumstances, in order to increase the scan quality. The machine lights will return to their original brightness when scanning ends.

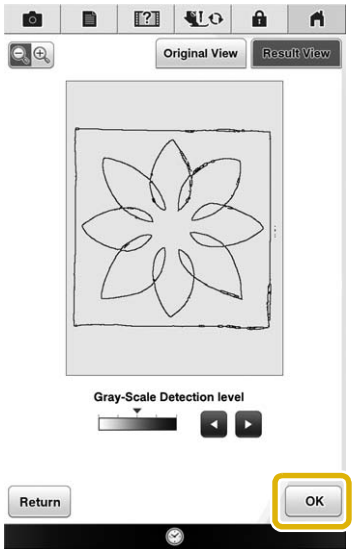
→ When the following message appears, press OK.

→ Scanning begins.
* To stop scanning and return to the screen in step 3, press Cancel.

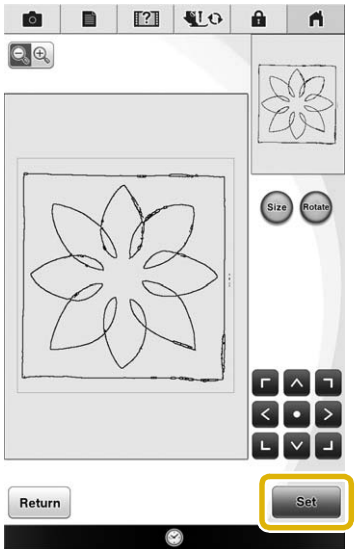
5 When scanning is finished, move to frame the image for the pattern, and then press OK.



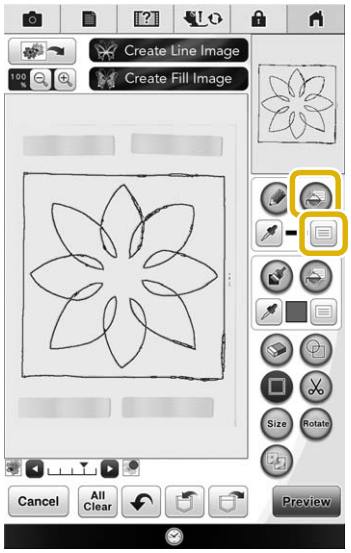
6 Press OK.



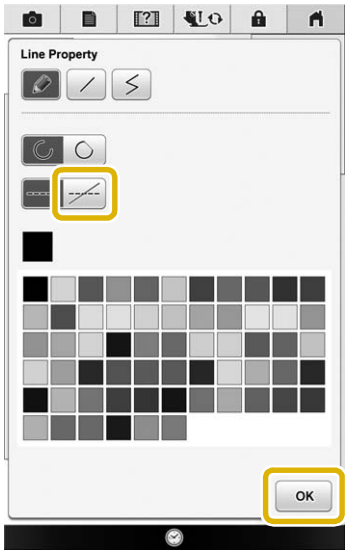
7 Press Set.



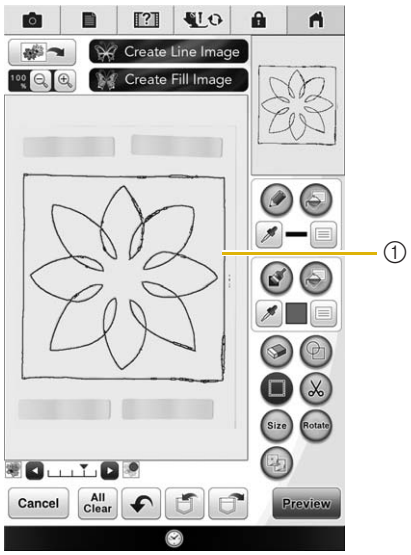
8 Press , and then press .



9 Press ----- to set the outline of the pattern, and then press OK.

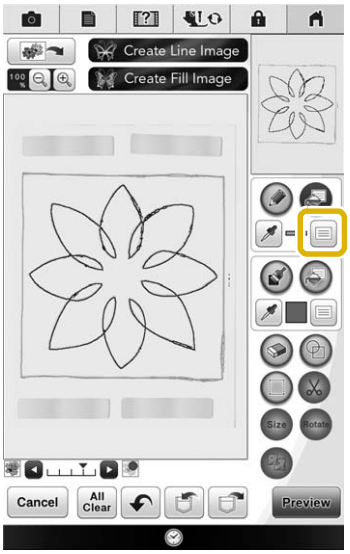


10 Select the outline of the pattern to set as the line without stitch.

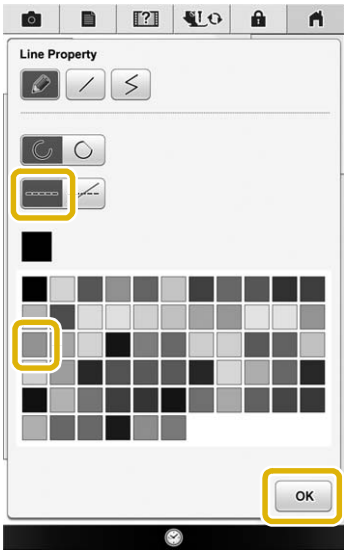


① Outline of the pattern

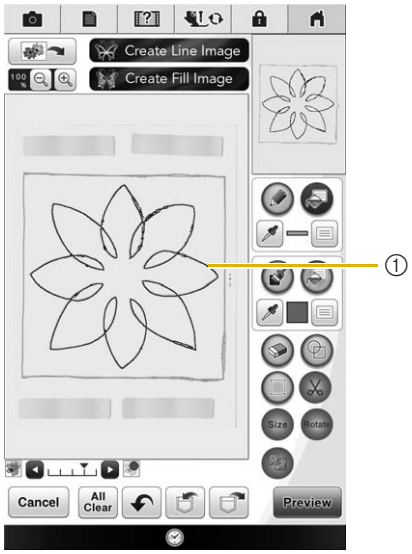
11 Press to select the color of the stitch around the stippling effect.



12 Press ----- and select the stitch color, and then press OK.

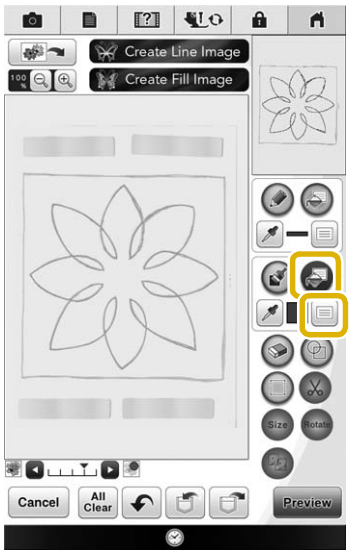


13 **Select the stitch line around the stippling effect.**

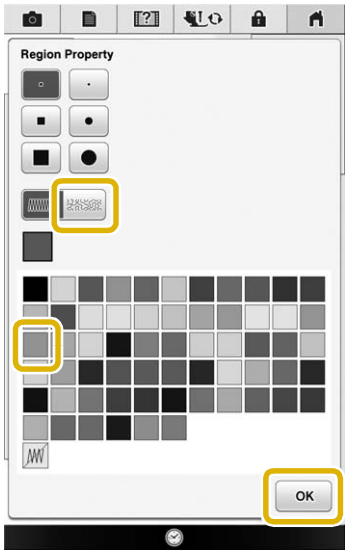


① Stitch line

14 **Press , and then press .**



15 **Press , and then select the stitch color. Press OK after setting the color.**



16 **Select the area you want to set stippling effect.**

17 **Follow the procedure from step 11 of "Basic Stippling with IQ Designer".**

Scanning Fabric and Stippling

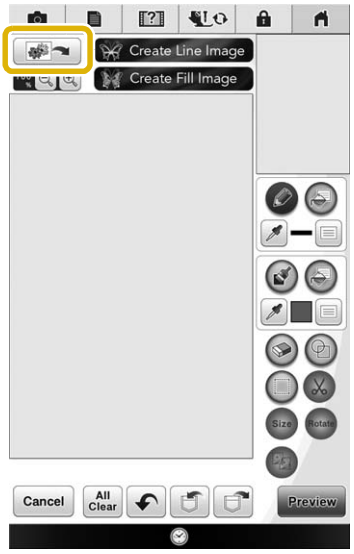
Use the fabric pattern to coordinate with the stippling pattern.

1 **Set the fabric to the embroidery frame.**

2 **Press** IQ.

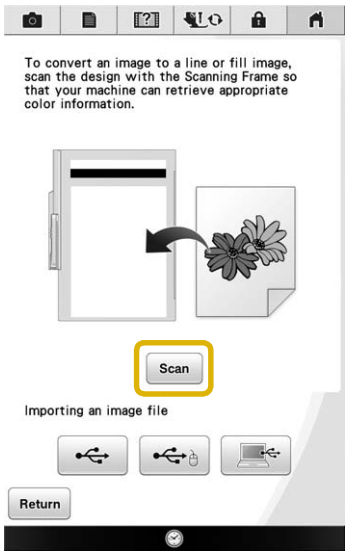
* You can also start the function by pressing IQ in "Embroidery" mode.

3 **Press** .



→ The image display screen appears.

4 **Set the embroidery frame to the machine, and then press** Scan.



Note

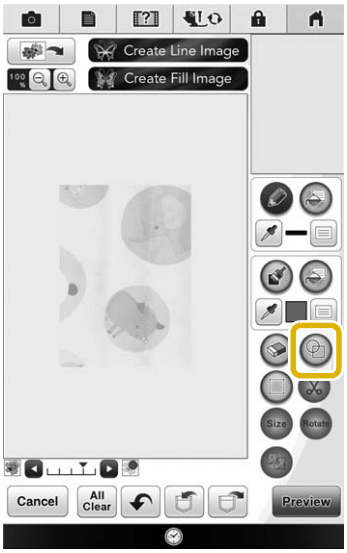
- When scanning starts, some of the machine lights will turn off in a certain circumstances, in order to increase the scan quality. The machine lights will return to their original brightness when scanning ends.
- You can import an image of 5 MB or smaller from USB media or a computer.

→ When the following message appears, press OK.

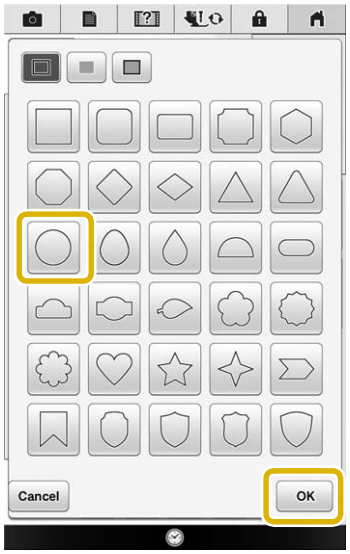
→ Scanning begins.

* To stop scanning and return to the screen in step 3, press Cancel.

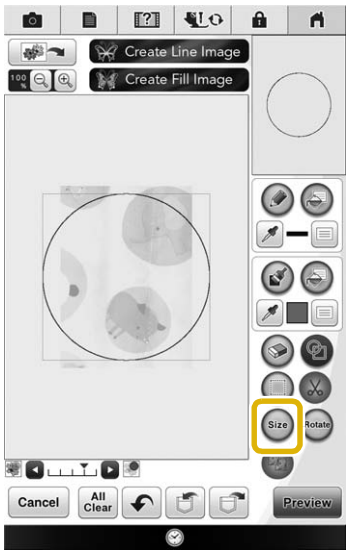
5 **Press** .



6 **Select the circle shape, and then press OK.**

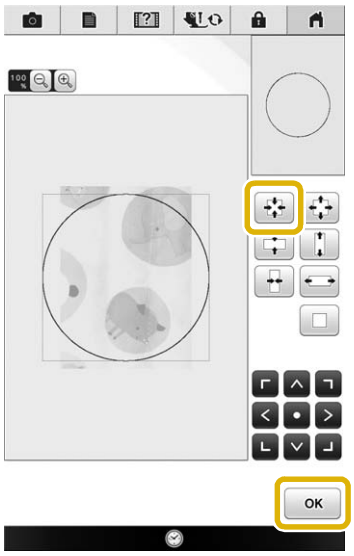


7 **Press Size to enlarge the circle.**

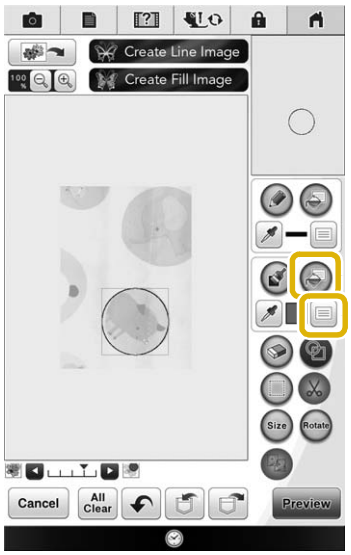


8 **Press ✥ until the size of circle fits the pattern on the fabric, and then press OK.**

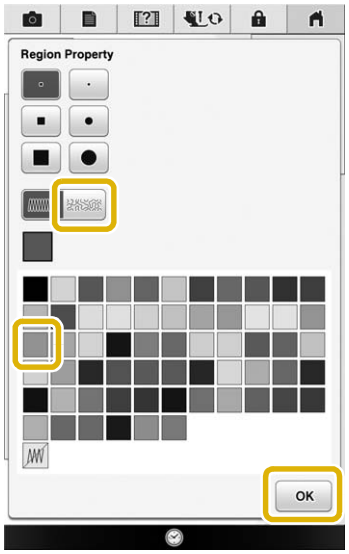
* Use ◤ ▲ ◥ / ◀ ● ▶ / ◣ ▼ ◢ to align the position of the circle to the pattern on the fabric.



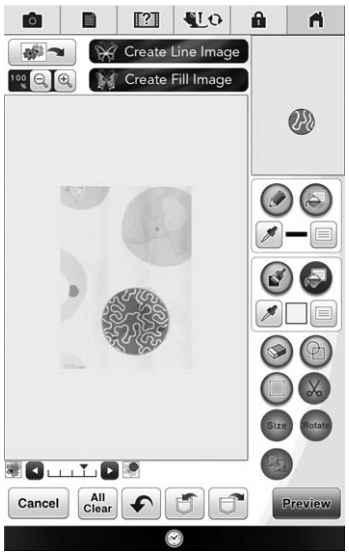
9 **Press ✎, and then press ▤.**



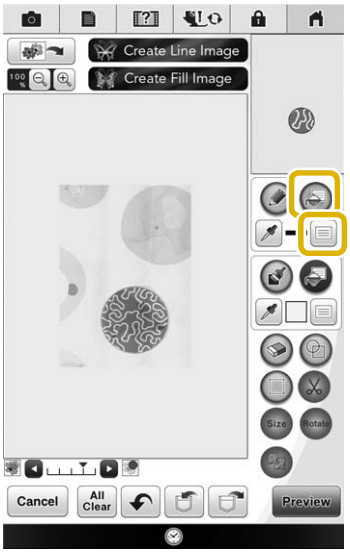
10 Press , and then select the stitch color.
Press OK after setting the color.



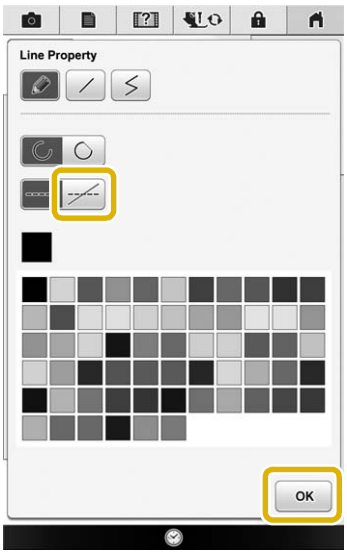
11 Select the area you want to set stippling effect.



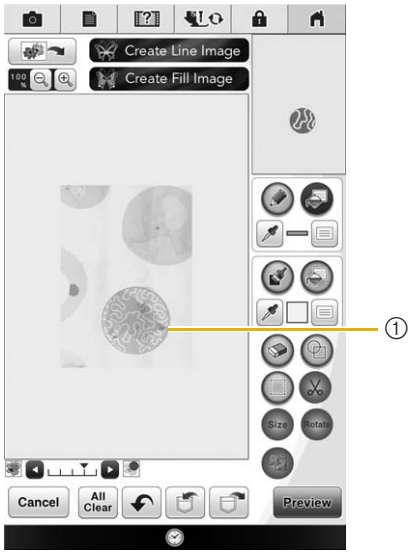
12 Press , and then press .



13 Press to set the outline of the pattern, and then press OK.



14 **Select the outline of the pattern to set as the line without stitch.**



① Outline of the pattern

15 **Follow the procedure from step 11 of "Basic Stippling with IQ Designer".**

→ Start embroidering on the fabric that you scanned at first.

Chapter 8

How to Create Bobbin Work

ABOUT BOBBIN WORK 358

PREPARING FOR BOBBIN WORK 359

Required Materials 359
- Bobbin case and bobbin cover 359
- Lower thread 359
- Upper thread 359
- Needle 359
- Presser foot 359
- Fabric 360

Upper Threading 360

Preparing the Bobbin Thread 360
- When tension is applied to the bobbin thread 362
- When tension is not applied to the bobbin thread 363

CREATING BOBBIN WORK (SEWING) 365

Positioning the Fabric and Sewing 365
- Finishing the thread ends 367

Bobbin Work Free Motion Sewing 367

CREATING BOBBIN WORK (EMBROIDERY) 368

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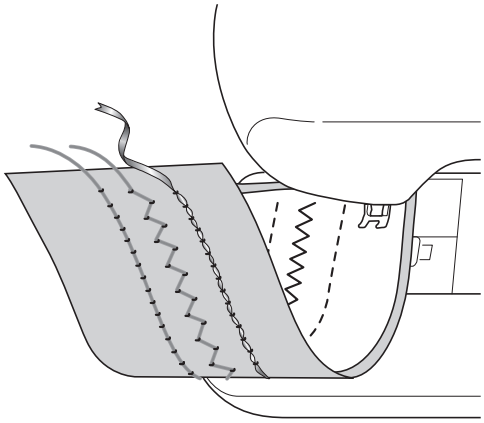
Start Embroidering 369

ADJUSTING BOBBIN WORK THREAD TENSION 372
- Adjusting the upper thread tension 372
- Adjusting the tension of the bobbin thread 372

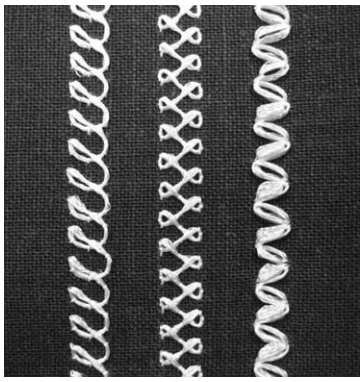
TROUBLESHOOTING 373
- The thread was accidentally cut automatically and the bobbin thread is caught inside the machine 373
- The pattern is misaligned 373
- The bobbin thread catches on the tension spring of the bobbin case 373

ABOUT BOBBIN WORK

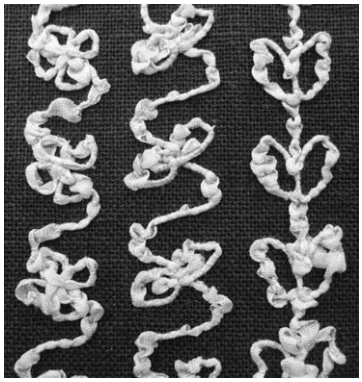
Beautiful embroidery work, with a three-dimensional appearance, can be created by winding the bobbin with heavy weight thread or ribbon, which is too thick to be threaded through the machine's needle. The decorative thread or ribbon will stitch out on the underneath side of fabric while sewing with the fabric wrong side facing up.



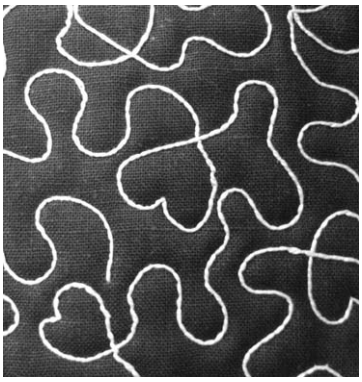
1. Utility stitches



2. Decorative stitches



3. Free motion sewing

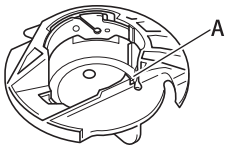


Bobbin work embroidery is sewn using the bobbin work patterns included with this product in addition to some of the utility stitches.

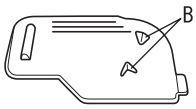
PREPARING FOR BOBBIN WORK

Required Materials

■ Bobbin case and bobbin cover



① Bobbin case (gray)
There is a notch at the location indicated by the letter “A”.



① Bobbin cover
There are two small v-shaped tabs on the back of the bobbin cover as indicated by the letter “B”. The tabs help hold the bobbin in place so it does not lift up while thick thread is being pulled through.

■ Lower thread

We recommend the following types of threads for bobbin work.

<Sewing/Embroidery>

No.5 or finer hand embroidery thread or decorative thread

Flexible woven ribbon
(When embroidering: approx. 2mm (approx. 5/64 inch) recommended)

<Sewing only>

Fine embroidery ribbon (silk or silk-like material) (3.5 mm (approx. 1/8 inch) or less, recommended)

* When wide ribbon or heavy weight threads are being used, we recommend test sewing with and without bobbin case tension being applied to see which gives the best stitching results. If wide ribbon such as 3.5mm (approx. 1/8 inch) is to be used, we recommend that bobbin case tension not be applied. Refer to page 363 for more detailed instructions.

Note

- Do not use thread heavier than No.5 hand embroidery thread.
- Some threads may not be appropriate for bobbin work. Be sure to sew trial stitches before sewing on your project.

■ Upper thread

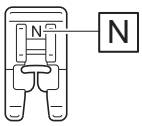
Upper thread choices can vary depending on the finished look you would like to achieve. By using sewing machine embroidery thread (polyester), multipurpose polyester thread, or monofilament (transparent nylon) thread the appearance of a single design can be changed many times just by choosing a different upper thread weight and/or color.
If you do not wish for the upper thread to be visible, we recommend using transparent nylon monofilament thread or polyester light weight thread (50wt. or above) that is the same color as the lower thread.

■ Needle

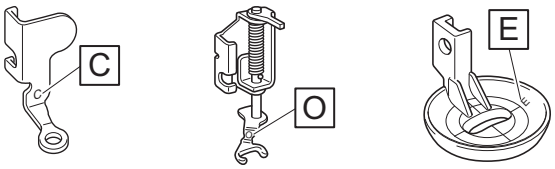
Use a needle appropriate for the upper thread and fabric being used. Refer to “Fabric/Thread/Needle Combinations” on page 75 and “Embroidery Step by Step” on page 196.

■ Presser foot

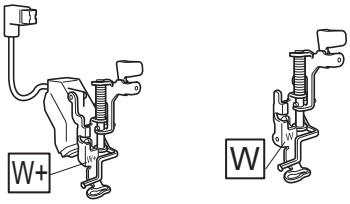
Utility stitches or decorative stitches:
Monogramming foot “N”



Free motion sewing: Free motion quilting foot “C”, Free motion open toe quilting foot “O” or Free motion echo quilting foot “E”



Embroidery: Embroidery foot “W+” or Embroidery foot “W” (optional)



■ Fabric

Be sure to sew trial stitches on a piece of scrap fabric, which includes the same threads and fabric as what is being used in your project.

Note

- The sewing results may be affected by the type of fabric used. Before sewing your project, be sure to sew trial stitches on a piece of scrap fabric that is the same as the fabric used in the project.

Upper Threading

1 Install a needle appropriate for the upper thread and fabric to be used.

For details on installing the needle, refer to "CHANGING THE NEEDLE" on page 73.

2 Attach the presser foot.

→ "CHANGING THE PRESSER FOOT" on page 68
→ "Using Free motion Quilting Foot "C"" on page 132
→ "Using free motion Open Toe Quilting Foot "O"" on page 134
→ "Echo Quilting Using the Free Motion Echo Quilting Foot "E"" on page 135
→ "Attaching Embroidery Foot "W+" with LED pointer" on page 197

3 Thread the machine with the upper thread.

For details on threading the machine, refer to "Upper Threading" on page 60.

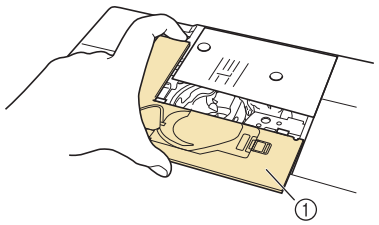
Preparing the Bobbin Thread

In order to create bobbin work, the bobbin case must be replaced with the one for bobbin work. Before creating bobbin work, clean the bobbin case and the race.

1 Raise the needle and presser foot, and then turn off the machine.

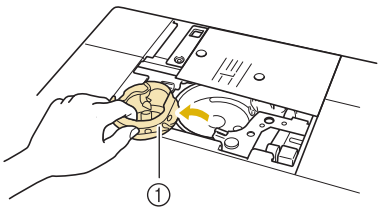
2 Remove the flat bed attachment or embroidery unit.

3 Grasp both sides of the needle plate cover, and then slide it toward you to remove it.



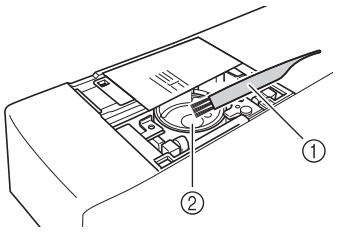
① Needle plate cover

4 Remove the bobbin case.



① Bobbin case

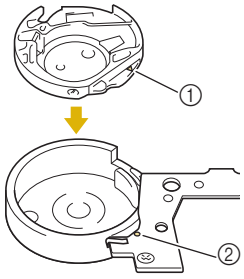
5 Use the cleaning brush included with the machine or a vacuum cleaner to remove any lint and dust from the race and its surrounding area.

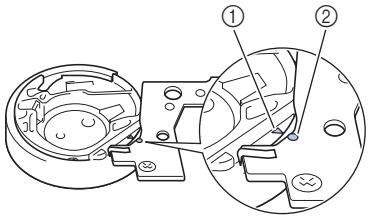


① Cleaning brush
② Race

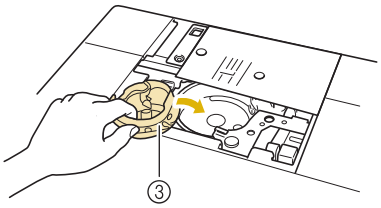
6 Wipe the bobbin case (gray) with a soft lint free cloth to clean it.

7 **Insert the bobbin case so that the ▲ mark on the bobbin case aligns with the ● mark on the machine.**





* Align the ▲ and ● marks.



① ▲ mark on the bobbin case
② ● mark on the machine
③ Bobbin case

Note

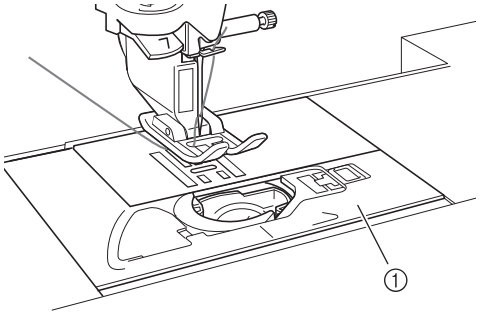
- The bobbin case (gray) cannot be used for sewing in any way other than bobbin work. After sewing bobbin work, refer back to the steps in “Preparing the Bobbin Thread” on page 360 for removing and cleaning the bobbin case (gray), and then reinstall the standard bobbin case (black).

⚠ CAUTION

- **Be sure to use the bobbin case (gray) when creating bobbin work. Using any other bobbin case may result in the thread becoming tangled or damage to the machine.**
- **Make sure that the bobbin case is correctly installed. If the bobbin case is incorrectly installed, the thread may become tangled or the machine may be damaged.**

8 **Install the needle plate cover.**

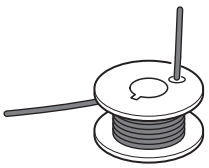
For details on installing the needle plate cover, refer to “Cleaning the Race” of “Appendix”.



① Needle plate cover

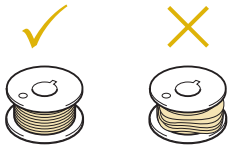
9 **Install the flat bed attachment.**

10 **Insert the thread tail from the spool of thread through the hole in the bobbin from the inside to the outside. Hold the thread tail while winding the thread around the bobbin by hand. After winding the bobbin so it is filled as shown below (about 80%), cut the thread.**

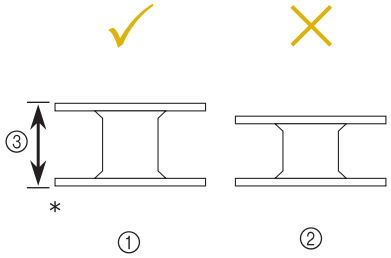


⚠ CAUTION

- **Use a bobbin thread that has been correctly wound. Otherwise, the needle may break or the thread tension will be incorrect.**



- **Be sure to use the machine's included bobbin or one designed specifically for this machine. Using any other bobbin may result in damage or injuries.**

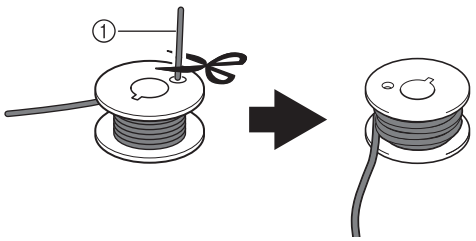


* Actual size
① This model
② Other models
③ 11.5 mm (approx. 7/16 inch)

Note

- Slowly and evenly wind the thread around the bobbin.
- For best results, wind the bobbin so the thread is snug and not twisted.

11 Using scissors carefully trim the thread tail as close to the bobbin as possible.



① Beginning of wound thread

⚠ CAUTION

- **If thread extends beyond the top of the bobbin too much, the thread may become tangled or the needle may break.**

Memo

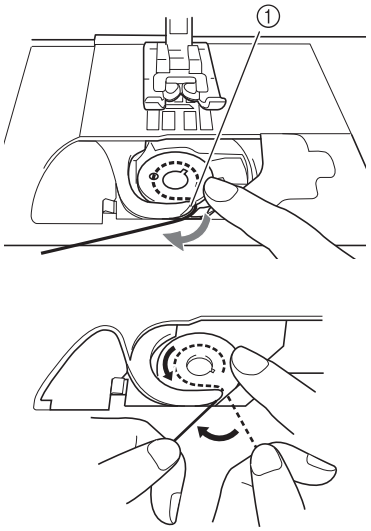
- If inserting thread tail through bobbin hole is difficult, bobbin can be wound by holding the tail and wrapping thread around inside base. Then carefully trim thread tail so it does not extend from the side of the bobbin.

12 Install a bobbin wound with an adequate amount of thread for pattern.

Whether or not tension should be applied to the bobbin thread depends on the type of thread being used.

■ When tension is applied to the bobbin thread

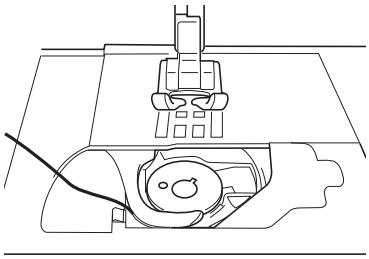
Insert bobbin into bobbin case so the thread unwinds from the left side.
Then correctly pass the thread through the tension spring as shown below.



① Tension spring

⚠ CAUTION

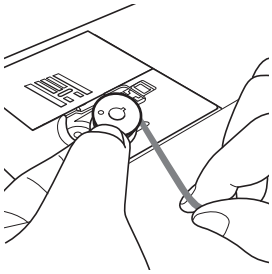
- **When winding the bobbin, make sure the thread is not frayed. Sewing with frayed thread may result in the thread catching on the tension spring of the bobbin case, the thread completely becoming tangled or damage to the machine.**
- **Do not guide the bobbin thread through the groove in the needle plate cover, otherwise the lower Thread only as far as shown below.**

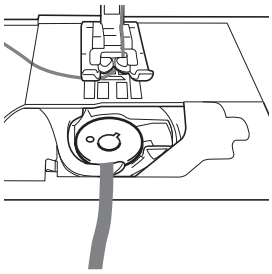


■ When tension is not applied to the bobbin thread

If the bobbin thread in the trial stitching is too tight and adjusting the bobbin case tension does not help, do not pass the thread through the tension spring.

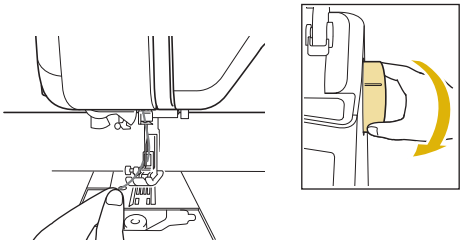
Hold the bobbin with your left hand so the thread unwinds from the right side and hold the end of the thread with your right hand.



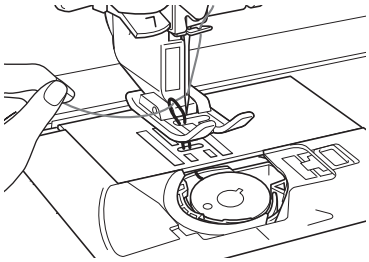


13 **Pull out about 8 cm (approx. 3 inches) of bobbin thread.**

14 **Lightly hold the end of the upper thread while turning the handwheel toward you (counterclockwise) until the mark on the handwheel aligns with the center top of machine.**



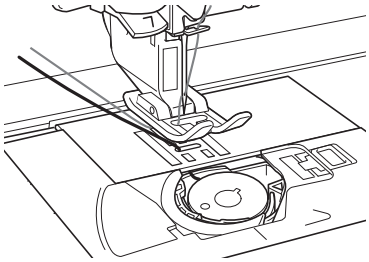
15 **Gently pull the upper thread to bring the bobbin thread up through the needle plate.**



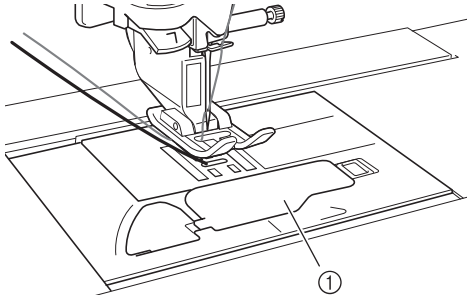
→ A loop of the bobbin thread comes out through the hole in the needle plate.

16 **Insert tweezers through bobbin thread loop and pull bobbin thread above the needle plate.**

17 **Align the upper thread and bobbin thread, and then pull out about 10 cm (approx. 4 inches) of the threads and pass them under the presser foot toward the rear of the machine.**



18 **Install the bobbin cover with tabs.**



① Bobbin cover

→ This completes the upper and lower threading.

⚠ CAUTION

- **When creating bobbin work, use the bobbin cover with tabs, otherwise the thread may become tangled or the needle may break.**

CREATING BOBBIN WORK (SEWING)

Positioning the Fabric and Sewing

Note

- Recommended stitches for bobbin work are open “airy” type stitches.
- Be sure to sew trial stitches using same fabric and threads as project in order to check the sewing results.
- The bobbin thread may become tangled due to the type of pattern and thread that are being used. Since this may cause the needle to break, immediately stop sewing if this occurs. Turn off the machine and cut out the tangled thread with scissors. Then, clean the race and bobbin case as described in “Preparing the Bobbin Thread” on page 360.

1 **Turn on the machine.**

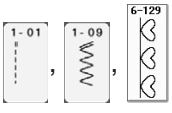
2 **Select a stitch in the Utility and Decorative Stitches mode. For this example, press**

.

Memo

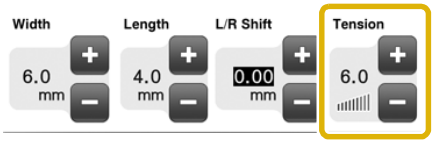
- For best results, select a longer stitch length and a wider stitch width. Depending on the selected stitch, it may not be possible to change the stitch length and stitch width settings.

- Depending on the fabric, bunched stitches may result. We recommend selecting a simple stitch and sewing trial stitches to check the sewing results.

Examples of simple stitches: 

3 **Adjust the upper thread tension.**

For details on adjusting the upper thread tension, refer to “Setting the Thread Tension” on page 90.



Memo

We recommend a setting between 6 and 8 for the upper thread tension.

4 **Make sure the automatic thread cutting (** **) and automatic reinforcement/reverse stitching (** **) have been turned off.**

⚠ CAUTION

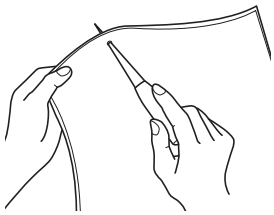
- **Before sewing, make sure the automatic thread cutting has been turned off. If sewing is started with automatic thread cutting turned on, the thread may become tangled or the machine may be damaged.**

5 **Place stabilizer on top (wrong side) of the fabric.**

Note

- Type and weight of stabilizer will depend on fabric and thread being used.

6 **If thread is too thick to pull through fabric to machine surface use an awl to punch a small hole in the fabric at the beginning of stitching so the bobbin thread can be fed through the opening.**

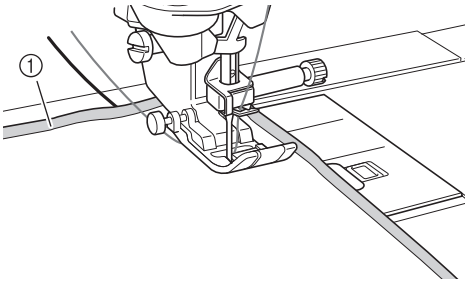


7 **Press** **.**

→ The screen changes, and all keys and operation buttons are locked.

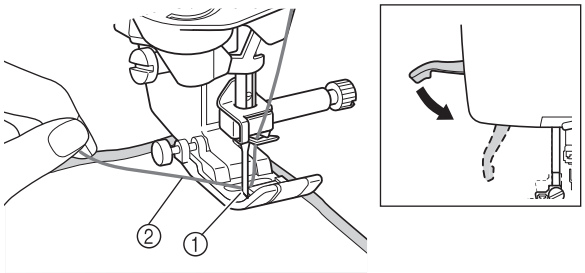
8 **Use the presser foot lever to raise the presser foot.**

9 **With the wrong side facing up, place the fabric under the presser foot.**



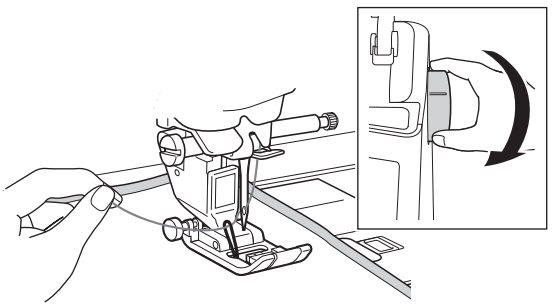
① Wrong side of fabric

10 **Turn the handwheel toward you (counterclockwise) to feed the needle into the fabric or punched hole. Position the upper thread over the presser foot and lightly hold then, lower the presser foot lever.**



① Punched hole
② Upper thread over the presser foot

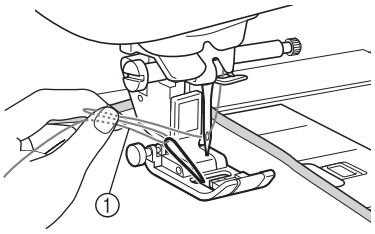
11 **Pulling the upper thread gently, turn the handwheel toward you (counterclockwise) until the mark on the handwheel aligns with the center top of machine.**



→ A loop of the bobbin thread comes out through the hole in the fabric.

Note

- If the bobbin thread does not come up, hold the upper thread as shown below to pull up the bobbin thread.



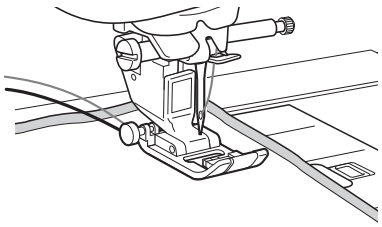
① Upper thread

12 **Raise the presser foot lever, and then use tweezers to pull up the bobbin thread and bring the end of the thread to the top of the fabric.**

Note

- Pull the thread while holding down the fabric so it does not move out of place.

13 **Align the upper thread and bobbin thread, and then pass them under the presser foot toward the rear of the machine.**

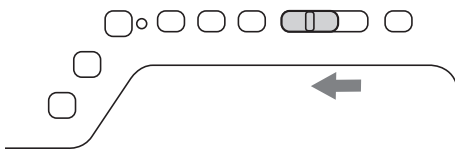


14 **While gently holding threads at the rear of the machine, turn the handwheel to feed the needle into the fabric or punched hole again, and then lower the presser foot lever.**

15 **Press** .

→ All keys and operation buttons are unlocked, and the previous screen is displayed.

16 **Select a low speed, gently hold the threads behind the presser foot and start sewing. Threads can be released after several stitches have been made.**



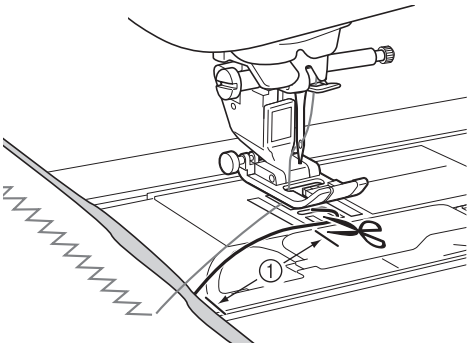
Note
- Before sewing, check that there is enough thread in the bobbin.

17 **When you have reached the end of the stitching area, stop the machine.**

Note
- Do not sew reinforcement/reverse stitches at the end of the stitching, otherwise the threads may become tangled or the needle may break. In addition, it will be difficult to pull the bobbin thread up to the wrong side of the fabric.

18 **Raise the needle and presser foot.**

19 **Leaving about 10 cm (approx. 4 inches) of thread at the ends, use scissors to cut the threads.**

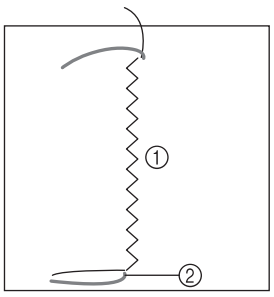


① 10 cm (approx. 4 inches)

Note
- Do not press the “Thread Cutter” button to cut the threads, otherwise the machine may be damaged.

■ Finishing the thread ends

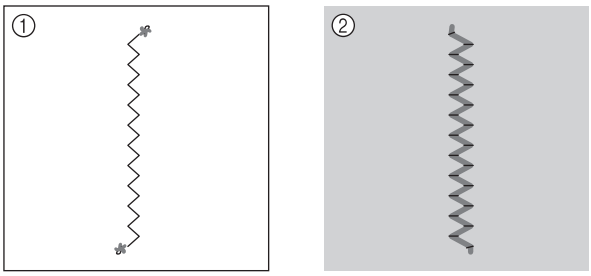
1 **At the end of the stitching, use a hand sewing needle to bring the bobbin thread up to the wrong side of the fabric.**



① Wrong side of fabric
② Bobbin thread

Note
- If it is difficult to place bobbin thread through the eye of a hand sewing needle, use a ribbon embroidery needle to pull the thread up to the wrong side of the fabric. Otherwise, use an awl to pull up the bobbin thread.

2 **Working from the wrong side of the fabric, tie the bobbin and upper threads together by hand. Cut away excess threads with scissors.**



① Wrong side of fabric
② Right side of fabric

Note
- To ensure threads do not come undone after being tied place a drop of fabric glue on knots.

3 **If the desired results could not be achieved, adjust the tension of the bobbin thread and of the upper thread, and then try sewing the stitching again.**

For more details, refer to “ADJUSTING BOBBIN WORK THREAD TENSION” on page 372.

Bobbin Work Free Motion Sewing

If so desired, use a template or draw your design on the stabilizer to allow for ease of stitching. Remember, your stitches with your decorative thread will be on the underneath side of your fabric and the stabilizer will be on the top of the wrong side of your fabric.

* For bobbin work free motion sewing use the instructions for “CREATING BOBBIN WORK (SEWING)” on page 365.
* For information about using the free motion quilting foot “C”, free motion open toe quilting foot “O”, or free motion echo quilting foot “E” refer to “Free Motion Quilting” on page 131.

CREATING BOBBIN WORK (EMBROIDERY)

Selecting the Pattern

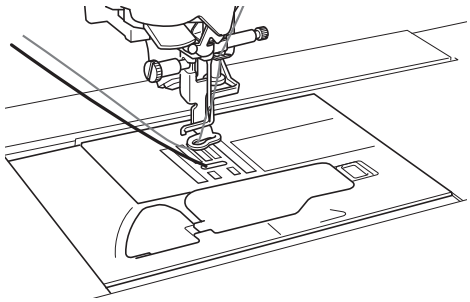
Note
- Prepare the machine for bobbin work as described in "PREPARING FOR BOBBIN WORK" on page 359.

1 **Attach the embroidery foot "W+" or "W" and the embroidery unit.**

2 **Install a bobbin wound with an adequate amount of thread for pattern.**

Note
- For an estimated length of bobbin thread required for each pattern, refer to the Quick Reference Guide included with the machine. Be sure to use a bobbin wound with enough thread. If the bobbin runs out of thread while sewing, the embroidery cannot be completed.
- Depending on the thread thickness, it may not be possible to wind the bobbin with the necessary length of thread. In this case, try winding the bobbin again, or use a lighter weight thread.

3 **Pull up the bobbin thread above the needle plate.**



4 **Turn on the machine.**

5 **Press** OK **.**

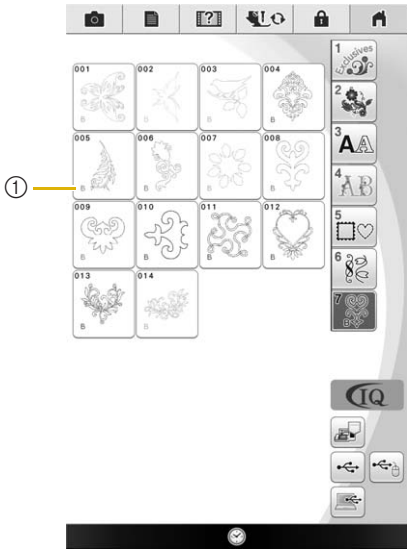
→ The carriage will move to the initialization position.

6 **To select a bobbin work embroidery pattern, press** **(Embroidery).**

7 **Press** **for bobbin work patterns.**

8 **Select one of the bobbin work embroidery patterns.**

Embroidery patterns for bobbin work appear with the letter "B" in the lower-left corner of the key.



① "B" mark

→ Regardless of the setting that had been selected, the automatic thread cutting function is turned off.

→ When a bobbin work embroidery pattern is selected the embroidery sewing speed is automatically set at 350 spm.

Note
- The beginning and end of stitching are specified for bobbin work patterns. They cannot be used for normal embroidering.

⚠ CAUTION
- **When sewing bobbin work, be sure to select an embroidery pattern for bobbin work. If any other type of pattern is selected, the machine may be damaged.**

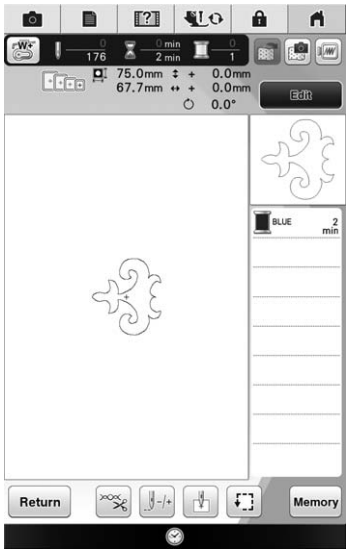
Note
- Embroidery sewing speed defaults to 350 spm when a bobbin work embroidery pattern is selected. The Settings screen will not allow speed to be adjusted.

Memo

- When an embroidery pattern for bobbin work is selected, the automatic thread cutting function is turned off. Afterward, if a pattern other than one for bobbin work is selected, the automatic thread cutting function is returned to the setting that was selected before the embroidery pattern for bobbin work was chosen.

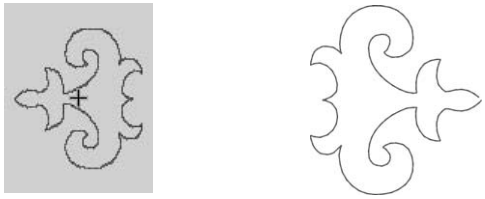
9 **Press Set and then press Embroidery.**

→ The embroidering screen is displayed.



Note

- Since bobbin work is sewn from the wrong side of the fabric, the pattern shown in the screen appears as a mirror image of the final sewn embroidery. If necessary, flip the image to preview it. In addition, when sewing with the thread colors shown in the embroidering screen, select a bobbin thread that matches what is shown in the screen.



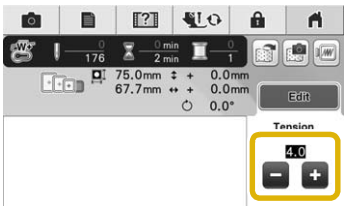
① Image shown in screen ② Sewn embroidery (Right side of fabric)

Memo

- With embroidery patterns for bobbin work, the size and thread density cannot be changed. In addition, the automatic thread cutting function cannot be turned on.

10 **Press , and then adjust the tension of the upper thread.**

For details on adjusting the tension of the upper thread, refer to “Adjusting Thread Tension” on page 287.

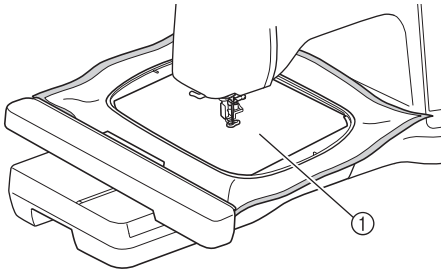


Memo

- We recommend a setting between 6 and 8 for the upper thread tension.

Start Embroidering

1 **Hoop the fabric so the right side of the fabric is facing down with the stabilizer lying on the top. Use an embroidery frame that fits the size of the pattern and then attach the frame to the machine. These patterns are embroidered from the wrong side of the fabric so technically you are working in “reverse” of normal embroidering.**

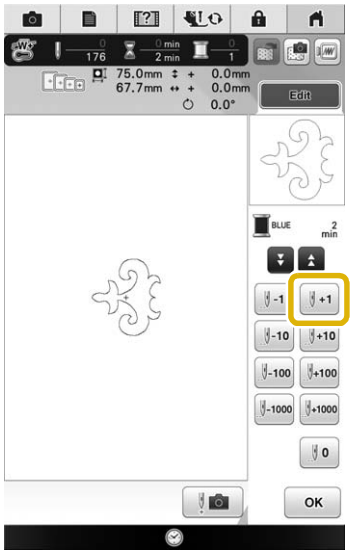


① Wrong side of fabric

⚠ CAUTION

- **Always use a stabilizer material for embroidery. Otherwise, the needle may break and cause injuries. Not using a stabilizer material may result in a poor finish to your project.**

2 **It is necessary to move to the beginning of stitching so press [-/+], and then press [+1].**



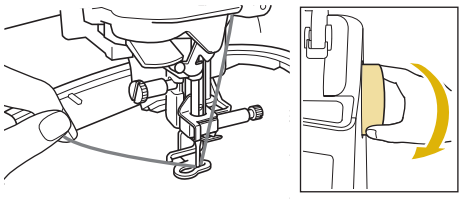
→ The embroidery frame moves to the beginning of stitching.

3 **Press [lock].**

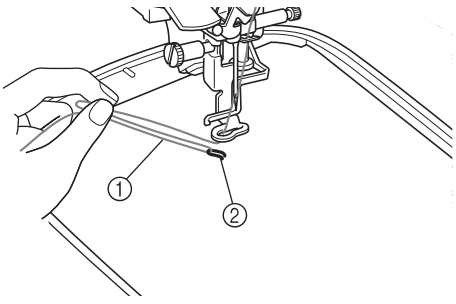
→ The screen changes, and all keys and operation buttons are locked.

4 **Using the presser foot lever, raise the presser foot.**

5 **To bring the bobbin thread above the fabric, rotate the handwheel counterclockwise while holding the upper thread.**



6 **As shown below, pull the upper thread slightly to the left pulling the bobbin thread up through the fabric.**



① Upper thread
② Bobbin thread

Memo

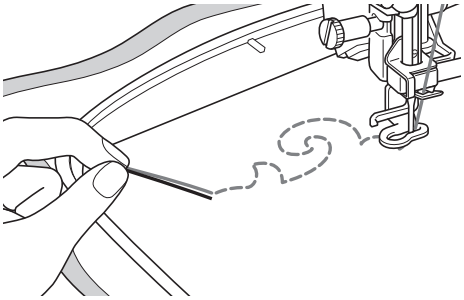
- If the bobbin thread cannot be pulled up, use an awl to create small hole to help pull bobbin thread to surface.

7 **Press [lock] to unlock all keys and buttons.**

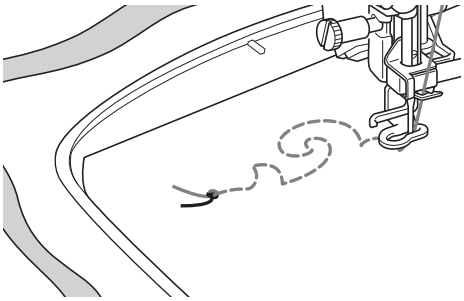
8 **Lower the presser foot.**

9 **Press [OK].**

10 **While holding both the upper thread and the bobbin thread, sew a section of the pattern.**



11 **Stop the machine, and then tie the upper thread and the bobbin thread together to secure the threads.**

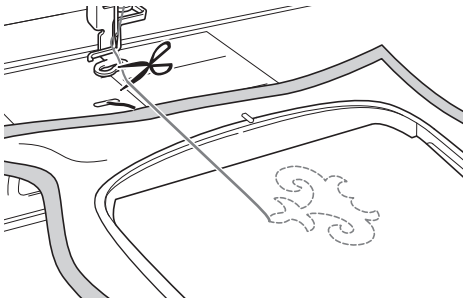


12 **Start sewing again to finish the pattern.**

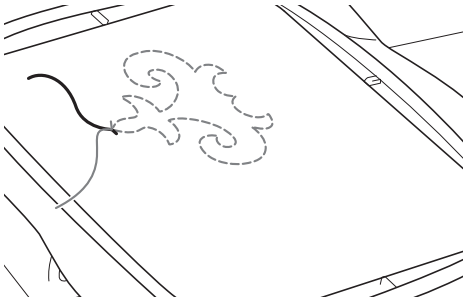
13 **Raise the needle and presser foot, remove the embroidery frame, and then cut the upper thread and the bobbin thread.**

When cutting the threads, be sure to leave an adequate length of thread so they can be

properly secured.



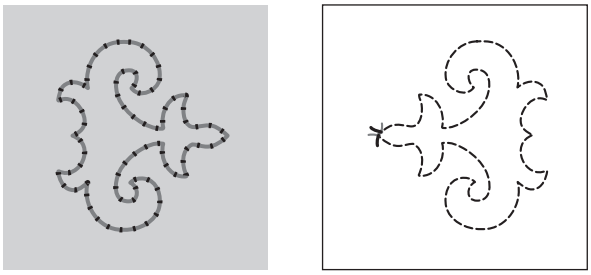
14 **Using a hand sewing needle such as a ribbon embroidery needle, pull the bobbin thread to the top (wrong side) of the fabric, and then tie the upper thread and the bobbin thread together.**



Memo

- If there is a gap between the start point and end point of the pattern, cut the threads, remove the fabric from the machine, and then use a ribbon embroidery needle to hand sew stitches to connect the starting and ending points.

15 **Remove the fabric from the embroidery frame, and check the finished embroidery.**



① Right side of fabric ② Wrong side of fabric

16 **If the desired results could not be achieved, adjust the tension of the bobbin thread and of the upper thread, and then try sewing the pattern again.**

For more details, refer to "ADJUSTING BOBBIN WORK THREAD TENSION" on page 372.

Memo

- Check bobbin after each bobbin work embroidery pattern is sewn to make sure there is adequate bobbin thread for the next pattern.

ADJUSTING BOBBIN WORK THREAD TENSION

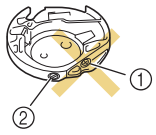
After sewing trial stitches and checking the sewing results, adjust the thread tensions if necessary. After adjusting the tensions, be sure to sew trial stitches again in order to check the sewing results.

■ Adjusting the upper thread tension

We recommend a setting between 6 and 8 for the upper thread tension.
If utility stitches are being used, refer to “Setting the Thread Tension” on page 90. If embroidery patterns are being used, refer to “Adjusting Thread Tension” on page 287.

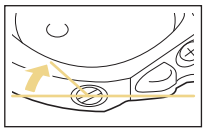
■ Adjusting the tension of the bobbin thread

If the desired stitching cannot be achieved after adjusting the upper thread tension, adjust the tension of the bobbin thread. The tension of the bobbin thread can be adjusted by turning the slotted-head (–) screw on the bobbin case (gray) for bobbin work.

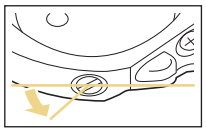


① Do not turn the phillips screw (+).
② Adjust with a small screwdriver.

To increase the tension of the bobbin thread, turn the slotted-head (–) screw 30° to 45° clockwise.

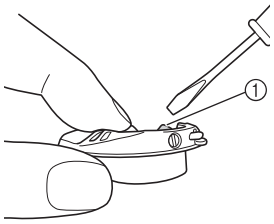


To decrease the tension of the bobbin thread, turn the slotted-head (–) screw 30° to 45° counterclockwise.



Note

- Turning the screw on the bobbin case (gray) may push up the spring plate, as shown below.
  If this occurs, gently press down the spring plate with a screwdriver so it is lower than the top surface of the bobbin case (gray), and then insert the bobbin case into the machine.



① Spring plate

⚠ CAUTION

- **DO NOT adjust the position of the phillips (+) screw on the bobbin case (gray) as this may result in damage to the bobbin case, rendering it useless.**
- **If the slotted screw (-) is difficult to turn, do not use force. Turning the screw too much or providing force in either (rotational) direction may cause damage to the bobbin case. Should damage occur, the bobbin case may not maintain proper tension.**

Note

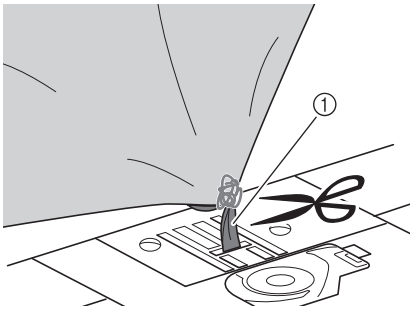
- If the bobbin thread tension is tight, the thread cannot be passed through the tension spring when the bobbin is installed in the bobbin case. (Refer to “When tension is not applied to the bobbin thread” on page 363.)

TROUBLESHOOTING

Several solutions for minor problems are described below. If the problem persists, contact your nearest authorized Baby Lock retailer.

■ The thread was accidentally cut automatically and the bobbin thread is caught inside the machine

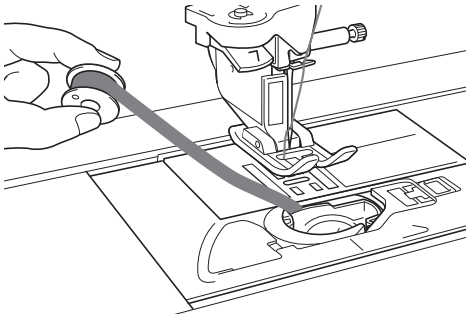
1 **Cut the thread near the fabric above the needle plate, and then remove the fabric.**



① Thread

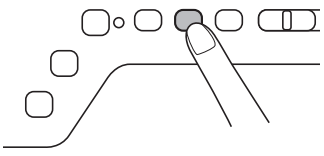
Note
- If an embroidery pattern was sewn, remove the embroidery frame.

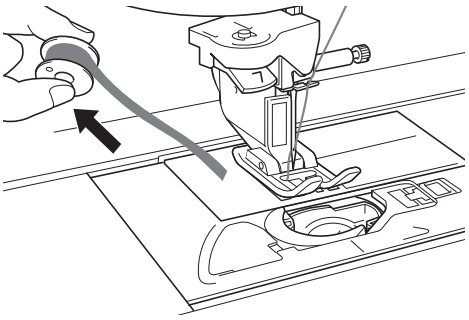
2 **Remove the bobbin, and then hold it out toward the left side of the machine.**



3 **Lower the presser foot.**

4 **Apply slight tension on bobbin thread by holding thread out to the left side of presser foot. Press the "Thread Cutter" button again.**



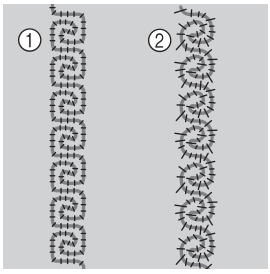


⚠ CAUTION
- **Do not pull on the thread with excessive force, otherwise the machine may be damaged.**

■ The pattern is misaligned

Refer to "ADJUSTING BOBBIN WORK THREAD TENSION" and increase the upper thread tension. If the pattern is still misaligned, reduce the tension of the bobbin thread.

Example: Decorative Stitch



① Correct tension
② The upper thread tension is too loose, or the bobbin thread tension is too tight.

■ The bobbin thread catches on the tension spring of the bobbin case

Sew with no tension applied to the bobbin thread. (Refer to "When tension is not applied to the bobbin thread" on page 363.)

Chapter 9
Appendix

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CARE AND MAINTENANCE

⚠ CAUTION

- **Be sure to unplug the machine before cleaning it. Otherwise, electric shock or injury may result.**

Restrictions on oiling

In order to prevent damaging this machine, it must not be oiled by the user. This machine was manufactured with the necessary amount of oil applied to ensure correct operation, making periodic oiling unnecessary.
If problems occur, such as difficulty turning the handwheel or an unusual noise, immediately stop using the machine, and contact your nearest authorized Baby Lock retailer.

Precautions on storing the machine

Do not store the machine in any of the locations described below, otherwise damage to the machine may result, for example, rust caused by condensation.

* Exposed to extremely high temperatures
* Exposed to extremely low temperatures
* Exposed to extreme temperature changes
* Exposed to high humidity or steam
* Near a flame, heater or air conditioner
* Outdoors or exposed to direct sunlight
* Exposed to extremely dusty or oily environments

Note

- In order to extend the life of this machine, periodically turn it on and use it. Storing this machine for an extended period of time without using it may reduce its efficiency.

Cleaning the LCD Screen

If the screen is dirty, gently wipe it with the included LCD cleaning cloth or a soft, dry cloth. Do not use organic solvents or detergents.

Note

- Do not wipe the LCD screen with a damp cloth.

Memo

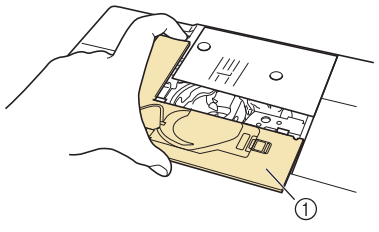
- Occasionally, condensation may form on the LCD screen or it may become fogged up; however, this is not a malfunction. After a while, the cloudiness will disappear.

Cleaning the Machine Casing

If the surface of the machine is dirty, lightly soak a cloth in a neutral detergent, squeeze it out firmly, and then wipe the surface. Then wipe again with a dry cloth.

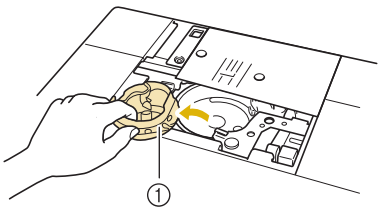
Cleaning the Race

1. **Press the "Needle Position" button to raise the needle.**
2. **Turn the main power to OFF.**
3. **Remove the needle and the presser foot holder (see pages 69 through 73).**
4. **Remove the flat bed attachment or the embroidery unit if either is attached.**
5. **Grasp both sides of the needle plate cover, and then slide it toward you.**



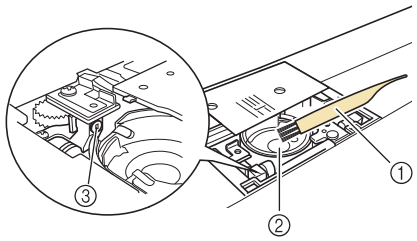
① Needle plate cover
→ The needle plate cover is removed.

6 **Grasp the bobbin case, and then gently lift out.**



① Bobbin case

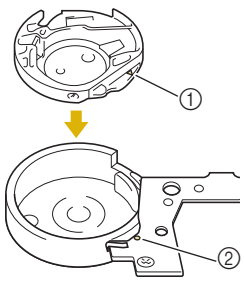
7 **Use the cleaning brush or a vacuum cleaner to remove any lint and dust from the race and bobbin thread sensor and the surrounding area.**

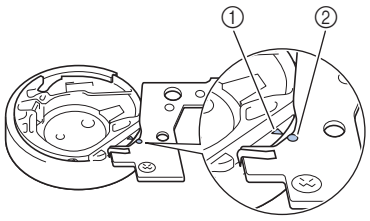


① Cleaning brush
② Race
③ Bobbin thread sensor

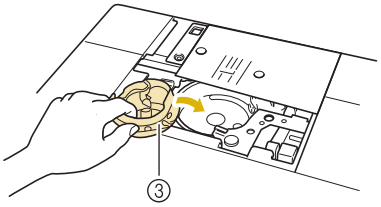
Note
- Do not apply oil to the bobbin case.
- If lint or dust collects on the bobbin thread sensor, the sensor may not operate correctly.

8 **Insert the bobbin case so that the ▲ mark on the bobbin case aligns with the ● mark on the machine.**





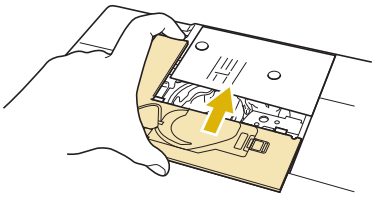
* Align the ▲ and ● marks.



① ▲ mark on the bobbin case
② ● mark on the machine
③ Bobbin case
* Make sure that the indicated points are aligned before installing the bobbin case.

⚠ CAUTION
- Never use a bobbin case that is scratched; otherwise, the upper thread may become tangled, the needle may break, or sewing performance may suffer. For a new bobbin case (part code: XE5342-101 (green marking on the screw), XC8167-551 (no color on the screw), XE8298-001 (gray, for bobbin work)), contact your nearest authorized retailer.
- Make sure that you fit the bobbin case properly, otherwise the needle may break.

9 **Insert the tabs on the needle plate cover into the needle plate, and then slide the cover back on.**

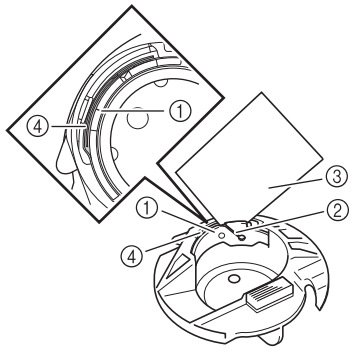


Note
- If the needle plate has been removed it is especially important to reinstall the needle plate and tighten the screws prior to installing the bobbin case.

Cleaning the Bobbin Case

Thread wax and dust easily collect around the notch in the tension spring on the bobbin case, resulting in an incorrect thread tension. Therefore, the bobbin case should be cleaned as necessary should tension problems arise.
When cleaning the bobbin case, use card stock or another type of paper of similar thickness and sturdiness in order to prevent pieces of paper tearing off and getting lodged in the bobbin case.

1. **Follow steps 1 to 6 in "Cleaning the Race" to remove the bobbin case.**
2. **Using a piece of paper of adequate thickness and sturdiness, slide the paper between the tension plate base and the tension spring and also slide the paper behind the notch of the spring to remove any dirt or dust.**



① Tension plate base
② Notch
③ Paper (e.g. business card type)
④ Tension spring

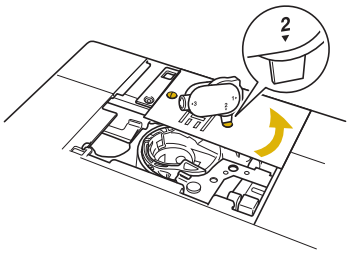
Memo
- Do not bend the tension spring. In addition, do not use anything other than recommended paper to clean the bobbin case.

3. **Use the cleaning brush to remove any lint and dust from inside the bobbin case.**
4. **Replace the bobbin case and needle plate cover.**

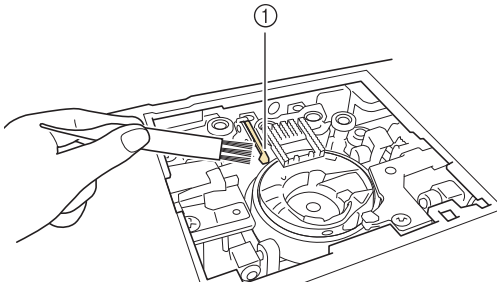
Cleaning the Cutter in the Bobbin Case Area

The cutter below the needle plate should be cleaned. If dust or lint accumulate on the cutter, it will be difficult to cut the thread when the "Thread Cutter" button is pressed or the automatic thread cutting function is used. Clean the cutter when the thread is not easily cut.

1. **Follow steps 1 through 5 in "Cleaning the Race" to remove the needle plate cover.**
2. **Use the screwdriver included with the machine to unscrew and remove the needle plate.**



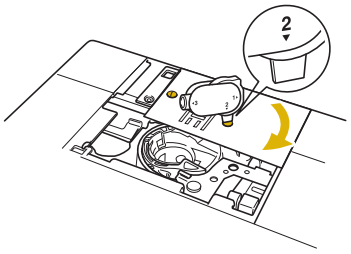
3. **Use the cleaning brush or a vacuum cleaner to remove any lint and dust from the cutter in the bobbin case area.**



① Cutter

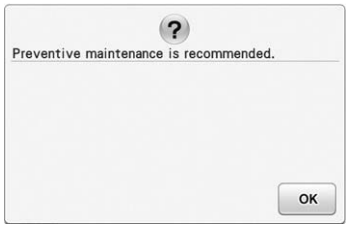
⚠ CAUTION
- **Do not touch the cutter, otherwise injuries may result.**

4. **Use the screwdriver included with the machine to screw and attach the needle plate.**



5 **Insert the tabs on the needle plate cover into the needle plate, and then slide the cover back on.**

About the Maintenance Message



Once this message appears, it is recommended to take your machine to an authorized Baby Lock retailer for a regular maintenance check. Although this message will disappear and the machine will continue to function once you press OK, the message will display several more times until the appropriate maintenance is performed.

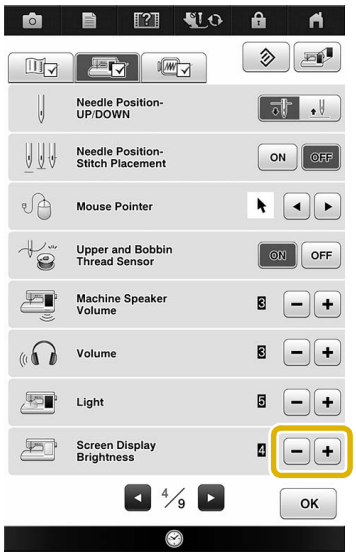
Please take the time to arrange for the maintenance your machine requires once this message appears. Such steps will help to ensure you receive continued, uninterrupted hours of machine operation for the future.

ADJUSTING THE SCREEN

Adjusting the Brightness of the Screen Display

If the screen does not look very clear under certain situations, you can adjust the brightness of the screen display.

1. **Press [ ].**
   → The settings screen appears.
2. **Press [ ].**
   → The General settings screen appears.
3. **Display page 4 of the General settings screen.**
4. **Press [−] or [+] to adjust the brightness of the screen display.**



* The screen will dim as the number on the settings screen decreases. The screen will appear brighter as the numbers increase.

Touch Panel is Malfunctioning

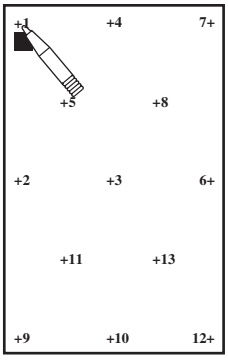
If the screen does not respond correctly when you touch a key (the machine does not perform the operation or performs a different operation), follow the steps below to make the proper adjustments.

1. **Holding your finger on the screen, turn the main power switch to OFF and back to ON.**

→ The touch panel adjustment screen is displayed.

2. **Using the included touch pen, lightly touch the center of each +, in order from 1 to 13.**

> **Note**
> • Only use the included touch pen to touch the screen. Do not use a mechanical pencil, pin, or other sharp object. Do not press too hard on the screen. Otherwise, damage may result.



3. **Turn the main power to OFF, then turn it back to ON.**

> **Note**
> • If you finish the screen adjustment and the screen still does not respond, or if you cannot do the adjustment, contact your authorized Baby Lock retailer.

TROUBLESHOOTING

If the machine stops operating correctly, check the following possible problems before requesting service. You can solve most problems by yourself. Visit us at " www.babylock.com ".
If the problem persists, contact your Baby Lock retailer.

Frequent Troubleshooting Topics

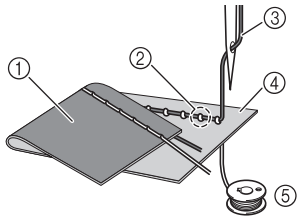
Detailed causes and remedies for common troubleshooting topics are described below. Be sure to refer to this before contacting your Baby Lock retailer.

■ Upper Thread is Too Tight	page 381
■ Tangled Thread on Wrong Side of Fabric	page 382
■ Incorrect Thread Tension	page 384
■ Fabric is Caught in the Machine and Cannot be Removed	page 385

Upper Thread is Too Tight

■ Symptom

* The upper thread appears as a single continuous line.
* The lower thread is visible from the upper side of the fabric. (Refer to the illustration below.)
* The upper thread has tightened up, and comes out when pulled.
* The upper thread has tightened up, and wrinkles appear in the fabric.
* The upper thread tension is tight, and the results do not change even after the thread tension is adjusted.



① Lower side of fabric
② Lower thread visible from upper side of fabric
③ Upper thread
④ Upper side of fabric
⑤ Lower thread

■ Cause

Incorrect lower threading
If the lower thread is incorrectly threaded, instead of the appropriate tension being applied to the lower thread, it is pulled through the fabric when the upper thread is pulled up. For this reason, the thread is visible from the upper side of the fabric.

■ Remedy

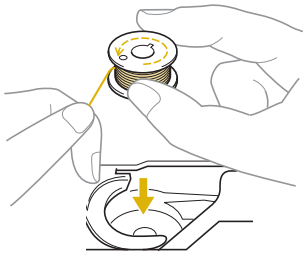
Correctly install the lower thread.

1 Turn off the sewing machine.

2 Remove the bobbin from the bobbin case.

3 Place the bobbin in the bobbin case so that the thread unwinds in the correct direction.

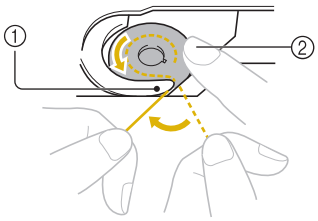
* Hold the bobbin with your right hand with the thread unwinding to the left, and hold the end of the thread with your left hand. Then, with your right hand, place the bobbin in the bobbin case.



If the bobbin is inserted with the thread unwinding in the wrong direction, sewing will be done with an incorrect thread tension.

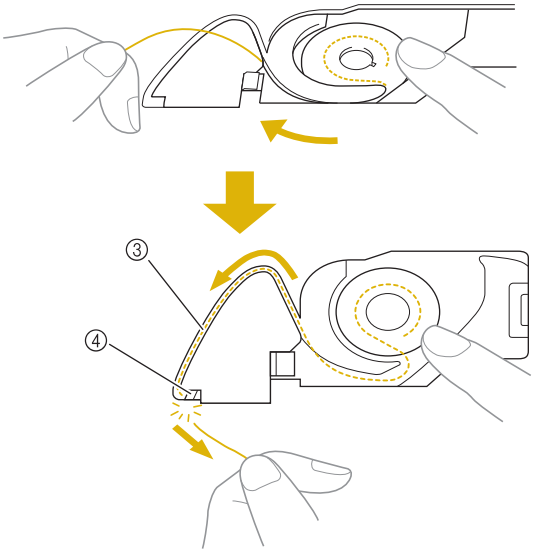
4 While holding the bobbin in place with your finger, pass the thread through the slit in the needle plate.

* Hold down the bobbin with your right hand, and then pull the end of the thread around the tab with your left hand.



① Tab
② Hold down the bobbin with your right hand.

Pull the thread to pass it through the slit in the needle plate, then cut it with the cutter.



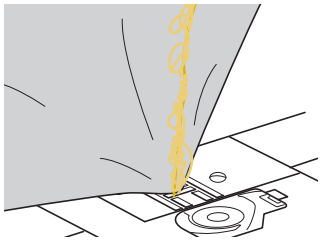
③ Slit
④ Cutter

Sewing with the correct thread tension is possible after the bobbin has been correctly installed in the bobbin case.

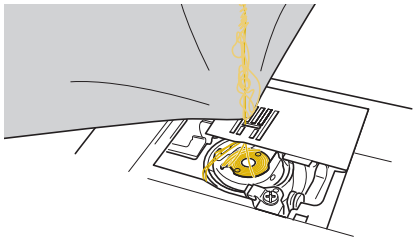
Tangled Thread on Wrong Side of Fabric

■ Symptom

* The thread becomes tangled on the lower side of the fabric.



* After starting sewing, a rattling noise is made and sewing cannot continue.
* Looking under the fabric, there is tangled thread in the bobbin case.



■ Cause

Incorrect upper threading
If the upper thread is incorrectly threaded, the upper thread passed through the fabric cannot be firmly pulled up and the upper thread becomes tangled in the bobbin case, causing a rattling noise.

■ Remedy

Remove the tangled thread, and then correct the upper threading.

1 Remove the tangled thread. If it cannot be removed, cut the thread with scissors.

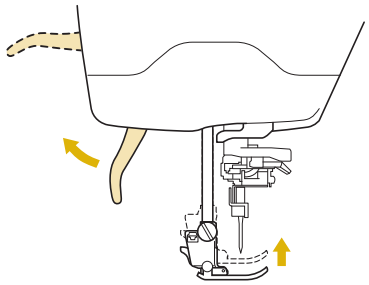
* Refer to “Cleaning the Race” in “CARE AND MAINTENANCE” on page 376.

2 Remove the upper thread from the machine.

3 Refer to the following steps to correct the upper threading.

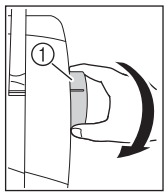
* If the bobbin was removed from the bobbin case, refer to “Setting the Bobbin” on page 57 and “Remedy” in the section “Upper Thread is Too Tight” on page 381 to correctly install the bobbin.

4 **Raise the presser foot using the presser foot lever.**

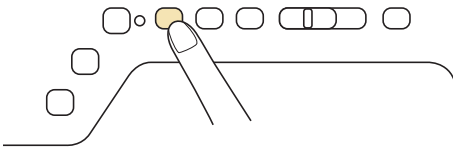


* If the presser foot is not raised, the sewing machine cannot be threaded correctly.

5 **Raise the needle by turning the handwheel toward you (counterclockwise) so that the mark on the wheel points up, or press "Needle Position" button once or twice to raise the needle.**

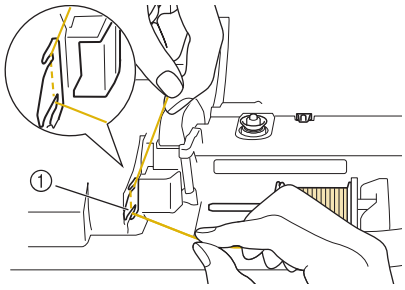


or



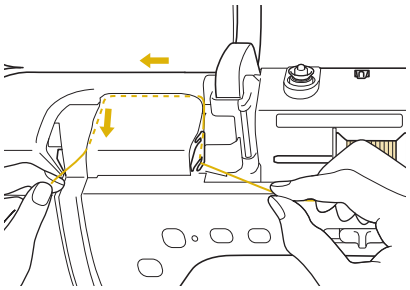
① Mark

6 **While holding the thread with both hands, pull the thread up from under the thread guide plate.**

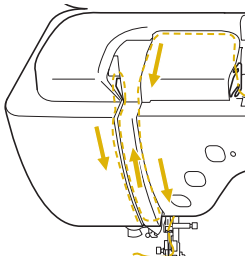


① Thread guide plate

7 **While holding the thread in your right hand, pass the thread through the thread guide in the direction indicated.**

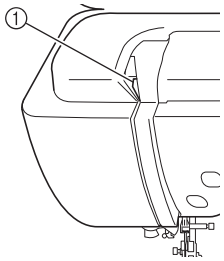


8 **Guide the thread down, up, then down through the groove, as shown in the illustration.**



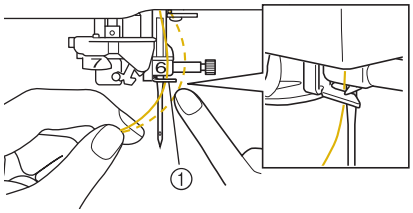
Memo

- Look in the upper groove area to check if the thread catches on the take-up lever visible inside the upper groove area.



① Look in the upper groove area

9 **Pass the thread through the needle bar thread guide (marked "6") by holding the thread with both hands and guiding it as shown in the illustration.**



① Needle bar thread guide

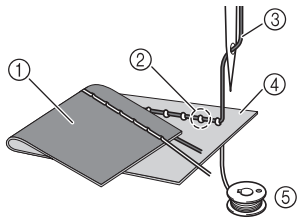
10 **Thread the needle according to steps 10 and 15 in "UPPER THREADING" on page 60.**

Incorrect Thread Tension

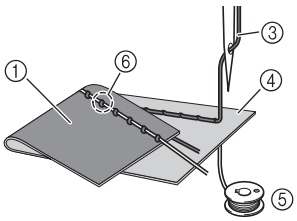
■ Symptoms

- Symptom 1: The lower thread is visible from the upper side of the fabric.
- Symptom 2: The upper thread appears as a straight line on the upper side of the fabric.
- Symptom 3: The upper thread is visible from the lower side of the fabric.
- Symptom 4: The lower thread appears as a straight line on the lower side of the fabric.
- Symptom 5: The stitching on the lower side of the fabric is loose or has slack.

☐ Symptom 1



☐ Symptom 3



① Lower side of fabric
② Lower thread visible on upper side of fabric
③ Upper thread
④ Upper side of fabric
⑤ Lower thread
⑥ Upper thread visible from lower side of fabric

■ Cause/remedy

☐ Cause 1

The machine is not correctly threaded.

<With symptoms 1 and 2 described above>
The lower threading is incorrect.
Adjust the upper thread tension and then refer to “Upper Thread is Too Tight” on page 90.

<With symptoms 3 through 5 described above>
The upper threading is incorrect.
Adjust the upper thread tension and then refer to “Tangled Thread on Wrong Side of Fabric” on page 382 to correct the upper threading.

☐ Cause 2

A needle and thread appropriate for the fabric are not being used.

The sewing machine needle that should be used depends on the type of fabric sewn and the thread thickness. If a needle and thread appropriate for the fabric are not being used, the thread tension will not be adjusted correctly, causing wrinkles in the fabric or skipped stitches.

* Refer to “Fabric/Thread/Needle Combinations” on page 75 to check that a needle and thread appropriate for the fabric are being used.

☐ Cause 3

An appropriate upper tension is not selected.

Adjust the upper thread tension to select an appropriate thread tension.
The appropriate thread tension differs according to the type of fabric and thread being used.

* Adjust the thread tension while test sewing on a piece of scrap fabric that is the same as that used in your project.

Note

- If the upper threading and lower threading are incorrect, the thread tension cannot be adjusted correctly, even by adjusting the upper thread tension. Check the upper threading and lower threading first, and then adjust the thread tension.

* When the lower thread is visible on the upper side of the fabric. Set the upper thread tension to a lower number. (Loosen the thread tension.)
* When the upper thread is visible on the lower side of the fabric. Set the upper thread tension to a higher number. (Tighten the thread tension.)

Fabric is Caught in the Machine and Cannot be Removed

If the fabric is caught in the sewing machine and cannot be removed, the thread may have become tangled under the needle plate. Follow the procedure described below to remove the fabric from the machine. If the operation could not be completed according to the procedure, instead of attempting to complete it forcefully, contact your nearest authorized Baby Lock retailer.

■ Removing the fabric from the machine

1 **Immediately stop the sewing machine.**

2 **Turn off the sewing machine.**

3 **Remove the needle.**

If the needle is lowered into the fabric, turn the handwheel away from you (clockwise) to raise the needle out of the fabric, and then remove the needle.

* Refer to "CHANGING THE NEEDLE" on page 73.

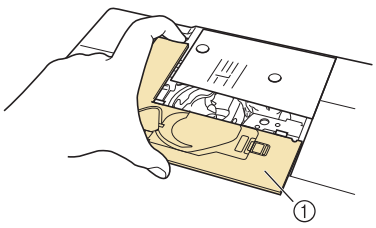
4 **Remove the presser foot and presser foot holder.**

* Refer to "CHANGING THE PRESSER FOOT" on page 68.

5 **Lift up the fabric and cut the threads below it.**

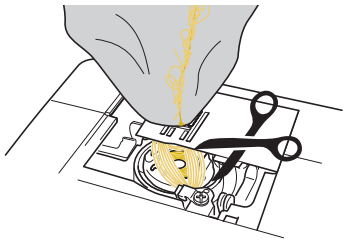
If the fabric can be removed, remove it. Continue with the following steps to clean the race.

6 **Remove the needle plate cover.**



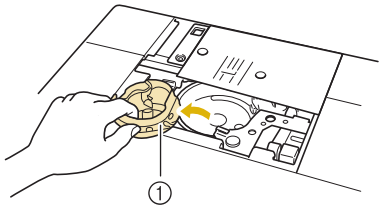
① Needle plate cover

7 **Cut out the tangled threads, and then remove the bobbin.**



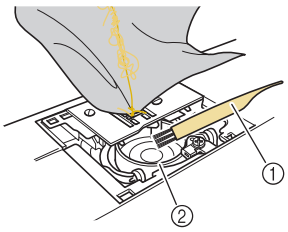
8 **Remove the bobbin case.**

If threads remain in the bobbin case, remove them.



① Bobbin case

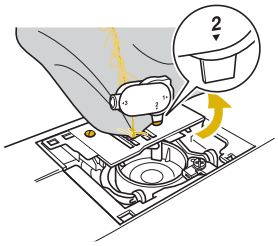
9 **Use the cleaning brush or a vacuum cleaner to remove any dust or loose threads from the race and its surrounding area.**



① Cleaning brush
② Race

If the fabric could be removed	Continue with step 16.
If the fabric could not be removed	Continue with step 10.

10 **Use the enclosed multi-purpose screwdriver to loosen the two screws on the needle plate.**

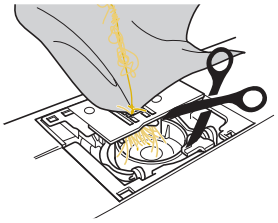


Note

- Be careful not to drop the removed screws in the machine.

11 Slightly lift up the needle plate, cut any tangled threads, and then remove the needle plate.

Remove the fabric and threads from the needle plate.



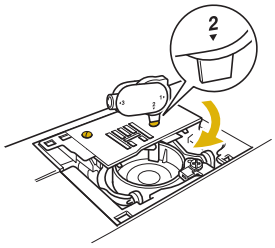
If the fabric cannot be removed, even after completing these steps, contact your nearest authorized Baby Lock retailer.

12 Remove any threads in the race and around the feed dogs.

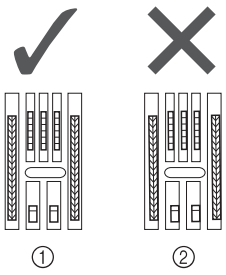
13 Turn the handwheel to raise the feed dogs.

14 Align the two screw holes in the needle plate with the two holes at the needle plate mounting base, and then fit the needle plate onto the machine.

15 Lightly finger-tighten the screw on the right side of the needle plate. Then, use the multi-purpose screwdriver to firmly tighten the screw on the left side. Finally, firmly tighten the screw on the right side.



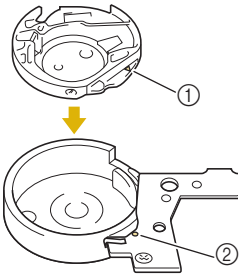
Turn the handwheel to check that the feed dogs move smoothly and do not contact the edges of the slots in the needle plate.

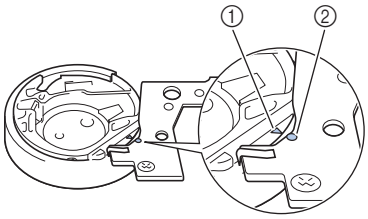


① Correct position of feed dogs
② Incorrect position of feed dogs

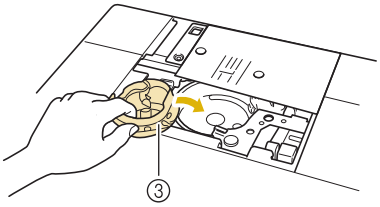
Note
- Be careful not to drop the removed screws in the machine.

16 Insert the bobbin case so that the ▲ mark on the bobbin case aligns with the ● mark on the machine.





* Align the ▲ and ● marks.

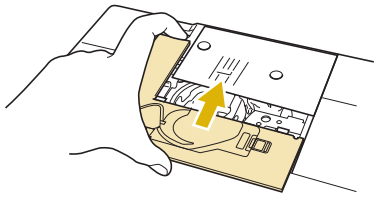


① ▲ mark on the bobbin case
② ● mark on the machine
③ Bobbin case

* Make sure that the indicated points are aligned before installing the bobbin case.

⚠ CAUTION
- Never use a bobbin case that is scratched; otherwise, the upper thread may become tangled, the needle may break, or sewing performance may suffer. For a new bobbin case (part code: XE5342-101 (green marking on the screw), XC8167-551 (no color on the screw), XE8298-001 (gray, for bobbin work)), contact your nearest authorized retailer.
- Make sure that you fit the bobbin case properly, otherwise the needle may break.

17 **Insert the tabs on the needle plate cover into the needle plate, and then slide the cover back on.**



Note
- If the needle plate has been removed it is especially important to reinstall the needle plate and tighten the screws prior to installing the bobbin case.

18 **Check the condition of the needle, and then install it.**

If the needle is in a poor condition, for example, if it is bent, be sure to install a new needle.

* Refer to "CHANGING THE NEEDLE" on page 73.

⚠ CAUTION
- **Never use bent needles. Bent needles can easily break, possibly resulting in injuries.**

Note
- After completing this procedure, continue with the following procedure in "Checking machine operations" to check that the machine is operating correctly.

Memo
- Since the needle may have been damaged when the fabric was caught in the machine, we recommend replacing it with a new one.

■ Checking machine operations

If the needle plate has been removed, check machine operations to confirm that installation has been completed correctly.

1 **Turn on the machine.**

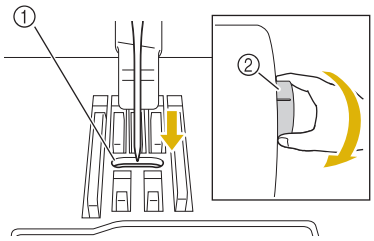
2 **Select**

.

Note
- Do not yet install the presser foot and thread.

3 **Slowly turn the handwheel toward you (counterclockwise), and look from all sides to check that the needle falls at the center of the hole in the needle plate.**

If the needle contacts the needle plate, remove the needle plate, and then install it again, starting with step 13 in "Removing the fabric from the machine" on page 385.



① Hole in the needle plate
② Handwheel

4 **Select zigzag stitch**

. At this time, increase the stitch length and width to their maximum settings.

5 **Slowly turn the handwheel toward you (counterclockwise) and check that the needle bar and feed dogs operate correctly.**

If the needle or feed dogs contact the needle plate, the machine may be malfunctioning; therefore, contact your nearest authorized Baby Lock retailer.

6 **Turn off the machine, and then install the bobbin and presser foot.**

* Refer to "Setting the Bobbin" and "CHANGING THE PRESSER FOOT" on page 68.

7 **Correctly thread the machine.**

* For details on the machine, refer to "UPPER THREADING" on page 60.

Note
- The thread may have become tangled as a result of incorrect upper threading. Make sure that the machine is correctly threaded.

8 **Perform trial sewing with normal fabric.**

Note
- Incorrect sewing may be the result of incorrect upper threading or sewing thin fabrics. If there are poor results from the trial sewing, check the upper threading or the type of fabric being used.

List of Symptoms

If you have a minor problem with your sewing machine, check the following solutions. If the solutions suggested do not correct the problem, contact your authorized Baby Lock retailer. Press → Operation Guide → Troubleshooting for advice about minor sewing problems during sewing. Press Return at any time to return to the original screen.

■ Getting ready

Problem	Cause	Solution	Page
Cannot thread the needle.	Needle is not in the correct position.	Press the “Needle Position” button to raise the needle.	17
	Needle is installed incorrectly.	Reinstall the needle correctly.	73
	Needle is turned, bent or the point is dull.	Replace the needle.	73
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	60
	The needle threader hook is bent and does not pass through the eye of the needle.	Contact your authorized Baby Lock retailer.	—
	The needle threader lever cannot be moved or returned to its original position.	Contact your authorized Baby Lock retailer.	—
	A size 65/9 needle is being used.	The needle is incompatible with the needle threader. Manually pass the thread through the eye of the needle.	63
Cannot lower the presser foot with the presser foot lever.	Presser foot was raised using the “Presser Foot Lifter” button.	Press the “Presser Foot Lifter” button to lower the presser foot.	17
Bobbin thread does not wind neatly on the bobbin.	The thread is not passed through the bobbin winding thread guide correctly.	Correctly pass the thread through the bobbin winding thread guide.	53
	Bobbin spins slowly.	Press + in the bobbin winding window to increase the bobbin winding speed.	54
	The thread that was pulled out was not wound onto the bobbin correctly.	Wind the thread that was pulled off around the bobbin 5 or 6 times clockwise.	53
	The empty bobbin was not set on the pin properly.	Set the empty bobbin on the pin and slowly turn the bobbin until you hear it click in place.	52
While winding the bobbin, the bobbin thread was wound below the bobbin winder seat.	You have not wound the bobbin thread properly when you are initially winding thread on the bobbin as well as being sure that the bobbin thread is set in the guides.	After removing the thread wound below the bobbin winder seat, wind the bobbin correctly. Follow the drawn images on the top of the machine for guidance when threading the machine for bobbin winding.	52
The bobbin thread cannot be pulled up.	Needle is turned, bent or the point is dull.	Replace the needle.	73
	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	57
Machine does not operate	All keys and buttons have been locked by .	Press to unlock all keys and buttons.	68, 73
Nothing appears in the LCD.	Main power switch is not turned on.	Turn the main power to ON.	28
	The plug of the power cord is not inserted into an electrical outlet.	Insert the plug of the power cord into an electrical outlet.	29
The LCD screen does not look very clear.	The brightness of the screen is not adjusted.	Adjust the “Screen Display Brightness” in the settings screen.	380
Nothing happens, even if the LCD display is pressed	The screen has been locked.	Press either of the following keys to unlock the screen.	—
The LCD screen is fogged up.	Condensation has formed on the LCD screen.	After a while, the cloudiness will disappear.	—
Embroidery unit does not operate.	Embroidery unit is not attached correctly.	Reattach the embroidery unit correctly.	197
	Embroidery frame was attached before the unit was initialized.	Remove the embroidery unit, and then perform the initialization process correctly.	197

Problem	Cause	Solution	Page
Pointer of the embroidery foot “W+” with LED pointer does not indicate the position correctly	With thick elastic fabric, the position will be misaligned only at raised parts in the fabric.	Manually adjust the position according to the thickness of the fabric.	250
	With fabric having a very uneven surface, the position is not correctly aligned.	The pointer indication should be used only as a reference.	—
Specifying with sensor pen cannot be done accurately.	The sensor pen has not been calibrated.	Before using the sensor pen for the first time, be sure to calibrate it.	50
	The pen is being held differently than when it was calibrated.	When using the sensor pen, be sure to hold it at the same angle as when it was calibrated. The specification location may be misaligned if the pen is held at a slightly different angle. In this case, make fine adjustments after making the selection.	50

■ While sewing

Problem	Cause	Solution	Page
Machine does not operate.	“Start/Stop” button was not pressed.	Press the “Start/Stop” button.	17
	There is no pattern selected.	Select a pattern.	111, 168, 200, 299
	Presser foot is not lowered.	Lower the presser foot.	17
	“Start/Stop” button was pressed with the foot controller attached.	Remove the foot controller, or use the foot controller to operate the machine.	81
	The “Start/Stop” button was pressed while the machine is set for the sewing speed controller to control the zigzag stitch width.	Use the foot controller instead of the “Start/Stop” button to operate the machine, or set the “Width Control” to “OFF” in the settings screen.	31, 81
Needle breaks.	Needle is installed incorrectly.	Reinstall the needle correctly.	73
	Needle clamp screw is not tightened.	Tighten the needle clamp screw.	74
	Needle is turned or bent.	Replace the needle.	73
	Using improper needle or thread for the selected fabric.	Check the “Fabric/thread/needle combinations” chart.	75
	Wrong presser foot was used.	Use the recommended presser foot.	“STITCH SETTING CHART”
	Upper thread tension is too tight.	Adjust the thread tension.	90, 287
	Fabric is pulled during sewing.	Do not pull the fabric during sewing.	—
	Spool cap is set incorrectly.	Check the method for attaching the spool cap, then reattach the spool cap.	60
	There are scratches around the opening in the needle plate.	Replace the needle plate, or consult your authorized Baby Lock retailer.	117
	There are scratches around the opening in the presser foot.	Replace the presser foot, or consult your authorized Baby Lock retailer.	68
	There are scratches on the bobbin case.	Replace the bobbin case, or consult your authorized Baby Lock retailer.	376
	Needle is defective.	Replace the needle.	73
	A bobbin designed specifically for this machine is not used.	Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.	57
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	60
	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	57
	Presser foot is attached incorrectly.	Attach the presser foot correctly.	68
	Screw of the presser foot holder is loose.	Securely tighten the screw of the presser foot.	69
	Fabric is too thick.	Use fabric that the needle can pierce when the handwheel is turned.	85
	Fabric is fed forcefully when sewing thick fabric or thick seams.	Allow the fabric to be fed without being forcefully pushed.	85
	Stitch length is too short.	Adjust the stitch length.	89
	Stabilizer is not attached to fabric being embroidered.	Attach stabilizer.	173, 242
	Bobbin thread is incorrectly wound.	Use a correctly wound bobbin.	52

Problem	Cause	Solution	Page
Upper thread breaks.	Machine is not threaded correctly (used the wrong spool cap, spool cap is loose, the thread did not catch the needle bar threader, etc.)	Rethread the machine correctly.	60
	Knotted or tangled thread is being used.	Remove any knots or tangles.	—
	The selected needle is not appropriate for the thread being used.	Select a needle that is appropriate for the type of thread being used.	75
	Upper thread tension is too tight.	Adjust the thread tension.	90, 287
	Thread is twisted.	Use scissors, etc., to cut the twisted thread and remove it from the race, etc.	—
	Needle is turned, bent or the point is dull.	Replace the needle.	73
	Needle is installed incorrectly.	Reinstall the needle correctly.	73
	There are scratches around the opening of the needle plate.	Replace the needle plate, or consult your authorized Baby Lock retailer.	117
	There are scratches around the opening in the presser foot.	Replace the presser foot, or consult your authorized Baby Lock retailer.	68
	There are scratches on the bobbin case.	Replace the bobbin case, or consult your authorized Baby Lock retailer.	376
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	75
	While sewing, the thread became knotted or tangled.	Rethread upper and lower thread.	57, 60
	A bobbin designed specifically for this machine is not used.	Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.	57
The thread is tangled on the wrong side of the fabric.	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine. Be sure that the presser foot is in the raised position when threading the machine so that the upper thread sets properly in the upper tension.	60
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	75
The upper thread is too tight.	The bobbin thread is incorrectly installed.	Correctly install the bobbin thread.	57
Bobbin thread breaks.	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	57
	Bobbin thread is incorrectly wound.	Use a correctly wound bobbin.	52
	There are scratches on the bobbin or it doesn’t rotate properly.	Replace the bobbin.	57
	Thread is twisted.	Use scissors, etc. to cut the twisted thread and remove it from the race, etc.	—
	A bobbin designed specifically for this machine is not used.	Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.	57
Fabric puckers.	There is a mistake in the upper or bobbin threading.	Check the steps for threading the machine and rethread it correctly.	57, 60
	Spool cap is set incorrectly.	Check the method for attaching the spool cap, then reattach the spool cap.	60
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	75
	Needle is turned, bent or the point is dull.	Replace the needle.	73
	Stitches are too long when sewing thin fabrics.	Shorten the stitch length.	89
	Thread tension is set incorrectly.	Adjust the thread tension.	90, 287
	Wrong presser foot.	Use the correct presser foot.	“STITCH SETTING CHART”
The stitch is not sewn correctly.	The presser foot that is used is not appropriate for the type of stitch that you wish to sew.	Attach the presser foot that is appropriate for the type of stitch that you wish to sew.	“STITCH SETTING CHART”
	The thread tension is incorrect.	Adjust the tension of the upper thread.	90
	The thread is tangled, for example, in the bobbin case.	Remove the tangle thread. If the thread is tangled in the bobbin case, clean the race.	376
Skipped stitches	Machine is threaded incorrectly.	Check the steps for threading the machine and rethread it correctly.	60
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	75

Problem	Cause	Solution	Page
Skipped stitches	Needle is turned, bent or the point is dull.	Replace the needle.	73
	Needle is installed incorrectly.	Reinstall the needle correctly.	73
	Needle is defective.	Replace the needle.	73
	Dust or lint has collected under the needle plate.	Remove the dust or lint with the brush.	376
	Thin or stretch fabrics are being sewn.	Sew with one sheet of thin paper under the fabric.	87
No stitching	Needle is turned, bent or the point is dull.	Replace the needle.	73
	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	57
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	60
High-pitched sound while sewing	Dust or lint is caught in the feed dogs.	Remove the dust or lint.	376
	Pieces of thread are caught in the race.	Clean the race.	376
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	60
	A bobbin designed specifically for this machine is not used.	Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.	57
	There are needle holes or friction scratches in the bobbin case.	Replace the bobbin case, or consult your authorized Baby Lock retailer.	376
Fabric does not feed through the machine.	Feed dogs are set in the down position.	Press , and then turn the handwheel to raise the feed dogs.	131
	Stitches are too close together.	Lengthen the stitch length setting.	89
	Wrong presser foot was used.	Use the correct presser foot.	“STITCH SETTING CHART”
	Needle is turned, bent or the point is dull.	Replace the needle.	73
	Thread is entangled.	Cut the entangled thread and remove it from the race.	—
	Zigzag foot “J” is slanted on a thick seam at the beginning of stitching.	Use the presser foot locking pin (black button on the left side) on zigzag foot “J” to keep the presser foot level while sewing.	86
The fabric feeds in the opposite direction.	The feed mechanism is damaged.	Contact your Baby Lock retailer.	—
The needle contacts the needle plate.	The needle clamp screw is loose.	Firmly tighten the needle clamp screw. If the needle is bent or blunt, replace it with a new one.	73
	Needle is turned, bent or the point is dull.	Replace the needle.	73
Fabric being sewn with the machine cannot be removed.	Thread is tangled below the needle plate.	Lift up the fabric and cut the threads below it, and clean the race.	382
A broken needle has fallen into the machine.	—	Turn off the machine, and then remove the needle plate. If the needle that fell into the machine can be seen, use tweezers to remove it. After removing the needle, return the needle plate to its original position. Before turning on the machine, slowly turn the handwheel toward you to check that it turns smoothly. If the handwheel does not turn smoothly or the needle that fell into the machine cannot be removed, consult your authorized Baby Lock retailer.	—
The handwheel feels sluggish when it is turned.	Thread is tangled in the bobbin case.	Remove the tangled thread from the bobbin case. Re-install the bobbin case so it is correctly positioned.	382

■ After sewing

Problem	Cause	Solution	Page
Thread tension is incorrect.	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	60
	Bobbin is set incorrectly.	Reset the bobbin. (If needle plate was removed, reinstall needle plate and tighten screws prior to installing bobbin case.)	57
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	75
	Presser foot holder is not attached correctly.	Reattach the presser foot holder correctly.	69
	Thread tension is set incorrectly.	Adjust the thread tension.	90, 287
	Bobbin thread is incorrectly wound.	Use a correctly wound bobbin.	52
	Needle is turned, bent or the point is dull.	Replace the needle.	73
	A bobbin designed specifically for this machine is not used.	Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.	57
Character or decorative patterns are misaligned.	Pattern adjustment settings were set incorrectly.	Revise the pattern adjustment settings.	174
Pattern does not turn out.	Wrong presser foot was used.	Attach the correct presser foot.	“STITCH SETTING CHART”
	Did not use a stabilizer material on thin fabrics or stretch fabrics.	Attach a stabilizer material.	173
	Thread tension is set incorrectly.	Adjust the thread tension.	90, 287
	Fabric was pulled, pushed or fed at an angle while it was being sewn.	Sew while guiding the fabric with your hands so that the fabric is fed in a straight line.	80
	The thread is tangled, for example, in the bobbin case.	Remove the tangle thread. If the thread is tangled in the bobbin case, clean the race.	
Embroidery pattern does not sew out correctly.	Thread is twisted.	Use scissors, etc., to cut the twisted thread and remove it from the bobbin case, etc.	—
	Thread tension is set incorrectly.	Adjust the thread tension.	90, 287
	Fabric was not inserted into the frame correctly (fabric was loose, etc.).	If the fabric is not stretched tight in the frame, the pattern may turn out poorly or there may be shrinkage of the pattern. Set the fabric into the frame correctly.	244
	Stabilizing material was not attached.	Always use stabilizing material, especially with stretch fabrics, lightweight fabrics, fabrics with a coarse weave, or fabrics that often cause pattern shrinkage. See your authorized Baby Lock retailer for the proper stabilizer.	242
	There was an object placed near the machine, and the carriage or embroidery frame hit the object during sewing.	If the frame bumps something during sewing, the pattern will turn out poorly. Do not place anything in the area where the frame may bump it during sewing.	259
	Fabric outside the frame edges interferes with the sewing arm, so the embroidery unit cannot move.	Reinsert the fabric in the embroidery frame so that the excess fabric is away from the sewing arm, and rotate the pattern 180 degrees.	244
	Fabric is too heavy, so the embroidery unit cannot move freely.	Place a large thick book or similar object under the arm head to lightly lift the heavy side and keep it level.	—
	Fabric is hanging off the table.	If the fabric is hanging off the table during embroidery, the embroidery unit will not move freely. Place the fabric so that it does not hang off the table or hold the fabric to keep it from dragging.	259
	Fabric is snagged or caught on something.	Stop the machine and place the fabric so that it does not get caught or snagged.	—
	Embroidery frame was removed during sewing (for example, to reset the bobbin). The presser foot was bumped or moved while removing or attaching the embroidery frame, or the embroidery unit was moved.	If the presser foot is bumped or the embroidery unit is moved during sewing, the pattern will not turn out. Be careful when removing or reattaching the embroidery frame during sewing.	266
	Stabilizer is incorrectly attached, for example, it is smaller than the embroidery frame.	Attach the stabilizer correctly.	242

Problem	Cause	Solution	Page
Loops appear on the surface of the fabric when embroidering	The thread tension is incorrectly set.	Adjust the thread tension.	287
	The tension of the upper thread is incorrectly set for the combination of the fabric, thread and pattern being used.	Use the embroidery needle plate cover.	260
	The combination of the bobbin case and bobbin thread is incorrect.	Change the bobbin case or bobbin thread so that the correct combination is used.	259

⚠ CAUTION

- **This machine is equipped with a thread detection device. If the "Start/Stop" button is pushed before the upper threading is done, the machine will not operate properly. Also, depending on the pattern selected, the machine may feed the fabric even if the needle is raised. This is due to the needle bar release mechanism. At these times, the machine will make a sound different from what is made during normal sewing. This is not the sign of a malfunction.**
- **If the power is disconnected during sewing:**
  Turn the main power to OFF and unplug the machine.
  If you restart the machine, follow the instructions for operating the machine correctly.

ERROR MESSAGES

If the machine is not properly set and the “Start/Stop” button or the “Reverse/Reinforcement Stitch” button is pressed, or if the operation procedure is incorrect, the machine does not start. An alarm sounds and an error message is displayed on the LCD. If an error message displays, follow the instructions in the message.

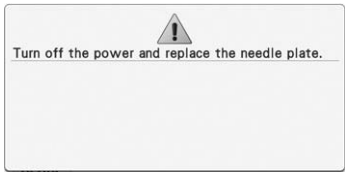
Below is an explanation of error messages. Refer to these when necessary (if you press OK or do the operation correctly while the error message is displayed, the message disappears).

⚠ CAUTION

- **Be sure to rethread the machine. If you press the “Start/Stop” button without rethreading the machine, the thread tension may be wrong or the needle may break and cause injury.**

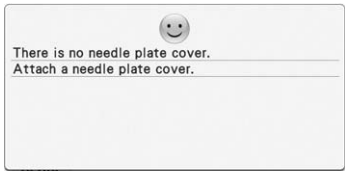
This message is displayed when the motor locks due to tangled thread or for other reasons related to thread delivery.

This message is displayed when the embroidery unit is initializing.



This message is displayed when you try to sew with a stitch other than a middle needle position stitch while the single-hole needle plate is installed.
This message is displayed when the needle plate is removed with the machine on or when the machine is turned on and embroidery or embroidery edit mode is selected (see page 57).

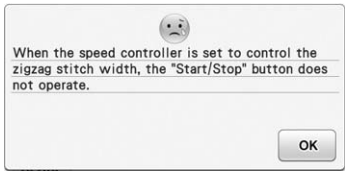
This message is displayed when the machine needs to be maintained. (see page 379)



This message is displayed when the needle plate cover is not attached.

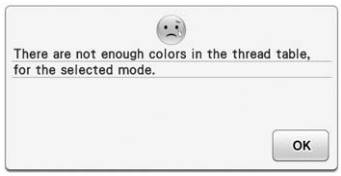
This message is displayed when you try to combine more than 71 patterns.

This message is displayed when the buttonhole lever is up, a buttonhole stitch is selected, and the “Start/ Stop” button or “Reverse/ Reinforcement Stitch” button is pushed.



This message is displayed when the speed control lever is set to control the zigzag stitch width, and the “Start/ Stop” button is pushed. Use the foot controller to operate the machine.

This message appears when there are not enough colors in the custom thread table, to display the color scheme you have selected to display.
In this case, set more colors in the custom thread table (See page 223), or select less colors in the color visualizer function. (See page 227.)



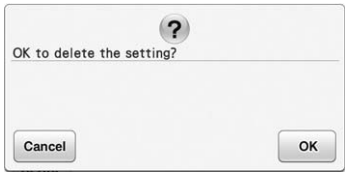
This message appears when there are not enough colors in the thread table, to display the color scheme effect you have selected. In this case, select another effect or the custom thread table (300 color palette) or less colors in the color visualizer function. (See page 227.)
If there are not enough number of colors set in the custom thread table, set more colors in the table. (See page 223.)

This message is displayed when the automatic needle threading button is pushed while twin needle sewing is set.

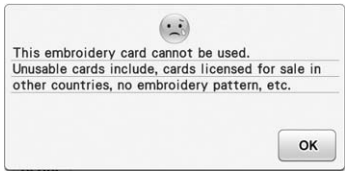
This message is displayed when the “Start/Stop” button is pressed before the edge of the fabric is detected. To detect the edge of the fabric using the built-in camera, press Close, raise the presser foot, and then perform the operation again. (see page 160)

This message is displayed when the built-in camera cannot detect the edge of the fabric.
If this message appeared after sewing has reached 1 to 2 cm (about 3/8 to 3/4 inch) from the edge of the fabric, refer to step 13 in “Edge Sewing” on page 165.
If this message appeared during edge sewing, the edge of the fabric cannot be detected by the built-in camera. Press Close, raise the presser foot, raise the needle if it is lowered, and then perform the procedure described in “Edge Sewing” on page 162 starting from step 6.
If this error message appears again, sew without using edge sewing function.

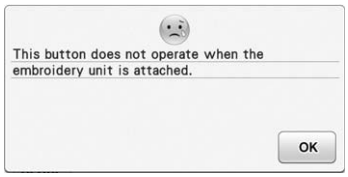
This message appears when you try to save more than 100 camera image or settings screen image files in the USB media. In this case, delete a file from the USB media or use different USB media. (See page 34 and 96)



This message appears when Delete or All Delete is pressed to delete the settings for a utility stitch. To delete the selected settings, press OK.

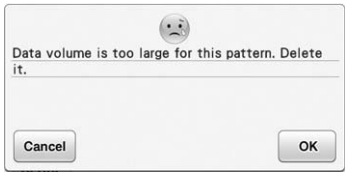


This message is displayed when an unusable embroidery card is inserted.

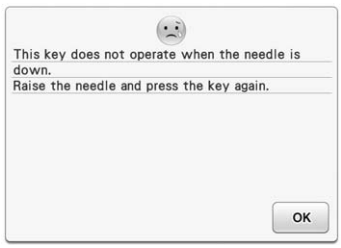


This message is displayed when the “Reverse/ Reinforcement Stitch” button is pushed while the embroidery unit is attached.

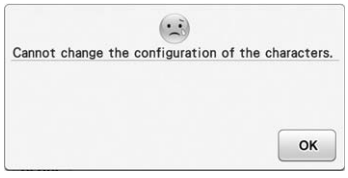
This message is displayed when the foot controller is pressed while the embroidery unit is attached and machine is set up for embroidering.



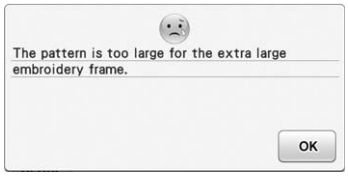
This message is displayed when the patterns you are editing take up too much memory, or if you are editing too many patterns for the memory.



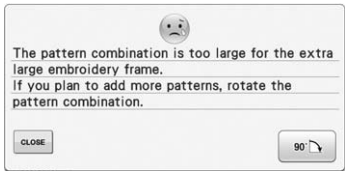
This message is displayed when a key on the LCD display is touched while the needle is in the down position.



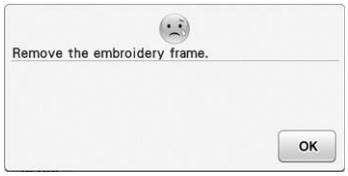
This message is displayed when there are too many characters and the curved character configuration is impossible.



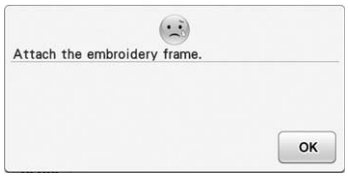
This message is displayed when the machine is in embroidery mode, and the character pattern combination is too large to fit in the embroidery frame.



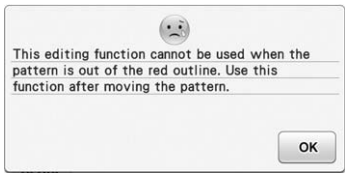
This message is displayed when the machine is in embroidery mode and the combined character pattern is too large for the embroidery frame. You can rotate the pattern 90 degrees and continue combining characters.



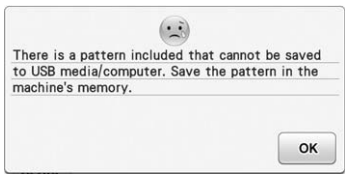
This message is displayed when the machine is in embroidery mode and the embroidery unit tries to initialize while the embroidery frame is attached.



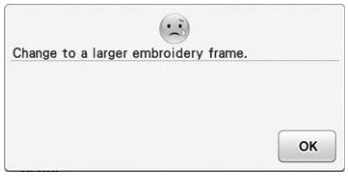
This message is displayed when the machine is ready to sew an embroidery pattern, and the “Start/Stop” button is pushed while the embroidery frame is not attached.



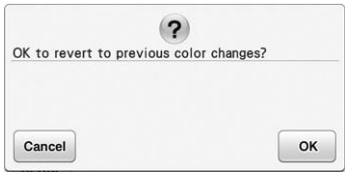
This message is displayed when the machine is in embroidery edit mode, and you try to use an editing function when the pattern is not completely within the red outline.



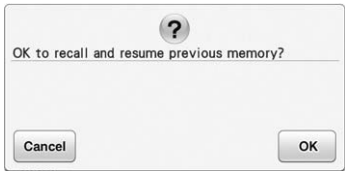
This message is displayed when you try to save a copyright protected pattern to USB media/Computer. According to copyright laws, patterns that are illegal to reproduce or edit cannot be saved to USB media or computer. If this message displays, save the pattern in the machine’s memory.



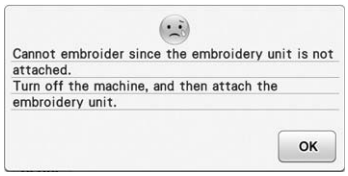
This message is displayed when the machine is in embroidery mode and the small frame is attached, and the selected pattern does not fit in the small frame.
This message appears when embroidery frame (small) is attached while aligning the embroidery position using the built-in camera.



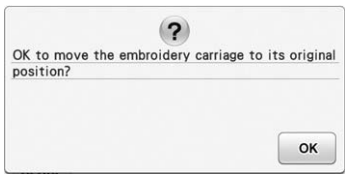
This message is displayed when **Reset** is pressed when changing thread colors.



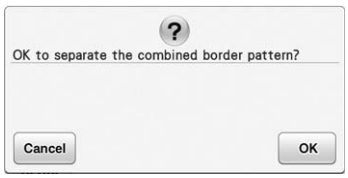
This message appears if the machine is turned off while sewing, then turned on again. Press **OK** to return the machine to the condition (pattern position and number of stitches) when it was turned off. Follow the procedure described in “If the Thread Breaks During Sewing” on page 267 to align the needle position and sew the remainder of the pattern.



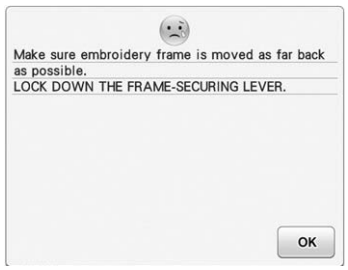
This message is displayed when the “Start/Stop” button is pushed and the machine is in embroidery mode, but the embroidery unit is not attached.



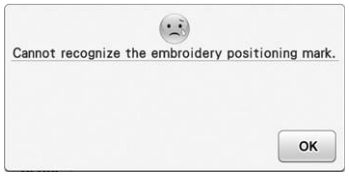
This message is displayed when replacing the embroidering bobbin thread.



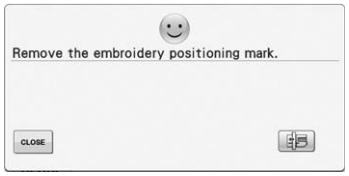
This message is displayed when rotating a saved combined pattern in the Embroidery screen.



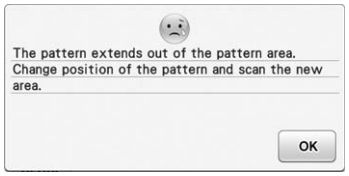
This message is displayed when the embroidery frame is attached.



This message is displayed when the machine failed to recognize the embroidery positioning mark.
- Confirm that the embroidery positioning mark is in the selected area. If problem persists, see page 254 to reposition mark.
- Machine failed to recognize printed positioning mark. Set “Page Scaling” to “None (100%)”, and try printing the embroidery positioning mark again. (see page 285)

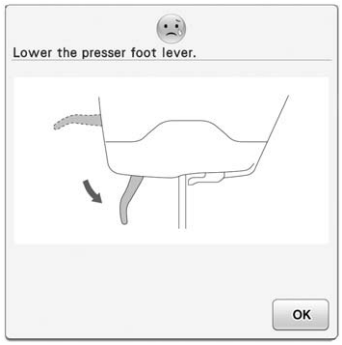


This message is displayed when the machine has recognized the embroidery position mark. Remove the embroidery positioning sticker and press OK to continue. To remove the embroidery positioning sticker more easily, press . (see page 254)



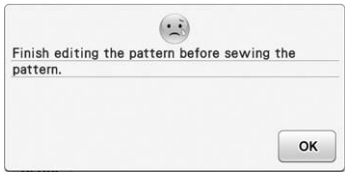
This message appears when the built-in camera is being used to align the embroidery position, but the embroidery positioning sticker is too near an edge or the pattern extends from the embroidery frame. Change the positioning of the embroidery position sticker, and then try aligning the position again. See page 249.

This message is displayed when the upper thread is broken or not threaded correctly, and the “Start/ Stop” button or the “Reverse/ Reinforcement Stitch” button is pressed.

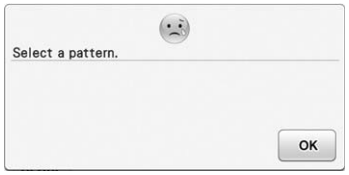


This message is displayed when the “Presser Foot Lifter” button is pushed while the presser foot lever is raised/the needle is lowered.

This message is displayed when the “Start/Stop” button is pushed to sew Utility stitches or Character/Decorative stitches while the foot controller is connected. (This message does not appear when embroidering).

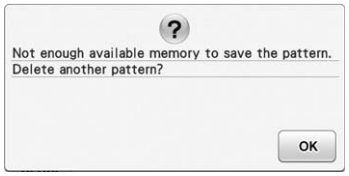


This message is displayed when the “Start/ Stop” button is pushed while the machine is in embroidery edit mode and a pattern is being edited.

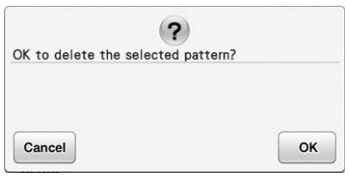


This message is displayed when there is no stitch or embroidery pattern selected and the “Start/ Stop” button or the “Reverse/Reinforcement Stitch” button is pressed.

This message is displayed when the bobbin thread is running out.

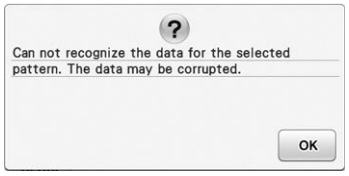


This message is displayed when the memory is full and the stitch or pattern cannot be saved.



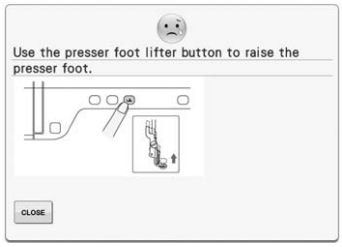
This message is displayed when, after selecting a pattern, Utility Stitch, Character Decorative Stitch, or is pressed and the pattern is about to be deleted.

This message is displayed when the bobbin is being wound, and the motor locks because the thread is tangled, etc.

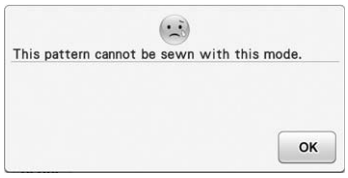


This message is displayed when there is a possibility that the data for the selected pattern is corrupted.

This message is displayed when the buttonhole lever is down, a stitch other than a buttonhole is selected, and the “Start/ Stop” button or the “Reverse/ Reinforcement Stitch” button is pushed.

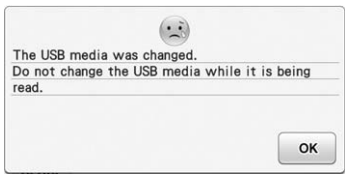


This message is displayed when the embroidery unit is attached and the power is turned on with the needle in the down position.

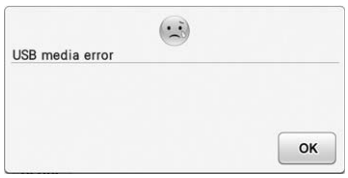


This message is displayed when the selected stitch is not available for the specific function.

This message is displayed when you try to use incompatible media.

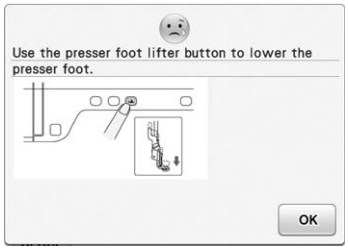


This message is displayed when you attempt to select a pattern after the USB media in which the pattern is saved has been changed.

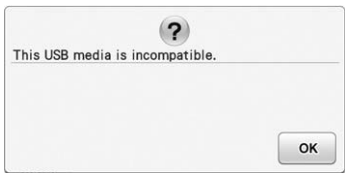


This message is displayed when an error occurs with the USB media.

This message is displayed when the memory is full and a pattern must be deleted.

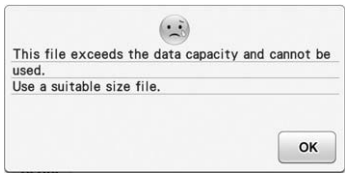


This message is displayed when a button, such as the “Start/Stop” button, is pushed while the presser foot is raised.



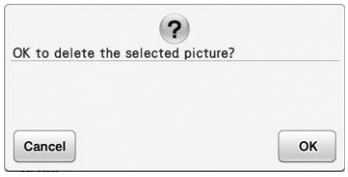
This message is displayed when you try to use incompatible USB media. For a list of compatible USB media, visit “ www.babylock.com ”.

This message is displayed when it seems that the upper thread has not been threaded correctly.



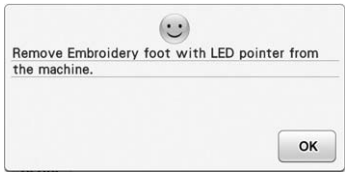
This message is displayed when the file size exceeds the data capacity of the machine.
Confirm the file size and format. (see page 35.)

This message appears if the file format is incompatible with this machine. Check the list of compatible file formats. (see page 35.)

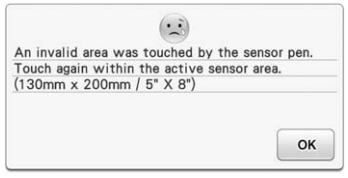


This message is displayed when the image is deleted.

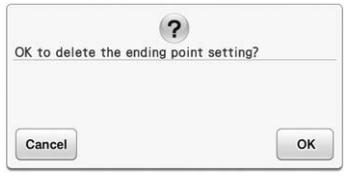
This message is displayed when you press Sewing Guide in the screen other than the Utility Stitch, or press Pattern Explanation in the screen other than the Utility Stitch or Character/ Decorative Stitch.



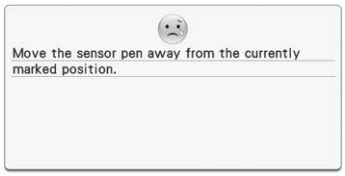
This message appears when you try to start sewing utility or decorative/ character stitches using the embroidery foot with the LED pointer attached to the machine.



This message appears when you touch the invalid area of sensor pen. Touch the active area. (see page 98)



This message appears when you try to recall the pattern stored in the machine while specifying the sewing end point using the sensor function. (see page 103)

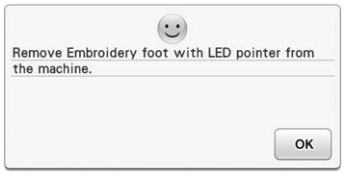


This message appears when you press down the sensor pen tip before pressing and keep pressing for the certain period. Move the sensor pen away from the current position.

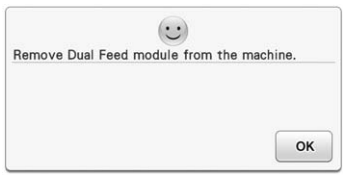
This message appears when something is wrong with the sensor unit of the machine. Consult your authorized retailer.

This message appears when you touch the invalid area of sewing with the sensor pen. Touch the active area. (see page 98)

This message appears when the time/date is not set. Set time/date. (see page 29)



This message appears when you try to start sewing utility/decorative stitch or character pattern with the embroidery foot with the LED pointer attached to the machine. Remove the embroidery foot with the LED pointer before entering the sewing mode. (see page 207)



This message appears when you try to start embroidering with the dual feed foot attached to the machine. Remove the dual feed foot before entering the embroidery mode. (see page 70)

This message appears when the function to specify the sewing end point cannot be used with the current stitch. Select other stitch. (see page 103)

This message appears when the dual feed foot cannot be used with the current stitch. Select other stitch.

This message appears when the selected function is not available with the sensor function. (see page 98, 254)

■ Alarm Sounds

If the operation was performed incorrectly, an alarm sounds to indicate that an error occurred. If the operation was performed correctly, the machine beeps to confirm the operation.

Memo

- To cancel the operation beep or to change the volume, press , display screen 4/9, and then change the setting for “Machine Speaker Volume”. See page 32 for more details.

SPECIFICATIONS

	Item	Specification
Sewing Machine (Box 1 of 2)	Dimensions of machine	Approx. 662 mm (W) × 348 mm (H) × 321 mm (D) (approx. 26-1/16 inches (W) × 13-11/16 inches (H) × 12-5/8 inches (D))
	Dimensions of box	Approx. 740 mm (W) × 620 mm (H) × 405 mm (D) (approx. 29-1/8 inches (W) × 24-13/32 inches (H) × 15-15/16 inches (D))
	Weight of machine	Approx. 17 kg (approx. 37.5 lb)
	Weight of box (for shipping)	Approx. 26 kg (approx. 57.3 lb)
	Sewing speed	70 to 1050 stitches per minute
	Needles	Home sewing machine needles (HA × 130)
Embroidery Unit (Box 2 of 2)	Dimensions of embroidery unit	Approx. 595 mm (W) × 139 mm (H) × 524 mm (D) (approx. 23-7/16 inches (W) × 5-15/32 inches (H) × 20-5/8 inches (D))
	Dimensions of machine with embroidery unit attached	Approx. 916 mm (W) × 348 mm (H) × 524 mm (D) (approx. 36-1/16 inches (W) × 13-11/16 inches (H) × 20-5/8 inches (D))
	Dimensions of box	Approx. 735 mm (W) × 620 mm (H) × 190 mm (D) (approx. 28-15/16 inches (W) × 24-13/32 inches (H) × 7-15/32 inches (D))
	Weight of embroidery unit	Approx. 4.6 kg (approx. 10.1 lb)
	Weight of box (for shipping)	Approx. 7.4 kg (approx. 16.3 lb)
Total Shipping Weight (Combination of all 2 boxes complete)		Approx. 37 kg (approx. 81.6 lb)

* Please be aware that some specifications may change without notice.

UPGRADING YOUR MACHINE'S SOFTWARE

You can use USB media or a computer to upgrade software for your sewing machine.
When an upgrade program is available on " www.babylock.com ", please download the files following the instructions on the website and steps below.

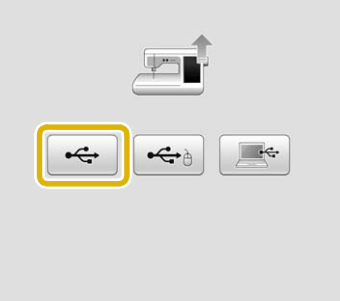
Note
- When using USB media to upgrade the software, check that no data other than the upgrade file is saved on the USB media being used before starting to upgrade.

Upgrade Procedure Using USB Media

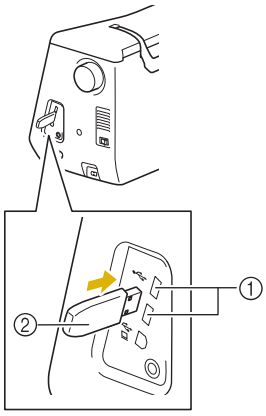
1 **While pressing the "Automatic Threading" button, turn the main power to ON.**

→ The following screen will appear on the LCD.

2 **Press** [USB] **.**



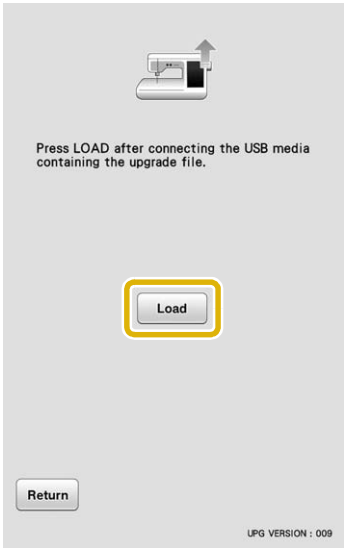
3 **Insert the USB media into the primary (top) USB port on the machine. The media device should only contain the upgrade file.**



① Primary (top) USB port for media
② USB media

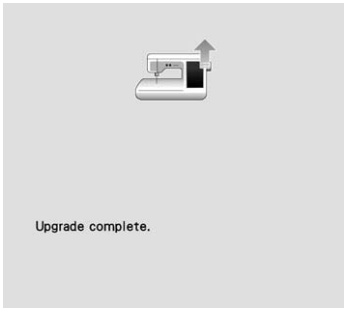
Note
- The access lamp will begin blinking after inserting USB media, and it will take about 5 to 6 seconds to recognize the media. (Time will differ depending on the USB media).

4 **Press** [Load] **.**



→ The upgrade file is loaded.

Note
- If an error occurs, a red text error message will appear. When the installation is performed successfully, following message will appear.



5 **Remove the USB media, and turn the machine off and on again.**

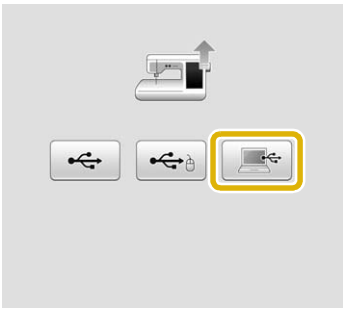
Upgrade Procedure Using Computer

Note
- Do not connect any additional USB media devices to your computer when using the USB cable.

1 **While pressing the "Automatic Threading" button, turn the main power to ON.**

→ The following screen will appear on the LCD.

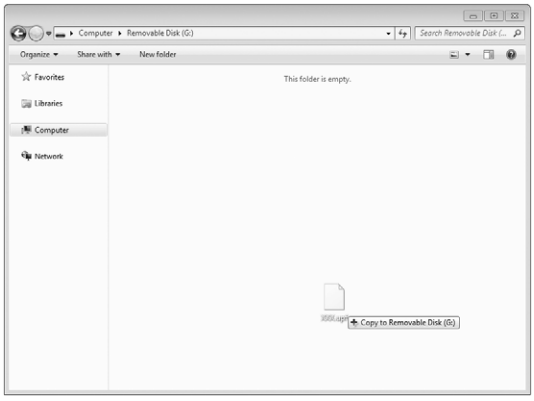
2 **Press** .



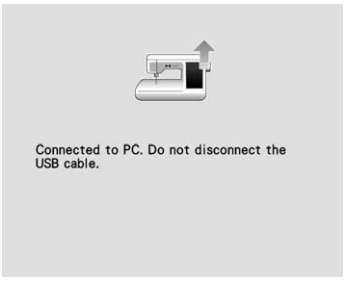
3 **Plug the USB cable connector into the corresponding USB ports for the computer and for the machine.**

→ "Removable Disk" will appear in "Computer (My Computer)".

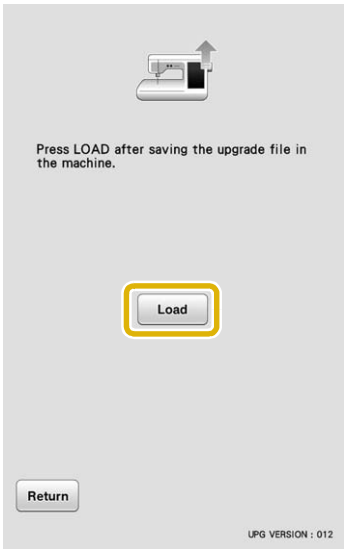
4 **Copy the upgrade file to "Removable Disk".**



→ The following message will appear.

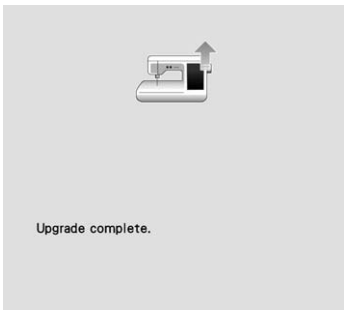


5 **When the message disappears, press** .



→ The upgrade file is loaded.

Note
- If an error occurs, a red text error message will appear. When the installation is performed successfully, following message will appear.



6 **Unplug the USB cable, and turn the machine off and on again.**

STITCH SETTING CHART

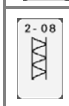
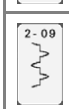
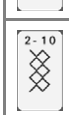
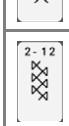
The following chart shows information for each utility stitch concerning applications, stitch lengths, stitch widths, and whether or not the twin needle mode can be used.

Note

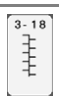
- Quilting foot “C” is used when the straight stitch needle plate is attached to the machine. Refer to “Using Free motion Quilting Foot “C”” on page 132.

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Straight stitch (Left)			General sewing, gather, pintuck, etc. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	Straight stitch (Left)			General sewing, gather, pintuck, etc. Reinforcement stitch is sewn while pressing “Reverse/Reinforcement Stitch” button.	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	Straight stitch (Middle)			General sewing, gather, pintuck, etc. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	Straight stitch (Middle)			General sewing, gather, pintuck, etc. Reinforcement stitch is sewn while pressing “Reverse/Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	Triple stretch stitch			General sewing for reinforcement and decorative topstitching	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Stem stitch			Reinforced stitching, sewing and decorative applications	**1.0 (1/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Decorative stitch			Decorative stitching, top stitching	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Basting stitch			Basting	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**20 (3/4)**	5 - 30 (3/16 - 1-3/ 16)	NO
	Zigzag stitch			For overcasting, mending. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.0 - 5.0 (0 - 3/16)	OK (J)
	Zigzag stitch			For overcasting, mending. Reinforcement stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.0 - 5.0 (0 - 3/16)	OK (J)
	Zigzag stitch (Right)			Start from right needle position, zigzag sew at left.	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.4 (1/16)**	0.3 - 5.0 (1/64 - 3/16)	OK (J)
	Zigzag stitch (Left)			Start from left needle position, zigzag sew at right.	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.4 (1/16)**	0.3 - 5.0 (1/64 - 3/16)	OK (J)
	2 steps elastic zigzag			Overcasting (medium weight and stretch fabrics), tape and elastic	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	2 steps elastic zigzag	J	O	Overcasting (medium weight and stretch fabrics), tape and elastic	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	3 steps elastic zigzag	J	O	Overcasting (medium, heavyweight and stretch fabrics), tape and elastic	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	Overcasting stitch	G		Reinforcing of light and medium weight fabrics	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**2.0 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Overcasting stitch	G		Reinforcing of heavyweight fabric	**5.0 (3/16)**	2.5 - 5.0 (3/32 - 3/16)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Overcasting stitch	G		Reinforcing of medium, heavyweight and easily friable fabrics or decorative stitching.	**5.0 (3/16)**	3.5 - 5.0 (1/8 - 3/16)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Overcasting stitch	J	O	Reinforced seaming of stretch fabric	**5.0 (3/16)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Overcasting stitch	J	O	Reinforcing of medium stretch fabric and heavyweight fabric, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Overcasting stitch	J	O	Reinforcement of stretch fabric or decorative stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Overcasting stitch	J	O	Stretch knit seam	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Single diamond overcast	J	O	Reinforcement and seaming stretch fabric	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Single diamond overcast	J	O	Reinforcement of stretch fabric	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**1.8 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	With side cutter	S		Straight stitch while cutting fabrics	**0.0 (0)**	0.0 - 2.5 (0 - 3/32)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	NO
	With side cutter	S		Zigzag stitch while cutting fabrics	**3.5 (1/8)**	3.5 - 5.0 (1/8 - 3/16)	**1.4 (1/16)**	0.0 - 5.0 (0 - 3/16)	NO
	With side cutter	S		Overcasting stitch while cutting fabrics	**3.5 (1/8)**	3.5 - 5.0 (1/8 - 3/16)	**2.0 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	With side cutter	S		Overcasting stitch while cutting fabrics	**5.0 (3/16)**	3.5 - 5.0 (1/8 - 3/16)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
	With side cutter	S		Overcasting stitch while cutting fabrics	**5.0 (3/16)**	3.5 - 5.0 (1/8 - 3/16)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Piecing stitch (Right)	J	O	Piecework/patchwork 6.5 mm (approx. 1/4 inch) left seam allowance	**5.5 (7/32)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	Piecing stitch (Middle)	J	C	Piecework/patchwork	**—**	—	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Piecing stitch (Left)			Piecework/patchwork 6.5 mm (approx. 1/4 inch) left seam allowance	**1.5 (1/16)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	Hand-look quilting			Quilting stitch made to look like hand quilting stitch	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Quilting appliqué zigzag stitch			Zigzag stitch for quilting and sewing on appliqué quilt pieces	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.0 - 5.0 (0 - 3/16)	NO
	Quilting appliqué stitch			Quilting stitch for invisible appliqué or attaching binding	**1.5 (1/16)**	0.0 - 7.0 (0 - 1/4)	**1.8 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Quilting stippling			Background quilting	**7.0 (1/4)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Blind hem stitch			Hemming woven fabrics	**0.0 (0)**	+3.0 - -3.0 (+1/8 - -1/8)	**2.0 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Blind hem stitch stretch			Hemming stretch fabric	**0.0 (0)**	+3.0 - -3.0 (+1/8 - -1/8)	**2.0 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Blanket stitch			Appliqués, decorative blanket stitch	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Shell tuck edge			Shell tuck edge finish on fabrics	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	Satin scallop stitch			Decorating collar of blouse, edge of handkerchief	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**0.5 (1/32)**	0.1 - 5.0 (1/64 - 3/16)	OK (J)
	Scallop stitch			Decorating collar of blouse, edge of handkerchief	**7.0 (1/4)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Patchwork join stitch			Patchwork stitches, decorative stitching	**4.0 (1/16)**	0.0 - 7.0 (0 - 1/4)	**1.2 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	**Patchwork double overlock stitch**			Patchwork stitches, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	**Couching stitch**			Decorative stitching, attaching cord and couching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.2 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	**Smocking stitch**			Smocking, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Feather stitch			Fagoting, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	**Fagoting cross stitch**			Fagoting, bridging and decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Tape attaching			Attaching tape to seam in stretch fabric	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.0 (1/16)**	0.2 - 5.0 (1/61 - 3/16)	OK (J)

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Ladder stitch			Decorative stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Rick-rack stitch			Decorative top stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Decorative stitch			Decorative stitching	**1.0 (1/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Decorative stitch			Decorative stitching	**5.5 (7/32)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Serpentine stitch			Decorative stitching and attaching elastic	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	Decorative stitch			Decorative stitching and appliqué	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**1.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	Decorative stippling stitch			Decorative stitching	**7.0 (1/4)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Decorative hems, triple straight at left	**1.0 (1/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Decorative hems, triple straight at center	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching zigzag			Decorative hems, top stitching	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Decorative hems, lace attaching pin stitch	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Decorative hems	**3.0 (1/8)**	0.0 - 7.0 (0 - 1/4)	**3.5 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Decorative hems daisy stitch	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Heirloom, decorative hems	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**3.5 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Heirloom, decorative hems	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**3.5 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Heirloom, decorative hems	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**3.5 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Heirloom, decorative hems	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Heirloom, decorative hems	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Honeycomb stitch			Heirloom, decorative hems	**5.0 (3/64)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Honeycomb stitch			Heirloom, decorative hems	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**3.5 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Heirloom, decorative hems	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Heirloom, decorative hems	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Heirloom, decorative hems	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Heirloom, decorative hems	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
	**Hemstitching**			Heirloom, decorative hems	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Decorative hems and bridging stitch	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Decorative hems. Fagoting, attaching ribbon	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	OK (J)
	Hemstitching			Decorative hems, smocking	**6.0 (15/64)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Decorative hems, smocking	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/16 - 3/16)	NO
	Hemstitching			Decorative hems, smocking	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Decorative hems	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Ladder stitch			Decorative hems. Fagoting, attaching ribbon	**7.0 (1/4)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	0.4 - 2.5 (1/64 - 3/32)	NO
	Narrow rounded buttonhole			Buttonhole on light to medium weight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
	Wide round ended buttonhole			Buttonholes with extra space for larger buttons	**5.5 (7/32)**	3.5 - 5.5 (1/8 - 7/32)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
	Tapered round ended buttonhole			Reinforced waist tapered buttonholes	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
	Round ended buttonhole			Buttonholes with vertical bar tack in heavyweight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
4-05	**Round ended buttonhole**	A		Buttonholes with bar tack	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-06	**Round double ended buttonhole**	A		Buttonholes for fine, medium to heavyweight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-07	**Narrow squared buttonhole**	A		Buttonholes for light to medium weight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-08	**Wide squared buttonhole**	A		Buttonholes with extra space for larger decorative buttons	**5.5 (7/32)**	3.5 - 5.5 (1/8 - 7/32)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-09	**Squared buttonhole**	A		Heavy-duty buttonholes with vertical bar tacks	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-10	**Stretch buttonhole**	A		Buttonholes for stretch or woven fabrics	**6.0 (15/64)**	3.0 - 6.0 (1/8 - 15/64)	**1.0 (1/16)**	0.5 - 2.0 (1/32 - 1/16)	NO
4-11	**Heirloom buttonhole**	A		Buttonholes for heirloom and stretch fabrics	**6.0 (15/64)**	3.0 - 6.0 (1/8 - 15/64)	**1.5 (1/16)**	1.0 - 3.0 (1/1 - 1/8)	NO
4-12	**Bound buttonhole**	A		The first step in making bound buttonholes	**5.0 (3/16)**	0.0 - 6.0 (0 - 15/64)	**2.0 (1/16)**	0.2 - 4.0 (1/64 - 3/16)	NO
4-13	**Keyhole buttonhole**	A		Buttonholes in heavyweight or thick fabrics for larger flat buttons	**7.0 (1/4)**	3.0 - 7.0 (1/8 - 1/4)	**0.5 (1/32)**	0.3 - 1.0 (1/64 - 1/16)	NO
4-14	**Tapered keyhole buttonhole**	A		Buttonholes in medium to heavy weight fabrics for larger flat buttons	**7.0 (1/4)**	3.0 - 7.0 (1/8 - 1/4)	**0.5 (1/32)**	0.3 - 1.0 (1/64 - 1/16)	NO
4-15	**Keyhole buttonhole**	A		Buttonholes with vertical bar tack for reinforcement in heavyweight or thick fabrics	**7.0 (1/4)**	3.0 - 7.0 (1/8 - 1/4)	**0.5 (1/32)**	0.3 - 1.0 (1/64 - 1/16)	NO
4-16	**4 steps buttonhole 1**	N	O	Left side of 4 step buttonhole	**5.0 (7/32)**	1.5 - 7.0 (1/16 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-17	**4 steps buttonhole 2**	N	O	Bar tack of 4 step buttonhole	**5.0 (7/32)**	1.5 - 7.0 (1/16 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-18	**4 steps buttonhole 3**	N	O	Right side of 4 step buttonhole	**5.0 (7/32)**	1.5 - 7.0 (1/16 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-19	**4 steps buttonhole 4**	N	O	Bar tack of 4 step buttonhole	**5.0 (7/32)**	1.5 - 7.0 (1/16 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-20	**Darning**	A		Darning of medium weight fabric	**7.0 (1/4)**	2.5 - 7.0 (3/32 - 1/4)	**2.0 (1/16)**	0.4 - 2.5 (1/64 - 1/16)	NO
4-21	**Darning**	A		Darning of heavyweight fabric	**7.0 (1/4)**	2.5 - 7.0 (3/32 - 1/4)	**2.0 (1/16)**	0.4 - 2.5 (1/64 - 1/16)	NO
4-22	**Bar tack**	A		Reinforcement at opening of pocket, etc.	**2.0 (1/16)**	1.0 - 3.0 (1/16 - 1/8)	**0.4 (1/64)**	0.3 - 1.0 (1/64 - 1/16)	NO

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
4-23	**Button sewing**	M		Attaching buttons	**3.5 (1/8)**	2.5 - 4.5 (3/32 - 3/16)	–	–	NO
4-24	**Eyelet**	N		For making eyelets, holes on belts, etc.	**7.0 (1/4)**	7.0 6.0 5.0 (1/4 15/64 3/16)	**7.0 (1/4)**	7.0 6.0 5.0 (1/4 15/64 3/16)	NO
4-25	**Star eyelet**	N		For making star-shaped eyelets on holes.	–	–	–	–	NO
5-01	**Diagonally left up (Straight)**	N		For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-02	**Reverse (Straight)**	N		For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-03	**Diagonally right up (Straight)**	N		For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-04	**Sideways to left (Straight)**	N		For attaching appliqué on tubular pieces of fabric	–	–	–	–	NO
5-05	**Sideways to right (Straight)**	N		For attaching appliqué on tubular pieces of fabric	–	–	–	–	NO
5-06	**Diagonally left down (Straight)**	N		For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-07	**Forward (Straight)**	N		For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-08	**Diagonally right down (Straight)**	N		For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-09	**Sideways to left (Zigzag)**	N		For attaching appliqué on tubular pieces of fabric	–	–	–	–	NO
5-10	**Sideways to right (Zigzag)**	N		For attaching appliqué on tubular pieces of fabric	–	–	–	–	NO
5-11	**Forward (Zigzag)**	N		For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-12	**Reverse (Zigzag)**	N		For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
Q-01	**Piecing stitch (Middle)**	J	C	Piecework/patchwork	–	–	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
Q-02	**Piecing stitch (Right)**	J		Piecework/patchwork 6.5 mm (approx. 1/4 inch) right seam allowance	**5.50 (7/32)**	0.00 - 7.00 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
Q-03	**Piecing stitch (Left)**	J		Piecework/patchwork 6.5 mm (approx. 1/4 inch) left seam allowance	**1.50 (1/16)**	0.00 - 7.00 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
Q-04	**Hand-look quilting**	J		Quilting stitch made to look like hand quilting stitch	**3.50**	0.00 - 7.00 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
Q-05	**Basting stitch**	J		Basting	**3.50**	0.00 - 7.00 (0 - 1/4)	**20 (3/4)**	5 - 30 (3/16 - 1-3/16)	NO
Q-06	**Stem stitch**	J		Reinforced stitching, sewing and decorative applications	**1.00 (1/16)**	0.00 - 7.00 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
Q-07	**Quilting appliqué zigzag stitch**	J		Zigzag stitch for quilting and sewing on appliqué quilt pieces	**3.50 (1/8)**	0.00 - 7.00 (0 - 1/4)	**1.6**	0.0 - 5.0 (0 - 3/16)	NO
Q-08	**Zigzag stitch (Right)**	J		Start from right needle position, zigzag sew at left	**3.50 (1/8)**	2.50 - 5.00 (3/32 - 3/16)	**1.6**	0.3 - 5.0 (1/64 - 3/16)	NO
Q-09	**Zigzag stitch (Left)**	J		Start from left needle position, zigzag sew at right	**3.50 (1/8)**	2.50 - 5.00 (3/32 - 3/16)	**1.6**	0.3 - 5.0 (1/64 - 3/16)	NO
Q-10	**2 steps elastic zigzag**	J		Overcasting (medium weight and stretch fabrics), tape and elastic	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**1.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
Q-11	**3 steps elastic zigzag**	J		Overcasting (medium, heavyweight and stretch fabrics), tape and elastic	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**1.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
Q-12	**Quilting appliqué stitch**	J		Quilting stitch for invisible appliqué or attaching binding	**2.00**	0.00 - 7.00 (0 - 1/16)	**2.0**	0.4 - 5.0 (1/64 - 3/16)	NO
Q-13	**Shell tuck edge**	J		Shell tuck edge finish on fabrics	**4.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	NO
Q-14	**Blanket stitch**	J		Appliqués, decorative blanket stitch	**3.50 (1/8)**	0.00 - 7.00 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
Q-15	**Quilting stippling**	J		Background quilting	**7.00 (1/4)**	0.00 - 7.00 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
Q-16	**Overcasting stitch**	J		Stretch knit seam	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**4.0 (3/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
Q-17	**Tape attaching**	J		Attaching tape to seam in stretch fabric	**5.50 (3/16)**	0.00 - 7.00 (0 - 1/4)	**1.4**	0.2 - 5.0 (1/61 - 3/16)	NO
Q-18	**Serpentine stitch**	N		Decorative stitching and attaching elastic	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**2.0**	0.2 - 5.0 (1/64 - 3/16)	NO
Q-19	**Feather stitch**	J		Fagoting, decorative stitching	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
Q-20	**Fagoting cross stitch**	J		Fagoting, bridging and decorative stitching	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
Q-21	**Couching stitch**	J		Decorative stitching, attaching cord and couching	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**1.2 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Patchwork double overlock stitch			Patchwork stitches, decorative stitching	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Smocking stitch			Smocking, decorative stitching	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Rick-rack stitch			Decorative top stitching	**4.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Decorative stitch			Decorative stitching and appliqué	**6.00 (15/64)**	0.00 - 7.00 (0 - 1/4)	**1.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	Decorative stitch			Decorative stitching	**5.50 (3/16)**	0.00 - 7.00 (0 - 1/4)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Heirloom, decorative hems	**5.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**2.0 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Hemstitching			Decorative hems and bridging stitch	**6.00 (15/64)**	0.00 - 7.00 (0 - 1/4)	**2.0 (1/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Single diamond overcast			Reinforcement and seaming stretch fabric	**6.00 (15/64)**	0.00 - 7.00 (0 - 1/4)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Overcasting stitch			Reinforcement of stretch fabric or decorative stitching	**4.00 (3/16)**	0.00 - 7.00 (0 - 1/4)	**4.0 (3/16)**	0.4 - 5.0 (1/64 - 3/16)	NO
	Free motion couching stitch			Free motion couching stitch	**3.50 (1/3)**	2.75 - 3.75 (3/32 - 1/8)	–	–	NO

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