baby lock®

espire®

Instruction and Reference Guide

Model BLSR

Baby Lock Consumer Helpline: 800-313-4110
www.babylock.com

IMPORTANT SAFETY INSTRUCTIONS

When using this machine, basic safety precautions should always be taken, including the following:
Read all instructions before using.

DANGER - To reduce the risk of electric shock:

1. The machine should never be left unattended while plugged in. Always unplug the machine from the electrical outlet immediately after using and before cleaning.

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

1. Do not allow this machine to be used as a toy. Close attention is necessary when the machine is used by or near children.
2. Use this machine only for its intended use as described in this manual. Use only accessories recommended by the manufacturer as contained in this manual.
3. 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 dropped into water. Return the machine to the nearest authorized retailer or service center for examination, repair, electrical or mechanical adjustment.
4. Never operate the machine with any air openings blocked. Keep ventilation openings of the machine and foot control free from the accumulation of lint, dust, and loose cloth.
5. Never drop or insert any object into any opening.
6. Do not use outdoors.
7. Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
8. To disconnect, turn the main switch to the symbol "○" position which represents off, then remove plug from outlet.
9. Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
10. Keep fingers away from all moving parts. Special care is required around the machine needle.
11. Always use the proper needle plate. The wrong plate can cause the needle to break.
12. Do not use bent needles.
13. Do not pull or push fabric while stitching. It may deflect the needle causing it to break.
14. Switch the machine to the symbol "○" position when making any adjustments in the needle area, such as threading needle, changing needle, threading bobbin, or changing presser foot, and the like.
15. Always unplug the machine from the electrical outlet when removing covers, lubricating, or when making any other user servicing adjustments mentioned in the instruction manual.
16. This sewing machine is not intended for use by young children or infirm persons without supervision.
17. Young children should be supervised to ensure that they do not play with this machine.
18. If the LED light unit (light-emitting diode) is damaged, it must be replaced by authorized retailer.

SAVE THESE INSTRUCTIONS

This machine is intended for household use.

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

If this machine is fitted with a three-pin non-rewireable BS plug then please read the following.

IMPORTANT

If the available socket outlet is not suitable for the plug supplied with this equipment, it should be cut off and an appropriate three-pin plug fitted. With alternative plugs an approved fuse must be fitted in the plug.

NOTE

The plug served from the main lead must be destroyed as a plug with bared flexible cords is hazardous if engaged in a live socket outlet. 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.

WARNING

DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER 'E', BY THE EARTH SYMBOL ⏚ OR COLOURED GREEN OR GREEN AND YELLOW.

The wires in this main lead are coloured in accordance with the following code:

Blue	Neutral
Brown	Live

As the colours of the wiring in the main lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

The wire which is coloured blue must be connected to the terminal which is marked with the letter 'N' or coloured black or blue.

The wire which is coloured brown must be connected to the terminal which is marked with the letter 'L' or coloured red or brown.

Federal Communications Commission (FCC)
Declaration of Conformity (For USA Only)

Responsible Party: Tacony Corporation
1760 Glisinn Lane
Fenton, Missouri 63026

declares that the product

Product Name: Baby Lock Sewing Machine
Model Number: BLSR

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

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

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

CONGRATULATIONS ON CHOOSING OUR MACHINE

Your machine is the most advanced computerized household sewing machine. To fully enjoy all the features incorporated, we suggest that you study the manual.

PLEASE READ BEFORE USING THIS MACHINE

For safe operation

1. Be sure to keep your eye on the needle while sewing. Do not touch the handwheel, thread take-up lever, needle, or other moving parts.
2. Remember to turn off the power switch and unplug the cord when:
   - Operation is completed
   - Replacing or removing the needle or any other parts
   - A power failure occurs during use
   - Maintaining the machine
   - Leaving the machine unattended.
3. Do not store anything on the foot controller.
4. Plug the machine directly into the wall. Do not use extension cords.
5. Do not place or store the machine near heaters or other hot appliances, in any location exposed to extremely high or low temperatures, high humidity or dusty locations. Doing so could cause the machine to malfunction.
6. Never operate the 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 retailer or service center for examination, repair, electrical or mechanical adjustment.

For a longer service life

1. 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.
2. Use only neutral soaps or detergents to clean the case. Benzene, thinner, and scouring powders can damage the machine, and should never be used.
3. Do not drop or hit the machine.
4. Always consult the operation manual when replacing or installing any assemblies, the presser feet, needle, or other parts to assure correct installation.
5. Use only the interface cable (USB cable) included with this machine.

For repair or adjustment

In the event a malfunction occurs or adjustment is required, first follow the troubleshooting table in the back of the operation manual to inspect and adjust the machine yourself. If the problem persists, please consult your local authorized Baby Lock retailer.

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

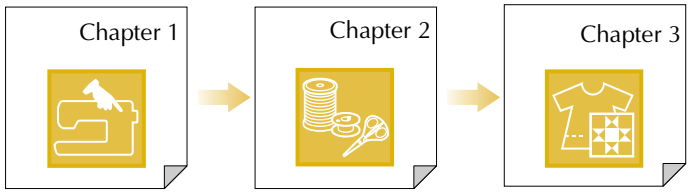
The contents of this manual and specifications of this product are subject to change without notice.

HOW TO USE THIS MANUAL

Chapters 1 and 2 describe to the first-time user the initial operations for using this machine and the basic sewing operations.

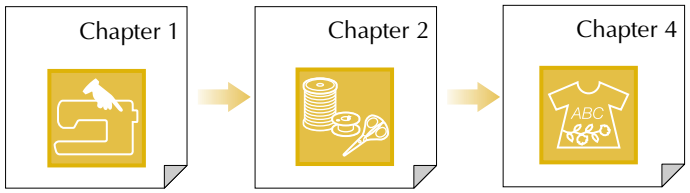
To sew utility stitches

Continue with chapter 3 to learn how to select a stitch and sew using the various stitches.



To sew characters and patterns

Continue with chapter 4 to learn basic operations, from selecting patterns to sewing, in addition to operations such as combining and editing patterns to rotate or resize them, and storing combined patterns.



- Parts related to operations described in the procedures are highlighted in gold.
  Perform the operations while comparing the screens in the procedures with those that appear on the machine.

- If, while using the machine, you have questions about an operation or you would like to know more about a specific function, refer to the index (Page 147) and the table of contents to find the section of the manual to refer to.

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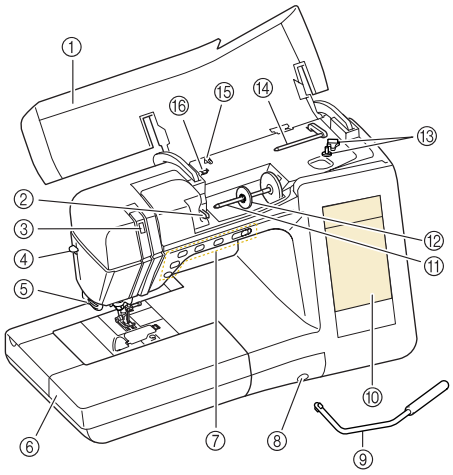
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NAMES OF MACHINE PARTS AND THEIR FUNCTIONS

Machine

■ Front View



① **Top cover**
Open the top cover to thread the machine and wind the bobbin.

② **Thread guide plate**
Pass the thread around the thread guide plate when threading the upper thread.

③ **Thread take-up lever check window**
Look through the window to check the position of the take-up lever.

④ **Needle threader lever**
Use the needle threader lever when threading the needle automatically.

⑤ **Thread cutter**
Pass the threads through the thread cutter to cut them.

⑥ **Flat bed attachment with accessory compartment**
Store presser feet and bobbins in the accessory compartment of the flat bed attachment. Remove the flat bed attachment when sewing cylindrical pieces such as sleeve cuffs.

⑦ **Operation buttons (5 buttons) and sewing speed controller**
Use these buttons to perform various operations, such as starting sewing and raising or lowering the needle.
Slide the sewing speed controller to adjust the sewing speed while using utility stitches.

⑧ **Knee lifter slot**
Insert the knee lifter into the slot.

⑨ **Knee lifter**
Use the knee lifter to raise and lower the presser foot.

⑩ **LCD (liquid crystal display)**
Stitch settings can be viewed and edited, and operations for using the machine can be displayed, and error messages appear in the LCD.

⑪ **Spool pin**
Place a spool of thread on the spool pin.

⑫ **Spool cap**
Use the spool cap to hold the spool in place.

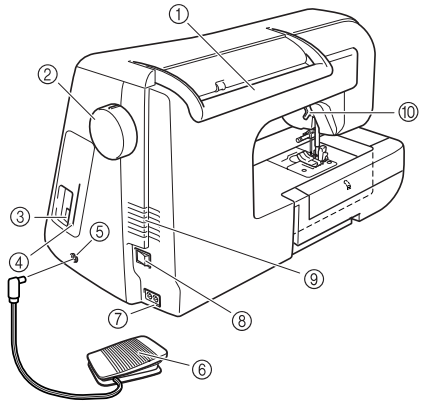
⑬ **Bobbin winder**
Use the bobbin winder when winding the bobbin.

⑭ **Supplemental spool pin**
Use this spool pin to wind the bobbin thread while sewing or to sew with the twin needle.

⑮ **Thread guide**
Pass the thread through this thread guide when winding the bobbin thread.

⑯ **Bobbin winding thread guide**
Pass the thread around this thread guide when winding the bobbin thread.

■ Right-side/Rear View



① **Handle**
When transporting the machine, carry it by this handle.

② **Handwheel**
Turn the handwheel toward you to sew one stitch or to raise or lower the needle.

③ **USB connector**
Plug in a USB cable to connect a computer.

④ **Touch pen holder**
Use the touch pen holder to hold the touch pen when it is not being used.

⑤ **Foot controller jack**
Insert the plug on the end of the foot controller cord into the foot controller jack.

⑥ **Foot controller**
Press the foot controller to control the speed of the machine.

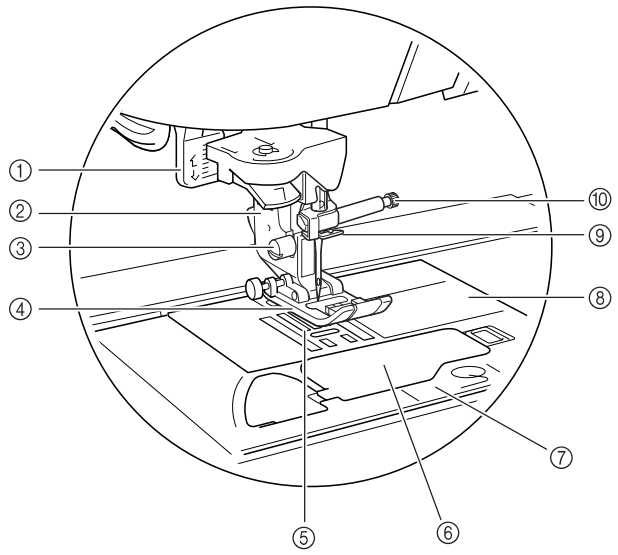
⑦ **Jack connector**
Insert the power cord into the jack connector.

⑧ **Main power switch**
Use the main power switch to turn the machine ON and OFF.

⑨ **Air vent**
Do not cover the air vent while the sewing machine is being used.

⑩ **Presser foot lever**
Raise and lower the presser foot lever to raise and lower the presser foot.

Needle and Presser Foot Section



① **Buttonhole lever**
Lower the buttonhole lever when sewing buttonholes and bar tacks.

② **Presser foot holder**
The presser foot is attached to the presser foot holder.

③ **Presser foot holder screw**
Use the presser foot holder screw to hold the presser foot holder in place.

④ **Presser foot**
The presser foot consistently applies pressure to the fabric as it is sewn. Attach the appropriate presser foot for the selected stitch.

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

⑥ **Bobbin cover**
Open the bobbin cover to insert the bobbin.

⑦ **Needle plate cover**
Remove the needle plate cover to clean the bobbin case and race.

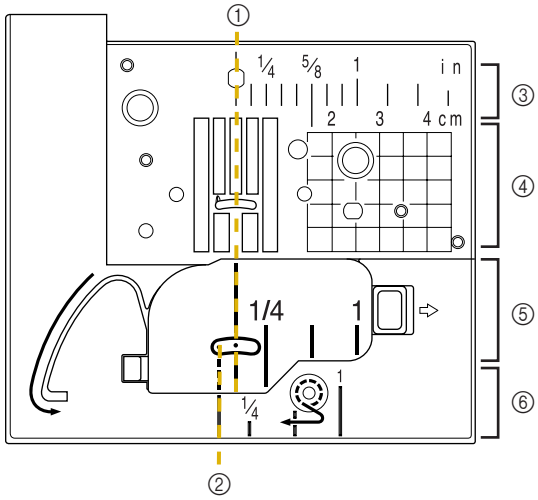
⑧ **Needle plate**
The needle plate is marked with guides to help sew straight seams.

⑨ **Needle bar thread guide**
Pass the upper thread through the needle bar thread guide.

⑩ **Needle clamp screw**
Use the needle clamp screw to hold the needle in place.

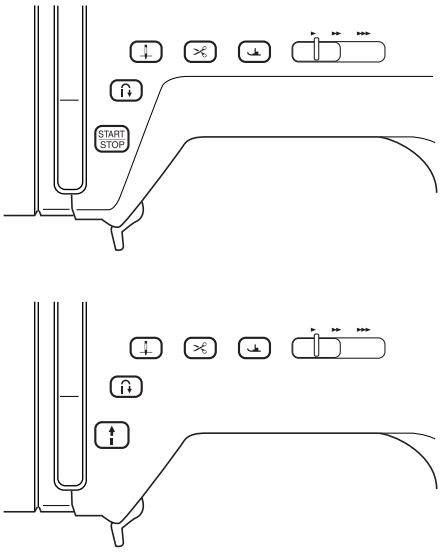
Measurements on the needle plate, bobbin cover and needle plate cover

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



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

Operation Buttons



① **"Start/Stop" button** (START STOP)

When this button is pressed, the machine sews a few stitches at a low speed, then begins sewing at the speed set by the sewing speed controller. Press this button again to stop sewing. This button lights up in a different color depending on the machine's operating condition.

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

② **"Reverse/Reinforcement Stitch" button**

This button is used to sew reinforcement stitches at the beginning and end of stitching. When this button is pressed, the machine sews 3 to 5 stitches in the same spot, then stops automatically. For straight and zigzag stitches that take reverse stitches, the machine sews reverse stitches (stitches sewn in the opposite direction) at low speed only while the "Reverse/Reinforcement Stitch" button is held down.

③ **"Needle Position" button**

Use this button to change the sewing direction or for detailed sewing in small areas. Press this button to raise or lower the needle position. Press this button twice to sew a single stitch.

④ **"Thread Cutter" button**

Press this button after sewing to automatically trim the excess thread.

⑤ **"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.

⑥ **Sewing speed controller**

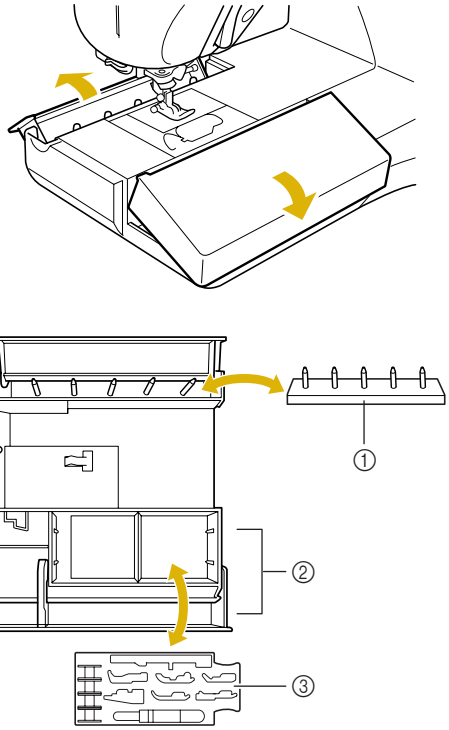
Slide the sewing speed controller to the left or right to adjust the sewing speed. Slide the controller to the left to sew at lower speeds. Slide the controller to the right to sew at higher speeds. Beginners should sew at a lower speed until they become familiar with the machine.

⚠ CAUTION

- **Do not press the "Thread Cutter" button after the threads have already been cut. Otherwise, the needle may break, the threads may become tangled, or damage to the machine may occur.**

Included Accessories

The accessories are stored in the flat bed attachment. Open the flat bed attachment as shown below.



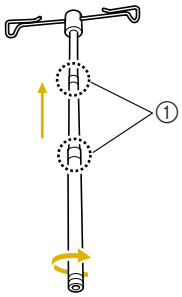
① **Bobbin stand**
(Place the bobbins on the pins to store them.)

② **Storage space**

③ **Presser foot storage tray**
(Store presser feet marked A, G, I, J, M, N, and R.)

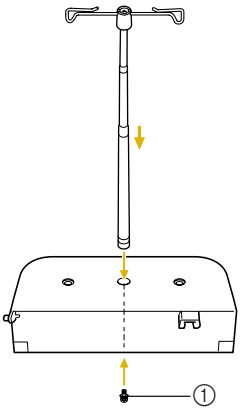
■ How to Assemble the Spool Stand

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



① Stoppers

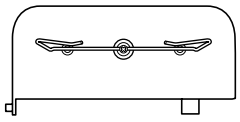
2 **Insert the telescopic thread guide into the round hole at the center of the spool support, and then use a screwdriver to securely tighten the screw from the reverse side.**



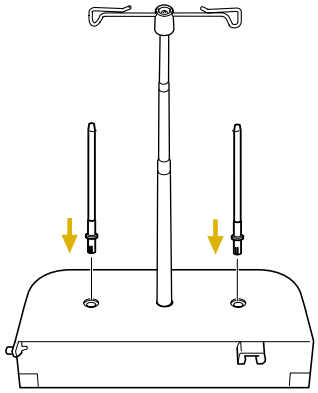
① Screw

Note

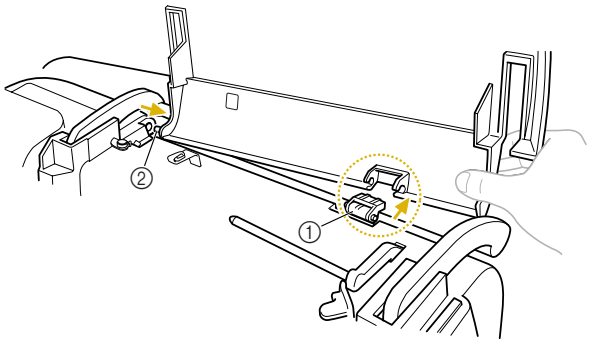
Make sure that the stoppers on the telescopic thread guide shaft are firmly in place and that the top of the thread guide is parallel to the spool support. In addition, check that the shaft is straight up from the spool support.



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

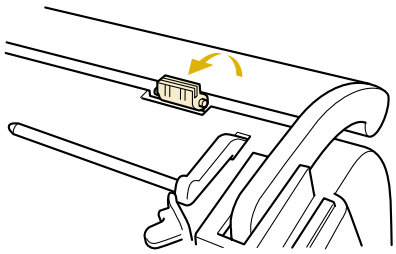


4 **Open the upper cover of the machine. With your right hand, snap the cover toward the back to release the cover from the latch. Slide the upper cover to the right so that the pin on the left side is disengaged, and then remove the upper cover.**

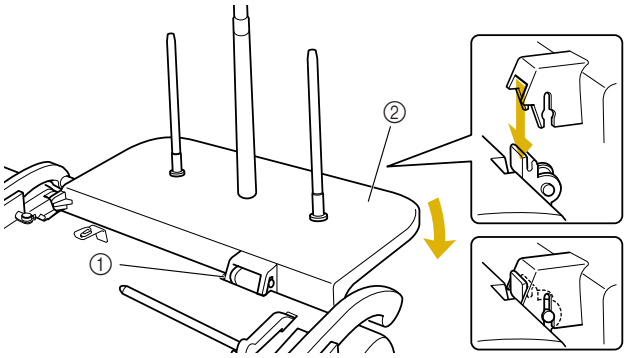


① Latch
② Pin

5 **Raise the latch on the machine toward you.**



6 **With the lower part of the stand between the handle and machine, slide the spool stand to the left so that the pin fits into the hole in the machine, and then fit the spool stand into the latch.**



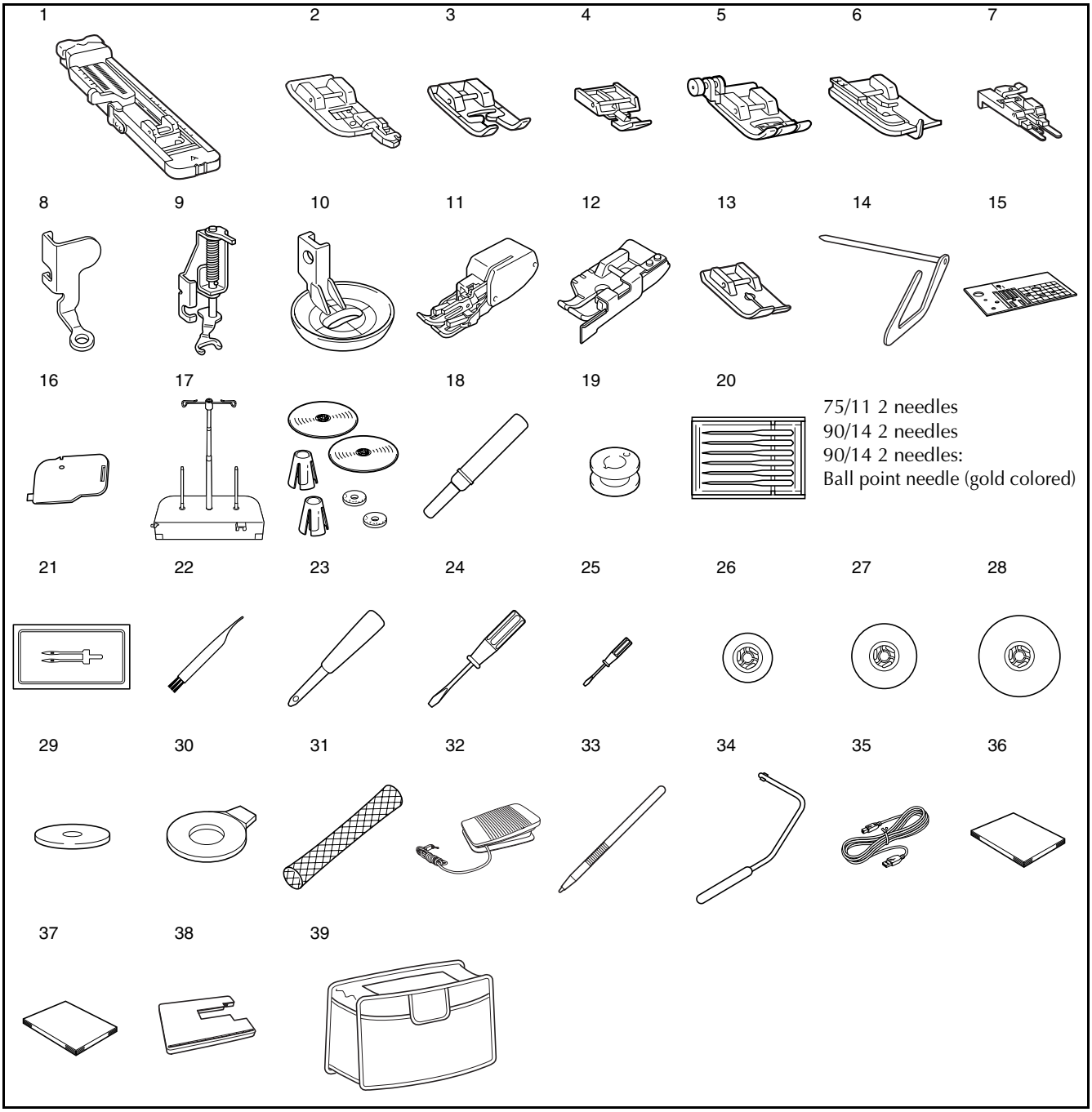
① Latch
② Spool stand

Note

Make sure that the latch of the machine is positioned toward you and that the spool stand firmly fits into the groove in the latch.

Memo

For details on using the spool stand, refer to the enclosed instruction sheet.


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75/11 2 needles
90/14 2 needles
90/14 2 needles:
Ball point needle (gold colored)
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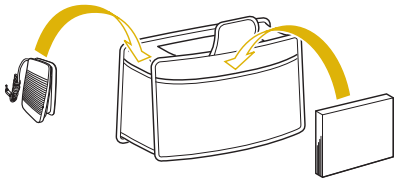
No.	Part Name	Part Code
1	Buttonhole foot “A”	X57789-151
2	Overcasting foot “G”	XC3098-051
3	Monogramming foot “N”	X53840-351
4	Zipper foot “I”	X59370-051
5	Zigzag foot “J” (on machine)	XC3021-051
6	Blind stitch foot “R”	X56409-051
7	Button fitting foot “M”	130489-001
8	Free-motion quilting foot “C”	XE0765-001
9	Free-motion open toe quilting foot “O”	XE0767-001
10	Free-motion echo quilting foot “E”	XE0766-001
11	Walking foot	XA8320-104
12	1/4” quilting foot with guide	XC6800-251
13	Straight stitch foot	XD0826-051
14	Quilting guide	XA7208-001
15	Straight stitch needle plate	XC8362-051
16	Cord guide bobbin cover (with single hole)	XC8449-051
17	Spool stand	XE0774-001
18	Seam ripper	X54243-051
19	Bobbin × 10	X52800-150
20	Needle set	X58358-051
21	Twin Needle	X59296-151
22	Cleaning brush	X59476-051
23	Eyelet punch	135793-001
24	Screwdriver (large)	XC8349-051
25	Screwdriver (small)	X55468-051
26	Spool cap (small) × 2	130013-154
27	Spool cap (medium) × 2 One is on the machine.	X55260-153
28	Spool cap (large) × 2	130012-054
29	Spool felt	X57045-051
30	Disc-shaped screwdriver	XC1074-051
31	Spool net	XA5523-050
32	Foot controller	XC8816-051
33	Touch pen (stylus)	XA9940-051
34	Knee lifter	XA6941-052
35	USB cable	XD0745-051
36	Instruction and Reference Guide	XE1070-001
37	Quick Reference Guide	XE1071-001
38	Extension table	XE0796-001
39	Soft cover	XE1123-001

Memo

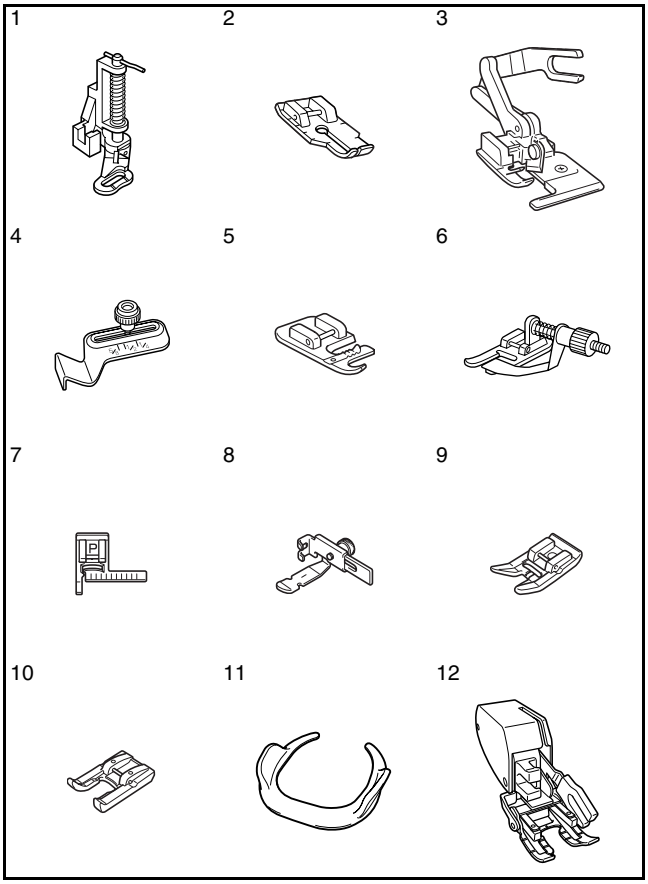
(For U.S.A. only)
Foot controller: Model T
This foot controller can be used with this machine model BLSR.

Memo

- For details on using parts 13, 17 and 38, refer to the instruction sheet enclosed with item.
- Always use accessories recommended for this machine.
- The screw for the presser foot holder is available through your authorized retailer (part code: XA4813-051).
- This instruction and reference guide and the foot controller can be stored in the soft cover.



Options



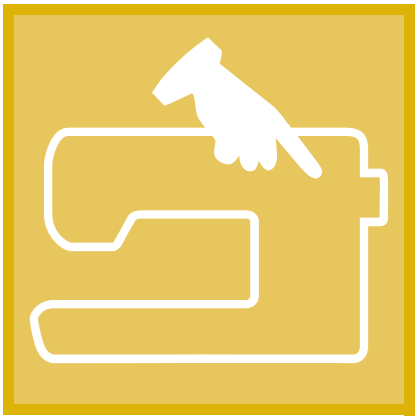
No.	Part Name	Part Code
1	Quilting foot	FA2
2	1/4” quilting foot	FA1
3	Side cutter foot	FA10
4	Seam guide	BLG-SG
5	Cording foot (3 cord guide)	XA6871-001
6	Blind stitch foot (with guide)	XA0059-001
7	Stitch guide foot “P”	FA6
8	Adjustable zipper/piping foot	FA9
9	Non stick foot	FA8
10	Open toe foot	FA7
11	Free-motion grip	* See note.
12	Open toe walking foot	* See note.

Memo

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

Note

Visit your authorized Baby Lock retailer for complete listing of optional accessories available for your machine.



Chapter 1
Getting Ready

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Using the Machine Operation Mode Key 23
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■ Winding the Bobbin Using the Spool Pin 27
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Using the Twin Needle 32

CHANGING THE PRESSER FOOT 34

Removing the Presser Foot 34
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CHANGING THE NEEDLE 35

■ Checking the Needle 35
■ About the Needle 37
■ Fabric/Thread/Needle Combinations 37

SEWING LARGE PIECES OF FABRIC 38

TURNING THE MACHINE ON/OFF

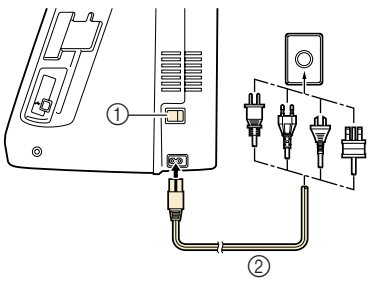
⚠ WARNING

- Use only regular household electricity as 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 supply jack on the machine.
- 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

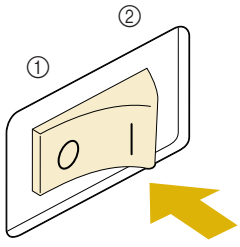
- Use only the power cord included with this machine.
- Do not use extension cords or multi-plug adapters with many other appliances plugged in to them. Fire or electric shock may result.
- Do not touch the plug with wet hands. Electric shock may result.
- When unplugging the machine, always turn the main power to OFF first. Always grab the power cord plug or power cord connector to remove it from the wall outlet or power cord jack connector. 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 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, either the machine or the electrical set 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 cord into the power cord jack connector, then insert the plug into a wall outlet.**



① Main power switch
② Power cord

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



① OFF
② ON

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

LCD SCREEN

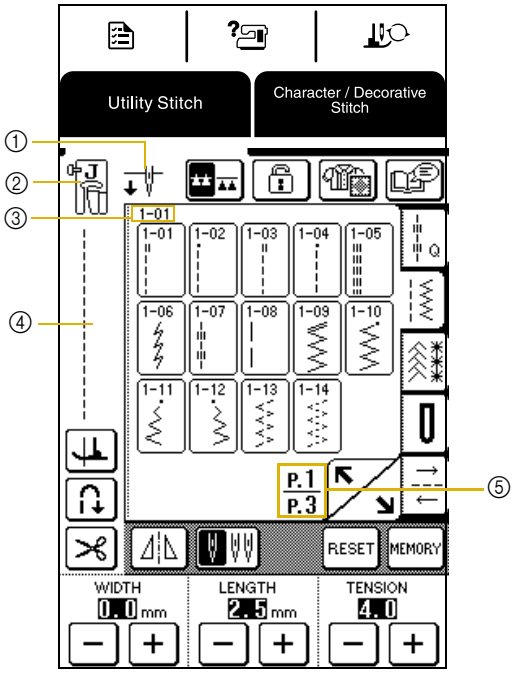
■ Display Precautions

- Only touch the display with your finger or the touch pen included with the machine. Do not use a mechanical pencil, screwdriver or any other hard or sharp objects. In addition, do not press the display with extreme pressure, otherwise damage to the display may result.
- All or part of the display may sometimes become darker or lighter due to fluctuations in the surrounding temperature or other changes in the environment. This is not a sign of a malfunction. If the display is difficult to read, adjust its brightness (see page 22).
- The display may be dark immediately after the machine is turned on. This is a normal characteristic of the backlight and is not a sign of a malfunction. After approximately 10 minutes, the display should reach its normal level of brightness.
- If you are not directly facing the display, the colors may be distorted or the screen may be difficult to read. This is a normal characteristic of the display and is not a malfunction. Be sure to sit in front of the display while using it.

When the machine is turned on, the opening screen appears. The machine can be set so that the opening screen is not displayed (see page 22).
Lightly press the display with your finger. Depending on the setting, either “Q-01 Piecing stitch (Middle)”, “1-01 Straight stitch (Left)” or “1-03 Straight stitch (Middle)” is automatically selected (see page 22).

Memo

It may take some time until the opening screen appears. This is not a sign of a malfunction.



① Shows whether the machine is set for a single needle or twin needle, and the needle position when the machine is stopped. The desired needle position can be set (see page 22).

For a single needle



Single needle/down position



Single needle/up position

For a twin needle



Twin needle/down position



Twin needle/up position

② Presser foot code
Attach the indicated presser foot before sewing.
③ Shows the number for the selected stitch (only for utility stitches).
④ Shows a preview of the selected stitch.
⑤ Shows the current page number and the total number of pages available in the category selected.

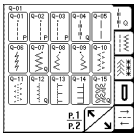
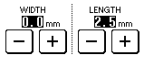
■ Key Functions

With your finger or the touch pen, press a key at the top of the display () to change the screen that is displayed.

Operation panel

No.	Key	Name	Function	Page
❶		Machine setting mode key	Press this key to change the needle stop position, turn the buzzer on/off, adjust the pattern or screen, and change other machine settings.	22
❷		Machine operation mode key	Press this key to see descriptions for upper threading, winding the bobbin, changing the presser foot, and other operations for using the machine.	23
❸		Presser foot / Needle exchange key	Press this key when changing the needle or presser foot. Pressing this key locks all keys and operation buttons so that parts can safely be changed. Press this key again to unlock the keys and buttons. When machine operations are displayed, the screen for the needle/presser foot replacement mode is not displayed.	34, 35
❹	Utility Stitch	Utility stitch key	Press this key to select a straight stitch, zigzag stitch, buttonhole, blind hem stitch, or other stitch (utility stitch) commonly used in quilting or garment sewing.	52
❺	Character / Decorative Stitch	Character/Decorative Stitch key	Press this key to select character or decorative stitches.	102

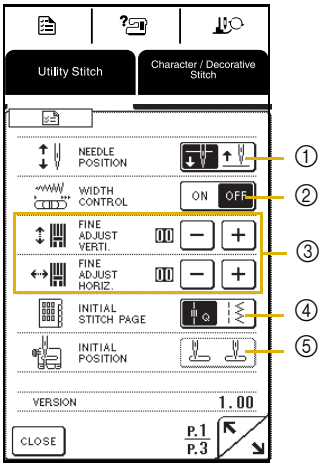
Screen

No.	Key	Name	Function	Page
⑥		Drop feed key	For free-motion sewing, press this key to lower the feed dogs (free-motion sewing mode). In addition, the key automatically appears as  and the feed dogs are lowered when button sewing is selected.	62, 95
⑦		Screen lock key	Press this key to lock the screen. When the screen is locked, the various settings, such as the stitch width and stitch length, are locked and cannot be changed. Press this key again to unlock the settings.	49
⑧		Sewing type selection key	Press this key when you need help selecting the appropriate stitch for the sewing application and when you need instructions on how to sew the selected stitch. This key is very helpful for beginners.	54
⑨		Pattern explanation key	Press this key to see how the selected stitch can be used.	24
⑩		Stitch selection display	Press the key for the stitch that you want to sew. Press one of the  keys to change the pattern selection screen.	52
⑪		Pivot key	Press this key to select the pivot setting. When the pivot setting is selected, stopping the machine lowers the needle and slightly raises the presser foot automatically. In addition, when sewing is restarted, the presser foot is automatically lowered. • If this key appears as , it cannot be used.	47
⑫		Automatic reinforcement stitch key	Press this key to select 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 stitching (depending on the selected stitch, reverse stitches may be sewn). Press this key again to cancel the setting.	45
⑬		Automatic thread cutting key	Press this key to select the automatic thread cutting setting. If you select this setting before sewing, the machine will automatically sew reinforcement stitches (or reverse stitches, depending on the selected stitch) and trim the threads when the “Reverse/Reinforcement Stitch” button is pressed. Press this key again to cancel the setting.	46
⑭		Mirror image key	Press this key to create a mirror image of the selected stitch. • If this key appears as , it cannot be used.	53
⑮		Needle mode selection key (single/twin)	Before sewing with the twin needle, press this key to select the setting for twin needle sewing. Each time this key is pressed, the setting switches between that for single needle sewing and twin needle sewing. • If this key appears as , it cannot be used.	32
⑯		Reset key	Press this key to return the selected stitch saved settings to the original settings.	53
⑰		Manual memory key	Change the stitch settings (zigzag width and stitch length, thread tension, automatic thread cutting or automatic reinforcement stitching, etc.), then save them by pressing this key.	53
⑱		Stitch width and stitch length keys	Shows the stitch width (zigzag width) and the stitch length settings of the currently selected stitch. Press + or − to adjust the stitch width and stitch length settings. • If -.- mm appears, the setting cannot be adjusted.	44
⑲		Thread tension keys	Shows the thread tension setting of the currently selected stitch. The thread tension is usually set automatically. Press + or − to adjust the thread tension setting.	45

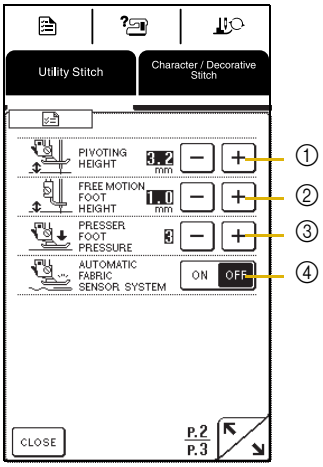
Using the Machine Setting Mode Key

Press [ ] to change the needle stop position, turn the buzzer on/off, adjust the pattern or screen, and change other basic machine settings. The settings specified here are the default settings.

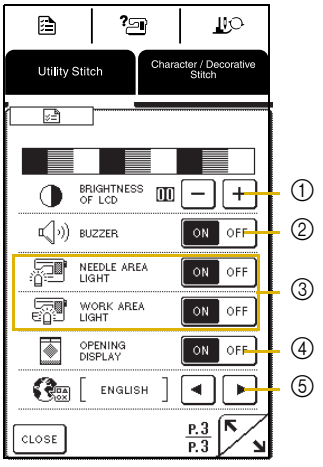
Press [ ] to display the previous or next page.



① Select whether the needle stops in the raised or lowered position when the machine is stopped.
② Select whether to use the sewing speed controller or to adjust the zigzag width (see page 61).
③ Make adjustments to the character and decorative stitches (see page 106).
④ Select whether the screen containing quilting stitches ( ) or utility stitches ( ) is the first screen that is displayed.
⑤ 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.
Cannot be selected if the quilting stitch category ( ) is selected for "INITIAL STITCH PAGE".



① Change the height of the presser foot when sewing is stopped when the pivot setting is selected (see page 47). Adjust the presser foot to one of the three heights (3.2 mm, 5.0 mm and 7.5 mm).
② Change the height of the presser foot when the machine is set to free-motion sewing mode (see page 62).
③ Adjust the presser foot pressure between 1 (light) and 4 (firm).
* Set the pressure to 3 for normal sewing.
④ When set to "ON", the thickness of the fabric is automatically detected by an internal sensor while sewing, so the fabric can be fed smoothly (see pages 43, 48 and 62).
When "PRESSER FOOT PRESSURE" is set to "1", this function is not available even if it is set to "ON".



① Adjust the brightness of the display.
* Press [−] to make the screen lighter.
* Press [+] to make the screen darker.
Adjust the brightness so that the contrast between ■ and ▤ can be clearly seen.

② Turn on/off the buzzer.
③ Turn on/off the needle area and work area lights.
④ Select whether or not the opening screen appears when the machine is turned on.
⑤ Select one of the 3 display languages: [English], [French], [Spanish]

Memo

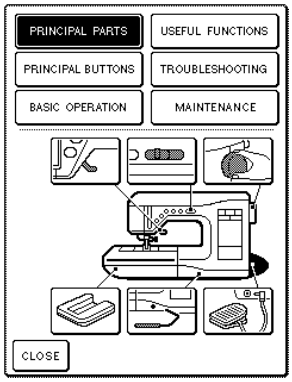
The latest version of software is installed in your machine. Check with your local authorized Baby Lock or our web site (www.babylock.com) for notification of available updates (see page 137).

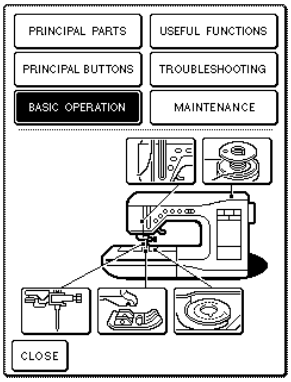
Using the Machine Operation Mode Key

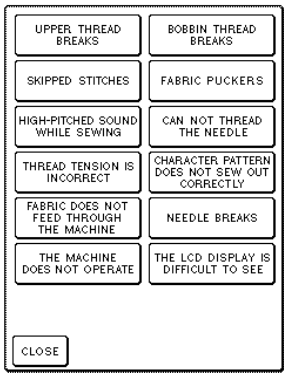
Basic machine operations and other information based on the contents of this Operation Manual are stored in this machine.

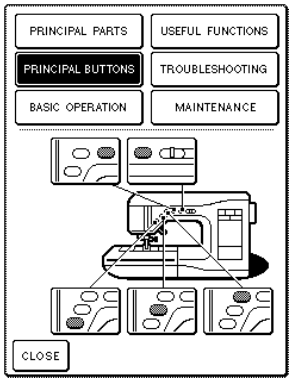
Press [?] to open the screen shown below. Six categories are displayed at the top of the screen. Press a key to see more information about that category.

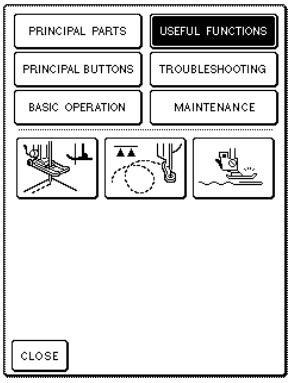
■ Contents of Each Category

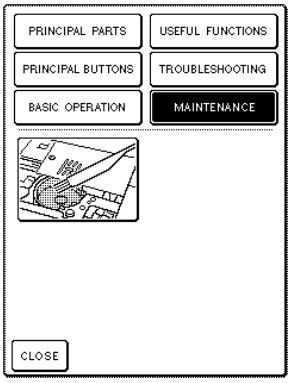
<table>
<tr><th>Names of Machine Parts and Their Functions</th><th>Sewing Basics</th><th>Troubleshooting</th></tr>
<tr>
<td>


 Presser foot lever
 Sewing speed controller
 Handwheel
 Flat bed attachment with accessory compartment
 Knee lifter
 Foot controller
</td>
<td>


 Upper threading
 Bobbin winding
 Changing the needle
 Changing the presser foot
 Setting the bobbin
</td>
<td>


</td>
</tr>
<tr><th>Main Buttons</th><th>Useful Functions</th><th>Maintenance</th></tr>
<tr>
<td>


 “Thread Cutter” button
 “Presser Foot Lifter” button
 “Start/Stop” button
 “Reverse/Reinforcement Stitch” button
 “Needle Position” button
</td>
<td>


 Pivoting
 Automatic drop feed (Free-motion mode)
 Automatic fabric sensor system (Automatic Presser Foot Pressure)
</td>
<td>


 Cleaning the Race and Shuttle
</td>
</tr>
</table>

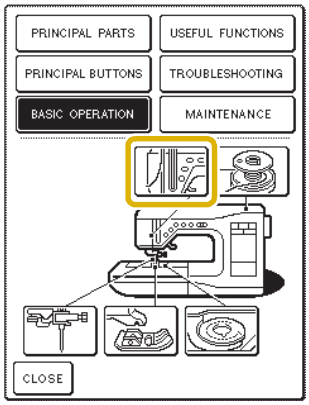
Example: Displaying information about upper threading

1 **Press** [?] .

2 **Press** [BASIC OPERATION] .

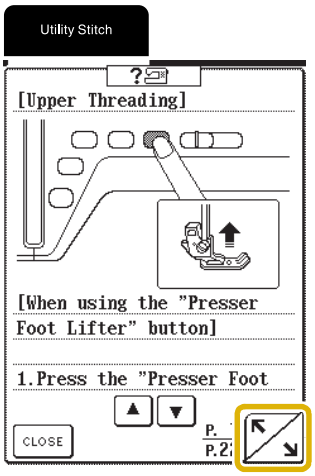
→ A list of basic operations appears in the lower half of the screen.

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



→ The instructions for threading the machine appear.

4 **Press** [P.1/P.2] **to view the next page.**



5 **When you are finished with the instructions, press** [CLOSE] .

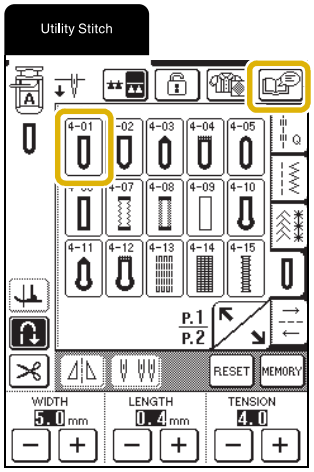
→ Press [▲] or [▼] to scroll through additional information for that page.

Using the Pattern Explanation Key

To learn more about the uses for a stitch, select the stitch, and then press [?] to see a description of the selected stitch.

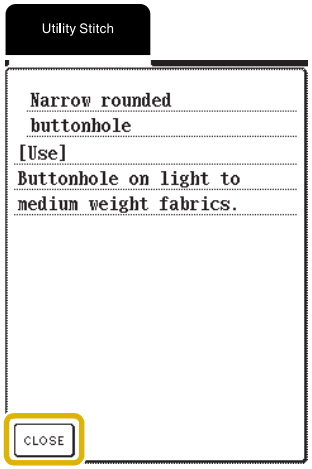
Example: Displaying information on the use for [4-01].

1 **Select** [4-01] **, and then press** [?] .



→ Uses for [4-01] appear.

2 **When you are finished with the instructions, press** [CLOSE] .



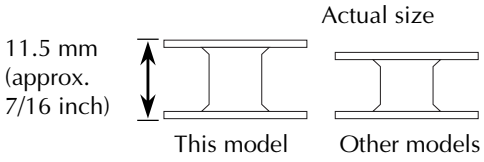
LOWER/UPPER THREADING

Winding the Bobbin

This section describes how to wind thread onto a bobbin. With this machine, you can use the supplemental spool pin to wind the bobbin while sewing using the main spool pin.

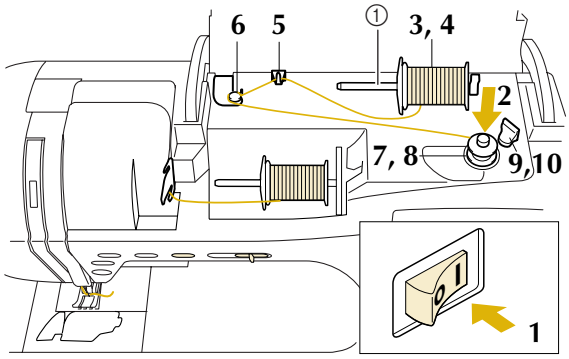
⚠ CAUTION

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



■ Using the Supplemental Spool Pin

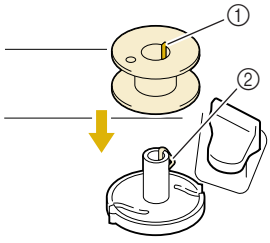
While sewing, the bobbin can conveniently be wound.



① Supplemental spool pin

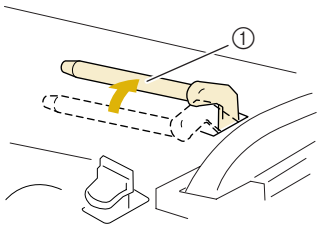
1 Turn on the machine, and then open the top cover.

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



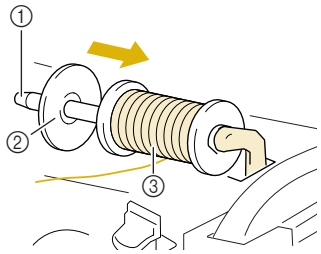
① Groove in bobbin
② Spring on bobbin winder shaft

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 the thread unwinds from the front. Then, slide the spool cap as far as possible onto the supplemental spool pin to secure the thread spool.



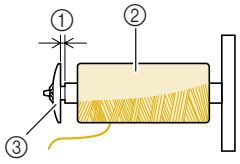
① Supplemental spool pin
② Spool cap
③ Thread spool

⚠ CAUTION

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

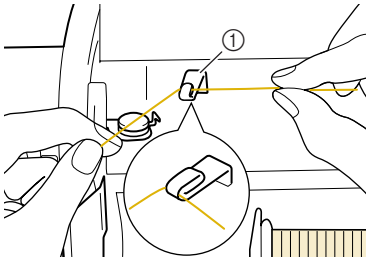
Note

When using cross-wound thread on a thin spool, use the small spool cap, and leave a small gap between the cap and the thread spool.



① Gap
② Cross-wound thread
③ Spool cap (small)

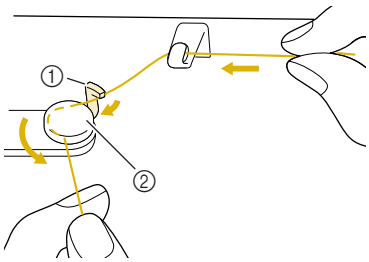
5 **While holding the thread from the spool in your right hand, hold the end of the thread with your left hand, and then pass the thread through the thread guide.**



① Thread guide

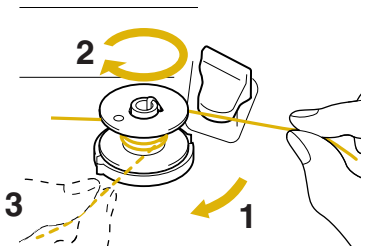
6 **Pass the thread under the pin on the bobbin winding thread guide, and then pass it around the pretension disk.**

* Make sure that the thread passes under the pretension disk.

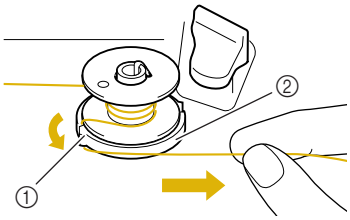


① Pin
② Pretension disk

7 **Wind the thread clockwise around the bobbin four or five times.**



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



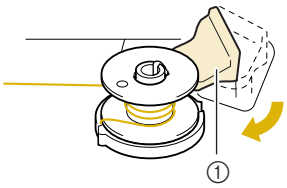
① Guide slit
② Bobbin winder seat

⚠ 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.**

9 **Slide the bobbin holder to the left until it snaps into place.**

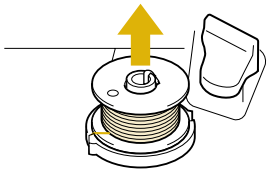
* When the bobbin holder is set to the left, it works as a switch to make the bobbin wind automatically.



① Bobbin holder (switch)

→ The bobbin stops spinning automatically when it is full, and the bobbin holder returns to its original position.

10 **Cut the thread, and then remove the bobbin.**

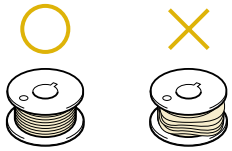


Note

When removing the bobbin, pull up only on the bobbin. Do not pull on the bobbin winder seat, otherwise it may become loose, resulting in damage to the machine.

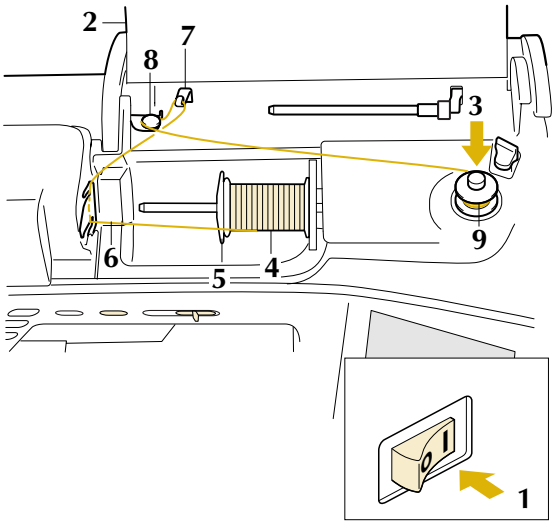
⚠ CAUTION

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



■ Winding the Bobbin Using the Spool Pin

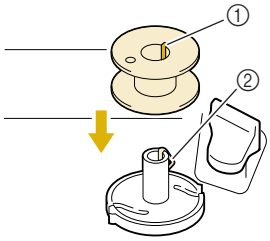
The main spool pin cannot be used to wind the bobbin while sewing. For details, see "Using the Supplemental Spool Pin" on page 25.



1 **Turn on the machine.**

2 **Open the top cover.**

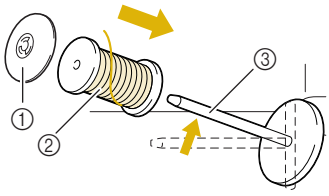
3 **Align the groove in the bobbin with the spring on the bobbin winder shaft, and then slide the bobbin onto the shaft.**



① Groove in bobbin
② Spring on bobbin winder shaft

4 **Pivot the spool pin so that it angles upward, and then place the spool of thread on the spool pin.**

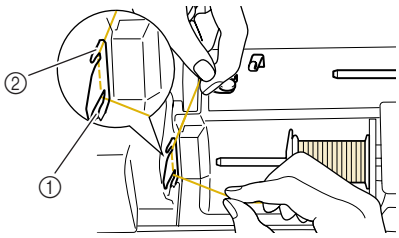
* Make sure that the thread unwinds from the front.



① Spool cap
② Thread spool
③ Spool pin

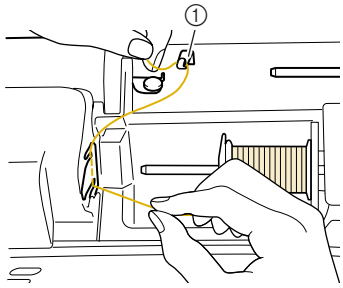
5 **Slide the spool cap as far as possible onto the spool pin, and then return the spool pin to its original position.**

6 **While holding the thread from the spool with both hands, pull the thread through the lower notch in the thread guide plate, then through the upper notch.**



① Lower notch in the thread guide plate
② Upper notch in the thread guide plate

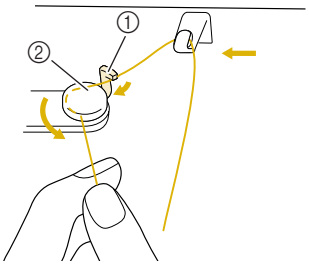
7 **Pass the thread through the thread guide.**



① Thread guide

8 **Pass the thread under the pin on the bobbin winding thread guide, and then pass it around the pretension disk.**

* Make sure that the thread passes under the pretension disk.



① Pin
② Pretension disk

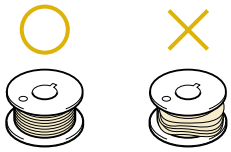
9 **Follow steps 7 through 10 on page 26.**

Setting the Bobbin

This section describes how to set a bobbin wound with thread into the machine. You can begin sewing without pulling up the bobbin thread. If you wish to pull up the bobbin thread, for example, when sewing gathers, follow the procedure described in the next section.

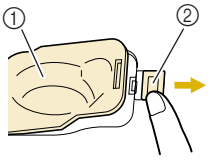
⚠ CAUTION

- **Use a bobbin thread that has been correctly wound. Otherwise, the needle may break or the thread tension will be incorrect.**



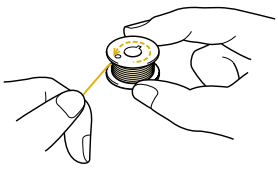
1 **Press the "Presser Foot Lifter" button to raise the presser foot.**

2 **Slide the bobbin cover latch to the right, and then remove the bobbin cover.**

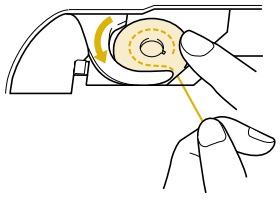


① Bobbin cover
② Latch

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



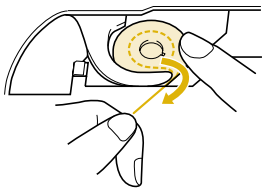
4 **Insert the wound bobbin into the bobbin case so that the thread unwinds in the direction of the arrow.**



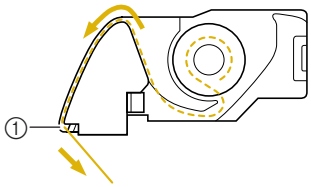
⚠ CAUTION

- **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.**

5 **Lightly hold down the bobbin with your right hand, and then, while slightly pulling the thread with your left hand, guide it through the groove.**

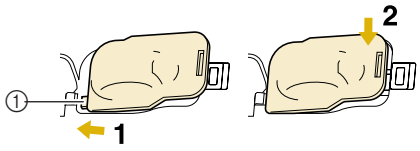


6 **After guiding the thread completely through the groove, pull it toward you to cut it with the cutter.**



① Cutter

7 **Attach the bobbin cover by inserting the tab in the lower-left corner of the bobbin cover, then lightly press down on the right side of the cover until it snaps into place.**



① Tab

Pulling Up the Bobbin Thread

There may be some sewing applications where you may want to pull up the bobbin thread, for example, when making gathers or with free-motion quilting. Follow the procedure described below to pull up the bobbin thread.

Memo

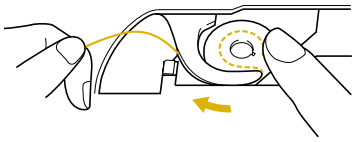
Thread the upper thread before pulling up the bobbin thread. For details, see "Upper Threading" on page 29.

1 **Follow steps 1 through 4 from the previous section to insert the bobbin into the bobbin case.**

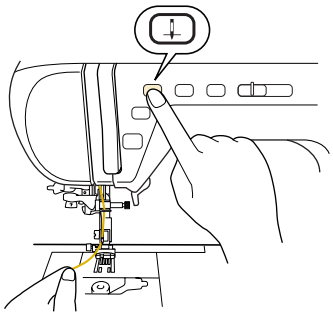
2 **Guide the bobbin thread through the groove, following the arrow in the illustration.**

Note

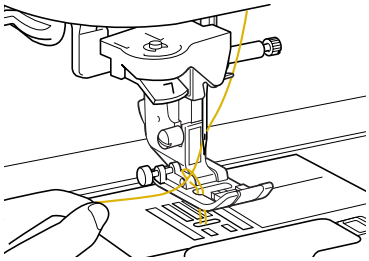
- Do not cut the thread with the cutter.
- Do not attach the bobbin cover.



3 **While lightly holding the upper thread, press the "Needle Position" button twice to lower, then raise the needle.**

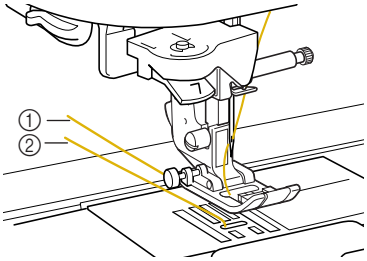


4 **Gently pull the upper thread to pull up the bobbin thread.**



→ A loop of the bobbin thread comes out from the hole in the needle plate.

5 **Pull out about 100 mm of the bobbin thread, and then pass it under the presser foot toward the rear of the machine, making it even with the upper thread.**



① Upper thread
② Bobbin thread

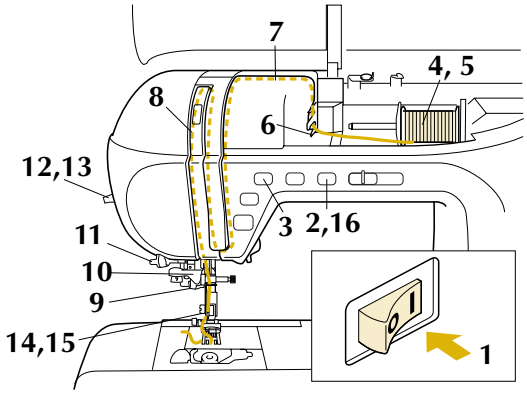
6 **Attach the bobbin cover.**

Upper Threading

This section describes how to thread the machine and the needle. The machine is marked with numbers that indicate the threading order.

⚠ CAUTION

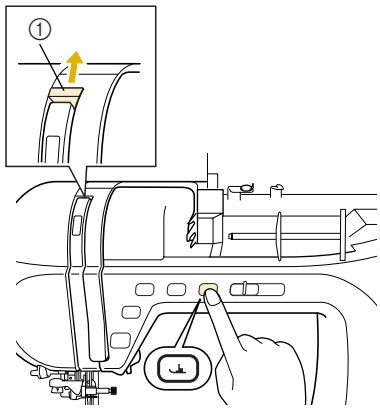
- **Be sure to thread the machine properly. Improper threading can cause the thread to tangle and break the needle, leading to injury.**
- **When using accessories not included with this machine, attach the accessory to the machine after threading the machine.**



1 **Turn on the machine.**

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

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

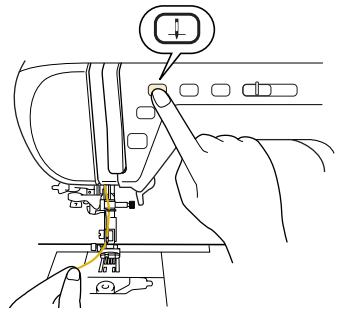


① Upper thread shutter

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.**

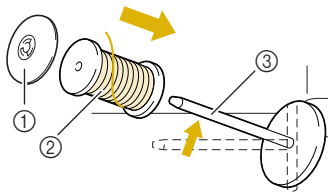


Note

If you try to thread the needle with the needle threader lever without raising it, damage to the machine may result.

4 **Pivot the spool pin so that it angles upward, and then place the spool of thread on the spool pin.**

* Make sure that the thread unwinds from the front.



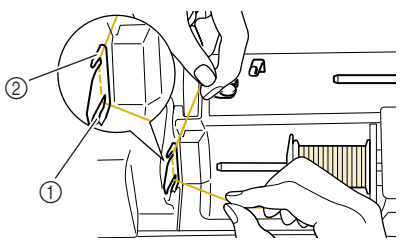
① Spool cap
② Thread spool
③ Spool pin

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

CAUTION

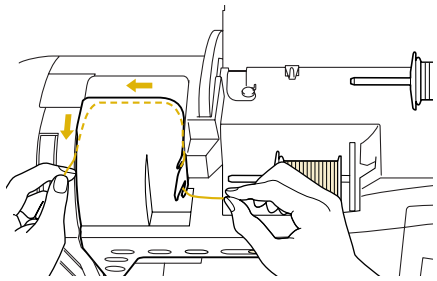
- **If the thread spool and/or spool cap are set incorrectly, the thread may tangle on the spool pin and cause the needle to break.**
- **Use the spool cap (large, medium, or small) that is closest in size to the thread spool. If a spool cap smaller than the thread spool is used, the thread may become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

6 **While holding the thread from the spool with both hands, pull the thread through the lower notch in the thread guide plate, then through the upper notch.**

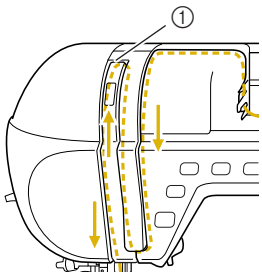


① Lower notch in the thread guide plate
② Upper notch in the thread guide plate

7 **While holding the thread from the spool in your right hand, hold the end of the thread with your left hand, and then guide the thread through the groove, following the arrows in the illustration.**



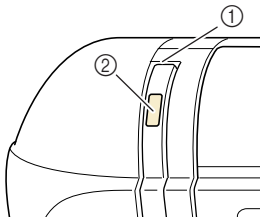
8 **Guide the thread down, up, then down through the groove, as shown in the illustration.**



① Upper thread shutter

Memo

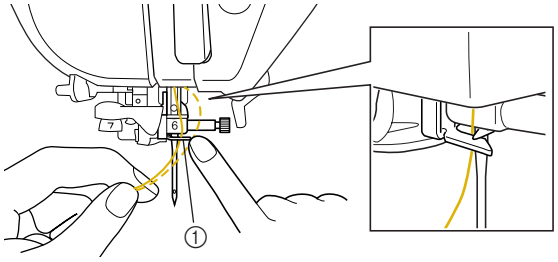
Look through the take-up lever check window to check the position of the take-up lever. Before threading the machine, make sure that the take-up lever is in the raised position.



① Upper thread shutter
② Thread take-up lever check window

9 **Pass the thread through the needle bar thread guide (marked "6").**

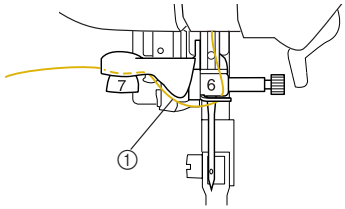
* Hold the thread with both hands and fully pass it through the guide, as shown in the illustration.



① Needle bar thread guide

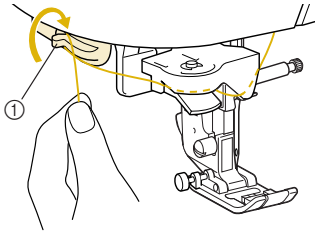
10 **Pass the thread through the thread guide disks (marked "7").**

* Make sure that the thread passes through the groove in the thread guide.
* Make sure that the thread securely enters the thread guide disks, otherwise the needle may not be threaded.



① Groove in thread guide

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

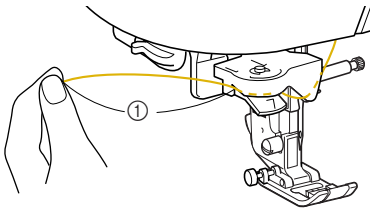


① Thread cutter

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").



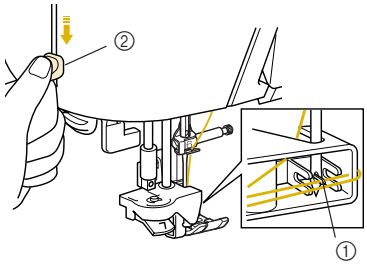
① 80 mm or more

12 **Lower the needle threader lever slowly until it clicks.**

* The hook is rotated and passes through the eye of the needle.

Note

- If the needle threader lever is lowered quickly, the needle may not be threaded.
- Make sure that no objects, such as the fabric, are touching the hook.



① Hook
② Needle thread lever

13 **Release the needle threader lever.**

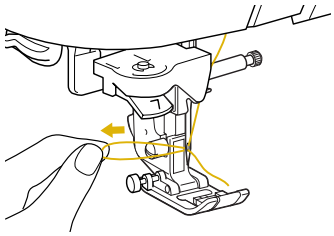
→ The thread passes through the eye of the needle.

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

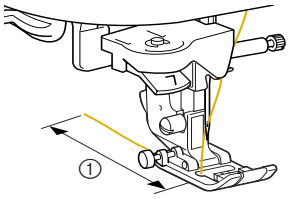
Note

Do not pull the thread strongly. Otherwise, the needle may bend or break.

* 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.



15 **Pull out about 100 mm (approx. 3-4 inches) of the thread, and then pass it under the presser foot toward the rear of the machine.**



① 100 mm

16 **Press the "Presser Foot Lifter" button to lower the presser foot before starting to sew.**

Memo

This completes the upper threading procedure.

Note

- The needle threader can be used with home sewing machine needles 75/11 through 100/16. For details on appropriate needle and thread combinations, see "Fabric/Thread/Needle Combinations" on page 37.
- If automatic needle threading could not be completed correctly, repeat the procedure, starting with the needle bar thread guide (marked "6").
- 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.

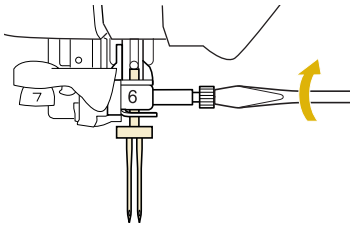
Using the Twin Needle

Using the twin needle, you can sew two parallel lines of the same stitch. Although the same bobbin thread is used, interesting patterns can be sewn by threading each needle with a different color of thread. Both upper threads should have the same thickness and quality. The twin needle can only be used with patterns where  appears when they are selected. Check the "STITCH SETTING CHART" at the end of this manual for patterns that can be used with the twin needle.

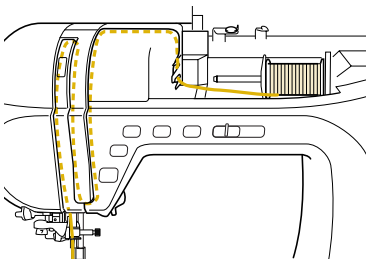
⚠ CAUTION

- **Use only twin needles made for this machine (part code X59296-151). Other needles could break, resulting in damage.**
- **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, be sure to use presser foot "J". In case bunched stitches may occur, use the presser foot "N".**

1 **Press , and then install the twin needle (see "CHANGING THE NEEDLE" on page 35).**

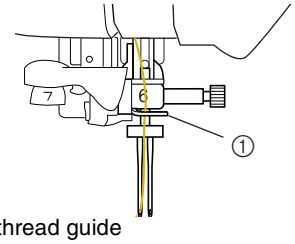


2 **Thread the machine for the first needle according to the procedure for threading a single needle (see "Upper Threading" on page 29).**



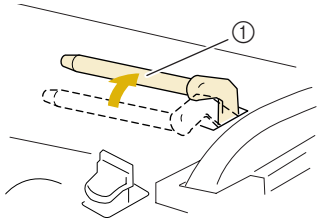
3 **Pass the thread through the needle bar thread guide, and then manually thread the needle on the left side.**

* Do not use needle threader when threading a twin needle.



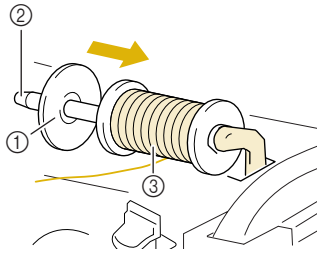
① Needle bar thread guide

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



① Supplemental spool pin

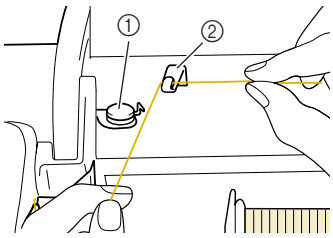
5 **Place the additional spool of thread on the supplemental spool pin so that the thread unwinds from the front. Then, slide the spool cap as far as possible onto the supplemental spool pin to secure the thread spool.**



① Spool cap
② Supplemental spool pin
③ Thread spool

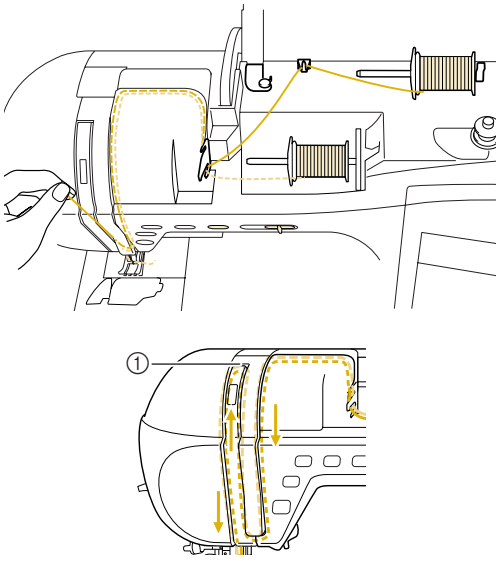
6 **While holding the thread from the spool in your right hand, hold the end of the thread with your left hand, and then pass the thread through the thread guide.**

* Do not pass the thread through the bobbin winding thread guide.



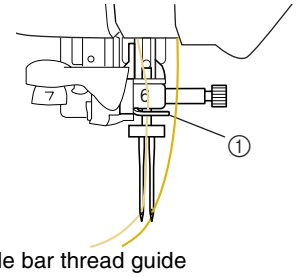
① Bobbin winding thread guide
② Thread guide

7 **While holding the thread from the spool with both hands, 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.**



① Shutter

8 **Without passing the thread through the needle bar thread guide, manually thread the needle on the right side.**



① Needle bar thread guide

Note

The needle threader cannot be used. Manually pass the thread through the eye of the needle from the front. If the needle threader is used, damage to the machine may result.

9 **Press [ ], or press [END] in the screen.**

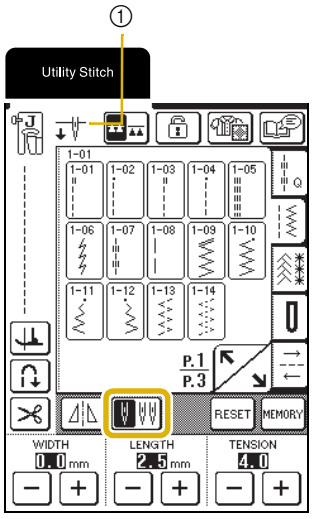
10 **Select a stitch.**

Note

If [ ] appears as [ ] after a stitch is selected, the twin needle cannot be used with the selected stitch.

11 **Press [ ] to select the setting for twin needle sewing.**

* The stitch width becomes narrower than with single needle sewing.



① Single needle/twin needle setting

→ appears.

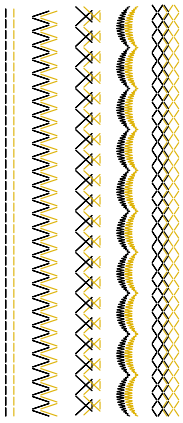
CAUTION

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

12 **Press the "Start/Stop" button after lowering the presser foot lever.**

Memo

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



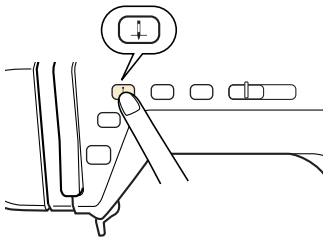
CHANGING THE PRESSER FOOT

⚠ CAUTION

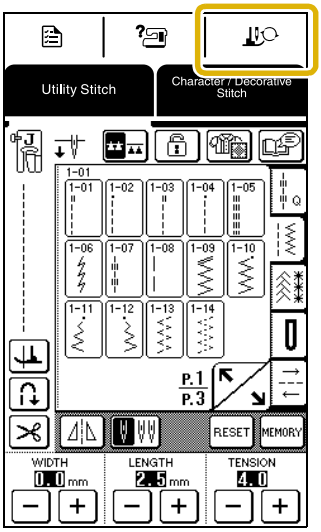
- **Always press [ ] in the operation panel before changing the presser foot. If [ ] is not pressed and the "Start/Stop" button or another button is pressed, the machine will start and may cause injury.**
- **Always use the correct presser foot for the selected stitch. If the wrong presser foot is used, 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

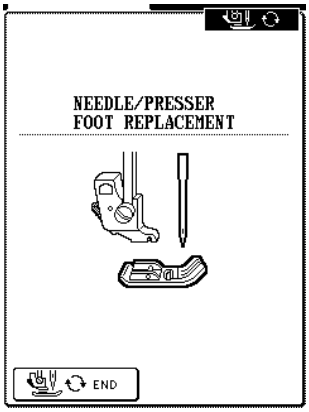
1. **Press the "Needle Position" button to raise the needle.**



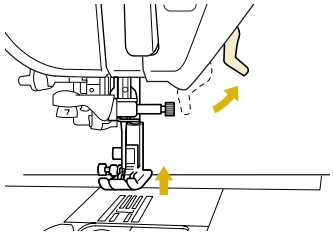
2. **Press [ ].**



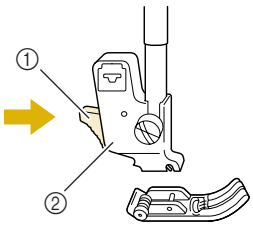
→ The screen changes, and all keys and operation buttons are locked.



3. **Raise the presser foot lever.**



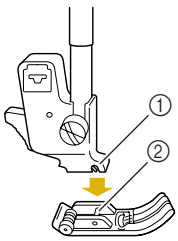
4. **Press the black button on the presser foot holder to remove the presser foot.**



① Black button
② Presser foot holder

Attaching the Presser Foot

1. **Place the presser foot under the holder, aligning the pin on the foot with the notch in the holder, and then lower the presser foot lever so that the presser foot pin snaps into the notch in the holder.**



① Notch
② Pin

2. **Press [ ], or press [END] in the screen.**

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

3. **Raise the presser foot lever.**

CHANGING THE NEEDLE

⚠ CAUTION

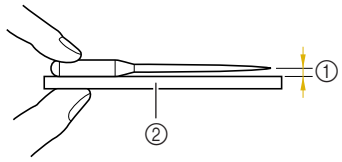
- **Always press [ ] in the operation panel before changing the needle. If [ ] is not pressed and the "Start/Stop" button or another operation button is pressed accidentally, the machine will start and injury may result.**
- **Use only sewing machine needles made for home use. Other needles may bend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

■ Checking the Needle

Place the flat side of the needle on a flat surface (such as the needle plate or a piece of glass) and check that the gap between the needle and the flat surface is even.

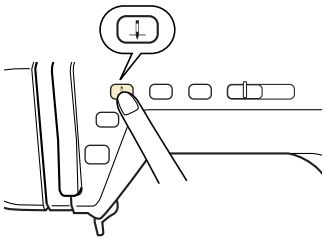
Note

Never use bent or blunt needles.

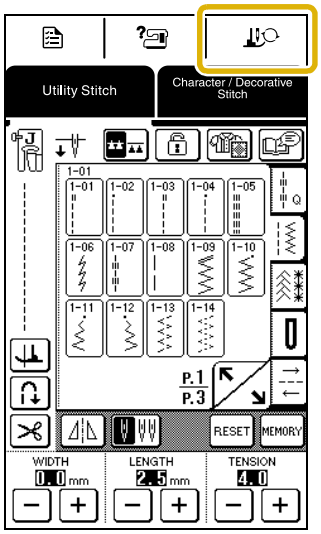


① Even gap
② Flat surface (bobbin cover, glass, etc.)

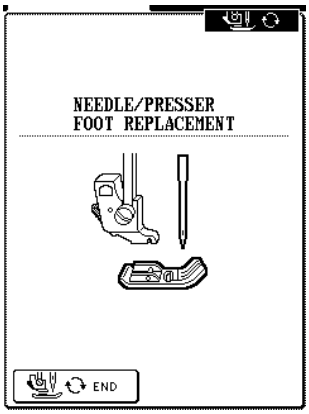
1 Press the "Needle Position" button to raise the needle.



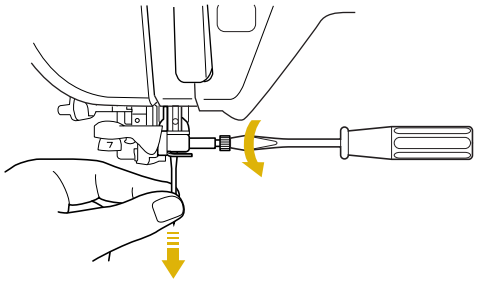
2 Press [ ].



→ The screen changes, and all keys and operation buttons are locked.

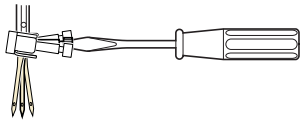


3 **Use the included screwdriver to turn the needle clamp screw toward the front of the machine to loosen it, and then remove the needle.**

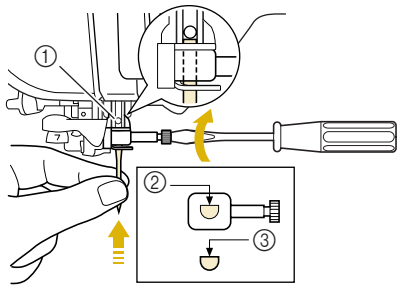


Note

Do not apply extreme force when loosening or tightening the needle clamp screw, otherwise damage to the machine may result.



4 **With the flat side of the needle facing the back, insert the new needle until it touches the needle stopper. Use the 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 [ ], or press [END] in the screen.**

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

■ About the Needle

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

- The smaller the needle number, the finer the needle. As the numbers increase, the needles get thicker.
- Use fine needles with lightweight fabrics, and thicker needles with heavyweight fabrics.
- To avoid skipped stitches, use ball point needle (gold colored) 90/14 with stretch fabrics.
- To avoid skipped stitches, use ball point needle (gold colored) 90/14 when sewing character or decorative stitches.
- Use a 90/14 to 100/16 needle with transparent nylon threads, regardless of the fabric being sewn.
- A home sewing machine needle 75/11 is inserted in the sewing machine.

■ Fabric/Thread/Needle Combinations

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

Fabric		Thread		Size of needle
		Type	Size	
Medium weight fabric	Broadcloth	Cotton	60 - 80	75/11 - 90/14
	Taffeta	Synthetic mercerized	60 - 80	
	Flannel, Gabardine	Silk or silk finished	50	
Lightweight fabric	Lawn, Batiste	Cotton	60 - 80	65/9 - 75/11
	Georgette	Synthetic mercerized	60 - 80	
	Challis, Satin	Silk	50	
Heavyweight fabric	Denim	Cotton	30 - 50	90/14 - 100/16
	Corduroy	Synthetic mercerized	50	
	Tweed	Silk	50	
Stretch fabric	Jersey	Thread for knits	50 - 60	Ball point needle (gold colored) 75/11 - 90/14
	Tricot			
Easily frayed fabrics		Cotton thread	50 - 80	65/9 - 90/14
		Synthetic thread		
		Silk thread	50	
For top stitching		Synthetic mercerized	30	90/14 - 100/16
		Silk	30	

Memo

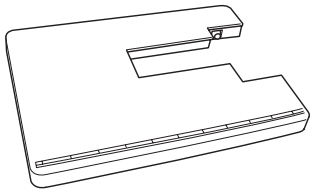
For transparent nylon thread, always use needle 90/14 - 100/16.
The same thread is usually used for the bobbin thread and upper threading.

⚠ CAUTION

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

SEWING LARGE PIECES OF FABRIC

The extension table makes sewing large pieces of fabric easier.

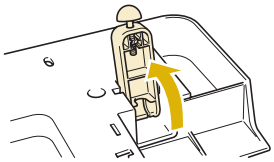


⚠ CAUTION

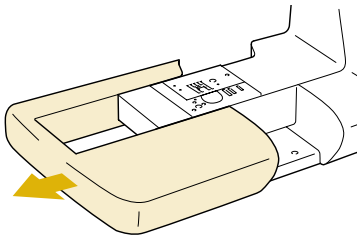
- **Do not move the sewing machine while the extension table is attached, otherwise damage or injuries may occur.**
- **Do not use the extension table for other purposes such as an ironing board. This can cause damage and injury.**

1 Open up the legs at the bottom of the extension table.

Pull out the four legs until they snap into place.



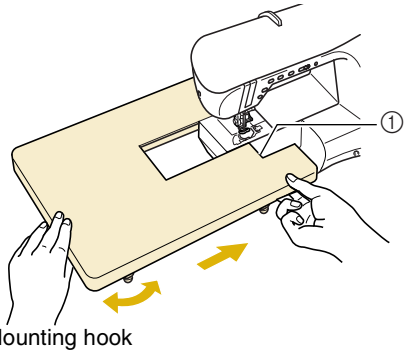
2 Turn off the power and pull the flat bed attachment off to the left.



→ With the flat bed attachment removed, free-arm sewing is possible.

3 Install the extension table.

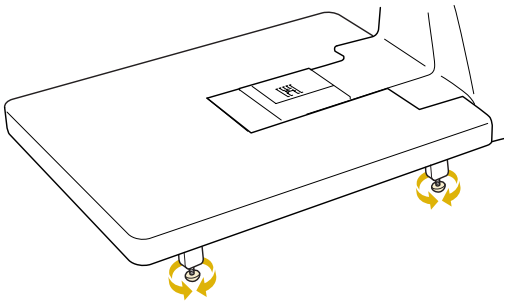
Keeping the extension table level, slowly slide it into place until the mounting hook clicks into position.



① Mounting hook

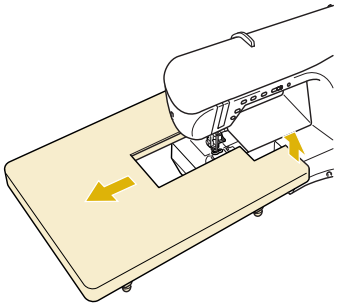
4 Rotate the rubber foot attached to the bottom of each leg to adjust the height.

Make sure that the extension table is either at the same level or slightly lower than the surface of the needle plate.



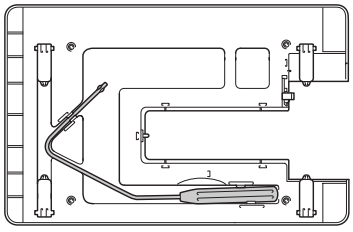
5 When you are finished using the extension table, remove it.

While slightly lifting up the extension table to release the mounting hook, pull the table off to the left.



Memo

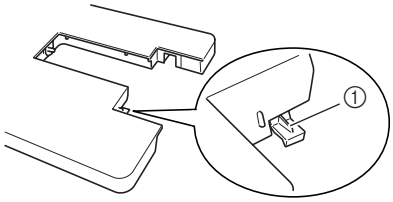
The knee lifter can be snapped into the bottom of the extension table for storage.



6 Install the flat bed attachment back in its original position.

⚠ CAUTION

- **Do not install or remove the extension table with force, otherwise the mounting hook may be damaged.**



① Mounting hook



Chapter 2
Sewing Basics

SEWING 40

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SEWING

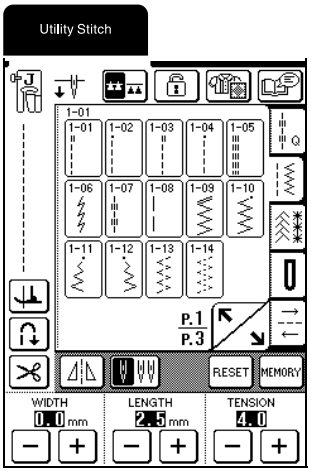
⚠ CAUTION

- **To avoid injury, pay special attention to the needle while the machine is in operation. Keep your hands away from moving parts while the machine is in operation.**
- **Do not stretch or pull the fabric during sewing. Doing so may lead to injury.**
- **Do not use bent or broken needles. Doing so may lead to injury.**
- **Take care that the needle does not strike 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 on the machine, and then press the "Needle Position" button to raise the needle.**

2 **Select a stitch.**



→ The symbol for the correct presser foot appears in the upper-left corner of the LCD.

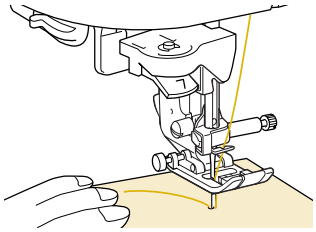
3 **Install the presser foot (see "CHANGING THE PRESSER FOOT" on page 34).**

⚠ 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.**

4 **Place the fabric under the presser foot, hold the fabric and thread ends with your left hand, and then turn the handwheel to lower the needle into the fabric at the starting point of the stitching.**

* The black button on the left side of presser foot "J" should be pressed only if the fabric does not feed or when sewing thick seams (see page 43). Normally, you can sew without pressing the black button.



5 **Lower the presser foot lever.**

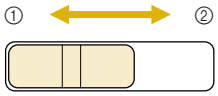
Memo

You can start sewing without pulling up the bobbin thread.

6 **Slide the sewing speed controller to adjust the sewing speed.**

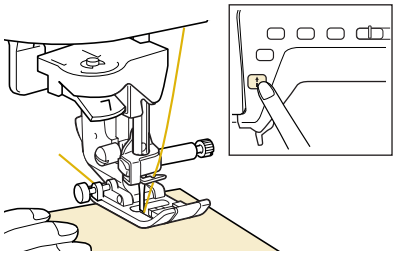
Memo

The sewing speed can also be adjusted during sewing.

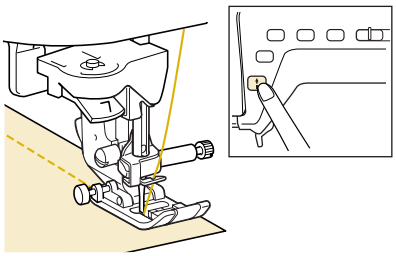


① Slow
② Fast

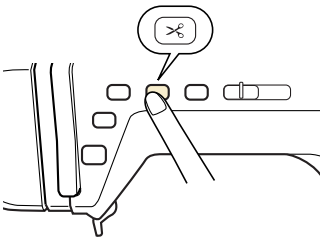
7 **Lightly place your hands on the fabric to guide it, and then press the "Start/Stop" button to start sewing.**



8 **To stop sewing, press the “Start/Stop” button again.**



9 **Press the “Thread Cutter” button to trim the threads.**



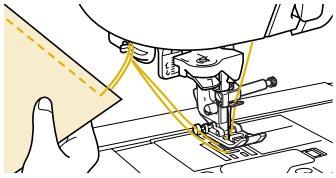
→ The needle automatically stops in the raised position, and the feed dogs are lowered.

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 thread or other decorative threads, use the thread cutter on the side of the machine.



10 **Raise the presser foot and remove the fabric.**

Memo

When the “Thread Cutter” button is pressed, the feed dogs are automatically lowered so the fabric can easily be removed, and then they are raised when sewing is started.

Note

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 stops automatically and a message appears in the screen. When this message appears, change the bobbin with one full of thread. However, if the “Start/Stop” button is pressed, a few stitches can be sewn.

■ Using the Foot Controller

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

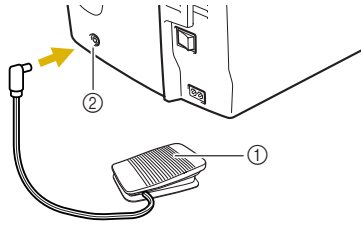
CAUTION

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

Memo

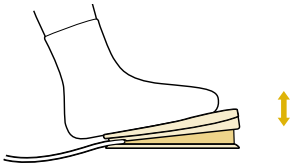
When the foot controller is being used, the “Start/Stop” button has no effect on sewing.

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



① Foot controller
② Foot controller jack

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



Memo

The speed set using the sewing speed controller is the foot controller’s maximum sewing speed.

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

Memo

(For U.S.A. only)

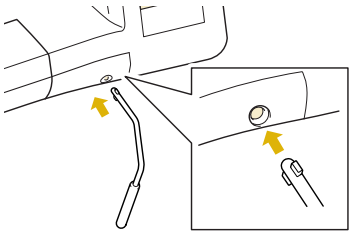
Foot controller: Model T

This foot controller can be used with model BLSR.

■ 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.

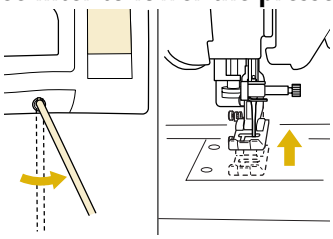
1 Align the tabs on the knee lifter with the notches in the jack, and then insert the knee lifter as far as possible.



Note

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

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



Note

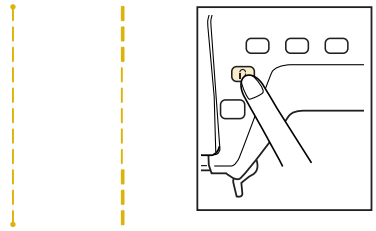
When the presser foot is in raised position, move the knee lifter further to the right for the presser foot to lower.

⚠ 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.**

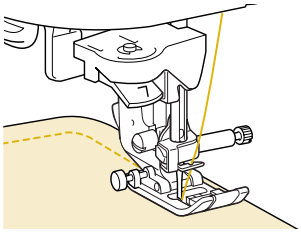
Sewing Reinforcement Stitches

Generally stitching must be secured at the beginning and end with reverse/reinforcement stitches. Press the "Reverse/Reinforcement Stitch" button to sew reverse/reinforcement stitches.
Depending on the selected stitch, reverse or reinforcement stitches are sewn while the "Reverse/Reinforcement Stitch" button is kept pressed. With reinforcement stitches, 3 to 5 stitches are sewn at the same place. With reverse stitches, the stitching is sewn at a low speed in the opposite direction.
In addition, this machine can be set to sew reinforcement stitches (or reverse stitches) automatically. For details, see "Automatic Reinforcement Stitching" on page 45.



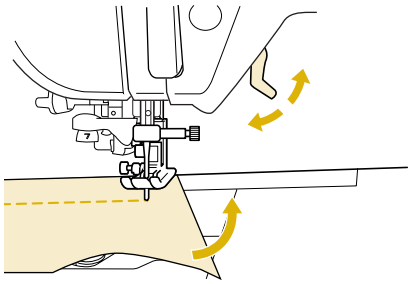
Sewing Curves

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



Changing Sewing Direction

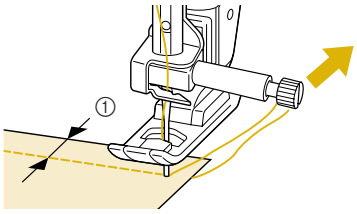
Stop the machine with the needle in the fabric at the point where you want to change the sewing direction, and then raise the presser foot lever. Using the needle as a pivot, turn the fabric, lower the presser foot lever, and then continue sewing.



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 (see "Pivoting" on page 47).

■ 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.

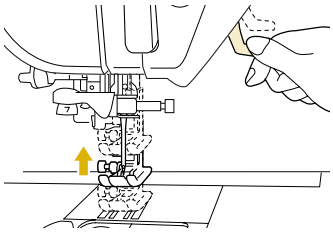


① 0.5 cm

Sewing Heavyweight Fabric

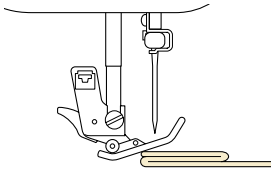
■ If the Fabric Does Not Fit under the Presser Foot

The presser foot lever can be raised to two different positions. If the fabric is too thick to fit under the presser foot, raise the presser foot lever to its highest position so that the fabric can be placed under the presser foot.

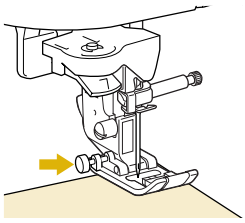


■ If the Fabric Does Not Feed

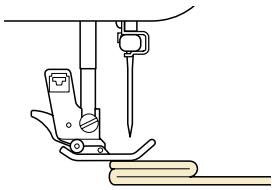
If the fabric does not feed when starting to sew or when sewing thick seams, press the black button on the left side of presser foot "J".



1. **Raise the presser foot lever.**
2. **While keeping the black button on the left side of presser foot "J" pressed in, lower the presser foot lever.**



* The presser foot remains level, enabling the fabric to be fed. Once the trouble spot has been sewn, the presser foot will return to its normal operation.

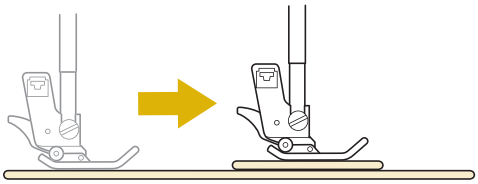


⚠ CAUTION

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

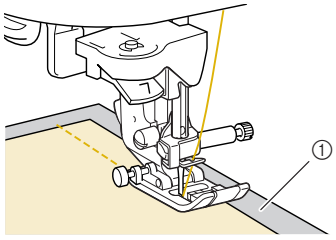
Memo

When "AUTOMATIC FABRIC SENSOR SYSTEM" (Automatic Presser Foot Pressure) in the machine settings screen is set to "ON", the thickness of the fabric is automatically detected by the internal sensor so the fabric can be fed smoothly for best sewing results. (See page 48 for details.)



Sewing Lightweight Fabric

Iron the fabric with starch or place thin paper or tear away stabilizer under thin fabrics to make sewing easier. Gently tear off the paper or the stabilizer after sewing.



① Thin paper

ADJUSTING STITCH SETTINGS

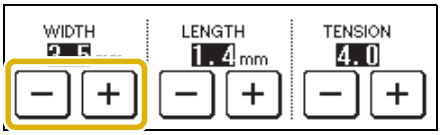
When a stitch is selected, the most appropriate stitch width, stitch length, and upper thread tension are automatically set. However, if needed, you can change any of the settings as described in this section.

Note

- Settings for some stitches cannot be changed (See “STITCH SETTING CHART” at the end of this manual).
- If a stitch setting is changed, but not saved, the stitch setting returns to its default when the machine is turned off or a different stitch is selected.

Adjusting the Stitch Width

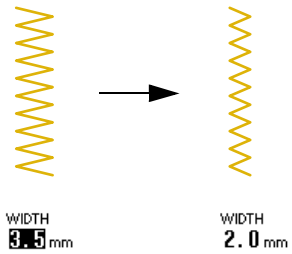
The stitch width (zigzag width) can be adjusted to make the stitch wider or narrower.



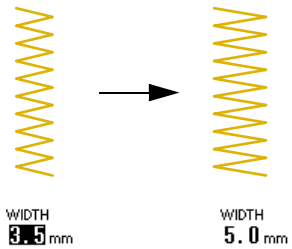
Memo

If the foot controller is connected, the sewing speed controller can be used to adjust the zigzag width (see page 61).

Each press of [−] makes the zigzag stitch narrower.



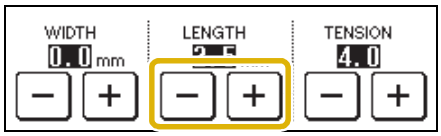
Each press of [+] makes the zigzag stitch wider.



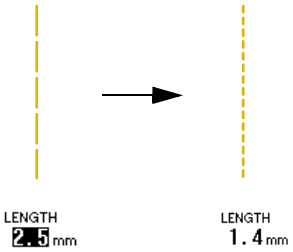
Press [RESET] to return the setting to its default.

Adjusting the Stitch Length

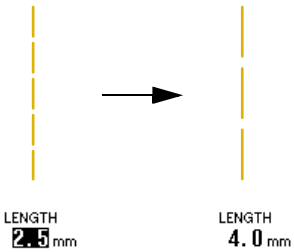
The stitch length can be adjusted to make the stitch longer or shorter.



Each press of [−] makes the stitch shorter.



Each press of [+] makes the stitch longer.



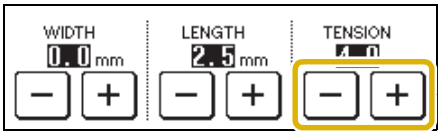
Press [RESET] to return the setting to its default.

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.**

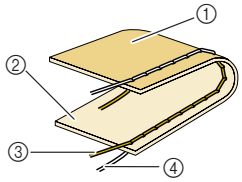
Adjusting the Thread Tension

The default thread tension, which is automatically set, can normally be used regardless of the type of thread or fabric being sewn. However, with some fabric and thread combinations, the thread tension may need to be adjusted.



■ Correct Thread Tension

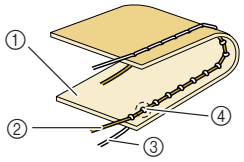
The upper thread and the bobbin thread should cross near the center of the fabric. If the thread tension is incorrectly set, the seam may have a poor finish or the fabric may pucker.



① Wrong side of fabric
② Surface of fabric
③ Upper thread
④ Bobbin thread

■ Upper Thread Is Too Tight

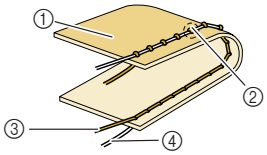
If the bobbin thread can be seen on the surface of the fabric, press [−] . Each press of the key reduces the setting and decreases the upper thread tension.



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

■ Upper Thread Is Too Loose

If the upper thread can be seen on the wrong side of the fabric, press [+] . Each press of the key increases the setting and tightens the upper thread tension.



① Wrong side of fabric
② Locks appear on the wrong side of the fabric.
③ Upper thread
④ Bobbin thread

Press [RESET] to return the setting to its default.

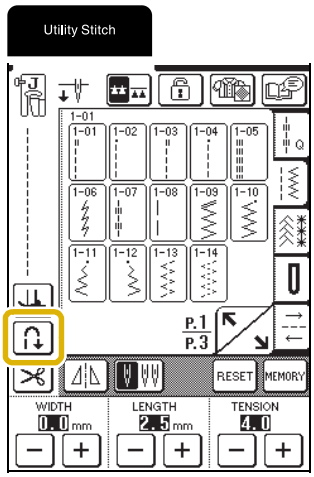
USEFUL FUNCTIONS

Automatic Reinforcement Stitching

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

1 Select a stitch.

2 Press [ ] to select the automatic reinforcement/reverse stitching setting.

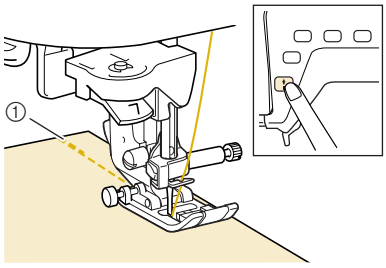


→ The key appears as [ ] .

Memo

The automatic reinforcement/reverse stitching setting is already selected with some stitches, such as buttonholes and bar tacks.

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 automatically sew reverse stitches (or reinforcement stitches), and then begin sewing.**

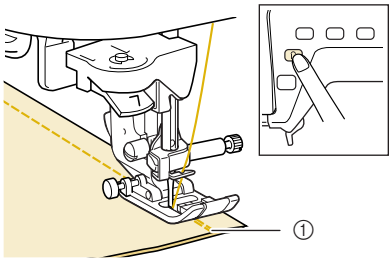


① Reverse stitches (or reinforcement stitches)

Memo

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

4 **If the "Reverse/Reinforcement Stitch" button is pressed, the machine automatically sews reverse stitches (or reinforcement stitches), then stops.**



① Reverse stitches (or reinforcement stitches)

Memo

To cancel the automatic reverse/reinforcement stitching setting, press  again so that it appears as .

Automatic Thread Cutting

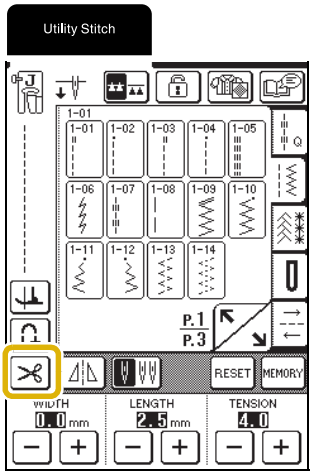
If the automatic thread cutting setting is selected before sewing, the machine will automatically sew reinforcement stitches (or reverse stitches, depending on the selected stitch) and cut the thread when the "Reverse/Reinforcement Stitch" button is pressed at the end of stitching. This is useful when sewing buttonholes and bar tacks.

Memo

The automatic thread cutting setting can be selected when the automatic reinforcement/reverse stitching setting is selected.

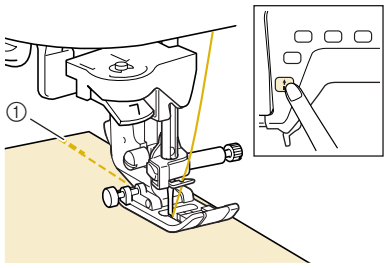
1 **Select a stitch.**

2 **Press  to select the automatic thread cutting setting.**



→ The key appears as .

3 **Place the fabric under the presser foot with the needle at the starting point of the stitching, and then press the "Start/Stop" button. The machine will automatically sew reverse stitches (or reinforcement stitches), and then begin sewing.**

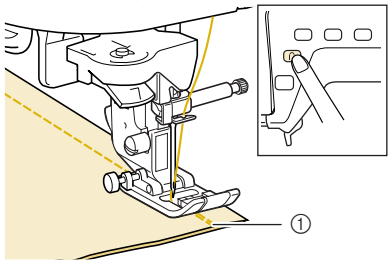


① Reverse stitches (or reinforcement stitches)

Memo

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

4 If the "Reverse/Reinforcement Stitch" button is pressed, the machine automatically sews reverse stitches (or reinforcement stitches), cuts the thread, then stops.



① Reverse stitches (or reinforcement stitches)

→ The feed dogs are automatically lowered.

Memo

- The feed dogs are raised when sewing is started.
- To cancel the automatic thread cutting setting, press [✂] again so that it appears as [✂].

Pivoting

If the pivot setting 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 [📄], and then display "PIVOTING HEIGHT" on P. 2 of the machine settings screen. Press [−] or [+] to select one of the three heights (3.2 mm, 5.0 mm or 7.5 mm). To raise the presser foot further, increase the setting. (Normally, 3.2 mm is set.)

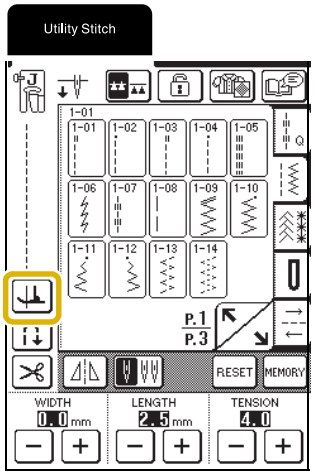


Note

- If "NEEDLE POSITION" in the machine settings screen (P. 1) is set to the raised position, the pivot function cannot be used. In that case, the key appears as a dotted line and is not available.
- When the setting is selected, the pivot function can only be used with stitches where presser foot J, N, C or O is indicated in the upper-left corner of the screen. If any other stitch is selected, the key appears as a dotted line and is not available.
- Since the presser foot is fully raised when the automatic thread cutting key is pressed, press the "Presser Foot Lifter" button to lower the presser foot, and then press the "Start/Stop" button to continue sewing.

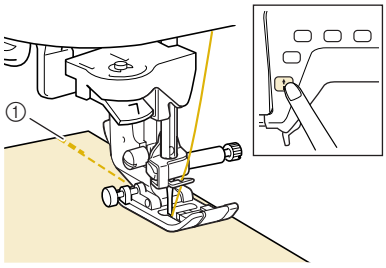
1 **Select a stitch.**

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



→ The key appears as .

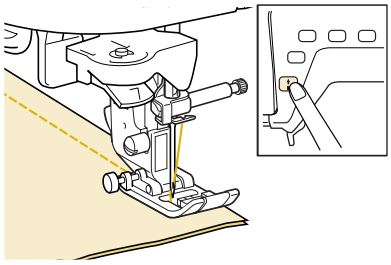
3 **Place the fabric under the presser foot with the needle at the starting point of the stitching, and then press the "Start/Stop" button. The machine will begin sewing.**



Memo

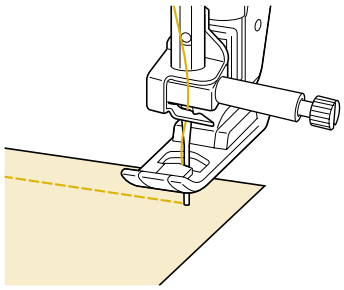
If you press the "Start/Stop" button to pause sewing, then press it again to continue, reverse stitches (or reinforcement stitches) will not be sewn.

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



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

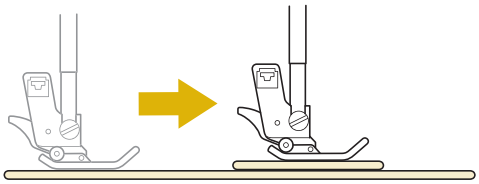
5 **Rotate the fabric, and then press the "Start/Stop" button.**

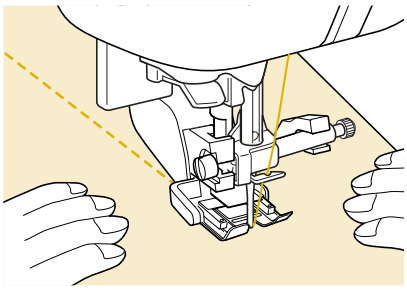


→ The presser foot is automatically lowered, and sewing continues.

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, so the fabric can be fed smoothly. The fabric sensor works continuously while sewing. This function is useful for sewing over thick seams (see page 43), or quilting (see page 59).

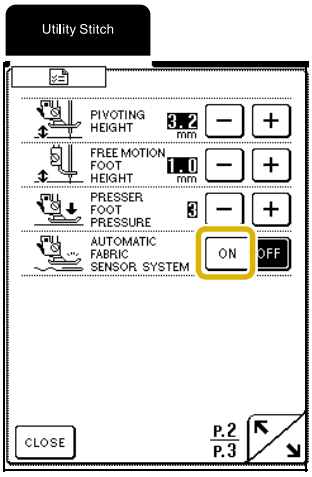




1 **Press**  **.**

→ The machine settings screen appears.

2 **Press  to display P. 2, and then set the "AUTOMATIC FABRIC SENSOR SYSTEM" (Automatic Presser Foot Pressure) to "ON".**



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

Locking the Screen

If the screen is locked before starting to sew, the various settings, such as the stitch width and stitch length, are locked and cannot be changed. This prevents screen settings from accidentally being changed or the machine from being stopped while large pieces of fabric or other projects are being sewn. The screen can be locked while sewing utility stitches and character/ decorative stitches.

1 **Select a stitch.**

2 **If necessary, adjust any settings, such as the stitch width and stitch length.**

3 **Press .**

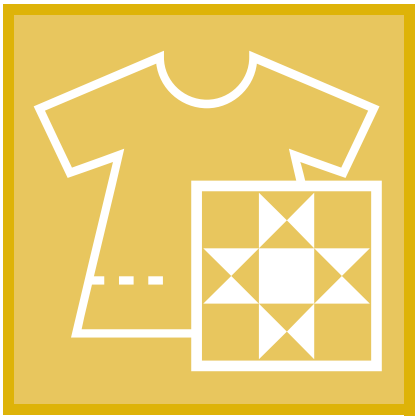
→ The key appears as .

4 **Sewing begins.**

5 **When you are finished sewing, press  to unlock the screen.**

Note

- When the screen is locked (), no key other than  and the  keys can be operated. To select a different stitch or change the settings, press  so that it appears as  to unlock the screen.
- When the screen is locked, pressing any of the  keys unlocks the screen.
- The screen is unlocked when the machine is turned off.



Chapter 3
Utility Stitches

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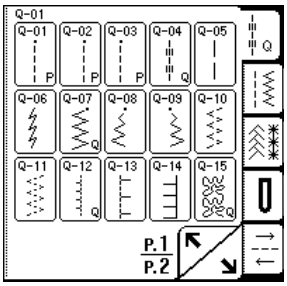
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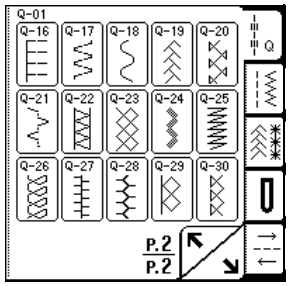
SELECTING A UTILITY STITCH

■ Stitch Selection Screens

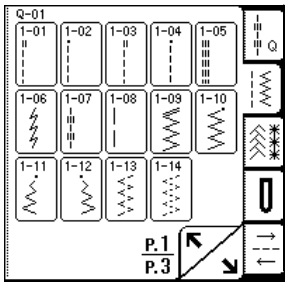
Press  to display the previous or next page.

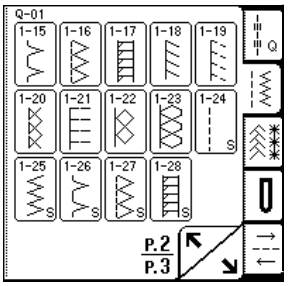
Quilting Stitches

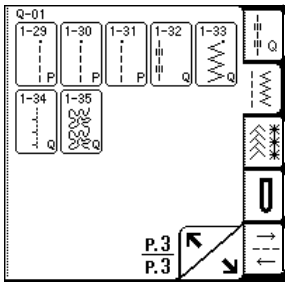




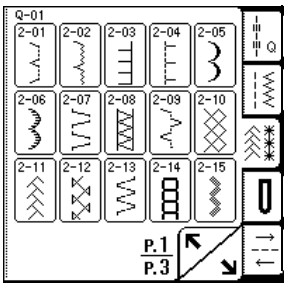
Straight/Overcasting/Quilting Stitches

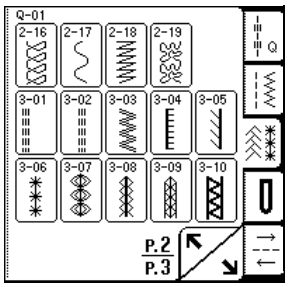


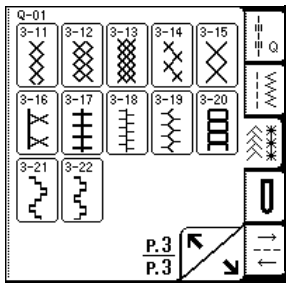




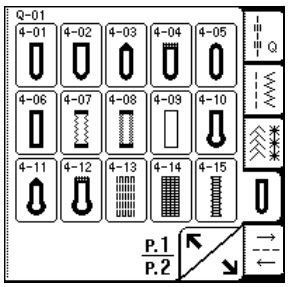
Decorative Stitches/Heirloom Stitches

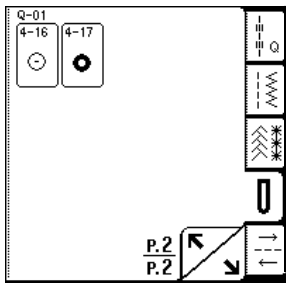




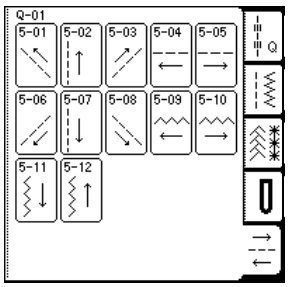


Buttonholes/Bar tacks





Multi-Directional Sewing

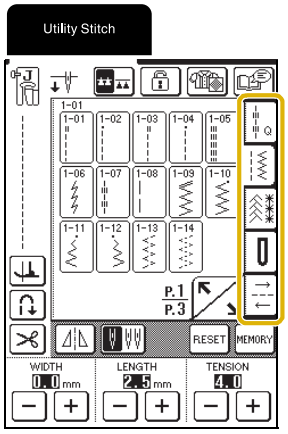


Selecting a Stitch

1 **Turn on the machine, and then lightly press the display.**

→ Depending on the setting, either “Q-01 Piecing stitch (Middle)”, “1-01 Straight stitch (Left)” or “1-03 Straight stitch (Middle)” is automatically selected.

2 **Press [Q] [ ] [ ] [ ] [ ] to display a screen of the stitches in the selected category, and then select a stitch.**



→ An image of the selected stitch is displayed below the symbol of the appropriate presser foot.

Memo

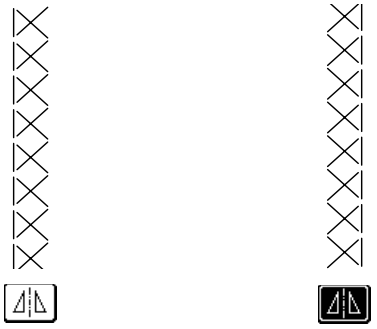
For details on the stitches, refer to “STITCH SETTING CHART” at the end of this manual.

■ Using the Mirror Image Key

Press [ ] so that it appears as [ ]. A mirror image of the selected stitch is created.

Note

If [ ] appears as [ ] after a stitch (buttonholes, multi-directional sewing patterns, etc.) is selected, a mirror image of the selected stitch cannot be created.



Saving Stitch Settings

This machine is preset with the default settings for the stitch width (zigzag width), stitch length, thread tension, automatic thread cutting, automatic reverse/ reinforcement stitching, etc. However, if you wish to save specific settings for a stitch so that they can be used later, press [MEMORY] after changing the settings to save the new settings with the selected stitch.

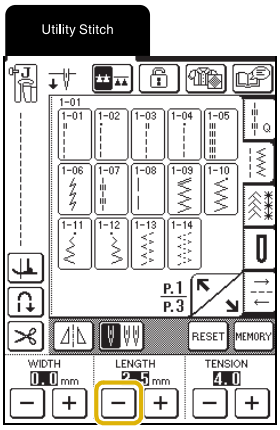
Example: Using a stitch length of 2.0 mm for the straight stitch

1 **Press [ ], and then select a straight stitch.**

Memo

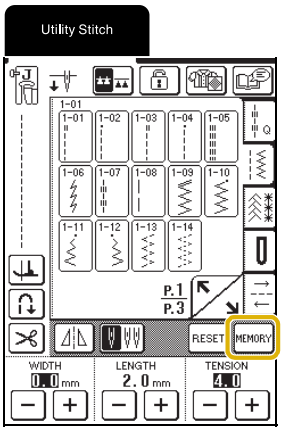
The default stitch length is 2.5 mm.

2 **Set the stitch length to 2.0 mm.**



3 **Press [MEMORY].**

* To reset the selected stitch to its default settings, press [RESET], and then press [MEMORY].



Memo

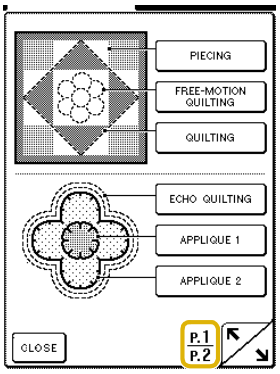
- The next time that the same straight stitch is selected, the stitch length is set to 2.0 mm.
- All stitch settings (stitch width, stitch length, thread tension, automatic thread cutting, automatic reverse/reinforcement stitching, mirror image, and twin needle settings) are saved, not just the setting that was changed. When the same stitch is selected, the last settings saved are displayed even if the machine was turned off. If the settings are changed again and MEMORY is pressed, or if RESET is pressed to reset the setting to its default, the new settings are not saved unless MEMORY is pressed another time.

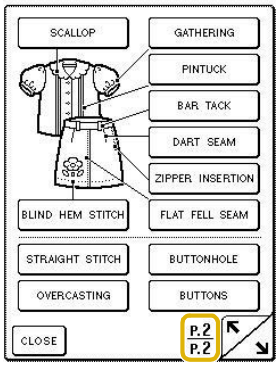
Using the Sewing Type Selection Key

By pressing , a stitch can also be selected according to its desired use. When you are not sure which stitch to select for your application or when you need information on how certain stitches are used, press , select the appropriate stitch for your project, and then follow the instructions to sew the selected stitch.
We recommend that beginners use this method to select stitches.

Memo

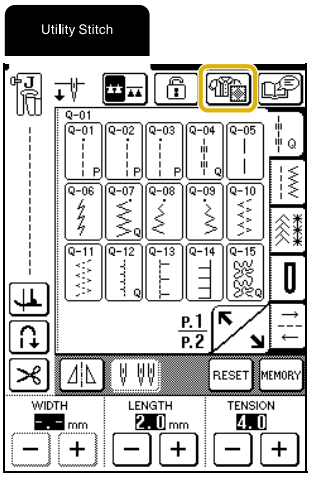
P. 1 appears if is pressed while a quilting stitch selection screen is displayed, and P. 2 appears if is pressed while any utility stitch selection screen is displayed.





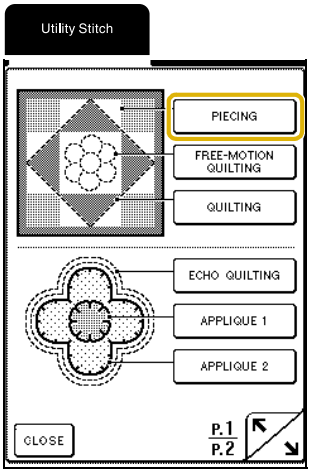
Example: Displaying information about piecing.

1 **Press**  **.**



→ The sewing type selection screen is displayed.

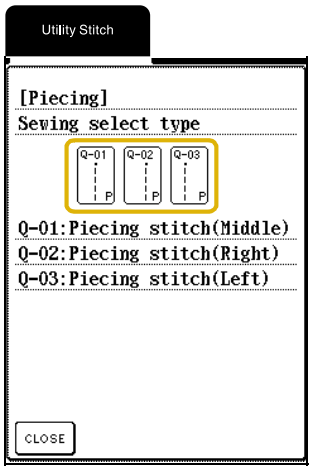
2 **Press** PIECING **.**



→ The stitch selection screen for piecing is displayed.

3 **Select a stitch.**

* Press CLOSE to return to the previous screen.



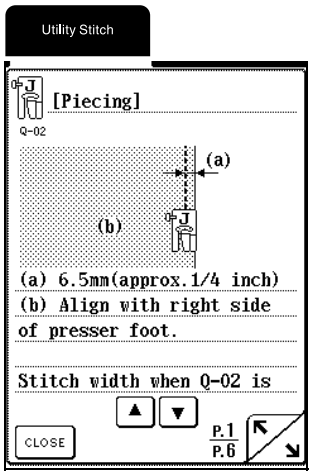
→ Directions for sewing the selected stitch are displayed.

4 **Follow the directions to sew the stitch.**

* Press ▲ or ▼ to scroll the page.

* Press  to display the next page.

* Press CLOSE to return to the previous screen.



5 **When you have finished sewing, press** CLOSE **.**

Memo

The feed dogs are automatically raised or lowered depending on the stitch selected from the sewing type selection screen. For example, when a stitch from the following sewing types is selected, the feed dogs are automatically lowered: FREE-MOTION QUILTING, QUILTING, ECHO QUILTING, and BUTTON SEWING.

SEWING THE STITCHES

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 (see “Using the Foot Controller” on page 41 and/or see “Using the Knee Lifter” on page 42).
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.

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Piecing stitch (Middle)**		Piecework/patchwork	—	—	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	**Piecing stitch (Right)**		Piecework/patchwork 6.5 mm (approx. 1/4 inch) right seam allowance	**5.5 (7/32)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	**Piecing stitch (Left)**		Piecework/patchwork 6.5 mm (approx. 1/4 inch) left seam allowance	**1.5 (1/16)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	**Hand-look quilting (Middle)**		Quilting stitch made to look like hand quilting stitch	**3.5**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Basting stitch (Middle)**		Basting	**3.5**	0.0 - 7.0 (0 - 1/4)	**20.0 (3/4)**	5.0 - 30.0 (3/16 - 1-3/16)	NO
	**Stem stitch**		Reinforced stitching, sewing and decorative applications	**1.0 (1/16)**	1.0 - 3.0 (1/16 - 1/8)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Quilting appliqué zigzag stitch**		Zigzag stitch for quilting and sewing on appliqué quilt pieces	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.6**	0.0 - 4.0 (0 - 3/16)	NO
	**Zigzag stitch (Right)**		Start from right needle position, zigzag sew at left	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.6**	0.3 - 4.0 (1/64 - 3/16)	NO
	**Zigzag stitch (Left)**		Start from left needle position, zigzag sew at right	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.6**	0.3 - 4.0 (1/64 - 3/16)	NO
	**2 step elastic zigzag**		Overcasting (medium weight and stretch fabrics), tape and elastic	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	NO
	**3 step elastic zigzag**		Overcasting (medium, heavyweight and stretch fabrics), tape and elastic	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	NO
	**Quilting appliqué stitch**		Quilting stitch for invisible appliqué or attaching binding	**2.0**	0.5 - 5.0 (1/64 - 3/16)	**2.0**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Shell tuck edge**		Shell tuck edge finish on fabrics	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 4.0 (1/64 - 1/16)	NO
	**Blanket stitch**		Appliqués, decorative blanket stitch	**3.5 (1/8)**	2.5 - 7.0 (3/32 - 1/4)	**2.5 (3/32)**	1.6 - 4.0 (1/16 - 3/16)	NO
	**Quilting stippling**		Background quilting	**7.0 (1/4)**	1.0 - 7.0 (1/16 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Overcasting stitch**	J O	Stretch knit seam	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Tape attaching**	J O	Attaching tape to seam in stretch fabric	**5.5**	0.0 - 7.0 (0 - 1/4)	**1.4**	0.2 - 4.0 (1/61 - 3/16)	NO
	**Serpentine stitch**	N O	Decorative stitching and attaching elastic	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**2.0**	0.2 - 4.0 (1/64 - 3/16)	NO
	**Feather stitch**	J O	Fagoting, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Fagoting cross stitch**	J O	Fagoting, bridging and decorative stitching	**5.0 (3/16)**	2.5 - 7.0 (3/32 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Couching stitch**	J O	Decorative stitching, attaching cord and couching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.2 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	NO
	**Patchwork double overlock stitch**	J O	Patchwork stitches, decorative stitching	**5.0 (3/16)**	2.5 - 7.0 (3/32 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Smocking stitch**	J O	Smocking, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Rick-rack stitch**	J O	Decorative top stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Decorative stitch**	N O	Decorative stitching and appliqué	**6.0 (15/64)**	1.0 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 3/16)	NO
	**Decorative stitch**	J O	Decorative stitching	**5.5 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**	N O	Heirloom, decorative hems	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**2.0 (1/16)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**	N O	Decorative hems and bridging stitch	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**2.0 (1/16)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Single diamond overcast**	J O	Reinforcement and seaming stretch fabric	**6.0 (15/64)**	1.0 - 7.0 (1/16 - 1/4)	**3.0 (1/8)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Overcasting stitch**	J O	Reinforcement of stretch fabric or decorative stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Piecing stitch (Right)**	J O	Piecework/patchwork 6.5 mm (approx. 1/4 inch) right seam allowance	**5.5 (7/32)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	**Piecing stitch (Middle)**	J C	Piecework/patchwork	—	—	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
1-31 P	**Piecing stitch (Left)**	J O	Piecework/patchwork 6.5 mm (approx. 1/4 inch) left seam allowance	**1.5 (1/16)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
1-32 Q	**Hand-look quilting**	J O	Quilting stitch made to look like hand quilting stitch	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
1-33 Q	**Quilting appliqué zigzag stitch**	J O	Zigzag stitch for quilting and sewing on appliqué quilt pieces	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.0 - 4.0 (0 - 3/16)	NO
1-34 Q	**Quilting appliqué stitch**	J O	Quilting stitch for invisible appliqué or attaching binding	**1.5 (1/16)**	0.5 - 5.0 (1/64 - 3/16)	**1.8 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
1-35 Q	**Quilting stippling**	J O	Background quilting	**7.0 (1/4)**	1.0 - 7.0 (1/16 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO

■ 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).

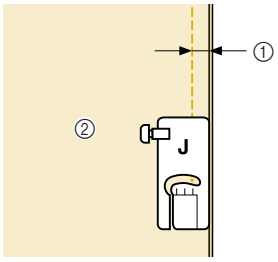
Memo

To change the width of the seam allowance, adjust the stitch width to change the needle position.

1 **Press Q-02 or Q-03, and then attach presser foot "J".**

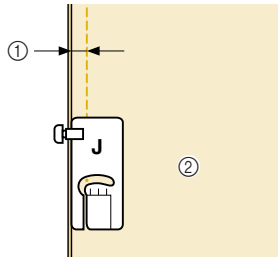
2 **Sew with the edge of the fabric aligned with the side of the presser foot.**

Stitch width when Q-02 is selected



① 6.5 mm (approx. 1/4 inch)
② Align with right side of presser foot.

Stitch width when Q-03 is selected



① 6.5 mm (approx. 1/14 inch)
② Align with left side of presser foot.

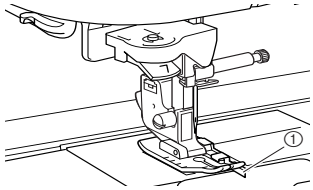
Memo

- The stitch width refers to the needle position, not the width of the seam allowance.
- To change the needle position, press + or − in the width display.
- After the stitch length and needle position are set as desired, the settings can be saved (see page 53).

■ Piecing Using the 1/4" Quilting Foot with Guide

This quilting foot can sew an accurate 1/4 inch or 1/8 inch seam allowance.
It can be used for piecing together a quilt or for topstitching.

1 **Press Q-01, and then attach the 1/4" piecing foot with guide.**

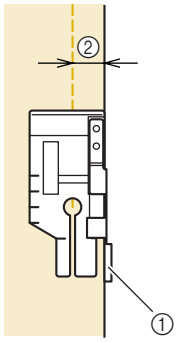


① Guide

2 **Use the guide and marks on the presser foot to sew accurate seam allowances.**

Piecing a 1/4 inch seam allowance

Sew keeping the edge of the fabrics against the guide.



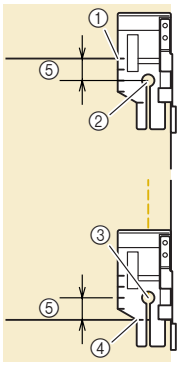
① Guide
② 1/4 inch

Memo

For accurate fabric placement, refer to “Needle Plate and Needle Plate Cover Marks” on page 68.

Creating an accurate seam allowance

Use the mark on the foot to begin, end, or pivot 1/4 inch from edge of fabric.



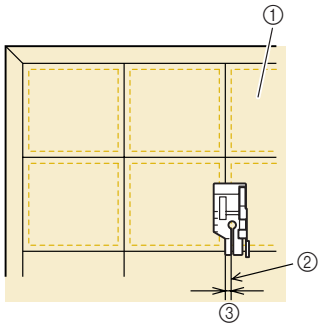
① Align this mark with edge of fabric to begin.
② Beginning of stitching
③ End of stitching
④ Opposite edge of fabric to end or pivot
⑤ 1/4 inch

Memo

For details on pivoting, refer to “Pivoting” on page 47.

Topstitching quilting, 1/8 inch

Sew with the edge of the fabric aligned with the left side of the presser foot end.



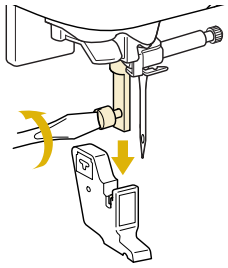
① Surface of fabric
② Seam
③ 1/8 inch

■ Quilting with walking foot

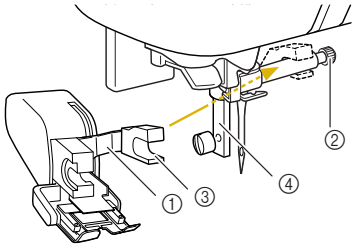
Sewing together the quilt top, batting, and backing is called quilting. You can sew the quilt with the walking foot to keep the quilt top, batting, and backing from sliding. The walking foot has a set of feed dogs that move together with the feed dogs in the needle plate during sewing.

1 **Follow the steps on page 34 to remove the presser foot.**

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

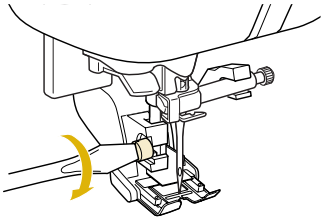


3 **Set the operation lever of the walking foot so that the needle clamp screw is set between the fork, and position the walking foot on the presser foot bar.**



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

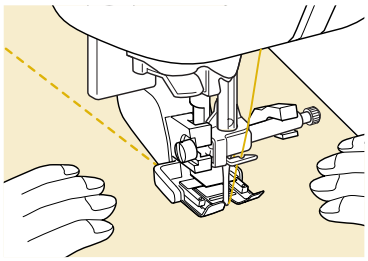
4 **Lower the presser foot lever. Tighten the screw securely with the screwdriver.**



5 **Place one hand on each side of the walking foot to hold the fabric secure while sewing.**

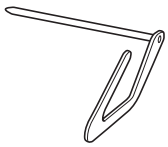
Note

- Sew at slow to medium speed.
- Do not sew in reverse or use stitches that require side ways or reverse feeding.
- 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.
- If “AUTOMATIC FABRIC SENSOR SYSTEM” (Automatic Presser Foot Pressure) in the machine settings screen is set to “ON”, the fabric can be fed smoothly for best sewing results. For details on the automatic fabric sensor system, refer to “Automatic Fabric Sensor System (Automatic Presser Foot Pressure)” on page 48.



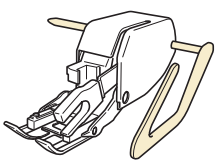
■ Using the Quilting Guide

Use the quilting guide to sew parallel stitches that are equally spaced.

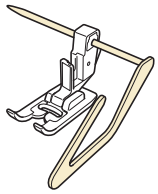


1 **Insert the stem of the quilting guide into the hole at the rear of the walking foot or presser foot holder.**

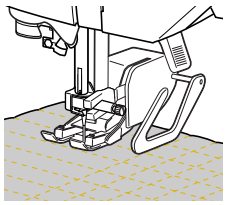
Walking foot



Presser foot holder



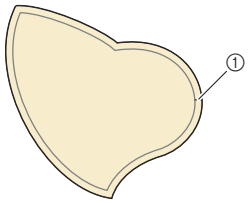
2 **Adjust the stem of the quilting guide so that the guide aligns with the seam that has already been sewn.**



■ Appliqués

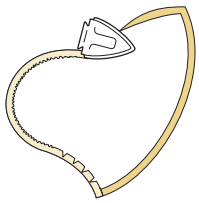
The seam will blend in if transparent nylon thread is used for the upper thread.

1 **Trace the pattern onto the appliqué fabric, and then cut around it.**

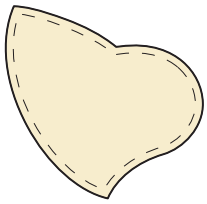


① Seam allowance: 3 to 5 mm

2 **Cut a piece of thick paper or stabilizer to the finished size of the appliqué design, place it on the back of the appliqué, and then fold over the seam allowance using an iron.**

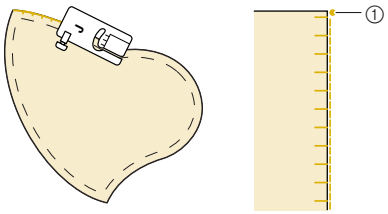


3 **Turn the applique over and remove the stabilizer or paper. Pin or bast the applique on to the main fabric.**



4 **Press**  **, and then attach presser foot “J”.**

5 **Check the needle drop point, and then sew along the edge of the appliqué while making sure that the needle drops slightly off the edge of the fabric.**



① Needle drop point

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.**

■ Quilting with Satin Stitches

Use the foot controller to sew with satin stitches. If you set the speed control slide to control the stitch width, you can make subtle changes in the stitch width during sewing.

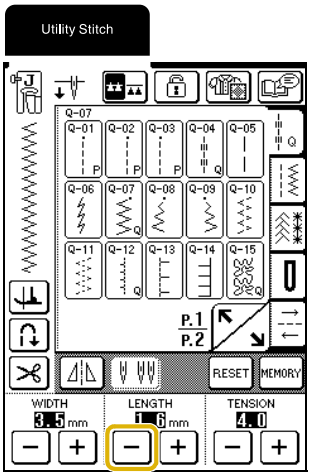
1 **Connect the foot controller (see page 41).**

2 **Press [Q-07], and then attach presser foot "J".**

3 **Press [−] in the length display to shorten the stitch length.**

Memo

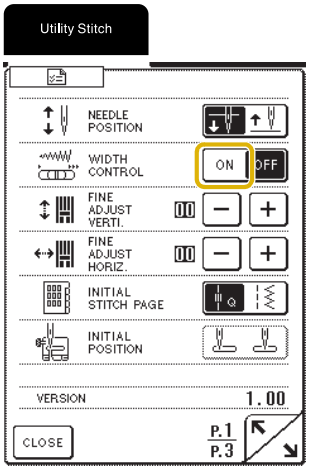
A stitch length between 0.3 and 0.5 mm (approx. 1/64 and 1/32 inch) is best for satin stitches, although this range varies depending on the type of fabric and thickness of thread used.



4 **Press [ ].**

* Change the sewing speed controller to a stitch width controller.

5 **Set "WIDTH CONTROL" to "ON". The sewing speed will be adjusted using the foot controller.**

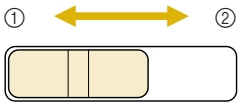


6 **Press [CLOSE].**

7 **While sewing, slide the sewing speed controller to adjust the stitch width.**

Memo

- Slide the controller to the left to make the width narrower. Slide the controller to the right to make the width wider.
- The stitch width is adjusted equally from the middle (center) needle position. (Stitches Q-08 and 1-11 will adjust from the right, stitches Q-09 and 1-12 will adjust from the left.)



① Narrower
② Wider



8 **When you are finished sewing, set "WIDTH CONTROL" back to "OFF".**

■ Free-motion Quilting

For free-motion quilting, use free-motion quilting foot “C” and 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 feed dogs are automatically lowered so the fabric can be moved freely, and 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.

■ Free-motion Quilting Using Free-motion Quilting Foot “C”

The free-motion quilting foot “C” is used for free-motion sewing using a straight stitch. Be sure to select a straight stitch with the middle (center) needle position Q-01 or 1-30.



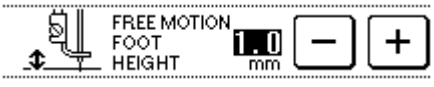
Free-motion quilting foot “C”

⚠ 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 select one of the patterns with a center needle position (Q-01 or 1-30). Using any other stitch may result in the needle striking the quilting foot, causing damage or injuries.**

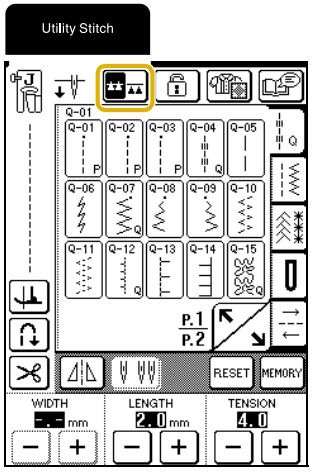
Memo

- 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 [📄], and then press [−] or [+] to change the value beside “FREE MOTION FOOT HEIGHT” on P. 2 of machine settings screen (see page 22). Increase the height that the quilting foot is raised, for example, when sewing puffy or thick fabrics; decrease for better control of thin fabrics.



- In order to sew with a balanced tension, it may be necessary to adjust the upper thread tension (see page 45). Test with a sample piece of quilting fabric.

1 **Press [🧵] to lower the feed dogs and to set the machine to free-motion sewing mode.**



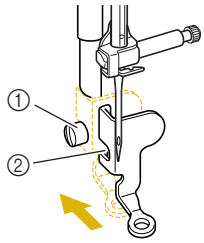
→ The feed dogs are lowered, and the quilting foot is raised to the necessary height for free-motion sewing.

2 **Select a Q-01 or 1-30.**

→ When stitch Q-01 or 1-30 is selected, free-motion foot “C” is indicated in the upper-left corner of the screen.

3 **Remove the presser foot holder (see page 59).**

4 **Attach free-motion foot “C” at the front with the presser foot holder screw aligned with the notch in the quilting foot.**

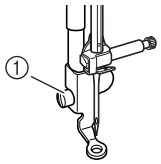


① Presser foot holder screw
② Notch

Note

Make sure that the quilting foot is not slanted.

5 **Hold the quilting foot in place with your right hand, and then tighten the presser foot holder screw using the screwdriver in your left hand.**

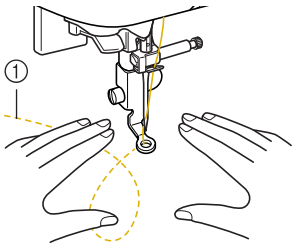


① Presser foot holder screw

⚠ CAUTION

- **Be sure to securely tighten the screws with the 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 regular pace in order to sew uniform stitches roughly 2.0-2.5 mm (approx. 1/16 - 3/32 inch) in length.**

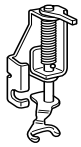


① Stitch

7 **Press [icon] to cancel the free-motion sewing mode.**

■ Free-motion Quilting 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. Any stitch can be sewn with the free-motion open toe quilting foot “O”.



Free-motion open toe quilting foot “O”

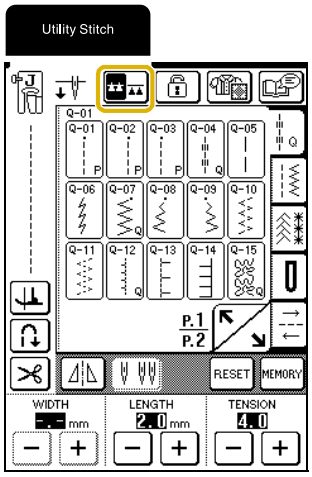
Note

Free-motion open toe quilting foot “O” can also be used with stitches used with free-motion foot “C” (Q-01 or 1-30). We recommend using free-motion quilting foot “O” with free-motion sewing of fabrics of uneven thicknesses.

Memo

In order to sew with a balanced tension, it may be necessary to adjust the upper thread tension (see page 45). Test with a sample piece of quilting fabric.

1 **Press [icon] to lower the feed dogs and to set the machine to free-motion sewing mode.**



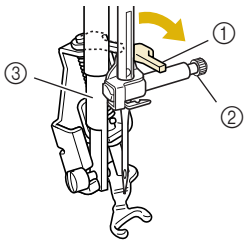
→ The feed dogs are lowered, and the quilting foot is raised to the necessary height for free-motion sewing.

2 **Select a stitch.**

→ When stitch Q-01 or 1-30 is selected, free-motion quilting foot “C” is indicated in the upper-left corner of the screen. When the other stitches are selected, free-motion open toe quilting foot “O” is indicated in the screen.

3 **Remove the presser foot holder (see page 59).**

4 **Attach free-motion 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.**

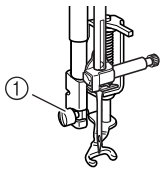


① Pin
② Needle clamp screw
③ Presser bar

Note

Make sure that the quilting foot is not slanted.

5 **Hold the quilting foot in place with your right hand, and then tighten the presser foot holder screw using the screwdriver in your left hand.**

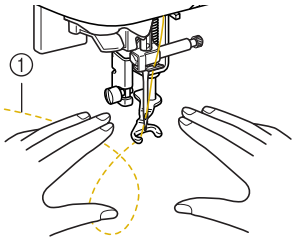


① Presser foot holder screw

⚠ CAUTION

- **Be sure to securely tighten the screws with the 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 regular pace in order to sew uniform stitches roughly 2.0-2.5 mm (approx. 1/16 - 3/32 inch) in length.**

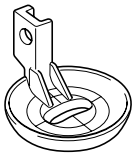


① Stitch

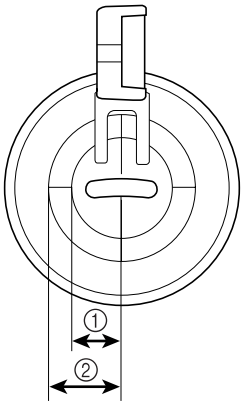
7 **Press [ ] to cancel the free-motion sewing mode.**

■ Echo Quilting

Sewing quilting lines at equal distances around a motif is called echo quilting. The quilting lines, which appear as ripples echoing off 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



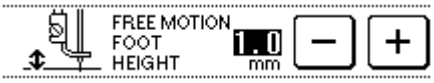
① 6.4 mm (approx. 1/4 inch)
② 9.5 mm (approx. 3/8 inch)

⚠ 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.**

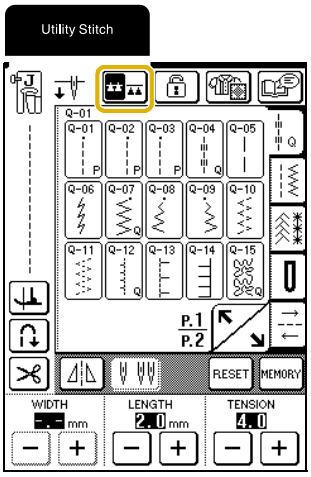
Memo

- 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 [ ], and then press [−] or [+] to change the value beside "FREE MOTION FOOT HEIGHT" on P. 2 of machine settings screen (see page 22). Increase the height that the quilting foot is raised, for example, when sewing puffy or thick fabrics; decrease for better control of thin fabrics.



- In order to sew with a balanced tension, it may be necessary to adjust the upper thread tension (see page 45). Test with a sample piece of quilting fabric.

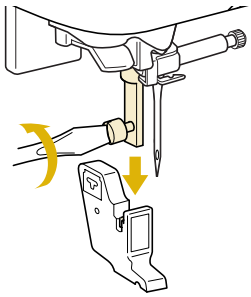
1 **Press [ ] to lower the feed dogs and to set the machine to free-motion sewing mode.**



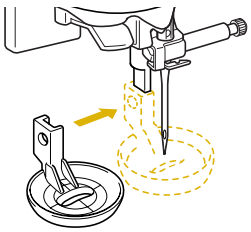
2 **Select a straight stitch with the middle (center) needle position [Q-01] or [1-03].**

3 **Follow the steps on page 34 "Removing the Presser Foot" to remove the presser foot.**

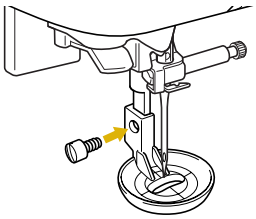
4 **Loosen the presser foot holder screw, and then remove the screw and the presser foot holder.**



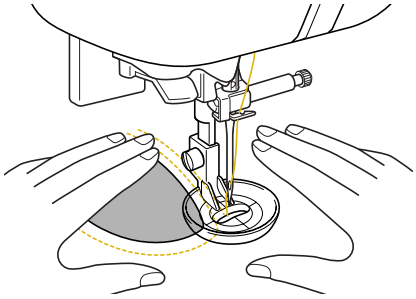
5 **Position the free-motion echo quilting foot "E" on the left side of the presser bar with the holes in the quilting foot and presser bar aligned.**

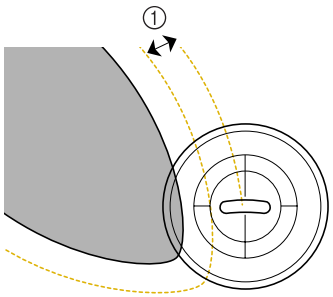


6 **Tighten the screw.**



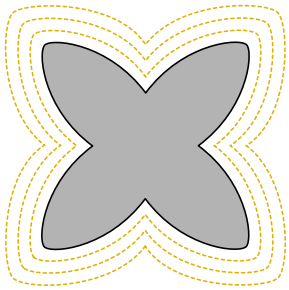
7 **Using the measurement on the quilting foot as a guide, sew around the motif.**





① 6.4 mm (approx. 1/4 inch)

Finished project



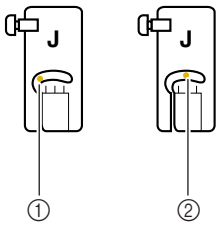
8 **Press [ ] to cancel the free-motion sewing mode.**

Straight Stitches

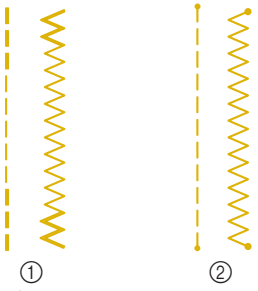
Note

When using the twin needle (see page 32), be sure to attach presser foot “J”.

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
1-01	**Straight stitch (Left)**	J	General sewing, gather, pintuck, etc. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
1-02	**Straight stitch (Left)**	J	General sewing, gather, pintuck, etc. Reinforcement stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
1-03	**Straight stitch (Middle)**	J	General sewing, gather, pintuck, etc. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
1-04	**Straight stitch (Middle)**	J	General sewing, gather, pintuck, etc. Reinforcement stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
1-05	**Triple stretch stitch**	J	General sewing for reinforcement and decorative topstitching	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.5 - 4.0 (1/16 - 3/16)	OK (J)
1-06	**Stretch stitch**	J	Reinforced stitching, sewing and decorative applications	**1.0 (1/16)**	1.0 - 3.0 (1/16 - 1/8)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
1-07	**Decorative stitch**	N	Decorative stitching, top stitching	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
1-08	**Basting stitch**	J	Basting	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**20.0 (3/4)**	5.0 - 30.0 (3/16 - 1-3/16)	NO



① Left needle position
② Middle (center) needle position

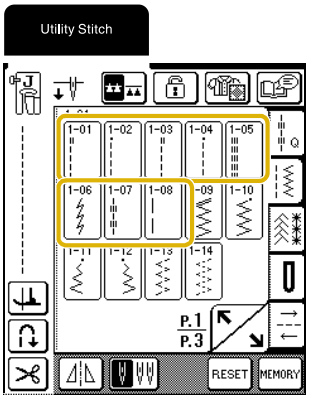


① Reverse stitch
② Reinforcement stitch

Memo

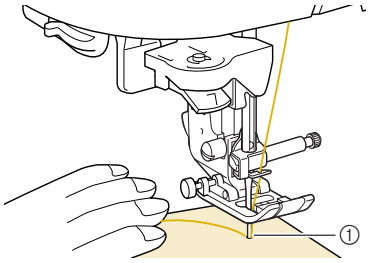
“ ⦀ ” at the beginning of the stitch shown on the key indicates that reverse stitches are sewn when the “Reverse/ Reinforcement Stitch” button is pressed. “ ⋅ ” at the beginning of the stitch shown on the key indicates that reinforcement stitches are sewn when the “Reverse/Reinforcement Stitch” button is pressed.

1 **Select a stitch.**



2 **Attach presser foot "J".**

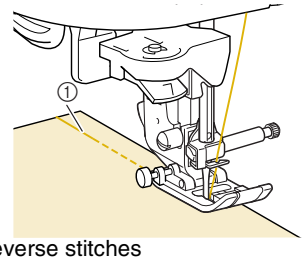
3 **Hold the thread ends and the fabric with your left hand, and turn the handwheel toward you with your right hand to insert the needle into the fabric at the starting point of the stitching.**



① Starting point of stitching

4 **Lower the presser foot lever.**

5 **Hold the "Reverse/Reinforcement Stitch" button pressed to sew reverse stitches (or reinforcement stitches), and then press the "Start/Stop" button to start sewing slowly.**

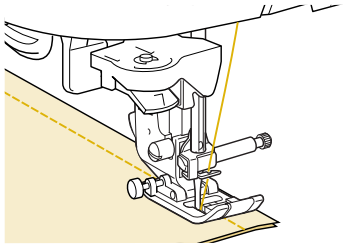


① Reverse stitches

CAUTION

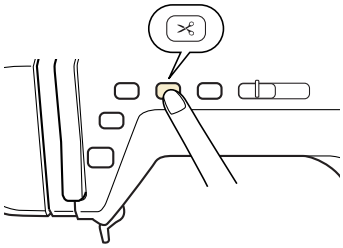
- **Be sure the needle does not strike a basting pin, or any other objects, during sewing. The thread could tangle or the needle could break, causing injury.**

6 **At the end of the stitching, hold the "Reverse/Reinforcement Stitch" button pressed to sew reverse stitches (or reinforcement stitches).**



7 **Press the "Thread Cutter" button to trim the threads.**

* If the automatic thread cutting setting is selected before sewing, the machine will automatically sew reverse stitches (or reinforcement stitches) at the beginning of stitching. When the "Reverse/Reinforcement Stitch" button is pressed at the end of stitching, the machine will automatically sew reverse stitches (or reinforcement stitches) and cut the thread.

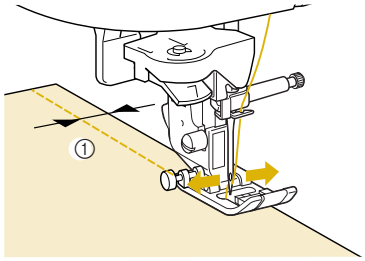


■ Changing the Needle Position (Left or Middle Needle Position Stitches Only)

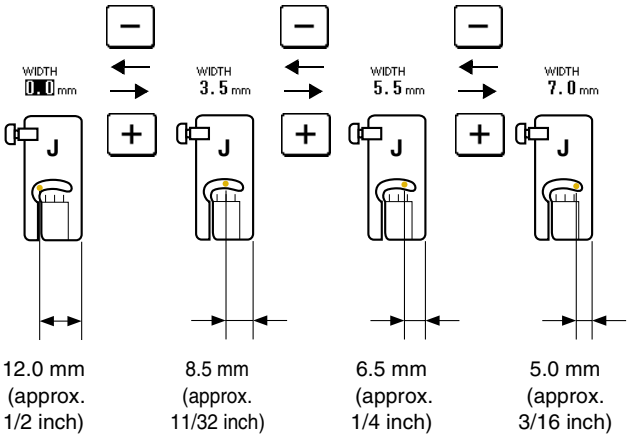
When you select left or middle (center) needle position stitches, you can use [−] and [+] in the stitch width display to change the position of the needle. Match the distance from the right edge of the presser foot to the needle with the stitch width, then align the edge of the presser foot with the edge of the fabric during sewing for an attractive finish.

Memo

When -.- mm appears in the stitch width display, select a different straight stitch.



① Stitch width



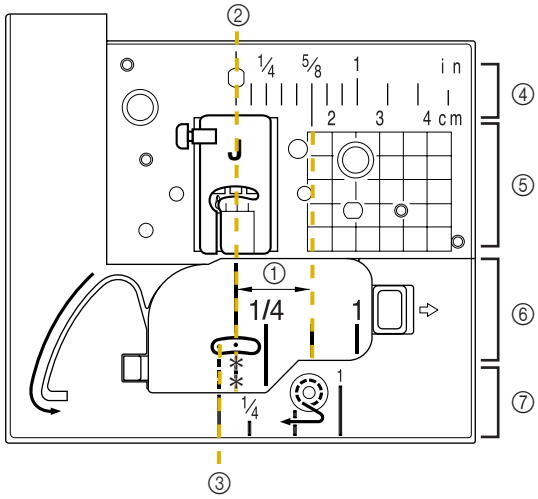
12.0 mm (approx. 1/2 inch) | 8.5 mm (approx. 11/32 inch) | 6.5 mm (approx. 1/4 inch) | 5.0 mm (approx. 3/16 inch)

■ Needle Plate and Needle Plate Cover Marks

For a standard 16 mm (approx. 5/8 inch) seam allowance, set the width to 3.5 mm on the screen. While sewing, align the edge of the fabric with the 5/8 inch (approx. 16 mm) mark on the needle plate.

∗Needle plate and bobbin cover marks are used when sewing with a straight stitch in the middle (center) needle position.

∗Needle plate cover marks are used when sewing with a straight stitch in the left position.

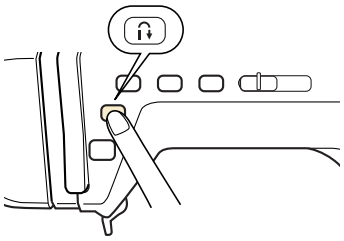


① 5/8 inch (approx. 16 mm)
② For stitches with a middle (center) needle position
③ For stitches with a left needle position
④ Middle (center) needle position <inch>
⑤ Middle (center) needle position <cm>
⑥ Middle (center) needle position <inch>
⑦ Left needle position <inch>

■ Basting

1 **Press [1-08], and then attach presser foot "J".**

2 **Press the "Reverse/Reinforcement Stitch" button to sew reinforcement stitches at the beginning of the stitching.**



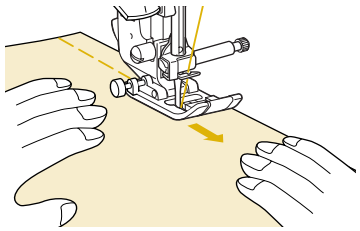
Memo

The stitch length can be set between 5 mm and 30 mm (approx. 3/16 and 1-3/16 inches).



① Between 5 mm (approx. 3/16 inch) and 30 mm (approx. 1-3/16 inches)

3 **Sew while lightly guiding the fabric.**



Memo

This is easy to do if the foot controller is used (see page 41).

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

■ 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.

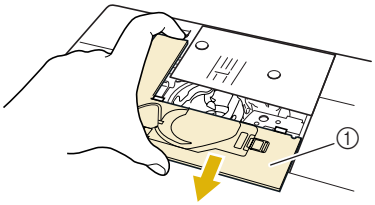
CAUTION

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

1 **Press the "Presser Foot Lifter" button to raise the presser foot and turn the main power to OFF.**

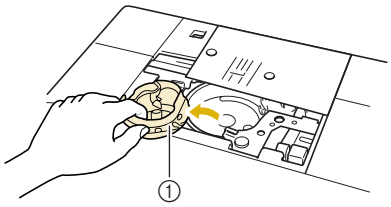
2 **Remove the flat bed attachment.**

3 **Grasp both sides of the needle plate cover, and then slide it toward you.**



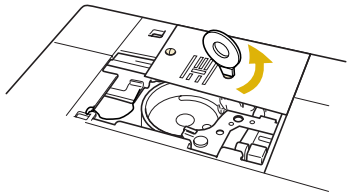
① Needle plate cover

4 **Grasp the bobbin case, and then pull it out.**

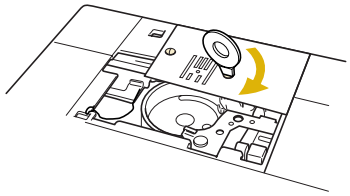


① Bobbin case

5 **Use the disc-shaped screwdriver included with the machine to unscrew and remove the regular needle plate.**



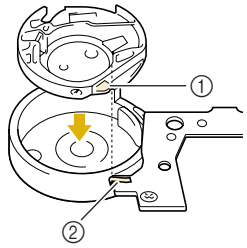
6 **Set the straight stitch needle plate in place and use the screwdriver to tighten the plate.**

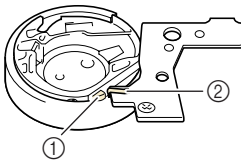


Note

Align the two screw holes on the needle plate with the two holes on the machine. Use the disc-shaped screwdriver to tighten the screws in the needle plate.

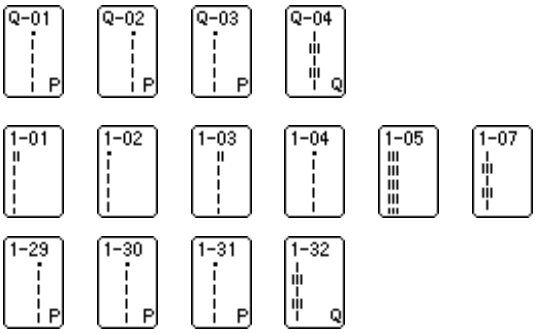
7 **Insert the bobbin case so that the projection on the bobbin case aligns with the spring, and then attach the needle plate cover.**





① Projection
② Spring

8 **After reinstalling the needle plate cover, select one of the following straight stitches.**



Memo

When using the straight stitch needle plate, all straight stitches become middle needle position stitches. You cannot change the needle position using the width display.

CAUTION

- **Selecting other stitches will cause an error message to be displayed.**
- **Be sure to turn the handwheel slowly in your direction before sewing and make sure that the needle is not contacting the straight stitch foot and straight stitch needle plate.**

9 **Attach the straight stitch foot.**



10 **Start sewing.**

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

Memo

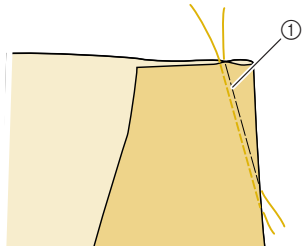
To prevent puckering on fine fabrics, use a fine needle, size 75/11, and a short stitch length. For heavier fabrics, use a heavier needle, size 90/14, and longer stitches.

Darts Seams

1 **Press**  **, and then attach presser foot "J".**

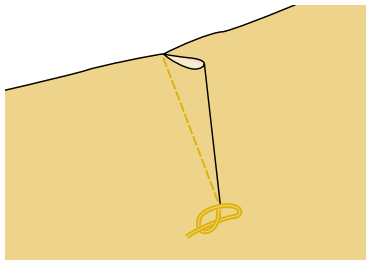
2 **Press the "Reverse/Reinforcement Stitch" button to sew reverse stitches at the beginning of the stitching, and then sew from the wide end to the narrow end without stretching the fabric.**

* If the automatic reverse/reinforcement stitching setting is selected before sewing, reverse stitches will be sewn at the beginning of the stitching.

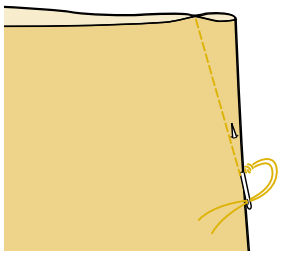


① Basting

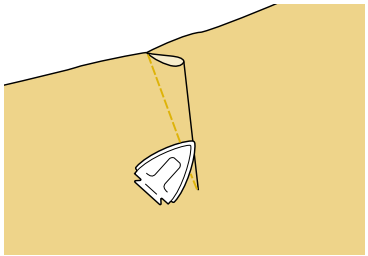
3 **Without sewing reverse stitches at the end of the stitching, pull out 50 mm (approx. 1-15/16 inches) of the threads, cut them, and then tie the two ends together.**



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



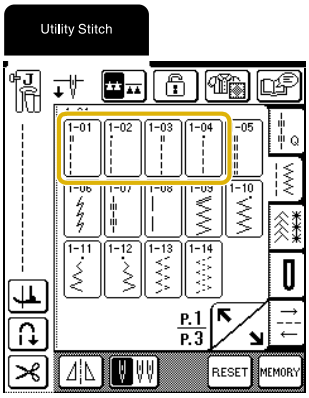
5 **Iron the dart to one side.**



Gathering

Sew gathers on sleeves, the waist of a gathered skirt, etc.

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

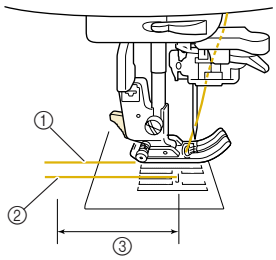


2 **Set the stitch length to 4.0 mm (approx. 3/16 inch) and the thread tension to 2.0 (weaker tension).**

Memo

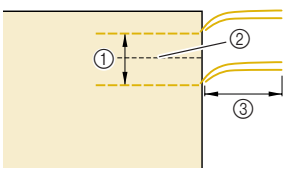
If you press , then GATHERING, the stitch length is automatically set to 4.0 mm (approx. 3/16 inch) and the thread tension is automatically set to 2.0.

3 **Pull out 50 mm (approx. 1-15/16 inches) of both the upper and bobbin threads (see “Pulling Up the Bobbin Thread” on page 28).**



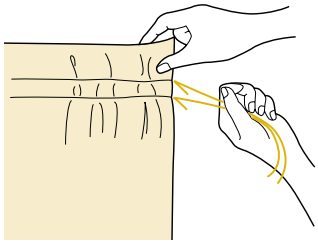
① Upper thread
② Bobbin thread
③ 50 mm (approx. 1-15/16 inches)

4 **Sew a row of straight stitches along each side of the seam line, pull out 50 mm (1-15/16 inches) of the upper and bobbin threads, and then cut the threads.**

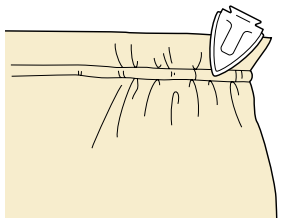


① 10 to 15 mm (approx. 3/8 to 9/16 inch)
② Seam line
③ 50 mm (approx. 1-15/16 inches)

5 **Pull the bobbin threads to create the desired amount of gathering, and then tie the threads.**



6 **Smooth the gathers by ironing them.**



7 **Sew along the seam line, and then remove the basting stitch.**

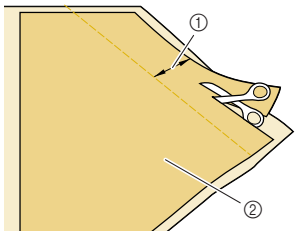
Flat Fell Seams

Use flat fell seams to reinforce seams and finish edges neatly.

1 **Press , and then attach presser foot “J”.**

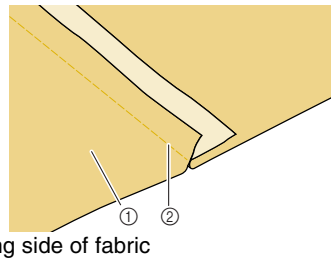
2 **Align the fabric with right sides together, sew the seam line, and then cut off half the seam allowance from the side on which the flat fell seam will lie.**

* If the automatic reverse/reinforcement stitching and automatic thread cutting settings are selected before sewing, reverse stitches will automatically be sewn at the beginning and end of the stitching and the thread will be cut.



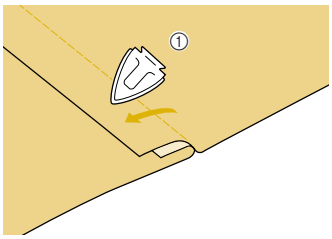
① About 12 mm (approx. 1/2 inch)
② Wrong side of fabric

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



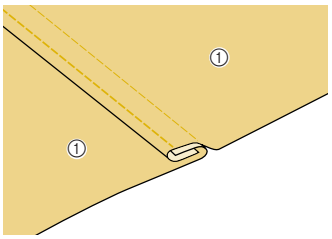
① Wrong side of fabric
② Seam line

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



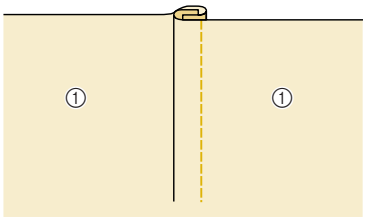
① Wrong side of fabric

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



① Wrong side of fabric

Finished flat fell seam

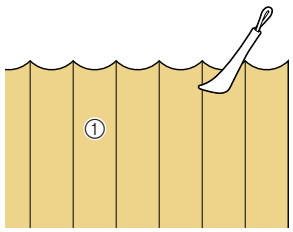


① Surface of fabric

Pintucks

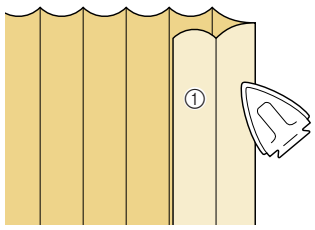
Use pin tucks to decorate blouses.

1 **Mark the positions of the folds on the wrong side of the fabric.**



① Wrong side of fabric

2 **Turn the fabric over, and then iron only the folds with the tip of the iron.**

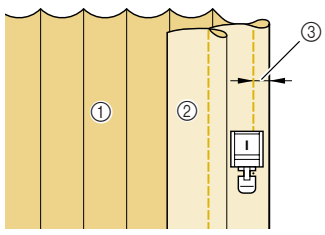


① Surface of fabric

3 **Press**  **, and then attach presser foot "I".**

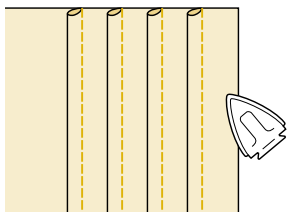
4 **Attach the pin on the right side of presser foot "I" to the presser foot holder, and then sew along the folds.**

* If the automatic reverse/reinforcement stitching and automatic thread cutting settings are selected before sewing, reverse stitches will automatically be sewn at the beginning and end of the stitching and the thread will be cut.



① Wrong side of fabric
② Surface of fabric
③ Width of pin tuck

5 **Iron the folds in the same direction.**



Zigzag Stitches

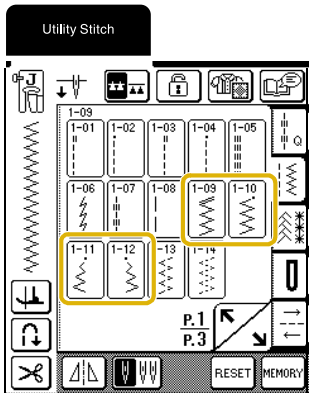
Zigzag stitches are useful for a variety of applications, including overcasting and sewing appliqués and patchwork.

Note

When using the twin needle (see page 32), be sure to attach presser foot “J”.

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
1-09	**Zigzag stitch (Middle)**	J	For overcasting, mending. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.0 - 4.0 (0 - 3/16)	OK (J)
1-10	**Zigzag stitch (Middle)**	J	For overcasting, mending. Reinforcement stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.0 - 4.0 (0 - 3/16)	OK (J)
1-11	**Zigzag stitch (Right)**	J	Start from right needle position, zigzag sew at left.	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.4 (1/16)**	0.3 - 4.0 (1/64 - 3/16)	OK (J)
1-12	**Zigzag stitch (Left)**	J	Start from left needle position, zigzag sew at right.	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.4 (1/16)**	0.3 - 4.0 (1/64 - 3/16)	OK (J)

1 Select a stitch, and then attach presser foot “J”.

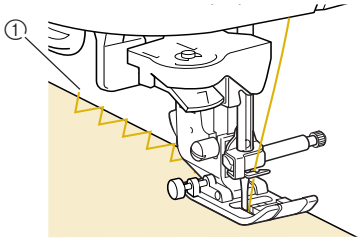


Memo

“ ▮ “ at the beginning of the stitch shown on the key indicates that reverse stitches are sewn when the “Reverse/Reinforcement Stitch” button is pressed. “ ▪ “ at the beginning of the stitch shown on the key indicates that reinforcement stitches are sewn when the “Reverse/Reinforcement Stitch” button is pressed.

■ Overcasting

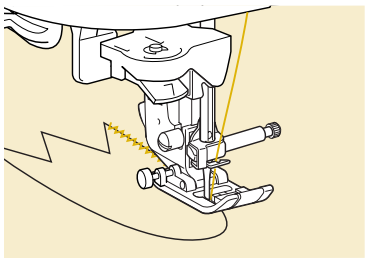
Sew while making sure that the needle drops slightly off the edge of the fabric.



① Needle drop point

■ Appliqués

Attach the appliqué using starch or basting, and then sew along the edge of the appliqué, making sure that the needle drops slightly off the edge.

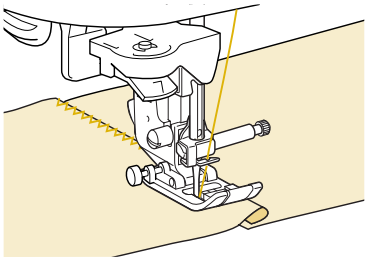


Memo

For additional applique instructions, see page 60.

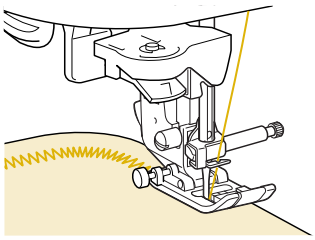
■ Patchwork (Crazy Quilts)

Turn back the desired width of seam allowance, place it over a different piece of fabric, and then sew the two fabric pieces together so the stitching bridges both pieces.



■ Sewing Curves

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.

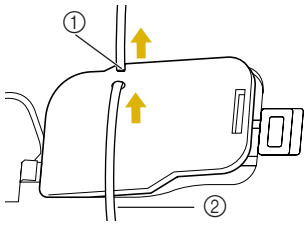


■ Using the Cord Guide Bobbin Cover

1 **Remove the bobbin cover from the machine (see page 28).**

2 **Thread gimp thread through the hole in the cord guide bobbin cover from top to bottom. Position the thread in the notch at the back of the cord guide bobbin cover.**

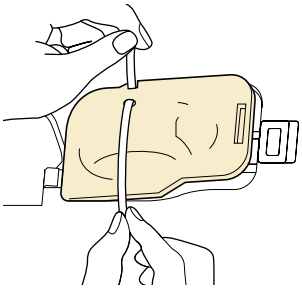
* For easy thread flow through the notch, the gimp thread should not exceed 1.5 mm (approx. 1/16 inch) in diameter.



① Notch
② Gimp thread

3 **Snap the cord guide bobbin cover into place, making sure that the gimp thread can be fed freely.**

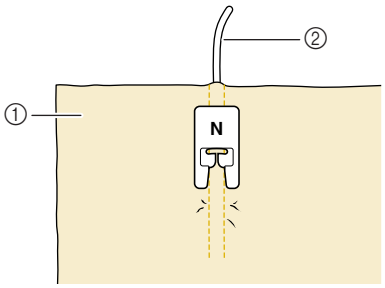
* Make sure there are no restrictions when feeding the thread.



4 **Set the zigzag width from 2.0-2.5 mm (approx. 1/16 - 3/32 inch).**

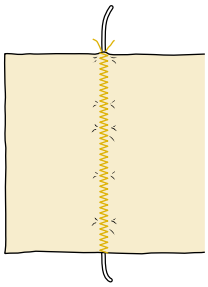
5 **Attach presser foot "N".**

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.**

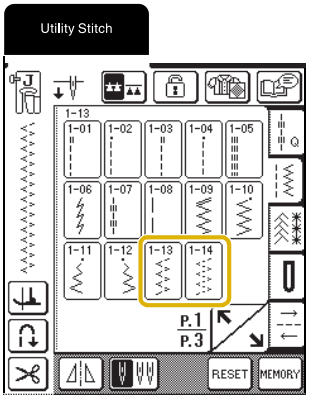


Elastic Zigzag Stitches

Use elastic zigzag stitches for a wide variety of applications, including overcasting, tape attaching, and darning.

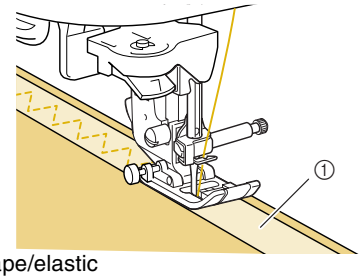
Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
1-13	**2 step elastic zigzag**	J	For overcasting (medium weight and stretch fabrics), attaching tape and elastic	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	OK (J)
1-14	**3 step elastic zigzag**	J	For overcasting (medium, heavyweight and stretch fabrics), attaching tape and elastic	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	OK (J)

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



■ Tape/Elastic Attaching

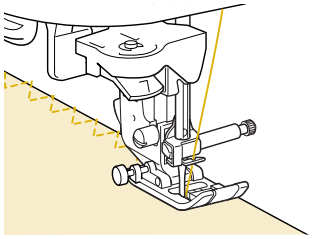
Stretch the tape or elastic flat. While stretching the tape or elastic flat, sew the tape or elastic to the fabric.



① Tape/elastic

■ Overcasting

Use this stitch to sew overcasting on the edge of stretch fabrics. Sew while making sure that the needle drops slightly off the edge of the fabric.



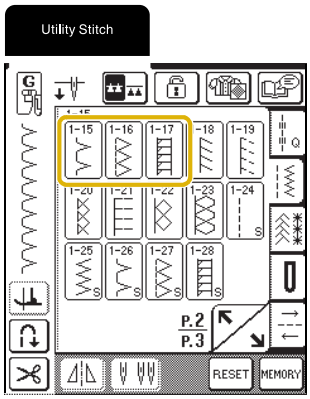
Overcasting

Sew overcasting at the beginning and end of seams for skirts or pants, and at the beginning and end of all cuttings. Depending on the selected stitch, use presser foot “G” or “J” or the optional side cutter attachment.

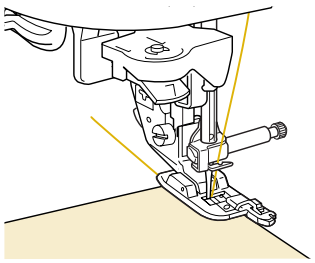
■ Overcasting Using Presser Foot “G”

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
1-15	**Overcasting stitch**	G	Reinforcing of light and medium weight fabrics	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**2.0 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
1-16	**Overcasting stitch**	G	Reinforcing of heavyweight fabric	**5.0 (3/16)**	2.5 - 5.0 (3/32 - 3/16)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
1-17	**Overcasting stitch**	G	Reinforcing of medium, heavyweight and easily frayed fabrics or decorative stitching	**5.0 (3/16)**	3.5 - 5.0 (1/8 - 3/16)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO

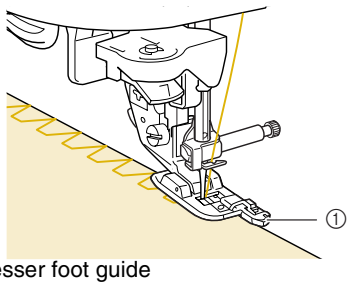
1 **Select a stitch, and then attach presser foot “G”.**



2 **Lower the presser foot so that the presser foot guide is flush against the edge of the fabric.**



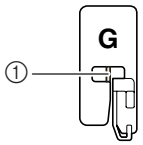
3 **Sew along the presser foot guide.**



① Presser foot guide

⚠ CAUTION

- **After the stitch width is adjusted, turn the handwheel toward you by hand and check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may break and cause injury.**



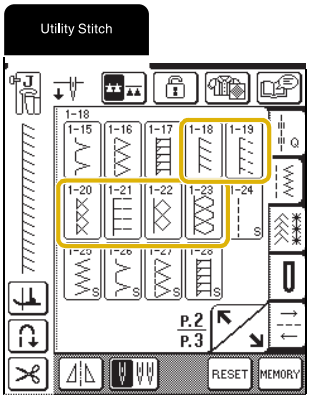
① The needle should not touch

- **If the presser foot is raised to its highest level, the needle may strike the presser foot.**

■ Overcasting Using Presser Foot "J"

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
1-18	**Overcasting stitch**	J	Reinforced seaming of stretch fabric	**5.0 (3/16)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.5 - 4.0 (1/32 - 3/16)	OK (J)
1-19	**Overcasting stitch**	J	Reinforcing of medium stretch fabric and heavyweight fabric, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.5 - 4.0 (1/32 - 3/16)	OK (J)
1-20	**Overcasting stitch**	J	Reinforcement of stretch fabric or decorative stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
1-21	**Overcasting stitch**	J	Stretch knit seam	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
1-22	**Single diamond overcast**	J	Reinforcement and seaming stretch fabric	**6.0 (15/64)**	1.0 - 7.0 (1/16 - 1/4)	**3.0 (1/8)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
1-23	**Single diamond overcast**	J	Reinforcement of stretch fabric	**6.0 (15/64)**	1.0 - 7.0 (1/16 - 1/4)	**1.8 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)

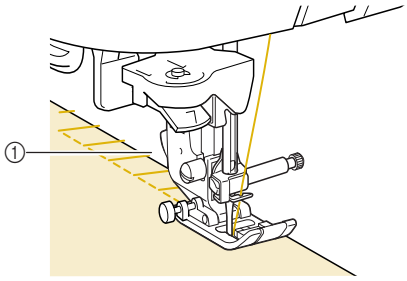
1 **Select a stitch, and then attach presser foot "J".**



2 **Sew while making sure that the needle drops slightly off the edge of the fabric.**

Memo

For best results when sewing stretch fabrics, decrease the pressure of the presser foot.



① Needle drop point

■ Overcasting Using the Optional Side Cutter

By using the side cutter, you can do overcasting while cutting the fabric.

⚠ CAUTION

- **Make sure to only select one of the stitches listed below. Using another stitch may cause the needle to hit the presser foot and break, possibly causing injury.**

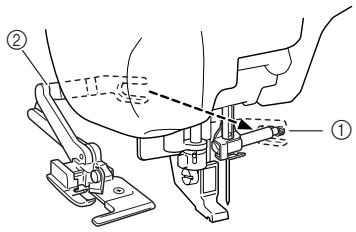
Memo

Thread the needle manually when using the side cutter, or only attach the side cutter after threading the needle using the needle threader.

Stitch Key	Stitch name	Presser foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
1-24	**With side cutter**	S	Straight stitch while cutting fabrics	**0.0 (0)**	0.0 - 2.5 (0 - 3/32)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	NO
1-25	**With side cutter**	S	Zigzag stitch while cutting fabrics	**3.5 (1/8)**	3.5 - 5.0 (1/8 - 3/16)	**1.4 (1/16)**	0.0 - 4.0 (0 - 3/16)	NO
1-26	**With side cutter**	S	Overcasting stitch while cutting fabrics	**3.5 (1/8)**	3.5 - 5.0 (1/8 - 3/16)	**2.0 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
1-27	**With side cutter**	S	Overcasting stitch while cutting fabrics	**5.0 (3/16)**	3.5 - 5.0 (1/8 - 3/16)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
1-28	**With side cutter**	S	Overcasting stitch while cutting fabrics	**5.0 (3/16)**	3.5 - 5.0 (1/8 - 3/16)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO

1 **Follow the steps on page 34 to remove the presser foot.**

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

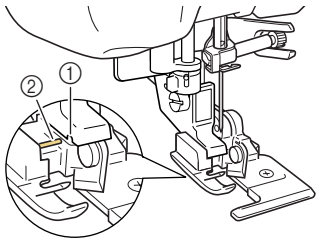


① Needle clamp screw
② Operating lever

Memo

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

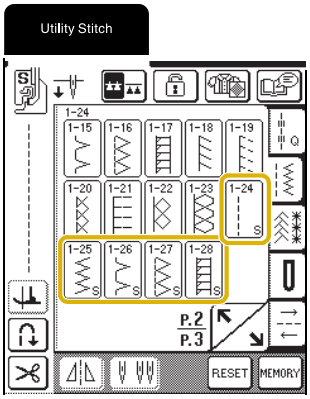
3 **Position the side cutter so that the side cutter pin is aligned with the notch in the presser foot holder, and then lower the presser foot.**



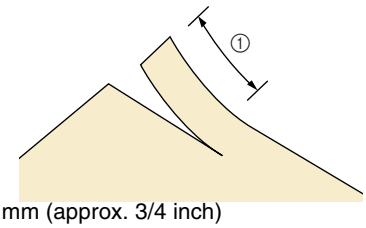
① Notch in presser foot holder
② Pin

→ The side cutter is attached.

4 **Select a stitch.**

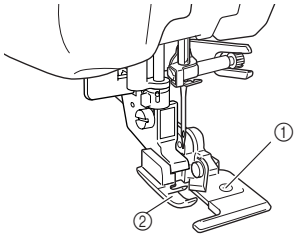


5 **Make a cut of approximately 20 mm (approx. 3/4 inch) in the fabric.**



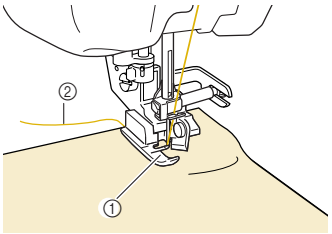
① 20 mm (approx. 3/4 inch)

6 **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.**



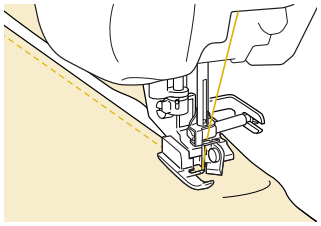
① Guide plate (lower knife)
② Presser foot

7 **Thread the needle manually 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

8 **Start sewing.**



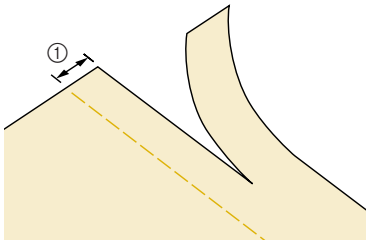
→ A seam allowance is cut while the stitching is sewn.

Note

If the width has been adjusted, turn the handwheel by hand to check that the needle does not touch the side cutter. If the needle touches the side cutter, it might cause the needle to break.

■ When Sewing Straight Stitches While Using the Optional Side Cutter

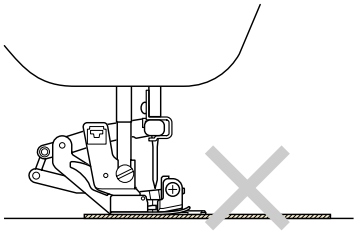
The seam margin should be approximately 5 mm (approx. 3/16 inch).



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 6 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 on it.
- Add a small amount of oil as required to the cutting edge of the cutter.

Blind Hem Stitches

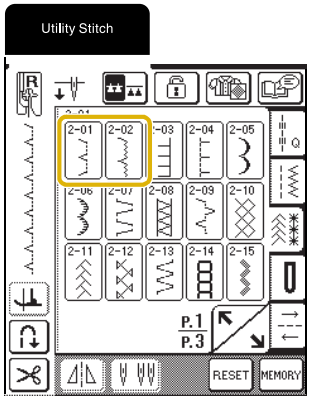
Select a blind hem stitch to sew the hems or cuffs of dresses, blouses, pants, or skirts.

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
2-01	**Blind hem stitch**	R	Hemming woven fabrics	**00**	3← – –→3	**2.0 (1/16)**	1.0 - 3.5 (1/16 - 1/8)	NO
2-02	**Blind hem stitch**	R	Hemming stretch fabric	**00**	3← – –→3	**2.0 (1/16)**	1.0 - 3.5 (1/16 - 1/8)	NO

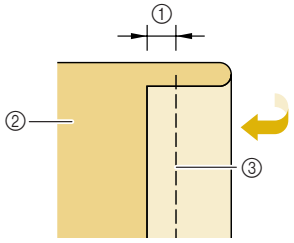
1 Select a stitch.

Memo

For best results when sewing stretch fabrics, decrease the pressure of the presser foot.

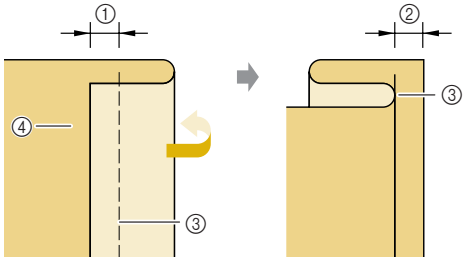


2 Place the fabric wrong side up, and then fold and baste the fabric as shown.



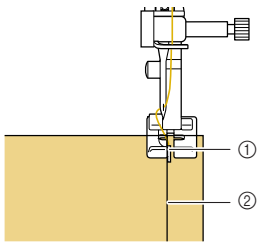
① 5 mm
② Wrong side of fabric
③ Basting

3 Fold the fabric again, as shown.



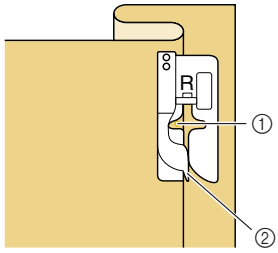
① 5 mm
② 5 mm
③ Basting
④ Wrong side of fabric

4 Attach presser foot “R”, and then lower the presser foot so that the presser foot guide is flush against the fold of the fabric.



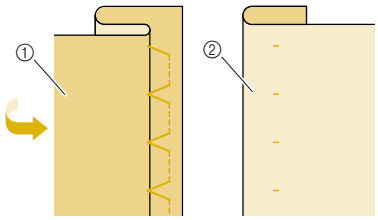
① Presser foot guide
② Fold

5 Sew while keeping the fold in the fabric against the presser foot guide.



① Needle position
② Presser foot guide

6 **Remove the basting, and then turn over the fabric.**



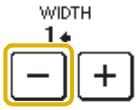
① Wrong side of fabric
② Surface of fabric

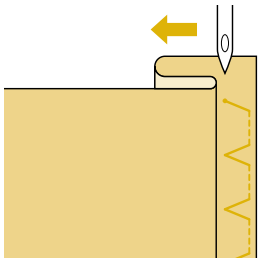
Memo

Blind hem stitches cannot be sewn if the needle does not catch the fold on the left side. However, if the needle catches too much of the fold, the fabric cannot be unfolded and too much of the seam will appear on the surface of the fabric, leaving an unattractive finish. If either of these occur, follow the instructions below to correct the problem.

■ If the Needle Does Not Catch the Fold

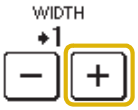
Press [−] in the width display so that the needle slightly catches the fold.

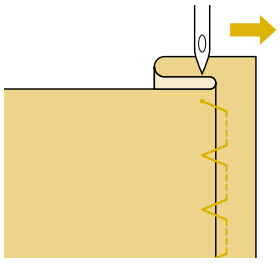




■ If the Needle Catches Too Much of the Fold

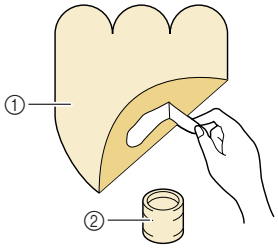
Press [+] in the width display so that the needle slightly catches the fold.





Appliqués

1 **Use a temporary spray adhesive or basting to attach the appliqué to the fabric.**



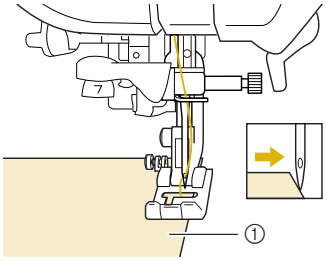
① Appliqué
② Fabric glue

2 **Press**  **or** **.**

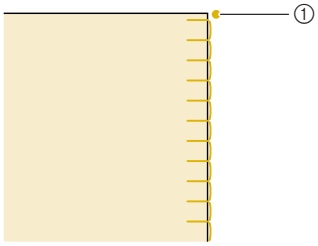
Memo

- Adjust the stitch width and length according to the shape, size and fabric quality of the appliqué (see page 44).
- For details on the stitches, refer to the “STITCH SETTING CHART” at the end of this manual.

3 **Attach presser foot “J”, and then sew along the edge of the appliqué, making sure that the needle drops slightly off the edge.**



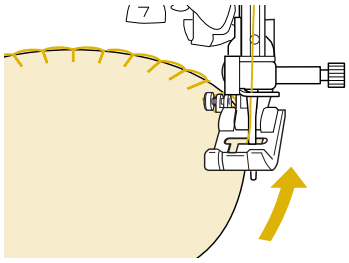
① Appliqué



① Needle drop point

■ Sewing 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.
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 (see “Pivoting” on page 47).



Shell Tuck Stitching

The arched tuck that looks like shells lined up in a row is called a shell tuck. In addition to edging, this decorative stitching can be used on the neckline or sleeves of dresses and blouses.

1 **Press** 2-04 **.**

Memo

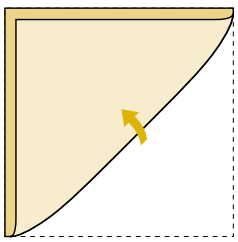
For details on the stitches, refer to the “STITCH SETTING CHART” at the end of this manual.

2 **Increase the thread tension for an attractive scalloped finish to the shell tuck stitching.**

Memo

If the thread tension is too loose, the shell tuck stitching will not scallop.

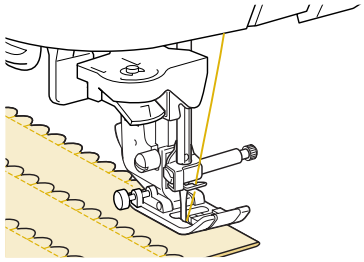
3 **Fold the fabric in half along the bias.**

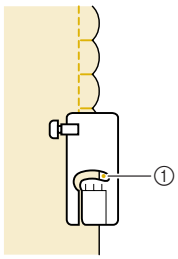


Note

Use a thin fabric.

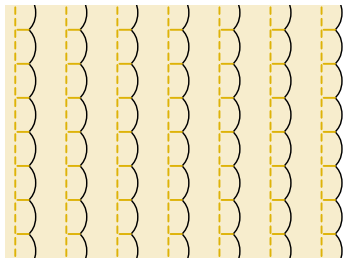
4 **Attach presser foot “J”, and then sew along the edge of the fabric, making sure that the needle drops slightly off the edge.**





① Needle drop point

5 **Unfold the fabric, and then iron the tucks down to one side.**



Scalloping

Scallop stitching (wave-shaped running stitching) can be used to decorate the edges of blouse collars and handkerchiefs.

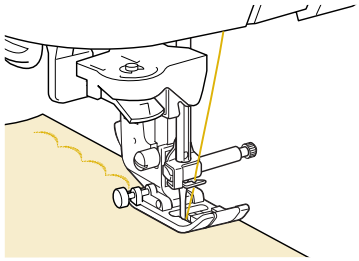
1 **Press** 2-05 **, and then attach presser foot “N”.**

Memo

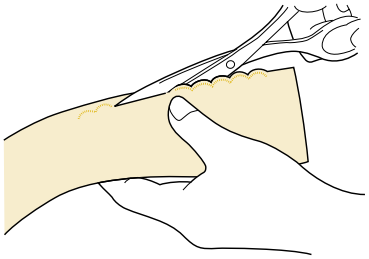
- If the automatic thread cutting setting is selected before sewing, the machine will automatically sew reinforcement stitches at the beginning of stitching. When the “Reverse/Reinforcement Stitch” button is pressed at the end of stitching, the machine will automatically sew reinforcement stitches and cut the thread.
- For best results, apply starch and iron the fabric before sewing.
- For details on the stitches, refer to the “STITCH SETTING CHART” at the end of this manual.

2 **Leave a seam when sewing the scallop stitches so that the pattern is not sewn directly on the edge of the fabric.**

> **Note**
> Sew test stitches on the fabric before sewing on your project.



3 **Trim along the seam, making sure not to cut the stitches.**

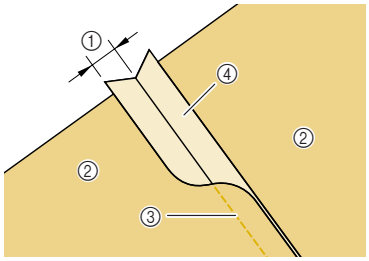


Top Stitching

For a decorative effect in a crazy quilt, stitches can be sewn over a pressed seam allowance.

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

2 **With right sides together, sew two pieces of fabric, and then open the seam allowances.**

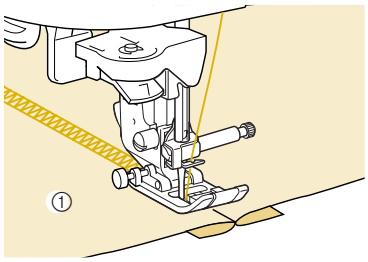


① 6.5 mm (1/4inch)
② Wrong side of fabric
③ Straight stitch
④ Seam allowance

3 **Turn the fabric over so the right side faces up, and then sew over the seam with the center of the presser foot aligned with the seam.**

* Select one of the following stitches.





① Surface of fabric

Smocking

The decorative stitching created by sewing over gathers is called smocking. It is used to decorate the front of blouses or cuffs.

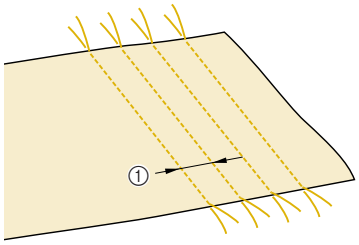
1 **Select a straight stitch, and then attach presser foot "J".**

> **Note**
> Make sure that the automatic reverse/reinforcement stitching and automatic thread cutting settings are not selected.

2 **Set the stitch length to 4.0 mm (approx. 3/16 inch) and the thread tension to 2.0 (loose tension).**

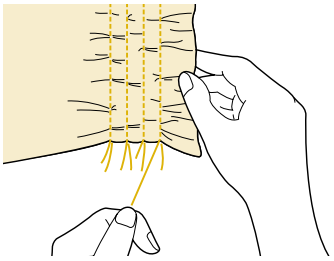
3 **Pull out 50 mm (approx. 1-15/16 inches) of both the upper and bobbin threads.**

4 **Sew stitching 10 mm (approx. 3/8 inch) apart.**



① Approximately 10mm (approx. 3/8 inch)

5 **Pull the bobbin threads to create the desired amount of gather, and then smooth the gathers by ironing them.**

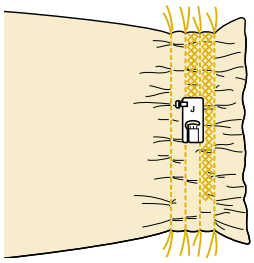


6 **Press** 2-10 **or** 2-12 **.**

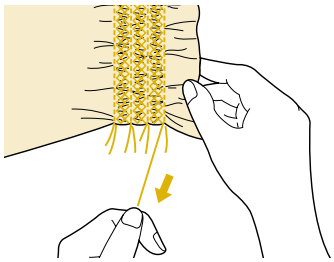
Memo

For details on the stitches, refer to the “STITCH SETTING CHART” at the end of this manual.

7 **Sew between the straight stitches.**



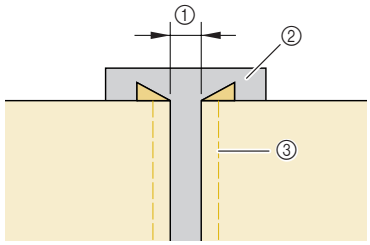
8 **Pull out the straight stitch threads.**



Fagoting

Stitching across an open seam is called fagoting. It is used on blouses and children’s clothing.

1 **Separate the two pieces of fabric by about 4 mm (approx. 3/16 inch), and baste them onto thin paper.**



① 4 mm
② Thin paper
③ Basting

2 **Press** 2-11 **or** 2-12 **, and then set the stitch width to the maximum (7.0 mm).**

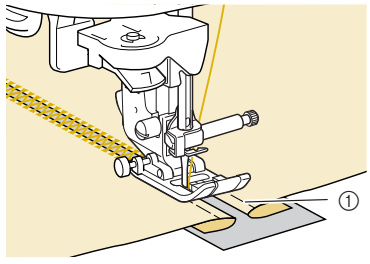
Memo

For details on the stitches, refer to the “STITCH SETTING CHART” at the end of this manual.

3 **Attach presser foot “J”, and then sew with the presser foot centered between the two pieces of fabric.**

Memo

This stitch is more decorative when thicker thread is used.



① Basting

4 **When you are finished sewing, gently tear off the paper.**

Tape or Elastic Attaching

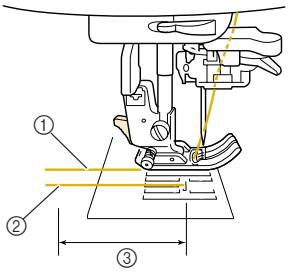
Elastic tape is sewn onto the fabric unstretched.

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

> **Note**
> Make sure that the automatic reverse/reinforcement stitching and automatic thread cutting settings are not selected.

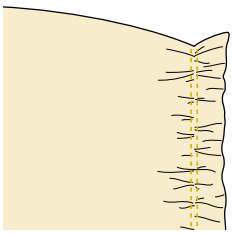
2 **Set the stitch length to 4.0 mm (approx. 3/16 inch) and the thread tension to 2.0 (weaker tension).**

3 **Pull out 50 mm (approx. 1-15/16 inches) of both the upper and bobbin threads (see "Pulling Up the Bobbin Thread" on page 28).**

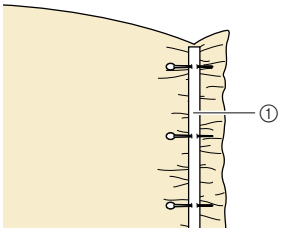


① Upper thread
② Bobbin thread
③ 50 mm

4 **Sew two rows of straight stitches on the surface of the fabric, and then pull the bobbin threads to create the desired amount of gather.**



5 **Pin the elastic tape to the wrong side of the fabric with the elastic tape evenly positioned on the gathers.**



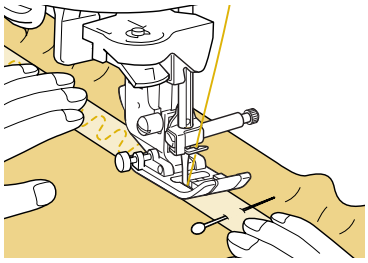
① Elastic tape

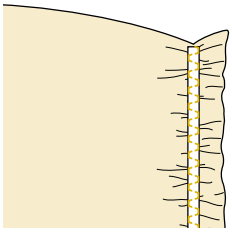
6 **Press**  **or**  **.**

> **Memo**
> For details on the stitches, refer to "Stitch Setting Chart" at the end of this manual.

7 **While pulling the elastic tape so that it is about the same length as the fabric, pull the fabric at the pin nearest the front of the presser foot with your right hand, and feed the fabric behind the presser foot with your left hand according to the feeding speed.**

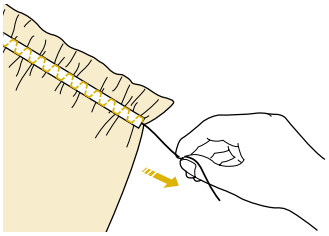
> **Memo**
> This is easy to do if the foot controller is used.





> **⚠ 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.**

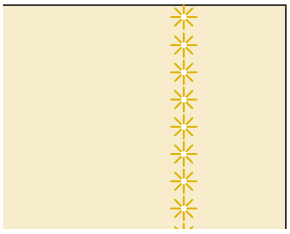
8 **Pull out the threads for the straight stitches.**



Heirloom Stitching

By sewing with the wing needle sold separately, the needle holes are enlarged, creating a lace-like decorative stitch.
This stitching is used to decorate tablecloths, hems, and shirt fronts.

■ Hemstitching (1) (Daisy Stitch)



Note

For best results, use lightweight to medium weight homespun fabrics with a slight stretch.

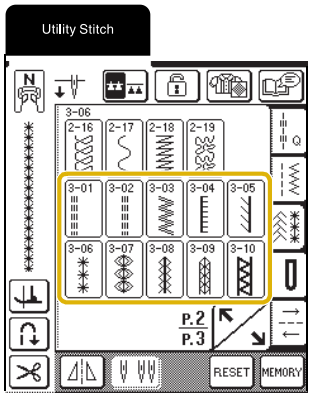
1 **Insert the wing needle (130/705H, size 100/16).**

Note

The needle threader cannot be used. Manually pass the thread through the eye of the needle from the front. If the needle threader is used, damage to the machine may result.

2 **Select a stitch, attach presser foot “N”, and then start sewing.**

* Select a stitch between 3-01 and 3-22.



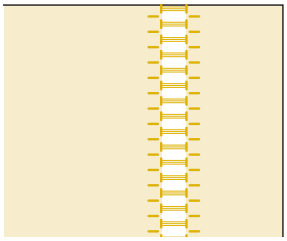
CAUTION

- **The needle threader cannot be used. Thread the wing needle by hand, from front to back. Using the needle threader may result in damage to the machine.**
- **A more attractive finish can be obtained if you use a “130/705H Wing” needle when sewing these patterns. If using a wing needle and the stitch width has been set manually, check that the needle will not touch the presser foot by carefully rotating the handwheel before starting sewing.**

Memo

For details on the stitches, refer to the “STITCH SETTING CHART” at the end of this manual.

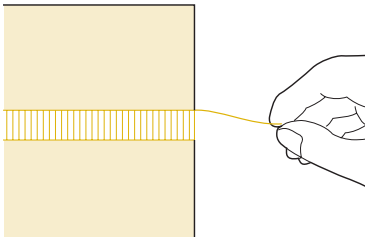
■ Hemstitching (2) (Drawn Work (1))



1 **Pull out several threads from the fabric to leave a 3 mm (approx. 1/8 inch) area open.**

Memo

For best result, use loosely woven fabrics.

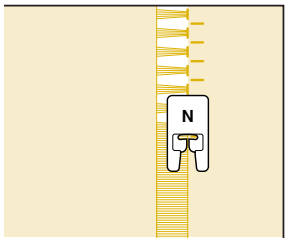


2 **Press 3-04, and then attach presser foot "N".**

Memo

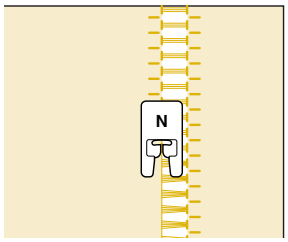
For details on the stitches, refer to the "STITCH SETTING CHART" at the end of this manual.

3 **With the surface of the fabric facing up, sew along the right edge of the open area.**

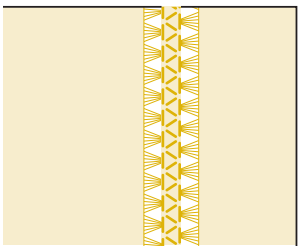


4 **Press to create a mirror image of the stitch.**

5 **Sew along the left edge of the open area so that the stitching looks symmetrical.**



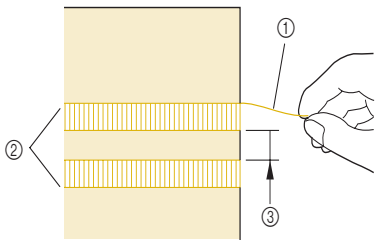
■ Hemstitching (3) (Drawn Work (2))



Memo

Drawn work can also be sewn using the wing needle (sold separately).

1 **Pull out several threads from both sides of a 4 mm (approx. 3/16 inch) area left unopened, as shown in the illustration.**



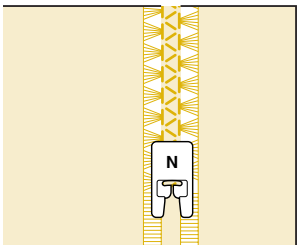
① Pulled out thread
② Pulled out area
③ Approximately 4 mm (approx. 3/16 inch) remaining

2 **Press 3-10.**

Memo

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

3 **Attach presser foot "N", and then sew along the center of the unopened area.**

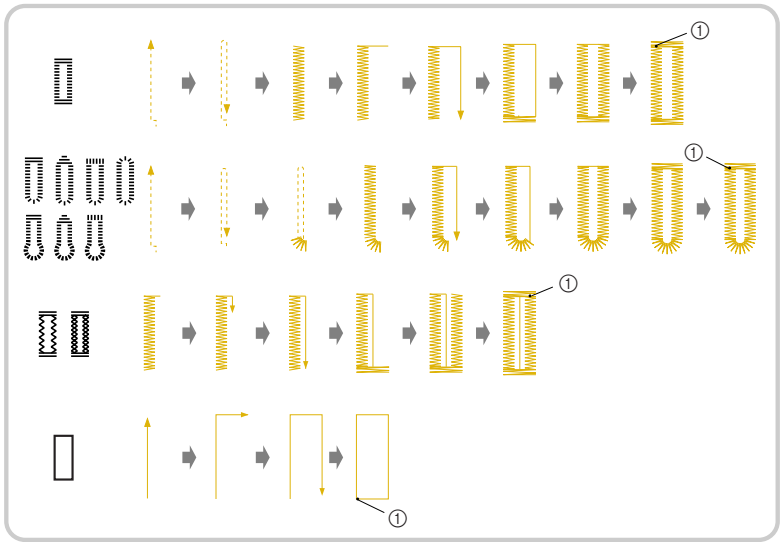


Buttonhole Stitches

Select the desired buttonhole stitch according to your application and the size of the button.

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
4-01	**Narrow rounded buttonhole**	A	Buttonhole on light to medium weight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-02	**Wide round ended buttonhole**	A	Buttonholes with extra space for larger buttons	**5.5 (7/32)**	3.5 - 5.5 (1/8 - 7/32)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-03	**Tapered round ended buttonhole**	A	Reinforced waist tapered buttonholes	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-04	**Round ended buttonhole**	A	Buttonholes with vertical bar tack in heavyweight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-05	**Round double ended buttonhole**	A	Buttonholes for fine, medium to heavyweight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-06	**Narrow squared buttonhole**	A	Buttonholes for light to medium weight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
4-07	**Stretch buttonhole**	A	Buttonholes for stretch or woven fabrics	**6.0 (15/64)**	3.0 - 6.0 (1/8 - 15/64)	**1.0 (1/16)**	0.5 - 2.0 (1/32 - 1/16)	NO
4-08	**Heirloom buttonhole**	A	Buttonholes for heirloom and stretch fabrics	**6.0 (15/64)**	3.0 - 6.0 (1/8 - 15/64)	**1.5 (1/16)**	1.0 - 3.0 (1/16 - 1/8)	NO
4-09	**Bound buttonhole**	A	The first step in making bound buttonholes	**5.0 (3/16)**	0.0 - 6.0 (0 - 15/64)	**2.0 (1/16)**	0.2 - 4.0 (1/64 - 3/16)	NO
4-10	**Keyhole buttonhole**	A	Buttonholes in heavyweight or thick fabrics for larger flat buttons	**7.0 (1/4)**	3.0 - 7.0 (1/8 - 1/4)	**0.5 (1/32)**	0.3 - 1.0 (1/64 - 1/16)	NO
4-11	**Tapered keyhole buttonhole**	A	Buttonholes in medium to heavy weight fabrics for larger flat buttons	**7.0 (1/4)**	3.0 - 7.0 (1/8 - 1/4)	**0.5 (1/32)**	0.3 - 1.0 (1/64 - 1/16)	NO
4-12	**Keyhole buttonhole**	A	Buttonholes with vertical bar tack for reinforcement in heavyweight or thick fabrics	**7.0 (1/4)**	3.0 - 7.0 (1/8 - 1/4)	**0.5 (1/32)**	0.3 - 1.0 (1/64 - 1/16)	NO

Buttonholes are sewn from the front of the presser foot to the back, as shown below.



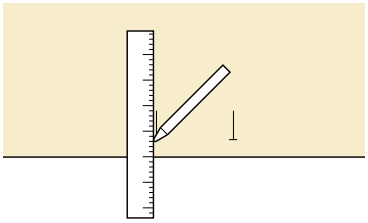
① Reinforcement stitching

1 **Select a stitch, and then attach presser foot "A".**

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

Memo

The maximum buttonhole length is 28 mm (approx. 1-1/6 inches) (diameter + thickness of the button).

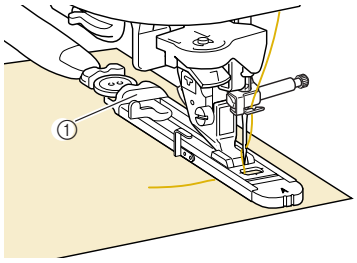


3 **Pull out the button holder plate on the presser foot, and then insert the button that will be put through the buttonhole.**

* The size of the buttonhole is set by clamping the button in the button holder plate.

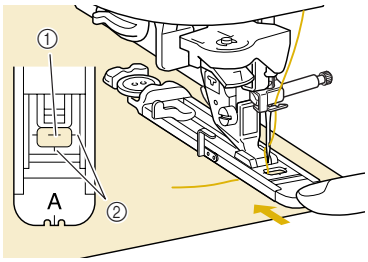
Note

Pass the thread under the presser foot.



① Button holder plate

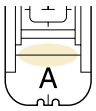
4 **Hold the outside frame of the buttonhole foot toward the back with your finger, and then lower the presser foot so that the mark on the fabric aligns with the marks on the buttonhole foot.**



① Mark on fabric
② Marks on presser foot

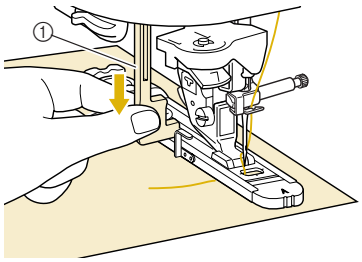
Note

- Slide the outside frame of the buttonhole foot backward as far as possible, making sure that there is no gap behind the part of the foot marked "A", as shown in the illustration. If the buttonhole foot is not slid back as far as possible, the buttonhole will not be sewn at the correct size.
- Pass the thread under the presser foot.

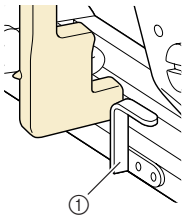


5 **Pull down the buttonhole lever.**

* The buttonhole lever should be positioned behind the metal bracket on the buttonhole foot, as shown in the illustration.



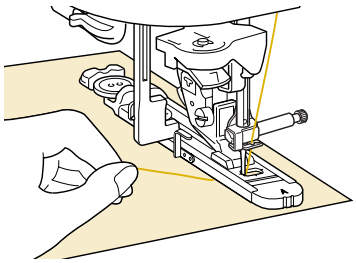
① Buttonhole lever



① Metal bracket

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

* Once sewing is completed, the machine automatically sews reinforcement stitches, then stops.
* If the automatic thread cutting setting is selected before sewing, the machine will automatically cut the thread at the end of stitching.



→ A buttonhole starts to sew from the front of the presser foot to the back.

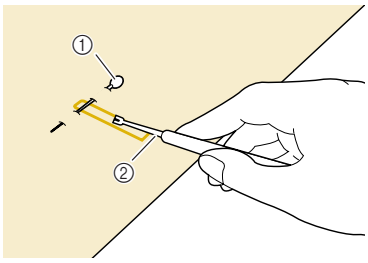
Note

- If the fabric does not feed, for example, because it is too thick, press [+] in the length display to increase the stitch length.
- When sewing is finished, raise the buttonhole lever to its original position.

7 **Insert a pin along the inside of a bar tack at the end of the buttonhole, and then insert the seam ripper into the center of the buttonhole and cut towards the pin.**

Note

Be careful not to cut the stitches with the seam ripper.

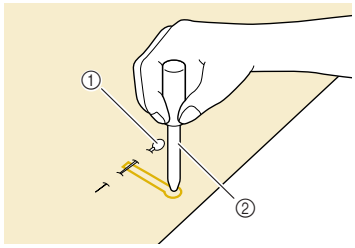


① Pin
② Seam ripper

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.**

For keyhole buttonholes, use the included eyelet punch to make a hole in the rounded end of the buttonhole. Then, insert a pin along the inside of the bar tack, insert a seam ripper into the hole made with the eyelet punch, and then cut towards the pin.



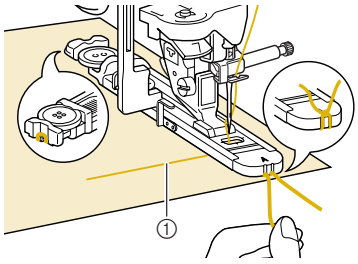
① Pin
② Eyelet punch

■ Sewing Stretch Fabrics

When sewing a buttonhole on stretch fabrics, press  or , and use a gimp thread.

1 Hook the gimp thread onto the back of buttonhole foot "A", and then pull the ends of the gimp thread under the presser foot. Pass the thread ends through the grooves at the front of the presser foot, and then temporarily tie them.

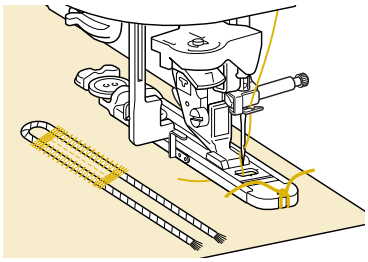
* Use #5 embroidery thread or lace yarn for the gimp thread.



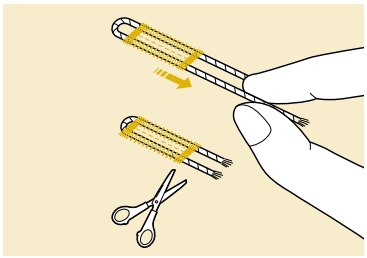
① Upper thread

2 Lower the presser foot lever, and then start sewing.

* Set the stitch width to the width of the gimp thread.



3 When sewing is finished, gently pull the gimp thread to remove any slack, and then use a handsewing needle with a large eye to pull the gimp thread to the wrong side of the fabric.



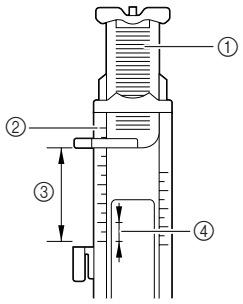
4 Tie the ends together, and then trim the excess.

* After using the seam ripper to cut the threads sewn over the buttonhole, trim the threads.

■ Buttons That Do Not Fit into the Button Holder Plate

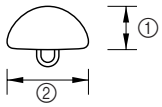
Use the markings on the presser foot scale to set the size of the buttonhole. The distance between the markings on the presser foot scale is 5 mm (approx. 3/16 inch).

Add together the diameter and thickness of the button, and then set the button holder plate to the calculated value.



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

Example: For a button with a diameter of 15 mm (approx. 9/16 inch) and a thickness of 10 mm (approx. 3/8 inch), the scale should be set at 25 mm (approx. 1 inch).



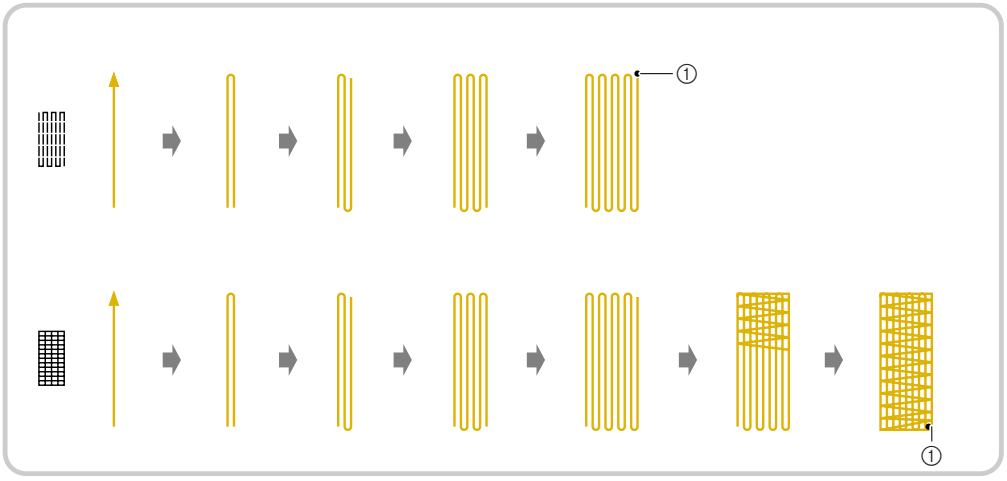
① Thickness: 10 mm (approx. 3/8 inch)
② Diameter: 15 mm (approx. 9/16 inch)

■ Darning

Use darning stitches for mending and other applications.

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
4-13	**Darning**	A	Darning of medium weight fabric	**7.0 (1/4)**	2.5 - 7.0 (3/32 - 1/4)	**2.0 (1/16)**	0.4 - 2.5 (1/64 - 1/16)	NO
4-14	**Darning**	A	Darning of heavyweight fabric	**7.0 (1/4)**	2.5 - 7.0 (3/32 - 1/4)	**2.0 (1/16)**	0.4 - 2.5 (1/64 - 1/16)	NO

Darning is sewn from the front of the presser foot to the back, as shown below.



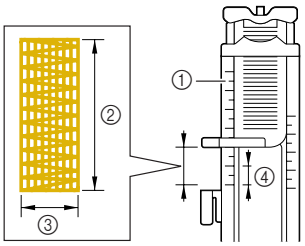
① Reinforcement stitching

1 **Select a stitch.**

2 **Set the scale on buttonhole foot “A” to the desired length of the darning, and then attach the buttonhole foot.**

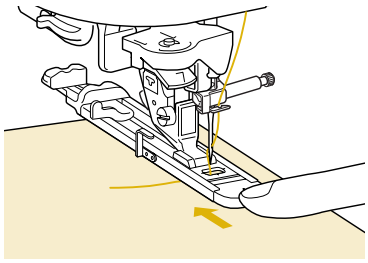
Memo

The maximum length for darning is 28 mm (approx. 1-1/16 inches).



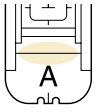
① Presser foot scale
② Finished measurement
③ 7 mm wide (approx. 1/4 inch)
④ 5 mm (approx. 3/16 inch)

3 **Hold the outside frame of the buttonhole foot toward the back with your finger, and then lower the presser foot so that it aligns with the area to be darned.**



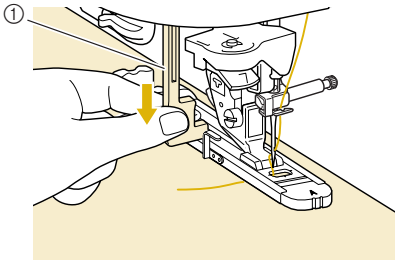
Note

- Slide the outside frame of the buttonhole foot backward as far as possible, making sure that there is no gap behind the part of the foot marked “A”, as shown in the illustration. If the buttonhole foot is not slid back as far as possible, the darning will not be sewn at the correct size.
- Pass the thread under the presser foot.

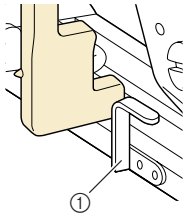


4 **Pull down the buttonhole lever.**

* The buttonhole lever should be positioned behind the metal bracket on the buttonhole foot, as shown in the illustration.



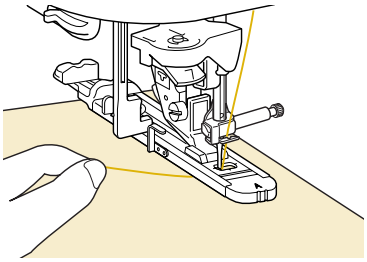
① Buttonhole lever



① Metal bracket

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

* Once sewing is completed, the machine automatically sews reinforcement stitches, then stops.
* If the automatic thread cutting setting is selected before sewing, the machine will automatically cut the thread at the end of stitching.



Note

If the fabric does not feed, for example, because it is too thick, press [+] in the length display to increase the stitch length.

Bar Tacks

Bar tacks are one type of reinforcement stitching used to strengthen points subject to strain, such as ends of pocket openings and slits.

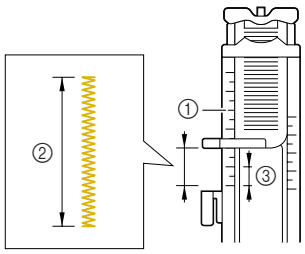
Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Bar tack**		Reinforcement at opening of pocket, etc.	**2.0 (1/16)**	1.0 - 3.0 (1/16 - 1/8)	**0.4 (1/64)**	0.3 - 1.0 (1/64 - 1/16)	NO

1 **Press**  **.**

2 **Set the scale on buttonhole foot "A" to the desired length of the darning, and then attach the buttonhole foot.**

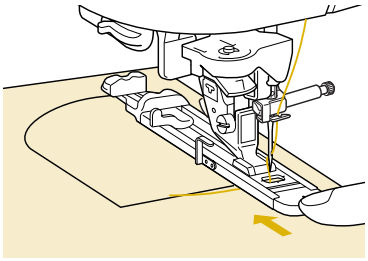
Memo

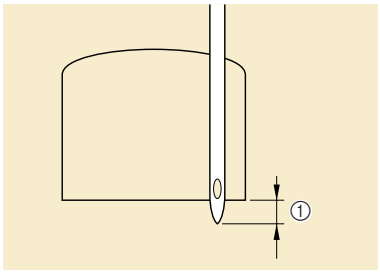
The bar tack length can be set between 5 and 28 mm (approx. 3/16 and 1-1/16 inches). Bar tacks are usually between 5 and 10 mm (approx. 3/16 and 3/8 inch) (This differs depending on the application.)



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

3 **Position the fabric so that the opening of the pocket moves toward you during sewing. Hold the outside frame of the buttonhole foot toward the back with your finger, check the first needle drop point, and then lower the presser foot.**

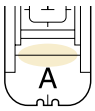




① First needle drop point: 2 mm (approx. 1/16 inch)

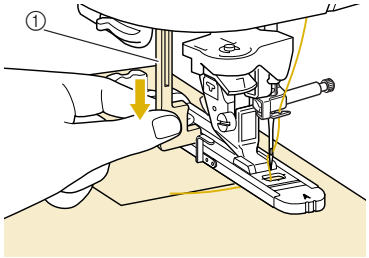
Note

- Slide the outside frame of the buttonhole foot backward as far as possible, making sure that there is no gap behind the part of the foot marked “A”, as shown in the illustration. If the buttonhole foot is not slid back as far as possible, the bar tack will not be sewn at the correct size.
- Pass the thread under the presser foot.

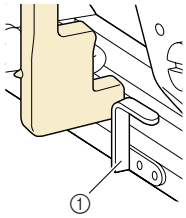


4 **Pull down the buttonhole lever.**

* The buttonhole lever should be positioned behind the metal bracket on the buttonhole foot, as shown in the illustration.



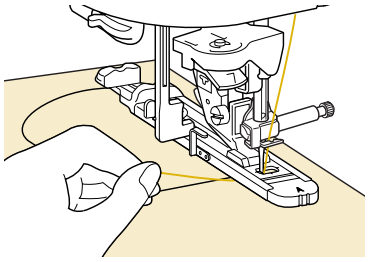
① Buttonhole lever



① Metal bracket

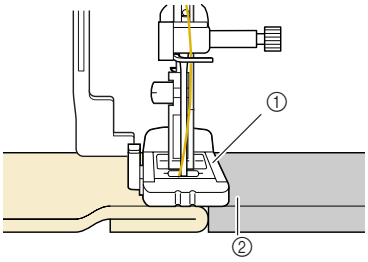
5 **Gently hold the end of the upper thread, and then start sewing.**

* Once sewing is completed, the machine automatically sews reinforcement stitches, then stops.
* If the automatic thread cutting setting is selected before sewing, the machine will automatically cut the thread at the end of stitching.



■ Bar Tacks on Thick Fabrics

Place a piece of folded fabric or cardboard beside the fabric being sewn to level the buttonhole foot and allow for easier feeding.



① Presser foot
② Thick fabric

Note

If the fabric does not feed, for example, because it is too thick, press [+] in the length display to increase the stitch length.

Button Sewing

Buttons with 2 or 4 holes can be sewn on.

Note

Make sure that the automatic thread cutting setting is not selected when sewing on buttons.

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
4-16	**Button sewing**	M	Attaching buttons	**3.5 (1/8)**	2.5 - 4.5 (3/32 - 3/16)	—	—	NO

1 **Press 4-16.**

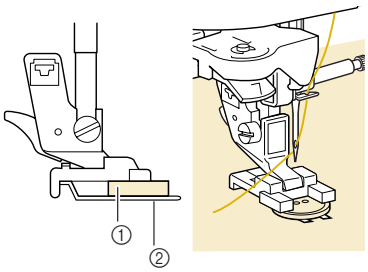
→ automatically changes to , and the feed dogs are lowered.

Memo

When button sewing is selected, cannot be set.

2 **Raise the presser foot lever.**

3 **Attach button fitting foot "M", slide the button along the metal plate and into the presser foot, and then lower the presser foot lever.**



① Button
② Metal plate

4 **Turn the handwheel toward you to check that the needle correctly goes into the holes of the button without touching it.**

CAUTION

- **Make sure the needle does not strike the button during sewing. The needle may break and cause injury.**

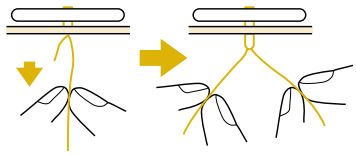
5 **Gently hold the end of the upper thread, and then start sewing.**

* Once sewing is completed, the machine automatically sews reinforcement stitches, then stops.
* If the automatic thread cutting setting is selected before sewing, the machine will automatically cut the thread at the end of stitching.

Note

- To attach the button more securely, repeat the procedure.
- Adjust the stitch width to the distance between the holes in the button.

6 **With scissors, cut the upper and bobbin threads at the beginning of the stitching, pull the upper thread at the end of the stitching to the wrong side of the fabric, and then tie it with the bobbin thread.**

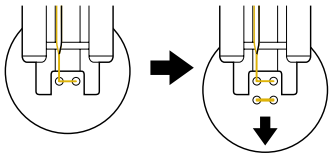


Memo

If a different stitch is selected, returns to its original setting.

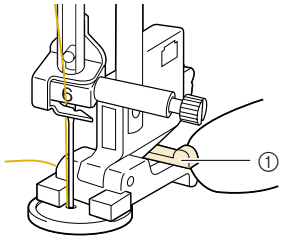
■ Attaching a 4-Hole Button

Sew the two holes toward the front. Then, raise the presser foot, move the fabric so that the needle goes into the back two holes, and then sew them in the same way.



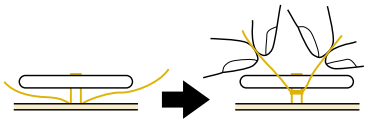
■ Attaching a Button with a Shank

1 Pull the shank lever toward you.



① Shank lever

2 When sewing is finished, pull the two ends of the upper thread between the button and the fabric, wind them around the shank, and then tie them together.



3 Tie the ends of the bobbin thread together at the beginning and end of the stitching on the wrong side of the fabric

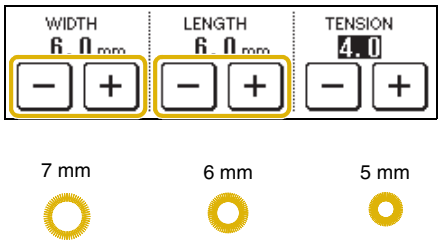
Eyelets

Eyelets can be used for making belt holes and other similar applications.

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch width [mm (inch)]		Stitch length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
4-17	**Eyelet**	N	For making eyelets, holes on belts, etc.	**7.0 (1/4)**	7.0 6.0 5.0 (1/4 15/64 3/16)	**7.0 (1/4)**	7.0 6.0 5.0 (1/4 15/64 3/16)	NO

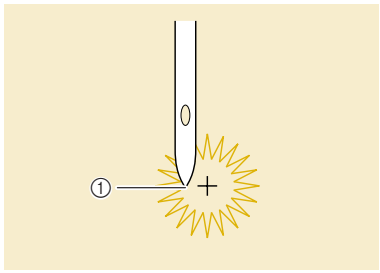
1 Press 4-17, and then attach presser foot "N".

2 Press − or + in the width display or − or + in the length display to set the size of the eyelet.



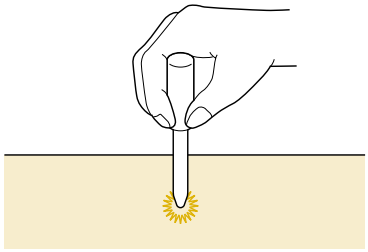
3 Lower the needle into the fabric at the beginning of the stitching, lower the presser foot lever, and then start sewing.

* Reinforcement stitches are automatically sewn at the end of the stitching.
* If the automatic thread cutting setting is selected before sewing, the machine will automatically cut the thread at the end of stitching.



① Starting point of stitching

4 **Use the eyelet punch to cut a hole in the center of the stitching.**

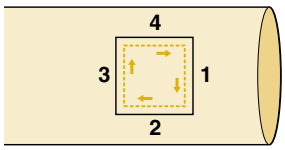


Multi-Directional Sewing (Straight Stitch and Zigzag Stitch)

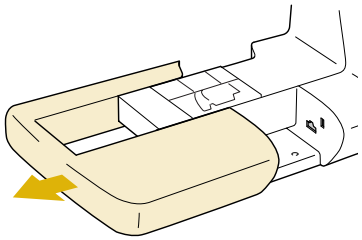
Use these stitches to attach patches or emblems to pant legs, shirt sleeves, etc.

Memo

Pass the free arm through the tubular piece of fabric, and then sew in the order shown in the illustration.

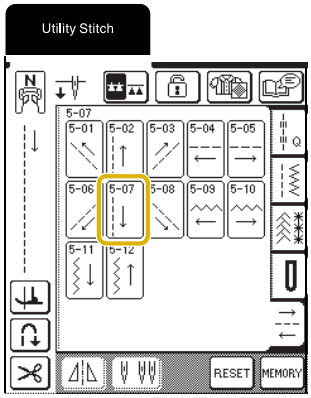


1 **Remove the flat bed attachment to enable free-arm sewing.**



2 **Pass the free arm through the fabric.**

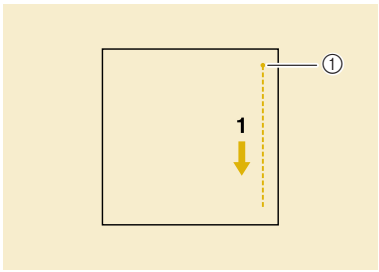
3 **Press 5-07, and then attach presser foot "N".**



Memo

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

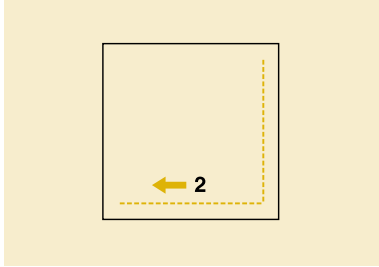
4 **Insert the needle into the fabric at the starting point of the stitching, and then sew seam 1.**



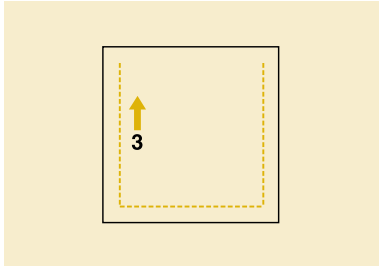
① Starting point of stitching

5 **Press 5-04, and then sew seam 2.**

* The fabric will move sideways, so guide the fabric with your hands to sew straight.

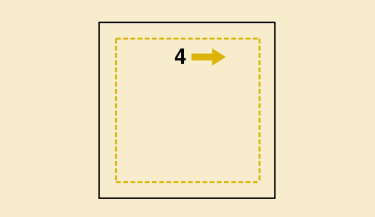


6 **Press 5-02, and then sew seam 3.**



7 **Press [5-05], and then sew seam 4.**

* The fabric will move sideways, so guide the fabric with your hands to sew straight.



Memo

Zigzag stitches can also be used with multi-directional sewing.

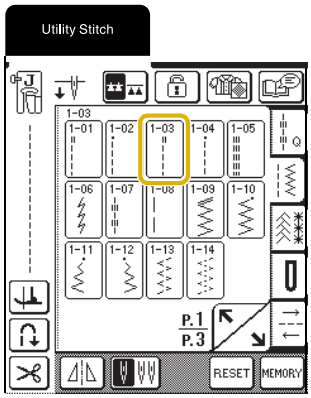
Zipper Insertion

■ Centered Zipper

Use for bags and other such applications.

1 **Press [1-03].**

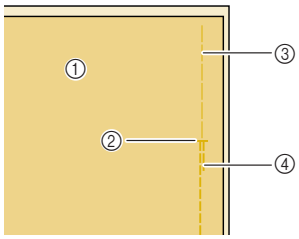
* Be sure to select the straight stitch with the middle (center) needle position.



Memo

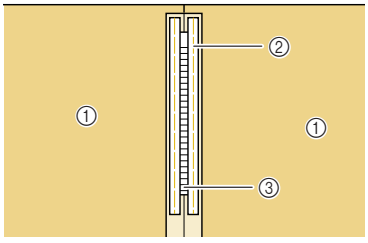
For details on the stitches, refer to the “STITCH SETTING CHART” at the end of this manual.

2 **Attach presser foot “J”, sew straight stitches up to the zipper opening, and then sew basting stitches to the top of the fabric.**



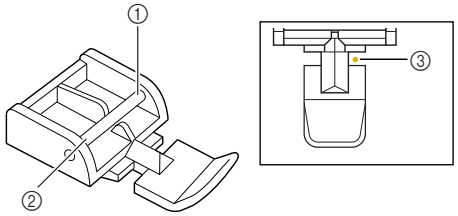
① Wrong side of fabric
② End of zipper opening
③ Basting
④ Reverse stitching

3 **Press open the seam allowance, align the seam with the center of the zipper, and then baste the zipper in place.**



① Wrong side of fabric
② Basting
③ Zipper teeth

4 **Remove presser foot "J", and then attach the pin on the right side of zipper foot "I" to the presser foot holder.**

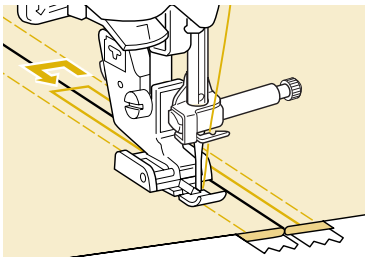


① Right side
② Left side
③ Needle drop point

CAUTION

- **When using zipper foot "I", make sure the straight stitch, middle (center) needle position is selected. Turn the handwheel 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 around the zipper, and then remove the basting.**



CAUTION

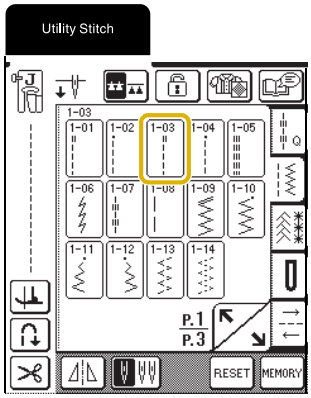
- **Make sure the needle does not strike the zipper during sewing. If the needle strikes the zipper, the needle may break, leading to injury.**

■ Side Zipper

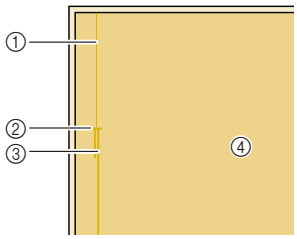
Use for side zippers on skirts or dresses.

1 **Press**  **.**

* Be sure to select the straight stitch with the middle (center) needle position.

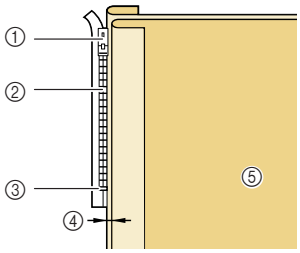


2 **Attach presser foot "J", sew straight stitches to the zipper opening, and then sew basting stitches to the edge of the fabric.**



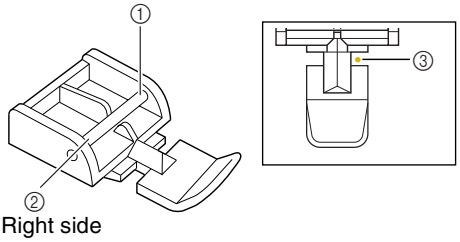
① Basting
② End of zipper opening
③ Reverse stitching
④ Wrong side of fabric

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 Zipper teeth
③ End of zipper opening
④ 3 mm (approx. 1/8 inch)
⑤ Wrong side of fabric

4 **Remove presser foot “J”, and then attach the presser foot holder to the pin on the right side of zipper foot “I”.**



① Right side
② Left side
③ Needle drop point

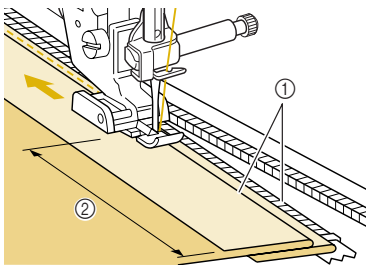
⚠ CAUTION

- **When using zipper foot “I”, make sure the straight stitch, middle (center) needle position is selected. Turn the handwheel 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 **Set the presser foot in the 3 mm (approx. 1/8 inch) margin.**

6 **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.**

7 **Pull down the zipper slider, then continue sewing to the edge of the fabric.**

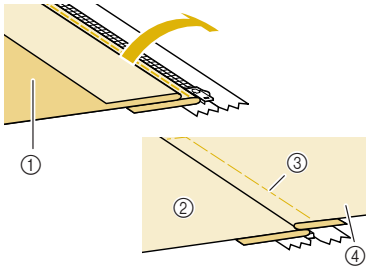


① 3 mm (approx. 1/8 inch)
② 50 mm (approx. 2 inch)

⚠ CAUTION

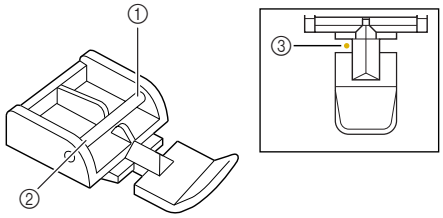
- **Make sure the needle does not strike the zipper during sewing. If the needle strikes the zipper, the needle may break, leading to injury.**

8 **Close the zipper, turn the fabric over so that the surface faces up, and then baste the other side of the zipper to the fabric.**



① Front of garment (wrong side of fabric)
② Back of garment (surface of fabric)
③ Basting
④ Front of garment (surface of fabric)

9 **Remove the presser foot, and then attach the pin on the left side of the zipper foot to the presser foot holder.**



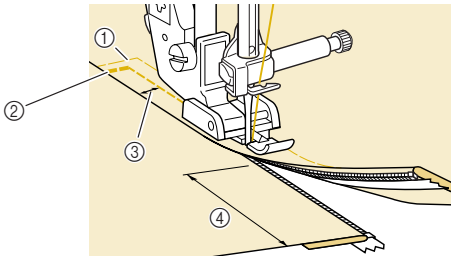
① Right side
② Left side
③ Needle drop point

10 **Set the fabric so that the left edge of the presser foot touches the edge of the zipper teeth.**

11 **Sew reverse stitches at the closed end of the zipper, then continue sewing.**

12 **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.**

13 **Open the zipper and sew the rest of the seam.**



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



Chapter 4
Character/ Decorative Stitches

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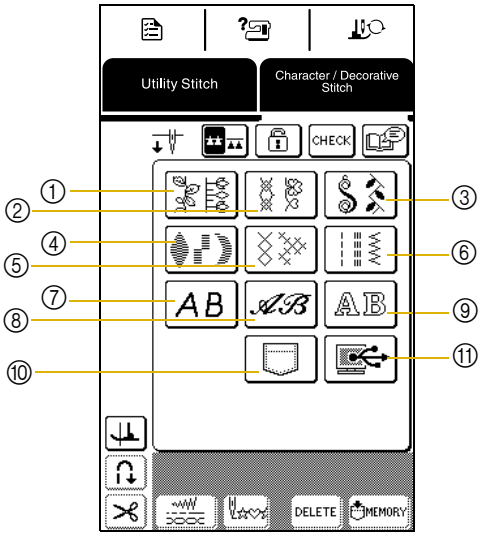
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SELECTING STITCH PATTERNS

■ Stitch Selection Screens

Press Character / Decorative Stitch to display the screen shown below.

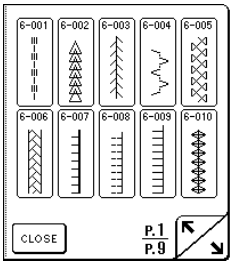


① Decorative stitch patterns
② 7 mm decorative stitch patterns
③ Satin stitch patterns
④ 7 mm satin stitch patterns
⑤ Cross stitch patterns
⑥ Utility decorative stitch patterns
⑦ Alphabet patterns (gothic font)
⑧ Alphabet patterns (handwriting font)
⑨ Alphabet patterns (outline style)
⑩ Patterns saved in the machine's memory (see page 122)
⑪ Patterns saved on the computer (see page 123).

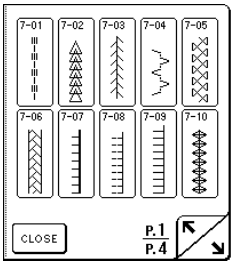
Press to display the previous or next page.

* The patterns in screens ②, ④ and ⑥ have a stitch width of 7 mm or less. Both the stitch length and width can be adjusted.

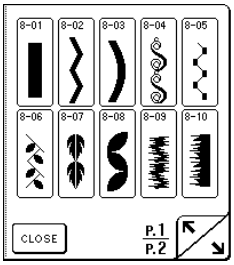
① Decorative stitch patterns



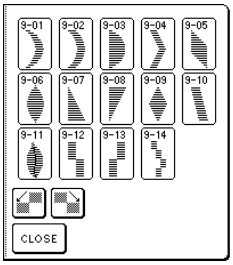
② 7 mm decorative stitch patterns



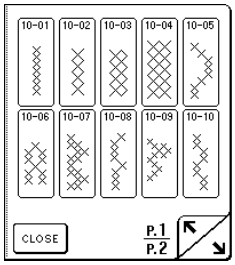
③ Satin stitch patterns



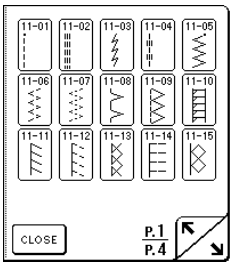
④ 7 mm satin stitch patterns



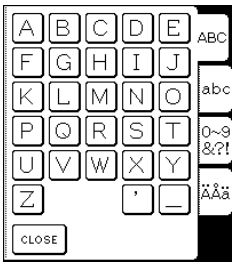
⑤ Cross stitch patterns



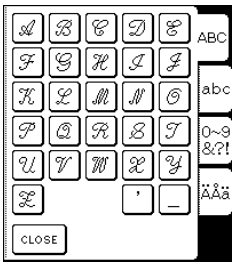
⑥ Utility decorative stitch patterns



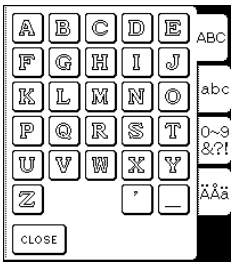
⑦ Alphabet patterns (gothic font)



⑧ Alphabet patterns (handwriting font)



⑨ Alphabet patterns (outline style)

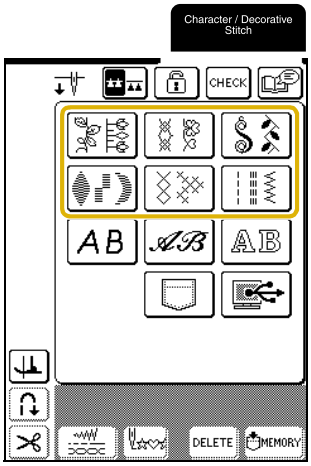


Note

When the screen is locked ( ), no key other than and the Utility Stitch / Character / Decorative Stitch keys can be operated.

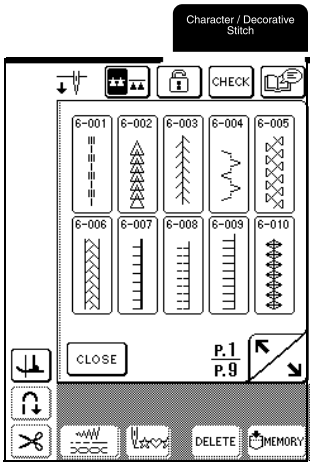
Selecting Decorative Stitch Patterns/ 7 mm Decorative Stitch Patterns/ Satin Stitch Patterns/ 7 mm Satin Stitch Patterns/Cross Stitch Patterns/Utility Decorative Stitch Patterns

1 **Press Character / Decorative Stitch, and then press the key for the category containing the pattern that you want to sew.**



2 **Select a stitch pattern that you want to sew.**

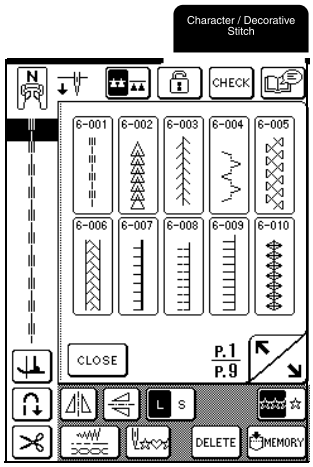
* Press ↘ to display the next page.
* Press ↖ to display the previous page.
* Press CLOSE to return to the screen of pattern categories.



→ An image of the selected stitch pattern is displayed below the symbol of the appropriate presser foot.

3 **To combine patterns, select the next pattern.**

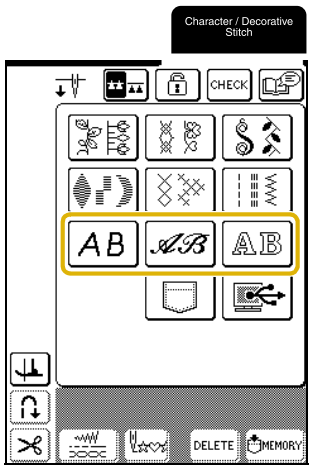
* Press CHECK to check the selected pattern combination.
* If the wrong pattern was selected, press DELETE to erase the pattern, and then select the new stitch pattern.



Alphabet Patterns

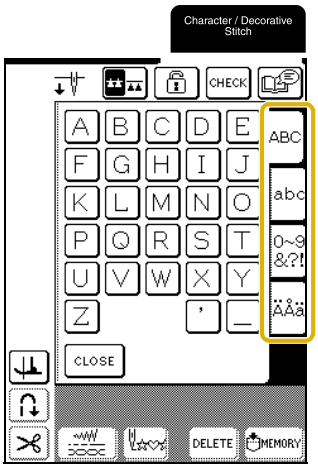
Three alphabet patterns are available in different styles. The procedure for selecting a character is the same with all styles.

1 **Press Character / Decorative Stitch, and then press the key for the character style that you want to sew.**



2 **Press ABC abc 0~9 &?! ÄÅä to display a selection screen of characters, and then select a character. Repeat this step until you have selected all of the characters.**

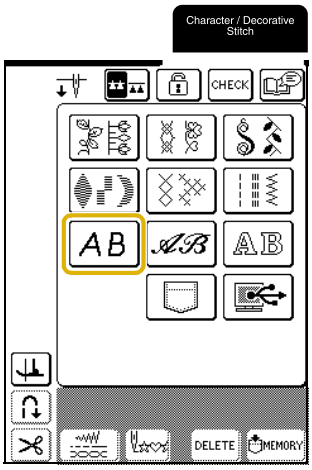
* If a wrong character was selected, press DELETE to erase the character, and then select the new character.
* To select a different character style, press CLOSE, and then select the new character style.
* Press CHECK to check the selected characters.



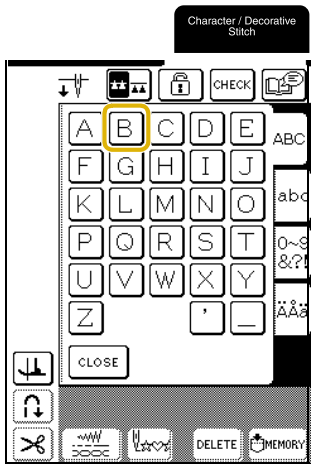
→ An image of the selected characters is displayed below the symbol of the appropriate presser foot.

Example: To select "Bus"

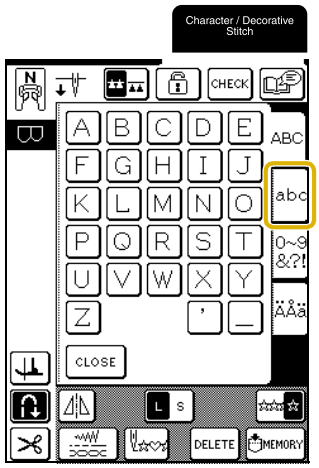
1 **Press AB.**



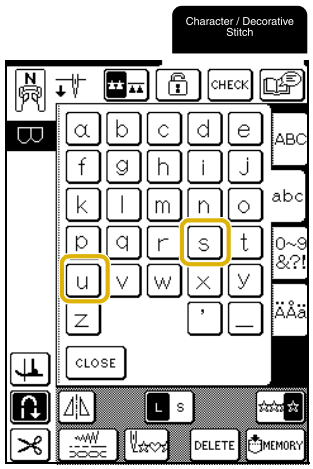
2 **Press B.**



3 **Press abc.**



4 **Press u, then s.**



→ "Bus" appears.

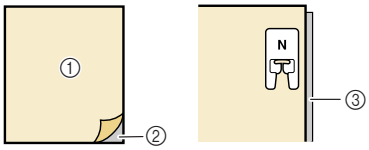
* A maximum of 70 characters can be combined.

SEWING STITCH PATTERNS

Sewing Attractive Finishes

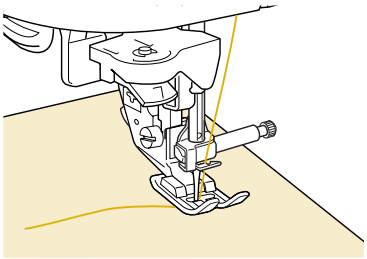
Note

- To achieve the best results when sewing character/decorative stitches, check the table below for the proper fabric/needle/thread combinations.
- Other factors, such as the type or thickness of the fabric being sewn or the type of stabilizer material used, also affect the stitching. Therefore, be sure to sew a few trial stitches before sewing your project.
- Since shrinkage or bunched stitches may result when satin stitches are sewn, be sure to affix stabilizer material to the fabric.
- While sewing, guide the fabric with your hands so that it will be fed straight.

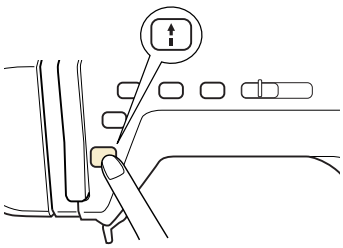
Fabric	When sewing on stretch fabrics, lightweight fabrics, or fabrics with coarse weaves, attach stabilizer on the wrong side of the fabric. If you do not wish to do so, place the fabric on a thin paper such as tracing paper.  ① Fabric ② Stabilizer ③ Thin paper
Thread	#50 - #60
Needle	With lightweight, regular, or stretch fabrics: Ballpoint 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 presser foot “N”.**
3. **Place the fabric under the presser foot, pull the upper thread under the presser foot and to the side, and then lower the presser foot lever.**



4. **Press the “Reverse/Reinforcement Stitch” button to sew reinforcement stitches, and then press the “Start/Stop” button to start sewing.**



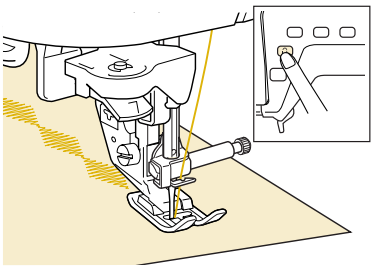
CAUTION

- **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 (see “Adjusting the Stitch Length” on page 44).**

Memo

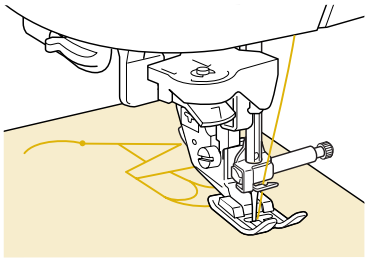
If the fabric is pulled or pushed during sewing, the pattern may not be sewn correctly. In addition, depending on the pattern, there may be movement to the left and right as well as to the front and back. Therefore, guide the fabric with your hands so that it will be fed straight.

5 **Press the “Start/Stop” button to stop the machine, and then press the “Reverse/ Reinforcement Stitch” button to sew reinforcement stitches.**



Memo

- When sewing character stitch patterns, the machine automatically sews reinforcement stitches at the end of the stitching, then stops (The machine is automatically set to sew reinforcement stitches at the beginning and end of each character.)



- After sewing is finished, trim any excess thread.



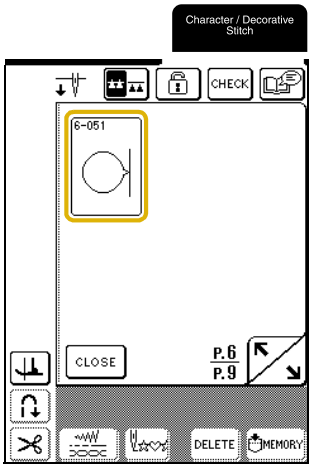
Note

When sewing some patterns, the needle will stop in the raised position while the fabric is fed due to the operation of the needle bar separation mechanism which is used in this machine. At such times, a clicking sound different from the sound generated during sewing will be heard. This sound is normal and is not the sign of a malfunction.

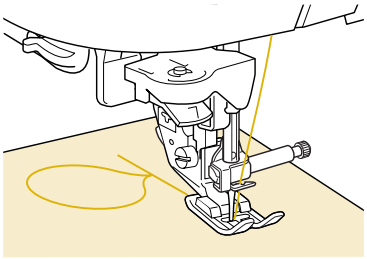
Adjusting Patterns

Depending on the type and thickness of the fabric being sewn, the sewing speed, whether or not stabilizer material is used, etc., the desired result may not be achieved. If this occurs, sew , and then perform the following adjustment using the same sewing conditions as those used for your project. If the pattern is still misaligned after making adjustments with  selected, adjust each pattern separately.

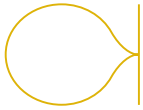
1 **Press , and then press  on P. 6 of the screen.**



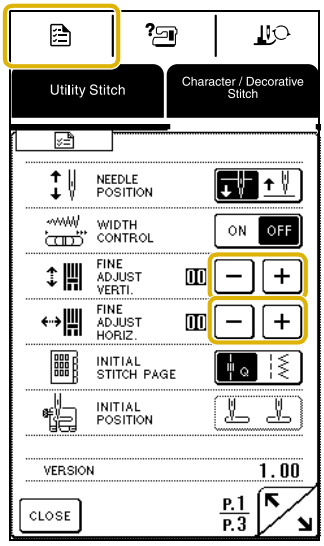
2 **Attach presser foot “N”, and then sew a single pattern.**



3 **Compare the sewn pattern with the following illustration.**



4 **Press** [ ].



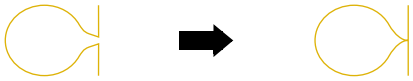
If the pattern is bunched together:

Press [+] in the FINE ADJUST VERTI. display.
Each press of the key increases the value and lengthens the pattern.



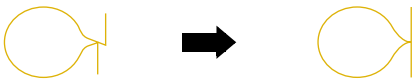
If the pattern is stretched:

Press [−] in the FINE ADJUST VERTI. display.
Each press of the key decreases the value and shortens the pattern.



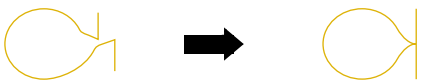
If the pattern is skewed to the left:

Press [+] in the FINE ADJUST HORIZ. display.
Each press of the key increases the value and moves the pattern to the right.



If the pattern is skewed to the right:

Press [−] in the FINE ADJUST HORIZ. display.
Each press of the key decreases the value and moves the pattern to the left.



5 **Sew the pattern again. If the pattern still is not sewn correctly, adjust it again. Continue making adjustments until the pattern is sewn correctly.**

Memo

You can sew with the settings screen on the display.

6 **After the pattern is sewn correctly, quit making adjustments. Press [CLOSE] to return to the previous screen.**

Note

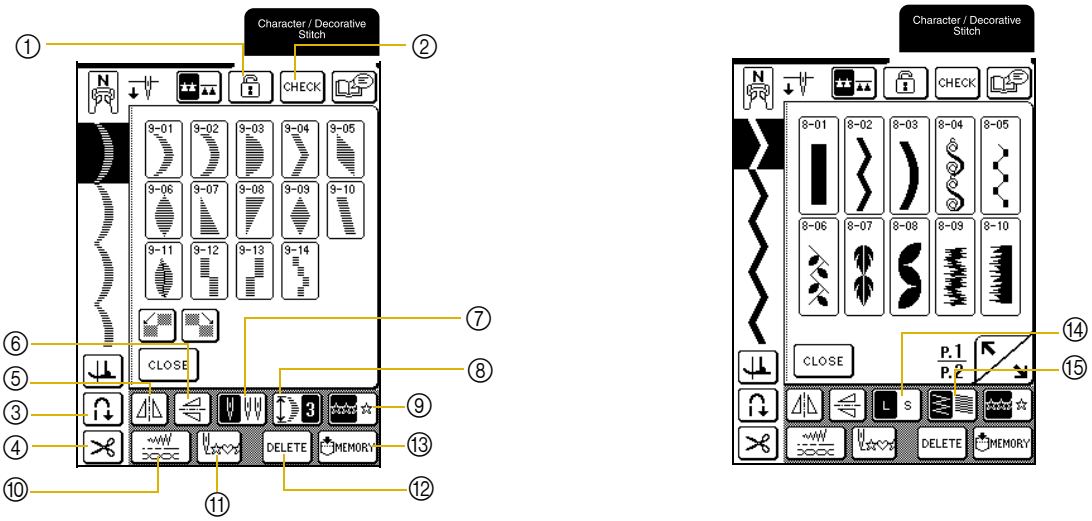
The adjustment made will remain until changed again.

EDITING STITCH PATTERNS

Using the editing functions, you can change the patterns in a variety of ways, such as resizing them or flipping them to create a mirror image.

Memo

Depending on the pattern that is selected, some editing functions may not be available.



■ Key Functions

No.	Key	Name	Function	Page
①		Screen lock key	Press this key to lock the screen. When the screen is locked, the various settings, such as the stitch width and stitch length, are locked and cannot be changed. Press this key again to unlock the settings.	49
②	CHECK	Image check key	Press this key to check an image of the selected patterns (characters).	103, 104
③		Automatic reinforcement stitch key	Press this key to select the automatic reinforcement stitching setting. If you select this setting before sewing, the machine will automatically sew reinforcement stitches at the beginning and end of stitching. Press this key again to cancel the setting.	45
④		Automatic thread cutting key	Press this key to select the automatic thread cutting setting. If you select this setting before sewing, the machine will automatically cut the thread at the end of stitching. Press this key again to cancel the setting.	46
⑤		Horizontal mirror image key	Press this key to create a horizontal mirror image of the selected stitch pattern.	109
⑥		Vertical mirror image key	Press this key to create a vertical mirror image of the selected stitch pattern.	109
⑦		Needle mode selection key (single/twin)	Press this key to select the setting for twin needle sewing. Each time this key is pressed, the setting switches between that for single needle sewing and for twin needle sewing.	32
⑧	3	Elongation key	If a 7 mm satin stitch pattern is selected, press this key to select from five settings for changing the pattern length without changing the zigzag width or stitch length.	109
⑨		Single/repeat sewing key	Press this key to switch between sewing the pattern a single time or repeatedly.	110
⑩		Stitch settings key	Press this key to open the screen for changing the stitch width, stitch length and thread tension for the selected pattern. Normally, the machine has default settings.	44
⑪		Back to beginning key	When sewing is stopped, press this key to return to the beginning of the pattern.	111
⑫	DELETE	Delete key	If the wrong pattern was accidentally selected, press this key to erase it. If patterns have been combined, each press of this key erases the last pattern in the combination.	103, 104
⑬	MEMORY	Memory key	Press this key to save the pattern combination.	119
⑭	L S	Size key	Press this key after selecting a pattern to change the size of the pattern (large or small).	109
⑮		Thread density key	Press this key after selecting a pattern to change the stitching density of the pattern.	110

Changing the Pattern Size

After selecting a stitch pattern, press [L S] until the desired size is selected.



Memo

- Stitch patterns entered after the pattern size was changed are added at the selected size until it is changed again.
- You cannot change the size of stitch patterns once they have been combined.

Actual size

L



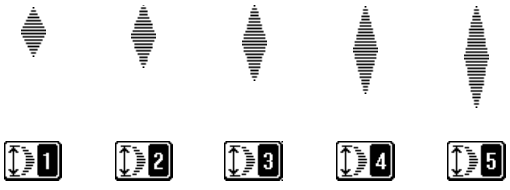
S



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

If 7 mm satin stitch patterns are selected, the pattern length can be changed without changing the zigzag width or stitch length. After selecting a stitch pattern, press [3] to select one of the five settings available.





Creating a Vertical Mirror Image

After selecting a stitch pattern, press [] to flip the pattern vertically.





Creating a Horizontal Mirror Image

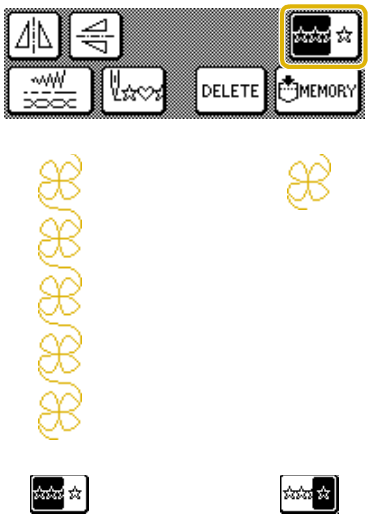
After selecting a stitch pattern, press [] to flip the pattern horizontally.





Selecting a Single/Repeating Pattern

Press  to select whether the pattern is sewn repeatedly or once.

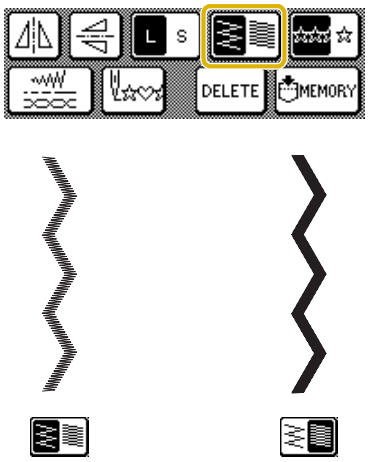


Memo

If you press  while sewing, the key changes to  and the machine will sew one copy of the pattern, then automatically stop.

Changing the Thread Density (Satin Stitch Patterns Only)

After selecting a stitch pattern, press  until the desired stitching density is selected.



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

- Stitch patterns entered after the stitching density was changed are added at the selected density until it is changed again.
- You cannot change the stitching density of stitch patterns once they have been combined.

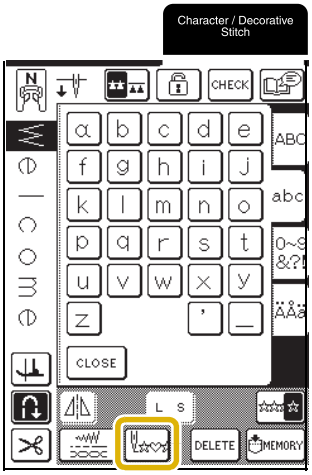
Returning to the Beginning of the Pattern

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

Memo

This function is not available for the sititches in the Utility Stitch category.

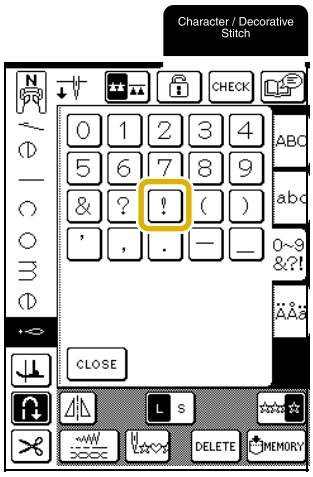
1 **Press the "Start/Stop" button to stop the machine, and then press .**



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

Memo

If this key is pressed when sewing is stopped, patterns can be added at the end of a combined stitch pattern. (In this example, "!" is added.)



2 **Press the "Start/Stop" button to continue sewing.**

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 Patterns

Note

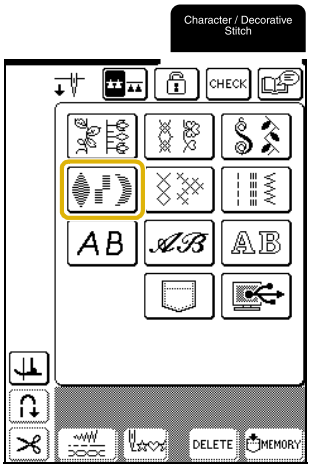
- When stitch patterns are combined, the machine is automatically set to sew the pattern once. To repeatedly sew the combined stitch patterns, combine the patterns, and then press  so that it appears as .
- You cannot change settings (such as the size and orientation) for stitch patterns once they have been combined. To resize or reorient the patterns, specify the settings for each pattern as it is added to the combination.
- Stitch patterns displayed on the LCD screen are for your reference. Sewing result and proportion may differ from the stitch pattern on the LCD screen. Please sew a trial on a piece of fabric before stitching on your project.

Combining Patterns from Different Categories

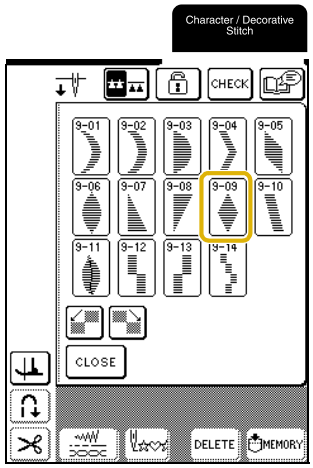
Example:



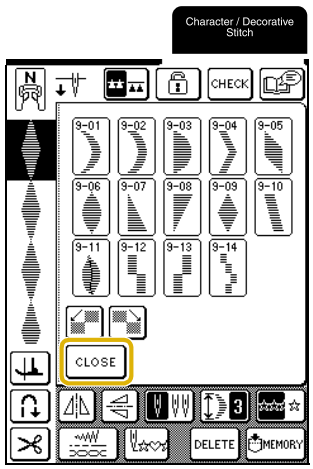
1 **Press** .



2 **Press** .

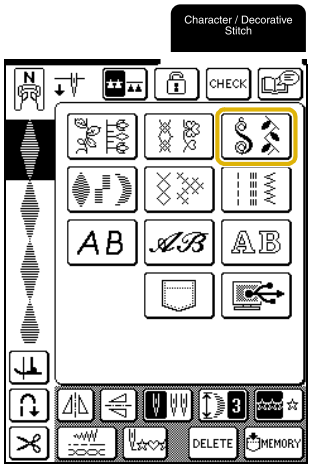


3 **Press** .



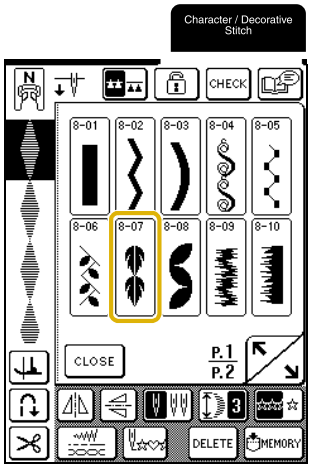
→ The screen of pattern categories appears.

4 **Press** .

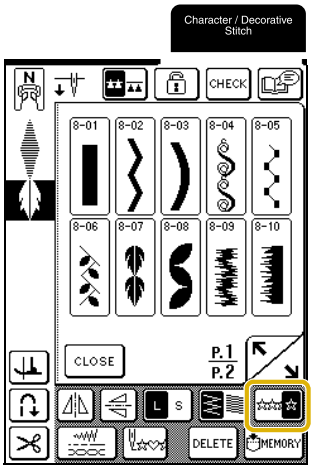


5 **Press** 

.

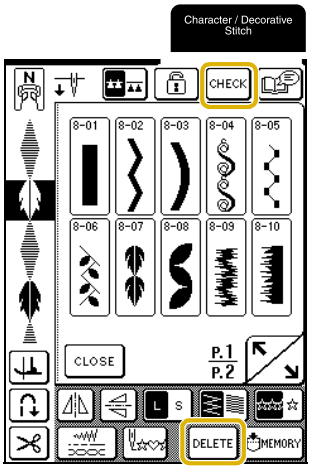


6 **To repeatedly sew the pattern combination, press**  **so that it appears as** .

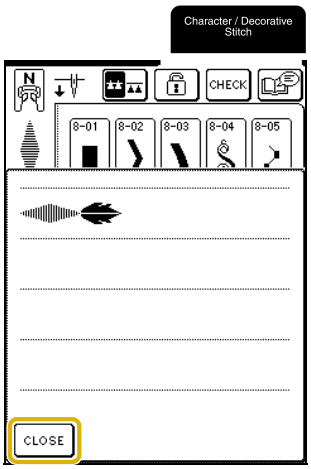


Memo

- Press DELETE to erase the last pattern entered. Patterns are erased one at a time.
- If the entire combined pattern cannot be displayed, press CHECK to view an image of the pattern. Press CLOSE to return to the previous screen.



→ The image of the pattern appears.

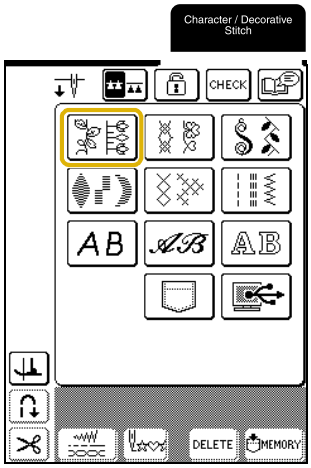


Combining Stitch Patterns of Different Sizes

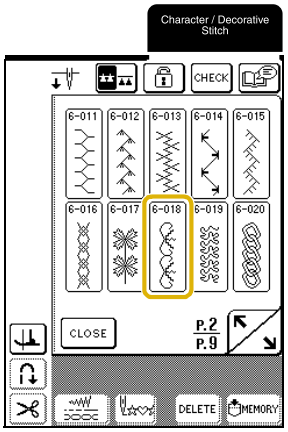
Example:



1 **Press**  **.**

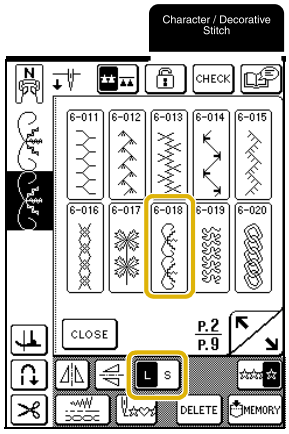


2 **Press**  **.**



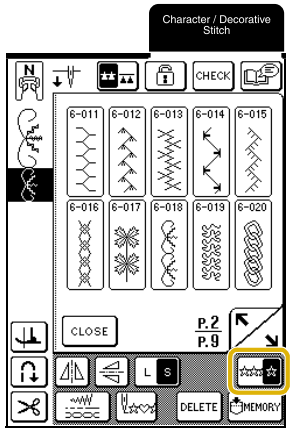
→ The larger size pattern appears.

3 **Press**  **again, and then press**  **so that it appears as**  **.**



→ The second pattern is displayed in the smaller size.

4 **To repeatedly sew the pattern combination, press**  **so that it appears as**  **.**



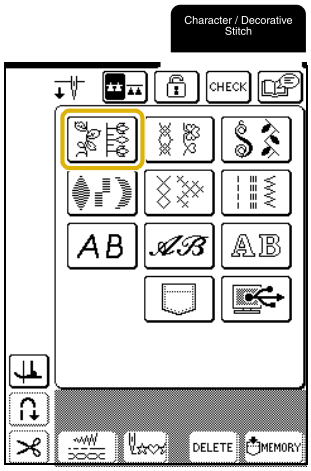
→ The combination appears as a repeating pattern.

Combining Stitch Patterns of Different Orientations

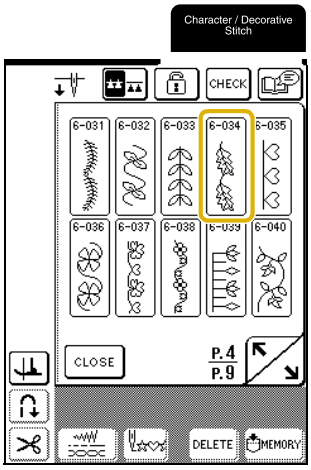
Example:



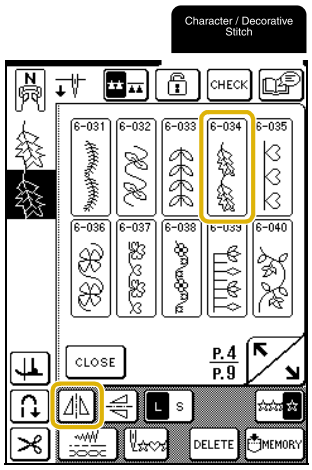
1 **Press**  **.**



2 **Press**  **.**

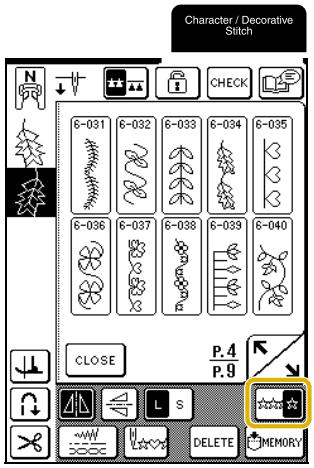


3 **Press**  **again, and then press**  **so that it appears as**  **.**



→ The second pattern is flipped horizontally.

4 **To repeatedly sew the pattern combination, press**  **so that it appears as**  **.**

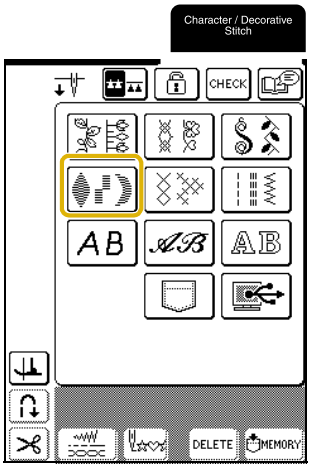


→ The combination appears as a repeating pattern.

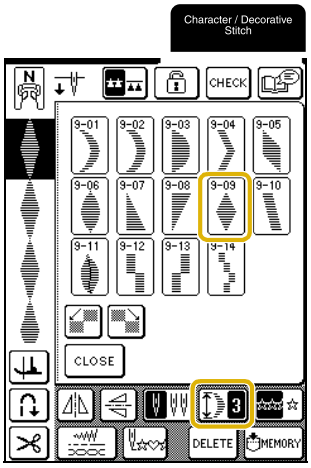
Combining Stitch Patterns of Different Lengths



1 **Press**  **.**

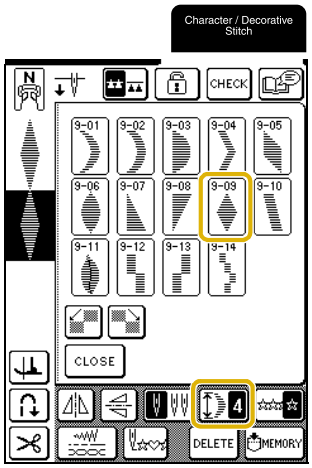


2 **Press**  **, and then press**  **once so that it appears as**  **.**



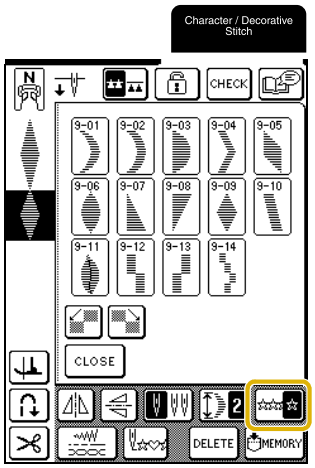
→ The pattern is displayed with a length of 4.

3 **Press**  **again, and then press**  **three times so that it appears as**  **.**



→ The second pattern is displayed with a length of 2.

4 **To repeatedly sew the pattern combination, press**  **so that it appears as**  **.**



→ The combination appears as a repeating pattern.

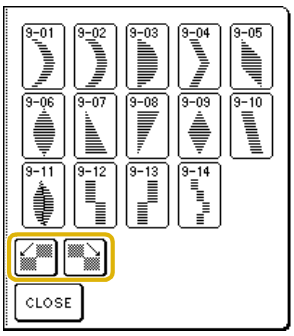
Creating Step Patterns (7 mm Satin Stitch Patterns Only)

Stitch patterns that are shifted to create a step-shaped pattern are called step patterns.

Step patterns can be created by using  and  to shift 7 mm satin stitch patterns.

Press  once to move the stitch pattern to the left by half the width of the stitch pattern.

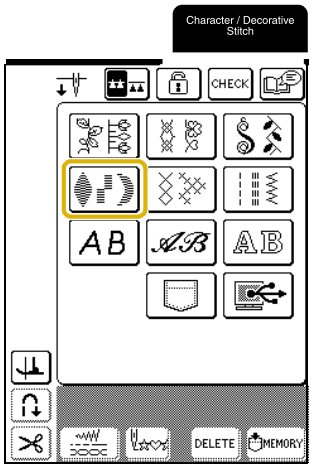
Press  once to move the stitch pattern to the right by half the width of the stitch pattern.



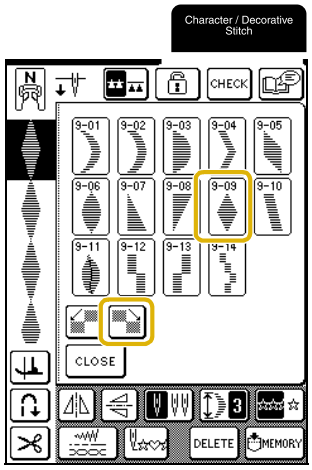
Example:



1 **Press** .

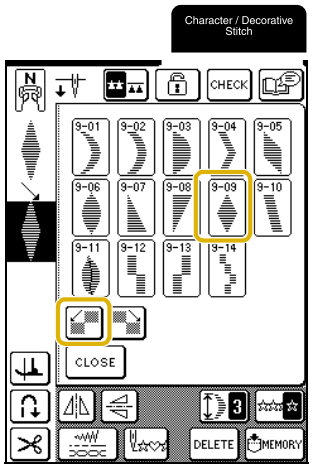


2 **Press** **, and then press** .

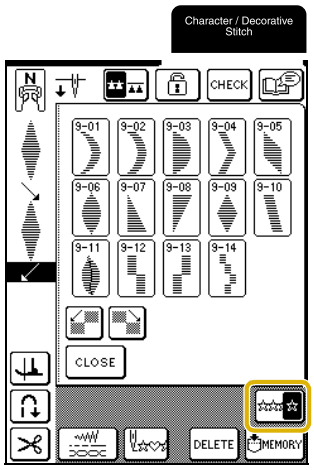


→ The next pattern is moved to the right.

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

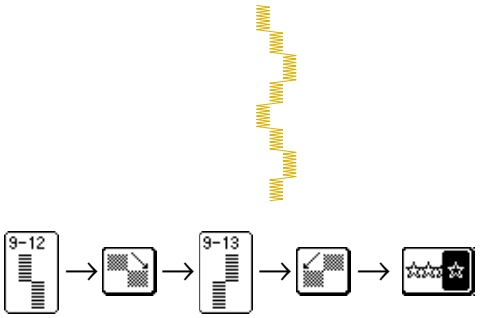


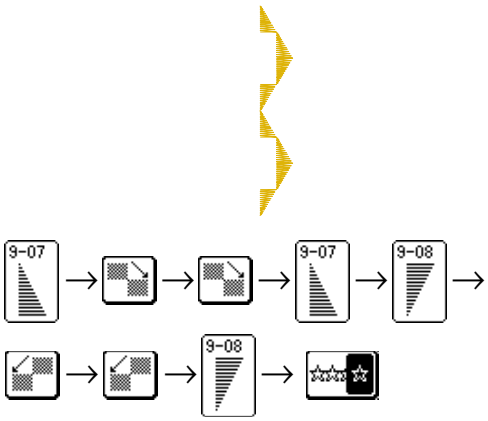
4 **Press**  **so that it appears as** .

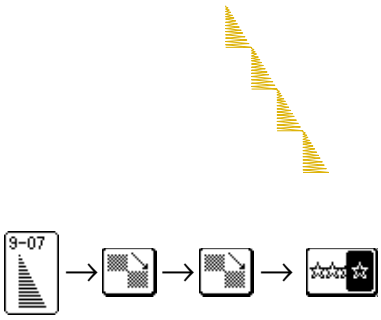


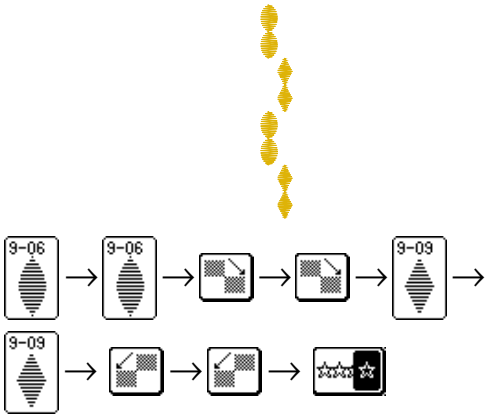
→ The combination appears as a repeating pattern.

■ Examples of Pattern Combinations









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

- Only .pmu stitch data files can be used with this machine. Using data other than that created using this machine may cause the machine to malfunction.

■ Computers and Operating Systems with the Following Specifications Can Be Used

- Compatible models:
  IBM PC with a USB port as standard equipment
  IBM PC-compatible computer equipped with a USB port as standard equipment
- Compatible operating systems:
  Microsoft Windows 98SE/Me/2000/XP
  (Windows 98SE requires a driver. Download the driver from our Web site (www.babylock.com). In addition, only Windows 98 Second Edition can use the driver.)

■ Precautions on Using the Computer to Create and Save Data

- If the file name of stitch data cannot be identified, for example, because the name contains special characters or symbols, the file is not displayed. If this occurs, change the name of the file. It is recommended to use the upper and lower case letters, the numbers 0 through 9, the dash "-", and the underline "_". Do not use comma "," period "." in the file name.
- Do not create folders in "Removable Disk" on a computer. If stitch data is stored in a folder, that stitch data cannot be displayed by the machine.

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- Microsoft and Windows are registered trademarks or trademarks of Microsoft Corporation.

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All other brands and product names mentioned in this manual are registered trademarks of their respective companies. However, the explanations for markings such as ® and ™ are not clearly described within the text.

Saving Stitch Patterns in the Machine's Memory

You can save often-used stitch patterns in the machine's memory. The machine's memory can hold up to a maximum of 24 stitch patterns, 70 entries per stitch pattern, or 224 KB.

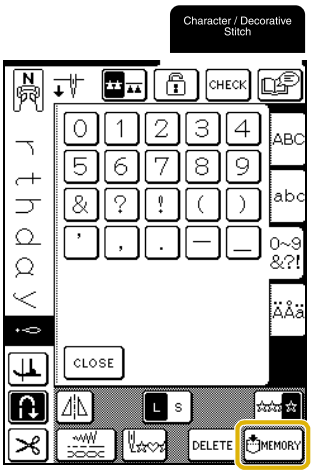
Note

Do not turn off the machine while the "Saving" screen is displayed, otherwise you may lose the stitch pattern that you are saving.

Memo

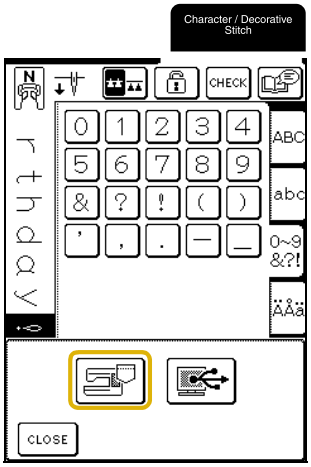
- It takes a few seconds to save a stitch pattern in the machine's memory.
- See page 122 for information on retrieving a saved stitch pattern.

1 **Press** MEMORY **.**



2 **Press** .

* Press CLOSE to return to the previous screen without saving the stitch pattern.



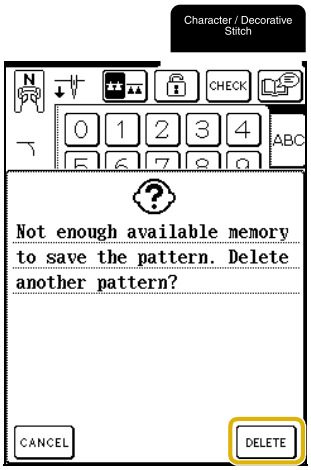
→ The “Saving” screen appears. When the pattern is saved, the previous screen appears automatically.

■ If the Memory Is Full

If this screen appears while you are trying to save a pattern on the machine’s memory, the memory is too full to hold the currently selected stitch pattern. To save the stitch pattern in the machine’s memory, you have to delete a previously saved stitch pattern.

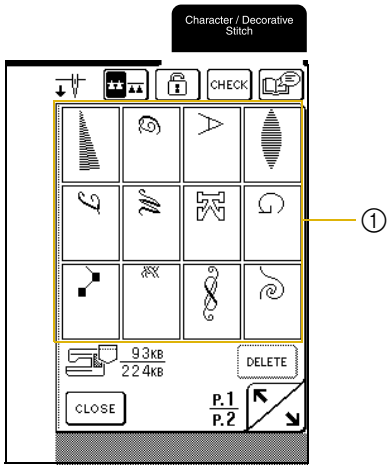
1 **Press** DELETE **to continue.**

* Press CANCEL to return to the previous screen without saving the stitch pattern.



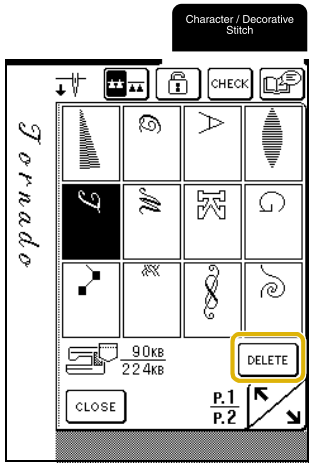
2 **Select a stitch pattern to be deleted.**

* Press  to display the next page.
* Only the first entry of each stitch pattern is displayed in the memory. Press CHECK to view the entire stitch pattern.
* Press CLOSE if you do not want to delete the stitch pattern.



① Saved stitch patterns

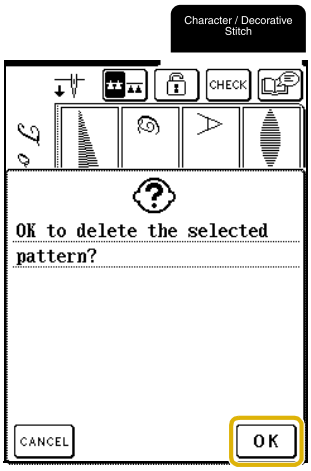
3 **Press** DELETE.



→ A confirmation message appears.

4 **Press [OK].**

* If you decide not to delete the stitch pattern, press [CANCEL].



→ The old stitch pattern is deleted, and the new stitch pattern is automatically saved.

Saving Stitch Patterns to the Computer

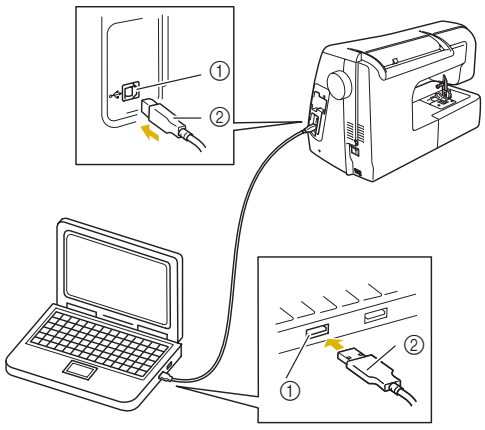
Using the included USB cable, connect the sewing machine to your computer so that stitch patterns can be retrieved from and saved to your computer.

Note

Do not turn off the machine while the “Saving” screen is displayed, otherwise you may lose the stitch pattern that you are saving.

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

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



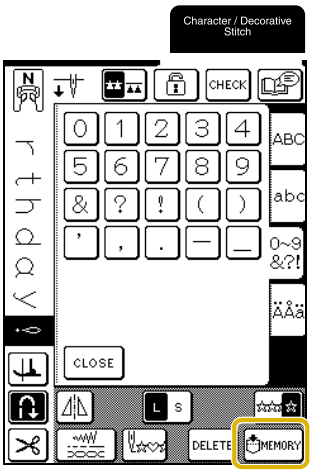
① USB port
② USB cable connector

→ The “Removable Disk” icon appears in “My Computer” on the computer.

Note

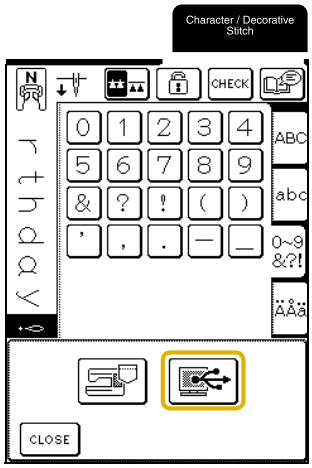
- The connectors on the USB cable can only be inserted into a port in one direction. If it is difficult to insert the connector, do not insert it with force, and then check the orientation of the connector.
- For details on the position of the USB port on the computer, refer to the instruction manual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

2 **Press [MEMORY].**



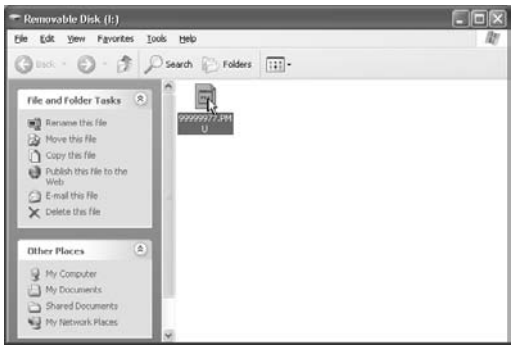
3 **Press** .

→ Press CLOSE to return to the previous screen without saving the stitch pattern.



→ The stitch pattern is temporarily saved to "Removable Disk" under "My Computer".

4 **Select the stitch pattern's .pmu file in "Removable Disk", and copy the file to the computer.**

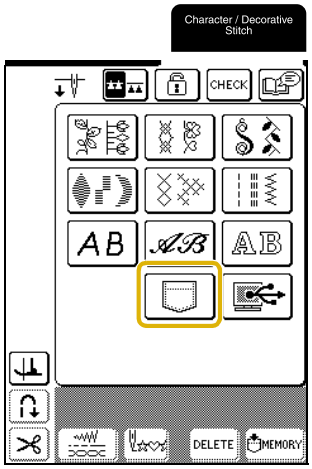


Note

- Do not turn off the machine while the "Saving" screen is displayed, otherwise you may lose the data.
- Since the files are only temporarily saved on "Removable Disk", turning off the machine will erase the files. Be sure to copy the necessary files onto the hard disk of the computer.

Retrieving Stitch Patterns from the Machine's Memory

1 **Press** .



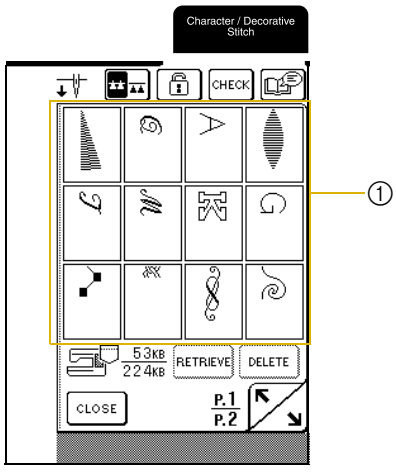
→ The pocket selection screen appears.

2 **Select a stitch pattern to be retrieved.**

* Press  to display the next page.

* Press CHECK to view the entire stitch pattern.

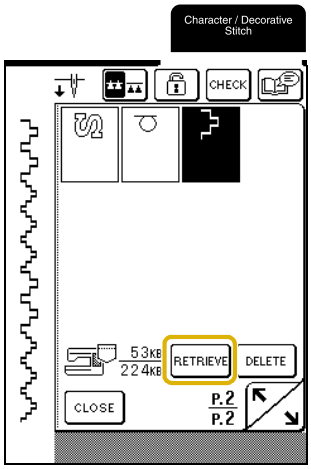
* Press CLOSE to return to the previous screen without retrieving the stitch pattern.



① Saved stitch patterns

3 **Press** RETRIEVE.

* Press DELETE to delete the stitch pattern.

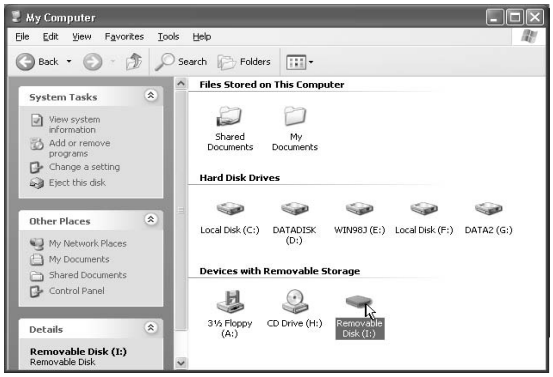


→ The selected stitch pattern is retrieved and the sewing screen appears.

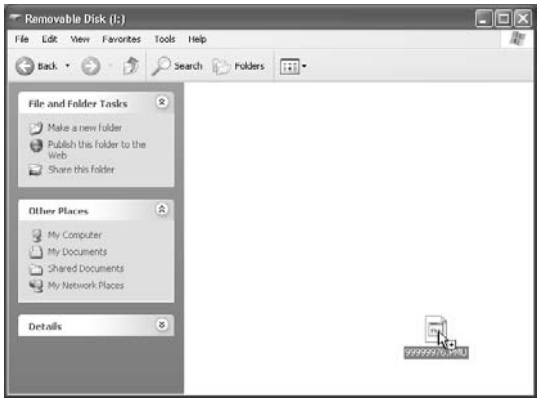
Retrieving Stitch Patterns from the Computer

1 **Plug the USB cable connectors into the corresponding USB ports on the computer and on the machine (see page 121).**

2 **On the computer, open "My Computer", and then go to "Removable Disk".**



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



Memo

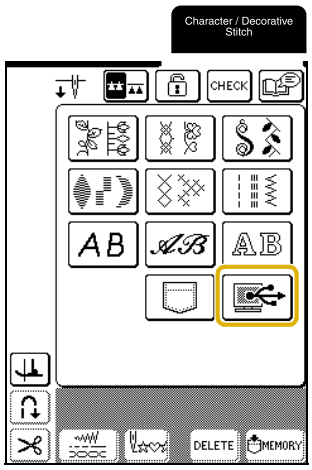
A maximum of 24 stitch patterns or 476 KB can be moved or copied to "Removable Disk".

→ Stitch pattern data in "Removable Disk" is written to the machine.

Note

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

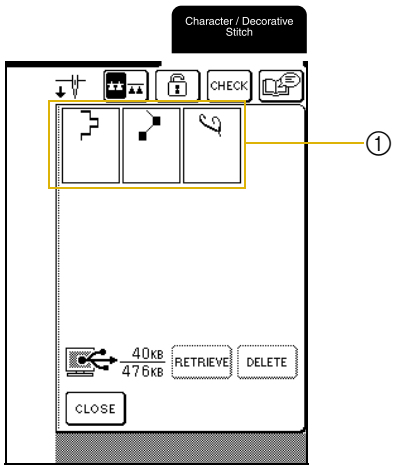
4 **Press** .



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

5 Select a stitch pattern to be retrieved.

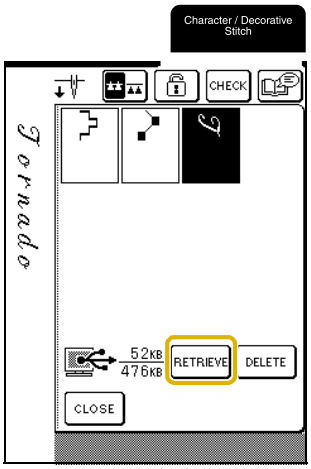
* Press CHECK to view the entire stitch pattern.
* Press CLOSE to return to the previous screen without retrieving the stitch pattern.



① Saved stitch patterns

6 Press RETRIEVE.

* Press DELETE to delete the stitch pattern.



→ The selected stitch pattern is retrieved and the sewing screen appears.

⚠ CAUTION

- **When disconnecting the USB cable:**
  Before disconnecting the USB cable, click the "Unplug or Eject Hardware" icon in the taskbar of Windows® Me/2000 or the "Safely Remove Hardware" icon in the taskbar of Windows® XP. Then, when the removable disk has been removed safely, disconnect the USB cable from the computer and the machine.



With Windows 98 SE, check that the Access lamp is not flashing before disconnecting the USB cable from the computer and the machine.

Note

- Be sure to perform the operation described above before disconnecting the USB cable from the computer and the machine, otherwise the computer may malfunction, the data may not be written correctly, or the data or data writing area on the machine may be damaged.
- The pattern retrieved from the computer is only temporarily written to the machine. It is erased from the machine when the machine is turned off. If you wish to keep the pattern, store it in the machine (see "Saving Stitch Patterns in the Machine's Memory" on page 119).



Chapter 5
Appendix

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- Cleaning the Machine Casing 126
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- Cleaning the Bobbin Case 127

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UPGRADING YOUR MACHINE'S SOFTWARE 137

STITCH SETTING CHART 139

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CARE AND MAINTENANCE

⚠ CAUTION

- **Be sure to unplug the machine before cleaning it. Otherwise, electric shock or injury may result.**

Cleaning the LCD

If the surface of the LCD is dirty, lightly wipe it with a soft dry cloth. Do not use organic solvents or detergents.

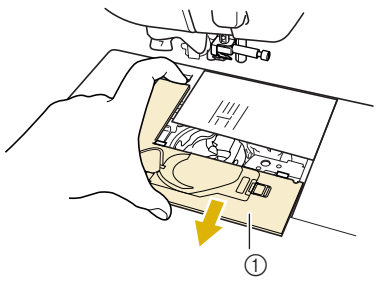
Cleaning the Machine Casing

If the surface of the machine is dirty, dampen a cloth with a neutral detergent, wring it out firmly, and then wipe the surface. Then, wipe again with a dry cloth.

Cleaning the Race

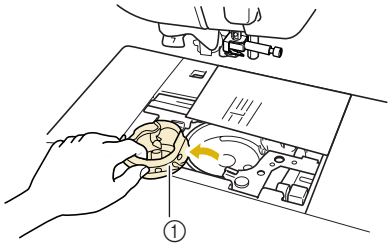
If dust or dirt collects in the race or bobbin case, the machine will not run well, and the bobbin thread detection function may not operate.
Keep the machine clean for best results.

1. **Press the "Needle Position" button to raise the needle.**
2. **Raise the presser foot.**
3. **Turn off the machine.**
4. **Remove the needle, presser foot and presser foot holder (see page 34 through 36).**
5. **Remove the flat bed attachment.**
6. **Grasp both sides of the needle plate cover, and then slide it toward you.**



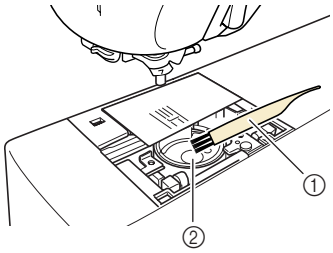
① Needle plate cover

7. **Grasp the bobbin case, and then pull it out.**



① Bobbin case

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

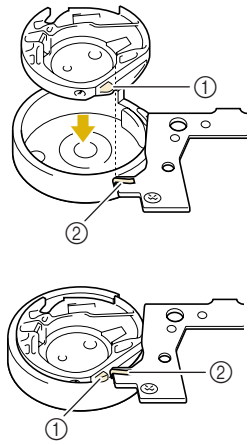


① Cleaning brush
② Race

Note

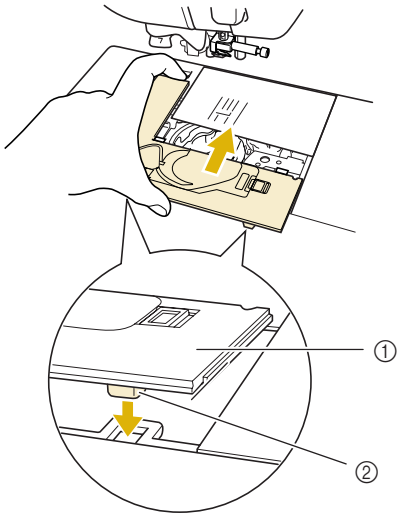
Do not apply oil to the race.

9 **Insert the bobbin case so that the projection on the bobbin case aligns with the spring.**



① Projection
② Spring

10 **Insert the tabs on the needle plate cover into the needle plate, and then slide the cover back into place.**



① Needle plate cover
② Tabs

Note

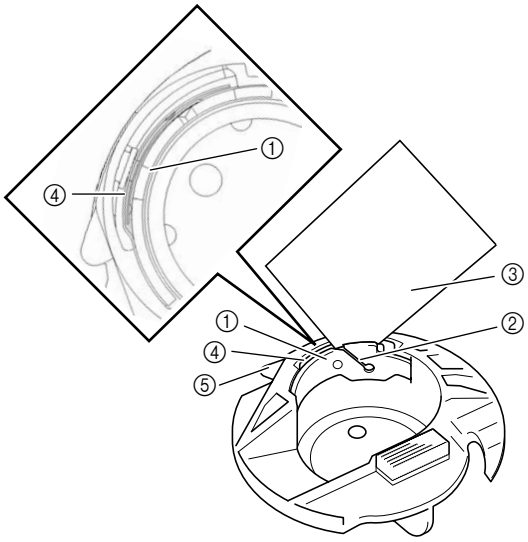
- Never use a bobbin case that is scratched; otherwise, the upper thread may become tangled, the needle may break, or sewing performance may suffer.
- For a new bobbin case (part code: XC3153-151), contact your nearest authorized Baby Lock retailer.
- Be sure that the bobbin case is correctly installed. Otherwise, the needle may break.

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 business 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 from "Cleaning the Race" on page 126 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
⑤ Bobbin case projection (stopper)

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 included cleaning brush to remove any lint and dust from inside the bobbin case.**

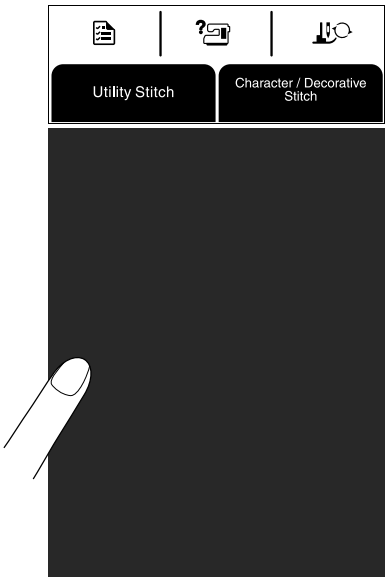
4 **Reinsert the bobbin case and needle plate cover assuring the bobbin case projection (stopper) is touching the bracket spring.**

ADJUSTING THE SCREEN

Screen Visibility Is Low

If the screen is difficult to read when the machine is turned on, follow the procedure described below.

1. **Turn off the machine, hold your finger anywhere on the screen, and then turn the machine on.**

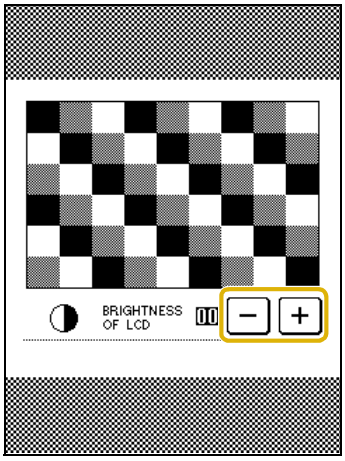


→ The BRIGHTNESS OF LCD screen appears.

Memo

Continue touching the LCD until the screen shown below appears.

2. **Press [−] or [+] to adjust the brightness of the screen.**

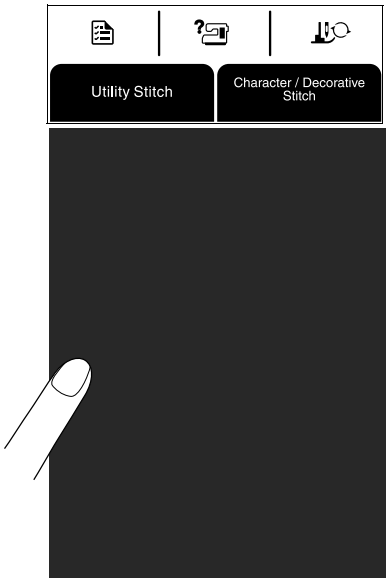


3. **Turn the machine off, then on again.**

Touch Panel Is Malfunctioning

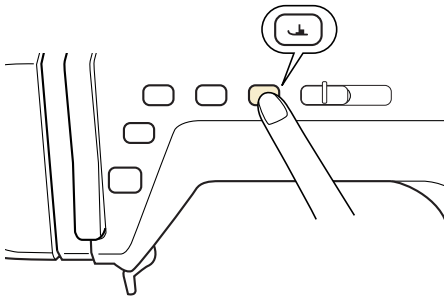
If the screen does not respond correctly when a key is pressed (the machine does not perform the operation or performs a different operation), follow the procedure described below to make the proper adjustments.

1. **Turn off the machine, hold your finger anywhere on the screen, and then turn the machine on.**



→ The BRIGHTNESS OF LCD screen appears.

2. **Press the "Presser Foot Lifter" button.**



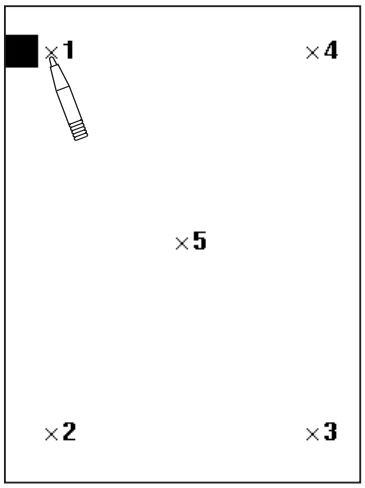
→ The touch panel adjustment screen appears.

3 **Using the included touch pen, lightly touch the center of each ×, in order from 1 to 5.**

* If the buzzer sounds one time after you press number 5, the operation is finished, and "SUCCESS" appears on the screen.
If the buzzer sounds twice, there was an error. In this case, repeat the steps above.

Note

Only use the included touch pen to touch the screen. Do not use a mechanical pencil, screwdriver or any other hard or sharp object. Do not apply a strong force to the display, otherwise damage to the display may result.



4 **After making the necessary touch panel adjustment, turn the machine off, then on again.**

Note

If you finish the touch panel adjustment and the screen still does not respond, or if you cannot complete the adjustment, contact your authorized retailer.

TROUBLESHOOTING

If you have a minor problem with your sewing machine, check the following solutions. If the solutions suggested do not correct the problem, contact your authorized Baby Lock retailer.

Memo

This machine is equipped with a simple troubleshooting feature that can be used in case minor problems occur during sewing. Press , and then press TROUBLESHOOTING to display a list of problems. Press the key for the appropriate problem, and then check for the causes that are displayed.

Problem	Cause	Solution	Page
Upper thread breaks	The machine was threaded incorrectly (the spool is installed incorrectly, the wrong spool cap was used, the needle bar thread guide did not catch the thread, etc.).	Rethread the machine correctly.	29
	The thread is knotted or tangled.	Remove the knots and tangles.	–
	The thread is too thick for the needle.	Check the table of fabric, thread and needle combinations, and select the appropriate combination.	37
	The upper thread tension is too strong.	Adjust the thread tension.	45
	The thread is tangled.	Use scissors, etc., to cut the tangled thread and remove it from the race (bobbin case), etc.	–
	The needle is bent or blunt.	Replace the needle with a new one.	35
	The needle is installed incorrectly.	Reinstall the needle correctly.	35
	There are scratches around the hole in the needle plate.	Replace the needle plate, or consult your authorized retailer.	–
	There are scratches around the hole in the presser foot.	Replace the presser foot, or consult your authorized retailer.	–
	There are scratches on the race (bobbin case).	Replace the race (bobbin case), or consult your authorized retailer.	–
Bobbin thread breaks	Bobbin is set incorrectly.	Reset the bobbin correctly.	28
	There are scratches on the bobbin or it doesn't rotate properly.	Replace the bobbin.	–
	The thread is tangled.	Use scissors etc., to cut the tangled thread and remove it from the race (bobbin case), etc.	–
Skipped stitches	The machine is threaded incorrectly.	Check the procedure for threading the machine and rethread it correctly.	29
	The thread or needle is not suitable for the type of fabric being sewn.	Check the table of fabric, thread and needle combinations, and select the appropriate combination.	37
	The needle is bent or blunt.	Replace the needle with a new one.	35
	The needle is installed incorrectly.	Reinstall the needle correctly.	35
	The needle is defective.	Replace the needle.	35
	Dust or lint has collected under the needle plate.	Remove the dust or lint with the brush.	126
Fabric puckers	The upper or bobbin threading is incorrect.	Check the procedure for threading the machine and rethread it correctly.	28, 29
	The spool is installed incorrectly.	Reinstall the spool correctly.	29
	The thread or needle is not suitable for the type of fabric being sewn.	Check the table of fabric, thread and needle combinations, and select the appropriate combination.	37
	The needle is bent or blunt.	Replace the needle with a new one.	35
	The stitches are too long for sewing lightweight fabrics.	Shorten the stitch length.	44
	The thread tension is set incorrectly.	Adjust the thread tension.	45
	The wrong presser foot was used.	Attach the correct presser foot.	139

Problem	Cause	Solution	Page
High-pitched sound while sewing	Dust or lint is caught in the feed dogs.	Remove the dust or lint.	126
	Pieces of thread are caught in the race (bobbin case).	Clean the race (bobbin case).	126
	The upper threading is incorrect.	Check the procedure for threading the machine and rethread it correctly.	29
	There are scratches on the race (bobbin case).	Replace the race (bobbin case), or consult your authorized retailer.	–
Cannot thread the needle	The needle is not in the correct position.	Press the “Needle Position” button to raise the needle.	11
	The threading hook does not pass through the eye of the needle.	Press the “Needle Position” button to raise the needle.	11
	The needle is installed incorrectly.	Reinstall the needle correctly.	35
Thread tension is incorrect	The upper threading is incorrect.	Check the procedure for threading the machine and rethread it correctly.	29
	Bobbin is set incorrectly.	Reset the bobbin thread correctly.	28
	The thread or needle is not suitable for the type of fabric being sewn.	Check the table of fabric, thread and needle combinations, and select the appropriate combination.	37
	The presser foot holder is not attached correctly.	Reattach the presser foot holder correctly.	59
	The thread tension is set incorrectly.	Adjust the thread tension.	45
Character pattern does not sew out correctly	The wrong presser foot was used.	Attach the correct presser foot.	139
	Pattern adjustment settings were set incorrectly.	Correct the pattern adjustment settings.	106
	The thread tension is set incorrectly.	Adjust the thread tension.	45
Needle breaks	The needle is installed incorrectly.	Reinstall the needle correctly.	35
	The needle clamp screw is not tightened.	Tighten the needle clamp screw.	36
	The needle is bent or blunt.	Replace the needle with a new one.	35
	The thread or needle is not suitable for the type of fabric being sewn.	Check the table of fabric, thread and needle combinations, and select the appropriate combination.	37
	The wrong presser foot was used.	Attach the correct presser foot.	139
	The upper thread tension is too strong.	Adjust the thread tension.	45
	The fabric is pulled during sewing.	Do not pull the fabric during sewing.	–
	The spool is installed incorrectly.	Reinstall the spool correctly.	30
	There are scratches around the hole in the needle plate.	Replace the needle plate, or consult your authorized retailer.	–
	There are scratches around the hole(s) in the presser foot.	Replace the presser foot, or consult your authorized retailer.	–
	There are scratches on the race (bobbin case).	Replace the race (bobbin case), or consult your authorized retailer.	–
	The needle is defective.	Replace the needle.	35
Fabric does not feed through the machine	The feed dogs are lowered.	Press the drop feed key to raise the feed dogs.	21, 62
	The stitches are too close together.	Lengthen the stitch length.	44
	The wrong presser foot was used.	Attach the correct presser foot.	139
	The needle is bent or blunt.	Replace the needle with a new one.	35
	The thread is tangled.	Use scissors, etc., to cut the tangled thread and remove it from the race (bobbin case), etc.	–
Machine does not operate	There is no pattern selected.	Select a pattern.	52, 102
	The “Start/Stop” button was not pressed.	Press the “Start/Stop” button.	40
	The main power switch is not turned on.	Turn the main power to on.	18
	The presser foot is not lowered.	Lower the presser foot.	40
	The “Start/Stop” button was pressed while the foot controller is connected.	Remove the foot controller, or use the foot controller to operate the machine.	11, 41
LCD cannot be read	The LCD contrast is not properly adjusted.	Adjust the LCD contrast.	22, 128

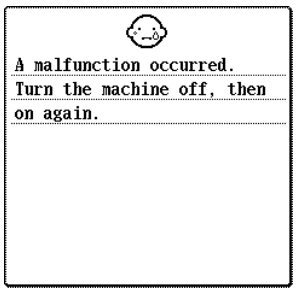
⚠ CAUTION

- **This machine is equipped with a thread detection device. If the "Start/Stop" button is pushed before the upper threading is done, the machine will not operate properly. Also, depending on the pattern selected, the machine may feed the fabric even if the needle is raised. This is due to the needle bar release mechanism. At these times, the machine will make a sound different from that made during normal sewing. This is not the sign of a malfunction.**
- **If the power is disconnected during sewing:**
  Turn the main power to OFF and unplug the machine.
  If you restart the machine, follow the instructions for operating the machine correctly.

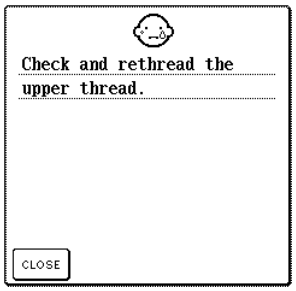
ERROR MESSAGES

If the “Start/Stop button” or the “Reverse/Reinforcement Stitch” button is pressed before the machine is correctly set up or if an incorrect operation is performed, the machine stops and informs you of the error with an alarm and an error message. If an error message appears, correct the problem according to the instructions in the message.

(The message that is displayed can be cancelled either by pressing CLOSE or performing the operation correctly.)



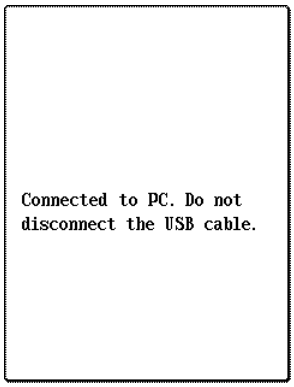
This message is displayed if a malfunction occurred.



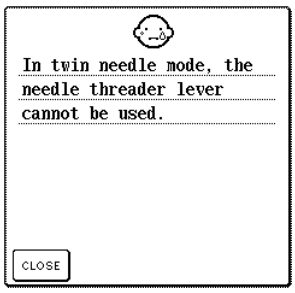
This message is displayed when the upper thread is broken or not threaded correctly, and the “Start/Stop” button or the “Reverse/Reinforcement Stitch” button is pressed.

⚠ CAUTION

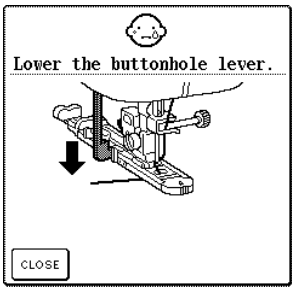
- **Be sure to rethread the machine. If you press the “Start/Stop” button without rethreading the machine, the thread tension may be wrong or the needle may break and cause injury.**



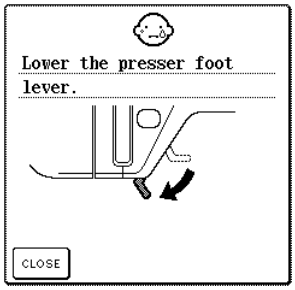
This message is displayed when using USB cable to download information from PC to machine.



This message is displayed when you try to use the needle threader lever while twin needle sewing is set.



This message is displayed when a buttonhole stitch is selected and the “Start/Stop” button or the “Reverse/Reinforcement Stitch” button is pressed while the buttonhole lever is raised.



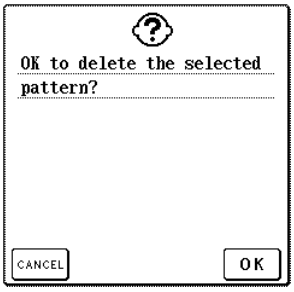
This message is displayed when the “Start/Stop” button, “Reverse/Reinforcement Stitch” button, “Thread Cutter” button or “Presser Foot Lifter” button is pressed while the presser foot lever is raised/the needle is lowered.



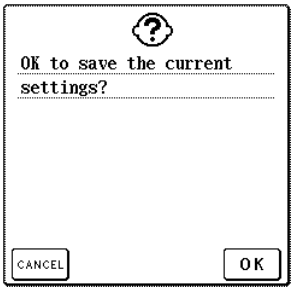
This message is displayed when the memory is full and the stitch or pattern cannot be saved.



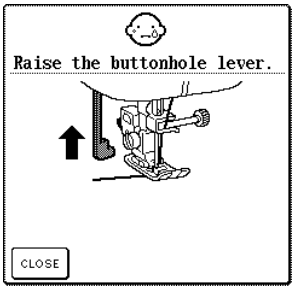
This message is displayed when  is pressed while the presser foot is raised.



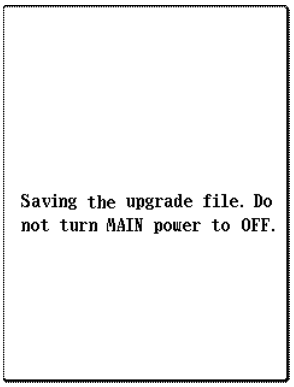
This message is displayed when  or  is pressed after a pattern is selected.



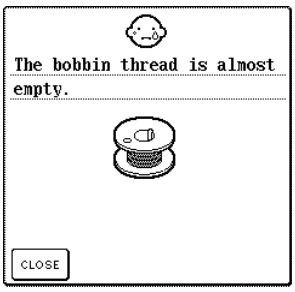
This message is displayed when  is pressed while a utility stitch is selected.



This message is displayed when a stitch other than a buttonhole stitch is selected and the “Start/Stop” button or the “Reverse/ Reinforcement Stitch” button is pressed while the buttonhole lever is lowered.



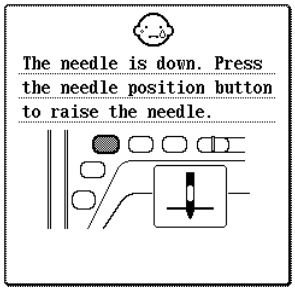
This message is displayed while upgrade file is being downloaded to machine.



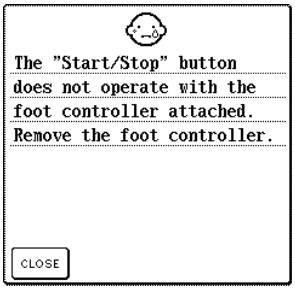
This message is displayed when the bobbin thread is running out.



This message is displayed when the bobbin is being wound, and the motor locks because the thread is tangled, etc.



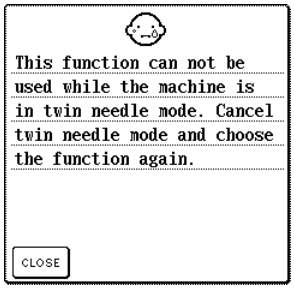
This message is displayed when the needle is in the down position and the needle threader is lowered.



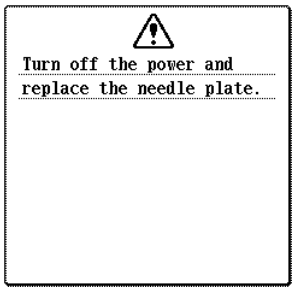
This message is displayed when the “Start/Stop” button is pressed while the foot controller is connected.



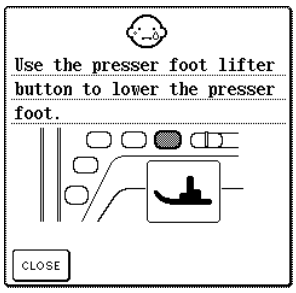
This message is displayed when the motor locks up due to tangled thread or for other reasons related to thread delivery.



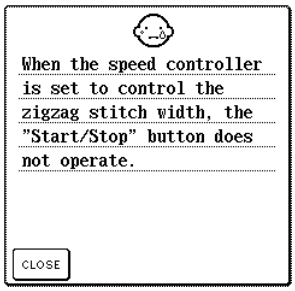
This message is displayed when the machine is set for twin needle sewing and a pattern that cannot be sewn with the twin needle is selected.



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.



This message is displayed when the “Start/Stop” button, “Reverse/ Reinforcement Stitch” button, or the “Thread Cutter” button is pressed while the presser foot is raised.



This message is displayed when the “Start/Stop” button is pressed while the sewing speed controller is set to control the zigzag stitch width.

■ Alarm

If an incorrect operation is performed, the machine beeps two or four times.

Memo

To turn the alarm on or off, press [ ].
For details, see page 22.

SPECIFICATIONS

	Item	Specification
Sewing Machine	Dimensions	51.1 cm (W) × 30.5 cm (H) × 25.8 cm (D) (approx. 20-1/8 inches (W) × 12 inches (H) × 10-1/8 inches (D))
	Case dimensions	58.2 cm (W) × 31.9 cm (H) × 28.4 cm (D) (approx. 22-7/8 inches (W) × 12-1/2 inches (H) × 11-1/8 inches (D))
	Weight	11.3 kg (24.9 lb.)
	Sewing speed	70 to 1000 stitches per minute
	Needle	Home sewing machine needles (HA × 130)

UPGRADING YOUR MACHINE'S SOFTWARE

You can use a computer to download software upgrades for your sewing machine.
When an upgrade program is available on www.babylock.com, please download the files following the instructions on the web site and steps below.

Note

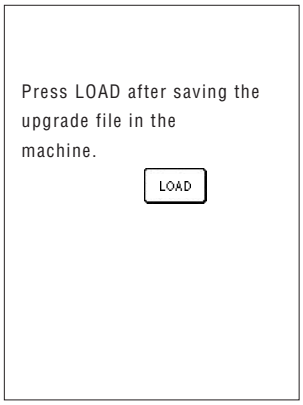
There are two upgrade files. Be sure to download both files successively.

Memo

- When the machine's software is upgraded, saved combinations of character and decorative stitches are erased.
- While the software is being upgraded, the buzzer will not sound when a key is pressed.

1 While holding the "Presser Foot Lifter" button pressed, turn on the machine.

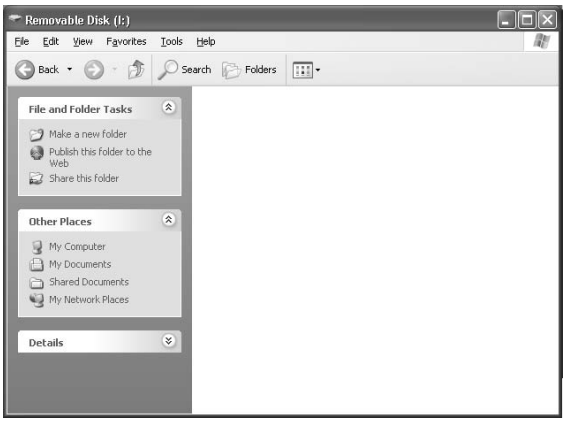
→ The following screen appears.



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

→ The "Removable Disk" icon appears in "My Computer" on the computer.

3 Copy the upgrade file to "Removable Disk".

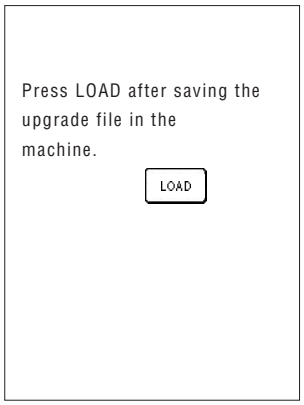


→ The message "Connected to PC. Do not disconnect the USB cable." appears.

4 When the screen shown in step 1 appears again, press LOAD .

→ The message "Saving the upgrade file. Do not turn main power to OFF."appears. The download takes about 3 minutes.

5 When the following screen appears, the first upgrade file is downloaded.

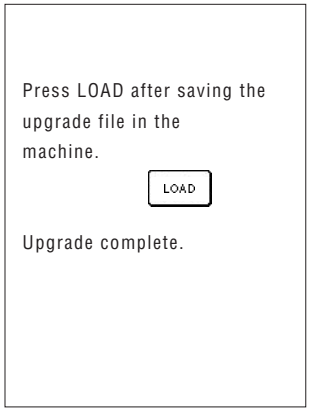


6 Copy the second upgrade file to "Removable Disk".

7 When the screen shown in step 1 appears again, press LOAD .

→ The message "Saving the upgrade file. Do not turn main power to OFF."appears. The download takes about 3 minutes.

8 **When the following screen appears, upgrading is completed.**



Note

If an error occurred, an error message appears in red. At this time, turn the machine off, and then start the procedure again from step 1.

9 **Disconnect the USB cable, and turn the machine off, then on again.**

STITCH SETTING CHART

Note
When using the twin needle (see page 32), be sure to attach presser foot “J”.

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch Width [mm (inch)]		Stitch Length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
Q-01 P	**Piecing stitch (Middle)**	J C	Piecework/patchwork	—	—	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
Q-02 P	**Piecing stitch (Right)**	J O	Piecework/patchwork 6.5 mm (approx. 1/4 inch) right seam allowance	**5.5 (7/32)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
Q-03 P	**Piecing stitch (Left)**	J O	Piecework/patchwork 6.5 mm (approx. 1/4 inch) left seam allowance	**1.5 (1/16)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
Q-04 Q	**Hand-look quilting (Middle)**	J O	Quilting stitch made to look like hand quilting stitch	**3.5**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
Q-05	**Basting stitch (Middle)**	J O	Basting	**3.5**	0.0 - 7.0 (0 - 1/4)	**20.0 (3/4)**	5.0 - 30.0 (3/16 - 1-3/16)	NO
Q-06	**Stem stitch**	J O	Reinforced stitching, sewing and decorative applications	**1.0 (1/16)**	1.0 - 3.0 (1/16 - 1/8)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
Q-07 Q	**Quilting appliqué zigzag stitch**	J O	Zigzag stitch for quilting and sewing on appliqué quilt pieces	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.6**	0.0 - 4.0 (0 - 3/16)	NO
Q-08	**Zigzag stitch (Right)**	J O	Start from right needle position, zigzag sew at left	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.6**	0.3 - 4.0 (1/64 - 3/16)	NO
Q-09	**Zigzag stitch (Left)**	J O	Start from left needle position, zigzag sew at right	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.6**	0.3 - 4.0 (1/64 - 3/16)	NO
Q-10	**2 step elastic zigzag**	J O	Overcasting (medium weight and stretch fabrics), tape and elastic	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	NO
Q-11	**3 step elastic zigzag**	J O	Overcasting (medium, heavyweight and stretch fabrics), tape and elastic	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	NO
Q-12 Q	**Quilting appliqué stitch**	J O	Quilting stitch for invisible appliqué or attaching binding	**2.0**	0.5 - 5.0 (1/64 - 3/16)	**2.0**	1.0 - 4.0 (1/16 - 3/16)	NO
Q-13	**Shell tuck edge**	J O	Shell tuck edge finish on fabrics	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 4.0 (1/64 - 1/16)	NO
Q-14	**Blanket stitch**	J O	Appliqués, decorative blanket stitch	**3.5 (1/8)**	2.5 - 7.0 (3/32 - 1/4)	**2.5 (3/32)**	1.6 - 4.0 (1/16 - 3/16)	NO
Q-15 Q	**Quilting stippling**	J O	Background quilting	**7.0 (1/4)**	1.0 - 7.0 (1/16 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch Width [mm (inch)]		Stitch Length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Overcasting stitch**	J O	Stretch knit seam	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Tape attaching**	J O	Attaching tape to seam in stretch fabric	**5.5**	0.0 - 7.0 (0 - 1/4)	**1.4**	0.2 - 4.0 (1/61 - 3/16)	NO
	**Serpentine stitch**	N O	Decorative stitching and attaching elastic	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**2.0**	0.2 - 4.0 (1/64 - 3/16)	NO
	**Feather stitch**	J O	Fagoting, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Fagoting cross stitch**	J O	Fagoting, bridging and decorative stitching	**5.0 (3/16)**	2.5 - 7.0 (3/32 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Couching stitch**	J O	Decorative stitching, attaching cord and couching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.2 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	NO
	**Patchwork double overlock stitch**	J O	Patchwork stitches, decorative stitching	**5.0 (3/16)**	2.5 - 7.0 (3/32 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Smocking stitch**	J O	Smocking, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Rick-rack stitch**	J O	Decorative top stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Decorative stitch**	N O	Decorative stitching and appliqué	**6.0 (15/64)**	1.0 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 3/16)	NO
	**Decorative stitch**	J O	Decorative stitching	**5.5 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**	N O	Heirloom, decorative hems	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**2.0 (1/16)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**	N O	Decorative hems and bridging stitch	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**2.0 (1/16)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Single diamond overcast**	J O	Reinforcement and seaming stretch fabric	**6.0 (15/64)**	1.0 - 7.0 (1/16 - 1/4)	**3.0 (1/8)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Overcasting stitch**	J O	Reinforcement of stretch fabric or decorative stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	1.0 - 4.0 (1/16 - 3/16)	NO

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch Width [mm (inch)]		Stitch Length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Straight stitch (Left)**		General sewing, gather, pintuck, etc. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	**Straight stitch (Left)**		General sewing, gather, pintuck, etc. Reinforcement stitch is sewn while pressing “Reverse/Reinforcement Stitch” button.	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	**Straight stitch (Middle)**		General sewing, gather, pintuck, etc. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	**Straight stitch (Middle)**		General sewing, gather, pintuck, etc. Reinforcement stitch is sewn while pressing “Reverse/Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	OK (J)
	**Triple stretch stitch**		General sewing for reinforcement and decorative topstitching	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.5 - 4.0 (1/16 - 3/16)	OK (J)
	**Stem stitch**		Reinforced stitching, sewing and decorative applications	**1.0 (1/16)**	1.0 - 3.0 (1/16 - 1/8)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Decorative stitch**		Decorative stitching, top stitching	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Basting stitch**		Basting	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**20.0 (3/4)**	5.0 - 30.0 (3/16 - 1-3/16)	NO
	**Zigzag stitch (Middle)**		For overcasting, mending. Reverse stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.0 - 4.0 (0 - 3/16)	OK (J)
	**Zigzag stitch (Middle)**		For overcasting, mending. Reinforcement stitch is sewn while pressing “Reverse/ Reinforcement Stitch” button.	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.0 - 4.0 (0 - 3/16)	OK (J)
	**Zigzag stitch (Right)**		Start from right needle position, zigzag sew at left.	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.4 (1/16)**	0.3 - 4.0 (1/64 - 3/16)	OK (J)
	**Zigzag stitch (Left)**		Start from left needle position, zigzag sew at right.	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**1.4 (1/16)**	0.3 - 4.0 (1/64 - 3/16)	OK (J)
	**2 step elastic zigzag**		Overcasting medium weight and stretch fabrics, attaching tape and elastic.	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	OK (J)
	**3 step elastic zigzag**		Overcasting medium, heavyweight and stretch fabrics, attaching tape and elastic.	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	OK (J)
	**Overcasting stitch**		Reinforcing of light and medium weight fabrics	**3.5 (1/8)**	2.5 - 5.0 (3/32 - 3/16)	**2.0 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Overcasting stitch**		Reinforcing of heavyweight fabric	**5.0 (3/16)**	2.5 - 5.0 (3/32 - 3/16)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Overcasting stitch**		Reinforcing of medium, heavyweight and easily frayed fabrics or decorative stitching	**5.0 (3/16)**	3.5 - 5.0 (1/8 - 3/16)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Overcasting stitch**		Reinforced seaming of stretch fabric	**5.0 (3/16)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.5 - 4.0 (1/32 - 3/16)	OK (J)

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch Width [mm (inch)]		Stitch Length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Overcasting stitch**		Reinforcing of medium stretch fabric and heavyweight fabric, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 9/32)	**2.5 (3/32)**	0.5 - 4.0 (1/32 - 3/16)	OK (J)
	**Overcasting stitch**		Reinforcement of stretch fabric or decorative stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Overcasting stitch**		Stretch knit seam	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**4.0 (3/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Single diamond overcast**		Reinforcement and seaming stretch fabric	**6.0 (15/ 64)**	1.0 - 7.0 (1/16 - 1/4)	**3.0 (1/8)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Single diamond overcast**		Reinforcement of stretch fabric	**6.0 (15/ 64)**	1.0 - 7.0 (1/16 - 1/4)	**1.8 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**With side cutter**		Straight stitch while cutting fabrics	**0.0 (0)**	0.0 - 2.5 (0 - 3/32)	**2.5 (3/32)**	0.2 - 5.0 (1/64 - 3/16)	NO
	**With side cutter**		Zigzag stitch while cutting fabrics	**3.5 (1/8)**	3.5 - 5.0 (1/8 - 3/16)	**1.4 (1/16)**	0.0 - 4.0 (0 - 3/16)	NO
	**With side cutter**		Overcasting stitch while cutting fabrics	**3.5 (1/8)**	3.5 - 5.0 (1/8 - 3/16)	**2.0 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**With side cutter**		Overcasting stitch while cutting fabrics	**5.0 (3/16)**	3.5 - 5.0 (1/8 - 3/16)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**With side cutter**		Overcasting stitch while cutting fabrics	**5.0 (3/16)**	3.5 - 5.0 (1/8 - 3/16)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Piecing stitch (Right)**		Piecework/patchwork 6.5 mm (approx. 1/4 inch) right seam allowance	**5.5 (7/32)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	**Piecing stitch (Middle)**		Piecework/patchwork	**—**	—	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	**Piecing stitch (Left)**		Piecework/patchwork 6.5 mm (approx. 1/4 inch) left seam allowance	**1.5 (1/16)**	0.0 - 7.0 (0 - 1/4)	**2.0 (1/16)**	0.2 - 5.0 (1/64 - 3/16)	NO
	**Hand-look quilting**		Quilting stitch made to look like hand quilting stitch	**0.0 (0)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Quilting appliqué zigzag stitch**		Zigzag stitch for quilting and sewing on appliqué quilt pieces	**3.5 (1/8)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	0.0 - 4.0 (0 - 3/16)	NO
	**Quilting appliqué stitch**		Quilting stitch for invisible appliqué or attaching binding	**1.5 (1/16)**	0.5 - 5.0 (1/64 - 3/16)	**1.8 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Quilting stippling**		Background quilting	**7.0 (1/4)**	1.0 - 7.0 (1/16 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch Width [mm (inch)]		Stitch Length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Blind hem stitch**		Hemming woven fabrics	**00**	3← – →3	**2.0 (1/16)**	1.0 - 3.5 (1/16 - 1/8)	NO
	**Blind hem stitch**		Hemming stretch fabric	**00**	3← – →3	**2.0 (1/16)**	1.0 - 3.5 (1/16 - 1/8)	NO
	**Blind hem stitch**		Appliqués, decorative blanket stitch	**3.5 (1/8)**	2.5 - 7.0 (3/32 - 1/4)	**2.5 (3/32)**	1.6 - 4.0 (1/16 - 3/16)	OK (J)
	**Shell tuck edge**		Shell tuck edge finish on fabrics	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	0.2 - 4.0 (1/64 - 1/16)	OK (J)
	**Satin scallop stitch**		Decorating collar of blouse, edge of handkerchief	**5.0 (3/16)**	2.5 - 7.0 (3/32 - 1/4)	**0.5 (1/32)**	0.1 - 1.0 (1/64 - 1/16)	OK (J)
	**Scallop stitch**		Decorating collar of blouse, edge of handkerchief	**7.0 (1/4)**	0.0 - 7.0 (0 - 1/4)	**1.4 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Patchwork join stitch**		Patchwork stitches, decorative stitching	**4.0 (1/16)**	0.0 - 7.0 (0 - 1/4)	**1.2 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	OK (J)
	**Patchwork double overlock stitch**		Patchwork stitches, decorative stitching	**5.0 (3/16)**	2.5 - 7.0 (3/32 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Couching stitch**		Decorative stitching, attaching cord and couching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.2 (1/16)**	0.2 - 4.0 (1/64 - 1/16)	OK (J)
	**Smocking stitch**		Smocking, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Feather stitch**		Fagoting, decorative stitching	**5.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Fagoting cross stitch**		Fagoting, bridging and decorative stitching	**5.0 (3/16)**	2.5 - 7.0 (3/32 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Tape attaching**		Attaching tape to seam in stretch fabric	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/61 - 3/16)	OK (J)
	**Ladder stitch**		Decorative stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**3.0 (1/8)**	2.0 - 4.0 (1/16 - 3/16)	NO
	**Rick-rack stitch**		Decorative top stitching	**4.0 (3/16)**	0.0 - 7.0 (0 - 1/4)	**2.5 (3/32)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Decorative stitch**		Decorative stitching	**5.5 (3/16)**	0.0 - 7.0 (0 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	OK (J)
	**Serpentine stitch**		Decorative stitching and attaching elastic	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 3/16)	OK (J)
	**Decorative stitch**		Decorative stitching and appliqué	**6.0 (15/64)**	1.0 - 7.0 (1/16 - 1/4)	**1.0 (1/16)**	0.2 - 4.0 (1/64 - 3/16)	OK (J)
	**Decorative stippling stitch**		Decorative stitching	**7.0 (1/4)**	1.0 - 7.0 (1/16 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch Width [mm (inch)]		Stitch Length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Hemstitching**		Decorative hems, triple straight at left	**1.0 (1/16)**	1.0 - 7.0 (1/16 - 1/4)	**2.5 (3/32)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Decorative hems, triple straight at center	**3.5 (1/8)**	1.0 - 7.0 (1/16 - 1/4)	**2.5 (3/32)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching zigzag**		Decorative hems, top stitching	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**3.0 (1/8)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Decorative hems, lace attaching pin stitch	**3.5 (1/8)**	1.5 - 7.0 (1/16 - 1/4)	**2.5 (3/32)**	1.6 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Decorative hems	**3.0 (1/8)**	1.5 - 7.0 (1/16 - 1/4)	**3.5 (1/8)**	1.6 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Decorative hems daisy stitch	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**3.0 (1/8)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**3.5 (1/8)**	1.6 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**3.5 (1/8)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**3.5 (1/8)**	1.6 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**4.0 (3/16)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**4.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**2.5 (3/32)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Honeycomb stitch**		Heirloom, decorative hems	**5.0 (3/64)**	1.5 - 7.0 (1/16 - 1/4)	**2.5 (3/32)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Honeycomb stitch**		Heirloom, decorative hems	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**3.5 (1/8)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**3.0 (1/8)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**4.0 (3/16)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**4.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**2.5 (3/32)**	1.6 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Heirloom, decorative hems	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**2.0 (1/16)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Decorative hems and bridging stitch	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**2.0 (1/16)**	1.5 - 4.0 (1/16 - 3/16)	NO

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch Width [mm (inch)]		Stitch Length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Hemstitching**		Decorative hems. Fagoting, attaching ribbon	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**3.0 (1/8)**	1.5 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Decorative hems, smocking	**6.0 (15/64)**	1.5 - 7.0 (1/16 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Hemstitching**		Decorative hems, smocking	**5.0 (3/16)**	1.5 - 7.0 (1/16 - 1/4)	**1.6 (1/16)**	1.0 - 4.0 (1/16 - 3/16)	NO
	**Narrow rounded buttonhole**		Buttonhole on light to medium weight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
	**Wide round ended buttonhole**		Buttonholes with extra space for larger buttons	**5.5 (7/32)**	3.5 - 5.5 (1/8 - 7/32)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
	**Tapered round ended buttonhole**		Reinforced waist tapered buttonholes	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
	**Round ended buttonhole**		Buttonholes with vertical bar tack in heavyweight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
	**Round double ended buttonhole**		Buttonholes for fine, medium to heavyweight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
	**Narrow squared buttonhole**		Buttonholes for light to medium weight fabrics	**5.0 (3/16)**	3.0 - 5.0 (1/8 - 3/16)	**0.4 (1/64)**	0.2 - 1.0 (1/64 - 1/16)	NO
	**Stretch buttonhole**		Buttonholes for stretch or woven fabrics	**6.0 (15/64)**	3.0 - 6.0 (1/8 - 15/64)	**1.0 (1/16)**	0.5 - 2.0 (1/32 - 1/16)	NO
	**Heirloom buttonhole**		Buttonholes for heirloom and stretch fabrics	**6.0 (15/64)**	3.0 - 6.0 (1/8 - 15/64)	**1.5 (1/16)**	1.0 - 3.0 (1/16 - 1/8)	NO
	**Bound buttonhole**		The first step in making bound buttonholes	**5.0 (3/16)**	0.0 - 6.0 (0 - 15/64)	**2.0 (1/16)**	0.2 - 4.0 (1/64 - 3/16)	NO
	**Keyhole buttonhole**		Buttonholes in heavyweight or thick fabrics for larger flat buttons	**7.0 (1/4)**	3.0 - 7.0 (1/8 - 1/4)	**0.5 (1/32)**	0.3 - 1.0 (1/64 - 1/16)	NO
	**Tapered keyhole buttonhole**		Buttonholes in medium to heavy weight fabrics for larger flat buttons	**7.0 (1/4)**	3.0 - 7.0 (1/8 - 1/4)	**0.5 (1/32)**	0.3 - 1.0 (1/64 - 1/16)	NO
	**Keyhole buttonhole**		Buttonholes with vertical bar tack for reinforcement in heavyweight or thick fabrics	**7.0 (1/4)**	3.0 - 7.0 (1/8 - 1/4)	**0.5 (1/32)**	0.3 - 1.0 (1/64 - 1/16)	NO
	**Darning**		Darning of medium weight fabric	**7.0 (1/4)**	2.5 - 7.0 (3/32 - 1/4)	**2.0 (1/16)**	0.4 - 2.5 (1/64 - 1/16)	NO
	**Darning**		Darning of heavyweight fabric	**7.0 (1/4)**	2.5 - 7.0 (3/32 - 1/4)	**2.0 (1/16)**	0.4 - 2.5 (1/64 - 1/16)	NO
	**Bar tack**		Reinforcement at opening of pocket, etc.	**2.0 (1/16)**	1.0 - 3.0 (1/16 - 1/8)	**0.4 (1/64)**	0.3 - 1.0 (1/64 - 1/16)	NO
	**Button sewing**		Attaching buttons	**3.5 (1/8)**	2.5 - 4.5 (3/32 - 3/16)	—	—	NO

Stitch Key	Stitch Name	Presser Foot	Applications	Stitch Width [mm (inch)]		Stitch Length [mm (inch)]		Twin Needle
				Auto	Manual	Auto	Manual	
	**Eyelet**		For making eyelets, holes on belts, etc.	**7.0 (1/4)**	7.0 6.0 5.0 (1/4 15/64 3/16)	**7.0 (1/4)**	7.0 6.0 5.0 (1/4 15/64 3/16)	NO
	**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

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