Solaris™

Instruction & Reference Guide
Sewing

Model BLSA

baby lock

FOR THE LOVE OF SEWING

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Baby Lock Consumer Helpline: 800-313-4110

www.BabyLock.com

INTRODUCTION

Thank you for purchasing this machine.
Before using this machine or attempting any maintenance, carefully read the "IMPORTANT SAFETY INSTRUCTIONS" on this page, and then study the Instruction and Reference Guide for the correct operation of the various functions. In addition, after you have finished reading this product safety manual, store it where it can quickly be accessed for future reference. Failure to follow these instructions may result in an increased risk of personal injury or damage to property, including through fire, electrical shock, burns or suffocation.

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 mouse designed specifically for 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.

FOR USERS IN THE UK, EIRE, MALTA AND CYPRUS ONLY

IMPORTANT

- In the event of replacing the plug fuse, use a fuse approved by ASTA to BS 1362, i.e. carrying the ASTA mark, rating as marked on plug.
- Always replace the fuse cover. Never use plugs with the fuse cover omitted.
- If the available electrical outlet is not suitable for the plug supplied with this equipment, you should contact your authorized Baby Lock retailer to obtain the correct lead.

Federal Communications Commission (FCC) Declaration of Conformity (For U.S.A. Only)

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

declares that the product

Product Name: Baby Lock Sewing Machine
Model Number: BLSA

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 authorized Baby Lock retailer or an experienced radio/TV technician for help.
- This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

Important

Changes or modifications not expressly approved by Tacony Corporation could void the user's authority to operate the equipment.

This equipment complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that it deemed to comply without maximum permissive exposure evaluation (MPE).

For users in Canada

This equipment complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that it deemed to comply without maximum permissive exposure evaluation (MPE).

For users in Mexico

The operation of this equipment is subject to the following two conditions:
(1) it is possible that this equipment or device may not cause harmful interference, and
(2) this equipment or device must accept any interference, including interference that may cause undesired operation.

La operación de este equipo está sujeta a las siguientes dos condiciones:
(1) es posible que este equipo o dispositivo no cause interferencia perjudicial y
(2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

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HOW TO USE THIS MANUAL

The Instruction and Reference Guides for this machine consist of the Instruction and Reference Guide (Sewing) and the Instruction and Reference Guide (Embroidery). Refer to the appropriate Instruction and Reference Guide according to your needs. For basic information about, for example, the included accessories or the settings screen, refer to chapter 1 of the Instruction and Reference Guide (Sewing).
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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Chapter *1*

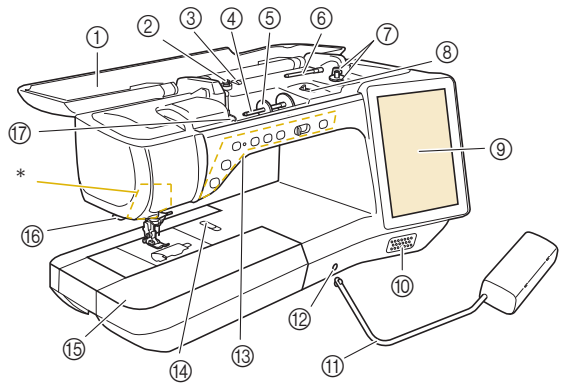
Getting Ready

NAMES OF MACHINE PARTS AND THEIR FUNCTIONS

The names of the various parts of the machine and their functions are described below. Before using the 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.

⚠ CAUTION

- **Do not place any object weighing 1 kg or more on the top cover, otherwise the cover may be damaged.**

② **Pretension disk**
Pass the thread around the pretension 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 61)

⑤ **Spool cap**
Use the spool cap to hold the spool of thread in place. (page 61)

⑥ **Supplemental spool pin**
Use this spool pin to wind the bobbin thread, or to sew with the twin needle. (page 52, 64)

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

⑧ **Bobbin winding slider**
Adjust the amount of thread wound onto the bobbin. (page 54)

⑨ **LCD (liquid crystal display)**
Settings for the selected stitch and error messages appear in the LCD. (page 27)

⑩ **Speaker**

⑪ **Knee lifter**
Use the knee lifter to raise and lower the presser foot. (page 90)

⑫ **Knee lifter slot**
Insert the knee lifter into the slot. (page 90)

⑬ **Operation buttons (7 buttons) and sewing speed controller**
Use these buttons and the slide to operate the machine. (page 15)

⑭ **Needle plate lever**
Slide the lever toward you to remove the needle plate. (page 184)

⑮ **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 16)

⑯ **Thread cutter**
Pass the threads through the thread cutter to cut them. (page 63)

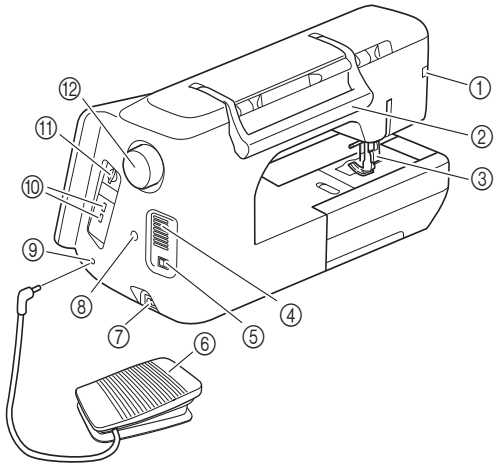
⑰ **Thread guide plate**
Pass the thread around the thread guide plate when threading upper thread. (page 61)

* Camera and projector (built-in)

⚠ CAUTION

- **Do not touch the camera or projector. Otherwise, it will not display properly.**

■ Right-side/Rear View



① **Connector for the presser foot**
Connect the dual feed foot or embroidery foot with LED pointer (sold separately). (page 74)

② **Handle**
Carry the 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 72)

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

⑤ **Main power switch**
Use the main power switch to turn the machine ON and OFF. (page 25)

⑥ **Foot controller**
Use the foot controller to operate the machine.

⑦ **Power cord receptacle**
Insert the power cord into the machine receptacle. (page 25)

⑧ **Dual purpose stylus holder connector**
Connect the included dual purpose stylus holder. (page 95)

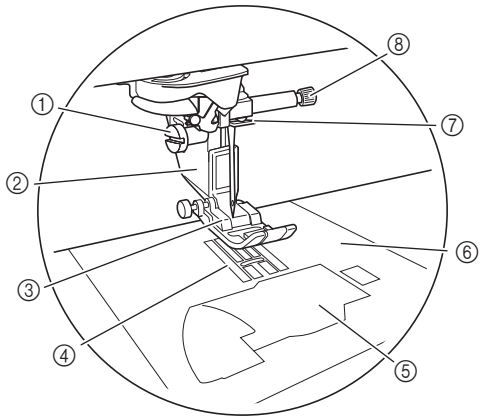
⑨ **Foot controller jack**
Insert the foot controller plug into its jack on the machine. (page 78)

⑩ **USB port**
In order to send stitch patterns and embroidery patterns from/to USB media, plug the USB media directly into the USB port.

⑪ **SD card slot**
Insert an SD card into the SD card slot in order to import/export stitch patterns and embroidery patterns.

⑫ **Handwheel**
Rotate the handwheel toward you (counterclockwise) to raise and lower the needle. The wheel should be turned toward the front of the machine.

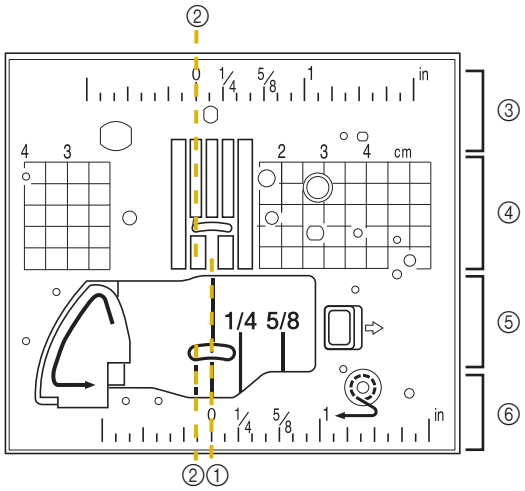
Needle and Presser Foot Section



① **Presser foot holder screw**
Use the presser foot holder screw to hold the presser foot in place. (page 73)
② **Presser foot holder**
The presser foot is attached to the presser foot holder. (page 72)
③ **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 72)
④ **Feed dogs**
The feed dogs feed the fabric in the sewing direction.
⑤ **Bobbin cover**
Open the bobbin cover to set the bobbin. (page 58, 117)
⑥ **Needle plate**
The needle plate is marked with guides to help sew straight seams. (page 110)
Remove the needle plate to clean the race. (page 111, 184)
⑦ **Needle bar thread guide**
Pass the upper thread through the needle bar thread guide. (page 61)
⑧ **Needle clamp screw**
Use the needle clamp screw to hold the needle in place. (page 73)

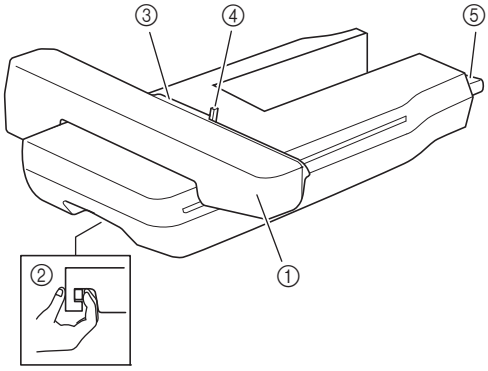
Measurements on the needle plate and the bobbin cover (with mark)

The measurements on the bobbin cover and needle plate are references for stitch patterns with a left or middle (center) 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 **Middle (center) needle position on the needle plate <inch>**

Embroidery Unit



① **Carriage**
The carriage moves the embroidery frame automatically when embroidering.

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

③ **Embroidery frame holder**
Insert the embroidery frame into the embroidery frame holder to hold the frame in place.

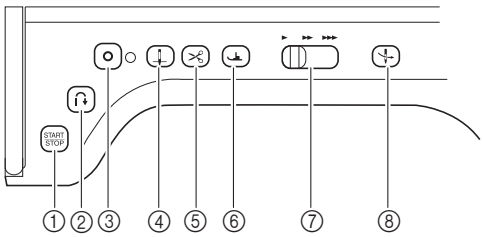
④ **Frame-securing lever**
Press the frame-securing lever down to secure the embroidery frame.

⑤ **Embroidery unit connection**
Insert the embroidery unit connection into the connection port when attaching the embroidery unit.

⚠ 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** (START/STOP)
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 position.
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 79)

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 79)

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.

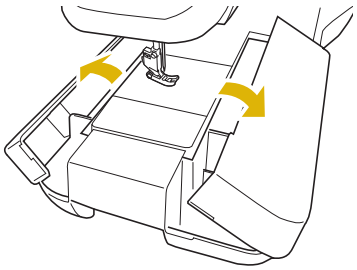
⑧ **"Automatic Threading" button**
Use this button to automatically thread the needle.

⚠ 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

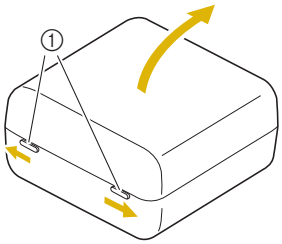
Pull the top of the flat bed attachment to open the accessory compartment.



Using the Accessory Case

■ Opening the Accessory Case

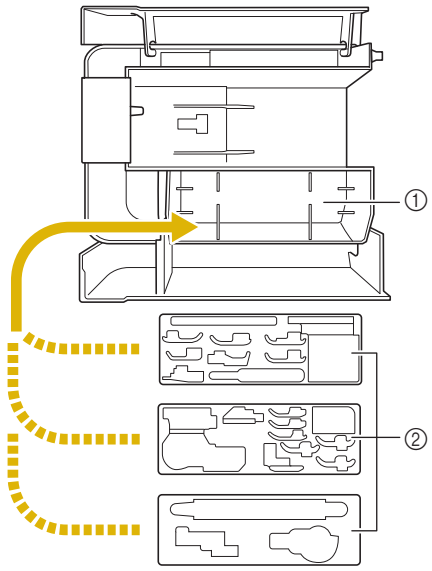
Slide the latches on the front of the accessory case outward to open it.



① Latches

■ Using the Accessory Trays

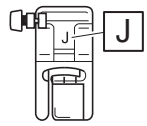
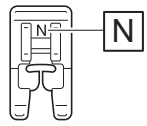
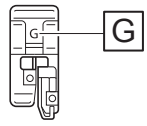
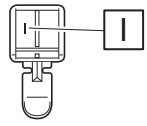
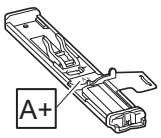
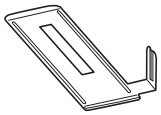
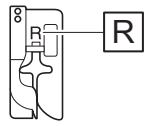
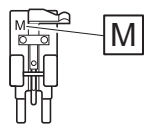
Three presser foot storage trays are stored in the included accessory case.
For your convenience, a presser foot storage tray can be stored in the accessory compartment of the flat bed attachment.

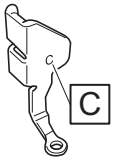
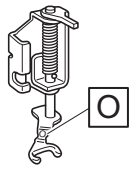
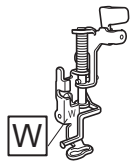
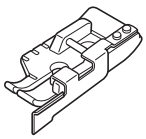
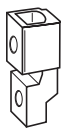


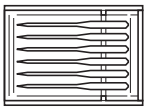
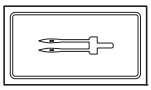
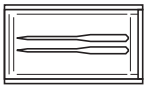
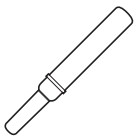
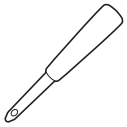
① Presser foot storage space of the flat bed attachment
② Presser foot storage trays

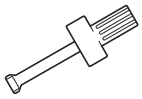
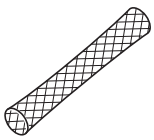
Included Accessories

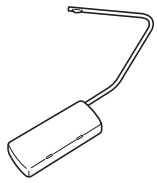
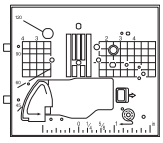
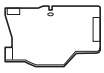
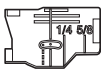
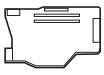
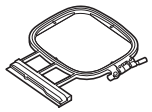
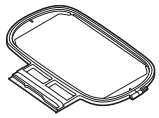
After opening the box, check that the following accessories are included. If any item is missing or damaged, contact your authorized Baby Lock retailer.

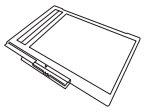
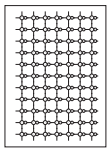
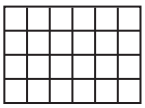
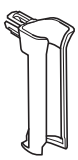
	Part Name Part Code
1. 	Zigzag foot “J” (on machine) XF3022-001
2. 	Monogramming foot “N” X53840-351
3. 	Overcasting foot “G” XC3098-051
4. 	Zipper foot “I” X59370-051
5. 	Buttonhole foot “A+” XH2665-001
6. 	Buttonhole foot stabilizer XH1726-001
7. 	Blind stitch foot “R” X56409-051
8. 	Button fitting foot “M” 130489-001
9.	Dual feed foot XF4068-201

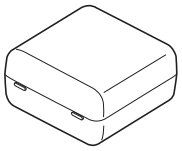
	Part Name Part Code
10.	Regular dual feed foot XF4419-001
11.	Straight stitch foot XD0826-051
12. 	Free motion quilting foot “C” XF4737-001
13.	Free motion echo quilting foot “E” XE0766-001
14. 	Free motion open toe quilting foot “O” XF4873-001
15. 	Embroidery foot “W” XF4012-001
16. 	1/4 quilting foot with guide XC6800-251
17. 	Adapter XF3613-001

	Part Name Part Code
18.	Screw (small) XA4813-051
19. 	Needle set 75/11 2 needles 90/14 2 needles 90/14 2 needles: Ball point needle (gold colored) XE4962-001
20. 	Twin needle 2.0/11 needle XE4963-001
21. 	Ball point needle set 75/11 2 needles: Ball point needle for embroidery HAX130EBBR XD0705-151
22.	Bobbin × 10 (One is on machine.) X52800-150
23. 	Seam ripper XF4967-001
24.	Scissors XF2052-001
25.	Cleaning brush X59476-051
26. 	Eyelet punch XZ5051-001
27.	Screwdriver (small) X55468-051

	Part Name Part Code
28. 	Screwdriver (large) XC4237-021
29.	Multi-purpose screwdriver BLMPD
30.	Spool cap (small) 130013-154
31.	Spool cap (medium) × 2 (One is on machine.) X55260-153
32.	Spool cap (large) 130012-054
33.	Thread spool insert (mini king spool insert) XA5752-121
34.	Spool stand XH1607-001 Refer to “Using the Spool Stand” on page 23.
35.	Spool felt (on machine) X57045-051
36. 	Spool net × 2 XA5523-050
37.	Embroidery needle plate cover XE4708-001

	Part Name / Part Code
38. 	Knee lifter XE4713-001
39.	Alternate bobbin case (no color on the screw) XC8167-651
40.	Standard bobbin case (green marking on the screw) (on machine) XE5342-101
41. 	Straight stitch needle plate XH2513-001
42. 	Cord guide bobbin cover (with single hole) XE0085-101
43. 	Bobbin cover (with mark) (on machine) XH3126-001
44. 	Bobbin cover XF9666-001
45. 	Embroidery frame H 100 mm × W 100 mm (H 4 inches × W 4 inches) EF74
46. 	Embroidery frame H 180 mm × W 130 mm (H 7 inches × W 5 inches) EF75
47.	Embroidery frame H 240 mm x W 240 mm (H 9-1/2 inches × W 9-1/2 inches) XG5558-001

	Part Name / Part Code
48.	Embroidery frame H 408 mm × W 272 mm (H 16 inches × W 10-5/8 inches) XH1466-001
49. 	Scanning frame XF9321-001
50.	Magnet × 6 XF9325-001
51.	Embroidery bobbin thread BBT-W
52. 	Embroidery positioning sticker sheets × 2 XE4912-501
53. 	White calibration stickers (solid) XE7916-001
54.	Stabilizer material X81176-001
55.	Chalk pencil XE8568-001
56.	Dual purpose stylus XH2515-001
57. 	Dual purpose stylus holder XH1805-001

	Part Name Part Code
58. 	Accessory case XH2514-001
59.	Foot controller XC8816-051
60.	Bobbin center pin and instruction sheet XF5048-001
61.	Power cord XC6052-151

Following documents can be downloaded.

- Instruction and Reference Guide (Sewing)
- Instruction and Reference Guide (Embroidery)
- Embroidery Design Guide

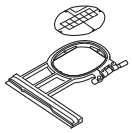
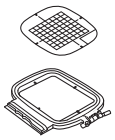
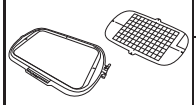
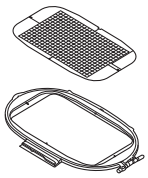
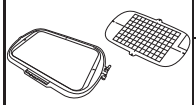
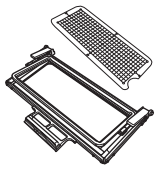
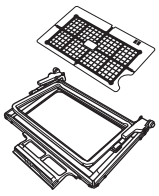
www.babylock.com/

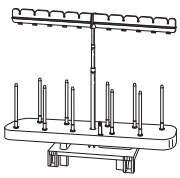
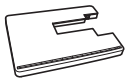
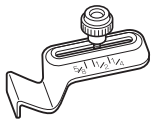
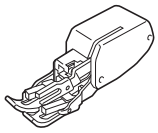
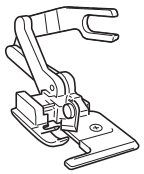
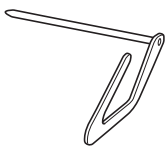
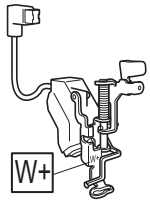
Memo

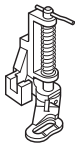
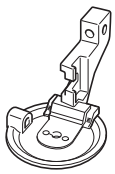
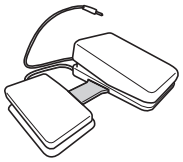
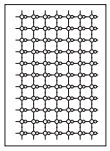
- (For U.S.A. only)
  Foot controller: Model T
  This foot controller can be used on the machine with product code 882-W31. The product code is mentioned on the machine rating plate.
- Always use accessories recommended for this machine.
- The screw for the presser foot holder is available through your authorized Baby Lock retailer (Part code XA4813-051).

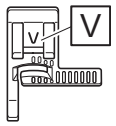
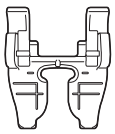
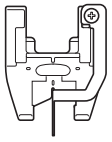
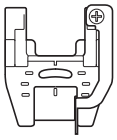
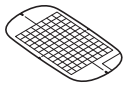
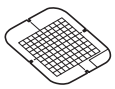
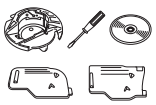
Options

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

	Part Name Part Code
1. 	Embroidery frame set H 20 mm × W 60 mm (H 1 inch × W 2-1/2 inches) EF73: Frame EF77: Embroidery sheet
2. 	Embroidery frame set H 150 mm × W 150 mm (H 6 inches × W 6 inches) BLMA-150
3.	Embroidery frame set H 200 mm × W 200 mm (H 8 inches × W 8 inches) EF91: Frame EF93: Embroidery sheet
4. 	Embroidery frame set H 300 mm × W 200 mm (H 12 inches × W 8 inches) EF92: Frame EF94: Embroidery sheet
5. 	Embroidery frame set H 260 mm × W 160 mm (H 10-1/4 inches × W 6-1/4 inches) EF81: Frame EF84: Embroidery sheet
6. 	Embroidery frame set H 360 mm × W 240 mm (H 14 inches × W 9-1/2 inches) EF95: Frame EF96: Embroidery sheet
7. 	Border embroidery frame H 300 mm × W 100 mm (H 12 inches × W 4 inches) BLMA-CBH
8. 	Border embroidery frame set H 180 mm × W 100 mm (H 7 inches × W 4 inches) BLSO-BF

	Part Name / Part Code
9.	Embroidery bobbin thread (white) / BBT-W
	Embroidery bobbin thread (black) / BBT-B
10. 	10 spool stand / BLMA-TS
11. 	Wide table / BLSA-ET
12. 	Seam guide / BLG-SG
13. 	Walking foot / BLG-WF
14. 	Side cutter foot / BLG-SCF
15. 	Quilting guide / BLG-QG
16. 	Embroidery foot “W+” with LED pointer / BTY-EF

	Part Name / Part Code
17. 	Free-motion quilting foot / BLG-FM
18. 	Couching foot / BLTY-CCF
19. 	Multi-Function Foot controller / BLMA-MFC
20.	Circular attachment / BL-CSA
21.	Edge joining foot / ESG-EJF
22.	Vertical spool pin / XC8619-052
23. 	Embroidery positioning sticker sheets × 8 / BLSO-EPS
24.	Free motion guide grip / XG1921-001
25.	USB mouse / XE4904-101

	Part Name Part Code
26. 	Vertical stitch alignment foot “V” BLSO-VF
27. 	Open toe sole for dual feed foot BLTY-OTDF
28. 	Stitch in the Ditch Sole for Digital Dual Foot BLDY-SDDF
29. 	1/4" Sole with Guide for Digital Dual Foot BLDY-QFDF
30.	Embroidery frame sheet H 100 mm × W 100 mm (H 4 inches × W 4 inches) EF78
31. 	Embroidery frame sheet H 180 mm × W 130 mm (H 7 inches × W 5 inches) EF79
32. 	Embroidery frame sheet H 240 mm x W 240 mm (H 9-1/2 inches × W 9-1/2 inches) XG5566-001
33.	Embroidery frame sheet H 408 mm × W 272 mm (H 16 inches × W 10-5/8 inches) XH1825-001
34. 	Bobbin Work Kit BL-BWA

Memo

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

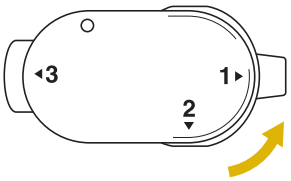
Note

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

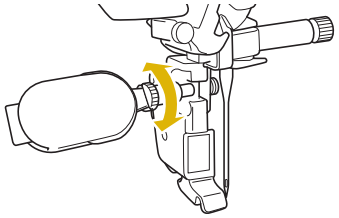
Using the Multi-purpose Screwdriver

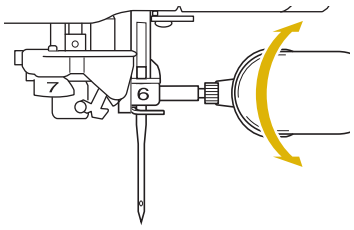
Since the screwdriver can be changed to three different positions, it can be extremely useful for the various machine preparations. With this machine, position "1" and position "3" are used.

■ Position "1"

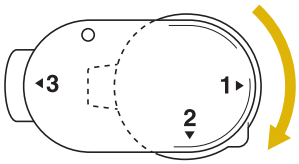


You can install/remove the presser foot holder, needle clamp screw.

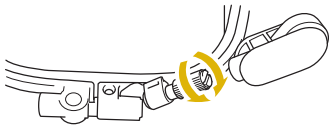




■ Position "3"



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.

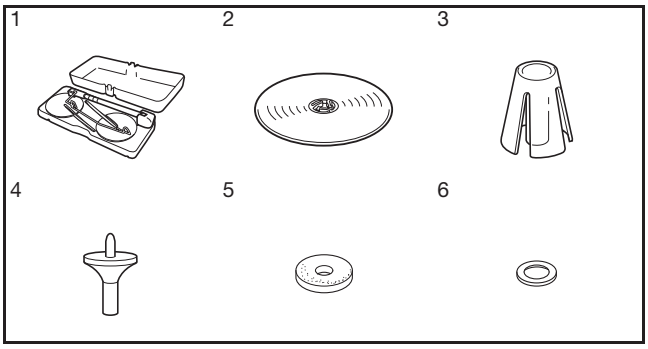


Note

- 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.



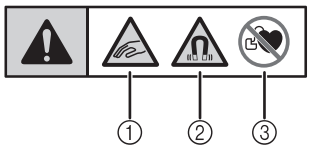
No.	Part Name	Part Code
1	Spool stand	XH1607-001
2	Spool cap (XL) × 2	XE0779-001
3	Spool holder × 2	XA0679-050
4	Spool cap base × 2	XE0780-001
5	Spool felt × 2	XC7134-051
6	Ring × 4	026030-136

* No.2 to No.6 are included in a plastic bag.

⚠ 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.**

■ Warning label



This product contains magnets.

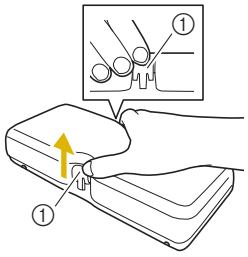
① Be careful not to pinch your fingers or any objects between the spool stand and the upper cover of the machine.

② Be sure to keep the magnets away from precision electronics, computer disks, credit cards with a magnetic stripe, etc.

③ Do not use the spool stand if you have a pacemaker.

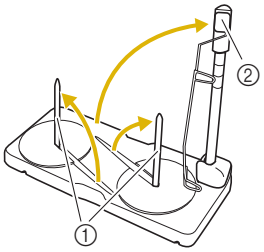
Assembling the Spool Stand

1 **Hold in the tabs on the spool stand and remove the lid.**



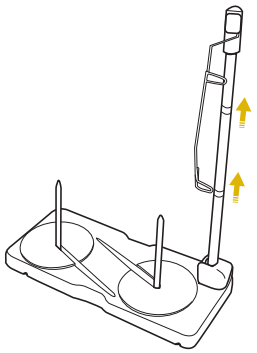
① Tabs

2 **Raise the telescopic thread guide shaft and the two spool pins.**

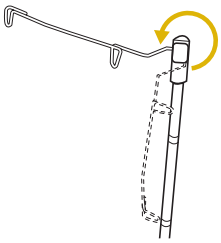


① Spool pins
② Telescopic thread guide shaft

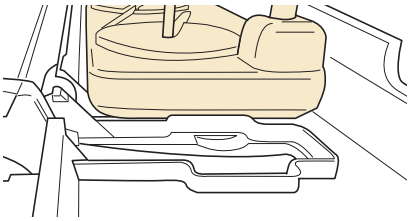
3 **Fully extend the telescopic thread guide shaft until the two internal stoppers snap into place.**



4 **Turn the thread guide counterclockwise.**



5 **Open the upper cover of the machine, and then place the spool stand on the upper cover with the notches in the spool stand aligned with the tabs on the upper cover.**



Note

- Make sure that the spool stand is firmly secured. Otherwise, the spool stand may fall during sewing.
- Do not place any object weighing 1 kg or more on the top cover. The weight of the spool stand with its lid removed is about 280 g.

Memo

- For details on winding the bobbin using the spool stand, refer to page 56.
- For details on upper threading using the spool stand, refer to page 66.

TURNING THE MACHINE ON/OFF

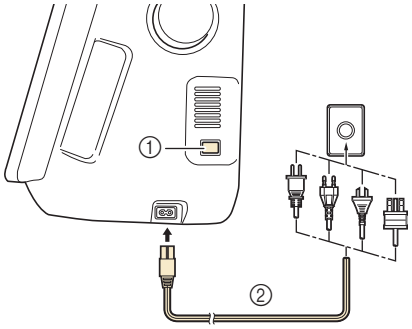
⚠ WARNING

- 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

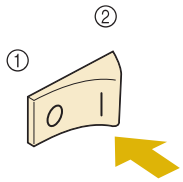
- Use only the power cord included with this machine.
- Do not use extension cords or multi-plug adapters with many other appliances plugged in to them. Fire or electric shock may result.
- Do not touch the plug with wet hands. Electric shock may result.
- When unplugging the machine, always turn the 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.
- For U.S.A only
  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.

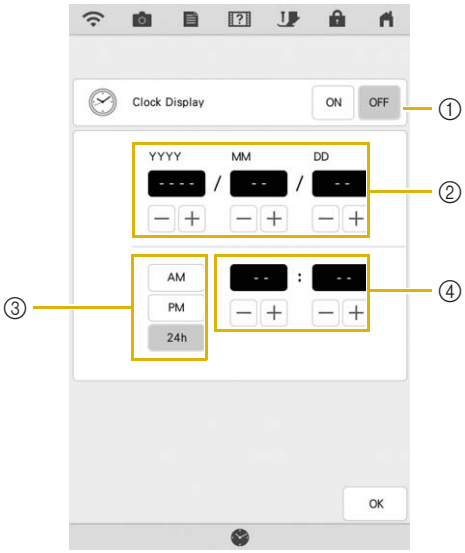
1 **Press < and > to set your local language.**

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 LCD screen.

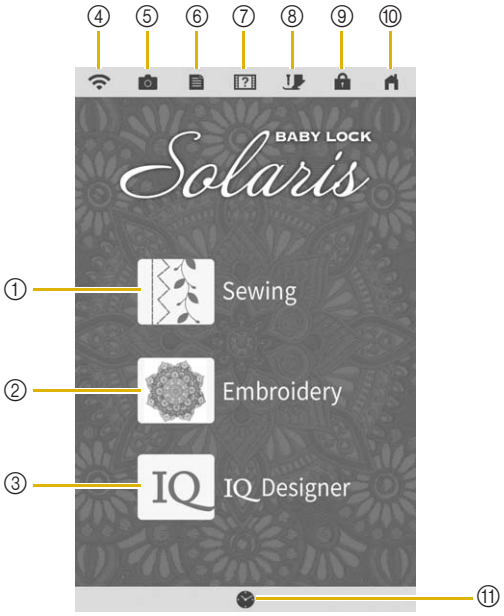
LCD SCREEN

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 dual purpose stylus to select a machine function.

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

Memo
- Only touch the screen with your finger or the included dual purpose stylus. 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.	102, 158
②		Embroidery key	Attach the embroidery unit and press this key to embroider patterns.	–
③	IQ	IQ Designer key	Press this key to start creating your custom design embroidery patterns.	–

No.	Display	Key Name	Explanation	Page
④		Wireless LAN key	Check the machine's signal strength. Press this key to specify the wireless settings.	45
⑤		Camera view key	Press this key to check the needle location as it is shown on the screen through the built-in camera.	92
⑥		Machine setting screen key	Press this key to change the needle stop position, adjust the stitch patterns and embroidery patterns or screen, and change other machine settings.	28
⑦		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.	38
⑧		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.	58, 72
⑨		Screen lock key	Press this key to lock the screen. When the screen is locked, can still sew, but cannot change any of the screen functions. Press this key again to unlock the settings.	158
⑩		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".	–
⑪		Time/Date key	Press this key to set the clock to your local time.	26

Using the Machine Setting Mode Key

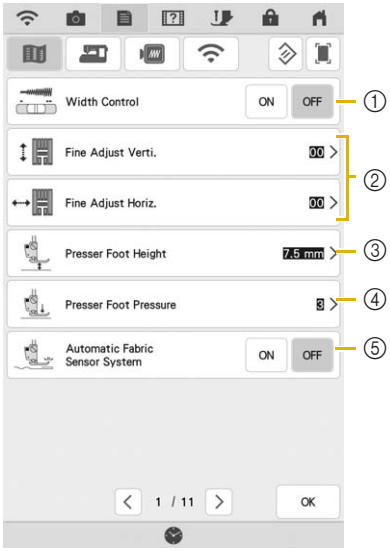
Press to change the default machine settings (needle stop position, embroidery speed, opening display, etc.). To display the different settings screens, press for "Sewing settings", for "General settings", for "Embroidery settings" or for "Wireless LAN settings".

Memo

- Press < or > to display a different settings screen.

Sewing Settings

■ Page 1



① Select whether to use the sewing speed controller to determine the zigzag width (page 125).

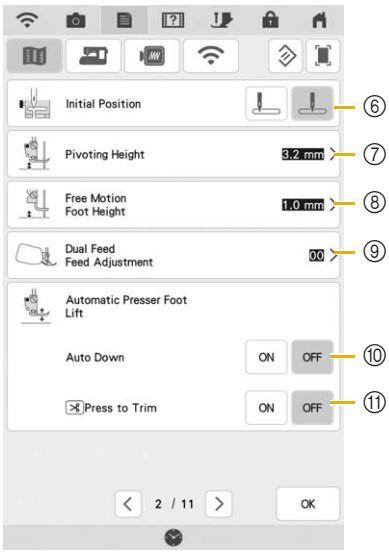
② Make adjustments to character or decorative stitch patterns (page 164).

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 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 (pages 83 and 91).

■ Page 2



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 Change the height of the presser foot when sewing is stopped when the pivot setting is selected (page 89). Adjust the presser foot to one of the four heights.

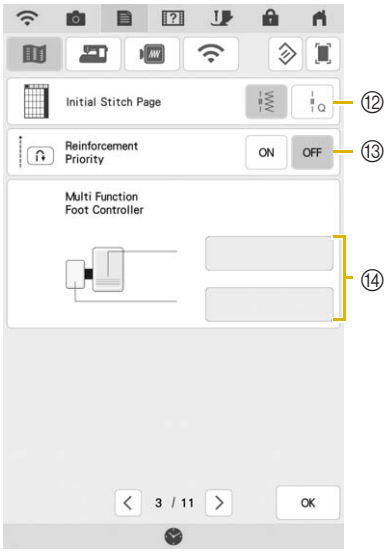
⑧ Change the height of the presser foot when the machine is set to free motion sewing mode (page 126).

⑨ Adjust the amount of fabric feeding of the dual feed foot (page 76).

⑩ Pressing the "Start/Stop" button or depressing the foot controller automatically lowers the presser foot (if it is raised) before starting sewing.

⑪ Pressing the "Thread Cutter" button automatically lowers the presser foot before cutting the thread. The presser foot will be raised after the thread is cut.

■ Page 3



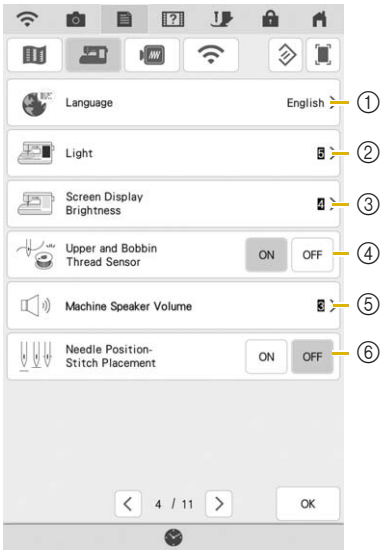
⑫ Select whether utility stitches ( ) or quilting stitches ( ) are displayed first in the stitch selection screen.

⑬ 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 (page 79).

⑭ You can activate this setting after connecting the multi-function foot controller (optional). (These settings are not operable unless the multi-function foot controller is attached to the machine.) (page 33)

General Settings

■ Page 4



① Change the display language.

② Change the brightness of the needle area and work area lights.

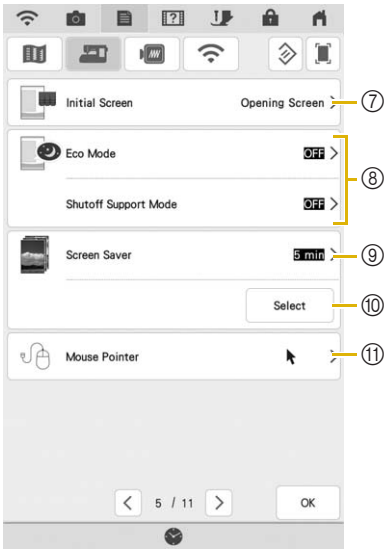
③ If the screen is not very clear in certain environments, you can adjust the brightness of the screen.

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 Select the operation of the “Needle Position - Stitch Placement” button from the following two sequences. (page 92)

■ Page 5



⑦ Select whether to display the opening screen video when the machine is turned on.

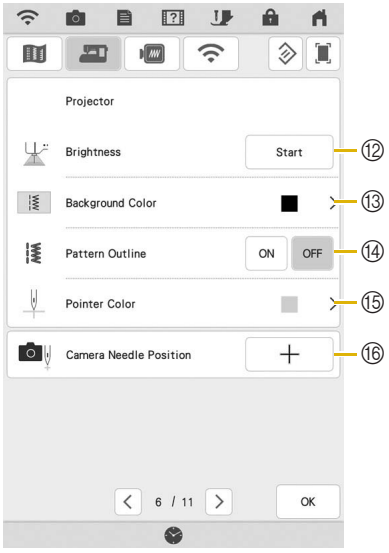
⑧ Select to save the machine power by setting the “Eco Mode” or the “Shutoff Support Mode” (page 34).

⑨ Select the length of time until the screen saver appears.

⑩ Change the image of the screen saver (page 35).

⑪ Change the shape of the pointer when a USB mouse is used. The setting remains selected even after the machine is turned off.

■ Page 6



⑫ Select the brightness of the projector.

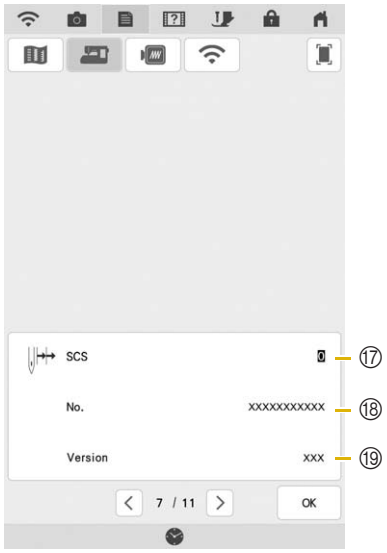
⑬ Select whether to show background color when using projector function.

⑭ Select whether to display outline of the pattern.

⑮ Select the color of the pointer.

⑯ The camera needle drop point can be specified. (page 36)

■ Page 7



⑰ 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.)

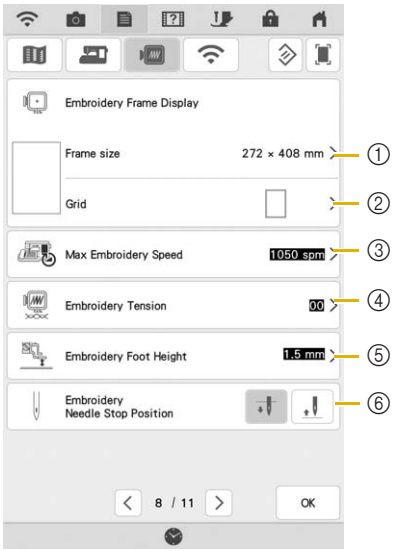
⑱ The “No.” is the internal machine number for the machine.

⑲ Display the program version.

Embroidery Settings

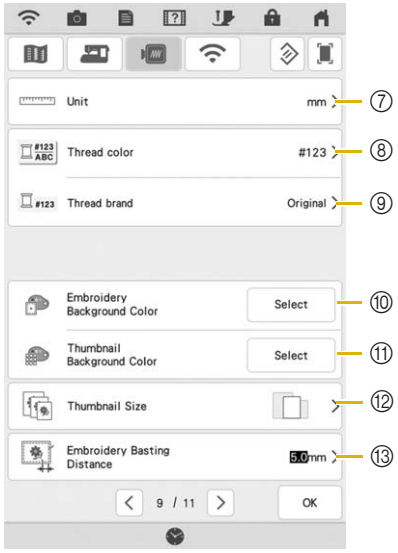
For details on embroidering settings, refer to the Instruction and Reference Guide (Embroidery).

■ Page 8



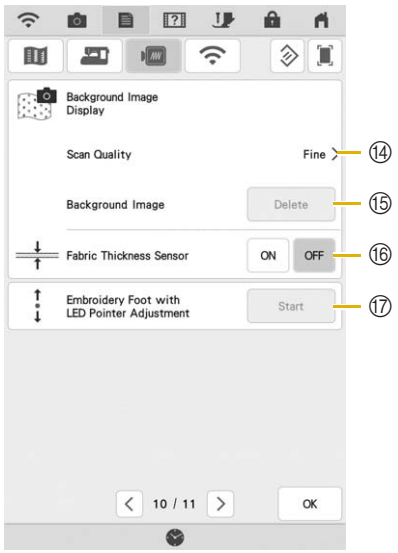
① Select from among 12 embroidery frame displays.
② Change the center point marker or grid lines.
③ Adjust the maximum embroidery speed setting.
④ Adjust the upper thread tension for embroidering.
⑤ Select the height of the embroidery foot during embroidering.
⑥ Adjust the needle position for embroidering.

■ Page 9



⑦ Change the display units (mm/inch).
⑧ Change the thread color display on the “Embroidery” screen; thread number, color name.
⑨ Select the thread brand used to display a pattern when it is opened.
⑩ Change the color of the background for the embroidery display area.
⑪ Change the color of the background for the thumbnail area.
⑫ Press to specify the size of pattern thumbnails.
⑬ Adjust the distance between the pattern and the basting stitching.

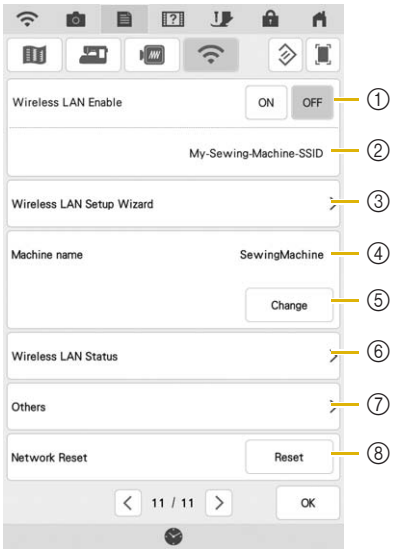
■ Page 10



⑭ Select the quality for displaying the fabric in the screen.
⑮ Erase the scanned image.
⑯ Set to “ON” when positioning the pattern on the thick fabric using the built-in camera.
⑰ Adjust the position and brightness of the embroidery foot “W+” with LED pointer (sold separately). (These settings are not available unless embroidery foot “W+” with LED pointer is installed on the machine.)

Wireless LAN settings

■ Page 11



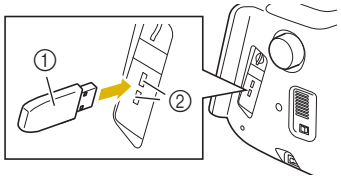
① Enable/disable the wireless LAN function.
② Display the connected SSID.
③ Set the machine to connect wireless LAN function.
④ Display the machine name of wireless LAN function.
⑤ Press [Change] to change the machine name of wireless LAN function.
⑥ Check the wireless LAN status.
⑦ Display other menus.
⑧ Press [Reset] to reset network operations.

Setting Functions

■ Saving a Settings Screen Image to USB Media

An image of the settings screen can be saved as .PNG file.

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



① USB media
② USB port

2 Press .

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

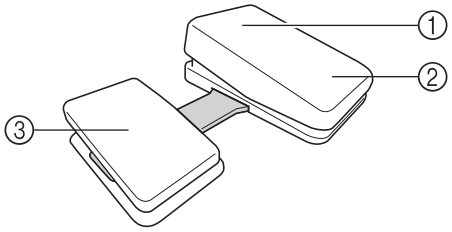
3 Press .

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

■ Specifying the Multi-Function Foot Controller (Sold Separately)

With the multi-function foot controller, various 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) * • Presser Foot Up/Down • No Setting
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 79.

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.

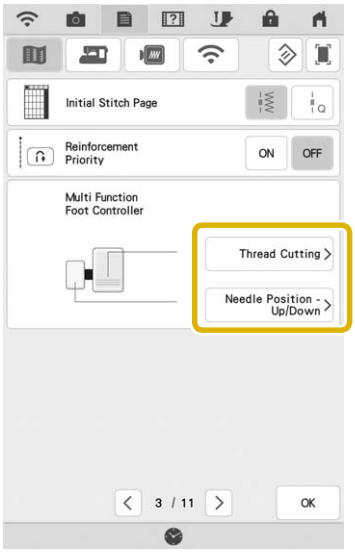
Note

- Before specifying the functions, connect the multi-function foot controller to the machine. The settings screen is activated the first time that the machine detects the multi-function foot controller.
- After the multi-function foot controller is connected to the 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 3 of the settings screen.**

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



4 **Press** OK .

■ 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.

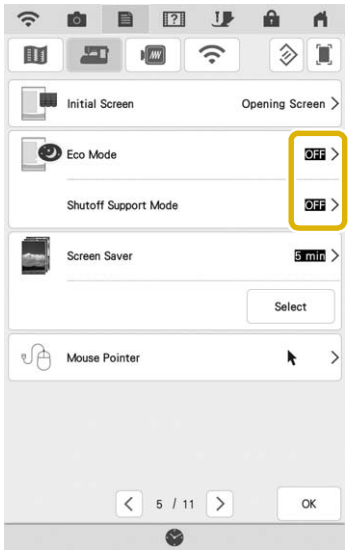
“Eco Mode”;
Machine will enter a sleep mode. Touch the screen or press the “Start/Stop” button to continue sewing.

“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, 10 - 120 (minute)	OFF, 1 - 12 (hour)
“Start/Stop” button	Green flashing	Green slow flashing
Suspended function	Machine light, Screen display	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. **Press circled area 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 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	.bmp, .jpg, .png
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

1 **Press** .

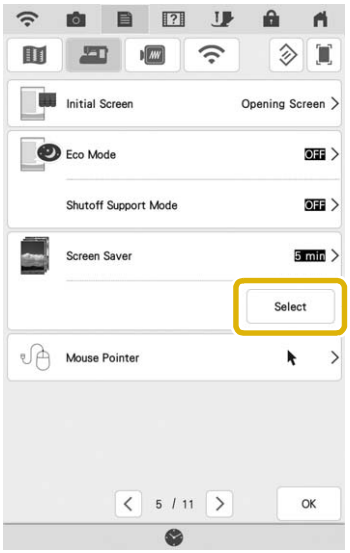
→ The settings screen appears.

2 **Press** .

→ The General settings screen appears.

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

4 **Press** Select .

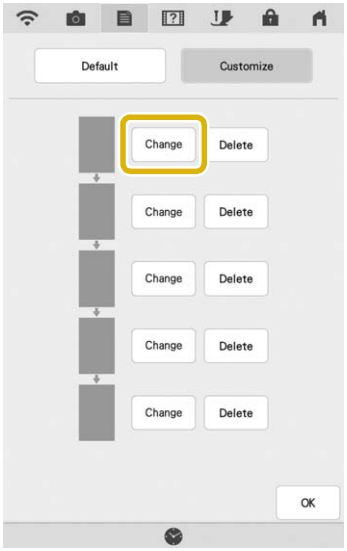


5 **Press** Customize .

6 **Connect the USB media that contains your personal image to the USB port of the machine.**

* Refer to page 48 about USB connectivity.

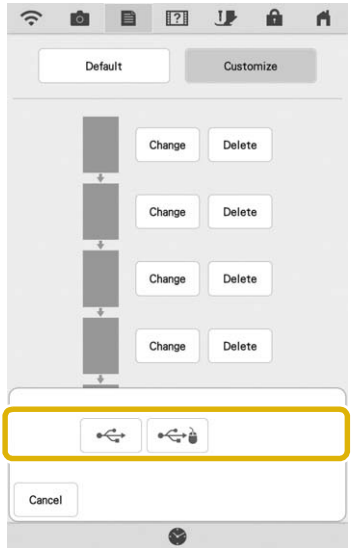
7 **Press** Change **to select the first image.**



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

* Press Delete to delete the selected image.

8 **Select the device that is connected.**



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

* Press Cancel 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.

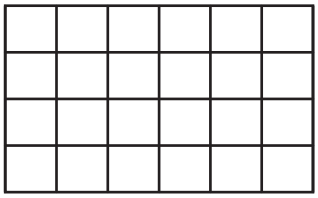
* Press Return to view the previous page.

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

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

■ Needle Calibration Using the Built-in Camera

Setting the camera needle position is essential when you use camera or projector 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 **Press .**

→ The settings screen appears.

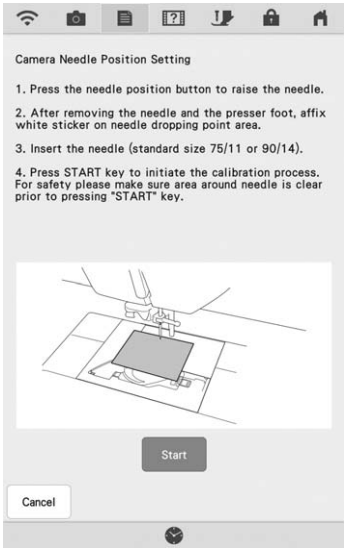
2 **Press .**

→ The General settings screen appears.

3 **Display page 6 of the General settings screen.**

4 **Press +.**

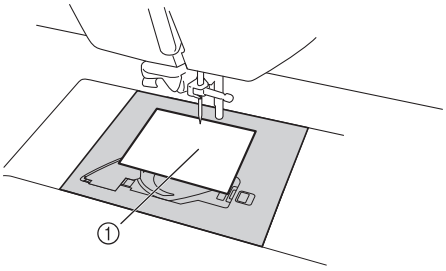
→ Camera needle position setting screen appears.



5 **Follow the on-screen instructions to complete the procedure.**

1. Press the needle position button to raise the needle.

2. After removing the needle and the presser foot, affix white sticker on needle dropping point area.



① White sticker

3. Insert the needle (standard size 75/11 or 90/14).

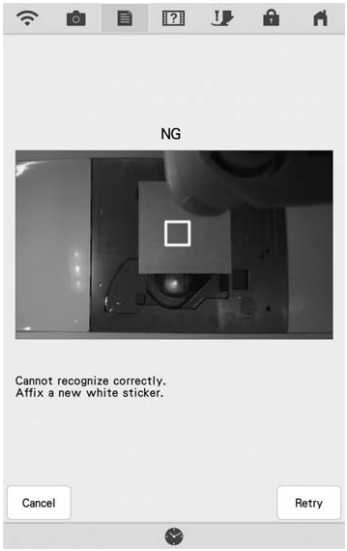
Note

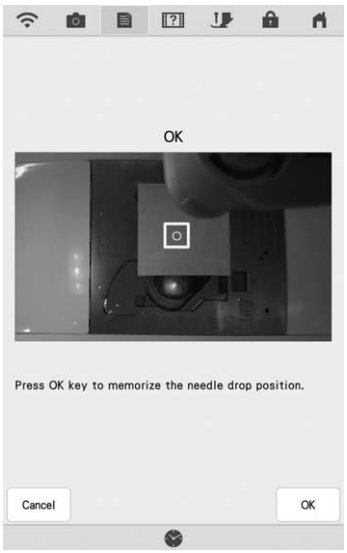
- Use a new sticker. The camera needle position cannot be set correctly if there is a hole in sticker or if it is dirty. If you have no new stickers, contact your nearest authorized Baby Lock retailer.

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.

6 The operation is finished when "OK" appears. If "NG" appears, affix a new white sticker, and then press Retry. If multiple attempts to set the position are not successful, contact your nearest authorized Baby Lock retailer.





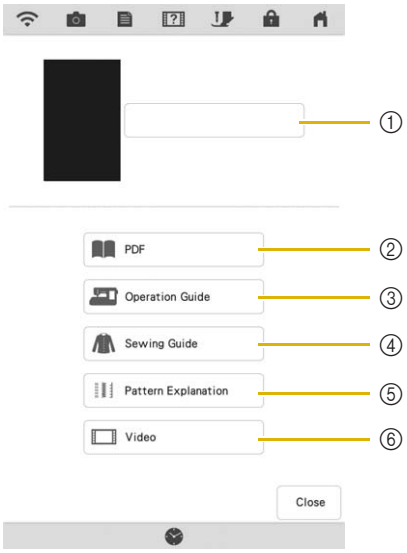
* Press OK to memorize the calibration data.

* Press Cancel to back to original screen without memorizing the calibration data.

7 Remove the sticker.

Using the Machine Help Key

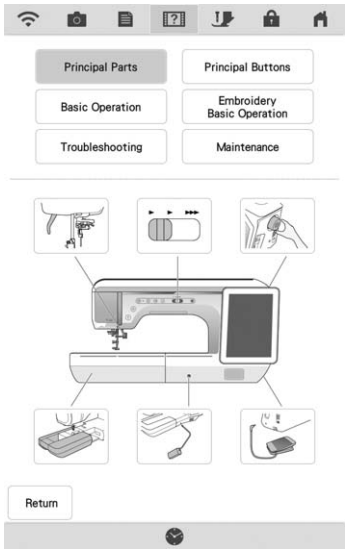
Press [?] to open the machine help screen. Six functions are available from the screen shown below.



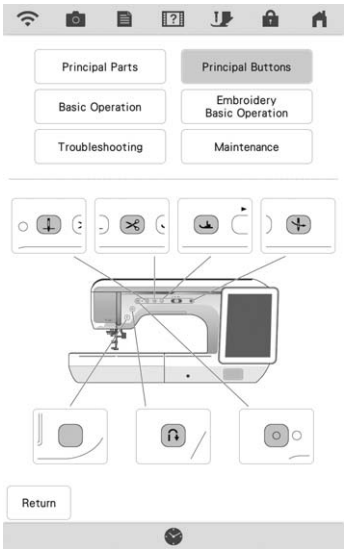
① Press this key to continue viewing the Instruction and Reference Guide (PDF file) or watching the video that was stopped.
② Press this key to view the Instruction and Reference Guide (PDF file).
③ Press this key to see explanation for upper threading, winding the bobbin, changing the presser foot, preparing to embroider a pattern, and how to use the machine (page 39).
④ Press this key to select utility stitches when you are not sure which stitch to use or how to sew the stitch (page 40).
⑤ Press this key to see an explanation of the selected stitch (page 43).
⑥ Press this key to watch tutorial videos or MPEG-4 (MP4) files from USB media (page 41).

Using the Operation Guide Function

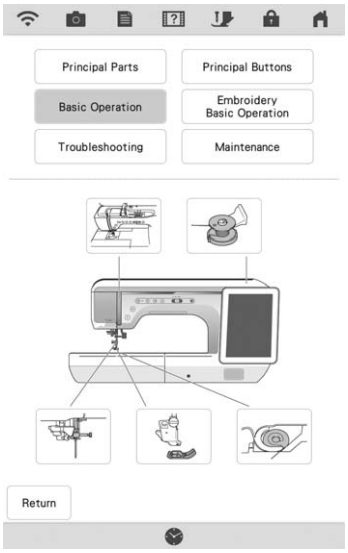
Press Operation Guide to open the screen shown below. Six categories are displayed at the top of the screen. Press a key to see more information about that category.



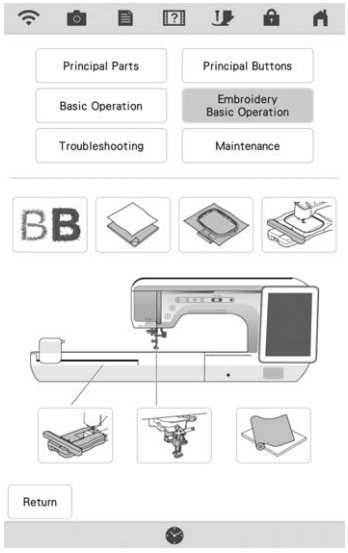
Principal Parts displays information about the main parts of the machine and their functions. This is the first screen displayed when you press Operation Guide.



Principal Buttons displays information about the operation buttons.

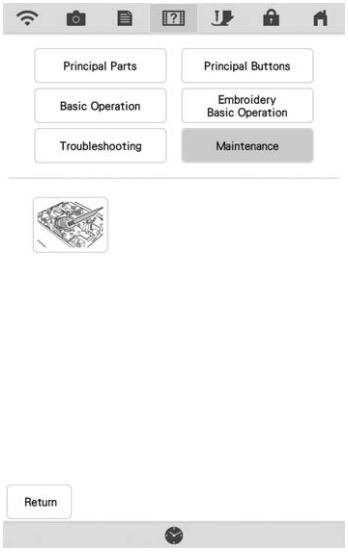


Basic Operation displays information about threading the machine, changing presser feet, etc. Some of the functions are described in the movies. Watch these movies for a better understanding of the functions.



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.

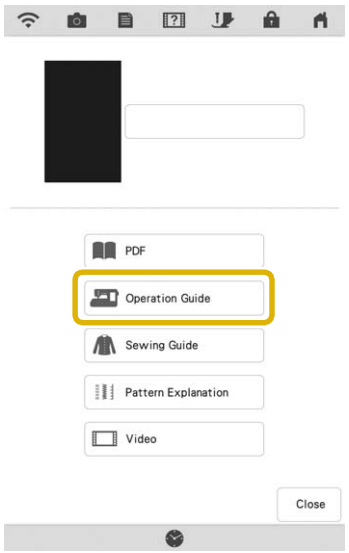


Maintenance displays information about cleaning the machine, etc.
Some of the functions are described in the movies. Watch these movies for a better understanding of the functions.

Example: Displaying information about upper threading

1 **Press** .

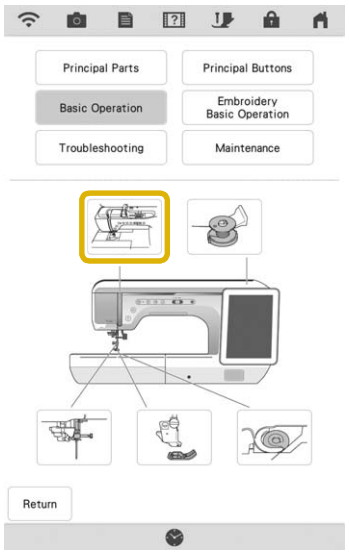
2 **Press** Operation Guide .



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

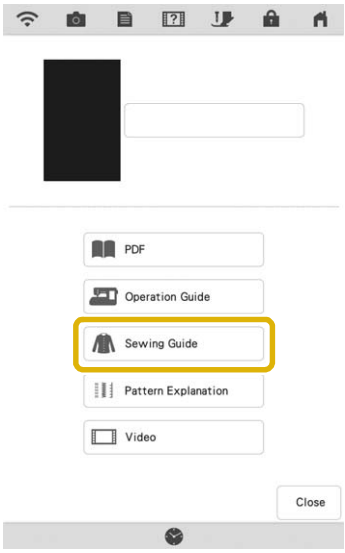
The sewing guide function can be used to select stitch patterns from the Utility Stitch screen. Use this function when you are not sure which stitch to use for your application, or to get advice about sewing particular stitches. For example, if you want to sew overcasting, but you do not know which stitch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

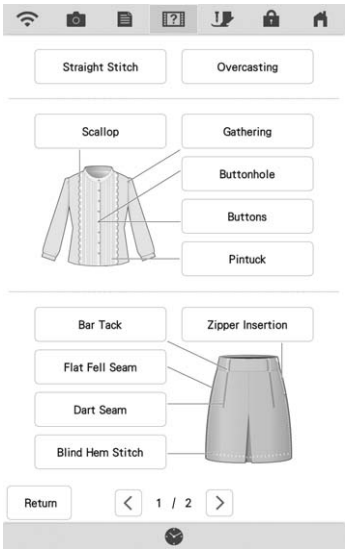
3 **Press** Sewing Guide .

→ 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

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.

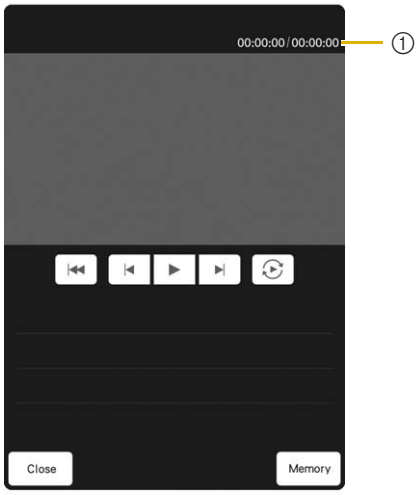
1 **Press** .

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
⏸	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

- Long video file names may be shortened when they are displayed.

5 **Play the video.**

* Use the operation keys as described in “Playing a Tutorial Video” on page 41.

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 Return.**

Using the Stitch Pattern Explanation Function

If you want to know more about the uses of a stitch pattern, select the stitch pattern and press [?] and then Pattern Explanation to see an explanation of the stitch selection. Descriptions are displayed for each stitch pattern in the Utility Stitch screen.

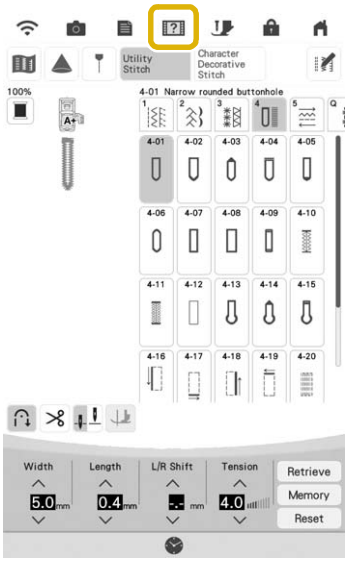
Note

- With the stitch pattern explanation function, descriptions can be displayed for the stitch patterns available on the Utility Stitch and Character/Decorative Stitch screens.

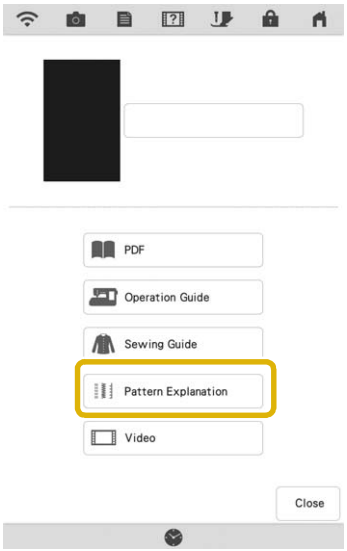
Example: Displaying information about 4-01

1 **Press** 4-01.

2 **Press** [?].



3 **Press** Pattern Explanation.



→ The screen shows information.

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

Memo

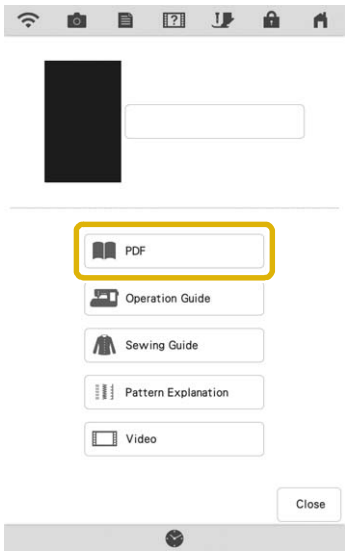
- The settings remain displayed to allow you to fine tune the stitch.

Viewing the Instruction and Reference Guide (PDF File) on the Machine

The Instruction and Reference Guide (PDF file) for this machine can be viewed on the machine.

1 **Press** [?].

2 **Press** [PDF].



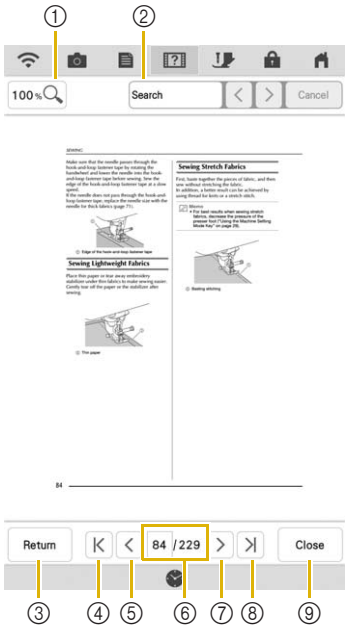
3 **Select the document to be viewed.**

Memo

- The Instruction and Reference Guide can be viewed in the currently selected display language. For details on selecting the display language, refer to “Page 4” on page 29.

4 **Read the Instruction and Reference Guide.**

Operation keys



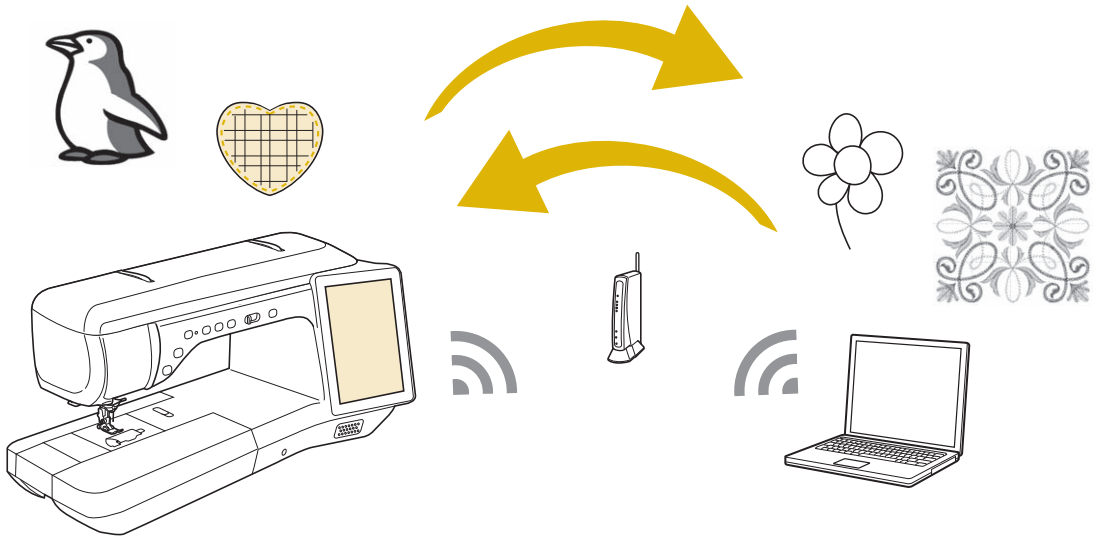
①	100%	Press to select from 100%, 200% and 400%.
②	Search	1. Press to display a keyboard. 2. Enter the text to be searched for. 3. To search from the current page to the beginning of the document, press [<]. To search from the current page to the end of the document, press [>].
③	Return	Press to return to the screen before the Instruction and Reference Guide (PDF file) was opened.
④	[|<]	Press to display the first page.
⑤	[<]	Press to display the previous page.
⑥	84 /229	Shows the current page/total number of pages. Press the current page number, and then enter a page number to display the desired page.
⑦	[>]	Press to display the next page.
⑧	[>|]	Press to display the last page.
⑨	Close	Press to close the screen and exit the machine help screen.

Memo

- To zoom in or out on a page, pinch two fingers together or spread them apart. You can also move a page after zooming in by dragging it.

WIRELESS NETWORK CONNECTION FUNCTIONS

This machine supports a wireless network connection. Using this function, an embroidery pattern or decorative stitch pattern edited in embroidery editing software (Palette 11) with wireless transfer functions can be transferred to the machine from a computer. In addition, embroidery patterns can be transferred from the machine to the embroidery editing software (Palette 11). The machine and computer must be connected to the same network. For detailed procedures, refer to the manual for the application.

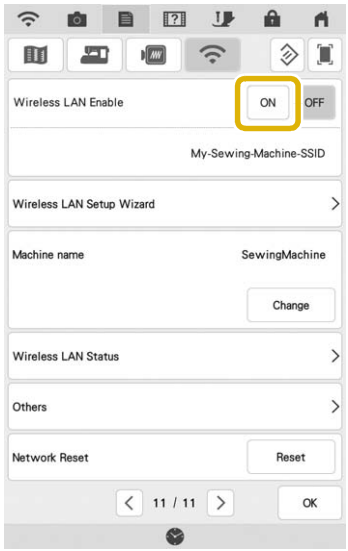


Specifying Wireless Network Connection Settings

The machine can be connected to your wireless network.

1. **Press .**

2. **Set "Wireless LAN Enable" to "ON".**



→ The machine will begin to emit the wireless network signal.

■ Requirements for a Wireless Network Connection

The wireless network connection complies with IEEE 802.11 n/g/b standards and uses the 2.4 GHz frequency.

Memo

- A wireless network cannot be set up with WPA/WPA2 Enterprise.

Using the Wizard to Set Up the Wireless Network Connection

There are multiple ways to set up the wireless network connection. We recommend the method that uses the wizard on this machine.

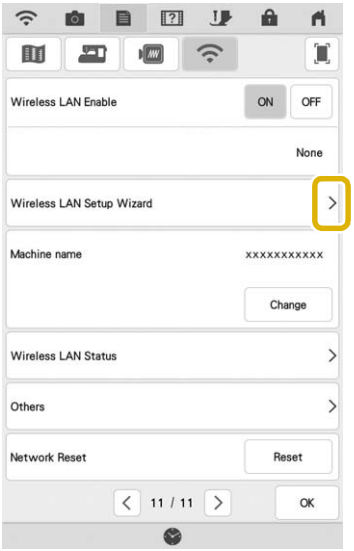
1 In order to connect your machine to a wireless network, the security information (SSID and network key) for your home network will be required. The network key may also be called a password, security key or encryption key. First, find your security information and note it.

SSID	Network Key (Password)

Memo

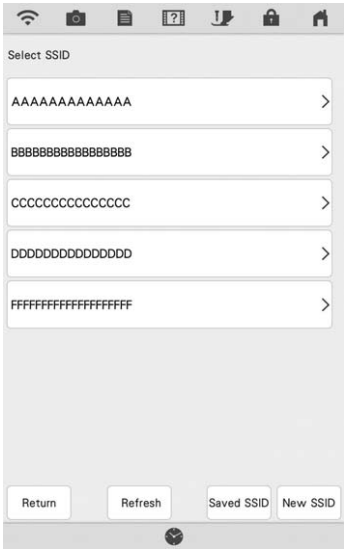
- The wireless network connection cannot be set up if you do not have the security information.
- How to find the security information
  - ① Check the manual provided with your home network.
  - ② The default SSID may be the manufacturer's name or the model name.
  - ③ If you cannot find the security information, contact the manufacturer of the router, your network administrator or your Internet provider.

2 Press > beside "Wireless LAN Setup Wizard".



→ A list of available SSIDs appears.

3 Select > beside the SSID that was noted.

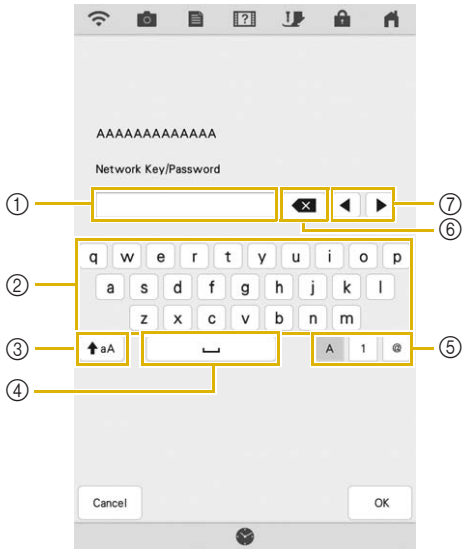


→ The screen for entering the network key (password) appears.

Memo

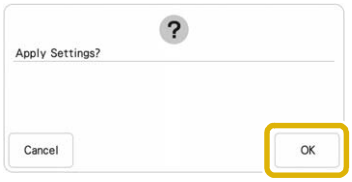
- If the desired network SSID does not appear in the list, press Refresh.
- If the desired network SSID is not displayed, specify it as described below.
  - ① Select New SSID in the list of SSIDs, and then press OK.
  - ② Enter the desired network SSID, and then press OK.
  - ③ Select the authentication method and encryption mode.
- If the machine had already been connected to the home network, press Saved SSID, and then select the saved SSID.

4 **Enter the network key (password) that was noted, and then press** OK **.**

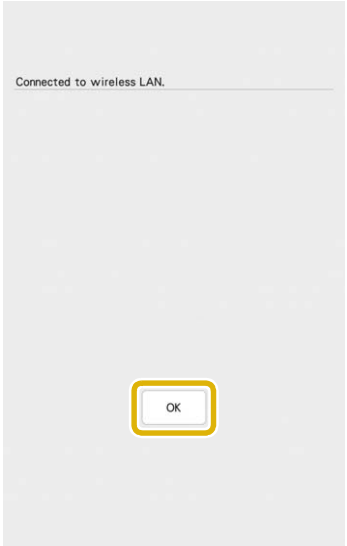


① Text input area
② Character keys
③ Caps key
④ Space key
⑤ Letters/numbers/symbols key
⑥ Backspace key (Deletes the character at the cursor's position.)
⑦ Cursor keys (Move the cursor to the left or right.)

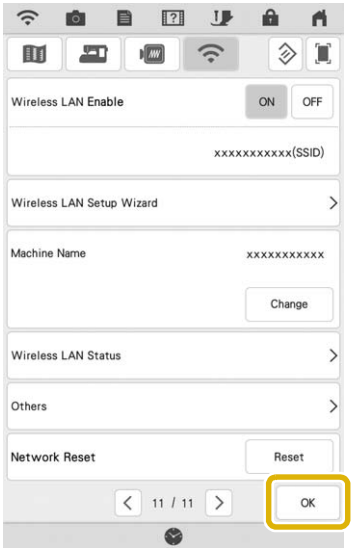
5 **When the following message appears, press** OK **.**



→ When a connection is established, the following message appears.



6 **Press** OK **to exit the setup.**



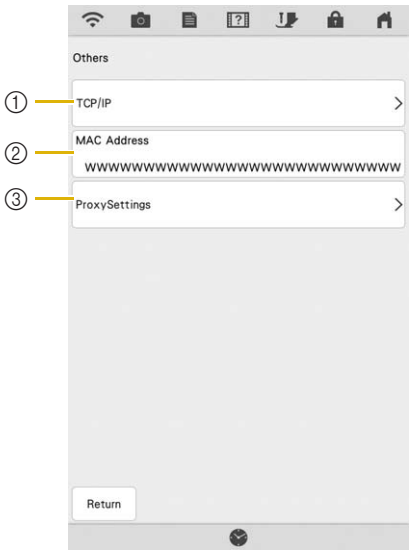
→ The number beside "Machine Name" is the name that will be used when registering the machine with embroidery editing software (Palette 11) in order to transfer files.

Memo

- While connected, the signal strength is indicated by the icon in the upper-left corner of the display.
- Once a wireless network connection has been set up, a wireless network connection will be established each time the machine is turned on. However, "Wireless LAN Enable" in the network settings screen must remain set to "ON".

■ Using the "Others" Menu

The "Others" menu contains the following items.

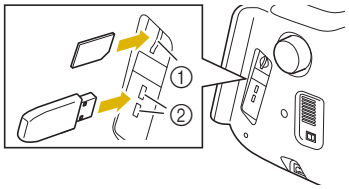


① TCP/IP settings can be manually entered.
② Shows the MAC address.
③ Use when proxy settings are required.

CONNECTING THE ACCESSORY TO THE MACHINE

Using USB Media/SD card (Sold Separately)

When sending or reading stitch patterns using the USB media, connect the device to the USB port. When using SD card, insert the SD card into the SD card slot.



① SD card slot
② USB port

Memo

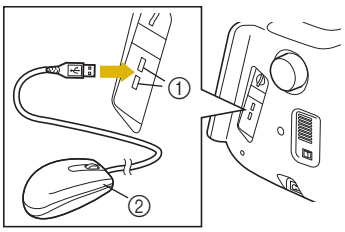
- USB media is widely used, however some USB media may not be usable with this machine. Please visit our website for more details.
- Depending on the type of USB media being used, either directly plug the USB device into the machine's USB port or plug the USB media Reader/Writer into the machine's USB port.
- Do not insert anything other than USB media into the USB media port. Otherwise, the machine may be damaged.
- Do not insert anything other than SD card into the SD card slot. Otherwise, the machine may be damaged.

Using a USB Mouse (Sold Separately)

The USB mouse, connected to the machine, can be used to perform a variety of operations in the screens.
Connect a USB mouse to the 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
② USB mouse

Note

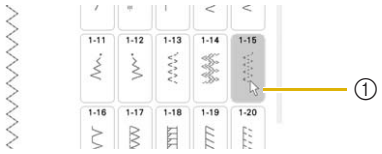
- A USB mouse can be connected or disconnected at any time.
- Only the left mouse button can be used to perform operations. No other buttons can be used.
- The mouse pointer does not appear in the camera view window, the screen saver or opening screen.

■ 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

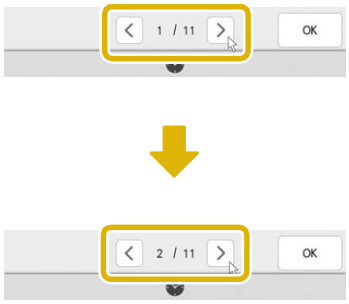
- Double-clicking has no effect.



① Pointer

■ Changing Pages

If page numbers and a vertical scroll bar for additional pages are displayed, click the left mouse button with the pointer on [<] / [>] or [^] / [v] to display the previous or next page.



Chapter 2
Sewing Basics

LOWER THREADING

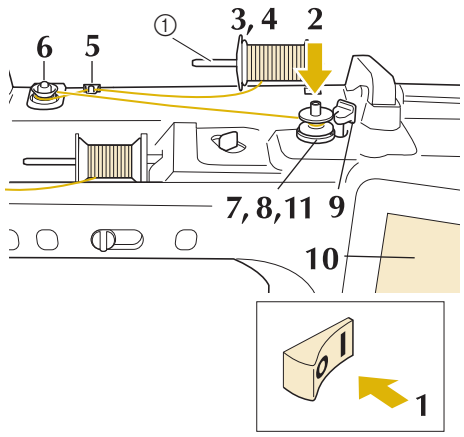
Winding the Bobbin

⚠ CAUTION

- **The included bobbin was designed specifically for this 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: X52800-150). X52800-150 is Class 15 type bobbin.**

■ Using the Supplemental Spool Pin

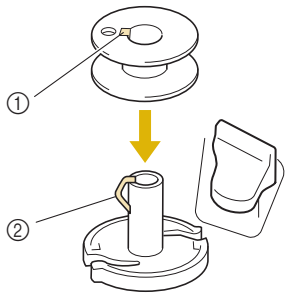
With this machine, you can wind the bobbin during sewing. While the main spool pin is being used for sewing, you can wind a bobbin by using the supplemental spool pin.



① Supplemental spool pin

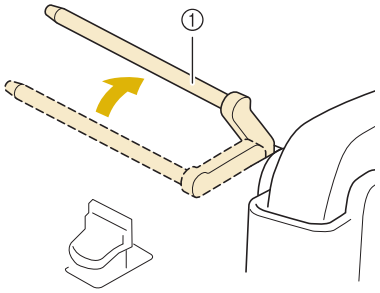
1 **Turn the main power to ON and open the top cover.**

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



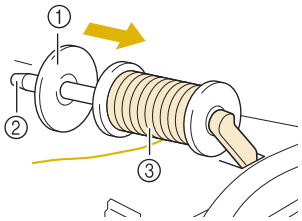
① Groove in the bobbin
② Spring on the shaft

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.**



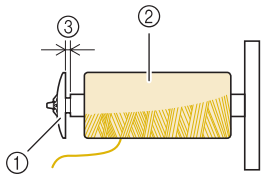
① Spool cap
② Spool pin
③ Thread spool

⚠ 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, small or mini king) 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.**

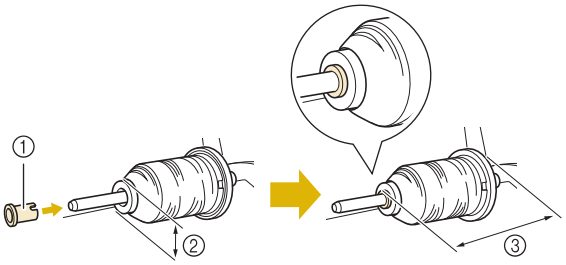
Memo

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



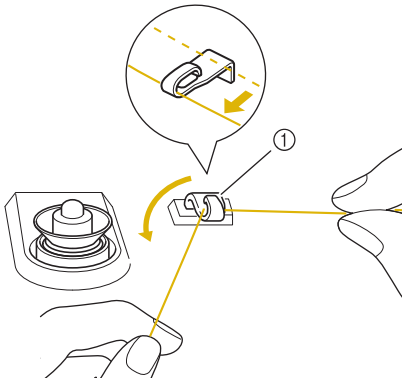
① Spool cap (small)
② Thread spool (cross-wound thread)
③ Space

- 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.



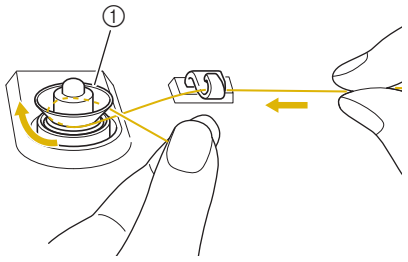
① Spool cap (mini king spool insert)
② 12 mm (1/2 inch)
③ 75 mm (3 inches)

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.**

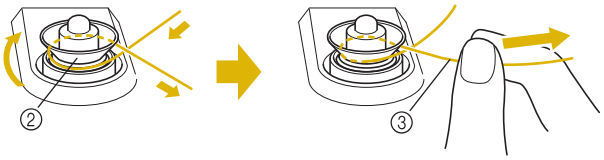


① Thread guide

6 **Pass the thread around the pretension disk making sure that the thread is under the pretension disk.**

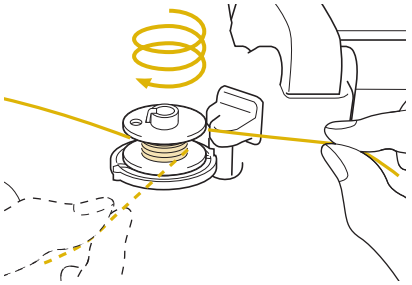


① Pretension disk
→ Make sure that the thread passes under the pretension disk.

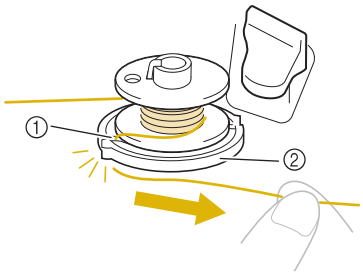


② Pretension disk
③ Pull it in as far as possible.
→ Check to make sure thread is securely set between pretension disks.

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.**

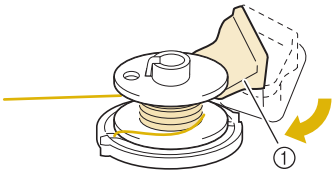


① Guide slit (with built-in cutter)
② Bobbin winder seat

⚠ 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.**

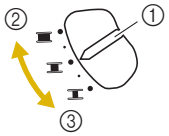
9 **Set the bobbin winding switch to the left, until it clicks into place.**



① Bobbin winding switch

Memo

- Sliding the bobbin winding switch to the left switches the machine into bobbin winding mode.
- Use the bobbin winding slider to adjust the amount of thread wound onto the bobbin to one of five levels.

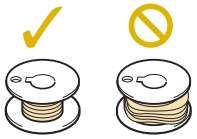


① Bobbin winding slider
② More
③ Less

→ The bobbin winding window appears.

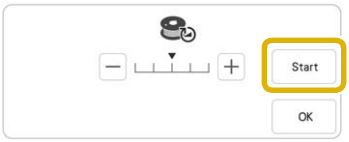
Note

- When winding transparent nylon thread on the bobbin, stop bobbin winding when the bobbin is 1/2 to 2/3 full. If the bobbin was fully wound with transparent nylon thread, it may not be wound neatly.



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.

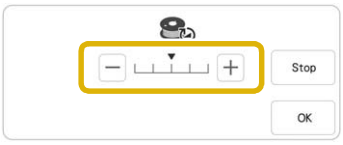


Note

- 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.

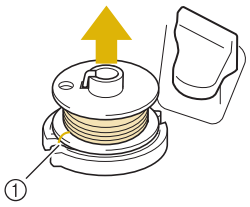
Memo

- 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.



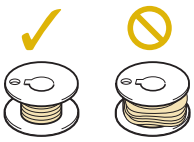
① Cutter

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.

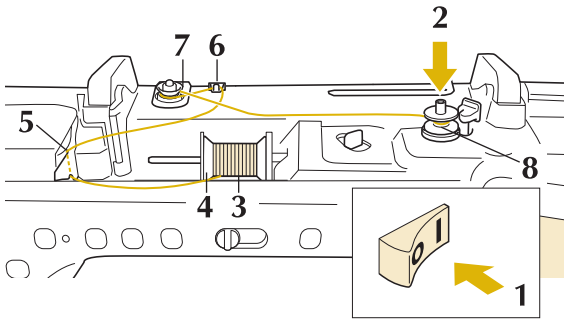
⚠ CAUTION

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



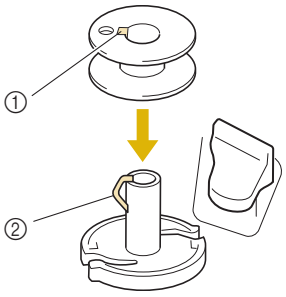
■ Using the Spool Pin

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.



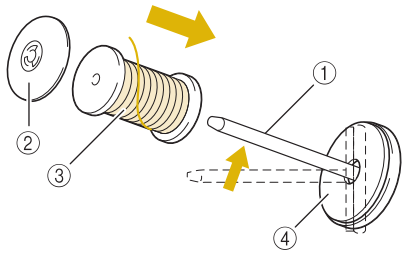
1 Turn the main power to ON and open the top cover.

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

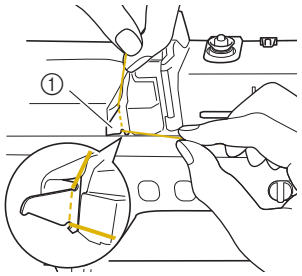
3 Pivot the spool pin so that it angles upward. Set the thread spool on the spool pin so that the thread unwinds from the front of the spool.



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

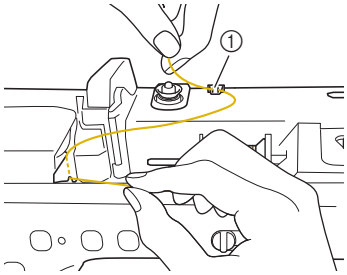
4 **Push the spool cap onto the spool pin as far as possible, then return the spool pin to its original position.**

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



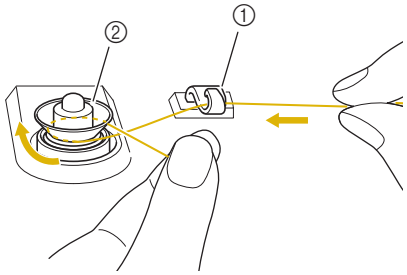
① Thread guide plate

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



① Thread guide

7 **Pass the thread around the pretension disk making sure that the thread is under the pretension disk.**

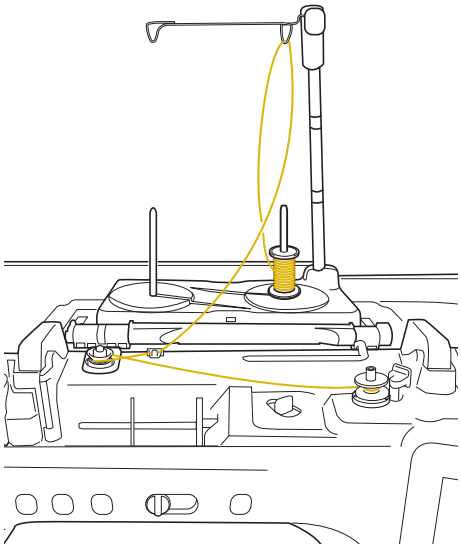


① Thread guide
② Pretension disk

8 **Follow steps 7 through 11 on page 53 through 55.**

■ 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 55.



Memo

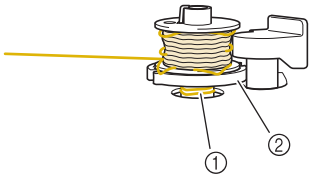
- Refer to page 24 to assemble the spool stand.
- Refer to page 66 to thread the machine using the spool stand.

⚠ 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 pretension disk correctly, the thread may become tangled beneath the bobbin winder seat.
Wind off the thread according to the following procedure.

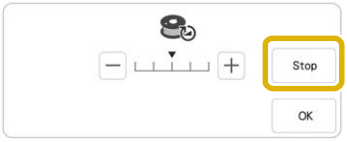


① Thread
② Bobbin winder seat

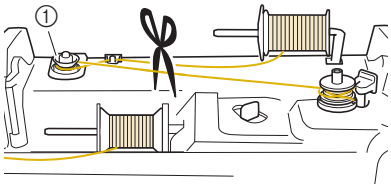
⚠ CAUTION

- **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.**

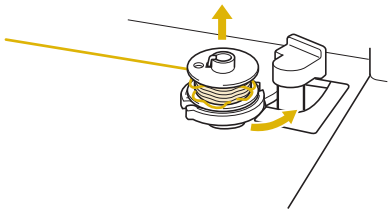


2 **Cut the thread with scissors near the pretension disk.**

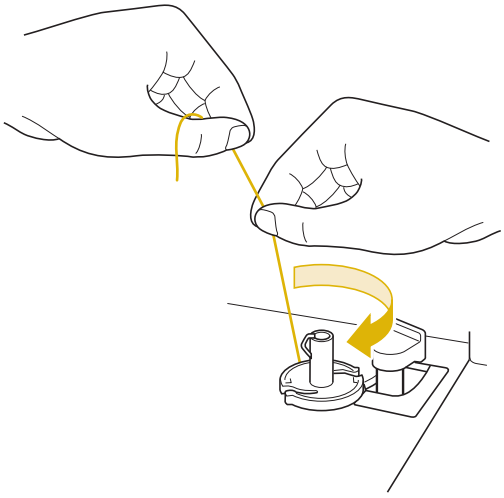


① Pretension disk

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.**

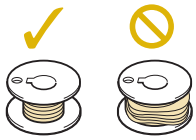
Note

- Make sure that the thread passes through the pretension 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.**

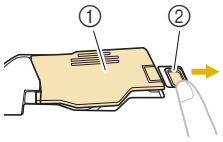


- **The included bobbin was designed specifically for this machine. If bobbins from other models are used, the machine will not operate correctly. Use only the included bobbin or bobbins of the same type (part code: X52800-150). X52800-150 is Class 15 type bobbin.**
- **Before inserting or changing the 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.

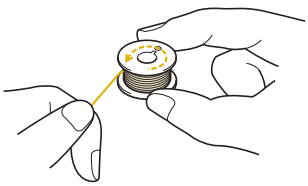
2 Slide the bobbin cover latch to the right.



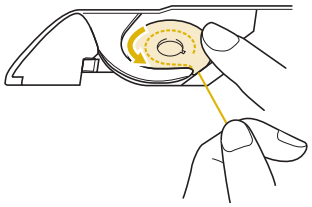
① Bobbin cover
② Latch
→ The bobbin cover opens.

3 Remove the bobbin cover.

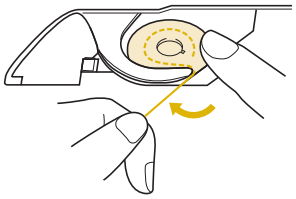
4 Hold the bobbin with your right hand and hold the end of the thread with your left hand.



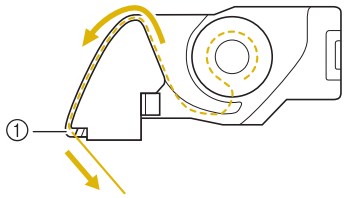
5 Set the bobbin in the bobbin case so that the thread unwinds to the left.



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



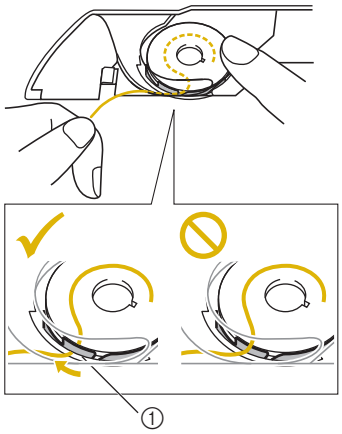
7 Pass the thread through the guide, and then pull the thread out toward the front.



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. (page 87)

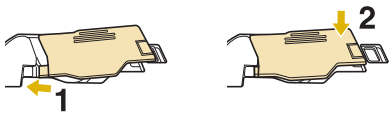


① Tension spring

⚠ 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.

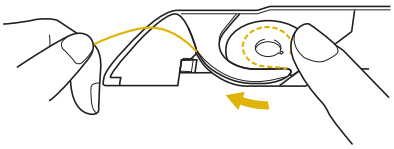
Memo

- You can pull up the bobbin thread after threading the upper thread (“UPPER THREADING” on page 61).

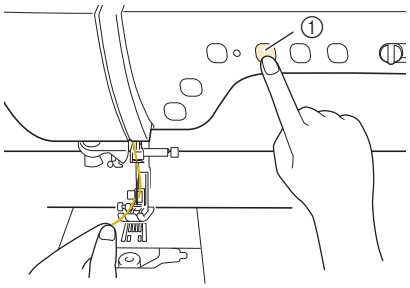
1 **Follow steps 1 to 4 in “Setting the Bobbin” on page 58 for installing the bobbin into the bobbin case.**

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.



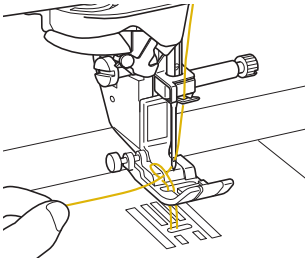
3 **While holding the upper thread, press the “Needle Position” button to lower the needle.**



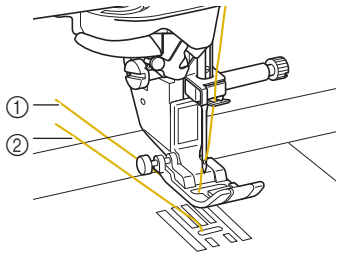
① “Needle Position” button

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.**

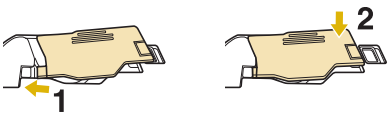


6 **Pull up the bobbin thread, pass it under the presser foot and pull it about 100 mm (approx. 3-4 inches) toward the back of the machine, making it even with the upper thread.**



① Upper thread
② Bobbin thread

7 **Replace the bobbin cover.**



UPPER THREADING

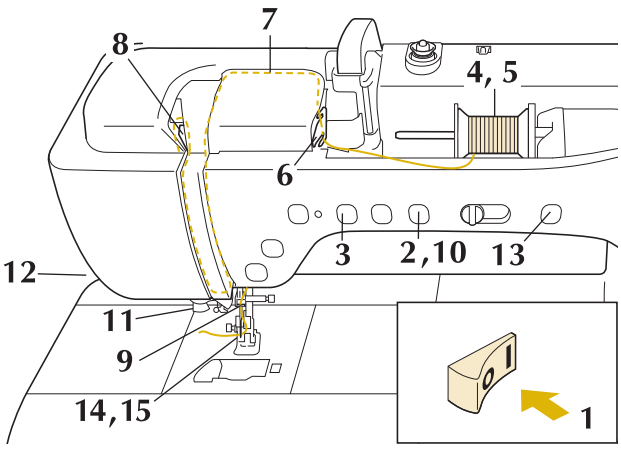
Upper Threading

⚠ 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.**

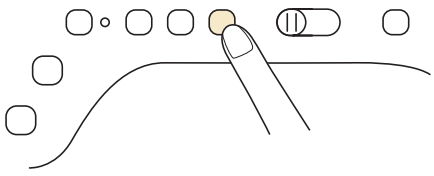
Memo

- The automatic threading function can be used with home 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.

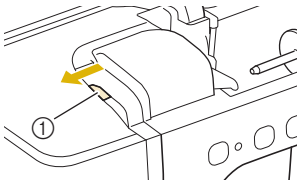


1 **Turn the main power to ON.**

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



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

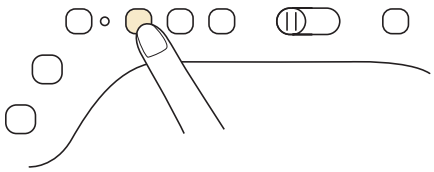


① Upper thread shutter

Memo

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

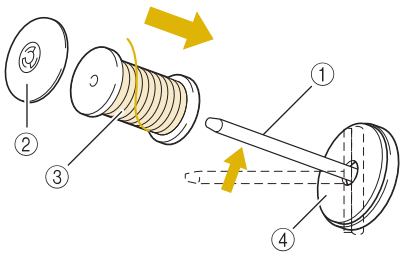
3 **Press the "Needle Position" button to raise the needle.**



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

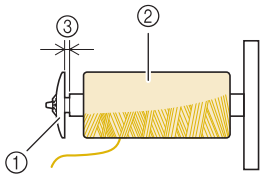
5 **Push the spool cap onto the spool pin as far as possible, then return the spool pin to its original position.**

⚠ 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 spool insert) 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.**

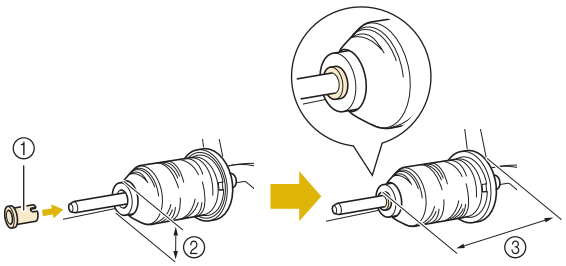
Memo

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



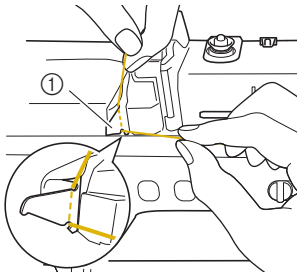
① Spool cap (small)
② Thread spool (cross-wound thread)
③ Space

- 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 spool insert).



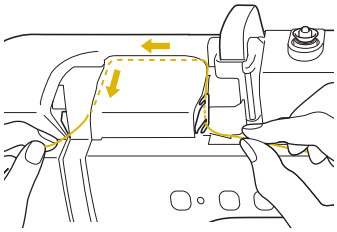
① Thread spool insert (mini king spool insert)
② 12 mm (1/2 inch)
③ 75 mm (3 inches)

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

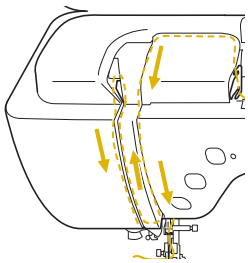


① Thread guide plate

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

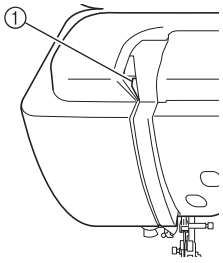


8 **Guide the thread down, up, then down through the groove, as shown in the illustration.**



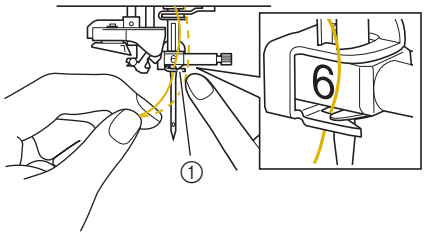
Memo

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



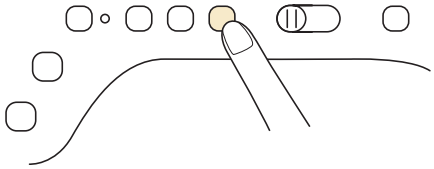
① Look in the upper groove area

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.**

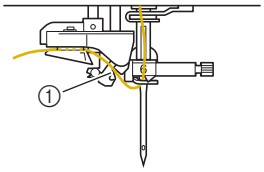


① Needle bar thread guide

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

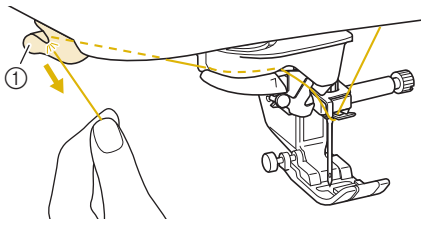


11 **Pass the thread through the thread guide disks (marked “7”). Make sure that the thread passes through the groove in the thread guide.**



① Groove in thread guide

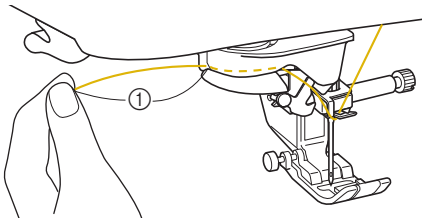
12 **Pull the thread up through the thread cutter to cut the thread, as shown in the illustration.**



① Thread cutter

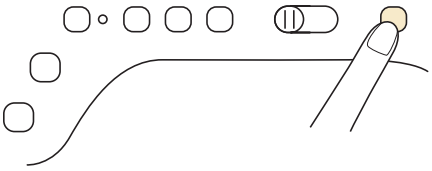
Note

- 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.**



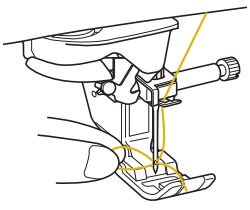
→ The thread passes through the eye of the needle.

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.

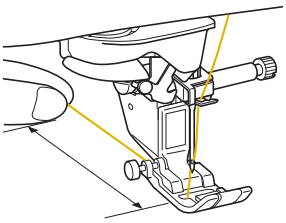


Note

- 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.



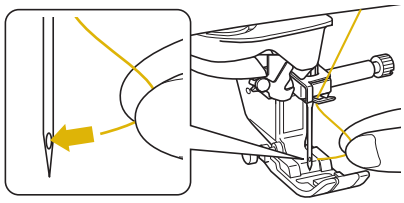
① About 100-150 mm (approx. 4-6 inches)

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

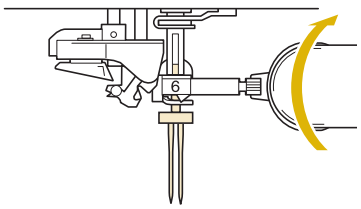
The twin needle can only be used for stitch patterns that show after being selected. Before you select a stitch pattern, make sure the stitch can be sewn in the twin needle mode (refer to the "STITCH SETTING CHART" on page 206).

⚠ CAUTION

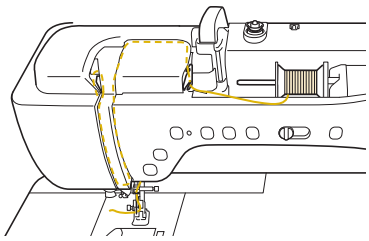
- **Twin needle (part code XE4963-001) is recommended for this machine. Contact your authorized Baby Lock retailer for replacement needles (size 2.0/11 is recommended).**
- **Be sure to set the twin needle mode when using the twin needle. Using the twin needle while the machine is in single needle mode 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 69).

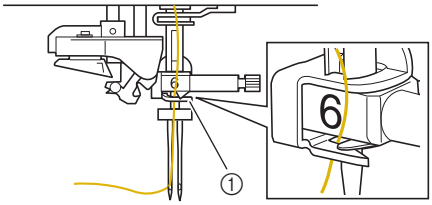
* If the message "OK to automatically lower the presser foot?" appears on the LCD screen, press OK to continue.



2 **Thread the machine for the first needle according to the procedure for threading a single needle (“Upper Threading” on page 61).**



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

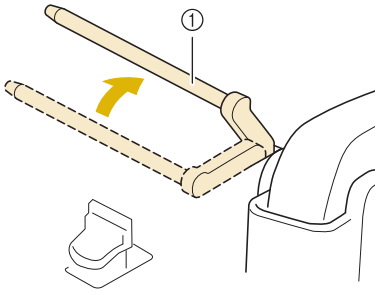


① Needle bar thread guide

Note

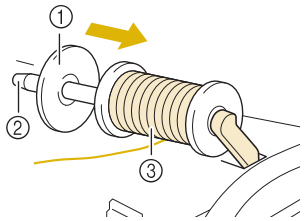
- The “Automatic Threading” button cannot be used. Manually thread the twin needle from front to back. Using the “Automatic Threading” button may result in damage to the machine.

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



① Supplemental spool pin

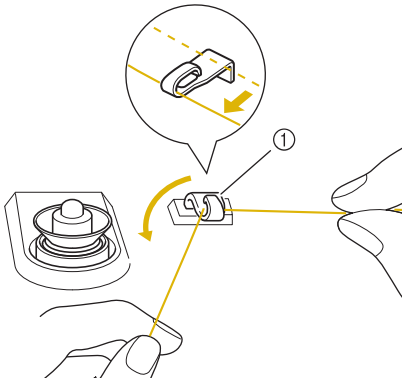
5 **Place the additional spool of thread on the supplemental spool pin, so that the thread unwinds from the front. Push the spool cap onto the spool pin as far as possible to secure the thread spool.**



① Spool cap
② Spool pin
③ Thread spool

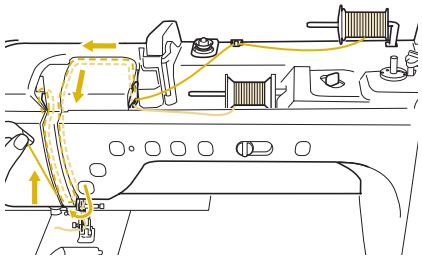
6 **Hold the thread from the spool with both hands, and place the thread in the thread guide.**

* Do not place the thread in the pretension disks.

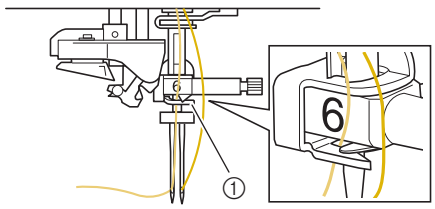


① Thread guide

7 **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.**



8 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

9 Press to unlock all keys and buttons.

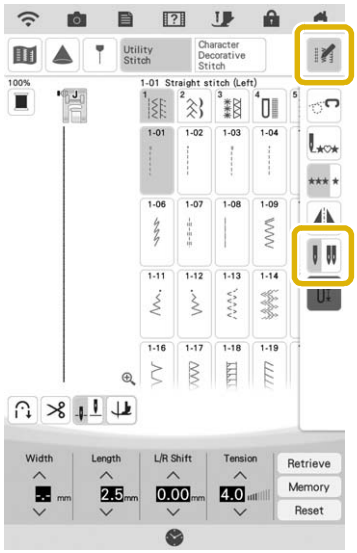
10 Select a stitch pattern. (Example:)

* Refer to "Sewing a Stitch" on page 77 for selecting the stitch.

* Refer to the "STITCH SETTING CHART" on page 206 for the proper stitch to use with presser foot "J".

→ The selected stitch is displayed.

11 Press , and then press to select the twin needle mode.



→ Twin needle mode is set.

Note

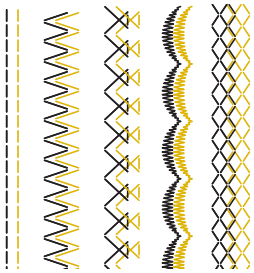
- If the key is light gray after selecting the stitch, the selected stitch cannot be sewn in the twin needle mode.

⚠ 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.**

12 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

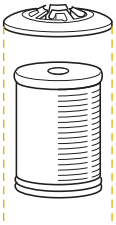
The included spool stand is useful when using thread on spools with a large diameter (cross-wound thread). This spool stand can hold two spools of thread.

Memo

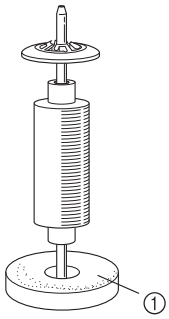
- Refer to page 24 to assemble the spool stand.
- Refer to page 56 to wind the bobbin when using the spool stand.

■ 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.

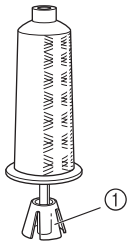


- When using thread on a thin spool, place the included spool felt on the spool pin, place the thread spool on the spool pin so that the center of the spool is aligned with the hole at the center of the spool felt, and then insert the spool cap onto the spool pin.



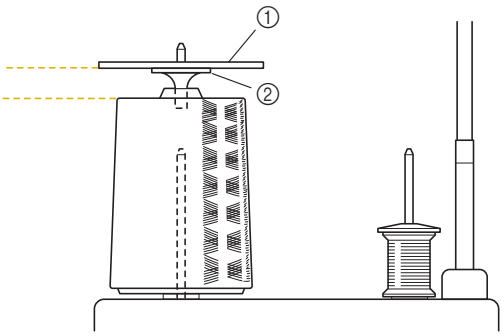
① Spool felt

- 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.



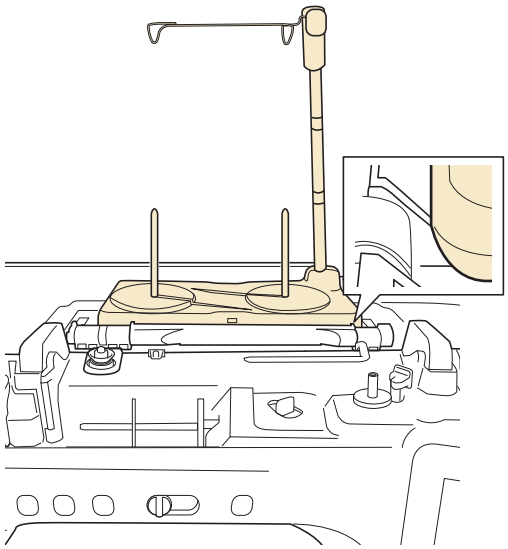
① Spool holder

- 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.

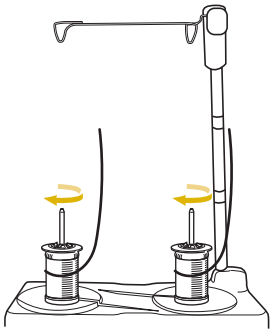


① Spool cap
② Spool cap base

1 Attach the spool stand to the machine.



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.

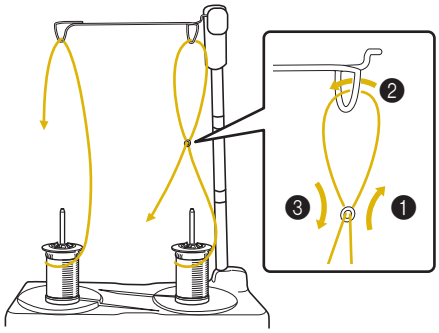


Note

- 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.**

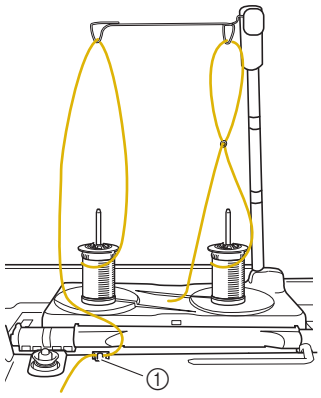
When using thread that quickly feeds off the spool, such as metallic thread, use the enclosed ring to prevent the thread from becoming entangled. Threading sequence; Pull the thread from the spool, place the thread through the ring from the bottom up (❶), into the thread guide (❷) and through the ring 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.**



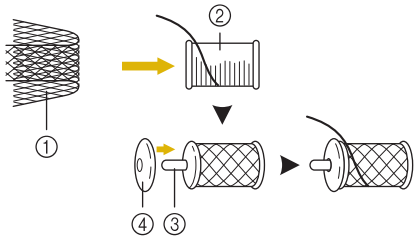
① Thread guide

5 **Thread the machine according to the steps 6 to 15 of "Upper Threading" on page 61.**

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.

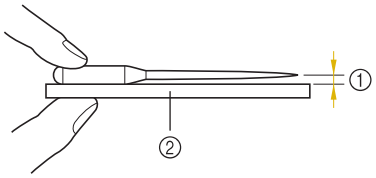
CHANGING THE NEEDLE

⚠ 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 home 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.**

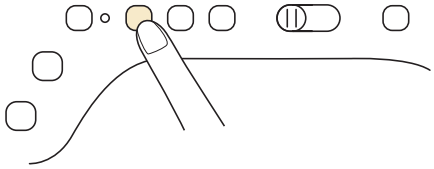
Memo

- 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.



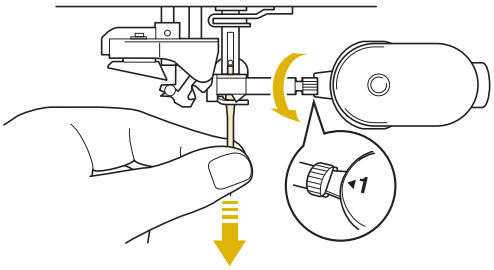
2 Press to lock all keys and buttons.

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

Note

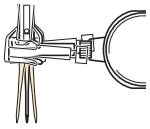
- Before replacing the needle, cover the hole in the needle plate with fabric or paper to prevent the needle from falling into the machine.

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

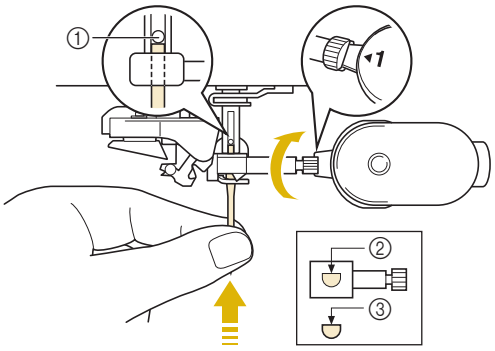


Note

- 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.**

Memo

- The automatic threading function can be used with home 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.

Fabric/Thread/Needle Combinations

- **Needles that can be used with this machine: Home sewing machine needles (size 65/9 - 100/16)**
  *** The larger the number, the larger the needle. As the numbers decrease, the needles get finer.**
- **Thread that can be used with this machine: 30 - 90 weight**
  *** Never use thread of 20 weight or lower. It may cause machine to malfunction.**
  *** The smaller the number, the heavier the thread. As the numbers increase, the thread gets finer.**
- **The machine needle and thread that should be used depends on the type and thickness of the fabric. Refer to the following table when choosing the thread and needle appropriate for the fabric that you wish to sew.**
  - The combinations shown in the table provide a general guideline. Be sure to sew trial stitches on the actual number of layers and type of fabric to be used in your project.
  - The machine needles are consumables. For safety and best results, we recommend replacing the needle regularly. For details on when to replace the needle, refer to "CHANGING THE NEEDLE" on page 69.
- **In principle, use a fine needle and thread with lightweight fabrics, and a larger needle and heavier thread with heavyweight fabrics.**
- **Select a stitch appropriate for the fabric, and then adjust the stitch length. When sewing lightweight fabrics, make the stitch length finer (shorter). When sewing heavyweight fabrics, make the stitch length coarser (longer). (page 86)**
  When sewing stretch fabrics, refer to "Sewing Stretch Fabrics" on page 84.

Fabric Type/Application		Thread		Size of needle	Stitch length mm (inch)
		Type	Weight		
Lightweight fabrics	Lawn, georgette, challis, organdy, crepe, chiffon, voile, gauze, tulle, lining, etc.	Polyester thread	60 - 90	65/9 - 75/11	Fine stitches 1.8-2.5 (1/16-3/32)
		Cotton thread, Silk thread	50 - 80		
Medium weight fabrics	Broadcloth, taffeta, gabardine, flannel, seersucker, double gauze, linen, terry cloth, waffle weave, sheeting, poplin, cotton twill, satin, quilting cotton, etc.	Polyester thread	60 - 90	75/11 - 90/14	Regular stitches 2.0-3.0 (1/16-1/8)
		Cotton thread, Silk thread	50 - 60		
Heavyweight fabrics	Denim (12 ounces or more), canvas, etc.	Polyester thread, Cotton thread	30	100/16	Coarse stitches 2.5-4.0 (3/32-3/16)
	Denim (12 ounces or more), canvas, tweed, corduroy, velour, melton wool, vinyl-coated fabric, etc.	Polyester thread	60	90/14 - 100/16	
		Cotton thread, Silk thread	30 - 50		
Stretch fabrics (knit fabrics, etc.)	Jersey, tricot, T-shirt fabric, fleece, interlock, etc.	Polyester thread, Cotton thread, Silk thread	50	Ball point needle 75/11 - 90/14	Setting appropriate for the fabric thickness
For top-stitching		Polyester thread, Cotton thread	30	90/14 - 100/16	Setting appropriate for the fabric thickness
			50 - 60	75/11 - 90/14	

■ Transparent nylon thread

Use a home sewing machine topstitching needle, regardless of the fabric or thread.

■ Embroidery needles

Use a 75/11 home sewing machine needle for embroidery.

⚠ CAUTION

- **The appropriate fabric, thread and needle combinations are shown in the preceding table. If the combination of the fabric, thread and needle is not correct, particularly when sewing heavy fabrics (such as denim) with thin needles (such as 65/9 to 75/11), the needle may bend or break. In addition, the stitching may be uneven or puckered or there may be skipped stitches.**

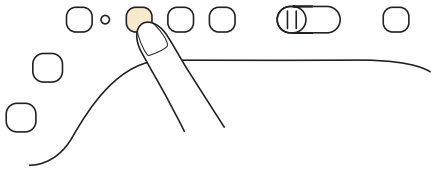
CHANGING THE PRESSER FOOT

⚠ 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

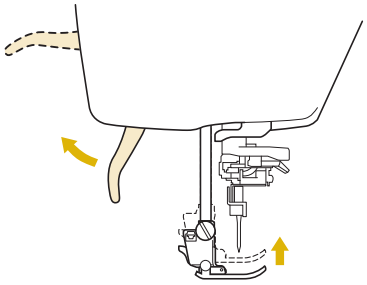
1 **Press the "Needle Position" button to raise the needle.**



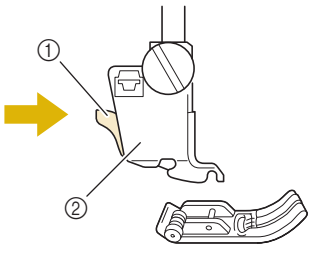
2 **Press to lock all keys and buttons.**

* 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.**



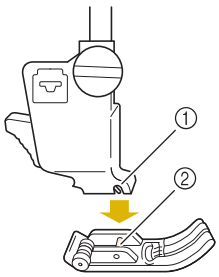
① Black button
② Presser foot holder

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

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

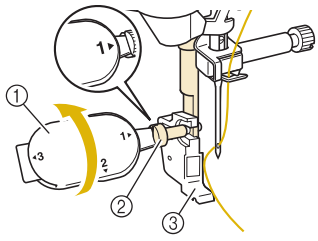
- Thread the needle manually when using the walking foot, or only attach the walking foot after threading the needle using the "Automatic Threading" button.
- When sewing with the walking foot, sew at medium to low speeds.

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. (page 79.)

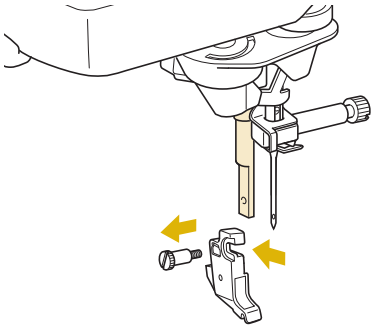
1 **Follow the steps in "Removing the Presser Foot" on page 72.**

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

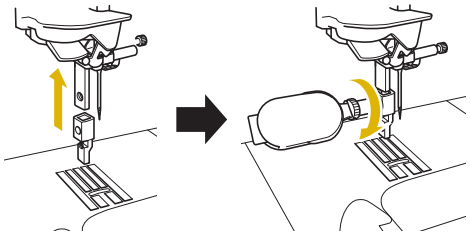


① Multi- purpose screwdriver
② Presser foot holder screw
③ Presser foot holder

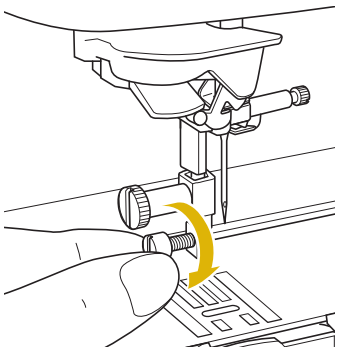
3 **Remove the screw of the presser foot completely from the presser foot shaft.**



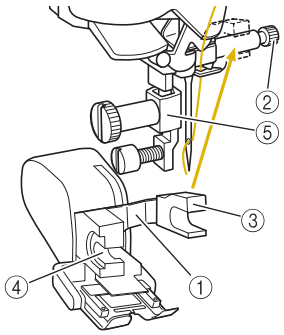
4 **Set the adapter on the presser foot bar, aligning the flat side of the adapter opening with the flat side of the presser bar. Push it up as far as possible, and then tighten the screw securely with the screwdriver.**



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

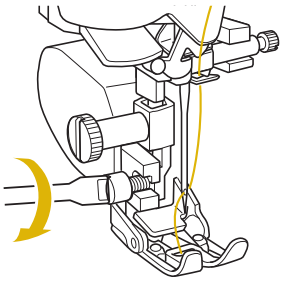


6 **Set the operation lever of the walking foot so that the needle clamp screw is set in the fork. Position the shank of the walking foot on the presser foot bar.**



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.

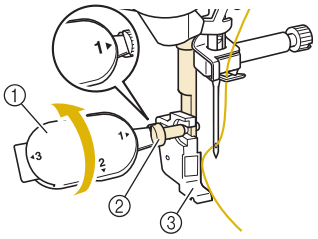
Note
- When sewing with the dual feed foot, sew at medium to low speeds.

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 72.**

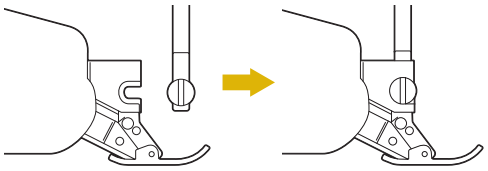
2 **Loosen the screw of the presser foot holder to remove the presser foot holder.**



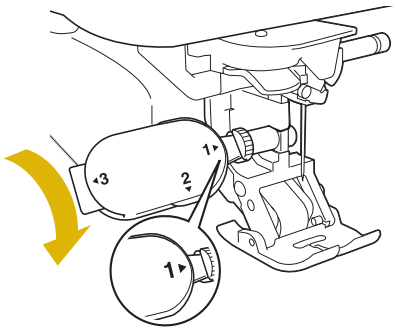
① Multi- purpose screwdriver
② Presser foot holder screw
③ Presser foot holder

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



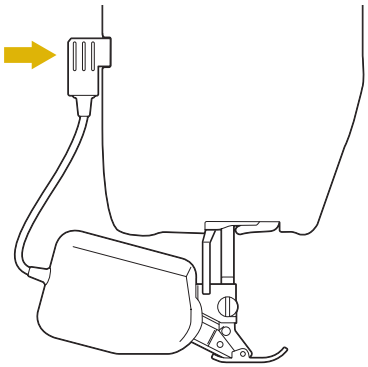
4 **Hold the dual feed foot in place with your right hand, then using the included screwdriver securely tighten the large screw.**



⚠ 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.**

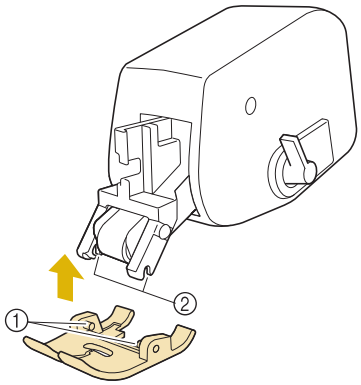


6 **Press to unlock all keys and buttons.**

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

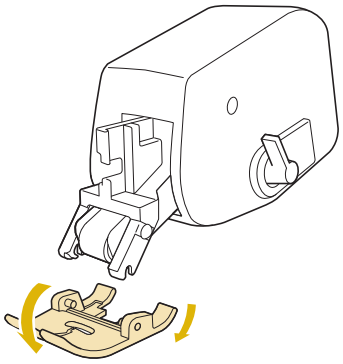
■ Attaching/Detaching toe

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



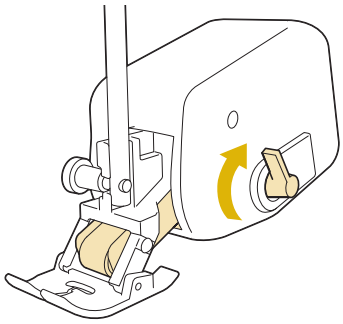
① Pins
② Notches

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.

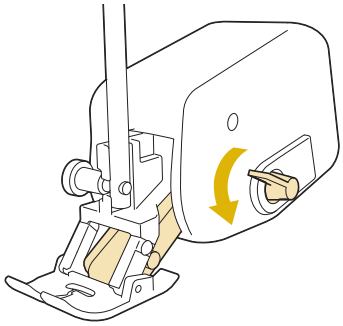


■ Using the Dual Feed Position Lever

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.

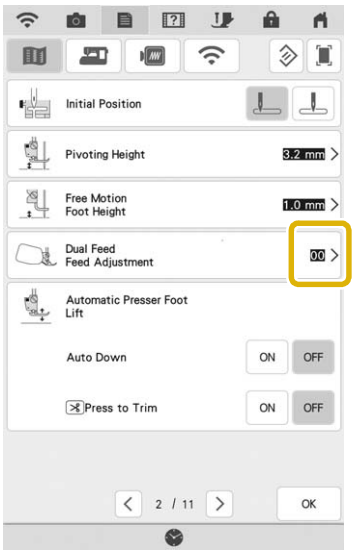
2 Press .

→ The Sewing settings screen appears.

3 Display page 2 of the Sewing settings screen.

4 Touch the number to select 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, touch a higher number 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, touch a lower number to decrease the feed amount for the top fabric.



5 Press OK to return to the original screen.

SEWING

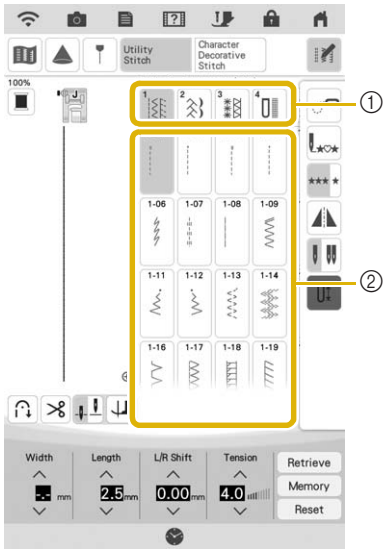
⚠ CAUTION

- 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 Select the category, and then press the key of the stitch you want to sew.



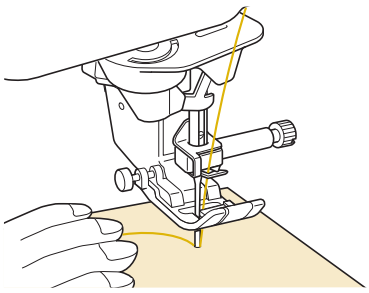
① Category
② Key of the stitch
→ The symbol of the correct presser foot will be displayed in the upper left corner of the LCD screen.

3 Install the presser foot ("CHANGING THE PRESSER FOOT" on page 72).

⚠ 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 "STITCH SETTING CHART" on page 206 for presser foot recommendations.

4 Set the fabric under the presser foot. Hold the fabric and thread in your left hand, and push the "Needle Position" button to set the needle in the sewing start position.



Memo

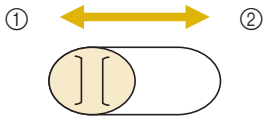
- The black button on the left side of presser foot "J" should be pressed only if the fabric does not feed or when sewing thick seams (page 83). Normally, you can sew without pressing the black button.

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.**

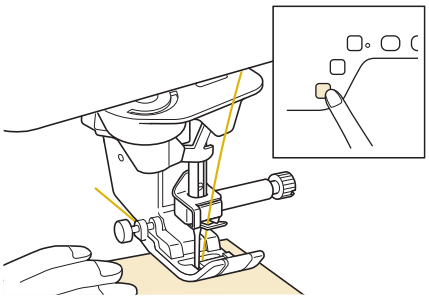
* You can use this slide to adjust sewing speed during sewing.



① Slow
② Fast

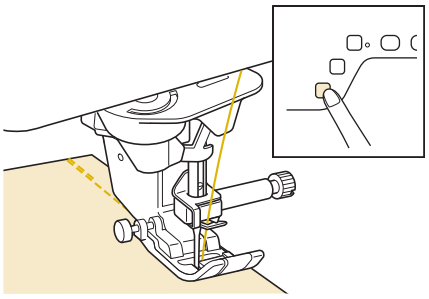
7 **Press the "Start/Stop" button to start sewing.**

* Guide the fabric lightly by hand.

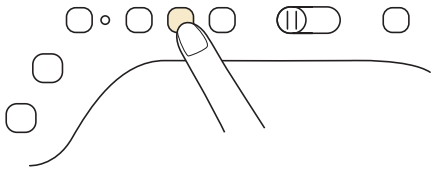


Memo
- When the foot controller is being used, you cannot start sewing by pressing the "Start/Stop" button.

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



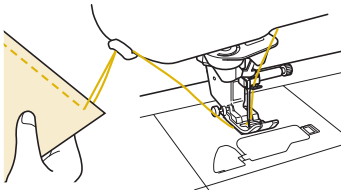
9 **Press the "Thread Cutter" button to trim the upper and lower threads.**



→ 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.

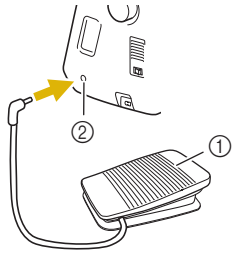
■ Using the Foot Controller

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

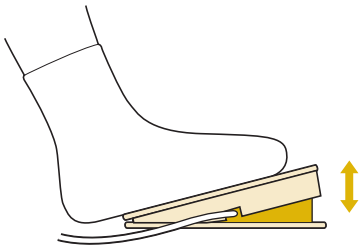
1 **Insert the foot controller plug into its jack on the machine.**



① Foot controller
② Foot controller jack

2 **Slowly depress the foot controller to start sewing.**

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



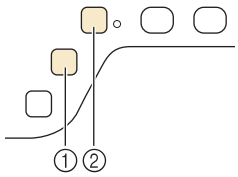
Memo

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

3 **Release the foot controller to stop the machine.**

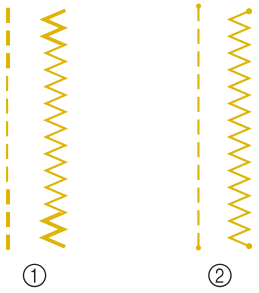
Sewing Reinforcement Stitches

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. (page 15)



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 stitch pattern. (Refer to "STITCH SETTING CHART" on page 206.)

Memo

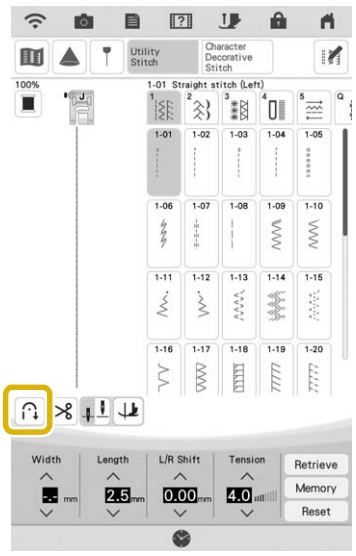
- When you press the "Reinforcement Stitch" button while sewing character/decorative stitch pattern, you can end sewing with a full stitch instead of at a mid-point.
- The green light on the right of the "Reinforcement Stitch" button lights up while the machine is sewing a full motif, and it automatically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

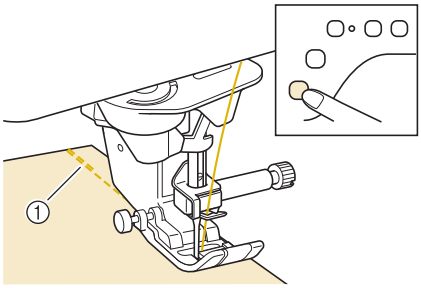


→ The key will display as .

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.

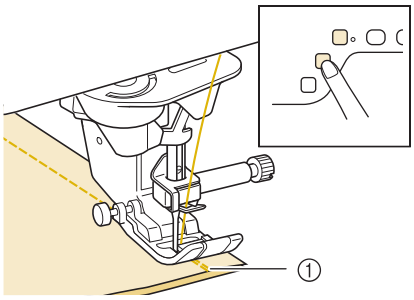


① Reverse stitches (or reinforcement stitches)

→ 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 stitch pattern. Refer to the following table for details on the operation that is performed when the button is pressed.

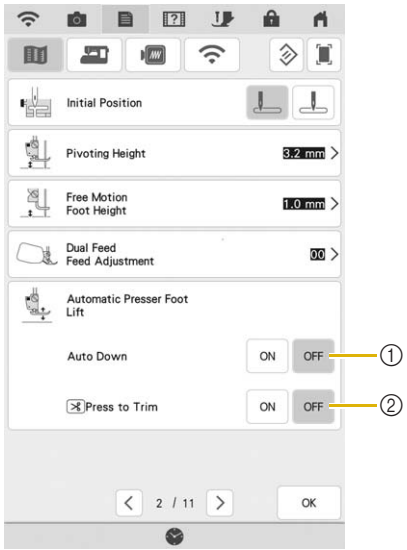
	"Reverse Stitch" button	"Reinforcement Stitch" button
Utility Stitch + 1-01, 1-03, 1-09	Machine starts sewing the stitches and only sews reverse stitches while holding the "Reverse Stitch" button.	Machine starts sewing the stitches and sews 3 – 5 reinforcement stitches while holding the "Reinforcement 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.

	"Reverse Stitch" button	"Reinforcement Stitch" button
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 stitch 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 stitch pattern and sews reinforcement stitches at the end of sewing.

* If "Reinforcement Priority" of the settings screen is set to "ON" (page 29), reinforcement stitches are sewn instead of reverse stitches.

Automatic Presser Foot Lowering Function and Thread Cutting Function

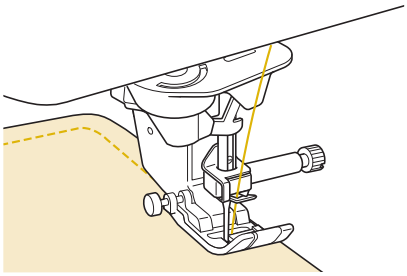
By setting the machine to automatically raise and lower the presser foot, sewing operations can be performed more smoothly.



No.	Key Name	Explanation
①	Auto Down	When "Auto Down" in the machine settings screen is set to "ON", pressing the "Start/Stop" button or depressing the foot controller automatically lowers the presser foot (if it is raised) before starting to sew.
②	Press to Trim	When "Press to Trim" in the machine settings screen is set to "ON", pressing the "Thread Cutter" button automatically lowers the presser foot (if it is raised) before cutting the thread. The presser foot will be raised after the thread is cut.

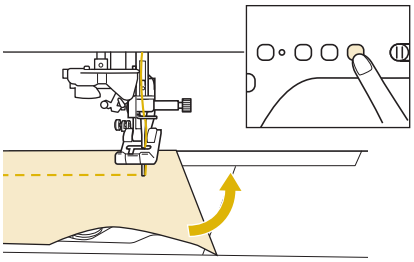
Sewing Curves

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



Changing Sewing Direction

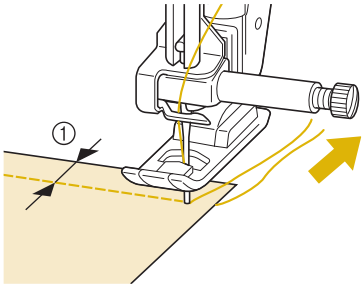
Stop the machine. Leave the needle in the fabric, and press the "Presser Foot Lifter" button to raise the presser foot. Using the needle as a pivot, turn the fabric so that you can sew in the new direction. Press the "Presser Foot Lifter" button to lower the presser foot and start sewing.



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 89).

■ Sewing a Seam Allowance of 0.5 cm or Less

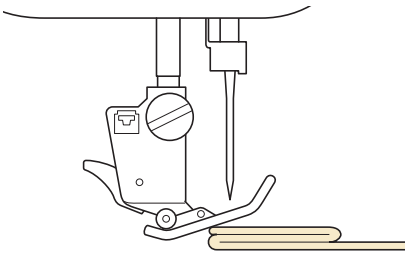
Baste the corner before sewing, and then, after changing the sewing direction at the corner, pull the basting thread toward the back while sewing.



① 5 mm (approx. 3/16 inch)

Sewing Heavyweight Fabrics

The 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.

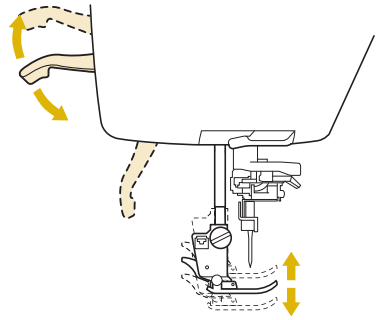


⚠ CAUTION

- **Do not forcefully push fabrics more than 6 mm (approx. 1/4 inch) thick through the machine. This may cause the needle to break and cause injury.**
- **Thicker fabrics require a larger needle. (page 71)**

■ 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

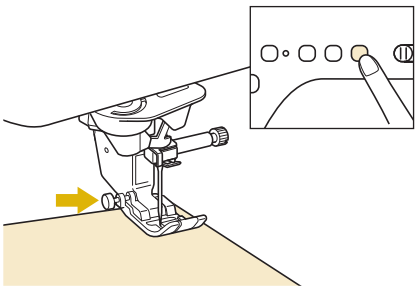
- You cannot use the presser foot lever after the presser foot has been raised using the "Presser Foot Lifter" button.

■ If the Fabric does not Feed

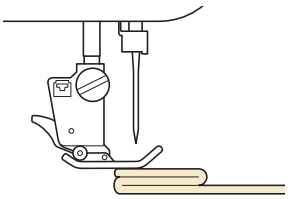
If the fabric does not feed when starting to sew or when sewing thick seams, press the black button on the left side of presser foot "J".

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. (page 91.)

Sewing Hook-and-Loop Fastener Tape

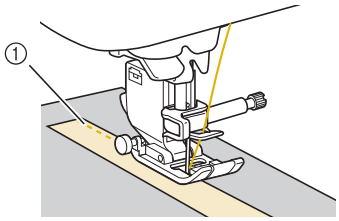
⚠ CAUTION

- **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.

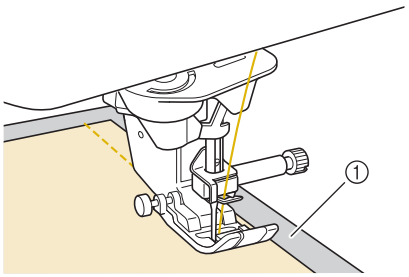
Make sure that the needle passes through the hook-and-loop fastener tape by rotating the handwheel and lower the needle into the hook-and-loop fastener tape before sewing. Sew the edge of the hook-and-loop fastener tape at a slow speed.
If the needle does not pass through the hook-and-loop fastener tape, replace the needle size with the needle for thick fabrics (page 71).



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.



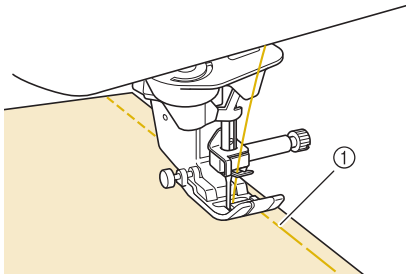
① Thin paper

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 28).



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 “STITCH SETTING CHART” on page 206).
- If you turn off the machine or select another stitch without saving stitch setting changes (“Saving Your Stitch Settings” on page 107), the stitch settings will return to their default settings.

Setting the Stitch Width

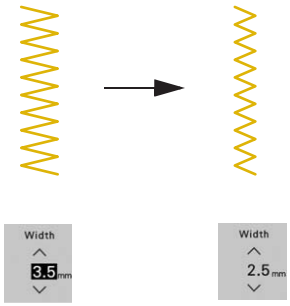
Follow the steps below when you want to change the zigzag stitch pattern width.

Memo

- For an alternate method of changing the stitch width using the speed controller, refer to page 125.

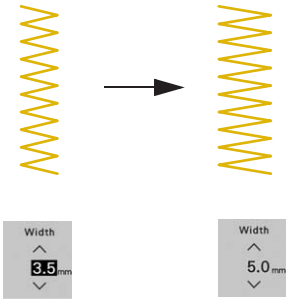
Example:

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

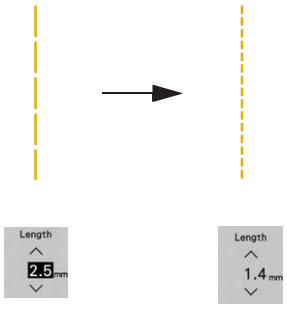
- After adjusting the stitch width, slowly rotate the handwheel toward you (counterclockwise) and check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may bend or break.

Setting the Stitch Length

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

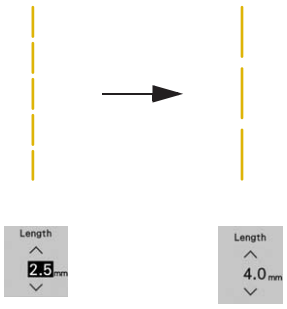
Example:

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

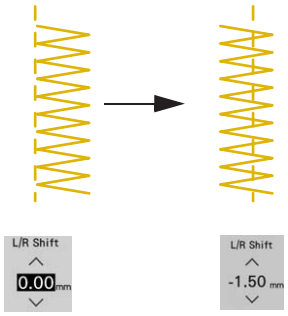
- **If the stitches get bunched together, lengthen the stitch length and continue sewing. Do not continue sewing without lengthening the stitch length. Otherwise, the needle may break and cause injury.**

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.

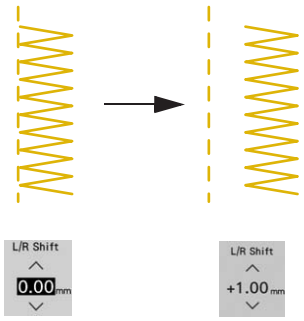
Example:

Press ∨ to shift the stitch pattern to the left.



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

Press ∧ to shift the stitch 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

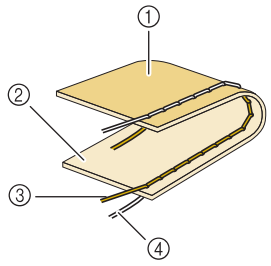
- After adjusting the "L/R Shift", slowly rotate the handwheel toward you (counterclockwise) and check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may bend or break.

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.



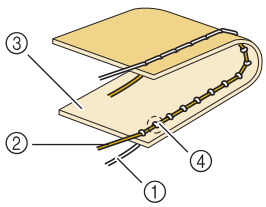
① Wrong side
② Surface
③ Upper thread
④ Bobbin thread

■ 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” on page 58 and rethread the bobbin thread.

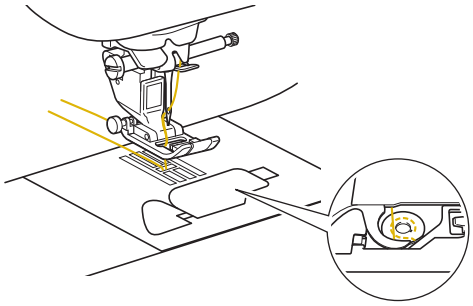


① Bobbin thread
② Upper thread
③ Surface
④ Locks appear on surface of fabric

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 58.

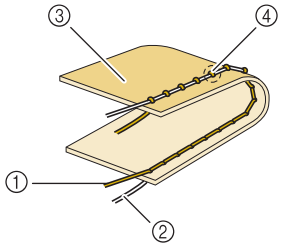


■ Upper Thread is Too Loose

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” on page 61 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.

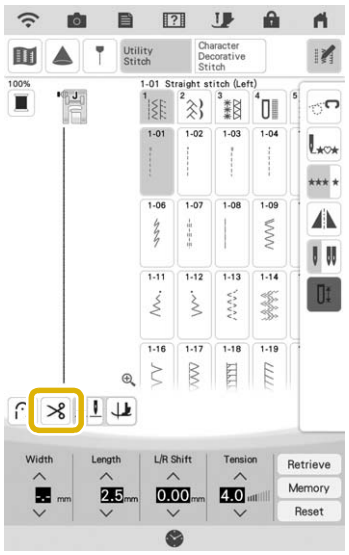
USEFUL FUNCTIONS

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.

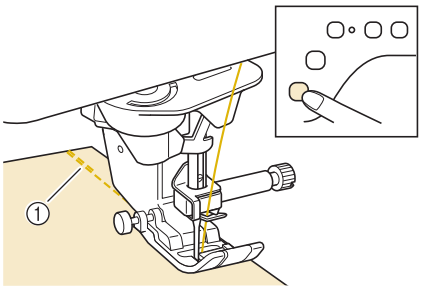


→ You get , and the machine is set for automatic thread cutting function and automatic reverse/reinforcement stitching.

Memo

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

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



① Reverse stitches (or reinforcement stitches)

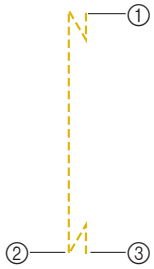
→ The machine will automatically sew reverse stitches (or reinforcement stitches) and then continue sewing.

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.

Pivoting

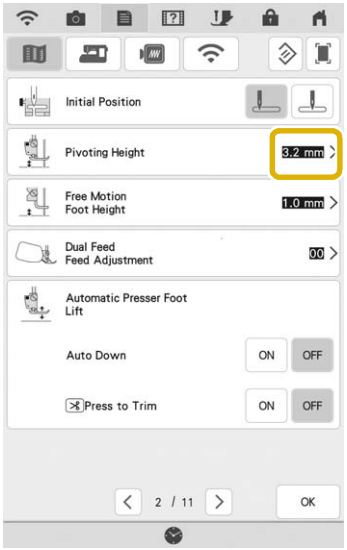
If the pivot function is selected, the machine stops with the needle lowered (in the fabric) and the presser foot is automatically raised to an appropriate height when the “Start/Stop” button is pressed. When the “Start/Stop” button is pressed again, the presser foot is automatically lowered and sewing 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. Touch the number to select the height. To raise the presser foot further, increase the setting. (Normally, 3.2 mm is set.)

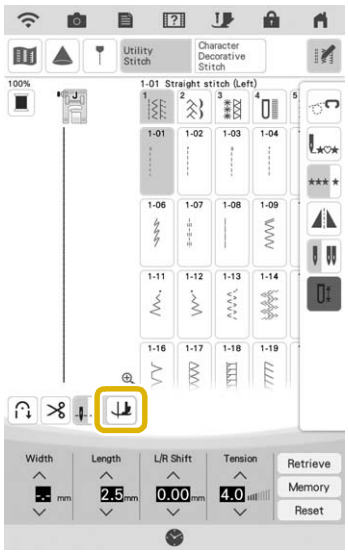


Note

- The pivot function can only be used with stitches where presser foot “J”, “N” or “X” (Couching foot) 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, “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.

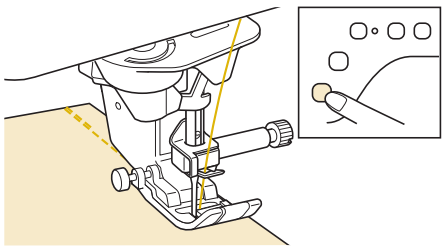


→ The key appears as .

Note

- To use the pivot function, the needle position should be set to . When the needle position is set to , the presser foot is raised automatically.

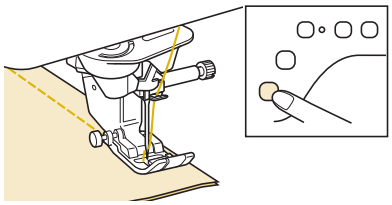
3 Place the fabric under the presser foot with the needle at the starting point of the stitching, and then press the “Start/Stop” button. The machine will begin sewing.



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.**

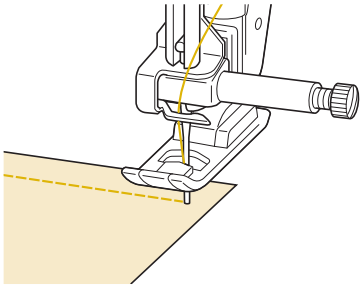


→ The machine stops with the needle in the fabric, and the presser foot is raised.

Memo

- If “Automatic Presser Foot Lift” in the machine settings screen is set to “ON”, the needle and the presser foot are raised when the machine is stopped.

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



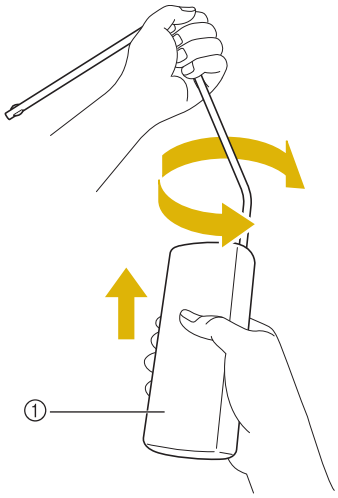
→ The presser foot is automatically lowered, and sewing continues.

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.

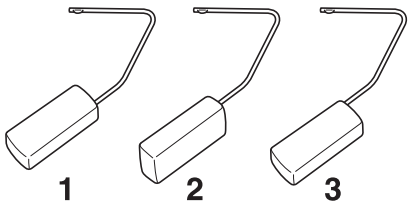
1 **Change the operating position of the knee lifter handle before inserting into the machine.**
Slide up the knee lifter handle slightly and rotate it while releasing pressure so handle will click into position.

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

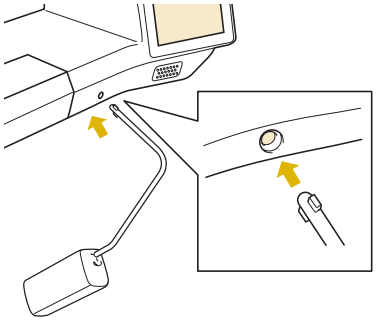


① Knee lifter handle

→ 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.**



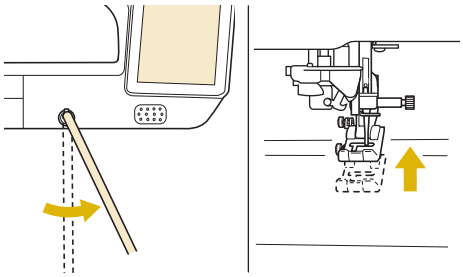
⚠ CAUTION

- **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

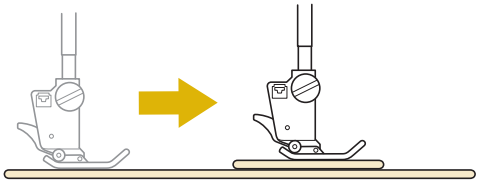
- **Be sure to keep your knee away from the knee lifter during sewing. If the knee lifter is pushed during machine operation, the needle may break or the thread tension may loosen.**

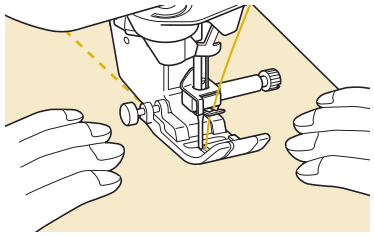
Memo

- 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 (page 82), or quilting (page 123).

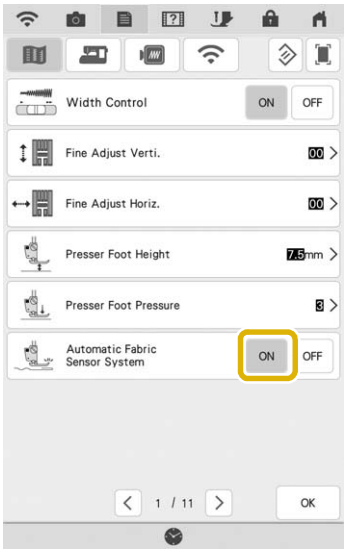




1 **Press .**

→ The settings screen appears.

2 **Set “Automatic Fabric Sensor System” to “ON”.**

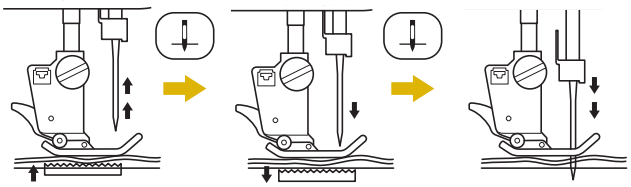


3 **Press OK to return to the original screen.**

Needle Position - Stitch Placement

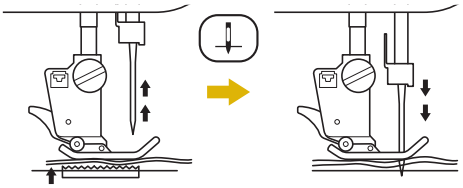
When the “Needle Position - Stitch Placement” is “ON”, the needle will be partially lowered for precise stitch placement and then press the “Needle Position” button to lower the needle completely. Each press of the “Needle Position” button changes the needle to the next position. When the “Needle Position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

“Needle Position - Stitch Placement” is “ON”



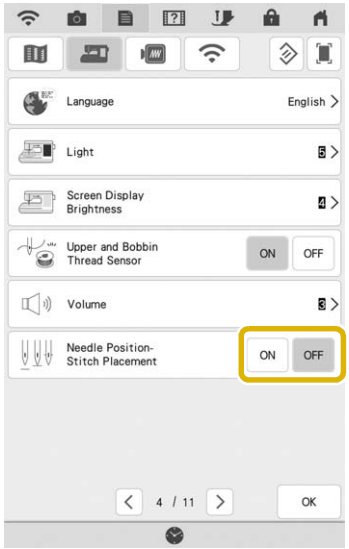
* When the needle is nearly lowered by pressing the “Needle Position” button, the feed dogs are lowered. At this time, the fabric can be shifted to finely adjust the needle drop position.

“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.

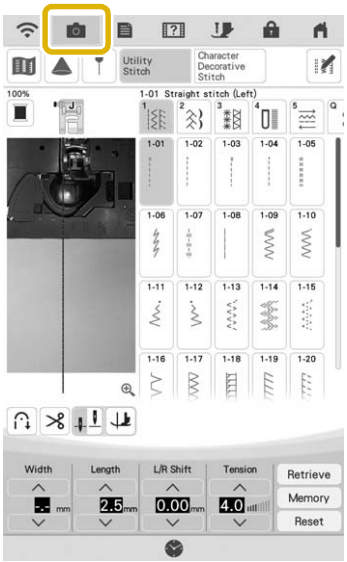
Checking the Needle Location in the Screen

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 NEEDLE DROP POSITION

④ OK

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 32). The files for camera images are saved as “.PNG”. A maximum of 100 camera images can be saved in one USB media.

GRID VIEW

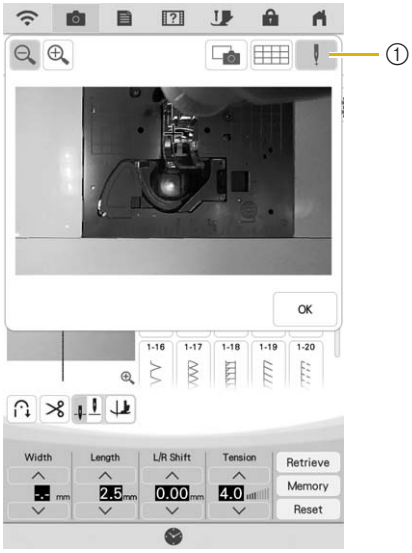
Press this key to display a grid.

Press OK to close the screen.

NEEDLE DROP POSITION

Press ! to show the needle drop position in the screen as “ + ”.

Lower the presser foot before pressing !. 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 THE PROJECTOR

Convenient Sewing Features by Using the Projector

Operations that can use the projector

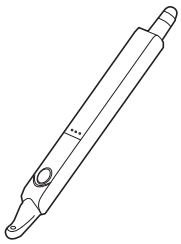
- Setting the guideline as a reference for your sewing position.
- Selecting a stitch pattern
- Editing the selected stitch pattern
- Displaying the needle drop point (when embroidering)
- Displaying the edited embroidery pattern (when embroidering)

⚠ CAUTION

- **Do not stare directly at the projector light. Otherwise, blindness may result.**

About the Dual Purpose Stylus

The included dual purpose stylus has two points. Use the soft point to operate the LCD screen and the hard point to operate the projector.



Installing a Battery in the Dual Purpose Stylus

A battery for the dual purpose stylus is not included with your machine. Use a new AAA alkaline battery (LR03).

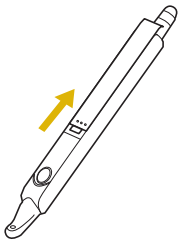
⚠ WARNING

- **Do not disassemble or modify the dual purpose stylus.**
- **Do not use metallic objects, such as tweezers or a metallic pen, when changing the battery.**
- **Do not throw the battery into fire or expose to heat.**
- **Remove battery immediately and stop using the machine if you notice abnormal odor, heat, discoloration, deformation or anything unusual while using or storing it.**

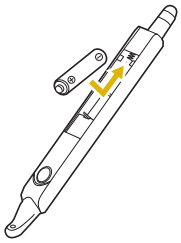
⚠ CAUTION

- **Remove the battery if you do not intend to use the dual purpose stylus for an extended period of time.**
- **Do not set the positive and negative ends of the battery in the wrong direction.**

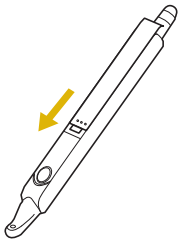
1 Slide the lid with your finger to remove it.



2 Install a new AAA alkaline battery (LR03) in the dual purpose stylus with the negative end (-) pointing up.

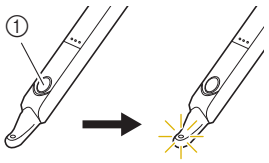


3 **Close the lid.**



Operating the Projector with the Dual Purpose Stylus

Press the button to light the hard point of the dual purpose stylus. After the built-in camera detects the light, you can operate the projector with the dual purpose stylus.



① Button

⚠ IMPORTANT

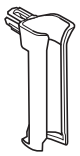
- **Do not put your hand, fabric or any object between the built-in camera and the light-emitting part of the dual purpose stylus, otherwise the built-in camera cannot detect the light from the dual purpose stylus.**

⚠ CAUTION

- **Do not insert any object into the light-emitting part of the dual purpose stylus, otherwise the stylus may be damaged.**

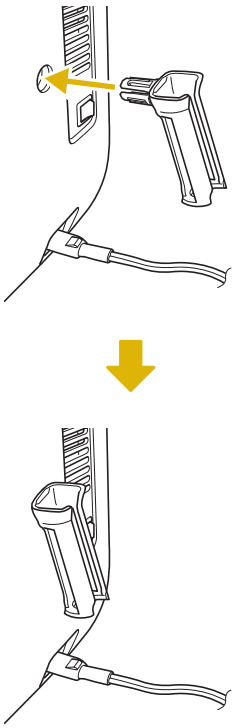
Using the Dual Purpose Stylus Holder

Attach the dual purpose stylus holder to keep the dual purpose stylus with the machine. The right side of the holder can be used to hold the dual purpose stylus.

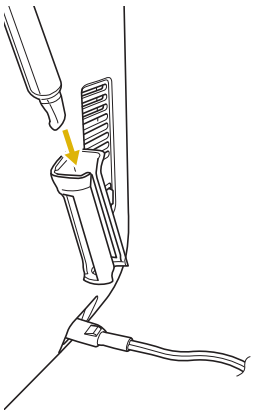


Dual purpose stylus holder

1 **Firmly insert the dual purpose stylus holder into the hole.**



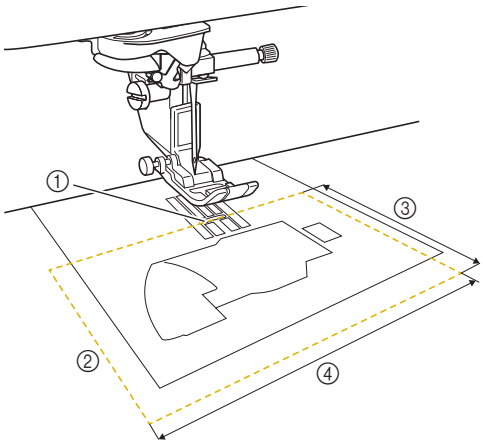
2 **With the flat part of the dual purpose stylus facing to the machine, insert it into the dual purpose stylus holder.**



PROJECTOR FUNCTIONS (UTILITY STITCHES AND CHARACTER/DECORATIVE STITCHES)

Projection Area of Projector

When the machine is sewing utility stitches or character/decorative stitches, the projection area of the projector is as shown below.



① Needle drop point
② Projection area
③ 7.6 cm (3 inches)
④ 12.7 cm (5 inches)

Note

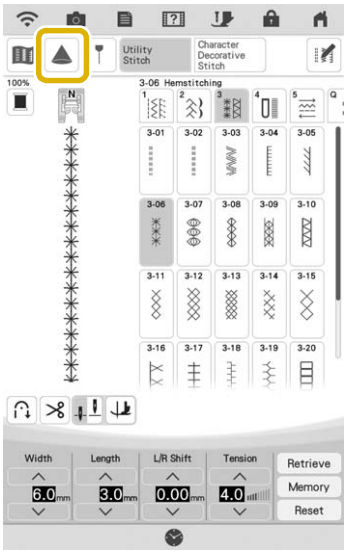
- A stitch pattern cannot be selected from the LCD while a stitch pattern is being projected by the projector. In order to select a stitch pattern from the LCD, press Cancel in the screen.

Projecting the Stitch Pattern with the Projector

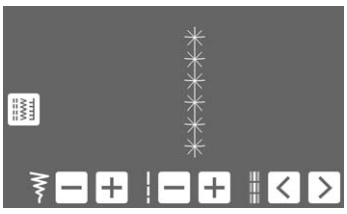
Using the projector, the selected stitch pattern can be projected onto the fabric.

1 **Select a stitch pattern.**

2 **Press** .

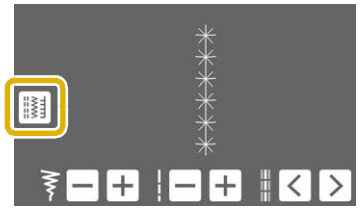


→ The selected stitch pattern and the adjustment keys are projected onto the fabric.



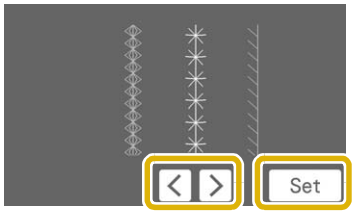
Selecting a Stitch Pattern with the Dual Purpose Stylus

1 **When the stitch pattern is projected onto the fabric, press [ ] with the dual purpose stylus.**



→ A stitch pattern can be selected.

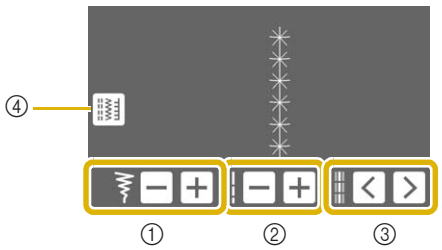
2 **Press [ ] [ ] with the dual purpose stylus until the desired stitch pattern is displayed, and then press [Set].**



Editing a Stitch Pattern Selected with the Dual Purpose Stylus

The stitch width, stitch length and "L/R Shift" can be changed for the stitch pattern projected by the projector.

1 **Use the dual purpose stylus to adjust the stitch width, stitch length and sewing position.**



① Stitch width setting
② Stitch length setting
③ "L/R Shift" setting
④ Press to select a different stitch pattern.
→ The specified settings are applied to the projected stitch pattern.

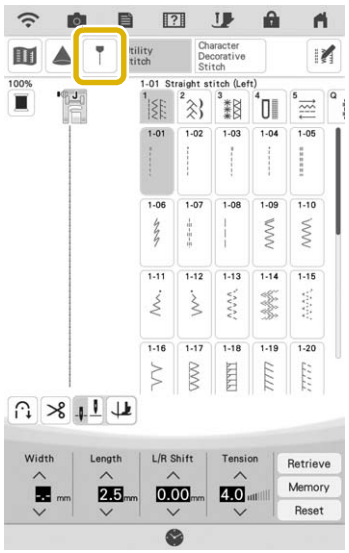
Memo

- When the stitch selection screen appears again in the LCD, the settings change to those specified with the dual purpose stylus.
- With twin needle sewing, the stitch width is specified based on the left needle.

Projecting the Guidelines with the Projector

With the guideline function, sewing can easily be done by following the lines and marks projected onto the fabric.

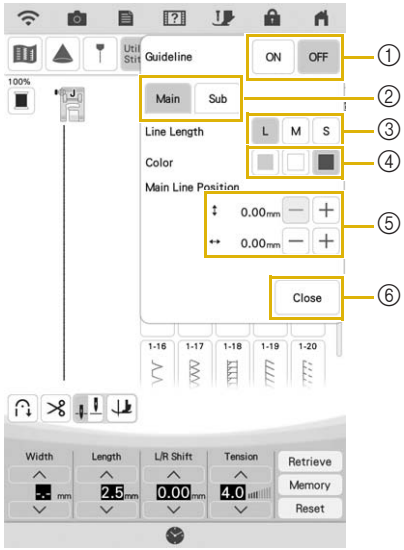
1 Press .



→ The guideline settings screen appears.

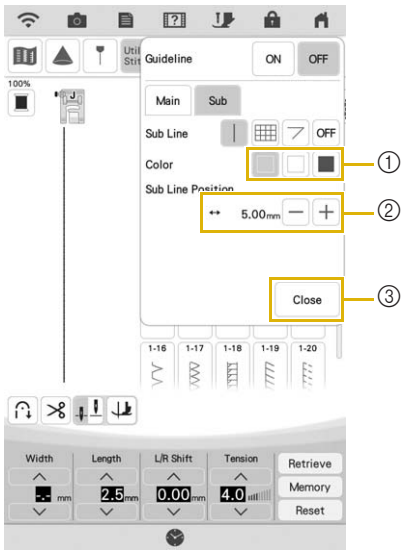
2 Specify the guideline settings.

Main guideline



① If the guidelines will not be used, select “OFF”.
② Select the guideline whose settings are to be specified.
③ Select the length of the main guideline.
④ Select the color of the main guideline.
⑤ Specify the position of the main guideline.
⑥ Press to finish specifying the guideline settings.

Sub guideline



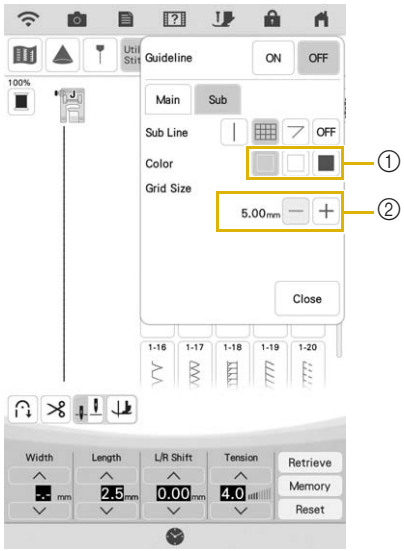
① Select the color of the sub guideline.
② Specify the position of the sub guideline.

Memo

- When or is selected, the position of the sub guideline is based on the position of the main guideline. When the position of the sub guideline is changed, change the position of the main guideline.

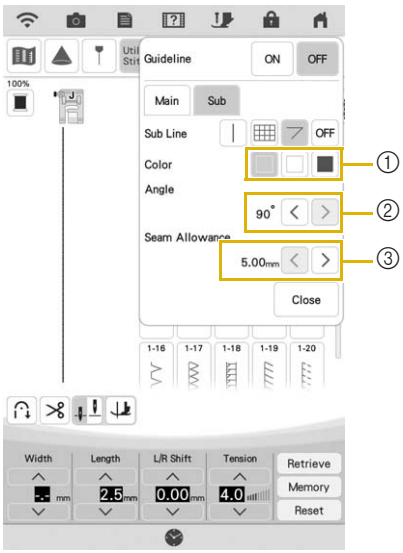
③ Press to finish specifying the guideline settings.

Sub guideline



① Select the color of the sub guideline.
② Specify the grid size of the sub guideline.

Sub guideline



① Select the color of the sub guideline.
② Specify the angle of the sub guideline.
③ Specify the seam allowance of the sub guideline.

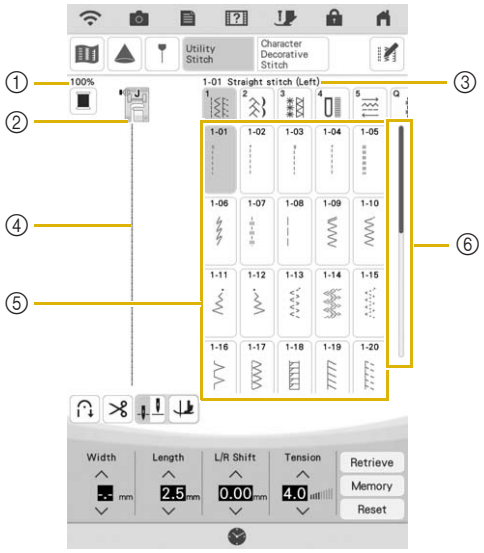
Chapter *3*

Utility Stitches

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.



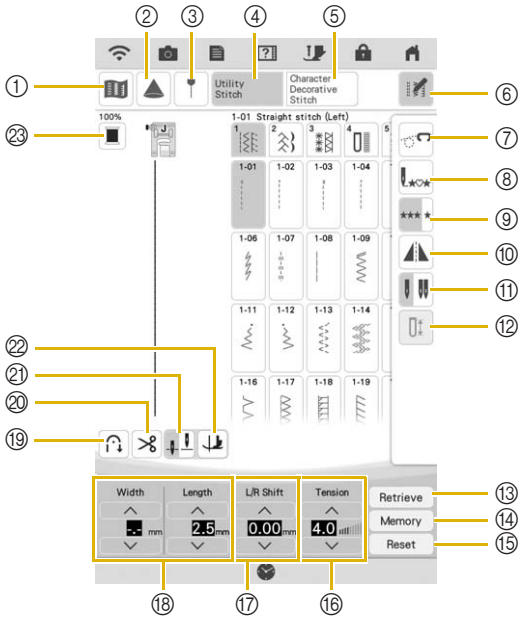
No.	Display	Key Name	Explanation	Page
①	100%	Stitch pattern display size	Shows the approximate size of the stitch pattern selected. 100% : Nearly the same size as the sewn stitch pattern * The actual size of the sewn stitch pattern may differ depending on the type of fabric and thread that is used.	105
②		Presser foot display	Shows the presser foot code. Attach the presser foot indicated in this display before sewing.	72
③	1-01 Straight stitch (Left)	Selected stitch display	Shows the name and code number of the selected stitch.	105
④		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.	92, 105
⑤		Stitch selection screen	Press the key for the stitch pattern you want to sew. Use to change to different stitch groups.	105
⑥		Scroll bar	Slide the scroll bar to move the pages of stitch selection screen.	104

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

■ Key Functions

Note

- Editing function keys are found after pressing .



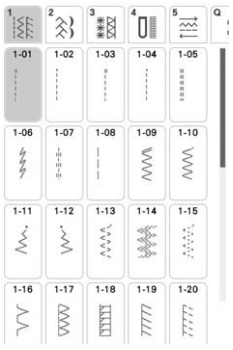
No.	Display	Key Name	Explanation	Page
①		Image key	Press this key to display an enlarged image of the selected stitch pattern.	106
②		Projector key	Press this key to use projector functions.	96
③		Guideline marker key	Press this key to display or set the guideline marker for the sewing line. The guideline marker makes quilt piecing or aligning stitching on the fabric edge easier.	98
④	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.	105
⑤	Character Decorative Stitch	Character/Decorative stitch key	Press this key to select character or decorative stitch patterns.	158
⑥		Edit key	Press this key to display editing function keys on the screen.	166
⑦		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.	126
⑧		Back to beginning key	When sewing is stopped, press this key to return to the beginning of the stitch.	106
⑨		Single/Repeat sewing key	Press this key to choose single stitches or continuous stitches.	106
⑩		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.	105
⑪		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.	64
⑫		Slit length key	Press this key to manually set the buttonhole length when a buttonhole stitch is selected.	144
⑬	Retrieve	Retrieve key	Press this key to retrieve a saved stitch pattern.	107
⑭	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.	107
⑮	Reset	Reset key	Press this key to return the selected stitch pattern saved settings to the default settings.	85-87

No.	Display	Key Name	Explanation	Page
⑯		Thread tension key	Shows the automatic thread tension setting of the currently selected stitch pattern. You can use ∧ and ∨ to change the thread tension settings.	87
⑰		"L/R Shift" key	Press ∧ to shift the stitch pattern to the right or press ∨ to shift the stitch pattern to the left. This feature is not available for all stitch patterns. Only those applicable will be shifted. The machine default setting is highlighted.	86
⑱		Stitch width and stitch length key	Shows the zigzag width and stitch length settings of the currently selected stitch pattern. You can use ∧ and ∨ to adjust the zigzag width and stitch length settings.	85, 86
⑲		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 stitch pattern, the machine may sew reverse stitches).	79
⑳		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 stitch pattern, the machine may sew reverse stitches) and trim the threads after sewing.	88
㉑		Needle position setting key	Press this key to select the needle stop position to be up or down. You can also check the needle mode setting (single or twin). Single needle/down position Single needle/up position Twin needle/down position Twin needle/up position	64, 89
㉒		Pivot key / Auto Up 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.	89
㉓		Thread color change key	Press this key to change the thread color displayed on the screen.	106

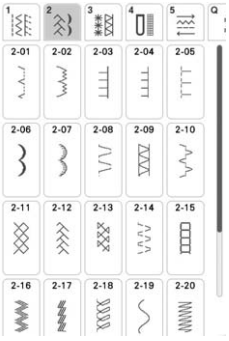
■ Stitch Selection Screens

There are seven categories of Utility Stitches.

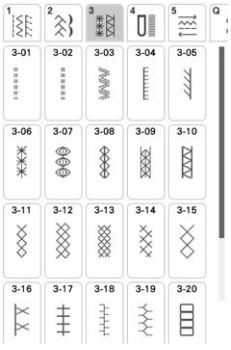
Straight/Overcasting



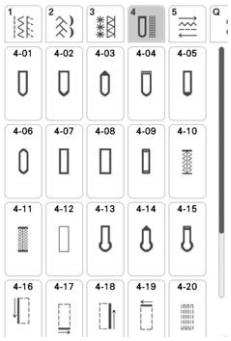
Decorative Stitches



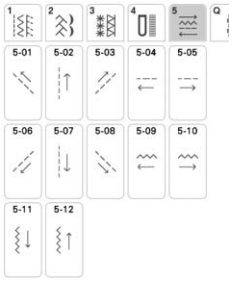
Heirloom Stitches



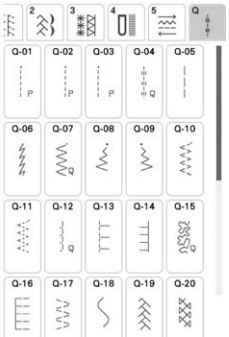
Buttonholes/Bar tacks



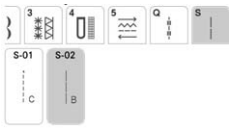
Multi-directional Sewing



Quilting Stitches



Other 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.**

Memo

- Swipe the key of a category or stitch pattern sideways to display hidden categories.

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

Memo

- For details on each stitch, refer to "STITCH SETTING CHART" on page 206.

■ 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.

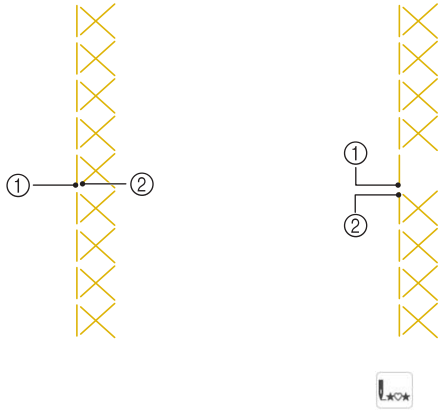
The key will display as .

■ 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.

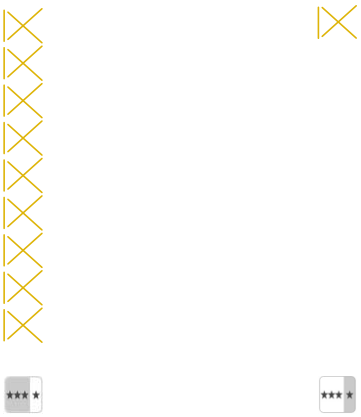
Press before start sewing, to return to the beginning of the stitch.

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

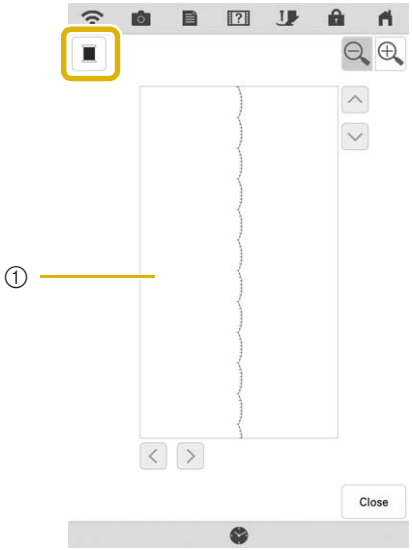
You can display an image of the selected stitch. You can check and change the colors of the image of the screen.

1 Press .

→ An image of the selected stitch is displayed.

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

* Press to display an enlarged image of the stitch.



① Stitch screen

Memo

- The color changes every time you press .

3 Press Close to go back to the original screen.

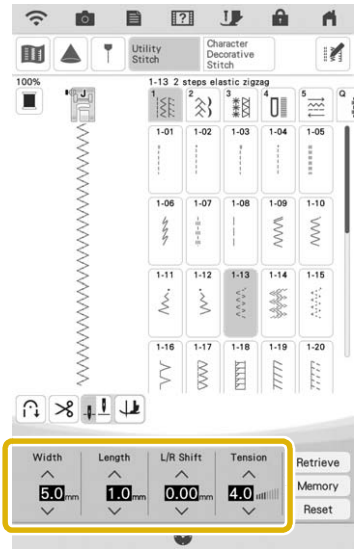
Saving Your Stitch Settings

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.

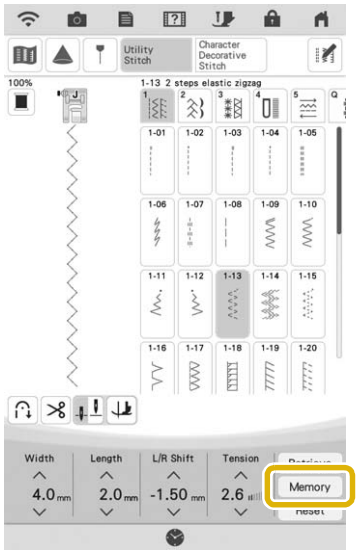
■ Saving Settings

1 **Select a stitch. (Example: 1-13)**

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 107.

■ Retrieving Saved Settings

1 **Select a stitch.**

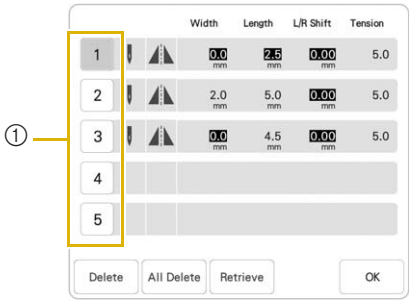
Memo

- 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.

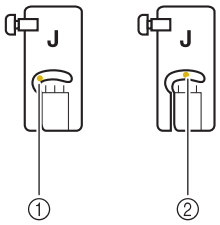
Memo

- 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.

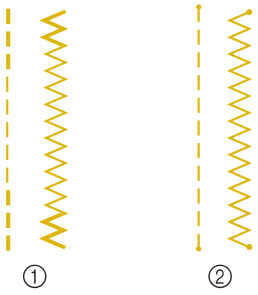
SEWING THE STITCHES

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

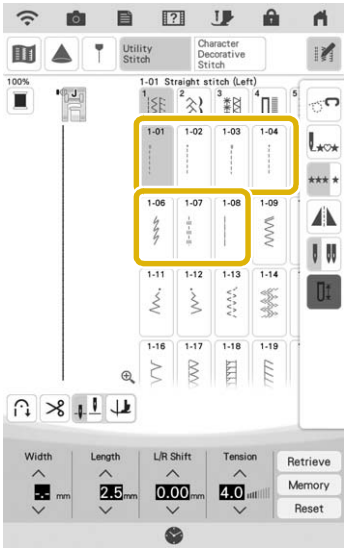


① Reverse stitch
② Reinforcement stitch

Memo

- If the selected stitch has a double mark " ‖ " at the top of the key display, you can sew reverse stitches holding the "Reverse Stitch" button (page 79).
- 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.

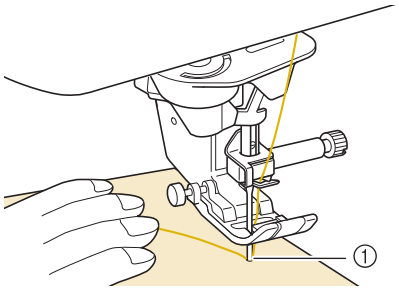
1 Select a stitch.



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 push the “Needle Position” button with your right hand to insert the needle into the fabric.**

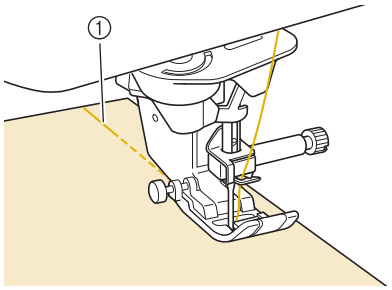


① Sewing start position

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.**



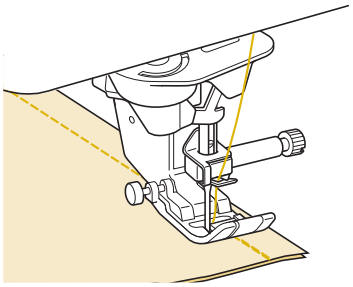
① Reverse stitches or reinforcement stitches

→ The machine will begin sewing slowly.

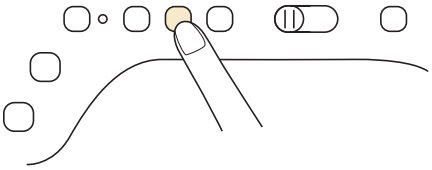
⚠ CAUTION

- **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.**

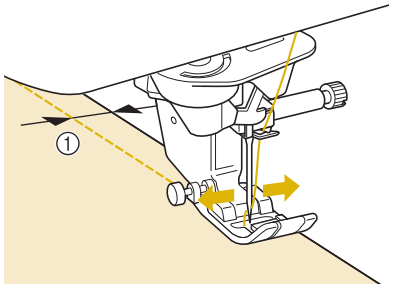


Memo

- 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.

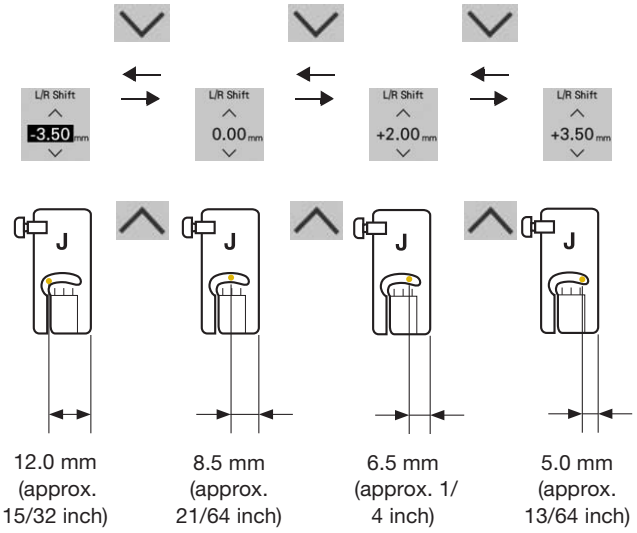
■ Changing the Needle Position (Left or Middle Needle Position Stitches Only)

When you select left or middle needle position stitches, you can use ▽ and △ in the L/R Shift 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

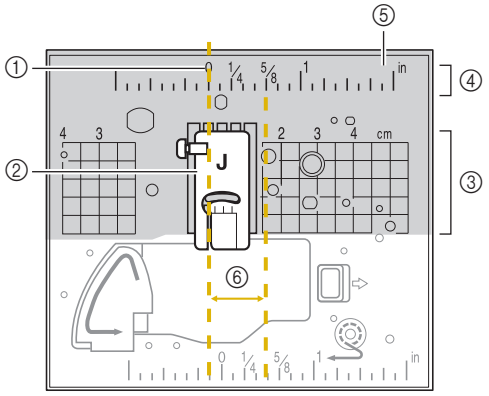


12.0 mm (approx. 15/32 inch) | 8.5 mm (approx. 21/64 inch) | 6.5 mm (approx. 1/4 inch) | 5.0 mm (approx. 13/64 inch)

■ Aligning the Fabric with a Mark on the Needle Plate or Bobbin Cover (with Mark)

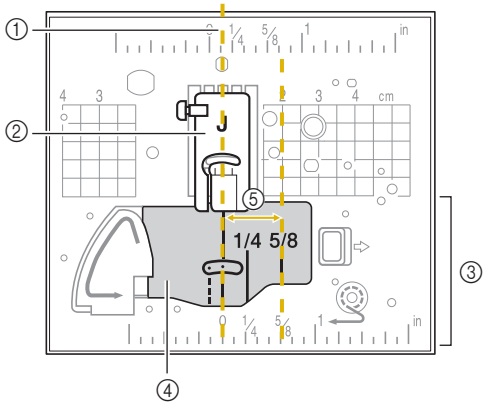
While sewing, align the edge of the fabric with the 16 mm (approx. 5/8 inch) mark on the needle plate or bobbin cover (with mark) depending on the needle position (left or middle (center) needle position stitches only).

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)

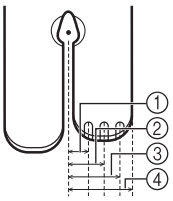
For stitches with a middle (center) needle position (Stitch width: 3.5 mm)

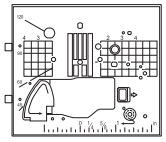


① Seam
② Presser foot
③ Inches
④ Bobbin cover (with mark)
⑤ 16 mm (5/8 inch)

■ 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

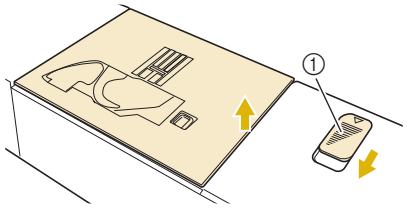
- **Always use the straight stitch foot in combination with the straight stitch needle plate.**

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 (refer to page 69, 73).**

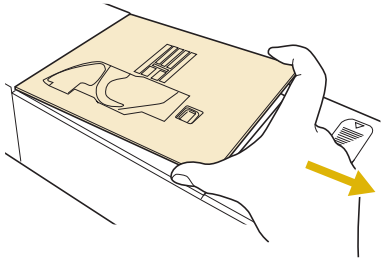
3 **Remove the flat bed attachment or the embroidery unit if either are attached.**

4 **Slide the needle plate lever toward you.**

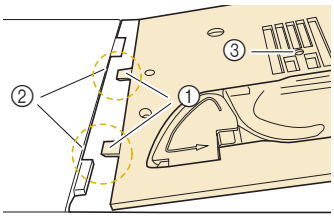


① Slide toward you.
→ The needle plate opens.

5 **Slide out the regular needle plate with your right hand to remove it.**

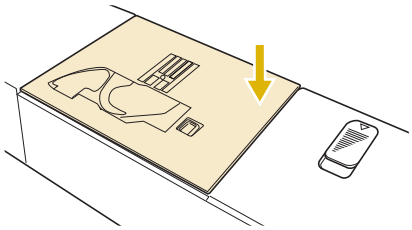


6 **Insert the tabs on the straight stitch needle plate into the notches in the machine.**



① Tabs
② Notches
③ Round hole

7 **Press down on the right side of the straight stitch needle plate to secure it.**



8 **Select any of the straight stitches.**

Note

- Selecting other stitches will cause an error message to be displayed.
- After installing straight stitch needle plate, you must turn the machine OFF, then back to ON to reset the straight stitch settings.

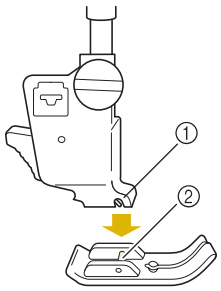
Memo

- 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 L/R Shift.

⚠ 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.**

9 Insert needle and attach the straight stitch foot.



① Notch
② Pin

10 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 and the presser foot "J".

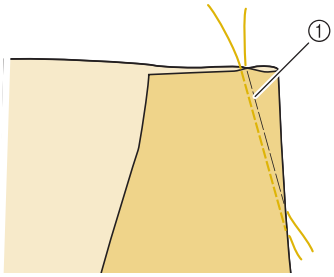
Memo

- 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.

Dart Seam

1 Select and attach presser foot "J".

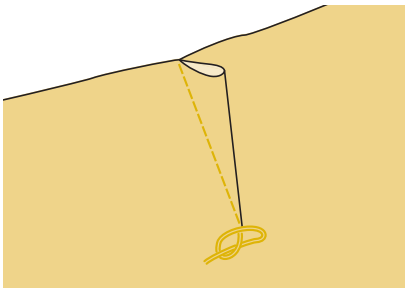
2 Sew a reverse stitch at the beginning of the dart and then sew from the wide end to the other end without stretching the fabric.



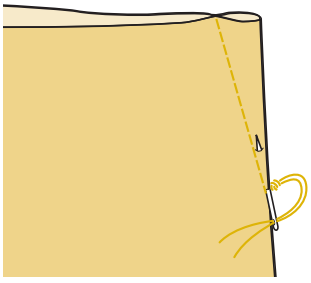
① Basting

3 Cut the thread at the end leaving 50 mm (approx. 1-15/16 inches), and then tie both ends together.

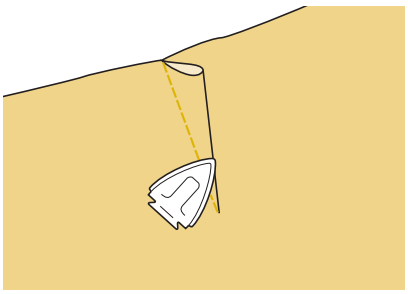
* Do not sew a reverse stitch at the end.



4 Insert the ends of the thread into the dart with a hand sewing needle.



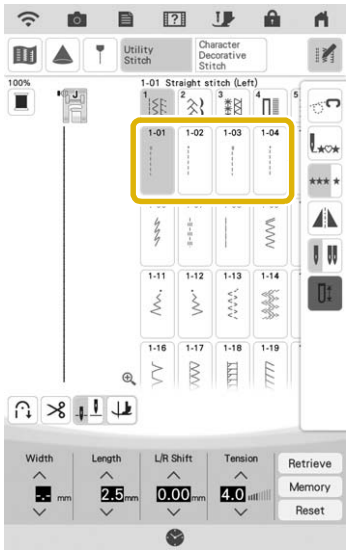
5 Iron the dart to one side so that it is flat.



Gathering

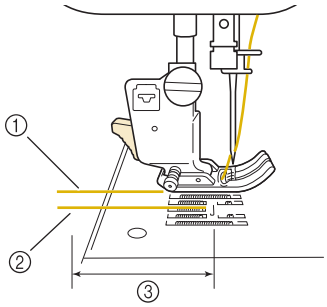
Use on waists of skirts, sleeves of shirts, etc.

1 **Select a straight stitch and attach presser foot “J”.**



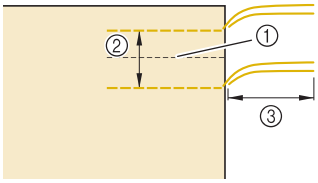
2 **Set the stitch length to 4.0 mm (approx. 5/32 inch) and the thread tension to approximately 2.0 (weaker tension).**

3 **Pull the bobbin and upper threads out by 50 mm (approx. 1-15/16 inches) (page 59).**



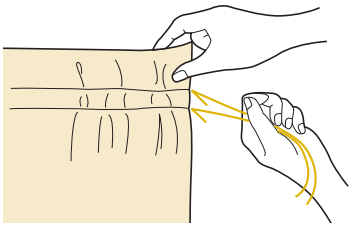
① Upper thread
② Bobbin thread
③ About 50 mm (approx. 1-15/16 inches)

4 **Sew two rows of straight stitches parallel to the seam line, then trim excess thread leaving 50 mm (approx. 1-15/16 inches).**

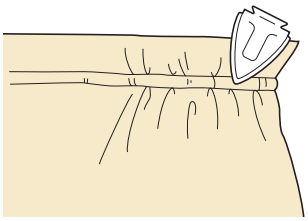


① Seam line
② 10 to 15 mm (approx. 3/8 inch to 9/16 inch)
③ About 50 mm (approx. 1-15/16 inches)

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.**

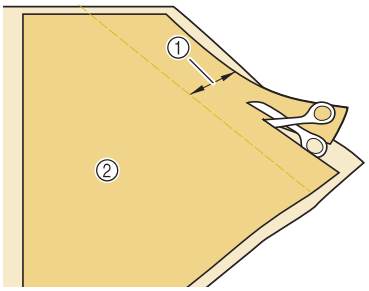
Flat Fell Seam

Use for reinforcing seams and finishing edges neatly.

1 **Select** **and attach presser foot “J”.**

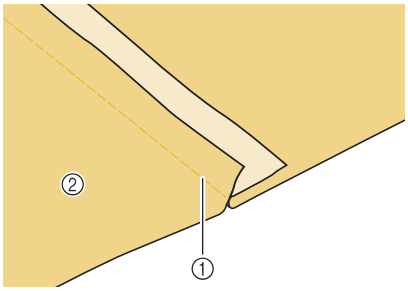
2 **Sew the finish line, then cut half of the seam allowance from the side on which the flat fell seam will lie.**

* 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.



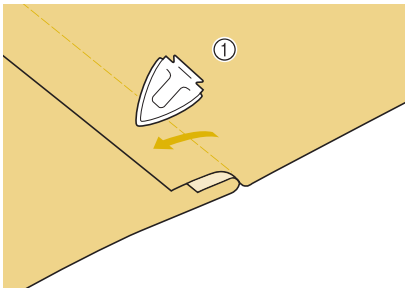
① About 12 mm (approx. 1/2 inch)
② Wrong side

3 **Spread the fabric out along the finish line.**



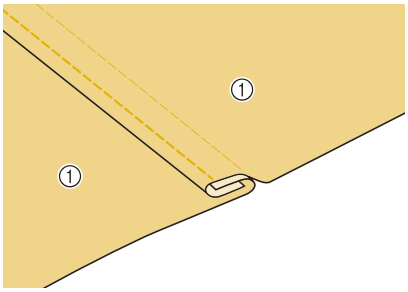
① Finish line
② Wrong side

4 **Lay both seam allowances on the side of the shorter seam (cut seam) and iron them.**



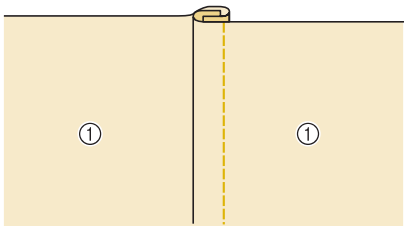
① Wrong side

5 **Fold the longer seam allowance around the shorter one, and sew the edge of the fold.**



① Wrong side

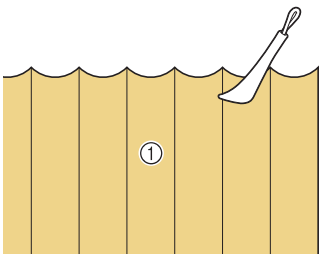
Finished flat fell seam



① Surface

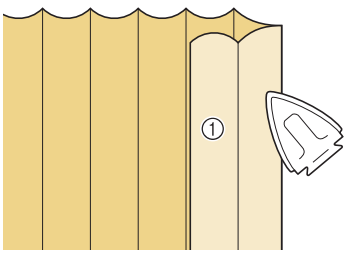
Pintuck

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.**

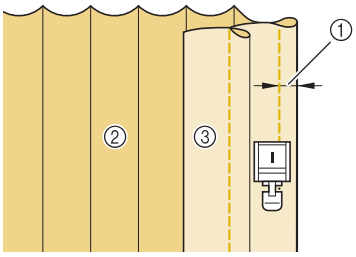


① Surface

3 **Select** **and attach presser foot “I”.**

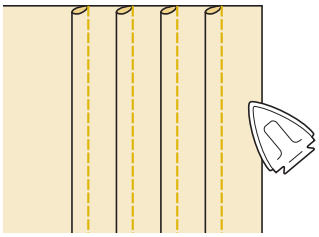
4 Sew a straight stitch along the fold.

* 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 “ ” at the top of the key display, you can sew reverse stitches by holding the “Reverse Stitch” button. (page 79)
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 (page 79).

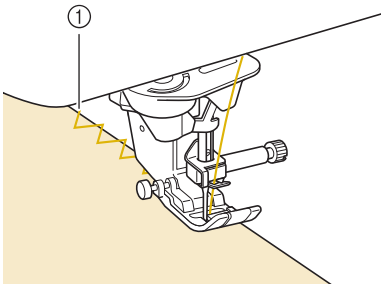
Stitch	Stitch name	Presser foot
1-09	Zigzag stitch	J
1-10	Zigzag stitch	J
1-11	Zigzag stitch (Right)	J
1-12	Zigzag stitch (Left)	J

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.

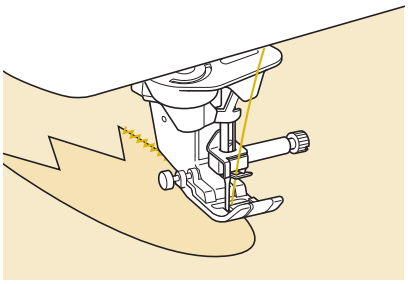


① Needle drop position

■ Appliqué (Using a Zigzag Stitch)

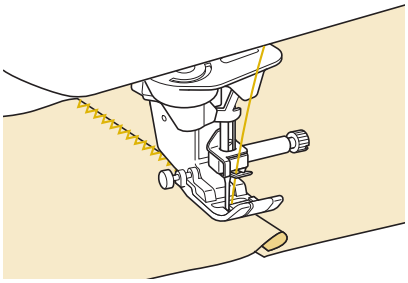
Attach the appliqué material using a temporary spray adhesive or basting, and then sew it.

* Sew a zigzag stitch while positioning the right-hand side needle drop point just outside the edge of the fabric.



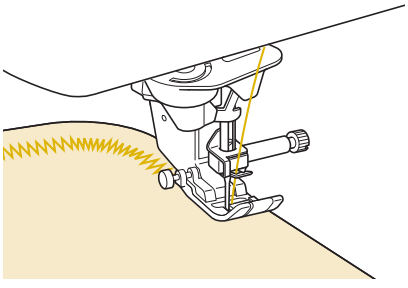
■ Patchwork (for Crazy Quilt)

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.



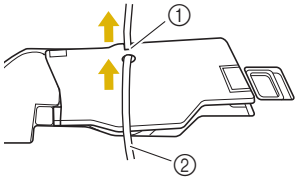
■ Sewing Curves (Using a Zigzag Stitch)

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)

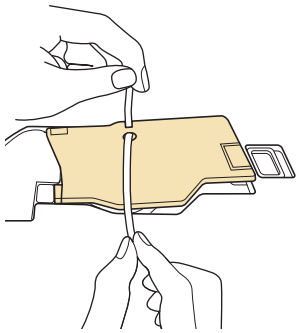
1. **Remove the bobbin cover from the machine (page 58).**
2. **Thread the gimp thread through the hole in the cord guide bobbin cover from bottom to top. Position the thread in the notch at the back of the cord guide bobbin cover.**



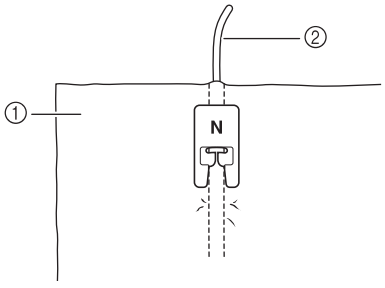
① Notch
② Gimp thread

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.

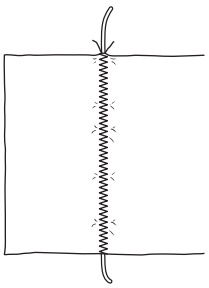


4. **Set the zigzag width from 2.0-2.5 mm (approx. 1/16 - 3/32 inch).**
5. **Attach presser foot "N".**
6. **Position the fabric right side up on top of the cord and place the cord to the rear of the machine under the presser foot.**



① Fabric (right side)
② Gimp thread

7. **Lower the presser foot and start sewing to make a decorative finish.**



Elastic Zigzag Stitches

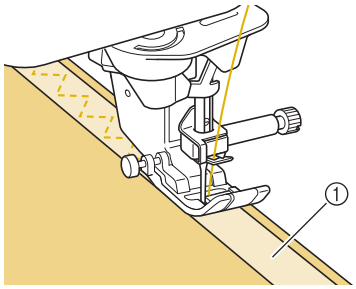
Use elastic zigzag stitches for tape attaching, overcasting, darning, or a wide variety of other uses.

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

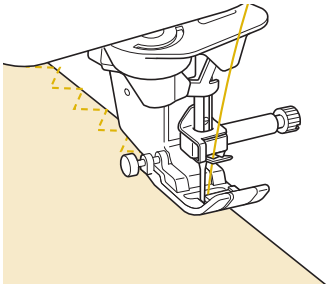
While stretching the tape flat, sew it to the fabric.



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

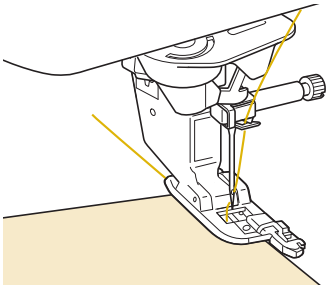
Use for the edge of seams in skirts or trousers, and the edge of all cuttings. Use presser foot “G”, presser foot “J”, or the side cutter attachment depending on the kind of overcasting stitch you select.

■ Overcasting Using Presser Foot “G”

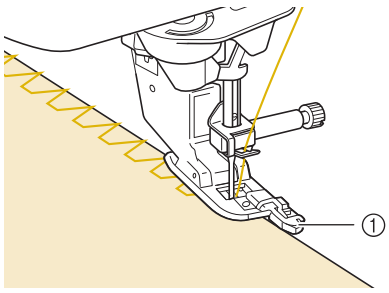
Stitch	Stitch name	Presser foot
1-16	Overcasting stitch	G
1-17	Overcasting stitch	G
1-18	Overcasting stitch	G

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.



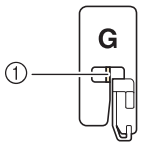
3 Sew along the presser foot guide.



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.**



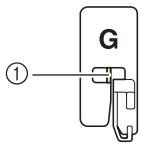
① The needle should not touch the center bar

- **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.**

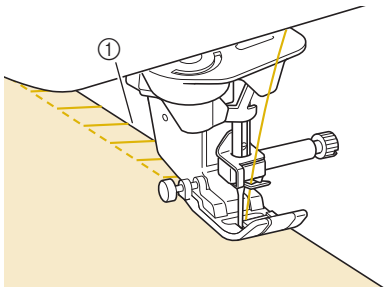


① Center bar

■ 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.

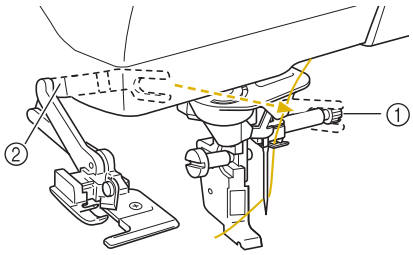
⚠ CAUTION
- **Recommended stitches are noted “S” in the lower right corner, therefore sure to only select one of these stitches listed below. Using another stitch may cause the needle to hit the presser foot and break, possibly causing injury.**

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	With side cutter	S
1-26	With side cutter	S
1-27	With side cutter	S
1-28	With side cutter	S
1-29	With side cutter	S

1. **Select a stitch.**
2. **Follow the steps on page 72 to remove the presser foot.**
3. **Thread the needle (page 61).**

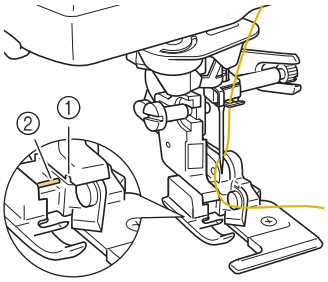
4 **Position the fork on the side cutter's operating lever onto the needle clamp screw.**



① Needle clamp screw
② Operating lever

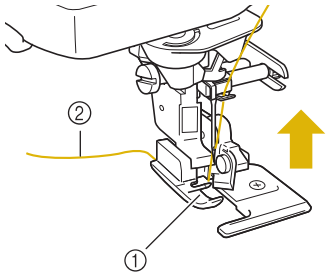
Memo
- Make sure that the fork of the operating lever is set onto the needle screw firmly.

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.**



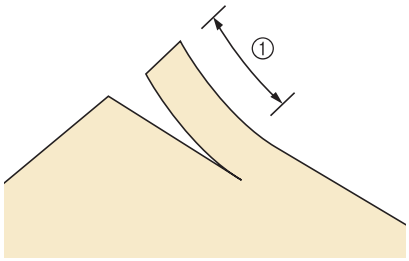
① Notch in presser foot holder
② Pin
→ The side cutter is attached.

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.**



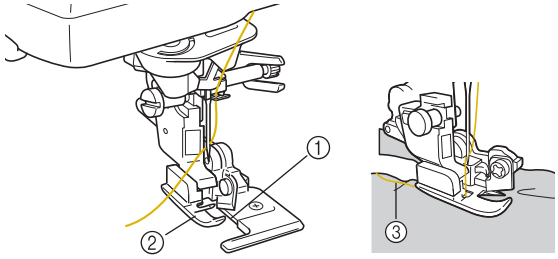
① Presser foot
② Upper thread

7 **Make a cut of approximately 20 mm (approx. 3/4 inch) in the fabric.**



① 20 mm (approx. 3/4 inch)

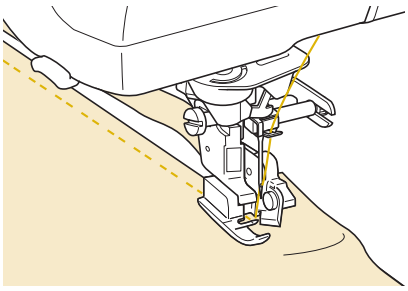
8 **Position the fabric so that the right side of the cut is on top of the guide plate and the left side of the cut is underneath the presser foot.**



① Guide plate (lower knife)
② Presser foot
③ Upper thread

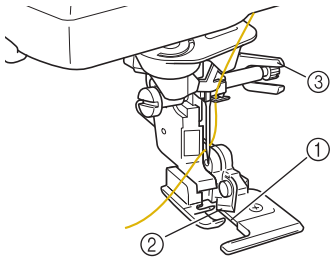
Memo
- If the fabric is not positioned correctly, the fabric will not be cut.

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.**



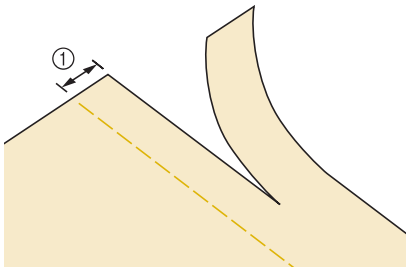
① Guide plate (lower knife)
② Upper knife
③ Operation lever

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.

■ Sewing Straight Stitches While Using the Side Cutter (Sold Separately)

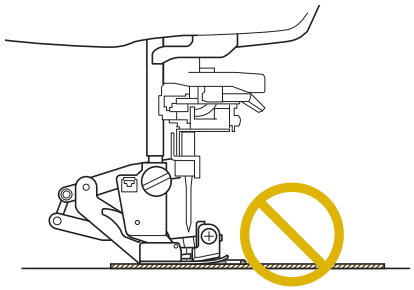
The seam margin should be approximately 5 mm (approx. 3/16 inch).



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 Foot Controller” on page 78 and /or “Using the Knee Lifter” on page 90).
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	
		J	C
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	
		C	C
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	
		C	C
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 (only quilting stitches marked with “Q”) is selected, a finer stitch width can be set than that available with stitch patterns in other categories.

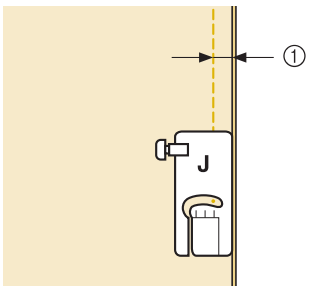
■ Piecing

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".

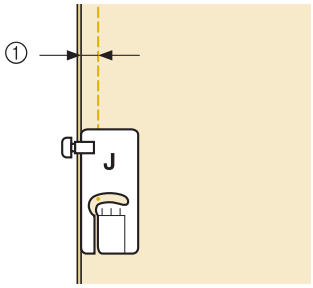
2 Align the edge of the fabric with the edge of the presser foot, and start sewing.

* To sew a 6.5 mm (approx. 1/4 inch) seam allowance along the right 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 v in the L/R Shift display.

Memo

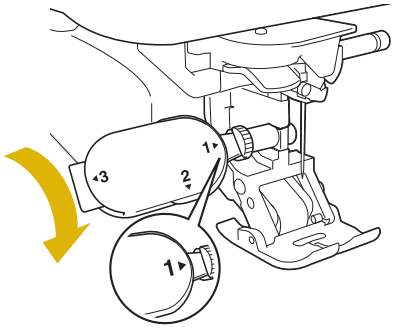
- Using a straight stitch (middle needle position) makes it easier to sew smoothly (page 108).
- In the case Q-01(center, at L/R Shift 3.5 mm) is selected, if the guideline marker is set at 10.0 mm (3.5 mm plus 6.5 mm, close to 1/4 inch), you can sew piecing by referring to the guideline marker.

■ Quilting

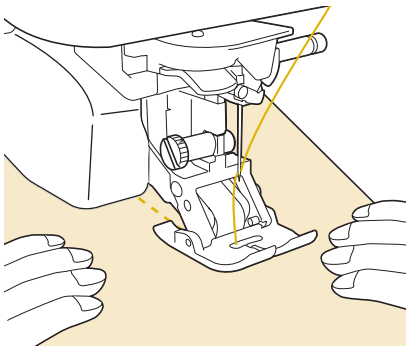
Sewing the quilt top, batting, and backing together is called quilting. You can sew the quilt with the dual feed foot to keep the quilt top, batting, and backing from sliding. The dual feed foot has a motorized belt that moves together with the feed dogs in the needle plate during sewing.
For straight 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 (page 74).



3 Place one hand on each side of the presser foot to hold the fabric secure while sewing.

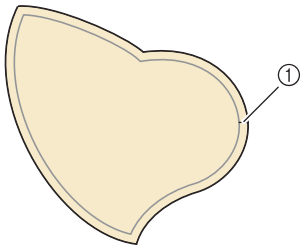


Memo

- 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.

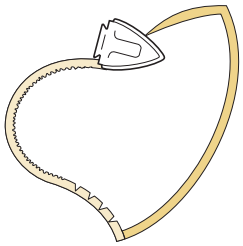
■ Appliqué

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.**

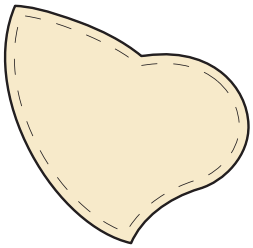


① Seam allowance: 3 to 5 mm (approx. 1/8 to 3/16 inch)

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.**

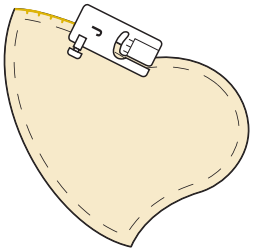


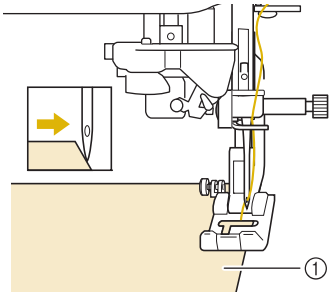
3 **Turn the appliqué over, and attach the stabilizer with basting pins or a basting stitch.**

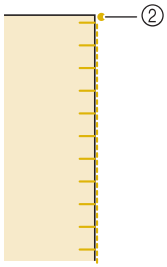


4 **Select** **and attach presser foot "J".**

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

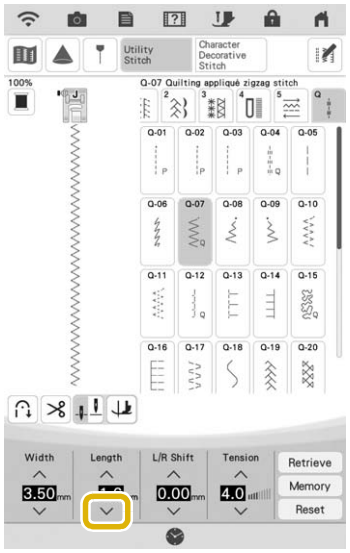
■ Quilting with Satin Stitches

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 (page 78).**

2 **Select** **and attach presser foot "J".**

3 **Press** **in the length display to shorten the stitch length.**

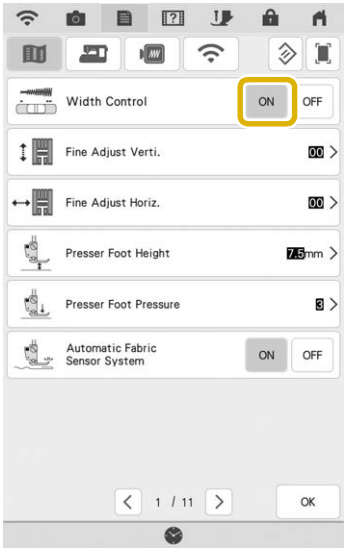


Memo

- 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

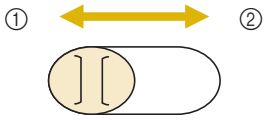
- You can use the speed control slide to adjust the stitch width. Use the foot controller to adjust the sewing speed.

6 **Press** OK **.**

→ The display will return to the original screen.

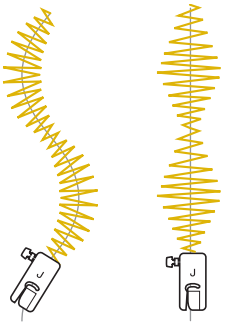
7 **Start sewing.**

* 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



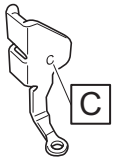
8 **When you are finished sewing, set the "Width Control" back to "OFF".**

■ 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.



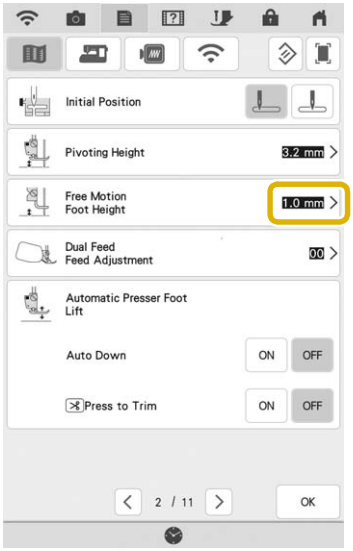
Free motion quilting foot "C"

⚠ 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.**

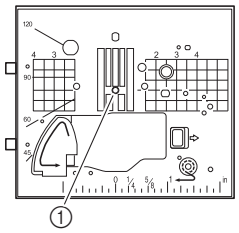
Memo

- 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. Touch the number to select the height that the quilting foot is raised above the fabric. Increase the setting, 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 (page 111).



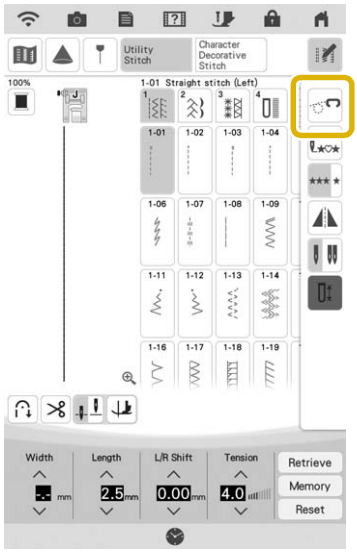
① Round hole

Memo

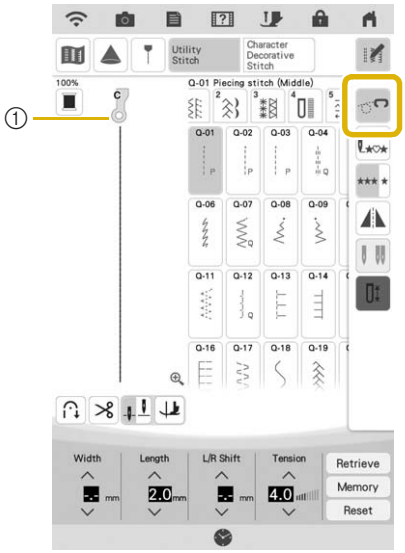
- Notice this needle plate has a round hole for the needle.

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.

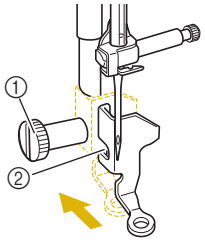


① Free motion quilting foot "C"

→ 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 (page 73).**

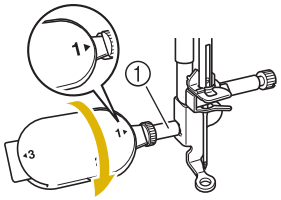
5 **Attach free motion quilting foot "C" at the front with the presser foot holder screw aligned with the notch in the quilting foot.**



① Presser foot holder screw
② Notch

Note
- Make sure that the quilting foot is attached properly and not slanted.

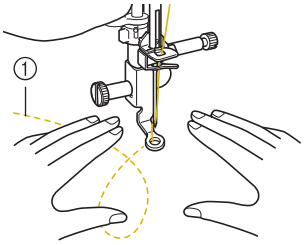
6 **Hold the quilting foot in place with your right hand, and tighten the presser foot holder screw using the multi-purpose screwdriver with your left hand.**



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.

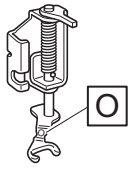
9 **After sewing, make sure to remove the straight stitch needle plate and presser foot "C", and reinstall the regular needle plate.**

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 L/R Shift.

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 "STITCH SETTING CHART" on page 206.



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 (page 87). Test with a sample piece of quilting fabric.

1 **Press to set the machine to free motion sewing mode.**

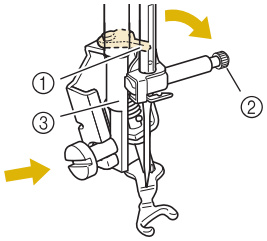
→ The key appears as , the quilting foot is raised to the necessary height, and then the feed dogs are lowered for free motion sewing.

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 (page 73).**

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.**

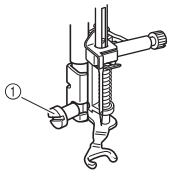


① Pin
② Needle clamp screw
③ Presser bar

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.**

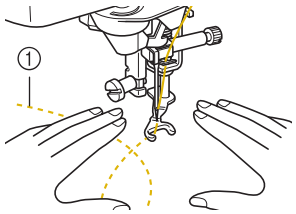
* Use the multi-purpose screw driver setting the position to "1". (page 23)



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.**

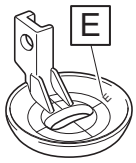
→ Rotate the handwheel toward you (counterclockwise) to raise the feed dogs.

Memo

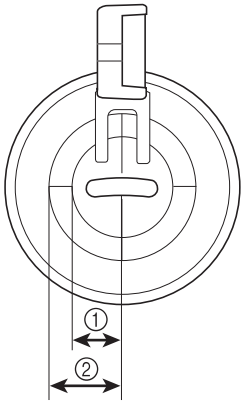
- Do not be discouraged with your initial results. The technique requires practice.

■ 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



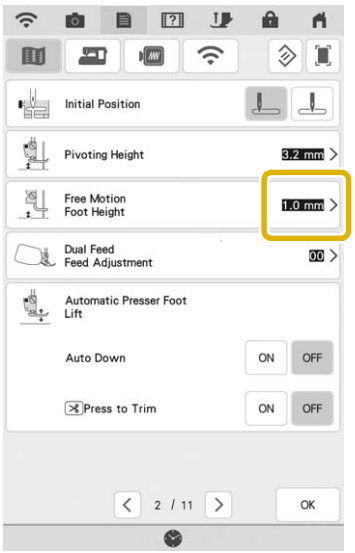
① 6.4 mm (approx. 1/4 inch)
② 9.5 mm (approx. 3/8 inch)

⚠ 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 (page 28). Touch the number to select the height that the quilting foot is raised above the fabric. Increase the setting, 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 (page 87). Test with a sample piece of quilting fabric.

1 **Select .**

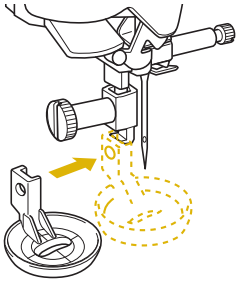
2 **Press to set the machine to free motion sewing mode.**

→ The key appears as , the quilting foot is raised to the necessary height, then the feed dogs are lowered for free motion sewing.

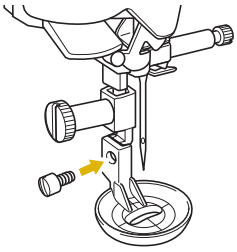
3 **Follow the steps on page 72 to remove the presser foot.**

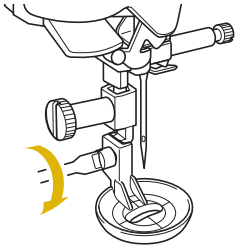
4 **Remove the presser foot holder (page 73) and the screw.**

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 screwdriver (large).**

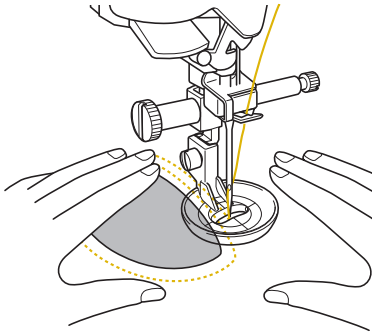


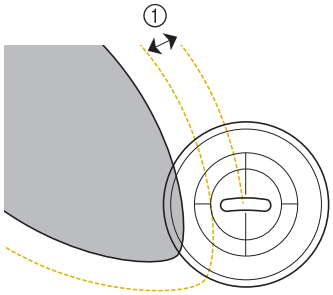


⚠ CAUTION

- **Be sure to securely tighten the screws with the included screwdriver (large). Otherwise, the needle may touch the quilting foot, causing it to bend or break.**

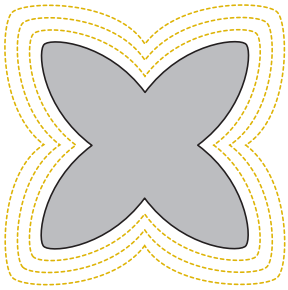
7 **Using the measurement on the quilting foot as a guide, sew around the motif.**





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

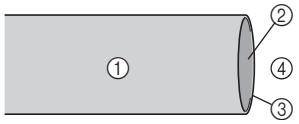
Secure the bottoms of skirts and pants with a blind hem. Two stitches are available for blind hem stitching.

Stitch	Stitch name	Presser foot
2-01	Blind hem stitch	R
2-02	Blind hem stitch stretch	R

Memo

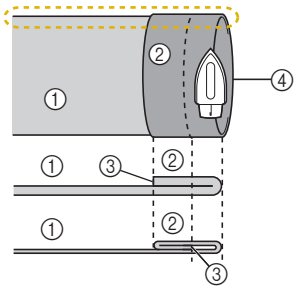
- When the size of cylindrical pieces is too small to slide onto the arm or the length is too short, the fabric will not feed and desired results may not be achieved.

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.



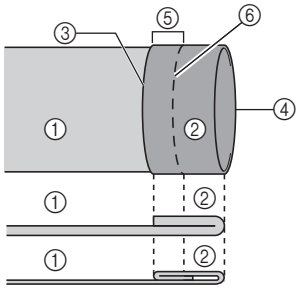
① Wrong side of fabric
② Right side of Fabric
③ Edge of fabric
④ Desired edge of hem

<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.



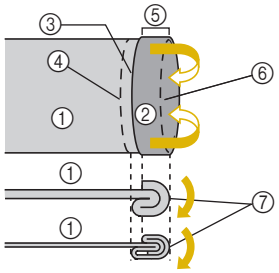
① Wrong side of fabric
② Right side of fabric
③ Edge of fabric
④ Desired edge of hem
⑤ 5 mm (3/16 inch)
⑥ Basting

<Thick fabric>

<Normal fabric>

<Seen from the side>

4 Fold back the fabric inside along the basting.



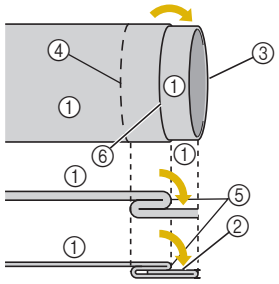
① Wrong side of fabric
② Right side of fabric
③ Edge of fabric
④ Desired edge of hem
⑤ 5 mm (3/16 inch)
⑥ Basting
⑦ Basting point

<Thick fabric>

<Normal fabric>

<Seen from the side>

5 Unfold the edge of fabric, and position the fabric with the wrong side facing up.



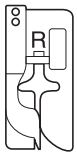
① Wrong side of fabric
② Right side of fabric
③ Edge of fabric
④ Desired edge of hem
⑤ Basting point
⑥ Basting

<Thick fabric>

<Normal fabric>

<Seen from the side>

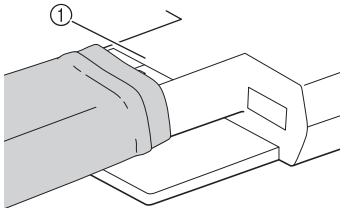
6 Attach blind stitch foot "R".



7 Select 2-01 or 2-02.

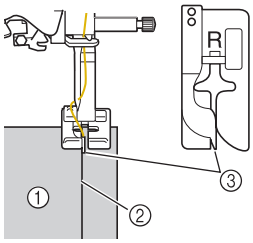
8 **Remove the flat bed attachment to use the free-arm.**

9 **Slide the item that you wish to sew onto the free arm, make sure that the fabric feeds correctly, and then start sewing.**



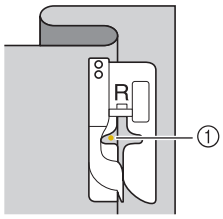
① Free arm

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.**



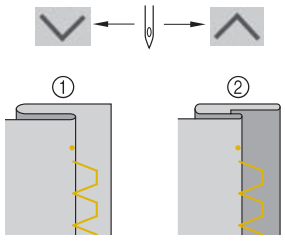
① Wrong side of fabric
② Fold of hem
③ Guide

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

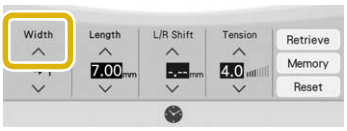
Memo

- 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.

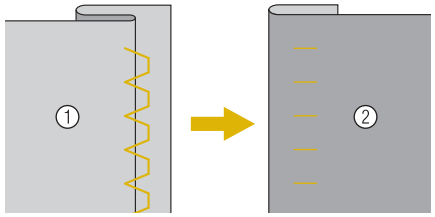
■ If the Needle Catches Too Much of the Hem Fold

The needle is too far to the left.

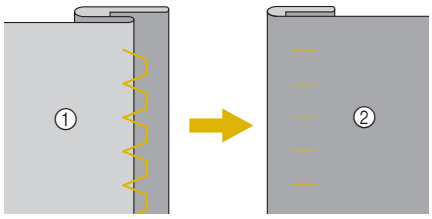
Press ^ to decrease the stitch width so that the needle slightly catches the fold of the hem.



<Thick fabric>



<Normal fabric>

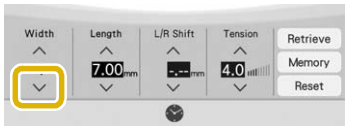


① Wrong side of fabric
② Right side of fabric

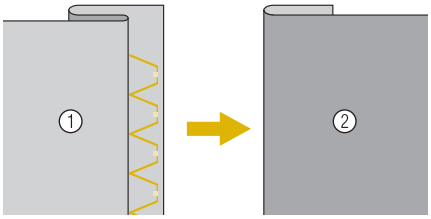
■ If the Needle does not Catch the Hem Fold

The needle is too far to the right.

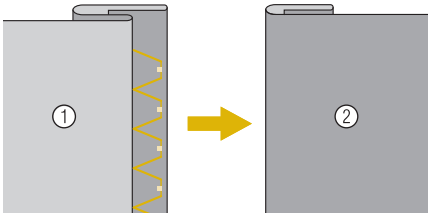
Press v to increase the stitch width so that the needle slightly catches the fold of the hem.



<Thick fabric>



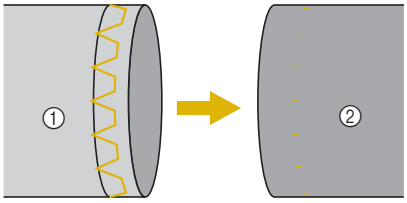
<Normal fabric>



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.**

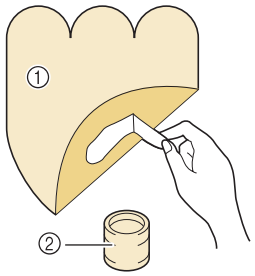


① Wrong side of fabric
② Right side of fabric

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

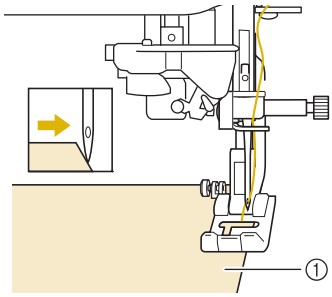
2 **Select** **or** **.**

* Adjust the stitch length and width to correspond to the appliqué shape, size, and quality of material (page 85).

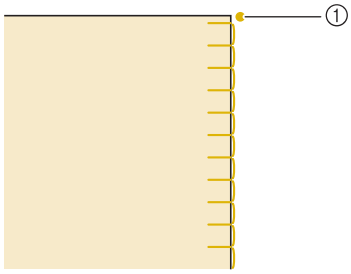
Memo

- For details on each stitch, refer to “STITCH SETTING CHART” on page 206.

3 **Attach presser foot “J”. Check that the needle drops slightly off the edge of the appliqué, then start sewing.**



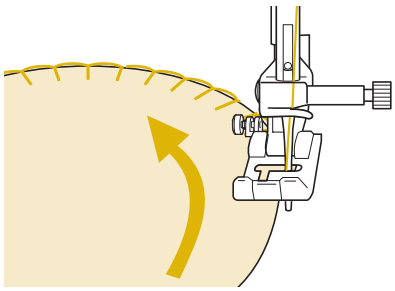
① Appliqué material



① Needle drop position

■ Appliqué Sharp Curves

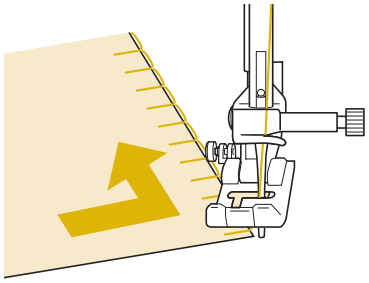
Stop the machine with the needle in the fabric outside the appliqué. Raise the presser foot and turn the fabric a little bit at a time while sewing for an attractive finish to the seam.



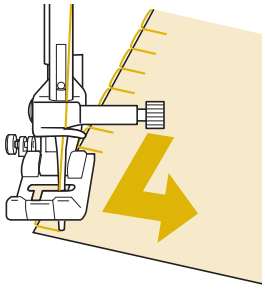
■ Appliqué Corners

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.

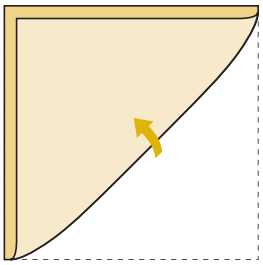
1 **Select** .

Memo
- For details on each stitch, refer to “STITCH SETTING CHART” on page 206.

2 **Increase the upper thread tension for an attractive scallop finish to the shelltuck stitches (page 87).**

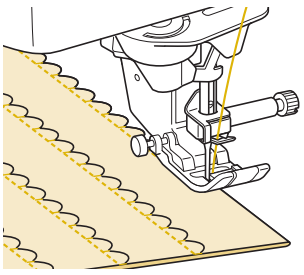
Memo
- If the upper thread tension is too weak, the shelltuck stitches will not scallop.

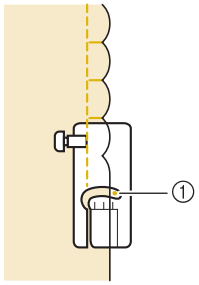
3 **To make rows of shell tuck stitches, fold the fabric in half along the bias.**



Memo
- Use a thin fabric.

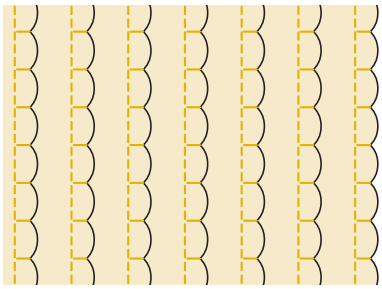
4 **Attach presser foot “J”. Set the needle drop point slightly off the edge of the fabric, and start sewing.**





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 stitch 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.

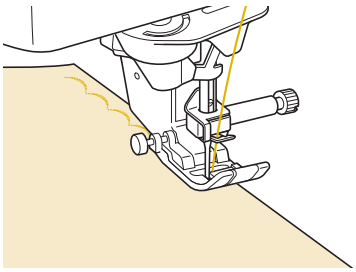
Memo
- A temporary spray adhesive may be necessary for lightweight fabrics. Test sew the fabric before sewing a project.

1 **Select** 2-06 .

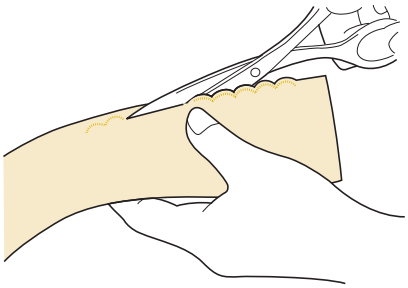
Memo
- For details on each stitch, refer to "STITCH SETTING CHART" on page 206.

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.**



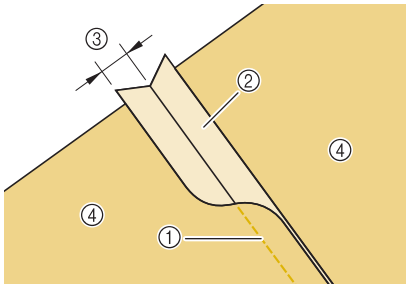
Memo
- Use a seam sealant to secure the edges of the scallop stitches.

Crazy Quilting

For a decorative look called "Crazy Quilting", the following stitches can be sewn on top of a pressed seam allowance.

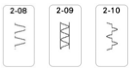
1 **Select a straight stitch and attach presser foot "J".**

2 **With the right sides facing each other, sew two pieces of fabric together, and then press open the seam allowance.**

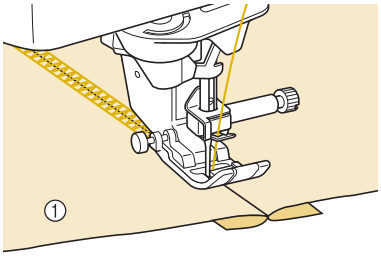


① Straight stitch
② Seam margins
③ 6.5 mm (approx. 1/4 inch)
④ Wrong side

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

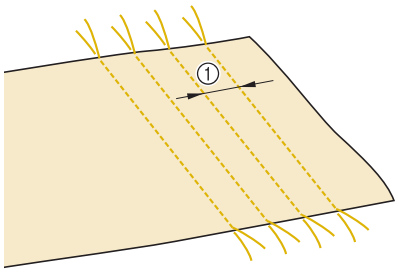
Use smocking stitches for decorative sewing on clothes, etc.

1 **Select a straight stitch and attach presser foot "J".**

2 **Set the stitch length to 4.0 mm (approx. 5/32 inch) and loosen the upper thread tension to approximately 2.0 ("Setting the Stitch Length" on page 86 and "Setting the Thread Tension" on page 87).**

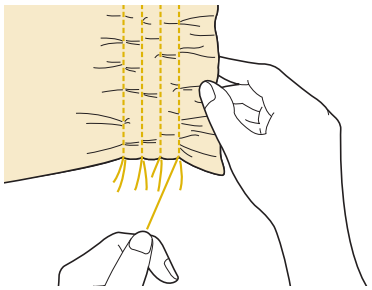
3 **Pull the bobbin and upper threads out by 50 mm (approx. 2 inches).**

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.**

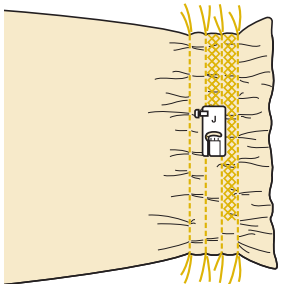


6 **Select** **or** **.**

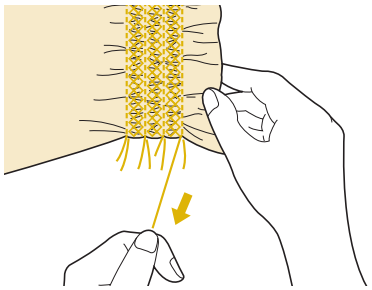
Memo

- For details on each stitch, refer to "STITCH SETTING CHART" on page 206.

7 **Sew the spaces between the straight seams.**



8 **Pull out the straight stitch threads.**

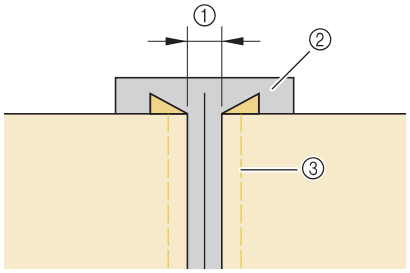


Fagoting

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.

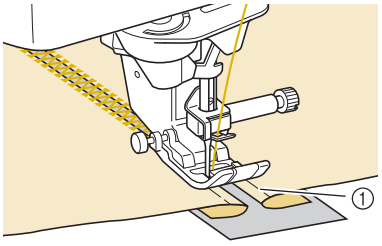


① 4.0 mm (approx. 3/16 inch)
② Paper
③ Basting stitches

2 **Select 2-12 or 2-13.**

Memo
- For details on each stitch, refer to "STITCH SETTING CHART" on page 206.

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.**

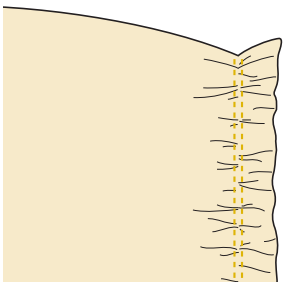
Tape or Elastic Attaching

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 ("Setting the Stitch Length" on page 86 and "Setting the Thread Tension" on page 87).**

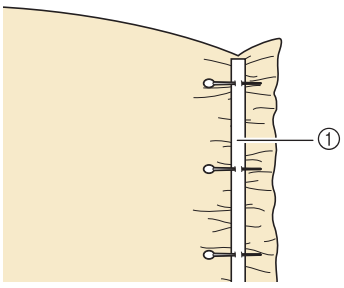
Memo
- Be sure that neither automatic reinforcement nor automatic thread cutting is selected.

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.**

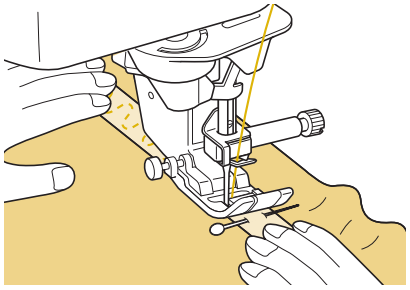


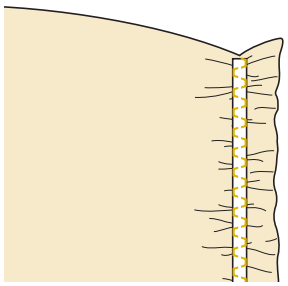
① Tape

5 **Select 2-14 or 1-13.**

Memo
- For details on each stitch, refer to "STITCH SETTING CHART" on page 206.

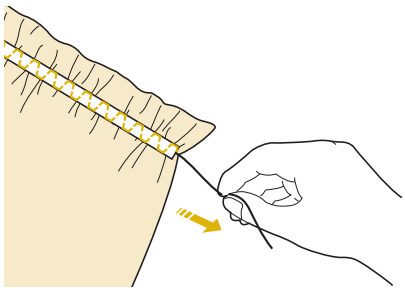
6 **Sew over the tape (or elastic).**





⚠ 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 stitch 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.**

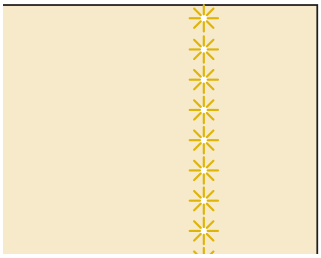
2 **Select a stitch and attach presser foot "N".**

* Select any stitch between 3-01 and 3-25.

Memo
- For details on each stitch, refer to "STITCH SETTING CHART" on page 206.

3 **Start sewing.**

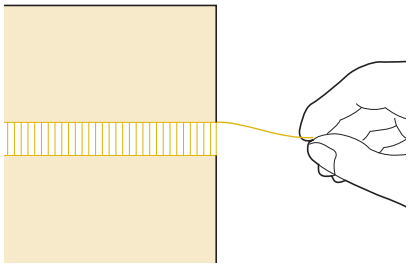
Example: Illustration of finished product



■ 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.

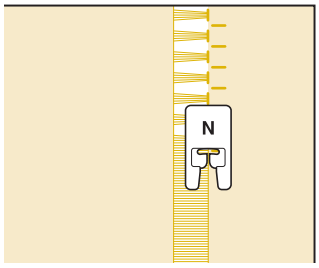


Memo
- Loosely woven fabrics work best for this.

2 **Select** 3-04 **.**

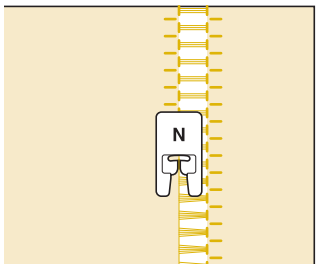
Memo
- For details on each stitch, refer to “STITCH SETTING CHART” on page 206.

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.**

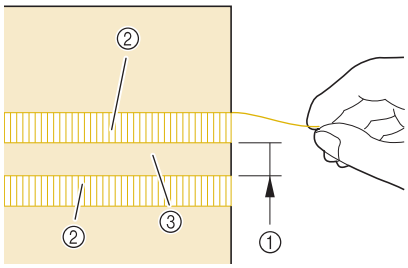
5 **Match beginning needle drop points on the opposite edge of the open area to keep the stitching symmetrical.**



■ 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.

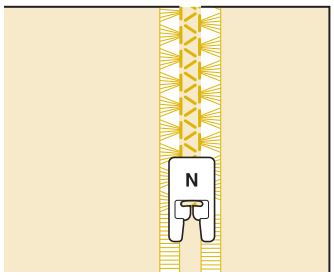


① Approx. 4 mm (approx. 3/16 inch) or less
② Four threads (pull out)
③ Five threads (leave)

2 **Select** 3-10 **.**

Memo
- For details on each stitch, refer to “STITCH SETTING CHART” on page 206.

3 **Sew the decorative stitch in the center of the five threads created above.**



Memo
- A wing needle can be used for Hemstitching (3).

Basting

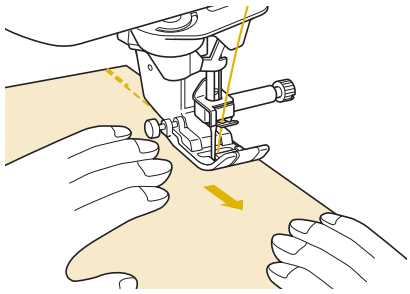
1 **Select** 1-08 **and attach presser foot "J".**

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.
- Stitching will be sewn with a length of 5 mm (approx. 3/16 inch).

① 5 mm (approx. 3/16 inch)

3 **Sew while keeping the fabric straight.**

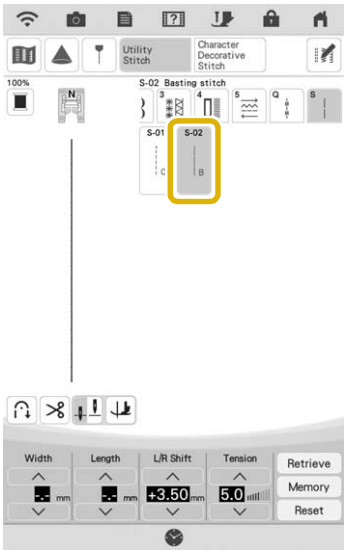


4 **End the basting with reinforcement stitches.**

■ Free-Motion Basting

When the feed dogs are lowered, basting can be sewn while freely moving the fabric.

1 **Press** S-02 **.**



→ The presser foot is raised to the height necessary for free-motion sewing, and the feed dogs are lowered.

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.**

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

Sew while moving the fabric when the needle is raised.

Memo
- If the side pedal of the multi-function foot controller (sold separately) is set to "Single Stitch", basting can be sewn by using the side pedal to sew each single stitch. For details on specifying settings for the multi-function foot controller, refer to "Specifying the Multi-Function Foot Controller (Sold Separately)" on page 33.
- The green light on the right of the "Reinforcement Stitch" button lights up while reinforcement or reverse stitching.
- The sewing speed is limited up to 100 spm.

4 **End the basting with reinforcement stitches.**

One-step Buttonholes

With one-step buttonholes, you can make buttonholes appropriate to the size of your button.

⚠ CAUTION

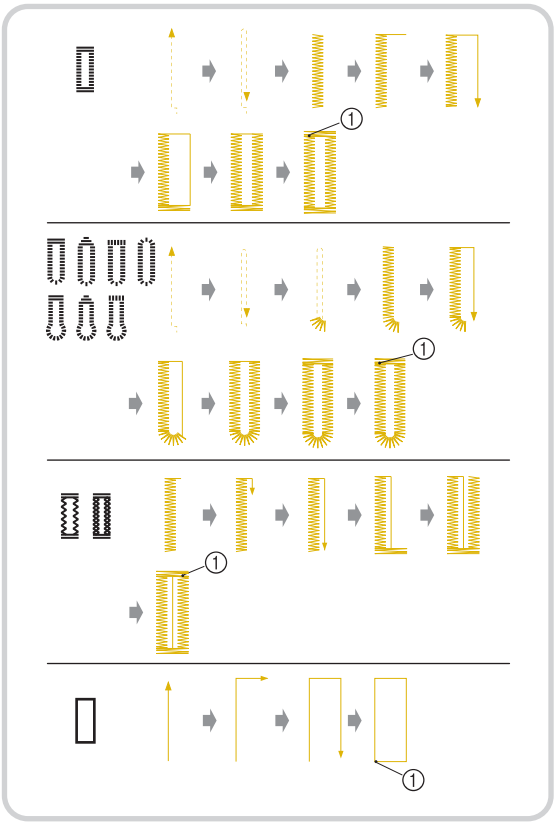
- **When attaching and removing buttonhole foot "A+", do not apply excessive force to the presser foot, otherwise it may be damaged. In addition, be careful not to hit the needle when attaching and removing buttonhole foot "A+", otherwise the needle may break.**

Note

- Before attaching the presser foot, check that there is enough thread in the bobbin.
- When the presser foot is attached, the compartment of the flat bed attachment cannot be opened. Be sure to first remove any necessary accessories.
- Sew trial stitches on fabric that is the same as that used in your project, referring to "Fabric/Thread/Needle Combinations" on page 71.
- The built-in camera detects the position of buttonhole foot "A+". Do not touch the camera. (Refer to "NAMES OF MACHINE PARTS AND THEIR FUNCTIONS" on page 12.)
- Do not peel the "A+" sticker off buttonhole foot "A+" or cover the sticker with the upper thread, etc., otherwise the camera cannot detect the presser foot or buttonholes cannot be sewn.

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+

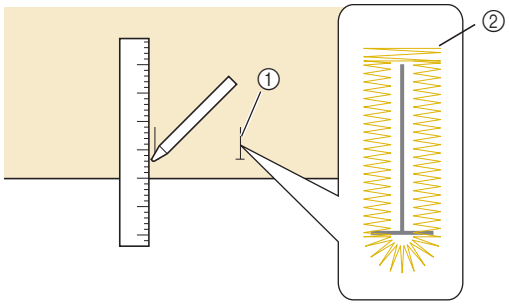
One-step buttonholes are sewn from the front of the presser foot to the back, as shown below.



① Reinforcement stitching

1 Select a buttonhole stitch, and attach buttonhole foot "A+".

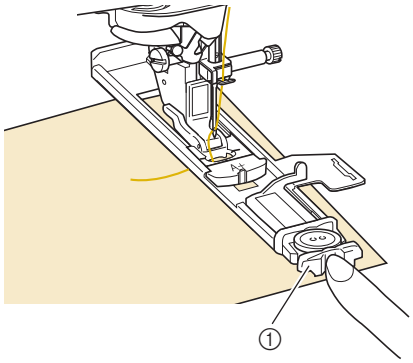
2 Mark the position and length of the buttonhole on the fabric.



① Marks on fabric
② Buttonhole sewing

Memo
- The maximum buttonhole length is about 47 mm (approx. 1-3/4 inches) (diameter + thickness of the button).

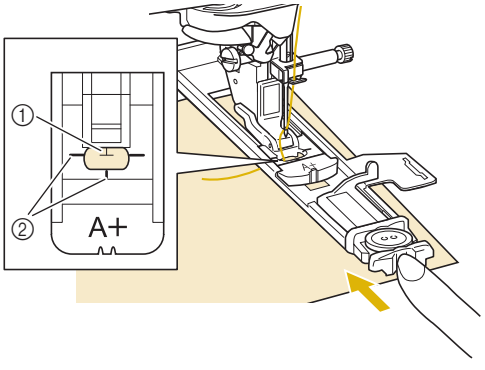
3 Pull out the button holder plate on the presser foot, and insert the button that will be put through the buttonhole. Then tighten the button holder plate around the button.



① Button holder plate

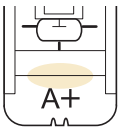
Memo
- The size of the buttonhole is determined by the size of the button in the button holder plate.

4 Align the presser foot with the mark on the fabric, and lower the presser foot.



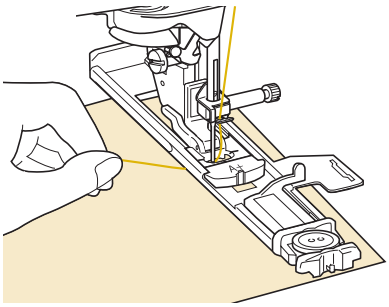
① Mark on the fabric
② Marks on the presser foot

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 Gently hold the end of the upper thread, and then start sewing.

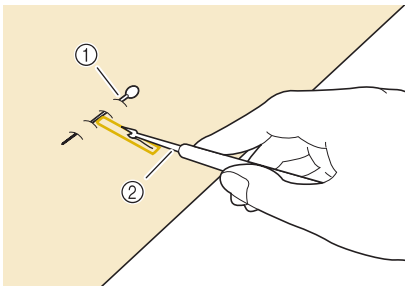
* Feed the fabric carefully by hand while the buttonhole is sewn.



→ 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.

6 **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.**



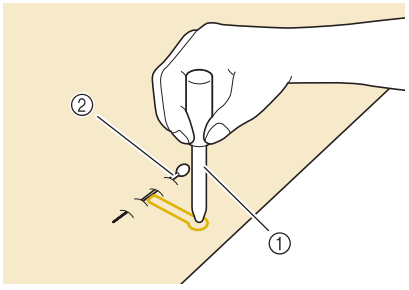
① Basting pin
② Seam ripper

⚠ 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

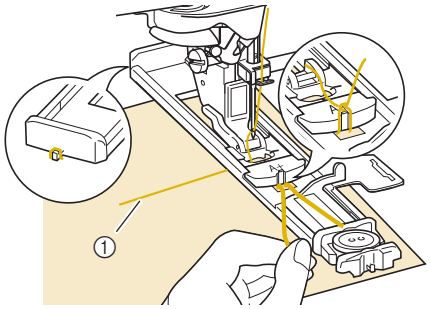
■ Sewing Stretch Fabrics

Note

- Attach stabilizer material to the back of stretch fabrics to prevent them from stretching.

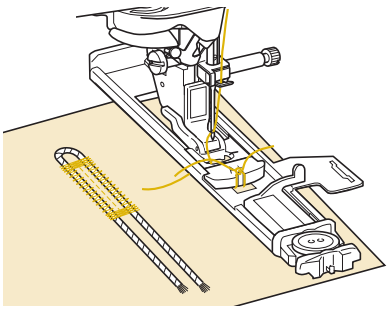
When sewing on stretch fabric with or , sew the buttonhole stitches over a gimp thread.

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

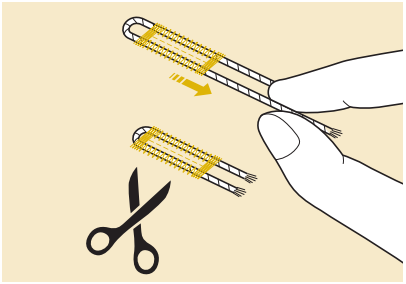
2 **Lower the presser foot and start sewing.**



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.**

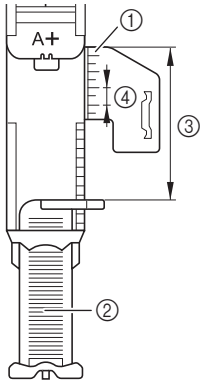


Memo

- 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

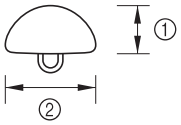
Use the markings on the presser foot scale to set the size of the buttonhole. One mark on the presser foot scale equals 5 mm (approx. 3/16 inch).
Add the button diameter and thickness together, and then set the plate at the calculated value.



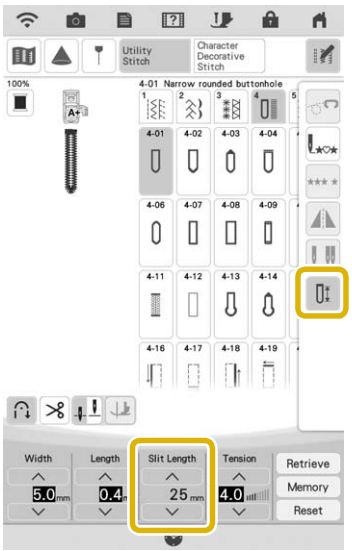
① Presser foot scale
② Button holder plate
③ Completed measurement of diameter + thickness
④ 5 mm (approx. 3/16 inch)

Memo

- Example) For a button with a diameter of 15 mm (about 9/16 inch) and thickness of 10 mm (about 3/8 inch), align the scale with 25 mm (about 1 inch), or specify 25 mm in the screen.

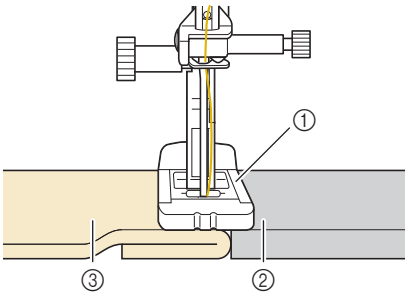


① 10 mm (approx. 3/8 inch)
② 15 mm (approx. 9/16 inch)



■ Sewing 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.



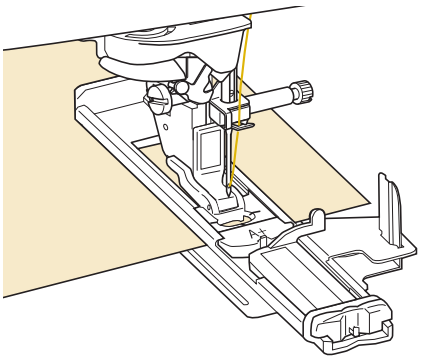
① Presser foot
② Thick paper
③ Fabric

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.

■ Sewing Thick Seams or Fabric That Cannot Be Correctly Fed

Attach the buttonhole stabilizer, and then feed the fabric between the stabilizer and the presser foot.



Four-step Buttonholes

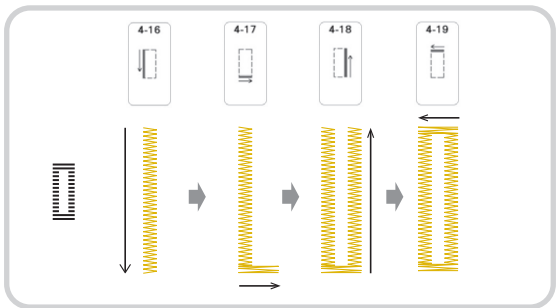
You can sew 4-step buttonholes using the following 4 stitches together. You can sew any desired length for the buttonhole when using 4-step buttonholes. 4-step buttonholes are a good option when attaching oversize buttons.

Note

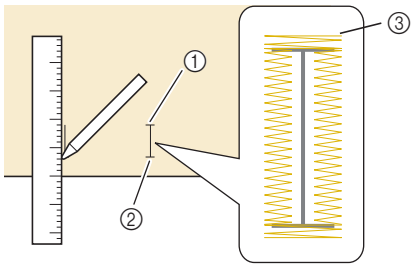
- When changing the stitch settings, make sure that all stitch settings are changed to match.

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.

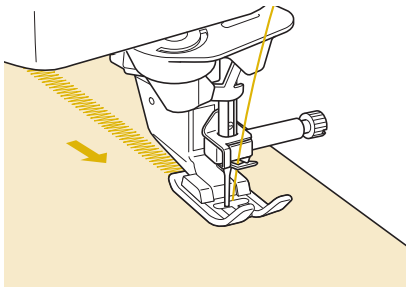


① Starting point
② End point
③ Buttonhole sewing

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.

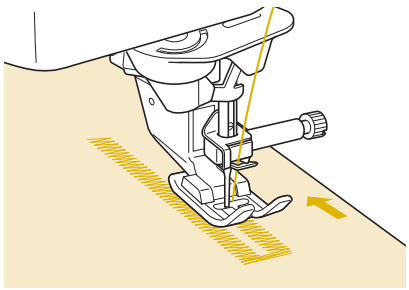
4 Sew the desired length for the buttonhole and press the "Start/Stop" button again.



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 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.**

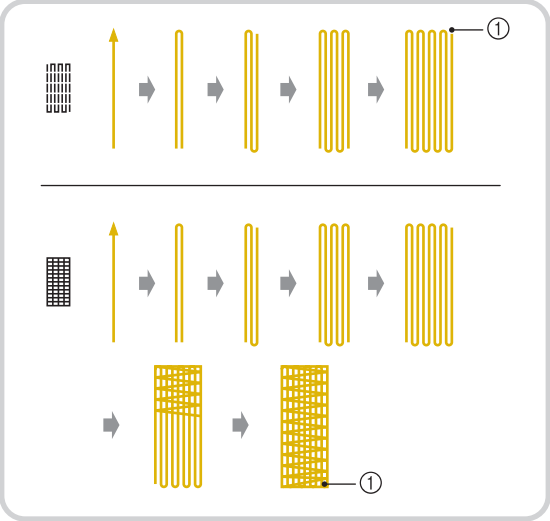
10 **Refer to page 143 to open the buttonhole.**

■ Darning

Use darning stitches for mending and other applications.

Stitch	Stitch name	Presser foot
4-20	Darning	A+
4-21	Darning	A+

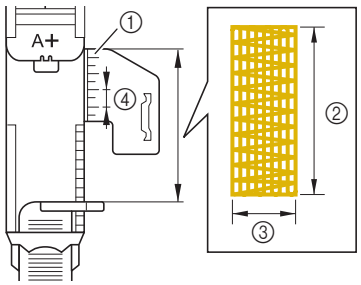
Darning is performed by sewing from the front of the presser foot to the back as shown below.



① Reinforcement stitches

1 **Select a stitch, and attach buttonhole foot "A+".**

2 **Set the scale to the desired length of the darning.**

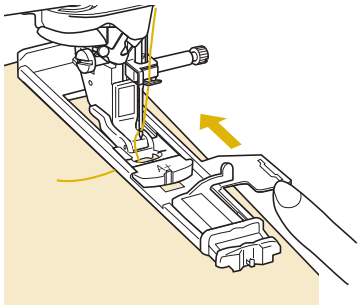


① Presser foot scale
② Completed length measurement
③ Width 7 mm (approx. 1/4 inch)
④ 5 mm (approx. 3/16 inch)

Memo

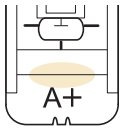
- The maximum length for darning is 50 mm (approx. 1-31/32 inches).

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.**

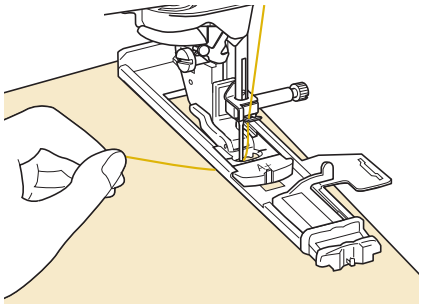


Note

- 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 **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.

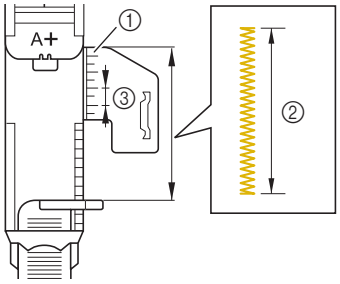
Bar Tacks

Use bar tacks to reinforce areas that will be subject to strain, such as pocket corners.

Stitch	Stitch name	Presser foot
	Bar tack	

1 **Select** **.**

2 **Attach buttonhole foot "A+" and set the scale to the length of the bar tack you wish to sew.**

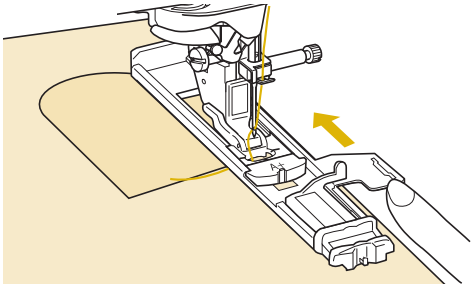


① Presser foot scale
② Completed length measurement
③ 5 mm (approx. 3/16 inch)

Memo

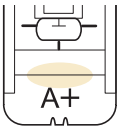
- Bar tacks can be between 10 mm (approx. 25/64 inch) and 50 mm (approx. 1-31/32 inches).

3 **Set the fabric so that the pocket moves toward you during sewing.**

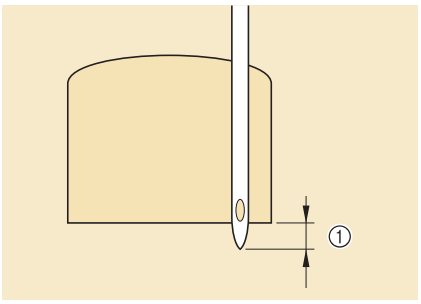


Note

- 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.

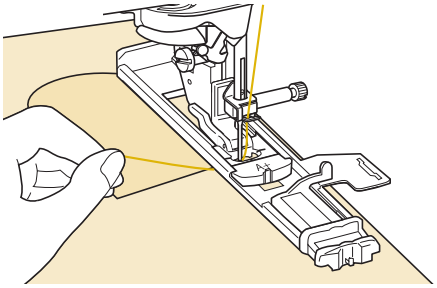


4 **Check the first needle drop point and lower the presser foot.**



① 2 mm (approx. 1/16 inch)

5 **Gently hold the end of the upper thread and begin sewing.**



→ When sewing is completed, the machine will sew reinforcement stitches and stop automatically.

Button Sewing

Buttons with 2 or 4 holes can be attached, using the machine.

Stitch	Stitch name	Presser foot
4-23	Button sewing	M

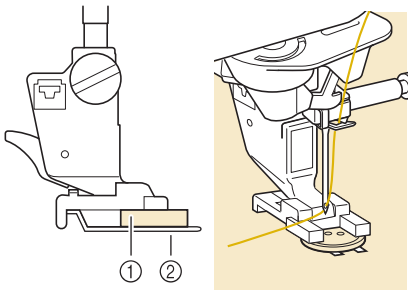
Note
- Do not use the automatic thread cutting function when sewing buttons. Otherwise, you will lose the thread ends.

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.**

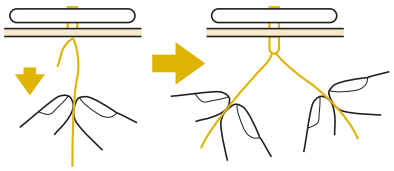
* If the needle does not reach the holes on the left side, adjust the stitch width.
* To attach the button more securely, repeat the process.

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.**

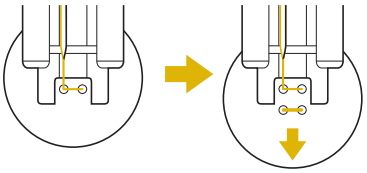
6 **From the wrong side of the fabric, pull the end of the bobbin thread to pull the upper thread through to the wrong side of the fabric. Tie the two thread ends together and cut the threads.**



7 **After the button is attached, select another stitch and rotate the handwheel toward you (counterclockwise) to raise the feed dogs.**

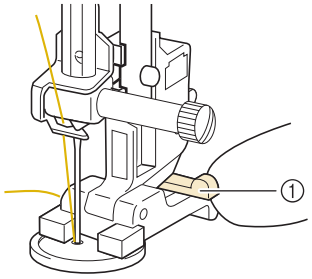
■ Attaching 4 Hole Buttons

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.



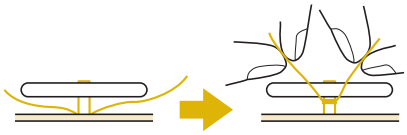
■ Attaching a Shank to the Button

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.**

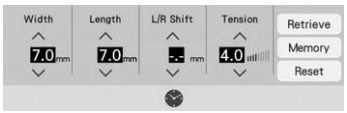
Eyelet

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.**

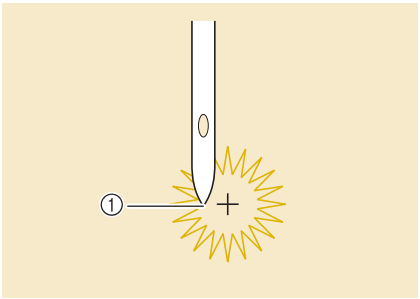


① Large 7 mm (approx. 9/32 inch)
② Medium 6 mm (approx. 15/64 inch)
③ Small 5 mm (approx. 13/64 inch)

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

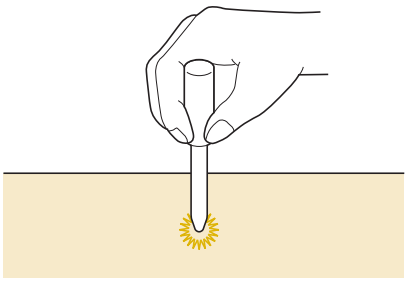
4 **Lower the presser foot and start sewing.**

→ 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 163.

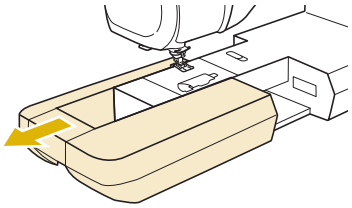
5 **Use the eyelet punch to make a hole in the center of the stitching.**



Multi-directional Sewing (Straight Stitch and Zigzag Stitch)

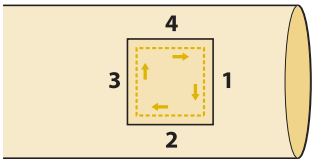
Use these stitch patterns to attach patches or emblems to pant legs, shirt sleeves, etc.

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.

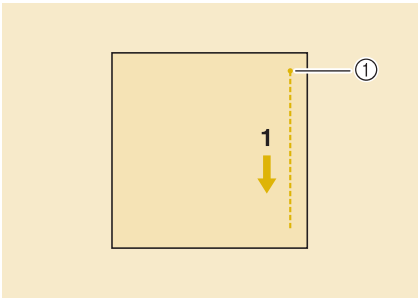


2 **Select** **and attach monogramming foot "N".**

Memo

- For details on each stitch, refer to "STITCH SETTING CHART" on page 206.

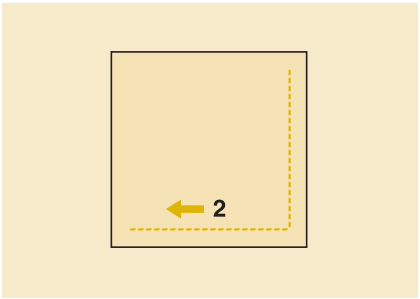
3 **Set the needle in the fabric at the sewing start point, and sew seam "1" as shown.**



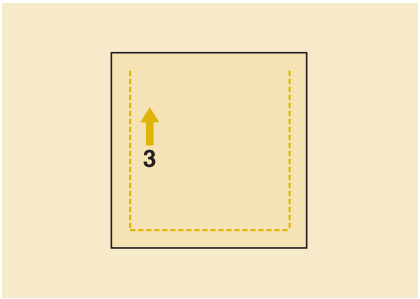
① Start Point

4 **Select** **and sew seam "2" as shown.**

* The fabric will move sideways, guide the fabric by hand to keep sewing straight.

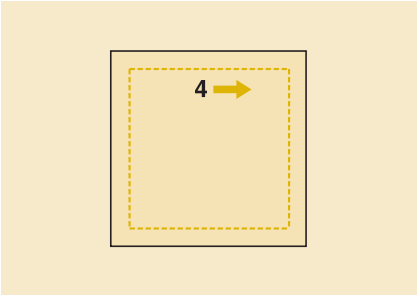


5 **Select** **and sew seam "3" as shown.**



→ The fabric feeds forward while stitching backward.

6 **Select** 5-05 **and sew seam "4" as shown.**



→ The seam will be connected to the starting point of seam 1.

Zipper Insertion

■ Centered Zipper

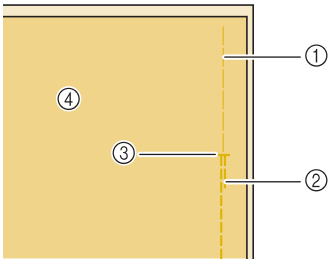
Use for bags and other such applications.

1 **Select** 1-03 **.**

Memo
- For details on each stitch, refer to "STITCH SETTING CHART" on page 206.

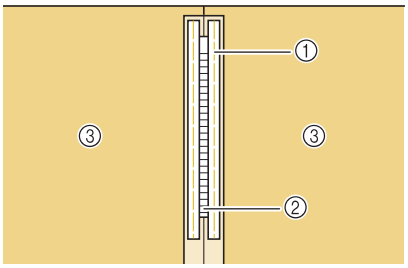
Note
- Make sure you sew using the middle needle position.

2 **Attach presser foot "J" and sew straight stitches up to the zipper opening. Change to a basting stitch (page 140) and sew to the top of the fabric.**



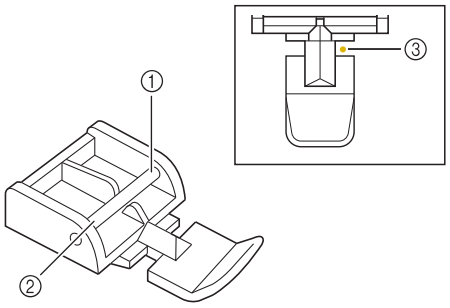
① Basting stitches
② Reverse stitches
③ End of zipper opening
④ Wrong side

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

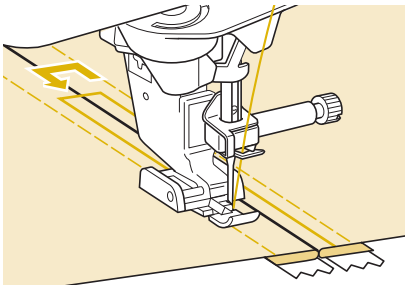
4 **Remove presser foot "J". Align the right side of the pin in zipper foot "I" with the presser foot holder, and attach the zipper foot.**



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

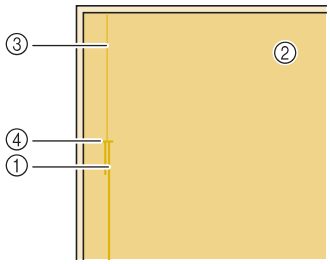
Use for side zippers in skirts or dresses.

1 **Select** .

Note

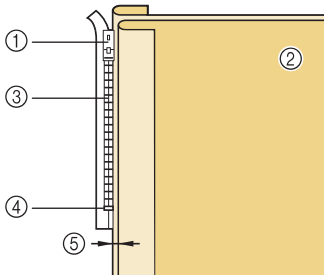
- Make sure you sew using the middle needle position.

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

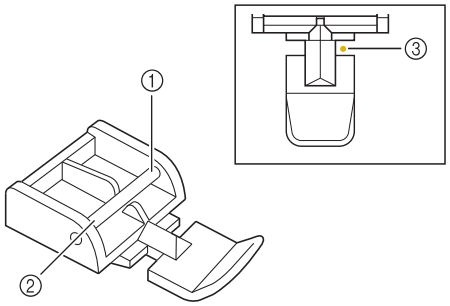
3 **Press the seam allowance open and align the folded hem along the teeth of the zipper, while maintaining 3 mm (approx. 1/8 inch) of sewing space.**



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

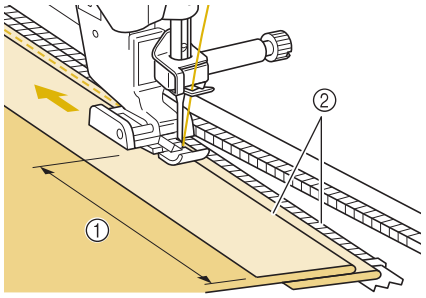
⚠ CAUTION

- **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.**

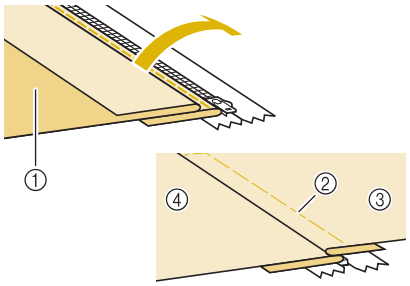


① 50 mm (approx. 2 inches)
② 3 mm (approx. 1/8 inch)

⚠ 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.**

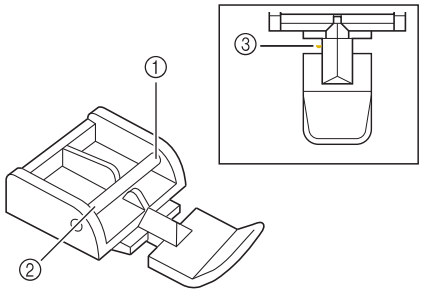
9 **Close the zipper, turn the fabric over, and sew a basting stitch.**



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.



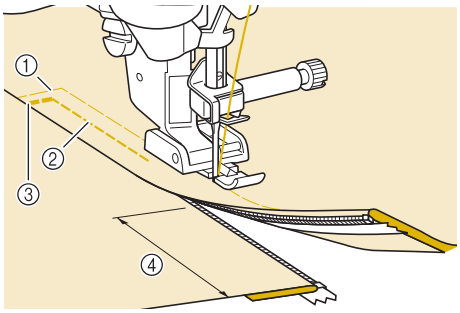
① Right
② Left
③ Needle drop position

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.**



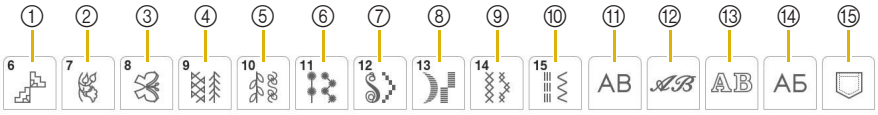
① Basting stitches
② 7 to 10 mm (approx. 1/4 inch to 3/8 inch)
③ Reverse stitches
④ 50 mm (approx. 2 inches)

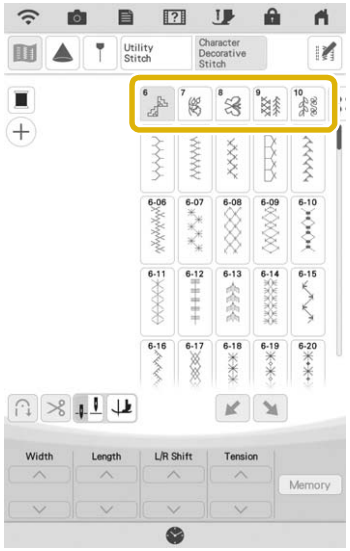
Chapter 4

Character/Decorative Stitches

SELECTING STITCH PATTERNS

Press , then Character Decorative Stitch to display the screen below.





① Wide and Various
② Wide Botanical
③ Wide Motifs and Messages
④ Narrow and Various
⑤ Narrow Botanical
⑥ Candlewicking
⑦ Large Satin
⑧ Satin
⑨ Cross Stitches
⑩ Combinable Utility
⑪ Alphabet characters (gothic font)
⑫ Alphabet characters (handwriting font)
⑬ Alphabet characters (outline)
⑭ Cyrillic font
⑮ Pocket

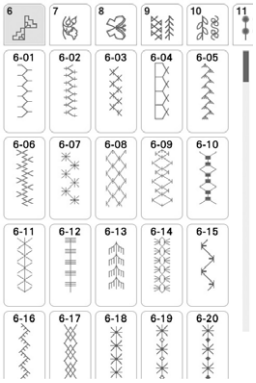
Note

- If the screen is locked ( ), unlock the screen by pressing . While the screen is locked, no other key can be operated.

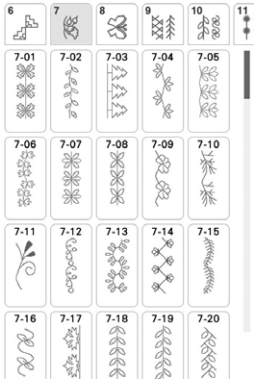
■ Stitch Selection Screens

There are 14 categories of Character/Decorative stitch patterns.

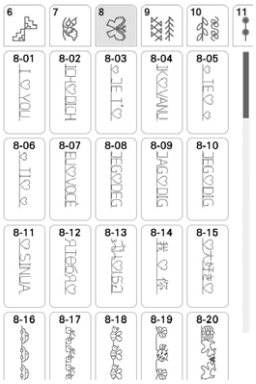
Wide and Various



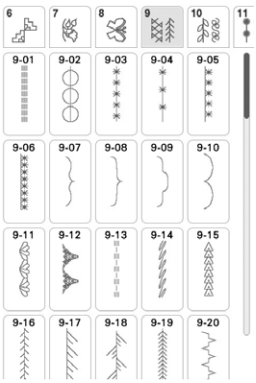
Wide Botanical



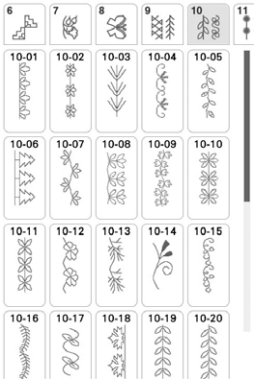
Wide Motifs and Messages



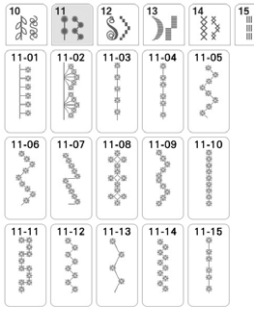
Narrow and Various



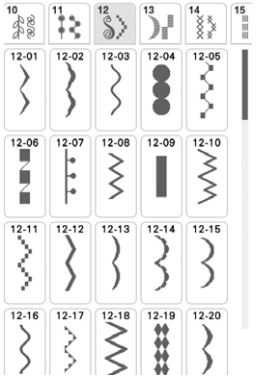
Narrow Botanical



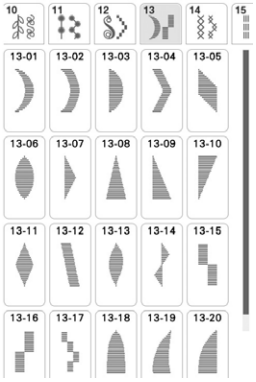
Candlewicking



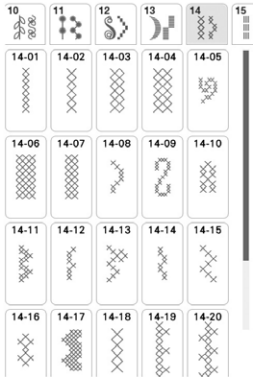
Large Satin



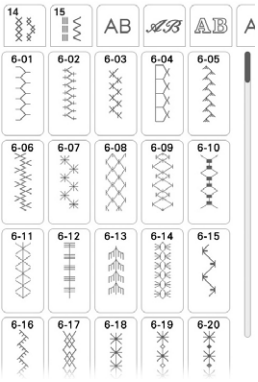
Satin



Cross Stitches

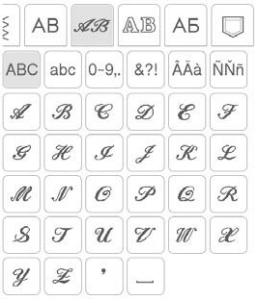


Combinable Utility



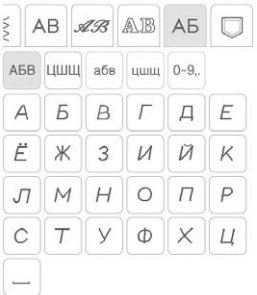
Alphabet characters (gothic font)

Alphabet characters (handwriting font)



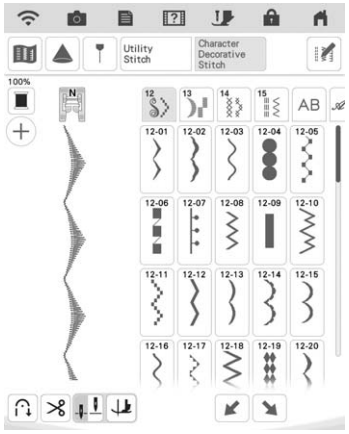
Alphabet characters (outline)

Cyrillic font



Selecting Decorative Stitch Patterns

1. **Select the category of the stitch pattern you want to sew.**
2. **Press the key of the stitch pattern you want to sew.**

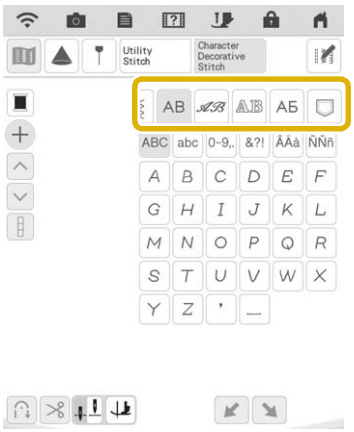


→ The selected stitch pattern is displayed.

Selecting Character Stitch Patterns

Entering characters from the groups shown below, for example “Blue Sky”.

1. **Press AB, AB, AB or АБ to select a font.**



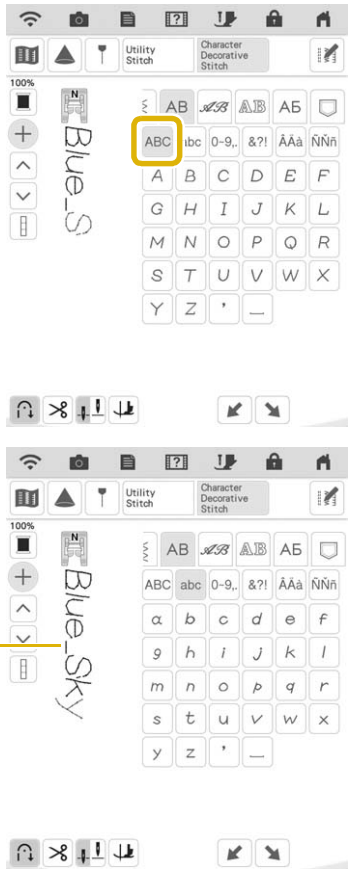
2. **Press to change the selection screens.**

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 Jump stitch

* Remove the jump stitches after sewing.

* To continue entering characters in a different font, select the other font, and then repeat the procedure from step 1.

■ Deleting Characters

1 Press , and then press Delete to delete the last character.

2 Select the correct character.

■ Adding Characters

1 Press + so that screen displays +.

2 Press ^ or v to move the cursor in front of the character where you want to add characters.

3 Select the character you want to add.

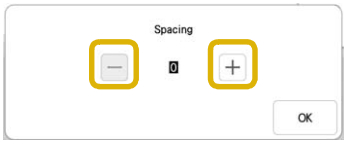
■ Adding the Character Spacing

The space between the characters can be adjusted.

1 Press , and then 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.

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.

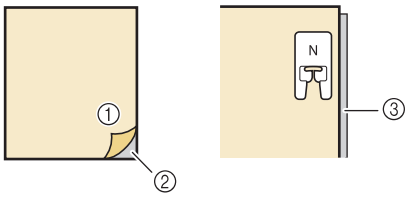
SEWING STITCH PATTERNS

Sewing Attractive Finishes

To achieve attractive results when sewing character/decorative stitches, check the table below for the proper fabric/needle/thread combinations.

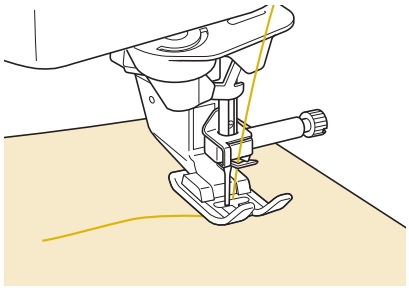
Note

- 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.

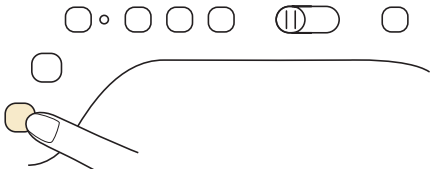
Fabric	When sewing on stretch fabrics, lightweight fabrics, or fabrics with coarse weaves, attach stabilizer on the wrong side of the fabric. If you do not wish to do so, place the fabric on a thin paper such as tracing paper.  ① Fabric ② Stabilizer ③ Thin paper
Thread	#50 - #60
Needle	With lightweight, 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

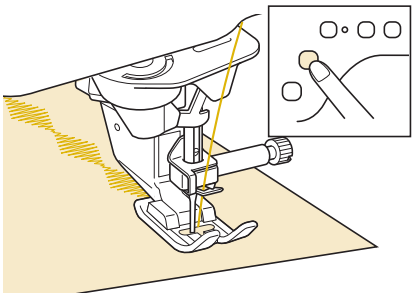
- **When sewing 7 mm satin stitch patterns and the stitches are bunched, lengthen the stitch length. If you continue sewing when the stitches are bunched, the needle may bend or break (“Setting the Stitch Length” on page 86).**

Memo

- If the fabric is pulled or pushed during sewing, the stitch pattern may not turn out correctly. Also, depending on the stitch 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.

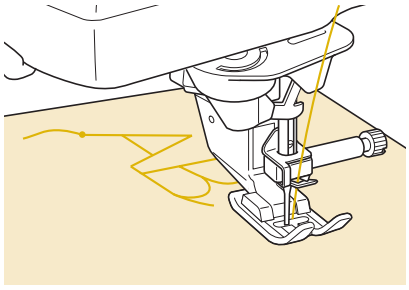
5 **Press the “Start/Stop” button to stop sewing.**

6 **Keep pressing the “Reverse Stitch” button or the “Reinforcement Stitch” button to sew 4 stitches of reinforcement stitches.**

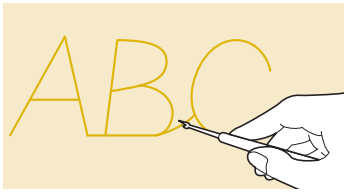


Memo

- When sewing character stitches, the machine automatically sews reinforcement stitches at the beginning and end of each character.



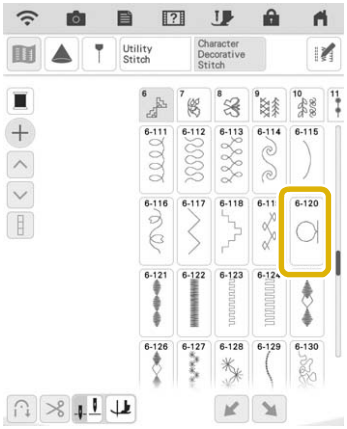
- After sewing is finished, use a seam ripper to trim any excess thread (jump stitches).



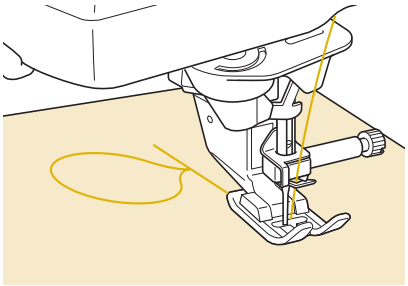
Making Adjustments

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 stitch pattern does not turn out well even after making adjustments based on the 6-120 stitch pattern, make adjustments for each stitch pattern individually.

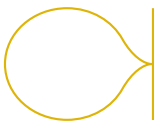
1 **Press 6 and select 6-120.**



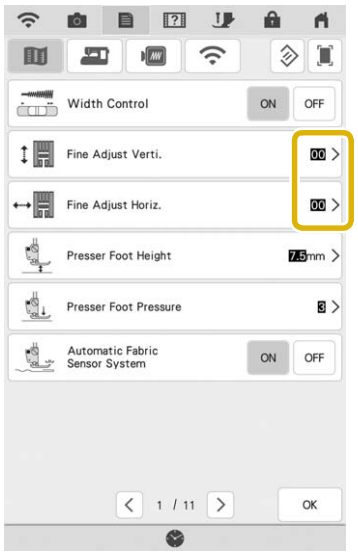
2 **Attach monogramming foot “N” and sew the stitch pattern.**



3 **Compare the finished stitch pattern to the illustration of the correct stitch pattern below.**



4 **Press , and then adjust the stitch pattern with the "Fine Adjust Verti." or "Fine Adjust Horiz." displays.**



* If the stitch pattern is bunched:
Touch to increase the number in the "Fine Adjust Verti." display.

→ The displayed value increases each time the button is pressed and the stitch pattern will lengthen.

* If the stitch pattern has gaps:
Touch to decrease the number in the "Fine Adjust Verti." display.

→ The displayed value decreases each time the button is pressed and the stitch pattern will shorten.

* If the stitch pattern is skewed to the left:
Touch to increase the number in the "Fine Adjust Horiz." display.

→ The displayed value increases each time the button is pressed and the stitch pattern will slide to the right.

* If the stitch pattern is skewed to the right:
Touch to decrease the number in the "Fine Adjust Horiz." display.

→ The displayed value decreases each time the button is pressed and the stitch 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.**

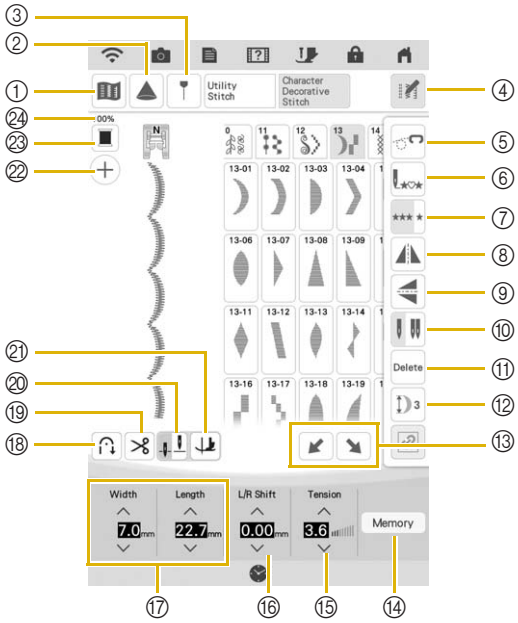
EDITING STITCH PATTERNS

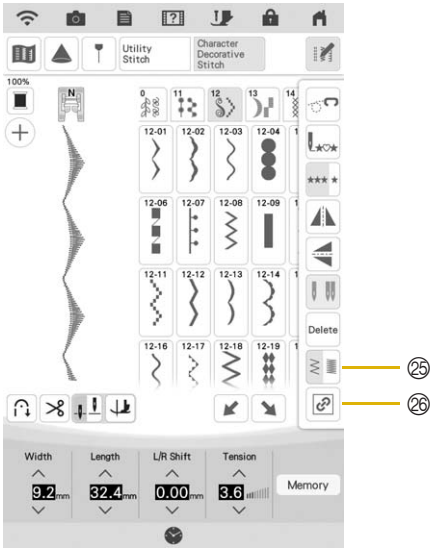
■ Key Functions

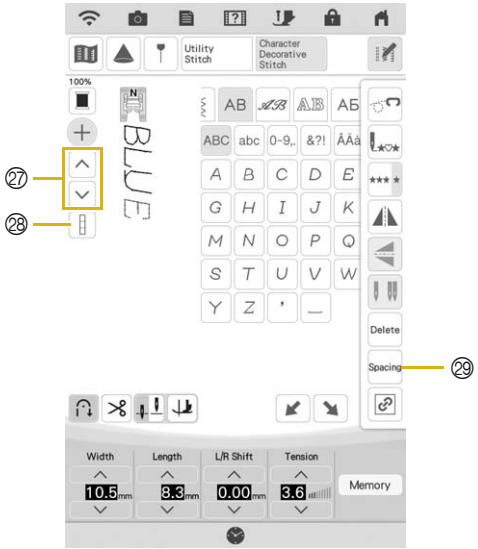
You can create just the finish you want using the editing functions. Make stitch patterns larger or smaller, make mirror images, etc.

Note

- Some editing functions cannot be used with certain stitch patterns. Only the functions for the displayed keys are available when a stitch pattern is selected.







No.	Display	Key Name	Explanation	Page
①		Image key	Press this key to display an enlarged image of the selected stitch pattern.	171
②		Projector key	Press this key to use projector functions.	96
③		Guideline marker key	Press this key to display or set the guideline marker for the sewing line. The guideline marker makes quilt piecing or aligning stitching on the fabric edge easier.	98
④		Stitch pattern editing key	Press this key to display editing function keys on the screen.	103
⑤		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.	126
⑥		Back to beginning key	When sewing is stopped, press this key to return to the beginning of the stitch pattern.	170
⑦		Single/Repeat sewing key	Press this key to choose single stitches or continuous stitches.	169
⑧		Horizontal mirror image key	After selecting the stitch pattern, use this key to create a horizontal mirror image of the stitch pattern.	169
⑨		Vertical mirror image key	After selecting the stitch pattern, use this key to create a vertical mirror image of the stitch pattern.	169
⑩		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.	64
⑪		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.	161
⑫		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.	169
⑬		Step effect key	Press this key to make step stitch patterns.	175
⑭		Memory key	Use this key to save stitch pattern combinations.	179
⑮		Thread tension key	Shows the automatic thread tension setting of the currently selected stitch pattern. You can use and to change the thread tension settings.	87
⑯		"L/R Shift" key	Press to shift the stitch pattern to the right or press to shift the stitch pattern to the left. This feature is not available on all stitch patterns. Only those applicable will be shifted. The machine default setting is highlighted.	86
⑰		Stitch width and stitch length key	Shows the stitch width and stitch pattern length of the selected stitch pattern. The machine default settings are highlighted.	85, 86
⑱		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 stitch pattern, the machine may sew reverse stitches).	79
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 stitch pattern, the machine may sew reverse stitches) and trim the threads after sewing.	88
⑳		Needle position setting key	Press this key to select the needle stop position to be up or down. You can also check the needle mode setting (single or twin). Single needle/down position Single needle/up position Twin needle/down position Twin needle/up position	64, 89
㉑		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.	89

No.	Display	Key Name	Explanation	Page
㉒		Add stitch pattern key	Press this key to add a new stitch pattern.	161
㉓		Thread color change key	Press this key to change the thread color displayed on the screen.	171
㉔	100%	Stitch pattern display size	Show the approximate size of the stitch pattern selected. 100% : Nearly the same size as the sewn stitch pattern 50% : 1/2 the size of the sewn stitch pattern 25% : 1/4 the size of the sewn stitch pattern * The actual size of the sewn stitch pattern may differ depending on the type of fabric and thread that is used.	105
㉕		Thread density key	After selecting the stitch pattern, use this key to change the thread density of the stitch pattern.	170
㉖		Maintain aspect ratio key	Press this key to maintain the aspect ratio when enlarging or reducing the stitch pattern.	169
㉗		Stitch pattern selection key	Press this key to enter or edit the stitch pattern immediately after the selected stitch pattern.	161
㉘		Select all on/off key	Press this key to switch between selecting only the last stitch pattern entered or all combined stitch patterns.	169
㉙	Spacing	Character spacing key	Press this key to change the spacing of character stitch patterns.	161

Changing the Size

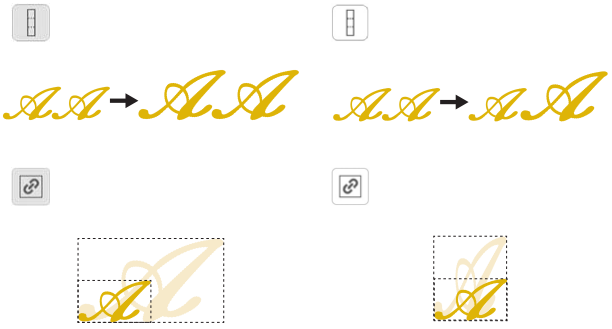
Select a stitch pattern, then press ^ or v to change the size of the stitch pattern.

Memo

- When the select all on/off key appears as , the size of all stitch patterns can be changed.
- When the maintain aspect ratio key appears as , the stitch pattern size can be changed while maintaining the aspect ratio.

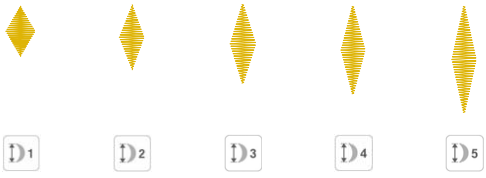
Stitch Pattern Size

* The size differs depending on the fabric and threads.



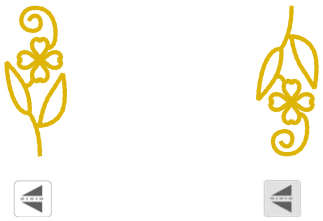
Changing the Length (for 7mm Satin Stitch Patterns Only)

When 7mm satin stitch patterns are selected, press , and then 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, press , and then press .

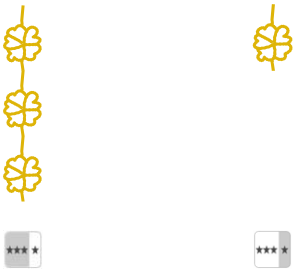


Creating a Horizontal Mirror Image

To create a horizontal mirror image, select a stitch pattern, press , and then press .

Sewing a Stitch Pattern Continuously

Press , and then press to select continuous sewing or single stitch sewing.

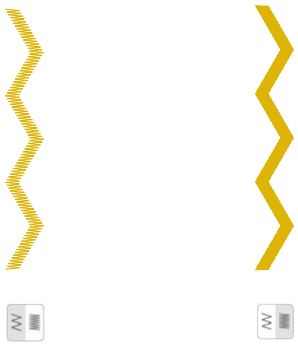


Memo

- To finish a complete motif while sewing the stitch pattern continuously, you can press the key while sewing. The machine will automatically stop when the motif is finished.

Changing Thread Density (for Large Satin Only)

After selecting a satin stitch pattern, press , and then 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

- When the select all on/off key appears as , the thread density of all stitch patterns can be changed.

Returning to the Beginning of the Stitch Pattern

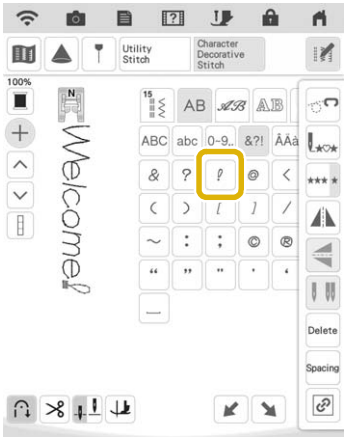
When sewing character/decorative stitches, you can return to the beginning of the stitch pattern after trial sewing or when the stitching is sewn incorrectly.

1 Press the "Start/Stop" button to stop the machine, press , and then press .

→ Sewing returns to the beginning of the selected stitch pattern ("W") from the point where sewing was stopped.

Memo

- If this key is pressed while sewing is stopped, stitch patterns can be added at the end of a combined stitch pattern. (In this example, "!" is added.) Press or to add the stitch pattern at the desired location.



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 stitch 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. **Scroll with your finger to view any part of the image that extends out of the viewable display area.**

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

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.

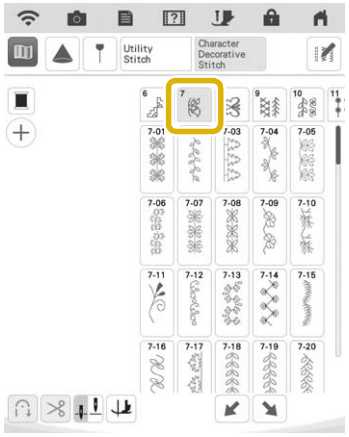
Before Combining

Single stitch sewing is automatically selected for sewing combined stitch patterns. If you want to sew the stitch pattern continuously, press **** after finishing the stitch pattern combination.

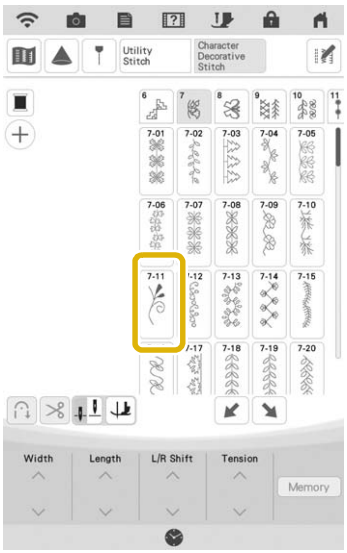
Combining Various Stitch Patterns

Example:

1 **Press** .

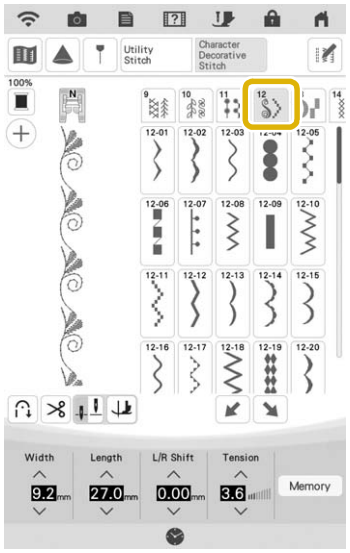


2 **Select** .

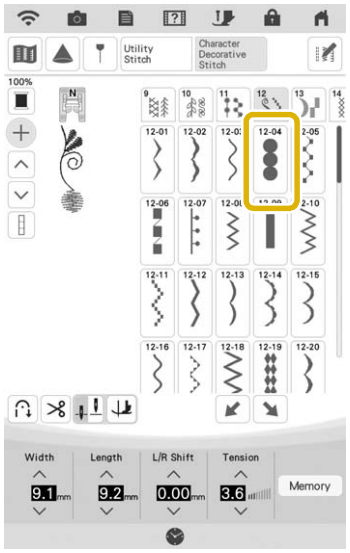


3 **Press** .

4 **Press** .



5 **Select** .



6 **Press to sew the stitch pattern continuously.**

Memo

- Stitch patterns are deleted individually starting with the last stitch pattern entered by pressing Delete.

Combining Large and Small Stitch Patterns

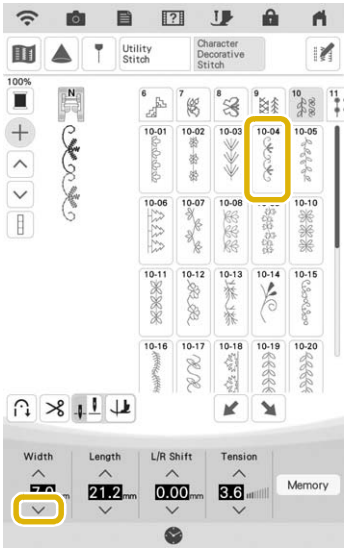
Example:

1 **Press** .

→ The large size stitch will be selected.

2 **Press so that it displays .**

3 **Press again, and then press to change the size.**

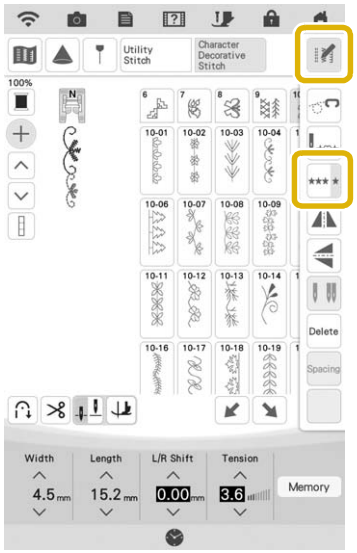


→ The size of the stitch pattern changes.

Memo

- To change the size of the stitch pattern while maintaining the aspect ratio, press the maintain aspect ratio key ( ).

4 **Press , and then press to sew continuously.**



→ The entered stitch pattern is repeated.

Combining Horizontal Mirror Image Stitch Patterns

Example:

1 **Press .**

2 **Press .**

3 **Press again, press , and then press .**

→ The stitch pattern is flipped along a vertical axis.

4 **Press .**

→ The entered stitch pattern is repeated.

Combining Stitch Patterns of Different Length

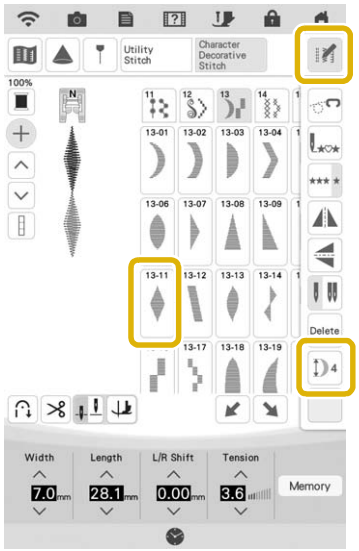
Example:

1 **Press 13-11, then press D3 once.**

→ The length of the image is set to D4.

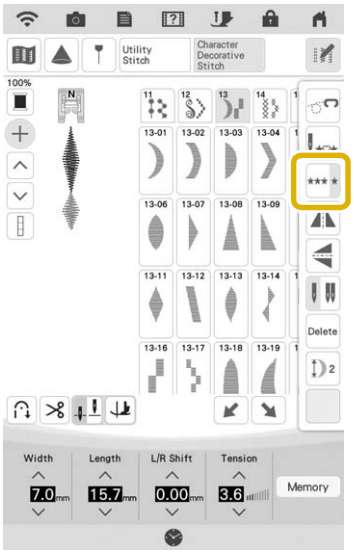
2 **Press +.**

3 **Select 13-11 again, press ✎, and then press D4 3 times.**



→ The length of the image is set to D2.

4 **Press ★★★.**

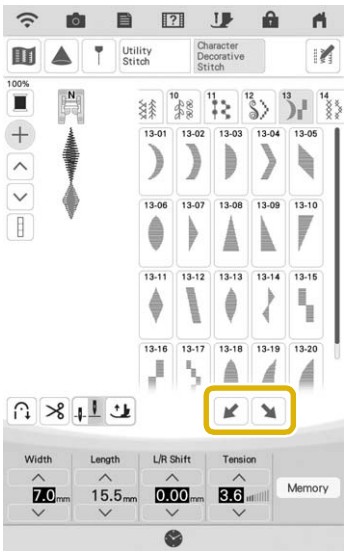


→ The entered stitch pattern is repeated.

Making Step Stitch Patterns

You can use the ↙ ↘ keys 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.



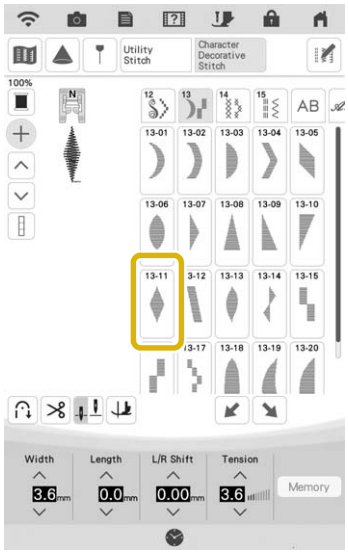
Example:

1 **Press** 13-11 **.**

2 **Press** ↘ **.**

→ The next stitch pattern will move to the right.

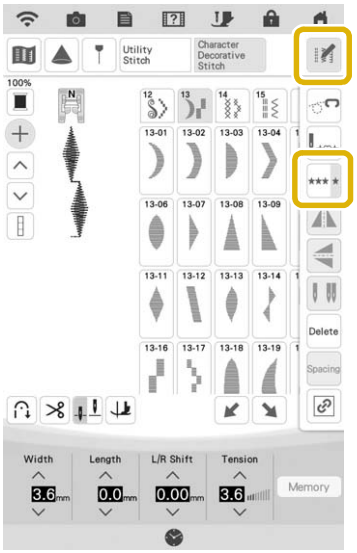
3 **Press** 13-11 **again.**



4 **Press** ↙ **.**

→ The next stitch pattern will move to the left.

5 **Press** ✎ **, and then press** ★★★ **.**



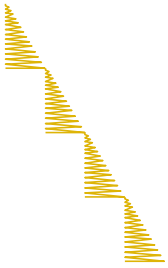
→ The entered stitch pattern is repeated.

■ More Examples

Press 13-15 → ↘ → 13-16 → ↙ → ★★★.

Press 13-09 → ↘ → ↘ → 13-09 → 13-10 → ↙ → ↙ → 13-10 → ***.

Press 13-09 → ↘ → ↘ → ***.



Press 13-06 → 13-06 → ↘ → ↘ → 13-11 → 13-11 → ↙ → ↙ → ***.

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", ".pmu" and ".pmp" stitch data files can be used with this machine. When the machine is used to save a file with any extension, it is saved as a ".pmp" 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)

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.

■ 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.

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.

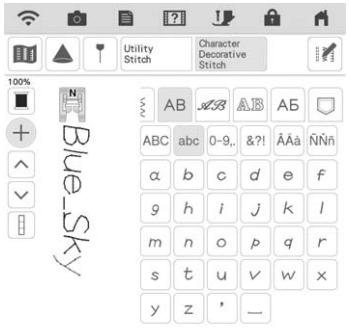
Note

- 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.
- Refer to page 180 for information on retrieving a saved stitch pattern.

1 **Press** Memory.



2 **Press** .

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

→ The "Saving…" screen is displayed. When the stitch 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 stitch pattern, 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 refer to "Retrieving Stitch Patterns from the Machine's Memory" on page 180.

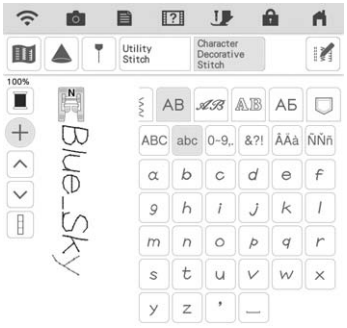
Saving Stitch Patterns to USB Media

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

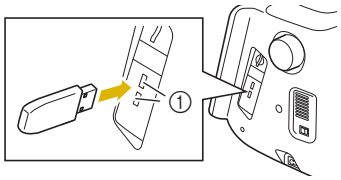
Memo

- 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.



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



① USB port

3 **Press** [USB] **.**

* Press [USB] when connecting the USB media to the USB port for mouse.

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

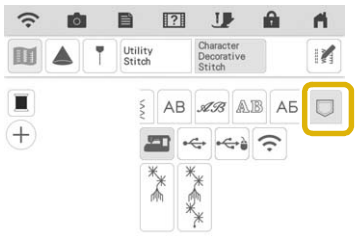
→ The “Saving…” screen is displayed. When the stitch pattern is saved, the display returns to the original screen automatically.

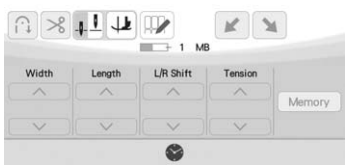
Note

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

Retrieving Stitch Patterns from the Machine’s Memory

1 **Press** [Pocket] **.**

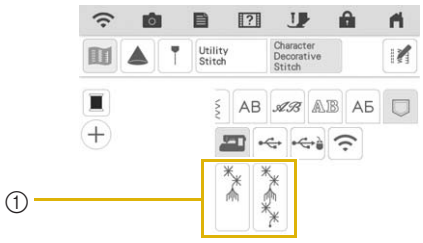


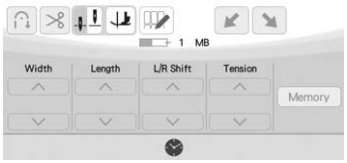


→ The pocket selection screen appears.

2 **Choose a stitch pattern to retrieve.**

* If the entire saved stitch pattern is not displayed, press the thumbnail.





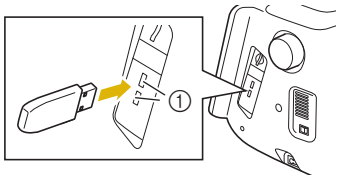
① Saved stitch patterns

→ 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.

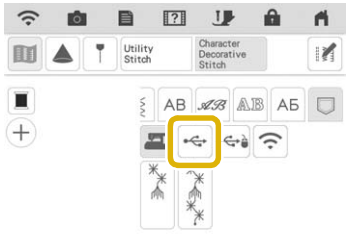
1 Insert the USB media into the USB port on the machine. (page 179)

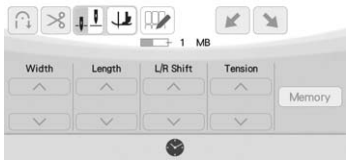


① USB port

2 Press .

* Press when connecting the USB media to the USB port for mouse.

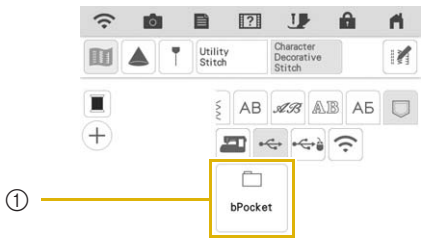


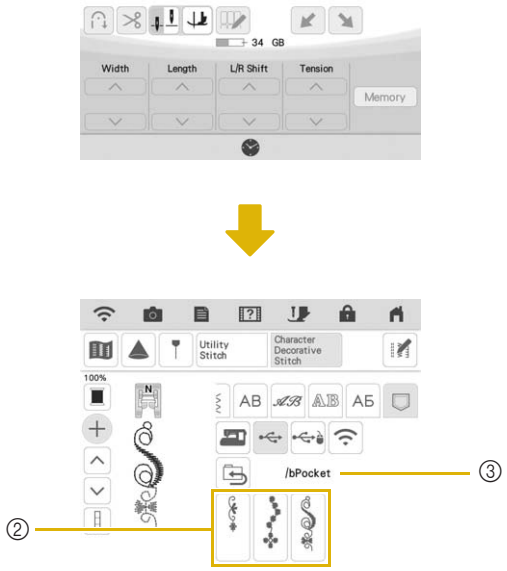


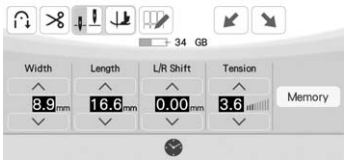
→ Stitch patterns and a folder in a top folder are displayed.

3 Press bPocket 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.



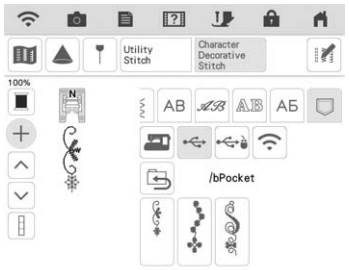


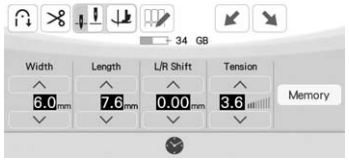


① Folder name
② Stitch patterns in a folder show only the first stitch pattern of any combined stitch patterns.
③ Path
→ The path shows the current folder at the top of the list.
Stitch patterns and a subfolder within a folder are displayed.

* 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.**



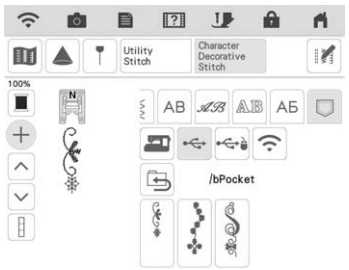


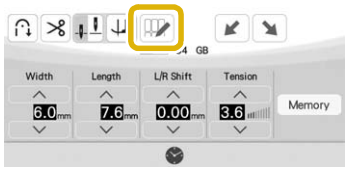
→ The selected stitch pattern is recalled and the sewing screen will be displayed.

Managing Saved File

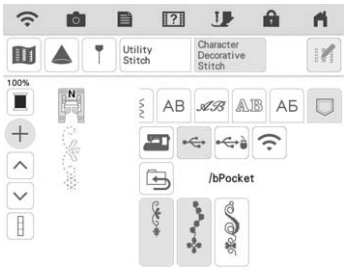
You can delete the saved file, or save to machine's memory from USB media.

1 **In the retrieving screen from USB, press , and touch the stitch pattern you want to manage.**





2 **Choose the command.**



Select all	Press to select all displayed stitch patterns.
Select none	Press to deselect all selected stitch patterns.
Delete	Press to delete the selected stitch patterns.
Memory	Press to save the selected stitch patterns in the machine's memory.

Chapter 5

Appendix

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 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 a soft, dry cloth. Do not use organic solvents or detergents.

Note

- Do not wipe the LCD screen with a damp cloth.

Memo

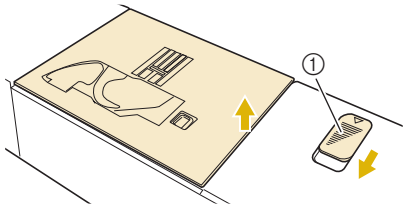
- Occasionally, condensation may form on the LCD screen or it may become fogged up; however, this is not a malfunction. After a while, the cloudiness will disappear.

Cleaning the Machine Casing

If the surface of the machine is dirty, lightly soak a cloth in a neutral detergent, squeeze it out firmly, and then wipe the surface. Then wipe again with a dry cloth.

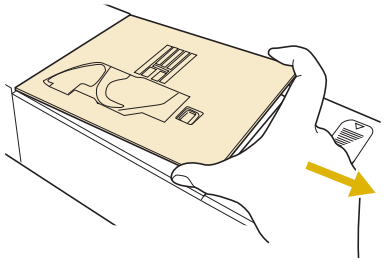
Cleaning the Race

1. **Press the "Needle Position" button to raise the needle.**
2. **Turn the main power to OFF.**
3. **Remove the needle and the presser foot holder (page 69, 72).**
4. **Remove the flat bed attachment or the embroidery unit if either is attached.**
5. **Slide the needle plate lever toward you.**

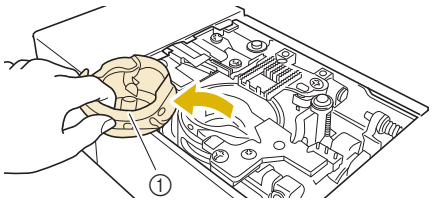


① Slide toward you.
→ The needle plate opens.

6. **Slide out the needle plate with your right hand to remove it.**

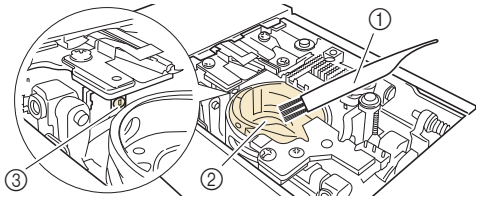


7 **Grasp the bobbin case, and then gently lift out.**



① Bobbin case

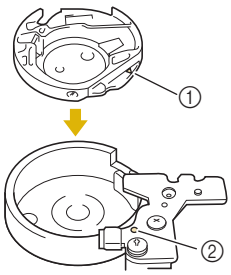
8 **Use the cleaning brush or a vacuum cleaner to remove any lint and dust from the race and bobbin thread sensor and the surrounding area.**

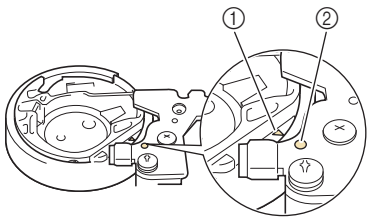


① Cleaning brush
② Race
③ Bobbin thread sensor

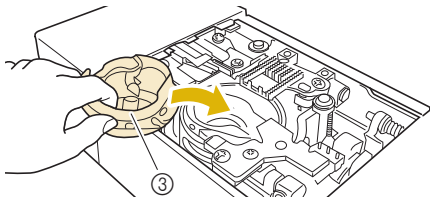
Note
- Do not apply oil to the bobbin case.
- If lint or dust collects on the bobbin thread sensor, the sensor may not operate correctly.

9 **Insert the bobbin case so that the ▲ mark on the bobbin case aligns with the ● mark on the machine.**





* Align the ▲ and ● marks.

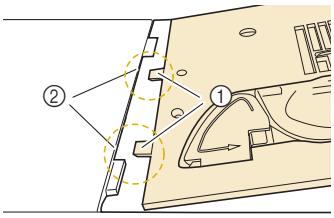


① ▲ mark on the bobbin case
② ● mark on the machine
③ Bobbin case

* Make sure that the indicated points are aligned before installing the bobbin case.

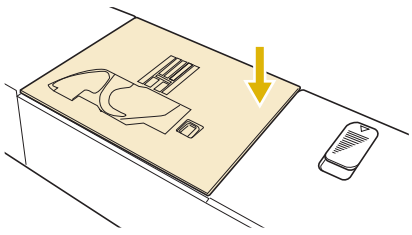
⚠ CAUTION
- Never use a bobbin case that is scratched; otherwise, the upper thread may become tangled, the needle may break, or sewing performance may suffer. For a new bobbin case (part code: XE5342-101 (green marking on the screw), XC8167-551 (no color on the screw)), contact your nearest authorized Baby Lock retailer.
- Make sure that you fit the bobbin case properly, otherwise the needle may break.

10 **Insert the tabs on the needle plate into the notches in the machine.**



① Tabs
② Notches

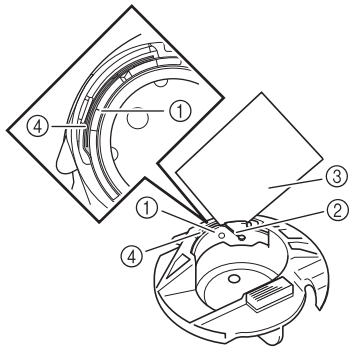
11 **Press down on the right side of the needle plate to secure it.**



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 7 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

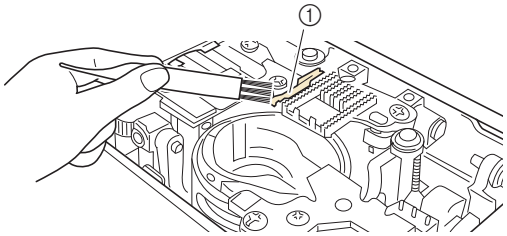
Memo
- Do not bend the tension spring. In addition, do not use anything other than recommended paper to clean the bobbin case.

3. **Use the cleaning brush to remove any lint and dust from inside the bobbin case.**
4. **Replace the bobbin case and needle plate.**

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 7 in "Cleaning the Race" to remove the needle plate.**
2. **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.**

3. **Attach the needle plate.**

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.

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 authorized Baby Lock retailer.

Frequent Troubleshooting Topics

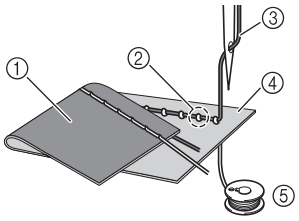
Detailed causes and remedies for common troubleshooting topics are described below. Be sure to refer to this before contacting your authorized Baby Lock retailer.

■ Upper Thread is Too Tight	page 188
■ Tangled Thread on Wrong Side of Fabric	page 189
■ Incorrect Thread Tension	page 191
■ Fabric is Caught in the Machine and Cannot be Removed	page 192

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

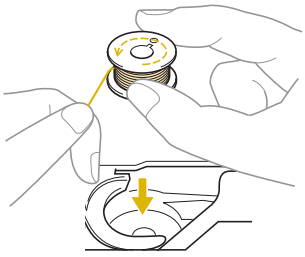
Incorrect lower threading
If the lower thread is incorrectly threaded, instead of the appropriate tension being applied to the lower thread, it is pulled through the fabric when the upper thread is pulled up. For this reason, the thread is visible from the upper side of the fabric.

■ Remedy

Correctly install the lower thread.

1. **Turn off the 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.**

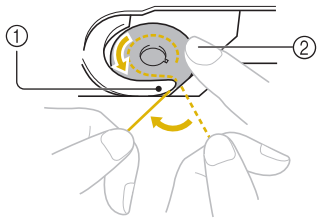
* Hold the bobbin with your right hand with the thread unwinding to the left, and hold the end of the thread with your left hand. Then, with your right hand, place the bobbin in the bobbin case.



If the bobbin is inserted with the thread unwinding in the wrong direction, sewing will be done with an incorrect thread tension.

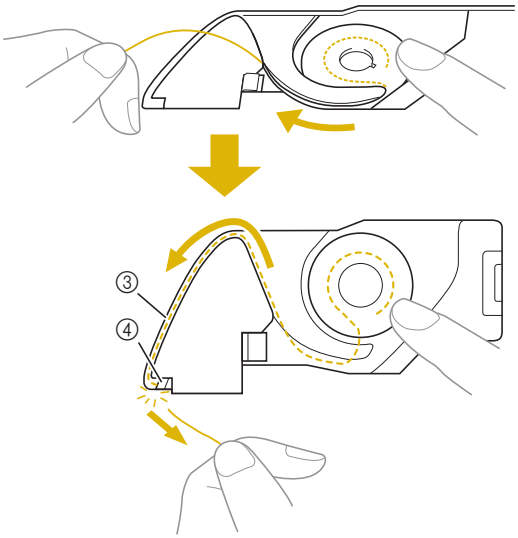
4 While holding the bobbin in place with your finger, pass the thread through the slit in the needle plate.

* 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.



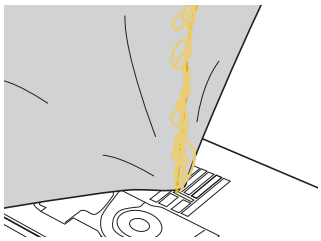
③ Slit
④ Cutter

Sewing with the correct thread tension is possible after the bobbin has been correctly installed in the bobbin case.

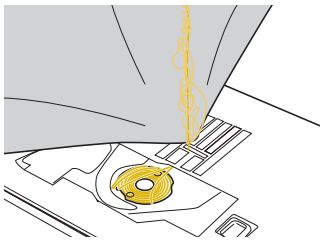
Tangled Thread on Wrong Side of Fabric

■ 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.

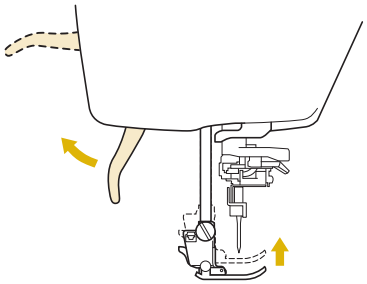
* Refer to "Cleaning the Race" in "CARE AND MAINTENANCE" on page 184.

2 Remove the upper thread from the machine.

3 Refer to the following steps to correct the upper threading.

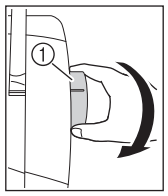
* If the bobbin was removed from the bobbin case, refer to "Setting the Bobbin" on page 58 and "Remedy" in the section "Upper Thread is Too Tight" on page 188 to correctly install the bobbin.

4 **Raise the presser foot using the presser foot lever.**

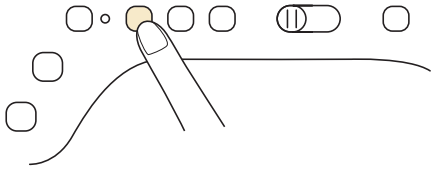


* If the presser foot is not raised, the machine cannot be threaded correctly.

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.**

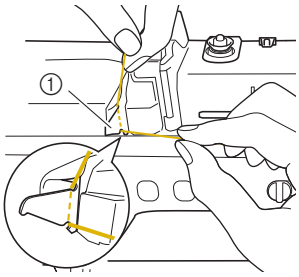


or



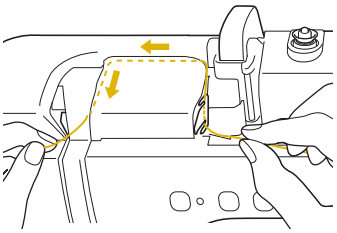
① Mark

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

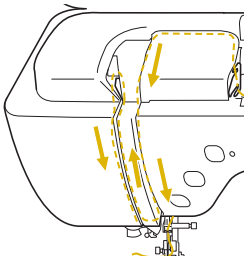


① Thread guide plate

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

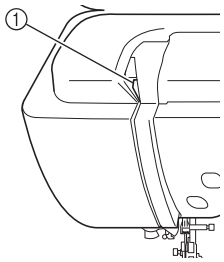


8 **Guide the thread down, up, then down through the groove, as shown in the illustration.**



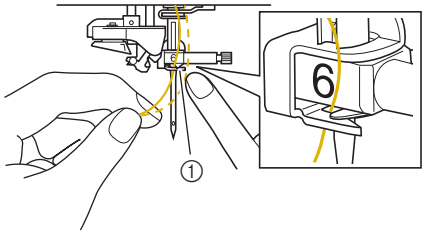
Memo

- Look in the upper groove area to check if the thread catches on the thread 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

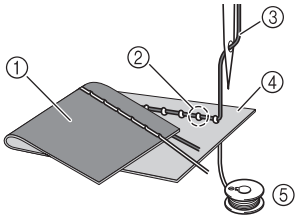
10 **Thread the needle according to steps 10 and 15 in "UPPER THREADING" on page 61.**

Incorrect Thread Tension

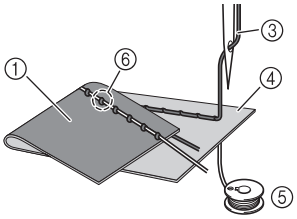
■ Symptoms

- 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 87.

<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 189 to correct the upper threading.

☐ Cause 2

A needle and thread appropriate for the fabric are not being used.

The 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 71 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 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 authorized Baby Lock retailer.

■ Removing the fabric from the machine

1 **Immediately stop the machine.**

2 **Turn off the 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 69.

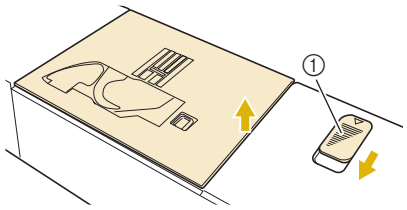
4 **Remove the presser foot and presser foot holder.**

* Refer to “CHANGING THE PRESSER FOOT” on page 72.

5 **Lift up the fabric and cut the threads below it.**

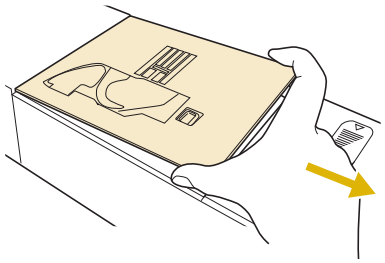
If the fabric can be removed, remove it. Continue with the following steps to clean the race.

6 **Slide the needle plate lever toward you.**



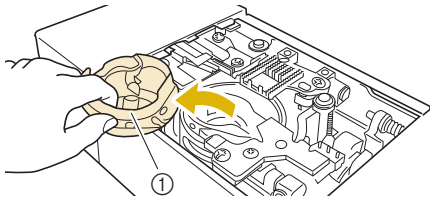
① Slide toward you.
→ The needle plate opens.

7 **Slide out the needle plate with your right hand to remove it.**



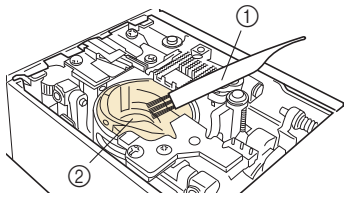
8 **Grasp the bobbin case, and then gently lift out.**

If threads remain in the bobbin case, remove them.



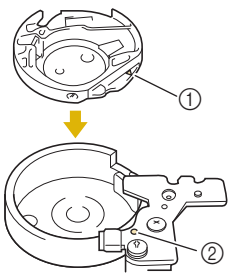
① Bobbin case

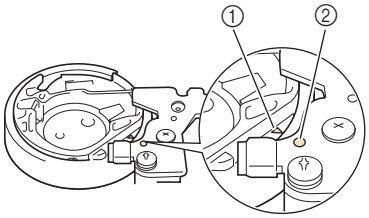
9 **Use the cleaning brush or a vacuum cleaner to remove any dust or loose threads from the race and its surrounding area.**



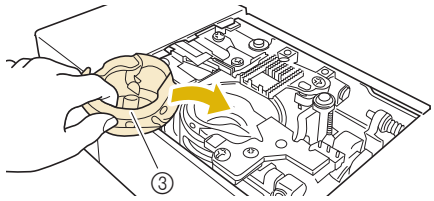
① Cleaning brush
② Race

10 **Insert the bobbin case so that the ▲ mark on the bobbin case aligns with the ● mark on the machine.**





* Align the ▲ and ● marks.



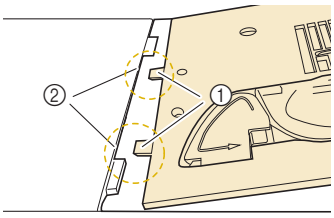
① ▲ mark
② ● mark
③ Bobbin case

* Make sure that the indicated points are aligned before installing the bobbin case.

⚠ CAUTION

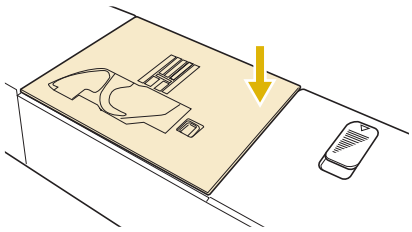
- Never use a bobbin case that is scratched; otherwise, the upper thread may become tangled, the needle may break, or sewing performance may suffer. For a new bobbin case (part code: XE5342-101 (green marking on the screw), XC8167-551 (no color on the screw)), contact your nearest authorized Baby Lock retailer.
- Make sure that you fit the bobbin case properly, otherwise the needle may break.

11 Insert the tabs on the needle plate into the notches in the machine.



① Tabs
② Notches

12 Press down on the right side of the needle plate to secure it.



13 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 69.

⚠ 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.

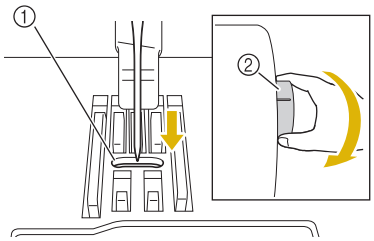
2 Select **.**

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.



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 authorized Baby Lock retailer.

6 **Turn off the machine, and then install the bobbin and presser foot.**

* Refer to "Setting the Bobbin" on page 58 and "CHANGING THE PRESSER FOOT" on page 72.

7 **Correctly thread the machine.**

* For details on the machine, refer to "UPPER THREADING" on page 61.

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

- Remember when sewing thin fabrics, select a center stitch that is shorter in length and use the straight stitch needle plate for straight sewing stitches. A lightweight paper stabilizer can also be placed on the underside of the fabric.

List of Symptoms

If you have a minor problem with your 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.	15
	Needle is installed incorrectly.	Reinstall the needle correctly.	69
	Needle is turned, bent or the point is dull.	Replace the needle.	69
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	61
	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.	64
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.	15
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.	65
	Bobbin spins slowly.	Press + in the bobbin winding window to increase the bobbin winding speed.	55
	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.	69
	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	58
Machine does not operate	All keys and buttons have been locked by .	Press to unlock all keys and buttons.	66, 72
Nothing appears in the LCD.	Main power switch is not turned on.	Turn the main power to ON.	25
	The plug of the power cord is not inserted into an electrical outlet.	Insert the plug of the power cord into an electrical outlet.	26
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.	29
Nothing happens, even if the LCD display is pressed	The screen has been locked.	Press either of the following keys to unlock the screen.	—
The LCD screen is fogged up.	Condensation has formed on the LCD screen.	After a while, the cloudiness will disappear.	—
The dual purpose stylus cannot be operated.	The dual purpose stylus is dirty.	Clean the light-emitting part of the dual purpose stylus.	—
	The battery is dead.	Replace the battery with a new one.	94

■ While sewing

Problem	Cause	Solution	Page
Machine does not operate.	“Start/Stop” button was not pressed.	Press the “Start/Stop” button.	15
	There is no stitch pattern selected.	Select a stitch pattern.	105, 158
	Presser foot is not lowered.	Lower the presser foot.	15
	“Start/Stop” button was pressed with the foot controller attached.	Remove the foot controller, or use the foot controller to operate the machine.	78
	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.	28, 78
Needle breaks.	Needle is installed incorrectly.	Reinstall the needle correctly.	69
	Needle clamp screw is not tightened.	Tighten the needle clamp screw.	70
	Needle is turned or bent.	Replace the needle.	69
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	71
	Wrong presser foot was used.	Use the recommended presser foot.	206
	Upper thread tension is too tight.	Adjust the thread tension.	87
	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.	61
	There are scratches around the opening in the needle plate.	Replace the needle plate, or consult your authorized Baby Lock retailer.	184
	There are scratches around the opening in the presser foot.	Replace the presser foot, or consult your authorized Baby Lock retailer.	72
	There are scratches on the bobbin case.	Replace the bobbin case, or consult your authorized Baby Lock retailer.	184
	Needle is defective.	Replace the needle.	69
	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.	58
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	61
	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	58
	Presser foot is attached incorrectly.	Attach the presser foot correctly.	72
	Screw of the presser foot holder is loose.	Securely tighten the screw of the presser foot.	73
	Fabric is too thick.	Use fabric that the needle can pierce when the handwheel is turned.	82
	Fabric is fed forcefully when sewing thick fabric or thick seams.	Allow the fabric to be fed without being forcefully pushed.	71, 82
	Stitch length is too short.	Adjust the stitch length.	86
	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.	61
	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.	71
	Upper thread tension is too tight.	Adjust the thread tension.	87
	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.	69
	Needle is installed incorrectly.	Reinstall the needle correctly.	69
	There are scratches around the opening of the needle plate.	Replace the needle plate, or consult your authorized Baby Lock retailer.	184
	There are scratches around the opening in the presser foot.	Replace the presser foot, or consult your authorized Baby Lock retailer.	72
	There are scratches on the bobbin case.	Replace the bobbin case, or consult your authorized Baby Lock retailer.	184
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	71
	While sewing, the thread became knotted or tangled.	Rethread upper and lower thread.	58, 61
	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.	58
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.	61
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	71
The upper thread is too tight.	The bobbin thread is incorrectly installed.	Correctly install the bobbin thread.	58
Bobbin thread breaks.	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	58
	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.	58
	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.	58
Fabric puckers.	There is a mistake in the upper or bobbin threading.	Check the steps for threading the machine and rethread it correctly.	58, 61
	Spool cap is set incorrectly.	Check the method for attaching the spool cap, then reattach the spool cap.	61
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	71
	Needle is turned, bent or the point is dull.	Replace the needle.	69
	Stitches are too long when sewing thin fabrics.	Shorten the stitch length.	86
	Thread tension is set incorrectly.	Adjust the thread tension.	87
	Wrong presser foot.	Use the correct presser foot.	206
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.	206
	The thread tension is incorrect.	Adjust the tension of the upper thread.	87
	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.	184
Skipped stitches	Machine is threaded incorrectly.	Check the steps for threading the machine and rethread it correctly.	61
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	71

Problem	Cause	Solution	Page
Skipped stitches	Needle is turned, bent or the point is dull.	Replace the needle.	69
	Needle is installed incorrectly.	Reinstall the needle correctly.	69
	Needle is defective.	Replace the needle.	69
	Dust or lint has collected under the needle plate.	Remove the dust or lint with the brush.	184
	Thin or stretch fabrics are being sewn.	Sew with one sheet of thin paper under the fabric.	84
No stitching	Needle is turned, bent or the point is dull.	Replace the needle.	69
	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	58
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	61
High-pitched sound while sewing	Dust or lint is caught in the feed dogs.	Remove the dust or lint.	184
	Pieces of thread are caught in the race.	Clean the race.	184
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	61
	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.	58
	There are needle holes or friction scratches in the bobbin case.	Replace the bobbin case, or consult your authorized Baby Lock retailer.	184
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.	126
	Stitches are too close together.	Lengthen the stitch length setting.	86
	Wrong presser foot was used.	Use the correct presser foot.	206
	Needle is turned, bent or the point is dull.	Replace the needle.	69
	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.	83
The fabric feeds in the opposite direction.	The feed mechanism is damaged.	Contact your authorized 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.	70
	Needle is turned, bent or the point is dull.	Replace the needle.	69
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.	189
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.	189
The built-in camera cannot detect the buttonhole foot.	The buttonhole foot is dirty.	Clean the area of the buttonhole foot to be detected.	141
	Mark “A+” or 3 dots on the presser foot is shaded.	Keep these area clean.	141

■ 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.	61
	Bobbin is set incorrectly.	Reset the bobbin. (If needle plate was removed, reinstall needle plate and tighten screws prior to installing bobbin case.)	58
	Using improper needle or thread for the selected fabric.	Check the “Fabric/Thread/Needle Combinations” chart.	71
	Presser foot holder is not attached correctly.	Reattach the presser foot holder correctly.	—
	Thread tension is set incorrectly.	Adjust the thread tension.	87
	Bobbin thread is incorrectly wound.	Use a correctly wound bobbin.	52
	Needle is turned, bent or the point is dull.	Replace the needle.	69
	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.	58
Character or decorative stitch patterns are misaligned.	Stitch pattern adjustment settings were set incorrectly.	Revise the stitch pattern adjustment settings.	164
Stitch pattern does not turn out.	Wrong presser foot was used.	Attach the correct presser foot.	206
	Did not use a stabilizer material on thin fabrics or stretch fabrics.	Attach a stabilizer material.	163
	Thread tension is set incorrectly.	Adjust the thread tension.	87
	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.	77
	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.	184

⚠ 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.**
- **If the power is disconnected during sewing:**
  Turn the main power to OFF and unplug the machine.
  If you restart the machine, follow the Instruction and Reference Guide for operating the machine correctly.

ERROR MESSAGES

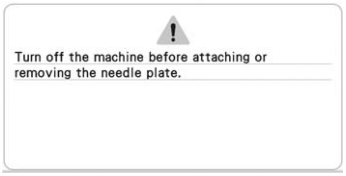
If the machine is not properly set and the “Start/Stop” button or the “Reverse/Reinforcement Stitch” button is pressed, or if the operation procedure is incorrect, the machine does not start. An alarm sounds and an error message is displayed on the LCD. If an error message displays, follow the instructions 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.**

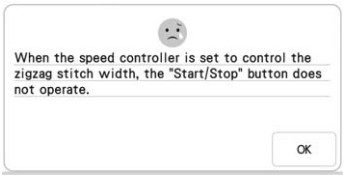
This message is displayed when the motor locks due to tangled thread or for other reasons related to thread delivery.



This message is displayed when 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.

This message is displayed when the machine needs to be maintained. (page 187)

This message is displayed when you try to combine more than 71 stitch patterns.

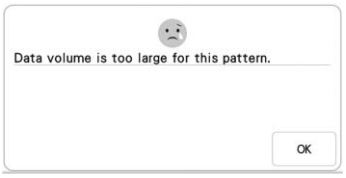


This message is displayed when the speed control lever is set to control the zigzag stitch width, and the “Start/ Stop” button is pushed. Use the foot controller to operate the machine.

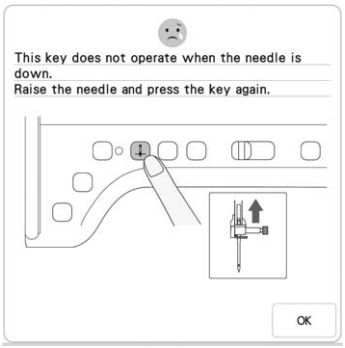
This message is displayed when the automatic needle threading button is pushed while twin needle sewing is set.

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. (page 32)

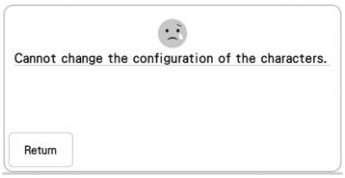
This message appears when Delete or All Delete is pressed to delete the settings for a utility stitch. To delete the selected settings, press OK.



This message is displayed when the stitch patterns you are editing take up too much memory, or if you are editing too many stitch patterns for the memory.

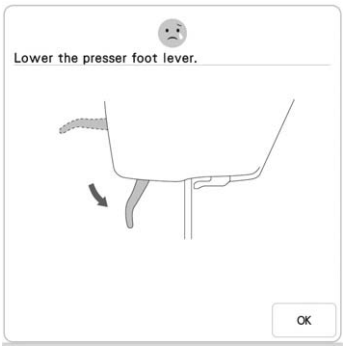


This message is displayed when a key on the LCD display is touched while the needle is in the down position.

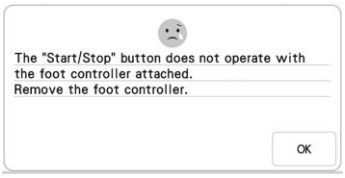


This message is displayed when there are too many characters and the curved character configuration is impossible.

This message is displayed when the upper thread is broken or not threaded correctly, and the “Start/Stop” button or the “Reverse/ Reinforcement Stitch” button is pressed.



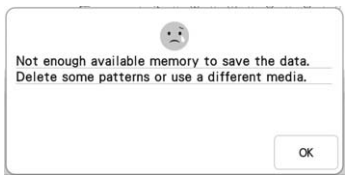
This message is displayed when the “Presser Foot Lifter” button is pushed while the presser foot lever is raised/the needle is lowered.



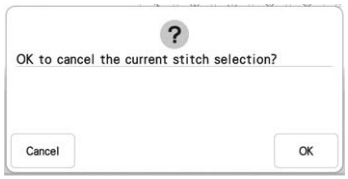
This message is displayed when the “Start/Stop” button is pushed to sew utility stitches or character/ decorative stitches while the foot controller is connected.

This message is displayed when there is no stitch 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.

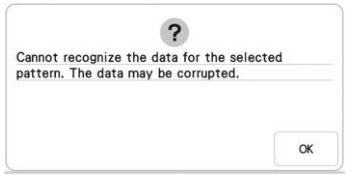


This message is displayed when the memory is full and the stitch pattern or embroidery pattern cannot be saved.



This message is displayed when, after selecting a stitch pattern, Utility Stitch, Character Decorative Stitch, or is pressed and the stitch 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.

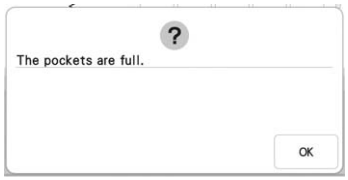


This message is displayed when there is a possibility that the data for the selected stitch pattern is corrupted.

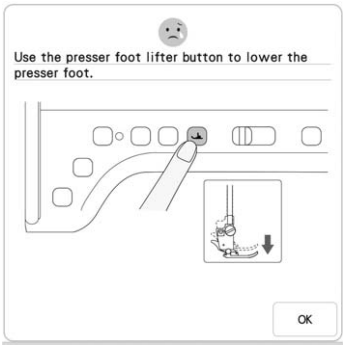
This message is displayed when you try to use incompatible media.

This message is displayed when you attempt to select a stitch pattern after the USB media in which the stitch pattern is saved has been changed.

This message is displayed when an error occurs with the USB media.

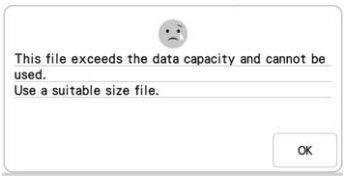


This message is displayed when the memory is full and a stitch pattern must be deleted.



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 it seems that the upper thread has not been threaded correctly.

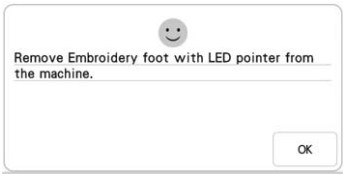


This message is displayed when the file size exceeds the data capacity of the machine.
Confirm the file size and format. (page 35.)

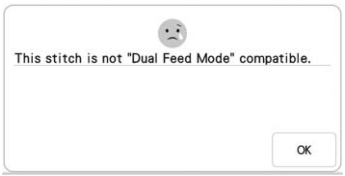
This message appears if the file format is incompatible with this machine. Check the list of compatible file formats. (page 35.)

This message is displayed when the image is deleted.

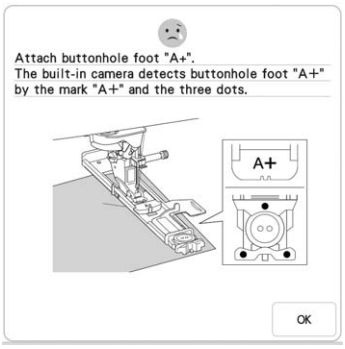
This message is displayed when you press Sewing Guide in the screen other than the utility stitch, or press Pattern Explanation in the screen other than the utility stitch or character/ decorative stitch.



This message appears when you try to start sewing utility stitches or character/decorative stitches 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.



This message appears when the dual feed foot cannot be used with the current stitch. Select other stitch.



This message appears when start sewing buttonhole stitches without attaching buttonhole foot “A+”.

■ 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 page 4 of the General settings screen, and then change the setting for “Machine Speaker Volume”. Refer to page 29 for more details.

SPECIFICATIONS

	Item	Specification
Machine (Box 1 of 2)	Dimensions of machine	Approx. 690 mm (W) × 349 mm (H) × 322 mm (D) (approx. 27-11/64 inches (W) × 13-47/64 inches (H) × 12-43/64 inches (D))
	Dimensions of box	Approx. 805 mm (W) × 510 mm (H) × 405 mm (D) (approx. 31-11/16 inches (W) × 20-5/64 inches (H) × 15-15/16 inches (D))
	Weight of machine	Approx. 19.6 kg (approx. 43.2 lb)
	Weight of box (for shipping)	Approx. 23.0 kg (approx. 50.7 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. 637 mm (W) × 150 mm (H) × 576 mm (D) (approx. 25-5/64 inches (W) × 5-29/32 inches (H) × 22-43/64 inches (D))
	Dimensions of machine with embroidery unit attached	Approx. 973 mm (W) × 349 mm (H) × 576 mm (D) (approx. 38-5/16 inches (W) × 13-47/64 inches (H) × 22-43/64 inches (D))
	Dimensions of box	Approx. 800 mm (W) × 695 mm (H) × 205 mm (D) (approx. 31-1/2 inches (W) × 27-23/64 inches (H) × 8-5/64 inches (D))
	Weight of embroidery unit	Approx. 5.6 kg (approx. 12.3 lb)
	Weight of box (for shipping)	Approx. 9.2 kg (approx. 20.3 lb)
Total Shipping Weight (Combination of all 2 boxes complete)		Approx. 43.4 kg (approx. 95.7 lb)
Data storage		USB media/SD card (SD and SDHC)

* Please be aware that some specifications may change without notice.

UPGRADING YOUR MACHINE'S SOFTWARE

You can use USB media to upgrade software for your machine.
When an upgrade program is available on " www.babylock.com ", please download the files following the instructions on the website and steps below.

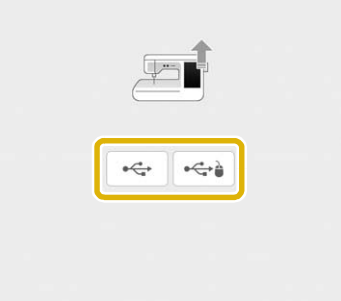
Note
- When using USB media to upgrade the software, check that no data other than the upgrade file is saved on the USB media being used before starting to upgrade.
- Compatible operating systems:
  Windows 7, Windows 8.1, Windows 10

Upgrade Procedure Using USB Media

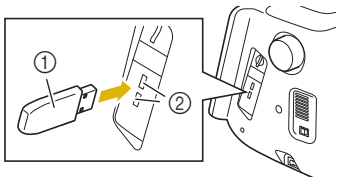
1 While pressing the "Automatic Threading" button, turn the main power to ON.

→ The following screen will appear on the LCD.

2 Press [USB] or [USB].



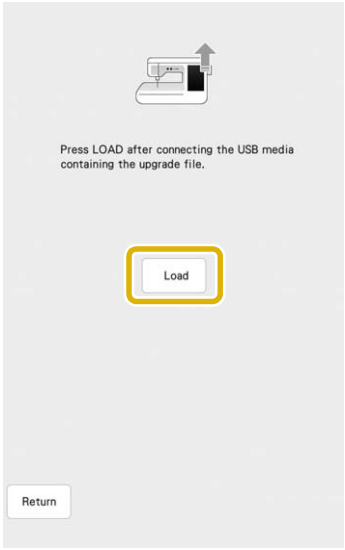
3 Insert the USB media into the USB port corresponding to the button pressed in step 2. USB port on the machine. The media device should only contain the upgrade file.



① USB media
② USB port

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.

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 126.

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Straight stitch (Left)			General sewing, gather, pintuck, etc. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**0.0 (0)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 13/ 64)	OK (J)
	Straight stitch (Left)			General sewing, gather, pintuck, etc. Reinforcement stitch is sewn while pressing “Reverse/Reinforcement Stitch” button.	**0.0 (0)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 13/ 64)	OK (J)
	Straight stitch (Middle)			General sewing, gather, pintuck, etc. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (9/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 13/ 64)	OK (J)
	Straight stitch (Middle)			General sewing, gather, pintuck, etc. Reinforcement stitch is sewn while pressing “Reverse/Reinforcement Stitch” button.	**3.5 (9/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 13/ 64)	OK (J)
	Triple stretch stitch			General sewing for reinforcement and decorative topstitching	**0.0 (0)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/ 64)	OK (J)
	Stem stitch			Reinforced stitching, sewing and decorative applications	**1.0 (3/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/ 64)	OK (J)
	Decorative stitch			Decorative stitching, top stitching	**0.0 (0)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/ 64)	OK (J)
	Basting stitch			Basting	**0.0 (0)**	0.0 - 7.0 (0 - 9/32)	**20 (25/32)**	5.0 (13/64)	NO
	Zigzag stitch			For overcasting, mending. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (9/64)**	0.0 - 7.0 (0 - 9/32)	**1.4 (1/16)**	0.0 - 5.0 (0 - 13/64)	OK (J)
	Zigzag stitch			For overcasting, mending. Reinforcement stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (9/64)**	0.0 - 7.0 (0 - 9/32)	**1.4 (1/16)**	0.0 - 5.0 (0 - 13/64)	OK (J)
	Zigzag stitch (Right)			Start from right needle position, zigzag sew at left.	**3.5 (9/64)**	2.5 - 5.0 (3/32 - 13/ 64)	**1.4 (1/16)**	0.3 - 5.0 (1/64 - 13/ 64)	OK (J)
	Zigzag stitch (Left)			Start from left needle position, zigzag sew at right.	**3.5 (9/64)**	2.5 - 5.0 (3/32 - 13/ 64)	**1.4 (1/16)**	0.3 - 5.0 (1/64 - 13/ 64)	OK (J)
	2 steps elastic zigzag			Overcasting (medium weight and stretch fabrics), tape and elastic	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**1.0 (3/64)**	0.2 - 5.0 (1/64 - 13/ 64)	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		Overcasting (medium weight and stretch fabrics), tape and elastic	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**1.0 (3/64)**	0.2 - 5.0 (1/64 - 13/64)	OK (J)
1-15	**3 steps elastic zigzag**	J		Overcasting (medium, heavyweight and stretch fabrics), tape and elastic	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**1.0 (3/64)**	0.2 - 5.0 (1/64 - 13/64)	OK (J)
1-16	**Overcasting stitch**	G		Reinforcing of light and medium weight fabrics	**3.5 (9/64)**	2.5 - 5.0 (3/32 - 13/64)	**2.0 (5/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
1-17	**Overcasting stitch**	G		Reinforcing of heavyweight fabric	**5.0 (13/64)**	2.5 - 5.0 (3/32 - 13/64)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
1-18	**Overcasting stitch**	G		Reinforcing of medium, heavyweight and easily friable fabrics or decorative stitching.	**5.0 (13/64)**	3.5 - 5.0 (9/64 - 13/64)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
1-19	**Overcasting stitch**	J		Reinforced seaming of stretch fabric	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
1-20	**Overcasting stitch**	J		Reinforcing of medium stretch fabric and heavyweight fabric, decorative stitching	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
1-21	**Overcasting stitch**	J		Reinforcement of stretch fabric or decorative stitching	**4.0 (5/32)**	0.0 - 7.0 (0 - 9/32)	**4.0 (5/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
1-22	**Overcasting stitch**	J		Stretch knit seam	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**4.0 (5/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
1-23	**Single diamond overcast**	J		Reinforcement and seaming stretch fabric	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
1-24	**Single diamond overcast**	J		Reinforcement of stretch fabric	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**1.8 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	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 - 13/64)	NO
1-26	**With side cutter**	S		Zigzag stitch while cutting fabrics	**3.5 (9/64)**	3.5 - 5.0 (9/64 - 13/64)	**1.4 (1/16)**	0.0 - 5.0 (0 - 13/64)	NO
1-27	**With side cutter**	S		Overcasting stitch while cutting fabrics	**3.5 (9/64)**	3.5 - 5.0 (9/64 - 13/64)	**2.0 (5/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
1-28	**With side cutter**	S		Overcasting stitch while cutting fabrics	**5.0 (13/64)**	3.5 - 5.0 (9/64 - 13/64)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
1-29	**With side cutter**	S		Overcasting stitch while cutting fabrics	**5.0 (13/64)**	3.5 - 5.0 (9/64 - 13/64)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
1-30	**Piecing stitch (Right)**	J		Piecework/patchwork 6.5 mm (approx. 1/4 inch) right seam allowance	**5.5 (7/32)**	0.0 - 7.0 (0 - 9/32)	**2.0 (5/64)**	0.2 - 5.0 (1/64 - 13/64)	NO
1-31	**Piecing stitch (Middle)**	J	C	Piecework/patchwork	**—**	—	**2.0 (5/64)**	0.2 - 5.0 (1/64 - 13/64)	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 - 9/32)	**2.0 (5/64)**	0.2 - 5.0 (1/64 - 13/64)	NO
1-33	**Hand-look quilting**	J		Quilting stitch made to look like hand quilting stitch	**0.0 (0)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
1-34	**Quilting appliqué zigzag stitch**	J		Zigzag stitch for quilting and sewing on appliqué quilt pieces	**3.5 (9/64)**	0.0 - 7.0 (0 - 9/32)	**1.4 (1/16)**	0.0 - 5.0 (0 - 13/64)	NO
1-35	**Quilting appliqué stitch**	J		Quilting stitch for invisible appliqué or attaching binding	**1.5 (1/16)**	0.0 - 7.0 (0 - 9/32)	**1.8 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
1-36	**Quilting stippling**	J		Background quilting	**7.0 (9/32)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
2-01	**Blind hem stitch**	R		Hemming woven fabrics	**0.0 (0)**	+3.0 - -3.0 (+1/8 - -1/8)	**2.0 (5/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
2-02	**Blind hem stitch stretch**	R		Hemming stretch fabric	**0.0 (0)**	+3.0 - -3.0 (+1/8 - -1/8)	**2.0 (5/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
2-03	**Blanket stitch**	J		Appliqués, decorative blanket stitch	**3.5 (9/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
2-04	**Blanket stitch**	J		Appliqués, decorative blanket stitch	**2.5 (3/32)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
2-05	**Shell tuck edge**	J		Shell tuck edge finish on fabrics	**4.0 (5/32)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 13/64)	OK (J)
2-06	**Satin scallop stitch**	N		Decorating collar of blouse, edge of handkerchief	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**0.5 (1/64)**	0.1 - 5.0 (0 - 13/64)	OK (J)
2-07	**Scallop stitch**	N		Decorating collar of blouse, edge of handkerchief	**7.0 (9/32)**	0.0 - 7.0 (0 - 9/32)	**1.4 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
2-08	**Patchwork join stitch**	J		Patchwork stitches, decorative stitching	**4.0 (5/32)**	0.0 - 7.0 (0 - 9/32)	**1.2 (1/16)**	0.2 - 5.0 (1/64 - 13/64)	OK (J)
2-09	**Patchwork double overlock stitch**	J		Patchwork stitches, decorative stitching	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
2-10	**Couching stitch**	J		Decorative stitching, attaching cord and couching	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**1.2 (1/16)**	0.2 - 5.0 (1/64 - 13/64)	OK (J)
2-11	**Smocking stitch**	J		Smocking, decorative stitching	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
2-12	**Feather stitch**	J		Fagoting, decorative stitching	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
2-13	**Fagoting cross stitch**	J		Fagoting, bridging and decorative stitching	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
2-14	**Tape attaching**	J		Attaching tape to seam in stretch fabric	**4.0 (5/32)**	0.0 - 7.0 (0 - 9/32)	**1.0 (3/64)**	0.2 - 5.0 (1/64 - 13/64)	OK (J)

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Ladder stitch			Decorative stitching	**4.0 (5/32)**	0.0 - 7.0 (0 - 9/32)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Rick-rack stitch			Decorative top stitching	**4.0 (5/32)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Decorative stitch			Decorative stitching	**1.0 (3/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Decorative stitch			Decorative stitching	**5.5 (7/32)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Serpentine stitch			Decorative stitching and attaching elastic	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**1.0 (3/64)**	0.2 - 5.0 (1/64 - 13/64)	OK (J)
	Decorative stitch			Decorative stitching and appliqué	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**1.0 (3/64)**	0.2 - 5.0 (1/64 - 13/64)	OK (J)
	Decorative stippling stitch			Decorative stitching	**7.0 (9/32)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Decorative hems, triple straight at left	**1.0 (3/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Decorative hems, triple straight at center	**3.5 (9/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching zigzag			Decorative hems, top stitching	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Decorative hems, lace attaching pin stitch	**3.5 (9/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Decorative hems	**3.0 (1/8)**	0.0 - 7.0 (0 - 9/32)	**3.5 (9/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Decorative hems daisy stitch	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Heirloom, decorative hems	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**3.5 (9/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Heirloom, decorative hems	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**3.5 (9/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Heirloom, decorative hems	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**3.5 (9/64)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Heirloom, decorative hems	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**4.0 (5/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Heirloom, decorative hems	**4.0 (5/32)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Honeycomb stitch			Heirloom, decorative hems	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Honeycomb stitch			Heirloom, decorative hems	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**3.5 (9/64)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Heirloom, decorative hems	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Heirloom, decorative hems	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Heirloom, decorative hems	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**4.0 (5/32)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Heirloom, decorative hems	**4.0 (5/32)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Heirloom, decorative hems	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**2.0 (5/64)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Decorative hems and bridging stitch	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**2.0 (5/64)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Decorative hems. Fagoting, attaching ribbon	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 13/64)	OK (J)
	Hemstitching			Decorative hems, smocking	**6.0 (15/64)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Decorative hems, smocking	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/16 - 13/64)	NO
	Hemstitching			Decorative hems, smocking	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Decorative hems	**5.0 (13/64)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Ladder stitch			Decorative hems. Fagoting, attaching ribbon	**7.0 (9/32)**	0.0 - 7.0 (0 - 9/32)	**1.6 (1/16)**	0.4 - 2.5 (1/64 - 3/32)	NO
	Narrow rounded buttonhole			Buttonhole on light to medium weight fabrics	**5.0 (13/64)**	3.0 - 6.5 (1/8 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
	Wide round ended buttonhole			Buttonholes with extra space for larger buttons	**5.5 (7/32)**	3.5 - 6.5 (9/64 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
	Tapered round ended buttonhole			Reinforced waist tapered buttonholes	**5.0 (13/64)**	3.0 - 6.5 (1/8 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
	Round ended buttonhole			Buttonholes with vertical bar tack in heavyweight fabrics	**5.0 (13/64)**	3.0 - 6.5 (1/8 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	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 (13/64)**	3.0 - 6.5 (1/8 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
4-06	**Round double ended buttonhole**	A+		Buttonholes for fine, medium to heavyweight fabrics	**5.0 (13/64)**	3.0 - 6.5 (1/8 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
4-07	**Narrow squared buttonhole**	A+		Buttonholes for light to medium weight fabrics	**5.0 (13/64)**	3.0 - 6.5 (1/8 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
4-08	**Wide squared buttonhole**	A+		Buttonholes with extra space for larger decorative buttons	**5.5 (7/32)**	3.5 - 6.5 (9/64 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
4-09	**Squared buttonhole**	A+		Heavy-duty buttonholes with vertical bar tacks	**5.0 (13/64)**	3.0 - 6.5 (1/8 - 1/4)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
4-10	**Stretch buttonhole**	A+		Buttonholes for stretch or woven fabrics	**6.0 (15/64)**	3.0 - 6.5 (1/8 - 1/4)	**1.0 (3/64)**	0.5 - 2.0 (1/64 - 5/64)	NO
4-11	**Heirloom buttonhole**	A+		Buttonholes for heirloom and stretch fabrics	**6.0 (15/64)**	3.0 - 6.5 (1/8 - 1/4)	**1.5 (1/16)**	1.0 - 3.0 (3/64 - 1/8)	NO
4-12	**Bound buttonhole**	A+		The first step in making bound buttonholes	**5.0 (13/64)**	0.0 - 6.5 (0 - 1/4)	**2.0 (5/64)**	0.2 - 4.0 (1/64 - 5/32)	NO
4-13	**Keyhole buttonhole**	A+		Buttonholes in heavyweight or thick fabrics for larger flat buttons	**7.0 (9/32)**	3.0 - 7.0 (1/8 - 9/32)	**0.5 (1/64)**	0.3 - 1.0 (1/64 - 3/64)	NO
4-14	**Tapered keyhole buttonhole**	A+		Buttonholes in medium to heavy weight fabrics for larger flat buttons	**7.0 (9/32)**	3.0 - 7.0 (1/8 - 9/32)	**0.5 (1/64)**	0.3 - 1.0 (1/64 - 3/64)	NO
4-15	**Keyhole buttonhole**	A+		Buttonholes with vertical bar tack for reinforcement in heavyweight or thick fabrics	**7.0 (9/32)**	3.0 - 7.0 (1/8 - 9/32)	**0.5 (1/64)**	0.3 - 1.0 (1/64 - 3/64)	NO
4-16	**4 steps buttonhole 1**	N	O	Left side of 4 step buttonhole	**5.0 (13/64)**	1.5 - 7.0 (1/16 - 9/32)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
4-17	**4 steps buttonhole 2**	N	O	Bar tack of 4 step buttonhole	**5.0 (13/64)**	1.5 - 7.0 (1/16 - 9/32)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
4-18	**4 steps buttonhole 3**	N	O	Right side of 4 step buttonhole	**5.0 (13/64)**	1.5 - 7.0 (1/16 - 9/32)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
4-19	**4 steps buttonhole 4**	N	O	Bar tack of 4 step buttonhole	**5.0 (13/64)**	1.5 - 7.0 (1/16 - 9/32)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 3/64)	NO
4-20	**Darning**	A+		Darning of medium weight fabric	**7.0 (9/32)**	2.5 - 7.0 (3/32 - 9/32)	**2.0 (5/64)**	0.4 - 2.5 (1/64 - 3/32)	NO
4-21	**Darning**	A+		Darning of heavyweight fabric	**7.0 (9/32)**	2.5 - 7.0 (3/32 - 9/32)	**2.0 (5/64)**	0.4 - 2.5 (1/64 - 3/32)	NO
4-22	**Bar tack**	A+		Reinforcement at opening of pocket, etc.	**2.0 (5/64)**	1.0 - 3.0 (3/64 - 1/8)	**0.4 (1/64)**	0.3 - 1.0 (1/64 - 3/64)	NO

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Button sewing			Attaching buttons	**3.5 (9/64)**	2.5 - 4.5 (3/32 - 11/64)	—	—	NO
	Eyelet			For making eyelets, holes on belts, etc.	**7.0 (9/32)**	7.0 6.0 5.0 (9/32 15/64 13/64)	**7.0 (9/32)**	7.0 6.0 5.0 (9/32 15/64 13/64)	NO
	Star eyelet			For making star-shaped eyelets on holes.	—	—	—	—	NO
	Diagonally left up (Straight)			For attaching appliqué on tubular pieces of fabric and mitering corners	—	—	—	—	NO
	Reverse (Straight)			For attaching appliqué on tubular pieces of fabric and mitering corners	—	—	—	—	NO
	Diagonally right up (Straight)			For attaching appliqué on tubular pieces of fabric and mitering corners	—	—	—	—	NO
	Sideways to left (Straight)			For attaching appliqué on tubular pieces of fabric	—	—	—	—	NO
	Sideways to right (Straight)			For attaching appliqué on tubular pieces of fabric	—	—	—	—	NO
	Diagonally left down (Straight)			For attaching appliqué on tubular pieces of fabric and mitering corners	—	—	—	—	NO
	Forward (Straight)			For attaching appliqué on tubular pieces of fabric and mitering corners	—	—	—	—	NO
	Diagonally right down (Straight)			For attaching appliqué on tubular pieces of fabric and mitering corners	—	—	—	—	NO
	Sideways to left (Zigzag)			For attaching appliqué on tubular pieces of fabric	—	—	—	—	NO
	Sideways to right (Zigzag)			For attaching appliqué on tubular pieces of fabric	—	—	—	—	NO
	Forward (Zigzag)			For attaching appliqué on tubular pieces of fabric and mitering corners	—	—	—	—	NO
	Reverse (Zigzag)			For attaching appliqué on tubular pieces of fabric and mitering corners	—	—	—	—	NO
	Piecing stitch (Middle)			Piecework/patchwork	—	—	**2.0 (5/64)**	0.2 - 5.0 (1/64 - 13/64)	NO
	Piecing stitch (Right)			Piecework/patchwork 6.5 mm (approx. 1/4 inch) right seam allowance	**5.50 (7/32)**	0.00 - 7.00 (0 - 9/32)	**2.0 (5/64)**	0.2 - 5.0 (1/64 - 13/64)	NO
	Piecing stitch (Left)			Piecework/patchwork 6.5 mm (approx. 1/4 inch) left seam allowance	**1.50 (1/16)**	0.00 - 7.00 (0 - 9/32)	**2.0 (5/64)**	0.2 - 5.0 (1/64 - 13/64)	NO

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Hand-look quilting			Quilting stitch made to look like hand quilting stitch	**3.50 (9/64)**	0.00 - 7.00 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Basting stitch			Basting	**3.50 (9/64)**	0.00 - 7.00 (0 - 9/32)	**20 (25/32)**	5 - 30 (13/64 - 1-3/16)	NO
	Stem stitch			Reinforced stitching, sewing and decorative applications	**1.00 (3/64)**	0.00 - 7.00 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Quilting appliqué zigzag stitch			Zigzag stitch for quilting and sewing on appliqué quilt pieces	**3.50 (9/64)**	0.00 - 7.00 (0 - 9/32)	**1.6 (1/16)**	0.0 - 5.0 (0 - 13/64)	NO
	Zigzag stitch (Right)			Start from right needle position, zigzag sew at left	**3.50 (9/64)**	2.50 - 5.00 (3/32 - 13/64)	**1.6 (1/16)**	0.3 - 5.0 (1/64 - 13/64)	NO
	Zigzag stitch (Left)			Start from left needle position, zigzag sew at right	**3.50 (9/64)**	2.50 - 5.00 (3/32 - 13/64)	**1.6 (1/16)**	0.3 - 5.0 (1/64 - 13/64)	NO
	2 steps elastic zigzag			Overcasting (medium weight and stretch fabrics), tape and elastic	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**1.0 (3/64)**	0.2 - 5.0 (1/64 - 13/64)	NO
	3 steps elastic zigzag			Overcasting (medium, heavyweight and stretch fabrics), tape and elastic	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**1.0 (3/64)**	0.2 - 5.0 (1/64 - 13/64)	NO
	Quilting appliqué stitch			Quilting stitch for invisible appliqué or attaching binding	**2.00 (5/64)**	0.00 - 7.00 (0 - 9/32)	**2.0 (5/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Shell tuck edge			Shell tuck edge finish on fabrics	**4.00 (5/32)**	0.00 - 7.00 (0 - 9/32)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 13/64)	NO
	Blanket stitch			Appliqués, decorative blanket stitch	**3.50 (9/64)**	0.00 - 7.00 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Quilting stippling			Background quilting	**7.00 (9/32)**	0.00 - 7.00 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Overcasting stitch			Stretch knit seam	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**4.0 (5/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Tape attaching			Attaching tape to seam in stretch fabric	**5.50 (7/32)**	0.00 - 7.00 (0 - 9/32)	**1.4 (1/16)**	0.2 - 5.0 (1/64 - 13/64)	NO
	Serpentine stitch			Decorative stitching and attaching elastic	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**2.0 (5/64)**	0.2 - 5.0 (1/64 - 13/64)	NO
	Feather stitch			Fagoting, decorative stitching	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Fagoting cross stitch			Fagoting, bridging and decorative stitching	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Couching stitch			Decorative stitching, attaching cord and couching	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**1.2 (1/16)**	0.2 - 5.0 (1/64 - 13/64)	NO

Stitch	Stitch name	Presser foot		Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin needle
					Auto.	Manual	Auto.	Manual	
	Patchwork double overlock stitch			Patchwork stitches, decorative stitching	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Smocking stitch			Smocking, decorative stitching	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Rick-rack stitch			Decorative top stitching	**4.00 (5/32)**	0.00 - 7.00 (0 - 9/32)	**2.5 (3/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Decorative stitch			Decorative stitching and appliqué	**6.00 (15/64)**	0.00 - 7.00 (0 - 9/32)	**1.0 (3/64)**	0.2 - 5.0 (1/64 - 13/64)	NO
	Decorative stitch			Decorative stitching	**5.50 (7/32)**	0.00 - 7.00 (0 - 9/32)	**1.6 (1/16)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Heirloom, decorative hems	**5.00 (13/64)**	0.00 - 7.00 (0 - 9/32)	**2.0 (5/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Hemstitching			Decorative hems and bridging stitch	**6.00 (15/64)**	0.00 - 7.00 (0 - 9/32)	**2.0 (5/64)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Single diamond overcast			Reinforcement and seaming stretch fabric	**6.00 (15/64)**	0.00 - 7.00 (0 - 9/32)	**3.0 (1/8)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Overcasting stitch			Reinforcement of stretch fabric or decorative stitching	**4.00 (5/32)**	0.00 - 7.00 (0 - 9/32)	**4.0 (5/32)**	0.4 - 5.0 (1/64 - 13/64)	NO
	Free motion couching stitch			Free motion couching stitch	**3.50 (9/64)**	2.75 - 3.75 (3/32 - 1/8)	**–**	–	NO
	Basting stitch			Free motion basting stitch	**3.50 (9/64)**	0.00 - 7.00 (0 - 9/32)	**–**	–	NO

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Solaris™

Instruction & Reference Guide
Embroidery

Model BLSA

baby lock

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HOW TO USE THIS MANUAL

The Instruction and Reference Guides for this machine consist of the Instruction and Reference Guide (Sewing) and the Instruction and Reference Guide (Embroidery). Refer to the appropriate Instruction and Reference Guide according to your needs. For basic information about, for example, the included accessories or the settings screen, refer to chapter 1 of the Instruction and Reference Guide (Sewing).
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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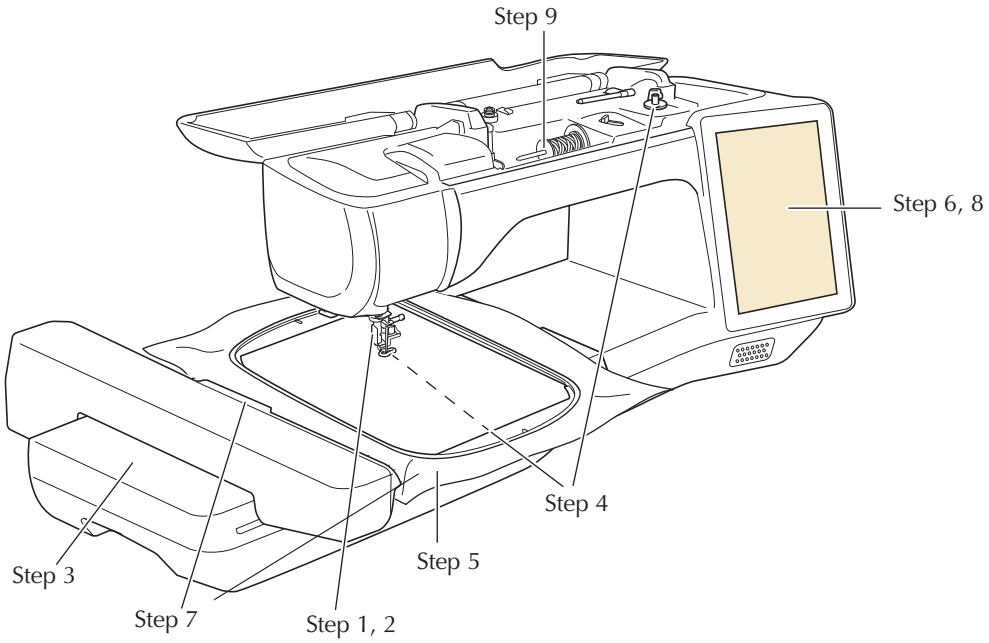
Chapter *1*

Embroidery Step by Step

BEFORE EMBROIDERING

Follow the steps below to prepare the machine for embroidery.



Step #	Aim	Action	Page
1	Presser foot attachment	Attach embroidery foot “W”.	9
2	Checking the needle	Use needle 75/11 for embroidery. *	—
3	Embroidery unit attachment	Attach the embroidery unit.	13
4	Bobbin thread setup	For the bobbin thread, wind embroidery bobbin thread and set it in place.	15
5	Fabric preparation	Attach a stabilizer material to the fabric, and hoop it in the embroidery frame.	28
6	Pattern selection	Turn the main power to ON, and select an embroidery pattern.	36
7	Embroidery frame attachment	Attach the embroidery frame to the embroidery unit.	34
8	Checking the layout	Check and adjust the size and position of the embroidery.	46
9	Embroidery thread setup	Set up embroidery thread according to the pattern.	22

* 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.

Using the Machine Setting Mode Key

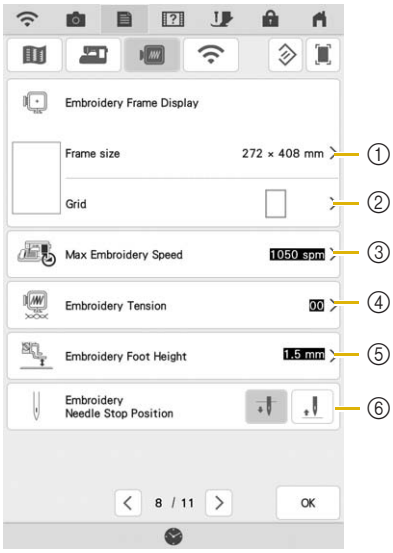
Press to change the default machine settings (needle stop position, embroidery speed, opening display, etc.). To display the different settings screens, press for "Sewing settings", for "General settings", for "Embroidery settings" or for "Wireless LAN settings". For details on settings for sewing utility stitches, on common settings and on wireless settings, refer to the Instruction and Reference Guide (Sewing).

Memo

- Press < or > to display a different settings screen.

Embroidery settings

■ Page 8



① Select from among 12 embroidery frame displays (page 103).

② Change the center point marker or grid lines (page 103).

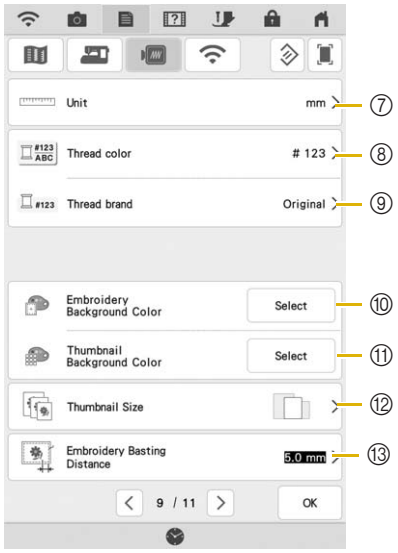
③ Adjust the maximum embroidery speed setting (page 102).

④ Adjust the upper thread tension for embroidering (page 98).

⑤ Select the height of the embroidery foot during embroidering.

⑥ Adjust the needle position for embroidering.

■ Page 9



⑦ Change the display units (mm/inch).

⑧ Change the thread color display on the "Embroidery" screen; thread number, color name (page 102).

⑨ Select the thread brand used to display a pattern when it is opened (page 102).

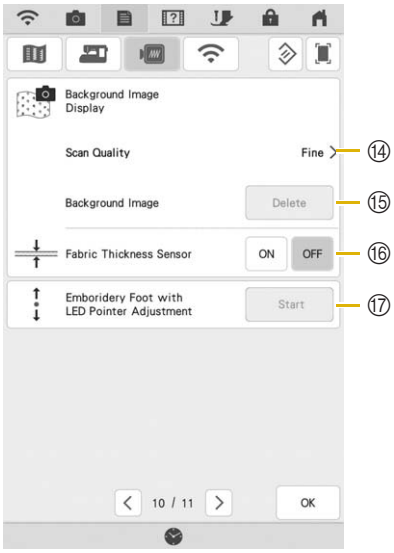
⑩ Change the color of the background for the embroidery display area.

⑪ Change the color of the background for the thumbnail area.

⑫ Press to specify the size of pattern thumbnails.

⑬ Adjust the distance between the pattern and the basting stitching (page 96).

■ Page 10



⑭ Select the quality for displaying the fabric in the screen (page 94).

⑮ Erase the scanned image (page 94).

⑯ Set to “ON” when positioning the pattern on the thick fabric using the built-in camera (page 95).

⑰ Adjust the position and brightness of the embroidery foot “W+” with LED pointer (sold separately). (These settings are not available unless embroidery foot “W+” with LED pointer is installed on the machine.)

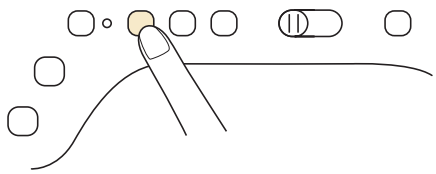
CHANGING THE PRESSER FOOT

⚠ 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.**
- **Only use presser feet made for this machine. Using other presser feet may lead to accident or injury.**

Removing the Presser Foot

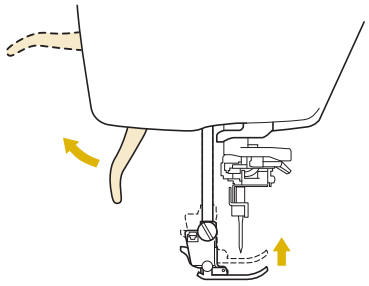
1 Press the "Needle Position" button to raise the needle.



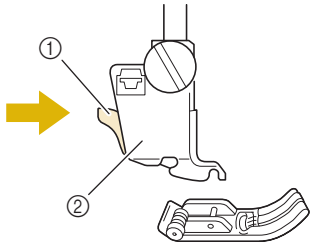
2 Press to lock all keys and buttons.

* 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.

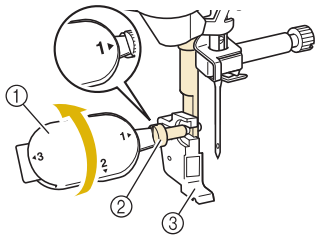


4 Press the black button on the presser foot holder and remove the presser foot.



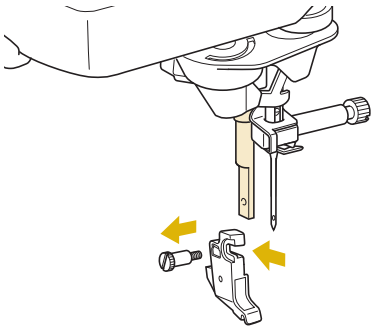
① Black button
② Presser foot holder

5 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

6 Remove the screw of the presser foot completely from the presser foot shaft.



Attaching Embroidery Foot "W"

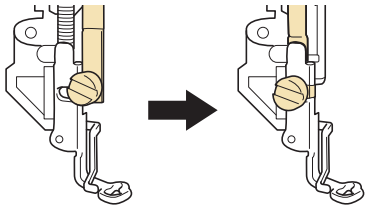
⚠ CAUTION

- **When attaching an embroidery 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" when doing embroidery. Using another embroidery foot may cause the needle to strike the embroidery foot, causing the needle to bend or break and possibly cause injury.**

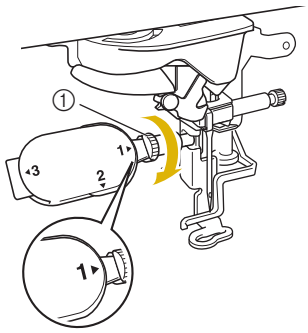
1. **Remove the presser foot and presser foot holder. For details, refer to "Removing the Presser Foot" on page 9.**

2. **Position the embroidery foot "W" 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 embroidery foot and possibly cause injury.**

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

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

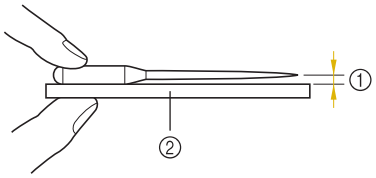
CHANGING THE NEEDLE

⚠ 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 home sewing machine needles made for home use. Other needles may bend or break and may cause injury.**
- **Never embroider with a bent needle. A bent needle will easily break and may cause injury.**

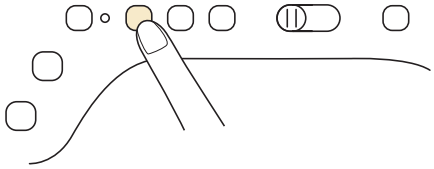
Memo

- 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.



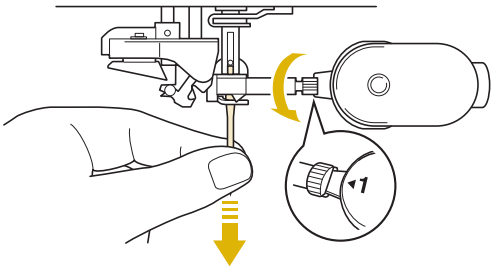
2 Press to lock all keys and buttons.

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

Note

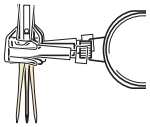
- Before replacing the needle, cover the hole in the needle plate with fabric or paper to prevent the needle from falling into the machine.

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

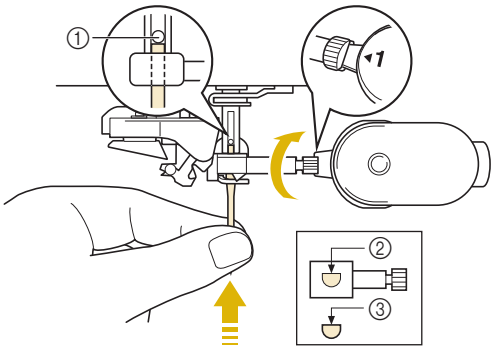


Note

- 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.**

ATTACHING THE EMBROIDERY UNIT

About the Embroidery Unit

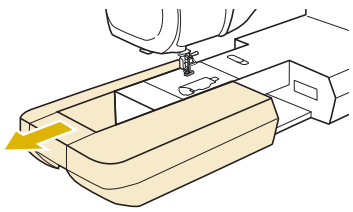
⚠ CAUTION

- **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, injuries or damage may result.**
- **To avoid distorting your embroidery design, do not touch the embroidery carriage and frame when the machine is embroidering.**
- **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.**
- **Do not push on the carriage when installing the embroidery unit onto the machine. Moving the carriage may damage the embroidery unit.**
- **Allow sufficient space around the embroidery unit. Otherwise, the embroidery unit could fall off foreign object, and may cause injury.**
- **Do not touch the embroidery carriage until the initialization finishes.**

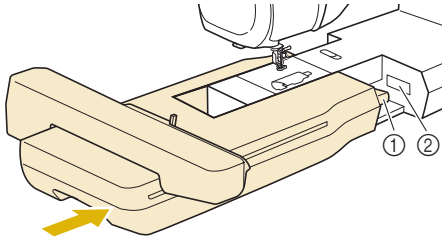
Note

- 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.

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.



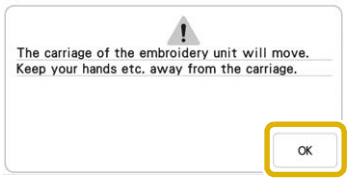
① Embroidery unit connection
② Machine connection port

Note

- Be sure there is no gap between the embroidery unit and the machine. If there is a gap, the embroidery patterns will not embroider with the correct registration.

3 Turn the main power to ON.

4 Press OK.



→ The carriage will move to the initialization position.

Removing the Embroidery Unit

1 **Press , then press .**

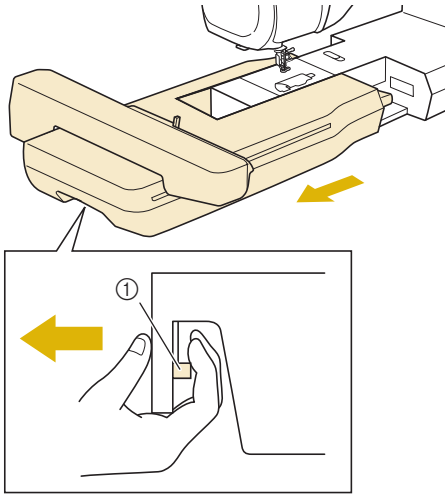
→ The carriage will move to the removal position.

⚠ 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.**

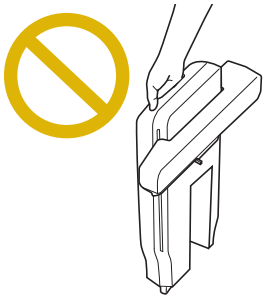
3 **Press the release button, and pull the embroidery unit away from the machine.**



① Release button

⚠ CAUTION

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



LOWER THREADING

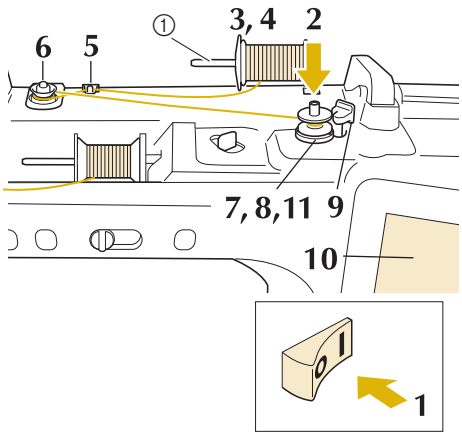
Winding the Bobbin

⚠ CAUTION

- **The included bobbin was designed specifically for this 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: X52800-150). X52800-150 is Class 15 type bobbin.**

■ Using the Supplemental Spool Pin

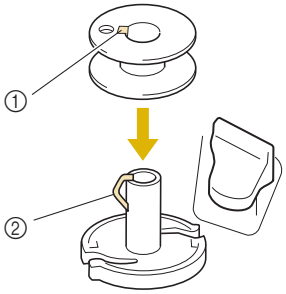
With this machine, you can wind the bobbin during embroidering. While the main spool pin is being used for embroidering, you can wind a bobbin by using the supplemental spool pin.



① Supplemental spool pin

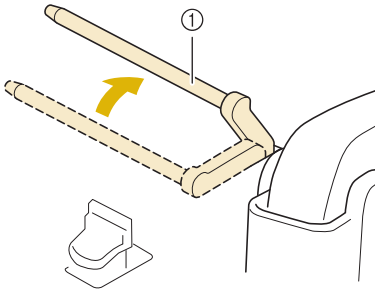
1 **Turn the main power to ON and open the top cover.**

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



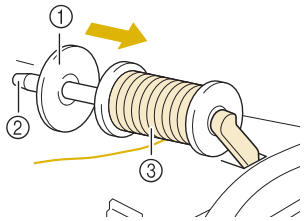
① Groove in the bobbin
② Spring on the shaft

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.**



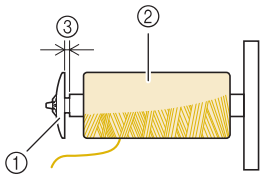
① Spool cap
② Spool pin
③ Thread spool

⚠ 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, small or mini king) 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.**

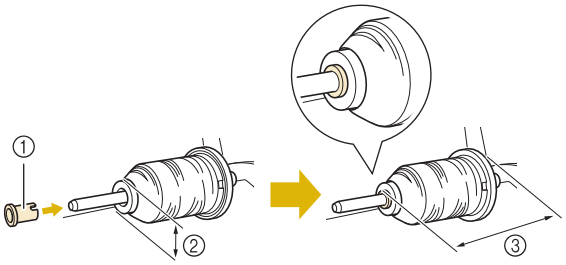
Memo

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



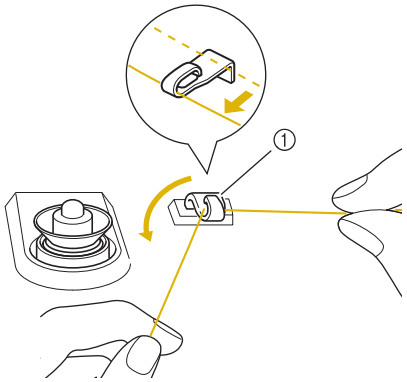
① Spool cap (small)
② Thread spool (cross-wound thread)
③ Space

- 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.



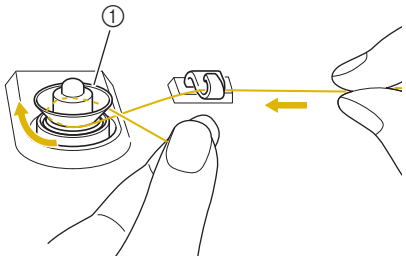
① Spool cap (mini king spool insert)
② 12 mm (1/2 inch)
③ 75 mm (3 inches)

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.

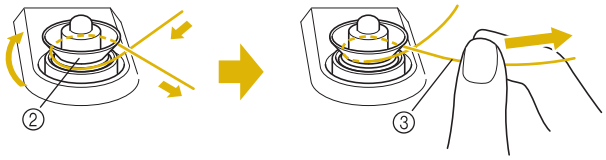


① Thread guide

6 Pass the thread around the pretension disk making sure that the thread is under the pretension disk.

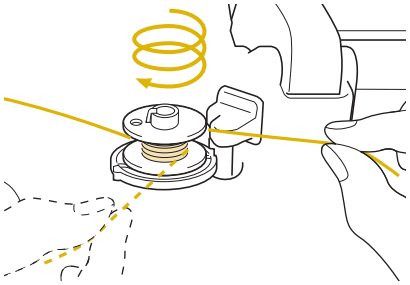


① Pretension disk
→ Make sure that the thread passes under the pretension disk.

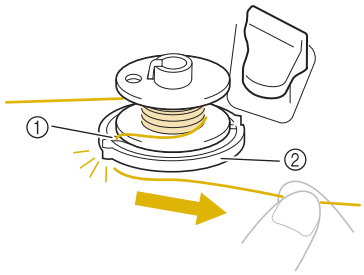


② Pretension disk
③ Pull it in as far as possible.
→ Check to make sure thread is securely set between pretension disks.

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.**

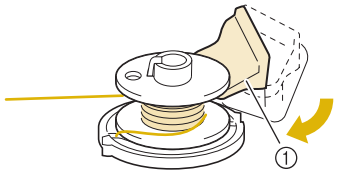


① Guide slit (with built-in cutter)
② Bobbin winder seat

⚠ 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.**

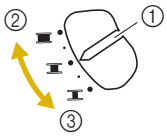
9 **Set the bobbin winding switch to the left, until it clicks into place.**



① Bobbin winding switch

Memo

- Sliding the bobbin winding switch to the left switches the machine into bobbin winding mode.
- Use the bobbin winding slider to adjust the amount of thread wound onto the bobbin to one of five levels.

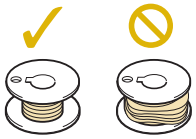


① Bobbin winding slider
② More
③ Less

→ The bobbin winding window appears.

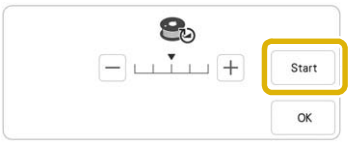
Note

- When winding transparent nylon thread on the bobbin, stop bobbin winding when the bobbin is 1/2 to 2/3 full. If the bobbin was fully wound with transparent nylon thread, it may not be wound neatly.



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

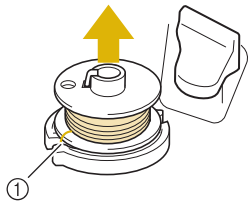
- Start changes to Stop while the bobbin is winding.
- Stay near the machine while winding the bobbin to make sure the bobbin thread is being wound correctly. If the bobbin thread is wound incorrectly, press Stop immediately to stop the bobbin winding.

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.**



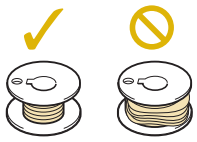
① Cutter

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.

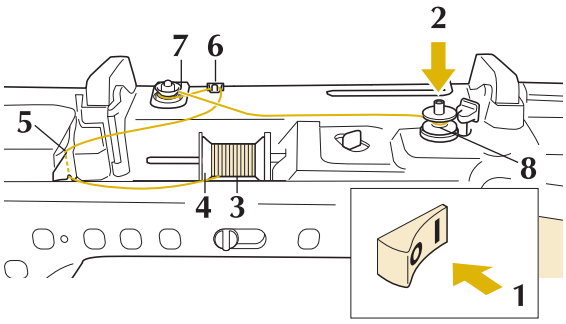
⚠ CAUTION

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



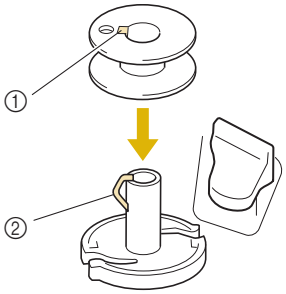
■ Using the Spool Pin

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



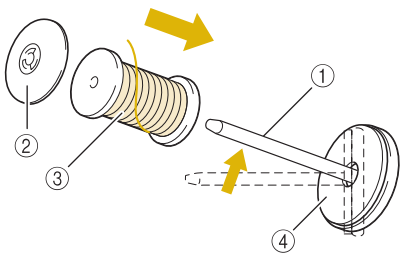
1 **Turn the main power to ON and open the top cover.**

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

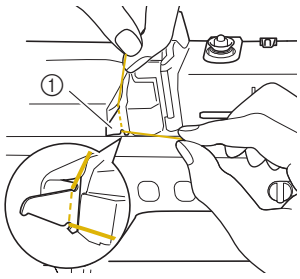
3 **Pivot the spool pin so that it angles upward. Set the thread spool on the spool pin so that the thread unwinds from the front of the spool.**



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

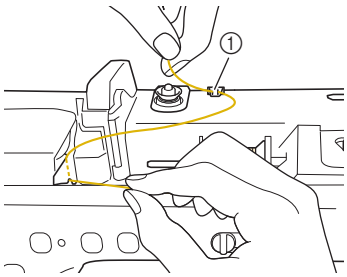
4 **Push the spool cap onto the spool pin as far as possible, then return the spool pin to its original position.**

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



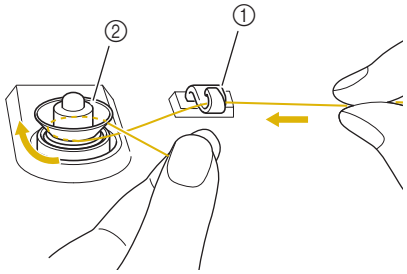
① Thread guide plate

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



① Thread guide

7 **Pass the thread around the pretension disk making sure that the thread is under the pretension disk.**

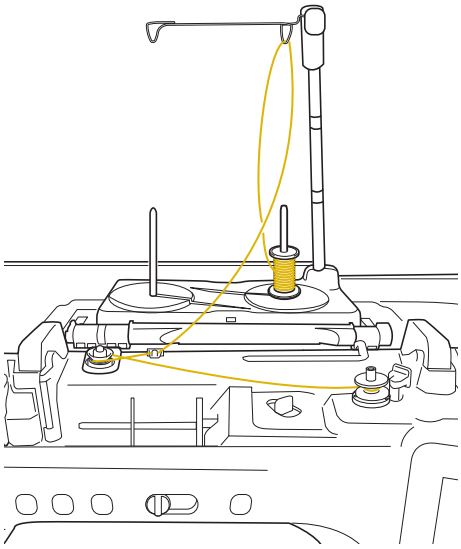


① Thread guide
② Pretension disk

8 **Follow steps 7 through 11 on page 16 through 18.**

■ 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 16 to page 18.



Memo

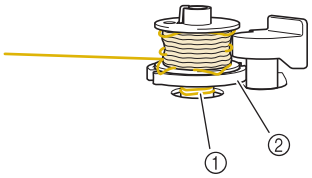
- Refer to the Instruction and Reference Guide (Sewing) to assemble the spool stand.
- Refer to page 25 to thread the machine using the spool stand.

⚠ 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 pretension disk correctly, the thread may become tangled beneath the bobbin winder seat.
Wind off the thread according to the following procedure.

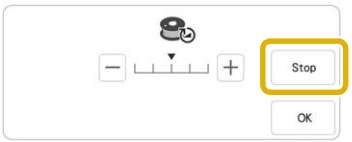


① Thread
② Bobbin winder seat

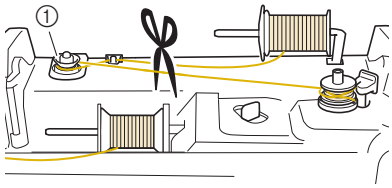
⚠ CAUTION

- **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.**

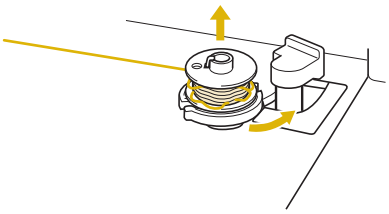


2 **Cut the thread with scissors near the pretension disk.**

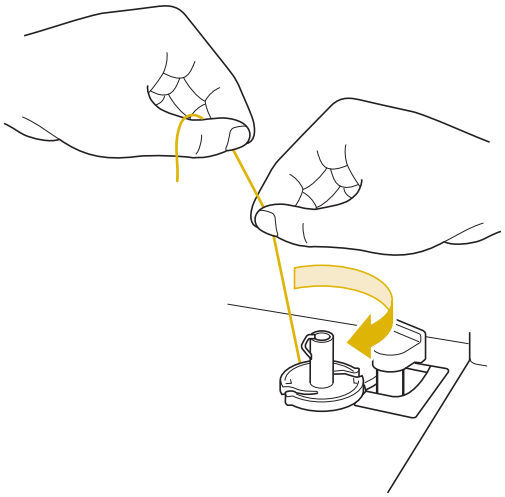


① Pretension disk

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.**

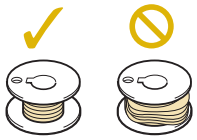
Note

- Make sure that the thread passes through the pretension disk correctly (page 16).

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.**

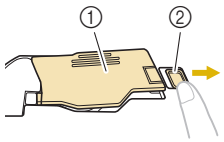


- **The included bobbin was designed specifically for this machine. If bobbins from other models are used, the machine will not operate correctly. Use only the included bobbin or bobbins of the same type (part code: X52800-150). X52800-150 is Class 15 type bobbin.**
- **Before inserting or changing the 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 embroidering.**

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

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

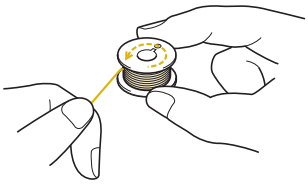
2 **Slide the bobbin cover latch to the right.**



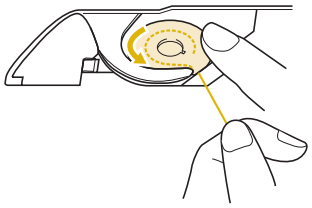
① Bobbin cover
② Latch
→ The bobbin cover opens.

3 **Remove the bobbin cover.**

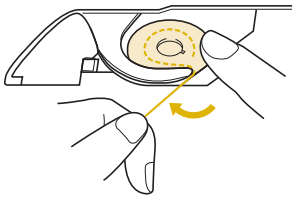
4 **Hold the bobbin with your right hand and hold the end of the thread with your left hand.**



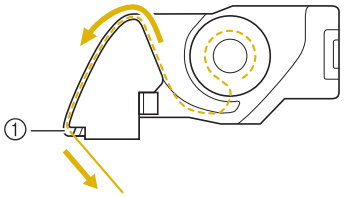
5 **Set the bobbin in the bobbin case so that the thread unwinds to the left.**



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



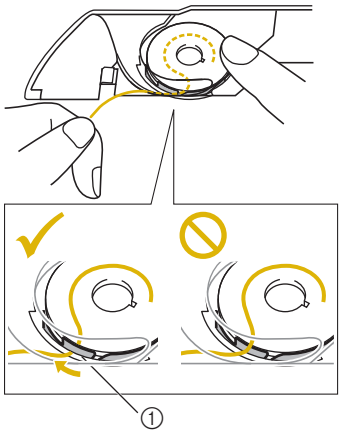
7 **Pass the thread through the guide, and then pull the thread out toward the front.**



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. (page 97)

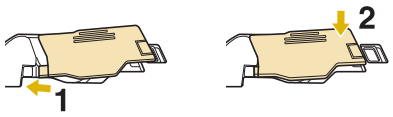


① Tension spring

⚠ 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.

UPPER THREADING

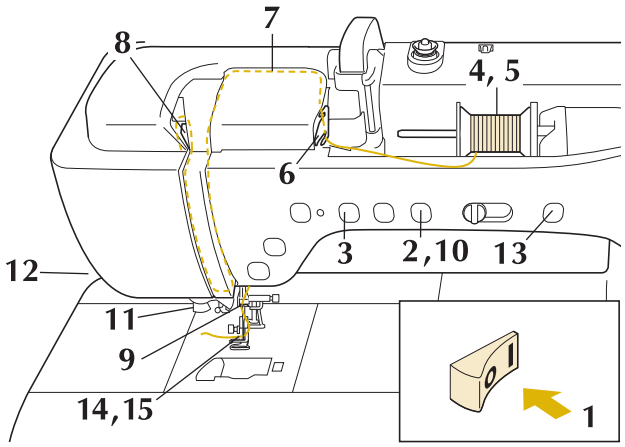
Upper Threading

⚠ CAUTION

- **Be sure to thread the machine properly. Improper threading can cause the thread to tangle and break the needle, leading to injury.**

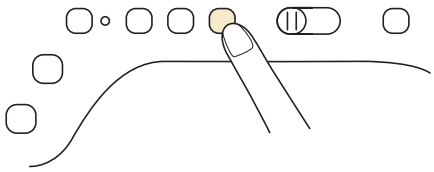
Memo

- The automatic threading function can be used with home 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.

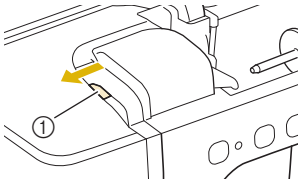


1 **Turn the main power to ON.**

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



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

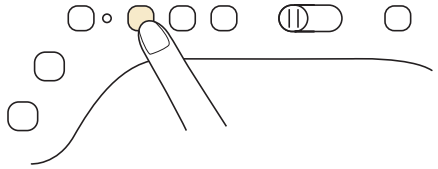


① Upper thread shutter

Memo

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

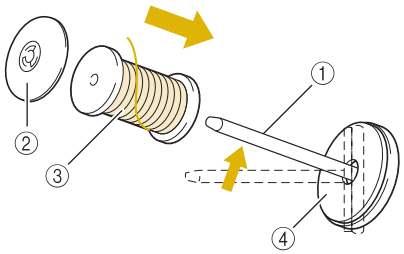
3 **Press the "Needle Position" button to raise the needle.**



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

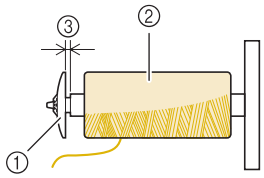
5 **Push the spool cap onto the spool pin as far as possible, then return the spool pin to its original position.**

⚠ 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 spool insert) 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.**

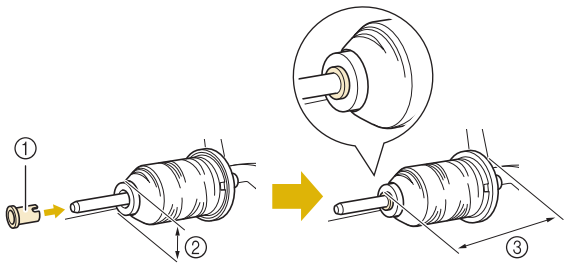
Memo

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



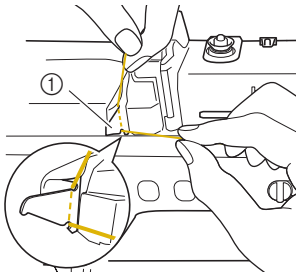
① Spool cap (small)
② Thread spool (cross-wound thread)
③ Space

- 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 spool insert).



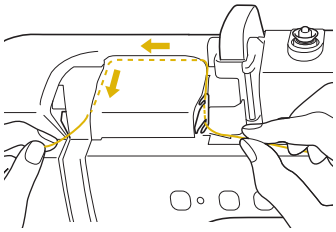
① Thread spool insert (mini king spool insert)
② 12 mm (1/2 inch)
③ 75 mm (3 inches)

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

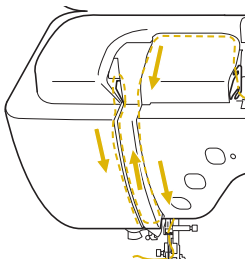


① Thread guide plate

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

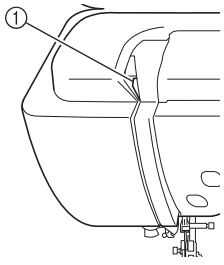


8 **Guide the thread down, up, then down through the groove, as shown in the illustration.**



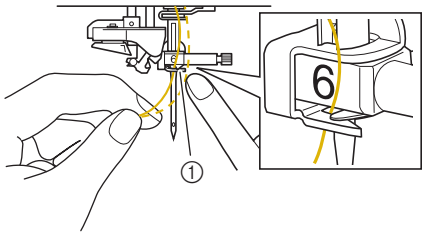
Memo

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



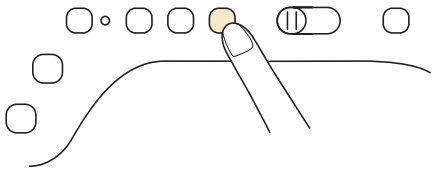
① Look in the upper groove area

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.**

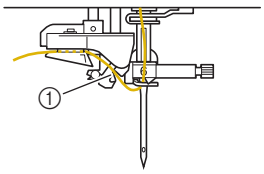


① Needle bar thread guide

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

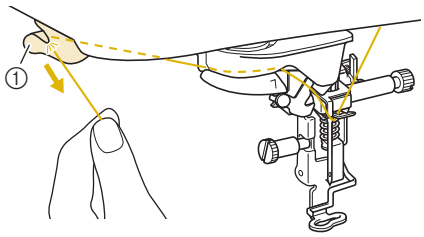


11 **Pass the thread through the thread guide disks (marked "7"). Make sure that the thread passes through the groove in the thread guide.**



① Groove in thread guide

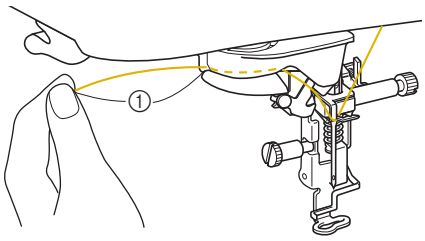
12 **Pull the thread up through the thread cutter to cut the thread, as shown in the illustration.**



① Thread cutter

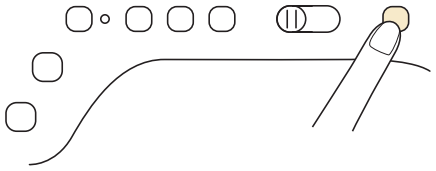
Note

- 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.**



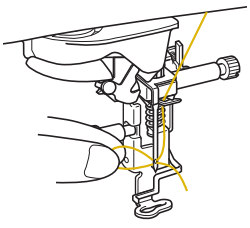
→ The thread passes through the eye of the needle.

Memo

- When the "Automatic Threading" button is pressed, the embroidery foot will be automatically lowered. After threading is finished, the embroidery 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.

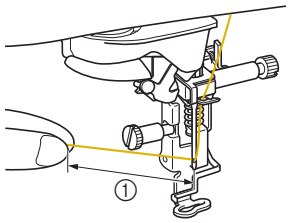


Note

- 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 embroidery foot toward the rear of the machine.

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



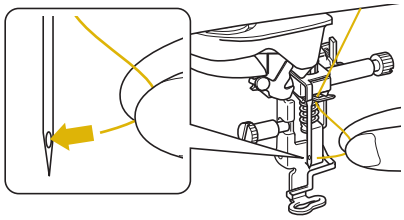
① About 100-150 mm (approx. 4-6 inches)

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 Spool Stand

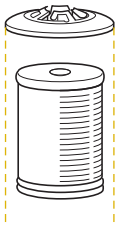
The included spool stand is useful when using thread on spools with a large diameter (cross-wound thread). This spool stand can hold two spools of thread.

Memo

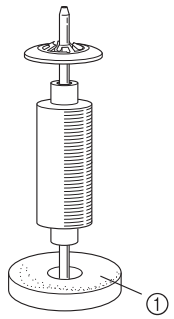
- Refer to the Instruction and Reference Guide (Sewing) to assemble the spool stand.
- Refer to page 19 to wind the bobbin when using the spool stand.

■ 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 embroidering performance may suffer.

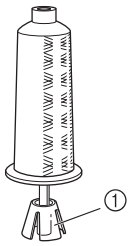


- When using thread on a thin spool, place the included spool felt on the spool pin, place the thread spool on the spool pin so that the center of the spool is aligned with the hole at the center of the spool felt, and then insert the spool cap onto the spool pin.



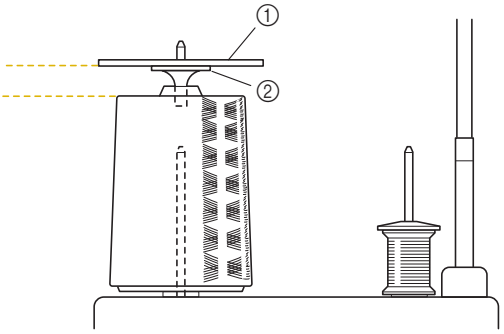
① Spool felt

- 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.



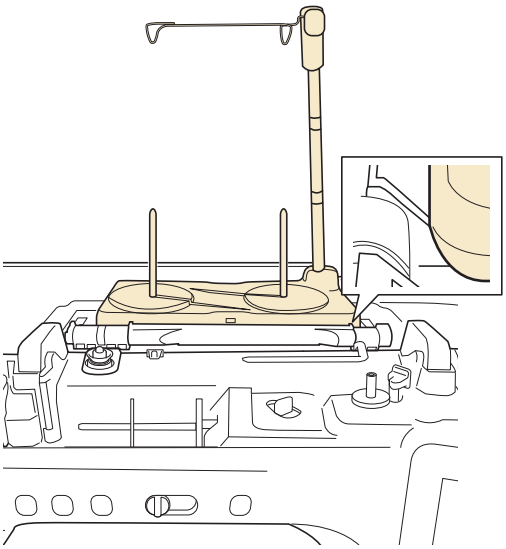
① Spool holder

- 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.

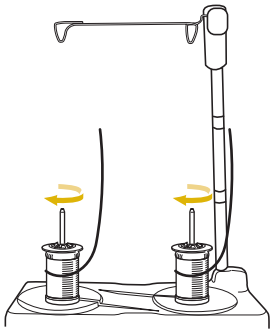


① Spool cap
② Spool cap base

1 **Attach the spool stand to the machine.**



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.**

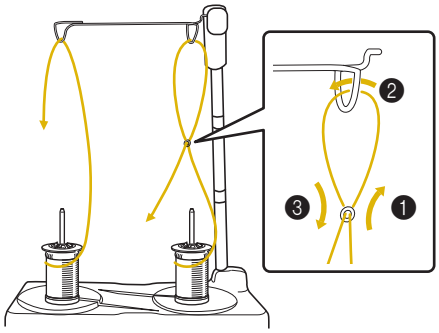


Note

- 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.**

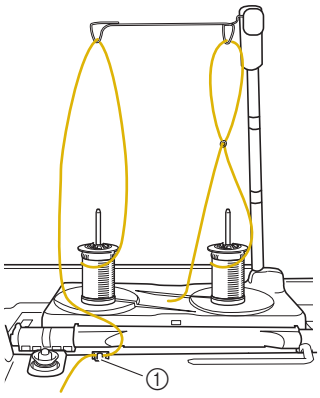
When using thread that quickly feeds off the spool, such as metallic thread, use the enclosed ring to prevent the thread from becoming entangled. Threading sequence; Pull the thread from the spool, place the thread through the ring from the bottom up (❶), into the thread guide (❷) and through the ring 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.**



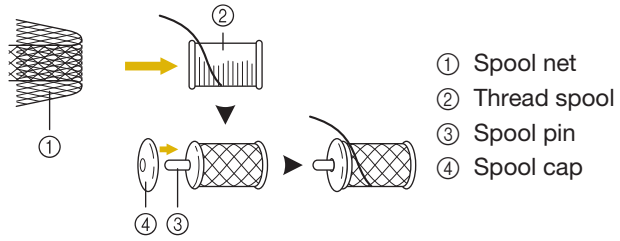
① Thread guide

5 **Thread the machine according to the steps 6 to 15 of "Upper Threading" on page 22.**

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.

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.**

Note

- When embroidering fabric layers filled with thick batting, for example, a better result can be achieved by adjusting the embroidery foot height in the embroidery settings screen.

  Press , and select page 8. Touch the number beside “Embroidery Foot Height” in the embroidery settings screen. Adjust the embroidery foot height for thick or puffy fabrics.

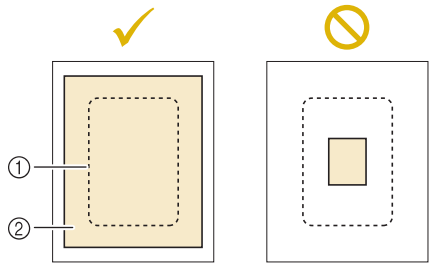
- To increase the space between the embroidery foot and the needle plate, set the “Embroidery Foot Height” to a larger number.
- In the case of thick terry cloth towels we recommend that you place a piece of water soluble stabilizer on the top surface of the towel. This will help to reduce the nap of the toweling and result in more attractive embroidery.

Attaching Iron-on Stabilizers (Backing) to the Fabric

⚠ CAUTION

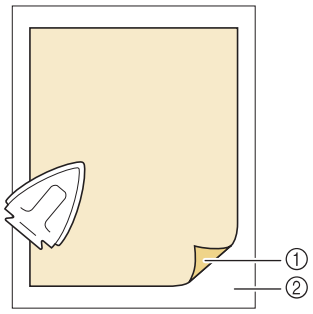
- **Always use a stabilizer material for embroidery when embroidering stretch fabrics, lightweight fabrics, fabrics with a coarse weave, or fabrics which cause pattern shrinkage. Otherwise, the needle may break and cause injury. Not using a stabilizer material may result in a poor finish to your project.**

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.



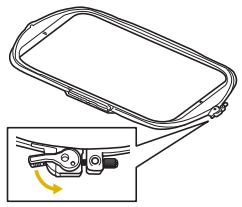
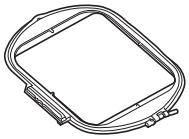
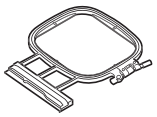
① Fusible side of stabilizer
② Fabric (wrong side)

Memo

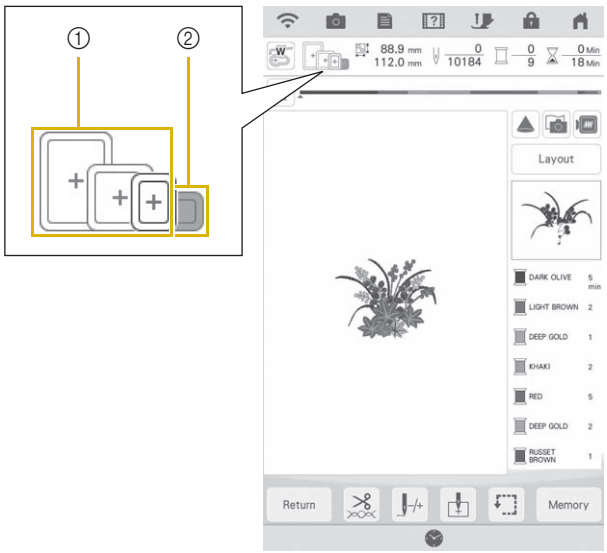
- When embroidering on thin fabrics such as organdy or lawn, or on napped fabrics such as towel or corduroy, use water soluble stabilizer (sold separately) for best results. The water soluble stabilizer material will dissolve completely in water, giving the project a more attractive finish.

Hooping the Fabric in the Embroidery Frame

■ Types of Embroidery Frames

			
Embroidery field 408 mm × 272 mm (approx. 16 inches × 10-5/8 inches)	Embroidery field 240 mm × 240 mm (approx. 9-1/2 inches × 9-1/2 inches)	Embroidery field 180 mm × 130 mm (approx. 7 inches × 5 inches)	Embroidery field 100 mm × 100 mm (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.



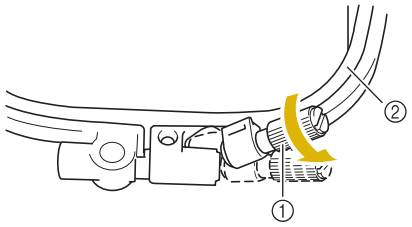
① Highlighted: Can be used
② Shaded: Cannot be used

■ Inserting the Fabric

Note

- If the fabric is not securely held in the embroidery frame, the embroidery design will embroider 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.

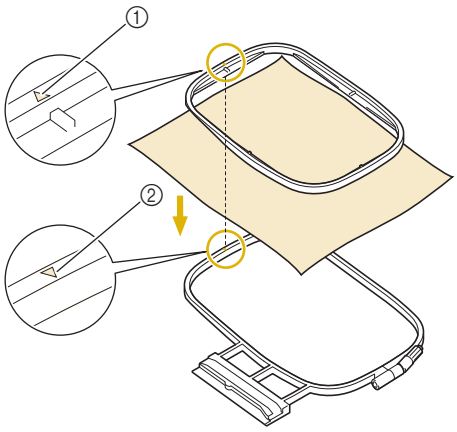
1 **Lift-up and loosen the frame adjustment screw and remove the inner frame.**



① Frame adjustment screw
② Inner frame

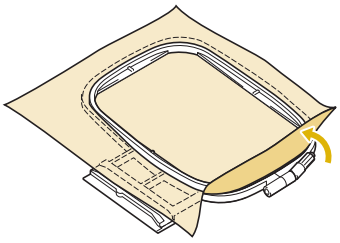
2 **Lay the fabric right side up on top of the outer frame.**

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



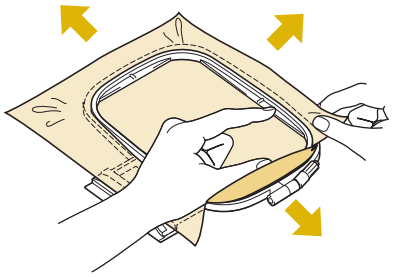
① Inner frame's △
② Outer frame's ▽

4 **Slightly tighten the frame adjustment screw, and then remove the slack in the fabric by pulling on the edges and corners.**

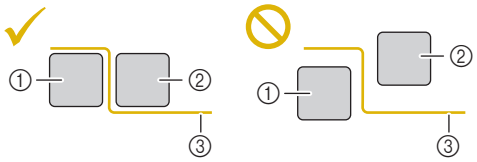


5 **Gently stretch the fabric taut to keep the fabric from loosening after stretching.**

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

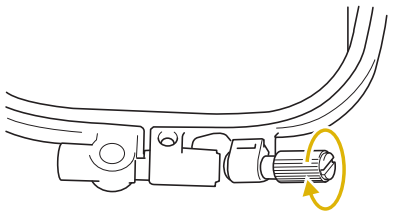


* Make sure the inside and outside frames are even before you start embroidering.

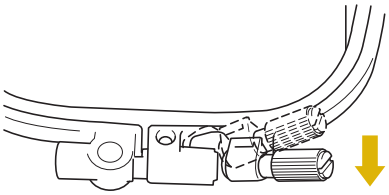


① Outer frame
② Inner frame
③ Fabric

6 **Tighten the frame adjustment screw.**

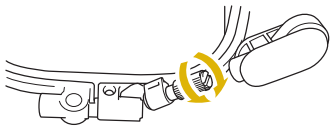


7 **Return the frame adjustment screw to its initial position.**



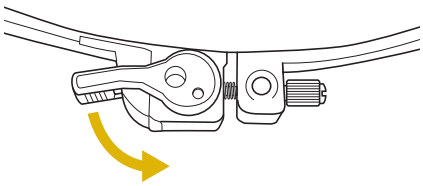
Memo

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

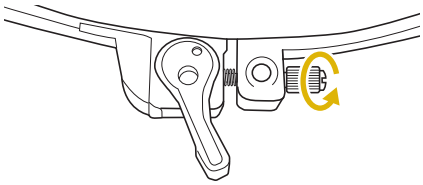


■ Inserting Fabric into Embroidery Frame (408mm × 272 mm (approx. 16 inches × 10-5/8 inches))

1 **Lower the lever.**

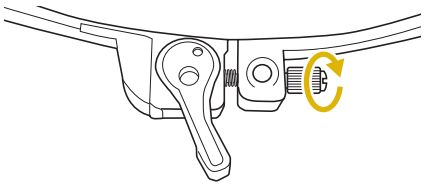


2 **Loosen the frame adjustment screw by hand, and then remove the inner frame.**



3 **Refer to steps 3 through 6 of "Inserting the Fabric" on page 30 to hoop the fabric.**

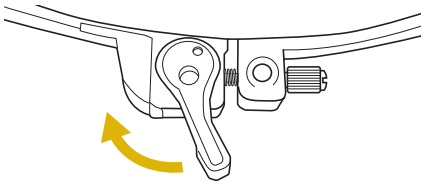
4 **Tighten the frame adjustment screw by hand.**



⚠ CAUTION

- **Do not overtighten the screw.**

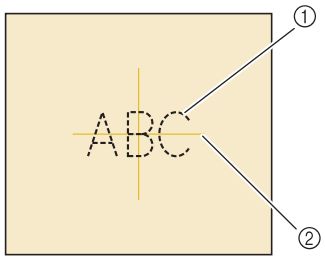
5 **Return the lever to its original position.**



■ Using the Embroidery Sheet (sold separately)

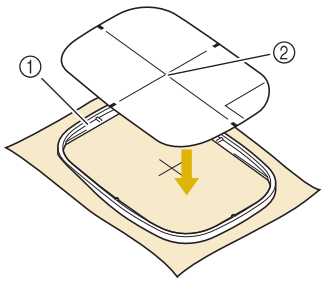
When you want to embroider the pattern in a particular place, use the embroidery sheet with the frame.

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



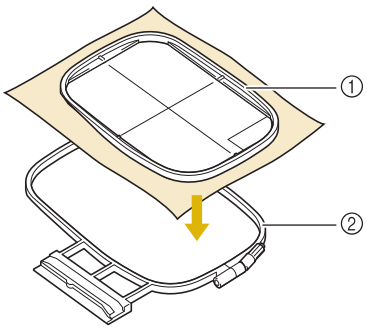
① Embroidery pattern
② Mark

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.**



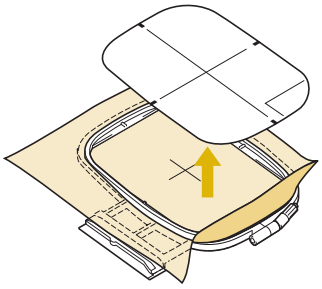
① Inner frame
② Guide line

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



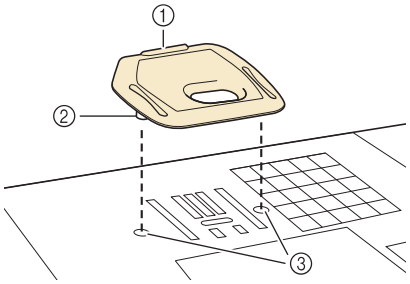
① Inner frame
② Outer frame

4 **Remove the embroidery sheet.**



■ 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

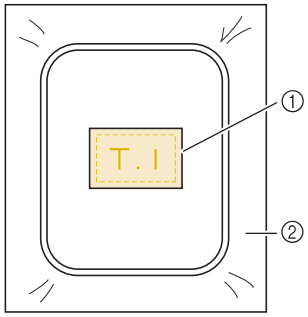
- Do not use the embroidery needle plate cover for any applications other than embroidery.

Embroidering Small Fabrics or Fabric Edges

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

■ Embroidering Small Fabrics

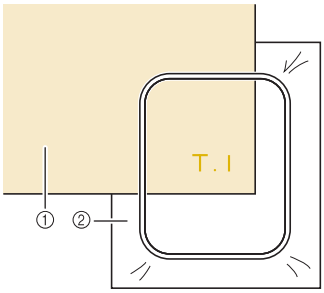
Use a temporary spray adhesive to adhere the small piece of fabric to the larger piece in the frame.
If you do not wish to use a temporary spray adhesive, attach the stabilizer with a basting stitch.



① Fabric
② Stabilizer

■ Embroidering Edges or Corners

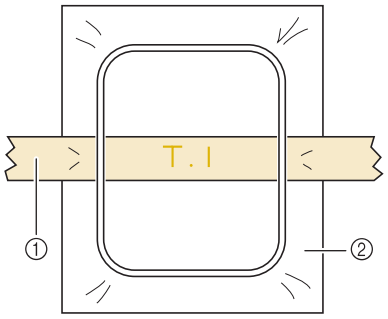
Use temporary spray adhesive to attach the fabric to the stabilizer, and then hoop the fabric.
If you do not wish to use a temporary spray adhesive, attach the stabilizer with a basting stitch.



① Fabric
② Stabilizer

■ Embroidering Ribbons or Tape

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

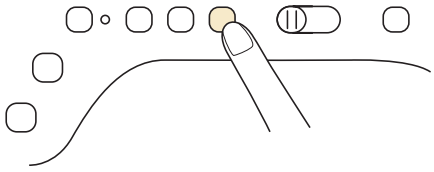


① Ribbon or tape
② Stabilizer

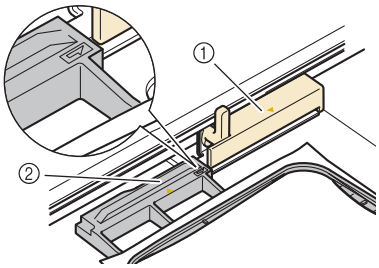
ATTACHING THE EMBROIDERY FRAME

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

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

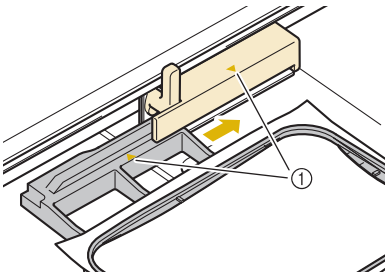


2 **Align the embroidery frame guide with the right edge of the embroidery frame holder.**



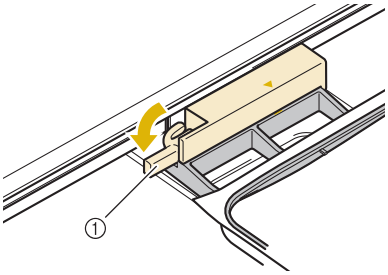
① Embroidery frame holder
② Embroidery frame guide

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



① Arrow mark

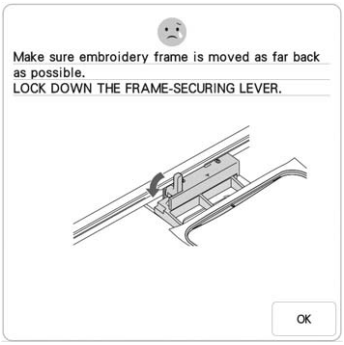
4 **Lower the frame-securing lever to be level with the frame to secure the embroidery frame in the embroidery frame holder.**



① Frame-securing lever

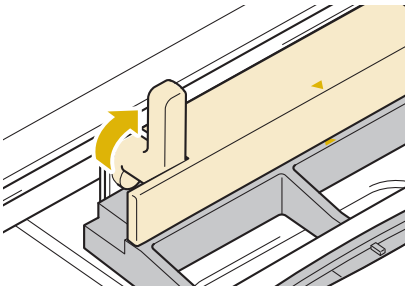
⚠ CAUTION

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

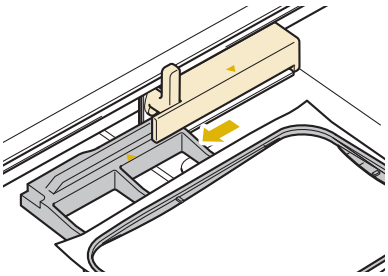


■ Removing the Embroidery Frame

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



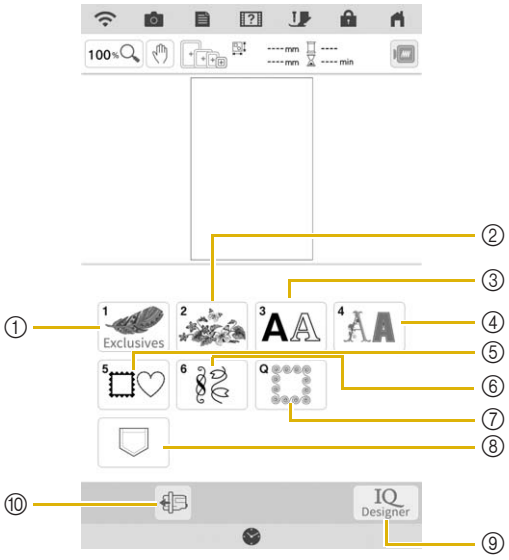
2 **Pull the embroidery frame toward you.**



EMBROIDERY SCREENS

■ 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. You can also use patterns sold separately.



① Baby Lock "Exclusives"
② Embroidery patterns
③ Character patterns
④ Decorative alphabet patterns
⑤ Frame patterns
⑥ Utility embroidery patterns
⑦ Quilt sashes (page 127)
⑧ Patterns saved in your favorites
⑨ IQ Designer(page 142)
⑩ Press this key to position the embroidery unit for storage

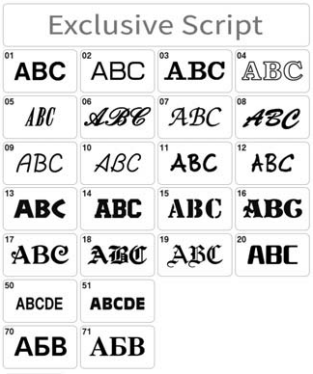
■ Pattern Selection Screens

There are 7 categories of patterns in this machine.

Baby Lock "Exclusives"

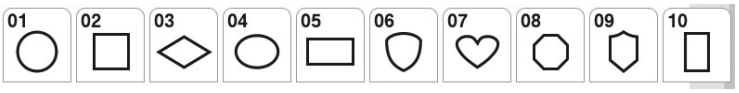
Embroidery patterns

Alphabet characters



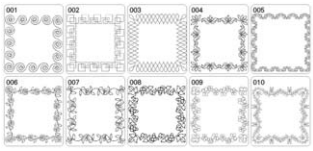
Decorative alphabet patterns

Frame patterns



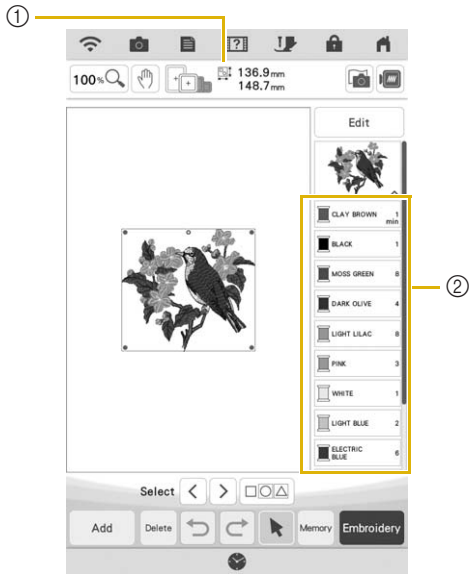
Utility embroidery patterns

Quilting border patterns



KEY FUNCTIONS

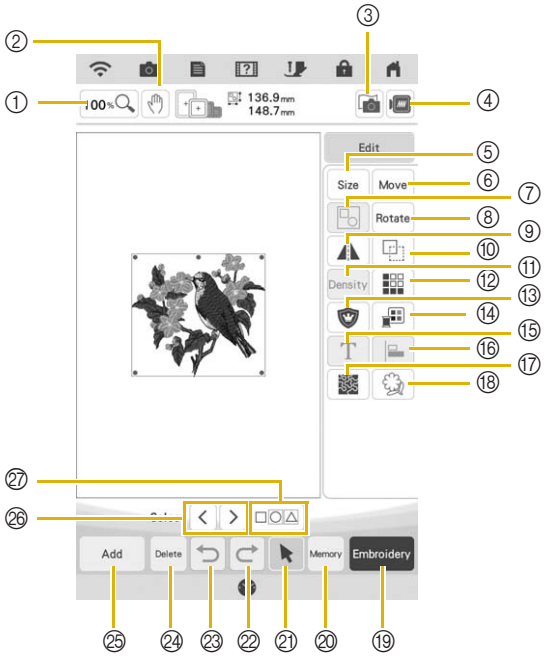
Editing Patterns



① Shows the size of the entire combined pattern.
② Shows the color sequence and stitching times of each step of the pattern currently selected.

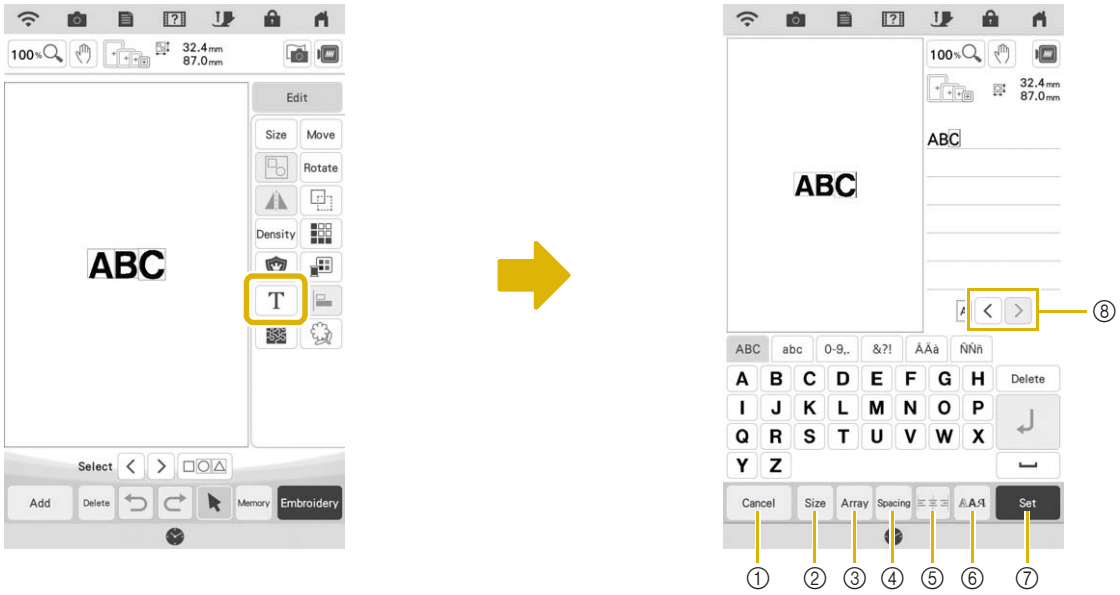
Memo
- If a key display is grayed out, you cannot use that function with the selected pattern.

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



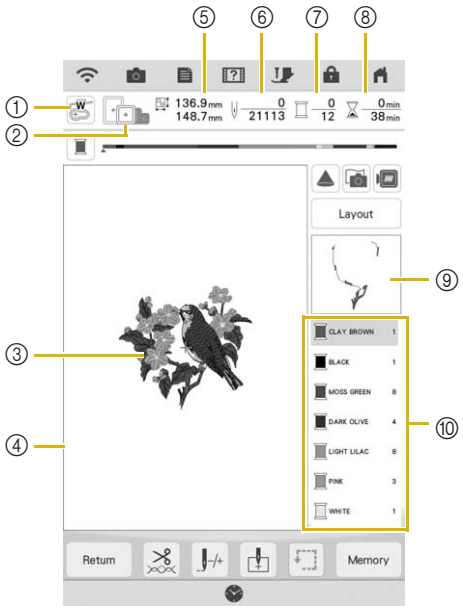
No.	Display	Key Name	Explanation	Page
①		Magnify key	Press this key to select the magnification ratio.	73
②		Hand key	Press this key to move the canvas when it is magnified.	—
③		Fabric scan key	Press this key to scan the fabric to align the embroidery position.	92
④		Image key	Press this key for a preview of the embroidered image.	62
⑤		Size key	Press this key to change the size of the pattern. Patterns can be enlarged or reduced.	64
⑥		Move key	Press this key to display the pattern moving window.	63
⑦		Group key	Press this key to select multiple patterns in the screen at the same time.	88
⑧		Rotate key	Press this key to rotate the pattern.	63
⑨		Horizontal mirror image key	Press this key to make a horizontal mirror image of the selected pattern.	67
⑩		Duplicate key	Press this key to duplicate a pattern.	73
⑪		Density key	Press this key to change the density of frame patterns or character patterns.	66
⑫		Border function key	Press this key to create and edit repeated patterns.	67
⑬		Appliqué piece key	Press this key to create an appliqué piece by sewing an outline around the selected pattern.	116
⑭		Thread palette key	Press this key to change the colors of the displayed pattern.	81
⑮		Letter edit key	Press this key to edit character patterns.	40
⑯		Alignment key	Press this key to arrange multiple patterns on a line.	89
⑰		Stippling key	Press this key to create stippling around a pattern.	126
⑱		Outline key	Press this key to extract the outline of a pattern. The extracted pattern can be used with IQ Designer.	175
⑲		Embroidery key	Press this key to call up the embroidering screen.	—
⑳		Memory key	Press this key to save a pattern in the machine's memory, USB media or an SD card. The pattern can also be transferred to a computer via a wireless network connection.	109, 111
㉑		Pattern select key	When a combined pattern is selected, use this key to select a part of the pattern to edit.	—
㉒		Redo key	Press this key to redo the last operation that was undone.	—
㉓		Undo key	Press this key to undo the last operation.	—
㉔		Delete key	Press this key to delete the selected pattern (the pattern outlined by the red box).	73
㉕		Add key	Press this key to add another pattern to the editing pattern.	—
㉖		Select key	Press this key to change a selected pattern when multiple patterns are in the screen.	87
㉗		Grouping key / Multiple selection key	Press this key to make multiple patterns are on the screen to be selected at the same time or to be grouped.	87, 88

Editing Letters



No.	Display	Key Name	Explanation	Page
①	Cancel	Cancel key	Press this key to exit the editing character pattern screen.	—
②	Size	Size key	Press this key to change the size of the character pattern.	77
③	Array	Array key	Press this key to change the configuration of a character pattern.	78
④	Spacing	Character spacing key	Press this key to change the spacing of character patterns.	79
⑤		Alignment key	Press this key to align the characters at the right, left or center.	76
⑥		Font type key	Press this key to change the font type.	76
⑦	Set	Set key	Press this key to apply the text editing.	—
⑧		Character selection keys	Press these keys to move the cursor and select a character.	—

Embroidery Screen



① Shows the embroidery foot code.
Attach embroidery foot “W” for all embroidery projects. When the embroidery foot symbol is displayed on the screen, you are able to embroider.

② Shows the embroidery frames that can be used for the selected pattern. Be sure to use the proper frame (page 29).

③ Shows a preview of the selected pattern.

④ Shows the boundary for embroidering with the selected frame in the settings screen. (page 103)

⑤ Shows the size of the selected pattern.

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

⑦ Shows the number of colors in the selected pattern, and the number of the color currently being embroidered.

⑧ Shows the time necessary to embroider the pattern, and the time already spent embroidering the pattern (not including time for changing and automatically trimming the thread).

⑨ Shows the part of the embroidery that will be embroidered with the first thread color.

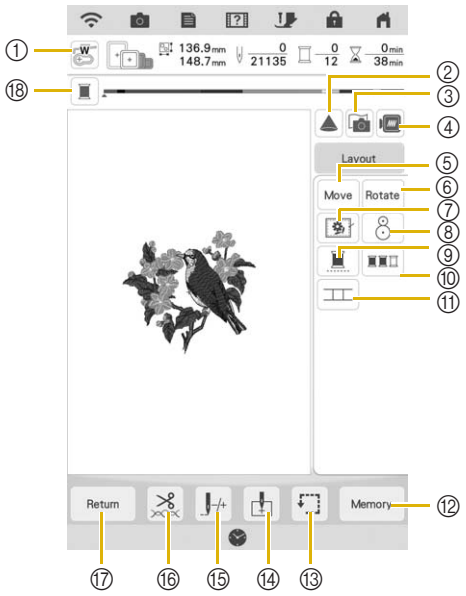
⑩ Shows the order for thread color changes and the embroidering time for each thread color.

* 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.

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



Note

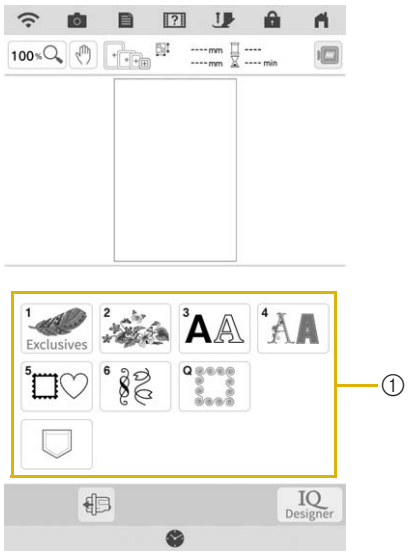
- Some operations or functions are not available for certain patterns. If the key display is darkened, you cannot use that function or operation with the selected pattern.

No.	Display	Key Name	Explanation	Page
①		Needle point check key	Press this key to check the needle drop point with the projector.	47
②		Projector key	Press this key to use the projector to project the pattern.	46
③		Fabric scan key	Press this key to scan the fabric to align the embroidery position.	92
④		Image key	Press this key for a preview of the embroidered image.	62
⑤	Move	Move key	Press this key to display the pattern moving window.	63
⑥	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.	63
⑦		Basting key	Press this key to add the basting stitch to the pattern. You can set the desired basting distance.	96
⑧		Embroidery positioning key	Press this key to align the embroidering position using the built-in camera.	49
⑨		Uninterrupted embroidery key	Press this key to embroider the selected pattern with a single color (monochrome).	92
⑩		Color sorting key	Press this key to reduce the number of thread color changes by rearranging the embroidering order for the selected pattern to combine parts of the same thread color.	84
⑪		Pattern connect key	Press this key to start pattern connecting embroidering. You can connect the patterns accurately using the built-in camera.	131
⑫	Memory	Memory key	Press this key to save a pattern in the machine's memory, USB media or an SD card. The pattern can also be transferred to a computer via a wireless network connection.	109, 111
⑬		Trial key	Press this key to check the position of the pattern.The carriage moves to the desired position so you can check that there is enough space to embroider the pattern.	52
⑭		Starting point key	Press this key to move the needle start position to align the needle with the pattern position.	103, 104
⑮		Forward/Back key	Press this key to move the needle forward or back in the pattern; useful if the thread breaks while embroidering or if you want to start again from the beginning.	57, 58
⑯		Cut/Tension key	Press this key to specify automatic thread cutting, thread trimming or the thread tension. For embroidery, these functions are set automatically.	97 - 98
⑰	Return	Return key	Press this key to return to the pattern type selection screen.	—
⑱		Progress bar switching key	Press this key to switch the progress bar (which shows the embroidering progress) between showing only one color or all colors.	—

SELECTING PATTERNS

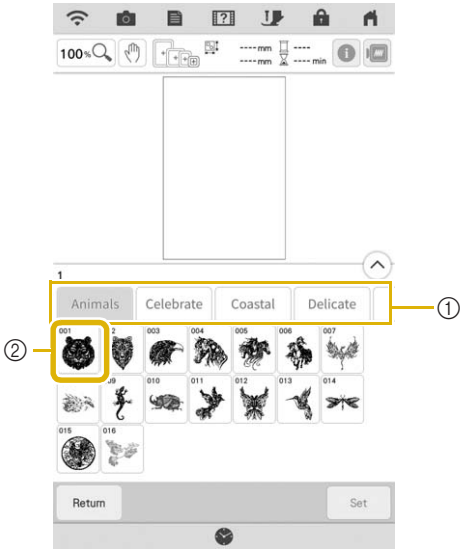
Selecting Embroidery Patterns/ Decorative Alphabet Patterns/ Utility Embroidery Patterns

1 **Press the category tab you want to embroider.**



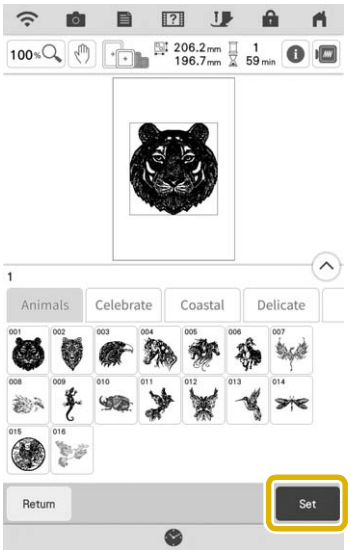
① Pattern category tabs

2 **Select the sub-category, and then select the pattern that you want to embroider.**



① Sub-category
② Embroidery pattern

3 **Press** Set.



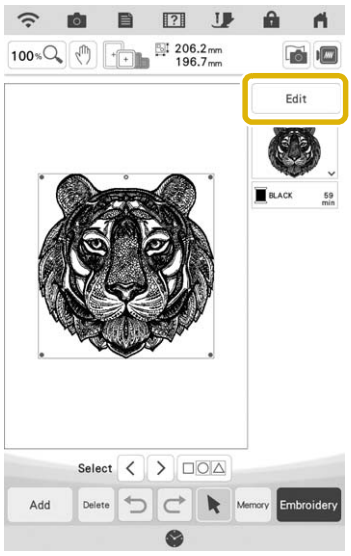
→ The pattern selected is outlined in red on the "Edit" display.

Memo

- If you press ⓘ, you can see detailed information about the pattern.

4 **Press** Edit **to edit the selected pattern.**

* Refer to “Editing Patterns” on page 38 about the “Edit” display.



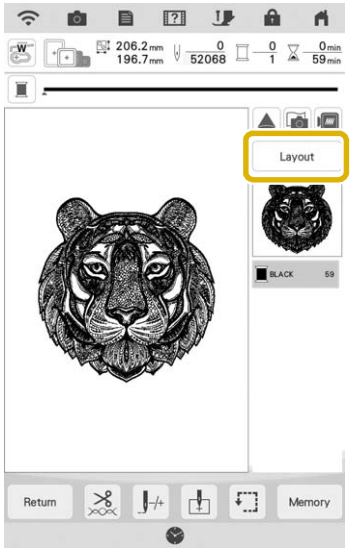
5 **Press** Embroidery**.**

→ The embroidering screen is displayed.

6 **To reposition the pattern in the embroidering screen before embroidering, press** Layout **.**

* Refer to “Embroidery Screen” on page 41.

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



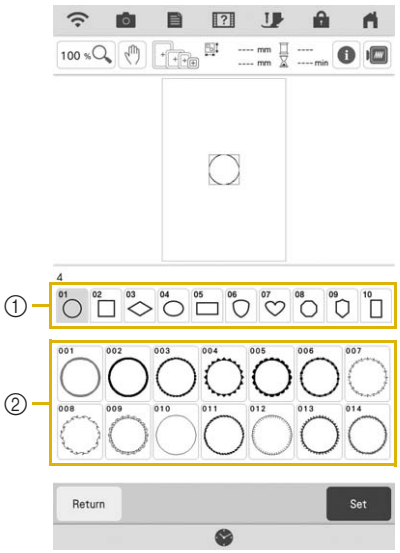
7 **Press the “Start/Stop” button to begin embroidering.**

* Refer to “Embroidering Patterns” on page 54.

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 **Follow the steps from 4 to 7 of "Selecting Embroidery Patterns/Decorative Alphabet Patterns/Utility Embroidery Patterns" on page 43.**

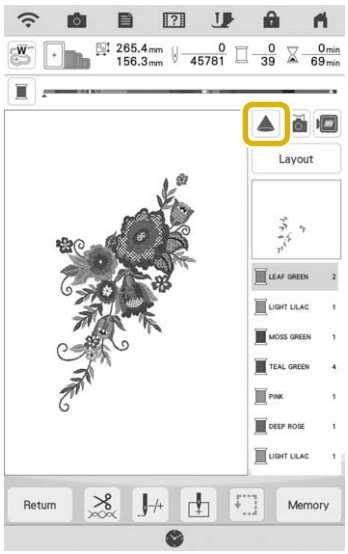
CONFIRMING THE PATTERN POSITION

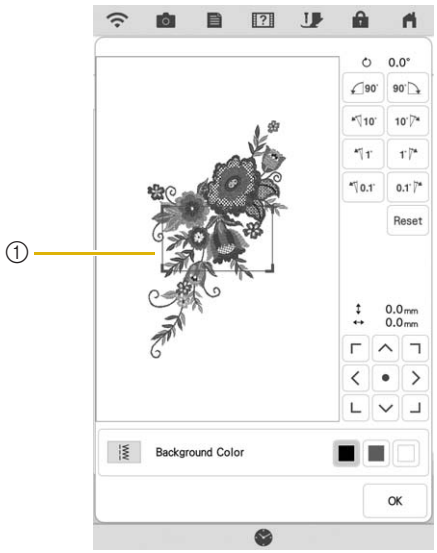
The pattern is normally positioned in the center of the embroidery frame. If the pattern needs to be repositioned for better placement on the garment, you can check the layout before starting embroidery.

Checking the Embroidery Pattern with the Projector

Using the projector, the selected embroidery pattern can be projected onto the fabric.

1 **Press ▲ in the embroidering screen.**



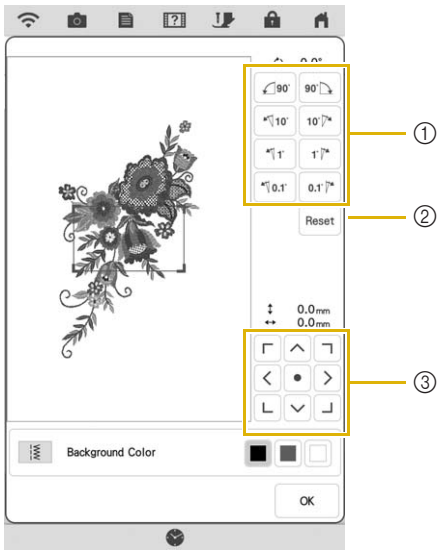


① Display area

→ The part of the pattern within the display area will be projected onto the fabric.

2 **Check the embroidery pattern.**

While the display area remains in place, the pattern can be moved.



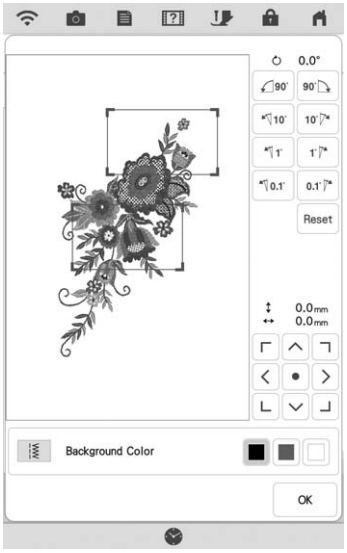
① Press to change the angle.

② Press to return the pattern to its original angle.

③ Press to move the pattern.

Memo

- To change the position of the display area, drag the display area with your finger. At the same time, the embroidery frame is moved.

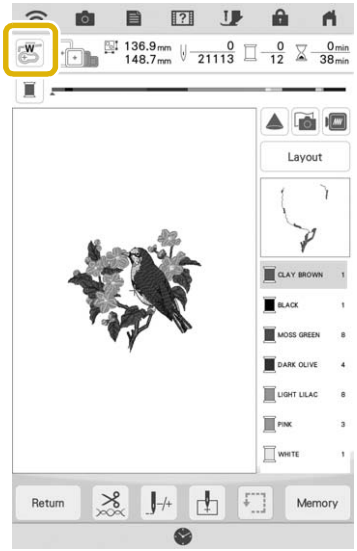


Checking the Needle Drop Point With the Projector

With the projector pointer, you can check the needle drop point before embroidering.

1 **Press in the embroidery screen.**

→ The pointer of the projector indicates the needle drop point.



Memo

- When the pointer of the projector is turned on, the embroidery foot height is automatically adjusted according to the fabric thickness.
- If embroidery foot “W+” with LED pointer (sold separately) is installed, the LED pointer is turned on.

* The pointer of the projector turns off automatically by lowering the embroidery foot or returning to the previous page.

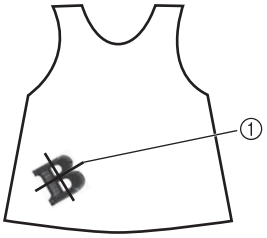
Note

- With fabric that has a very uneven surface such as thick fabric or quilting, the fabric thickness may not be correctly measured. In this case, the pointer indication should be used only as a reference.

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.**

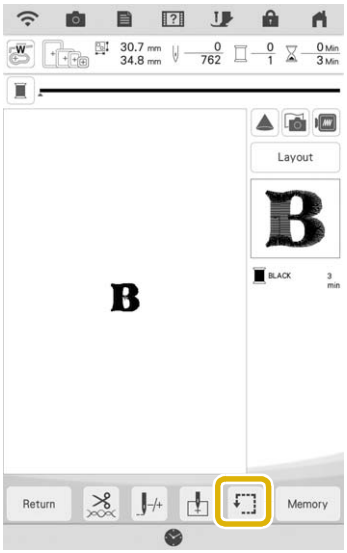


① Chalk pencil mark

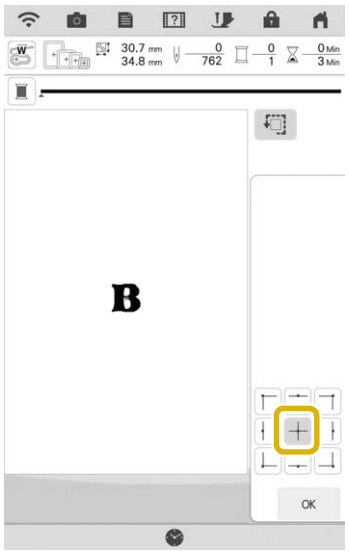
2 **Hoop the fabric.**

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

4 **Press in the embroidering screen.**



5 **Press ⊕ to set the starting point to the center of the pattern.**

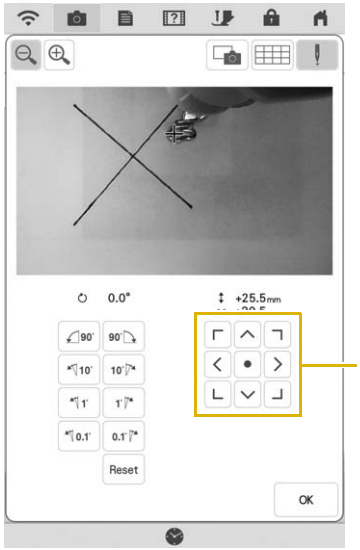


6 **Press OK.**

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

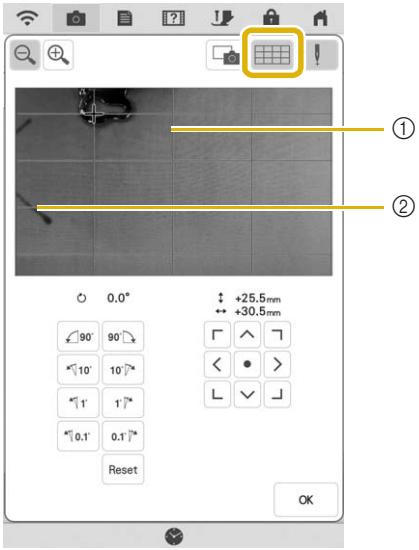
8 **Press 📷.**

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.**

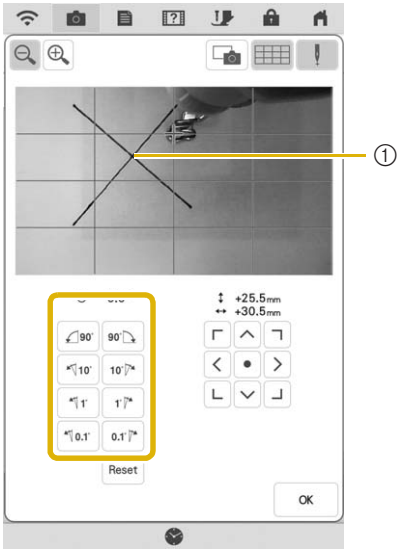


① Grid lines
② Chalk mark on the fabric

Memo

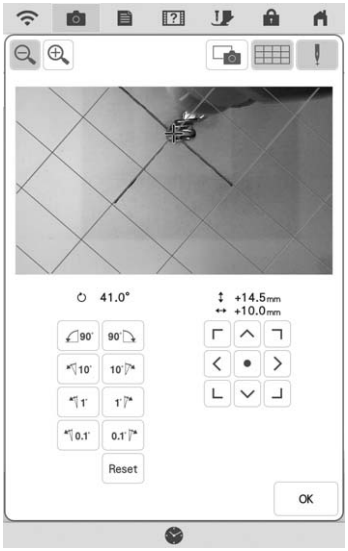
- Press 🔍 to enlarge the camera view. By enlarging the camera view, you can make a close adjustment for the center point of the pattern moving the embroidery frame little by little.

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 63.)**



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.**

* Refer to "Embroidering Patterns" on page 54.

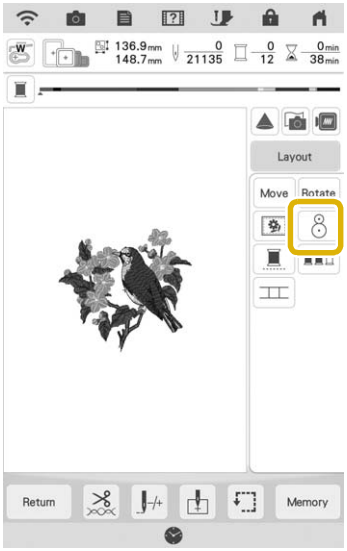
Using the Embroidery Position Sticker to Align the Embroidering Position

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

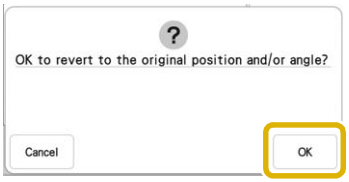
Note

- 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.

1 **Press** Layout **to display the editing window, and then press** .

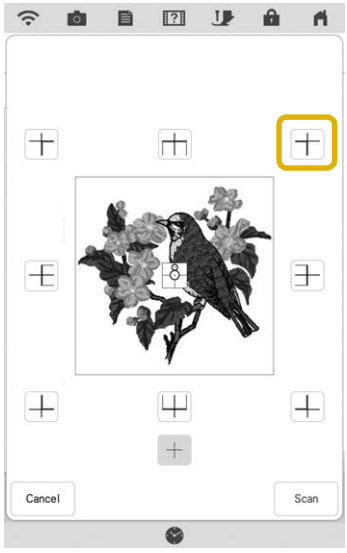


2 **Following message appears. Press** OK **.**



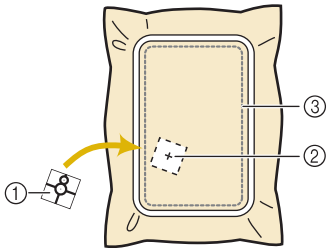
→ The embroidering position will return to the original position, even if you changed before.

3 **Select the position you want to set as the reference point.**



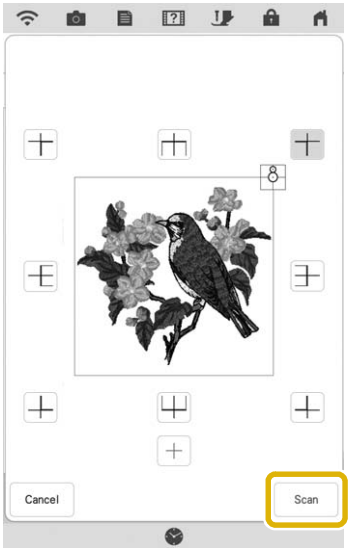
* Select ＋ if you want to embroider referring the embroidery positioning sticker as the center of the pattern.

4 **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

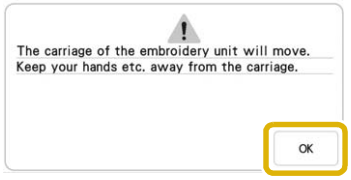
5 **Press** Scan **.**



Note

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

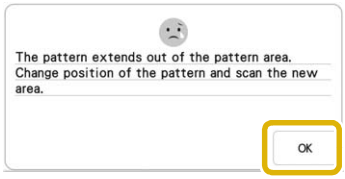
6 **Following message appears. Press** OK **.**



→ 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.

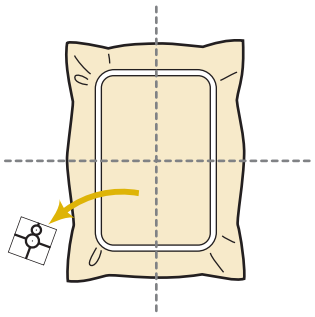
Note

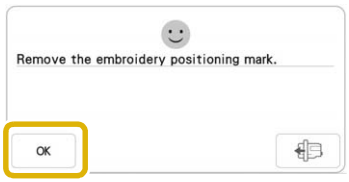
- If the following error message appears, press OK, rehoop the fabric so that the pattern is within the embroidery field, and then press Scan again.



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 carriage 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.**

* Refer to "Embroidering Patterns" on page 54.

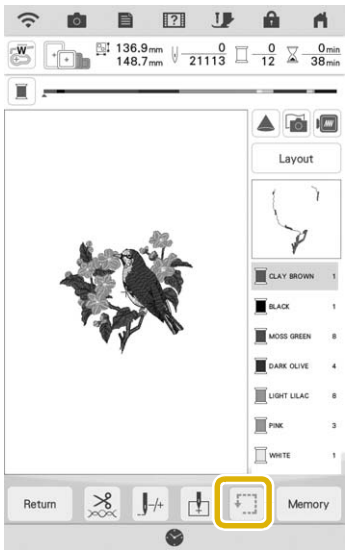
Note

- After the included embroidery positioning stickers are used up, optional stickers are available. For details, refer to the Instruction and Reference Guide (Sewing).

Checking the Pattern Position

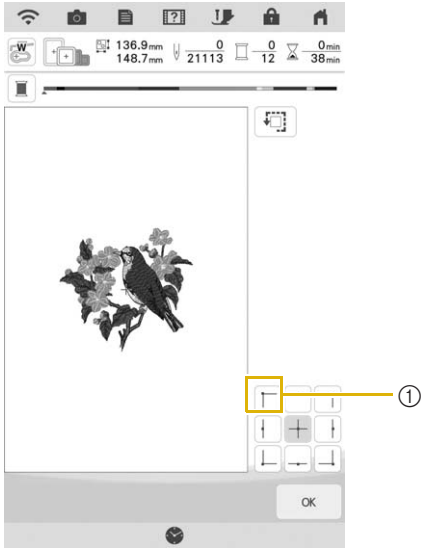
The carriage moves and shows the pattern position. Watch the embroidery frame closely to make sure the pattern will be embroidered in the right place.

1 **Press** .



→ The following screen is displayed.

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

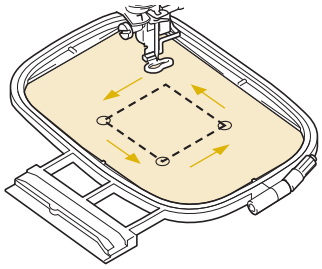


① Selected position

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

Memo

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



⚠ CAUTION

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

3 **Press** OK.

EMBROIDERING A PATTERN

Embroidering Attractive Finishes

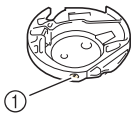
Many factors are involved in achieving a beautiful embroidery result. Using the appropriate stabilizer (page 28) and hooping the fabric in the frame (page 29) are two important factors mentioned earlier. Another important point is the appropriateness of the needle and thread being used. See the explanation 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 pattern may not embroider out correctly.

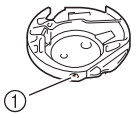
Bobbin case (recommended for sewing and for embroidering with included 60 weight bobbin thread)



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

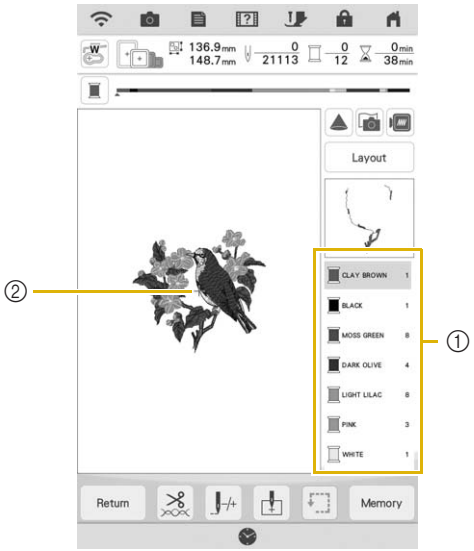
- **When embroidering on large garments (especially jackets or other heavy fabrics), do not let the fabric hang over the table. Otherwise, the embroidery unit cannot move freely and the embroidery frame may strike the needle, causing the needle to bend or break and possibly cause injury.**
  Place the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

Embroidering Patterns

Example:

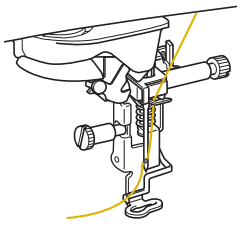


① Embroidery color order
② Cursor

Memo

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

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

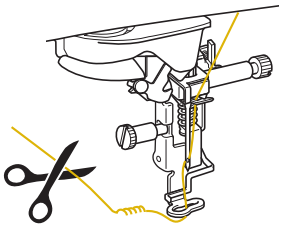


2 Lower the embroidery foot, then press the "Start/Stop" button to start embroidering.

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

Memo

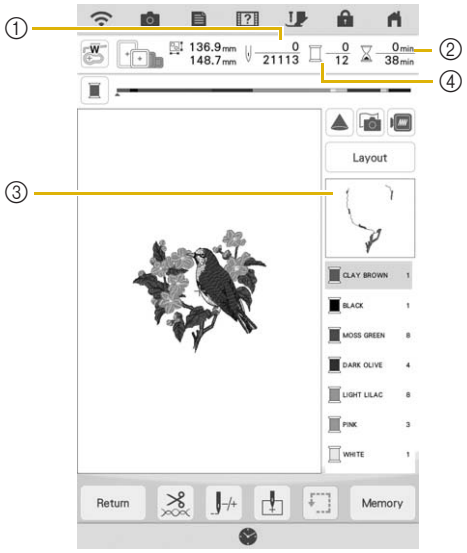
- If you want to get more attractive finishes, try the procedures below;
  - After 5-6 stitches, press the "Start/Stop" button again to stop the machine.
  - Trim the excess thread at the end of the seam. If the end of the seam is under the embroidery foot, raise the embroidery foot, then trim the excess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



- If there is thread left over from the beginning of embroidering, it may be embroidered 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 embroidered, "Finished embroidering" will appear on the display. Press OK, and the display will return to the original screen.

Memo

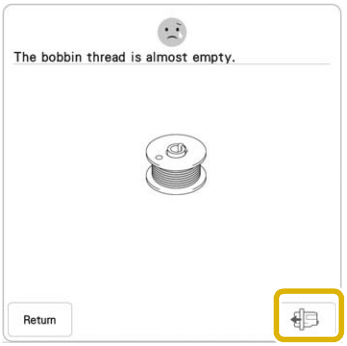
- The Thread Trimming Function is originally set to trim excess thread jumps (threads linking parts of the pattern, etc.). Depending on the type of thread and fabric that are used, an end of upper thread may remain on the surface of the fabric at the beginning of the stitching. After embroidering is 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.
  Refer to page 101 for information on the thread trimming function.

ADJUSTMENTS DURING THE EMBROIDERY PROCESS

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

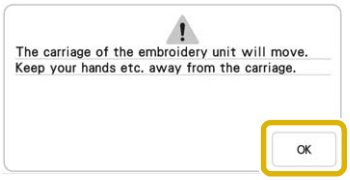
If the Bobbin Runs Out of Thread

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 replace the bobbin.



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.
- You can embroider 10 final stitches without replacing the bobbin by pressing Return.

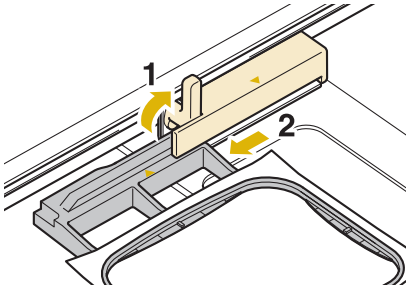
1 **Press OK.**



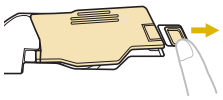
→ After the thread is automatically cut, the carriage will move.

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. (Refer to "Setting the Bobbin" on page 20.)**



4 **Press OK.**

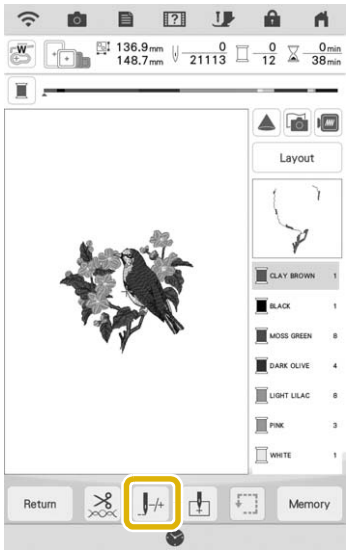
5 **Attach the embroidery frame.**

6 **To return to the spot in the pattern where you stopped embroidering, follow steps 2 through 8 in "If the Thread Breaks During Embroidering" on page 57.**

If the Thread Breaks During Embroidering

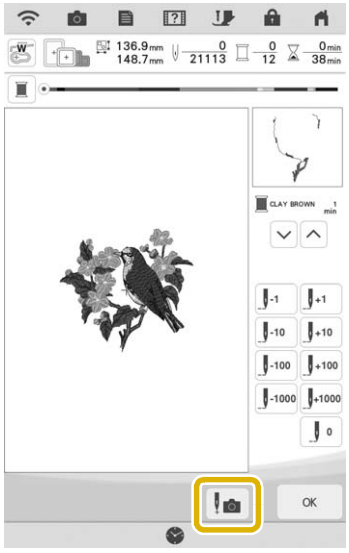
1. **If the upper thread is broken, redo the upper threading. If the bobbin thread is broken, press and follow the directions in steps 1 through 5 in "If the Bobbin Runs Out of Thread" on page 56.**

2. **Press .**



3. **Press the "Presser Foot Lifter" button to lower the embroidery foot.**

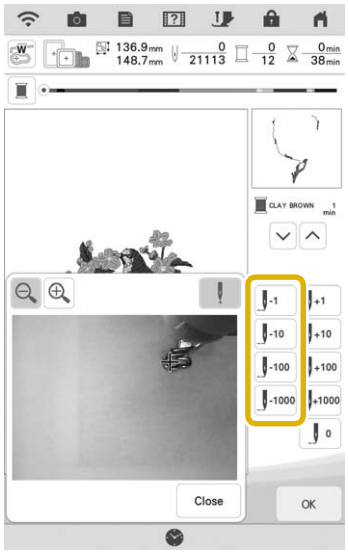
4. **Press .**



→ The camera view window appears.

5. **Press or 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 or to move ahead to slightly before where the thread broke.



* Press to enlarge the image in the screen.

* Press to remove " + " from the screen.

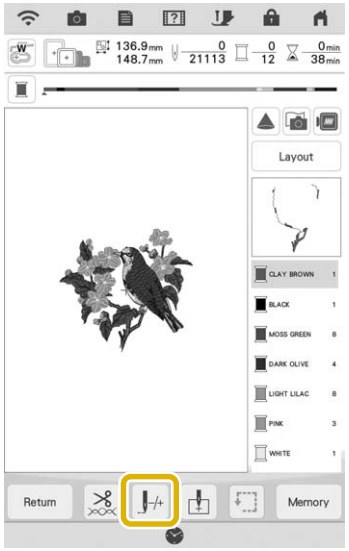
6. **Press Close to close the camera view window.**

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

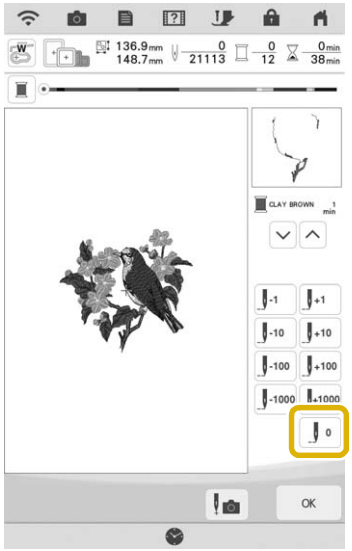
8. **Press the "Start/Stop" button to continue embroidering.**

Restarting from the Beginning

1 **Press** .



2 **Press** .



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

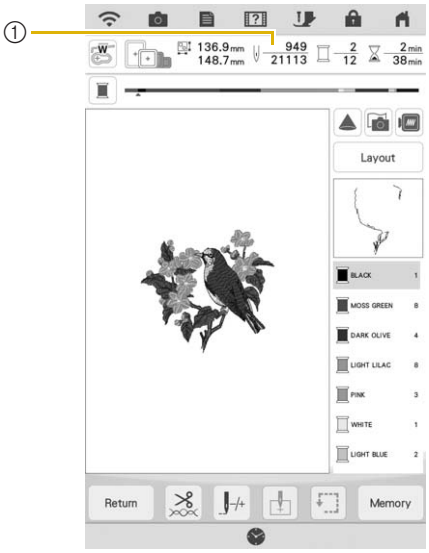
3 **Press the "Presser Foot Lifter" button to lower the embroidery foot and start embroidering.**

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.

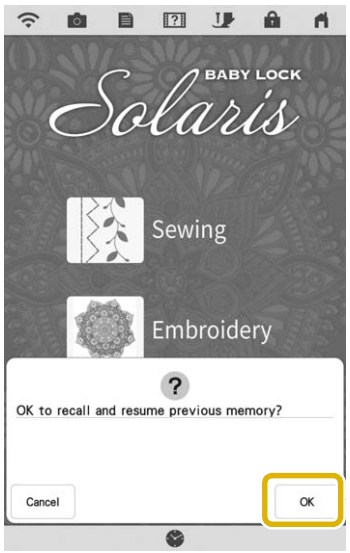
1 **Turn the main power to ON.**

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 .

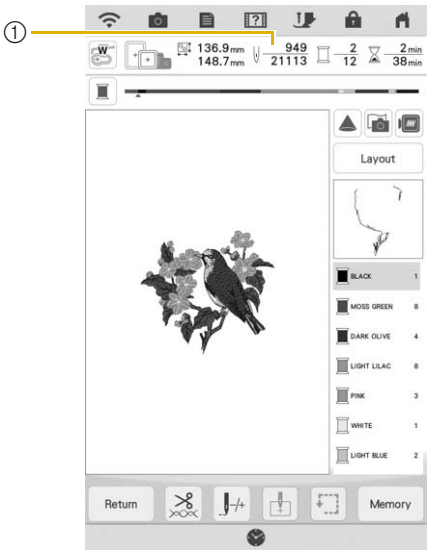


→ The previous embroidering screen displayed before the machine was turned off appears.

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

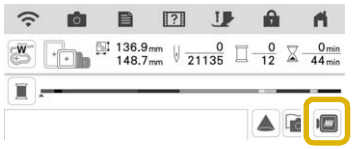
Chapter 2

Basic Editing

BASIC EDITING

Previewing the Pattern

1 **Press** .



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

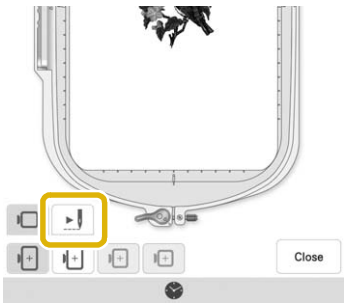
2 **Press to select the frame used in the preview.**

* Frames displayed in dark gray cannot be selected.

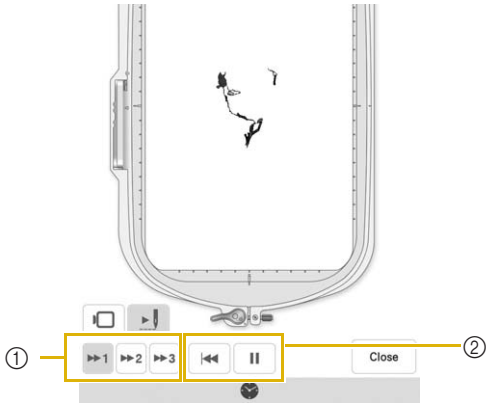
* Press to enlarge the image of the pattern.

* The pattern can be embroidered as it appears in the following display.

3 **Press to check the embroidering order.**



→ The stitch simulator screen appears.



① Select the simulation speed. Press , , or to change the speed. The speed can even be changed while the simulation is running.

② Operation keys

: Press to start the simulation at the set speed. When pressing , icon changes to .

: Press this key while the simulation is running to pause it. When pressing , icon changes to .

• Press to return to the embroidery frame holder/ embroidery frame selection screen.

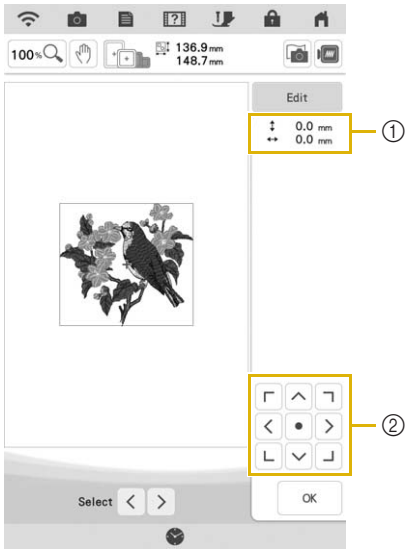
4 **Press** Close.

Moving the Pattern

1. **Press Edit, and then 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 ⌜ ^ ⌝ < • > ⌞ v ⌟ 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

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 dual purpose stylus.

4. **Press OK.**

Rotating the Pattern

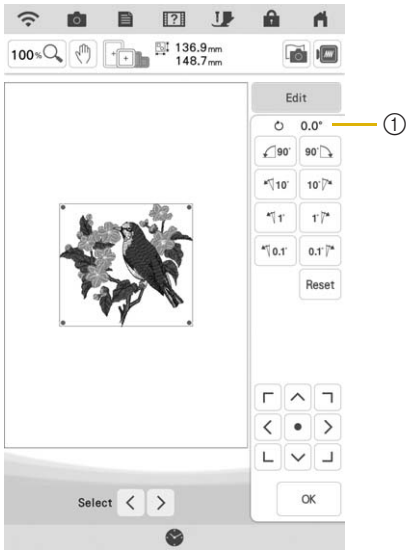
1. **Press Edit, and then press Rotate.**

2. **Select the key indicating the desired direction and angle for rotating the pattern. (Example: 90° rotates 90 degrees clockwise.)**

0°

90°

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



① Degree of rotation

Memo

- If the USB mouse is connected, 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.
- You can also rotate patterns by dragging at the top of the pattern.

3 **Press** OK.

Changing the Size of the Pattern

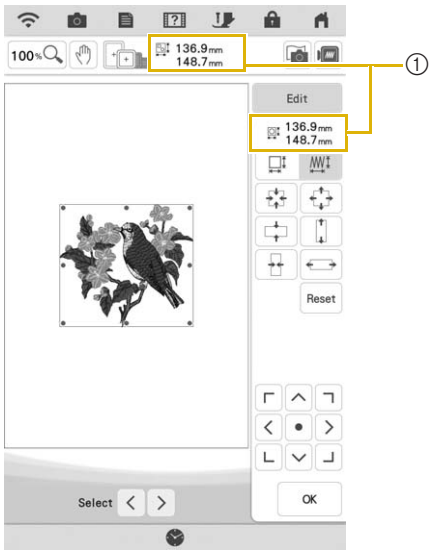
1 **Press** Edit, **and then press** Size.

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

Example:

Memo

- Press Reset to return the pattern to its original size.



① Size of the pattern

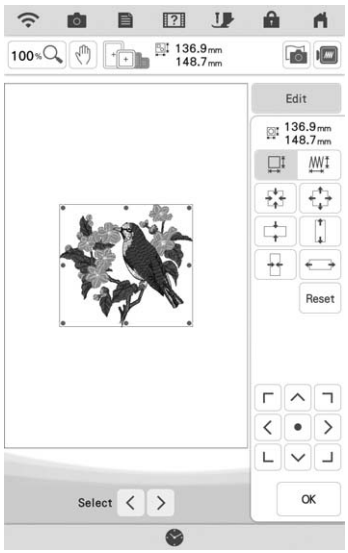
Memo

- In order to maintain embroidering quality, there is a limit to how much the embroidery pattern can be enlarged or reduced.
- Some patterns or characters can be enlarged to a greater degree if they are rotated 90 degrees.
- If the USB mouse is connected, 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 by Dragging

You can also change the pattern size by dragging the red point on the pattern image.



Note

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

■ 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 do trial embroidery using same fabric and threads as project in order to check the embroidering results.
- This function cannot be used with 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 cannot be resized while maintaining a thread density.

Memo

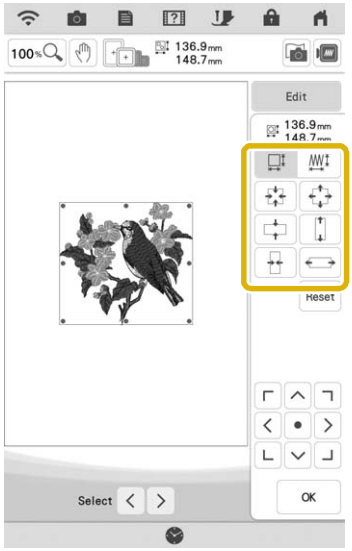
- Depending on the pattern, the size of the pattern increases up to 200 % or reduces to 60 %.

1 **Press** **in the size window.**

* : When you want to increase or decrease the density of the design. When the pattern size is changed, the thread density for the pattern increases or decreases, but the number of stitches is maintained.

* : When changing the size, the pattern keeps the original density. The number of stitch is recalculated.

2 Select the direction in which to change the size.



* Press — to make the pattern less dense.
* Press + to make the pattern more dense.

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.

3 Press OK.

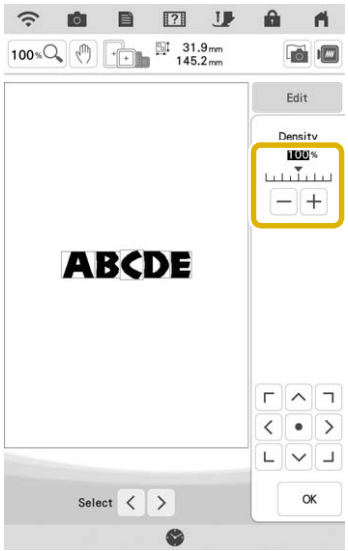
Changing the Density

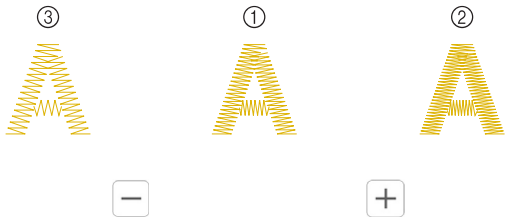
The thread density can be changed.
A setting between 80% and 120% in 5% increments can be specified.
This setting is available for some alphabet character patterns, frame patterns and so on. Other patterns are available after enabling patterns to change the density. For details, refer to “Changing the Size and the Density of the Pattern” on page 65.

1 Press Edit, and then 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.

Creating a Horizontal Mirror Image

Press Edit, and then press to create a horizontal mirror image of the selected pattern.

Designing Repeated Patterns

■ Embroidering Repeated Patterns

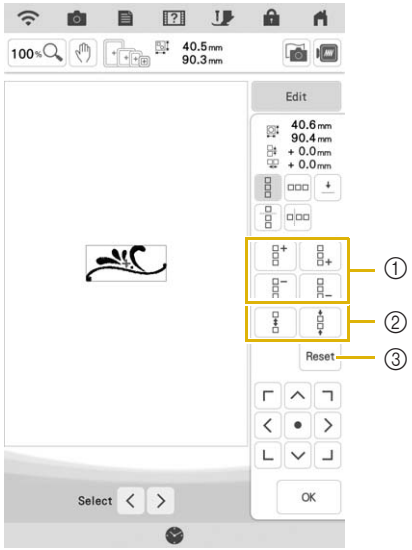
Using the border function, you can create repeated patterns. You can also adjust the spacing of the patterns.

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

2 **Select the direction in which the pattern will be repeated. Use to repeat the pattern above and to repeat the pattern below.**

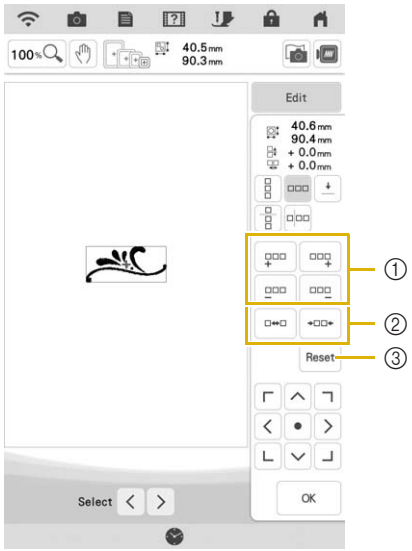
* To delete above pattern, press .
* To delete below pattern, press .

Vertical direction



① Repeating and deleting keys
② Spacing keys
③ Key to cancel pattern repeating

Horizontal direction

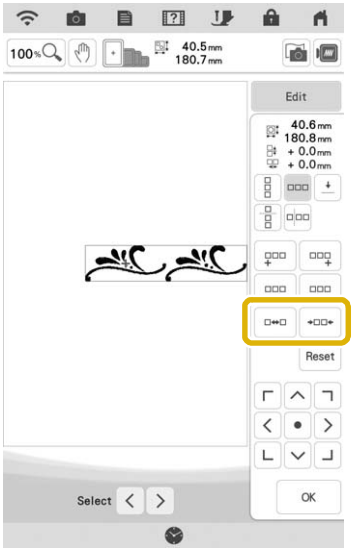


① Repeating and deleting keys
② Spacing keys
③ Key to cancel pattern repeating
→ The pattern direction indicator will change depending on the direction selected.

3 Adjust the spacing of the repeated pattern.

* To widen spacing, press .

* To tighten spacing, press .

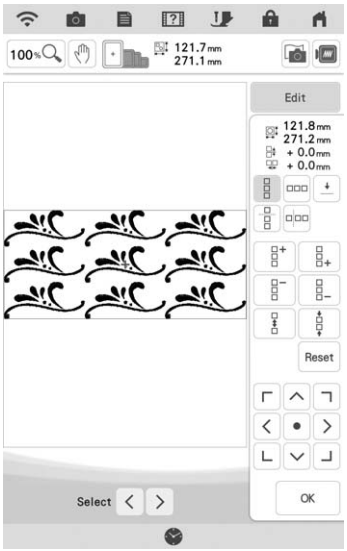


4 Complete repeated patterns by repeating steps 2 through 3.

5 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. Refer to the following section on how to repeat one element of a repeated pattern.

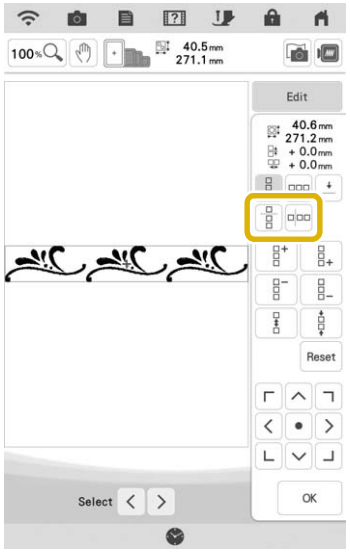
■ Repeating One Element of a Repeated Pattern

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 **Press** .

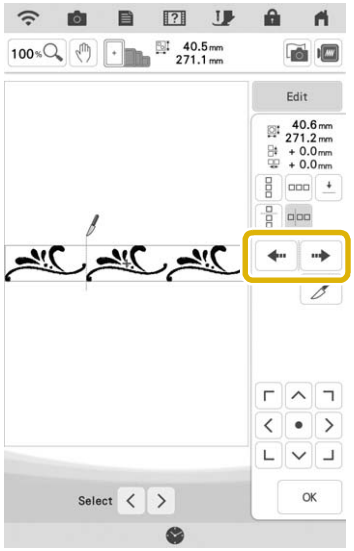
2 **Choose the direction in which the repeated pattern will be cut.**

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



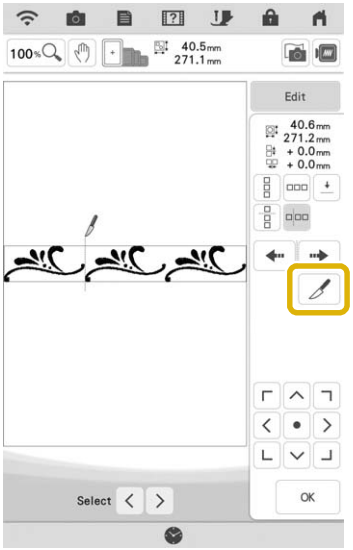
→ The pattern direction indicator will change depending on the direction selected.

3 **Use and to select the cut line.**



→ The cut line will move.

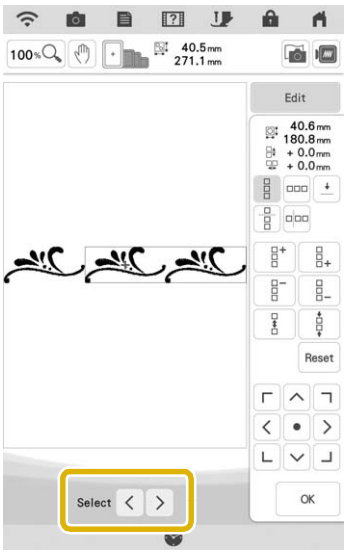
4 **Press** .



→ The repeated pattern will be divided into separate elements.

5 **Press** .

6 **Use and to select the element to repeat.**



7 **Repeat the selected element.**

8 **Press** OK.

Note

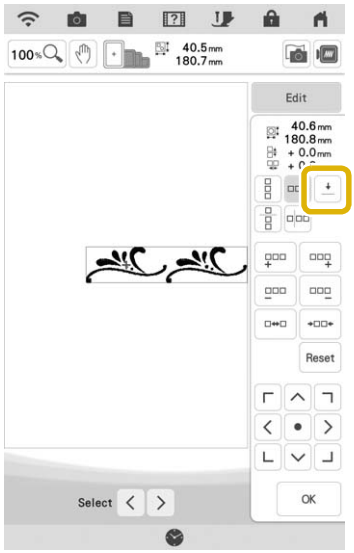
- Once you have cut a repeated pattern into separate elements, you cannot return to the original repeated pattern.
- Each element can be edited separately in the edit screen. Refer to “Selecting combined embroidery patterns” on page 87.
- Press Embroidery to change the embroidering order in order to minimize the number of the thread color changes.

■ Assigning Thread Marks

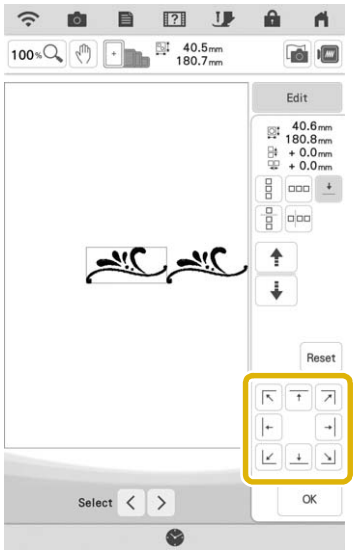
By embroidering thread marks, you can easily align patterns when embroidering a series. When embroidering is finished on a pattern, a thread mark in the shape of an arrow will be sewn using the final thread. When embroidering a series of patterns, use the point of this arrow for positioning the following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

1 **Press Edit, and then 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.

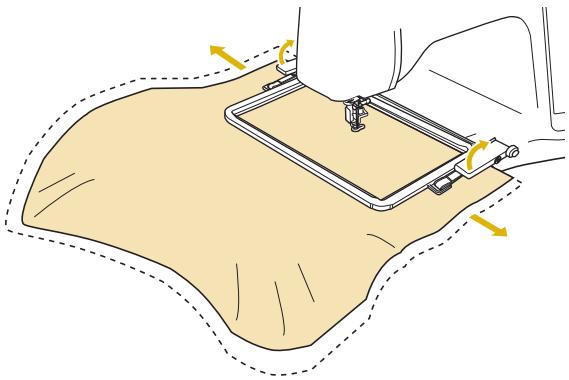
4 **Press OK.**

Embroidering the Pattern Repeatedly

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

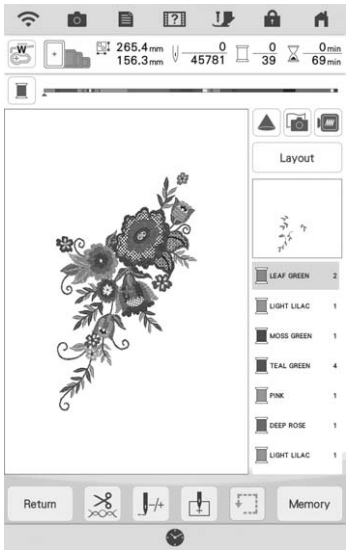
Memo

- 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 70.



2 **Press** OK **, then** Embroidery **.**

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

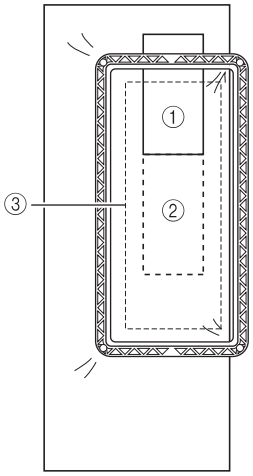
→ When embroidering is finished, the thread mark is sewn with the last thread color.

4 **Remove the embroidery frame.**

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

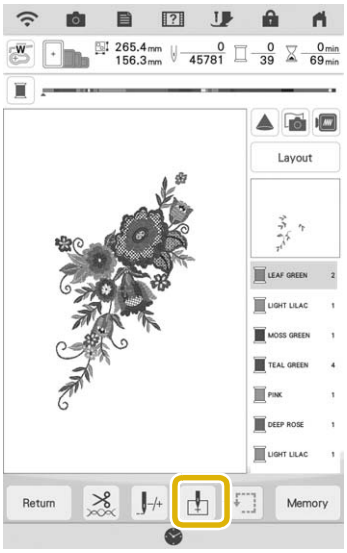
Note

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

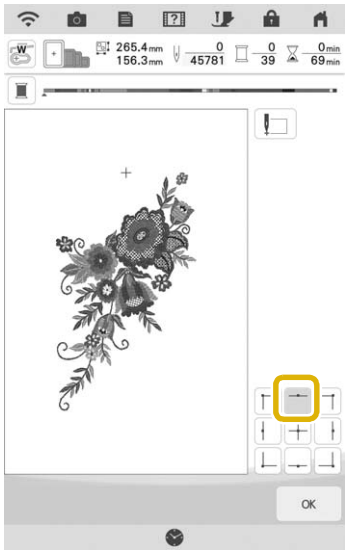


① Pattern embroidered first
② Position of pattern to be embroidered next
③ Embroidering area of embroidery sheet

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



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

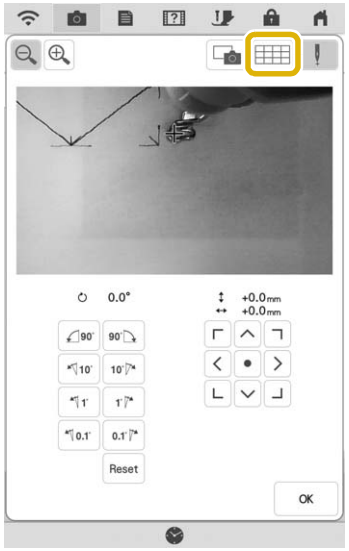


8 **Touch OK.**

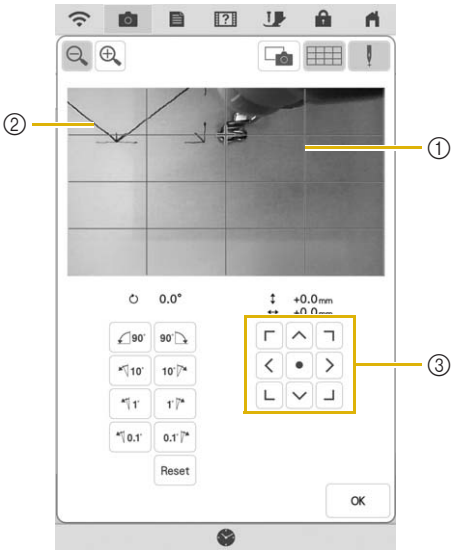
9 **Press the "Presser Foot Lifter" button to lower the embroidery foot.**

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 point 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 embroider the pattern properly aligned even if the thread mark and the starting point are aligned in the camera view window.

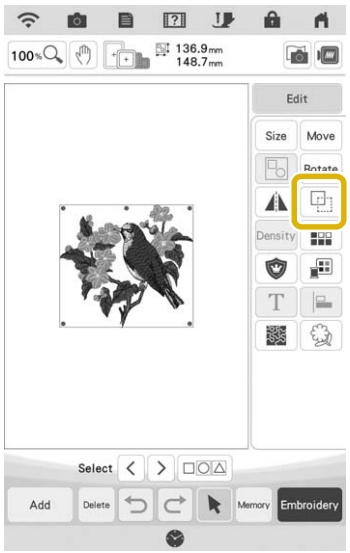
14 **Press OK to return to the previous screen.**

15 **Remove the thread mark.**

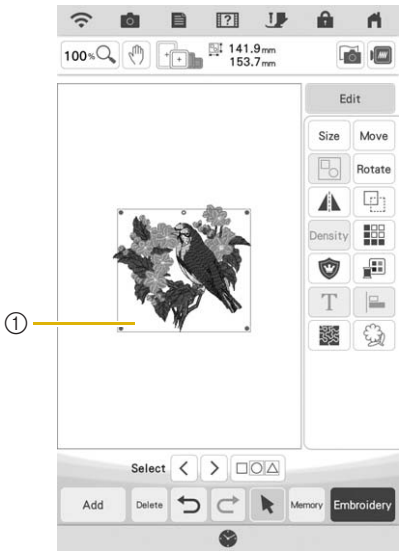
16 **Press the "Start/Stop" button to begin embroidering.**

Duplicating a Pattern

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



→ The duplicate is positioned.



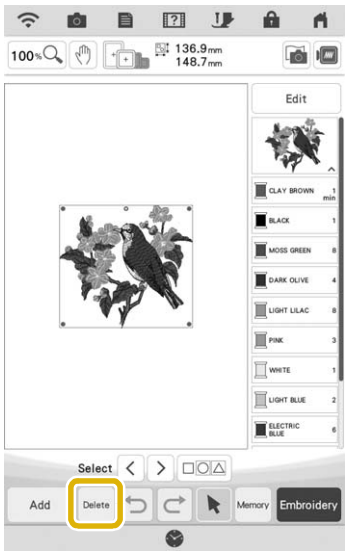
① Duplicated pattern

Note

- If multiple patterns are displayed in the screen, only the pattern selected using < and > is duplicated.
- Move and edit each duplicated pattern individually.

Deleting the Pattern

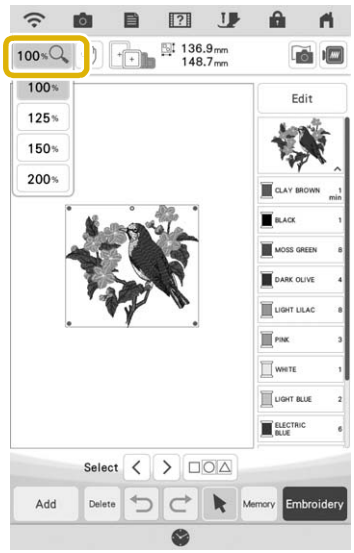
Press Delete to delete the pattern from the screen.



Displaying Patterns in the Screen Magnified

1 **Press** 100% **to magnify the image.**

* The image is magnified by 125%, 150% and 200% as you press 100%.



2 Check the displayed pattern.

Memo

- When magnifying, pressing enables you to move displayed area. At this time, the embroidery pattern in the location in the embroidery field does not move.

EDITING LETTERS

Selecting Alphabet Character Patterns

Example: Entering “The Sky is Blue”.

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 “T”.**

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

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

Memo

- If you continue adding characters after changing the size, the new characters will be entered in the new size.

5 **Press** abc **and enter “he”.**

6 **Press** ␣ **to enter a space.**

7 **Press ABC again and enter “S”.**

8 **Press abc and then enter “ky_is”.**

9 **Press ↵ to make a new line.**

10 **Enter “Blue” according to step 4 and 5.**

11 **Press Set.**

→ The embroidering screen is displayed.

12 **Follow the steps from 4 to 7 of “Selecting Embroidery Patterns/Decorative Alphabet Patterns/Utility Embroidery Patterns” on page 43.**

Character Alignment

Each press of ≡≡≡ switches between right alignment, left alignment and center alignment, in that order.

≡≡≡ Right alignment

ABCDE
FGH
IJKLMN

≡≡≡ Left alignment

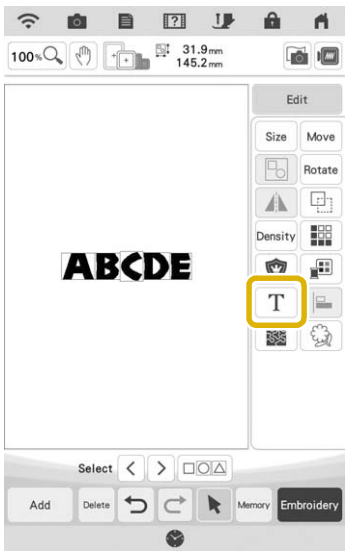
ABCDE
FGH
IJKLMN

≡≡≡ Center alignment

ABCDE
FGH
IJKLMN

Changing Font Type

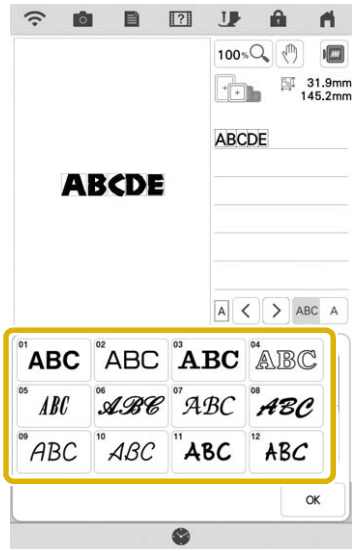
1 **Before changing the font type, press Edit, and then press T.**



2 **Press** AAa.

3 **Select the font type.**

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



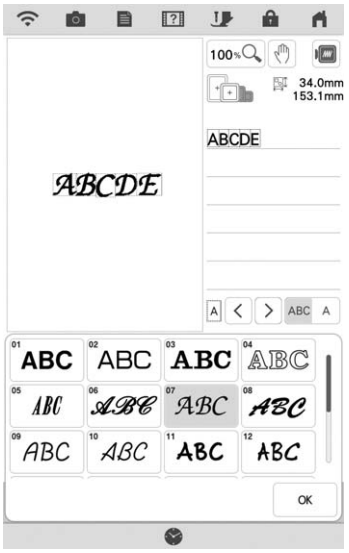
* Scroll the bar to display the font type that is not on the screen.

Memo

- To change the character font type for only the selected character, press ABC A. The font type on the left side of the selected character is changed.

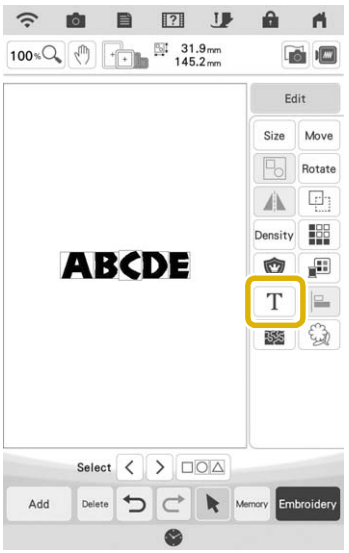
4 **Press** OK.

→ The new font is selected.



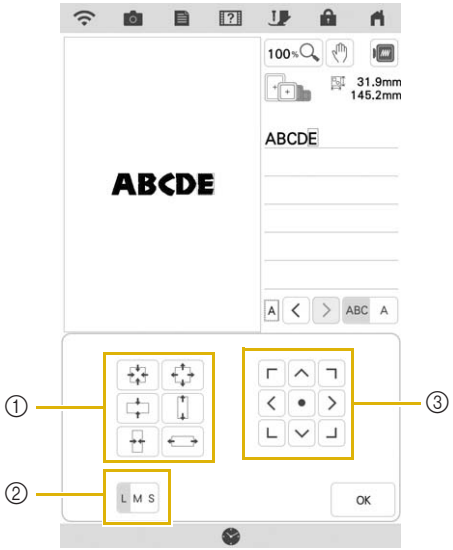
Changing Letter Size

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



2 **Press** Size **.**

3 **Change the size of letters.**



① Change the size to the specific direction.
② Change the size from L, M or S size.
③ Move the text.

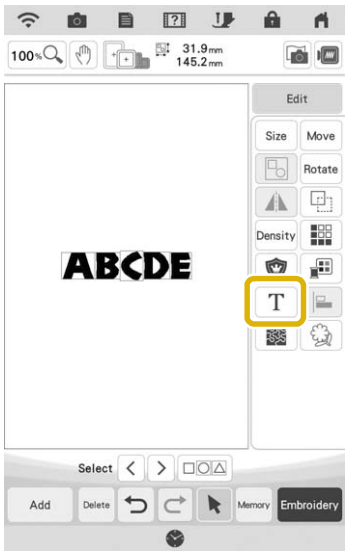
Memo

- To change the character letter size for only the selected character, press ABC A. The letter size on the left side of the selected character is changed.

4 **Press** OK **.**

Changing the Configuration of Alphabet Character Patterns

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



2 **Press** Array.

3 **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.

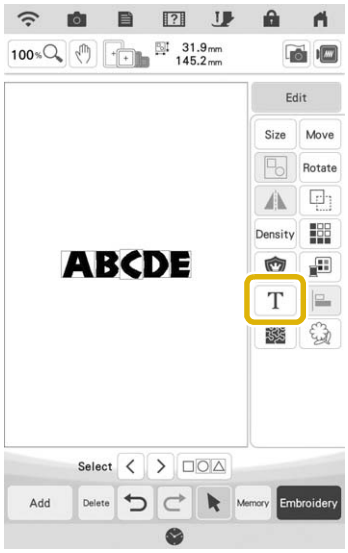
Memo

- When selecting , these keys (and) change to look like (and). So you can increase or decrease the incline.
- You can move patterns using on the screen.

4 **Press** OK.

Changing Alphabet Character Spacing

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



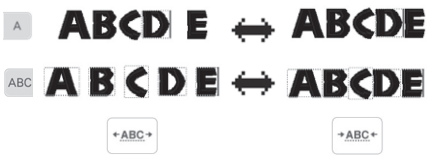
2 **Press** Spacing.

3 Select the spacing.

* Press [+ABC+] to increase the character spacing.
* Press [+ABC+] to decrease the character spacing.
* Press [ABC] to return the pattern to its original appearance.
* Press [A] to move the text up.
* Press [A] to move the text down.

Memo

- To change the character spacing for only the selected character, press [ABC A]. The spacing on the left side of the selected character is changed.



[+ABC+] [+ABC+]

- You can move patterns using [arrow pad] on the screen.

4 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.

Re-editing Character Patterns

Even after text has been entered, the characters can be re-edited.

1 Press [Edit], and then press [T].

→ The character pattern can be re-edited.

Note

- A line feed cannot be added when re-editing character patterns.

EDITING COLORS

Changing the Thread Color

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

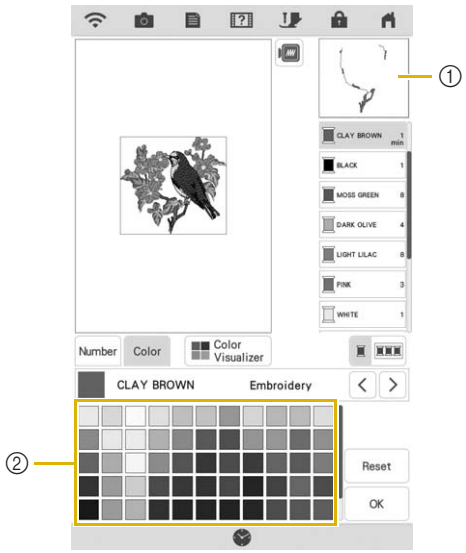
1 **Press** Edit **, and then press** .

→ The thread color palette screen displays.

2 **Press the color of the part to be changed.**

* Scroll color palette area to display the thread color that is not on the screen.

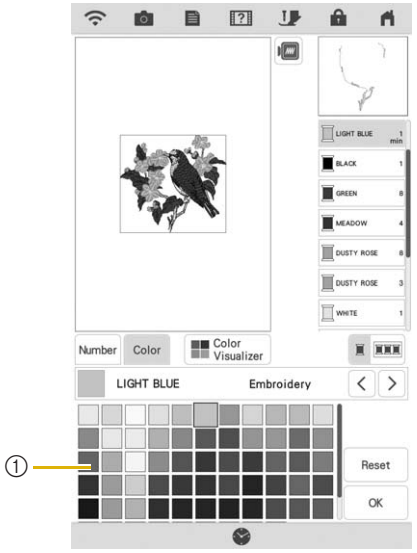
→ The selected thread color image is displayed.



① Selected thread color image
② 64 Embroidery thread color palette

3 **Select a new color from the color palette, and then press** OK **.**

* 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

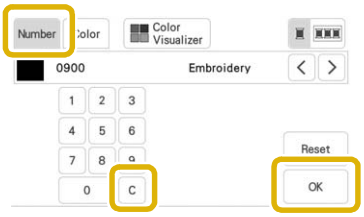
→ The selected color appears at the top of the embroidering order.

→ The display shows the changed colors.

4 **Press** OK **.**

Memo

- Press Number to find a thread color by entering its number. If you enter the wrong number, press C , and then enter the correct number. After entering the number, press OK .



Find New Color Schemes With the Color Visualizer Function

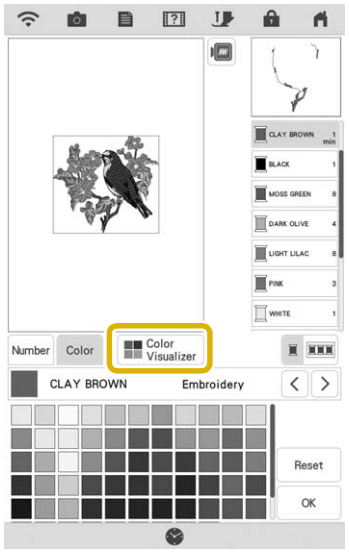
With the color visualizer function, the machine suggests new color schemes for the embroidery pattern that you have selected. After you select the

desired effect from the four available (“Random”, “Vivid”, “Gradient” and “Soft”), sample color schemes for the selected effect are displayed.

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

→ The thread color palette screen appears.

2 **Press** Color Visualizer **.**

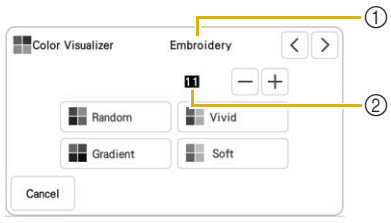


→ The color visualizer screen appears.

Note

- This function may not be available depending on the pattern you select (ex. a bordered embroidery pattern, licensed pattern).

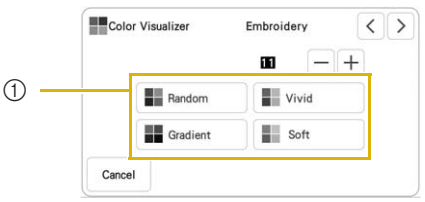
3 **Select the thread brand for colors and the number of colors you want to create the pattern with.**



① Thread brand for colors

② Number of colors to be used.

4 **Select the desired effect.**



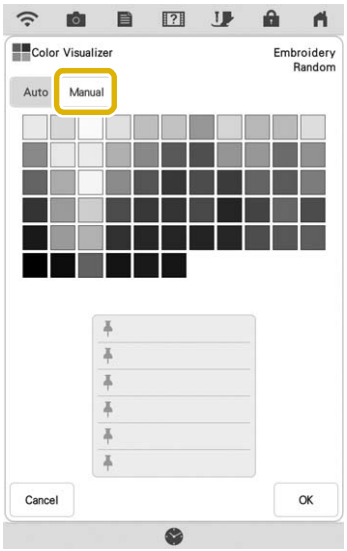
① Effects for schemes

→ 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.

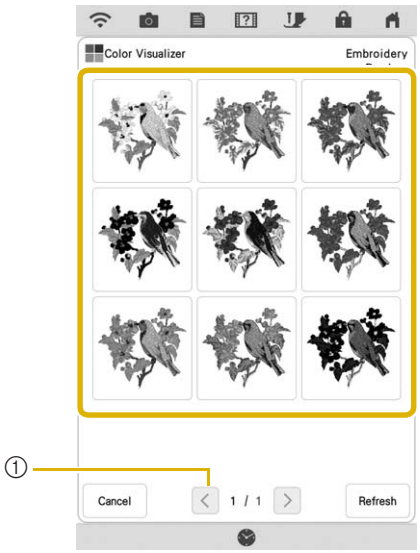
“Manual” setting for “Gradient”
You can select one color to be used in the “Gradient” effect.
The effect will be created with a color you select.

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.

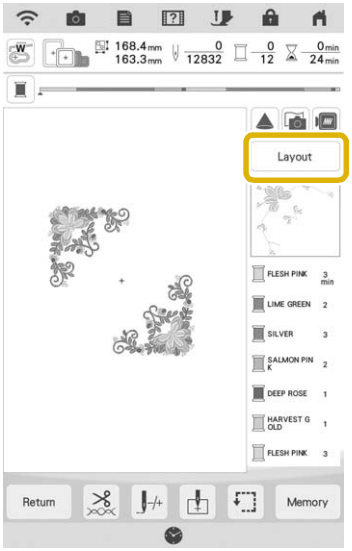
→ The thread color palette screen will appear.

Thread Color Sorting

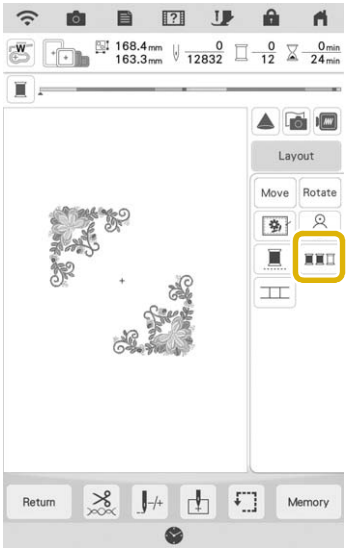
This function allows you to embroider while replacing the thread spool a minimal number of times.

Before starting to embroider, press [▪▪▪] in the embroidery screen to rearrange the embroidery order and sort it by thread colors.

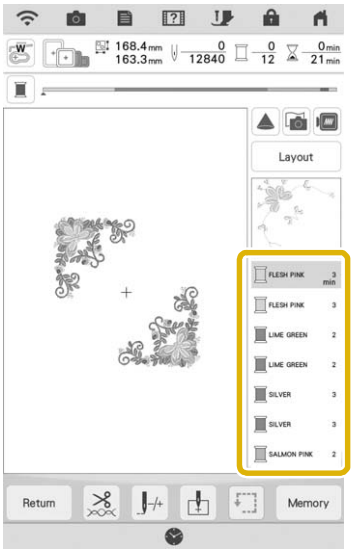
1 Press [Layout] in the embroidery screen.



2 Press [▪▪▪].



* Press [Layout] again to check the sorted thread colors.



The embroidery color order is rearranged and sorted by thread colors.

Press [Layout], then [▪▪▪] to cancel color sorting and embroider with the original embroidery color order.

Note

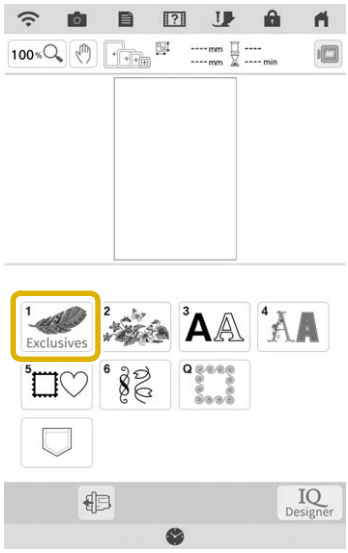
- This function does not work on overlapping designs.

COMBINING PATTERNS

Editing Combined Patterns

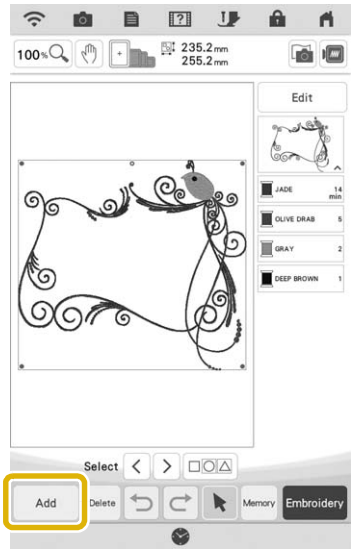
Example: Combining alphabet characters with an embroidery pattern and editing

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



2 **Select** Monograms **, press** 007 **and then press** Set **.**

3 **Press** Add **.**



4 **Press AA to enter the alphabet characters.**

* Press Return to return to the previous screen.

5 **Select ABC and enter "LOVE".**

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

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

* Refer to page 78 for more information about changing the layout.

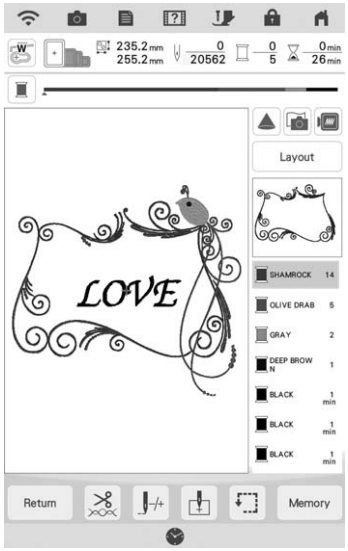
7 **Use ◄ ► to move the characters.**

* With a USB mouse, your finger or the dual purpose stylus, drag the characters to move them.

8 **Press Edit, and then press to change the color of the characters.**

* Refer to page 81 for more information about changing the color.

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

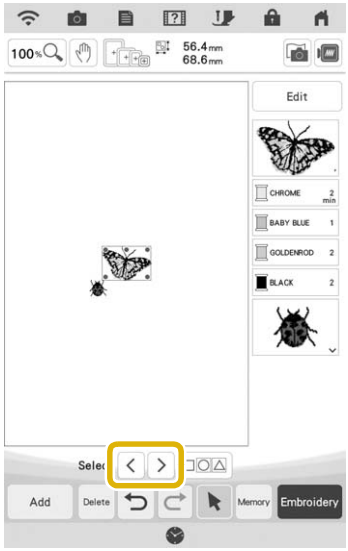


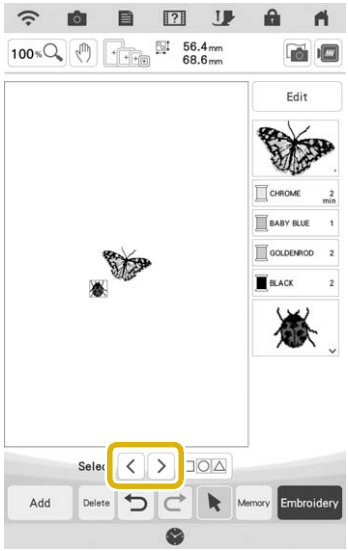
■ Selecting combined embroidery patterns

If multiple patterns have been combined, use [<] [>] 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 dual purpose stylus.

Memo

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





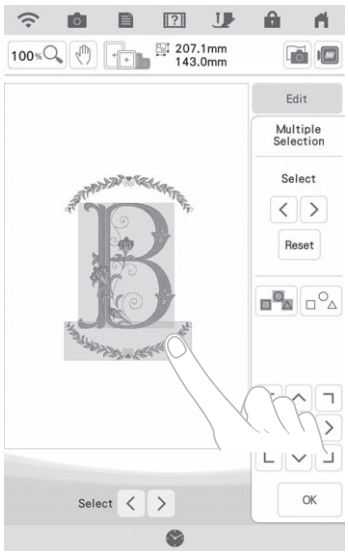
Selecting Multiple Patterns at the Same Time

Multiple patterns can easily be edited, for example, when moving patterns that are combined, if they are all selected together.

1 Press [□○△].

→ The Multiple Selection screen appears.

2 Touch each pattern to select multiple patterns.



Memo

- Multiple patterns can also be selected by dragging your finger in the screen.
- Multiple patterns can be selected or deselected from the Multiple Selection screen. Press < or > to check the patterns to be selected, and then press Set.

The selected patterns are surrounded with a red box.

- Press to select all patterns in the pattern display area.
- Press to deselect all selected patterns.
- The patterns can also be selected by touching them directly in the screen.
- While the Multiple Selection screen is displayed, patterns can be moved with .
- The following functions cannot be used while multiple patterns are selected.
  - Resizing
  - Rotating
  - Appliqué
  - Border
  - Thread color changing

3 Press OK to return to the embroidery edit screen.

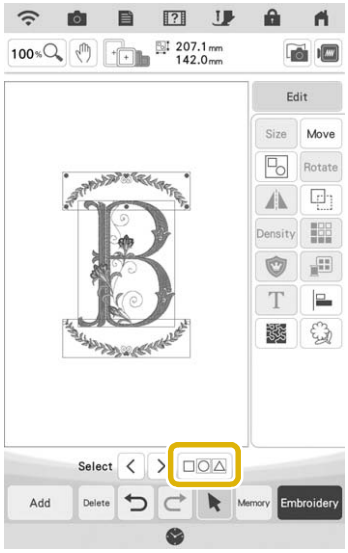
* Each selected pattern is surrounded with a red box.

Grouping Multiple Selected Patterns

If the multiple patterns selected in "Selecting Multiple Patterns at the Same Time" on page 87 are grouped, they can be edited as a single pattern.

1 Press to select multiple patterns.

→ The selected patterns are grouped.



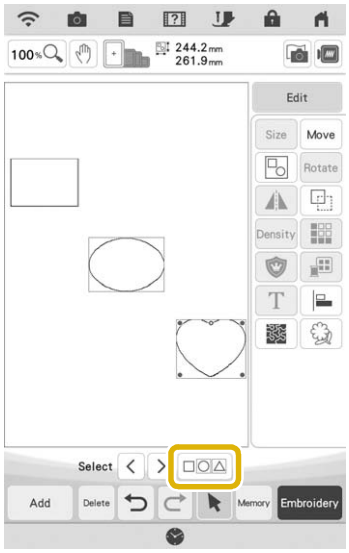
* Press to ungroup the patterns. If there are multiple grouped patterns, the selected pattern group is ungrouped.

Memo

- When patterns are grouped, the following functions are applied to all patterns in the pattern group.
  - Moving
  - Rotating
  - Appliqué
  - Border
  - Extracting pattern outlines
  - Simple stippling or echo quilting
  - Thread color changing

Aligning the Embroidery Patterns

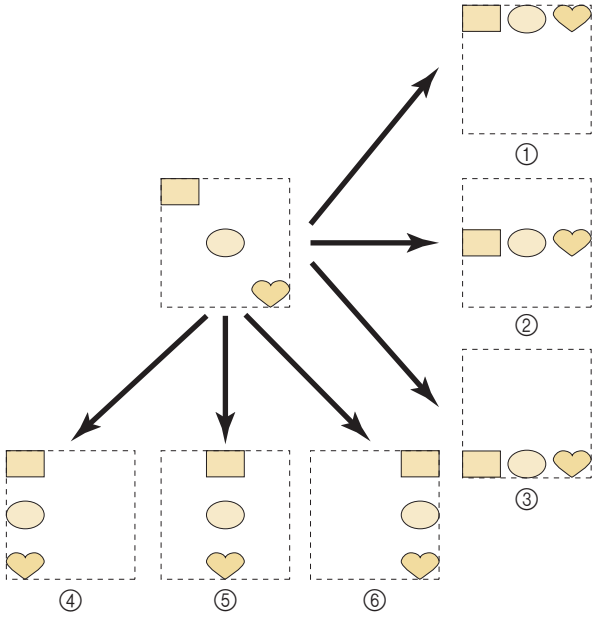
1 **Press [□○△], select each pattern that you want to align, and then press [OK].**



2 **Press [Edit], [⫢], and then press the key for the desired alignment.**

No.	Display	Explanation
①		Top
②		Middle
③		Bottom
④		Left
⑤		Center
⑥		Right

Example:



Embroidering Combined Patterns

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

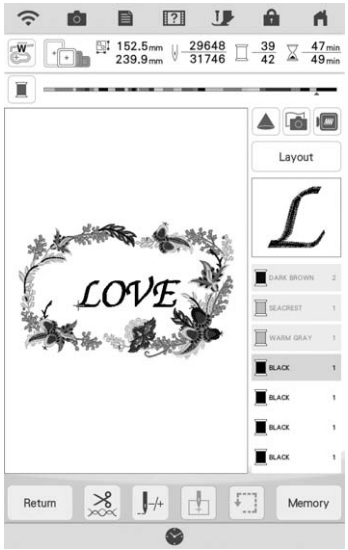
Note

- Follow the directions in “Embroidering Patterns” on page 54.

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

→ After 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.

Chapter 3

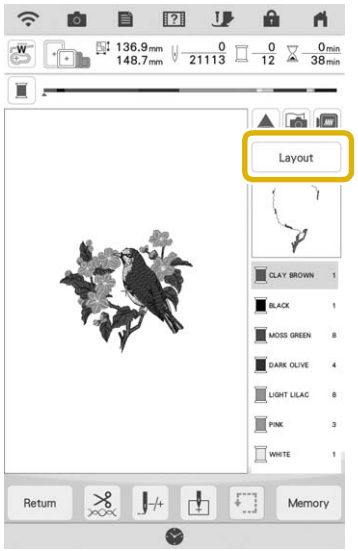
Advanced Editing

VARIOUS EMBROIDERING FUNCTIONS

Uninterrupted Embroidering (Using a Single Color : Monochrome)

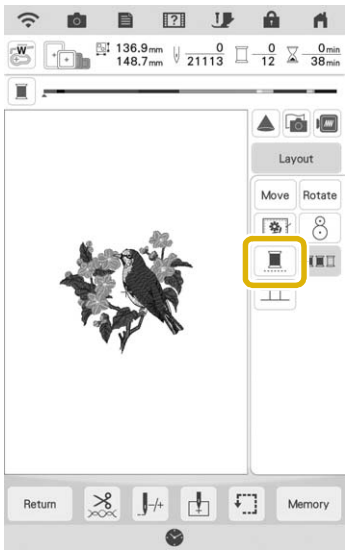
A selected pattern can be stitched out in one color instead of multicolor. The machine will continue till the pattern is completed.

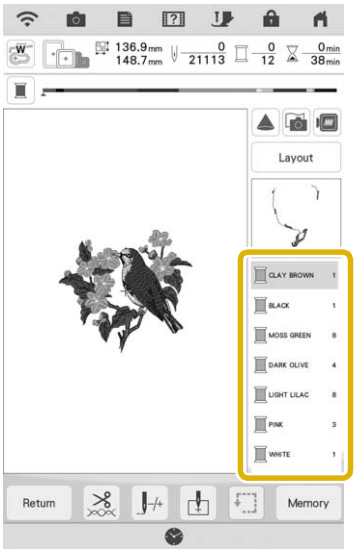
1 **In the embroidery screen, press** Layout **.**



2 **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 (page 100 and 101).

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

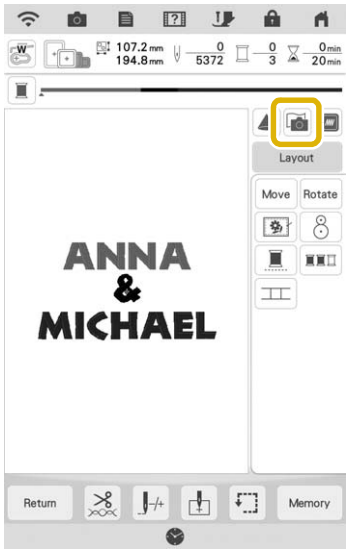
- When embroidery frame (small: H 2 cm × W 6 cm (H 1 inch × W 2-1/2 inches)) is installed, the built-in camera cannot be used to align the embroidering position.
- For details on using thicker fabric such as quilting, refer to “Positioning the Pattern on Thick Fabric” on page 95.

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

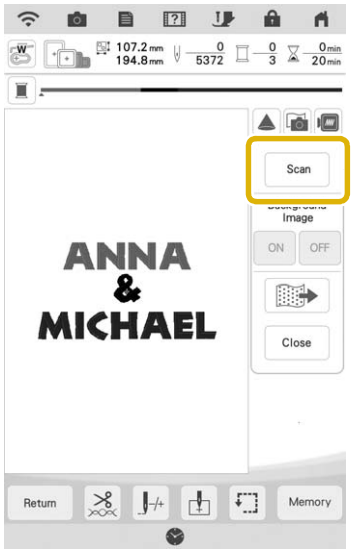
2 **Select the pattern and, if necessary, edit the pattern and press** Embroidery **.**

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

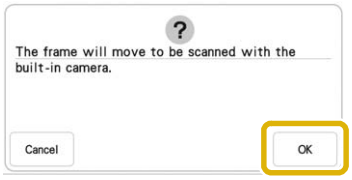
3 **Press** .



4 **Press** Scan **.**



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

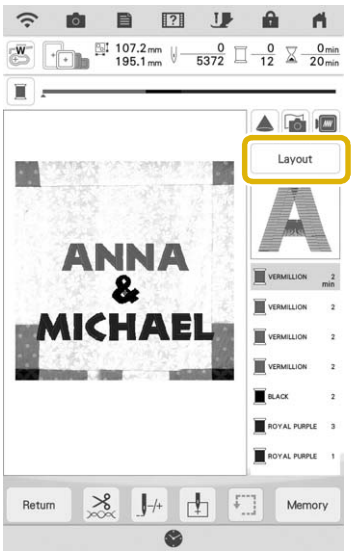


→ The carriage moves so the fabric can be scanned.

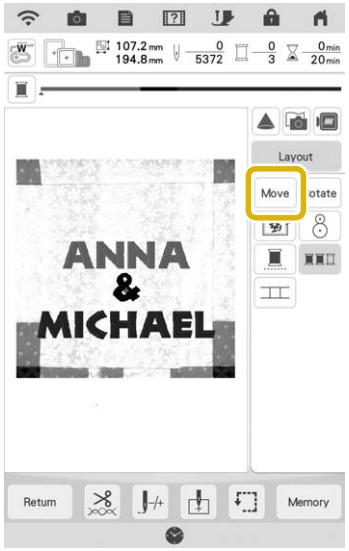
> **Memo**
> - If you do not wish the upper thread to be scanned together with the fabric, scan the fabric without the needle threaded with the upper thread.

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

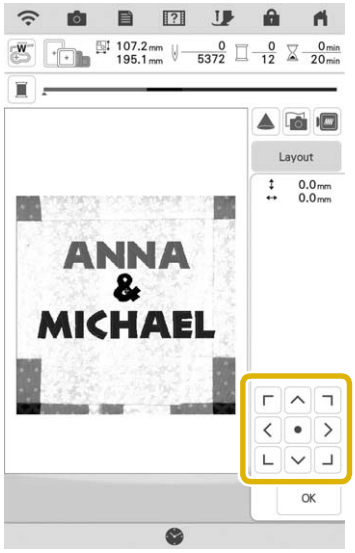
* The pattern can be moved to the desired position by dragging on the screen using your finger, the dual purpose stylus or connected mouse without displaying the editing window. If you need some fine adjustment, move the pattern from the editing window.



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



8 **Use** ⌜ ^ ⌝ < • > ⌞ v ⌟ **to align the pattern to the desired embroidery position.**



9 **Press** OK **.**

Memo

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

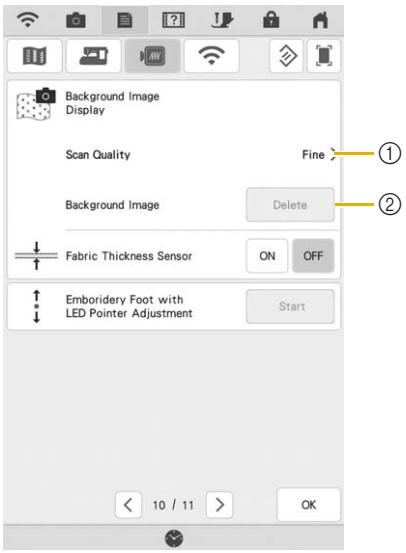
10 **Press the "Start/Stop" button to start embroidering.**

* Refer to "Embroidering Patterns" on page 54.

→ 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 "Fine" to scan clearer than setting to "Standard".

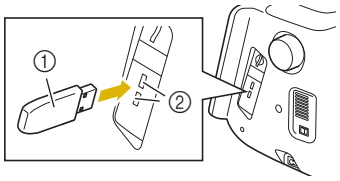
② Press Delete to remove the background image completely.

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 media
② USB port

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

3 **Press** Memory **.**

→ 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 scanned images are saved with the name "BG**.PNG" in a folder labeled "bPocket".

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

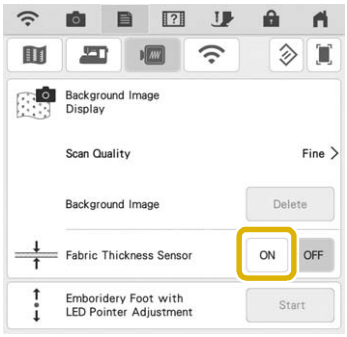
■ Positioning the Pattern on Thick Fabric

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.

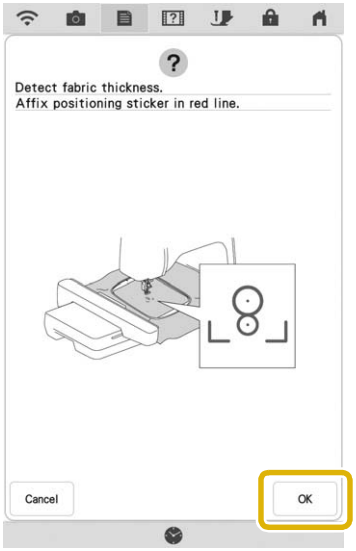
Memo

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

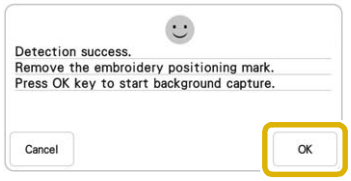
1. **Hoop the fabric in the embroidery frame, and then attach the frame to the machine.**
2. **Select the pattern and, if necessary, edit the pattern and press Embroidery.**
3. **Display page 10 of the settings screen, and then set "Fabric Thickness Sensor" to "ON".**



4. **Press OK.**
5. **Press .**
6. **Press Scan.**
7. **Affix the embroidery positioning sticker to the fabric within the area indicated by the red frame displayed with the projector, and then press OK.**



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



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

9. **Continue with step 6 on page 93 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.**

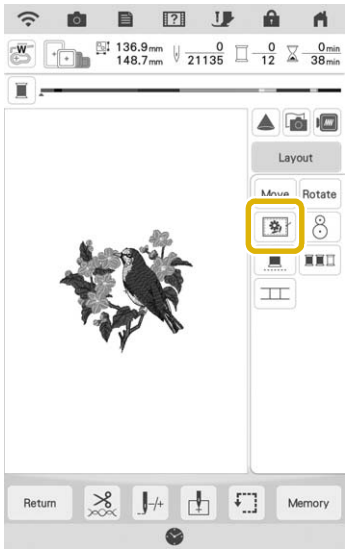
Basting Embroidery

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 Layout, and then press to select the basting setting.**



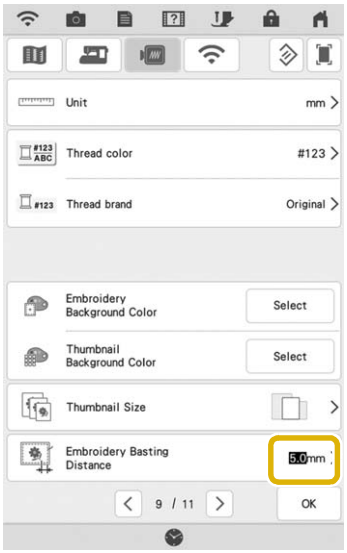
Memo

- To cancel the setting, press .

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

2 **Press .**

3 **Touch the number 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.

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

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

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

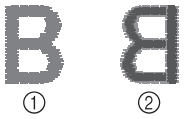
MAKING EMBROIDERY ADJUSTMENTS

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 loose, the machine may stop during embroidering. This is not the sign of a malfunction. Increase the thread tension slightly, and begin embroidering again.

Memo

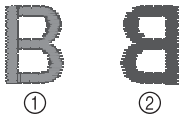
- If you turn the main power to OFF or select a different pattern, the thread tension will reset to the automatic setting.
- When you retrieve a saved pattern, the thread tension setting will be the same as when the pattern was saved.

■ 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.

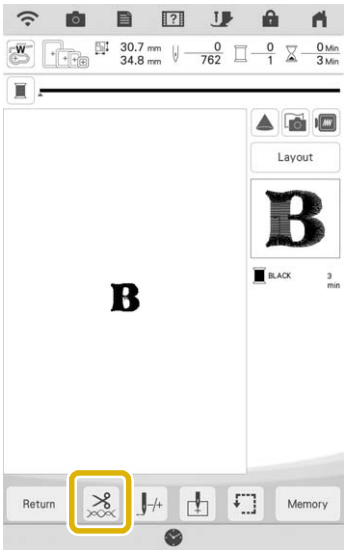
Note

- If the bobbin thread was incorrectly threaded, the upper thread may be too tight. In this case, refer to “Setting the Bobbin” on page 20 and rethread the bobbin thread.

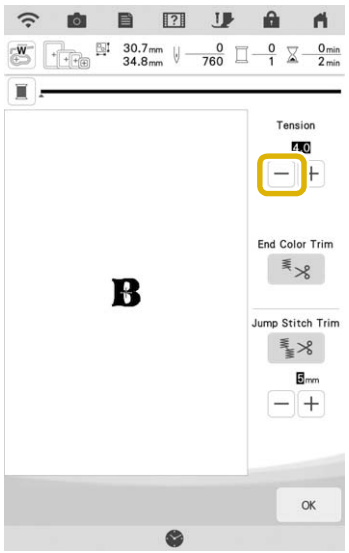


① Right side
② Wrong side

1 **Press** .



2 **Press [−] to loosen 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

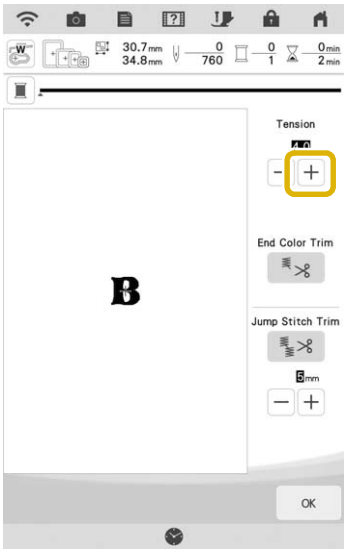
- If the upper thread was incorrectly threaded, the upper thread may be too loose. In this case, refer to “Upper Threading” on page 22 and rethread the upper thread.

① ②

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

- The tension of the upper thread can be adjusted for embroidering on page 8 of the embroidery settings screen. 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. Increase the number to tighten the upper thread and decrease the number to loosen the upper tension. If an individual embroidery pattern needs additional fine tuning, refer to “Adjusting Thread Tension” on page 97.

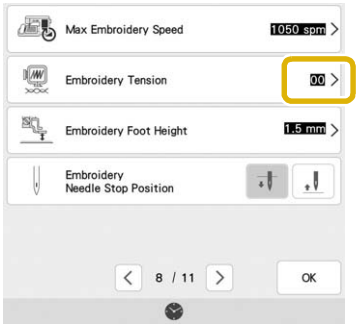
■ Adjusting Overall Upper Thread Tension

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 then press [MY].**

2 **In the "Embroidery Tension", touch the number to adjust the upper thread tension.**

* Increase to tighten the upper thread tension.
* Decrease to loosen the upper thread tension.

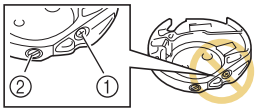


3 **Press** OK **.**

Adjusting the Alternate Bobbin Case (with No Color on the Adjusting 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. Refer to the Instruction and Reference Guide (Sewing).

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).

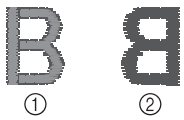
■ Correct Tension

Upper thread slightly appears on the wrong side of fabric.

① Right side
② Wrong side

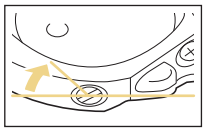
■ Bobbin Thread is Too Loose

Bobbin thread appears slightly on the right side of fabric.



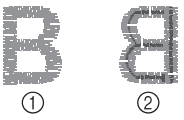
① Right side
② Wrong side

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



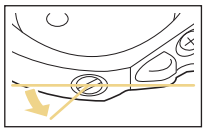
■ Bobbin Thread is Too Tight

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

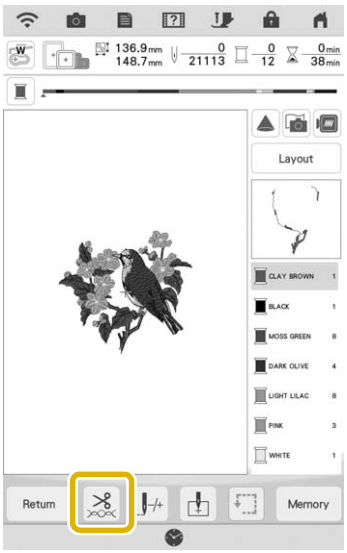
- **When adjusting the alternate bobbin case, be sure to remove the bobbin from the alternate bobbin case.**
- **DO NOT adjust the position of the phillips (+) screw on the alternate bobbin case as this may result in damage to the bobbin case, rendering it unusable.**
- **If the slotted screw (-) is 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 embroidering 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.

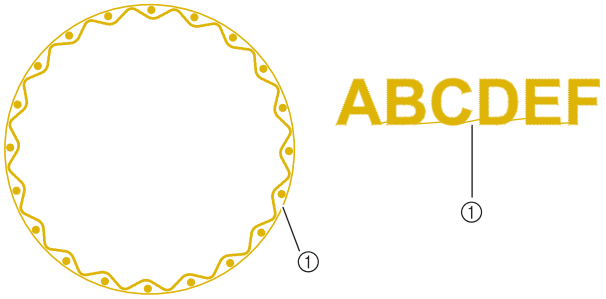
→ The key will display as .

* When one color thread is embroidered, 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.

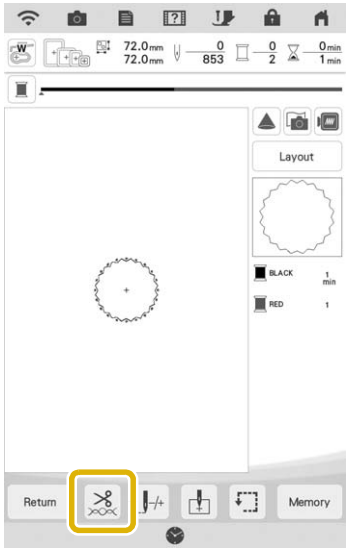


① Jump stitch

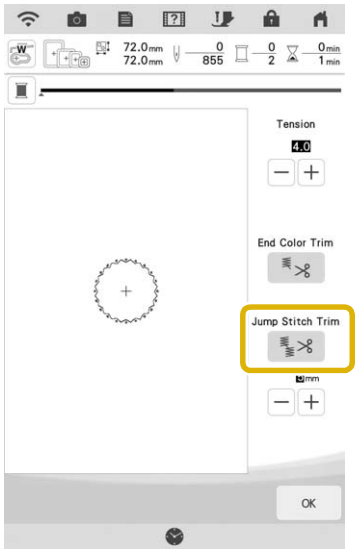
Note

- 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 to turn off the thread trimming function.**



→ The key will display as .

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

■ Selecting the Trim Function to Adjust Jump Stitch Length

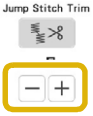
When the thread trimming function is turned on, you can select the length of the jump stitch. Stitch below the value will not be trimmed. This function can be turned ON or OFF during embroidering.

Select a setting from 5 mm to 50 mm in 5 mm increments.

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

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

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



Note

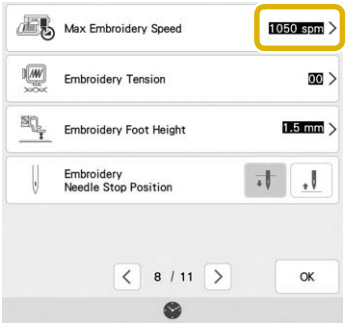
- If design has many trims it is recommended to select a higher jump stitch trim setting in order to reduce the amount of excess tails on backside of fabric.
- The higher number of the jump stitch length selected, the fewer number of times the machine will trim. In this case, more jump stitches remain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

Adjusting the Embroidery Speed

1 **Press , and then press .**

2 **In the "Max Embroidery Speed", touch the number to change the maximum embroidery speed.**

* You can choose from 8 different speed levels.



Memo

- SPM is the number of stitches embroidered 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 done.
- 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

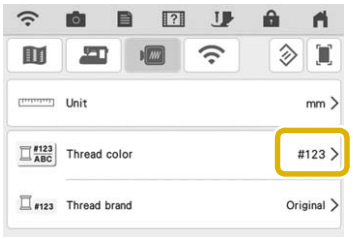
You can display the name of the thread colors or embroidery thread number.

Memo

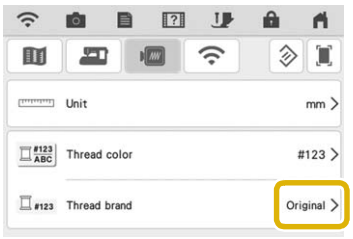
- Colors on the screen may vary slightly from actual spool colors.
- "Original", imported data remains the brand thread created with the software, is set as a default.

1 **Press , and then press .**

2 **In the "Thread color", touch the status to display the name of the thread colors or the embroidery thread number.**



3 **Touch the embroidery thread name to select from 13 embroidery thread brands pictured below.**



Embroidery: Polyester thread	328 Embroidery
Country: Cotton thread*	404 Country
Madeira Poly: Polyester thread	1791 Madeira Poly
Madeira Rayon	1192 Madeira Rayon
Sulky	1159 Sulky
Robison-Anton: Polyester thread	9109 R-A Poly
Robison-Anton: Rayon thread	513 R-A Rayon
Isacord	869 Isacord
GueterMann	869 Guetermann
Simplicity Pro	513 Simplicity Pro
Polyfast	869 Polyfast
Iris	502 Iris
Floriani	810 Floriani

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

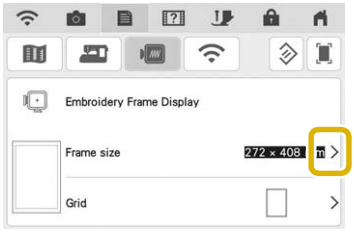
4 **Press OK.**

Changing the Embroidery Frame Display

1 **Press and .**

2 **In the "Embroidery Frame Display", touch ﹥ to change the embroidery frame display mode.**

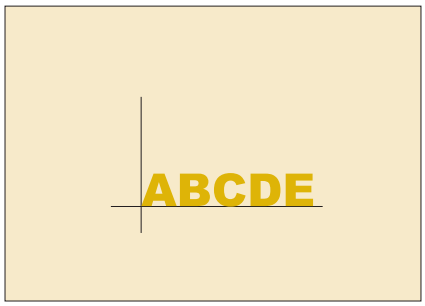
* There are 12 choices.



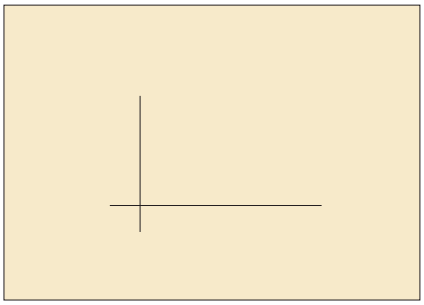
3 **Press** OK **.**

Aligning the Pattern and the Needle

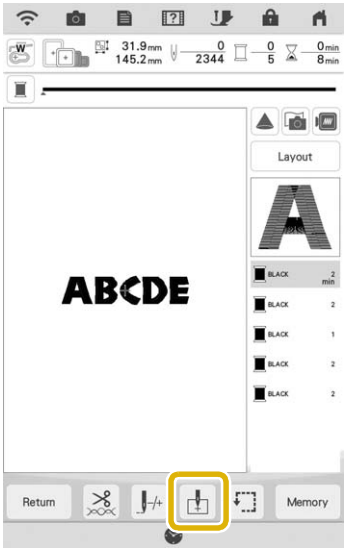
Example: Aligning the lower left side of a pattern and the needle



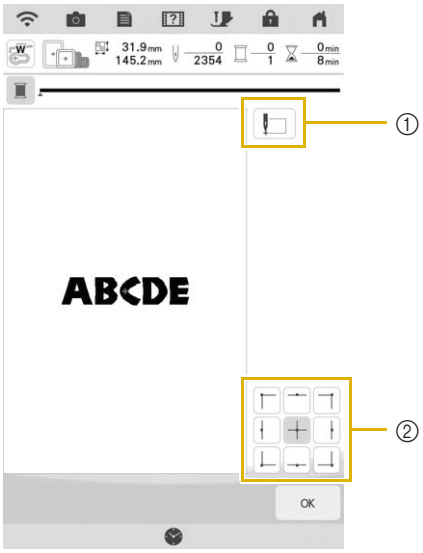
1 **Mark the embroidery start position on the fabric, as shown.**



2 **Press .**



3 **Press .**



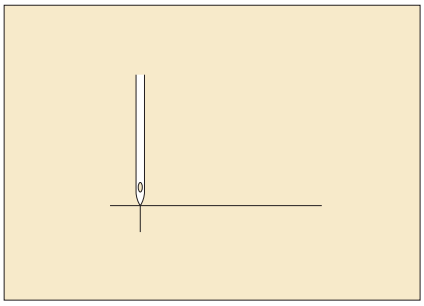
① This key is used for aligning linked characters (page 104).

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 Layout, 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, refer to “Aligning the Embroidering Position Using the Built-In Camera” on page 47.

Embroidering Linked Characters

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

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

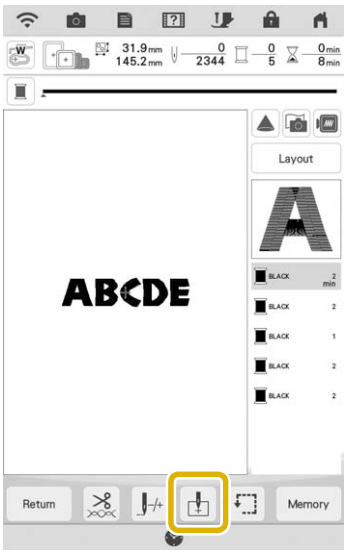
A B C D E F G

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

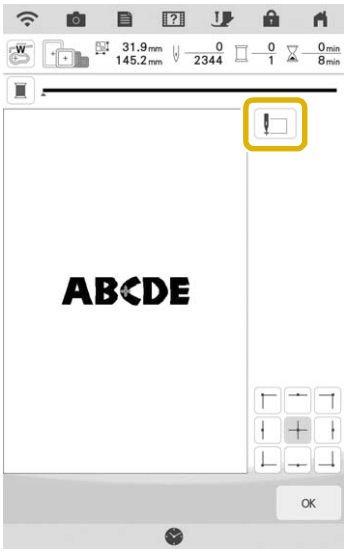
Note

- For details on selecting character patterns, refer to “Selecting Alphabet Character Patterns” on page 75.

2 **Press .**



3 **Press .**



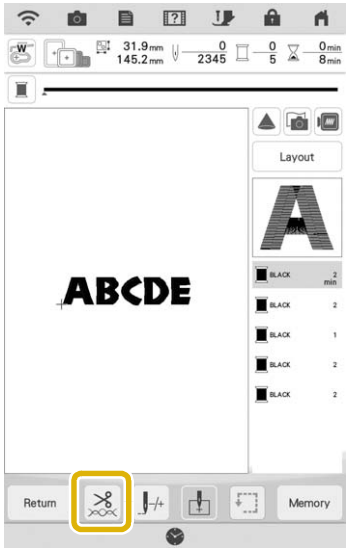
→ The needle is positioned in the lower-left corner of the pattern. The carriage moves so that the needle is positioned correctly.

Note

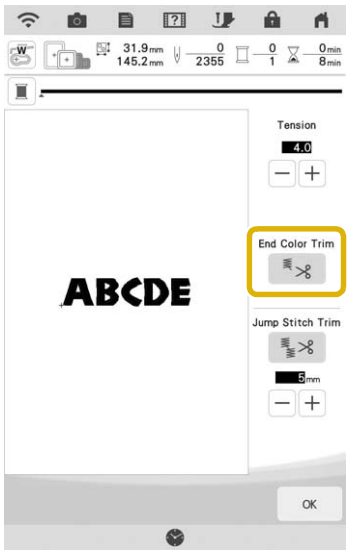
- To cancel the starting point setting and return the starting point to the center of the pattern, press .
- Use to select a different starting point for embroidering.

4 **Press OK.**

5 **Press** .

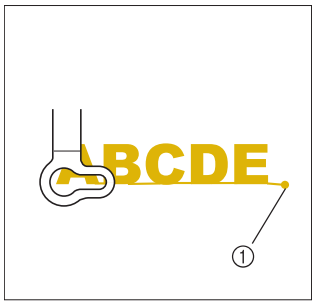


6 **Press** **to turn off the thread cutting function and then press** OK .



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.**

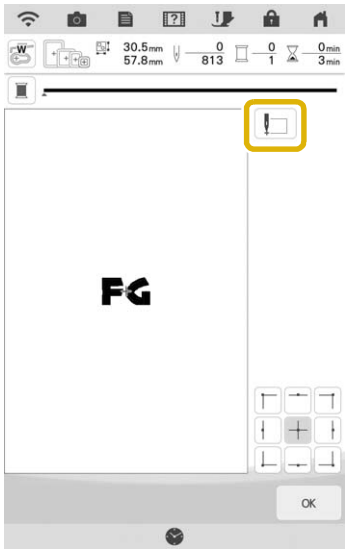


① End of the embroidering

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

10 **Press** .

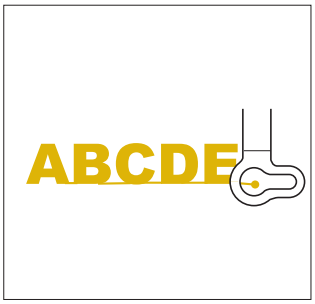
11 **Press** .



→ The needle is positioned in the lower-left corner of the pattern. The carriage 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, refer to “Aligning the Embroidering Position Using the Built-In Camera” on page 47.

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 embroidering with a stitch density that is too fine or when embroidering 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, .dst and .phx embroidery data files can be used with this machine. Using data other than that saved using our data design systems or machines may cause this machine to malfunction. When the machine is used to save a file with any extension, it is saved as a .phx data file.

■ Types of USB Devices/Media that can be Used

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

- USB Flash drive (USB Flash memory)

Embroidery 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 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.

■ 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 408 mm (H) × 272 mm (W) (approx.16 inches (H) × 10-5/8 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 408 mm (H) × 272 mm (W) (approx.16 inches (H) × 10-5/8 inches (W)) cannot be used. (All designs must be within the 408 mm (H) × 272 mm (W) (approx.16 inches (H) × 10-5/8 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 cannot exceed a maximum number of 750,000 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.
- 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 embroidering position changed, etc. A total of about 10 MB of patterns can be saved in the machine's memory.

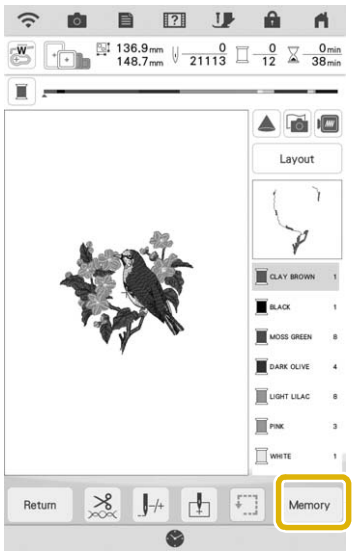
Note

- 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.
- Refer to page 110 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.

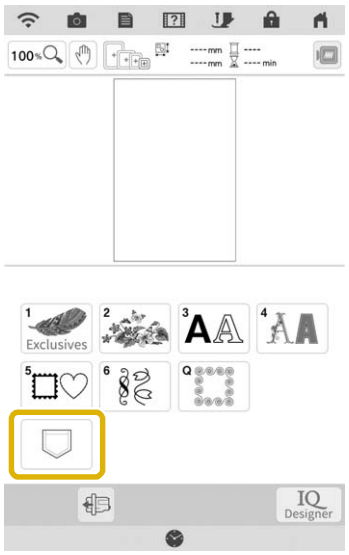
→ The "Saving…" screen is displayed. When the pattern is saved, the display returns to the original screen automatically.

■ 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. Refer to "Retrieving Patterns from the Machine's Memory" on page 110.

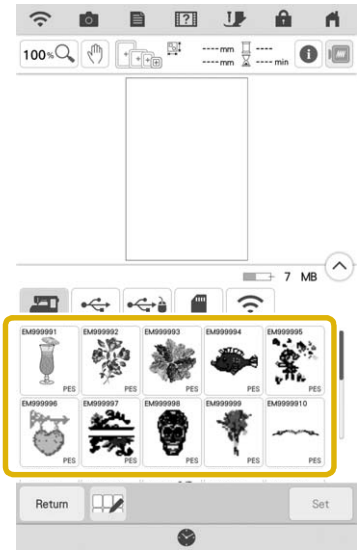
Retrieving Patterns from the Machine's Memory

1 **Press** .



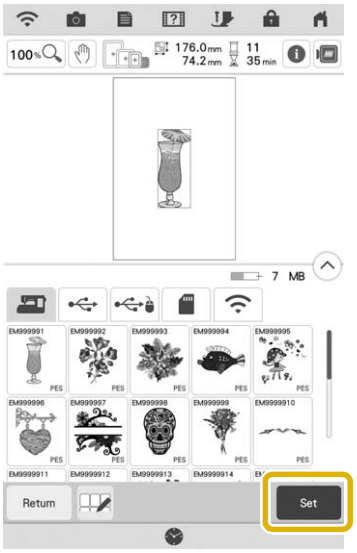
→ The machine displays the patterns currently in the memory.

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



3 **Press** Set.

* Press Return to delete the embroidery pattern.



→ The embroidering screen is displayed.

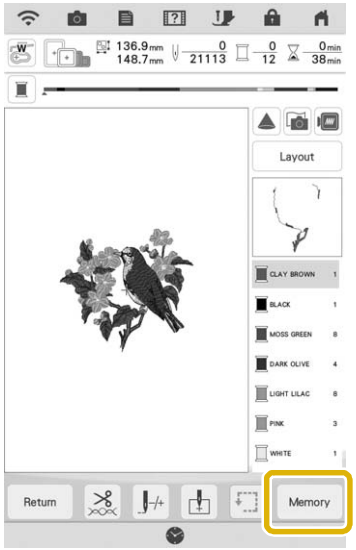
Saving Embroidery Patterns to USB Media/SD Card

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

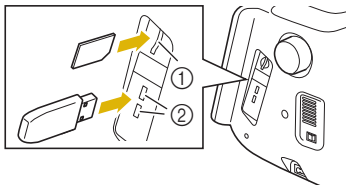
Memo

- 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/SD card 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/SD card into the USB port/SD card slot on the machine.



① SD card slot
② USB port

Note

- Do not insert anything other than USB media into the USB media port. Otherwise, damage to the machine may result.
- Do not insert anything other than SD card into the SD card slot. Otherwise, damage to the machine may result.

3 Press the key for the corresponding media.

* 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

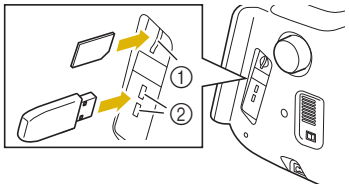
- Do not insert or remove USB media/SD card while "Saving..." screen is displayed. You will lose some or all of the pattern you are saving.

Recalling from USB Media/SD card

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

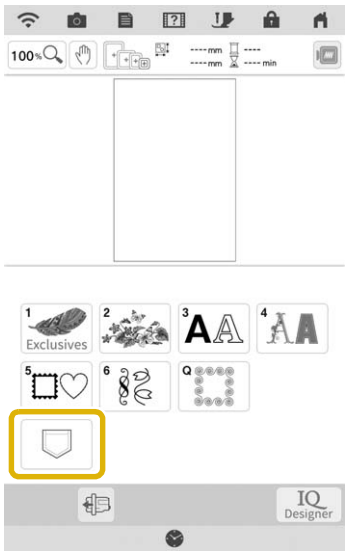
Note
- The processing speed may vary by quantity of data.

1 **Insert the USB media/SD card into the USB port/SD card slot on the machine.**

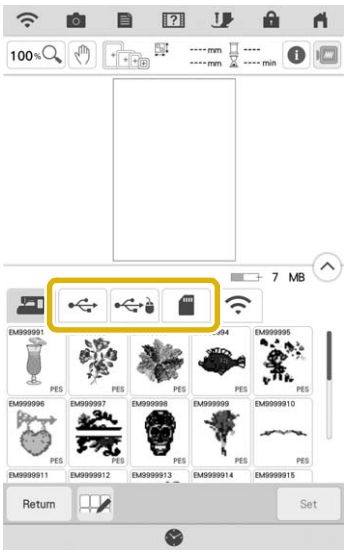


① SD card slot
② USB port

2 **Press** .

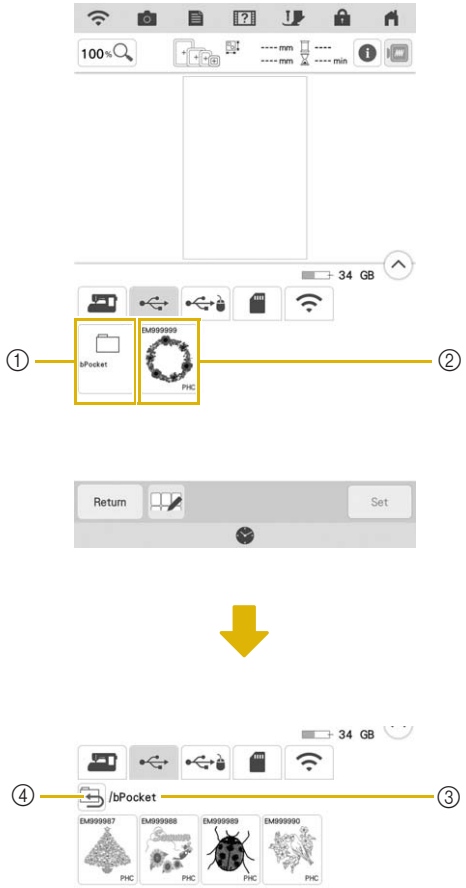


3 **Press the key for the corresponding media.**



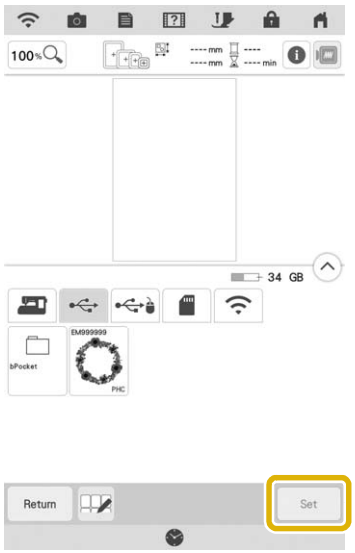
→ Embroidery patterns and a folder in a top folder are displayed.

4 **Press bPocket when there is a subfolder to sort two or more embroidery patterns to USB media/SD card, the embroidery pattern in the subfolder is displayed.**



① Folder name
② Embroidery patterns in USB media/SD card
③ Path
* The path to show the current folder at the top of the list.
Embroidery patterns and subfolders within a folder are displayed.
④ Press to return to the previous folder.
* Use the computer to create folders. Folders cannot be created with the machine.

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

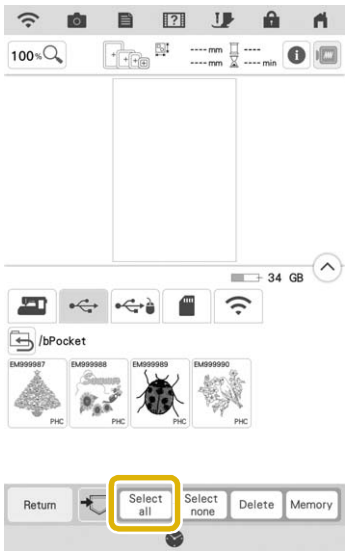


→ The pattern is selected.
* Press Cancel to return to the original screen.

Saving/Deleting Multiple Patterns

It may be useful to save all or multiple data from USB media/SD card, for example, to the machine. The data can only be saved to the machine's memory (bPocket).

1 **Press [ ], and then either select the thumbnails of the patterns or press [Select all].**



→ The thumbnails of selected patterns appear in blue. To deselect the pattern, either press the thumbnail again or press [Select none].

Memo

- When selecting USB media or SD card, [Memory] is displayed. When [Memory] is selected, all the selected files are saved to the machine's memory.

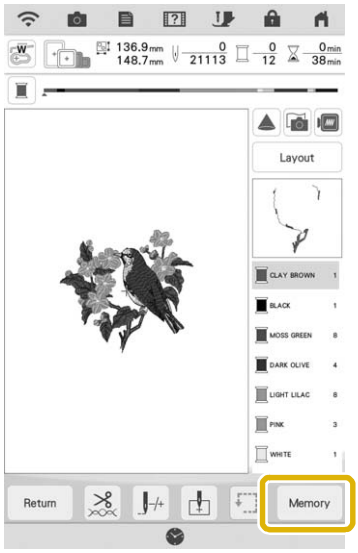
Transferring Embroidery Patterns

For detailed procedures, refer to Palette manual (Version 11 or higher).

Memo

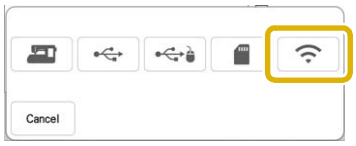
- Embroidery patterns cannot be transferred if the computer and machine are connected to different home network. Be sure to connect to the same home network.

1 **In the pattern type selection screen on the machine, press [Memory].**



→ A list of embroidery patterns saved in the machine appears.

2 **Select the pattern to be transferred to the application, and then press [ ].**



→ The pattern is saved in a folder to be transferred via the wireless network.

Receiving Embroidery Patterns on the Machine

For detailed procedures, refer to Palette manual (Version 11 or higher).

Memo

- Embroidery patterns cannot be transferred if the computer and machine are connected to different home network. Be sure to connect to the same home network.

1 **In the pattern type selection screen on the machine, press , and then press .**

2 **Select from the list the pattern to be recalled**

EMBROIDERY APPLICATIONS

Creating an Appliqué Piece

Appliqué pieces can be created from the built-in patterns and imported patterns. 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.

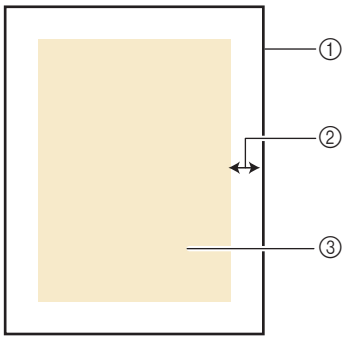
Note

- 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

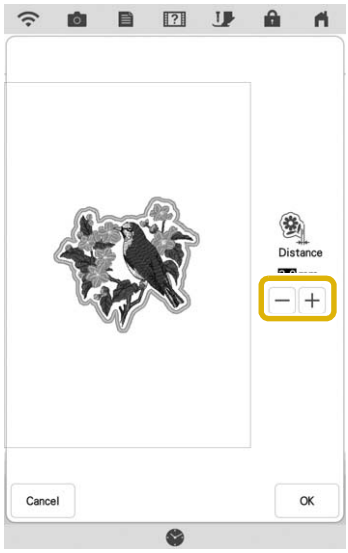
- Finish combining and editing the pattern before selecting the appliqué setting. If the pattern is edited after selecting the appliqué setting, the appliqué stitching and pattern may become misaligned.
- Since an outline is added, the pattern for an appliqué piece (when the appliqué setting is selected) 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 Edit, and then press to position the satin stitching around design.**

3 **Specify the distance between the pattern and the appliqué outline.**



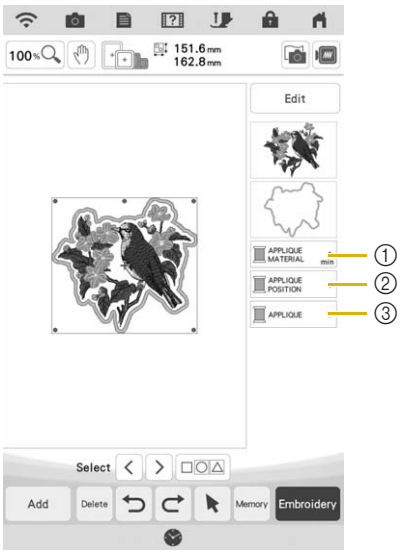
Memo

- At this time, the pattern and appliqué piece are grouped.

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

Memo

- Three steps are added to the embroidering 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.

4 **Press OK.**

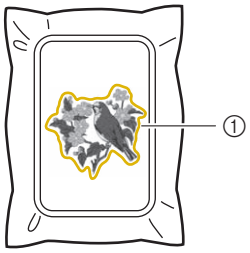
5 **Fuse or stick a piece of stabilizer to the back of the felt or denim fabric to be used as the appliqué piece.**

Note

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

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

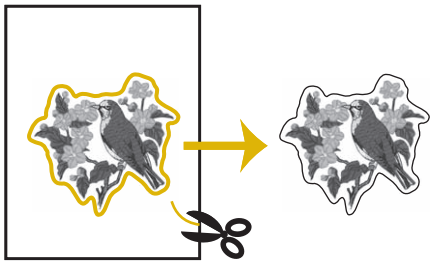
7 **After the pattern is embroidered, thread the machine with the thread for the cutting line, and then sew the cutting line (APPLIQUE MATERIAL).**



① Cutting line for appliqué

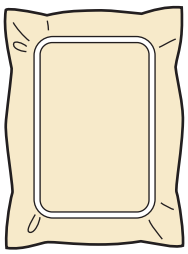
Memo
- We recommend using thread for the cutting line that is closest to the color of the fabric.

8 **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.**



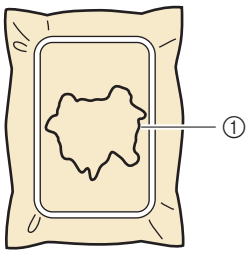
Note
- Depending on the pattern density and fabric used, there may be shrinking of the pattern or the appliqué may be misaligned with the placement line. We recommend cutting slightly outside of the cutting line.
- When using patterns that are vertically and horizontally symmetrical, use a chalk pencil 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.

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



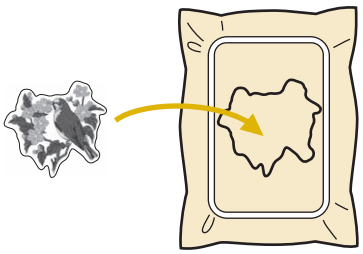
Note
- If water soluble stabilizer is used, it is not necessary to remove the stabilizer material after sewing the appliqué outline. To reduce shrinkage of the pattern, we recommend using water soluble stabilizer.
- Put together two layers of water soluble stabilizer, otherwise the stabilizer material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

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



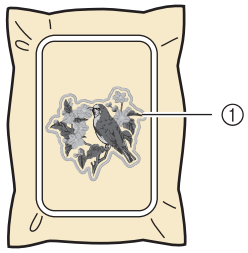
① Pattern placement line

11 **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.

12 **With the machine threaded using the thread for the outline from step 10, sew the outline (APPLIQUE).**



① Outline of appliqué piece

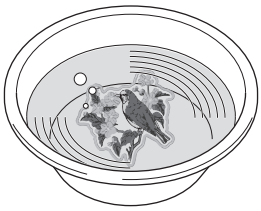
Memo

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

13 **After sewing is finished, remove the stabilizer material from the embroidery frame.**

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

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



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

Note

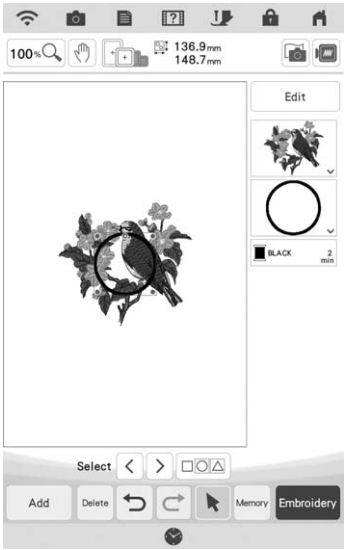
- Do not apply a strong force when ironing, otherwise the stitching may be damaged.

■ 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, refer to “Selecting Frame Patterns” on page 45.

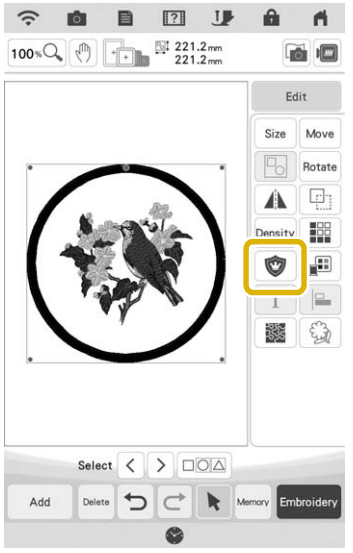
1 **Select the pattern and edit, if necessary.**

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 to select the appliqué piece setting.**



5 **Press to ungroup the patterns.**

6 **Use to select the frame pattern, and then press Delete and OK.**

→ The frame pattern is deleted.

7 **Press Embroidery.**

8 **Continue with step 5 of "Creating an Appliqué Piece" on page 117 to complete the appliqué piece.**

Using Appliqués

This machine can embroider patterns that contain an appliqué. Follow the procedure described below to embroider patterns with APPLIQUE MATERIAL (appliqué piece), APPLIQUE POSITION (appliqué position) and APPLIQUE (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

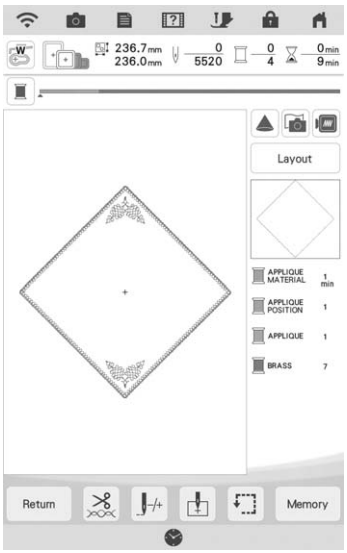
- Fabric for the appliqué piece
- Fabric for the appliqué base
- Stabilizer material
- Craft glue
- Embroidery thread

Note

- If APPLIQUE MATERIAL (appliqué piece), APPLIQUE POSITION (appliqué position) and APPLIQUE (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.

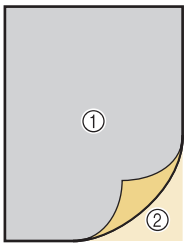
■ 1. Creating the Appliqué Piece

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



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

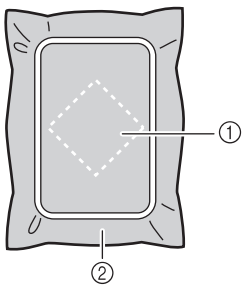
Hoop the fabric in the embroidery frame, and then attach the embroidery frame to the embroidery unit.



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

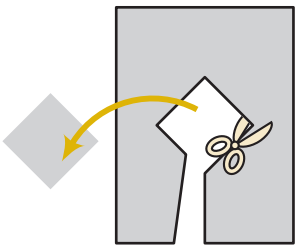
3 Thread the machine with the embroidery thread, lower the presser foot lever, and then press the "Start/Stop" button to sew the cutting line of the appliqué piece.

→ 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

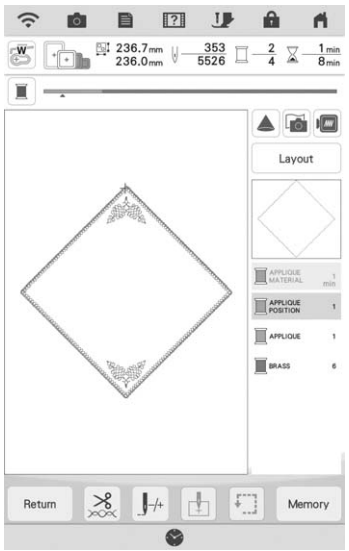
- If the appliqué piece is cut out along the inside of the cutting line, it may not be correctly attached to the fabric. Therefore, carefully cut out the appliqué piece along the cutting line.
- After cutting out the appliqué piece, carefully remove the thread.

■ 2. Sewing the Appliqué Position on the Base Fabric

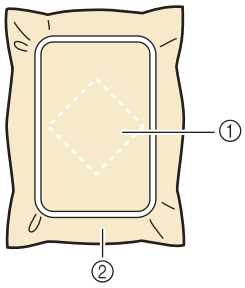
1 **Attach stabilizer material to the wrong side of the fabric for the appliqué base.**

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

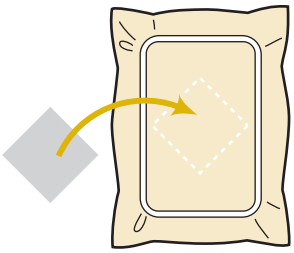
3 **Remove the embroidery frame from the embroidery unit.**

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".**

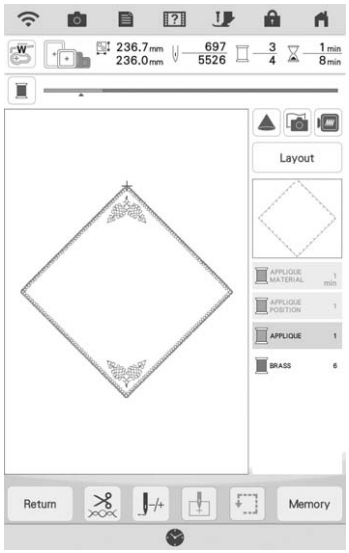


Note

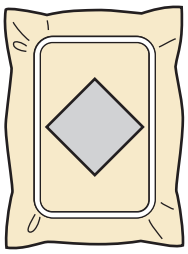
- If the appliqué piece is not securely attached to the base fabric, the appliqué piece may lift off the base fabric during embroidering, causing misalignment.
- If the appliqué piece cannot be attached to the base fabric with craft glue, securely baste it in place with basting stitches.
- If thin fabric 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, attach 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 embroider the appliqué.



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

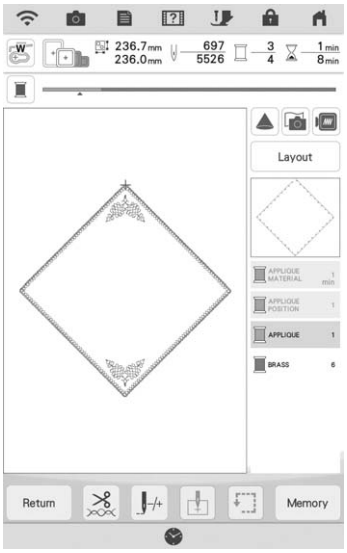


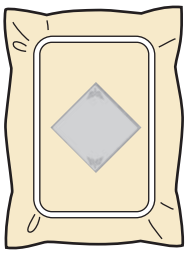
Memo

- Depending on the pattern that is selected, APPLIQUE MATERIAL (appliqué piece), APPLIQUE POSITION (appliqué position) and APPLIQUE (appliqué) for all three steps may not appear. If APPLIQUE (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.**





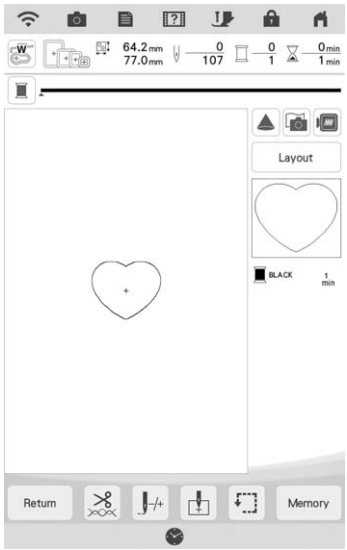
Memo

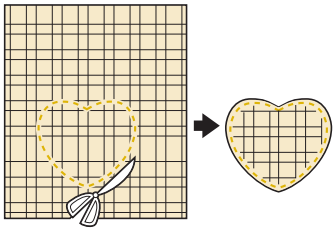
- Since glue may become attached to the embroidery foot, needle or needle plate, clean off any glue off after finishing embroidering the appliqué pattern.
- For best results, trim all excess threads each time the thread color is changed.

Using a Frame Pattern to Make an Appliqué (1)

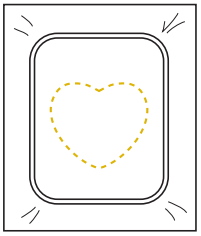
You can use framed patterns of the same size and shape to create an appliqué. Embroider one pattern with a straight stitch and one pattern with a satin stitch.

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

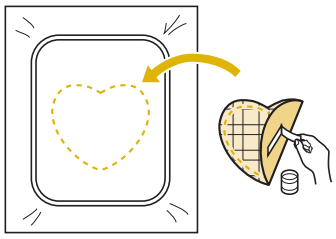




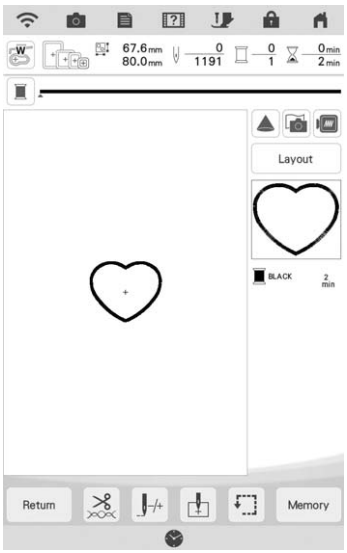
2 **Embroider the same pattern from step 1 onto the base fabric.**



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.**

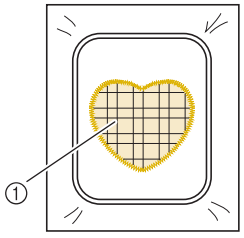


4 **Select the satin stitch frame pattern of the same shape as the appliqué. Embroider over the appliqué and base fabric from step 3 to create the appliqué.**



Note

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

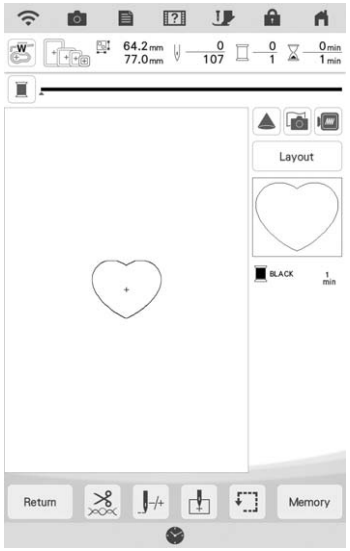


① Appliqué material

Using a Frame Pattern to Make an Appliqué (2)

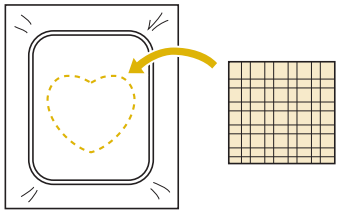
This is a second method to make appliqué using embroidery patterns. You do not have to change the fabric in the embroidery frame using this method. Embroider one pattern with a straight stitch and one pattern with a satin stitch.

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

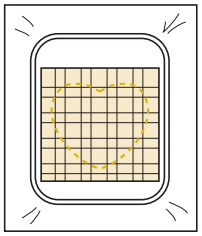


2 **Place the appliqué fabric over the pattern embroidered in step 1.**

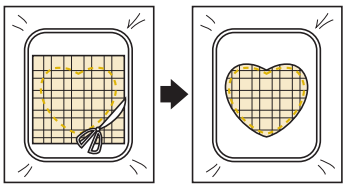
* Be sure that the appliqué fabric completely covers the seam.



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



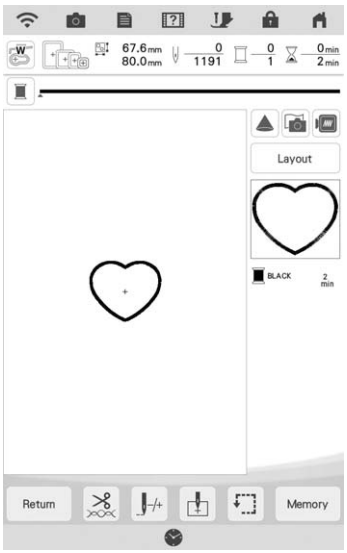
4 **Remove the embroidery frame from the embroidery unit, and cut around the outside of the stitches.**



Note

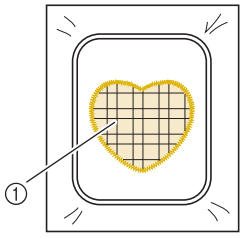
- Do not remove the fabric from the embroidery frame to cut it. Also, do not pull strongly on the fabric. Otherwise, the fabric may loosen in the frame.

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



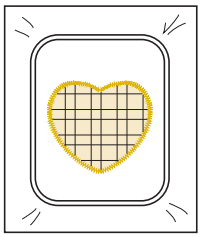
Note

- 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.**



Creating Stippling or Echo Patterns Automatically

Stippling or echo quilting patterns can be created around the machine's built-in patterns or original embroidery data without using IQ Designer.

Memo

- If this simple stippling operation is used with batting sandwiched between two layers of fabric, the embroidery pattern and stippling may become misaligned. For quilting, refer to "Decorative Stitching Around a Pattern in Embroidery (a Quilting Function)" on page 175.

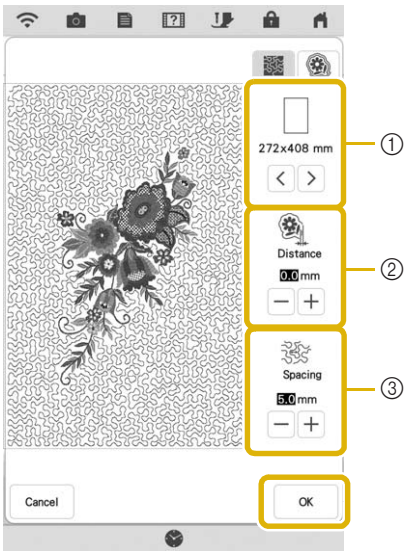
1 **Select the pattern that stippling will be added around.**

2 **Press** **in the embroidery edit screen.**

→ Stippling is automatically applied around the selected pattern.
To select multiple patterns, refer to "Selecting Multiple Patterns at the Same Time" on page 87.

* Press in the stippling settings screen to create an echo quilting pattern.

3 **After specifying the stitch settings for the stippling, press** OK **.**



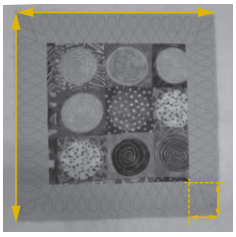
① If an embroidery frame size is selected, the stippling is added within the area of the selected frame size. If the pattern is larger than the selected frame size, the area indicating the frame size will appear in gray.

② Specify the distance from the outline of the pattern to the stippling.

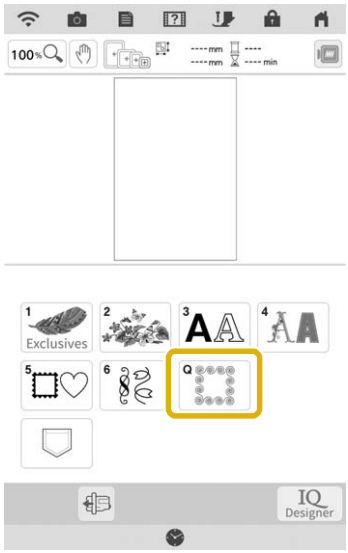
③ Specify the spacing for the stippling.

Embroidering Quilting Border Patterns

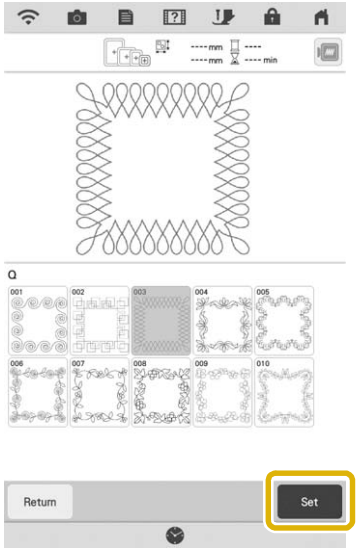
Quilting border patterns larger than the embroidery frame can be split in order to be embroidered.
It is recommended to measure the size of quilting border you want to embroider in the beginning.



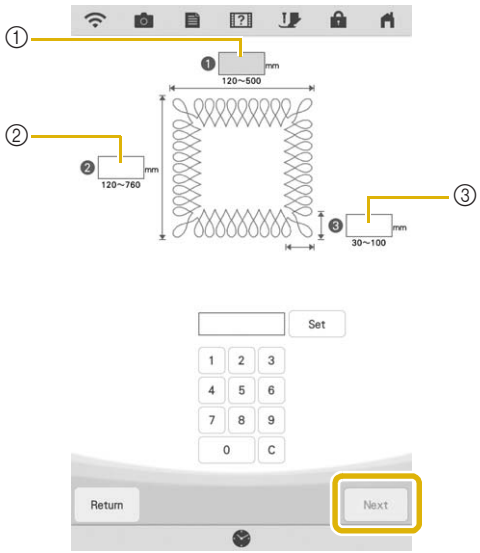
1 **Press** .



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



3 **Enter values to each of the width and height of the sash and quilting border, and then press Set. After entering all three values, press Next.**

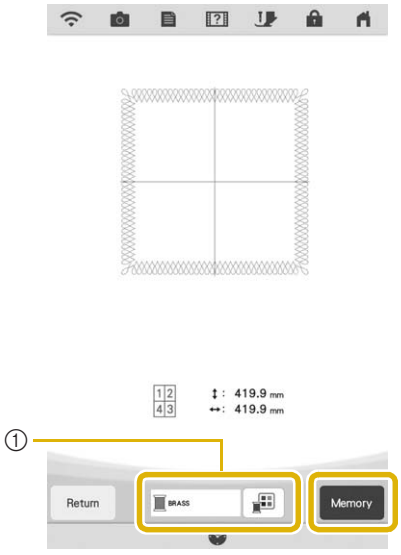


① Width
② Height
③ Quilting border

* To clear the value, press C.

→ The pattern appears with the specified settings applied.

4 **Check the split pattern, and then press Memory.**



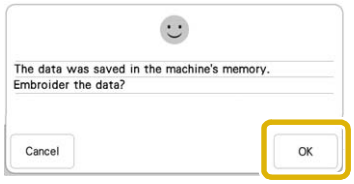
① You can change the thread color.

→ The data for the split embroidery pattern is saved on the machine.

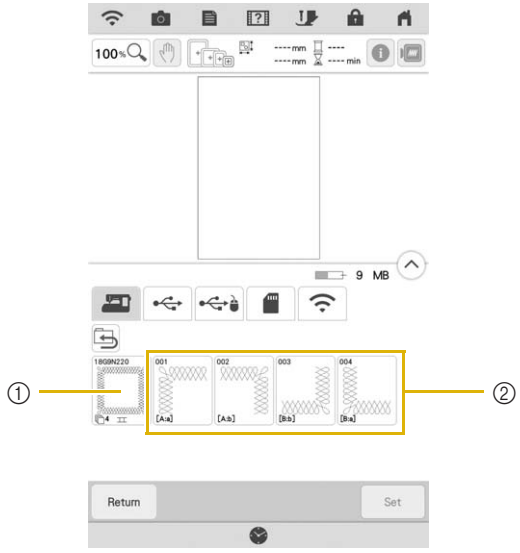
Note

- The data for the split embroidery pattern cannot be saved on external media such as USB media.

5 **To embroider the pattern, press OK.**



6 **Select the embroidering method, and then press Set.**



① To embroider using the built-in camera for aligning the embroidering position, press the key showing the entire pattern.

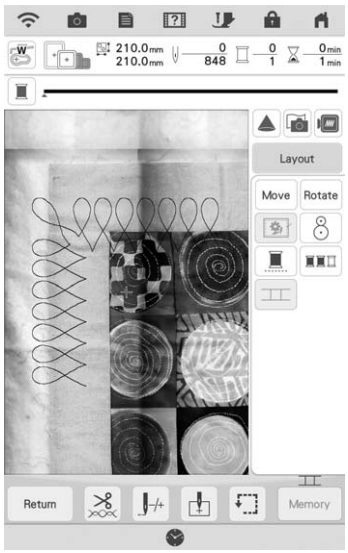
② To embroider by visually aligning the pattern sections, press the pattern section to be embroidered.

* This manual shows method ①. For method ②, refer to "Embroidering Split Embroidery Patterns" on page 129.

7 **Press .**

8 **Attach the embroidery frame along with the first section being embroidered, and scan the frame. For scanning the background, refer to "Display the Fabric While Aligning the Embroidering Position" on page 92.**

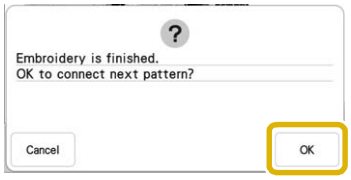
9 **Move and rotate the pattern to align with the background.**



- For moving the pattern, refer to "Moving the Pattern" on page 63.
- For rotating the pattern, refer to "Rotating the Pattern" on page 63.

10 **Embroider the first section.**

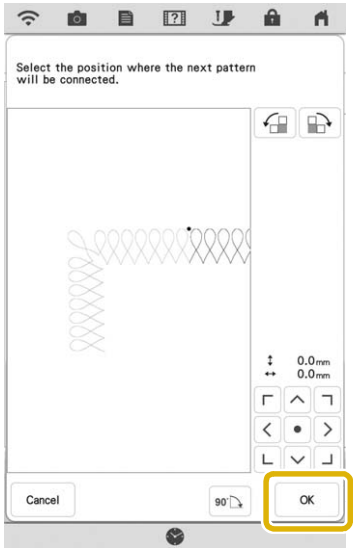
11 **After embroidering the first section, following message appears. Press OK.**



→ Move to embroider the second section.

12 **Press .**

13 **Press** OK.



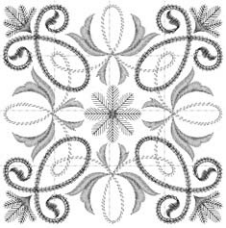
14 **Embroider the rest of the section following the step 13 on page 133 through step 19 on page 136 of "Connecting Three Patterns".**

Embroidering Split Embroidery Patterns

Split embroidery patterns created with Palette Ver.7 or later can be embroidered. 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 embroidered.

For details on creating split embroidery patterns and for more detailed embroidering instructions, refer to the operation manual included with Palette Ver.7 or later.

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



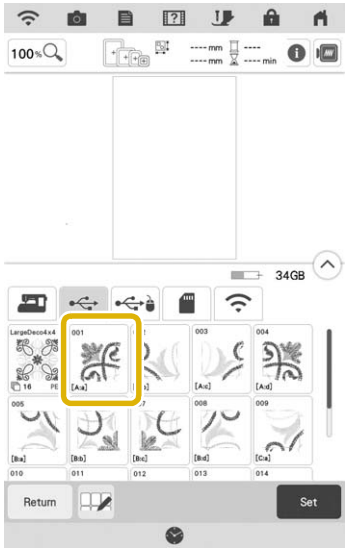
1 **Connect to the machine the media containing the created split embroidery pattern, and then select the split embroidery pattern to be embroidered.**

* For details on recalling patterns, refer to "Recalling from USB Media/SD card" on page 112.

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

2 **Select section to be embroidered.**

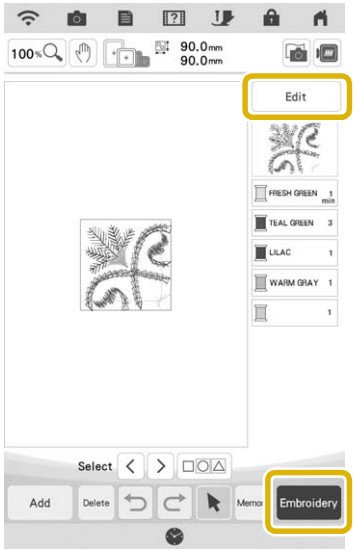
* Select the sections in alphabetical order.
* A maximum of 12 sections can be displayed in one page. If there are 13 or more sections in the pattern, scroll the bar.



Note

- To embroider large-size split embroidery patterns by using the camera to connect the pattern sections, press the whole pattern icon. Refer to “Connecting Large-Size Split Embroidery Patterns” on page 139.

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

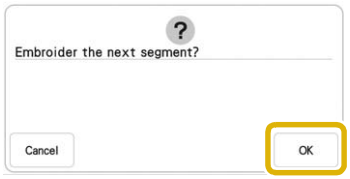


Memo

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

4 **Press the “Start/Stop” button to embroider the pattern section.**

5 **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.

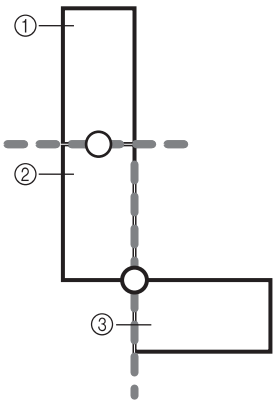
6 **Repeat steps 2 through 5 to embroider the remaining sections of the pattern.**

USING THE CAMERA TO CONNECT PATTERNS

Instead of using thread marks, the camera can be used to connect patterns in the Embroidery Edit screen. Select the appropriate frame depending on the size of the embroidery. At this time, the margin for the pattern is about 3 cm (1-3/16 inches). The small embroidery frame (2 cm × 6 cm (1 inch × 2-1/2 inches)) cannot be used with the camera function.

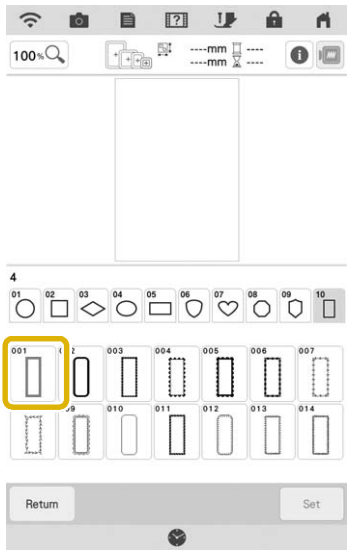
Connecting Three Patterns

Example:



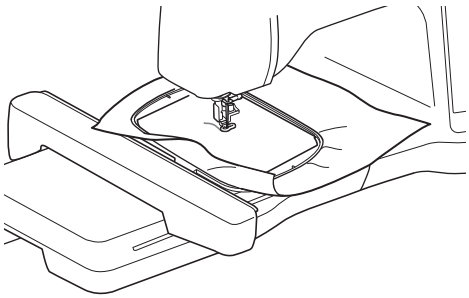
① Pattern A
② Pattern B
③ Pattern C

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



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

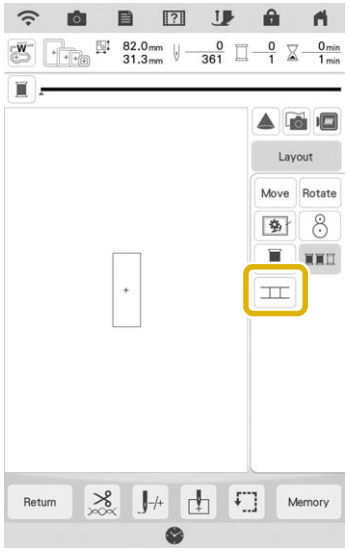
3 Hoop fabric in the 18 cm × 13 cm (7-1/8 inches × 5-1/8 inches) embroidery frame, and then attach the frame to the machine.



4 Press Embroidery to display the embroidering screen.

5 Press Layout.

6 Press .



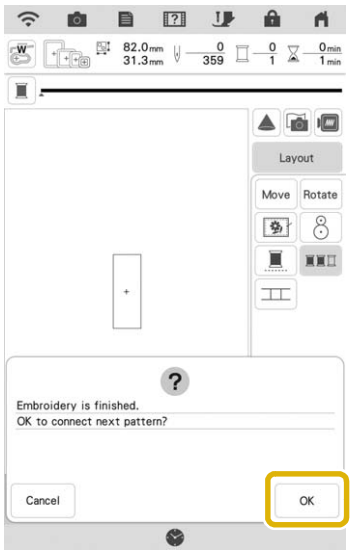
→ appears in the screen, and then changes to .

Memo

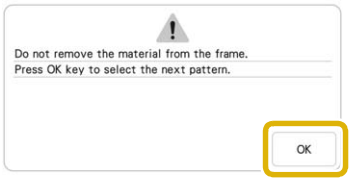
- can be pressed while embroidering.
- A pattern cannot be saved in the machine's memory while patterns are being connected.

7 Lower the embroidery foot, and then embroider the first pattern.

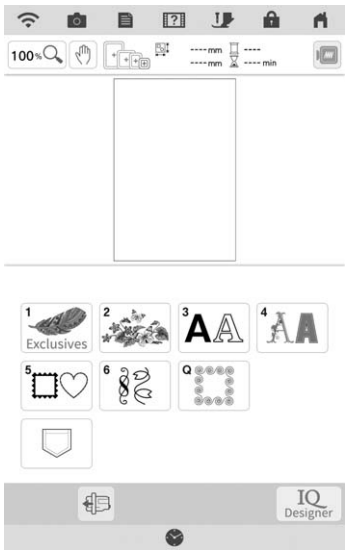
8 **After embroidering of the first pattern is finished, the following message appears. Press** OK **.**



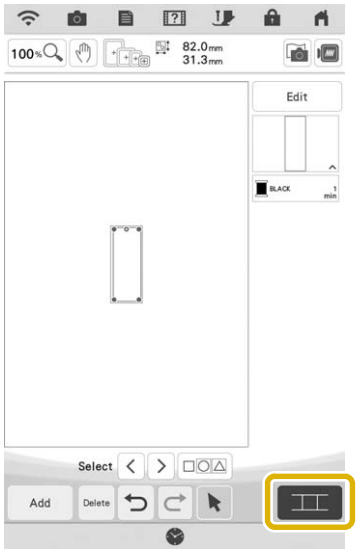
9 **When the following message appears, press** OK **.**



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



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

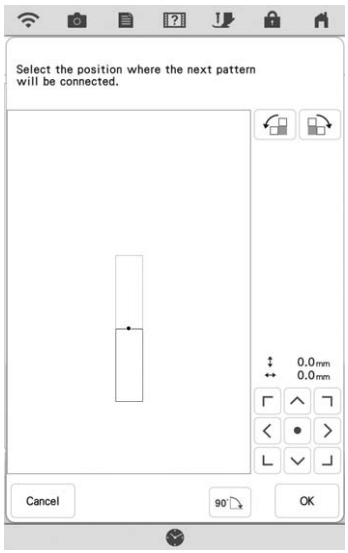


→ The pattern connection setting screen appears.

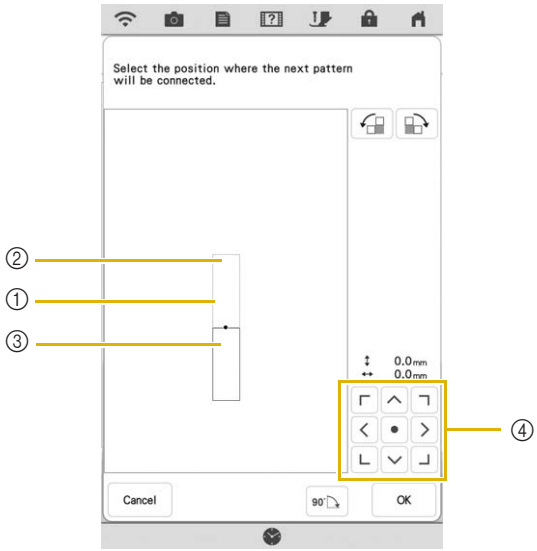
Memo

- 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.
90°	Rotate the second pattern 90 degrees in a clockwise arc.

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

Note

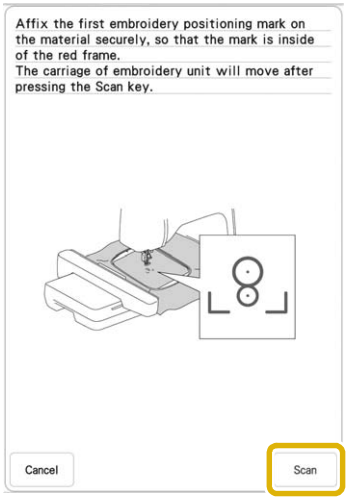
- The second pattern will be automatically connected to the first pattern without adjustment. Change the position of the second pattern manually using ⌜ ^ ⌝ < • > ⌞ v ⌟.
- The position of the second pattern can be moved using your finger or the included dual purpose stylus.
- Use , or 90° if you want 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. Follow the on-screen instructions to affix the two stickers to the fabric so that the positioning marks can be detected by the camera.

Note

- Use the embroidery positioning stickers included with this product or purchase replacement stickers (BLSO-EPS) from your authorized 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 Scan.

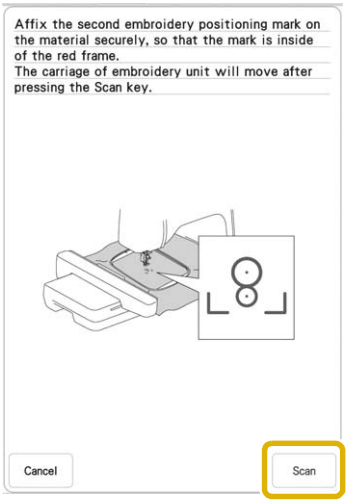


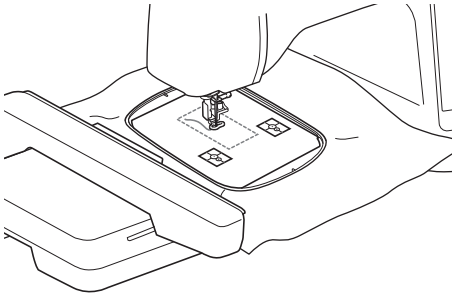
→ The camera detects the first embroidery positioning sticker.

Note

- Do not peel off the first embroidery positioning sticker to use it for the second embroidery positioning mark.
- Use new embroidery 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.
- Use your fingers to apply pressure to the corners of the embroidery 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 embroidery positioning sticker in the correct position. Make sure that the sticker is affixed with the large circle at the top.

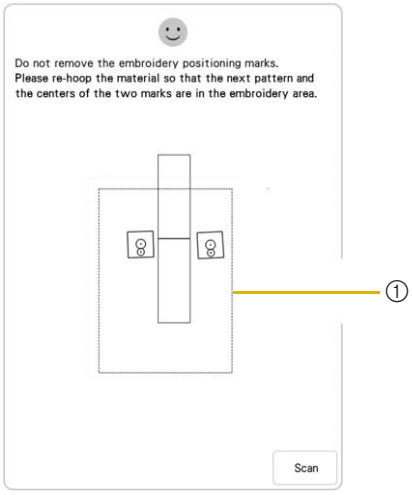
15 **Use both hands to affix the second embroidery positioning mark within the red lines that now appear on the machine by pressing down on each corner of the positioning mark onto the material and then touch** Scan **.**





→ The camera detects the second embroidery positioning sticker.

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

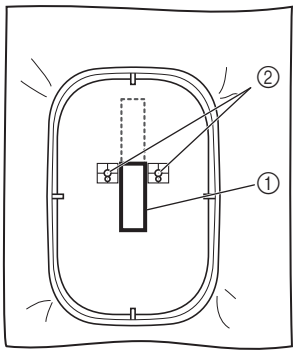


① Embroidering area

Note

- The positioning markers are shown with a tilted appearance to make sure that as long as the markers were placed with the red outlined square, they will be read properly and correct connection can be assured.

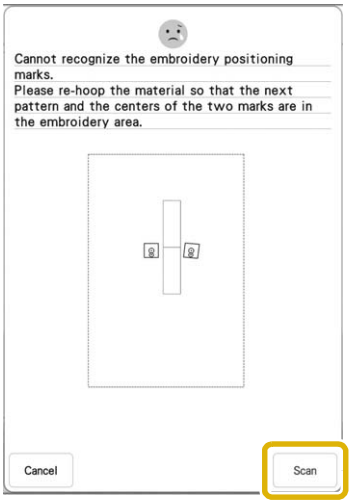
While making sure that the two embroidery positioning stickers do not peel off, remove the embroidery frame from the machine, and then rehoop the fabric. Be sure to hoop the fabric so the next pattern and both the embroidery positioning stickers are within the embroidery area. Reattach the frame and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

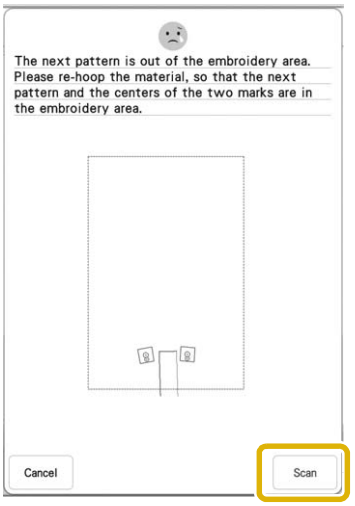


① Pattern to be embroidered next
② Centers of large circles for stickers
→ The camera detects the two embroidery positioning stickers.

Note

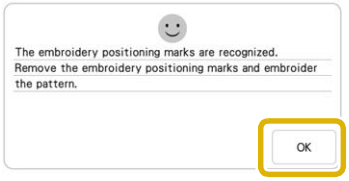
- If either of the following messages appear, rehoop the fabric so that the next pattern and both the embroidery positioning stickers are within the embroidery area as indicated in the screen.
  Press Scan to detect the embroidery positioning stickers.





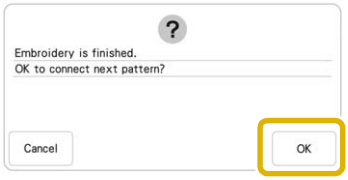
- If the machine detects that the next pattern and the centers of the large circles of the two embroidery positioning stickers do not fit within the embroidering area, the operation will be paused. Follow the on-screen instructions to reposition the embroidery positioning stickers. Refer to “Changing the Position of a Sticker” on page 137 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.
- To quit positioning, press Cancel.

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

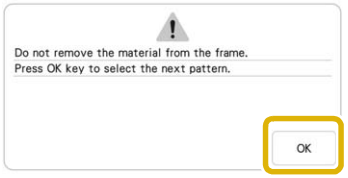


18 **Lower the embroidery foot, and then embroider the second pattern.**

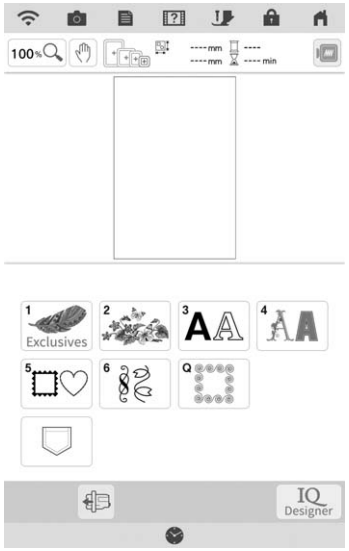
→ When embroidering is finished, the following message appears.
To connect a third pattern, press OK.



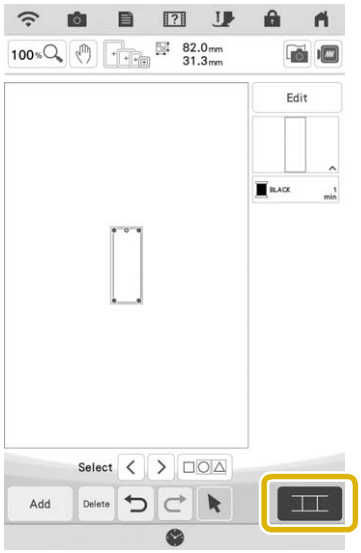
19 **When the following message appears, press OK.**



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



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

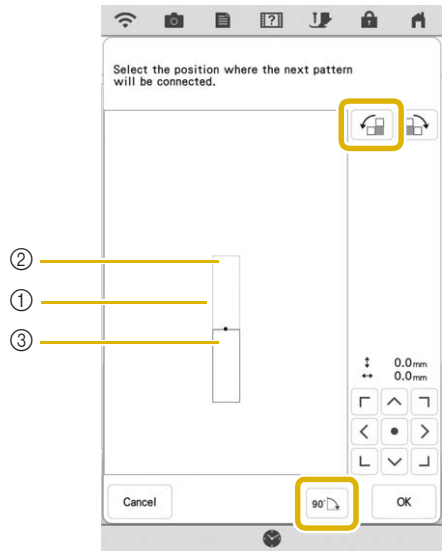


→ The pattern connection setting screen appears.

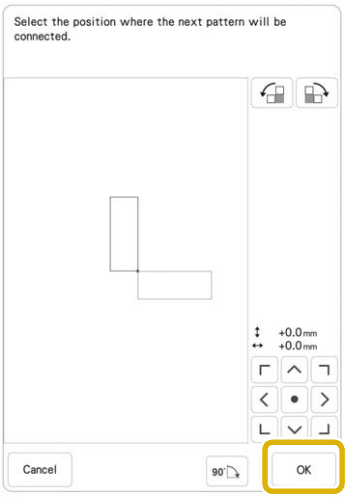
Memo
- You can edit the third pattern in this screen.

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.

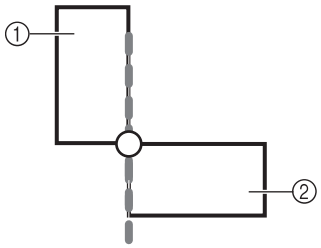
23 Lower the embroidery foot, and then embroider the third pattern.

→ 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.

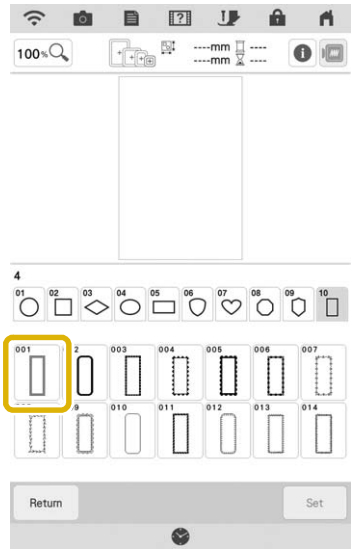
Changing the Position of a Sticker

If the selected pattern or embroidery 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 134 in order to move the embroidery 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.

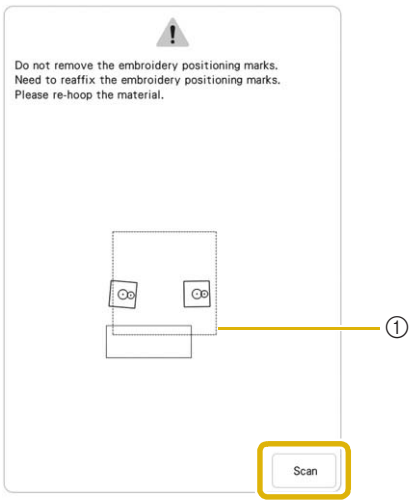


① Pattern A
② Pattern B

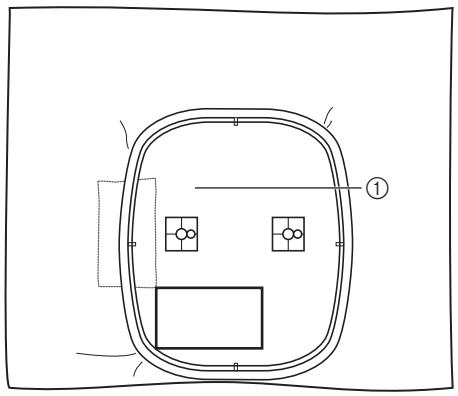
1 Refer to steps 1 through 15 of "Connecting Three Patterns" using the embroidery frame with a size of 10 cm × 10 cm (4 inches × 4 inches) to embroider the first pattern and to connect the second pattern.



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



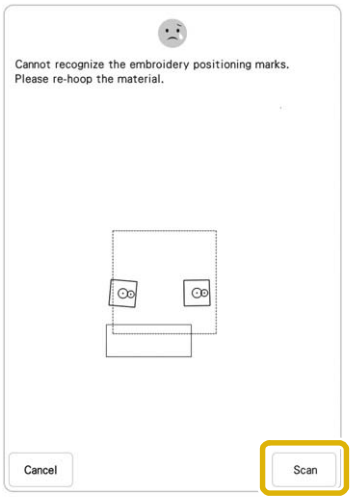
① Embroidering area



① Pattern to be embroidered next

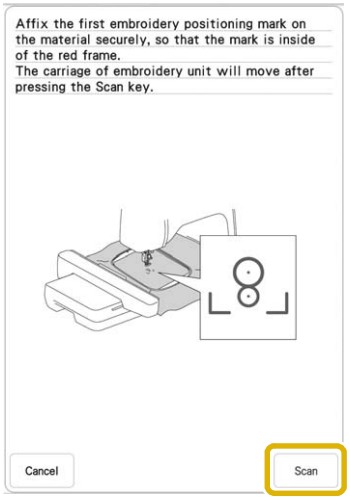
Note

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



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

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

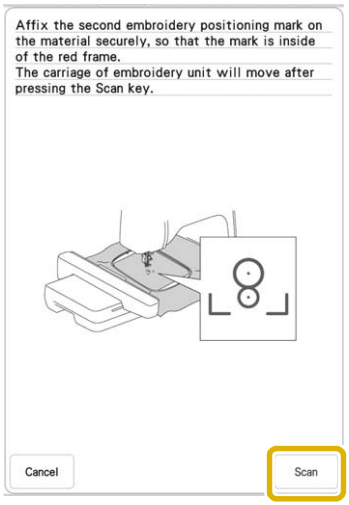


→ Press Scan so that the camera detects the first embroidery positioning sticker.

Note

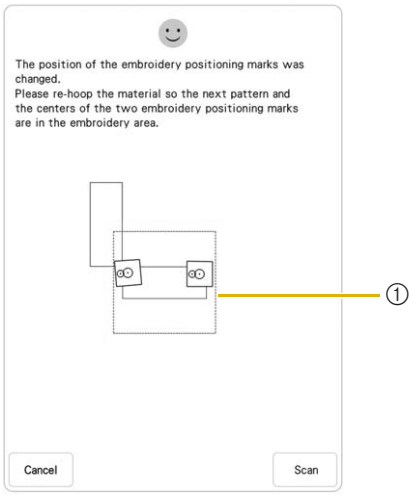
- The positioning markers are shown with a tilted appearance to make sure that as long as the markers were placed with the red outlined square, they will be read properly and correct connection can be assured.

5 Affix the second sticker and then press Scan.

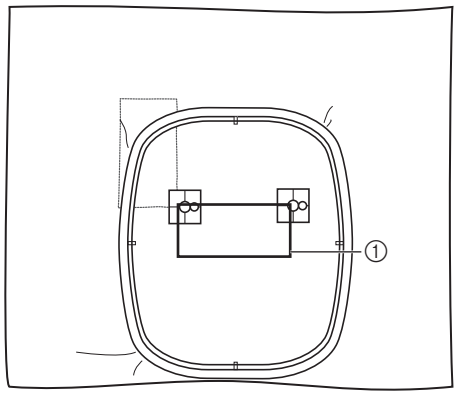


→ The camera detects the second embroidery positioning sticker.

6 **After the two embroidery positioning stickers have been detected, the following message appears. While making sure that the embroidery 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

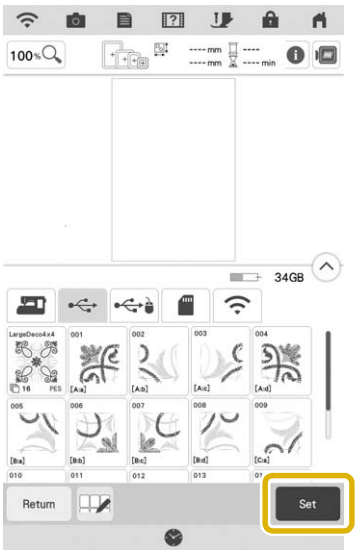
7 **Continue the operation from step 17 on page 136 after pressing OK.**

Connecting Large-Size Split Embroidery Patterns

Large-size split embroidery patterns can be embroidered if embroidery positioning stickers are used.

1 **Recall the large-size split embroidery pattern.**

2 **Press Set.**



→ Use the camera to connect large-size split embroidery patterns.

3 **Embroider the first pattern.**

4 **Refer to steps 13 to 17 of "Connecting Three Patterns" on page 131 to embroider the remaining patterns.**

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.

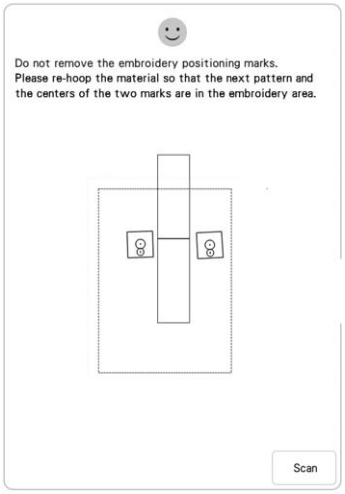
↓

Start detecting embroidery positioning stickers (2 locations).

↓

Finish detecting embroidery 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.

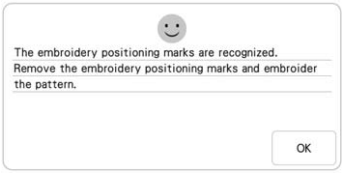


↓

Rehoop the fabric.

↓

Finish detecting embroidery positioning stickers (2 locations).



↓

Begin embroidering the second pattern.

↓

Finish embroidering the second pattern.

Chapter 4

IQ Designer

ABOUT IQ DESIGNER

With IQ Designer, you can use the functions listed below:

- 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 SD card.

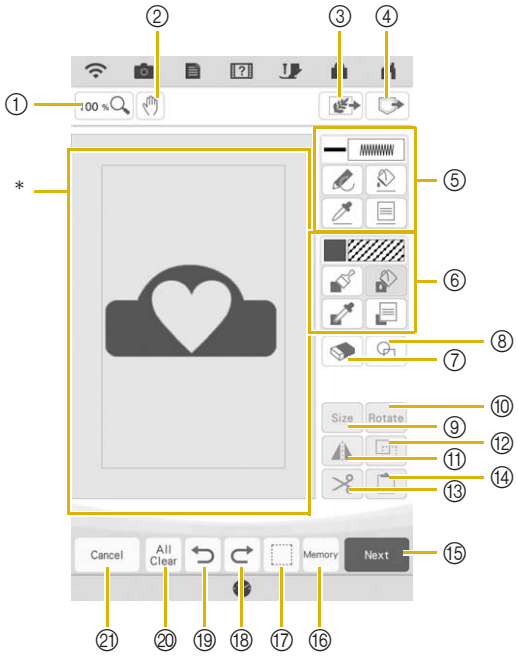
You can also combine patterns that you have created with the machine's built-in patterns.

Start IQ Designer by pressing IQ in the home page screen or pressing IQ Designer in the embroidery pattern selection screen.

⚠ CAUTION

- **Only touch the screen with your finger or the dual purpose stylus included with the 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.**

PATTERN DRAWING SCREEN



* Pattern drawing area

Memo

- The actual dimension of the pattern area is the size of the embroidery frame, which is 40.8 cm × 27.2 cm (approx. 16 inches × 10-5/8 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 dual purpose stylus or your finger to display the corresponding area in the pattern drawing area.

■ Key functions

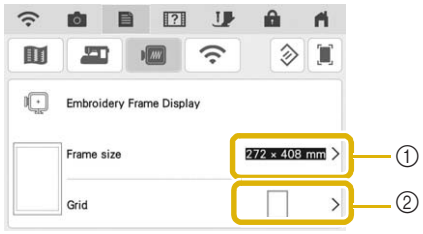
No.	Display	Key Name	Explanation	Page
①		Magnify key	Press this key to magnify the pattern.	147
②		Hand key	Press this key to move the canvas when it is magnified.	—
③		Scan key	Press this key to select background image scanning, line scanning or illustration scanning.	155, 159, 162
④		Recall key	Press this key to recall image data created with IQ Designer from the machine's memory, USB media, SD card or the computer.	—
⑤		Line tool key	Draw lines and set the color. You can select the line type, stitch type and color as you need. Press to pick up the color, line type and stitch type from a line in the pattern within the pattern drawing area. The picked up color is shown as the currently selected line color beside the button and as the selected color in the Line Property screen.	145
⑥		Brush tool key	Paint with brush and set the color. You can select the brush type, fill type and color as you need. Painted lines and areas will be converted to the pattern embroidered with fill stitch. Press to pick up the color, brush type and fill type from a region in the pattern within the pattern drawing area. The picked up color is shown as the currently selected region color beside the button and as the selected color in the Region Property screen.	147
⑦		Erase key	Press this key to erase lines and shapes that have been drawn. You can select the size/shape of the eraser.	149
⑧		Stamp key	Press this key to select the stamp shape for pattern drawing.	148
⑨		Size key	Press this key to change the size of the selected section.	149, 166
⑩		Rotate key	Press this key to rotate the selected section.	149
⑪		Mirror image key	Press this key to create a mirror image of the selected pattern.	150
⑫		Duplicate key	Press this key to duplicate the selected section. The temporarily positioned section can immediately be rotated, enlarged, reduced or moved.	150
⑬		Cut key	Press this key to cut out the selected section.	150
⑭		Paste key	Press this key to paste in the selected section duplicated with the duplicate key or a selected section using the cut key.	150
⑮		Next key	Press this key to continue to the stitch settings screen.	—
⑯		Memory key	Press this key to store the pattern being created.	—
⑰		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.	150
⑱		Redo key	Press this key to redo the last operation that was undone.	—
⑲		Undo key	Press this key to undo the last operation that was performed and return to the previous state. Each press of this key will undo one operation.	—
⑳		All Clear key	Press this key to clear all the lines and shapes and start from the beginning. The background image is also cleared.	—
㉑		Cancel key	Press this key to exit from 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”.
With “Embroidery Frame Display” in the settings screen, the embroidery frame and grid can be specified separately. For details on the types of embroidery frames and grids available, refer to “Changing the Embroidery Frame Display” on page 103.

1 **Press .**

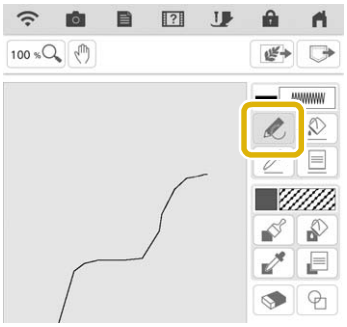
2 **Select the grid line of the “Embroidery Frame Display”.**



① Embroidery frame types
② Grid types
* Select the grid size 10 mm (3/8 inch) or 25 mm (1 inch).

Drawing Lines

1 **Press and draw lines.**



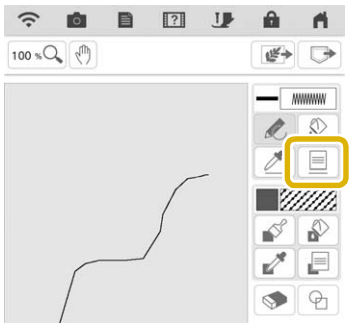
Memo

- When is pressed, all regions will be displayed in the background to clarify the drawing lines on the screen.

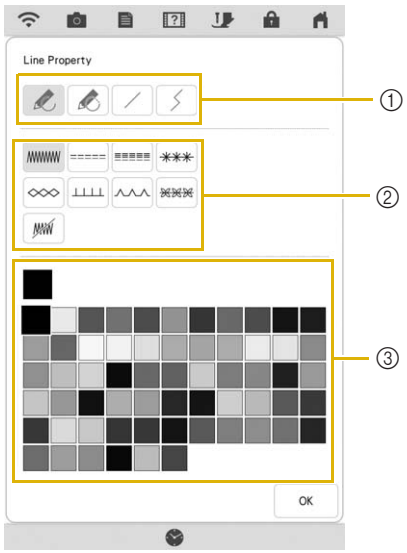
■ Setting the line types, stitch types and colors

You can set or change the line types, stitch types and colors anytime. You can also specify the line types, stitch types and colors before drawing lines.

1 Press [ ] to set the line types, stitch types and colors.



→ The settings screen appears.

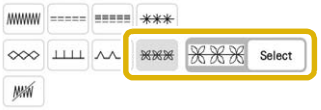


① Line types
② Stitch types
③ Line color selection: touch the color palette to activate the drawing pen color.

Line types

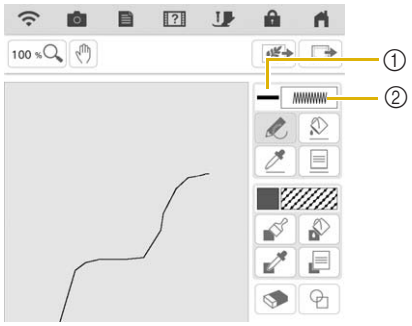
	Freehand line with the end open.
	Freehand line closing the end automatically.
	Straight line with one stroke
	Straight line changing directions to the point you select. If the end point is created near the start point, a closed object will be created.

Stitch types

	Zigzag stitch
	Running stitch
	Triple stitch
	Candlewicking stitch
	Chain stitch
	E stitch
	V stitch
	Select motif stitches Displays motif stitch selection screen, where [Select] can be pressed to select a pattern. 
	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.

→ You can check the selected stitch type and color.



① Color bar
② Stitch type

3 **Press then press on the line to change its color.**

→ The connected line will be changed to the selected color.

Memo

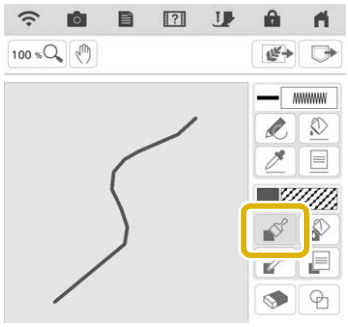
- Press 100 % to magnify the image when you cannot press on the line correctly. For details on magnify the image, refer to “Displaying Patterns in the Screen Magnified” on page 73.
- Press , and then select a color within the pattern drawing area to apply the same color to other lines or parts of the pattern.

① Use to select the line color.

② Press for changing the line color, and then select the pattern to be changed.

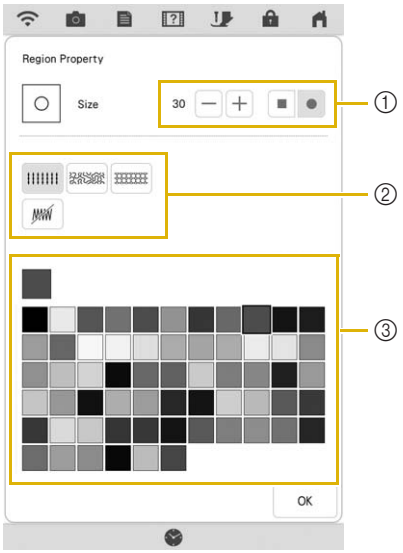
Drawing Regions

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 stitch types
③ Fill color selection: touch the color palette to activate the paint brush color.

Brush shapes

■	Square brush	
●	Round brush	

To select the brush size, press — or +.

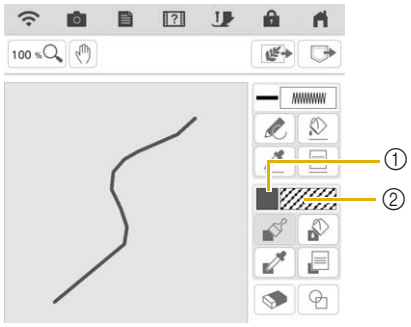
Fill stitch types

	Fill stitch pattern
	Stippling pattern
	Select decorative fill patterns Displays a fill pattern selection screen, where Select can be pressed to select a pattern.

Select when you don’t want fill stitch.

2 **Press OK to return to the pattern drawing screen.**

→ You can check the selected stitch type and color.



① Color bar

* If a stippling pattern or decorative fill pattern has been specified, the settings are displayed.

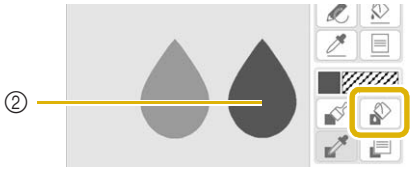
② Stitch type

3 **Press and press on the brush line to change color and fill stitch types. You can also set the fill color, stitch type and fill pattern of a closed area made of the lines and brush lines.**

Memo

- Press 100 % to magnify the image when you cannot press on the fill correctly.
- Press , and then select a pattern color in the pattern drawing area to apply that fill color to other patterns.

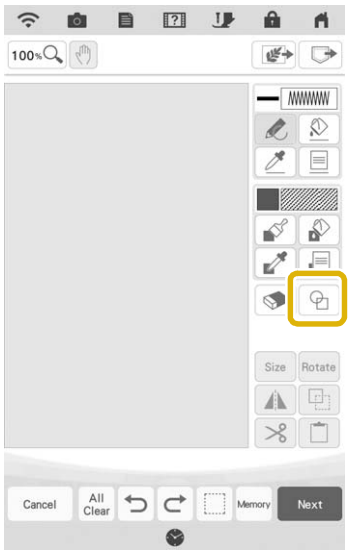
① Use to select the fill color.



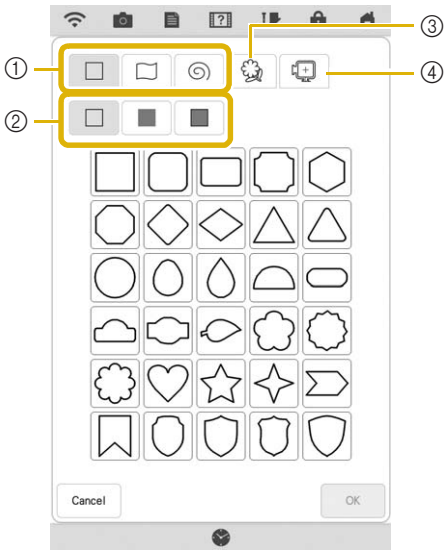
② Press for changing the fill color, and then select the pattern to be changed.

Using the Stamp Key

1 **Press .**



2 **Select a stamp type and stamp shape.**



① Stamp shapes

② Stamp types

③ Saved outlines

④ Frame embroidering areas

Stamp shapes

	Basic shapes
	Closed shapes
	Open shapes

Stamp types (Only for Basic shapes)

	Outline
	Fill stitch
	Outline and fill stitch

* Select the outline ( ), fill stitch ( ), or outline and fill stitch ( ) of a basic shape.

Saved outlines

	Embroidery pattern outlines can be registered as stamp shapes. When registering stamp shapes, select from the last six embroidery patterns used. If more than six shapes are registered, the oldest one is automatically erased. For details on registering a stamp shape, refer to “Decorative Stitching Around a Pattern in Embroidery (a Quilting Function)” on page 175.

Frame embroidering areas

	Select an embroidering area in order to arrange the pattern to fit an embroidery frame.

* Press Cancel to return to the pattern drawing screen.

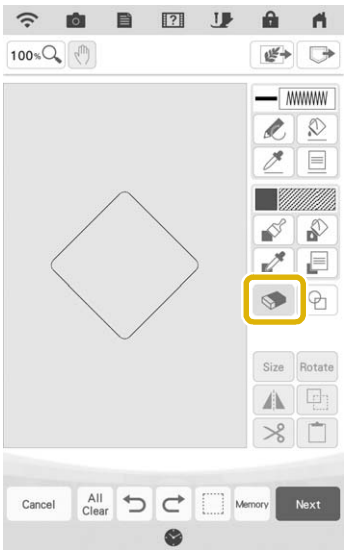
3 **Press OK to set the selected stamp.**

→ The pattern drawing screen is displayed.

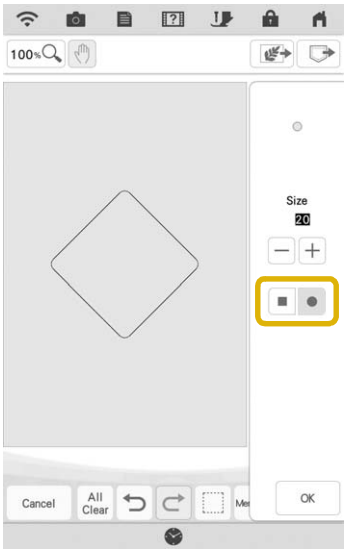
* You can change size of, rotate or move the shape right after you create it by pressing Size or Rotate.

Using the Erase Key

1 **Press .**



2 **Select the shape of the eraser.**



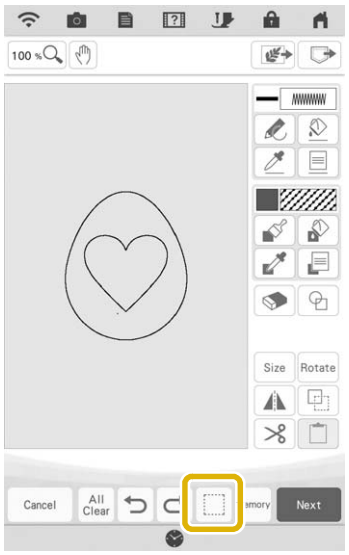
* To select the eraser size, press — or +.

3 **Drag along the area or line that you want to erase while the key appears as .**

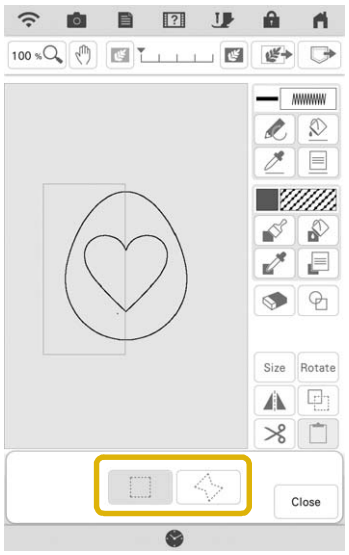
Using the Select Key

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 [⬚].**

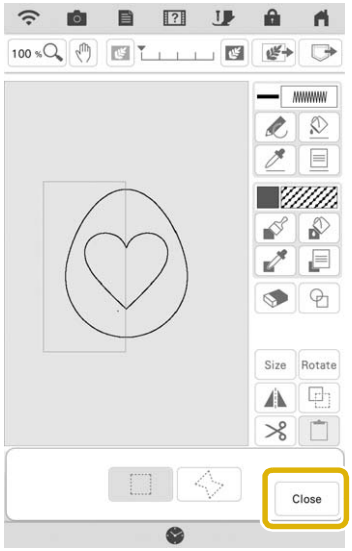


2 **Select the method for selecting an area.**



3 **Select the area you want to edit, and then press [Close].**

* To select an area you want to edit, hold the dual purpose stylus at a point on the screen and drag the dual purpose stylus to create the red box around your selected area to be edited.



4 **Edit the design with available keys. (Refer to "Key functions" on page 144 for the details of each key function.)**

5 **Press [Next], and then specify the stitch setting.**

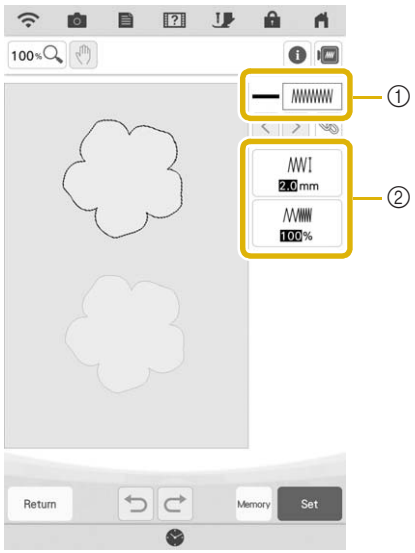
STITCH SETTINGS SCREEN

Before creating the embroidery pattern, specify the stitch settings. Lines of the design are sewn with various stitches and areas are sewn with fill stitches or stippling stitches. Stitching of the areas was already selected in “Drawing Regions” on page 147, so specify values of detailed settings.
After specifying the settings, press OK to create the embroidery pattern.

Specifying Individual Stitch Settings

Select a pattern in the stitch settings screen to specify its line and region stitch settings. If multiple patterns are selected, the settings are applied to those patterns.

■ Line settings



① Shows the stitch type and color for the selected line.
② Shows the stitch settings for the selected line.

Line sew stitch settings

Select the type of stitching you want applied to your line art, from zigzag stitch ( ), running stitch ( ), triple stitch ( ), candlewicking stitch or chain stitch .

Zigzag stitch

Zigzag width	Specifies the width of the zigzag stitches used to sew the lines of the design.
Density	Specifies the density of the zigzag 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.

Candlewicking Stitch

Size	Increases/reduces the size of the pattern.
Spacing	Specifies the spacing of the candlewicking stitch.

Chain stitch

Size	Increases/reduces the size of the pattern.
Thickness	Sets repeated sewing at the same part.

E stitch

Stitch width	Increases/reduces the size of the pattern.
Spacing	Specifies the spacing of the E stitch.
Thickness	Sets repeated sewing at the same part.
Arrange	Specifies the orientation of the pattern.
Flip	Specifies the decorative line shows up inside or outside.

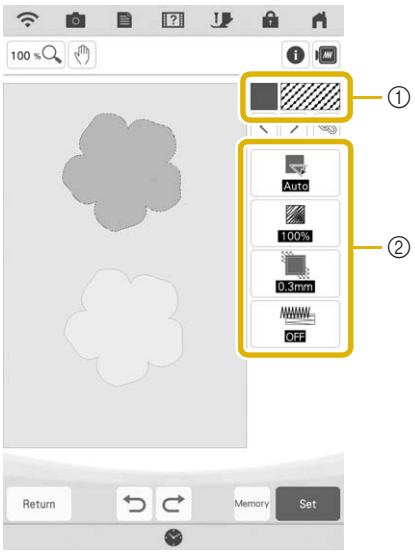
V stitch

Stitch width	Increases/reduces the size of the pattern.
Spacing	Specifies the spacing of the V stitch.
Thickness	Sets repeated sewing at the same part.
Arrange	Specifies the orientation of the pattern.
Flip	Specifies the decorative line shows up inside or outside.

Motif stitch

Pattern selection	Select the pattern.
Size	Increases/reduces the size of the pattern.
Spacing	Specifies the spacing of the motif stitch.
Flip	Specifies the decorative line shows up inside or outside.

■ Region settings



① Shows the stitch type and color for the selected region.
② Shows the stitch settings for the selected region.

Fill stitch settings

Direction	Specifies the sewing direction. Select “Manual” to change to the 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 you embroider the pattern and can check the shrinkage.
Under sewing	Select if you need or do not need the under sewing for the stabilized fabric.

Stippling stitch settings

Run pitch	Specifies the length of a stitch of the stippling stitch.
Spacing	Specifies the spacing between the stitches when embroidering the stippling stitch.
Distance	Specifies the offset from the pattern outline.
_____ Single/ Triple stitch	Specifies the stitch type.

Decorative fill

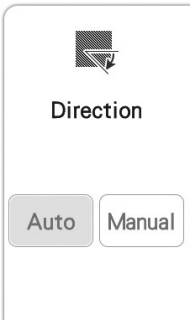
Size	Increases/reduces the size of the pattern.
Direction	Specifies the rotation angle of the pattern.
Outline	Select whether “ON” or “OFF” the outline is also converted to embroidery data. If “ON” is selected, the number of thread jumps can be reduced.
Random shift	Randomly varies the line.
Position offset	Specifies the reference point for the pattern.

1 Use [<] [>] to select the line or region to be changed.

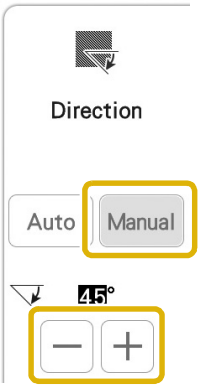
→ Each press of [<] [>] moves the highlighting of the selected pattern in order.

2 Select the setting to be changed, and then change the setting in the screen that appears. (In this example, the sewing direction will be changed.)

→ The setting screen appears.



3 Press [Manual], and then use [−] [+] to change the direction.



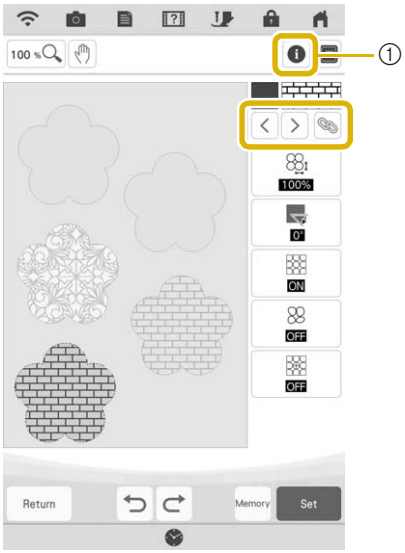
4 Press [OK] to apply the setting.

* Change other settings in the same way.

Specifying Global Stitch Settings

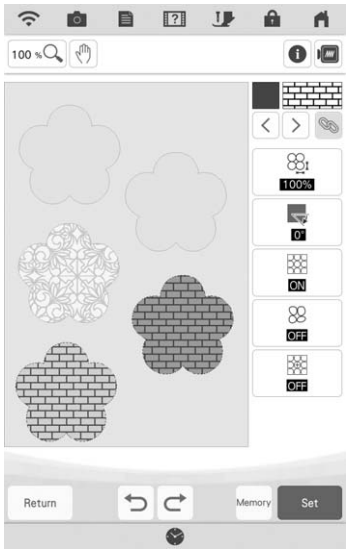
The same stitch settings can be changed at the same time for multiple patterns of the same type.

1 Use [<] [>] to select the stitch whose settings are to be changed, and then press [🔗].



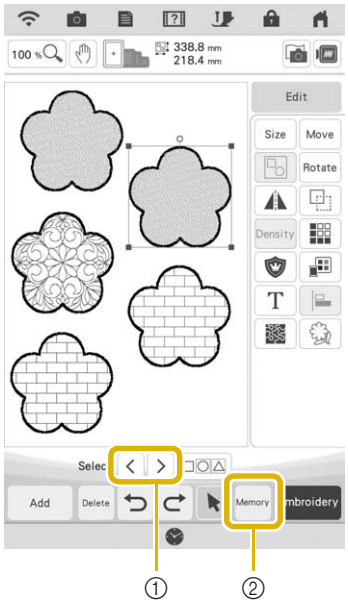
① Press [ⓘ] to check various information such as the thread colors.

→ The same stitch type areas will be selected at the same time.



2 Follow steps 2 through 4 in "Specifying Individual Stitch Settings" on page 151 to change the settings.

3 Press [Set] to display the pattern editing screen.



① Press [<] [>] to check an enlarged view of the pattern.

② Press [Memory] to save the embroidery data.

IQ DESIGNER WITH SCAN

Using the Scanning Frame

1 **Prepare the desired drawing/illustration.**

⚠ CAUTION

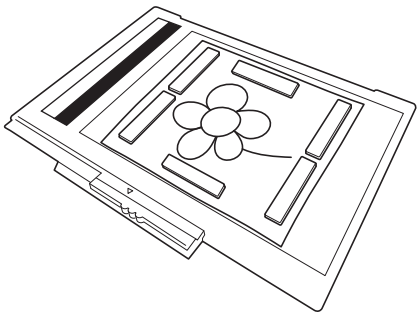
- **To avoid having the embroidery foot strike the frame during the scanning process and possibly causing injury, check the following: the thickness of the fabric or paper, creases or folds in the fabric or paper that may be rolled up too close to the frame.**

Memo

- Only one sheet of paper can be placed in the scanning frame per scan.

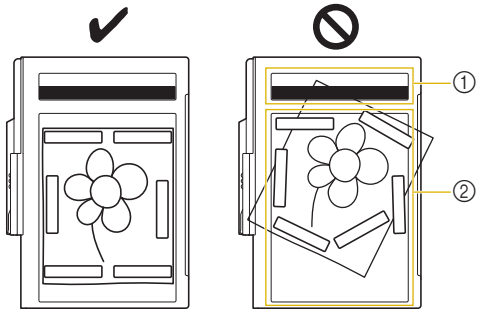
2 **Place the paper to be scanned in the scanning frame, and then secure the paper in place with the magnets.**

* 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.

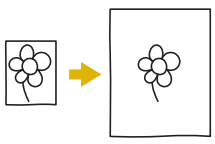


① White balance area
② Scan area

- 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 magnets which are included with the scanning frame. 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 an image from a small piece of paper that can't be held with the magnets, copy that image onto a larger piece of paper, to then be placed on the scanning frame.



3 **Attach the embroidery unit to the machine, and then turn on the machine.**

* Refer to "ATTACHING THE EMBROIDERY UNIT" on page 13.

Note
- Unthread the machine to avoid having the thread slipping out of the needle or getting caught on the embroidery frame.

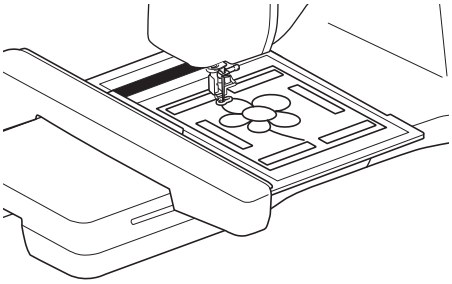
4 **Press the "Presser Foot Lifter" button to raise the embroidery foot, and then press the "Needle Position" button to raise the needle.**

* The embroidery foot is not raised high enough when raised with the presser foot lever.

⚠ CAUTION
- **Make sure that embroidery foot and needle are fully raised. If scanning is started with the embroidery 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.**

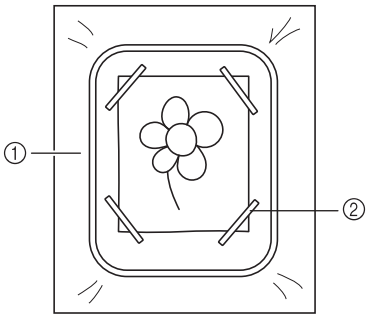
* Refer to "ATTACHING THE EMBROIDERY FRAME" on page 34.



Note
- Be sure not to attach any embroidery foot other than the embroidery foot "W", otherwise the embroidery 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.

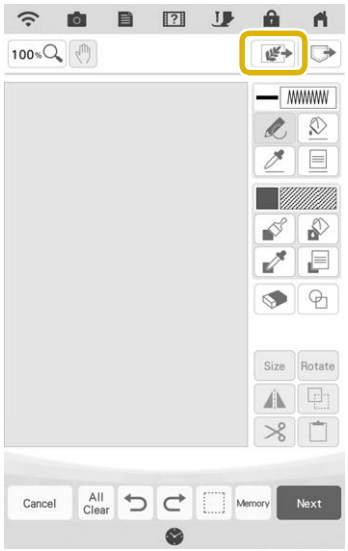


① Fabric
② Tape

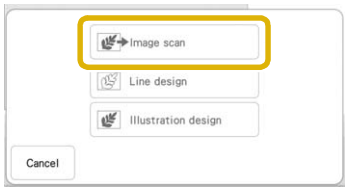
Scanning to Trace Background Image

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** .



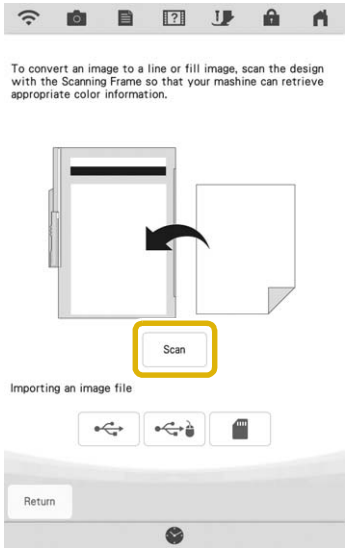
2 **Press** Image scan .



→ The image display screen appears.

3 **Using the magnets, affix a picture to the scanning frame and attach the frame to the machine. Refer to "Using the Scanning Frame" on page 154.**

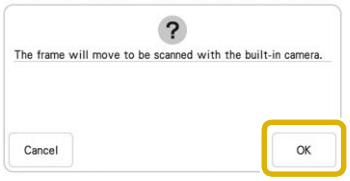
4 **Press** Scan **.**



Note

- When scanning starts, some of the machine lights will turn off in 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.



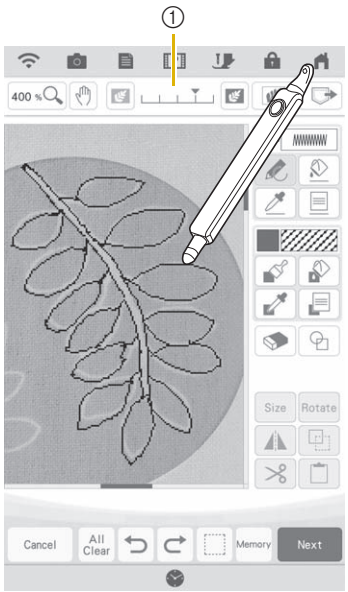
→ Scanning begins.

* To stop scanning and return to the screen in step 4, press Cancel.

5 **When scanning is finished, scanned image is displayed transparently in the pattern drawing area.**

6 **Using the included dual purpose stylus, press , and then draw lines to trace the image.**

* For details on drawing lines, refer to "Drawing Lines" on page 145.



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.

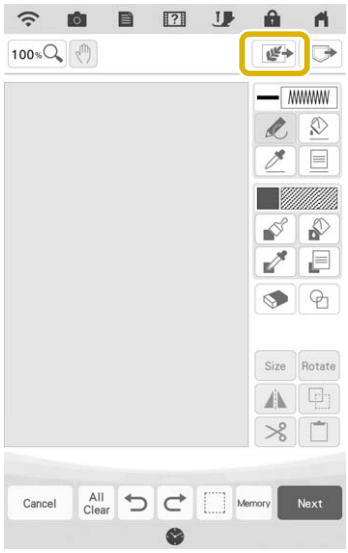
7 **After editing the pattern, press Next to specify the settings for pattern.**

8 **Press Set to display the pattern editing screen.**

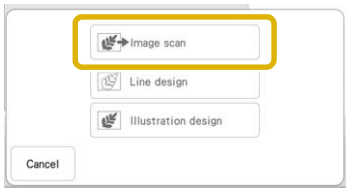
■ Importing the Background image

Prepare the data file of your favorite picture so that you can create an embroidery pattern. Save data as a .jpg file type in your computer, on a USB media stick or SD card.

1 **Press .**

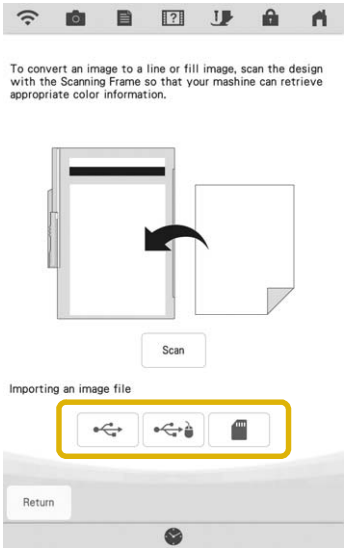


2 **Press Image scan.**



→ The image display screen appears.

3 **Select the device you saved the data to.**



Note

- You can import an image of 2 MB or smaller from USB media or SD card.

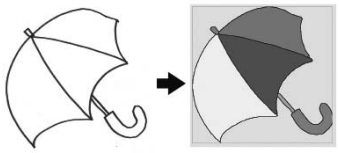
4 **Select the data, and then press Set.**

5 The selected image is displayed transparently in the pattern drawing area.

* After the scanned image is converted to stitching, it appears as a background in the pattern drawing screen. 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.

LINE SCAN

Custom patterns can be created from drawings. You can create patterns by scanning your drawings using the included scanning frame or importing an image from USB media or SD card.



Recommended line drawings for Line Scan

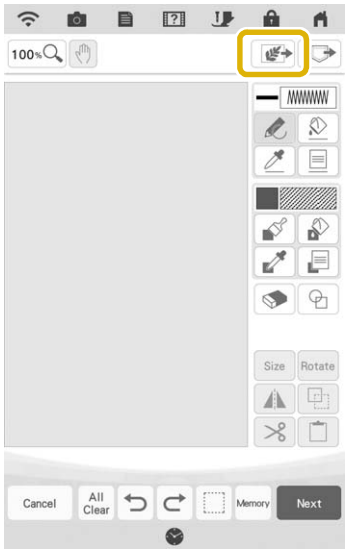
- Line drawings must be drawn clearly using lines with approximately 1 mm thickness.
- Line drawings should be drawn in a strong contrast.
- If the lines are too short or gathered too densely, they will not be scanned correctly.

Note

- For details on creating patterns using color illustrations, refer to “ILLUSTRATION SCAN” on page 162.
- If you cannot scan the drawings as expected, you can edit the design in IQ Designer. Refer to “PATTERN DRAWING SCREEN” on page 143.
- 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 151.
- Line drawings are scanned as black lines. If you want to change the colors, specify in IQ Designer. Refer to “Drawing Regions” on page 147.

Using the Scanning Frame to Create a Pattern with Line Scan

1 **Press** .



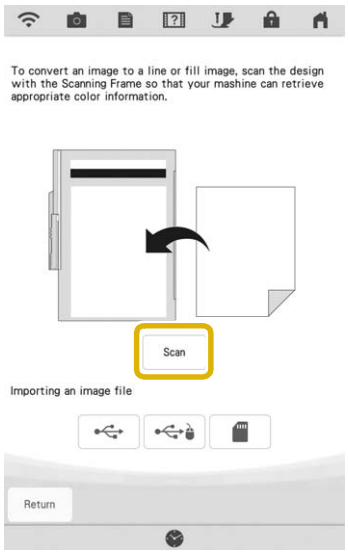
2 **Press** Line design.

→ The image display screen appears.

3 **Press** Scan.

* To import an image from USB media or SD card, press , or . For details, see “Importing the Background image” on page 157.

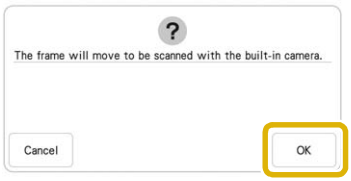
* If you scan the image, make sure that the scanning frame is attached to the machine. Refer to "Using the Scanning Frame" on page 154.



Note

- The scanned background image can be converted to line scan data. At this time, it is unnecessary to scan the line drawing again.
- When scanning starts, some of the machine lights will turn off in 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 2 MB or smaller from USB media or SD card.

→ When the following message appears, press OK.

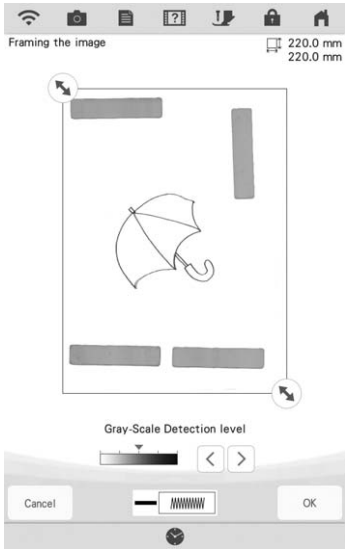


→ Scanning begins.

* 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.

① The settings for the lines to be sewn appear.

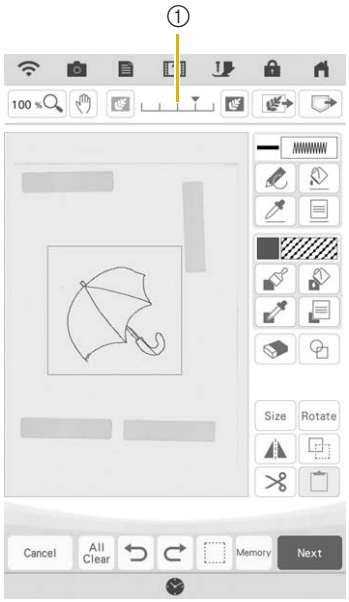
* If you do not know how the settings should be changed, first continue the operation without specifying settings and check the results.
* To enlarge the image, press .
* To display the image before being converted, press Original View. Compare the images before and after being converted, and then change the settings if necessary.
* To return to the previous screen, press Return.

→ After changes to the settings for “Detection level” is applied, Set changes to Retry. Press Retry to check that the image is as desired.

8 Press Set.

→ The pattern drawing screen is displayed.

9 If necessary, edit the scanned image.



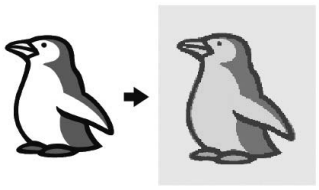
* After the scanned image is converted to stitching, it appears as a background in the pattern drawing screen. Use gauge ① to adjust the transparency of the background. Each press of lightens the background, making the line pattern darker. Each press of darkens the background, making the line pattern lighter.

Note

- During scanning, the small dots that appear and unnecessary lines can be erased.

ILLUSTRATION SCAN

Custom patterns can be created from color illustrations. You can create patterns by scanning an illustration using the included scanning frame or importing an image from USB media or SD card.

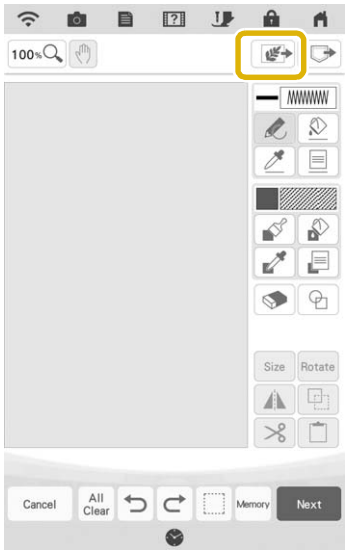


Recommended illustrations for Illustration Scan

- Patterns that are clearly drawn, with no gradation, fading or blurriness.
- Patterns that are at least a 5 mm square
- Patterns that are extremely simple images

Using the Scanning Frame to Create a Pattern with Illustration Scan

1 **Press** .

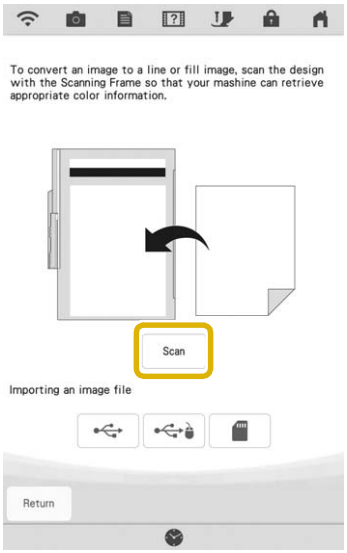


2 **Press** Illustration design.

→ The image display screen appears.

3 **Press** Scan.

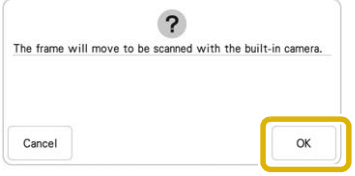
* To import an image from USB media or SD card, press , or .



Note

- The scanned background image can be converted to illustration scan data. At this time, it is unnecessary to scan the illustration again.
- 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.

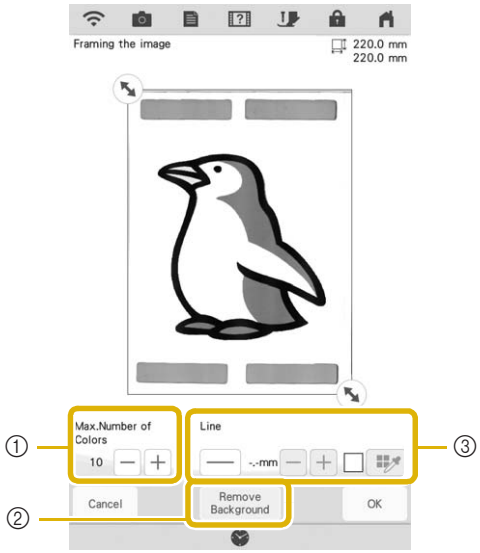


→ Scanning begins.

* 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 be 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).

- Press to select the outline color. Select by touching the color, or moving icon using in the color selection 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, 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.

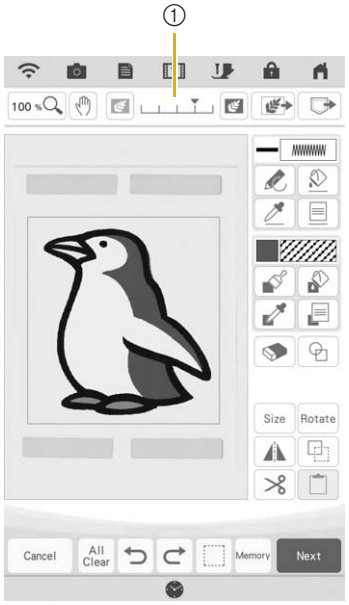
* To return to the previous screen, press Return.

→ 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.

→ The pattern drawing screen is displayed.

9 If necessary, edit the scanned image.



* After the scanned image is converted to stitching, it appears as a background in the pattern drawing screen. 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.

STIPPLING

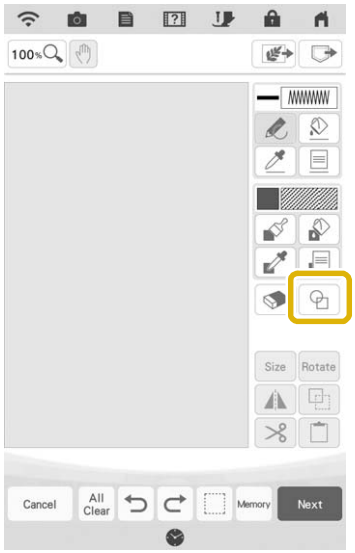
Basic Stippling with IQ Designer

Create a stippling design with the basic procedure.
Example:

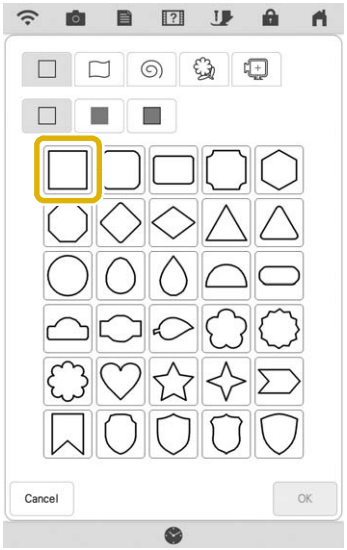
1 **Press** IQ.

* You can also start the function by pressing IQ Designer in "Embroidery" mode.

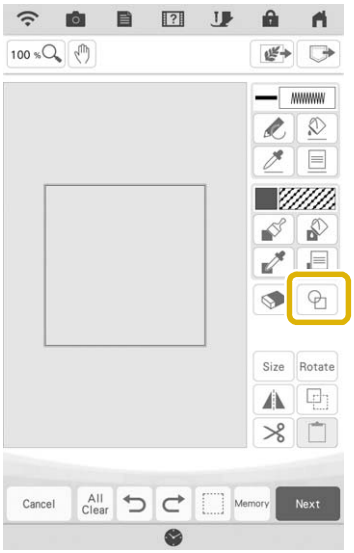
2 **Press** .



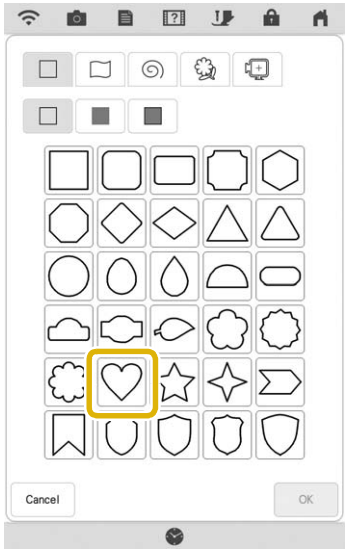
3 **Select the square shape, and then press** OK.



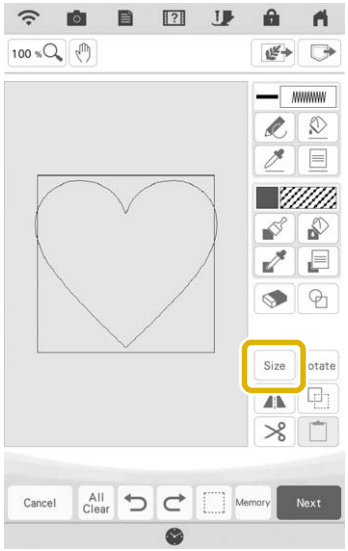
4 **Press** .



5 **Select the heart shape, and then press** OK **.**

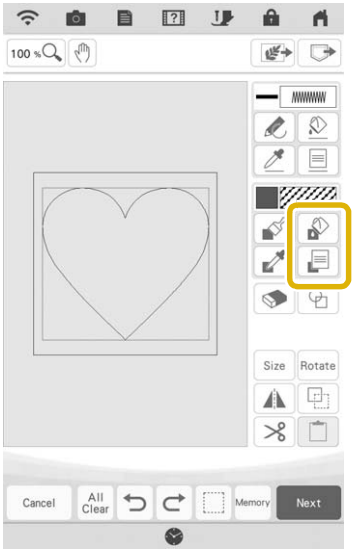


6 **Press** Size **.**

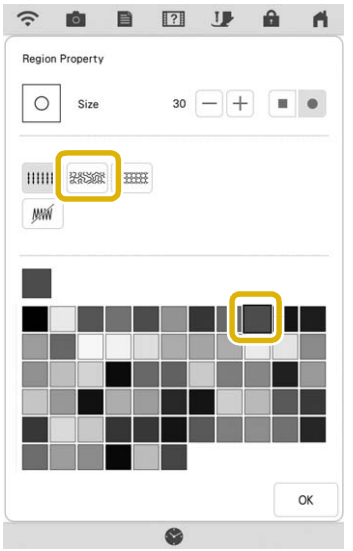


7 **Press** **until the heart shape fits in the square shape, and then press** OK **.**

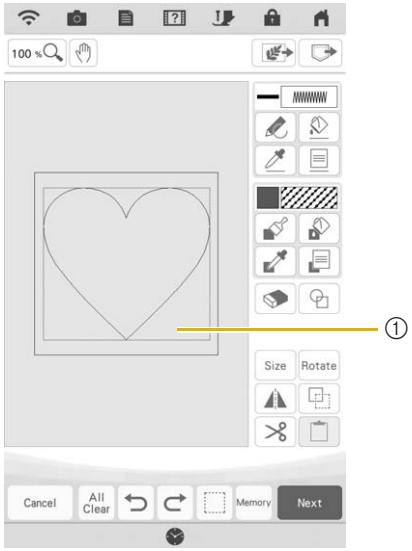
8 **Press** **, and then press** **.**



9 **Press** **, and then select the stitch color. Press** OK **after setting the color.**

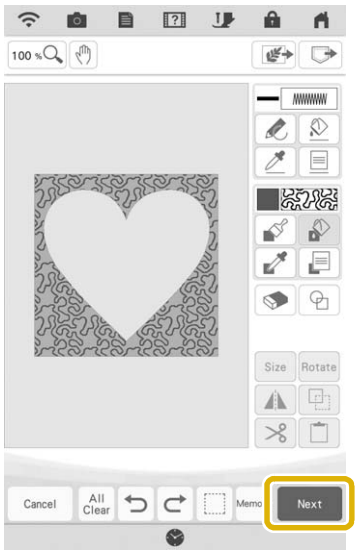


10 **Select the area you want to set stippling effect.**



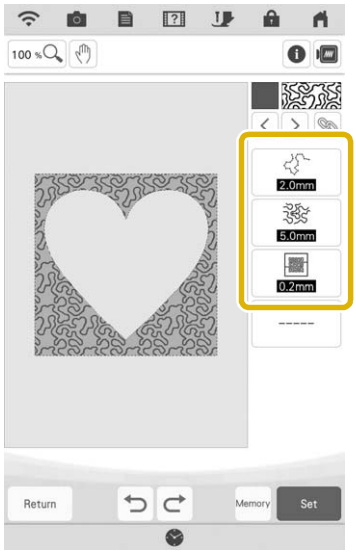
① Select this area.

11 **Press** Next **.**



12 **Adjust the stippling settings to create the desired effect, and then press** Set **.**

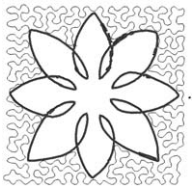
* For details, refer to "Specifying Individual Stitch Settings" on page 151.



13 **Follow the procedure described on "Editing Patterns" on page 38 to edit the pattern as desired.**

Scanning Drawing to Create Stippling Pattern

Create a custom pattern with stippling design.
Example:

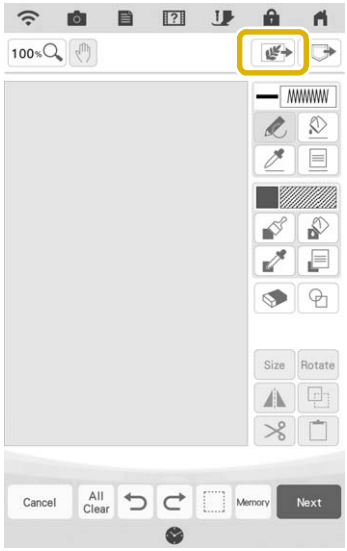


1 **Place a drawing of your design on the scanning frame.**

2 **Press** IQ **.**

* You can also start the function by pressing IQ Designer in "Embroidery" mode.

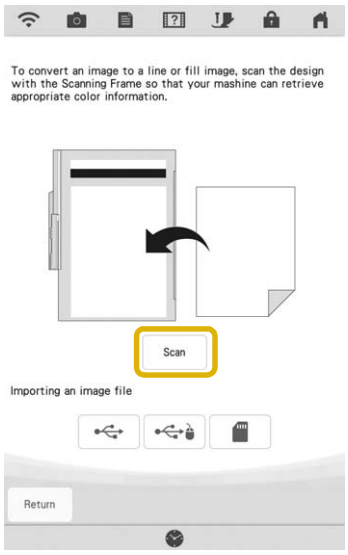
3 **Press** .



4 **Press** Line design .

→ The image display screen appears.

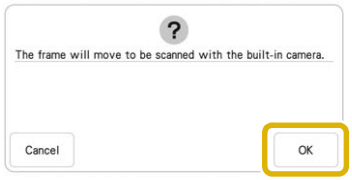
5 **Position the scanning frame on the machine, and then press** Scan .



Note

- When scanning starts, some of the machine lights will turn off in 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 2 MB or smaller from USB media or SD card.

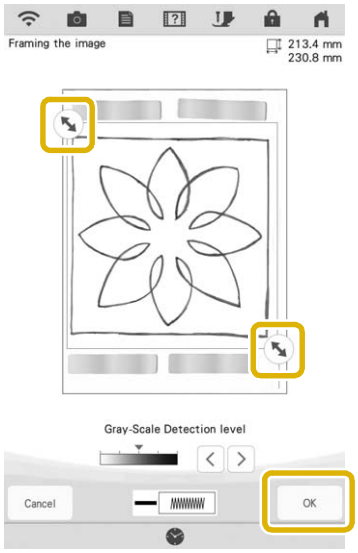
→ When the following message appears, press OK .



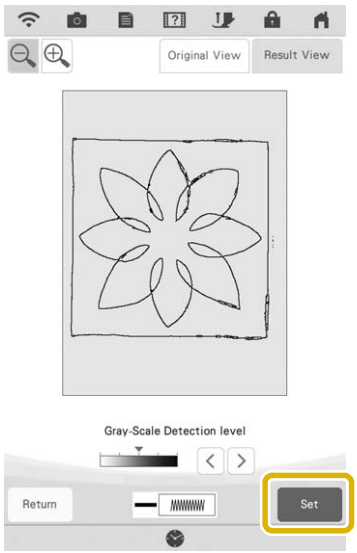
→ Scanning begins.

* To stop scanning and return to the screen in step 5, press Cancel .

6 **When scanning is finished, move to frame the image for the pattern, and then press** OK .

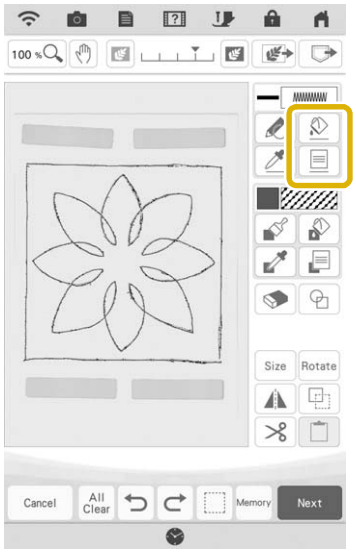


7 **The screen for confirming the converted image appears, adjust the image if necessary and then press** Set **.**

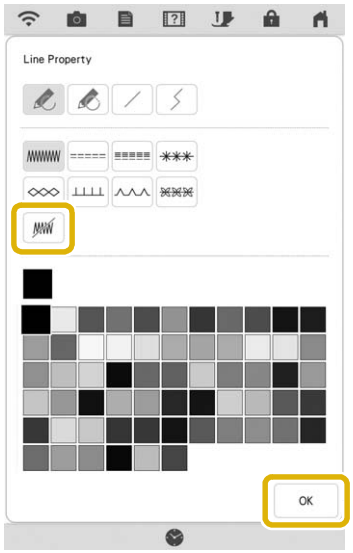


→ The pattern drawing screen is displayed.

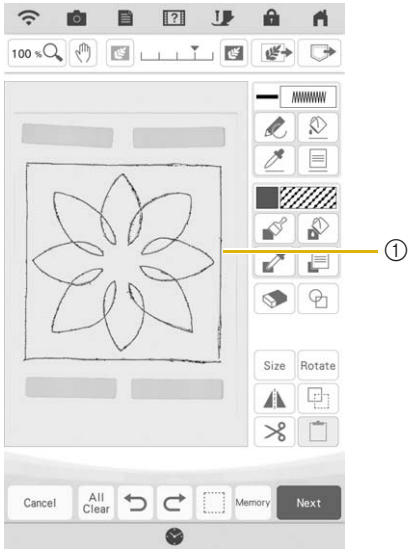
8 **To set the outline of the pattern, press** , **and then** **.**



9 **Press** **and then** OK **.**
This will set the outline without a stitch.

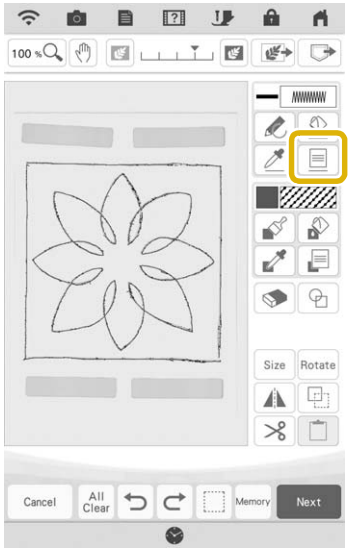


10 **Select the outline of the pattern.**

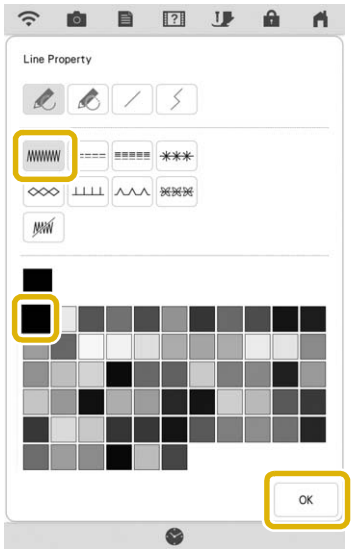


① Outline of the pattern

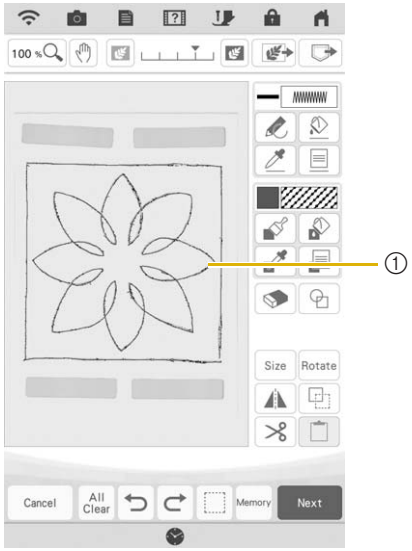
11 **Press [ ] to select the color of the stitch around the stippling effect.**



12 **Press [ ] and select the stitch color, and then press [OK].**

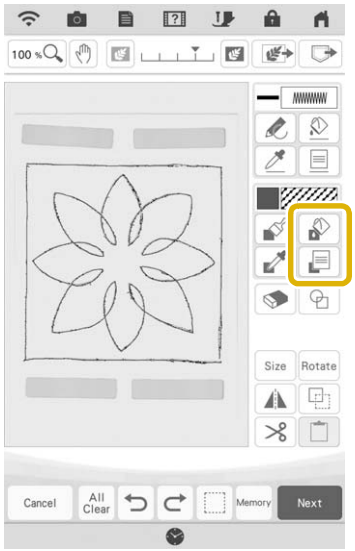


13 **Select the stitch line around the stippling effect.**

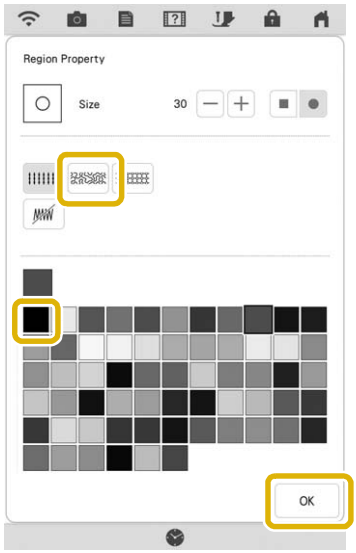


① Stitch line

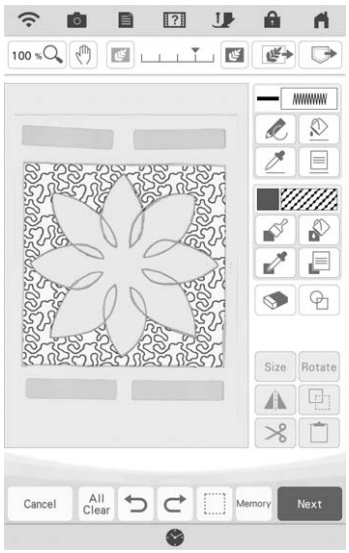
14 **To set the stitch color and fill stitch type, press [ ], and then [ ].**



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" on page 165.**

Scanning Fabric and Stippling

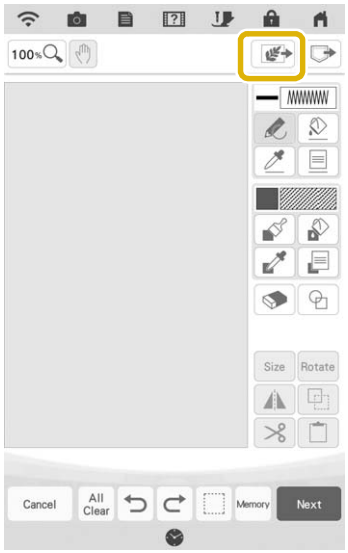
Use the fabric pattern to coordinate with the stippling pattern.

1 **Set the fabric to the embroidery frame.**

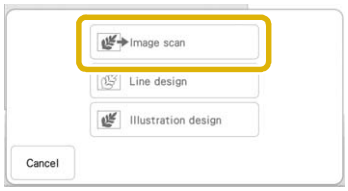
2 **Press IQ.**

* You can also start the function by pressing IQ Designer in "Embroidery" mode.

3 **Press .**

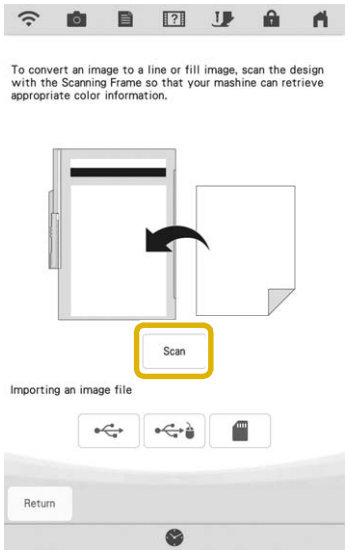


4 **Press Image scan.**



→ The image display screen appears.

5 **Position the embroidery frame on the machine, and then press** Scan **.**



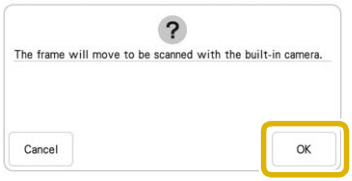
Memo

- Although the instructions in the LCD screen refer to the scanning frame, this example uses an embroidery frame for scanning.

Note

- When scanning starts, some of the machine lights will turn off in 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 2 MB or smaller from USB media or SD card.

→ When the following message appears, press OK.

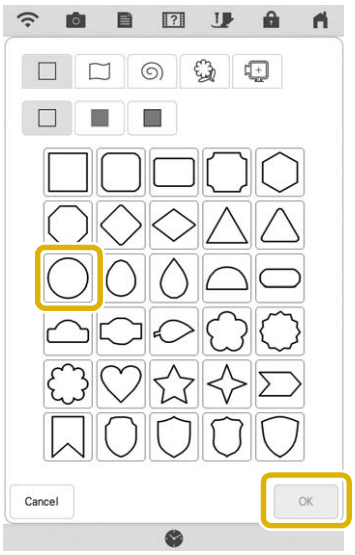


→ Scanning begins.

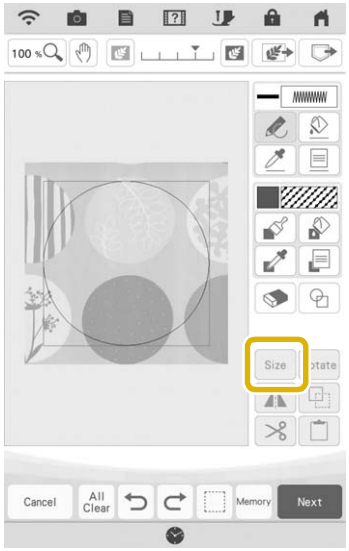
* To stop scanning and return to the screen in step 5, press Cancel.

6 **Press** .

7 **Select the circle shape, and then press** OK **.**

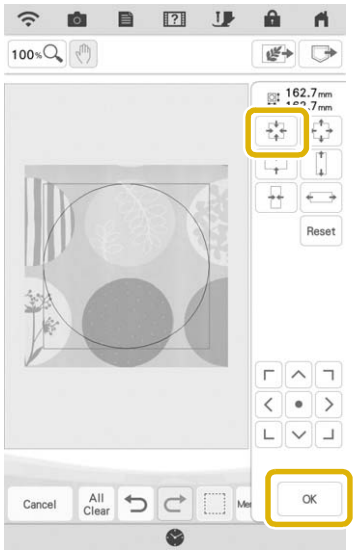


8 **Press Size to increase or decrease the size of the circle.**

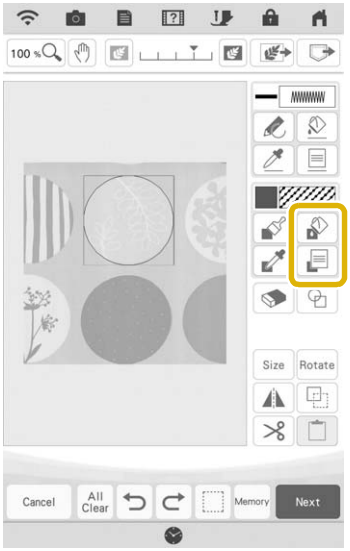


9 **Press until the size of circle fits the pattern on the fabric, and then press OK.**

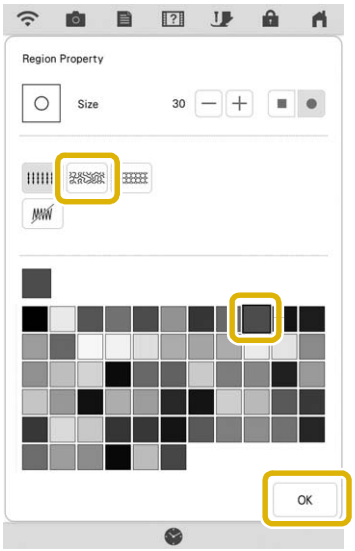
* Use to align the position of the circle to the pattern on the fabric.



10 **To set the stitch color and fill stitch type, press , and then .**



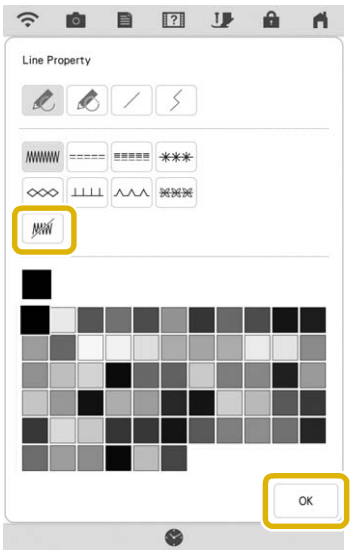
11 **Press , and then select the stitch color. Press OK after setting the color.**



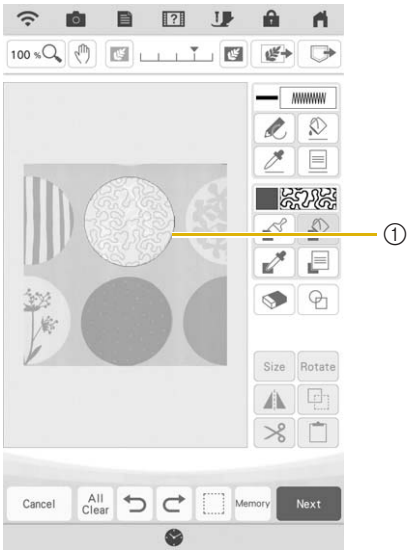
12 **Select the area you want to set stippling effect.**

13 **To set the outline of the pattern, press [ ], and then [ ].**

14 **Press [ ] and then [OK]. This will set the outline without a stitch.**



15 **Select the outline of the pattern.**



① Outline of the pattern

16 **Follow the procedure from step 11 of "Basic Stippling with IQ Designer" on page 165.**

→ Start embroidering on the fabric that you scanned at first.

Decorative Stitching Around a Pattern in Embroidery (a Quilting Function)

Memo
- For best results, reduce the sewing speed.

A quilt can be created with stippling around an embroidery pattern.

1. **Hoop the embroidery frame with batting sandwiched between two layers of fabric, and then attach the frame to the machine.**

2. **Press and select the pattern that decorative stitching will be added around, and then press in the embroidery edit screen.**

→ The outline of the pattern is displayed.

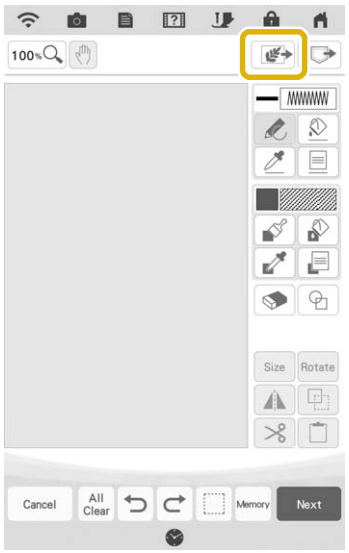
3. **Press Memory.**

→ A message appears, and the pattern outline is registered as a stamp shape in IQ Designer. Press OK.

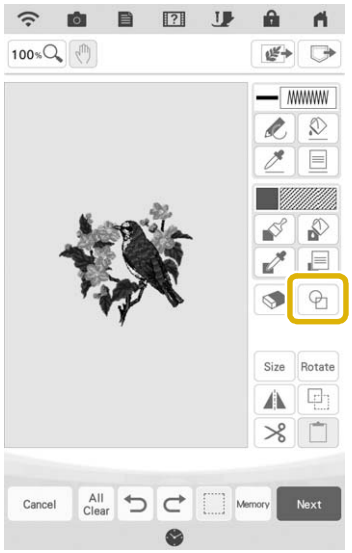
4. **Press Embroidery to continue to the embroidery screen, and then embroider the pattern.**

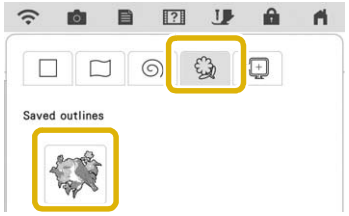
5. **Press IQ in the home page screen to start IQ Designer.**

6 **Press [icon] to scan the embroidered fabric. Refer to "Importing the Background image" on page 157 for details.**



7 **Press [icon], press [icon] to recall the stamp shape registered in step 3, and then arrange it over the scanned pattern.**



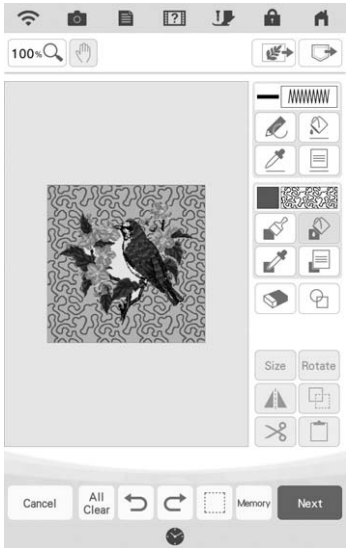


8 **Use a stamp or rectangular frame to determine the area to be stitched.**

> **Note**
> - If the area is to be drawn by hand, be sure to draw a completely closed shape. If the area is not closed, it cannot be correctly filled with the decorating.

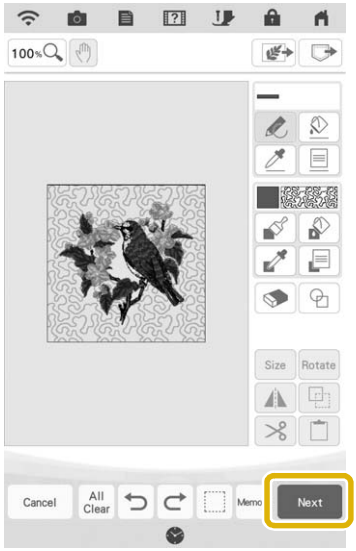
9 **Use the brush tool keys to select the pattern and color of the decorative stitching.**

10 **Fill the area to be stitched outside of the stamp shape outline.**

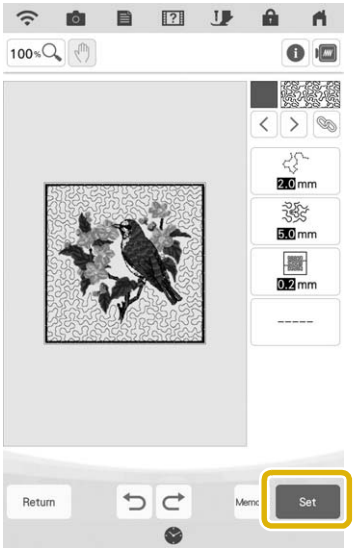


11 **Set the line type for the frame and pattern to , and then press Next.**

* Stitch settings can be adjusted in the stitch settings screen. For details, refer to “STITCH SETTINGS SCREEN” on page 151.



12 **Specify the stitch spacing and length in the stitch settings screen, and then press Set.**



13 **Embroider the stippling around the embroidery pattern.**

Chapter 5

Appendix

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 authorized Baby Lock retailer.

List of Symptoms

If you have a minor problem with your 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 embroidering problems during embroidering. 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.	—
	Needle is installed incorrectly.	Reinstall the needle correctly.	11
	Needle is turned, bent or the point is dull.	Replace the needle.	11
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	22
	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.	25
Cannot lower the embroidery foot with the presser foot lever.	Embroidery foot was raised using the "Presser Foot Lifter" button.	Press the "Presser Foot Lifter" button to lower the embroidery foot.	—
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.	16
	Bobbin spins slowly.	Press + in the bobbin winding window to increase the bobbin winding speed.	17
	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.	16
	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.	15
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.	15
The bobbin thread cannot be pulled up.	Needle is turned, bent or the point is dull.	Replace the needle.	11
	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	20
Machine does not operate	All keys and buttons have been locked by .	Press to unlock all keys and buttons.	9, 11
Nothing appears in the LCD.	Main power switch is not turned on.	Turn the main power to ON.	—
	The plug of the power cord is not inserted into an electrical outlet.	Insert the plug of the power cord into an electrical outlet.	—
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.	—
Nothing happens, even if the LCD display is pressed	The screen has been locked.	Press either of the following keys to unlock the screen.	—

Problem	Cause	Solution	Page
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.	13
	Embroidery frame was attached before the unit was initialized.	Remove the embroidery unit, and then perform the initialization process correctly.	13
Pointer of the projector 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.	47
	With fabric having a very uneven surface, the position is not correctly aligned.	The pointer indication should be used only as a reference.	—

■ While embroidering

Problem	Cause	Solution	Page
Machine does not operate.	“Start/Stop” button was not pressed.	Press the “Start/Stop” button.	—
	There is no pattern selected.	Select a pattern.	36
	Embroidery foot is not lowered.	Lower the embroidery foot.	—
Needle breaks.	Needle is installed incorrectly.	Reinstall the needle correctly.	11
	Needle clamp screw is not tightened.	Tighten the needle clamp screw.	12
	Needle is turned or bent.	Replace the needle.	11
	Using improper needle or thread for the selected fabric.	Refer to the “Fabric/Thread/Needle Combinations” chart in the Instruction and Reference Guide (Sewing).	—
	Wrong embroidery foot was used.	Use the recommended embroidery foot.	10
	Upper thread tension is too tight.	Adjust the thread tension.	97
	Fabric is pulled during embroidering.	Do not pull the fabric during embroidering.	—
	Spool cap is set incorrectly.	Check the method for attaching the spool cap, then reattach the spool cap.	22
	There are scratches around the opening in the needle plate.	Replace the needle plate, or consult your authorized Baby Lock retailer.	—
	There are scratches around the opening in the embroidery foot.	Replace the embroidery foot, or consult your authorized Baby Lock retailer.	9
	There are scratches on the bobbin case.	Replace the bobbin case, or consult your authorized Baby Lock retailer.	—
	Needle is defective.	Replace the needle.	11
	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.	20
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	22
	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	20
	Embroidery foot is attached incorrectly.	Attach the embroidery foot correctly.	9
	Screw of the presser foot holder is loose.	Securely tighten the screw of the presser foot.	10
	Fabric is too thick.	Use fabric that the needle can pierce when the handwheel is turned.	—
	Stabilizer is not attached to fabric being embroidered.	Attach stabilizer.	28
	Bobbin thread is incorrectly wound.	Use a correctly wound bobbin.	15

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.	22
	Knotted or tangled thread is being used.	Remove any knots or tangles.	—
	The selected needle is not appropriate for the thread being used.	Refer to the “Fabric/Thread/Needle Combinations” chart in the Instruction and Reference Guide (Sewing).	—
	Upper thread tension is too tight.	Adjust the thread tension.	97
	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.	11
	Needle is installed incorrectly.	Reinstall the needle correctly.	11
	There are scratches around the opening of the needle plate.	Replace the needle plate, or consult your authorized Baby Lock retailer.	—
	There are scratches around the opening in the embroidery foot.	Replace the embroidery foot, or consult your authorized Baby Lock retailer.	9
	There are scratches on the bobbin case.	Replace the bobbin case, or consult your authorized Baby Lock retailer.	—
	Using improper needle or thread for the selected fabric.	Refer to the “Fabric/Thread/Needle Combinations” chart in the Instruction and Reference Guide (Sewing).	—
	While embroidering, the thread became knotted or tangled.	Rethread upper and lower thread.	20, 22
	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.	20
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 embroidery foot is in the raised position when threading the machine so that the upper thread sets properly in the upper tension.	22
	Using improper needle or thread for the selected fabric.	Refer to the “Fabric/Thread/Needle Combinations” chart in the Instruction and Reference Guide (Sewing).	—
The upper thread is too tight.	The bobbin thread is incorrectly installed.	Correctly install the bobbin thread.	20
Bobbin thread breaks.	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	20
	Bobbin thread is incorrectly wound.	Use a correctly wound bobbin.	15
	There are scratches on the bobbin or it doesn’t rotate properly.	Replace the bobbin.	20
	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.	20
Fabric puckers.	There is a mistake in the upper or bobbin threading.	Check the steps for threading the machine and rethread it correctly.	20, 22
	Spool cap is set incorrectly.	Check the method for attaching the spool cap, then reattach the spool cap.	22
	Using improper needle or thread for the selected fabric.	Refer to the “Fabric/Thread/Needle Combinations” chart in the Instruction and Reference Guide (Sewing).	—
	Needle is turned, bent or the point is dull.	Replace the needle.	11
	Thread tension is set incorrectly.	Adjust the thread tension.	97

Problem	Cause	Solution	Page
Skipped stitches	Machine is threaded incorrectly.	Check the steps for threading the machine and rethread it correctly.	22
	Using improper needle or thread for the selected fabric.	Refer to the “Fabric/Thread/Needle Combinations” chart in the Instruction and Reference Guide (Sewing).	—
	Needle is turned, bent or the point is dull.	Replace the needle.	11
	Needle is installed incorrectly.	Reinstall the needle correctly.	11
	Needle is defective.	Replace the needle.	11
	Dust or lint has collected under the needle plate.	Remove the dust or lint with the brush.	—
High-pitched sound while embroidering	Pieces of thread are caught in the race.	Clean the race.	—
	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	22
	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.	20
	There are needle holes or friction scratches in the bobbin case.	Replace the bobbin case, or consult your authorized Baby Lock retailer.	—
Fabric does not feed through the machine.	Needle is turned, bent or the point is dull.	Replace the needle.	11
	Thread is entangled.	Cut the entangled thread and remove it from the race.	—
The fabric feeds in the opposite direction.	The feed mechanism is damaged.	Contact your authorized 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.	11
	Needle is turned, bent or the point is dull.	Replace the needle.	11
Fabric being embroidered 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.	—
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.	—

■ After embroidering

Problem	Cause	Solution	Page
Thread tension is incorrect.	Upper threading is incorrect.	Check the steps for threading the machine and rethread the machine.	22
	Bobbin is set incorrectly.	Reset the bobbin. (If needle plate was removed, reinstall needle plate.)	20
	Using improper needle or thread for the selected fabric.	Refer to the “Fabric/Thread/Needle Combinations” chart in the Instruction and Reference Guide (Sewing).	—
	Thread tension is set incorrectly.	Adjust the thread tension.	97
	Bobbin thread is incorrectly wound.	Use a correctly wound bobbin.	15
	Needle is turned, bent or the point is dull.	Replace the needle.	11
	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.	20
Embroidery pattern does not embroider 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.	97
	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.	30
	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.	28
	There was an object placed near the machine, and the carriage or embroidery frame hit the object during embroidering.	If the frame bumps something during embroidering, the pattern will turn out poorly. Do not place anything in the area where the frame may bump it during embroidering.	53
	Fabric outside the frame edges interferes with the free arm, so the embroidery unit cannot move.	Reinsert the fabric in the embroidery frame so that the excess fabric is away from the free arm, and rotate the pattern 180 degrees.	30
	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.	53
	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 embroidering (for example, to reset the bobbin). The embroidery foot was bumped or moved while removing or attaching the embroidery frame, or the embroidery unit was moved.	If the embroidery foot is bumped or the embroidery unit is moved during embroidering, the pattern will not turn out. Be careful when removing or reattaching the embroidery frame during embroidering.	56
	Stabilizer is incorrectly attached, for example, it is smaller than the embroidery frame.	Attach the stabilizer correctly.	28
Loops appear on the surface of the fabric when embroidering	The thread tension is incorrectly set.	Adjust the thread tension.	97
	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.	32
	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.	53

⚠ 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.**
- **If the power is disconnected during embroidering:**
  Turn the main power to OFF and unplug the machine.
  If you restart the machine, follow the Instruction and Reference Guide for operating the machine correctly.

ERROR MESSAGES

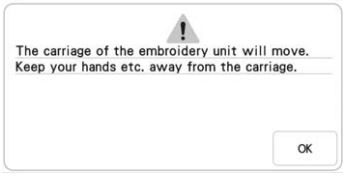
If the machine is not properly set and the “Start/Stop” button or the “Reverse/Reinforcement Stitch” button is pressed, or if the operation procedure is incorrect, the machine does not start. An alarm sounds and an error message is displayed on the LCD. If an error message displays, follow the instructions 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).

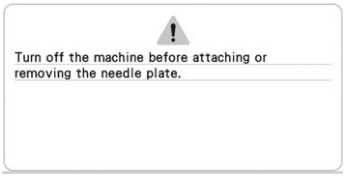
⚠ CAUTION

- **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.



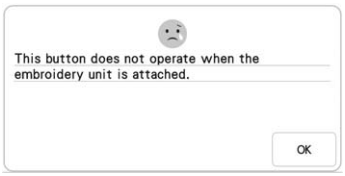
This message is displayed when the embroidery unit is initializing.



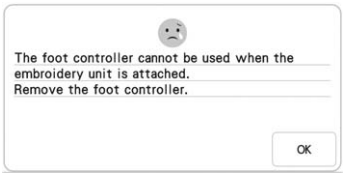
This message is displayed when the needle plate is removed with the machine on or when the machine is turned on and embroidery or embroidery edit mode is selected.

This message is displayed when the machine needs to be maintained.

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.

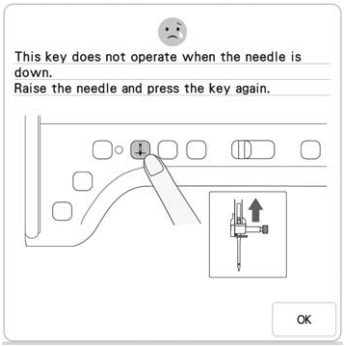


This message is displayed when the “Reverse/ Reinforcement Stitch” button is pushed while the embroidery unit is attached.

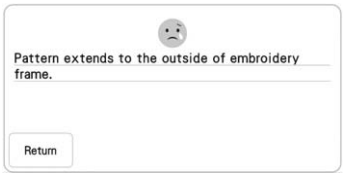


This message is displayed when the foot controller is pressed while the embroidery unit is attached and machine is set up for embroidering.

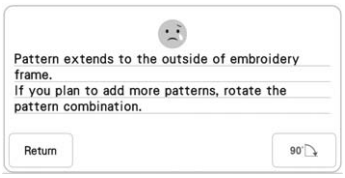
This message is displayed when the patterns you are editing take up too much memory, or if you are editing too many patterns for the memory.



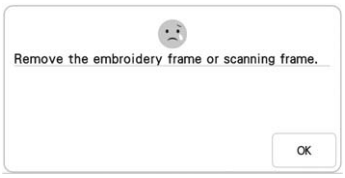
This message is displayed when a key on the LCD display is touched while the needle is in the down position.



This message is displayed when the machine is in embroidery mode, and the character pattern combination is too large to fit in the embroidery frame.

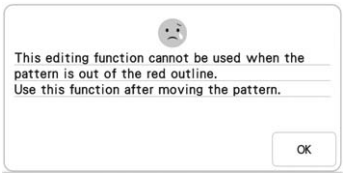


This message is displayed when the machine is in embroidery mode and the combined character pattern is too large for the embroidery frame. You can rotate the pattern 90 degrees and continue combining characters.

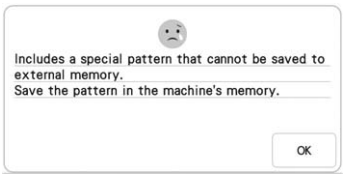


This message is displayed when the machine is in embroidery mode and the embroidery unit tries to initialize while the embroidery frame is attached.

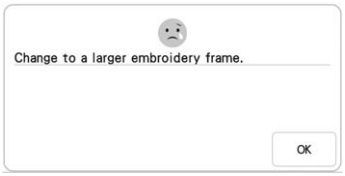
This message is displayed when the machine is ready to embroider a pattern, and the “Start/Stop” button is pushed while the embroidery frame is not attached.



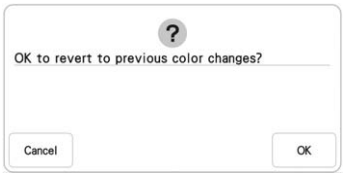
This message is displayed when the machine is in embroidery edit mode, and you try to use an editing function when the pattern is not completely within the red outline.



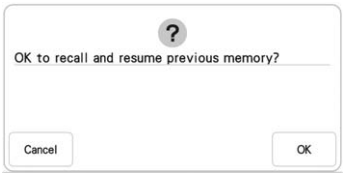
This message is displayed when you try to save a copyright protected pattern to USB media or computer. According to copyright laws, patterns that are illegal to reproduce or edit cannot be saved to USB media or computer. If this message displays, save the pattern in the machine’s memory.



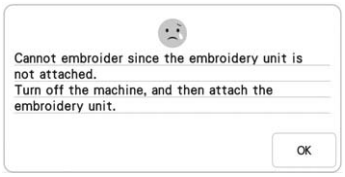
This message is displayed when the machine is in embroidery mode and the small frame is attached, and the selected pattern does not fit in the small frame.
This message appears when embroidery frame (small) is attached while aligning the embroidery position using the built-in camera.



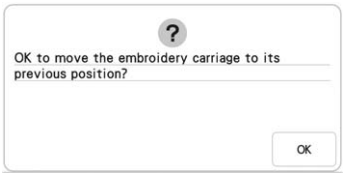
This message is displayed when Reset is pressed when changing thread colors.



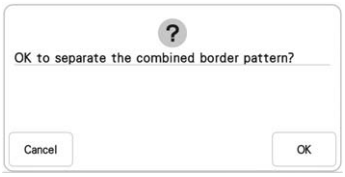
This message appears if the machine is turned off while embroidering, then turned on again. Press OK to return the machine to the condition (pattern position and number of stitches) when it was turned off. Follow the procedure described in “If the Thread Breaks During Embroidering” on page 57 to align the needle position and embroider the remainder of the pattern.



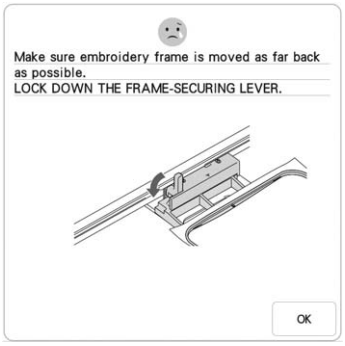
This message is displayed when the “Start/Stop” button is pushed and the machine is in embroidery mode, but the embroidery unit is not attached.



This message is displayed when replacing the embroidering bobbin thread.



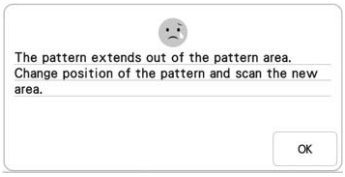
This message is displayed when rotating a saved combined pattern in the Embroidery screen.



This message is displayed when the embroidery frame is attached.

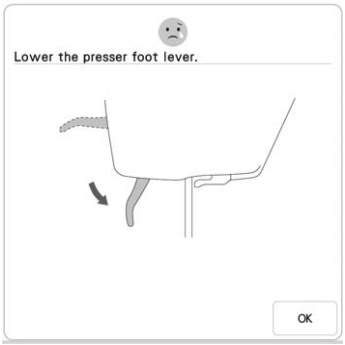
This message is displayed when the machine failed to recognize the embroidery positioning mark.
- Confirm that the embroidery positioning mark is in the selected area. If problem persists, refer to page 51 to reposition mark.

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 . (page 51)



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. Refer to page 46.

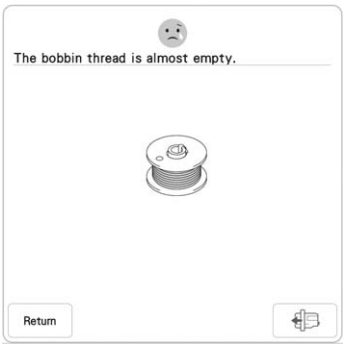
This message is displayed when the upper thread is broken or not threaded correctly, and the “Start/ Stop” button or the “Reverse/ Reinforcement Stitch” button is pressed.



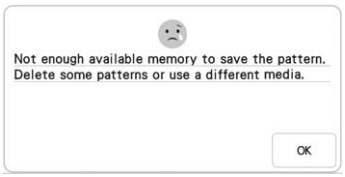
This message is displayed when the “Presser Foot Lifter” button is pushed while the presser foot lever is raised/the needle is lowered.

This message is displayed when the “Start/ Stop” button is pushed while the machine is in embroidery edit mode and a pattern is being edited.

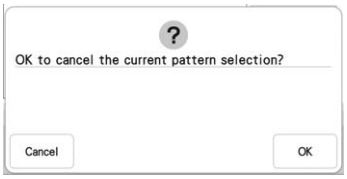
This message is displayed when there is no stitch or embroidery pattern selected and the “Start/ Stop” button or the “Reverse/Reinforcement Stitch” button is pressed.



This message is displayed when the bobbin thread is running out.



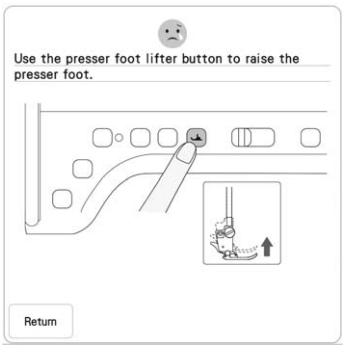
This message is displayed when the memory is full and the stitch or pattern cannot be saved.



This message is displayed when, after selecting a pattern 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.

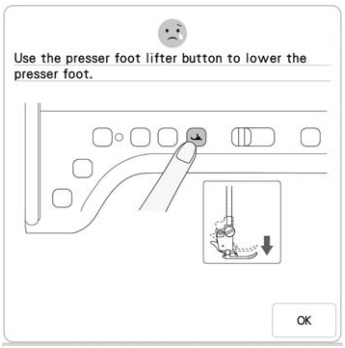


This message is displayed when the embroidery unit is attached and the power is turned on with the needle in the down position.

This message is displayed when you try to use incompatible media.

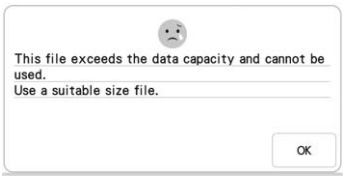
This message is displayed when you attempt to select a pattern after the USB media in which the pattern is saved has been changed.

This message is displayed when an error occurs with the USB media.



This message is displayed when a button, such as the “Start/Stop” button, is pushed while the presser foot is raised.

This message is displayed when it seems that the upper thread has not been threaded correctly.

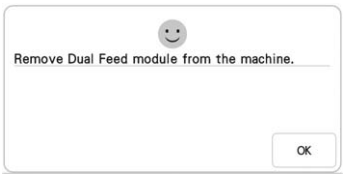


This message is displayed when the file size exceeds the data capacity of the machine.
Confirm the file size and format.

This message appears if the file format is incompatible with this machine. Check the list of compatible file formats.

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 embroidering with the dual feed foot attached to the machine. Remove the dual feed foot before entering the embroidery mode.

■ 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 page 4 of the settings screen, and then change the setting for “Machine Speaker Volume”. For details, refer to the Instruction and Reference Guide (Sewing).

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