IMPORTANT SAFETY INSTRUCTIONS

When using this machine, basic safety precautions should always be taken, including the following:

Read all instructions before using this sewing machine.

DANGER – To reduce the risk of electric shock:
1. The machine should never be left unattended while plugged in. Always unplug the machine from the electrical outlet immediately after use and before cleaning.
2. Always unplug the machine before changing the light bulb. Replace the bulb with the same type (rated 12 V, 5 W).

WARNING – To reduce the risk of burns, fire, electric shock, or injuries:
1. Do not allow this machine to be used as a toy. Close attention is necessary when the machine is used by or near children.
2. Use this machine only for its intended use as described in this manual. Use only accessories recommended by the manufacturer as contained in this manual.
3. Never operate this machine if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or if it has been dropped into water. Return the machine to the nearest authorized dealer or service center for examination, repair, or electrical or mechanical adjustment.
4. Never operate the machine with any of its air openings blocked. Keep ventilation openings of the machine and foot controller free from the accumulation of lint, dust, and loose cloth.
5. Never drop or insert any object into any of the machine's openings.
6. Do not allow this machine to be used as a toy. Close attention is necessary when the machine is used by or near children.
7. Do not use this machine outdoors.
8. To disconnect, set the main power switch to the "O" (off) position, and then remove the plug from the outlet.
9. Do not unplug the cord by pulling on it. To unplug the power supply cord, grasp the plug, not the cord.
10. Keep fingers away from all moving parts. Special care is required around the machine’s needle.
11. Always use the proper needle plate. The wrong plate can cause the needle to break.
12. Do not use bent needles.
13. Do not push or pull the fabric while stitching. This may deflect the needle causing it to break.
14. Switch the machine to the "O" (off) position when making any adjustments in the needle area, such as threading the needle, changing the needle, threading the bobbin, or changing the presser foot.
15. Always unplug the machine from the electrical outlet when removing covers, lubricating, or making any other user-serviceable adjustments mentioned in this operation manual.
16. This sewing machine is not intended for use by young children or infirm persons without supervision.
17. Young children should be supervised to ensure that they do not play with this machine.

SAVE THESE INSTRUCTIONS

This machine is intended for household use only.
FOR USERS IN THE UK, EIRE, MALTA AND CYPRUS ONLY

If your embroidery machine is fitted with a 3-pin non-rewireable BS plug, please read the following.

IMPORTANT

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

Note
The plug severed from the power supply cord must be destroyed, as a plug with bare flexible wires is hazardous if engaged in a live socket outlet. In the event that the plug fuse is replaced, use a fuse approved by ASTA to BS 1362, i.e. carrying the mark, rated as marked on plug.

Always replace the fuse cover. Never use plugs with the fuse cover removed.

WARNING
DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL, WHICH IS MARKED WITH THE LETTER ‘E’, BY THE EARTH SYMBOL OR COLOURED GREEN OR YELLOW.

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

<table>
<thead>
<tr>
<th>Blue</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td>Live</td>
</tr>
</tbody>
</table>

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

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

The wire which is coloured brown must be connected to the terminal which is marked with the letter ‘L’ or coloured red or brown.
THANK YOU FOR PURCHASING
THE PC-6500 COMPUTERIZED SEWING MACHINE

Your machine is the most advanced, computerized home-use sewing machine available. To fully enjoy all the features incorporated into it, we suggest that you study this manual.

PLEASE READ BEFORE USING THIS MACHINE

For safe operation:
1. Be sure to keep your eye on the needle while sewing. Do not touch the pulley, thread take-up, needle, or other moving parts.
2. Remember to turn off the main power switch and unplug the cord when:
   • operation is completed
   • replacing or removing the needle or any other parts
   • a power failure occurs during use
   • maintaining the machine
   • leaving the machine unattended
3. Do not store anything on the foot controller.
4. Plug the machine directly into the wall. Do not use extension cords.

For a longer service life:
1. When storing this machine, avoid direct sunlight and high humidity. Do not store the machine beside a space heater, iron, or other hot objects.
2. 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.
3. Do not drop or hit the machine.
4. Always consult this operation manual when replacing or installing any assembly, the presser foot, the needle, or other parts to assure correct installation.

For repair or adjustment:
In the event that a malfunction occurs or adjustment is required, first follow the troubleshooting table in the back of this operation manual to inspect and adjust the machine yourself. If the problem persists, please consult your nearest authorized service center.
### CONTENTS

#### CHAPTER 1

**SETTING UP**

- PRINCIPAL PARTS ......................................................... 4
- FLAT-BED-ATTACHMENT.................................................. 5
- Removing the flat-bed attachment................................. 5
- Accessory compartment.................................................. 5
- ADDITIONAL ACCESSORIES............................................... 6
- OPTIONAL ACCESSORIES.................................................. 7
- POWER SUPPLY .................................................................. 8
- CONTROLS ........................................................................ 9
  - Selection keys.......................................................... 9
  - Operation buttons..................................................... 9
- LCD screen................................................................... 10
- LCD DENSITY .................................................................... 11
- DISPLAY LANGUAGE......................................................... 13
- PRESSER FEET / FEED DOGS............................................ 14
  - Changing the presser foot.......................................... 14
  - Installing the presser foot adapter & the
    walking foot............................................................ 15
  - Installing the optional side cutter............................. 16
  - Installing the presser foot holder............................... 18
  - Raising/lowering the feed dogs................................. 18
- FABRIC/THREAD/NEEDLE COMBINATIONS ...................... 19
- NEEDLE ........................................................................ 20
  - Checking the needle.................................................. 20
  - Changing the needle.................................................. 20
- BOBBIN WINDING / LOWER THREADING ......................... 21
  - Winding the bobbin.................................................... 21
  - Installing the bobbin................................................... 23
- UPPER THREADING .......................................................... 24
  - Threading the upper thread....................................... 24
  - Needle threader.......................................................... 26
  - Pulling up the bobbin thread..................................... 27
  - Extra spool pin ............................................................ 27
  - Net ........................................................................... 27
- FOOT CONTROLLER........................................................ 28

#### CHAPTER 2

**SEWING**

- STITCH SELECTION........................................................ 29
  - Selecting a utility stitch............................................. 29
  - Selecting a stitch with the stitch guide ( ).............. 29
  - Stitch width and length reference chart.................... 31
- STITCH WIDTH & LENGTH .............................................. 33
  - Adjusting the needle position (stitch width).............. 33
  - Adjusting the stitch length....................................... 33
- THREAD TENSION .......................................................... 34
  - Correct tension........................................................ 34
  - Adjusting the upper thread tension............................ 34
- OPERATION GUIDE.......................................................... 35
  - AUTOMATIC REVERSE/REINFORCEMENT
    STITCHING.................................................................. 36
  - AUTOMATIC THREAD CUTTING................................... 37
  - BASIC SEWING............................................................ 38

**SEWING CHART**

- Sewing using the straight stitch (left needle
  position)................................................................... 38
- USEFUL SEWING SKILLS.................................................. 40
  - Sewing corners......................................................... 40
  - Sewing thick seams................................................... 40
  - Sewing curves.......................................................... 40
  - Sewing thick fabric.................................................... 41
  - Sewing thin fabric..................................................... 41
  - Using the needle plate.............................................. 42

#### CHAPTER 3

**UTILITY STITCHES**

- BASIC STITCHING.......................................................... 43
  - Reinforced stitching of stretch fabric........................ 43
- DART SEWING............................................................... 44
- GATHERING.................................................................. 45
- ZIPPER INSERTING (CENTER AND SIDE
  APPLICATIONS)........................................................... 46
  - Inserting a centered zipper..................................... 46
  - Inserting a side zipper............................................. 47
- PINTUCK SEWING.......................................................... 49
- FLAT-FELL SEAM SEWING............................................. 50
- BASTING..................................................................... 51
- ZIGZAG STITCHING...................................................... 52
  - Overcasting with a zigzag stitch.............................. 52
  - Appliquéd sewing with a zigzag stitch...................... 52
  - Patchwork (crazy quilt) stitching............................. 52
- OVERCASTING.............................................................. 53
  - Sewing with or ....................................................... 53
  - Sewing with or ....................................................... 53
- BLIND HEM STITCHING .................................................. 54
  - Adjusting the needle position................................. 55
- BUTTONHOLE STITCHING............................................ 56
  - Sewing order of buttonholes................................... 58
  - Sewing stretch fabrics.............................................. 58
  - Odd-shaped buttons that do not fit into the
    button guide plate.................................................. 59
  - Adjusting the buttonhole width............................. 59
  - Adjusting the stitch length of the buttonhole........... 59
- BAR TACK STITCHING................................................... 60
  - Sewing bar tacks on thick fabrics............................ 61
  - Adjusting the bar tack width.................................... 61
  - Adjusting the stitch length of the bar tack.............. 61
- DARNING................................................................. 62
  - Adjusting the darning width.................................... 63
  - Adjusting the stitch length of the darning.............. 63
  - Darning stitch cycle................................................ 63
- TAPE ATTACHING......................................................... 64
- EYELET STITCHING...................................................... 65
- BUTTON SEWING.......................................................... 66
  - Attaching two-hole buttons.................................... 66
  - Attaching four-hole buttons.................................... 67
  - Attaching a shank to the button............................. 67
- APPLIQUÉ STITCHING................................................... 68
  - Sewing around corners of the appliquéd.................. 68
- APPLIQUÉ QUILT STITCHING......................................... 69
  - Sample patterns for appliquéd quilts....................... 69
- SCALLOP STITCHING...................................................... 70
- SMOKING STITCHING.................................................... 71
- PATCHWORK STITCHING............................................... 72
EMBROIDERING .................................................93

CHAPTER 4

MY CUSTOM STITCH™ (CREATE YOUR OWN STITCH DESIGNS) ...........................................77
DESIGNING THE STITCH ........................................77
ENTERING STITCH DATA ......................................79
EDITING STITCH DATA .......................................81
Moving a point ...............................................81
Moving part or all of the design ......................82
Inserting new points .......................................82
STORING A STITCH DESIGN THAT YOU HAVE CREATED .......................................................84
RETRIEVING A STITCH DESIGN THAT HAS BEEN SAVED ....................................................85

CHAPTER 5

EMBROIDERING ................................................86
SETUP .............................................................86
Installing embroidery foot Q .............................86
Installing the embroidery unit ........................78
Initializing the embroidery unit .......................87
Embroidering screen ......................................88
Removing the embroidery unit .......................88
Creating beautiful embroidery ......................89
Attaching stabilizer material ............................89
Inserting the fabric in the embroidery frame ....90
Attaching the embroidery frame to the embroidery arm .........................................................92
Removing the embroidery frame from the embroidery arm ...................................................92
EMBROIDERING ....................................................93
Simple embroidering .....................................93
Embroiding multi-color patterns ......................93
EMBROIDERY PATTERNS .......................................95
Creating text patterns ....................................95
Typing uppercase & lowercase characters ......97
Changing the character size ..........................97
Checking the text ..........................................98
Editing text ..................................................99
Changing the color of each character in the text .................................................................99
Creating frame patterns .................................100
Selecting one-point patterns .........................101
Displaying the thread color names .................102
Selecting patterns from a memory card .........102
CHANGING THE PATTERN SETTING .................104
Editing the layout of the pattern .....................104
Changing the embroidering position ...............105
Changing the pattern direction .......................106
Mirror imaging patterns ................................106
Embrodiering from a specific starting point ...107
Checking the embroidery area .......................107
Changing the size of patterns .......................108
Changing the thread density .........................109
MEMORY ..........................................................110
Saving character combinations in the memory .................................................................110
Retrieving a pattern which has been saved ....110
CONTINUING WHILE EMBROIDERING ...............112
Continuing embroidering ..............................112
Embrodiering again from the beginning .......113
EMBROIDERY APPLICATIONS ................................114
Linking characters ........................................114
Using the extra-large embroidery frame (optional) ............................................................115
Combining a frame pattern with a design .....119
Embrodiery appliques (using a frame pattern) .................................................................120
Embroidering onto small pieces of fabric or in corners .....................................................121

MAINTENANCE ....................................................122
CLEANING ........................................................122
Cleaning the screen ........................................122
Cleaning the machine surface ......................122
Cleaning the shuttle ........................................122
CHANGING THE LIGHT BULB .........................124

ERROR MESSAGES ...........................................125
Warning messages .........................................125
Operation messages .....................................128
Troubleshooting ..........................................129
Thread and stitch problems .........................130
Mechanical problems ....................................131

SEWING CHART ................................................132

PATTERNS (PROGRAMMED IN MACHINE) ........135
Utility stitches ..........................................135
Character embroidery ................................135
Frame pattern embroidering .......................135
Floral alphabet ..........................................135
Combining a frame pattern with a design ......139
Embrodiery appliques (using a frame pattern) .................................................................140
Embroidering onto small pieces of fabric or in corners .....................................................140

CONTENTS

SEWING CHART

STITCHES

UTILITY STITCHES

EMBROIDERING

MAINTENANCE

ERROR MESSAGES

PATTERNS (PROGRAMMED IN MACHINE)
1 Handle
2 Bobbin winder
3 Selection keys (Refer to page 9 for more details.)
4 Balance wheel
5 Sewing speed controller
6 Presser foot lever
7 Main power switch
8 Operation buttons (Refer to page 9 for more details.)
9 Flat-bed attachment with accessory compartment

10 Feed dog position switch
11 Bobbin cover
12 Feed dogs
13 Presser foot
14 Needle threader
15 Buttonhole lever
16 Thread cutter
17 Needle threader lever
18 LCD (liquid crystal display)
19 Thread guide for bobbin winding
20 Spool cap
FLAT-BED ATTACHMENT

Removing the flat-bed attachment

With the flat-bed attachment removed, sewing tubular pieces, such as sleeves and pant legs, or hard-to-reach areas of the garment is easier. To remove the flat-bed attachment, pull it straight out to the left of the sewing machine.

1 Flat-bed attachment

Accessory compartment

To open the accessory compartment, tilt its lid toward you.

II Each presser foot is marked with a letter.

1 Presser foot code

III Compartment accessories

The location of each accessory is shown in figure III. Only use the accessories designed for this machine.

<table>
<thead>
<tr>
<th>No.</th>
<th>Part Name</th>
<th>Part Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Buttonhole foot A</td>
<td>X57789-101</td>
</tr>
<tr>
<td>2</td>
<td>Embroidery foot Q</td>
<td>XA5891-101</td>
</tr>
<tr>
<td>3</td>
<td>Overcasting foot G</td>
<td>X51162-001</td>
</tr>
<tr>
<td>4</td>
<td>Monogramming foot N</td>
<td>X53840-301</td>
</tr>
<tr>
<td>5</td>
<td>Zipper foot I</td>
<td>X59370-051</td>
</tr>
<tr>
<td>6</td>
<td>Zigzag foot J</td>
<td>137748-101</td>
</tr>
<tr>
<td>7</td>
<td>Blind hem foot R</td>
<td>X56409-001</td>
</tr>
<tr>
<td>8</td>
<td>Seam ripper</td>
<td>X54243-001</td>
</tr>
<tr>
<td>9</td>
<td>Button sewing foot M</td>
<td>130489-001</td>
</tr>
<tr>
<td>10</td>
<td>Bobbins*</td>
<td>136492-101</td>
</tr>
<tr>
<td>11</td>
<td>Needle set</td>
<td>X58358-001</td>
</tr>
</tbody>
</table>

*Only use the plastic bobbins supplied in the accessory compartment or as additional accessories.
ADDITIONAL ACCESSORIES

<table>
<thead>
<tr>
<th>No.</th>
<th>Part Name</th>
<th>Part Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Presser foot adapter</td>
<td>XA6027-001</td>
</tr>
<tr>
<td>2</td>
<td>Seam ripper</td>
<td>X54243-001</td>
</tr>
<tr>
<td>3</td>
<td>Screw¹ (for securing presser foot)</td>
<td>XA5904-051</td>
</tr>
<tr>
<td>4</td>
<td>Scissors</td>
<td>184783-001</td>
</tr>
<tr>
<td>5</td>
<td>Chalk pen</td>
<td>184944-001</td>
</tr>
<tr>
<td>6</td>
<td>Cleaning brush</td>
<td>XA4527-001</td>
</tr>
<tr>
<td>7</td>
<td>Eyelet punch</td>
<td>135793-001</td>
</tr>
<tr>
<td>8</td>
<td>Screwdriver (large)</td>
<td>X55467-051</td>
</tr>
<tr>
<td>9</td>
<td>Screwdriver (small)</td>
<td>X55468-051</td>
</tr>
<tr>
<td>10</td>
<td>Spool cap (small)</td>
<td>130013-003</td>
</tr>
<tr>
<td>11</td>
<td>Spool cap (large)</td>
<td>130012-003</td>
</tr>
<tr>
<td>12</td>
<td>Extra spool pinb</td>
<td>XA3336-051</td>
</tr>
<tr>
<td>13</td>
<td>Spool felt</td>
<td>X57045-001</td>
</tr>
<tr>
<td>14</td>
<td>Disc-shaped screwdriver</td>
<td>XA2005-051</td>
</tr>
<tr>
<td>15</td>
<td>Spool netd</td>
<td>127610-000</td>
</tr>
<tr>
<td>16</td>
<td>Embroidery set (large)</td>
<td>SA423</td>
</tr>
<tr>
<td>17</td>
<td>Screw (for securing adapter)</td>
<td>XA4813-051</td>
</tr>
<tr>
<td>18</td>
<td>Foot controller</td>
<td>XA3931-051</td>
</tr>
<tr>
<td>19</td>
<td>Grid sheet</td>
<td>X80948-002</td>
</tr>
<tr>
<td>20</td>
<td>Hard case</td>
<td>XA5555-001</td>
</tr>
<tr>
<td>21</td>
<td>Bobbin thread</td>
<td>XA8375-002</td>
</tr>
<tr>
<td>22</td>
<td>Embroidery cards</td>
<td>SA298</td>
</tr>
<tr>
<td>23</td>
<td>Stabilizer material</td>
<td>SA299</td>
</tr>
</tbody>
</table>

¹ Use the same screw for installing both the walking foot and the optional side cutter.

² The extra spool pin provided as an accessory should be inserted onto the bobbin winder shaft when it is used.

³ When using the walking foot, refer to the instruction sheet included with this operation manual.

⁴ When using special threads that quickly wind off the thread spool, place a net over the spool before sewing.

**Note (For U.S.A only)**

Foot controller: Model N5V

This foot controller can be used for this machine model PC6500.
### Optional Accessories

<table>
<thead>
<tr>
<th>No.</th>
<th>Part Name</th>
<th>Part Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Side cutter</td>
<td>X80943-001</td>
</tr>
<tr>
<td>2</td>
<td>Embroidery cards(^a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No. 3 Dinosaur</td>
<td>SA300</td>
</tr>
<tr>
<td></td>
<td>No. 6 Moskowitz’s World</td>
<td>SA303</td>
</tr>
<tr>
<td></td>
<td>No. 7 Country Life</td>
<td>SA304</td>
</tr>
<tr>
<td></td>
<td>No. 8 Holiday</td>
<td>SA305</td>
</tr>
<tr>
<td></td>
<td>No. 9 Hobby Craft</td>
<td>SA306</td>
</tr>
<tr>
<td></td>
<td>No. 10 Monogram Emblem</td>
<td>SA307</td>
</tr>
<tr>
<td></td>
<td>No. 11 Frame</td>
<td>SA311</td>
</tr>
<tr>
<td></td>
<td>No. 12 Transportation</td>
<td>SA312</td>
</tr>
<tr>
<td></td>
<td>No. 13 Sports Emblem</td>
<td>SA313</td>
</tr>
<tr>
<td></td>
<td>No. 14 Large Floral</td>
<td>SA314</td>
</tr>
<tr>
<td></td>
<td>No. 15 Cute Kids</td>
<td>SA315</td>
</tr>
<tr>
<td></td>
<td>No. 16 Dogs &amp; Cats</td>
<td>SA316</td>
</tr>
<tr>
<td></td>
<td>No. 19 Marine</td>
<td>SA319</td>
</tr>
<tr>
<td></td>
<td>No. 20 Petite Designs</td>
<td>SA320</td>
</tr>
<tr>
<td></td>
<td>No. 21 Needlework</td>
<td>SA321</td>
</tr>
<tr>
<td></td>
<td>No. 23 White on white</td>
<td>SA323</td>
</tr>
<tr>
<td>3</td>
<td>Extra-large frame(^b)</td>
<td>SA425</td>
</tr>
<tr>
<td>4</td>
<td>Walking foot(^c)</td>
<td>X81064-001</td>
</tr>
</tbody>
</table>

\(^a\) This unit cannot be used together with memory card S1.

**WARNING**

Embroidery cards purchased in other countries may not be compatible with your machine.

\(^b\) Refer to pages 115 through 118 for details on embroidering using the extra-large embroidery frame.

\(^c\) When using the walking foot, refer to page 15.
POWER SUPPLY

WARNING
– When leaving the machine unattended or when it is not being used, turn off the main power switch on the side of the machine, then remove the plug from the wall outlet.

CAUTION
– Do not use this sewing machine with extension cords or multi-plug adapters, otherwise a fire or an electric shock may occur.
– Do not use wet hands to remove the plug from the wall outlet, otherwise an electric shock may occur.
– When unplugging the power cord, turn off the main power switch of the machine, and then grasp the plug to unplug the cord. Pulling on the cord may damage it or cause a fire or an electric shock.
– Do not allow the power cord to be cut, damaged, modified, forcefully bent, pulled, twisted or bundled. In addition, do not place heavy objects on the cord or subject it to heat, otherwise the cord may be damaged or a fire or an electric shock may occur.
– If the power cord or plug is damaged, contact your nearest authorized dealer or service center.
– When servicing the machine, or when removing covers or changing bulbs, unplug the sewing machine or disconnect the electrical supply.
– If the machine is not to be used for a long period of time, unplug the power cord, otherwise a fire may occur.
– For U.S.A. only:
   This appliance has a polarized plug (one blade wider than the other). To reduce the risk of electric shock, this plug is intended to fit in a polarized outlet in only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install the proper outlet. Do not modify the plug in any way.

1. Pull out the power supply cord and insert the plug into a wall outlet.
   1 Power supply cord
   2 Main power switch

2. To turn on the machine, set the main power switch to “I”.
   To turn off the machine, set the main power switch to “O”.
Thread cutter button
Press this button to cut both the upper and the bobbin threads automatically.

Needle position button
Press this button to raise or lower the needle.

Reverse/reinforcement stitch button
Press this button to secure the end of the stitching by sewing either reverse stitches or reinforcement stitches. Reverse stitches (straight stitches only) are sewn by stitching in the reverse direction. Reinforcement stitches (most other stitches) are made by sewing three stitches on top of each other.

Start/stop button
Press this button to start or stop sewing. The needle drops to its lowest position when the machine is stopped. To sew at a low speed, keep this button pressed. This button lights up in green when the machine is ready to start sewing and while it is sewing or embroidering. If the machine is not ready to start sewing, the button lights up in red. The button lights up in orange when the bobbin winder shaft is moved to the right in order to wind the bobbin thread onto the bobbin.
Press a key on the screen with your finger to select the pattern displayed inside the key or to start the indicated function or operation.

**Note**
When the machine is turned on, the straight stitch (left needle position) is automatically selected.

**CAUTION**
Be sure to press the key only with your finger. Never press a key with a hard, pointed instrument, such as a pencil or a screwdriver. Furthermore, do not press down too hard on the screen, otherwise it may be damaged.

---

1. Attach the presser foot indicated by the code that is displayed.
2. Press this key before sewing with the optional side cutter installed.
3. Press this key before sewing to automatically sew reverse or reinforcement stitches at the beginning and end of stitching. (Refer to page 36 for more details.)
4. Press this key before sewing to automatically cut the threads after sewing. (Refer to page 37 for more details.)
5. Press this key to display the stitch guide, which will help you select the best stitch for your specific need.
6. Press this key to display the previous page.
7. Press this key to display the next page.

**Other basic LCD keys**

**END key**
Press this key to stop using the current function.

**CHECK key**
If an error message appears, press this key to return to the previous screen.
LCD DENSITY

At times, changes in the ambient temperature may make all or part of the screen light or darker; this is not the sign of a malfunction. If the screen becomes difficult to read, adjust its density.

Note
The screen may become dark immediately after the power is turned on. This is a feature of the light that illuminates the screen, and is not the sign of a malfunction. The screen will return to its normal level of brightness after approximately 10 minutes.

Adjusting the density with the main power switch

1. While pressing anywhere in the LCD, turn the sewing machine off, then back on again.

2. Adjust the density of the LCD.
   To make the LCD lighter, press either the SEWING key or the MY CUSTOM STITCH™ key.
   To make the LCD darker, press either the OPERATION GUIDE or the STITCH ADJUST key.
   The density of the LCD changes each time one of these keys is pressed.
   ①  Press this key to make the density lighter.
   ② Press one of these keys to make the density darker.

3. After making the adjustment, turn the machine off, then back on again.
Adjusting the density with the Operation Guide

1. Press the **OPERATION GUIDE** key.
2. Press the **NEXT** key.

3. Press the **BRIGHTNESS OF LCD** key.

4. Press the **NEXT** key.

5. Adjust the density of the LCD.
   To make the LCD lighter, press the white key.
   To make the LCD darker, press the black key.
   The density of the LCD changes each time one of these keys is pressed.
   1. Press this key to make the density lighter.
   2. Press one of these keys to make the density darker.
   3. Press this key to finish adjusting the density.

6. After making the adjustment, press the **END** key.

To change density, touch "WHITE" key or "BLACK" key in next page.
DISPLAY LANGUAGE

You can easily change the language of all the keys and messages displayed on the LCD.

1. Press the **OPERATION GUIDE** key.
2. Press the **NEXT** key.

3. Press the **LANGUAGE SELECTION** key.

4. Press the **NEXT** key until the desired language is displayed.

5. Press the key of the desired language. The language of all keys and messages displayed in the LCD are changed.

**Note**
- When the display language is changed, error messages will also be displayed in the selected language.
- The display language can be set to one of 11 languages (English, German, French, Italian, Dutch, Spanish, Danish, Norwegian, Finnish, Swedish and Portuguese).

**CAUTION**
- This function should not be used as a translation function.
- Even when the sewing machine is turned off, the current language setting will be retained.
Changing the presser foot

It may be necessary to change the presser foot depending on the stitch that is selected.

1. Press the needle position button to raise the needle, and then turn off the sewing machine.

2. Raise the presser foot lever.

3. Press the black button located at the back of the presser foot holder to release the foot.

   1. Presser foot holder

4. Place the other presser foot below the holder so that the presser foot pin is aligned with the slit in the holder.

5. Lower the presser foot lever so that the presser foot pin snaps into the notch in the presser foot holder.

   1. Notch in presser foot holder
   2. Presser foot pin
The walking foot is useful for sewing materials that are hard to feed, such as vinyl cloth, synthetic leather, thin leather, etc. This foot prevents such materials from crumpling, slipping or sticking by evenly feeding both pieces of fabric.

**The walking foot can only be used to sew the straight stitches ([1] and [2]) and the zigzag stitch ([3]).**

1. Remove the installed presser foot and the presser foot holder.

2. Slide the presser foot adapter as high as possible up the presser foot bar, and then fasten it by firmly tightening the screw (for securing adapter) with the enclosed screwdriver or disc-shaped screwdriver.

   - **Screw (for securing adapter)**

   **Note**
   If the screw is not completely tightened, injuries may occur.

3. Hook the connecting fork of the walking foot onto the needle clamp screw, lower the presser foot lever, and then fasten the walking foot by firmly tightening the screw (for securing presser foot) with the enclosed screwdriver or disc-shaped screwdriver.

   - **Connecting fork**
   - **Screw (for securing presser foot)**

   **Note**
   - Before sewing, be sure to turn the balance wheel slowly toward you to check that the needle does not touch the presser foot, otherwise injuries may occur.
   - Sew at a slow to medium speed.
Installing the optional side cutter

By installing the side cutter, you can cut the fabric while sewing, for example when sewing an overcasting stitch. To use the side cutter, select a pattern that displays on the LCD, and then press so that it appears as .

1. Press the needle position button to raise the needle, and then turn off the sewing machine.

2. Raise the presser foot lever.

3. Remove the installed presser foot and the presser foot holder.

4. Securely hook the connecting fork of the side cutter onto the needle clamp screw.
   1. Needle clamp screw
   2. Connecting fork

5. While lifting the presser foot up, insert the screw (for securing presser foot) through the notch in the side cutter’s bracket and into the hole in the presser foot bar, and then lightly tighten the screw. Lower the presser foot lever, and then firmly tighten the screw with the enclosed screwdriver or disc-shaped screwdriver.

6. Select a pattern, and then press so that it appears as . Other necessary adjustments for using the side cutter will be carried out automatically.

   **Note**
   Pressing so that it changes back to turns off the side cutter operation.
7. Make a cut of about 25/32” (2.0 cm) long in the fabric.
   1 25/32” (2.0 cm)

8. Raise the presser foot lever, and then thread the bobbin thread and the upper thread.

9. Position the fabric so that the right side of the cut goes over the guide plate and the left side of the cut is under the presser foot.
   1 Guide plate (lower knife)
   2 Presser foot

10. Thread the needle, pull out a long section of the upper thread, pass it under the presser foot, and then pull it out toward the rear of the sewing machine. (See figure B.)
    2 Presser foot
    3 Upper thread

11. Lower the presser foot lever.

**CAUTION**
After the stitch width is adjusted, turn the balance wheel toward you by hand and check that the needle does not touch the side cutter. If the needle hits the side cutter and breaks, injuries may occur.

When sewing straight stitches, the seam margin will be about 13/64” (5.0 mm).
1 Seam margin

**Note**
- The side cutter will not cut the fabric if the fabric is simply spread out under the presser foot and the guide plate. Be sure to position the fabric as explained in step 9 before sewing.
- Always raise the needle before raising the presser foot lever.
- The side cutter can cut one layer of 13-oz denim.
- Clean the side cutter after using it, otherwise dust and scraps of thread will build up in it.
- Add a small amount of oil as required to the cutting edge of the cutter.
Installing the presser foot holder

1. Press the needle position button to raise the needle, and then turn off the sewing machine.
2. Raise the presser foot lever.
3. Remove the currently installed presser foot.
4. While pressing the black button on the left side of the presser foot holder, slide the holder as high as possible up the presser foot bar, and then release the button.

CAUTION
Be careful not to touch the tip of the needle, otherwise injuries may occur.

Note
If the presser foot holder is not installed correctly, the thread tension may not be tight enough due to an improper presser foot height.

Raising/lowering the feed dogs

With the accessory compartment removed, the feed dog position switch can be seen at the base of the machine. To lower the feed dogs, for example when sewing buttons, slide the lever to the right. To continue sewing while the feed dogs feed the fabric, slide the lever to the left.

Note
When the embroidery unit is attached to the sewing machine, the feed dogs are automatically lowered.
Select the appropriate thread and needle for the fabric that you are using.

<table>
<thead>
<tr>
<th>Application</th>
<th>Thread</th>
<th>Size of needle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type</td>
<td>Size</td>
</tr>
<tr>
<td>Broad cloth</td>
<td>Cotton</td>
<td>60-80</td>
</tr>
<tr>
<td>Taffeta</td>
<td>Synthetic mercerized</td>
<td>60-80</td>
</tr>
<tr>
<td>Flannel, Gabardine</td>
<td>Silk</td>
<td>50-80</td>
</tr>
<tr>
<td>Lawn</td>
<td>Cotton</td>
<td>60-80</td>
</tr>
<tr>
<td>Georgette</td>
<td>Synthetic mercerized</td>
<td>60-80</td>
</tr>
<tr>
<td>Challis, Satin</td>
<td>Silk</td>
<td>50-80</td>
</tr>
<tr>
<td>Denim</td>
<td>Cotton</td>
<td>30-50</td>
</tr>
<tr>
<td>Corduroy</td>
<td>Synthetic mercerized</td>
<td>50</td>
</tr>
<tr>
<td>Tweed</td>
<td>Silk</td>
<td>50</td>
</tr>
<tr>
<td>Jersey</td>
<td>Thread for knits</td>
<td></td>
</tr>
<tr>
<td>Tricot</td>
<td>Synthetic mercerized</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Silk</td>
<td>30</td>
</tr>
</tbody>
</table>

**Note**

- For sewing on the popular variety of stretch fabrics, for embroidering and for decorative stitch sewing, the golden needle should be used.
- There are many different types of needles to suit a variety of sewing needs. Therefore, be sure to select the correct needle for your specific sewing application, for example when sewing denim or when sewing with metallic thread.
### NEEDLE

#### Checking the needle

Place the flat side of the needle on a flat surface and check that the needle is not bent up, down, or to either side. If the needle is bent, it should be thrown away to prevent damage to your project or to the machine.

1. Flat surface (needle plate, glass, ruler, etc.)

#### Changing the needle

A 75/11 needle is installed in the machine when you purchase it.

1. Press the needle position button to raise the needle.
2. Turn off the sewing machine and lower the presser foot lever.
3. Loosen the needle clamp screw with a screwdriver.
4. Pull out the needle.

**CAUTION**

Do not apply a strong force when loosening or tightening the needle clamp screw, otherwise certain parts of the machine may be damaged.

5. With the flat side of the needle facing toward the back, insert the needle as far up as possible so that it touches the needle stopper. Fasten the screw securely with a screwdriver.

6. Turn the sewing machine on.
BOBBIN WINDING / LOWER THREADING

Winding the bobbin

1. Plug the machine into the power supply and turn on the main power switch.

2. Place the spool on the spool pin so that the thread unrolls from the bottom front of the spool. Then, secure the spool on the spool pin using a spool cap with the size closest to the spool size.
   - Spool
   - Spool pin
   - Spool cap

Note
If using fine thread such as cross-wound thread, leave some space between the spool cap (small) and the spool of thread.
   - Cross-wound thread
   - Spool cap (small)
   - Gap

3. While holding the spool thread with your right hand, use your left hand to pass the thread through the guides as shown.
4. Place the bobbin on the bobbin winder shaft so that the spring on the shaft fits into the groove in the top of the bobbin (a). Then, slide the bobbin winder shaft to the right (b).
   1 Spring on the shaft
   2 Groove in the bobbin

5. Wind the thread clockwise around the bobbin four or five times (a), pass the thread through the slit in the bobbin winder seat, and then pull it as shown to cut it (b).
   1 Bobbin winder seat

6. Slide the sewing speed controller to its maximum (as far as possible to the right).
7. Press the start/stop button. The bobbin stops spinning automatically when it is full.
8. After the bobbin has stopped spinning, press the start/stop button to stop the machine.
9. Cut the thread, slide the bobbin winder shaft to the left and then remove the bobbin.
Installing the bobbin

1. Slide the bobbin cover latch to the right, and then remove the bobbin cover.
   ① Bobbin cover latch
   ② Bobbin cover

2. Insert the bobbin into the shuttle so that the thread unrolls as shown in the illustration.

3. Guide the thread through the groove, then pull the thread toward you to cut off any excess.
   ① Built-in thread cutter

4. Reattach the bobbin cover by inserting the left end (a) and pressing down lightly on the right end so that it snaps into place (b).

   Note
   You can begin sewing without pulling up the bobbin thread.
1. Raise the presser foot lever. (If the presser foot is not raised, the sewing machine cannot be threaded correctly.)

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

3. Place the spool on the spool pin so that the thread unrolls from the bottom front of the spool. Then, secure the spool on the spool pin using a spool cap with the size closest to the spool size.
4. While holding the spool thread with your right hand, use your left hand to keep the thread taut while passing it through the guides as shown.

Note
Incorrect threading may cause damage.

5. Pass the thread through the wire loop, and then lower the presser foot lever.

Note
Lowering the presser foot lever engages the auto thread tension unit, allowing you to pull the thread taut as you continue. Be sure to raise the presser foot lever before removing the upper thread, otherwise the auto thread tension unit may be damaged.

6. Thread the needle manually or using the needle threader. (Refer to page 26 for more details on using the needle threader.)

7. Pass the thread underneath the presser foot, and then pull about 2” (5.0 cm) of the upper thread out toward the rear of the machine.

Note
You can begin sewing without pulling up the bobbin thread.
Needle threader

1. Use your left index finger to lower the needle threader lever while gently pulling the thread to the left so that it catches on the large hook.
   ① Needle threader lever
   ② Large hook

2. Lower the needle threader lever to its lowest position and check that the thread is held by the large hook and that the small hook has passed through the eye of the needle.
   ① Small hook

3. Pull the thread through the guides on each side of the needle so that the thread catches on the hook that passes through the eye of the needle.
   ② Guides

4. While gently holding the thread, raise the needle threader lever.

5. Pull the thread through the eye of the needle out towards the rear of the machine.

6. Pass the thread underneath the presser foot, and then pull about 2” (5.0 cm) of the upper thread out toward the rear of the machine.

Note
You can begin sewing without pulling up the bobbin thread.

<table>
<thead>
<tr>
<th>Needle</th>
<th>Thread (cotton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>65/9</td>
<td>#30, 50, 60</td>
</tr>
<tr>
<td>75/11</td>
<td>#30</td>
</tr>
<tr>
<td>90/14</td>
<td>#30</td>
</tr>
<tr>
<td>100/16</td>
<td>#20</td>
</tr>
</tbody>
</table>

Note
- The needle threader cannot be used with the needle and thread combinations shown at the left.
- The needle threader can be used with transparent nylon thread and any size needle between 90/14 and 100/16.
Extra spool pin

When embroidering with metallic thread, use the extra spool pin in order to prevent the thread from twisting as it unrolls from the spool.

Note
When using metallic thread, we recommend using a 90/14 home sewing machine needle.

1. Insert the extra spool pin onto the end of the bobbin winder shaft.
2. Place the spool felt on the spool pin.
3. Place the spool of thread on the spool pin so that the thread unrolls from the front of the spool.
4. Thread the upper thread.
   1. Insert the extra spool pin onto the end of the bobbin winder shaft.
   2. Spool felt
   3. Spool of thread

Net

When using special threads that quickly wind off the spool, place a net over the spool before sewing. Be sure to cut the net to match the size of the spool.

1. Net
2. Spool
3. Spool pin
4. Spool cap
This foot controller (model N5V) is designed for use with this sewing machine (model PC-6500).

**Note**
- When the foot controller is plugged in, the start/stop button cannot be used to start or stop sewing.
- The foot controller’s maximum sewing speed is set with the sewing speed controller.

1. With the sewing machine turned off, insert the foot controller plug into its jack on the machine.
   1. Foot controller jack
   2. Foot controller plug
   3. Foot controller

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

3. Release the foot controller to stop sewing.

**CAUTION**
Do not allow fabric pieces or dust to collect in the foot controller, otherwise a fire or an electric shock may occur.
STITCH SELECTION

Selecting a utility stitch

This sewing machine is equipped with 78 built-in utility stitches.

1. Press the SEWING key.
2. Press the PREV or NEXT key until the desired stitch is displayed.
3. Press the key for the stitch that you wish to use.

For details on sewing using the selected utility stitch, refer to page 43.

Selecting a stitch with the stitch guide ( )

The stitch guide can provide beginning sewers with help in selecting the appropriate stitch for the desired sewing application. An example of how the stitch guide can be used is shown below.

Example: To select a stitch for sewing a buttonhole on a shirt

1. If the utility stitch screen is not already displayed, press the SEWING key.
2. Press .
3. Press the BUTTONHOLE key.
4. Press to select the buttonhole stitch for a shirt.
5. Follow the instructions, and then press the NEXT key.
6. Follow the instructions, and then press the **NEXT** key.

7. Follow the instructions, and then press the **NEXT** key.

8. Follow the instructions, and then press the **NEXT** key.

9. Follow the instructions, and then press the **NEXT** key.

10. Follow the instructions, and then press the **NEXT** key.

11. Follow the instructions, and then press the **NEXT** key.

12. To turn on automatic reverse/reinforcement stitching, press so that it appears as .
To turn on automatic thread cutting, press so that it appears as .
## Stitch width and length reference chart

<table>
<thead>
<tr>
<th>STITCH</th>
<th>Stitch width [mm (inch)]</th>
<th>Stitch length [mm (inch)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight (Left needle position)</td>
<td>0.0</td>
<td>0.0–7.0 (0–9/32)</td>
</tr>
<tr>
<td>Straight (Middle needle position)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Triple stretch stitch</td>
<td>0.0</td>
<td>0.0–7.0 (0–9/32)</td>
</tr>
<tr>
<td>Stretch stitch</td>
<td>1.0</td>
<td>(3/32)</td>
</tr>
<tr>
<td>Basting stitch</td>
<td>0.0</td>
<td>(0)</td>
</tr>
<tr>
<td>Zigzag stitch</td>
<td>3.5</td>
<td>(9/32)</td>
</tr>
<tr>
<td>Elastic Zigzag</td>
<td>5.0</td>
<td>(13/32)</td>
</tr>
<tr>
<td>Overcasting</td>
<td>5.0</td>
<td>(13/32)</td>
</tr>
<tr>
<td>Blind hem stitch</td>
<td>0.0</td>
<td>(0)</td>
</tr>
<tr>
<td>Buttonhole</td>
<td>5.0</td>
<td>(13/32)</td>
</tr>
<tr>
<td>Fagoting</td>
<td>5.0</td>
<td>(13/32)</td>
</tr>
<tr>
<td>Applique</td>
<td>5.0</td>
<td>(13/32)</td>
</tr>
</tbody>
</table>

### Stitch width and length reference chart

<table>
<thead>
<tr>
<th>STITCH</th>
<th>Stitch width [mm (inch)]</th>
<th>Stitch length [mm (inch)]</th>
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</thead>
<tbody>
<tr>
<td>Bar tack</td>
<td>2.0</td>
<td>(5/64)</td>
</tr>
<tr>
<td>Darning</td>
<td>7.0</td>
<td>(9/32)</td>
</tr>
<tr>
<td>Tape attaching</td>
<td>4.0</td>
<td>(5/64)</td>
</tr>
<tr>
<td>Eyelet</td>
<td>7.0</td>
<td>(9/32)</td>
</tr>
<tr>
<td>Button sewing</td>
<td>3.5</td>
<td>(9/32)</td>
</tr>
<tr>
<td>Appliqué</td>
<td>3.5</td>
<td>(9/32)</td>
</tr>
<tr>
<td>Scallop stitch</td>
<td>5.0</td>
<td>(13/32)</td>
</tr>
<tr>
<td>Smocking stitch</td>
<td>5.0</td>
<td>(13/32)</td>
</tr>
<tr>
<td>Patchwork stitch</td>
<td>4.0</td>
<td>(5/32)</td>
</tr>
<tr>
<td>Fagoting</td>
<td>5.0</td>
<td>(13/32)</td>
</tr>
<tr>
<td>Applique</td>
<td>5.0</td>
<td>(13/32)</td>
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<tr>
<td>Manual</td>
<td>5.0</td>
<td>(15/32)</td>
</tr>
<tr>
<td>Manual</td>
<td>5.0</td>
<td>(15/32)</td>
</tr>
</tbody>
</table>

Notes:

- **Auto** and **Manual** columns indicate whether the stitch width and length are adjustable or not.
- **Non-adjustable** stitches are marked with a dashed line.
<table>
<thead>
<tr>
<th>STITCH</th>
<th>Stitch width [mm (inch)]</th>
<th>Stitch length [mm (inch)]</th>
<th>STITCH</th>
<th>Stitch width [mm (inch)]</th>
<th>Stitch length [mm (inch)]</th>
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<tr>
<td></td>
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<tr>
<td><strong>Decorative</strong></td>
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<tr>
<td><strong>Heirloom</strong></td>
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<tr>
<td><strong>Satin stitch</strong></td>
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</tbody>
</table>

-- Non-adjustable
STITCH WIDTH & LENGTH

Adjusting the needle position (stitch width)

1. Select a stitch, and then press the STITCH ADJUST key.
2. Adjust the needle position (stitch width).
   - To move the needle toward the right (increase the stitch width), press the STITCH WIDTH key (wider).
   - To move the needle toward the left (decrease the stitch width), press the STITCH WIDTH key (narrower).
   The stitch length setting changes each time one of these keys is pressed.
3. After making the adjustment, press the END key.

Note
- The needle position cannot be changed for the straight stitch (center needle position) ( ).
- The default stitch width setting for the selected stitch is highlighted in black.

1. Needle moved toward the right (wider stitch)
2. Needle positioned in the center (standard stitch width)
3. Needle moved toward the left (narrower stitch)

Adjusting the stitch length

1. Select a stitch, and then press the STITCH ADJUST key.
2. Adjust the stitch length.
   - To increase the stitch length, press the STITCH LENGTH key (longer).
   - To decrease the stitch length, press the STITCH LENGTH key (shorter).
   The stitch length setting changes each time one of these keys is pressed.
3. After making the adjustment, press the END key.

Note
- When sewing straight stitches with 4.5 mm or 5.0 mm length setting on fabric less than 5/128” (1.0 mm) thick, the stitch length automatically adjusts to 5/32” (4.0 mm) at the start of sewing in order to prevent gathering.
- The default stitch length setting for the selected stitch is highlighted in black.

1. Longer stitch
2. Medium stitch length
3. Shorter stitch
### THREAD TENSION

**Correct tension**

The upper thread and the bobbin thread should cross at about the center of the fabric. If the thread tension is incorrectly set, flat attractive stitches will not be sewn or the fabric will pucker. The thread tension for each stitch is preset to the most appropriate setting. However, in the following cases, the thread tension may need adjustment:

- when using special thread or sewing on special fabric
- when sewing gathers
- when the preset settings do not give the desired result

**Note**
Correct tension is important since too much or too little tension weakens the seams or causes the fabric to pucker.

#### Adjusting the upper thread tension

1. Select a stitch, and then press the STITCH ADJUST key.
2. Adjust the thread tension.
   - To increase the thread tension (tighten the upper thread), press the THREAD TENSION key (stronger).
   - To decrease the thread tension (loosen the upper thread), press the THREAD TENSION key (weaker).
   - The thread tension setting changes each time one of these keys is pressed.
3. After making the adjustment, press the END key.

**Note**
The default thread tension setting (AUTO) is highlighted in black.

- If the upper thread is too tight, locks appear on the right side of the fabric.
- Bobbin thread
- Upper thread
- Right side of fabric

- If the upper thread is too loose, locks appear on the wrong side of the fabric.
- Bobbin thread
- Upper thread
- Wrong side of fabric
This sewing machine is equipped with a convenient guide that displays information and instructions on various operations, such as bobbin winding, upper threading, and LCD adjustment, making this machine easy to use.

Example: To display the instructions for installing the bobbin

1. Press the OPERATION GUIDE key.
   ① OPERATION GUIDE key

2. Press the SETTING BOBBIN key.
   ① Press the NEXT key to display more options.

3. Follow the instructions, and then press the NEXT key.

4. Follow the instructions, and then press the NEXT key.

5. Follow the instructions, and then press the END key.

Example: To display the instructions for installing the bobbin

1. Press the OPERATION GUIDE key.
   ① OPERATION GUIDE key

2. Press the SETTING BOBBIN key.
   ① Press the NEXT key to display more options.

3. Follow the instructions, and then press the NEXT key.

4. Follow the instructions, and then press the NEXT key.

5. Follow the instructions, and then press the END key.
AUTOMATIC REVERSE/REINFORCEMENT STITCHING

Before sewing, turn on automatic reverse/reinforcement stitching to sew reverse stitches (stitches sewn in the reverse direction when sewing straight stitches) or reinforcement stitches (three stitches sewn on top of each other when sewing stitches other than straight stitches) automatically at both the beginning and the end of the stitching to secure it.

1. Select a stitch.

2. Turn on automatic reverse/reinforcement stitching by pressing [1] so that it appears as [2].

   1 Automatic reverse/reinforcement stitching turned on

   Note

   – Be sure to place the edge of the fabric at least 3 to 4 stitch lengths behind the presser foot so that the reverse/reinforcement stitches can be sewn.


3. Press the start/stop button.

   1 Reverse/reinforcement stitches are sewn, and then sewing starts.

   Note

   If the start/stop button had been pressed to pause sewing, the beginning reverse/reinforcement stitches are not sewn.

4. When the end of the stitching is reached, press the reverse/reinforcement stitch button to sew reverse/reinforcement stitches and stop sewing.

   2 Reverse/reinforcement stitches are sewn, and then sewing stops automatically.
AUTOMATIC THREAD CUTTING

Before sewing, turn on automatic thread cutting to cut the threads automatically at the end of sewing. This function is convenient when sewing buttonholes and bar tacks.

1. Select a stitch.

2. Turn on automatic thread cutting by pressing \[ \text{Automatic thread cutting turned on} \]
   - Automatic reverse/reinforcement stitching must also be used when automatic thread cutting is turned on.
   - Pressing \[ \text{turns off automatic thread cutting.} \]

3. Press the start/stop button.
   - Reverse/reinforcement stitches are sewn, and then sewing starts.

   \[ \text{Note} \]
   - If the start/stop button had been pressed to pause sewing, the beginning reverse/reinforcement stitches are not sewn.

4. When the end of the stitching is reached, press the reverse/reinforcement stitch button to sew reverse/reinforcement stitches, stop sewing, and cut the threads.
   - Reverse/reinforcement stitches are sewn, sewing stops, and then the threads are cut automatically.
BASIC SEWING

Sewing using the straight stitch (left needle position)

CAUTION
- Be aware of the needle location at all times while sewing, and keep your hands away from all moving parts such as the needle, balance wheel and thread take-up lever, otherwise injuries may occur.
- Do not pull or push the fabric too hard while sewing, otherwise injuries may occur.
- Never use bent needles. They can easily break, which could result in injury.

1. When the sewing machine is turned on, the straight stitch (left needle position) is automatically selected.
   1. Attach the presser foot indicated by the code that is displayed.
   2. Press this key before sewing with the optional side cutter installed.
   3. Press this key before you start sewing to automatically sew reverse or reinforcement stitches at the beginning and end of stitching. (Refer to page 36 for more details.)
   4. Press this key before you start sewing to automatically cut the threads after sewing. (Refer to page 37 for more details.)
   5. Press this key to display a stitch guide, which will help you select the best stitch for your specific need.
   6. Press this key to display the previous page.
   7. Press this key to display the next page.

2. Place the fabric under the presser foot.

3. While holding the thread end and the fabric with your left hand, turn the balance wheel toward you with your right hand to lower the needle to the starting point of the stitching.
   1. Upper thread

Note
- You can begin sewing without pulling up the bobbin thread.
- Be sure to place the edge of the fabric at least 3 to 4 stitch lengths behind the presser foot so that the reverse/reinforcement stitches can be sewn.
4. Lower the presser foot lever.

5. Press the reverse/reinforcement stitch button to sew reverse stitches, and then press the start/stop button. The machine starts sewing at slow speed.

**Note**
- To pause sewing in order to turn or adjust the fabric, press the start/stop button. To restart sewing, press the start/stop button again.
- If automatic reverse/reinforcement stitching is turned on before you start sewing, pressing just the start/stop button automatically sews reverse/reinforcement stitches before sewing.

6. Adjust the sewing speed using either the sewing speed controller or the foot controller.

7. When the end of the stitching is reached, press the reverse/reinforcement stitch button to sew reverse stitches and stop the machine.

8. Press the thread cutter button to cut the threads.

**Note**
- Cut thick thread (thicker than #30) with the cutter on the side of the machine as shown.
- If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reverse/reinforcement stitches, trims the threads and stops the machine.
USEFUL SEWING SKILLS

Sewing corners

When you reach the corner, leave the needle in the fabric, raise the presser foot lever, and then turn the fabric. Lower the presser foot lever and continue sewing.

For stitches that are shorter than 13/64” (5.0 mm):

Before you begin sewing, baste the corner. After turning the fabric at the corner, continue sewing while pulling the basting thread out toward the back.

Sewing thick seams

If the presser foot angles up as it approaches a thick seam, leave the needle in the fabric and raise the presser foot lever. After levelling off the sewing area by placing a piece of folded fabric or cardboard under the back of the presser foot, lower the presser foot lever and continue sewing.

Sewing curves

Sewing a curve with a straight stitch
Sew slowly while keeping the seam parallel with the fabric edge as you guide the fabric around the curve.
Sewing thick fabric

1. Raise the presser foot lever, and then raise it even higher so thicker fabrics can be placed under the presser foot.

2. If the fabric does not feed at the beginning of sewing, place a piece of folded fabric or cardboard under the back of the presser foot to raise it.

Sewing thin fabric

Place thin paper or stabilizer material under the fabric before sewing.

Sewing a curve with a zigzag stitch

Select a short stitch length in order to obtain a fine stitch and sew slowly while keeping the seam parallel with the fabric edge as you guide the fabric around the curve.

Note

For sharp corners, temporarily stop sewing while keeping the needle in the material, raise the presser foot lever, and then carefully turn the fabric while keeping the fabric edge aligned with the side of the presser foot. Lower the presser foot lever and continue sewing.
Align the edge of the material with a line on the needle plate to sew even seam allowances.
**BASIC STITCHING**

1. **Straight (Left)** [straight stitch (left needle position)]: for normal sewing
2. **Straight (Mid)** [straight stitch (center needle position)]: for normal sewing
3. **Triple stretch stitch**: for reinforced stitching
4. **Stretch stitch**: for sewing stretch fabric

1. Baste or pin together the fabric pieces before sewing, attach presser foot J, and lower the presser foot lever.

2. Press the reverse/reinforcement stitch button to sew reverse/reinforcement stitches, and then press the start/stop button to continue sewing.

   - **Reverse stitches at beginning**

**Note**
- Be sure to place the edge of the fabric at least 3 to 4 stitch lengths behind the presser foot so that the reverse/reinforcement stitches can be sewn.
- If automatic reverse/reinforcement stitching is turned on before you start sewing, pressing just the start/stop button automatically sews reverse/reinforcement stitches before sewing.

3. Slow down the sewing speed near the end of the stitching, and then press the reverse/reinforcement stitch button to sew reverse/reinforcement stitches and stop the machine.

4. Press the thread cutter button to cut the threads.

**Note**
If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reverse/reinforcement stitches, trims the threads and stops the machine.

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**Reinforced stitching of stretch fabric**

Baste the fabric beforehand and sew along the basting using a stretch stitch (or ).

1. **Basting**

**Note**
Do not pull the fabric while sewing.
1. Attach presser foot J. Then, after sewing reverse stitches at the beginning of the dart, sew from the wide end to the narrow end without stretching the fabric.

   1 Right side of fabric
   2 Wrong side of fabric
   3 Basting

   **Note**
   If automatic reverse/reinforcement stitching is turned on before you start sewing, pressing just the start/stop button automatically sews reverse stitches before sewing.

2. Press the start/stop button to stop stitching without sewing reverse stitches at the end of the seam, cut the threads, leaving about 2” (5.0 cm) of thread on the ends, and then tie the two threads together at each end.

3. Insert the ends of the thread into the dart using a needle.

4. Iron the dart to one side so that it lays flat.
Create gathers on the waists of skirts or on shirt sleeves.

1. **Straight (Left) [straight stitch (left needle position)]**
   
   1. Set the stitch length to 5/32” (4.0 mm) and select a weak thread tension.
   
   **Note**
   
   If you pressed then **GATHERING**, the stitch length automatically adjusts to 5/32” (4.0 mm) and a weak thread tension is automatically selected.

   2. Attach presser foot J, and pull out about 2” (5.0 cm) of both the upper and bobbin threads.
      
      ① Upper thread
      ② Bobbin thread
      ③ About 2” (5.0 cm)

   3. Turn off automatic thread cutting and automatic reverse/reinforcement stitching, sew two rows of straight stitches parallel to the seamline, and then remove the fabric from the machine, leaving about 2” (5.0 cm) of thread on the ends.
      
      ① Seamline
      ② 3/8” to 1/2” (1.0 to 1.5 cm)
      ③ About 2” (5.0 cm)

   4. Pull the bobbin threads to obtain the desired amount of gather, and then tie the thread ends together.

   5. Smooth the gathers by ironing them.
Inserting a centered zipper

1. Attach presser foot J, sew straight stitches up to the zipper opening, and then sew reverse stitches. Then, select a basting stitch and continue sewing to the edge of the fabric.
   - End of zipper opening
   - Reverse stitches
   - Basting stitch
   - Wrong side of fabric

2. Press open the seam allowance, and then use the basting stitch to baste the zipper in place.
   - Zipper
   - Basting
   - Wrong side of fabric

3. Press [Straight (Mid)], and then press (presser foot I). The thread tension automatically adjusts for presser foot I.

   **Note**
   If you pressed then ZIPPER INSERTION, the thread tension is automatically adjusted.

4. Attach the presser foot holder to the right pin of presser foot I, and topstitch around the zipper 25/64" (1.0 cm) from the edge of the pressed edge.
   - Presser foot holder attached to right pin of presser foot I
   - Right side of fabric

5. Remove the basting.
Inserting a side zipper

1. Attach presser foot J, sew straight stitches up to the zipper opening, and then sew reverse stitches. Then, select a basting stitch and continue sewing to the edge of the fabric.
   1. End of zipper opening
   2. Reverse stitches
   3. Basting stitch
   4. Wrong side of fabric

2. Press open the seam allowance and align the pressed edge with the zipper teeth, leaving 1/8" (3.0 mm) of space for the stitching.
   1. Wrong side of fabric
   2. Leave 1/8" (3.0 mm) for stitching
   3. Zipper teeth
   4. Zipper pull tab
   5. Zipper opening (base of zipper)

3. Select [Straight (Mid)], and then press (presser foot I). The thread tension automatically adjusts for presser foot I.

4. Attach the presser foot holder to the left pin of presser foot I, open the zipper, and then sew the bottom layer to the zipper from the top to base of the zipper.

Note
If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reverse stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reverse stitches, trims the threads and stops the machine.
5. Close the zipper, turn over the fabric, and then sew the other side of the zipper to the fabric.
   ① Wrong side of fabric

6. Turn the fabric over so that the right side of the fabric faces up, sew a straight stitch across the bottom of the zipper and along the left side to about 13/64” (5.0 cm) from the edge of the fabric.

7. Stop the machine with the needle in the fabric, raise the presser foot lever, and then remove the basting stitches.
   ① Right side of fabric

8. Move the zipper pull tab out of the way and continue sewing to the edge of the fabric.
   ① Right side of fabric
PINTUCK SEWING

1. Mark the positions of the folds on the wrong side of the fabric.
   - Wrong side of fabric

2. Fold over the fabric and iron only along the folds.
   - Right side of fabric

3. Press [Straight (Mid)], and then press (presser foot I). The thread tension automatically adjusts for presser foot I.

   Note
   If you pressed then PINTUCK, the thread tension is automatically adjusted.

4. Attach the presser foot holder to the right pin of presser foot I, and sew a straight stitch along each fold.
   - Width of pintuck
   - Wrong side of fabric
   - Right side of fabric

   Note
   If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reverse stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reverse stitches, trims the threads and stops the machine.

5. Iron the folds toward the same direction.
Sew flat-fell seams to reinforce seams and for neatly finishing edges.

1. Attach presser foot J, sew the seam, and then cut off half of the seam allowance from the one that will lie flat.
   - About 15/32" (1.2 cm)
   - Wrong side of fabric

**Note**
If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reverse stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reverse stitches, trims the threads and stops the machine.

2. Spread out the fabric along the seamline.
   - Seamline
   - Wrong side of fabric

3. Iron both seam allowances toward the more narrow (cut) one.
   - Wrong side of fabric

4. Fold the longer seam allowance around the more narrow one, and sew the edge of the fold so that the seam appears as shown.
   - Wrong side of fabric
   - Right side of fabric
1. Attach presser foot J and lower the presser foot lever.

2. Press the reverse/reinforcement button to sew reinforcement stitches at the beginning of the basting.

**Note**
- If you will not sew reinforcement stitches, raise the presser foot lever, hold the end of the upper thread, and then turn the balance wheel toward you with your right hand to pull up the bobbin thread. Pull about 2” (5.0 cm) of both the upper and lower threads out toward the rear of the machine.
- The length of one stitch can be set between 13/64” and 1-3/16” (5.0 and 30.0 mm).

3. Sew while keeping the fabric pulled tight.

4. End the basting with reinforcement stitches.
ZIGZAG STITCHING

1. Zigzag stitch: for normal zigzag sewing
2. Elastic zigzag: for sewing stretch fabric
3. Elastic zigzag: for sewing stretch fabric

Overcasting with a zigzag stitch

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

1. Needle drop point

Appliqué sewing with a zigzag stitch

Before sewing an appliqué, attach it to the fabric either with adhesive or by basting it. Sew the zigzag stitch so that the needle drops off the edge of the appliqué.

Patchwork (crazy quilt) stitching

Fold over the desired width of the top fabric and position it over the lower fabric. Then, sew the zigzag stitch so that the stitching bridges both pieces of fabric.

1. Upper fabric
2. Lower fabric
OVERCASTING

Overcasting
1 for sewing thin and medium weight fabrics
2 for sewing thick fabrics
3 for sewing thick and medium weight stretch fabrics
4 for sewing mediumweight stretch fabrics
5 for sewing stretch fabrics
6 for sewing stretch fabrics

Utility stitches that display can be sewn using the side cutter. For details on installing and using the side cutter, refer to page 16.

Sewing with , or

Attach presser foot G, lower the presser foot lever, and then sew the overcasting with the fabric edge against the guide of presser foot G.

Note
If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reinforcement stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reinforcement stitches, trims the threads and stops the machine.

CAUTION
After the stitch width is adjusted, turn the balance wheel toward you by hand and check that the needle does not touch the presser foot. If the needle hits the presser foot and breaks, injuries may occur.

Sewing with , or

Attach presser foot J, and check that the needle drops slightly off the edge of the fabric before sewing.

Note
If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reinforcement stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reinforcement stitches, trims the threads and stops the machine.
**BLIND HEM STITCHING**

**Blind hem stitch**
1. for sewing fabric other than stretch fabric
2. for sewing stretch fabric

1. Fold the fabric and baste it as illustrated. Then, fold the fabric once again as shown.
   1. 3/16" (0.5 cm)
   2. Right side of fabric
   3. Wrong side of fabric
   4. Basting stitch

2. Attach blind hem foot R, lower the presser foot lever, and position the fabric under the presser foot so that the edge of the folded hem touches the guide of the presser foot.
   1. Guide
   2. Folded hem

3. With the **STITCH WIDTH** keys, adjust the needle position so that the needle slightly catches the fold of the hem, and then sew the fabric.
   1. Needle drop point

**Note**
If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reinforcement stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reinforcement stitches, trims the threads and stops the machine.

4. Turn over the fabric and remove the basting stitch.
   1. Wrong side of fabric
   2. Right side of fabric
Adjusting the needle position

Press the **STITCH ADJUST** key, and then use the **STITCH WIDTH** keys \( \text{W} \) and \( \text{N} \) to adjust the needle position so that the needle slightly catches the fold of the hem.

If the needle catches too much of the hem fold, press the **STITCH WIDTH** key \( \text{W} \) to move the needle away from the fold.

1. Wrong side of fabric
2. Right side of fabric

If the needle does not catch enough of the hem fold, press the **STITCH WIDTH** key \( \text{N} \) to move the needle closer to the fold.

1. Wrong side of fabric
2. Right side of fabric
### BUTTONHOLE STITCHING

**Buttonhole**
1. for thin and medium weight fabrics (horizontal holes)
2. for jeans and trousers
3. for thick coats
4. for thin or medium weight fabrics
5. for stretch fabric with coarse weaves
6. for stretch fabrics
7. for making a bound buttonhole
8. for suits and overcoats
9. for jeans and trousers
10. for thick coats

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

**Note**
- The maximum buttonhole length is 1-3/16" (3 cm) (diameter + thickness of the button).
- Thick thread (#30) cannot be used when sewing with **and**.

2. Attach buttonhole foot A and lower the presser foot lever, making sure that the upper thread passes underneath the buttonhole foot.

3. Pull out the button guide plate and insert the button that will be put through the buttonhole.

4. Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration at the left, making sure that there is no gap behind the part of the foot marked “A”.

**Note**
If the buttonhole foot is not slid back as far as possible, the buttonhole will not be sewn with the correct size.

5. Position the fabric under the buttonhole foot so that the red marks on the sides of the buttonhole foot align with the front end of the buttonhole marking and the red mark on the front of the foot is centered in the marking.

6. Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.

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**Button**
1. for thin and medium weight fabrics (horizontal holes)
2. for jeans and trousers
3. for thick coats
4. for thin or medium weight fabrics
5. for stretch fabric with coarse weaves
6. for stretch fabrics
7. for making a bound buttonhole
8. for suits and overcoats
9. for jeans and trousers
10. for thick coats

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

**Note**
- The maximum buttonhole length is 1-3/16" (3 cm) (diameter + thickness of the button).
- Thick thread (#30) cannot be used when sewing with **and**.

2. Attach buttonhole foot A and lower the presser foot lever, making sure that the upper thread passes underneath the buttonhole foot.

3. Pull out the button guide plate and insert the button that will be put through the buttonhole.

4. Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration at the left, making sure that there is no gap behind the part of the foot marked “A”.

**Note**
If the buttonhole foot is not slid back as far as possible, the buttonhole will not be sewn with the correct size.

5. Position the fabric under the buttonhole foot so that the red marks on the sides of the buttonhole foot align with the front end of the buttonhole marking and the red mark on the front of the foot is centered in the marking.

6. Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.

---

**Button**
1. for thin and medium weight fabrics (horizontal holes)
2. for jeans and trousers
3. for thick coats
4. for thin or medium weight fabrics
5. for stretch fabric with coarse weaves
6. for stretch fabrics
7. for making a bound buttonhole
8. for suits and overcoats
9. for jeans and trousers
10. for thick coats

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

**Note**
- The maximum buttonhole length is 1-3/16" (3 cm) (diameter + thickness of the button).
- Thick thread (#30) cannot be used when sewing with **and**.

2. Attach buttonhole foot A and lower the presser foot lever, making sure that the upper thread passes underneath the buttonhole foot.

3. Pull out the button guide plate and insert the button that will be put through the buttonhole.

4. Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration at the left, making sure that there is no gap behind the part of the foot marked “A”.

**Note**
If the buttonhole foot is not slid back as far as possible, the buttonhole will not be sewn with the correct size.

5. Position the fabric under the buttonhole foot so that the red marks on the sides of the buttonhole foot align with the front end of the buttonhole marking and the red mark on the front of the foot is centered in the marking.

6. Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.

---

**Button**
1. for thin and medium weight fabrics (horizontal holes)
2. for jeans and trousers
3. for thick coats
4. for thin or medium weight fabrics
5. for stretch fabric with coarse weaves
6. for stretch fabrics
7. for making a bound buttonhole
8. for suits and overcoats
9. for jeans and trousers
10. for thick coats

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

**Note**
- The maximum buttonhole length is 1-3/16" (3 cm) (diameter + thickness of the button).
- Thick thread (#30) cannot be used when sewing with **and**.

2. Attach buttonhole foot A and lower the presser foot lever, making sure that the upper thread passes underneath the buttonhole foot.

3. Pull out the button guide plate and insert the button that will be put through the buttonhole.

4. Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration at the left, making sure that there is no gap behind the part of the foot marked “A”.

**Note**
If the buttonhole foot is not slid back as far as possible, the buttonhole will not be sewn with the correct size.

5. Position the fabric under the buttonhole foot so that the red marks on the sides of the buttonhole foot align with the front end of the buttonhole marking and the red mark on the front of the foot is centered in the marking.

6. Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.

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**Button**
1. for thin and medium weight fabrics (horizontal holes)
2. for jeans and trousers
3. for thick coats
4. for thin or medium weight fabrics
5. for stretch fabric with coarse weaves
6. for stretch fabrics
7. for making a bound buttonhole
8. for suits and overcoats
9. for jeans and trousers
10. for thick coats

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

**Note**
- The maximum buttonhole length is 1-3/16" (3 cm) (diameter + thickness of the button).
- Thick thread (#30) cannot be used when sewing with **and**.

2. Attach buttonhole foot A and lower the presser foot lever, making sure that the upper thread passes underneath the buttonhole foot.

3. Pull out the button guide plate and insert the button that will be put through the buttonhole.

4. Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration at the left, making sure that there is no gap behind the part of the foot marked “A”.

**Note**
If the buttonhole foot is not slid back as far as possible, the buttonhole will not be sewn with the correct size.

5. Position the fabric under the buttonhole foot so that the red marks on the sides of the buttonhole foot align with the front end of the buttonhole marking and the red mark on the front of the foot is centered in the marking.

6. Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.

---

**Button**
1. for thin and medium weight fabrics (horizontal holes)
2. for jeans and trousers
3. for thick coats
4. for thin or medium weight fabrics
5. for stretch fabric with coarse weaves
6. for stretch fabrics
7. for making a bound buttonhole
8. for suits and overcoats
9. for jeans and trousers
10. for thick coats

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

**Note**
- The maximum buttonhole length is 1-3/16" (3 cm) (diameter + thickness of the button).
- Thick thread (#30) cannot be used when sewing with **and**.

2. Attach buttonhole foot A and lower the presser foot lever, making sure that the upper thread passes underneath the buttonhole foot.

3. Pull out the button guide plate and insert the button that will be put through the buttonhole.

4. Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration at the left, making sure that there is no gap behind the part of the foot marked “A”.

**Note**
If the buttonhole foot is not slid back as far as possible, the buttonhole will not be sewn with the correct size.

5. Position the fabric under the buttonhole foot so that the red marks on the sides of the buttonhole foot align with the front end of the buttonhole marking and the red mark on the front of the foot is centered in the marking.

6. Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.
7. Gently hold the end of the upper thread, and then start sewing. Feed the fabric carefully by hand while the buttonhole is sewn. Once sewing is completed, the machine automatically sews reinforcement stitches, and then stops.

**Note**
- If automatic thread cutting is turned on before you start sewing, both threads are automatically cut after the reinforcement stitches are sewn.
- If the fabric does not feed (for example, because it is too thick), press the STITCH LENGTH key to increase the stitch length.

6. Cut open the buttonhole.

**For normal buttonholes and rounded buttonholes:**
Insert a pin along the inside of one of the bar tacks, and then insert the seam ripper into the center of the buttonhole and cut towards the pin.

1. Pin

**For keyhole buttonholes:**
Use the eyelet punch to make a hole in the rounded end of the buttonhole. Then, insert a pin along the inside of one of the bar tacks, insert a seam ripper into the hole made with the eyelet punch, and cut towards the pin.

1. Eyelet punch
2. Pin
Sewing stretch fabrics

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

1. Hook the gimp thread onto the front end of presser foot A so that it fits into the grooves, and then temporarily tie it there.

2. Lower the presser foot lever and start sewing.

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

3. Once sewing is completed, gently pull the gimp thread to remove any slack, and trim off any excess.
Odd-shaped buttons that do not fit into the button guide plate

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

Example: For a button with a diameter of 19/32" (1.5 cm) and a thickness of 25/64" (1.0 cm), the scale should be set at 1" (2.5 cm)

1. Thickness [25/64" (1.0 cm)]
2. Diameter [19/32" (1.5 cm)]
3. Button guide plate
4. Scale
5. Diameter + thickness [1" (2.5 cm)]
6. 13/64" (0.5 cm)

Adjusting the buttonhole width

Press the STITCH ADJUST key, and then use the STITCH WIDTH keys [W] and [N] to adjust the width of the buttonhole.

1. Pressing STITCH WIDTH key [W] increases the width of the buttonhole.
2. Standard buttonhole width
3. Pressing STITCH WIDTH key [N] decreases the width of the buttonhole.

Adjusting the stitch length of the buttonhole

Press the STITCH ADJUST key, and then use the STITCH LENGTH keys [L] and [S] to adjust the stitch length of the bar tacks.

1. Pressing STITCH LENGTH key [L] lengthens the bar tack stitch length.
2. Standard buttonhole stitch length
3. Pressing STITCH LENGTH key [S] shortens the bar tack stitch length.

Note
If the fabric does not feed (for example, because it is too thick), press the STITCH LENGTH key [L] to increase the stitch length.
Use bar tacks to reinforce points that will be subject to strain, such as pocket corners, belt loops, or the tops of pleats.

**Bar tack**

1. After attaching the pocket according to the pattern’s instructions, attach buttonhole foot A and set the scale to the desired length of the bar tack.
   - Scale
   - 13/64” (0.5 cm)
   - Length of bar tack

**Note**
Bar tacks can be between 13/64” and 1-3/16” (0.5 and 3.0 cm) long, however, the normal bar tack length is between 13/64” and 25/64” (0.5 and 1.0 cm).

2. Position the pocket as shown with the top of the pocket facing you and lower the presser foot lever, making sure that the upper thread passes underneath the buttonhole foot.

3. Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration at the left, making sure that there is no gap behind the part of the foot marked “A”.

**Note**
If the buttonhole foot is not slid back as far as possible, the bar tack will not be sewn with the correct size.

4. Check that the needle drops at the corner of the pocket, and then move the pocket back 5/64” (2.0 mm).
   - 5/64” (2.0 mm)

5. Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.
   - Buttonhole lever
   - Metal bracket on the buttonhole foot
6. Gently hold the end of the upper thread, and then press the start/stop button to start the machine. Once sewing is completed, the machine automatically sews reinforcement stitches, and then stops.

Note
- If automatic thread cutting is turned on before you start sewing, both threads are automatically cut after the reinforcement stitches are sewn.
- If the fabric does not feed (for example, because it is too thick), press the STITCH LENGTH key [L] to increase the stitch length.

Sewing bar tacks on thick fabrics

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

1. Buttonhole foot
2. Folded fabric or cardboard

Adjusting the bar tack width

Press the STITCH ADJUST key, and then use the STITCH WIDTH keys [W] and [N] to adjust the width of the bar tack.

1. Pressing STITCH WIDTH key [W] increases the width of the bar tack.
2. Standard bar tack width
3. Pressing STITCH WIDTH key [N] decreases the width of the bar tack.

Adjusting the stitch length of the bar tack

Press the STITCH ADJUST key, and then use the STITCH LENGTH keys [L] and [S] to adjust the stitch length of the bar tack.

1. Pressing STITCH LENGTH key [L] lengthens the bar tack stitch length.
2. Standard bar tack stitch length
3. Pressing STITCH LENGTH key [S] shortens the bar tack stitch length.

Note
If the fabric does not feed (for example, because it is too thick), press the STITCH LENGTH key [L] to increase the stitch length.
**DARNING**

### Darning

1. Attach buttonhole foot A and set the scale to the desired length of the darning.
   - **Scale**
   - **13/64” (0.5 cm)**
   - **Length of darning**

**Note**

The maximum length of the darning is 1-3/16” (3.0 cm).

2. Check that the needle drops at the desired position and lower the presser foot lever, making sure that the upper thread passes underneath the buttonhole foot.

3. Slide the outside frame of the buttonhole foot backward as far as possible as shown in the illustration at the left, making sure that there is no gap behind the part of the foot marked “A”.

**Note**

If the buttonhole foot is not slid back as far as possible, the darning will not be sewn with the correct size.

4. Lower the buttonhole lever so that it is positioned behind the metal bracket on the buttonhole foot.
   - **1 Buttonhole lever**
   - **2 Metal bracket on the buttonhole foot**

5. Gently hold the end of the upper thread, and then press the start/stop button to start the machine. Once sewing is completed, the machine automatically sews reinforcement stitches, and then stops.

**Note**

If automatic thread cutting is turned on before you start sewing, both threads are automatically cut after the reinforcement stitches are sewn.
Adjusting the darning width

Press the STITCH ADJUST key, and then use the STITCH WIDTH keys \( \text{W} \) and \( \text{N} \) to adjust the width of the darning.

1. Pressing STITCH WIDTH key \( \text{W} \) increases the width of the darning.
2. Standard darning width
3. Pressing STITCH WIDTH key \( \text{N} \) decreases the width of the darning.

Adjusting the stitch length of the darning

Press the STITCH ADJUST key, and then use the STITCH LENGTH keys \( \text{L} \) and \( \text{S} \) to adjust the stitch length of the darning.

1. Pressing STITCH LENGTH key \( \text{L} \) lengthens the darning stitch length (makes it less dense).
2. Standard darning stitch length
3. Pressing STITCH LENGTH key \( \text{S} \) shortens the darning stitch length (makes it more dense).

Note

If the fabric does not feed (for example, because it is too thick), press the STITCH LENGTH key \( \text{L} \) to increase the stitch length.

Darning stitch cycle

1. Reinforcement stitches
TAPE ATTACHING

Use this stitch to attach tape to thin or medium weight fabric.

1 Tape attaching
2 Elastic zigzag

1. Attach presser foot J, press [Straight (Left)], set the stitch length to 5/32” (4.0 mm) and select a weak thread tension.

2. Pull up the bobbin thread (See page 27 for details.), turn off automatic thread cutting and automatic reverse/ reinforcement stitching, sew a straight stitch, and then pull the bobbin thread to obtain the desired amount of gather.

3. Place the tape on top of the seam that you have just sewn and secure it with pins.

4. Press or and sew along the top of the tape.

5. Pull out the straight stitch threads.
EYELET STITCHING

Use this stitch for making eyelets, such as on belts.

1. Press the **STITCH ADJUST** key, and then select the eyelet size.

2. Attach presser foot N.

3. Check that the needle drops at the desired position, lower the presser foot lever, and then start sewing. Once sewing is completed, the machine automatically sews reinforcement stitches, and then stops.

   - **Needle drop point**

**Note**

If automatic thread cutting is turned on before you start sewing, both threads are automatically cut after the reinforcement stitches are sewn.

4. Make a hole in the center with an eyelet punch.
**BUTTON SEWING**

Use this stitch to attach buttons.

1. Raise the presser foot lever and slide the feed dog position switch to the right to lower the feed dogs.
   - Feed dog position switch

2. Attach button sewing foot M, place the button into the presser foot, and then lower the presser foot lever.

3. Turn off automatic thread cutting.

4. Gently hold the end of the upper thread, turn the balance wheel to check that the needle correctly goes into each hole in the button, and then start sewing. Once sewing is completed, the machine automatically stops.

   **Note**
   - To adjust the stitch width, press the STITCH ADJUST key, and then use the STITCH WIDTH keys \[ \text{w} \] and \[ \text{N} \] to adjust the stitch width to the distance between the button holes.
   - If extra strength is needed to secure the button, perform the button sewing operation again.

5. Remove the fabric, leaving plenty of thread on the ends.

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

   **Note**
   Remember to return the feed dogs to their original position.
Attaching four-hole buttons

First, sew the two holes which are closest to you. Once they have been sewn, raise the presser foot lever, move the fabric so that the needle goes into the next two holes, and then sew them in the same way.

Attaching a shank to the button

1. Pull the shank lever toward you before sewing.
   - Shank lever

2. After sewing is completed, remove the fabric from the sewing machine.

3. Pull the two ends of the upper thread between the button and the fabric, wind them around the shank, and then tie them firmly together.

4. Tie the ends of the bobbin thread together from the wrong side of the fabric.
**APPLIQUÉ STITCHING**

1. Use fabric glue or a basting stitch to attach the appliqué to the fabric.
   - Appliqué
   - Fabric glue

**Note**
The appliqué should be attached with fabric glue or a basting stitch so that it will not move during sewing.

2. Attach presser foot J, and check that the needle drops slightly off the edge of the appliqué before starting to sew.
   - Appliqué

**Note**
If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reinforcement stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reinforcement stitches, trims the threads and stops the machine.

3. Sew reinforcement stitches to finish sewing.
   - Appliqué
   - Needle drop point

**Sewing around corners of the appliqué**

1. Stop the machine with the needle positioned outside the appliqué.

2. Raise the presser foot lever, and then turn the fabric as needed to change the sewing direction.
APPLIQUÉ QUILT STITCHING

1. Trace the pattern onto the appliqué fabric, and then cut around it leaving an extra margin of between 3/256” and 5/256” (0.3 and 0.5 mm).

   Seam margin (3/256” to 5/256” (0.3 to 0.5 mm))

2. Cut a piece of thick paper to the exact size of the pattern, center it in the fabric, and then fold over the seam margin using an iron.

3. Take away the thick paper.

4. Turn the fabric over and attach it in place by sewing basting stitches around the edge.

5. Attach monogramming foot N, press , and then sew around the edge, while making sure that the needle drops outside of the pattern as close to the edge as possible.

Note
If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reinforcement stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reinforcement stitches, trims the threads and stops the machine.

Sample patterns for appliqué quilts

1. Dresden plate
2. Stained glass
3. Sunbonnet Sue
1. Attach presser foot N, and sew scallop stitches along the edge of the fabric, making sure not to sew directly on the edge of the fabric.

   Right side of fabric

**Note**
If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reinforcement stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reinforcement stitches, trims the threads and stops the machine.

2. Trim carefully along the stitches, making sure not to cut them.

**Note**
There are products available on the market that will “seal” the trimmed areas. This gives the edges a more finished appearance.
SMOKING STITCHING

Use this stitch to create decorative smocking on clothing.

1 Smocking stitch

1. Press [Straight (Left)], set the stitch length to 5/32” (4.0 mm), and select a weak thread tension.

2. Sew straight stitches at intervals of 25/64” (1.0 cm).
   - About 25/64” (1.0 cm)

3. Pull the bobbin threads to obtain the desired amount of gather, and then smooth the gathers by ironing them.

4. Attach presser foot J, press and sew over the straight stitches.

5. Pull out the straight stitch threads to remove them.
1. Align the right sides of the two pieces of fabric and sew them together with a straight stitch. Open up the seam allowances [about 25/64" (1.0 cm)] and press them flat.
   - Straight stitch
   - Seam allowance
   - 25/64" (1.0 cm)
   - Wrong side of fabric

2. Attach presser foot J, center it on the seamline, and then sew over the seam using one of the patchwork stitches shown above.
   - Right side of fabric
   - Seamline
Use these stitches to sew decorative stitches across an open seam.

1. Baste the two pieces of fabric onto thin paper or a water-soluble stabilizer sheet.
   1 Basting stitch
   2 5/32” (0.4 cm)
   3 Thin paper or stabilizer sheet

2. Attach presser foot J, center it on the paper between the folded fabric edges and sew the fagoting.
   1 Basting stitches

Note
- Use thicker threads (#30).
- After sewing, remove the paper.
DECORATIVE STITCHING

1. Attach presser foot J, press \( \textcircled{1} \) and select a strong thread tension.

2. Fold under the edge of the fabric.

   Right side of fabric

   Note
   Use a thin fabric.

3. Make sure that the needle drops slightly off the edge of the fabric, and then sew the shell tucks.

4. Unfold the fabric and iron the tucks down to one side.

These stitches can be used to embellish the seams of crazy quilts or to decorate hems. For a more ornamental stitch, use contrasting thread colors or decorative embroidery thread.
HEIRLOOM STITCHING

Use these stitches for sewing tablecloths, and for making decorative hems on clothing and decorative stitching on shirt fronts.

A more attractive finish can be obtained if a wing needle (130/705H) is used. When a wing needle is used and the stitch width has been set manually, before starting to sew, carefully turn the balance wheel toward you and check that the needle does not touch the presser foot.

Hemstitching with

1. Pull out several threads and remove them from one section of a piece of fabric so that the fabric is frayed. Removing about 5 or 6 threads will leave a 1/8" (3.0 mm) frayed area.

2. Attach presser foot N.

3. With the wrong side of the fabric facing up, sew along one edge of the frayed section.

4. Turn the fabric around, keeping the reverse side of the fabric facing up, and sew along the other edge of the frayed section so that the stitches are parallel and appear as shown below.
1. Pull out four threads, leave an unfrayed section of five threads, and then pull out four more threads. The width of the five threads is approximately 5/32" (4.0 mm) or less.
   ① Approx. 5/32" (4.0 mm) or less
   ② Sections of four threads pulled out
   ③ Unfrayed section of five threads

2. Sew the decorative stitch along the center of the unfrayed section so that the stitching appears as shown below.

**Note**
Use of the wing needle is optional.
With the MY CUSTOM STITCH™ function, you can sew designs that you create yourself.

**Note**
- Stitches that you create with MY CUSTOM STITCH™ can be a maximum of 9/32" (7 mm) wide and 1-1/3" (33 mm) long.
- Stitches can be designed more easily with MY CUSTOM STITCH™ if you draw the stitch on the enclosed grid sheet first.

1. Draw the stitch design on the grid sheet (part code SA500, X80948-001).

   1. Start point
   2. End point
   3. Intersection

**Note**
- Simplify the design so that it can be sewn as a continuous line. For a more attractive stitch, close the design by intersecting lines.
- If the design will be repeated and linked, the start point and end point of the design should be at the same height.

2. Mark the points in the design where the direction of the stitching changes.

3. Determine the x and y coordinates of each of the marked points. This will determine the design of the stitching that will be sewn.
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ENTENDING STITCH DATA

Note
Make sure that the embroidery unit is not attached.

1. Press the MY CUSTOM STITCH key.

This area displays the stitch that is being created.

2. The number beside ‡ indicates the y coordinate of the tip of , and the number beside ‡ indicates the x coordinate of the tip of .

3. This number indicates the point indicated by within the stitch design.

4. Press this key to display a screen that allows you to change a set point. (Refer to page 81 for more details.)

5. Press this key to select whether one stitch or three stitches are sewn between two points.

6. Press this key to erase the last point that has been set.

7. Press this key to add the point indicated by .

8. Press this key to finish creating the stitch and display the screen that allows you to see the entered stitch. (Refer to page 80.)

3. Select whether one stitch or three stitches will be sewn between the first two points. To sew one stitch, press so that it appears as ; to sew three stitches, touch the key so that it appears as .

4. Use the arrow keys to move to the coordinates of the first point that was made on the grid sheet (from step 2 on page 77).

5. Press the SET key to add the point indicated by .

6. Repeat steps 3 through 5 for each point that you have drawn on the grid sheet until the stitch design is drawn on the screen as a continuous line.

Note
If you make a mistake while setting points, press the DEL key to erase the last point set.

7. Once you have finished entering the stitch data, press the END key.
A screen that allows you to see the entered stitch design appears.

1. Press this key so that it appears as \( R \) to sew the stitch design repeatedly. Press this key so that it appears as \( S \) to sew the stitch design only one single time.
2. Press this key to return to the screen that allows you make changes to the entered data.

If the stitch design will be repeated and linked, make sure that linking stitches are added so that the stitch designs will not overlap.

1. Linking stitches

**Note**

If you have entered points that are too close together, the fabric may not feed properly. Edit the stitch data to leave a larger space between points.
EDITING STITCH DATA

1. Press the **EDIT** key.

A screen that allows you to edit the entered stitch design appears.

1. Press this key to move \( \) backward one point.
2. Press this key to move \( \) forward one point.
3. Press this key to move part of or all of the design. (Refer to page 82 for more details.)
4. Press this key to insert a point. (Refer to page 82 for more details.)
5. Press this key to delete the selected point.

2. Make the desired changes to the stitch design.

3. Press the **END** key.

Moving a point

1. Press \( \) or \( \) to move \( \) to the point that you wish to move.

2. Use the four arrow keys to move the point to the desired position.
Moving part or all of the design

1. Press \(<\) or \(>\) to move \(\wedge\) to the first point of the section that you wish to move.

2. Press \(\text{SEL}\). The selected point and all points that come after it are surrounded by a box. (This indicates the area that is to be moved.)

3. Press \(<\) or \(>\) to move the selected section to the desired location, and then press the SET key.

Inserting new points

1. Press \(<\) or \(>\) to move \(\wedge\) to point at the beginning of the line that you wish to add a new point to.
2. Press \text{INS}. A new point is inserted and \text{ } moves to it.

3. Use the four arrow keys to move the point to the desired position.
STORING A STITCH DESIGN THAT YOU HAVE CREATED

Up to five stitch designs can be stored.

Example: To save the entered stitch design in memory address 1

1. Enter the stitch data.

2. Press the MEMORY key.

3. When an empty memory appears on screen, press that MEMORY # key to save your design. If a pattern has already been saved in memory address 1, it is displayed on the screen. Pressing the MEMORY key of a full memory will cause its contents to be placed by what you are saving.

It will take approximately 10 seconds for the pattern to be stored. Once the pattern has been stored, the display will return to the previous screen.

CAUTION
Do not turn off the power while a pattern is being saved (while the message “Saving” is displayed). Otherwise, the data being stored may be deleted.
RETRIEVING A STITCH DESIGN THAT HAS BEEN SAVED

Example: To recall a stitch design that has already been saved in memory address 3

1. Press the MEMORY key.
   MEMORY key

2. Press the NEXT key twice.
   If the desired pattern is not displayed on the screen, press the NEXT and PREV keys until the desired pattern is shown.

3. Press the RETRIEVE 3 key.

   The retrieved pattern appears on the screen and can be edited or sewn.
Installing embroidery foot Q

**CAUTION**
Be sure to turn off the power before attaching embroidery foot Q. If the power is left on and the start/stop button is accidentally pressed, the machine will start operating, which could result in serious injury.

1. Press the needle position button to raise the needle, and then turn off the sewing machine.

2. Raise the presser foot lever.

3. With the enclosed screwdriver or disc-shaped screwdriver, loosen the screw on the presser foot holder, and then pull the holder downward to remove it.
   - Presser foot holder

4. Slide the bracket on embroidery foot Q up onto the presser foot bar, and then fasten it by firmly tightening the screw with the enclosed screwdriver or disc-shaped screwdriver.
   - Embroidery foot Q

**CAUTION**
Be careful not to touch the tip of the needle, otherwise injuries may occur.

**Note**
- Make sure that embroidery foot Q is tightly attached to the presser foot bar.
- It is recommended that a 90/14-size needle be used when embroidering thicker fabrics such as denim or when using stabilizing products such as puffy foam. A 75/11-size needle might bend or break, which could result in injuries.
Installing the embroidery unit

CAUTION

- Always turn off the main power switch before connecting or removing the embroidery unit.
- Do not touch the connector on the embroidery unit.
- The foot controller cannot be used when the embroidery unit is operational.
- When the embroidery unit is not being used, always store it in its box and packing materials.
- Do not carry the machine with the embroidery unit connected.
- Always set your machine on a flat, level surface.

1. Turn off the sewing machine.
2. Open the connecting slot by sliding the cover in the direction indicated by the arrow.

   ① Connecting slot cover

Note

When the embroidery unit is not being used, keep the connecting slot cover closed.

3. Insert the connector on the embroidery unit firmly into the connecting slot.

Note

With the sewing machine on a flat, level surface, slide the embroidery unit towards the machine.

Initializing the embroidery unit

1. Turn on the sewing machine. The message shown at the left appears on the screen.

Note

If the buttonhole lever, the needle or the presser foot lever are lowered or if the bobbin winding shaft is moved to the right, an error message appears indicating the current error condition. After the error condition is corrected, the message shown at the left appears.

2. Press CHECK. The embroidery arm moves to its initial position.

CAUTION

- Do not place your hands near the embroidery arm, otherwise injuries may occur.
- Please note that the embroidery arm normally makes noises while it moves to its initial position.
- If the embroidery unit could not be initialized normally, a buzzer will sound. If this occurs, make sure that a embroidery frame is not attached and try initializing the embroidery unit again.
Embroidering screen

Press a key on the screen with your finger to select the pattern or to start the indicated function or operation.

1. Press the key showing the character font that you would like to use.
2. Press this key to embroider a frame.
3. Press this key to embroider a one-point pattern.
4. Press this key to select a pattern from the installed embroidery card.
5. Press this key to position the embroidery arm so that the embroidery unit can be removed.

Removing the embroidery unit

1. Make sure that the embroidery frame has been removed, press the EMBROIDERY key, and then press . The carriage will move to the position where it can be removed.

CAUTION
If the above step is not performed, the embroidery unit cannot be placed in its box and packing materials for storage.

2. Turn off the sewing machine, hold the left side of the embroidery unit, and while pressing the release button, gently slide the embroidery unit away from the machine.

CAUTION
Make sure that the power is turned off, otherwise damage may result.
Creating beautiful embroidery

Refer to the table below and the FABRIC/THREAD/NEEDLE COMBINATIONS table on page 19 when selecting the appropriate fabric, thread and needle for creating attractive embroidery. Pattern slippage may occur when using fabric of different thicknesses or when using different types of stabilizers. Be sure to sew a test embroidery beforehand.

<table>
<thead>
<tr>
<th>FABRIC</th>
<th>Before embroidering, attach a sheet of non-woven stabilizer material to the fabric. <strong>Note</strong> It is recommended that you use special embroidering stabilizer material which can be torn from around the design when sewing is finished.</th>
</tr>
</thead>
<tbody>
<tr>
<td>THREAD</td>
<td>Upper thread: Embroidery thread #50. Bobbin thread: Embroidery thread #60. <strong>Note</strong> Adjust the thread tension if the thread quality is not compatible.</td>
</tr>
<tr>
<td>NEEDLE</td>
<td>75/11 (Embroidery)</td>
</tr>
</tbody>
</table>

Attaching stabilizer material

Using stabilizer material is an important part of creating attractive embroidery. It is particularly important when embroidering stretch fabrics, thin fabrics, and fabrics with coarse weaves. If necessary, two layers of stabilizer material may be attached.

Before embroidering, iron the stabilizer material onto the back of the fabric. Use stabilizer material with an area that is larger than the frame, and make sure that all sides of the stabilizer material are securely clamped in the frame. When embroidering fabrics that cannot be ironed, or in places where ironing is difficult, place the stabilizer material underneath the frame before embroidering.

For slick or slippery fabric, use one or two layers of stabilizer material clamped in the frame on the wrong side of the fabric. In addition, embroider over a water-soluble stabilizer sheet placed on the right side of the fabric.

- Embroidery frame
- Fabric
- Non-woven stabilizer material
**Inserting the fabric in the embroidery frame**

Embroidery frames are available in four sizes: extra-large, large, medium, and small.

- Embroidery area of extra-large frame: 11-53/64" (30 cm) (H) × 5-3/64" (13 cm) (W)
- Embroidery area of large frame: 7" (18 cm) (H) × 5-3/64" (13 cm) (W)
- Embroidery area of medium frame: 4" (10 cm) (H) × 4" (10 cm) (W)
- Embroidery area of small frame: 25/324" (2 cm) (H) × 2-23/64" (6 cm) (W) (for embroidering initials)

**CAUTION**
- Depending on the size of the pattern and the position of the pattern to be embroidered, it may not be possible to use the medium and small frames. When using these frames, be sure to check the pattern layout on the screen (refer to page 98) before starting to embroider. If the wrong frame is used by mistake, the presser foot may hit the frame, possibly causing injuries.
- Do not use any embroidery frames other than those shown here, otherwise injuries could occur.

1. Use a chalk pen to mark the center of the embroidering position on the fabric.

2. Loosen the screw on the outer frame and separate the inner and outer frames. Place the fabric on top of the outer frame with the right side of the fabric facing up, and then place the inner frame inside the outer frame to clamp the fabric.

   1. Inner frame
   2. Outer frame
   3. Screw
   4. Loosen
   5. Right side of fabric

**Note**
Be sure to align the arrow marks on the two frames (▲ on the inner frame with ▼ on the outer frame).

3. Tighten the screw just enough to secure the fabric, and then gently remove the fabric from the frame without loosening the screw.

   1. Tighten

**Note**
This stretches the fabric to help reduce pattern distortions while embroidering.

4. Remove the inner frame.

5. Place the inner frame on top of the fabric, place the embroidery sheet inside the inner frame, and then align the center of the lines on the sheet with the mark on the fabric.

   1. Inner frame
   2. Line

**Note**
For best results, lay the outer frame on a flat surface and lay the fabric on top of it before aligning the center of the embroidery sheet with the mark on the fabric.
6. Insert the fabric and inner frame back into the outer frame without allowing the embroidery sheet or the fabric to move out of place.
   1 Outer frame
   2 Inner frame
   3 Right side of fabric

**Note**
Press down firmly until the tops of the outer frame and inner frame are aligned.

7. Tighten the screw by hand.
   1 Tighten

**Note**
To avoid stripping the screw, do not use a screwdriver to tighten it.

8. Check that the center of the pattern has remained in the correct position, and then remove the embroidery sheet before starting to embroider.
   1 Fingerhole for removing embroidery sheet
Attaching the embroidery frame to the embroidery arm

CAUTION
Be sure to wait until the embroidery unit has finished initializing before trying to attach the embroidery frame. (Refer to page 87.)

1. Raise the presser foot lever to its highest position, and then pass the embroidery frame under the presser foot, making sure that the mounting bracket of the frame is on the left side and the right side of the fabric is facing up.

2. Align the slots in the mounting bracket of the frame with the two knobs on the frame holder of the embroidery arm, and then press the frame onto the frame holder so that it clicks into place.

   1. Frame holder on embroidery arm
   2. Knobs

Note
Be sure that the mounting bracket on the embroidery frame is attached to both knobs. If it is attached to only one knob, the pattern may not be embroidered correctly.

Removing the embroidery frame from the embroidery arm

While pushing the release lever on the frame holder to the left, lift the embroidery frame up to remove it.

1. Release lever
Simple embroidering

1. After threading the bobbin thread, the upper thread and the needle, pass the thread down through the hole in embroidery foot Q, and then pull about 2" (5 cm) of the upper thread out toward the rear of the machine.

2. Design the embroidery pattern.

3. Lower the presser foot and press the start/stop button to start the machine. After sewing 5 to 6 stitches, stop the machine and trim off any excess thread at the beginning of the embroidery.

4. Press the start/stop button again to continue embroidering. The machine stops embroidering when it has completed all of the stitching with the thread color that is installed.

**Note**
The sewing speed is automatically controlled by the machine according to the pattern selected.

Embroidering multi-color patterns

When the selected pattern can be embroidered using different colors of thread, the pattern appears on the screen separated into each color. The order of embroidering is shown from left to right.

**Example: To embroider the floral pattern of the letter “B”**

1. Thread the first color. (Refer to the procedure explained above.) When the start/stop button is pressed, the first part of the pattern (1) is sewn, and then the machine automatically sews the reinforcement stitches and stops.

**Note**
- Be sure to raise the presser foot before changing the thread.
- When embroidering for this color is finished, the parts of the pattern automatically move one position to the left.
2. Replace the upper thread with the next color and press the start/stop button. The second part of the pattern (2) is embroidered, and then the machine automatically sews the reinforcement stitches and stops.

3. Replace the upper thread with the next color and press the start/stop button. The third part of the pattern (3) is embroidered, and then the machine automatically sews the reinforcement stitches and stops.

4. Repeat step 3 to embroider the fourth (4), fifth (5) and sixth (6) parts of the pattern.

5. Trim off any excess thread.
Creating text patterns

Text characters are available in three different fonts. In addition to the numbers and the letters of the alphabet, two of the fonts can be used to create words with accents and special punctuation.

1. Press the key of the desired font.

Note
If the screen shown at the left is not displayed, press the EMBROIDERY key.

2. Press the letter keys to create your text. (Refer to page 87.)

Note
Press the PREV and NEXT keys to display more characters.

- Press this key to sew reinforcement stitches and stop the machine after each character is embroidered so that the thread can be changed. (Refer to page 99.)
- When a lot of text has been typed in, some of the text cannot be viewed on the screen. Press this key to scroll the entered text across the screen so that it can be checked. (Refer to page 98.)
- Press this key to return to the previous screen containing more characters.
- Press this key to display the next screen containing more characters.
- Press this key to switch between uppercase and lowercase. (Refer to page 97.)
- Press this key to change the character size to one of three sizes. (Refer to page 97.)
- Press this key if you would like to change the embroidering position within the frame (page 105), change the overall size of the pattern (page 108), or use the Help function, which allows you to select a specific point during the embroidering of the pattern (page 112).

Note
This key changes to the HELP key after embroidering starts.
- Press this key to turn on and off automatic thread cutting. (Refer to page 37.)
- Press this key to erase the last character of the text. (Refer to page 99.)
Example: To select characters to create the word “BUS”

1. Press **ABCabc0-9&?**.

2. Press the **B** key.

3. Press the **NEXT** key.

4. Press the **U** key.

5. Press the **S** key.
Typing uppercase & lowercase characters

Two of the fonts can be typed in with both uppercase and lowercase characters. Press \( \textcolor{red}{\text{A}} \) to switch between uppercase and lowercase. When this key appears as \( \textcolor{blue}{\text{A}} \), uppercase letters can be typed in. When the key appears as \( \textcolor{red}{\text{A}} \), lowercase letters can be typed in.

Example: To type in “Aa”

1. Press the \( \textcolor{red}{\text{A}} \) key.

2. Press \( \textcolor{red}{\text{A}} \) to switch to lowercase.

3. Press the \( \textcolor{red}{\text{a}} \) key.

Changing the character size

The size of the characters can be changed by pressing \( \textcolor{blue}{\text{L/M/S}} \). Each time this key is pressed, it selects a different character size.

Changing the character size changes the size of all characters in the text. When this key appears as \( \textcolor{blue}{\text{L/M/S}} \), all characters are changed to the large size. When the key appears as \( \textcolor{blue}{\text{L/M/S}} \), all characters are changed to the medium size. When the key appears as \( \textcolor{blue}{\text{L/M/S}} \), all characters are changed to the small size.

L (large)
M (medium)
S (small)
Checking the text

After a lot of text has been typed in, it may not be possible to view some of it on the screen. Press the CHECK key for the entire text to scroll across the screen.

Example: When “abcdefghijk” have been typed in small-sized lowercase characters

After “k” is typed in, the display appears as shown in the illustration at the left.

Note
When the size of the text starts to exceed the size of the embroidery area of the frame, no more characters can be typed in. To type in more text, select a smaller character size. (Refer to page 88.)

Press the CHECK key to scroll all of the text across the screen.

Note
If all the text can already be displayed on the screen at one time, the text does not scroll.
Before starting to embroider, press the **MULTI COLOR** key so that it appears as to turn on multi-color embroidering. After a character is embroidered, the machine automatically sews reinforcement stitches, and then stops so that the thread can be changed.

**Note**
Pressing **MULTI COLOR** so that it changes back to **MULTI COLOR** turns off multi-color embroidering.

**Example:** When “Giel” has been entered instead of “Girl”

1. Press the **CLEAR** key twice to delete “I” then “e”.

2. Press the **r** key, and then press the **l** key.

The last character selected is deleted each time the **CLEAR** key is pressed.
Creating frame patterns

Frame patterns are created by combining the desired frame shape with the selected stitch.

1. Press \[\text{ }\].

**Note**
If the screen shown at the left is not displayed, press the **FONT/DECORATIVE** key.

2. Press the key for the desired frame shape.  
   1. Press this key to display more frame shapes. (A total of 10 different frame shapes are available.)

3. Select the desired stitch.  
   1. This shows the currently selected frame shape.  
   2. Press this key to display more stitches. (A total of 12 different stitches are available.)

The selected frame pattern is shown on the screen.  
1. This shows the currently selected stitch.  
2. Press this key if you would like to change the embroidering position within the frame (page 105), change the overall size of the pattern (page 108), or use the Help function, which allows you to search for a specific point in the embroidering of the pattern (page 112).  

**Note**
This key changes to the **HELP** key after embroidering starts.

- Press this key to turn on and off automatic thread cutting. (Refer to page 37.)  
- Press this key to return to the screen where the pattern was selected (step 2 above).  
- If the frame pattern can be embroidered using different colors of thread, the embroidering order of each part of the pattern is shown from left to right.
Selecting one-point patterns

A variety of patterns have already been created and are available for embroidering at any time.

Note
The two patterns appearing in wide buttons (see the list of one-point patterns on pages 136 and 137) are too wide to fit horizontally within an embroidery frame. Therefore, although the patterns appear horizontally on the buttons, they will be sewn vertically. Be sure to position the fabric in the embroidery frame so that the pattern will be sewn correctly.

1. Press \[ A \].

Note
If the screen shown at the left is not displayed, press the EMBROIDERY key.

2. Press the key for the desired one-point pattern.
   ① Press this key to scroll through all available patterns. (A total of 18 different patterns available.)
   ② Press this key to display the previous screen containing more patterns.
   ③ Press this key to display the next screen containing more patterns.

Various details about the selected one-point pattern are displayed.

① This shows the amount of time remaining to embroider the pattern over the total amount of time required. (It does not include the time needed to change threads.) \[ \text{appears here while the time is being calculated.} \]

② Press this key if you would like to change the embroidering position within the frame (page 105), change the overall size of the pattern (page 108), or use the Help function, which allows you to search for a specific point in the embroidering of the pattern (page 112).

Note
This key changes to the HELP key after embroidering starts.

③ Press this key to turn on and off automatic thread cutting. (Refer to page 37.)

④ Press this key to return to the screen where the pattern was selected (step 2 above).

⑤ This shows the number of the thread color currently being sewn over the total number of colors that can be used.

⑥ Press this key to display the thread color names instead of each part of the pattern. (The thread colors that are displayed are for reference only.) If the THREAD COLOR key is not displayed, it is not possible to display the color names. (Refer to page 102.)

⑦ If the pattern can be embroidered using different colors of thread, the embroidering order of each part of the pattern is shown from left to right.
Displaying the thread color names

After selecting a pattern, press the THREAD COLOR key so that it appears as to display the thread color names instead of each part of the pattern.

**Note**
- Pressing THREAD COLOR so that it changes back to re-displays the embroidering order of each part of the pattern.
- If the THREAD COLOR key is not displayed, it is not possible to display the color names.

Selecting patterns from a memory card

1. Set the main power switch to “O” to turn off the sewing machine.

2. Hold the memory card so that the arrow on the card faces toward you, and then insert the card as far as possible into the slot on the right side of the sewing machine.
3. Set the main power switch to “I” to turn on the sewing machine.

**CAUTION**

- Do not insert the card in any direction other than that described above, and do not force it into the slot, otherwise the card or the machine may be damaged.
- When the card is inserted, it should appear as shown in the illustration at the left. Trying to push the card in any further will damage the connector.
- Always turn off the main power switch before inserting or removing the embroidery card (memory card).
- Always keep the memory card in its case when it is not being used.

4. Press .

5. The pattern selection screen for the inserted memory card is displayed. [The illustration at the left shows the Transportation card No.2 (part code SA299, X58321-001) (optional).]

**Note**

If the screen shown at the left is not displayed, press the EMBROIDERY key before pressing .

6. Select the desired pattern in the same way as you select a one-point pattern. (Refer to page 101 for more details.)
The position for embroidering the pattern can be changed by using the layout screen. This is useful if you want to embroider a pattern somewhere other than the center of the embroidery area of the frame, such as in the corner of the fabric.

### Character patterns

![Character pattern layout](image)

### Frame patterns

![Frame pattern layout](image)

### One-point patterns

![One-point pattern layout](image)

1. Press the **SET** key.

2. Press the **LAYOUT** key.
   - Press this key to return to the screen that was previously displayed.
   - Press this key to display a screen that allows you to change the size of the pattern. (Refer to page 108.)
   - Press this key to display a screen that allows you to change the position and sewing direction of the pattern.
   - Press this key to display a screen that allows you to search for a specific point in the embroidering of the pattern if the thread breaks while sewing. (Refer to page 112.)
3. Change the position and sewing direction of the pattern.
   ① Either the height(📞) and width(📞) of the current pattern or its horizontal(📞) and vertical(📞) embroidery position from the center are displayed here.
   
   Note
   Characters and patterns may sometimes be displayed slightly larger than in actual size.
   
   ② Press this key to rotate the selected pattern 90° clockwise. (Refer to page 106.)
   ③ This indicates the entire area of the frame where embroidery can be sewn.
   ④ This indicates the current position where the needle will be dropped in relation to the embroidery area of the pattern.
   ⑤ This indicates the embroidery position and embroidery area for the current pattern at the selected size.
   ⑥ Press these keys to move the embroidering position of the pattern within the embroidery area. (Refer to the section below.)
   
   ⑦ Press this key to return the embroidering position to the center of the embroidery area.
   ⑧ Press this key to move the needle position either to the middle of the pattern or to the sewing start point. Use it when you would like to change the embroidering position. (Refer to page 107.)
   ⑨ Press this key to move the embroidery frame so that it traces the area required for the selected design, allowing you to check the embroidering position. (Refer to page 107.)
   ⑩ Press this key to return to the screen that was previously displayed.
   ⑪ Press this key to return to the pattern screen.
   ⑫ Press this key to flip the pattern horizontally (change it to its mirror image). (Refer to page 106.)
   
   Note
   This function may not be available for use with some patterns.
   ⑬ Press this key to switch the display between the size and the embroidering position.

4. After making the desired adjustments, press the END key.

Changing the embroidering position [ ▶️ ▲ ▼ ▶️ ▼ ]

CAUTION
After moving a pattern, check that it fits within the installed embroidery frame. (Refer to page 107 for more details.) If the pattern does not fit correctly within the embroidery frame, the embroidery foot may touch the frame, possibly causing injuries.

1. Press 📗 so that it appears as 📗 to display the position of the embroidery pattern.
2. Press the arrow key for the direction in which you would like to move the pattern. If the arrow key is pressed once, the pattern moves one step; if the key is pressed continuously, the pattern moves continuously.

Note
   – Press the CENTER key to return the embroidering position to the center.
   – Use the hole on embroidery foot Q as a guide.
   – Never lower the needle while the embroidery frame is moving.

Example: To move the embroidering position toward the upper-right corner

Press 📗.
Changing the pattern direction

Each time \( \uparrow \) is pressed the pattern is rotated in 90° steps clockwise as shown in the illustration at the left. The arrow within \( \uparrow \) shows the direction for the top of the pattern.

**Note**
Some patterns may be too long to be rotated 90°. In such cases, these patterns can only be rotated by 180°.

Mirror imaging patterns

Press \( \leftrightarrow \) so that it appears as \( \leftrightarrow \) to flip the pattern horizontally.

**Note**
- Pressing \( \leftrightarrow \) so that it changes back to \( \leftrightarrow \) flips the pattern back to a normal image.
- \( \leftrightarrow \) is not displayed for some patterns.
**Embroidering from a specific starting point**

1. Mark the starting point on the fabric within the frame as shown in the illustration. The mark cannot be too close to the edge of the frame as the presser foot prevents the needle from getting very close to the frame.

2. Press START so that it appears as . The embroidery frame moves so that the needle is at the starting point.

3. Use the arrow keys to move the frame so that the mark on the fabric aligns with the hole in embroidery foot Q, and then start embroidering.

---

**Checking the embroidery area**

Press the TRIAL key to move the embroidery frame so that the presser foot traces the necessary embroidery area for the currently selected pattern.

**Note**

Do not lower the needle. Instead, use the hole in embroidery foot Q as a guide.
Changing the size of patterns

The sizes of patterns can be changed as desired.

Character patterns

Frame patterns

One-point patterns

1. Press the SET key.

2. Press ENLARGE or REDUCE.

3. Change the size of the pattern.
   1. Press this key to make the pattern larger.
   2. Press this key to return the pattern to its original size.
   3. Press this key to make the pattern smaller.

Note
   - The maximum sizes for frame patterns vary according to the pattern.
   - Some frame patterns can be enlarged even further if they are rotated 90°.
   - Refer to page 105 for details on the other keys in this screen.

4. After making the desired adjustments, press the END key.
Changing the thread density

The thread density of characters and some frame patterns can be adjusted so that they are either coarser or finer when they are embroidered.

**Note**
This function may not be available for use with some patterns.

1. Press the **STITCH ADJUST** key.
2. Adjust the thread density.
   - To make the embroidery coarser (sew the stitches farther apart), press the **THREAD DENSITY** key \( - \)
   - To make the embroidery finer (sew the stitches closer together), press the **THREAD DENSITY** key \( + \)
   
   The thread density setting changes each time one of these keys is pressed.
3. After making the adjustment, press the **END** key.

**Note**
The default thread density setting (STD) is highlighted in black.

1. Coarser (stitches farther apart)
2. Standard thread density
3. Finer (stitches closer together)
MEMORY

You can save up to 5 different character patterns that you have created and use them again later.

Saving character combinations in the memory

Example: To save the character pattern “Girl” in memory address 1

1. Select a font, and then type in the text to create the pattern.

2. Press the MEMORY button. MEMORY button

3. Press the MEMORY 1 key.
   If a pattern has already been saved in memory address 1, it is displayed on the screen. Press the NEXT and PREV keys to look for a memory address that is either empty or contains a pattern that can be deleted.

Note
- If a pattern is saved in an address where another pattern has already been saved, the old pattern is deleted.
- Do not turn off the power while a pattern is being saved (while the message “Saving” is displayed).
- It takes approximately 10 seconds for a pattern to be saved. For details on retrieving a pattern which has been saved, refer to page 101.

Once the pattern has been saved, the display returns to the previous screen.
Retrieving a pattern which has been saved

Example: To recall the pattern “Boy” that has already been saved in memory address 2

1. Press the MEMORY button.
2. Press the NEXT key.
3. Press the RETRIEVE 2 key.

The retrieved pattern appears on the screen and can be edited and embroidered.

Note
Patterns which are saved from an embroidery card can only be retrieved if the card containing that pattern has been inserted into the card slot of the sewing machine.
ADJUSTMENTS WHILE EMBROIDERING

Continuing embroidering

If one of the threads break or if you stop the sewing machine to adjust the stitching location, you may need to continue sewing from a point other than the current one. In that case, the help screen can be used to find your desired stitch in the pattern.

1. **If the upper thread has broken:** Stop the sewing machine, raise the needle and the presser foot lever, and then re-thread the upper thread.

   **If the bobbin thread has broken or the bobbin has run out of thread:** Cut the upper thread above the fabric and remove the embroidery frame. Remove any thread that is tangled under the embroidery. Re-thread the bobbin thread and re-attach the embroidery frame.

2. Press the HELP key.

3. Press the BACK key to move back a few stitches slightly before the point where the thread broke.

   **Note**
   If the desired point cannot be reached by pressing the BACK key, press the REVERSE SEARCH key to return to the starting point of the desired color, and then press the FORWARD key until you reach the point at which you would like to resume embroidering. Then, press the start/stop button.
   1. Press this key to move back to the start position for the entire embroidery pattern.
   2. Press this key to select the start position for the next color or character without embroidering.
   3. Press this key to select the start position for the previous color or character without embroidering.
   4. Press this key to move the embroidery frame so that the needle is positioned one stitch ahead without embroidering. If this key is pressed continuously, the stitching moves ahead in jumps of 9 stitches starting from the 6th stitch.
   5. Press this key to move the embroidery frame so that the needle is positioned one stitch backward without embroidering. If this key is pressed continuously, the stitching moves backward in jumps of 9 stitches starting from the 6th stitch.
   6. Press this key to return to the previous screen (pattern screen).

4. Lower the presser foot lever and continue embroidering.

   **Note**
   The start/stop button may not function for a few seconds after the FORWARD SEARCH or REVERSE SEARCH key is pressed; however, this is not a sign of a malfunction.
1. Press the HELP key.

2. Press the HOME key. The embroidery frame moves so that the needle returns to the embroidering starting point.

3. Lower the presser foot lever and start embroidering.
EMBROIDERY APPLICATIONS

Linking characters

If all of the characters cannot be sewn at one time, sew them in sections while linking them.

Example: To embroider “ABC”, then link “DE”

1. Select a font and type in “ABC”.

2. Press the SET key, then the LAYOUT key to display the layout screen.

3. Move the needle to the starting point. (Make sure the button appears as ![Start Point].)

4. Press the start/stop button to start embroidering. Once embroidering is completed, the machine automatically sews the end point. This point can be used as the starting point for the next section of text.

5. Adjust the fabric within the embroidery frame so that the last character and the end point are just inside the left edge of the frame.

   Note
   Make sure that the embroidering line aligns with the reference lines on the embroidery sheet that you are using.

6. Erase “ABC”, and then type in “DE”.

7. Press the SET key, then the LAYOUT key to display the layout screen.

8. Adjust the embroidering position so that the hole in embroidery foot Q aligns with the end point for “ABC”.

9. Press the start/stop button to continue embroidering.
Using the extra-large embroidery frame (optional)

By attaching this extra-large embroidery frame at each of its three installation positions, extra-large designs can be embroidered, for example when sewing logos onto sweatshirts.

1. Top installation position
2. Middle installation position
3. Bottom installation position

**EMBROIDERY SHEET**

1. Embroidering range
2. Center of the pattern (when installed at position 1)
3. Reference line
4. Center of the pattern (when installed at position 2)
5. Center of the pattern (when installed at position 3)

**Note**

When using the extra-large embroidery frame, be sure that there are no objects within 30 cm from the sewing machine, otherwise a misaligned embroidered pattern or injuries may occur.
Connecting patterns

Example: To embroider connecting patterns

1. Mark the location on the fabric where you wish to embroider the design.

2. Position the embroidery sheet over the entire design drawn on the fabric so that the reference lines of the embroidery sheet align with the center of the design, and then draw reference lines for the entire design.

3. Stretch the fabric between the inner and outer embroidery frames while making sure that the reference lines on the embroidery sheet remain aligned with reference lines for the design drawn on the fabric. Then, attach the embroidery frame to the embroidery arm at the top installation position. (Refer to pages 90 - 92 for more details on attaching the embroidery frame.)

   ① Top installation position

4. Choose a pattern.

5. Before embroidering each of the two patterns shown in the illustration, press the LAYOUT key, and position the pattern correctly. To rotate the pattern, press (refer to page 106). To position the frame so that the pattern will be embroidered correctly, press so that it appears as (refer to page 107), and then use the arrow keys to align the needle with the center of each pattern's reference lines (refer to page 105).

6. Remove the embroidery frame, and then re-attach it to the embroidery arm at the bottom installation position.
7. Before embroidering the bottom two patterns shown in the illustration, press the LAYOUT key, and position the pattern correctly. To position the frame so that the pattern will be embroidered correctly, press so that it appears as (refer to page 98), and then use the arrow keys to align the needle with the center of each pattern’s reference lines (refer to page 105).

Note
When combining patterns from embroidery cards no. 14 and 31:
With the extra-large embroidery frame attached at any of the three installation positions (top, middle, or bottom), patterns A, B, and C can be combined and embroidered.
Pattern A: Before embroidering, press the LAYOUT key, press so that it appears as and then press to move the pattern to +3.60.
Pattern B: Embroider the pattern without changing its position.
Pattern C: Before embroidering, press the LAYOUT key, press so that it appears as , and then press to move the pattern to -3.60.

Connecting letters

Example: To embroider "ABCDEFGHJK"

1. Mark the location on the fabric where you wish to embroider the design.

2. Position the embroidery sheet over the entire design drawn on the fabric so that the reference lines of the embroidery sheet align with the center of the design, and then draw reference lines for the entire design.
3. Stretch the fabric between the inner and outer embroidery frames while making sure that the reference lines on the embroidery sheet remain aligned with reference lines for the design drawn on the fabric. Then, attach the embroidery frame to the embroidery arm at the top installation position. (Refer to pages 90 - 92 for more details on attaching the embroidery frame.)

1 Top installation position

4. Select a medium size font and type in "ABCDEF".

5. Rotate the pattern so that it is positioned vertically by pressing the SET key, then LAYOUT key, and then pressing so that it appears as (refer to page 106).

Press so that it appears as.

6. Use the arrow keys to align the needle with the point where the reference lines cross each other, and then begin embroidering.

2 Do not cut the thread after embroidering "ABCDEF".

7. Remove the embroidery frame, and then re-attach it to the embroidery arm at the bottom installation position.

8. Erase "ABCDEF", and then type in "GHIJK".

9. Position the frame so that the pattern will be embroidered correctly by pressing the LAYOUT key, pressing so that it appears as (refer to page 107), and then using the arrow keys to align the needle with the last stitch of "ABCDEF" (refer to page 105).

3 Last stitch after embroidering "ABCDEF"
Combining a frame pattern with a design

1. Create a frame pattern, and then embroider it. A cross (+) is sewn in the center of the frame after it is embroidered. This mark can be used as a guide for positioning characters or other patterns within the frame.

2. Create the inner design, and then press the SET key, then the LAYOUT key to display the layout screen.

3. Select the center needle position (Make sure the button appears as $\text{Start}$.), and then adjust the embroidery pattern position so that the hole in embroidery foot $Q$ aligns with “+”. Then, embroider the design.

Making badges or decorative patches

1. After embroidering a frame and the inner design, select the same frame pattern, press $\text{Start}$, as the stitch, and then sew the same frame pattern around the outside of the original frame so that it is slightly larger than the original.

2. Cut cleanly around the outside frame, following the line of the outside stitching.
You can easily sew appliqués by adjusting frame patterns to the same shape and size as the appliqué.

1. Select the appliqué material for the project, attach stabilizer material to it, place it in the embroidery frame, and then attach the embroidery frame to the machine.

2. Select the frame shape to be embroidered and press as the stitch. Embroider the frame onto the appliqué material. Remove the fabric from the embroidery frame, and cut neatly around the outside of the shape made by the stitches.

3. Embroider the base fabric in the same way using the same frame pattern shape and the same stitch as in step 2.

4. Apply a thin layer of fabric glue to the back of the appliqué embroidered in step 2, and then attach it to the base fabric so that it aligns with the embroidered frame pattern.

5. Without changing the frame shape or size, select an appliqué stitch, and embroider the appliqué material onto the project.
**Embroidering onto small pieces of fabric or in corners**

Use stabilizer material to provide extra support while embroidering. After embroidering is completed, carefully remove the stabilizer material. Use stabilizer material which is specially designed for embroidering.

**Case A**
1. Fabric
2. Iron on the stabilizer material. (If you do not wish to use an iron, attach the stabilizer material with a basting stitch.)
3. Stabilizer

**Case B**
1. Fabric
2. Stabilizer

**Case C**
1. Ribbon (Secure with double-sided tape.)
2. Stabilizer

**Note**
Temporary spray-on adhesive can also be used to secure unusually shaped objects. If adhesive is used, some glue may get on the presser foot, needle and needle plate. After finishing embroidering the appliqué pattern, clean away the glue.
MAINTENANCE

CLEANING

Cleaning the screen

CAUTION
Disconnect the power supply cord from the wall socket before cleaning the screen, otherwise injuries or an electric shock may occur.

If the front panel is dirty, wipe it gently with a soft, dry cloth. Do not use any organic solvents or detergents.

Cleaning the machine surface

CAUTION
Disconnect the power supply cord from the wall socket before cleaning the machine surface, otherwise injuries or an electric shock may occur.

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.

Cleaning the shuttle

CAUTION
Disconnect the power supply cord from the wall socket before cleaning the shuttle, otherwise injuries or an electric shock may occur.

Sewing performance will suffer and bobbin thread detection will become unreliable if dust collects in the shuttle; therefore, it should be kept clean at all times.
1. Set the main power switch to “O”, and then remove the presser foot holder and the needle.

2. Loosen the screws with the enclosed screwdriver or disc-shaped screwdriver.

3. Remove the needle plate.
   - Needle plate

4. Turn the balance wheel towards you until the edge of the notch in the shuttle aligns with the edge of the race shelf, and then remove the race.
   - Edge of notch in shuttle
   - Edge of race shelf

5. Take out the shuttle.

6. Remove accumulated lint and thread from the inside of the shuttle and race with a brush or a vacuum cleaner.
   - Race
   - Shuttle

7. Insert the shuttle by aligning the projection on the shuttle with the spring on the stopper.
   - Projection
   - Spring

**Note**
Lint and dust accumulated in the race will sometimes cause poor stitching or a malfunction of the bobbin thread sensor.
1. Set the main power switch to “O” and unplug the power supply cord from the electrical outlet prior.

2. Loosen the screw on the back of the sewing machine head.

3. Remove the end cap.
   1. Screw
   2. End cap

4. Replace the snap-in light bulb with a new one.
   1. Light bulb

**Note**
Light bulbs are available through your dealer. (12 V, 5 W; Parts code XA2037001)

5. Re-attach the end cap.

6. Tighten the screw.
   1. Screw
   2. End cap
ERROR MESSAGES

If the machine is not properly set when the start/stop button is pressed, or if a correction of your operating procedure is required, the machine will not start and will instruct you with an alarm and a warning message on the LCD.

### Warning messages

**Check if thread is entangled.** Check if needle is bent.

This message appears when the motor becomes locked, such as when the thread is entangled.

**Start/Stop button does not work when foot control is connected. Disconnect foot control.**

This message appears when the start/stop button is pushed while the foot controller is connected.

**Select pattern.**

This message appears when the start/stop button, or reverse/reinforcement stitch button is pressed, but no pattern has been selected.

**Return bobbin winding shaft to left.**

This message appears when the reverse/reinforcement stitch button, needle position button or thread cutter button is pushed while the bobbin winder shaft is moved to the right.

**Raise presser foot lever.**

This message appears when the embroidery unit is being initialized, but the presser foot is lowered.

**Lower presser foot lever.**

This message appears when the start/stop button, reverse/reinforcement stitch button, thread cutter button or the foot controller is pressed while the presser foot lever is raised.

**Raise buttonhole lever(1).**

This message appears when the start/stop button or reverse/reinforcement stitch button is pressed while a pattern other than a buttonhole is selected and the buttonhole lever is lowered.
This message appears when the start/stop button or reverse/reinforcement stitch button is pressed while a buttonhole pattern is selected and the buttonhole lever is raised.

No more stitches can be combined.

This message is displayed when trying to combine more stitch patterns than possible.

Bobbin thread is running out.

This message appears when the machine detects that the amount of bobbin thread remaining is low.

Check if upper thread is cut.

This message appears when the machine detects that either there is no upper thread or it is cut. If the upper thread is cut, re-thread it.

This button will not work when embroidery unit is not attached. Turn off power and attach embroidery unit.

This message appears when the FONT/DECORATIVE key or MEMORY key is pressed while the embroidery unit is not installed.

This button will not work while embroidery unit is attached.

This message appears when the reverse/reinforcement stitch button is pressed while the embroidery unit is installed.

Turn off power and remove embroidery unit before using this button.

This message appears when the SEWING key is pressed while the embroidery unit is installed.
Select pattern.

This message appears when the STITCH ADJUST key is pressed before selecting a pattern.

Foot controller will not work while embroidery unit is attached. Remove foot controller

This message appears when the foot controller is used while the embroidery unit is installed.

Pattern is too big for large frame. To add more patterns, rotate this pattern.

This message appears when the entered characters are too long to fit within the embroidery frame. More characters may be added if the pattern is rotated 90 degrees.

Complete pattern entry.

This message appears when you try to save a pattern design while using the MY CUSTOM STITCH™ function before the stitch has been completely created and the END key is pressed, or when the start/stop button is pressed before the frame pattern has been completely created.

This pattern can not be saved in memory.

This message appears when the pattern that you tried to store could not be stored.

No pattern is memorized.

This message appears when trying to retrieve a pattern, but no patterns have been stored.

Saved on a card.

This message appears when trying to retrieve a pattern from a memory card that is not inserted.
This message appears when 🔄 is pressed while no memory card is inserted into the slot.

This card cannot be used.

This message appears when 🔄 is pressed while a memory card that cannot be read by this machine is inserted.

Saved on another card.

This message appears when trying to retrieve a pattern from one memory card while a different memory card is inserted.

This key does not work when needle is at low position. Raise the needle to high position and touch key again.

This message appears if an attempt is made to move the embroidery frame while the needle is lowered.

Selected embroidery pattern exceeds size of large frame.

This message appears when the size of the pattern is changed so that it exceeds the size of the embroidery area.

Raise the needle to high position.

This message appears if the needle is lowered when the sewing machine is turned on.

Operation messages

This message appears while the bobbin is winding.

Winding bobbin thread.
Embroidery arm will start moving. Keep your hands, etc. away from arm. CHECK

This message appears when the sewing machine is turned on while the embroidery unit is installed.

Saving

This message appears while storing a pattern in the memory.

Troubleshooting

This sewing machine is equipped with an easy-to-use troubleshooting feature, which provides assistance when there is a problem sewing. Press the corresponding key for the problem to see possible causes of the problem.

1. Press the OPERATION GUIDE button.

2. Press the NEXT key.

3. Press the TROUBLE CHECK key.

4. Press the key describing the problem.

5. Follow the advice to check the sewing machine.

6. Press the END key to quit the troubleshooting function.
Before calling for service, check the following items. If the problem persists, contact the store where the sewing machine was purchased or your nearest service representative.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Upper thread breaks</strong></td>
<td>1. Upper threading is not correct.</td>
<td>1. Re-thread upper thread.</td>
</tr>
<tr>
<td></td>
<td>2. Upper thread is tangled.</td>
<td>2. Remove thread ends from race and shuttle.</td>
</tr>
<tr>
<td></td>
<td>3. Spool of thread is not correctly set.</td>
<td>3. Set spool of thread correctly.</td>
</tr>
<tr>
<td></td>
<td>4. Correct needle is not used.</td>
<td>4. Install proper needle.</td>
</tr>
<tr>
<td></td>
<td>5. Shuttle is damaged.</td>
<td>5. Contact service representative.</td>
</tr>
<tr>
<td><strong>2. Bobbin thread breaks</strong></td>
<td>1. Upper thread is tangled.</td>
<td>1. Remove thread ends from race and inner shuttle and from around spool pin.</td>
</tr>
<tr>
<td></td>
<td>2. Bobbin is not threaded properly.</td>
<td>2. Re-thread bobbin thread.</td>
</tr>
<tr>
<td><strong>3. Skipped stitches</strong></td>
<td>1. Needle is not correctly inserted.</td>
<td>1. Insert needle correctly.</td>
</tr>
<tr>
<td></td>
<td>2. Correct needle is not used.</td>
<td>2. Install proper needle.</td>
</tr>
<tr>
<td></td>
<td>3. The combination of fabric, thread and needle is not correct.</td>
<td>3. Check “FABRIC/THREAD/NEEDLE COMBINATIONS” chart on page 19.</td>
</tr>
<tr>
<td></td>
<td>4. Dust is clinging to bottom of needle plate.</td>
<td>4. Remove dust by cleaning with a brush.</td>
</tr>
<tr>
<td></td>
<td>5. Upper threading is not correct.</td>
<td>5. Re-thread upper thread.</td>
</tr>
<tr>
<td><strong>4. Fabric puckers</strong></td>
<td>1. Threading is not correct</td>
<td>1. Re-thread upper and bobbin threads correctly.</td>
</tr>
<tr>
<td></td>
<td>2. Correct needle is not used.</td>
<td>2. Install proper needle.</td>
</tr>
<tr>
<td></td>
<td>3. Combination of fabric, thread and needle is not correct.</td>
<td>3. Check “FABRIC/THREAD/NEEDLE COMBINATIONS” chart on page 19.</td>
</tr>
<tr>
<td></td>
<td>4. Thread tension is set to AUTO.</td>
<td>4. Refer to “THREAD TENSION” on page 34.</td>
</tr>
<tr>
<td><strong>5. Inability to thread needle</strong></td>
<td>1. Needle is not correctly inserted.</td>
<td>1. Insert needle correctly.</td>
</tr>
<tr>
<td></td>
<td>2. Needle threader lever cannot be lowered.</td>
<td>2. Turn balance wheel to raise needle to its highest position.</td>
</tr>
<tr>
<td><strong>6. Inability to adjust thread tension</strong></td>
<td>1. Upper threading is not correct.</td>
<td>1. Re-thread upper thread.</td>
</tr>
<tr>
<td></td>
<td>2. Bobbin is not threaded correctly.</td>
<td>2. Re-thread bobbin thread.</td>
</tr>
<tr>
<td></td>
<td>3. Combination of fabric, thread and needle is not correct.</td>
<td>3. Check “FABRIC/THREAD/NEEDLE COMBINATIONS” chart on page 19.</td>
</tr>
<tr>
<td></td>
<td>4. Thread tension is set to AUTO.</td>
<td>4. Refer to “THREAD TENSION” on page 34.</td>
</tr>
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</table>
# Mechanical problems

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fabric is not fed properly</td>
<td>1. Feed dogs are lowered.</td>
<td>1. Raise feed dogs.</td>
</tr>
<tr>
<td></td>
<td>2. Combination of selected stitch and presser foot is not correct.</td>
<td>2. Attach correct presser foot.</td>
</tr>
<tr>
<td></td>
<td>3. Correct needle is not being used.</td>
<td>3. Install correct needle.</td>
</tr>
<tr>
<td></td>
<td>4. Thread is entangled.</td>
<td>4. Remove thread ends from race or inner shuttle.</td>
</tr>
<tr>
<td>2. Needle breaks</td>
<td>1. Needle is not correctly inserted.</td>
<td>1. Insert needle correctly.</td>
</tr>
<tr>
<td></td>
<td>2. Correct needle is not used.</td>
<td>2. Install proper needle.</td>
</tr>
<tr>
<td></td>
<td>3. Combination of fabric, thread and needle is not correct.</td>
<td>3. Check “FABRIC/THREAD/NEEDLE COMBINATIONS” chart on page 19.</td>
</tr>
<tr>
<td>3. Machine is noisy, or running at a slow speed, or thread trimming is not good</td>
<td>1. Dust is clinging to bottom of needle plate.</td>
<td>1. Remove dust by cleaning with a brush.</td>
</tr>
<tr>
<td></td>
<td>2. Machine is turned off.</td>
<td>2. Set main power switch to “I”.</td>
</tr>
<tr>
<td></td>
<td>3. Presser foot is not lowered.</td>
<td>3. Lower presser foot lever.</td>
</tr>
<tr>
<td></td>
<td>4. Check for error messages on LCD.</td>
<td>4. Refer to “ERROR MESSAGES” on page 125.</td>
</tr>
<tr>
<td>5. Embroidery unit does not work</td>
<td>1. Machine is turned off.</td>
<td>1. Set main power switch to “I”.</td>
</tr>
<tr>
<td></td>
<td>2. Embroidery unit is not correctly attached.</td>
<td>2. Correctly attach embroidery unit to sewing machine.</td>
</tr>
<tr>
<td></td>
<td>3. Memory card is not inserted.</td>
<td>3. Turn off machine, then insert memory card.</td>
</tr>
<tr>
<td></td>
<td>4. Check for error messages on LCD.</td>
<td>4. Refer to “ERROR MESSAGES” on page 125.</td>
</tr>
<tr>
<td></td>
<td>5. Embroidery unit was not correctly initialized.</td>
<td>5. Refer to “Initializing the embroidery unit” on page 87.</td>
</tr>
<tr>
<td>SELECTION KEY</td>
<td>NAME OF PATTERN</td>
<td>PATTERN</td>
</tr>
<tr>
<td>---------------</td>
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<td>---------</td>
</tr>
<tr>
<td>Straight (Left)</td>
<td>General sewing, gathering, pintuck sewing, etc.</td>
<td>R - C T</td>
</tr>
<tr>
<td>Straight (Mid)</td>
<td>General reinforcement sewing</td>
<td>Δ - C T</td>
</tr>
<tr>
<td>Triple stretch stitch</td>
<td>Straight stitching (attaching elastic, reinforcing)</td>
<td>Δ - C T</td>
</tr>
<tr>
<td>Stretch stitch</td>
<td>Basting</td>
<td>Δ - C T</td>
</tr>
<tr>
<td>Zigzag stitch</td>
<td>Overcasting, patchwork</td>
<td>R - C T</td>
</tr>
<tr>
<td>Elastic zigzag</td>
<td>Overcasting (medium, thick and stretch fabrics), tape stitching, darning</td>
<td>Δ - C T</td>
</tr>
<tr>
<td>Overcasting</td>
<td>Reinforcement of thin and medium fabrics</td>
<td>Δ - C T</td>
</tr>
<tr>
<td>Blind hem stitch</td>
<td>Reinforcement of stretch fabrics</td>
<td>Δ - C T</td>
</tr>
<tr>
<td>Buttonhole</td>
<td>Buttonholes for suits and overalls</td>
<td>* - C T</td>
</tr>
<tr>
<td>Buttonholes for jeans and trousers</td>
<td>* - C T</td>
<td></td>
</tr>
<tr>
<td>Buttonholes for thick coats</td>
<td>* - C T</td>
<td></td>
</tr>
<tr>
<td>Buttonholes for stretch fabrics</td>
<td>* - C T</td>
<td></td>
</tr>
<tr>
<td>Buttonholes for stretch fabrics</td>
<td>* - C T</td>
<td></td>
</tr>
<tr>
<td>First step in making a bound buttonhole</td>
<td>* - C T</td>
<td></td>
</tr>
</tbody>
</table>

**UTILITY STITCH**

| NAME OF PATTERN | PATTERN | TYPE OF PRESSER FOOT | USE | REVERSE/REINFORCEMENT STITCHING | STITCH WIDTH ADJUSTMENT | STITCH LENGTH ADJUSTMENT | AUTOMATIC THREAD CUTTING | AUTOMATIC REVERSE/REINFORCEMENT STITCHING | REVERSE/REINFORCEMENT STITCHING | STITCH WIDTH ADJUSTMENT | STITCH LENGTH ADJUSTMENT | AUTOMATIC THREAD CUTTING | AUTOMATIC REVERSE/REINFORCEMENT STITCHING | REVERSE/REINFORCEMENT STITCHING |
|----------------|---------|---------------------|-----|----------------------------------|-------------------------|-------------------------|--------------------------|------------------------------------------|---------------------------------|--------------------------|-------------------------|--------------------------|------------------------------------------|---------------------------------|--------------------------|
| Buttonhole | Buttonholes for suits and overalls | * - C T | | | | | | | | | | | | | | |
| Buttonholes for jeans and trousers | * - C T | | | | | | | | | | | | | | |
| Buttonholes for thick coats | * - C T | | | | | | | | | | | | | | |
| Buttonholes for stretch fabrics | * - C T | | | | | | | | | | | | | | |
| Buttonholes for stretch fabrics | * - C T | | | | | | | | | | | | | | |
| First step in making a bound buttonhole | * - C T | | | | | | | | | | | | | | |

**UTILITY STITCH**

| NAME OF PATTERN | PATTERN | TYPE OF PRESSER FOOT | USE | REVERSE/REINFORCEMENT STITCHING | STITCH WIDTH ADJUSTMENT | STITCH LENGTH ADJUSTMENT | AUTOMATIC THREAD CUTTING | AUTOMATIC REVERSE/REINFORCEMENT STITCHING | REVERSE/REINFORCEMENT STITCHING | STITCH WIDTH ADJUSTMENT | STITCH LENGTH ADJUSTMENT | AUTOMATIC THREAD CUTTING | AUTOMATIC REVERSE/REINFORCEMENT STITCHING | REVERSE/REINFORCEMENT STITCHING |
|----------------|---------|---------------------|-----|----------------------------------|-------------------------|-------------------------|--------------------------|------------------------------------------|---------------------------------|--------------------------|-------------------------|--------------------------|------------------------------------------|---------------------------------|--------------------------|
| Buttonhole | Buttonholes for suits and overalls | * - C T | | | | | | | | | | | | | | |
| Buttonholes for jeans and trousers | * - C T | | | | | | | | | | | | | | |
| Buttonholes for thick coats | * - C T | | | | | | | | | | | | | | |
| Buttonholes for stretch fabrics | * - C T | | | | | | | | | | | | | | |
| Buttonholes for stretch fabrics | * - C T | | | | | | | | | | | | | | |
| First step in making a bound buttonhole | * - C T | | | | | | | | | | | | | | |

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| NAME OF PATTERN | PATTERN | TYPE OF PRESSER FOOT | USE | REVERSE/REINFORCEMENT STITCHING | STITCH WIDTH ADJUSTMENT | STITCH LENGTH ADJUSTMENT | AUTOMATIC THREAD CUTTING | AUTOMATIC REVERSE/REINFORCEMENT STITCHING | REVERSE/REINFORCEMENT STITCHING | STITCH WIDTH ADJUSTMENT | STITCH LENGTH ADJUSTMENT | AUTOMATIC THREAD CUTTING | AUTOMATIC REVERSE/REINFORCEMENT STITCHING | REVERSE/REINFORCEMENT STITCHING |
|----------------|---------|---------------------|-----|----------------------------------|-------------------------|-------------------------|--------------------------|------------------------------------------|---------------------------------|--------------------------|-------------------------|--------------------------|------------------------------------------|---------------------------------|--------------------------|
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| Buttonholes for jeans and trousers | * - C T | | | | | | | | | | | | | | |
| Buttonholes for thick coats | * - C T | | | | | | | | | | | | | | |
| Buttonholes for stretch fabrics | * - C T | | | | | | | | | | | | | | |
| Buttonholes for stretch fabrics | * - C T | | | | | | | | | | | | | | |
| First step in making a bound buttonhole | * - C T | | | | | | | | | | | | | | |

**UTILITY STITCH**

<p>| NAME OF PATTERN | PATTERN | TYPE OF PRESSER FOOT | USE | REVERSE/REINFORCEMENT STITCHING | STITCH WIDTH ADJUSTMENT | STITCH LENGTH ADJUSTMENT | AUTOMATIC THREAD CUTTING | AUTOMATIC REVERSE/REINFORCEMENT STITCHING | REVERSE/REINFORCEMENT STITCHING | STITCH WIDTH ADJUSTMENT | STITCH LENGTH ADJUSTMENT | AUTOMATIC THREAD CUTTING | AUTOMATIC REVERSE/REINFORCEMENT STITCHING | REVERSE/REINFORCEMENT STITCHING |
|----------------|---------|---------------------|-----|----------------------------------|-------------------------|-------------------------|--------------------------|------------------------------------------|---------------------------------|--------------------------|-------------------------|--------------------------|------------------------------------------|---------------------------------|--------------------------|
| Buttonhole | Buttonholes for suits and overalls | * - C T | | | | | | | | | | | | | | |
| Buttonholes for jeans and trousers | * - C T | | | | | | | | | | | | | | |
| Buttonholes for thick coats | * - C T | | | | | | | | | | | | | | |
| Buttonholes for stretch fabrics | * - C T | | | | | | | | | | | | | | |
| Buttonholes for stretch fabrics | * - C T | | | | | | | | | | | | | | |
| First step in making a bound buttonhole | * - C T | | | | | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th>SELECTION KEY</th>
<th>NAME OF PATTERN</th>
<th>TYPE OF PRESSER FOOT</th>
<th>USE</th>
<th>REVERSE/REINFORCEMENT STITCHING</th>
<th>STITCH WIDTH ADJUSTMENT</th>
<th>STITCH LENGTH ADJUSTMENT</th>
<th>AUTOMATIC THREADING</th>
<th>AUTOMATIC REVERSE/REINFORCEMENT STITCHING</th>
<th>UTILITY STITCH</th>
<th>SELECTION KEY</th>
<th>NAME OF PATTERN</th>
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<th>USE</th>
<th>REVERSE/REINFORCEMENT STITCHING</th>
<th>STITCH WIDTH ADJUSTMENT</th>
<th>STITCH LENGTH ADJUSTMENT</th>
<th>AUTOMATIC THREADING</th>
<th>AUTOMATIC REVERSE/REINFORCEMENT STITCHING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decorative</td>
<td>Decorative</td>
<td>Δ * * C T</td>
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*Utility Stitch*
### EMBROIDERY

<table>
<thead>
<tr>
<th>SELECTION KEY</th>
<th>NAME OF PATTERN</th>
<th>TYPE OF PRESSER FOOT</th>
<th>USE</th>
<th>STITCH WIDTH ADJUSTMENT</th>
<th>STITCH LENGTH ADJUSTMENT</th>
<th>AUTOMATIC THREAD CUTTING</th>
<th>AUTOMATIC REVERSE/REINFORCEMENT STITCHING</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMBROIDERY</td>
<td>ALPHABET</td>
<td>Character sewing</td>
<td>–</td>
<td>C</td>
<td>T</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>FRAME PATTERN</td>
<td>Frame pattern</td>
<td>–</td>
<td>C</td>
<td>T</td>
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<tr>
<td></td>
<td>ONE-POINT PATTERN</td>
<td>Patterns</td>
<td>–</td>
<td>C</td>
<td>T</td>
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<tr>
<td></td>
<td>MEMORY CARD (SOLD SEPARATELY)</td>
<td>Characters</td>
<td>–</td>
<td>C</td>
<td>T</td>
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</tr>
</tbody>
</table>

**R**: Sews in reverse when the reverse/reinforcement stitch button is pressed.

**Δ**: Three reinforcement stitches will be sewn when the reverse/reinforcement stitch button is pressed.

**★**: Adjustable

**–**: Non-adjustable

**L, M, S or L, S**: Pattern size can be changed
- L (large)
- M (medium)
- S (small)

**T**: If automatic thread cutting and automatic reverse/reinforcement stitching are turned on before you start sewing, pressing just the start/stop button automatically sews reverse stitches before sewing. In addition, pressing the reverse/reinforcement stitch button at the end of the stitching automatically sews reverse stitches, trims the threads and stops the machine.

**T**: Reinforcement stitches will be sewn automatically at the start of sewing. Press the reverse/reinforcement stitch button to sew reinforcement stitches automatically at the finish of sewing.

**C**: Programmed automatic thread cutting is available.

**C**: Automatic thread cutting is available.
Utility stitches

Character embroidering

Sizes: \( L \) 30 mm (1-3/16"), \( M \) 15 mm (9/16"), \( S \) 7.5 mm (1/4")
(Approximate size)

<table>
<thead>
<tr>
<th>ABCDEFGHIJKLMNOPQRS</th>
<th>A B C D E F G H I J K L M N O P Q R S</th>
</tr>
</thead>
<tbody>
<tr>
<td>TU VW XYZ abcdefghijklm</td>
<td>T U V W X Y Z a b c d e f g h i j k l m</td>
</tr>
<tr>
<td>ÅÄÆÑÖÖÇÜßääåææéëëëêëëëëôòöşçû</td>
<td>ÅÄÆÑÖÖÇÜßääåææéëëëëëôòöşçû</td>
</tr>
<tr>
<td>0123456789 &amp;?!.-(- )', /</td>
<td>0123456789 &amp;?!.-(- )', /</td>
</tr>
</tbody>
</table>
Frame pattern embroidering

Sizes can be enlarged or reduced.

Frames

Stitches

Floral alphabet

A B C D E F

G H I J K L