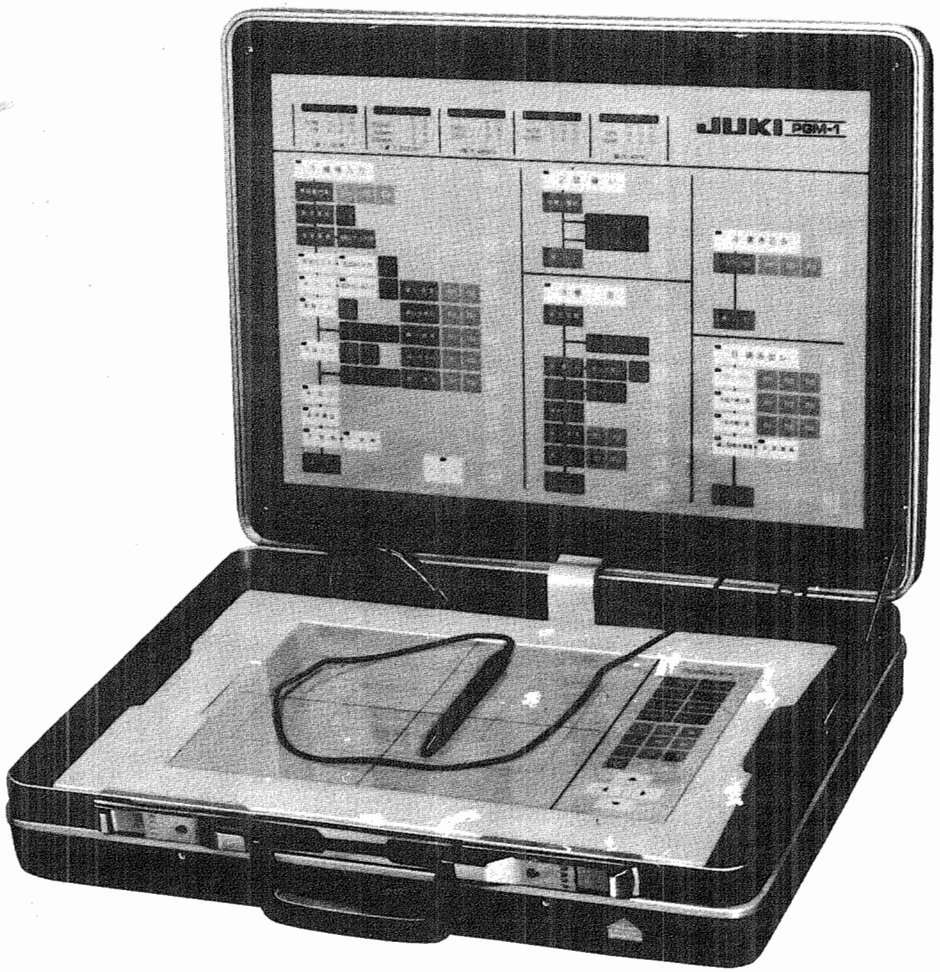
MODEL **PGM-1**

COMPACT TYPE
PROGRAMMING DEVICE

INSTRUCTION BOOK



TOKYO JUKI INDUSTRIAL CO., LTD.

CONTENTS

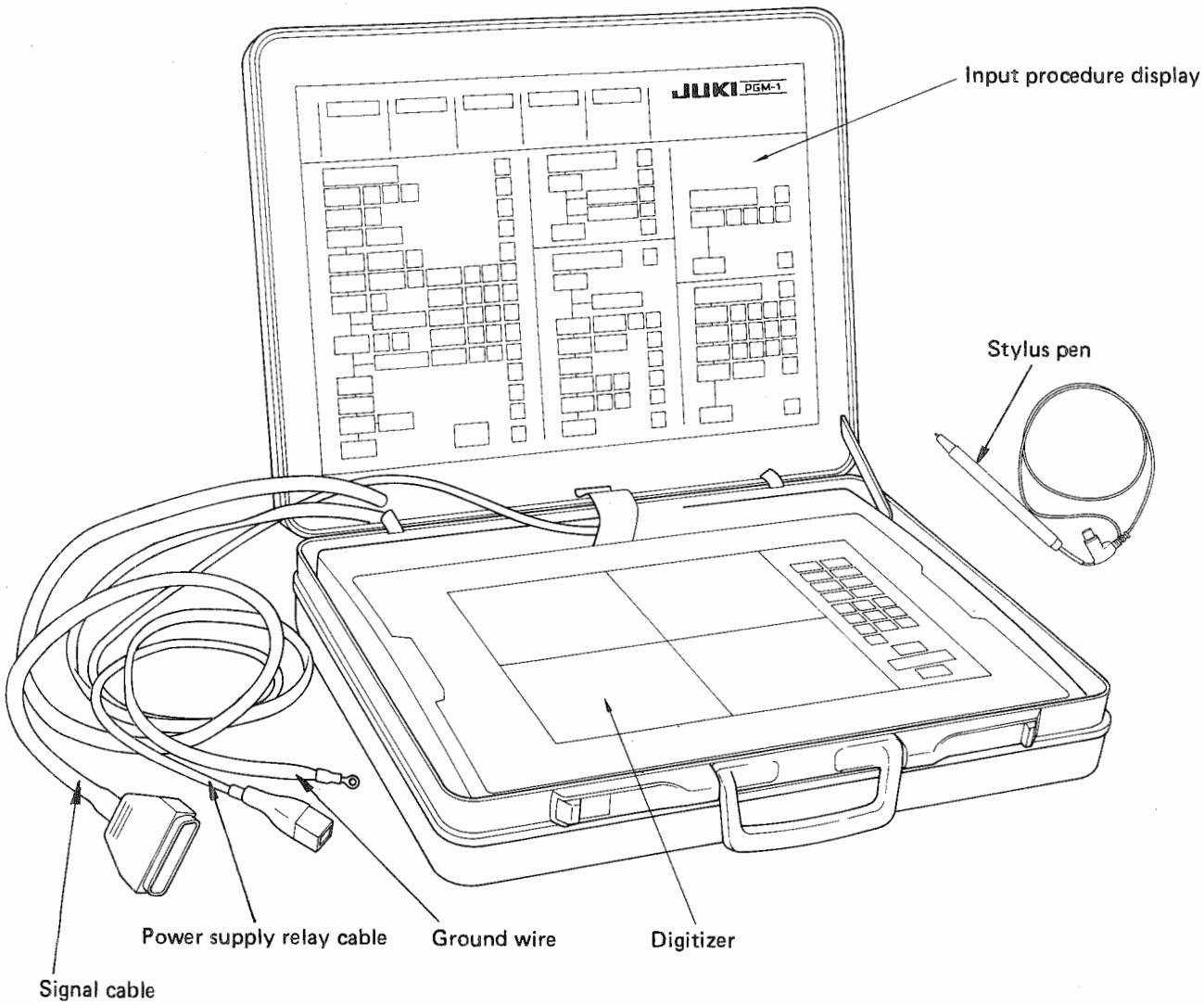
The Model PGM-1 Compact Type Programming Device is used for creating patterns on the micro-floppy disk used in the JUKI AMS-210 Electronic Cycle Machine, and writing them in. The functions of this unit operate when it is connected to the AMS-210.

This input unit has a number of functions. A great variety of tasks can be performed with it, and programs are easy to create. In particular, the functions for test sewing and making corrections have been designed from the customer's point of view. We are sure that you will find them useful.

To get the most out of these functions, it is necessary to use the unit correctly, so before using it please read this manual and also the AMS-210 Instruction Book. We hope that you will enjoy using it for a long time.

II. COMPONENTS

The PGM-1 consists of the following components.



III. FEATURES

1. **Strong and easy to carry**
   The unit is contained in a case that it is strong and convenient to carry around.
2. **Operation is easy**
   The input procedure display makes operation easy, with input being done with the stylus pen.
3. **High-precision pattern input**
   Enlarged patterns are input by the digitizer, so that the needle entry points are accurately located.
4. **Abundance of pattern data input methods, and expanded applications**
   There are 10 pattern data input methods, so input can be done by the method best suited to a particular application, and patterns can be created in a short time. In addition there is a function for inputting points without enlargement, so input can be matched to the pattern such as reverse stitching, increasing the possible applications.
5. **Increased test sewing functions**
   Before writing pattern data on a micro-floppy disk, the test sewing functions can be used to do test sewing under realistic sewing conditions.
6. **Highly flexible modification possible**
   There are 7 modification methods available. By using them together with the test sewing functions, perfect programs in which the pattern, fabric and sewing method are matched can be created in the program creation stage.
7. **Editing and similar pattern creation are easy**
   Micro-floppy disk contents can be easily copied onto another disk, and disks can be edited. Geometrically similar patterns can be created by enlarging and reducing pattern data. The new patterns thus created can be input the same way as the original pattern data.
8. **Many pattern data can be input on a single disk.**
   A single disk can accommodate a number of pattern data.

IV. SPECIFICATIONS

1.	Pattern input range :	248mm x 212mm
2.	Digitizer resolution :	0.1mm
3.	Computation accuracy :	± 0.16mm
4.	Enlargement and reduction :	1% to 400%
5.	Stitch length specification:	0.2mm to 4.8mm
6.	Sewing speed specification :	200 s.p.m. and 600s.p.m. to 2,000 s.p.m. (in 100 s.p.m. steps)
7.	Number of stitches :	up to 1,000 stitches per pattern
8.	Memory medium used :	3.5 inch micro-floppy disk
9.	Pattern specification :	1 to 999
10.	Number of patterns stored :	33 to 512 patterns
11.	Enlargement/Reduction Scale :	0.1x to 10x
12.	Temperature range in use :	+ 5°C to +40°C
13.	Humidity range in use :	20% to 80% (without condensation)
14.	Exterior dimensions :	W : 390mm x L : 475mm x H : 125mm
15.	Weight :	Max. 8kg

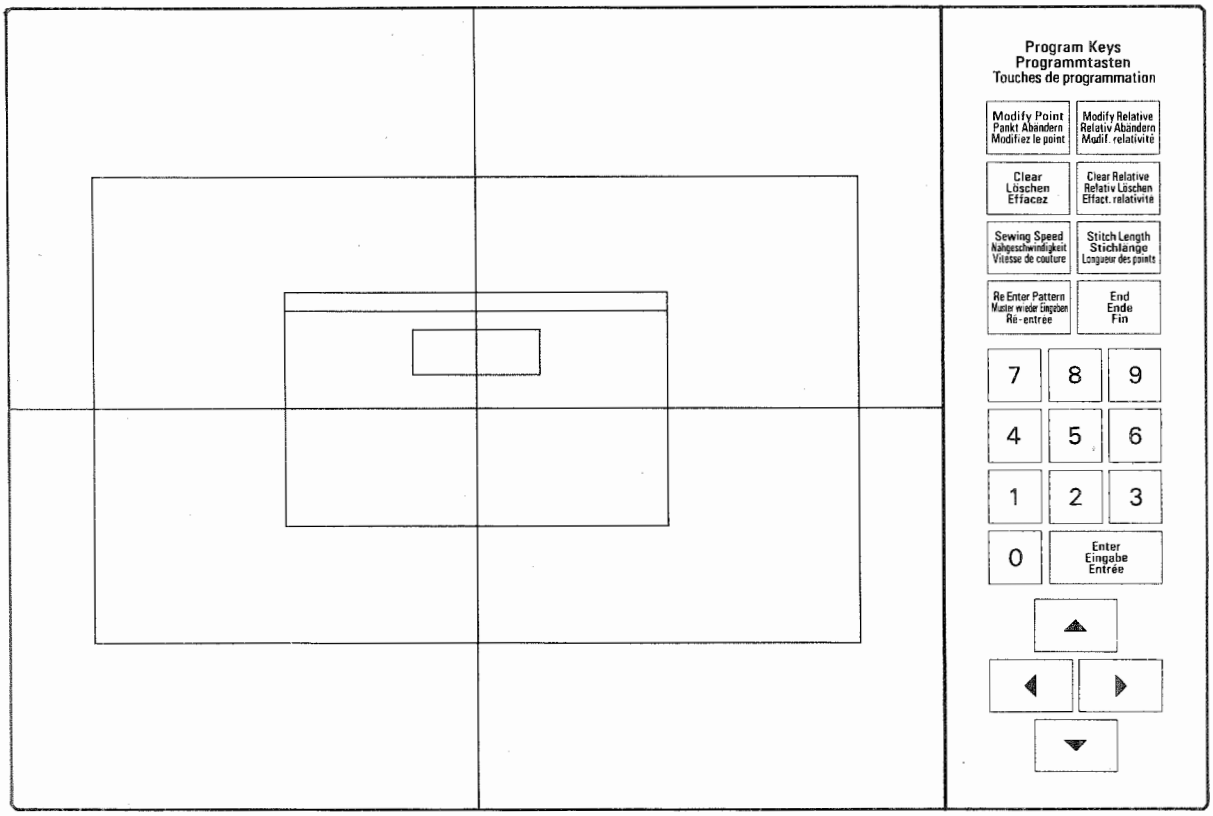
V. DIGITIZER DISPLAY FUNCTIONS

The coordinates (X,Y) of the point to which the stylus pen points are read and sent to the control box.

Part of the digitizer is used for program keys. Input is done by pressing lightly on the center of the desired function key with the stylus pen tip.

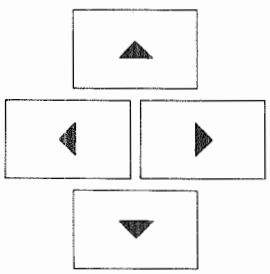
The rest of the digitizer is used for pattern input. Place a diagram of the needle entry points on it and then input the points.

(Caution) **The digitizer resolution is 0.1mm. A needle entry point diagram up to 3 to 4mm thick can be read, but as the diagram becomes thicker the 0.1mm resolution will be lost, so keep the diagram thickness to not more than 0.5mm as much as possible.**



1. Program key functions

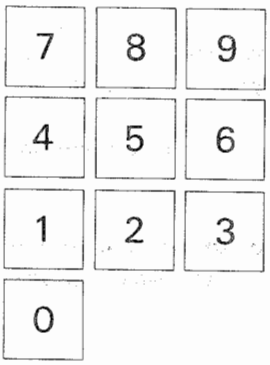
(1) Step keys



① . Move the input procedure display in the direction of the arrow, and select the function.
Specify the white input display.

② . When making corrections use (▼) to advance to the next step in the program and (▲) to go back to the previous step.

(2) Numeric keys

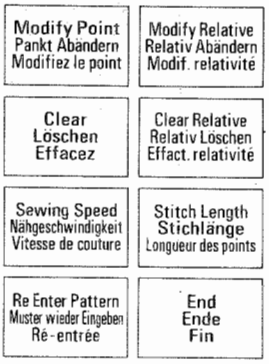


Use the numeric keys to specify the pattern number, X-scale, Y-scale, stitch length and sewing speed. Also use these keys to specify the blue input display.

(3) "ENTER" key

When input is done with "ENTER" (orange) on the input display the set data are read in. When enter is done the buzzer will sound "pee" when the set data are correct, "peepee" when they are incorrect.

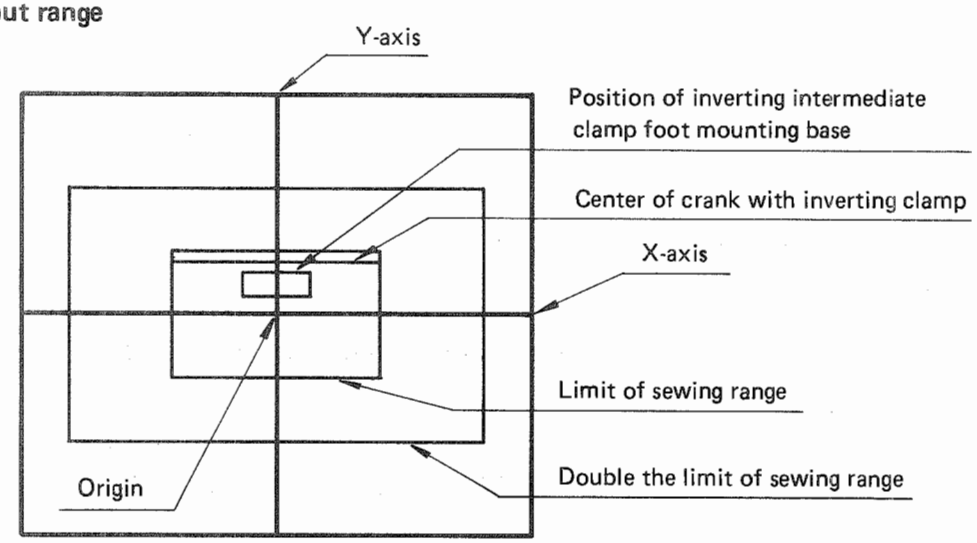
(4) Function specification keys



① . Mistakes in pattern input can be corrected. There are 8 function keys. For a detailed explanation of the functions please refer to VI-5 Modification Functions. When the desired function key is input, the specified display lights up.

② . Specify the green section of the pattern input. When input is done the specified display will light up.

2. Pattern input range



The pattern input range extends 248 mm in the X-direction and 212 mm in the Y-direction. Enlarge or reduce the original diagram as necessary so that it fits within this frame.

The AMS-210 can sew within a range that measures 102 mm in the X (right-left) direction and 62 mm in the Y (front-back) direction. The AMS-210 provided with the inverter can sew within a range that measures 102 mm in the X (right-left) direction and 57 mm in the Y (front-back) direction. When it is desired to enlarge or reduce the pattern, set the original diagram as nearly parallel to the X-axis and Y-axis as possible. If it is not parallel

The input display indicates the procedure to be followed (refer to next page). The selected function is indicated by an LED, making input easy.

When the connector is connected and the power switch is turned ON, the program in the unit is executed. The pattern input display at the upper left lights up automatically.

1. Principal functions

The PGM-1 has 5 principal functions.

(1) Pattern input function
This is used to create sewing pattern data.

(2) Test sewing function
The sewing machine is operated to perform test sewing on the basis of the pattern data that have been created, corrected and read out.

(3) Modification function
This is used to correct the sewing pattern data that have been created and read out.

(4) Floppy disk write function
This is used to write sewing pattern data that have been created on a micro-floppy disk.

(5) Floppy disk read function
This is used to read sewing pattern data from a micro-floppy disk.

These functions are selected by using the left (◀) and right (▶) step keys. When the desired function is lit up, operate the "ENTER" key. The test sewing, modification and Floppy disk write functions cannot be selected immediately after power is turned ON.

2. Pattern input

When "ENTER" is input while the pattern input display is lit up, the display shifts downward, and pattern input becomes possible. At this time, a display indicating the pattern scale lights up.

(1) Setting of pattern input conditions
Three pattern input conditions are set. When "ENTER" is input the display automatically shifts downward. If you become aware that an input is erroneous, use the (▲) step key to shift the display and repeat that input.

(Caution) Once a pattern is input with an erroneous condition setting, modification becomes impossible, so please check all of the conditions before input.

Pattern Scale Muster-Skala Echelle de configuration	n1	n2	n3
×0.8	0	0	8
× 2	0	2	0

(MAX. 10.0 –Fold
MAX. 10.0 –Fach
10.0 fois maxi)

Sewing Speed Nähgeschwindigkeit Vitesse de couture	n1	n2
200	0	2
600	0	6
2000	2	0

(MAX. 2000spm
MAX. 2000ST/MIN
2000 pts/mm maxi)

Stitch Length Stichlänge Longueur des points	n1	n2
0.6	0	6
2.2	2	2

(MAX. 4.8 mm
MAX. 4.8 mm
4.8 mm maxi)

Pattern No. Muster-Nr. N° de configuration	n1	n2	n3
55	0	5	5
220	2	2	0

X-Y Scale X-Y-Skala Echelle X-Y	n1	n2	n3
52	0	5	2
150	1	5	0

(MAX. 400%
MAX. 400%
400% maxi)

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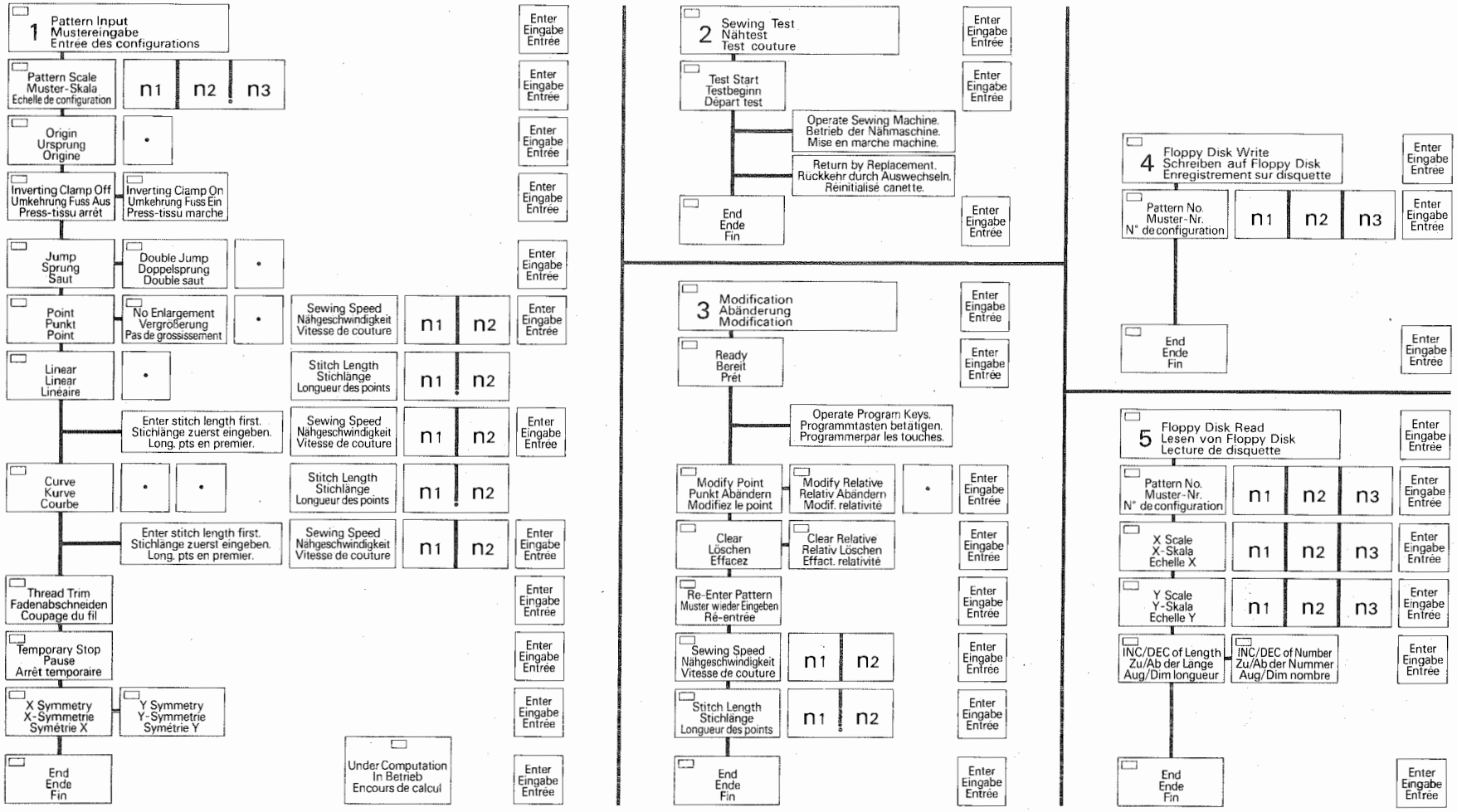
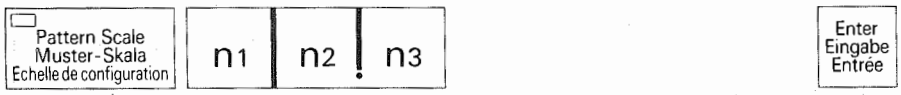




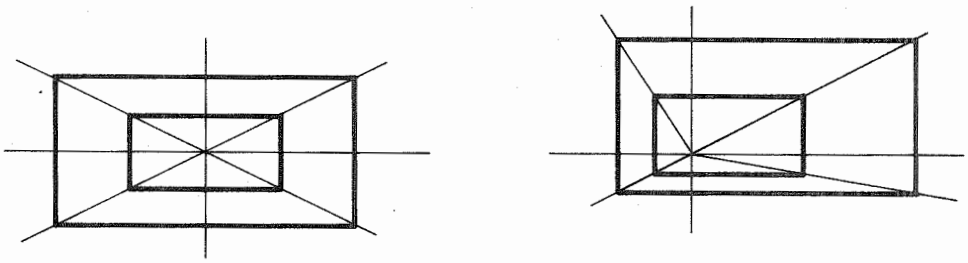
The pattern scale is input as a 3-digit number. The range of possible inputs is 001 to 100; 010 means a scale of 1/1 and 020 means 2/1. The number that is input is displayed as the pattern No. on the AMS-210 control box panel surface.

If the setting is correct, input "ENTER" to read it; then the origin setting display will light up.

(Caution) When the pattern scale is entered, the data storage memory area is cleared. If the pattern input is erroneous, if it is before the pattern scale is entered, the previous data are still in memory, so it is possible to return to the principal function selection using the (▲) step key to shift the display to Pattern Input.

②. Origin setting

Input the position of the origin of the sewing pattern. The origin becomes a reference point when the sewing pattern is enlarged or reduced, so it should be as near to the center of the pattern as possible.



Origin setting is done by setting the stylus pen tip at the center of the pattern and pressing lightly. When this is done the buzzer sounds "pee" to indicate that the origin has been input. The origin can be input any number of times, each input superseding the previous inputs.

When the origin is correct, input "ENTER" to read it. Then the regular pattern display lights up.

③. Inverting clamp OFF/inverting clamp ON

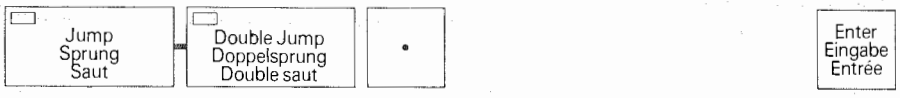
Select whether the Inverting Clamp Off or Inverting Clamp On is to be used. To use the inverting clamp On use the (▶) step key to shift the display to the right and then input "ENTER". For the Inverting Clamp Off input "ENTER" without the rightward shift. The display then automatically advances to jump input.

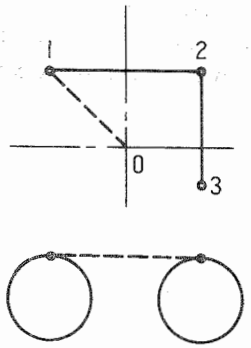
(Caution) Note that the intermediate presser will not work if the inverting Clamp On is selected while the Inverting Clamp Off has been set.

(2) How to input the pattern

There are 10 methods of pattern input. Use the method best suited to the sewing pattern and sewing method to be used. Select the input method by using the step key to shift the display. Input data are read by using the "ENTER" input. Previous input data are erased by clearing with the function specification key.

①. Jump input



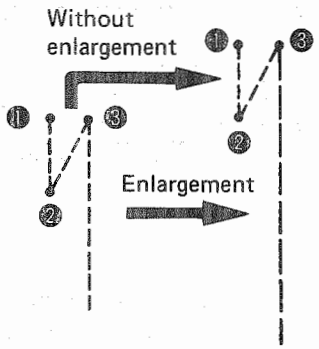


Jump input and double jump input are selected with the (◀) and (▶) step keys.

Use this function to move the feeding frame to a specified position without sewing. For jump input actual dimensions; for double jump input jump with double the actual dimensions.

Jump specification can be input continuously. Use "ENTER" input to read the jump that have been continuously input. Jump can be done not only from 0 but from anywhere on the pattern.

②. Point input, no enlargement input



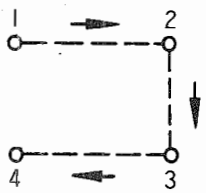
Point input specifications can be input continuously. The points that were input continuously are read by using the "ENTER" input. A stitch can be formed by using the stylus pen to specify each needle entry point.

When a pattern is to be enlarged or reduced on the sewing machine, all of the stitches become proportionally longer or shorter. When no enlargement input is performed, the stitch described in the pattern input is formed unaffected by enlargement or reduction. This feature is useful in such cases as the reverse stitching shown in the diagram at left. Up to 128 stitches can be input by a single enter; after each enter the process can be repeated to input additional points.

★ (Specification of sewing speed)

The maximum sewing speed is limited according to the stitch length, but it can be reduced still further by means of sewing speed input. When the sewing speed function specification key is pressed, the corrected sewing speed display and the point input display (linear input for a straight line, curve input for a circular arc) light up. When these light up, input the sewing speed as a 2-digit number (0.2 for 200 s.p.m.; 13 for 1,300 s.p.m.) and then read by using the "ENTER" input. If more than 2 digits are input only the last 2 are used. The digits that were input are displayed on the Y-scale display on the side of the control box. The allowable sewing speed specifications are 02 and 06 to 20.

(Caution) Always specify the sewing speed before point input. After enter, if still further speed reduction is desired, repeat the specification.
Direct input from the origin without enlargement is not possible.
Be sure that position ❶ meets position ❸ , or else dislocation in shape will result when enlarging or reducing a pattern.



A straight line is specified by inputting its two end points. Sewing is done from the first point specified to the second.

★ (Specification of stitch length)

When the stitch length function key is pressed, the corrected stitch length display and linear input (or curve input display) lights up. When it lights up, input the stitch length as a 2-digit number (20 for 2 mm, 32 for 3.2 mm) and read it by means of input "ENTER" input. If more than 2 digits are input, only the last 2 are used. The digits which are input are displayed on the X-scale display on the control box panel. Stitch length specifications can be from 02 to 48 in steps of 2.

(Caution) Always specify the stitch length before specifying points. If points are specified without specifying the stitch length, the buzzer will sound to indicate an error.

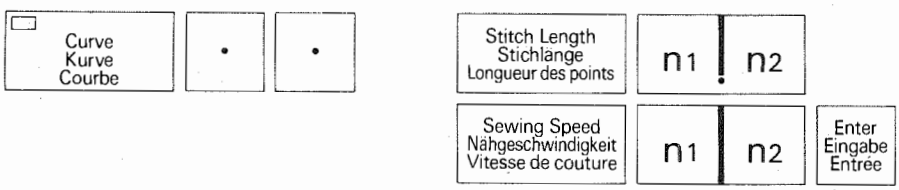
After enter of the point specification input, intermediate points are computed. While the computation is in progress the "Under Computation" display lights up and the input pen becomes inoperative.

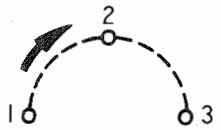
When the computation is completed the display goes off and the input pen becomes operative. If the specified line length is not evenly divisible by the stitch the data are created in such a way as to minimize the remainder.

When a pattern is enlarged or reduced on the sewing machine, the stitch length and number of stitches can be increased or decreased, so even if the length of pattern is small use linear input.

The maximum stitching speed is limited by the stitch length, but if desired it can be reduced further by stitching speed input. The input is done the same way as point input and should always be done before point input.

④. Curve input





Curve input is specified by specifying 3 points on it. Sewing proceeds in the ascending order of specification. (Sewing is done from the first point specified to the second and then to the third.)

After the three points are entered, the intermediate points along the curve are computed. While this computation is in progress further input is not accepted. The display indications are the same as for a linear computation.

If the specified curve length is not evenly divisible by the stitch length, the data are created so as to minimize the remainder.

When the pattern is enlarged or reduced on the sewing machine, the stitch length and number of stitches can be increased or decreased, so even if the length is short curve input should be performed. As in the case of point input and linear input, the stitch length and stitching speed must be specified before point specification.

⑤. Thread trim

Thread Trim
Fadenabschneiden
Coupage du fil

Enter
Eingabe
Entrée

Thread trimming can be done at any arbitrary point in a sewing pattern. Input "ENTER" with the Thread Trimming display lighted up to indicate that thread should be trimmed. After a thread trimming input, another thread trimming input cannot be performed until after a point input, linear input or curve input.

⑥. Temporary stop

Temporary Stop
Pause
Arrêt temporaire

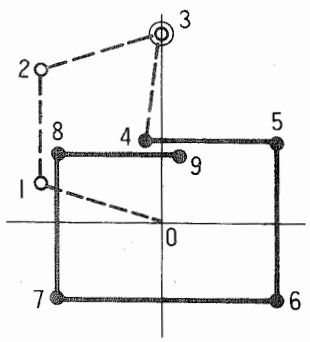
Enter
Eingabe
Entrée

Sewing can be halted at any arbitrary point in the middle of a pattern. Such a Temporary Stop can be combined with a Jump to set a second origin.

If "ENTER" is input while the Temporary Stop display is lighted up, a temporary stop is read. If a temporary stop is desired after thread trimming, input thread trimming and temporary stop in that order. After a temporary stop, sewing can be started again with the start switch.

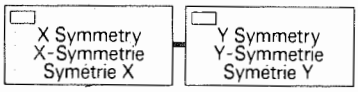
★ (Second origin setting)

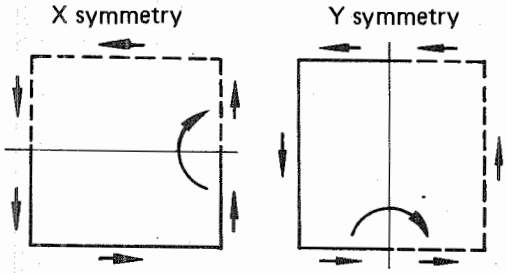
If a temporary stop is input between the origin 0 and the point where sewing starts, that point is read as a second origin. A second origin is generally used to make the product being sewn easier to set. The sewing will both start and end at the second origin.



In the pattern shown at left a temporary stop has been inserted at 3 after a jump, then there is another jump before sewing is done from 4 to 9. In this case, after the sewing machine finds the origin at 0, then there are jumps from 0 to 1 to 2 to 3 followed by a temporary stop, then the machine goes through the cycle from 3 to 9.

When enlargement or reduction is done on the sewing machine, the path from the origin to the second origin is not enlarged or reduced.

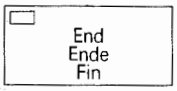




A symmetrical pattern can be easily input using X symmetry and Y symmetry. The point before X and Y symmetry are specified is used as a reference to create the pattern. In the second half of the symmetrical pattern the sewing in the X-direction is reversed in the case of X symmetry; the sewing in the Y-direction is reversed in the case of Y symmetry.

If it is desired to trim the thread in the second half of the symmetrical pattern, input the thread trim after symmetry enter.

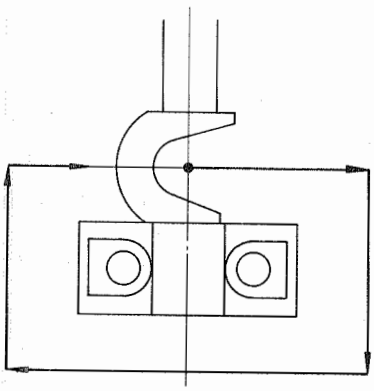
⑧. End of pattern input



After the completion of pattern input, press the (▼) step key or the End function key to eight the END display. By means of "ENTER" input, the display is shifted to pattern input. After this shift, control returns to the main function selection.

3. Inverted pattern input

(1) Inputting direction

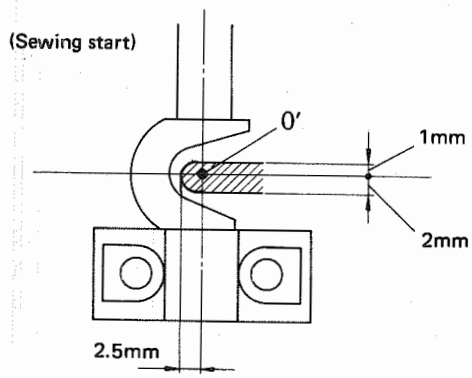


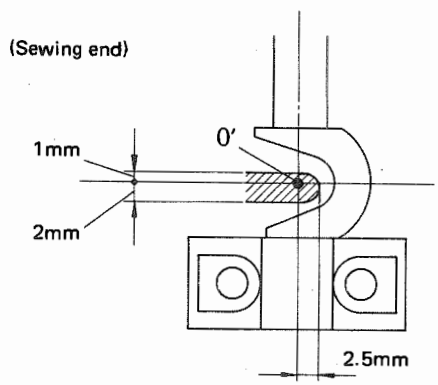
Input an inversion pattern in the clockwise direction as illustrated.

If an inversion pattern is entered in the counterclockwise direction, then the needle will interfere with the inverting crank as shown in the example 1.

If a counterclockwise input is required, see the example 4.

(2) Input range





Within the inverting crank, make input within the hatched area in the figure above, otherwise the inverting crank may interfere with the needle.

(Note) The center 0′ of the inverting crank is positioned 26 mm above the origin.

(3) Inverting clamp Off/inverting clamp On

When the inverting clamp is used, select "Inverting clamp On" and input Enter. If "Inverting clamp Off" is selected, the magnet for the inverting crank will not work. Use enough care when making this input because no modification can be made later by the correcting function.

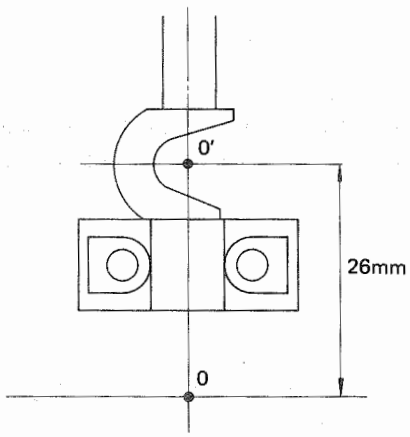
(4) Enlargement/Reduction

No pattern with the inverting crank can be enlarged or reduced.

(5) Second origin

For a pattern with the inverting crank, second origin setting can not be performed with the AMS-210. If second origin setting is necessary, set it in advance by the PGM-1.

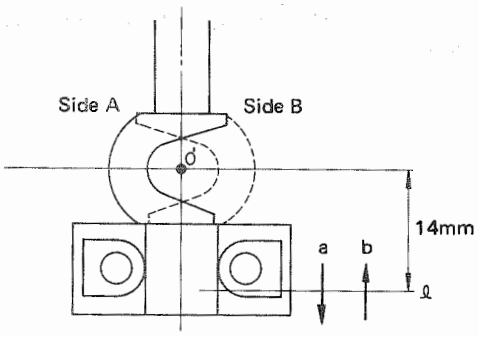
(6) Center of the inverting crank



The center 0′ of the inverting crank is 26 mm above machine origin 0. Use the line of "Center of the crank for Inverting clamp On" on the digitizer sheet as reference. (for 100% scale)

If a produced pattern has been dislocated, correct it using the Modify Relative function.

(7) Controlling the inverting crank



The following describes the position of the inverting crank under different conditions:

① On side A when the machine is searching for the origin.

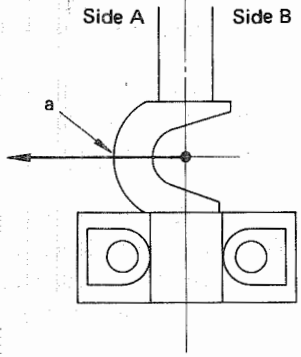
② On side A when the start switch is turned ON at a sewing start or second origin.

③ When line ℓ (approx. 14mm below the center 0′ of the inverting crank) is passed over:
On side B for direction a
On side A for direction b

④ On side A after completion of a sewing cycle or after reaching the sewing start point or second origin.

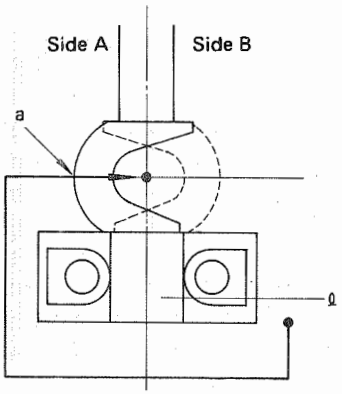
The inverting crank is magnetically controlled in all conditions, ① to ④ .

Produce a pattern with great care taken to the sewing start position and the sewing direction in order to avoid interference between the inverting crank and the needle. (In principle, the sewing direction should be clockwise.)



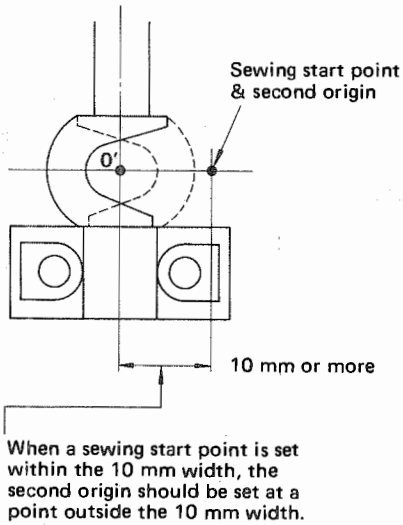
The inverting crank will be located on side A when the start switch is turned ON. As a result, the inverting crank interferes with the needle at point a.

★Example 2. Pattern which does not pass over inverting line ℓ



The inverting crank will not go back to side B, so the inverting crank will interfere with the needle at point a.

★Example 3. When the cloth is too thick

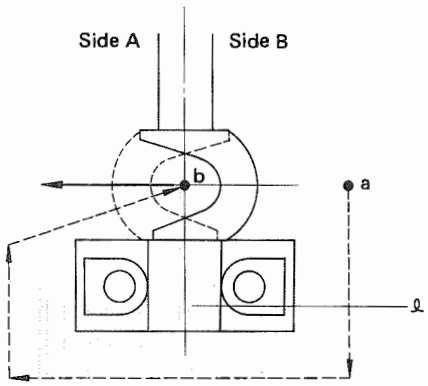


When the cloth thickness is 2 mm or more, the needle may interfere with the inverting crank. To avoid this, space the sewing start and end points 10 mm or more from the center of the crank.

When it is necessary to set the sewing start point within 10 mm from the center of the inverting crank, use a second origin set by programming. By setting a second origin outside the inverting crank, the interference between the needle and the inverting crank can be prevented.

(Caution) No second origin setting is possible with the AMS-210 main unit.

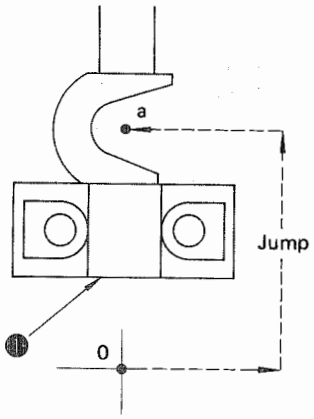
★Example 4. When sewing an inversion pattern in counterclockwise direction



Set second origin a as illustrated, and allow it to pass over inverting line ℓ using the jump command so that the inverting crank is located on side B. (The inverting crank is on side A at the start, but it moves to side B after passing over line ℓ.)

Then jump to sewing start point b. Since the inverting crank is on side B, sewing can be performed in the counterclockwise direction.

(8) Input procedure from origin to sewing start point

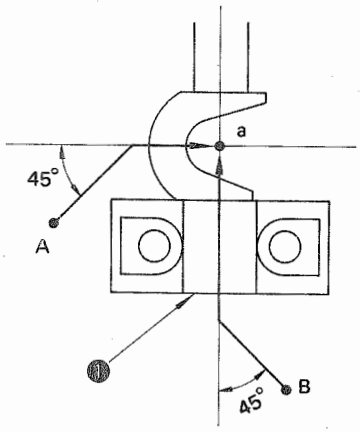


Move from origin 0 to sewing start point a by inputting jump.

However, do not jump directly from origin 0 to sewing start point a , otherwise inverting intermediate presser mounting base ❶ may interfere with the needle point.

To prevent mounting base ❶ from coming in contact with the needle point, input jump as illustrated, referring to "Position of inverting intermediate presser mounting base" shown in the digitizer sheet.

(9) Moving from sewing end point back to sewing start point



To move from sewing end points A or B to sewing start point a, first move at a 45° angle until the X or Y coordinates of the sewing start point is reached. Then move in the Y or X direction. Depending on the position of the sewing start or end point, the needle point may interfere with inverting intermediate clamp foot mounting base ❶ . For a pattern in which such interference is anticipated, add a jump command after sewing end and thread trimming to prevent the needle point from hitting inverting intermediate presser mounting base ❶ .

4. Test sewing function

Before the sewing pattern data created by pattern input are written on a micro-floppy disk, test sewing can be done using the AMS-210 electronic cycle machine. This test sewing function can be used also for the sewing pattern data read out from the disk. When the test sewing display is lighted up and "ENTER" is input, the display shifts to the start of test sewing, then the test sewing mode is executed.

(1) Test Start

When "ENTER" is input as an instruction to start test sewing, control shifts to the sewing machine, and the input unit becomes inoperative.

If it is desired to stop test sewing before enter, the (▼) step key can be used to shift control to End.

(2) Operate Sewing Machine

When the Set Ready switch on the control box panel is pressed, the feed searches for the origin, shifts to the sewing start point and halts; then test sewing can be done by normal sewing machine operation. Always start by performing test operation to confirm the pattern, then perform the

When test sewing is completed, press the Reset switch on the control box panel to return control to the input unit. At this time the End display stays lighted up. If "ENTER" is input the test sewing display lights up and the main functions can be selected.

5. Modification function

Sewing pattern data created by pattern input and sewing pattern data read out from a disk can be corrected. When the modification display is lighted up and "ENTER" is input, the display shifts to data processing and flashes, and the modification function is executed.

(Caution) During modification, forward and backward sewing machine feed are done with the step keys. At this time, the following data control items are displayed on the pattern input procedure display, and the number of points input with the stylus pen is displayed on the Counter on the control box panel.

(1) Correction possible

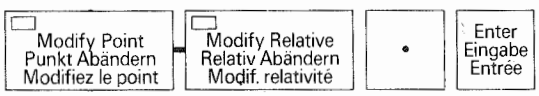
When "ENTER" is input as an instruction to start modification, the sewing machine feed control and the input unit control are executed and the "Ready" display changes from flashing to being steadily lit up. At this time, the sewing machine feed automatically searches for origin from whenever it is located, and then stops.

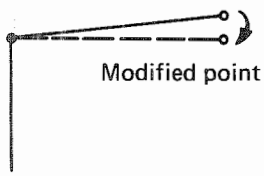
(2) Operate Programs Keys

Operate the step keys to perform program forward (▼) or reverse (▲) control.

Every time one of these keys is operated, the feed moves forward or backward among the points input with the stylus pen. When the feed is shifted to immediately before the data on which program modification is to be performed and then the function specification key corresponding to the modification to be made is input, the corresponding data modifies become possible.

①. Modify Point, Modify Relative

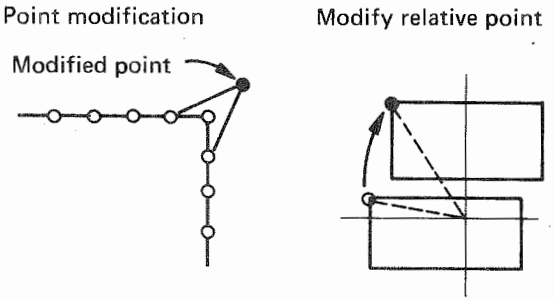




When the "Modify Point" function specification key is input, the Modify Point display lights up and Modify Point becomes possible; and similarly for Modify Relative. Then when the position of the point to be modified is specified and "ENTER" is input, the Modified Point is read. After computation, the display returns to "Ready".

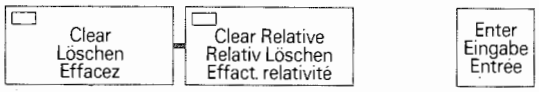
After that, if the (▼) step key is input the sewing machine feed shifts to the modified point to confirm that the modification has been made.

(Caution) In making modifications, a point can be replaced by another point, a linear by another linear or a curve by another curve, but, for example, a point cannot be changed to a linear.



* "Modify point" refers to a modification in which only the modified point is shifted and other points remain unchanged. "Modify Relative" means that not only is the modified point shifted, but all points after it are shifted by the same amount so that they remain in the same position relative to the modified point as before the modification.

②. Clear and Clear Relative

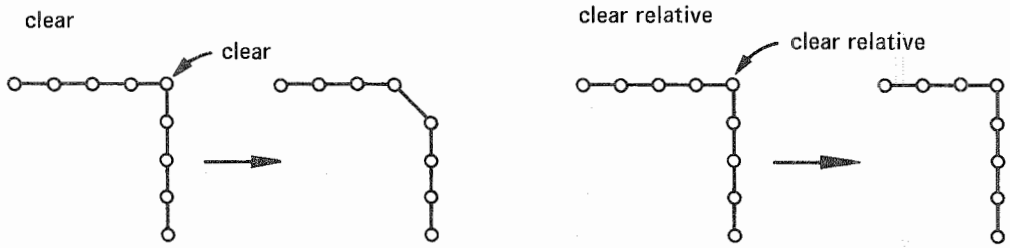


Data can be deleted immediately after a feed stop.

When the "Clear" function specification key is input, the Clear display lights up, and similarly for the "Clear Relative" key. Then, after "ENTER" input, the next point specification or function data (such as thread trim or temporary stop) is deleted, and the display returns to "Ready".

(Caution) If clearing is done immediately before a linear or curve, that linear or curve is completely deleted. Additions cannot be made after a deletion.
After a deletion, the (▼) step key can be used to confirm that the deletion was in fact carried out.

* "Clear" means that only the point in question is deleted, while other points remain unchanged. "Clear Relative" means that the positions of points following the cleared point shift to maintain the same positions relative to the point immediately preceding the cleared point that they had relative to the cleared point.

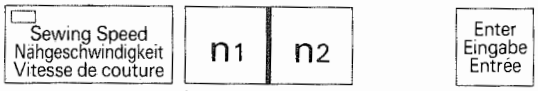


③. Re-enter pattern

A sewing pattern can be revised starting from an intermediate point.

When the feed is shifted to immediately before the point from which re-enter is desired and the "Re-enter pattern" function specification is input, the re-enter pattern display lights up. If "ENTER" is then input, the display then shifts to re-enter pattern point input and re-enter becomes possible. Subsequent data are all erased.

Perform re-enter, referring to the discussion of pattern input in this Instruction Book.

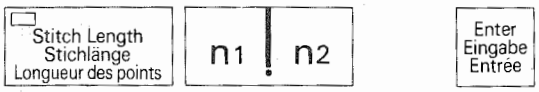


The sewing speed in point input, linear input and curve input can be modified.

In point input, linear input or curve input, when the feed is shifted to immediately before the part to which a modification is to be applied and the sewing speed function specification key is specified, the sewing speed display lights up. Then when the sewing speed is input using the numeric keys followed by a "ENTER" input, the modification is carried out automatically and the display shifts to "Ready".

(Caution) If a sewing speed above the limit imposed by the stitch length is specified, sewing is done at the limiting speed.

⑤ . Stitch length



In linear input and curve input the stitch length specification can be modified.

When the feed is moved to immediately before the instruction to be corrected and the stitch length function specification key specified, the stitch length display lights up. If the stitch length is then input with the numeric keys followed by "ENTER" input, a computation is automatically carried out and the display shifts to "Ready".

Specify the stitch length referring to the section on linear input in this Instruction Book.

(Caution) The stitch length can vary from 02 to 48 in steps of 2. The stitch length specified at the time of pattern input and the subsequent stitch length specified can be modified at a time. If modification is made midway, the stitch lengths entered between that modification and the subsequent specified point will be modified at a time.

⑥ . End of modifications

When modifications have been completed and the End function specification key is specified, the End display lights up. Then if "ENTER" is input the display shifts to "Modification", and selection of a main function becomes possible. Modification can be terminated even if the feed is in the middle of sewing data.

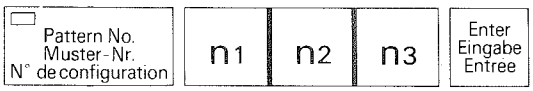
6. Write-in function

Pattern data created by pattern input or read-out pattern data are written in on a micro-floppy disk.

If "ENTER" is input while the Floppy Display Write display is lit up, the display shifts to pattern No. and write-in control is executed.

When the same sewing pattern data are to be written in on multiple media, repeat the write-in operation for each medium.

(1) Pattern No.



Specify the unused pattern No. which it is desired to write in with a numeric key. At this time the number that is input is displayed on the pattern No. display on the control box panel.

If "ENTER" is then input, the pattern No. display flashes and write-in is automatically executed. When write-in is completed, the END display lights up automatically.

(Caution) Patterns are arranged on a micro-floppy disk in the order in which they are written in. The last pattern No. can be repeatedly written in any number of times. At this time, the previous pattern data are all erased, so check that they are no longer necessary before doing it.

★ (Pattern No. specification)

Pattern No. specification is done by inputting a 3-digit number. Any number from 001 to 999 can be input. The number that is input is displayed on the pattern display on the control box panel.

A pattern No. consists of 3 digits; if more than 3 digits are input then only the last 3 are used.

(2) End (Completion of write-in)

When write-in is completed End lights up automatically. Then if "ENTER" is input, the display shifts to write-in and a main function can be selected.

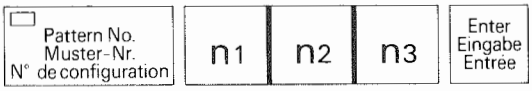
★ (Write-in errors)

① . If a previously written in pattern No. is specified and entered, the pattern No. display flashes and a pattern No. error is output. At this time, check the pattern No. and then reset it. The last pattern No. specification will not be considered an error.

② . If some trouble occurs during write-in control execution that causes write-in to be done erroneously, Floppy Disk Write display lights up. At this time, try repeating the write-in a number of times. If the error is repeated, apply a floppy disk check (write-in prohibition).

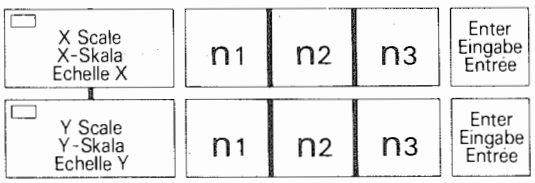
Sewing pattern data in a micro-floppy disk can be enlarged or reduced and then read out. If "ENTER" is read out while the Floppy Disk Read display is lit up, the display shifts to pattern No. and read-out control is executed. If erroneous data are input, shift the display using the (▲) step key and repeat the input.

(1) Pattern No.



Specify the number of the pattern to be read out. Refer to the section on write-in in this Instruction Book for instructions on how to specify the pattern No. After setting the pattern No., if "ENTER" is input then X-scale lights up.

(2) X-scale, Y-scale



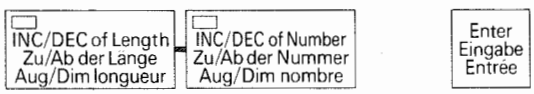
Input the X-scale and the Y-scale with the numeric keys. Enlargement or reduction can be done independently in the X and Y directions within the range of 1% to 400%, with the pattern written in on the micro-floppy disk taken as 100%. In the case of an ordinary pattern enlargement or reduction is done with the origin as a reference point.

When the X-scale is specified and "ENTER" input, the display shifts to Y-scale. When the Y-scale is specified and "ENTER" input, the INC/DEC of length display lights up. The specified number is displayed on the X. Y-scale display on the control box panel.

★ (X. Y-scale setting)

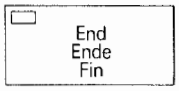
The X and Y-scale can be specified as 3-digit numbers in the range 001% to 400%. If more than 3 digits are specified, only the last 3 digits are used. The numbers that are input are displayed on the X/Y-scale display on the control box panel.

(3) INC/DEC of length, INC/DEC of number



When performing enlargement or reduction, choose whether the stitch length or the number of stitches is to be increased or decreased. Use the (◀) or (▶) step key to make the desired display light up, then read it with "ENTER" input. When this is done the display shifts to END.

(4) End (Completion of read-out)



If the read-out condition settings are good, inputs "ENTER". At this time the END display flashes and sewing pattern data read-out is executed.

When read-out is completed, the Floppy disk read display automatically lights up and a main function can be selected.

★ (Read-out errors)

①. Pattern No. error

If a specified pattern No. is not in the disk the pattern No. display flashes. In such a case check the pattern No. and repeat the input.

②. Enlargement error

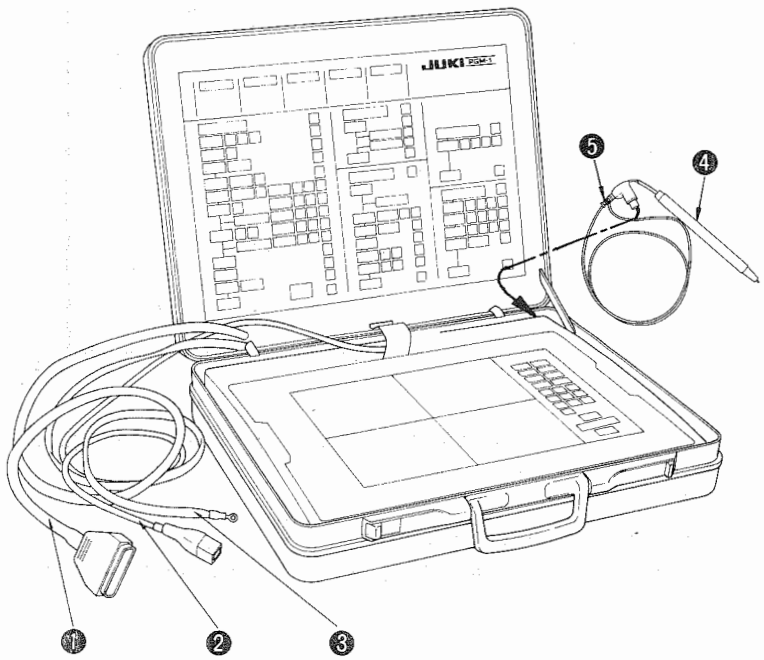
After the enlargement computation is executed, if as a result of stitch length increase the stitch length exceeds 4.8 mm, or if as a result of increase or decrease of number of stitches the computation area is exceeded, the X/Y-scale flashes.

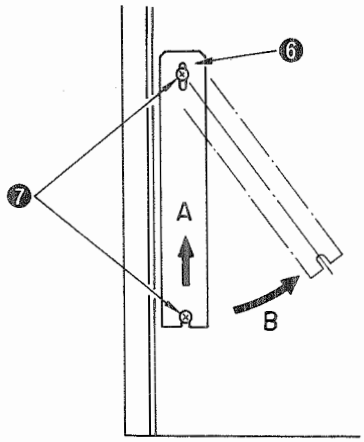
In such a case, decrease the enlargement rate and repeat the specification, or repeat pattern input of the sewing pattern data.

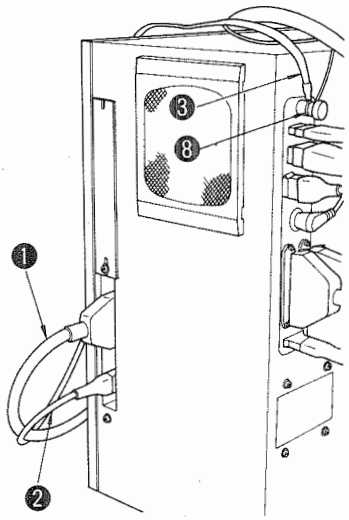
③. Read-out error

If during execution of data read-out control some trouble should occur causing read-out to be erroneous, the Floppy Disk Read display flashes. In such a case, try repeating the read-out a number of times. If the error continues to occur, remove the floppy disk and insert it again.

The PGM-1 is used while connected to the JUKI AMS-210 electronic cycle machine. Perform the following preparations before using it.



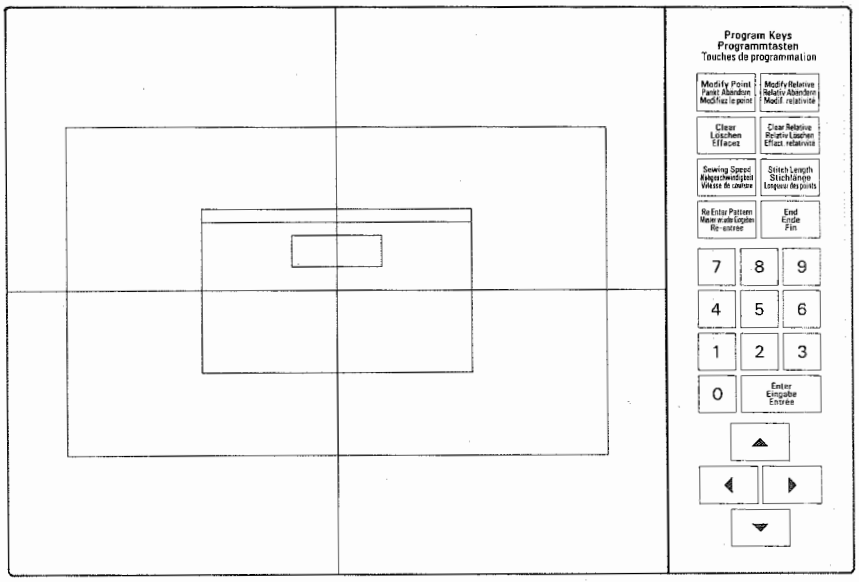




1. Place the PGM-1 input unit on a platform and open the case.
2. Take relay cords ❶ , ❷ and ❸ and stylus pen ❹ out of the case.
3. Point the stylus pen cord lead in ❺ upward and connect it to the digitizer side connector.
4. Loosen set screw ❼ on the control box panel connector blind plate ❻ , move the connector blind plate in the direction of arrow A and rotate it in direction B.
5. Connect signal cable ❶ coming out from the PGM-1 and power supply relay cable ❷ to the connector inside the connector blind plate.
6. Connect ground wire ❸ to ground terminal ❽ on the control box.
7. Turn the power switch ON and create sewing pattern data. After the creation is completed turn the power switch OFF and disconnect all of the connections in the reverse of the above order.

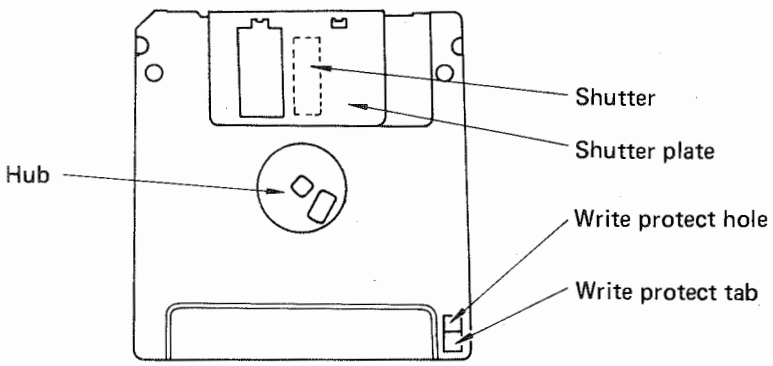
Ⅷ. PRECAUTIONS IN HANDLING

1. Handling the digitizer



1) Avoid installing the digitizer in a place where the temperature is extremely high or low, or where the humidity is high.
2) Do not apply strong vibrations.
3) Do not place any objects that become hot on the digitizer.
4) Wipe dirt off of the digitizer with a soft cloth soaked in alcohol. Do not use thinner or benzine.

2. Handling and storing the micro-floppy disks



1) Do not open the shutter and touch the magnetic surface with a finger.
2) Pressing the shutter plate strongly or applying excessive force can cause a breakdown.
3) Deforming the hub or using it while it is dirty can cause errors. Always keep it clean.

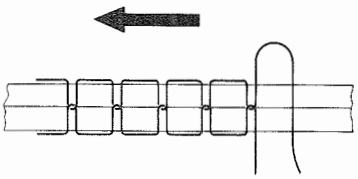
5) Do not use a rubber eraser.
6) Avoid eating or drinking near a disk.
7) Store away from high temperature, high pressure and direct sunlight.
8) Do not store in the presence of a magnetic field.
9) Do not store in a dusty or dirty place.
10) If power is turned ON or OFF with a micro-floppy disk inserted, data can be destroyed, so always insert disks after power is turned ON and remove them before power is turned OFF. Always apply the write protect except during write-in.

3. Check the direction of connectors before connecting them.
4. If a cable is pulled strongly, a wire can break or a connector can be pulled loose, so do not pull cables too hard.

IX. USEFUL INFORMATION FOR MAKING A SEWING PATTERN

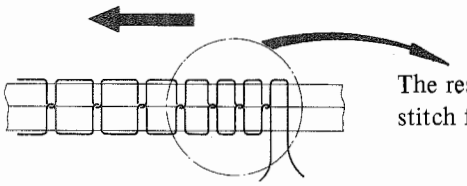
1. How to prevent a loose beginning stitch

Possible problem



Likely to occur when sewing with filament thread.

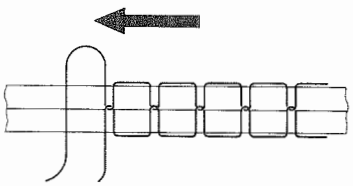
Corrective measures Decrease the length of the first stitch, then gradually increase the stitch length.



The resistance of the fabric prevents the beginning stitch from becoming loose or being skipped.

2. How to prevent a loose ending stitch

Possible problem



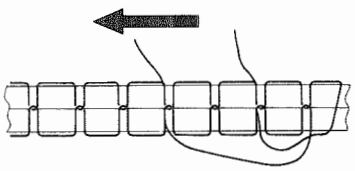
Likely to occur when sewing with filament thread.

Preventive measures

1) Be sure that the ending stitch is in the hitch stitch direction.
2) Reduce the stitch length.
3) Be sure that the needle entry is in the wiper swing direction.
4) Avoid the starting needle entry.

3. How to prevent beginning stitch thread from coming up

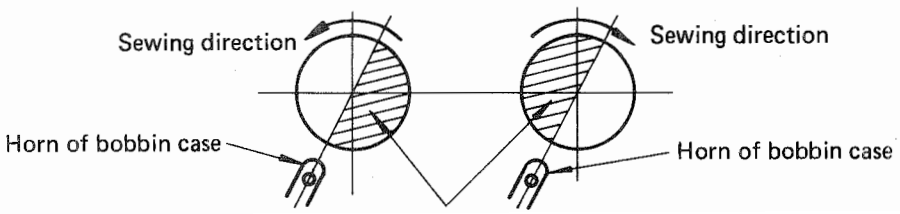
Possible problem



Likely to occur when sewing with filament thread.

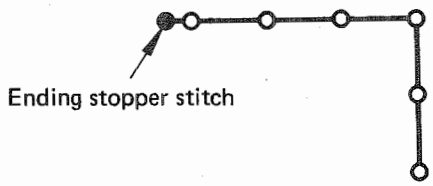
Corrective measures

1) Start sewing within the perfect stitch range, then change the sewing direction.
2) Use silicone oil.



Possible problem : Thread trimming length is often inconsistent when sewing with contton thread or spun thick thread.

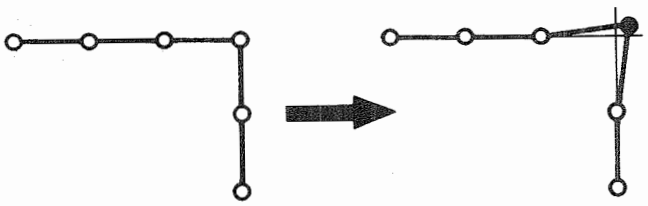
Preventive measures : When sewing with cotton thread, spun thread or thick thread, keep the ending stopper stitch apart from an adjacent needle entry further than when sewing with filament thread as illustrated below. (preferably in the perfect stitch direction for reduced lifting resistance)



5. Miscellaneous

1) **Knit stitch** : Keep the ending stitch apart from an adjacent needle entry for better finish.

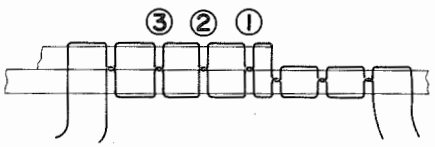
2) **Corner stitch** : Dislocate the corner as illustrated below for neat finish.



3) **Preventive measures against stitch skipping :**
Make the beginning needle entry parallel to the ending needle entry.

4) **Preventive measures against thread breakage while sewing :**
Be careful not to allow the needle to enter the same point three or more times, or else the thread may break.

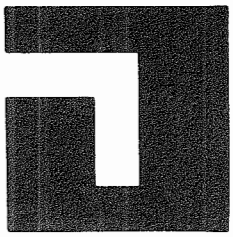
5) **Preventing the bobbin thread from "bouncing" in sewing the first overlapping part :**
This trouble often occurs when sewing with cotton thread.
Adjust so that more than three stitches are formed on an overlapping part. Reduce the length of beginning stitches.



6) **Preventing thread breakage at the last stitch :**
When sewing heavy-weight material, the needle may bend and pierce or break the thread if needle entry points are too close. As a result, there is a likelihood of stitch skipping and thread trimming failure. This is especially important when sewing with cotton thread.

7) **Preventive measures against bobbin thread trimming failure :**
In order to tense the bobbin thread at the last stitch, be sure to provide a 1 mm or more space between the ending stopper stitch and the preceding needle entry. At this time, however, be careful not to allow an excessive space between them especially for filament thread, otherwise a loose ending stitch may result.

8) **How to minimize the length of threads remaining on material :**
Align the last stitch with the first stitch.



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