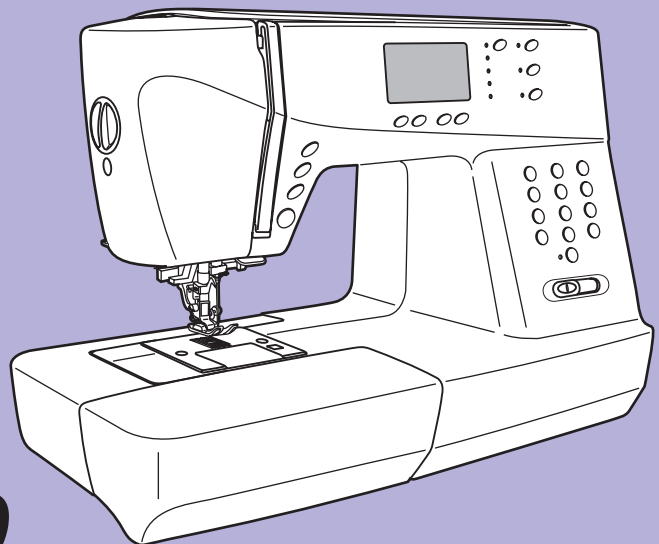


Another quality product from

**EURO-PRO** 

# Instruction Manual

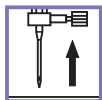


## **Model 9110**

*Pattern numbers 265 /Pattern can be magnified and mirrored /Multiple sewing program /Auto threader*

**EURO-PRO Operating LLC, 94 Main Mill Street, Door 16, Plattsburgh, NY 12901 Tel.: 1 (800) 798-7398**

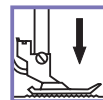
## SYMBOL INSTRUCTIONS



Raise needle



Raise presser foot



Lower presser foot

# IMPORTANT SAFETY INSTRUCTIONS

When using an electrical appliance, basic safety should always be followed, including the following:

Read all instructions before using this sewing machine.

**DANGER** -To reduce the risk of electric shock:

1. An appliance should never be left unattended when plugged in.
2. Always unplug this appliance from the electric outlet immediately after using and before cleaning.
3. Always unplug before checking and re-lamping. Contact the manufacturer or its service agent for repair in the event of failure if the machine is with 240mW LED lamp, which is not user-replaceable. Replace bulb with same type rated 5 watts if the machine is with 5W lamp.

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

1. Do not allow to be used as a toy. Close attention is necessary when this appliance is used by or near children.
2. Use this appliance only for its intended use as described in this manual. Use only the attachments recommended by the manufacturer as contained in this manual.
3. Never operate this appliance 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 appliance to the nearest authorized dealer or service center for examination, repair, electrical or mechanical adjustment.
4. Never operate the appliance with any air openings block. Keep ventilation openings of the sewing machine and foot controller free from accumulation of lint, dust, and loose cloth.
5. Keep fingers away from all moving parts. Special care is required around the sewing machine needle.
6. Always use the proper needle plate, a wrong needle plate can cause the needle to break.
7. Do not use bent needles.
8. Do not pull or push fabric while stitching. It may deflect the needle causing it to break.
9. Switch the sewing machine off ("O") when making any adjustments in the needle area, such as threading needle, changing needle, threading bobbin, or changing presser foot, and the light.
10. Always unplug sewing machine from the electrical outlet when removing covers, lubricating, or when making any other user servicing adjustments mentioned in the instruction manual.
11. Never drop or insert any object into any opening.
12. Do not use outdoors.
13. Do not operate where aerosol spray products are being used or where oxygen is being administered.
14. To disconnect, turn all controls to the off ("O") position, then remove plug from outlet.
15. Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.

## SAVE THESE INSTRUCTIONS

**This sewing machine is intended for household use only.**

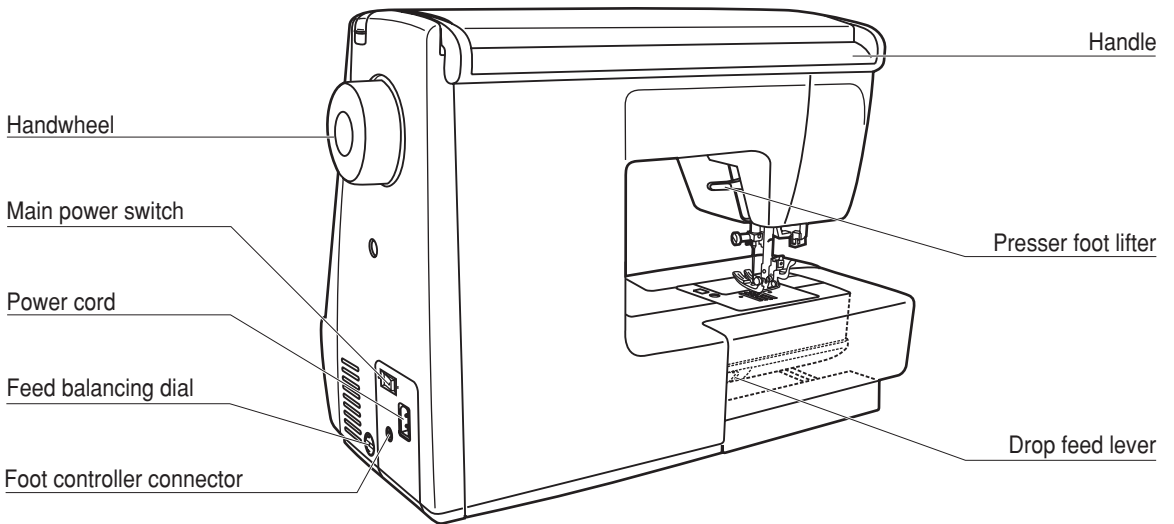
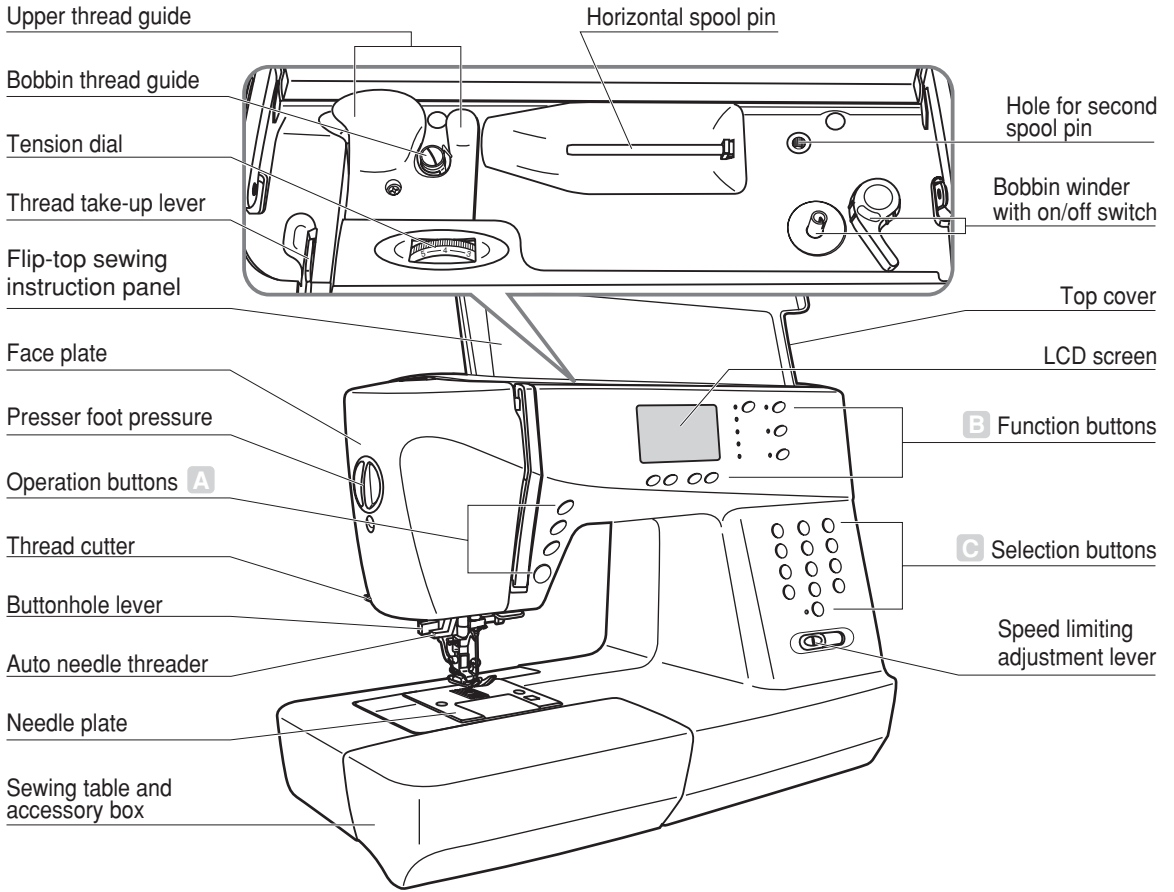
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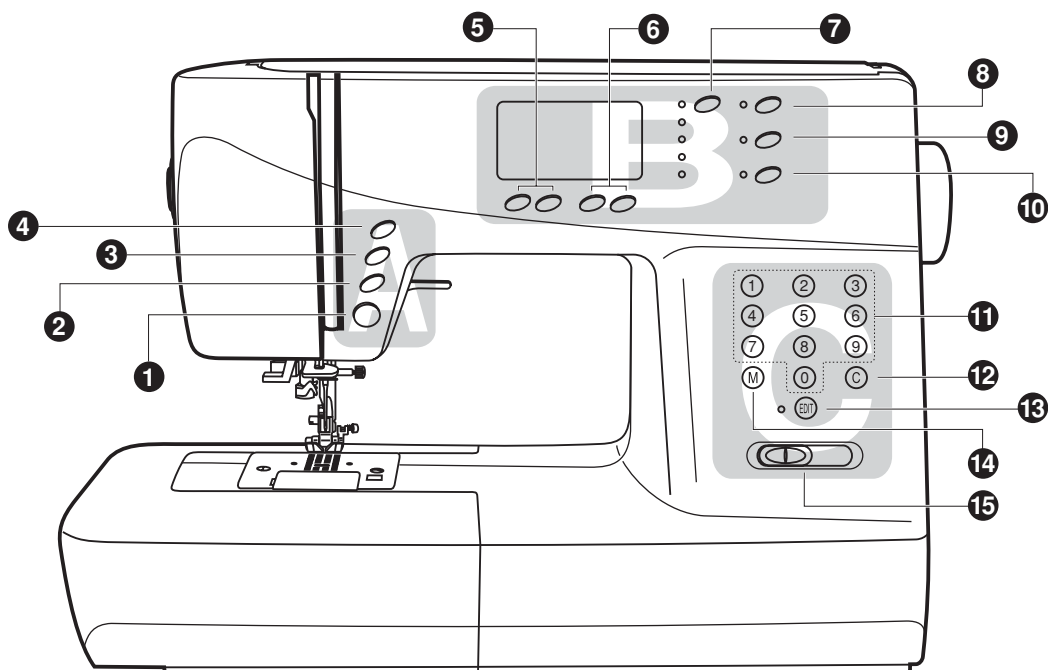
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# PRINCIPAL PARTS OF THE MACHINE



## BUTTONS OF THE MACHINE



### ■ A. Operation buttons (see page 21/22)

#### 1. Start/stop button

Press this button to start or stop the machine.

#### 2. Reverse button

Hold down this button to sew either backwards or a reinforcement stitch at a low speed.

#### 3. Auto-lock button

Hold down this button to sew locking stitches immediately or at the end of the current patterns and automatically stop.

#### 4. Needle up/down position button

Press this button to move the needle either up or down.

### ■ B. Function buttons (see page 23/24/25)

#### 5. Stitch width adjustment button

Press this button to adjust the width of the zigzag stitch.

#### 6. Stitch length adjustment button

Press this button to adjust the length of the stitch.

### **7. Mode selection button**

Press this button to select direct mode, utility and decorative pattern mode, block letter mode, script letter mode and outline letter mode.

### **8. Elongation button**

Pattern 30 to 39 can be elongated up to five times its normal length by pressing this button.

### **9. Mirror button**

Press this button to sew a reflection pattern.

### **10. Twin needle button**

Press this button to fix the width range when using the twin needle to sew.

## ■ **C. Selection buttons** (see page 26/27)

### **11. Direct pattern selection and number buttons**

Instant access to direct pattern or press number buttons of the pattern number to select the desired pattern.

### **12. Clear button**

If an incorrect pattern is selected or memorized, pressing this button will clear it.

### **13. Edit button**

Press this button to set an added pattern when sewing combinations of decorative stitches.

### **14. Memory button**

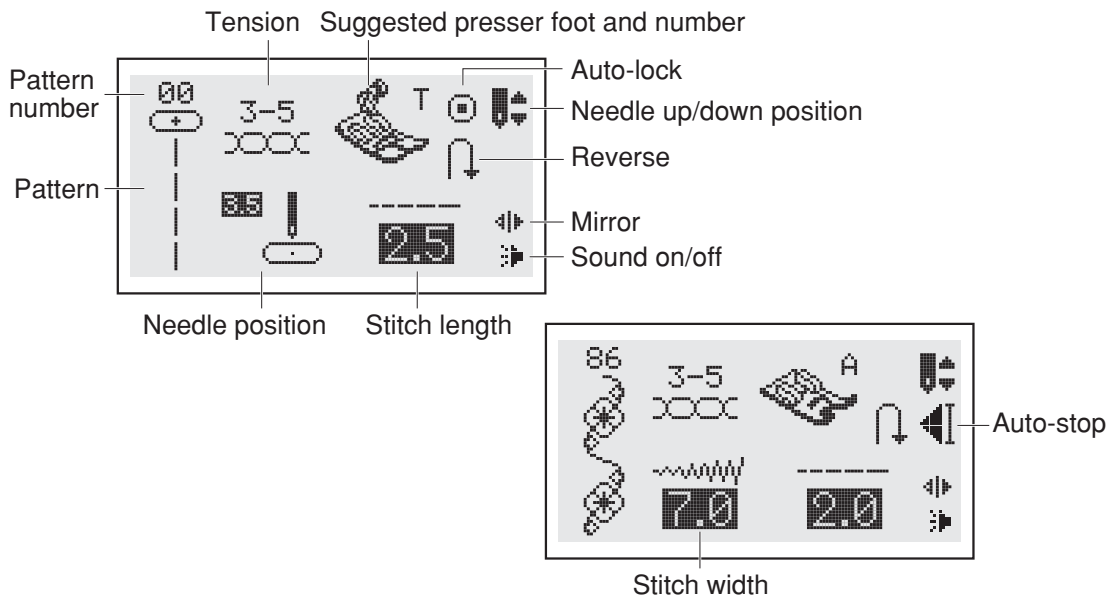
Press this button to enter or store the created pattern combination in the memory.

### **15. Speed limiting adjustment lever**

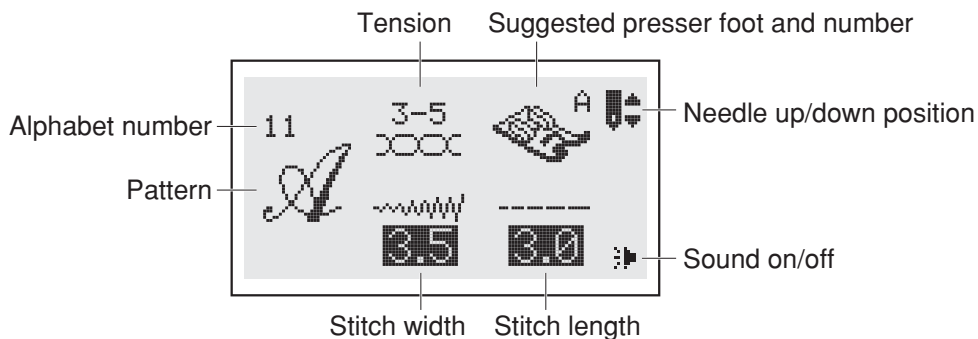
Slide this lever to change the sewing speed.



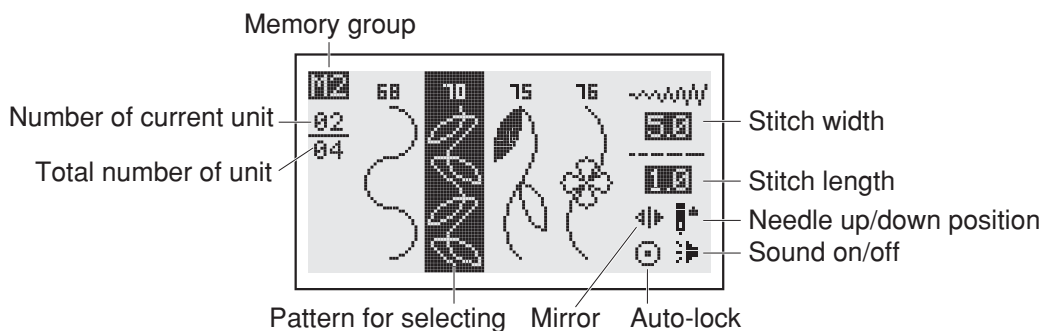
■ Pattern



■ Alphabet



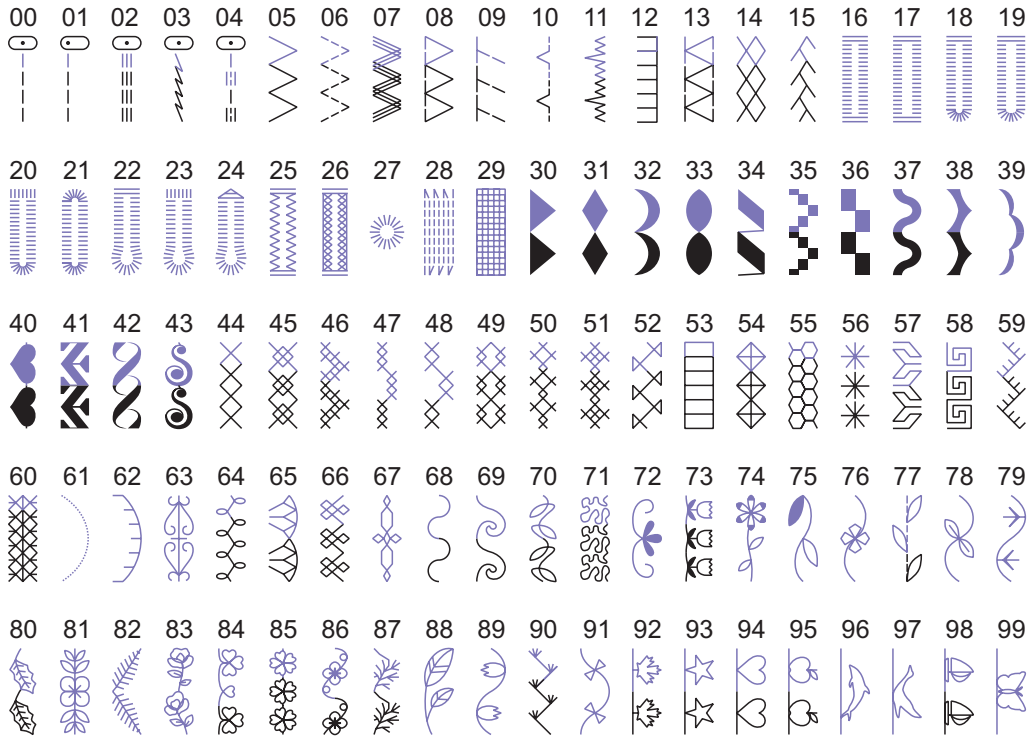
■ Memory



# PATTERN CHART

The portion marked in purple on the chart below shows the one unit of each pattern.

## Patterns



## Alphabets

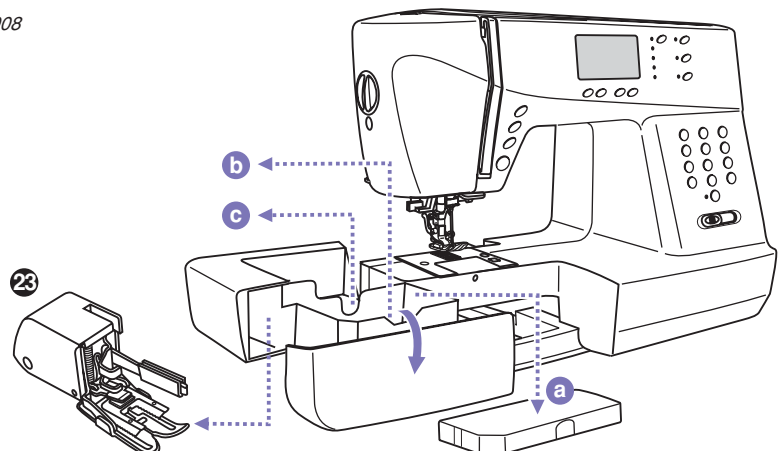
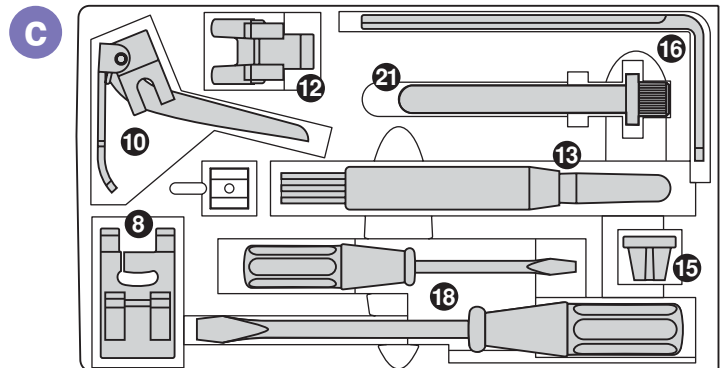
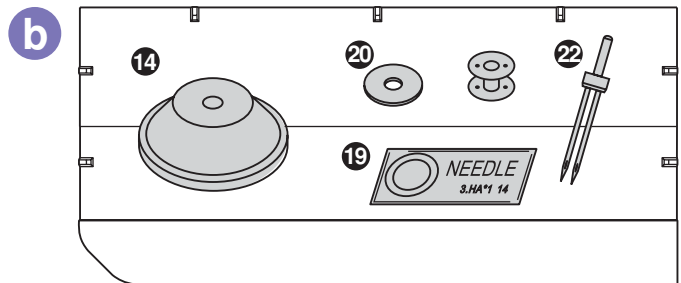
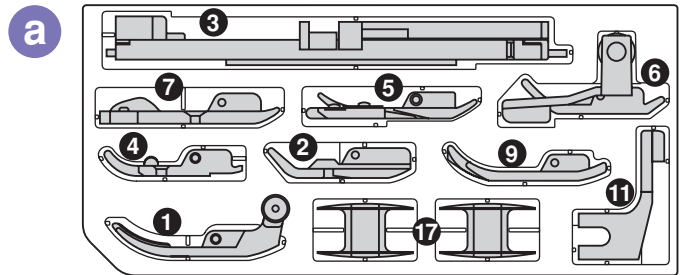


## ACCESSORIES

Following the directions of the arrows, you can see the three accessory storage spaces (a), (b), (c).

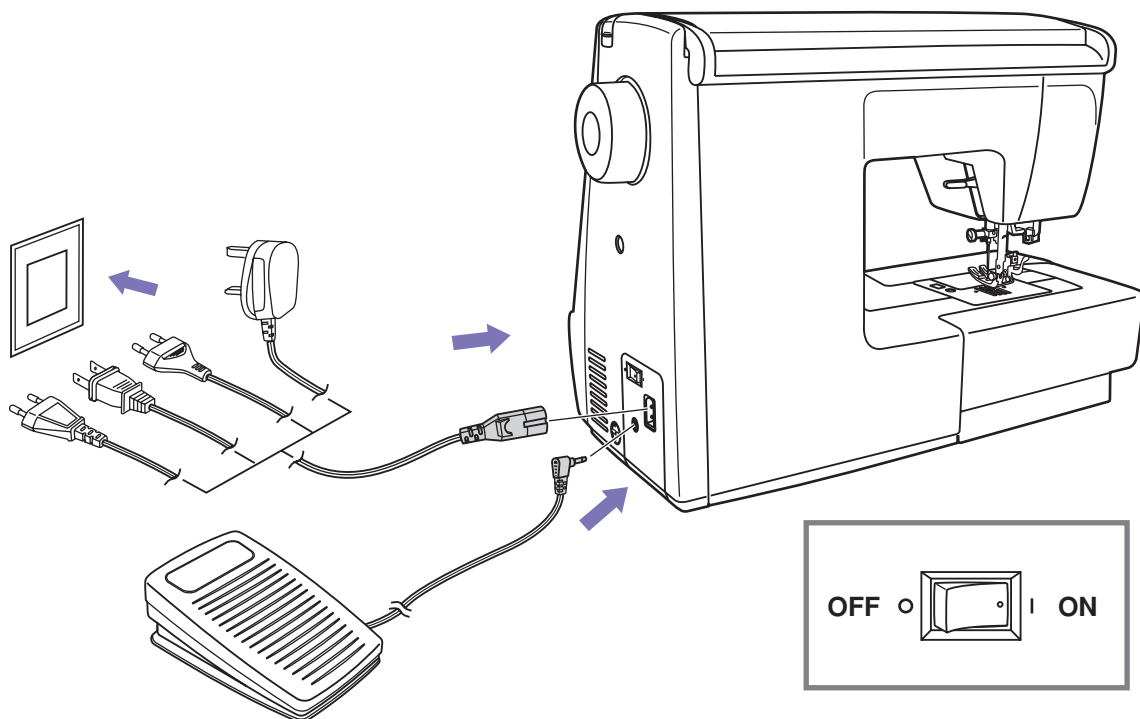
### Standard accessories

1. All purpose foot (T) - 006186008
2. Zipper foot (I) - 006905008
3. Buttonhole foot (D) - 006102008
4. Cording foot (M) - 006813008
5. Overcasting foot (E) - 006907008
6. Blind hem foot (F) - 006904008
7. Hemmer foot (K) - 006900008
8. Satin stitch foot (A) - 006172008
9. Quilting foot (P) - 006916008
10. Darning/ Embroidery foot - 006016008
11. Gathering foot - 006917008
12. Button sewing foot - 006914008
13. Brush/ Seam ripper - 006099008
14. Spool holder (Large) - R12373210
15. Spool holder (Small) - TA10943209
16. Seam guide - 006008001
17. Bobbin(3x) - 006084009
18. Screwdriver (L & S) - 006012008
19. Pack of needle - 006014148
20. Spool pin felt - 006015009
21. Second spool pin - R60033210
22. Twin needle - 006020008
23. Walking foot - 006185008



## CONNECTING THE MACHINE TO THE POWER SOURCE

**Caution:** Always make sure that the machine is unplugged from power source and the main switch is on "O". when the machine is not in use and before inserting or removing parts.



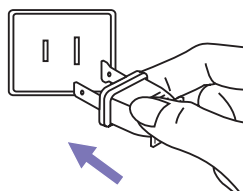
### ■ Connecting the machine

Before connecting the power supply, make sure that the voltage and frequency shown on the machine is conforming with your electrical power.

Place the machine on a stable table.

1. Connect the power line cord to the machine by inserting the 2-hole plug into the terminal box.
2. Connect the power line plug to the electric outlet.
3. Turn on the power switch.
4. The sewing lamp will light up when the switch is turned on.

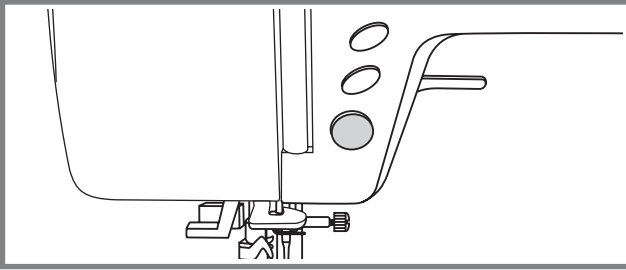
To disconnect, turn the power switch to the off position, then remove plug from outlet.



### Polarized plug information

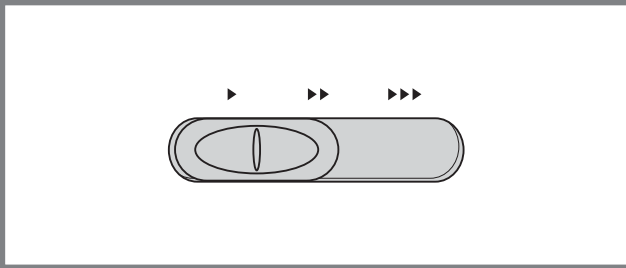
This appliance has a polarized plug (one blade wider than the other), to reduce the risk of electrical shock; this plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician. Do not modify the plug in any way.

## ■ Start/stop button



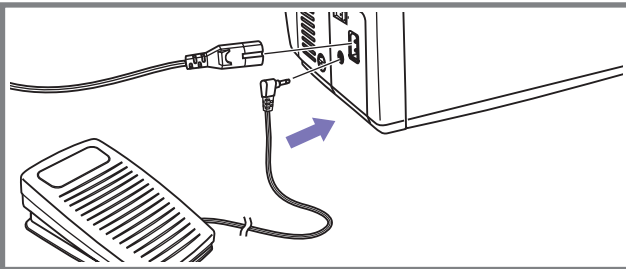
The machine will start running when Start/stop button is pressed and will stop when pressed the second time.

The machine will rotate slowly at start of sewing.

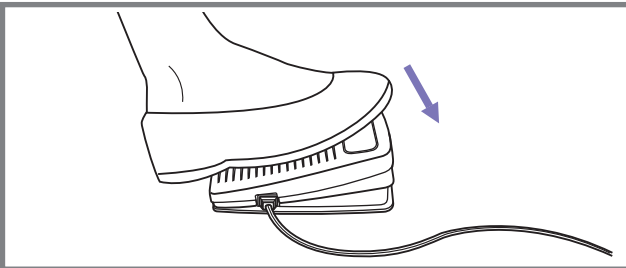


The speed limiting adjustment lever can control the sewing speed. To increase the speed, slide the lever to the right, To decrease the sewing speed, slide the lever to the left.

## ■ Foot control




With the sewing machine turned off, insert the foot control plug into its connector on the sewing machine.



Turn on the sewing machine, and then slowly depress the foot control to start sewing.

Release the foot control to stop the sewing machine.

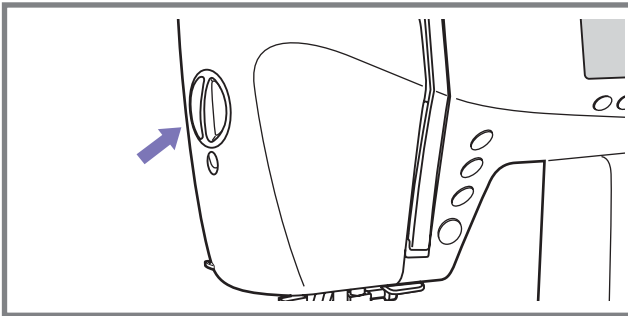
 **Please Note:** The setting of the speed limiting adjustment lever will limit the maximum speed of the machine.



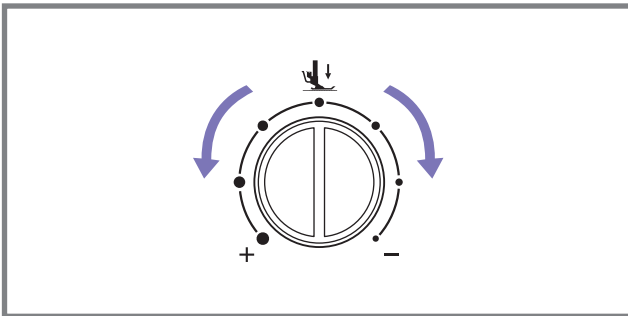
**Attention:** Consult a qualified electrician if in doubt as how to connect the machine to the power source. Unplug the power cord when the machine is not in use.

The appliance must be used with the foot controller C-9000 manufactured by CHIEN HUNG TAIWAN., LTD.

## ADJUSTING THE PRESSER FOOT PRESSURE



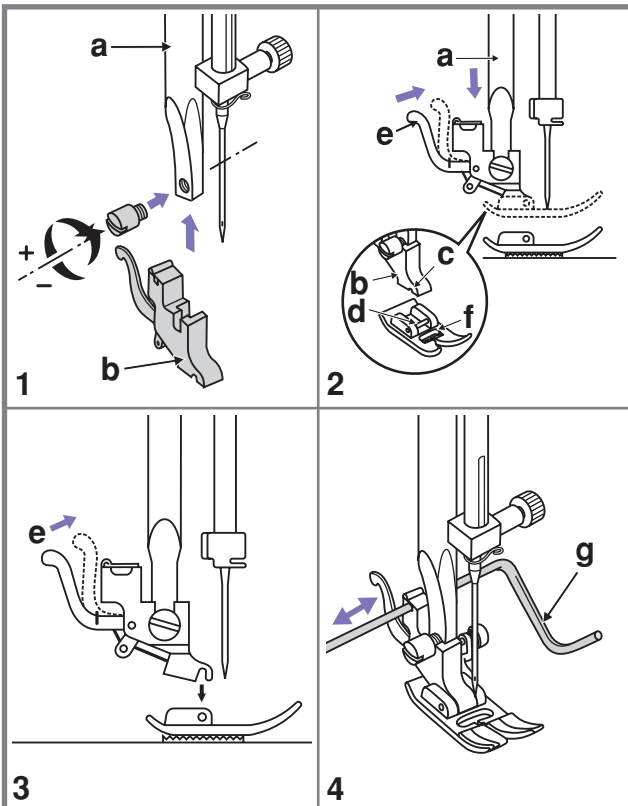
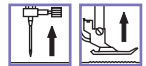
The presser foot pressure dial is on the left of the face plate.



The presser foot pressure of the machine has been pre-set and requires no particular readjustment according to the type of fabric.

For sewing very thin fabric, loosen the pressure by turning the screw counterclockwise, and for heavy fabric, tighten by turning it clockwise.

## CHANGING THE PRESSER FOOT



**⚠ Attention:** Turn power switch to off ("O") when carrying out any of the above operations!

### Attaching the presser foot holder (1)

Raise the presser foot bar (a). Attach the presser foot holder (b) as illustrated.

### Attaching the presser foot (2)

Lower the presser foot holder (b) until the cut-out (c) is directly above the pin (d). Raise the lever (e).

Lower the presser foot holder (b) and the presser foot (f) will engage automatically.

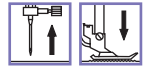
### Removing the presser foot (3)

Raise the presser foot.

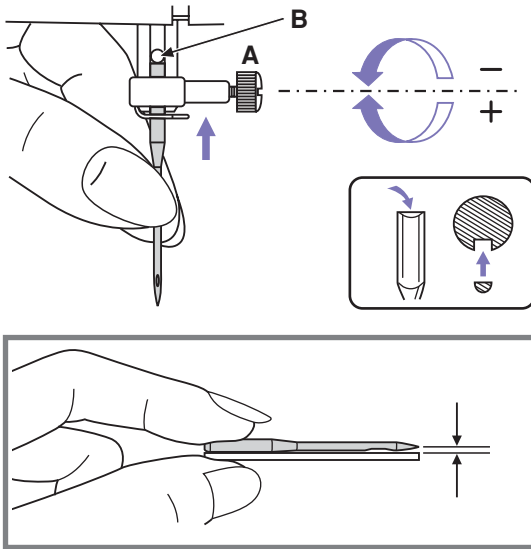
Raise the lever (e) and the foot will disengage.

### Attaching the seam guide (4)

Attach the seam guide (g) in the slot as illustrated. Adjust according to need for hems, pleats, etc.



## REPLACING THE NEEDLE



**⚠ Attention:** Turn power switch to off. ("O") when carrying out any of the above operations!

Change the needle regularly, especially if it is showing signs of wear and causing problems.

Insert the needle following the illustrated instructions.

A. Loosen the needle clamp screw and tighten again after inserting the new needle.

The flat side of the shaft should be towards the back.

B. Insert the needle as far up as it will go.

Needles must be in perfect condition.

Problems can occur with:

- Bent needles
- Blunt needles
- Damaged points

## MATCHING NEEDLE/ FABRIC/ THREAD

### NEEDLE, FABRIC, THREAD SELECTION GUIDE

NEEDLE SIZE	FABRICS	THREAD
9-11 (70-80)	Lightweight fabrics-thin cottons, voile, serge, silk, muslin, Qiana, interlocks, cotton knits, tricot, jerseys, crepes, woven polyester, shirt & blouse fabrics.	Light-duty thread in cotton, nylon, polyester or cotton wrapped polyester.
11-14 (80-90)	Medium weight fabrics-cotton, satin, kettleclote, sailcloth, double knits, lightweight woollens.	Most threads sold are medium size and suitable for these fabrics and needle sizes. Use polyester threads on synthetic materials and cotton on natural woven fabrics for best results. Always use the same thread on top and bottom.
14 (90)	Medium weight fabrics-cotton duck, woolen, heavier knits, terrycloth, denims.	
16 (100)	Heavyweight fabrics-canvas, woollens, outdoor tent and quilted fabrics, denims, upholstery material (light to medium).	
18 (110)	Heavy woollens, overcoat fabrics, upholstery fabrics, some leathers and vinyls.	Heavy duty thread, carpet thread.





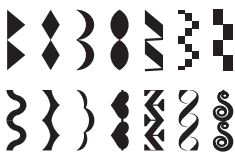








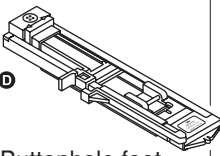
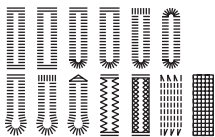












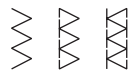







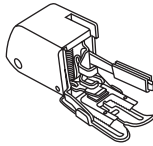







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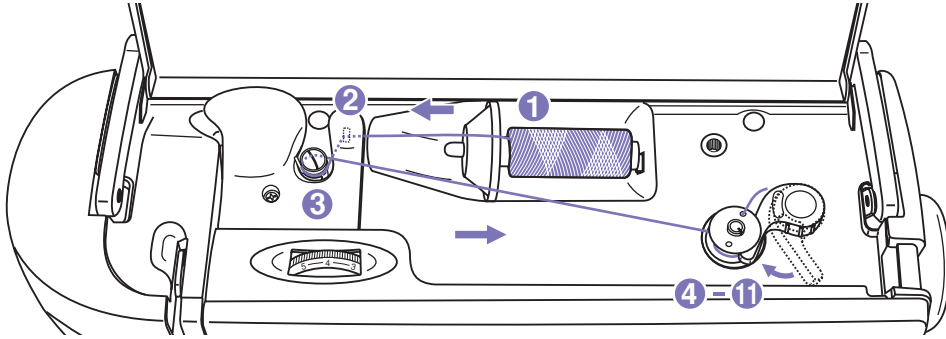
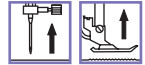
- In general, fine threads and needles are used for sewing fine fabrics, and thicker threads are used for sewing heavy fabrics.
- Always test thread and needle size on a small piece of fabric which will be used for actual sewing.
- Use the same thread for needle and bobbin.

**TYPE OF PRESSER FOOT CHART**

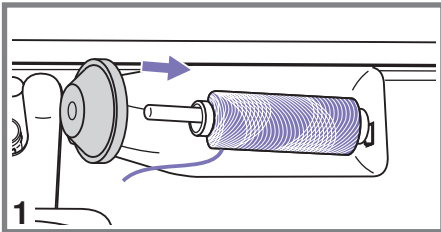
(Double needle is being suggested for certain stitches for more creativity)

PRESSER FOOT	APPLICATION	NEEDLE	PRESSER FOOT	APPLICATION	NEEDLE
 All purpose foot (T)	General sewing, Patchwork stitches, Decorative stitching, Smocking, Fagoting, etc.	 	 Satin stitch foot (A)	Satin stitch 	 
 Zipper foot (I)	Inserting zippers 		 Quilting foot (P)	Quilting 	
 Buttonhole foot (D)	Buttonhole 		 Darning/ Embroidery foot	Darning Free embroidery Monogramming 	
 Cording foot (M)	Cording 		 Gathering foot	Gathering 	 
 Overcasting foot (E)	Overcasting 		 Button sewing foot	Button sewing 	
 Blind hem foot (F)	Blind hem 		 Walking foot	This foot helps to prevent uneven feeding of very difficult fabrics	 
 Hemmer foot (K)	Narrow hemming 				

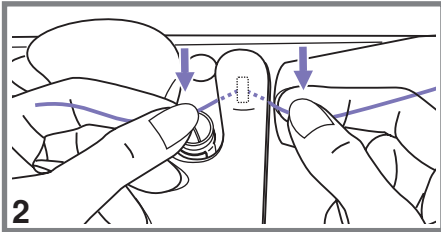




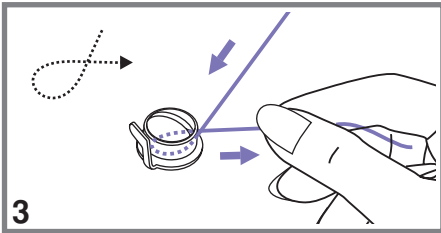
### ■ Bobbin winding



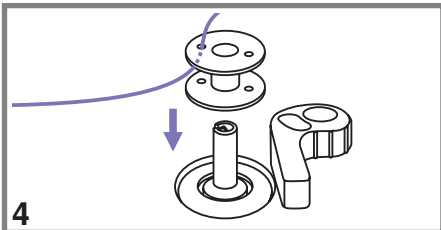
1. Place the thread and spool holder onto the spool pin. For smaller spools of thread, place spool holder with the small side next to the spool or use the small spool holder.



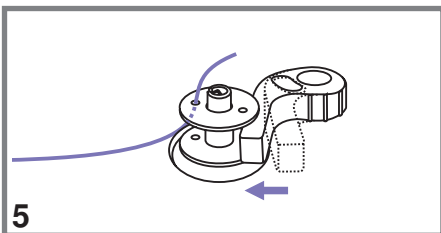
2. Snap the thread into the thread guide (Child beneath thread guide cover).



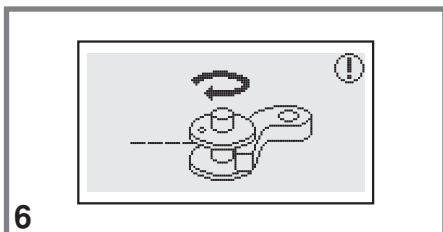
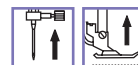
3. Wind the thread clockwise around the bobbin winder tension discs.



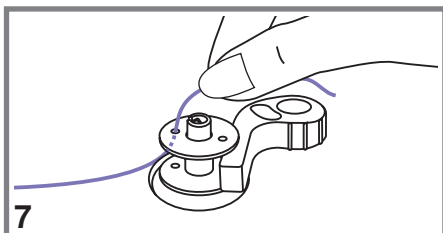
4. Place the thread end through one of the inner holes in the bobbin as illustrated and place empty bobbin on the spindle.



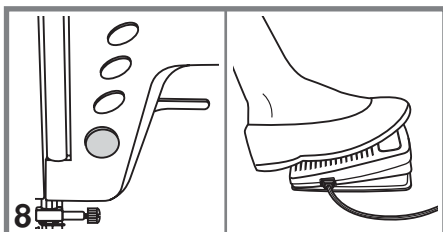
5. Press the bobbin winder stopper against the bobbin.



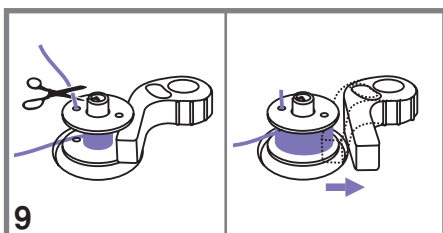
6. When the bobbin winder switch is pressed to the left, LCD will display the animation of bobbin winding, press the engaging lever to right, the animation disappears, LCD display the frame of ordinary operating.



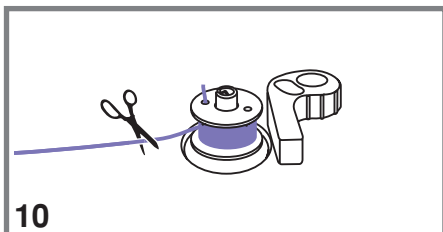
7. Hold the thread tail securely in one hand.



8. Press the Start/stop button or foot control.



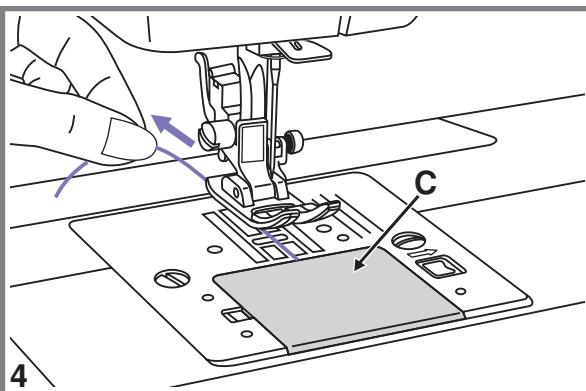
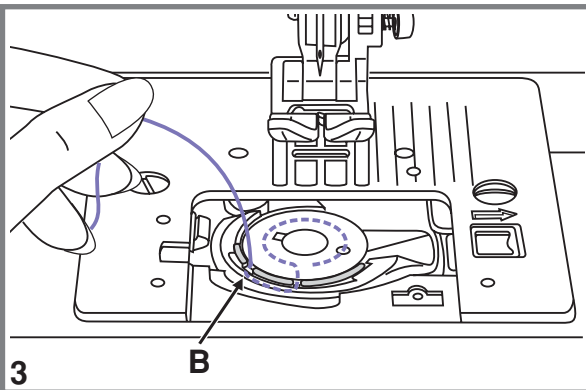
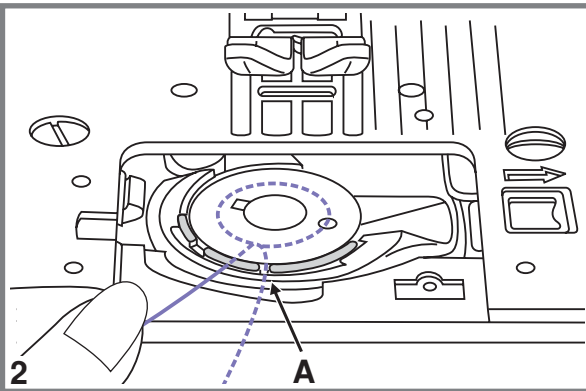
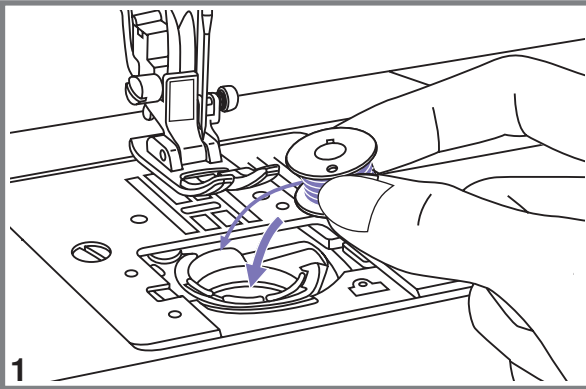
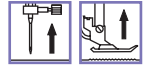
9. After the bobbin has wound a few turns stop the machine and cut the thread near the hole of the bobbin. Set the speed to maximum. Continue filling the bobbin until it is full. The motor stops automatically when the bobbin is full.



10. Stop the machine, cut the thread and then remove the bobbin.

**Please Note:** When the bobbin winder switch is placed on the left, "bobbin winding position", the machine will not sew and the handwheel will not turn. To start sewing, push the bobbin winder switch to the right "sewing position".

## INSERTING THE BOBBIN



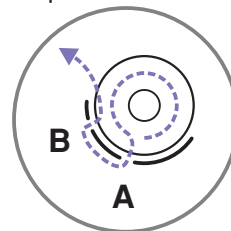
**⚠ Attention:** Turn power switch to off ("O") before inserting or removing the bobbin.

**When inserting or removing the bobbin, the needle must be fully raised.**

1. Insert the bobbin in the bobbin case with the thread running in a counterclockwise direction (arrow).

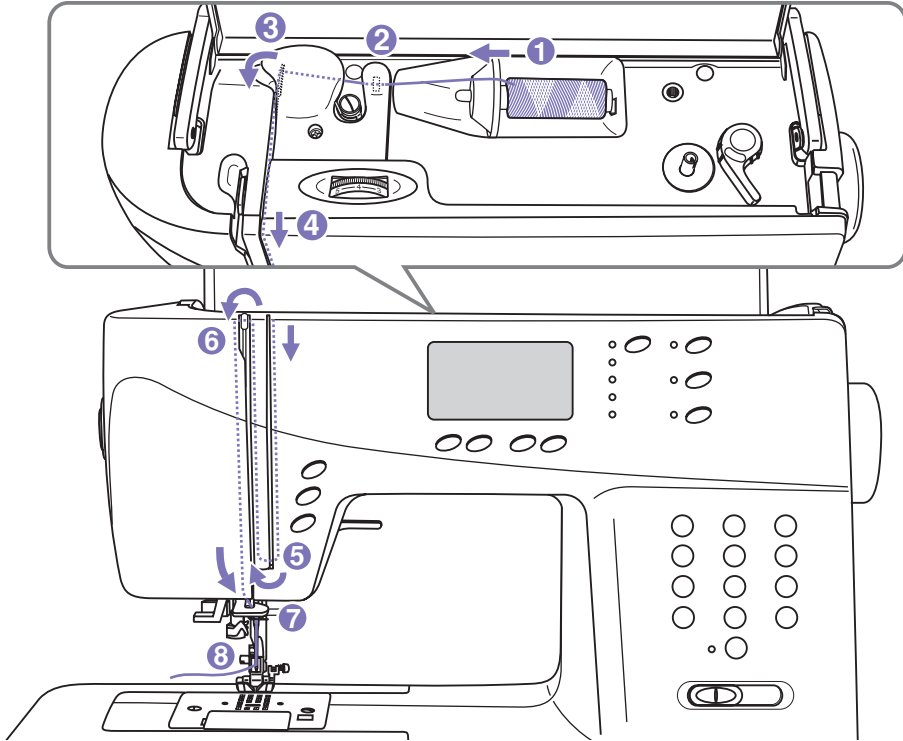
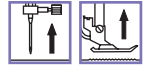
2. Pull the thread through the slit (A).


3. Pull the thread toward the left and along the inside of the spring until it slips into the notch (B) being sure that the thread does not slip out of the slit (A).

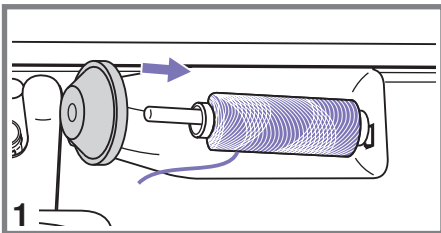


4. Pull out about 15 cm (6 inches) of thread and attach the bobbin cover plate. (C)

# THREADING THE UPPER THREAD

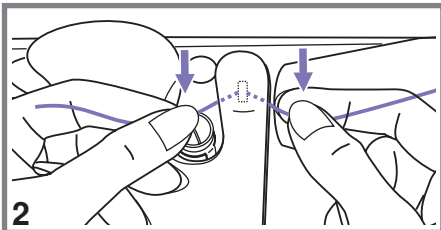


 **Please Note:** It is important to carry out the threading correctly as by not doing so several sewing problems could result.

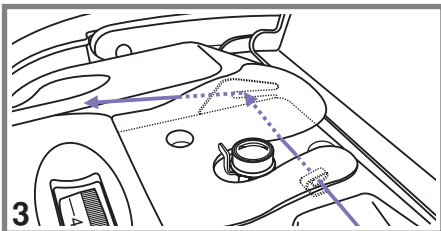


**Start by raising the needle to its highest point, and also raise the presser foot to release the tension discs.**

1. Lift up the spool pin. Place the spool of thread on the spool pin so that the thread comes from the front of the spool, then place the spool cap at the end of the spool pin.

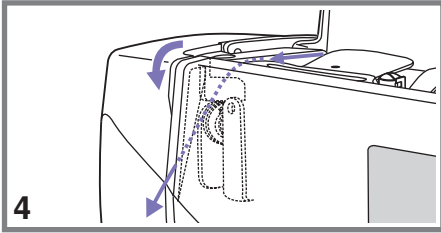
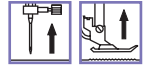


2. Draw the thread from the spool through the upper thread guide.

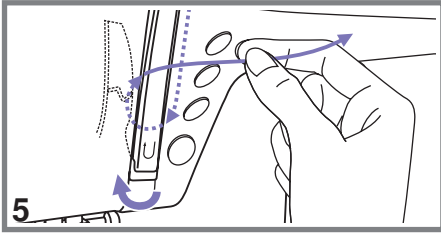


3. Guide the thread around the thread guide pulling the thread through the pre-tension spring as illustrated.

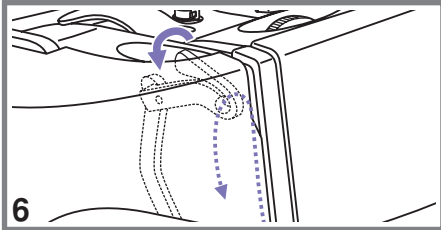
## THREADING THE UPPER THREAD



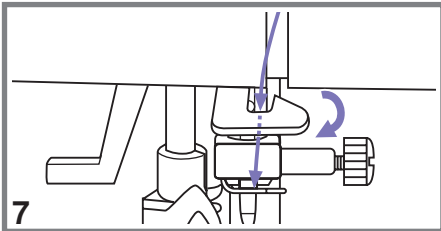
4. Thread the tension module by passing the thread between the silver discs.



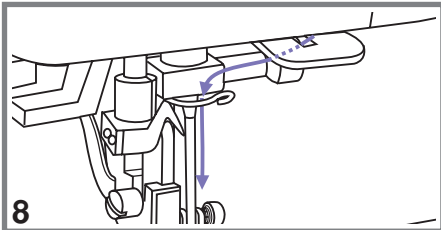
5. Then, down and around the check spring holder.



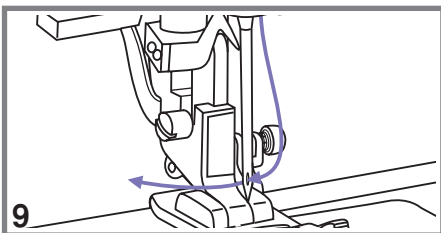
6. At the top of this movement, pass the thread from right to the left through the slotted eye of the take-up lever and then downwards again.



7. Pass the thread behind the flat, horizontal thread guide.



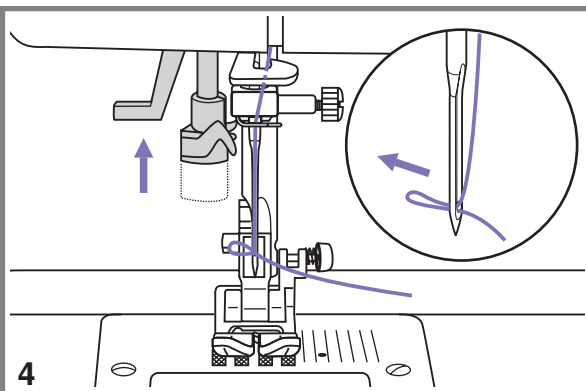
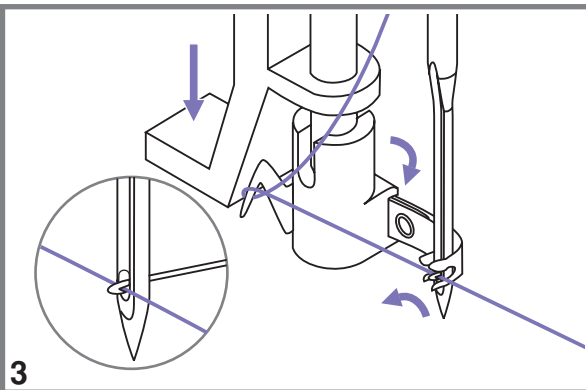
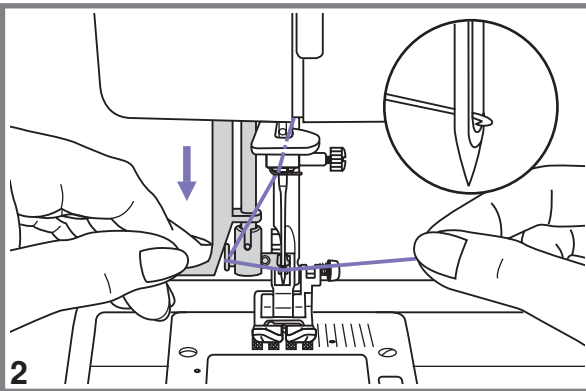
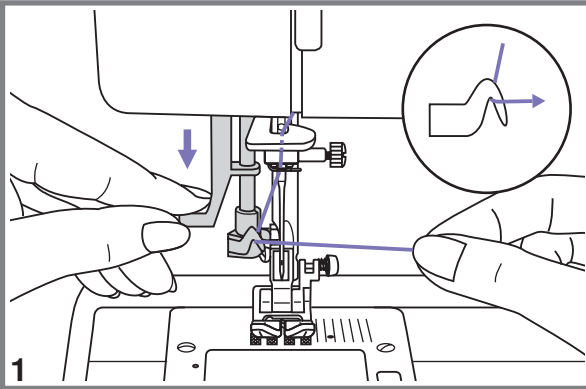
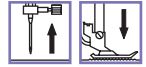
8. Guide the thread through the wire loop.



9. Pull the end of the thread through the needle from front to rear, and pull out about 10 cm of thread.

Use the needle threader to thread the needle. (On the next page.)

## USING THE NEEDLE THREADER



**⚠ Attention:** Turn power switch to the off position ("O").

**Raise the needle to its highest position and lower the presser foot.**

1. Lower the needle threader lever slowly and draw the thread through the thread guide as illustrated and then to the right.

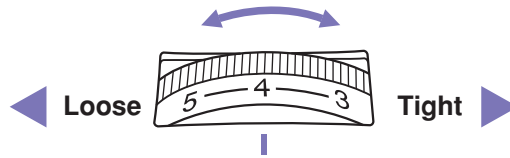
2. The needle threader automatically turns to the threading position and the hook pin passes through the needle eye.

3. Take the thread in front of the needle.

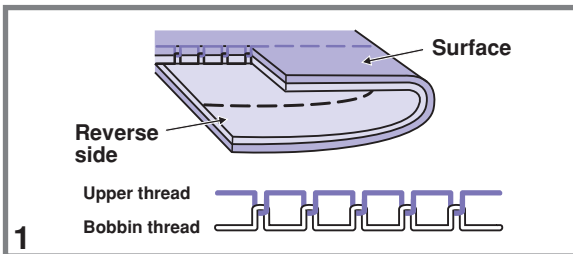
4. Hold the thread loosely and release the lever slowly. The hook will turn and pass the thread through the needle eye forming a loop.

Pull the thread through the needle eye.

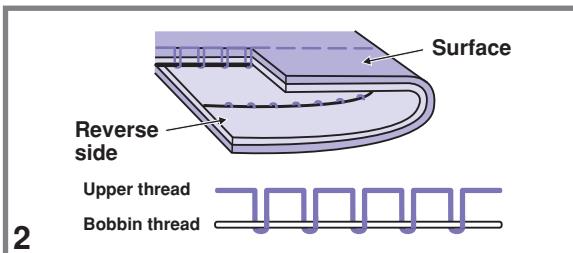
# THREAD TENSION



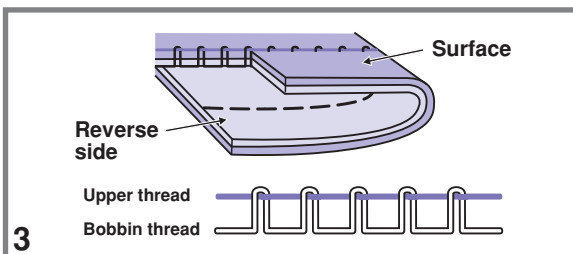
- Basic thread tension setting: "4"
- To increase the tension, turn the dial to the next number up. To reduce the tension, turn the dial to the next number down.
- Proper setting of tension is important to good sewing.
- There is no single tension setting appropriate for all the stitch functions and fabrics.
- 90% of all sewing will be between "3" and "5" ("4" is basic setting).
- For all decorative sewing you will always obtain a nicer stitch and less fabric puckering when the upper thread appears on the bottom side of your fabric.



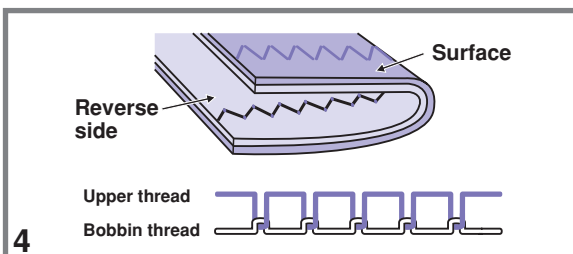
1. Normal thread tension for straight stitch sewing.



2. Thread tension is too loose for straight stitch sewing. Turn dial to higher number.

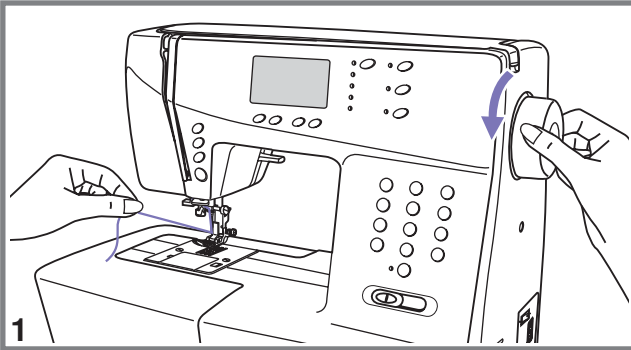


3. Thread tension is too tight for straight stitch sewing. Turn dial to lower number.

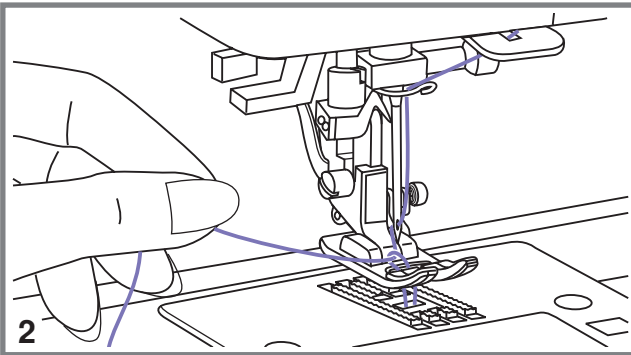


4. Normal thread tension for zig zag and decorative sewing.

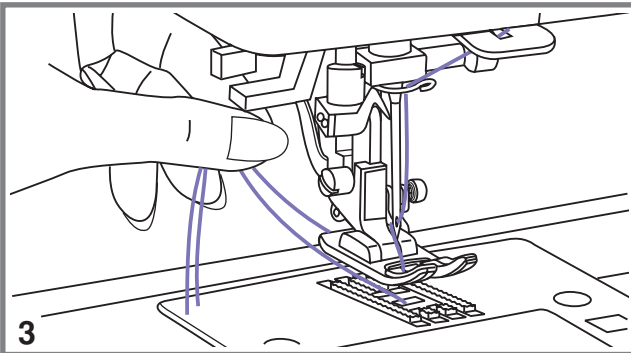
## RAISING UP THE LOWER THREAD



1. Hold the upper thread with the left hand. Turn the handwheel towards you (counterclockwise) lowering, then raising the needle.

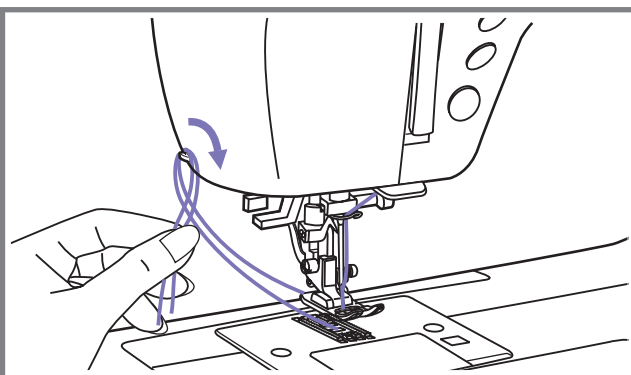
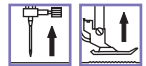


2. Gently pull on the upper thread to bring the bobbin thread up through the needle plate hole. The bobbin thread will come up in a loop.



3. Pull both threads to the back under the presser foot.

## CUTTING THE THREAD

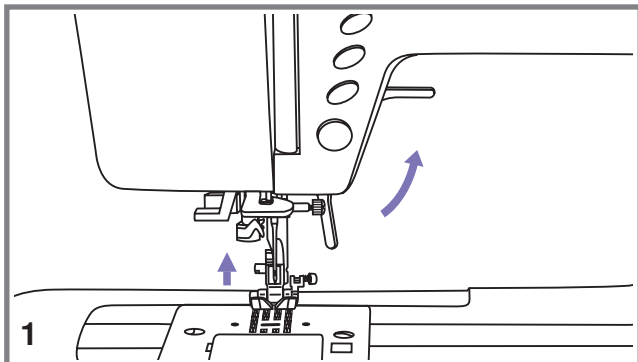


Raise the presser foot. Remove the fabric, draw the threads to the left side of the face cover and cut using the thread cutter.

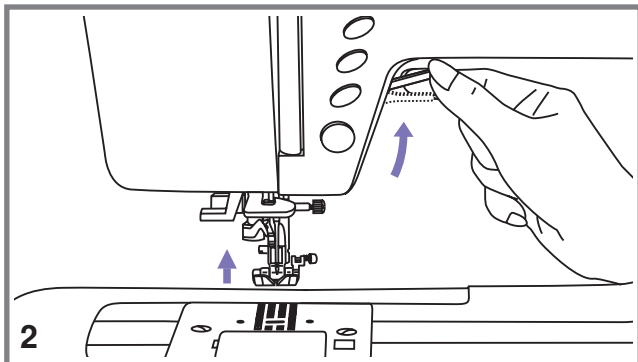
The threads are cut at the proper length to start the next seam.



## TWO-STEP PRESSER FOOT LIFTER

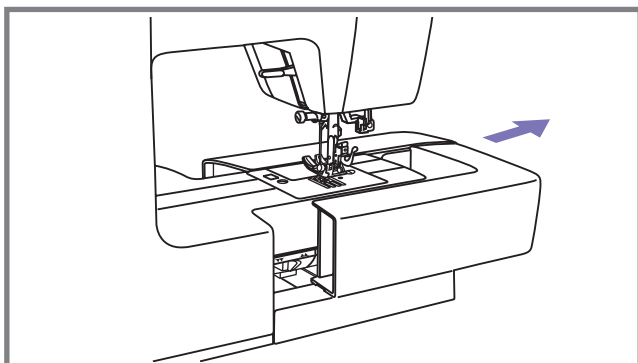
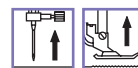


1. The presser foot lifter raises and lowers your presser foot.

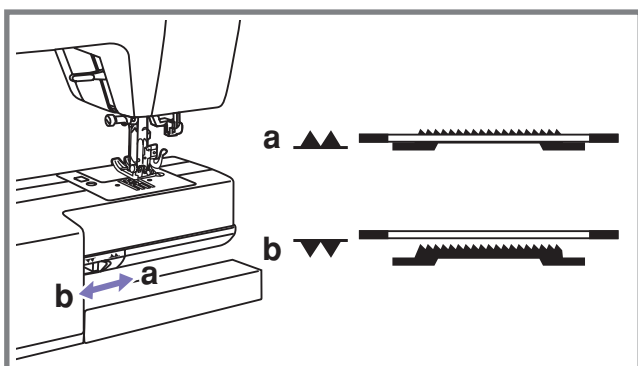


2. When sewing several layers or thick fabrics, the presser foot can be raised a second stage for easy positioning of the work.

## TO RAISE OR DROP THE FEED DOGS



With the sewing table off the machine, the feed dog adjustment lever can be seen on the base in back of the sewing machine.



Sliding the lever to the "▼▼" (b) will lower the feed dog, for example during button sewing. If you wish to continue sewing normally, slide the lever to the "▲▲" (a) in order to raise the feed dogs.

The feed dog will not rise up if you do not turn the handwheel, even if the lever is slid to the right. Make a complete turn to raise the feed dogs.

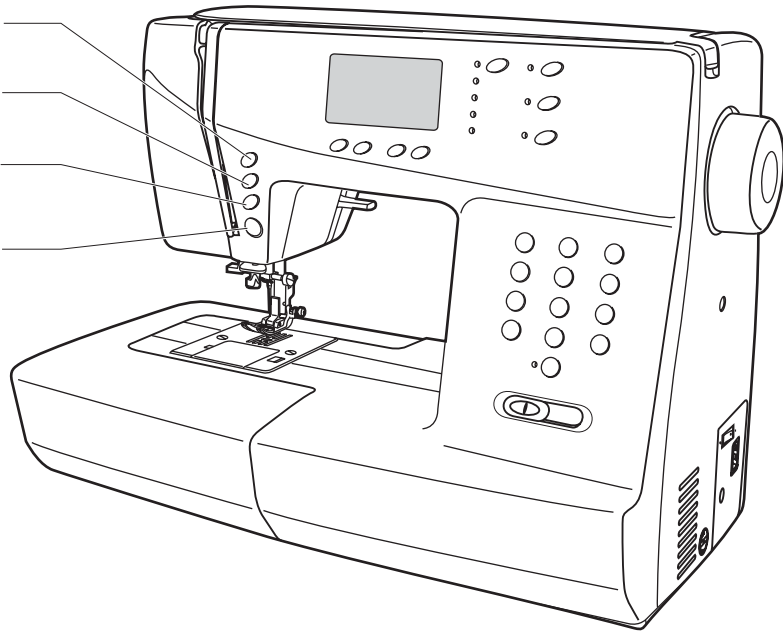
## OPERATION BUTTONS

Needle up/down  
position button

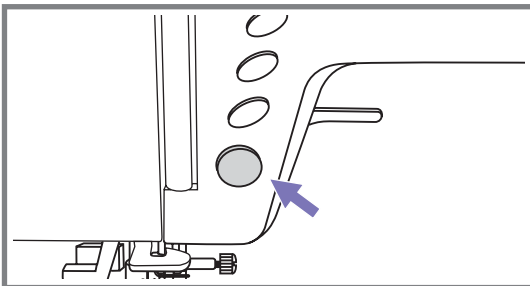
Auto-lock button

Reverse button

Start/stop button



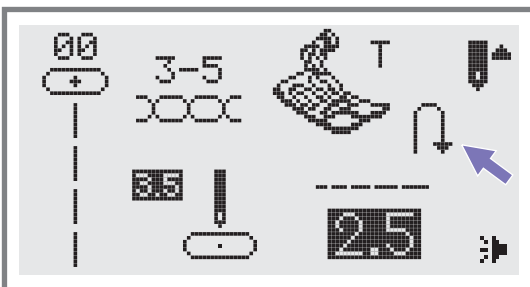
### ■ Start/stop button



The machine will start running when start/stop button is pressed and will stop when pressed the second time. The machine will rotate slowly at the beginning of the sewing.

The sewing speed can be controlled by the speed limiting adjustment lever.

### ■ Reverse button

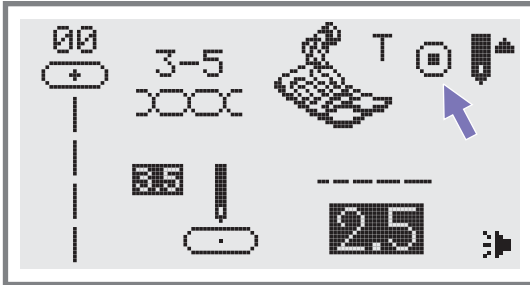


When the patterns 00-05, 30-99 are selected, the machine will sew in reverse or a reinforcement stitch at a low speed if the reverse button is pressed. The machine will sew forward after the button is released.

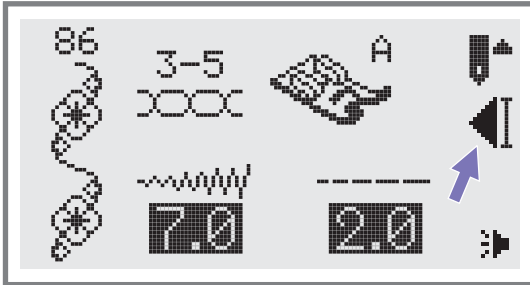
An arrow "↕" on the LCD display indicates reverse sewing.

## OPERATION BUTTONS

### Auto-lock button



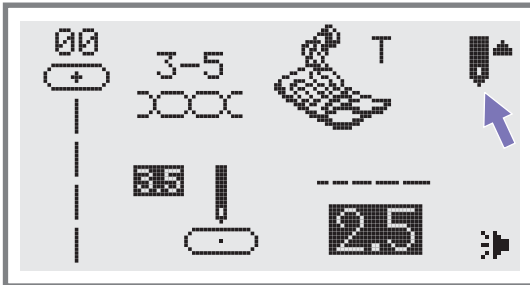
When the patterns 00-06 are selected, the machine will immediately sew 3 locking stitches when the Auto-lock button is pressed, then automatically stop. The LCD will display the figure "⊕" until the machine is stopped.



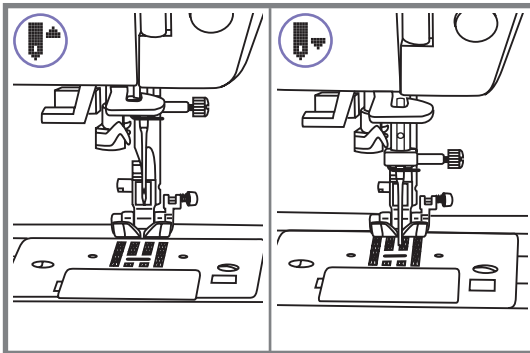
When the patterns 07-15, 30-99 are selected, press the Auto-lock button, the machine will sew 3 locking stitches at the end of the current pattern and automatically stop. The LCD will display the figure "⬅" until the machine is stopped.

The function will be cancelled if you press the button once again or select another pattern.

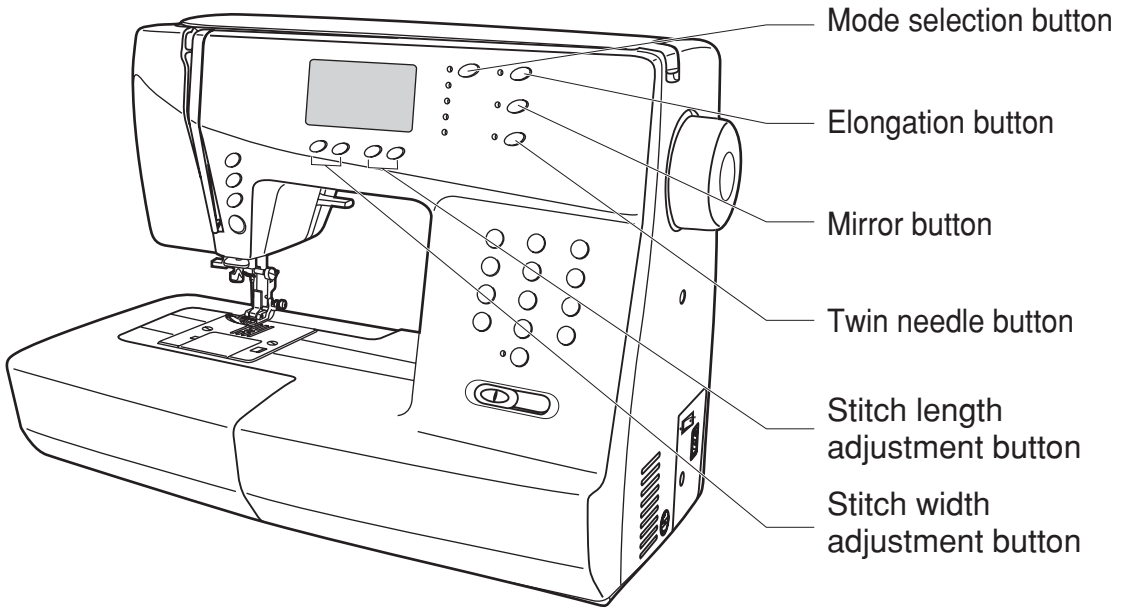
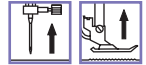
### Needle up/ down position button



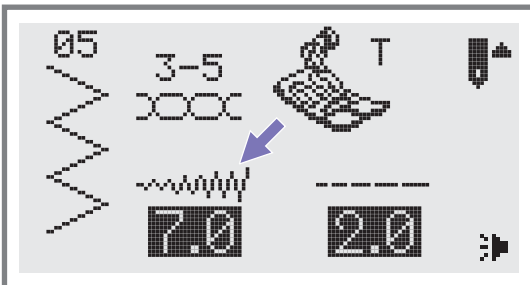
With the Needle up/ down position button, you decide whether the needle shall stop in the up position or in the material when you stop sewing.



Press the button so that the arrow, on the LCD screen, will point upward "⬆", and the needle will stop in the highest position. When you press the button so that the arrow points downward "⬇", the machine will stop with the needle in the lowest position.

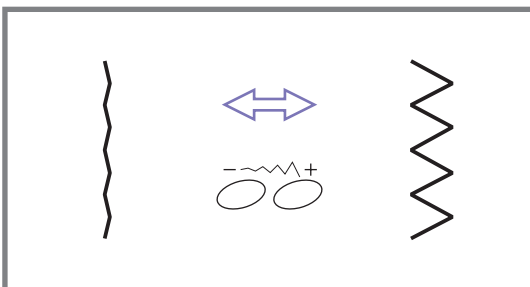


**■ Stitch width adjustment button**

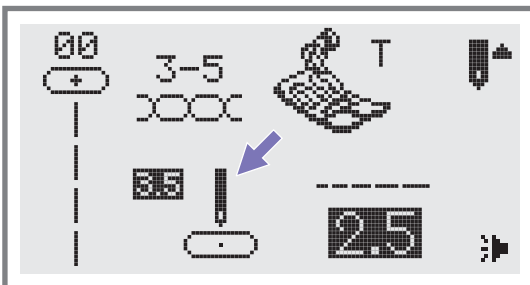


When you select a stitch, the machine will automatically set the recommended stitch width, which will be indicated by numbers on the LCD screen. The stitch width can be regulated by pressing the stitch width adjustment buttons.

Certain stitches have a limited stitch width.



For a narrower stitch, press the "-" button (left). For a wider stitch, press the "+" button (right). The stitch width can be adjusted between "0.0-7.0". Certain stitches have a limited stitch width.

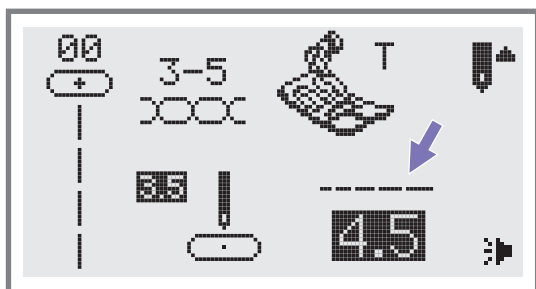


When patterns 00~04 are selected, the needle position is regulated by the stitch width adjustment buttons. Pressing the "-" button (left), will move the needle to the left and pressing the "+" button (right), will move the needle to the right. The numbers will be changed from left position "0.0" to extreme right position "7.0". The pre-set center needle position will be indicated as "3.5".

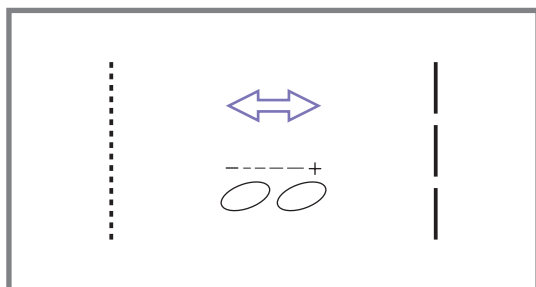


## FUNCTION BUTTONS

### Stitch length adjustment button

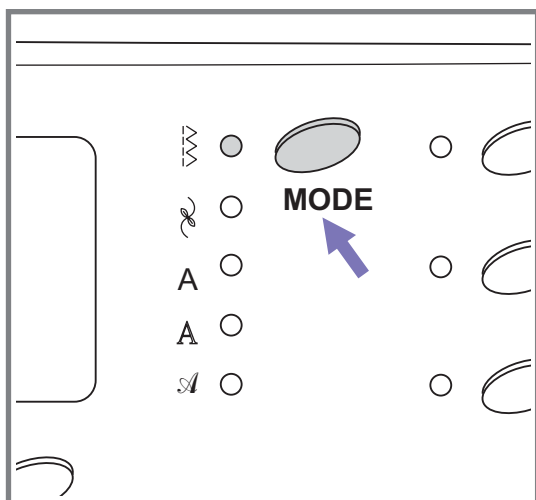


When you select a stitch the machine will automatically set the recommended stitch length which will be indicated by numbers on the LCD screen. The stitch length can be adjusted by pressing the stitch length adjustment buttons.



To shorten the stitch length, press the "-" button (left). For a longer stitch length, press the "+" button (right). The stitch length can be adjusted between "0.0-4.5". Certain stitches have a limited length.

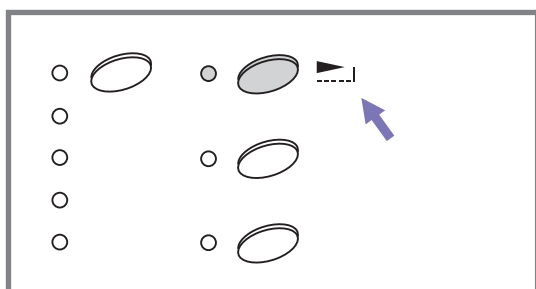
### MODE selection button



The LED light will be set at direct mode "⌘" when start the machine. By pressing the button, LED light will move step by step to select the stitch mode, as shown.

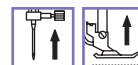
- ⌘ Direct mode stitch selection.
- ☿ Utility and decorative pattern mode: Stitch selection using number buttons.
- A Block letter mode: Character selection using number buttons.
- A Script letter mode: Character selection using number buttons.
- ☿ Outline letter mode: Character selection using number buttons.

### Elongation button (see page 56)

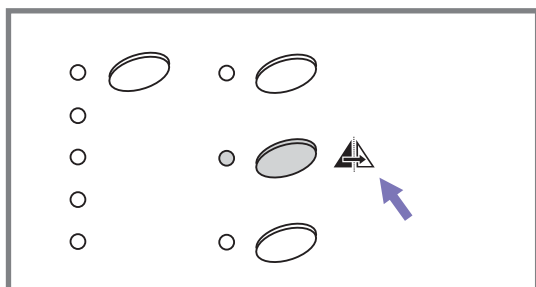


The pattern 30-39 can be elongated up to five times its normal length by pressing the "▶---" button, LED light will turn on.

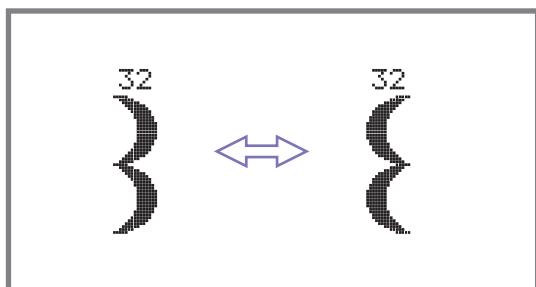
When the width or length or stitch is changed, a greater variety of patterns are available.



■ **Mirror button** (see page 57)

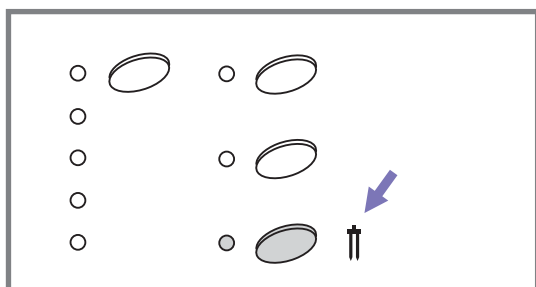


The patterns 00-15, 30-99 can be mirror imaged along a vertical axis by pressing the "▲" button, LED light will turn on. The machine will continue to sew the reflected pattern until the mirror button is pressed again. The mirror function also will be canceled if the pattern changed.



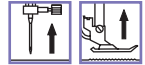
The function for mirror imaging the pattern appears on the LCD screen.

■ **Twin needle button** (see page 58)

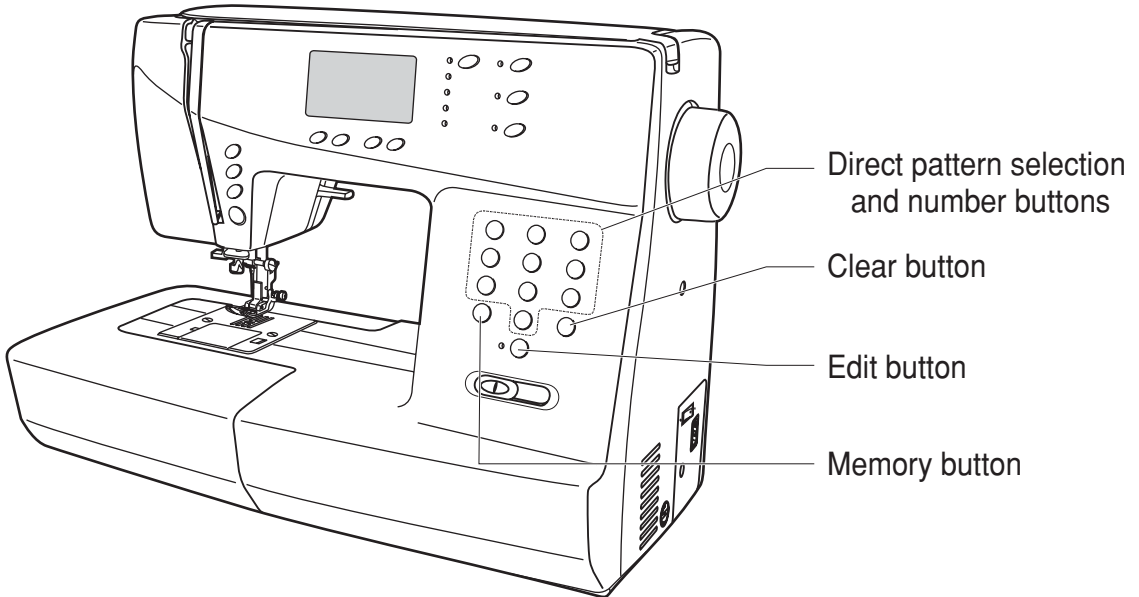


With the twin needle, the patterns 00-15, 30-99 can sew two parallel lines of the same stitch with two different threads.

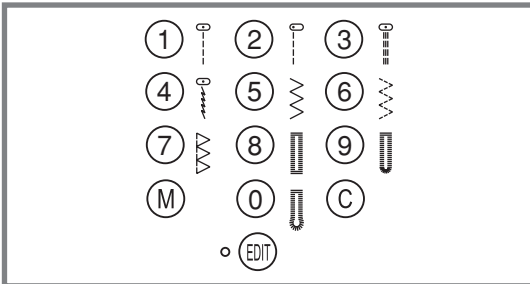
Press the "‡" button, LED light will turn on, and the machine automatically reduces the maximum width for twin needle sewing. Press the button again for single needle sewing.



# SELECTION BUTTONS

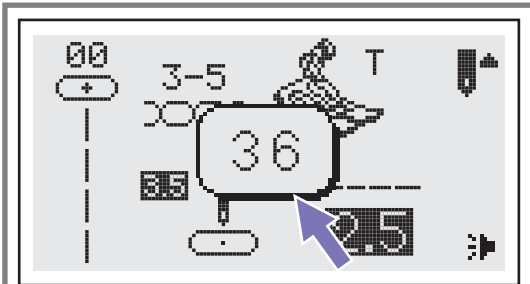


## ■ Direct pattern selection and number buttons



### Direct pattern selection

Press the buttons to select the utility patterns shown beside the number button when the mode button is set at the Direct mode.

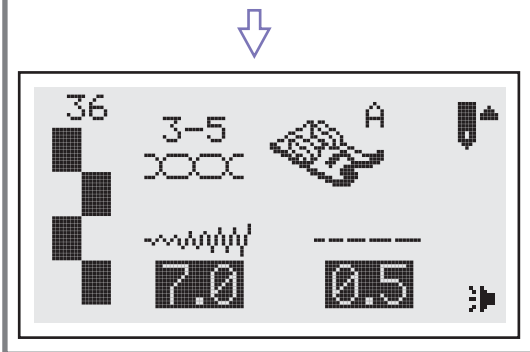


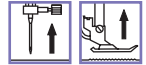
### Number buttons

Press the number buttons of the pattern number to select the desired pattern.

Except the Direct Pattern mode, the other mode can be selected by pressing the desired numbers.

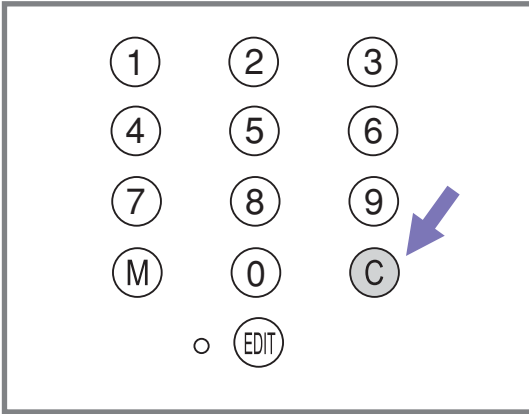
Example: pattern 36





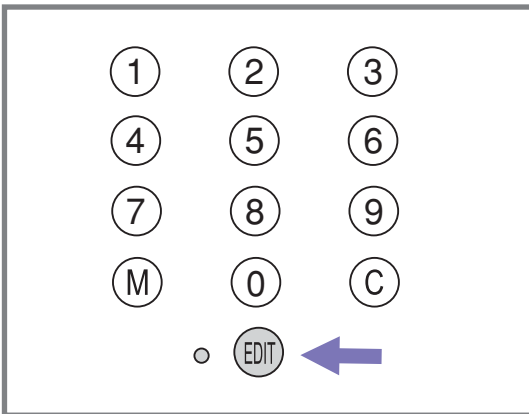
## SELECTION BUTTONS

### ■ Clear button



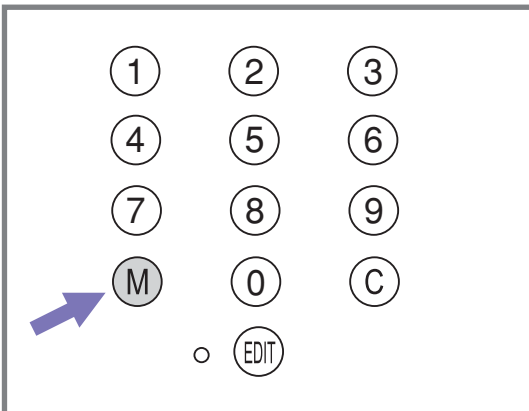
Press this button when the incorrect character is selected. Each press of this button erases one character, or press this button to remove an added pattern when sewing combinations of characters or decorative stitches.

### ■ Edit button




If you wish to modify any settings in the memory mode, use the stitch width "+" or "-" button to select the pattern to be modified, and press the "EDIT" button to set the selected pattern under the editing mode, the LED light will turn on. Manual setting function of the stitch width, stitch length, mirror and auto-lock for these memorized patterns is now possible. Press the "EDIT" button again to leave the editing mode and return to memory mode.

### ■ Memory button

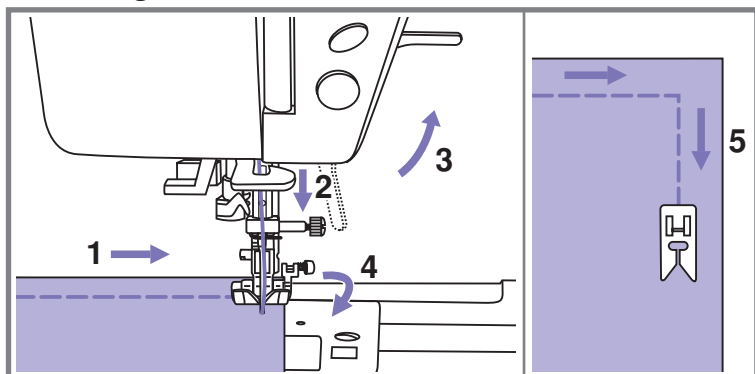


Press the "M" button to enter the memory mode, and store the combinations of characters or decorative stitches. Use the stitch width "+" or "-" button to confirm the pattern memorized by pressing this button in memory mode.

 **Please Note:** The Direct mode patterns and buttonholes cannot be memorized.

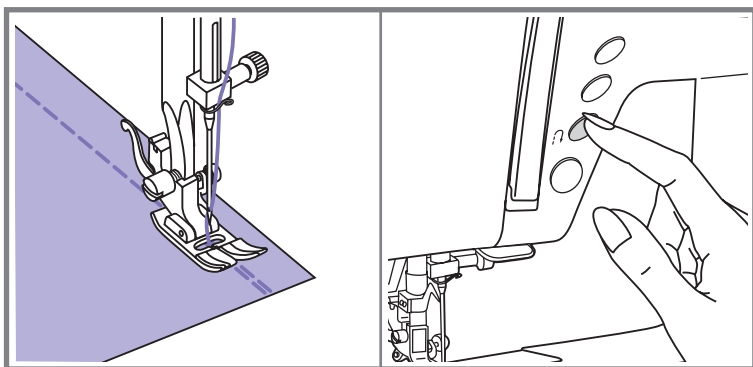


### Sewing corners



1. Stop the sewing machine when you reach a corner.
2. Lower the needle into the fabric manually or by pressing the needle up/down button once.
3. Raise the presser foot.
4. Use the needle as a pivot and turn the fabric.
5. Lower the presser foot and resume sewing.

### Reverse

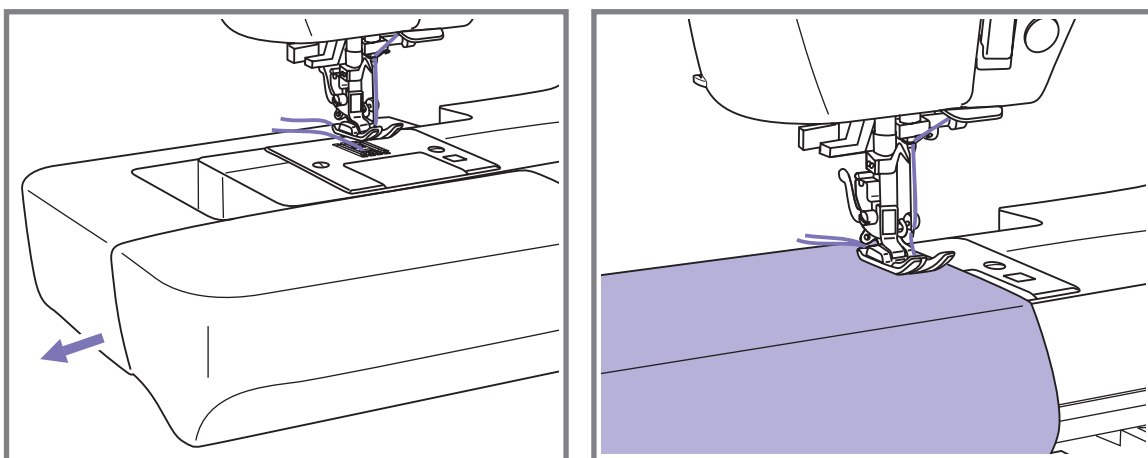


Reverse stitching is used to secure the threads at the beginning and at the end of a seam.

Press the reverse button and sew 4-5 stitches.

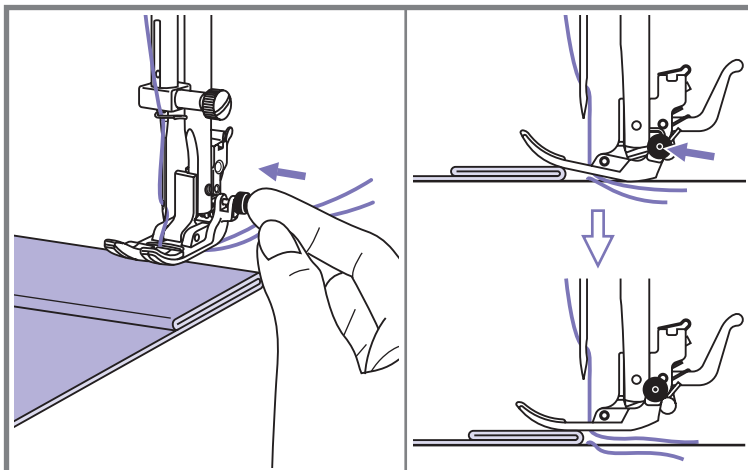
The machine will sew forward when the button is released.

### Free arm



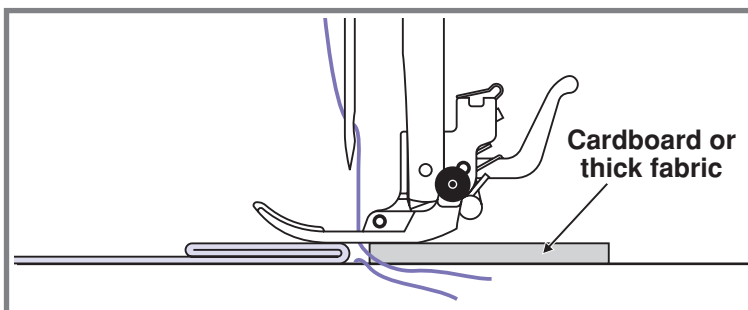
Free-arm sewing is convenient for sewing tubular areas such as pant hems and cuffs.

■ Sewing on the heavy fabric



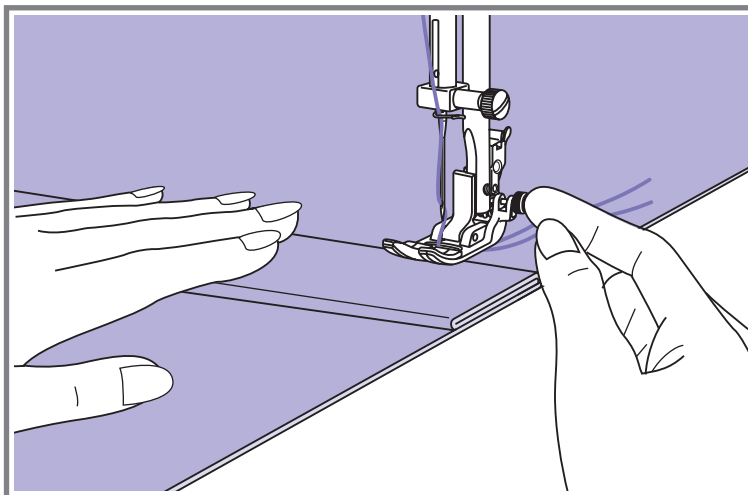
The black button on the right side of the presser foot will lock the presser foot in a horizontal position if you push it in before lowering the presser foot. This ensures even feeding at the beginning of a seam and helps when sewing multiple layers of fabric such as sewing over seams when hemming jeans.

When you reach the point of an increased thickness, lower the needle and raise the presser foot. Press the toe of the foot and push in the black button, then lower the foot and continue sewing.

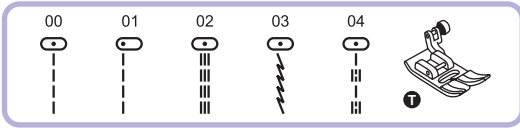


The black button releases automatically after sewing few stitches.

You also can place another piece of fabric with the same thickness at the back of the seam. Or support the presser foot while feeding by hand and sewing toward the folded side.

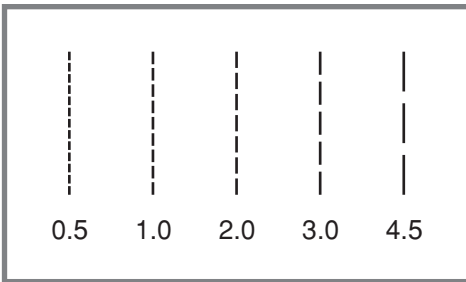


## STRAIGHT STITCHES AND NEEDLE POSITION



### Changing the needle position

These settings apply only to pattern 00-04. The pre-set position is "3.5", center position. When you press the "-" stitch width adjustment button, the needle position will move to the left. When you press the "+" stitch width adjustment button, the needle position will move to the right. On the LCD screen, the point illustration and the number indicate the needle position.

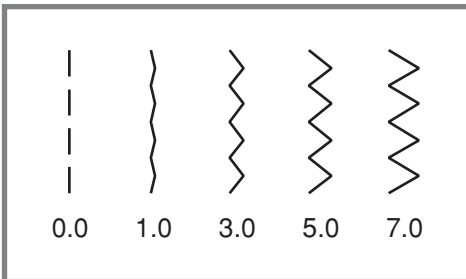
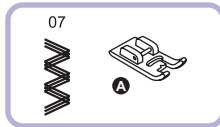
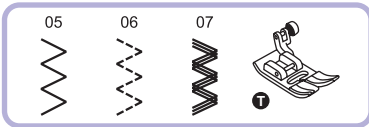


### Changing the stitch length

To shorten the stitch length, press the "-" stitch length adjustment button. For a longer stitch length, press the "+" stitch length adjustment button.

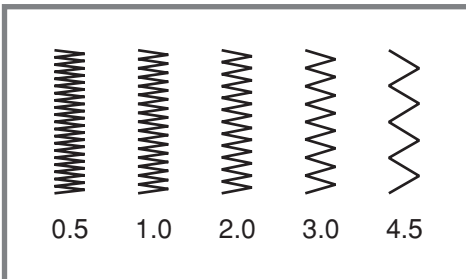
Generally speaking, the thicker the fabric, thread and needle, the longer the stitch should be.

## ZIGZAG STITCHES



### Adjusting the stitch width

The maximum zigzag stitch width for zigzag stitching is "7.0"; however, the width can be reduced on any patterns. The width increases as you press the "+" stitch width adjustment button from "0.0-7.0".



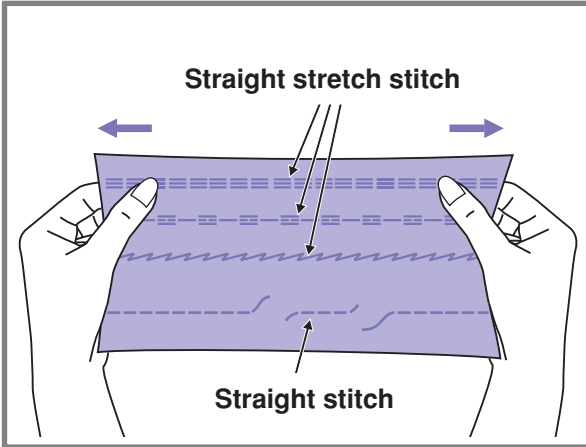
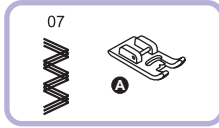
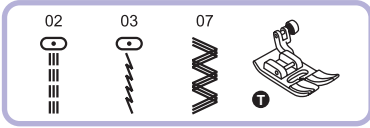
### Adjusting the stitch length

The density of zigzag stitches increase as the setting of stitch length approaches "0.2".

Neat zigzag stitches are usually achieved at "1.0-2.5".

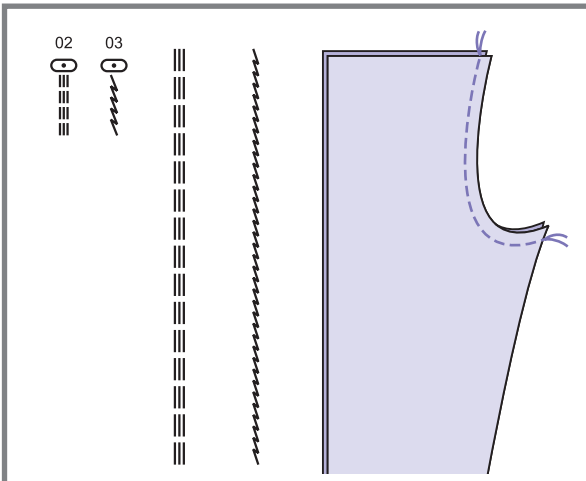
Closed up zigzag stitches (close together) are referred to as a satin stitch.

# STRETCH STITCH

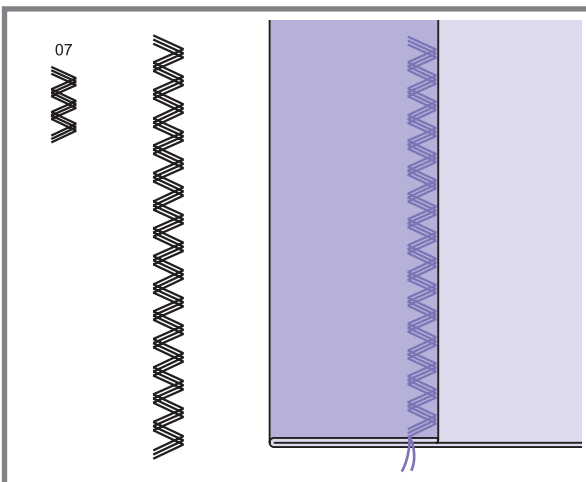


It assures you of a stitch that is strong and flexible and will give with the fabric without breaking. Good for easy to ravel and knit fabrics. It is good for joining durable fabric such as denims.

These stitches can also be used as a decorative top stitch.



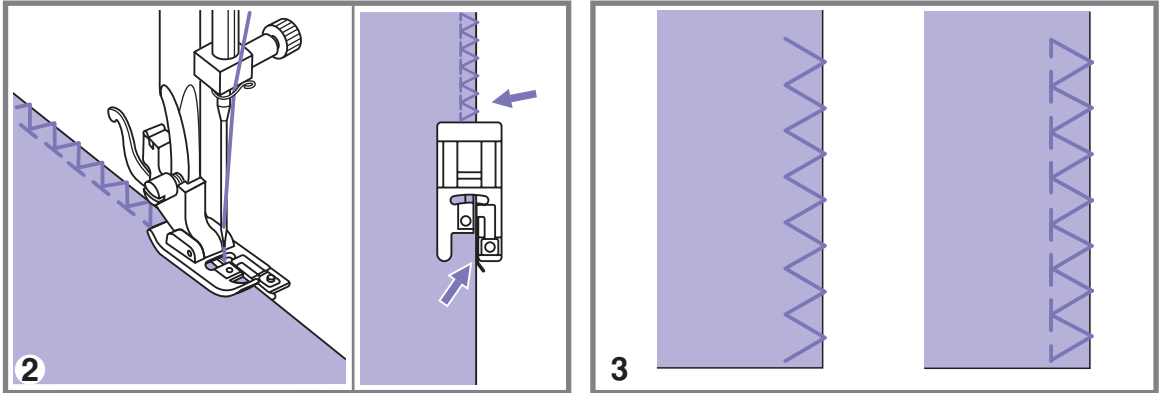
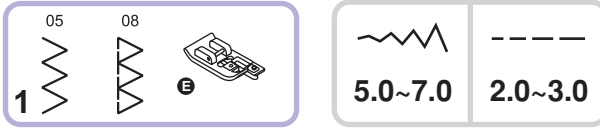
Straight stretch stitch is used to add triple reinforcement to stretch and hardwearing seams.



Triple zigzag stretch stitch is suitable for firm fabrics like denim, poplin, duck, etc.

# OVERCASTING STITCHES

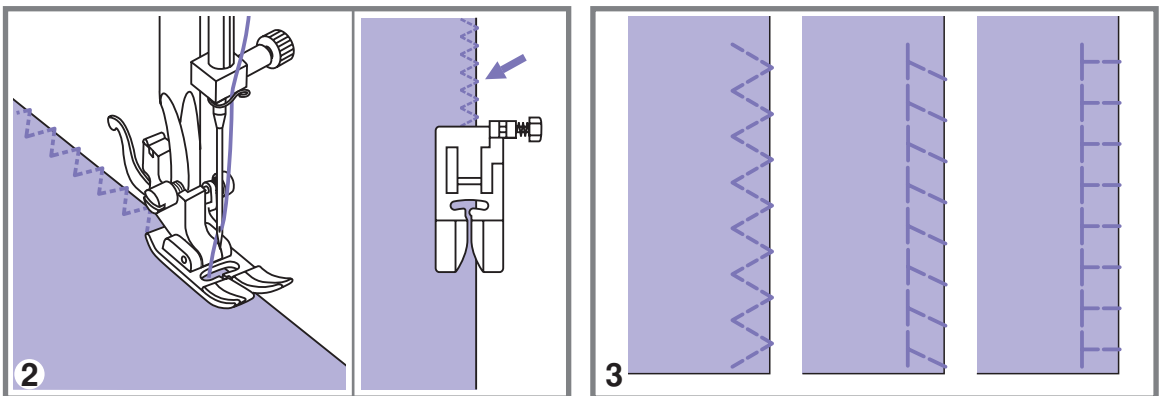
## Using the overcasting foot



1. Change the presser foot to the overcasting foot.
2. Sew the fabric with the fabric edge against the guide of the overcasting foot.

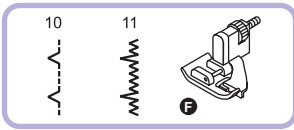
**⚠ Attention:** The overcasting foot should be used to sew with patterns 05 and 08 only and do not set the stitch width narrower than "5.0". It is possible that needle could hit the presser foot and break when sewing other patterns and width.



## Using the all purpose foot



1. Change the presser foot to the all purpose foot.
2. Sewing the overcasting along the edge of the fabric so that the needle drops over the edge of the fabric on the right side.


# BLIND HEM/ LINGERIE STITCH

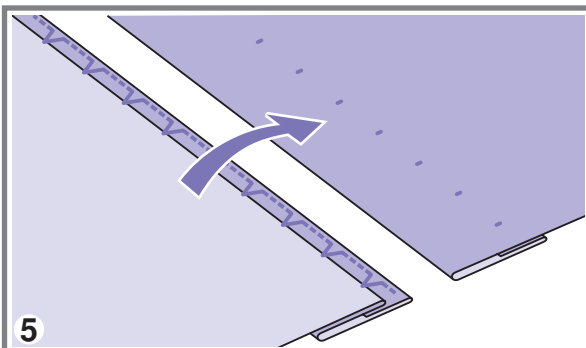
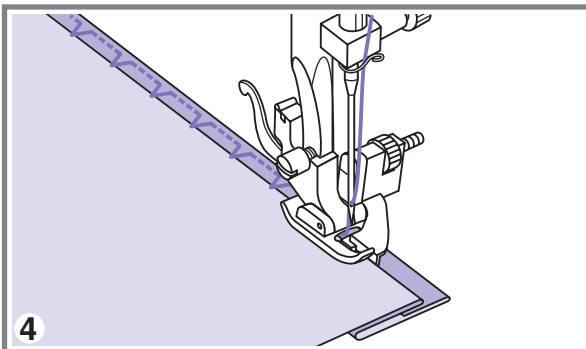
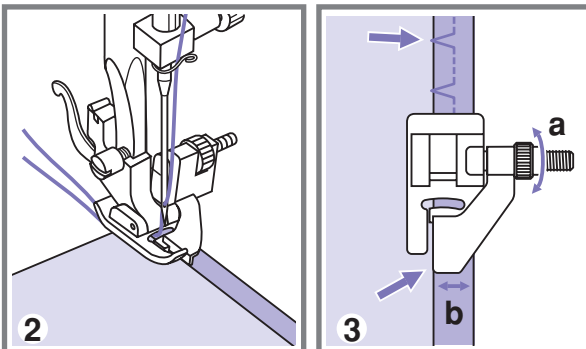
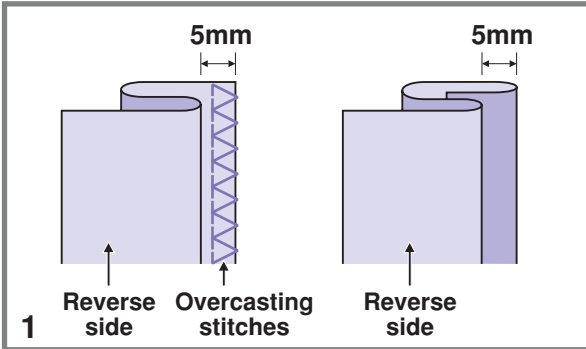


	
2.5~4.0	1.0~2.0

**10:** Blind hem/lingerie for firm fabrics

**11:** Blind hem for stretch fabrics

 **Please Note:** It takes practice to sew blind hems. Always make a sewing test first.



1. Fold the fabric as illustrated with the wrong side uppermost.

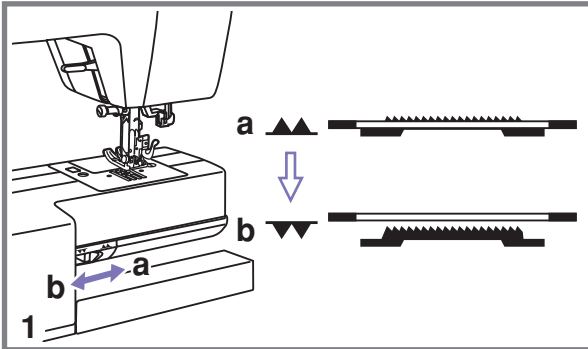
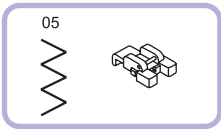
2. Place the fabric under the foot. Turn the handwheel forwards by hand until the needle swings fully to the left. It should just pierce the fold of the fabric. If it does not, adjust the stitch width accordingly.

3. Adjust the guide (b) by turning the knob (a) so that the guide just rests against the fold.

4. Sew slowly, guiding the fabric carefully along the edge of the guide.

5. Turn over the fabric.

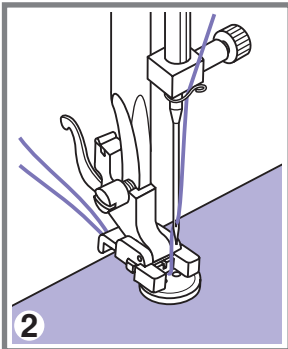
# BUTTON SEWING



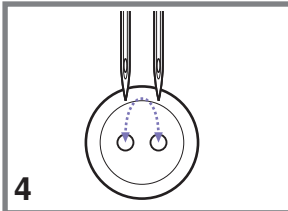
Change the presser foot to the button sewing foot.

1. Move the drop feed control to "▼▼" to lower the feed dogs.

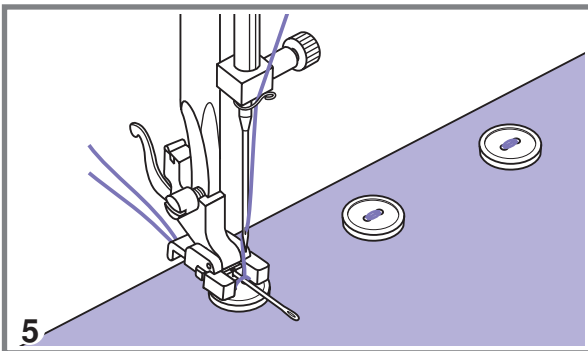
2. Position the work under the foot. Place the button in the desired position, lower the foot.



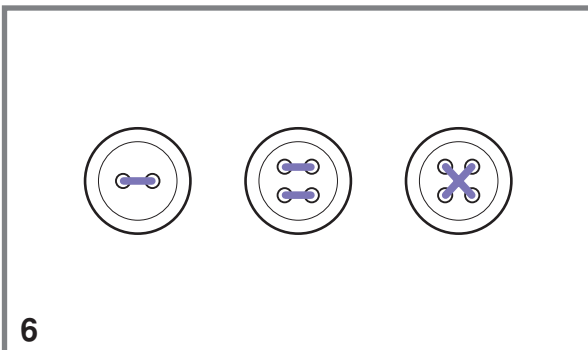
3. Select zig zag pattern. Adjust the stitch width to "2.0-7.0" according to the distance between the two holes of the button.



4. Turn the handwheel to check that the needle goes cleanly into the left and right holes of the button.

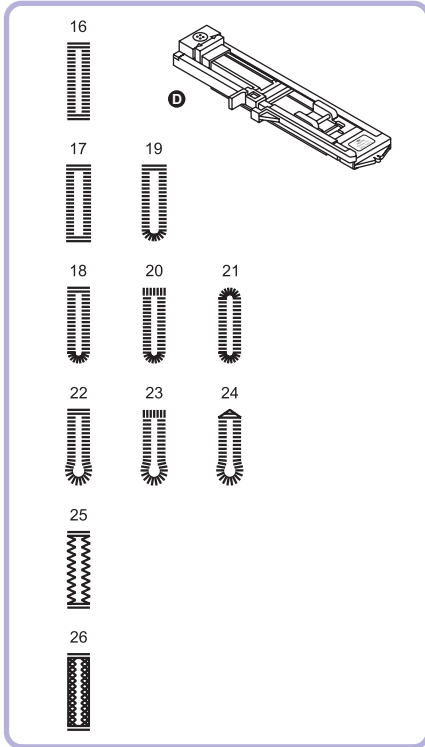





5. Before sewing, press the Auto-lock button to sew reinforcement stitches automatically at the beginning and at the end of the stitch. If a shank is required, place a darning needle on top of the button and sew.




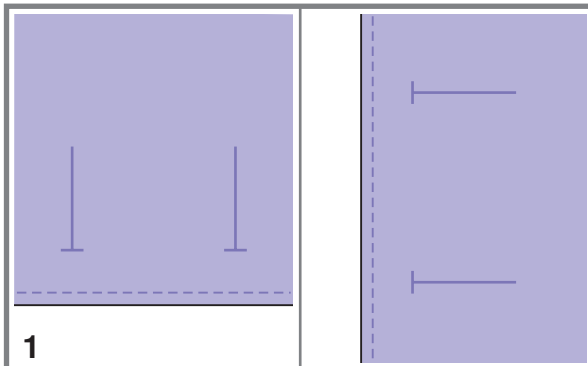
6 For buttons with 4 holes, sew through the front two holes first, push work forward and then sew through the back two holes.

# BUTTONHOLE STITCHING



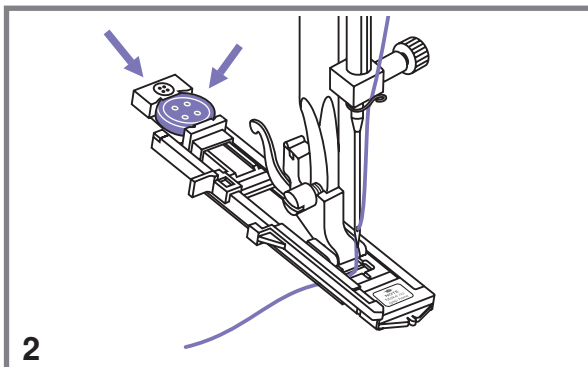
	-----	<b>16:</b> For thin or medium fabric
<b>2.5~7.0</b>	<b>0.3~1.0</b>	<b>17:</b> For horizontal holes on blouses or shirts made from thin or medium fabric
	-----	<b>18:</b> For thin or medium fabric
<b>3.0~7.0</b>	<b>0.3~1.0</b>	<b>19:</b> For horizontal holes on blouses or shirts made from thin or medium fabric
	-----	<b>20:</b> For horizontal buttonholes on thick fabrics
<b>2.5~5.5</b>	<b>0.3~1.0</b>	<b>21:</b> For thin or medium fabric
	-----	<b>22:</b> For suits or overcoats
<b>5.5~7.0</b>	<b>0.3~1.0</b>	<b>23:</b> For thick coats
	-----	<b>24:</b> For jeans or trousers
<b>3.0~7.0</b>	<b>1.0~2.0</b>	<b>25:</b> For jeans or stretch fabric with a coarse weave
	-----	<b>26:</b> For stretch fabric
<b>3.0~7.0</b>	<b>1.0~3.0</b>	

 **Please Note:** Before sewing a buttonhole on your project, practice on a scrap piece of the same type of fabric.



1. Mark the positions of the buttonhole on the fabric.

The maximum buttonhole length is 3cm (1 3/16 inch). (Total of diameter + thickness of button.)

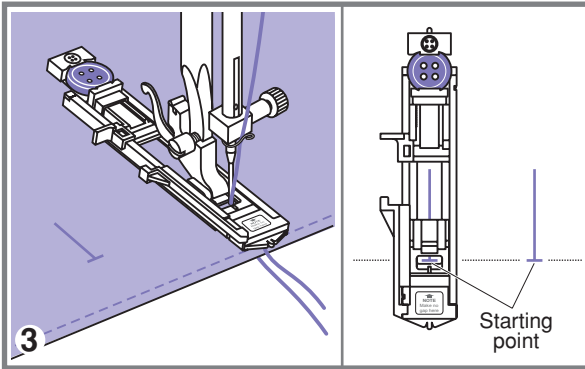


2. Attach the buttonhole foot, then pull out the button holder plate and insert the button. The size of the buttonhole is determined by the size of the button inserted in the button plate.

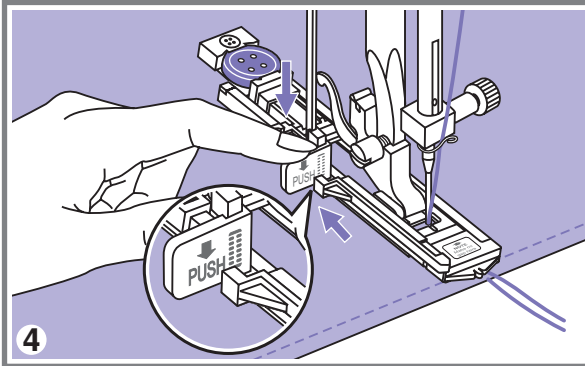
The thread should be passed through the hole in the presser foot, then be placed under the foot.



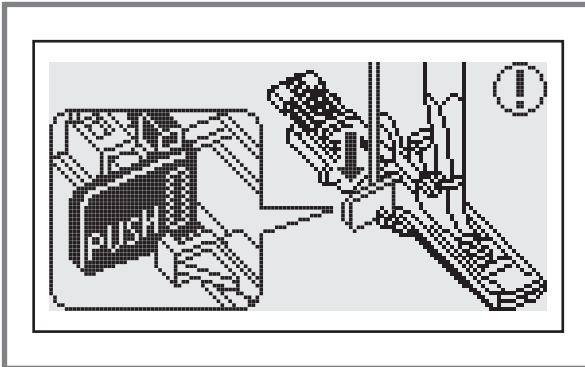
## BUTTONHOLE STITCHING




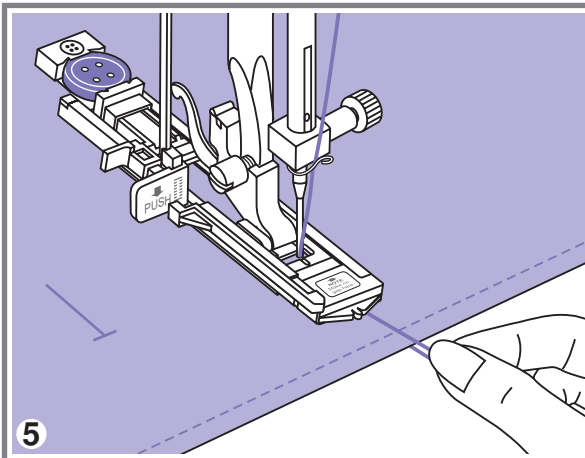
3. Select the buttonhole stitch. Adjust the stitch width and the stitch length to the desired width and density.




4. Position the fabric under the presser foot so that the centerline's mark is aligning with the center of the buttonhole foot.  
Lower the buttonhole lever, then push it to the back.



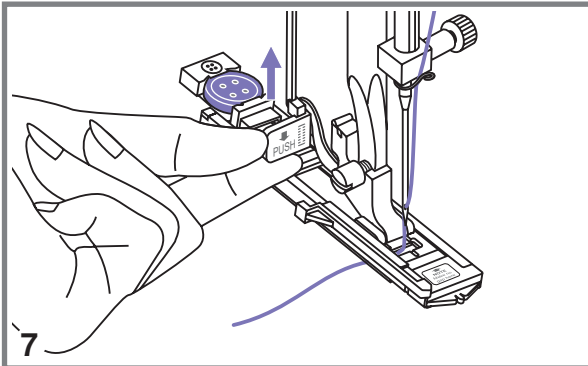
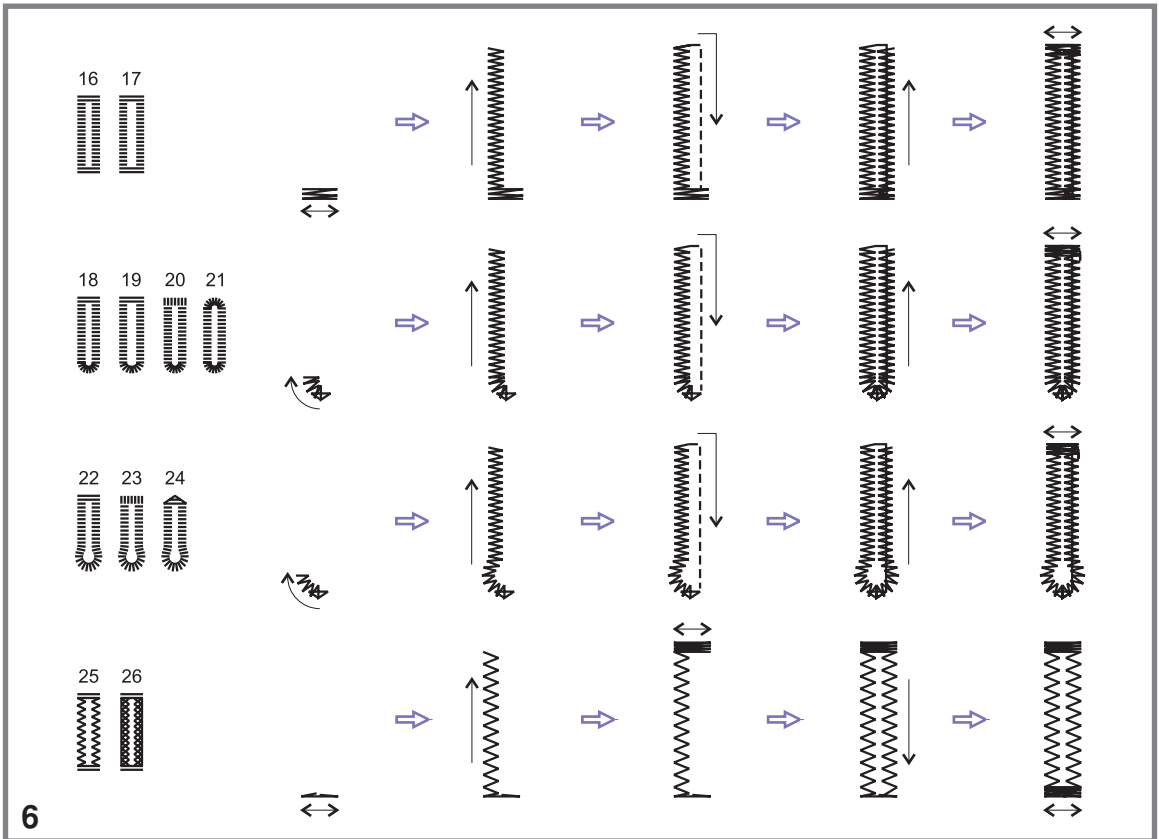
-  **Please Note:** When you select any buttonhole pattern, LCD screen will be demonstrated the warning animation message display, it is to remind you to lower the buttonhole lever.



5. While lightly holding the end of upper thread and start sewing.

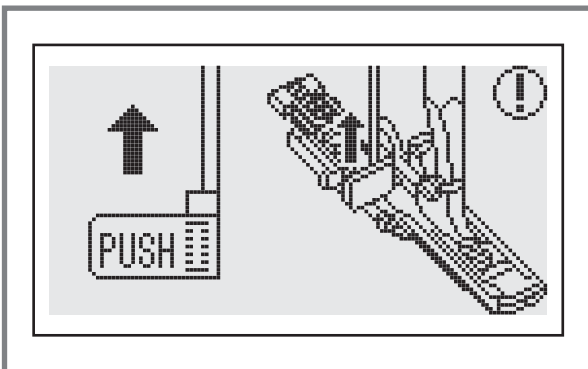
-  **Please Note:** Gently feed the fabric by hand. Before stopping, the machine will automatically sew a reinforcement stitch after the buttonhole is sewn.

# BUTTONHOLE STITCHING

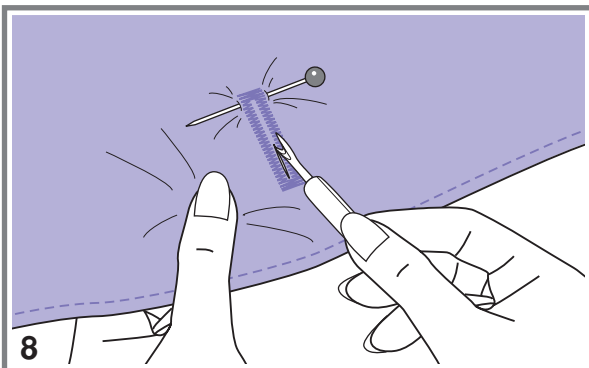


6. Buttonholes are sewn from the front of the presser foot to the back, as shown.

7. Raise the presser foot and cut thread. To sew over same buttonhole, raise the presser foot (will return to original position). After sewing the buttonhole stitch, raise the buttonhole lever until it stops.



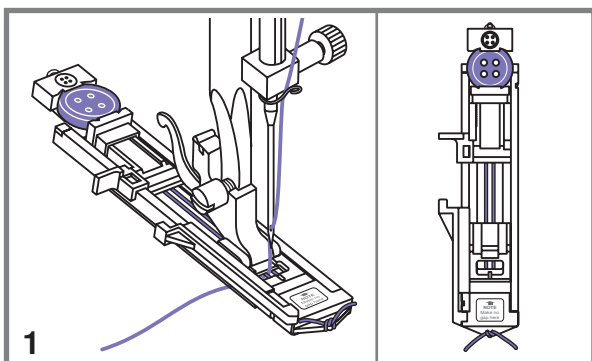
**Please Note:** After finishing the buttonhole stitch, LCD screen will be demonstrated the warning animation message display, it is to remind you to lift the buttonhole lever.



8. Cut the center of the buttonhole being careful not to cut any stitches on either side. Use a pin as a stopper at the bartack so you do not cut too much.

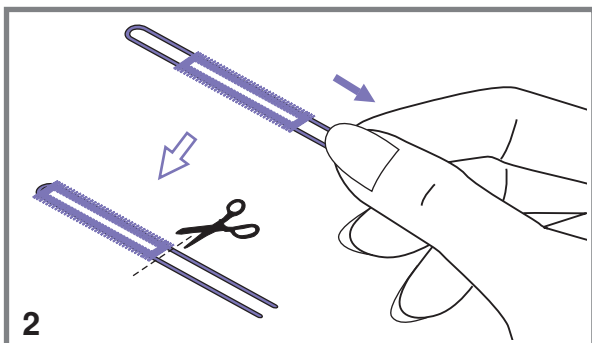
## ■ Making a buttonhole on stretch fabrics

When sewing buttonholes on stretch fabric, hook heavy thread or cord under the buttonhole foot.




1. Attach the buttonhole foot and hook the gimp thread onto the back of the presser foot. Bring the two gimp thread ends to the front of the foot and insert them into the grooves, then temporarily tie them there. Lower the presser foot and start sewing.

Set the stitch width to match the diameter of the gimp thread.

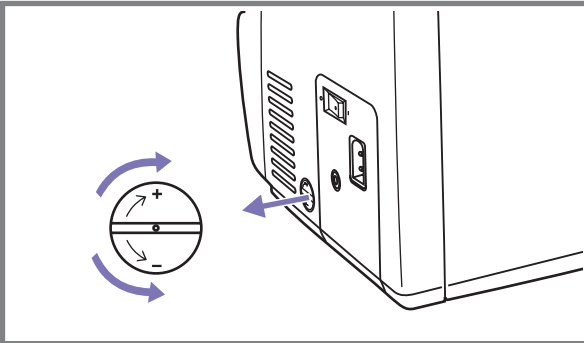


2. Once sewing is completed, pull the gimp thread gently to remove any slack, then trim off any excess.

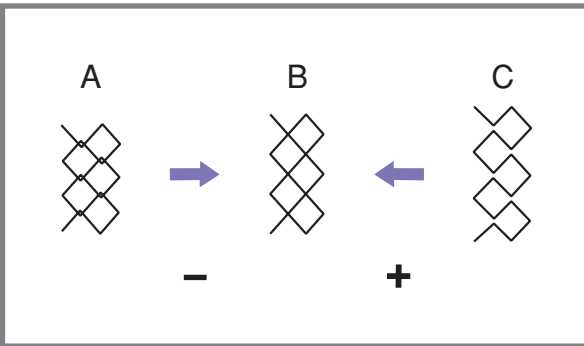
 **Please Note:** It is suggested that you use interfacing on the backside of the fabric.

## ADJUSTING PATTERN BALANCE

If the decorative stitch patterns, numbers or manual buttonhole stitch are uneven when you sew on a particular fabric, adjust them with the feed balancing dial.

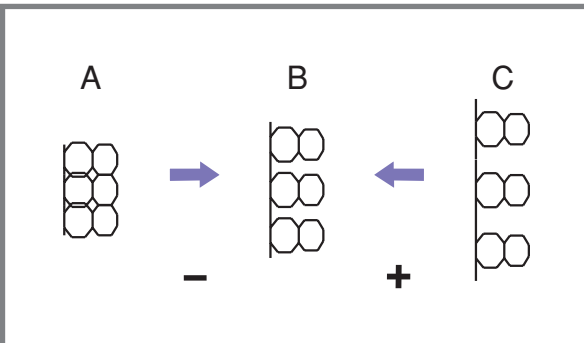


The dial should usually be in a neutral position.



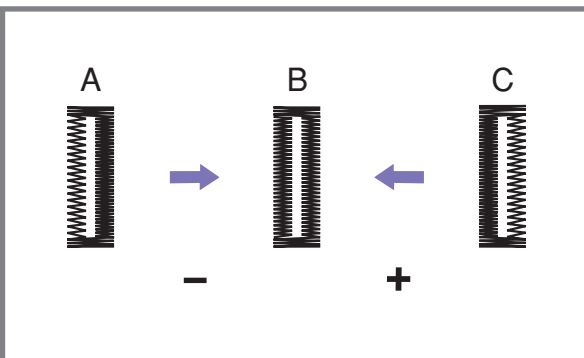
### Adjusting distorted stretch stitch patterns

- A. When Patterns are too compressed, correct by turning the dial in the direction of "-".
- B. Correct setting.
- C. When Patterns are too drawn out, correct by turning the dial in the direction of "+".



### Adjusting distorted letters or numbers

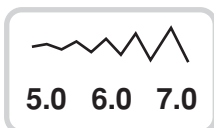
- A. When the letters or numbers overlap, turn the dial to "-".
- B. Correct setting.
- C. When the patterns are too drawn out, correct by turn the dial to "+".



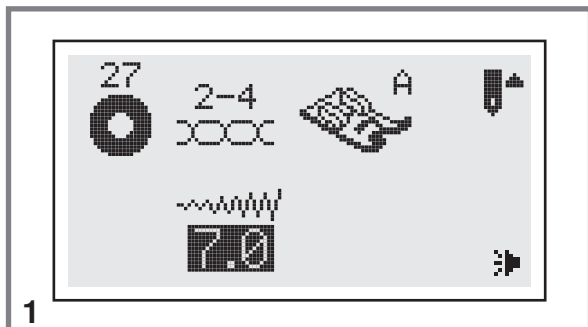
### Adjusting the stitch density for buttonhole

- A. Right side is denser. If the left side of the buttonhole is less dense than the right side, turn the feed balancing dial to "-".
- B. Correct setting.
- C. Left side is denser. If the right side of the buttonhole is less dense than the left side, turn the feed balancing dial to "+".

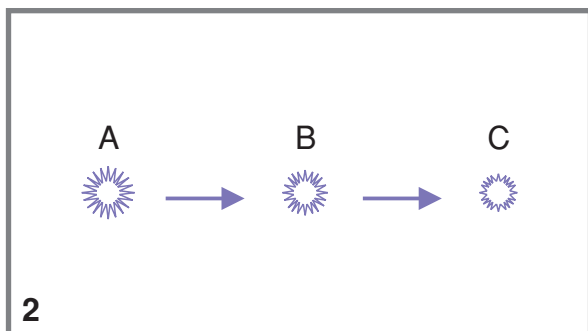
# EYELET STITCH



**27:** Select for sewing eyelets on belts , etc



1. Select pattern 27 to get the eyelet stitch. Attach presser foot "A".



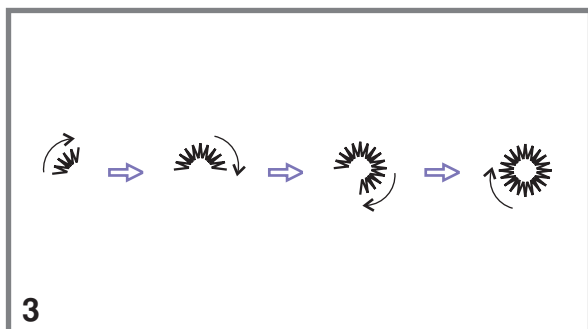
2. Press the "-" or "+" stitch width adjustment to button select the eyelet size.

Size of eyelet.

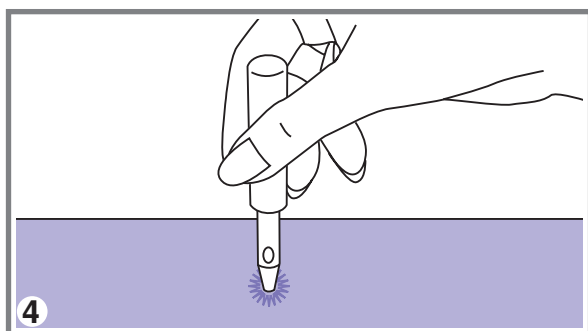
A. Large: 7.0mm (1/4 inch).

B. Medium: 6.0mm (15/64 inch).

C. Small: 5.0mm (3/16 inch).



3. Lower the needle into the fabric at the beginning of the stitching, and then lower the presser foot lever. Once sewing is completed, the machine automatically sews reinforcement stitches, then stops.

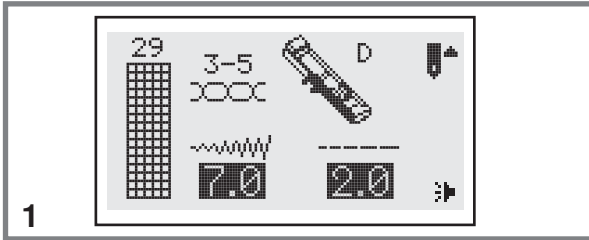
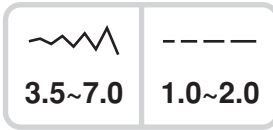
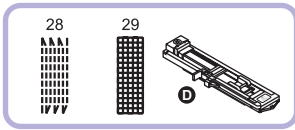


4. Make a hole at the center using an eyelet punch.

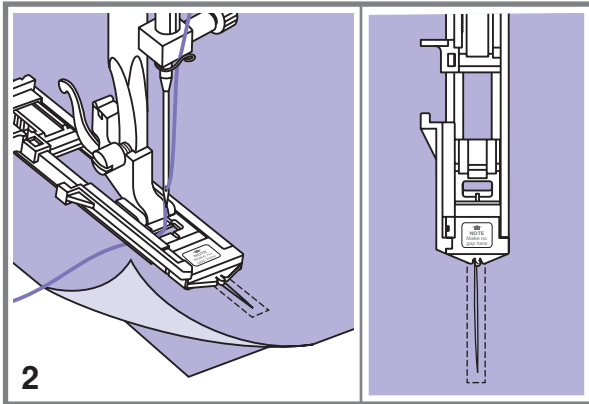
\* Eyelet punch is not included with the machine.

**Please Note:** If thin thread is used, the stitching may be coarse. If this occurs, sew the eyelet twice one on top of the other.

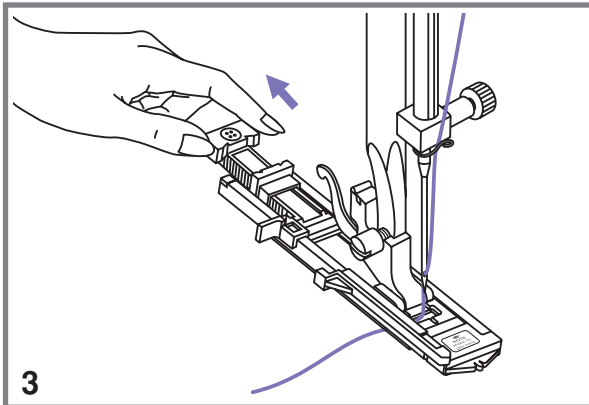
# DARNING STITCH



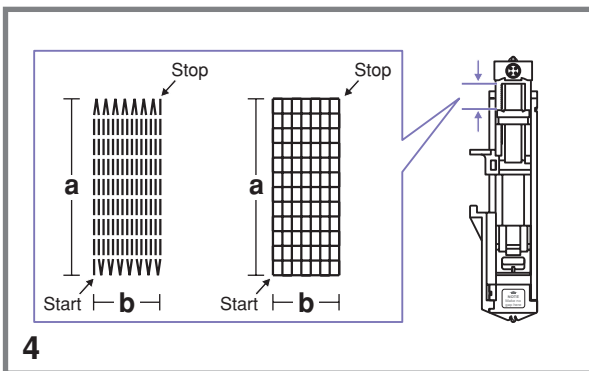
1. Select pattern 28 or 29 from the Group Patterns "A" to get the darning stitch. Change the presser foot to the buttonhole foot.



2. Baste the upper fabric and the under fabric together. Select the needle position. Lower the presser foot over the center of the tear.



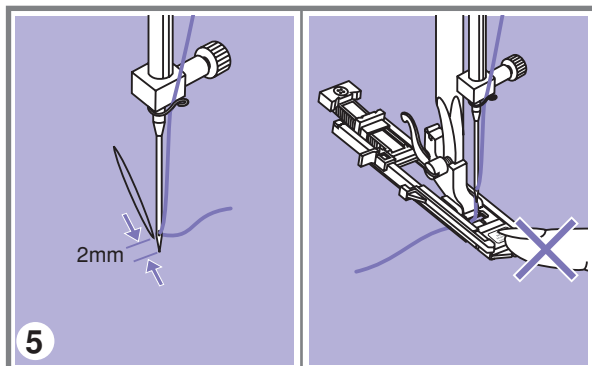
3. Pull the button holder to the rear. Set the button guide plate on buttonhole foot to the desired length.



4. The size of one darn cycle is variable. However, the maximum stitch length is 2.6cm (1 inch) and the maximum stitch width is 7mm (9/32 inch).

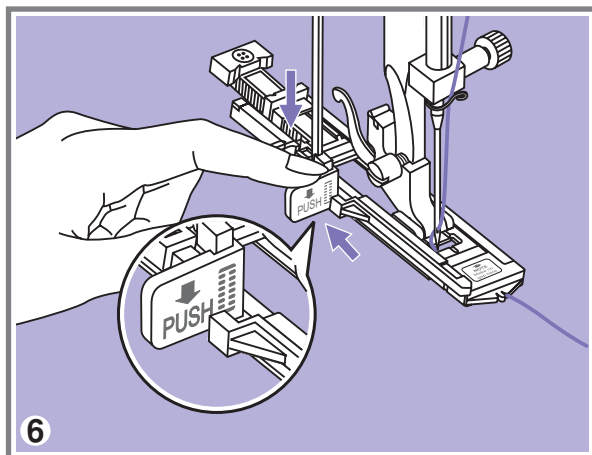
a. The length of sewing.  
b. The width of sewing.

## DARNING STITCH



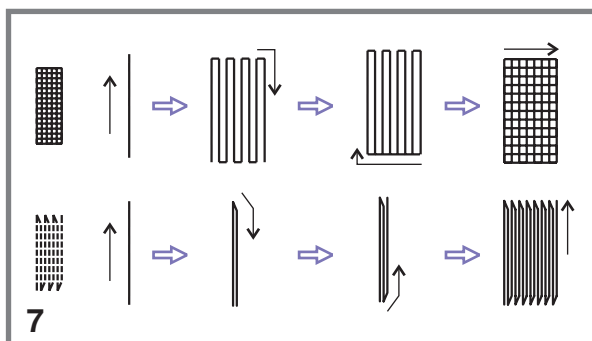
5. Position the fabric so that the needle is 2mm (1/16 inch) in front of the area to be darned, and then lower the presser foot lever.

**Please Note:** When lowering the presser foot, do not push in the front of the presser foot, otherwise the darning will not be sewn with the correct size.

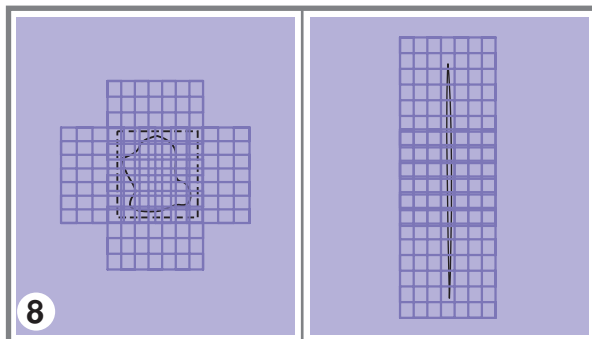


6. Pass the upper thread down through the hole in the presser foot. Pull down the buttonhole lever then push it back. The buttonhole lever is positioned behind the bracket on the buttonhole foot. Gently hold the end of the upper thread in your left hand, and then start sewing.

**Please Note:** When you select any buttonhole pattern or darning pattern, LCD screen will be demonstrated the warning animation message display, it is to remind you to lower the buttonhole lever.

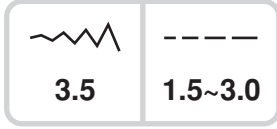
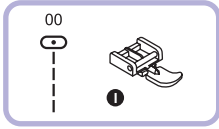


7. Darning stitches are sewn from the front of the presser foot to the back, as shown.



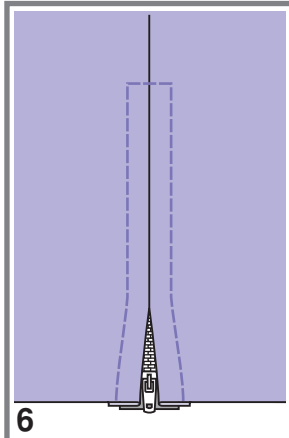
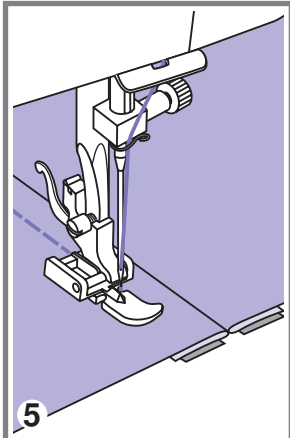
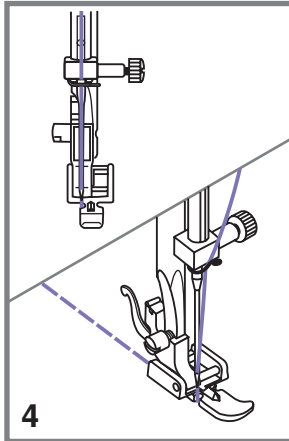
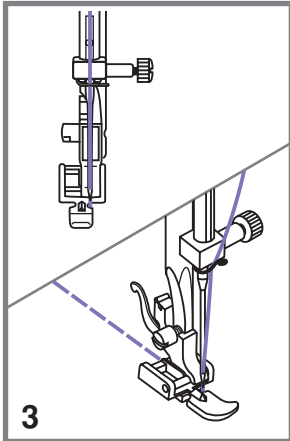
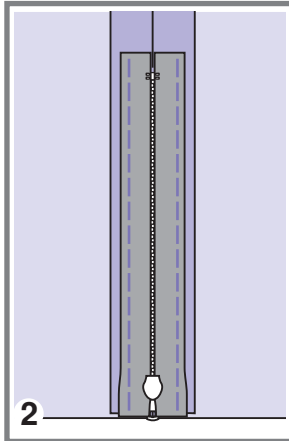
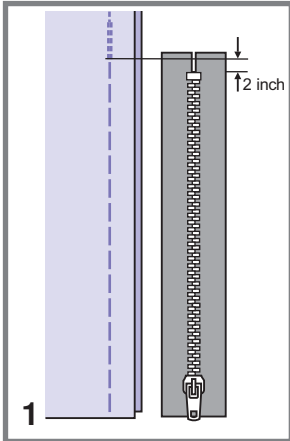
8. If the sewing range is too big to sew, then we suggest you can sew several times (or cross sew) to get better sewing result.

# ZIPPER INSERTION



**⚠ Attention:** Zipper foot should be used for sewing with center needle position straight stitch only. It is possible that needle could hit the presser foot and break when sewing other patterns.

## ■ Inserting a centered zipper



1. Baste the zipper opening on the garment.

2. Press open the seam allowance. Place the zipper face down on the seam allowance with the teeth against the seam line. Baste the zipper tape.

3. Attach the zipper foot. Attach the right side of the presser foot pin to the holder when sewing the left side of the zipper.

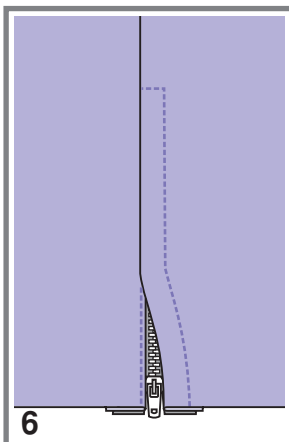
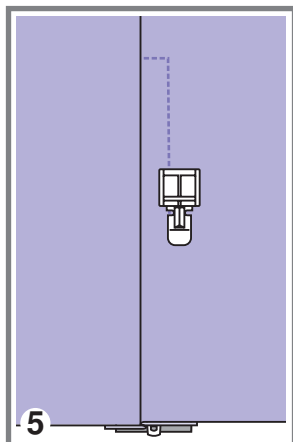
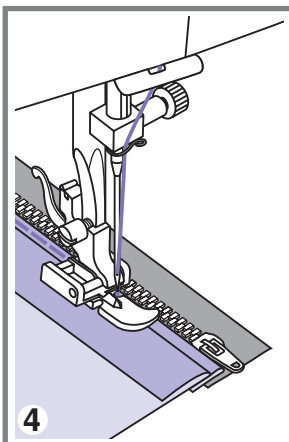
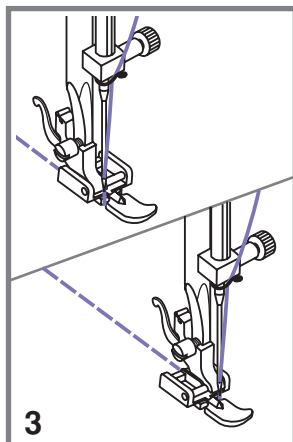
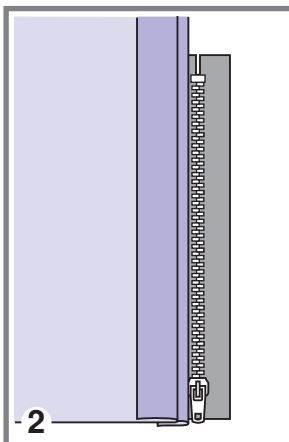
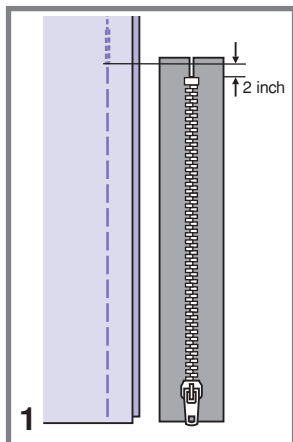
4. Attach the left side of the presser foot pin to the presser foot holder when sewing the right side of the zipper.

5. Stitch left side of the zipper from top to bottom.

6. Stitch across the lower end and right side of zipper. Remove the basting and press.



**■ Inserting a side zipper**



1. Baste the zipper opening on the garment.

2. Fold back to the left seam allowance. Turn under the right seam allowance to form 3mm (1/8 inch) fold.

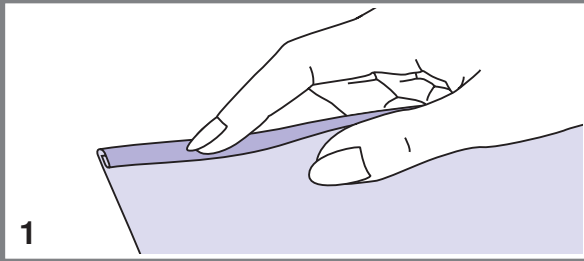
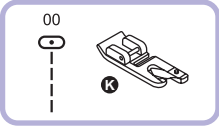
3. Attach the zipper foot. Attach the right side of the presser foot pin to the holder when sewing the left side of the zipper. Attach the left side of the presser foot pin to the presser foot holder when sewing the right side of the zipper.

4. Stitch the left side of zipper from bottom to top.

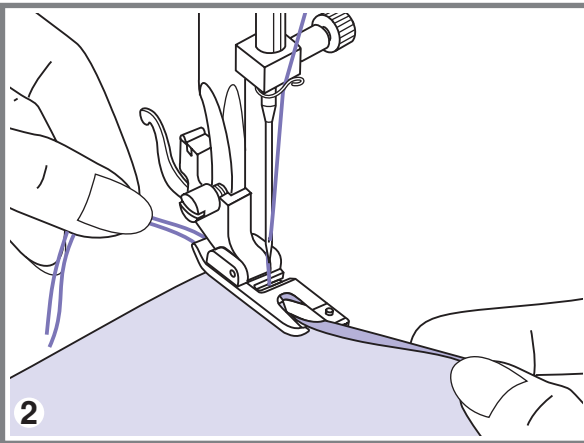
5. Turn the fabric right side out, stitch across the lower end and right side of zipper.

6. Stop about 5cm (2 inches) from the top of zipper. Remove the basting and open the zipper. Stitch the remainder of the seam.

## NARROW HEMMING

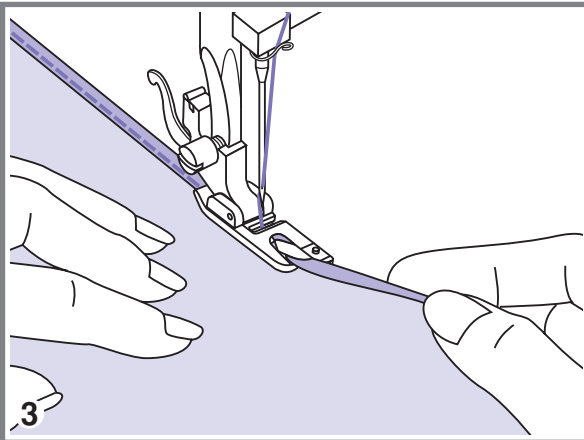


1. Fold edge of fabric over about 3mm (1/8 inch), then fold it over again 3mm (1/8 inch) for about 5cm (2 inches) along the edge of the fabric.



2. Insert the needle into the fold by rotating the handwheel toward you, and lower the presser foot. Sew several stitches and raise the presser foot.

Insert the fabric fold into the spiral opening of hemmer foot. Move fabric back and forth until the fold forms a scroll shape.

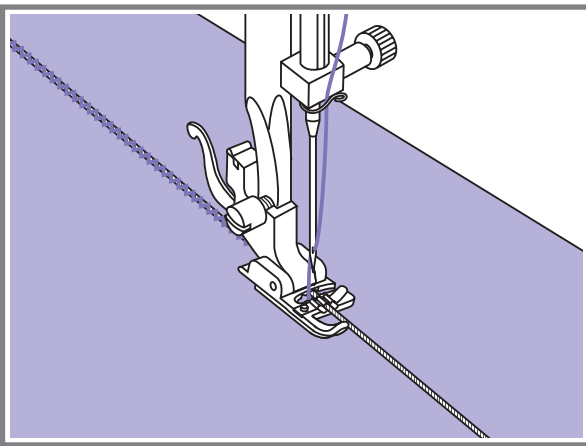
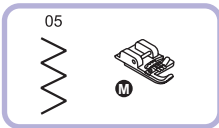


3. Lower the presser foot and start sewing slowly, guiding the raw edge of the fabric in front of the hemmer foot evenly into the scroll of the foot.

## CORDING

Sew over one strand of cording to create a pretty swirled design on a jacket or vest or sew over three strands of cording for border trims. Pearl cotton, knitting yarn, embroidery floss, lace thread, fine wool or lily yarn can be used for cording.

### ■ Single cording

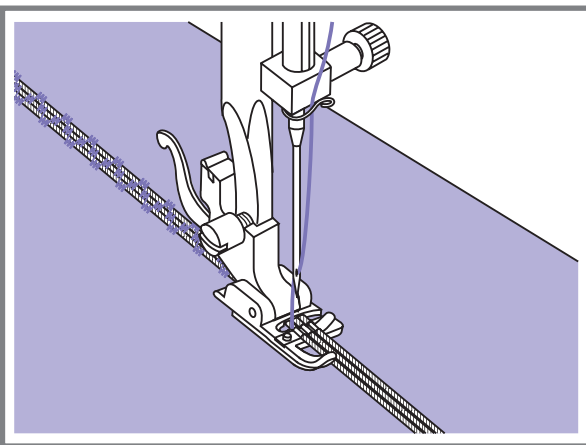
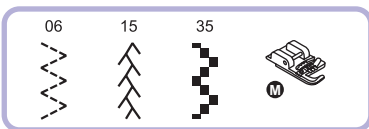


Mark the design on the fabric. Insert the cord in the center groove of the cording foot from the right side opening. Pull the cord about 5cm (2 inches) behind the foot.

The grooves under the foot will hold the length of the cord in place while the stitches are being formed over the cord.

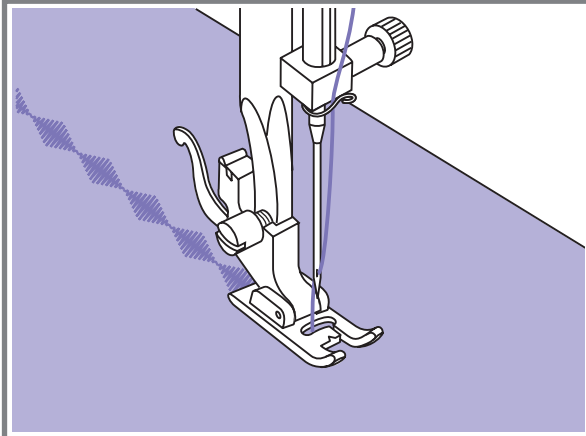
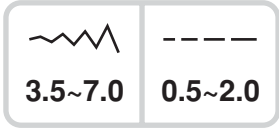
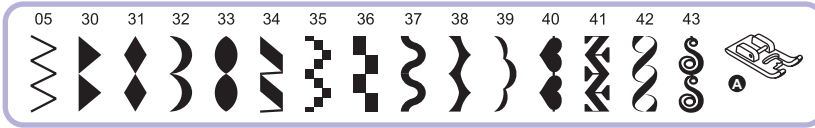
Select the stitch and adjust the stitch width so that the stitches are just covering the cord. Lower the foot and sew slowly, guiding the cord over the design.

### ■ Triple cording



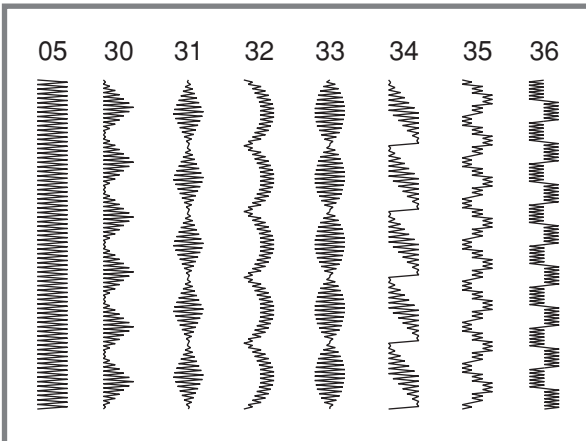
Push the sewing thread to the left and insert three cords into the grooves of the foot and pull about 5cm (2 inches) of the cords behind the foot. Select the desired pattern and adjust the stitch width so that the stitches are just covering the cords. Lower the foot and sew slowly guiding the cords.

# SATIN STITCH SEWING

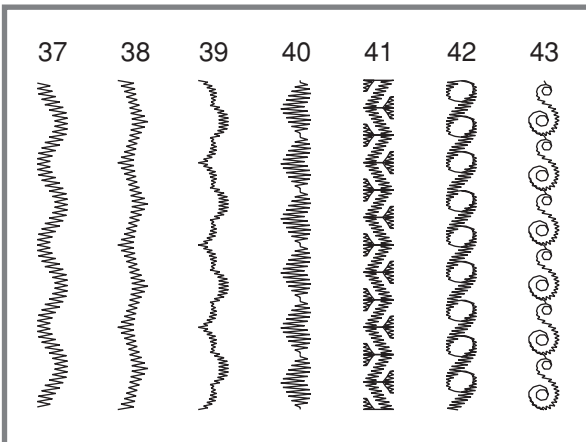


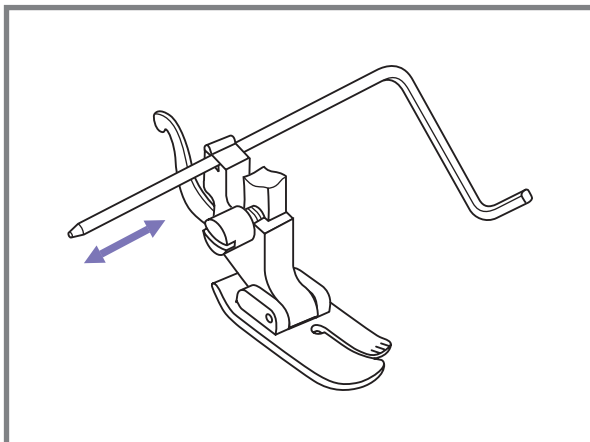
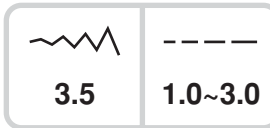
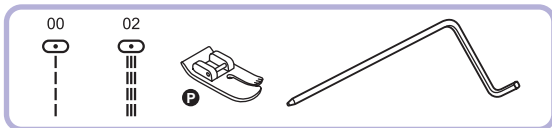
Use the satin stitch foot for satin stitching and sewing decorative stitches. This foot has a full indentation on the underside to allow easy sewing over the thickness of the stitches formed by closely spaced zigzag stitches, and even feeding of the fabric.

To tailor the satin or decorative stitch pattern, you may adjust the length and width of the pattern by pressing the stitch length and width adjustment buttons. Experiment with fabric scraps until you get the desired length and width.

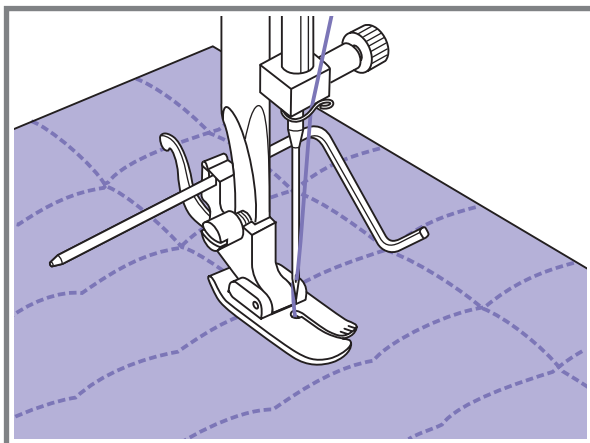


**Please Note:** When sewing very thin fabrics, it is suggested that you use interfacing on the backside of the fabric.



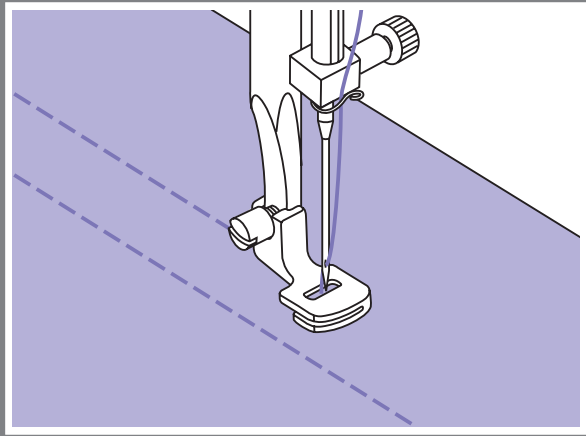
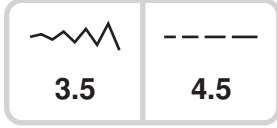
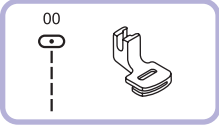


Insert the quilting guide in the presser foot holder as illustrated and set the space as you desire.

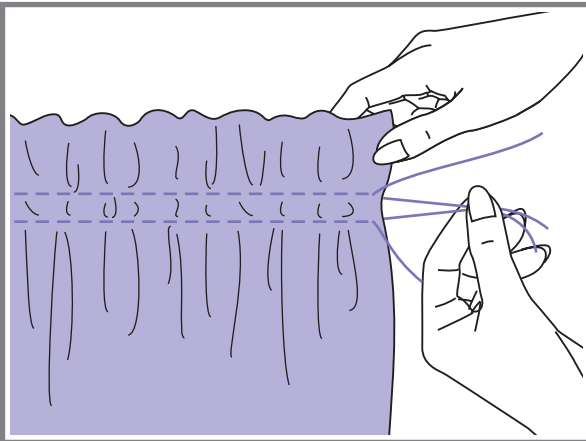


Sew the first row and move over the fabric to sew successive rows with the guide riding along the previous row of stitching.

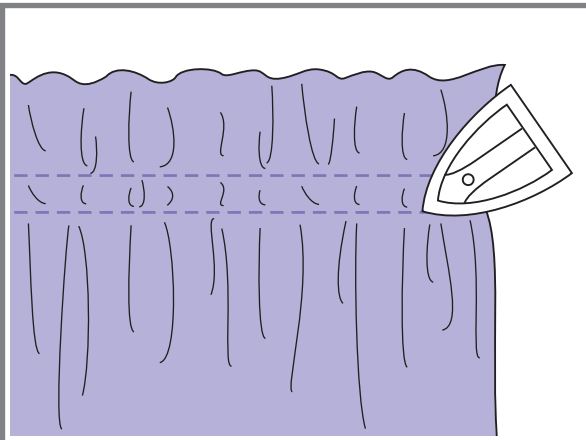
# GATHERING




1. Remove the presser foot holder and attach the gathering foot.
2. Sew a single row or multiple rows of straight stitches.
3. If more gathering is required, loosen the upper thread tension to below 2 so that the bobbin thread lies on the underside of the material.

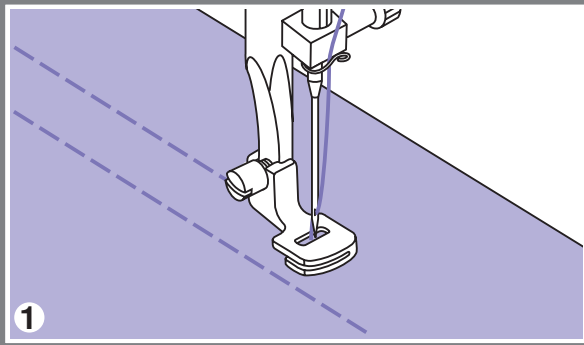
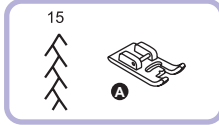
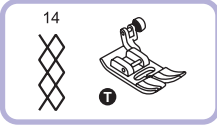


4. Pull the bobbin threads to obtain the desired amount of gather, then tie the threads to secure them.



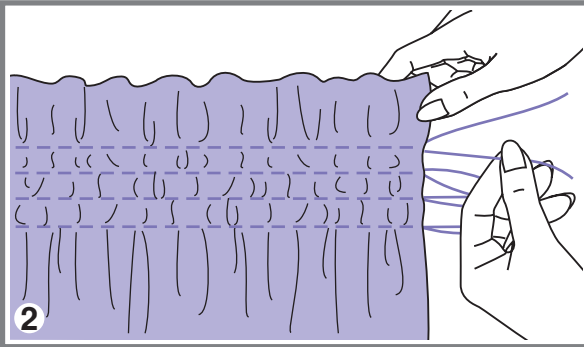
5. Smooth the gathers by ironing them.

 **Please Note:** It can also use the all purpose foot and gather fabric by hand by lowering the tension setting to below 2 and pulling the lower thread to gather the material.

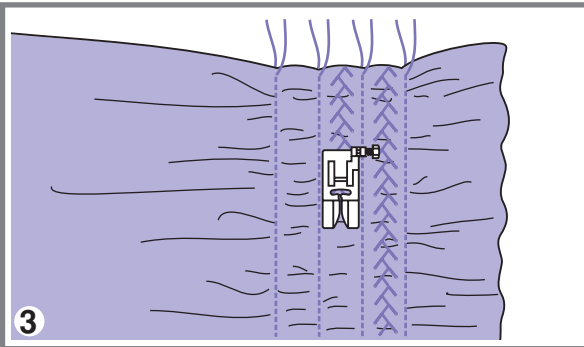


1. Use the gathering foot to sew straight lines 1cm (3/8 inch) apart, across the area to be smocked.

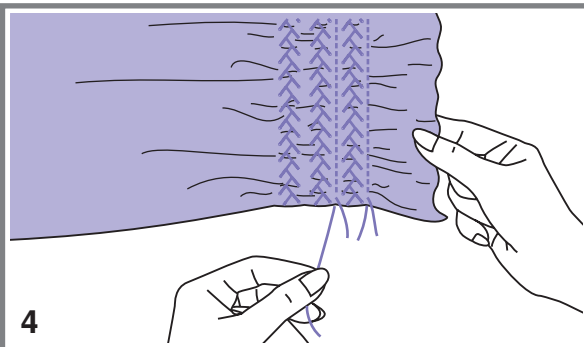
\*For gathering sewing instructions, see page 49.



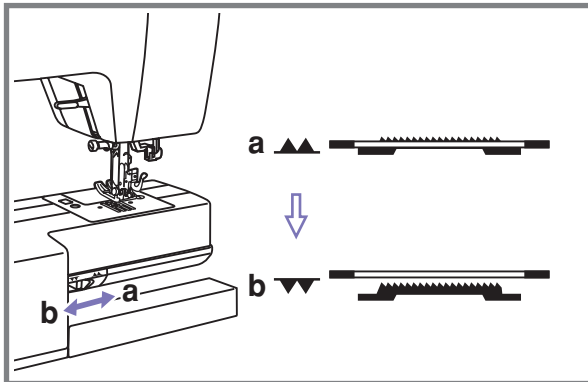
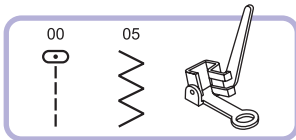
2. Knot the threads along one edge. Pull the bobbin threads and distribute the gathers evenly. Secure the threads at the other end.



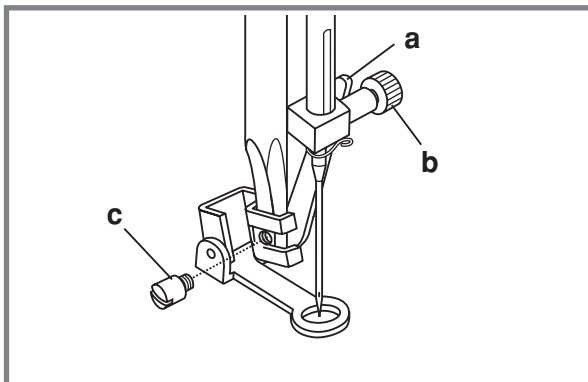
3. Reduce the tension, if necessary and sew decorative pattern stitches between the straight seams.



4. Pull out the gathering stitches.



Move the drop feed control to "▼" to lower the feed dogs.

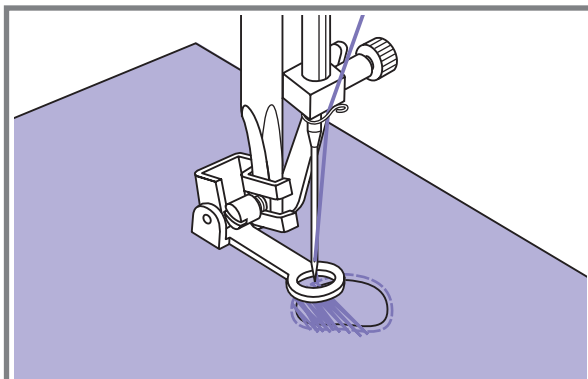


Remove the presser foot holder, and attach the darning foot to the presser foot holder bar. The lever (a) should be behind the needle clamp screw (b). Press the darning foot on firmly from behind with your index finger and tighten the screw (c).

## Darning



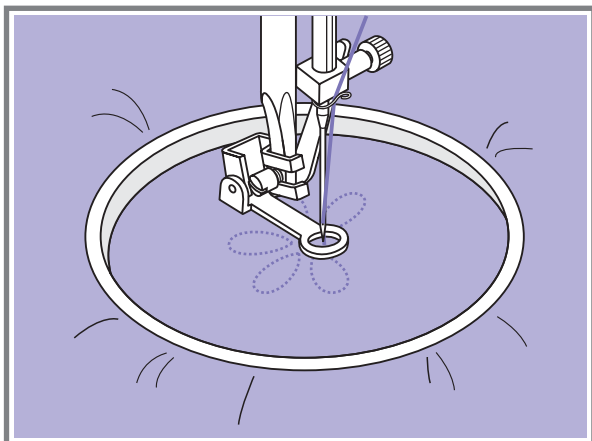
**Please Note:** Free motion darning is accomplished without the sewing machine internal feed system. Movement of the fabric is controlled by the operator. It is necessary to coordinate sewing speed and movement of fabric.



First sew around the edges of the hole (to secure the threads). Working from left to right, sew over the hole in a constant and continuous movement. Turn the work by 1/4 and sew over the first stitching moving the work slower over the hole to separate the threads and not form big gaps between the threads.



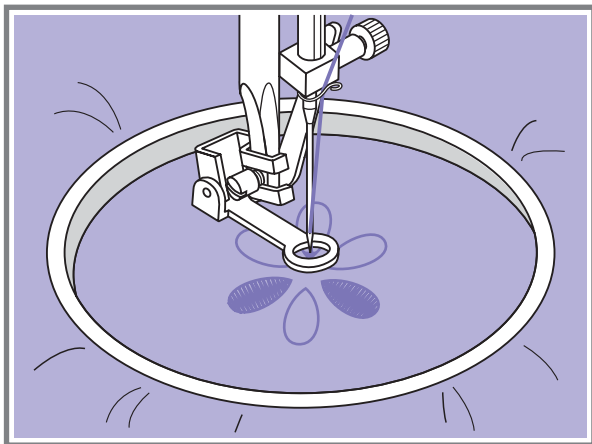
## ■ Embroidery



Select zigzag stitch pattern and adjust the stitch width as desired. Stitch along the outline of the design by moving the embroidery hoop. Make sure to maintain a constant speed.

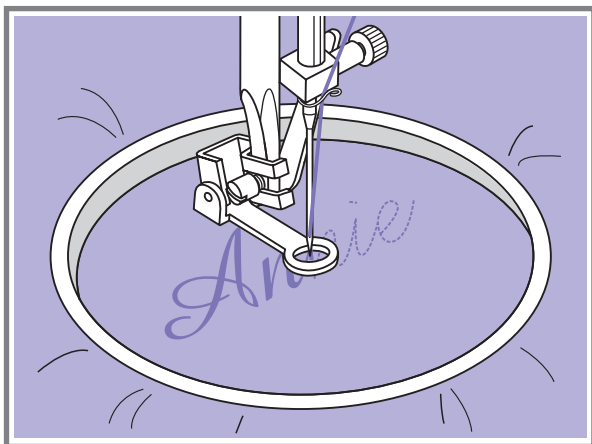
Fill in the design working from the outline towards the inside. Keep the stitches close together.

You will get longer stitches by moving the hoop faster and shorter stitches by moving the hoop more slowly.



Secure with a reinforcement stitches at the end by press Auto-lock button.

## ■ Monogramming

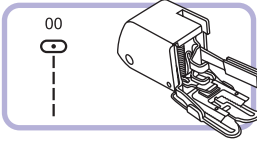


Select the zigzag stitch pattern and adjust the stitch width as desired. Sew at a constant speed, moving the hoop slowly along the lettering.

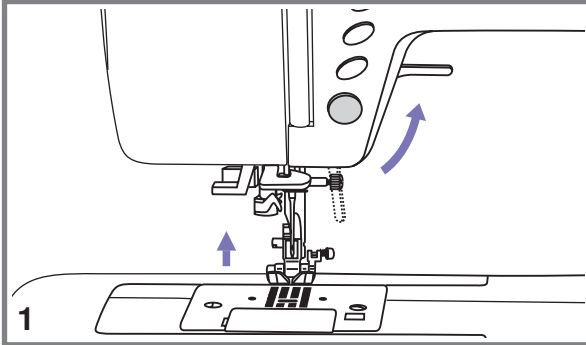
When the letter is finished. Secure with a reinforcement stitches at the end by press Auto-lock button.

\* Embroider hoop is not included with the machine.

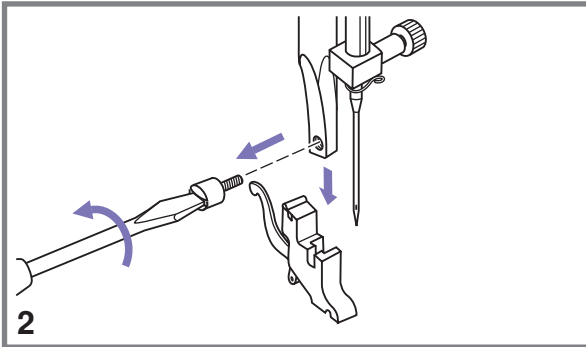
## WALKING FOOT



**Please Note:** Always try to sew first without the walking foot accessory which should be used only when necessary.



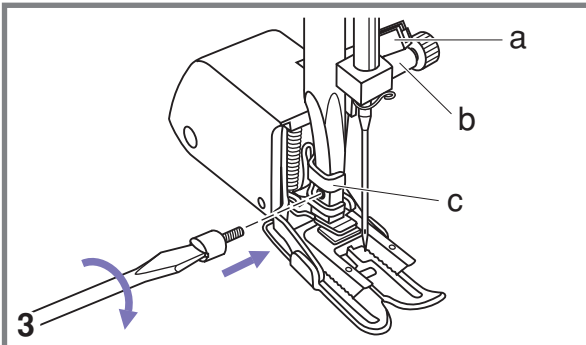
It is easier to guide the fabric and you have a better view of the seam when using the standard, regular foot on your machine. Your sewing machine offers excellent stitch quality on a wide range of fabrics from delicate chiffons to multiple layers of denim.



The Walking Foot accessory equalizes the feeding of the upper and lower layers of fabric and improves the matching of plaids, stripes and patterns. It also helps to prevent uneven feeding of very difficult fabrics.

1. Lift the presser foot lifter to raise the presser foot bar.

2. Remove the presser foot holder by unscrewing (counterclockwise) the presser bar attaching screw.



3. Attach the Walking Foot to the machine as follows:

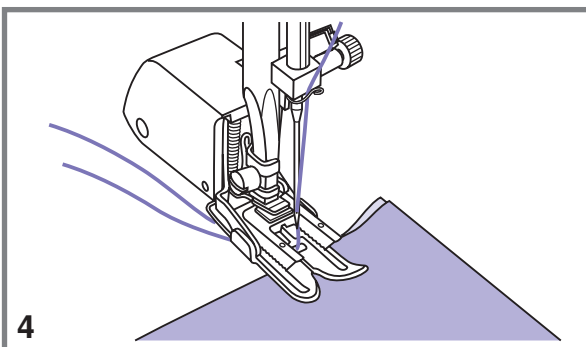
- The arm (a) should fit into above the needle screw and clamp (b).

- Slide the plastic attaching head (c) from your left to right so that it is fitted into the presser foot bar.

- Lower the presser foot bar.

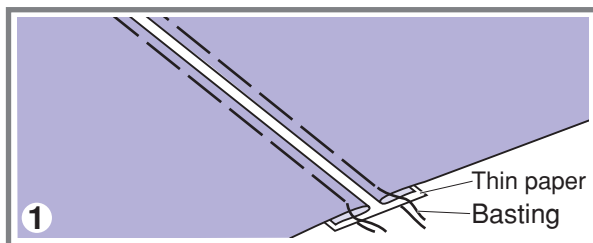
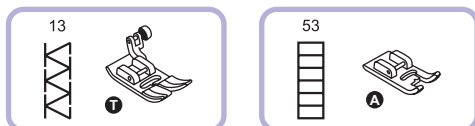
- Replace and tighten (clockwise) the presser bar attaching screw.

- Make sure both the needle screw and the presser bar attaching screw are tightly secured.

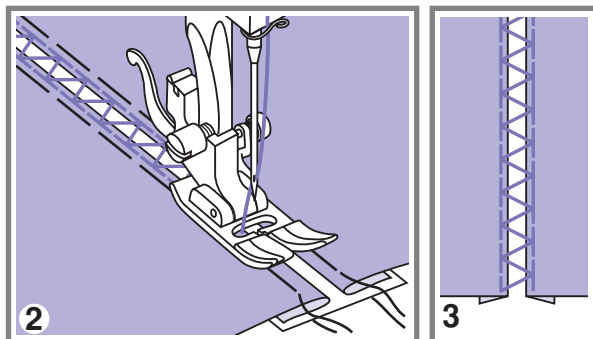


4. Draw the bobbin thread up and place both the bobbin thread and the needle thread behind the walking foot attachment.

## FAGOTING

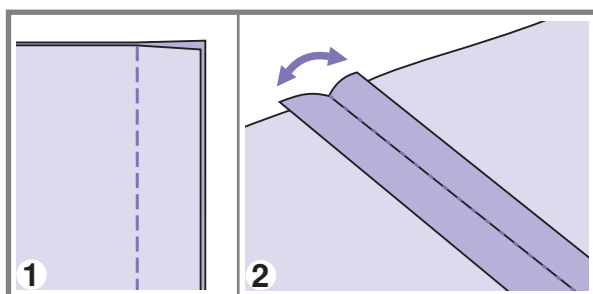
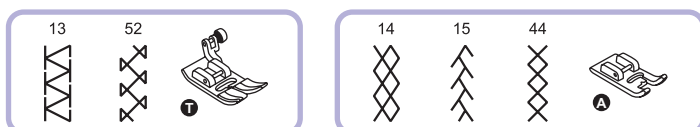


1. Separate the folded edges of the fabric pieces with a gap of 4mm (1/8 inch) and baste them onto a piece of thin paper or water-soluble stabilizer sheet.



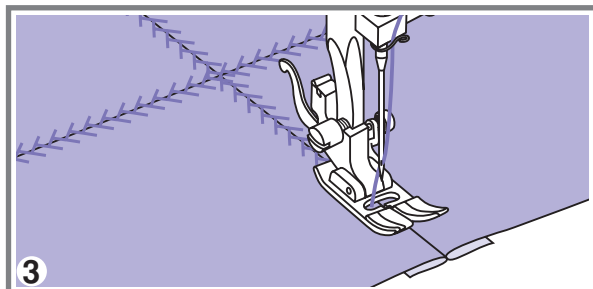
2. Align the center of the presser foot with the center of the two pieces of fabric and begin sewing.
3. After sewing, remove the paper.

## PATCHWORK STITCHING



1. Place the two pieces of fabric with the right side together and sew with the straight stitch.

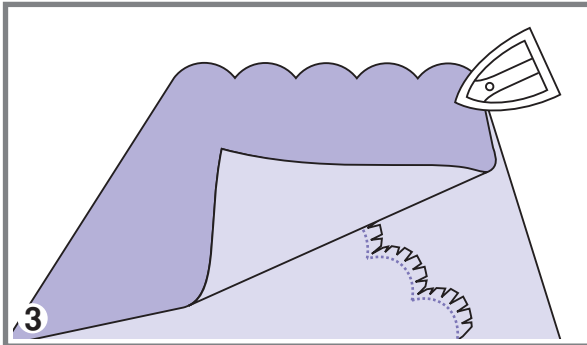
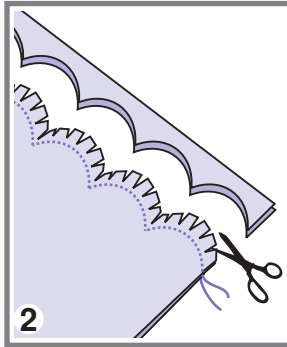
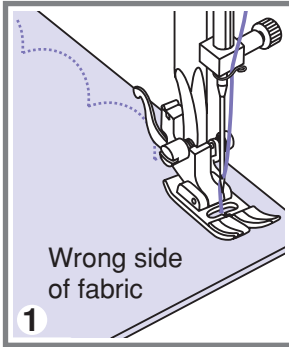
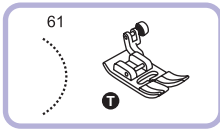
2. Open the seam allowances and presses it flat.



3. Place the center of the presser foot on the seam line of the joined pieces of fabric and sew over the seam.

# SCALLOP STITCH

## ■ Scallop hem

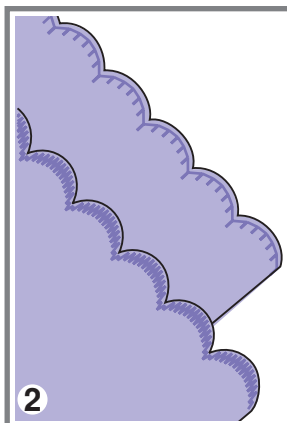
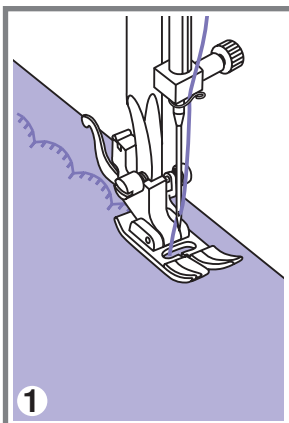
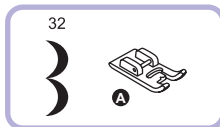
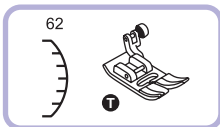


1. Fold the fabric right side together in and sew along the edge.

2. Cut the fabric along the seam leaving an allowance of 3mm (1/8 inch) for seaming. Notch the allowance.

3. Turn fabric over and push out the curved seam to the surface and iron it.

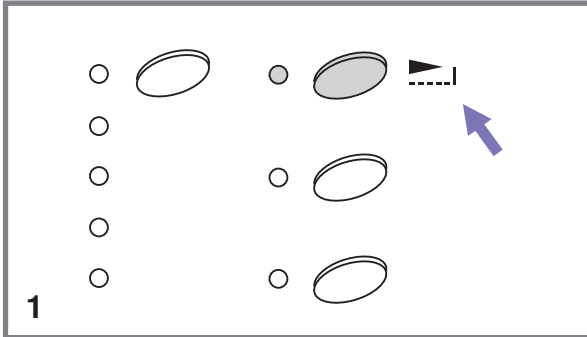
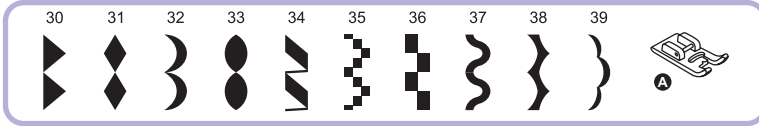
## ■ Scallop edging



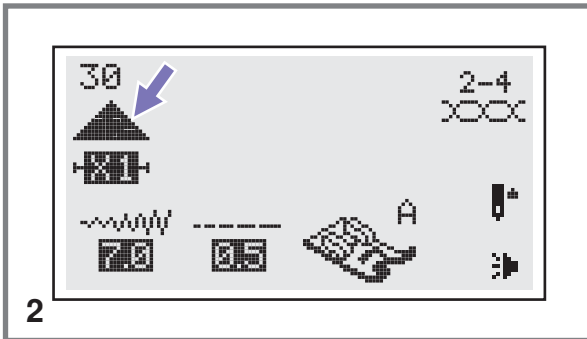
1. Sew on hem line.

2. Trim the fabric close to the stitching taking care not to cut the thread.

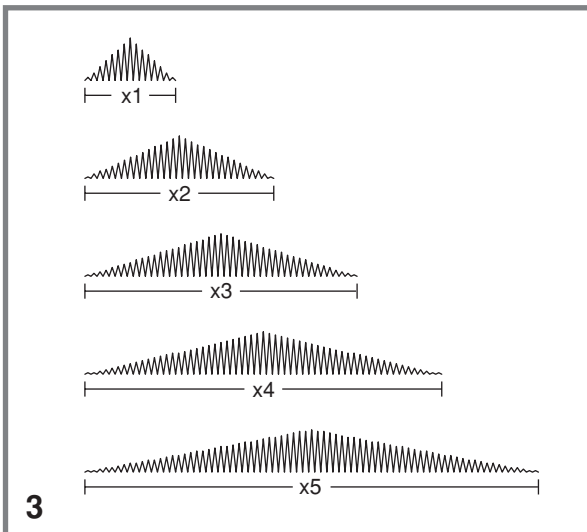
# ELONGATION




1. The stitch can be elongated up to five times its normal length by pressing the elongation button.



2. The LCD screen icon for elongation imaging of the pattern appears.



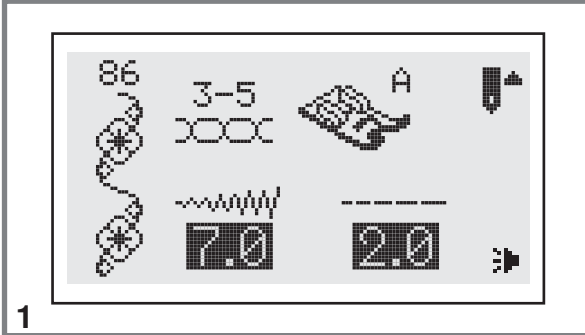
3. When the width or length or stitch is changed, a greater variety of patterns are available.

 **Please Note:** The patterns 30-39 can be elongation and mirror simultaneously.

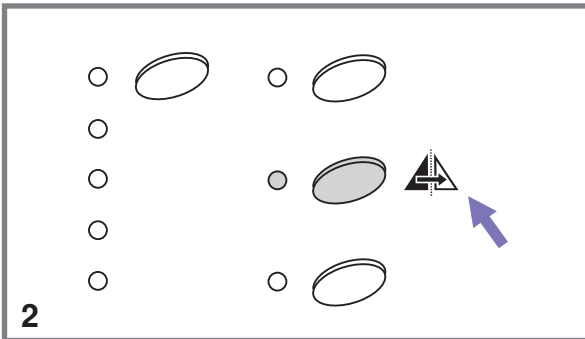
# MIRROR

 **Please Note:**

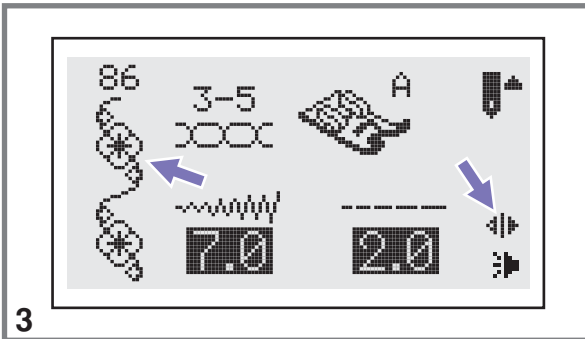
- Pattern 16-29 cannot be mirror imaged.
- Mirror imaged patterns can also be combined with other patterns.



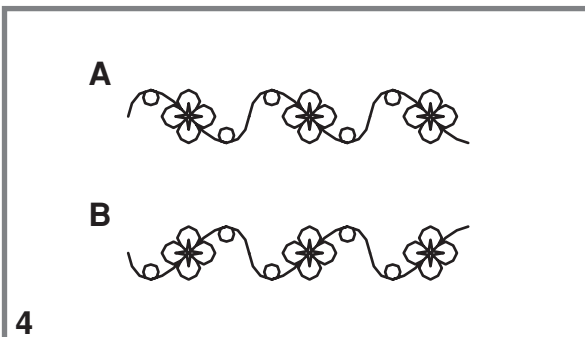
1. Select the pattern.



2. Pressing the mirror button.



3. The LCD screen icon for mirror imaging of the pattern appears.



A. Normal pattern sewing.  
B. Mirror pattern sewing.

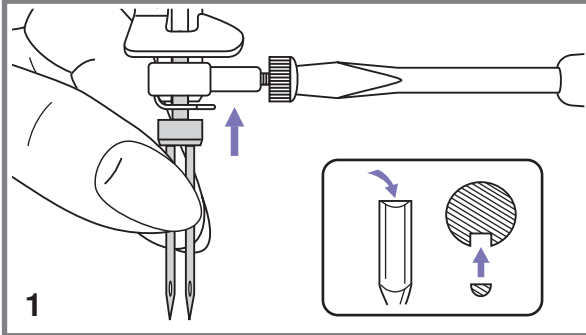
## USING THE TWIN NEEDLE



1.0~3.0



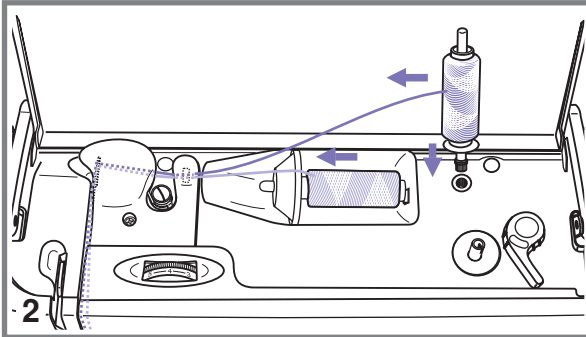
**Please Note:** When using twin needles, use the "T" presser foot regardless of what kind of sewing will be carried out.



1. Insert the twin needle.

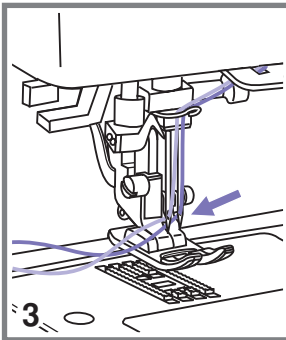


**Attention:** Only use the twin needle (part code: 006020008). Use of any other needle may bend the needle or damage the machine. Never use bent needles. Bent needles can easily break, possibly resulting in injuries.



2. Follow the instructions for single-needle threading using the horizontal spool pin. Thread through the left needle.

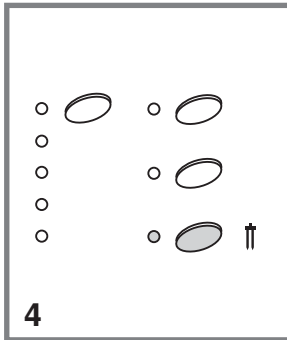
Set the second spool pin (included with the accessories) into the hole on the top of the machine. Thread through remaining points, making certain to omit the thread guide above the needle and pass thread through the right needle.



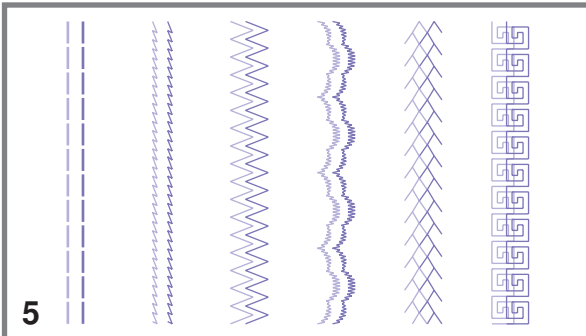
3. Thread each needle separately.



**Please Note:** Make sure that the two threads used to thread the twin needle are of the same weight. You can use one or two colors.



4. Press the Twin needle button, LED light will turn on, and the machine automatically reduces the maximum width for twin needle sewing.

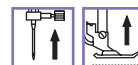


5. Select a stitch pattern and start to sewing. The patterns 00-15, 30-99 can be used.

Two lines of stitching are sewn parallel to each other.




**Please Note:** When sewing with twin needle, always proceed slowly, and make sure to maintain a low speed to insure quality stitching.

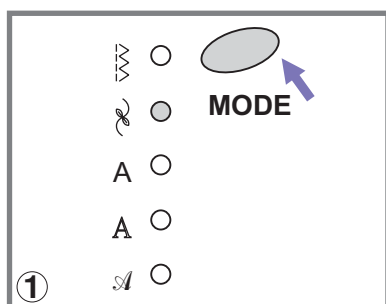



Combined patterns can be stored for later use. Since stored patterns are not lost after the sewing machine is turned off, they can be recalled at any time. This is convenient for patterns, such as names, that will be used often.

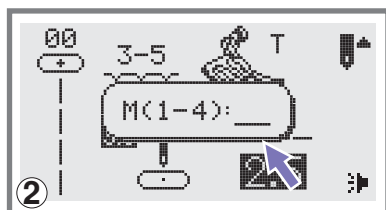
**Please Note:**

- Multiple patterns selecting from pattern modes  , **A** , **A** , **A** can be combined and sewn together.
- This machine has 4 modules of program memory and each module can retain 20 units of stitches.
- Patterns 16-29 cannot be entered into memory.
- All the units in the memory can be edited to set its function such as Stitch length, Stitch width, Elongation, Mirror, and Auto-lock.

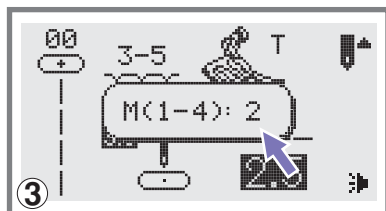
**Combining patterns or letters**



1. Press "MODE" button to select any desired pattern group among  , **A** , **A** , **A** on front cover. The LED will indicate the selected group.



2. Press the "M" button to open the memory mode and then appears a sub-screen in the center. It is available to select the number of the memory module when the cursor start flashing.

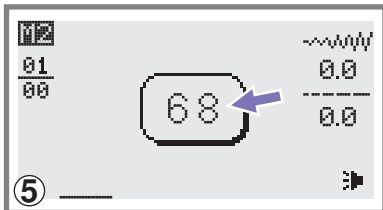
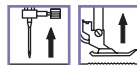


3. Press number of memory module. (e.g. 2)

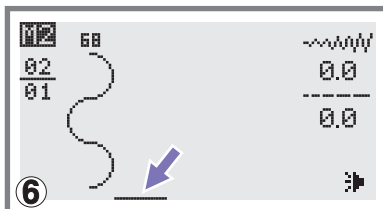


4. Enter the memory screen automatically and the flashing cursor stays in the first position.

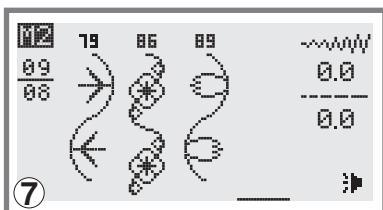




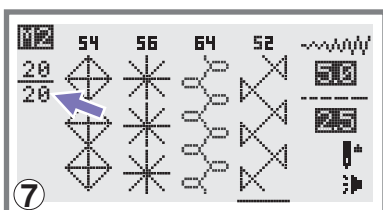
5. Press the desired pattern number. (E.g.68)




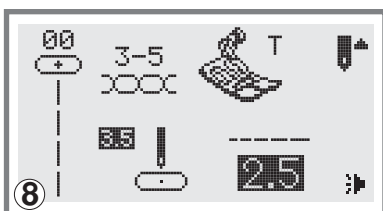
6. The selected pattern displays on the LCD screen and the cursor move to the next position.




7. Repeat step 5, 6 for more patterns to be stored in the memory.



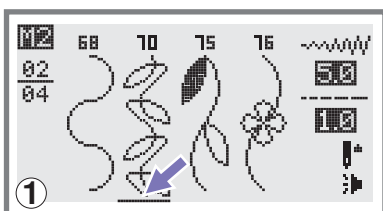
 **Please Note:** When the memory the full with 20 units of patterns, the machine will beep to signal it.



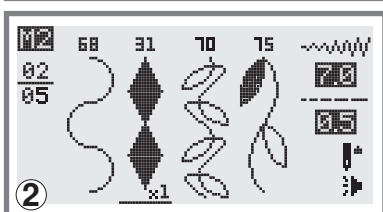
8. Press the "M" button to leave the memory mode and return to the normal screen.

 **Attention:** The selected pattern will be cleared from the memory module after closing the machine if you do not press the "M" button again when you have completed your selection.

### ■ Adding patterns or letters



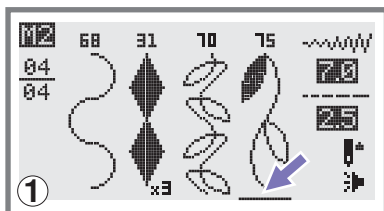
1. Press the stitch width adjustment button and shift the cursor past the last pattern or letter where you would like to add another pattern while in the memory mode.



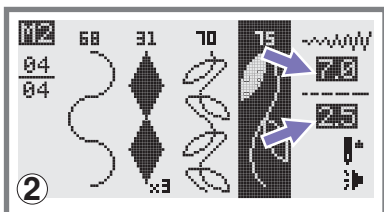
2. Press pattern number. (e.g. 31) The selected pattern will be inserted.



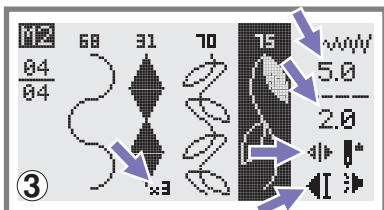
## ■ Editing patterns



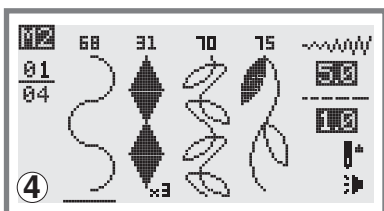
1. Use the stitch width adjustment button to select the pattern that you wish to edit while in the memory mode.



2. Press the "EDIT" button to edit the pattern. The stitch length, stitch width, Elongation, Mirror, and Auto-lock of the patterns can be adjusted manually.

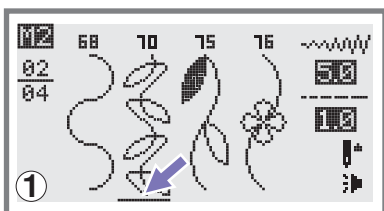


**Please Note:** The stitch length, stitch width, Elongation, Mirror, and Auto-lock of the patterns can be adjusted manually.

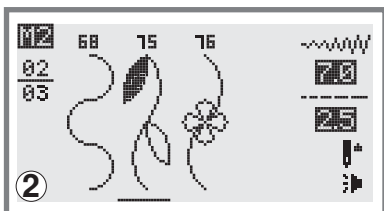


4. Press the "EDIT" button when complete and return to browse status.

## ■ Clearing patterns or letters



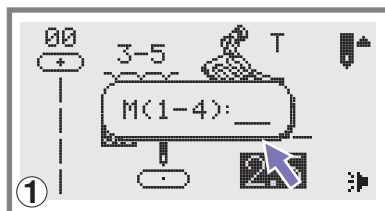
1. Use the stitch width adjustment button to select the pattern that you want to clear while in the memory mode.



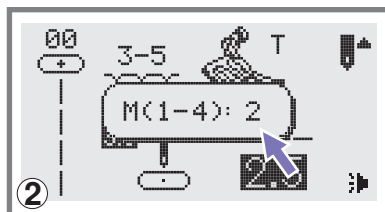
2. Press the "C" button to delete the selected pattern and the next pattern in the back will move forward.



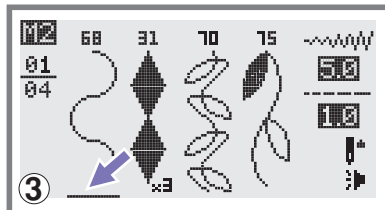
## Recalling and sewing the memorized pattern



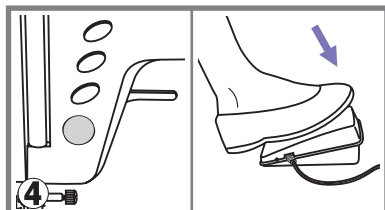
1. Press the "M" button to enter memory mode and then input the number of memory module when the cursor start flashing.



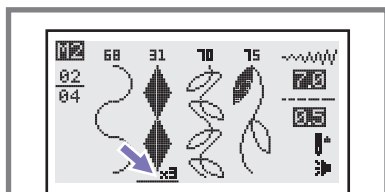
2. Input the number of memory module. (e.g. 2)



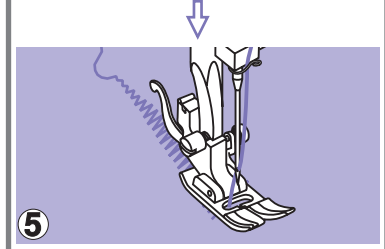
3. The LCD screen containing the various types of stitches will open.



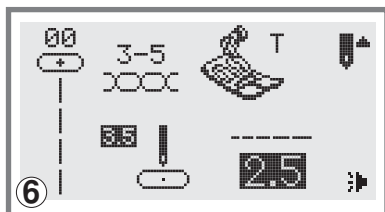
4. Press on the foot control or press the start/stop button to start the sewing machine.



5. The cursor on the LCD screen will move along with the sequential pattern while sewing.



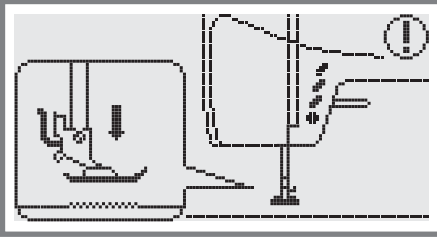
**Please Note:** If the cursor stays in a vacant position in the end, the machine will start sewing from the first pattern. If the cursor stays under a specific pattern, the machine will start sewing from that pattern.



6. Press the "M" button to leave memory mode and return to the normal screen.

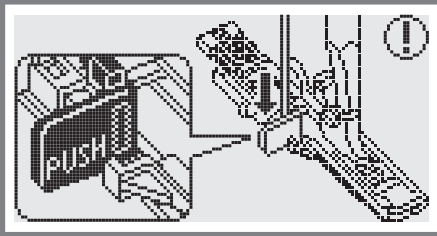
## WARNING FUNCTIONS

### ■ Warning animation message display



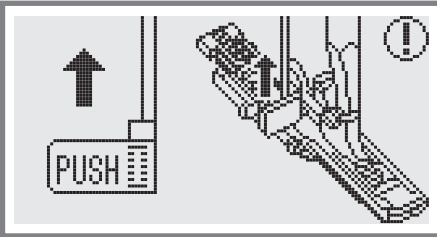
#### **Presser foot is not lowered**

The Start/stop button or reverse button was pressed while the presser foot was raised.



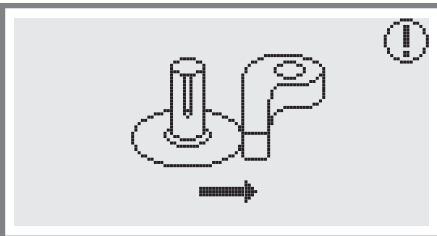
#### **BH lever is not lowered**

The buttonhole or darning stitch was selected and the start/stop button was pressed while the buttonhole lever is raised.



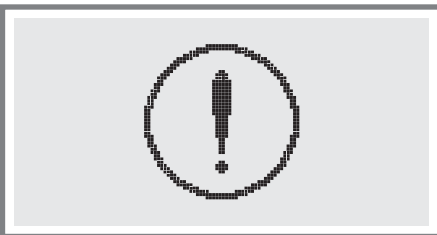
#### **BH lever is not lifted**

A stitch other than the buttonhole or darning stitch was selected and the start/stop button was pressed while the buttonhole lever is down.



#### **Return bobbin winder stopper to right**

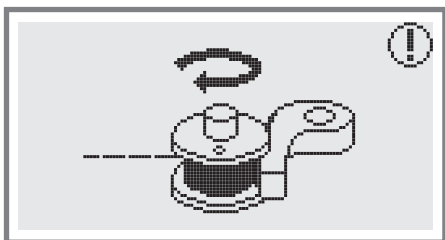
When the bobbin winder stopper is in left, press any button (except the Start/stop button), the LCD screen will display the animation of return bobbin winder stopper to right.



#### **The sewing machine is in trouble**

The animation message means that the thread is twisted or jammed and the hand wheel axle cannot move. Please look through the "Trouble shooting guide" on page 69/70 to find the solution. After the problem has been solved, the machine will continue to sew.

### ■ Instruction animation message display




#### **Bobbin winding**

The bobbin winder is winding the bobbin.

### ■ Warning beeping sound

- When operating correctly: 1 beep
- When the memory is full 20 units of pattern: 2-short beeps
- When operating incorrectly: 3-short beeps
- When the sewing machine is in trouble and can't sew: 8 seconds short beeps

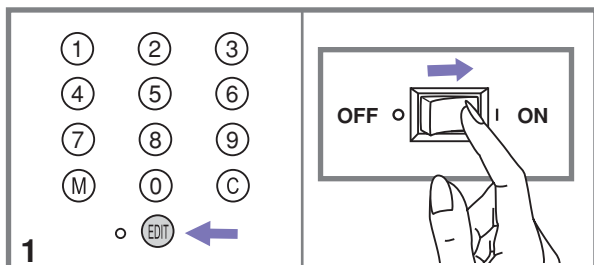
It means that the thread is twisted or jammed and the hand wheel axle can't move. Please look through the "Trouble shooting guide" on page 69/70 to find the solution. After the problem has been solved, the machine will continue to sew.

 **Please Note:** *If the problem is still not solved, please contact your local dealer.*

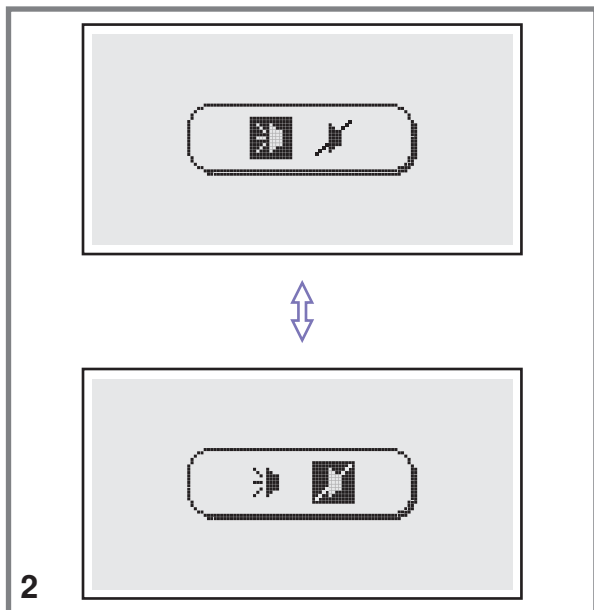


**Attention:** *During the sewing, if the thread get jammed inside the hook stopping the needle from moving and you continue pressing the foot control, the security switch will stop the machine completely. In order to restart the sewing machine, you will have to turn the on/off switch to the OFF position and then ON again.*

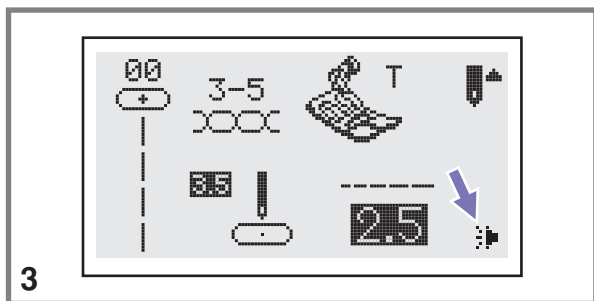
# BUZZER SOUND



1. Press on the "EDIT" button and turn on the power switch.




2. You can select the mode by pressing the stitch width "+" or "-" button. Select desired mode sound on "on" or sound off "off".



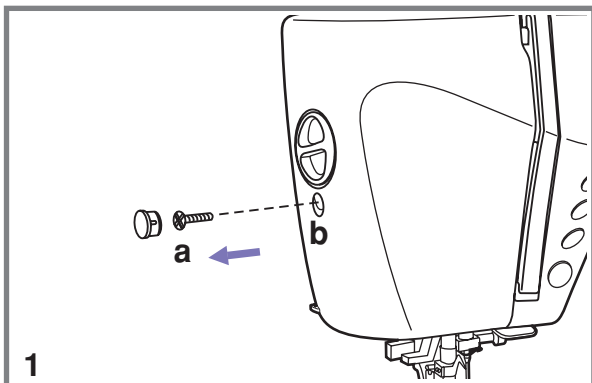
3. Pressing the "EDIT" button. The Buzzer sound setting mark will appear on the LCD screen when you have set it.

## REPLACING THE LIGHT BULB

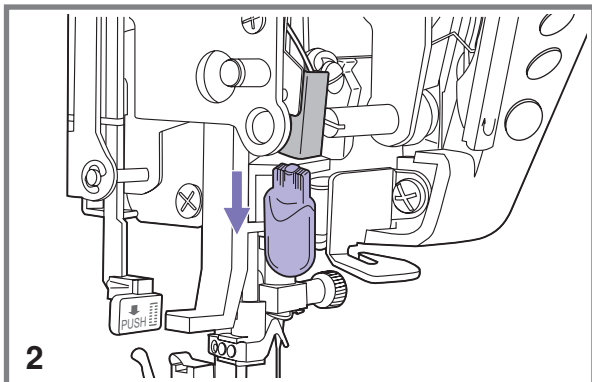
 **Attention:** Turn the power switch off and wait until the lamp has cooled down before touching it.

 **Please Note:**

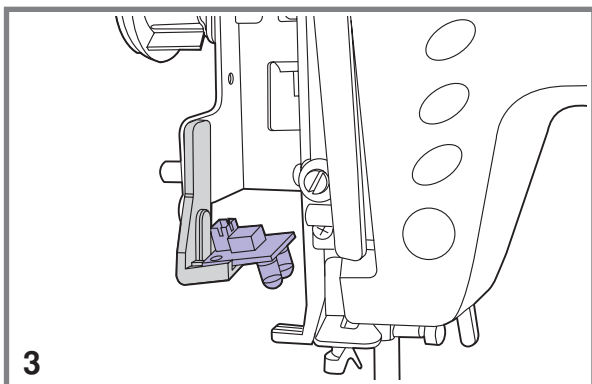
- The 5W lamp is user-replaceable.
- The 240mW LED lamp is not user-replaceable.



1. Loosen the screw (a) on the left side of the sewing head and remove the face plate (b).



2. If the machine is equipped with a 5W lamp, replace the bulb as follows:  
Pull light bulb downward to remove.  
Replace the bulb with same type rated 5W.  
Replace the face plate and tighten the screw.

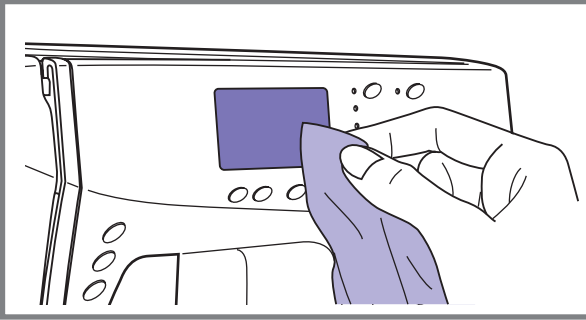


3. If the machine is equipped with a 240mW LED lamp, you must contact the manufacturer or its service agent for repair in the event of failure.

## MAINTENANCE

**⚠ Attention:** Disconnect the power cord from the wall socket before cleaning the screen and sewing machine surface, otherwise injury or electrical shock may result.

### ■ Cleaning the screen



If the front panel is dirty, wipe it gently with a soft, dry cloth.

Do not use any organic solvents or detergents.

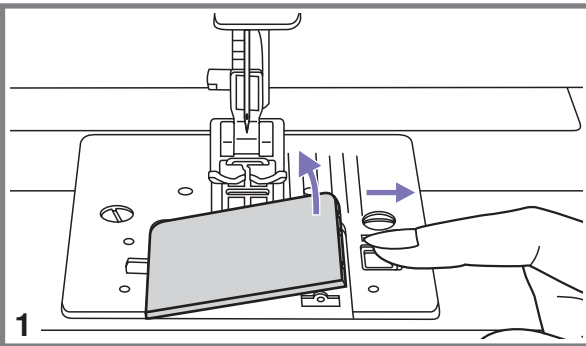
### ■ Cleaning the sewing machine surface

If the surface of the sewing machine is dirty, lightly soak a cloth in mild detergent, squeeze it out firmly and then wipe the surface. After cleaning it once in this way, wipe the surface again with a dry cloth.

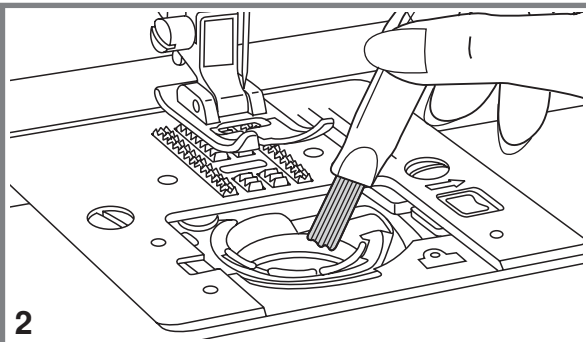
### ■ Cleaning the hook

If lint and bits of thread accumulate in the hook, this will interfere with the smooth operation of the machine. Check regularly and clean the stitching mechanism when necessary.

**⚠ Attention:** Disconnect the machine from the wall outlet before carrying out any maintenance.

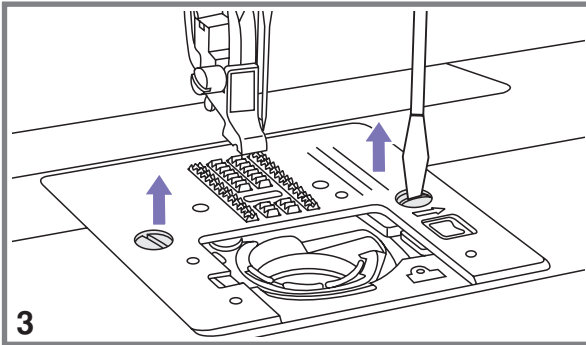


1. Remove the bobbin cover plate and bobbin.

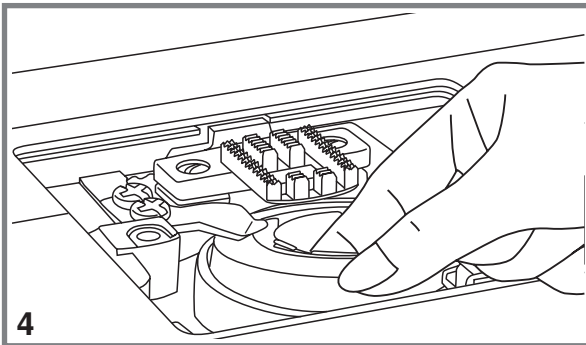


2. Clean the bobbin holder with a brush.

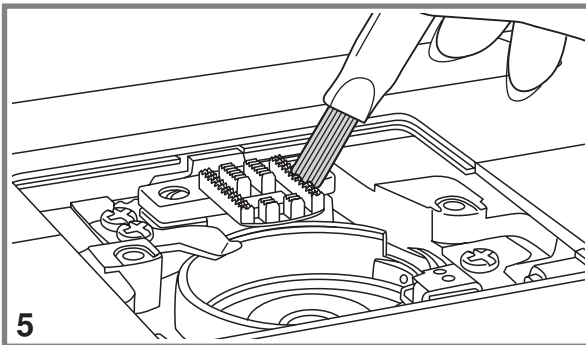




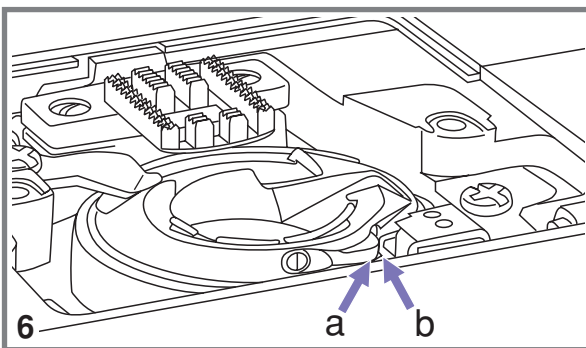
3. Remove the needle, presser foot and presser foot holder. Remove the bobbin cover plate and bobbin. Remove the screw holding the needle plate and remove the needle plate.



4. Lift up the bobbin case and remove it.



5. Clean the hook race, feed dog and bobbin case with a brush. Also clean them, using a soft, dry cloth.



6. Replace the bobbin case into the hook race so that the tip (a) fits to the stopper (b) as shown.

## TROUBLE SHOOTING GUIDE

Before calling for service, check the following items. If the problem still persists, contact the place of purchase or your nearest authorized dealer.

Problem	Cause	Correction	Reference
Upper thread breaks	1.The machine is not threaded correctly.	1.Rethread the machine.	Page 15
	2.The thread tension is too tight.	2.Reduce the thread tension (lower number).	Page 18
	3.The thread is too thick for the needle.	3.Select a larger needle.	Page 10
	4.The needle is not inserted correctly.	4.Remove and reinsert the needle (flat side towards the back).	Page 10
	5.The thread is wound around the spool holder pin.	5.Remove the reel and wind thread onto reel.	Page 15
	6.The needle is damaged.	6.Replace the needle.	Page 10
Lower thread breaks	1.The bobbin case is not inserted correctly.	1.Remove and reinsert the bobbin case and pull on the thread. The thread should pull easily.	Page 14
	2.The bobbin case is threaded wrong.	2.Check both bobbin and bobbin case.	Page 14
	3.The lower thread tension is too tight	3.Loosen lower thread tension as described.	Page 18
Skipped stitches	1.The needle is not inserted correctly.	1.Remove and reinsert needle(flat side towards the back).	Page 10
	2.The needle is damaged.	2.Insert a new needle.	Page 10
	3.The wrong size needle has been used.	3.Choose a needle to suit the thread.	Page 10
	4.The foot is not attached correctly.	4.Check and attach correctly.	Page 71
	5.The machine is not threaded correctly.	5.Rethread the machine.	Page 15
	6.The presser foot pressure is not strong enough.	6.Adjusting the presser foot pressure.	Page 9
Needle breaks	1.The needle is damaged.	1.Insert a new needle.	Page 10
	2.The needle is not correctly inserted.	2.Insert the needle correctly (flat side towards the back).	Page 10
	3.Wrong needle size for the fabric.	3.Choose a needle to suit the thread and fabric.	Page 10
	4.The wrong foot is attached.	4.Select the correct foot.	Page 71
	5.The needle clamp screw is loose.	5.Use the screwdriver to firmly tighten the screw.	Page 10
	6.The presser foot that is used is not appropriate for the type of stitch that you wish to sew.	6.Attach the presser foot that is appropriate for the type of stitch that you wish to sew.	Page 71
	7.The upper thread tension is too tight.	7.Loosen the upper thread tension.	Page 18
Loose stitches	1.The machine is not correctly threaded.	1.Check the threading.	Page 15
	2.The bobbin case is not correctly threaded.	2.Thread the bobbin case as illustrated.	Page 14
	3.Needle/fabric/thread combination is wrong.	3.The needle size must suit the fabric and thread.	Page 10
	4.Thread tension is wrong.	4.Correct the thread tension.	Page 18
Seam gather or pucker	1.The needle is too thick for the fabric.	1.Select a finer needle.	Page 10
	2.The stitch length is adjusted wrong.	2.Readjust the stitch length.	Page 24
	3.The thread tension is too tight.	3.Loosen the thread tension.	Page 18

## TROUBLE SHOOTING GUIDE

Problem	Cause	Correction	Reference
Seam puckering	1.The needle thread tension is too tight.	1.Lossen the thread tension.	Page 18
	2.The needle thread is not threaded correctly.	2.Rethread the machine.	Page 15
	3.The needle is too heavy for the fabric being sewn.	3.Choose a needle to suit the thread and fabric.	Page 10
	4.The stitch length is too long for the fabric.	4.Make stitch dense.	Page 24
	5.The presser foot pressure is not correctly adjusted.	5.Adjusting the presser foot pressure.	Page 9
Patterns are distorted	1.The correct presser foot is not used.	1.Select the correct foot.	Page 71
	2.The needle thread tension is too tight.	2.Loosen the thread tension .	Page 18
	3.The stitch length is not suitable for the fabric being sewn.	3.Make stitch adjust.	Page 24
	4.Feed balancing dial is not set properly.	4.Adjusting pattern balance.	Page 39
The machine jams	1.Thread is caught in the hook.	Remove the upper thread and bobbin case, turn the handwheel backwards and forwards by hand and remove the thread remands.	Page 67
	2.The feed dogs are packed with lint.		
The machine is noisy	1.Fluff or oil have collected on the hook or needle bar.	1.Clean the hook and feed dog as described.	Page 67
	2.Poor quality oil has been used.	2.Only use good quality sewing machine oil	Page 10
	3.The needle is damaged.	3.Replace the needle.	Page 10
	4.Slight humming sound coming from internal motor.	4.Normal	--
	5.Thread is caught in the hook.	Remove the upper thread and bobbin case, turn the handwheel backwards and forwards by hand and remove the thread remands.	Page 67
	6.The feed dogs are packed with lint.		
Uneven stitches, uneven feed	1.Poor quality thread.	1.Select a better quality thread.	Page 10
	2.The bobbin case is threaded wrong.	2.Remove the bobbin case, the thread and reinsert correctly.	Page 14
	3.Fabric has been pulled.	3.Do not pull on the fabric while sewing, let it be taken up by the machine.	--
The sewing machine doesn't operate	1.The machine is not turned on.	1.Turn on the machine.	Page 7
	2.The Start/stop button was not pressed.	2.Press the Start/stop button.	Page 21
	3.The presser foot lever is raised.	3.Lower the presser foot lever.	Page 20
	4.The Start/stop button was pressed, even through the foot controller is connected.	4.Do not use Start/stop button when the foot controller is con-nected. To use Start/stop button, disconnect the foot controller.	Page 21
	5.A thread is caught in the hook race.	5.Remove the upper thread and bobbin case, turn the handwheel backwards and forwards by hand and remove the thread remands.	Page 67
	6.The machine is not plugged in.	6.Connect the power line plug to the electric outlet.	Page 7

# QUICK ADJUSTMENT REFERENCE CHART

Stitch Pattern		Width (mm)		Length (mm)		Presser Foot	Functions					
		Auto	Manual	Auto	Manual		Reverse	Auto-lock	Elongation	Mirror/ Presser foot	Twin needle	Memory
Utility stitches	00	3.5	0.0~7.0	2.5	0.0~4.5	T(P/K/I)	*	*		* / T	*	*
	01	0.0	0.0~7.0	2.5	0.0~4.5	T(P/K/I)	*	*		* / T	*	*
	02	3.5	0.0~7.0	2.5	1.0~3.0	T(P)	*	*		* / T	*	*
	03	3.5	1.0~6.0	2.5	1.0~3.0	T	*	*		* / T	*	*
	04	3.5	0.0~7.0	2.5	1.5~3.0	T	*	*		* / T	*	*
	05	5.0	0.0~7.0	2.0	0.3~4.5	T(E)	*	*		* / T	*	*
	06	5.0	2.0~7.0	1.0	0.3~4.5	T	*	*		* / T	*	*
	07	5.0	2.5~7.0	2.5	1.0~3.0	T(A)	*	*		* / T	*	*
	08	5.0	3.5~7.0	2.5	1.0~3.0	E	*	*		* / T	*	*
	09	5.0	2.5~7.0	2.5	1.0~3.0	T	*	*		* / T	*	*
	10	3.5	2.5~7.0	2.0	0.5~4.5	F	*	*		* / T	*	*
	11	3.5	2.5~7.0	1.0	0.5~4.5	F	*	*		* / T	*	*
	12	3.5	2.5~7.0	2.5	1.0~3.0	T	*	*		* / T	*	*
	13	5.0	2.5~7.0	2.5	1.0~3.0	T(A)	*	*		* / T	*	*
	14	7.0	2.5~7.0	2.5	1.0~3.0	A	*	*		* / A	*	*
15	6.0	2.5~7.0	2.5	1.0~3.0	A(M)	*	*		* / A	*	*	
Buttonhole stitches	16	5.0	2.5~7.0	0.5	0.3~1.0	D						
	17	5.5	3.0~7.0	0.5	0.3~1.0	D						
	18	5.0	2.5~5.5	0.5	0.3~1.0	D						
	19	6.0	3.0~7.0	0.5	0.3~1.0	D						
	20	5.0	2.5~5.5	0.5	0.3~1.0	D						
	21	5.0	2.5~5.5	0.5	0.3~1.0	D						
	22	7.0	5.5~7.0	0.5	0.3~1.0	D						
	23	7.0	5.5~7.0	0.5	0.3~1.0	D						
	24	7.0	5.5~7.0	0.5	0.3~1.0	D						
	25	6.0	3.0~7.0	1.0	1.0~2.0	D						
	26	6.0	3.0~7.0	1.5	1.0~3.0	D						
27	7.0	7.0,6.0,5.0			A							
Darning stitches	28	7.0	3.5~7.0	2.0	1.0~2.0	D						
	29	7.0	3.5~7.0	2.0	1.0~2.0	D						
Satin stitches	30	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*
	31	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*
	32	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*
	33	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*
	34	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*
	35	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*
	36	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*
	37	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*
	38	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*
	39	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*	*	* / A	*	*





















\* : Adjustments can be made.

# QUICK ADJUSTMENT REFERENCE CHART

Stitch Pattern		Width (mm)		Length (mm)		Presser Foot	Functions					
		Auto	Manual	Auto	Manual		Reverse	Auto-lock	Elongation	Mirror/ Presser foot	Twin needle	Memory
Satin stitches	40	7.0	2.5~7.0	0.5	0.3~1.0	A	*	*		*/A	*	*
	41	7.0	2.5~7.0	1.5	0.5~3.0	A	*	*		*/A	*	*
	42	7.0	2.5~7.0	1.0	0.5~2.0	A	*	*		*/A	*	*
	43	7.0	2.5~7.0	2.0	1.0~3.0	A	*	*		*/A	*	*
Cross stitches	44	5.0	2.5~7.0	2.5	1.0~3.0	A	*	*		*/A	*	*
	45	6.0	2.5~7.0	1.0	0.5~3.0	A(T)	*	*		*/A	*	*
	46	6.0	2.5~7.0	1.0	0.5~3.0	A	*	*		*/A	*	*
	47	4.0	2.5~7.0	1.0	0.5~3.0	A	*	*		*/A	*	*
	48	4.0	2.5~7.0	1.0	0.5~3.0	A	*	*		*/A	*	*
	49	6.0	2.5~7.0	1.0	0.5~3.0	A	*	*		*/A	*	*
	50	6.0	2.5~7.0	1.0	0.5~3.0	A	*	*		*/A	*	*
	51	6.0	2.5~7.0	1.0	0.5~3.0	A	*	*		*/A	*	*
Decorative stitches	52	5.0	2.5~7.0	2.5	1.0~3.0	A(T)	*	*		*/A	*	*
	53	5.0	2.5~7.0	2.5	1.0~3.0	A	*	*		*/A	*	*
	54	5.0	2.5~7.0	2.5	1.0~3.0	A	*	*		*/A	*	*
	55	7.0	2.5~7.0	2.0	1.0~3.0	A	*	*		*/A	*	*
	56	5.0	2.5~7.0	2.5	1.0~4.5	A	*	*		*/A	*	*
	57	7.0	2.5~7.0	2.0	1.0~3.0	T(A)	*	*		*/T	*	*
	58	5.0	2.5~7.0	2.5	1.0~3.0	T(A)	*	*		*/T	*	*
	59	7.0	2.5~7.0	1.5	1.0~3.0	A(T)	*	*		*/A	*	*
	60	6.0	2.5~7.0	1.5	1.0~3.0	A	*	*		*/A	*	*
	61	7.0	2.5~7.0	2.5	1.0~3.0	T	*	*		*/T	*	*
	62	7.0	2.5~7.0	2.5	1.0~4.5	A(T)	*	*		*/A	*	*
	63	7.0	2.5~7.0	2.5	1.0~3.0	A	*	*		*/A	*	*
	64	7.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		*/A	*	*
	65	5.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		*/A	*	*
	66	5.0	2.5~7.0	1.0	0.5~3.0	A	*	*		*/A	*	*
	67	7.0	2.5~7.0	3.0	1.0~3.0	A(T)	*	*		*/A	*	*
	68	5.0	2.5~7.0	1.0	0.5~4.5	T	*	*		*/T	*	*
	69	5.0	2.5~7.0	1.0	0.5~3.0	A(T)	*	*		*/A	*	*
	70	5.0	2.5~7.0	1.0	1.0~3.0	A(T)	*	*		*/A	*	*
	71	6.0	2.5~7.0	1.0	1.0~3.0	A	*	*		*/A	*	*
	72	6.0	2.5~7.0	2.0	1.0~3.0	A	*	*		*/A	*	*
73	7.0	2.5~7.0	3.0	1.0~3.0	A	*	*		*/A	*	*	
74	7.0	2.5~7.0	3.0	1.0~3.0	A	*	*		*/A	*	*	
75	7.0	2.5~7.0	2.5	1.5~3.0	A(T)	*	*		*/A	*	*	
76	7.0	2.5~7.0	2.5	1.0~3.0	A(T)	*	*		*/A	*	*	
77	7.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		*/A	*	*	
78	7.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		*/A	*	*	
79	7.0	2.5~7.0	2.5	1.0~3.0	A(T)	*	*		*/A	*	*	

\*: Adjustments can be made.

# QUICK ADJUSTMENT REFERENCE CHART

Stitch Pattern		Width (mm)		Length (mm)		Presser Foot	Functions					
		Auto	Manual	Auto	Manual		Reverse	Auto-lock	Elongation	Mirror/ Presser foot	Twin needle	Memory
Decorative stitches	80 	7.0	2.5~7.0	2.0	1.0~3.0	A	*	*		* / A	*	*
	81 	7.0	2.5~7.0	3.0	1.5~4.5	A	*	*		* / A	*	*
	82 	7.0	2.5~7.0	3.0	1.0~3.0	A	*	*		* / A	*	*
	83 	7.0	2.5~7.0	2.0	1.0~3.0	A	*	*		* / A	*	*
	84 	7.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		* / A	*	*
	85 	7.0	2.5~7.0	2.0	1.0~3.0	A	*	*		* / A	*	*
	86 	7.0	2.5~7.0	2.0	1.0~3.0	A	*	*		* / A	*	*
	87 	7.0	2.5~7.0	2.0	1.0~3.0	A	*	*		* / A	*	*
	88 	7.0	2.5~7.0	2.0	1.0~3.0	A	*	*		* / A	*	*
	89 	7.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		* / A	*	*
	90 	7.0	2.5~7.0	2.0	1.0~3.0	A	*	*		* / A	*	*
	91 	7.0	2.5~7.0	2.5	1.0~3.0	A(T)	*	*		* / A	*	*
	92 	7.0	2.5~7.0	3.0	1.0~3.0	A(T)	*	*		* / A	*	*
	93 	5.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		* / A	*	*
	94 	5.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		* / A	*	*
	95 	5.0	2.5~7.0	3.0	1.0~3.0	A(T)	*	*		* / A	*	*
	96 	5.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		* / A	*	*
	97 	5.0	2.5~7.0	2.0	1.0~3.0	A(T)	*	*		* / A	*	*
	98 	7.0	2.5~7.0	2.5	1.0~3.0	A	*	*		* / A	*	*
99 	5.0	2.5~7.0	3.0	1.0~3.0	A	*	*		* / A	*	*	

\* : Adjustments can be made.

