Extensive range of Singer Sewing Machine manuals
SINGER®

INSTRUCTION MANUAL
for
Making Sewing Patterns

1669U MACHINE
CONTENTS

1. Preparation ................................................................................................................. 2

2. Execution of Program .................................................................................................... 3

3. How to Prepare Patterns ................................................................................................. 4
   1. To Prepare a Pattern Formed with Straight Lines ...................................................... 7
   2. To Make a Circle ........................................................................................................ 9
   3. To Make an Arc .......................................................................................................... 10
   4. To Make Free Curved Line ........................................................................................ 11
   5. To Set Zigzag Stitch ................................................................................................. 12
   6. To Clear Zigzag Stitch ............................................................................................. 15
   7. Setting of thread trimming while sewing ................................................................. 16
   8. To Set Fabric Feed ................................................................................................. 17
   9. To Clear Fabric Feed .............................................................................................. 17
  10. To Change Stitch Length ......................................................................................... 18
  11. To Change Max. Sewing Speed ............................................................................... 19
  12. Mirror Image ........................................................................................................... 20
  13. Monogramming ........................................................................................................ 21
  14. To End Pattern Preparation .................................................................................... 22

4. To Modify Pattern ........................................................................................................ 23

5. To Enlarge or Reduce Pattern Size ............................................................................ 31

6. To Move Pattern .......................................................................................................... 32

7. To Select Pattern .......................................................................................................... 33

8. Options ....................................................................................................................... 35

9. Description of Tablet ................................................................................................. 36
   1. Specification of Tablet ............................................................................................ 36
   2. Button Cursor .......................................................................................................... 36
   3. Function Switches .................................................................................................... 37

10. Sewing Data ............................................................................................................... 38

11. How to Write Sewing Data into "EEPROM" .............................................................. 39
1. Preparation

1) Specification for personal computer

- **Machine**: IBM PC/AT compatible personal computer
- **CPU**: 486DX2 - 33MHz or more (Pentium-60MHz or more is recommended)
- **Memory**: 8 MB or more
- **Floppy disk**: 3.5 inch, 2HD/1.44MB disk drive 1 unit or more
- **Hard disk**: 5 MB or more (3 MB required for program software)
- **CRT**: 640 X 480 dot, 16 colors or more
- **OS**: MS-DOS 5.0 or more

2) Start up the personal computer in "MS-DOS" mode.
   (With regard to the startup method, refer to the service manual furnished with the personal computer.)

3) Copy all system disks (1 and 2) to hard disks.
   Example: When copying from drive A to hard disk drive C, type as shown below and press <ENTER> key.
   ```
   copy a:*.* c:
   ```

4) Check to determine whether the programs listed below have been copied.
   ```
   Sin1669.bat
   bold.chr
   egavag.bgi
   trip.chr
   569_file.dt
   569com.exe
   569edit.exe
   569file.exe
   569mdf.exe
   569open.exe
   569ptm.exe
   569scl.exe
   569ptsel.exe
   sin_hex.exe
   ```
   Example: When copying to hard disk drive C, type as shown below and press <ENTER> key.
   ```
   dir c:
   ```
2. Execution of Program

1. Preparation

(1) Make sure that personal computer is connected to tablet with RS232C cable.  
   (Use serial connector No.1 on the personal computer side.)
(2) Switch the personal computer "ON" and then start up the personal computer in  
   "MS-DOS" mode.
   Input the following to personal computer.
   (Example: When program has been copied to hard disk drive "D")
   Type "D" and press <ENTER> key.
   The display indicates the following,
   Type as shown below and press <ENTER> key.
   **SIN1669**
   The program is put into execution.
   * By pressing any key during the opening display, the display can be returned to the menu  
   display.

2. Menu

   When a tablet is used, switch the tablet 'ON' after the menu display has appeared.
   Select the desired item with cursor key and press <ENTER> key.
   The program for the item selected is put into execution. The following items are  
   contained in the menu.

   **PATTERN MAKE**
   **PATTERN MODIFY**
   **PATTERN COMBINATION**
   **PATTERN SCALE**
   **PATTERN SELECTION**
   **OPTIONS**

   * In case this system is used for the first time, be sure to select "OPTIONS" and put this  
   into execution in order to determine where pattern data is loaded and saved . (See Page  
   35 "OPTIONS")
   * In case no data is input within a given period of time, "Display Screen Protection Program"  
   appears on the display. This display changes to the menu display when any key is  
   depressed.

![Image of menu display screen]

**Fig.1 Menu Display Screen**
3. How to Make Patterns

Keys to be Used:

<Enter> Key: To input points
<Delete> Key: To delete data incorrectly input
<Arrow> Key: To move arrow pointer
<Number> Key: To input values
<Back Space> Key: To delete values incorrectly input

List of Function Keys by Function in Pattern Mode:

The following functions can be selected by pressing the appropriate function key while making pattern.

F1 key: CIR, ARC
To make a circle or an arc. (See items 3-2 and 3-3)

F2 key: SPLINE
To make a free curved line (See item 3-4)

F3 key: ZZ, CLR-ZZ
To set or clear zigzag stitching (See items 3-5 and 3-6)

F4 key: TRIM
To set thread trimming (See item 3-7)

F5 key: FEED
To set or clear fabric feed (See items 3-8 and 3-9)

F6 key: STI-LENG
To change stitch length (See 3-10)

F7 key: MAX-SPEED
To change max. sewing speed (See item 3-11)

F8 key: OPTION

F9 key: OPTION

F10 key: Change Menu
To change menu item
When <F10> key is selected, the functions of keys will be changed as follows.

F1 key: OPTION
F2 key: OPTION
F3 key: OPTION
F4 key: OPTION
F5 key: MIRROR
    Mirror image of pattern (See item 3-12)
F6 key: MONOGRAM
    Monogramming (See item 3-13)
F7 key: CHANGE DEVICE
    Change of pattern input device
F8 key: MDF END
    Completion of pattern modification
F9 key: END
    Completion of preparation of pattern (See item 3-14)
F10 key: Change Menu
    Change of menu items
Example of How to Prepare a Square Pattern

1) Select "PATTERN MAKE" on the menu and press < ENTER > key.
2) Display shows the following.
   INPUT DEVICE SELECT
   F1 : TABLET
   F2 : CURSOR
   PUSH THE <F1> OR <F2> KEY.

3) Press either < F1 > or < F2 > key to select input device.
   When < F1 > key is pressed, tablet is selected as an input device.
   When < F2 > key is pressed, input by cursor keys is selected.
   In case tablet is selected, input the original point of stitch pattern of a master pattern
drawing by using button cursor on the tablet. Also, stitch pattern should be written on
a master pattern drawing in a scale of 5 times. (See Fig. 2)

4) The display indicates the following.
   INPUT PATTERN NAME
   (MAXIMUM LENGTH OF FILE NAME IS 8 CHARACTERS.)

5) Input the name of stitch pattern with < ENTER > key. (Example: When the stitch
   pattern is named '1669U')
   INPUT PATTERN NAME
   (MAXIMUM LENGTH OF FILE NAME IS 8 CHARACTERS.)
   1669U.<ENTER>

* Max. number of characters for a pattern name that can be input is 8 characters.

Fig. 2  Original Point of Stitch Pattern
1. To Prepare a Pattern Formed with Straight Lines
   Make a pattern in the manner described below. (See Fig. 3)

   ![](image)

   **Fig. 3 Pattern Input Display Screen**

   1) Pattern input display screen appears with the following message.

   
   SET START
   POSITION

   2) Input the start point of sewing the pattern. (When data is input with keys, refer to the
   instructions given under the heading of 'Keys to be Used'. (See Page 4))
   Move pointer to (X=70, Y=135) and input the desired points.

   3) The following message appears on the display.

   STLENG
   = 100

   4) By using <Back Space> key, delete the value shown, input stitch length and then press
   <ENTER> key.
   (Example: When stitch length is set for 3mm)

   STLENG
   = 30 <ENTER>

   * Stitch length between 0.2 and 10mm can be input.
   When input stitch by stitch, input as STLENG = 100.
   In case the distance between 2 points exceeds 100 (10 mm), point or points will be
   added automatically.
5) Move pointer to (X=230, Y=135) and input the desired points.

6) Move pointer to (X=230, Y=165) and input the desired points.

7) Move pointer to (X=70, Y=165) and input the desired points.

8) Move pointer to (X=70, Y=135) and input the desired points.

9) End pattern preparation by making reference to the procedures described under the heading "To End Pattern Preparation" on Page 22.
2. To Make a Circle
   Make a pattern in the manner described below. (Example: See Fig. 4)
   1) Press <F1> key.
   2) The following message appears on the display.
      F1:CIRCLE
      F2:ARC
   3) Press <F1> key.
   4) The following message appears on the display.
      CIRCLE
      PUSH
      <F1> OR <F2>KEY.
      F1:YES    F2:NO
   Press <F1> key.
   (To discontinue the making of a circle, press <F2> key.)
   5) The display indicates the following.
      Input CIR
      1ST Point

6) Input point B. (Example: See Fig.4-1)
7) The display indicates the following.
   Input CIR
   2ND Point

8) Input point C. (Example: See Fig.4-2)
9) The display indicates the following.
   WHAT A MOMENT

   Make a circle which passes through points A, B and C.(Example: See Fig.4-3)

* When point A and C cannot be connected to form a circle (due to
  the location of points being on a straight line, etc.), an error
  message appears on the display.
  In this case, correct the location of points and input data again.
4. To Make a Free Curved Line
   Follow the steps described below when making a free curved line. (Example: See Fig.6)

1) Press < F2 > key.
2) The display indicates the following.
   **SPLINE**
   **PUSH**
   `<F1> OR <F2> KEY.`
   **F1: YES    F2: NO**

   Press < F1 > key.
   (To discontinue the making of free curved line, press < F2 > key.)
3) The display indicates the following.
   **IN OVER 3**
   **SPL_POINT**

4) Input points B to D in sequence. (Example: See Fig. 6-1, 2 and 3)
5) Press F10 key.
6) The display shows the following.
   **WHAT A MOMENT**
   Make a free curved line. (See Fig. 6-4)

* The more points input, the smoother curved line formed. Free curved line cannot be made unless 3 points or more are input.

Fig. 6  Making of Free Curved Line
5. To Set Zigzag Stitching
   Follow the steps described below when setting zigzag stitching. (Example: See Fig. 7)
   1) Press <F3> key.
   2) The display indicates the following.
      F1:ZIG ZAG
      F2:CLR_ZIG ZAG
   3) Press <F1> key.
   4) The display indicates the following.
      ZIG ZAG
      PUSH
      <F1> OR <F2>KEY.
      F1:YES    F2:NO
      Press <F1> key.
      (To discontinue setting of zigzag stitching, press <F2> key.)
   5) The display indicates the following.
      Select
      Z/Z base line
      F1:'L' F2:'C' F3:'R'
      PUSH <F1>, <F2>
      OR <F3>KEY.
      Set needle position to the left or center or right by pressing <F1> or <F2> or <F3>
      key.

Left Needle Position  Center Needle Position  Right Needle Position
6) The display indicates the following.
   ZIG ZAG
   WIDTH=50_<ENTER>

7) Input zigzag stitch width and press <ENTER> key. (Example: When zigzag stitch width is set for 4mm)
   ZIG ZAG
   WIDTH=40_<ENTER>

8) The display indicates the following.
   ZIG ZAG
   STITCH=1_<ENTER>

9) Input the number of zigzag stitches and press <ENTER> key.
   (Example: When the number of zigzag stitches is 2)
   ZIG ZAG
   STITCH=2_<ENTER>

10) The display indicates the following.
    ZIG ZAG
    PITCH=10_<ENTER>

11) Input the number of zigzag pitches and press <ENTER> key.
    (Example: When the number of zigzag stitches is 0.5mm)
    ZIG ZAG
    PITCH=5_<ENTER>

12) Input the end point of zigzag stitching. (Example: See Fig.7)

   * Once zigzag stitching is set, sewing of circle or arc or free curved line will become zigzag stitching.
6. To Clear Zigzag Stitching
   Follow the steps described below when clearing zigzag stitching.
   1) Press < F3 > key.

   2) The display indicates the following.
      F1: ZIG ZAG
      F2: CIR ZIG ZIG

   3) Press < F2 > key.
   4) The following message appears on the display.
      CIR Z/Z
      PUSH
      <F1> OR <F2> KEY.
      F1: YES     F2: NO

      Press < F1 > key.
      (To discontinue clearing of zigzag stitching, press < F2 > key.)
7. Setting of thread trimming while sewing
   Trimming position must be set in the manner described below.
   (Example: See Fig. 8)

1) Press <F4> key. The following message appears on the display.
   TRIM
   PUSH
   <F1> OR <F2> KEY.
   F1: YES  F2: NO
   Press <F1> key. (To discontinue setting of trimming position, press <F2> key.)

   Trimming position was set at point A. (Example: See Fig. 8-2)

2) Input the next point. (Example: See Fig. 8-3)

   * Other functions cannot be used unless sewing start point B after trimming is input.
   Only presser foot moves without sewing up to the next point of trimming data.

---

Fig. 8  Thread Trimming
8. To Set Fabric Feed (feeding of work piece without sewing)
   Follow the steps described below when setting fabric feed.
   (Example: See Fig. 10)

1) Press <F5> key.
2) The following message appears on the display.
   FEED
   PUSH
   <F1> OR <F2>KEY.
   F1:YES  F2:NO

   Press < F1 > key.
   (To discontinue setting of fabric feed, press < F2 > key.)
3) Fabric feed takes place from point A. (Example: See Fig. 10-1.)

   * During fabric feed, the system cannot be set for zigzag stitching, trimming, temporary
   stoppage and end of operation.
   Fabric feed starts after thread trimming at setting position A of fabric feed.

9. To Clear Fabric Feed
   The method used to clear fabric feed is as mentioned below.

1) Press < F10 > key and then < F9 > key to select "END".
   Fabric feed is cleared. (Example: See Fig. 10-3)

   Sewing starts from point C. (Example: See Fig. 10-4)

---

Fig. 10  Fabric Feed
10. To Change Stitch Length
   The procedures in changing stitch length are as described below.
   1) Press <F6> key.
   2) The following message appears on the display.
      **STLEN**G **IN**
      **PUSH**
      <F1> OR <F2>KEY.
      F1: YES  F2: NO
      Press <F1> key.
      (To discontinue changing of stitch length, press <F2> key.)
   3) The display indicates the following.
      **STLEN**G
      = 100
      - The value shown at this point represents STLEN up to now.
   4) Input stitch length and press <ENTER> key.
      (Example: When stitch length is set for 3mm.)
      **STLEN**G
      = 30 <ENTER>
      - Stitch length between 0.2 to 10mm can be input. When stitch length is input stitch by stitch, input as STLEN = 100.

      Stitch length is changed.
11. To Change Max. Sewing Speed
   Follow the steps described below when changing max. sewing speed.
   1) Press <F7> key.
   2) The following message appears on the display.
      MAX_SPEED
      PUSH
      <F1> OR <F2> KEY.
      F1: YES    F2: NO
      Press <F1> key.
      (To discontinue changing of max. sewing speed, press <F2> key.)
   3) The display indicates the following.
      MAX_SPEED
      = 2700
      • The value shown at this point represents max. sewing speed up to now.
   4) Input max. sewing speed and press <ENTER> key.
      (Example: When max. sewing speed is set at 1200rpm.)
      MAX_SPEED
      = 1200,<ENTER>
      • Since figures of first and second place become invalid, input values in increments of 100 rpm.
      The max. sewing speed between 200 and 2700 rpm can be input.
      Max. sewing speed is changed.
12. Mirror Image
   Mirror image is produced in the manner described below.
   1) Press <F10> key.
   2) Press <F5> key.
   3) The following message appears on the display,
      MIRROR
      PUSH
      <F1> OR <F2> KEY.
      F1: YES   F2: NO

   Press <F1> key.
   (To discontinuing mirror image, press <F2> key.)
   4) The display shows the following.
      F1: X DIRECTION
      F2: Y DIRECTION
      F3: XY DIRECTION

   5) When <F1> key is pressed, mirror image is produced with X-axis as a base.
      When <F2> key is pressed, mirror image is produced with Y-axis as a base.
      When <F3> key is pressed, mirror image is produced with XY-axis as a base.
      Press <F1> or <F2> or <F3> key as desired.

   Mirror image is produced.
13. Monogramming

Monogram pattern can be sew in the manner described below.

1) Press <F10> key.
2) Press <F6> key.
3) The following message appears on the display,

```
MONOGRAM
PUSH
<F1> OR <F2> KEY.
F1: YES  F2: NO
```

Press <F1> key.
(To discontinue setting of monogram sewing, press <F2> key.)

4) The display indicates the following.

```
INPUT MONO
1ST LINE
f10:END 1ST LINE
```

Input points that form a line (1) in sequence. (See Fig. 11-2)

5) After inputting points that form a line (1), press <ENTER> key.

6) The display indicates the following.

```
INPUT MONO
2ND LINE
f10:END 2ND LINE
```

Input points that form a line AA in sequence. (See Fig. 11-3)

7) After inputting points that form line AA, press <F10> key.

X-axis/ Y-axis are automatically set and monogram pattern is sewn.

8) The display indicates the following and data for monogramming is prepared.
(Example: When X-axis is used as a base.)

```
X DIRECTION
PUSH
<F1> OR <F2> KEY.
F1: YES  F2: NO
```

If the data is satisfactory, press <F1> key.
To change X-axis/Y-axis, press <F2> key.
Monogram pattern is made.

Fig. 11   Monogramming

* Feeding pitch for monogramming is determined by STLENG value.
Consequently, sew monogram pattern after changing STLENG value.
14. To End Making of Pattern

When ending the making of pattern, go through the procedures described below.
1) Press <F10> key.
2) Press <F9> key.
3) The display indicates the following,
   F1:END
   F2:QUIT

4) Press <F1> key.
   Thread trimming mode will be input in pattern data automatically.
5) The display indicates the following.
   Select Pattern type

   F1:Horizontal tack
   F2:Vertical tack
   F3:Embroidery
   PUSH
   <F1>, <F2> or <F3>
   KEY.

   Input the type of pattern.
   Press <F1> key for horizontal tack.
   Press <F2> key for vertical tack.
   Press <F3> key for embroidery.
   Press <F1> or <F2> or <F3> key as desired.

6) The display indicates the following.
   SAVE SEWING PATTERN DATA
   INPUT PATTERN NAME
   (MAXIMUM LENGTH OF FILE NAME IS 8 CHARACTERS.)
   1669u_

7) Input the name of pattern and press <ENTER> key.
   When pattern is not to be stored, press <ESC> key.

   * Max. number of characters that can be input as the name of pattern is 8 characters.

8) To write pattern data into "EEPROM", execute the instructions given under the heading
   "To select Pattern" (Page 33).
4. How to Modify Pattern  (Example: See Fig. 12)

1) Select "PATTERN MODIFY" on the menu display and press <ENTER> key.
2) The display indicates the following.
   
   INPUT DEVICE SELECT
   F1: TABLET
   F2: CURSOR
   PUSH THE <F1> OR <F2> KEY.

3) Press either <F1> or <F2> key to decide input device.
   When a tablet is selected, input the original point of pattern of a master pattern drawing
   with button cursor on the tablet.
4) Select the name of pattern you desire to modify with cursor key.
5) Display changes to 'Pattern Modify Display Screen' with the following message appearing
   on the display.
   START
   f1: NO MODIFY
   f2: MODIFY
   f3: MODIFY ALL END

6) When <F1> key is pressed, the arrow pointer moves to the next data without modifying
   the data pointed by the arrow pointer.
   When <F2> key is pressed, the data pointed by arrow pointer is modified.
   When <F3> key is pressed, the modification program is finished without modifying
   the data subsequent to the one pointed by arrow pointer.
7) When modification is selected by pressing <F2> key, the following message appears
   on the display.
   F1: INSERT
   F2: DELETE

8) When <F1> key is pressed, a new data point C will be additionally inserted between
   point A and point B.
   When <F2> key is pressed, point B will be deleted and a new data point C will be
   additionally inserted.
   Further, the following message appears on the display.
   F1: Use +/- KEY
   F2: Use ARROW KEY

   PUSH
   <F1> OR <F2> KEY.
   When <F1> key is pressed, previously input data points will be used for data input.
   When <F2> key is pressed, arrow keys or input pointer on the tablet will be used
   The method of data input is the same as in the case of making pattern.
   After completing data input, press <F10> key and thereafter, select 'MDF END' with
   <F8> key.
In the case of **INSERT**

In the case of **DELETE**

**Fig 12:** How to Modify Pattern
(Example 1) Delete point B. (DELETE)

1) Press <F1> key to move the arrow pointer to point B. (See Fig. 13-1)
2) When arrow pointer has reached point B, select 'MODIFY' by pressing <F2> key. 
The following message appears on the display.
   **F1: INSERT**
   **F2: DELETE**

3) Press <F2> key.
   The following message appears on the display.
   **F1: Use +/- KEY**
   **F2: Use ARROW KEY**
   **PUSH**
   **<F1> OR <F2> KEY.**

   Press <F2> key.
   Point B will be deleted and the arrow pointer will be moved to point A.
   (See Fig. 13-2)
4) Press <F10> key to select "Change Menu".
5) Press <F8> key to select "MDF END". Modification of point B is completed. The arrow
   mark moves to the position of point C. (See Fig. 13-3).
6) Press <F3> key.
   The arrow pointer moves up to the end of pattern according to the pattern data. (See
   Fig. 13-4)
7) End pattern preparation by making reference to the procedures described under the
   heading "To End Pattern Preparation" on Page 22.

![Diagram](image)

**Fig. 13: Example 1**
(Example 2) To delete data after point B (DELETE)

1) Press <F1> key and move arrow pointer to point C. (See Fig. 14-1)

2) When arrow pointer has reached point 3, press <F2> key.
   The following message appears on the display.
   F1: INSERT
   F2: DELETE

3) Press <F2> key.
   The following message appears on the display.
   F1: Use +/- KEY
   F2: Use ARROW KEY
   PUSH
   <F1> OR <F2> KEY.

Press <F2> key.
Point C is deleted and arrow pointer moves to point B. (See Fig. 14-2)

4) Select "Change Menu" by pressing <F10> key.

5) Select "END" by pressing <F9> key. The following message appears on the display.
   F1: END
   F2: QUIT

6) Press <F1> key.

7) End pattern preparation by making reference to the procedures described under the
   heading "To End Pattern Preparation" on Page 22.

Fig. 14: Example 2
(Example 3) To Delete and Revise Point B

1) Move arrow pointer to point B by pressing <F1> key.
2) When arrow pointer has reached point B, press <F2> key.
   The following message appears on the display.
   F1: INSERT
   F2: DELETE

3) Press <F2> key.
   The following message appears on the display.
   F1: Use +/- KEY
   F2: Use ARROW KEY
   PUSH
   <F1> OR <F2> KEY.

   Press <F2> key.
   Point B is deleted and arrow pointer moves to point A. (See Fig. 15-2)

4) Input point as point D.
   Point D is input between point A and C. (See Fig. 15-3)

5) Press <F10> key to select item "Change Menu".

6) Press <F8> key to select item "MDF END". Revision of point B is completed.
   Arrow pointer moves to point C. (See Fig. 15-4)

7) Press <F3> key.
   Arrow pointer moves to the end of pattern according to the pattern data.
   (See Fig. 15-5)

8) End pattern preparation by making reference to the procedures described under the
   heading "To End Pattern Preparation" on Page 22.

Fig. 15: Example 3
(Example 4) To Input Point C between Point A and B (INSERT)

1) Move arrow pointer to point B by pressing <F1> key. (See Fig. 16-1)
2) When arrow pointer has reached point B, press <F2> key.
   The following message appears on the display.
   F1:INSERT
   F2:DELETE

3) Press <F1> key.
   Arrow pointer moves to point A. (See Fig. 16-2)
4) Input point C.
   Point C is input between point A and B. (See Fig. 16-3)
5) Press <F10> key to select “Change Menu”
6) Press <F8> key to select “MDF END”. Revision of point between point A and B is completed.
   Arrow pointer moves to point B. (See Fig. 16-4)
7) Press <F3> key.
   Arrow pointer moves to the end of pattern according to the pattern data. (See Fig. 16-5)
8) End pattern preparation by making reference to the procedures described under the heading “To End Pattern Preparation” on Page 22.

Fig. 16: Example 4
(Example 5) To Change Max. Sewing Speed after Point A (INSERT)

1) Move arrow pointer to point B by pressing <F1> key. (See Fig. 17-1)
2) When arrow pointer has reached point B, press <F2> key.
   The following message appears on the display.
   F1:INSERT
   F2:DELETE
3) Press <F1> key.
   Arrow pointer moves to point A. (See Fig. 17-2)
4) Press <F7> key. (Refer to the instructions given under the heading of "To Change Max. Sewing Speed".)
5) The following message appears on the display.
   MAX_SPEED
   PUSH
   <F1> OR <F2> KEY.
   F1:YES  F2:NO
   Press <F1> key.
6) The display indicates the following.
   MAX_SPEED
   = 2700

* The value shown at this point represents MAX-SPEED up to now.
7) Input max. sewing speed and press <ENTER> key. (Example: When max. sewing speed is set at 2000rpm.)
   MAX_SPEED
   = 2000 <ENTER>
8) Data on max. sewing speed is input after point A. (See Fig. 17-3)
9) Press <F8> key to select "Change Menu".
10) Press <F8> key to select "MDI END". Additional revision of max.
    sewing speed is completed. Arrow pointer moves to point B. (See Fig. 17-4)
11) Press <F3> key.
    Arrow pointer moves to the end of pattern according to the pattern data. (See Fig. 17-5)
12) End pattern preparation by making reference to the procedures described under the heading "To End Pattern Preparation" on Page 22.

![Pattern Diagrams](image-url)
(Example 6) To Change Stitch Length after Point A (INSERT)

1) Move arrow pointer to point B by pressing < F1 > key. (See Fig. 18-1)
2) When arrow pointer has reached point B, press < F2 > key.
   The following message appears on the display.
   F1: INSERT
   F2: DELETE
3) Press < F1 > key.
   Arrow pointer moves to point A. (See Fig. 18-2)
4) Press < F6 > key. (See instructions given under the heading of "How to Change Stitch Length")
5) The following message appears on the display.
   STLEN IN
   PUSH
   < F1 > OR < F2 > KEY.
   F1: YES F2: NO
   Press < F1 > key.
6) The display indicates the following.
   STLEN
   = 100
   * The value shown at this point represents the STLEN up to now.
7) Input stitch length data and press < ENTER > key. (Example: When stitch length is set for 3mm.)
   STLEN
   = 30 < ENTER>
   Stitch length data has been input after point A. (See Fig. 18-3)
8) Press < F10 > key to select 'Change Menu'.
9) Press < F8 > key to select 'MDF END'. Change of stitch length is now completed.
   Arrow pointer moves to point B. (See Fig. 18-4)
10) Press < F3 > key.
    Arrow pointer moves to the end of pattern according to the pattern data. (See Fig. 18-5)
11) End pattern preparation by making reference to the procedures described under the heading 'To End Pattern Preparation' on Page 22.

Fig. 18: Example 6
5. How to Enlarge or Reduce Pattern Size

Enlarge or reduce pattern size in the manner described below. (See Fig. 19)

1) Select "PATTERN SCALE" on the menu and press < ENTER > key.

2) The display indicates the following.
   INPUT DEVICE SELECT
   F1:TABLET
   F2:CURSOR

3) Press either < F1 > or < F2 > key to select input device.
   When tablet is selected, input the original point of pattern of a master pattern drawing
   using button cursor keys on the tablet.

4) Select the name of pattern which you desire to
   enlarge or reduce with cursor key.

5) The following message appears on the display.
   SELECT PIVOT

6) Input base point A for enlargement or reduction.
   (See Fig. 19-1)

7) The display indicates the following.
   SX=100.0

8) Input X-scale and press < ENTER > key.
   (Example: When X-scale is 200%)
   SX=200_ < ENTER >

9) The display indicates the following.
   SY=100.0

10) Input Y-scale and press < ENTER > key.
    (Example: When Y-scale is 200%)
    SY=200_ < ENTER >

11) Pattern is enlarged or reduced with point A as a
    base point. (See Fig. 19-2)

12) The display indicates the following.
    PUSH THE < F1 > OR
        < F2 > KEY.

    F1:YES     F2:NO

13) When < F1 > key is pressed, scale is determined
    and operation is completed. (See Fig. 19-3)
    When < F2 > key is pressed, operation to enlarge
    or reduce pattern is performed over again.

14) End pattern preparation by making reference to
    the procedures described under the heading "To
    End Pattern Preparation" on Page 22.

Fig. 19:
Enlargement or Reduction
of Pattern
6. To Move Pattern

Move pattern in the manner described below. (See Fig. 20)

1) Select "PATTERN COMBINATION" on the menu display and press <ENTER> key.
2) The display indicates the following.

   INPUT DEVICE SELECT
   F1:TABLET
   F2:CURSOR
   PUSH THE <F1> OR <F2> KEY.

3) Press either <F1> or <F2> key to select input device.
   When tablet is selected, input the original point of pattern of a master pattern drawing with button cursor on the tablet.
4) Select the name of pattern which you desire to move with cursor key.
5) Move pattern by using input device. (See Fig. 20-2)
6) Press <ENTER> key. This determines the position to which the pattern is to be moved.
   (See Fig. 20-3)
7) The following message appears on the display.
   PUSH THE <F1> OR
   <F2> KEY.
   F1:YES F2:NO

8) When <F1> key is pressed, the movement of pattern is determined and operation is completed.
   When <F2> key is pressed, the movement of pattern is executed over again.
9) The following message appears on the display.
   DOSE IT READ
   THE NEXT PATTERN
   PUSH
   <F1> OR <F2> KEY.

   F1:YES F2:NO

When different patterns are joined together, press <F1> key.
Then repeat step 4) and thereafter. To end the program, press <F2> key.
10) End pattern preparation by making reference to the procedures described under the heading "To End Pattern Preparation" on Page 22.

○ Original point ○ Original point ○ Original point

Before movement

1 2 After movement

Fig. 20: Movement of Pattern
7. To Select Pattern

1) Select *PATTERN SELECTION* and press <ENTER> key.
2) The display changes to pattern selection display screen with the following message appearing on the display. (See Fig. 21)
   **Select Pattern**
   
   64 patterns are available for selection.

3) Select the name of file with cursor key and press <ENTER> key.
   The pattern that has been selected appears on the display.

4) The following message appears on the display.
   **Dose it selected this Pattern**
   
   **Push <F1> or <F2> Key.**
   <F1:Yes> <F2:No>
   Quit<ESC> Key

5) Press < F1 > key to determine the selection of pattern.
   When < F2 > key is pressed, the pattern which has been selected is canceled.

6) The following message appears on the display.
   **Dose it read the next Pattern**
   
   **Push <F1> or <F2> Key.**
   <F1:Yes> <F2:End>
   Quit<ESC> Key

7) When < F1 > key is pressed, the display changes to pattern selection display.
   Repeat step 2) and thereafter.
   When < F2 > key is pressed, selection of pattern is completed.

8) The display indicates the following.
   **SAVE SEWING PATTERN DATA**
   **INPUT PATTERN NAME**
   (MAXIMUM LENGTH OF FILE NAME IS 8 CHARACTERS.)

9) Input the name of pattern and press < ENTER > key.
   This will be saved in disk with extension "HEX" assigned after File Name.
   (Example: 1669u. HEX)
   This file is used when writing data into EEPROM which will be explained on the following pages.
   In case pattern is not saved, press < ESC > key.

10) The display indicates the following.
    **Push any key**

11) The display returns to menu display when any key is pressed.

12) To return to MS-DOS mode after finishing pattern preparation program, select "End" on the menu display and press < Enter > Key.
READ SEWING PATTERN DATA
Using a ARROW Key, Select name of data.(Cancel:<ESC>Key)

Select Pattern

![Pattern Selection Display Screen](image)

**Fig. 21: Pattern Selection Display Screen**

**Note:** Relationship Between Above Nos.(*1) and Pattern Nos.

<table>
<thead>
<tr>
<th>No.(*1)</th>
<th>Pattern No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1A</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>2A</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>3A</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>
8. Options

1) Select item "OPTIONS" on menu display and press < ENTER > key.
2) "OPTIONS" display screen appears. (See Fig. 22)

*drive* is to set a driver for reading in and writing pattern data. Select it with cursor key and press < ENTER > key.
*directory* is to set a directory for reading in and writing pattern data. Input the name of directory and press < ENTER > key.

3) End OPTIONS with < ESC > key.
The contents which have been set will be stored.

Fig. 22: OPTIONS Display Screen
9. Description on Tablet

1. Specification of Tablet (Digitizer)
   Manufacturer: Seiko Electronic Industrial Co., Ltd.
   Type: DT-3213-00

2. Button Cursor

![Button Cursor Diagram]

Fig. 23 Button Cursor

Each of the 4 button cursors are fitted with a button and serve the following functions:

- Button 1 — Inputs pattern data.
- Button 2 — Delete pattern data
- Button 3 — Not used
- Button 4 — Not used

By moving 4 button cursor on the top of the tablet body and pressing Button 1, coordinates at read out focal point can be input. Also, data which have been input can be deleted on a data by data basis by pressing Button 2 on the tablet body.
3. Function Switch

Function switches are used to set various functions of the tablet and located on the bottom side of the tablet.

![Diagram of Function Switches and Cables](image)

**Fig. 24** Underside of Tablet

Function switches should be set as shown below.

<table>
<thead>
<tr>
<th></th>
<th>DSW1</th>
<th>DSW2</th>
<th>DSW3</th>
<th>DSW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td><img src="image" alt="ON DSW1" /></td>
<td><img src="image" alt="ON DSW2" /></td>
<td><img src="image" alt="ON DSW3" /></td>
<td><img src="image" alt="ON DSW4" /></td>
</tr>
<tr>
<td>OFF</td>
<td><img src="image" alt="OFF DSW1" /></td>
<td><img src="image" alt="OFF DSW2" /></td>
<td><img src="image" alt="OFF DSW3" /></td>
<td><img src="image" alt="OFF DSW4" /></td>
</tr>
</tbody>
</table>

![Diagram of Function Switches](image)

**Fig. 25** Functions Switches

When these switches are set incorrectly, it can cause the program to malfunction. Also, be sure to turn main switch 'OFF' before setting function switches. In case function switches are set after turning main switch 'ON', the contents of pre-set functions will remain unchanged.
10. Sewing Data

When a pattern is made with this software, 5 data files (*.PTD *.XYD *.569 *.56R *.HEX) are prepared.
(*.PTD *.XYD *.569) are used for modifying, enlarging, reducing and moving a pattern.
(*.56R *.HEX) are used as data for writing into EEPROM.
11. How to Write Sewing Data into "EEPROM"

1. EEPROM
   Manufacturer: ATMELE Type: AT28HC256-70PC

2. ROM Writer
   Manufacturer: DATA I/O (Made in USA) Type: ChipLab+
   The method to be followed in writing sewing data is explained below by taking the case of EPROM Writer, "ChipLab", made by DATA I/O.
   (When a ROM writer made by other manufacturer is used, check to determine whether the above "EEPROM" is usable or not and then refer to the service manual prepared by the manufacturer.)

3. To install ChipLab software
   1) To connect hardware
      (1) Turn main switch on personal computer 'OFF'.
      (2) Connect ChipLab to personal computer with the cable furnished with the unit.
         (Connect cable to parallel port on the side of personal computer.)
      (3) Turn main switch on personal computer 'ON'.
      (4) Turn power switch on Chiplab 'ON'.

   2) To install software
      (1) Put installation disk #1 into disk drive.
      (2) Type as follows and press ENTER key.
         a:install or b:install
         (a: or b: represents the name of the drive in which the disk is saved.)
      (3) Answer the questions according to the instructions given on the display.
      (4) Turn power switch on ChipLab 'OFF'.
      (5) Turn main switch on personal computer 'OFF'.
   * Refer to the 'Operator's Guide' prepared by the manufacturer for details.

4. Execution of program
   1) Check to see that the personal computer is connected to ChipLab with the cable furnished with the unit.
   2) Turn power switch on personal computer 'ON'.
   3) Turn power switch on ChipLab 'ON'.
      Input data to personal computer by typing as follows.

      **chipLab**
      Press < ENTER> key. The program is put into execution.

4) The display indicates the following.
   Subsequent operations are performed by using a mouse. In case the mouse is inoperative,
   install a mouse driver before switching power for ChipLab 'ON'
5. To select write device
1) Move mouse cursor to "Device" and press left button on mouse.
2) The following display appears.

3) Move mouse cursor to "Select" and press left button on mouse.
4) The following display appears.

5) Move mouse cursor to 'Atmel' of 'Manufacturer' and press left button on mouse.
6) Move mouse cursor to '28HC256' of 'Device' and press left button on mouse.
7) The following display appears.

8) Move mouse cursor to <SELECT> and press left button on mouse.
9) The display indicates the following.

```
<table>
<thead>
<tr>
<th>ChipLab-Logic+</th>
<th>Atmel 284C256</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Selection</td>
<td></td>
</tr>
<tr>
<td>[Atmel ] [ ]</td>
<td></td>
</tr>
<tr>
<td>Device Footnote</td>
<td></td>
</tr>
<tr>
<td>The Software Data Protection option is not supported on this device</td>
<td></td>
</tr>
<tr>
<td>&lt;ESC&gt;CLOSE&gt;</td>
<td></td>
</tr>
</tbody>
</table>
```

10) Move mouse cursor to <ESC>CLOSE> and press left button on mouse.
11) The display returns to main display.

6. To clear data area
1) Move mouse cursor to "Data" and press left button on mouse.
2) The following display appears.

```
<table>
<thead>
<tr>
<th>ChipLab-Logic+</th>
<th>Atmel 284C256</th>
</tr>
</thead>
<tbody>
<tr>
<td>File Data Device Config Options Help</td>
<td></td>
</tr>
<tr>
<td>Data Editor</td>
<td></td>
</tr>
<tr>
<td>Move data...</td>
<td></td>
</tr>
<tr>
<td>Complement data...</td>
<td></td>
</tr>
<tr>
<td>Savecheck data...</td>
<td></td>
</tr>
<tr>
<td>Initializing Algorithm Database...</td>
<td></td>
</tr>
<tr>
<td>System ID:284C0......</td>
<td></td>
</tr>
<tr>
<td>Revision:1.28-2.0000......</td>
<td></td>
</tr>
<tr>
<td>Initializing User Memory, 0x0000...Done</td>
<td></td>
</tr>
<tr>
<td>Device Algorithm Loaded for Atmel 284C256</td>
<td></td>
</tr>
</tbody>
</table>
```

3) Move mouse cursor to "Fill RAM" and press left button on mouse.
4) The display indicates the following.

```
<table>
<thead>
<tr>
<th>ChipLab-Logic+</th>
<th>Atmel 284C256</th>
</tr>
</thead>
<tbody>
<tr>
<td>File Data Device Config Options Help</td>
<td></td>
</tr>
<tr>
<td>Fill User Memory</td>
<td></td>
</tr>
<tr>
<td>Starting Address: [0]</td>
<td></td>
</tr>
<tr>
<td>Block Size: [8000]</td>
<td></td>
</tr>
<tr>
<td>Fill With: [ff]</td>
<td></td>
</tr>
<tr>
<td>&lt;FILL&gt; &lt;CLOSE&gt;</td>
<td></td>
</tr>
</tbody>
</table>
```

1) Input "0" to Starting Address and press <TAB> key.
2) Input "8000" to Block Size and press <TAB> key.
3) Input "FF" to Fill With and press <TAB> key.
4) Move mouse cursor to <FILL> and press left button on mouse.
5) Move mouse cursor to <CLOSE> and press left button on mouse.
6) The display returns to main display.
7. How to read in sewing data
   1) Move mouse cursor to 'File' and press left button on mouse.
   2) The following display appears.
   
   ![Display 1]

   3) Move mouse cursor to 'Open' and press left button on mouse.
   4) The display indicates the following.

   ![Display 2]

   (1) Select the name of pattern (*.HEX) with mouse and press <TAB> key.
   (2) Press <TAB> key.
   (3) Press <TAB> key.
   (4) Input ^O^ to I/O Addr Offset and press <TAB> key.
   (5) Input *8000* to User Data Size and press <TAB> key.
   (6) Input ^O^ to Memory Beg in Address and press <TAB> key.
   (7) Move mouse cursor to 'READ' and press left button on mouse.
   (8) The display returns to main display.
8. To write sewing data
1) Insert a blank *Atmel AT28HC256-70PC* into socket.
2) Move mouse cursor to *Device* and press left button on mouse.
3) The display indicates the following.

```
Select...
  Program device...
  Read device
  Verify device

Self-test Complete.
Initializing Algorithm Database....
System id: 11240.......
Revision 2.02-2.0000....
Initializing User Memory Size.... Done
```

4) Move mouse cursor to *Program Device* and press left button on mouse.
5) The display indicates the following.

```
[ ] Enable Security Fuse Programming [ ] Set Auto-increment
[ ] Disable Security Fuse Data [ ] Enable Illegal Bit Check
Data Word Width [ ] [ ] Enable Blank Check
[ ] [ ] Enable Electronic ID Check
Next Device [ ] [ ] [ ] [ ] Enable Erase before Program
[ ] [ ] [ ] [ ] Select Option
[ ] [ ] [ ] [ ] [ ] Manufacturer-specified
Total Set Size [ ] [ ] [ ] [ ] [ ] [ ] Single pulse
User Data Size [ ] [ ] [ ] [ ] [ ] [ ] [ ] Verify Passes
Next Operation begins at [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
Memory Begin Address [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
Device Begin Address [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
Device Block Size [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

< PROGRAM >  < CLOSE >
```
6) Move mouse cursor to *<PROGRAM>* and press left button on mouse.
7) During the programming of device, a box showing that the programming is being performed, appears on the display.

After completion of programming, the following message appears on the display.

**Program Operation Successful:**

8) Move mouse cursor to *<CLOSE>* and press left button on mouse.
9) The display returns to main display.
10) Remove device from socket.
9. To end writing of sewing data

1) Move mouse cursor to "File" and press left button on mouse.
2) The display indicates the following.

3) Move mouse cursor to "Exit" and press left button on mouse.
4) "ChipLab" program is completed.
10. To blank out device
   1) Go through the procedures described up to item 6 "To Clear Data Area".
   2) Insert a blank "Atmel AT28HC256-70PC" into socket.
   3) Move mouse cursor to "Device" and press left button on mouse.
   4) The display indicates the following.

   ![Display showing options for programming]

   5) Move mouse cursor to 'Program Device' and press left button on mouse.
   6) The display indicates the following.

   ![Display showing options for blank check]

   7) Move mouse cursor to 'Enable Blank Check' and by pressing left button on mouse, delete [*] before 'Enable Blank Check'.
   8) The display indicates the following.
9) Move mouse cursor to "<PROGRAM>" and press left button on mouse.
10) During the programming of the device, a box showing that programming is in process, appears at the center portion of the display.
When operation is completed, the following message appears on the display.

Program Operation Successful:

11) Move mouse cursor to "<CLOSE>" and press left button on mouse.
12) The display returns to main display.
13) Remove socket from device.
14) Go through the procedures described under item 9. "To End Writing of Sewing Data".