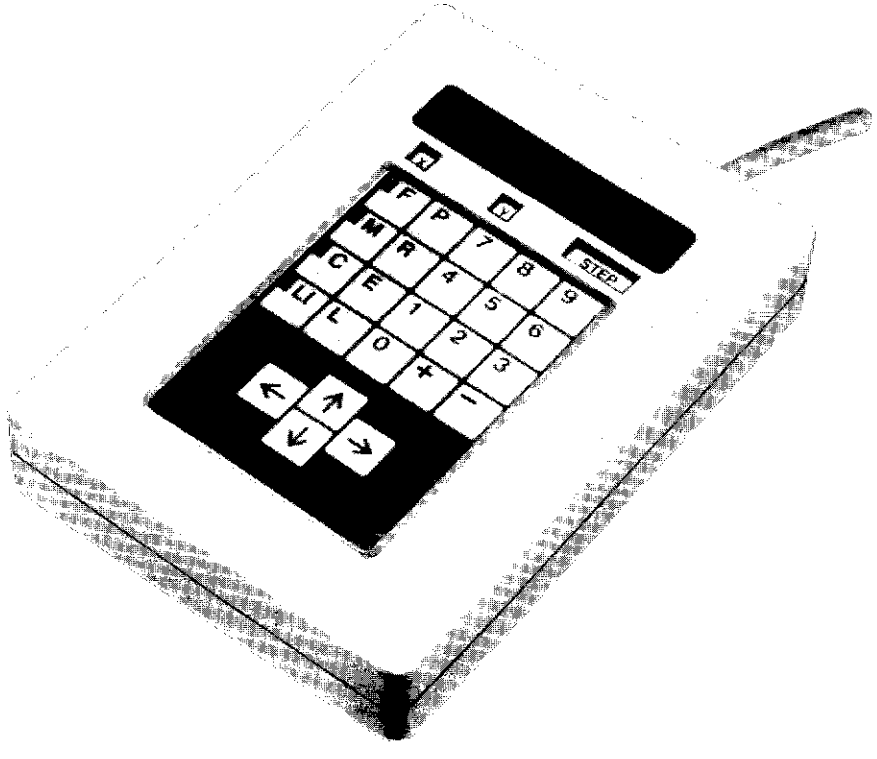
brother

ELECTRONICALLY PROGRAMMABLE LOCK STITCH SEWING MACHINE WITH PROFILE MII PROGRAMMER

BAS-350

INSTRUCTION MANUAL



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EXPLANATION OF THE KEYBOARD AND DISPLAY

Feed key
This key is used after thread trimming is completed if the sewing operation is not to be restarted immediately following the position at which thread trimming was performed.

Command indicator
Indicates the last command key (feed, mirror, cancel, line) input if that key is currently functional.

Mirror key
This key is used to program a symmetrical mirror image of a pattern which has already been input or to program a smoothing pattern. It is also to be used to perform such operations as pattern enlarging and reducing.

Cancel key
This key is to be used to cancel any of the points in a pattern which has already been programmed.

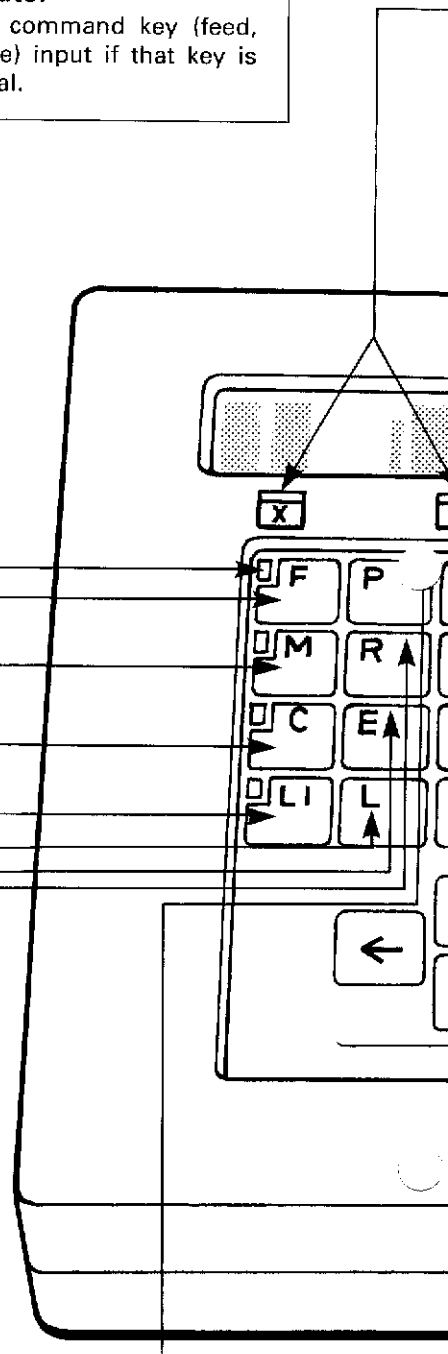
Line key
This key enables the operator to easily program straight lines.

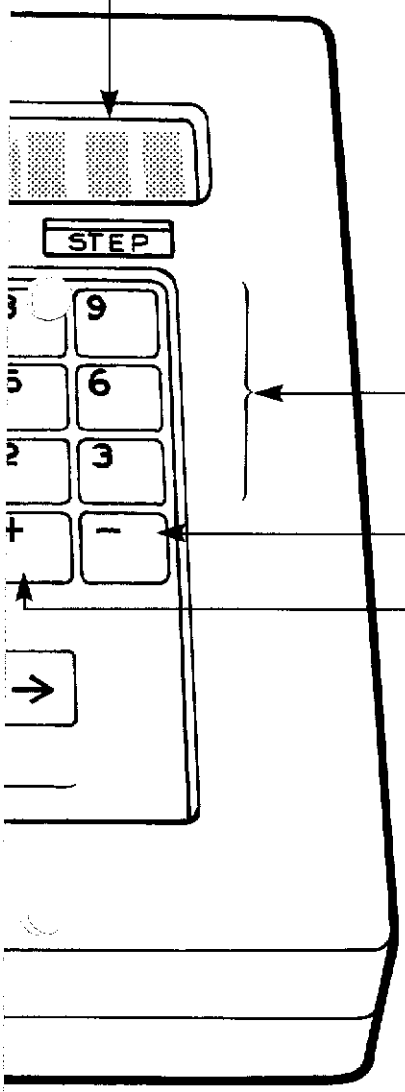
Load key
Press this key to program the current needle position. The input command will be programmed only once even if this key is pressed more than once while the needle is maintained in the same position.

End key
When the pattern is fully programmed, display "1 1 1" in the STEP display and press this key to enter a program end command.

Reset key
If this key is pressed during the program mode, the feed plate will move to the origin. Furthermore, if "2 2 2" is in the STEP display and the [R] key is pressed, the program will be erased completely.

Program key
- Used to switch between sewing and program modes.
- Indicates remaining programmable stitches even if only a single stitch is programmed.





X·Y display
Indicates the amount of feed jig movement in the X direction or Y direction when the jog key is pressed.

STEP display
- This display indicates the number of steps when the ⊞ key or ⊟ key is used.
- It also indicates the various numerical input commands.
- If less than 500 programmable stitches remain when the load key is pressed, the indicator will flash at every following 100 stitch increment.

Numeral keys
These keys will be indicated on the display in sequential order below the STEP display in the order input.

Minus key
- Reverse feeds the work clamp the number of stitches indicated in the STEP display.
- Can be used to clear a wrong command.

Plus key
- Forward feeds the work clamp the number of stitches indicated in the STEP display.
- Can be used to clear a wrong command.

Jog keys
These keys are used to move the needle in the direction of the arrow on each respective key. If command indicator "F" or "LI" is not lit the needle cannot be fed more than 6.3 mm.

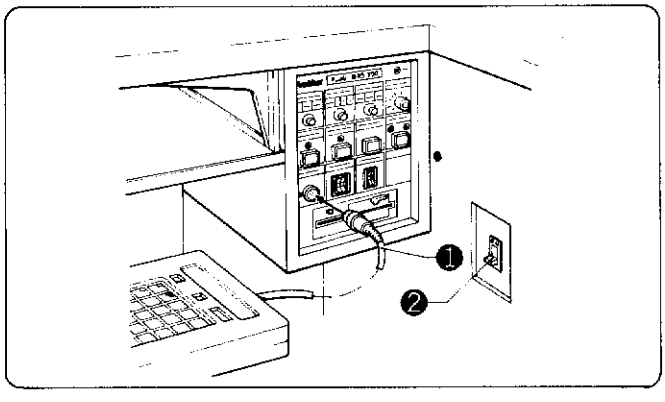
COMMAND LIST

- This command list is to be used to program a pattern. Refer to this list to input the program correctly.

1 1 1 [E]	END	
1 1 2 [E]	LOW SPEED SEWING	
2 2 2 [R]	DATA CLEAR	
3 3 3 [L]	REPEAT	
5 5 5 [L]	TRACE	
6 6 6 [L]	SWITCH TO LOW SPEED	
4 4 0 [L]	POINT SYMMETRY	
4 4 1 [L]	X AXIS SYMMETRY	
4 4 2 [L]	Y AXIS SYMMETRY	
4 4 3 [L]	REVERSE	
0 0 1 [M] ◺ / ◿	ORIGINAL	
0 1 1 [M] ◿ / ◺ 0 1 0 [M]		
□ □ □ [M] (stitch length)	SMOOTHING (Example) Stitch length: 3 mm If not specified: 2 mm	0 3 0 M
7 8 9 [L]	SMOOTHING END Push this key at a corner.	
4 □ □ [M] (width)	MULTIPLE SEAM (Example) width: 2 mm	4 2 0 M
5 □ □ [M] (width)	MULTIPLE SEAM (Example) 4 lines * Input with the width command.	5 0 4 M
3 □ □ [M] (division)	TURNING (Example) Divided into 4 sections (90°) Max. 36 sections (10°)	3 0 4 M
[F] 6 6 6	SPLIT PROGRAMMING	
8 □ □ [M]	X-AXIS ENLARGEMENT/REDUCTION (Example) 120% Enlargement	8 1 2 M
9 □ □ [M]	Y-AXIS ENLARGEMENT/REDUCTION (Example) 80% Reduction	9 0 8 M
8 8 8 [L]	NEW EMBROIDERY COMMAND	
7 7 7 [F]	PARALLEL SHIFT	

※ When using "TRACE" and other commands (for example SMOOTHING) at the same time, specify TRACE first.

CORRECT HANDLING OF THE PROGRAMMER



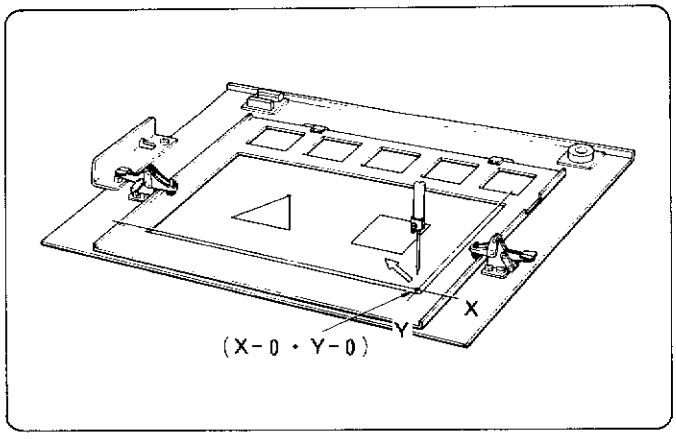
(1) Connect programmer plug ❶ to the operation panel.
(2) Turn the power switch ❷ on. Set the feed plate (with graph paper stencil) in place. Press the [P] (program) key. The feed jig will shift to and stop at the origin and the programmer will then be ready for input.
(3) When programming is completed press [P] again to assume the sewing mode.
※Do not press the panel with sharp or pointed objects.

PROGRAMMING PROCEDURE

≪ **Note** ≫
- Outline the pattern to the actual size.
- Design the pattern in such a way that the stitch length does not exceed 6.3 mm.
- The maximum number of stitches is 10,000.
- The maximum pattern size is 350 mm in the X direction and 250 mm in the Y direction.
- There are no limits in establishing the initial stitch position, performing a backstitch operation, or setting the sewing direction.

4 To program a skipped start sewing operation

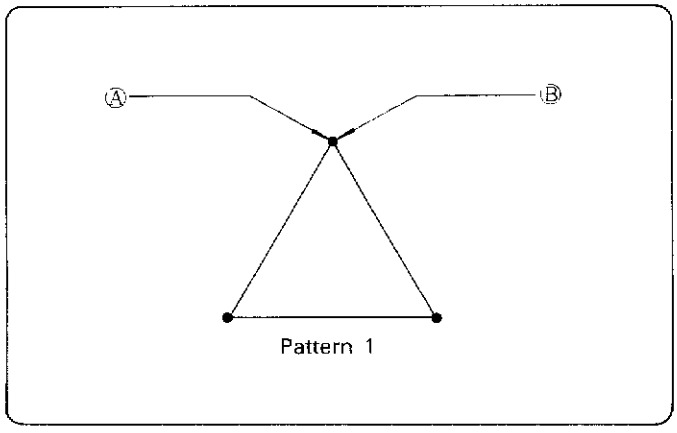
- To continue sewing after thread trimming without returning the feed jig to the pallet replacement point, program the pattern with the F key.



Example: Program the pattern in the figure at left.

(1) Press the P key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.

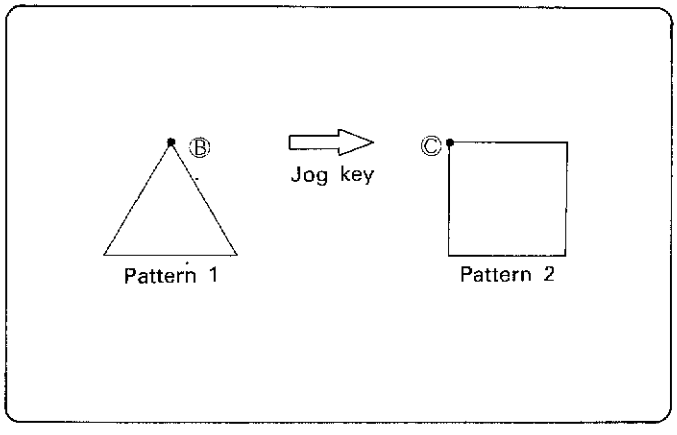
(2) Use the jog keys to move the feed jig to the initial stitch position.



(3) When the needle tip is aligned with the initial stitch position Ⓐ on the pattern outline, press the L key. This will program the initial stitch position.

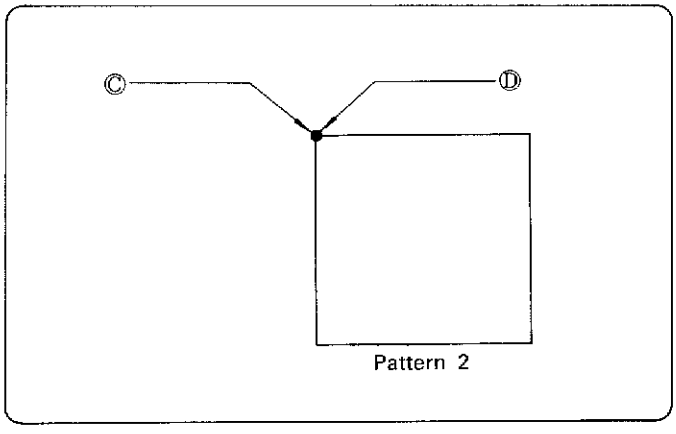
(4) Repeat the above procedure to program the remaining stitches of pattern 1.

(5) Press the L key at the final stitch position Ⓑ of pattern 1, and then press the F key. At this time, command indicator "F" will illuminate.



(6) Use the jog keys to move the feed jig to the initial stitch position of pattern 2.

(7) When the needle tip is aligned with the initial stitch position Ⓒ of pattern 2, press the L key. The operation will be programmed to restart from point Ⓒ after the thread trimming operation is completed at point Ⓑ.



(8) Repeat the above procedure to program the remaining stitches of pattern 2.

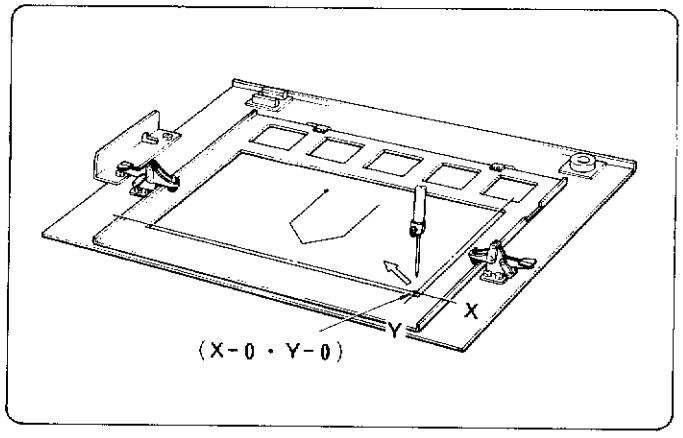
(9) Press the L key at the final stitch position Ⓓ, and press number key 1 three times to indicate "1 1 1" on the STEP display. Press the E key.

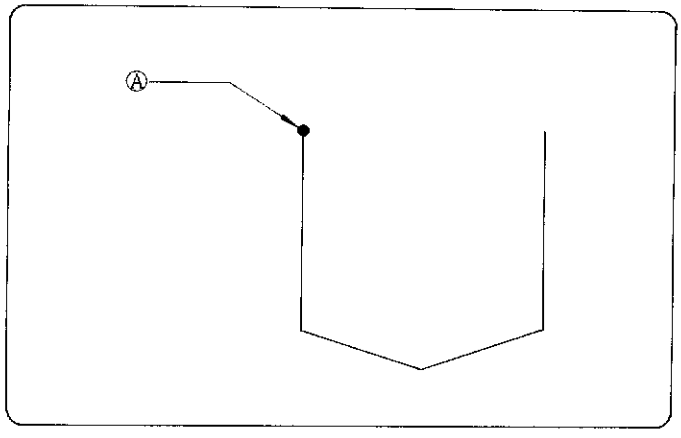
(10) The feed jig will move back to the origin.

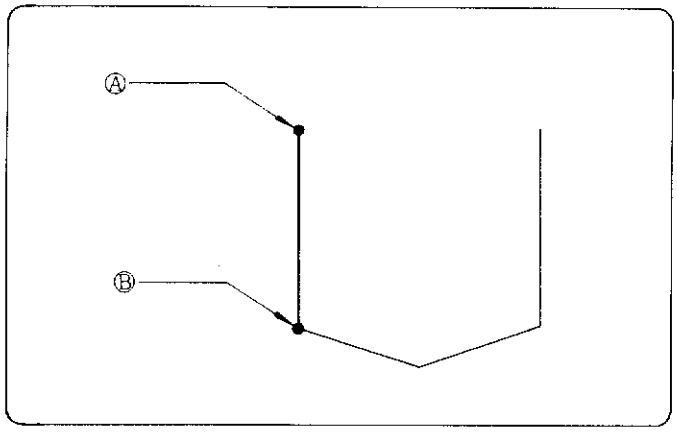
(11) Write the program to the floppy disk.
(Refer to page 24.)

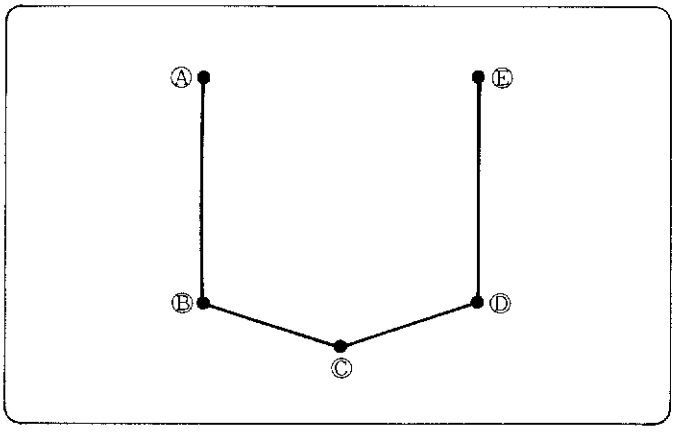
[3] To program a stitch pattern containing numerous straight lines in the pattern

- Use the [LI] key to program straight line portions of the pattern.









Example: Program the pattern in the figure at left.

(1) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.

(2) Use the jog keys to move the feed jig to the initial stitch position.

(3) When the needle tip is aligned with the initial stitch position Ⓐ on the pattern outline, press the [L] key. This will program the initial stitch position.

(4) Use the number keys to indicate the proper stitch length on the STEP display. To set the proper stitch length, divide the actual stitch length by 1 pulse (i.e., 0.1 mm).
(For example, if the desired stitch length is 3 mm, (3 ÷ 0.1 = 30). Use the number keys to indicate "0 3 0" on the STEP display.)
※If the stitch length is not indicated on the STEP display, or if it exceeds 6.3 mm (63), it will automatically be set to 2 mm.

(5) Press the [LI] key. Command indicator "LI" will light.

(6) Use the jog keys to move the feed jig to the final stitch position Ⓑ on the straight line portion of the pattern.

Note 1:
When more than a specified number of stitches are required between point Ⓐ and point Ⓑ, the transfer speed will suddenly decrease. Press the [L] key and then the [LI] key between point Ⓐ and point Ⓑ to reprogram the remaining stitches on the straight line portion of the pattern.

(7) Press the [L] key when the needle tip becomes aligned with point Ⓑ on the outline of the needle movement to program the straight line from point Ⓐ to point Ⓑ.

(8) Repeat the above procedure to program the remaining straight lines from point Ⓑ → Ⓒ, Ⓒ → Ⓓ, Ⓓ → Ⓔ.

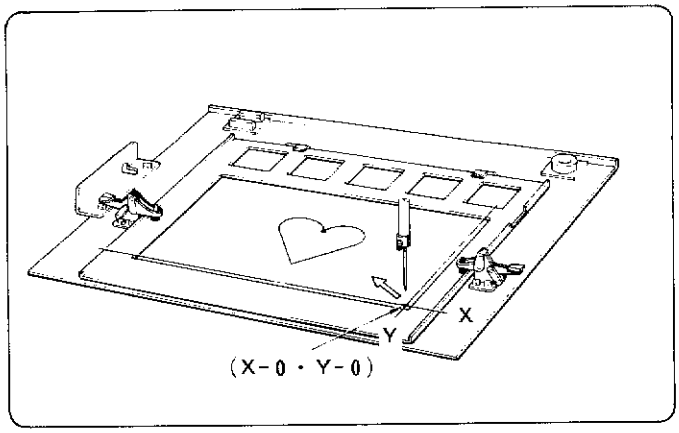
Note 2:
For diagonal lines, e.g. Ⓑ → Ⓒ, there are instances in which the line may not turn out to be straight unless the line is sub-divided into smaller portions.

(9) Press the [L] key at the position indicated by the letter Ⓔ. Then press number key [1] three times to indicated "1 1 1" on the STEP display, and then press the [E] key.

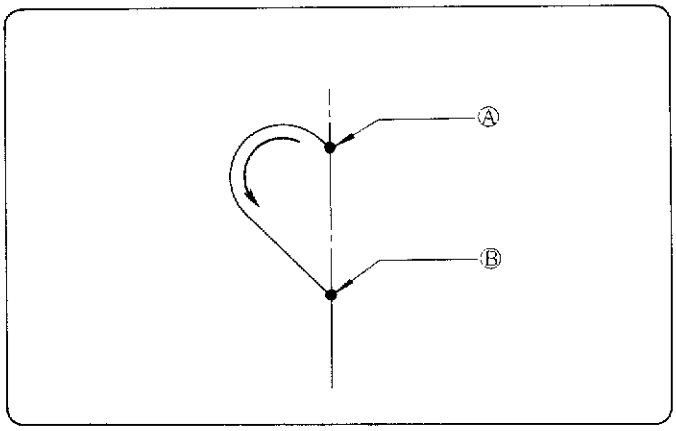
(10) The feed jig will move back to the origin.

(11) Write the program to the floppy disk.
(Refer to page 24.)

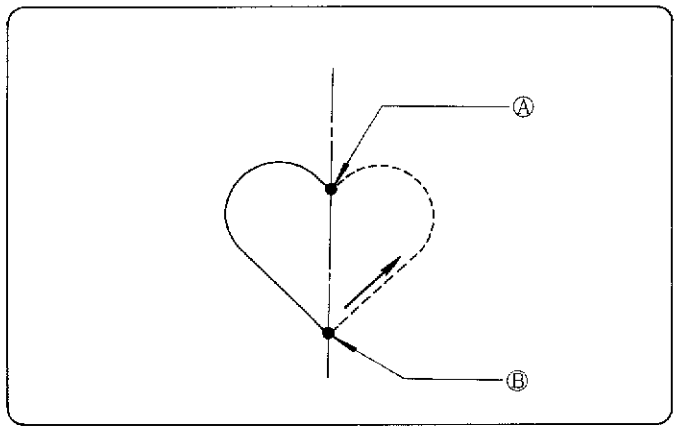
B. To program a symmetrical pattern, the operator is only required to program one-half of the pattern and then use the number keys to program the remaining half of the design.
Example: Program on the Y axis a mirror image of the pattern in the figures below.



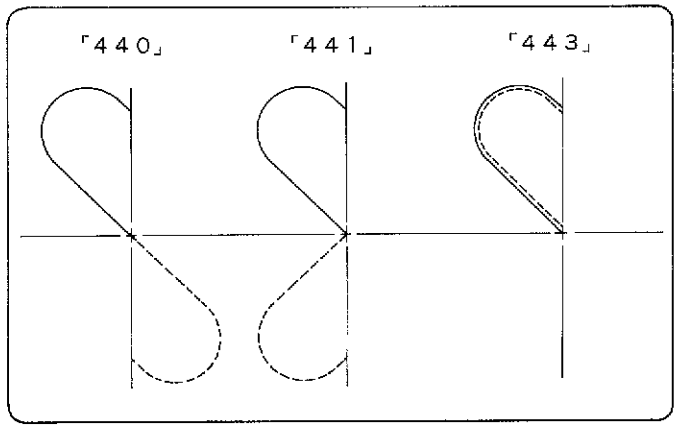
(1) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the display, and command indicator "F" will illuminate.
(2) Use the jog keys to move the feed jig to the initial stitch position.



(3) When the needle tip is aligned with the initial stitch position Ⓐ on the pattern outline, press the [L] key. This will program the initial stitch position.
(4) Repeat the above procedure to program the left half of the pattern from point Ⓐ to point Ⓑ.
(5) Press the [L] key at point Ⓑ. Use the number keys to display "4 4 2" on the STEP display, and press the [L] key once again.
※After completing step ❺ above, it is also possible to continue the programming operation from point Ⓐ.



(6) The needle tip will slowly move from point Ⓑ to point Ⓐ, and the right side half of the pattern will be automatically programmed. At this time, if the presser lifter switch is pressed, the feed jig will be moved at rather high speed.
(7) When the needle tip becomes aligned with point Ⓐ, press number key [1] three times to indicate "1 1 1" on the STEP display. Press the [E] key.
(8) The feed jig will move back to the origin.
(9) Write the program to the floppy disk.
(Refer to page 24.)

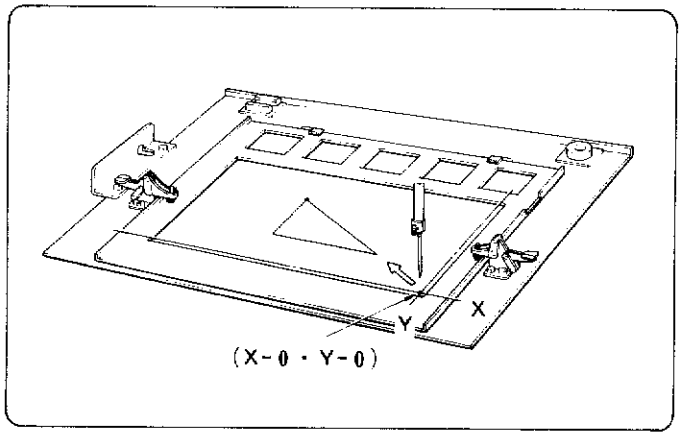


※In addition to programming a symmetrical mirror image on the Y axis, it is also possible to program symmetrically on the X axis on the right side by indicating "4 4 0" or to program a reversing operation by indicating "4 4 3" on the STEP display.

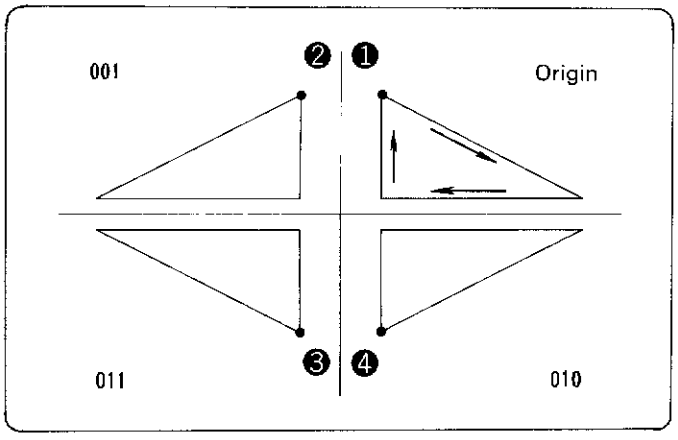
5 To program a symmetrical mirror image of a pattern

A. Use the M key to program a symmetrical mirror image of a stitch pattern which has already been programmed.

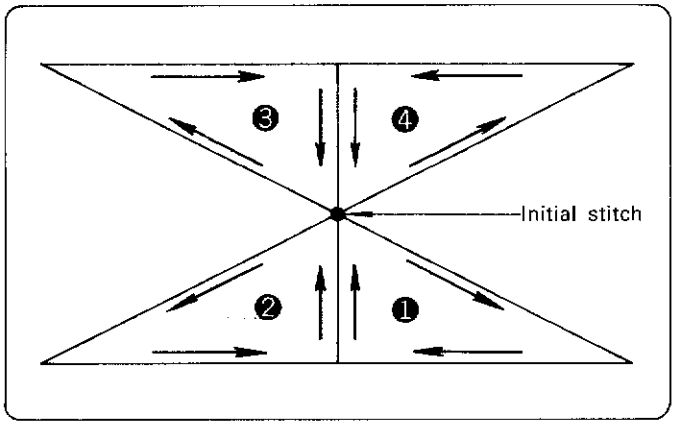
Example: Program a mirror image of the pattern in the figures below.

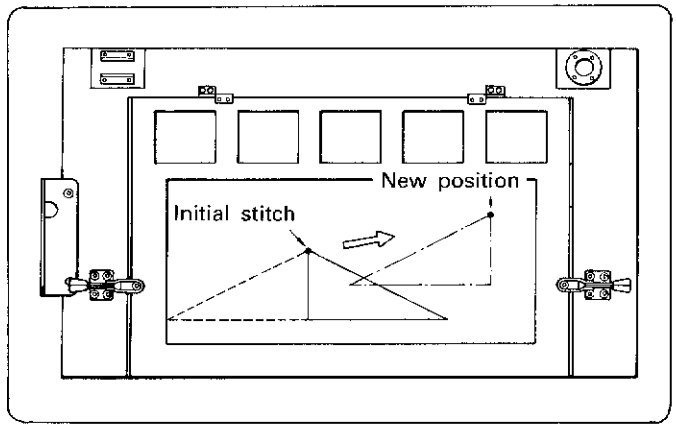


(1) Press the P key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(2) Insert a floppy disk with a preprogrammed stitch pattern into the floppy disk drive.
(3) Press the read switch. The read indicator will illuminate and the pattern data will be read onto the memory.



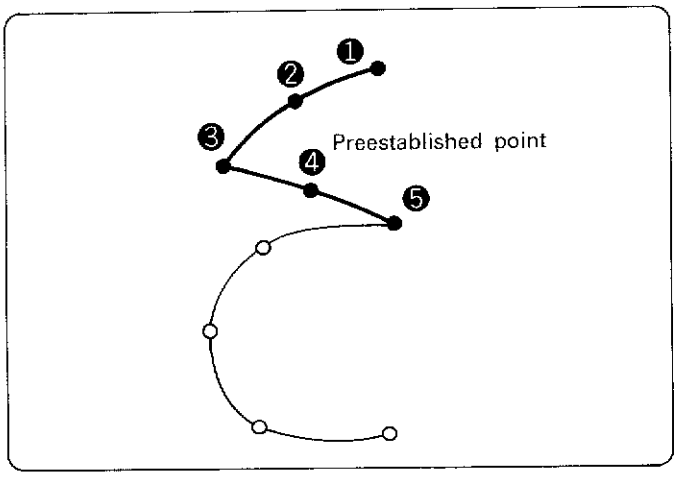
(4) If the pattern in section ❶ of the figure on the left is the original design, press "0 0 1" to program the pattern in section ❷, "0 1 1" to program the pattern in section ❸, and "0 1 0" to program the pattern in section ❹. Use the number keys to indicate the appropriate numbers on the STEP display.
(5) Press the M key, and then press the L key.
(6) Write the program to the floppy disk. (Refer to page 24.)

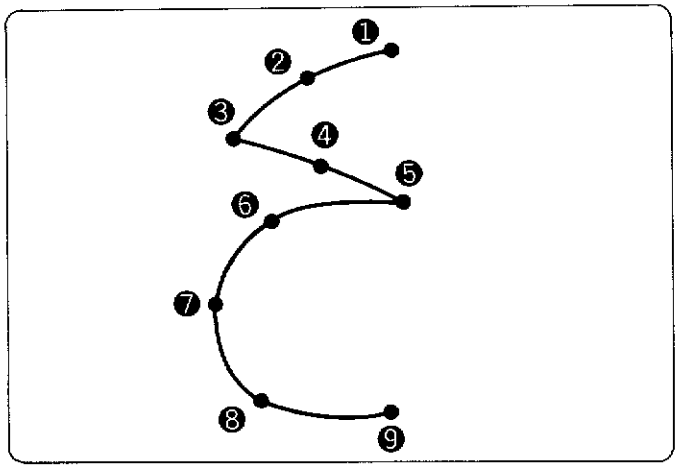




Note 1:
When the M key is used to compose a mirror image, the program will be input with the initial stitch position as the starting point of the entire symmetrical pattern as shown in the figures above.

Note 2:
In the event that the mirror image may extend beyond the limits of the sewing area, or if the entire pattern is to be moved to the center of the sewing area press the R key after completing steps (1) – (5) above. Then press the jog keys to move the feed jig to the new initial stitch position, and press the L key. The new initial stitch position will be programmed.



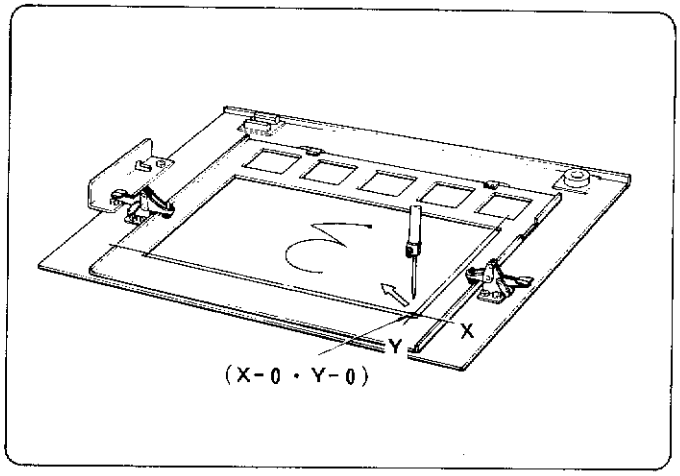


(9) Set the proper stitch length according to procedure (4) mentioned above, and then press the [M] key.
(10) Use the jog keys to align the needle tip with stitch position ❹, and press the [L] key. Stitch position ❹ will be programmed.
(11) Use the direction keys to align the needle tip with stitch position ❺, and press the [L] key. Stitch position ❺ will be programmed.
(12) Follow procedure (8) mentioned above, and use the number keys to indicate "7 8 9" on the STEP display. Press the [L] key. Stitch positions ❸ – ❺ will be programmed.
(13) Set the proper stitch length according to procedure (4) mentioned above, and then press the [M] key.
(14) Use the jog keys to program stitch positions ❻, ❼, ❽, and ❾.
(15) Follow procedure (8) mentioned above, and use the number keys to indicate "7 8 9" on the STEP display. Then press the [L] key. Stitch positions ❺ – ❾ will be programmed.
※After procedure (15) is completed, it is also possible to continue the programming operation from stitch position ❾.
(16) Press number key [1] three times to indicate "1 1 1" on the STEP display. Press the [E] key.
(17) The feed jig will move back to the origin.
(18) Write the program to the floppy disk.
(Refer to page 24.)

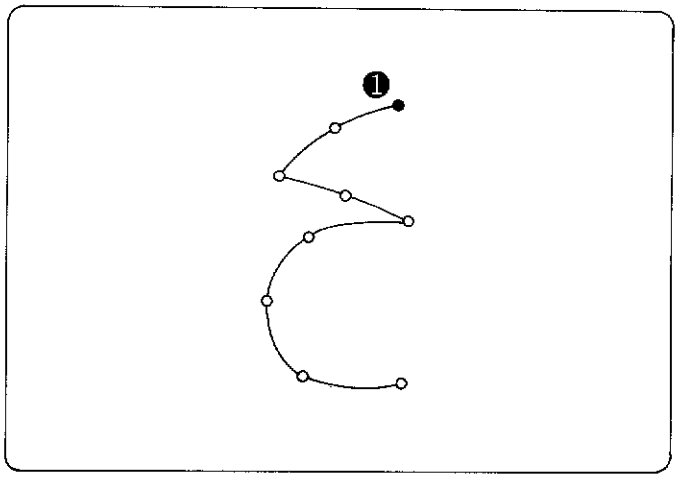
Note 1:
If the numerals "7 8 9" are input immediately after the [M] key is pressed, be sure to press the [L] key at 2 or more stitch positions.
Note 2:
Be sure to stop the programming operation temporarily at such angles as shown at stitch position ❸. If the programming operation is continued without a temporary stop, a curve rather than an angle will be programmed.

[6] To program a stitch pattern with the smoothing operation

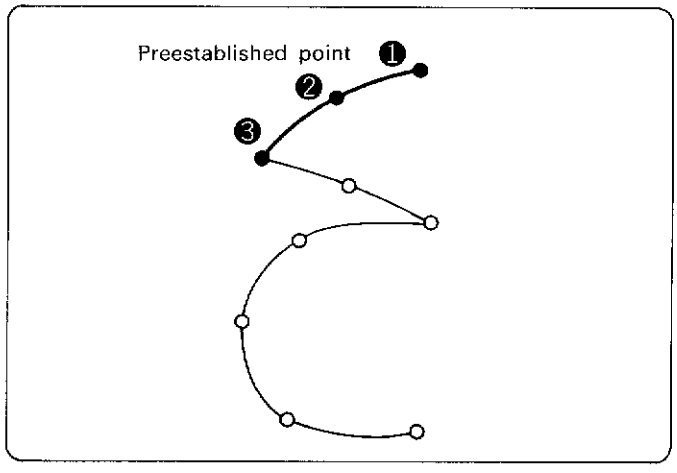
- Use the number keys and the [M] key to program the main stitch positions, which have been established with the pattern so as to avoid having to program the pattern one stitch at a time.
  Example: Program the pattern in the figures below.



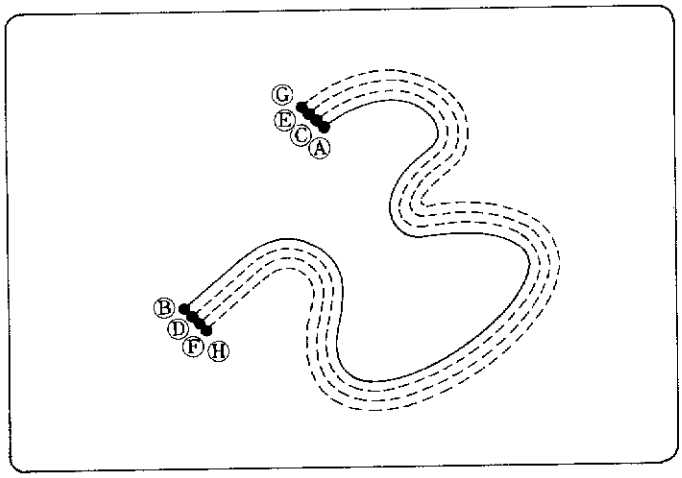
(1) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(2) Use the jog keys to move the feed jig to the initial stitch position.

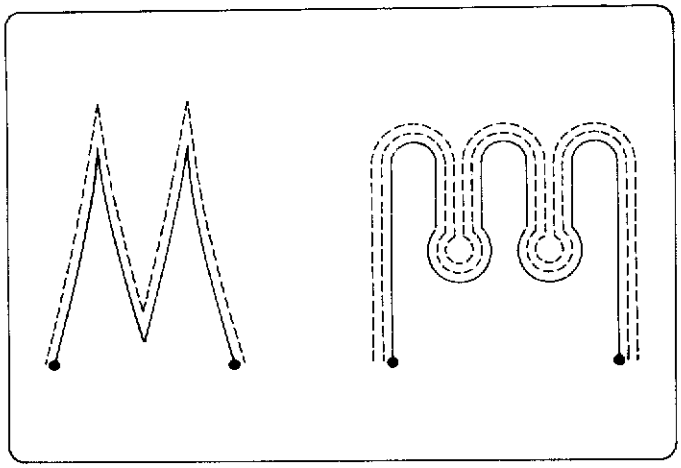


(3) When the needle tip is aligned with the initial stitch position ❶ on the pattern outline, press the [L] key. The initial stitch will be programmed.
(4) Use the number keys to indicate the desired stitch length on the STEP display. To set the proper stitch length, divide the actual stitch length by 1 pulse (i.e., 0.1 mm).
(For example, to set the proper stitch length when the actual stitch length is 3 mm, (3 mm ÷ 0.1 mm = 30). Use the number keys to indicate "0 3 0" on the STEP display.)
※If the stitch length is not indicated on the STEP display, or if it exceeds 6.3 mm (63), it will automatically be set to 2 mm.



(5) Press the [M] key. Command indicators "F" and "M" will both illuminate.
(6) Use the jog keys to align the neede tip with stitch position ❷, and then press the [L] key.
(7) Use the jog keys to align the needle tip with stitch position ❸, and then press the [L] key. This programs stitch position ❸.
(8) Be sure to program a turning point at such angles as shown in stitch position ❸. Use the number keys to indicate "7 8 9" on the STEP display, and press the [L] key. The stitch positions ❶–❸ will be programmed.





(6) Press the L key. The last 2 digits of the read-out "5 □ □" on the STEP display will decrease one at a time to indicate that the program is in progress.
(When the program is completed, the needle tip will move from point Ⓑ to point Ⓒ, and slowly advance from point Ⓒ → Ⓓ, Ⓔ → Ⓕ, and Ⓖ → Ⓗ, and the programming operation will be automatically performed. At this time, if the presser lifter switch is pressed, the feed jig will be fast forwarded.)

(7) Press number key 1 three times at point Ⓗ to indicate "1 1 1" on the STEP display. Then press the E key.

(8) The feed jig will move back to the origin.

(9) Write the program to the floppy disk.
(Refer to page 24.)

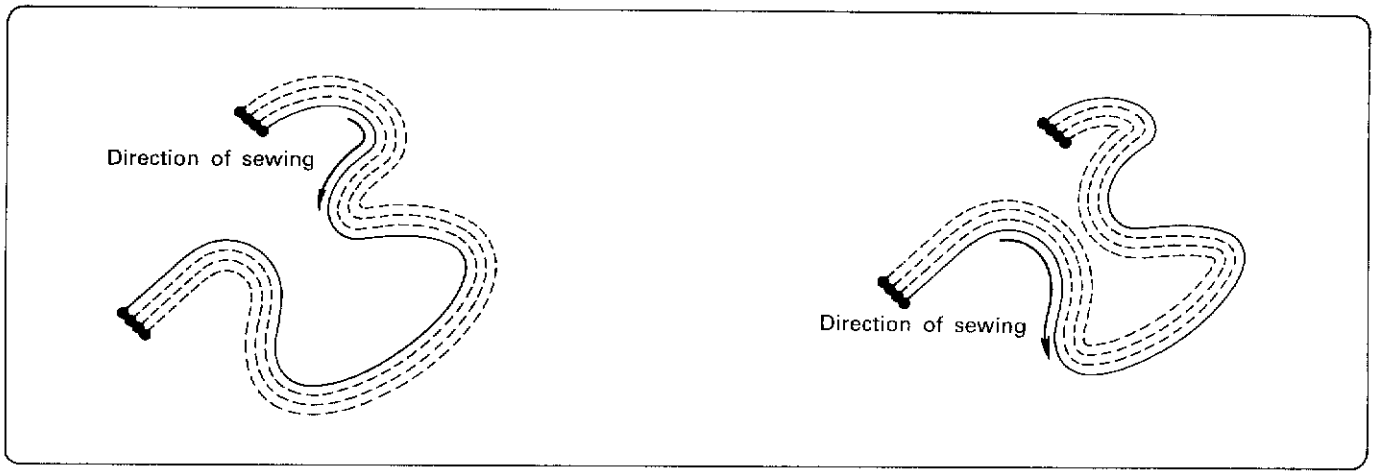
Note 1:
To program a multiple seam operation, be sure to program the base pattern (solid line portion) with the smoothing operation. The multiple seam operation cannot be programmed if it includes a pattern which is programmed one stitch at a time or a mirror image pattern which is repeated.

Note 2:
If the multiple seam operation is to include a skipped start sewing operation (feed), program the operation at every skipped start position.

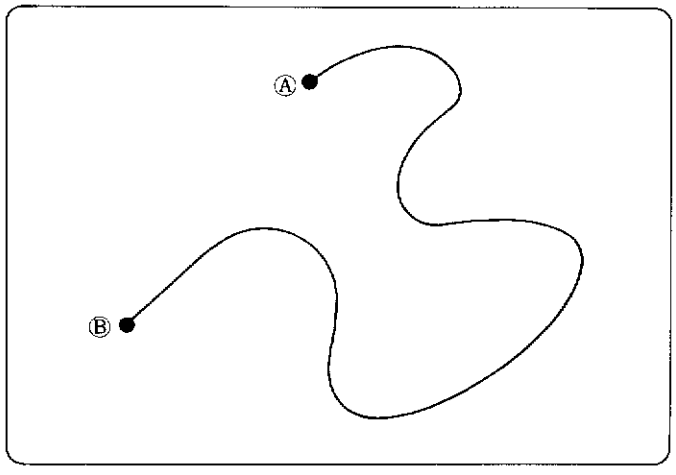
Note 3:
If the base pattern for the multiple seam operation should include an acute angle as shown in the figures above, or if the base pattern should include a number of curves, it may not be possible to use the multiple seam operation.
(For example, if a four-line-multiple seam operation has been programmed but cannot be sewn as calculated, only a three or two line multiple seam operation will be performed.)

7 To program a multiple seam operation

- A multiple seam pattern can be programmed on the basis of a stitch pattern which has been composed with the smoothing function at a constant distance from, and parallel to, the preceding stitch line any number of times. This is done with the number keys and the M key.



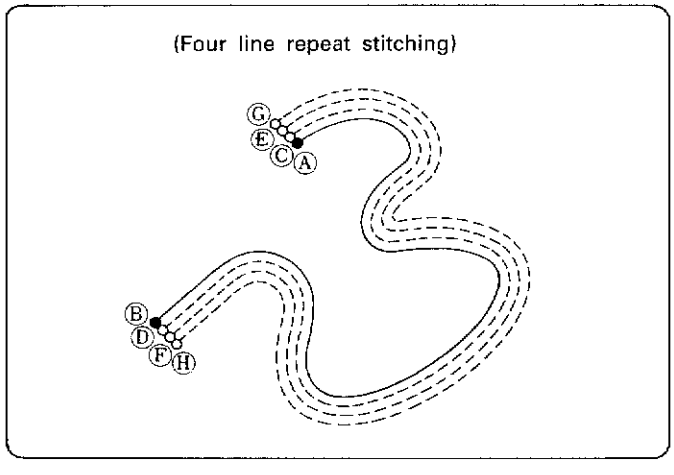
In the multiple seam programming procedure, patterns can be repeated only to the left relative to the forward feed direction as shown in the figure above. Therefore, it is necessary to determine the forward feed direction of the pattern according to the desired result.



Example: Program the pattern in the figure at left.

(1) Program the base pattern line from point Ⓐ to point Ⓑ with the smoothing function. (Refer to page 9.)

(2) Press number key 4 at point Ⓑ, and input the proper distance between the repeating patterns to the STEP display. To set the distance between the repeating patterns, divide the actual distance by 1 pulse (i.e., 0.1 mm). (For example, if the desired distance is 2 mm, (2 mm ÷ 0.1 mm = 20). Input 2 0. The STEP display should read "4 2 0".)



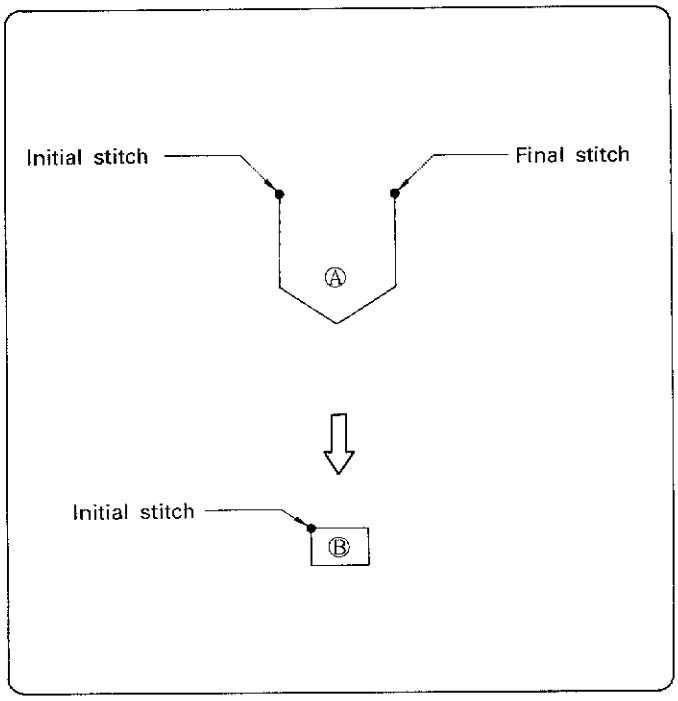
(3) Press the M key. Command indicators "F" and "M" will both illuminate.

(4) Press number key 5, and input the number of times the pattern is to be repeated. (For example, to repeat the line four times, use the number keys to indicate "5 0 4" on the STEP display.)

(5) Press the M key.

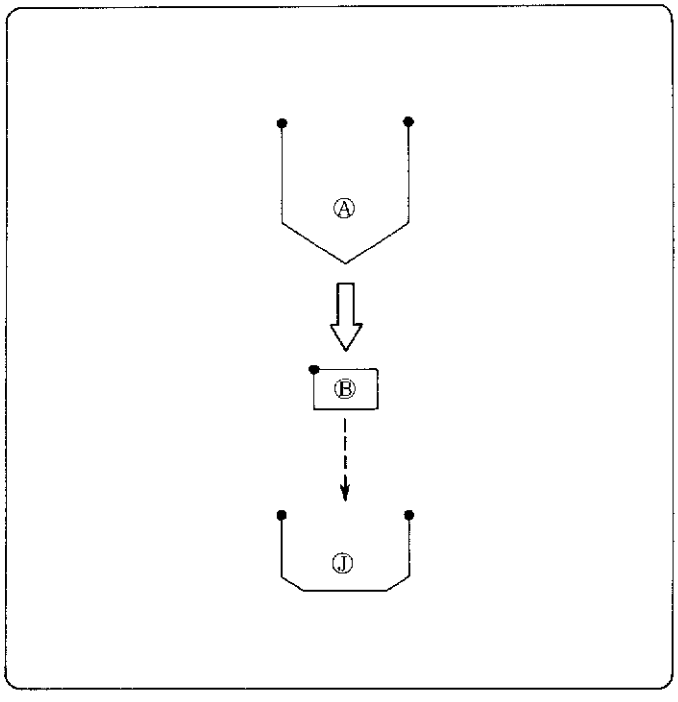
9 To input a split program

- This is a method of programming an independent sewing operation or a sequential sewing operation of a pattern subdivided into smaller sections. Up to 10 different patterns can be sewn with the split program switch.



Example: Program the pattern in the figure at left.

(1) Program pattern Ⓐ.
(2) Press the L key at the final stitch position of pattern Ⓐ.
(3) Press the F key. Command indicator "F" will illuminate.
(4) Use the jog keys to move the feed jig to the initial stitch position of pattern Ⓑ.
(5) Align the needle tip with the initial stitch position of pattern Ⓑ.



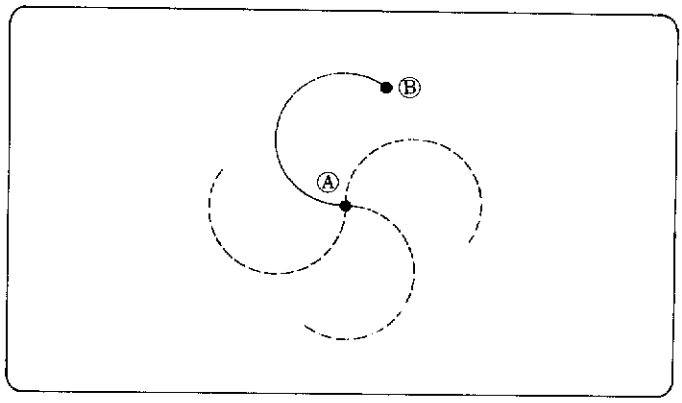
(6) Press number key 6 three times to indicate "6 6 6" on the STEP display. (Note: "6 6 6" on the STEP display refers to a split program input command when F key is selected.)
(7) Press the L key.
(8) Up to 10 patterns, i.e., Ⓐ, Ⓑ, to Ⓙ, can be programmed in sequential order. (A total of up to 10,000 stitches are possible for programs Ⓐ – Ⓙ.)
(9) When programming of the final stitch is completed, press number key 1 three times to indicate "1 1 1" on the STEP display. Then press the E key.
(10) The feed jig will move back to the origin.
(11) Write the program to the floppy disk.
(Refer to page 24.)

Note:

Continuous or split program sewing of over 10 split program patterns can be performed, but an independent sewing operation can not be performed from the 11th pattern onward.

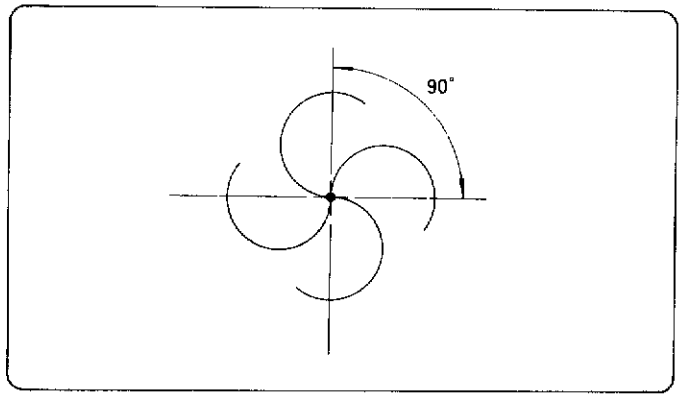
8 To program a turning pattern

- A turning design having a recurring pattern at regular intervals can be programmed with the number keys and the M key after programming a single section of the design.



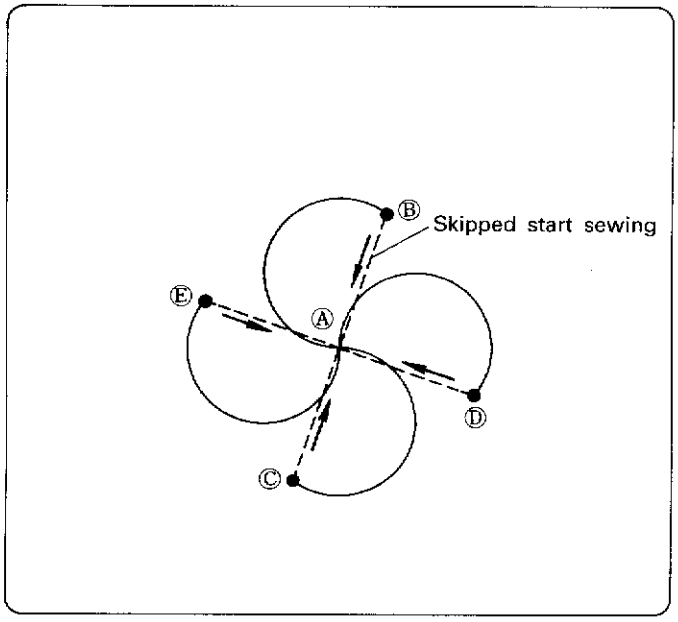
Example: Program the pattern in the figure at left.

(1) Program the solid line extending from point Ⓐ to point Ⓑ. (Programming will be easier if the smoothing function is employed.)



(2) Press number key 3 at point Ⓑ. Indicate on the STEP display the number of times the base pattern is to be repeated within 360°.
(For example, if the pattern is to be repeated 4 times, the STEP display should read "3 0 4". The pattern will be repeated at 90° intervals.)

(3) Press the M key. Command indicators "F" and "M" will both illuminate.



(4) Press the L key. (The needle tip will move from point Ⓑ to point Ⓐ, and then move slowly from point Ⓐ → Ⓒ → Ⓐ, Ⓐ → Ⓓ → Ⓐ, and Ⓐ → Ⓔ in that order. Programming will be automatically performed. At this time, if the presser lifter switch is pressed the feed jig will be fast forwarded.)

(5) Press number key 1 three times at point Ⓔ to indicate "1 1 1" on the STEP display. Press the E key.

(6) The feed jig will move back to origin.

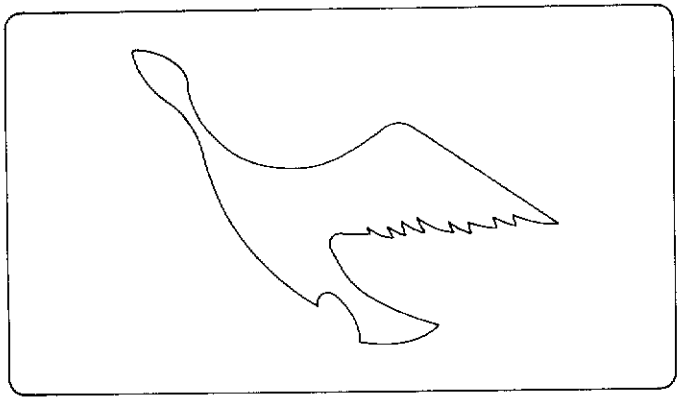
(7) Write the program to the floppy disk.
(Refer to page 24.)

Note 1:
The feed data will connect point Ⓑ to point Ⓐ which is the center of the turning pattern.

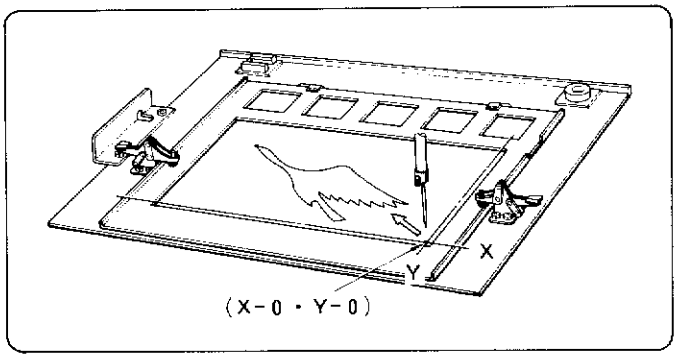
Note 2:
The pattern can only be repeated 2, 3, 4 , 6, 8, 12, 16, 24, 32, or 36 times within 360°.

11 To program a stitch pattern by tracing the design

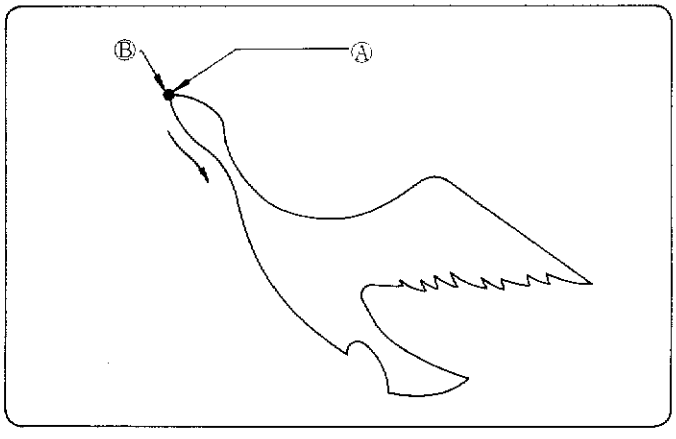
- A stitch pattern can easily be programmed by operating the number keys and the direction keys to trace the pattern with the needle tip.



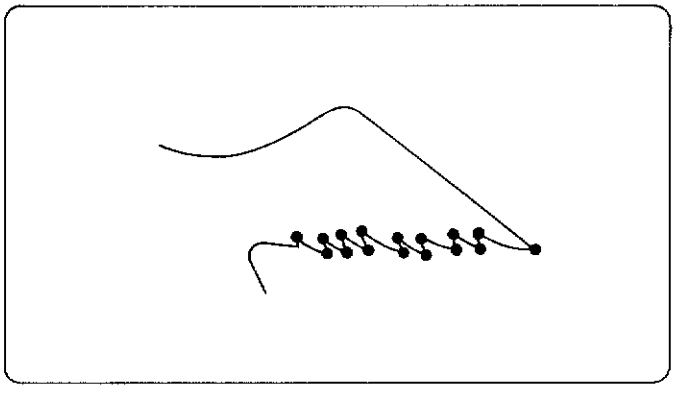
Example: Program the pattern in the figure at left.



(1) Press the P key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(2) Use the jog keys to move the feed jig to the initial stitch position.



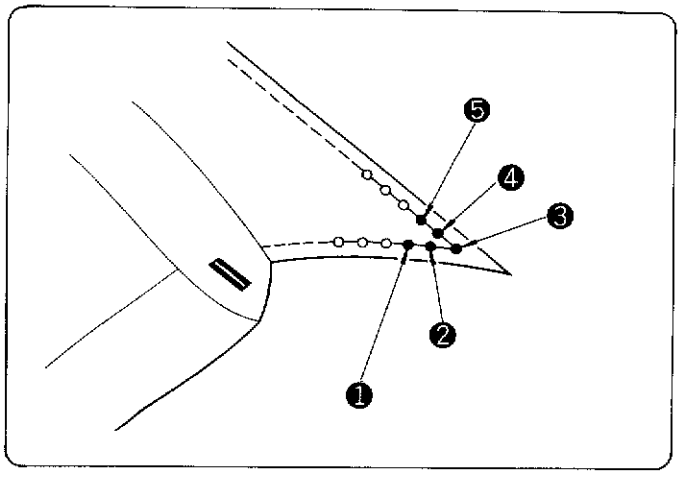
(3) Align the needle tip with the initial stitch position Ⓐ on the sewing pattern.
(4) Press number key 5 three times to indicate "5 5 5" on the STEP display. Then press the L key.
(5) Use the number keys to indicate the proper stitch length on the STEP display. To set the proper stitch length, divide the actual stitch length by 1 pulse (i.e., 0.1 mm)
(For example, if the desired stitch length is 3 mm, (3 mm ÷ 0.1 mm = 30). Use the number keys to indicate "0 3 0" on the STEP display.)
※If the stitch length is not indicated on the STEP display, or if it exceeds 6.3 mm (63), it will automatically be set to 2 mm.
(6) Use the jog keys to trace the pattern with the needle tip starting from the initial stitch position Ⓐ.
(7) Press the L key at the final stitch position Ⓑ.
(8) Press number key 1 three times to indicate "1 1 1" on the STEP display. Then press the E key.
(9) The feed jig will move back to the origin.
(10) Write the program to the floppy disk.
(Refer to page 24.)



Note 1:
To perform areas requiring special attention (e.g., an acute angle), press the L key for better results.
Note 2:
During the program the F or the L key can be used. If either is to be used, press the L key at the beginning and end of the feed or the line program.

[10] To program a low speed sewing operation in subdivided sections

- If a pattern is programmed according to the regular procedure, the first 2 stitches and the last 3 stitches will be automatically performed at low speed. If the sewing speed is to be reduced during the sewing operation (e.g., at acute angles), use the [L] key to perform a low speed sewing operation.



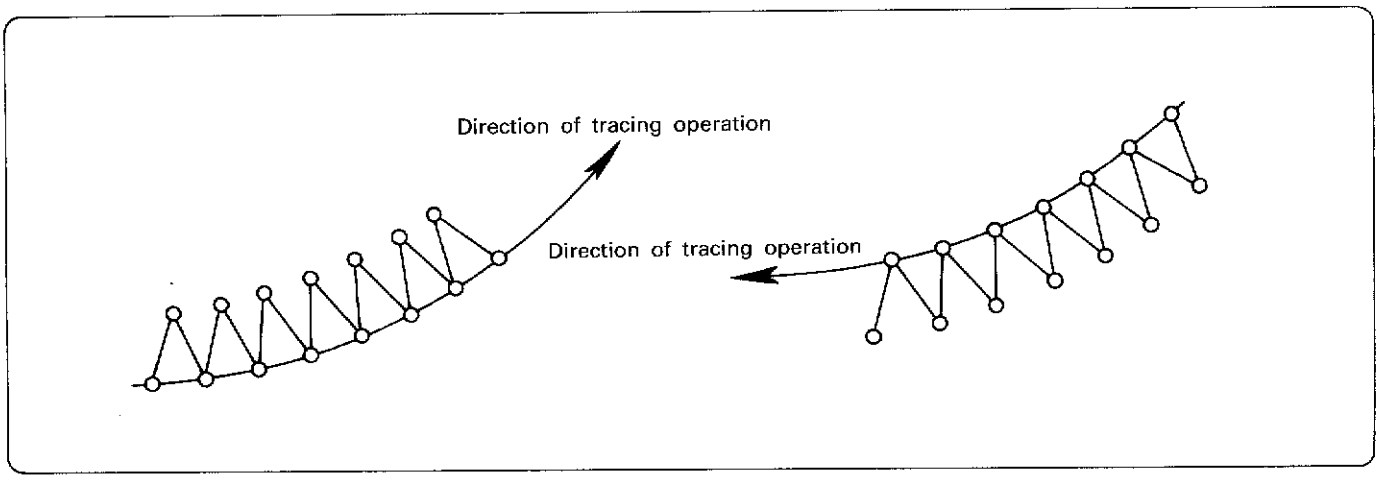
Example: Perform a low speed sewing operation from points ❶ – ❺ on the collar of the garment in the figure at left.

(1) Insert the floppy disk containing the proper pattern into the floppy disk drive.
(2) Press the read switch. The read indicator will illuminate, and the program data will be read onto the memory.
(3) Press number key [9] three times to indicate "9 9 9" on the STEP display, and then press the [+] key. The feed jig will begin to advance one stitch at a time, starting from the initial stitch position.
(4) When the needle tip becomes aligned with the position marked ❶, press either the [+] key or the [−] key. The feed jig movement will stop. (If, however, the feed jig is accidentally advanced beyond the position marked ❶, use the number keys to indicate on the STEP display the number of stitches to move back and then press the [−] key. The feed jig will move in the reverse direction the number of stitches indicated on the STEP display.)
(5) Press number key [6] three times to indicate "6 6 6" on the STEP display. Then press the [L] key.
(6) Press number key [1] to indicate "0 0 1" on the STEP display. Then press the [+] key. The needle tip will move to stitch position ❷.
(7) Repeat steps (5) and (6) to finish programming from position ❷–❺.
(8) Write the program to the floppy disk.
(Refer to page 24.)

Note:
Low speed sewing is not possible unless the entire pattern is completed.

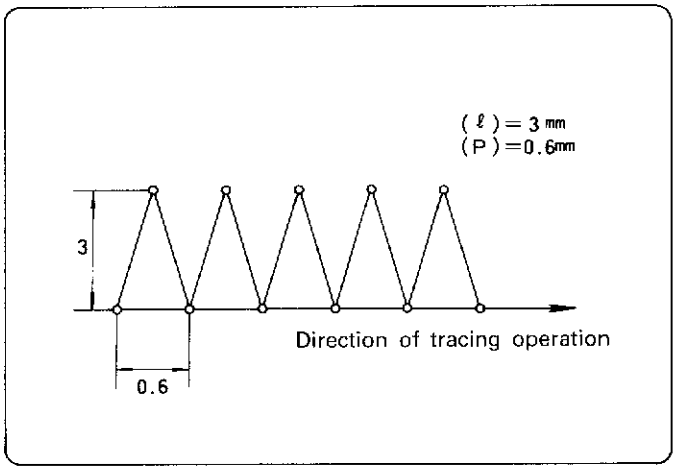
13 To program a zigzag sewing operation

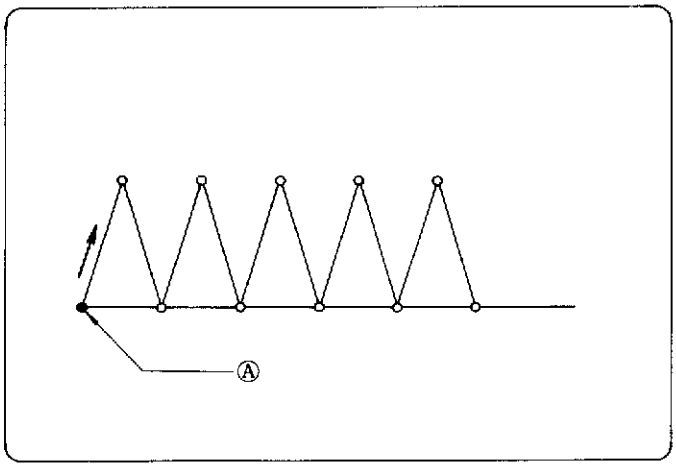
- Zigzag patterns can be easily programmed with the tracing function.



In the zigzag sewing operation, patterns will appear only to the left relative to the forward feed direction as shown in the figure above. Therefore, it is necessary to determine the proper direction of the tracing operation required to obtain the desired results.

A. To program a zigzag operation.





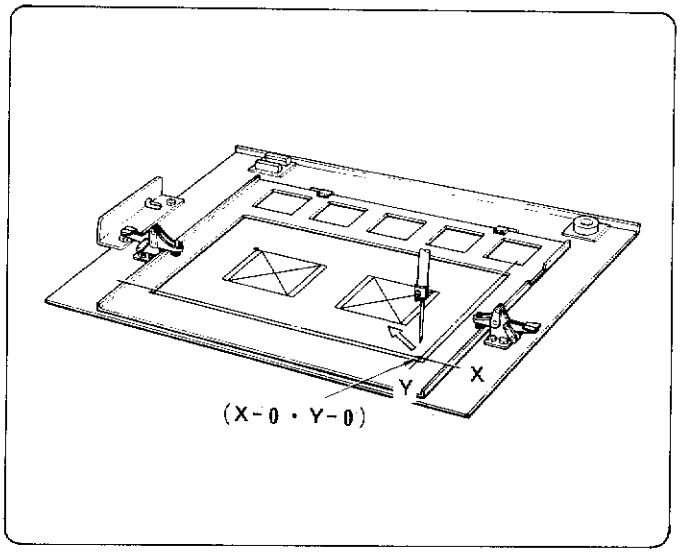
Example: Program the pattern in the figure at left.

(1) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(2) Use the jog keys to move the feed jig to the initial stitch position.
(3) Align the needle tip with the initial stitch position Ⓐ on the outline of the needle movement.
(4) Use the number keys to indicate "7 7 □" on the STEP display. The last digit □ is the numeral obtained by dividing the stitch width (I) by the stitch length (P) − 1. Therefore, (I) ÷ (P) − 1. In this instance, 3 mm ÷ 0.6 mm − 1 = 4. Therefore, indicate "7 7 4" on the STEP display.
(5) Press the [L] key.
(6) Establish the proper stitch length. To obtain the proper stitch length, divide the actual stitch length by 1 pulse (0.1 mm). In this instance, 0.6 mm ÷ 0.1 mm = 6. Therefore, indicate "0 0 6" on the STEP display.
(7) Use the jog keys so that the needle tip accurately traces the pattern, starting from the initial stitch position Ⓐ.
(8) Press the [L] key at the final stitch position.
(9) Press number key [1] three times to indicate "1 1 1" on the STEP display. Then press the [E] key.
(10) The feed jig will move back to the origin.
(11) Write the program to the floppy disk. (Refer to page 24.)

Note:
The [L] key is to be pressed only at step (5) above. Do not press the [L] key or the [R] key at any other step.

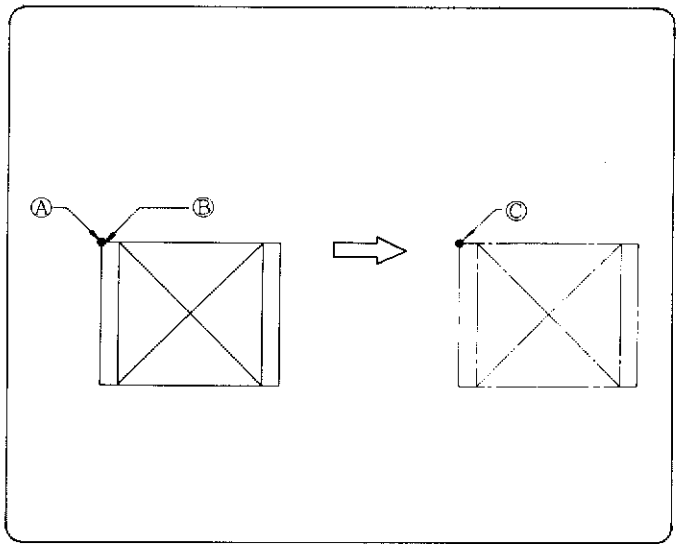
12 To program a design with recurring patterns

- A pattern which has been programmed can be repeated with the number keys.

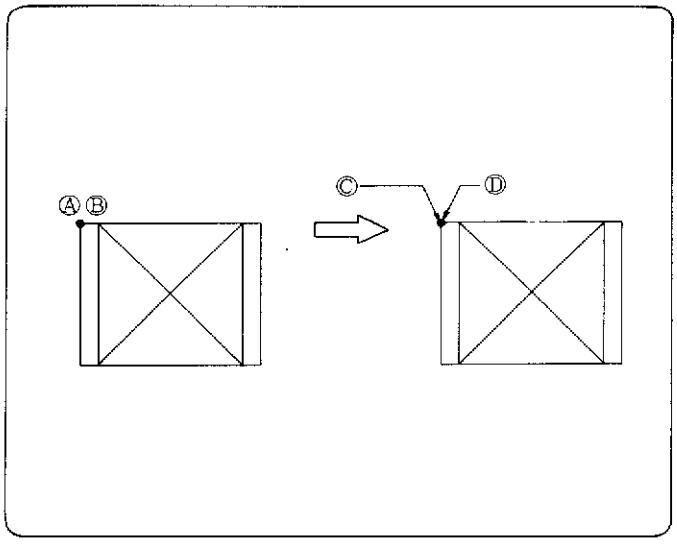


Example: Program the pattern in the figure at left.

(1) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(2) Use the jog keys to move the feed jig to the intitial stitch position.
(3) When the needle tip and the initial stitch position Ⓐ on the outline of the needle movement are aligned, press the [L] key. The initial stitch will be programmed.

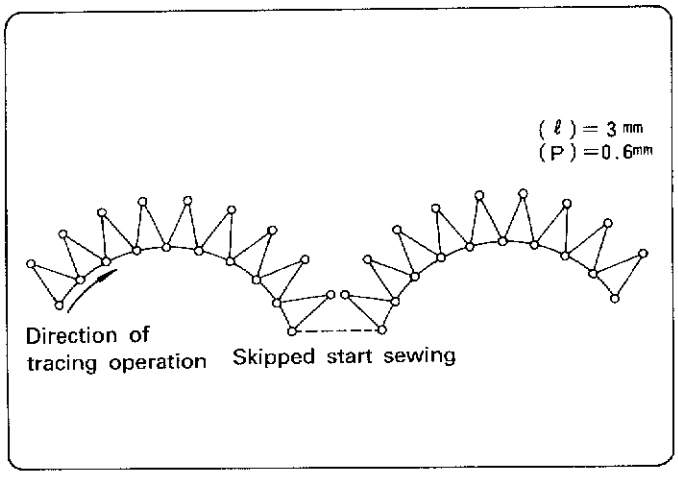


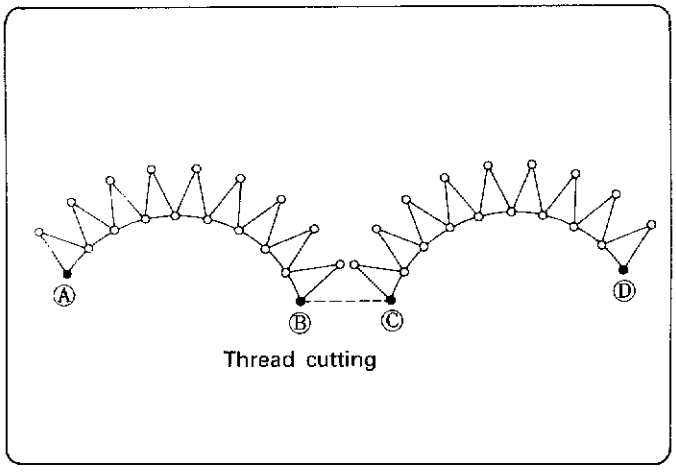
(4) Repeat the above procedure to program the remaining stitches of the pattern.
(5) Press the [L] key at the final stitch position Ⓑ, and then press the [F] key. Command indicator "F" will illuminate.
(6) Use the jog keys to move the feed jig to the desired sewing position.
(7) Align the needle tip with the position at which sewing operation Ⓒ is to be performed. Then press the [L] key.
(8) Press number key [3] three times to indicate "3 3 3" on the STEP display.



(9) The needle tip will slowly trace the recurring pattern, and the programming operation will be automatically performed. At this time, if the presser lifter switch is pressed, the feed jig will be fast forwarded.
(10) Press the [L] key at the final stitch position Ⓓ of the recurring pattern.
(11) Press number key [1] three times to indicate "1 1 1" on the STEP display. Then press the [E] key.
(12) The feed jig will move back to the origin.
(13) Write the program to the floppy disk.
(Refer to page 24.)

2. If the zigzag sewing patterns preceding or following the skipped start sewing operation is changed.



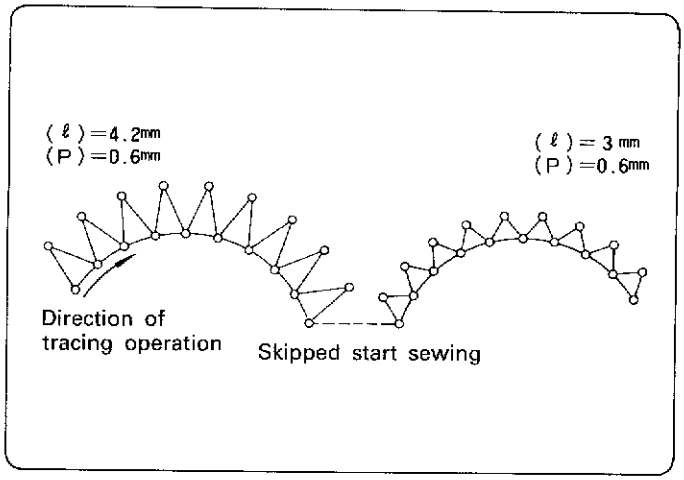


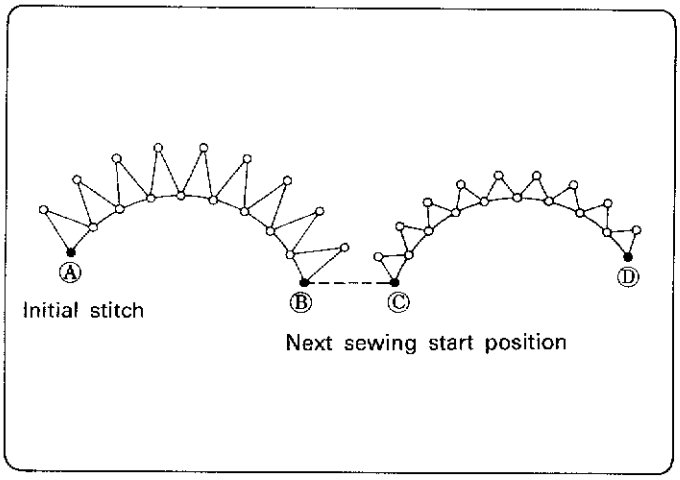
Example: Program the pattern in the figure at left.

(1) Press the [P] key. The feed jig will move to origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(2) Use the jog keys to move the feed jig to the initial stitch position.
(3) Align the needle tip with the initial stitch position Ⓐ on the outline of the needle movement.
(4) Specify the zigzag width. Use the number keys to indicate "7 7 □" on the STEP display. The last digit □ is the numeral obtained by dividing the stitch width (l) by the stitch length (P) − 1. Therefore, (l) ÷ (P) − 1. In this instance, 4.2 mm ÷ 0.6 mm − 1 = 6. Therefore, indicate "7 7 6" on the STEP display.
(5) Press the [L] key.
(6) Establish the proper stitch length. To obtain the proper stitch length, divide the actual stitch length by 1 pulse (0.1 mm). In this instance, 0.6 mm ÷ 0.1 mm = 6. Therefore, indicate "0 0 6" on the STEP display.
(7) Use the jog keys so that the needle tip accurately traces the pattern, starting from the initial stitch position Ⓐ, and traces to position Ⓑ.
(8) Press the [R] key. The feed jig will move back to the origin.
(9) Use the jog keys to move the feed jig to the initial stitch position.
(10) Align the needle tip with the initial stitch position Ⓐ on the outline of the needle movement.
(11) Follow procedure (4) mentioned above to indicate "7 7 □" on the STEP display. In this instance, 3 mm ÷ 0.6 mm − 1 = 4. Therefore, indicate "7 7 4" on the STEP display.
(12) Press the [L] key.
(13) Press number key [9] three times to indicate "9 9 9" on the STEP display.
(14) Press the [+] key to move the needle tip to position Ⓑ.
(15) Press the [F] key. Command indicator "F" will illuminate.
(16) Use the jog keys to move the feed jig to the initial position of the next sewing operation.
(17) Press the [L] key when the needle tip is aligned with the initial stitch position Ⓒ.
(18) Indicate the proper stitch length on the STEP display according to step (6) above.
(19) Use the jog keys so that the needle tip traces from point Ⓒ → Ⓓ.
(20) Press the [L] key at the final stitch position Ⓓ.
(21) Press number key [1] three times to indicate "1 1 1" on the STEP display. Then depress the [E] key.
(22) The feed jig will move back to the origin.
(23) Write the program to the floppy disk.
(Refer to page 24.)

B. To program a skipped start sewing operation (feed) into a zigzag sewing operation.

1. If the zigzag sewing patterns preceding and following the skipped start sewing operation are the same.





Example: Program the pattern in the figure at left.

(1) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.

(2) Use the jog keys to move the feed jig to the initial stitch position.

(3) Align the needle tip with the initial stitch position Ⓐ on the outline of the needle movement.

(4) Specify the zigzag width. Use the number keys to show "7 7 □" on the STEP display. The last digit □ is the numeral obtained by dividing the stitch width (l) by the stitch length (P) − 1. Therefore, (l) ÷ (P) − 1. In this instance, 3 mm ÷ 0.6 mm − 1 = 4. Therefore, indicate "7 7 4" on the STEP display.

(5) Press the [L] key.

(6) Determine the proper stitch length. To obtain the proper stitch length, divide the actual stitch length by 1 pulse (0.1 mm). In this instance, 0.6 mm ÷ 0.1 mm = 6. Therefore, indicate "0 0 6" on the STEP display.

(7) Use the jog keys so that the needle tip accurately traces the pattern, starting from the initial stitch position Ⓐ, and traces to position Ⓑ.

(8) Press the [F] key. Command indicator "F" will illuminate.

(9) Use the jog keys to move the feed jig to the initial stitch position of the next sewing operation.

(10)Press the [L] key when the needle tip becomes aligned with the intitial stitch position Ⓒ.

(11)Use the jog keys so that the needle tip accurately traces from point Ⓒ → Ⓓ on the pattern.

(12)Press the [L] key at the final stitch position Ⓓ.

(13)Press number key [1] three times to indicate "**1 1 1**" on the STEP display. Then press the [E] key.

(14)The feed jig will move back to the origin.

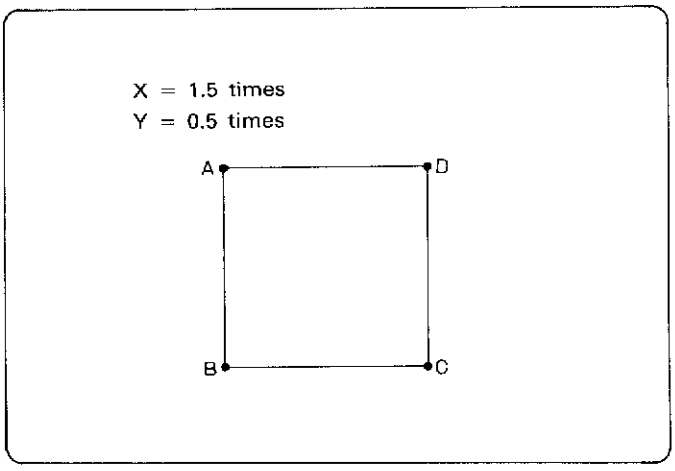
(15)Write the program to the floppy disk.

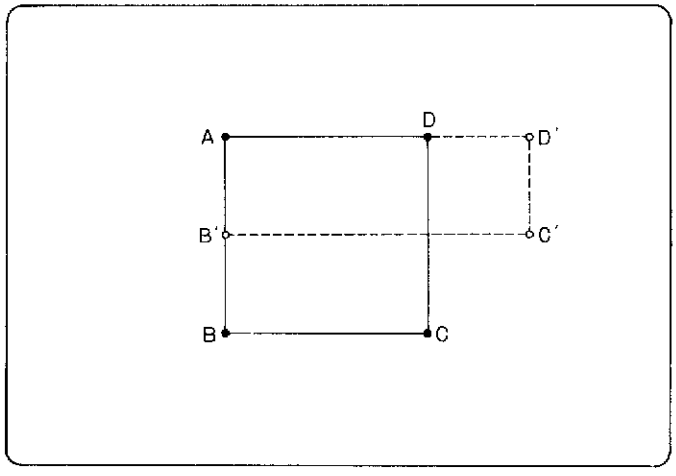
(Refer to page 24.)

14 To enlarge or reduce a pattern

- Patterns can be enlarged or reduced in on X-axis (horizontal) or Y-axis (vertical) independent of the other axis and without changing the stitch length.

A. If the initial stitch position remains unchanged.





Example: Program the pattern in the figure at left.

(1) Program the original pattern with the smoothing operation.
(Refer to page 9.)

Note 1:
The enlarging or reducing operation cannot be done unless the smoothing operation has been used to program the original pattern.

(2) To confirm that the pattern is accurately programmed, press the [R] key to move the feed jig to the origin, and press number key [9] three times to indicate "9 9 9" on the STEP display. Then press the [+] key. The needle tip will trace the pattern one stitch at a time according to the program.

(3) Press number key [1] three times at position A to indicate "1 1 1" on the STEP display. Then press the [E] key.

(4) The feed jig will move back to the origin.

(5) If the original pattern is to be written to the floppy disk, do so at this time.
*Note that if the [R] key is pressed after the [E] key, the enlarging or reducing operation can not be performed.

(6) Press number key [8], and indicate on the STEP display the amount of enlargement or reduction in the X direction. (For example, to enlarge the pattern 1.5 times in the X direction, indicate "8 1 5" on the STEP display.)

(7) Press the [M] key.

(8) Press number key [9], and indicate on the STEP display the amount of enlargement or reduction in the Y direction. (For example, to reduce the pattern 0.5 times in the Y direction, indicate "9 0 5" on the STEP display.)

(9) Press the [M] key.

(10) Press the [L] key.

(11) Press the [R] key. The feed jig will move back to the origin.

(12) Press number key [9] three times to indicate "9 9 9" on the STEP display, and then press the [+] key. The needle tip will move one stitch at a time from point A → B' → C' → D' → A in that order.

(13) When the needle tip returns to position A, press number key [1] three times to indicate "1 1 1" on the STEP display. Then press the [E] key. The feed jig will move back to the origin.

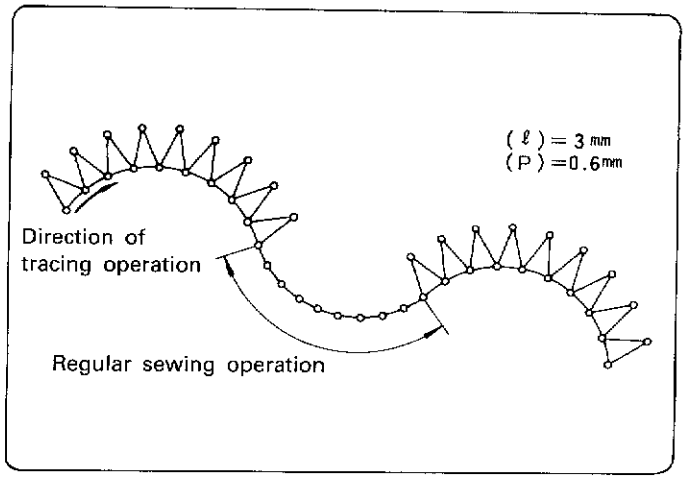
(14) Write the program to the floppy disk.
(Refer to page 24.)

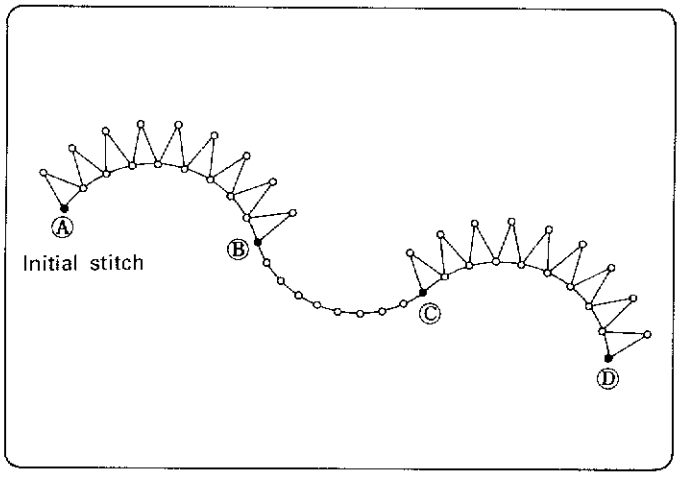
Note 2:
Perform the enlarging or reducing operation immediately after programming the original pattern. If the pattern has been written to the floppy disk and then read again, this program cannot be enlarged or reduced.

Note 3:
If a skipped start sewing operation is included in the program, the enlarging or reducing operation cannot be performed.

Note 4:
If the program exceeds the maximum dimensions (350 mm in the X direction and 250 mm in the Y direction) of the sewing area, the program data will be cancelled. Therefore, pay careful attention in programming the enlarging operation.

C. To program a regular sewing operation during a zigzag sewing operation.





Example: Program the pattern in the figure at left.

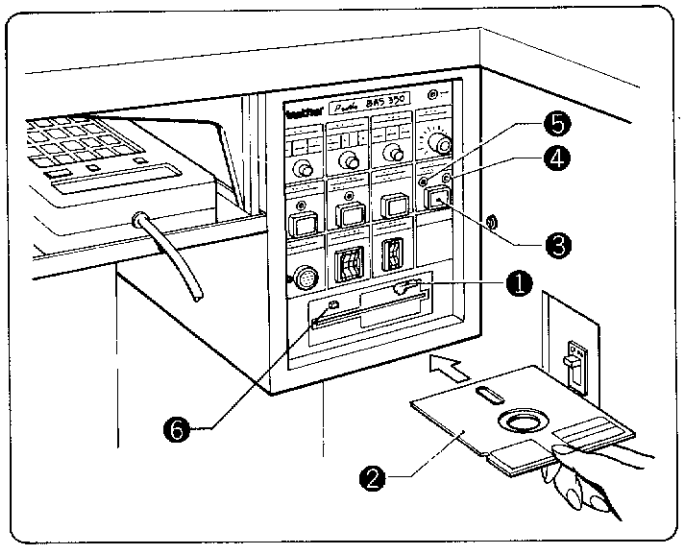
(1) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(2) Use the jog keys to move the feed jig to the initial stitch position.
(3) Align the needle tip with the initial stitch position Ⓐ on the outline of the needle movement.
(4) Specify the zigzag width. Use the number keys to indicate "7 7 □" on the STEP display. The last digit □ is the numeral obtained by dividing the stitch width (l) by the stitch length (P) − 1. Therefore, (l) ÷ (P) − 1. In this instance, 3 mm ÷ 0.6 mm − 1 = 4. Therefore, indicate "7 7 4" on the STEP display.
(5) Press the [L] key.
(6) Determine the proper stitch length. To obtain the proper stitch length, divide the actual stitch length by 1 pulse (0.1 mm). In this instance, 0.6 mm ÷ 0.1 mm = 6. Therefore, indicate "0 0 6" on the STEP display.
(7) Use the jog keys so that the needle tip accurately traces the pattern from the initial stitch position Ⓐ to position Ⓑ.
(8) Press the [F] key. Command indidcator "F" will illuminate.
(9) Use the direction keys to move the feed jig to the initial stitch position of the next sewing operation.
(10) Press the [L] key when the needle tip becomes aligned with the initial stitch position Ⓒ.
(11) Use the jog keys so that the needle tip accurately traces from point Ⓒ → Ⓓ.
(12) Press the [L] key at the final stitch position Ⓓ.
(13) Press number key [1] three times to indicate "1 1 1" on the STEP display. Then press the [E] key.
(14) The feed jig will move back to the origin.
(15) Press the [R] key. The feed jig will move back to the origin.
(16) Press number key [9] three times to indicate "9 9 9" on the STEP display.
(17) Press the [+] key to move the needle tip to position Ⓑ.
(18) Program the stitches from point Ⓑ to point Ⓒ.
(19) Press the [L] key at point Ⓒ.
(20) Press the [C], [1], and [+] keys in that order.
(21) Write the program to the floppy disk.
(Refer to page 24.)

15 When a command key is pressed incorrectly.

- The program will remain unchanged when command keys are pressed incorrectly. To clear a command which has been input incorrectly, simply press the ⊞ or the ⊟ key.

16 How to write program data to the floppy disk.

- Follow the procedure below to write program data to the floppy disk.



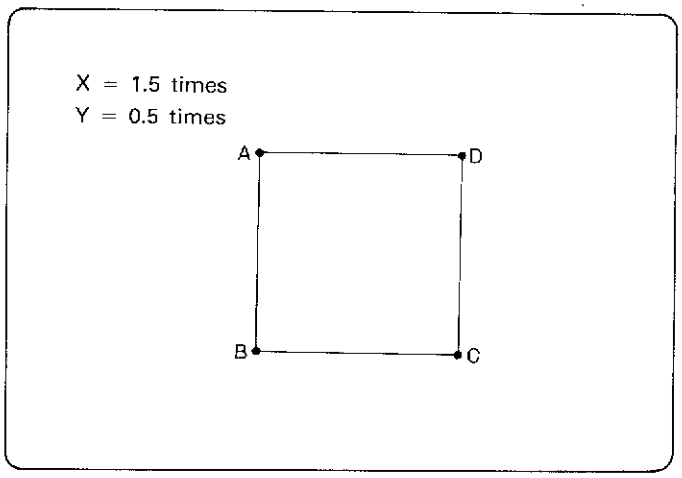
(1) Turn the floppy disk drive lever ❶ to the left to insert a floppy disk ❷.
(2) Insert the floppy disk ❷ with the label at the front top, and then close the FDD lever ❶.
(3) Press the write switch ❸.
(4) The read indicator ❺ will light after the write indicator ❹, indicating the program is currently being written to the floppy disk.
(5) After writing programmed data to floppy disk, a buzzer will sound indicating ❻ that the process is completed.

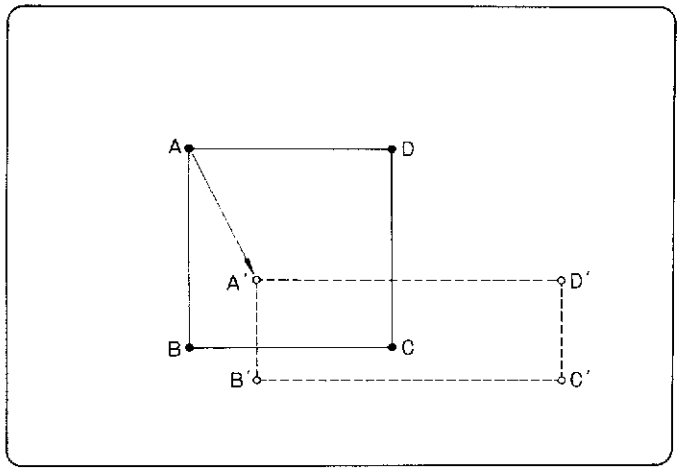
17 Sewing speed and stitch length during the sewing operation

- The sewing speed of the BAS-350 is automatically controlled according to the stitch length. The relationship between the sewing speed and the stitch length is listed in the table below.

Stitch length	Maximum sewing speed
0.1 – 2.4 mm	2,000 spm
2.5 – 4.4 mm	1,400 spm
4.5 – 6.3 mm	800 spm

B. To change the position of the initial stitch





Example: Program the pattern in the figure at left.

(1) Program the original pattern with the smoothing operation.
(Refer to page 9.)

Note 1:
The enlarging or reducing operation cannot be performed unless the smoothing operation has been used to program the original pattern.

(2) To confirm that the pattern is accurately programmed, press the [R] key to move the feed jig to the origin, and press number key [9] three times to indicate "9 9 9" on the STEP display. Then press the [+] key. The needle tip will follow the pattern one stitch at a time according to the program.

(3) Press number key [1] three times at position A to indicate "1 1 1" on the STEP display. Then press the [E] key.

(4) The feed jig will move back to the origin.

(5) If the original pattern is to be written to the floppy disk, do so at this time.
*Note that if the [R] key is pressed after pressing [E], the enlarging or reducing operation can not be performed.

(6) Press number key [8], and indicate on the STEP display the amount of enlargement or reduction in the X direction. (For example, to enlarge the scale of the pattern 1.5 times in the X direction, indicate "8 1 5" on the STEP display.)

(7) Press the [M] key.

(8) Press number key [9], and indicate on the STEP display the amount of enlargement or reduction in the Y direction. (For example, to reduce the scale of the pattern 0.5 times in the Y direction, indicate "9 0 5" on the STEP display.)

(9) Press the [M] key.

(10) Press the [L] key.

(11) Press the [R] key. The feed jig will move back to the origin.

(12) Use the jog keys to move the needle tip to the position at which the sewing operation is to begin (point A')

(13) Press the [L] key.

(14) Follow procedure (2) to confirm that the pattern is accurately programmed. The needle tip will move one stitch at a time from point A' → B' → C' → D' → A' in that order.

(15) When the needle tip returns to position A', press number key [1] three times to indicate "1 1 1" on the STEP display. Then press the [E] key. The feed jig will move back to the origin.

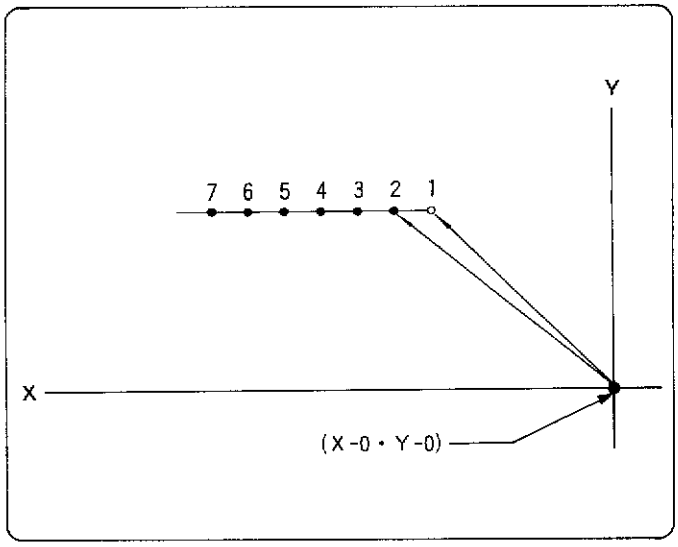
(16) Write the program to the floppy disk.
(Refer to page 24.)

Note 2:
Perform the enlarging or reducing operation immediately after programming the original pattern. If the pattern has been written to the floppy disk and then read again, the program cannot be enlarged or reduced.

Note 3:
If a skipped start sewing operation is included in the program, the enlarging or reducing operation cannot be performed.

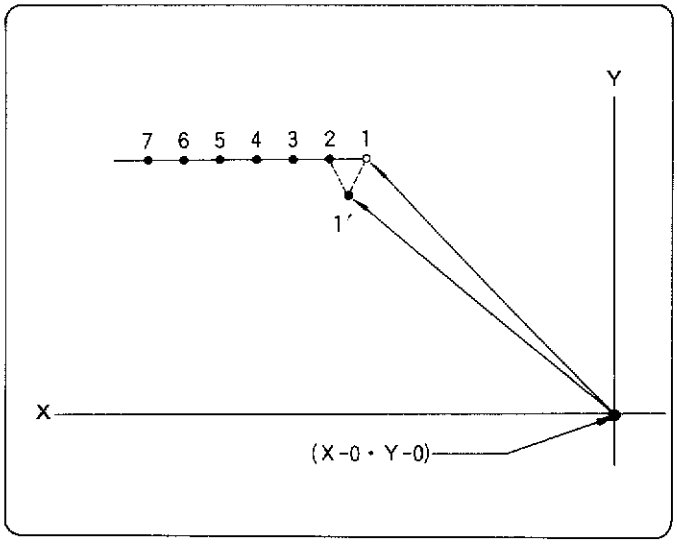
Note 4:
If the program exceeds the maximum dimensions (350 mm in the X direction and 250 mm in the Y direction) of the sewing area, the program data will be cancelled. Therefore, pay careful attention in programming the enlarging operation.

[2] To cancel the initial stitch of a stitch pattern which has already been programmed



(1) Set the power switch to the ON position.
(2) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(3) Insert the floppy disk containing the stitch pattern program and read the pattern.
(4) Press number key [1] and the [+] key. The needle tip will move to the initial stitch position of the program.
(5) Press the [C] key, number key [1], and the [+] key in that order. The initial stitch will be cancelled, and the needle tip will move to the second stitch position.
(6) Write the program to the floppy disk. (Refer to page 24.)
(7) Press the [P] key. The display will go out.

[3] To cancel the initial stitch of a pattern and reprogram the new initial stitch position



(1) Set the power switch ON.
(2) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(3) Insert the floppy disk containing the stitch pattern program and read the pattern.
(4) Press number key [1] and the [+] key. The needle tip will move to the initial stitch position.
(5) Use the jog keys to move the needle tip from the initial stitch position 1 to the new initial stitch position1'.

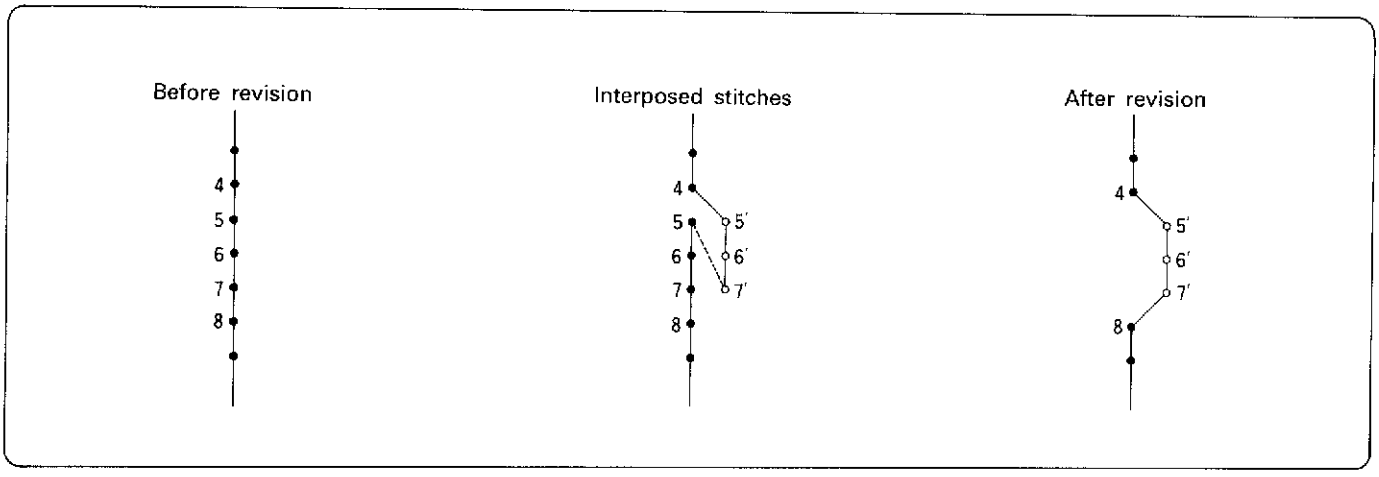
Note:
If the distance between initial stitch position 1 and the new initial stitch position 1' is greater than 6.3 mm, press either the [F] key or the [L] key, and then use the jog keys to move the needle tip to the new initial stitch position 1'. Then press the [L] key.

(6) Press number key [1], and the [-] key. The needle tip will move to the original initial stitch position 1.
(7) Press the [C], [1], and the [+] keys in that order. The original initial stitch position 1 will be cancelled, and the needle tip will move to the second stitch position 2.
(8) Write the program to the floppy disk. (Refer to page 24.)
(9) Press the [P] key. The display will go out.

HOW TO REVISE THE PROGRAM

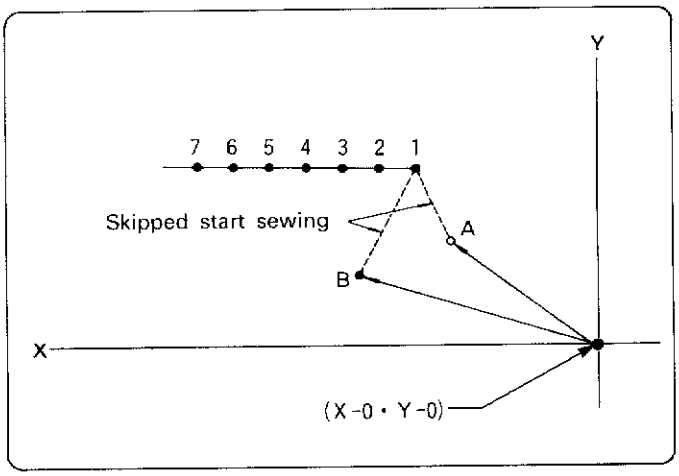
★ Use the manual operation mode when revising a program.
★ The [C] (clear) key can be used to make changes in programs previously programmed and stored or currently in progress.
★ The smoothing function will not work during program revisions. Any non-smoothing operation can be used for program revisions.

[1] To revise a section of a stitch pattern program from points 5, 6, and 7 to points 5', 6', and 7' according to alterations made in the stitch design



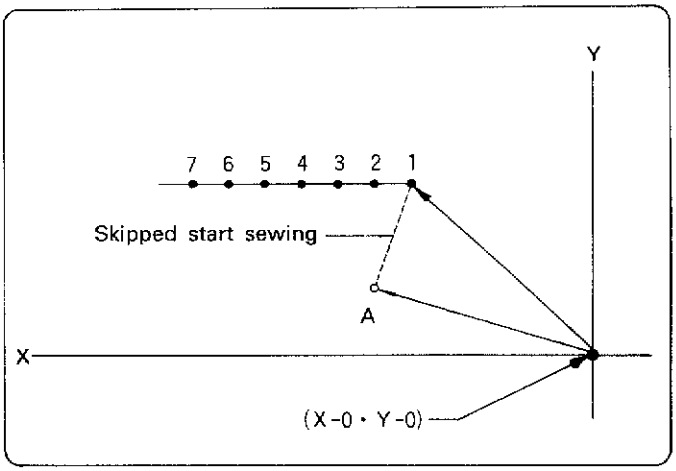
(1) Set the power switch to the ON position.
(2) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(3) Insert the floppy disk containing the stitch pattern program and read the pattern data to the memory.
(4) Press number key [9] three times to indicate "9 9 9" on the STEP display, and then press the [+] key. The feed jig will move one stitch at a time from the initial stitch position.
(5) When the needle tip is aligned with point 4, press either the [+] or the [−] key. The feed jig will stop. (If, however, the feed jig is accidentally moved beyond point 4, indicate on the STEP display the number of stitches past point 4, and then press the [−] key. The feed jig will move as many stitches as indicated on the STEP display in the reverse direction.)
(6) Use the jog keys to align the needle tip with point 5, and then press the [L] key. Point 5' will be programmed.
(7) Follow the above procedure to program points 6' and 7'.
(8) Use the number keys to indicate "0 0 1" on the STEP display, and then press the [+] key. The needle tip will move to point 5. Points 5', 6', and 7' will be interposed between points 4 and 5.
(9) Press the [C] key. Command indicator "C" will illuminate.
(10) Use the number keys to indicate on the STEP display the number of stitches to be cancelled. (In this instance, indicate "0 0 3" on the STEP display to cancel points 5, 6, and 7.)
(11) Press the [+] key. The needle tip will move to points 6, 7 and 8. The 3 points 5, 6, and 7 will be cancelled and the program will be revised so that the needle will move from point 4, 5', 6', 7', 8.
(12) Write the program to the floppy disk. (Refer to page 24.)
(13) Press the [P] key. The display will go out.

6 To shift the shunting point from point A to point B



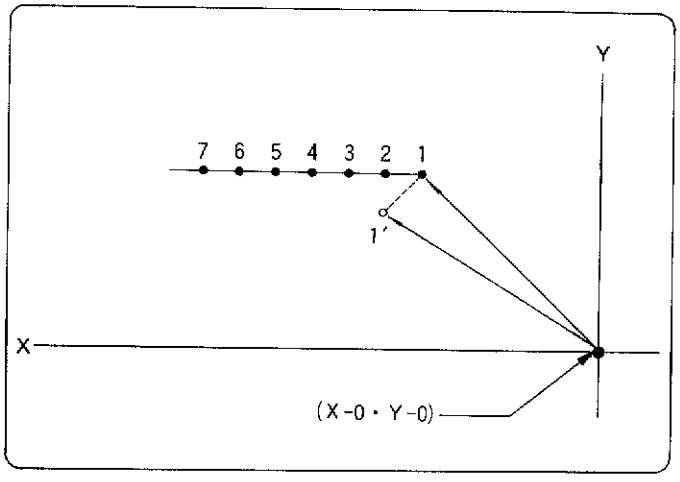
(1) Set the power switch ON.
(2) Press the P key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(3) Insert the floppy disk containing the stitch pattern program and read the pattern.
(4) Press number key 1 and the + key. The needle tip will move to shunting point A.
(5) Press the L1 key, and then use the jog keys to move the needle tip to the new shunting point B. Then press the L key.
(6) Press number key 1 and the − key. The needle tip will move to shunting point A.
(7) Press the C key, number key 1, and the + key in that order. Shunting point A will be cancelled, and the needle tip will move to the new shunting point B.
(11) Write the program to the floppy disk. (Refer to page 24.)
(12) Press the P key. The display will go out.

7 To cancel shunting point A



(1) Set the power switch ON.
(2) Press the P key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(3) Insert the floppy disk containing the stitch pattern program and read the pattern.
(4) Press number key 1 and the + key. The needle tip will move to shunting point A.
(5) Press the C key, number key 1, and the + key in that order. Shunting point A will be cancelled, and the needle tip will move to the initial stitch position.
(6) Write the program to the floppy disk. (Refer to page 24.)
(7) Press the P key. The display will go out.

4 To program a sewing operation prior to the initial stitch position of a pattern which has already been programmed

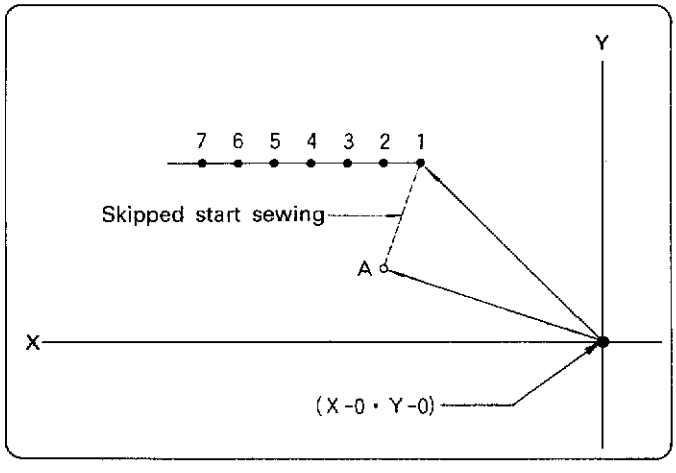


(1) Set the power switch ON.
(2) Press the P key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(3) Insert the floppy disk containing the stitch pattern program and read the pattern.
(4) Press number key 1 and the + key. The needle tip will move to the initial stitch position.
(5) Press either the U key, or the F key, and then use the jog keys to move the needle tip to position 1', which will be programmed as the new initial point. Write down the coordinates (the X and Y values) on a piece of paper, and press the L key.
(6) Use the jog keys and the L key between the new stitch position 1' and the previous initial stitch position 1 to program the additional sewing position.

Note:
Determine the number of additional sewing positions according to the distance and the stitch length between the new stitch position 1' and the previous initial stitch position 1.

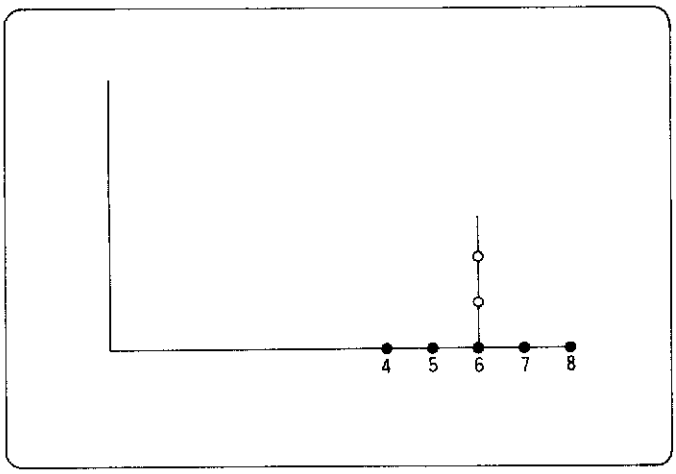
(7) Program the value of each of the coordinates in the X and Y directions.
(8) Press the R key. The feed jig will move back to the origin.
(9) Press number key 1 and the + key. The needle tip will move to the initial stitch position.
(10) Press the C key, number key 1, and the + in that order. The needle tip will move to the new stitch position 1', and a stitch position prior to the initial stitch position 1 will be programmed.
(11) Write the program to the floppy disk. (Refer to page 24.)
(12) Press the P key. The display will turn off.

5 To program a shunting point prior to the initial stitch position of a pattern which has already been programmed



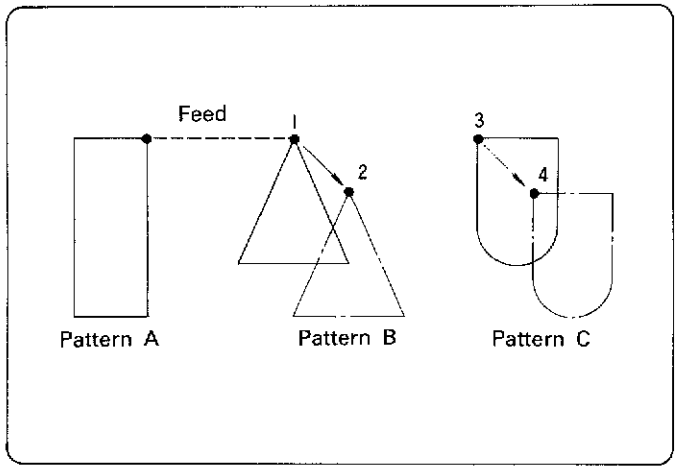
(1) Set the power switch ON.
(2) Press the P key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(3) Insert the floppy disk containing the stitch pattern program and read the pattern.
(4) Press number key 1 and the + key. The needle tip will move to the initial stitch position of the program.
(5) Press the F key, and then use the jog keys to move the needle tip to point A (the shunting point.) Then write down the coordinates (the X and Y values) on a piece of paper, and press the L key.
(6) Press key F and shift the feed jig the distance of the coordinates (the number indicated for X, Y) with the jog keys, and then press L.
(7) Press number key 2 and the − key. The needle tip will move from the initial stitch position to point A and then back to the initial stitch position.
(8) Press the C key, number key 1, and the + in that order. The needle tip will move to point A, and the shunting point will be added to the program prior to the initial stitch position.
(9) Write the program to the floppy disk.
(Refer to page 24.)
(10) Press the P key. The display will go out.

9 To cancel points 7 and 8 after locating an error in the program



(1) Press the C key. Command indicator "C" will illuminate.
(2) Use the number keys to indicate on the STEP display the number of steps to be cancelled. In this instance, points 7 and 8 are to be cancelled. Therefore, indicate "0 0 2" on the STEP display.
(3) Press the − key. The needle tip will move from point 8 to point 7 and then to point 6. Points 8 and 7 will be cancelled.
(4) Reprogram the stitch pattern from point 6.

10 Shifting of a pattern B that is in the middle of consecutively programmed patterns



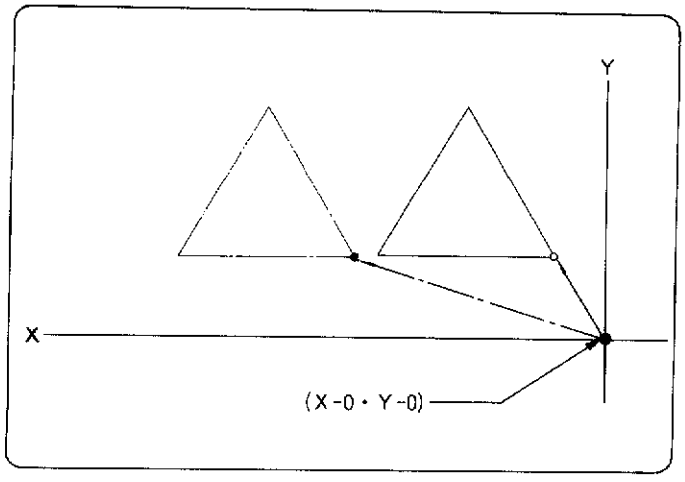
(1) Turn the power switch ON.
(2) Press the key P. The feed jig will move to the origin (X-0, Y-0), "0" will appear in the X, Y, and STEP indicators and command indicator lamp "F" will illuminate.
(3) Insert a floppy disk into the floppy disk drive.
(4) Press number key 9 three times until "9 9 9" appears in the STEP indicator, and then press the + key. The needle tip should now trace pattern A one stitch at a time.
(5) Press the + or − key so that the needle tip aligns with the first stitch of pattern B. The feed jig will stop. (If the feed jig moves past the first stitch of pattern B, use the number keys to display that number of stitches in the STEP indicator and then press the − key. The feed jig will now return the number of stitches displayed in the indicator.)
(6) Press number keys display "7 7 7" in the STEP indicator, and then press the key F.
(7) Use the jog to move the needle tip from point 1 to point 2, and then press key L.

Note:

If a third pattern "C" follows pattern B, pattern C will automatically follow pattern B and shift as shown in the figure above. If this is undesirable, follow the same procedure as in steps (4) – (7) above to move the needle tip to point 3, and use the "7 7 7" F command to return pattern C to its original position.

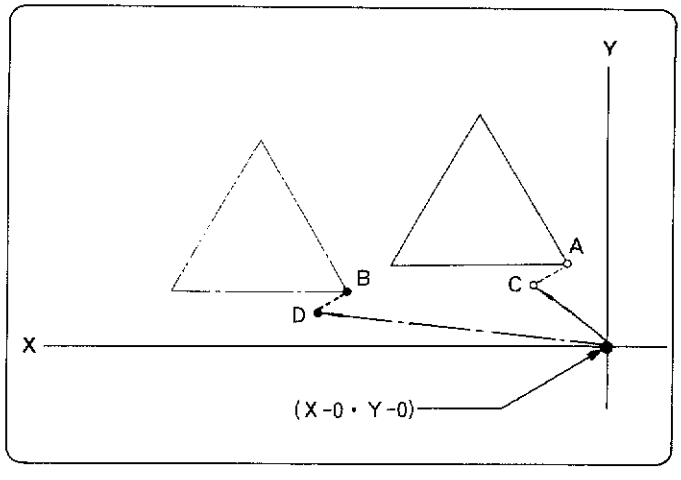
[8] To parallel-shift a programmed stitch pattern in the X direction or Y direction

A. When the initial stitch is the beginning of the sewing operation.



(1) Set the power switch ON.
(2) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(3) Insert the floppy disk containing the stitch pattern program and read the pattern.
(4) Use the jog keys to move the needle tip to the new starting position of the pattern. Then press the [L] key.
(5) Write the program to the floppy disk. (Refer to page 24.)
(6) Press the [P] key. The display will go out.

B. When the initial stitch is the shunting point of the sewing operation.



(1) Set the power switch ON.
(2) Press the [P] key. The feed jig will move to the origin (X-0, Y-0), "0" will be indicated on the STEP display, and command indicator "F" will illuminate.
(3) Insert the floppy disk containing the stitch pattern program and read the pattern.
(4) Press number key [2] and the [+] key. The needle tip will move to point A.
(5) Use the jog keys to move the needle tip to point B. (Do not press the [L] key.)

Note:
When the distance from point A to point B exceeds 6.3 mm, press either the [L] key or the [F] key, and then use the jog keys to move the needle tip to point B.

(6) Write down the coordinates (the X and Y values).
(7) Press the [R] key. The feed jig will move back to the origin.
(8) Press number key [1] and the [+] key. The needle tip will move to point C.
(9) Use the jog keys according to the value of the coordinates in the X and Y direction to move the needle tip to point D.
(10) Turn the pulley to mark point D with the needle tip so that the needle tip can easily be brought to this position.
(11) Turn the pulley to raise the needle to the needle up position.
(12) Press the [R] key. The feed jig will move back to the origin.
(13) Use the jog keys to move the needle tip to point D (i.e., to where the mark was made.) Then press the [L] key.
(14) Write the program to the floppy disk. (Refer to page 24.)
(15) Press the [P] key. The display will turn off.

13 Multiple seam pattern programming (new multiple seam)

※ The programming method described is an improved version of the multiple seam programming method used until now. The previous multiple seam programming method can still be used.

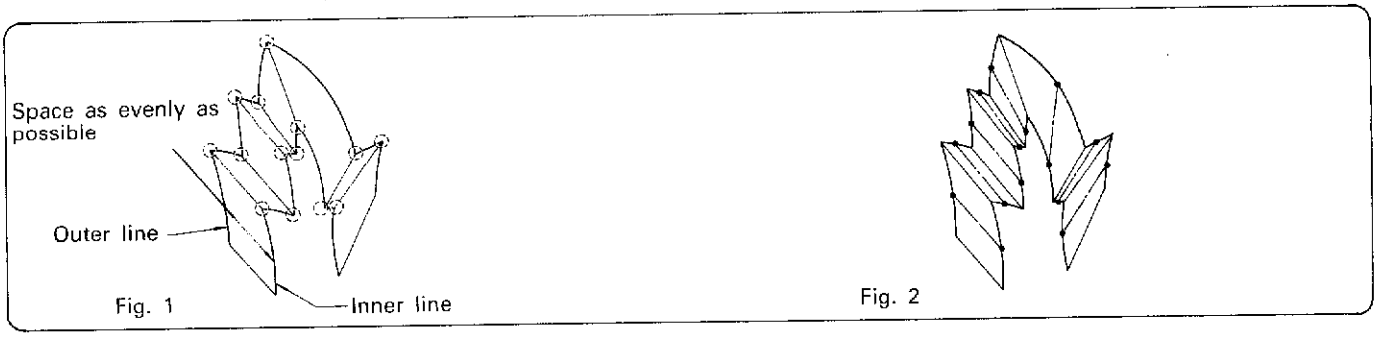


Fig. 1

Fig. 2

(Programming)

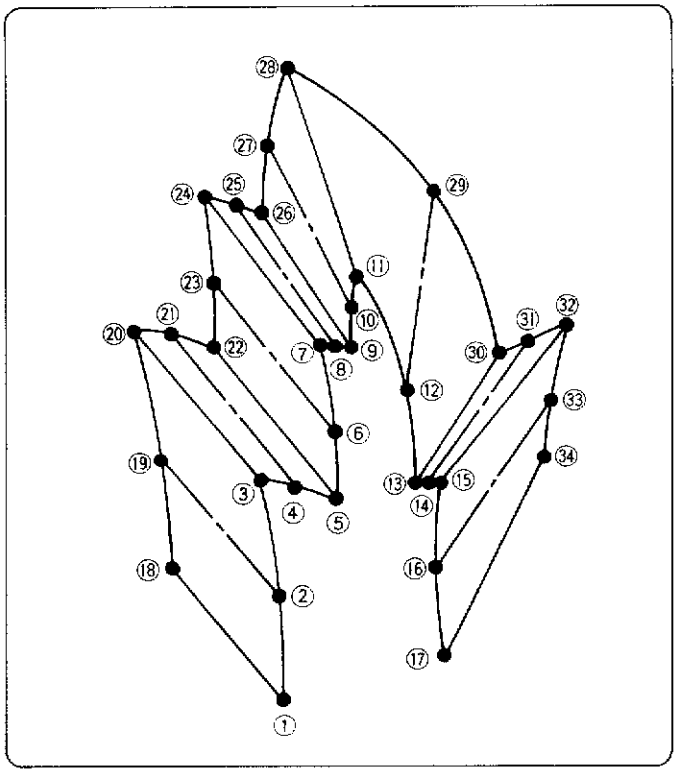
(1) Estimate and draw the inner and outermost lines of the pattern. When drawing these lines, keep the spacing as even as possible.

(2) Connect the pivot points on the inner line with the correspoinding pivot points on the outer line as shown in Fig. 1.

(3) Select a minimum of one other point between each of these pivot points and connect them as shown in Fig. 2.

※Select these points according to the same smoothing method used previously.

※Be sure to space the intermediate points evenly between the pivot points on both the inner and outer lines.



Example:

Note 1:

Either the inner line or the outer line may be programmed first but sewing will start from the line programmed first.

Note 2:

The forward direction (sewing direction) is determined by the programming order.

(1) Turn the power switch ON.

(2) Press key [P]. The feed jig will move to the origin (X-0, Y-0), "0" will be displayed in the X, Y, and STEP indicators, and command indicator "F" will illuminate.

(3) Use the jog key to move the needle tip to position ①. Now press key [8] three times to display "8 8 8" in the STEP indicator, and then press key [L].

※Set the stitch length last. Note, also, that it is not necessary to depress key [M] as before.

(4) Use the jog key to bring the needle tip to position ② and then press key [L].

(5) Again, use the jog key to bring the needle tip to position ③. Next, display "7 8 9" in the STEP indicator, and press key [L]. Be sure to program "7 8 9" [L] at every pivot point.

(6) Continue programming in this way through position ⑰.

※If a certain interval is to be joined with a straight line, move the needle tip from one pivot point directly to the next, and then program the same "7 8 9 " [L]. Furthermore, if a certain interval is programmed as a straight line, for example from ⑦ to ⑨ above, be sure to program the corresponding interval, ㉔ to ㉖ above, as a straight line, too.

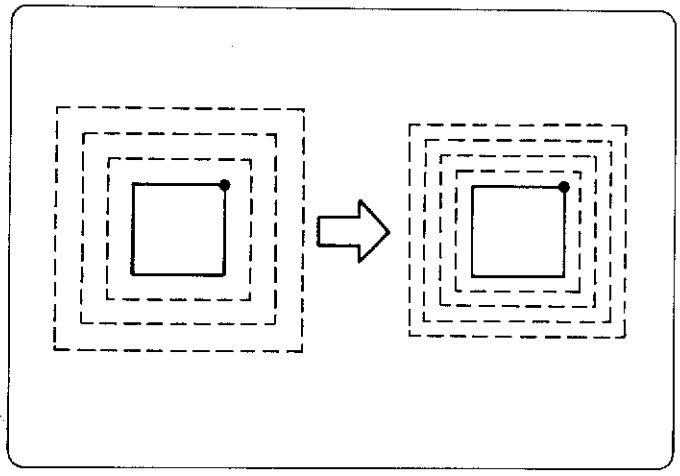
(7) After position ⑰ is programmed, press key [F], and then use the jog key to move the needle tip to position ⑱.

(8) Program as above through position ㉞.

※Be sure to program so that the same [L] and "7 8 9 " [L] commands are entered at corresponding positions on both the inner and outer lines. If points are not correspondingly programmed on the inner and outer lines, the machine will automatically back-up to the previous point. Reprogram from there.

11 Reprogramming a multiple seam pattern

- If a multiple seam pattern cannot be sewn as programmed, or if the stitch length or width commands are to be changed, the current data in the memory programmed in the smoothing process can be used as is for reprogramming.

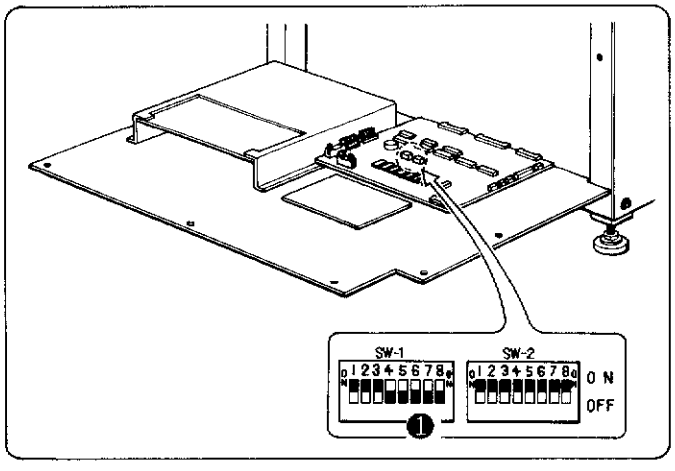


(1) Press key [R]. The feed jig will move to the origin.
(2) Press number key [1] and the [+] key. The feed jig will move to the sewing start position.
*If a shunting point has been programmed, cancel it and restart at the sewing start position. (See page 28.)
(3) Use the number keys to set the stitch length, and then press key [M].
(4) Use the number keys to set the width, and then press key [M].
(5) Use the number keys to indicate how many rows are to be sewn, and then press key [M].
(6) Press key [L].

Note 1:
Corrections of multiple sewing patterns cannot be made with data stored on the floppy disk.
Note 2:
If the multiple seam pattern is to be sewn repeatedly but not necessarily as programmed, set the stitch length and width somewhat smaller to simplify sewing.
Note 3:
When key [L] is pressed, the STEP indicator will display "5 □ □" and the final two digits will decrease consecutively while an audible indicator sounds notifying the operator that a pattern is being programmed. When the indicator ceases to sound, the needle tip will begin to move slowly.

12 Unification of machine speed regardless of stitch length (Low Speed Conversion)

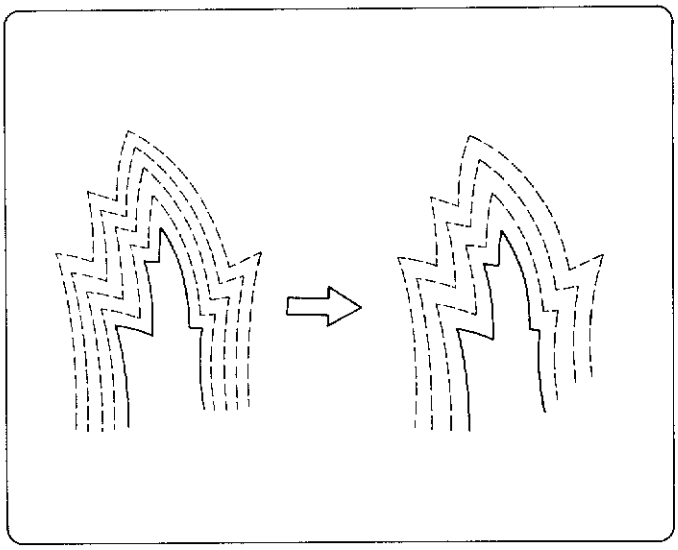
- This machine automatically regulates machine speed according to stitch length. However, it is now possible to use a uniform speed for all stitch lengths with this new program, thus making final stitching of zigzag patterns and in extremely thick materials easier and prettier than before.



(1) When programming is completed, press "1 1 2" [E] instead of "1 1 1" [E]. This simple operation automatically sets a uniform sewing speed for all stitch lengths.
Note 1:
Floppy disks for 800 spm will retain the previous machine speeds if programmed with "1 1 1" [E].
Note 2:
If dip switch ❶ 1 – 7 is ON, the machine speed will be 800 spm regardless of the program on the floppy disk unless low speed conversion is programmed.

14 Reprogramming a multiple seam pattern (new multiple seam)

- It is possible to revise previously programmed data in memory composed by the smoothing method in order to change to the stitch length or width. Perform the following steps.



(1) Press key [R]. The feed jig will move to the origin.
(2) Press number key [1] and the [+] key. The needle tip will move to the sewing start position.
※Cancel any shunting points, and start as usual from the sewing start position. (See page 28.)
(3) Use the number keys to reset the stitch length and then press key [M].
(4) Use the number keys to indicate how many rows are to be sewn, and then press key [M].
(5) Press key [L].

Note:
Multiple seam patterns stored on a floppy disk cannot be revised.

◆ Cautions during programming

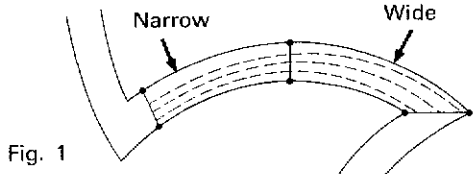


Fig. 1

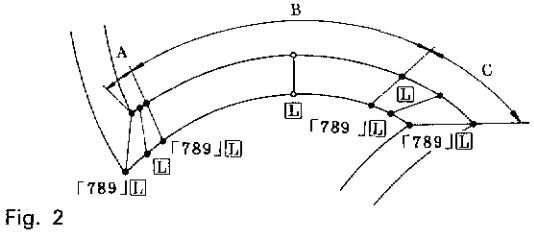


Fig. 2

- If the sewing angle changes suddenly and sharply, multiple seam lines will become erratically narrow and wide as shown in Fig. 1 at left. To avoid this, select several points near the pivot points and curve points and smooth the lines.
※Figure 2 at left shows the pattern divided into three section, A, B, and C.

Note:
A maximum of 200 points can be plotted on one side. If 200 points are exceeded on one side, the machine will automatically back-up one point. If this happens, use key [F] to proceed to the outer line and program points on it, or replot the inner line with fewer points.

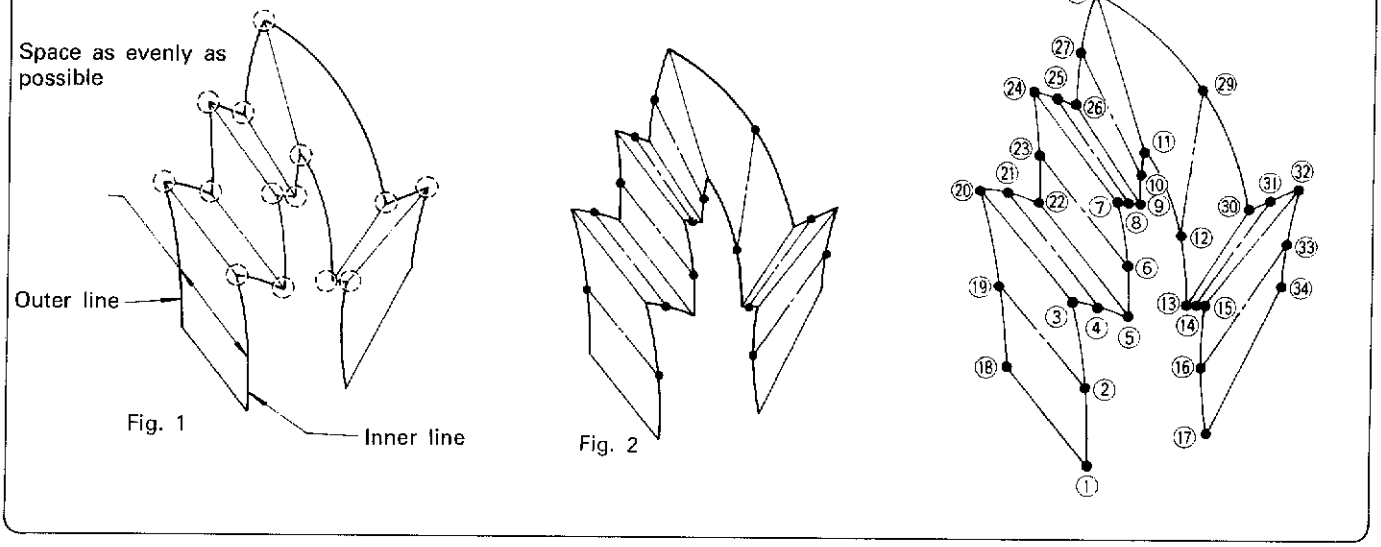


Fig. 1

Fig. 2

(9) Use the number keys to indicate the desired stitch length in the STEP indicator. Stitch length indication is the desired stitch length divided by one pulse (0.1 mm). For example, a stitch length of 1.6 mm is indicated as 1.6 ÷ 0.1 = 16, or a STEP indication of "0 1 6".

(10) Press key [M].

(11) Press number key [5], and then indicate in how many multiple rows the pattern is to be sewn. For instance, if four rows of the pattern are desired, display "5 0 4" in the STEP indicator.

(12) Press key [M].

※Either the stitch length or the row number can be programmed first.

(13) Press key [L].

※If neither the stitch length nor row number command is specified an alarm will sound. If the alarm sounds, reprogram from step (9) through (13).

(14) The machine will now calculate the programmed pattern steps. The display will indicate the row number being calculated until the final row number is calculated and stored.

※An audible indicator will sound while the machine is calculating.

(15) When both calculations and programming are ended, press number key [1] three times and display "1 1 1" in the STEP indicator. Press key [E].

※Note that it is possible to continue from position ㉞ to another pattern, or program another multiple seam pattern.

Note 3:

The feed jig will not trace the programmed stitch pattern after calculations are over as conventional multiple seam programming did. Perform the following steps to check the program.

(1) Press key [R]. The feed jig will move to the point of origin.

(2) Press number key [1] and the [+] key. The needle tip will move to the sewing start position.

(3) Press number key [9] three times to display "9 9 9" in the STEP Indicator, and then press the [+] key.

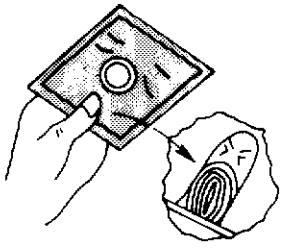
(4) The needle tip will begin to trace the pattern one stitch at a time.

※It is also possible to press number key [9] three times to display "9 9 9" in the STEP indicator and then press the [−] key to trace the pattern in reverse when programming is completed.

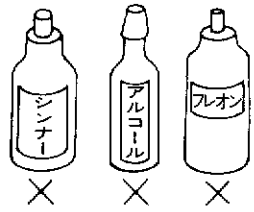
FLOPPY DISK CARE AND STORAGE

※ Be sure to read and follow the below guidelines.

1. Do not touch the inside surface (i.e. recording area) of the floppy disk.
This can make the floppy disk unusable and prevent readout of currently stored patterns.

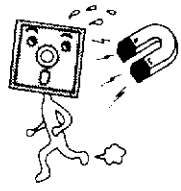


2. Do not attempt to clean the disk with any fluid or dry material.
Thinner, benzene, alcohol, and water will irreparably damage the disk.



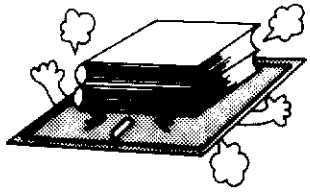
Thinner Alcohol Fluoro-solvent

3. Keep the floppy disks away from any magnets and magnetic fields.
Magnetic fields can completely erase floppy disk contents. Particularly avoid use near paperweights containing a magnet.

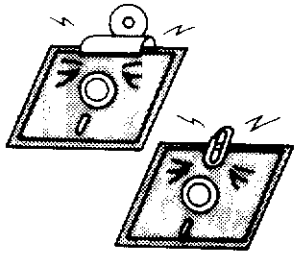


4. Do not bend or fold the floppy disk.
Although the disk will bend quite easily, this could render the disk unusable.

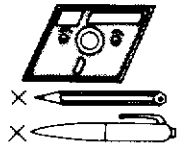
5. Do not rest other objects on top of the floppy disk.
Heavy objects could render the disk unusable.



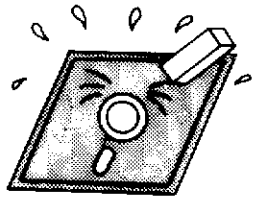
6. Do not clip the floppy disk to papers or other disks with paperclips or spring clips.



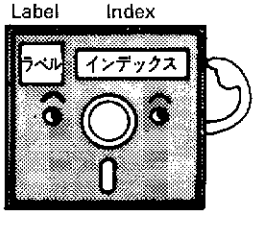
7. Use felt markers or similar instruments to write on the labels.
Do not use ball point pens, pencils, or other instruments requiring much pressure.



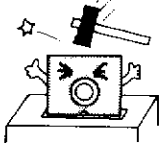
8. Do not use erasers on the labels. The powder and rubbings from the eraser could damage the disk.



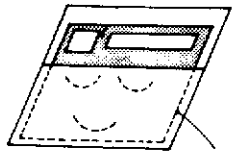
9. Be sure to attach the index label in the correct place.
Be sure to attach the index label to the right of the brand label.
Do not attach another label on top of a previous label.



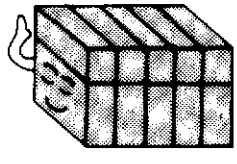
10. Insert floppy disks into the drive carefully.
Rough handling may bend or crease the disk, rendering it unusable.



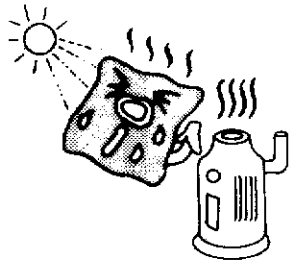
11. Be sure to store floppy disks in their envelopes.
The envelope protects the disk from dust and damage.



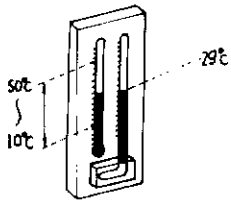
12. Store disks in floppy disk file boxes, and stand the boxes up.
Storing disks out of the boxes or on the side may result in damage and data errors resulting from dust or disk bending.



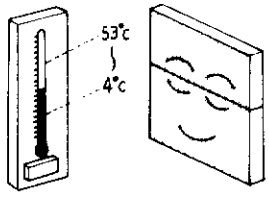
13. Do not store the disks in direct sunlight or near hot stoves or heaters.



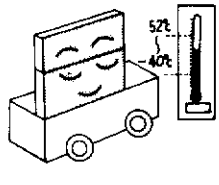
14. Floppy disks can be used within the following ranges:
temperature: 10 – 50°C
humidity: 20 – 80% RH
Avoid rapid temperature changes at all times and particularly when the wet bulb temperature is below 29°C.



15. Store in the following ranges:
temperature: 4 – 53°C
humidity: 8 – 80% RH



15. Ship under the following conditions:
temperature: −40 – +53°C
humidity: 8 – 90% RH
Be sure to wrap the floppy disks in a sturdy box inside a static prevention bag.



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