Destiny™ II

Instruction and Reference Guide

Model BLDY2

baby lock

FOR THE LOVE OF SEWING

To register your machine warranty and receive Baby Lock product updates and offers, go to babylock.com/profile. If you have questions with registration, visit your Authorized Baby Lock Retailer.

Baby Lock Consumer Helpline: 800-313-4110

www.babylock.com

INTRODUCTION

Thank you for purchasing this embroidery and sewing machine. Before using this machine, carefully read the “IMPORTANT SAFETY INSTRUCTIONS”, and then study this manual for the correct operation of the various functions.
In addition, after you have finished reading this manual, store it where it can quickly be accessed for future reference.

IMPORTANT SAFETY INSTRUCTIONS

Please read these safety instructions before attempting to use the machine.

⚠DANGER - To reduce the risk of electric shock

1 Always unplug the machine from the electrical outlet immediately after using, when cleaning, when making any user servicing adjustments mentioned in this manual, or if you are leaving the machine unattended.

⚠WARNING - To reduce the risk of burns, fire, electric shock, or injury to persons.

2 Always unplug the machine from the electrical outlet when removing covers, or when making any adjustments mentioned in the instruction manual.

- To unplug the machine, switch the machine to the symbol “O” position to turn it off, then grasp the plug and pull it out of the electrical outlet. Do not pull on the cord.
- Plug the machine directly into the electrical outlet. Do not use an extension cord.
- Always unplug your machine if the power is cut.

3 Electrical Hazards:

- This machine should be connected to an AC power source within the range indicated on the rating label. Do not connect it to a DC power source or inverter. If you are not sure what kind of power source you have, contact a qualified electrician.
- This machine is approved for use in the country of purchase only.

4 Never operate this machine if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or water is spilled on the unit. Return the machine to the nearest authorized Baby Lock retailer for examination, repair, electrical or mechanical adjustment.

- While the machine is stored or in use if you notice anything unusual, such as an odor, heat, discoloration or deformation, stop using the machine immediately and unplug the power cord.
- When transporting the sewing machine, be sure to carry it by its handle. Lifting the sewing machine by any other part may damage the machine or result in the machine falling, which could cause injuries.
- When lifting the sewing machine, be careful not to make any sudden or careless movements, otherwise you may injure your back or knees.

5 Always keep your work area clear:

- Never operate the machine with any air openings blocked. Keep ventilation openings of the sewing machine and foot control free from the build up of lint, dust, and loose cloth.
- Do not store objects on the foot controller.
- Do not use extension cords. Plug the machine directly into the electrical outlet.
- Never drop or insert any object into any opening.
- Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
- Do not use the machine near a heat source, such as a stove or iron; otherwise, the machine, power cord or garment being sewn may ignite, resulting in fire or an electric shock.
- Do not place this sewing machine on an unstable surface, such as an unsteady or slanted table, otherwise the sewing machine may fall, resulting in injuries.

6 Special care is required when sewing:

- Always pay close attention to the needle. Do not use bent or damaged needles.
- Keep fingers away from all moving parts. Special care is required around the machine needle.
- Switch the sewing machine to the symbol “O” position to turn it off when making any adjustments in the needle area.
- Do not use a damaged or incorrect needle plate, as it could cause the needle to break.
- Do not push or pull the fabric when sewing, and follow careful instruction when free motion stitching so that you do not deflect the needle and cause it to break.

7 This machine is not a toy:

- Your close attention is necessary when the machine is used by or near children.
- The plastic bag that this sewing machine was supplied in should be kept out of the reach of children or disposed of. Never allow children to play with the bag due to the danger of suffocation.
- Do not use outdoors.

8 For a longer service life:

- When storing this machine, avoid direct sunlight and high humidity locations. Do not use or store the machine near a space heater, iron, halogen lamp, or other hot objects.
- Use only neutral soaps or detergents to clean the case. Benzene, thinner, and scouring powders can damage the case and machine, and should never be used.
- Always consult the Instruction and Reference Guide when replacing or installing any assemblies, the presser feet, needle, or other parts to assure correct installation.

9 For repair or adjustment:

- If the light unit is damaged, it must be replaced by an authorized Baby Lock retailer.
- In the event a malfunction occurs or adjustment is required, first follow the troubleshooting table in the back of the Instruction and Reference Guide to inspect and adjust the machine yourself. If the problem persists, please consult your local authorized Baby Lock retailer.

Use this machine only for its intended use as described in the manual.

Use accessories recommended by the manufacturer as contained in this manual.

Use only the interface cable (USB cable) included with this machine.

Use only the mouse designed specifically for this machine.

Use only the sensor pen included with this machine.

The contents of this manual and specifications of this product are subject to change without notice.

For additional product information and updates, visit our website at www.babylock.com

SAVE THESE INSTRUCTIONS
This machine is intended for household use.

FOR USERS IN COUNTRIES EXCEPT EUROPEAN COUNTRIES

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

FOR USERS IN EUROPEAN COUNTRIES

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

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Federal Communications Commission (FCC) Declaration of Conformity

Responsible Party: Tacony Corporation
1760 Gilsinn Lane,
Fenton, Missouri 63026 USA

declares that the product

Product Name: Baby Lock Sewing Machine
Model Number: BLDY/BLDY2

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the retailer or an experienced radio/TV technician for help.
- The included interface cable should be used in order to ensure compliance with the limits for a Class B digital device.
- Changes or modifications not expressly approved by Tacony Corporation could void the user's authority to operate the equipment.

Laser Notices

Laser Safety

This sewing machine is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the sewing machine does not produce hazardous laser radiation.

IEC 60825-1 Specification

This sewing machine is a Class 1 laser product as defined in IEC 60825-1:2007 specifications.

The laser beam emitted by the laser unit installed in this machine is restricted to an output at a safe level. However, the machine contains 6-milliwat, 630-640nanometer wavelength, 6-12 degree at parallel divergence angle, 24-34 degree at perpendicular divergence angle, InGaAlP laser diodes. Therefore, eye damage may result from disassembling or altering this machine.
Safety precautions have been designed to prevent any possible laser beam exposure to the operator.

FDA Regulations

U.S. Food and Drug Administration (FDA) has implemented regulations for laser products manufactured on and after August 2, 1976. Compliance is mandatory for products marketed in the United States. The label shown on the back of the sewing machine indicates compliance with the FDA regulations and must be attached to laser products marketed in the United States.

Tacony Corporation
1760 Gilsinn Lane Fenton, Missouri 63026, U.S.A.

This product complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

⚠ CAUTION

- **Use of controls, adjustments or the performance of procedures other than those specified in this manual may result in hazardous radiation exposure.**

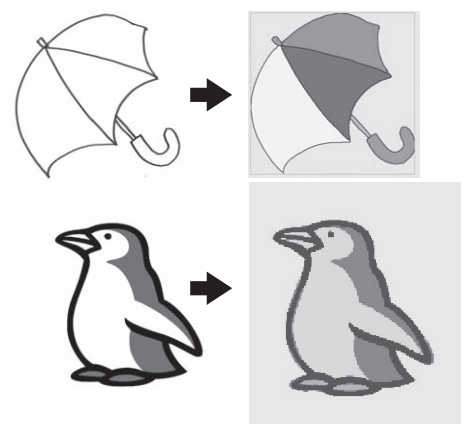
OUTSTANDING FEATURES

IQ Designer

Draw your own shape or lines to design original embroidery patterns. You can specify colors, line type and fill stitch type. Try the stipple-like embroidery pattern. It's very easy and fun!

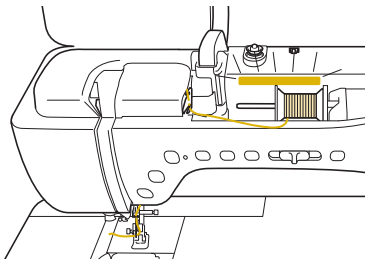
Line Scan / Fill Scan

You don't need a computer to create line art anymore. Scan your favorite drawing or illustration or import a JPEG format data to make your original embroidery pattern. Embroider your unforgettable memories!



Spool Stand LED Lighting

Now, your sewing machine shows you the thread color you are going to embroider next.

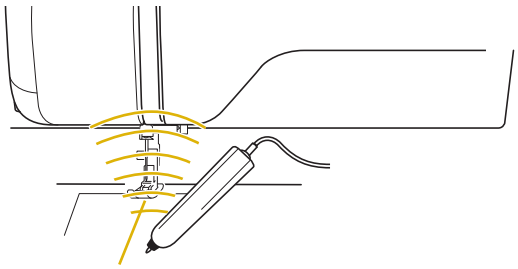


Couching Dual Feed Foot with Dual Feed

Decorative couching gains more popularity everyday. The powerful dual feed foot helps you add embellishment securely with an attractive result to your favorite materials. Enjoy creating many types of decorative couching embellishments with this dual feed foot.

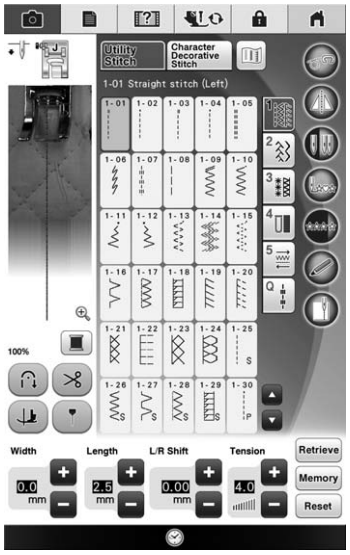
Improved Laser Guideline Marker

It's easy and accurate to specify the stitch position using the improved laser guideline marker. You can use this function easily without any preparation.



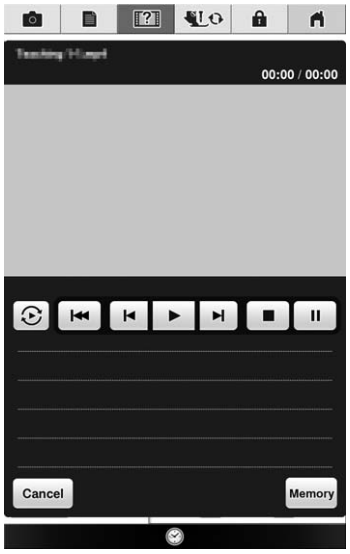
Improved Camera Function

Can you imagine a sewing machine with a built-in camera? Not only viewing the close up view of the needle position, but also you can align the embroidery position, connect the embroidery patterns and place the pattern position while checking the fabric image. The camera functions become clearer and more accurate.



Playing MPEG-4 (MP4) Videos

Your MPEG-4 (MP4) videos can be played and saved from USB media. It's going to be easier to create your project watching the tutorial video on the machine.
Original tutorial videos are installed in this machine. When you find this icon [?] on the title in this manual, you can find the tutorial video of the procedure in your machine.



WHAT YOU CAN DO WITH THIS MACHINE

Getting Ready

To learn the operation of the principal parts and the screens

Chapter 1
Page 27

Sewing Basics

To learn how to prepare for sewing and basic sewing operations

Chapter 2
Page 79

Utility Stitches

Pre-programmed with more than 100 frequently used stitches

Chapter 3
Page 107

Character/Decorative Stitches

The variety of stitches widen your creativity

Chapter 4
Page 167

Basic Embroidery

Maximum 36 cm × 24 cm (approx. 14 × 9.5 inches) for large embroidery designs

Chapter 5
Page 195

Advanced Embroidery

Maximum 36 cm × 24 cm (approx. 14 × 9.5 inches) for large embroidery designs

Chapter 6
Page 271

How to Create Bobbin Work

To learn how to create bobbin work

Chapter 7
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IQ Designer

Create original embroidery pattern

Chapter 8
Page 357

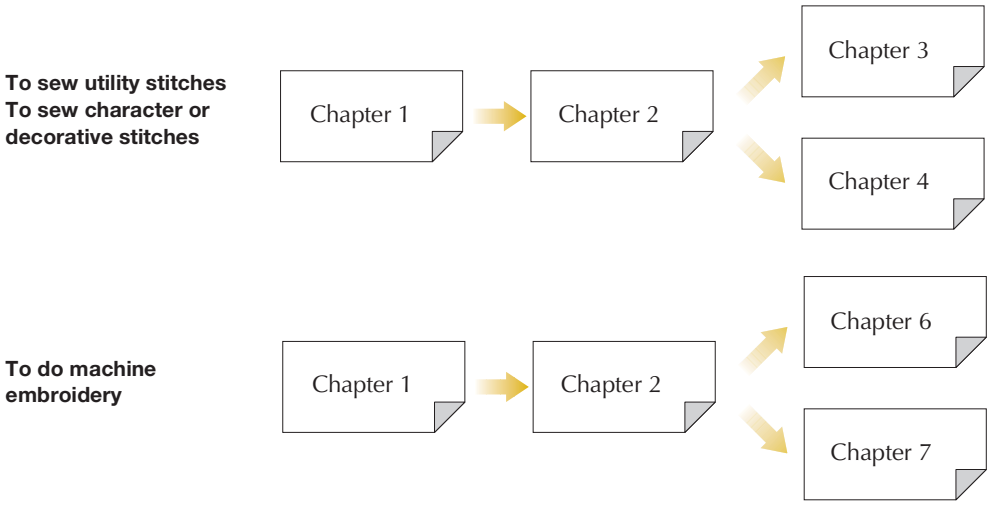
Appendix

Caring for your machine and dealing with errors and malfunctions

Chapter 9
Page 375

HOW TO USE THIS MANUAL

Chapter 1 and Chapter 2 explain your sewing machine's basic operation procedures for someone who is using the sewing machine for the first time. If you want to sew utility stitches or character/ decorative stitches, read Chapter 1 and Chapter 2, then go on to Chapter 3 (Utility Stitches) or Chapter 4 (Character/ Decorative Stitches).
When you are ready to begin using the embroidery function after reading Chapter 1 and Chapter 2, proceed to Chapter 6 (Basic Embroidery) and Chapter 7 (Advanced Embroidery).
In the screens appearing in the step-by-step instructions, the parts referred to in the operations are marked with . Compare the screen in the directions with the actual screen, and carry out the operation.
If, while using the machine, you experience something you do not understand, or there is a function you would like to know more about, refer to the index at the back of the Instruction and Reference Guide in conjunction with the table of contents to find the section of the manual you should refer to.



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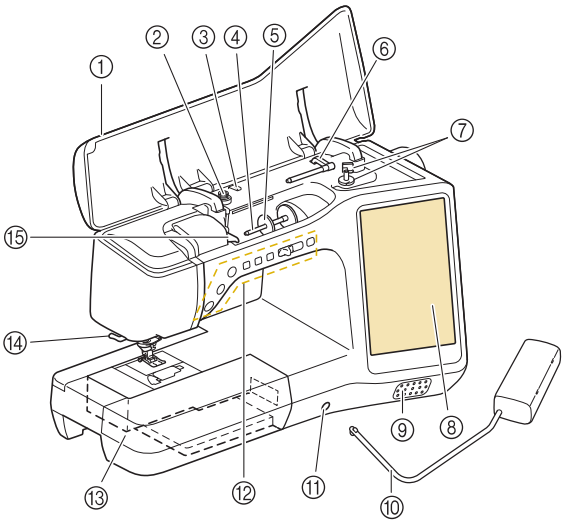
NAMES OF MACHINE PARTS AND THEIR FUNCTIONS

The names of the various parts of the sewing machine and their functions are described below. Before using the sewing machine, carefully read these descriptions to learn the names of the machine parts.

Machine

■ Front View



① **Top cover**
Open the top cover when threading the machine or winding the bobbin.

② **Pre-tension disk**
Pass the thread around the pre-tension disk when winding the bobbin thread. (page 52)

③ **Thread guide for bobbin winding**
Pass the thread through this thread guide when winding the bobbin thread. (page 52)

④ **Spool pin**
Place a spool of thread on the spool pin. (page 60)

⑤ **Spool cap**
Use the spool cap to hold the spool of thread in place. (page 60)

⑥ **Supplemental spool pin**
Use this spool pin to wind the bobbin thread, or to sew with the twin needle. (page 52, 63)

⑦ **Bobbin winder**
Use the bobbin winder when winding the bobbin. (page 52)

⑧ **LCD (liquid crystal display)**
Settings for the selected stitch and error messages appear in the LCD. (page 30)

⑨ **Speaker**

⑩ **Knee lifter**
Use the knee lifter to raise and lower the presser foot. (page 94)

⑪ **Knee lifter slot**
Insert the knee lifter into the slot. (page 94)

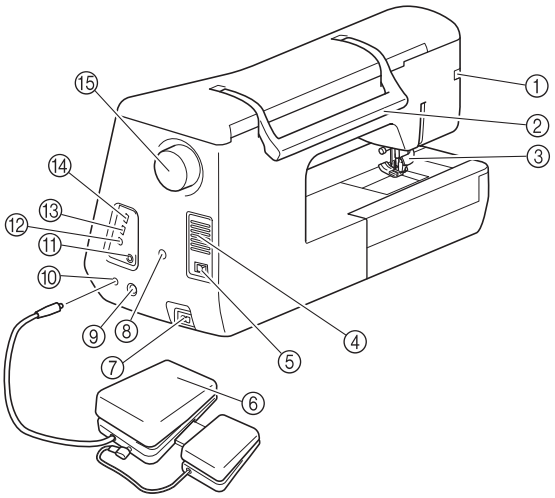
⑫ **Operation buttons (7 buttons) and sewing speed controller**
Use these buttons and the slide to operate the sewing machine. (page 17)

⑬ **Flat bed attachment with accessory compartment**
Store presser feet and bobbins in the accessory compartment of the flat bed attachment. When sewing cylindrical pieces, remove the flat bed attachment. (page 18)

⑭ **Thread cutter**
Pass the threads through the thread cutter to cut them. (page 62)

⑮ **Thread guide plate**
Pass the thread around the thread guide plate when threading upper thread. (page 60)

■ Right-side/Rear View



① **Connector for the presser foot**
Connect the dual feed foot or embroidery foot with LED pointer. (page 70, 197)

② **Handle**
Carry the sewing machine by its handle when transporting the machine.

③ **Presser foot lever**
Raise and lower the presser foot lever to raise and lower the presser foot. (page 68)

④ **Air vent**
The air vent allows the air surrounding the motor to circulate. Do not cover the air vent while the sewing machine is being used.

⑤ **Main power switch**
Use the main power switch to turn the sewing machine ON and OFF. (page 28)

⑥ **Multi-function foot controller**
Various sewing machine operations can be programmed into the multi-function foot controller. For some countries and areas, normal foot controller is included with the machine.

⑦ **Power cord receptacle**
Insert the power cord into the machine receptacle. (page 28)

⑧ **Sensor pen holder connector**
Connect the included sensor pen holder. (page 49)

⑨ **Sensor pen jack**
Connect the sensor pen. (page 48)

⑩ **Foot controller jack**
Insert the foot controller plug into its jack on the machine. (page 81)

⑪ **Headphones or external speaker jack**
Connect the headphone.

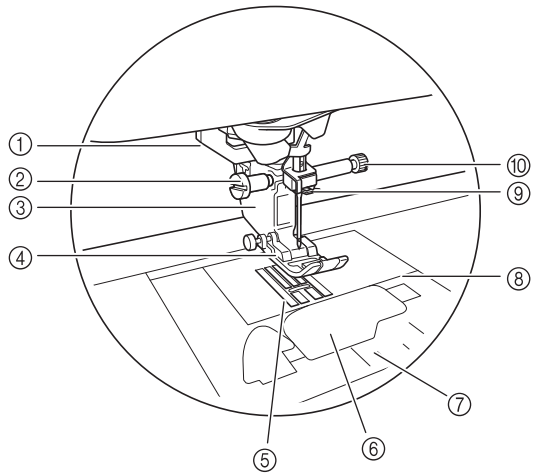
⑫ **USB port for computer**
In order to import/export patterns between a computer and the machine, plug the USB cable into the USB port. (page 46, 187, 189, 192, 208, 284, 300, 402)

⑬ **USB port for mouse (page 46)**

⑭ **USB port**
In order to send patterns from/to USB media, plug the USB media directly into the USB port. (page 34, 46,187,188, 191, 207, 225, 274, 284, 299, 401)

⑮ **Handwheel**
Rotate the handwheel toward you (counterclockwise) to raise and lower the needle. The wheel should be turned toward the front of the machine.

Needle and Presser Foot Section



① **Buttonhole lever**
The buttonhole lever is used with the one-step buttonhole foot to create buttonholes. (page 147)

② **Presser foot holder screw**
Use the presser foot holder screw to hold the presser foot in place. (page 69)

③ **Presser foot holder**
The presser foot is attached to the presser foot holder. (page 68)

④ **Presser foot**
The presser foot consistently applies pressure to the fabric as sewing takes place. Attach the appropriate presser foot for the selected stitch. (page 68)

⑤ **Feed dogs**
The feed dogs feed the fabric in the sewing direction.

⑥ **Bobbin cover**
Open the bobbin cover to set the bobbin. (page 57, 123)

⑦ **Needle plate cover**
Remove the needle plate cover to clean the race. (page 117, 260)

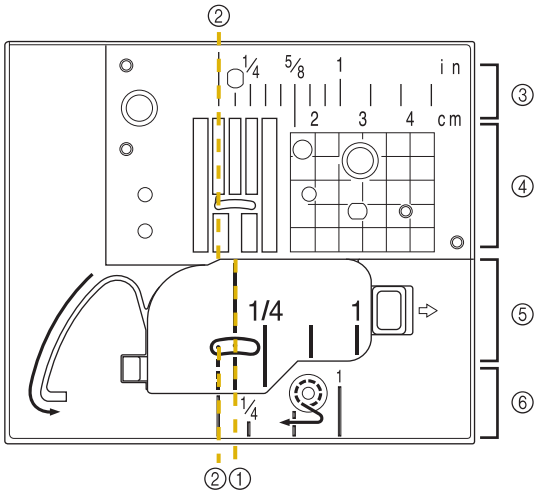
⑧ **Needle plate**
The needle plate is marked with guides to help sew straight seams. (page 116)

⑨ **Needle bar thread guide**
Pass the upper thread through the needle bar thread guide. (page 60)

⑩ **Needle clamp screw**
Use the needle clamp screw to hold the needle in place. (page 69)

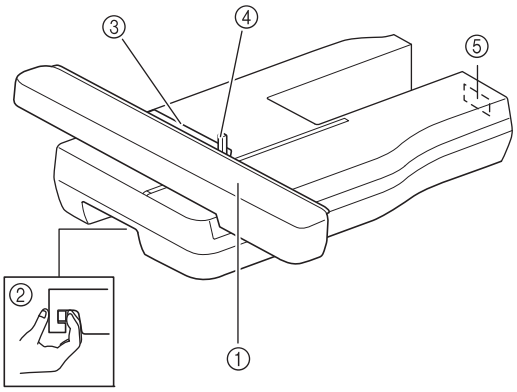
Measurements on the needle plate, bobbin cover (with mark) and needle plate cover

The measurements on the bobbin cover are references for patterns with a middle (center) needle position. The measurements on the needle plate and the needle plate cover are references for stitches with a left needle position.



① **For stitches with a middle (center) needle position**
② **For stitches with a left needle position**
③ **Left needle position on the needle plate <inch>**
④ **Left needle position on the needle plate <cm>**
⑤ **Middle (center) needle position on the bobbin cover (with mark) <inch>**
⑥ **Left needle position on the needle plate cover <inch>**

Embroidery Unit



① **Carriage**
The carriage moves the embroidery frame automatically when embroidering. (page 197)

② **Release lever (located under the embroidery unit)**
Press the release lever to remove the embroidery unit. (page 198)

③ **Embroidery frame holder**
Insert the embroidery frame into the embroidery frame holder to hold the frame in place. (page 247)

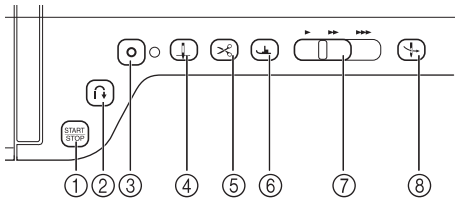
④ **Frame-securing lever**
Press the frame-securing lever down to secure the embroidery frame. (page 247)

⑤ **Embroidery unit connection**
Insert the embroidery unit connection into the connection port when attaching the embroidery unit. (page 197)

⚠ CAUTION

- **Before inserting or removing the embroidery unit, turn the main power to off.**
- **After the embroidery frame is set in the frame holder, be sure the frame-securing lever is correctly lowered.**

Operation Buttons



① **"Start/Stop" button**
Press this button and the machine will sew a few stitches at a slow speed and then begin sewing at the speed set by the sewing speed controller. Press the button again to stop the machine. Hold the button in to sew at the machine's slowest speed. The button changes color according to the machine's operation mode.

Green:	The machine is ready to sew or is sewing.
Red:	The machine cannot sew.

② **"Reverse Stitch" button**
For straight, zigzag, and elastic zigzag stitch patterns that take reverse stitches, the machine will sew reverse stitches at low speed only while holding down the "Reverse Stitch" button. The stitches are sewn in the opposite direction.
For other stitches, use this button to sew reinforcement stitches at the beginning and end of sewing. Press and hold this button, and the machine sews 3 stitches in the same spot and stops automatically. (page 83)

③ **"Reinforcement Stitch" button**
Use this button to sew a single stitch repeatedly and tie-off. For character/decorative stitches, press this button to end with a full stitch instead of at a mid-point. The LED light beside this button lights up while the machine is sewing a full motif, and automatically turns off when the sewing is stopped. (page 83)

④ **"Needle Position" button**
Use this button when changing sewing direction or for detailed sewing in small areas. Press this button to raise or lower the needle position. With this button, you can lower and raise the needle to sew a single stitch.

⑤ **"Thread Cutter" button**
Press this button after sewing to automatically trim the excess thread.

⑥ **"Presser Foot Lifter" button**
Press this button to lower the presser foot and apply pressure to the fabric. Press this button again to raise the presser foot.

⑦ **Sewing Speed controller**
Use this controller to adjust the sewing speed. Move the slide to the left to sew at slower speeds. Move the slide to the right to sew at higher speeds. Beginners should sew at a slow speed.

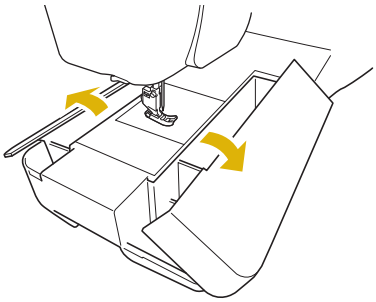
⑧ **"Automatic Threading" button**
Use this button to automatically thread the needle.

⚠ CAUTION

- **Do not press the thread cutter button after the threads have been cut. The needle may break and threads may become tangled, or damage to the machine may occur.**

Using the Flat Bed Attachment

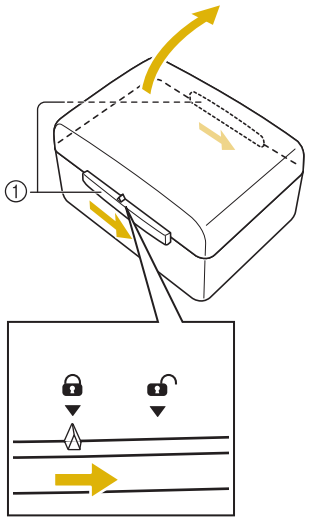
Pull the top of the flat bed attachment to open the accessory compartment.



Using the Accessory Case

■ Opening the Accessory Case

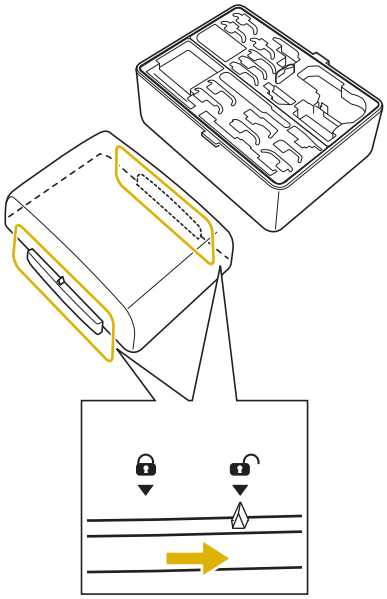
Fully slide the bar on each side of the accessory case to the unlocked position, and then lift off the lid to open the case.
The case can only be opened or locked correctly if both bars are slid in the same direction.



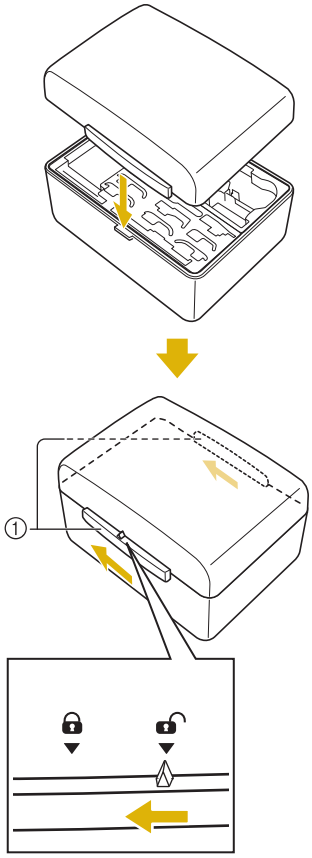
① Bars

■ Closing the Accessory Case

1 Fully slide the bar on each side of the accessory case lid to the unlocked position.



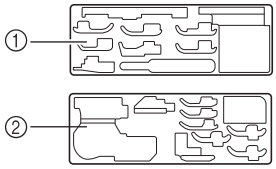
2 Place the lid on top of the case so that the notches in the lid align with the tabs on the case, and then slide the bars on each side back to the locked position.



① Bars

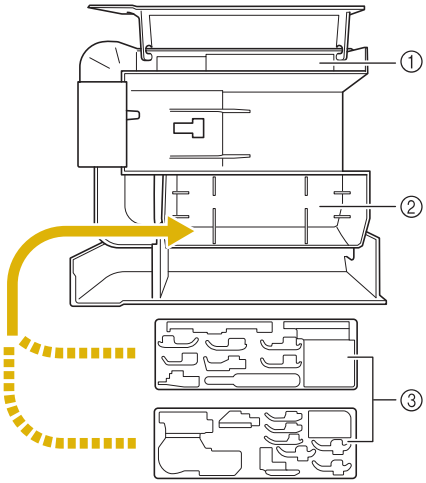
■ Using the Accessory Trays

Two presser foot storage trays are stored in the included accessory case. One is for presser feet for utility sewing, and the other is for presser feet for embroidery and machine quilting.



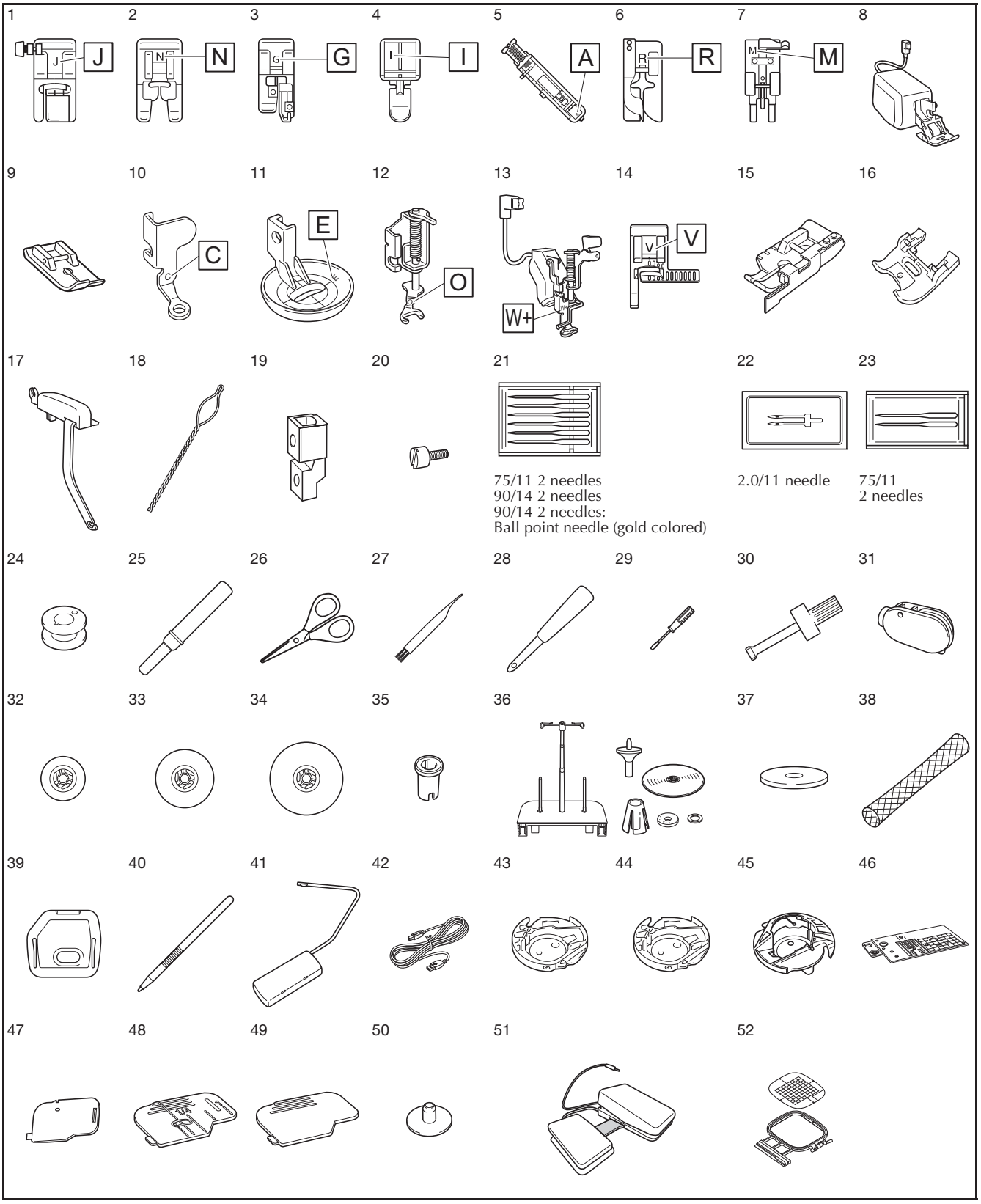
① For presser feet for utility sewing
② For presser feet for embroidery and machine quilting

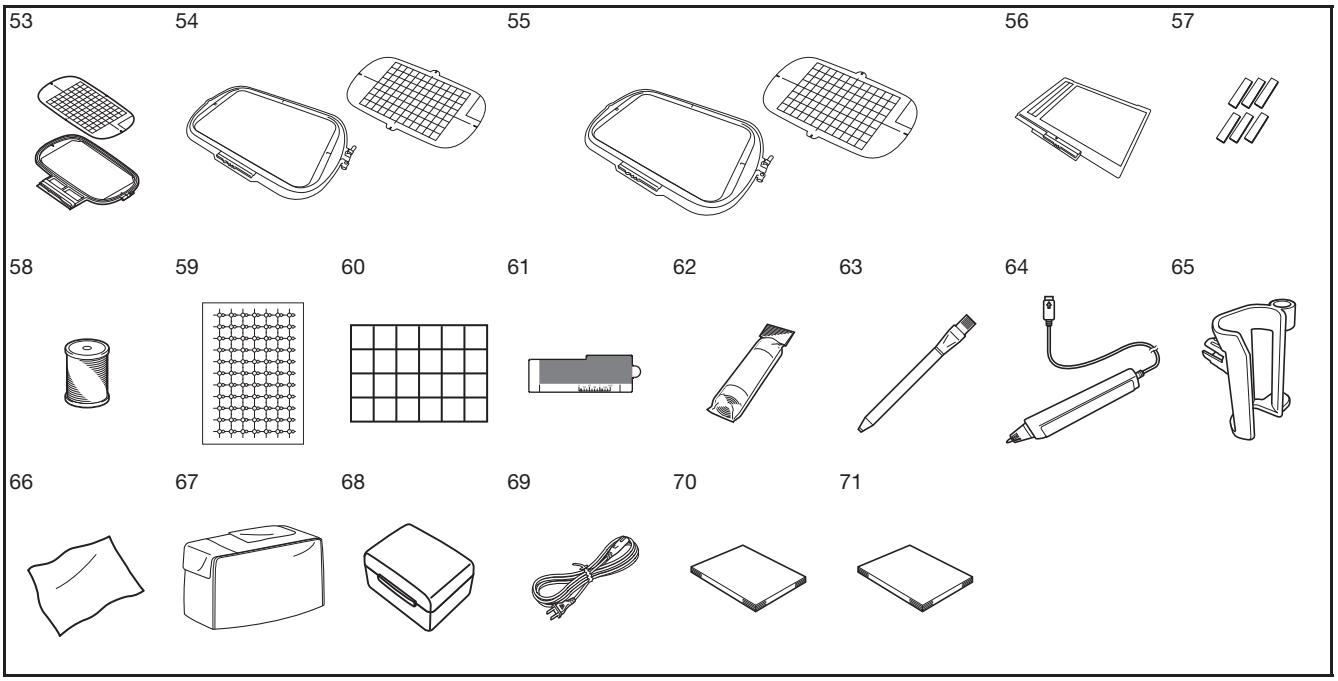
For your convenience, a presser foot storage tray can be stored in the accessory compartment of the flat bed attachment.



① Additional storage space of the flat bed attachment
② Presser foot storage space of the flat bed attachment
③ Presser foot storage trays

Included Accessories





No.	Part Name	Part Code
1	Zigzag foot “J” (on machine)	XC3022-001
2	Monogramming foot “N”	X53840-351
3	Overcasting foot “G”	XC3098-051
4	Zipper foot “I”	X59370-051
5	Buttonhole foot “A”	X57789-351
6	Blind stitch foot “R”	X56409-051
7	Button fitting foot “M”	130489-001
8	Dual feed foot	XF4068-101
9	Straight stitch foot	XD0826-051
10	Free motion quilting foot “C”	XF4737-001
11	Free motion echo quilting foot “E”	XE0766-001
12	Free motion open toe quilting foot “O”	XF4873-001
13	Embroidery foot “W+” with LED pointer	XF3124-001
14	Vertical stitch alignment foot “V”	XE0005-001
15	1/4 quilting foot with guide	XC6800-251
16	Couching dual feed foot	XF9332-001
17	Top-left yarn guide	XG0786-001
18	Yarn threader	XF7187-001
19	Adapter	XF3613-001
20	Screw (small)	XA4813-051
21	Needle set *1	XE4962-001
22	Twin needle *2	XE4963-001
23	Ball point needle set *3	XD0705-151
24	Bobbin × 10 (One is on machine.)	X52800-150
25	Seam ripper	XF4967-001
26	Scissors	XC1807-121
27	Cleaning brush	X59476-051
28	Eyelet punch	XZ5051-001
29	Screwdriver (small)	X55468-051
30	Screwdriver (large)	XC4237-021
31	Multi-purpose screwdriver	BLMPD
32	Spool cap (small)	130013-154
33	Spool cap (medium) × 2 (One is on machine.)	X55260-153
34	Spool cap (large)	130012-054
35	Thread spool insert (mini king spool insert)	XA5752-121

No.	Part Name	Part Code
36	Spool stand	BLMA-STS See page 24
37	Spool felt (on machine)	X57045-051
38	Spool net × 2	XA5523-050
39	Embroidery needle plate cover	XE5131-001
40	Touch pen (stylus)	XA9940-051
41	Knee lifter	XE4713-001
42	USB cable	XD0745-051
43	Standard bobbin case (green marking on the screw) (on machine)	XE5342-101
44	Alternate bobbin case (no color on the screw)	XC8167-551
45	Bobbin case (gray, for bobbin work)	XE8298-001
46	Straight stitch needle plate	XF3076-001
47	Cord guide bobbin cover (with single hole)	XE8991-101
48	Bobbin cover (with mark)	XF0750-101
49	Bobbin cover (on machine)	XE8992-101
50	Bobbin center pin and instruction sheet	XF5048-001
51	Multi-function foot controller	BLMA-MFC
52	Embroidery frame set (medium) H 10 cm × W 10 cm (H 4 inches × W 4 inches)	EF74: Frame EF78: Embroidery sheet
53	Embroidery frame set (large) H 18 cm × W 13 cm (H 7 inches × W 5 inches)	EF75: Frame EF79: Embroidery sheet
54	Embroidery frame set (extra large) H 30 cm × W 20 cm (H 12 inches × W 8 inches)	EF92: Frame EF94: Embroidery sheet
55	Embroidery frame set (super large) H 36 cm × W 24 cm (H 14 inches × W 9-1/2 inches)	EF95: Frame EF96: Embroidery sheet
56	Scan frame	XF9321-001
57	Magnet × 6	XF9325-001
58	Embroidery bobbin thread	BBT-W
59	Embroidery positioning sticker sheets × 4	XE4912-501
60	White calibration stickers (solid)	XE7916-001
61	Edge sewing sheet × 6	XE5500-001

No.	Part Name	Part Code
62	Stabilizer material	X81176-001
63	Chalk pencil	XE8568-001
64	Sensor pen	XF4702-101
65	Pen holder	XF2973-001
66	LCD cleaning cloth	XE5023-101
67	Dust cover	XG0717-001
68	Accessory case	XF9966-001
69	Power cord	XC6052-051
70	Instruction and Reference Guide	XF9969-001
71	Quick reference guide	XF9970-001

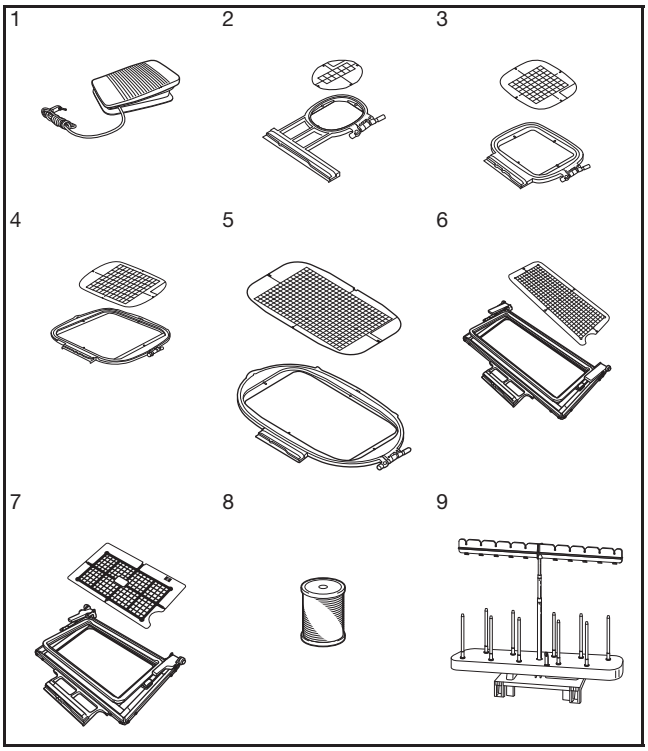
*1 75/11 2 needles
90/14 2 needles
90/14 2 needles: Ball point needle (gold colored)
*2 2.0/11 needle
*3 75/11 2 needles:
Ball point needle for embroidery
HAX130EBBR

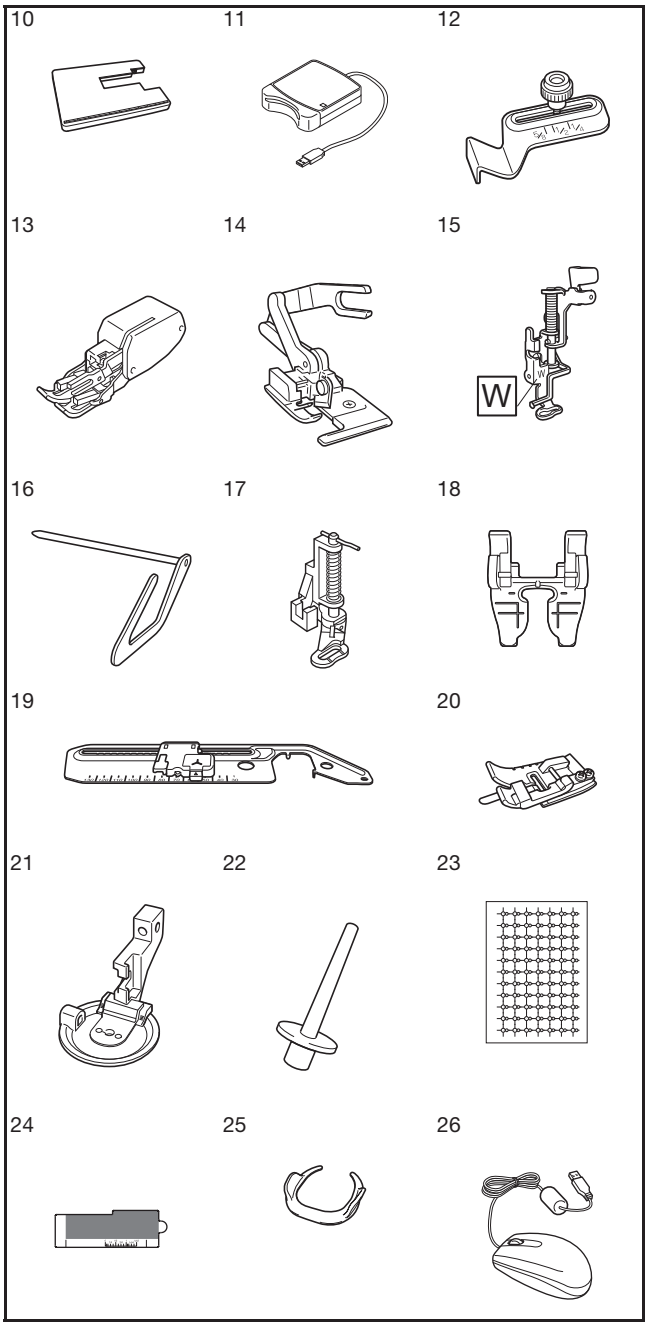
Memo

- Foot controller: Model U
  This foot controller can be used on the machine with product code 882-W21. The product code is mentioned on the machine rating plate.
- Always use accessories recommended for this machine.
- The screw for the presser foot holder is available through your authorized Baby Lock retailer (Part code XA4813-051).

Options

The following are available as optional accessories to be purchased separately from your authorized Baby Lock retailer.





No.	Part Name	Part Code
1	Foot Controller	XC8816-051
2	Embroidery frame set (small) H 2 cm × W 6 cm (H 1 inch × W 2-1/2 inches)	EF73: Frame EF77: Embroidery sheet
3	Square embroidery frame H 15 cm × W 15 cm (H 6 inches × W 6 inches)	BLMA-150
4	Embroidery frame set (quilt) H 20 cm × W 20 cm (H 8 inches × W 8 inches)	EF91: Frame EF93: Embroidery sheet
5	Embroidery frame set (extra large) H 26 cm × W 16 cm (H 10-1/4 inches × W 6-1/4 inches)	EF81: Frame EF84: Embroidery sheet
6	Border embroidery frame H 30 cm × W 10 cm (H 12 inches × W 4 inches)	BLMA-CBH
7	Border embroidery frame set H 18 cm × W 10 cm (H 7 inches × W 4 inches)	BLSO-BF
8	Embroidery bobbin thread (white)	BBT-W
	Embroidery bobbin thread (black)	BBT-B

No.	Part Name	Part Code
9	10 spool stand	BLMA-TS
10	Extension table	BLMA-ET
11	Embroidery card reader	BLECR
12	Seam guide	BLG-SG
13	Walking foot	FA12
14	Side cutter foot	BLG-SCF
15	Embroidery foot “W”	XF4012-101
16	Quilting guide	FA11
17	Free-motion quilting foot	FA2
18	Open toe for dual feed foot	BLTY-OTDF
19	Circular attachment	BL-CSA
20	Edge joining foot	ESG-EJF
21	Couching Foot	BLTY-CCF
22	Vertical spool pin	XC8619-052
23	Embroidery positioning sticker sheets × 8	BLSO-EPS
24	Edge sewing sheet × 5	BLSO-ESS
25	Free motion guide grip	XG1921-001
26	USB mouse	XE4904-101

Memo

- All specifications are correct at the time of printing. Please be aware that some specifications may change without notice.

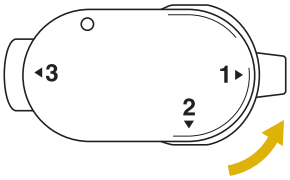
Note

- Visit your nearest authorized Baby Lock retailer for a complete listing of optional accessories for your machine.

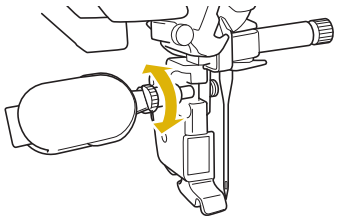
Using the Multi-purpose Screwdriver

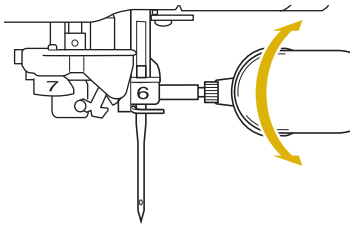
Since the screwdriver can be changed to three different positions, it can be extremely useful for the various machine preparations.

■ Position “1”

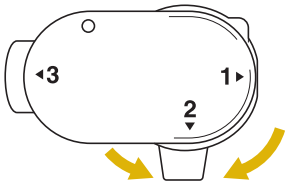


You can install/remove the presser foot holder, needle clamp screw.

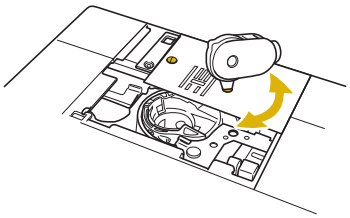




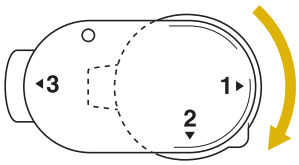
■ Position “2”



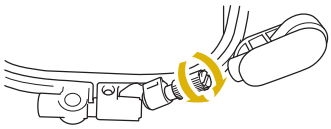
You can install/remove the needle plate.



■ Position "3"



The multi-purpose screwdriver can be positioned over the screw on the embroidery frame to tighten the screw after hooping the fabric or when removing the fabric.

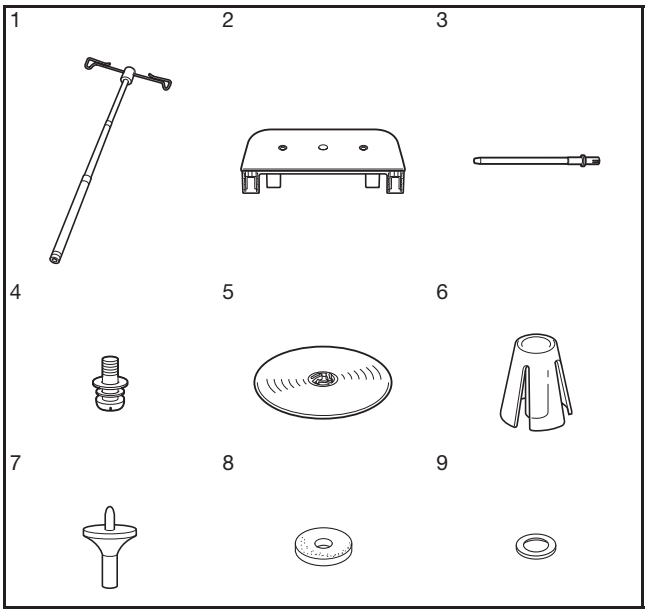


Note

- When rotating the multi-purpose screwdriver, do not forcefully rotate it in the direction that it does not rotate; otherwise, it may break.

Using the Spool Stand

The included spool stand is useful when using thread spools with a large diameter (cross-wound thread). The spool stand can hold two spools of thread.



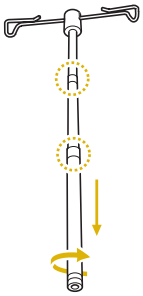
No.	Part Name	Part Code
1	Telescopic thread guide	XE0776-001
2	Spool support	XE4958-101
3	Spool pin × 2	XA6313-051
4	Screw and washer	XC7568-051
5	Spool cap (XL) × 2	XE0779-001
6	Spool holder × 2	XA0679-050
7	Spool cap base × 2	XE0780-001
8	Spool felt × 2	XC7134-051
9	Ring × 4	026030-136

⚠ CAUTION

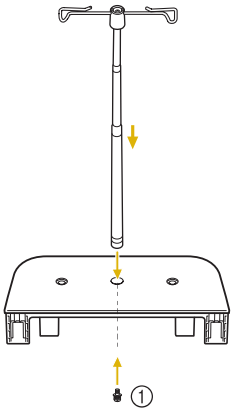
- **Do not lift the handle of the machine while the spool stand is installed.**
- **Do not push or pull the telescopic thread guide or spool pins with extreme force, otherwise damage may result.**
- **Do not place any object other than spools of thread on the spool support.**
- **Do not try to wind thread on the bobbin while sewing using the spool stand.**

■ How to assemble the spool stand

1 Fully extend the telescopic thread guide shaft, and then rotate the shaft until the two internal stoppers click into place.



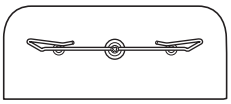
2 Insert the telescopic thread guide into the round hole at the center of the spool support, and then use a screwdriver to securely tighten the screw (①) from the reverse side.



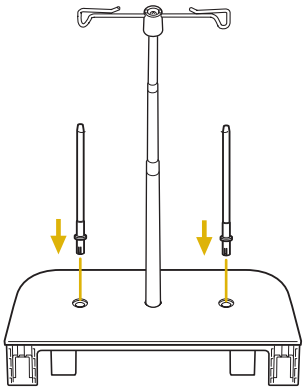
① Screw

Note

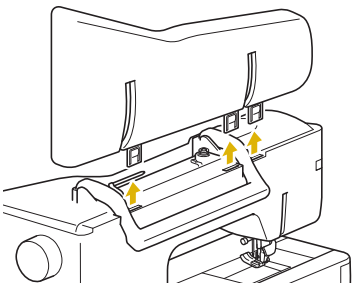
- Make sure that the stoppers on the telescopic thread guide shaft are firmly in place and that the thread guide openings are directly above the two holes for spool pins in the spool support. In addition, check that the shaft is securely tightened in the spool support.



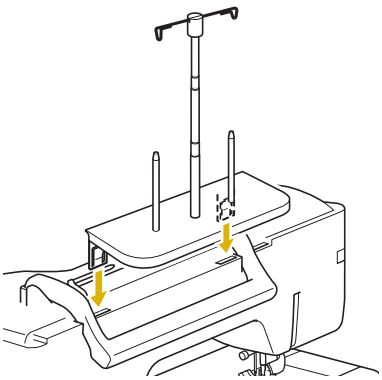
3 **Firmly insert the two spool pins into the two holes in the spool support.**



4 **Open the upper cover of the machine, and then pull the upper cover up to remove it from the machine.**

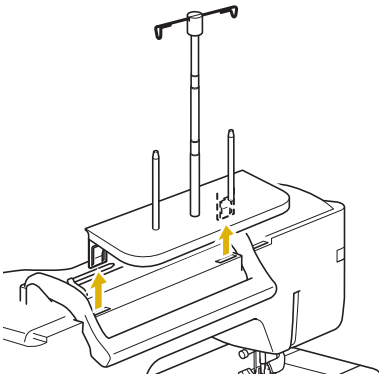


5 **Insert the spool stand onto the notches of the machine.**

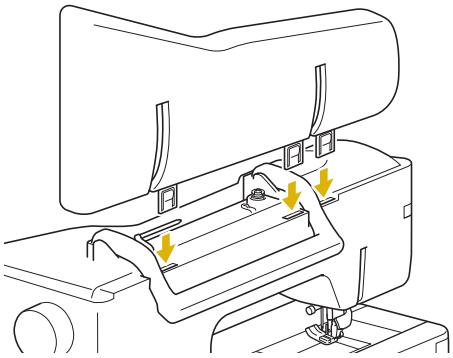


■ How to remove

1 **Pull the spool stand up to remove it from the machine.**



2 **Attach the upper cover to the machine.**

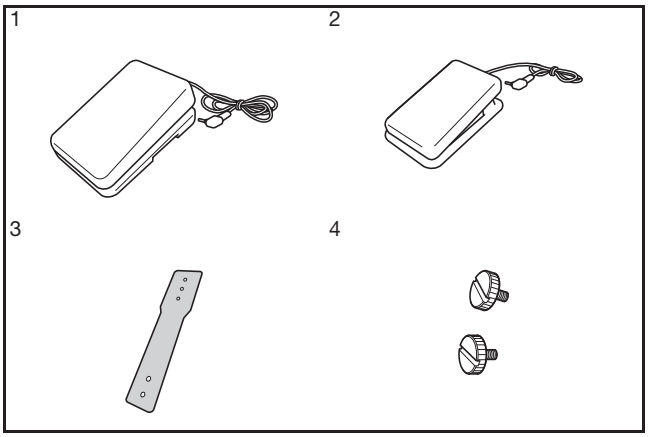


Memo

- See page 56 about the bobbin winding using the spool stand.
- See page 65 about the upper threading using the spool stand.

Using the Multi-function Foot Controller (Only for supplied models)

Refer to see "Specifying the Multi-Function Foot Controller (Only for supplied models)" on page 82, before using this foot controller.

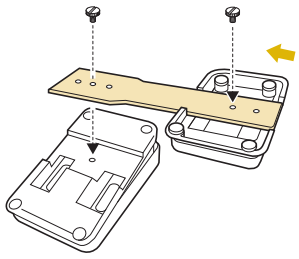


No.	Part Name	Part Code
1	Main foot controller	XF6709-201
2	Side pedal	XF3217-001
3	Mounting plate	XF3222-001
4	Mounting screw × 2	XF3223-001

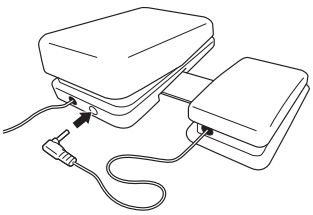
Assembling the Controller

1 Align the wide side of the mounting plate with the notch in the bottom of the main foot controller, and then secure them together with a screw.

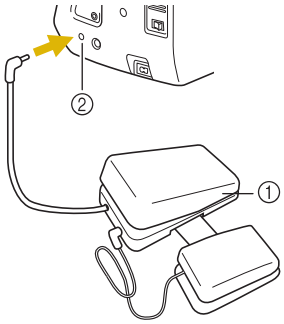
Feed the other side of the mounting plate into the notch on the bottom of the side pedal, and then secure them together with a screw.



2 Insert the plug for the side pedal into the jack at the back of the main foot controller.



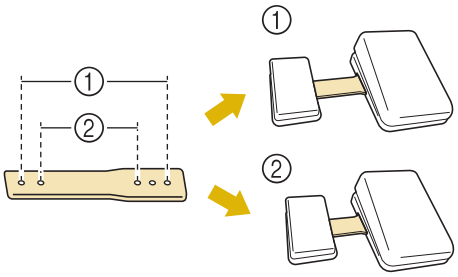
3 Insert the plug for the main foot controller into the foot controller jack on the right side of the machine.



① Multi-function foot controller
② Foot controller jack

■ Adjusting the Pedal Positions

The pedal spacing can be adjusted depending on the screw holes used in the mounting plate. The pedal spacing is the widest when the pedals are attached using the outermost screw holes ①; the pedal spacing is the narrowest when they are attached using the innermost screw holes ②.



Note

- The side pedal may be attached on the right or left side of the main foot controller.
- For greater distance you always have the option of not connecting the side pedal and main foot controller using the mounting plate, making sure that both pedals are connected using the jack from the side pedal to the main foot controller.

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TURNING THE MACHINE ON/OFF

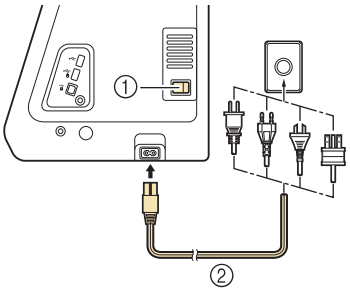
⚠ WARNING

- Use only regular household electricity for the power source. Using other power sources may result in fire, electric shock, or damage to the machine.
- Make sure that the plugs on the power cord are firmly inserted into the electrical outlet and the power cord receptacle on the machine. Otherwise, a fire or electric shock may result.
- Do not insert the plug on the power cord into an electrical outlet that is in poor condition.
- Turn the main power to OFF and remove the plug in the following circumstances:
  When you are away from the machine
  After using the machine
  When the power fails during use
  When the machine does not operate correctly due to a bad connection or a disconnection
  During electrical storms

⚠ CAUTION

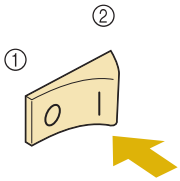
- Use only the power cord included with this machine.
- Do not use extension cords or multi-plug adapters with many other appliances plugged in to them. Fire or electric shock may result.
- Do not touch the plug with wet hands. Electric shock may result.
- When unplugging the machine, always turn the main power to OFF first. Always grasp the plug to remove it from the outlet. Pulling on the cord may damage the cord, or lead to fire or electric shock.
- Do not allow the power cord to be cut, damaged, modified, forcefully bent, pulled, twisted, or bundled. Do not place heavy objects on the cord. Do not subject the cord to heat. These things may damage the cord, or cause fire or electric shock. If the cord or plug is damaged, take the machine to your authorized Baby Lock retailer for repairs before continuing use.
- Unplug the power cord if the machine is not to be used for a long period of time. Otherwise, a fire may result.
- When leaving the machine unattended, either the main switch of the machine should be turned to OFF or the plug must be removed from the socket-outlet.
- When servicing the machine or when removing covers, the machine must be unplugged.
- This appliance has a polarized plug (one blade wider than the other). To reduce the risk of electrical shock, this plug is intended to fit in a polarized outlet only one way.
  If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install the proper outlet. Do not modify the plug in any way.

1 **Insert the power supply cord into the power cord receptacle, then insert the plug into a wall outlet.**



① Main power switch
② Power supply cord

2 **Turn the main power switch to "I" to turn on the machine.**



① OFF
② ON

Memo
- When the machine is turned on, the needle and the feed dogs will make sound when they move; this is not a malfunction.

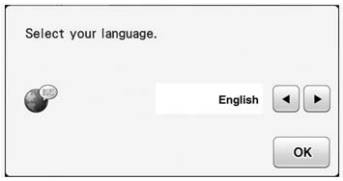
3 **Turn the main power switch to "O" to turn off the machine.**

Memo
- If the machine is turned off in the middle of sewing in the "Sewing" function, the operation will not be continued after turning the power on again.

Setting Your Machine for the First Time

When you first turn on the machine, set the language and time/date to your language and local time/date. Follow the procedure below when the settings screen appears automatically.

1 **Press ◄ and ► to set your local language.**

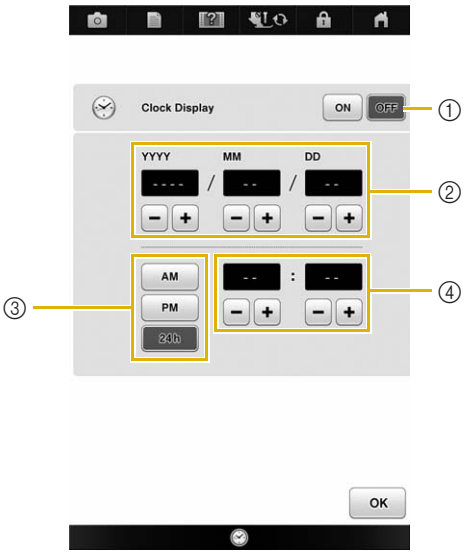


2 **Press OK.**

3 **The message screen, confirming if you want to set time/date, appears. To set the time/date, press OK; to cancel the setting, press Cancel.**

→ The screen to set time/date appears.

4 **Press − or + to set time date.**



① Press to display the time on the screen.
② Set the year (YYYY), month (MM) and date (DD).
③ Select whether 24h or 12h setting to display.
④ Set the current time.

5 **Press OK to start using your machine.**

→ The clock starts from 0 second of the time you set.

Note
- The time/date you set may be cleared, if you don't turn on the machine for an extended period of time.
- Time setting is also available by pressing clock button/time on the bottom of the LCD screen.

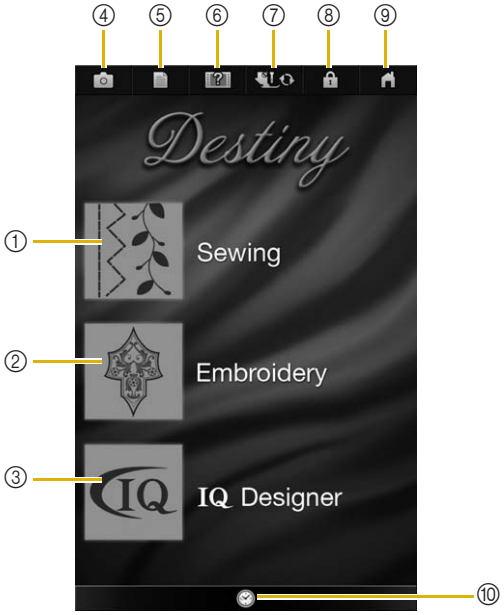
LCD SCREEN

When the machine is turned on, the opening movie is played. Touch anywhere on the screen for the home page screen to be displayed. Touch the LCD screen or a key with your finger or the included touch pen to select a machine function.

Memo

- Only touch the screen with your finger or the included touch pen. Do not use a sharp pencil, screwdriver, or other hard or sharp object. It is not necessary to press hard on the screen. Pressing too hard or using a sharp object may damage the screen.

■ Home Page Screen



No.	Display	Key Name	Explanation	Page
①		Sewing key	Press this key to sew utility stitches or character/ decorative stitch patterns.	108, 168
②		Embroidery key	Attach the embroidery unit and press this key to embroider patterns.	196
③		IQ Designer	Press this key to start creating your custom design embroidery patterns.	324
④		Camera view key	Press this key to check the needle location as it is shown on the screen through the built-in camera.	96, 160
⑤		Machine setting screen key	Press this key to change the needle stop position, adjust the pattern or screen, and change other machine settings.	31
⑥		Sewing machine help key	Press this key to see explanations on how to use the machine. You can see the tutorial videos and also the MP4 movie files that you have.	40
⑦		Presser foot/ Needle exchange key	Press this key before changing the needle, the presser foot, etc. This key locks all key and button functions to prevent operation of the machine.	57, 68
⑧		Screen lock key	Press this key to lock the screen. When the screen is locked, you can still sew, but cannot change any of the screen functions. Press this key again to unlock the settings.	168
⑨		Home page screen key	Press this key anytime it is displayed to return to the home page screen and select a different category - “Sewing”, “Embroidery” or “IQ Designer”.	–
⑩		Time/Date key	Press this key to set the clock to your local time.	29

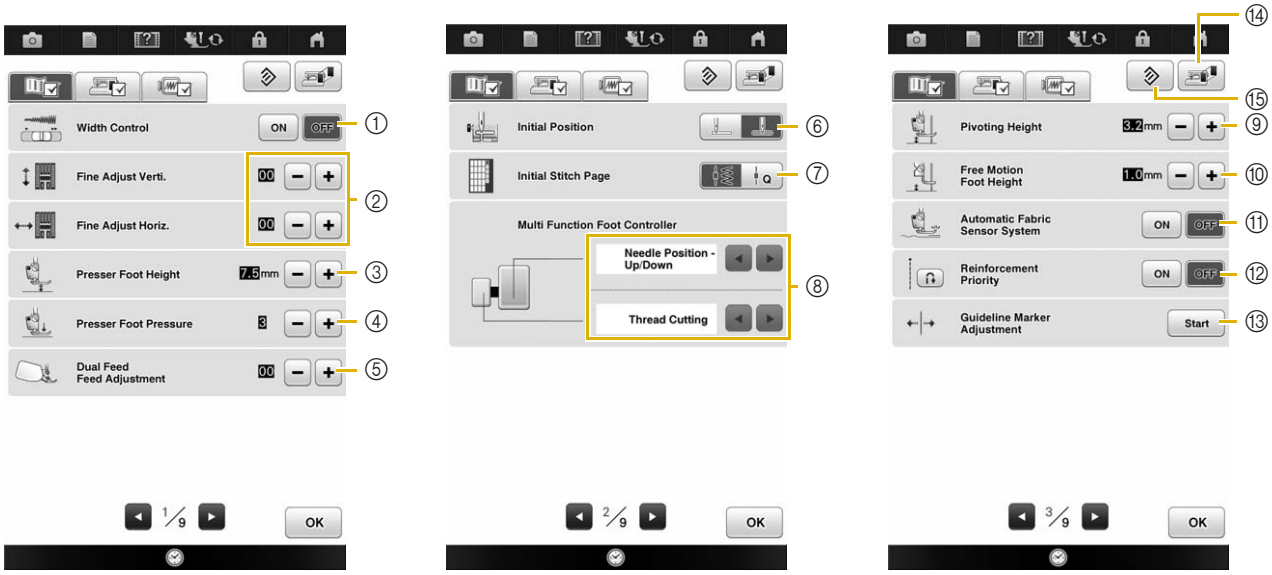
Using the Machine Setting Mode Key

Press to change the default machine settings (needle stop position, embroidery speed, opening display, etc.). To display the different settings screens, press for "Sewing settings", for "General settings" or for "Embroidery settings".

Memo

- Press or to display a different settings screen.

Sewing settings

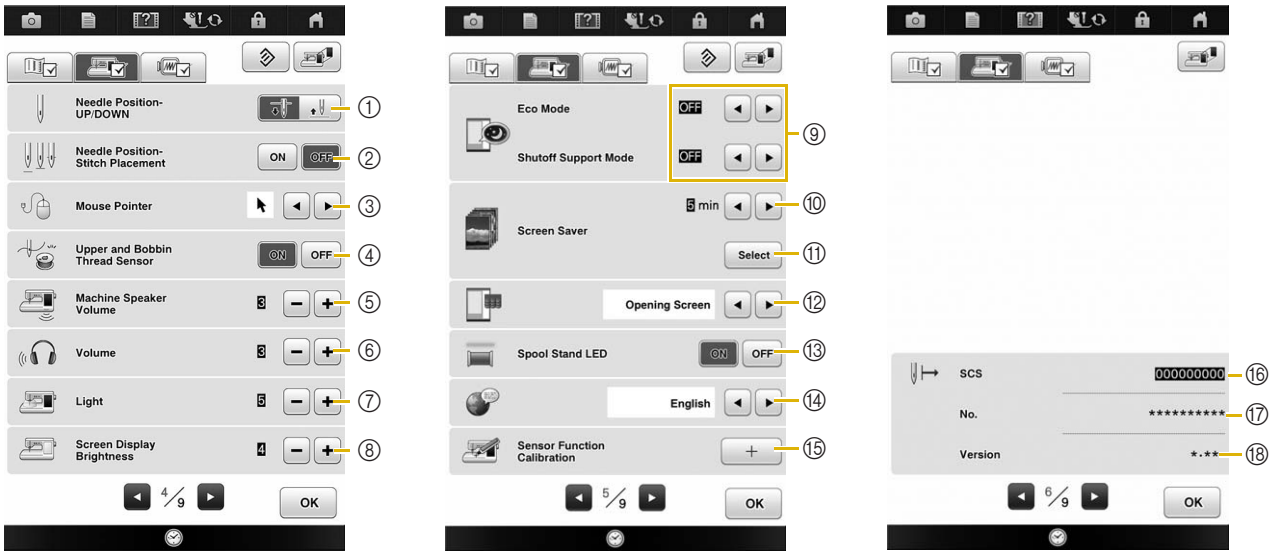


① Select whether to use the sewing speed controller to determine the zigzag width (see page 131).
② Make adjustments to character or decorative stitch patterns (see page 174).
③ Adjust the presser foot height. Select the height of the presser foot when the presser foot is raised.
④ Adjust the presser foot pressure. The higher the number, the greater the pressure will be. Set the pressure at "3" for normal sewing.
⑤ Adjust the amount of fabric feeding of the dual feed foot (see page 72).
⑥ Select whether "1-01 Straight stitch (Left)" or "1-03 Straight stitch (Middle)" is the utility stitch that is automatically selected when the machine is turned on.
⑦ Select whether "Utility Stitch" or "Quilt Stitch" displayed first on the stitch selection screen when the "Sewing" is selected.
⑧ You can activate this setting after connecting the multi-function foot controller. (These settings are not operable unless the multi-function foot controller is attached to the machine.) (see page 82)
⑨ Change the height of the presser foot when sewing is stopped when the pivot setting is selected (see page 93). Adjust the presser foot to one of the three heights (3.2 mm, 5.0 mm and 7.5 mm).
⑩ Change the height of the presser foot when the machine is set to free motion sewing mode (see page 131).
⑪ When set to "ON", the thickness of the fabric is automatically detected by an internal sensor while sewing. This enables the fabric to be fed smoothly (see pages 86 and 95).
⑫ When set to "ON", reinforcement stitches are sewn at the beginning and/or end of sewing for a reinforcement stitch pattern, even when the "Reverse Stitch" button is pressed (see page 83).
⑬ Adjust the guideline marker position and brightness (see page 98).
⑭ Press to save a settings screen image to USB media (see page 34).
⑮ Press to reset settings. Some settings do not reset.

Note

- When the straight stitch needle plate is on the machine, the needle will automatically move to the middle position.

General settings



⚠ CAUTION

- **If "Upper and Bobbin Thread Sensor" is set to "OFF", remove the upper thread. If the machine is used with the upper thread threaded, the machine will not be able to detect if the thread has become tangled. Continuing to use the machine with tangled thread may cause damage.**

① Select the needle stop position (the needle position when the machine is not operating) to be up or down. Select the down position when using the pivot key.

② Select the operation of the "Needle Position - Stitch Placement" button from the following two sequences (see page 96).
Each press of the "Needle Position - Stitch Placement" button:
"ON" – raises the needle, stops it at a nearly lowered position, then lowers it
"OFF" – raises the needle, then lowers it

③ Change the shape of the pointer when a USB mouse is used (see page 35).

④ Turn both the upper and bobbin thread sensor "ON" or "OFF". If it is turned "OFF", the machine can be used without thread.

⑤ Change the speaker volume. Increase the number for louder volume, decrease for softer volume.

⑥ Change the headphone (external speakers) volume.

⑦ Change the brightness of the needle area and work area lights.

⑧ Change the screen display brightness (see page 380).

⑨ Select to save the machine power by setting the "Eco Mode" or the "Shutoff Support Mode" (see page 34).

⑩ Select the length of time until the screen saver appears. A setting between "OFF" (0) and "60" minutes can be set in 1-minute increments.

⑪ Change the image of the screen saver (see page 35).

⑫ Select the initial screen that is displayed when the machine is turned on (see page 36).

⑬ Turn on or off the spool stand LED indicator (see page 262).

⑭ Change the display language (see page 37).

⑮ Calibrate the sensor function (see page 50).

⑯ Display the total number of stitches sewn on this machine, which is a reminder to take your machine in for regular servicing. (Contact your authorized Baby Lock retailer for details.)

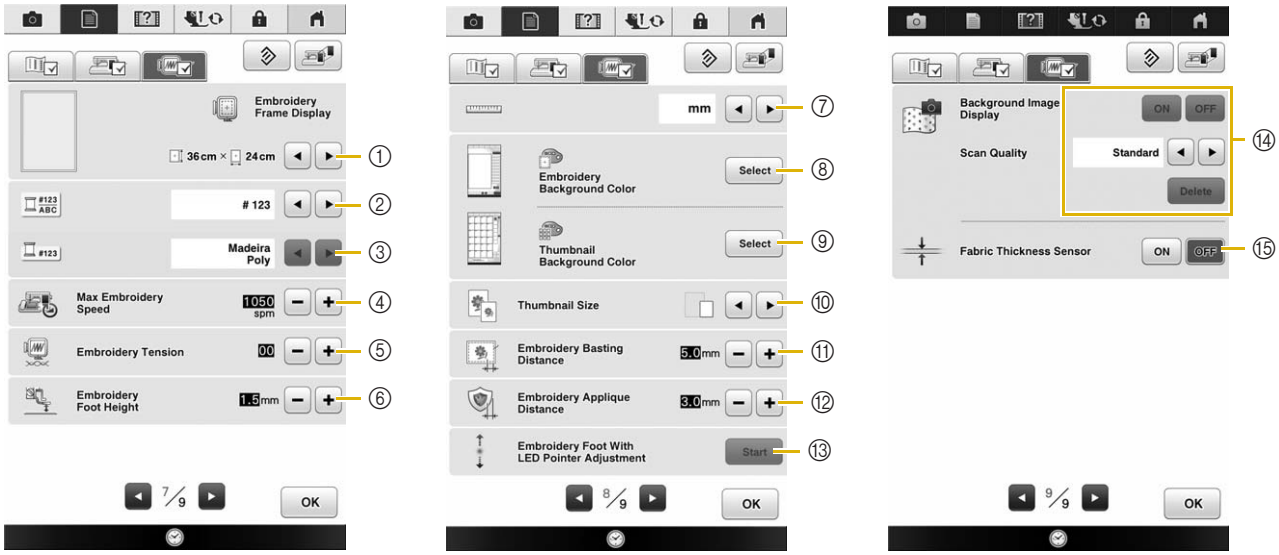
⑰ The "No." is the internal machine number for the embroidery and sewing machine.

⑱ Display the program version.

Memo

- The latest version of software is installed in your machine. Check with your local authorized Baby Lock retailer or at " www.babylock.com " for available updates (see page 401).

Embroidery settings

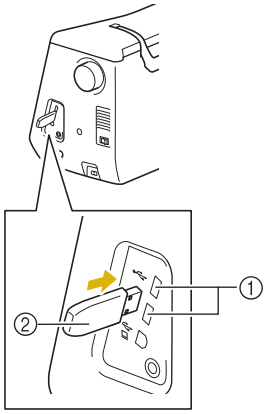


① Select from among 23 embroidery frame displays (see page 292).
② Change the thread color display on the “Embroidery” screen; thread number, color name (see page 291).
③ When the thread number “#123” is selected, select from six thread brands (see page 291).
④ Adjust the maximum embroidery speed setting (see page 291).
⑤ Adjust the upper thread tension for embroidering (see page 288).
⑥ Select the height of the embroidery foot during embroidering (see page 242).
⑦ Change the display units (mm/inch).
⑧ Change the color of the background for the embroidery display area (see page 37).
⑨ Change the color of the background for the thumbnail area (see page 37).
⑩ Press to specify the size of pattern thumbnails (see page 38).
⑪ Adjust the distance between the pattern and the basting stitching (see page 276).
⑫ Adjust the distance between the appliqué pattern and the outline (see page 277).
⑬ Adjust the position and brightness of the embroidery foot with LED pointer (see page 249).
⑭ Specify to display the fabric image on the screen. You can select the scan quality (see page 272).
⑮ Set to “ON” when positioning the pattern on the thick fabric using the built-in camera (see page 275).

■ Saving a Settings Screen Image to USB Media

An image of the settings screen can be saved as a BMP file.
A maximum of 100 images can be saved on a single USB media at one time.

1 Insert the USB media into the USB port on the right side of the machine.



① USB port
② USB media

2 Press .

→ The settings screen appears. Select the settings screen page that you want to save the screen image of.

3 Press .

→ The image file will be saved to the USB media.

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

The files for Settings screen images are saved with the name "S**.BMP" in a folder labeled "bPocket".

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

Note

- If 100 image files have already been saved on the USB media, the following message appears. In this case, delete a file from the USB media or use different USB media.

■ Selecting the "Eco Mode" or "Shutoff Support Mode"

You can save the machine power by setting the eco mode or the shutoff support mode.
If you leave the machine without using for a specified period of time, the machine enters in one of these modes.

"Eco Mode";
Machine will enter a sleep mode. Touch the screen or press the "Start/Stop" button to continue sewing.

"Shutoff Support Mode";
Machine will enter the lower power mode after set period of time. Turn machine off and then back on to restart sewing.

Condition	Eco Mode	Shutoff Support Mode
Available time	OFF, 0 - 120 (minute)	OFF, 1 - 12 (hour)
"Start/Stop" button	Green flashing	Green slow flashing
Suspended function	Machine light, Screen display, LED pointer, Guideline marker, Spool Stand LED	All functions
After recovering	The machine starts from the previous operation.	You need to turn off the machine.

Press the "Start/Stop" button or touch the screen display to recover from these modes.

1 Press .

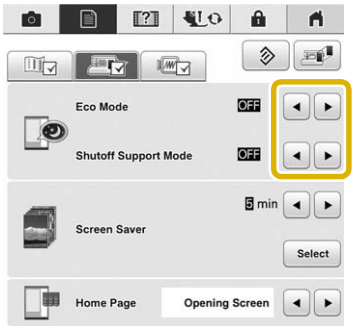
→ The settings screen appears.

2 Press .

→ The General settings screen appears.

3 Display page 5 of the General settings screen.

4 Use ◀ or ▶ to select the time until entering the mode.



Note

- If you turn off the machine while the machine is in the “Eco Mode” or the “Shutoff Support Mode”, wait for about 5 seconds before turning on the machine again.

Changing the Pointer Shape When a USB Mouse Is Used

In the settings screen, the shape can be selected for the pointer that appears when a USB mouse is connected. Depending upon the background color, select the desired shape from the three that are available.

Memo

- For details on changing the background color, refer to “Changing the Background Colors of the Embroidery Patterns” on page 37.

1. **Press .**

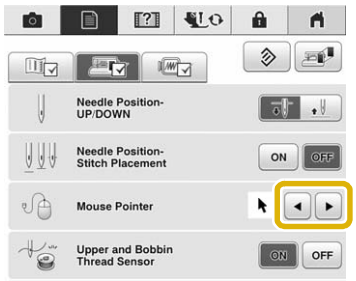
   → The settings screen appears.

2. **Press .**

   → The General settings screen appears.

3. **Display page 4 of the General settings screen.**

4. **Use ◀ and ▶ to choose the pointer shape from the three available setting (, and).**



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

Memo

- The setting remains selected even if the machine is turned off.

Changing the Screen Saver Image

Instead of the default image, you can select your own personal images for the screen saver of your machine.
Before changing the screen saver image, prepare the image on your computer or USB media.

Compatible image files

Format	JPEG format (.jpg)
File size	Max. 2 MB for each image
File dimension	800 × 1280 pixels or less, (If the width is more than 800 pixels, the image imported will be reduced to a width of 800 pixels.)
Number allowed	5 or less

Note

- When using USB media, make sure that it contains only your own personal images to be selected for the screen saver.
- Folders are recognized. Open the folder that holds your personal images.

1. **Press .**

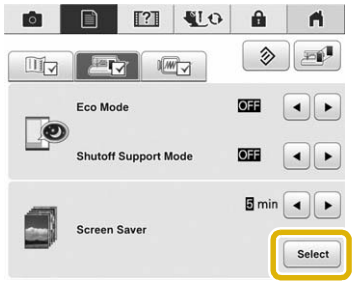
   → The settings screen appears.

2. **Press .**

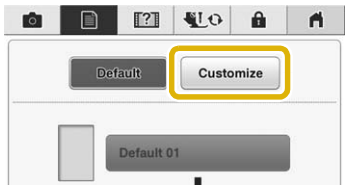
   → The General settings screen appears.

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

4. **Press Select .**



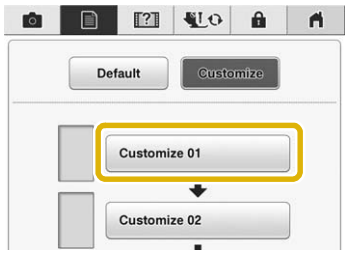
5. **Press Customize .**



6 Connect the USB media or the computer (using a USB cable) that contains your personal image to the USB port of the machine.

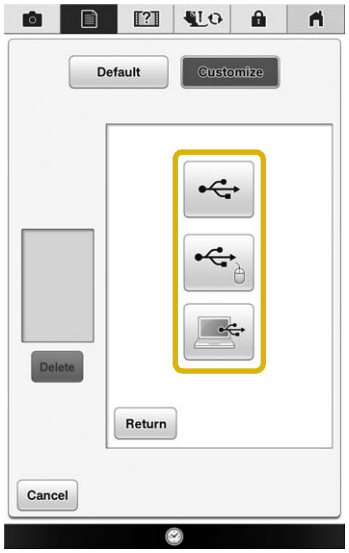
* See page 46 about USB connectivity.

7 Press Customize 01 to select the first image.



* The images will appear in a list in this screen. Select the desired number to specify the image.

8 Select the device that is connected.



* Press when connecting USB media to the USB port.

* Press when connecting USB media to the center USB port.

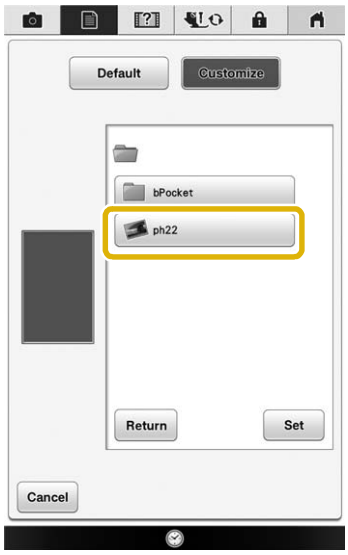
* Press when connecting a computer using a USB cable, and then copy your personal images into "Removable Disk", which appears on the desktop of the computer.

→ A list of your personal images appear on the screen.

* Press Delete to delete the selected image.

* Press Return to view the previous page.

9 Press a file name to select image and then press Set.



→ The selected image is stored on your machine.

* Press Return to view the previous page.

10 Repeat the procedure from step 7 to select the remaining images.

11 Press Cancel to return to the original screen.

■ Selecting the Initial Screen Display

The Initial screen that appears on the machine can be changed.

1 Press .

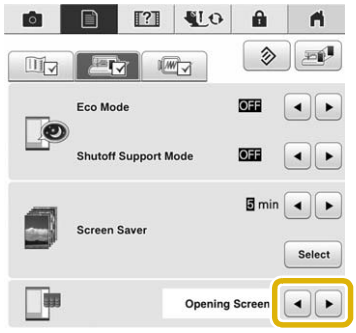
→ The settings screen appears.

2 Press .

→ The General settings screen appears.

3 Display page 5 of the General settings screen.

4 Use ◄ and ► to select the setting for the initial screen display.



* **Opening Screen**: When the machine is turned on, the home page screen appears after the opening movie screen is touched.
* **Home Page**: When the machine is turned on, the home page screen appears.
* **Sewing/Embroidery Screen**: When the machine is turned on, the Embroidery screen appears if the embroidery unit is attached to the machine, or the sewing screen appears if the embroidery unit is not attached to the machine.

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

■ Choosing the Display Language

1 **Press .**

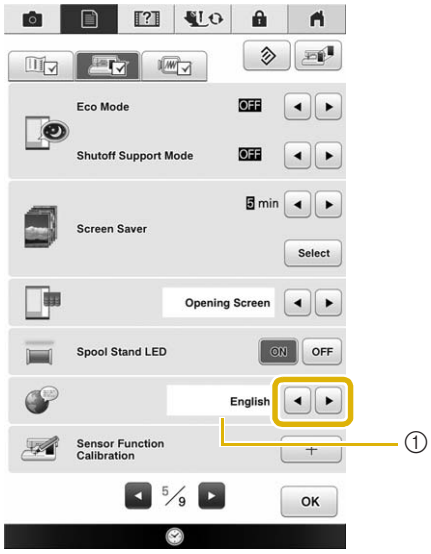
→ The settings screen appears.

2 **Press .**

→ The General settings screen appears.

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

4 **Use ◀ and ▶ to choose the display language.**



① Display language

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

■ Changing the Background Colors of the Embroidery Patterns

In the settings screen, the background colors can be changed for the embroidery pattern and pattern thumbnails. Depending on the pattern color, select the desired background color from the 66 color thumbnails shown. Different background colors can be selected for the embroidery pattern and pattern thumbnails.

1 **Press .**

→ The settings screen appears.

2 **Press .**

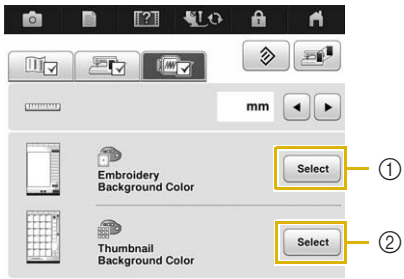
→ The Embroidery settings screen appears.

Memo

- When using the Embroidery or IQ Designer, touch to directly access the Embroidery settings screen.

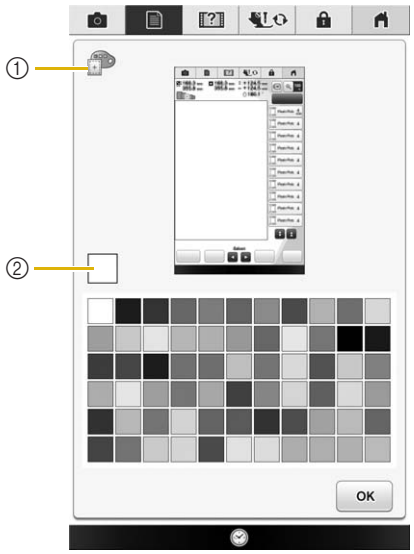
3 **Display shown on page 8 of the Embroidery settings screen.**

4 **Press Select .**

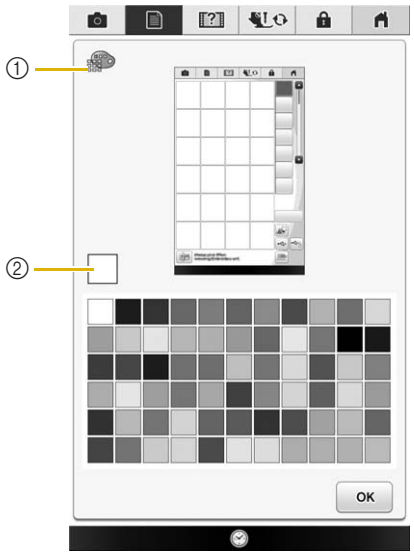


① Embroidery pattern background
② Pattern thumbnails background

5 **Select the background color from the 66 color thumbnails shown.**



① Embroidery pattern background
② Selected color



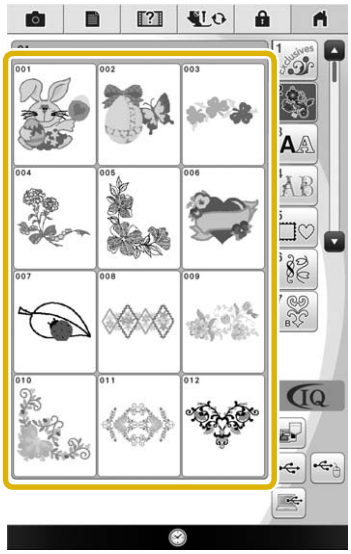
① Pattern thumbnails background
② Selected color

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

Memo
- The setting remains selected even if the machine is turned off.

Specifying the Size of Pattern Thumbnails

The thumbnails for selecting an embroidery pattern can be set to be displayed at the normal size or a larger size. The larger size is 1.5 times the normal size.



1 **Press .**

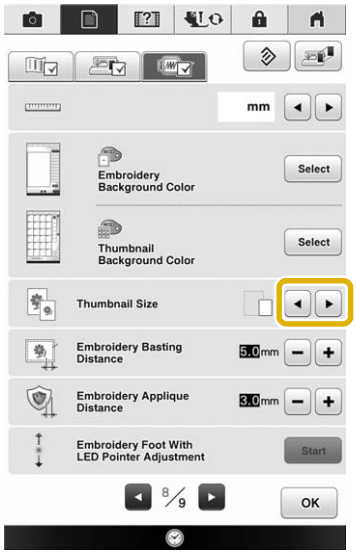
→ The settings screen appears.

2 **Press .**

→ The Embroidery settings screen appears.

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

4 **Press ◄ or ► to select the desired thumbnail size.**

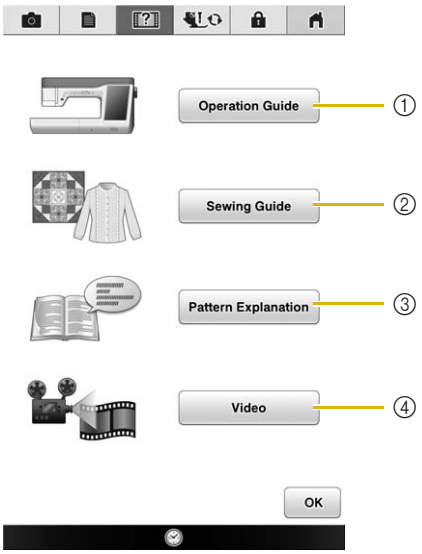


Note

- When thumbnail size setting has been changed the pattern selection screen will not immediately reflect the chosen size. To view the patterns with the new thumbnail size, return to the category selection screen, and then select the pattern category again.

Using the Sewing Machine Help Key

Press to open the sewing machine help screen. Four functions are available from the screen shown below.



① Press this key to see explanation for upper threading, winding the bobbin, changing the presser foot, preparing to embroider a pattern, and how to use the machine (see page 45).

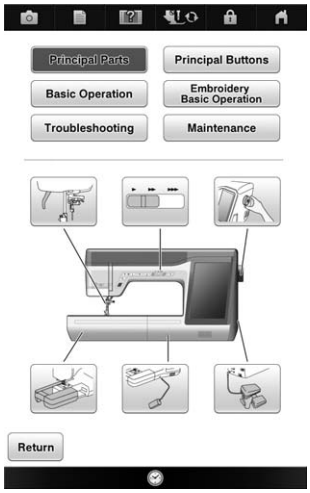
② Press this key to select utility stitches when you are not sure which stitch to use or how to sew the stitch (see page 41).

③ Press this key to see an explanation of the stitch selected (see page 42).

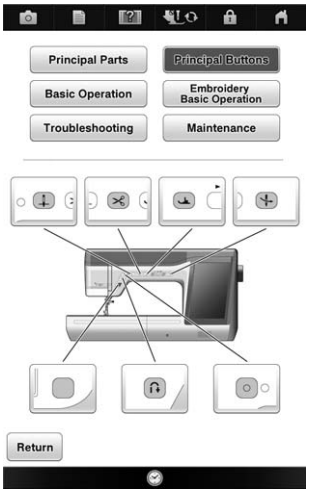
④ Press this key to watch tutorial videos or MPEG-4 (MP4) files from USB media (see page 43).

Using the Operation Guide Function

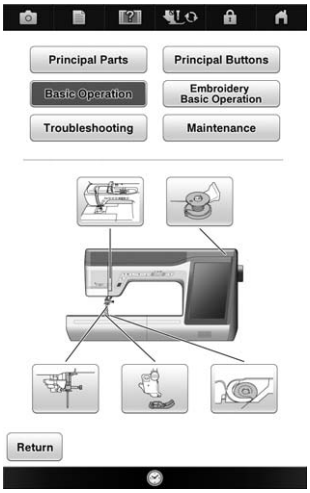
Press [Operation Guide] to open the screen shown below. Six categories are displayed at the top of the screen. Press a key to see more information about that category.



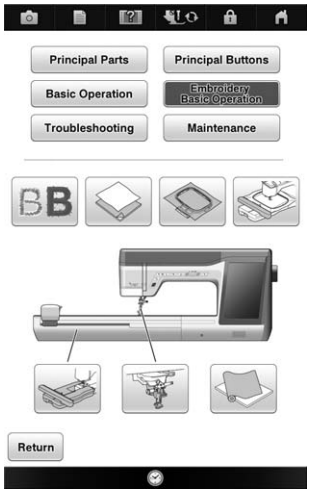
[Principal Parts] displays information about the main parts of the machine and their functions. This is the first screen displayed when you press [Operation Guide].



[Principal Buttons] displays information about the operation buttons.

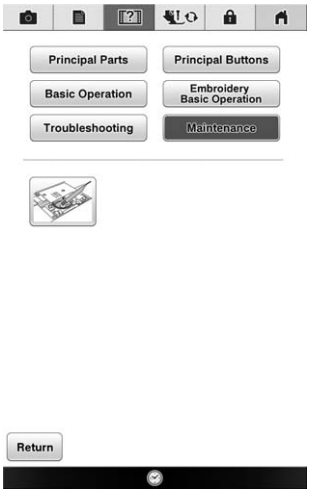


[Basic Operation] displays information about threading the machine, changing presser feet, etc. Some of the functions are described in the movies. Watch these movies for a better understanding of the functions.



[Embroidery Basic Operation] displays information about attaching the embroidery unit, preparing fabric for embroidering, etc.
Some of the functions are described in the movies. Watch these movies for a better understanding of the functions.

[Troubleshooting] displays troubleshooting information.



[Maintenance] displays information about cleaning the machine, etc.
Some of the functions are described in the movies. Watch these movies for a better understanding of the functions.

Example: Displaying information about upper threading

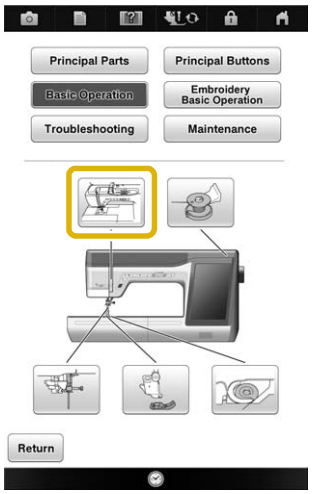
1 **Press** [?].

2 **Press** [Operation Guide].

3 **Press** [Basic Operation].

→ The lower half of the screen will change.

4 **Press** [ ] **(upper threading).**



→ The screen shows instructions for threading the machine.

5 **Read the instructions.**

* Press [▶] to view the next page.

* Press [◀] to view the previous page.

6 **Press** [Return] **to return to the original screen.**

Using the Sewing Guide Function

The sewing guide function can be used to select patterns from the Utility Stitch screen.
Use this function when you are not sure which stitch to use for your application, or to get advice about sewing particular stitches. For example, if you want to sew overcasting, but you do not know which stitch to use or how to sew the stitch, you can use this screen to get advice. We recommend that beginners use this method to select stitches.

1 **Enter Utility Stitch category from the home page.**

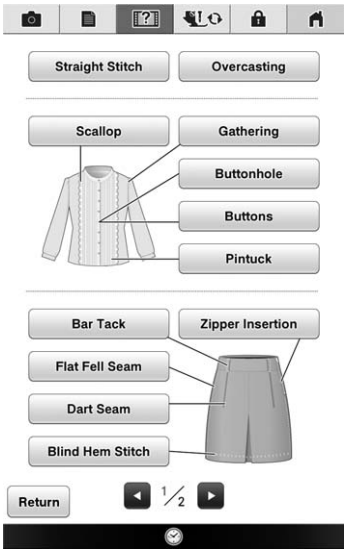
2 **Press** [?].

3 **Press** [Sewing Guide].

→ The advice screen is displayed.

4 **Press the key of the category whose sewing instructions you wish to view.**

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



5 **Read the explanations and select the appropriate stitch.**

→ The screen displays directions for sewing the selected stitch. Follow the directions to sew the stitch.

Playing a Tutorial Video

Memo

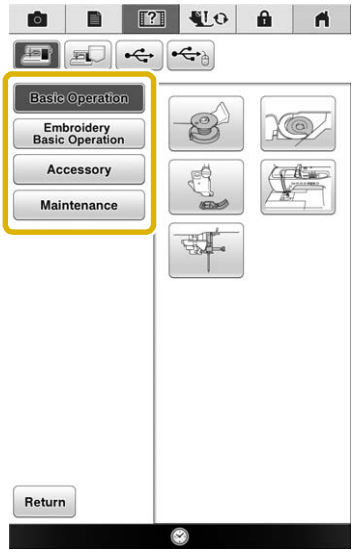
- When you find this icon [?] on the title in this manual, you can find the tutorial video of the procedure in your machine.

This machine provides tutorial videos on how to use the machine. Together with the help guides, which offer descriptions through text and illustrations, the tutorial videos assist with machine operation.

1 **Press [?].**

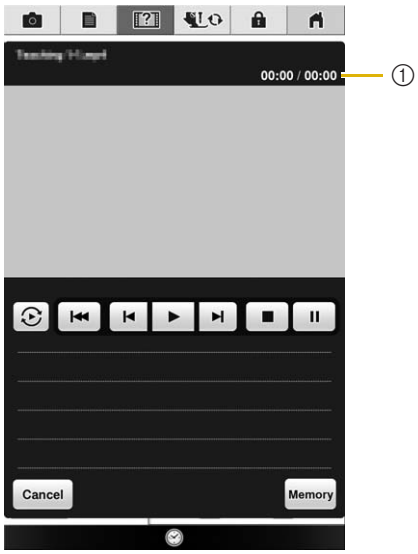
2 **Press [Video].**

3 **Press the title of the desired tutorial video.**



→ The selected tutorial video begins playing.

4 **Play the tutorial video.**



① Number of seconds elapsed/Total number of seconds

Operation keys

▶	Play
■	Stop
⏸	Pause
⏮	Skip back 10 seconds
⏭	Skip forward 10 seconds
⏮	Return to beginning
	Repeat
Delete	Delete video (when playing from the machine's memory)
Memory	Save to machine (when playing from USB media)

Memo

- A frequently viewed tutorial video can be saved to [ ] (favorites) of the machine, from where it can be played.

5 **After you are finished playing the video, press [Close].**

Playing MPEG-4 (MP4) Videos

Your MP4 videos can be played from USB media. In addition, the MP4 video can be saved to the machine so that a tutorial video on creating a project, for example, can be viewed at any time.

Videos that can be played

MP4 file format: Video - H.264/MPEG-4 AVC, Audio – AAC
Size: 450 (H) × 800 (W)

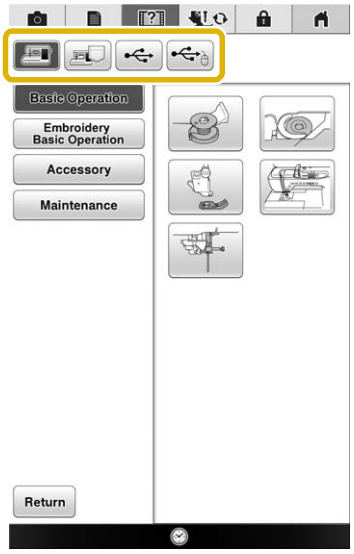
Memo

- MP4 file size will be changed to fit the screen. If you view the large MP4 file, the file will be reduced to fit the screen. If you view the smaller MP4 file, the file will be expanded to fit the screen.
- Some type of MP4 file cannot viewed with the machine.

1 **Press [?].**

2 **Press [Video].**

3 **Select the device where the video is saved.**



: play a tutorial video

: Play a video saved on the machine (favorites)

: Play a video from USB media plugged into the USB port

: Play a video from USB media plugged into the USB port for mouse

* To return to the previous screen, press [Return].

4 **Select the video that you want to play.**

* To return to the previous screen, press [Return].

Note

- Video file names more than 20 characters long may be omitted and not displayed.

5 **Play the video.**

* Use the operation keys as described in "Playing a Tutorial Video".

Note

- Up to about 1 GB of MP4 videos can be saved on the machine. When the maximum capacity has been reached, delete unnecessary videos.

6 **After you are finished playing the video, press [Close].**

Using the Pattern Explanation Function

If you want to know more about the uses of a stitch pattern, select the pattern and press [?] and then [Pattern Explanation] to see an explanation of the stitch selection.

Note

- With the pattern explanation function, descriptions can be displayed for the patterns available on the Utility Stitch and Character/Decorative Stitch screens.
- Descriptions are displayed for each pattern in the Utility Stitch screen. Description for the Character/Decorative Stitch category is also displayed.
- If the [Pattern Explanation] key appears in gray, the pattern explanation function cannot be used.

Example: Displaying information about [4-01]

1. **Press [4-01].**

2. **Press [?].**

3. **Press [Pattern Explanation].**

→ The screen shows information.

4. **Press [Return] to return to the original screen.**

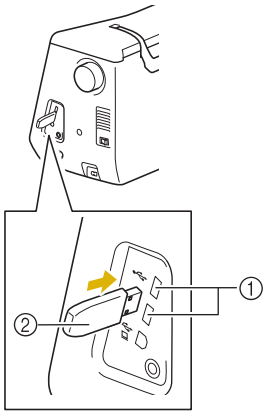
Memo

- The settings remain displayed to allow you to fine tune the stitch.

CONNECTING THE ACCESSORY TO THE MACHINE

Using USB Media

When sending or reading patterns using the USB media, connect the device to the USB port.



① USB port
② USB media

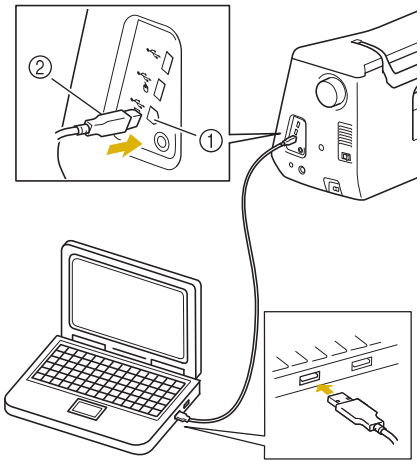
Memo

- USB media is widely used, however some USB media may not be usable with this machine. Please visit our website for a detailed listing of approved USB media devices.
- 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.

Connecting the Machine to the Computer

Using the included USB cable, the sewing machine can be connected to your computer.

Refer to "Connecting Your Machine to the PC" on page 187 for the available computer operating systems.



① USB port for computer
② USB cable connector

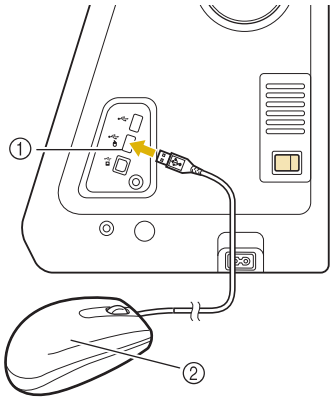
Note

- 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.

Using a USB Mouse (Sold Separately)

The USB mouse, connected to the sewing machine, can be used to perform a variety of operations in the screens.
Connect a USB mouse to the USB port marked with . You can also connect a USB mouse to the other USB port.

Memo
- If a mouse other than the optional USB mouse is used, it may not perform as described in this Instruction and Reference Guide.



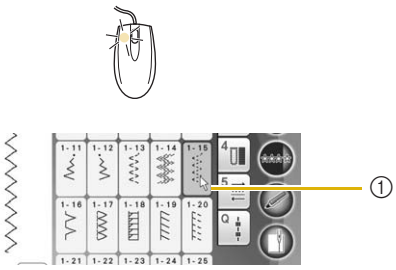
① USB port marked with
② USB mouse

Note
- Do not perform operations with the mouse at the same time that you are touching the screen with your finger or the included touch pen.
- A USB mouse can be connected or disconnected at any time.
- Only the left mouse button and its wheel can be used to perform operations. No other buttons can be used.
- The mouse pointer does not appear in the camera view window, the screen saver, opening screen or the home page screen.

■ Clicking a Key

When the mouse is connected, the pointer appears on the screen. Move the mouse to position the pointer over the desired key, and then click the left mouse button.

Memo
- Double-clicking has no effect.

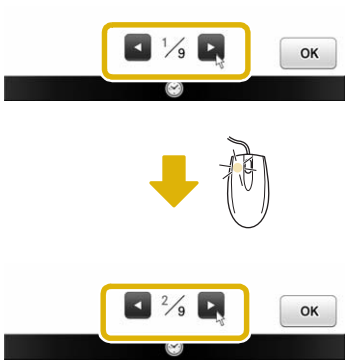


① Pointer

■ Changing Pages

Rotate the mouse wheel to switch through the tabs of the pattern selection screens.

Memo
- If page numbers and a vertical scroll bar for additional pages are displayed, rotate the mouse wheel or click the left mouse button with the pointer on ◀/▶ or ▲/▼ to display the previous or next page.



USING THE SENSOR PEN

Convenient Sewing Features by Using the Sensor Pen

By using the sensor pen, you have the option of four separate functions

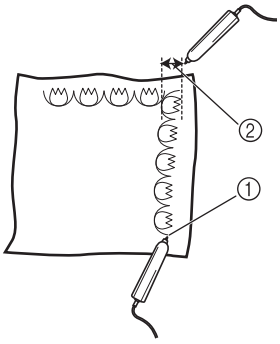
- Setting the guideline as a reference for your sewing position.
- Set the needle position of straight stitch.
- Adjust the width and "L/R Shift" position of a zigzag stitch.
- Set the ending point of a stitch pattern sequence.

⚠ CAUTION

- **The guideline marker is a laser; therefore, do not stare at the laser light directly. Otherwise it may cause blindness.**

Note

- When the guideline or LED pointer does not appear clearly, set the brightness of the machine light dimmer to see them clearly. Refer to "Using the Machine Setting Mode Key" on page 31.

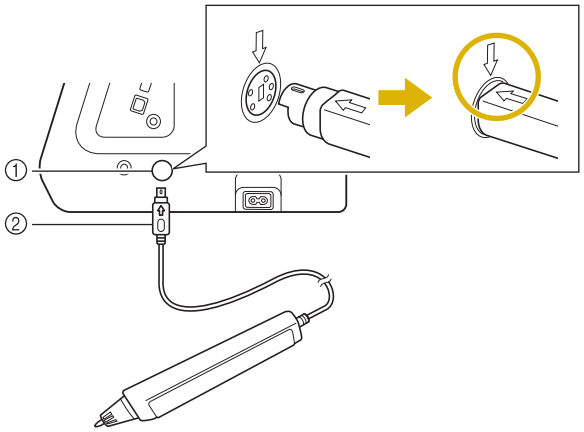


① When specifying the end point of your sewing, this function adjusts your pattern or stitch so that you end up with a complete design.

② It is easy to set the pattern width and position.

Connecting the Sensor Pen

When connecting the sensor pen to the machine, make sure that the arrow on the sensor pen connector faces up and that the connector is firmly inserted into the jack.



① Sensor pen jack

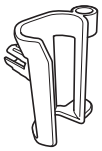
② Sensor pen connector

⚠ CAUTION

- **When connecting the sensor pen, make sure that the arrow on the sensor pen connector faces up, otherwise the connector pins will not align correctly and the connector will be damaged.**
- **When connecting or disconnecting the sensor pen, grab the connector, and then slowly push it straight in or pull it straight out.**
- **When disconnecting the sensor pen from the machine, do not pull on the cord, otherwise the sensor pen may be damaged.**

Using the Sensor Pen Holder

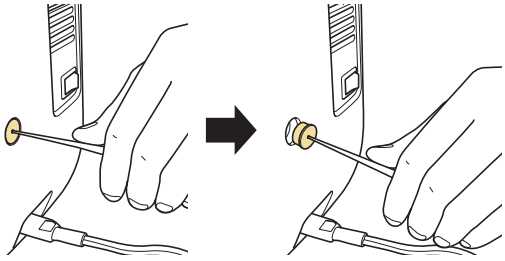
When connecting the sensor pen to the machine, attach the sensor pen holder to keep the sensor pen with the machine.
The right side of the holder can be used to hold the touch pen.



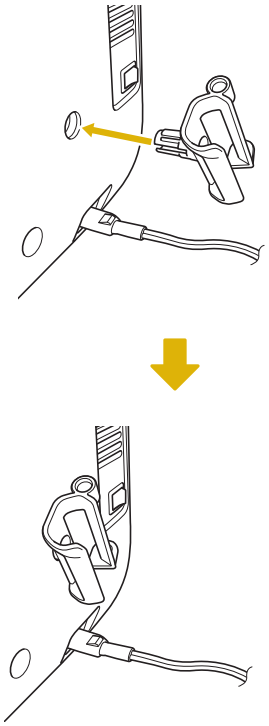
Sensor pen holder

1 Using the point end of the cleaning brush or the seam ripper point, remove the protective cap covering the hole on the right side of the machine.

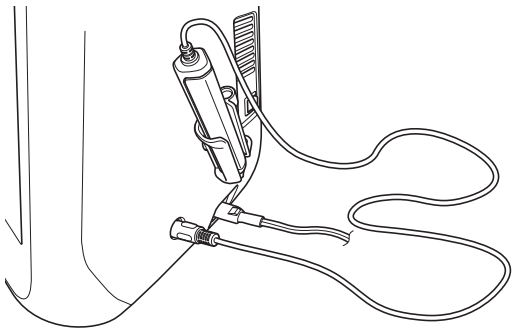
→ Insert the point of the seam ripper or cleaning brush into the hole in the protective cap, and then lightly pull out the protective cap to remove it.



2 Firmly insert the sensor pen holder into the hole where the protective cap was removed.

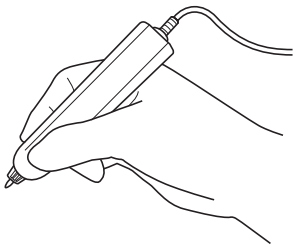


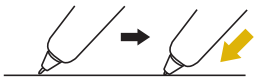
3 Set the sensor pen in the sensor pen holder with the pen tip pointing downward, and then connect the sensor pen to the machine.



Using the Sensor Pen

Hold the sensor pen, and then touch the point to be specified. When the tip of the sensor pen is pushed in, the position information is sent to the machine.
When using the sensor pen, touch slowly and gently for the definite operation.





1) Touch: Touch a point with the sensor pen, then immediately lift up the pen.
2) Long touch: Touching a point with the sensor pen and holding it down for at least one second allows you to activate the functions that you just selected.

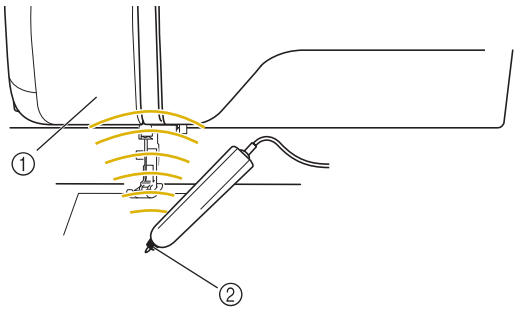
Note

- Once a point is touched with the sensor pen and the entered information is applied in the screen, perform the next operation. Repeatedly touching a point with the sensor pen may prevent the information from being correctly read.
- Do not drag the sensor pen tip on the machine, otherwise the sensor pen tip may be chipped off.
- If there is any problem with the guideline marker, the sensor function may not operate correctly.

Memo
- The sensor pen can be used to touch on the screen as a touch pen.

Important Information about Sensor Pen

The sensor pen emits the signal to the machine, and then the sensor pen receiver receives the signal to specify the position.



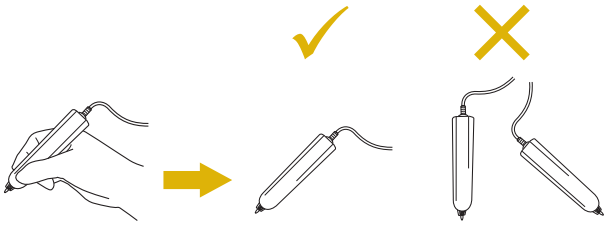
① Sensor pen receiver
② Signal is waved out from the sensor pen

⚠ CAUTION
- **Do not insert any object into the sensor pen and the receiver, otherwise the machine may be damaged.**

⚠ IMPORTANT
- **Do not put your hand, the fabric or any object between the machine and the sensor pen, otherwise the sensor pen receiver may not receive the ultrasonic wave.**
- **Do not use the machine close to any other unit which produces ultrasonic wave or a vibration sound, otherwise interference may occur.**

Calibrating the Sensor Pen

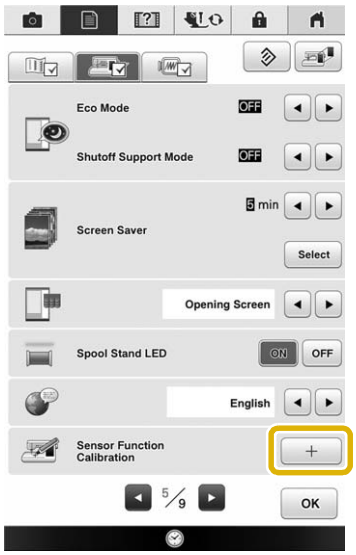
Before using the sensor pen for the first time, be sure to personalize it using "Sensor Function Calibration" in the settings screen. Doing so allows the machine to learn the position in which you usually hold the pen.
Hold the sensor pen at a comfortable angle and then calibrate the machine according to the procedure below.
Be sure to keep the sensor pen at the same angle while calibrating the first and second points.



1 Press [ ].
→ The settings screen appears.

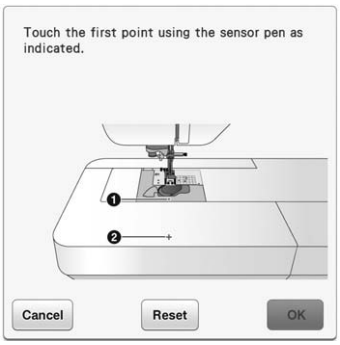
2 Press [ ].
→ The General settings screen appears.

3 Display page 5 of the General settings screen.

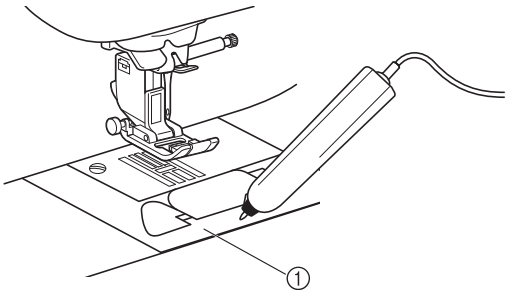


4 Press [+] after connecting the sensor pen to the machine.
→ The Sensor Function Calibration screen appears.
* If the message "OK to automatically lower the presser foot?" appears on the LCD screen, press [OK] to continue.

5 Touch the first point of green dot marking using the sensor pen.

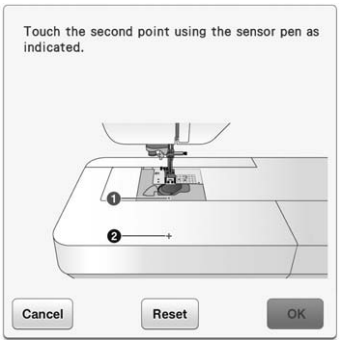


* Touch on the needle plate cover.

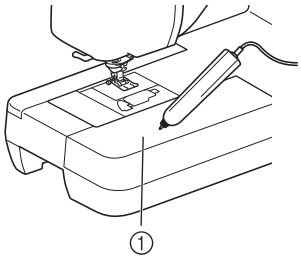


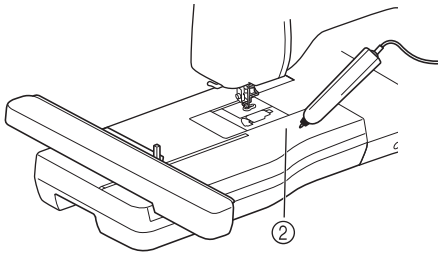
① Needle plate cover

6 Touch the second point of center of cross-hair using the sensor pen.



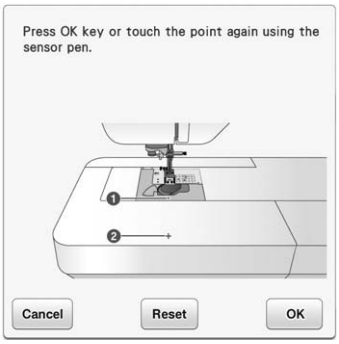
* Touch on the point in the illustrations.





① Flat bed attachment
② Embroidery unit

7 Press OK to finish the calibration. To repeat the calibration touch the first point again using the sensor pen, and continue with step 6.



* Press Cancel to return to the original screen without finishing the calibration.

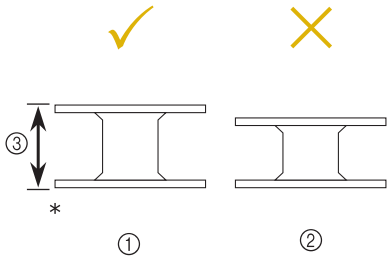
* Press Reset to reset the calibration.

LOWER THREADING

Winding the Bobbin

⚠ CAUTION

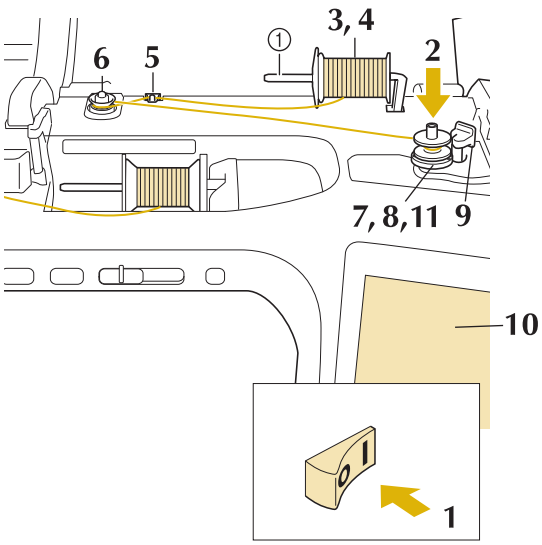
- **The included bobbin was designed specifically for this sewing machine. If bobbins from other models are used, the machine will not operate correctly. Use only the included bobbin or bobbins of the same type (part code: X52800-120). X52800-120 is Class 15 type bobbin.**



* Actual size
① This model
② Other models
③ 11.5 mm (approx. 7/16 inch)

■ Using the Supplemental Spool Pin

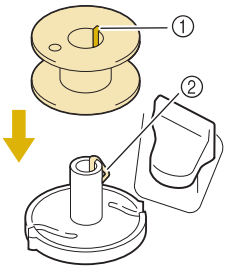
With this machine, you can wind the bobbin during sewing. While using the main spool pin to sew embroidery, you can conveniently wind the bobbin using the supplemental spool pin.



① Supplemental spool pin

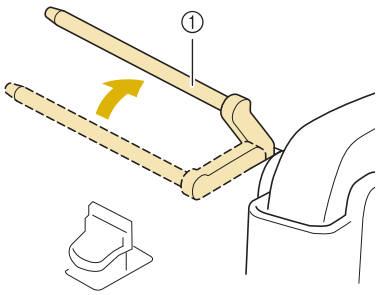
1 **Turn the main power to ON and open the top cover.**

2 **Align the groove in the bobbin with the spring on the bobbin winder shaft, and set the bobbin on the shaft.**



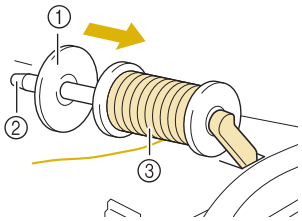
① Groove in the bobbin
② Spring on the shaft

3 **Set the supplemental spool pin in the "up" position.**



① Supplemental spool pin

4 **Place the spool of thread on the supplemental spool pin, so that thread unrolls from the front. Push the spool cap onto the spool pin as far as possible to secure the thread spool.**



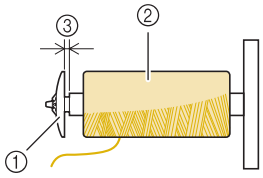
① Spool cap
② Spool pin
③ Thread spool

⚠ CAUTION

- **If the thread spool and/or spool cap are set incorrectly, the thread may tangle on the spool pin and cause the needle to break.**
- **Use the spool cap (large, medium, or small) that is closest in size to the thread spool. If a spool cap smaller than the thread spool is used, the thread may become caught in the slit on the end of the spool and cause the needle to break.**

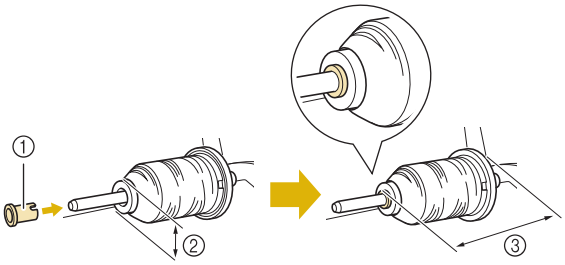
Memo

- When sewing with fine, cross-wound thread, use the small spool cap, and leave a small space between the cap and the thread spool.



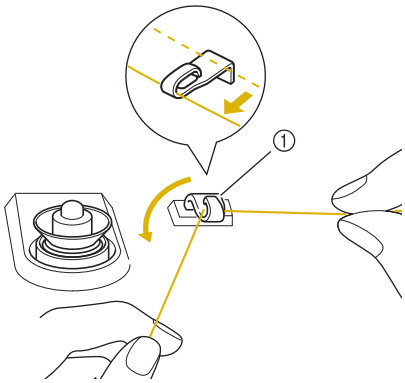
① Spool cap (small)
② Thread spool (cross-wound thread)
③ Space

- If a spool of thread whose core is 12 mm (1/2 inch) in diameter and 75 mm (3 inches) high is inserted onto the spool pin, use the mini spool cap.



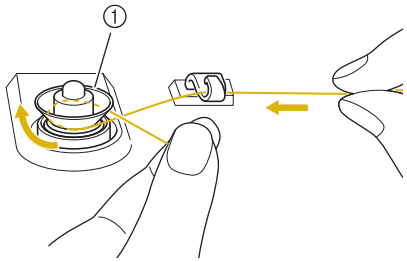
① Spool cap (mini king spool insert)
② 12 mm (1/2 inch)
③ 75 mm (3 inches)

5 **With your right hand, hold the thread near the thread spool. With your left hand, hold the end of the thread, and use both hands to pass the thread through the thread guide.**

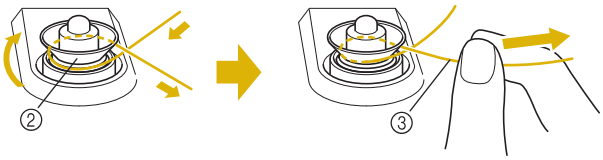


① Thread guide

6 **Pass the thread around the pre-tension disk making sure that the thread is under the pre-tension disk.**

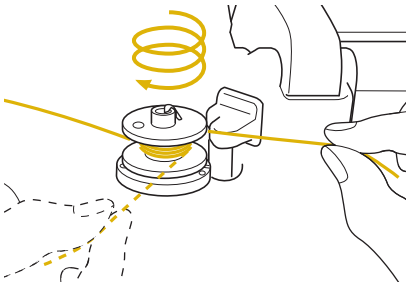


① Pre-tension disk
→ Make sure that the thread passes under the pre-tension disk.

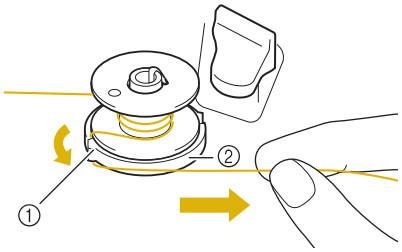


② Pre-tension disk
③ Pull it in as far as possible.
→ Check to make sure thread is securely set between pre-tension disks.

7 **Wind the thread clockwise around the bobbin 5-6 times.**



8 **Pass the end of the thread through the guide slit in the bobbin winder seat, and pull the thread to the right to cut the thread with the cutter.**

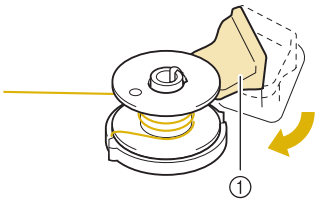


① Guide slit (with built-in cutter)
② Bobbin winder seat

⚠ CAUTION

- **Be sure to follow the process described. If the thread is not cut with the cutter, and the bobbin is wound, when the thread runs low it may tangle around the bobbin and cause the needle to break.**

9 **Set the bobbin winding switch to the left, until it clicks into place.**



① Bobbin winding switch

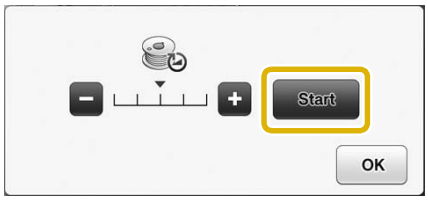
Memo

- Sliding the bobbin winding switch to the left switches the machine into bobbin winding mode.

→ The bobbin winding window appears.

10 **Press Start .**

→ Bobbin winding starts. The bobbin stops rotating when bobbin winding is completed. The bobbin winding switch will automatically return to its original position.

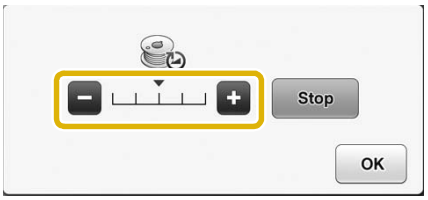


Note

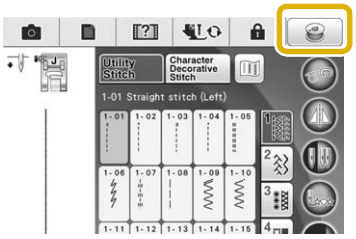
- Start changes to Stop while the bobbin is winding.
- Stay near the machine while winding the bobbin to make sure the bobbin thread is being wound correctly. If the bobbin thread is wound incorrectly, press Stop immediately to stop the bobbin winding.
- The sound of winding the bobbin with stiff thread, such as nylon thread for quilting, may be different from the one produced when winding normal thread; however, this is not a sign of a malfunction.

Memo

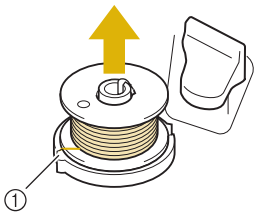
- You can change the winding speed by pressing − (to decrease) or + (to increase) in the bobbin winding window.



- Press OK to minimize the bobbin winding window. Then, you can perform other operations, such as selecting a stitch or adjusting the thread tension, while the bobbin is being wound.
- Press (in top right of the LCD screen) to display the bobbin winding window again.



11 **Cut the thread with cutter and remove the bobbin.**



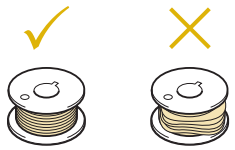
① Cutter

Memo

- When removing the bobbin, do not pull on the bobbin winder seat. Doing so could loosen or remove the bobbin winder seat, and could result in damage to the machine.

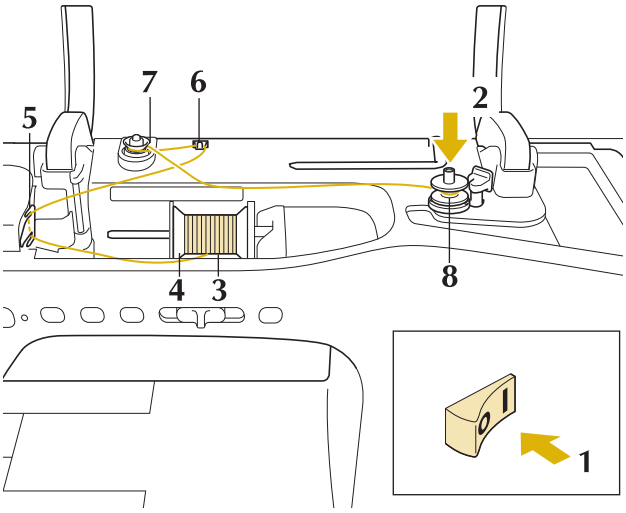
⚠ CAUTION

- **Setting the bobbin improperly may cause the thread tension to loosen, breaking the needle and possibly resulting in injury.**



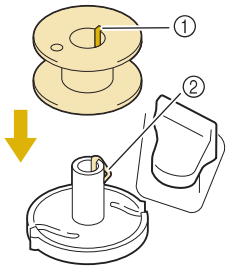
■ Using the Spool Pin

You can use the main spool pin to wind the bobbin before sewing. You cannot use this spool pin to wind the bobbin while sewing.



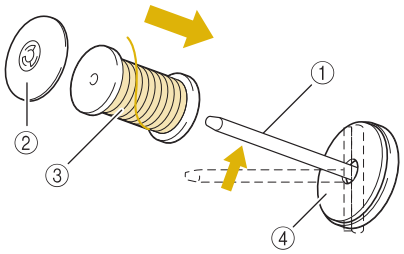
1 **Turn the main power to ON and open the top cover.**

2 **Align the groove in the bobbin with the spring on the bobbin winder shaft, and set the bobbin on the shaft.**



① Groove in the bobbin
② Spring on the shaft

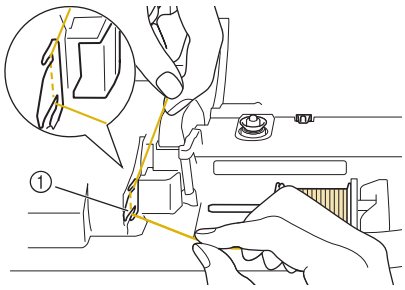
3 **Pivot the spool pin so that it angles upward. Set the thread spool on the spool pin so that the thread unwinds from the front of the spool.**



① Spool pin
② Spool cap
③ Thread spool
④ Spool felt

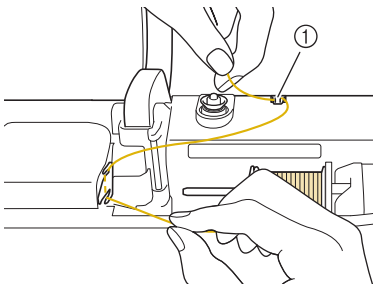
4 **Push the spool cap onto the spool pin as far as possible, then return the spool pin to its original position.**

5 **While holding the thread with both hands, pull the thread up from under the thread guide plate.**



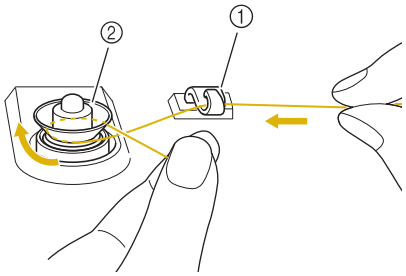
① Thread guide plate

6 **Pass the thread through the thread guide.**



① Thread guide

7 **Pass the thread around the pre-tension disk making sure that the thread is under the pre-tension disk.**

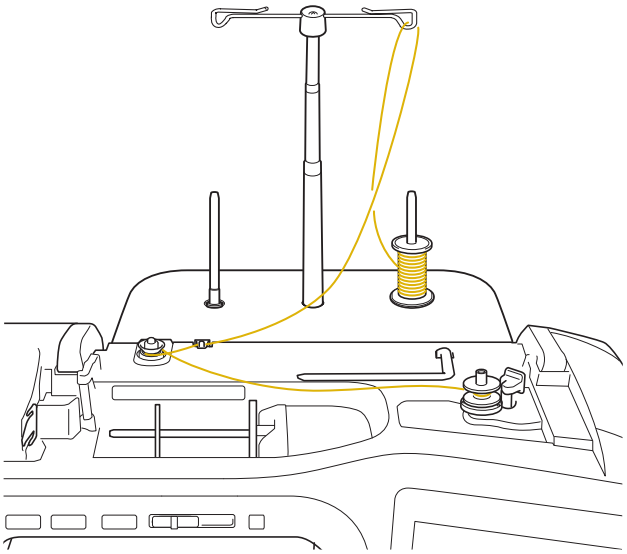


① Thread guide
② Pre-tension disk

8 **Follow steps 7 through 11 on page 53 through 54.**

■ Using the Spool Stand

To wind thread on the bobbin while the spool stand is installed, pass the thread from the spool through the thread guide on the telescopic thread guide, and then wind the bobbin according to steps 5 through 11 of "Using the Supplemental Spool Pin"on page 53 to page 54.



Memo

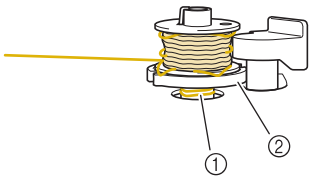
- See page 24 to assemble the spool stand.
- See page 65 to thread the machine using the spool stand.

⚠ CAUTION

- **When winding thread on the bobbin, do not cross the bobbin winding thread with the upper thread in the thread guides.**

■ Untangling Thread from Beneath the Bobbin Winder Seat

If the bobbin winding starts when the thread is not passed through the pre-tension disk correctly, the thread may become tangled beneath the bobbin winder seat.
Wind off the thread according to the following procedure.

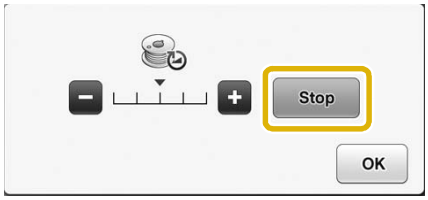


① Thread
② Bobbin winder seat

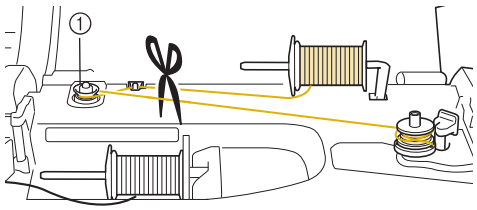
⚠ CAUTION

- **Do not remove the bobbin winder seat even if the thread becomes tangled under the bobbin winder seat. It may result in injuries.**

1 **If the thread becomes tangled under the bobbin winder seat, press Stop once to stop the bobbin winding.**

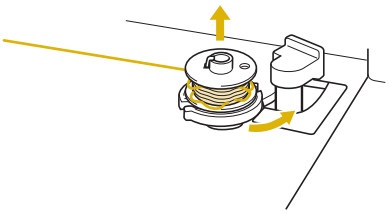


2 **Cut the thread with scissors near the pre-tension disk.**

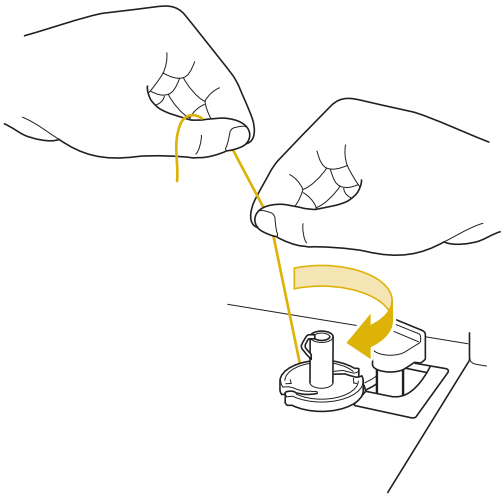


① Pre-tension disk

3 **Push the bobbin winder switch to the right, and then raise the bobbin at least 100 mm (4 inches) from the shaft.**



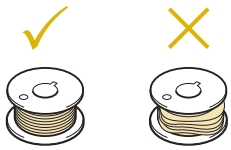
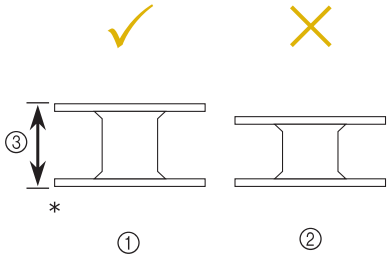
4 **Cut the thread near the bobbin and hold the thread end of the spool with your left hand. Unwind the thread clockwise near the bobbin winder seat with your right hand as shown below.**



5 **Wind the bobbin again.**

> **Note**
> - Make sure that the thread passes through the pre-tension disk correctly (page 53).

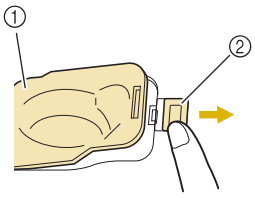
Setting the Bobbin

> **⚠ CAUTION**
> - **Use a bobbin thread that has been correctly wound. Otherwise, the needle may break or the thread tension will be incorrect.**
>
> 
>
> - **The included bobbin was designed specifically for this sewing machine. If bobbins from other models are used, the machine will not operate correctly. Use only the included bobbin or bobbins of the same type (part code: X52800-120). X52800-120 is Class 15 type bobbin.**
>
> 
>
> * Actual size
> ① This model
> ② Other models
> ③ 11.5 mm (approx. 7/16 inch)
>
> - **Before inserting or changing the bobbin, be sure to press in the LCD to lock all keys and buttons, otherwise injuries may occur if the "Start/Stop" button or any other button is pressed and the machine starts sewing.**

1 **Press to lock all keys and buttons and raise the presser foot.**

* If the message "OK to automatically lower the presser foot?" appears on the LCD screen, press OK to continue.

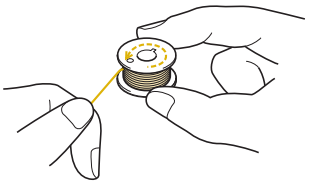
2 **Slide the bobbin cover latch to the right.**



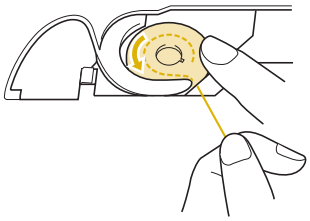
① Bobbin cover
② Latch
→ The bobbin cover opens.

3 **Remove the bobbin cover.**

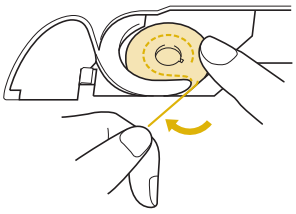
4 **Hold the bobbin with your right hand and hold the end of the thread with your left hand.**



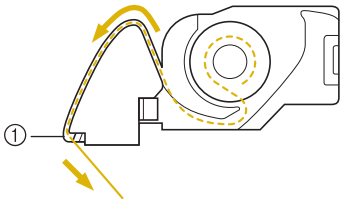
5 **Set the bobbin in the bobbin case so that the thread unwinds to the left.**



6 **Hold the bobbin lightly with your right hand, and then guide the thread with your left hand.**



7 **Pass the thread through the guide, and then pull the thread out toward the front.**

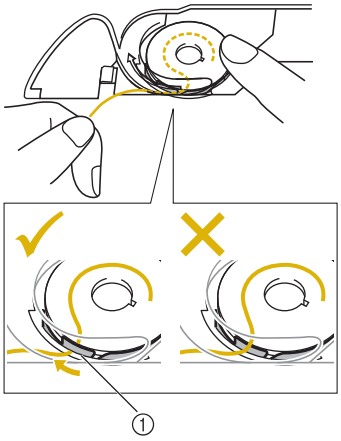


① Cutter

→ The cutter cuts the thread.

Note

- If the thread is not correctly inserted through the tension spring of the bobbin case, it may cause incorrect thread tension. (see page 90)

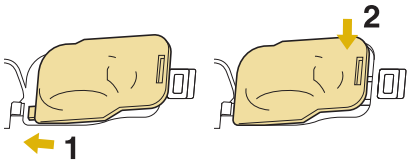


① Tension spring

⚠ CAUTION

- **Be sure to hold down the bobbin with your finger and unwind the bobbin thread correctly. Otherwise, the thread may break or the thread tension will be incorrect.**

8 **Insert the tab in the lower-left corner of the bobbin cover (1), and then lightly press down on the right side to close the cover (2).**



9 **Press** **to unlock all keys and buttons.**

Pulling Up the Bobbin Thread

There may be some sewing applications where you want to pull up the bobbin thread; for example, when making gathers, darts, or doing free motion quilting or embroidery.

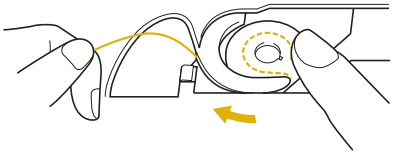
Memo

- You can pull up the bobbin thread after threading the upper thread (“UPPER THREADING” on page 60).

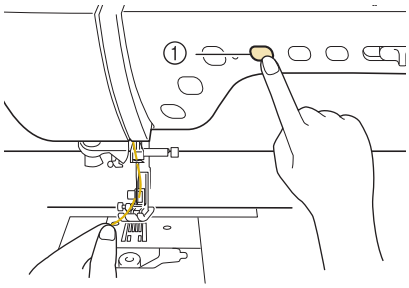
1 **Follow steps 1 to 4 in “Setting the Bobbin” on page 57 for installing the bobbin into the bobbin case.**

2 **Guide the bobbin thread through the groove, following the arrow in the illustration.**

* Do not cut the thread with the cutter.
* Do not replace the bobbin cover.



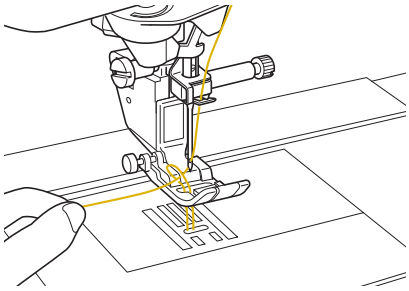
3 **While holding the upper thread, press the “Needle Position” button to lower the needle.**



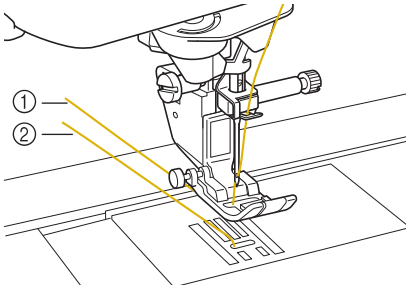
① “Needle Position” button

4 **Press the “Needle Position” button to raise the needle.**

5 **Gently pull the upper thread. A loop of the bobbin thread will come out of the hole in the needle plate.**

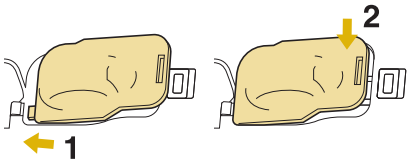


6 **Pull up the bobbin thread, pass it under the presser foot and pull it about 100 mm (approx. 3-4 inches) toward the back of the machine, making it even with the upper thread.**



① Upper thread
② Bobbin thread

7 **Replace the bobbin cover.**



UPPER THREADING

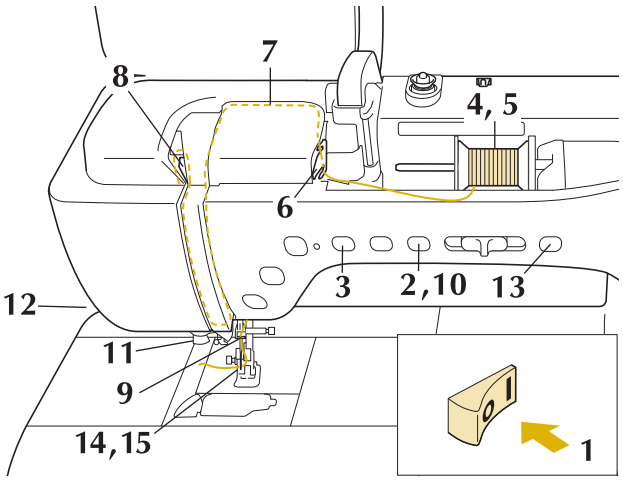
Upper Threading

⚠ CAUTION

- **Be sure to thread the machine properly. Improper threading can cause the thread to tangle and break the needle, leading to injury.**
- **When using the walking foot, the side cutter or accessories not included with this machine, attach the accessory to the machine after threading the machine.**

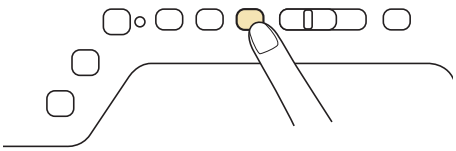
Memo

- The automatic threading function can be used with sewing machine needle sizes 75/11 through 100/16.
- When threads such as transparent nylon monofilament or speciality threads are used it is not recommended to use the needle threader.
- The automatic threading function cannot be used with the wing needle or the twin needle.

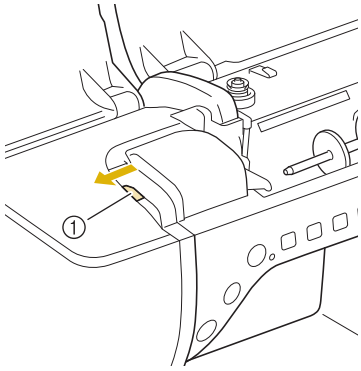


1 **Turn the main power to ON.**

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



→ The upper thread shutter opens so the machine can be threaded.

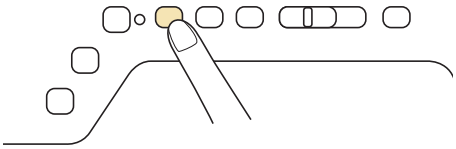


① Upper thread shutter

Memo

- This machine is equipped with an upper thread shutter, allowing you to check that the upper threading is performed correctly.

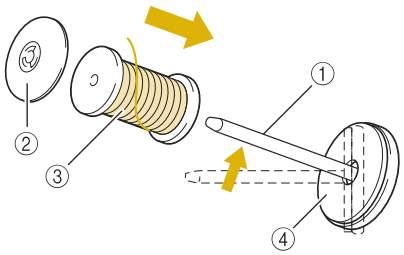
3 **Press the "Needle Position" button to raise the needle.**



Note

- If you try to thread the needle automatically without raising the needle, the thread may not thread correctly.

4 **Pivot the spool pin so that it angles upward. Set the thread spool on the spool pin so that the thread unwinds from the front of the spool.**



① Spool pin
② Spool cap
③ Thread spool
④ Spool felt

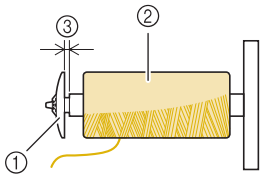
5 **Push the spool cap onto the spool pin as far as possible, then return the spool pin to its original position.**

⚠ CAUTION

- **If the thread spool and/or spool cap are set incorrectly, the thread may tangle on the spool pin and cause the needle to break.**
- **Use the spool cap (large or medium) or the thread spool insert (mini king thread spool) that is closest in size to the thread spool. If a spool cap smaller than the thread spool is used, the thread may become caught in the slit on the end of the spool and cause the needle to break.**

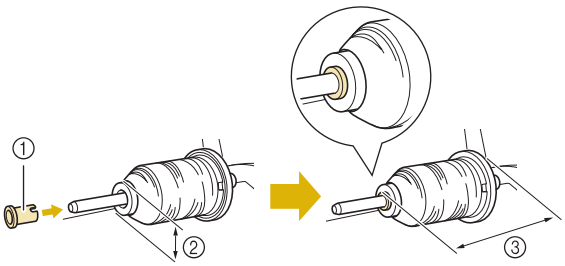
Memo

- When sewing with fine, cross-wound thread, use the small spool cap, and leave a small space between the cap and the thread spool.



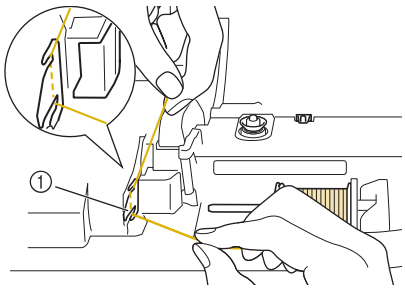
① Spool cap (small)
② Thread spool (cross-wound thread)
③ Space

- If a spool of thread whose core is 12 mm (1/2 inch) in diameter and 75 mm (3 inches) high is inserted onto the spool pin, use the thread spool insert (mini king thread spool).



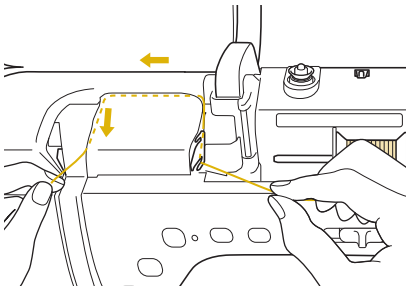
① Thread spool insert (mini king spool insert)
② 12 mm (1/2 inch)
③ 75 mm (3 inches)

6 **While holding the thread with both hands, pull the thread up from under the thread guide plate.**

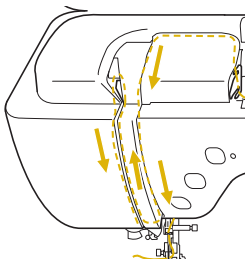


① Thread guide plate

7 **While holding the thread in your right hand, pass the thread through the thread guide in the direction indicated.**

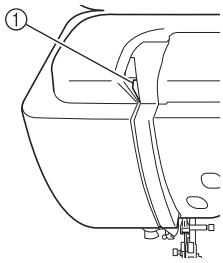


8 **Guide the thread down, up, then down through the groove, as shown in the illustration.**



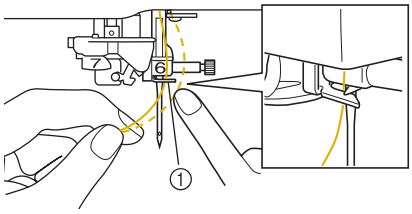
Memo

- Look in the upper groove area to check if the thread catches on the take-up lever visible inside the upper groove area.



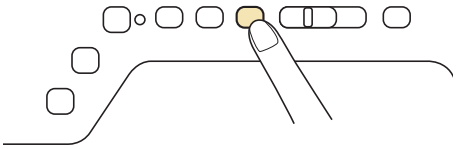
① Look in the upper groove area

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.**

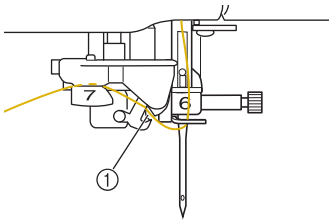


① Needle bar thread guide

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

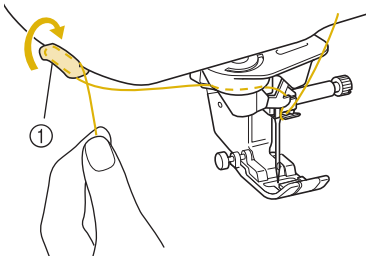


11 **Pass the thread through the thread guide disks (marked "7"). Make sure that the thread passes through the groove in the thread guide.**



① Groove in thread guide

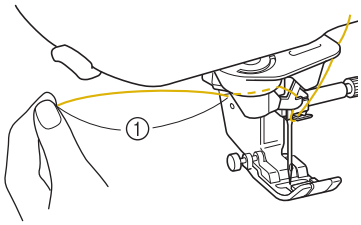
12 **Pull the thread up through the thread cutter to cut the thread, as shown in the illustration.**



① Thread cutter

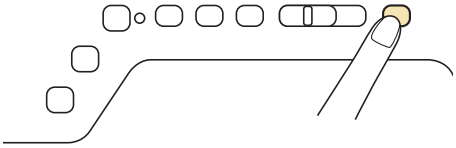
Note

- When using thread that quickly winds off the spool, such as metallic thread, it may be difficult to thread the needle if the thread is cut.
  Therefore, instead of using the thread cutter, pull out about 80 mm (approx. 3 inches) of thread after passing it through the thread guide disks (marked "7").



① 80 mm (approx. 3 inches) or more

13 **Press the "Automatic Threading" button to have the machine automatically thread the needle.**



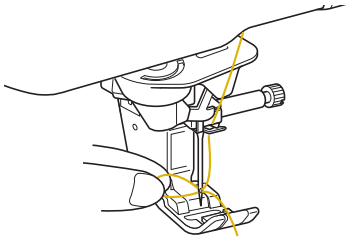
→ The thread passes through the eye of the needle.

Memo

- When the "Automatic Threading" button is pressed, the presser foot will be automatically lowered. After threading is finished, the presser foot moves back to the position before the "Automatic Threading" button was pressed.

14 **Carefully pull the end of the thread that was passed through the eye of the needle.**

* If a loop was formed in the thread passed through the eye of the needle, carefully pull on the loop of thread through to the back of the needle.

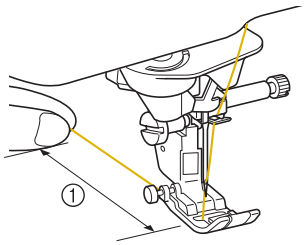


Note

- Pulling the loop of thread gently will avoid needle breakage.

15 Pull out about 100-150 mm (approx. 4-6 inches) of the thread, and then pass it under the presser foot toward the rear of the machine.

→ Raise the presser foot lever if the presser foot is lowered.



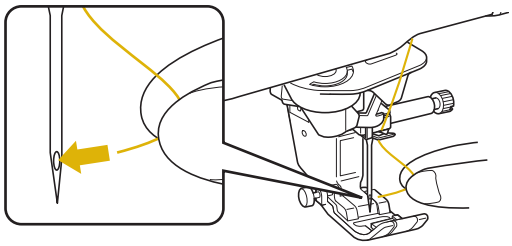
① About 100-150 mm (approx. 4-6 inches)

Memo

- If the needle could not be threaded or the thread was not passed through the needle bar thread guides, perform the procedure again starting from step 3.
  Then, pass the thread through the eye of the needle after step 9.

Note

- Some needles cannot be threaded with the needle threader. In this case, instead of using the needle threader after passing the thread through the needle bar thread guide (marked "6"), manually pass the thread through the eye of the needle from the front.



Using the Twin Needle Mode

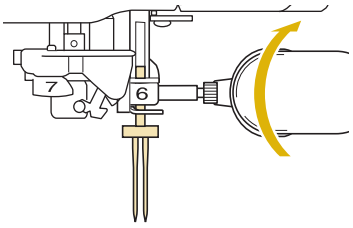
The twin needle can only be used for patterns that show after being selected. Before you select a stitch pattern, make sure the stitch can be sewn in the twin needle mode (refer to the "STITCH SETTING CHART" at the end of this manual).

⚠ CAUTION

- **Twin needle (part code XE4963-001) is recommended for this machine. Contact your authorized Baby Lock retailer for replacement needles (size 2.0/11 is recommended).**
- **Be sure to set the twin needle mode when using the twin needle. Using the twin needle while the machine is in single needle mode could cause the needle to break, resulting in damage.**
- **Do not sew with bent needles. The needle could break and cause injury.**
- **When using the twin needle, it is recommended to use presser foot "J".**
- **When the twin needle is used, bunched stitches may occur depending on the types of fabric and thread that are used.**
  Use monogramming foot "N" for decorative stitches.
- **Before changing the needle or threading the machine, be sure to press on the LCD Screen to lock all keys and buttons, otherwise injuries may occur if the "Start/Stop" button or any other button is pressed and the machine starts sewing.**

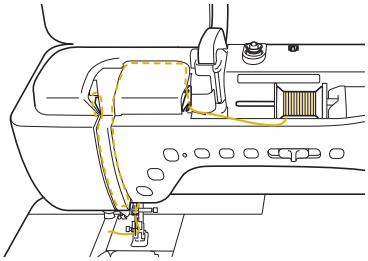
1 Press to lock all keys and buttons and then install the twin needle ("CHANGING THE NEEDLE" on page 73).

* If the message "OK to automatically lower the presser foot?" appears on the LCD screen, press OK to continue.



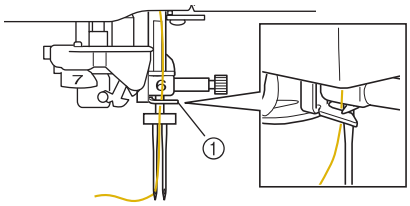
2 Press to unlock all keys and buttons.

3 **Thread the machine for the first needle according to the procedure for threading a single needle (“Upper Threading” on page 60).**



4 **Press to lock the machine.**

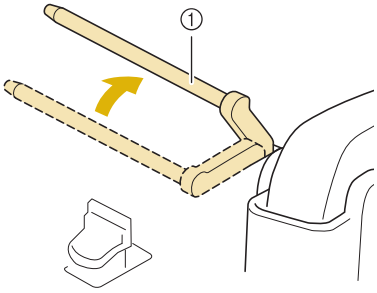
5 **Pass the thread through the needle bar thread guides on the needle bar, then thread the needle on the left side manually.**



① Needle bar thread guide

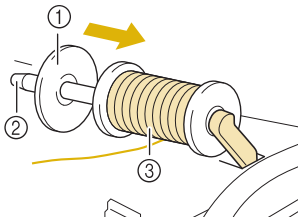
> **Note**
> • The “Automatic Threading” button cannot be used. Manually thread the twin needle from front to back. Using the “Automatic Threading” button may result in damage to the machine.

6 **Pull up the supplemental spool pin and set it in the up position.**



① Supplemental spool pin

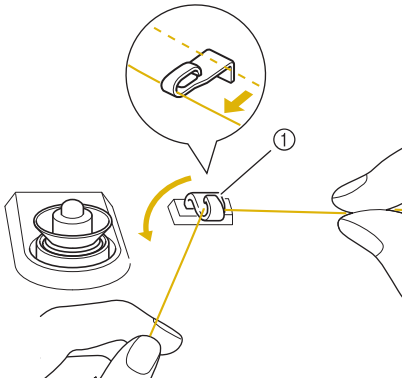
7 **Place the additional spool of thread on the supplemental spool pin, so that the thread unwinds from the front. Push the spool cap onto the spool pin as far as possible to secure the thread spool.**



① Spool cap
② Spool pin
③ Thread spool

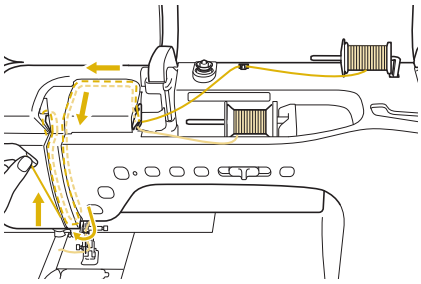
8 **Hold the thread from the spool with both hands, and place the thread in the thread guide.**

* Do not place the thread in the pre-tension disks.



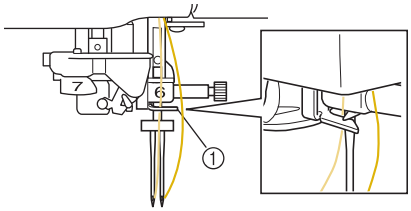
① Thread guide

9 **Press to unlock the machine, and while holding the thread from the spool, pull the thread through the lower notch in the thread guide plate, then through the upper notch. Hold the end of the thread with your left hand, and then guide the thread through the groove, following the arrows in the illustration.**



10 **Press to lock the machine.**

11 **Continue threading however do not pass the thread in the needle bar thread guide "6" on the needle bar. Thread the needle on the right side.**



① Needle bar thread guide

12 **Select a stitch pattern. (Example:)**

* Refer to "Sewing a Stitch" on page 80 for selecting the stitch.

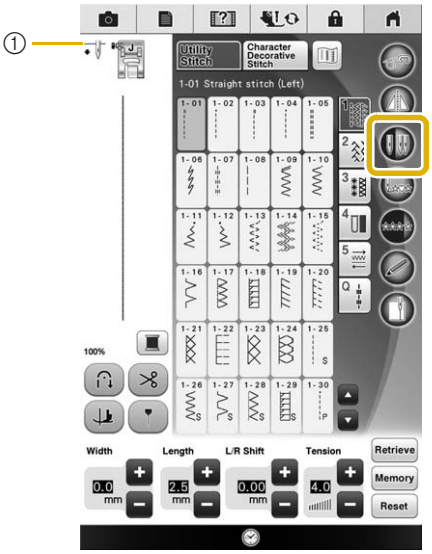
* Refer to the "STITCH SETTING CHART" at the end of this manual for the proper stitch to use with presser foot "J".

→ The selected stitch is displayed.

Note

- If the key is light gray after selecting the stitch, the selected stitch cannot be sewn in the twin needle mode.

13 **Press to select the twin needle mode.**



① Single needle/twin needle setting

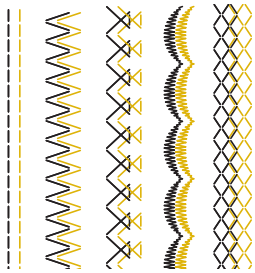
→ appears.

⚠ CAUTION

- **Be sure to set the twin needle mode when using the twin needle. Using the twin needle while the machine is in single needle mode could cause the needle to break, resulting in damage.**

14 **Start sewing.**

Sample of Twin Needle Sewing



Memo

- To change direction when sewing with the twin needle, raise the needle from the fabric, raise the presser foot lever, and then turn the fabric.

Using the Spool Stand

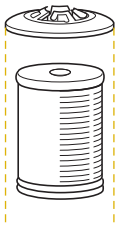
The included spool stand is useful when using thread on spools with a large diameter (cross-wound thread). This spool stand can hold two spools of thread.

Memo

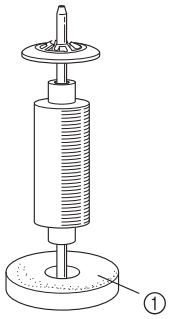
- See page 24 to assemble the spool stand.
- See page 56 to wind the bobbin when using the spool stand.

■ Using the Spool Stand

- Be sure to use a spool cap that is slightly larger than the spool.
  If the spool cap that is used is smaller or much larger than the spool, the thread may catch and sewing performance may suffer.

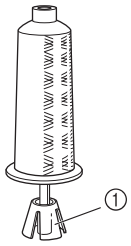


- When using thread on a thin spool, place the included spool felt on the spool pin, place the thread spool on the spool pin so that the center of the spool is aligned with the hole at the center of the spool felt, and then insert the spool cap onto the spool pin.



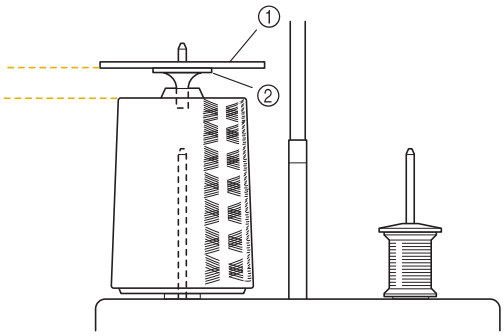
① Spool felt

- When using thread on a cone spool, use the spool holder. When using cone shaped thread spool with other than cotton thread, it is not necessary to use spool caps.



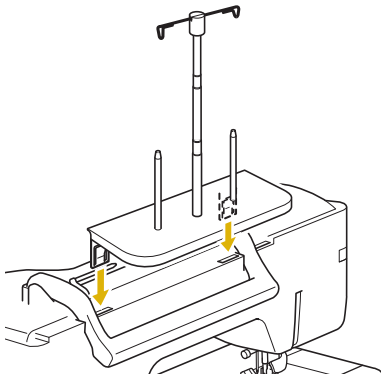
① Spool holder

- Depending on the size of spool or the amount of thread remaining, choose the appropriate sized spool cap (large or medium). Spool cap (small) cannot be used with the spool cap base.

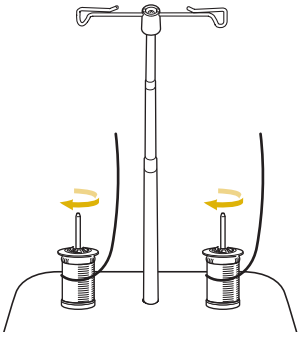


① Spool cap
② Spool cap base

1 Attach the spool stand to the machine. (see page 24.)



2 Place the spool of thread on the spool pin so that the thread feeds off the spool clockwise. Firmly insert the spool cap onto the spool pin.

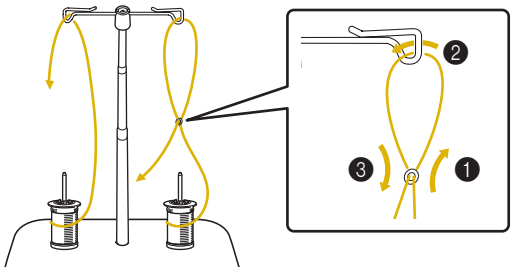


Note

- When using 2 spools of thread, make sure that both spools are feeding in the same direction.
- Make sure that the spools do not touch each other, otherwise the thread will not feed off smoothly, the needle may break, or the thread may break or become tangled. In addition, make sure that the spools do not touch the telescopic thread guide at the center.
- Make sure that the thread is not caught under the spool.

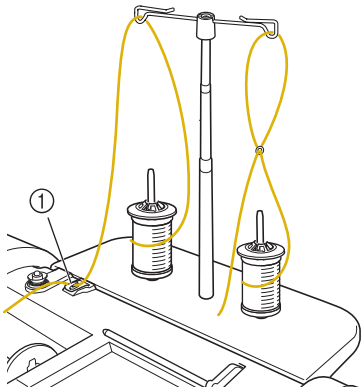
3 **Pull the thread off the spool. Pass the thread from the back to the front through the thread guides at the top.**

When using thread that quickly feeds off the spool, such as metallic thread, use the enclosed ring to prevent the thread from becoming entangled.
Threading sequence; Pull the thread from the spool, place the thread through the ring from the bottom up (❶), into the thread guide (❷) and through the ring from the top down (❸). When using the ring, do not use the spool cap base.



Note
- Guide the thread so that it does not become entangled with the other thread.
- After feeding the thread as instructed, wind any excess thread back onto the spool, otherwise the excess thread will become tangled.

4 **Pass the thread through the machine's thread guide from the right to the left.**



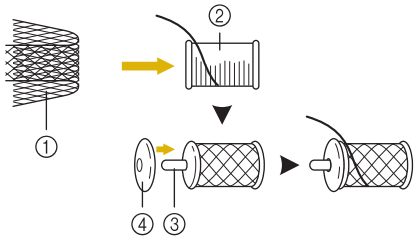
① Thread guide

5 **Thread the machine according to the steps ⑥ to ⑮ of "Upper Threading" on page 60.**

Using Threads that Unwind Quickly

■ Using the Spool Net

If using transparent nylon monofilament thread, metallic thread, or other strong thread, place the included spool net over the spool before using it. When using specialty threads, threading must be done manually.
If the spool net is too long, fold it once to match it to the spool size before placing it over the spool.



① Spool net
② Thread spool
③ Spool pin
④ Spool cap

Memo
- When threading the spool with the spool net on, make sure that 50-60 mm (approx. 2 - 2-1/2 inches) of thread are pulled out.
- It may be necessary to adjust the thread tension when using the spool net.

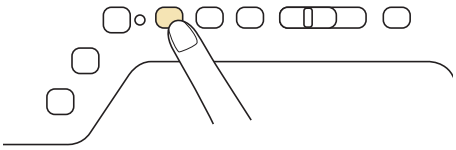
CHANGING THE PRESSER FOOT

⚠ CAUTION

- Always press on the screen to lock all keys and buttons before changing the presser foot. If is not pressed and the "Start/Stop" button or another button is pressed, the machine will start and may cause injury.
- Always use the correct presser foot for the selected stitch pattern. If the wrong presser foot is used, the needle may strike the presser foot and bend or break, and may cause injury.
- Only use presser feet made for this machine. Using other presser feet may lead to accident or injury.

Removing the Presser Foot

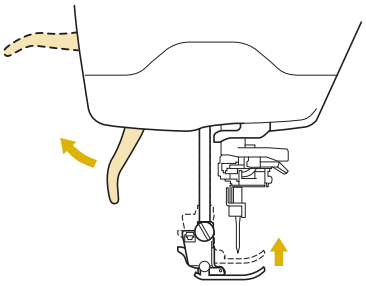
1 **Press the "Needle Position" button to raise the needle.**



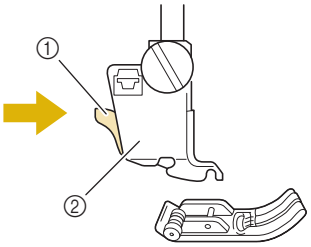
2 **Press to lock all keys and buttons.**

* If the message "OK to automatically lower the presser foot?" appears on the LCD screen, press OK to continue.

3 **Raise the presser foot lever.**



4 **Press the black button on the presser foot holder and remove the presser foot.**



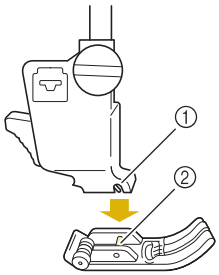
① Black button
② Presser foot holder

Attaching the Presser Foot

⚠ CAUTION

- Make sure that the presser foot is installed in the correct direction, otherwise the needle may strike the presser foot, breaking the needle and causing injuries.

1 **Place the new presser foot under the holder, aligning the foot pin with the notch in the holder. Lower the presser foot lever so that the presser foot pin snaps into the notch in the holder.**



① Notch
② Pin

2 **Press to unlock all keys and buttons.**

3 **Raise the presser foot lever.**

Attaching the Presser Foot with the Included Adapter

You can attach the presser feet using the included adapter and small screw.
For example, the walking foot, the free motion echo quilting foot "E", the free motion quilting foot "C" and so on.
Following procedure shows how to attach the walking foot as an example.

■ Attaching the Walking Foot (Optional)

The walking foot holds the fabric between the presser foot and the feed dogs to feed the fabric. This enables you to have better fabric control when sewing difficult fabrics (such as quilted fabrics or velvet) or fabrics that slip easily (such as vinyl, leather, or synthetic leather).

Note

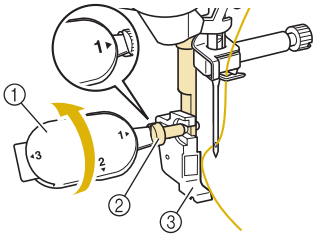
- Thread the needle manually when using the walking foot, or only attach the walking foot after threading the needle using the "Automatic Threading" button.
- When sewing with the walking foot, sew at medium to low speeds.

Memo

- The walking foot can only be used with straight or zigzag stitch patterns. Reverse stitches cannot be sewn with the walking foot. Only select straight or zigzag stitch patterns with reinforcement stitches. (see page 83.)

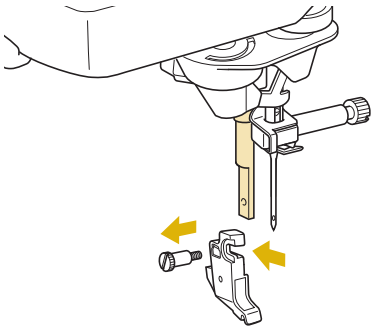
1 **Follow the steps in "Removing the Presser Foot" on the previous page.**

2 **Loosen the screw of the presser foot holder to remove the presser foot holder.**

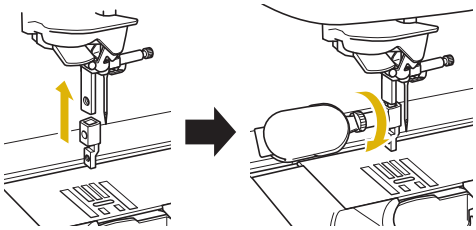


① Multi- purpose screwdriver
② Presser foot holder screw
③ Presser foot holder

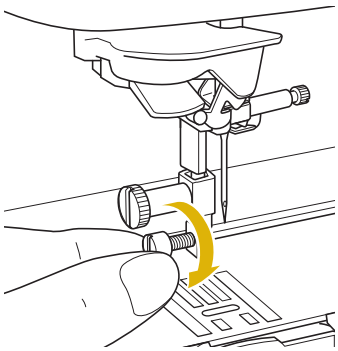
3 **Remove the screw of the presser foot completely from the presser foot shaft.**



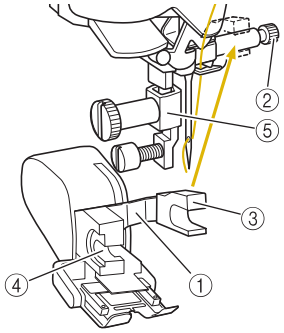
4 **Set the adapter on the presser foot bar, aligning the flat side of the adapter opening with the flat side of the presser bar. Push it up as far as possible, and then tighten the screw securely with the screwdriver.**



5 **Turn a supplied small screw 2 or 3 times with your hand.**

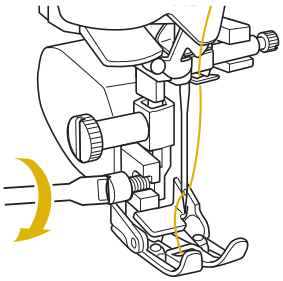


6 **Set the operation lever of the walking foot so that the needle clamp screw is set in the fork. Position the shank of the walking foot on the presser foot bar.**



① Operation lever
② Needle clamp screw
③ Fork
④ Walking foot shank
⑤ Presser foot bar

7 **Lower the presser foot lever. Insert the screw, and tighten the screw securely with the screwdriver.**



⚠ CAUTION

- **Use the included screwdriver to tighten the screw securely. If the screw is loose, the needle may strike the presser foot and cause injury.**
- **Be sure to rotate the handwheel toward you (counterclockwise) to check that the needle does not strike the presser foot. If the needle strikes the presser foot, injury may result.**

Using the Dual Feed Foot

Dual feed foot enables you to have best fabric control when sewing difficult fabrics that slip easily, such as quilted fabrics or fabrics that tend to stick to the bottom of a presser foot, such as vinyl, leather or synthetic leather.

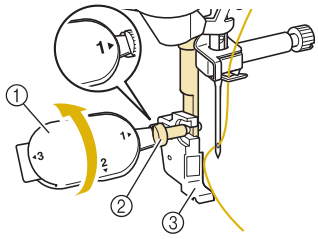
Note
- When sewing with the dual feed foot, sew at medium to low speeds.

Memo
- When selecting stitches to be used with the dual feed foot, only the stitches that can be used will be activated on the display.
- When sewing fabric that easily sticks together, a more attractive finish can be achieved by basting the beginning of sewing.

■ Attaching the Dual Feed Foot

1 **Follow the steps in "Removing the Presser Foot" on page 68.**

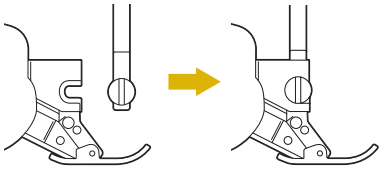
2 **Loosen the screw of the presser foot holder to remove the presser foot holder.**



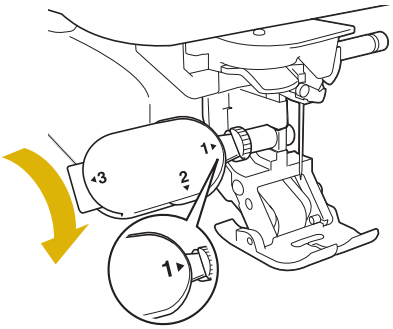
① Multi- purpose screwdriver
② Presser foot holder screw
③ Presser foot holder

3 **Position the dual feed foot to the presser foot bar by aligning the notch of the dual feed foot to the large screw.**

Side view



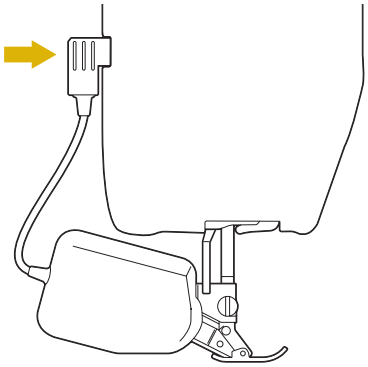
4 **Hold the dual feed foot in place with your right hand, then using the included screwdriver securely tighten the large screw.**



⚠ CAUTION

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

5 **Plug the connector of the dual feed foot into the jack on the back of your machine.**

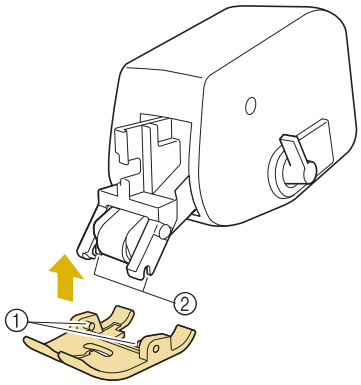


6 **Press** **to unlock all keys and buttons.**

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

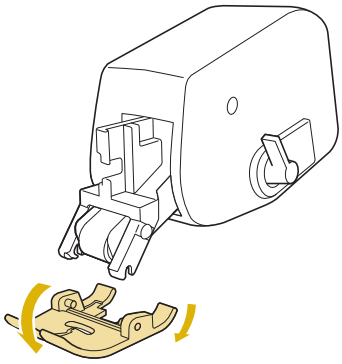
■ Attaching/Detaching toe

Attach the toe by aligning the pins with the notches and snap it into place.



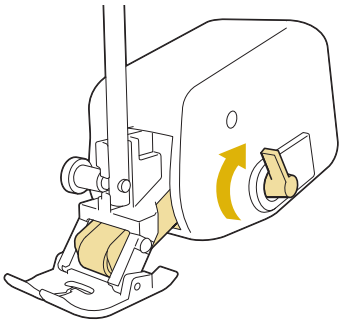
① Pins
② Notches

If you push down on the front and back part of the dual feed foot, the toe of the dual feed foot will snap off.

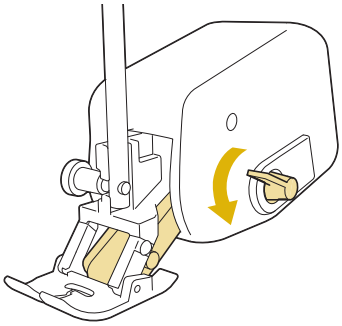


■ Using the Dual Feed Position Lever

When the feed position lever is up, the black roller belt on the dual feed is not engaged.



When the feed position lever is down, the black roller belt on the dual feed is engaged.



Note
- Do not operate the lever while sewing.

■ Adjusting the Amount of Fabric Feeding of the Dual Feed Foot

The dual feed mechanism pulls the top fabric according to the set stitch length. With troublesome fabrics, fine tune the set length, by changing the dual feed feed adjustment in the settings screen.

Note
- As a default, some keys mentioned in the following procedures appear in light gray and are not available. To enable the keys for specifying the settings, attach the dual feed foot to the machine. The keys are enabled after the dual feed foot is detected.

1 **Press [ ].**

→ The settings screen appears.

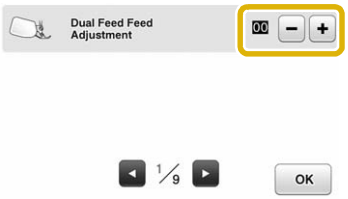
2 **Press [ ].**

→ The Sewing settings screen appears.

3 **Display page 1 of the Sewing settings screen.**

4 **Use [−] or [+] to increase or decrease the feeding of the top fabric.**

* Select “00” for sewing in most cases.
* If the feed amount for the top fabric is too little, causing the fabric to be longer than the bottom fabric, press [+] to increase the feed amount for the top fabric.
* If the feed amount for the top fabric is too much, causing the fabric to be shorter than the bottom fabric, press [−] to decrease the feed amount for the top fabric.



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

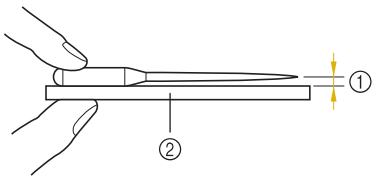
CHANGING THE NEEDLE

⚠ CAUTION

- **Always press on the screen to lock all keys and buttons before changing the needle. If is not pressed and the "Start/Stop" button or another operation button is pressed accidentally, the machine will start and injury may result.**
- **Use only sewing machine needles made for home use. Other needles may bend or break and may cause injury.**
- **Never sew with a bent needle. A bent needle will easily break and may cause injury.**

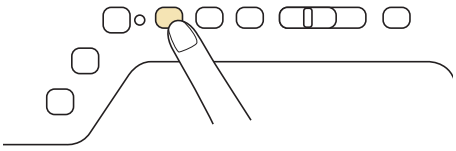
Memo

- To check the needle correctly, place the flat side of the needle on a flat surface. Check the needle from the top and the sides. Throw away any bent needles.



① Parallel space
② Level surface (bobbin cover, glass, etc.)

1 Press the "Needle Position" button to raise the needle.



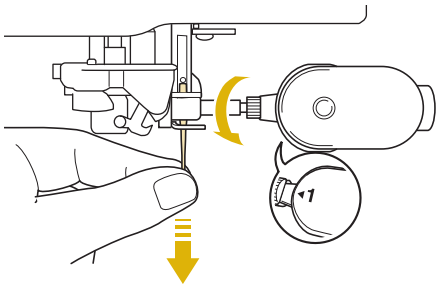
2 Press to lock all keys and buttons.

* If the message "OK to automatically lower the presser foot?" appears on the LCD screen, press OK to continue.

Note

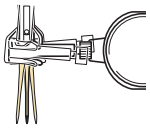
- Before replacing the needle, cover the hole in the needle plate with fabric or paper to prevent the needle from falling into the machine.

3 Use the screwdriver to turn the needle clamp screw toward the front of the machine and loosen the screw. Remove the needle.

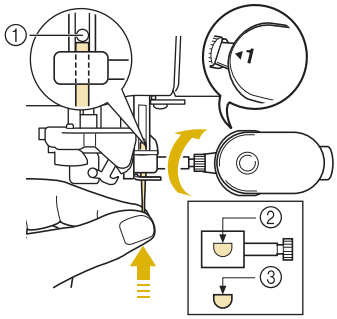


Note

- Do not apply pressure to the needle clamp screw. Doing so may damage the needle or machine.



4 **With the flat side of the needle facing the back, insert the new needle all the way to the top of the needle stopper (viewing window) in the needle clamp. Use a screwdriver to securely tighten the needle clamp screw.**



① Needle stopper
② Hole for setting the needle
③ Flat side of needle

⚠ CAUTION

- **Be sure to push in the needle until it touches the stopper, and securely tighten the needle clamp screw with a screwdriver. If the needle is not completely inserted or the needle clamp screw is loose, the needle may break or the machine may be damaged.**

5 **Press** **to unlock all keys and buttons.**

About the Needle

The sewing machine needle is probably the most important part of the sewing machine. Choosing the proper needle for your sewing project will result in a beautiful finish and fewer problems. Below are some things to keep in mind about needles.

- The smaller the needle number, the finer the needle. As the numbers increase, the needles get thicker.
- Use fine needles with lightweight fabrics, and thicker needles with heavyweight fabrics.
- To avoid skipped stitches, use ball point needle (golden colored) 90/14 with stretch fabrics.
- To avoid skipped stitches, use ball point needle (golden colored) 90/14 when sewing character or decorative stitches.
- Use needle 75/11 for embroidery. Use ball point needle 75/11 for embroidering patterns with short jump stitches such as alphabet characters when the thread trimming function is turned on.
- It is recommended that a 90/14 needle should be used when embroidering on heavyweight fabrics or stabilizing products (for example, denim, puffy foam, etc.). A 75/11 needle may bend or break, which could result in injury.
- Size 75/11 machine needle is installed into your sewing machine.

Fabric/Thread/Needle Combinations

The following table provides information concerning the appropriate thread and needle for various fabrics. Please refer to this table when selecting a thread and needle for the fabric you wish to use.

Fabric type/Application		Thread		Size of needle
		Type	Size	
Medium weight fabrics	Broadcloth	Cotton thread	60 - 90	75/11 - 90/14
	Taffeta	Synthetic thread		
	Flannel, Gabardine	Silk thread	50	
Thin fabrics	Lawn	Cotton thread	60 - 90	65/9 - 75/11
	Georgette	Synthetic thread		
	Challis, Satin	Silk thread	50	
Thick fabrics	Denim	Cotton thread	30	90/14 - 100/16
			50	
	Corduroy	Synthetic thread	50 - 60	
	Tweed	Silk thread		
Stretch fabrics	Jersey	Thread for knits	50 - 60	Ball point needle (gold colored) 75/11 - 90/14
	Tricot			
Easily frayed fabrics		Cotton thread	50 - 90	65/9 - 90/14
		Synthetic thread		
		Silk thread	50	
For top-stitching		Synthetic thread	50	90/14 - 100/16
		Silk thread		

Memo

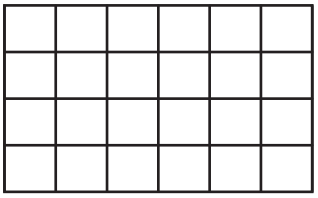
- For transparent monofilament nylon thread, always use needle sizes 90/14 or 100/16. The same thread is usually used for the bobbin thread and upper thread.

⚠ CAUTION

- **Be sure to follow the needle, thread, and fabric combinations listed in the table. Using an improper combination, especially a heavyweight fabric (i.e., denim) with a small needle (i.e., 65/9 - 75/11), may cause the needle to bend or break, and lead to injury. Also, the seam may be uneven, the fabric may pucker, or the machine may skip stitches.**

NEEDLE CALIBRATION USING THE BUILT IN CAMERA

Setting the camera needle position is essential when you use camera function. It is not necessary to perform this operation each time, but we recommend performing it when the needle is changed. Use the white stickers (solid) included with the machine.

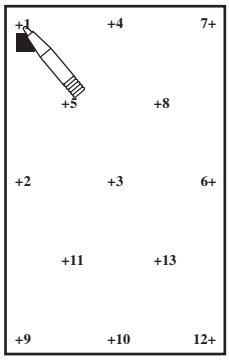


1 Hold your finger firmly on the LCD screen, and then turn on the machine.

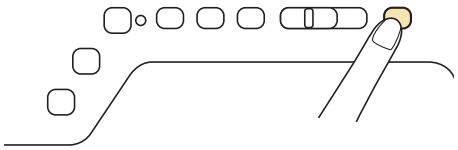
Note

- Be careful not to touch the LCD screen prior to Step 2 below.
- This function can be performed with or without embroidery unit attached to machine. If attached, message screens will appear regarding movement of embroidery unit.

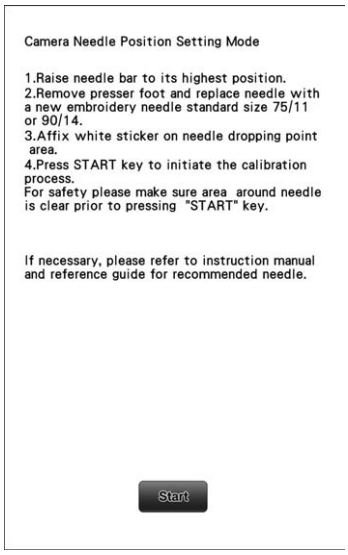
→ The following screen appears.



2 Press the "Automatic Threading" button.



→ Camera needle position setting screen appears.



3 Follow the on-screen instructions to complete the procedure.

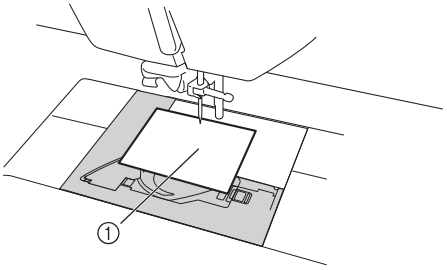
1. Raise needle bar to its highest position.

Note

- The "Needle Position" button cannot be used while setting the camera needle position. Turn the handwheel counterclockwise to move the needle bar.

2. Remove presser foot and replace needle with a new embroidery needle standard size 75/11 or 90/14.

3. Affix white sticker on needle dropping point area.



① White sticker

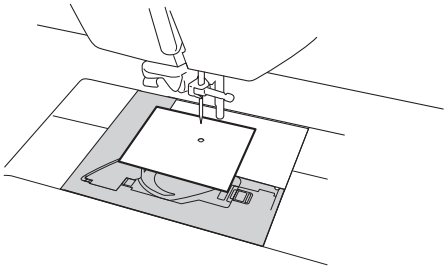
Note

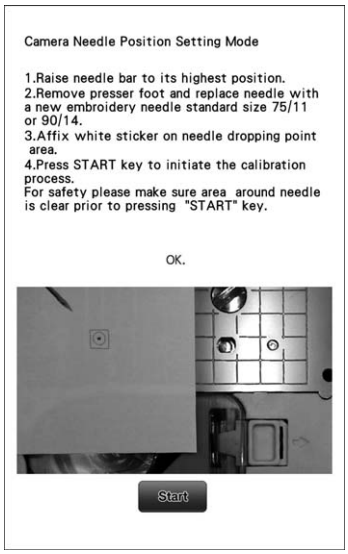
- Use a new sticker. The camera needle position cannot be set correctly if there is a hole in sticker or if it is dirty. If you have no new stickers, contact your nearest Baby Lock retailer.

4. Press Start to initiate the calibration process. For safety please make sure area around needle is clear prior to pressing Start.

→ Setting the needle drop point begins.

4 The operation is finished when "OK" appears. If "NG" appears, remove the sticker, and then follow the on-screen instructions to repeat steps 3 and 4 of step 3. If multiple attempts to set the position are not successful, contact your nearest Baby Lock retailer.





5 Remove the sticker, and then turn off the machine.

Chapter 2
Sewing Basics

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SEWING

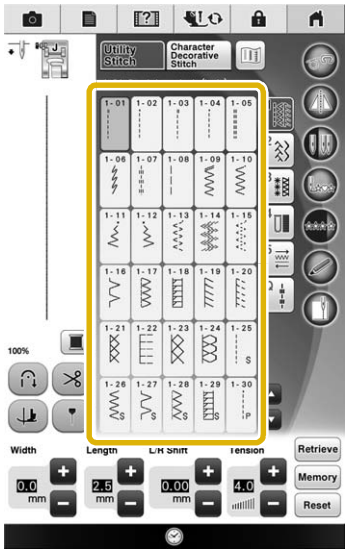
⚠ CAUTION

- To avoid injury, pay special attention to the needle while the machine is in operation. Keep your hands away from moving parts while the machine is in operation.
- Do not stretch or pull the fabric during sewing. Doing so may lead to injury.
- Do not use bent or broken needles. Doing so may lead to injury.
- Do not attempt to sew over basting pins or other objects during sewing. Otherwise, the needle may break and cause injury.
- If stitches become bunched, lengthen the stitch length setting before continuing sewing. Otherwise, the needle may break and cause injury.

Sewing a Stitch

1 **Turn the main power to ON and press to display the utility stitches, and push the "Needle Position" button to raise the needle.**

2 **Press the key of the stitch you want to sew.**



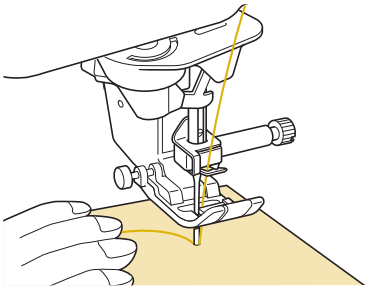
→ The symbol of the correct presser foot will be displayed in the upper left corner of the LCD screen.

3 **Install the presser foot ("CHANGING THE PRESSER FOOT" on page 68).**

⚠ CAUTION

- Always use the correct presser foot. If the wrong presser foot is used, the needle may strike the presser foot and bend or break, possibly resulting in injury.
  Refer to page 403 for presser foot recommendations.

4 **Set the fabric under the presser foot. Hold the fabric and thread in your left hand, and rotate the handwheel to set the needle in the sewing start position.**



Memo

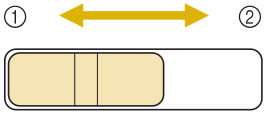
- The black button on the left side of presser foot "J" should be pressed only if the fabric does not feed or when sewing thick seams (see page 86). Normally, you can sew without pressing the black button.

5 **Lower the presser foot.**

* You do not have to pull up the bobbin thread.

6 **Adjust the sewing speed with the speed control slide.**

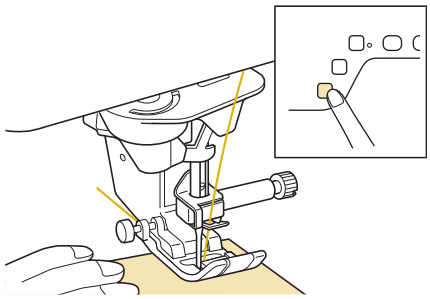
* You can use this slide to adjust sewing speed during sewing.



① Slow
② Fast

7 **Press the "Start/Stop" button to start sewing.**

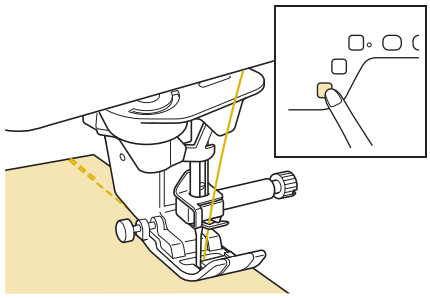
* Guide the fabric lightly by hand.



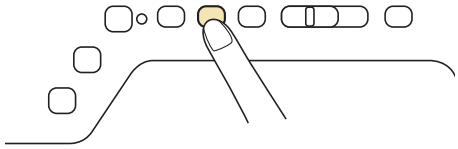
Memo

- When the foot controller is being used, you cannot start sewing by pressing the "Start/Stop" button.

8 **Press the "Start/Stop" button again to stop sewing.**



9 **Press the "Thread Cutter" button to trim the upper and lower threads.**



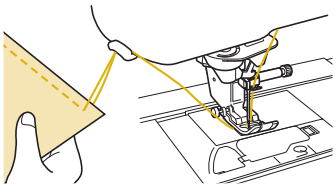
→ The needle will return to the up position automatically.

CAUTION

- **Do not press the "Thread Cutter" button after the threads have been cut. Doing so could tangle the thread or break the needle and damage the machine.**
- **Do not press the "Thread Cutter" button when there is no fabric set in the machine or during machine operation. The thread may tangle, possibly resulting in damage.**

Note

- When cutting thread thicker than #30, nylon monofilament thread, or other decorative threads, use the thread cutter on the side of the machine.



10 **When the needle has stopped moving, raise the presser foot and remove the fabric.**

Memo

- This machine is equipped with a bobbin thread sensor that warns you when the bobbin thread is almost empty. When the bobbin thread is nearly empty, the machine automatically stops. However, if the "Start/Stop" button is pressed, a few stitches can be sewn. When the warning displays, re-thread the machine immediately.

■ Using the Multi-Function Foot Controller

You can also use the foot controller to start and stop sewing.

CAUTION

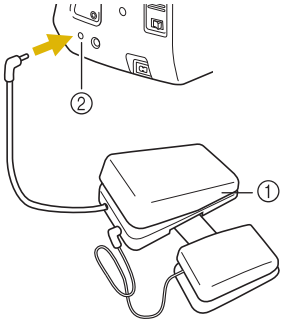
- **Do not allow fabric pieces and dust to collect in the foot controller. Doing so could cause a fire or an electric shock.**

Memo

- When the multi-function foot controller is being used, you cannot start sewing by pressing the "Start/Stop" button.
- The multi-function foot controller cannot be used when embroidering.
- The multi-function foot controller can be used for sewing utility and decorative stitches when the embroidery unit is attached.

1 Insert the multi-function foot controller plug into its jack on the machine.

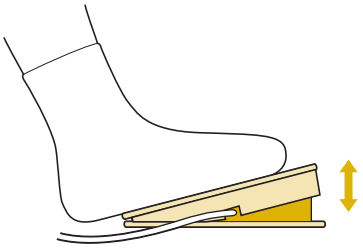
* Before connecting the multi-function foot controller, be sure to assemble the controller. Refer to "Assembling the Controller" on page 26.



① Multi-function foot controller
② Foot controller jack

2 Slowly depress the multi-function foot controller to start sewing.

Pressing down on the multi-function foot controller increases the sewing speed; releasing the pressure on the multi-function foot controller decreases the sewing speed.



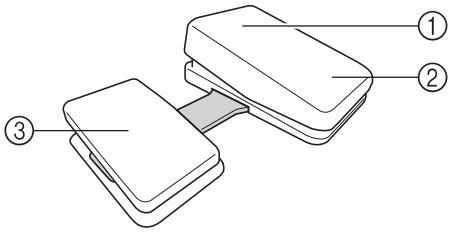
Memo
- The speed that is set using the sewing speed controller is the multi-function foot controller's maximum sewing speed.

3 Release the multi-function foot controller to stop the machine.

Specifying the Multi-Function Foot Controller (Only for supplied models)

With the multi-function foot controller, various sewing machine operations in addition to starting/stopping sewing, such as thread cutting and reverse stitching, can be specified to be performed.

■ Functions That Can Be Specified



	Controller	Functions that can be specified
①	Main foot controller	Start/Stop
②	Heel switch	Select any of the following: • Thread Cutting • Needle Position UP/DOWN • Single Stitch • Reverse Stitch (Reinforcement Stitch) *
③	Side pedal	

* If you set the "Reverse Stitch" function on the heel switch, machine operates the same as pressing the "Reverse Button" on the machine.

* Reinforcement stitching may be applied depending on the selected stitch pattern. For the details, refer to "Automatic Reinforcement Stitching" on page 83.

Memo
- If you set "Reverse Stitch" on the side pedal, you can create a darning stitch effect using zigzag stitches. With both feet, keep pressing the main foot controller, and repeat pressing and releasing the side pedal to sew forward and reverse in turn. Machine will reverse at the speed you press the main foot controller.

■ Specifying the Functions

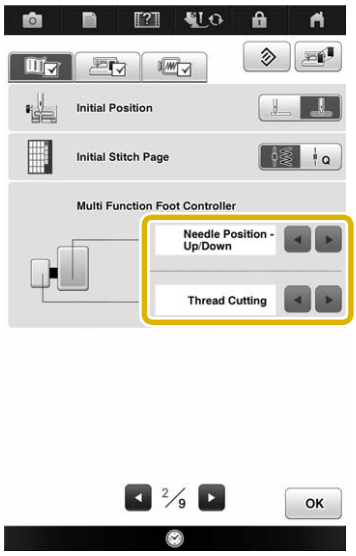
The functions performed by the multi-function foot controller can be specified in the settings screen.

Note
- Before specifying the functions, connect the multi-function foot controller to the sewing machine. The settings screen is activated the first time that the sewing machine detects the multi-function foot controller.
- After the multi-function foot controller is connected to the sewing machine and the functions are specified, the "Start/Stop" button cannot be used. All buttons other than the "Start/Stop" button can continue to be used.

1 **Press .**

2 **Display page 2 of the Sewing Settings screen.**

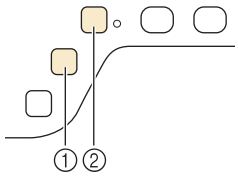
3 **Select the functions to be performed by the multi-function foot controller.**



4 **Press OK.**

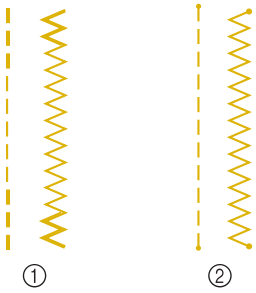
Sewing Reinforcement Stitches

Reverse/reinforcement stitches are generally necessary at the beginning and end of sewing. You can use the "Reverse Stitch" button to sew reverse/reinforcement stitches. When you keep pressing "Reinforcement Stitch" button, the machine will sew reinforcement stitch at that point 3 to 5 stitches, and then stop. (see page 17)



① "Reverse Stitch" button
② "Reinforcement Stitch" button

If the automatic reinforcement stitch is selected on the screen, reverse stitches (or reinforcement stitches) will be sewn automatically at the beginning of sewing when the "Start/Stop" button is pressed. Press "Reverse Stitch" button or "Reinforcement Stitch" button to sew reverse stitches (or reinforcement stitches) automatically at the end of sewing (Refer to the next procedure "Automatic Reinforcement Stitching".).



① Reverse stitch
② Reinforcement stitch

The operation performed when the button is pressed differs depending on the selected pattern. (Refer to "STITCH SETTING CHART" on page 403.)

Memo

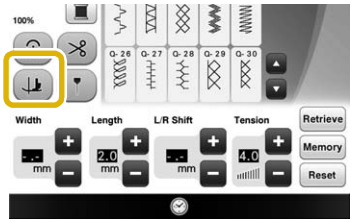
- When you press the "Reinforcement Stitch" button while sewing character/decorative stitch pattern, you can end sewing with a full stitch instead of at a mid-point.
- The green light on the right of the "Reinforcement Stitch" button lights up while the machine is sewing a full motif, and it automatically turns off when the sewing is stopped.

Automatic Reinforcement Stitching

After selecting a stitch motif, turn on the automatic reinforcement stitching function before sewing, and the machine will automatically sew reinforcement stitches (or reverse stitches, depending on the stitch motif) at the beginning and end of sewing.

1 **Select a stitch pattern.**

2 **Press to set the automatic reinforcement stitching function.**

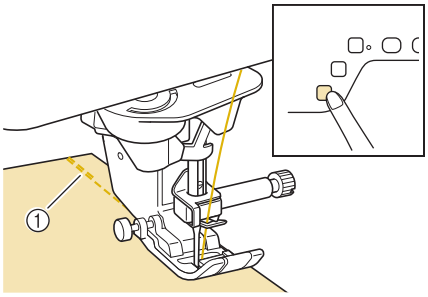


→ The key will display as .

Memo

- Some stitches, such as buttonholes and bar tacks, require reinforcement stitches at the beginning of sewing. If you select one of these stitches, the machine will automatically turn on this function (the key appears as when the stitch is selected).

3 Set the fabric in the start position and begin sewing.

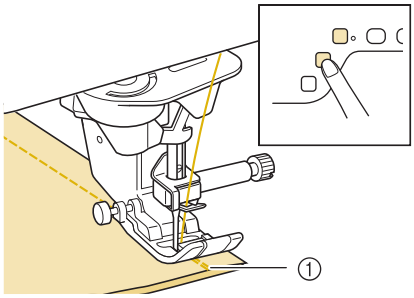


① Reverse stitches (or reinforcement stitches)

→ The machine will automatically sew reverse stitches (or reinforcement stitches) and then continue sewing.

If you press the Start/Stop button to pause sewing, press it again to continue. The machine will not sew reverse/reinforcement stitches again.

4 Press "Reverse Stitch" button or "Reinforcement Stitch" button).



① Reverse stitches (or reinforcement stitches)

→ The machine will sew reverse stitches (or reinforcement stitches) and stop.

Memo

- To turn off the automatic reinforcement stitching function, press again, so it appears as .

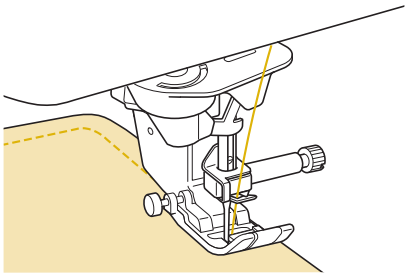
The operation performed when the button is pressed differs depending on the selected pattern. Refer to the following table for details on the operation that is performed when the button is pressed.

	"Reverse Stitch" button	"Reinforcement Stitch" button
Utility Stitch + 1-01 1-03 1-09	Machine starts sewing the stitches and only sews reverse stitches while holding the "Reverse Stitch" button.	Machine starts sewing the stitches and sews 3 – 5 reinforcement stitches while holding the "Reinforcement Stitch" button.
Utility Stitch + 1-02 1-04 1-10	Machine starts sewing the stitches and only sews reverse stitches while holding the "Reverse Stitch" button.*	Machine starts sewing the stitches and sews 3 – 5 reinforcement stitches while holding the "Reinforcement Stitch" button.
Utility Stitch + 1-01 1-03 1-09	Machine sews reverse stitches at the beginning and end of sewing.	Machine sews reverse stitches at the beginning and reinforcement stitches at the end of sewing.
Utility Stitch + 1-02 1-04 1-10	Machine sews reinforcement stitches at the beginning and reverse stitches at the end of sewing.*	Machine sews reinforcement stitches at the beginning and end of sewing.
Character Decorative Stitch +	Machine starts sewing and then sews reinforcement stitches while holding the "Reverse Stitch" button.	Machine starts sewing at the beginning, then completes the pattern and sews reinforcement stitches at the end of sewing.
Character Decorative Stitch +	Machine sews reinforcement stitches at the beginning and sews reinforcement stitches when the "Reverse Stitch" button is pressed.	Machine sews reinforcement stitches at the beginning, then completes the pattern and sews reinforcement stitches at the end of sewing.

* If "Reinforcement Priority" of the settings screen is set to "ON" (see page 31), reinforcement stitches are sewn instead of reverse stitches.

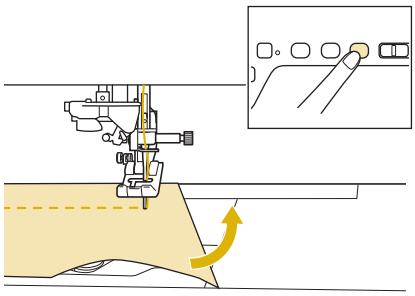
Sewing Curves

Sew slowly while keeping the seam parallel with the fabric edge as you guide the fabric around the curve.



Changing Sewing Direction

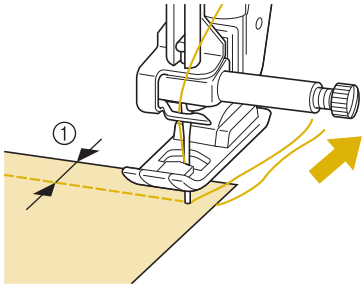
Stop the machine. Leave the needle in the fabric, and press the "Presser Foot Lifter" button to raise the presser foot. Using the needle as a pivot, turn the fabric so that you can sew in the new direction. Press the "Presser Foot Lifter" button to lower the presser foot and start sewing.



The pivot setting is useful when changing the sewing direction. When the machine is stopped at the corner of the fabric, the machine stops with the needle in the fabric and the presser foot is automatically raised so the fabric can easily be rotated ("Pivoting" on page 93).

■ Sewing a Seam Allowance of 0.5 cm or Less

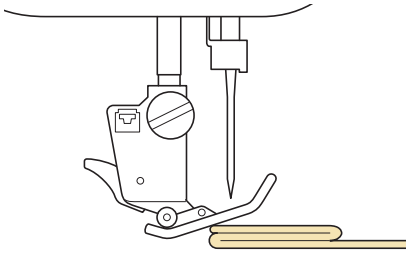
Baste the corner before sewing, and then, after changing the sewing direction at the corner, pull the basting thread toward the back while sewing.



① 5 mm (approx. 3/16 inch)

Sewing Heavyweight Fabrics

The sewing machine can sew fabrics up to 6 mm (approx. 1/4 inch) thick. If the thickness of a seam causes sewing to occur at an angle, help guide the fabric by hand and sew on the downward slope.

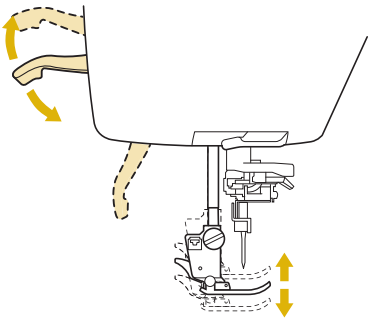


⚠ CAUTION

- **Do not forcefully push fabrics more than 6 mm (approx. 1/4 inch) thick through the sewing machine. This may cause the needle to break and cause injury.**
- **Thicker fabrics require a larger needle (See page 75).**

■ If the Fabric does not Fit under the Presser Foot

If the presser foot is in the up position, and you are sewing heavyweight or multiple layers of fabric which do not fit easily under the presser foot, use the presser foot lever to raise the presser foot to its highest position. The fabric will now fit under the presser foot.



Memo

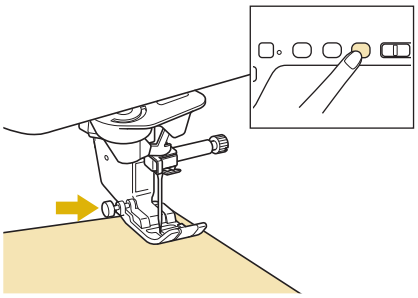
- You cannot use the presser foot lever after the presser foot has been raised using the "Presser Foot Lifter" button.

■ If the Fabric does not Feed

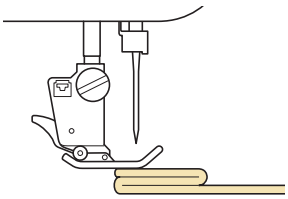
If the fabric does not feed when starting to sew or when sewing thick seams, press the black button on the left side of presser foot "J".

1. **Raise the presser foot.**

2. **While keeping the black button on the left side of presser foot "J" pressed in, press the "Presser Foot Lifter" button to lower the presser foot.**



3. **Release the black button.**



→ The presser foot remains level, enabling the fabric to be fed.

Memo

- Once the trouble spot has been passed, the foot will return to its normal position.
- When "Automatic Fabric Sensor System" (Automatic Presser Foot Pressure) in the machine settings screen is set to "ON", the thickness of the fabric is automatically detected by the internal sensor so the fabric can be fed smoothly for best sewing results. (see page 95 for details.)

Sewing Hook-and-Loop Fastener Tape

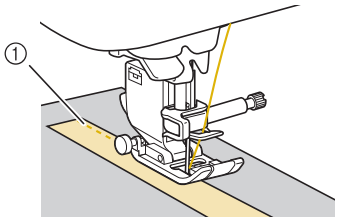
⚠ CAUTION

- **Do not use adhesive backed hook-and-loop fastener tape designed for sewing. When glue adheres to the needle or the bobbin hook race, it may cause malfunction.**
- **If the hook-and-loop fastener tape is sewn with a fine needle (65/9-75/11), the needle may bend or break.**

Note

- Before starting to sew, baste the fabric and hook-and-loop fastener tape together.

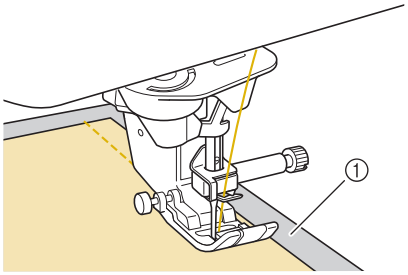
Make sure that the needle passes through the hook-and-loop fastener tape by rotating the handwheel and lower the needle into the hook-and-loop fastener tape before sewing. Sew the edge of the hook-and-loop fastener tape at a slow speed.
If the needle does not pass through the hook-and-loop fastener tape, replace the needle size with the needle for thick fabrics (page 75).



① Edge of the hook-and-loop fastener tape

Sewing Lightweight Fabrics

Place thin paper or tear away embroidery stabilizer under thin fabrics to make sewing easier. Gently tear off the paper or the stabilizer after sewing.



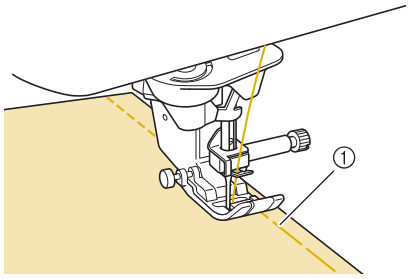
① Thin paper

Sewing Stretch Fabrics

First, baste together the pieces of fabric, and then sew without stretching the fabric.
In addition, a better result can be achieved by using thread for knits or a stretch stitch.

Memo

- For best results when sewing stretch fabrics, decrease the pressure of the presser foot (“Using the Machine Setting Mode Key” on page 31).



① Basting stitching

STITCH SETTINGS

When you select a stitch, your machine automatically selects the appropriate stitch width, stitch length, and upper thread tension. However, if needed, you can change any of the individual settings.

Note
- Settings for some stitches cannot be changed (refer to the “STITCH SETTING CHART” at the end of this manual).
- If you turn off the machine or select another stitch without saving stitch setting changes (“Saving Your Stitch Settings” on page 113), the stitch settings will return to their default settings.

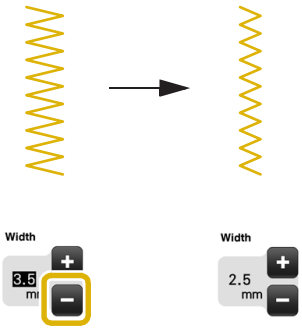
Setting the Stitch Width

Follow the steps below when you want to change the zigzag stitch pattern width.

Memo
- For an alternate method of changing the stitch width using the speed controller, see page 131.

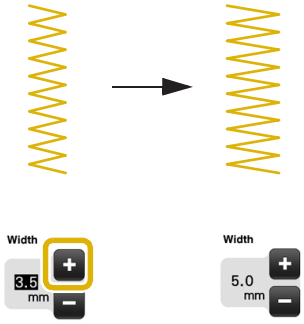
Example:

Press [−] to narrow the zigzag stitch pattern width.



→ The value in the display gets smaller.

Press [+] to widen the zigzag stitch pattern width.



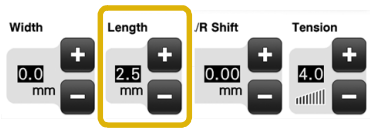
→ The value in the display gets bigger.

Memo
- Press [Memory] to save the stitch settings.
- Press [ ] to check changes made to the stitch.
- Press [Reset] to return the stitch width to the original setting.

Note
- After adjusting the stitch width, slowly rotate the handwheel toward you (counterclockwise) and check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may bend or break.

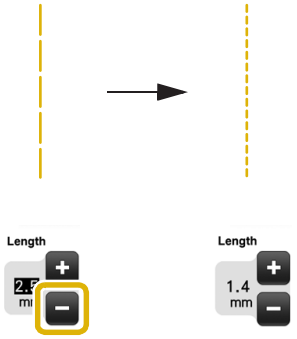
Setting the Stitch Length

Follow the steps below when you want to change the stitch pattern length.



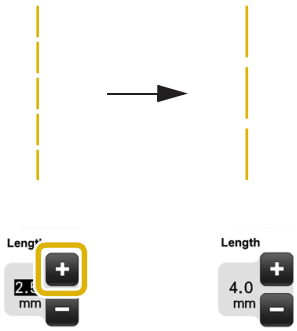
Example:

Press [−] to shorten the stitch length.



→ The value in the display gets smaller.

Press [+] to lengthen the stitch length.



→ The value in the display gets bigger.

Memo

- Press [Memory] to save the stitch settings.
- Press [ ] to check changes made to the stitch.
- Press [Reset] to return the stitch length to the original setting.

⚠ CAUTION

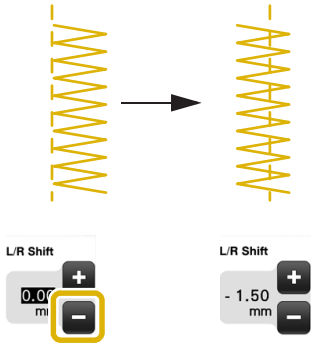
- **If the stitches get bunched together, lengthen the stitch length and continue sewing. Do not continue sewing without lengthening the stitch length. Otherwise, the needle may break and cause injury.**

Setting the "L/R Shift"

Follow the steps below when you want to change the placement of the zigzag stitch pattern by moving it left and right.

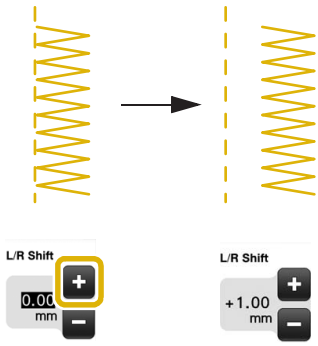
Example:

Press [−] to shift the pattern to the left.



→ The value in the display appears with a minus sign.

Press [+] to shift the pattern to the right side of the left needle position.



→ The value in the display appears with a plus sign.

Memo

- Press [Memory] to save the stitch settings.
- Press [ ] to check changes made to the stitch.
- Press [Reset] to return to the original setting.

Note

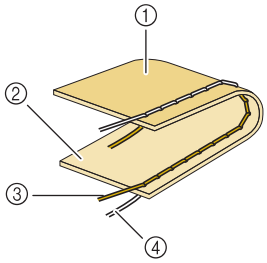
- After adjusting the "L/R Shift", slowly rotate the handwheel toward you (counterclockwise) and check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may bend or break.

Setting the Thread Tension

You may need to change the thread tension, depending on the fabric and thread being used. Follow the steps below to make any necessary changes.

■ Proper Thread Tension

The upper thread and the bobbin thread should cross near the center of the fabric. Only the upper thread should be visible from the right side of the fabric, and only the bobbin thread should be visible from the wrong side of the fabric.



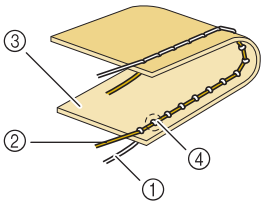
① Wrong side
② Surface
③ Upper thread
④ Bobbin thread

■ Upper Thread is Too Tight

If the bobbin thread is visible from the right side of the fabric, the upper thread is too tight.

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.

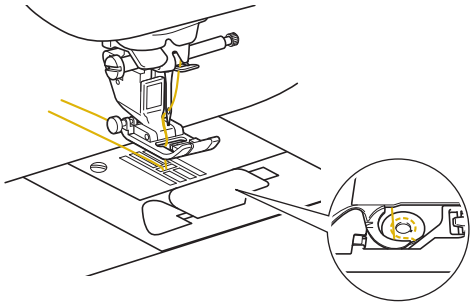


① Bobbin thread
② Upper thread
③ Surface
④ Locks appear on surface of fabric

Press [−], to loosen the upper thread.

Memo

- When you finish sewing, remove the bobbin cover and then make sure that the thread is shown as below. If the thread is not shown as below, the thread is not inserted through the tension-adjusting spring of the bobbin case correctly. Reinsert the thread correctly. For details, refer to page 57.

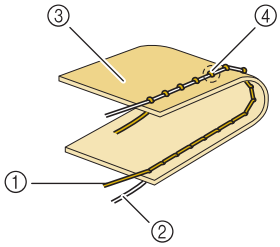


■ Upper Thread is Too Loose

If the upper thread is visible from the wrong side of the fabric, the upper thread is too loose.

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 Upper thread
② Bobbin thread
③ Wrong side
④ Locks appear on wrong side of fabric

Press [+], to tighten the upper thread.

Memo

- Press [Reset] to return the thread tension to the original setting.

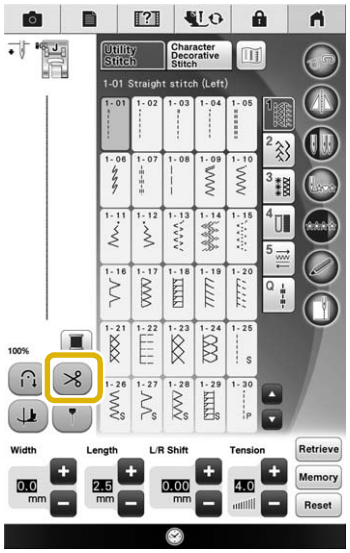
USEFUL FUNCTIONS

Automatic Thread Cutting

After selecting a stitch pattern, turn on the automatic thread cutting function before sewing, and the machine will automatically sew reinforcement stitches (or reverse stitches, depending on the stitch pattern) at the beginning and end of sewing, and trim the threads at the end of sewing. This function is useful when sewing buttonholes and bar tacks.

1 Select a stitch pattern.

2 Press to set the automatic thread cutting function.

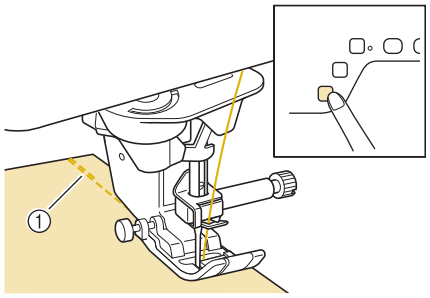


→ You get , and the machine is set for automatic thread cutting function and automatic reverse/reinforcement stitching.

Memo

- To turn off the automatic thread cutting function, press again, so it appears as .
- This function is set automatically when sewing embroidery.

3 Set the fabric in the start position and start sewing.



① Reverse stitches (or reinforcement stitches)

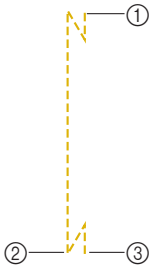
→ The machine will automatically sew reverse stitches (or reinforcement stitches) and then continue sewing.

Memo

- If you press the "Start/Stop" button to pause sewing, press the same button again to continue. The beginning reverse/reinforcement stitches will not be sewn again.

4 Once you have reached the end of the stitching, press "Reverse Stitch" button or "Reinforcement Stitch" button once.

If stitching, such as buttonholes and bar tacking, that includes reinforcement stitching has been selected, this operation is unnecessary.



① The point where the "Start/Stop" button was pressed.

② The point where the "Reverse Stitch" button or the "Reinforcement Stitch" button was pressed.

③ The thread is cut here.

Memo

- The automatic thread cutting function will not be performed if the "Start/Stop" button is pressed while sewing. Press the "Reverse Stitch" button or the "Reinforcement Stitch" button at the end of the stitching.

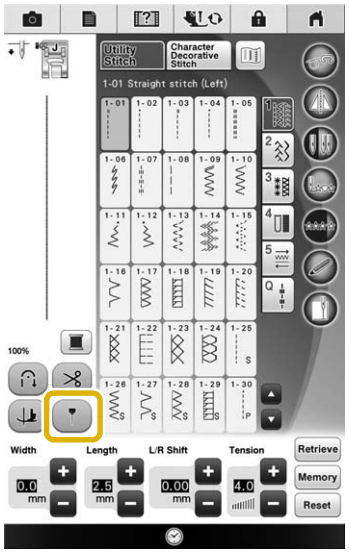
Adjusting the Needle Drop Position with the Guideline Marker

The red guideline marker indicates the sewing position on the fabric. You can adjust the sewing position by moving the guideline marker while checking the guideline marker on the fabric.

⚠ CAUTION

- **The guideline marker is a laser; therefore, do not stare at the laser light directly. Otherwise it may cause blindness.**

1 Press to display the guideline marker.



→ The guideline marker scale appears.

* Depending on the setting of "Initial Position" in the settings screen, the initial needle drop position is scaled as either 0.0 mm or 3.5 mm.

2 Use − or + to move the needle drop position.

→ Adjust the position from 15.5 mm (5/8 inch) to the right of the left needle to -3.5 mm (-1/8 inch) to the left of the left needle.

3 Press again to stop using the guideline marker.

■ Adjusting the Guideline Marker Position

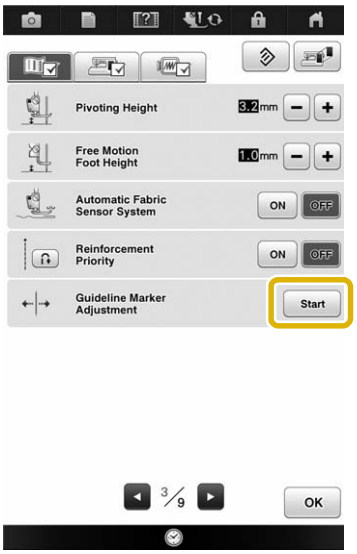
If the guideline marker indicates the position incorrectly in the center needle position, adjust the initial position in the settings screen.

1 Press to display "Guideline Marker Adjustment" in the settings screen.

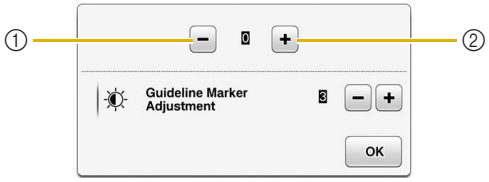
2 Display settings screen.

3 Press Start.

→ The "Guideline Marker Adjustment" screen appears.



4 Use − or + to adjust the guideline marker position.



① Press to move the guideline marker to the left

② Press to move the guideline marker to the right

5 Press OK twice to return to the original screen.

■ Adjusting the Brightness of the Guideline Marker

1 Follow steps from 1 to 3 to display the "Guideline Marker Adjustment" screen.

2 Use − or + to adjust the brightness of the guideline marker.

→ Set the brightness of the guideline marker from "1" for a dim marker, to "5" for the brightest marker, on the fabric.

3 Press OK twice to return to the original screen.

Pivoting

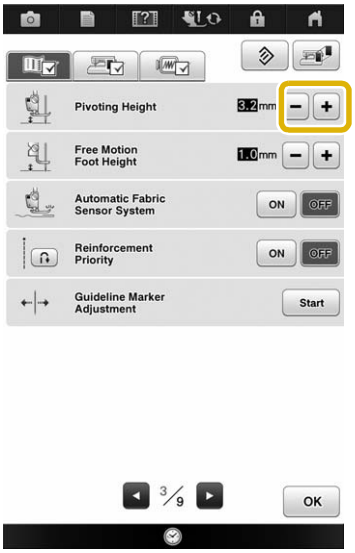
If the pivot function is selected, the machine stops with the needle lowered (in the fabric) and the presser foot is automatically raised to an appropriate height when the "Start/Stop" button is pressed. When the "Start/Stop" button is pressed again, the presser foot is automatically lowered and sewing continues. This function is useful for stopping the machine to rotate the fabric.

⚠ CAUTION

- **When the pivot setting is selected, the machine starts when the "Start/Stop" button is pressed or the foot controller is pressed down even if the presser foot has been raised. Be sure to keep your hands and other items away from the needle, otherwise injuries may occur.**

Memo

- When the pivot setting is selected, the height of the presser foot when sewing is stopped can be changed according to the type of fabric being sewn. Press to display "Pivoting Height" of the settings screen. Press − or + to select one of the three heights (3.2 mm, 5.0 mm or 7.5 mm). To raise the presser foot further, increase the setting. (Normally, 3.2 mm is set.)

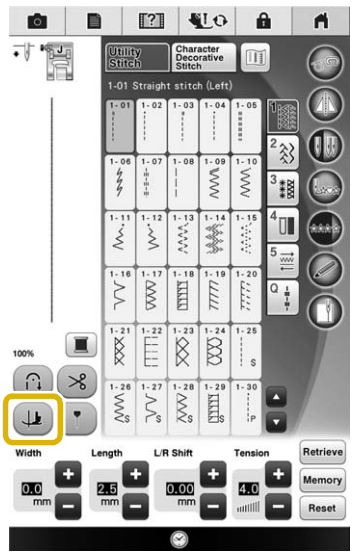


Note

- The "Needle Position – Up/Down" of the settings screen, must be set in the down position for the pivot function to be used. When "Needle Position – Up/Down" is set in the raised position , appears as light gray and cannot be used.
- The pivot function can only be used with stitches where presser foot "J" or "N" is indicated in the upper-left corner of the screen. If any other stitch is selected, appears as light gray and is not available.
- If the pivot function is selected, − and + beside "Presser Foot Height" in the settings screen are not available and the setting cannot be changed.

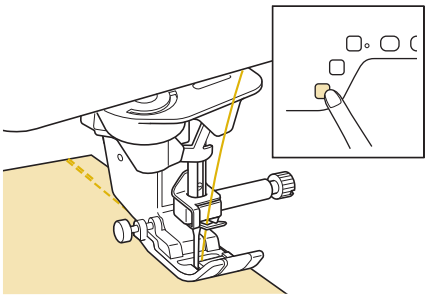
1 Select a stitch.

2 **Press to select the pivot setting.**



→ The key appears as .

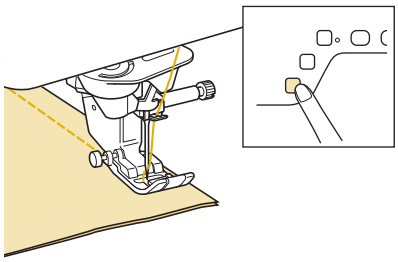
3 **Place the fabric under the presser foot with the needle at the starting point of the stitching, and then press the "Start/Stop" button. The machine will begin sewing.**



Memo

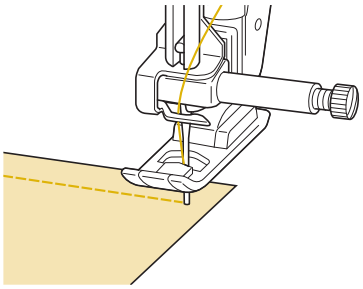
- If you press the "Start/Stop" button to pause sewing, press it again to continue, reverse stitches (or reinforcement stitches) will not be sewn.

4 **Press the "Start/Stop" button to stop the machine at the point where the sewing direction changes.**



→ The machine stops with the needle in the fabric, and the presser foot is raised.

5 **Rotate the fabric, and then press the "Start/Stop" button.**



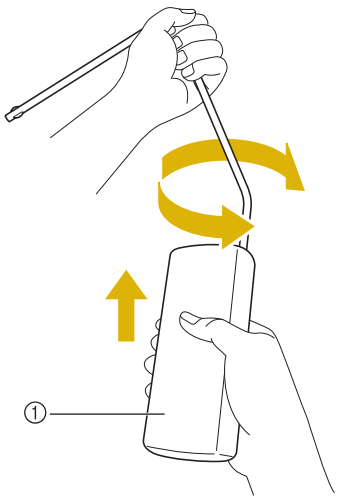
→ The presser foot is automatically lowered, and sewing continues.

Using the Knee Lifter

Using the knee lifter, you can raise and lower the presser foot with your knee, leaving both hands free to handle the fabric.

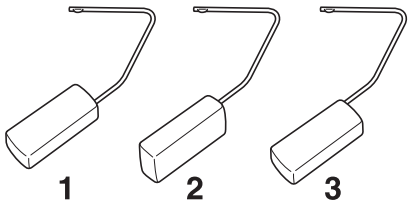
1 **Change the operating position of the knee lifter handle before inserting into the machine.**
Slide up the knee lifter handle slightly and rotate it while releasing pressure so handle will click into position.

* The knee lifter can be adjusted to three different angles.

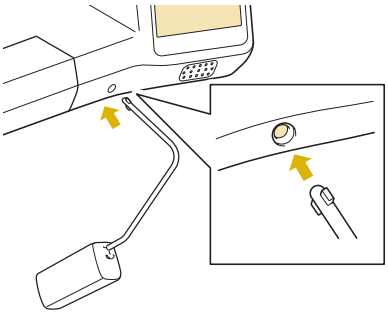


① Knee lifter handle

→ Rotate knee lifter handle till it clicks into the selected position that is most comfortable for you.



2 **Align the tabs on the knee lifter with the notches in the knee lifter slot on the front of the machine. Insert the knee lifter bar as far as possible.**



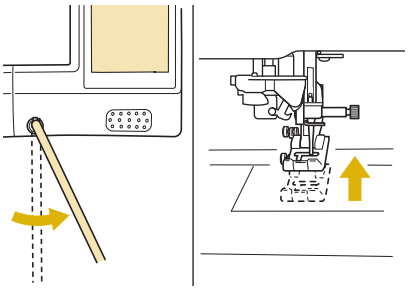
⚠ CAUTION

- **Only change position of the knee lifter handle when knee lifter is not on the machine, otherwise the knee lifter may damage the mounting slot on front of the machine.**

Note

- If the knee lifter bar is not pushed into the mounting slot as far as possible, it may come out during use.

3 **Use your knee to move the knee lifter bar to the right in order to raise the presser foot. Release the knee lifter to lower the presser foot.**



⚠ CAUTION

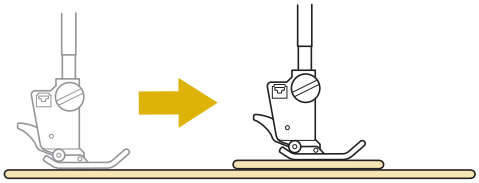
- **Be sure to keep your knee away from the knee lifter during sewing. If the knee lifter is pushed during machine operation, the needle may break or the thread tension may loosen.**

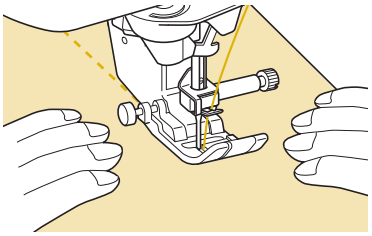
Memo

- When the presser foot is in the up position, move the knee lifter to the far right and then release to return the presser foot to the down position.

Automatic Fabric Sensor System (Automatic Presser Foot Pressure)

The thickness of the fabric is automatically detected and the presser foot pressure is automatically adjusted with an internal sensor while sewing, to insure that your fabric is fed smoothly. The fabric sensor system works continuously while sewing. This function is useful for sewing over thick seams (see page 85), or quilting (see page 129).

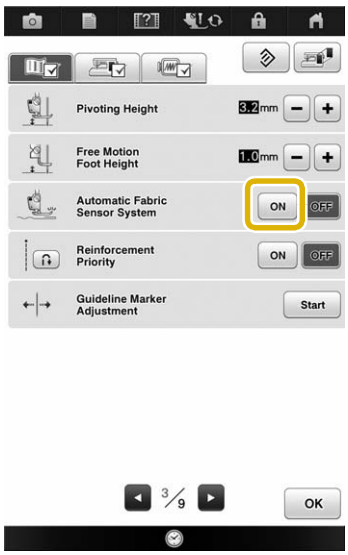




1 **Press [ ].**

→ The settings screen appears.

2 **Set "Automatic Fabric Sensor System" to "ON".**

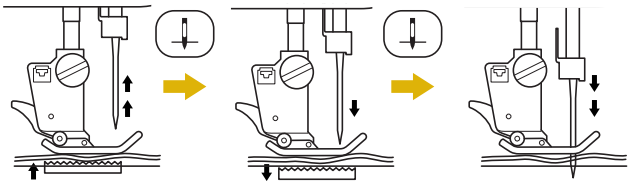


3 **Press [OK] to return to the original screen.**

Needle Position - Stitch Placement

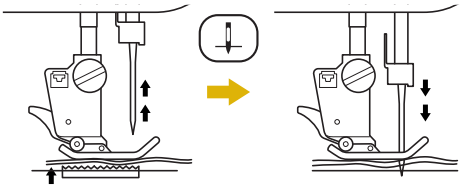
When the “Needle Position - Stitch Placement” is “ON”, the needle will be partially lowered for precise stitch placement and then press the “Needle Position” button to lower the needle completely. Each press of the “Needle Position” button changes the needle to the next position. When the “Needle Position - Stitch Placement” is “OFF”, each press of the “Needle Position” button simply raises and then lowers the needle.

“Needle Position - Stitch Placement” is “ON”



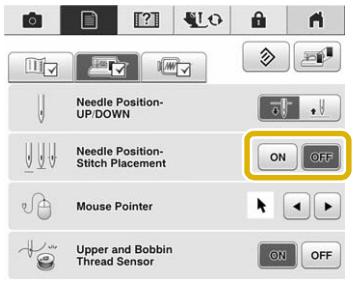
* When the needle is nearly lowered by pressing the “Needle Position” button, the feed dogs are lowered. At this time, the fabric can be shifted to finely adjust the needle drop position.

“Needle Position - Stitch Placement” is “OFF”



1 Press .

2 Set “Needle Position - Stitch Placement” to “ON” or “OFF”.



3 Press OK to return to the original screen.

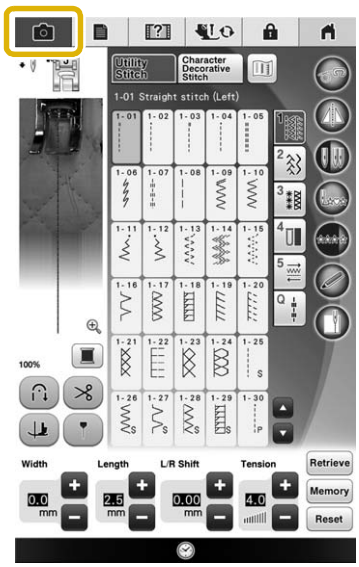
Checking the Needle Location in the Screen

You can check the stitch image with actual fabric image on the screen.

1 Select a stitch.

2 Press .

→ An image of the selected stitch and the actual fabric image are displayed.



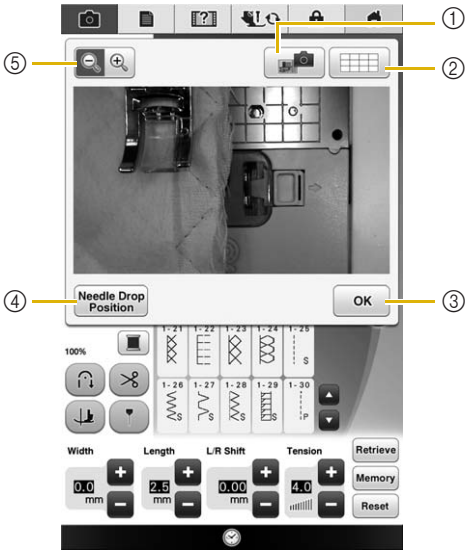
* Press to change the thread color displayed on the screen. You can select from four different colors.

3 Press on the fabric image or on the screen.

→ The camera view window appears.

→ Press again to turn off the camera view.

■ Using the Camera View Window



→ The camera view window appears.

① CAMERA IMAGE
② GRID VIEW
③ OK
④ NEEDLE DROP POSITION
⑤ ZOOM

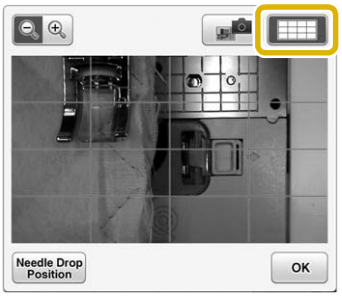
CAMERA IMAGE

Press this key to save a camera image to the USB media.
Insert the USB media to the machine to save a camera image (Refer to "Saving a Settings Screen Image to USB Media" on page 34). The files for camera images are saved with the name "C**.BMP". A maximum of 100 camera images can be saved in one USB media.

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

GRID VIEW

Press this key to display a grid.



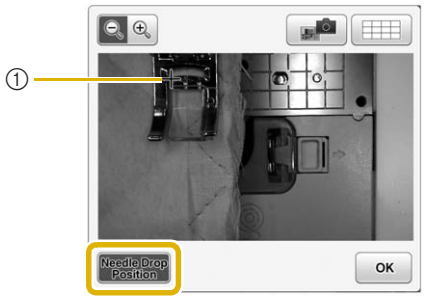
OK

Press this key to close the screen.

NEEDLE DROP POSITION

Press [Needle Drop Position] to show the needle drop position in the screen as " ✚ ".

Lower the presser foot before pressing [Needle Drop Position]. Once the needle drop position appears on the screen, you can raise the presser foot and change the needle drop position by moving the fabric.



① Needle drop position

ZOOM

Press [⊖ ⊕] to enlarge the image in the screen.
Press [⊖ ⊕] again to return the image to its original display size.

Note

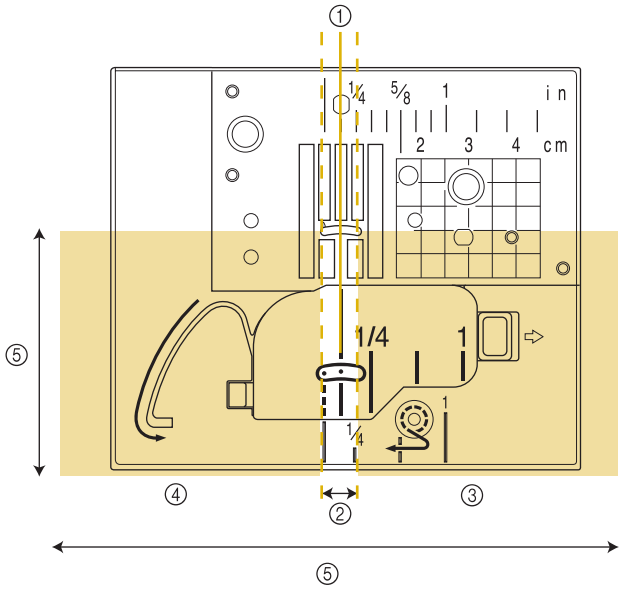
- The camera view window disappears when you start sewing.
- When sewing thick fabrics, the needle drop position indicated in the screen may differ from the actual position.

USING SENSOR FUNCTIONS WITH SEWING STITCH

Before using the sensor functions, carefully read “Utility Stitches” chapter to familiarize yourself with the machine operations.
The sensor functions are performed using the sensor pen.

Sensor Function Area

When using the sensor pen with utility stitches, the operations may differ depending on the area to be touched.



①	Center needle position	Sewing position for stitch patterns sewn with the center needle position
②	Setting area	Area 3.5 mm to the left and right of ①. Touch this area with the sensor pen to specify a position. Area 7 mm, when positioning the guideline marker.
③	Adjustment area (right)	Touch: With each touch, the setting increases by 0.5 mm. This allows fine adjustments to be made after touching within ② to specify a position. Long touch: After touching ② to specify a position or adjusting the position by touching within ③ or ④, long touch to apply the setting.
④	Adjustment area (left)	Touch: With each touch, the setting decreases by 0.5 mm. This allows fine adjustments to be made after touching within ② to specify a position. Long touch: Apply the setting in the same way as a long touch within ③.
⑤	The sensor pen touch range extends approximately 200 mm (7-7/8 inches) toward you from the needle drop point and 130 mm (approx. 5 inches) to either side of the middle (center) needle position.	

Memo

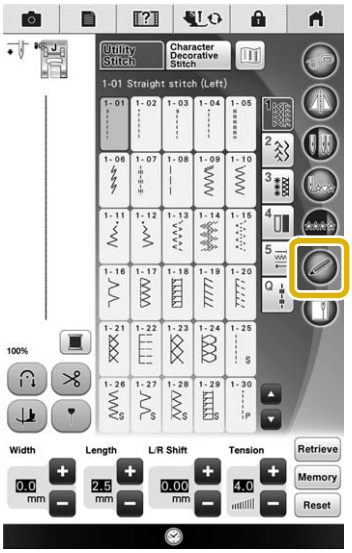
- There are borderline areas between setting area and adjustment areas, which allow you to set quickly to the most decreased/increased value.
- The borderline areas are respectively 6.5 mm (approx. 1/4 inch) wide when positioning the guideline marker, and 10 mm (approx. 3/8 inch) wide in other cases.

Specifying the Guideline Marker Position With the Sensor Pen

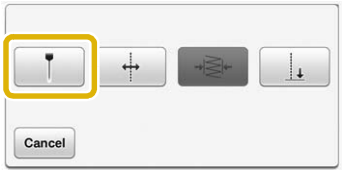
The sewing position will be indicated by a red guideline marker.
The position of the guideline marker can be adjusted to your desired location.

1 **Select a stitch pattern.**

2 **Press .**



3 **Press .**



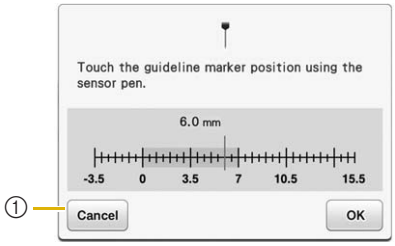
→ The guideline marker position setting screen appears and the guideline marker flashes.

4 **With the sensor pen, touch the location to be specified as the guideline marker position.**

→ The machine's guideline marker moves to the touched position and flashes.

→ The distance from the left reference line to the touched position appears in the guideline marker position setting screen.

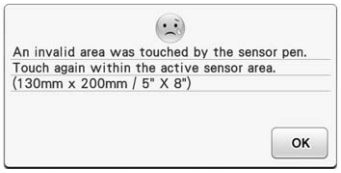
→ The stitch preview on the upper left side of the screen is updated according to the specified setting.



① Press OK to stop specifying a setting with the sensor pen.

Note

- The following error message appears if the area outside of the sensor pen touch range is touched. Press OK, and then touch within the sensor pen touch range.

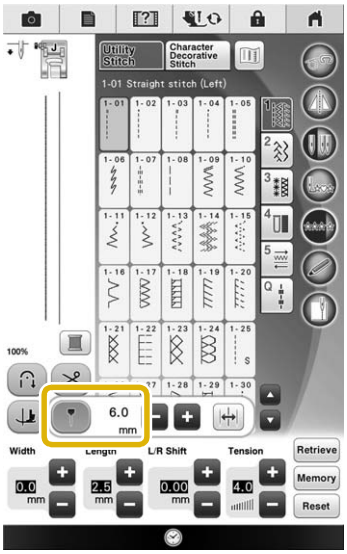


Memo

- The position can be precisely adjusted by touching the adjustment areas with the sensor pen.
- When using the sensor pen to specify the guideline marker position, it may not be possible to exactly specify the desired location. In this case, use either of the following operations to make fine adjustments.
  - Touch an adjustment area with the sensor pen to adjust the position in 0.5 mm increments.
  - Adjust the position with the guideline marker scale shown in step 5.

5 **Press OK to apply the guideline marker position setting.**

* The setting can also be applied by a long touch of the sensor pen within the adjustment area.



→ The stitch selection screen appears again, and the setting in the guideline marker scale changes to the setting specified with the sensor pen.

→ The guideline marker stops flashing.

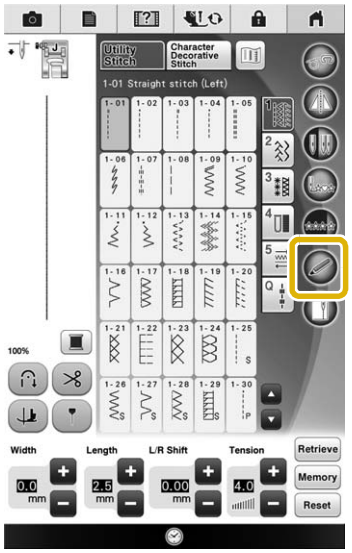
Note

- If you set the needle drop position, the stitch width or stitch position after specifying the guideline marker position, the guideline marker may move while setting. The guideline marker moves back to the specified position after the needle drop position, stitch width or stitch position is set and the original screen appears.

Specifying the Needle Drop Position With the Sensor Pen

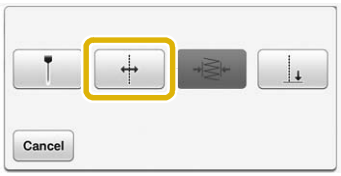
1 **Select a stitch pattern.**

2 **Press .**



→ The sensor functions screen appears.

3 **Press .**



→ The reference position setting screen appears, and the red guideline marker flashes at the machine's sewing position.

Note

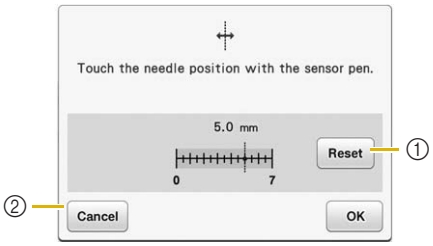
- If is not available, the sewing reference position cannot be specified with the selected stitch pattern. Select a different stitch pattern.

4 **With the sensor pen, touch the location to be specified as the needle drop position.**

→ The guideline marker moves to the touched position and flashes.

→ The distance from the left reference line to the touched position appears in the reference position setting screen.

→ The stitch preview on the upper left side of the screen is updated according to the specified setting.

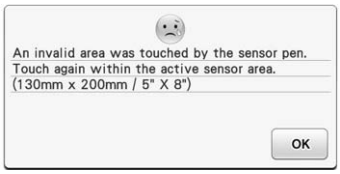


① Press to return the needle drop position to its default setting.

② Press to stop specifying a setting with the sensor pen.

Note

- The following error message appears if the area outside of the sensor pen touch range is touched. Press OK, and then touch within the sensor pen touch range.



Memo

- The position can be precisely adjusted by touching the adjustment areas with the sensor pen.
- To change the setting, use the sensor pen to touch the desired location for the reference position.

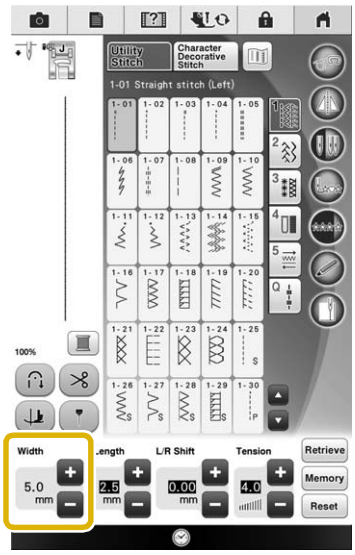
5 **Press OK to apply the reference position setting.**

* The setting can also be applied by extended touch in the adjustment area with the sensor pen.

→ The needle moves to the specified position to start sewing.

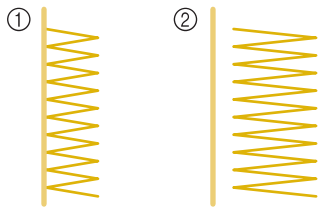
→ The stitch selection screen appears again, and the stitch width changes to the setting specified with the sensor pen.

→ The guideline marker stops flashing.



Using the Sensor Pen to Specify the Stitching Width and Stitch Position

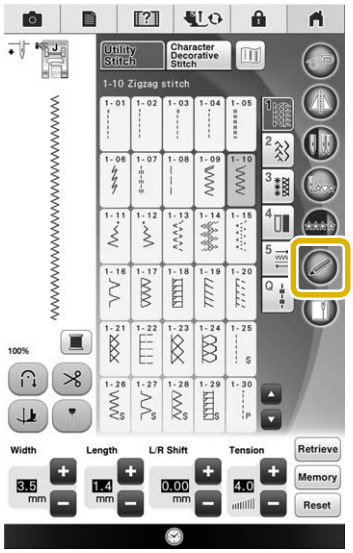
The zigzag width and "L/R Shift" value can be specified.



① Original stitching width/position
② Adjusted stitching width/position

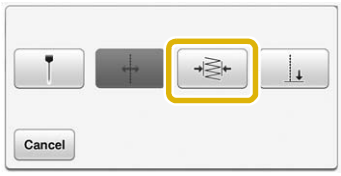
1 **Select a stitch pattern.**

2 **Press .**



→ The sensor functions screen appears.

3 **Press .**



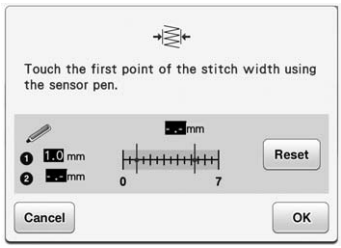
→ The stitching width setting screen appears, and the guideline marker flashes at the present left side of the stitch width.

Note

- If is not available, the stitching width cannot be specified with the selected stitch pattern. Select a different stitch pattern.

4 **With the sensor pen, touch the first point for the stitching width.**

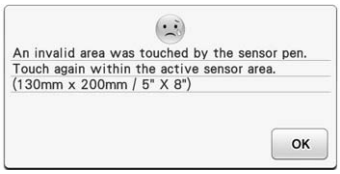
→ The distance from the left reference line to the touched position appears in the stitching width setting screen.



→ The guideline marker moves to the touched position and flashes.

Note

- The following error message appears if the area outside of the sensor pen touch range is touched. Press OK, and then touch within the sensor pen touch range.



Memo

- The position can be precisely adjusted by touching the adjustment areas with the sensor pen.

5 **Press OK to apply the first point of the stitching width.**

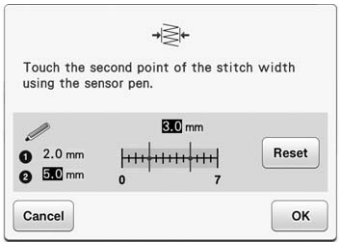
* The setting can also be applied by applying an extended touch in the adjustment area with the sensor pen.

6 **With the sensor pen, touch the second point for the stitching width.**

→ The distance from the left reference line to the touched position appears in the stitching width setting screen.

→ The stitch preview on the upper left side of the screen is updated according to the specified setting.

→ The guideline marker moves to the touched position and flashes.



Note

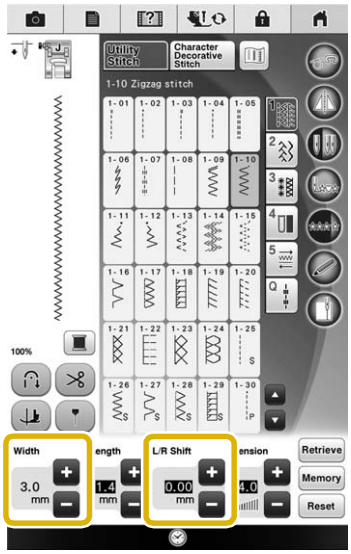
- If the distance between the specified first and second points is wider than the maximum stitch width for the selected stitch pattern, the second point cannot be specified. Specify a location closer to the first point.
- If the distance between the specified first and second points is narrower than the minimum stitch width for the selected stitch pattern, the second point cannot be specified. Specify a location further away from the first point.

7 **Press OK to apply the second point of the stitching width.**

* The setting can also be applied by long touching an adjustment area with the sensor pen.

→ The needle moves to the specified position to start sewing.

→ The stitch selection screen appears again, and the stitch width and "L/R Shift" change according to the settings specified with the sensor pen.



Note

- With multiple patterns that have been combined, the specified stitching width is applied to the pattern with the largest stitch width. With patterns other than combined patterns, the stitch width is adjusted to the stitching width specified for the pattern with the largest stitch width.
- With multiple patterns that have been combined, the settings specified for the stitch width and "L/R Shift" in the stitch selection screen are for the first pattern to be sewn. The value may differ from the stitch width setting.
- With twin needle sewing, the stitching width is specified with the left needle as the reference.

Using the Sensor Pen to Specify the Sewing End Point

Note
- In order to specify the end point of a longer piece of fabric more accurately, use the sensor pen to touch the end point twice. Be sure to touch the same point.
- Before starting to sew, mark the end point of this longer piece of fabric.

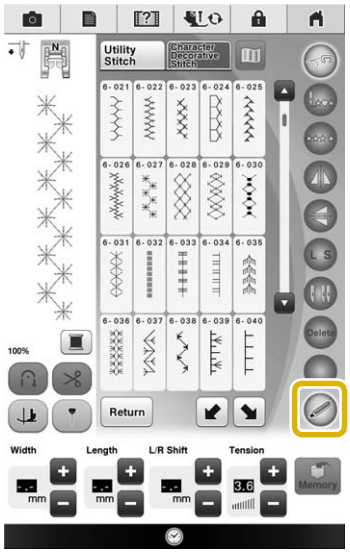
Before start sewing, test the pattern first from steps 1 to 3 to see if the stitch can be used with this function. Before starting to sew, mark the end point.

1 Start sewing after a stitch has been selected, and then stop the machine when the desired sewing end point enters the sensor pen touch range.

Note
- If the needle drop point is being specified with the sensor pen within 70 mm (approx. 2-3/4 inches) from the sewing end point, the machine will not require the second touch. After completing step 4, continue with step 8. However, the actual sewing end point may be slightly different than the specified location.
  In order to specify the location accurately, stop the machine at a location more than 70 mm (approx. 2-3/4 inches) away from the sewing end point before specifying it for the first time.

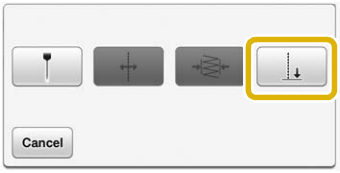
Memo
- If the needle drop point is greater than 100 mm (approx. 4 inches) from the selected ending point using the sensor pen, a more accurate position can be specified the second time that the point is touched.

2 Press .



→ The sensor functions screen appears.

3 Press .

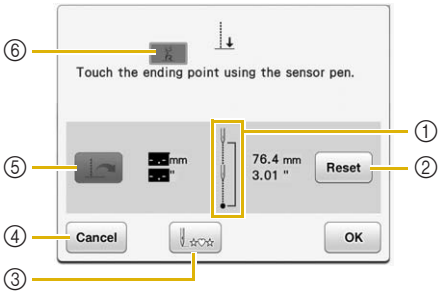


→ The sewing end point setting screen appears.

Note
- If is not available, the sewing end point cannot be specified with the selected stitch pattern. Select a different stitch pattern.

4 With the sensor pen, touch the location to be specified as the sewing end point.

→ The distance from the current needle position to the touched location appears.



① It shows how many times you need to touch the sewing end point, once or twice.

Touch once

Touch twice

② Press to erase the specified sewing end point.

③ Press to begin sewing at the beginning of the pattern.

④ Press to stop specifying a setting with the sensor pen.

⑤ Press when sewing the same distance as the previous time to recall the previous setting.

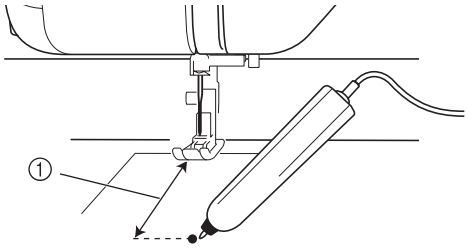
→ See "Reusing the Previous Setting" on page 106.

⑥ Press to select whether or not sewing is ended with a complete pattern.

→ See "Stitch End Mode Key" on page 104.

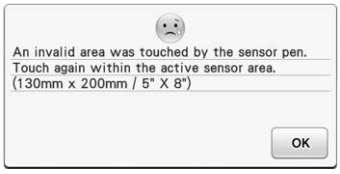
Note

- The displayed distance is not the length of a straight line connecting the current needle position and the location touched with the sensor pen. It is the length of a perpendicular intersection for the location touched with the sensor pen and the sewing line.



① Displayed distance

- The following error message appears if the area outside of the sensor pen touch range is touched. Press OK, and then touch within the sensor pen touch range.



- When sewing with this setting, be sure to gently hold the fabric and feed it straight.
- When using the sensor pen to specify the sewing end point, be sure to hold the pen in the same way as when it was calibrated, otherwise the actual end point may be different from the point that you specified.
- For best results, sew test stitching using the same material and stitch pattern as those in the actual project.

Stitch End Mode Key

	The end of stitching is not adjusted. When the end point is reached, sewing stops immediately, even if the stitch pattern is not complete.	
	The length of the stitch pattern is adjusted so that sewing will stop at the specified end point with a complete pattern.	

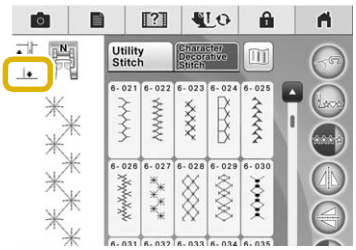
Note

- The stitch end mode key is not available with the following situations.
  - When only is shown. The adjustment of the stitch end is not available with the selected stitch, and only one icon will be shown.
  - When the stitch end mode key is grayed out.
  - When specifying the sewing end point at the point that needs adjustment more than 20% of the length of a pattern, to finish a pattern completely.
- In order to end sewing with a complete pattern, we recommend reducing the size of the pattern. Sewing with a long pattern may not end with a complete pattern.

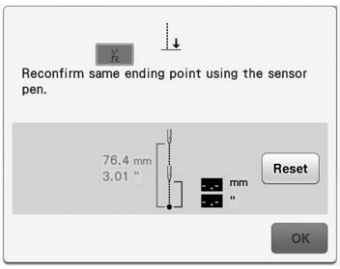
5 **Press OK, and then continue sewing.**

* The setting can also be applied by extending the touching with the sensor pen in the adjustment area with the sensor pen.

→ When a sewing end point setting is specified, appears in the upper-left corner of the screen.

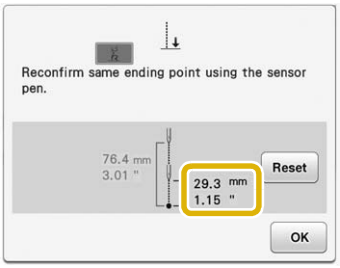


→ The machine automatically stops with the needle in the fabric, at about half the distance to the specified sewing end point, and the sewing end point setting screen appears.



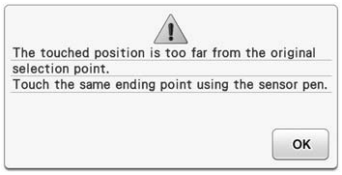
6 **With the sensor pen, touch again the location to be specified as the sewing end point.**

→ The distance from the current needle position to the touched location appears.



Note

- By using the sensor pen to touch the sewing end point twice, the distance will be accurately specified. Be sure to touch the same point.
- The following error message appears if the location touched the second time is different than the location touched the first time. Touch the correct location.



- The stitch end mode key cannot be used when specifying the sewing end point for the second time.

7 **Press OK to apply the sewing end point setting.**

* The setting can also be applied by extending the touching with the sensor pen in the adjustment area with the sensor pen.

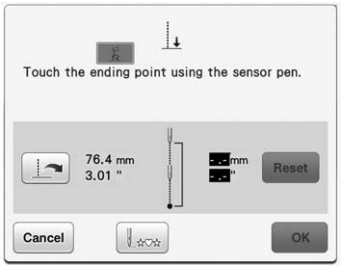
8 **Start sewing again.**

* The machine stops at the specified end point automatically.

■ Reusing the Previous Setting

When using the same fabric and pattern to sew the same length, the previous setting can be used again, instead of using the sensor pen to specify the sewing end point each time.
To use the previous setting, repeat steps 1 through 3 then press in step 4, instead of using the sensor pen.

* If was pressed, it is unnecessary to specify the sewing end point for the second time. Continue with step 8 to continue sewing until the machine automatically stops at the sewing end point.
* Be sure to press to begin sewing at the beginning of the stitch pattern.



Note

- This resume function will only repeat the sewing distance that has been assigned within the 200 mm (approx. 8 inches) distance from the needle point to the sewing end point.
  If you are already sewing and you stop the machine to specify the ending point, when pressing to duplicate the previous setting the machine will only repeat the distance from where you stop the machine to the ending point.
  You can change the sewing end point after pressing by touching the new end point with the sensor pen. For a more accurate result, however, it is recommended to specify the end point again from the beginning.
- The sewing end point cannot be recalled in the following situations. (The key is not available.)
  - When the machine has been turned off.
  - When a pattern is changed, added or deleted.
  - When the stitch length is changed.
  - When a pattern is flipped vertically.
  - When the dual feed foot is attached/ detached.
  - When the feed position lever of the dual feed foot is raised/lowered.
- To cancel the previous setting, press . Continue the procedure from step 4.
- The sewing end point can be recalled; however, if the sewing conditions have changed, for example, a different fabric is used, the sewing end point must be specified again from the beginning.

Chapter 3
Utility Stitches

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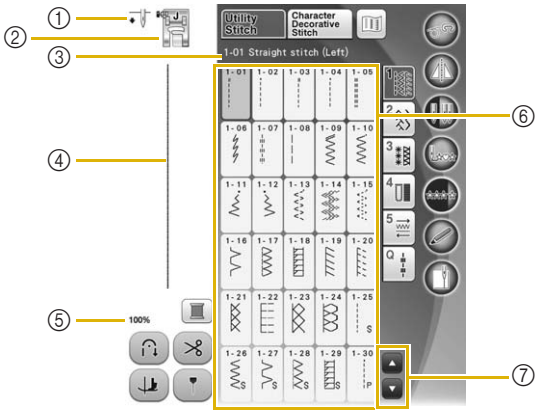
SELECTING UTILITY STITCHES

■ Utility Stitch LCD Screen

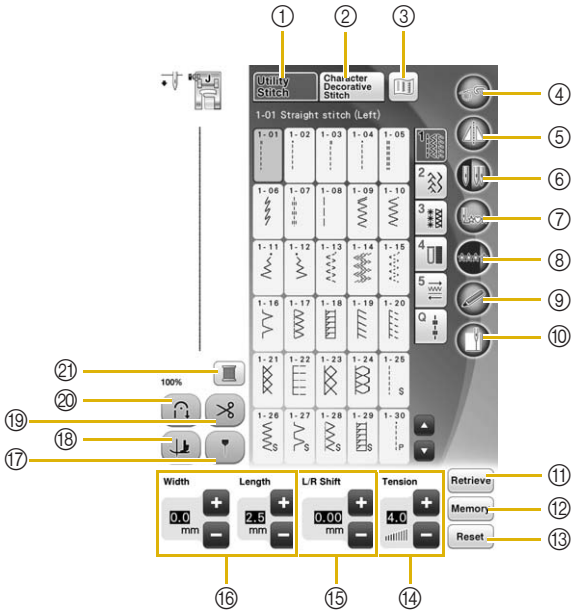
Press a key with your finger to select the stitch pattern, to select a machine function, or to select an operation indicated on the key.



No.	Display	Key Name	Explanation	Page
①		Needle position setting display	Shows single or twin needle mode setting, and the needle stop position. Single needle/down position Single needle/up position Twin needle/down position Twin needle/up position	63, 93
②		Presser foot display	Shows the presser foot code. Attach the presser foot indicated in this display before sewing.	68
③	1-01 Straight stitch (Left)	Selected stitch display	Shows the name and code number of the selected stitch.	111
④	100%	Stitch preview	Shows a preview of the selected stitch. When shown at 100%, the stitch appears in the screen at nearly its actual size. Press to display the stitch preview and the camera view together to check how the stitch will be sewn on the actual fabric.	96, 111
⑤	100%	Pattern display size	Shows the approximate size of the pattern selected. 100%: Nearly the same size as the sewn pattern 50%: 1/2 the size of the sewn pattern 25%: 1/4 the size of the sewn pattern * The actual size of the sewn pattern may differ depending on the type of fabric and thread that is used.	111
⑥		Stitch selection screen	Press the key for the pattern you want to sew. Use to change to different stitch groups.	111
⑦		Page key	Press or , to move the pages of stitch selection screen, one page at a time. You can scroll up and down the pages faster by touching the screen.	110

* All key functions of the LCD are explained in the “Key Functions” table on the following page.

■ Key Functions



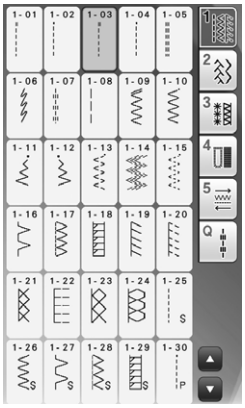
No.	Display	Key Name	Explanation	Page
①	Utility Stitch	Utility stitch key	Press this key to select a straight stitch, zigzag stitch, buttonhole, blind hem stitch, or other stitches commonly used in garment construction.	111
②	Character Decorative Stitch	Character/Decorative stitch key	Press this key to select character or decorative stitch patterns.	168
③		Image key	Press this key to display an enlarged image of the selected stitch pattern.	112
④		Free motion mode key	Press this key to enter free motion sewing mode. The presser foot is raised to an appropriate height and the feed dog is lowered for free motion quilting.	131
⑤		Mirror image key	Press this key to create a mirror image of the selected stitch pattern. If the key display is light gray, a mirror image of the selected stitch pattern cannot be sewn.	111
⑥		Needle mode selection key (single/ double)	Press this key to select twin needle sewing mode. The sewing mode changes between single needle mode and twin needle mode each time you press the key. If the key display is light gray, the selected stitch pattern cannot be sewn in the twin needle mode.	63
⑦		Back to beginning key	When sewing is stopped, press this key to return to the beginning of the stitch.	112
⑧		Single/Repeat sewing key	Press this key to choose single stitches or continuous stitches.	112
⑨		Sensor function key	Press this key to use the sensor function.	98
⑩		Edge sewing key	Using the built-in camera, press this key to measure the width of the area from the edge of the fabric to the stitch and set the camera for edge sewing.	160
⑪	Retrieve	Retrieve key	Press this key to retrieve a saved pattern.	113
⑫	Memory	Manual memory key	Change the stitch pattern settings (zigzag width and stitch length, thread tension, automatic thread cutting or automatic reinforcement stitching, etc.), then save them by pressing this key. Five sets of settings can be saved for a single stitch pattern.	113
⑬	Reset	Reset key	Press this key to return the selected stitch pattern saved settings to the default settings.	88-90
⑭	Tension 4.0	Thread tension key	Shows the automatic thread tension setting of the currently selected stitch pattern. You can use the plus and minus keys to change the thread tension settings.	90
⑮	L/R Shift 0.00 mm	"L/R Shift" key	Press + to shift the stitch pattern to the right or press − to shift the pattern to the left. This feature is not available for all patterns. Only those applicable will be shifted. The machine default setting is highlighted.	89

No.	Display	Key Name	Explanation	Page
⑯	Width 0.0 mm / Length 2.5 mm	Stitch width and stitch length key	Shows the zigzag width and stitch length settings of the currently selected stitch pattern. You can use the plus and minus keys to adjust the zigzag width and stitch length settings.	88
⑰		Guideline marker key	Press this key to display the guideline marker along the sewing line. The guideline marker makes it easier to align stitches with the fabric edge or other marker on the fabric.	92
⑱		Pivot key	Press this key to select the pivot function. When the pivot function is selected, stopping the machine lowers the needle and slightly raises the presser foot automatically. In addition, when sewing is restarted, the presser foot is automatically lowered. • If this key appears as , the pivot function cannot be used.	93
⑲		Automatic thread cutting key	Press this key to set the automatic thread cutting function. Set the automatic thread cutting function before sewing to have the machine automatically sew reinforcement stitches at the beginning and end of sewing (depending on the pattern, the machine may sew reverse stitches) and trim the threads after sewing.	91
⑳		Automatic reinforcement stitch key	Press this key to use the automatic reinforcement stitching (reverse stitching) setting. If you select this setting before sewing, the machine will automatically sew reinforcement stitches at the beginning and end of sewing (depending on the pattern, the machine may sew reverse stitches).	83
㉑		Thread color change key	Press this key to change the thread color displayed on the screen.	112

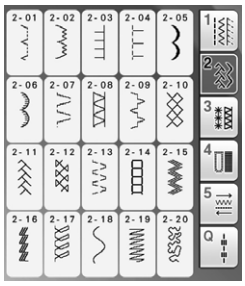
■ Stitch Selection Screens

There are 6 categories of Utility Stitches.

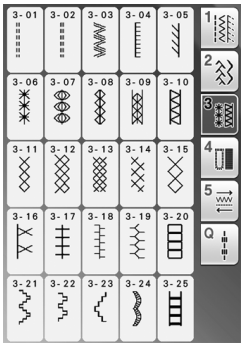
Straight/Overcasting



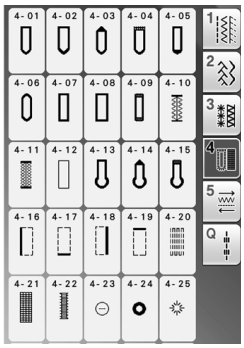
Decorative Stitches



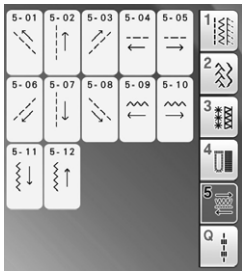
Heirloom Stitches



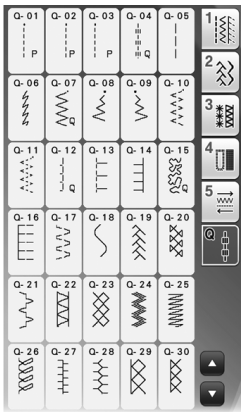
Buttonholes/Bar tacks



Multi-directional Sewing



Quilting Stitches



Selecting a Stitch

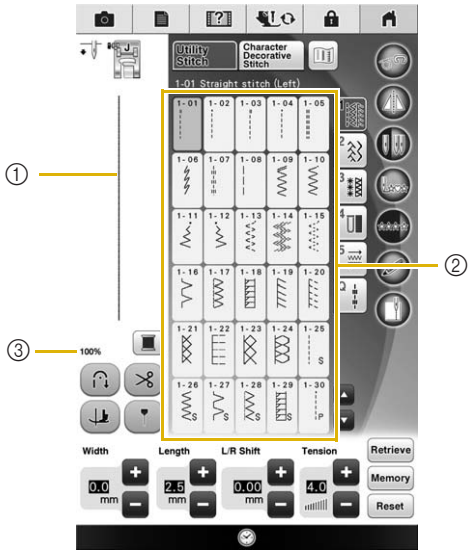
1 Turn the main power to ON and press to display the utility stitches.

→ Either "1-01 Straight stitch (Left)" or "1-03 Straight stitch (Middle)" is selected, depending on the setting selected in the settings screen.

2 Use to select the category you want.

* Press to view the next page.

* Press to view previous page.



① Preview of the selected stitch
② Stitch selection screen
③ Percentage size of view

3 Press the key of the stitch you want to sew.

Memo

- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

■ Using the Mirror Image Key

Depending on the type of utility stitch you select, you may be able to sew a horizontal mirror image of the stitch.

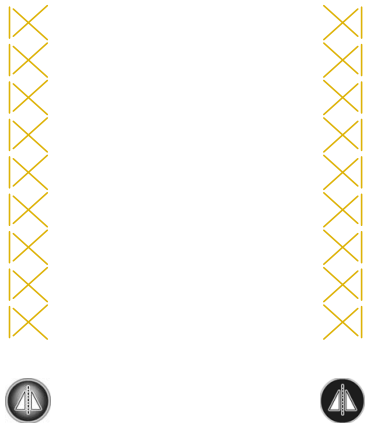
If is lit when you select a stitch, it will be possible to make a mirror image of the stitch.

Note

- If is light gray after you select a stitch, you cannot create a horizontal mirror image of the selected stitch due to the type of stitch or type of presser foot recommended (this is true of buttonholes, multi-directional sewing, and others).

Press to create a horizontal mirror image of the selected stitch.

The key will display as .



3

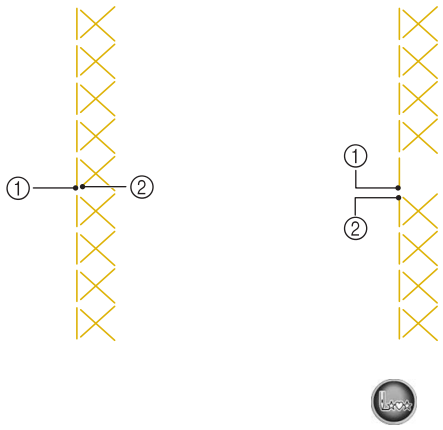
Utility Stitches

■ Returning to the Beginning of the Stitch

Even if you stopped stitching while sewing, you can return to the beginning of the stitch pattern. This function is useful after trial sewing or when the stitching is sewn incorrectly.

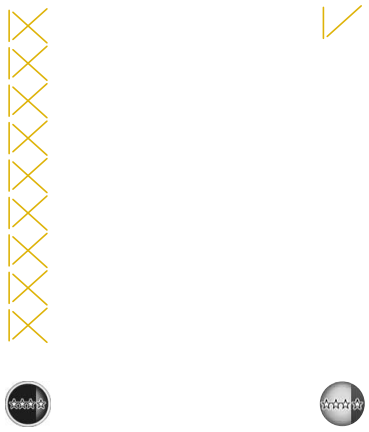
Press before start sewing, to return to the beginning of the stitch.

① Stop stitching
② Re-start stitching



■ Sewing Continuous/Single Stitch Sewing

Press to select continuous sewing or single stitch sewing.



■ Using the Image Key

You can display an image of the selected stitch. You can check and change the colors of the image of the screen.

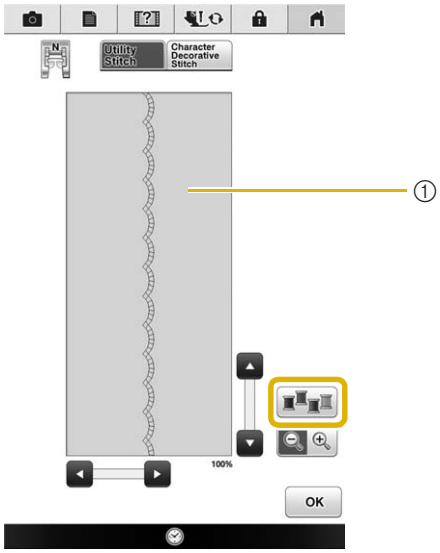
1 Press .

→ An image of the selected stitch is displayed.

2 Press to change the thread color of the stitch on the screen.

You can select from 4 colors: blue, red, black or yellow.

* Press to display an enlarged image of the stitch.



① Stitch screen

Memo

- The color changes every time you press .

Note

- If stitches are wider or larger than display, press darkened arrows to move the stitch pattern for better visibility.

3 Press OK to go back to the original screen.

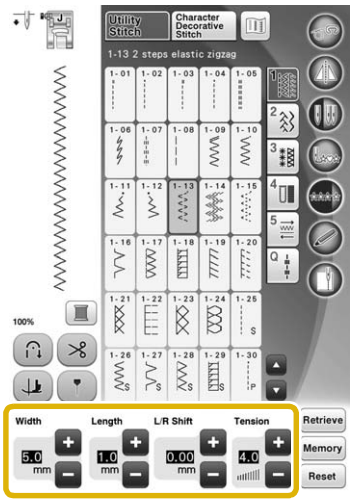
Saving Your Stitch Settings

The settings for the zigzag stitch width, stitch length, thread tension, automatic thread cutting, automatic reinforcement stitching, etc., are preset in the machine for each stitch. However, if you have specific settings that you wish to reuse later for a stitch, you can change the settings so that they can be saved for that stitch. Five sets of settings can be saved for a single stitch.

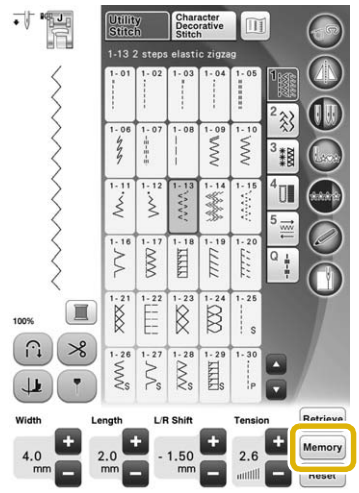
■ Saving Settings

1 **Select a stitch. (Example:)**

2 **Specify your preferred settings.**



3 **Press Memory.**



→ The settings are saved and the original screen automatically appears.

Memo

- If you try to save settings when there are already 5 sets of settings saved for a stitch, the message "The pockets are full. Delete a pattern" will appear. Close the message and delete a setting referring to page 113.

■ Retrieving Saved Settings

1 **Select a stitch.**

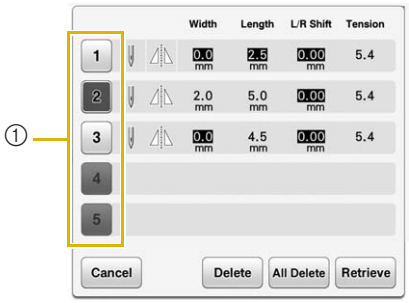
Memo

- When a stitch is selected, the last settings retrieved are displayed. The last settings retrieved are retained even if the machine was turned off or a different stitch was selected.

2 **Press Retrieve.**

3 **Press the numbered key of the settings to be retrieved.**

* Press Cancel to return to the original screen without retrieving settings.



① Numbered keys

4 **Press Retrieve.**

→ The selected settings are retrieved, and the original screen automatically appears.

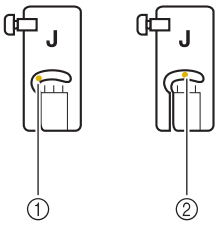
Memo

- To save new settings when there are already 5 sets of settings saved for a stitch, press Retrieve. Press the numbered key of the setting to be deleted. Press Delete, press OK and then Memory. The new setting will be saved in place of the recently deleted setting.
- You can delete all the saved settings by pressing All Delete.

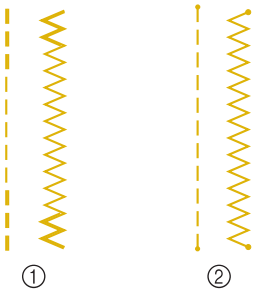
SEWING THE STITCHES

Straight Stitches

Stitch	Stitch name	Presser foot
1-01	Straight stitch (Left)	J
1-02	Straight stitch (Left)	J
1-03	Straight stitch (Middle)	J
1-04	Straight stitch (Middle)	J
1-05	Triple stretch stitch	J
1-06	Stem stitch	J
1-07	Decorative stitch	N
1-08	Basting stitch	J



① Left needle position
② Middle needle position

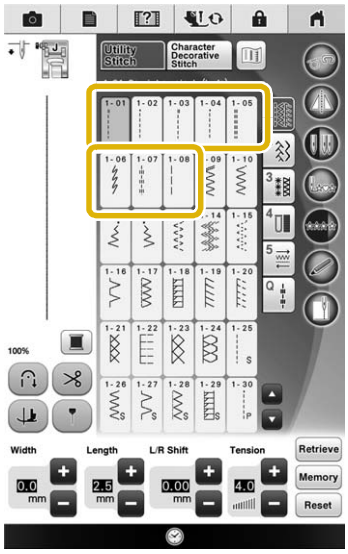


① Reverse stitch
② Reinforcement stitch

Memo

- If the selected stitch has a double mark " ⅱ " at the top of the key display, you can sew reverse stitches holding the "Reverse Stitch" button (see page 83).
- If the selected stitch has a dot mark " · " at the top of the key display, you can sew reinforcement stitches holding the "Reinforcement Stitch" button.

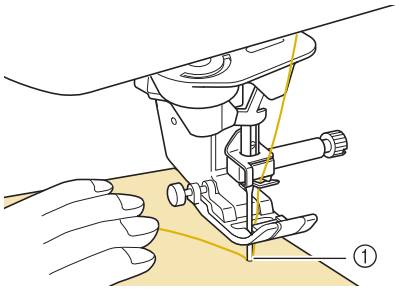
1 Select a stitch.



2 Attach presser foot "J".

* Attach presser foot "N" when you select 1-07.

3 **Hold the thread tail and fabric with your left hand, and rotate the handwheel with your right hand to insert the needle into the fabric.**

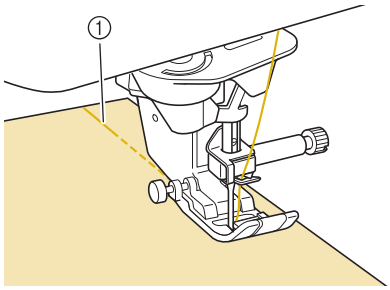


① Sewing start position

4 **Lower the presser foot, and hold the "Reverse Stitch" button or the "Reinforcement Stitch" button to sew 3-4 stitches.**

→ The machine sews reverse stitches or reinforcement stitches.

5 **Press the "Start/Stop" button to sew forward.**



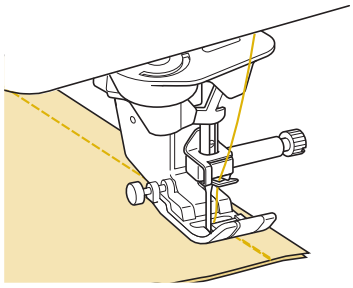
① Reverse stitches or reinforcement stitches

→ The machine will begin sewing slowly.

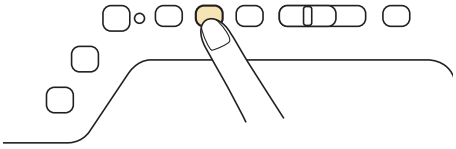
⚠ CAUTION

- **Be sure the needle does not strike a basting pin, or any other objects, during sewing. The thread could tangle or the needle could break, causing injury.**

6 **When sewing is completed, hold the "Reverse Stitch" button or the "Reinforcement Stitch" button to sew 3-4 reverse stitches or reinforcement stitches at the end of the seam.**



7 **After sewing, press the "Thread Cutter" button to trim the threads.**

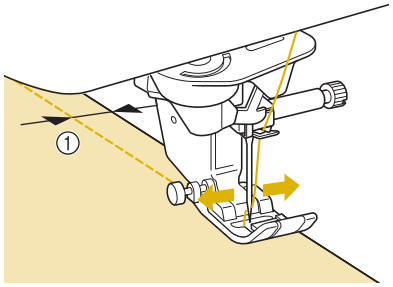


Memo

- When the automatic thread cutting and automatic reinforcement stitch keys on the screen are selected, reverse stitches or reinforcement stitches will be sewn automatically at the beginning of sewing when the "Start/Stop" button is pressed. Press the "Reverse Stitch" button or the "Reinforcement Stitch" button to sew reverse stitches or reinforcement stitches and trim the thread automatically at the end of sewing.

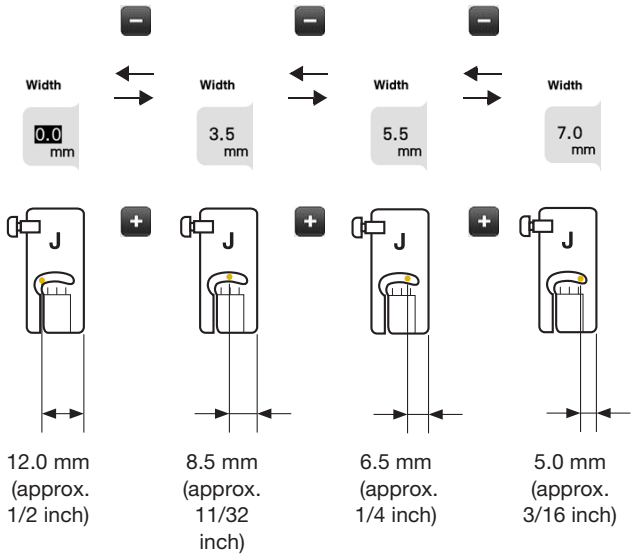
■ Changing the Needle Position (Left or Middle Needle Position Stitches Only)

When you select left or middle needle position stitches, you can use − and + in the stitch width display to change the position of the needle. Match the distance from the right edge of the presser foot to the needle with the stitch width, then align the edge of the presser foot with the edge of the fabric during sewing for an attractive finish.



① Stitch width

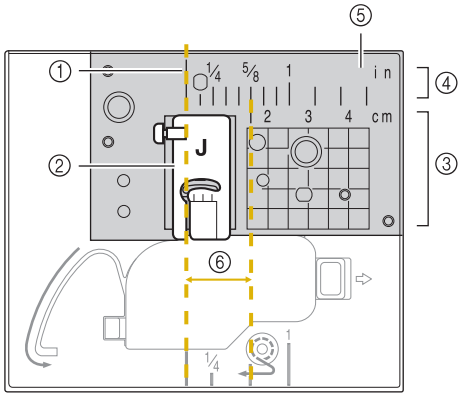
Example: Left/Middle needle position stitches



■ Aligning the Fabric with a Mark on the Needle Plate or Bobbin Cover (with Mark)

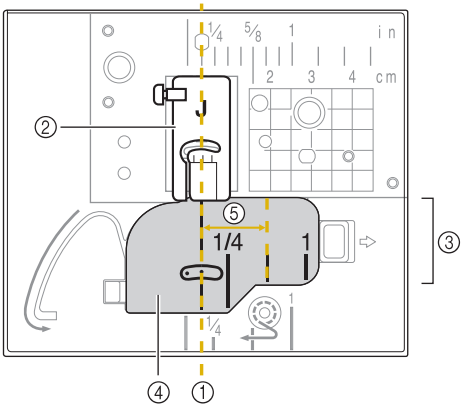
While sewing, align the edge of the fabric with the 16 mm (approx. 5/8 inch) mark on the needle plate or bobbin cover (with mark) depending on the needle position (left or middle (center) needle position stitches only).

For stitches with a left needle position (Stitch width: 0.0 mm)



① Seam
② Presser foot
③ Centimeters
④ Inches
⑤ Needle plate
⑥ 16 mm (5/8 inch)

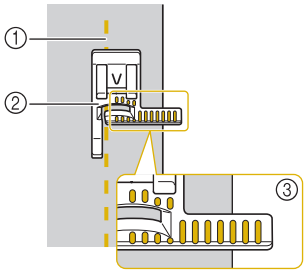
For stitches with a middle (center) needle position (Stitch width: 3.5 mm)



① Seam
② Presser foot
③ Inches
④ Bobbin cover (with mark)
⑤ 16 mm (5/8 inch)

■ Aligning the Fabric with the Vertical Stitch Alignment "V" Foot

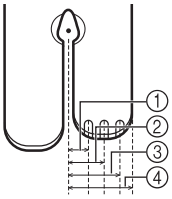
Sew while keeping the right edge of the fabric aligned with a desired position of markings on the vertical stitch alignment "V" foot.
You can also use the vertical stitch alignment "V" foot for setting a stitch width using the built-in camera (see page 160).

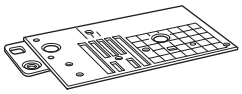


① Seam
② Vertical stitch alignment "V" foot
③ Markings

■ Using the Straight Stitch Needle Plate and the Straight Stitch Foot

The straight stitch needle plate and the straight stitch foot can only be used for straight stitches (middle needle position stitches). Use the straight stitch needle plate and the straight stitch foot when sewing thin fabrics or when sewing small pieces which tend to sink into the hole of the regular needle plate during sewing. The straight stitch foot is perfect to reduce puckering on lightweight fabrics. The small opening on the foot provides support for the fabric as the needle travels through the fabric.





① 2.25 mm (1/8 inch)
② 4.25 mm (3/16 inch)
③ 6.25 mm (1/4 inch)
④ 8.5 mm (5/16 inch)

⚠ CAUTION

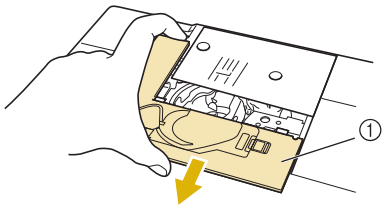
- **Always use the straight stitch foot in combination with the straight stitch needle plate.**

1 **Press the "Needle Position" button to raise the needle and turn the main power to OFF or press to lock all keys and buttons.**

2 **Remove the needle and the presser foot holder (see page 69 through 73).**

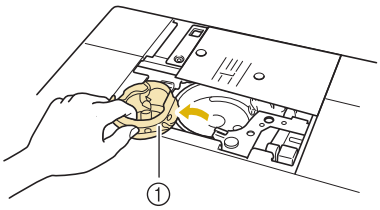
3 **Remove the flat bed attachment or the embroidery unit if either are attached.**

4 **Grasp both sides of the needle plate cover, and then slide it toward you.**



① Needle plate cover

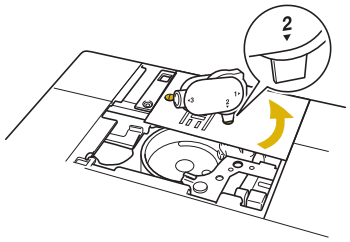
5 **Grasp the bobbin case, and then pull it out.**



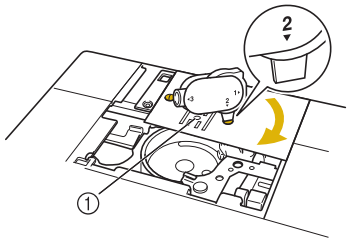
① Bobbin case

6 **Use the multi-purpose screwdriver included with the machine to unscrew and remove the regular needle plate.**

* Use the multi-purpose screw driver setting the position to "2". (see page 23)



7 **Set the straight stitch needle plate in place and use the multi-purpose screwdriver to tighten the plate.**



① Round hole

Note
- Align the two screw holes on the needle plate with the two holes on the machine. Use the multi-purpose screw driver included with the machine to secure the screws in the needle plate.

8 **Insert the bobbin case in its original position, and then attach the needle plate cover.**

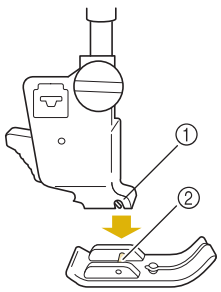
9 **After reinstalling the needle plate cover, select any of the straight stitches.**

Note
- Selecting other stitches will cause an error message to be displayed.

Memo
- When using the straight stitch needle plate, many straight stitches become middle needle position stitches. If a straight stitch is selected that is not applicable for use when the straight stitch needle plate is attached, an error message will be displayed to prevent the use of this stitch. You cannot change the needle position using the width display.
- Always secure the needle plate before inserting the bobbin case into its original position.

⚠ CAUTION
- **Slowly rotate the handwheel toward you (counterclockwise) before sewing and make sure that the needle is not contacting the straight stitch foot and straight stitch needle plate.**

10 **Insert needle and attach the straight stitch foot.**



① Notch
② Pin

11 **Press to unlock all keys and buttons, and then start sewing.**

* After sewing, make sure to remove the straight stitch needle plate and the straight stitch foot, and reinstall the regular needle plate, the needle plate cover and the presser foot "J".

Memo
- To prevent puckering on fine fabrics, use a fine needle, size 75/11, and a short stitch length. For heavier fabrics, use a heavier needle, size 90/14, and longer stitches.

■ Basting

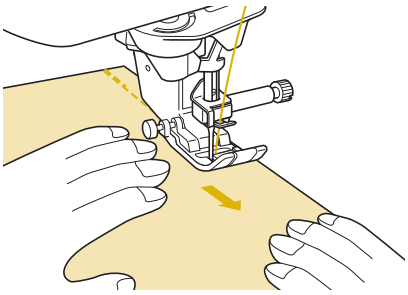
1 **Select and attach presser foot "J".**

2 **Keep pressing the "Reverse Stitch" button or the "Reinforcement Stitch" button to sew 4 stitches of reinforcement stitches, then press "Start/Stop" button to continue sewing.**

Memo
- When you use the basting stitch for gathering, do not use a reinforcement stitch at the beginning; you should lift the presser foot, rotate the handwheel toward you (counterclockwise), pull up the bobbin thread and pull a length of top and bobbin thread out from the rear of the machine.
- You can set the stitch length between 5 mm (approx. 3/16 inch) and 30 mm (approx. 1-3/16 inches)

① Between 5 mm (approx. 3/16 inch) and 30 mm (approx. 1-3/16 inches)

3 **Sew while keeping the fabric straight.**

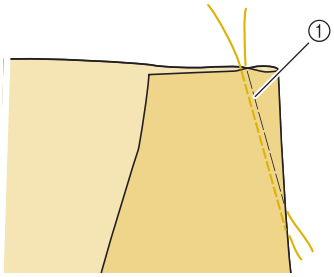


4 **End the basting with reinforcement stitches.**

Dart Seam

1 **Select** **and attach presser foot "J".**

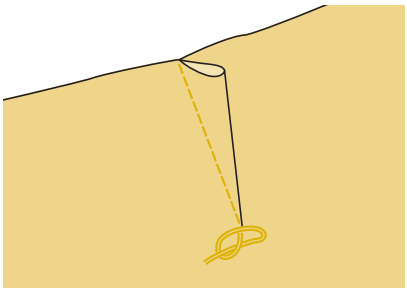
2 **Sew a reverse stitch at the beginning of the dart and then sew from the wide end to the other end without stretching the fabric.**



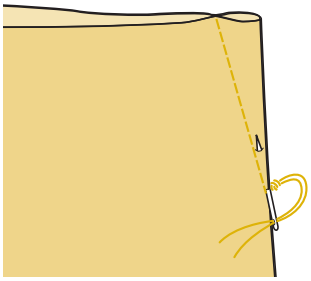
① Basting

3 **Cut the thread at the end leaving 50 mm (approx. 1-15/16 inches), and then tie both ends together.**

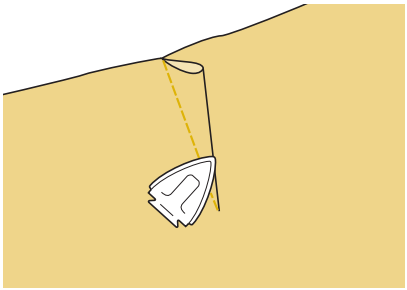
* Do not sew a reverse stitch at the end.



4 **Insert the ends of the thread into the dart with a hand sewing needle.**



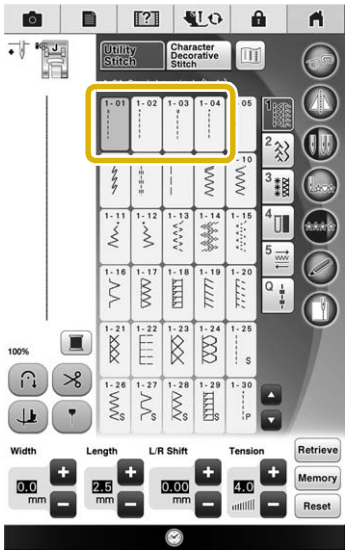
5 **Iron the dart to one side so that it is flat.**



Gathering

Use on waists of skirts, sleeves of shirts, etc.

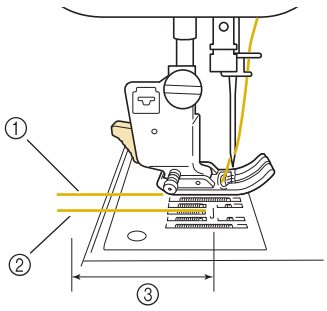
1 **Select a straight stitch and attach presser foot "J".**



2 **Set the stitch length to 4.0 mm (approx. 3/16 inch) and the thread tension to approximately 2.0 (weaker tension).**

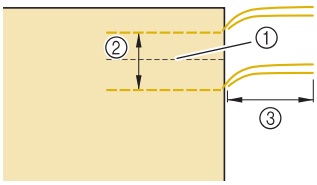
* If you press GATHERING after pressing [?] and then Sewing Guide, the stitch length will be set automatically to 4.0 mm (approx. 3/16 inch) and the thread tension will be automatically set to 2.0.

3 **Pull the bobbin and upper threads out by 50 mm (approx. 1-15/16 inches) (see page 59).**



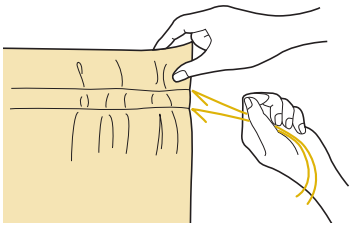
① Upper thread
② Bobbin thread
③ About 50 mm (approx. 1-15/16 inches)

4 **Sew two rows of straight stitches parallel to the seam line, then trim excess thread leaving 50 mm (approx. 1-15/16 inches).**

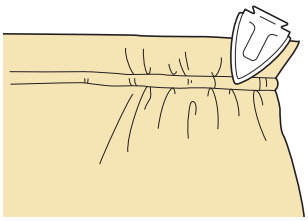


① Seam line
② 10 to 15 mm (approx. 3/8 inch to 9/16 inch)
③ About 50 mm (approx. 1-15/16 inches)

5 **Pull the bobbin threads to obtain the desired amount of gather, then tie the threads.**



6 **Smooth the gathers by ironing them.**



7 **Sew on the seam line and remove the basting stitch.**

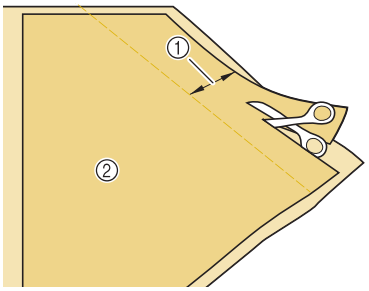
Flat Fell Seam

Use for reinforcing seams and finishing edges neatly.

1 **Select** **and attach presser foot "J".**

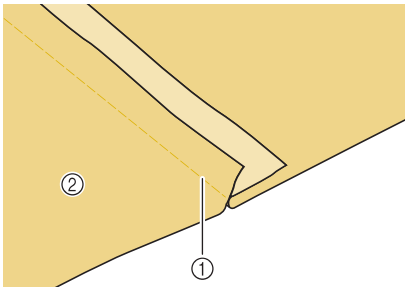
2 **Sew the finish line, then cut half of the seam allowance from the side on which the flat fell seam will lie.**

* When the automatic thread cutting and automatic reinforcement stitching are preset, reverse stitches will be sewn automatically at the beginning of sewing. Press the "Reinforcement Stitch" button to sew a reinforcement stitch and trim the thread automatically at the end of sewing.



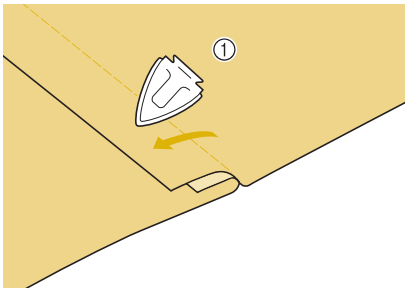
① About 12 mm (approx. 1/2 inch)
② Wrong side

3 **Spread the fabric out along the finish line.**



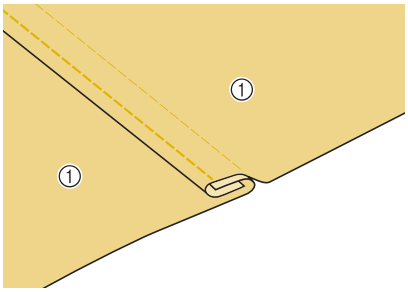
① Finish line
② Wrong side

4 **Lay both seam allowances on the side of the shorter seam (cut seam) and iron them.**



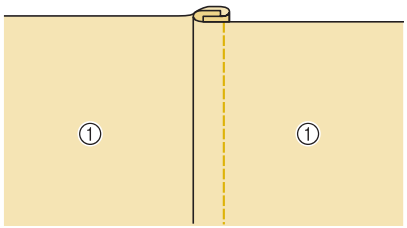
① Wrong side

5 **Fold the longer seam allowance around the shorter one, and sew the edge of the fold.**



① Wrong side

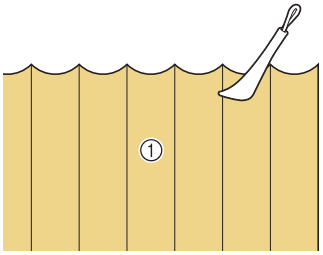
Finished flat fell seam



① Surface

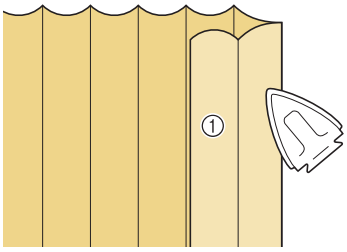
Pintuck

1 Mark along the folds on the wrong side of the fabric.



① Wrong side

2 Turn the fabric and iron the folded parts only.

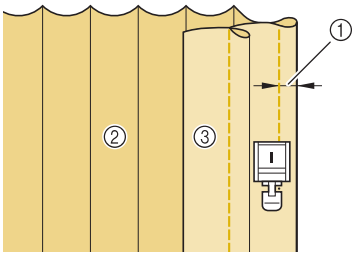


① Surface

3 Select and attach presser foot "I".

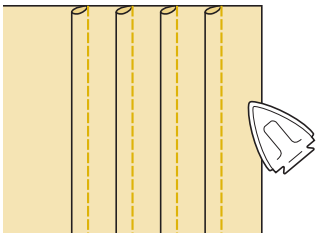
4 Sew a straight stitch along the fold.

* When the automatic thread cutting and automatic reinforcement stitching are preset, reverse stitches will be sewn automatically at the beginning of sewing. Press the "Reinforcement Stitch" button to sew a reinforcement stitch and trim the thread automatically at the end of sewing.



① Width for pintuck
② Wrong side
③ Surface

5 Iron the folds in the same direction.



Zigzag Stitches

Zigzag stitches are useful for overcasting, appliqué, patchwork, and many other applications.
Select a stitch, and attach presser foot "J".
If the stitch which you select has a double mark " ⅡⅡ " at the top of the key display, you can sew reverse stitches by holding the "Reverse Stitch" button. (see page 83)
If the stitch which you select has a dot mark " • " at the top of the key display, you can sew reinforcement stitches by holding the "Reinforcement Stitch" button (see page 83).

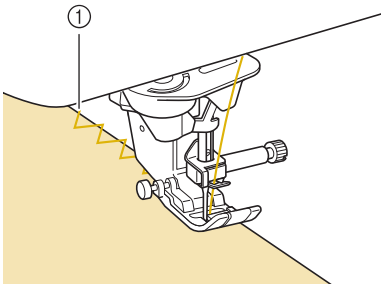
Stitch	Stitch name	Presser foot
1-09	Zigzag stitch	J
1-10	Zigzag stitch	J
1-11	Zigzag stitch (Right)	J
1-12	Zigzag stitch (Left)	J

1 **Select a stitch.**

2 **Attach presser foot "J".**

■ Overcasting (Using a Zigzag Stitch)

Sew the overcasting along the edge of the fabric while positioning the right-hand side needle drop point just outside the edge of the fabric.

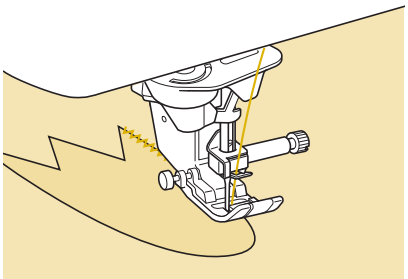


① Needle drop position

■ Appliqué (Using a Zigzag Stitch)

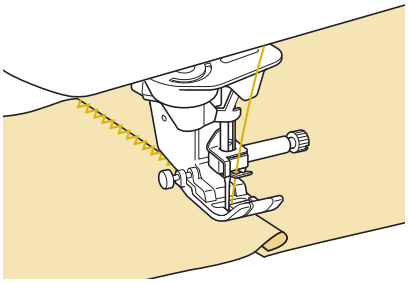
Attach the appliqué material using a temporary spray adhesive or basting, and then sew it.

* Sew a zigzag stitch while positioning the right-hand side needle drop point just outside the edge of the fabric.



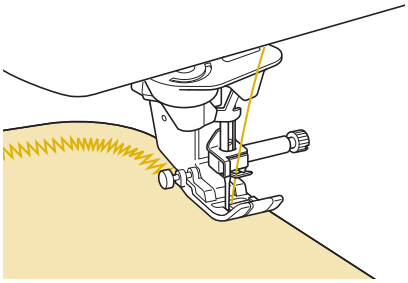
■ Patchwork (for Crazy Quilt)

Turn back the desired width of fabric and position it over the lower fabric, then sew so that the stitch bridges both pieces of fabric.



■ Sewing Curves (Using a Zigzag Stitch)

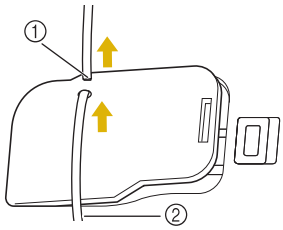
Shorten the stitch length setting to obtain a fine stitch. Sew slowly, keeping the seams parallel with the fabric edge as you guide the fabric around the curve.



■ Cord Guide Bobbin Cover (Using a Zigzag Stitch)

1. **Remove the bobbin cover from the machine (see page 57).**

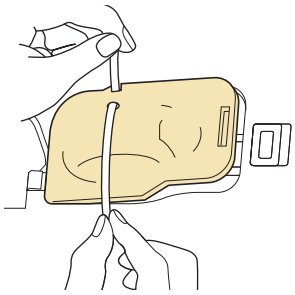
2. **Thread the gimp thread through the hole in the cord guide bobbin cover from top to bottom. Position the thread in the notch at the back of the cord guide bobbin cover.**



① Notch
② Gimp thread

3. **Snap the cord guide bobbin cover into place, making sure that the gimp thread can be fed freely.**

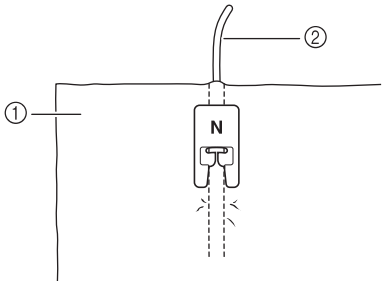
* Make sure there are no restrictions when feeding the thread.



4. **Set the zigzag width from 2.0-2.5 mm (approx. 1/16 - 3/32 inch).**

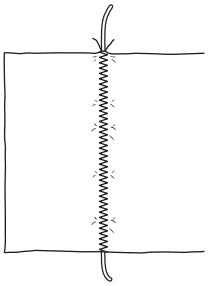
5. **Attach presser foot "N".**

6. **Position the fabric right side up on top of the cord and place the cord to the rear of the machine under the presser foot.**



① Fabric (right side)
② Gimp thread

7. **Lower the presser foot and start sewing to make a decorative finish.**



Elastic Zigzag Stitches

Use elastic zigzag stitches for tape attaching, overcasting, darning, or a wide variety of other uses.

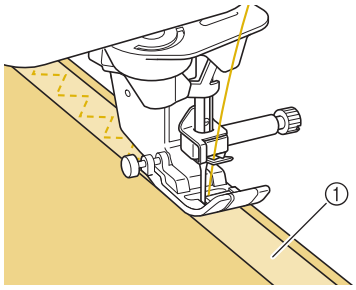
Stitch	Stitch name	Presser foot
1-13	2 steps elastic zigzag	J
1-14	2 steps elastic zigzag	J
1-15	3 steps elastic zigzag	J

1. **Select a stitch.**

2. **Attach presser foot "J".**

■ Tape Attaching

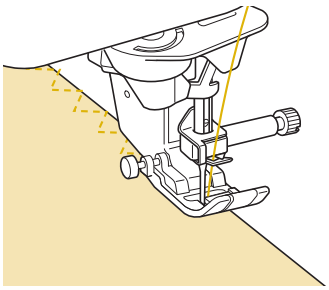
While stretching the tape flat, sew it to the fabric.



① Tape

■ Overcasting

Use this stitch to sew overcasting on the edge of stretch fabrics. Sew the overcasting along the edge of the fabric while positioning the right-hand side needle drop point just outside the edge of the fabric.



Overcasting

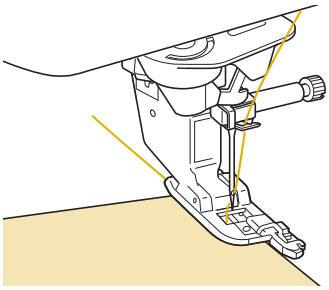
Use for the edge of seams in skirts or trousers, and the edge of all cuttings. Use presser foot "G", presser foot "J", or the side cutter attachment depending on the kind of overcasting stitch you select.

■ Overcasting Using Presser Foot "G"

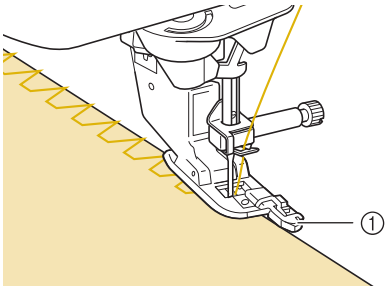
Stitch	Stitch name	Presser foot
1-16	Overcasting stitch	G
1-17	Overcasting stitch	G
1-18	Overcasting stitch	G

1 **Select a stitch and attach presser foot "G".**

2 **Lower the presser foot so that the presser foot guide is set flush against the edge of the fabric.**



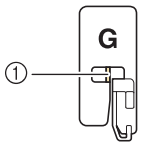
3 **Sew along the presser foot guide.**



① Guide

⚠ CAUTION

- **After the stitch width is adjusted, rotate the handwheel toward you (counterclockwise). Check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may break and cause injury.**



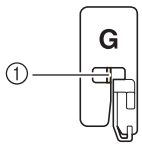
① The needle should not touch the center bar

- **If the presser foot is raised to its highest level, the needle may strike the presser foot.**

4 **Press the "Start/Stop" button to stop sewing when you are finished, and raise the presser foot and needle to remove the fabric by pulling it back.**

⚠ CAUTION

- **Pull the fabric to the back of the machine after finished sewing. By pulling the fabric to the front or side, the center bar of the presser foot "G" may break.**



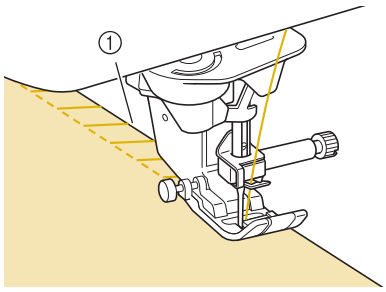
① Center bar

■ Overcasting Using Presser Foot "J"

Stitch	Stitch name	Presser foot
1-19	Overcasting stitch	J
1-20	Overcasting stitch	J
1-21	Overcasting stitch	J
1-22	Overcasting stitch	J
1-23	Single diamond overcast	J
1-24	Single diamond overcast	J

1. **Select a stitch and attach presser foot "J".**

2. **Sew with the needle dropping slightly off the edge of the fabric.**



① Needle drop position

Note
- Fine adjustment of the stitching on the fabric can be done with "L/R Shift". Before sewing your project, be sure to sew trial stitches using the same conditions as in the actual project.

Memo
- For best results when sewing stretch fabrics, decrease the pressure of the presser foot.

■ Overcasting Using the Side Cutter (Sold Separately)

By using the side cutter, you can do overcasting while cutting the fabric.

⚠ CAUTION
- **Recommended stitches are noted "S" in the lower right corner, therefore sure to only select one of these stitches listed below. Using another stitch may cause the needle to hit the presser foot and break, possibly causing injury.**

Note
- Thread the needle manually when using the side cutter, or only attach the side cutter after threading the needle using the "Automatic Threading" button.

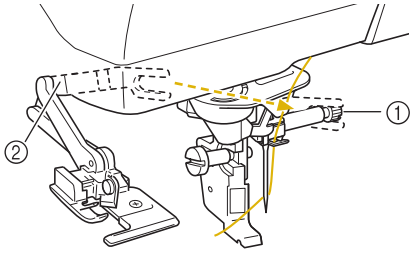
Stitch	Stitch name	Presser foot
1-25 S	With side cutter	S
1-26 S	With side cutter	S
1-27 S	With side cutter	S
1-28 S	With side cutter	S
1-29 S	With side cutter	S

1. **Select a stitch.**

2. **Follow the steps on page 68 to remove the presser foot.**

3. **Thread the needle (see page 60).**

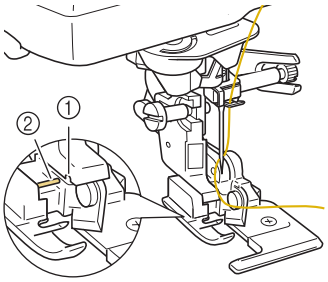
4 **Position the fork on the side cutter's operating lever onto the needle clamp screw.**



① Needle clamp screw
② Operating lever

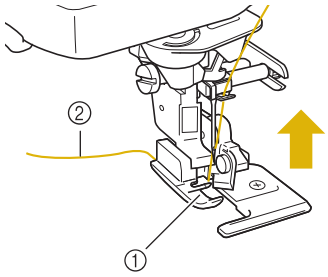
Memo
- Make sure that the fork of the operating lever is set onto the needle screw firmly.

5 **Position the side cutter so that the side cutter pin is aligned with the notch in the presser foot holder, and then lower the presser foot.**



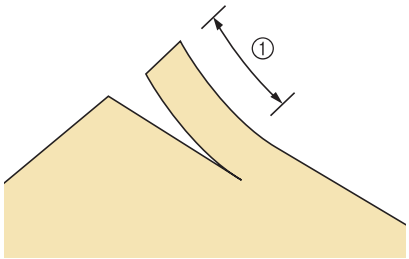
① Notch in presser foot holder
② Pin
→ The side cutter is attached.

6 **Raise the presser foot and pull out a long section of the upper thread. Pass it below the presser foot and pull it out in the fabric feed direction.**



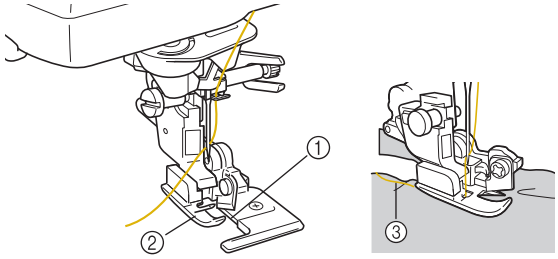
① Presser foot
② Upper thread

7 **Make a cut of approximately 20 mm (approx. 3/4 inch) in the fabric.**



① 20 mm (approx. 3/4 inch)

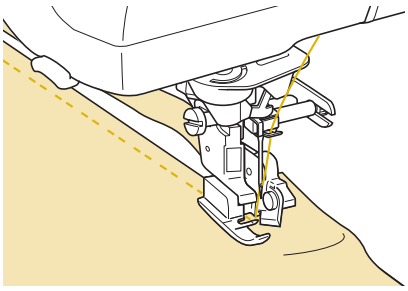
8 **Position the fabric so that the right side of the cut is on top of the guide plate and the left side of the cut is underneath the presser foot.**



① Guide plate (lower knife)
② Presser foot
③ Upper thread

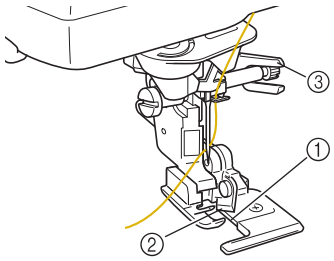
Memo
- If the fabric is not positioned correctly, the fabric will not be cut.

9 **Lower the presser foot and start.**



→ A seam allowance is cut while the stitching is sewn.

- **When using the side cutter, sew between low and mid-speed and do not touch the knives or operation lever of the side cutter while sewing to avoid equipment damage or injury.**



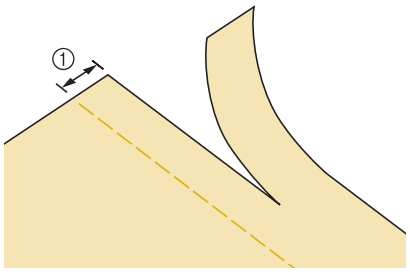
① Guide plate (lower knife)
② Upper knife
③ Operation lever

Note

- If the width has been adjusted, rotate the handwheel toward you (counterclockwise). Check that the needle does not touch the side cutter. If the needle touches the side cutter, it might cause the needle to break.

■ When Sewing Straight Stitches While Using the Side Cutter (Sold Separately)

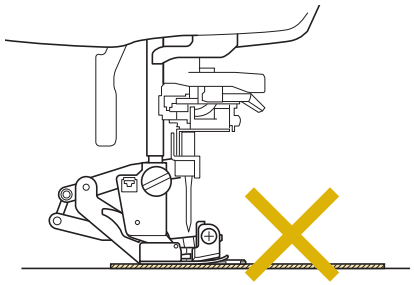
The seam margin should be approximately 5 mm (approx. 3/16 inch).



① Seam margin

Memo

- The fabric will not be cut if the whole fabric is simply spread out underneath the presser foot guide plate. Set the fabric as explained in step 8 from the previous section, and then start sewing.



- One layer of 13 oz. denim can be cut.
- Clean the side cutter after use to avoid having dust and scraps of thread build up in the cutter area.
- Add a small amount of oil as required to the cutting edge of the cutter.

Quilting

You can make beautiful quilts quickly and easily with this machine. When making a quilt, you will find it convenient to use the knee lifter and foot controller to free your hands for other tasks (“Using the Multi-Function Foot Controller” on page 81 and /or “Using the Knee Lifter” on page 94).
The 30 quilting stitches Q-01 through Q-30 and the utility stitches with “P” or “Q” indicated on their key are useful for quilting.
The “P” or “Q” at the bottom of the key display indicates that these stitches are intended for (“Q”) quilting and (“P”) piecing.

Stitch	Stitch name	Presser foot	
Q-01 P	**Piecing stitch (Middle)**	J	C
Q-02 P	**Piecing stitch (Right)**	J	O
Q-03 P	**Piecing stitch (Left)**	J	O
Q-04 Q	**Hand-look quilting (Middle)**	J	O
Q-05	**Basting stitch**	J	O

Stitch	Stitch name	Presser foot	
Q-06	Stem stitch	J	
Q-07	Quilting appliqué zigzag stitch	J	
Q-08	Zigzag stitch (Right)	J	
Q-09	Zigzag stitch (Left)	J	
Q-10	2 steps elastic zigzag	J	
Q-11	3 steps elastic zigzag	J	
Q-12	Quilting appliqué stitch	J	
Q-13	Shell tuck edge	J	
Q-14	Blanket stitch	J	
Q-15	Quilting stippling	J	
Q-16	Overcasting stitch	J	
Q-17	Tape attaching	J	
Q-18	Serpentine stitch	N	
Q-19	Feather stitch	J	
Q-20	Fagoting cross stitch	J	
Q-21	Couching stitch	J	
Q-22	Patchwork double overlock stitch	J	
Q-23	Smocking stitch	J	
Q-24	Rick-rack stitch	J	

Stitch	Stitch name	Presser foot	
Q-25	Decorative stitch	N	
Q-26	Decorative stitch	J	
Q-27	Hemstitching	N	
Q-28	Hemstitching	N	
Q-29	Single diamond overcast	J	
Q-30	Overcasting stitch	J	
1-30	Piecing stitch (Right)	J	
1-31	Piecing stitch (Middle)	J	C
1-32	Piecing stitch (Left)	J	
1-33	Hand-look quilting	J	
1-34	Quilting appliqué zigzag stitch	J	
1-35	Quilting appliqué stitch	J	
1-36	Quilting stippling	J	

Memo

- When a stitch pattern in the Quilting Stitches category (Q-02 through Q-30) is selected, a finer stitch width can be set than is available with stitch patterns in other categories.
  For example: Stitch Q-03 has 57 needle positions and stitch Q-19 has 29 width selections.

Note

- The width range of stitch setting is only available in the Quilting stitch “Q” quilting category.

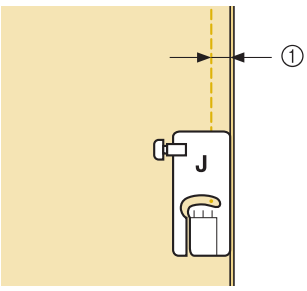
■ Piecing

Sewing two pieces of fabric together is called piecing. When cutting pieces for quilt blocks, make sure the seam allowance is 6.5 mm (approx. 1/4 inch).

1 Select Q-02 or Q-03 and attach presser foot "J".

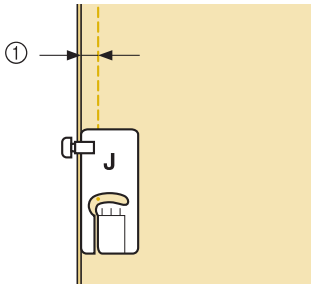
2 Align the edge of the fabric with the edge of the presser foot, and start sewing.

* To sew a 6.5 mm (approx. 1/4 inch) seam allowance along the left edge of the presser foot with Q-02 selected, the width should be set to 5.50 mm (approx. 7/32 inch).



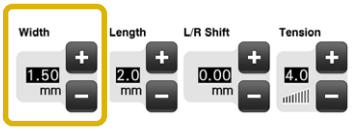
① 6.5 mm (approx. 1/4 inch)

* To sew a 6.5 mm (approx. 1/4 inch) seam allowance along the left edge of the presser foot with Q-03 selected, the width should be set to 1.50 mm (approx. 1/32 inch).



① 6.5 mm (approx. 1/4 inch)

* To change the needle position, use + or − in the width display.



Memo

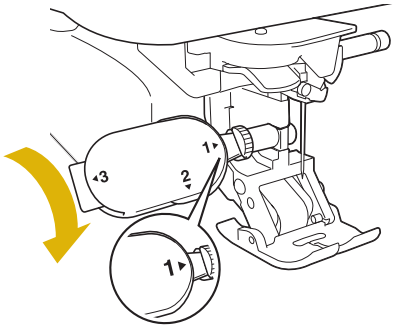
- Using a straight stitch (middle needle position) makes it easier to sew smoothly (see page 114).
- In the case Q-01(center, at width 3.5 mm) is selected, if the guideline marker is set at 10.0 mm (3.5 mm plus 6.5 mm, close to 1/4 inch), you can sew piecing by referring to the guideline marker.

■ Quilting

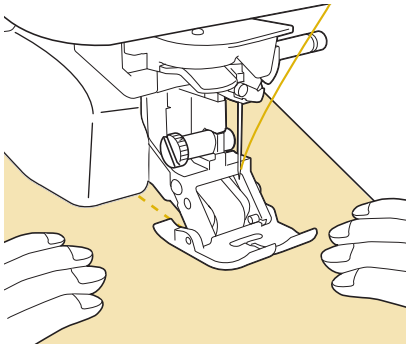
Sewing the quilt top, batting, and backing together is called quilting. You can sew the quilt with the dual feed foot to keep the quilt top, batting, and backing from sliding. The dual feed foot has a motorized belt that moves together with the feed dogs in the needle plate during sewing.
For straight line quilting, use the dual feed foot and the straight stitch needle plate. Always select a straight stitch (middle needle position) when using the straight stitch needle plate.

1 Select Q-01, Q-03 or Q-07.

2 Attach the dual feed foot (see page 70).



3 Place one hand on each side of the presser foot to hold the fabric secure while sewing.

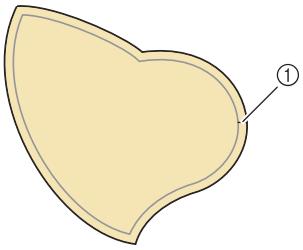


Memo

- Sew at slow to medium speed.
- Always check to be sure that your quilting surface is securely basted before beginning to sew. Specialized machine quilt needles and threads are also available for machine quilting.

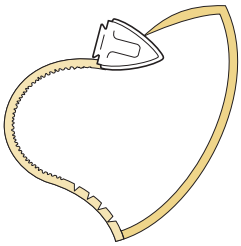
■ Appliqué

1 **Trace the pattern onto the appliqué fabric and then cut around it, leaving a 3 to 5 mm (approx. 1/8 to 3/16 inch) seam allowance.**

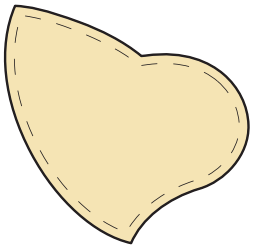


① Seam allowance: 3 to 5 mm (approx. 1/8 to 3/16 inch)

2 **Place a piece of stabilizer cut to the finished size of the appliqué design onto the fabric, and then fold over the seam margin using an iron. Clip curves when necessary.**

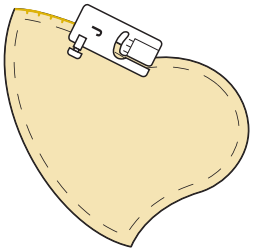


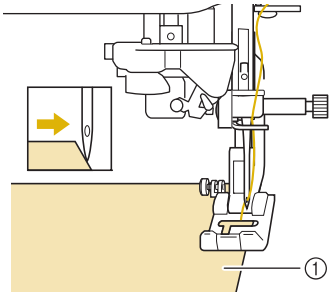
3 **Turn the appliqué over, and attach the stabilizer with basting pins or a basting stitch.**

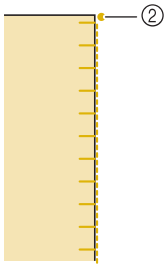


4 **Select** **and attach presser foot "J".**

5 **Use the quilting appliqué stitch to attach the appliqué. Sew around the edge while dropping the needle as close to the edge as possible.**







① Appliqué
② Needle drop position

⚠ CAUTION

- **Be careful that the needle does not strike a basting pin during sewing. Striking a pin can cause the needle to break, resulting in injury.**

You can use the appliqué technique to attach appliqué designs like the three pictured below.

① Dresden plate
② Stained glass
③ Sunbonnet sue

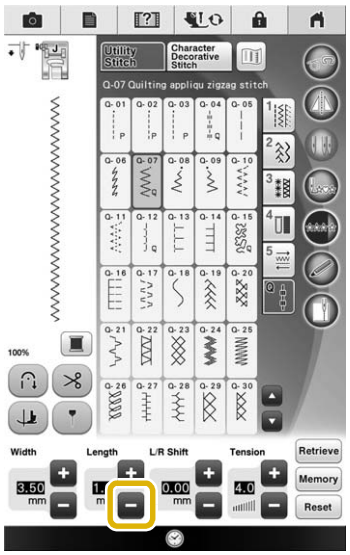
■ Quilting with Satin Stitches

For better fabric control, use the foot controller to sew with satin stitches. Set the speed control slide to control the stitch width to make subtle changes in the stitch width during sewing.

1 **Attach the foot controller (see page 81).**

2 **Select** **and attach presser foot "J".**

3 **Press** **in the length display to shorten the stitch length.**

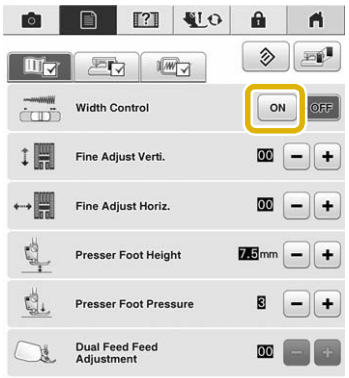


Memo

- The setting will vary according to the kind of fabric and the thickness of the thread, but a length of 0.3 to 0.5 mm (approx. 1/64 to 1/32 inch) is best for satin stitches.

4 **Press** **to use the speed control slide to control the stitch width.**

5 **Set the "Width Control" to "ON".**



Memo

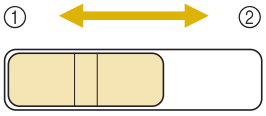
- You can use the speed control slide to adjust the stitch width. Use the foot controller to adjust the sewing speed.

6 **Press** OK **.**

→ The display will return to the original screen.

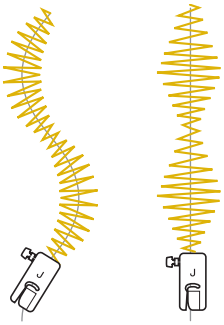
7 **Start sewing.**

* You can adjust the stitch width during sewing by moving the sewing speed controller. Slide the lever to the left, and the stitch width becomes narrower. Slide it to the right, the stitch width becomes wider. The size of the width changes equally on both sides of the middle needle position.



① narrower
② wider

Example: Changing the width



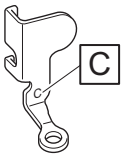
8 **When you are finished sewing, set the "Width Control" back to "OFF".**

■ Free Motion Quilting

With free motion quilting, the feed dogs can be lowered by pressing , so that the fabric can be moved freely in any direction.
For free motion quilting, use free motion quilting foot "C" or free motion open toe quilting foot "O" depending on the stitch that is selected, and set the machine to free motion sewing mode. In this mode, the presser foot is raised to the necessary height for free motion sewing.
We recommend attaching the foot controller and sewing at a consistent speed. You can adjust the sewing speed with the speed control slide on the machine.

Using Free motion Quilting Foot "C"

Use the free motion quilting foot "C" with straight stitch needle plate for free motion sewing.



Free motion quilting foot "C"

⚠ CAUTION

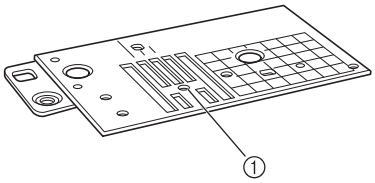
- **With free motion quilting, control the feeding speed of the fabric to match the sewing speed. If the fabric is moved faster than the sewing speed, the needle may break or other damage may result.**
- **When using free motion quilting foot "C", be sure to use the straight stitch needle plate and sew with the needle in middle (center) needle position. If the needle is moved to any position other than the middle (center) needle position, the needle may break, which may result in injuries.**

Memo

- When starting to sew, the internal sensor detects the thickness of the fabric, and the quilting foot is raised to the height specified in the machine settings screen. Press to display "Free Motion Foot Height" of the settings screen. Press − or + to select the height that the quilting foot is raised above the fabric. Increase the setting by pressing +, for example, when sewing very stretchy fabric, so that it is easier to sew.

- In order to sew with a balanced tension, it may be necessary to adjust the upper thread tension. Test with a sample piece of fabric that is similar to your chosen fabric.

1 **Attach the straight stitch needle plate (see page 117).**



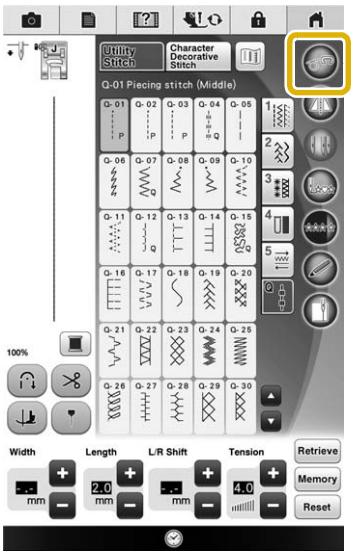
① Round hole

Memo

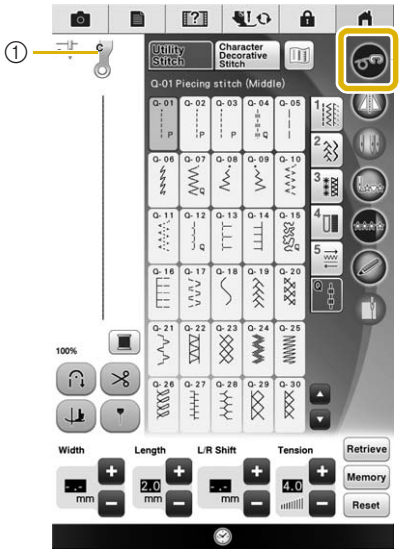
- Notice this needle plate has a round hole for the needle.

2 **Select Q-01 or 1-31.**

3 **Press to set the machine to free motion sewing mode.**



→ The key appears as , the quilting foot is raised to the necessary height, and then the feed dogs are lowered for free motion sewing.

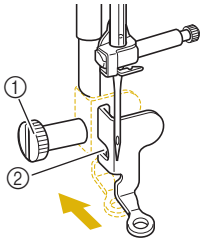


① Free motion quilting foot "C"

→ When stitch Q-01 or 1-31 is selected, free motion quilting foot "C" is indicated in the upper-left corner of the screen.

4 **Remove the presser foot holder (see page 69).**

5 **Attach free motion quilting foot "C" at the front with the presser foot holder screw aligned with the notch in the quilting foot.**



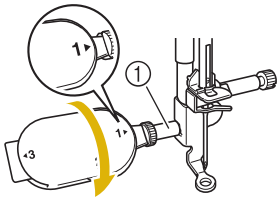
① Presser foot holder screw

② Notch

Note

- Make sure that the quilting foot is attached properly and not slanted.

6 **Hold the quilting foot in place with your right hand, and tighten the presser foot holder screw using the multi-purpose screwdriver with your left hand.**

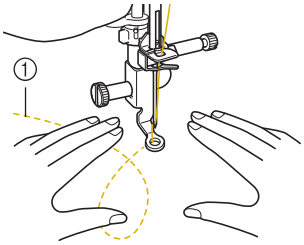


① Presser foot holder screw

CAUTION

- **Be sure to securely tighten the screws with the included multi-purpose screwdriver. Otherwise, the needle may touch the quilting foot, causing it to bend or break.**

7 **Use both hands to stretch the fabric taut, and then move the fabric at a consistent pace in order to sew uniform stitches roughly 2.0-2.5 mm (approx. 1/16 - 3/32 inch) in length.**



① Stitch

8 **Press to cancel the free motion sewing mode.**

→ Rotate the handwheel toward you (counterclockwise) to raise the feed dogs.

9 **After sewing, make sure to remove the straight stitch needle plate and presser foot "C", and reinstall the regular needle plate and the needle plate cover.**

Note

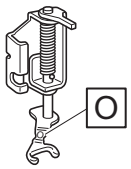
- Free motion open toe quilting foot "O" can also be used with the straight stitch needle plate. We recommend using free motion open toe quilting foot "O" with free motion sewing of fabrics of uneven thicknesses.
- When using the straight stitch needle plate, all straight stitches become middle needle position stitches. You cannot change the needle position using the width display.

Memo

- Normally, the feed dogs are raised for regular sewing.
- Do not be discouraged with your initial results. The technique requires practice.

Using free motion Open Toe Quilting Foot "O"

The free motion open toe quilting foot "O" is used for free motion quilting with zigzag or decorative stitches or for free motion quilting of straight lines on fabric with an uneven thickness. Various stitches can be sewn using free motion open toe quilting foot "O". For details on the stitches that can be used, refer to the "STITCH SETTING CHART" at the end of this manual.



Free motion open toe quilting foot "O"

Memo

- In order to sew with a balanced tension, it may be necessary to adjust the upper thread tension (see page 90). Test with a sample piece of quilting fabric.

1 **Press to set the machine to free motion sewing mode.**

→ The key appears as , the quilting foot is raised to the necessary height, and then the feed dogs are lowered for free motion sewing.

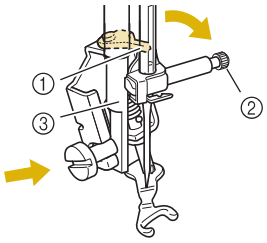
2 **Select a stitch.**

Memo

- When stitch Q-01 or 1-31 is selected, free motion quilting foot "C" is indicated in the upper-left corner of the screen. When the other stitches are selected, free motion open toe quilting foot "O" is indicated in the screen.

3 **Remove the presser foot holder (see page 69).**

4 **Attach free motion open toe quilting foot "O" by positioning the pin of the quilting foot above the needle clamp screw and aligning the lower-left of the quilting foot and the presser bar.**



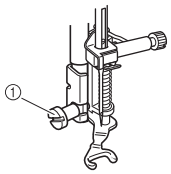
① Pin
② Needle clamp screw
③ Presser bar

Note

- Make sure that the quilting foot is not slanted.

5 **Hold the quilting foot in place with your right hand, and tighten the presser foot holder screw using the multi-purpose screwdriver with your left hand.**

* Use the multi-purpose screw driver setting the position to "1". (see page 23)

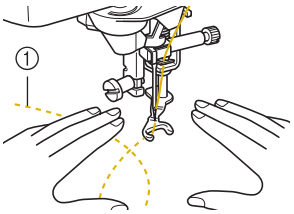


① Presser foot holder screw

⚠ CAUTION

- **Be sure to securely tighten the screws with the included multi-purpose screwdriver. Otherwise, the needle may touch the quilting foot, causing it to bend or break.**

6 **Use both hands to stretch the fabric taut, and then move the fabric at a consistent pace in order to sew uniform stitches roughly 2.0-2.5 mm (approx. 1/16 - 3/32 inch) in length.**



① Stitch

7 Press to cancel the free motion sewing mode.

→ Rotate the handwheel toward you (counterclockwise) to raise the feed dogs.

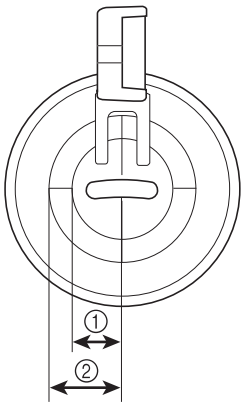
Memo

- Do not be discouraged with your initial results. The technique requires practice.

■ Echo Quilting Using the Free Motion Echo Quilting Foot "E"

Sewing quilting lines at equal distances around a motif is called echo quilting. The quilting lines, which appear as ripples echoing away from the motif, are the distinguishing characteristic of this quilting style. Use the free motion echo quilting foot "E" for echo quilting. Using the measurement on the presser foot as a guide, sew around the motif at a fixed interval. We recommend attaching the foot controller and sewing at a consistent speed.

Free motion echo quilting foot "E" measurement



① 6.4 mm (approx. 1/4 inch)
② 9.5 mm (approx. 3/8 inch)

⚠ CAUTION

- **With free motion quilting, control the feeding speed of the fabric to match the sewing speed. If the fabric is moved faster than the sewing speed, the needle may break or other damage may result.**

Memo

- When starting to sew, the internal sensor detects the thickness of the fabric, and the quilting foot is raised to the height specified in the machine settings screen. Press to display "Free Motion Foot Height" of the settings screen (see page 31). Press − or + to select the height that the quilting foot is raised above the fabric. Increase the setting by pressing +, for example, when sewing very soft fabric, so that it is easier to sew.

- In order to sew with a balanced tension, it may be necessary to adjust the upper thread tension (see page 90). Test with a sample piece of quilting fabric.

1 Select .

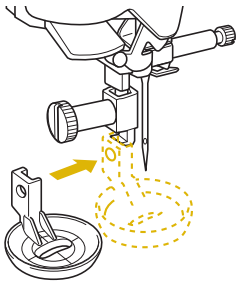
2 Press to set the machine to free motion sewing mode.

→ The key appears as , the quilting foot is raised to the necessary height, then the feed dogs are lowered for free motion sewing.

3 Follow the steps on page 68 "Removing the Presser Foot" to remove the presser foot.

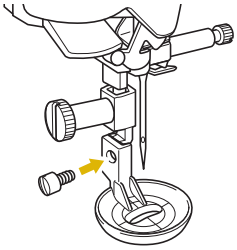
4 Remove the presser foot holder (see page 69) and the screw.

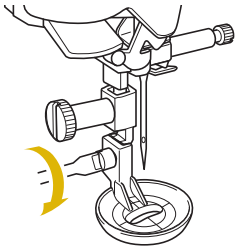
5 Position the free motion echo quilting foot "E" on the left side of the presser bar with the holes in the quilting foot and presser bar aligned.



6 Tighten the screw with the included multi-purpose screwdriver.

* Use the multi-purpose screw driver setting the position to "1". (see page 23)

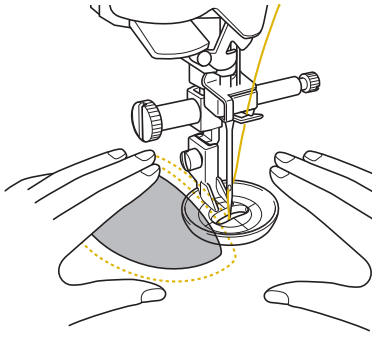


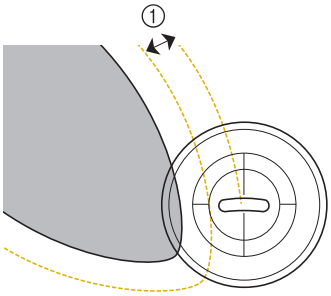


⚠ CAUTION

- **Be sure to securely tighten the screws with the included multi-purpose screwdriver. Otherwise, the needle may touch the quilting foot, causing it to bend or break.**

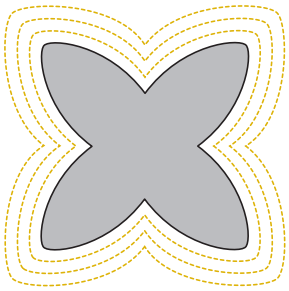
7 Using the measurement on the quilting foot as a guide, sew around the motif.





① 6.4 mm (approx. 1/4 inch)

Finished project



8 Press to cancel the free motion sewing mode.

→ Rotate the handwheel toward you (counterclockwise) to raise the feed dogs.

Blind Hem Stitches

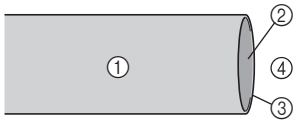
Secure the bottoms of skirts and pants with a blind hem. Two stitches are available for blind hem stitching.

Stitch	Stitch name	Presser foot
2-01	Blind hem stitch	R
2-02	Blind hem stitch stretch	R

Memo

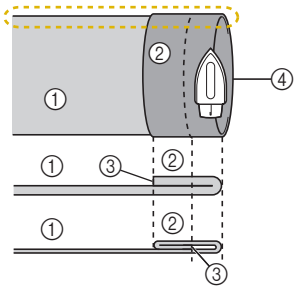
- When the size of cylindrical pieces is too small to slide onto the arm or the length is too short, the fabric will not feed and desired results may not be achieved.

1 Turn the skirt or pants wrong side out.



① Wrong side of fabric
② Right side of fabric
③ Edge of fabric
④ Bottom side

2 **Fold the fabric along the desired edge of the hem, and press.**



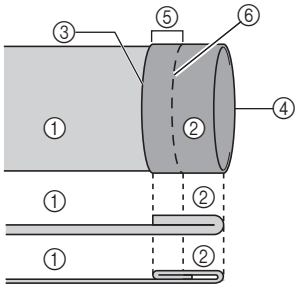
① Wrong side of fabric
② Right side of Fabric
③ Edge of fabric
④ Desired edge of hem

<Thick fabric>

<Normal fabric>

<Seen from the side>

3 **Use a chalk to mark on the fabric about 5 mm (3/16 inch) from the edge of the fabric, and then baste it.**



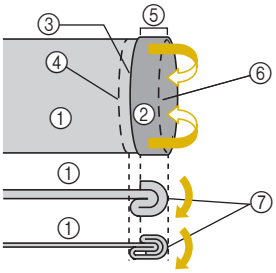
① Wrong side of fabric
② Right side of fabric
③ Edge of fabric
④ Desired edge of hem
⑤ 5 mm (3/16 inch)
⑥ Basting

<Thick fabric>

<Normal fabric>

<Seen from the side>

4 **Fold back the fabric inside along the basting.**



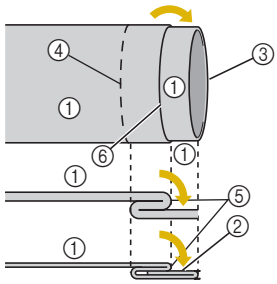
① Wrong side of fabric
② Right side of fabric
③ Edge of fabric
④ Desired edge of hem
⑤ 5 mm (3/16 inch)
⑥ Basting
⑦ Basting point

<Thick fabric>

<Normal fabric>

<Seen from the side>

5 **Unfold the edge of fabric, and position the fabric with the wrong side facing up.**



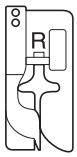
① Wrong side of fabric
② Right side of fabric
③ Edge of fabric
④ Desired edge of hem
⑤ Basting point
⑥ Basting

<Thick fabric>

<Normal fabric>

<Seen from the side>

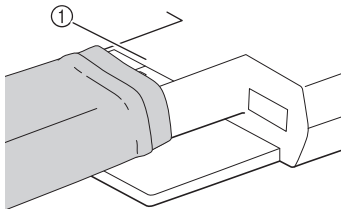
6 **Attach blind hem foot "R".**



7 **Select** **or** **.**

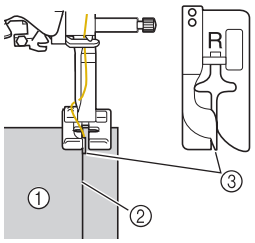
8 **Remove the flat bed attachment to use the free-arm.**

9 **Slide the item that you wish to sew onto the free arm, make sure that the fabric feeds correctly, and then start sewing.**



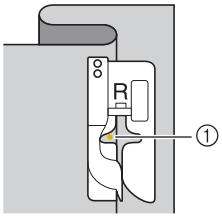
① Free arm

10 **Position the fabric with the edge of the folded hem against the guide of the presser foot, and then lower the presser foot lever.**



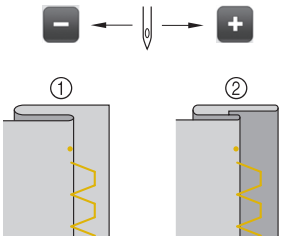
① Wrong side of fabric
② Fold of hem
③ Guide

11 Adjust the stitch width until the needle slightly catches the fold of the hem.



① Needle drop point
When you change the needle drop point, raise the needle, and then change the stitch width.

<Stitch Width>



① Thick fabric
② Normal fabric

Memo

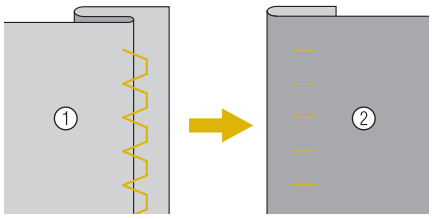
- Blind hem stitches cannot be sewn if the left needle drop point does not catch the fold. If the needle catches too much of the fold, the fabric cannot be unfolded and the seam appearing on the right side of the fabric will be very large, leaving an unattractive finish. If you experience either of these cases, follow the instructions below to solve the problem.

■ If the Needle Catches Too Much of the Hem Fold

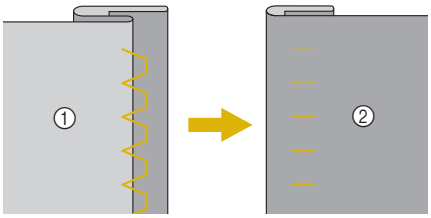
The needle is too far to the left.

Press + to decrease the stitch width so that the needle slightly catches the fold of the hem.

<Thick fabric>



<Normal fabric>



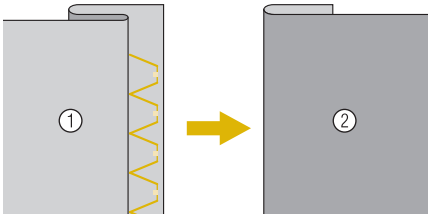
① Wrong side of fabric
② Right side of fabric

■ If the Needle does not Catch the Hem Fold

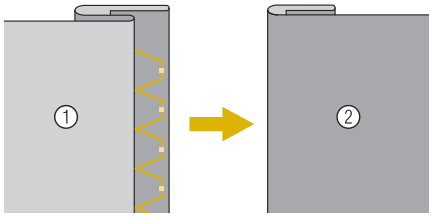
The needle is too far to the right.

Press − to increase the stitch width so that the needle slightly catches the fold of the hem.

<Thick fabric>



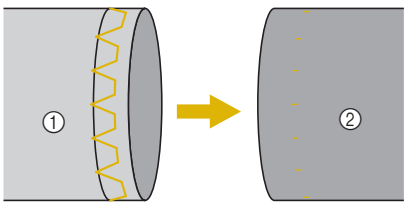
<Normal fabric>



① Wrong side of fabric
② Right side of fabric

12 Sew with the fold of the hem against the presser foot guide.

13 Remove the basting stitching and reverse the fabric.

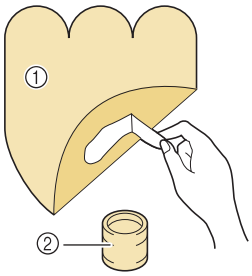


① Wrong side of fabric
② Right side of fabric

Appliqué

1 Use a temporary spray adhesive, fabric glue or a basting stitch to attach the appliqué to the fabric.

* This will keep the fabric from moving during sewing.



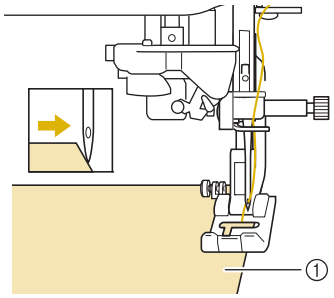
① Appliqué
② Fabric glue

2 Select [2-03] or [1-10].

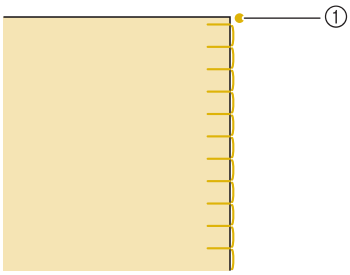
* Adjust the stitch length and width to correspond to the appliqué shape, size, and quality of material (see page 88).

Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

3 Attach presser foot "J". Check that the needle drops slightly off the edge of the appliqué, then start sewing.



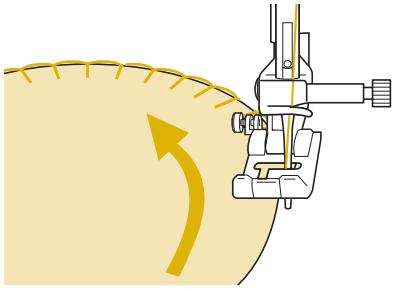
① Appliqué material



① Needle drop position

■ Appliqué Sharp Curves

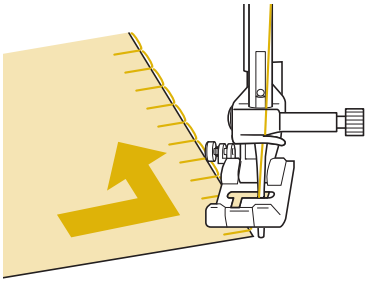
Stop the machine with the needle in the fabric outside the appliqué. Raise the presser foot and turn the fabric a little bit at a time while sewing for an attractive finish to the seam.



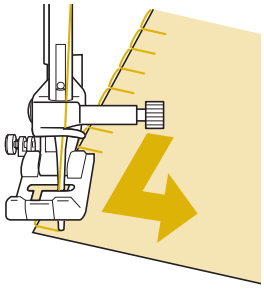
■ Appliqué Corners

Stop the machine with the needle in the right position of the outside (or inside) corner of the appliqué. Raise the presser foot and pivot the fabric to align the fabric edge. Lower the presser foot and continue stitching.

①



②



① Outside corner
② Inside corner

Memo
- Placing a lightweight tear away stabilizer beneath the stitching area will improve the stitch placement along the edge of the appliqué fabric.

Shelltuck Stitches

Shelltuck stitches give an attractive appearance of shells along the curve of a collar. This stitch pattern can be used for edging the neckline or sleeves of dresses and blouses.

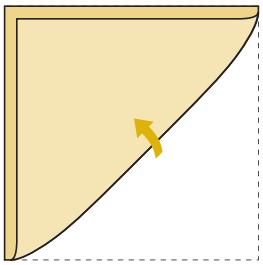
1 **Select** 2-04 **.**

Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

2 **Increase the upper thread tension for an attractive scallop finish to the shelltuck stitches (see page 90).**

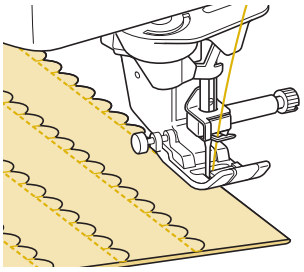
Memo
- If the upper thread tension is too weak, the shelltuck stitches will not scallop.

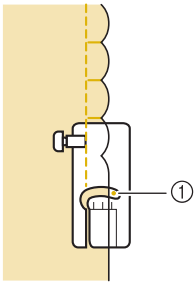
3 **To make rows of shell tuck stitches, fold the fabric in half along the bias.**



Memo
- Use a thin fabric.

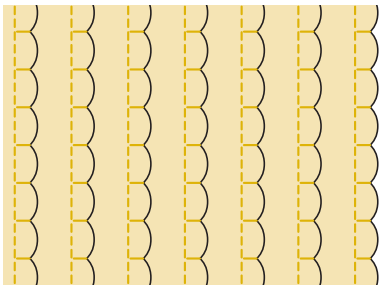
4 **Attach presser foot "J". Set the needle drop point slightly off the edge of the fabric, and start sewing.**





① Needle drop position

5 **Unfold the fabric, and iron the tucks to one side.**



Memo
- To make shell tucks at the edge of a collar or neckline, follow the pattern's instructions and then use this stitch to make a decorative finish on the collar or neckline.

Scallop Stitches

This wave-shaped satin stitch is called the scallop stitch. Use this stitch to decorate the edges of blouse collars and handkerchiefs or use it as a hem accent.

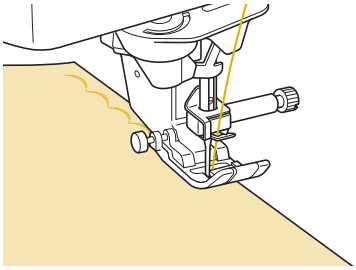
Memo
- A temporary spray adhesive may be necessary for lightweight fabrics. Test sew the fabric before sewing a project.

1 **Select** 2-05 **.**

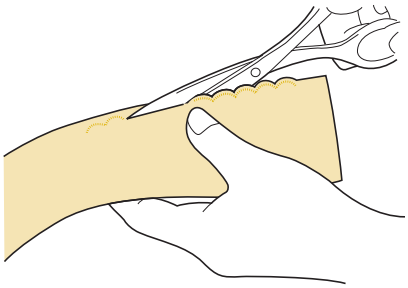
Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

2 Attach presser foot "N". Sew scallop stitches along the edge of the fabric.

* Do not sew directly on the edge of the fabric.



3 Trim along the seam, making sure not to cut the stitches.



Memo

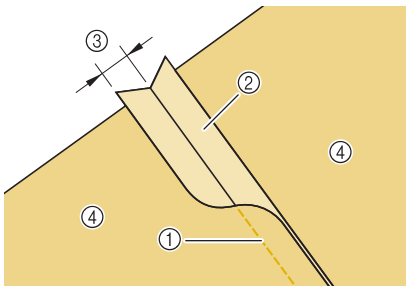
- Use a seam sealant to secure the edges of the scallop stitches.

Crazy Quilting

For a decorative look called "Crazy Quilting", the following stitches can be sewn on top of a pressed seam allowance.

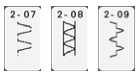
1 Select a straight stitch and attach presser foot "J".

2 With the right sides facing each other, sew two pieces of fabric together, and then press open the seam allowance.

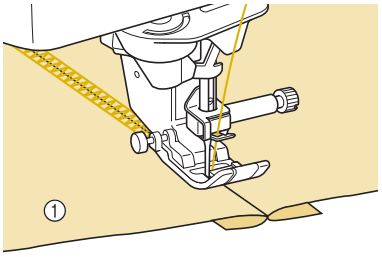


① Straight stitch
② Seam margins
③ 6.5 mm (approx. 1/4 inch)
④ Wrong side

3 Select a stitch for top stitching.



4 Place the fabric right side up in the machine, and center the presser foot over the seam when sewing.



① Right side of fabric

Smocking Stitches

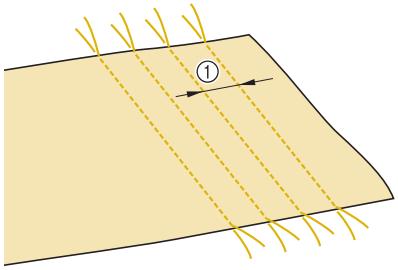
Use smocking stitches for decorative sewing on clothes, etc.

1 Select a straight stitch and attach presser foot "J".

2 Set the stitch length to 4.0 mm (approx. 3/16 inch) and loosen the upper thread tension to approximately 2.0 (see "Setting the Stitch Length" on page 89 and "Setting the Thread Tension" on page 90).

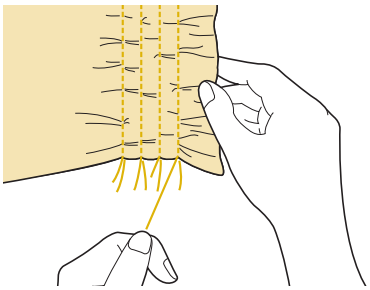
3 Pull the bobbin and upper threads out by 50 mm (approx. 2 inches).

4 Sew the seams, leaving approximately 10 mm (approx. 3/8 inch) between the seams, then trim excess thread, leaving 50 mm (approx. 2 inches).



① Approximately 10 mm (approx. 3/8 inch)

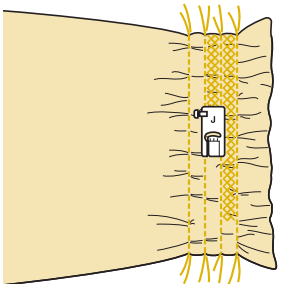
5 **Pull the bobbin threads to obtain the desired amount of gather, and then smooth the gathers by ironing them.**



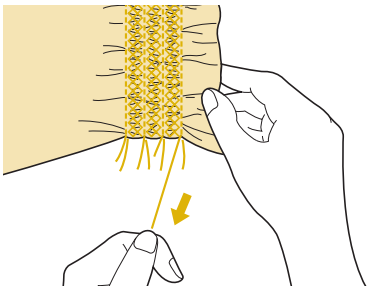
6 **Select 2-10 or 2-12.**

Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

7 **Sew the spaces between the straight seams.**



8 **Pull out the straight stitch threads.**

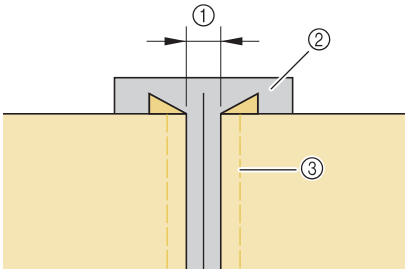


Fagoting

When there is a space between two fabrics with thread sewn over the space to join the fabrics together, it is called fagoting. Use this stitch when sewing blouses or children's clothes.

1 **Baste two pieces of fabric onto thin paper, leaving a space of 4 mm (approx. 3/16 inch) between the fabrics.**

* If you draw a line down the middle of the thin paper or water-soluble stabilizer, sewing is easier.

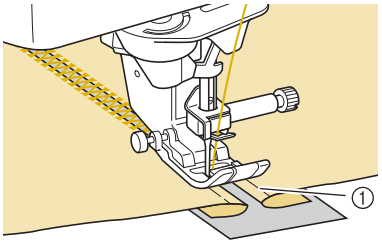


① 4.0 mm (approx. 3/16 inch)
② Paper
③ Basting stitches

2 **Select 2-11 or 2-12.**

Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

3 **Attach presser foot "J". Align the center of the presser foot with the middle of the space between the fabrics and begin sewing.**



① Basting stitches

Memo
- Use a thick thread.

4 **When sewing is finished, gently tear the paper away.**

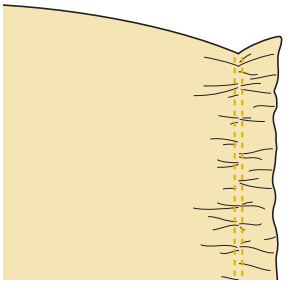
Tape or Elastic Attaching

1. **Select a straight stitch and attach presser foot "J".**

2. **Set the stitch length to 4.0 mm (approx. 3/16 inch), and loosen the upper thread tension to 2.0 (see "Setting the Stitch Length" on page 89 and "Setting the Thread Tension" on page 90).**

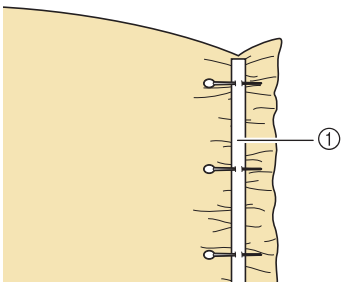
Memo
- Be sure that neither automatic reinforcement nor automatic thread cutting is selected.

3. **Sew two rows of straight stitches on the right side of the fabric, then pull the bobbin thread to create the necessary gather.**



Memo
- Before sewing the straight stitch, rotate the handwheel toward you (counterclockwise) and pull up the bobbin thread. Holding the top and bobbin thread, pull a length of thread out from the rear of the machine. (Be sure that the presser foot is raised.)

4. **Place the tape over the gather, and hold it in place with basting pins.**

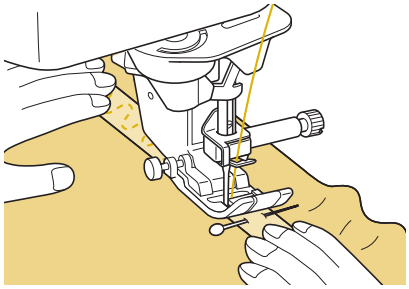


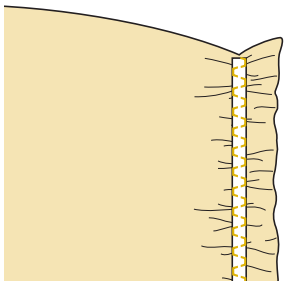
① Tape

5. **Select 2-13 or 1-13.**

Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

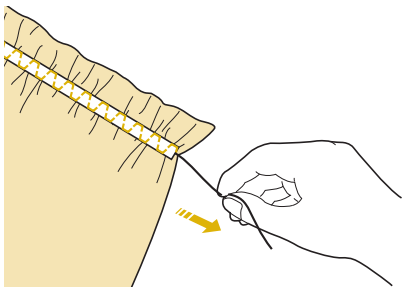
6. **Sew over the tape (or elastic).**





⚠ CAUTION
- **Be sure the needle does not strike a basting pin, or any other objects, during sewing. The thread could tangle or the needle could break, causing injury.**

7. **Pull out the straight stitch threads.**



Heirloom

■ Hemstitching (1) (Daisy Stitch)

Use for sewing tablecloths, decorative hems, and decorative stitching on shirt fronts.

Memo
- Use a light to medium weight homespun fabric with a little stiffness.

1 **Insert a type 130/705H, size 100/16 Wing needle.**

* This specialty sewing needle is not furnished with your machine. Must be purchased separately.

⚠ CAUTION
- **The "Automatic Threading" button cannot be used. Thread the wing needle by hand, from front to back. Using the "Automatic Threading" button may result in damage to the machine.**
- **A more attractive finish can be obtained if you use a "130/705H Wing" needle when sewing these patterns. If using a wing needle and the stitch width has been set manually, check that the needle will not touch the presser foot by carefully rotating the handwheel toward you (counterclockwise) before starting to sew.**

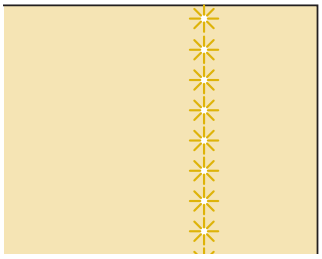
2 **Select a stitch and attach presser foot "N".**

* Select any stitch between 3-01 and 3-25.

Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

3 **Start sewing.**

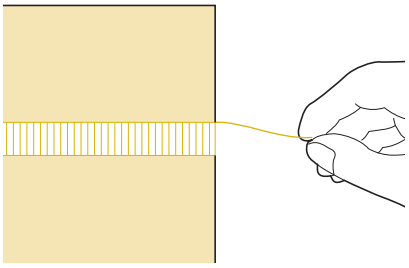
Example: Illustration of finished product



■ Hemstitching (2) (Drawn Work (1))

1 **Pull out several threads from one area on a piece of fabric to open the area.**

* Pull out 5 or 6 threads to leave a 3 mm (approx. 1/8 inch) area open.

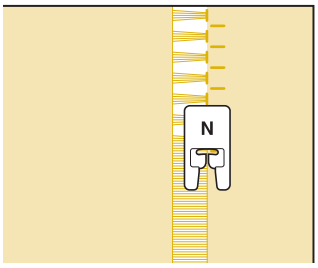


Memo
- Loosely woven fabrics work best for this.

2 **Select** .

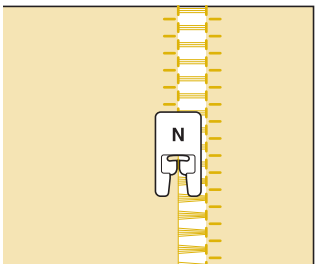
Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

3 **Attach presser foot "N". With the right side of the fabric facing up, sew one edge of the open area.**



4 **Press** **to create a mirror image of the stitch.**

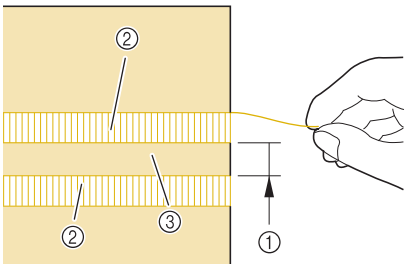
5 **Match beginning needle drop points on the opposite edge of the open area to keep the stitching symmetrical.**



■ Hemstitching (3) (Drawn Work (2))

1 **Pull out several threads from both sides of the 4 mm (approx. 3/16 inch) area which are not yet open.**

* Pull out four threads, leave five threads, and then pull out four threads. The width of five threads is approximately 4 mm (approx. 3/16 inch) or less.

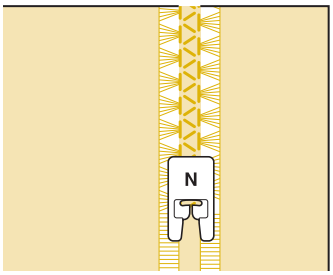


① Approx. 4 mm (approx. 3/16 inch) or less
② Four threads (pull out)
③ Five threads (leave)

2 **Select** .

Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

3 **Sew the decorative stitch in the center of the five threads created above.**



Memo
- A wing needle can be used for Hemstitching (3).

Decorative Couching

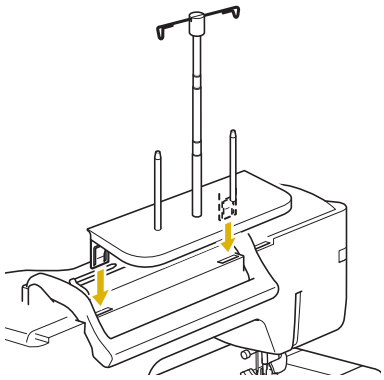
You can easily sew decorative stitching using yarn, etc.

⚠ CAUTION
- **When using yarn, we recommend selecting yarn of weight 4 (MEDIUM 4). If the yarn is extremely thin or thick, has an unusual shape (flat or furry), or more than 2 yarn, the best finishing results may not be achieved, or injuries or damage may result.**

Note
- Sew test stitches on the fabric before sewing on your project.
- We recommend using a stabilizer material when sewing stretch fabrics, lightweight fabrics, fabrics with a coarse weave, or fabrics which cause fabric shrinkage.

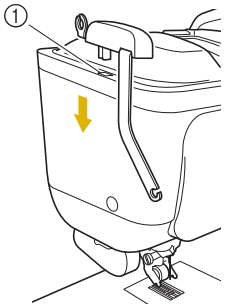
■ Prepare for the Decorative Couching

1 **Attach the spool stand to the machine.**



* Refer to "Using the Spool Stand" on page 56.

2 **Insert the top left yarn guide into the slot on the top left of the machine.**



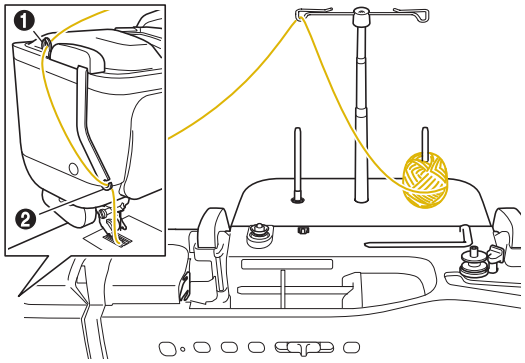
① Slot

3 **Press to lock all keys and buttons.**

4 **Attach the dual feed foot to the machine without attaching the toe of the couching dual feed foot.**

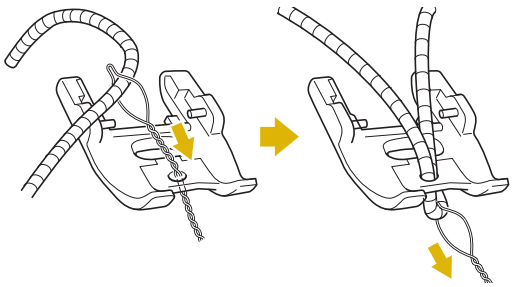
* Refer to "Attaching the Dual Feed Foot" on page 70.

5 **Pass the yarn, etc. through the telescopic thread guide and the yarn guide (❶) to (❷).**

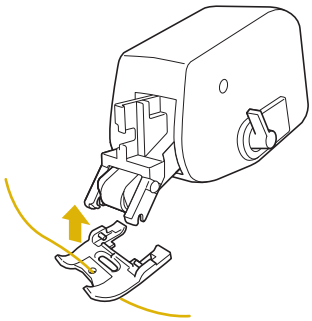


Note
- Make sure that the yarn, etc. does not become entangled as you work.

6 **Thread the yarn, etc. to the couching toe. Pass the yarn through the loop in the yarn threader wire needle and then pass the threader from top to bottom through the hole on the couching toe.**



7 **Attach the toe of the couching dual feed foot shown below to the dual feed foot.**



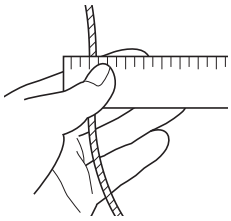
8 **Pull out the yarn for about 100 mm (4 inches) to the back of the machine.**

9 **Press to unlock all keys and buttons.**

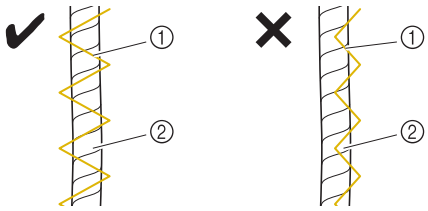
■ Sewing Decorative Couching

1 **Select .**

2 **Measure the width of the yarn, etc. and set the stitch width according to the width of the yarn, etc.**



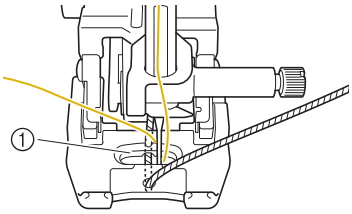
Note
- Make sure that there are enough width to wrap over the yarn, etc.
- You can adjust the stitch width while checking the camera view. Refer to "Checking the Needle Location in the Screen" on page 96.



① Zigzag stitch
② Yarn

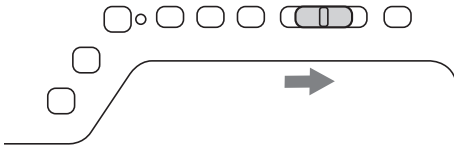
3 **Rotate the handwheel to set the needle in the sewing start position. Start sewing on the right side of the yarn.**

4 **Make sure that the yarn, etc. passes straight through the slit in the back of the toe of the couching dual feed foot, and then lower the presser foot.**



① Slit

5 **Set the sewing speed to the medium speed.**



6 **Press "Start/Stop" button to start sewing.**

* While lightly holding down the fabric with both hands, adjust the sewing direction.

Memo

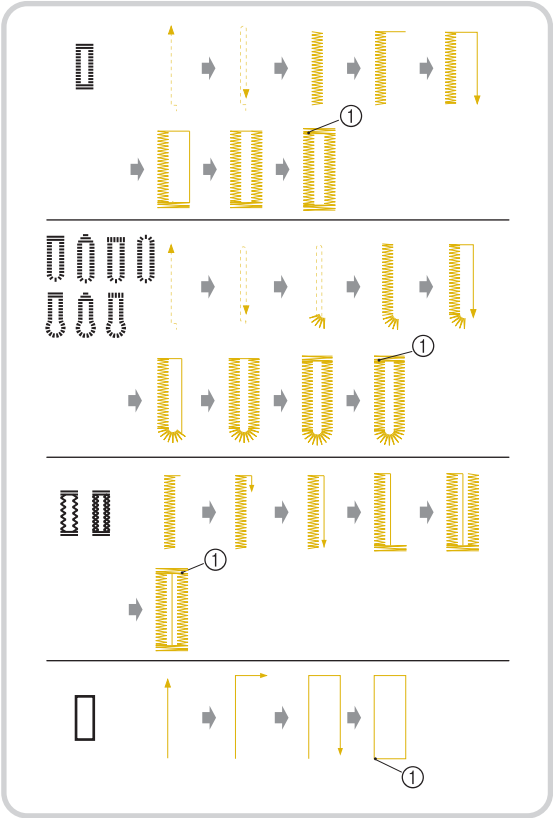
- The multi-function foot controller can also be very useful for sharp angle sewing when set to single stitch sewing. For details on the multi-function foot controller, refer to page 82.
- Pivoting is also useful when rotating fabric with both hands.
- When guideline marker is set to on, it is easy to sew zigzag couching straight.

One-step Buttonholes

With one-step buttonholes, you can make buttonholes appropriate to the size of your button.

Stitch	Stitch name	Presser foot
4-01	Narrow rounded buttonhole	A
4-02	Wide round ended buttonhole	A
4-03	Tapered round ended buttonhole	A
4-04	Round ended buttonhole	A
4-05	Round ended buttonhole	A
4-06	Round double ended buttonhole	A
4-07	Narrow squared buttonhole	A
4-08	Wide squared buttonhole	A
4-09	Squared buttonhole	A
4-10	Stretch buttonhole	A
4-11	Heirloom buttonhole	A
4-12	Bound buttonhole	A
4-13	Keyhole buttonhole	A
4-14	Tapered keyhole buttonhole	A
4-15	Keyhole buttonhole	A

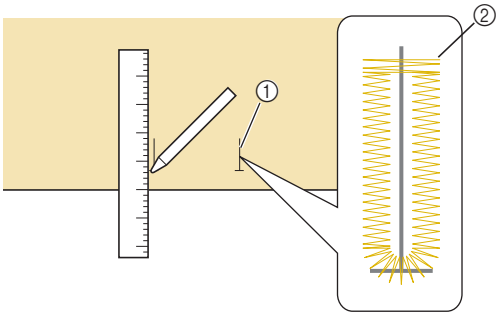
One-step buttonholes are sewn from the front of the presser foot to the back, as shown below.



① Reinforcement stitching

1 Select a buttonhole stitch, and attach buttonhole foot "A".

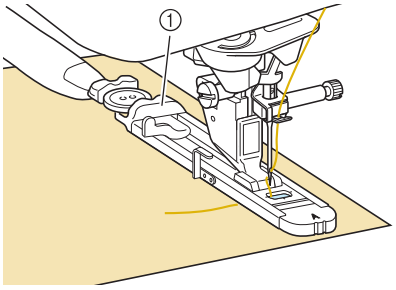
2 Mark the position and length of the buttonhole on the fabric.



① Marks on fabric
② Buttonhole sewing

Memo
- The maximum buttonhole length is about 28 mm (approx. 1-1/16 inches) (diameter + thickness of the button).

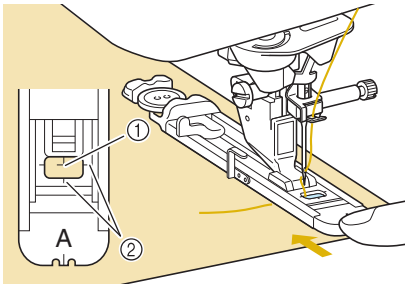
3 Pull out the button holder plate on the presser foot, and insert the button that will be put through the buttonhole. Then tighten the button holder plate around the button.



① Button holder plate

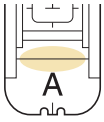
Memo
- The size of the buttonhole is determined by the size of the button in the button holder plate.

4 Align the presser foot with the mark on the fabric, and lower the presser foot.

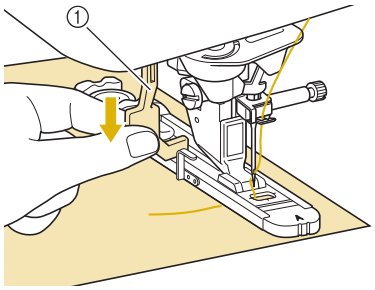


① Mark on the fabric
② Marks on the presser foot

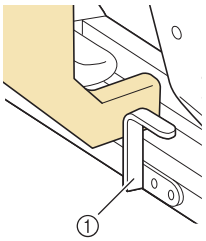
Note
- Pass the thread underneath the presser foot.
- Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration, making sure that there is no gap behind the part of the foot marked "A". If the buttonhole foot is not slid back as far as possible, the buttonhole will not be sewn at the correct size.



5 **Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.**



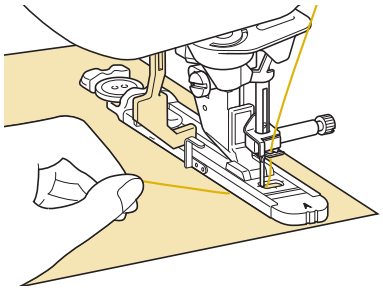
① Buttonhole lever



① Metal bracket

6 **Gently hold the end of the upper thread, and then start sewing.**

* Feed the fabric carefully by hand while the buttonhole is sewn.

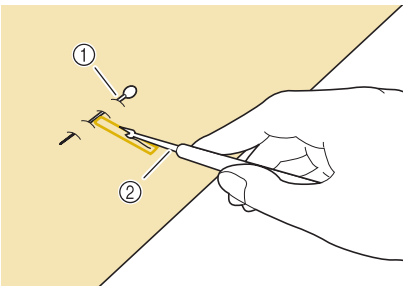


→ Once sewing is completed, the machine automatically sews reinforcement stitches, and then stops.

Memo

- If automatic thread cutting is turned on before you start sewing, both threads are automatically cut after the reinforcement stitches are sewn. If the fabric does not feed (for example, because it is too thick), increase the stitch length setting.

7 **Insert a pin along the inside of one of the bar tacks, and then insert the seam ripper into the center of the buttonhole and cut towards the pin.**



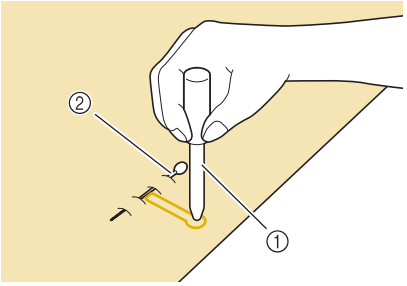
① Basting pin
② Seam ripper

⚠ CAUTION

- **When using the seam ripper to open the buttonhole, do not put your hand or finger in the path of the ripper. The ripper may slip and cause injury. Do not use the seam ripper in any other way than how it is intended.**

Memo

- For keyhole buttonholes, use the eyelet punch to make a hole in the rounded end of the buttonhole. Then insert a pin along the inside of one of the bar tacks, insert a seam ripper into the hole made with the eyelet punch, and cut towards the pin.

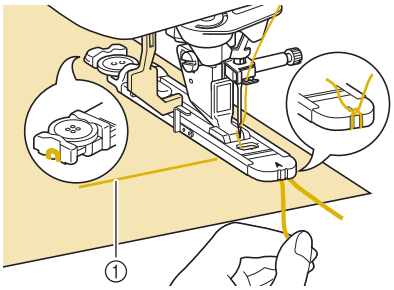


① Eyelet punch
② Basting pin

■ Sewing Stretch Fabrics

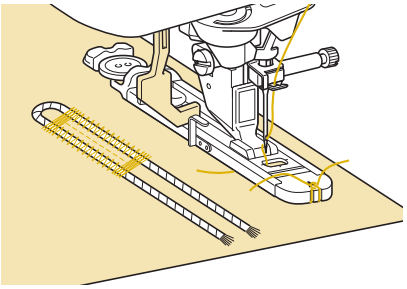
When sewing on stretch fabric with 4-10 or 4-11, sew the buttonhole stitches over a gimp thread.

1 Hook the gimp thread onto the back of presser foot "A". Insert the ends into the grooves at the front of the presser foot, and then temporarily tie them there.



① Upper thread

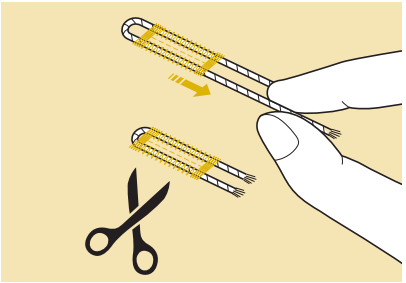
2 Lower the presser foot and start sewing.



Memo

- Set the width of the satin stitches to the width of the gimp thread, and set the buttonhole width to be 2-3 times the width of the gimp thread.

3 Once sewing is completed, gently pull the gimp thread to remove any slack, and trim off any excess.

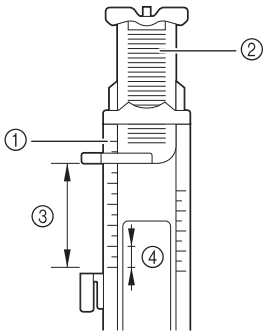


Memo

- After using the seam ripper to cut open the threads over the buttonhole, trim off the threads.

■ Odd Shaped Buttons/Buttons that do Not Fit into the Button Holder Plate

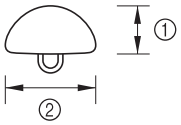
Use the markings on the presser foot scale to set the size of the buttonhole. One mark on the presser foot scale equals 5 mm (approx. 3/16 inch).
Add the button diameter and thickness together, and then set the plate at the calculated value.



① Presser foot scale
② Button holder plate
③ Completed measurement of diameter + thickness
④ 5 mm (approx. 3/16 inch)

Memo

- For example, for a button with a diameter of 15 mm (approx. 9/16 inch) and a thickness of 10 mm (approx. 3/8 inch), the scale should be set at 25 mm (approx. 1 inch).



① 10 mm (approx. 3/8 inch)
② 15 mm (approx. 9/16 inch)

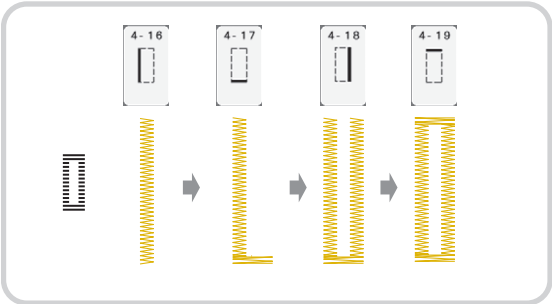
Four-step Buttonholes

You can sew 4-step buttonholes using the following 4 stitches together. You can sew any desired length for the buttonhole when using 4-step buttonholes. 4-step buttonholes are a good option when attaching oversize buttons.

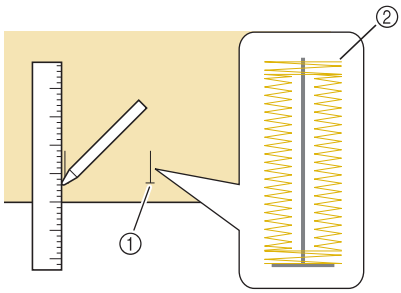
Note
- When changing the stitch settings, make sure that all stitch settings are changed to match.

Stitch	Stitch name	Presser foot
4-16	4 steps buttonhole 1	N
4-17	4 steps buttonhole 2	N
4-18	4 steps buttonhole 3	N
4-19	4 steps buttonhole 4	N

Four-step buttonholes are sewn as shown below.



1 **Mark the position and length of the buttonhole on the fabric.**

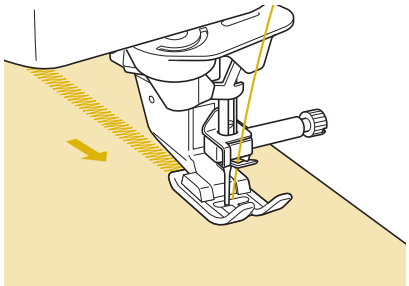


① Marks on fabric
② Buttonhole sewing

2 **Attach monogramming foot "N", and select stitch [4-16] to sew the left side of the buttonhole.**

3 **Press the "Start/Stop" button to start sewing.**

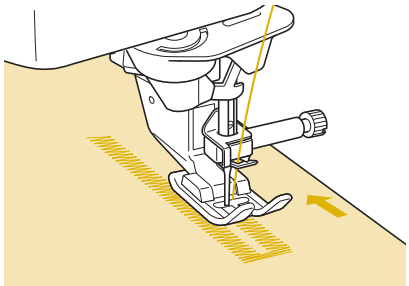
4 **Sew the desired length for the buttonhole and press the "Start/Stop" button again.**



5 **Select stitch [4-17] to sew the bar tack and press the "Start/Stop" button.**

→ The machine will automatically stop after sewing the bar tack.

6 **Select stitch [4-18] to sew the right side of the buttonhole, and press the "Start/Stop" button to begin sewing.**



7 **Sew the right side of the buttonhole and press the "Start/Stop" button again.**

* Sew the right side of the buttonhole the same length as the left.

8 **Select stitch [4-19] to sew the bar tack and then press the "Start/Stop" button.**

→ The machine will automatically sew off the bar tack tie and stop when the bar tack is complete.

9 **Raise the presser foot and remove the fabric.**

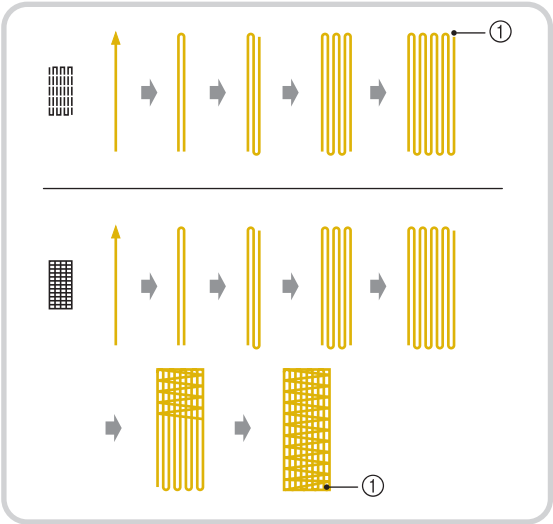
10 **Refer to page 149 to open the buttonhole.**

■ Darning

Use darning stitches for mending and other applications.

Stitch	Stitch name	Presser foot
4-20	Darning	A
4-21	Darning	A

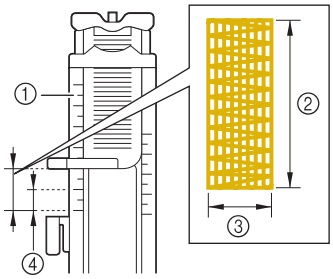
Darning is performed by sewing from the front of the presser foot to the back as shown below.



① Reinforcement stitches

1 **Select a stitch, and attach buttonhole foot "A".**

2 **Set the scale to the desired length of the darning.**

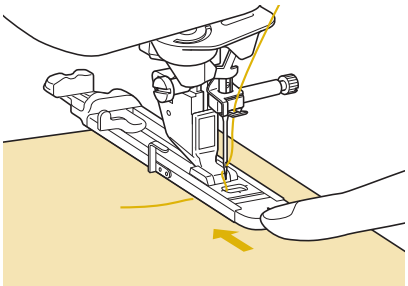


① Presser foot scale
② Completed length measurement
③ Width 7 mm (approx. 1/4 inch)
④ 5 mm (approx. 3/16 inch)

Memo

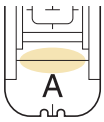
- The maximum length for darning is 28 mm (approx. 1-1/16 inches).

3 **Check that the needle drops at the desired position and lower the presser foot, making sure the upper thread passes underneath the buttonhole foot.**

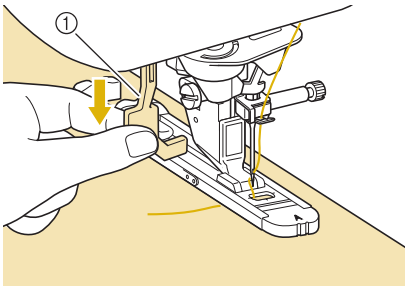


Note

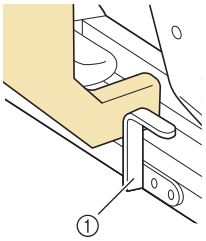
- Pass the thread underneath the presser foot.
- Set the presser foot so that there is no gap behind the section marked with an "A" (the shaded area in the illustration below). If there is a gap, the size of the darning will not be correct.



4 **Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.**

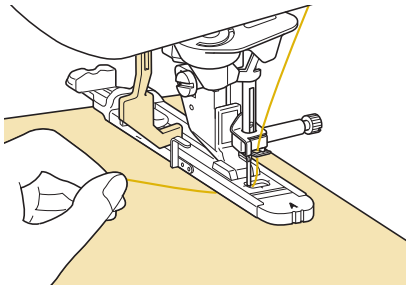


① Buttonhole lever



① Metal bracket

5 **Gently hold the end of the upper thread, and then press the "Start/Stop" button to start the machine.**



→ Once sewing is completed, the machine automatically sews reinforcement stitches, and then stops.

Memo

- If automatic thread cutting is turned on before you start sewing, both threads are automatically cut after the reinforcement stitches are sewn. If the fabric does not feed (for example, because it is too thick), increase the stitch length setting.

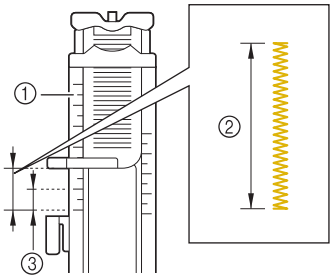
Bar Tacks

Use bar tacks to reinforce areas that will be subject to strain, such as pocket corners.

Stitch	Stitch name	Presser foot
4-22	Bar tack	A

1 **Select 4-22.**

2 **Attach buttonhole foot "A" and set the scale to the length of the bar tack you wish to sew.**

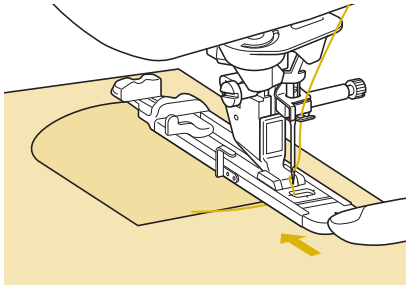


① Presser foot scale
② Completed length measurement
③ 5 mm (approx. 3/16 inch)

Memo

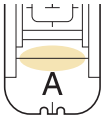
- Bar tacks can be between 5 mm (approx. 3/16 inch) and 28 mm (approx. 1-1/16 inches). Bar tacks are usually between 5 mm (approx. 3/16 inch) and 10 mm (approx. 3/8 inch).

3 **Set the fabric so that the pocket moves toward you during sewing.**

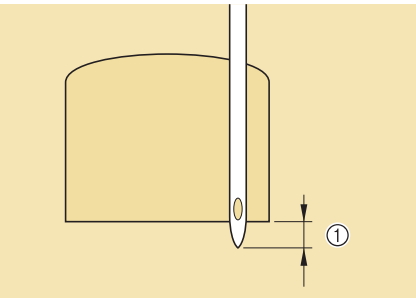


Note

- Pass the thread underneath the presser foot.
- Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration, making sure that there is no gap behind the part of the foot marked "A". If the buttonhole foot is not slid back as far as possible, the bar tack will not be sewn to the correct size.

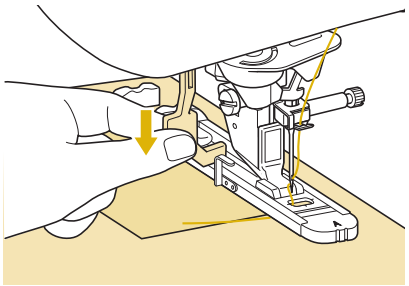


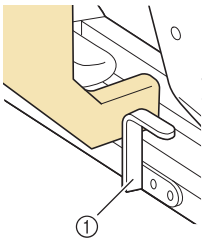
4 **Check the first needle drop point and lower the presser foot.**



① 2 mm (approx. 1/16 inch)

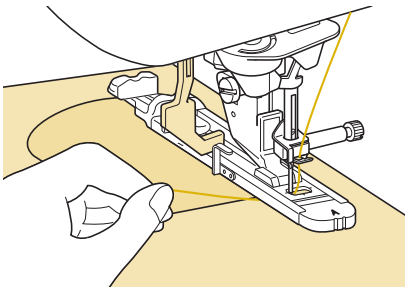
5 **Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.**





① Metal bracket

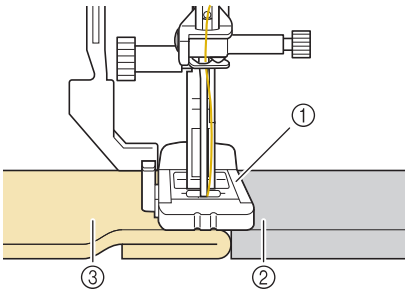
6 **Gently hold the end of the upper thread and begin sewing.**



→ When sewing is completed, the machine will sew reinforcement stitches and stop automatically.

■ Bar Tacks on Thick Fabrics

Place a piece of folded fabric or cardboard beside the fabric being sewn to level the buttonhole foot and allow for easier and even feeding.



① Presser foot
② Thick paper
③ Fabric

Memo

- If automatic thread cutting is turned on before you start sewing, both threads are automatically cut after the reinforcement stitches are sewn. If the fabric does not feed (for example, because it is too thick), increase the stitch length setting.

Button Sewing

Buttons with 2 or 4 holes can be attached, using the machine.

Stitch	Stitch name	Presser foot
4-23	Button sewing	M

Note

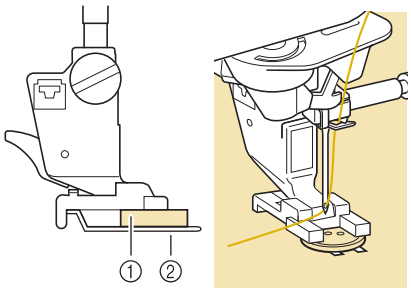
- Do not use the automatic thread cutting function when sewing buttons. Otherwise, you will lose the thread ends.

1 **Select 4-23 .**

→ The feed dogs are lowered automatically.

2 **Raise the presser foot.**

3 **Attach button sewing foot "M", slide the button along the metal plate and into the presser foot, and lower the presser foot.**



① Button
② Metal plate

4 **Rotate the handwheel toward you (counterclockwise) to check that the needle goes into each hole correctly.**

* If the needle does not reach the holes on the left side, adjust the stitch width.
* To attach the button more securely, repeat the process.

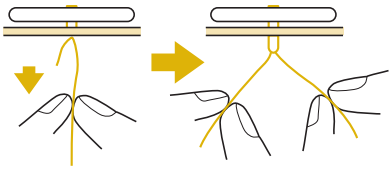
5 **Gently hold the end of the upper thread and start sewing.**

→ The machine stops automatically when sewing is finished.

⚠ CAUTION

- **Make sure the needle does not strike the button during sewing. The needle may break and cause injury.**

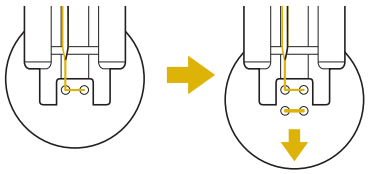
6 **From the wrong side of the fabric, pull the end of the bobbin thread to pull the upper thread through to the wrong side of the fabric. Tie the two thread ends together and cut the threads.**



7 **After the button is attached, select another stitch and rotate the handwheel toward you (counterclockwise) to raise the feed dogs.**

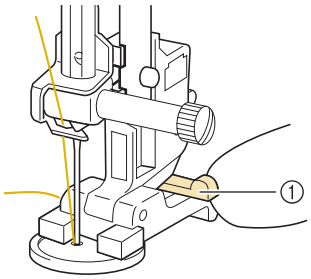
■ Attaching 4 Hole Buttons

Sew the two holes closest to you. Then raise the presser foot and move the fabric so that the needle goes into the next two holes, and sew them in the same way.



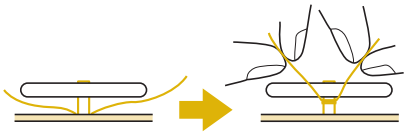
■ Attaching a Shank to the Button

1 **Pull the shank lever toward you before sewing.**



① Shank lever

2 **Pull the two ends of the upper thread between the button and the fabric, wind them around the shank, and then tie them firmly together.**



3 **Tie the ends of the bobbin thread from the beginning and end of sewing together on the wrong side of the fabric.**

Note

- When sewing is completed, be sure to select the other stitch and rotate the handwheel toward you (counterclockwise) to raise the feed dogs.

4 **Cut off any excess thread.**

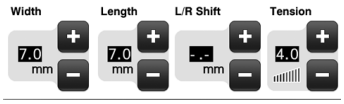
Eyelet

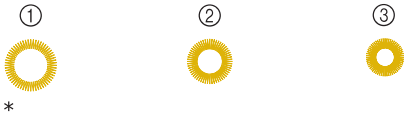
Use this stitch for making belt holes and other similar applications.

Stitch	Stitch name	Presser foot
4-24	Eyelet	N
4-25	Star eyelet	N

1 **Select 4-24 or 4-25.**

2 **Use − + in either the stitch width display or the stitch length display to choose the size of the eyelet.**

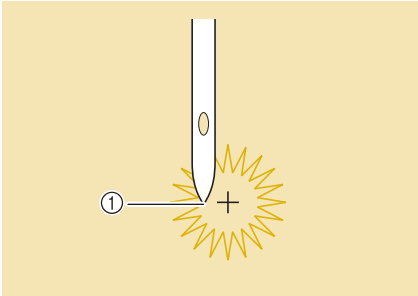




* Actual size
① Large 7 mm (approx. 1/4 inch)
② Medium 6 mm (approx. 15/64 inch)
③ Small 5 mm (approx. 3/16 inch)

> **Note**
> • Only one size is available for 4-25.

3 **Attach monogramming foot "N", then rotate the handwheel toward you (counterclockwise) to check the needle drop position.**



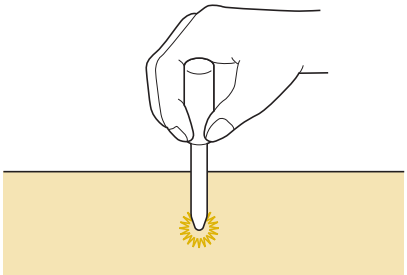
① Needle drop position

4 **Lower the presser foot and start sewing.**

→ When sewing is finished, the machine sews reinforcement stitches and stops automatically.

> **Note**
> • If the stitch pattern comes out poorly, make adjustments to "SEWING STITCH PATTERNS" on page 173.

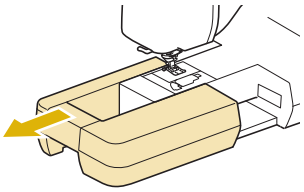
5 **Use the eyelet punch to make a hole in the center of the stitching.**



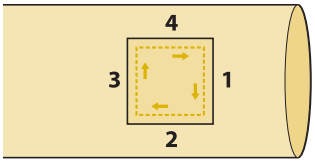
Multi-directional Sewing (Straight Stitch and Zigzag Stitch)

Use these stitch patterns to attach patches or emblems to pant legs, shirt sleeves, etc.

1 **Remove the flat bed attachment to use the free-arm.**



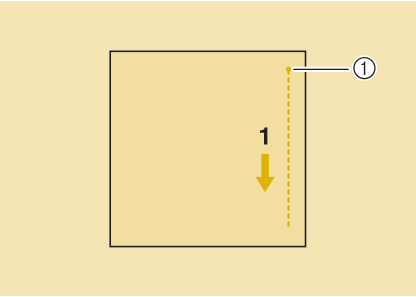
> **Memo**
> • Insert the tubular piece of fabric onto the free-arm, and then sew in the order shown in the illustration.



2 **Select 5-07 and attach monogramming foot "N".**

> **Memo**
> • For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

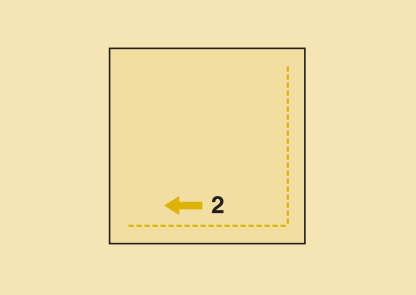
3 **Set the needle in the fabric at the sewing start point, and sew seam "1" as shown.**



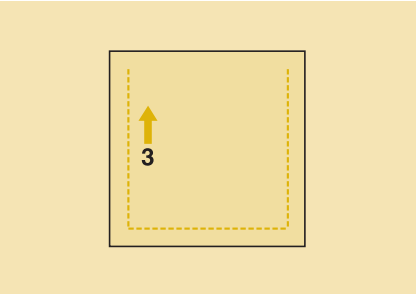
① Start Point

4 **Select** **and sew seam "2" as shown.**

* The fabric will move sideways, guide the fabric by hand to keep sewing straight.

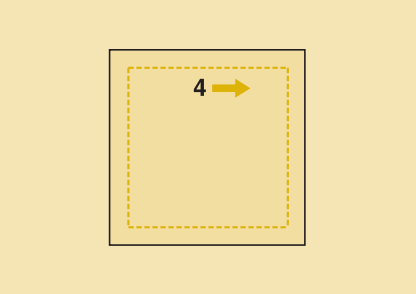


5 **Select** **and sew seam "3" as shown.**



→ The fabric feeds forward while stitching backward.

6 **Select** **and sew seam "4" as shown.**



→ The seam will be connected to the starting point of seam 1.

Zipper Insertion

■ Centered Zipper

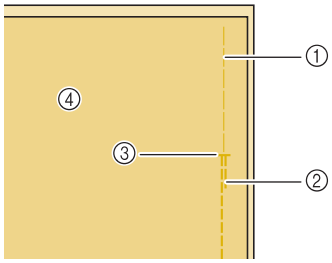
Use for bags and other such applications.

1 **Select** .

Memo
- For details on each stitch, refer to the "STITCH SETTING CHART" at the end of this manual.

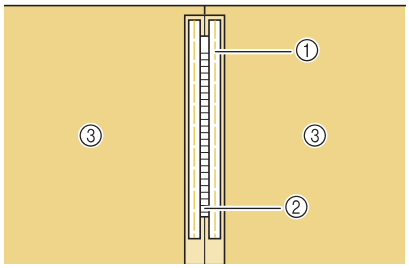
Note
- Make sure you sew using the middle needle position.

2 **Attach presser foot "J" and sew straight stitches up to the zipper opening. Change to a basting stitch (see page 118) and sew to the top of the fabric.**



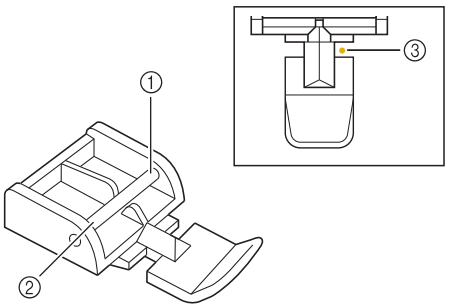
① Basting stitches
② Reverse stitches
③ End of zipper opening
④ Wrong side

3 **Press the seam allowance open and attach the zipper with a basting stitch in the middle of each side of the zipper tape.**



① Basting stitches
② Zipper
③ Wrong side

4 **Remove presser foot "J". Align the right side of the pin in zipper foot "I" with the presser foot holder, and attach the zipper foot.**

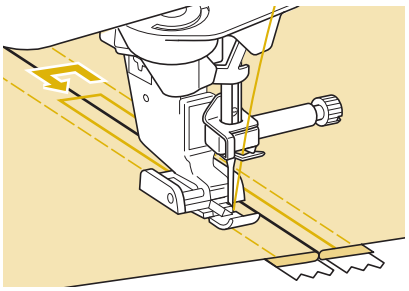


① Right
② Left
③ Needle drop position

⚠ CAUTION

- **When using zipper foot "I", make sure the straight stitch, middle needle position is selected. Rotate the handwheel toward you (counterclockwise) to make sure the needle does not strike the presser foot. If another stitch is selected, the needle will strike the presser foot, causing the needle to break and possibly causing injury.**

5 **Topstitch 7 to 10 mm (approx. 1/4 to 3/8 inch) from the seamed edge of the fabric, then remove the basting.**



⚠ CAUTION

- **Make sure the needle does not strike the zipper during sewing. If the needle strikes the zipper, the needle may break, leading to injury.**

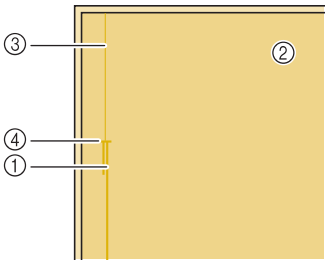
■ Inserting a Side Zipper

Use for side zippers in skirts or dresses.

1 **Select** .

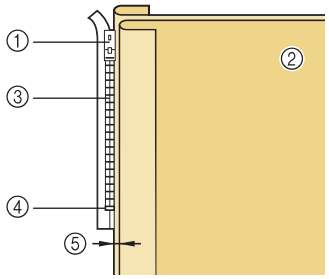
Note
- Make sure you sew using the middle needle position.

2 **Attach presser foot "J" and sew straight stitches up to the zipper opening. Change to a basting stitch and sew to the top of the fabric.**



① Reverse stitches
② Wrong side of fabric
③ Basting stitches
④ End of zipper opening

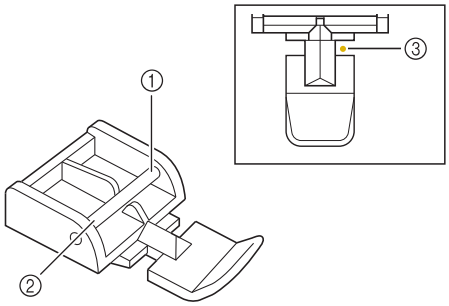
3 **Press the seam allowance open and align the folded hem along the teeth of the zipper, while maintaining 3 mm (approx. 1/8 inch) of sewing space.**



① Zipper pull tab
② Wrong side of fabric
③ Zipper teeth
④ End of zipper opening
⑤ 3 mm (approx. 1/8 inch)

4 **Remove presser foot "J".**

5 **Align the right side of the pin in zipper foot "I" with the presser foot holder, and attach the presser foot.**



① Right
② Left
③ Needle drop position

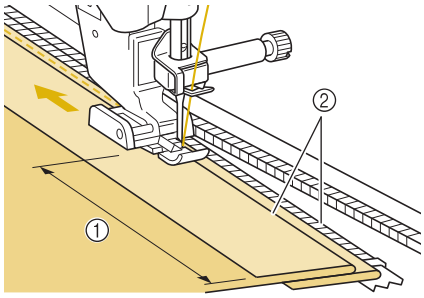
⚠ CAUTION

- **When using zipper foot "I", make sure the straight stitch, middle needle position is selected. Rotate the handwheel toward you (counterclockwise) to make sure the needle does not strike the presser foot. If another stitch is selected, the needle will strike the presser foot, causing the needle to break and possibly causing injury.**

6 **Set the presser foot in the 3 mm (approx. 1/8 inch) margin.**

7 **Starting from the end of the zipper opening, sew to a point about 50 mm (approx. 2 inches) from the edge of the fabric, then stop the machine.**

8 **Pull down the zipper slider, then continue sewing to the edge of the fabric.**

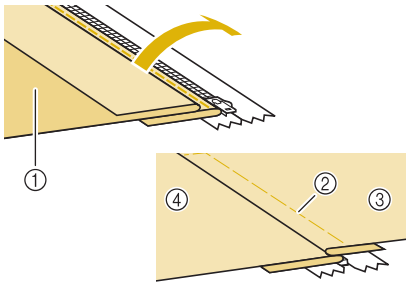


① 50 mm (approx. 2 inches)
② 3 mm (approx. 1/8 inch)

⚠ CAUTION

- **Make sure the needle does not strike the zipper during sewing. If the needle strikes the zipper, the needle may break, leading to injury.**

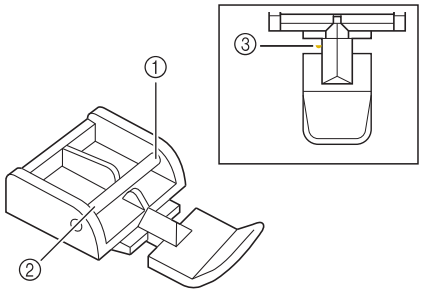
9 **Close the zipper, turn the fabric over, and sew a basting stitch.**



① Front of the skirt (wrong side of fabric)
② Basting stitches
③ Front of the skirt (right side of fabric)
④ Back of the skirt (right side of fabric)

10 **Remove the presser foot, and reattach it so that the left side of the pin is attached to the presser foot holder.**

* When sewing the left side of the zipper, the needle should drop on the right side of the presser foot. When sewing the right side of the zipper, the needle should drop on the left side of the presser foot.



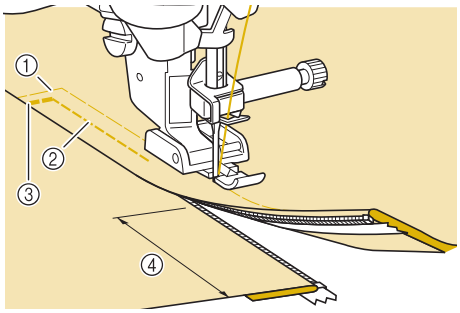
① Right
② Left
③ Needle drop position

11 **Set the fabric so that the left edge of the presser foot touches the edge of the zipper teeth.**

12 **Sew reverse stitches at the top of the zipper, then continue sewing.**

13 **Stop sewing about 50 mm (approx. 2 inches) from the edge of the fabric, leave the needle in the fabric, and remove the basting stitches.**

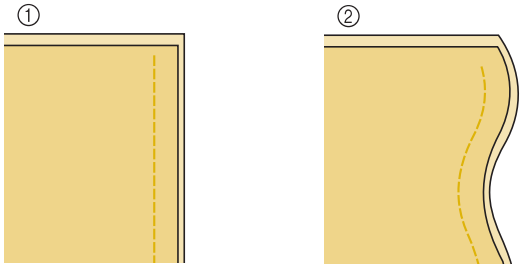
14 Open the zipper and sew the rest of the seam.



① Basting stitches
② 7 to 10 mm (approx. 1/4 inch to 3/8 inch)
③ Reverse stitches
④ 50 mm (approx. 2 inches)

Edge Sewing

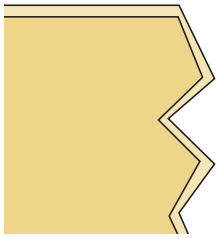
Using the built-in camera, the width of the area from the edge of the fabric to the stitching line can be measured and set for edge sewing.
This function can be used when the edge of the fabric is straight or a gentle curve.



① Straight
② Curved

Note

- Clean stitching cannot be sewn if this function is used when the edge of the fabric has corners as shown below.

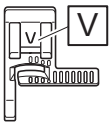


- When edge sewing using the built-in camera, make sure that the room is evenly lit. If the brightness in the room changes while edge sewing, the built-in camera may not be able to detect the edge of the fabric.
- The built-in camera detects the contrast between the fabric and the background. Therefore, observe the following precautions.
  – If the edge of the fabric is fraying, cut off any excess fabric threads.
  – If the fabric has a complicated pattern, is sheer or is glossy, such as a vinyl material, the built-in camera may not be able to detect it correctly.
- For best results, iron the fold when folding the edge of the fabric for edge sewing.
- When “Width Control” on page 1/8 of the settings screen is set to “ON” or when “Needle Position - Stitch Placement” on page 3/8 is set to “ON”, the built-in camera cannot be used with edge sewing. If either of these parameters are set to “ON”, appears gray and cannot be selected. Before using the built-in camera for edge sewing, set “Width Control” and “Needle Position - Stitch Placement” in the settings screen to “OFF”.

1 Select a stitch.

* Edge sewing using the built-in camera cannot be used with patterns where appears in gray when the pattern is selected.

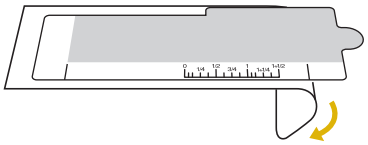
2 Attach the vertical stitch alignment foot "V".



⚠ CAUTION

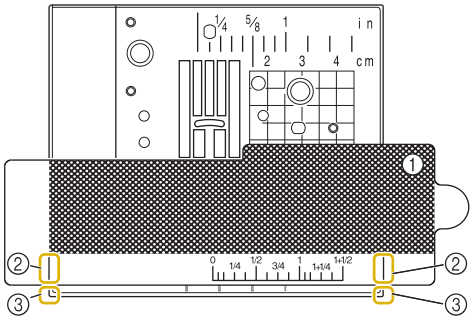
- **When edge sewing with the built-in camera, be sure to use the vertical stitch alignment foot "V". In order to maintain a fixed distance from the edge of the fabric, the needle will slightly move to either side, even when sewing with a straight stitch. If a different presser foot is used, it may be hit by the needle, causing the needle to break or resulting in injuries.**

3 Peel off the transparent sheet of the edge sewing sheet.

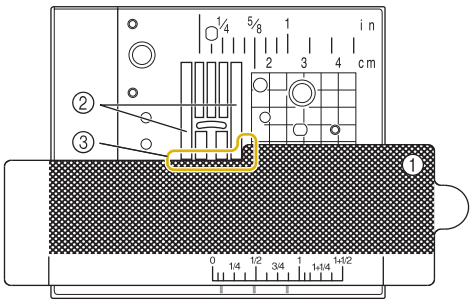


4 Place the edge sewing sheet on top of the needle plate cover.

Align the guides on the edge sewing sheet with the sides of the needle plate cover, and then adjust the position of the edge sewing sheet so that its cutout aligns with the edges of the opening for the feed dogs. Position the edge sewing sheet so that there is no gap between it and the edges of the opening for the feed dogs.



① Edge sewing sheet
② Guides on edge sewing sheet
③ Sides of needle plate cover



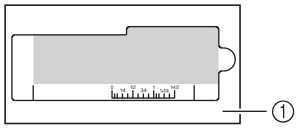
① Edge sewing sheet
② Feed dogs
③ Between the feed dogs and the edge sewing sheet

Note

- If the metal needle plate is visible between the feed dogs and the edge sewing sheet, the fabric may be incorrectly detected by the built-in camera.

Memo

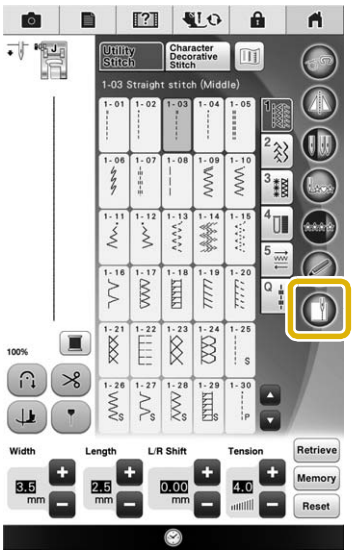
- Before using the edge sewing sheet, peel off the transparent sheet. After use, affix the edge sewing sheet to the transparent sheet to prevent it from collecting dust.



① Transparent sheet

- Be sure to install a fully wound bobbin before starting to use the edge sewing feature and built-in camera. If you need to change the bobbin while edge sewing, remove the edge sewing sheet carefully and place it again after changing the bobbin.

5 Press .



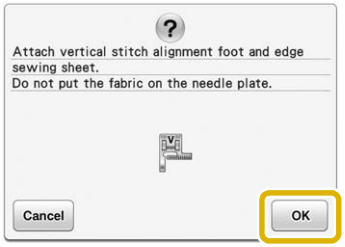
→ Depending on the stitch, the straight stitch with the middle (center) needle position is selected, regardless of the preset stitch width.

* Regardless of the setting selected in the machine settings screen, the brightness of the light changes to "5".

Note

- After is pressed, the stitch width and stitch length cannot be changed. Change the stitch width and stitch length before pressing .
- Some decorative stitches will function with the edge sewing. When selecting a stitch, if it is not applicable to this function, an error message will appear.

6 When the message shown below appears, check that the vertical stitch alignment foot "V" is attached and that the edge sewing sheet is positioned, and then press OK.



→ Then the edge sewing window appears.

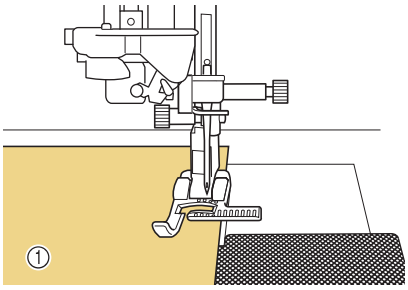
Note

- Before pressing OK, install the vertical stitch alignment foot "V" and position the edge sewing sheet; otherwise, the built-in camera cannot detect the fabric.

  If OK is pressed before the edge sewing sheet is positioned, the message shown in step 6 appears again.
- After pressing OK, do not place your hands or any other object near the needle plate until the message "Recognizing…" disappears.

7 Place the fabric under the presser foot.

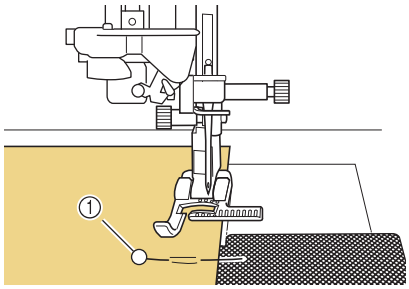
8 Move the fabric to the desired position for edge sewing. Position the fabric so that its edge is as straight as possible.



① Fabric

Note

- When pinning the fabric, insert the pins as shown below. If the head of the pin extends off the edge of the fabric, the fabric may not be correctly detected.

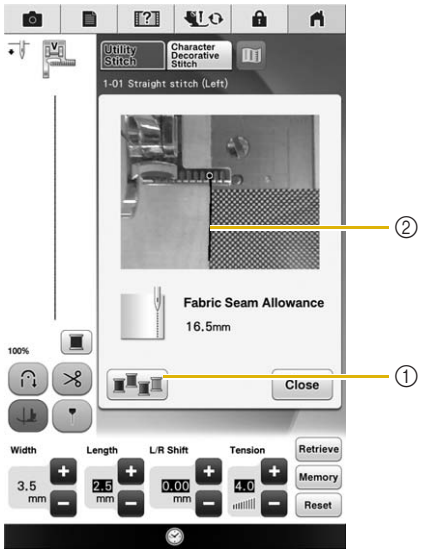


① Basting pin

9 Check that the built-in camera is correctly detecting the fabric.

* Press to change the colors of the fabric edge indicator line and starting point according to the color of the fabric. Each press of this key changes the color of the fabric edge indicator line to red

(with a blue starting point), blue (with a black starting point) or black (with a red starting point).

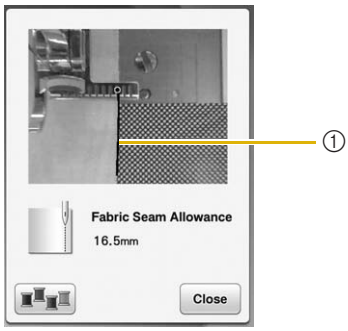


① Key for changing the color of the fabric edge indicator line

② Fabric edge indicator line

When the Built-In Camera Can Detect the Edge of the Fabric

The fabric edge indicator line appears correctly following the edge of the fabric.



① Fabric edge indicator line

When the Fabric Edge Indicator Line Does Not Appear

The built-in camera cannot detect the edge of the fabric.

Press Close, and then perform the procedure again starting with step 1.

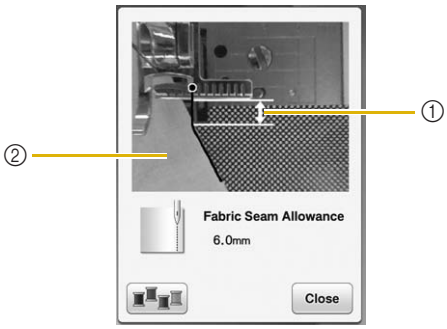
When the Fabric Edge Indicator Line Is Not Aligned With the Edge of the Fabric

The fabric edge indicator line that appears is not aligned with the edge of the fabric. The fabric at the beginning of sewing is not straight.

Try to straighten the edge of the fabric at the beginning of sewing (so it is parallel with the edge of the presser foot).

Note

- If a straight part of fabric edge indicator line (shown below) does not follow the edge of the fabric, edge sewing cannot be sewn correctly.

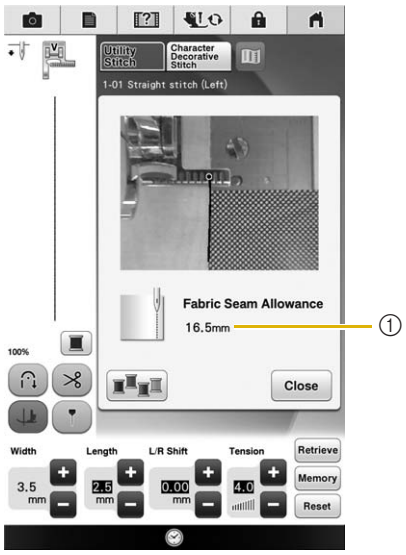


① Straight part

② Fabric

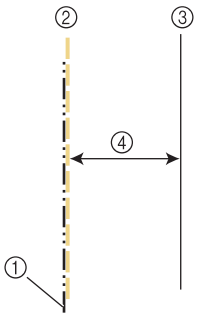
10 While checking the screen for the distance from the fabric edge to the edge sewing position, move the fabric to the desired position.

* The starting point of the fabric edge indicator line shows the position for the start of sewing. The actual position for the start of sewing is directly below the needle and parallel to the starting point.



① Distance from edge of fabric

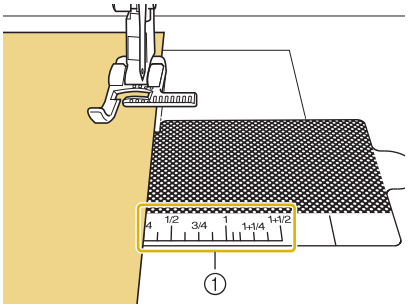
Example: When a straight stitch is selected (example:)



① Middle needle position
② Stitching
③ Edge of fabric
④ Width of edge sewing

Note

- Distances between 1.5 mm (about 1/16 inch) and 38.5 mm (about 1-1/2 inches) can be measured. The distance is displayed in the screen in 0.5 mm (about 1/64 inch) increments.
- The distance is displayed in millimeters. However, depending on the measurement setting, it can also be displayed in inches.
- If "-_- mm" appears as the distance and no inch measurement is displayed, the built-in camera is not able to detect the edge of the fabric.
- When a straight stitch is selected, use the scale on the edge sewing sheet as a guide for positioning the fabric for edge sewing.



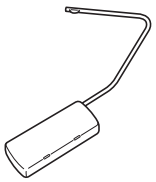
① Scale on the edge sewing sheet

11 Lower the presser foot.

→ The distance from the edge of the fabric to the seam is set.

Memo

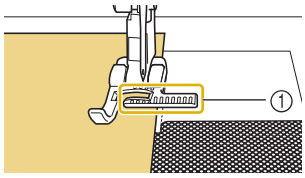
- If the knee lifter is used to lower the presser foot, the fabric can be held in place with both hands so the fabric does not move when the presser foot is lowered.



12 Press the "Start/Stop" button to start edge sewing.

→ Sewing starts with the set distance to the edge of the fabric maintained.

* While sewing, use the red scale marks on the vertical stitch alignment foot "V" as a guide to keep a fixed distance from the edge of the fabric.

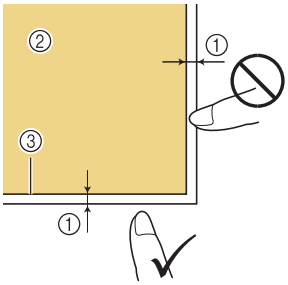


① Red scale marks

* When sewing starts, a still image from the built-in camera is displayed.

Note

- While sewing, do not place anything, including your hands, within 2 mm (about 1/16 inch) from the edge of the fabric, otherwise the edge of the fabric cannot be detected correctly. When guiding the fabric with your hands, place them outside of the object-free area and more than 2 mm (about 1/16 inch) from the edge of the fabric.



① Approximately 2 mm (about 1/16 inch)
② Fabric
③ Edge of fabric

13 When sewing is between 10 and 20 mm (about 3/8 and 3/4 inch) from the edge of the fabric, sewing stops automatically and the following message appears. To stop sewing, press Close.

* When this message appears, edge sewing (with the seam wizard function) is canceled.

Note

- To continue sewing to the edge of the fabric, do not press Close when the message shown above appears. With the above message displayed, press the "Start/Stop" button to sew.

Memo

- When edge sewing is finished, store the edge sewing sheet affixed to the transparent sheet in order to prevent it from collecting dust.

Chapter 4

Character/Decorative Stitches

SELECTING STITCH PATTERNS 168

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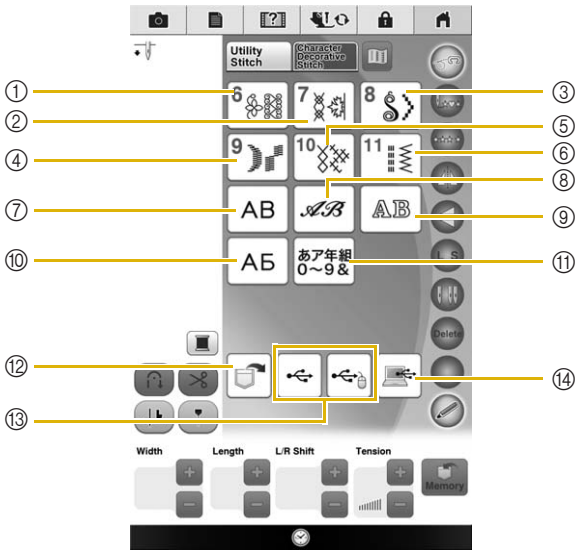
SELECTING STITCH PATTERNS

Press , then Character Decorative Stitch to display the screen below.



① Decorative stitch patterns
② 7mm decorative stitch patterns. You can set stitch length and width.
③ Satin stitch patterns
④ 7mm satin stitch patterns. You can set stitch length and width.
⑤ Cross stitch
⑥ Utility decorative stitch patterns
⑦ Alphabet characters (gothic font)
⑧ Alphabet characters (handwriting font)
⑨ Alphabet characters (outline)
⑩ Cyrillic font
⑪ Japanese character
⑫ Patterns saved in the machine's memory (see page 190)
⑬ Patterns saved in USB media (see page 191)
⑭ Patterns saved on the computer (see page 192)

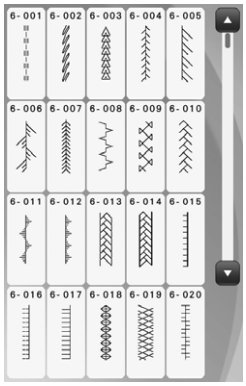
Note

- If the screen is locked ( ), unlock the screen by pressing . While the screen is locked, no other key can be operated.

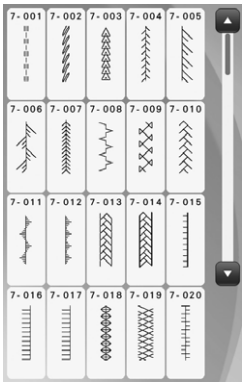
■ Stitch Selection Screens

There are 11 categories of Character/Decorative stitch patterns. If ▲ ▼ appears, there is more than one stitch selection screen for that category.

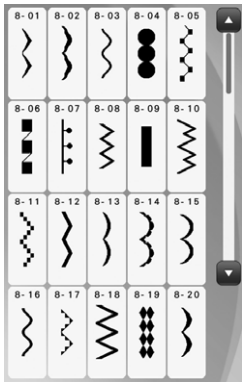
Decorative Stitch Patterns



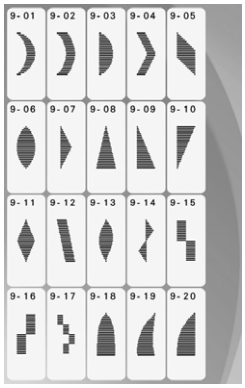
7mm Decorative Stitch Patterns



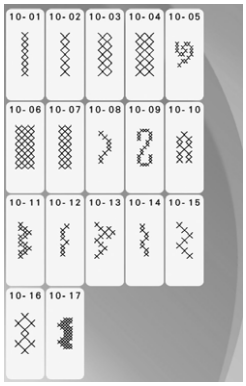
Satin Stitch Patterns



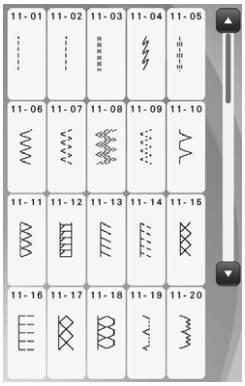
7mm Satin Stitch Patterns



Cross Stitch

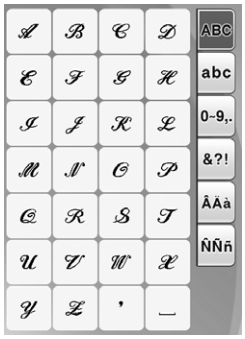


Utility Decorative Stitch Patterns



Alphabet Characters (Gothic Font)

Alphabet Characters (Handwriting Font)



Alphabet Characters (Outline)

Cyrillic font

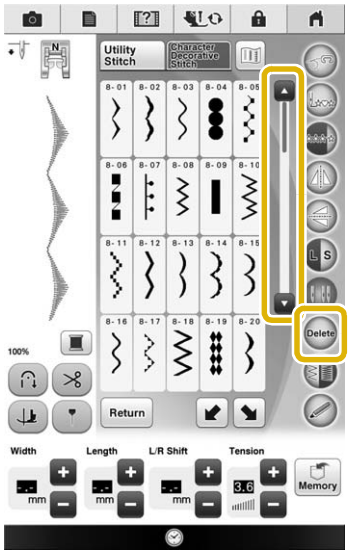
Japanese character

Selecting Decorative Stitch Patterns/7mm Decorative Stitch Patterns/Satin Stitch Patterns/ 7mm Satin Stitch Patterns/ Cross Stitch/Utility Decorative Stitch Patterns

1 Select the category of the pattern you want to sew.

2 Press the key of the stitch pattern you want to sew.

* Press ▼ to view the next page.
* Press ▲ to view the previous page.
* Touch the bar that appears between ▼ and ▲ to leap multiple pages at one time.
* To select a different stitch pattern, press Delete. When the current stitch pattern is erased, select the new stitch pattern.

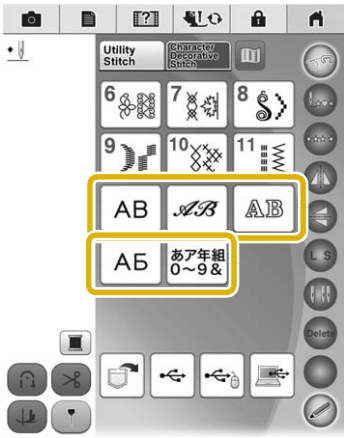


→ The selected pattern is displayed.

Alphabet Characters/Japanese characters

Entering characters from the groups shown below, for example "Blue Sky".

1 Press AB, AB, AB, AБ or あア年組 0~9& to select a font.



Memo

- There are four fonts for alphabet character stitching and one font for Japanese character stitching.

2 Press to change the selection screens.

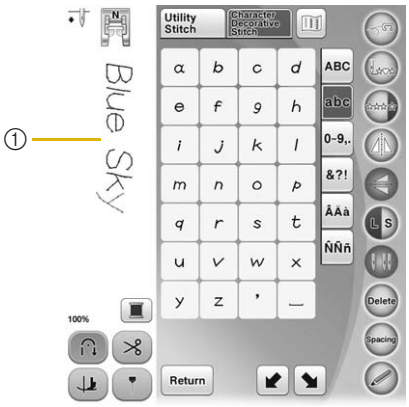
3 Press ABC and then enter "B".

4 Press abc and then enter "lue".

5 Press _ to enter a space.

6 Press ABC again and enter "S".

7 Press abc and then enter "ky".



① Jumping stitch

* Remove the jumping stitches after sewing.

* If you want to continue entering characters in a different font, press Return, and then repeat from step 1.

■ Deleting Characters

1 Press Delete to delete the last character.

Memo

- Characters are deleted individually starting with the last character entered.

2 Select the correct character.

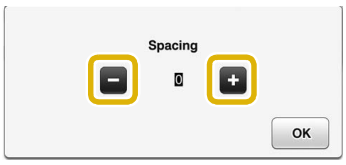
■ Adjusting the Character Spacing

The space between the characters can be adjusted.

1 Press Spacing.

→ The character spacing window appears.

2 Press ⊖ ⊕ to adjust character spacing.



* Press ⊕ to increase the character spacing and press ⊖ to decrease the character spacing.

Example:

* Each setting equals a specific distance between characters.

Value: 0

Blue Sky

Value: 10

Blue Sky

Value	mm
0	0
1	0.18
2	0.36
3	0.54
4	0.72
5	0.9
6	1.08
7	1.26
8	1.44
9	1.62
10	1.8

Memo

- The default setting is “0”. No number less than “0” can be set.
- Changing character spacing by this method, pertains to all characters. Spacing changes are valid not only while entering characters but also before and after the entering of characters.

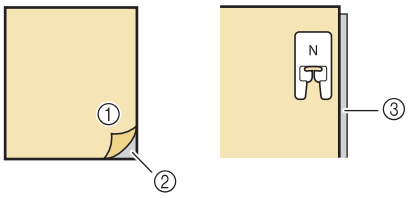
SEWING STITCH PATTERNS

Sewing Attractive Finishes

To achieve attractive results when sewing character/decorative stitches, check the table below for the proper fabric/needle/thread combinations.

Note

- Other factors, such as fabric thickness, stabilizer material, etc., also have an effect on the stitch, so you should always sew a few trial stitches before beginning your project.
- When sewing satin stitch patterns, there may be shrinking or bunching of stitches, so be sure to attach a stabilizer material.
- Guide the fabric with your hand to keep the fabric feeding straight and even during sewing.

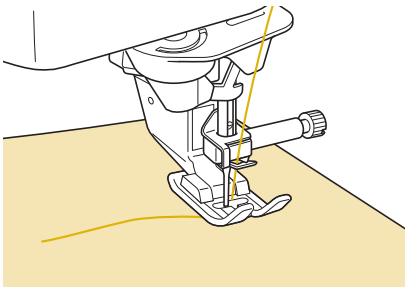
Fabric	When sewing on stretch fabrics, lightweight fabrics, or fabrics with coarse weaves, attach stabilizer on the wrong side of the fabric. If you do not wish to do so, place the fabric on a thin paper such as tracing paper.  ① Fabric ② Stabilizer ③ Thin paper
Thread	#50 - #60
Needle	With lightweight, regular, or stretch fabrics: the Ball point needle (golden colored) With heavyweight fabrics: home sewing machine needle 90/14
Presser foot	Monogramming foot “N”. Using another presser foot may give inferior results.

Basic Sewing

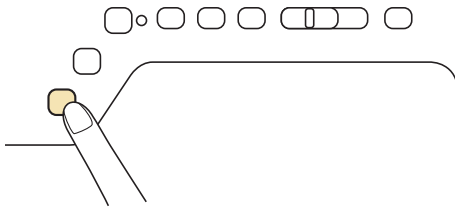
1 **Select a stitch pattern.**

2 **Attach monogramming foot “N”.**

3 **Place the fabric under the presser foot, pull the upper thread out to the side, and then lower the presser foot.**



4 **Press the “Start/Stop” button to start sewing.**



⚠ CAUTION

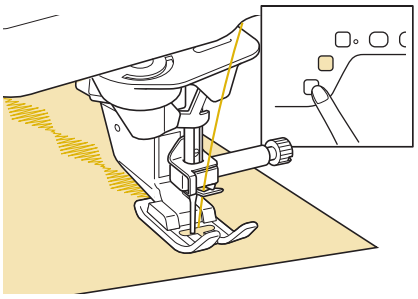
- **When sewing 7 mm satin stitch patterns and the stitches are bunched, lengthen the stitch length. If you continue sewing when the stitches are bunched, the needle may bend or break (“Setting the Stitch Length” on page 89).**

Memo

- If the fabric is pulled or pushed during sewing, the pattern may not turn out correctly. Also, depending on the pattern, there may be movement to the left and right as well as front and back. Guide the fabric with your hand to keep the fabric feeding straight and even during sewing.

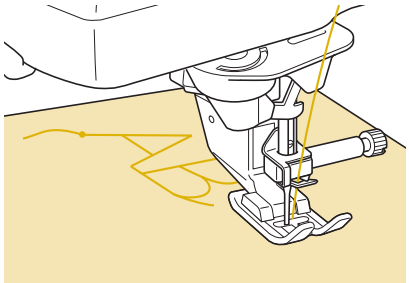
5 **Press the "Start/Stop" button to stop sewing.**

6 **Keep pressing the "Reverse Stitch" button or the "Reinforcement Stitch" button to sew 4 stitches of reinforcement stitches.**



Memo

- When sewing character stitches, the machine automatically sews reinforcement stitches at the beginning and end of each character.



- When sewing is completed, trim any excess thread between letters.

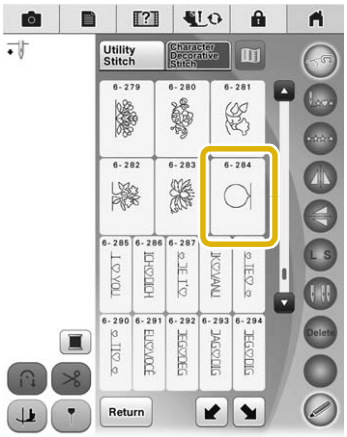
Note

- When sewing some patterns, the needle will temporarily pause in the raised position while the fabric is fed due to the operation of the needle bar separation mechanism which is used in this machine. At such times, a clicking sound different from the sound generated during sewing will be heard. This sound is normal and is not the sign of a machine malfunction.

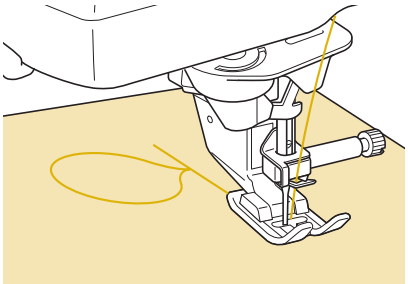
Making Adjustments

Your stitch pattern may sometimes turn out poorly, depending on the type or thickness of fabric, the stabilizer material used, sewing speed, etc. If your sewing does not turn out well, sew trial stitches using the same conditions as the real sewing, and adjust the stitch pattern as explained below. If the pattern does not turn out well even after making adjustments based on the 6-284 pattern, make adjustments for each pattern individually.

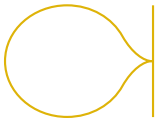
1 **Press 6 and select 6-284.**



2 **Attach monogramming foot "N" and sew the pattern.**



3 **Compare the finished pattern to the illustration of the correct pattern below.**



4 **Press [ ], and then adjust the pattern with the "Fine Adjust Verti." or "Fine Adjust Horiz." displays.**

* If the pattern is bunched:

Press [+] in the "Fine Adjust Verti." display.

→ The displayed value increases each time the button is pressed and the pattern will lengthen.

* If the pattern has gaps:

Press [−] in the "Fine Adjust Verti." display.

→ The displayed value decreases each time the button is pressed and the pattern will shorten.

* If the pattern is skewed to the left:

Press [+] in the "Fine Adjust Horiz." display.

→ The displayed value increases each time the button is pressed and the pattern will slide to the right.

* If the pattern is skewed to the right:

Press [−] in the "Fine Adjust Horiz." display.

→ The displayed value decreases each time the button is pressed and the pattern will slide to the left.

5 **Sew the stitch pattern again.**

* If the stitch pattern still comes out poorly, make adjustments again. Adjust until the stitch pattern comes out correctly.

Memo

- You can sew with the setting screen on the display.

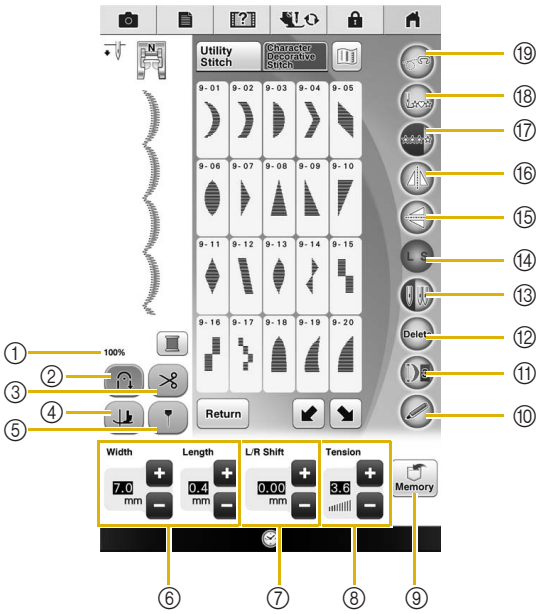
6 **Press [OK] to return to the original screen.**

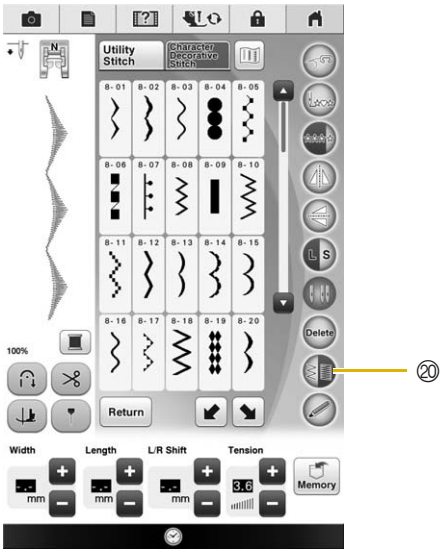
EDITING STITCH PATTERNS

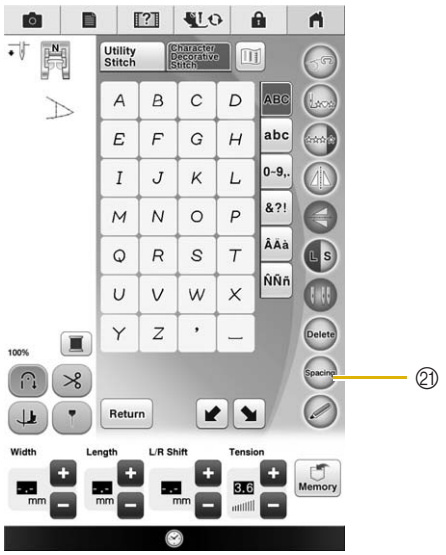
■ Key Functions

You can create just the finish you want using the editing functions. Make patterns larger or smaller, make mirror images, etc.

> **Note**
> • Some editing functions cannot be used with certain stitch patterns. Only the functions for the displayed keys are available when a pattern is selected.







No.	Display	Key Name	Explanation	Page
①	100%	Pattern display size	Show the approximate size of the pattern selected. 100% : Nearly the same size as the sewn pattern 50% : 1/2 the size of the sewn pattern 25% : 1/4 the size of the sewn pattern * The actual size of the sewn pattern may differ depending on the type of fabric and thread that is used.	111
②		Automatic reinforcement stitch key	Press this key to turn on the automatic reinforcement stitching mode.	83
③		Automatic thread cutting key	Press this key to turn on the automatic thread cutting mode.	91
④		Pivot key	Press this key to select the pivot function. When the pivot function is selected, stopping the machine lowers the needle and slightly raises the presser foot automatically. In addition, when sewing is restarted, the presser foot is automatically lowered. • If this key appears as , the pivot function cannot be used. • Be sure the needle position on page 4 of Machine Settings is set to the down position.	93
⑤		Guideline marker key	Press this key to display the guideline marker along the sewing line. The guideline marker makes it easier to align stitches with the fabric edge or other marker on the fabric.	92
⑥	Width 7.0 mm Length 0.4 mm	Stitch width and stitch length key	Shows the stitch width and stitch length of the selected stitch pattern. The machine default settings are highlighted.	88-90
⑦	L/R Shift 0.00 mm	"L/R Shift" key	Press + to shift the stitch pattern to the right or press − to shift the pattern to the left. This feature is not available on all patterns. Only those applicable will be shifted. The machine default setting is highlighted.	89
⑧	Tension 3.6	Thread tension key	Shows the thread tension setting for the selected stitch pattern. The machine default settings are highlighted	90
⑨	Memory	Memory key	Use this key to save stitch pattern combinations.	188
⑩		Sensor function key	Press this key to use the sensor function.	98
⑪		Elongation key	When 7mm satin stitch patterns are selected, press this key to choose from 5 automatic length settings, without changing the stitch zigzag width or stitch length settings.	178
⑫	Delete	Delete key	When you make a mistake selecting a stitch pattern, use this key to delete the mistake. When you make a mistake in combining stitch patterns, use this key to delete stitch patterns.	170, 171
⑬		Needle mode selection key (Single/Double)	Press this key to choose single needle sewing or twin needle sewing.	63
⑭	L S	Size selection key	Use this key to select the size of the stitch pattern (large, small).	178
⑮		Vertical mirror image key	After selecting the stitch pattern, use this key to create a vertical mirror image of the stitch pattern.	178
⑯		Horizontal mirror image key	After selecting the stitch pattern, use this key to create a horizontal mirror image of the stitch pattern.	178
⑰		Single/Repeat sewing key	Press this key to choose single stitches or continuous stitches.	178
⑱		Back to beginning key	When sewing is stopped, press this key to return to the beginning of the pattern.	179
⑲		Free motion mode key	Press this key to enter free motion sewing mode. The feed dog is lowered and presser foot is raised to a height appropriate for free motion quilting.	131
⑳		Thread density key	After selecting the stitch pattern, use this key to change the thread density of the pattern.	179
㉑	Spacing	Character spacing key	Press this key to change the spacing of character patterns.	171

Changing the Size

Select a stitch pattern, then press to change the size of the stitch pattern. The stitch pattern will be sewn in the size highlighted on the key.

Memo

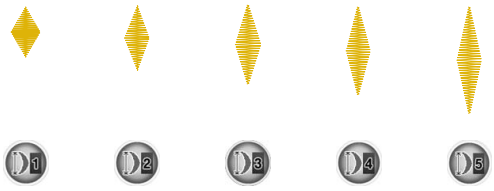
- If you continue entering stitch patterns after changing the size, those patterns will also be sewn in that size.
- You cannot change the size of combined stitch patterns once the stitch pattern is entered.

Actual Stitch Pattern Size

* The size differs depending on the fabric and threads.

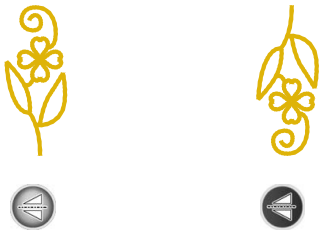
Changing the Length (for 7mm Satin Stitch Patterns Only)

When 7mm satin stitch patterns are selected, press to choose from 5 automatic length settings, without changing the stitch zigzag width or stitch length settings.



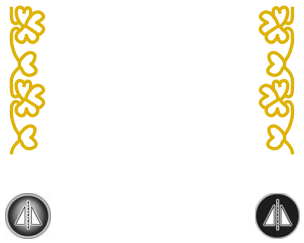
Creating a Vertical Mirror Image

To create a vertical mirror image, select a stitch pattern then press .



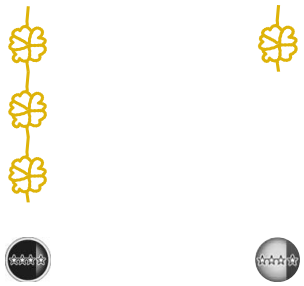
Creating a Horizontal Mirror Image

To create a horizontal mirror image, select a stitch pattern then press .



Sewing a Pattern Continuously

Press to select continuous sewing or single stitch sewing.

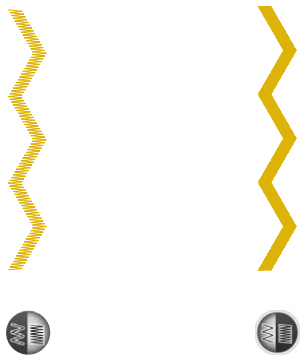


Memo

- To finish a complete motif while sewing the pattern continuously, you can press the key while sewing. The machine will automatically stop when the motif is finished.

Changing Thread Density (for Satin Stitch Patterns Only)

After selecting a satin stitch pattern, press to select your preferred thread density.



⚠ CAUTION

- **If the stitches bunch when thread density is changed to , return the thread density to . If you continue sewing when the stitches are bunched, the needle may bend or break.**

Memo

- Even if you select a new pattern after changing the thread density, the thread density remains the same until you change it.
- You cannot change thread density for a combined pattern after additional patterns are added.

Returning to the Beginning of the Pattern

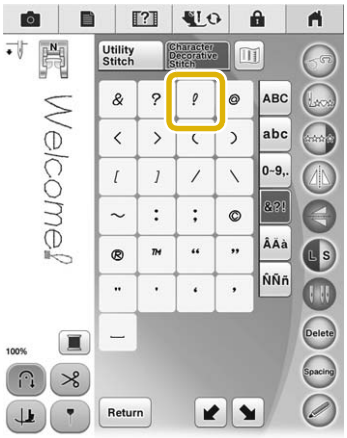
When sewing character/decorative stitches, you can return to the beginning of the pattern after trial sewing or when the stitching is sewn incorrectly.

1 Press the "Start/Stop" button to stop the machine, and then press .

→ Sewing returns to the beginning of the selected pattern ("W") from the point where sewing was stopped.

Memo

- If this key is pressed while sewing is stopped, patterns can be added at the end of a combined stitch pattern. (In this example, "!" is added.)



2 Press the "Start/Stop" button to continue sewing.

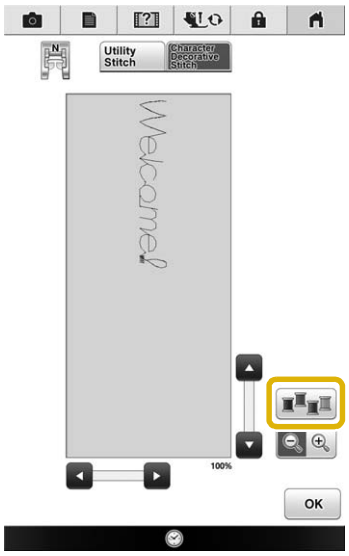
Checking the Image

You can display an approximate size image of the selected stitch pattern. You can also check and change the colors of the image on the screen.

1 **Press .**

→ An image of the selected pattern is displayed.

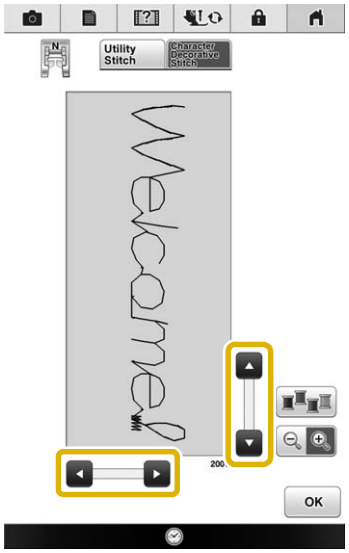
2 **Press to change the thread color in the image to red, blue, black or yellow.**



→ The color changes every time you press the button.

3 **Press to display the enlarged image.**

4 **Use / / / to view any part of the image that extends out of the viewable display area.**



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

Memo

- You can also sew from this screen when the presser foot symbol is displayed.
- Image of some patterns will display in default size only.

COMBINING STITCH PATTERNS

You can combine many varieties of stitch patterns, such as character stitches, cross stitches or satin stitches. You can also combine stitch patterns of different sizes, mirror image stitch patterns, and others.

Before Combining

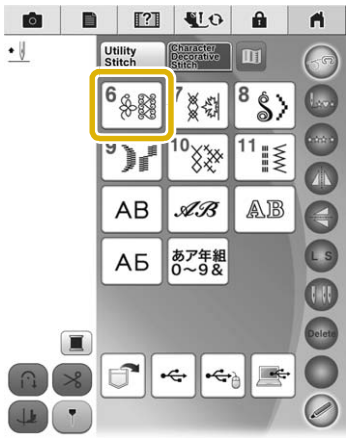
Single stitch sewing is automatically selected for sewing combined patterns. If you want to sew the pattern continuously, press after finishing the stitch pattern combination.

When changing sizes, creating mirror images, or making other adjustments to a combined stitch pattern, be sure to edit the selected stitch pattern before selecting the next one. You cannot edit a stitch pattern once the next stitch pattern is selected.

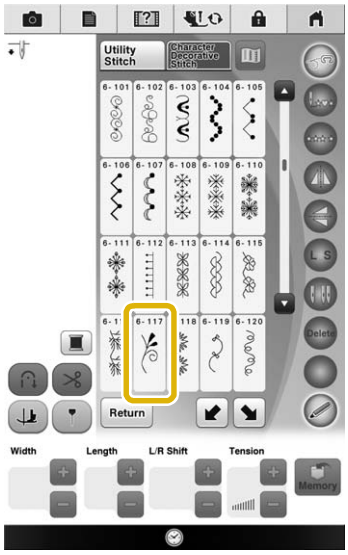
Combining Various Stitch Patterns

Example:

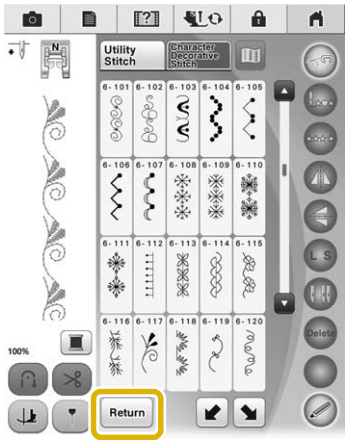
1 **Press** .



2 **Select** .

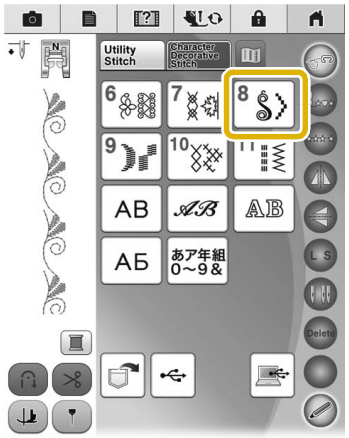


3 **Press** Return.

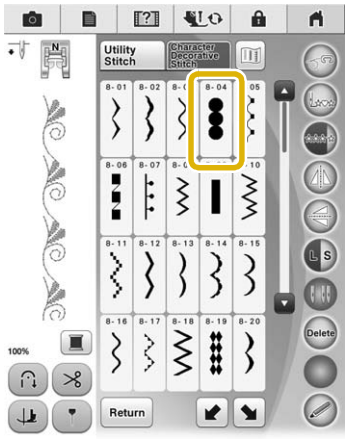


→ The display returns to the stitch selection screen.

4 **Press** .



5 **Select** .



6 **Press** **to sew the pattern continuously.**

Memo

- Patterns are deleted individually starting with the last pattern entered by pressing Delete.

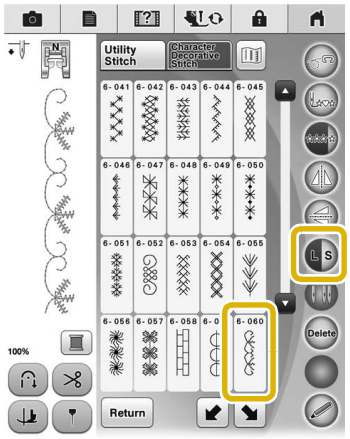
Combining Large and Small Stitch Patterns

Example:

1 **Press** .

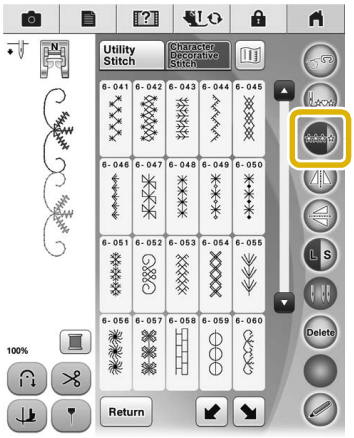
→ The large size stitch will be selected.

2 **Press** **again, then press** **to select the small size.**



→ The pattern is displayed in a smaller size.

3 Press to sew continuously.



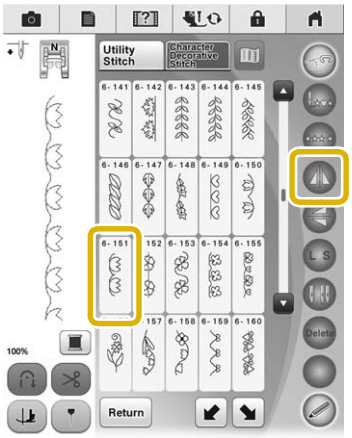
→ The entered pattern is repeated.

Combining Horizontal Mirror Image Stitch Patterns

Example:

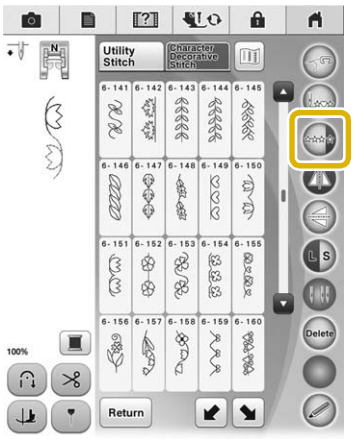
1 Press .

2 Press again, then press .



→ The pattern is flipped along a vertical axis.

3 Press .



→ The entered pattern is repeated.

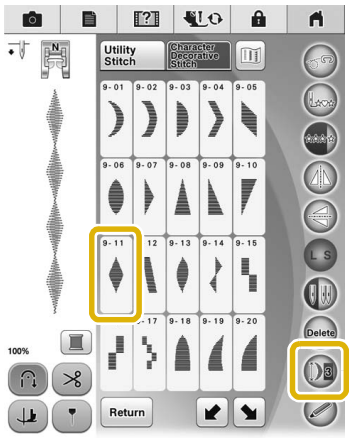
Combining Stitch Patterns of Different Length

Example:

1 **Press** **, then press** **once.**

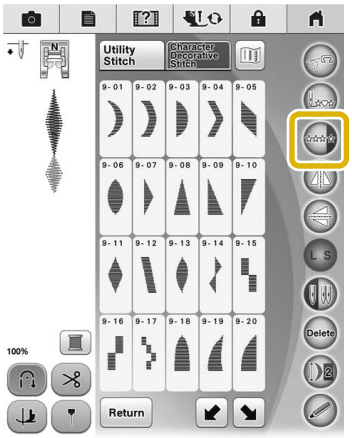
→ The length of the image is set to .

2 **Select** **again, then press** **3 times.**



→ The length of the image is set to .

3 **Press** .

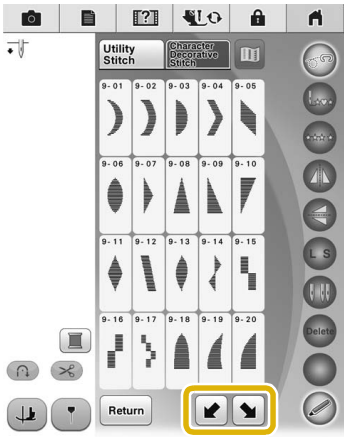


→ The entered pattern is repeated.

Making Step Stitch Patterns (for 7mm Satin Stitch Patterns Only)

You can use the keys with 7mm satin stitch patterns to create a step effect, also called step stitch patterns.

* Press to move the stitch pattern a distance equal to half of the stitch pattern's size to the left.
* Press to move the stitch pattern a distance equal to half of the stitch pattern's size to the right.



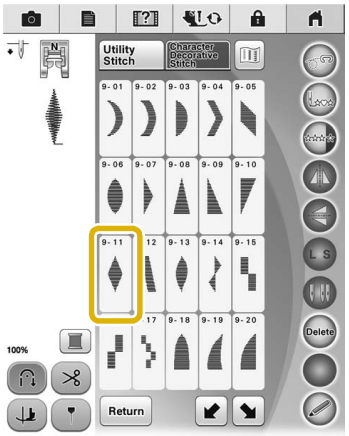
Example:

1 **Press** .

2 **Press** .

→ The next stitch pattern will move to the right.

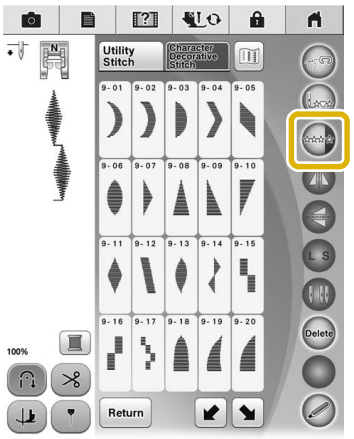
3 **Press** **again.**



4 **Press** .

→ The next stitch pattern will move to the left.

5 **Press** .



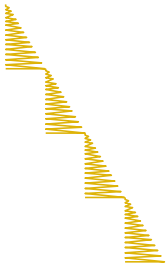
→ The entered pattern is repeated.

■ More Examples

Press → → → → .

Press → → → → → → → .

Press 9-09 → ↘ → ↘ → .



Press 9-06 → 9-06 → ↘ → ↘ → 9-11 → 9-11 → ↙ → ↙ → .

USING THE MEMORY FUNCTION

Stitch Data Precautions

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

■ Types of Stitch Data that can be Used

- In the Character/Decorative Stitch memory, ".pmv", ".pmx" and ".pmu" stitch data files can be used with this machine. ".pmu" stitch data files can be retrieved; however, when the machine is used to save the file, it is saved as a ".pmv" stitch data file.
- Using data other than that created using this machine or the machine which create ".pmu" data file, may cause the machine to malfunction.

■ Types of USB Devices/Media that can be Used

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

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

Stitch data can be recalled only from;

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

You can also use the following types of USB media with the 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

- 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).

- To create file folders, use a computer.

■ 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 stitch 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 "_".
- Stitch data in a folder created in USB media can be retrieved.
- Do not create folders in "Removable Disk" on a computer. If stitch data is stored in a folder in "Removable Disk", that stitch data cannot be retrieved by the machine.

Saving Stitch Patterns in the Machine's Memory

You can save often used stitch patterns in the machine's memory. A total of about 1 MB of stitch patterns can be saved in the machine's memory.

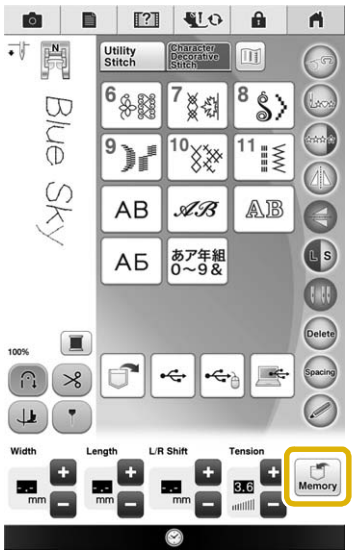
Note

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

Memo

- It takes a few seconds to save a stitch pattern.
- See page 190 for information on retrieving a saved stitch pattern.

1 Press [Memory].



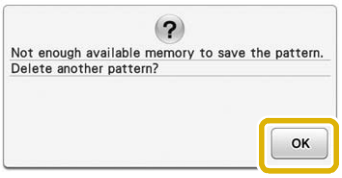
2 Press [ ].

* Press [OK] 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 following screen appears while you are trying to save a pattern on the machine's memory, the memory is too full to hold the currently selected stitch pattern. To save the stitch pattern in the machine's memory, you have to delete a previously saved stitch pattern. Press [OK], and then see the description in step 3 of "Retrieving Stitch Patterns from the Machine's Memory" on page 191.



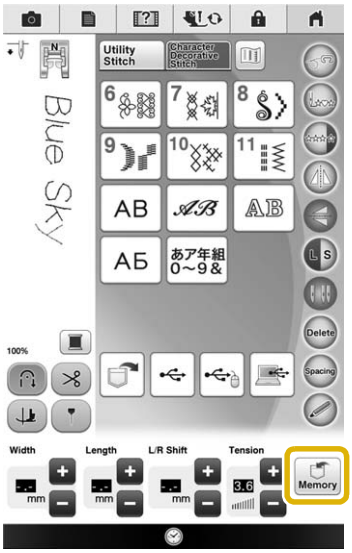
Saving Stitch Patterns to USB Media

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

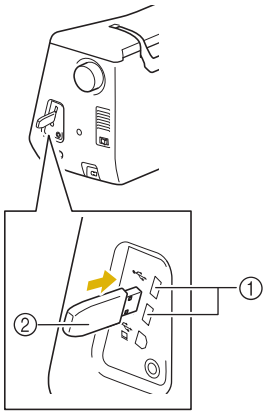
Memo

- 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].



2 Insert the USB media into either of the USB ports on the machine.

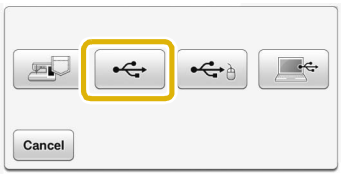


① USB port
② USB media

3 Press [USB].

* Press [USB mouse] when connecting the USB media to the USB port for mouse.

* Press [OK] 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 Stitch Patterns in the Computer

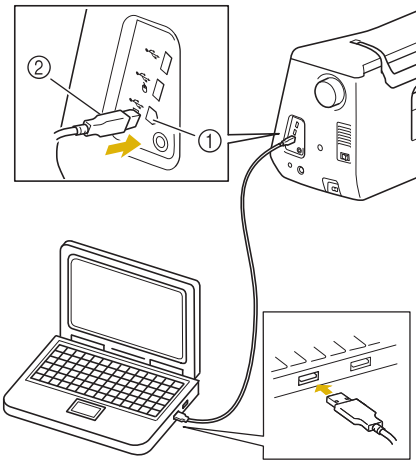
Using the included USB cable, the machine can be connected to your computer, and the stitch patterns can be temporarily retrieved from and saved in the "Removable Disk" folder in your computer. A total of about 10 MB of stitch patterns can be saved in the "Removable Disk", but the saved stitch patterns 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 stitch 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)".

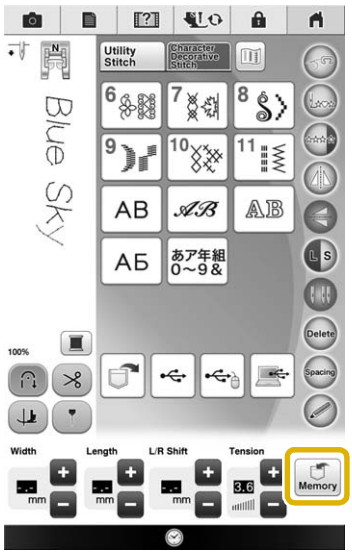
* The USB cable can be plugged into the USB ports on the computer and machine whether or not they are turned on.



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 and 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.

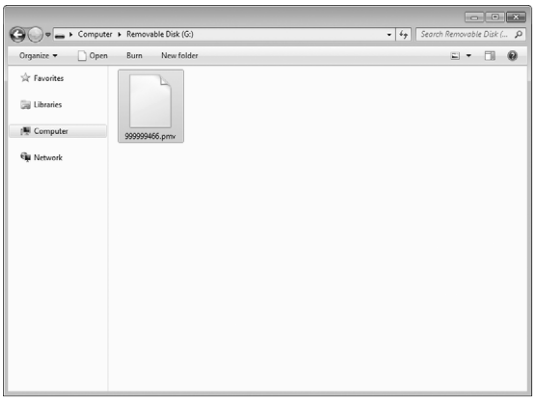


4 **Press** .

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

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

5 **Select the stitch pattern's .pmv file and copy the file to the computer.**

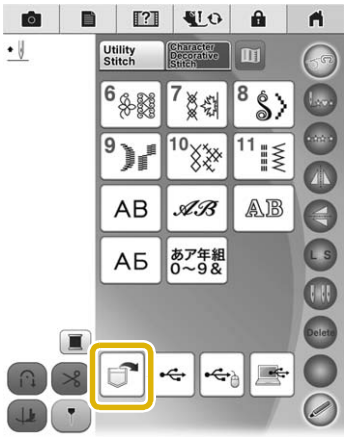


Note

- Do not turn off the machine while the "Saving" screen is showing. You may lose the data.

Retrieving Stitch Patterns from the Machine's Memory

1 **Press** .

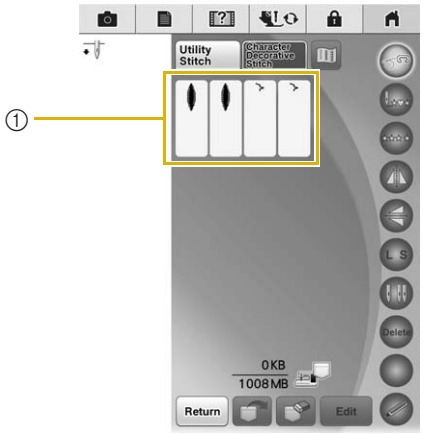


→ The pocket selection screen appears.

2 **Choose a stitch pattern to retrieve.**

* If the entire saved stitch pattern is not displayed, press the thumbnail.

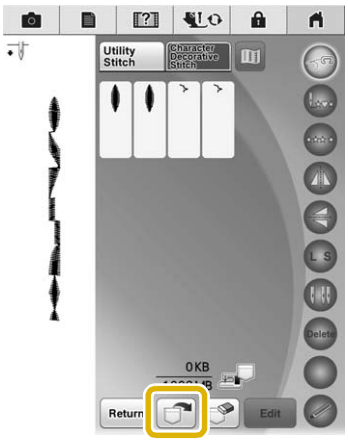
* Press Return to return to the original screen without saving.



① Saved stitch patterns

3 **Press .**

* Press to delete the stitch pattern.

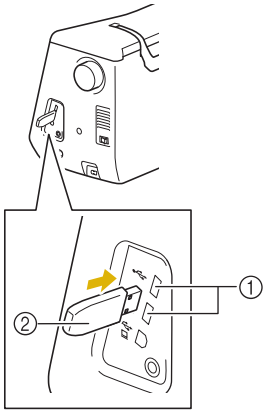


→ The selected stitch pattern is retrieved and the sewing screen will be displayed.

Recalling from USB Media

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

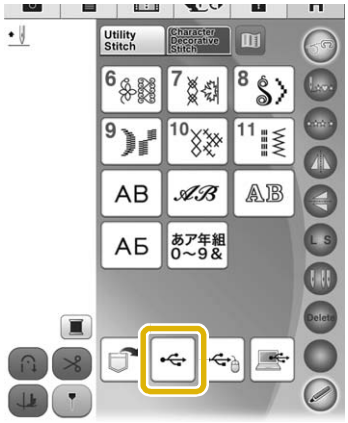
1 **Insert the USB media into either of the USB ports on the machine (see page 188).**



① USB port
② USB media

2 **Press .**

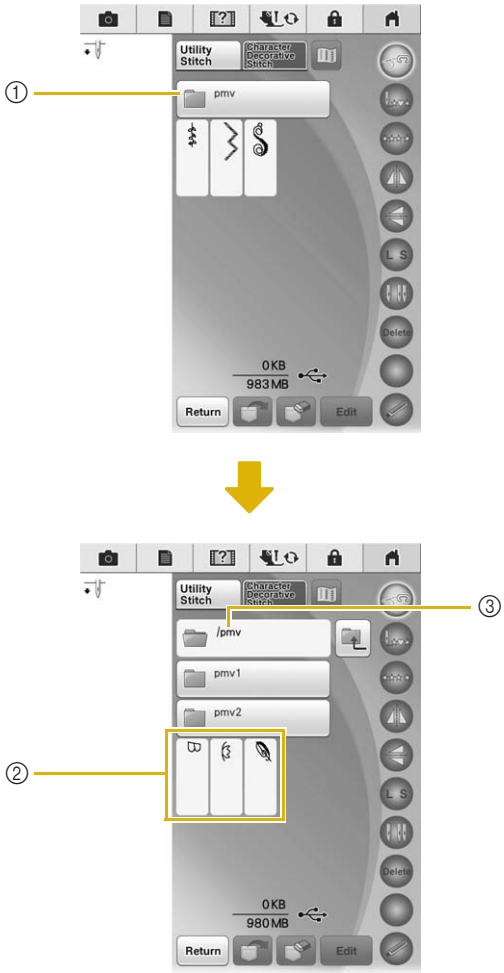
* Press when connecting the USB media to the USB port for mouse.



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

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

* Press [Return] to return to the original screen without recalling.



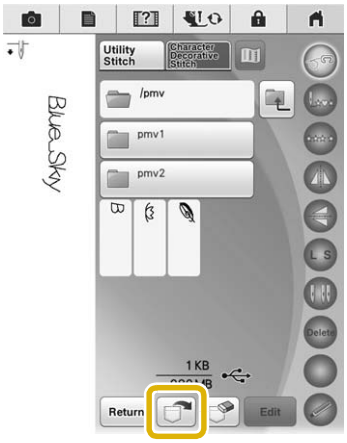
① Folder name
② Stitch patterns in a folder show only the first pattern of any combined patterns.
③ Path
→ The path shows the current folder at the top of the list.
Stitch patterns and a subfolder within a folder are displayed.

* Press [ ] 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 stitch pattern you want to recall.**

5 **Press [ ].**

* Press [ ] to delete the stitch pattern. The pattern will be deleted from the USB media.

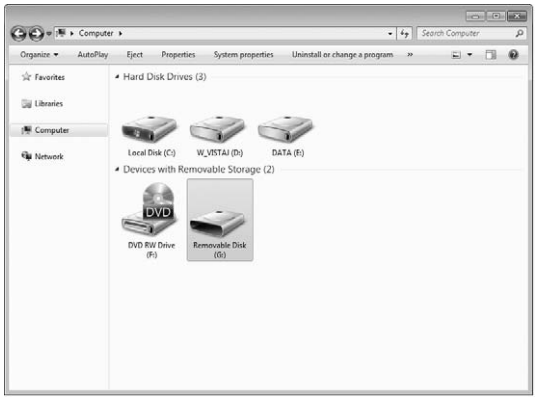


→ The selected stitch pattern is recalled and the sewing screen will be displayed.

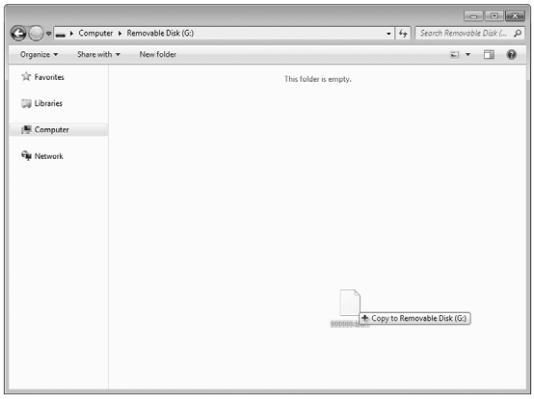
Recalling from the Computer

1 **Plug the USB cable connector into the corresponding USB ports for the computer and for the machine (see page 189).**

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



3 Move/copy the pattern data to "Removable Disk".

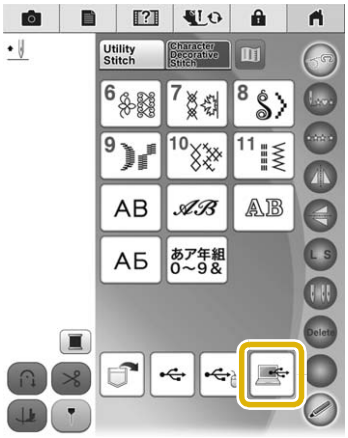


→ Stitch pattern data in "Removable Disk" is written to the machine.

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 .



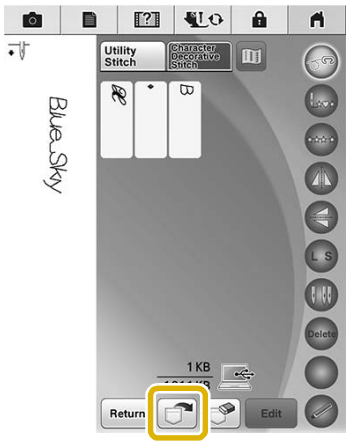
→ The stitch patterns in the computer are displayed on the selection screen.

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

* Press Return to return to the original screen without recalling.

6 Press .

* Press to delete the stitch pattern.
The pattern will be deleted from the "Removable Disk" folder in your computer.



→ The selected stitch pattern is recalled and the sewing screen will be displayed.

Note

- The pattern recalled from the computer is only temporarily written to the machine. It is erased from the machine when the machine is turned off. If you wish to keep the stitch pattern, store it in the machine ("Saving Stitch Patterns in the Machine's Memory" on page 188).

Chapter 5
Basic Embroidery

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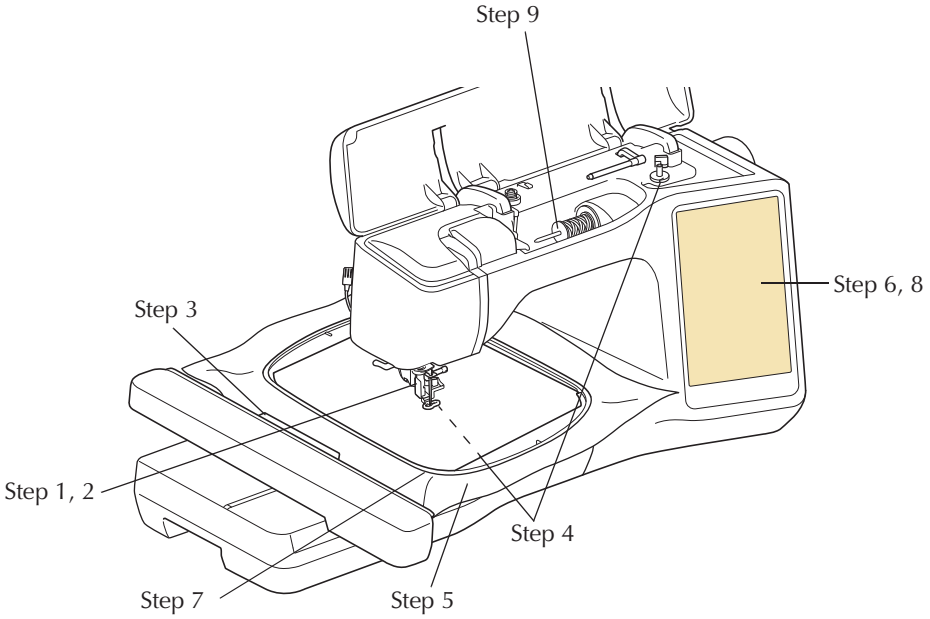
BEFORE EMBROIDERING

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
4	Bobbin thread setup	For the bobbin thread, wind embroidery bobbin thread and set it in place.	52
5	Fabric preparation	Attach a stabilizer material to the fabric, and hoop it in the embroidery frame.	242
6	Pattern selection	Turn the main power to ON, and select an embroidery pattern.	200
7	Embroidery frame attachment	Attach the embroidery frame to the embroidery unit.	247
8	Checking the layout	Check and adjust the size and position of the embroidery.	249
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

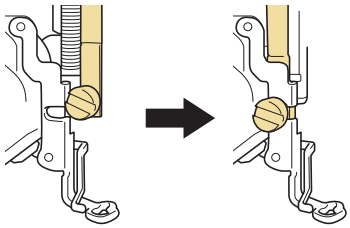
⚠ CAUTION

- 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.

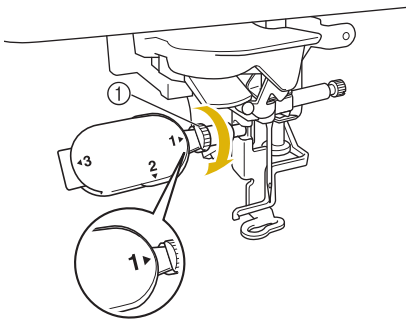
1. Remove the presser foot and presser foot holder. For details, refer to "CHANGING THE PRESSER FOOT" on page 68.

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.

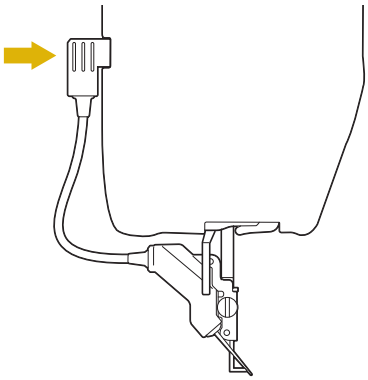


① Presser foot holder screw

⚠ 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

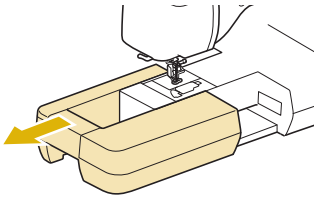
⚠ CAUTION

- 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.

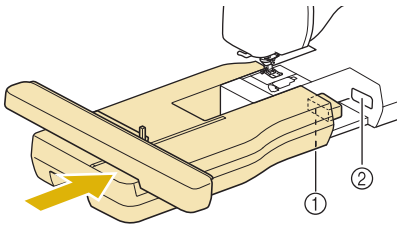
Note

- You can also sew utility/decorative stitches with the embroidery unit attached. Touch [ ] and [ ]. 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

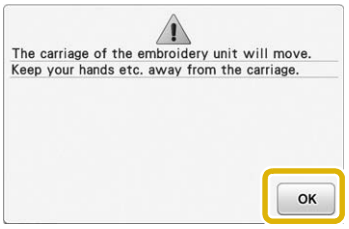
Note

- 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.

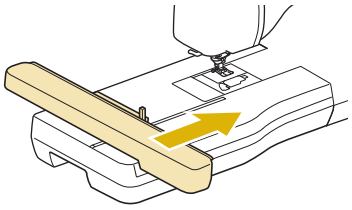
3 Turn the main power to ON.

→ The following message will appear.

4 Press [OK].



→ The carriage will move to the initialization position.



■ Removing the Embroidery Unit

1 Press [ ], then press [ ].

→ The carriage will move to the removal position.

⚠ CAUTION

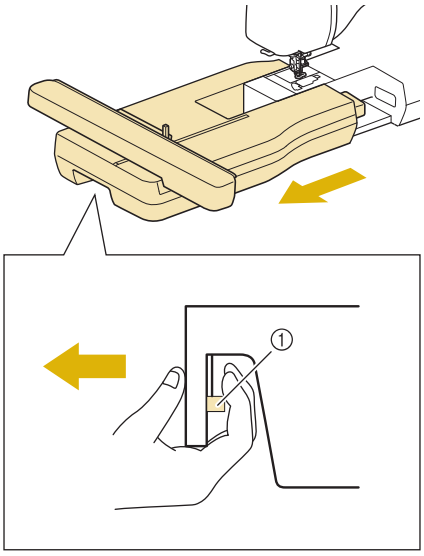
- **Always remove the embroidery frame before pressing [ ]. Otherwise, the frame may strike the embroidery foot, and possibly cause injury.**

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.

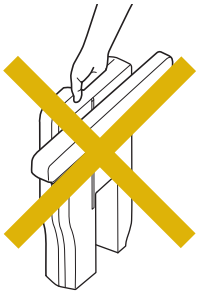
3 **Press the release button, and pull the embroidery unit away from the machine.**



① Release button

⚠ CAUTION

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

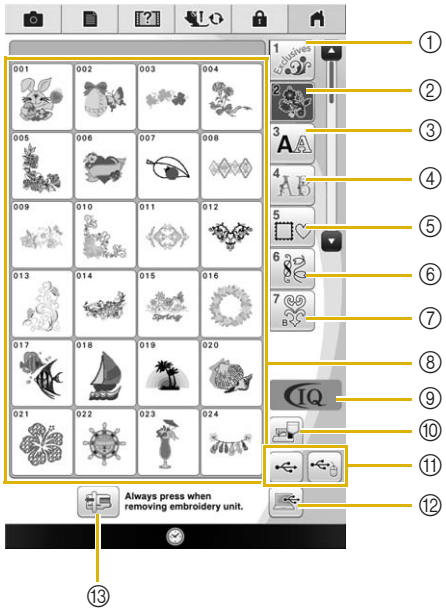


SELECTING PATTERNS

■ 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.



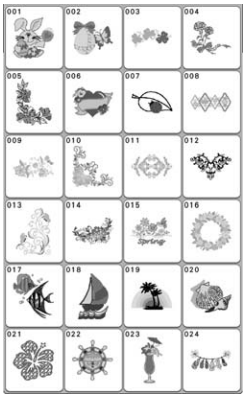
① "Baby Lock" Exclusives
② Embroidery patterns
③ Character patterns
④ Decorative alphabet patterns
⑤ Frame patterns
⑥ Utility embroidery patterns
⑦ Bobbin work patterns (see page 368)
⑧ Pattern type selection keys
⑨ IQ Designer (see page 324)
⑩ Patterns saved in the machine's memory (see page 301)
⑪ 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

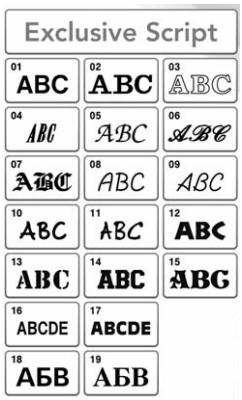
There are 7 categories of patterns in this machine.

"Baby Lock" Exclusives

Embroidery patterns

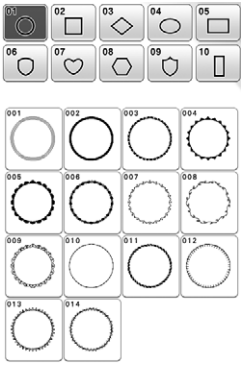


Alphabet characters

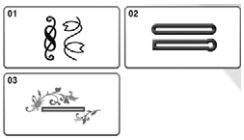


Floral alphabet patterns

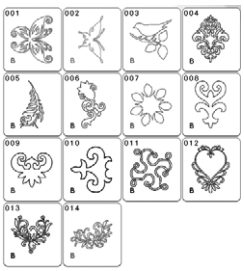
Frame patterns



Utility embroidery patterns



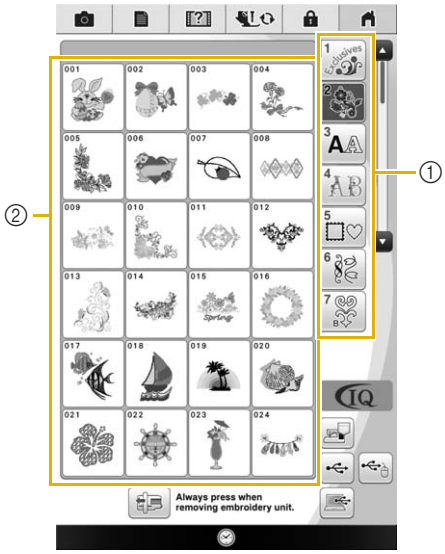
Bobbin work patterns



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

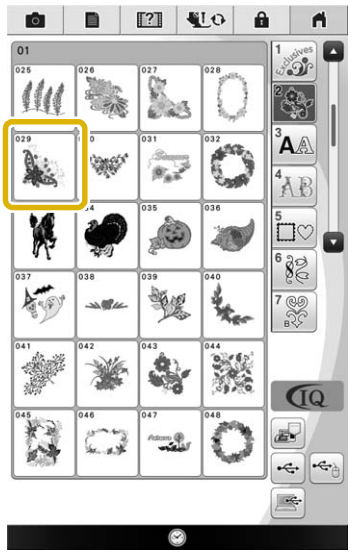
1 Press the category tab and then press the pattern type selection key or pattern key you want to embroider.

* 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.

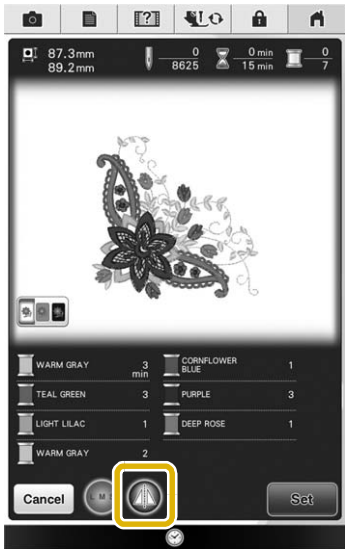
* Press ▲ to view the previous page.

* 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.



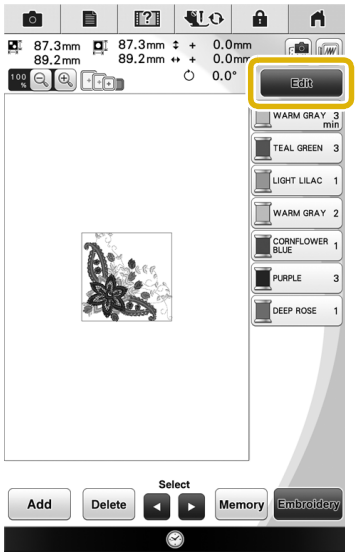
* Press to darken the screen background for the pattern with bright thread colors, to get a clearer image.

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.

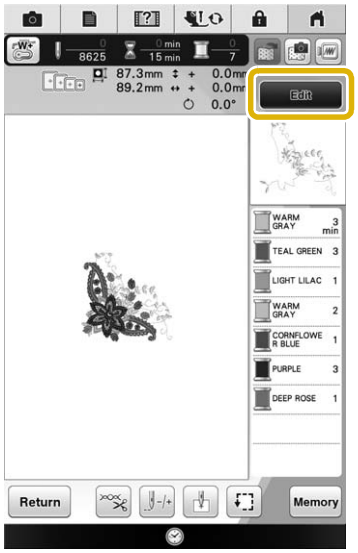


6 **Press Embroidery.**

→ 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.**

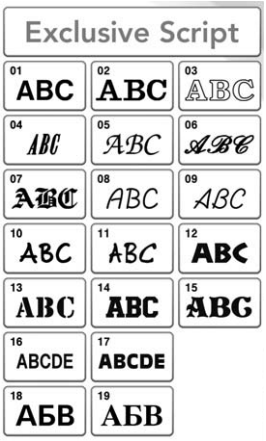
* See "Embroidering Patterns" on page 260.

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.**

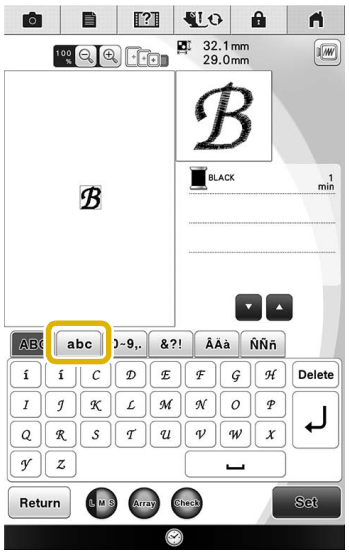
4 **Press ABC and then enter "B".**

* If you want to change the size of a character, select the character and then press LMS 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.

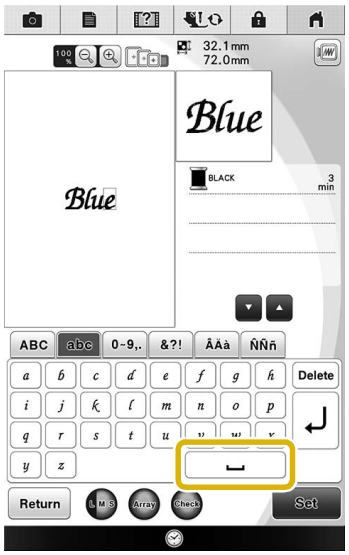
Memo

- 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.

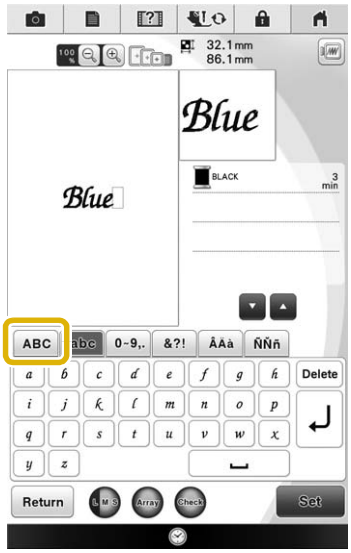
5 Press abc and enter “lue”.



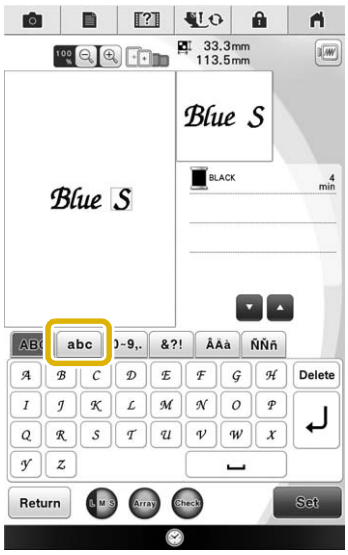
6 Press ␣ to enter a space.



7 Press ABC again and enter “S”.



8 Press abc and then enter “ky”.



9 Press Set.

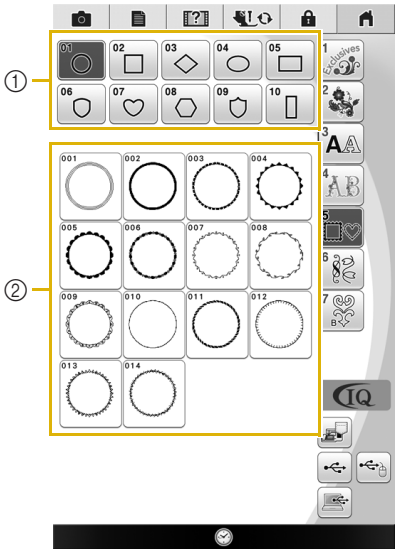
→ The embroidering screen is displayed.

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.**

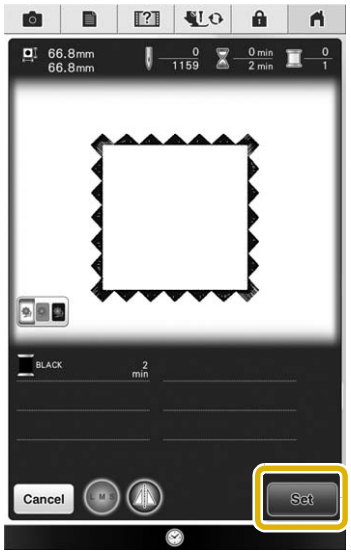


① Frame shapes
② Frame patterns
→ Various frame patterns are displayed at the bottom part of the screen.

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.

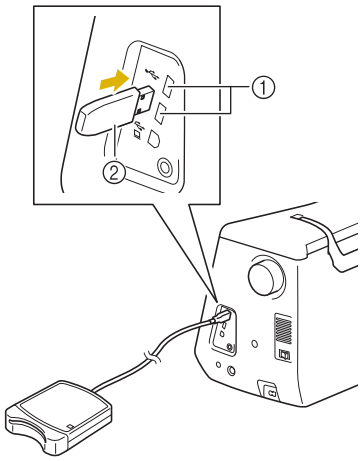
* If you have purchased the Palette 5 or higher, Palette Petite or Palette PTS, you can plug the included USB card writer module into the machine as an embroidery card reader, and recall patterns.

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.

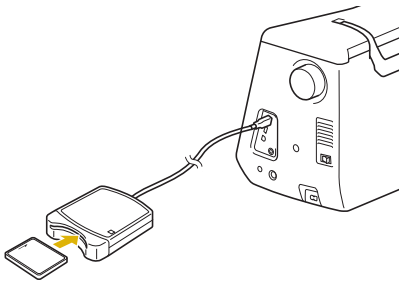
1 **Plug the optional embroidery card reader/ USB card writer module into the USB port on the machine.**



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.

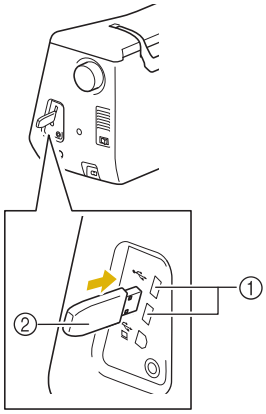
5 Press [Set].

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.

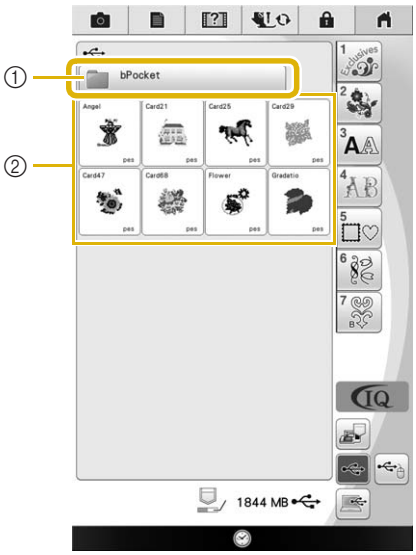


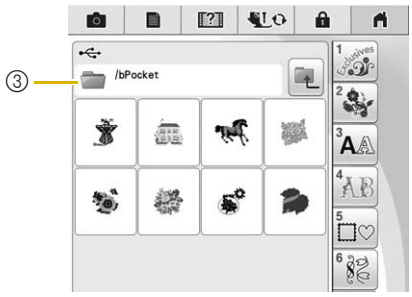
① USB port
② USB media

2 Press .

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

3 Press 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 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.

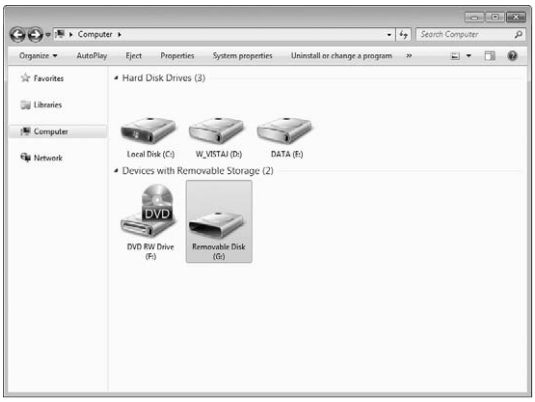
→ The Embroidery Edit screen is displayed.

Recalling from the Computer

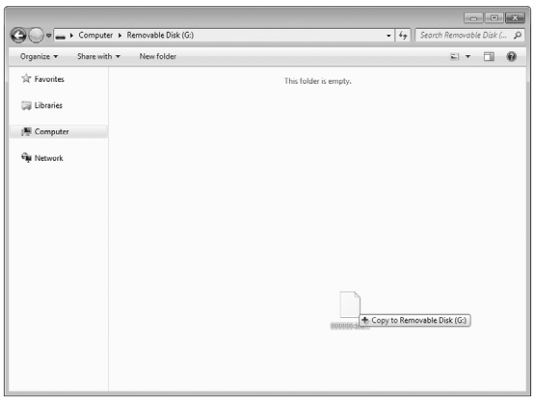
Refer to "Connecting Your Machine to the PC" on page 298 for the available computer operating systems.

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.

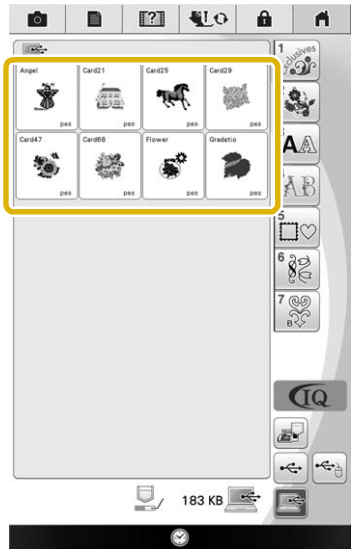
Note

- 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.**

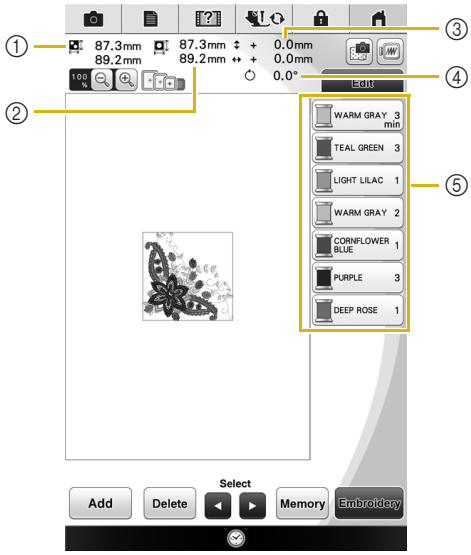


6 **Press Set.**

* Press Delete to delete the pattern from the computer.

→ The Embroidery Edit screen is displayed.

EDITING PATTERNS



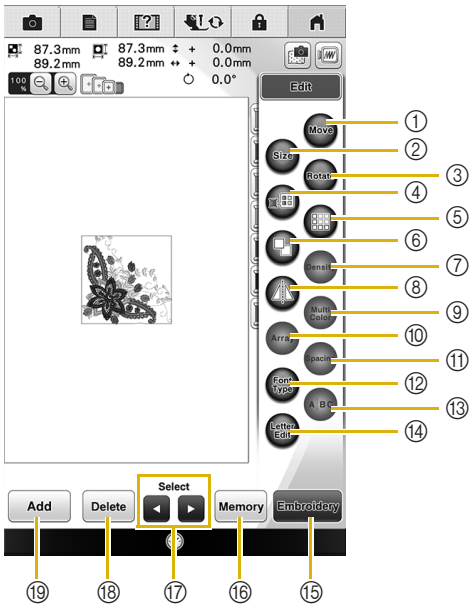
① Shows the size of the entire combined pattern.
② Shows the size of the pattern currently selected.
③ Shows the distance from the center of the frame.
④ Shows the degree of rotation for the pattern.
⑤ Shows the color sequence and stitching times of each step of the pattern currently selected.

Memo

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

■ Key Functions

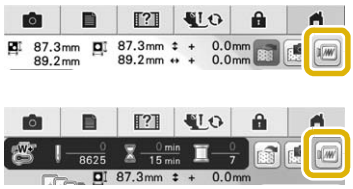
Using these keys, you can edit the pattern as you like. Press Edit to display the editing window.



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.

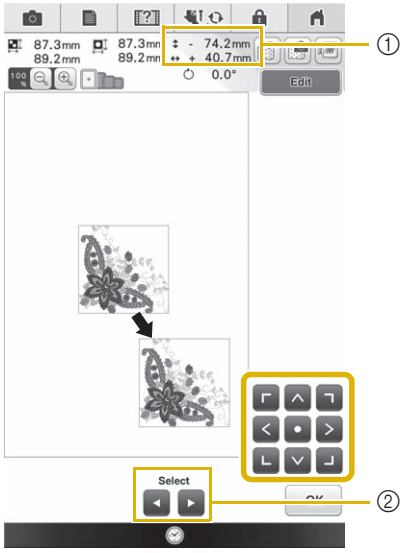
Moving the Pattern

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.



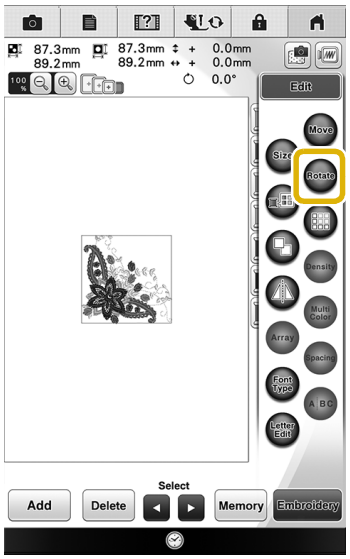
① Distance from the center
② Pattern select key

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

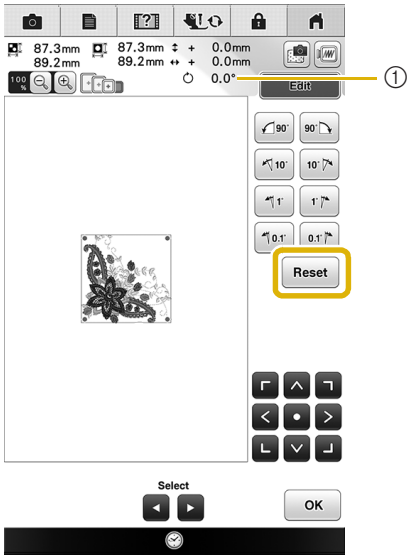
1 **Press Rotate.**



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°

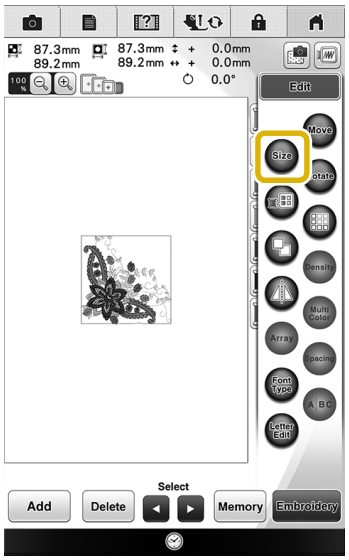
Memo

- 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.**

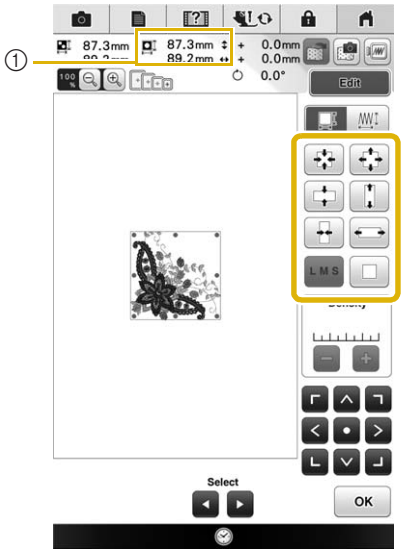
Changing the Size of the Pattern

1 **Press** .

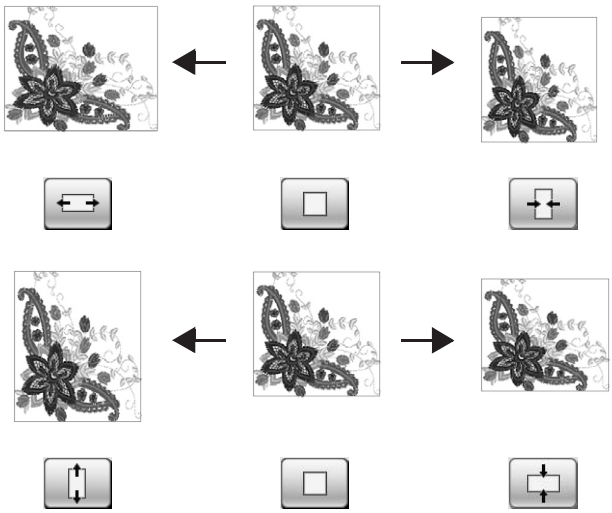


2 **Select the direction in which to change the size.**

	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.

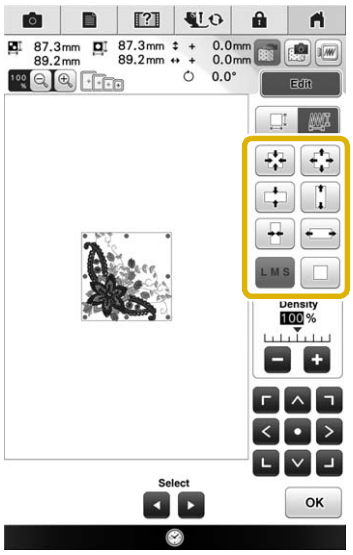
* Press : When you want to increase or decrease the density of the design.

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.



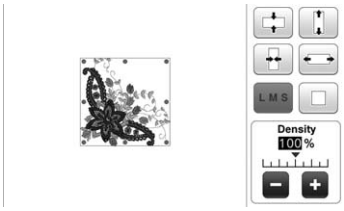
4 Press OK.

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.



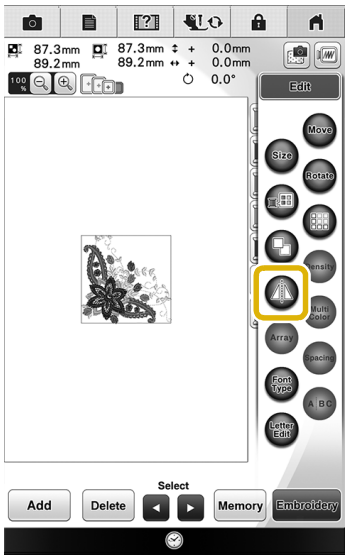
Note

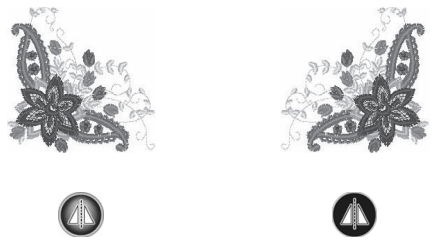
- You can change the pattern size with one finger. Using two or more fingers does not work.

Creating a Horizontal Mirror Image

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

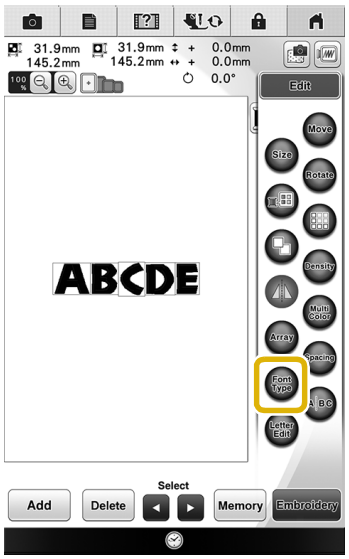
Press again to return the pattern to normal.





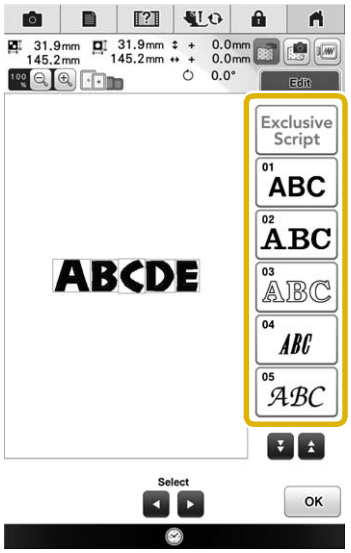
Changing Font Type

1 **Press** Font Type.



2 **Select the font type.**

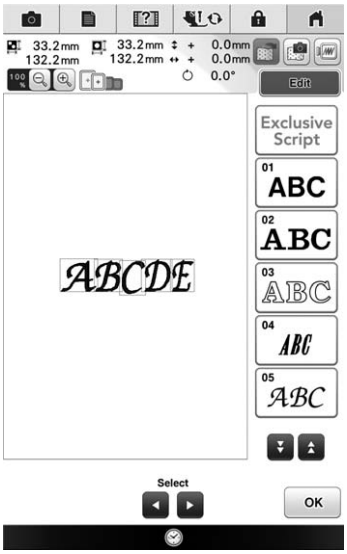
→ All the characters in the screen change into the selected font type.



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

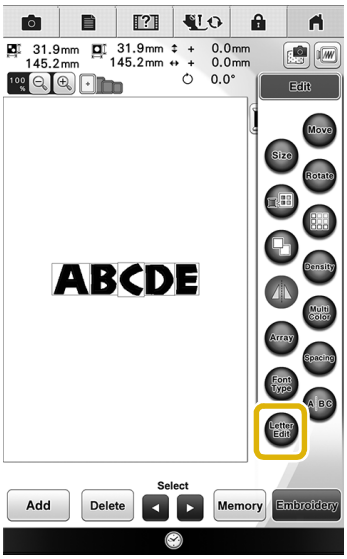
3 **Press** OK.

→ The new font is selected.



Editing Letters (Size/Font Type)

1 **Press** Letter Edit.

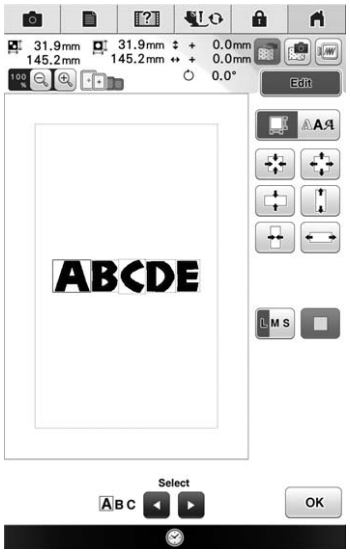


2 **Select a letter you want to edit by pressing ◀ or ▶.**

3 **Change the size of letters.**

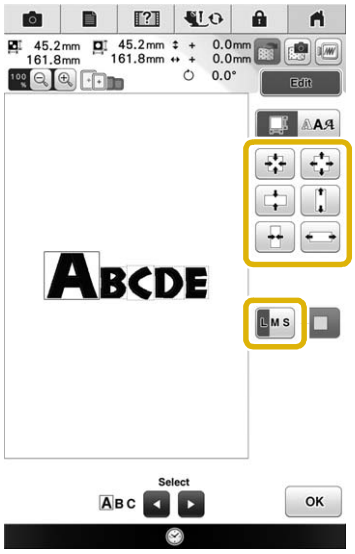
→ Selected letter will be resized.

* 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.**

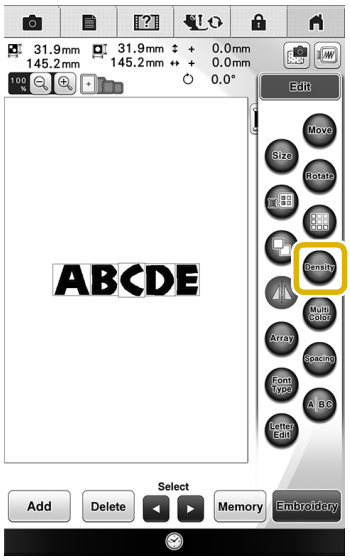
→ Selected letter's font type will be changed.

6 **Press [OK].**

Changing the Density (Alphabet Character and Frame Patterns Only)

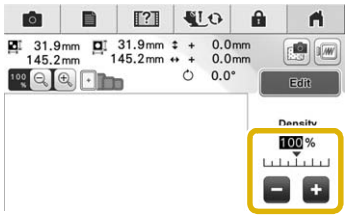
The thread density for some alphabet character and frame patterns can be changed.
A setting between 80% and 120% in 5% increments can be specified.

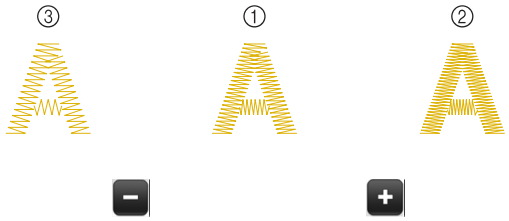
1 **Press [Density].**



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.

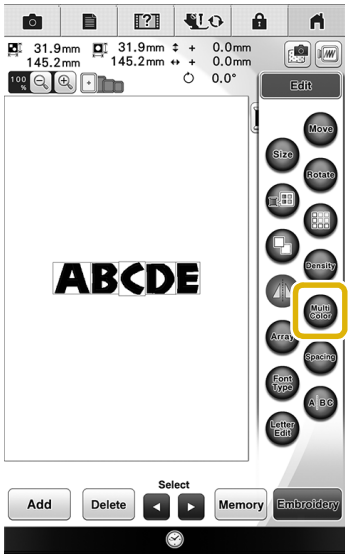
3 **Press OK.**

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.

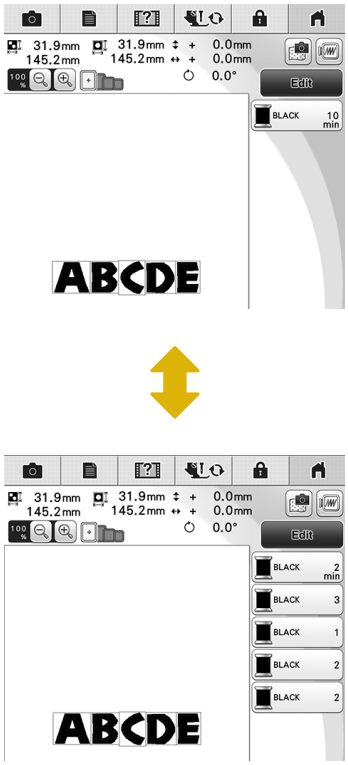
1 **Press Multi Color so that it appears as Multi Color.**

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



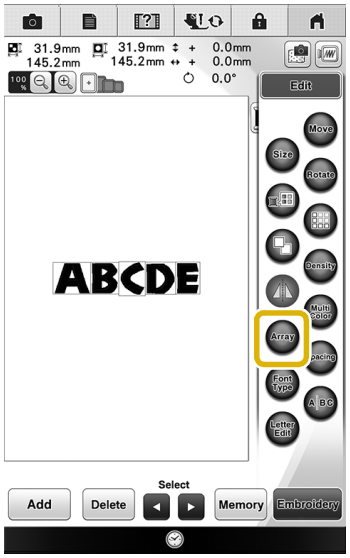
2 **Press Edit.**

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.

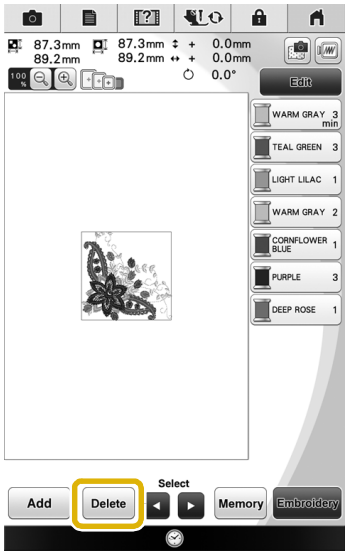
Memo

- 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

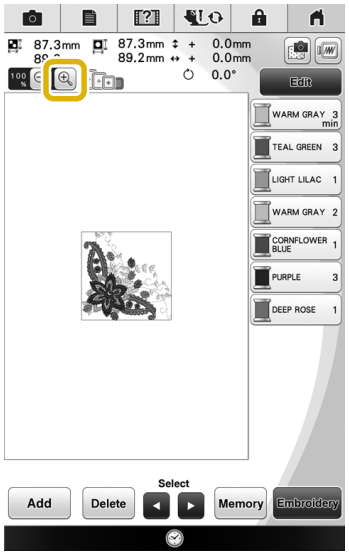
Press Delete to delete the pattern from the screen.



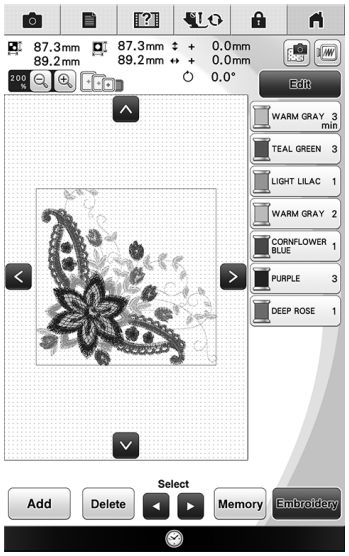
Displaying Patterns in the Screen Magnified

1 Press to magnify the image.

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



2 Check the displayed pattern.

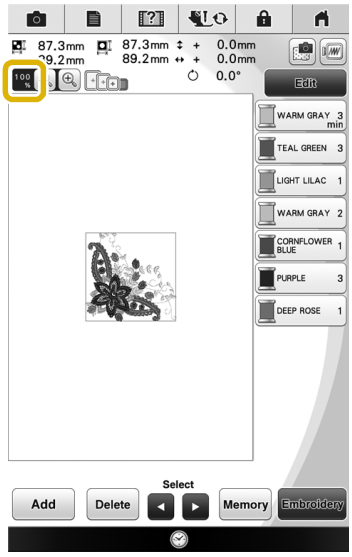


→ Use to scroll through the display in any direction.

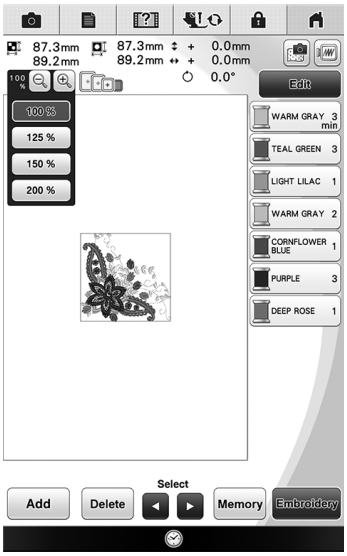
3 Press to return the pattern image to the normal size (100%).

■ Selecting the Percent of Magnification

1 Press .

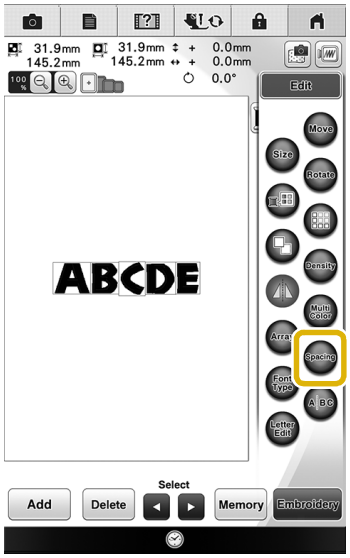


2 Press the percent of magnification you desire.



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.

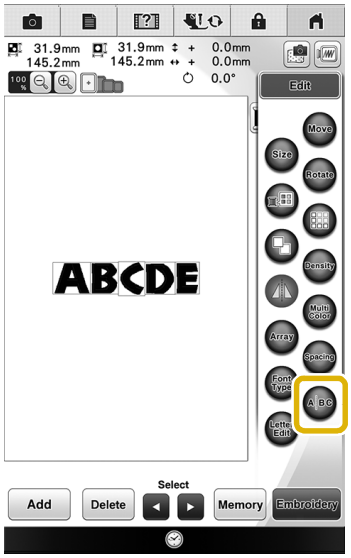
Memo

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

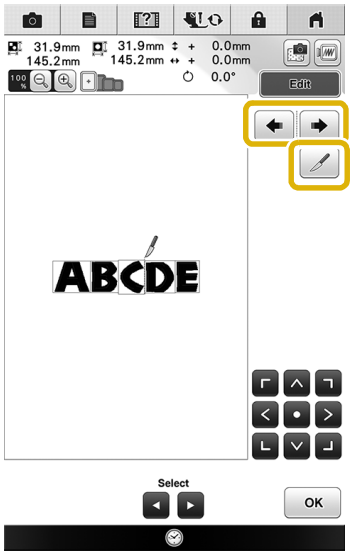
Separating Combined Character Patterns

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

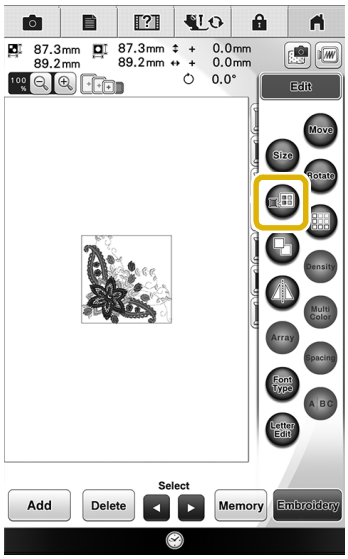
- You can move patterns using ⌜ ^ ⌝ < • > ⌞ v ⌟ on the window.

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 ⊞.**

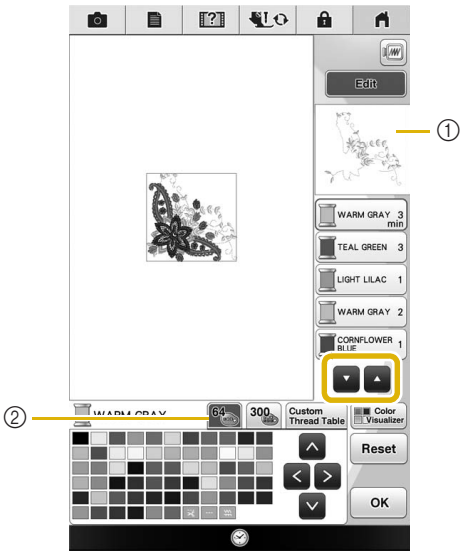


→ The thread color palette screen displays.

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.

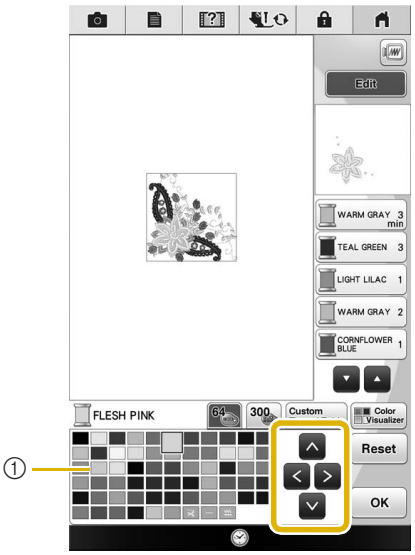


① Selected thread color image

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.

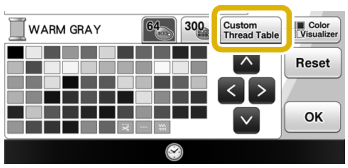
Creating a Custom Thread Table

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 ”.

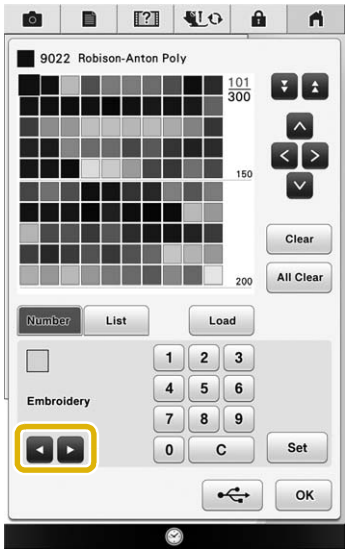
1 **Press and then press Custom Thread Table.**



2 **Use ⌃ < > ⌄ or press directly to choose where to add a color on the custom thread table.**

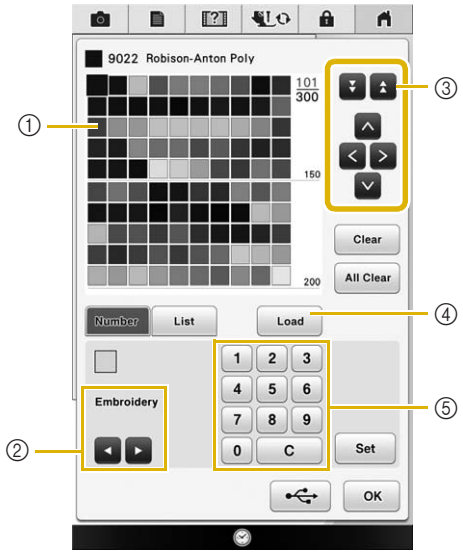
* You can scroll through 100 colors at a time using ⌃⌃ and ⌄⌄ on the custom thread table.

3 **Use ◄ ► to select one of the thread brands in the machine.**



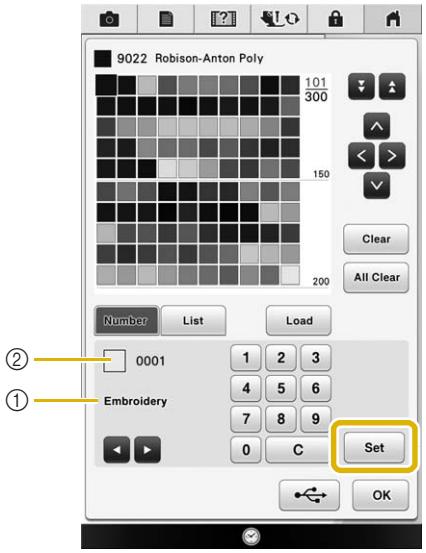
4 **Use [1] [2] [3] [4] [5] [6] [7] [8] [9] [0] to enter a color's 4-digit number.**

* 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.

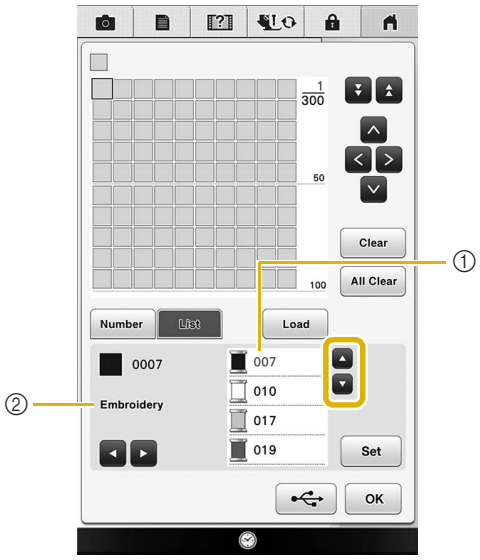
7 **Press [OK].**

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

1 **Press [icon] 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].

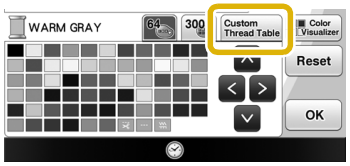
6 **Press [OK].**

■ Saving the Custom Thread Table to USB media

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

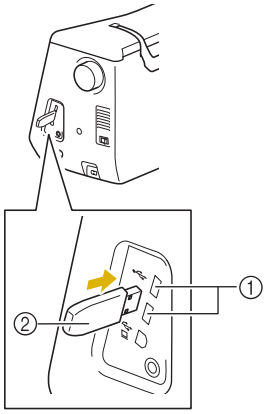
> **Note**
> - Custom thread table data can only be saved to USB media. You cannot save the data in the machine's memory or to your computer.
> - Custom thread table data is saved as ".pcp" data file.

1 **Press [icon] and then press [Custom Thread Table].**



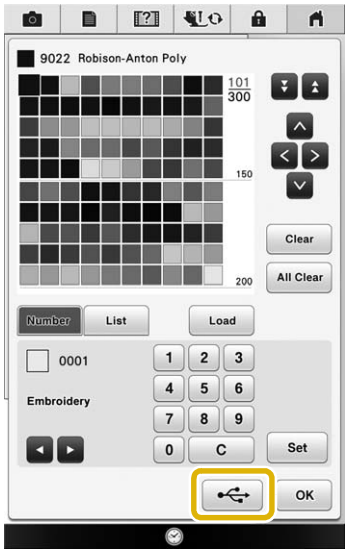
2 **Set your desired colors in the custom thread table according to the procedure in "Creating a Custom Thread Table" on page 223.**

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



① USB port
② USB media

4 **Press [USB].**



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

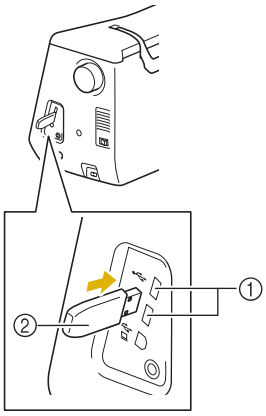
> **Note**
> - Do not insert or remove USB media while "Saving" screen is displayed. You will lose some or all of the data you are saving.

■ Recalling the Custom Thread Table data from USB media

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

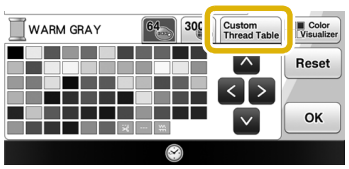
> **Note**
> - Do not store two or more ".pcp" data file in USB media. You can only recall one custom thread table data at a time.

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

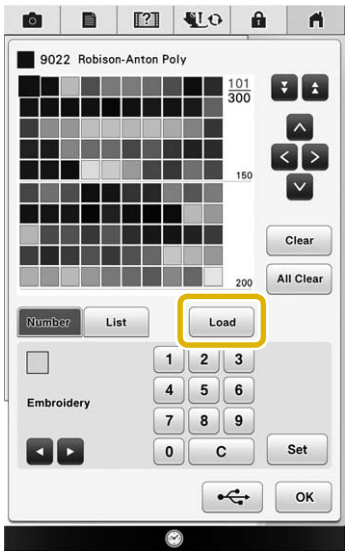


① USB port
② USB media

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

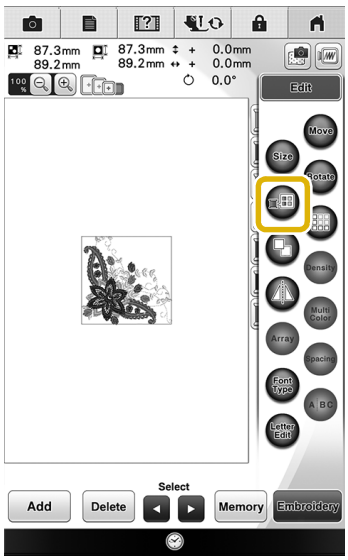
- Do not insert or remove USB media while "Saving" screen is displayed. You will lose some or all of the data you are saving.

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 .**



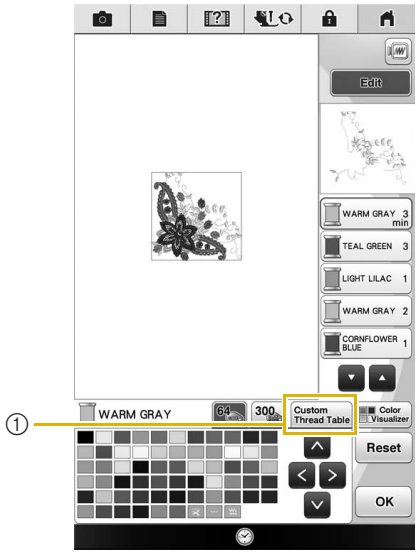
→ The thread color palette screen displays.

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.**

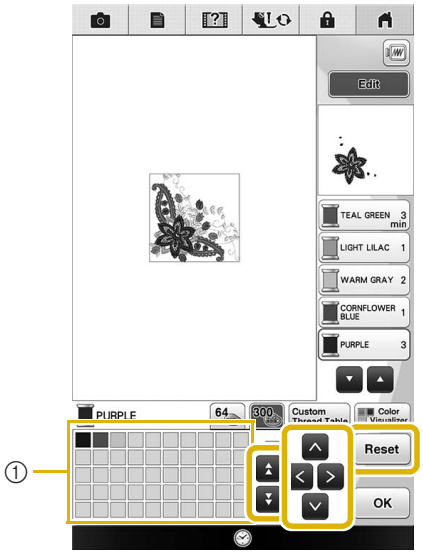


① Custom thread change key

→ 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.**

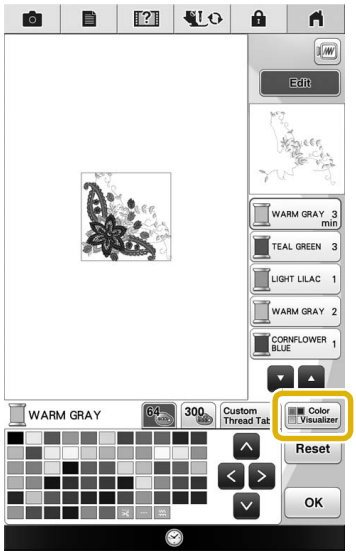
Find New Color Schemes With the Color Visualizer Function

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.**

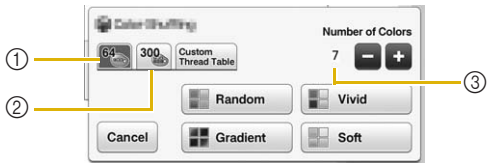


→ The color visualizer screen appears.

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)

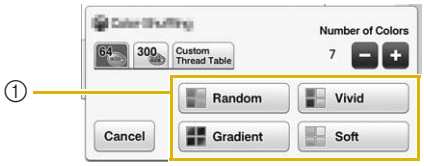
③ Number of colors to be used.

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.



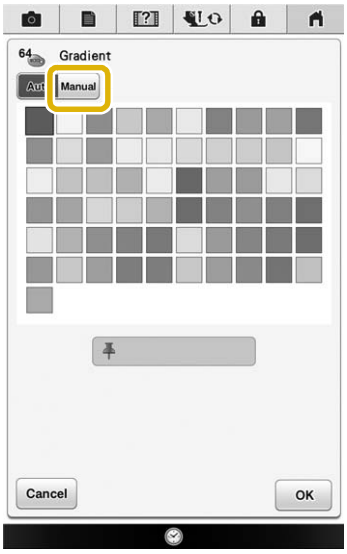
① Effects for schemes

→ 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.

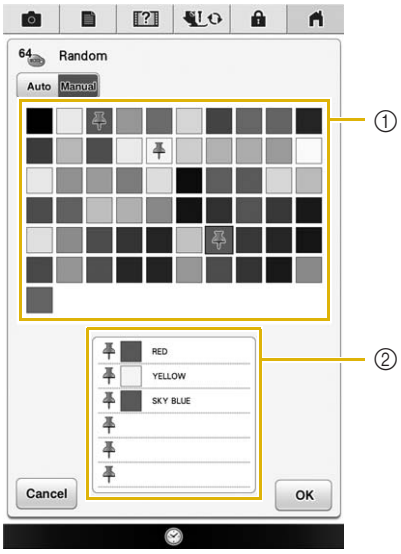
* If you don't need to specify the thread color, just set to Auto.



"Manual" setting for "Random"

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

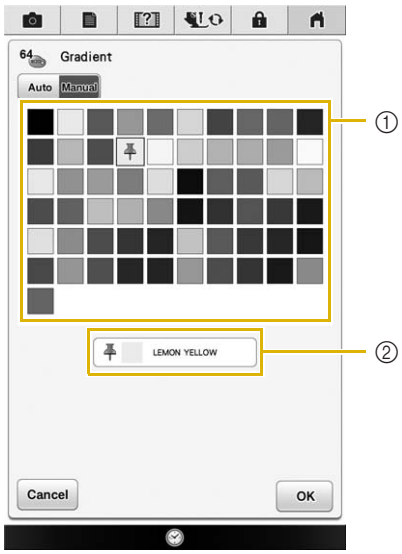
The effect will be created using the selected colors.



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.

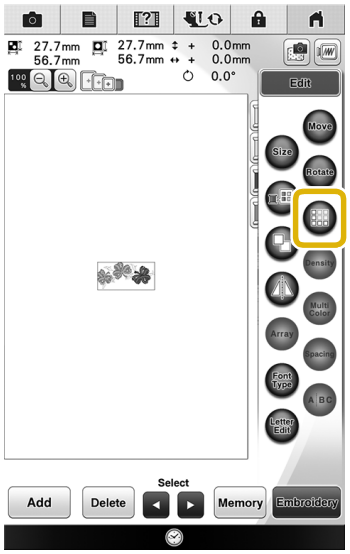
→ The thread color palette screen will appear.

Designing Repeated Patterns

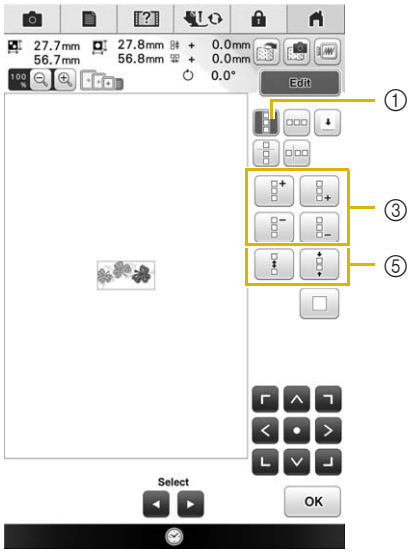
■ Sewing Repeated Patterns

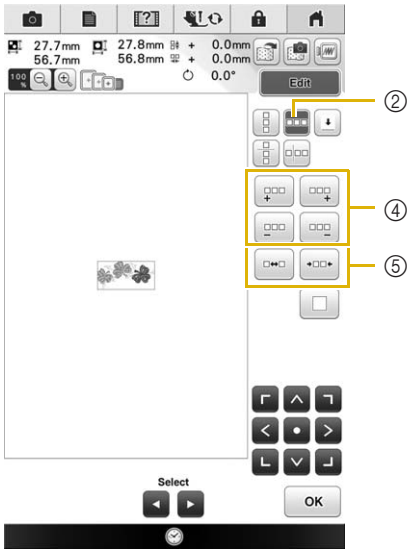
Using the border function, you can create stitches using repeated patterns. You can also adjust the spacing of the patterns within a repeated pattern stitch.

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.

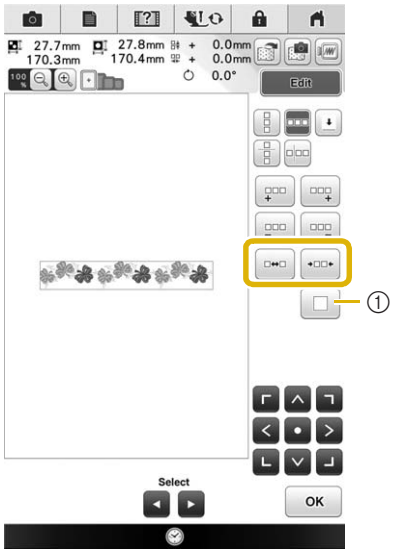
* To delete the left pattern, press [□□□−].

* 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

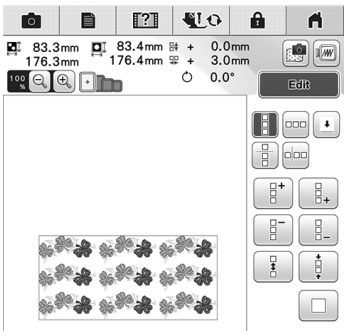
- You can only adjust the spacing of patterns included in the red frame.

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.



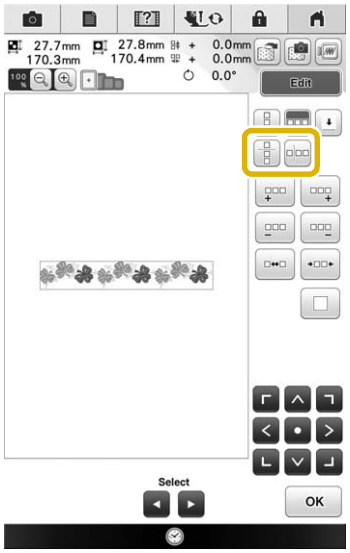
- When changing the direction in which the pattern will be repeated, all of the patterns in the red frame will automatically be grouped as one repeating unit. Press [□] to change a repeated pattern back to one single pattern. See the following section on how to repeat one element of a repeated pattern.

■ 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.

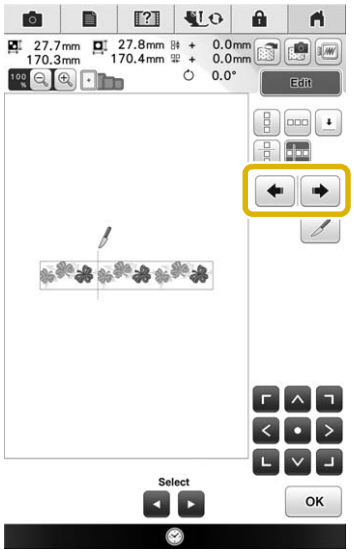
1 Choose the direction in which the repeated pattern will be cut.

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



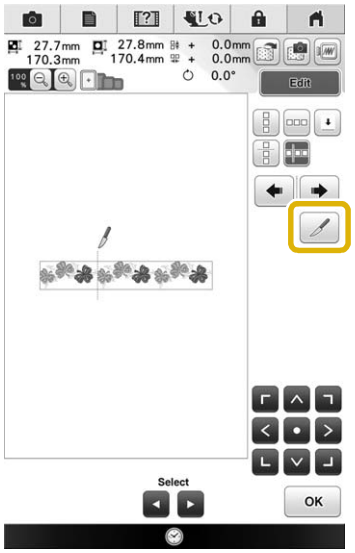
→ The pattern direction indicator will change depending on the direction selected.

2 Use and to select the cut line.



→ The cut line will move.

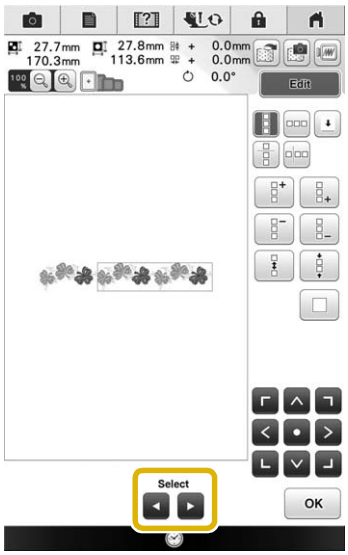
3 Press .



→ 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

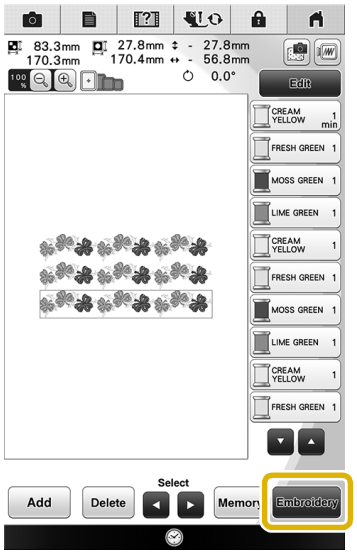
- Once you have cut a repeated pattern into separate elements, you cannot return to the original repeated pattern.
- Each element can be edited separately in the edit screen. See “Selecting combined embroidery patterns” on page 240.

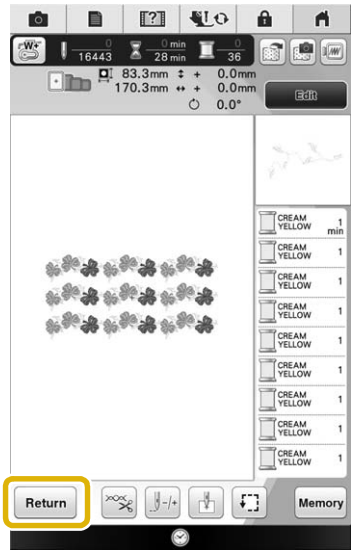
■ Color Sorting Repeated Patterns

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

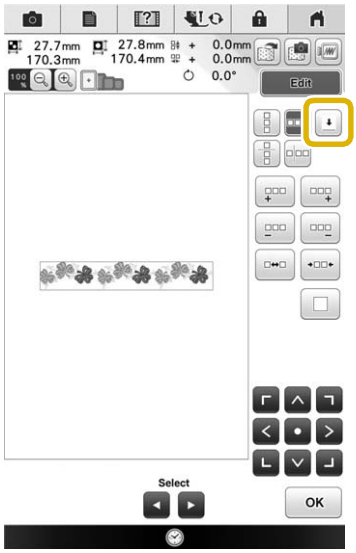
By sewing thread marks, you can easily align patterns when sewing a series. When sewing is finished on a pattern, a thread mark in the shape of an arrow will be sewn using the final thread. When sewing a series of patterns, use the point of this arrow for positioning the following designs to be sewn.

Memo

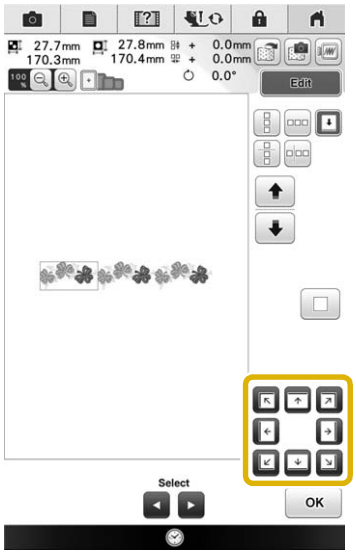
- When repeatedly sewing individual patterns, thread marks can be sewn around the perimeter of the pattern only.

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.

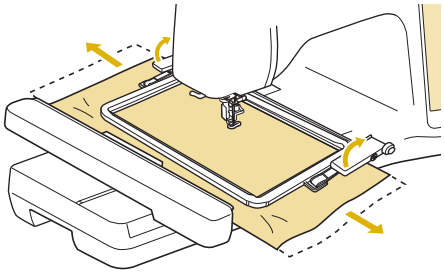
4 Press OK.

Embroidering the Pattern Repeatedly

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

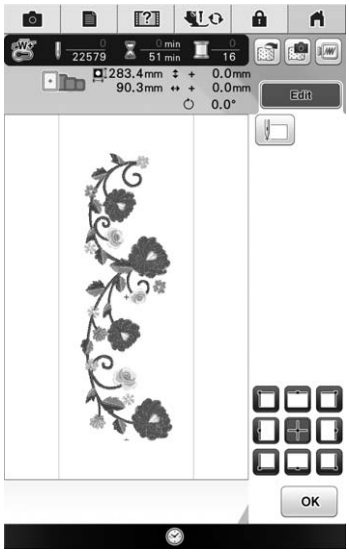
Memo

- 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.**

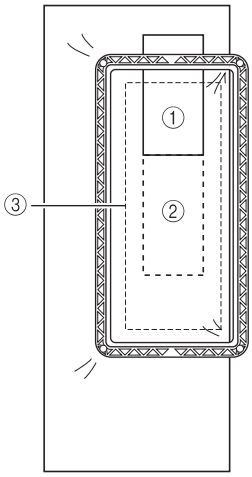
→ When embroidering is finished, the thread mark is sewn with the last thread color.

4 **Remove the embroidery frame.**

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

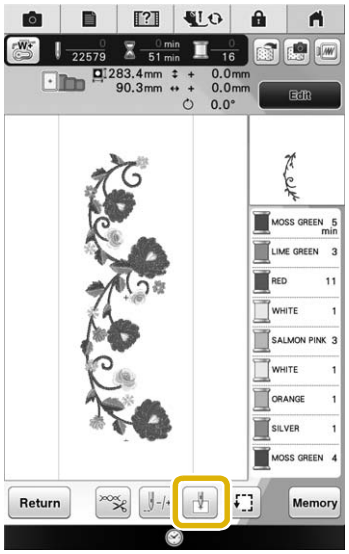
Note

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

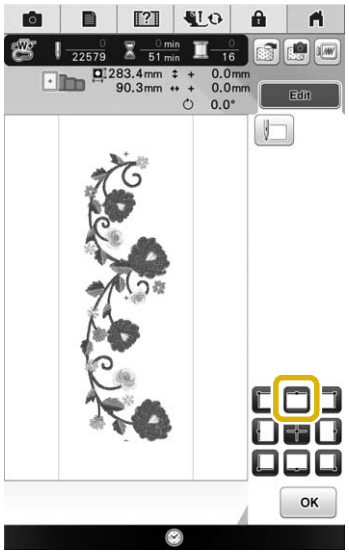


① Pattern embroidered first
② Position of pattern to be embroidered next
③ Embroidering area of embroidery sheet

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.**

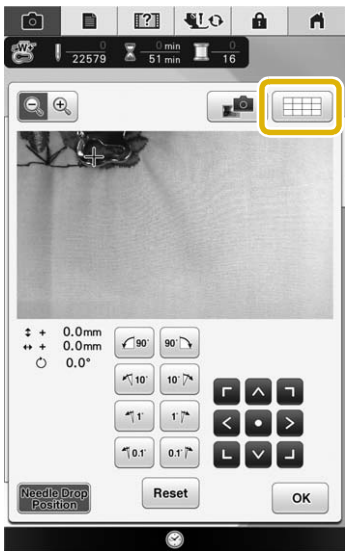


8 **Touch OK.**

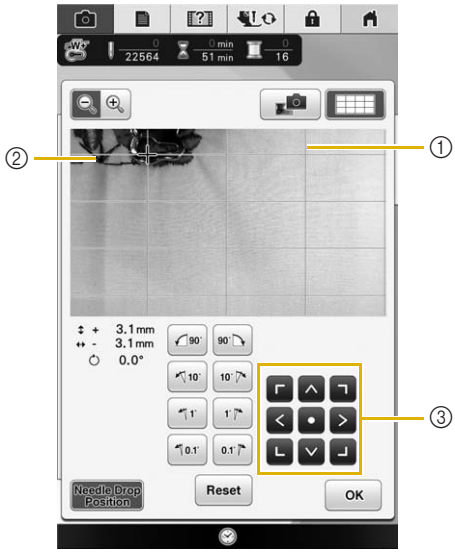
9 **Press the "Presser Foot Lifter" button to lower the presser foot.**

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.

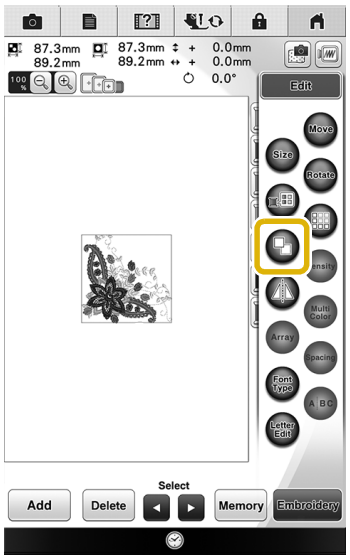
14 **Press OK to return to the previous screen.**

15 **Remove the thread mark.**

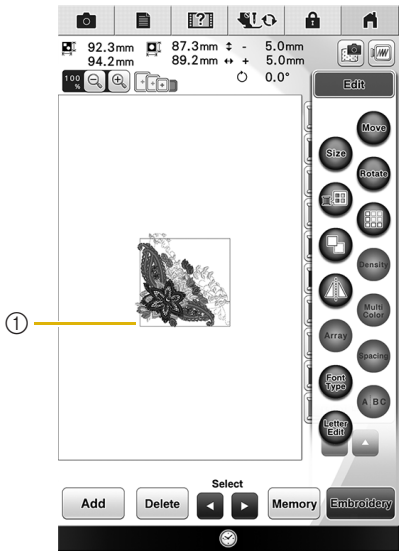
16 **Press the "Start/Stop" button to begin embroidering.**

Duplicating a Pattern

1 **Press .**



→ The duplicate is positioned over the original pattern.

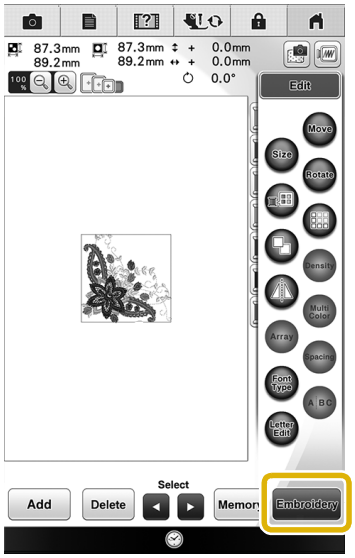


① Duplicated pattern

> **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.**

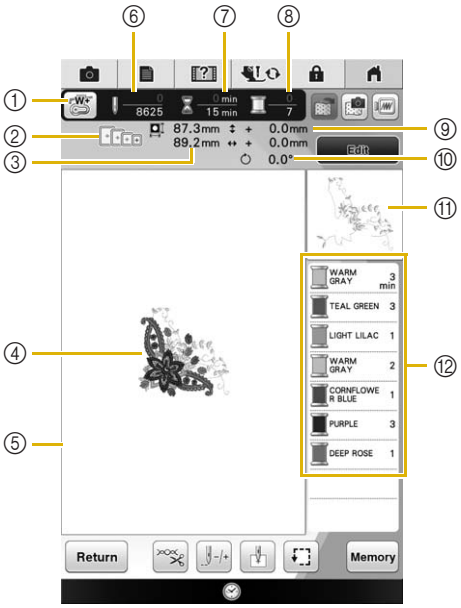


* To combine the pattern with other patterns, select Add (see page 238).

* 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.

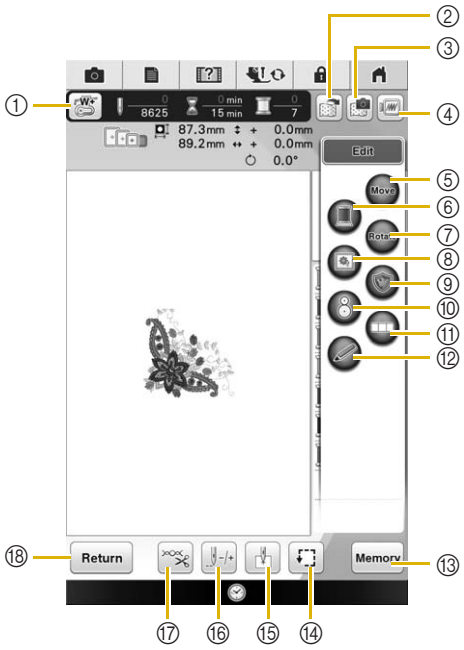
* The displayed time is the approximate time that will be required. The actual embroidering time may be longer than the displayed time, depending on the embroidery frame that is used. In addition, the amount of time required to change thread colors is not included.

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

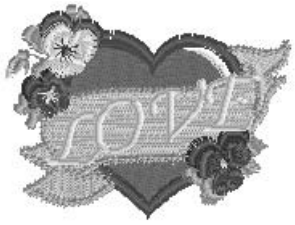
- Some operations or functions are not available for certain patterns. If the key display is darkened, you cannot use that function or operation with the selected pattern.

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

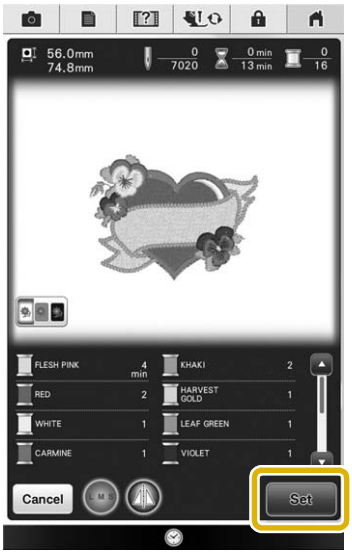
Example: Combining alphabet characters with an embroidery pattern and editing



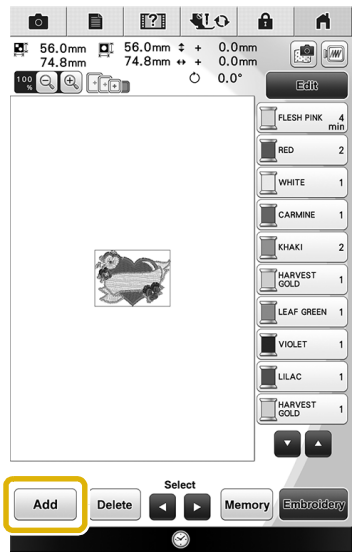
1 **Press** **to select an embroidery pattern.**

2 **Select** .

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



4 **Press Add.**



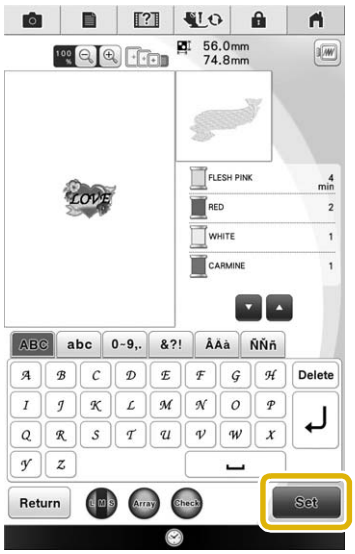
5 **Press 3AA to enter the alphabet characters.**

* 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.**

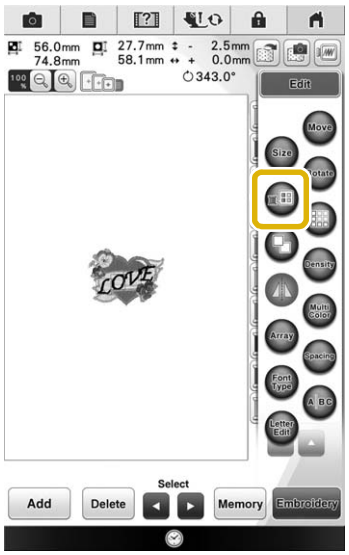
* See page 219 for more information about changing the layout.

9 **Use ⌜ ∧ ⌝ < • > ⌞ ∨ ⌟ to move the characters.**

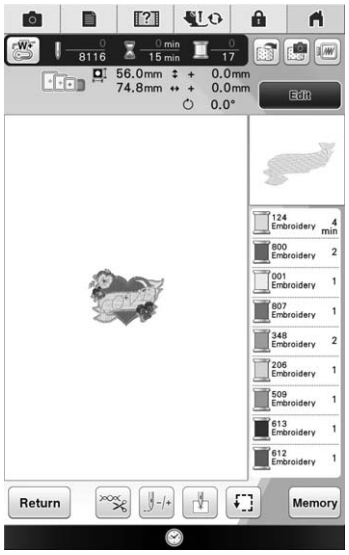
* With a USB mouse, your finger or the touch pen, drag the characters to move them.

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.**

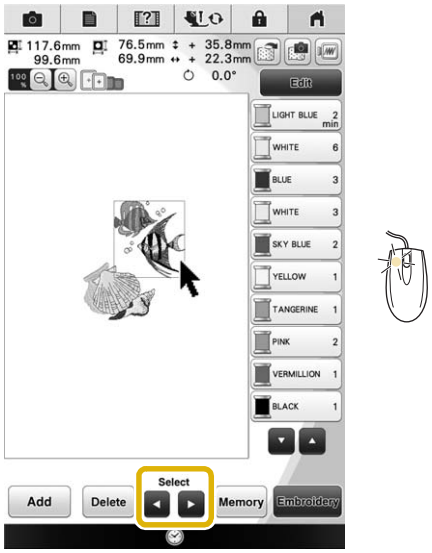


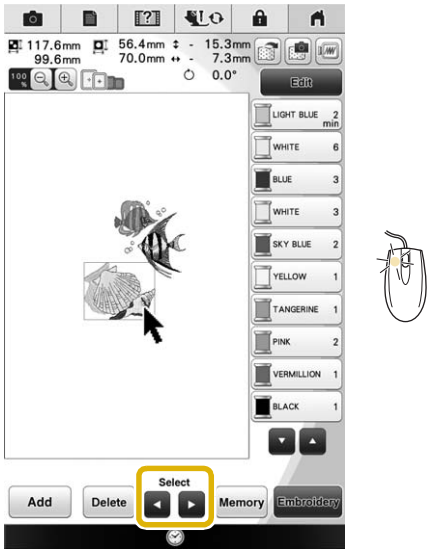
■ Selecting combined embroidery patterns

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.





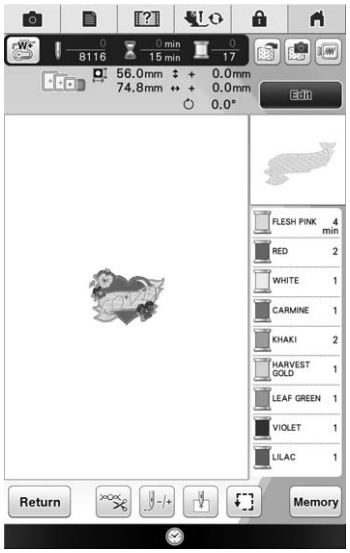
Sewing Combined Patterns

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

Note

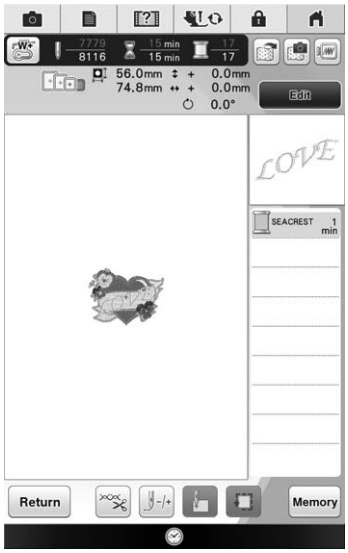
- Follow the directions in “Embroidering Patterns” on page 260.

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.

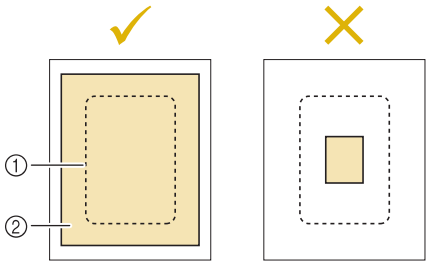
- To increase the space between the presser foot and the needle plate, set the "Embroidery Foot Height" to a larger number, 1.5 mm setting is used for most embroidery.

Attaching Iron-on Stabilizers (Backing) to the Fabric

⚠ CAUTION

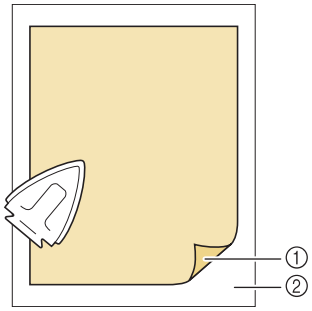
- **Always use a stabilizer material for embroidery when sewing stretch fabrics, lightweight fabrics, fabrics with a coarse weave, or fabrics which cause pattern shrinkage. Otherwise, the needle may break and cause injury. Not using a stabilizer material may result in a poor finish to your project.**

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.



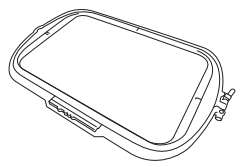
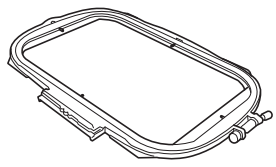
① Fusible side of stabilizer
② Fabric (wrong side)

Memo

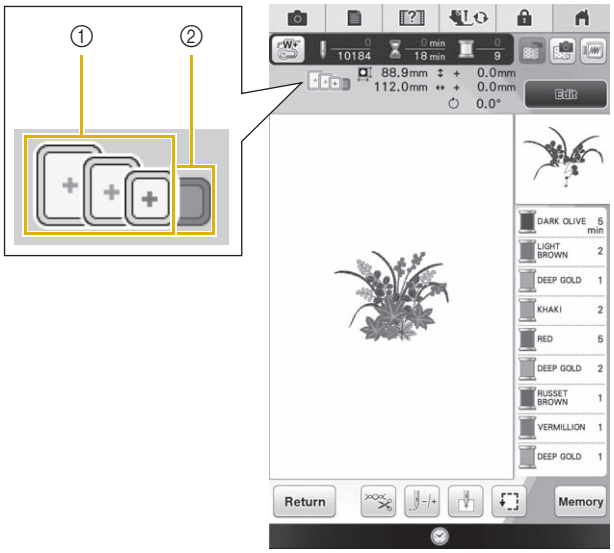
- When embroidering on thin fabrics such as organdy or lawn, or on napped fabrics such as towel or corduroy, use water soluble stabilizer (sold separately) for best results. The water soluble stabilizer material will dissolve completely in water, giving the project a more attractive finish.

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

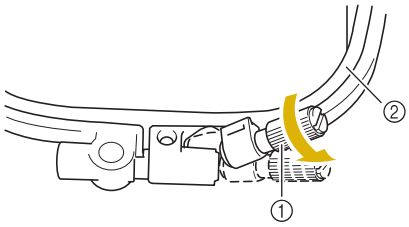
- **If you use a frame that is too small, the presser foot may strike the frame during sewing and cause injury.**

■ 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.

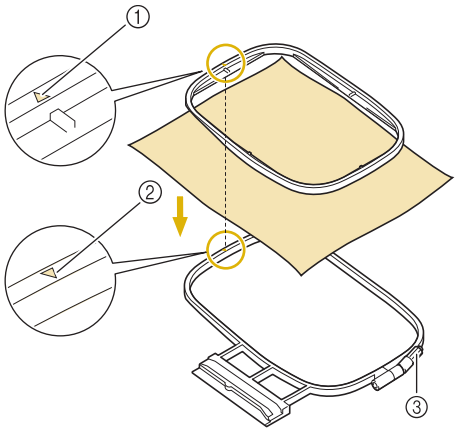
1 Lift-up and loosen the frame adjustment screw and remove the inner frame.



① Frame adjustment screw
② Inner frame

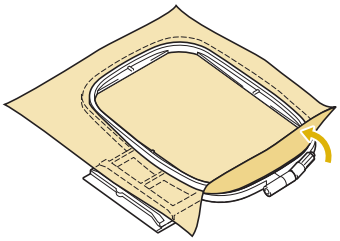
2 Lay the fabric right side up on top of the outer frame.

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



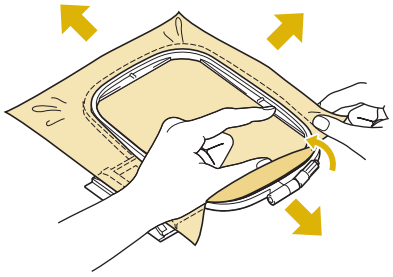
① Inner frame's △
② Outer frame's ▽
③ Frame adjustment screw

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.

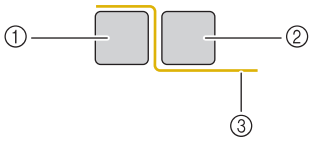


4 Gently stretch the fabric taut, and tighten the frame adjustment screw to keep the fabric from loosening after stretching.

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



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

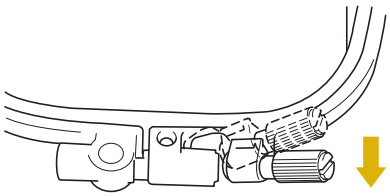


① Outer frame
② Inner frame
③ Fabric

Memo

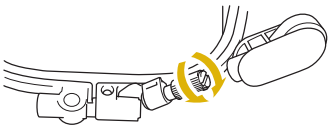
- Stretch the fabric from all four corners and all four edges. While stretching the fabric, tighten the frame adjustment screw.

5 Return the frame adjustment screw to its initial position.



Memo

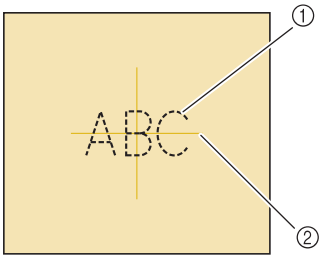
- You can use the included multi-purpose screw driver setting the position to “3”, when you loosen or tighten the frame adjustment screw.



■ Using the Embroidery Sheet

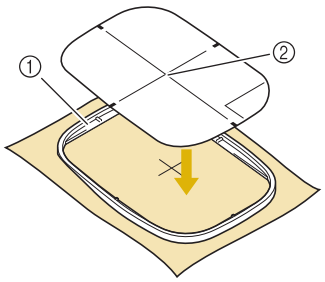
When you want to embroider the pattern in a particular place, use the embroidery sheet with the frame.

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



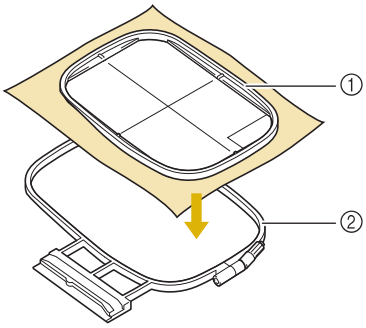
① Embroidery pattern
② Mark

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.



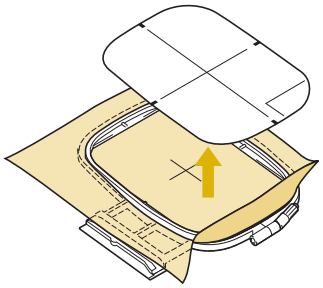
① Inner frame
② Guide line

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.

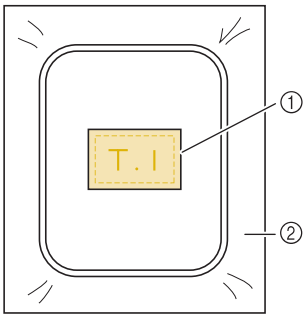


Embroidering Small Fabrics or Fabric Edges

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

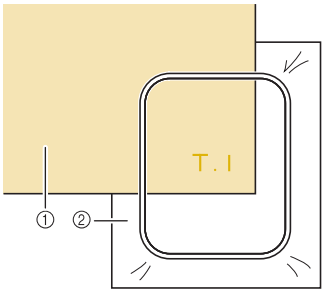
Use a temporary spray adhesive to adhere the small piece of fabric to the larger piece in the frame.
If you do not wish to use a temporary spray adhesive, attach the stabilizer with a basting stitch.



① Fabric
② Stabilizer

■ Embroidering Edges or Corners

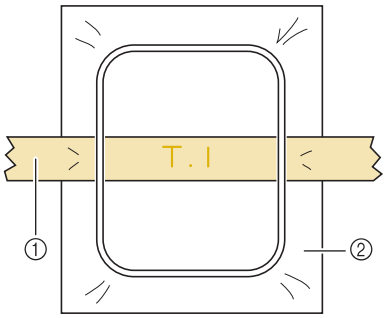
Use a temporary spray adhesive to adhere the small piece of fabric to the larger piece in the frame.
If you do not wish to use a temporary spray adhesive, attach the stabilizer with a basting stitch.



① Fabric
② Stabilizer

■ Embroidering Ribbons or Tape

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

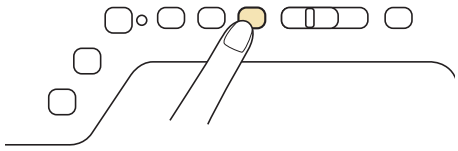


① Ribbon or tape
② Stabilizer

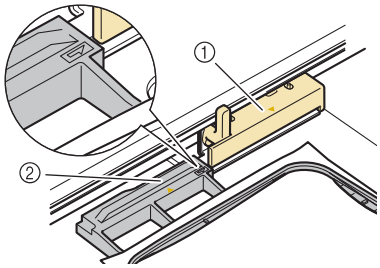
ATTACHING THE EMBROIDERY FRAME

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

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

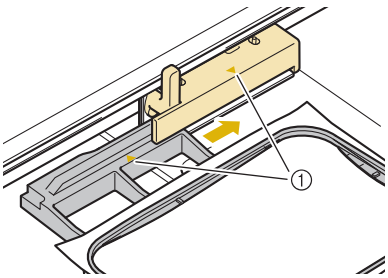


2 **Align the embroidery frame guide with the right edge of the embroidery frame holder.**



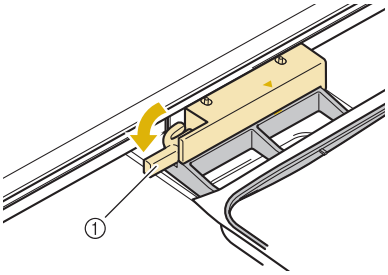
① Embroidery frame holder
② Embroidery frame guide

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



① Arrow mark

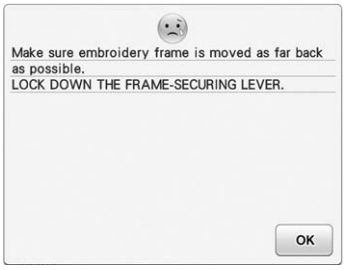
4 **Lower the frame-securing lever to be level with the frame to secure the embroidery frame in the embroidery frame holder.**



① Frame-securing lever

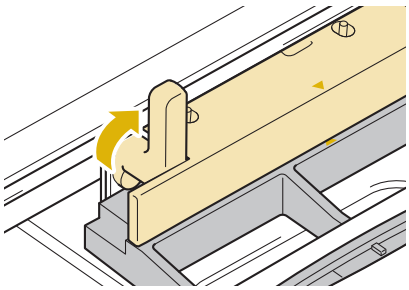
⚠ CAUTION

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

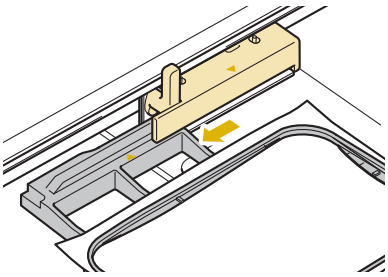


■ Removing the Embroidery Frame

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



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



CONFIRMING THE PATTERN POSITION

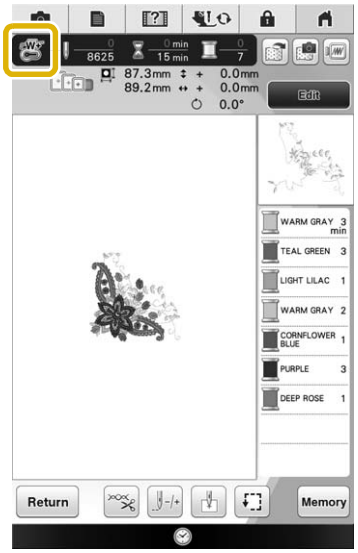
The pattern is normally positioned in the center of the embroidery frame. If the pattern needs to be repositioned for better placement on the garment, you can check the layout before starting embroidery.

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 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 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.

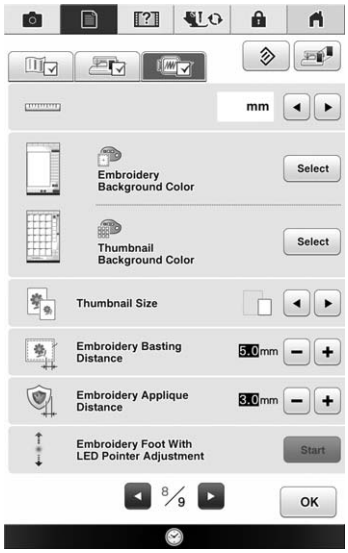
Note

- 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 .

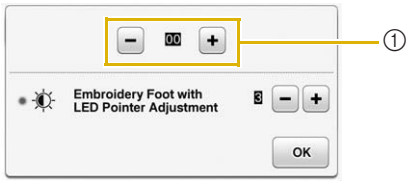
→ The settings screen appears.

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".

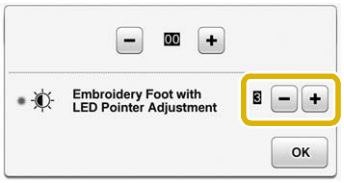
4 **Use [−] or [+] to adjust the LED pointer so that it indicates the actual needle drop point.**

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.**

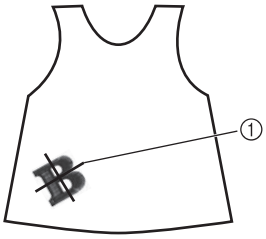


3 **Press [OK] twice to return to the original screen.**

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.**



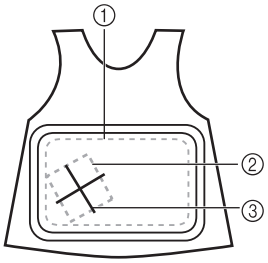
① Chalk pencil mark

* 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.

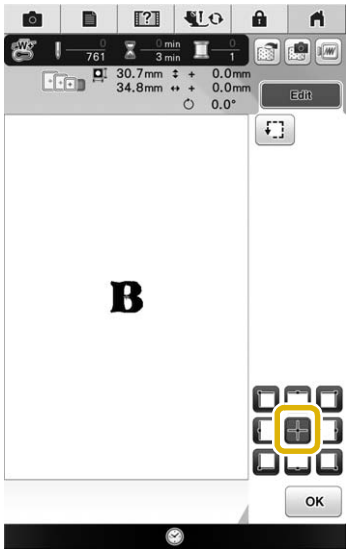


① Embroidering area
② Embroidery pattern size
③ Chalk pencil mark

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.

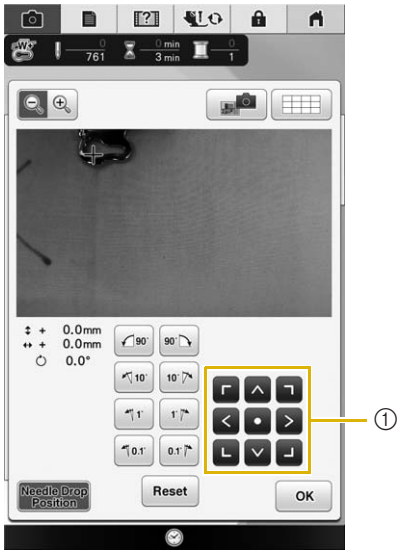


6 Press [OK].

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

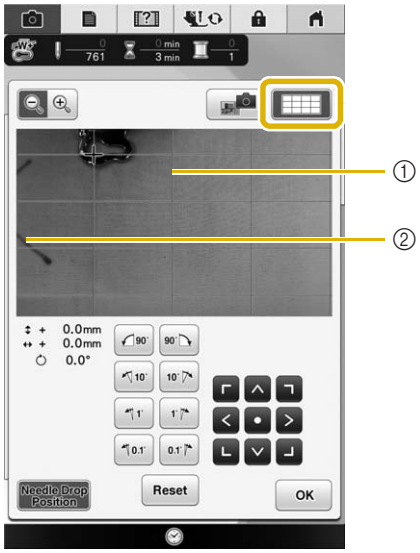
8 Press [ ].

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.

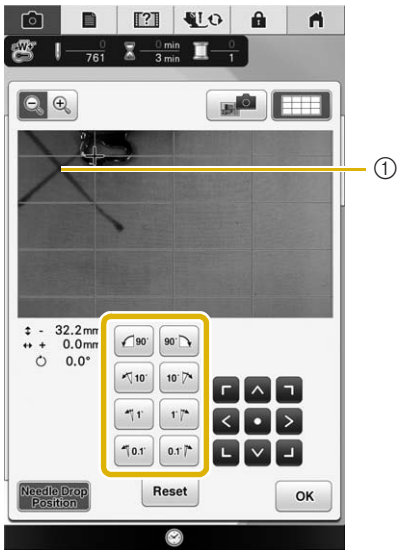


① Grid lines
② Chalk mark on the fabric

Memo

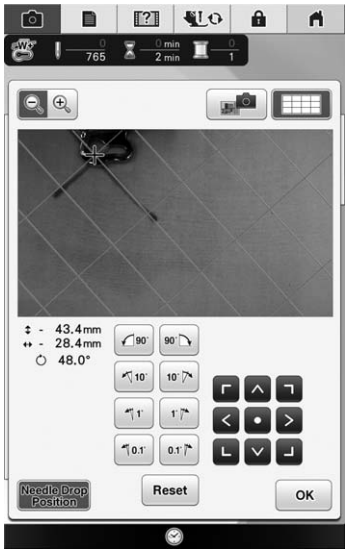
- Press [ ] to enlarge the camera view. By enlarging the camera view, you can make a close adjustment for the center point of the pattern moving the embroidery frame little by little.

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.**

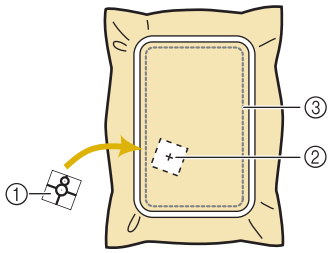
14 **Press the "Start/Stop" button to begin embroidering.**

* 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.

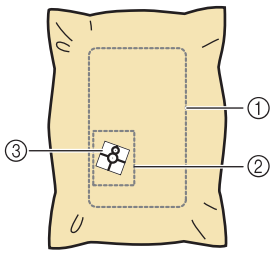
1 **Affix the embroidery positioning sticker to the location in the fabric to be embroidered. Place the embroidery positioning sticker so that the center of the larger circle is at the center or edge of the embroidery pattern.**



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

Note

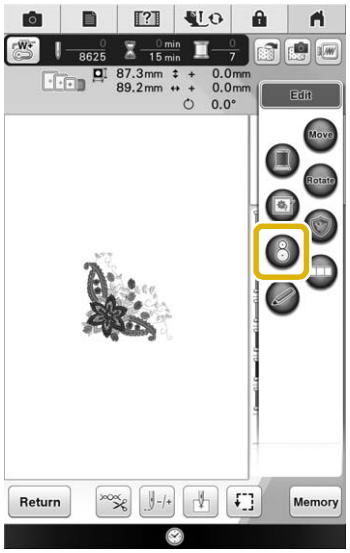
- When inserting the fabric in the embroidery frame, check that the embroidery pattern fits within the embroidery field for the frame that is used.



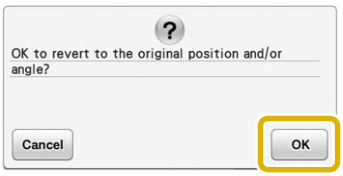
① Embroidery field
② Embroidery pattern
③ Embroidery positioning sticker

- 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 .**

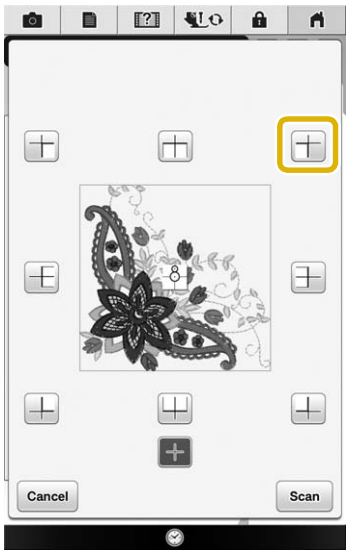


3 **Following message appears. Press OK.**



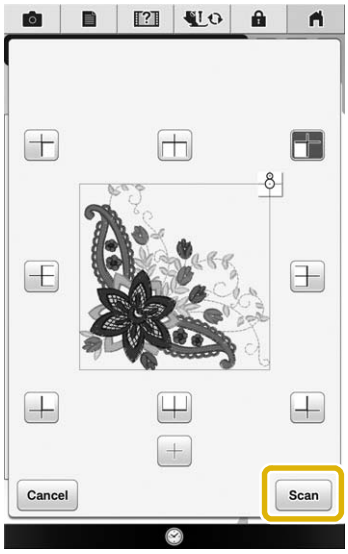
→ The embroidering position will return to the original position, even if you changed before.

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.

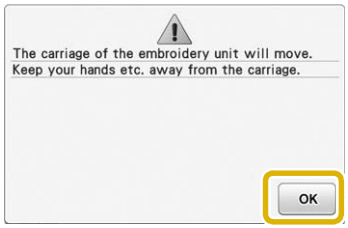
5 **Press Scan.**



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.

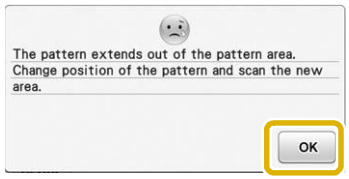
6 **Following message appears. Press OK.**



→ 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.

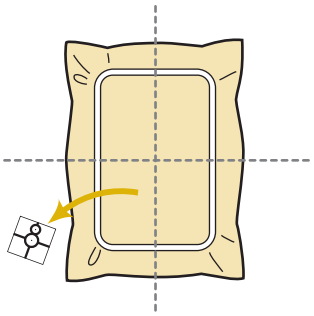
Note

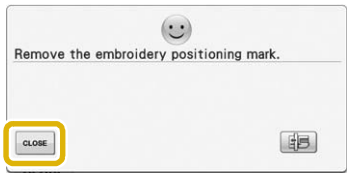
- If the following warning message appears, touch OK and reposition the embroidery positioning sticker so the pattern is within the embroidery field, and then press Scan again.



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.

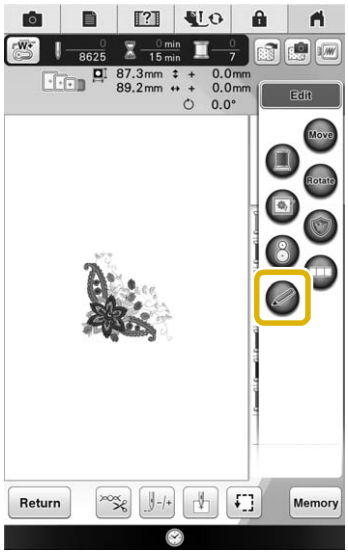
> **Note**
> - After the included embroidery positioning stickers are used up, optional stickers are available. For details, refer to "Options" on page 22.

Specifying the Embroidering Position With the Sensor Pen

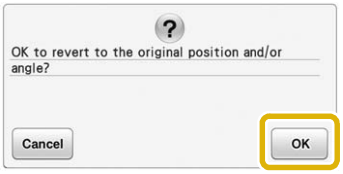
By using the sensor pen, the embroidering position can be adjusted to the desired location.

> **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.

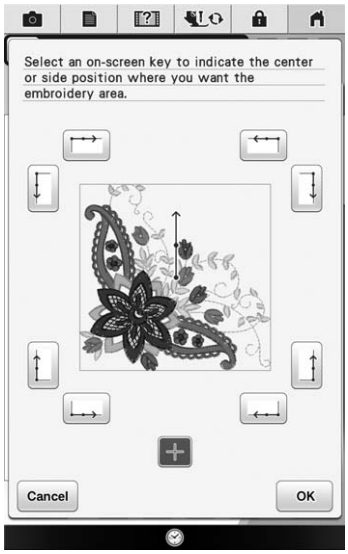
1 Press Edit, and then .



2 Press OK.



→ The embroidering position selection screen appears.

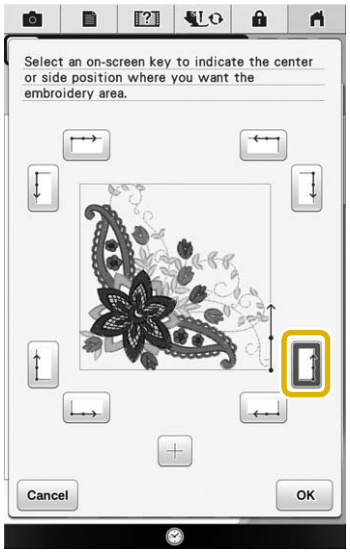


3 Select the reference point for positioning the embroidery pattern.

* 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.

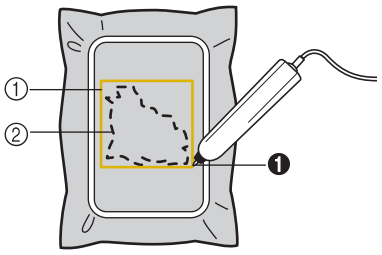
■ Selecting the Embroidering Position by the Pattern Edge

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



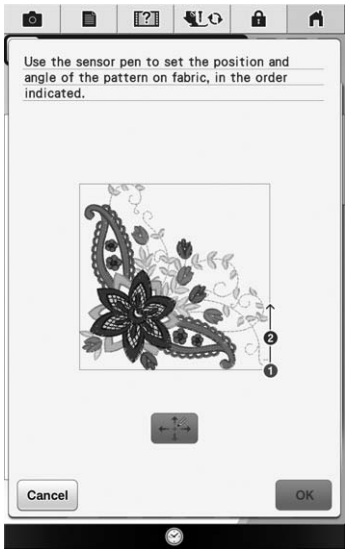
2 **Press** OK .

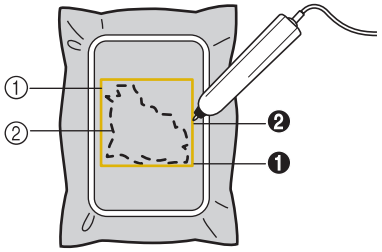
3 **With the sensor pen, touch the point on the fabric corresponding to corner ❶ in the screen.**



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.**



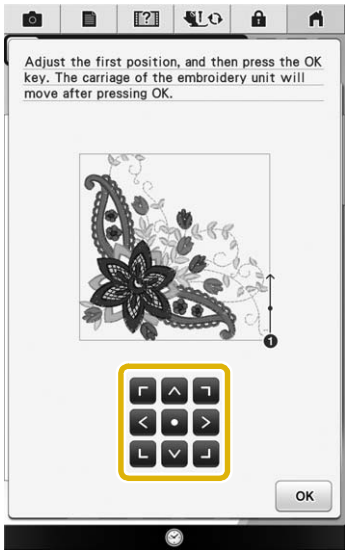


① Square of pattern edge
② Pattern position

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

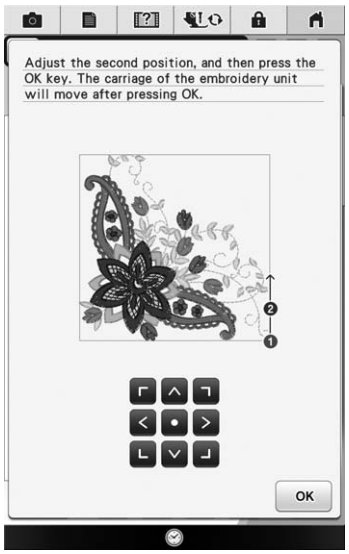
→ If you don't need to adjust the positions, continue to step 9.

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.



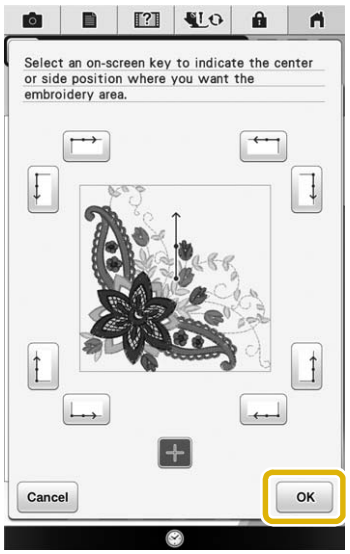
9 Press OK to apply the setting.

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

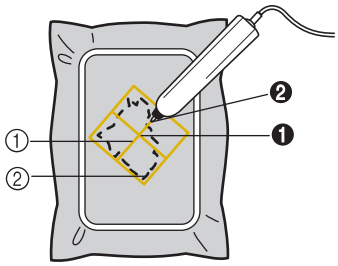
11 Press the "Start/Stop" button to start embroidering.

■ 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.

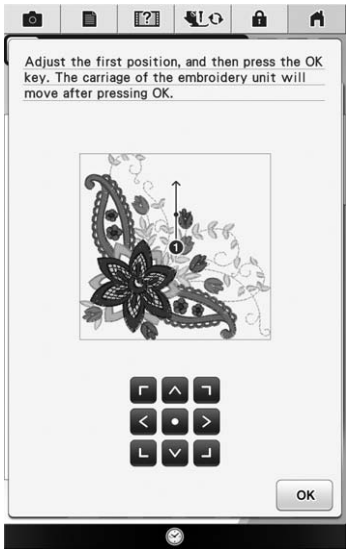


① Center line of the pattern
② Pattern position
→ Specified point number turns into red.

3 **Press to adjust the positions.**

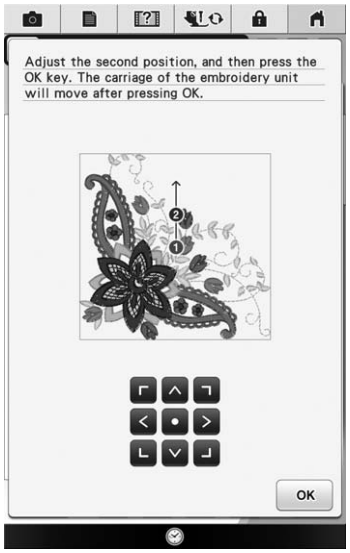
→ If you don't need to adjust the positions, continue to step 7.

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



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

6 **Press 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.**

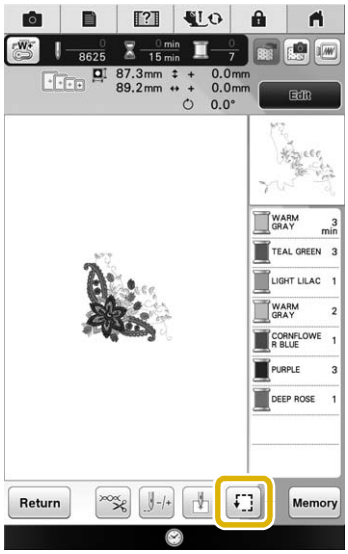
9 **Press the "Start/Stop" button to start embroidering.**

> **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

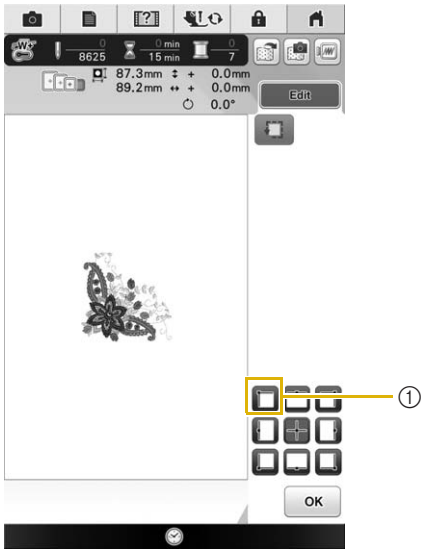
The embroidery frame moves and shows the pattern position. Watch the frame closely to make sure the pattern will be sewn in the right place.

1 **Press .**



→ The following screen is displayed.

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

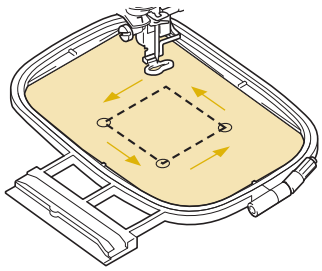


① Selected position

→ 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

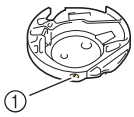
There are many factors that go into sewing beautiful embroidery. Using the appropriate stabilizer (see page 242) and hooping the fabric in the frame (see page 243) are two important factors mentioned earlier. Another important point is the appropriateness of the needle and thread being used. See the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

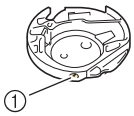
Bobbin case (recommended for sewing and for embroidering with included 60 weight bobbin thread)



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

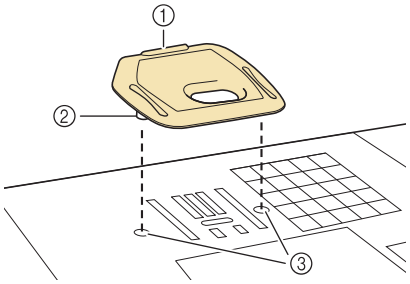
- **When embroidering on large garments (especially jackets or other heavy fabrics), do not let the fabric hang over the table. Otherwise, the embroidery unit cannot move freely and the embroidery frame may strike the needle, causing the needle to bend or break and possibly cause injury.**
  Place the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

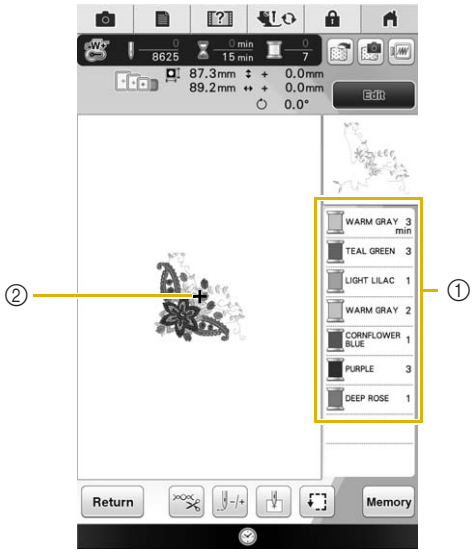
- **Push the embroidery needle plate cover as far as possible to attach it. If the embroidery needle plate cover is not securely attached, it may cause the needle to break.**

Note

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

Embroidering Patterns

Example:

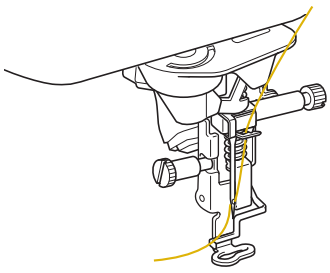


① Embroidery color order
② Cursor

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.**

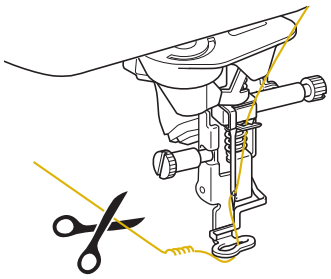


2 Lower the presser foot, then press the "Start/Stop" button to start embroidering.

→ 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

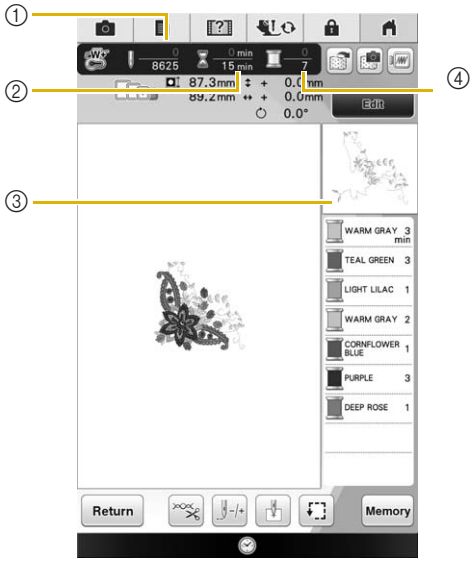
- If you want to get more attractive finishes, try the procedures below;
  - After 5-6 stitches, press the "Start/Stop" button again to stop the machine.
  - Trim the excess thread at the end of the seam. If the end of the seam is under the presser foot, raise the presser foot, then trim the excess thread.



- 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

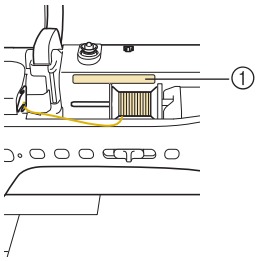
- The Thread Trimming Function is originally set to trim excess thread jumps (threads linking parts of the pattern, etc.). Depending on the type of thread and fabric that are used, an end of upper thread may remain on the surface of the fabric at the beginning of the stitching. After embroidering is 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

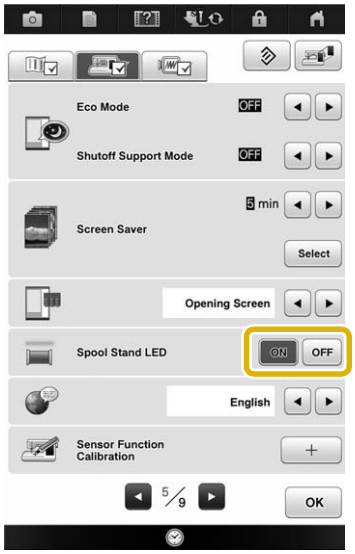
1 **Press .**

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

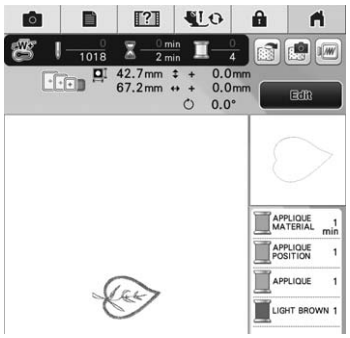
- Fabric for the appliqué piece
- Fabric for the appliqué base
- Stabilizer material
- Craft glue
- Embroidery thread

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.

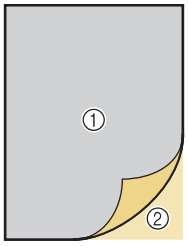
■ 1. Creating the Appliqué Piece

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



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

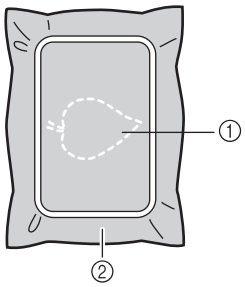
Hoop the fabric in the embroidery frame, and then attach the embroidery frame to the embroidery unit.



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

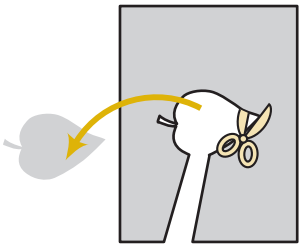
3 Thread the machine with the embroidery thread, lower the presser foot lever, and then press the "Start/Stop" button to sew the cutting line of the appliqué piece.

→ 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

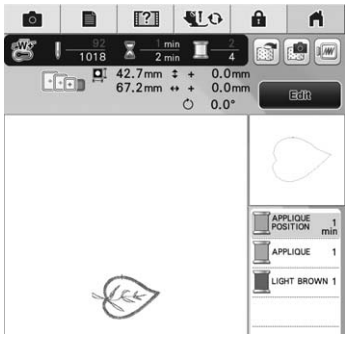
- If the appliqué piece is cut out along the inside of the cutting line, it may not be correctly attached to the fabric. Therefore, carefully cut out the appliqué piece along the cutting line.
- After cutting out the appliqué piece, carefully remove the thread.

■ 2. Sewing the Appliqué Position on the Base Fabric

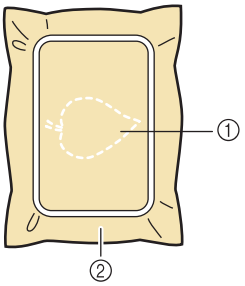
1 Attach stabilizer material to the wrong side of the fabric for the appliqué base.

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.



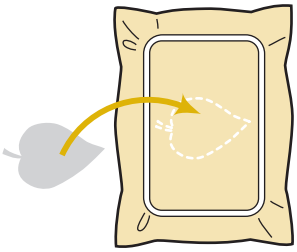
① Appliqué position
② Base fabric

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

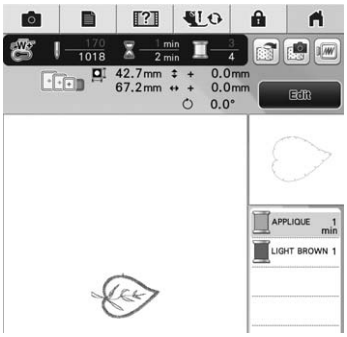
1 Lightly apply craft glue to the back of the appliqué piece, and then attach it to the base fabric within the outline of the position sewn in step 2 of "2. Sewing the Appliqué Position on the Base Fabric".



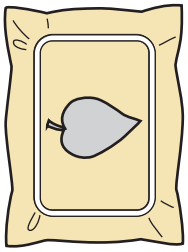
> **Note**
> - If the appliqué piece is not securely attached to the base fabric, the appliqué piece may lift off the base fabric during sewing, causing misalignment.
> - If the appliqué piece cannot be attached to the base fabric with craft glue, securely baste it in place with basting stitches.
> - 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.



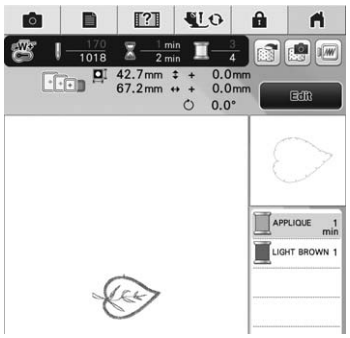
→ The appliqué piece is sewn to the base fabric, and then the machine stops.

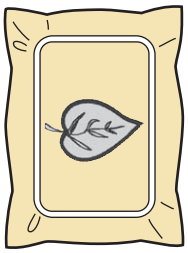


> **Memo**
> - Depending on the pattern that is selected, (appliqué piece), (appliqué position) and (appliqué) for all three steps may not appear. If (appliqué) appears as a color, embroider using thread of that color.

■ 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

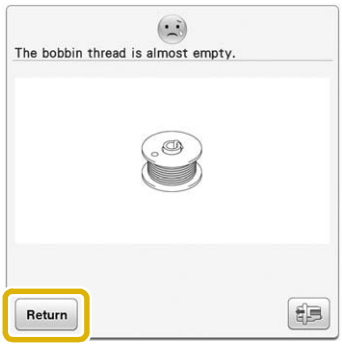
- Since glue may become attached to the presser foot, needle or needle plate, clean off any glue off after finishing embroidering the appliqué pattern.
- For best results, trim all excess threads each time the thread color is changed.

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.

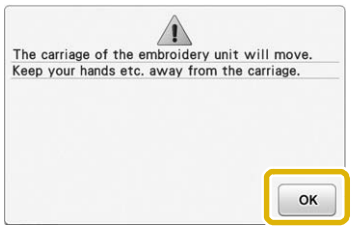
If the Bobbin Runs Out of Thread

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.

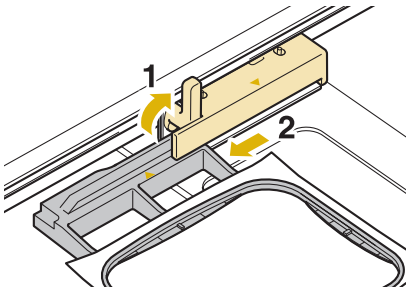
1 **Press [OK].**



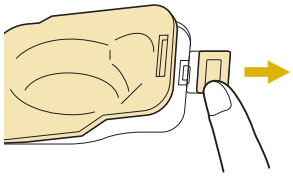
→ After the thread is automatically cut, the carriage will move.

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

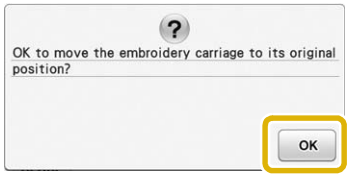
* Be careful not to apply strong force to the fabric at this time. Otherwise, the fabric may loosen in the frame.



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.**

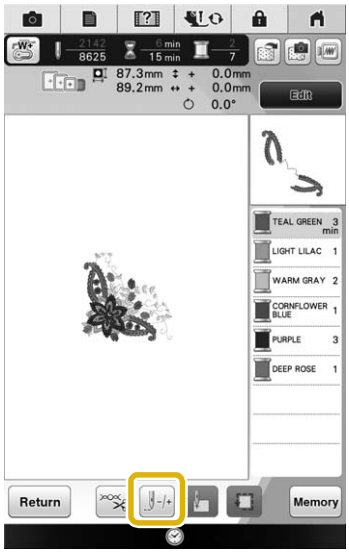
6 **To return to the spot in the pattern where you stopped sewing, follow steps ③ through ⑨ in the next section.**

If the Thread Breaks During Sewing

1. **Press the "Start/Stop" button to stop the machine.**

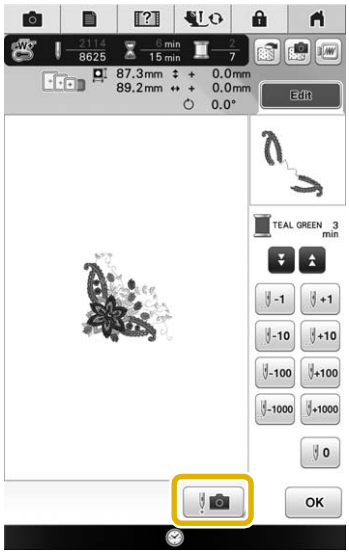
2. **If the upper thread is broken, redo the upper threading. If the bobbin thread is broken, press [ ] and follow the directions in steps 1 through 5 from the previous section to reset the bobbin.**

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



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

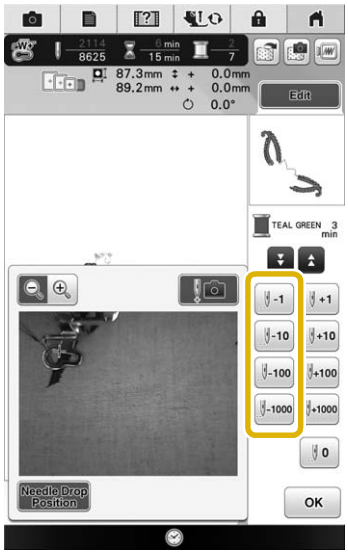
5. **Press [ ].**



→ 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.

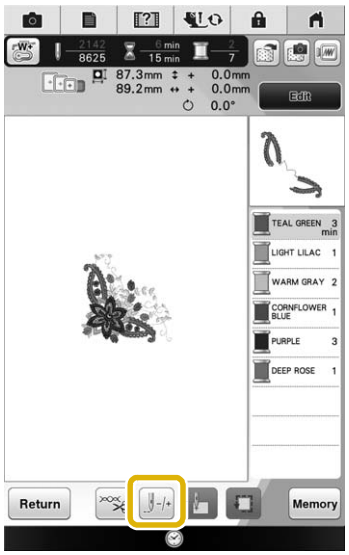
7. **Press [ ] to close the camera view window.**

8. **Press [OK] to return to the original screen.**

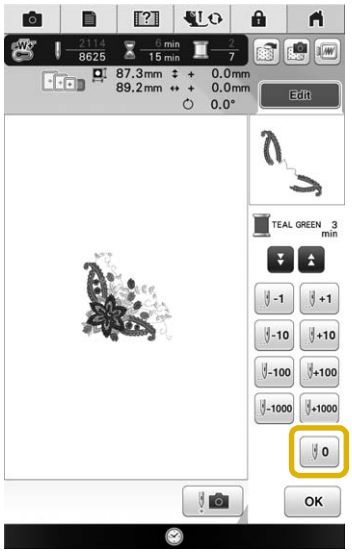
9. **Press the "Start/Stop" button to continue sewing.**

Restarting from the Beginning

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



2 **Press [0].**



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

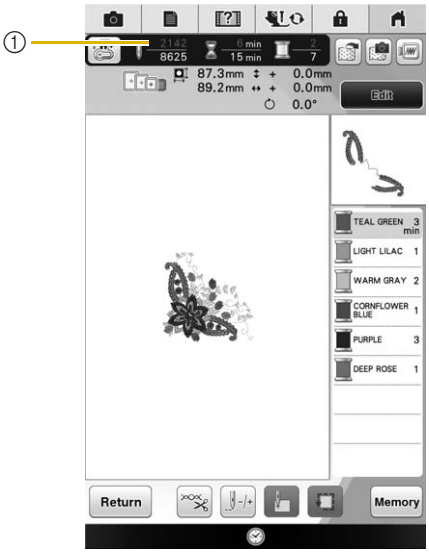
3 **Press the "Presser Foot Lifter" button to lower the presser foot and start sewing.**

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

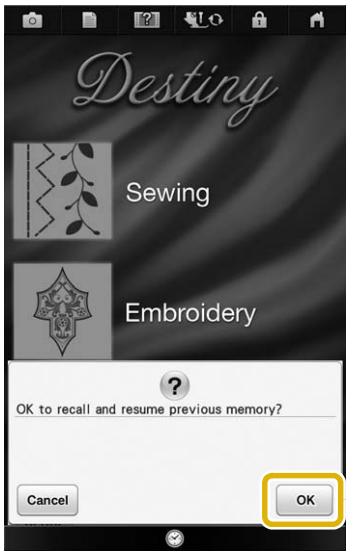
- Do not remove the embroidery unit or the memory will no longer remember your design.

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.

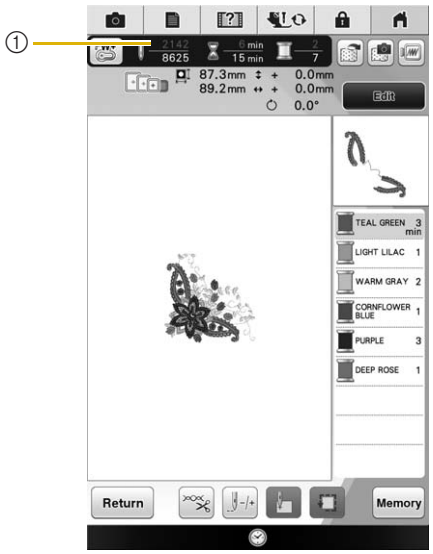


→ The previous embroidering screen displayed before the machine was turned off appears.

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

Chapter 6

Advanced Embroidery

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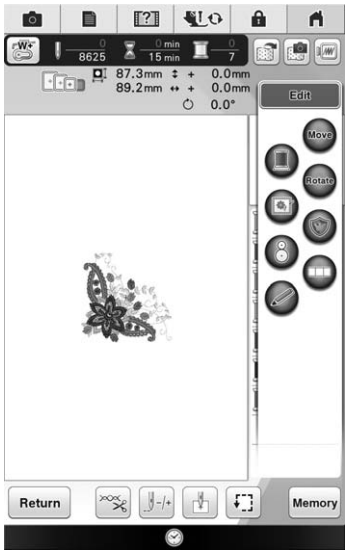
VARIOUS EMBROIDERING FUNCTIONS

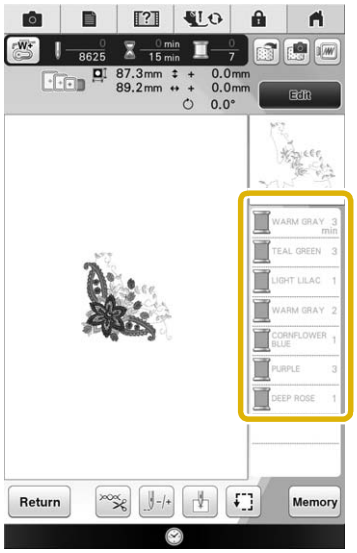
Uninterrupted Embroidering (Using a Single Color : Monochrome)

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).

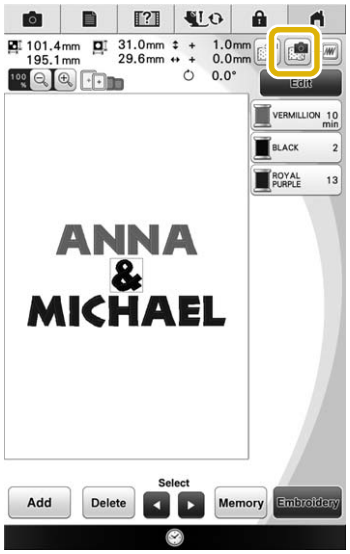
1 Hoop the fabric in the embroidery frame, and then attach the frame to the embroidery machine.

2 Select the pattern, and then press Set.

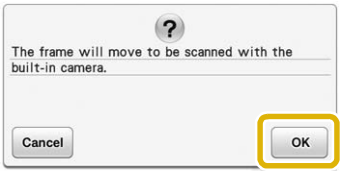
Note

- 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.**



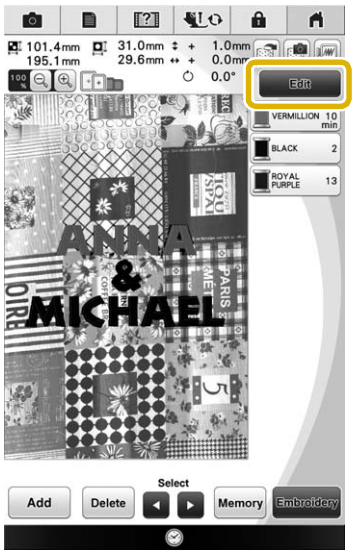
→ The embroidery frame moves so the fabric can be scanned.

Memo

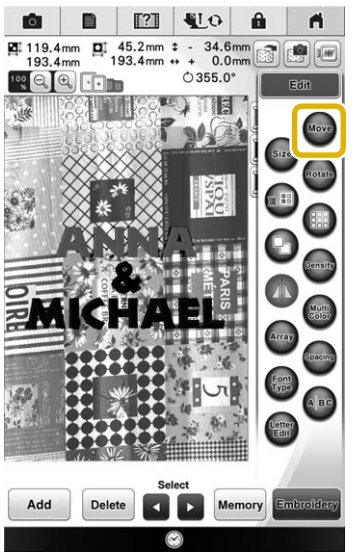
- If you do not wish the upper thread to be scanned together with the fabric, scan the fabric without the needle threaded with the upper thread.

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 ⌜ ^ ⌝ < • > ⌞ v ⌟ 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.

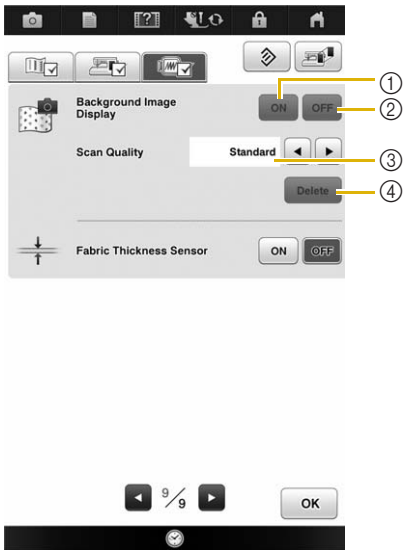
9 **Press the "Start/Stop" button to start embroidering.**

* 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.



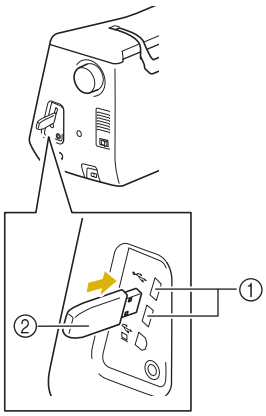
① Set to "ON" to leave the fabric displayed in the background.
② When set to "OFF", the background will disappear.
③ Set to "Fine" to scan clearer than setting to "Standard".
④ Press Delete to remove the background image completely.

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.

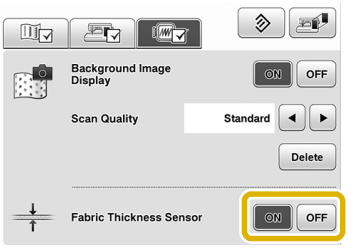
Memo

- 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.**

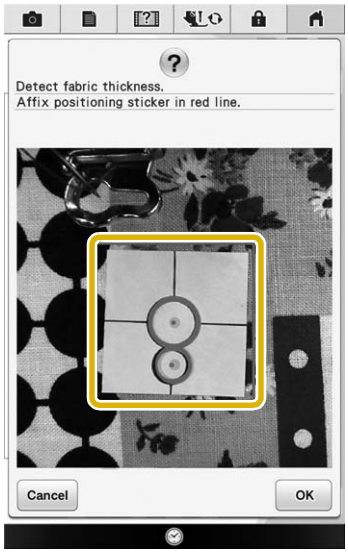
3 **Display page 9 of the Settings screen, and then set "Fabric Thickness Sensor" to "ON".**



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

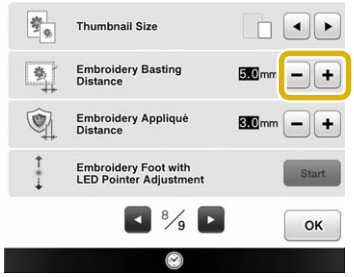
Before embroidering, basting stitches can be sewn along the outline of the pattern. This is useful for embroidering fabric that cannot have stabilizer material affixed with an iron or adhesive. By stitching stabilizer material to the fabric, shrinkage of the stitching or misaligned pattern can be minimized.

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.**



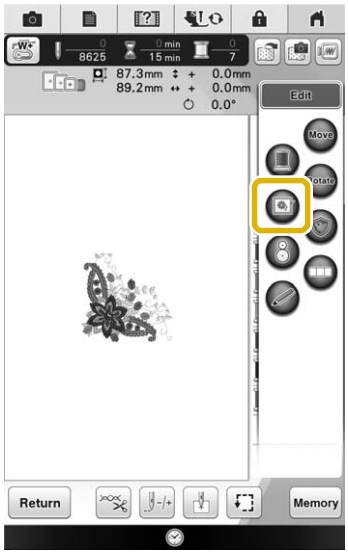
Memo

- 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.

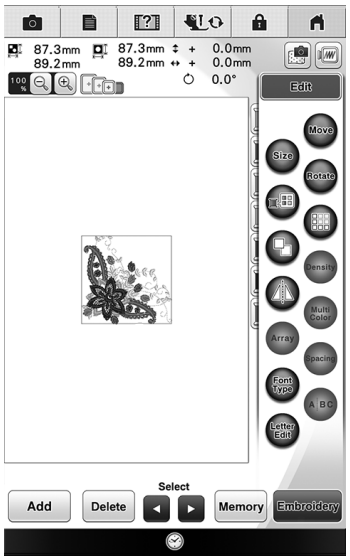
■ Creating an Appliqué Piece

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

Note

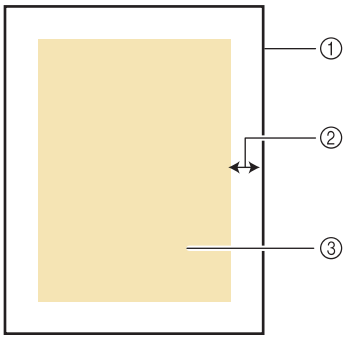
- Felt or denim fabrics are recommended to make the appliqué piece. Depending on the pattern and fabric used, lighter weight fabrics may cause the stitching to appear smaller.
- For best results, be sure to use stabilizer material for embroidering.
- Select a frame that matches the pattern size. Frame 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

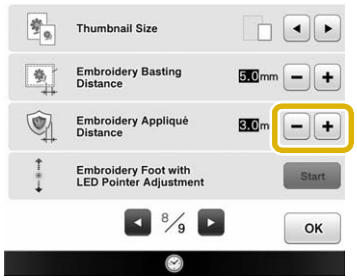
- Finish combining and editing the pattern before selecting the appliqué setting. If the pattern is edited after selecting the appliqué setting, the appliqué stitching and pattern may become misaligned.
- Since an outline is added, the pattern for an appliqué piece (when the appliqué setting is selected) 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.**

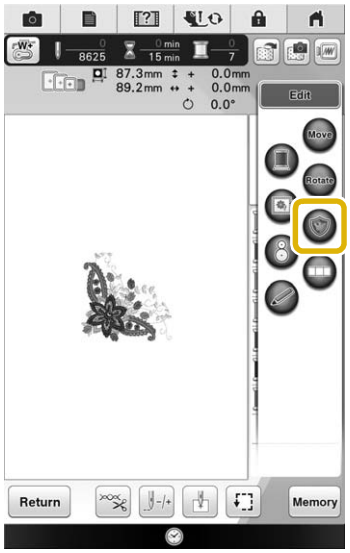
3 **Use [−] and [+] to specify the distance between the pattern and the appliqué outline.**



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.

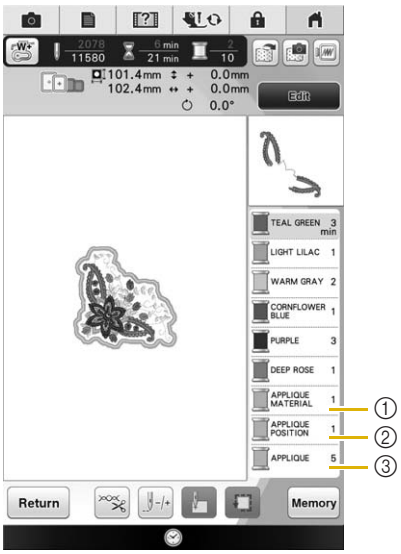
Memo

- 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.

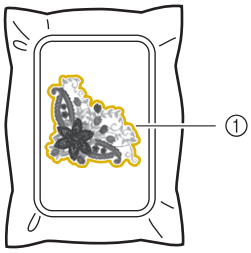
7 **Fuse or stick a piece of stabilizer to the back of the felt or denim fabric to be used as the appliqué piece.**

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).**

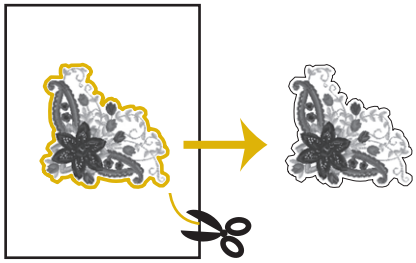


① Cutting line for appliqué

Memo

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

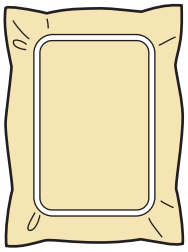
10 **Remove the appliqué material from the embroidery frame, and then carefully cut along the stitching. After cutting, carefully remove all of the cutting line thread.**



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.

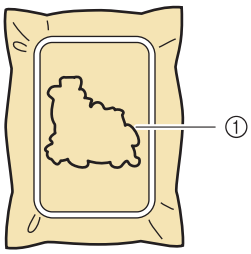
11 **Use two layers of adhesive water-soluble stabilizer material with their sticky sides together, and then hoop them in the embroidery frame.**



Note

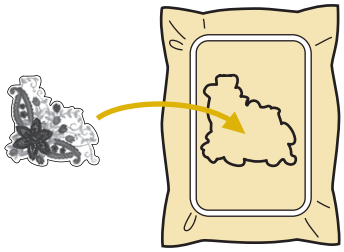
- If water-soluble stabilizer is used, it is not necessary to remove the stabilizer material after sewing the appliqué outline. To reduce shrinkage of the pattern, we recommend using water-soluble stabilizer.
- Put together two layers of water-soluble stabilizer, otherwise the stabilizer material may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

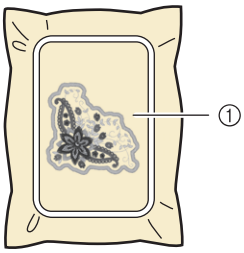
13 **Lightly apply glue or spray adhesive, and paste the appliqué piece so that it aligns with the placement line.**



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

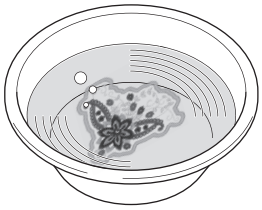
Memo

- 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

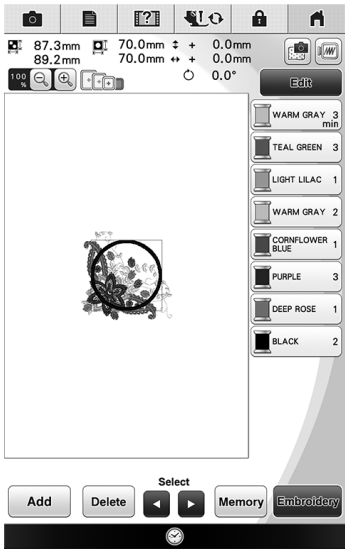
- Do not apply a strong force when ironing, otherwise the stitching may be damaged.

■ Using a Frame Pattern for the Outline

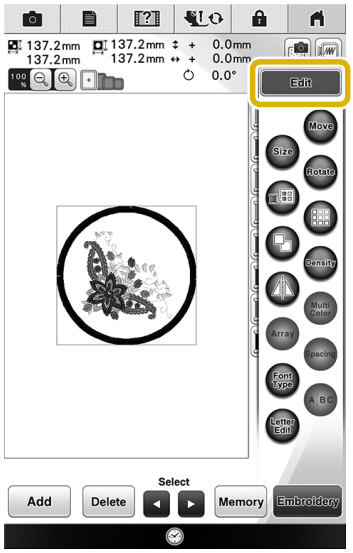
Using a frame pattern, the desired shape can be added as the outline of the appliqué. To select the desired frame, see “Selecting Frame Patterns” on page 205.

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.**

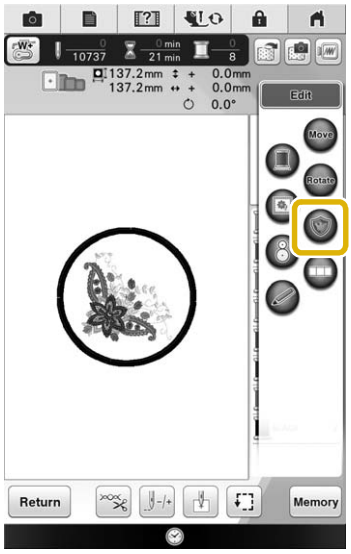


3 Press Edit to edit the frame pattern to fit the size of the appliqué pattern.



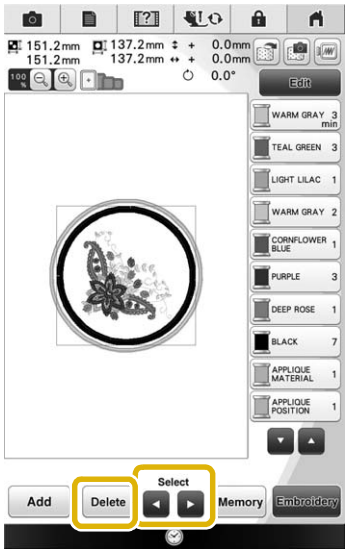
4 Press OK and then press Embroidery.

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



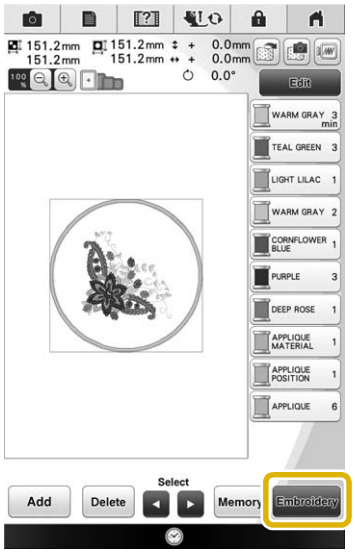
6 Press Return.

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



→ The frame pattern is deleted.

8 Press Embroidery.

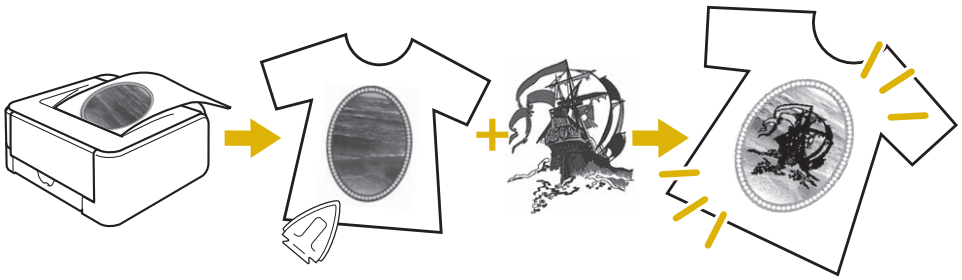


9 Continue with step 7 of "Creating an Appliqué Piece" on page 277 to complete the appliqué piece.

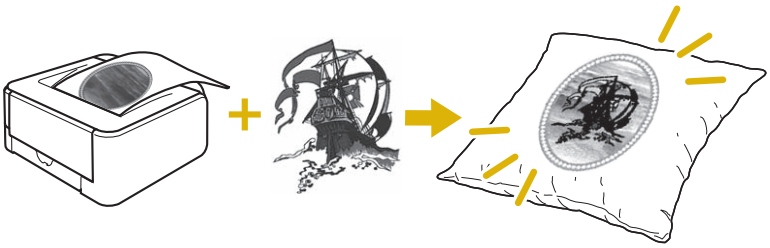
PRINT AND STITCH (COMBINING EMBROIDERY PATTERNS AND PRINTED DESIGNS)

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

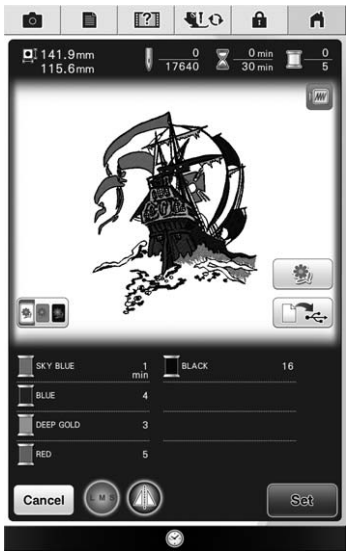
- Print the background and embroidery position sheet in their original dimensions. If an image is printed in a different size, the sizes of the embroidery pattern and background may not match. In addition, the built-in camera cannot detect the embroidery position mark. Make sure that the print settings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

Selecting a Pattern

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

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

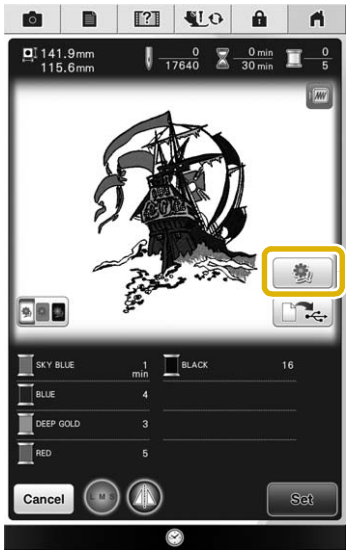
1 Select a pattern combining embroidery and printed designs.



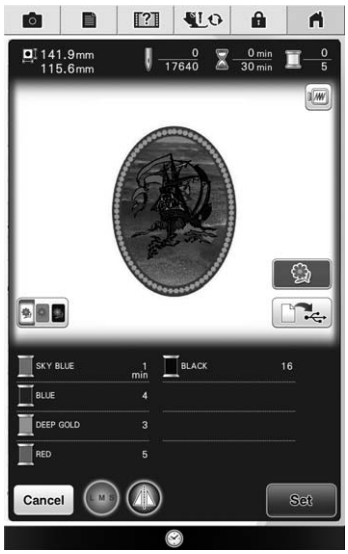
→ Only the embroidery pattern (not the background image of the selected embroidery pattern) is displayed.

■ Checking the Combined Image

Press [icon].



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



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

Outputting the Background Image and Positioning Image

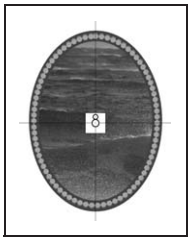
Use USB media or the computer to output the following three images from the machine.

* 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)



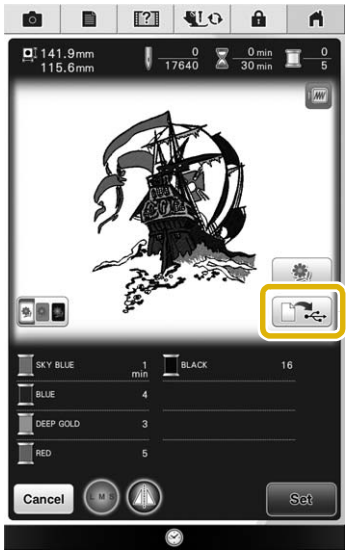
Note

- 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.

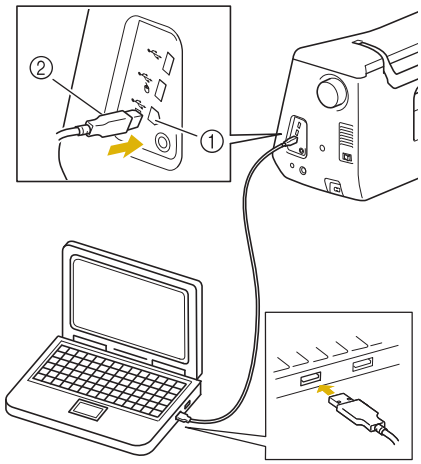
Memo

- 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.**

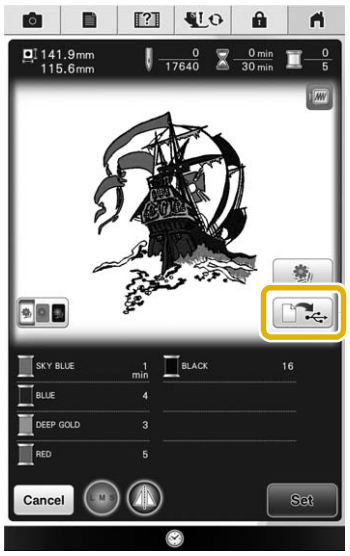
■ Using a USB Cable

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.

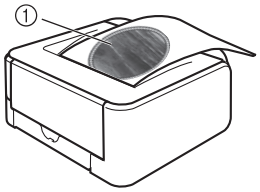
To view the PDF file, Adobe® Reader® is needed. If it is not installed on your computer, you can download it from the Adobe Systems website: http://www.adobe.com/

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.**

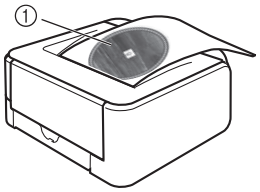
* When printing onto iron-on paper, print the file named E_1r.pdf (an image flipped on a vertical axis). When printing onto printable fabric, print the file named E_1n.pdf (an image that is not flipped).



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

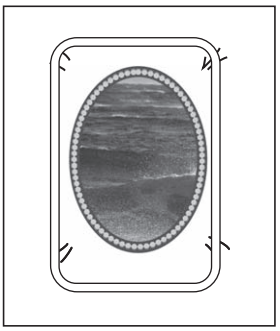
Note
- When printing the PDF file for the embroidery position sheet, specify the highest image quality possible for full-color printing. In addition, we recommend printing on matte paper. If this is not done, the built-in camera may not be able to correctly detect the embroidery positioning mark.

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.

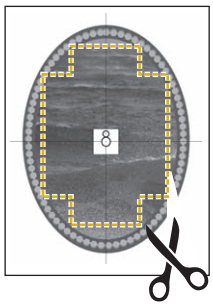
Sewing Embroidery Patterns

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

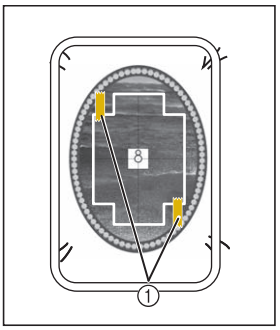


2 Cut the paper printed with the center positioning image so it can easily be positioned aligned with the background image on the fabric.

* 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.

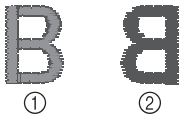
Note
- If the thread tension setting is made extremely weak, the machine may stop during sewing. This is not the sign of a malfunction. Increase the thread tension slightly, and begin sewing again.

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

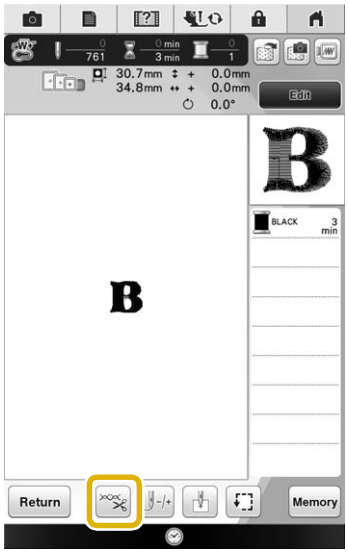
The tension of the upper thread is too tight, resulting in the bobbin thread being visible from the right side of the fabric.

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.

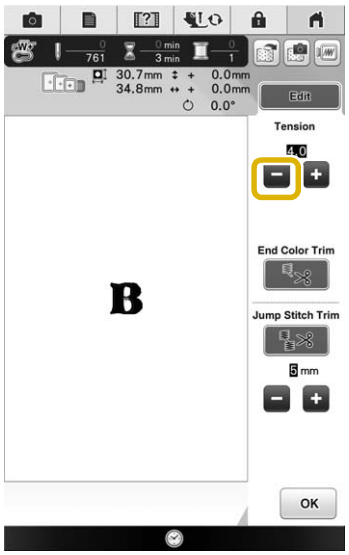


① Right side
② Wrong side

1 **Press** .



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



3 **Press [OK].**

■ Upper Thread is Too Loose

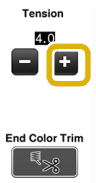
The tension of the upper thread is too loose, resulting in a loose upper thread, loose thread locks, or loops appearing on the right side of the fabric.

> **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.

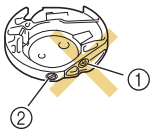
* Press [−] to loosen the upper thread tension.

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.

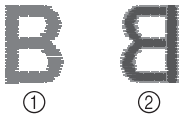
To adjust the bobbin tension for embroidery function, using the alternate bobbin case (with no color on the screw), turn the slotted screw (-) with a (small) screwdriver.



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

■ Correct Tension

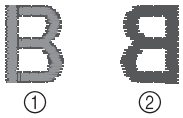
Upper thread slightly appears on the wrong side of fabric.



① Right side
② Wrong side

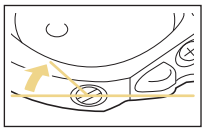
■ Bobbin Thread is Too Loose

Bobbin thread appears slightly on the right side of fabric.



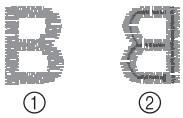
① Right side
② Wrong side

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



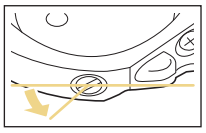
■ Bobbin Thread is Too Tight

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

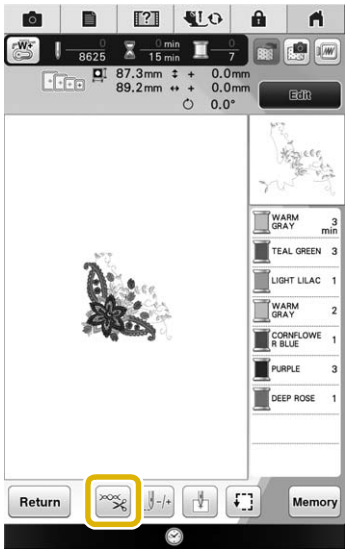
- **When adjusting the alternate bobbin case, be sure to remove the bobbin from the alternate bobbin case.**
- **DO NOT adjust the position of the phillips (+) screw on the alternate bobbin case as this may result in damage to the bobbin case, rendering it unusable.**
- **If the slotted screw (-) is 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)

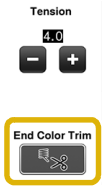
The automatic thread cutting function will cut the thread at the end of sewing each color. This function is initially turned on. To turn this function off, press key and then . This function can be turned on or off during embroidering.

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

1 Press .



2 Press to turn off the automatic thread cutting function.



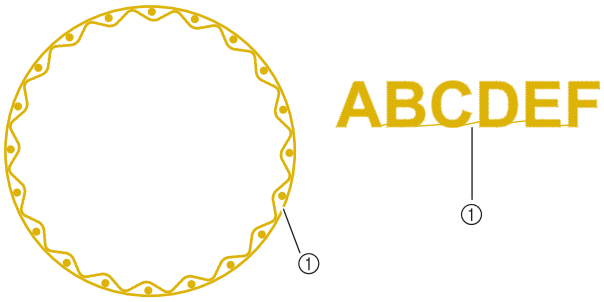
→ The key will display as .

* 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.

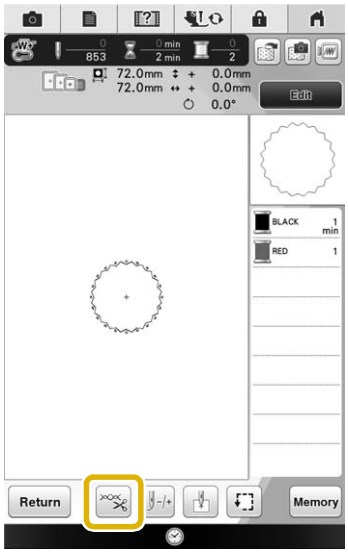


① Jump stitch

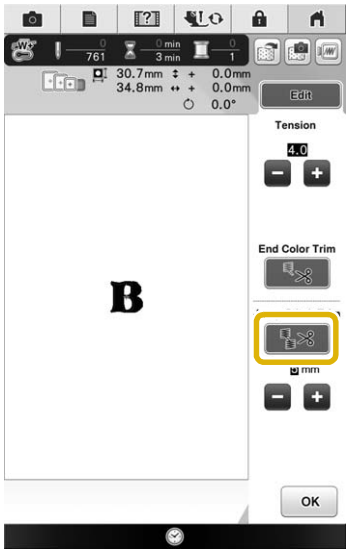
Note

- 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 [icon] to turn off the thread trimming function.**



→ The key will display as [icon].

* 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 [icon] 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 [icon] and [icon].**

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

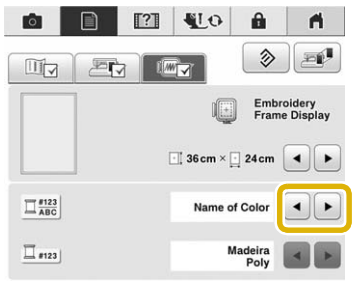
You can display the name of the thread colors or embroidery thread number.

Memo

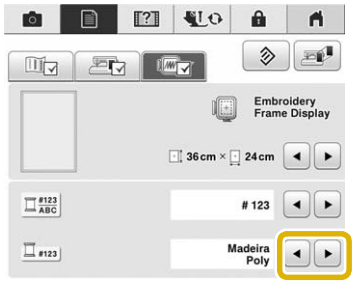
- Colors on the screen may vary slightly from actual spool colors.

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

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.

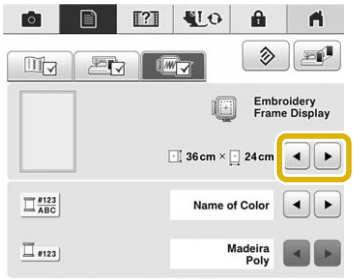
4 **Press OK.**

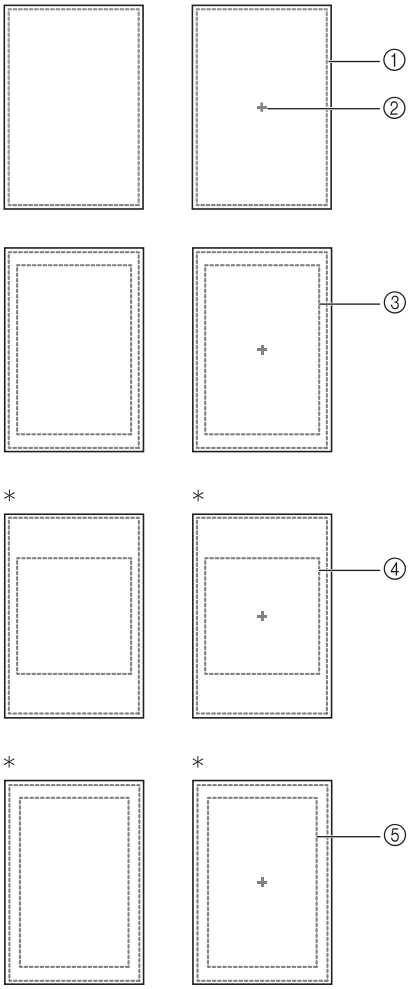
Changing the Embroidery Frame Display

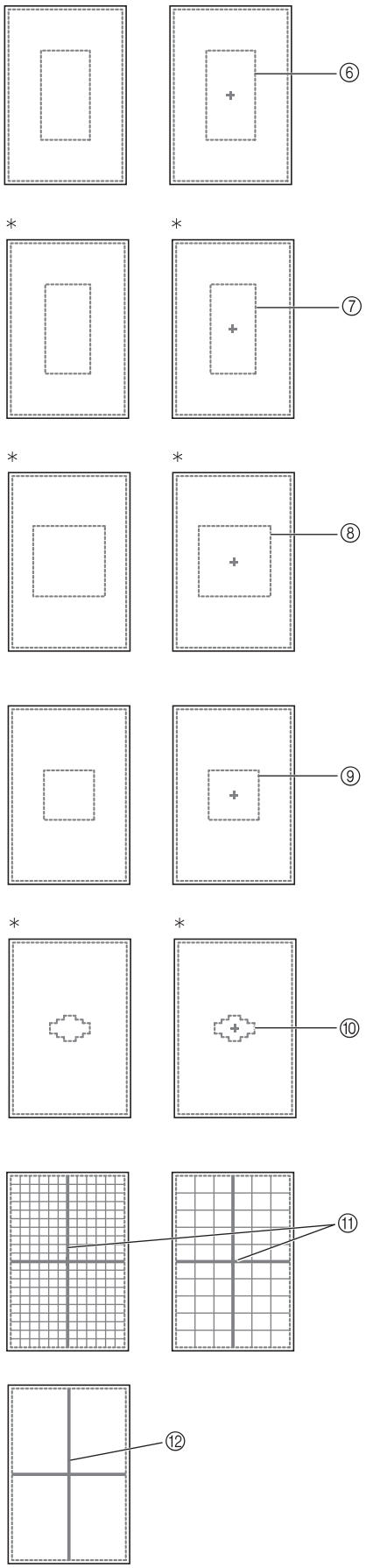
1 **Press ■ and ▦.**

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)

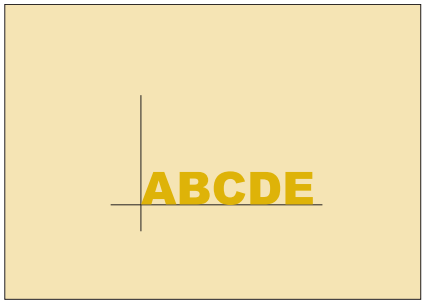
⑪ Grid lines 10 mm (3/8 inch), 25 mm (1 inch)

⑫ Cross lines

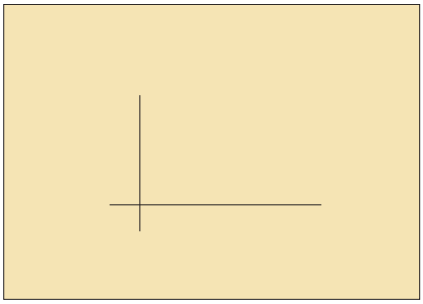
3 **Press** OK.

Aligning the Pattern and the Needle

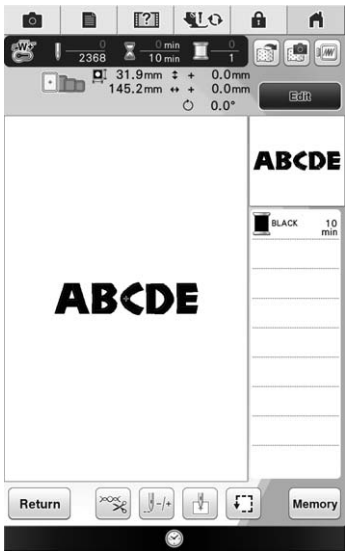
Example: Aligning the lower left side of a pattern and the needle



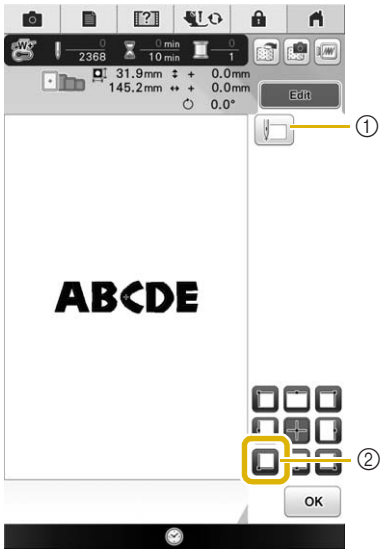
1 **Mark the embroidery start position on the fabric, as shown.**



2 **Press .**



3 **Press .**



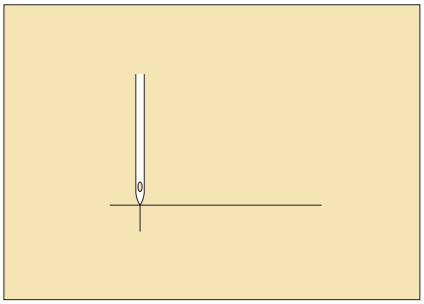
① This key is used for aligning linked characters (see page 294).

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”

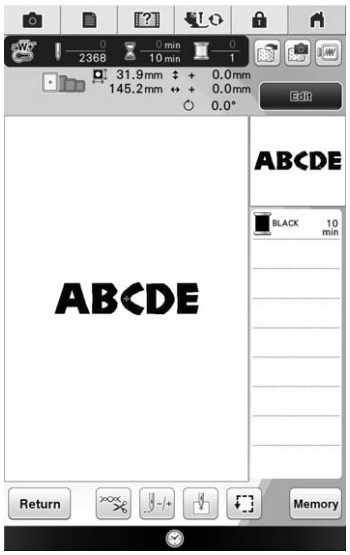
ABCDEFG

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

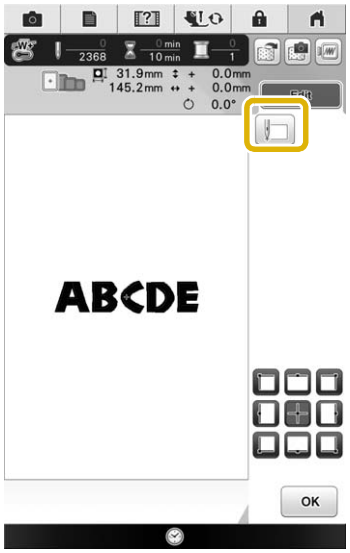
Note

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

2 Press .



3 Press .



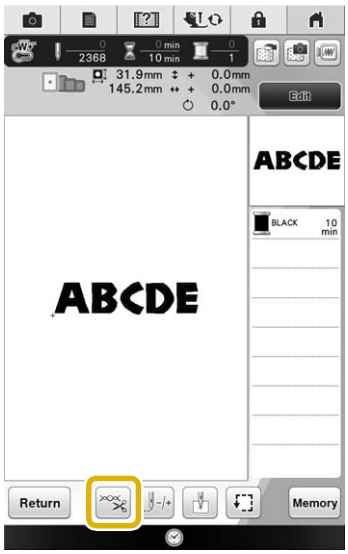
→ The needle is positioned in the lower-left corner of the pattern. The embroidery frame moves so that the needle is positioned correctly.

Note

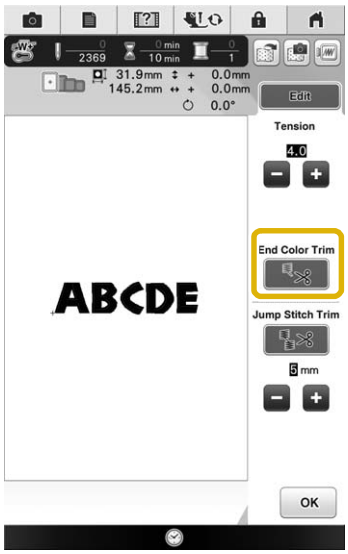
- To cancel the starting point setting and return the starting point to the center of the pattern, press .
- Use to select a different starting point for embroidering.

4 Press OK.

5 Press .

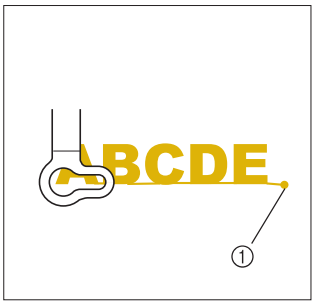


6 Press to turn off the thread cutting function and then press OK.



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".**

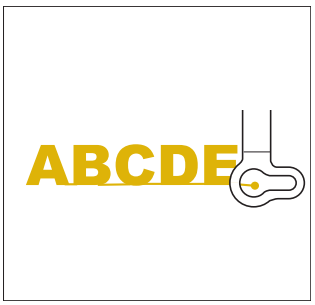
10 **Press** .

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.

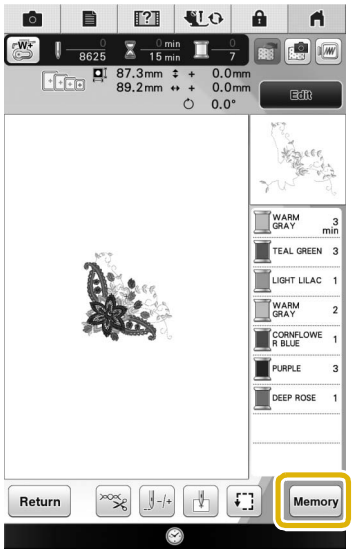
Note

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

Memo

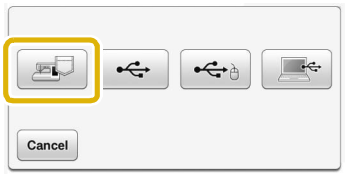
- It takes a few seconds to save a pattern to the machine's memory.
- See page 301 for information on retrieving a saved pattern.

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



2 **Press .**

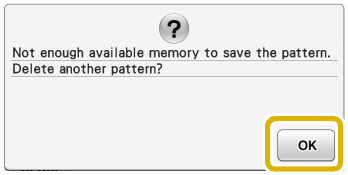
* Press Cancel to return to the original screen without saving.



→ 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.



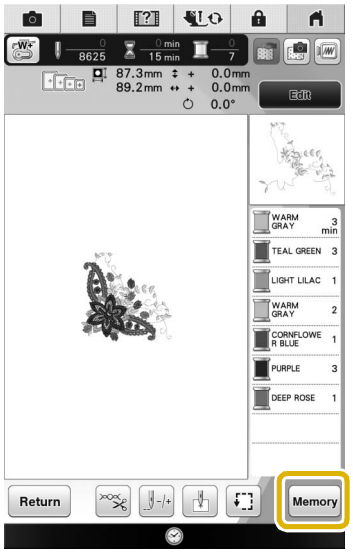
Saving Embroidery Patterns to USB Media

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

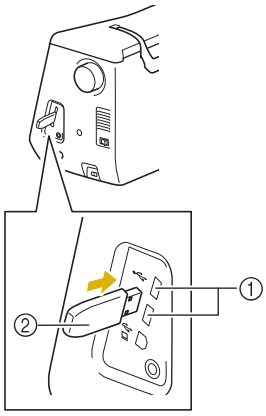
Memo

- 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.**

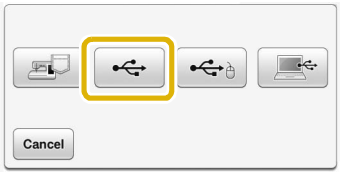


① USB port
② USB media

> **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

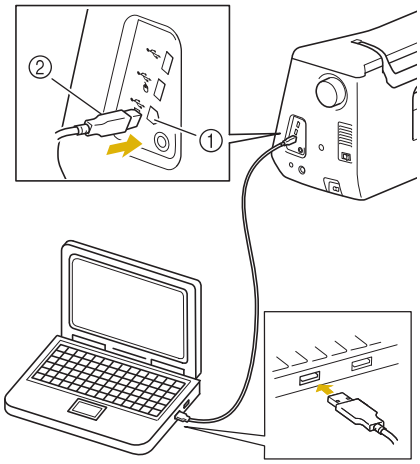
Using the included USB cable, the machine can be connected to your computer, and the embroidery patterns can be temporarily retrieved from and saved in the "Removable Disk" folder in your computer. A total of about 10 MB of embroidery patterns can be saved in the "Removable Disk", but the saved embroidery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

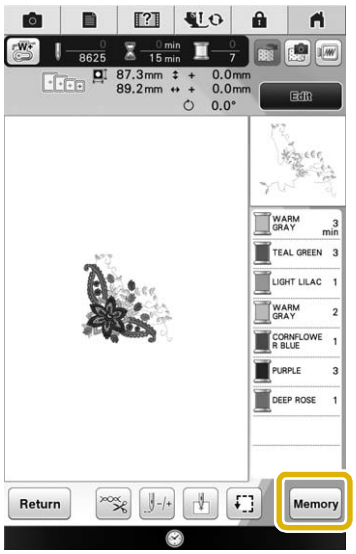


① USB port for computer
② USB cable connector
→ The "Removable Disk" icon will appear in "Computer (My Computer)" on the computer.

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.**

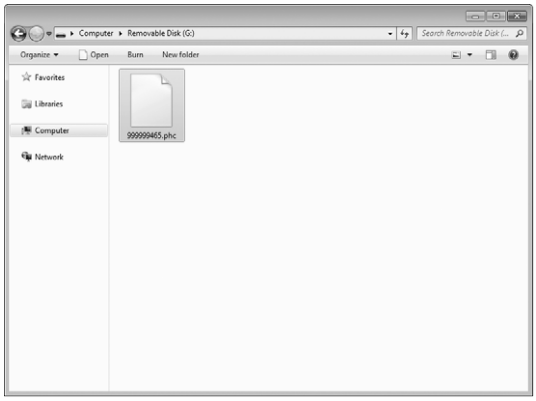


4 **Press [ ].**

* 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.**

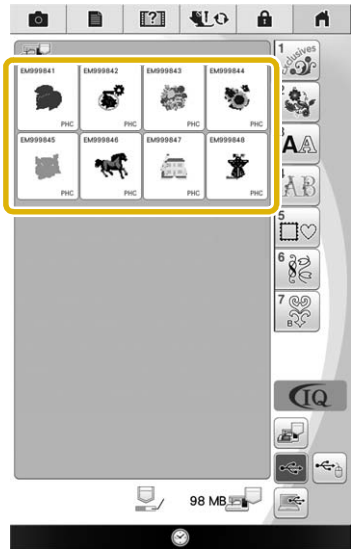


Retrieving Patterns from the Machine's Memory

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.

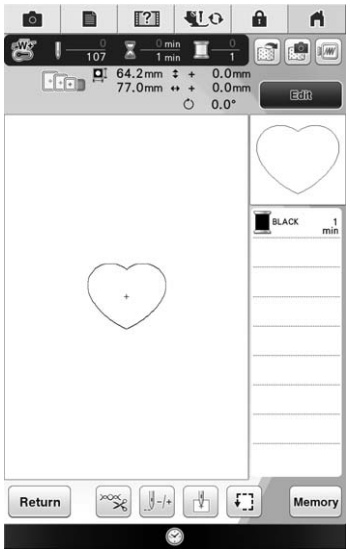
→ The embroidering screen is displayed.

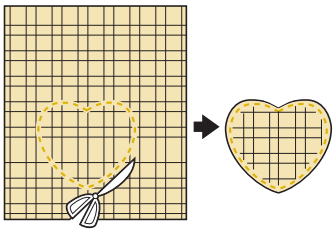
EMBROIDERY APPLICATIONS

Using a Frame Pattern to Make an Appliqué (1)

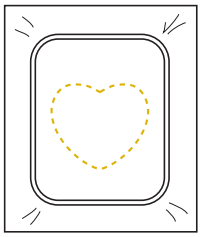
You can use framed patterns of the same size and shape to create an appliqué. Embroider one pattern with a straight stitch and one pattern with a satin stitch.

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

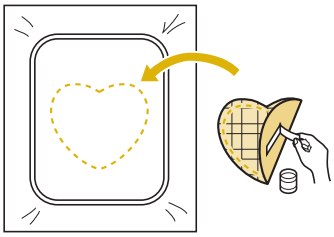




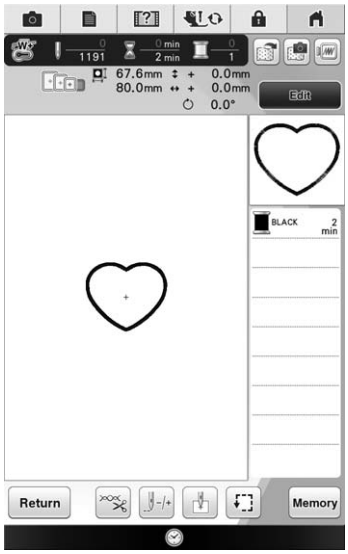
2 **Embroider the same pattern from step 1 onto the base fabric.**



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.**

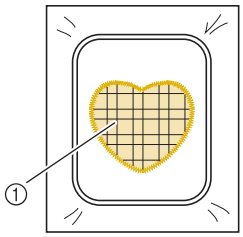


4 **Select the satin stitch frame pattern of the same shape as the appliqué. Embroider over the appliqué and base fabric from step 3 to create the appliqué.**



Note

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

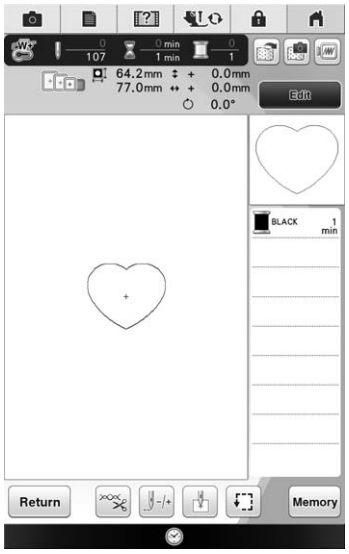


① Appliqué material

Using a Frame Pattern to Make an Appliqué (2)

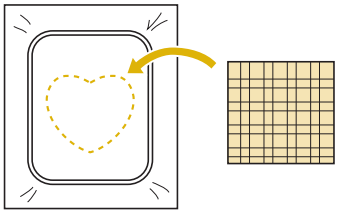
This is a second method to make appliqué using embroidery patterns. You do not have to change the fabric in the embroidery frame using this method. Embroider one pattern with a straight stitch and one pattern with a satin stitch.

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

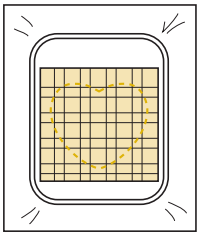


2 Place the appliqué fabric over the pattern embroidered in step 1.

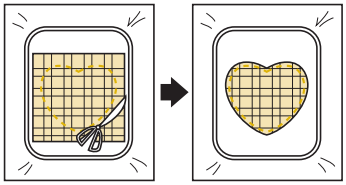
* Be sure that the appliqué fabric completely covers the seam.



3 Embroider the same pattern on the appliqué fabric.

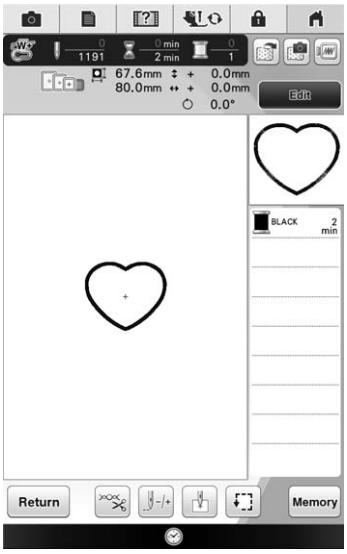


4 Remove the embroidery frame from the embroidery unit, and cut around the outside of the stitches.

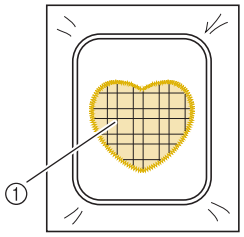


> **Note**
> - Do not remove the fabric from the embroidery frame to cut it. Also, do not pull strongly on the fabric. Otherwise, the fabric may loosen in the frame.

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

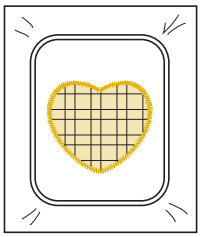


> **Note**
> - Do not change the size or position of the pattern.
> - If you change the size or position of the patterns when selecting them, make a note of the size and location.



① Appliqué material

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

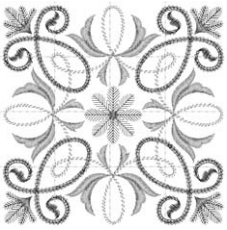


Sewing Split Embroidery Patterns

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.

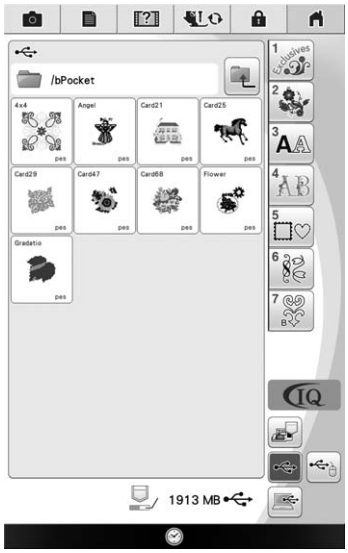
For details on creating split embroidery patterns and for more detailed sewing instructions, refer to the Instruction and Reference Guide included with Palette Ver.7 or later.

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.

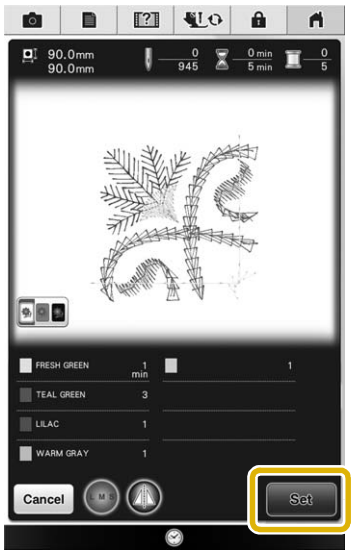


→ A screen appears so that a section of the split embroidery pattern can be selected.

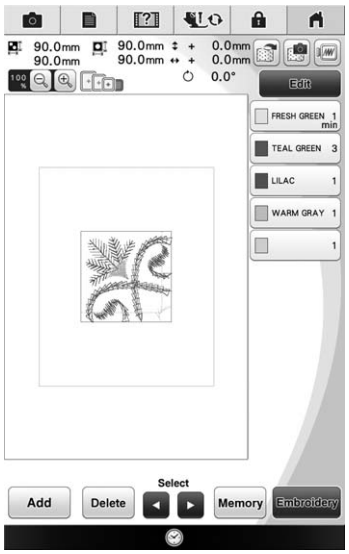
2 Select section to be embroidered.

* 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.**

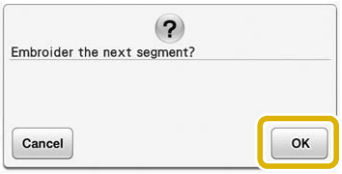


Memo

- 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.**

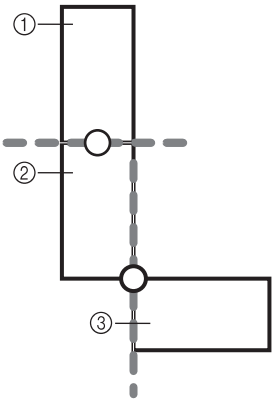
USING THE CAMERA TO CONNECT PATTERNS

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.

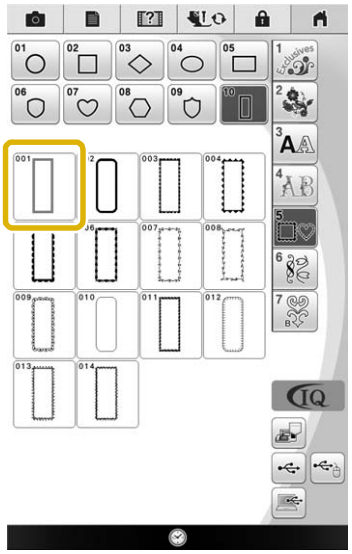
Connecting Three Patterns

Example:



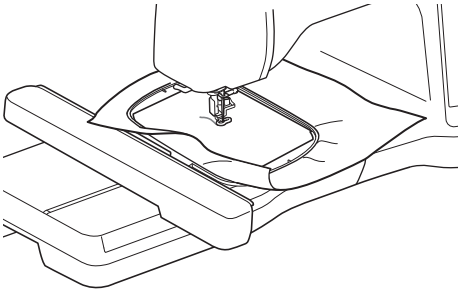
① Pattern A
② Pattern B
③ Pattern C

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



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

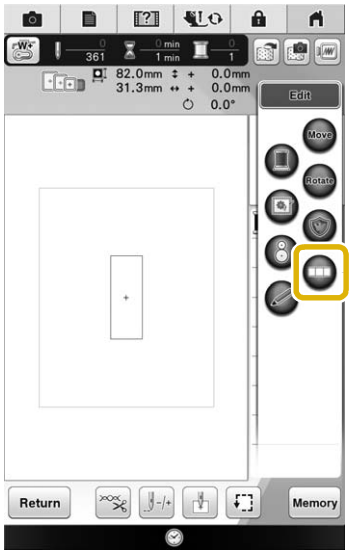
3 **Hoop fabric in the 18 cm × 13 cm (7-1/8 inches × 5-1/8 inches) embroidery frame, and then attach the frame to the embroidery machine.**



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

5 **Press Edit.**

6 **Press .**



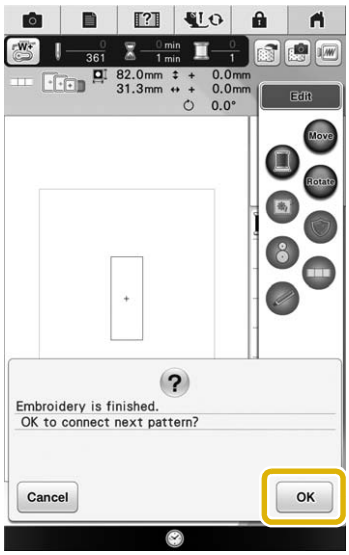
→ appears at the top left side of the screen, and then changes to .

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.**

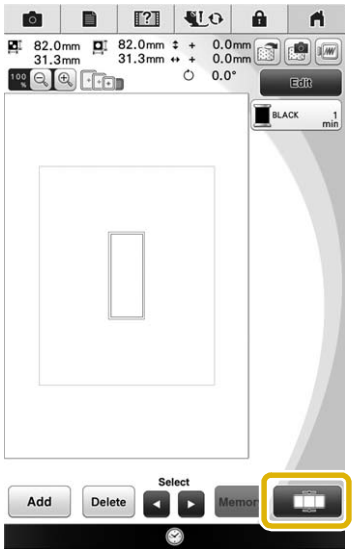
8 **After embroidering of the first pattern is finished, the following message appears. Press OK.**



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.**

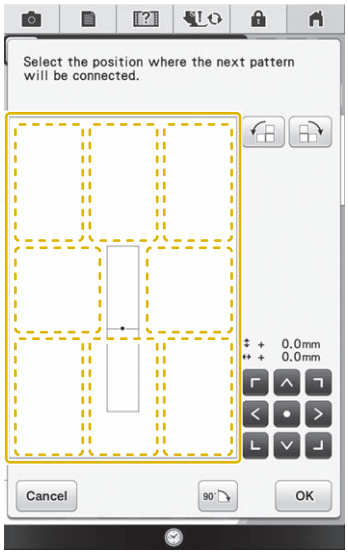


→ The pattern connection setting screen appears.

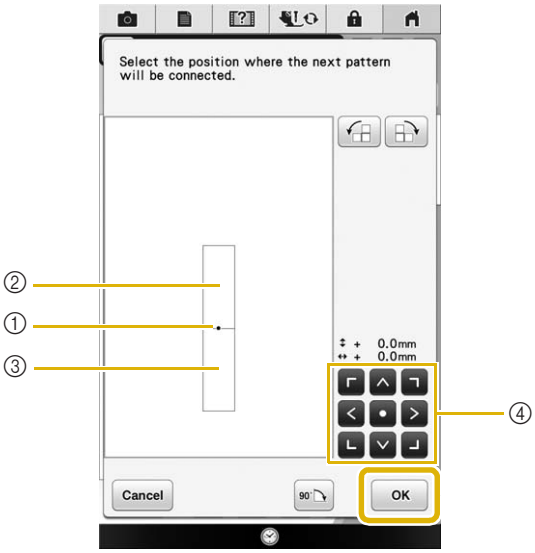
Memo

- 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

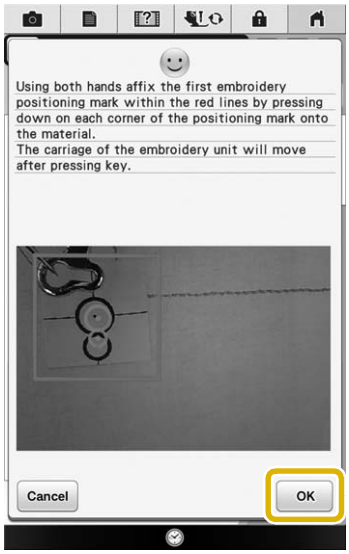
- The second pattern will be automatically connected to the first pattern without adjustment. Change the position of the second pattern manually using .
- The position of the second pattern can be moved using your finger or the included touch pen.
- Use , or if you want to align the pattern to the corner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

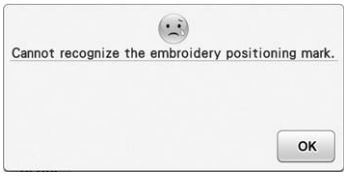
14 **Affix the first embroidery positioning sticker onto the fabric within the red lines that now appear on the screen of the machine by using both hands to press down on each corner of the sticker. Affix the sticker with the large circle to the top as shown on machine. Then, press OK.**

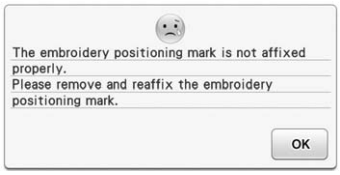


→ The camera detects the first positioning sticker.

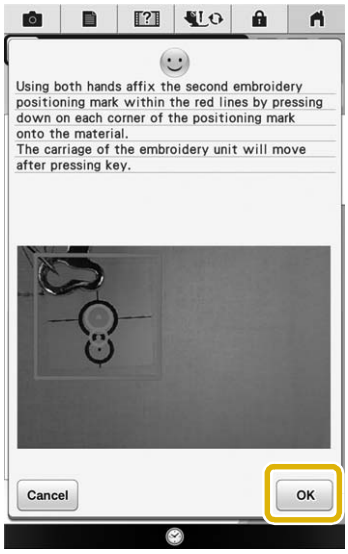
Note

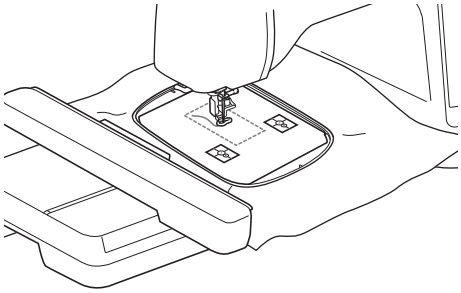
- Use new positioning stickers. If a sticker is reused, it may easily peel off. If the sticker peels off during this procedure, the patterns cannot be connected.
- Using fingers apply pressure to the corners of the positioning sticker to firmly affix it to the fabric. If the sticker is not firmly attached, 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.





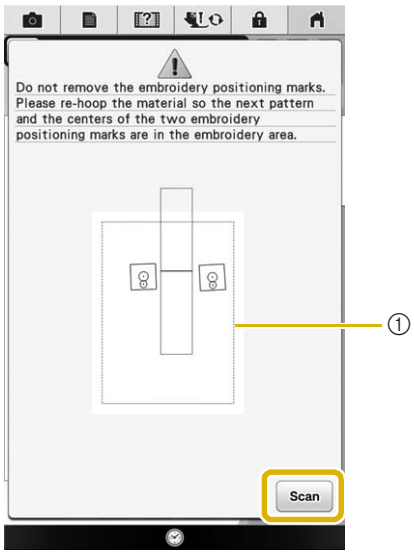
15 **Using both hands affix the second embroidery positioning mark within the red lines that now appear on the screen of the machine by pressing down on each corner of the positioning mark onto the material and then touch OK.**





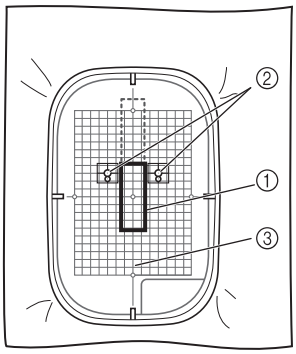
→ The camera detects the second positioning sticker.

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.

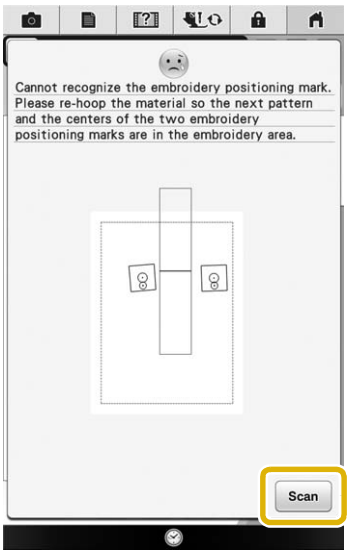


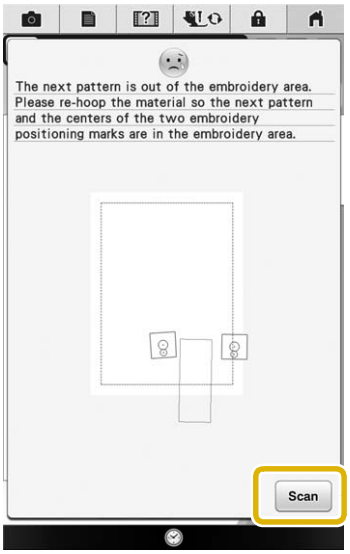
① Pattern to be embroidered next
② Centers of large circles for stickers
③ Embroidery sheet
→ The camera detects the two positioning stickers.

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.

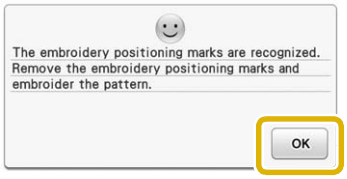
  Press OK to detect the positioning stickers.





- 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.

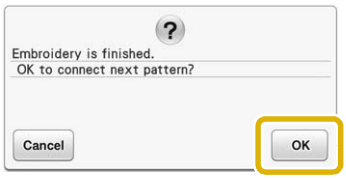
17 **After the positioning stickers have been detected, press OK, and then remove the stickers.**



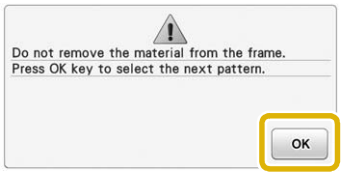
18 **Lower the presser foot, and then embroider the second pattern.**

→ When embroidering is finished, the following message appears.

To connect a third pattern, press OK.

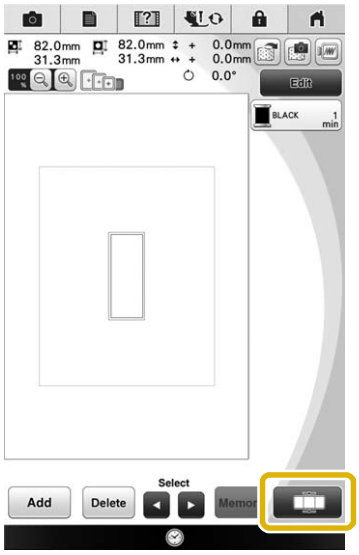


19 **When the following message appears, press OK.**



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

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



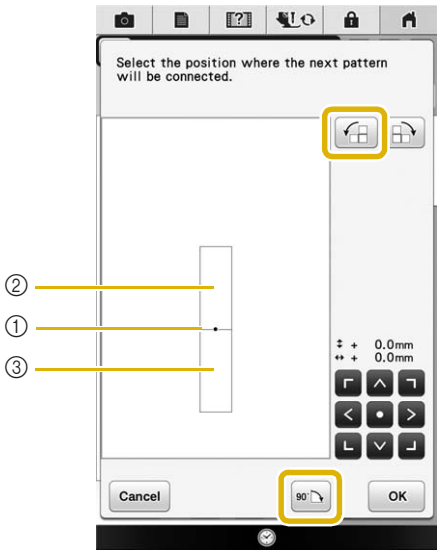
→ The pattern connection setting screen appears.

Memo

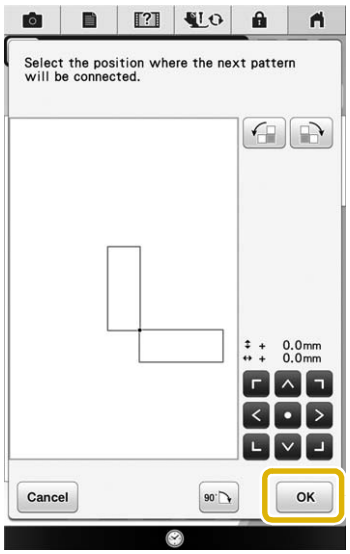
- You can edit the third pattern in this screen.

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.

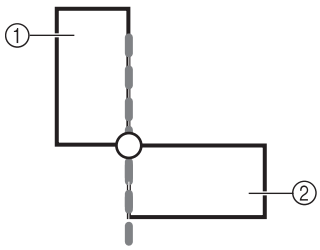
23 Lower the presser foot, and then embroider the third pattern.

→ 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.

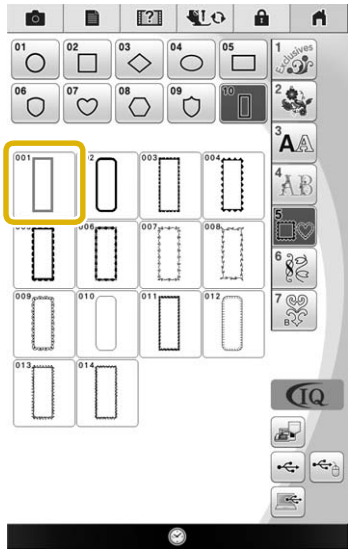
Changing the Position of a Sticker

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.



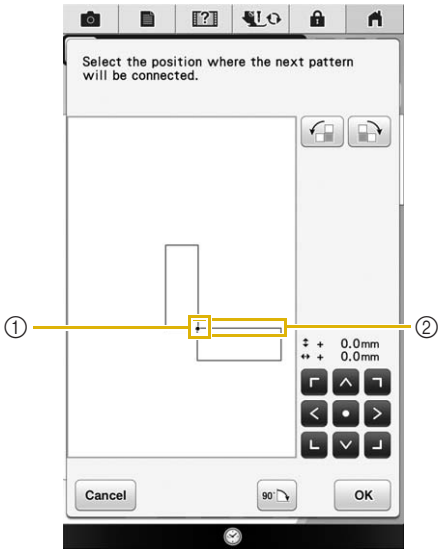
① Pattern A
② Pattern B

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.



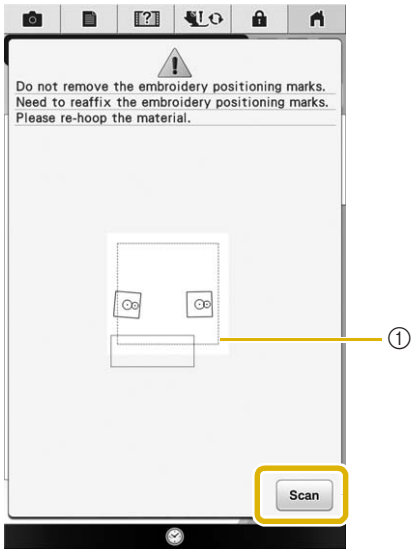
Note

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

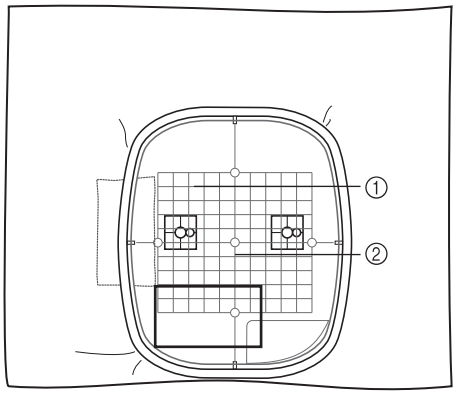


① Reference point
② Reference edge

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.**



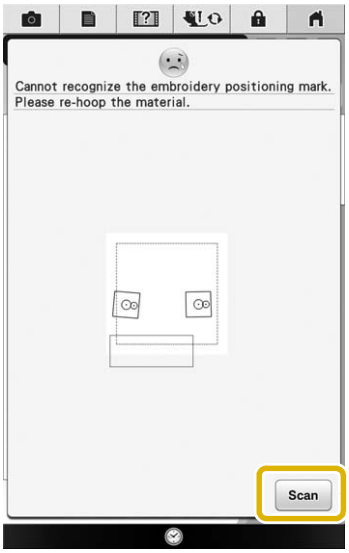
① Embroidering area



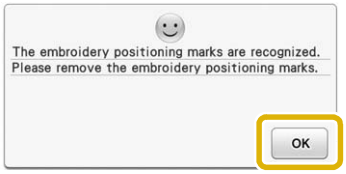
① Pattern to be embroidered next
② Embroidery sheet

Note

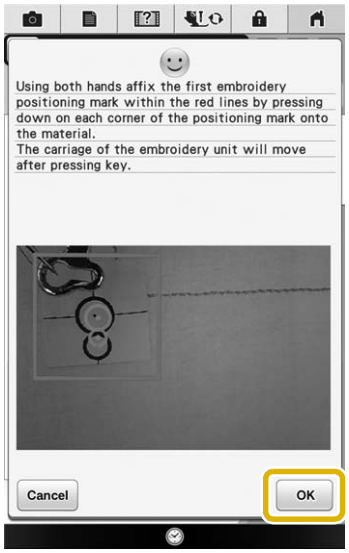
- If the following message appears, rehoop the fabric as indicated in the screen, and then press OK.



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

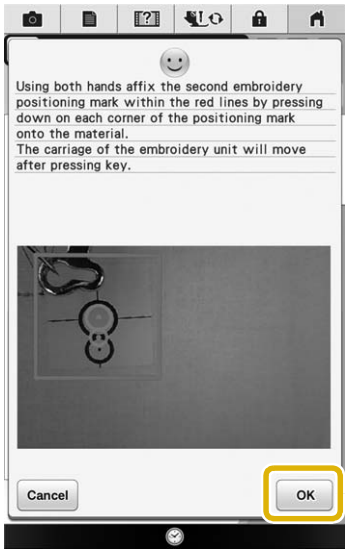


4 **Affix the two positioning stickers again according to the on-screen instructions so that the next pattern or positioning marks can fit in the embroidery area.**



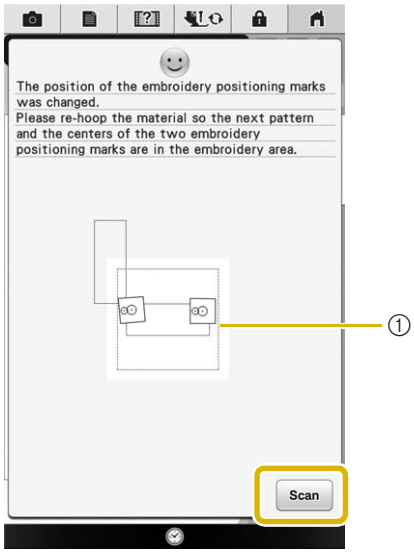
→ Press OK so that the camera detects the first positioning sticker.

5 **Affix the second sticker and then press OK.**

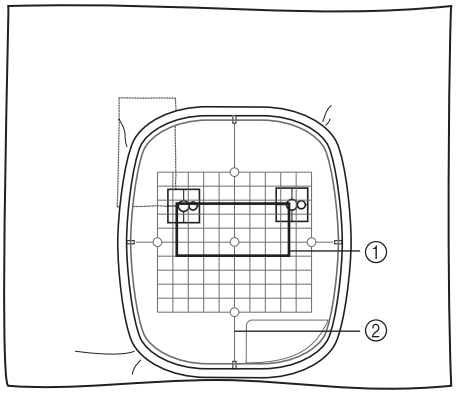


→ The camera detects the second positioning sticker.

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

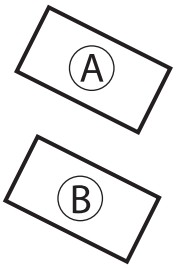


① Pattern to be embroidered next
② Embroidery sheet

7 **Continue the operation from step 17 on page 312 after pressing OK.**

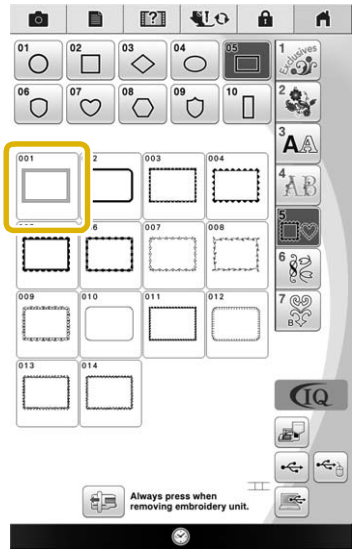
CONNECTING ROTATED PATTERNS

Greater design variations can be created by rotating patterns. The following procedure describes how to connect patterns that are rotated.



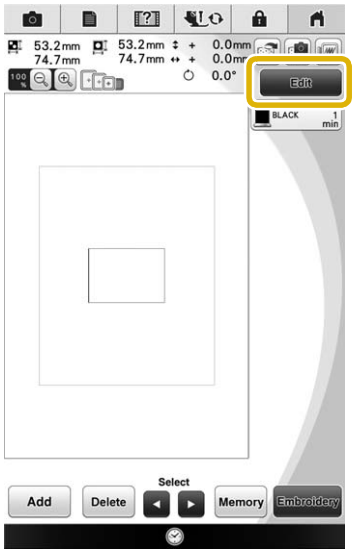
A: First pattern
B: Second pattern

1 Select the pattern, and then press Set.

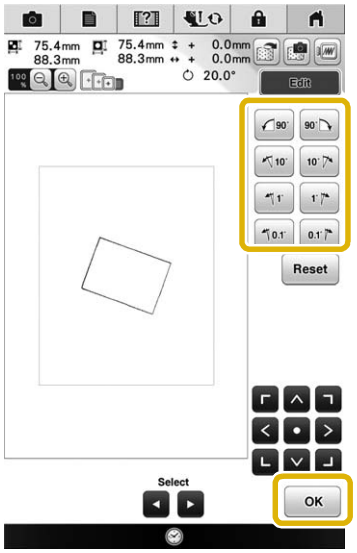


→ The pattern editing screen appears.

2 Press Edit and then, press Rotate in the pattern editing screen.



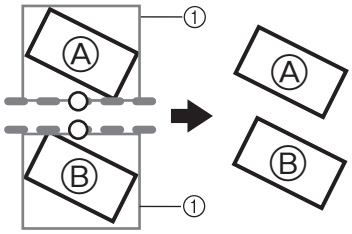
3 Rotate the pattern, and then press OK.



Note

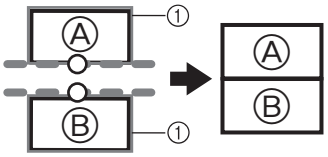
- Be sure to rotate the pattern from the pattern editing screen. The reference edge and reference point are specified along the smallest rectangle (not angled) that contains all patterns selected.

  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.

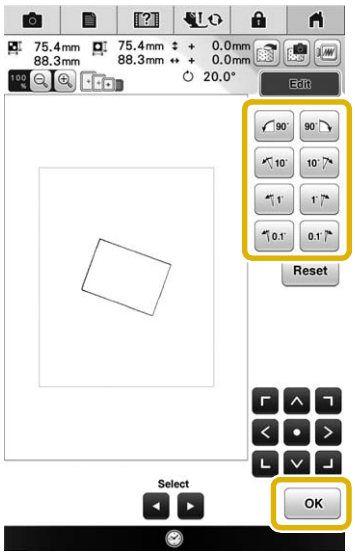
5 Press Edit and then, press .

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.

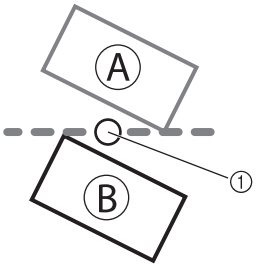
8 Press Edit and then, press Rotate in the pattern editing screen.

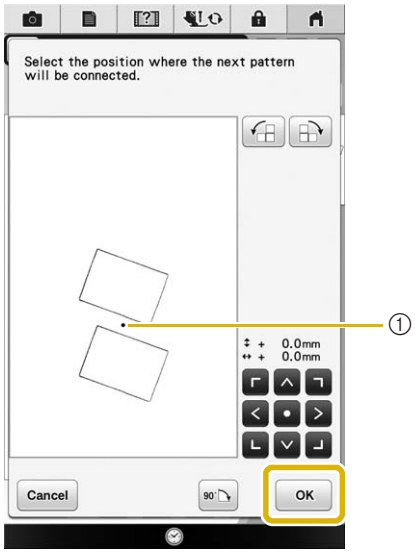
9 Rotate the pattern to the same angle as the first pattern, and then press OK.



10 Press .

11 The pattern position does not need to be specified for this example. Press OK.





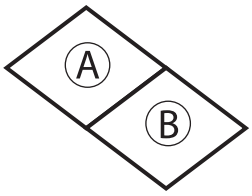
① Connecting point

→ 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

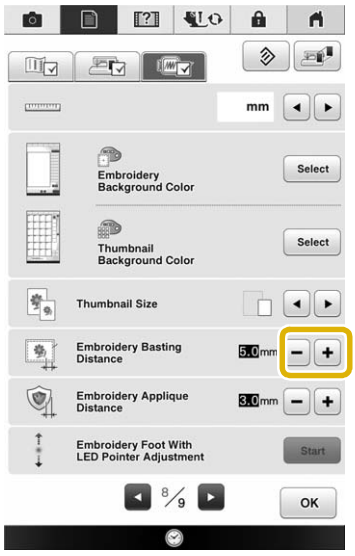
Greater design variations can be created by sliding the patterns being connected.
The following procedure describes how to use this function to connect patterns so they are joined along an edge. Before connecting the patterns, the basting function will be used to measure the distance that the pattern will be slid.



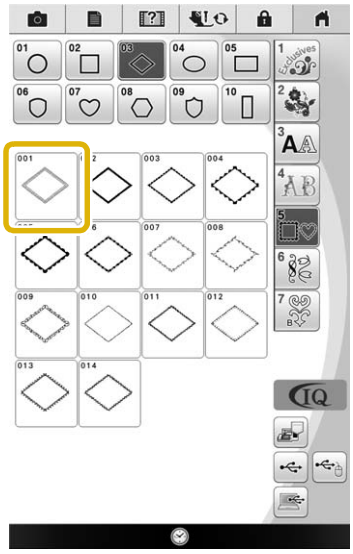
A: First pattern
B: Second pattern

■ Measuring the Distance That the Pattern Will Be Slid

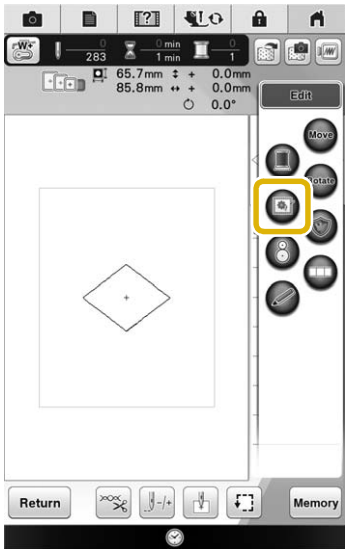
1 **Set "Embroidery Basting Distance" in the settings screen to "0.0".**



2 **Select the pattern whose slide distance is to be measured.**

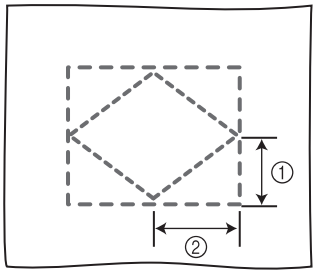


3 **Continue to the embroidery screen, and press Edit and then, press to select the basting function.**



→ 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.

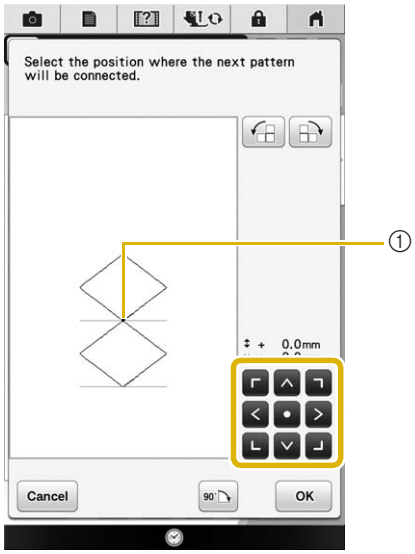
1 **Select the pattern, and then continue to the sewing screen.**

2 **Press Edit and then, press in the sewing screen.**

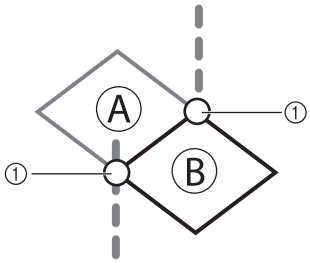
3 **Embroider the first pattern.**

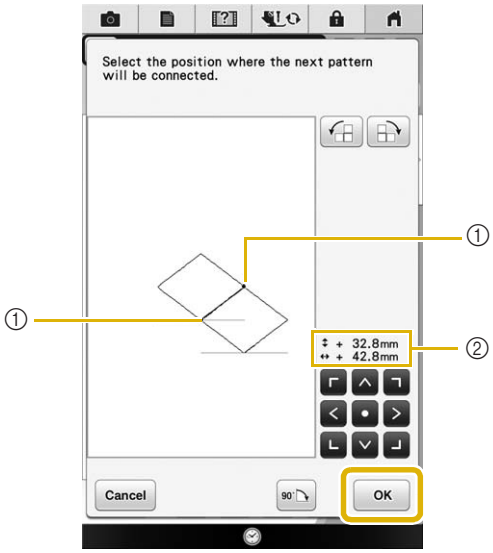
4 **Refer to steps 8 through 11 of "Connecting Three Patterns" on page 307 to select the next pattern.**

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

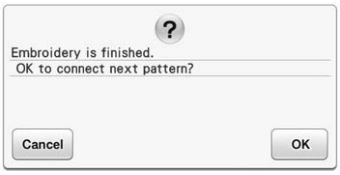
Select the first pattern. Press the pattern connection key .

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.

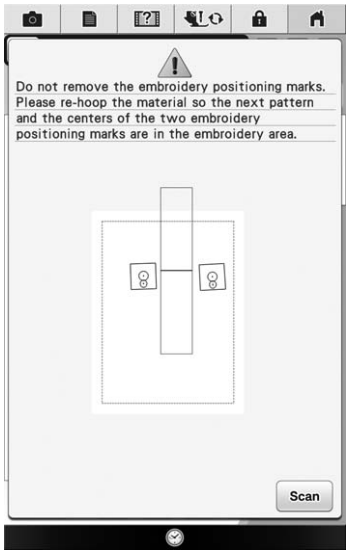
↓

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.

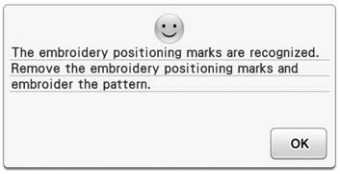


↓

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.

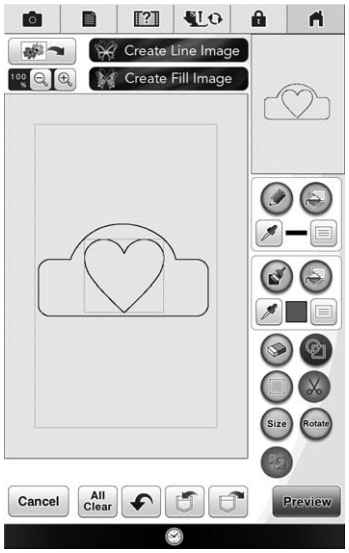
Start IQ Designer by pressing IQ in the home page screen or pressing IQ in the embroidery pattern selection screen.

⚠ CAUTION

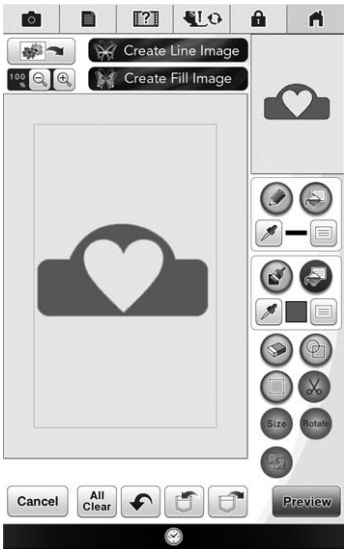
- **Only touch the screen with your finger or the pen (stylus) included with the sewing machine. Do not use a mechanical pencil, screwdriver or any other hard or sharp object. In addition, do not press the screen with extreme pressure. Otherwise the screen may be damaged.**
- **All or part of the screen 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)

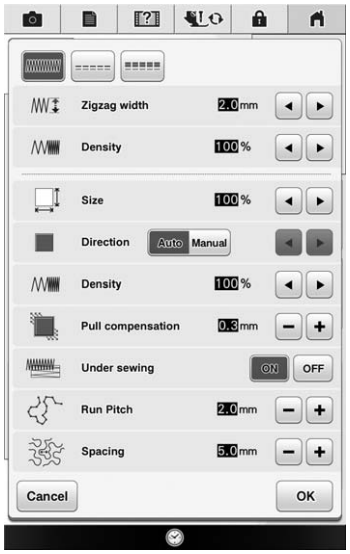


2. Add color to the pattern.

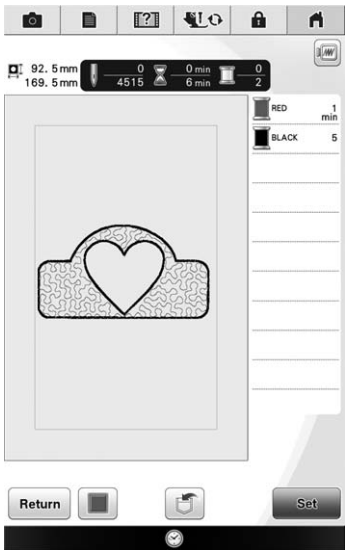


3. Select colors and stitching and add desired patterns to complete the pattern.

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.



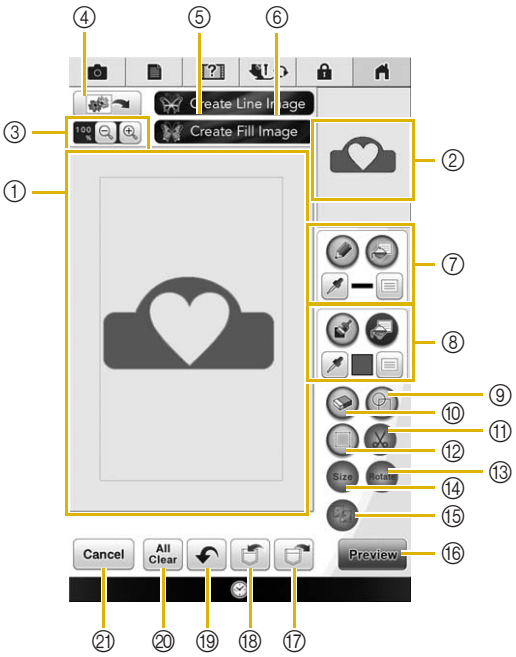
5. Convert image data to embroidery data.
The embroidery image preview screen appears. (page 334)



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	100 %	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	Create Line Image	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	Create Fill Image	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

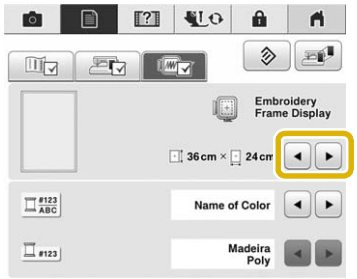
No.	Display	Key Name	Explanation	Page
⑨		Stamp key	Press this key to select the stamp shape for pattern drawing. You can set the fill/stroke setting.	329
⑩		Erase key	Press this key to erase lines and shapes that have been drawn. You can select the size/shape of the eraser.	330
⑪		Cut key	Press this 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 .

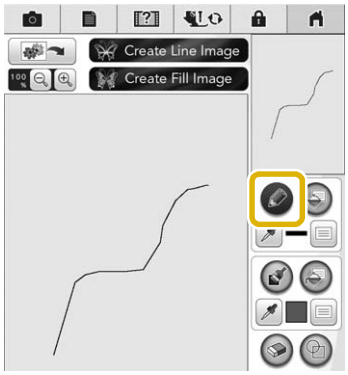
2 Select the grid line of the "Embroidery Frame Display".



* Select the grid size 10 mm (3/8 inch) or 25 mm (1 inch).

Drawing Lines

1 Press and draw lines.



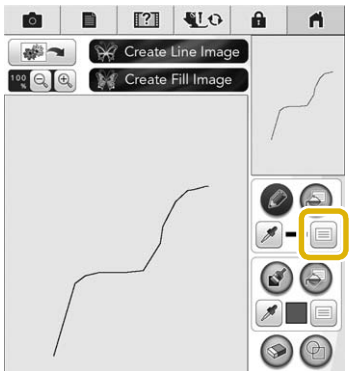
Memo

- 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.

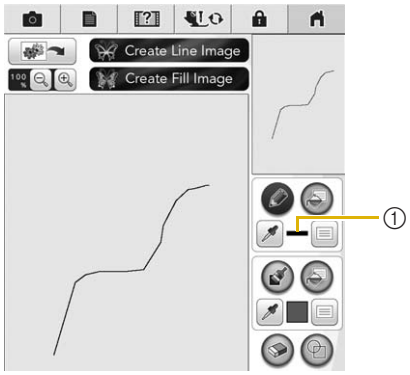
Line types

	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.

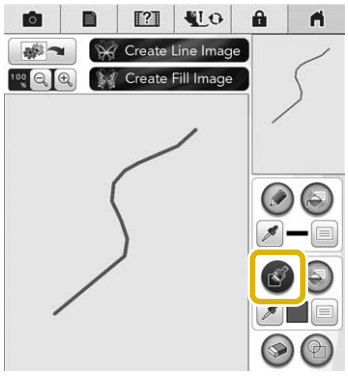
* You can pick the color from the line already drawn, press and select the desired color.

Memo

- Press to magnify the image when you cannot press on the line correctly.

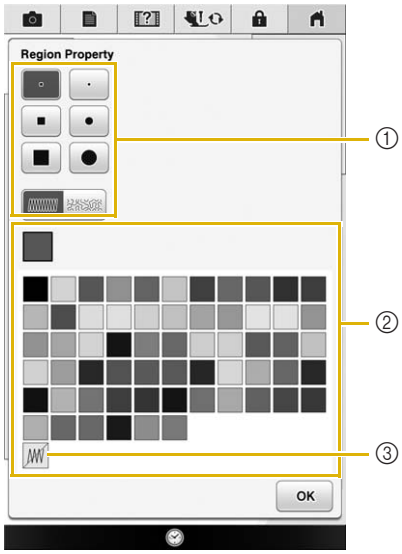
Drawing Regions

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	

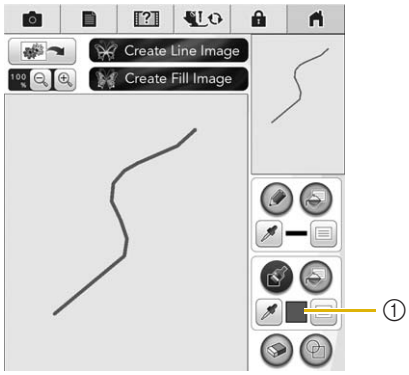
	Small brush	
	Medium brush	
	Large brush	

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

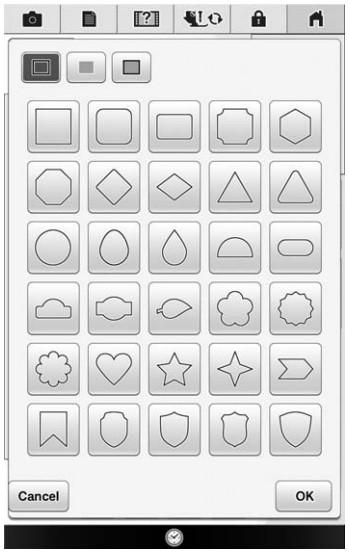
3 Press and press on the brush line to change color and fill stitch types. You can also set the fill color/stitch type to the closed area that is made by lines and brush lines.

* 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.

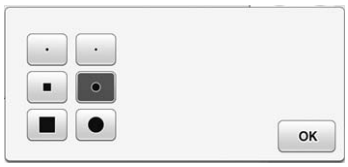
→ The pattern drawing screen is displayed.

* 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.

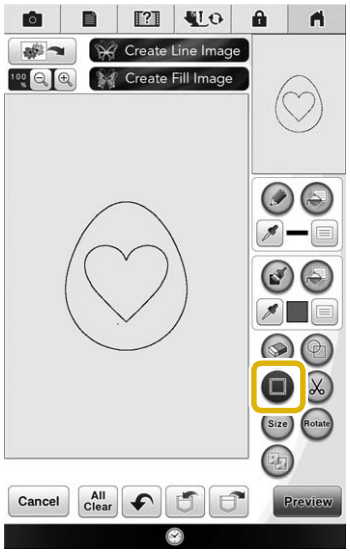
→ The pattern drawing screen is displayed.

4 Drag along the area or line that you want to erase while the key appears as .

Using the select key

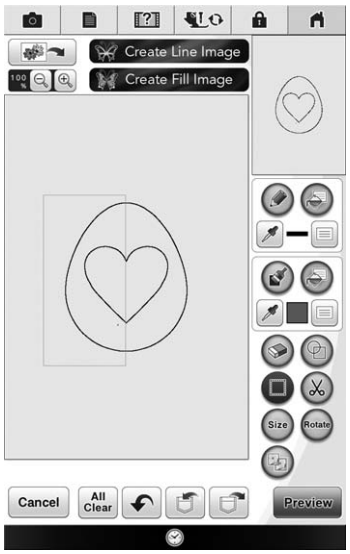
You can select the part of the design to move and/or edit. Some keys are available only after you select the part.

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

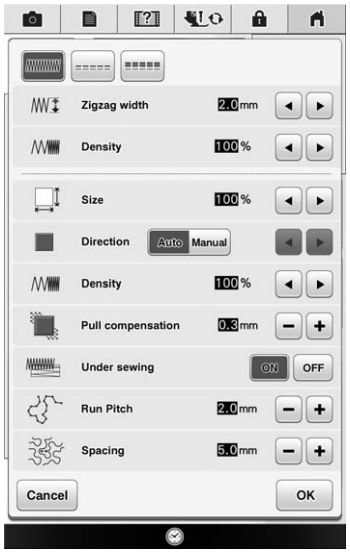
Press Preview to create the embroidery pattern.

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.

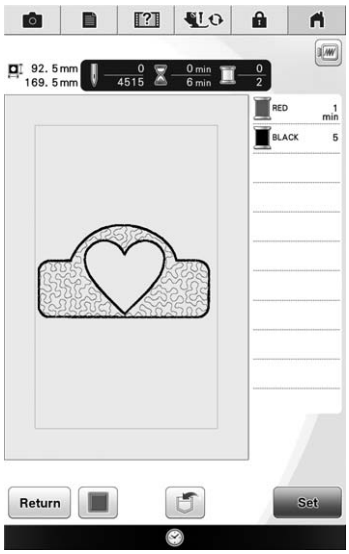
EMBROIDERY IMAGE PREVIEW SCREEN

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

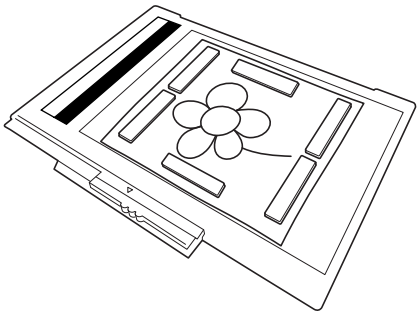
- **Do not set the fabric, the paper with crease or luster or the paper that is too thick or rolled up to the scan frame. Otherwise, the frame may strike the embroidery foot, and possibly cause injury.**

Memo

- Only one sheet of paper can be placed in the scanning frame per scan.

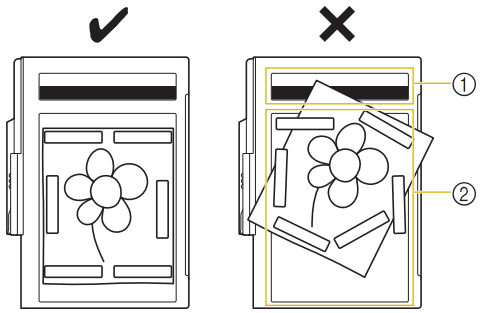
2 Place the paper to be scanned in the scanning frame, and then secure the paper in place with the included magnets.

* 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.



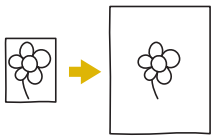
① White balance area

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.

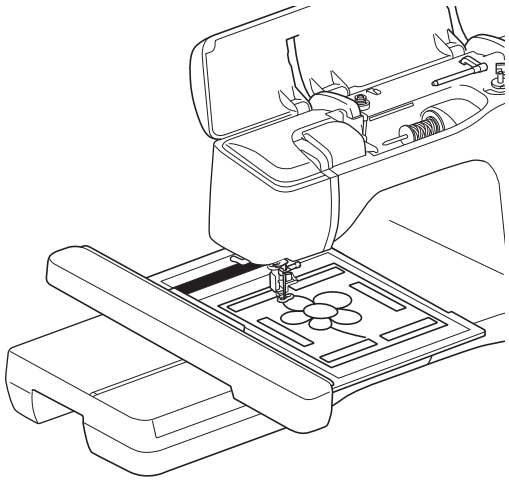
4 Press the "Presser Foot Lifter" button to raise the presser foot, and then press the "Needle Position" button to raise the needle.

* 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.

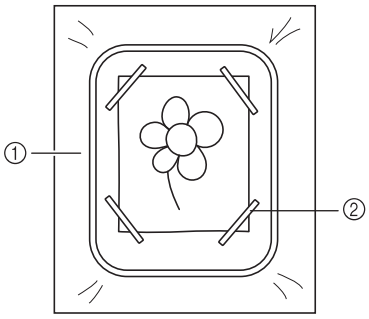


> **Note**
> - Unthread the machine to avoid having the thread slipping out of the needle or getting caught on the embroidery frame.
> - Be sure not to attach the presser foot other than the embroidery foot "W+" or "W", otherwise the presser foot will be scanned.

■ 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.

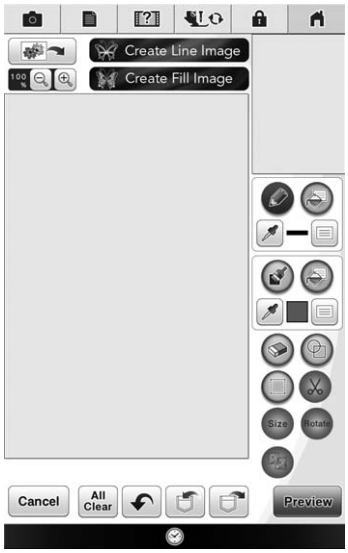


① Fabric
② Tape

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.

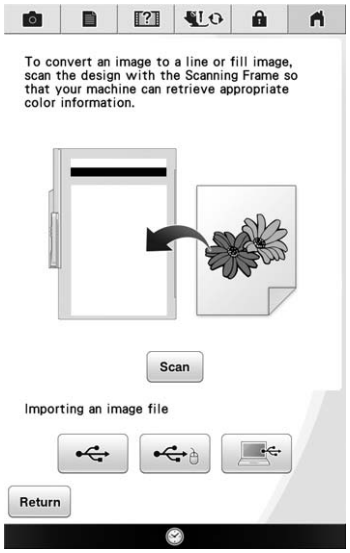
1 Press .



→ 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

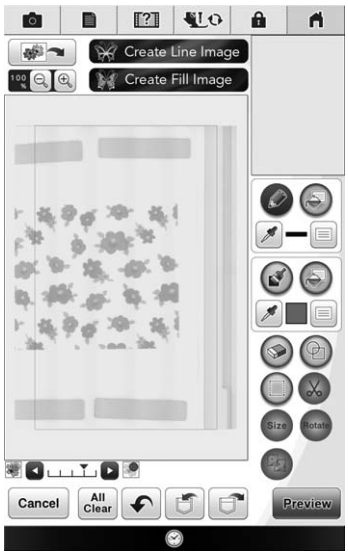
- When scanning starts, some of the machine lights will turn off in a certain circumstances, in order to increase the scan quality. The machine lights will return to their original brightness when scanning ends.
- You can import an image of 5 MB or smaller from USB media or a computer.

→ 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.

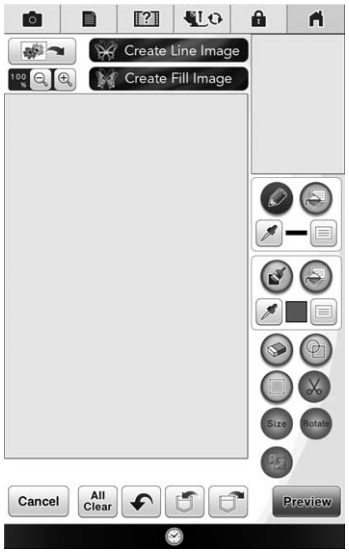
Each press of ▶ lightens the background, making the line pattern darker. Each press of ◀ darkens the background, making the line pattern lighter.

6 **After editing the pattern, follow the procedure from "After Editing the Design" on page 331.**

■ Importing the Background image

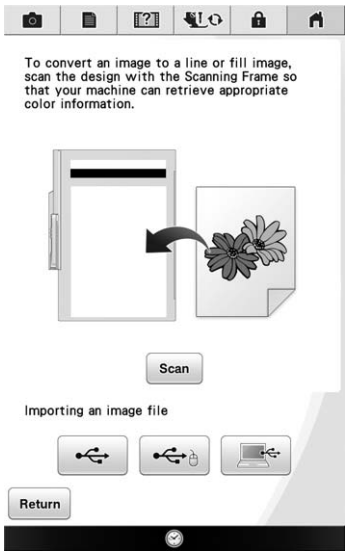
Prepare a data of your favorite picture that you want to create the pattern with. Save a data in the PC or USB media.

1 **Press** .

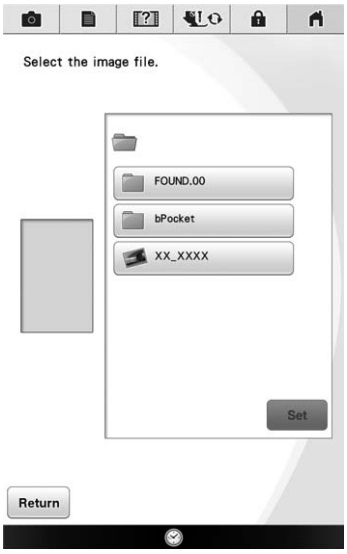


→ The image display screen appears.

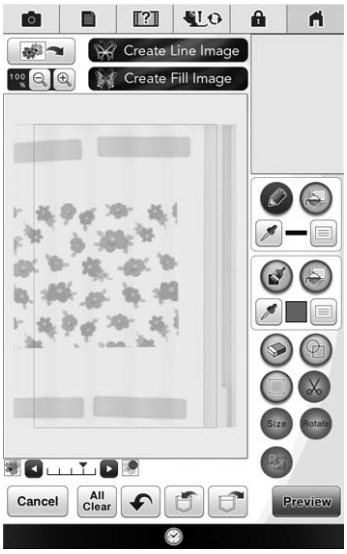
2 **Select the device you saved the data to.**



3 **Select the data, and then press** OK.

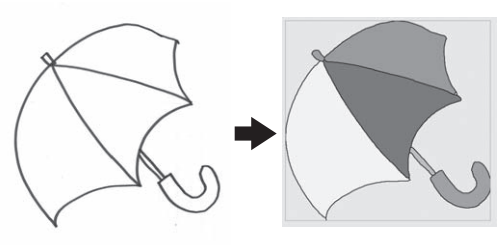


4 **The selected image is displayed in dim in the pattern drawing area.**



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

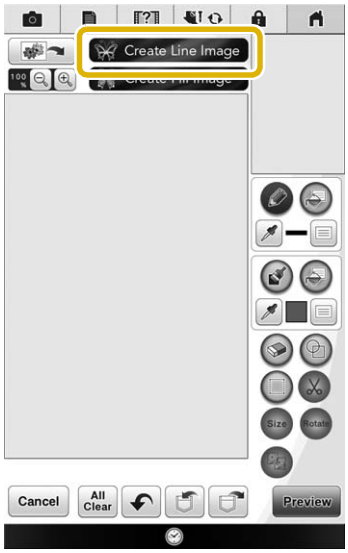
- For details on creating patterns using color illustrations, refer to “CREATING FILL IMAGE” on page 342.
- If you cannot scan the drawings as expected, you can edit the design in the IQ Designer. Refer to “PATTERN DRAWING SCREEN” on page 326.
- Line drawings are scanned without recognizing the thickness 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.

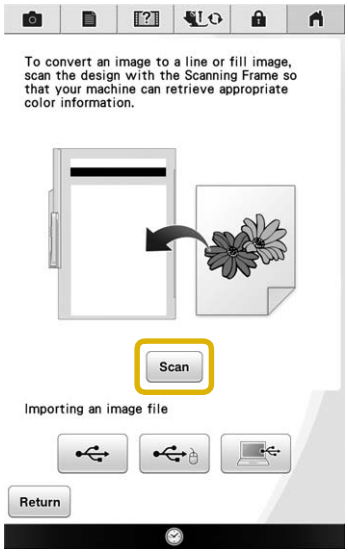


→ The image display screen appears.

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.

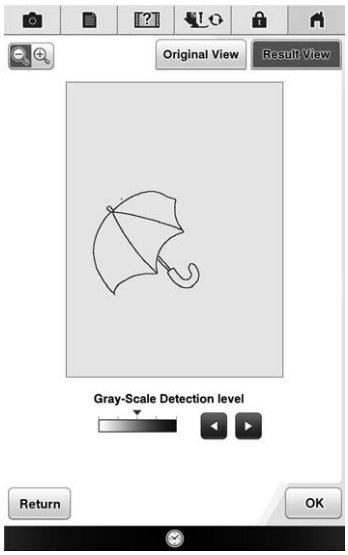
* To stop scanning and return to the screen in step 3, press Cancel. The scanned image will be deleted when you return to the previous screen.

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.

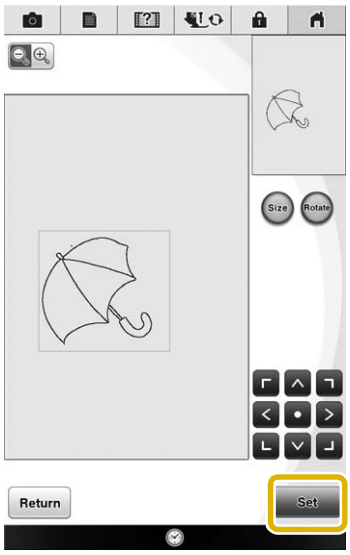
* To return to the previous screen, press Return.

→ 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.**

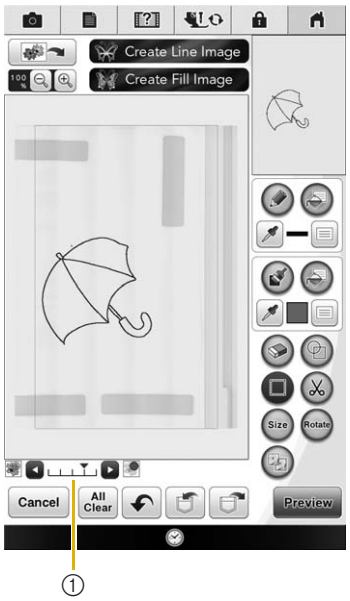
In this screen, the pattern can be resized, rotated or moved.



→ 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.**



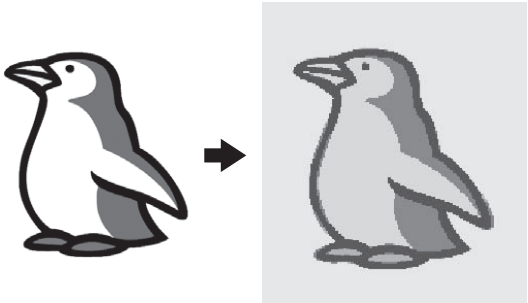
* The original image is displayed in the background. Use gauge ① to adjust the transparency of the background. Each press of ▶ lightens the background, making the line pattern darker. Each press of ◀ darkens the background, making the line pattern lighter.

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

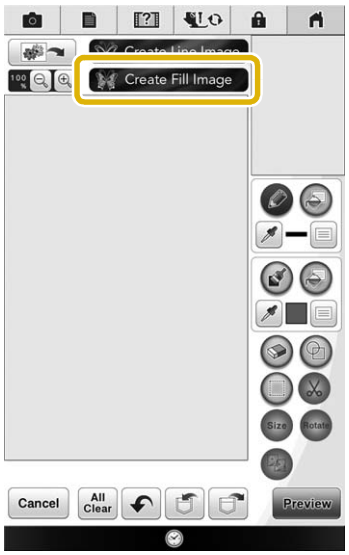
- Patterns that are clearly drawn, with no gradation, fading or blurriness.
- Patterns that are at least a 5 mm square
- Patterns that are extremely intricate design

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.

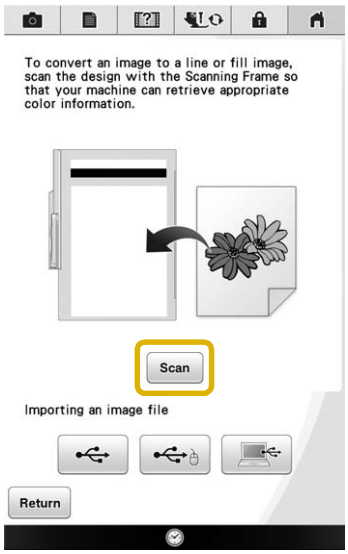
2 **Press** [Create Fill Image].



→ The image display screen appears.

3 **Press** [Scan].

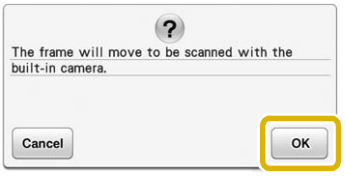
* To import an image from USB media or the computer, press [ ], [ ] or [ ].



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].

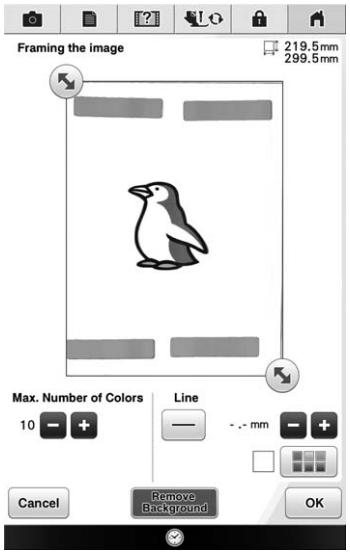


→ Scanning begins.

* 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.

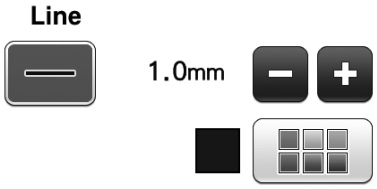


①	Max. Number of Colors	The number of colors in an image will reduced less than the number specified here, and then the outline will be extracted.
②	Remove Background	Select whether or not the background color will be included as one of the colors.
③	Line	Select whether or not the outline will be detected 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).



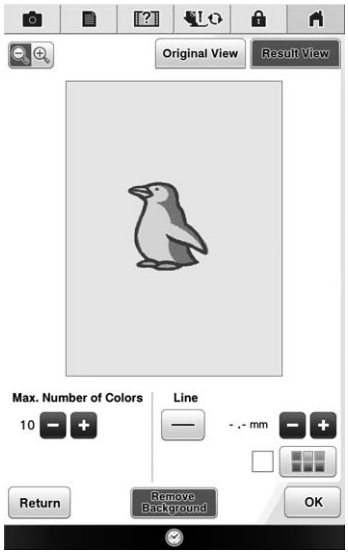
- By touching the scanned image, select the color that wanted to be detected as the outline.
- The moves to the point you touched.
  You can also move by using .

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.

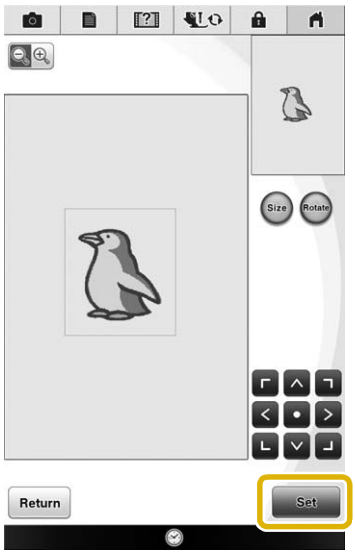
* To return to the previous screen, press Return.

→ 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

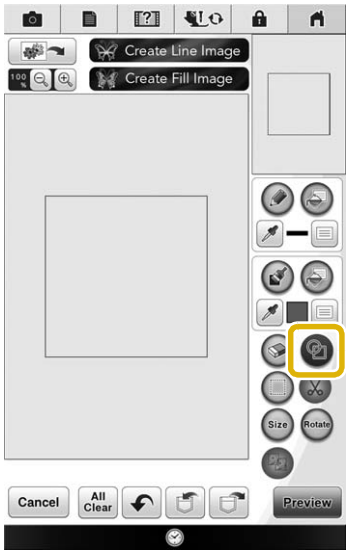
Basic Stippling with IQ Designer

Create a stippling design with the basic procedure.
Example:

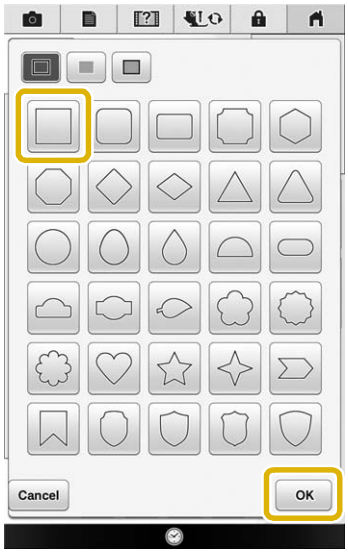
1 **Press IQ.**

* You can also start the function by pressing IQ in "Embroidery" mode.

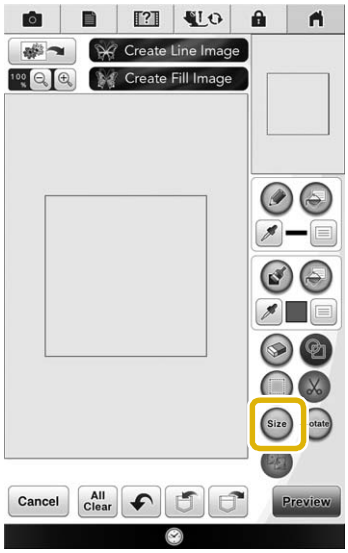
2 **Press .**



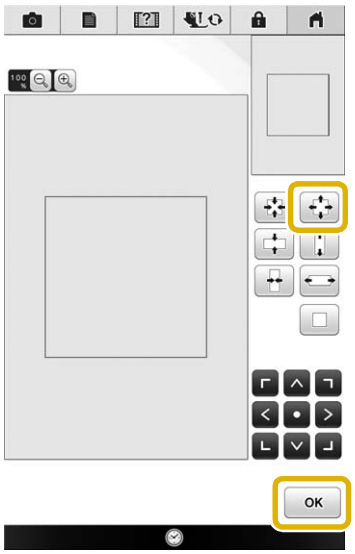
3 **Select the square shape, and then press OK.**



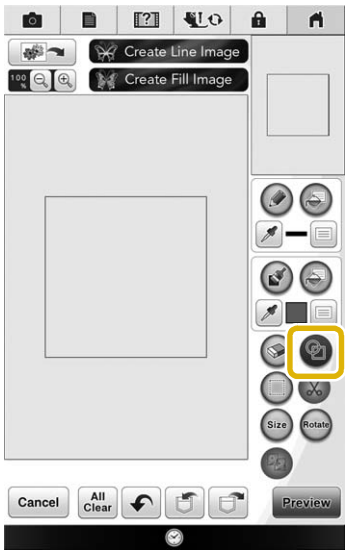
4 **Press Size to enlarge the square.**



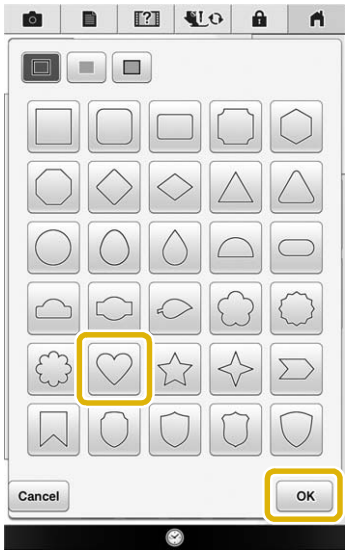
5 Press 7 times, and then press OK for this example.



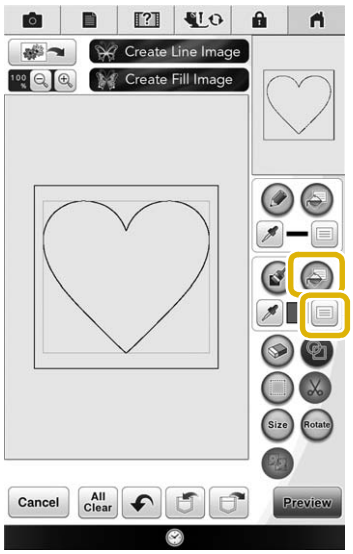
6 Press .



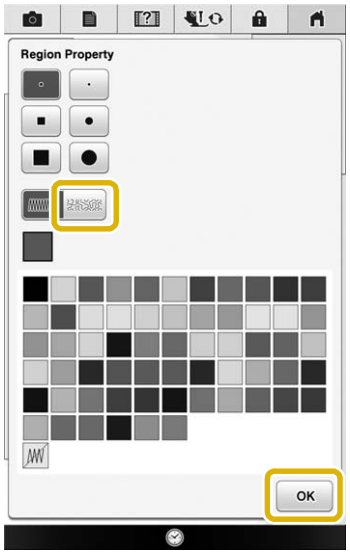
7 Select the heart shape, and then press OK.



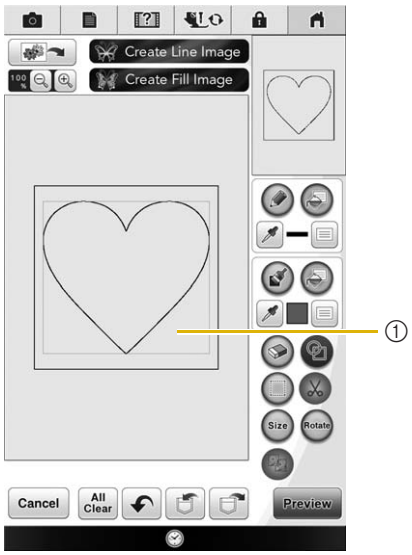
8 Press , and then press .



9 **Press , and then select the stitch color. Press OK after setting the color.**

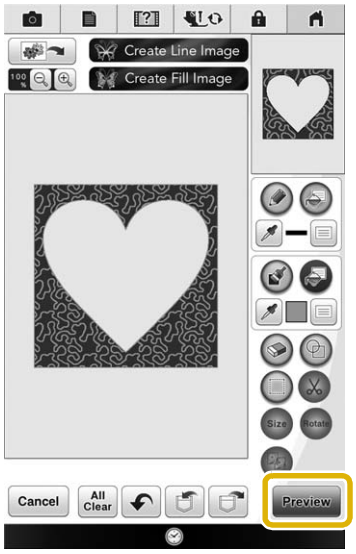


10 **Select the area you want to set stippling effect.**



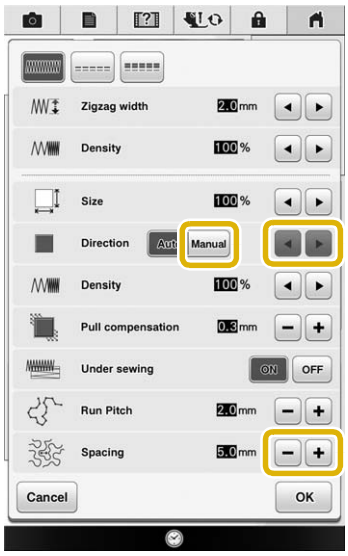
① Select this area.

11 **Press Preview.**

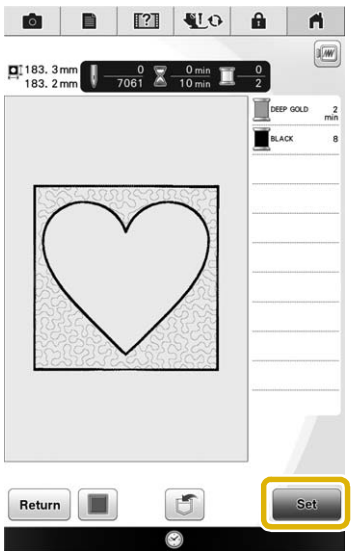


→ When the following message appears, press OK.

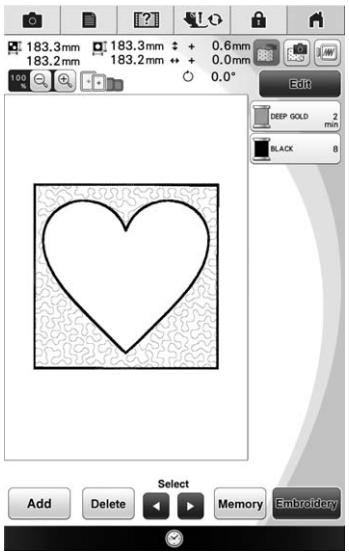
12 **Adjust the stippling settings to create the desired effect, and then press OK.**



13 **Press Set.**



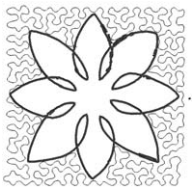
14 **Follow the procedure described on page 210 to edit the pattern as desired.**



Scanning Drawing to Create Stippling Pattern

Create the custom pattern with stippling design.

Example:

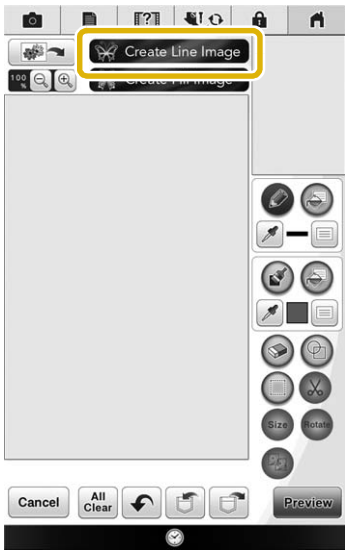


1 **Set the drawing to create the pattern to the scan frame.**

2 **Press IQ.**

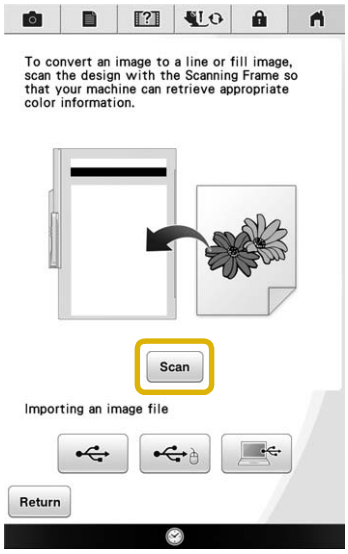
* You can also start the function by pressing IQ in "Embroidery" mode.

3 **Press Create Line Image.**



→ The image display screen appears.

4 **Set the scan frame to the machine, and then press Scan.**



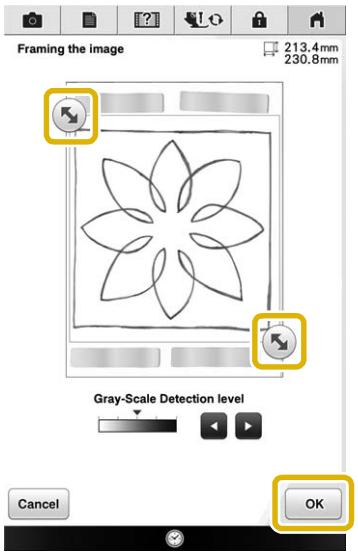
Note

- 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.

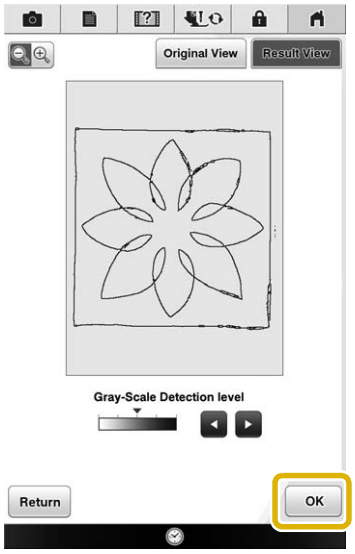
→ When the following message appears, press OK.

→ Scanning begins.
* To stop scanning and return to the screen in step 3, press Cancel.

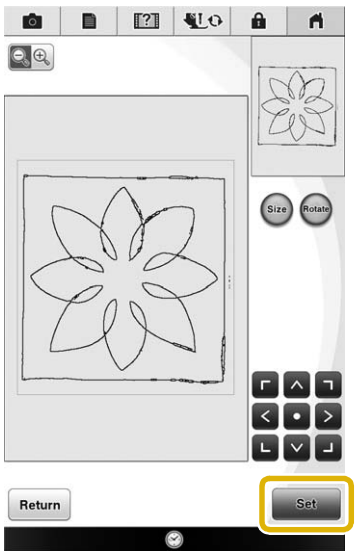
5 When scanning is finished, move to frame the image for the pattern, and then press OK.



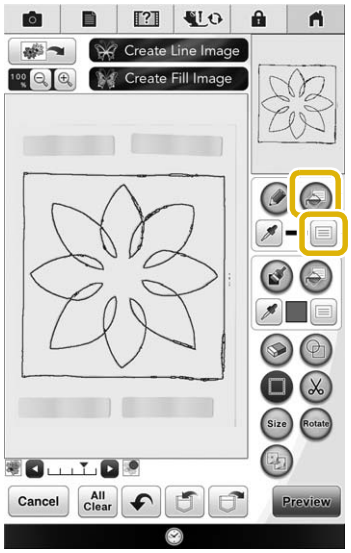
6 Press OK.



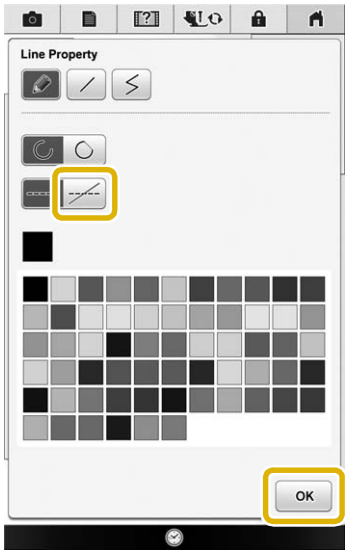
7 Press Set.



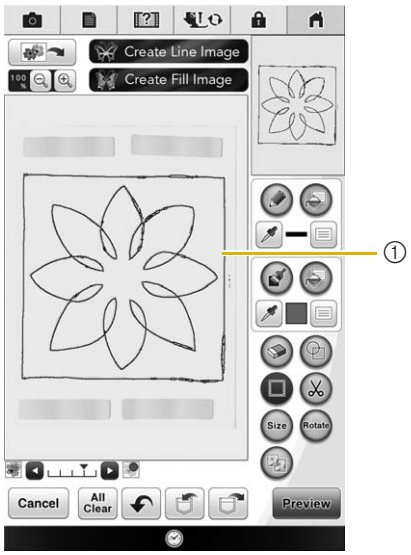
8 Press , and then press .



9 Press ----- to set the outline of the pattern, and then press OK.

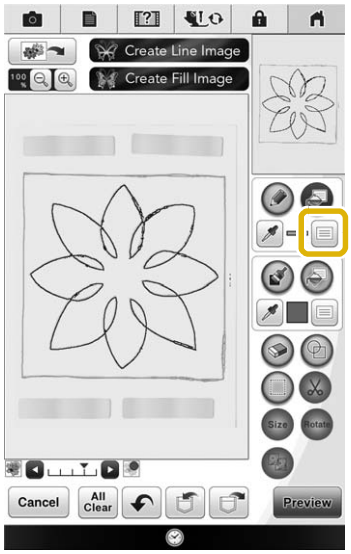


10 Select the outline of the pattern to set as the line without stitch.

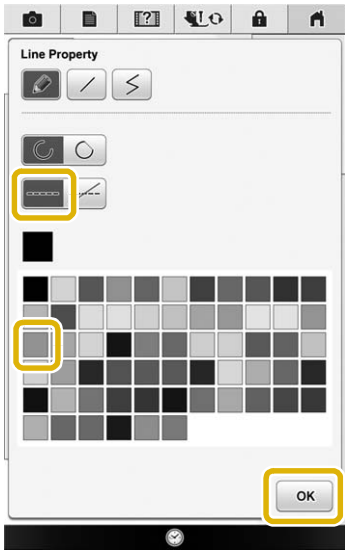


① Outline of the pattern

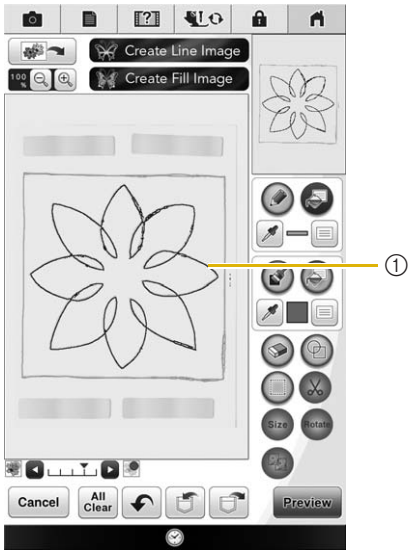
11 Press to select the color of the stitch around the stippling effect.



12 Press ----- and select the stitch color, and then press OK.

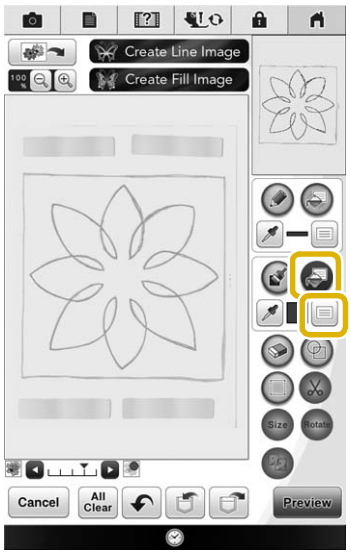


13 **Select the stitch line around the stippling effect.**

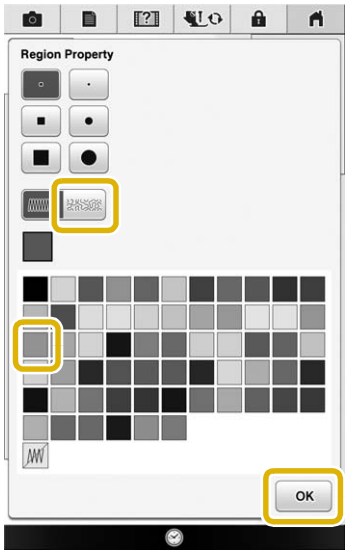


① Stitch line

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

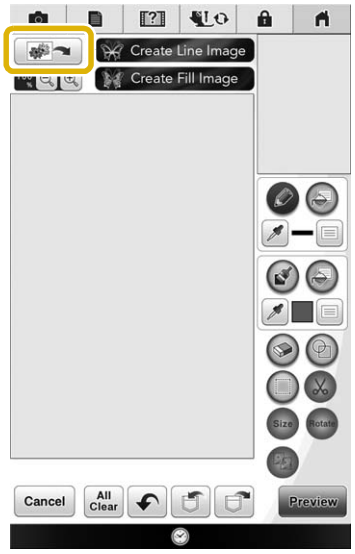
Use the fabric pattern to coordinate with the stippling pattern.

1 Set the fabric to the embroidery frame.

2 Press IQ.

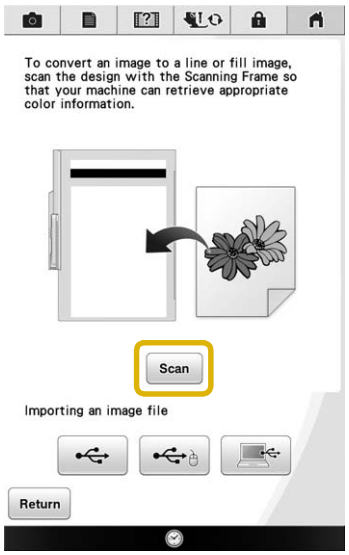
* You can also start the function by pressing IQ in "Embroidery" mode.

3 Press .



→ The image display screen appears.

4 Set the embroidery frame to the machine, and then press Scan.



Note

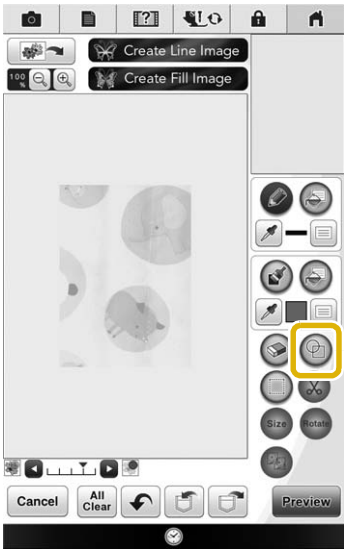
- When scanning starts, some of the machine lights will turn off in a certain circumstances, in order to increase the scan quality. The machine lights will return to their original brightness when scanning ends.
- You can import an image of 5 MB or smaller from USB media or a computer.

→ When the following message appears, press OK.

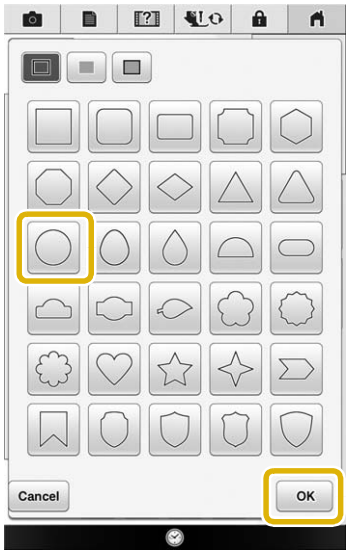
→ Scanning begins.

* To stop scanning and return to the screen in step 3, press Cancel.

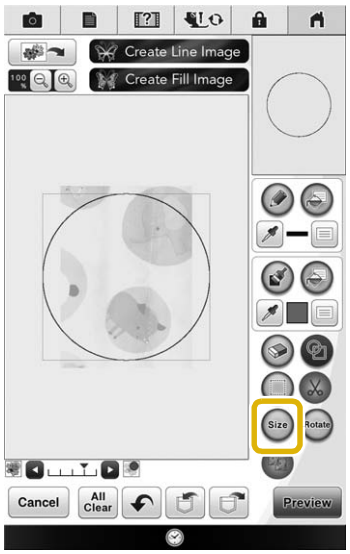
5 Press .



6 **Select the circle shape, and then press OK.**

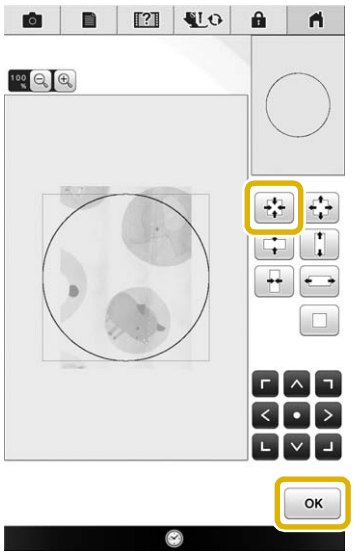


7 **Press Size to enlarge the circle.**

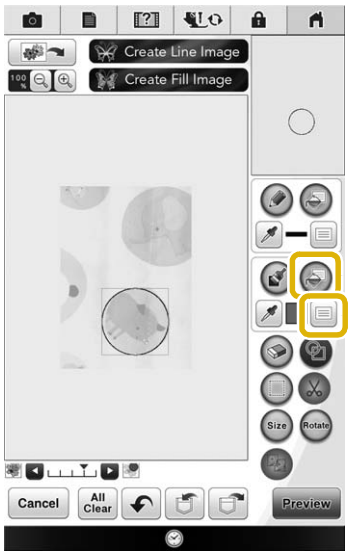


8 **Press ✥ until the size of circle fits the pattern on the fabric, and then press OK.**

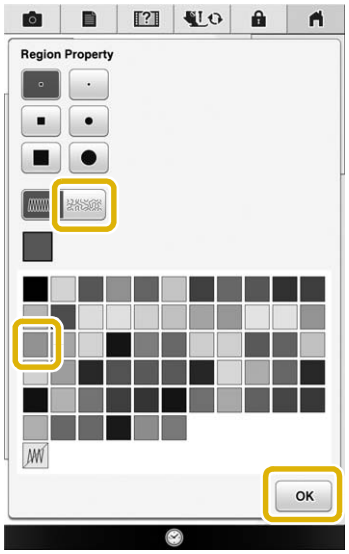
* Use ◤ ▲ ◥ ◀ ● ▶ ◣ ▼ ◢ to align the position of the circle to the pattern on the fabric.



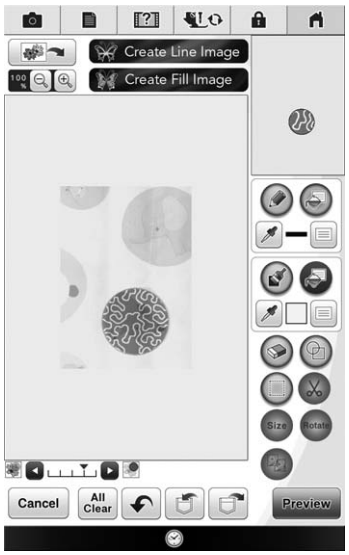
9 **Press ⊞, and then press ☰.**



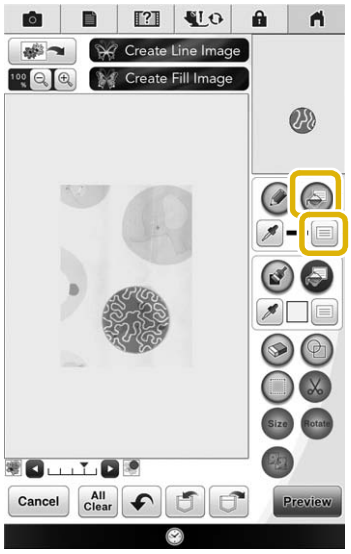
10 Press , and then select the stitch color. Press OK after setting the color.



11 Select the area you want to set stippling effect.

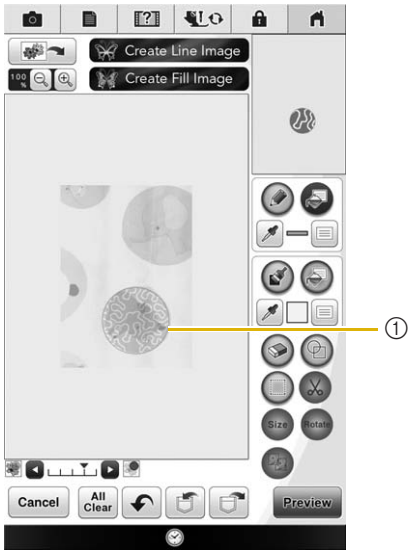


12 Press , and then press .



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

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- When tension is not applied to the bobbin thread 363

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Positioning the Fabric and Sewing 365
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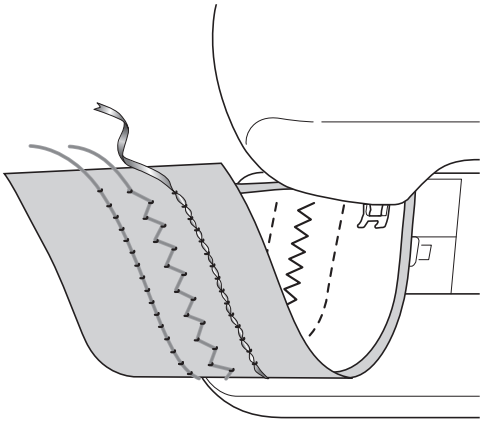
ADJUSTING BOBBIN WORK THREAD TENSION 372
- Adjusting the upper thread tension 372
- Adjusting the tension of the bobbin thread 372

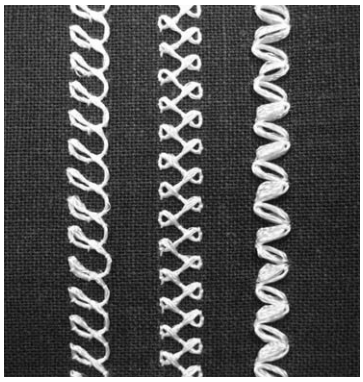
TROUBLESHOOTING 373
- The thread was accidentally cut automatically and the bobbin thread is caught inside the machine 373
- The pattern is misaligned 373
- The bobbin thread catches on the tension spring of the bobbin case 373

ABOUT BOBBIN WORK

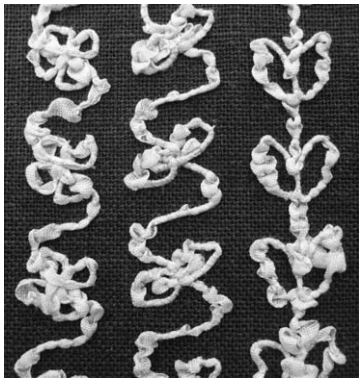
Beautiful embroidery work, with a three-dimensional appearance, can be created by winding the bobbin with heavy weight thread or ribbon, which is too thick to be threaded through the machine's needle. The decorative thread or ribbon will stitch out on the underneath side of fabric while sewing with the fabric wrong side facing up.



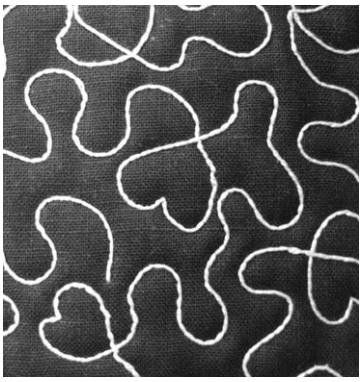
1. Utility stitches



2. Decorative stitches



3. Free motion sewing

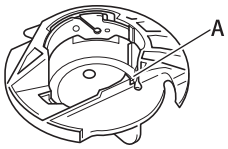


Bobbin work embroidery is sewn using the bobbin work patterns included with this product in addition to some of the utility stitches.

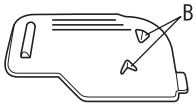
PREPARING FOR BOBBIN WORK

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

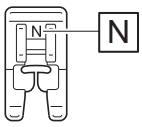
Upper thread choices can vary depending on the finished look you would like to achieve. By using sewing machine embroidery thread (polyester), multipurpose polyester thread, or monofilament (transparent nylon) thread the appearance of a single design can be changed many times just by choosing a different 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

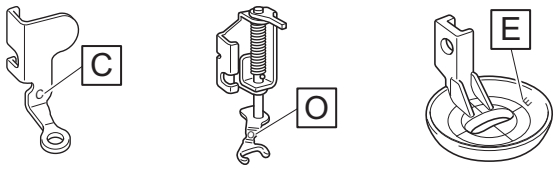
Use a needle appropriate for the upper thread and fabric being used. Refer to “Fabric/Thread/Needle Combinations” on page 75 and “Embroidery Step by Step” on page 196.

■ Presser foot

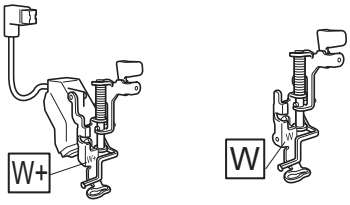
Utility stitches or decorative stitches:
Monogramming foot “N”



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.

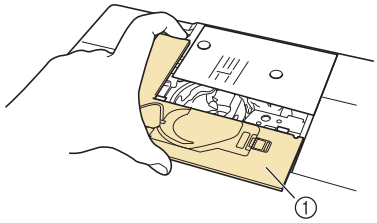
Preparing the Bobbin Thread

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.

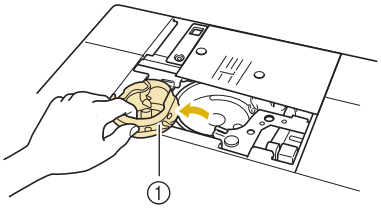
2 Remove the flat bed attachment or embroidery unit.

3 Grasp both sides of the needle plate cover, and then slide it toward you to remove it.



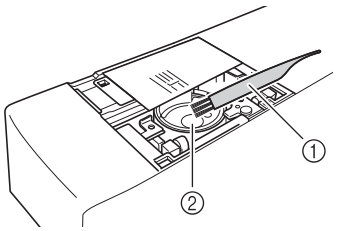
① Needle plate cover

4 Remove the bobbin case.



① Bobbin case

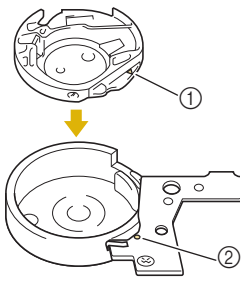
5 Use the cleaning brush included with the machine or a vacuum cleaner to remove any lint and dust from the race and its surrounding area.

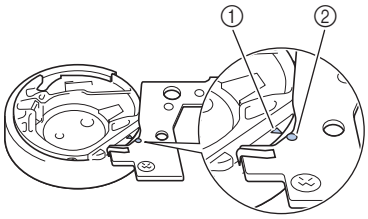


① Cleaning brush
② Race

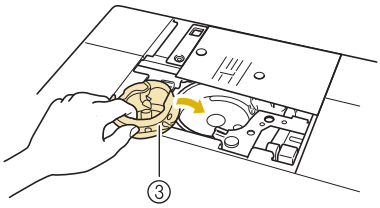
6 Wipe the bobbin case (gray) with a soft lint free cloth to clean it.

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

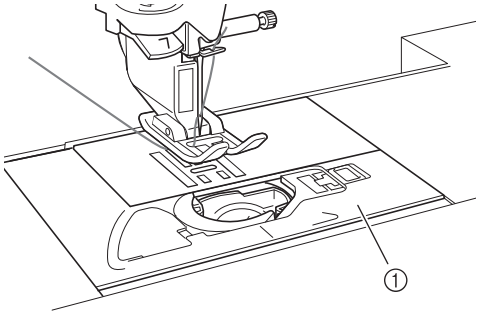
- The bobbin case (gray) cannot be used for sewing in any way other than bobbin work. After sewing bobbin work, refer back to the steps in "Preparing the Bobbin Thread" on page 360 for removing and cleaning the bobbin case (gray), and then reinstall the standard bobbin case (black).

⚠ 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.**

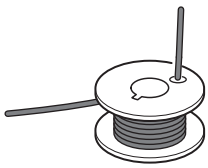
For details on installing the needle plate cover, refer to "Cleaning the Race" of "Appendix".



① Needle plate cover

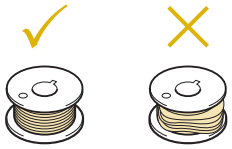
9 **Install the flat bed attachment.**

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.**

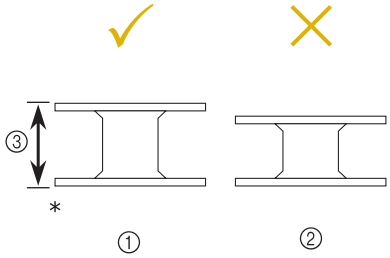


⚠ CAUTION

- **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.**

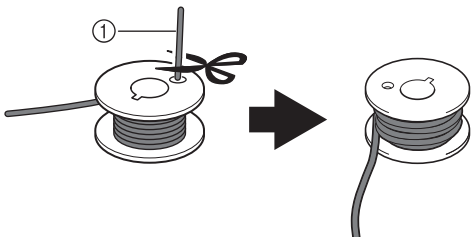


* Actual size
① This model
② Other models
③ 11.5 mm (approx. 7/16 inch)

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

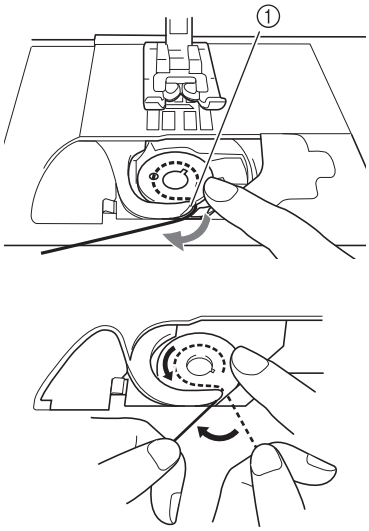
- If inserting thread tail through bobbin hole is difficult, bobbin can be wound by holding the tail and wrapping thread around inside base. Then carefully trim thread tail so it does not extend from the side of the bobbin.

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

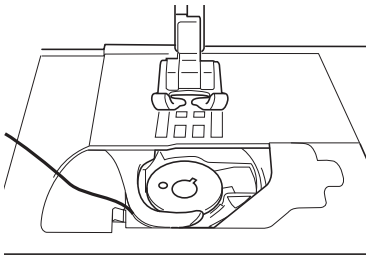
Insert bobbin into bobbin case so the thread unwinds from the left side.
Then correctly pass the thread through the tension spring as shown below.



① Tension spring

⚠ CAUTION

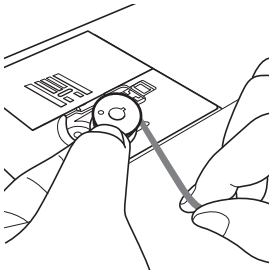
- **When winding the bobbin, make sure the thread is not frayed. Sewing with frayed thread may result in the thread catching on the tension spring of the bobbin case, the thread completely becoming tangled or damage to the machine.**
- **Do not guide the bobbin thread through the groove in the needle plate cover, otherwise the lower Thread only as far as shown below.**

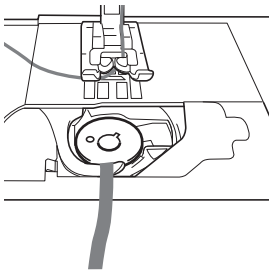


■ When tension is not applied to the bobbin thread

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.

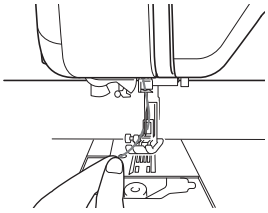
Hold the bobbin with your left hand so the thread unwinds from the right side and hold the end of the thread with your right hand.

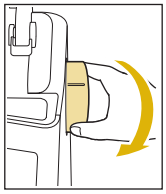




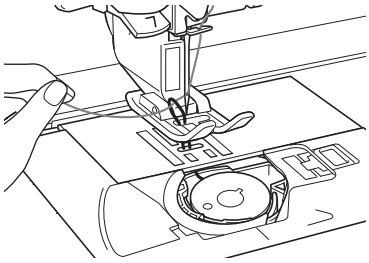
13 **Pull out about 8 cm (approx. 3 inches) of bobbin thread.**

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.**





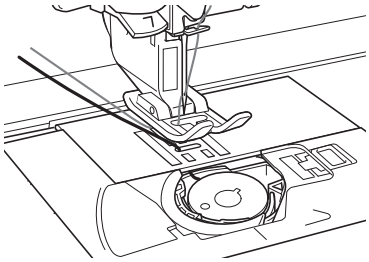
15 Gently pull the upper thread to bring the bobbin thread up through the needle plate.



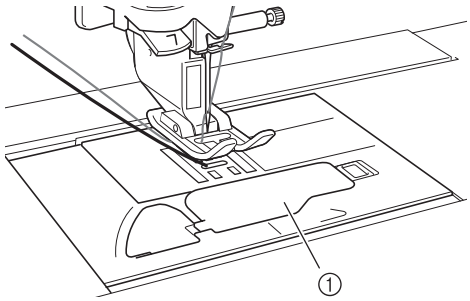
→ A loop of the bobbin thread comes out through the hole in the needle plate.

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.

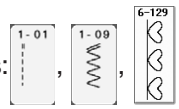
1 **Turn on the machine.**

2 **Select a stitch in the Utility and Decorative Stitches mode. For this example, press** .

Memo

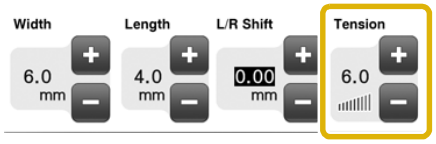
- For best results, select a longer stitch length and a wider stitch width. Depending on the selected stitch, it may not be possible to change the stitch length and stitch width settings.

- 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

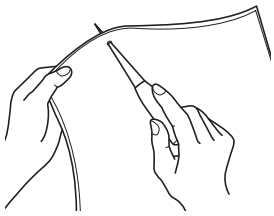
- **Before sewing, make sure the automatic thread cutting has been turned off. If sewing is started with automatic thread cutting turned on, the thread may become tangled or the machine may be damaged.**

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.**

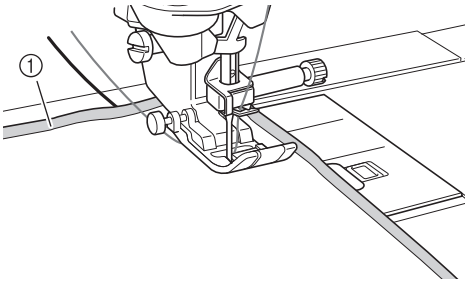


7 **Press** .

→ The screen changes, and all keys and operation buttons are locked.

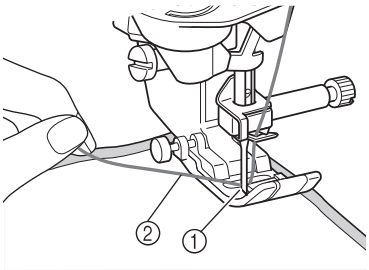
8 **Use the presser foot lever to raise the presser foot.**

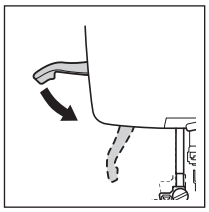
9 **With the wrong side facing up, place the fabric under the presser foot.**



① Wrong side of fabric

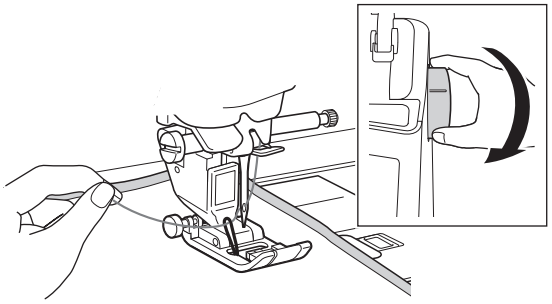
10 **Turn the handwheel toward you (counterclockwise) to feed the needle into the fabric or punched hole. Position the upper thread over the presser foot and lightly hold then, lower the presser foot lever.**





① Punched hole
② Upper thread over the presser foot

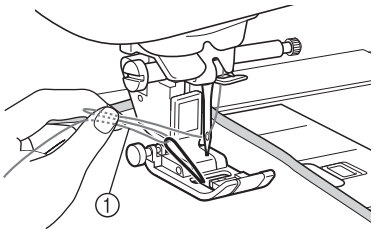
11 **Pulling the upper thread gently, turn the handwheel toward you (counterclockwise) until the mark on the handwheel aligns with the center top of machine.**



→ 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.



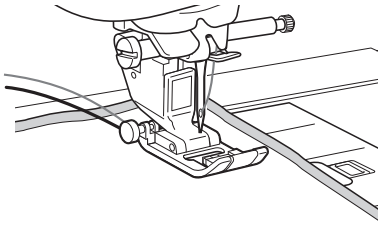
① Upper thread

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.**

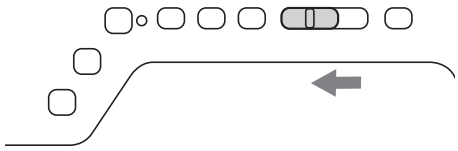


14 **While gently holding threads at the rear of the machine, turn the handwheel to feed the needle into the fabric or punched hole again, and then lower the presser foot lever.**

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.**



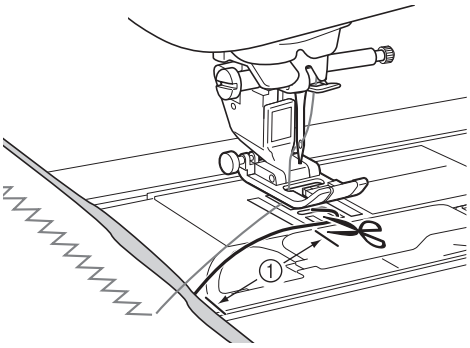
Note
- Before sewing, check that there is enough thread in the bobbin.

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.**

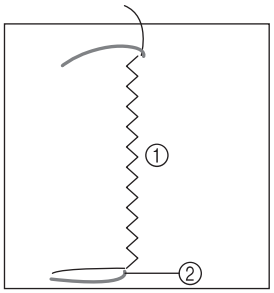


① 10 cm (approx. 4 inches)

Note
- Do not press the "Thread Cutter" button to cut the threads, otherwise the machine may be damaged.

■ Finishing the thread ends

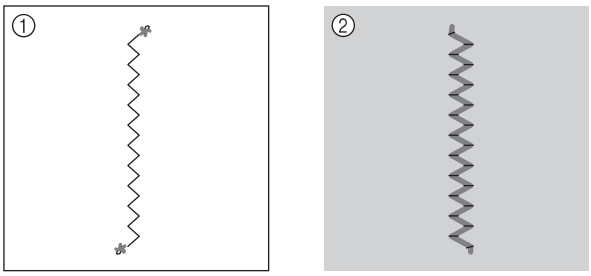
1 **At the end of the stitching, use a hand sewing needle to bring the bobbin thread up to the wrong side of the fabric.**



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

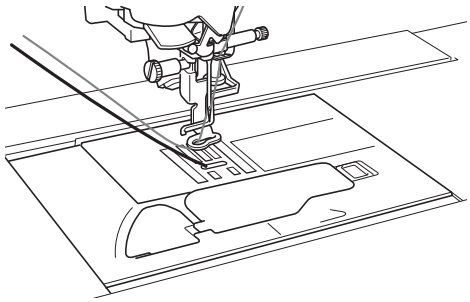
Note
- Prepare the machine for bobbin work as described in “PREPARING FOR BOBBIN WORK” on page 359.

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.**

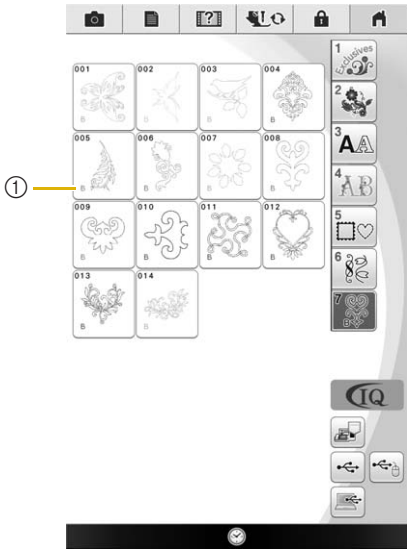
→ The carriage will move to the initialization position.

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.**

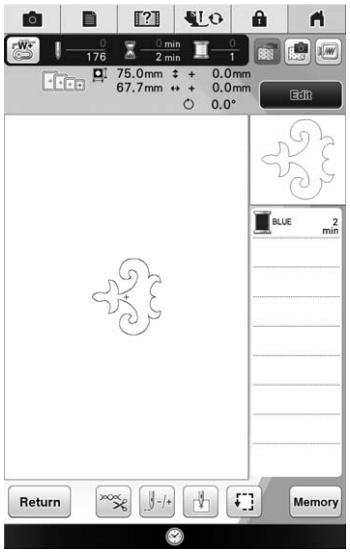
Note
- Embroidery sewing speed defaults to 350 spm when a bobbin work embroidery pattern is selected. The Settings screen will not allow speed to be adjusted.

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.

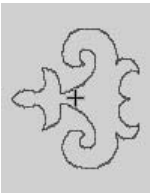
9 **Press Set and then press Embroidery.**

→ The embroidering screen is displayed.

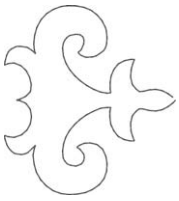


Note

- 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



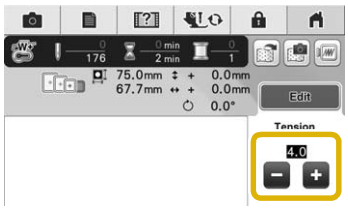
② Sewn embroidery (Right side of fabric)

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.

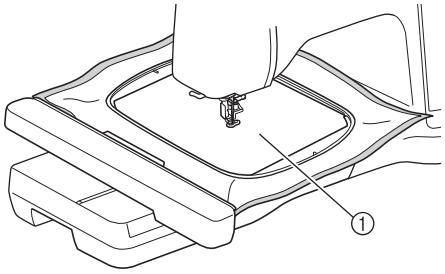


Memo

- 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.**

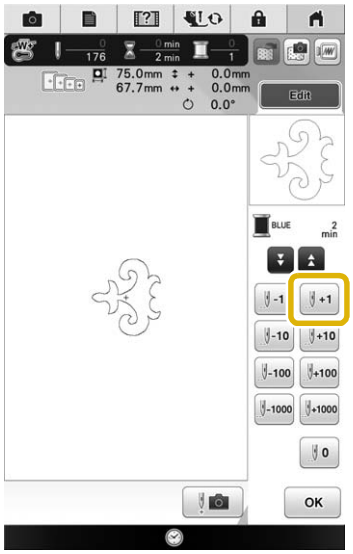


① Wrong side of fabric

⚠ 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].**



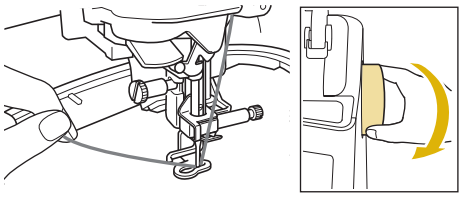
→ The embroidery frame moves to the beginning of stitching.

3 **Press [UP].**

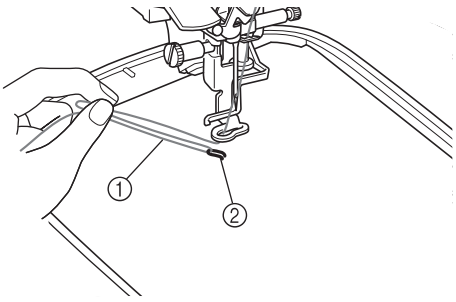
→ The screen changes, and all keys and operation buttons are locked.

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

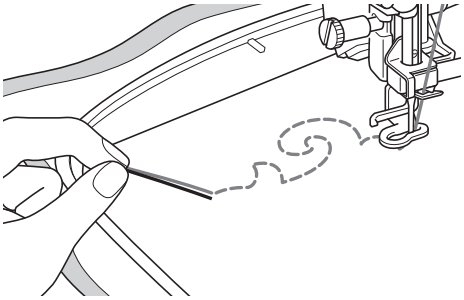
- If the bobbin thread cannot be pulled up, use an awl to create small hole to help pull bobbin thread to surface.

7 **Press [UP] to unlock all keys and buttons.**

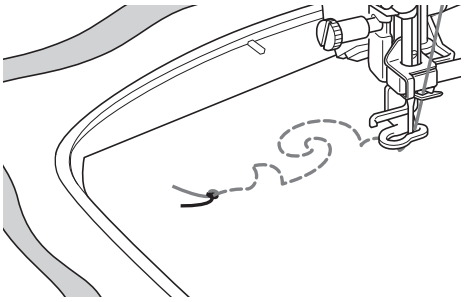
8 **Lower the presser foot.**

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.**

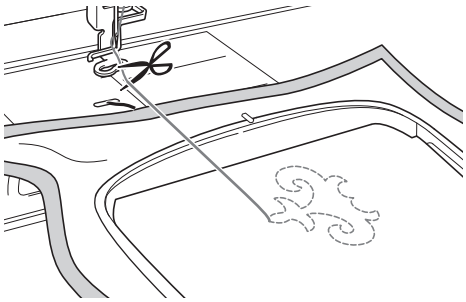


12 **Start sewing again to finish the pattern.**

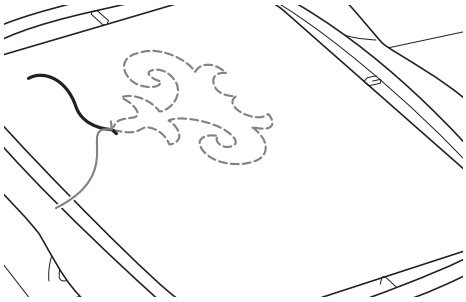
13 **Raise the needle and presser foot, remove the embroidery frame, and then cut the upper thread and the bobbin thread.**

When cutting the threads, be sure to leave an adequate length of thread so they can be

properly secured.



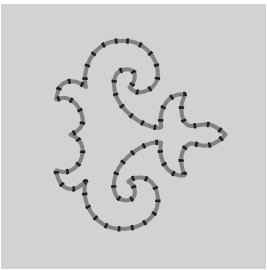
14 **Using a hand sewing needle such as a ribbon embroidery needle, pull the bobbin thread to the top (wrong side) of the fabric, and then tie the upper thread and the bobbin thread together.**



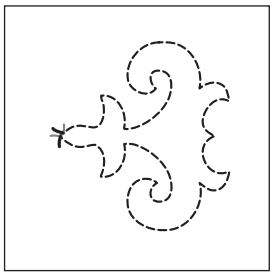
Memo

- 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

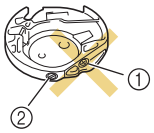
After sewing trial stitches and checking the sewing results, adjust the thread tensions if necessary. After adjusting the tensions, be sure to sew trial stitches again in order to check the sewing results.

■ 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.

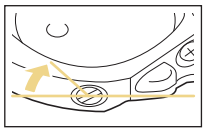
■ Adjusting the tension of the bobbin thread

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.

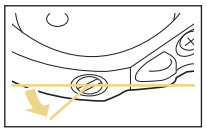


① Do not turn the phillips screw (+).
② Adjust with a small screwdriver.

To increase the tension of the bobbin thread, turn the slotted-head (–) screw 30° to 45° clockwise.

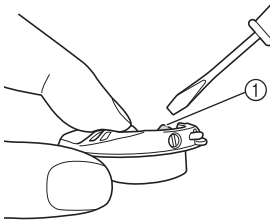


To decrease the tension of the bobbin thread, turn the slotted-head (–) screw 30° to 45° counterclockwise.



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

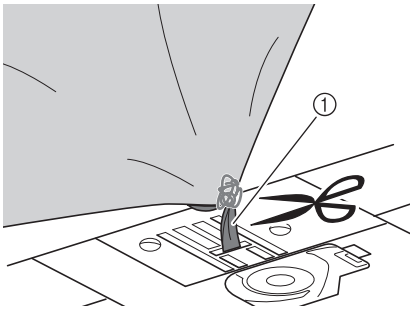
- If the bobbin thread tension is tight, the thread cannot be passed through the tension spring when the bobbin is installed in the bobbin case. (Refer to "When tension is not applied to the bobbin thread" on page 363.)

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

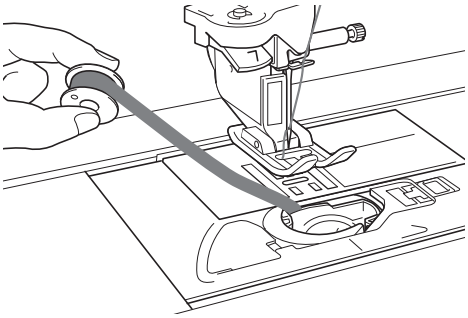
1 Cut the thread near the fabric above the needle plate, and then remove the fabric.



① Thread

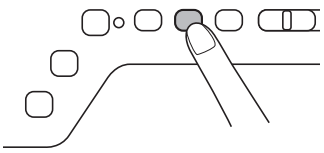
Note
- If an embroidery pattern was sewn, remove the embroidery frame.

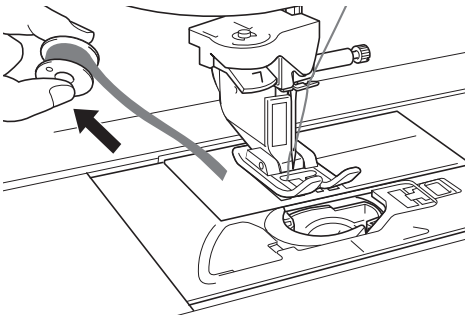
2 Remove the bobbin, and then hold it out toward the left side of the machine.



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.



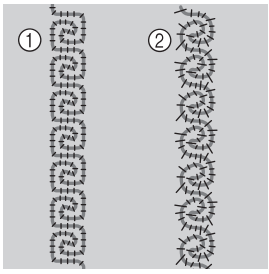


⚠ CAUTION
- **Do not pull on the thread with excessive force, otherwise the machine may be damaged.**

■ 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

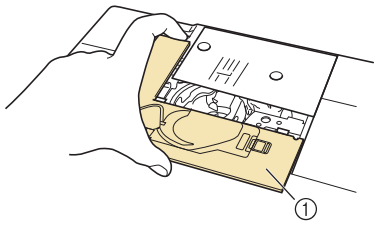
- Do not wipe the LCD screen with a damp cloth.

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.

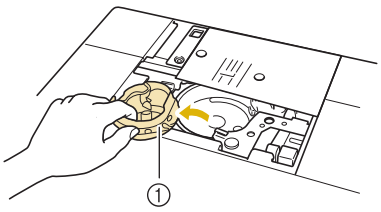
Cleaning the Race

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.**



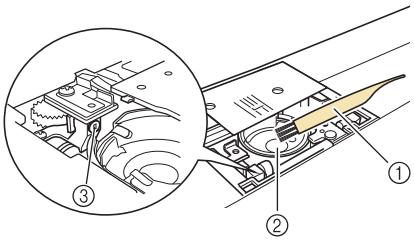
① Needle plate cover
→ The needle plate cover is removed.

6 **Grasp the bobbin case, and then gently lift out.**



① Bobbin case

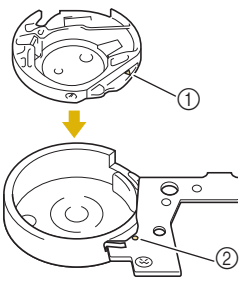
7 **Use the cleaning brush or a vacuum cleaner to remove any lint and dust from the race and bobbin thread sensor and the surrounding area.**

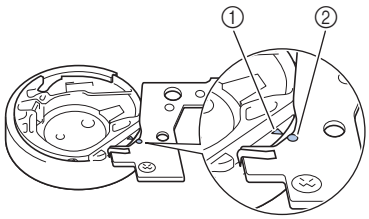


① Cleaning brush
② Race
③ Bobbin thread sensor

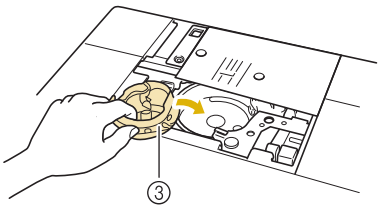
Note
- Do not apply oil to the bobbin case.
- If lint or dust collects on the bobbin thread sensor, the sensor may not operate correctly.

8 **Insert the bobbin case so that the ▲ mark on the bobbin case aligns with the ● mark on the machine.**





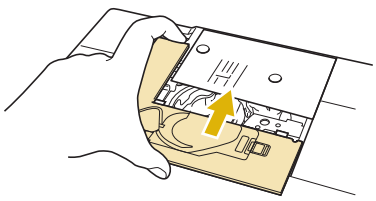
* Align the ▲ and ● marks.



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.**

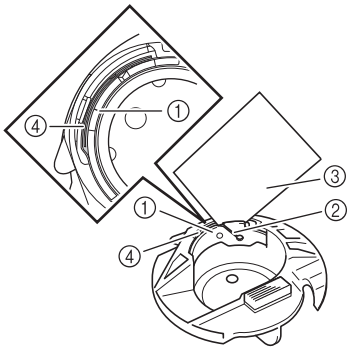


Note
- If the needle plate has been removed it is especially important to reinstall the needle plate and tighten the screws prior to installing the bobbin case.

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

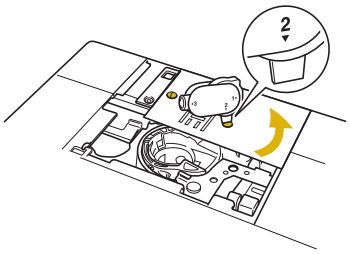
Memo
- Do not bend the tension spring. In addition, do not use anything other than recommended paper to clean the bobbin case.

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.**

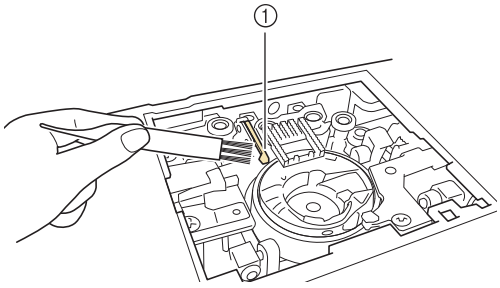
Cleaning the Cutter in the Bobbin Case Area

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.**



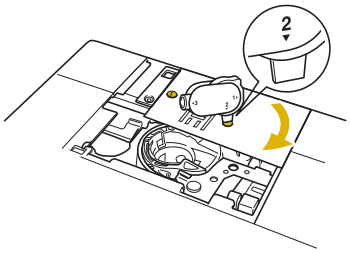
3. **Use the cleaning brush or a vacuum cleaner to remove any lint and dust from the cutter in the bobbin case area.**



① Cutter

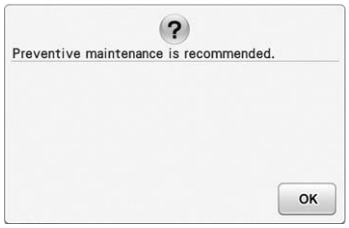
⚠ CAUTION
- **Do not touch the cutter, otherwise injuries may result.**

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 .**

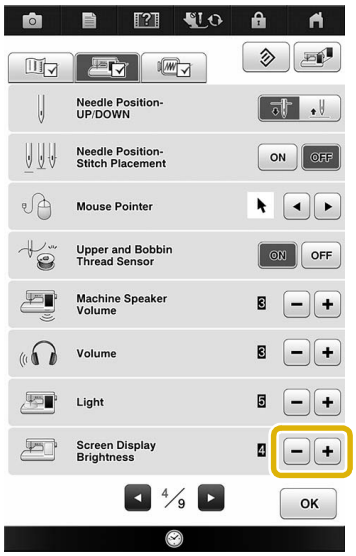
→ The settings screen appears.

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.**

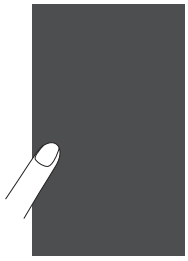


* The screen will dim as the number on the settings screen decreases. The screen will appear brighter as the numbers increase.

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.

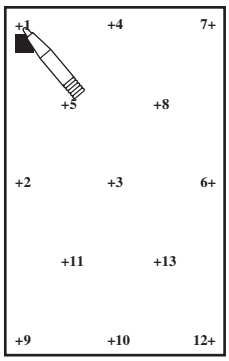
1 **Holding your finger on the screen, turn the main power switch to OFF and back to ON.**



→ 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

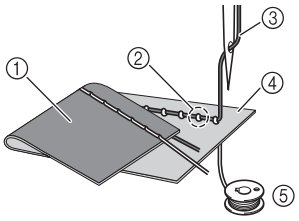
Detailed causes and remedies for common troubleshooting topics are described below. Be sure to refer to this before contacting your Baby Lock retailer.

■ 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

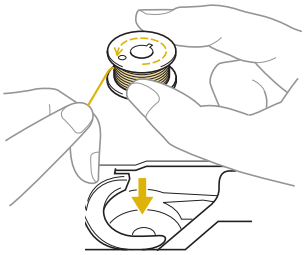
■ Cause

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.

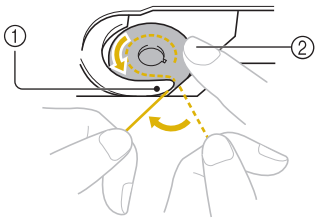
1. **Turn off the sewing machine.**
2. **Remove the bobbin from the bobbin case.**
3. **Place the bobbin in the bobbin case so that the thread unwinds in the correct direction.**
   * Hold the bobbin with your right hand with the thread unwinding to the left, and hold the end of the thread with your 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.

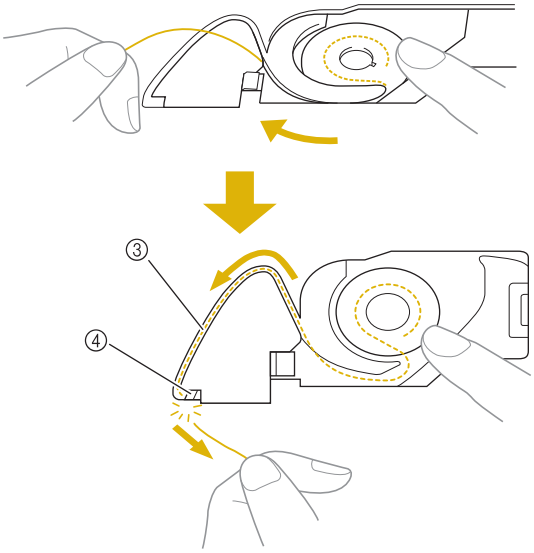
4 While holding the bobbin in place with your finger, pass the thread through the slit in the needle plate.

* 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.



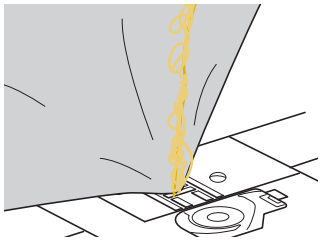
③ Slit
④ Cutter

Sewing with the correct thread tension is possible after the bobbin has been correctly installed in the bobbin case.

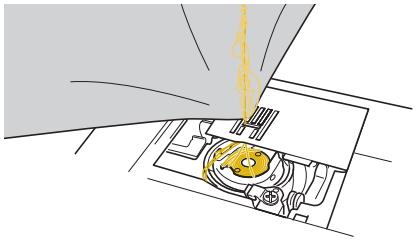
Tangled Thread on Wrong Side of Fabric

■ 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.

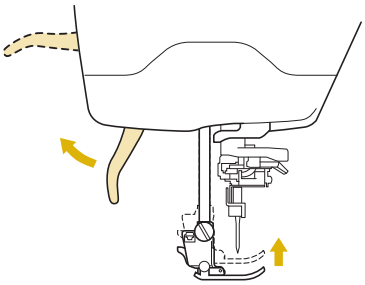
* Refer to “Cleaning the Race” in “CARE AND MAINTENANCE” on page 376.

2 Remove the upper thread from the machine.

3 Refer to the following steps to correct the upper threading.

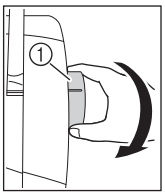
* If the bobbin was removed from the bobbin case, refer to “Setting the Bobbin” on page 57 and “Remedy” in the section “Upper Thread is Too Tight” on page 381 to correctly install the bobbin.

4 **Raise the presser foot using the presser foot lever.**

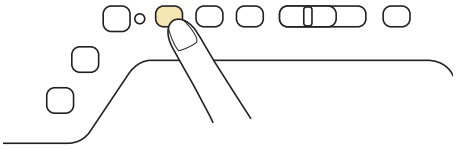


* If the presser foot is not raised, the sewing machine cannot be threaded correctly.

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.**

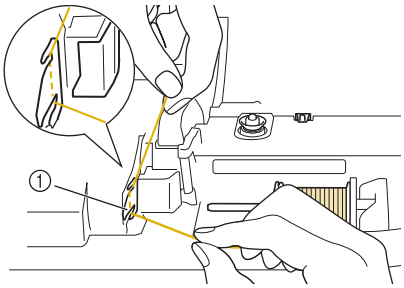


or



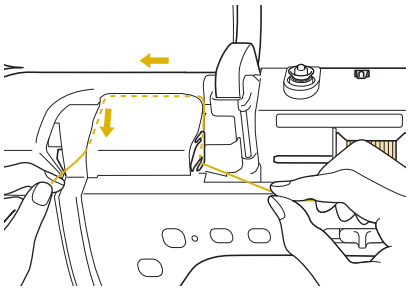
① Mark

6 **While holding the thread with both hands, pull the thread up from under the thread guide plate.**

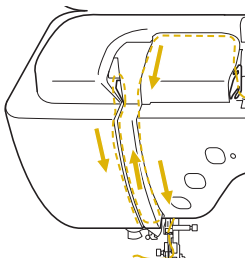


① Thread guide plate

7 **While holding the thread in your right hand, pass the thread through the thread guide in the direction indicated.**

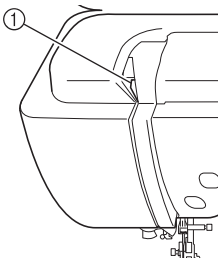


8 **Guide the thread down, up, then down through the groove, as shown in the illustration.**



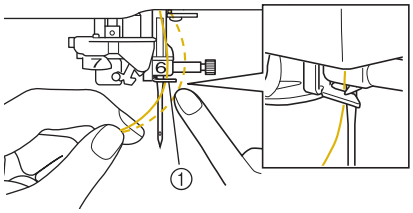
Memo

- 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

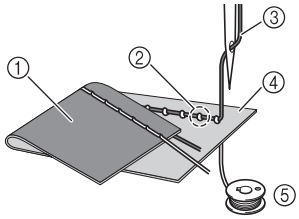
10 **Thread the needle according to steps 10 and 15 in "UPPER THREADING" on page 60.**

Incorrect Thread Tension

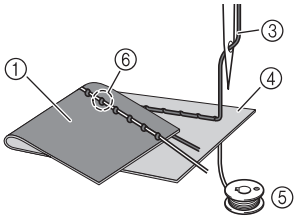
■ Symptoms

- 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.

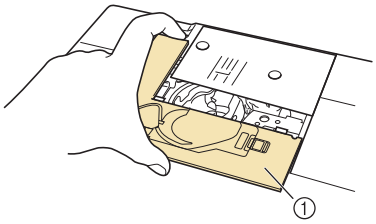
4 Remove the presser foot and presser foot holder.

* Refer to "CHANGING THE PRESSER FOOT" on page 68.

5 Lift up the fabric and cut the threads below it.

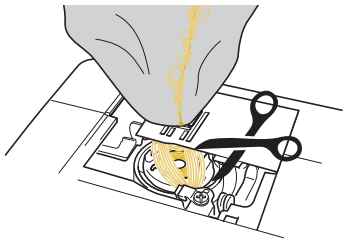
If the fabric can be removed, remove it. Continue with the following steps to clean the race.

6 Remove the needle plate cover.



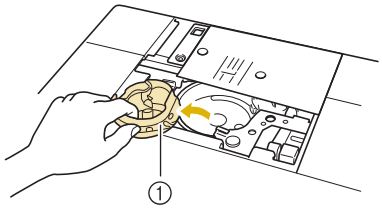
① Needle plate cover

7 Cut out the tangled threads, and then remove the bobbin.



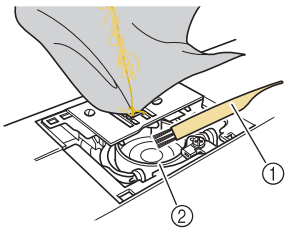
8 Remove the bobbin case.

If threads remain in the bobbin case, remove them.



① Bobbin case

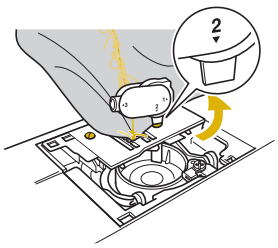
9 Use the cleaning brush or a vacuum cleaner to remove any dust or loose threads from the race and its surrounding area.



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.

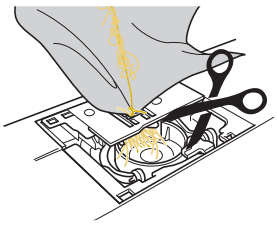
10 Use the enclosed multi-purpose screwdriver to loosen the two screws on the needle plate.



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.



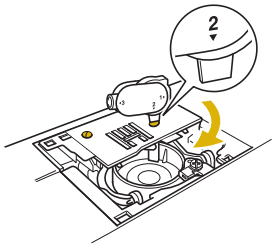
If the fabric cannot be removed, even after completing these steps, contact your nearest authorized Baby Lock retailer.

12 Remove any threads in the race and around the feed dogs.

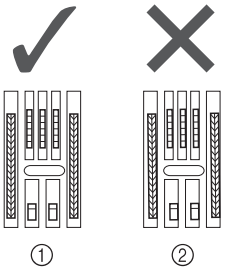
13 Turn the handwheel to raise the feed dogs.

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.



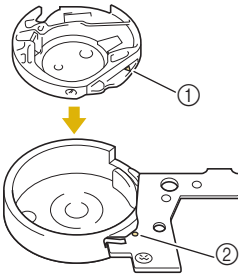
Turn the handwheel to check that the feed dogs move smoothly and do not contact the edges of the slots in the needle plate.

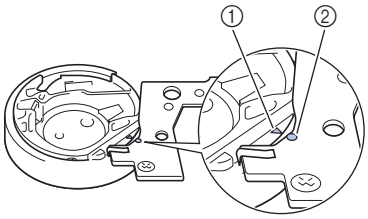


① Correct position of feed dogs
② Incorrect position of feed dogs

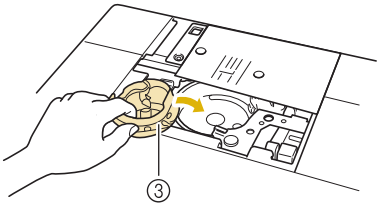
Note
- Be careful not to drop the removed screws in the machine.

16 Insert the bobbin case so that the ▲ mark on the bobbin case aligns with the ● mark on the machine.





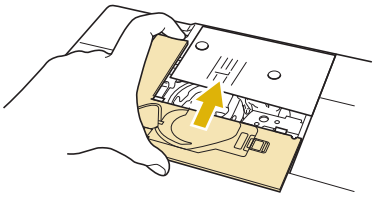
* Align the ▲ and ● marks.



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.

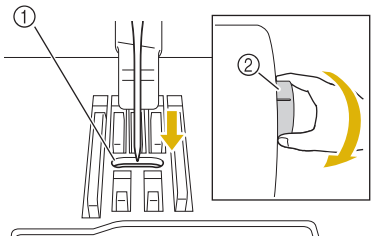
1 Turn on the machine.

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 [icon].	Press to unlock all keys and [icon] 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. [icon] [icon]	—
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.

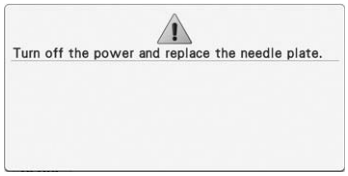
Below is an explanation of error messages. Refer to these when necessary (if you press OK or do the operation correctly while the error message is displayed, the message disappears).

⚠ 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.**

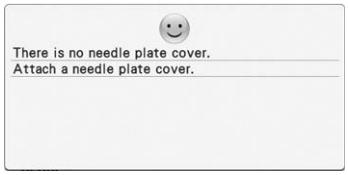
This message is displayed when the motor locks due to tangled thread or for other reasons related to thread delivery.

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).

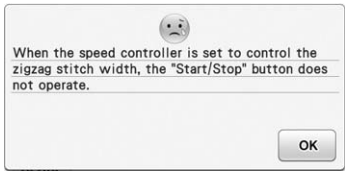
This message is displayed when the machine needs to be maintained. (see page 379)



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.



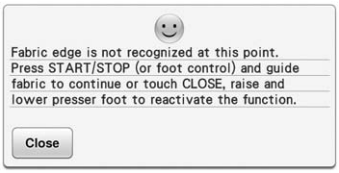
This message is displayed when the speed control lever is set to control the zigzag stitch width, and the “Start/ Stop” button is pushed. Use the foot controller to operate the machine.

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.)

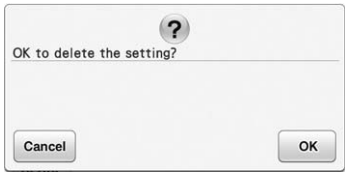
This message is displayed when the automatic needle threading button is pushed while twin needle sewing is set.

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)

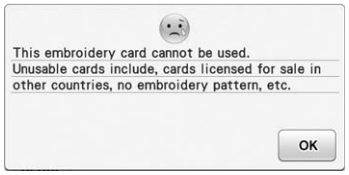


This message is displayed when the built-in camera cannot detect the edge of the fabric.
If this message appeared after sewing has reached 1 to 2 cm (about 3/8 to 3/4 inch) from the edge of the fabric, refer to step 13 in “Edge Sewing” on page 165.
If this message appeared during edge sewing, the edge 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.

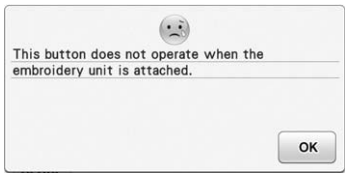
This message appears when you try to save more than 100 camera image or settings screen image files in the USB media. In this case, delete a file from the USB media or use different USB media. (See page 34 and 96)



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.

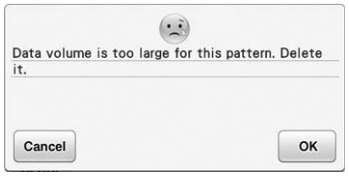


This message is displayed when an unusable embroidery card is inserted.

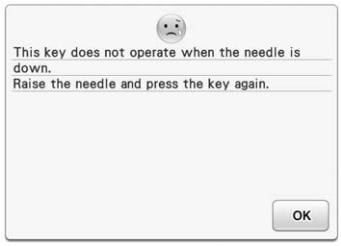


This message is displayed when the “Reverse/ Reinforcement Stitch” button is pushed while the embroidery unit is attached.

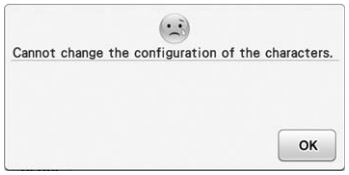
This message is displayed when the foot controller is pressed while the embroidery unit is attached and machine is set up for embroidering.



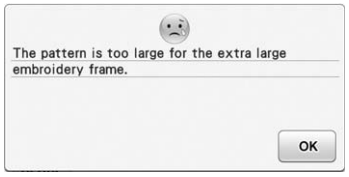
This message is displayed when the patterns you are editing take up too much memory, or if you are editing too many patterns for the memory.



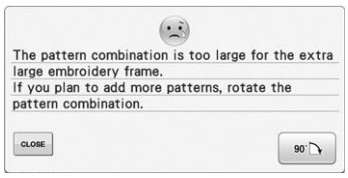
This message is displayed when a key on the LCD display is touched while the needle is in the down position.



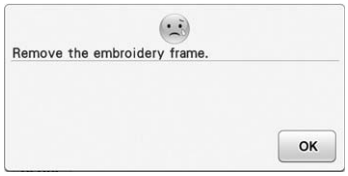
This message is displayed when there are too many characters and the curved character configuration is impossible.



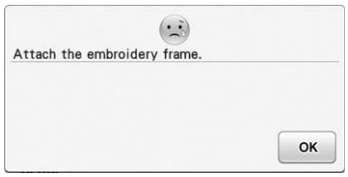
This message is displayed when the machine is in embroidery mode, and the character pattern combination is too large to fit in the embroidery frame.



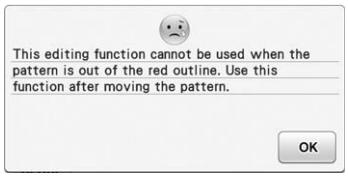
This message is displayed when the machine is in embroidery mode and the combined character pattern is too large for the embroidery frame. You can rotate the pattern 90 degrees and continue combining characters.



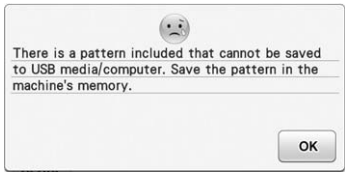
This message is displayed when the machine is in embroidery mode and the embroidery unit tries to initialize while the embroidery frame is attached.



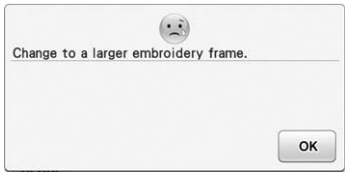
This message is displayed when the machine is ready to sew an embroidery pattern, and the “Start/Stop” button is pushed while the embroidery frame is not attached.



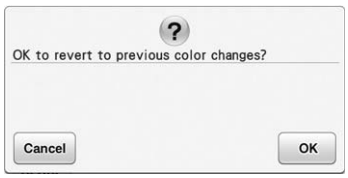
This message is displayed when the machine is in embroidery edit mode, and you try to use an editing function when the pattern is not completely within the red outline.



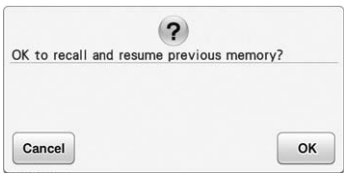
This message is displayed when you try to save a copyright protected pattern to USB media/Computer. According to copyright laws, patterns that are illegal to reproduce or edit cannot be saved to USB media or computer. If this message displays, save the pattern in the machine’s memory.



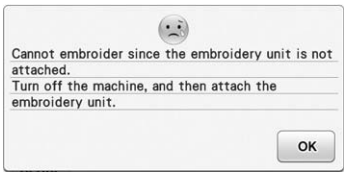
This message is displayed when the machine is in embroidery mode and the small frame is attached, and the selected pattern does not fit in the small frame.
This message appears when embroidery frame (small) is attached while aligning the embroidery position using the built-in camera.



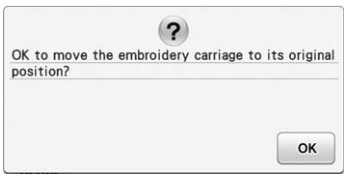
This message is displayed when Reset is pressed when changing thread colors.



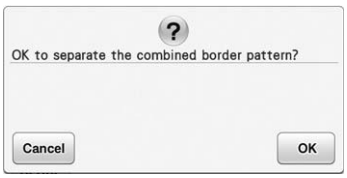
This message appears if the machine is turned off while sewing, then turned on again. Press OK to return the machine to the condition (pattern position and number of stitches) when it was turned off. Follow the procedure described in “If the Thread Breaks During Sewing” on page 267 to align the needle position and sew the remainder of the pattern.



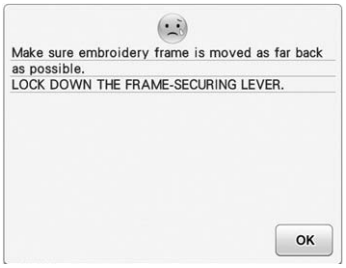
This message is displayed when the “Start/Stop” button is pushed and the machine is in embroidery mode, but the embroidery unit is not attached.



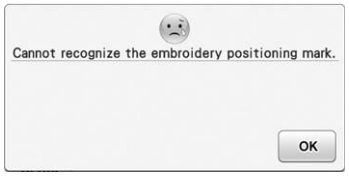
This message is displayed when replacing the embroidering bobbin thread.



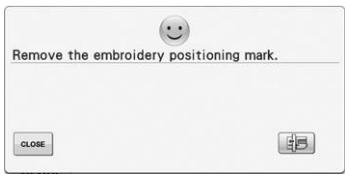
This message is displayed when rotating a saved combined pattern in the Embroidery screen.



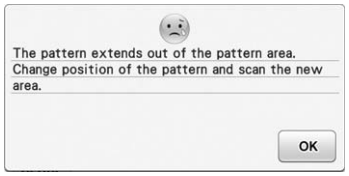
This message is displayed when the embroidery frame is attached.



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)

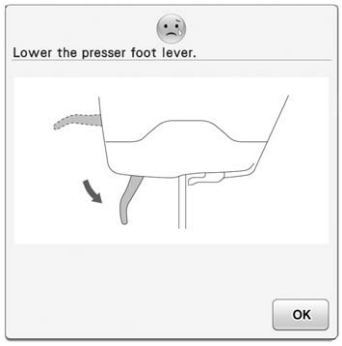


This message is displayed when the machine has recognized the embroidery position mark. Remove the embroidery positioning sticker and press OK to continue. To remove the embroidery positioning sticker more easily, press . (see page 254)



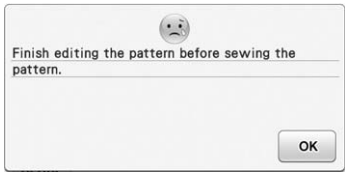
This message appears when the built-in camera is being used to align the embroidery position, but the embroidery positioning sticker is too near an edge or the pattern extends from the embroidery frame. Change the positioning of the embroidery position sticker, and then try aligning the position again. 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.



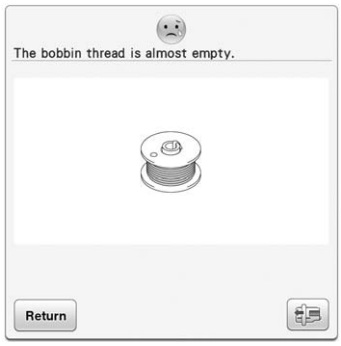
This message is displayed when the “Presser Foot Lifter” button is pushed while the presser foot lever is raised/the needle is lowered.

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).

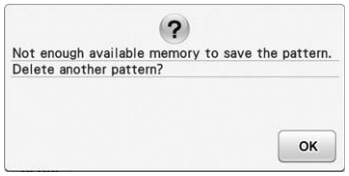


This message is displayed when the “Start/ Stop” button is pushed while the machine is in embroidery edit mode and a pattern is being edited.

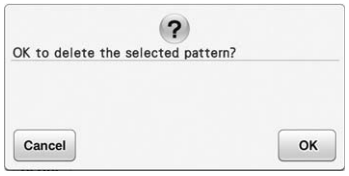
This message is displayed when there is no stitch or embroidery pattern selected and the “Start/ Stop” button or the “Reverse/Reinforcement Stitch” button is pressed.



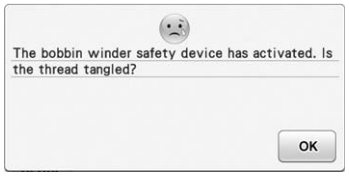
This message is displayed when the bobbin thread is running out.



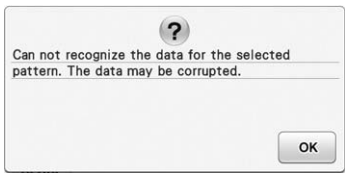
This message is displayed when the memory is full and the stitch or pattern cannot be saved.



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.

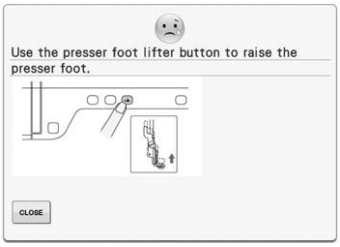


This message is displayed when the bobbin is being wound, and the motor locks because the thread is tangled, etc.

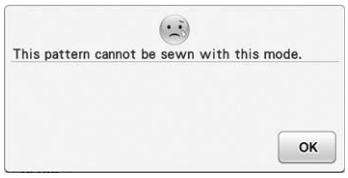


This message is displayed when there is a possibility that the data for the selected pattern is corrupted.

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.

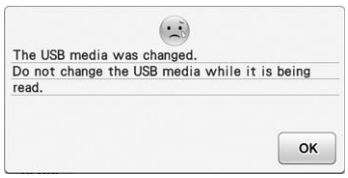


This message is displayed when the embroidery unit is attached and the power is turned on with the needle in the down position.

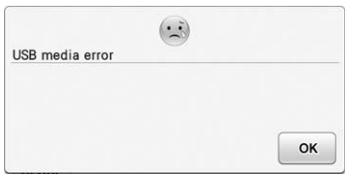


This message is displayed when the selected stitch is not available for the specific function.

This message is displayed when you try to use incompatible media.

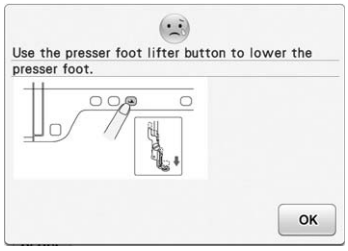


This message is displayed when you attempt to select a pattern after the USB media in which the pattern is saved has been changed.

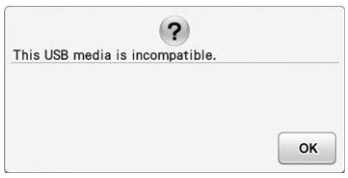


This message is displayed when an error occurs with the USB media.

This message is displayed when the memory is full and a pattern must be deleted.

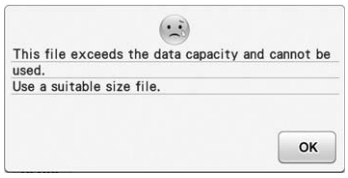


This message is displayed when a button, such as the “Start/Stop” button, is pushed while the presser foot is raised.



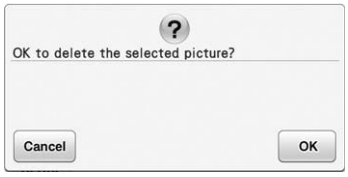
This message is displayed when you try to use incompatible USB media. For a list of compatible USB media, visit “ www.babylock.com ”.

This message is displayed when it seems that the upper thread has not been threaded correctly.



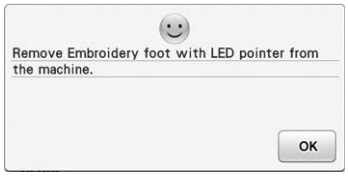
This message is displayed when the file size exceeds the data capacity of the machine.
Confirm the file size and format. (see page 35.)

This message appears if the file format is incompatible with this machine. Check the list of compatible file formats. (see page 35.)

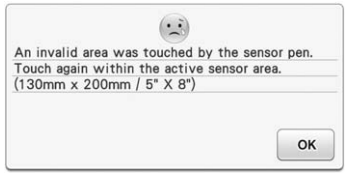


This message is displayed when the image is deleted.

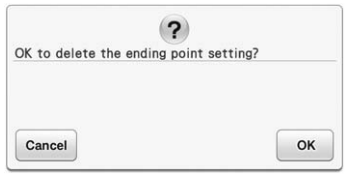
This message is displayed when you press Sewing Guide in the screen other than the Utility Stitch, or press Pattern Explanation in the screen other than the Utility Stitch or Character/ Decorative Stitch.



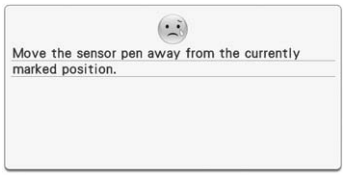
This message appears when you try to start sewing utility or decorative/ character stitches using the embroidery foot with the LED pointer attached to the machine.



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)

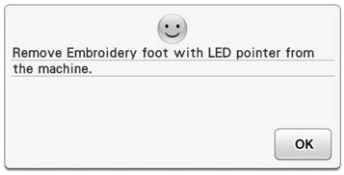


This message appears when you press down the sensor pen tip before pressing and keep pressing for the certain period. Move the sensor pen away from the current position.

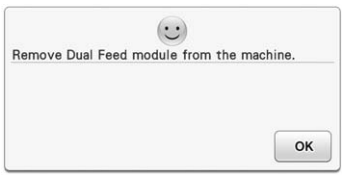
This message appears when something is wrong with the sensor unit of the machine. Consult your authorized retailer.

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.

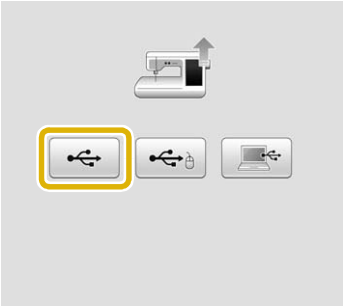
Note
- When using USB media to upgrade the software, check that no data other than the upgrade file is saved on the USB media being used before starting to upgrade.

Upgrade Procedure Using USB Media

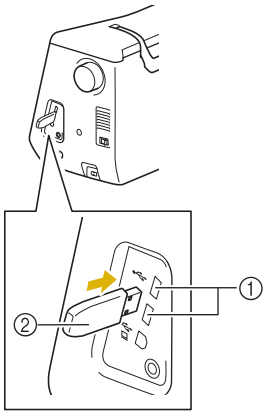
1 While pressing the "Automatic Threading" button, turn the main power to ON.

→ The following screen will appear on the LCD.

2 Press .



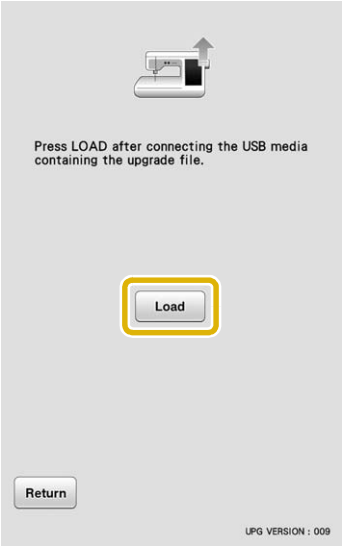
3 Insert the USB media into the primary (top) USB port on the machine. The media device should only contain the upgrade file.



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

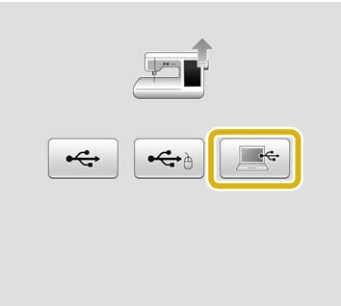
Note

- 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.

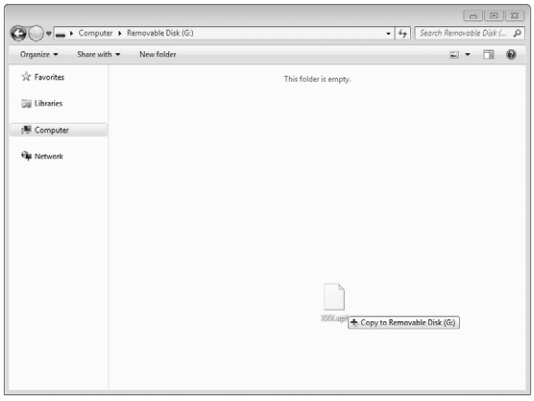
2 **Press .**



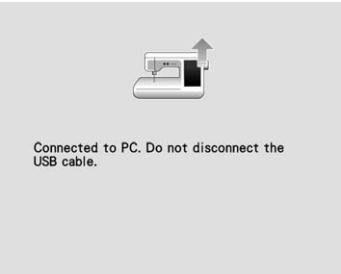
3 **Plug the USB cable connector into the corresponding USB ports for the computer and for the machine.**

→ "Removable Disk" will appear in "Computer (My Computer)".

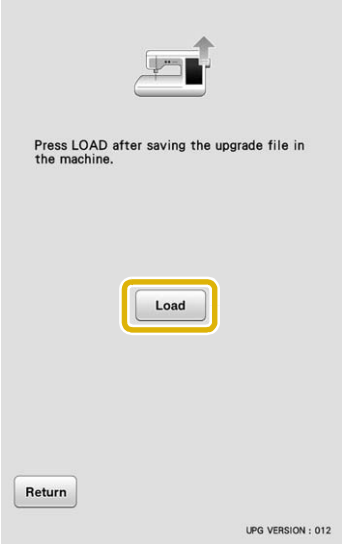
4 **Copy the upgrade file to "Removable Disk".**



→ The following message will appear.



5 **When the message disappears, press 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.

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	
1-01	**Straight stitch (Left)**	J		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)
1-02	**Straight stitch (Left)**	J		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)
1-03	**Straight stitch (Middle)**	J		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)
1-04	**Straight stitch (Middle)**	J		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)
1-05	**Triple stretch stitch**	J		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)
1-06	**Stem stitch**	J		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)
1-07	**Decorative stitch**	N		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)
1-08	**Basting stitch**	J		Basting	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**20 (3/4)**	5 - 30 (3/16 - 1-3/16)	NO
1-09	**Zigzag stitch**	J		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)
1-10	**Zigzag stitch**	J		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)
1-11	**Zigzag stitch (Right)**	J		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)
1-12	**Zigzag stitch (Left)**	J		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)
1-13	**2 steps elastic zigzag**	J		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	
1-14	**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)
1-15	**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)
1-16	**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
1-17	**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
1-18	**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
1-19	**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)
1-20	**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)
1-21	**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)
1-22	**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
1-23	**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)
1-24	**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)
1-25	**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
1-26	**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
1-27	**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
1-28	**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
1-29	**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
1-30	**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
1-31	**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	
1-32	**Piecing stitch (Left)**	J		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
1-33	**Hand-look quilting**	J		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
1-34	**Quilting appliqué zigzag stitch**	J		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
1-35	**Quilting appliqué stitch**	J		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
1-36	**Quilting stippling**	J		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
2-01	**Blind hem stitch**	R		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
2-02	**Blind hem stitch stretch**	R		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
2-03	**Blanket stitch**	J		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)
2-04	**Shell tuck edge**	J		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)
2-05	**Satin scallop stitch**	N		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)
2-06	**Scallop stitch**	N		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
2-07	**Patchwork join stitch**	J		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)
2-08	**Patchwork double overlock stitch**	J		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)
2-09	**Couching stitch**	J		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)
2-10	**Smocking stitch**	J		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)
2-11	**Feather stitch**	J		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)
2-12	**Fagoting cross stitch**	J		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)
2-13	**Tape attaching**	J		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	
2-14	**Ladder stitch**	J		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
2-15	**Rick-rack stitch**	J		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)
2-16	**Decorative stitch**	J		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)
2-17	**Decorative stitch**	J		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)
2-18	**Serpentine stitch**	N		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)
2-19	**Decorative stitch**	N		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)
2-20	**Decorative stippling stitch**	N		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
3-01	**Hemstitching**	N		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)
3-02	**Hemstitching**	N		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)
3-03	**Hemstitching zigzag**	N		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)
3-04	**Hemstitching**	N		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
3-05	**Hemstitching**	N		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
3-06	**Hemstitching**	N		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
3-07	**Hemstitching**	N		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
3-08	**Hemstitching**	N		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
3-09	**Hemstitching**	N		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)
3-10	**Hemstitching**	N		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)
3-11	**Hemstitching**	N		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	
3-12	**Honeycomb stitch**	N	O	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)
3-13	**Honeycomb stitch**	N	O	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)
3-14	**Hemstitching**	N	O	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)
3-15	**Hemstitching**	N	O	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
3-16	**Hemstitching**	N	O	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)
3-17	**Hemstitching**	N	O	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
3-18	**Hemstitching**	N	O	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)
3-19	**Hemstitching**	N	O	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)
3-20	**Hemstitching**	N	O	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)
3-21	**Hemstitching**	N	O	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
3-22	**Hemstitching**	N	O	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
3-23	**Hemstitching**	N	O	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
3-24	**Hemstitching**	N	O	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
3-25	**Ladder stitch**	N	O	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
4-01	**Narrow rounded buttonhole**	A		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
4-02	**Wide round ended buttonhole**	A		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
4-03	**Tapered round ended buttonhole**	A		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
4-04	**Round ended buttonhole**	A		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	O	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	O	For making star-shaped eyelets on holes.	–	–	–	–	NO
5-01	**Diagonally left up (Straight)**	N	O	For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-02	**Reverse (Straight)**	N	O	For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-03	**Diagonally right up (Straight)**	N	O	For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-04	**Sideways to left (Straight)**	N	O	For attaching appliqué on tubular pieces of fabric	–	–	–	–	NO
5-05	**Sideways to right (Straight)**	N	O	For attaching appliqué on tubular pieces of fabric	–	–	–	–	NO
5-06	**Diagonally left down (Straight)**	N	O	For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-07	**Forward (Straight)**	N	O	For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-08	**Diagonally right down (Straight)**	N	O	For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-09	**Sideways to left (Zigzag)**	N	O	For attaching appliqué on tubular pieces of fabric	–	–	–	–	NO
5-10	**Sideways to right (Zigzag)**	N	O	For attaching appliqué on tubular pieces of fabric	–	–	–	–	NO
5-11	**Forward (Zigzag)**	N	O	For attaching appliqué on tubular pieces of fabric and mitering corners	–	–	–	–	NO
5-12	**Reverse (Zigzag)**	N	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	O	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	
Q-22	**Patchwork double overlock stitch**	J	O	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
Q-23	**Smocking stitch**	J	O	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
Q-24	**Rick-rack stitch**	J	O	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
Q-25	**Decorative stitch**	N	O	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
Q-26	**Decorative stitch**	J	O	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
Q-27	**Hemstitching**	N	O	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
Q-28	**Hemstitching**	N	O	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
Q-29	**Single diamond overcast**	J	O	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
Q-30	**Overcasting stitch**	J	O	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
C-01	**Free motion couching stitch**	X		Free motion couching stitch	**3.50 (1/3)**	2.75 - 3.75 (3/32 - 1/8)	**–**	–	NO

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