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

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

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

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

2. **Always** unplug the machine from the electrical outlet when making any adjustments mentioned in the instruction manual:
   - To unplug the machine, switch the machine to the symbol “O” position to turn it off, then grasp the plug and pull it out of the electrical outlet. Do not pull on the cord.
   - Plug the machine directly into the electrical outlet. Do not use an extension cord.
   - **Always** unplug your machine if the power is cut.

3. **Never** operate this machine if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or water is spilled on the unit. Return the machine to the nearest authorized dealer or service center for examination, repair, electrical or mechanical adjustment.
   - While the machine is stored or in use if you notice anything unusual, such an odor, heat, discoloration or deformation, stop using the machine and immediately unplug the power cord.
   - When transporting the machine, be sure to carry it by its handle. Lifting the machine by any other part may damage the machine or result in the machine falling, which could cause injuries.
   - When lifting the machine, be careful not to make any sudden or careless movements, otherwise you may injure your back or knees.

4. **Always** keep your work area clear:
   - Never operate the machine with any air openings blocked. Keep ventilation openings of the sewing machine and foot control free from the build up of lint, dust, and loose cloth.
   - **Do not** store objects on the foot controller.
   - **Do not** use extension cords. Plug the machine directly into the electrical outlet.
   - **Never** drop or insert any object into any opening.
   - **Do not** operate where aerosol (spray) products are being used or where oxygen is being administered.
   - **Do not** use the machine near a heat source, such as a stove or iron; otherwise, the machine, power cord or garment being sewn may ignite, resulting in fire or an electric shock.
   - **Do not** place this machine on an unstable surface, such as an unsteady or slanted table, otherwise the machine may fall, resulting in injuries.
5 Special care is required when sewing:
• **Always** pay close attention to the needle. Do not use bent or damaged needles.
• Keep fingers away from all moving parts. Special care is required around the machine needle.
• Switch the sewing machine to the symbol “O” position to turn it off when making any adjustments in the needle area.
• **Do not** use a damaged or incorrect needle plate, as it could cause the needle to break.
• **Do not** push or pull the fabric when sewing, and follow careful instruction when freehand stitching so that you do not deflect the needle and cause it to break.

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

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

8 For repair or adjustment:
• If the Light unit (light-emitting diode) is damaged, it must be replaced by authorized dealer.
• In the event a malfunction occurs or adjustment is required, first follow the troubleshooting table in the back of the operation manual to inspect and adjust the machine yourself. If the problem persists, please consult your local authorized Brother dealer.

*Use this machine only for its intended use as described in this manual.*
*Use accessories recommended by the manufacturer as contained in this manual.*
*The contents of this manual and specifications of this product are subject to change without notice.*
*For additional product information, visit our web site at www.brother.com*

**SAVE THESE INSTRUCTIONS**

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

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

IMPORTANT

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

IMPORTANT SAFETY INSTRUCTIONS ................................................................. 1
Introduction .......................................................................................................... 7
Sewing Machine Features .................................................................................... 7
Accessories ............................................................................................................ 8
   Included accessories ......................................................................................... 8
   Optional accessories ......................................................................................... 9
Names of Machine Parts and Their Functions ..................................................... 10
   Front view ......................................................................................................... 10
   Needle and presser foot section ................................................................. 11
   Right-side/rear view ...................................................................................... 11
   Operation buttons ......................................................................................... 12
   Operation panel ............................................................................................ 13

GETTING READY ............................................................................................... 15

Turning the Machine On/Off .............................................................................. 16
   Power supply precautions ............................................................................. 16
   Turning on the machine ............................................................................... 17
   Turning off the machine .............................................................................. 17
Understanding the LCD Screens ......................................................................... 18
Changing the Machine Settings .......................................................................... 19
   Changing the settings .................................................................................. 19
   Adjusting the brightness of the LCD .......................................................... 21
   Changing the screen language .................................................................... 21
Winding/Installing the Bobbin ............................................................................ 22
   Bobbin precautions ....................................................................................... 22
   Winding the bobbin ..................................................................................... 22
   Installing the bobbin ................................................................................... 26
Upper Threading .................................................................................................. 28
   Threading the upper thread ........................................................................ 28
   Threading the needle ................................................................................... 31
   Threading the needle manually (without using the needle threader) ............. 33
   Using the twin needle .................................................................................. 33
   Pulling up the bobbin thread ...................................................................... 36
Replacing the Needle .......................................................................................... 37
   Needle precautions ....................................................................................... 37
   Needle types and their uses ....................................................................... 38
   Checking the needle .................................................................................... 39
   Replacing the needle ................................................................................... 39
Replacing the Presser Foot ................................................................................ 41
   Presser foot precautions ............................................................................. 41
   Replacing the presser foot ......................................................................... 41
   Adjusting the pressure of the presser foot .................................................. 43
   Removing the presser foot holder .............................................................. 43
   Using the walking foot ............................................................................... 44
Sewing Cylindrical or Large Pieces .................................................................. 46
   Stitching cylindrical pieces ....................................................................... 46
   Sewing large pieces of fabric .................................................................... 46
SEWING BASICS

Sewing ................................................................. 50
  General sewing procedure ...................................... 50
  Positioning the fabric .............................................. 51
  Starting to sew ..................................................... 52
  Securing the stitching ............................................ 54
  Cutting the thread ............................................... 55

Adjusting the Thread Tension .................................. 57
  Changing the tension of the upper thread ................. 57

Adjusting the Stitch Width and Length .................. 58
  Adjusting the stitch width ..................................... 58
  Adjusting the stitch length ..................................... 59

Useful Functions .................................................. 60
  Changing the needle stop position .......................... 60
  Automatically sewing reverse/reinforcement stitches ... 60
  Automatically cutting the thread ............................ 62
  Saving stitch settings .......................................... 63
  Hands-free raising and lowering of the presser foot ... 64

Useful Sewing Tips ............................................... 65
  Trial sewing ....................................................... 65
  Changing the sewing direction .............................. 65
  Sewing curves .................................................... 65
  Sewing thick fabrics .......................................... 66
  Sewing thin fabrics ............................................ 66
  Sewing stretch fabrics ........................................ 66
  Sewing leathers or vinyl fabrics ............................ 67
  Sewing an even seam allowance ............................ 67
  Sewing hook-and-loop fastener ............................ 68

UTILITY STITCHES .............................................. 69

Selecting Stitching ............................................... 70
  Selecting stitch types and patterns .......................... 70
  Selecting stitching ............................................... 72

Overcasting Stitches .............................................. 76
  Sewing overcasting stitches using overcasting foot “G” 76
  Sewing overcasting stitches using zigzag foot “J” ...... 77
  Sewing overcasting stitches using the optional side cutter ... 78

Basic Stitching ..................................................... 80
  Basting ............................................................ 80
  Basic stitching ................................................... 81

Blind Hem Stitching .............................................. 82

Buttonhole Stitching/Button Sewing ....................... 84
  Buttonhole sewing ............................................. 85
  Button sewing .................................................. 89

Zipper Insertion .................................................. 91
  Inserting a centered zipper .................................... 91
  Inserting a side zipper ......................................... 93

Zipper/piping Insertion ......................................... 96
  Inserting a centered zipper .................................... 96
  Inserting a piping ............................................... 97

Sewing Stretch Fabrics and Elastic Tape .................. 98
  Stretch stitching ............................................... 98
  Elastic attaching ............................................... 98
Appliqué, Patchwork and Quilt Stitching ................................................................. 100
  Appliqué stitching .................................................................................................... 101
  Patchwork (crazy quilt) stitching .......................................................................... 102
  Piecing ...................................................................................................................... 102
  Quilting .................................................................................................................... 103
  Free-motion quilting ............................................................................................... 104
  Satin stitching using the sewing speed controller .................................................. 105

Reinforcement Stitching ................................................................................................ 107
  Triple stretch stitching ............................................................................................ 107
  Bar tack stitching .................................................................................................... 107
  Darning .................................................................................................................... 109

Eyelet Stitching ............................................................................................................. 111

Decorative Stitching ..................................................................................................... 112
  Fagoting .................................................................................................................... 113
  Scallop stitching ....................................................................................................... 114
  Smocking .................................................................................................................. 114
  Shell luck stitching ................................................................................................... 115
  Joining ...................................................................................................................... 116
  Heirloom stitching .................................................................................................... 116

Sewing the Various Built-In Decorative Patterns ....................................................... 119
  Sewing beautiful patterns ....................................................................................... 119
  Sewing patterns ....................................................................................................... 119
  Combining patterns .................................................................................................. 120
  Repeat sewing patterns ............................................................................................ 121
  Checking the selected pattern .................................................................................. 121
  Changing the pattern size ........................................................................................ 122
  Changing the stitch density ...................................................................................... 123
  Changing the pattern length .................................................................................... 124
  Mirror imaging the pattern ...................................................................................... 125
  Saving patterns ......................................................................................................... 126
  Retrieving a pattern ................................................................................................. 126
  Realigning the pattern ............................................................................................. 127

Designing a Pattern ...................................................................................................... 129
  Drawing a sketch of the pattern ............................................................................... 129
  Entering the pattern data ......................................................................................... 130
  Examples of designs ................................................................................................. 132

APPENDIX ...................................................................................................................... 133

Stitch Settings ............................................................................................................... 134
  Utility stitches .......................................................................................................... 134
  Other stitches ............................................................................................................ 138

Care and Maintenance .................................................................................................. 142
  Restrictions on oiling ............................................................................................... 142
  Cleaning the machine surface .................................................................................. 142
  Cleaning the race ...................................................................................................... 142

Troubleshooting ........................................................................................................... 144
  Frequent troubleshooting topics ............................................................................... 144
  Upper thread tightened up ....................................................................................... 144
  Tangled thread on wrong side of fabric .................................................................... 145
  Incorrect thread tension ........................................................................................... 147
  Fabric is caught in the machine and cannot be removed ......................................... 148
  When the thread became tangled under the bobbin winder seat ............................ 151
  List of symptoms ...................................................................................................... 153
  Error messages ........................................................................................................ 158
  Nothing appears in the LCD ..................................................................................... 159
  Operation beep ......................................................................................................... 159
  Cancelling the operation beep .................................................................................. 159

Index ............................................................................................................................ 161
Introduction

Thank you for purchasing this sewing machine. Before using this sewing machine, carefully read the “IMPORTANT SAFETY INSTRUCTIONS” (page 1), and then study this manual for the correct operation of the various functions. In addition, after you have finished reading this manual, store it where it can quickly be accessed for future reference.

Sewing Machine Features

1. Easy upper threading
   Since the spool can be installed at the front of the sewing machine, the upper thread can easily be threaded. In addition, the needle can be threaded with a simple operation (page 28).

2. Automatic thread-cutting
   The sewing machine can be set to automatically cut the thread at the end of the stitching (page 62).

3. One-touch lower threading
   You can start sewing without pulling up the bobbin thread (page 26).

4. Simple bobbin-winding
   The bobbin can quickly and easily be wound with thread (page 22).

5. Built-in stitches
   You can select from the built-in stitches available, including utility stitches, character stitches and decorative stitches.

6. Knee lifter
   Use the knee lifter to raise and lower the presser foot with your knee, leaving both hands free to handle the fabric (page 64).
Accessories

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

Included accessories

The following items should also be included in the box.

Note

(For U.S.A. only)

- Foot controller: Model N5V
  This foot controller can be used on this machine model NX-450/NX570Q.
- The screw for the presser foot holder is available through your authorized dealer.
  (Part code: 132730-122)
- The organized accessory tray is available through your authorized dealer.
  (Part code: XC4489-051)

- Attaching the stitch pattern plate
  The stitch pattern plate shows the stitch numbers and the patterns available with each stitch mode. Attach the stitch pattern plate to the handle as shown in the illustration below.
**Optional accessories**

The following are available as optional accessories to be purchased separately.

1. **Side cutter**
   Part code: SA177, F054(XC3879-152)

2. **Quilting guide**
   Part code: SA132, F016N(XC2215-052)

3. **Wide table**
   Part code: SA551, WT5(XC9567-222)

4. **1/4 inch quilting foot**
   Part code: SA125, F001N(XC1944-052)

5. **1/4 inch quilting foot with guide**
   Part code: SA185, F057(XC7416-252)

---

**Memo**

- To obtain optional accessories or parts, contact your sales representative or the nearest authorized service center.
Names of Machine Parts and Their Functions

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

Front view

1. Thread guide plate
   Pass the thread under the thread guide plate.

2. Thread guide cover
   Pass the thread behind the thread guide cover when threading the upper thread.

3. Spool pin
   Place a spool of thread on the spool pin.

4. Bobbin winding thread guide and pretension disk
   Pass the thread under this thread guide and around the pretension disk when winding the bobbin thread.

5. Top cover
   Open the top cover to place the spool of thread on the spool pin.

6. Bobbin winder
   Use the bobbin winder when winding the bobbin.

7. Operation panel
   Use for stitch selection and various stitch functions. (page 13)

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

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

10. Flat bed attachment with accessory compartment
    Store presser feet and bobbins in the accessory compartment of the flat bed attachment. When sewing cylindrical pieces, remove the flat bed attachment.

11. Thread cutter
    Pass the threads through the thread cutter to cut them.

12. Needle threader lever
    Use the needle threader to thread the needle.

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

14. Thread tension dial
    Use the thread tension dial to adjust the tension of the upper thread.
Needle and presser foot section

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

2. **Thread guide disk**
   Pass the thread through the thread guide disk when using the needle threader to thread the needle.

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

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

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

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

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

8. **Presser foot**
   The presser foot applies pressure consistently on the fabric as sewing takes place. Attach the appropriate presser foot for the selected stitch.

9. **Presser foot holder**
   The presser foot is attached onto the presser foot holder.

Right-side/rear view

1. **Presser foot dial**
   Use the presser foot dial to adjust the amount of pressure that the presser foot applies to the fabric.

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

3. **Handwheel**
   Turn the handwheel toward you to raise and lower the needle. The handwheel should be turned towards you (counterclockwise).

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

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

6. **Foot controller jack**
   Insert the plug on the end of the foot controller cable into the foot controller jack.

7. **Power supply jack**
   Insert the plug on the power cord into the power supply jack.

8. **Feed dog position switch**
   Use the feed dog position switch to lower the feed dogs.

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

Memo

- Refer to pages 9 through 12 while you are learning to use your machine.
Operation buttons

The operation buttons help you to easily perform various basic sewing machine operations.

1. **“Start/Stop” button**
   - Press the “Start/Stop” button to start or stop sewing. The machine sews at a slow speed at the beginning of sewing while the button is depressed. When sewing is stopped, the needle is lowered in the fabric. For details, refer to “Starting to sew” (page 52).
   - The button lights up in green, red or orange, depending on how the sewing machine is being operated.
     - **Green:** When the machine is ready to start sewing or while it is sewing
     - **Red:** When the machine is not ready to start sewing
     - **Orange:** When the bobbin winder shaft is moved to the right for winding the bobbin
   - **CAUTION**
     - Do not press (“Thread Cutter” button) if there is no fabric under the presser foot or while the machine is sewing, otherwise the needle may break, the threads may become tangled or damage to the machine may occur.

2. **“Reverse/Reinforcement Stitch” button**
   - Press the “Reverse/Reinforcement Stitch” button to sew reverse stitches or reinforcement stitches. Reverse stitches are sewn by keeping the button pressed down to sew in the opposite direction. Reinforcement stitches are sewn by sewing 3 to 5 stitches on top of each other. For details, refer to “Securing the stitching” (page 54).

3. **“Needle Position” button**
   - Press the “Needle Position” button to raise or lower the needle. Pressing the button twice sews one stitch.

4. **“Thread Cutter” button**
   - Press the “Thread Cutter” button after stopping sewing to cut both the upper and the bobbin threads. For details, refer to “Cutting the thread” (page 55).

5. **Sewing speed controller**
   - Slide the sewing speed controller to adjust the sewing speed.

6. **Note**
   - Do not press (“Thread Cutter” button) if there is no fabric under the presser foot or while the machine is sewing, otherwise damage to the machine may occur.
   - When cutting thread thicker than #30, nylon thread or other special threads, use the thread cutter on the side of the machine. For details, refer to “Cutting the thread” (page 55).
Operation panel

The operation panel, located on the front at the right of the sewing machine, consists of the LCD (liquid crystal display) and keys for specifying various sewing settings.

1. **LCD (liquid crystal display)**
   Settings for the selected stitch and error messages for incorrect operations appear in the LCD. Use keys 2 and 3 through 8, described below, to display various items and select the settings. For details, refer to “Understanding the LCD Screens” (page 18).

2. **Settings key**
   Press this key to select sewing settings, such as for left/right mirror imaging, or other settings such as the operation beep.

3. **Needle stop position key**
   Press this key to select where the needle is positioned when the sewing machine is stopped.

4. **Automatic thread cutting key**
   Press this key to select the automatic thread cutting setting. Press this key again to cancel the setting.

5. **Automatic reverse/reinforcement stitch key**
   Press this key to select the automatic reverse/reinforcement stitching setting. Press this key again to cancel the setting.

6. **Needle mode selection key (single/twin)**
   Press this key to select the twin needle sewing setting. Each time this key is pressed, the setting switches between that for single needle sewing and for twin needle sewing.

7. **Stitch width keys**
   Press \( \Rightarrow \) or \( \Rightarrow \) to adjust the stitch width setting.

8. **Stitch length keys**
   Press \( \Rightarrow \) or \( \Rightarrow \) to adjust the stitch length setting.

9. **Stitch mode keys (9-12)**
   - **Preset utility stitch/saved pattern key**
     - Press this key to select the utility stitch assigned to a numeric key or to retrieve a pattern that has been saved.
     - Each time this key is pressed, the machine switches between the preset utility stitch mode and the saved pattern mode.
   - **Utility stitch key**
     - Press this key to select a straight stitch, zigzag stitch, buttonhole, blind hem stitch, or other stitches commonly used in garment sewing. Use the numeric keys to type in the number of the desired stitch.
   - **Decorative stitch key**
     - Press this key to select a decorative stitch, satin stitch, cross-stitch or decorative satin stitch. Each time this key is pressed, the stitch group switches between \( \Rightarrow \) and \( \Rightarrow \).
   - **Character stitch key**
     - Press this key to select a character stitch. Each time this key is pressed, the font switches to one of the three available.
   - **Manual memory key**
     - Press this key to save the adjusted stitch width and length settings.
   - **Reset key**
     - Press this key to reset the selected stitch to its original settings.
   - **Memory key**
     - Press this key to save stitch patterns, such as combined patterns and My Custom Stitch patterns, in the sewing machine's memory.
   - **OK key**
     - Press this key to apply the selection or perform the operation.
   - **Cancel/clear key**
     - Press this key to cancel the operation and return to the previous screen.
     - In addition, pressing this key removes the last pattern added when combining characters or decorative stitches.

10. **Numeric keys**
    Use these keys to quickly select one of the ten most often used stitches. When selecting other stitches, use these keys to type in the number of the desired stitch.
GETTING READY

The various preparations required before starting to sew are described in this chapter.

Turning the Machine On/Off ................................................................. 16
  Power supply precautions .................................................................... 16
  Turning on the machine ....................................................................... 17
  Turning off the machine ....................................................................... 17
Understanding the LCD Screens ................................................................. 18
Changing the Machine Settings ................................................................. 19
  Changing the settings .......................................................................... 19
  Adjusting the brightness of the LCD ..................................................... 21
  Changing the screen language ............................................................. 21
Winding/Installing the Bobbin ................................................................. 22
  Bobbin precautions ............................................................................. 22
  Winding the bobbin ............................................................................. 22
  Installing the bobbin .......................................................................... 26
Upper Threading ...................................................................................... 28
  Threading the upper thread ............................................................... 28
  Threading the needle .......................................................................... 31
  Threading the needle manually (without using the needle threader) .... 33
  Using the twin needle ........................................................................ 33
  Pulling up the bobbin thread .............................................................. 36
Replacing the Needle ............................................................................... 37
  Needle precautions ............................................................................. 37
  Needle types and their uses ............................................................... 38
  Checking the needle .......................................................................... 39
  Replacing the needle ......................................................................... 39
Replacing the Presser Foot ..................................................................... 41
  Presser foot precautions ................................................................. 41
  Replacing the presser foot ............................................................... 41
  Adjusting the pressure of the presser foot ......................................... 43
  Removing the presser foot holder ...................................................... 43
  Using the walking foot ..................................................................... 44
Sewing Cylindrical or Large Pieces ......................................................... 46
  Stitching cylindrical pieces ............................................................... 46
  Sewing large pieces of fabric ............................................................ 46
Turning the Machine On/Off

This section explains how to turn the sewing machine on and off.

Power supply precautions

Be sure to observe the following precautions concerning the power supply.

**WARNING**

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

**CAUTION**

- Use only the power cord included with this machine.
- Do not use extension cords or multi-plug adapters with many other appliances plugged in to them. Fire or electric shock may result.
- Do not touch the plug with wet hands. Electric shock may result.
- When unplugging the machine, always turn off the main power first. Always grasp the plug to remove it from the outlet. Pulling on the cord may damage the cord, or lead to fire or electric shock.
- Do not allow the power cord to be cut, damaged, modified, forcefully bent, pulled, twisted, or bundled. Do not place heavy objects on the cord. Do not subject the cord to heat. These things may damage the cord and cause fire or electric shock. If the cord or plug is damaged, take the machine to your authorized dealer for repairs before continuing use.
- Unplug the power cord if the machine is not to be used for a long period of time. Otherwise a fire may result.
**Turning on the machine**

Prepare the included power cord.

1. **Make sure that the sewing machine is turned off** (the main power switch is set to “〇”), and then plug the power cord into the power supply jack on the right side of the machine.

2. Insert the plug of the power cord into a household electrical outlet.

3. **Press the right side of the main power switch on the right side of the machine (set it to “|”).**

   ▶ The sewing light and the LCD come on when the machine is turned on.

**Memo**

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

---

**Turning off the machine**

When you are finished using the sewing machine, turn it off. In addition, before transporting the sewing machine to another location, be sure to turn it off.

1. **Make sure that the machine is not sewing.**

2. **Press the left side of the main power switch on the right side of the machine (set it to “〇”).**

   ▶ The sewing light and the LCD go off when the machine is turned off.

3. **Unplug the power cord from the electrical outlet.**

   Grasp the plug when unplugging the power cord.

4. **Unplug the power cord from the power supply jack.**

**Note**

- If a power outage occurs while the sewing machine is being operated, turn off the sewing machine and unplug the power cord. When restarting the sewing machine, follow the necessary procedure to correctly operate the machine.

(For U.S.A. only)

- This appliance has a polarized plug (one blade wider than the other). To reduce the risk of electrical shock, this plug is intended to fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install the proper outlet. Do not modify the plug in any way.
Understanding the LCD Screens

The LCD screen, located on the front at the right of the sewing machine, displays the settings for the selected stitch and error messages if operations are performed incorrectly. When the sewing machine is turned on, the LCD comes on and the following screen appears.

1. Presser foot that should be used
2. Stitch mode
3. Selected stitch
4. Stitch length (mm)
5. Stitch width (mm)

Memo

- For details on the error messages that appear when an operation is performed incorrectly, refer to “Error messages” (page 158).
Changing the Machine Settings

Various sewing machine operations and sewing settings can be changed.

**Changing the settings**

The general procedure for changing machine settings is described below.

1. **Turn on the sewing machine.**
   - The LCD comes on.

2. **Press  (Settings key) in the operation panel.**
   - The settings screen appears.

3. **Press  or  (Stitch length keys) until the stitch or machine attribute that you wish to set is displayed.**

4. **Press  or  (Stitch width keys) until the desired setting is selected.**
   - The setting is changed.

5. **Press  (OK key) or  (Cancel/clear key).**
   - The initial stitch screen appears again.
### List of stitch or machine attributes

The stitch or machine attributes that can be set are listed below. For details on each attribute, refer to the corresponding reference page.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Icon</th>
<th>Details</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check pattern</td>
<td>🔄ABC</td>
<td>Allows combined patterns to be checked.</td>
<td>page 121</td>
</tr>
<tr>
<td>Mirror imaging</td>
<td>🔄</td>
<td>Mirror images patterns along a vertical axis.</td>
<td>page 125</td>
</tr>
<tr>
<td>Pattern length</td>
<td>🔄</td>
<td>Adjusts the length of satin stitches.</td>
<td>page 124</td>
</tr>
<tr>
<td>Pattern size</td>
<td>🔄</td>
<td>Sets the size of patterns to be large or small.</td>
<td>page 122</td>
</tr>
<tr>
<td>Repeated/single sewing</td>
<td>🔄</td>
<td>Specifies whether the pattern will be sewn once or repeatedly.</td>
<td>page 121</td>
</tr>
<tr>
<td>Stitching density</td>
<td>🔄</td>
<td>Specifies the sewing density of the stitching.</td>
<td>page 123</td>
</tr>
<tr>
<td>Initial needle position</td>
<td>🔄</td>
<td>Select the straight stitch that is automatically selected when the machine is turned on.</td>
<td>-</td>
</tr>
<tr>
<td>Stitch width control</td>
<td>🔄</td>
<td>Allows the stitch width to be adjusted with the sewing speed controller.</td>
<td>page 105</td>
</tr>
<tr>
<td>Language</td>
<td>🔄ENGLISH</td>
<td>Allows the language used in the screens to be changed.</td>
<td>page 21</td>
</tr>
<tr>
<td>Buzzer</td>
<td>🔄</td>
<td>Specifies whether or not a beep is sounded with each operation.</td>
<td>page 159</td>
</tr>
<tr>
<td>LCD brightness</td>
<td>🔄</td>
<td>Adjusts the brightness of the LCD.</td>
<td>page 21</td>
</tr>
<tr>
<td>Vertical pattern adjustment</td>
<td>🔄</td>
<td>Adjusts the up and down position of the pattern.</td>
<td>page 127</td>
</tr>
</tbody>
</table>

#### Memo
- The icon shown highlighted above is the default setting.
- The default display language is English.
Adjusting the brightness of the LCD

The brightness of the LCD can be adjusted.

1 Press (Settings key) in the operation panel, and then press (Stitch length keys) until is displayed.

The screen for changing the brightness of the LCD appears.

To make the LCD brighter, press (Stitch width key). To make the LCD darker, press (Stitch width key).

The brightness of the LCD is changed.

Press (OK key) or (Cancel/clear key).

The initial stitch screen appears again.

Changing the screen language

The language used in the screens that are displayed can be changed to one of the many available.

1 Press (Settings key) in the operation panel, and then press (Stitch length keys) until the language is displayed.

The screen for changing the language of the screens appears.

Press or (Stitch width keys) until the desired language is selected.

The language can be changed to one of the available: English, French, German, Dutch, Spanish, Italian, Danish, Norwegian, Finnish, Swedish, Portuguese, Russian, Japanese, Korean or others.

The language of the screens is changed.

Press (OK key) or (Cancel/clear key).

The initial stitch screen appears again.
Winding/Installing the Bobbin

This section describes how to wind the thread onto the bobbin, and then insert the bobbin thread.

Bobbin precautions

Be sure to observe the following precautions concerning the bobbin.

**CAUTION**

- Only use the bobbin (part code: SA156, SFB(XA5539-151)) designed specifically for this sewing machine. Use of any other bobbin may result in injuries or damage to the machine.
- The included bobbin was designed specifically for this sewing machine. If bobbins from other models are used, the machine will not operate correctly. Use only the included bobbin or bobbins of the same type (part code: SA156, SFB(XA5539-151)).

![Actual size comparison between this model and other model bobbins](image)

Winding the bobbin

Wind the thread around the bobbin to prepare the bobbin thread.

![Winding the bobbin diagram](image)

① Bobbin winder

**Memo**

- The order that the machine should be threaded for winding the bobbin is indicated by a broken line on the sewing machine. Be sure to thread the machine as indicated.
1. Turn on the sewing machine.

2. Open the top cover.

3. Place the bobbin on the bobbin winder shaft so that the spring on the shaft fits into the notch in the bobbin. Press down on the bobbin until it snaps into place.

4. Slide the bobbin winder in the direction of the arrow until it snaps into place.

5. Remove the spool cap that is inserted onto the spool pin.

6. Place the spool of thread for the bobbin onto the spool pin. Slide the spool onto the pin so that the spool is horizontal and the thread unwinds to the front at the bottom.

7. Slide the spool cap onto the spool pin. Slide the spool cap as far as possible to the right, as shown, with the rounded side on the left.

**CAUTION**

- If the spool or the spool cap is not positioned correctly, the thread may become tangled around the spool pin and the needle may break.
- Three spool cap sizes are available (large, medium and small), allowing you to choose a spool cap that best fits the size of spool being used. If the spool cap is too small for the spool being used, the thread may catch on the slit in the spool or the machine may be damaged.
Memo

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

When using thread that winds off quickly, such as transparent nylon thread or metallic thread, place the spool net over the spool before placing the spool of thread onto the spool pin. If the spool net is too long, fold it to fit the size of the spool. When the spool net is used, the tension of the upper thread will slightly increase. Be sure to check the thread tension. For details, refer to “Adjusting the Thread Tension” (page 57).

8 While holding the thread near the spool with your right hand, as shown, pull the thread with your left hand, and then pass the thread behind the thread guide cover and to the front.

9 Pass the thread under the thread guide plate, and then pull it to the right.

10 Pass the thread under the hook on the thread guide, and then wind it counterclockwise under the pretension disk.

Note
- Make sure that the thread passes under the pretension disk.
11. While holding the thread with your left hand, wind the thread that was pulled out clockwise around the bobbin five or six times with your right hand.

Note
- Make sure that the thread between the spool and the bobbin is pulled tight.
- Be sure to wind the thread clockwise around the bobbin, otherwise the thread will become wrapped around the bobbin winder shaft.

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

13. Slide the sewing speed controller to the right to increase the bobbin winding speed and slide to left to decrease.

14. Press (“Start/Stop” button) once. When the foot controller is plugged in, press down on the foot controller.

15. Use scissors to cut the end of the thread wound around the bobbin.

16. Slide the bobbin winder shaft to the left.

CAUTION
- When the bobbin winding becomes slow, stop the machine, otherwise the sewing machine may be damaged.

Memo
- If the bobbin winder shaft is set to the right side, the needle will not move. (Sewing is impossible.)
17 Remove the bobbin from the shaft.

**Memo**
- When the sewing machine is started or the handwheel is turned after winding the bobbin, the machine will make a clicking sound; this is not a malfunction.

---

### Installing the bobbin

Install the bobbin wound with thread.

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

![Correct and Incorrect Bobbins]

- The bobbin was designed specifically for this sewing machine. If bobbins from other models are used, the machine will not operate correctly. Use only the included bobbin or bobbins of the same type (part code: SA156, SFB(XA5539-151)).

![Actual size comparison]

**Memo**
- The order that the bobbin thread should be passed through the bobbin case is indicated by marks around the bobbin case. Be sure to thread the machine as indicated.

---

1. Press \( \) (“Needle Position” button) once or twice to raise the needle, and then raise the presser foot lever.
2. Turn off the sewing machine.
3. Slide the bobbin cover latch to the right.
4. Remove the bobbin cover.
5. Hold the bobbin with your right hand and hold the end of the thread with your left.
6. Insert the bobbin with your right hand so that the end of the thread is on the left, and then, after pulling the thread firmly around the tab with your left hand as shown, lightly pull the thread to guide it through the slit.

**CAUTION**
- Be sure to install the bobbin so that the thread unwinds in the correct direction, otherwise the thread may break or the thread tension will be incorrect.
Memo

- The order that the bobbin thread should be passed through the bobbin case is indicated by marks around the bobbin case. Be sure to thread the machine as indicated. The marks around the bobbin case differ depending on the model.

While lightly holding down bobbin with your right hand as shown, guide the thread through the slit (1 and 2).
- At this time, check that the bobbin easily rotates counterclockwise.

Then, pull the thread toward you to cut it with the cutter (3).

1 Slit
2 Cutter (Cut the thread with the cutter.)

Note

- Make sure that the thread is correctly inserted through the tension-adjusting spring of the bobbin case. If it is not inserted correctly, reinsert the thread.

Reattach the bobbin cover.
Insert the tab in the lower-left corner of the bobbin cover, and then lightly press down on the right side.

- The lower threading is finished.

Next, thread the upper thread. Continue with the procedure in “Upper Threading” (page 28).

Memo

- You can begin sewing without pulling up the bobbin thread. If you wish to pull up the bobbin thread before starting to sew, pull up the thread according to the procedure in “Pulling up the bobbin thread” (page 36).
Upper Threading

In this section, the procedures for positioning the spool for the upper thread and threading the needle are described.

CAUTION

- When threading the upper thread, carefully follow the instructions. If the upper threading is not correct, the thread may become tangled and the needle may bend or break.

Memo

- The order that the machine should be threaded is indicated by a solid line on the sewing machine. Be sure to thread the machine as indicated.

Threading the upper thread

Set the spool of thread on the spool pin, and then thread the machine.

1. Turn on the sewing machine.

2. Raise the presser foot lever to raise the presser foot.

Note

- If the presser foot is not raised, the sewing machine cannot be threaded.
3 Press (1) (“Needle Position” button) once or twice to raise the needle.

- The needle is correctly raised when the mark on the handwheel is at the top, as shown below. Check the handwheel and, if this mark is not at this position, press (1) (“Needle Position” button) until it is.

4 Open the top cover.

5 Remove the spool cap that is inserted onto the spool pin.

- If the spool or the spool cap is not positioned correctly, the thread may become tangled around the spool pin and the needle may break.

6 Place the spool of thread onto the spool pin. Slide the spool onto the pin so that the spool is horizontal and the thread unwinds to the front at the bottom.

- If the spool or the spool cap is not positioned correctly, the thread may become tangled around the spool pin and the needle may break.

7 Slide the spool cap onto the spool pin. Slide the spool cap as far as possible to the right, as shown, with the rounded side on the left.

- If the spool or the spool cap is not positioned correctly, the thread may become tangled around the spool pin and the needle may break.

- Three spool cap sizes are available (large, medium and small), allowing you to choose a spool cap that best fits the size of spool being used. If the spool cap is too small for the spool being used, the thread may catch on the slit in the spool and the needle may break.
While holding the thread lightly with your right hand, pull the thread with your left hand, and then pass the thread behind the thread guide cover and to the front.

**Note**
- If the presser foot has been lowered and the shutter is closed, the machine cannot be threaded. Be sure to raise the presser foot and open the shutter before threading the machine. In addition, before removing the upper thread, be sure to raise the presser foot and open the shutter.
- This machine is equipped with a window that allows you to check the position of the take-up lever. Look through this window and check that the thread is correctly fed through the take-up lever.

Pass the thread under the thread guide plate, and then pull it up.

While using your right hand to lightly hold the thread passed under the thread guide plate, pass the thread through the thread path in the order shown below.

Pass the thread behind the needle bar thread guide.
The thread can easily be passed behind the needle bar thread guide by holding the thread in your left hand, then feeding the thread with your right hand, as shown.

Next, use the needle threader to thread the needle. Continue with the procedure in “Threading the needle” (page 31).
Threading the needle

This section describes how to thread the needle.

**Memo**
- The needle threader can be used with sewing machine needles 75/11 through 100/16.
- The needle threader cannot be used with the wing needle or the twin needle.
- If the needle threader cannot be used, refer to “Threading the needle manually (without using the needle threader)” (page 33).

1. Pull the end of the thread, which has been passed through the needle bar thread guide, to the left, then pass the thread through the notch of the thread guide ①, and then firmly pull the thread from the front and insert it into the slit of the thread guide disk marked “7” all the way ②. Make sure that the thread passes the notch of the thread guide.

2. Cut the thread with the thread cutter on the left side of the machine.

- **Memo**
  - If the thread is pulled through and cannot be cut correctly, lower the presser foot so that the thread is held in place before cutting the thread. If this operation is performed, skip step 3.
  - When using thread that quickly winds off the spool, such as metallic thread, it may be difficult to thread the needle if the thread is cut. Therefore, instead of using the thread cutter, pull out about 80 mm (approx. 3 inches) of thread after passing it through the thread guide disks (marked “7”).

3. Lower the presser foot lever to lower the presser foot.

- **Memo**
  - If the thread is pulled through and cannot be cut correctly, lower the presser foot so that the thread is held in place before cutting the thread. If this operation is performed, skip step 3.
  - When using thread that quickly winds off the spool, such as metallic thread, it may be difficult to thread the needle if the thread is cut. Therefore, instead of using the thread cutter, pull out about 80 mm (approx. 3 inches) of thread after passing it through the thread guide disks (marked “7”).
4 Lower the needle threader lever on the left side of the machine until it clicks, and then slowly return the lever to its original position.

![Image of needle threader lever]

- Needle threader lever
- The thread is passed through the eye of the needle.

**Note**
- If the needle was not completely threaded, but a loop in the thread was formed in the eye of the needle, carefully pull the loop through the eye of the needle to pull out the end of the thread.

![Image of upper threading finished]

**CAUTION**
- When pulling out the thread, do not pull it with extreme force, otherwise the needle may break or bend.

5 Raise the presser foot lever, pass the end of the thread through the presser foot, and then pull out about 5 cm (2 inches) of thread toward the rear of the machine.

![Image of presser foot lever]

- 5 cm (2 inches)
- The upper threading is finished.

Now that the upper threading and the lower threading are finished, you are ready to begin sewing.

**Note**
- If the needle is not raised, the needle threader cannot thread the needle. Be sure to press (“Needle Position” button) to raise the needle before using the needle threader.
Threading the needle manually (without using the needle threader)

When using specialty thread, such as transparent nylon thread or metallic thread, a wing needle or a twin needle which cannot be used with the needle threader, thread the needle as described below.

1. **Thread the machine to the needle bar thread guide.**
   - For details, refer to “Upper Threading” (page 28).

2. **Lower the presser foot lever.**

3. **Pass the thread through the eye of the needle from front to back.**

4. **Raise the presser foot lever, pass the end of the thread through the presser foot, and then pull out about 5 cm (2 inches) of thread toward the rear of the machine.**

**CAUTION**

- Do not touch the (Start/Stop) button, (Needle Position” button) or (Reverse/Reinforcement Stitch” button). If one of the buttons is accidentally pressed, the machine will begin sewing and your finger may be pricked with the needle or the needle may break.

Using the twin needle

With the twin needle, you can sew two parallel lines of the same stitch with two different threads. Both upper threads should have the same thickness and quality. Be sure to use the twin needle, the extra spool pin and the spool cap.

For details on the stitches that can be sewn with the twin needle, refer to “Stitch Settings” (page 134).

1. **Install the twin needle.**
   - For details on installing a needle, refer to “Replacing the needle” (page 39).

2. **Thread the upper thread for the left needle eye.**
   - For details, refer to steps 1 through 3 of “Threading the upper thread” (page 28).

3. **Manually thread the left needle with the upper thread.**
   - Pass the thread through the eye of the needle from the front.

**CAUTION**

- Only use the twin needle (part code: X59296-151). 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.

- The needle threader cannot be used with the twin needle. If the needle threader is used with the twin needle, the sewing machine may be damaged.
4 Insert the extra spool pin onto the bobbin winder shaft.
   Insert the extra spool pin so that it is perpendicular to the bobbin winder shaft.

5 Swing down the spool pin so that it is horizontal.

6 Place the upper thread spool for the needle on the right side onto the extra spool pin, and then secure it with the spool cap.
   The thread should unroll from the top front of the spool.

7 Thread the upper thread for the right side in the same way that the upper thread for the left side was threaded.

8 Without passing the thread through the needle bar thread guide, manually thread the right needle.
   Pass the thread through the eye of the needle from the front.
   • The needle threader cannot be used with the twin needle. If the needle threader is used with the twin needle, the sewing machine may be damaged.

9 Attach zigzag foot “J”.
   • For details on changing the presser foot, refer to “Replacing the presser foot” (page 41).

CAUTION
• When using the twin needle, be sure to attach zigzag foot “J”, otherwise the needle may break or the machine may be damaged.

10 Turn on the sewing machine.
   • The LCD comes on.
Select a stitch.

- For details on selecting a stitch, refer to “Selecting stitching” (page 72).
- For details on the stitches that can be sewn with the twin needle, refer to “Stitch Settings” (page 134).

![CAUTION]

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

Press  (Needle mode selection key).

![1](image)

- (Needle mode selection key) lights up, and the twin needle can now be used.
- To return to single needle sewing, press  (Needle mode selection key) until the key is no longer lit.
- Even after the sewing machine is turned off, the twin needle setting is not cancelled.

![CAUTION]

- When using the twin needle, be sure to select the twin needle setting, otherwise the needle may break or the machine may be damaged.

Start sewing.

- For details on starting to sew, refer to “Starting to sew” (page 52).
- Two lines of stitching are sewn parallel to each other.

![CAUTION]

- When changing the sewing direction, press  (“Needle Position” button) to raise the needle from the fabric, and then raise the presser foot lever and turn the fabric. Otherwise the needle may break or the machine may be damaged.
- Do not try turning the fabric with the twin needle left down in the fabric, otherwise the needle may break or the machine may be damaged.
Pulling up the bobbin thread

When making gathers or before free-motion quilting, first pull up the bobbin thread as described below.

1 Insert the bobbin into the bobbin case.
   - Refer to steps 1 through 5 of “Installing the bobbin” (page 26).

2 Pass the bobbin thread through the slot.
   Do not cut the thread with the cutter.

3 While lightly holding the upper thread with your left hand with the needle in the up-position, press  (“Needle Position” button) twice to lower and raise the needle.

   ➤ The bobbin thread is looped around the upper thread and can be pulled up.

4 Carefully pull the upper thread upward to pull out the end of the bobbin thread.

5 Pull out about 10 cm (4 inches) of the bobbin thread under the presser foot toward the rear of the machine.

6 Reattach the bobbin cover.
   Insert the tab in the lower-left corner of the bobbin cover, and then lightly press down on the right side.
ReReplacing the Needle

This section provides information on sewing machine needles.

Needle precautions

Be sure to observe the following precautions concerning the handling of the needle. Failure to observe these precautions is extremely dangerous, for example, if the needle breaks and fragments are dispersed. Be sure to read and carefully follow the instructions below.

⚠️ CAUTION

- Only use home sewing machine needles. 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.
## Needle types and their uses

The sewing machine needle that should be used depends on the fabric and thread thickness. Refer to the following table when choosing the thread and needle appropriate for the fabric that you wish to sew.

<table>
<thead>
<tr>
<th>Fabric Type/Application</th>
<th>Thread Type</th>
<th>Size</th>
<th>Size of Needle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medium weight fabrics</strong></td>
<td>Broadcloth</td>
<td>Cotton thread</td>
<td>60–90</td>
</tr>
<tr>
<td></td>
<td>Taffeta</td>
<td>Synthetic thread</td>
<td>60–90</td>
</tr>
<tr>
<td></td>
<td>Flannel, Gabardine</td>
<td>Silk thread</td>
<td>50</td>
</tr>
<tr>
<td><strong>Thin fabrics</strong></td>
<td>Lawn</td>
<td>Cotton thread</td>
<td>60–90</td>
</tr>
<tr>
<td></td>
<td>Georgette</td>
<td>Synthetic thread</td>
<td>60–90</td>
</tr>
<tr>
<td></td>
<td>Challis, Satin</td>
<td>Silk thread</td>
<td>50</td>
</tr>
<tr>
<td><strong>Thick fabrics</strong></td>
<td>Denim</td>
<td>Cotton thread</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Corduroy</td>
<td>Synthetic thread</td>
<td>50–60</td>
</tr>
<tr>
<td></td>
<td>Tweed</td>
<td>Silk thread</td>
<td>50–60</td>
</tr>
<tr>
<td><strong>Stretch fabrics</strong></td>
<td>Jersey</td>
<td>Thread for knits</td>
<td>50–60</td>
</tr>
<tr>
<td></td>
<td>Tricot</td>
<td></td>
<td>50–60</td>
</tr>
<tr>
<td><strong>Easily frayed fabrics</strong></td>
<td>Cotton thread</td>
<td>50–90</td>
<td>65/9–90/14</td>
</tr>
<tr>
<td></td>
<td>Synthetic thread</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Silk thread</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td><strong>For top-stitching</strong></td>
<td>Synthetic thread</td>
<td>30</td>
<td>100/16</td>
</tr>
<tr>
<td></td>
<td>Silk thread</td>
<td>50–60</td>
<td>90/11–90/14</td>
</tr>
</tbody>
</table>

### Note
- Never use a thread of weight 20 or lower. It may cause malfunctions.

### Memo
- The smaller the thread number, the thicker the thread, and the larger the needle number, the thicker the needle.
- Use the ball point needle when sewing on stretch fabrics or fabrics where skipped stitches easily occur.
- Use a 90/14 to 100/16 needle with transparent nylon threads, regardless of the fabric being sewn.

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

Sewing with a bent needle is extremely dangerous since the needle may break while the machine is being operated. Before using the needle, place the flat side of the needle on a flat surface and check that the distance between the needle and the flat surface is even.

- **Correct needle**
  - Flat side
  - Needle type marking

- **Incorrect needle**
  If the distance between the needle and the flat surface is not even, the needle is bent. Do not use a bent needle.

Replacing the needle

Replace the needle as described below. Use the screwdriver and a needle that has been determined to be straight according to the instructions in “Checking the needle”.

1. Press (“Needle Position” button) once or twice to raise the needle.

2. Turn off the sewing machine.

**CAUTION**

- Before replacing the needle, be sure to turn off the sewing machine, otherwise injuries may occur if (“Start/Stop” button) is accidentally pressed and the machine starts sewing.

3. Place fabric or paper under the presser foot to cover the hole in the needle plate.

**Note**

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

5 Hold the needle with your left hand, and then use a screwdriver to turn the needle clamp screw toward you (counterclockwise) to remove the needle.

6 With the flat side of the needle toward the rear of the machine, insert the needle until it touches the needle stopper.

7 While holding the needle with your left hand, use the screwdriver to tighten the needle clamp screw.

---

**CAUTION**

- Be sure to insert the needle until it touches the needle stopper and securely tighten the needle clamp screw with the screwdriver, otherwise the needle may break or damage may result.
Replacing the Presser Foot

The presser foot presses down on the fabric.

Presser foot precautions

Be sure to observe the following precautions concerning the presser feet.

**CAUTION**

- Use the presser foot appropriate for the type of stitch that you wish to sew, otherwise the needle may hit the presser foot, causing the needle to bend or break.
- Only use presser feet designed specifically for this sewing machine. Use of any other presser foot may result in injuries or damage to the machine.

Replacing the presser foot

Replace the presser foot as described below. For details on using the side cutter “S”, refer to “Sewing overcasting stitches using the optional side cutter” (page 78).

1. Press  (“Needle Position” button) once or twice to raise the needle.

   ![Needle Position button](image)

   ① “Needle Position” button
   ▶ The needle is raised.

2. Turn off the sewing machine.

3. Raise the presser foot lever.

   ![Presser foot lever](image)

   ① Presser foot lever
   ▶ The presser foot is raised.
4. Press the black button at the back of the presser foot holder.

![Presser Foot Holder Diagram]

- Black button
- Presser foot holder

The presser foot holder releases the presser foot.

5. Place a different presser foot below the holder so that the presser foot pin is aligned with the notch in the holder.

Position the presser foot so the letter indicating the presser foot type (A, G, I, J, M, N or R) is positioned to be read.

![Presser Foot Diagram]

- Presser foot holder
- Notch
- Pin
- Presser foot type

6. Slowly lower the presser foot lever so that the presser foot pin snaps into the notch in the presser foot holder.

![Presser Foot Lever Diagram]

- Presser foot lever
- Presser foot holder
- Notch
- Pin

The presser foot is attached.

7. Raise the presser foot lever to check that the presser foot is securely attached.

![Presser Foot Attached Diagram]

Note

- When a stitch is selected, the icon for the presser foot that should be used appears in the screen. Check that the correct presser foot is attached before starting to sew. If the wrong presser foot is installed, turn off the sewing machine, attach the correct presser foot, and then select the desired stitch again.

- For details on the presser foot that should be used with the selected stitch, refer to “Stitch Settings” (page 134).
Adjusting the pressure of the presser foot

The presser foot pressure (the amount of pressure applied to the fabric by the presser foot) can be adjusted.

1. Lower the presser foot lever.

2. Turn the presser foot pressure dial at the back of the machine to adjust the pressure of the presser foot.
   The scale on the dial indicates the range from 1 (weak) to 4 (strong). Turn the dial to the right (smaller number) to decrease the pressure. Turn the dial to the left (larger number) to increase the pressure.

3. When you are finished sewing, reset the dial to 3 (standard).

Removing the presser foot holder

Remove the presser foot holder when cleaning the sewing machine or when installing a presser foot that does not use the presser foot holder, such as the quilting foot. Use the screwdriver to remove the presser foot holder.

1. Remove the presser foot.
   For details, refer to “Replacing the presser foot” (page 41).

2. Use the screwdriver to loosen the presser foot holder screw.

   - Screwdriver
   - Presser foot holder
   - Presser foot holder screw

Attaching the presser foot holder

1. Align the presser foot holder with the lower-left side of the presser bar.

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

   - Screwdriver

Note

- If the presser foot holder is not correctly installed, the thread tension will be incorrect.
Using the walking foot

With the walking foot, both pieces of fabric are fed evenly by the feed dogs and the teeth on the presser foot. This is useful when sewing fabrics that are hard to feed such as vinyl and leather and when sewing fabrics that easily slip such as velvets or when quilting.

Use the screwdriver to attach the walking foot.

**CAUTION**

- Be sure to securely tighten the screw with the screwdriver, otherwise the needle may touch the presser foot, causing it to bend or break.
- Before starting to sew, slowly turn the handwheel toward you (counterclockwise) and check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may bend or break.

**Note**

- Thread the needle manually when using the walking foot, or only attach the walking foot after threading the needle using the needle threader.

**Attaching the walking foot**

- **Remove the presser foot holder.**
  - For details, refer to “Removing the presser foot holder” (page 43).

- **Hook the connecting fork of the walking foot onto the needle clamp screw.**

- **Lower the presser foot lever, insert the presser foot holder screw, and then tighten the screw with the screwdriver.**

**Removing the walking foot**

1. Press ("Needle Position" button) once or twice to raise the needle.

2. Turn off the sewing machine.

3. Raise the presser foot lever.

**CAUTION**

- When sewing with the walking foot, sew at a speed between slow and medium.
With a screwdriver, loosen the presser foot holder screw, and then remove the walking foot.

Attach the presser foot holder.

- For details, refer to “Removing the presser foot holder” (page 43).

**Memo**

- Only the straight stitch (with reinforcement stitching) and the zigzag stitch can be used with the walking foot. For details on the stitches, refer to “Stitch Settings” (page 134).
Sewing Cylindrical or Large Pieces

When sewing cylindrical or large pieces of fabric, remove the flat bed attachment.

**Stitching cylindrical pieces**

Removing the flat bed attachment makes it easier to sew cylindrical pieces such as cuffs and pant legs.

1. Pull the flat bed attachment off to the left.

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

2. Slide the part that you wish to sew onto the arm, and then sew from the top.

3. When you are finished with free-arm sewing, install the flat bed attachment back in its original position.

**Sewing large pieces of fabric**

The optional wide table makes sewing large pieces of fabric easier.

1. Open up the legs at the bottom of the wide table.
   Pull out the four legs until they snap into place.

2. Pull the flat bed attachment off to the left.

   ➤ With the flat bed attachment removed, free-arm sewing is possible.
3 Install the wide table. Keeping the wide table level, fully slide it into place. The lower right corner section of the wide table extends over the front section of the sewing machine bed.

4 Turn the screw at the bottom of each leg to adjust their height so the wide table will be level with the sewing machine bed.

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

Note
- The optional wide table is available through your brother dealer.

Memo
- With the legs folded up, the wide table can be stored attached to the hard case.

CAUTION
- Do not move the sewing machine while the wide table is attached, otherwise damage or injuries may occur.

5 When you are finished using the wide table, remove it. While slightly lifting up the wide table, pull it off to the left.
**SEWING BASICS**

The necessary preparations for sewing are described in this chapter.

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewing ..................................................................</td>
<td>50</td>
</tr>
<tr>
<td>General sewing procedure</td>
<td>50</td>
</tr>
<tr>
<td>Positioning the fabric</td>
<td>51</td>
</tr>
<tr>
<td>Starting to sew</td>
<td>52</td>
</tr>
<tr>
<td>Securing the stitching</td>
<td>54</td>
</tr>
<tr>
<td>Cutting the thread</td>
<td>55</td>
</tr>
<tr>
<td>Adjusting the Thread Tension</td>
<td>57</td>
</tr>
<tr>
<td>Changing the tension of the upper thread</td>
<td>57</td>
</tr>
<tr>
<td>Adjusting the Stitch Width and Length</td>
<td>58</td>
</tr>
<tr>
<td>Adjusting the stitch width</td>
<td>58</td>
</tr>
<tr>
<td>Adjusting the stitch length</td>
<td>59</td>
</tr>
<tr>
<td>Useful Functions</td>
<td>60</td>
</tr>
<tr>
<td>Changing the needle stop position</td>
<td>60</td>
</tr>
<tr>
<td>Automatically sewing reverse/reinforcement stitches</td>
<td>60</td>
</tr>
<tr>
<td>Automatically cutting the thread</td>
<td>62</td>
</tr>
<tr>
<td>Saving stitch settings</td>
<td>63</td>
</tr>
<tr>
<td>Hands-free raising and lowering of the presser foot</td>
<td>64</td>
</tr>
<tr>
<td>Useful Sewing Tips</td>
<td>65</td>
</tr>
<tr>
<td>Trial sewing</td>
<td>65</td>
</tr>
<tr>
<td>Changing the sewing direction</td>
<td>65</td>
</tr>
<tr>
<td>Sewing curves</td>
<td>65</td>
</tr>
<tr>
<td>Sewing thick fabrics</td>
<td>66</td>
</tr>
<tr>
<td>Sewing thin fabrics</td>
<td>66</td>
</tr>
<tr>
<td>Sewing stretch fabrics</td>
<td>66</td>
</tr>
<tr>
<td>Sewing leathers or vinyl fabrics</td>
<td>67</td>
</tr>
<tr>
<td>Sewing an even seam allowance</td>
<td>67</td>
</tr>
<tr>
<td>Sewing hook-and-loop fastener</td>
<td>68</td>
</tr>
</tbody>
</table>
Sewing

Basic sewing operations are described below.
Before operating the sewing machine, read the following precautions.

**CAUTION**

- While the machine is in operation, pay special attention to the needle location. In addition, keep your hands away from all moving parts such as the needle and handwheel, otherwise injuries may occur.
- Do not pull or push the fabric too hard while sewing, otherwise injuries may occur or the needle may break.
- Never use bent needles. Bent needles can easily break, possibly resulting in injuries.
- Make sure that the needle does not strike basting pins, otherwise the needle may break or bend.

**General sewing procedure**

Follow the basic procedures below to sew.

<table>
<thead>
<tr>
<th>1</th>
<th>Turn on the machine.</th>
<th>Turn on the sewing machine. For details on turning on the machine, refer to “Turning on the machine” (page 17).</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Select the stitch.</td>
<td>Select the stitch appropriate for the area to be sewn. For details on selecting a stitch, refer to “Selecting stitching” (page 72).</td>
</tr>
<tr>
<td>3</td>
<td>Attach the presser foot.</td>
<td>Attach the presser foot appropriate for the stitch. For details on replacing the presser foot, refer to “Replacing the presser foot” (page 41).</td>
</tr>
<tr>
<td>4</td>
<td>Position the fabric.</td>
<td>Place the area to be sewn under the presser foot. Be sure that the fabric pieces are sewn in the correct order and that the right and wrong sides of the fabric are aligned correctly. For details on positioning the fabric, refer to “Positioning the fabric” (page 51).</td>
</tr>
<tr>
<td>5</td>
<td>Start sewing.</td>
<td>Start sewing. For details on starting to sew, refer to “Starting to sew” (page 52).</td>
</tr>
<tr>
<td>6</td>
<td>Cut the thread.</td>
<td>Cut the thread at the end of sewing. The thread may also be cut automatically. For details on cutting the thread, refer to “Cutting the thread” (page 55).</td>
</tr>
</tbody>
</table>
Positioning the fabric

Be sure that the fabric pieces are sewn in the correct order and that the right and wrong sides of the fabric are aligned correctly.

1. Turn on the sewing machine.

   The straight stitch (left needle position) is automatically selected.

2. Press (“Needle Position” button) once or twice to raise the needle.

3. Place the fabric under the presser foot.
   - If the seam allowance is positioned on the right side, sewing in a straight line is easier and the extra fabric does not get in the way.

4. While holding the end of the thread and the fabric with your left hand, turn the handwheel toward you (counterclockwise) with your right hand to lower the needle to the starting point of the stitching.

5. Lower the presser foot lever.

   ▶ The fabric is now positioned to be sewn.

Memo

- To adjust the pressure that the presser foot applies to the fabric, refer to “Adjusting the pressure of the presser foot” (page 43).
Starting to sew

Once you are ready to start sewing, you can start the sewing machine. The sewing speed can be adjusted using either the sewing speed controller or the foot controller.

**Note**

**Important:**
- When the foot controller is plugged in, (“Start/Stop” button) cannot be used to start sewing.

### Using the operation buttons

Sewing can be started and stopped using the operation button ("Start/Stop" button).

1. Slide the sewing speed controller to the left or right to select the desired sewing speed.
   - Slide the sewing speed controller to the left to sew at a slower speed, or slide the speed controller to the right to sew at a faster speed.

2. Press ("Start/Stop" button) once.
   - The machine starts sewing.

3. If you continue to hold ("Start/Stop" button) pressed immediately after the sewing starts, the machine will sew at a slow speed.

4. When the end of the stitching is reached, press ("Start/Stop" button) once.
   - The machine stops sewing with the needle down (in the fabric).

5. When you are finished sewing, raise the needle, and then cut the threads.
   - For details, refer to “Cutting the thread” (page 55).

### Using the foot controller

Sewing can be started and stopped using the foot controller.

1. Turn off the sewing machine.
   - When connecting the foot controller, be sure to turn off the sewing machine in order to prevent the machine from accidentally being started.
Insert the foot controller plug into its jack on the side of the sewing machine.

1. Foot controller jack

**Note**

(For U.S.A. only)

- Foot controller: Model N5V
  This foot controller can be used on this machine model NX-450/NX570Q.

Turn on the sewing machine.

Slide the sewing speed controller to the left or right to select the desired sewing speed.

Slide the sewing speed controller to the left to sew at a slower speed, or slide the speed controller to the right to sew at a faster speed.

1. Sewing speed controller

- The speed set using the sewing speed controller will be the foot controller’s maximum sewing speed.

Once you are ready to start sewing, slowly press down on the foot controller.

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

Slowly press down on the foot controller. Pressing it down hard starts sewing too quickly.

The machine starts sewing.

When the end of the stitching is reached, completely release the foot controller.

The machine stops sewing with the needle lowered (in the fabric).

When you are finished sewing, raise the needle, and then cut the threads.

- For details, refer to “Cutting the thread” (page 55).

**Memo**

- When the foot controller is plugged in, (“Start/Stop” button) cannot be used to start sewing.
- When sewing is stopped, the needle remains lowered (in the fabric). The machine can be set so that the needle will stay up when sewing is stopped. For details on setting the machine so that the needle stays up when sewing is stopped, refer to “Changing the needle stop position” (page 60).

**CAUTION**

- Do not allow thread or dust to accumulate in the foot controller, otherwise a fire or an electric shock may occur.
- Do not place objects on the foot controller, otherwise damage to the machine or injuries may occur.
- If the machine is not to be used for a long period of time, unplug the foot controller, otherwise a fire or an electric shock may occur.
Securing the stitching

When sewing with the straight stitch, for example, at the end of an opening or where seams do not overlap, use reverse stitching or reinforcement stitching to secure the end of the thread.

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

2. Press 1 ("Start/Stop" button) or press down on the foot controller.
   At this time, if 1 ("Start/Stop" button) is held down, the machine sews at a low speed.

3. After sewing 3 to 5 stitches, press 1 ("Reverse/Reinforcement Stitch" button).
   Keep 1 ("Reverse/Reinforcement Stitch" button) held down until you reach the beginning of the stitching.

4. After sewing back to the beginning of the stitching, release 1 ("Reverse/Reinforcement Stitch" button).
   The machine stops sewing.

5. Press 1 ("Start/Stop" button), or press down on the foot controller.
   The machine starts sewing in the normal sewing direction.

6. When the end of the stitching is reached, press 1 ("Reverse/Reinforcement Stitch" button).
   Keep 1 ("Reverse/Reinforcement Stitch" button) held down until 3 to 5 reverse stitches are sewn.

   While 1 ("Reverse/Reinforcement Stitch" button) is held down, reverse stitches are sewn.
After 3 to 5 reverse stitches have been sewn, release (“Reverse/Reinforcement Stitch” button).

- The machine stops sewing.

Press (“Start/Stop” button), or press down on the foot controller.

At this time, if (“Start/Stop” button) is held down, the machine sews at a slow speed.

- The machine starts sewing in the normal sewing direction.

After sewing to the end of the stitching, the sewing machine stops.

Press (“Start/Stop” button) or release foot controller.

---

**Sewing reinforcement stitches**

When sewing stitches other than straight or zigzag stitches that are secured with reverse stitching, pressing (“Reverse/Reinforcement Stitch” button) sews reinforcement stitches, 3 to 5 stitches on top of each other.

- Reverse stitching
- Reinforcement stitching

---

**Memo**

- Whether reverse stitches or reinforcement stitches are sewn depends on the stitch that is selected. For details, refer to “Stitch Settings” (page 134).

---

**Cutting the thread**

When you have finished sewing, cut the threads. The threads can be cut in either of two ways.

- **Using (“Thread Cutter” button)**

  **When you wish to finish the stitching, press (“Thread Cutter” button) once.**

  1. “Thread Cutter” button
  - The threads are cut and the needle is raised.

  **Raise the presser foot lever.**

  1. Presser foot lever

  **CAUTION**

  - Do not press (“Thread Cutter” button) after the threads have already been cut, otherwise the needle may break, the threads may become tangled or damage to the machine may occur.

**Note**

- Do not press (“Thread Cutter” button) if there is no fabric under the presser foot or while the machine is sewing, otherwise damage to the machine may occur.

**Memo**

- The machine can be set so that the threads will be cut when sewing is finished. For details on setting the machine so that the threads are cut automatically, refer to “Automatically cutting the thread” (page 62).
- Using the manual thread cutter
  When sewing with nylon or metallic threads, or other special threads, use the thread cutter on the side of the machine to cut the threads.

1 When you wish to finish the stitching and the sewing machine is stopped, press (“Needle Position” button) once to raise the needle.

2 Raise the presser foot lever.

3 Pull the fabric to the left side of the machine, and then pass the threads through the thread cutter to cut them.
Adjusting the Thread Tension

The tensions of the upper thread and of the bobbin thread (thread tension) should be adjusted so that they are equal.

Changing the tension of the upper thread

You may need to change the thread tension, depending on the fabric and thread being used.

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

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

  **Note**
  - If the bobbin thread was incorrectly threaded, the upper thread may be too tight. In this case, refer to “Installing the bobbin” (page 26) and rethread the bobbin thread.

  ![Diagram of wrong side of fabric, right side of fabric, upper thread, and bobbin thread]

  1. Wrong side of fabric
  2. Right side of fabric
  3. Upper thread
  4. Bobbin thread

  ![Diagram of bobbin thread visible from the right side of the fabric]

  1. Wrong side of fabric
  2. Right side of fabric
  3. Upper thread
  4. Bobbin thread
  5. The bobbin thread is visible from the right side of the fabric.

  Turn the thread tension dial to the left to loosen the upper thread.

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

  **Note**
  - If the upper thread was incorrectly threaded, the upper thread may be too loose. In this case, refer to “Upper Threading” (page 28) and rethread the upper thread.

  ![Diagram of wrong side of fabric, right side of fabric, upper thread, and bobbin thread]

  1. Wrong side of fabric
  2. Right side of fabric
  3. Upper thread
  4. Bobbin thread
  5. The upper thread is visible from the wrong side of the fabric.

  Turn the thread tension dial to the right to tighten the upper thread.

  **Note**
  - If the upper thread is not threaded correctly or the bobbin is not installed correctly, it may not be possible to set the correct thread tension. If the correct thread tension cannot be achieved, rethread the upper thread and insert the bobbin correctly.
Adjusting the Stitch Width and Length

The zigzag width (pattern width) and stitch length of utility stitches can be adjusted. Normally, when a stitch is selected, the appropriate width and length are automatically selected. For details on the range of values within which the width and length can be set, refer to “Stitch Settings” (page 134).

Adjusting the stitch width

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

1 Turn on the sewing machine.
   - The LCD comes on.

2 Select a stitch.
   - A screen containing settings for the selected stitch appears.
   - For details on selecting a stitch, refer to “Selecting stitching” (page 72).
   - Immediately after the stitch is selected, the standard settings (highlighted) appear.

3 To make the stitch width narrower, press (Stitch width key). To make the stitch width wider, press (Stitch width key).
   - The stitch width is changed.

   - If the setting is changed, the highlighted value is erased.

Memo

- To reset the stitch width to its standard setting, select the same stitch again or change the setting to the highlighted value.
- Press (Reset key) to return the stitch width, stitch length to their default settings.
- If the straight stitch (left needle position or triple stretch stitch) was selected, changing the stitch width changes the needle position. Increasing the width moves the needle to the right; reducing the width moves the needle to the left.
- The settings can be saved so that they will always be specified each time the utility stitch is selected. For details, refer to “Saving stitch settings” (page 63).
- The sewing machine can be set so that the stitch width can easily be changed with the sewing speed controller. For details, refer to “Satin stitching using the sewing speed controller” (page 105).
- indicates that the setting cannot be adjusted.

CAUTION

- After adjusting the stitch width, slowly turn the handwheel toward you and check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may bend or break.
Adjusting the stitch length

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

1. Turn on the sewing machine.

   ▶ The LCD comes on.

2. Select a stitch.

   ▶ A screen containing settings for the selected stitch appears.

   • For details on selecting a stitch, refer to “Selecting stitching” (page 72).
   • Immediately after the stitch is selected, the standard settings (highlighted) appear.

3. To make the stitch length shorter, press ↑ (Stitch length key). To make the stitch length longer, press ↓ (Stitch length key).

   ▶ The stitch length is changed.

   • If the setting is changed, the highlighted value is erased.

Memo

• To reset the stitch length to its standard setting, select the same stitch again or change the setting to the highlighted value.
• Press ← (Reset key) to return the stitch width, stitch length to their default settings.
• The settings can be saved so that they will always be specified each time the utility stitch is selected. For details, refer to “Saving stitch settings” (page 63).
• indicates that the setting cannot be adjusted.

CAUTION

• If the stitches are bunched together, increase the stitch length. Continuing to sew with the stitches bunched together may result in the needle bending or breaking.
Useful Functions

Functions useful in improving sewing efficiency are described below.

Changing the needle stop position

When the sewing machine is purchased, it is set to leave the needle lowered in the fabric when sewing is stopped. However, the machine can be set to instead leave the needle raised when sewing is stopped.

1 Turn on the sewing machine.

The LCD comes on.

2 Press ⚠ (Needle stop position key).

⚠ (Needle stop position key) lights up, and the machine is now set to stop with the needle in the raised position.

- To return the machine to the setting where the needle is stopped in the lowered position, press ⚠ (Needle stop position key) until the key is no longer lit.
- Even after the sewing machine is turned off, the needle stop position setting is not cancelled.

Automatically sewing reverse/reinforcement stitches

The sewing machine can be set to automatically sew reverse or reinforcement stitches at the beginning and end of the stitching. Whether reverse stitches or reinforcement stitches are sewn depends on the stitch that is selected. For details, refer to “Stitch Settings” (page 134).

1 Turn on the sewing machine.

The LCD comes on.

2 Select a stitch.

- For details on selecting a stitch, refer to “Selecting stitching” (page 72).
Press (Automatic reverse/reinforcement stitch key).

This step is not necessary if a stitch such as those for sewing buttonholes and bar tacks is selected where reinforcement stitches are automatically sewn.

► (Automatic reverse/reinforcement stitch key) lights up, and the sewing machine is set for automatic reverse/reinforcement stitching.

- To turn automatic reverse/reinforcement stitching off, press (Automatic reverse/reinforcement stitch key) until the key is no longer lit.
- When the sewing machine is turned off, the automatic reverse/reinforcement stitching setting is cancelled.

Position the fabric under the presser foot, and then press (“Start/Stop” button) once.

“Start/Stop” button

► After reverse/reinforcement stitches are sewn, the machine starts sewing.

After reaching the end of the stitching, press (“Reverse/Reinforcement Stitch” button) once.

This step is not necessary if a stitch such as those for sewing buttonholes and bar tacks is selected where reinforcement stitches are automatically sewn.

“Reverse/Reinforcement Stitch” button

► After reverse/reinforcement stitches are sewn, the sewing machine stops.

Memo

- Reverse/reinforcement stitches WILL NOT be sewn until (“Reverse/Reinforcement Stitch” button) is pressed. (“Start/Stop” button) may be pressed to stop stitching when needed such as for pivoting corners.
Automatically cutting the thread

The sewing machine can be set to automatically cut the threads at the end of the stitching. This is called “programmed thread-cutting”. If programmed thread-cutting is set, automatic reverse/reinforcement stitching is also set. This setting is convenient if a stitch for sewing buttonholes or bar tacks is selected.

1 Turn on the sewing machine.

- The LCD comes on.

2 Select a stitch.

- For details on selecting a stitch, refer to “Selecting stitching” (page 72).

3 Press (Automatic thread cutting key).

- (Automatic thread cutting key) and (Automatic reverse/reinforcement stitch key) light up, and the sewing machine is set for programmed thread-cutting and automatic reverse/reinforcement stitching.

- To turn off programmed thread-cutting, press (Automatic thread cutting key) until the key is no longer lit.

- When the sewing machine is turned off, the programmed thread-cutting setting is cancelled.

4 Position the fabric under the presser foot, and then press ("Start/Stop" button) once.

5 After reaching the end of the stitching, press ("Reverse/Reinforcement Stitch" button) once.

- This step is not necessary if a stitch such as those for sewing buttonholes and bar tacks is selected where reinforcement stitches are automatically sewn.

Memo

- Reverse/reinforcement stitches WILL NOT be sewn and the thread will not automatically be cut until ("Reverse/Reinforcement Stitch" button) is pressed. ("Start/Stop" button) may be pressed to stop stitching when needed such as for pivoting corners.

The thread is cut here.
Saving stitch settings

Adjusted stitch width and length settings can be saved so that they will be specified each time the stitch is selected. The various settings can be saved for each utility stitch.

1 Select the stitch, and then adjust the stitch width and length.

To adjust the stitch width, press ☐ or ☐ (Stitch width keys). To adjust the stitch length, press ▲ or ▼ (Stitch length keys).

2 Press ☐ (Manual memory key).

- “Saving...” appears while the settings for the stitch width and stitch length are being saved.
- After the settings for the stitch width and stitch length are saved, the initial stitch screen appears again.
- The next time that the stitch is selected, the saved settings are the first ones that are displayed.
- To clear the saved settings and return the stitch width and length to their default settings, press ☐ (Reset key). To use the default settings the next time that the stitch is selected, press ☐ (Manual memory key) to save the settings.

For details on selecting a stitch, refer to “Selecting stitching” (page 72). The stitch width and length are changed.
Hands-free raising and lowering of the presser foot

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

Installing the knee lifter

1. **Turn off the sewing machine.**

2. **Insert the knee lifter into its jack on the front of the sewing machine in the lower-right corner.**
   Align the tabs on the knee lifter with the notches in the jack, and then insert the knee lifter as far as possible.

   ![Diagram showing how to install the knee lifter](image)

   - Tabs
   - Notches

   **Note**
   - If the knee lifter is not fully inserted into its jack, it may fall out while the sewing machine is operating.

Using the knee lifter

1. **Stop the sewing machine.**
   - Do not use the knee lifter while the sewing machine is operating.

2. **With your knee, press the knee lifter to the right.**
   Keep the knee lifter pressed to the right.

   ![Diagram showing how to use the knee lifter](image)

   - The presser foot is raised.

3. **Release the knee lifter.**
   - The presser foot is lowered.

   **CAUTION**
   - While sewing, keep your knee away from the knee lifter. If the knee lifter is pressed while the sewing machine is operating, the needle may break or the machine may be damaged.
Useful Sewing Tips

Various ways to achieve better results for your sewing projects are described below. Refer to these tips when sewing your project.

**Trial sewing**

After you have set up the machine with the thread and needle appropriate for the type of fabric being sewn, the machine automatically sets the thread tension and stitch length and width for the stitch that is selected. However, a trial piece of fabric should be sewn since, depending on the type of fabric and stitching being sewn, the desired results may not be achieved.

For the trial sewing, use a piece of fabric and thread that are the same as those used for your project, and check the thread tension and stitch length and width. Since the results differ depending on the type of stitching and the number of layers of fabric sewn, perform the trial sewing under the same conditions that will be used with your project.

**Changing the sewing direction**

1. **When the stitching reaches a corner, stop the sewing machine.**
   Leave the needle lowered (in the fabric). If the needle remained up when the machine stopped sewing, press (“Needle Position” button) to lower the needle.

2. **Raise the presser foot lever, and then turn the fabric.**
   Turn the fabric using the needle as a pivot.

3. **Lower the presser foot lever and continue sewing.**

**Sewing curves**

Stop sewing, and then slightly change the sewing direction to sew around the curve. For details on sewing with an even seam allowance, refer to “Sewing an even seam allowance” (page 67).

When sewing along a curve while using a zigzag stitch, select a shorter stitch length in order to obtain a finer stitch.
Sewing thick fabrics

- If the fabric does not fit under the presser foot
  If the fabric does not fit easily under the presser foot, raise the presser foot lever even higher to bring the presser foot to its highest position.

- If thick seams are being sewn and the fabric does not feed at the beginning of stitching
  The fabric may not feed when thick seams are being sewn and the presser foot is not level, as shown below. In this case, use the presser foot locking pin (black button on the left side of zigzag foot “J”) so that the presser foot remains level while sewing, allowing the fabric to be fed smoothly.

  ![Sewing direction](image)

  1. Sewing direction

  1. Raise the presser foot lever.

  2. Align the beginning of stitching, and then position the fabric.

  3. While holding zigzag foot “J” level, hold the presser foot locking pin (black button on the left side) pressed in, and lower the presser foot lever.

  ![Presser foot locking pin (black button)](image)

  1. Presser foot locking pin (black button)

  4. Release the presser foot locking pin (black button).

  - The presser foot remains level, allowing the fabric to be fed.

  ![Presser foot remains level](image)

  - After the seam is sewn, the presser foot will return to its original angle.

  ![Presser foot returns to original angle](image)

CAUTION

- If fabric more than 6 mm (15/64 inch) thick is sewn or if the fabric is pushed with too much force, the needle may bend or break.

Sewing thin fabrics

When sewing thin fabrics, the stitching may become misaligned or the fabric may not feed correctly. If this occurs, place thin paper or stabilizer material under the fabric and sew it together with the fabric. When you have finished sewing, tear off any excess paper.

![Stabilizer material or paper](image)

  1. Stabilizer material or paper

Sewing stretch fabrics

First, baste the pieces of fabric together, and then sew without stretching the fabric.

![Basting](image)

  1. Basting
Sewing leathers or vinyl fabrics

When sewing the fabrics that may stick to the presser foot such as leathers or coated fabrics, change the presser foot to the non stick foot.

Sewing an even seam allowance

To sew an even seam, start sewing so that the seam allowance is to the right of the presser foot, and the edge of the fabric is aligned with either the right edge of the presser foot or a marking on the needle plate.

- Aligning the fabric with the presser foot
  Sew while keeping the right edge of the presser foot a fixed distance from the edge of the fabric.

- Aligning the fabric with the stitch guide foot
  Sew while keeping the right edge of the fabric aligned with a desired position of markings on the stitch guide foot.

Aligning the fabric with a needle plate marking

The markings on the needle plate show the distance from the needle position of a seam sewn with the straight stitch (left needle position). Sew while keeping the edge of the fabric aligned with a marking in the needle plate. The distance between the markings in the upper scale is 1/8 inch (3 mm) and the distance between the markings in the grid is 5 mm (3/16 inch).
Sewing hook-and-loop fastener

**CAUTION**

- Use only the ungummed hook-and-loop fastener which is for sewing. If the glue is attached to the needle or the bobbin hook race, it may cause malfunction.
- If the hook-and-loop fastener is sewn with the thin needle (65/9-75/11), the needle may bend or break.

**Note**

- Before start sewing, baste together the fabric and the hook-and-loop fastener.

Make sure that the needle passes through the hook-and-loop fastener by turning the handwheel and lower the needle into the hook-and-loop fastener before sewing. And then, sew the edge of the hook-and-loop fastener at a slow speed. If the needle does not pass through the hook-and-loop fastener, replace the needle with the needle for thick fabrics (page 38).

① Edge of the hook-and-loop fastener
Selecting Stitching...............................70
Selecting stitch types and patterns......70
Selecting stitching .............................72
Overcasting Stitches............................76
  Sewing overcasting stitches
      using overcasting foot “G” ........76
  Sewing overcasting stitches
      using zigzag foot “J” ..............77
  Sewing overcasting stitches
      using the optional side cutter .....78
Basic Stitching.....................................80
  Basting ...........................................80
  Basic stitching ...............................81
Blind Hem Stitching ............................82
Buttonhole Stitching/Button Sewing....84
  Buttonhole sewing ..........................85
  Button sewing ................................89
Zipper Insertion.................................91
  Inserting a centered zipper ..........91
  Inserting a side zipper .................93
Zipper/piping Insertion ...................96
  Inserting a centered zipper ..........96
  Inserting a piping ..........................97
Sewing Stretch Fabrics
  and Elastic Tape............................98
  Stretch stitching ............................98
  Elastic attaching ...........................98
Appliqué, Patchwork
  and Quilt Stitching........................100
  Appliqué stitching ........................101
  Patchwork (crazy quilt) stitching.....102
  Piecing .......................................102
  Quilting .....................................103
  Free-motion quilting .....................104
  Satin stitching using the sewing
      speed controller ........................105
Reinforcement Stitching ....................107
  Triple stretch stitching .................107
  Bar tack stitching ..........................107
  Darning ......................................109
Eyelet Stitching.................................111
Decorative Stitching........................112
  Fagoting .....................................113
  Scallop stitching ...........................114
  Smocking .....................................114
  Shell tuck stitching ......................115
Joining ..........................................116
  Heirloom stitching ........................116
Sewing the Various Built-In
  Decorative Patterns .......................119
  Sewing beautiful patterns ..............119
  Sewing patterns .............................119
  Combining patterns .......................120
  Repeat sewing patterns .................121
  Checking the selected pattern .......121
  Changing the pattern size ..............122
  Changing the stitch density ..........123
  Changing the pattern length ..........124
  Mirror imaging the pattern ............125
  Retrieving a pattern ......................126
  Realigning the pattern ..................127
Designing a Pattern ...........................129
  Drawing a sketch of the pattern .....129
  Entering the pattern data ..............130
  Examples of designs ......................132
Selecting Stitching

You can select any of the various types of stitching available.

**Selecting stitch types and patterns**

A stitch can be selected from the following types available.

Stitch patterns can be selected through either direct select (by pressing the key for a specific stitch) or number selection (by entering the number for the stitch pattern).

For details on the types of stitches available, refer to “Stitch Settings” (page 134).

- **Direct selection**
  
  After pressing \((\text{Preset utility stitch/saved pattern key})\) to select the stitch mode, press the numeric key assigned with the desired stitch.

  With direct selection, there are two stitch modes: preset utility stitch mode \(\text{●} \) and saved pattern mode \(\text{○} \). When the machine is turned on or when the \(\text{●} \) (Preset utility stitch/saved pattern key) is pressed, the machine enters preset utility stitch mode, indicated by \(\text{●} \) in the lower-left corner of the screen. To enter saved pattern mode, indicated by \(\text{○} \) in the lower-left corner of the screen, press the \(\text{●} \) (Preset utility stitch/saved pattern key). Each press of \(\text{●} \) (Preset utility stitch/saved pattern key) switches the mode between the preset utility stitch mode \(\text{●} \) and saved pattern mode \(\text{○} \).

- **Number selection**
  
  After pressing \(\text{(Utility stitch key), (Decorative stitch key) or (Character stitch key)}\) to select the stitch mode, use the numeric keys to type in the number for the desired stitch.

- **Preset utility stitch**
  
  \(\text{●} \) The most frequently used utility stitches have been assigned to the numeric keys. These stitches can be selected simply by pressing the key.

- **Saved patterns**
  
  \(\text{○} \) Frequently used patterns and combined patterns can be saved on the machine's memory and easily retrieved using \(\text{(Preset utility stitch/saved pattern key)}\) and the numeric keys. For details, refer to “Saving patterns” (page 126).

- **Utility stitches (No.01-67)**
  
  \(\text{●} \) There are 67 utility stitches, including straight stitches, overcasting stitches and buttonhole stitches.
Decorative stitches

There are two decorative stitch modes: decorative stitch 1 mode \( \text{1} \) and decorative stitch 2 mode \( \text{2} \).

If (Decorative stitch key) is pressed once, decorative stitch 1 mode \( \text{1} \) is selected. If (Decorative stitch key) is pressed twice, decorative stitch 2 mode \( \text{2} \) is selected. Each press of (Decorative stitch key) switches the mode between decorative stitch 1 mode \( \text{1} \) and decorative stitch 2 mode \( \text{2} \).

\( \text{1} \) Decorative stitches (No.01-31)

There are 31 decorative stitches, including hearts, leaves and flowers.

Satin stitches (No.32-47)

There are 16 satin stitches.

Cross-stitches (No.48-52)

There are 5 types of cross-stitches.

Decorative satin stitches (No.53-62)

There are 10 decorative satin stitches.

My Custom Stitch (No.99)

You can design original stitches. (For details, refer to “Designing a Pattern” (page 129).)

\( \text{2} \) Utility decorative stitches (No.01–39)

Some utility stitches can be used as decorative stitches. There are 39 of these stitches.

Character stitches

There are three character stitch modes: Gothic font mode \( \text{A} \), Script font mode \( \text{A} \) and outline style mode \( \text{A} \).

If (Character stitch key) is pressed once, Gothic font mode \( \text{A} \) is selected. If (Character stitch key) is pressed twice, Script font mode \( \text{A} \) is selected. If (Character stitch key) is pressed three times, outline style mode \( \text{A} \) is selected. Each press of (Character stitch key) switches the mode between the Gothic font mode \( \text{A} \), Script font mode \( \text{A} \) and outline style mode \( \text{A} \).

Gothic font (No.01-55)

There are 55 characters, including letters, symbols and numbers, in the Gothic font.

Script font (No.01-55)

There are 55 characters, including letters, symbols and numbers, in the Script font.

Outline style (No.01-55)

There are 55 characters, including letters, symbols and numbers, in the outline style.
Selecting stitching

Using the operation panel keys, select the desired stitch. Ten of the most often used utility stitches can quickly be selected with the numeric keys. Right after turning the power on, the straight stitch (left needle position) is selected. The machine can also be set to select the straight stitch (center needle position). For details, refer to “Changing the settings” (page 19).

1 Determine the stitch that you wish to use.
   • For the numbers of the various stitches, refer to the stitch pattern plate and “Stitch Settings” (page 134).

2 Determine which presser foot should be used with the selected stitch.
   The presser feet are stored in the accessory compartment.
   • For details on the stitches that can be sewn with the twin needle, refer to “Stitch Settings” (page 134).

3 Attach the presser foot.
   • For details, refer to “Replacing the presser foot” (page 41).

4 Turn on the sewing machine.
   ▶ The straight stitch (left needle position) is shown selected in the LCD.

5 After selecting the stitch mode, select the stitch pattern.

With direct selection
With direct selection, there are two stitch modes: preset utility stitch mode and saved pattern mode.

1 Press (Preset utility stitch/saved pattern key) to select the stitch mode.

   ● Preset utility stitch
      The 10 stitch patterns printed on the numeric keys can be selected directly.
      When appears in the lower-left corner of the screen when the machine is turned on or when the (Preset utility stitch/saved pattern key) is pressed.

   ● Saved patterns
      The 10 stitch patterns saved with the numeric keys can be selected directly.
      When appears in the lower-left corner of the screen when (Preset utility stitch/saved pattern key) is pressed.

   ▶ When a direct selection mode is selected, (Preset utility stitch/saved pattern key) lights up.

   ▶ After the icon for the selected stitch mode appears in the center of the screen, a screen for selecting the stitch appears with the icon for the stitch mode in the lower-left corner. However, when the machine is turned on, appears only in the lower-left corner of the screen and does not appear in the center of the screen.

2 Press the key assigned with the stitch to select the stitch.
   • Continue with step 6 (on page 74).
With number selection

There are three modes of stitches that can be selected by number: utility stitch mode ₁, decorative stitch mode ₂ and character stitch mode ₃.

In addition, there are two decorative stitch modes ₄: decorative stitch 1 mode ₄₁ and decorative stitch 2 mode ₄₂. There are three character stitch modes ₅: Gothic font mode ₅₁, Script font mode ₅₂ and outline style mode ₅₃.

Press the stitch mode key for the stitch that you wish to use.

Utility stitches

₃: 67 utility stitches are available.

Decorative stitches

₄₁: 62 stitches, including decorative stitches, satin stitches, step patterns, cross stitch and decorative satin stitches, are available.

When ₄ (Decorative stitch key) is pressed once.

₄₂: 39 utility decorative stitches are available.

When ₄ (Decorative stitch key) is pressed twice.

Character stitches

₅₁: Gothic font

₅₁: 55 letter, symbol and numbers are available.

When ₅ (Character stitch key) is pressed once.

₅₂: Script font

₅₂: 55 letter, symbol and numbers are available.

When ₅ (Character stitch key) is pressed twice.

₅₃: Outline style

₅₃: 55 letter, symbol and numbers are available.

When ₅ (Character stitch key) is pressed three times.

A pressed key lights up.

After the icon for the selected stitch mode appears in the center of the screen, a screen for selecting the stitch appears with the icon for the stitch mode in the lower-left corner.

Example: decorative stitches ₄₁

Memo

* When pressing a stitch mode key multiple times, continue pressing the key after the icon for the stitch mode appears in the lower-left corner of the screen.
Use the numeric keys to type in the two-digit number for the desired stitch.
For stitches 01 through 09, the stitch can also be selected by using the numeric keys to type in a one-digit number, then pressing \( \text{OK} \) (OK key).

- After the entered number appears in the center of the screen, the stitch is selected.

Example

- For the numbers of the various stitches, refer to the stitch pattern plate and “Stitch Settings” (page 134).

- If the first number (tens when entering two-digit numbers, ones when entering one-digit numbers) was incorrectly entered, press \( \text{Cancel/clear key} \) (Cancel/clear key) to erase the entered number.

- If an incorrect two-digit number was entered, an error beep is sounded, and the entered number is cleared.

If necessary, specify the setting for automatic reverse/reinforcement stitching and adjust the stitch length, etc.

- For details on sewing with each of the utility stitches, begin on page 76.

**Note**

- When a stitch is selected, the icon for the presser foot that should be used appears in the screen. Check that the correct presser foot is attached before starting to sew. If the wrong presser foot is installed, turn off the sewing machine, attach the correct presser foot, and then select the desired stitch again.

**Memo**

- For details on adjusting the stitch width and length, refer to “Adjusting the Stitch Width and Length” (page 58).

---

**To select a different stitch**

Check the icon in the lower-left corner of the screen for the current mode.

![Current Mode Indicator]

The current mode is indicated.

- To select a stitch in the same mode as the current one
  - In the utility stitch mode, simply type in the number for the desired stitch.
  - In the decorative stitch mode and character stitch mode, press \( \text{Cancel/clear key} \) (Cancel/clear key) to cancel the stitch, and then type in the number for the desired stitch.
  - However, if the currently selected stitch was sewn at least one time, typing in a stitch number switches to the new stitch, even if the previous stitch was not canceled.

**Memo**

- Patterns can be combined by selecting a different decorative stitch while a stitch is selected. For details, refer to “Saving patterns” (page 126).

- To select a stitch in a different mode as the current one
  - After selecting a different mode, type in the number for the desired stitch. (Refer to steps \( \text{b} \) on pages 72 through 74.)

When switching from the utility stitch mode to the decorative stitch or character stitch mode or the other way around, all stitches that have been selected are erased so that a new stitch can be selected. In order to prevent stitches from incorrectly being erased, the following confirmation message appears.

![Confirmation Message]

- Delete the selected pattern.
- Cancel OK Delete
- To erase the stitch and select a different one, press \( \text{OK} \) (OK key), and then change the stitch mode.

- To stop the current stitch from being erased, press \( \text{Cancel/clear} \) (Cancel/clear key) to return to the previous screen.

**Memo**

- After changing stitch settings such as the stitch length and width or after combining patterns, the stitch pattern can be saved with its current settings. For details, refer to “Saving patterns” (page 126).
Overcasting Stitches

Sew overcasting stitches along the edges of cut fabric to prevent fabric from fraying. Fifteen stitches are available for overcasting. The procedure for sewing overcasting stitches is explained according to the presser foot that is used.

Sewing overcasting stitches using overcasting foot “G”

Three stitches can be used to sew overcasting with overcasting foot “G”.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Numeric Key</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overcasting</td>
<td>11</td>
<td></td>
<td>Preventing fraying in medium weight and thin fabrics</td>
<td>3.5 (1/8)</td>
<td>2.0 (1/16)</td>
<td>G</td>
</tr>
<tr>
<td>stitches</td>
<td></td>
<td></td>
<td></td>
<td>2.5–5.0 (3/32–3/16)</td>
<td>1.0–4.0 (1/16–3/16)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td></td>
<td>Preventing fraying in thick fabrics and fabrics that</td>
<td>5.0 (3/16)</td>
<td>2.5 (3/32)</td>
<td>G</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fray easily</td>
<td>2.5–5.0 (3/32–3/16)</td>
<td>1.0–4.0 (1/16–3/16)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td></td>
<td></td>
<td>5.0 (3/16)</td>
<td>2.5 (3/32)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.5–5.0 (1/8–3/16)</td>
<td>1.0–4.0 (1/16–3/16)</td>
<td></td>
</tr>
</tbody>
</table>

1. Attach overcasting foot “G”.

- For details, refer to “Replacing the presser foot” (page 41).

2. Select a stitch.

- For details, refer to “Selecting stitching” (page 72).

3. Position the fabric with the edge of the fabric against the guide of the presser foot, and then lower the presser foot lever.

4. Sew with the edge of the fabric against the presser foot guide.

- After adjusting the stitch width, slowly turn the handwheel toward you (counterclockwise) and check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may bend or break.
Sewing overcasting stitches using zigzag foot “J”

Seven stitches can be used to sew overcasting stitches with zigzag foot “J”.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Numeric Key</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zigzag stitch (center needle position)</td>
<td>07</td>
<td>🌟</td>
<td>Preventing fraying (center baseline/reverse stitching)</td>
<td>3.5 (1/8)</td>
<td>1.4 (1/16)</td>
<td>Auto Manual</td>
</tr>
<tr>
<td>Zigzag stitch (right needle position)</td>
<td>08</td>
<td>🌟</td>
<td>Preventing fraying (right baseline/reinforcement stitching)</td>
<td>3.5 (1/8)</td>
<td>1.4 (1/16)</td>
<td>Auto Manual</td>
</tr>
<tr>
<td>2-point zigzag stitch</td>
<td>09</td>
<td>🌟</td>
<td>Preventing fraying in thick fabrics and stretch fabrics</td>
<td>5.0 (3/16)</td>
<td>1.0 (1/16)</td>
<td>Auto Manual</td>
</tr>
<tr>
<td>3-point zigzag stitch</td>
<td>10</td>
<td>🌟</td>
<td>Preventing fraying in thick fabrics and stretch fabrics</td>
<td>5.0 (3/16)</td>
<td>1.0 (1/16)</td>
<td>Auto Manual</td>
</tr>
<tr>
<td>Overcasting stitch</td>
<td>14</td>
<td>🌟</td>
<td>Preventing fraying in stretch fabrics</td>
<td>5.0 (3/16)</td>
<td>2.5 (3/32)</td>
<td>Auto Manual</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>🌟</td>
<td>Preventing fraying in thick fabrics and stretch fabrics</td>
<td>5.0 (3/16)</td>
<td>2.5 (3/32)</td>
<td>Auto Manual</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>🌟</td>
<td>Preventing fraying in stretch fabrics</td>
<td>4.0 (3/16)</td>
<td>1.0–4.0 (1/16–3/16)</td>
<td>Auto Manual</td>
</tr>
</tbody>
</table>

1. Attach zigzag foot “J”.

- For details, refer to “Replacing the presser foot” (page 41).

2. Select a stitch.

- For details, refer to “Selecting stitching” (page 72).

3. Sew along the edge of the fabric with the needle dropping off the edge at the right.

 Memo

- For best results when sewing stretch fabrics, decrease the pressure of the presser foot. For details, refer to “Adjusting the pressure of the presser foot” (page 43).
Sewing overcasting stitches using the optional side cutter

Using the side cutter, seam allowances can be finished while the edge of the fabric is cut off. Five stitches can be used to sew overcasting stitches with the side cutter.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overcasting stitch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>☐</td>
<td>Sewing straight stitches while cutting the fabric</td>
<td>0.0 (0)</td>
<td>0.0–2.5 (0–3/32)</td>
<td>Auto 2.5 (3/32)</td>
</tr>
<tr>
<td>64</td>
<td>☐</td>
<td>Sewing zigzag stitches while cutting the fabric</td>
<td>3.5 (1/8)</td>
<td>3.5–5.0 (1/8–3/16)</td>
<td>Auto 1.4 (1/16)</td>
</tr>
<tr>
<td>65</td>
<td>☐</td>
<td>Preventing fraying in thin and medium weight fabrics while cutting the fabric</td>
<td>3.5 (1/8)</td>
<td>3.5–5.0 (1/8–3/16)</td>
<td>Auto 2.0 (1/16)</td>
</tr>
<tr>
<td>66</td>
<td>☐</td>
<td>Preventing fraying in thick fabrics while cutting the fabric</td>
<td>5.0 (3/16)</td>
<td>3.5–5.0 (1/8–3/16)</td>
<td>Auto 2.5 (3/32)</td>
</tr>
<tr>
<td>67</td>
<td>☐</td>
<td>Preventing fraying in thick fabrics while cutting the fabric</td>
<td>5.0 (3/16)</td>
<td>3.5–5.0 (1/8–3/16)</td>
<td>Auto 2.5 (3/32)</td>
</tr>
</tbody>
</table>

1. **Remove the presser foot.**
   - For details, refer to “Replacing the presser foot” (page 41).

2. **Lower the presser foot lever, and then manually thread the needle.**
   - The needle threader cannot be used. If the needle threader is used with the side cutter, the sewing machine may be damaged.

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

4. **Hook the connecting fork of the side cutter onto the needle clamp screw.**

   - [Diagram showing the side cutter being attached]

   - (1) Connecting fork
   - (2) Needle clamp screw

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

   - [Diagram showing the side cutter being attached]

   - (1) Notch in presser foot holder
   - (2) Pin

   - The side cutter is attached.
6 Raise the presser foot lever to check that the side cutter is securely attached.

7 Pass the upper thread under the side cutter, and then pull it out toward the rear of the sewing machine.

8 Select a stitch.
   • For details, refer to “Selecting stitching” (page 72).

CAUTION

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

9 Make a cut of about 2 cm (3/4 inch) long in the fabric at the beginning of the stitching.

10 Position the fabric in the side cutter.
   The cut in the fabric should be positioned over the guide plate of the side cutter.

11 Lower the presser foot lever, and then start sewing.
   ▶ A seam allowance is cut while the stitching is sewn.
   • If the stitching is sewn in a straight line, the seam allowance will be about 5 mm (3/16 inch).

Memo

- The side cutter can cut as much as one layer of 13-oz. denim.
- After using the side cutter, clean it by removing any lint or dust.
- If the side cutter can no longer cut fabric, use a rag to apply a small amount of oil to the cutting edge of the cutter.
- The optional side cutter is available through your brother dealer.
Basic Stitching

Straight stitches are used for sewing plain seams. Five stitches are available for basic stitching.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Numeric Key</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basting stitch</td>
<td>06</td>
<td>–</td>
<td>Temporarily securing</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td></td>
</tr>
<tr>
<td>Straightstitch (left needle position)</td>
<td>01</td>
<td>(1)</td>
<td>Basic stitching and sewing gathers or pintucks (left baseline/reverse stitching)</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>(1/64–3/16)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>–</td>
<td>Basic stitching and sewing gathers or pintucks (left baseline/reinforcement stitching)</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>(1/64–3/16)</td>
</tr>
<tr>
<td>Straightstitch (center needle position)</td>
<td>03</td>
<td>(2)</td>
<td>Basic stitching and sewing gathers or pintucks (center baseline/reverse stitching)</td>
<td>3.5 (1/8)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>(1/64–3/16)</td>
</tr>
<tr>
<td>Triple stretch stitch</td>
<td>04</td>
<td>(9)</td>
<td>Reinforcing seams and sewing stretch fabrics</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td></td>
</tr>
</tbody>
</table>

Basting

Sew basting with a stitch length between 5 mm (3/16 inch).

1. Attach zigzag foot “J”.

   - For details, refer to “Replacing the presser foot” (page 41).

2. Select stitch 06.

   - For details, refer to “Selecting stitching” (page 72).

3. Start sewing.

   - For details, refer to “Starting to sew” (page 52).
Basic stitching

1. Baste or pin together the fabric pieces.
2. Attach zigzag foot “J”.

- For details, refer to “Replacing the presser foot” (page 41).

3. Select a stitch.
- For details, refer to “Selecting stitching” (page 72).

4. Lower the needle into the fabric at the beginning of the stitching.

5. Start sewing.
- For details, refer to “Starting to sew” (page 52).
- For details on sewing reverse/reinforcement stitches, refer to “Securing the stitching” (page 54).

6. When sewing is finished, cut the thread.
- For details, refer to “Cutting the thread” (page 55).

---

Changing the needle position

The needle position used as the baseline is different for the straight stitch (left needle position) and the straight stitch (center needle position).

![Diagram of needle positions]

1. Straight stitch (left needle position)
2. Straight stitch (center needle position)

When the stitch width of the straight stitch (left needle position) is set to its standard setting (0.0 mm), the distance from the needle position to the right side of the presser foot is 12 mm (1/2 inch). If the stitch width is changed (between 0 and 7.0 mm (1/4 inch)), the needle position will also change. By changing the stitch width and sewing with the right side of the presser foot aligned with the edge of the fabric, a seam allowance can be sewn with a fixed width.

- For details, refer to “Adjusting the stitch width” (page 58).
Blind Hem Stitching

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

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Numeric Key</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blind hem stitch</td>
<td>17</td>
<td>73</td>
<td>Blind hem stitching on medium weight fabrics</td>
<td>00 (0) 3 ← 3 → 2.0 (1/16)</td>
<td>1.0–3.5 (1/16–1/8)</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td></td>
<td>Blind hem stitching on stretch fabrics</td>
<td>00 (0) 3 ← 3 → 2.0 (1/16)</td>
<td>1.0–3.5 (1/16–1/8)</td>
<td></td>
</tr>
</tbody>
</table>

Sew a blind hem according to the following procedure.

1. **Fold the fabric along the desired edge of the hem, and then baste it about 5 mm (3/16 inch) from the edge of the fabric.**

2. **Fold back the fabric along the basting, and then position the fabric with the wrong side facing up.**

3. **Attach blind hem foot “R”.**

   - For details, refer to “Replacing the presser foot” (page 41).

4. **Select a stitch.**

   - For details, refer to “Selecting stitching” (page 72).

5. **Position the fabric with the edge of the folded hem against the guide of the presser foot, and then lower the presser foot lever.**

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

   ① Wrong side of fabric
   ② Fold of hem
   ③ Guide
Adjust the stitch width until the needle slightly catches the fold of the hem.

- If the needle catches too much of the hem fold
  The needle is too far to the left.
  Press (of the Stitch width keys) to decrease the stitch width so that the needle slightly catches the fold of the hem.

- If the needle does not catch the hem fold
  The needle is too far to the right.
  Press (of the Stitch width keys) to increase the stitch width so that the needle slightly catches the fold of the hem.

For details on changing the stitch width, refer to “Adjusting the Stitch Width and Length” (page 58).

Sew with the fold of the hem against the presser foot guide.

Remove the basting stitching.

Memo

For best results when sewing stretch fabrics, decrease the pressure of the presser foot. For details, refer to “Adjusting the pressure of the presser foot” (page 43).
Buttonhole Stitching/Button Sewing

Buttonholes can be sewn and buttons can be sewn on. Eleven stitches are available for sewing one-step buttonholes and one stitch for sewing on buttons.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Numeric Key</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Auto</td>
<td>Manual</td>
<td>Auto</td>
</tr>
<tr>
<td>Buttonhole</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.4</td>
</tr>
<tr>
<td>stitch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td></td>
<td>–</td>
<td>Horizontal buttonholes on thin and medium weight</td>
<td>5.0 (3/16)</td>
<td>3.0–5.0 (1/8–3/16)</td>
<td>0.2–1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fabrics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td></td>
<td>–</td>
<td>Horizontal buttonholes on areas that are subject</td>
<td>5.0 (3/16)</td>
<td>3.0–5.0 (1/8–3/16)</td>
<td>0.2–1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>to strain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td>–</td>
<td>Horizontal buttonholes on thick fabrics</td>
<td>5.0 (3/16)</td>
<td>3.0–5.0 (1/8–3/16)</td>
<td>0.2–1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td></td>
<td>–</td>
<td>Buttonholes with bar tacks on both ends for</td>
<td>5.0 (3/16)</td>
<td>3.0–5.0 (1/8–3/16)</td>
<td>0.2–1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>stabilized fabrics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td></td>
<td>–</td>
<td>Buttonholes for stretch or knit fabrics</td>
<td>6.0 (15/64)</td>
<td>3.0–6.0 (1/8–15/64)</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td></td>
<td>–</td>
<td>Buttonholes for stretch fabrics</td>
<td>6.0 (15/64)</td>
<td>3.0–6.0 (1/8–15/64)</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td></td>
<td>–</td>
<td>Bound buttonholes</td>
<td>5.0 (3/16)</td>
<td>0.0–6.0 (0–15/64)</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td></td>
<td>–</td>
<td>Keyhole buttonholes for thick or plush fabrics</td>
<td>7.0 (1/4)</td>
<td>3.0–7.0 (1/8–1/4)</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td></td>
<td>–</td>
<td>Keyhole buttonholes for medium weight and thick</td>
<td>7.0 (1/4)</td>
<td>3.0–7.0 (1/8–1/4)</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fabrics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td></td>
<td>–</td>
<td>Horizontal buttonhole for thick or plush</td>
<td>7.0 (1/4)</td>
<td>3.0–7.0 (1/8–1/4)</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fabrics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Button-</td>
<td></td>
<td></td>
<td>Button sewing</td>
<td>3.5 (1/8)</td>
<td>2.5–4.5 (3/32–3/16)</td>
<td>–</td>
</tr>
<tr>
<td>sewing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stitch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Buttonhole sewing**

The maximum buttonhole length is about 28 mm (1-1/8 inches) (diameter + thickness of the button). Buttonholes are sewn from the front of the presser foot to the back, as shown below.

1. **Use chalk to mark on the fabric the position and length of the buttonhole.**

![Diagram showing buttonhole sewing process]

2. **Pull out the button guide plate of buttonhole foot “A”, and then insert the button that will be put through the buttonhole.**

---

1. Reinforcement stitching

---

The names of parts of buttonhole foot “A”, which is used for sewing buttonholes, are indicated below.

- **Button guide plate**
- **Presser foot scale**
- **Pin**
- **Marks on buttonhole foot**
- **5 mm (3/16 inch)**

---

*Buttonhole Stitching/Button Sewing* 85
If the button does not fit in the button guide plate
Add together the diameter and thickness of the button, and then set the button guide plate to the calculated length. (The distance between the markings on the presser foot scale is 5 mm (3/16 inch).)

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

Attach buttonhole foot “A”.
• For details, refer to “Replacing the presser foot” (page 41).

Select a stitch.
• For details, refer to “Selecting stitching” (page 72).

Position the fabric with the front end of the buttonhole mark aligned with the red marks on the sides of the buttonhole foot, and then lower the presser foot lever.

Pass the upper thread down through the hole in the presser foot.
• When lowering the presser foot, do not push in the front of the presser foot, otherwise the buttonhole will not be sewn with the correct size.

Pull down the buttonhole lever as far as possible.

The buttonhole lever is positioned behind the bracket on the buttonhole foot.
7 Gently hold the end of the upper thread in your left hand, and then start sewing.

- Once sewing is completed, the machine automatically sews reinforcement stitches, then stops.

8 Press ("Thread Cutter" button) once.
- The threads are cut, and the needle is raised.
- Raise the presser foot, and then remove the fabric.

Memo
bullet If the automatic thread cutting setting was selected before sewing, the machine will automatically cut the threads at the end of the stitching. For details, refer to “Automatically cutting the thread” (page 62).
bullet When using the thread cutter on the left side of the machine or scissors to cut the threads, press ("Needle Position" button) to raise the needle, raise the presser foot, and then pull out the fabric before cutting the threads. For details, refer to “Using the manual thread cutter” (page 56).

9 Raise the buttonhole lever to its original position.

10 Insert a pin along the inside of one bar tack at the end of the buttonhole stitching to prevent the stitching from being cut.

For keyhole buttonholes, use the eyelet punch to make a hole in the rounded end of the buttonhole, and then use the seam ripper to cut open the buttonhole.

CAUTION
bullet When opening the buttonhole with the seam ripper, do not place your hands in the cutting direction, otherwise injuries may result if the seam ripper slips.

Changing the density of the stitching
Adjust the stitch length.

- For details, refer to “Adjusting the stitch length” (page 59).
- If the fabric does not feed (for example, if it is too thick), decrease the density of the stitching.
Changing the stitch width
Adjust the stitch width.

- For details, refer to “Adjusting the stitch width” (page 58).

Memo
- Before sewing buttonholes, check the stitch length and width by sewing a trial buttonhole on a scrap piece of fabric.

Sewing buttonholes on stretch fabrics
When sewing buttonholes on stretch fabrics, use a gimp thread.

1. Hook the gimp thread onto the part of buttonhole foot “A” shown in the illustration so that it fits into the grooves, and then loosely tie it.
2. Attach buttonhole foot “A”.
   - For details, refer to “Replacing the presser foot” (page 41).
3. Select stitch $^{52}$ or $^{53}$.
4. Adjust the stitch width to the thickness of the gimp thread.
5. Lower the presser foot lever and the buttonhole lever, and then start sewing.
6. When sewing is finished, gently pull the gimp thread to remove any slack.
7. Use a handsewing needle to pull the gimp thread to the wrong side of the fabric, and then tie it.
8. With a seam ripper, cut the middle part of the gimp thread remaining at the top end of the buttonhole. Trim off any excess of the gimp thread.
**Button sewing**

Buttons can be sewn on with the sewing machine. Buttons with 2 or with 4 holes can be attached.

1. **Measure the distance between the holes in the button to be attached.**

2. **Raise the presser foot lever, and then slide the drop feed lever, located at the rear of the machine on the base, to \( \text{TT} \) (to the left as seen from the rear of the machine).**

3. **Attach button-sewing foot “M”.**

   - For details, refer to “Replacing the presser foot” (page 41).

4. **Select stitch 61.**

   - For details, refer to “Selecting stitching” (page 72).
   - Since the end of the thread will be tied off later, do not set the sewing machine for programmed-thread cutting.

5. **Adjust the stitch width so that it is the same as the distance between the holes in the button.**

6. **Place the button into button-sewing foot “M”.**

   - Button
   - The button is held in place.
   - When attaching four-hole buttons, first sew the two holes closest to you. Then, slide the button so that the needle goes into the two holes toward the rear of the sewing machine, and then sew them in the same way.

7. **Turn the handwheel toward you (counterclockwise) to check that the needle correctly goes into the two holes of the button.**

   If it seems as if the needle will hit the button, remeasure the distance between the holes in the button. Adjust the stitch width to the distance between the button holes.

---

**CAUTION**

- When sewing, be sure that the needle does not touch the button, otherwise the needle may bend or break.
Start sewing. Set the sewing speed controller to the left (so that the speed will be slow).

The sewing machine automatically stops after sewing reinforcement stitches.

- If additional strength is needed to secure the button, perform the button-sewing operation twice.
- Do not press ("Thread Cutter" button).

Use scissors to cut the upper thread and the bobbin thread at the beginning of the stitching. Pull the upper thread at the end of the stitching to the wrong side of the fabric, and then tie it with the bobbin thread.

When you are finished attaching the button, slide the drop feed lever to (to the right as seen from the rear of the machine) and turn the handwheel to raise the feed dogs.

Memo
- The feed dog position switch is normally set to the right side (as seen from the rear of machine).
- The feed dogs come up when you start sewing again.

Attaching a shank to a button
To sew the button with a shank, attach the button with space between it and the fabric, and then wind the thread by hand. This attaches the button securely.

Place the button into button-sewing foot “M”, and then pull the shank lever toward you.

After sewing is finished, cut the upper thread with plenty of excess, wind it around the thread between the button and the fabric, and then tie it to the upper thread at the beginning of the stitching.

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

Cut off any excess thread.
Zipper Insertion

A zipper can be sewn in place.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Numeric Key</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straightstitch</td>
<td>03</td>
<td>2</td>
<td>Attaching zippers</td>
<td>3.5 (1/8)</td>
<td>2.5 (3/32)</td>
<td></td>
</tr>
<tr>
<td>(center needle position)</td>
<td></td>
<td></td>
<td>Sewing concealed seams and pintucks</td>
<td>0.0–7.0 (0–1/4)</td>
<td>0.2–5.0 (1/64–3/16)</td>
<td></td>
</tr>
</tbody>
</table>

There are many methods for inserting zippers. The procedures for inserting a centered zipper and a side zipper are described below.

### Inserting a centered zipper

Stitching is sewn on both pieces of fabric butted against each other.

1. **Attach zigzag foot “J” and sew straight stitches up to the zipper opening.**
   With the right sides of the fabric facing each other, sew reverse stitches after reaching the zipper opening.
   - For details, refer to “Basic stitching” (page 81).
2. **Using a basting stitch, continue sewing to the edge of the fabric.**
3. **Press open the seam allowance from the wrong side of the fabric.**
4. **Align the seam with the center of the zipper, and then baste the zipper in place.**
5 Attach the presser foot holder to the right pin of zipper foot “I”.

6 Select stitch 03.

7 Topstitch around the zipper.

8 Remove the basting stitching.

**CAUTION**

- When using zipper foot “I”, be sure to select the straight stitch (center needle position), and slowly turn the handwheel toward you (counterclockwise) to check that the needle does not touch the presser foot. If a different stitch is selected or the needle hits the presser foot, the needle may bend or break.

- When sewing, be sure that the needle does not touch the zipper, otherwise the needle may bend or break.
Inserting a side zipper

Stitching is sewn on only one piece of fabric. Use this type of zipper application for side openings and back openings.

The following procedure will describe how to stitch on the left side, as shown in the illustration.

1. **Attach zigzag foot “J” and sew straight stitches up to the zipper opening.**
   With the right sides of the fabric facing each other, sew reverse stitches after reaching the zipper opening.
   - For details, refer to “Basic stitching” (page 81).

2. **Using a basting stitch, continue sewing to the edge of the fabric.**

3. **Press open the seam allowance from the wrong side of the fabric.**

4. **Press the seam allowance so that the right side (the side that will not be stitched) has an extra 3 mm (1/8 inch).**

5. **Align the zipper teeth with the pressed edge of the fabric having the extra 3 mm (1/8 inch), and then baste or pin the zipper in place.**

6. **Attach the presser foot holder to the right pin of zipper foot “I.”**
   If the stitching will be sewn on the right side, attach the presser foot holder to the left pin of the zipper foot.

*For details, refer to “Replacing the presser foot” (page 41).*
7 Select stitch 03.

- For details, refer to “Selecting stitching” (page 72).

**CAUTION**

● When using zipper foot “I”, be sure to select the straight stitch (center needle position), and slowly turn the handwheel toward you (counterclockwise) to check that the needle does not touch the presser foot. If a different stitch is selected or the needle hits the presser foot, the needle may bend or break.

8 Sew the zipper to the piece of fabric with the extra 3 mm (1/8 inch), starting from the base of the zipper.

**CAUTION**

● When sewing, be sure that the needle does not touch the zipper, otherwise the needle may bend or break.

9 When you are about 5 cm (2 inches) from the end of the zipper, stop the sewing machine with the needle lowered (in the fabric), raise the presser foot lever, and then open the zipper and continue sewing.

10 Close the zipper, turn over the fabric, and then baste the other side of the zipper to the fabric.

11 Attach the presser foot holder to the other pin of zipper foot “I”.

If the presser foot holder was attached to the right pin in step 6, change it to the left pin.

12 Topstitch around the zipper.

Sew reverse stitches at the end of the zipper opening and align the zipper teeth with the side of the presser foot.

**CAUTION**

● When sewing, be sure that the needle does not touch the zipper, otherwise the needle may bend or break.
When you are about 5 cm (2 inches) from the end of the zipper, stop the sewing machine with the needle lowered (in the fabric), raise the presser foot lever, and then open the zipper and continue sewing.

Remove the basting stitching.
Zipper/piping Insertion

A zipper and piping can be sewn in place.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Numeric Key</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straightstitch (left needle position)</td>
<td>01</td>
<td>1</td>
<td>Attaching zippers</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sewing concealed seams and piping</td>
<td>2.5 (3/32)</td>
<td>0.2–5.0 (1/64–3/16)</td>
<td></td>
</tr>
</tbody>
</table>

There are many methods for inserting zippers and pipings. The procedures for inserting a centered zipper and a piping are described below, with the adjustable zipper/piping foot.

### Inserting a centered zipper

1. **Refer to step 1–3 of “Inserting a centered zipper” (page 91).**
2. **Remove the presser foot and presser foot holder (page 43) to attach the screw-on adjustable zipper/piping foot.**
3. **Select stitch 01.**
4. **Loosen the positioning screw on the back of the presser foot.**
5. **Slide the presser foot over either the left or right feed dog.**
6. **Change the needle position so that the needle does not touch the presser foot.**
   For details, refer to “Adjusting the stitch width” (page 58).

**Note**
- Use a screw driver to securely tighten the screw that holds the presser foot. If the screw is loose, the needle may break and cause injuries.

**CAUTION**
- After adjusting the needle position, slowly turn the handwheel toward you and check the needle does not touch the presser foot. If the needle hits the presser foot, the needle may bend or break.
7 Securely tighten the positioning screw with a screwdriver.

8 Topstitch around the zipper.

- Positioning screw

CAUTION
- When sewing, be sure that the needle does not touch the zipper, otherwise the needle may bend or break.

9 Remove the basting stitching.

Inserting a piping

1 Place the piping between two fabric pieces turned inside out, as shown below.

2 Refer to the steps of attaching the adjustable zipper/piping foot (page 96).

3 Sew along the piping.

4 After sewing, turn fabric pieces.
Sewing Stretch Fabrics and Elastic Tape

Stretch fabrics can be sewn and elastic tape can be attached.

Observe the corresponding precautions when performing each of the following stitching operations.

### Stretch stitching

1. **Attach zigzag foot “J”**.
   - For details, refer to “Replacing the presser foot” (page 41).

2. **Select stitch 05**.
   - For details, refer to “Selecting stitching” (page 72).

3. **Sew the fabric without stretching it**.

### Elastic attaching

When elastic tape is attached to the cuff or waist of a piece of clothing, the finished dimensions will be that of the stretched elastic tape. Therefore, it is necessary that a suitable length of the elastic tape be used.

1. **Pin the elastic tape to the wrong side of the fabric**.
   - Pin the elastic tape to the fabric at a few points to make sure that the tape is uniformly positioned on the fabric.
2 Attach zigzag foot “J”.

- For details, refer to “Replacing the presser foot” (page 41).

3 Select a stitch.

- For details, refer to “Selecting stitching” (page 72).

4 Sew the elastic tape to the fabric while stretching the tape so that it is the same length as the fabric.
While pulling the fabric behind the presser foot with your left hand, pull the fabric at the pin nearest the front of the presser foot with your right hand.

CAUTION
- When sewing, be sure that the needle does not touch any pins, otherwise the needle may bend or break.
## Appliqué, Patchwork and Quilt Stitching

The stitches that can be used for sewing appliqués, patchwork and quilts are described below.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Numeric</th>
<th>Key</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zigzag stitch</td>
<td>07</td>
<td>4</td>
<td></td>
<td>Attaching appliqués (center baseline/reverse stitching)</td>
<td>3.5 (1/8)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>1.4 (1/16)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Appliqué quilting, free-motion quilting, satin stitching</td>
<td>3.5 (1/8)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>1.4 (1/16)</td>
</tr>
<tr>
<td>Appliqué stitch</td>
<td>19</td>
<td>11</td>
<td></td>
<td>Attaching appliqués</td>
<td>3.5 (1/8)</td>
<td>2.5–7.0 (3/32–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Attaching appliqués and binding</td>
<td>1.5 (1/16)</td>
<td>0.5–5.0 (1/32–3/16)</td>
<td>1.8 (1/16)</td>
</tr>
<tr>
<td>Piecing straight stitch</td>
<td>21</td>
<td>1</td>
<td></td>
<td>Piecing straight stitching (with a seam allowance of 6.5 mm (1/4 inch) from the right edge of the presser foot)</td>
<td>5.5 (7/32)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.0 (1/16)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Piecing straight stitching (with a seam allowance of 6.5 mm (1/4 inch) from the left edge of the presser foot)</td>
<td>1.5 (1/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.0 (1/16)</td>
</tr>
<tr>
<td>Joining stitch</td>
<td>28</td>
<td></td>
<td></td>
<td>Patchwork stitching</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>1.2 (1/16)</td>
</tr>
<tr>
<td>Mock hand quilting stitch</td>
<td>23</td>
<td>5</td>
<td></td>
<td>Straight stitch quilting that looks hand quilting</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td>Quilting stippling</td>
<td>26</td>
<td></td>
<td></td>
<td>Stippling</td>
<td>7.0 (1/4)</td>
<td>1.0–7.0 (1/16–1/4)</td>
<td>1.6 (1/16)</td>
</tr>
</tbody>
</table>
Appliqué stitching

For best results, use the included open toe foot.

1. Cut out the appliqué, leaving a seam allowance of between 3 and 5 mm (1/8 and 3/16 inch).

2. Place a pattern made of thick paper or stabilizer on the back of the appliqué, and then fold over the seam allowance using an iron.

3. Turn the fabric over, and then baste or pin it onto the fabric that it will be attached to.

4. Attach the open toe foot.

5. Select a stitch.

6. Turn the handwheel toward you (counterclockwise), and then begin sewing around the edge of the appliqué, making sure that the needle drops just outside of the appliqué.

When sewing around corners, stop the machine with the needle in the fabric just outside of the appliqué, raise the presser foot lever, and then turn the fabric as needed to change the sewing direction.
**Patchwork (crazy quilt) stitching**

1. Fold the edge of the top piece of fabric and place it over the lower piece.

2. Sew the two pieces of fabric together so the pattern spans over both pieces.

---

**Piecing**

Sewing together two pieces of fabric is called “piecing”. The fabric pieces should be cut with a 6.5 mm (1/4 inch) seam allowance.

Sew a piecing straight stitch 6.5 mm (1/4 inch) from either the right side or the left side of the presser foot.

1. **Baste or pin along the seam allowance of the fabric that you wish to piece together.**

2. **Attach zigzag foot “J”.**

   - For details, refer to “Replacing the presser foot” (page 41).

3. **Select stitch 21 or 22.**

   - For details, refer to “Selecting stitching” (page 72).

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

   - **For a seam allowance on the right side**
     Align the right side of the presser foot with the edge of the fabric, and sew using stitch 21.

   1. 6.5 mm (1/4 inch)
For a seam allowance on the left side
Align the left side of the presser foot with the edge of the fabric, and sew using stitch 22.

6.5 mm (1/4 inch)

Memo
To change the width of the seam allowance (the needle position), adjust the stitch width.

Quilting
Sandwiching batting between the top and bottom layers of fabric is called “quilting”. Quilts can easily be sewn using the walking foot and the optional quilting guide.

Note
• Thread the needle manually when using the walking foot, or only attach the walking foot after threading the needle using the needle threader.
• When sewing with the walking foot, sew at a speed between slow and medium.
• When quilting, use a 90/14 home sewing machine needle.
• The walking foot can only be used with straight or zigzag stitch patterns. Reverse stitches cannot be sewn with the walking foot. Only select straight or zigzag stitch patterns with reinforcement stitches. For details, refer to “Stitch Settings” (page 134).

1. Baste the fabric to be quilted.
2. Attach the walking foot.
   • For details, refer to “Using the walking foot” (page 44).
3. Select a stitch.
   • For details, refer to “Selecting Stitching” (page 70).
4. Place one hand on each side of the presser foot, and hold fabric taut while sewing.

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

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

Walking foot
Presser foot holder
Adjust the stem of the quilting guide so that the guide aligns with the seam that has already been sewn.

**Note**
- The optional quilting guide is available through your dealer.

### Free-motion quilting

With free-motion quilting, lower the feed dogs (using the drop feed lever) so that the fabric can be moved freely in any direction. The quilting foot is needed for free-motion quilting.

**Note**
- Thread the needle manually when using the quilting foot, or only attach the quilting foot after threading the needle using the needle threader.

1. **Remove the presser foot and the presser foot holder.**
   - Refer to “Removing the presser foot holder” (page 43).

2. **Secure the quilting foot with the presser foot holder screw.**
   - The pin on the quilting foot should be positioned over the needle clamp screw.

   ![Diagram](image1)

   - Pin on quilting foot
   - Presser foot holder screw
   - Needle clamp screw

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

   ![Diagram](image2)

   - Presser foot holder screw

**CAUTION**
- Be sure to securely tighten the screws with the screwdriver, otherwise the needle may touch the presser foot, causing it to bend or break.
4 Slide the drop feed lever, located at the rear of the machine on the base, to \( \text{[icon]} \) (to the left as seen from the rear of the machine).

1. Feed dog position switch (as seen from the rear of the machine)
   - The feed dogs are lowered.

5 Turn on the sewing machine, and then select a stitch.
   - For details, refer to “Selecting stitching” (page 72).

6 Use both hands to hold the fabric taut, and then move the fabric to follow the pattern. Reinforcement stitches are sewn at the beginning and end of sewing.

7 After sewing is finished, slide the drop feed lever to \( \text{[icon]} \) (to the right as seen from the rear of the machine) and turn the handwheel to raise the feed dogs.

1. Drop feed lever (as seen from the rear of the machine)
   - Normally, the drop feed lever is positioned at the right.

---

## Satin stitching using the sewing speed controller

A decorative stitch can be sewn by changing the stitch width of a satin stitch. If the sewing machine is set so that the stitch width can be adjusted using the sewing speed controller, the stitch width can quickly and easily be adjusted. In this case, the sewing speed is adjusted with the foot controller.

1 **Connect the foot controller.**
   - For details, refer to “Starting to sew” (page 52).

2 **Attach zigzag foot “J”**.
   - For details, refer to “Replacing the presser foot” (page 41).

3 Turn on the sewing machine, and then press \( \text{[icon]} \) (Settings key) in the operation panel.
   - The settings screen appears.

4 Press \( \text{[icon]} \) or \( \text{[icon]} \) (Stitch length keys) until \( \text{[icon]} \) is displayed.
   - The screen for specifying that the stitch width can be controlled with the sewing speed controller appears.
5 Press  or  (Stitch width keys) to select ON.
To return to OFF, press  or  (Stitch width keys).

The machine is now set so that the stitch width can be controlled with the sewing speed controller.

6 Press  (OK key) or  (Cancel/clear key).

The initial stitch screen appears again.

7 Select stitch 24  .

For details, refer to “Selecting stitching” (page 72).

8 While sewing, slide the sewing speed controller to adjust the stitch width.
Slide the controller to the left to make the width narrower. Slide the controller to the right to make the width wider.

Adjust the sewing speed with the foot controller.

9 When you are finished sewing, set the stitch width control setting back to OFF.

Memo
- When the foot controller is plugged in, ("Start/Stop” button) cannot be used to start sewing.

Memo
- Although the stitching result differs depending on the type of fabric being sewn and the thickness of the thread being used, for best results, adjust the stitch length to between 0.3 and 0.5 mm (1/64 and 1/32 inch).
Reinforcement Stitching

Reinforce points that will be subject to strain, such as sleeve holes, inseams and pocket corners.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Numeric Key</th>
<th>Application</th>
<th>Stitch Width [mm (inch)] Auto</th>
<th>Stitch Length [mm (inch)] Auto</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triple stretch stitch</td>
<td>04</td>
<td></td>
<td>Reinforcing the seams of sleeves and inseams</td>
<td>0.0 (0)</td>
<td>2.5 (3/32)</td>
<td>J</td>
</tr>
<tr>
<td>Bar tack stitch</td>
<td>60</td>
<td></td>
<td>Reinforcing the ends of openings, such as the corners of pockets</td>
<td>2.0 (1/16)</td>
<td>0.4 (1/64)</td>
<td>A</td>
</tr>
<tr>
<td>Darning stitch</td>
<td>58</td>
<td></td>
<td>Darning medium weight fabrics</td>
<td>7.0 (1/4)</td>
<td>2.0 (1/16)</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>59</td>
<td></td>
<td>Darning thick fabrics</td>
<td>7.0 (1/4)</td>
<td>2.0 (1/16)</td>
<td>A</td>
</tr>
</tbody>
</table>

### Triple stretch stitching

Use triple stretch stitching to reinforce sleeve holes and inseams.

1. **Attach zigzag foot “J”**.
   - For details, refer to “Replacing the presser foot” (page 41).

2. **Select stitch 04 .**
   - For details, refer to “Selecting stitching” (page 72).

3. **Start sewing.**
   - For details, refer to “Starting to sew” (page 52).

### Bar tack stitching

Bar tacks are used to reinforce points subject to strain, such as pocket corners and openings. As an example, the procedure for sewing bar tacks at pocket corners is described below.

1. **Determine the desired length of the bar tack.**
   Set the button guide plate on buttonhole foot “A” to the desired length. (The distance between the markings on the presser foot scale is 5 mm (3/16 inch).)

   ![Bar tack diagram]

   - A bar tack with a maximum length of about 28 mm (1–1/8 inches) can be sewn.
2 Attach buttonhole foot “A”.
   - For details, refer to “Replacing the presser foot” (page 41).

3 Select stitch 60 .
   - For details, refer to “Selecting stitching” (page 72).

4 Position the fabric so that the opening of the pocket faces toward you, and then lower the presser foot lever so that the needle drops 2 mm (1/16 inch) in front of the pocket opening.

   Pass the upper thread down through the hole in the presser foot.
   - When lowering the presser foot, do not push in the front of the presser foot, otherwise the bar tack will not be sewn with the correct size.

5 Pull down the buttonhole lever as far as possible.

   The buttonhole lever is positioned behind the bracket on the buttonhole foot.

6 Gently hold the end of the upper thread in your left hand, and then start sewing.

   ▶ Once sewing is completed, the machine automatically sews reinforcement stitches, then stops.

7 Cut the threads, raise the presser foot lever, and then remove the fabric.

8 Raise the buttonhole lever to its original position.

Memo
   - If the fabric does not feed, for example, because it is too thick, increase the stitch length. For details, refer to “Adjusting the stitch length” (page 59).
Darning

Fabric that has been torn can be darned. Darning is sewn as shown below.

1. **Determine the desired length of the darning.**
   Set the button guide plate on buttonhole foot “A” to the desired length. (The distance between the markings on the presser foot scale is 5 mm (3/16 inch).)

2. **Attach buttonhole foot “A”**.
   - For details, refer to “Replacing the presser foot” (page 41).

3. **Select stitch** 58 or 59.
   - For details, refer to “Selecting stitching” (page 72).

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

   - 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.

   - Do not reduce the gap.
Pull down the buttonhole lever as far as possible.

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.

Once sewing is completed, the machine automatically sews reinforcement stitches, then stops.

Cut the threads, raise the presser foot lever, and then remove the fabric.

Raise the buttonhole lever to its original position.

Memo

- If the fabric does not feed, for example, because it is too thick, increase the stitch length. For details, refer to “Adjusting the stitch length” (page 59).
## Eyelet Stitching

Eyelets, such as those on belts, can be sewn. Three sizes of eyelets are possible: 7 mm, 6 mm and 5 mm (1/4, 15/64 and 3/16 inch).

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyelet stitch</td>
<td>62</td>
<td>Sewing eyelets, for example, on belts</td>
<td>Auto: 7.0 (1/4)</td>
<td>Auto: 7.0, 6.0 or 5.0 (1/4, 15/64 or 3/16)</td>
<td>N</td>
</tr>
</tbody>
</table>

1. **Attach monogramming foot “N”.**
   - For details, refer to “Replacing the presser foot” (page 41).

2. **Select stitch 62.**
   - For details, refer to “Selecting stitching” (page 72).

3. **Adjust either the stitch width or the stitch length to select the desired eyelet size.**
   - For details, refer to “Adjusting the stitch width” (page 58).

4. **Lower the needle into the fabric at the beginning of the stitching, and then lower the presser foot lever.**

5. **Start sewing.**
   - Once sewing is completed, the machine automatically sews reinforcement stitches, then stops.

6. **Use the eyelet punch to cut a hole in the center of the eyelet.**
   - When using the eyelet punch, place thick paper or some other protective sheet under the fabric before punching the hole in the fabric.

**Memo**
- If light weight thread is used, the stitching may be sparse. If this occurs, sew the eyelet twice before removing the fabric, one on top of the other.
## Decorative Stitching

Various decorative stitches can be sewn with this sewing machine.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Auto</td>
<td>Manual</td>
<td>Auto</td>
</tr>
<tr>
<td>Fagoting stitch</td>
<td>32</td>
<td>Sewing two pieces of fabric together across an open seam</td>
<td>5.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td></td>
<td>5.0 (3/16)</td>
<td>2.5–7.0 (3/25–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td>Joining stitch</td>
<td>28</td>
<td></td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>1.2 (1/16)</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Decorative bridging stitches</td>
<td>5.0 (3/16)</td>
<td>2.5–7.0 (3/32–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td></td>
<td>5.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>1.2 (1/16)</td>
</tr>
<tr>
<td>Shell tuck stitch</td>
<td>20</td>
<td>Shell tuck stitching on collars and curves</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td>Smocking stitch</td>
<td>31</td>
<td></td>
<td>5.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>1.6 (1/16)</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>Smocking fabrics to add texture and elasticity</td>
<td>5.0 (3/16)</td>
<td>2.5–7.0 (3/32–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td></td>
<td>5.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>1.2 (1/16)</td>
</tr>
<tr>
<td>Scallop stitch</td>
<td>27</td>
<td>Satin scallop stitching</td>
<td>5.0 (3/16)</td>
<td>2.5–7.0 (3/32–1/4)</td>
<td>0.5 (1/32)</td>
</tr>
<tr>
<td>Hemstitching</td>
<td>39</td>
<td>Lace sewing, decorative hemming, heirloom stitching, etc.</td>
<td>3.5 (1/8)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td></td>
<td>6.0 (15/64)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>3.0 (1/8)</td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>Decorative hemming and heirloom stitching, etc. on thin, medium weight and plain weave fabrics</td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>3.5 (1/8)</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td></td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>4.0 (3/16)</td>
</tr>
<tr>
<td></td>
<td>43</td>
<td></td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td></td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>2.0 (1/16)</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>Decorative hemming, ribbon threading, heirloom stitching, etc.</td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>3.0 (1/8)</td>
</tr>
</tbody>
</table>
Fagoting

Stitching across an open seam is called “fagoting”. It is used on blouses and children’s clothing. This stitch is more decorative when thicker thread is used.

1. Use an iron to fold the two pieces of fabric along their seams.
2. Baste the two pieces of fabric, separated by about 4 mm (3/16 inch), onto thin paper or a sheet of water-soluble stabilizer.
   If you draw a line down the middle of the thin paper or water-soluble stabilizer, sewing is easier.
3. Attach zigzag foot “J”.
   • For details, refer to “Replacing the presser foot” (page 41).
4. Select stitch 32 or 33 .
   • For details, refer to “Selecting stitching” (page 72).
5. Set the stitch width to 7.0 mm (1/4 inch).
   • For details, refer to “Adjusting the stitch width” (page 58).
6. Sew with the center of the presser foot aligned along the center of the two pieces of fabric.
7. After sewing is finished, remove the paper.

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Presser Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Auto</td>
<td>Manual</td>
<td>Auto</td>
</tr>
<tr>
<td>Hemstitching</td>
<td>46</td>
<td>Heirloom stitching, etc.</td>
<td>6.0 (15/64)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>1.6 (1/16)</td>
</tr>
<tr>
<td></td>
<td>47</td>
<td></td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>1.6 (1/16)</td>
</tr>
<tr>
<td>Ladder stitch</td>
<td>35</td>
<td>Decorative stitching</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>3.0 (1/8)</td>
</tr>
<tr>
<td>Rick-rack stitch</td>
<td>36</td>
<td>Decorative stitching</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
</tr>
<tr>
<td>Decorative stitch</td>
<td>37</td>
<td></td>
<td>5.5 (7/32)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>1.6 (1/16)</td>
</tr>
<tr>
<td>Serpentine stitch</td>
<td>38</td>
<td></td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>1.0 (1/16)</td>
</tr>
</tbody>
</table>
### Scallop stitching

The wave-shaped repeating pattern that looks like shells is called “scalloping”. It is used on the collars of blouses and to decorate the edges of handkerchiefs.

1. **Attach monogramming foot “N”**.

   ![Monogramming foot “N”](image)

   - For details, refer to “Replacing the presser foot” (page 41).

2. **Select stitch 27**.

   ![Stitch 27](image)

   - For details, refer to “Selecting stitching” (page 72).

3. **Stitch along the edge of the fabric, making sure not to sew directly on the edge of the fabric**.

   ![Stitching along the edge](image)

   - For better results, apply spray starch to the fabric and press with a hot iron before it is sewn.

4. **Trim along the stitches**.

   ![Trimming the stitches](image)

   - Be careful not to cut the stitches.

### Smocking

The decorative stitch created by stitching or embroidering over gathers is called “smocking”. It is used to decorate the front of blouses or cuffs. The smocking stitch adds texture and elasticity to fabric.

1. **Attach zigzag foot “J”**.

   ![Zigzag foot “J”](image)

   - For details, refer to “Replacing the presser foot” (page 41).

2. **Select the straight stitch, and then adjust the stitch length to 4.0 mm (3/16 inch) and loosen the thread tension**.

   - For details, refer to “Adjusting the stitch length” (page 59) and “Changing the tension of the upper thread” (page 57).

3. **Sew parallel stitching at intervals of 1 cm (3/8 inch)**.

   ![Parallel stitching](image)

   - It is not necessary to sew reverse/reinforcement stitches or cut the thread.
   - At the end of the stitching, the thread is pulled out about 5 cm (2 inches).

4. **Pull the bobbin threads to create gathers**. Smooth the gathers by ironing them.
Select stitch 31, 32, or 33.
- For details, refer to “Selecting stitching” (page 72).

Stitch between the straight stitches.

Pull out the threads for the straight stitches.

Shell tuck stitching

The gathers that look like shells are called “shell tucks”. They are used to decorate trims, the front of blouses or cuffs made of thin fabrics.

1. Fold the fabric along the bias.

2. Attach zigzag foot “J”.
- For details, refer to “Replacing the presser foot” (page 41).

Select stitch 20, and then increase the thread tension.
- For details, refer to “Selecting stitching” (page 72).

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

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

Decorative bridging stitches can be sewn over the seam allowance of joined fabrics. This is used when making a crazy quilt.

1. Attach zigzag foot “J”.

   - For details, refer to “Replacing the presser foot” (page 41).

2. Sew together the right sides of the two pieces of fabric, and then open up the seam allowances.

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


   - For details, refer to “Selecting stitching” (page 72).

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

   ① Right side of fabric

Heirloom stitching

When sewing with the wing needle, the needle holes are enlarged, creating a lace-like decorative stitch. This is used to decorate hems and tablecloths on thin or medium weight fabrics in addition to plain weave fabrics.

**Note**

- If the thread becomes tangled, use stabilizer material.

1. Install the wing needle.

   - Use a 130/705H 100/16 wing needle.
   - For details on installing a needle, refer to “Replacing the needle” (page 39).
   - The needle threader cannot be used with the wing needle, otherwise the sewing machine may be damaged. Manually pass the thread through the eye of the needle from the front to the back.

2. Attach monogramming foot “N”.

   - For details, refer to “Replacing the presser foot” (page 41).

3. Select a stitch.

   The stitches that can be used are 39, 40, 41, 42, 43, 44, 45, 46, or 47.

   - For details, refer to “Selecting stitching” (page 72).
   - Select a stitch width of 6.0 mm (15/64 inch) or less.
Partial removing threads is called “drawnwork”. This gives a beautiful result with fabrics that have a loose weave. Two ways to create drawnwork are described below.

- **Drawnwork (Example 1)**

1. Pull out several threads from the fabric.

2. Attach monogramming foot “N”.

- For details, refer to “Replacing the presser foot” (page 41).


   - For details, refer to “Selecting stitching” (page 72).

4. With the right side of the fabric facing up, sew along the right edge of the frayed section.

5. Press (Settings key) in the operation panel.

   - The settings screen appears.

6. Press or (Stitch length keys) until is displayed.

   - The screen for mirror imaging the pattern appears.

- Select a stitch width of 6.0 mm (15/64 inch) or less, otherwise the needle may bend or break.
- After adjusting the stitch width, slowly turn the handwheel toward you (counterclockwise) and check that the needle does not touch the presser foot. If the needle hits the presser foot, the needle may bend or break.
Press or (Stitch width keys) to select ON.
To return to OFF, press or (Stitch width keys).

Press (OK key) or (Cancel/clear key).

Sew along the other edge of the frayed section so that it looks like the previous stitching.

Set the mirror image pattern setting back to OFF.

- Drawnwork (Example 2)

Pull out several threads from two sections of the fabric, separated by an unfrayed section of about 4 mm (3/16 inch).

Attach monogramming foot “N”.

Select stitch 42 .

Sew along the center of the unfrayed section.

- For details, refer to “Replacing the presser foot” (page 41).

- For details, refer to “Selecting stitching” (page 72).
Sewing the Various Built-In Decorative Patterns

Satin stitches, cross-stitches and decorative satin stitches can be sewn. All are sewn with monogramming foot “N”.

**Sewing beautiful patterns**

In order to sew the patterns correctly, the following must be considered.

- **Fabric**
  Before sewing stretch or thin fabrics or fabrics with a coarse weave, affix the optional stabilizer material to the wrong side of the fabric or place a thin sheet of paper, such as tracing paper, under the fabric. Since material puckering or bunched stitches may occur when satin stitches are sewn, be sure to affix stabilizer material to the fabric.

- **Needles and threads**
  When sewing thin, medium weight or stretch fabrics, use the ball point needle. When sewing thick fabrics, use a 90/14 home sewing machine needle. In addition, #50 to #60 thread should be used.

- **Trial sewing**
  Depending on the type and thickness of the fabric being sewn and whether or not stabilizer material is used, the desired result may not be achieved. Be sure to sew a trial piece of fabric before sewing your project. In addition, while sewing, be sure to guide the fabric with your hands in order to prevent the fabric from slipping.

**Sewing patterns**

1. Attach monogramming foot “N”.
   
   - For details, refer to “Replacing the presser foot” (page 41).

2. Select a stitch.
   
   - For details, refer to steps 4 through 6 of “Selecting stitching” (page 72).

3. Start sewing.

   - The stitching is sewn in the direction indicated by the arrow.

4. Sew reinforcement stitches.
   When sewing with a character stitch, reinforcement stitches are automatically sewn after each character.
   
   - When sewing a pattern with a stitch other than a character stitch, it is useful to first set the automatic reverse/reinforcement stitching setting. For details, refer to “Automatically sewing reverse/reinforcement stitches” (page 60).

5. When you are finished sewing, use scissors to trim off any excess threads at the beginning of the stitching and between the patterns.
Combining patterns

Multiple patterns can be combined and sewn together.
Decorative stitches and character stitches (stitches selected with and ) can be combined.
However, utility stitches (stitches selected with and ) cannot be combined.

Select the first pattern.

Select the next pattern.

Use the numeric keys to type in the number for the desired stitch.
To change the stitch type, press (Decorative stitch key) or (Character stitch key).
After the icon for the desired stitch mode appears in the lower-left corner of the screen, type in the number for the desired stitch.

The combined patterns appear in the LCD.

• To remove a selected pattern, press (Cancel/clear key) in the operation panel.
The pattern that was selected last is removed.

Repeat steps .

After all of the desired patterns are selected, start sewing.

The order that the patterns appear in the LCD is the order that they will be sewn.

Note
• When the combined pattern is sewn at least one time, sewing of the combined pattern is temporarily stopped. Typing in the number of a stitch after sewing clears the combined pattern and selects the new stitch, instead of adding the new stitch to the combined pattern.
• If you do not wish to clear the pattern, save it before typing in the number of the new stitch. For details on saving patterns, refer to “Saving patterns” (page 126).

Memo
• Up to 70 patterns can be combined.
• If multiple patterns have been combined, the sewing machine stops once all the selected patterns displayed in the LCD have been sewn. To repeatedly sew the combined pattern, refer to “Repeat sewing patterns”.
• The combined pattern can be saved for later use. For details, refer to “Saving patterns” (page 126).
Repeat sewing patterns

To repeatedly sew the combined pattern, follow the procedure described below.

1. Select the pattern.
   - For details, refer to “Combining patterns” (page 120).

2. Press (Settings key) in the operation panel.
   ▶ The settings screen appears.

3. Press (Stitch length keys) until is displayed.
   ▶ The screen for specifying repeat sewing appears.

4. Press (Stitch width keys) to select (repeat sewing).
   To return to (single sewing), press (Stitch width keys).

5. Press (OK key) or (Cancel/clear key).
   ▶ The initial stitch screen appears again, and the machine is set to repeatedly sew the selected pattern.

Note
- If repeated sewing is set, the pattern is repeatedly sewn until the sewing machine is stopped.
- If the sewing machine is turned off, the repeated/single sewing setting returns to its default setting.

Checking the selected pattern

Up to 70 patterns can be combined. If all of the selected patterns cannot be displayed in the LCD at the same time, the pattern can be checked according to the following procedure.

1. Press (Settings key) in the operation panel.
   ▶ The settings screen appears.
2 Press ▲ or ▼ (Stitch length keys) until □ is displayed. The screen for checking the pattern appears.

3 Press ◄ or ► (Stitch width keys) to scroll through the pattern and check it.

   • Press ◄ to scroll through the pattern to the left. If the key is pressed while the leftmost (first) pattern is displayed, a beep sounds.
   • Press ► to scroll through the pattern to the right. If the key is pressed while only the rightmost (last) pattern is displayed, a beep sounds.

4 Press OK (OK key) or ◄ (Cancel/clear key). The initial stitch screen appears again.

---

### Changing the pattern size

The size of character stitches in the Gothic font ( ▲ selected with ▲) and outline style ( ▲ selected with ▲) can be switched between large and small. However, the size of other patterns cannot be changed. For details on the stitch patterns whose size can be changed, refer to “Other stitches” (page 138).

1 Select a stitch. Select a pattern whose size can be changed.

2 Press ▼ (Settings key) in the operation panel. The settings screen appears.

3 Press ▲ or ▼ (Stitch length keys) until ▲ ▲ is displayed. The screen for changing the pattern size appears.
4 Press ← or → (Stitch width keys) until the desired size is selected.
Select A for the small size or select B for the large size.

The pattern size is changed.

5 Press OK (OK key) or ☐ (Cancel/clear key).
The initial stitch screen appears again.

Repeat steps 1 through 5.

Changing the stitch density
If a decorative satin stitch has been selected, the stitch density can be changed.

1 Select a decorative satin stitch (No. 53–62 of ☐, selected with ☑).

2 Press ☑ (Settings key) in the operation panel.
The settings screen appears.

3 Press ← or → (Stitch length keys) until ☐ is displayed.
The screen for specifying the stitching density of the decorative satin stitch appears.

Memo
- The large pattern size is the default. If the small pattern size is selected, small patterns can be combined and connected.
- If multiple patterns have been combined, the size of each selected pattern can be specified.
Press $\leftarrow$ or $\rightarrow$ (Stitch width keys) until the desired density is selected. Select $\frac{\text{A}}{\text{A}}$ for sparse stitching or select $\frac{\text{B}}{\text{B}}$ for compact stitching.

Press $\text{OK}$ (OK key) or $\text{C}$ (Cancel/clear key).

Press $\mathcal{A}$ or $\mathcal{B}$ (Stitch length keys) until is displayed.

Press $\leftarrow$ or $\rightarrow$ (Stitch width keys) until the desired ratio is selected.

Press $\text{OK}$ (OK key) or $\text{C}$ (Cancel/clear key).

Press $\mathcal{A}$ or $\mathcal{B}$ (Stitch width keys) until the desired density is selected.

Press $\mathcal{C}$ (Cancel/clear key).

Press $\mathcal{D}$ (Cancel/clear key).

Changing the pattern length

The length of one part of a satin stitch can be set to one of five sizes.

Select a satin stitch (No. 32–47 of $\frac{\text{A}}{\text{A}}$, selected with $\mathcal{D}$ ).

Press $\mathcal{E}$ (Settings key) in the operation panel.

Press $\mathcal{F}$ (Settings key) in the operation panel.

Press $\mathcal{G}$ (Settings key) in the operation panel.

Press $\mathcal{H}$ (Settings key) in the operation panel.

CAUTION

If the stitching density is too compacted, depending on the needle, the stitches may be bunched together, causing the needle to break.

If the stitching density is too compacted, depending on the needle, the stitches may be bunched together, causing the needle to break.

The length can be set within the range of $\times 1$ and $\times 5$.

Press $\mathcal{I}$ to reduce the length. If the key is pressed while the smallest setting ($\times 1$) is displayed, a beep sounds.

Press $\mathcal{J}$ to increase the length. If the key is pressed while the largest setting ($\times 5$) is displayed, a beep sounds.

The satin stitch length is changed.

The initial stitch screen appears again.
Mirror imaging the pattern

The pattern can be mirror imaged along a vertical axis.

1. Select a stitch.

2. Press (Settings key) in the operation panel.
   - The settings screen appears.

3. Press or (Stitch length keys) until \( \downarrow \) is displayed.
   - The screen for mirror imaging the pattern appears.

4. Press \( \downarrow \) or \( \uparrow \) (Stitch width keys) to select ON.
   - To return to OFF, press \( \downarrow \) or \( \uparrow \) (Stitch width keys).
   - The pattern is mirror imaged.

5. Press (OK key) or (Cancel/clear key).
   - The initial stitch screen appears again.

\( \text{① Normal} \)
\( \text{② Mirror-imaged} \)

Memo

- Some of the utility stitches, most of the decorative stitches, and all of the character stitches can be mirror imaged.
- Mirror imaged patterns can also be combined with other patterns.
Saving patterns

Combined patterns can be saved for later use. Since saved patterns are not lost after the sewing machine is turned off, they can be retrieved at any time. This is convenient for patterns, such as names, that will be used often. Utility stitches can also be saved. Up to ten patterns can be saved.

1. Create the combined pattern that you wish to save. Otherwise, display the pattern to be saved.
   - For details, refer to “Combining patterns” (page 120).

2. Press \( \text{Memory key} \) in the operation panel.
   - The machine enters pattern memory mode, and \( \text{appears in the upper-left corner of the screen.} \)

3. Press the numeric key (0 through 9) for the pocket where the pattern is to be saved.
   - The saved contents of the pocket for the selected number are displayed.
   - If nothing has been saved, nothing appears in the bottom of the screen.
   - If the pocket contains a pattern, the pattern is displayed. To leave this pattern in the pocket, select a different pocket.

4. Check the contents, and then press \( \text{OK key} \).
   - The contents saved in the selected pocket are overwritten.
     - “Saving...” appears while the pattern is being saved in the pocket.
     - After the pattern is saved, a beep is sounded, and the initial stitch screen appears again.

Note

* Do not turn off the sewing machine while a pattern is being saved, otherwise the pattern data may be lost.

Memo

* The pattern saved in the pocket can be erased by performing the save operation with no pattern selected.

Retrieving a pattern

1. Press \( \text{Preset utility stitch/saved pattern key} \) in the operation panel.
   - After \( \text{appears in the center of the screen, the machine enters retrieve pattern mode, and \( \text{appears in the lower-left corner of the screen.} \}

Memo

* Each time \( \text{Preset utility stitch/saved pattern key} \) is pressed, the machine switches between the preset utility stitch mode and the saved pattern mode. (For details on the preset utility stitch mode, refer to “Selecting stitch types and patterns” (page 70).
2 Press the numeric key (0 through 9) for the pocket where the pattern is saved.
   ▶ The saved contents of the pocket for the selected number are retrieved.

   • If nothing was saved in the selected pocket, a beep is sounded, and the screen displayed before the numeric key was pressed appears again.
   • To select a different pocket, use the numeric keys to type in the number of a different pocket.

Memo
   ● After a decorative stitch or character stitch pattern is retrieved, press \A (Decorative stitch key) or \B (Character stitch key) to combine additional patterns with it or edit it.

Realigning the pattern

The pattern may not be sewn correctly, depending on the type of fabric being sewn or the sewing speed. If this occurs, adjust the pattern while sewing on a piece of scrap fabric that is the same as that used for your project.

1 Attach monogramming foot “N”.
   ▶ For details, refer to “Replacing the presser foot” (page 41).

2 Select \C (No. 31 of \D, selected with \E).
   Press \F (Decorative stitch key), and then use the numeric keys to type in “31”.
   ▶ The pattern alignment stitch is selected.

3 Start sewing.
   ▶ The pattern for making the adjustment is sewn.
   ▶ The sewing machine stops after it has finished sewing the pattern.

4 Check the sewn pattern.
   If the part of the pattern indicated in the illustration is sewn uniformly, the pattern is correctly aligned.

   If the pattern is not sewn correctly, follow the steps below to adjust the sewing.

5 Press \G (Settings key) in the operation panel.
   ▶ The settings screen appears.

6 Press \H or \I (Stitch length keys) until \J is displayed.
   ▶ The screen for adjusting the pattern appears.
7 Press \(<\) or \(>\) (Stitch width keys).

- Make the necessary adjustments according to how the pattern is sewn.

Press \(>\) (Stitch width key) to increase the adjustment setting.

Press \(<\) (Stitch width key) to decrease the adjustment setting.

8 Start sewing again, and then check the pattern. Continue adjusting the pattern until it is sewn correctly.

9 When the pattern is sewn correctly, press \(\text{OK}\) (OK key) or \(\text{\(\frac{5}{9}\)}\) (Cancel/clear key).

- The initial stitch screen appears again.
Designing a Pattern

With the My Custom Stitch function, you can sew stitch patterns that you design yourself.

### Drawing a sketch of the pattern

Prepare a grid sheet set.

1. **Draw a sketch of the pattern on the grid sheet set.**

   ![](image1)

   Draw the pattern as one continuous line and with the start point and the end point of the design at the same height.

2. **If the pattern will be repeated, determine the space between the repeating patterns.**

   ![](image2)

   For a more attractive stitch, close the pattern by intersecting the line.

3. **Mark the points in the pattern that are positioned at intersections in the grid, and then link those points with a continuous straight line.**

   ![](image3)

4. **Determine the sewing order.**

   ![](image4)

   For a more attractive stitch, close the pattern by intersecting the line.
Entering the pattern data

Follow the pattern drawn on the grid sheet and program the pattern into the sewing machine.

1. **Attach monogramming foot “N”**.

   ![Monogramming Foot](image)

   - For details, refer to “Replacing the presser foot” (page 41).

2. **Turn on the sewing machine.**

3. **Select (No. 99 of , selected with ).**

   Press (Decorative stitch key), and then use the numeric keys to type in “99”.

   ![Pattern Selection](image)

   ▶ The screen for entering a pattern appears.

   ![Pattern Entry Screen](image)

   ① Number of the current point/Total number of points
   ② Horizontal coordinate (0–79)
   ③ Vertical coordinate (0–14)

4. **Check the grid sheet set, and specify the coordinates of the first point.**

   Press (Stitch width keys) to select the horizontal coordinate and press (Stitch length keys) to select the vertical coordinate, and then press (OK key).

   ![Stitch Setting](image)

   ① Stitch width keys
   ② Stitch length keys

5. **Specify the coordinates of the second point, and then press (OK key).**

   ![Second Point Specification](image)

   ▶ A screen appears, allowing you to specify the settings for the stitching between the two points.

6. **Specify whether single stitching or triple stitching will be sewn between the points.**

   Press (Stitch width keys) to select ( for single stitching or ( for triple stitching, and then press (OK key).

   ![Stitch Selection](image)

   ▶ A screen for selecting the next operation appears.
7 Select \textbf{[ ]} and then press \textbf{OK} (OK key).

- If you make a mistake while specifying a point, press \textbf{[ ]} (Cancel/clear key) so that the point changes from \textbf{[ ]} to \textbf{[ ]}, and then move (edit) the position of the point.

A screen for specifying the next point appears.

8 Repeat steps 6 through 7 to specify each point.
Up to 99 points can be entered.

To edit the position of a point.
The position of a point can be edited (moved) if \textbf{[ ]} (Cancel/clear key) is pressed while \textbf{[ ]} is displayed in the screen so that the point changes from \textbf{[ ]} to \textbf{[ ]}. Each time \textbf{[ ]} (Cancel/clear key) is pressed, the previous point is selected. To select the next point, press \textbf{OK} (OK key).

To delete a point
The last point can be deleted by pressing \textbf{[ ]} (0 key) while a point appears as \textbf{[ ]} in the screen where \textbf{[ ]} is displayed. Each press of the key deletes the last point in the pattern.

9 After all points in the pattern have been specified, select \textbf{[ ]} in the screen that appears in step 8, and then press \textbf{OK} (OK key).

The sewing screen appears.

10 Specify the various stitching settings, such as reverse/reinforcement stitching, in the same way as with other stitches.

- With this screen displayed, pressing \textbf{[ ]} (Cancel/clear key) displays the screen where points can be edited so that points can be added or removed.

**Memo**
- To save the entered pattern data, save it from the sewing screen. For details, refer to “Saving patterns” (page 126).
- The pattern in the LCD will appear different from the pattern drawn in the grid sheet set and the actual sewn stitch. Also, refer to these when entering the design.
Examples of designs

Enter each of the points indicated in the table to sew the sample stitch.

<table>
<thead>
<tr>
<th>Point</th>
<th>←</th>
<th>↓</th>
<th>Point</th>
<th>←</th>
<th>↓</th>
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</tbody>
</table>
APPENDIX

The various maintenance and troubleshooting procedures are described in this chapter.

STITCH SETTINGS ........................................................................................................ 134
Utility stitches ........................................................................................................... 134
Other stitches.......................................................................................................... 138

CARE AND MAINTENANCE ...................................................................................... 142
Restrictions on oiling ............................................................................................... 142
Cleaning the machine surface .............................................................................. 142
Cleaning the race ..................................................................................................... 142

TROUBLESHOOTING .............................................................................................. 144
Frequent troubleshooting topics ............................................................................ 144
Upper thread tightened up ...................................................................................... 144
Tangled thread on wrong side of fabric ................................................................. 145
Incorrect thread tension ......................................................................................... 147
Fabric is caught in the machine and cannot be removed ....................................... 148
When the thread became tangled under the bobbin winder seat ......................... 151
List of symptoms ..................................................................................................... 153
Error messages ........................................................................................................ 158
Nothing appears in the LCD ................................................................................... 159
Operation beep .......................................................................................................... 159
Cancelling the operation beep ................................................................................ 159

INDEX ....................................................................................................................... 161
## Stitch Settings

Applications, stitch lengths and widths and whether the twin needle can be used are listed for utility stitches in the following table.

### Utility stitches

<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Preser Foot</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Reverse/ Reinforcement Stitching</th>
<th>Programmed Thread-Cutting</th>
<th>Walking Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Left</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Straight</td>
<td></td>
<td>J</td>
<td>Basic stitching, sewing gathers or pintucks, etc.</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
<td>0.2–5.0 (1/64–3/16)</td>
<td>Yes (J)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J</td>
<td>Basic stitching and sewing gathers or pintucks</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
<td>0.2–5.0 (1/64–3/16)</td>
<td>Yes (J)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J/L</td>
<td>Attaching zippers, basic stitching, sewing gathers or pintucks, etc.</td>
<td>3.5 (1/8)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
<td>0.2–5.0 (1/64–3/16)</td>
<td>Yes (J)</td>
</tr>
<tr>
<td>Triple</td>
<td></td>
<td>J</td>
<td>Attaching sleeves, sewing inseams, sewing stretch fabrics and decorative stitching</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
<td>1.5–4.0 (1/16–3/16)</td>
<td>Yes (J)</td>
</tr>
<tr>
<td>Stretch</td>
<td></td>
<td>J</td>
<td>Sewing stretch fabrics and decorative stitching</td>
<td>1.0 (1/16)</td>
<td>1.0–3.0 (1/16–1/8)</td>
<td>2.5 (3/32)</td>
<td>1.0–4.0 (1/16–3/16)</td>
<td>Yes (J)</td>
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<tr>
<td>Basting</td>
<td></td>
<td>J</td>
<td>Temporarily securing</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>–</td>
<td>–</td>
<td>No</td>
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<tr>
<td>Zigzag</td>
<td></td>
<td>J/L</td>
<td>Overcasting and attaching appliqués</td>
<td>3.5 (1/8)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>1.4 (1/16)</td>
<td>0.0–4.0 (0–3/16)</td>
<td>Yes (J)</td>
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<td></td>
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<td>J</td>
<td>Beginning sewing from the right needle position</td>
<td>3.5 (1/8)</td>
<td>2.5–5.0 (3/32–3/16)</td>
<td>1.4 (1/16)</td>
<td>0.3–4.0 (1/64–3/16)</td>
<td>Yes (J)</td>
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<tr>
<td>2-point</td>
<td></td>
<td>J</td>
<td>Overcasting on medium weight or stretch fabrics, attaching elastic, darning, etc.</td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>1.0 (1/16)</td>
<td>0.2–4.0 (1/64–3/16)</td>
<td>Yes (J)</td>
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<td>3-point</td>
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<td>J</td>
<td>Overcasting on medium weight or stretch fabrics, attaching elastic, darning, etc.</td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>1.0 (1/16)</td>
<td>0.2–4.0 (1/64–3/16)</td>
<td>Yes (J)</td>
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<tr>
<td>Overcasting</td>
<td></td>
<td>G</td>
<td>Overcasting on thin or medium weight fabrics</td>
<td>3.5 (1/8)</td>
<td>2.5–5.0 (3/32–3/16)</td>
<td>2.0 (1/16)</td>
<td>1.0–4.0 (1/16–3/16)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G</td>
<td>Overcasting on thick fabrics</td>
<td>5.0 (3/16)</td>
<td>2.5–5.0 (3/32–3/16)</td>
<td>2.5 (3/32)</td>
<td>1.0–4.0 (1/16–3/16)</td>
<td>No</td>
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<tr>
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<td></td>
<td>G</td>
<td>Preventing fraying in thick fabrics and fabrics that fray easily</td>
<td>5.0 (3/16)</td>
<td>3.5–5.0 (1/8–3/16)</td>
<td>2.5 (3/32)</td>
<td>1.0–4.0 (1/16–3/16)</td>
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<tr>
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<td></td>
<td>J</td>
<td>Overcasting on stretch fabrics</td>
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<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
<td>0.5–4.0 (1/32–3/16)</td>
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<tr>
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<td>J</td>
<td>Overcasting on thick or stretch fabrics</td>
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<td>0.0–7.0 (0–1/4)</td>
<td>2.5 (3/32)</td>
<td>0.5–4.0 (1/32–3/16)</td>
<td>Yes (J)</td>
</tr>
<tr>
<td>Stitch Name</td>
<td>Pattern</td>
<td>Presser Foot</td>
<td>Application</td>
<td>Stitch Width [mm (inch)]</td>
<td>Stitch Length [mm (inch)]</td>
<td>Reverse/Reinforcement Stitching</td>
<td>Programmed Thread-Cutting</td>
<td>Walking Foot</td>
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<td>Overcasting stitch</td>
<td>J</td>
<td></td>
<td>Overcasting on stretch fabrics and decorative stitching</td>
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<td>0.0–7.0 (0–1/4)</td>
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<td>Blind hem stitch</td>
<td>R</td>
<td></td>
<td>Blind hem stitching on medium weight fabrics</td>
<td>00 (0)</td>
<td>3–3–3</td>
<td>No</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
</tr>
<tr>
<td>Blind hem stitch</td>
<td>R</td>
<td></td>
<td>Blind hem stitching on stretch fabrics</td>
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<td>3–3–3</td>
<td>No</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
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<tr>
<td>Appliqué stitch</td>
<td>J</td>
<td></td>
<td>Appliqué stitching</td>
<td>3.5 (1/8)</td>
<td>2.5–7.0 (3/32–1/4)</td>
<td>Yes (J)</td>
<td>Reinforcement + thread-cutting</td>
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<tr>
<td>Shell tuck stitch</td>
<td>J</td>
<td></td>
<td>Shell tuck stitching</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>Yes (J)</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
</tr>
<tr>
<td>Piecing straight stitch</td>
<td>J</td>
<td></td>
<td>Piecing straight stitching (with a seam allowance of 6.5 mm (1/4 inch) from the right edge of the presser foot)</td>
<td>5.5 (7/32)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>No</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
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<tr>
<td>Piecing straight stitch</td>
<td>J</td>
<td></td>
<td>Piecing straight stitching (with a seam allowance of 6.5 mm (1/4 inch) from the left edge of the presser foot)</td>
<td>1.5 (1/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>No</td>
<td>Reinforcement + thread-cutting</td>
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<tr>
<td>Straight stitch that looks hand-sewn (for quilting)</td>
<td>J</td>
<td></td>
<td>Straight stitch quilting that looks hand-sewn</td>
<td>0.0 (0)</td>
<td>0.0–7.0 (0–1/4)</td>
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<td>No</td>
</tr>
<tr>
<td>Zigzag stitch (for quilting)</td>
<td>J</td>
<td></td>
<td>Appliqué quilting, free-motion quilting, satin stitching</td>
<td>3.5 (1/8)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>No</td>
<td>Reinforcement + thread-cutting</td>
<td>Yes</td>
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<tr>
<td>Appliqué stitch (for quilting)</td>
<td>J</td>
<td></td>
<td>Attaching appliqués and binding</td>
<td>1.5 (1/16)</td>
<td>0.5–5.0 (1/32–3/16)</td>
<td>No</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
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<tr>
<td>Quilting stitch (for stippling)</td>
<td>J</td>
<td></td>
<td>Quilting background stitching (stippling)</td>
<td>7.0 (1/4)</td>
<td>1.0–7.0 (1/16–1/4)</td>
<td>No</td>
<td>Reinforcement + thread-cutting</td>
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<tr>
<td>Satin scallop stitch</td>
<td>N</td>
<td></td>
<td>Scallop stitching</td>
<td>5.0 (3/16)</td>
<td>2.5–7.0 (3/32–1/4)</td>
<td>Yes (J)</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
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<tr>
<td>Joining stitch</td>
<td>J</td>
<td></td>
<td>Patchwork stitching and decorative stitching</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>Yes (J)</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
</tr>
<tr>
<td>Joining stitch</td>
<td>J</td>
<td></td>
<td>Patchwork stitching, decorative stitching and sewing overcasting on both pieces of fabric, such as with tricot</td>
<td>5.0 (3/16)</td>
<td>2.5–7.0 (3/32–1/4)</td>
<td>Yes (J)</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
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<tr>
<td>Joining stitch</td>
<td>J</td>
<td></td>
<td>Patchwork stitching and decorative stitching</td>
<td>5.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>Yes (J)</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
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<tr>
<td>Joining stitch</td>
<td>J</td>
<td></td>
<td>Patchwork stitching and decorative stitching</td>
<td>5.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>Yes (J)</td>
<td>Reinforcement + thread-cutting</td>
<td>No</td>
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</table>

**Stitch Settings** 135
<table>
<thead>
<tr>
<th>Stitch Name</th>
<th>Pattern</th>
<th>Present Foot</th>
<th>Application</th>
<th>Stitch Width [mm (inch)]</th>
<th>Stitch Length [mm (inch)]</th>
<th>Reverse/ Reinforcement Stitching</th>
<th>Programmed Thread-Cutting</th>
<th>Walking Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fagoting stitch</td>
<td>❂</td>
<td>J</td>
<td>Fagoting and decorative stitching</td>
<td>5.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>Yes (J)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>❂</td>
<td>J</td>
<td>Fagoting and decorative stitching</td>
<td>5.0 (3/16)</td>
<td>2.5–7.0 (3/32–1/4)</td>
<td>Yes (J)</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Elastic-attaching</td>
<td>❂</td>
<td>J</td>
<td>Attaching elastic to stretch fabrics</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>Yes (J)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>stitch</td>
<td>❂</td>
<td>J</td>
<td>Decorative stitching</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>Yes (J)</td>
<td>No</td>
<td>No</td>
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<td>Ladder stitch</td>
<td>❂</td>
<td>J</td>
<td>Decorative stitching</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
<td>Yes (J)</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Rick-rack stitch</td>
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<td>J</td>
<td>Decorative stitching</td>
<td>4.0 (3/16)</td>
<td>0.0–7.0 (0–1/4)</td>
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<td>No</td>
<td>No</td>
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<tr>
<td>Decorative stitch</td>
<td>❂</td>
<td>J</td>
<td>Decorative stitching</td>
<td>5.5 (7/32)</td>
<td>0.0–7.0 (0–1/4)</td>
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<td>No</td>
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<tr>
<td>Serpentine stitch</td>
<td>❂</td>
<td>N</td>
<td>Decorative stitching and elastic-attaching</td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>Yes (J)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>❂</td>
<td>N</td>
<td>Lace sewing, decorative hemming, heirloom stitching, etc.</td>
<td>3.5 (1/8)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
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<td>❂</td>
<td>N</td>
<td>Decorative hemming, heirloom stitching, etc.</td>
<td>6.0 (15/64)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td></td>
<td>❂</td>
<td>N</td>
<td>Decorative hemming, heirloom stitching, etc.</td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td></td>
<td>❂</td>
<td>N</td>
<td>Decorative hemming on thin, medium weight and plain weave fabrics, heirloom stitching, etc.</td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td></td>
<td>❂</td>
<td>N</td>
<td>Decorative hemming on thin, medium weight and plain weave fabrics, heirloom stitching, etc.</td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<td>❂</td>
<td>N</td>
<td>Decorative hemming, ribbon threading, heirloom stitching, etc.</td>
<td>5.0 (3/16)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>No</td>
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<td>❂</td>
<td>N</td>
<td>Decorative stitching, smocking stitching, heirloom stitching, etc.</td>
<td>6.0 (15/64)</td>
<td>1.5–7.0 (1/16–1/4)</td>
<td>No</td>
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<td>Decorative stitching, smocking stitching, heirloom stitching, etc.</td>
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<td>1.5–7.0 (1/16–1/4)</td>
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<td>Buttonhole stitch</td>
<td>❂</td>
<td>A</td>
<td>Horizontal buttonholes on thin and medium weight fabrics</td>
<td>5.0 (3/16)</td>
<td>3.0–5.0 (1/8–3/16)</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td></td>
<td>❂</td>
<td>A</td>
<td>Horizontal buttonholes on areas that are subject to strain</td>
<td>5.0 (3/16)</td>
<td>3.0–5.0 (1/8–3/16)</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Stitch Name</td>
<td>Pattern</td>
<td>Presser Foot</td>
<td>Application</td>
<td>Stitch Width [mm (inch)]</td>
<td>Stitch Length [mm (inch)]</td>
<td>Reverse/ Reinforcement Stitching</td>
<td>Programmed Thread-Cutting</td>
<td>Walking Foot</td>
</tr>
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<tr>
<td>Buttonhole stitch</td>
<td>A</td>
<td>50</td>
<td>Horizontal buttonholes on thick fabrics</td>
<td>5.0 (3/16)</td>
<td>0.4 (1/64)</td>
<td>No</td>
<td>Automatic reinforcement</td>
<td>Thread-cutting</td>
</tr>
<tr>
<td></td>
<td>51</td>
<td>Secured buttonholes for fabrics that have backings</td>
<td>5.0 (3/16)</td>
<td>0.4 (1/64)</td>
<td>No</td>
<td>Automatic reinforcement</td>
<td>Thread-cutting</td>
<td>No</td>
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<tr>
<td></td>
<td>A</td>
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<td>Buttonholes for stretch or knit fabrics</td>
<td>6.0 (15/54)</td>
<td>1.5 (1/16)</td>
<td>No</td>
<td>Automatic reinforcement</td>
<td>Thread-cutting</td>
</tr>
<tr>
<td></td>
<td>53</td>
<td>Buttonholes for thick or furry fabrics</td>
<td>5.0 (3/16)</td>
<td>2.0 (1/16)</td>
<td>No</td>
<td>Automatic reinforcement</td>
<td>Thread-cutting</td>
<td>No</td>
</tr>
<tr>
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<td>54</td>
<td>Bound buttonholes</td>
<td>5.0 (3/16)</td>
<td>2.0 (1/16)</td>
<td>No</td>
<td>Automatic reinforcement</td>
<td>Thread-cutting</td>
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<td>55</td>
<td>Keyhole buttonholes for thick or furry fabrics</td>
<td>7.0 (1/4)</td>
<td>0.5 (1/32)</td>
<td>No</td>
<td>Automatic reinforcement</td>
<td>Thread-cutting</td>
<td>No</td>
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<td>Keyhole buttonholes for medium weight and thick fabrics</td>
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<td>Button sewing</td>
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# Other stitches

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* Pattern for making adjustment

---

**Memo**

- To select 31, press (Decorative stitch key) once.
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</table>

** Use monogramming foot “N” when combined with other pattern

---

**Memo**

- To select 2, press (Decorative stitch key) twice.
MEMO

To select A (Gothic font), press A (Character stitch key) once.

MEMO

To select A (Script font), press A (Character stitch key) twice.
### Stitch Settings

#### Stitch Type

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Presser Foot</th>
<th>Twin Needle</th>
<th>Pattern Size</th>
<th>Adjustable Stitching Density</th>
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#### Character Stitches (Outline Style)

<table>
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<th>Character</th>
<th>Presser Foot</th>
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<td>No</td>
<td>Large, Small</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
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</table>

**Memo**

To select A (Outline style), press A (Character stitch key) three times.
Care and Maintenance

Simple sewing machine maintenance operations are described below.

Restrictions on oiling

In order to prevent damaging this machine, it must not be oiled by the user. This machine was manufactured with the necessary amount of oil applied to ensure correct operation, making periodic oiling unnecessary.

If problems occur, such as difficulty turning the handwheel or an unusual noise, immediately stop using the machine, and contact your authorized dealer or the nearest authorized service center.

Cleaning the machine surface

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

CAUTION

- Unplug the power cord before cleaning the machine, otherwise injuries or an electric shock may occur.

Cleaning the race

Sewing performance will suffer if dust collects in the bobbin case; therefore, it should be cleaned periodically.

1. Turn off the sewing machine.
2. Unplug the power cord from the power supply jack on the right side of the sewing machine.

CAUTION

- Unplug the power cord before cleaning the machine, otherwise injuries or an electric shock may occur.

3. Remove the flat bed attachment.
4. Remove the needle plate cover.
   The needle plate cover is removed differently depending on the model.
   - If there is a screw in the needle plate cover
     1. Use the disc-shaped screwdriver to remove the screw in the needle plate cover.
     2. Grasp both sides of the needle plate cover, and then slide it toward you.

   - If there is no screw in the needle plate cover
     1. Grasp both sides of the needle plate cover, and then slide it toward you.

   ① Needle plate cover
   The needle plate cover is removed.
5 Remove the bobbin case.
Grasp the bobbin case, and then pull it out.

Remove the bobbin case.

6 Use the cleaning brush or a vacuum cleaner to remove any lint and dust from the race and its surrounding area.

Cleaning brush
Race

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

▲ mark
● mark
Bobbin case

* Align the ▲ and ● marks.

8 Install the needle plate cover.
The needle plate cover is installed differently depending on the model.

If there is a screw in the needle plate cover

1 Insert the tabs on the needle plate cover into the needle plate, and then slide the cover back on.

2 Use the disc-shaped screwdriver to tighten the screw in the needle plate cover.

If there is no screw in the needle plate cover

1 Insert the tabs on the needle plate cover into the needle plate, and then slide the cover back on.

9 Install the flat bed attachment in its original position.

CAUTION

● Never use a bobbin case that is scratched, otherwise the upper thread may become tangled, the needle may break or sewing performance may suffer. For a new bobbin case (part code: XC3153-321), contact your nearest authorized service center.

● Be sure that the bobbin case is correctly installed, otherwise the needle may break.
Troubleshooting

If the machine stops operating correctly, check the following possible problems before requesting service. You can solve most problems by yourself. If you need additional help, the Brother Solutions Center offers the latest FAQs and troubleshooting tips. Visit us at “http://solutions.brother.com”.

If the problem persists, contact your dealer or the nearest authorized service center.

Frequent troubleshooting topics

Detailed causes and remedies for common troubleshooting topics are described below. Be sure to refer to this before contacting us.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper thread tightened up</td>
<td>144</td>
</tr>
<tr>
<td>Tangled thread on wrong side of fabric</td>
<td>145</td>
</tr>
<tr>
<td>Incorrect thread tension</td>
<td>147</td>
</tr>
<tr>
<td>Fabric is caught in the machine and cannot be removed</td>
<td>148</td>
</tr>
<tr>
<td>When the thread became tangled under the bobbin winder seat</td>
<td>151</td>
</tr>
</tbody>
</table>

Upper thread tightened up

**Symptom**
- The upper thread appears as a single continuous line.
- The lower thread is visible from the upper side of the fabric. (Refer to the illustration below.)
- The upper thread has tightened up, and comes out when pulled.
- The upper thread has tightened up, and wrinkles appear in the fabric.
- The upper thread tension is tight, and the results do not change even after the thread tension is adjusted.

**Cause**

**Incorrect lower threading**

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

**Remedy/check details**

Correctly install the lower thread.

1. Turn off the sewing machine.
2. Remove the bobbin from the bobbin case.
3. Place the bobbin in the bobbin case so that the thread unwinds in the correct direction.
   - Hold the bobbin with your right hand with the thread unwinding to the left, and hold the end of the thread with your left hand. Then, with your right hand, place the bobbin in the bobbin case.

If the bobbin is inserted with the thread unwinding in the wrong direction, sewing will be done with an incorrect thread tension.
While holding the bobbin in place with your finger, pass the thread through the slit in the needle plate.

- Hold down the bobbin with your right hand, and then pull the end of the thread around the tab with your left hand.

1. Tab
2. Hold down the bobbin with your right hand.

Pull the thread to pass it through the slit in the needle plate, then cut it with the cutter.

3. Slit
4. Cutter

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

---

**Tangled thread on wrong side of fabric**

- **Symptom**
  - The thread becomes tangled on the lower side of the fabric.
  - After starting sewing, a rattling noise is made and sewing cannot continue.
  - Looking under the fabric, there is tangled thread in the bobbin case.

- **Cause**
  - Incorrect upper threading
    - If the upper thread is incorrectly threaded, the upper thread passed through the fabric cannot be firmly pulled up and the upper thread becomes tangled in the bobbin case, causing a rattling noise.

- **Remedy/check details**
  - Remove the tangled thread, and then correct the upper threading.

1. **Remove the tangled thread. If it cannot be removed, cut the thread with scissors.**
   - For details, refer to “Cleaning the race” on page 142.

2. **Remove the upper thread from the machine.**

3. **Refer to the following steps to correct the upper threading.**
   - If the bobbin was removed from the bobbin case, refer to “Installing the bobbin” (page 26) and “Remedy/check details” in the section “Upper thread tightened up” (page 144) to correctly install the bobbin.
Raise the presser foot using the presser foot lever.

Presser foot lever

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

Press  (“Needle Position” button) once or twice to raise the needle.

“Needle Position” button

The needle is correctly raised when the mark on the handwheel is at the top, as shown below. Check the handwheel and, if this mark is not at this position, press (“Needle Position” button) until it is.

Mark on handwheel

While holding the thread lightly with your right hand, pull the thread with your left hand, and then pass the thread behind the thread guide cover and to the front.

Thread guide cover

Pass the thread under the thread guide plate, and then pull it up.

Thread guide plate

While using your right hand to lightly hold the thread passed under the thread guide plate, pass the thread through the thread path in the order shown below.

Shutter

Pass the thread behind the needle bar thread guide.
The thread can easily be passed behind the needle bar thread guide by holding the thread in your left hand, then feeding the thread with your right hand, as shown.

Needle bar thread guide

Next, use the needle threader to thread the needle. Continue with the procedure in “Threading the needle” (page 31).
Incorrect thread tension

**Symptoms**
- Symptom 1: The lower thread is visible from the upper side of the fabric.
- Symptom 2: The upper thread appears as a straight line on the upper side of the fabric.
- Symptom 3: The upper thread is visible from the lower side of the fabric.
- Symptom 4: The lower thread appears as a straight line on the lower side of the fabric.
- Symptom 5: The stitching on the lower side of the fabric is loose or has slack.

**Cause/remedy/check details**

**Cause 1**
The machine is not correctly threaded.
- With symptoms 1 and 2 described above
  The lower threading is incorrect.
  Return the thread tension dial to “4”, and then refer to “Upper thread tightened up” (page 144) to correct the threading.
- With symptoms 3 through 5 described above
  The upper threading is incorrect.
  Return the thread tension dial to “4”, and then refer to “Tangled thread on wrong side of fabric” (page 145) to correct the upper threading.

**Cause 2**
A needle and thread appropriate for the fabric are not being used.
The sewing machine needle that should be used depends on the type of fabric sewn and the thread thickness.
If a needle and thread appropriate for the fabric are not being used, the thread tension will not be adjusted correctly, causing wrinkles in the fabric or skipped stitches.
- Refer to “Needle types and their uses” (page 38) to check that a needle and thread appropriate for the fabric are being used.

**Cause 3**
An appropriate setting on the thread tension dial is not selected.
Turn the thread tension dial to select an appropriate thread tension.
The appropriate thread tension differs according to the type of fabric and thread being used.
- Adjust the thread tension while test sewing on a piece of scrap fabric that is the same as that used in your project.

**Note**
- If the upper threading and lower threading are incorrect, the thread tension cannot be adjusted correctly, even by turning the thread tension dial. Check the upper threading and lower threading first, and then adjust the thread tension.

- When the lower thread is visible from the upper side of the fabric. Turn the thread tension dial to a lower number (toward the left). (Loosen the thread tension.)

- When the upper thread is visible from the lower side of the fabric. Turn the thread tension dial to a higher number (toward the right). (Tighten the thread tension.)
Fabric is caught in the machine and cannot be removed

If the fabric is caught in the sewing machine and cannot be removed, the thread may have become tangled under the needle plate. Follow the procedure described below to remove the fabric from the machine. If the operation could not be completed according to the procedure, instead of attempting to complete it forcefully, contact your nearest authorized service center.

Removing the fabric from the machine

1. Immediately stop the sewing machine.
2. Turn off the sewing machine.
3. Remove the needle.
   - If the needle is lowered into the fabric, turn the handwheel away from you (clockwise) to raise the needle out of the fabric, and then remove the needle.
     - Refer to “Replacing the needle” (page 39).
4. Remove the presser foot and presser foot holder.
   - Refer to “Replacing the presser foot” (page 41)” and “Removing the presser foot holder” (page 43).
5. Lift up the fabric and cut the threads below it.
   - If the fabric can be removed, remove it. Continue with the following steps to clean the race.
6. Remove the needle plate cover.
   - Refer to “Cleaning the race” (page 142).
7. Cut out the tangled threads, and then remove the bobbin.
8. Remove the bobbin case.
   - If threads remain in the bobbin case, remove them.
9. Use the cleaning brush or a vacuum cleaner to remove any dust from the race and its surrounding area.

If the fabric could be removed.

| Continue with step 10. |

If the fabric could not be removed.

| Continue with step 10. |
10 Use the enclosed disc-shaped screwdriver to loosen the two screws on the needle plate.

Note
● Be careful not to drop the removed screws in the machine.

11 Slightly lift up the needle plate, cut any tangled threads, and then remove the needle plate. Remove the fabric and threads from the needle plate.

If the fabric cannot be removed, even after completing these steps, contact your nearest authorized service center.

12 Remove any threads in the race and around the feed dogs.

13 Turn the handwheel to raise the feed dogs.

14 Align the two screw holes in the needle plate with the two holes at the needle plate mounting base, and then fit the needle plate onto the machine.

15 Lightly finger-tighten the screw on the right side of the needle plate. Then, use the disc-shaped screwdriver to firmly tighten the screw on the left side. Finally, firmly tighten the screw on the right side.

Turn the handwheel to check that the feed dogs move smoothly and do not contact the edges of the slots in the needle plate.

Note
● Be careful not to drop the removed screws in the machine.

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

- Align the ▲ and ● marks.

● Make sure that the indicated points are aligned before installing the bobbin case.
Attach the needle plate cover according to steps 16 in “Cleaning the race” (page 143).

Check the condition of the needle, and then install it.
If the needle is in a poor condition, for example, if it is bent, be sure to install a new needle.
- Refer to “Checking the needle” (page 39) and “Replacing the needle” (page 39).

CAUTION
- Never use bent needles. Bent needles can easily break, possibly resulting in injuries.

Note
- After completing this procedure, continue with the following procedure in “Checking machine operations” to check that the machine is operating correctly.

Memo
- Since the needle may have been damaged when the fabric was caught in the machine, we recommend replacing it with a new one.

Checking machine operations
If the needle plate has been removed, check machine operations to confirm that installation has been completed correctly.

Turn on the machine.
Select stitch 03 .

Note
- Do not yet install the presser foot and thread.

Slowly turn the handwheel toward you (counterclockwise), and look from all sides to check that the needle falls at the center of the hole in the needle plate.
If the needle contacts the needle plate, remove the needle plate, and then install it again, starting with step 10 in “Removing the fabric from the machine” (page 149).

Select stitch 07 . At this time, increase the stitch length and width to their maximum settings.
- For details on changing the settings, refer to “Adjusting the Stitch Width and Length” (page 58).

Slowly turn the handwheel toward you (counterclockwise) and check that the needle bar and feed dogs operate correctly.
If the needle or feed dogs contact the needle plate, the machine may be malfunctioning; therefore, contact your nearest authorized service center.

Turn off the machine, and then install the bobbin and presser foot.
- Refer to “Installing the bobbin” (page 26) and “Replacing the presser foot” (page 41).
Correctly thread the machine.

- For details on threading the machine, refer to “Upper Threading” (page 28).

**Note**

- The thread may have become tangled as a result of incorrect upper threading. Make sure that the machine is correctly threaded.

Perform trial sewing with normal fabric.

**Note**

- Incorrect sewing may be the result of incorrect upper threading or sewing thin fabrics. If there are poor results from the trial sewing, check the upper threading or the type of fabric being used.

---

**When the thread became tangled under the bobbin winder seat**

If the bobbin winding starts when the thread is not passed under the pretension disk of the bobbin-winding thread guide correctly, the thread may become tangled under the bobbin winder seat. In such a case, wind off the thread according to the following procedure.

**CAUTION**

- Do not remove the bobbin winder seat even if the thread become tangled under the bobbin winder seat. It may result in injuries.
- Do not remove the screw of the bobbin winder presser, otherwise the machine may be damaged; you cannot wind off the thread by removing the screw.

1. If the thread become tangled under the bobbin winder seat, press \( \text{ felon } \) (“Start/Stop” button) once to stop the bobbin winding. When the foot controller is plugged in, remove your foot from the foot controller.

2. Cut the thread with scissors beside the bobbin-winding thread guide.

---

1. Thread
2. Bobbin winder seat

1. Screw of the bobbin winder presser

1. Start/stop button

1. Bobbin-winding thread guide
3 Slide the bobbin winder shaft to the left, and then remove the bobbin from the shaft.

4 Hold the thread end with your left hand, and wind off the thread clockwise near the bobbin with your right hand as shown below.

5 Wind the bobbin again.

**Note**
- Make sure that the thread passes under the pretension disk of the bobbin-winding thread guide correctly (page 24).
### List of symptoms

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable Cause</th>
<th>Remedy</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The sewing machine does not operate.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The machine is not turned on.</td>
<td>Turn on the machine.</td>
<td></td>
<td>page 17</td>
</tr>
<tr>
<td>The “Start/Stop” button was not pressed.</td>
<td>Press the “Start/Stop” button.</td>
<td></td>
<td>page 52</td>
</tr>
<tr>
<td>The presser foot lever is raised.</td>
<td>Lower the presser foot lever.</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>The “Start/Stop” button was pressed, even though the foot controller is connected.</td>
<td>Do not use the “Start/Stop” button when the foot controller is connected. To use the “Start/Stop” button, disconnect the foot controller.</td>
<td></td>
<td>page 52</td>
</tr>
<tr>
<td>The bobbin winder shaft is pushed to the right.</td>
<td>Move the bobbin winder shaft to the left.</td>
<td></td>
<td>page 25</td>
</tr>
<tr>
<td><strong>The needle breaks.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The needle is incorrectly installed.</td>
<td>Correctly install the needle.</td>
<td></td>
<td>page 39</td>
</tr>
<tr>
<td>The needle clamp screw is loose.</td>
<td>Use the screwdriver to firmly tighten the screw.</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>The needle is bent or blunt.</td>
<td>Replace the needle.</td>
<td></td>
<td>page 38</td>
</tr>
<tr>
<td>The combination of fabric, thread and needle is not correct.</td>
<td>Select a thread and needle that are appropriate for the type of fabric being sewn.</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>The presser foot that is used is not appropriate for the type of stitch that you wish to sew.</td>
<td>Attach the presser foot that is appropriate for the type of stitch that you wish to sew.</td>
<td></td>
<td>page 134</td>
</tr>
<tr>
<td>The upper thread tension is too tight.</td>
<td>Loosen the upper thread tension.</td>
<td></td>
<td>page 57</td>
</tr>
<tr>
<td>The fabric is pulled too much.</td>
<td>Lightly guide the fabric.</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>The spool is incorrectly installed.</td>
<td>Correctly install the spool.</td>
<td></td>
<td>page 28</td>
</tr>
<tr>
<td>The area around the hole in the needle plate is scratched, or has a burr on it.</td>
<td>Replace the needle plate. Contact your dealer or the nearest authorized service center.</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>The area around the hole in the presser foot is scratched, or has a burr on it.</td>
<td>Replace the presser foot. Contact your dealer or the nearest authorized service center.</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>The bobbin case is scratched, or has a burr on it.</td>
<td>Replace the bobbin case. Contact your dealer or the nearest authorized service center.</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>A bobbin designed specifically for this machine is not used.</td>
<td>Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.</td>
<td></td>
<td>page 22</td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
<td>Reference</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>The upper thread breaks.</td>
<td>The upper thread was not threaded correctly (for example, the spool is not installed correctly, the spool cap is too big for the spool being used, or the thread has come out of the needle bar thread guide).</td>
<td>Correct the upper threading.</td>
<td>page 28</td>
</tr>
<tr>
<td></td>
<td>There are knots or tangles in the thread.</td>
<td>Remove any knots or tangles.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>The selected needle is not appropriate for the thread being used.</td>
<td>Select a needle that is appropriate for the type of thread being used.</td>
<td>page 38</td>
</tr>
<tr>
<td></td>
<td>The upper thread tension is too tight.</td>
<td>Loosen the upper thread tension.</td>
<td>page 57</td>
</tr>
<tr>
<td></td>
<td>The thread is tangled, for example, in the bobbin case.</td>
<td>Remove the tangle thread. If the thread is tangled in the bobbin case, clean the race.</td>
<td>page 142</td>
</tr>
<tr>
<td></td>
<td>The needle is bent or blunt.</td>
<td>Replace the needle.</td>
<td>page 39</td>
</tr>
<tr>
<td></td>
<td>The needle is incorrectly installed.</td>
<td>Correctly install the needle.</td>
<td>page 39</td>
</tr>
<tr>
<td></td>
<td>The area around the hole in the needle plate is scratched, or has a burr on it.</td>
<td>Replace the needle plate. Contact your dealer or the nearest authorized service center.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>The area around the hole in the presser foot is scratched, or has a burr on it.</td>
<td>Replace the presser foot. Contact your dealer or the nearest authorized service center.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>The bobbin case is scratched, or has a burr on it.</td>
<td>Replace the bobbin case. Contact your dealer or the nearest authorized service center.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>A bobbin designed specifically for this machine is not used.</td>
<td>Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.</td>
<td>page 22</td>
</tr>
<tr>
<td>The lower thread is tangled or breaks.</td>
<td>The bobbin thread is incorrectly installed.</td>
<td>Correctly install the bobbin thread.</td>
<td>page 26</td>
</tr>
<tr>
<td></td>
<td>The bobbin is scratched or does not rotate smoothly, or has a burr on it.</td>
<td>Replace the bobbin.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>The thread is tangled.</td>
<td>Remove the tangled thread and clean the race.</td>
<td>page 142</td>
</tr>
<tr>
<td></td>
<td>A bobbin designed specifically for this machine is not used.</td>
<td>Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.</td>
<td>page 22</td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
<td>Reference</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>The thread tension is incorrect.</td>
<td>The upper thread was not threaded correctly.</td>
<td>Correct the upper threading.</td>
<td>page 28</td>
</tr>
<tr>
<td></td>
<td>The bobbin thread is incorrectly installed.</td>
<td>Correctly install the bobbin thread.</td>
<td>page 26</td>
</tr>
<tr>
<td></td>
<td>The combination of fabric, thread and needle is not correct.</td>
<td>Select a thread and needle that are appropriate for the type of fabric being sewn.</td>
<td>page 38</td>
</tr>
<tr>
<td></td>
<td>The presser foot holder is incorrectly installed.</td>
<td>Correctly install the presser foot holder.</td>
<td>page 43</td>
</tr>
<tr>
<td></td>
<td>The thread tension is incorrect.</td>
<td>Adjust the tension of the upper thread.</td>
<td>page 57</td>
</tr>
<tr>
<td></td>
<td>A bobbin designed specifically for this machine is not used.</td>
<td>Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.</td>
<td>page 22</td>
</tr>
<tr>
<td>The fabric is wrinkled.</td>
<td>The upper thread was not threaded correctly, or the bobbin is incorrectly installed.</td>
<td>Correctly thread the upper thread and correctly install the bobbin thread.</td>
<td>page 26, 28</td>
</tr>
<tr>
<td></td>
<td>The spool is incorrectly installed.</td>
<td>Correctly install the spool.</td>
<td>page 28</td>
</tr>
<tr>
<td></td>
<td>The combination of fabric, thread and needle is not correct.</td>
<td>Select a thread and needle that are appropriate for the type of fabric being sewn.</td>
<td>page 38</td>
</tr>
<tr>
<td></td>
<td>The needle is bent or blunt.</td>
<td>Replace the needle.</td>
<td>page 39</td>
</tr>
<tr>
<td></td>
<td>If thin fabrics are being sewn, the stitch is too long.</td>
<td>Shorten the stitch length or sew with stabilizer material under the fabric.</td>
<td>page 59</td>
</tr>
<tr>
<td></td>
<td>The thread tension is incorrect.</td>
<td>Adjust the tension of the upper thread.</td>
<td>page 57</td>
</tr>
<tr>
<td>Stitches are skipped.</td>
<td>The upper thread was not threaded correctly.</td>
<td>Correct the upper threading.</td>
<td>page 28</td>
</tr>
<tr>
<td></td>
<td>The combination of fabric, thread and needle is not correct.</td>
<td>Select a thread and needle that are appropriate for the type of fabric being sewn.</td>
<td>page 38</td>
</tr>
<tr>
<td></td>
<td>The needle is bent or blunt.</td>
<td>Replace the needle.</td>
<td>page 39</td>
</tr>
<tr>
<td></td>
<td>The needle is incorrectly installed.</td>
<td>Correctly install the needle.</td>
<td>page 39</td>
</tr>
<tr>
<td></td>
<td>Dust has accumulated under the needle plate or in the bobbin case.</td>
<td>Remove the needle plate cover and clean the race.</td>
<td>page 142</td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
<td>Reference</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>A high-pitched noise is made while sewing.</td>
<td>Dust has accumulated in the feed dogs or in the bobbin case.</td>
<td>Clean the race.</td>
<td>page 142</td>
</tr>
<tr>
<td></td>
<td>The upper thread was not threaded correctly.</td>
<td>Correct the upper threading.</td>
<td>page 28</td>
</tr>
<tr>
<td></td>
<td>The bobbin case is scratched, or has a burr on it.</td>
<td>Replace the bobbin case. Contact your dealer or the nearest authorized service center.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A bobbin designed specifically for this machine is not used.</td>
<td>Incorrect bobbins will not work properly. Only use a bobbin designed specifically for this machine.</td>
<td>page 22</td>
</tr>
<tr>
<td>The needle threader cannot be used.</td>
<td>The needle has not been raised to the correct position.</td>
<td>Press the “Needle Position” button.</td>
<td>page 31</td>
</tr>
<tr>
<td></td>
<td>The needle is incorrectly installed.</td>
<td>Correctly install the needle.</td>
<td>page 39</td>
</tr>
<tr>
<td>The stitch is not sewn correctly.</td>
<td>The presser foot that is used is not appropriate for the type of stitch that you wish to sew.</td>
<td>Attach the presser foot that is appropriate for the type of stitch that you wish to sew.</td>
<td>page 134</td>
</tr>
<tr>
<td></td>
<td>The thread tension is incorrect.</td>
<td>Adjust the tension of the upper thread.</td>
<td>page 57</td>
</tr>
<tr>
<td></td>
<td>The thread is tangled, for example, in the bobbin case.</td>
<td>Remove the tangle thread. If the thread is tangled in the bobbin case, clean the race.</td>
<td>page 142</td>
</tr>
<tr>
<td>The fabric does not feed.</td>
<td>The feed dogs are lowered.</td>
<td>Slide the drop feed lever to the right. (as seen from the rear of the machine)</td>
<td>page 104</td>
</tr>
<tr>
<td></td>
<td>The stitch is too short.</td>
<td>Lengthen the stitch length.</td>
<td>page 59</td>
</tr>
<tr>
<td></td>
<td>The presser foot that is used is not appropriate for the type of stitch that you wish to sew.</td>
<td>Attach the presser foot that is appropriate for the type of stitch that you wish to sew.</td>
<td>page 134</td>
</tr>
<tr>
<td></td>
<td>The pressure of the presser foot is weak.</td>
<td>Turn the presser foot pressure dial to the left to increase the pressure of the presser foot.</td>
<td>page 43</td>
</tr>
<tr>
<td></td>
<td>The thread is tangled, for example, in the bobbin case.</td>
<td>Remove the tangle thread. If the thread is tangled in the bobbin case, clean the race.</td>
<td>page 142</td>
</tr>
<tr>
<td></td>
<td>Zigzag foot “J” is slanted on a thick seam at the beginning of stitching.</td>
<td>Use the presser foot locking pin (black button on the left side) on zigzag foot “J” to keep the presser foot level while sewing.</td>
<td>page 66</td>
</tr>
<tr>
<td>Nothing appears in the LCD.</td>
<td>The brightness of the LCD is either too light or too dark.</td>
<td>Adjust the brightness of the LCD.</td>
<td>page 159</td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
<td>Reference</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>While winding the bobbin, the bobbin thread was wound below the bobbin winder seat.</td>
<td>You have not wound the bobbin thread properly.</td>
<td>After removing the thread wound below the bobbin winder seat, wind the bobbin correctly.</td>
<td>page 151</td>
</tr>
<tr>
<td>Bobbin thread does not wind neatly on the bobbin.</td>
<td>The thread is not passed through the bobbin-winding thread guide correctly.</td>
<td>Correctly pass the thread through the bobbin-winding thread guide.</td>
<td>page 24</td>
</tr>
<tr>
<td></td>
<td>Bobbin spins slowly.</td>
<td>Move the sewing speed controller to the right (so that the speed will be fast).</td>
<td>page 25</td>
</tr>
<tr>
<td></td>
<td>The thread that was pulled out was not wound onto the bobbin correctly.</td>
<td>Wind the thread that was pulled off round the bobbin five or six times clockwise.</td>
<td>page 25</td>
</tr>
<tr>
<td>Fabric being sewn with the machine cannot be removed.</td>
<td>Thread is tangled below the needle plate.</td>
<td>Lift up the fabric and cut the threads below it, and clean the race.</td>
<td>page 148</td>
</tr>
<tr>
<td>The fabric feeds in the opposite direction.</td>
<td>The feed mechanism is damaged.</td>
<td>Contact your dealer or the nearest authorized service center.</td>
<td>–</td>
</tr>
<tr>
<td>The upper thread has tightened up.</td>
<td>The bobbin thread is incorrectly installed.</td>
<td>Correctly install the bobbin thread.</td>
<td>page 26, 144</td>
</tr>
<tr>
<td>The thread is tangled on the wrong side of the fabric.</td>
<td>You have not threaded the upper thread properly.</td>
<td>Correct the upper threading.</td>
<td>page 28, 145</td>
</tr>
</tbody>
</table>
Error messages

If ("Start/Stop" button) is pressed before the sewing machine is correctly set up or if an operation is performed incorrectly, an error message appears in the LCD. Follow the instructions that appear. The message will disappear if (OK key) or (Cancel/clear key) is pressed while the message is displayed.

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Probable Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>⬤ Can not change.</td>
<td>The selected setting cannot be changed with the selected pattern.</td>
</tr>
<tr>
<td>⬥ Change speed controller mode to “OFF”.</td>
<td>The “Start/Stop” button was pressed without connecting the foot controller while the setting for adjusting the stitch width using the sewing speed controller is set to [ON].</td>
</tr>
<tr>
<td>⬦ Delete the selected pattern.</td>
<td>The stitch mode was changed. This message appears when the current pattern is to be deleted.</td>
</tr>
<tr>
<td>⬧ Disconnect foot control.</td>
<td>The “Start/Stop” button was pressed while the foot controller was connected.</td>
</tr>
<tr>
<td>⬨ Lift buttonhole lever.</td>
<td>A stitch other than the buttonhole, bar tack or darning stitch was selected and the “Start/Stop” button was pressed while the buttonhole lever is lowered.</td>
</tr>
<tr>
<td>⬩ Lower buttonhole lever.</td>
<td>The buttonhole, bar tack or darning stitch was selected and the “Start/Stop” button was pressed while the buttonhole lever is raised.</td>
</tr>
<tr>
<td>⬪ Lower presser foot lever.</td>
<td>The “Start/Stop” button, “Reverse/Reinforcement Stitch” button or “Thread Cutter” button was pressed while the presser foot was raised.</td>
</tr>
<tr>
<td>⬫ No more stitches can be combined.</td>
<td>You tried to combine more than 70 decorative stitches, stain stitches, cross stitches or combined utility stitches.</td>
</tr>
<tr>
<td>⬬ Release twin needle setting.</td>
<td>The twin needle setting is selected while a pattern that cannot be sewn with the twin needle is selected.</td>
</tr>
<tr>
<td>⬭ Return bobbin winding shaft to left.</td>
<td>The “Reverse/Reinforcement Stitch” button, “Needle Position” button or “Thread Cutter” button was pressed while the bobbin winder shaft is moved to the right.</td>
</tr>
<tr>
<td>Saving...</td>
<td>A pattern is being saved. Otherwise, the stitch settings are being saved.</td>
</tr>
<tr>
<td>⬰ Select pattern.</td>
<td>The “Start/Stop” button or “Reverse/Reinforcement Stitch” button was pressed after a stitch has been deleted.</td>
</tr>
<tr>
<td>⭕ The safety device has been activated.</td>
<td>The motor locked up because the thread is tangled.</td>
</tr>
<tr>
<td>⭗ Winding bobbin thread.</td>
<td>The bobbin winder is winding the bobbin.</td>
</tr>
<tr>
<td>F01~F09</td>
<td>If error message “F01” through “F09” appears in the LCD while the sewing machine is being used, the machine may be malfunctioning. Contact your nearest authorized service center.</td>
</tr>
</tbody>
</table>
Nothing appears in the LCD

If nothing appears in the LCD when the sewing machine is turned on, the brightness of the LCD is either too light or too dark. If this is the case, perform the following operation.

1. Turn off the sewing machine.
2. While pressing (Cancel/clear key) in the operation panel, turn on the sewing machine.
3. Press < or > (Stitch width keys). Adjust the brightness of the LCD so that the screens can be seen.
4. Turn off the sewing machine, then turn it on again.

Operation beep

Each time a key is pressed or an incorrect operation is performed, a beep is sounded.

- **For a correct operation**
  One beep is sounded.

- **If an incorrect operation is performed**
  Two or four beeps are sounded.

- **If the machine locks up, for example, because the thread is tangled**
  The sewing machine continues to beep for four seconds. The machine automatically stops. Be sure to check for the cause of the error, and correct it before continuing to sew.

Cancelling the operation beep

When the sewing machine is purchased, it is set to beep each time an operation panel key is pressed. This setting can be changed so that the machine does not beep.

1. Turn on the sewing machine.
   - The LCD comes on.
2. Press (Settings key) in the operation panel.
   - The settings screen appears.
3. Press A or > (Stitch length keys) until (Beep) is displayed.
   - The screen for changing the beep setting appears.
4 Press ← or → (Stitch width keys) to select OFF.
   To return to ON, press ← or → (Stitch width keys).

5 Press ← (Cancel/clear key) or OK (OK key).
   ▶ The initial stitch screen appears again.
Index

Numerics
1/4 inch quilting foot ........................................... 9
1/4 inch quilting foot with guide .............................. 9
2-point zigzag stitch ......................................... 77
3-point zigzag stitch ........................................ 77
crazy quilt stitching ........................................... 102
cross-stitch ..................................................... 119
cross-stitches .................................. 71, 119, 138
curves ............................................................. 65
cylindrical pieces ............................................. 46

damning .......................................................... 109
decorative satin stitches ...................................... 71, 119, 138
decorative stitch key ............................................ 13
decorative stitches ........................................... 71, 119, 138
decorative stitching ........................................... 112
designing patterns ............................................. 129
direct selection .................................................. 70
disk-shaped screwdriver ....................................... 9
elastic tape .......................................................... 98
electrical outlet ................................................... 17
error messages .................................................. 158
even seam allowance ......................................... 67
extra spool pin .................................................... 9, 34
eyelet .............................................................. 111
eyelet punch ..................................................... 9, 87, 111

B
bar tack .............................................................. 107
baseline .............................................................. 81
basic stitching .................................................... 81
basting ............................................................... 80
blind hem stitch .................................................. 82
blind stitch foot ................................................... 9
bobbin ............................................................... 9, 26
bobbin case ......................................................... 142
bobbin cover ....................................................... 11, 27
bobbin thread ....................................................... 26
pulling up .......................................................... 36
bobbin winder ..................................................... 10
bobbin winder shaft spring .................................... 23
bobbin winding thread guide and pretension disk ...... 10, 24
bobbin-winding ................................................... 7, 22
brightness .......................................................... 21
built-in stitches ................................................... 7
button fitting foot ............................................... 9
button sewing ..................................................... 84, 89
buttonhole foot ................................................... 9, 88
buttonhole lever ................................................ 11, 86, 108, 110
buttonhole stitching .......................................... 84
crazy quilt stitching ........................................... 102
cross-stitch ..................................................... 119
cross-stitches .................................. 71, 119, 138
curves ............................................................. 65
cylindrical pieces ............................................. 46
damning .......................................................... 109
decorative satin stitches ...................................... 71, 119, 138
decorative stitch key ............................................ 13
decorative stitches ........................................... 71, 119, 138
decorative stitching ........................................... 112
designing patterns ............................................. 129
direct selection .................................................. 70
disk-shaped screwdriver ....................................... 9
elastic tape .......................................................... 98
electrical outlet ................................................... 17
error messages .................................................. 158
even seam allowance ......................................... 67
extra spool pin .................................................... 9, 34
free-motion quilting ........................................... 104

F
fagoting ............................................................ 113
features ................................................................ 7
feed dog position switch ..................................... 11, 105
feed dogs ........................................................... 11, 104
flat bed attachment ............................................ 10
flipping ............................................................ 125
foot controller ................................................... 9, 52
foot controller jack .............................................. 11
free-arm sewing .................................................. 46

G
grid sheet set ..................................................... 9

cancel/clear key .................................................. 13
care .................................................................. 142
changing machine settings .................................. 19
changing sewing direction .................................. 65
changing the settings ........................................ 19
character stitch key .......................................... 13
character stitches .......................................... 71, 119, 140
checking patterns ............................................. 121
cleaning ........................................................... 142
cleaning brush ................................................... 9, 143
combining patterns ........................................... 120
### APPENDIX

#### J
- needle stop position ........................................... 116
- overcasting stitches ........................................... 100

#### K
- knee lifter ......................................................... 7, 9, 64
- knee lifter mounting slot .................................... 10

#### L
- language .......................................................... 21
- LCD .................................................................... 13, 18, 21, 159
  - brightness ......................................................... 21, 159
- leather/vinyl fabrics .......................................... 67
- lower threading .................................................. 7, 26

#### M
- machine settings ................................................ 19
- main power switch ........................................... 11, 17
- maintenance ....................................................... 142
- manual memory key .......................................... 13
- memory key ....................................................... 13
- mirror image ...................................................... 125
- monogramming foot ........................................... 9
- My Custom Stitch ............................................... 71, 129

#### N
- needle ............................................................... 37
- needle bar thread guide ..................................... 11
- needle clamp screw .......................................... 40
- needle mode selection key .................................. 13
- needle plate ...................................................... 11, 67
- needle plate cover ............................................. 11
- needle position .................................................. 58, 81
- needle position button ....................................... 12
- needle set ........................................................ 9
- needle stop position ........................................... 60
- needle stop position key .................................... 13
- needle threader lever ....................................... 10
- needle threading ............................................... 31
- non stick foot ................................................... 9, 67
- number selection .............................................. 70
- numeric keys ..................................................... 13

#### O
- OK key ............................................................. 13
- open toe foot .................................................... 9
- openings .......................................................... 107
- operation beep ................................................ 159
- operation buttons ............................................ 10, 12
- operation manual ............................................. 9
- operation panel ................................................ 10, 13
- optional accessories ........................................ 9
- overcasting foot ............................................... 8
- overcasting stitches ........................................... 76

#### P
- patchwork stitching ........................................... 102
- pattern length ................................................. 124
- pattern size ..................................................... 122
- patterns .......................................................... 119
- piecing ............................................................ 102
- piping inserting ............................................... .97
- pocket corners ................................................ 107
- positioning fabric ............................................ 51
- power supply ................................................... 16
- power supply jack .......................................... 11, 17
- preset utility stitch/saved pattern key .................. 13
- presser foot ...................................................... 11, 41
- presser foot dial ............................................... 11, 43
- presser foot holder .......................................... 11, 43
- presser foot lever ............................................ 11
- presser foot pressure ........................................ 43
- programmed thread-cutting .............................. 62

#### Q
- quick reference guide ........................................ 9
- quilting .......................................................... 103
- quilting foot ................................................... 9, 104
- quilting guide ................................................... 9, 103

#### R
- race ............................................................... 142
- realigning ......................................................... 127
- realigning patterns .......................................... 127
- reinforcement stitching .................................... 54, 60, 107
- repeat sewing .................................................. 121
- replacing the needle ........................................ 37, 39
- reset key ........................................................ 13
- retrieving a pattern ......................................... 126
- reverse/reinforcement stitch button ................... 12

#### S
- satin stitches .................................................. 71, 119, 138
- satin stitching ................................................ 105
- saving patterns ............................................... 126
- saving stitch settings ....................................... 63
- scallop stitching ............................................. 114
- screwdriver ..................................................... 9, 40
- seam ripper ...................................................... 9, 87
- selecting stitching .......................................... 72
- settings key ..................................................... 13, 19
- sewing machine needles .................................. 37
- sewing speed .................................................. 52
- sewing speed controller .................................... 12, 105
- shell tuck stitch ............................................. 115
- side cutter ...................................................... 9, 78
- size ............................................................... 122
- sleeves .......................................................... 107
- smocking ......................................................... 114
- spool cap ......................................................... 9, 23, 29
- spool net ........................................................ 9
- spool pin ........................................................ 10, 23, 29
- start/stop button ............................................ 12, 52
- starting to sew ............................................... 52
<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>stitch density</td>
<td>123</td>
</tr>
<tr>
<td>stitch guide foot</td>
<td>9, 67</td>
</tr>
<tr>
<td>stitch length</td>
<td>59</td>
</tr>
<tr>
<td>stitch length keys</td>
<td>13</td>
</tr>
<tr>
<td>stitch mode</td>
<td>70</td>
</tr>
<tr>
<td>stitch pattern plate</td>
<td>9</td>
</tr>
<tr>
<td>stitch settings</td>
<td>134</td>
</tr>
<tr>
<td>stitch width</td>
<td>58</td>
</tr>
<tr>
<td>stitch width keys</td>
<td>13</td>
</tr>
<tr>
<td>straight stitch</td>
<td>134</td>
</tr>
<tr>
<td>stretch fabrics</td>
<td>66, 98</td>
</tr>
<tr>
<td>thick fabrics</td>
<td>66</td>
</tr>
<tr>
<td>thin fabrics</td>
<td>66</td>
</tr>
<tr>
<td>thread cutter</td>
<td>10, 56</td>
</tr>
<tr>
<td>thread cutter button</td>
<td>12, 55</td>
</tr>
<tr>
<td>thread guide cover</td>
<td>10</td>
</tr>
<tr>
<td>thread guide disk</td>
<td>11</td>
</tr>
<tr>
<td>thread guide plate</td>
<td>10</td>
</tr>
<tr>
<td>thread tension</td>
<td>57</td>
</tr>
<tr>
<td>thread tension adjustment</td>
<td>57</td>
</tr>
<tr>
<td>thread tension dial</td>
<td>10, 57</td>
</tr>
<tr>
<td>top cover</td>
<td>10</td>
</tr>
<tr>
<td>trial sewing</td>
<td>65</td>
</tr>
<tr>
<td>triple stretch stitch</td>
<td>107</td>
</tr>
<tr>
<td>troubleshooting</td>
<td>144</td>
</tr>
<tr>
<td>twin needle</td>
<td>9, 33, 40</td>
</tr>
<tr>
<td>upper thread</td>
<td>28</td>
</tr>
<tr>
<td>upper thread tension</td>
<td>57</td>
</tr>
<tr>
<td>upper threading</td>
<td>7, 28</td>
</tr>
<tr>
<td>utility decorative stitches</td>
<td>71, 119, 139</td>
</tr>
<tr>
<td>utility stitch key</td>
<td>13</td>
</tr>
<tr>
<td>utility stitches</td>
<td>70, 134</td>
</tr>
<tr>
<td>walking foot</td>
<td>9, 44, 103</td>
</tr>
<tr>
<td>wide table</td>
<td>9, 46</td>
</tr>
<tr>
<td>wing needle</td>
<td>116</td>
</tr>
<tr>
<td>zigzag foot</td>
<td>9</td>
</tr>
<tr>
<td>zipper foot</td>
<td>9</td>
</tr>
<tr>
<td>zipper stitching</td>
<td>91, 96</td>
</tr>
</tbody>
</table>
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