MITSUBISHI ELECTRIC

Industrial Sewing Machine

TECHNICAL MANUAL

Electronic Pattern Sewing Machine
PLK - G Series

Operation Panel

A180E606P02

Contents

Thank you for purchasing the Mitsubishi industrial sewing machine PLK-G Series. Please read this technical manual before starting to ensure correct and long-term use.

* The contents of this manual may not be reproduced in part or whole.
* The contents of this manual are subject to change without notice.
* An utmost effort has been made to cover all points of operation in this manual. Contact Mitsubishi if you have any questions regarding the contents.

[1] For safe use

■ For safe use

Always observe the following matters to safely use the Mitsubishi industrial electronic sewing machine PLK-G Series.

Before starting

Before using this control unit, read all of the technical manuals carefully, and correctly use the unit following the manual. Also read the "Mitsubishi Industrial Sewing Machine Technical Manual <Sewing Machine Head>" for details on the general configuration and sewing machine head.

Application and purpose

This control unit is designed to drive and control the Mitsubishi industrial electronic sewing machine PLK-G Series. Do not use this control unit for other applications or purposes. Do not use this control unit until it has been confirmed that safety measures have been accurately taken for the installed electronic sewing machine head section.

Working environment

Do not use this control unit in the following type of environment.

(1) Power voltage
- * Where the voltage fluctuation exceeds ±10% of the rated voltage.
- * Where the specified power capacity (refer to technical manual [Control unit] page [4]-2 “5. Power capacity”) cannot be ensured.

(2) Magnetic noise
- * Where strong fields or magnetic fields are generated, such as near a high-output high frequency oscillating machine or high frequency welder.

(3) Temperature and humidity
- * Where the ambient temperature is 35°C or more and 5°C or less.
- * Where the unit will be subject to direct sunlight, or outdoors.
- * Near sources of heat, such as heating appliances.
- * Where the relative humidity is 45% or less, or 85% or more, and where dew may condense.

(4) Atmosphere
- * In an atmosphere containing dust or corrosive gases, etc.
- * In a flammable gas or explosive environment.

(5) Vibration
- * If excessive vibration could occur when installed on the sewing machine, separately install the control box.

■ Installation

Control box

Correctly install the control box according to this manual.

Accessories

Always disconnect the control unit from the main power supply before installing the accessories listed in this manual. (Turn the power switch OFF, and disconnect the plug from the socket (power supply line).)

Cable

(1) Lay the connection cables so that excessive force will not be applied during operation. Do not excessively bend the cables.

(2) Cables laid near operating machine sections must be separated by at least 25mm.

(3) Before connecting the power cable to the control box, confirm that the power voltage matches the specifications given on the control box's rating nameplate and factory shipment voltage nameplate. Connect the cable to the indicated positions, and then supply the power. When using a power unit, connect the cable to the power unit and supply the power. In addition, when using a power unit, confirm that the power voltage matches the specifications given on the power unit's rating nameplate. Turn the power switch OFF before making any connections.

Grounding

Always ground the power cord's grounding wire.

Enclosed units and accessories

Connect the electrical enclosed units and accessories only to the positions indicated in the manual.

Removal

(1) Always turn the power switch OFF and disconnect the plug from the socket (power supply line) before removing the control box.
(2) Do not pull out the cord when disconnecting the plug. Always hold the plug receptacle when disconnecting the plug.
(3) Note that a high voltage is applied inside the control panel, **so always turn the power OFF and wait at least ten minutes before opening the control box cover.**

■ Maintenance, inspection and repairs

(1) Follow this manual when carrying out maintenance or inspections related to this control unit.
(2) This unit must be repaired, serviced and inspected only by a worker that has received special training.
(3) Always turn the power OFF before replacing the needle or bobbin, etc., on the head.
(4) Use genuine replacement parts for repairs and maintenance.

■ Other safety measures

(1) Keep fingers away from all moving machine parts (especially around the sewing machine needle, etc.).
(2) Never drop the control unit, or place objects in the clearances.
(3) Do not operate the sewing machine without the protective parts such as the cover, or protection devices such as the safety breaker.
(4) If any damage is observed in the control unit, if the unit does not operate correctly, or if the operation is suspicious, always suspend operation. Only operate the machine after the supervisor has adjusted, repaired or inspected the machine.
(5) The user must not make improvements or changes without instruction from Mitsubishi.

■ Caution displays and danger displays

(1)In this manual, the dangers and danger levels that arise with incorrect handling are classified using the following displays.

⚠Warning	The warning display shows that incorrect handling can lead to death or serious injuries.
⚠Caution	The caution display shows that incorrect handling can lead to injuries or damages to your house, household goods, and others.

(2)The meanings of these symbols are as follows.

	This symbol indicates that the instructions must be followed.
	This symbol indicates hot temperature requiring caution.
	This symbol indicates a prohibited action.

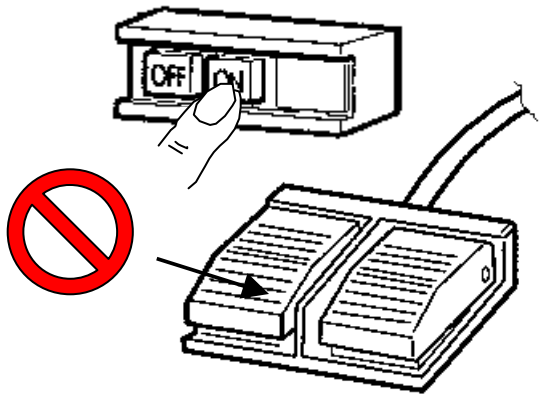
	This symbol indicates an electrical hazard or caution (electric shock caution).
	This symbol indicates that ground wire connection is required.

* Always deliver this manual to the end user.
* Store this manual nearby where it can be referred to when necessary.

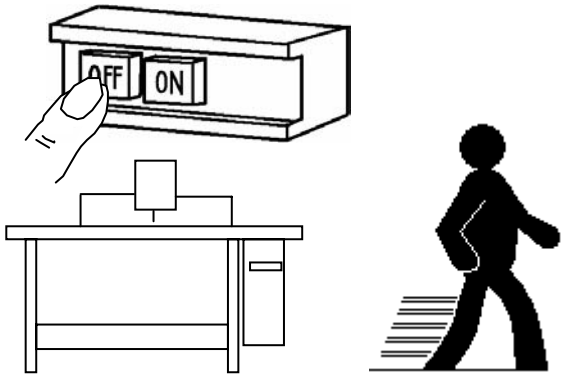
[2] Precautions for use

⚠Warning

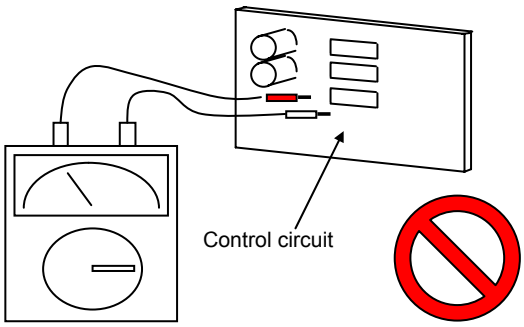
1. Do not place foot on the foot switch when turning the power ON.



2. Always turn the power OFF when leaving the sewing machine.

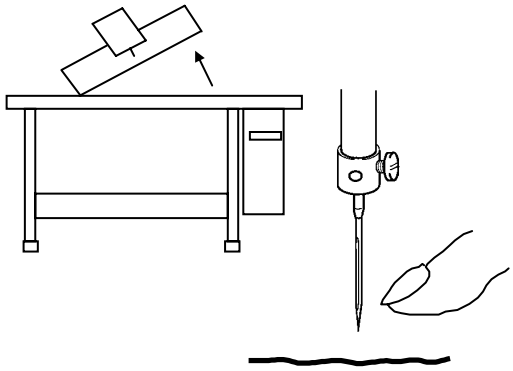


3. Do not inspect the control circuit with a tester.

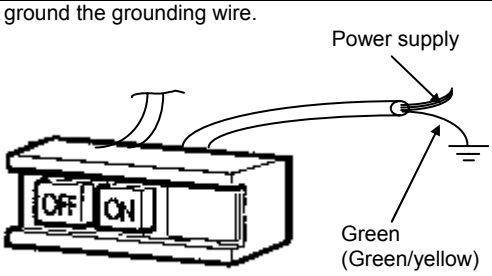


The tester voltage could be applied on the semiconductor parts, and cause damage.

4. Always turn the power switch OFF before tilting the sewing machine head, replacing the needle, or passing thread through the needle.

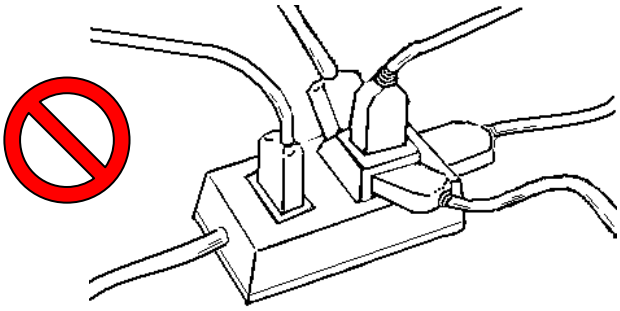


5. Always ground the grounding wire.

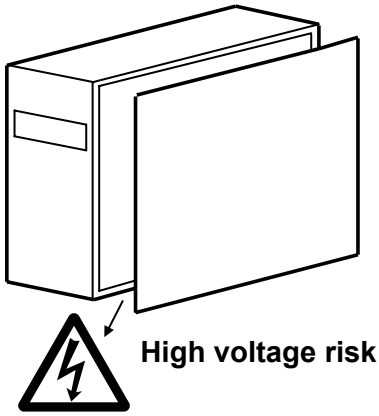


Always ground the provided grounding wire (green(green/yellow)).

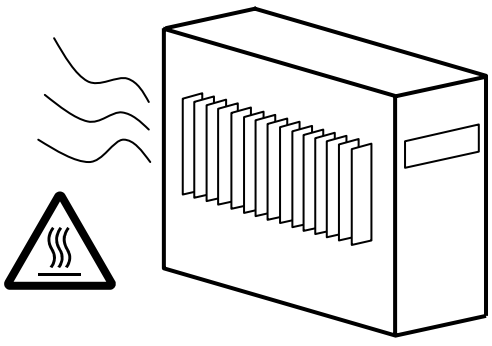
6. Do not use excessive wiring.



7. A high voltage is applied inside creating a hazardous state, so always turn the power OFF and wait ten minutes before opening the cover.



8. Radiation fins and other parts may be hot. Do not touch the parts.

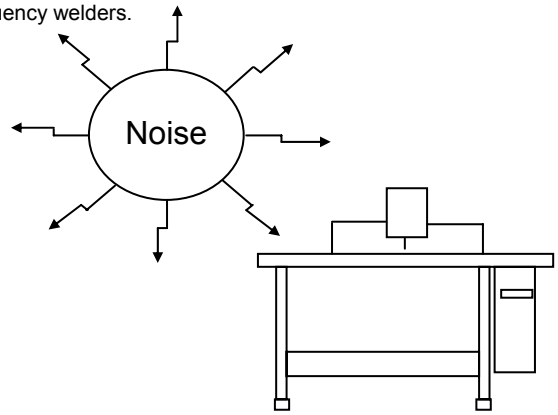


9. The sewing machine will coast to a stop when the power is turned OFF or a power failure occurs during sewing machine operation.

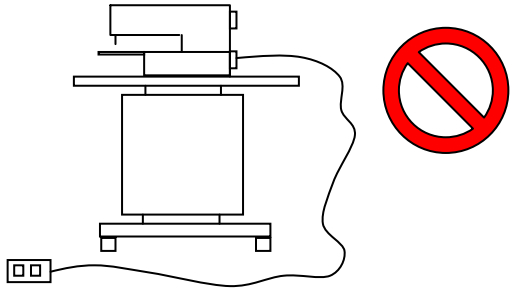
10. Always align the connector shape and direction, and securely insert the connector.

11. If the position detector's connector dislocates, or the sewing machine is completely locked, the motor will be turned OFF automatically for a set time to prevent burning. (Note that the motor may not turn OFF if there is incomplete locking or an overload.) When the fault has been recovered, turn the power OFF and ON once to resume normal operation. The same type of operation will take place if a detector fault or disconnection occurs.

12. Use the machine away from strong noise sources such as high frequency welders.

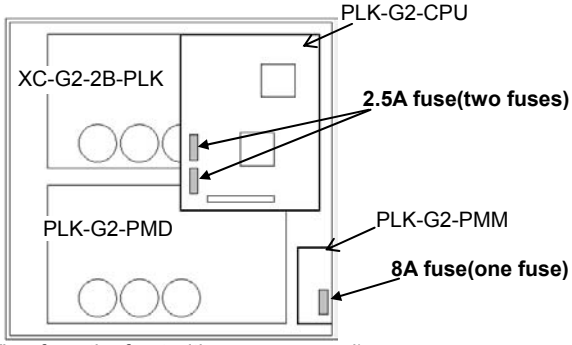


13. When connecting the external switch to an optional connector, etc., keep the signal wire as short as possible. A long wire could cause malfunctions.

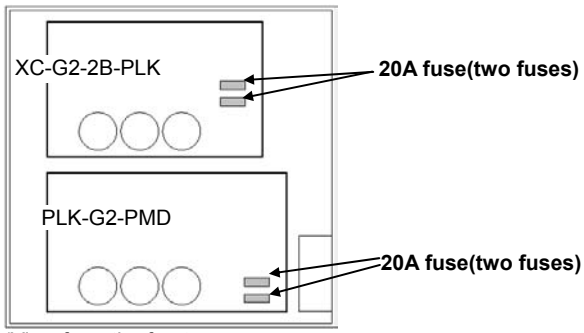


Use a shielded wire for the signal wire when possible.

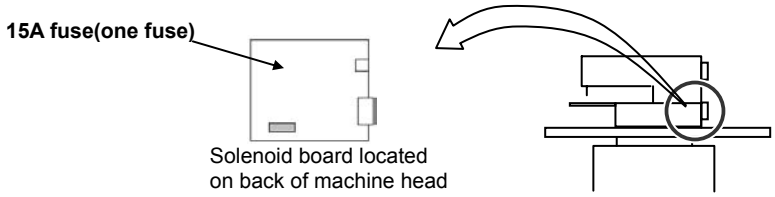
14. If the fuse blows, remove the cause, and replace the blown fuse with one having the same capacity.



(View from the front with cover removed)



(View from the front with the cover and CPU removed)



Solenoid board located on back of machine head

15. Attention when power supply is turned on again

Please make sure that turning on the power supply switch, after the LED of the front panel on the controlbox is completely turned off.

(Please do not turn on the power supply again while displaying the screen of the oepration panel.)

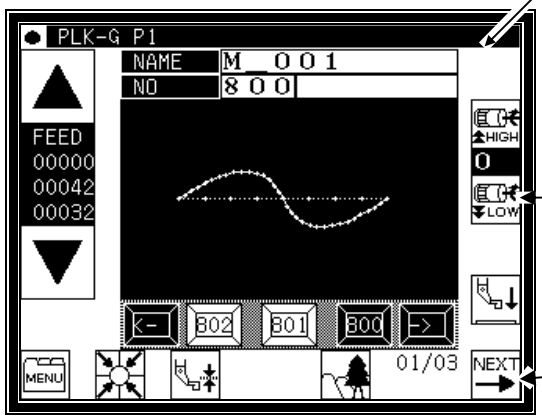
[3] Explanations of basic screen, icons and operation

Note When power supply is turned on, if there is not sewing pattern data in the internal memory, the message of [PATTERN DATA DOES NOT EXIST] is displayed. Press  , then the standard screen is displayed.

Note When you adjust the contrast to make the operation panel screen easier to view, refer to Chapter 8, “Adjusting the Liquid Crystal Contrast.”(Page[3]-6)

1. Screen configuration

(1)Sample screen 1 (Standard screen 1)

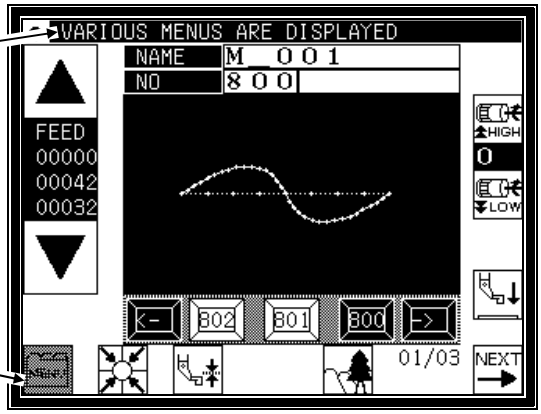


[Line at top of screen]
Normal: Index
(simple explanation of screen)
When any key is pressed:
The explanation for that key will appear. (Refer to sample screen 2.)

Some keys will continue execution while the key is held down.

Most keys will execute the operation when the finger is released.

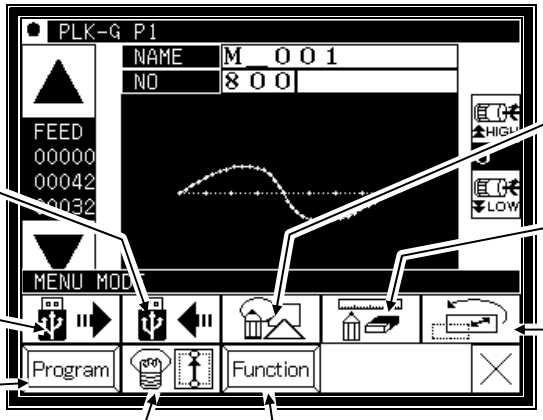
(2)Sample screen 2 (While menu icon on Standard screen 1 is held down)



An explanation of the key and the screen will appear.

This key (menu key) is pressed, so the key will be highlighted.

(3)Sample screen 3 (When menu is opened on Standard screen 1)



Writing data

Reading data

Program mode

Input/output setting mode

Methods of creating stitching data

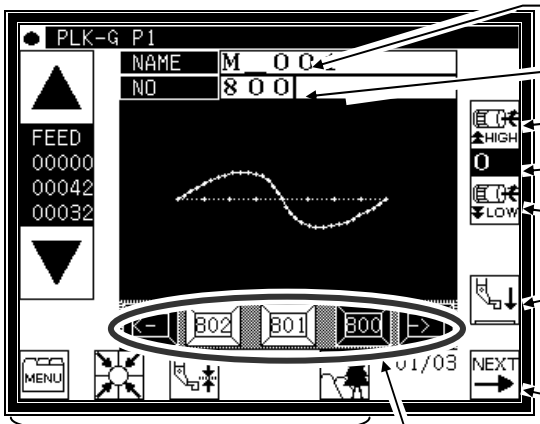
Modification mode

Data conversion mode

Function mode

2. Explanations of Standard screen 1

The Standard screen 1 is explained in detail below.



The pattern name is displayed. (Max : eight characters)

The pattern No. is displayed.

The sewing machine stitching speed is increased.

The current stitching speed setting value is displayed. (0~9)

The sewing machine stitching speed is decreased.

The presser foot is moved up/down. (*1)
(The direction of the arrow (up/down) will change according to the current state.)

Standard screen 2 opens.

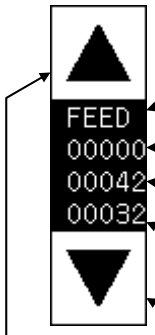
The stitching data is changed.
(Data in internal memory)

… Home position return will be executed.

… The menu window will open

… The Image screen will open.

… The presser foot correction screen will open.



The stitching data type for the current work holder position is displayed.
(FEED, SEW, TRIM, etc.)

The current number of stitches is displayed.

The total number of stitches (including the feed data, thread cutting code, end code, and code data) will be displayed.

The total number of actual stitches (excluding the feed data, thread cutting code, end code, and code data) will be displayed.

The operation is confirmed (Jogging in forward/reverse direction)

(1) If the work holder is lowered after home position return and the forward jogging direction (upward arrow) is pressed, the XY table (work holder) will move according to the stitching data. When the icon is released, the operation will stop at that position. When the jog minus direction (downward arrow) is pressed, the XY table (work holder) will move in the direction that the stitching data returns. When the icon is released, the operation will stop at that position.
(2) Check pattern data is correct by jogging buttons, before press start pedal.
(3) During operation, the presser bar lifting will lower at stitching sections in the stitching data, and will rise at the feed data sections.

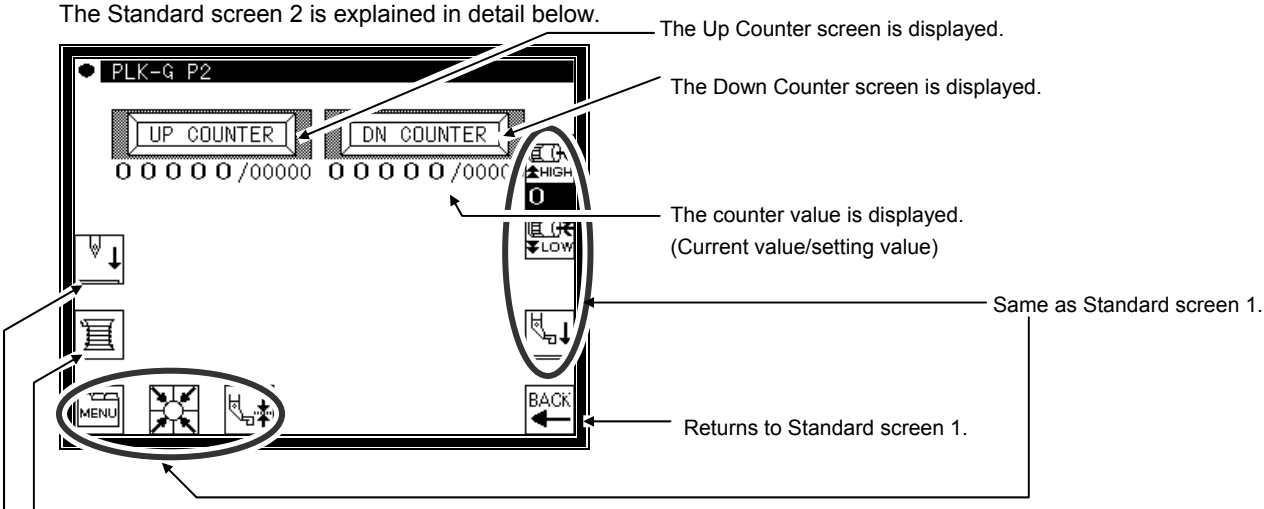
(*1) Presser bar lifting : Lowering the presser bar lifting when threading the needle is handy.

⚠Caution Turn the power OFF before threading the needle.

3. Explanations of Standard screen 2

Displays the Standard screen 2 from the Standard screen 1, by pressing NEXT.

The Standard screen 2 is explained in detail below.



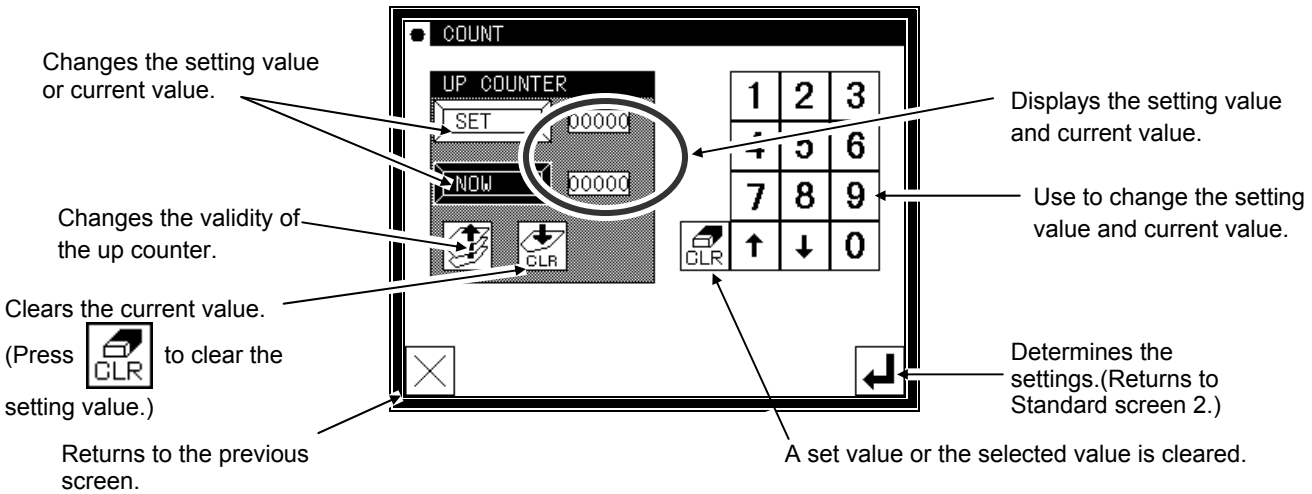
... Bobbin winding mode (The presser bar lifting will lower, and the Bobbin Winding Setting screen will open.) (The details are explained on the next page.)

... Moves the needle up/down.

4. The Up Counter screen is explained below

(The Down Counter screen is the same, except for the valid/invalid icon design.)

* The methods of counting with the up counter (down counter) and clearing the counter are determined by the program mode setting. (Page[16]-7)

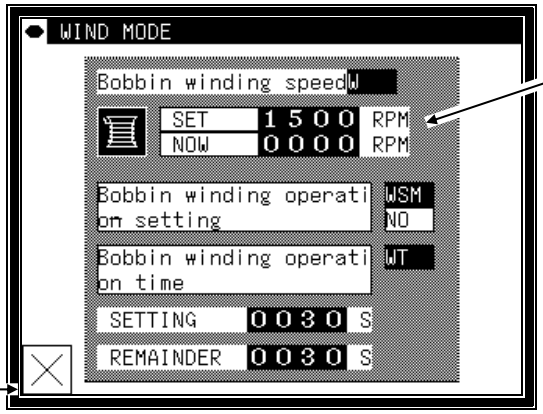


●When this screen is displayed, sewing cannot be performed.

5. The Bobbin Winding screen is explained below

This screen is used to wind thread on the bobbin. (The presser bar lifting will lower when the bobbin winding icon is pressed on the Standard screen 2.)
When the work holder switch is turned ON and the start switch is turned ON, the sewing machine will start rotating at the set speed. The XY table will not move at this time. The sewing machine will stop at the needle UP position when the start switch is turned OFF.

* The bobbin winding operation is determined by the program mode setting. (Page[16]-9)



Displays the current setting value.

Exits the bobbin winding mode.
*When exit winding mod, presser foot is raised.

6. Explanations of basic icons

The basic icons used commonly on several screens are explained in this section.

… Executes home position return.

… Enter : determines the settings, etc.

… Returns to the previous screen.

… Exits the current mode.

… Cancel : undo the previous operation.

… Opens the menu window.

… Displays the previous/next list when lists are displayed (pattern data list, mode list, etc.)

… Turns skip jogging ON/OFF, and opens the operation setting screens.

7. Explanation of operations

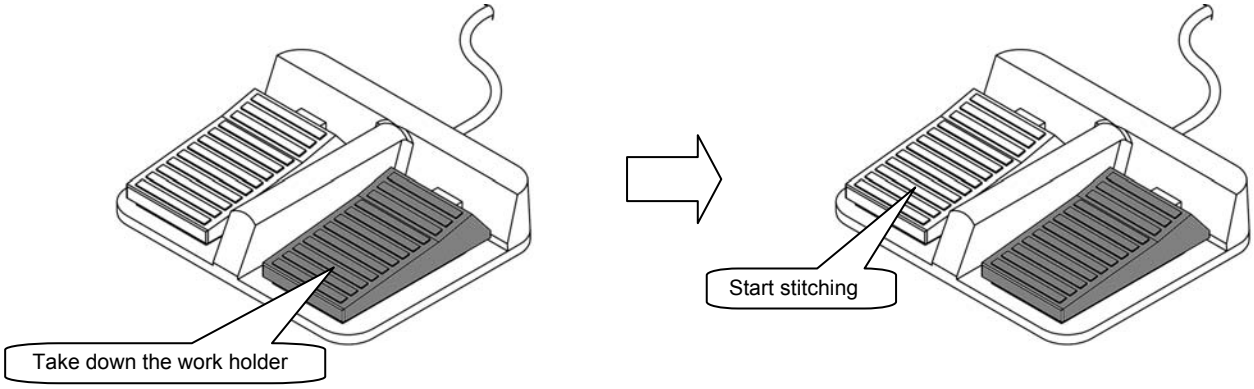
(1) Stitching operations

[1] Reconfirm the stitching data before starting. Take special care to the set stitching speed.

[2] The stitching speed is determined according to the set speed and stitch length. The maximum stitching speed is determined by the speed setting, and the stitch length limits the stitching speed.

[Caution] Do not change the sewing machine stitching speed during operation except in emergencies.
(Changing the speed can cause fault such as thread catching faults.)

[3] Set the material to be stitched, and turn the work holder switch ON. Next, when the start switch is turned ON, the sewing machine will start rotating and stitching. Once started, stitching will continue even the operator's foot is released from the start switch. When the stitching is completed, and the work holder returns to the home position, the sewing machine will stop and the work holder will automatically rise.



(2) Halting

To stop during the stitching, press the HALT switch (installed on sewing machine head; refer to following drawing). The sewing machine will stop at the needle UP position. (Standard default setting.)
To cancel the halted state, press the HALT switch again. The following operations will be possible when the halted state is canceled.

[1] Restart of stitching by pressing start switch. (gray pedal)

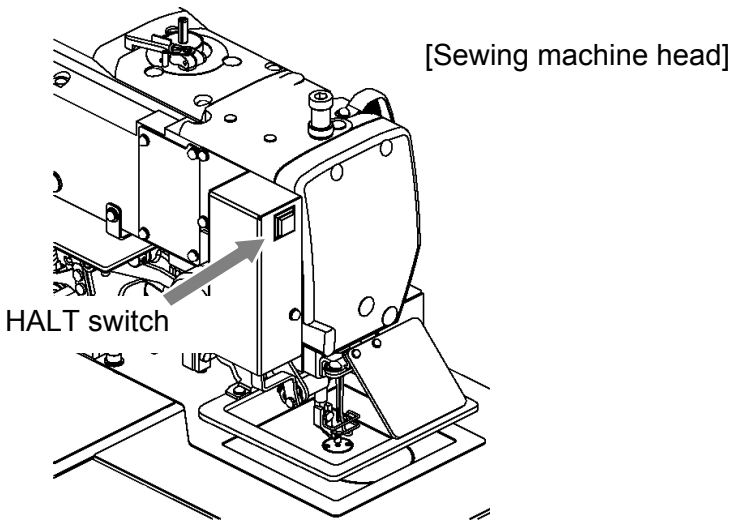
[2] Movement to stitching start position with forward jog/reverse jog icons.

[3] Lifting of work holder by pressing work holder switch. (black pedal)

[4] Change of stitching speed by setting stitching speed.

[5] Lifting/lowering of presser bar lifting.

[Note] The needle position during the halted state can be set with the program mode .



(3) Restitching methods

Restitching can be carried out using the previously explained halt function.
If the operation is halted due to needle thread breakage, etc., set the needle at the UP position, and then using the forward jog/reverse jog icons, move to the position where the thread broke. Tie the needle thread, etc., and restart stitching by pressing the start switch.

⚠Caution If the needle must be thread while the power is ON, do not turn on the start switch while threading. Doing so initiates machine rotation, resulting in an extremely dangerous situation. To ensure that the start switch is not turned on during threading, take measures such as moving the start switch away from your feet.

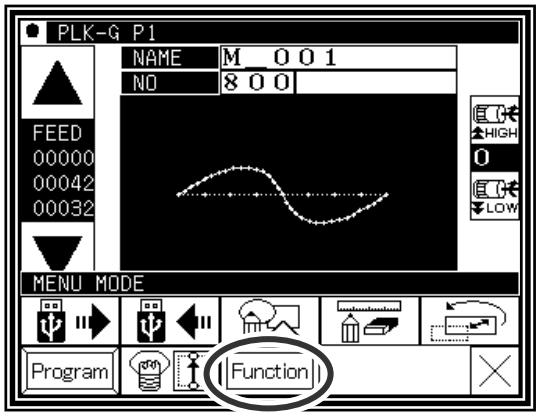
8.Adjusting the Liquid Crystal Contrast

(1)Entering the function mode

►Press 

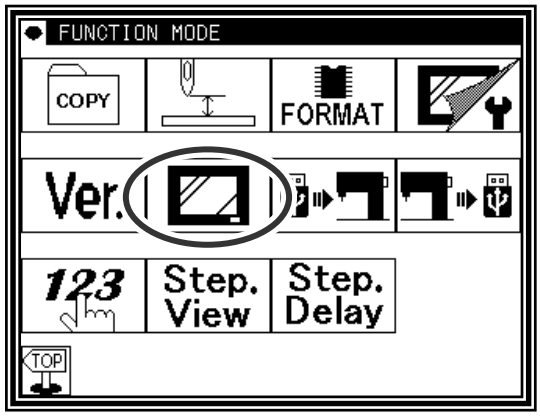
on the standard screen, and open the menu mode.

►Press 



(2)Entering the screen mode

►Press 
on the function mode menu, and open the screen mode.

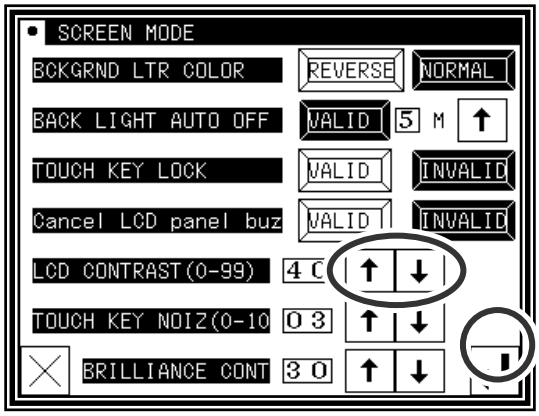


(3)Adjustment of LCD contrast

►Set the liquid crystal contrast value using the up and down arrow icons.

►After setting the value, press the 
[Enter] icon to apply the value.

►Back to Standard screen, then contrast setting is completed.



[4] Sewing Data Compatibility

1.Types of Sewing Data

Type	Explanation	Number
A data	This is data created with the PLK-A series (old model).	100 ~ 299
BA data	This is data created with the PLK-B series and E series (old model). (For embroidery data)	400 ~ 499
B data	This is data created with the PLK-B series and E series (old model).	600 ~ 799
G data	**This is data created with the PLK-G series.** (The maximum number of stitches is 20,000 stitches.)	**800 ~ 999**

2.Sewing Data Compatibility

The following table shows the handling capabilities of the sewing machine (PLK-G series) with respect to four types of sewing data.

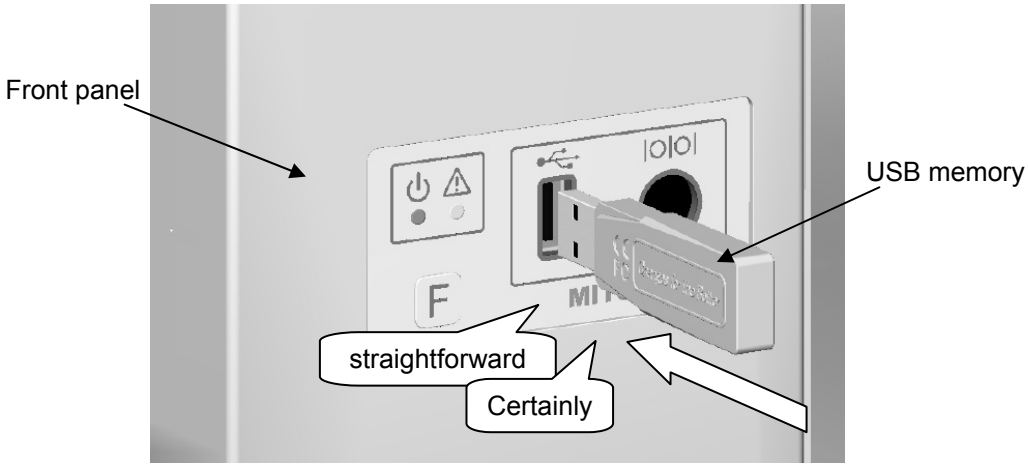
Type	Reading	Stitching	Continuous input, Modification and Conversion	Writing
A data	Available	Available	Not available	Not available
BA data	Available	Available	Not available	Not available
B data	Available	Available	Available	Available (Writing possible after conversion to G data)
G data	**Available**	**Available**	**Available**	**Available**

[5] Reading, writing and erasing data

1. USB

To perform actions such as storing (reading/writing) sewing data on a device other than the internal memory or reinstalling the system, a USB device is used. The device is connected to the USB connector on the front side of the control box.

When using a USB device, be sure to fully insert the device into the USB connector. (Refer to the figure below.)



[Caution]

■ Connect the USB device during use only. After use, remove and store the device in an appropriate location. When USB device is not connected, insert protection cap to the USB connector. (Protection cap must be inserted correctly according to the shape of the USB connector)

■ Sewing cannot be performed with the USB device inserted.

■ Do not insert the USB device during sewing.

■ Be careful that nothing bumps into the inserted USB device.

Conditions of Application

- USB1.1 or USB2.0 compatible USB memory and USB floppy disk drive (Note, however, formatting cannot be performed with a floppy disk drive connected to the machine.)
- Required power supply: USB compatible, 500mA or less

Note The write-protector might not be able to recognized according to the kind of USB device. Please make sure to release the write-protection before writing data to the USB memory.

Inapplicable Devices

■Never connect the following devices.
(Doing so causes malfunctions.)

- USB device requiring an external power supply (including Computer devices)
- USB hard disk drive, keyboard, mouse
- USB memory with fingerprint authentication function or with security function
- USB memory with hub function
- Media reader
- USB device without data storage function

2.Reading

Operation points

·Select “Read mode” from the menu.
·Select the target (internal memory/USB memory).
·Select the data, and execute reading.

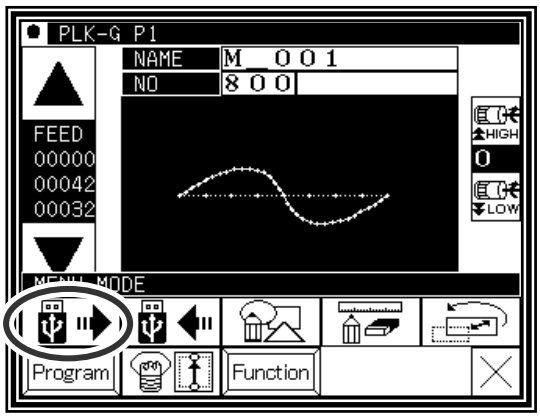
Operation details

(1)Selecting data read

Note Data reading excluding the start position cannot be executed. Read pattern data after home returning.

►Press MENU on the standard screen, and open the menu mode.

►Press .



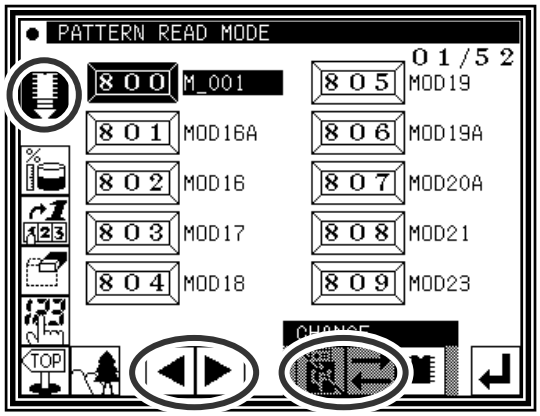
(2)·Select the target (internal memory/USB memory).

►When the screen first opens, the mode to read from the internal memory is selected.
(The mode display at the upper left of the screen is)

►Press to change to reading from the USB memory.
(The mode can also be changed by pressing)

Note If the USB memory is not inserted into the USB connector, USB memory icon can not be selected.

►If there is a large amount of data, press to change the screen.

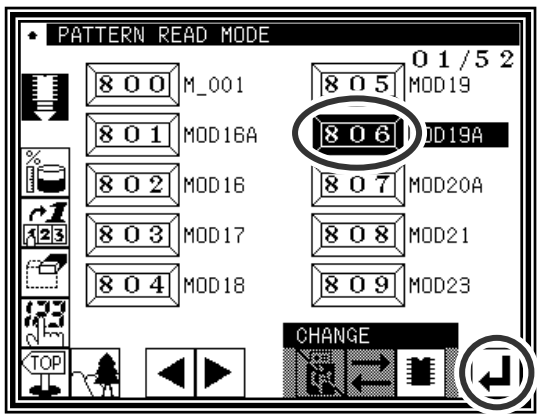


(3)Selecting and setting the data

►Press the number of the data to be read, and then press .

Note When you read data from the USB memory and select a data number that already exists in the internal memory, a message confirming that you overwrite the data appears. If you do not overwrite the data, press the icon. If you overwrite the data, press the icon.

►The read data will be displayed.



[Caution] When the target is the USB memory, do not remove the USB memory during reading. (Doing so may result in data damage.)

Note When the pattern data number is already known, it is possible to read by specifying the number directly by the following operations.
(Following operation is limited to reading from an internal memory.)

Reading [Direct reading mode]

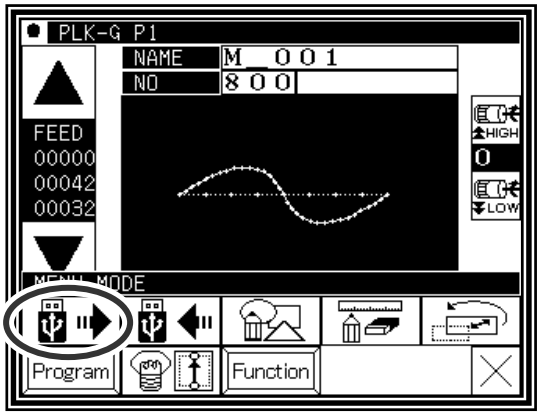
Operation details

(1) Selects pattern data read button

Note Data reading excluding the start position cannot be executed. Read pattern data after home returning.

►Press MENU, then menu screen is displayed.

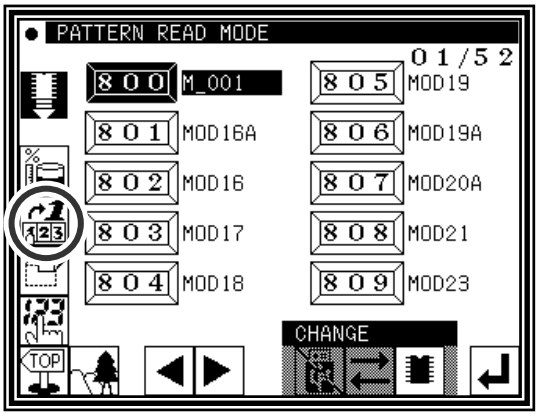
►Press .



(2)Selects direct pattern number selection

Note Direct pattern number selection is possible only to the data stored into the internal memory.

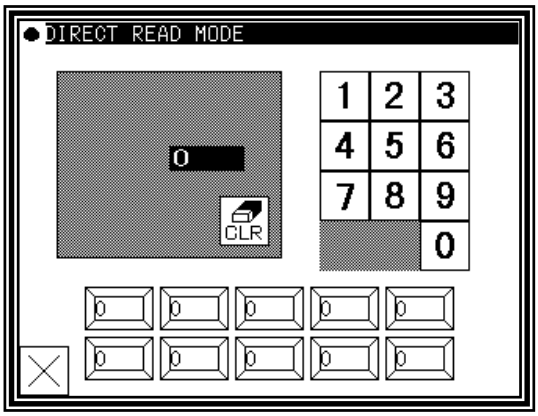
►Press direct pattern number button .



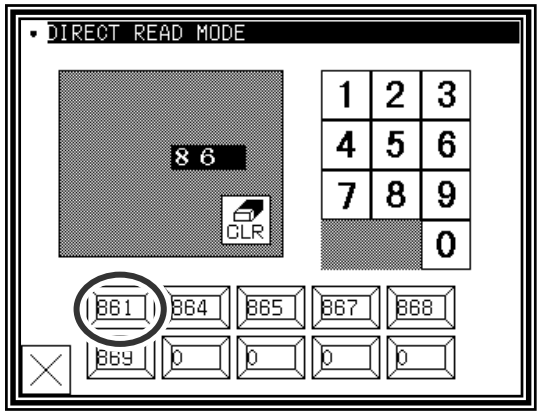
(3) Specifies pattern data number 1

(example. Case of reading number [861].)
► Press number button [8].

► Then 10 of pattern datas which number start from 8 are displayed.



(4) Specifies pattern data number 2



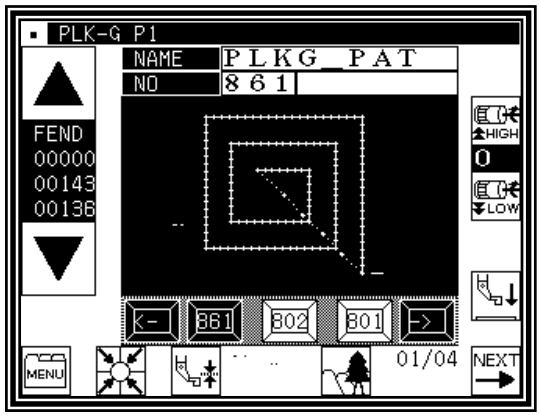
►Next press number button [6].

► Then all pattern data which number starts from 86 is displayed.

►At this time, desired pattern number [861] is displayed, then press 861.

Note It is also available, if inputs 3 digits in the column as [861] and push 861 button.

(5)Data read complete



►Standard screen with the figure of pattern number [861] is displayed.

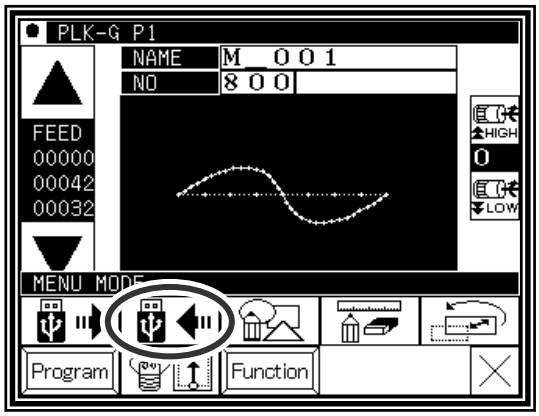
3.Writing

Operation points

·Select “Write mode” from the menu.
·Select the target (internal memory/USB memory).
·Set the pattern name and number, and execute writing.

Operation details

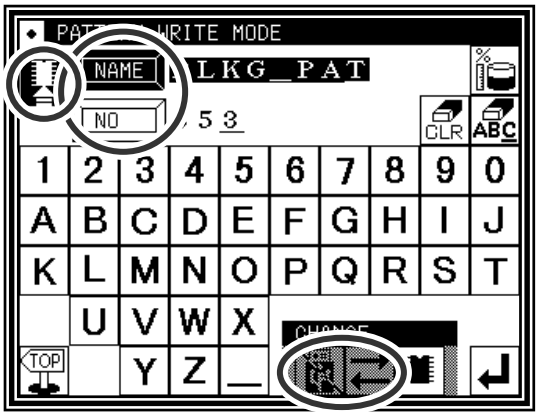
(1)Selecting data write



►Press MENU on the standard screen, and open the menu mode.
►Press .

Note Data writing excluding the start position cannot be executed. Write pattern data after home returning.

(2)Setting the pattern number and name

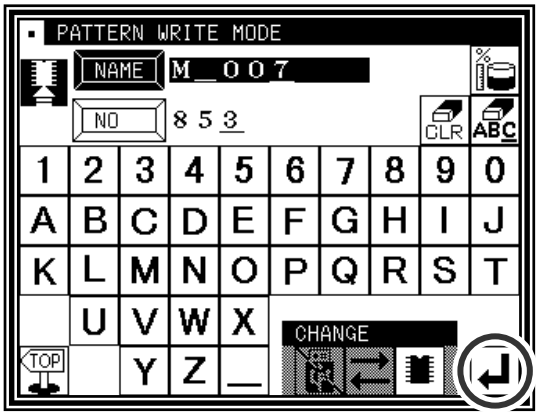


►When the screen first opens, the mode to write to the internal memory is selected.
(The mode display at the upper left of the screen is)
►Press to change to writing to the USB memory. (The mode can also be changed by pressing)

Note If the USB memory is not inserted into the USB connector, USB memory icon can not be selected.

►Set the pattern number and name.
Press NO , and to change the name press NAME . Highlight the icon, and then change the setting.
When the ABC icon is pressed, one of the alphanumeric characters from the right can be deleted from the pattern number or name. If press the CLR icon, all character is deleted.
(The pattern name can have up to eight characters.
Specify the pattern number within the range of “800” to “999”.)

(3)Starting writing



►Press .

Note If you try to write a data number that already exists for the write target, a message confirming that you overwrite the data appears. If you do not overwrite the data, press the icon. If you overwrite the data, press the icon.

►The standard screen will reappears.

[Caution] When the target is the USB memory, do not remove the USB memory during writing. (Doing so may result in data damage.)

4.Erasing

Operation points

·Select “Read mode” from the menu.
·Select the target (internal memory/USB memory).
·Select the data, and execute erasing.

Operation details

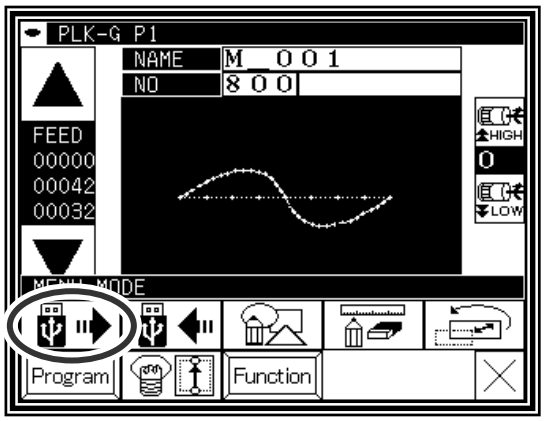
(1)Selecting data erase

►Press 

on the standard screen, and open the menu mode.

►Press  .

Note Data erasing excluding the start position cannot be executed. Erase pattern data after home returning.



(2)Select the target (internal memory/USB memory).

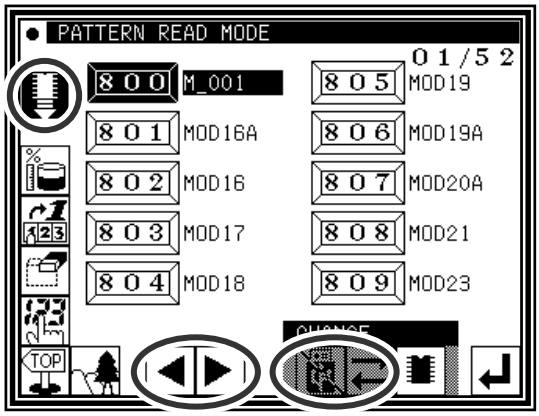
►When the screen first opens, the mode to erase from the internal memory is selected.
(The mode display at the upper left of the screen is 

)

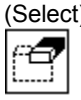
►Press  to change to erasing from the USB memory.
(The mode can also be changed by pressing )

Note If the USB memory is not inserted into the USB connector, USB memory icon can not be selected.

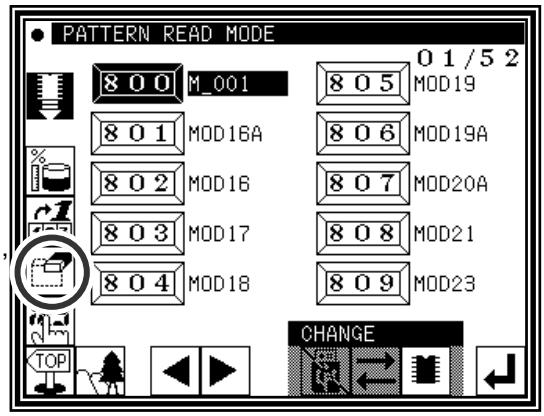
►If there is a large amount of data, press  to change the screen.



(3)Selecting and erasing the data

►Press (Select) the number of the data to be erased, and press  .

Note A message confirming that you erase the data appears. If you cancel the erase operation, press the  icon. If you execute the erase operation, press the  icon. A message indicating that erasing is in progress appears, and then the Standard screen reappears.



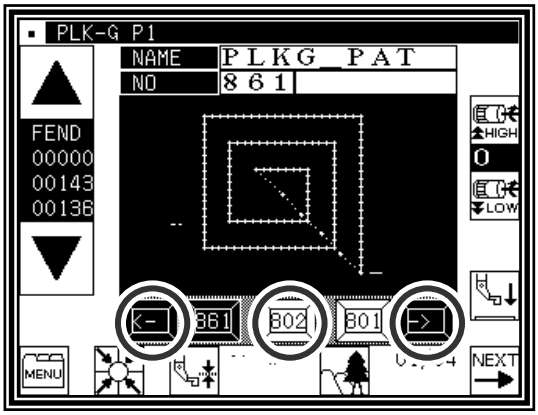
[Caution] When the target is the USB memory, do not remove the USB memory during erasing. (Doing so may result in data damage.)

5.Reading data with shortcut icons (Reading from internal memory)

Memo Data can be read out with easy operations.

Operation details

(1)Reading data



►Use the icon under the image area of the standard screen for call-up operation.
(No. 802 is used as an example here.)

►Press  to sequentially display the No. icon for the data written in the internal memory from left to right.(*1)

►Press  to sequentially display the No. icon for the data written in the internal memory from right to left.(*1)

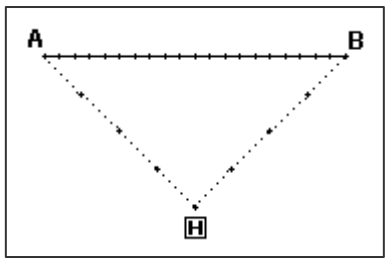
►Press the  (No. icon). The data written in the internal memory will be called out. (The data having the number indicated on the icon will be called out.)

(*1) 20 data recently used are stored.

[6] Creating stitching data

1.Flow of data creation

The flow of creating simple stitching data, as shown below, is explained in this section.



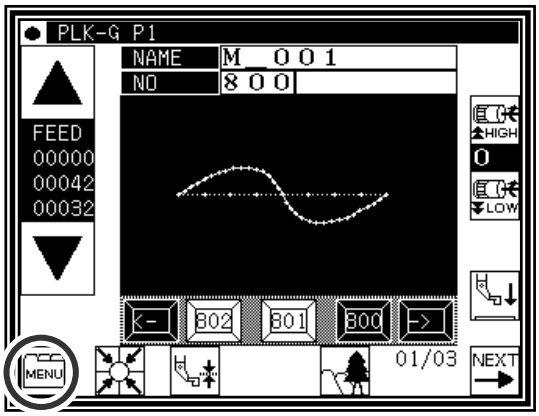
[Sample Fig.1]

The flow of operations for creating data and the transition of screen displays are explained here.

(1)Start from the standard screen

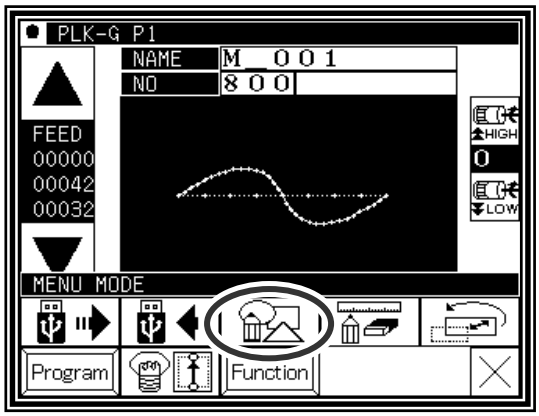
►Press 

.

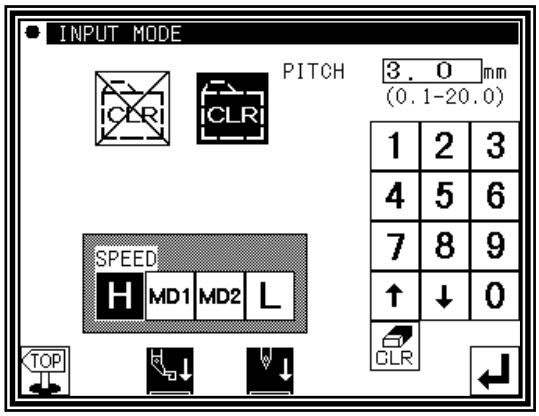


(2)The menu mode will open.

►Press 
.



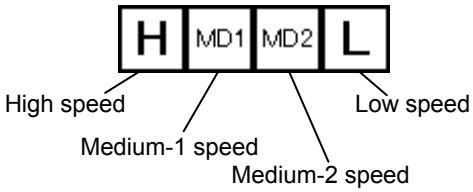
(3)The “INPUT MODE” screen will open.



►If the data has not been input on the standard screen, the [ICLR] and [ICLR] icons will not appear. To clear the input data and input new data, press [ICLR] .

To continuously input after the data already input, press [ICLR] .

►Set the speed.

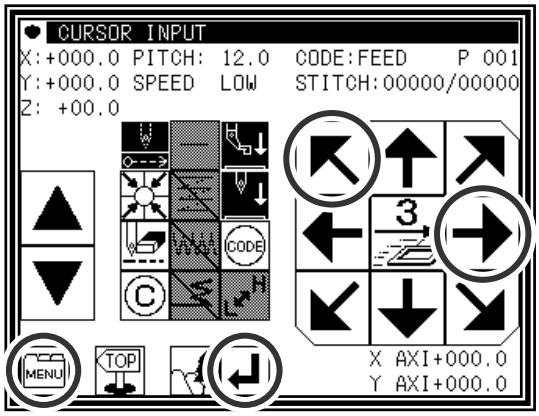


►Set the stitch length

Set in the range of 1 (0.1mm) to 200 (20.0mm) using the [0] to [9] and [↑], [↓] icons.

►When completed setting the data, press [↵] .

(4)The arrow input screen will open. (Input the sample Fig. 1 data.)



► When this screen is first opened, the code is set to FEED (feed data).

Press [↖] and move to the position (A point) for starting stitching. (Movement using the arrow mark icons will change the X and Y position values displayed on the screen.)

After moving, press [↵] , and set the current position.

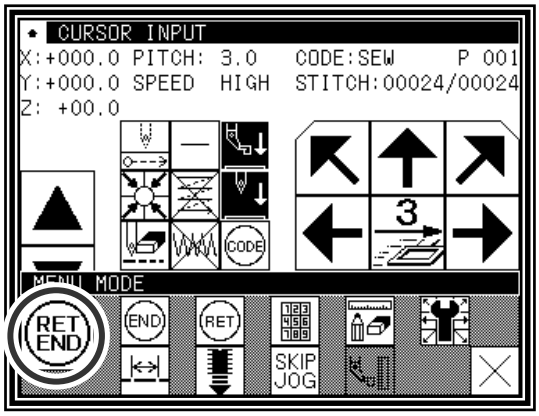
(Data on feed data to point A will be created.)

►Next, the code is set to SEW (sewing), so press [→] and move to the position (B point) for ending stitching. After moving, press [↵] , and set the current position.

(Data on straight stitching to point B will be created.)

►Next, press [MENU] .

(5)The “INPUT MODE” menu will open.

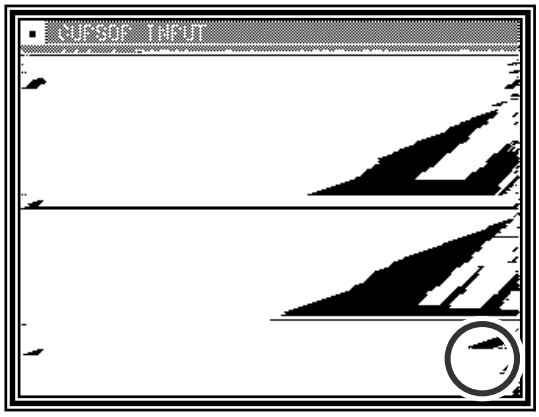


►When 

is pressed, the work holder will return to the home position, and inputting of data will be completed.(Data on feed data to the home position and the end code will be created.)

⚠Caution The work holder will automatically return to the home position.
Take care when the needle is lowered, etc.

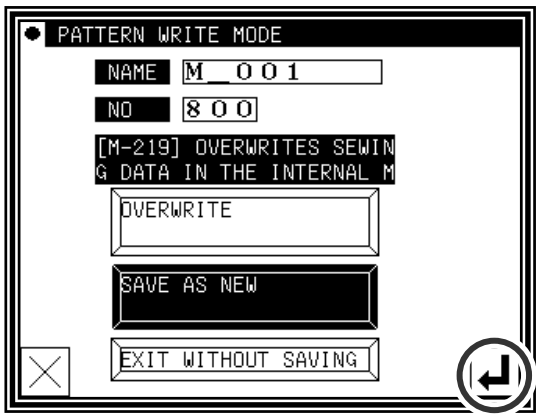
(6)A prompt for home position return will appear.



►Press 

⚠Caution The needle will rise to the UP position. If the needle is not at the UP position, it may lower once and then return to the UP position.

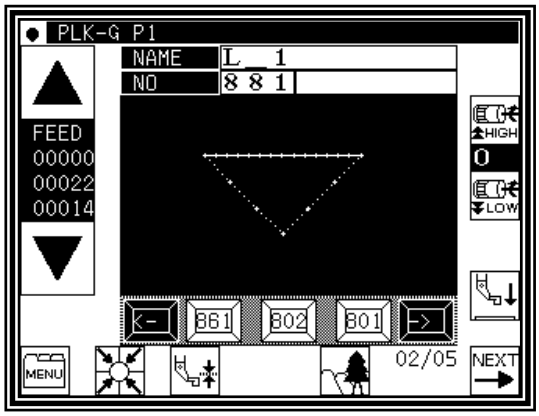
(7)Select a saving method.



►After selecting the saving method, press  icon.

(Refer to “[5] Reading, writing and erasing data”)

(8)The Standard screen will open.

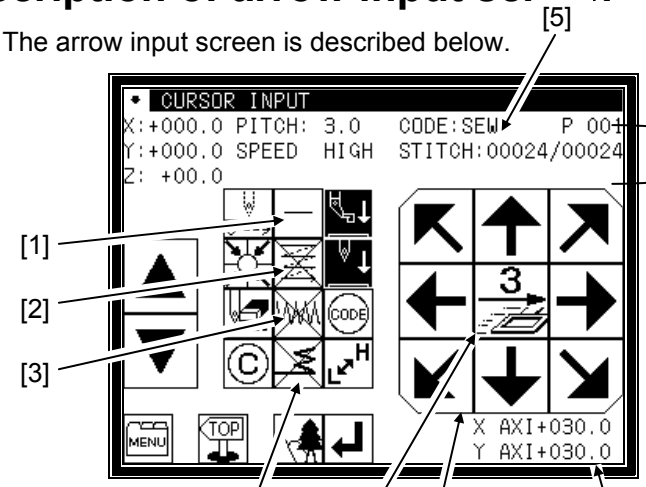


►Return to the Standard screen and confirm the input data.

►This completes the input.

2.Description of arrow input screen

The arrow input screen is described below.



The current status will be displayed.

"STITCH": Shows the "current needle position value/total number of stitches".

When the needle is at the final stitch (current needle position value = total number of stitches)

"X, Y": Shows the position values entered with the arrow mark keys.
"Stitch length", "speed", "code" : Shows the currently-set values.
"P": Shows the number of points entered for an arc, curve, etc.

During operation in the jog mode (current needle position < total number of stitches)

"X, Y", "Stitch length", "speed", "code" : Shows the needle data of the specified position.

When the needle is at the final stitch (current needle position value = total number of stitches)

Arrow mark keys will appear and data entry will be possible. To enter the position value, move the work holder using the arrow mark keys.

During operation in the jog mode (current needle position < total number of stitches)

The image currently creating will be displayed.

Displays current stitch position as an absolute value based on the home position.

[1]"Data entry method setting icon"

The basic data entry method currently set will appear. (Point, straight line, broken line, circle, arc, curve) Press this icon to display the data entry method setting screen.

[2]"Multi-stitching, reverse multi-stitching, offset data setting icon"

The multi-stitching, reverse multi-stitching, and offset data currently set will appear. (Not set, multi-stitching (feed data mode), reverse multi-stitching (feed data mode), multi-stitching (sewing mode), reverse multi-stitching (sewing mode), offset) Press this icon to display the multi-stitching, reverse multi-stitching, offset data setting screen. Using this screen, you can set detailed data.

[3]"Zigzag setting icon"

The zigzag currently set will be displayed (zigzag or non-zigzag). Press this icon to display the detailed zigzag data setting screen. Using this screen, you can set the detailed zigzag data.

[4]"Back tack setting icon"

The back tack currently set will appear. (No back tacking, start/end back tacking, overlap back tacking) Press this icon to display the detailed back tacking data setting screen. Using this screen, you can set detailed back tacking data.

[5]"Kind of code display"

FEED ---------- Feed
FEND ---------- Feed end cord (Displayed while JOG is operating)
SEW ---------- Basic input (Straight line, Arc, Circle, Curve, Broken line, Point)
P ---------- Multiple sewing
I ---------- Reverse multiple sewing
O ---------- Offset sewing
Z ---------- Zigzag sewing
B ---------- Back tacking sewing
(Others, the various code data is displayed while JOG is operating.)

[6] [Clamp speed swich icon]

Normal

: A little slow

: Slower

(Icon is changed whenever icon is pressed for a long period.)

"Cancel": Cancels the last operation, and returns to the previous data entry point.

> ⚠Caution The work holder will move. If the needle is lowered, be careful not to get injured.

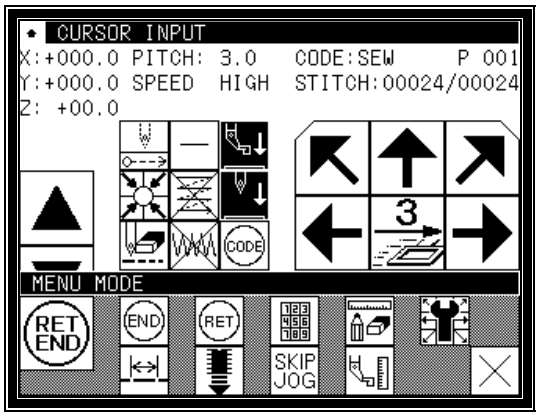
"Delete last point": Deletes the last determined point, and returns to the previous data entry point.

> ⚠Caution The work holder will move. If the needle is lowered, be careful not to get injured.

"Change sewing speed": Each time you press this icon, the set speed will be changed in the order of "HIGH → LOW → MD2 → MD1 → HIGH."

The image display screen will be displayed.

3.Description of menu



The data on feed data from the current position to the home position and the end code will be created, and the system will exit from the input mode.

The end code will be created, and the system will exit from the input mode.

The data on feed data from the current position to the home position will be created.

The screen is switched to the data creation screen that enables direct entry of numeric values.

The screen is switched to the input screen that enables data entry using the arrow mark keys (the arrow mark keys move the work holder).

You can enter the modification mode.

The stitch length change screen will appear.

When inputting data, the stitching data saved in the internal memory is added to the end of the data being input.

The skip jog setting screen will appear. (The details are explained on the next page.)

Displays presser foot setting screen.

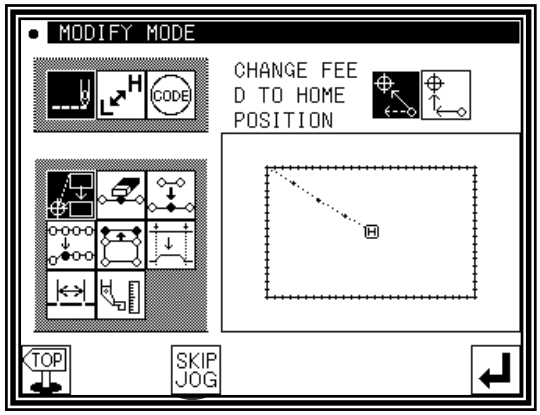
4.Skip jogging

Skip jogging allows movement to the target needle position at a faster speed than normal jogging. Skip jogging can be used in the input, modification and conversion modes.

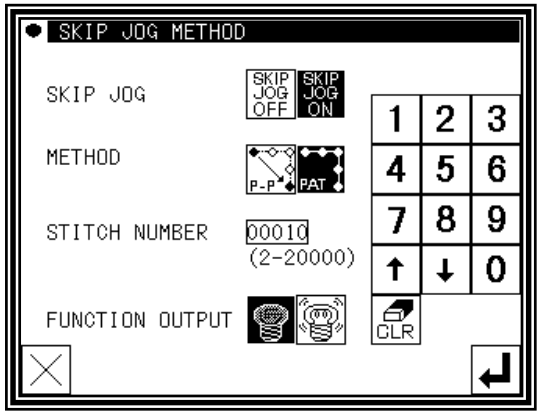
(1)Turning skip jogging ON/OFF, and displaying the setting screen

►Press SKIP JOG found on the input screen menu, the modification mode and conversion mode.

(The explanations are made with the Modification Mode screen.)



(2)Setting skip jogging



►Determine whether to use (ON) or not use (OFF) skip jogging.

SKIP JOG OFF : Do not use. (OFF)

SKIP JOG ON : Use. (ON)

►Determine the movement method.

P-P : Move linearly.

PAT : Move along a path.

►Using the numeric keypad, set the number of movement stitches.

►Determine the function output method.

: The output signal is invalid.

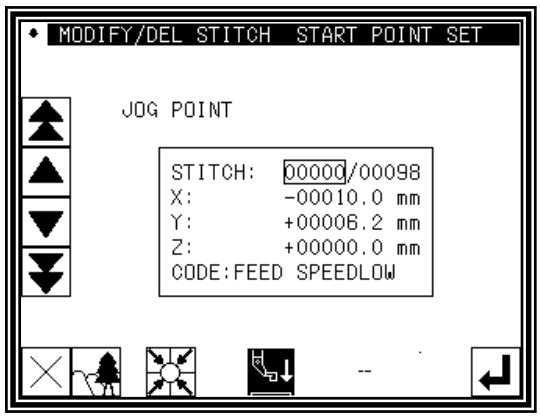
: The output signal is valid.

►After setting, press ↵ .

(3)Skip jog operations

►Skip jogging will start when ⏫ and ⏬ are pressed. (▲ and ▼ are the normal jogging icons.

Note Skip jogging will stop if one of ⏫ ⏬ ▲ ▼ is pressed.



[7] Methods of creating sewing data

⚠Caution Note that the needle will rise to the UP position when the "Home position Return" icon is pressed. (If the needle is not at the UP position, it may lower once and then return to the UP position.) By removing the presser bar lifting from sewing machine, data can be input safety and accurately.

Basic Inputs

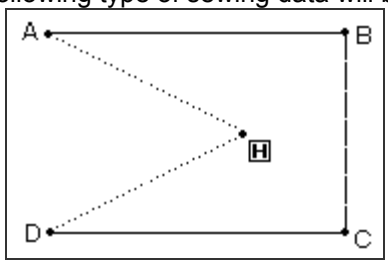
Function	icon	Explanation
Linear ([7]-1)		2-point input: A linear line is created between the current position (already input) and the newly input point.
Arc ([7]-4)		3-point input: An arc, passing through the current position (already input) and two newly input points, is created.
Circle ([7]-8)		3-point input: A circle, passing through the current position (already input) and two newly input points, is created.
Curve ([7]-11)		A curve passing through the current position (already input) and the input point (up to 300 points possible) is created.
Broken line ([7]-15)		A broken line connecting the current position (already input) and the input point (up to 300 points possible) is created.
Point ([7]-18)		The point can be input one stitch at a time. * The distance between the points must be within 20mm.
Code ([7]-20)	CODE	The code by which various controls are done can be input.

1.Linear input

Operation points

- Designate linear input(—)
- Input two points (A linear line is created between the current position (already input) and the newly input point.)

[Example] The following type of sewing data will be created.



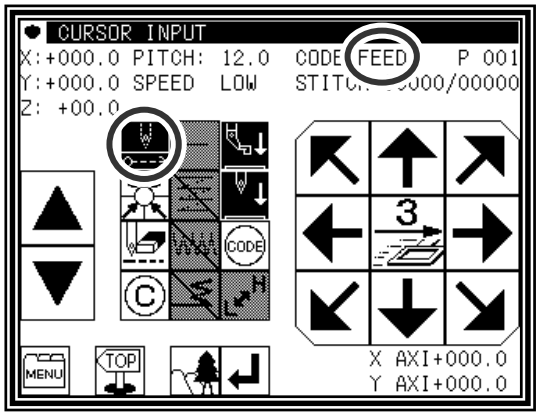
Operation details

(1)Inputting feed data to A point

►Press MENU and on the Standard screen. After making the various settings on the Data Setting Input screen, the Arrow Input screen will open. (Refer to Page[6]-2)

►Check that the code is set to FEED. If different code is set, press and set the code to FEED.

►Press the arrow icons and move to the A point. (Feed data to A point.)



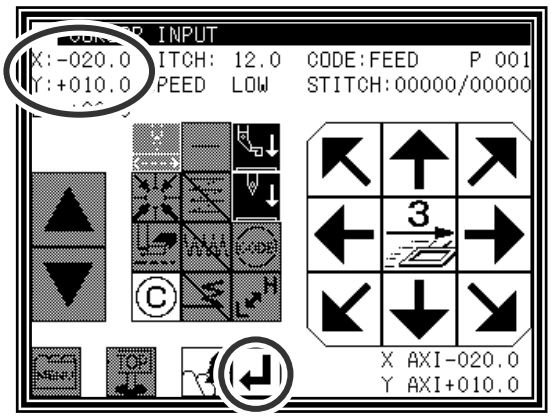
(2)Setting feed data to A point

►The movement amount can be confirmed.
[Example] X: -20.0, Y: +10.0

►Press  to set the data.
(Data on feed data to point A will be created.)

►The movement amount will be cleared.
X:+0.0, Y:+0.0

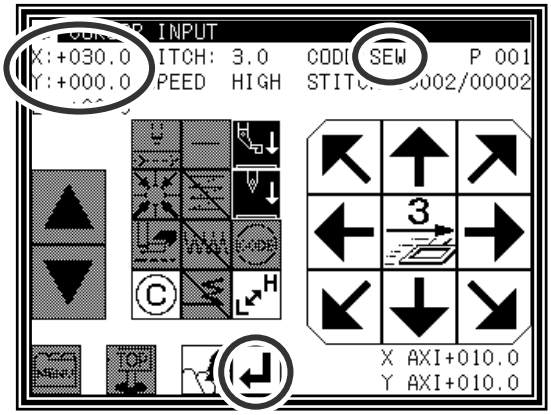
►The code will change to "SEW".



(3)Inputting stitching to B point

►Press the arrow icons and move to the B point.

►Press  to set the data.
(Data on straight stitching to point B will be created.)



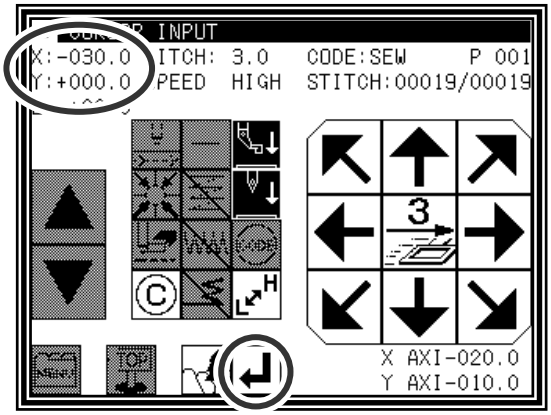
(4)Inputting stitching from C point to D point

►Press the arrow icons and move to the C point.

►Press  to set the data.
(Data on straight stitching to point C will be created.)

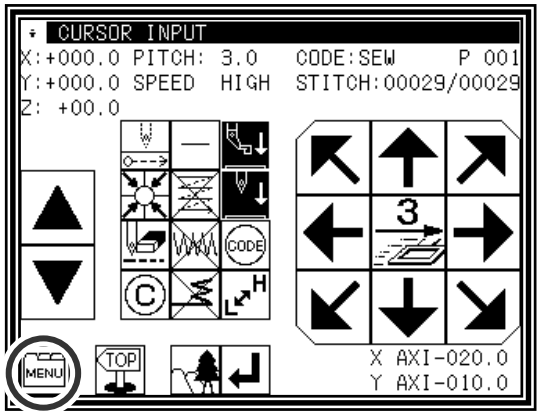
►Press the arrow icons and move to the D point.

►Press  to set the data.
(Data on straight stitching to point D will be created.)



(5)Setting stitching to D point

►Press  .

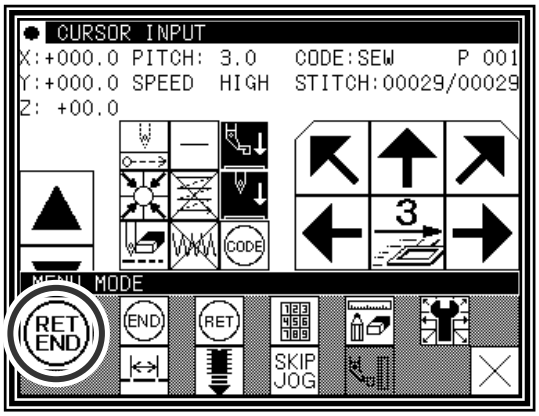


(6)Inputting the return/end code

►Press 

.

(Data on feed data to the home position and the end code will be created.)



⚠Caution The work holder will automatically return to the home position. Take care when the needle is lowered, etc.

►A prompt for home position return will appear.

Press  .

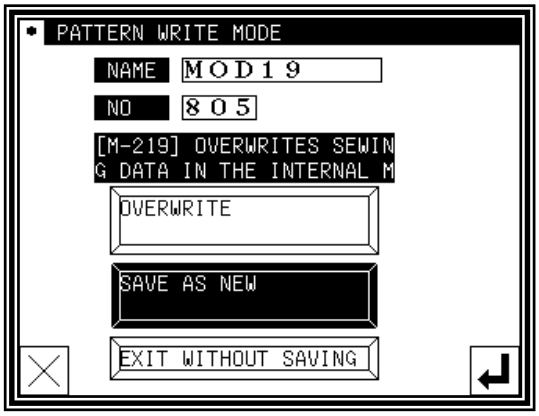
⚠Caution The needle will rise to the UP position. If the needle is not at the UP position, it may lower once and then return to the UP position.

(7)Select a saving method.

►After selecting the saving method, press  icon.

(Refer to section [5]Reading, writing and erasing data.)

►Return to the standard screen.

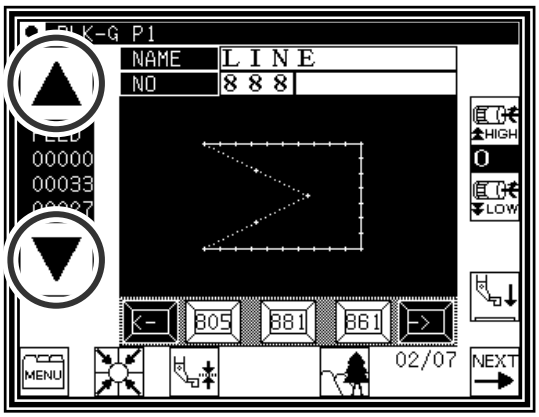


(8)Confirming the data

►Confirm the data. Press the jog icons ()

so the sewing machine movement can be confirmed. (Even if the data input has not been completed, if the data input last has been set, the movement can be confirmed in the same manner.)

►If the data must be modified, refer to section [11] Modification mode Modifying the stitching data.

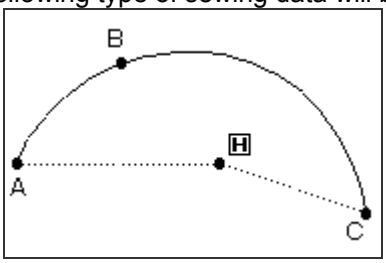


2.Arc input

Operation points

- Designate arc input ()
- Input three points (An arc, passing through the current position (already input) and two newly input points, is created.)

[Example] The following type of sewing data will be created.



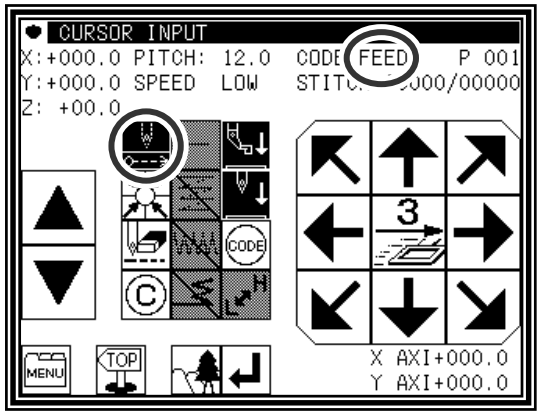
Operation details

(1)Inputting feed data to A point

►Press  and  on the Standard screen. After making the various settings on the Data Setting Input screen, the Arrow Input screen will open.
(Refer to Page[6]-2)

►Check that the code is set to FEED. If different code is set, press  and set the code to FEED.

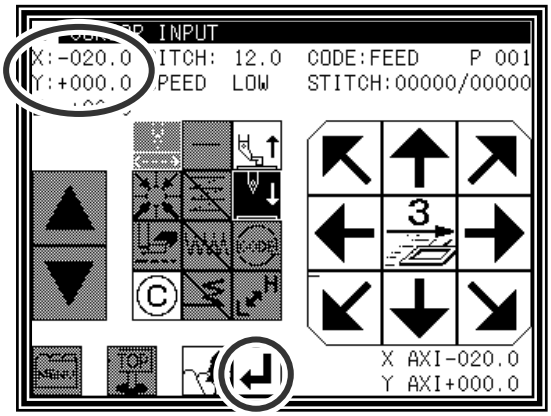
►Press the arrow icons and move to the A point. (Feed data to A point.)



(2)Setting feed data to A point

►The movement amount can be confirmed.

►Press  to set the data. (Data on feed data to point A will be created.)

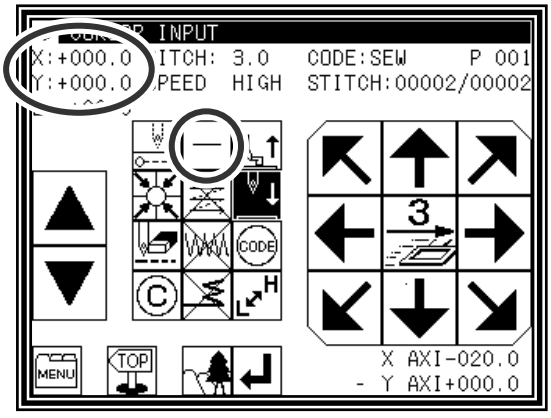


(3)Changing the input method

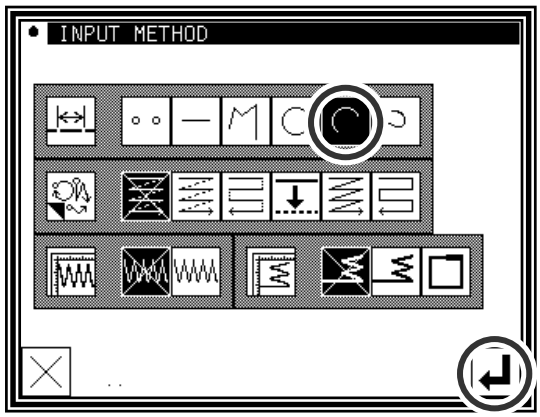
►The movement amount will be cleared.

►The code will change to "SEW".

►If the stitching type is not  "ARC INPUT", (if the type is  "LINEAR INPUT"), press  and change the type.
(The currently set stitching type will be displayed on the icon.)



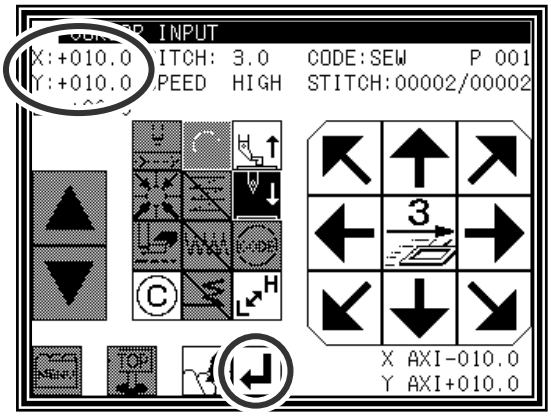
(4)Designating arc input



►Press  and then press  .

►The system will return to the arrow input screen.

(5)Setting B point and C point



►Press the arrow mark icon to move to point B.

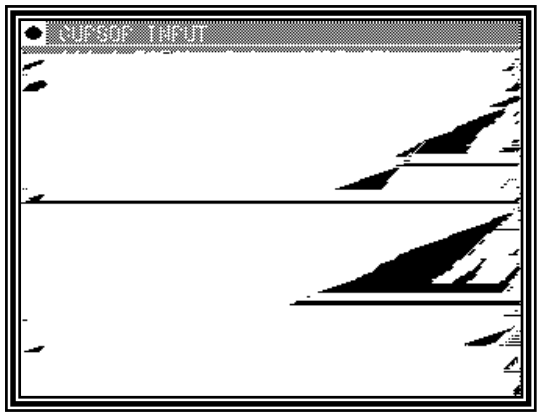
►The movement amount can be confirmed.

►Press  to determine point B.

►Press the arrow mark icon to move to point C.

►Press  and set the arc input.

(6)Creating the arc input data



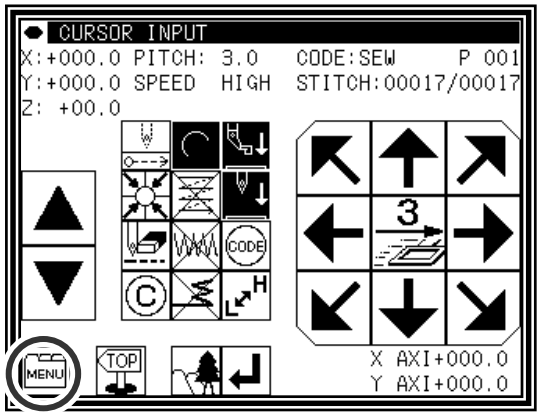
►The confirmation message "Create arc" will appear.

►Press  to return to the point C data entry screen.

►Press  and start creation of the arc input data. (The arc will be created.)

►A message indicating that the data is being created will appear.

(7)Completing creation of the arc input data



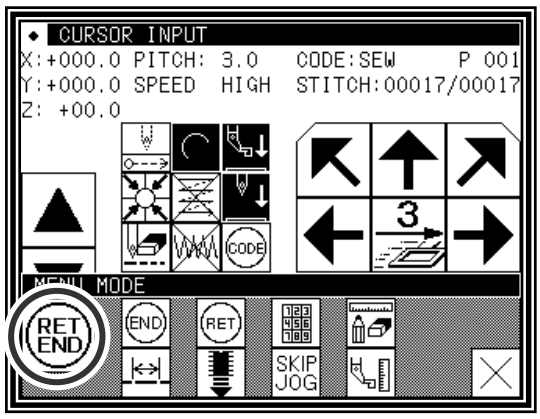
►Press  .

(8)Inputting the return/end code

►Press 

.

(Data on feed data to the home position and the end code will be created.)



⚠Caution The work holder will automatically return to the home position. Take care when the needle is lowered, etc.

►A prompt for home position return will appear.

Press  .

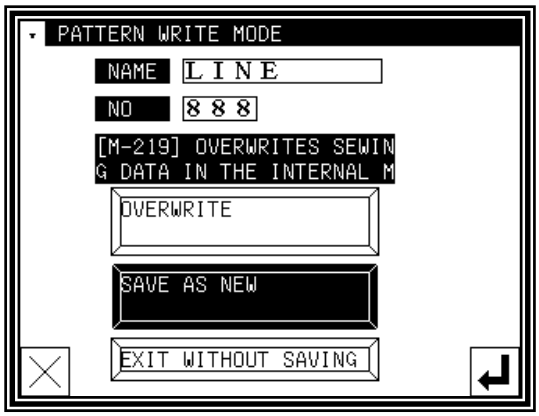
⚠Caution The needle will rise to the UP position. If the needle is not at the UP position, it may lower once and then return to the UP position.

(9)Select a saving method.

►After selecting the saving method, press  icon.

(Refer to section [5]Reading, writing and erasing data.)

►Return to the standard screen.

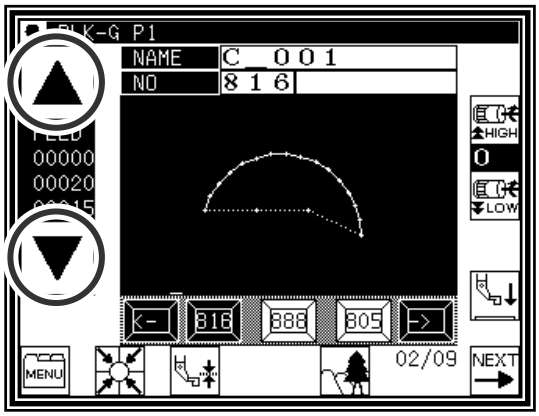


(10)Confirming the data

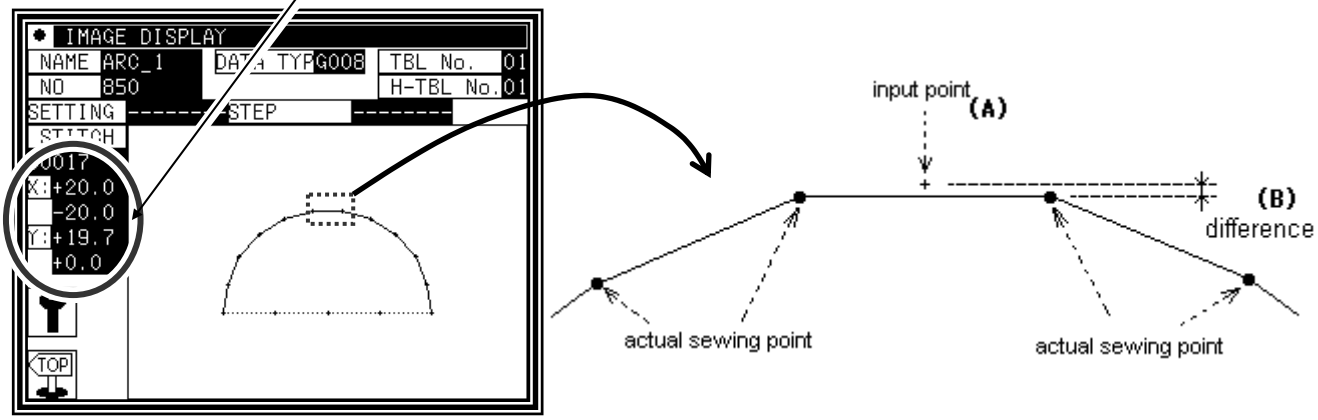
►Confirm the data. Press the jog icons ()

so the sewing machine movement can be confirmed. (Even if the data input has not been completed, if the data input last has been set, the movement can be confirmed in the same manner.)

►If the data must be modified, refer to section [11] Modification mode Modifying the stitching data.



Memo The size display of the pattern data is explained when "The arc" or "The Circle" is made and the image display  is pushed from a standard screen, the image display screen is opened.



For instance, when made the 20mm half circle data but the size display is not [20.0] Y axially, is [19.9] it like the above figure.

The reason for this is that the displayed value is calculated with an actual sewing point. Tries to make the circle or the circular arc which passes input point as shown in the figure below, the data is made according to the specified stitch length, it is not match that sewing point and input point (A). There is difference (B) of the figure below because the value is calculated with the sewing point.

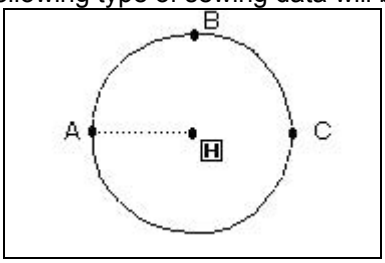
3.Circle input

Operation points

- Designate circle input (◯)
- Input three points (A circle, passing through the current position (already input) and two newly input points, is created.)

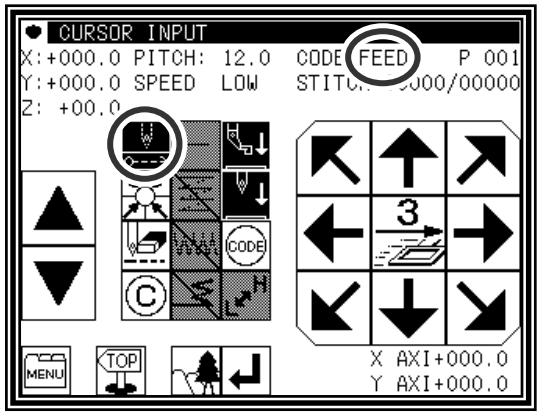
⚠Caution Note that the work holder will go back to the circle start position after the data is created.

[Example] The following type of sewing data will be created.



Operation details

(1)Inputting feed data to A point

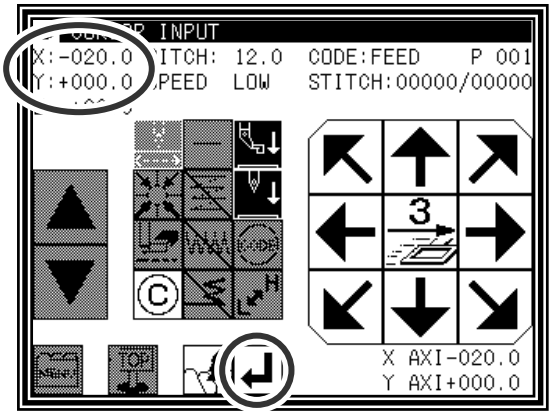


►Press MENU and on the Standard screen. After making the various settings on the Data Setting Input screen, the Arrow Input screen will open.
(Refer to Page[6]-2)

►Check that the code is set to FEED. If different code is set, press and set the code to FEED.

►Press the arrow icons and move to the A point.
(Feed data to A point.)

(2)Setting feed data to A point

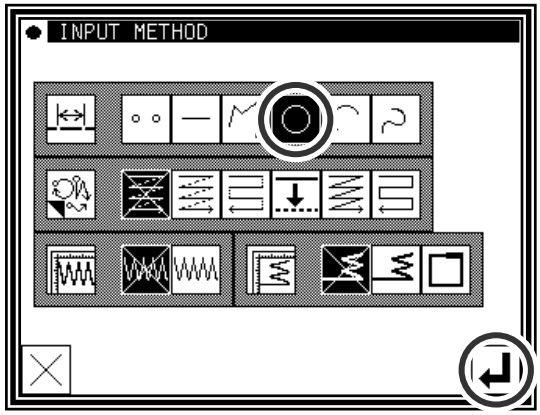


►The movement amount can be confirmed.

►Press to set the data.
(Data on feed data to point A will be created.)

►To change the stitching type to "Circle input", press the input method setting icon.
(In this case, the — icon.)

(3)Designating circle input

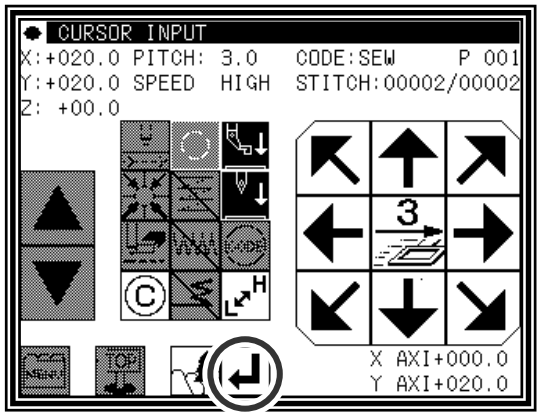


►Press ◯ .

►Press and set the data.

►The system will return to the arrow input screen.

(4)Setting B point and C point



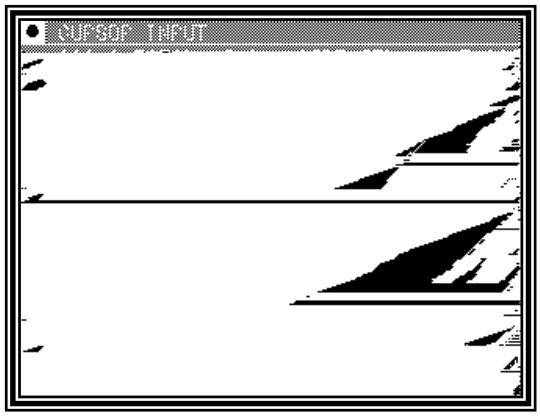
►Using the arrow icons, move to the B point.

►Press [↵] to determine point B.

►The Arrow Input screen will reappear, so press the arrow icons and move to the C point.

►Press [↵] to determine point C.

(5)Creating the circle input data



►The confirmation message "Create circle" will appear.

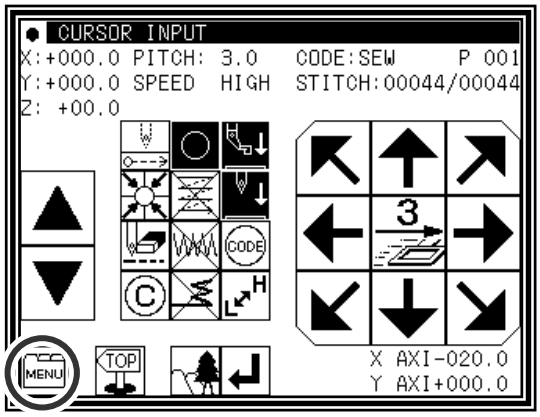
►Press [✕] to return to the point C data entry panel.

►Press [↵] and start creation of the circle input data.

►A message indicating that the data is being created will appear.

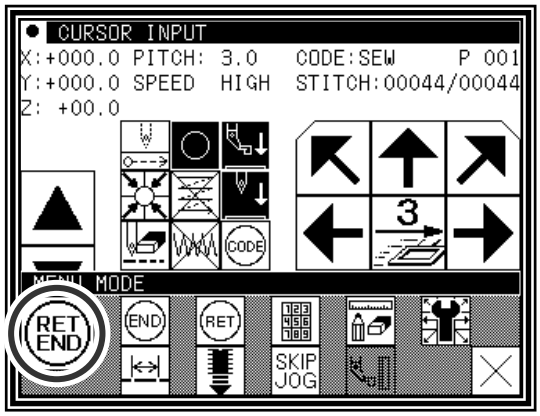
⚠Caution Note that the work holder will move to the current position after the data is created.

(6)Completing circle input



►Press [MENU] .

(7)Inputting the return/end code



►Press  .

(Data on feed data to the home position and the end code will be created.)

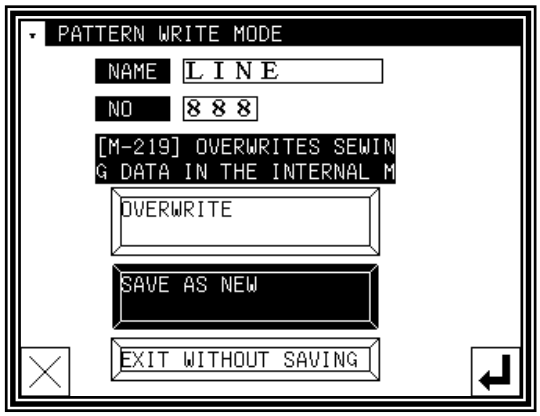
⚠Caution The work holder will automatically return to the home position. Take care when the needle is lowered, etc.

►A prompt for home position return will appear.

Press  .

⚠Caution The needle will rise to the UP position. If the needle is not at the UP position, it may lower once and then return to the UP position.

(9)Select a saving method.

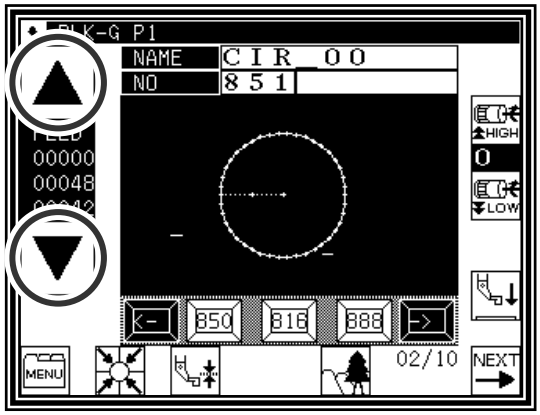


►After selecting the saving method, press  icon.

(Refer to section [5]Reading, writing and erasing data.)

►Return to the standard screen.

(10)Confirming the data



►Confirm the data. Press the jog icons () so the sewing machine movement can be confirmed. (Even if the data input has not been completed, if the data input last has been set, the movement can be confirmed in the same manner.)

►If the data must be modified, refer to section [11] Modification mode Modifying the stitching data.

4.Curve input

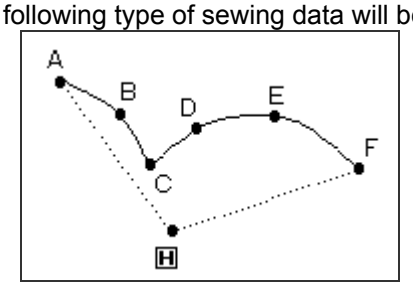
Operation points

▪ Designate curve input ()

▪ Up to 300 points can be input (A curve, passing through the current position and the input points, is created.)

▪ A delimiter point can be inserted at a pointed corner to continuously input the curve.

[Example] The following type of sewing data will be created.



A delimiter is set at the C point.

[Memo] Set the stitch length between 0.1 to 10.0mm.

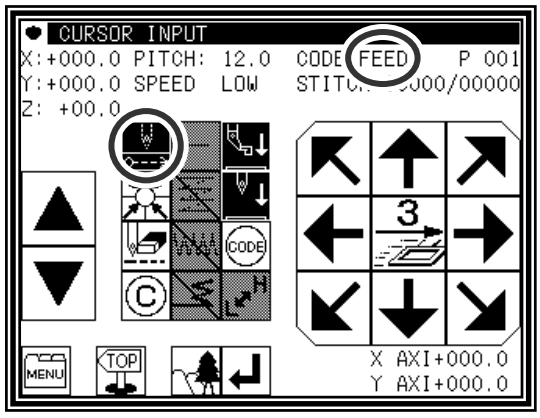
Operation details

(1)Inputting feed data to A point

►Press  and  on the Standard screen. After making the various settings on the Data Setting Input screen, the Arrow Input screen will open.
(Refer to Page[6]-2)

►Check that the code is set to FEED. If different code is set, press  and set the code to FEED.

►Press the arrow icons and move to the A point. (Feed data to A point.)

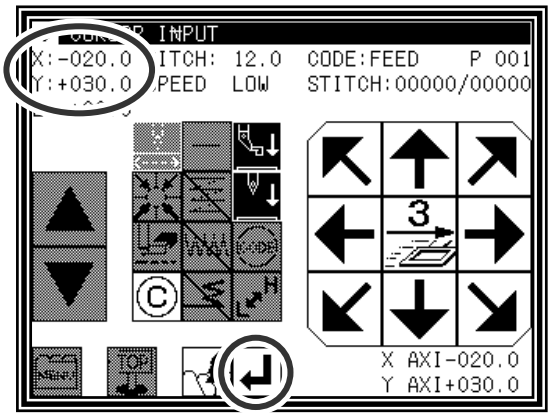


(2)Setting feed data to A point

►The movement amount can be confirmed.

►Press  to set the data.
(Data on feed data to point A will be created.)

►To change the stitching type to "CURVE INPUT", press the input method setting icon.
(In this case, the  icon.)

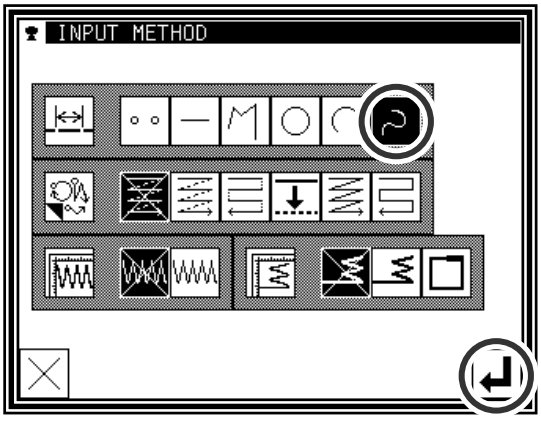


(3)Designating curve input

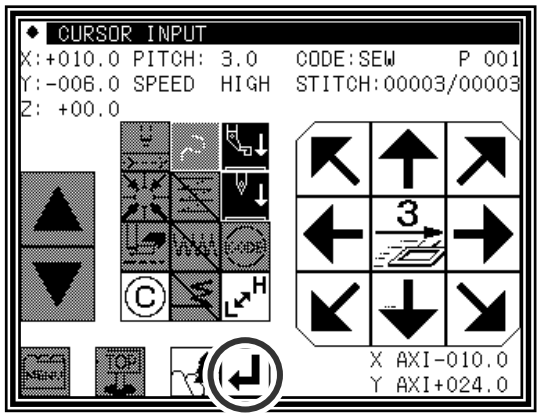
►Press  .

►Press  and set the data.

►The system will return to the arrow input screen.



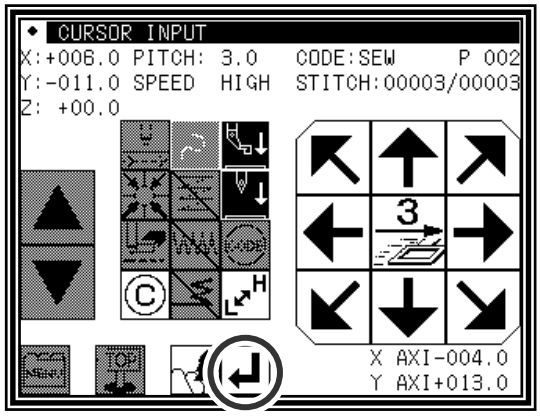
(4)Setting B point



►Press the arrow mark icon to move to point B.

►Press  to determine point B.

(5)Setting C point

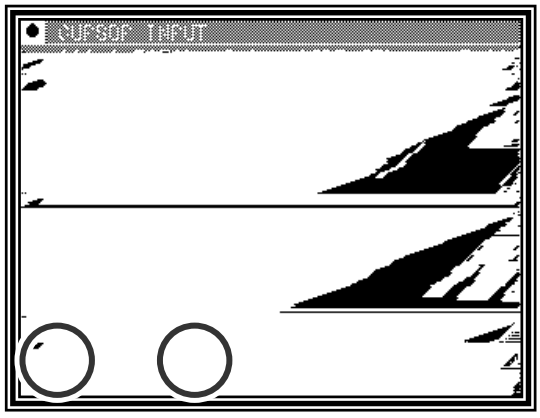


►Press the arrow mark icon to move to point C.

►Press  to determine point C.

►Press  again to enter the breakpoint.

(6)Inserting a delimiter point

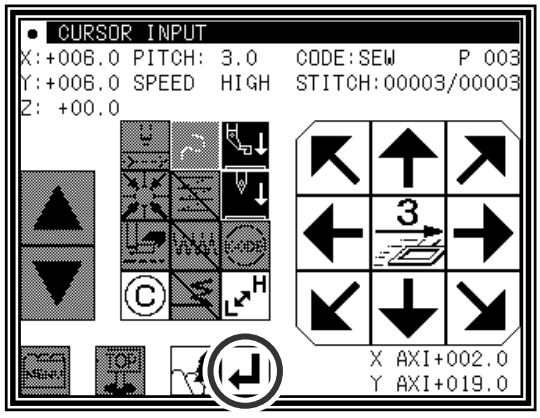


►The data creation confirmation message "Create breakpoint data" will appear.

►Press  to return to the point C data entry screen.

►Press  . The breakpoint will be set here.

(7)Setting the D point, E point and F point, and setting the curve input



►The Arrow Input screen will reappear.

►Press the arrow icons, and move to the D point.

►Press  to determine point D.

►Press the arrow icons again, and move to the E point.

►Press  to determine point E.

►Press the arrow icons again, and move to the F point.

►Press  to determine point F.

(Up to 300 points can be input.)

►At the completion of all point data entry, press  again to create data.

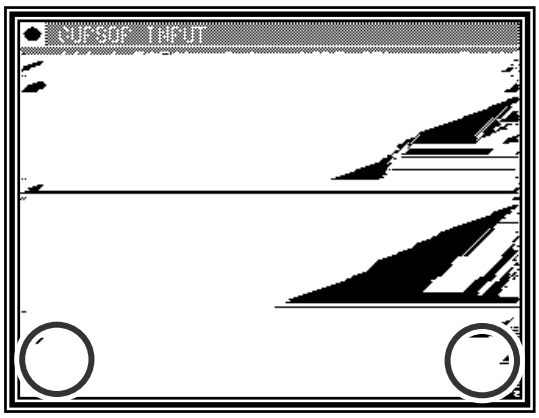
(8)Creating the curve input

►The data creation confirmation message "Create breakpoint data" will appear.

►Press  to return to the last point input screen.

►Press  to start creation of the curve input data.

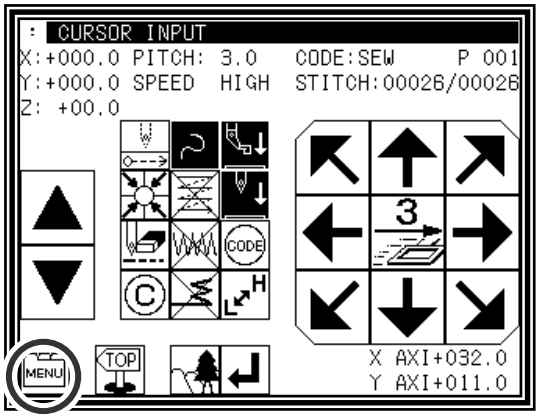
►A message indicating that the data is being created will appear.



(9)Completing curve input creation

►Press 

.



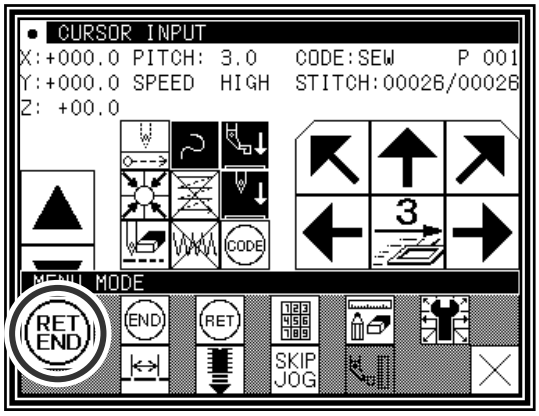
(10)Inputting the return/end code

►Press 

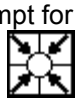
.

(Data on feed data to the home position and the end code will be created.)

⚠Caution The work holder will automatically return to the home position. Take care when the needle is lowered, etc.



►A prompt for home position return will appear.

Press  .

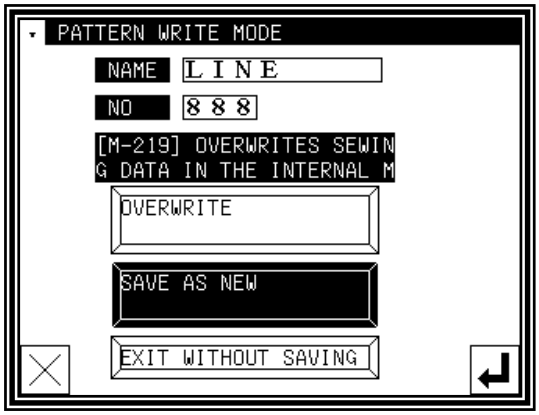
⚠Caution The needle will rise to the UP position. If the needle is not at the UP position, it may lower once and then return to the UP position.

(9)Select a saving method.

►After selecting the saving method, press  icon.

(Refer to section [5]Reading, writing and erasing data.)

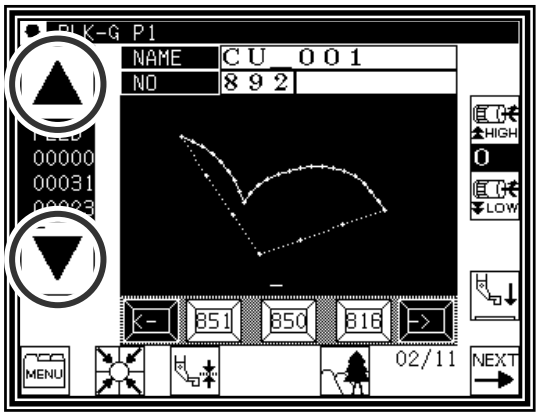
►Return to the standard screen.



(10)Confirming the data

►Confirm the data. Press the jog icons () so the sewing machine movement can be confirmed. (Even if the data input has not been completed, if the data input last has been set, the movement can be confirmed in the same manner.)

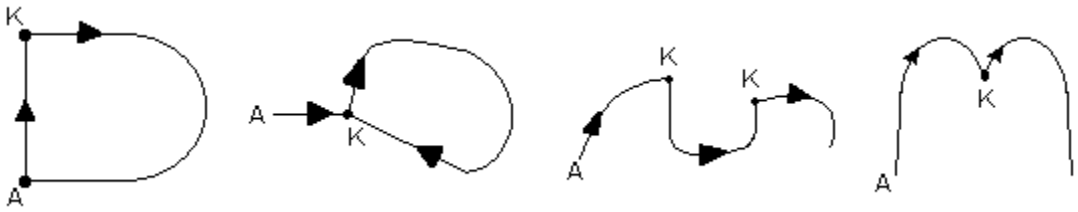
►If the data must be modified, refer to section [11] Modification mode Modifying the stitching data.



Memo If the distance between the curve start point and the end point is less than 0.5 mm, the pattern will be regarded as the "closed pattern", and the same coordinate value will be automatically set for both the start point and end point.

Precautions for inputting a curve

►For shape data as shown below, continuous curve input is possible by selecting a delimiter point where the corner is pointed (K point).
(This can also be applied for noncontinuous points such as for offset stitching, multiple stitching, and reverse multiple stitching.)



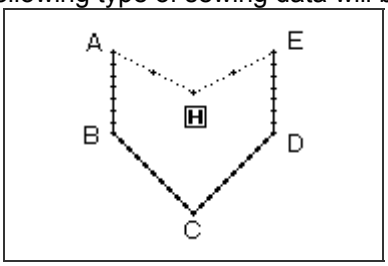
5.Broken line input

Operation points

▪ Designate broken line input()

▪ Up to 300 points can be input (A broken line connecting the current position and input points is created.)

[Example] The following type of sewing data will be created.



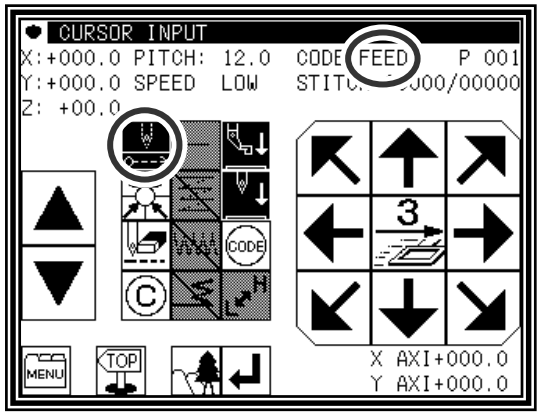
Operation details

(1)Inputting feed data to A point

►Press  and  on the Standard screen. After making the various settings on the Data Setting Input screen, the Arrow Input screen will open.
(Refer to Page[6]-2)

►Check that the code is set to FEED. If different code is set, press  and set the code to FEED.

►Press the arrow icons and move to the A point.
(Feed data to A point.)

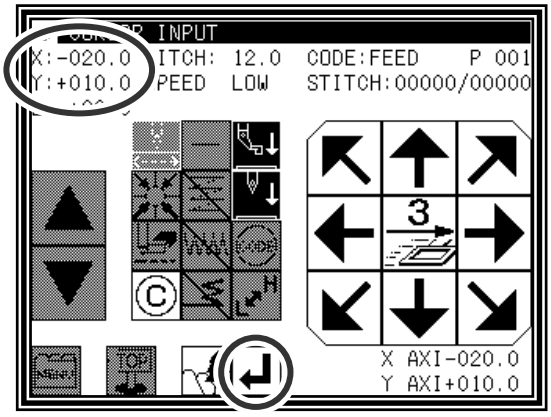


(2)Setting feed data to A point

►The movement amount can be confirmed.

►Press  to set the data.
(Data on feed data to point A will be created.)

►To change the stitching type to "Broken line input", press the input method setting icon.
(In this case, the  icon.)

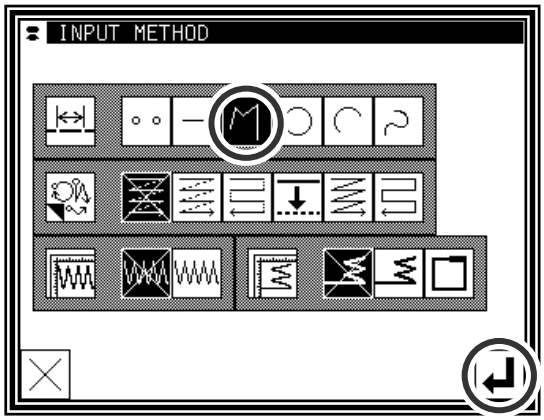


(3)Designating broken line input

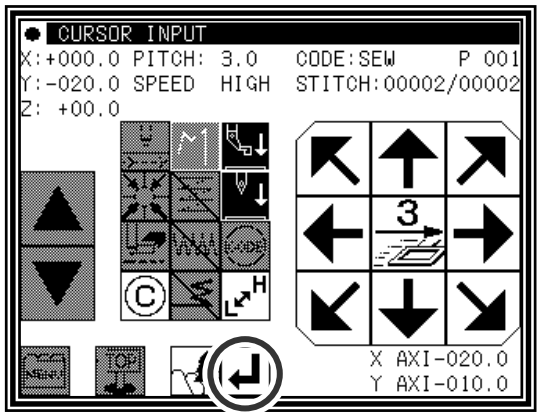
►Press  .

►Press  and set the data.

►The system will return to the arrow input screen.



(4)Setting B point , C point , D point , E point



►Press the arrow mark icon to move to point B.

►Press  to determine point B.

►Press the arrow mark icon to move to point C.

►Press  to determine point C.

►Press the arrow mark icon to move to point D.

►Press  to determine point D.

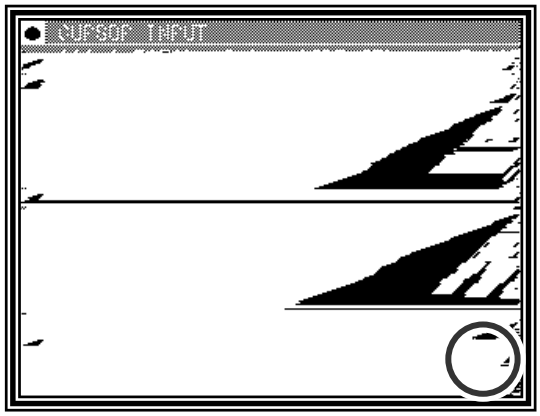
►Press the arrow mark icon to move to point E.

►Press  to determine point E.

(Up to 300 points can be input.)

►At the completion of all point data entry, press  again to create data.

(5)Creating the broken line input



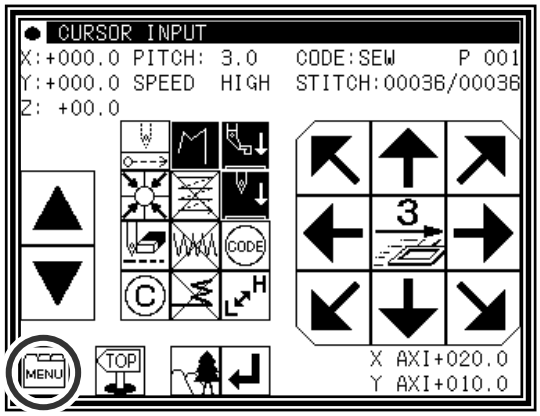
►The data creation confirmation message "Create breakpoint data" will appear.

►Press  to return to the last point input screen.

►Press  to start creation of the broken line input data.

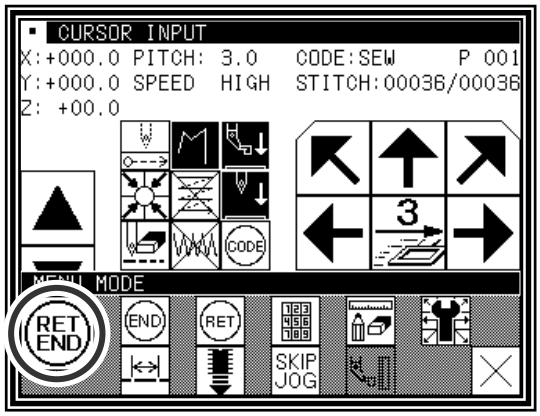
►A message indicating that the data is being created will appear. (The broken line will be created.)

(6)Creating the broken line input



►Press  .

(7)Inputting the return/end code



►Press 

.

(Data on feed data to the home position and the end code will be created.)

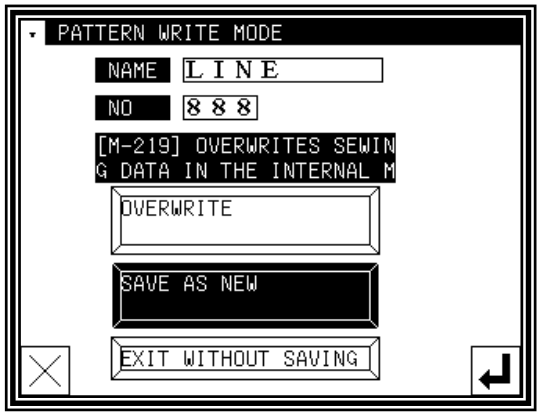
⚠Caution The work holder will automatically return to the home position. Take care when the needle is lowered, etc.

►A prompt for home position return will appear.

Press  .

⚠Caution The needle will rise to the UP position. If the needle is not at the UP position, it may lower once and then return to the UP position.

(8)Select a saving method.

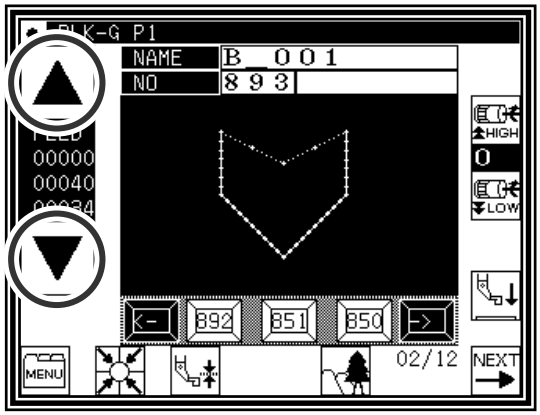


►After selecting the saving method, press  icon.

(Refer to section [5]Reading, writing and erasing data.)

►Return to the standard screen.

(9)Confirming the data



►Confirm the data. Press the jog icons () so the sewing machine movement can be confirmed. (Even if the data input has not been completed, if the data input last has been set, the movement can be confirmed in the same manner.)

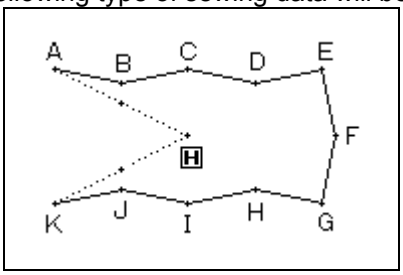
►If the data must be modified, refer to section [11] Modification mode Modifying the stitching data.

Memo If the distance between the broken line start point and the end point is less than 0.5 mm, the pattern will be regarded as the "closed pattern", and the same coordinate value will be automatically set for both the start point and end point.

6.Point input

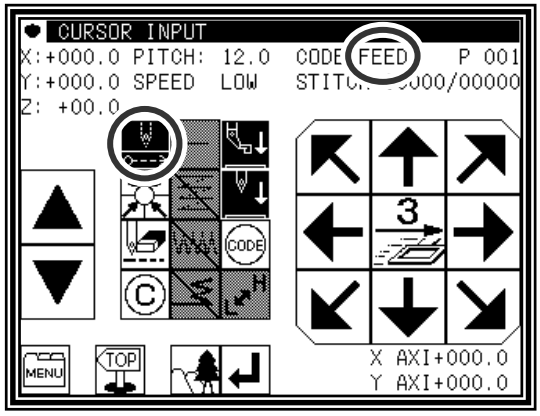
Operation points

▪ Designate point input()
(The distance between the points must be within 20mm)
[Example] The following type of sewing data will be created.



Operation details

(1)Inputting feed data to A point

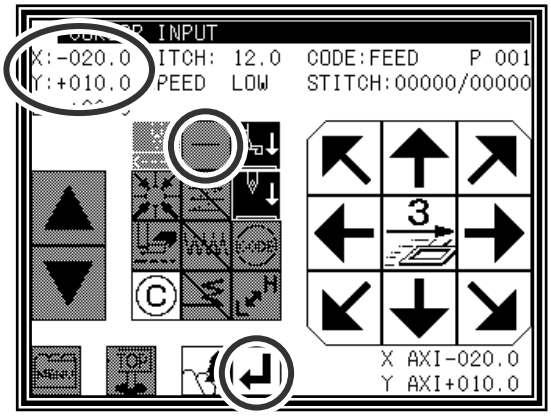


►Press  and  on the Standard screen. After making the various settings on the Data Setting Input screen, the Arrow Input screen will open.
(Refer to Page[6]-2)

►Check that the code is set to FEED. If different code is set, press  and set the code to FEED.

►Press the arrow icons and move to the A point.
(Feed data to A point.)

(2)Setting feed data to A point

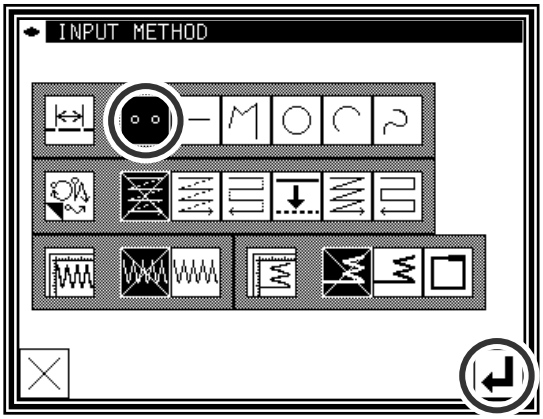


►The movement amount can be confirmed.

►Press  to set the data.
(Data on feed data to point A will be created.)

►To change the stitching type to "POINT INPUT", press the input method setting icon.
(In this case, the  icon.)

(3)Designating point input

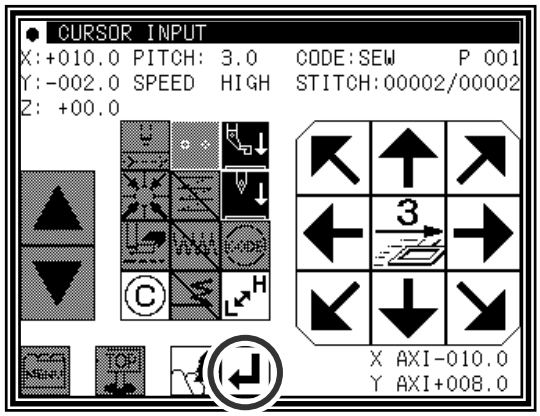


►Press  .

►Press  and set the data.

►The system will return to the arrow input screen.

(4)Setting B point to K point



►Press the arrow mark icon to move to point B.

Memo The distance between the points must be within 20mm.

►Press  to determine point B.

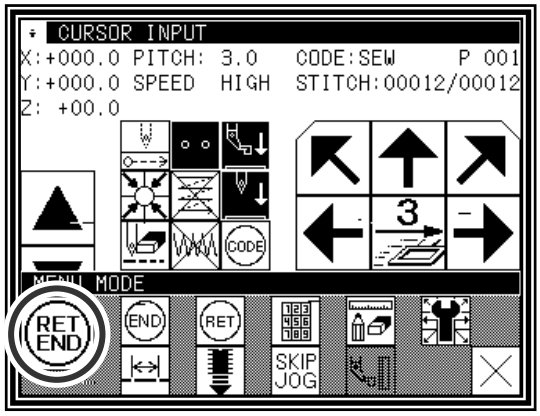
►Press the arrow mark icon to move to point C.

►Press  to determine point C.

►The Arrow Input screen will reappear, so press the arrow icons and move to the D point to K point in the same manner.

►Press  .

(5)Inputting the return/end code



►Press  .

(Data on feed data to the home position and the end code will be created.)

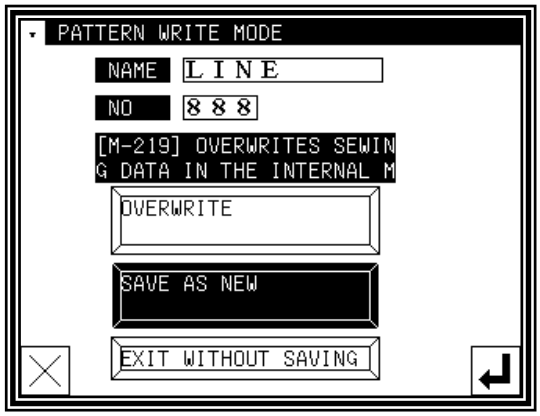
⚠Caution The work holder will automatically return to the home position. Take care when the needle is lowered, etc.

►A prompt for home position return will appear.

Press  .

⚠Caution The needle will rise to the UP position. If the needle is not at the UP position, it may lower once and then return to the UP position.

(6)Select a saving method.

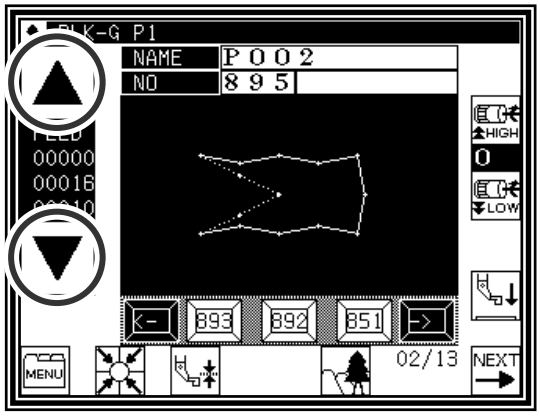


►After selecting the saving method, press  icon.

(Refer to section [5]Reading, writing and erasing data.)

►Return to the standard screen.

(7)Confirming the data



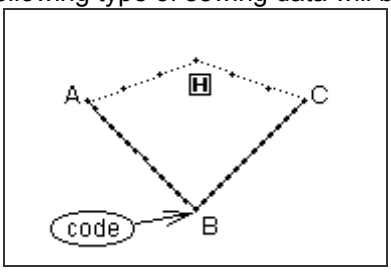
►Confirm the data. Press the jog icons () so the sewing machine movement can be confirmed. (Even if the data input has not been completed, if the data input last has been set, the movement can be confirmed in the same manner.)

►If the data must be modified, refer to section [11] Modification mode Modifying the stitching data.

7.Code data input

Operation points

▪ Designate code data input(CODE)
▪ Select and input the code data from the code data list
[Example] The following type of sewing data will be created.



Input the "NEEDLE UP HALT" code at the B point between the A-B point linear line and B-C linear line.

[Memo] Code data cannot be inserted when inputting with a linear, circle, arc, curve or polygonal line. To input, add the code data with the modification mode. (Input between the linear lines is possible as shown in the example.)

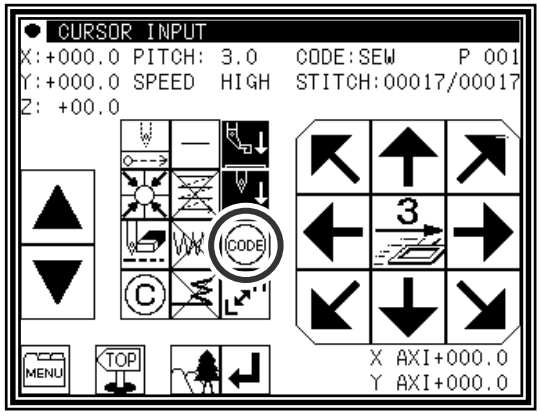
Operation details

(1)Inputting a linear line from A point to B point

►Input a linear line from the A point to B point using the linear input procedures.

(2)Inputting the code data (NEEDLE UP HALT)

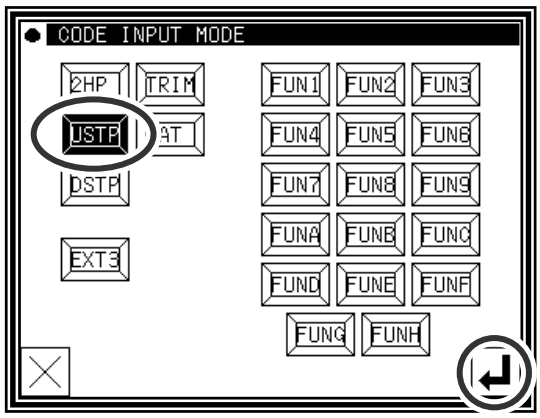
►Press CODE .



►Press USTP .
(Refer to the code list of the next page.)

►Press ↵ to set the code.
(The "NEEDLE UP HALT" code will be created.)

►The system will return to the arrow input screen.



(3)Inputting a linear line from B point to C point

►Input a linear line from the B point to C point using the linear input procedures.

(4)Inputting the return end and the data completion

►The return end is input and it is completion.

■List of code data

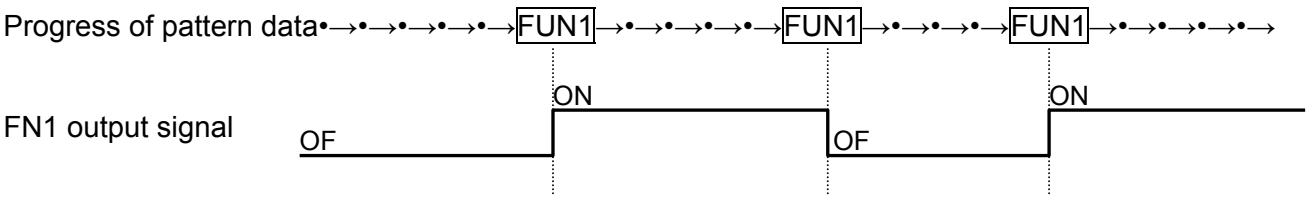
Code	Function	Code	Function
2HP	2nd home position	FUN1	Function code 1
USTP	Needle UP halt	FUN2	Function code 2
DSTP	Needle DOWN halt	FUN3	Function code 3
TRIM	Thread trimming	FUN4	Function code 4
BAT	Basting (Refer to page[7]-23)	FUN5	Function code 5
		FUN6	Function code 6
EXT3 : Extension code F1_H~FH_H : FN (1~H) Output ON F1_L~FH_L : FN (1~H) Output OFF		FUN7	Function code 7
		FUN8	Function code 8
		FUN9	Function code 9
		FUNA	Function code A
		FUNB	Function code B
		FUNC	Function code C
		FUND	Function code D
		FUNE	Function code E
		FUNF	Function code F
		FUNG	Function code G
		FUNH	Function code H

About the Function code (FUN1～FUNH)

Output signal FN1 to FNH can be controlled by set in the pattern data. (Refer to P.[14]-8)

When code data FUN1 is read in the pattern data while sewing, FN1 output is reversed.
(same as FUN2～FUNH)

[example. Timing chart when FUN1 code is set in the pattern data]



⚠Caution PLEASE DO NOT MIX F1_H~FH_H or F1_L~FH_L code with FUN1~FUNH code in the same data.

About Extension code (EXT3)

These signal also controls output signal FN1~FNH as well as above mentioned extension code (FUN1~FUNH). (Refer to P.[14]-8)

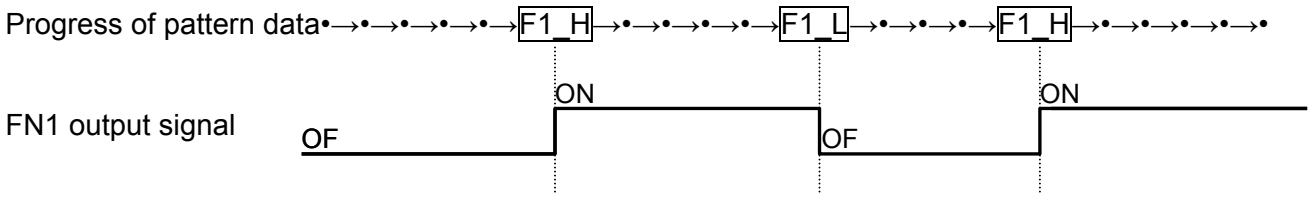
When code data F1_H is read in the pattern data while sewing, FN1 output is turned on.
When code data F1_L is read in the pattern data while sewing, FN1 output is turned off.
(Same as F2_H~FH_H、F2_L~FH_L)

> ⚠Caution PLEASE DO NOT USE [F1_H] CODE REPEATEDLY AFTER THE SAME CODE.
> PLEASE DO NOT USE [F1_L] CODE REPEATEDLY AFTER THE SAME CODE.
> PLEASE USE [F1_H] CODE AND [F1_L] CODE ALTERNATELY.
> (Also F2_H~FH_H,F2_L~FH_L)

> ⚠Caution [F1_L] CODE MUST BE INPUTTED AFTER [F1_H] CODE IS ALREADY INPUTTED.
> (Also F2_H~FH_H、F2_L~FH_L)

> ⚠Caution PLEASE DO NOT MIX FUN1~FUNH code with F1_H~ FH_H or F1_L~ FH_L code in the same data.

[example. Timing chart when F1_H/F1_L code is set into the pattern data]



[Example of prohibition]

[Same code repetition] ・→・→・→F1_H→・→・→・→F1_H→・→・→・

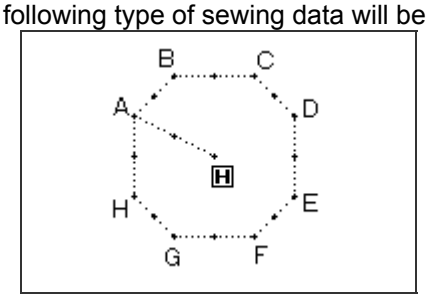
[Start from off code] ・→・→・→F1_L→・→・→・→F1_H→・→・→・

[Mixed use] ・→・→・→F1_H→・→・→・→FUN1→・→・→・

Making method of using BAT (Basting or more than 20mm stitch length) code.

The sewing data which exceeds the stitch length limitation of 20mm can be made by using this BAT code.

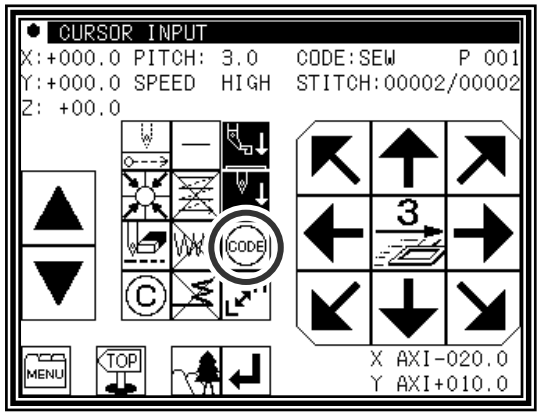
[Example] The following type of sewing data will be created.



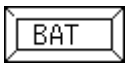
(1)Input the "BAT" codes after input the feed data to A point

►Press 

.



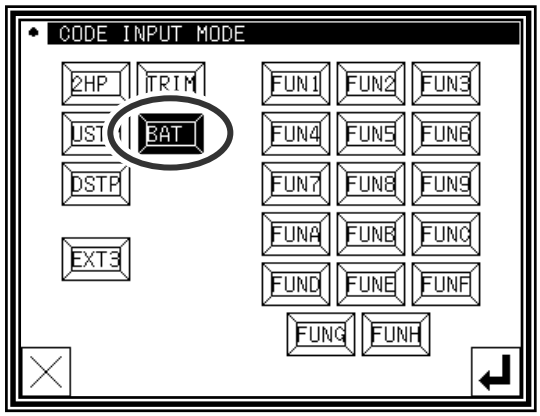
(2)Code selection on code selection screen

►Press 

.

►  decides to pushing.
(The BAT code is made.)

►Returns to the arrow input screen.

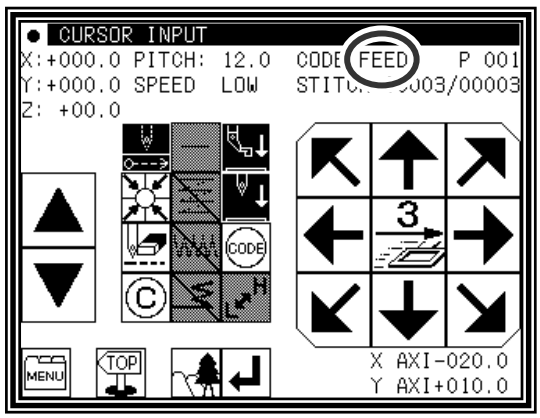


(3)Arrow input screen

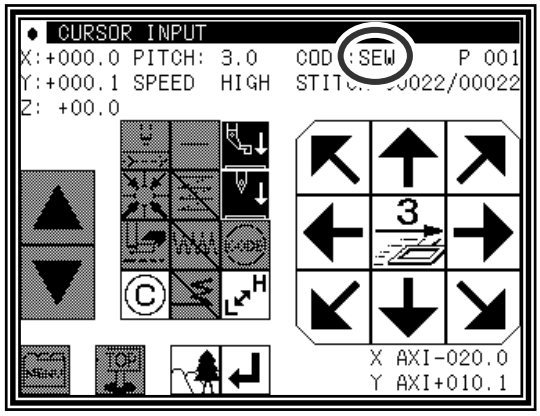
►Does not become SEW (Sewing) input mode and it is FEED input mood after input the "BAT" code.

►Input the feed data to the next B point.

►Input the "BAT" code and the feed data from H point to A point repeating.



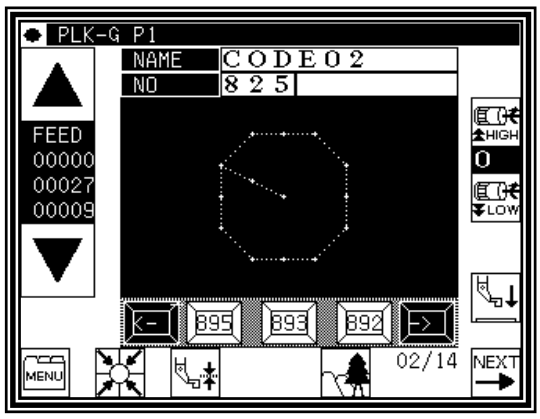
(4)The pattern data input before return end



►It is not input the "BAT" code before the last of return end but the sewing data is input. Inputs here only by 1 stitch of the straight line.

Memo The purpose of inputting the sewing data at the end is to put the thread trimmer (TRIM) code by the automatic operation when the return end is input. The thread trimmer(TRIM) code cannot be input after the sewing data.

(5)Input the return end and the data completion



►The return end is input and it is completion.

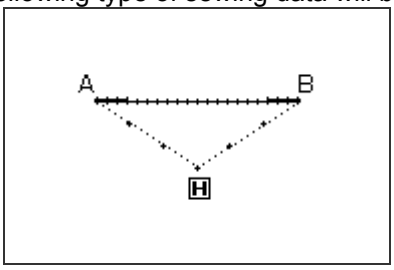
Application inputs

Various types of stitching, including back tacking, multiple stitching, offset stitching and zigzag stitching can be carried out. Various types of stitching data can be created by combining the basic inputs and these types. (Refer to section [9] Table of stitching type combinations.) Note that the application inputs cannot be combined with point inputs to input data.

Function	icon
Back tacking ([7]-25)	Start/end back tacking Overlap back tacking
Multiple stitching ([7]-29)	Multiple stitching (Feed data specifications) Multiple stitching (stitching specifications) Reverse multiple stitching (Feed data specifications) Reverse multiple stitching (stitching specifications)
Offset stitching ([7]-32)	
Zigzag stitching ([7]-34)	

8.Back tacking (start/end back tacking)

[Example] The following type of sewing data will be created.



With the linear input, the N mode and 3-stitch back tacking will be inserted for both the start and end of stitching. (The bold sections indicate start/end back tacking.)

Operation details

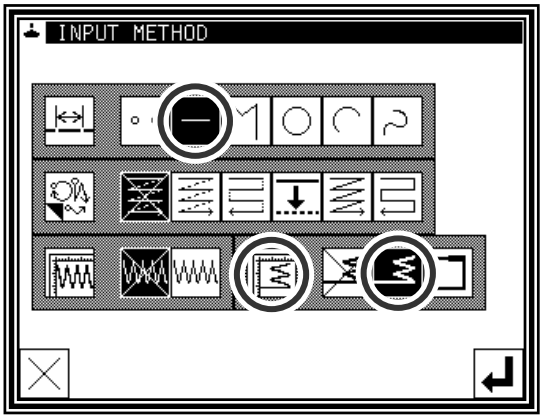
(1)Setting the input method

►Set the feed data from the home position to the A point with the procedures for linear input, and open the Input Method Setting screen.

►Press Linear Input .

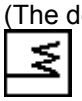
►Press back tacking .

►Press the back tacking details setting icon .



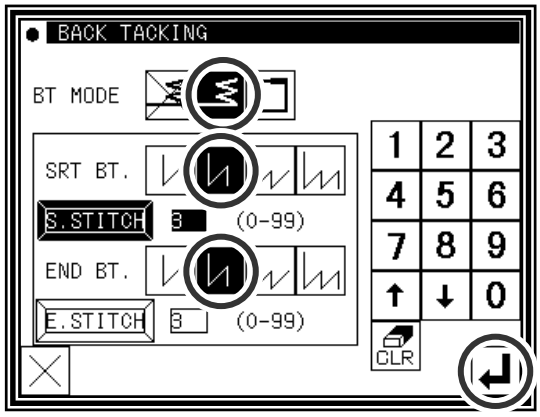
(2)Setting the back tacking details

►The details are set on this screen.
(The details set here are,

 (start/end back tacking),

start mode  (N mode), three start stitches,

end mode  (N mode), three end stitches.)



►Press  to determine these set values.

►The system will return to the input method setting screen.

►Press  to determine the set values.

►The system will return to the arrow input screen.

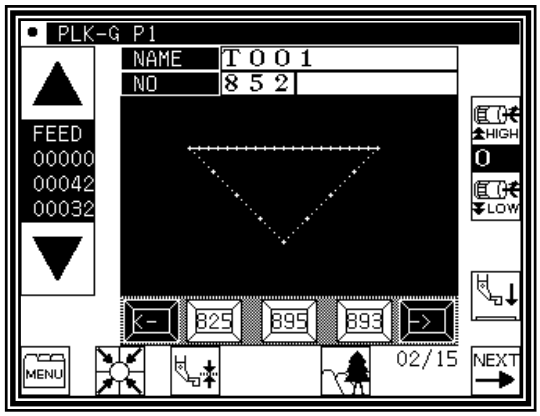
►Determine the B point with the linear input procedures, and create a linear line.

►After creating the linear line, press 

.

(3)Confirming the data

►The start/end back tacking data for the linear line has been created.



Memo Regarding back tacking mode

 V mode: Back tacking will be performed only once.

 N mode: Back tacking will be performed twice.

 M mode: Back tacking will be performed third.

 W mode: Back tacking will be performed fourth.

Memo Regarding number of stitches

Press the icon of the desired position (

or 

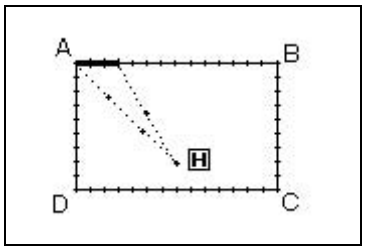
) to invert the icon.

After that, set data using the numeric icons or   .

Memo Press the back tacking data setting icon on the arrow input screen to directly display the "detailed back tacking data setting" screen.

9.Back tacking (overlap back tacking)

[Example] The following type of sewing data will be created.

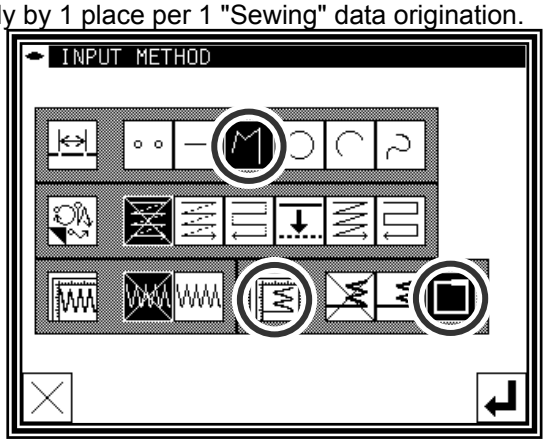


Input a rectangle as a broken line, and then insert overlap back tacking at the end. (The overlap mode is entered once; three overlap stitches are made.) (The bold section is the overlap back tacking section.)

Memo It is a shutting figure in the figure made in [Broken line], [Circle], [Arc], [Curve] to be able to do multiple back tacking. That is, it is not possible to do by combining "Straight line" in the plural in the enclosed figure. Moreover, it is not possible to do by plural combining "Straight line" and "Curve" also even in the enclosed figure. The multiple back tacking can be made only by 1 place per 1 "Sewing" data origination.

Operation details

(1)Setting the input method



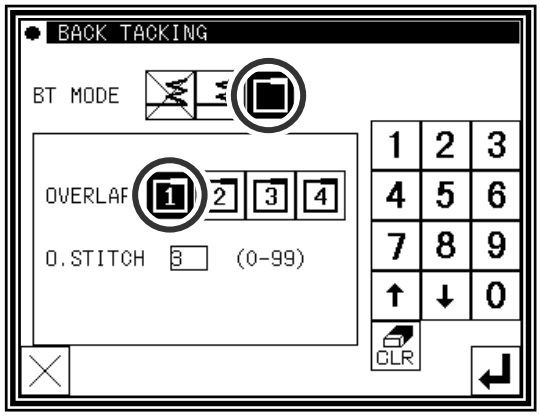
►Set the feed data from the home position to the A point with the procedures for broken line input, and open the Input Method Setting screen.

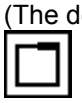
►Press broken Line Input  .

►Press Overlap back tacking  .

►Press the back tacking details setting icon  .

(2)Setting the back tacking details



►The details are set on this screen.
(The details set here are,
 (overlap back tacking),
overlap mode  , three overlap stitches.)

►Press  to determine these set values.

►The system will return to the input method setting screen.

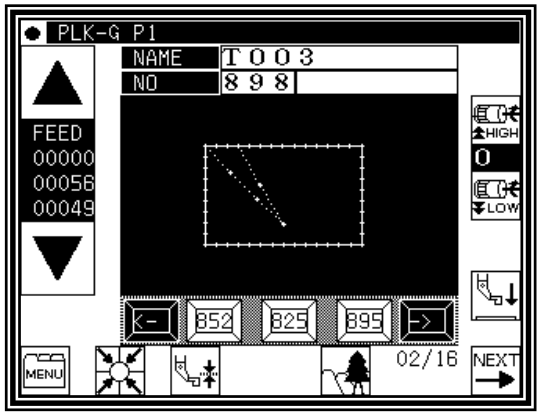
►Press  to determine the set values.

►The system will return to the arrow input screen.

►Determine the B, C, D and A points with the broken line procedures, and create the broken line data. (A broken line having overlap back tacking will be created.)

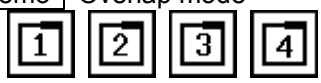
►After creating the broken line data,input  .

(3)Confirming the data



► The overlap back tacking will be created with the rectangle made with broken lines.

Memo Overlap mode



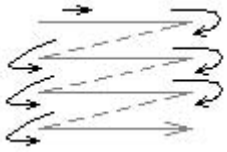
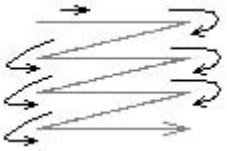
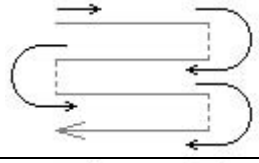
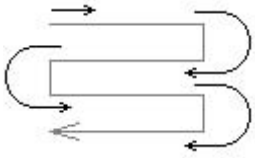
in the overlap mode indicate the number of overlapped sections.

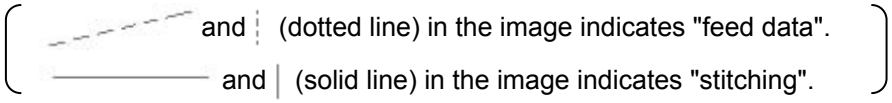
Memo Number of overlap stitches

This is the number of stitches at the overlapped section. (Set a value between 0 and 99.)

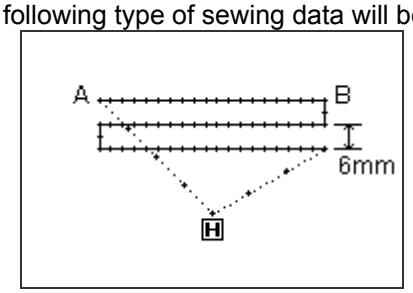
Memo If the distance between the broken line start point and the end point is 0.5 mm or more, the overlap back tacking data will not be created.(If the distance between the broken line start point and the end point is less than 0.5, the pattern will be regarded as the "closed pattern", and the same coordinate value will be automatically set for both the start point and end point.)

10.Multiple stitching

Type	Connection	icon	Stitching data image	Explanation
Multiple	Feed data			"Stitching" in a set direction is connected with "feed without stitching".
	Stitching			"Stitching" in a set direction is connected with "stitching".
Reverse multiple	Feed data			"Stitching" in alternating reverse directions is connected with "feed data".
	Stitching			"Stitching" in alternating reverse directions is connected with "stitching".



[Example] The following type of sewing data will be created.



Create the linear reverse multiple (stitching specification) data.
(The multiple distance is 6mm, the number of times is three, the direction is right.)

Operation details

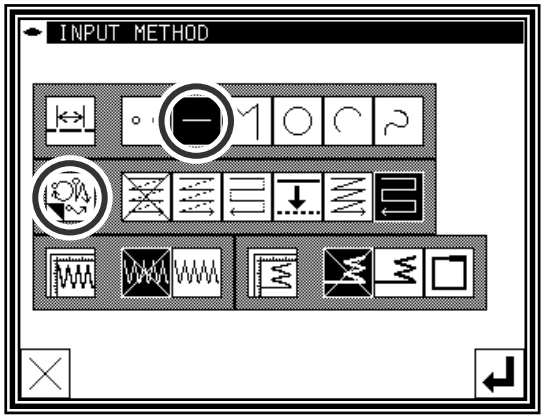
(1)Setting the input method

►Set the feed data from the home position to the A point with the procedures for linear input, and open the Input Method Setting screen.

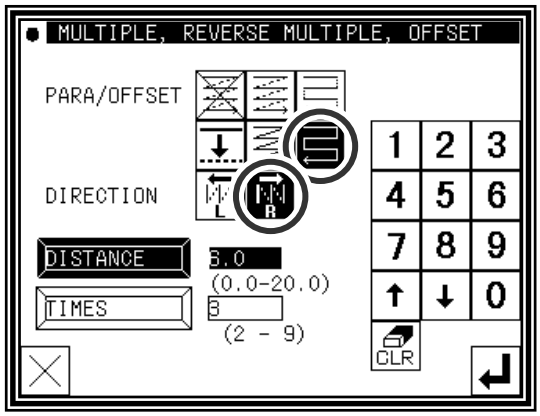
►Press Linear Input  .

►Press Reverse Multiple (stitching specifications)  .

►Press the reverse multiple details. Press  .



(2)Setting the reverse multiple stitching details



►The details are set on this screen.
(Press  and  , and set the distance to 6.0, and the number of times to 3.)

►Press  to set the data.

►The system will return to the input method setting screen.

►Press  to set the data.

►The system will return to the arrow input screen.

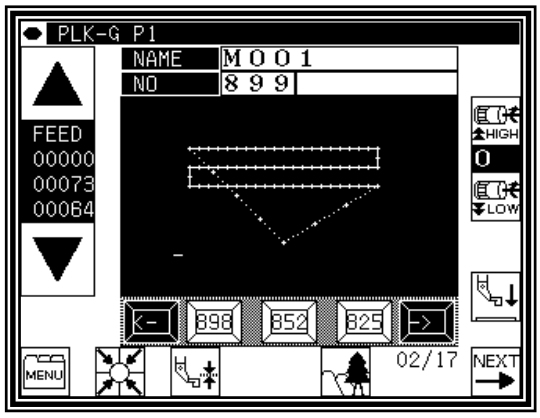
►Determine the B point with the linear input procedures, and create a linear line. (A straight line having reverse multiple (stitching specification) will be created.)

►After creating the linear line, input 

.

(3)Confirming the data

►Linear reverse multiple data has been created.



Memo Direction

When creating multiple stitching to the left of the input stitching line, press  (left side).

When creating multiple stitching to the right of the input stitching line, press  (right side).

Memo Distance

This is the distance between the multiple stitching and adjacent line. Set between 0.0mm and 20.0mm. To input the distance data, press the DISTANCE icon to invert the icon. After that, input the data using the numeric icons or the up/down arrow mark icons.

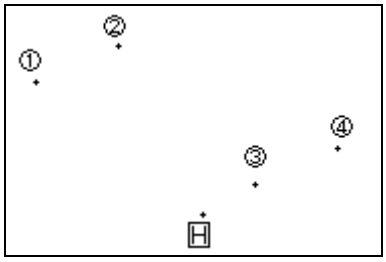
Memo Number of times

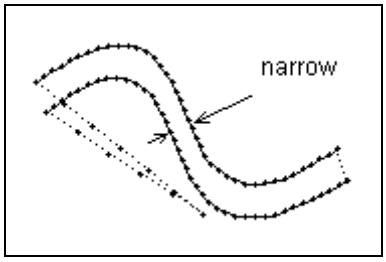
Set the number of multiple stitching layers. Set between 2 and 9. To input the number of times, press the NUMBER OF TIMES icon to invert the icon. After that, input the data using the numeric icons or the up/down arrow mark icons.

Memo Or press the MULTI, REVERSE MULTI, OFFSET icon on the arrow input screen to directly display the MULTI, REVERSE MULTI, OFFSET setting screen.

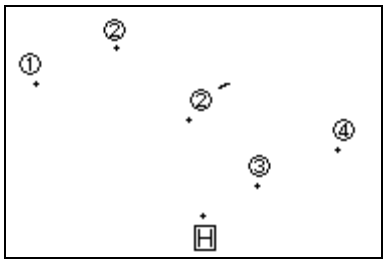
Memo (A) It is for the combination data of a curve input and multiple sew.

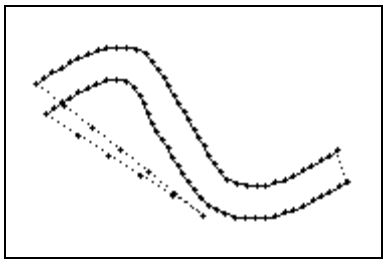
The data like the figure below (right) is made as shown in the figure below (left) when curves which pass point 2, point 3, and point 4 after an feed from the home position to point 1 are combined with multiple sewing and inputs.(Distance=10mm and 2 times of "Frequency")
The distance of the multiple data becomes "It is narrow" the data as shown in figure.





They are not like to make this partially narrow multiple data, to make a constant distance multiple data as much as possible, please input 2' between 2 and 3 as shown in the figure below (left). The multiple data as shown in the figure below (right) is made.

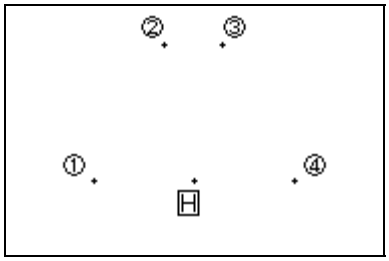


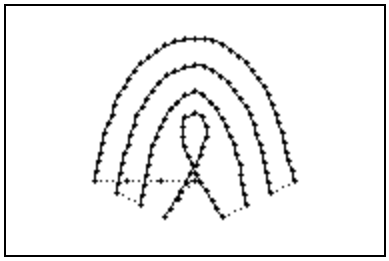


Memo (B) It is for the combination data of a curve input and multiple sew.

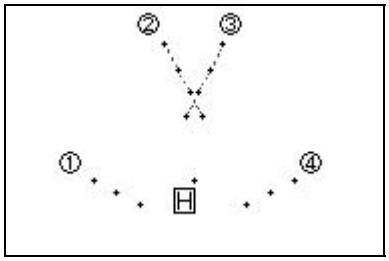
The data like the figure below (right) is made as shown in the figure below (left) when curves which pass point 2, point 3, and point 4 after an feed from the home position to point 1 are combined with multiple sewing and inputs.(Distance=8mm and 4 times of "Frequency")

The data is made in the curve that the fourth curve is different as understood from figure(right).





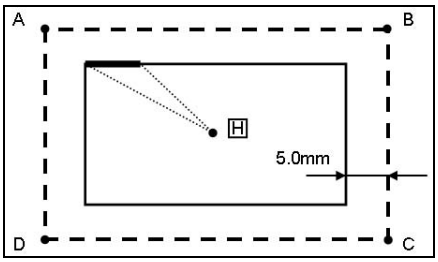
When the virtual input point which makes the multiple is requested by the operation, such a situation like the figure below, the reason for it is to intersect in the multiple.



Moreover, such a situation changes variously depending on the condition of the input point etc. of "Distance", "Frequency" of the multiple data, and the curve.
Please use a variety of trying.

11.Offset stitching (with overlap back tacking)

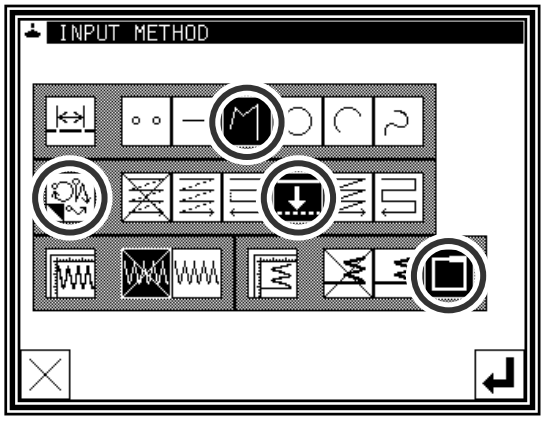
[Example] The following type of sewing data will be created.



Input offset stitching with overlap back tacking as a broken line. (Set the offset distance to "5.0 mm", direction to "right", overlap back tacking mode to "1", and number of stitches to "3".)
(The bold section indicates the overlap back tacking section.)
(The dotted line (- - - - - - -) indicates the actual input line (position before offset.))

Operation details

(1)Setting the input method



►Set the feed data from the home position H to the A point with the procedures for broken line input, and open the Input Method Setting screen.

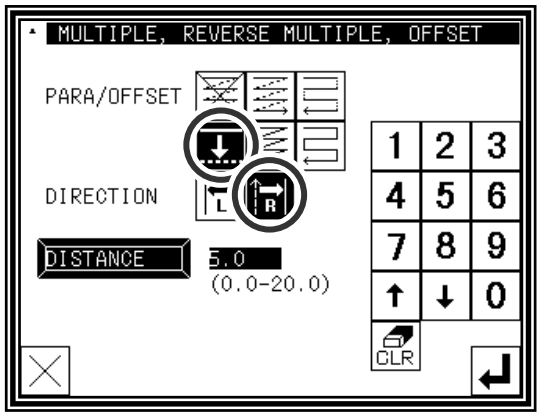
►Press Broken Line Input  .

►Press Offset  .

►Press Overlap Back Tacking  .

►Set the application input details. Press  .

(2)Setting the offset details

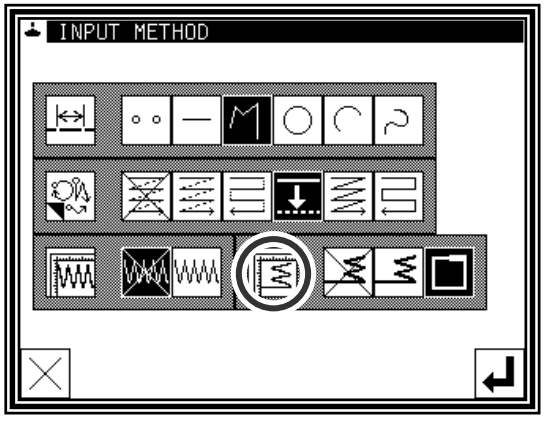


►The details are set on this screen.

(Press   , and set the distance to 5.0.)
The offset amount can be set in 0.1mm increments between 0 and 20mm.

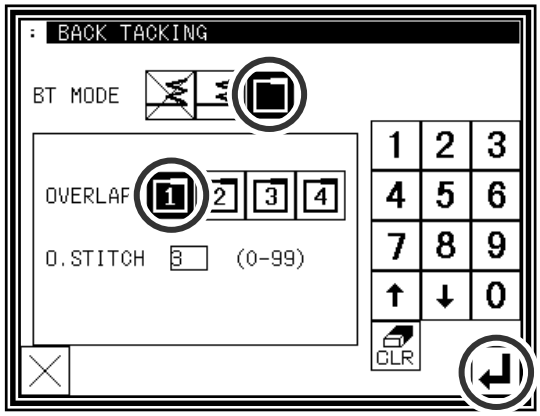
►After inputting the details, press  to set the data.

(3)Setting the back tacking details



►After returning to the Input Method Setting screen, press the back tacking details setting icon  .

(4)Setting the overlap back tacking details



►The details are set on this screen.
(The details set here are, (overlap back tacking), overlap mode 1 , three overlap stitches.)

►Press to set the data.

►The system will return to the input method setting screen.

►Press to set the data.

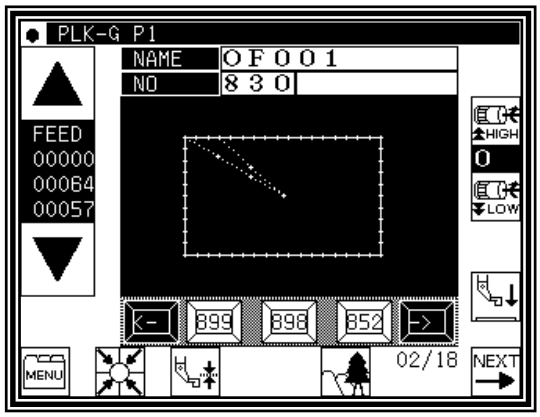
►The system will return to the arrow input screen.

►Determine the B, C D and A points with the broken line procedures, and create the broken line data.

►After creating the broken line data, input RET END .

(5)Confirming the data

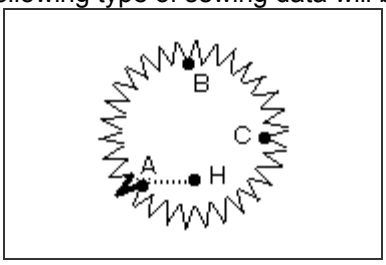
►The offset data will be displayed on the image screen.



Memo Or press the MULTI, REVERSE MULTI, OFFSET icon on the arrow input screen to directly display the MULTI, REVERSE MULTI, OFFSET setting screen.

12.Zigzag stitching (with overlap back tacking)

[Example] The following type of sewing data will be created.

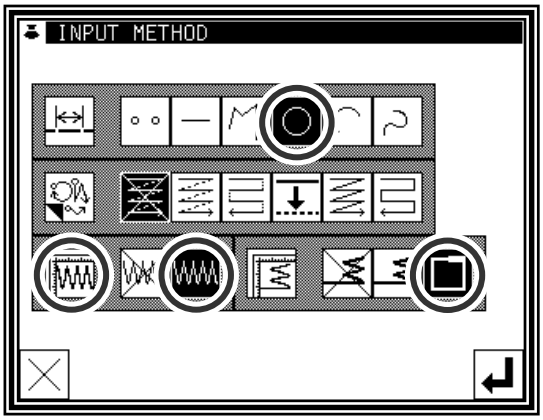


Input zigzag stitching with overlap back tacking as circle. (The zigzag deflection width will be 5.0mm, the feed amount will be 3.0mm, the direction is left,. the overlap back tacking mode will be carried out once, and three overlap stitches will be made.)

(The bold section is the overlap back tacking section.)

Operation details

(1)Setting the input method



►Set the feed data from the home position H to the A point with the procedures for broken line input, and open the Input Method Setting screen.

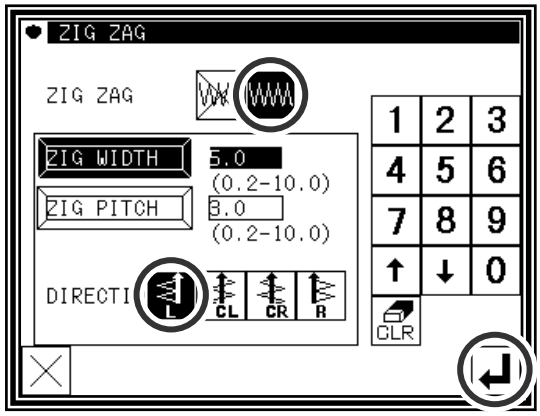
►Press Circle  .

►Press Zigzag  .

►Press Overlap Back Tacking  .

►Set the zigzag details. Press  .

(2)Setting the zigzag details

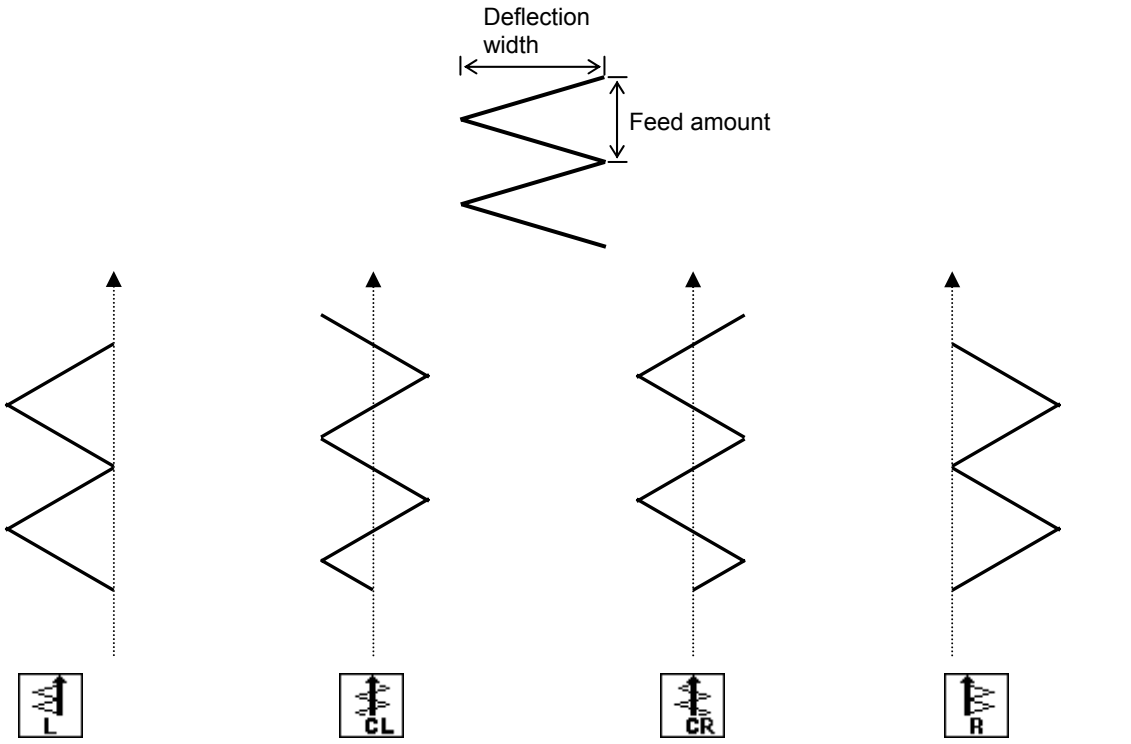


►The details are set on this screen.
(Press  , set the deflection width to 5.0, feed amount to 3.0 and direction to "left"  .)
(The zigzag deflection width can be set in 0.1mm increments between 0.2 and 10.0mm.)
(The zigzag feed amount can be set in 0.1mm increments between 0.2 and 10.0mm.)
(Refer to the "Deflection width, feed amount and creation direction" section given later for details.)

►After inputting the details, press  to set the data.

Memo To input the stitch width/length, press the STITCH WIDTH/LENGTH icon to invert the icon. After that, input the data using the numeric icons or the up/down arrow mark icons.

Deflection width, feed amount and creation direction



Travel direction left side

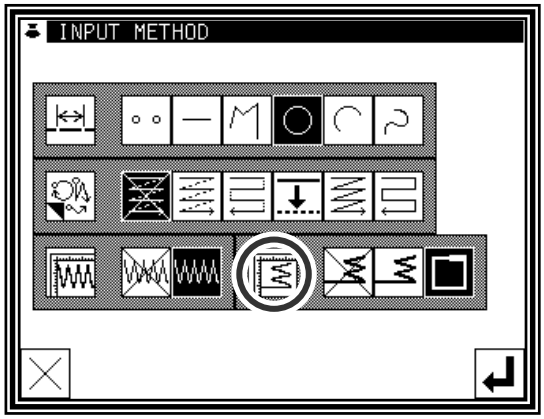
Travel direction center
Starts from left side

Travel direction center
Starts from right side

Travel direction right side

(3)Setting the back tacking details

►After returning to the Input Method Setting screen, press the back Tacking Details Setting icon .



(4)Setting the overlap back tacking details

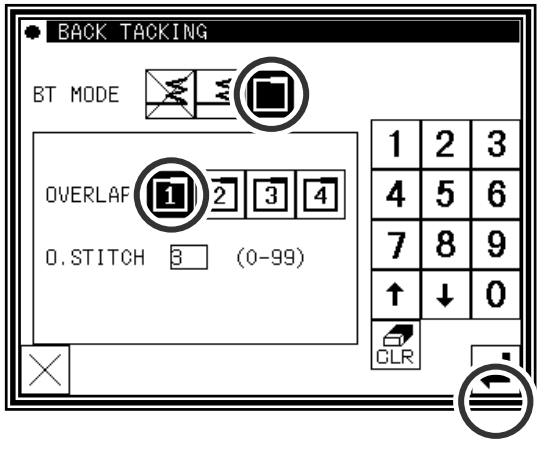
►The details are set on this screen.
(The details set here are, ,
overlap mode, 1 three overlap stitches.)

►After inputting the details, press to set the data.

►The system will return to the input method setting screen.

►Press to determine the set values.

►The system will return to the input method setting screen.

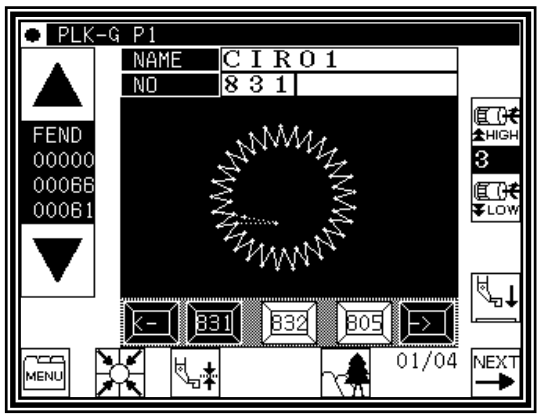


►While following the circle data entry procedure, determine points B and C to create the circle data.

►After creating the circle data, press RET END .

(5)Confirming the data

►Zigzag stitching (with overlap back tacking)



Memo Or press the ZIGZAG icon on the arrow input screen to directly display the ZIGZAG setting screen.

[8] Controlling the Presser Foot

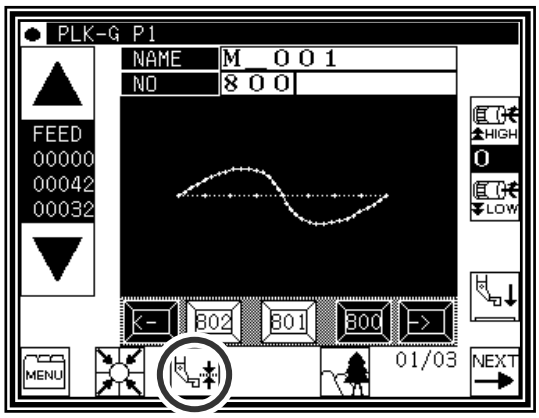
1. Setting for the Presser foot height correction

The lowest position when the presser foot is lowered can be corrected by following setting. Before sewing operation, please adjust the lowest position of the presser foot.

NOTE If presser foot height is changed by mechanical adjustment, this setting can not be used. Please use this setting, after return the presser foot height to the factory shipment condition.

(1) Display standard screen

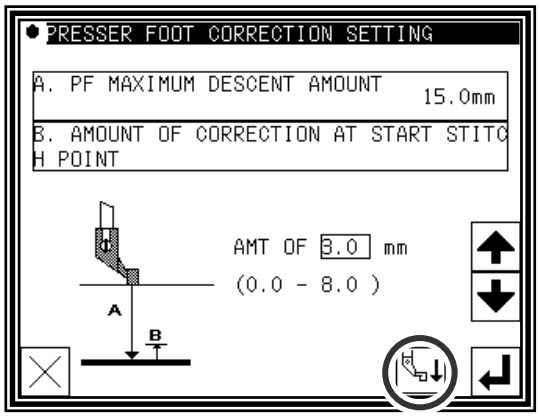
►Press the presser foot correction icon  .



(2)Setting presser foot correction value

►When presser foot is up position, correction value can not be corrected.

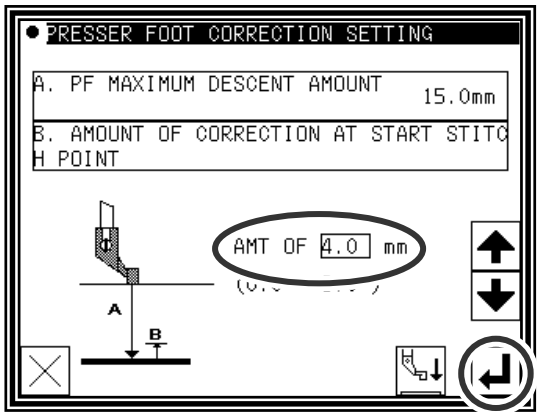
Please press  icon, then presser foot is lowered.



►Correction value can be set within the range from 0.0 to 8.0 mm by resolution of 0.2 mm. by pressing up and down arrow. (right example shows correction value =1.0)

►After setting value, press  .

►Setting is complete, then display is back to standard screen.



MEMO Presser foot correction value is preserved to the sewing pattern data.

- After setting presser foot correction value, when the sewing pattern data is saved, setting value is also saved in the pattern data.
- It can be selected whether to make the preserved value of the presser foot correction effective when the pattern data is read. Please reffer to [Program mode> Sewing pattern>HPW]. (Refer to P.[15]-1 for the program mode)

2. Presser foot height control while sewing operation

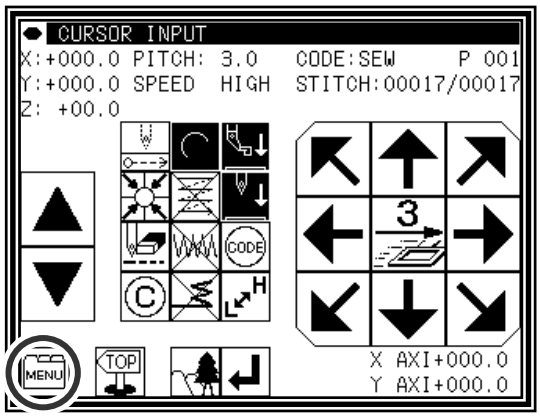
Presser foot height can be changed while sewing by the pattern data input or modification.
(In change the height of the presser foot according to the situation of the sewing material, it is effective to prevent skip stitch or prevent thread breakage.)

The method in the pattern data input is as follows. Please reffer to P.[11]-43 for the pattern data modification.

(1) On the way of pattern data input, please execute following operation at the position where presser foot height will be changed.

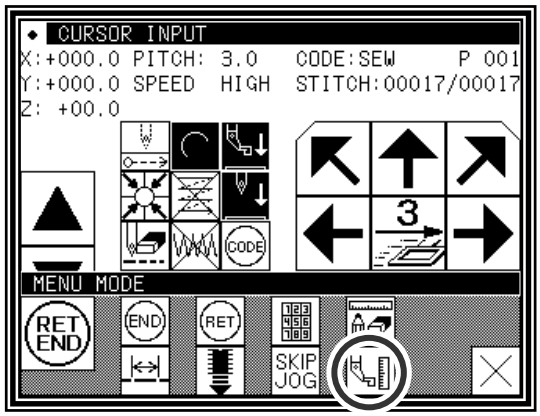
►Press 

, in the pattern input screen.



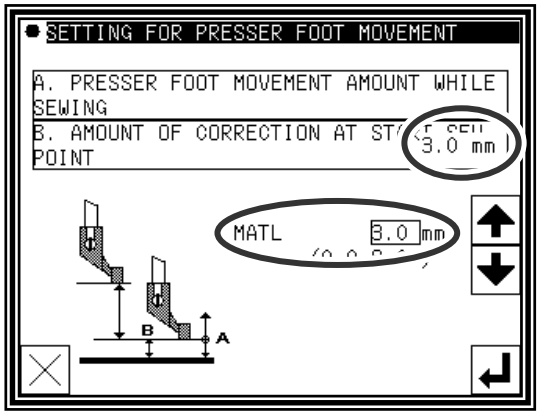
(2)Selection presser foot icon

►Press  , in the menu icon list.



(3)Setting presser foot height

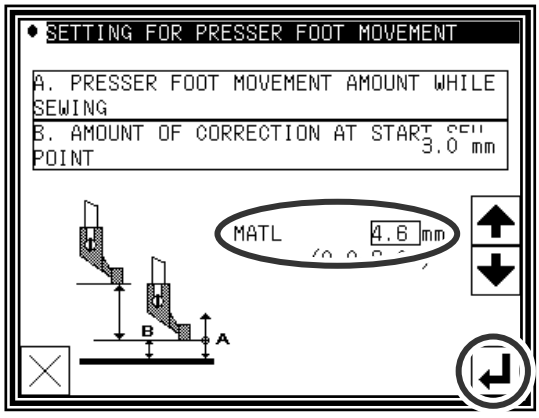
►example shows presser foot height = 3.0 mm.



► Press up and down arrow to change the presser foot height.

►After setting value, press  .

* Please consider interferrence between the presser foot and the needle bar.



(4) Next setting (if desired)

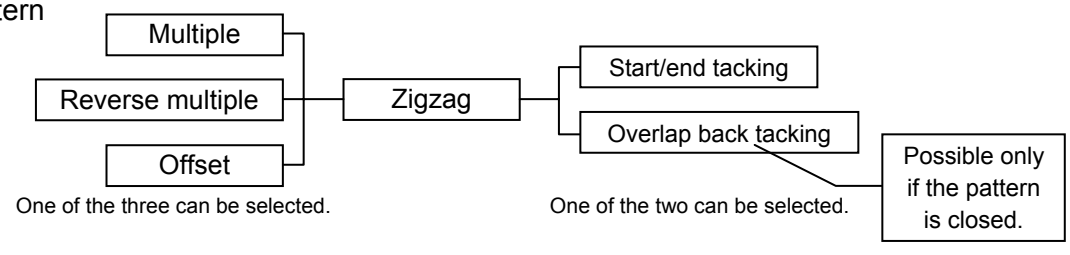
►If there is more position where presser foot height wants to be changed, please repeat above operation (1) to (3).

[9] Table of stitching type combinations

Basic input	Application input					
	Multiple	Reverse multiple	Offset	Zigzag	Start/end back tacking	Overlap back tacking
Linear						
	○					
		○				
			○			
				○		
					○	
	○			○		
	○				○	
	○			○	○	
		○		○		
		○			○	
		○		○	○	
			○	○		
			○		○	
			○	○	○	
				○	○	
Arc						
	○					
		○				
			○			
				○		
					○	
	○			○		
	○				○	
	○			○	○	
		○		○		
		○			○	
		○		○	○	
			○	○		
			○		○	
			○	○	○	
				○	○	
Circle						
	○					
		○				
			○			
				○		
					○	
						○
	○			○		
	○				○	
	○					○
	○			○	○	
	○			○		○
		○		○		
		○			○	
		○				○
		○		○	○	
		○		○		○
			○	○		
			○		○	
			○			○
			○	○	○	
			○	○		○
				○	○	
				○		○

Basic input	Application input					
	Multiple	Reverse multiple	Offset	Zigzag	Start/end back tacking	Overlap back tacking
Curve						
	○					
		○				
			○			
				○		
					○	
						○
	○			○		
	○				○	
	○					○
	○			○	○	
	○			○		○
		○		○		
		○			○	
		○				○
		○		○	○	
		○		○		○
			○	○		
			○		○	
			○			○
			○	○	○	
			○	○		○
				○	○	
				○		○
Broken line						
	○					
		○				
			○			
				○		
					○	
						○
	○			○		
	○				○	
	○					○
	○			○	○	
	○			○		○
		○		○		
		○			○	
		○				○
		○		○	○	
		○		○		○
			○	○		
			○		○	
			○			○
			○	○	○	
			○	○		○
				○	○	
				○		○
Point	(Combination inputs with application inputs are not possible.)					

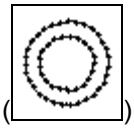
Combined pattern

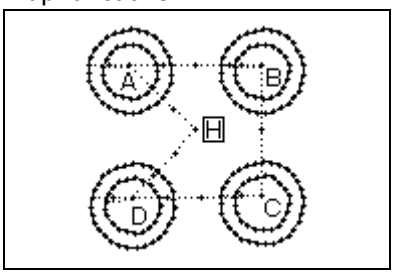


[10] Call-up function

In the sewing data input mode, you can call up the sewing data from the internal memory, and can combine the called-up data with the currently-created data to create a new sewing data. You can determine whether the first and final feed data should be deleted.

[Example of call-up function]

To create the following sewing data, preliminarily create the double circle data (), and then use the feed data and call-up functions.



Operation details

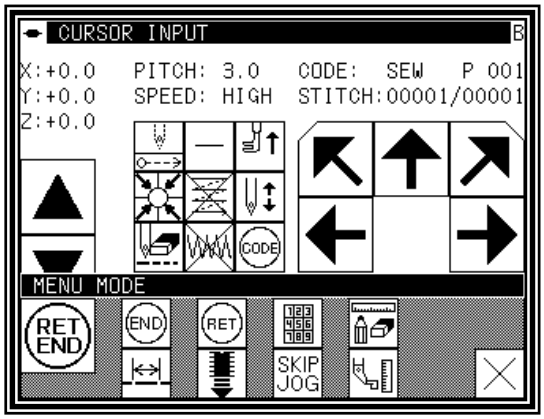
(1)Creation of data on feed data from home position H to point A

(2)Display of call-up screen

►Press the data entry mode 

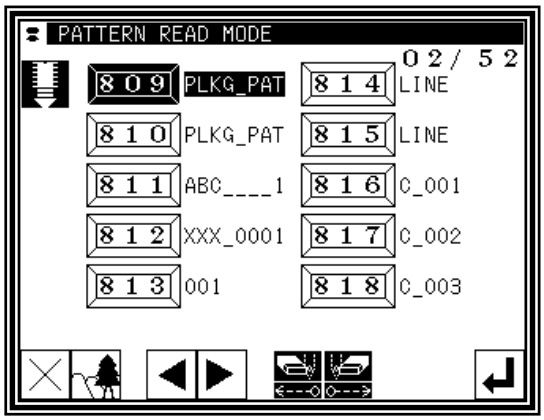
.

►Press  in the menu.



(3)Selection of call-up data

►Select data to be called up, and then press  .



⚠Caution The work holder will automatically move in accordance with the called-up data. If the needle is lowered, be careful not to get injured.

Memo After calling up "feed" data, you can modify the original "feed" data as follows

: The feed data at the sewing start point can be deleted.

: The feed data at the sewing end point can be deleted.

: The feed data at the sewing start point can be left undeleted.

: The feed data at the sewing end point can be left undeleted.

(4)For B, C, and D, call up the data in the same way, and complete the data.

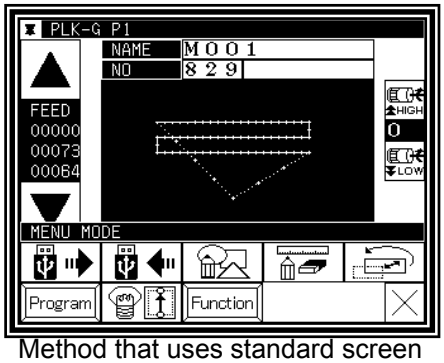
[11] Modification mode

1.Main modification mode functions

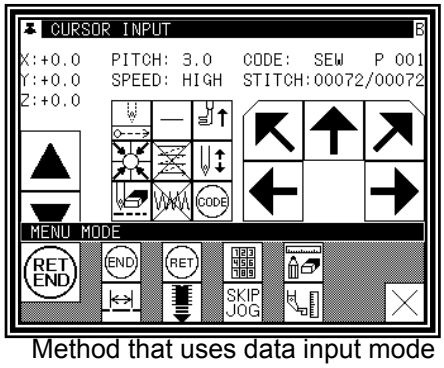
Function		icon	Details	Details setting
Stitch	Modifying the stitching start position ([11]-5)		The stitching start position moves.	-
	Deleting a stitch ([11]-7)		Deletes the designated stitch.	Designated No. of Stitches All After Designated Stitch
	Adding a stitch ([11]-11)		Data for one stitch is added at designated position	One Stitch Addition Same Stitch Addition
	Modifying the stitch position ([11]-15)		The position of the stitch is modified	Fixed <After modification position> Relative Movement
	Moving a block ([11]-19)		Data in a designated range is moved.	Change <Prior/Subsequent data> Add new stitch in between
	Modifying a block ([11]-23)		The area between two points to be modified is modified with linear, broken line, arc, curve, zigzag or feed data.	-
	Modifying stitch length ([11]-39)		The stitch length in the designated range is modified.	Designated distance modification All After Designated Stitch
	Modifying presser foot height ([11]-43)		The presser foot height at the specified position is modified.	-
Modifying the stitching speed ([11]-46)			The stitching speed is modified from the designated stitch.	Designated No. of Stitches All After Designated Stitch
Modifying code data ([11]-52)			Code data is added to or deleted from designated stitch position.	Add Delete

2.Entering the modification mode

- Press MENU and on the Standard screen to enter the modification mode.
- press MENU and in the input mode to enter the modification mode.



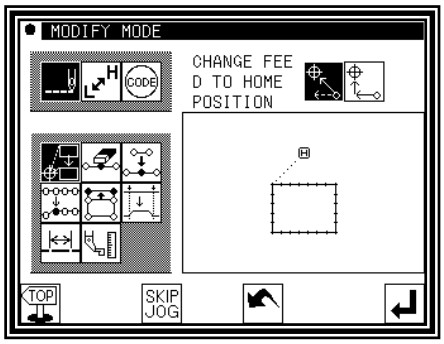
Method that uses standard screen



Method that uses data input mode

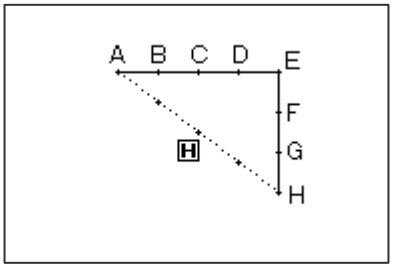
3.Quitting the modification mode

►After making modifications, press TOP to quit the modification mode.
(When ↩ is pressed, the modifications executed last will be undone.)

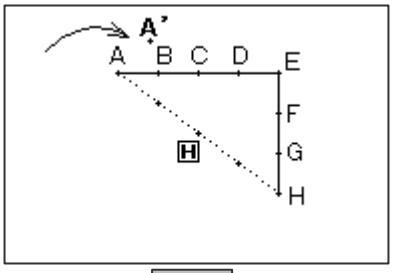


4.Changing the feed data to home position

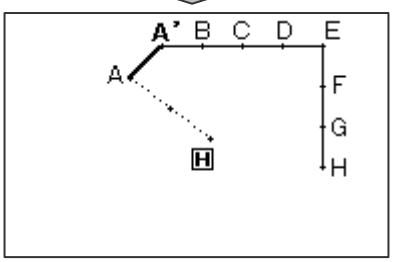
►An example for adding the A' point by adding one stitch to the original stitching data, as shown on the left, is explained in this section.

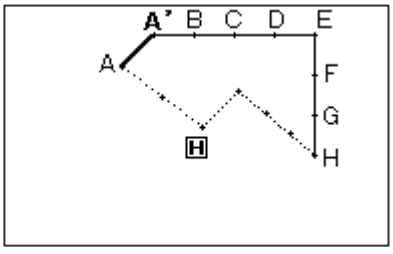


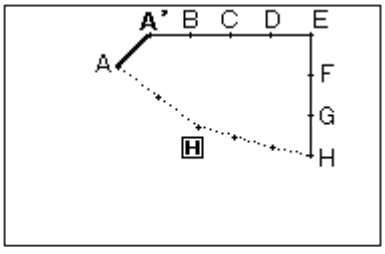
►Add the A' point as shown on the right.



►The B point to H point positions will change when the A' point is added. Thus, the feed data from the H point to the home position will also change. The method for changing this feed data can be selected with the following icons.







[Add return]

[Change return]

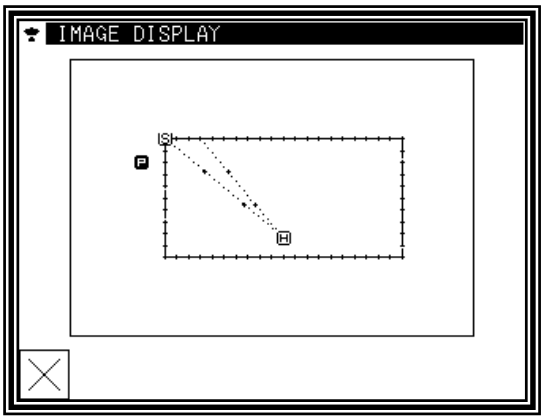
Memo Before modification, check the data. If the data on feed data from the sewing end point to the home position includes code data, the feed data following the code data will be modified.

5.Confirming on the image screen

If the image display icon  is pressed in the input mode, modification mode or conversion mode, the Image screen will open. This Image screen can be used effectively when modifying (converting) data in the modification (conversion mode), and the data can be modified (converted) easily.

An example of the Image screen in the modification mode is shown below.
The Image screen can be confirmed after the data modification (conversion) mode is entered, regardless of before and after modifications made.

▪ When stitching start position is modified



 : Closes the Image screen, and opens the previous screen. (Common for all Image screens.)

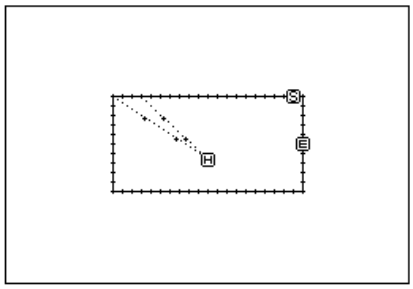
H : Indicates the home position. (Common for all Image screens.)

S : Indicates the original stitching start position.

P : Indicates the modified stitching start position. (Current position moved to with the arrow icons.)

<Only the image section is shown in the following explanations.>

▪ Deleting stitches

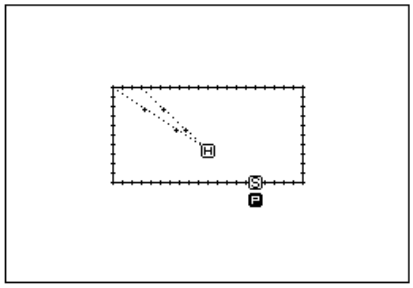


H : Indicates the home position. (Common for all Image screens.)

S : Indicates the stitch deletion start position.

E : Indicates the stitch deletion end position.

▪ Modifying the stitch position and adding stitches

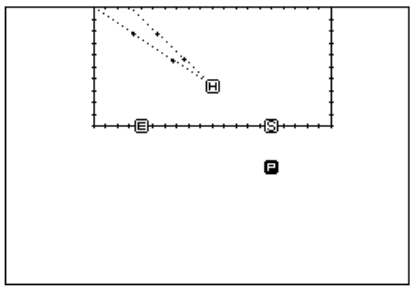


H : Indicates the home position. (Common for all Image screens.)

S : Indicates the original stitch position/stitch addition reference position.

P : Indicates the modified stitch position/added stitch position. (Current position moved to with the arrow icons.)

▪ Moving a block



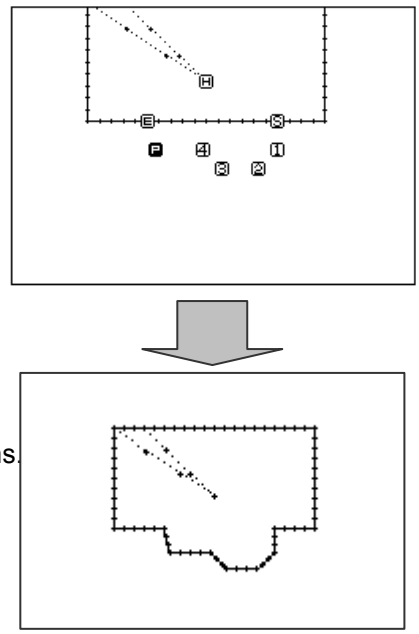
H : Indicates the home position. (Common for all Image screens.)

S : Indicates the block movement start position.

E : Indicates the block movement end position.

P : Indicates the position after block movement modification.

▪ Modifying a block (The broken line input data is created with block modification.)



H : Indicates the home position.
(Common for all Image screens.)

S : Indicates the block modification start position.

E : Indicates the block modification end position.

1 : Broken line transit point 1

2 : Broken line transit point 2

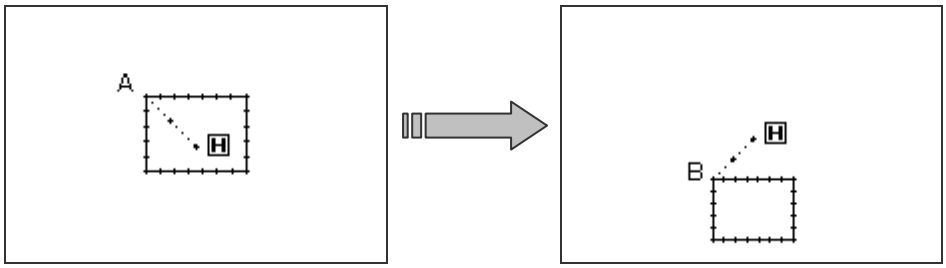
3 : Broken line transit point 3

4 : Broken line transit point 4

P : Indicates the current position moved to with the arrow icons.

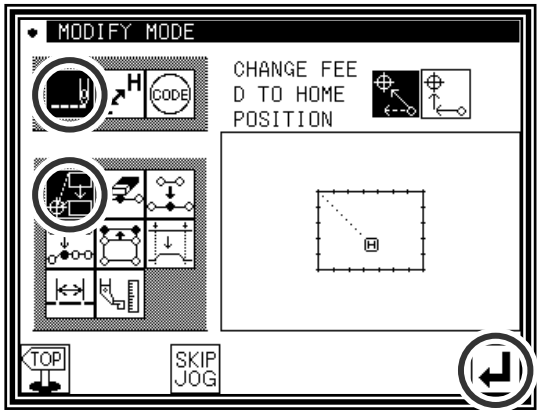
6.Modifying the stitching start position

[Example] The stitching start position A point in the stitching data will be modified to the B point as shown below.



Operation details

(1)Selecting the stitching start position movement



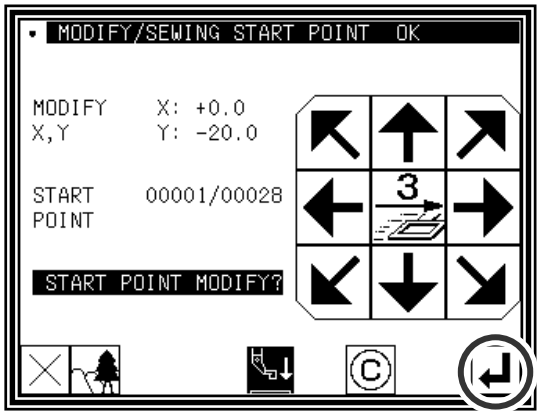
►Enter the modification mode. (Refer to the methods for entering the modification mode. Page[11]-1)

►Press Stitch Data Change  and Stitching Start Position Move  .

►Press  to set the data.

⚠Caution The work holder will automatically move to the current stitching start position.
(*1)Take care when the needle is lowered, etc.

(2)Moving to the modification position and setting the data



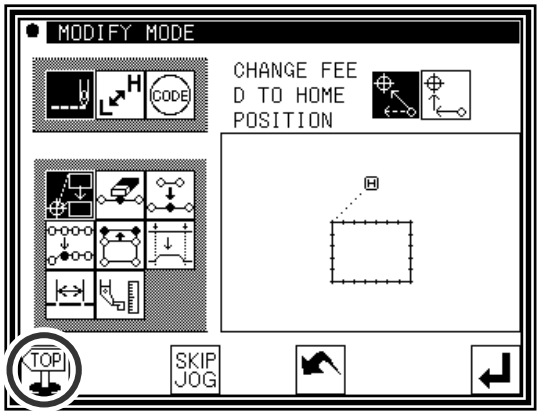
►Press the arrow icons to move the position to the B point.

►Press  .
(The sewing start position will be modified.)

⚠Caution When the modifications are undone, the work holder will automatically return to the home position. Take care when the needle is lowered, etc.

►If  is pressed here, the screen will change to the previous screen.

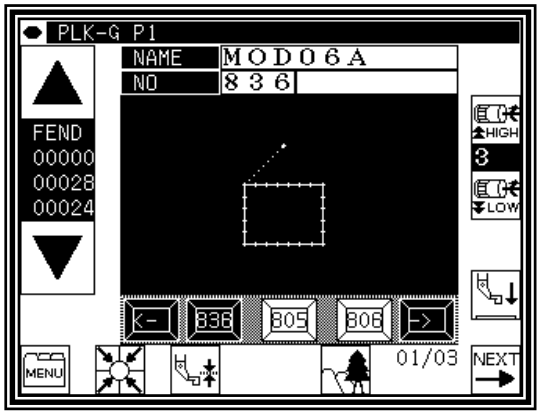
(3)Confirming the modified data



►Quit the modification mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)

(4)Confirming with the Standard screen

►The stitching start position has been modified.



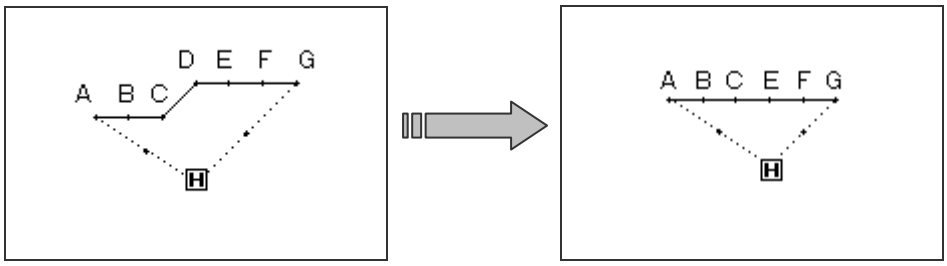
(*1)

Memo Please note that there is a characteristic explained as follows about " Modifying the stitching start position " of the data with the back tacking.
The data of the figure below is the straight line data which puts the start/end back tacking of V mode. (A fat part is back tacking).
In this case, is sewn in order of A→B→C→D.
Therefore, the actual stitch starting position is "A point." (Starting location of the data origination (input) is "B point."

Please specify whether to correct the B point because " Starting location (B) at the data input " after work holder automatically moves to "Actual stitch starting position (A)" when enters to " Modifying the stitching start position "

7.Deleting a stitch (Deleting the designated No. of stitches)

[Example] The stitching pattern between the C point and D point in the following type of stitching data will be deleted.



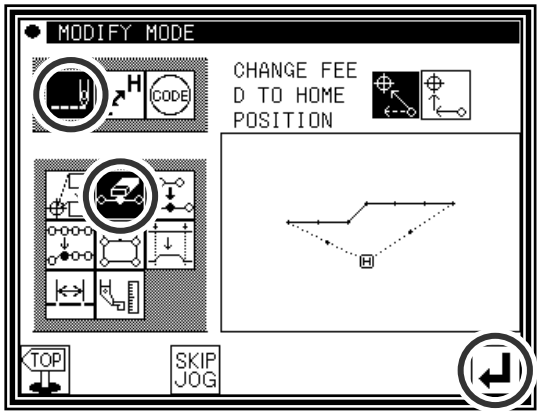
Operation details

(1)Selecting deletion of stitches

►Enter the modification mode. (Refer to the methods for entering the modification mode. Page[11]-1)

►Press Stitch Data Change  and Stitch Delete  .

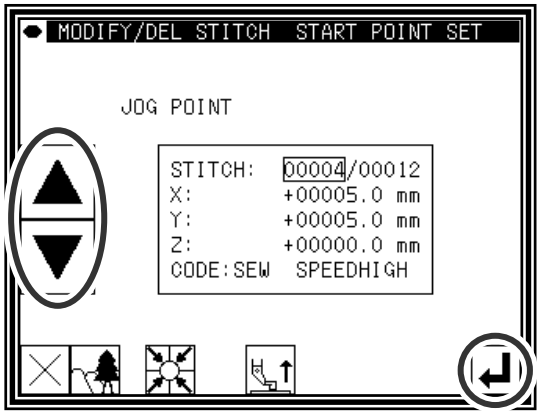
►Press  to open the next screen.



(2)Determining the deletion position

►Using Jog  ,  , determine the position to be deleted. Set to the stitch position (C point) just before the position to be deleted.

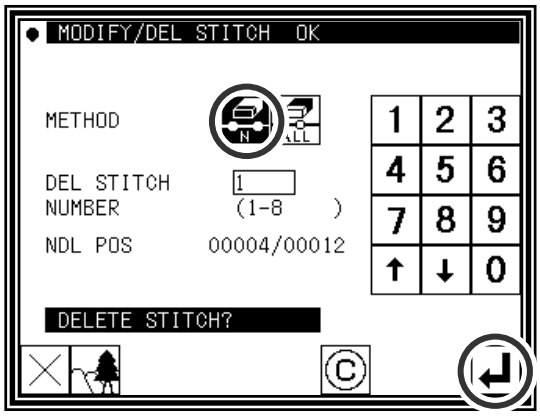
►Press  when the position has been set.



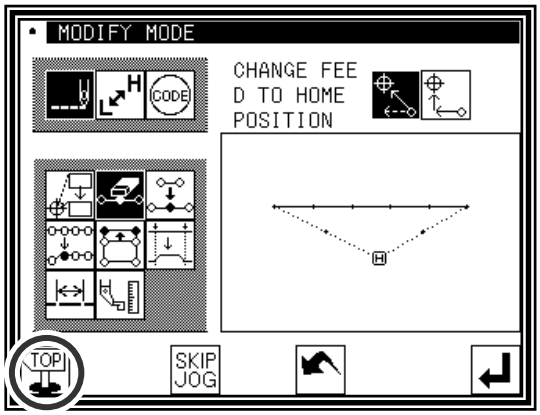
(3)Setting the deletion method

►Press No. of Stitch Designation  .

►Set the No. of stitches to be deleted as "1", and then press  .
(1 stitch of data will be deleted.)

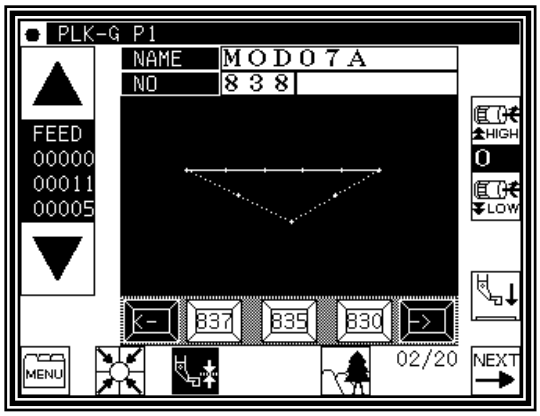


(4)Confirming after stitch deletion



►Quit the modification mode. Press TOP to change to the Saving mode screen. Press ↵ to return to the Standard screen after saving the data.
(When ↶ is pressed, the modifications executed last will be undone.)

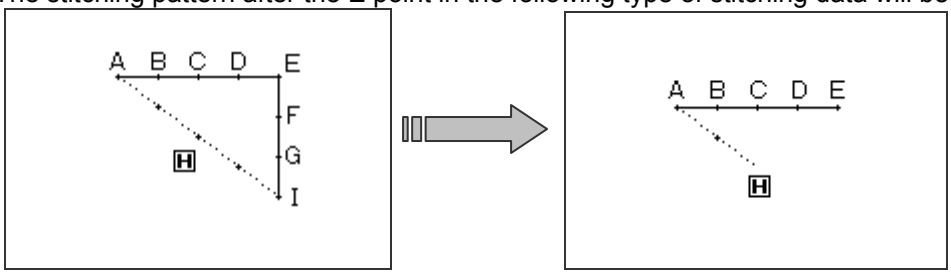
(5)Confirming with the Standard screen



►The stitch has been deleted.

8.Deleting a stitch
(Deleting all stitches after the designated position)

[Example] The stitching pattern after the E point in the following type of stitching data will be deleted.



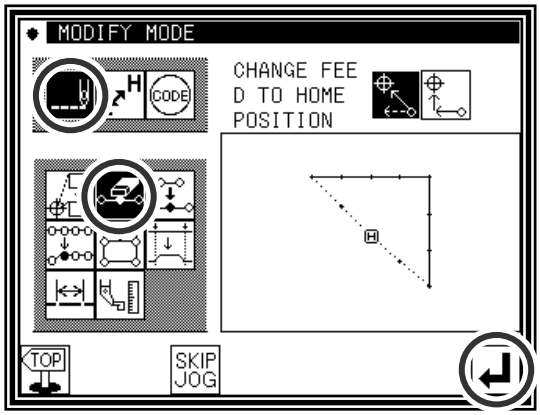
Operation details

(1)Selecting deletion of stitches

►Enter the modification mode.

►Press Stitch Data Change and Stitch Delete .

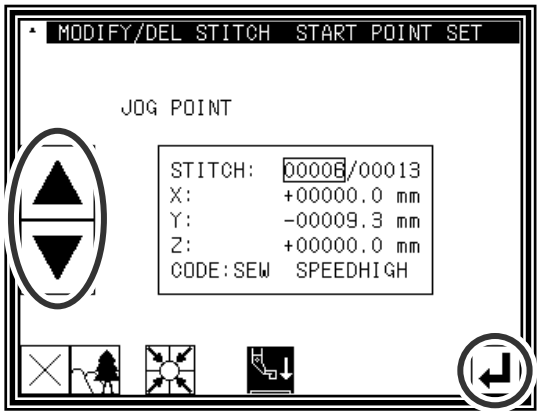
►Press to open the next screen.



(2)Determining the deletion position

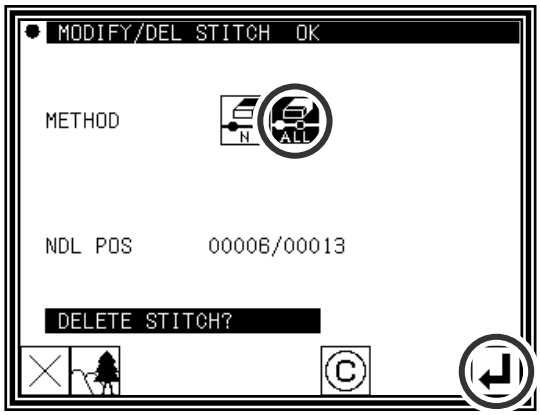
►Using Jog , , determine the position to be deleted. Move to the deletion position (point E).

►Press when the position has been set.

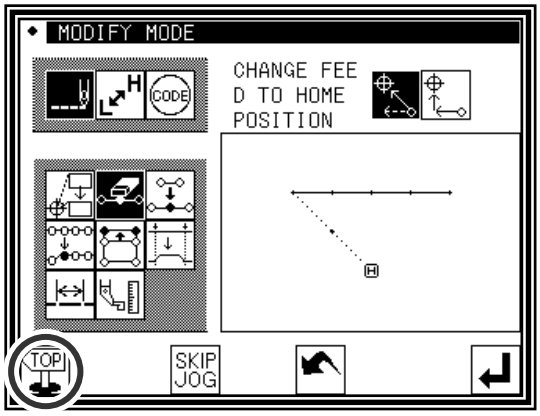


(3)Setting the deletion method

►Press All After Designated Stitch , and then press . (All the data below the specified position will be deleted.)

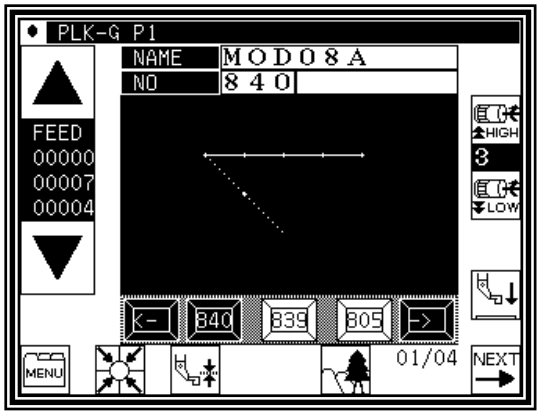


(4)Confirming after stitch deletion



►Quit the modification mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)

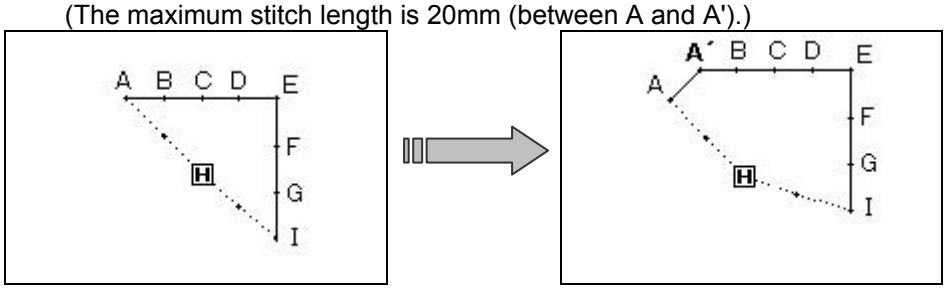
(5)Confirming with the Standard screen



►The stitches have been deleted.

9.Adding a stitch (Adding one stitch)

[Example] The required stitch length A' will be added to the A point of the following type of stitching (The maximum stitch length is 20mm (between A and A').)



Operation details

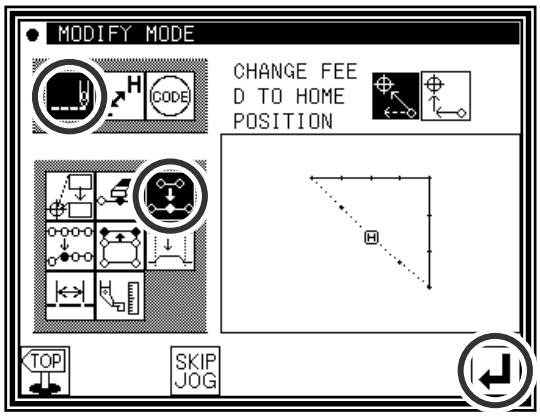
(1)Selecting stitch addition

►Enter the modification mode.

►Press Stitch Data Change 

and Stitch Add  .

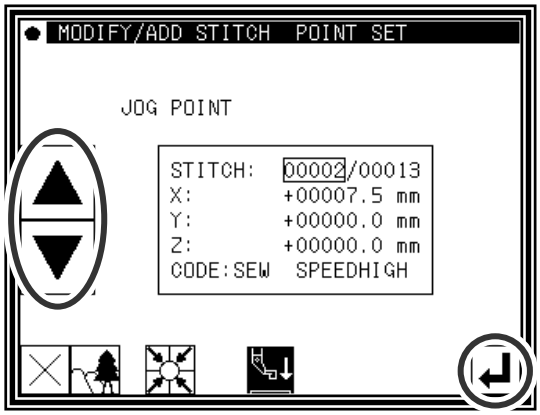
►Press  to open the next screen.



(2)Determining the addition position

►Using Jog  ,  , determine the position to be added. Move to the addition position (point A).

►Press  when the position has been set.

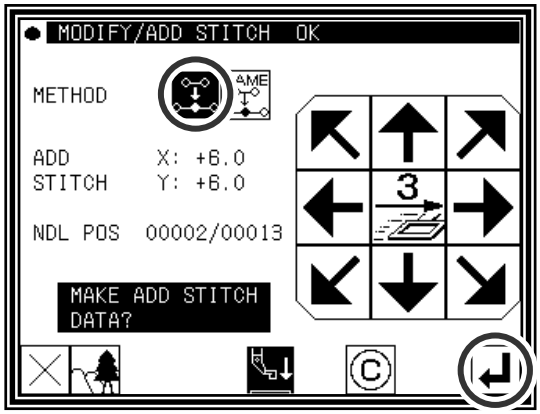


(3)Setting the addition method

►Press One Stitch Addition  , and then use the arrow icons to move and input the stitch position to be added. (A' point)

►Press  .

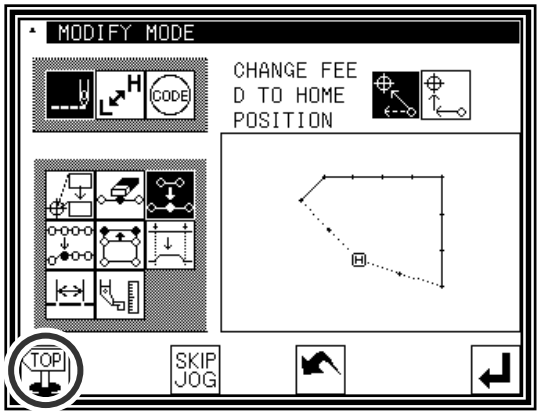
(One stitch will be added.)



(4)Confirming after stitch addition

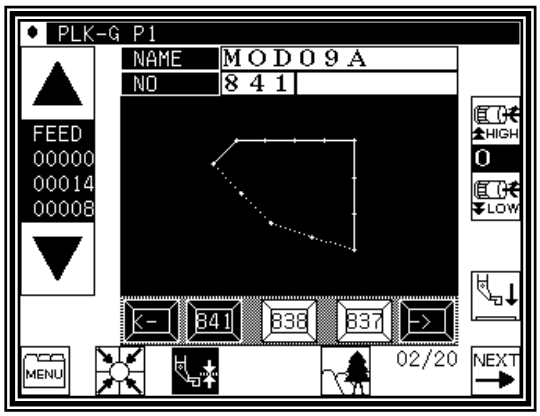
►Quit the modification mode. Press 

to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)



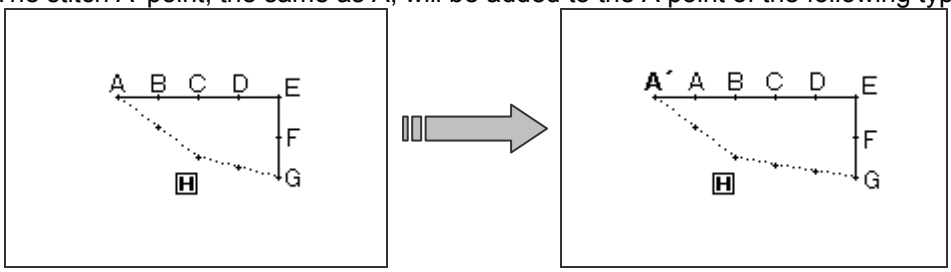
(5)Confirming with the Standard screen

►One stitch has been added.



10.Adding a stitch (Adding the same stitch)

[Example] The stitch A' point, the same as A, will be added to the A point of the following type of stitching data.



Operation details

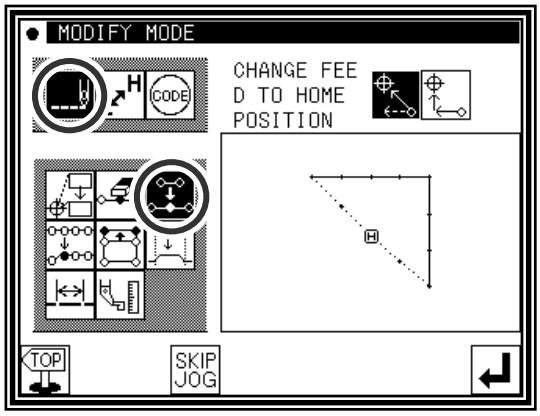
(1)Selecting stitch addition

►Enter the modification mode.

►Press Stitch Data Change 

and Stitch Add  .

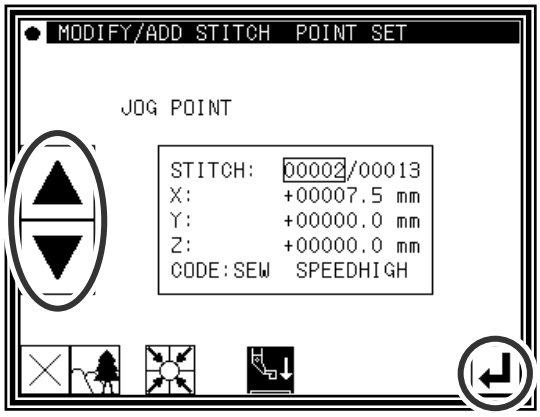
►Press  to open the next screen.



(2)Determining the addition position

►Using Jog  ,  , determine the position to be added. Move to the addition position (point A).

►Press  when the position has been set.

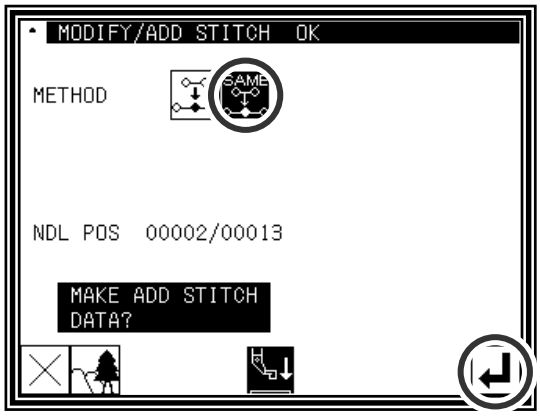


(3)Setting the addition method

►Press Same Stitch Addition  ,

and then press  .

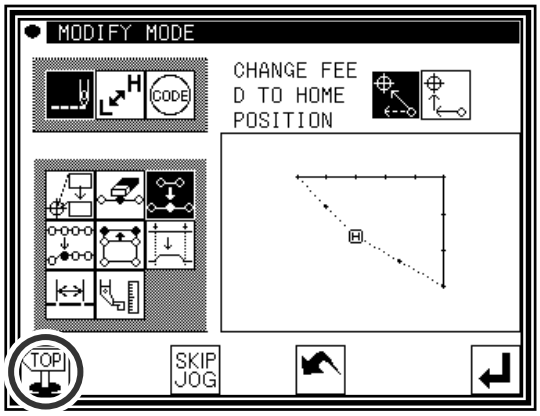
(The same stitch will be added.)



(4)Confirming after stitch addition

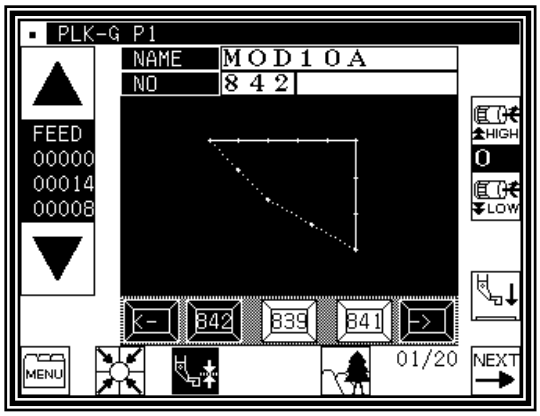
►Quit the modification mode. Press 

to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)



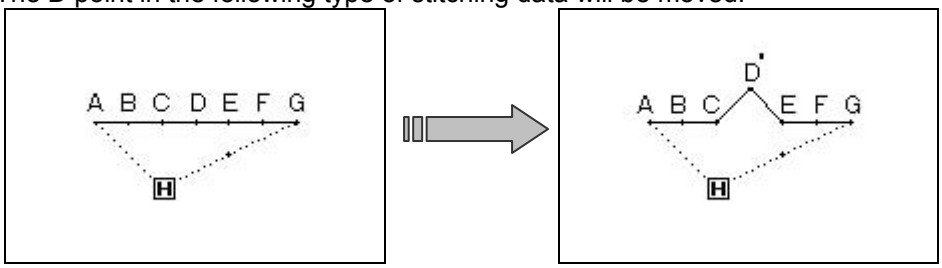
(5)Confirming with the Standard screen

►The same stitch has been added.



11.Modifying the stitch position (Position of subsequent data fixed)

[Example] The D point in the following type of stitching data will be moved.



Operation details

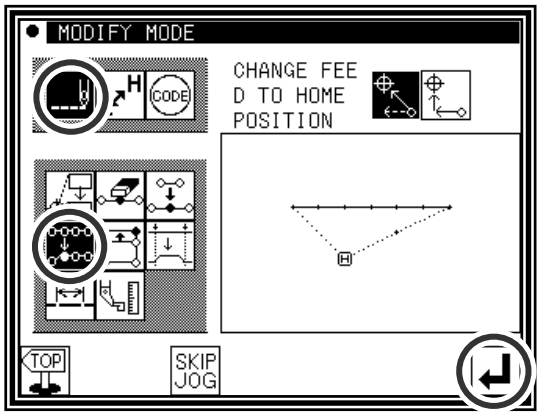
(1)Selecting stitch position modification

►Enter the modification mode.

►Press Stitch Data Change 

and Stitch Position Modify  .

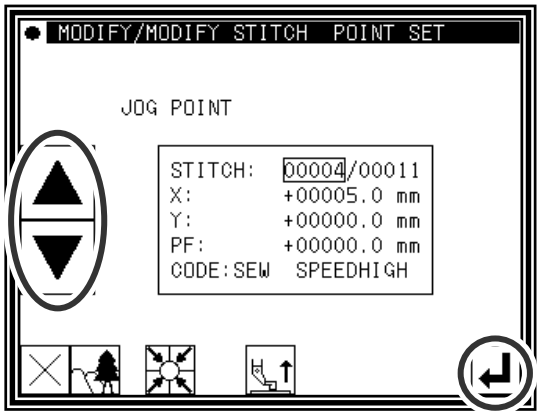
►Press  to open the next screen.



(2)Determining the modification position

►Using Jog  ,  , determine the position to be modified.(D point)

►Press  when the position has been set.



(3)Setting the modification method and modification amount

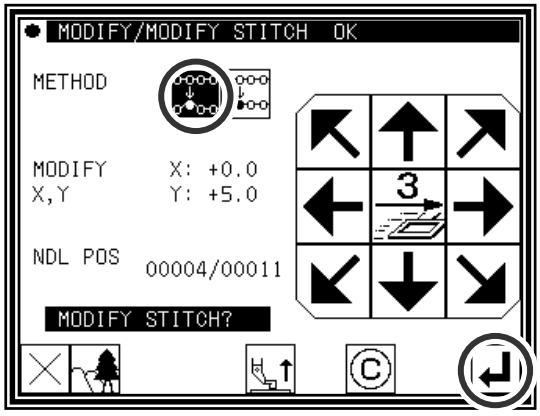
►To set the method, press  .

(pattern data after modification stitch fixed), and move to the modification position (point D') using the arrow mark icons.

►Press  .

(The stitch position will be modified.)

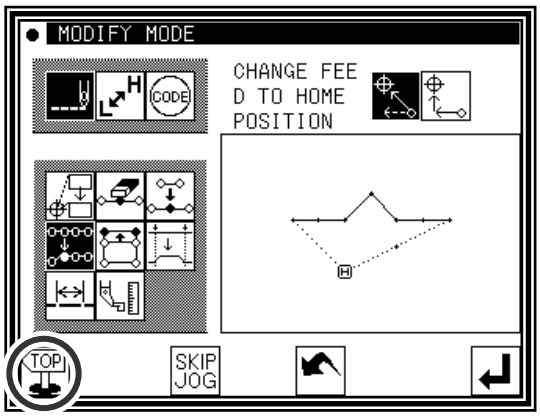
Memo Move the stitch length so that it is within the range of 20mm at the maximum.



(4)Confirming after modification

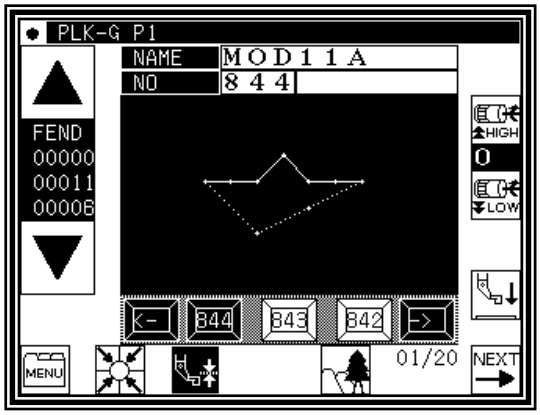
►Quit the modification mode. Press 

to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)



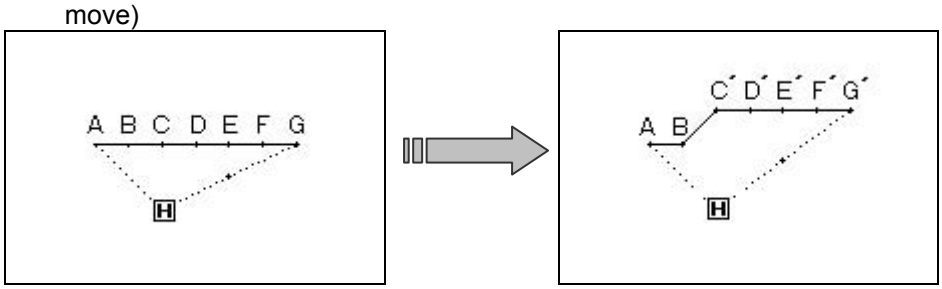
(5)Confirming with the Standard screen

►The stitch position has been modified.



12.Modifying the stitch position (Subsequent data position moved)

[Example] The C point in the following type of stitching data will be moved. (The D, E, F and G points will move)



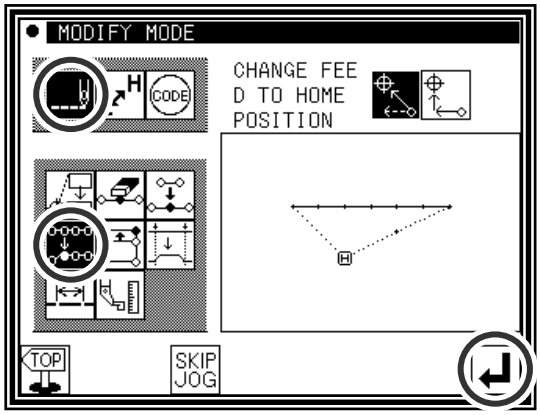
Operation details

(1)Selecting stitch position modification

►Enter the modification mode.

►Press Stitch Data Change and Stitch Position Modify .

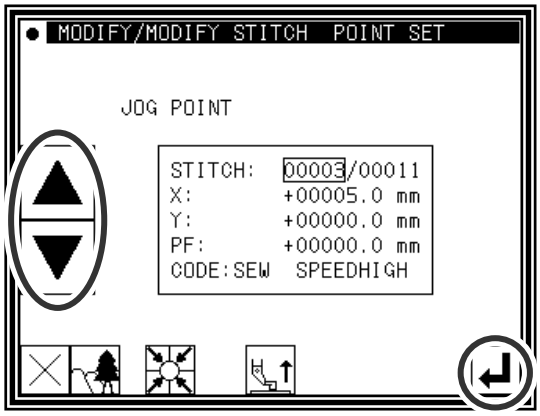
►Press to open the next screen.



(2)Determining the modification position

►Using Jog , , determine the position to be modified.(C point)

►Press when the position has been set.

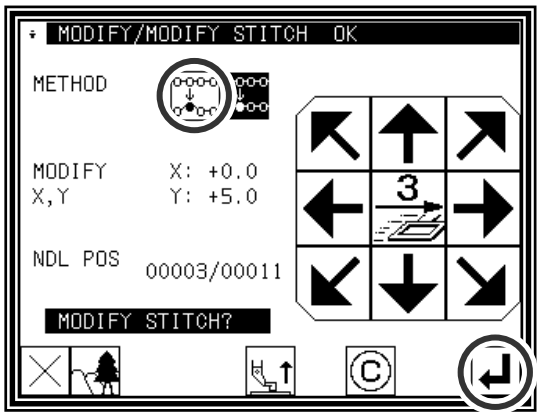


(3)Setting the modification method and modification amount

►To set the method, press .
(pattern data after modification stitch moved), and Move to the modification position (point C') using the arrow mark icons.

►Press .
(The stitch positions will be modified.)

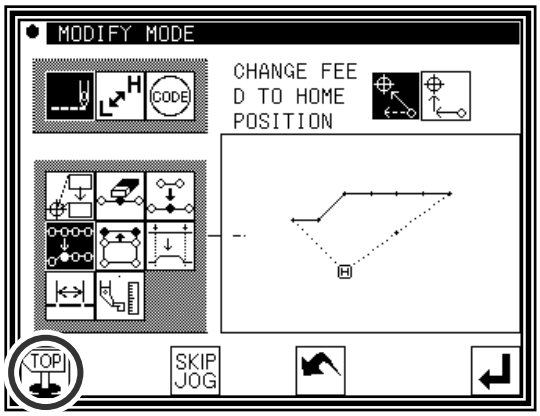
Memo Move the stitch length so that it is within the range of 20mm at the maximum.



(4)Confirming after modification

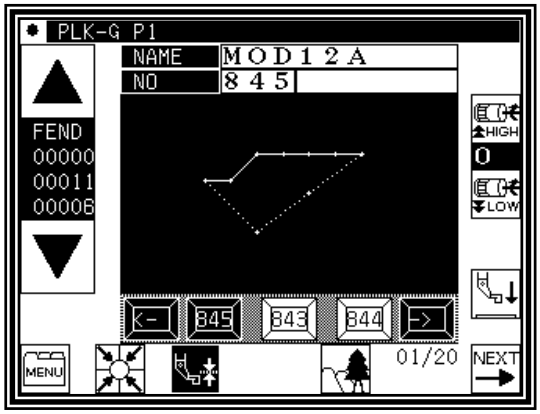
►Quit the modification mode. Press 

to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)



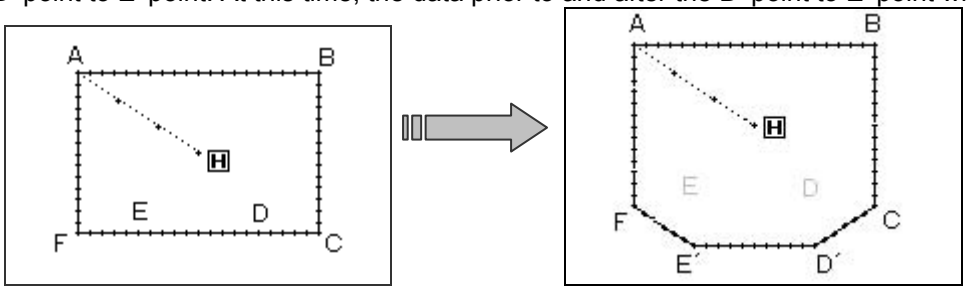
(5)The stitch position has been modified.

►The stitch positions have been modified.



13.Moving a block (Changing the prior/subsequent data)

[Example] The section between the D point and E point of the following type of stitching data will be moved to the D' point to E' point. At this time, the data prior to and after the D' point to E' point will be changed.



Operation details

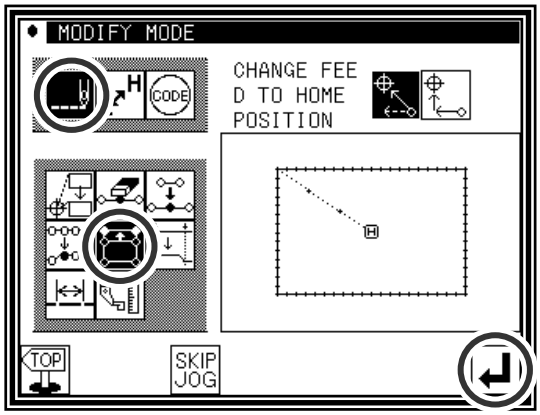
(1)Selecting block movement

►Enter the modification mode.

►Press Stitch Data Change 

and Block Move  .

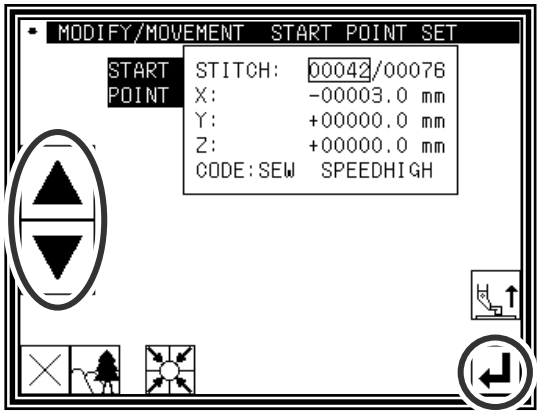
►Press  to open the next screen.



(2)Determining the block modification range (start point)

►Using Jog  ,  , determine the start point position.(D point)

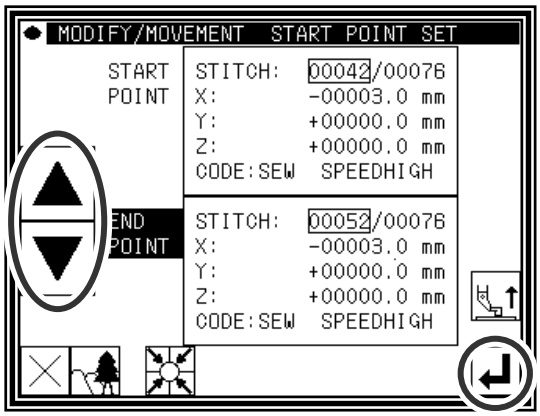
►Press  .



(3)Determining the block modification range (end point)

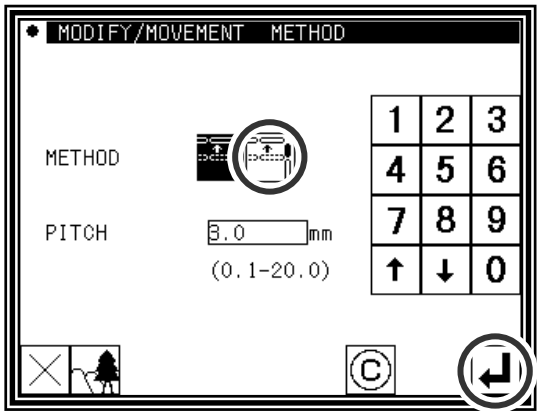
►Using Jog  ,  , determine the end point position.

►Press  .



⚠Caution When the end point is determined, the presser will automatically return to the start point. Take care when the needle is lowered, etc.

(4)Setting the movement method and stitch length

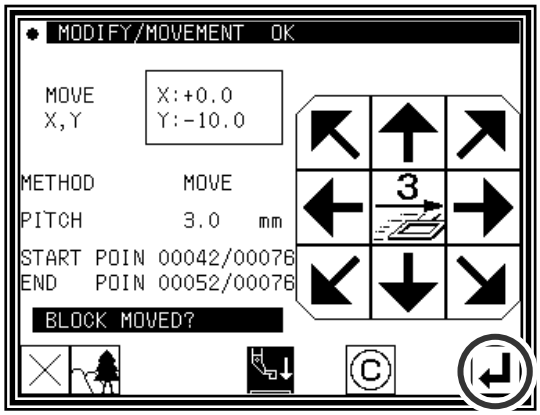


►Set the movement method. Press Prior/Subsequent Data Change .

►Set the stitch length.
(Set to 3.0mm for this example.)

►Press .

(5)Determining the movement amount



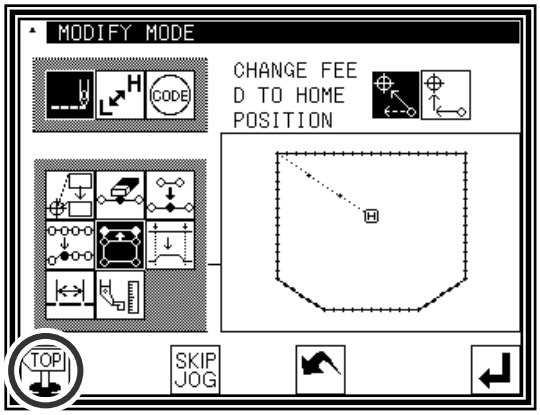
►Using the arrow icons, determine the movement amount.(Move to the position (point D').)

►Press

(The block position will be modified.)

⚠Caution The work holder will move. (The work holder will return to the start point of the section being modified; in this case the start point (A point) of the broken line input.)
Take care when the needle is lowered, etc.

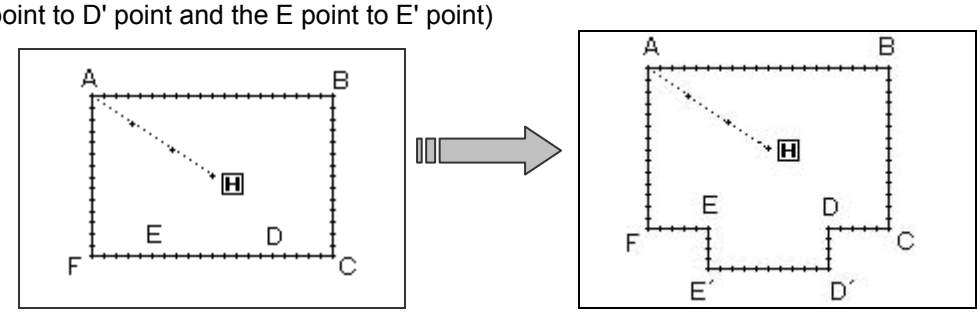
(6)Confirming after modification



►Quit the modification mode. Press TOP to change to the Saving mode screen. Press to return to the Standard screen after saving the data.
(When is pressed, the modifications executed last will be undone.)

14.Moving a block (Adding new data to the prior/subsequent data)

[Example] The section between the D point and E point of the following type of stitching data will be moved to the D' point to E' point. At this time, new data will be added prior to and after the D' point to E' point. (the D point to D' point and the E point to E' point)



Operation details

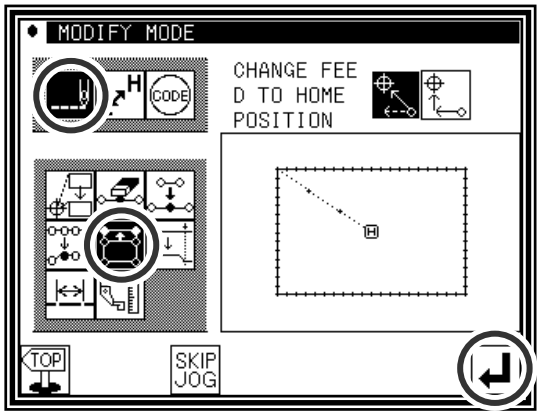
(1)Selecting block movement

►Enter the modification mode.

►Press Stitch Data Change 

and Block Move  .

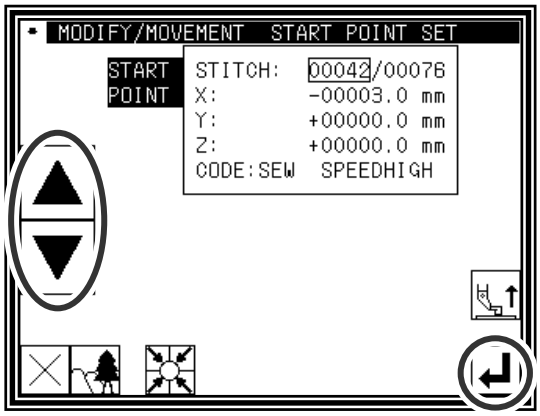
►Press  to open the next screen.



(2)Determining the block modification range (start point)

►Using Jog  ,  , determine the start point position.(D point)

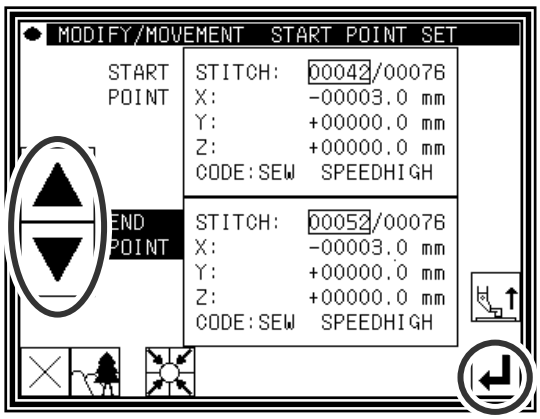
►Press  .



(3)Determining the block modification range (end point)

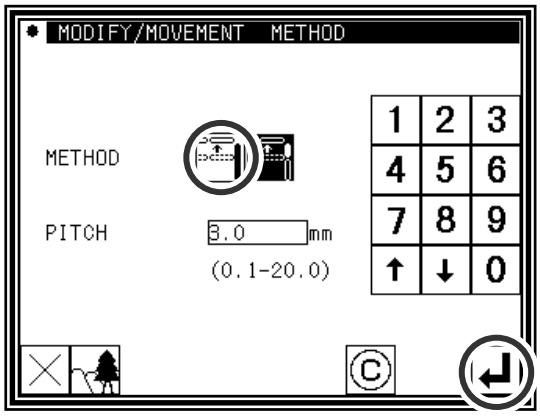
►Using Jog  ,  , determine the end point position.(E point)

►Press  .



⚠Caution When the end point is determined, the presser will automatically return to the start point. Take care when the needle is lowered, etc.

(4)Setting the movement method and stitch length

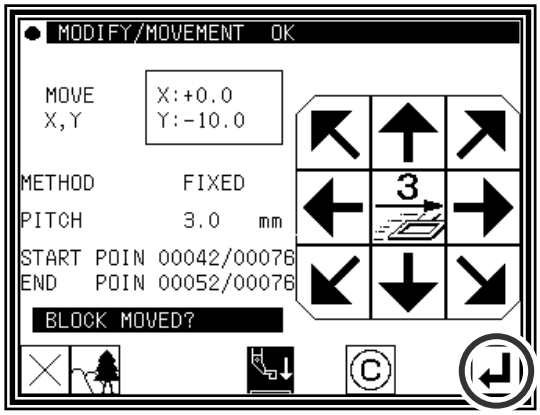


►Set the movement method.
Press Add New Stitch To Prior/Subsequent Data .

►Set the stitch length.
(Set to 3.0mm for this example.)

►Press .

(5)Determining the movement amount

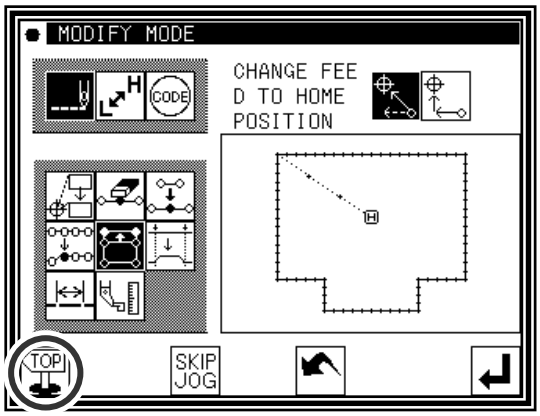


►Using the arrow icons, determine the movement amount. (Move to the position (point D').)

►Press .
(The block position will be modified.)

⚠Caution The presser will move.
(The presser will move to one stitch before the D point.) Take care when the needle is lowered, etc.

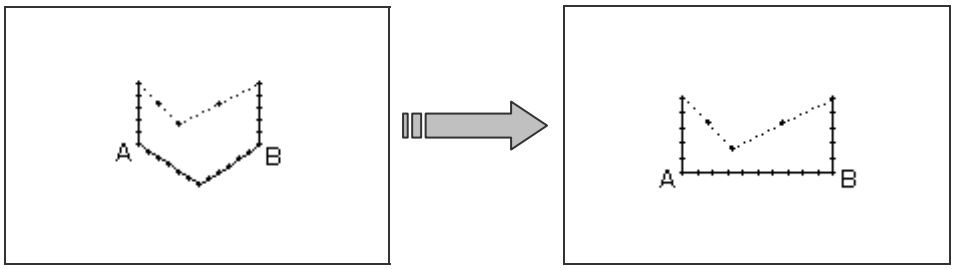
(6)Confirming after modification



►Quit the modification mode. Press TOP to change to the Saving mode screen. Press to return to the Standard screen after saving the data.
(When is pressed, the modifications executed last will be undone.)

15.Modifying a block 1 (Linear input)

[Example] The section between the A point and B point of the following type of stitching pattern will be modified to a linear line.



Operation details

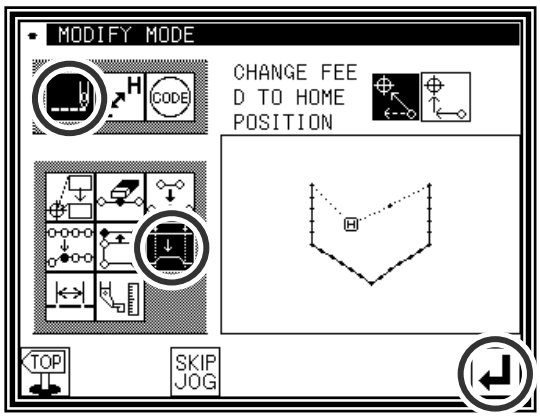
(1)Selecting block modification

►Enter the modification mode.

►Press Stitch Data Change 

and Block Modify  .

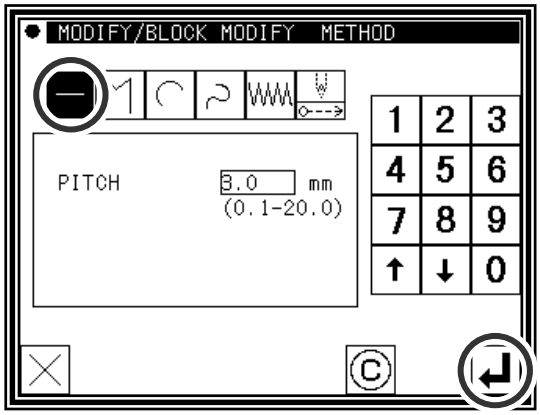
►Press  to open the next screen.



(2)Selecting the input type

►Press Linear  .

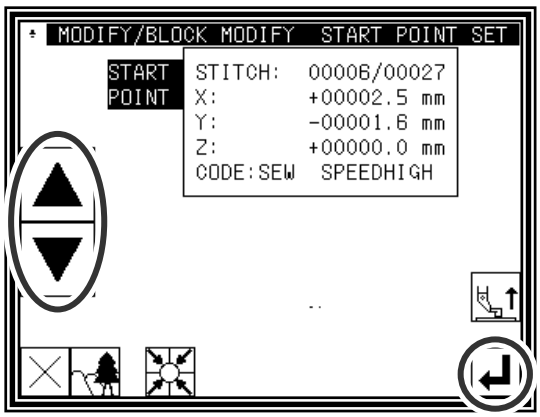
►Press  to set the data.



(3)Determining the block modification range (start point)

►Using Jog  ,  , determine the start point position.(A point)

►Press  .

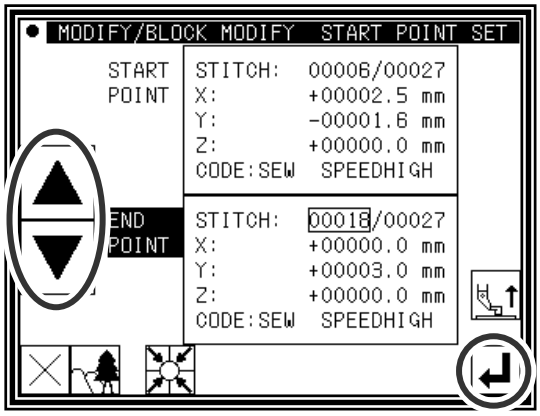


(4)Determining the block modification range (end point)

►Using Jog ▲, ▼, determine the end point position.(B point)

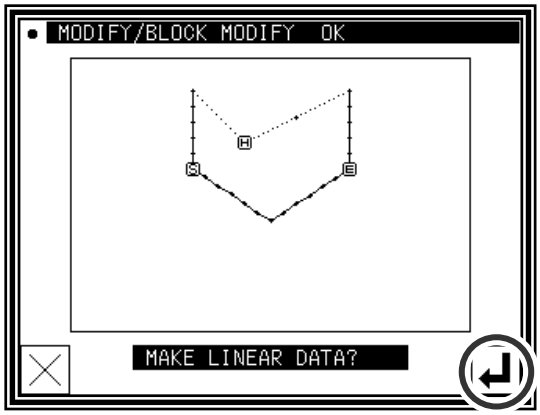
►Press ↵.

⚠Caution When the end point is determined, the work holder will automatically return to the start point. Take care when the needle is lowered, etc.



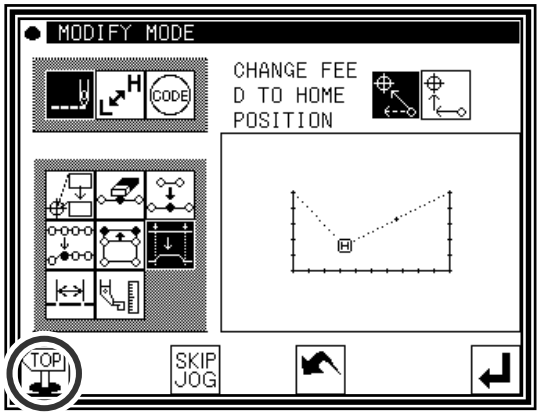
(5)Confirming the data creation

►Press ↵.
(The block position will be modified.)



(6)Confirming the modified data

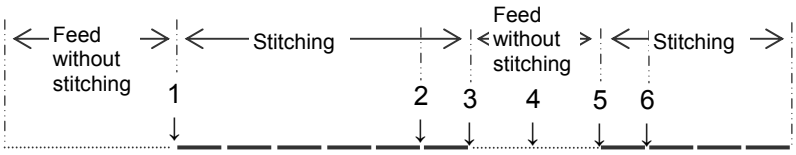
►Quit the modification mode. Press TOP to change to the Saving mode screen. Press ↵ to return to the Standard screen after saving the data.
(When ↶ is pressed, the modifications executed last will be undone.)



[Memo] 1. When arc modification is selected for block modification: Arc modification will be executed just by indicating one point in the designated range.
2. When linear modification is selected for block modification: The modification range will be connected with linear lines.
3. If the block to be modified contains code data, the code data will be deleted.
4. The block modification start point and end point are explained below.

■For modification other than feed data modification

The start point can be designated when the stitch is stitching data.
The end point can be designated when the section before the stitch is stitching data. (Refer to following illustration.)
(The data between the start point and end point is irrelevant. However, the feed data between the start point and end point will be changed to stitching data.)



Start point		End point	Designation validity
1	-	2	Valid (OK)
1	-	3	Valid (OK)
1	-	4	Invalid (NG) ... Prior section is feed data
1	-	5	Invalid (NG) ... Prior section is feed data
1	-	6	Valid (OK)

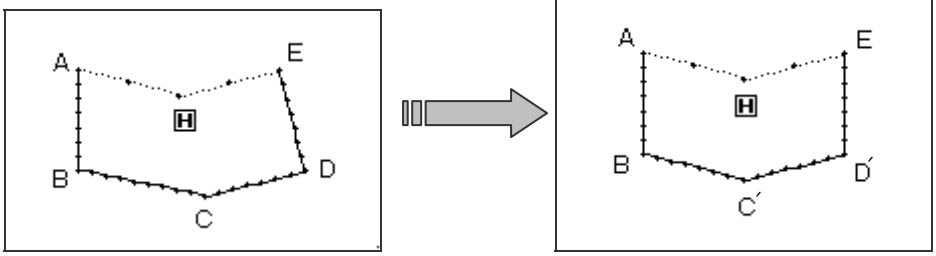
■For feed data modification

The start point can be designated when the stitch is stitching data or feed data.
The end point can be designated when the section before the stitch is stitching data or feed data.
(The data between the start point and end point is irrelevant.)

16.Modifying a block 2 (Broken line, arc, curve input)

Methods for designating the modification position with the jog icons. (This is handy when using the modification origin data as a reference.)

[Example] The C point and D point in the following type of data are each modified to the C' point and D' point.



Operation details

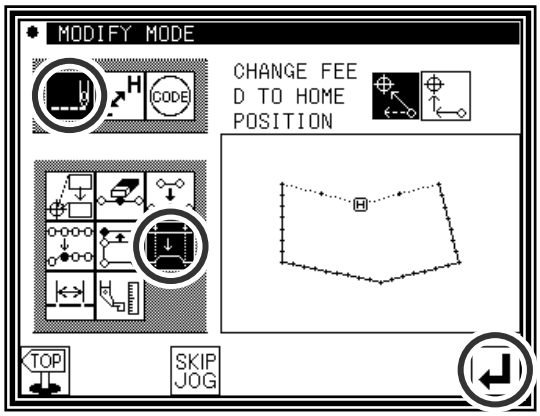
(1)Selecting block modification

►Enter the modification mode.

►Press Stitch Data Change 

and Block Modify  .

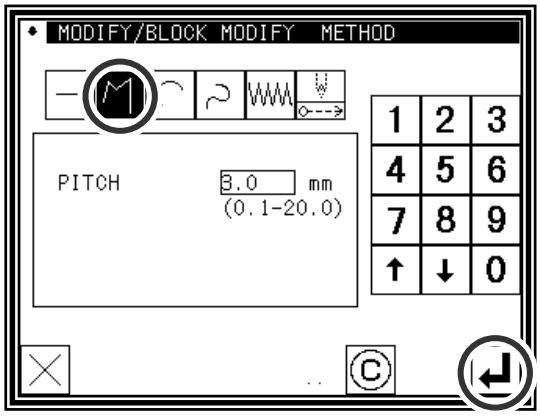
►Press  to open the next screen.



(2)Selecting the input type

►In this case, press Broken Line  .

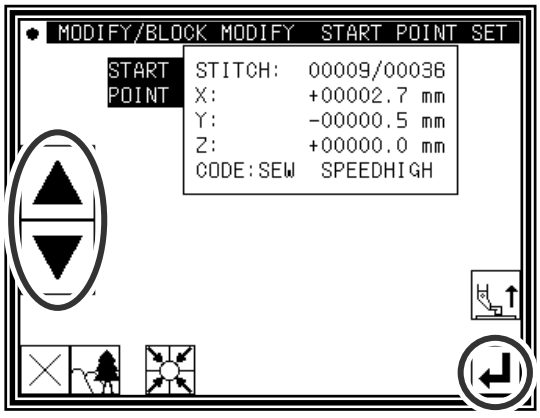
►Press  to set the data.



(3)Determining the block modification range (start point)

►Using Jog  ,  , determine the start point position.(B point)

►Press  .

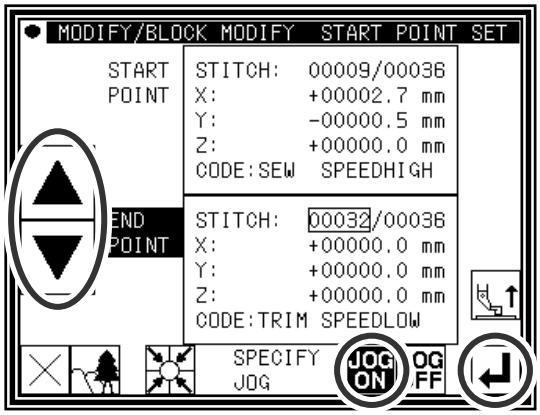


(4)Determining the block modification range (end point)

►Using Jog ▲, ▼, determinethe end point position.(E point)

►Press Jog Validity JOG ON.

►Press ↵.

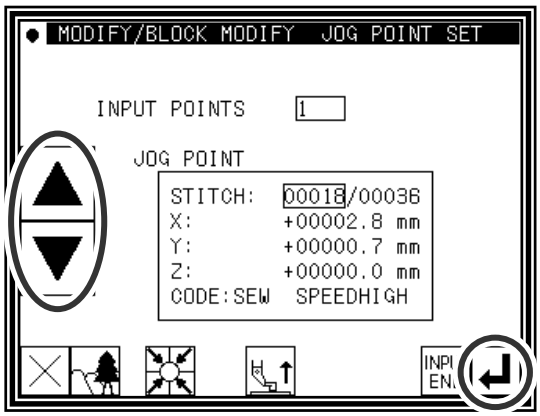


Caution When the end point is determined, the work holder will automatically return to the start point. Take care when the needle is lowered, etc.

(5)Moving and setting the modification origin jog position

►Using Jog ▲, ▼, move to the position to be modified. (C point in this example.)

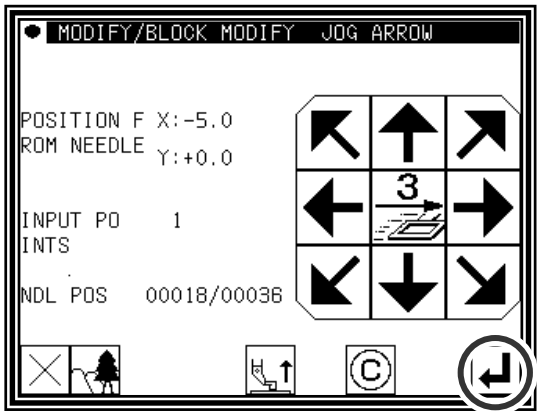
►Press ↵.



(6)Moving from the modification origin jog position to the modification position, and setting the data

►Press the arrow icons and modify the position. (Move to the C' point in this example.)

►Press ↵.

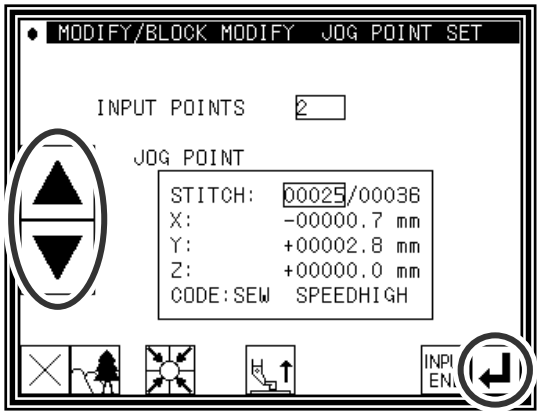


Caution The work holder will automatically return to the modification origin jog position (Needle position specified at (5.)). Take care when the needle is lowered, etc.

(7)Moving and setting the modification origin jog position

►Using Jog ▲, ▼, move to the position to be modified. (D point in this example.)

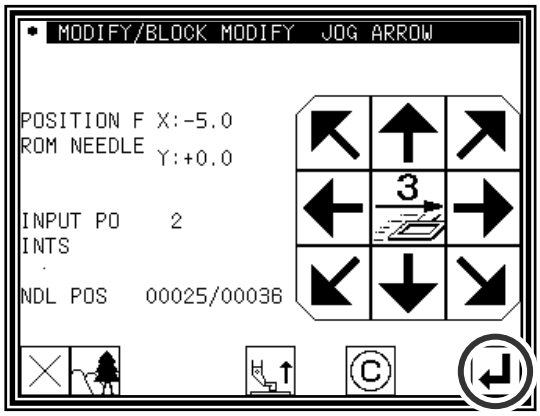
►Press ↵.



(8)Moving from the modification origin jog position to the modification position, and setting the data

►Press the arrow icons and modify the position. (Move to the D' point in this example.)

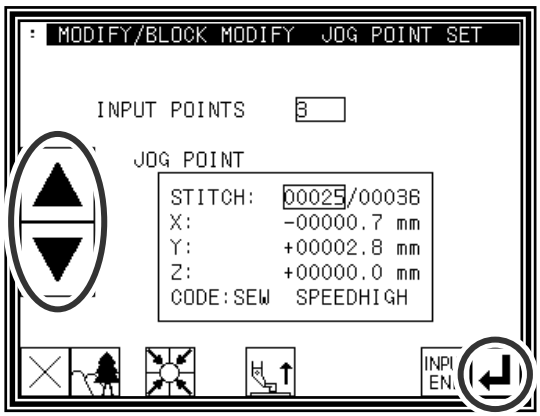
►Press  .



⚠Caution The work holder will automatically return to the modification origin jog position (Needle position specified at (5.)).
Take care when the needle is lowered, etc.

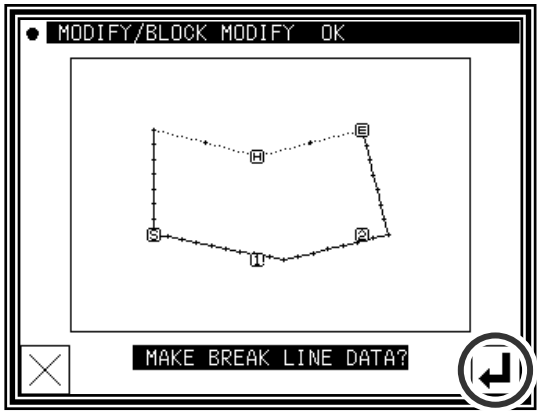
(9)Quitting position modification

►After determining all modification positions, press  .



(10)Confirming the data creation

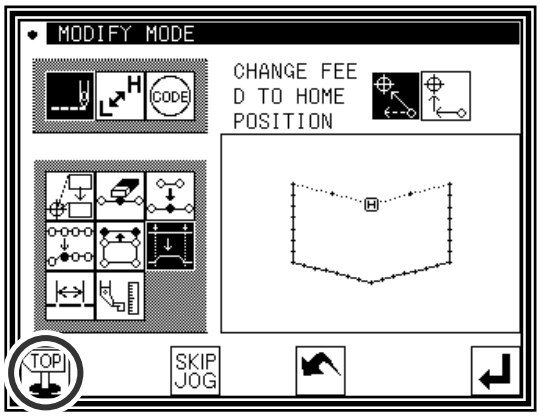
►To create the data, press 
(The block position will be modified.)



⚠Caution The work holder will automatically return to the start point. Take care when the needle is lowered, etc.

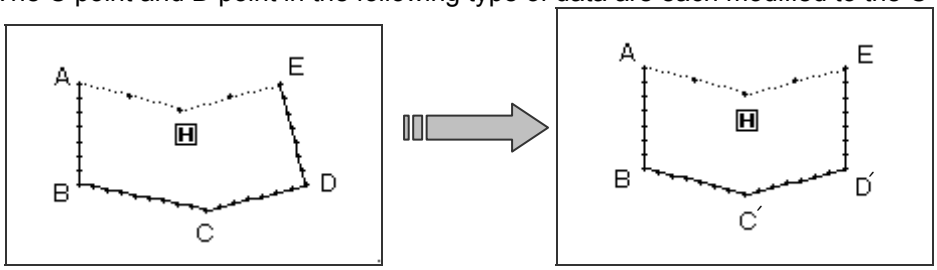
(11)Confirming the modified data

►Quit the modification mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)



■Designating the modification position without using jog icons (Handy for newly creating data.)

[Example] The C point and D point in the following type of data are each modified to the C' point and D' point.



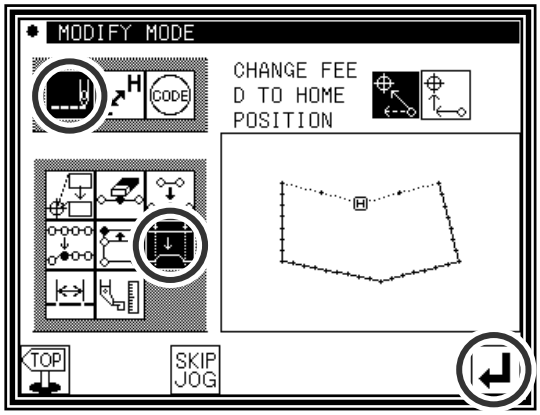
Operation details

(1)Selecting block modification

►Enter the modification mode.

►Press Stitch Data Change  and Block Modify  .

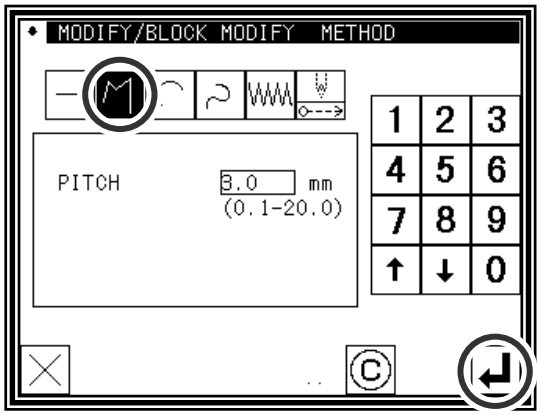
►Press  to open the next screen.



(2)Selecting the input type

►In this case, press Broken Line  .

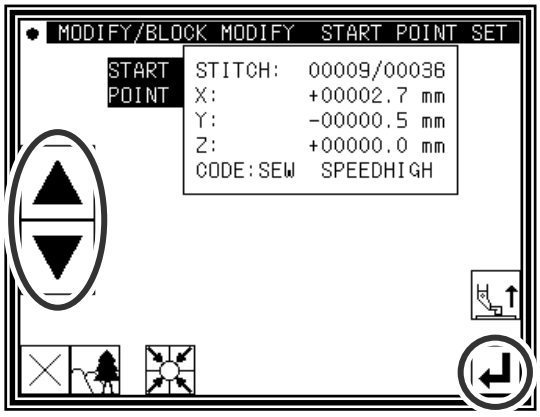
►Press  to set the data.



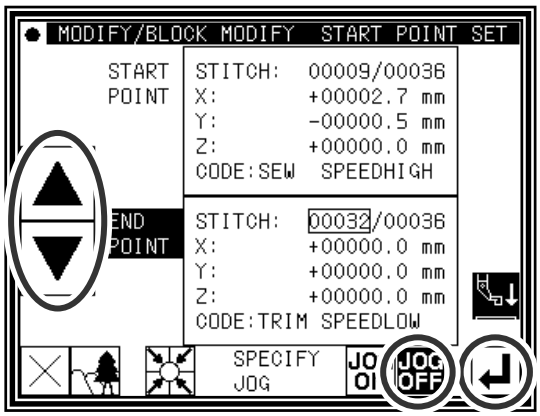
(3)Determining the block modification range (start point)

►Using Jog  ,  , determine the start point position.(B point)

►Press  .



(4)Determining the block modification range



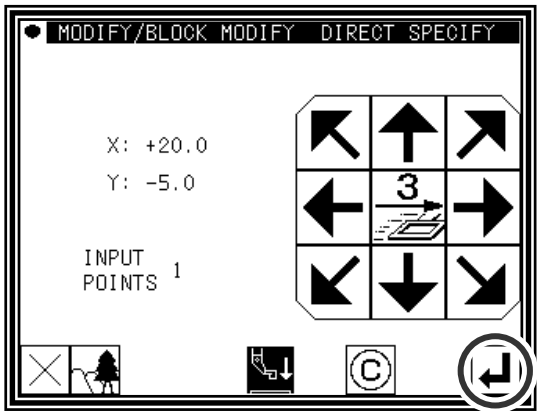
►Using Jog ▲ , ▼, determine the start point(B point) and end point(E point).

►Press Jog Validity JOG OFF.

►Press ↵.

⚠Caution When the end point is determined, the work holder will automatically return to the start point. Take care when the needle is lowered, etc.

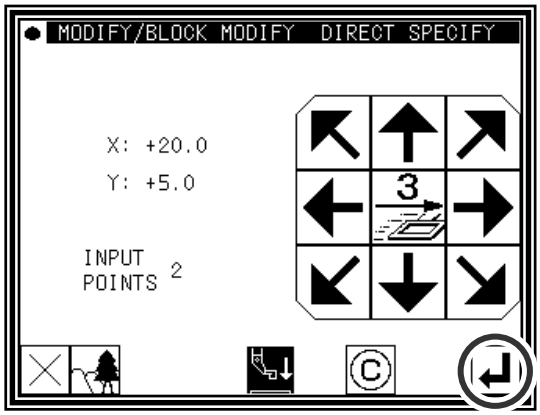
(5)Moving and determining the modification position



►Using the arrow icons, modify the position. (Move to C' point in this example.)

►Press ↵.

(6)Moving and determining the modification position

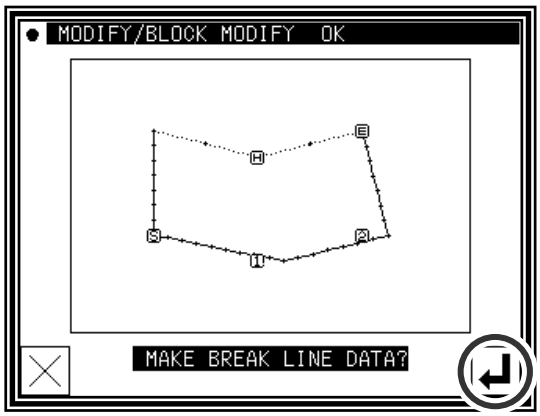


►Using the arrow icons, modify the position. (Move to D' point in this example.)

►Press ↵.

►press ↵ again.

(7)Confirming the data creation



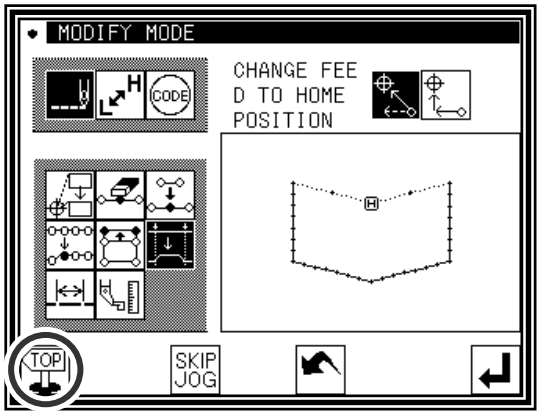
►To create the data, press ↵.
(The block position will be modified.)

⚠Caution The work holder will automatically return to the start point. Take care when the needle is lowered, etc.

(8)Confirming the modified data

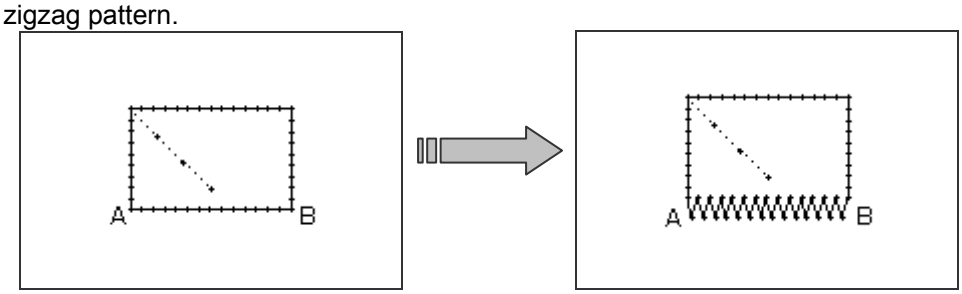
►Quit the modification mode. Press 

to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)



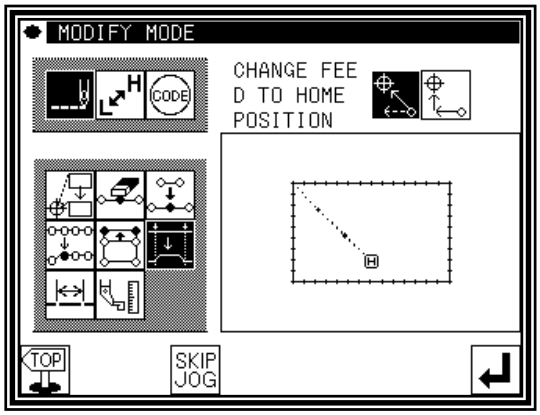
17.Modifying a block 3 (Zigzag input)

[Example] The section between the A point and B point in the following type of stitching data is modified to a zigzag pattern.



Operation details

(1)Selecting block modification

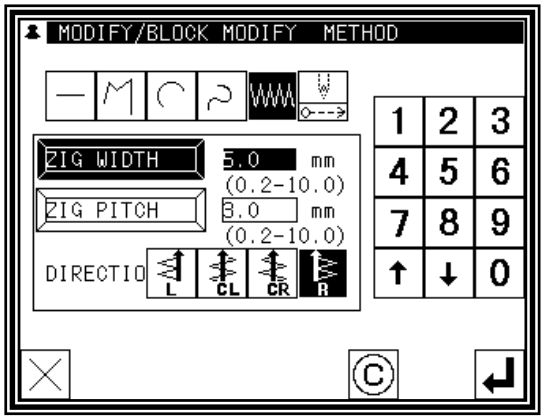


►Enter the modification mode.

►Press Stitch Data Change and Block Modify .

►Press to open the next screen.

(2)Selecting the input type



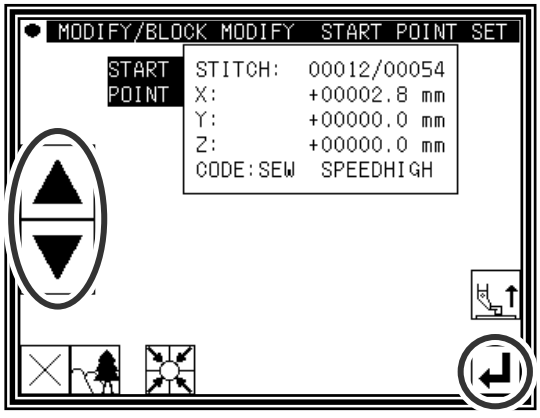
►Press Zigzag .

►Set the deflection width, feed amount and creation direction.
Set the deflection width to 5.0mm, feed amount to 3.0mm, and the creation direction to right (R).

Memo Refer to "[7] Methods of creating stitching data (12)Zigzag stitching (with overlap back tacking)" for details on the deflection width, feed amount and creation direction.

►Press to set the data. (At this time, if C is pressed, the deflection width and feed amount settings will be canceled.)

(3)Determining the block modification range (start point)



►Using Jog , , determine the start point position.(A point)

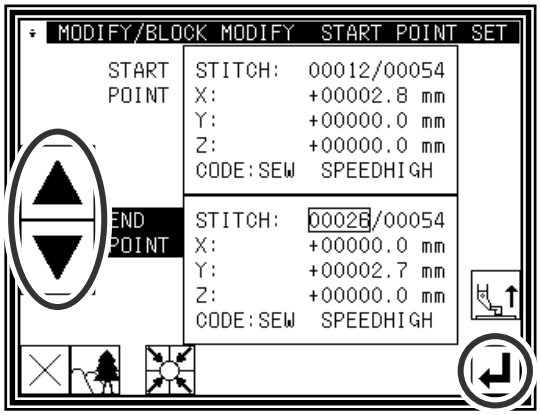
►Press .

(4)Determining the block modification range (end point)

►Using Jog , , determine the end point position.(B point)

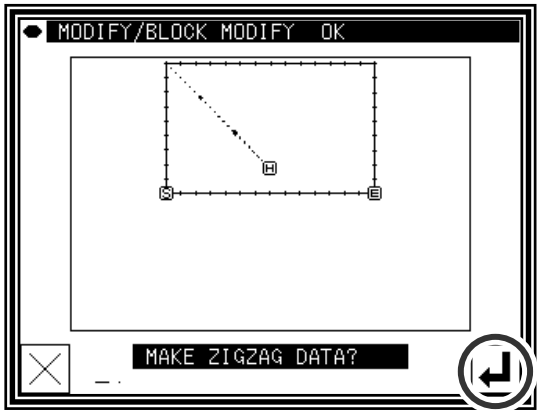
►Press .

Caution When the end point is determined, the work holder will automatically return to the start point. Take care when the needle is lowered, etc.



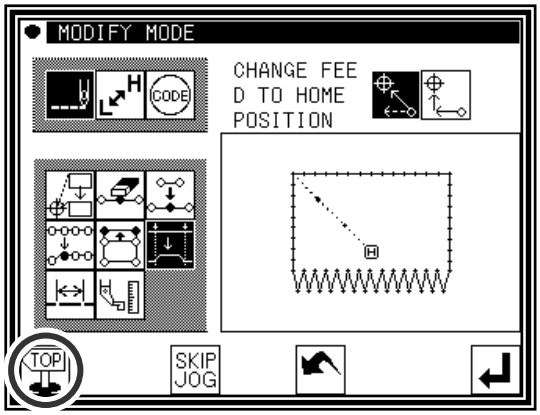
(5)Confirming the data creation

►To create the data, press .
(The block position will be modified.)



(6)Confirming the modified data

►Quit the modification mode. Press TOP to change to the Saving mode screen. Press to return to the Standard screen after saving the data.
(When is pressed, the modifications executed last will be undone.)

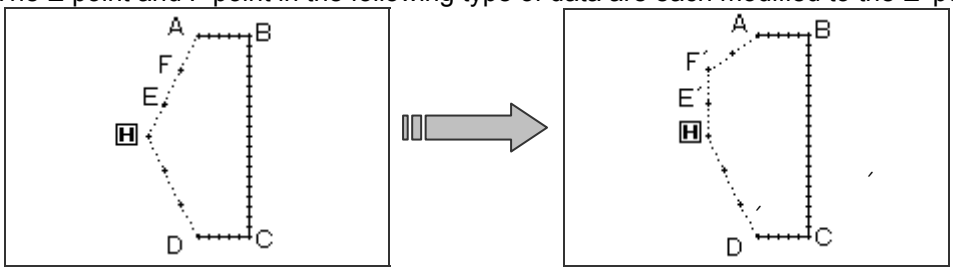


18.Modifying a block 4 (Changing the feed data)

Methods for designating the modification position with the jog icons.

(This is handy when using the modification origin data as a reference.)

[Example] The E point and F point in the following type of data are each modified to the E' point and F' point.



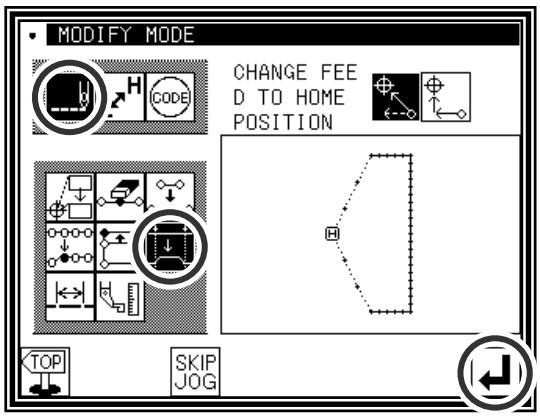
Operation details

(1)Selecting block modification

►Enter the modification mode.

►Press Stitch Data Change  and Block Modify  .

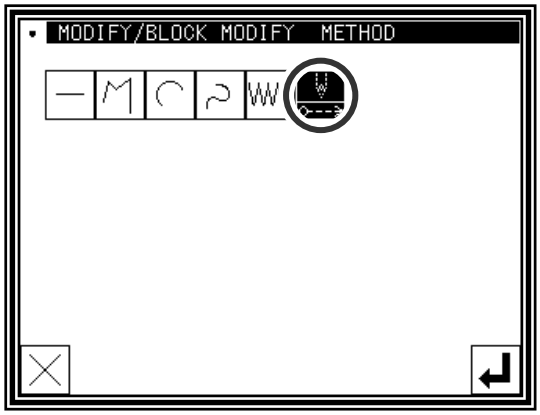
►Press  to open the next screen.



(2)Selecting the input type

►Press Feed data  .

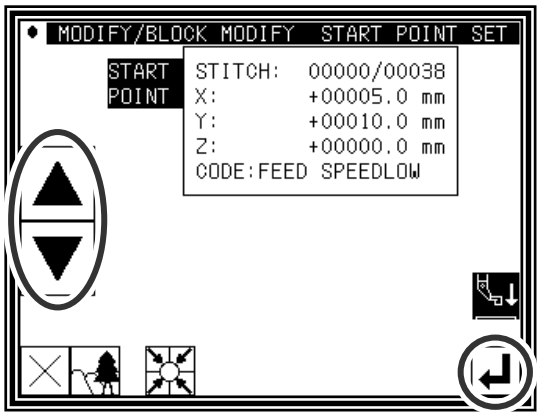
►Press  to set the data.



(3)Determining the block modification range (start point)

►Using Jog  ,  , determine the start point position. (Home position)

►Press  .

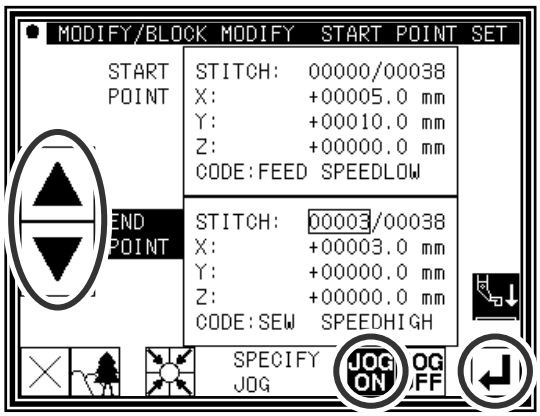


(4)Determining the block modification range (end point)

►Using Jog ▲, ▼, determine the end point position.(A point)

►Press JOG ON.

►Press ↵.

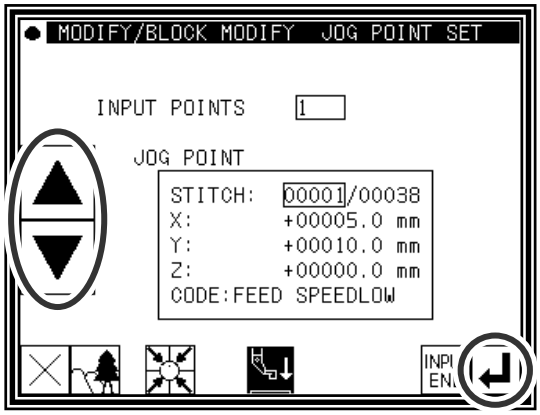


⚠Caution When the end point is determined, the work holder will automatically return to the start point. Take care when the needle is lowered, etc.

(5)Moving and setting the modification origin jog position

►Using Jog ▲, ▼, move to the position to be modified. (E point in this example.)

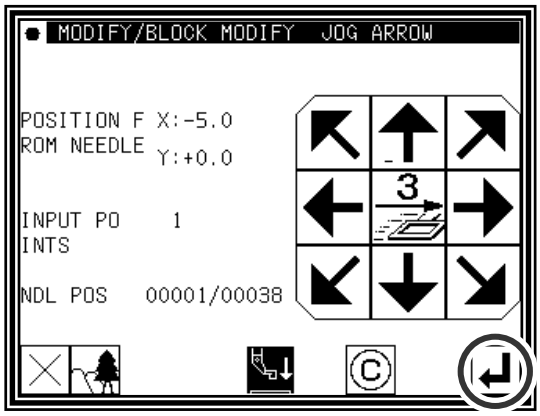
►Press ↵.



(6)Moving from the modification origin jog position to the modification position, and setting the data

►Press the arrow icons and modify the position. (Move to the E' point in this example.)

►Press ↵.

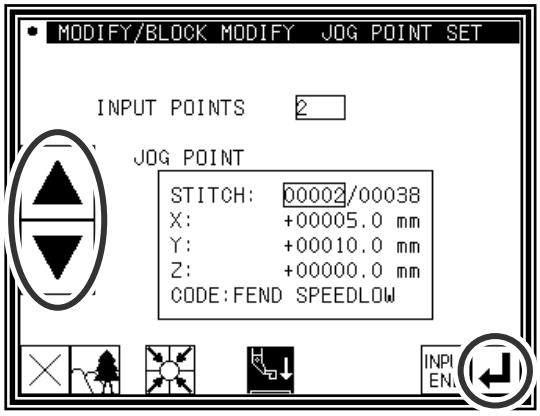


⚠Caution The work holder will automatically return to the modification origin jog position. Take care when the needle is lowered, etc.

(7)Moving and setting the modification origin jog position

►Using Jog ▲, ▼, move to the position to be modified. (F point in this example.)

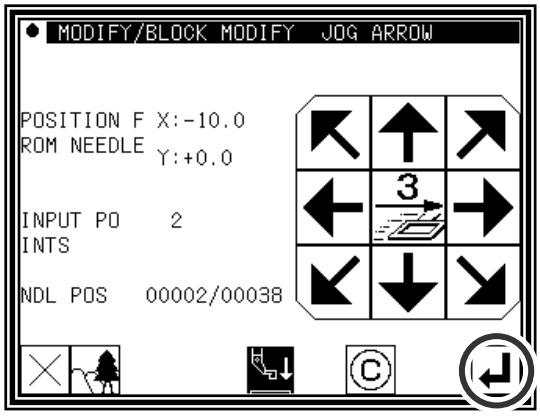
►Press ↵.



(8)Moving from the modification origin jog position to the modification position, and setting the data

►Press the arrow icons and modify the position. (Move to the F' point in this example.)

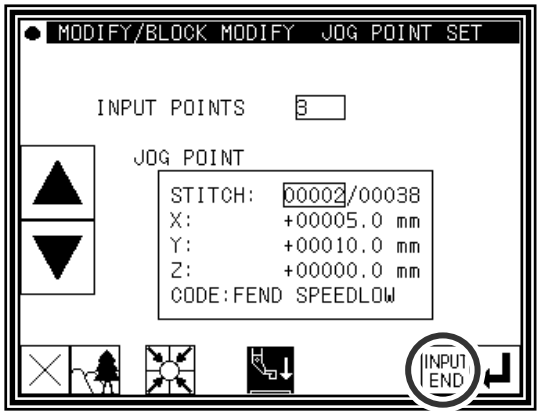
►Press [↵].



⚠Caution The work holder will automatically return to the modification origin jog position. Take care when the needle is lowered, etc.

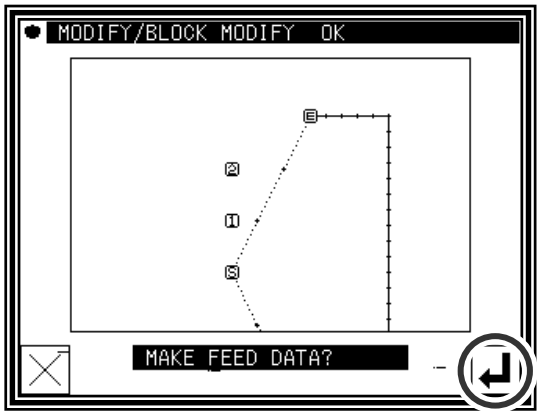
(9)Quitting position modification

►After determining all modification positions, press [INPUT END].



(10)Confirming the data creation

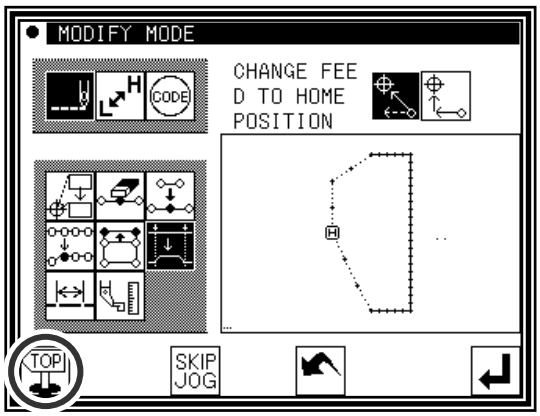
►Press [↵].
(The block position will be modified.)



⚠Caution The work holder will automatically return to the start point. Take care when the needle is lowered, etc.

(11)Confirming the modified data

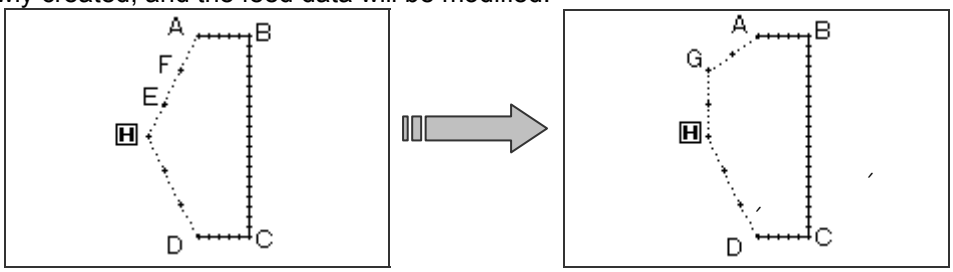
►Quit the modification mode. Press [TOP] to change to the Saving mode screen. Press [↵] to return to the Standard screen after saving the data.
(When [↶] is pressed, the modifications executed last will be undone.)



▪Designating the modification position without using jog icons

(Handy for newly creating data.)

[Example] The E point and F point in the following type of stitching data will be deleted, the G point will be newly created, and the feed data will be modified.



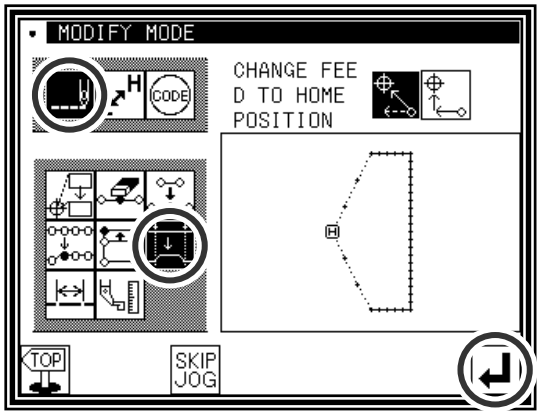
Operation details

(1)Selecting block modification

►Enter the modification mode.

►Press Stitch Data Change  and Block Modify  .

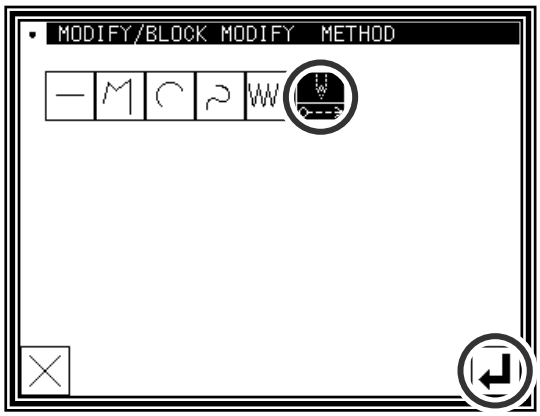
►Press  to open the next screen.



(2)Selecting the input type

►Press Feed data  .

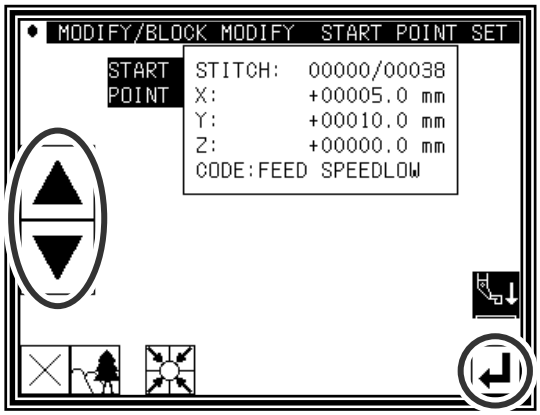
►Press  to set the data.



(3)Determining the block modification range (start point)

►Using Jog  ,  , determine the start point position. (Home position)

►Press  .

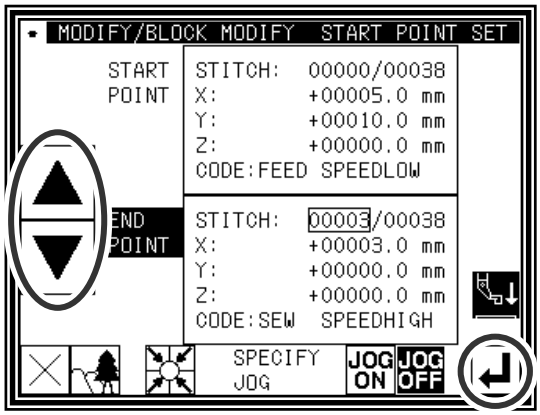


(4)Determining the block modification range

►Using Jog [▲], [▼], determine the start point(Home position) and end point(A point).

►Press Jog Validity [JOG OFF].

►Press [↵].



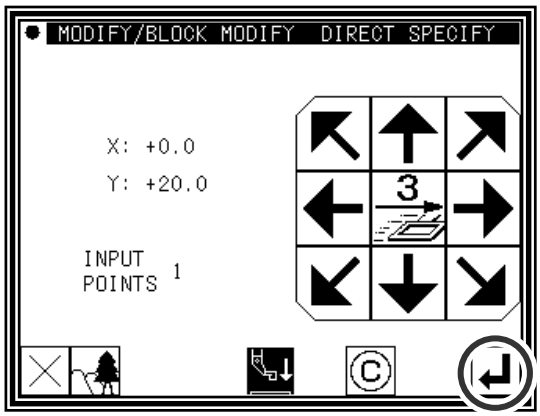
(5)Moving and determining the modification position

►Using the arrow icons, modify the position.
(Move to G point in this example.)

►Press [↵].

►If there are several positions to be modified, repeat step 5. (The number of input points will increase.)

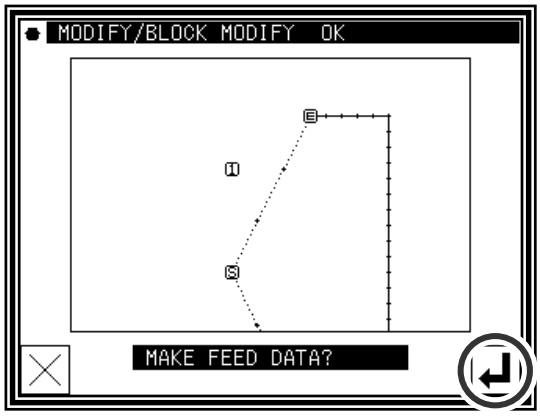
►When all modifications have been made, press [↵] again.



(6)Confirming the data creation

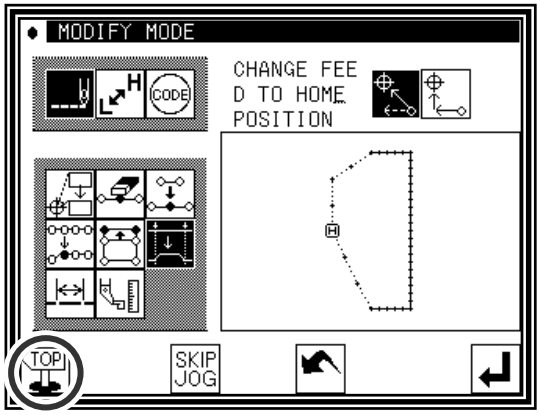
►Press [↵].
(The block position will be modified.)

⚠Caution The work holder will automatically return to the start point. Take care when the needle is lowered, etc.



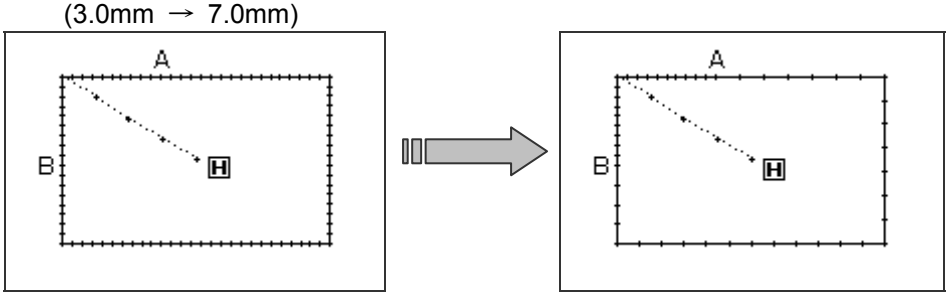
(7)Confirming the modified data

►Quit the modification mode. Press [TOP] to change to the Saving mode screen. Press [↵] to return to the Standard screen after saving the data.
(When [↶] is pressed, the modifications executed last will be undone.)



19.Modifying stitch length (Designated distance modification)

[Example] The stitch length between the stitching data point A and point B is modified as shown below.
(3.0mm → 7.0mm)



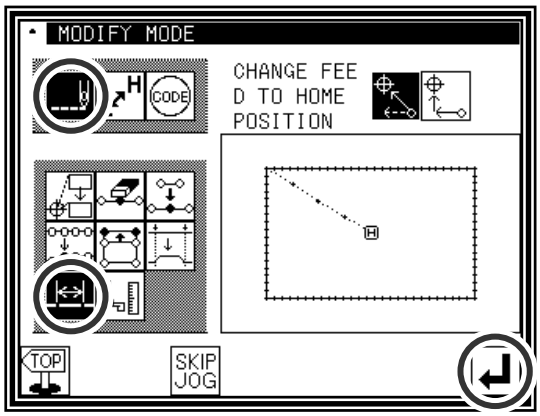
Operation details

(1)Selecting the stitch length modification

►Enter the modification mode.

►Press Stitch Data Change and Stitch length modification .

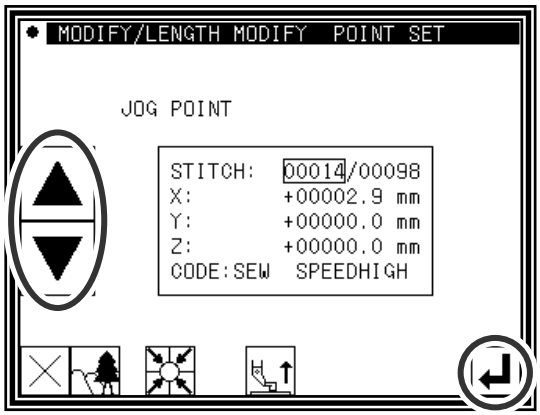
►Press to open the next screen.



(2)Determining the modification start position

►Determine the position to be modified with jog . Set to the position to start modification (point A).

►Press .



(3)Setting the modification method

►Set the method.

: Designated distance modification

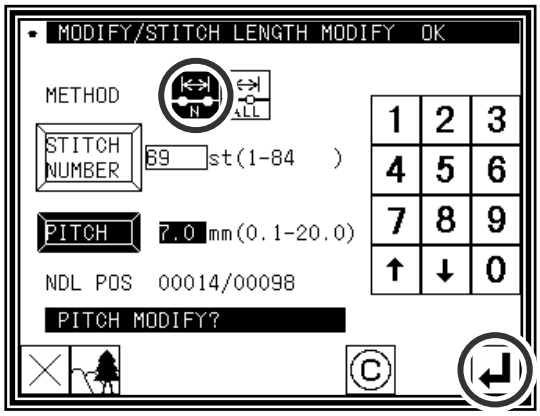
: All After designated stitch

(In this case, press)

►When modifying in a designated distance, set the No. of modification stitches.
(This will be "69 stitches" here.)

►Set the stitch length. (This will be "7.0mm" here.)

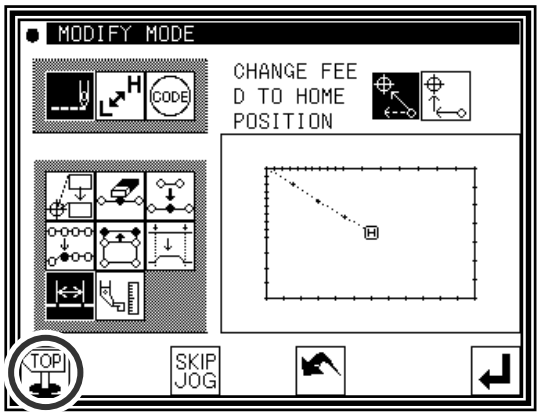
►Press .



(4)Confirming the modifications

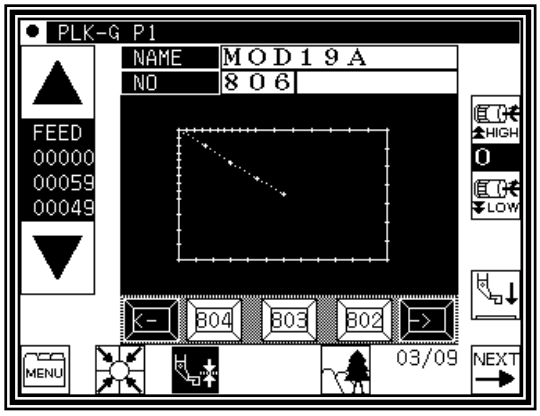
►Quit the modification mode. Press 

to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)



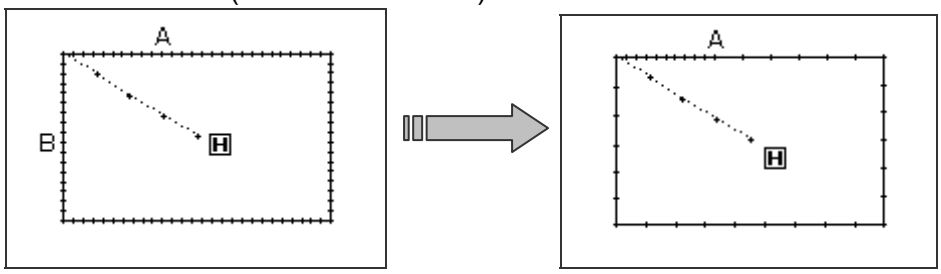
(5)Confirming with the Standard screen

►The stitch length has been modified.



20.Modifying stitch length (All After designated stitch)

[Example] The stitch length from stitching data point A to the end of stitching is modified as shown below. (3.0mm → 9.0mm)



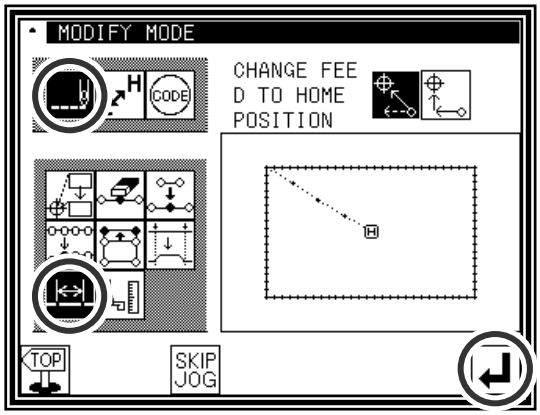
Operation details

(1)Selecting the stitch length modification

►Enter the modification mode.

►Press Stitch Data Change and Stitch length modification .

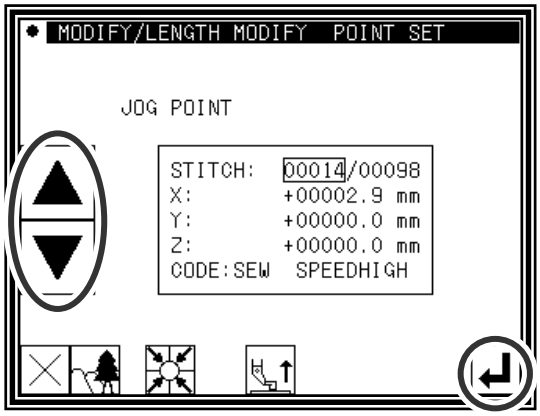
►Press to open the next screen.



(2)Determining the modification start position

►Determine the position to be modified with jog . Set to the position to start modification (point A).

►Press .



(3)Setting the modification method

►Set the method.

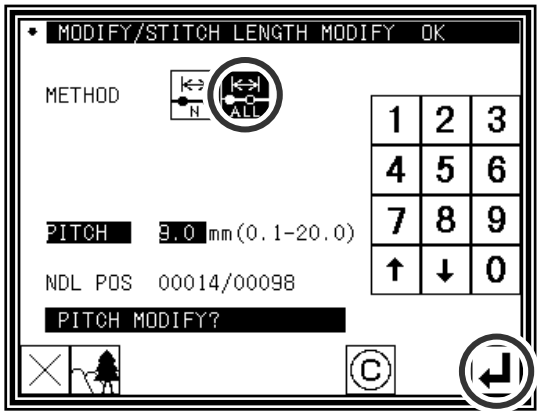
: Designated distance modification

: All After designated stitch

(In this case, press)

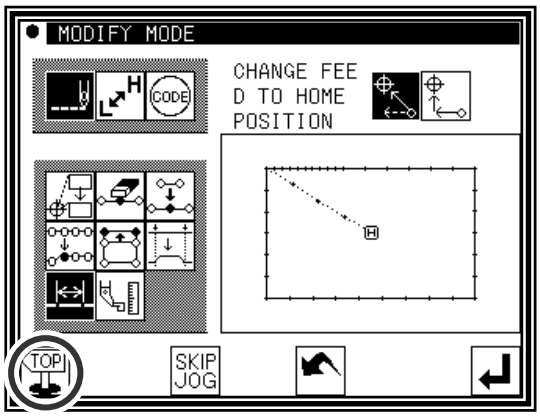
►Set the stitch length. (This will be "9.0mm" here.)

►Press .



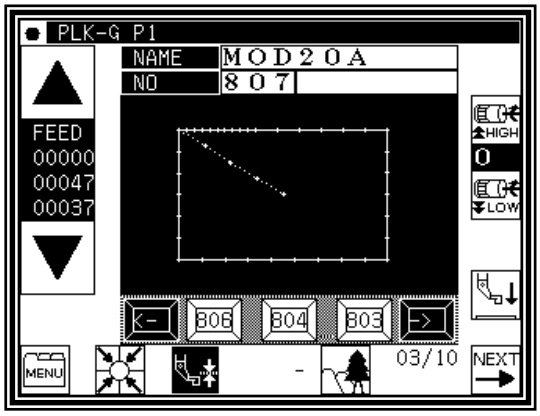
(4)Confirming the modifications

►Quit the modification mode. Press TOP to change to the Saving mode screen. Press ↵ to return to the Standard screen after saving the data.
(When ↶ is pressed, the modifications executed last will be undone.)



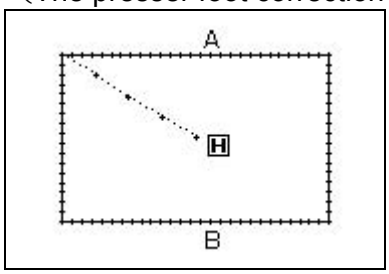
(5)Confirming with the Standard screen

►The stitch length has been modified.



21.Modifying presser foot height

[example] In the pattern data like a figure below, it is modified that the presser foot will be raised by 1.2mm between A point and B point.
（The presser foot correction value is already set to 1.0 mm）



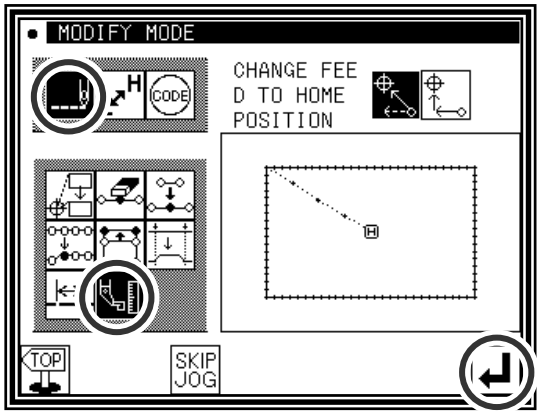
Detailed operation

(1)Selection presser foot height modification

►Enter the pattern modification mode (Refer to P.[11]-1)

►Press the stitch modification then, press the presser foot modification.

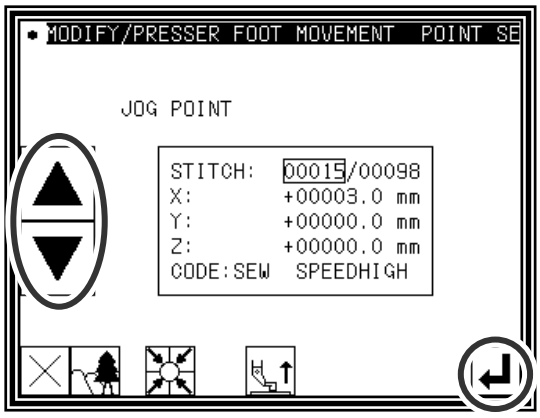
►Press .



(2)Moving to designated stitch position (A point)

►Move X-Y table to A point by pressing .

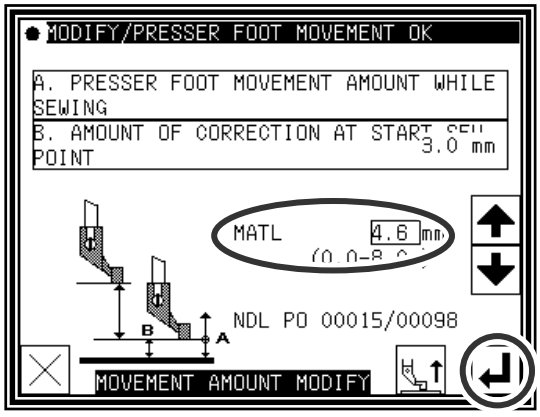
►After move to the position, press .



(3)Setting correction value

►Change material thicknes to [4.6] by pressing up and down arrow. (Correction value [3.0mm] + [1.6] → total [4.6mm])

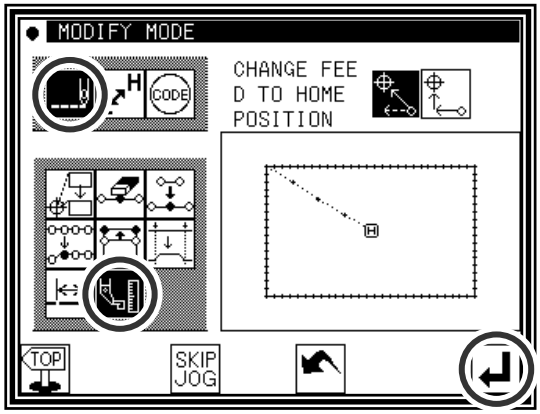
►After setting, press .



(4) Moving to designated stitch position

►Press  then,  .

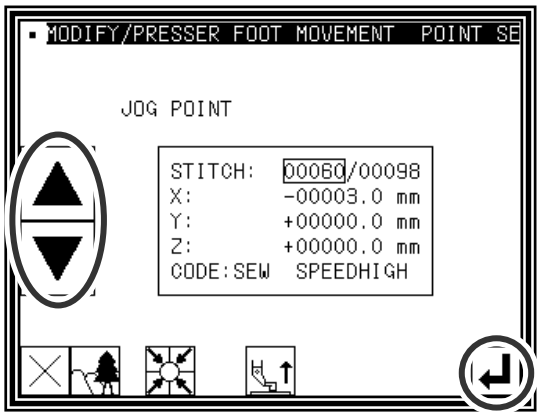
►Press  .



(5) Moving to designated stitch position (B point)

►Move X-Y table to B point by pressing  .

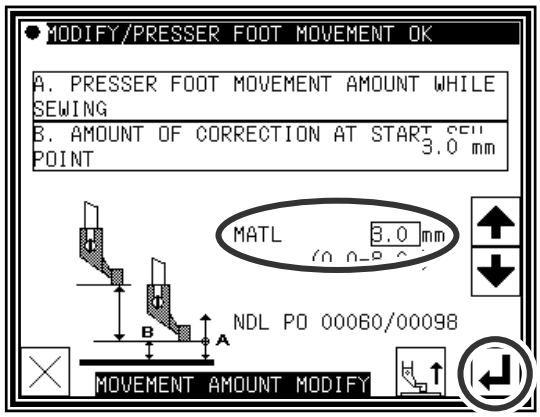
►After move to the position, press  .



(6) Setting correction value

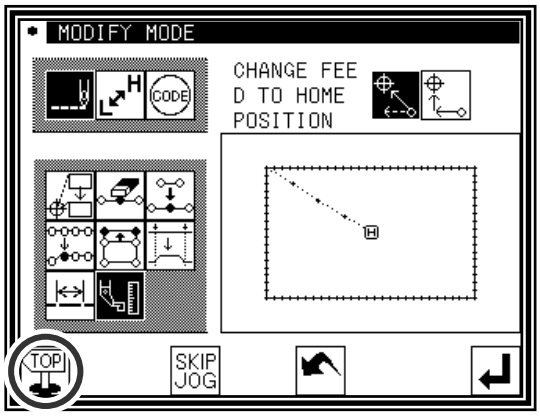
►Change material thicknes to [3.0] by pressing up and down arrow.

►After setting, press  .



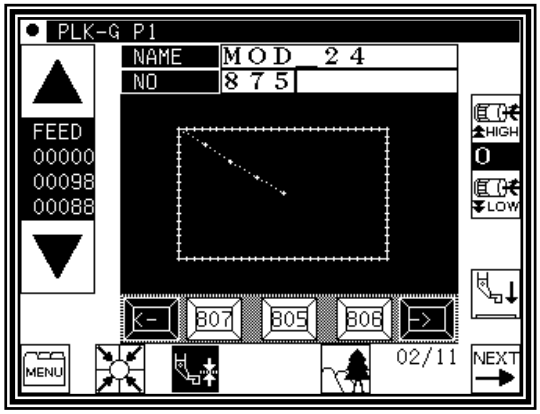
(7)Finishing presser foot height correction

►Press  to exit correction mode. Then screen is changed to save mode. Press  after data is saved, then screen is backed to standard screen. (If  is pressed, pattern data is returned to former state)



(8)Back to the standard screen

►Presser foot height has been modified.
(Correction check can not be available on this screen)
(The presser foot motion can be checked by the JOG icon)

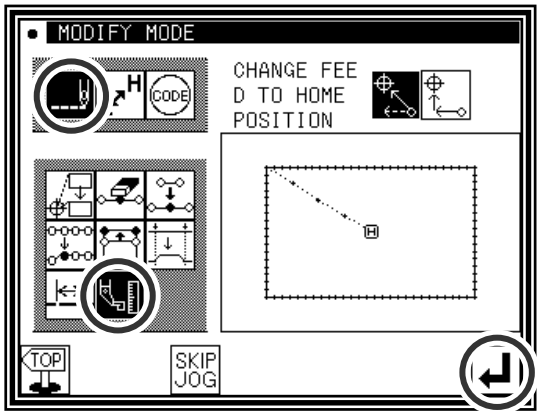


(9)Check the correction

►Enter the modification mode. (Refer to P.[11]-1)

►Press , then .

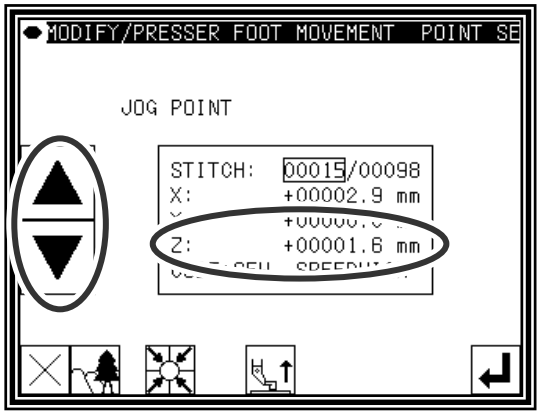
►Press .



(10)Moving to modified stitch position

►Move to designated position (A point) by pressing .

► The value of [PF:] has been [+00001.6 mm].



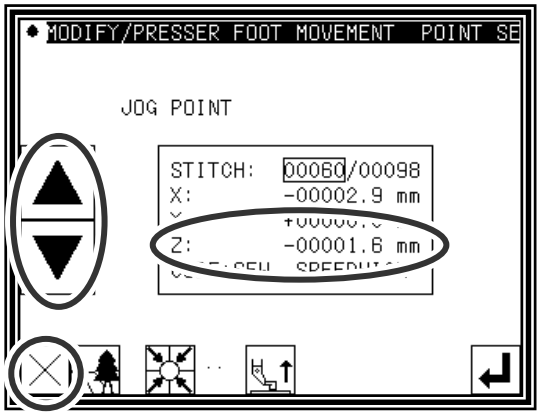
(11)Moving to next modified stitch position

►Move to designated position (B point) by pressing .

►The value of [PF:] has been [-00001.6 mm].

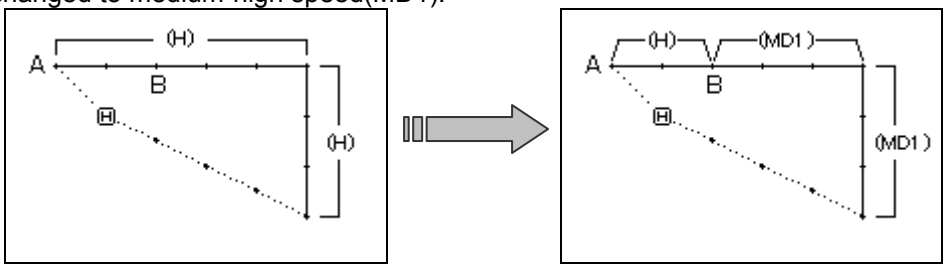
►After check, press to exit modification mode, then press to return to standard screen.

►Checking presser foot height modification is complete.



22.Modifying the stitching speed (All sections after designated position)

[Example] The stitching speed for all sections after the B point in the following type of stitching data will be changed to medium-high speed(MD1).



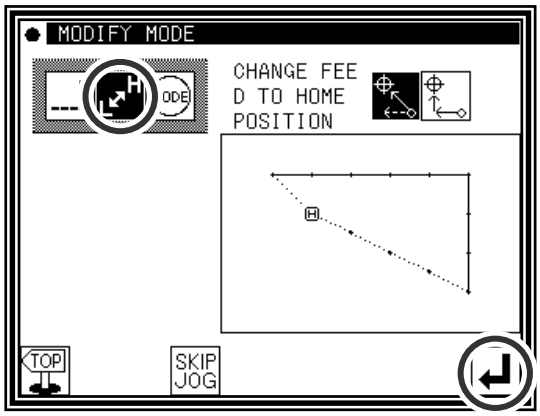
Operation details

(1)Selecting stitching speed modification

►Enter the modification mode.

►Press Stitching Speed Change [H].

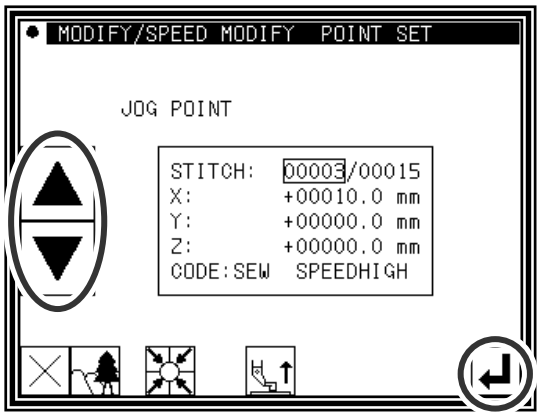
►Press [↵] to open the next screen.



(2)Determining the modification position

►Using Jog [▲], [▼], determine the start point position to be modified(B point).

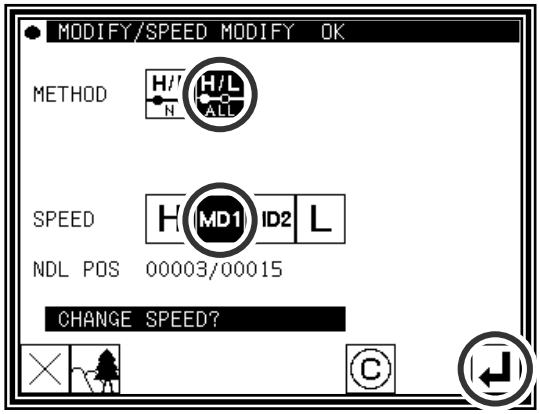
►Press [↵] after determining the positions.



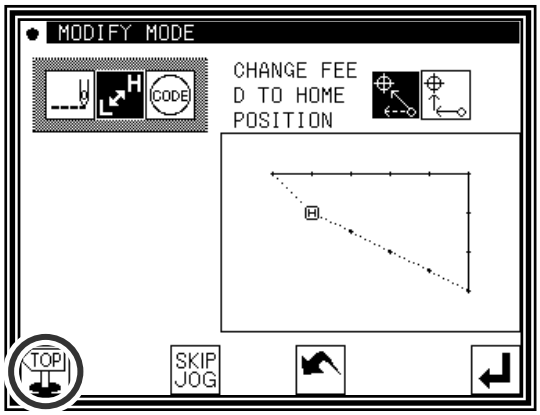
(3)Setting the modification method and speed

►Press All After Designated Stitch [H/L ALL], and set the new speed (MD1).

►Press [↵].
(The stitching speed will be modified.)



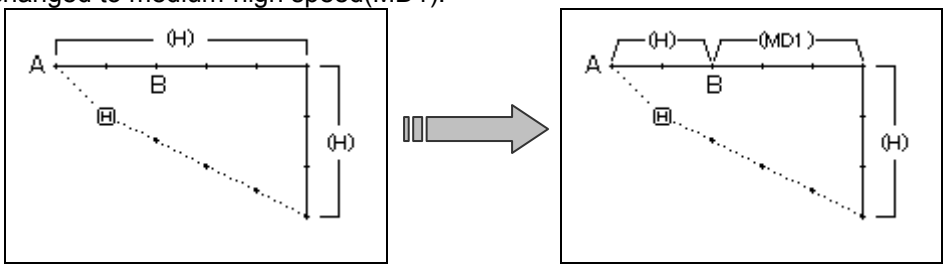
(4)Confirming the modifications



►Quit the modification mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)

23.Modifying the stitching speed (N stitches after designated position)

[Example] The stitching speed for three stitches after the B point in the following type of stitching data will be changed to medium-high speed(MD1).



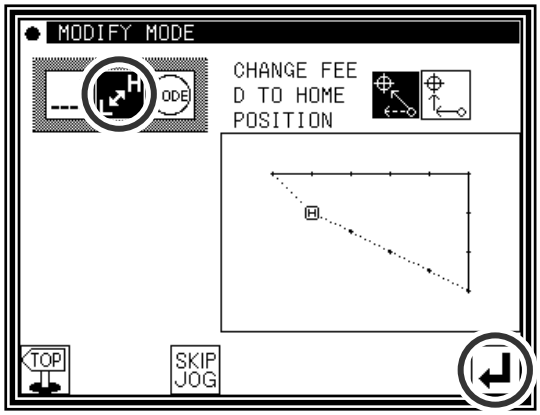
Operation details

(1)Selecting stitching speed modification

►Enter the modification mode.

►Press Stitching Speed Change .

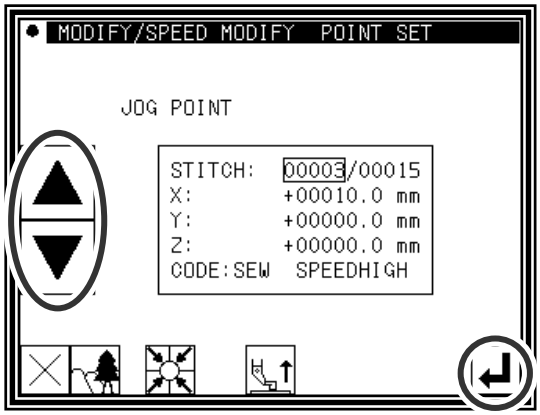
►Press to open the next screen.



(2)Determining the modification position

►Using Jog , , determine the start point position to be modified.(B point)

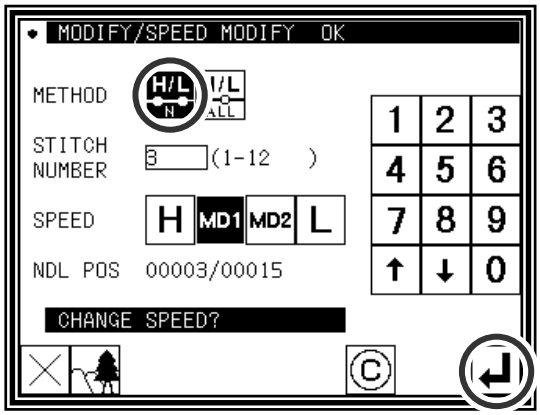
►Press after determining the positions.



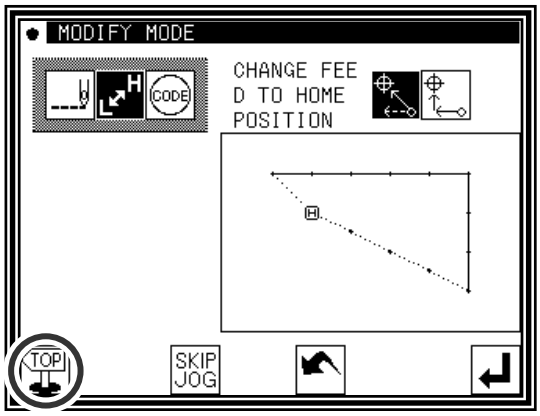
(3)Setting the modification method and speed

►Press N Stitches Change After Modified Stitch . Set the number of stitches to be changed (3) and the new speed (MD1).

►Press .
(The stitching speed will be modified.)



(4)Confirming the modifications

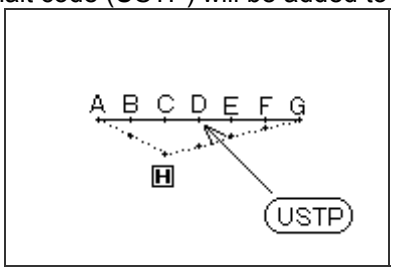


►Quit the modification mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)

24.Modifying code data (Adding code data)

Memo Refer to "Code data input" for a list of code data. [7]-20

[Example] The needle UP halt code (USTP) will be added to the D point of the following type of stitching data.



Operation details

(1)Selecting code data addition

►Enter the modification mode.

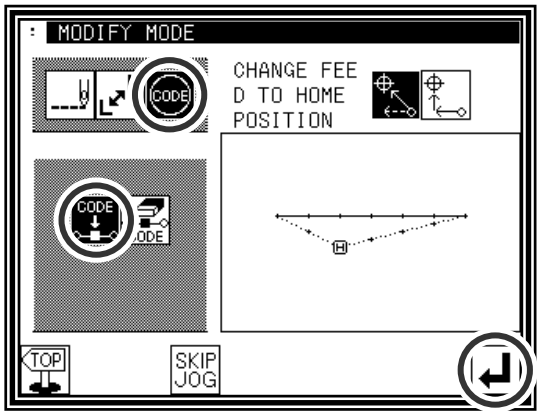
►Press Code Data Change 

,and

then press Code Data Add 

.

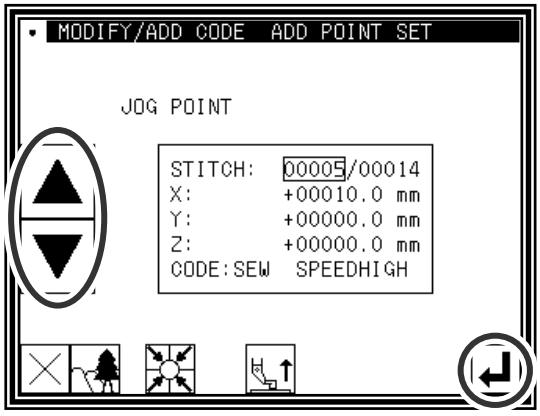
►Press  to open the next screen.



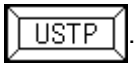
(2)Determining the code addition position

►Using Jog  ,  , determine the position to add the code.(D point)

►Press  after determining the position.

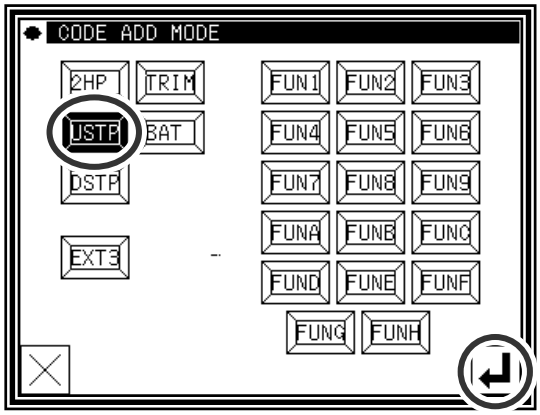


(3)Setting the code to add

►Press Needle UP Halt 

.

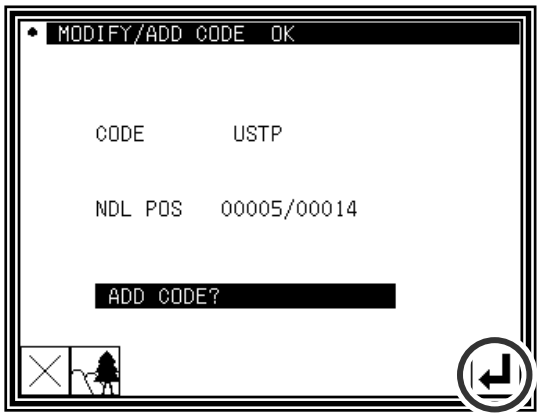
►Press  .



(4)Confirming execution

►Press  .

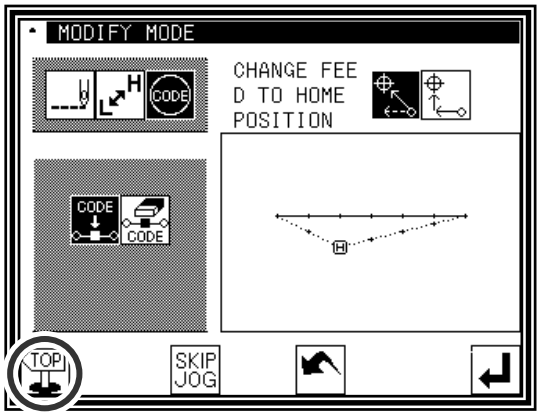
(The code data will be added.)



(5)Confirming the modifications

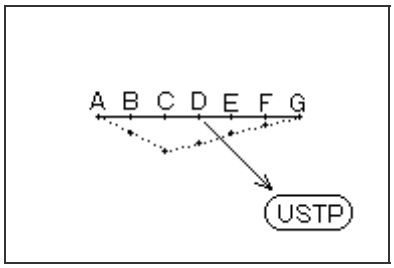
►Quit the modification mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.

(When  is pressed, the modifications executed last will be undone.)



25.Modifying code data (Deleting code data)

[Example] The needle UP halt code (USTP) will be deleted from the D point of the following type of stitching data.



Operation details

(1)Selecting code data deletion

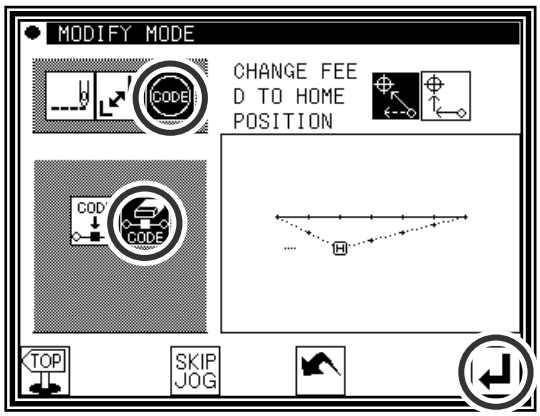
►Enter the modification mode.

►Press Code Data Change 

, and then press Code Data Delete 

.

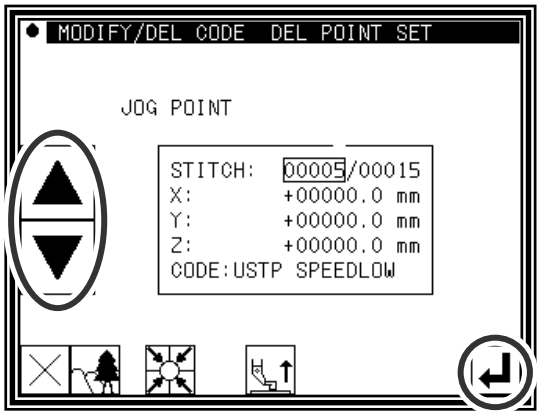
►Press  to open the next screen.



(2)Determining the code deletion position

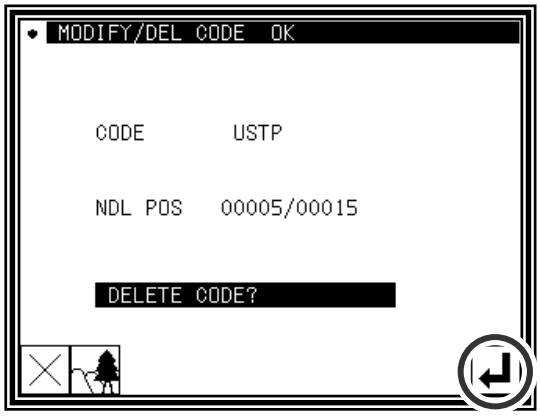
►Using Jog 
, 
, determine the position to delete the code. (D point)

►Press  after determining the position.



(3)Confirming execution

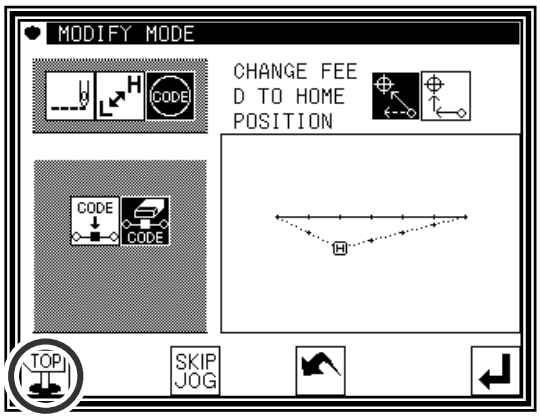
►Press 
.
(The code data will be deleted.)



(4)Confirming the modifications

►Quit the modification mode. Press 

to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the modifications executed last will be undone.)



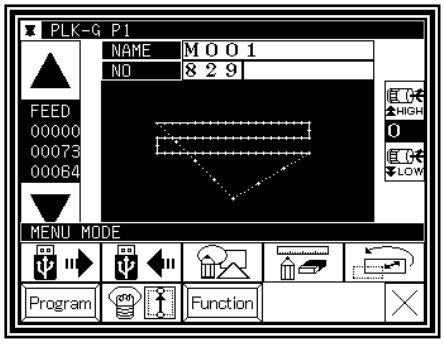
[12] Data conversion mode

1.Main data conversion mode functions

Function	icon	Details	Details setting
Back tacking ([12]-3)		Existing back tacking can be modified, and new back tacking can be created.	 Start/end back tacking  Overlap back tacking (Valid only for a closed figure.)
Zigzag stitching ([12]-7)		Existing zigzag stitching can be modified, and new zigzag stitching can be created.	-
Scaling ([12]-9)		Scaling with a set stitch length or set No. of stitches can be carried out independently for the X axis and Y axis centering on the center point.	<Center position>  Jog Designation  Pattern Center  Home position Center  No. of Stitches Fixed  Fixed Stitch Length
Symmetrical ([12]-12)		Using the existing sewing data, X-axis, Y-axis, or XY axis symmetrical pattern can be created. Whether to keep or delete the existing stitching data can also be selected.	<Methods>  Symmetrical Origin Clear  Keep Symmetrical Origin
Rotation ([12]-13)		The pattern can be rotated centering on a random center point.	<Center Position>  Jog Designation  Pattern Center  Home position Center
Offset ([12]-15)		The offset distance and direction for offset stitching data can be changed.	-
Multiple ([12]-18)		The multiple distance, multiple direction and number of multiple stitching times for multiple stitching data can be changed.	-

2.Entering the conversion mode

►Press  and  on the Standard screen to enter the conversion mode.

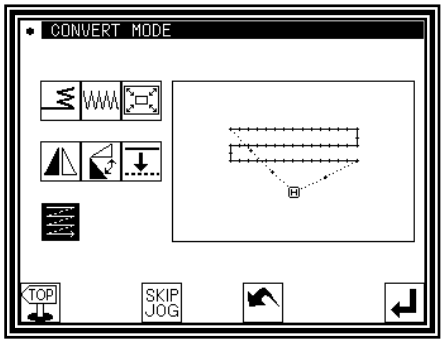


3.Quitting the conversion mode

►After converting the data, press 

to quit the conversion mode.

(When  is pressed, the conversions executed last will be undone.)



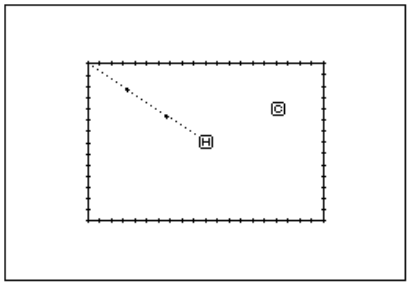
4.Confirming on the image screen (for the conversion mode)

(Refer to the section "Confirming on the image screen " for the modification mode for explanations common for the modification mode and conversion mode.) Page[11]-3

■Scaling, rotation

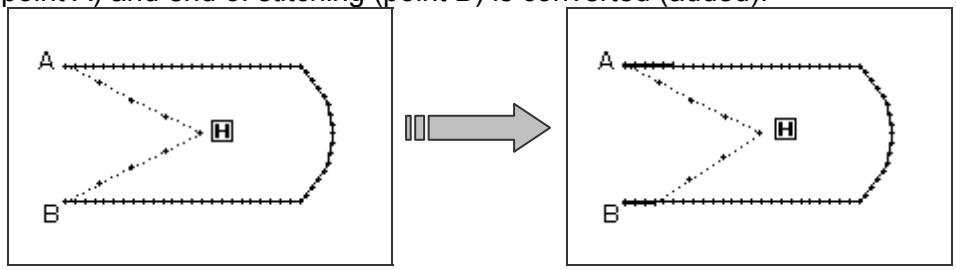
H : Indicates the home position.
(Common for all Image screens.)

C : Indicates the center position.



5.Back tacking(Start/end back tacking)

[Example] In the following type of stitching data, the start/end back tacking at the start of stitching (point A) and end of stitching (point B) is converted (added).



(The bold line indicates the back tacking)

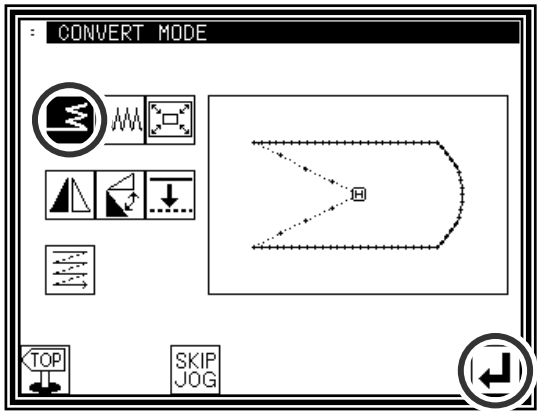
Operation details

(1)Selecting back tacking

►Enter the conversion mode.

►Press Back tacking  .

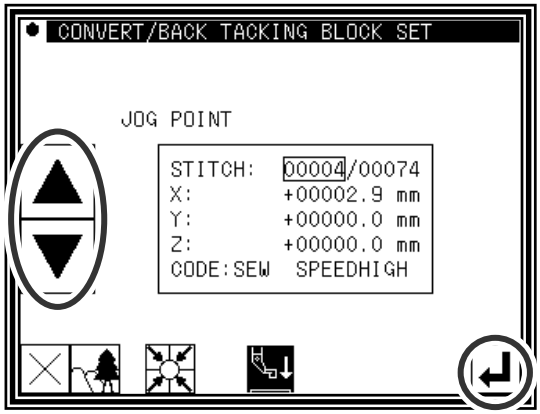
►Press  .



(2)Setting the block for converting back tacking

►Using jogging, move to the block where back tacking is to be converted. (In this case, move to a point between point A and point B.)

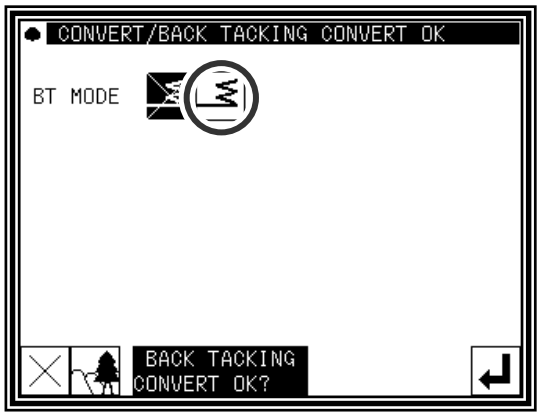
►Press  .



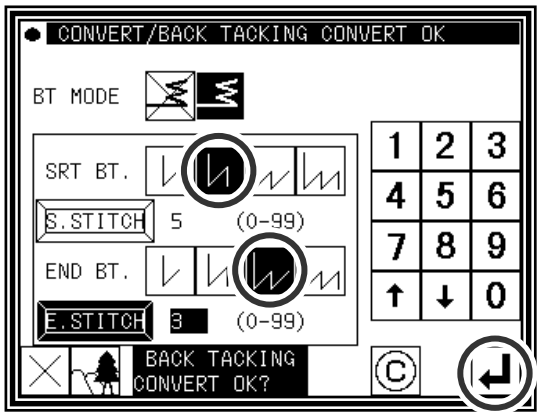
(3)Selecting start/end back tacking

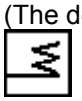
►Press start/end back tacking  .

Memo If the selected block is a "closed figure", the overlap back tacking icon will also appear. (Selection will be enabled.) This is not displayed in this example. (Selection is not possible.)



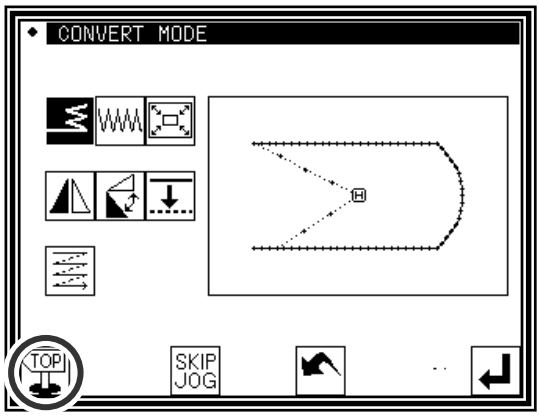
(4)Setting the back tacking details



►The details are set on this screen.
(The details set here are,
 (start/end back tacking)),
start mode  (N mode), five start stitches,
end mode  (M mode), three end stitches.)

►Press  .

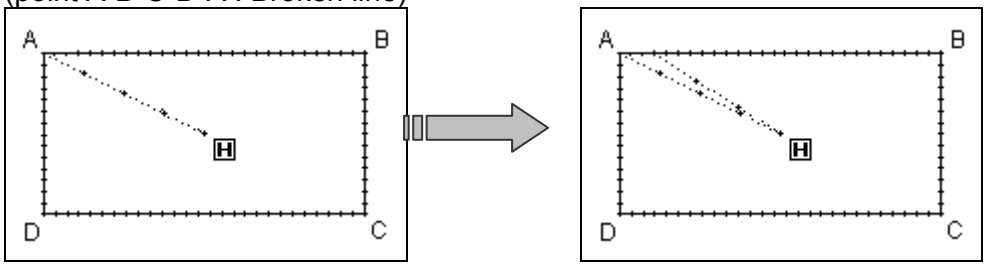
(5)Confirming execution of conversion



►Quit the conversion mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the conversion executed last will be undone.)

6.Back tacking(Overlap back tacking)

[Example] In the following type of stitching data, the overlap back tacking is converted (point A-B-C-D-A : Broken line)



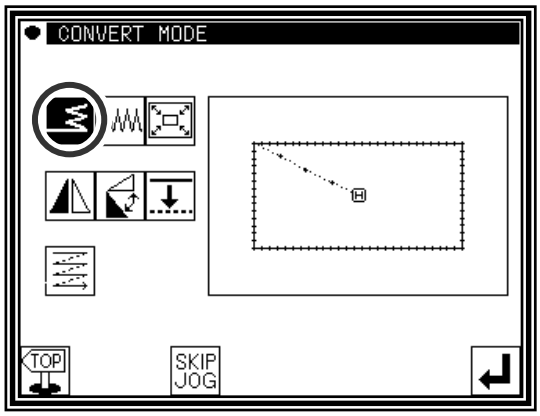
Operation details

(1)Selecting back tacking

►Enter the conversion mode.

►Press Back tacking .

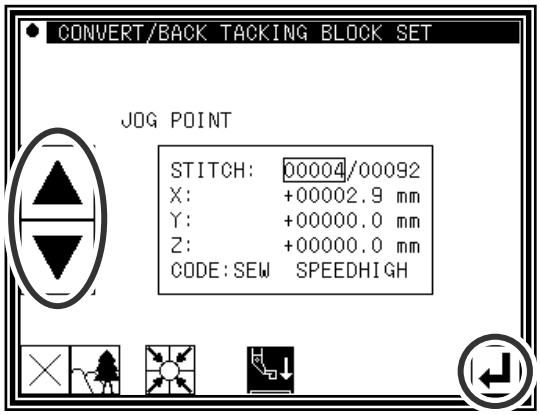
►Press .



(2)Setting the block for converting back tacking

►Using jogging, move to the block where back tacking is to be converted.

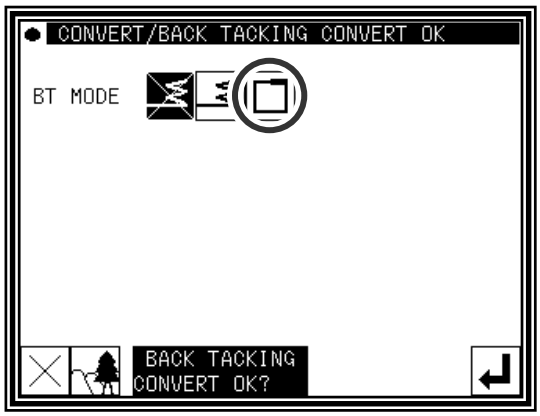
►Press .



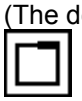
(3)Selecting overlap back tacking

►Press overlap back tacking .

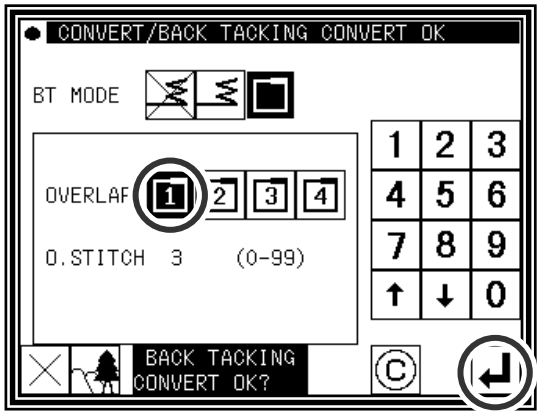
Memo If the selected block is a "closed figure", the overlap back tacking icon will also appear. (Selection will be enabled.) This is displayed in this example. (Selection is possible.)



(4)Setting the back tacking details

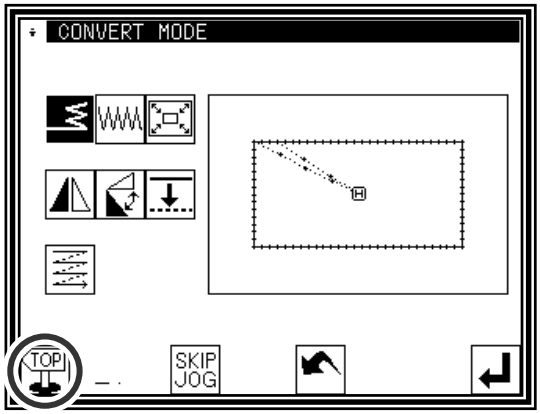
►The details are set on this screen.
(The details set here are,
 (overlap back tacking), overlap mode  ,
three overlap stitches.)

►Press  .



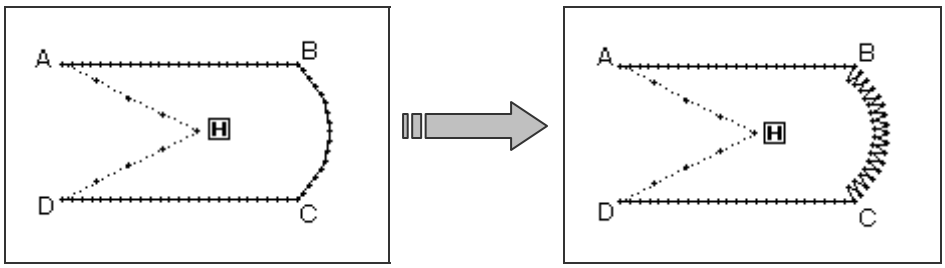
(5)Confirming execution of conversion

►Quit the conversion mode. Press  to change to
the Saving mode screen. Press  to return to
the Standard screen after saving the data.
(When  is pressed, the conversion executed
last will be undone.)



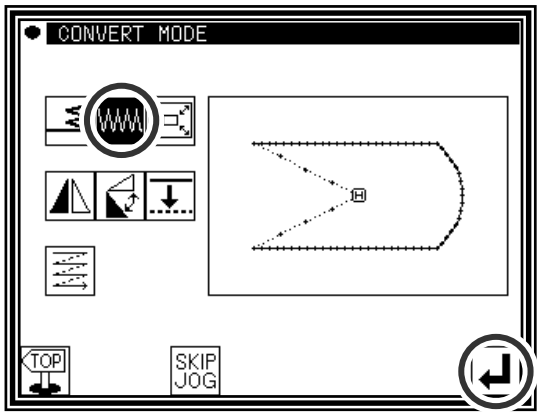
7.Zigzag stitching

[Example] In the following type of stitching data, the arc section between point B and point C is converted (added) to zigzag stitching. (Point A to point B: linear, point B to point C: arc, point C to point D: linear)



Operation details

(1)Selecting zigzag stitching

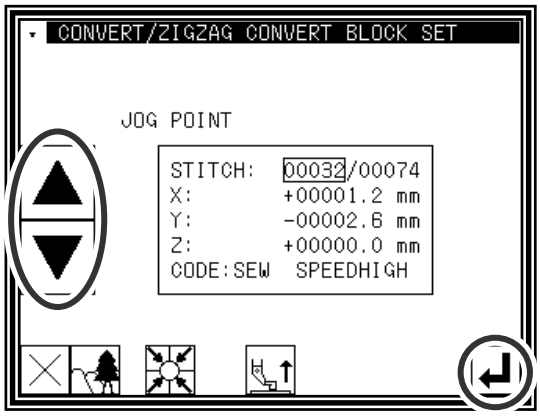


►Enter the conversion mode.

►Press zigzag .

►Press .

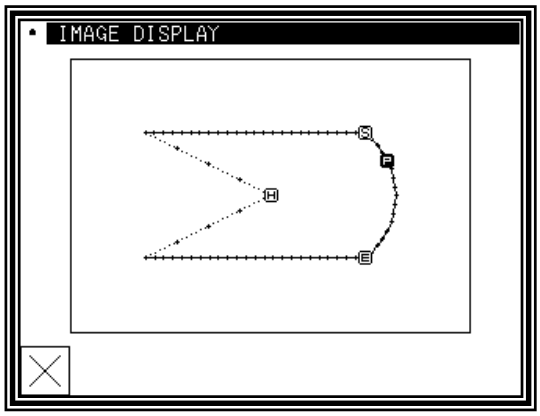
(2)Setting the block for converting zigzag



►Using jogging, move to the block to be converted to zigzag stitching. (In this case, move to the arc section (point between point B and point C).)

►Press .

Memo The block range can be confirmed easily when the Image screen is opened from the (2) screen.

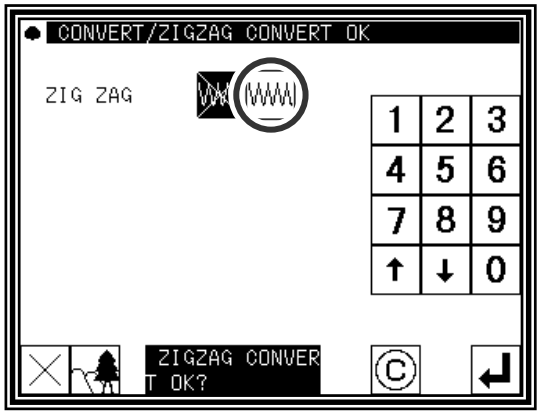


►Press from the (2) screen.

►Press to return.

(3)Selecting zigzag

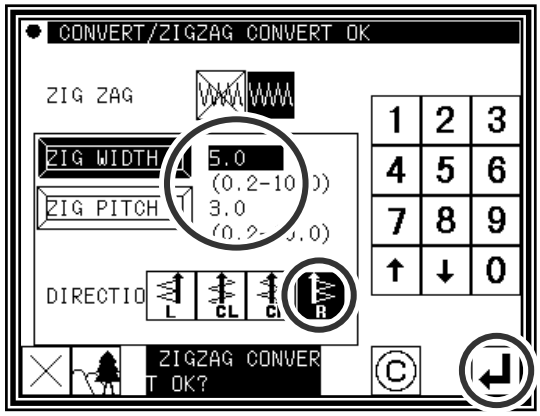
►Press zigzag  .



(4)Setting the zigzag details

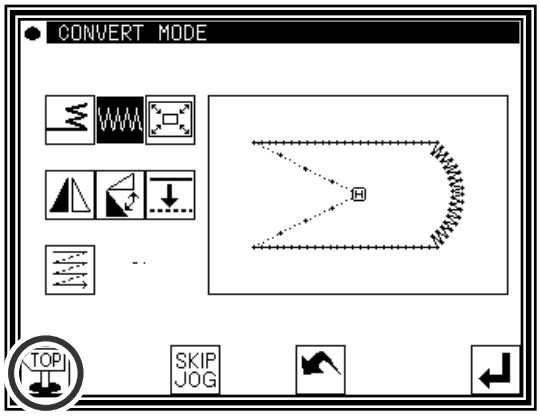
►The details are set on this screen.
(Press  , set the deflection width to 5.0, and feed amount to 3.0.
The creation direction is  .
(Refer to section [7] Methods of creating sewing data (12) Zigzag stitching for details on the "deflection width, feed amount and creation direction".)

►Press  .



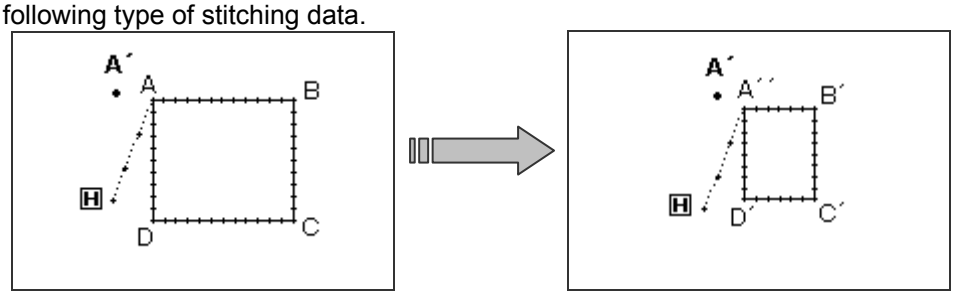
(5)Confirming the converted data

►Quit the conversion mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the conversion executed last will be undone.)



8.Scaling

[Example] The data will be reduced (X: 50%, 75%) with a fixed stitch length centering on the A' point in the following type of stitching data.



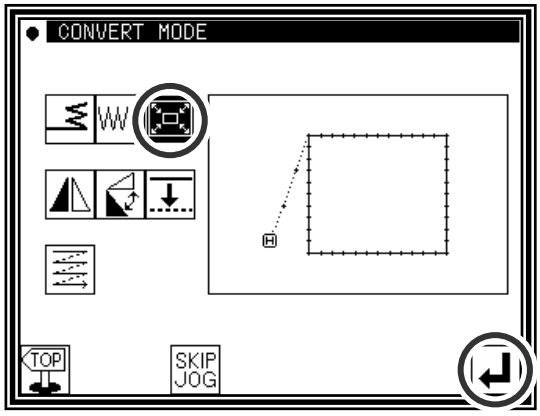
Operation details

(1)Selecting scaling

►Enter the conversion mode.

►Press Scaling .

►Press .



(2)Setting the scaling method, etc.

►Method

:No. of Stitches Fixed

:Fixed Stitch Length

(Press Fixed Stitch Length for this example.)

►Set the X, Y enlargement rate (reduction rate) with the numeric keypad or up/down arrow icons.

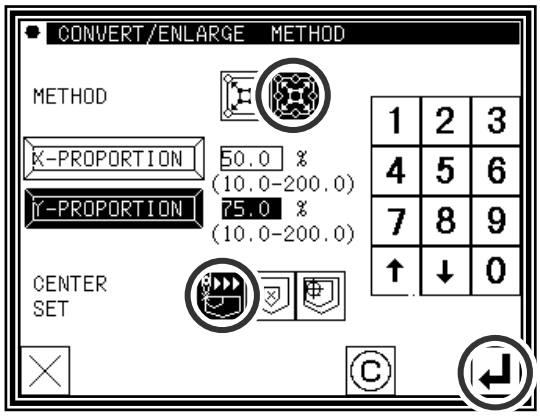
►Center designation

:Jog center designation, :Pattern center,

:Home position center

(Press Jog Center Designation for this example.)

►Press .



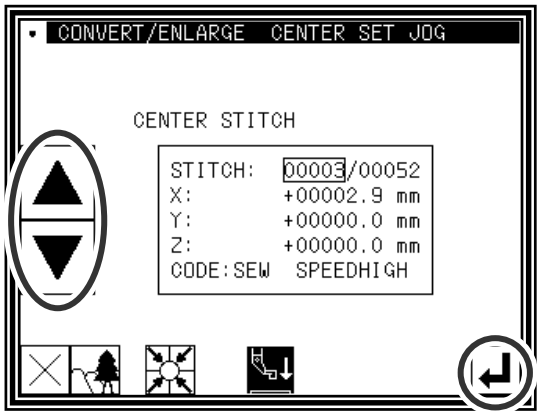
(3)Setting the center position

►In the jog mode, move to the needle near the desired enlargement/contraction center. (In this case, move to point A that is near point A'.)

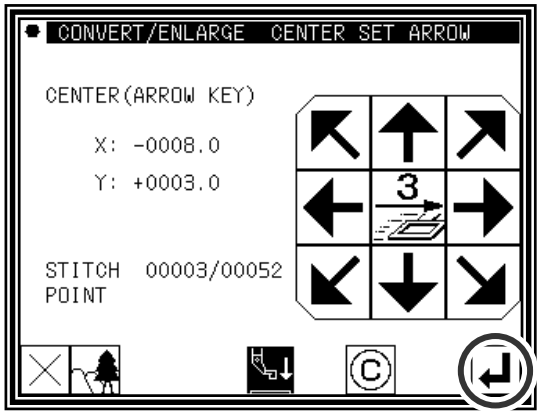
►Press .

Memo The center point can be designated without using the jog icons.

In this case, press only .



(4)Setting the center position details

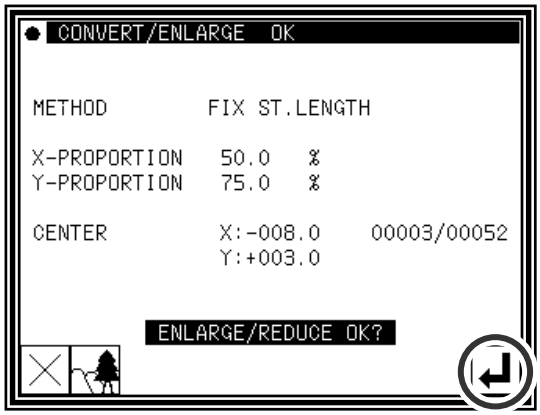


►If the center point is not to be set on the stitching data, use the arrow icons and move to the position to be used as the center. (A' point)

►After moving to the desired center position, press  .

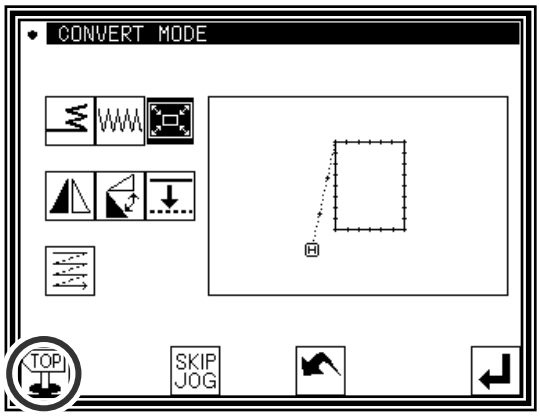
Memo If the desired center position is on the pattern data, do not move using the arrow, but just press  .

(5)Confirming execution of conversion



►Press  .

(6)Confirming the converted data



►Quit the conversion mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the conversion executed last will be undone.)

Memo 1 Circle scaling

A circle will be created even if the X, Y enlargement ratio/contraction ratio are set to different values.

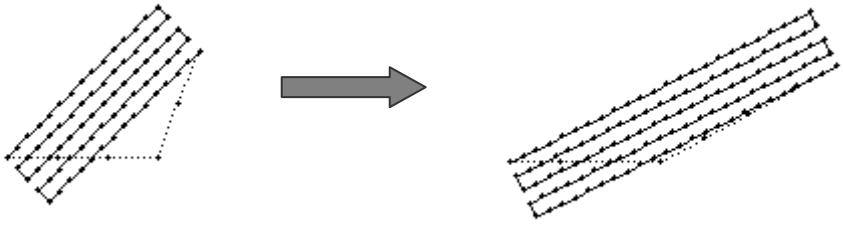
Memo 2 Expanded/reduces for zigzag sewing, multiple sewing, and offset sewing.

Sewing in zigzag, multiple, and offset an under mentioned set item is not influenced by the expansion/the reduction.
(The function as the offset is lost by the expansion/the reduction about the offset.)

- “Amount of stitch length” and “Width of shake” of zigzag sewing
- "Distance" of multiple sewing
- "Distance" of offset

(Do not use expansion/reduction but respectively to change these [13] - (8) zigzag sewing, [13] - (13) multiple sewing, [13] - (12) offset sewing in the conversion mode if modify to do.

[Example] It is expanded like 3mm of B in the offset width, when data [A] of multiple sewing of the 3mm width and expands 200% of X scale made by B data like the figure below.



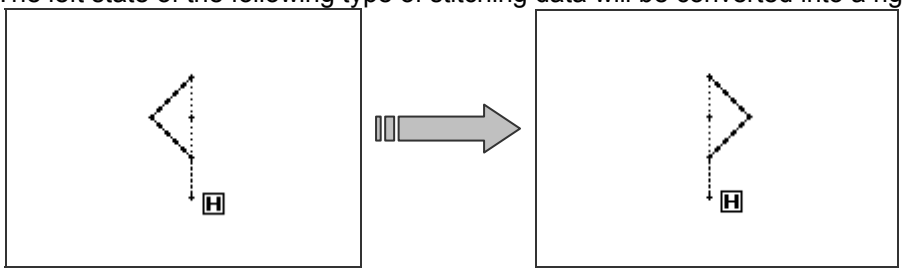
[A] [B]

Memo 3 "Fixed stitch number/stitch length fixed" setting for expanded/reduces for zigzag sewing

"Stitch number fixed/stitch length fixed" setting of the expansion/the reduction is not influenced by zigzag sewing. (Please reference to Page [12]-7 Conversion mode of zigzag sewing or Page [11]-23 block correction to do.)

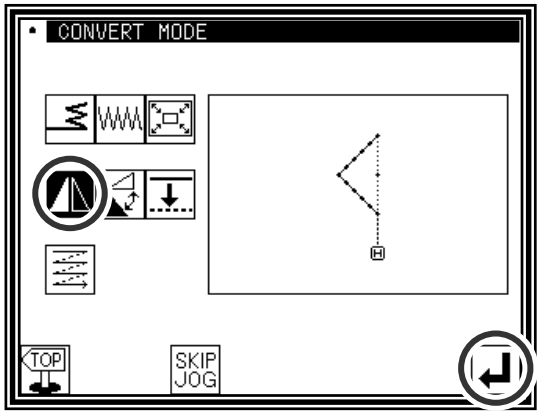
9.Symmetrical

[Example] The left state of the following type of stitching data will be converted into a right state.



Operation details

(1)Selecting symmetrical

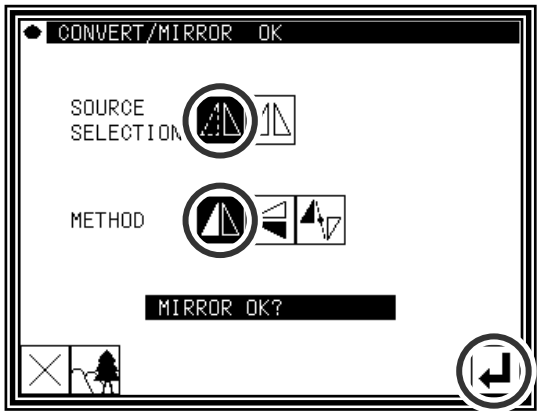


►Enter the conversion mode.

►Press Symmetrical  .

►Press  .

(2)Setting symmetrical method, etc., and executing



►Clearing symmetrical origin data

 :Delete Symmetrical Origin Data

 :Keep Symmetrical Origin Data

(Press "Delete" for this example.)

►Method

 :X Symmetrical Data Creation

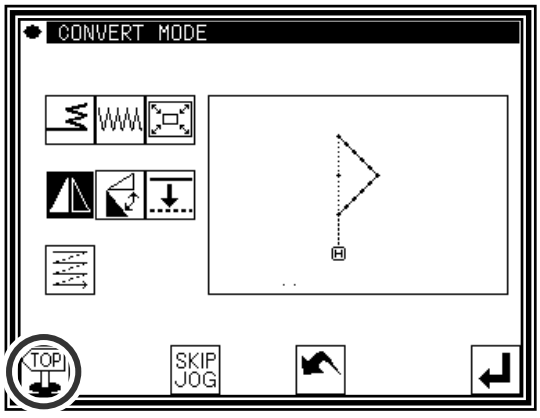
 :Y Symmetrical Data Creation

 :XY Symmetrical Data Creation

(Press "X Symmetrical Data Creation" for this example.)

►Press  .

(3)Confirming execution of conversion

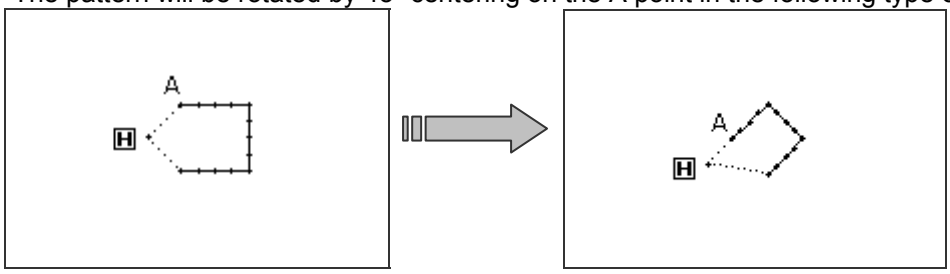


►Quit the conversion mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.

(When  is pressed, the conversion executed last will be undone.)

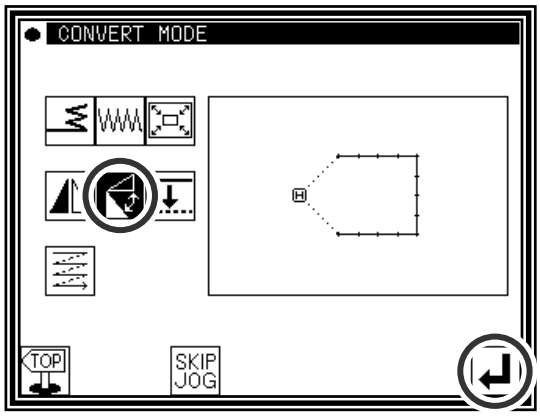
10.Rotation

[Example] The pattern will be rotated by 45° centering on the A point in the following type of stitching data.



Operation details

(1)Selecting rotation

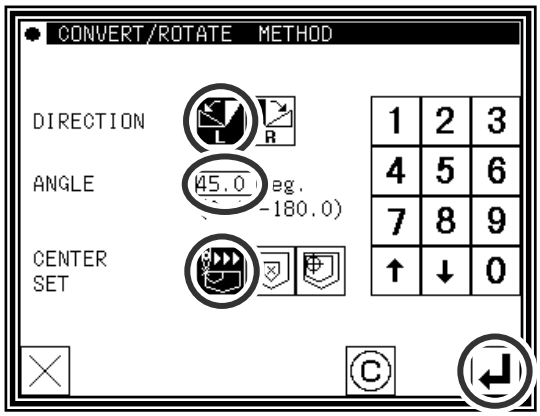


►Enter the conversion mode.

►Press Rotation  .

►Press  .

(2)Setting the rotation method, etc.



►Direction

 :Left Rotation

:Right Rotation

(Press "Left Rotation" for this example.)

►Angle

Input the angle from the numeric keypad.
(Input 45$ for this example.)

►Center Designation

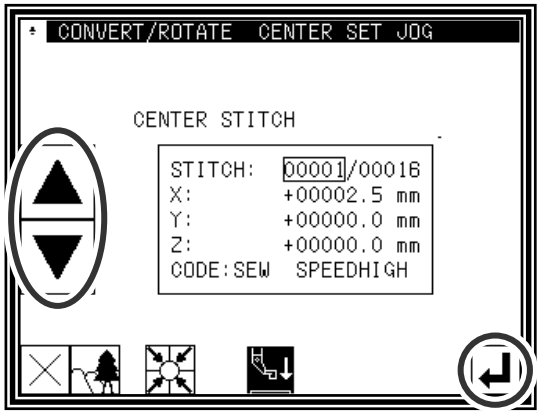
 :Jog center designation,  :Pattern center,

:Home position center

(Press "Jog Center Designation" for this example.)

►Press  .

(3)Setting the center position

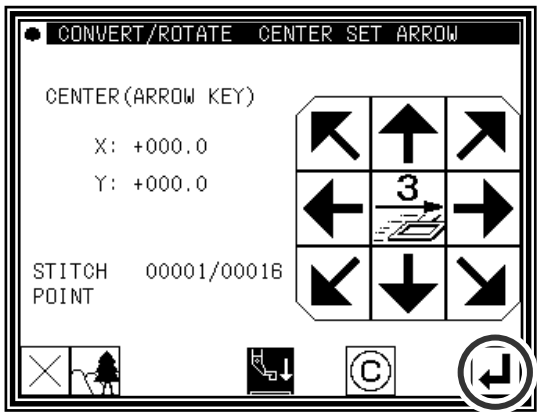


►In the jog mode, move to the needle near the desired center.

►Press  .

Memo The center point can be used without using the jog icons. In this case, press only  .

(4)Setting the center position details

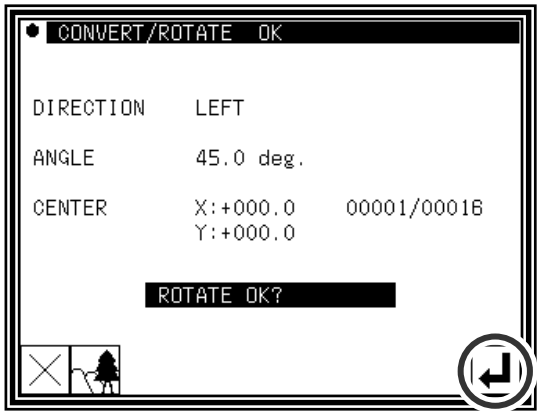


►If the center point is not to be set on the stitching data, use the arrow icons and move to the position to be used as the center.

►After setting the center, press  .

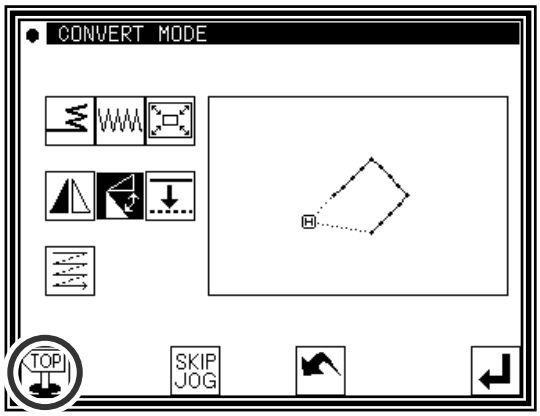
Memo If the desired center position is on the pattern data, do not move using the arrow, but just press  .

(5)Confirming execution of conversion



►Press  .

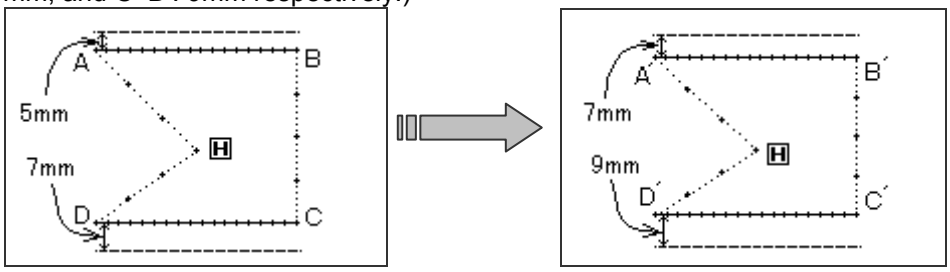
(6)Confirming the converted data



►Quit the conversion mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the conversion executed last will be undone.)

11.Offset

[Example] The offset distance for the offset stitches A-B and C-D in the following type of stitching data will be changed and converted into A'-B' and C'-D'. (The offset amount will be A-B: 5mm, C-D: 7mm, A'-B': 7mm, and C'-D': 9mm respectively.)



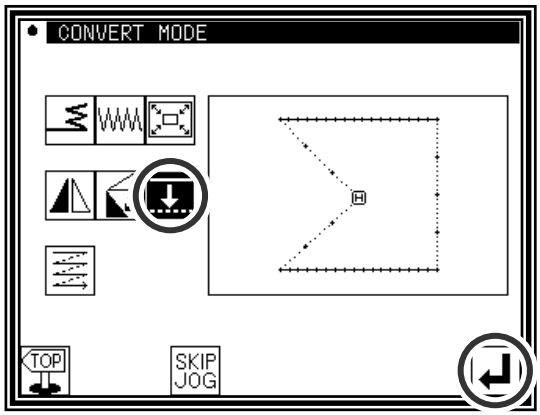
Operation details

(1)Selecting offset

►Enter the conversion mode.

►Press Offset  .

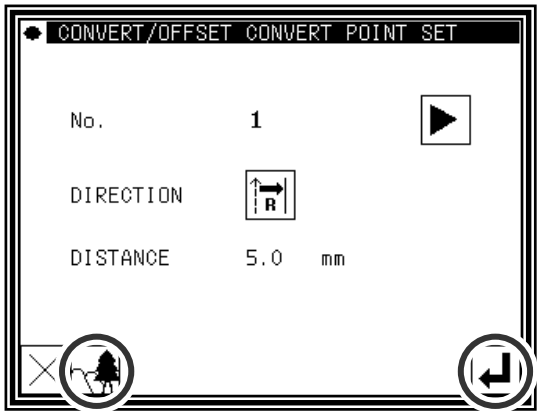
►Press  .



(2)Selecting and confirming the changed offset

►Press  or  to select the offset to be changed. (The offset numbers No. 1, 2, 3... are assigned in the created order.)
(In this case, select the first offset data.)

►Press  after select the data.

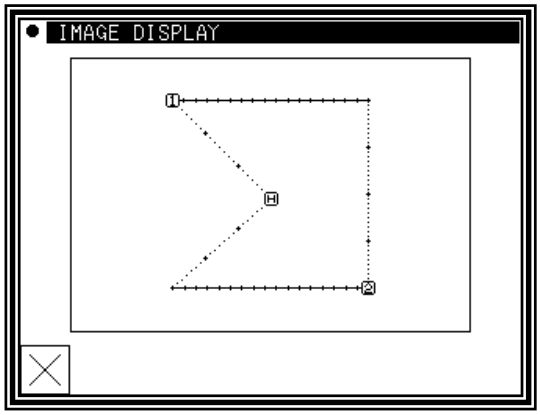


(3)Confirming the offset No. (Image screen)

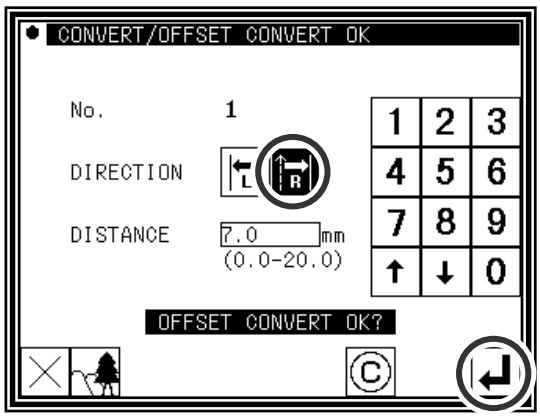
►Press  on the screen displayed in step 2.

►The offset No. will be expressed with 1 and 2.

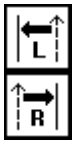
►Press  to return to the original screen.



(4)Setting and executing the conversion method



►Select the direction. (In this case, select "right".)



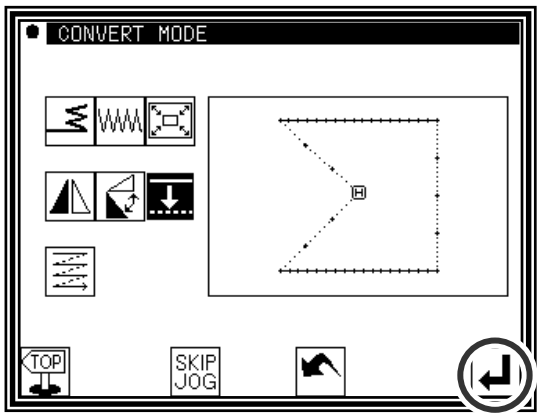
Left direction

Right direction

►Input the distance. (Input 7mm for this example.)

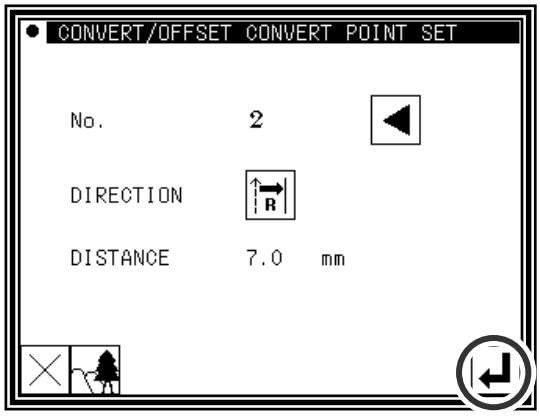
►Press  .

(5)Completing the first conversion



►Press  to start the second conversion.

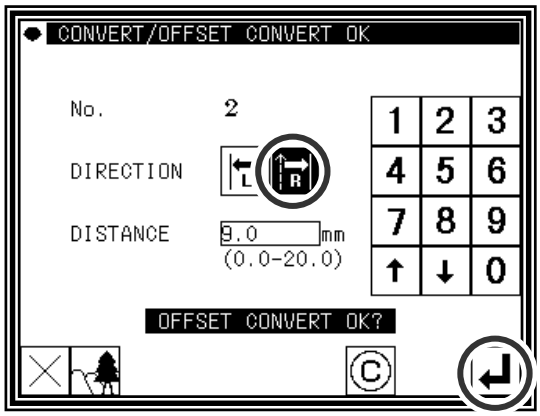
(6)Selecting and confirming the next offset.



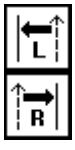
►Using the arrow icons(), select the offset to be changed.

►Press  after setting the data.

(7)Setting and executing the conversion method



►Select the direction. (In this case, select "right".)



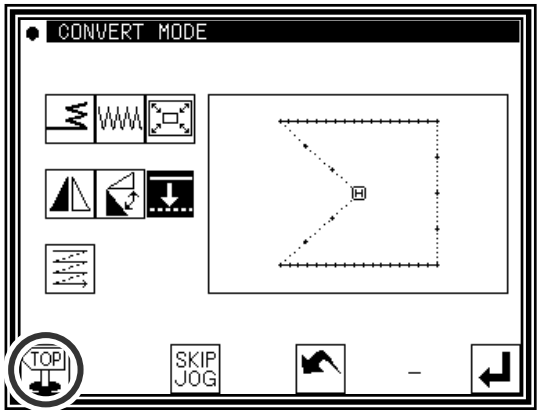
Left direction

Right direction

►Input the distance. (Input 9mm for this example.)

►Press  .

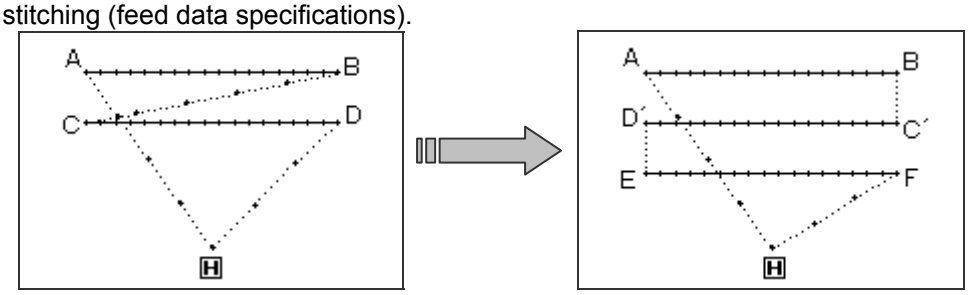
(8)Completing the second conversion



►Quit the conversion mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.
(When  is pressed, the conversion executed last will be undone.)

12.Multiple

[Example] ABCD designated two times for multiple stitching (feed data specifications) in the following type of stitching data, will be converted to the ABC'D'EF designated three times for reverse multiple stitching (feed data specifications).



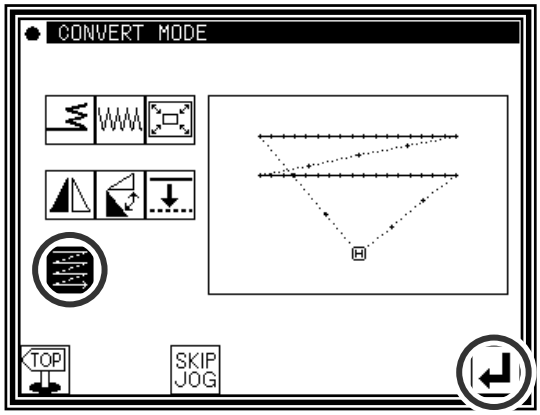
Operation details

(1)Selecting multiple stitching

►Enter the conversion mode.

►Press Multiple Stitching  .

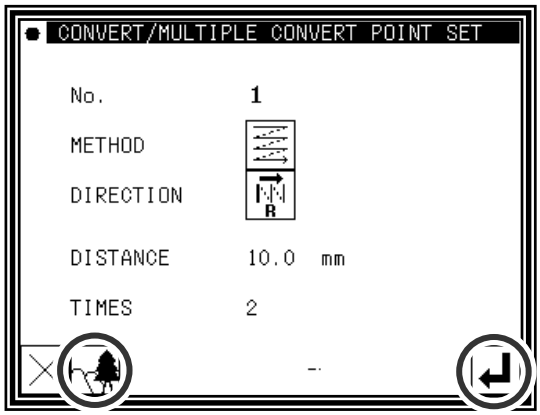
►Press  .



(2)Selecting and confirming the multiple stitching to be changed

►If there are multiple settings, press the arrow icons() (which appear when there are multiple settings), and change the setting.

►Press  after changing the setting.

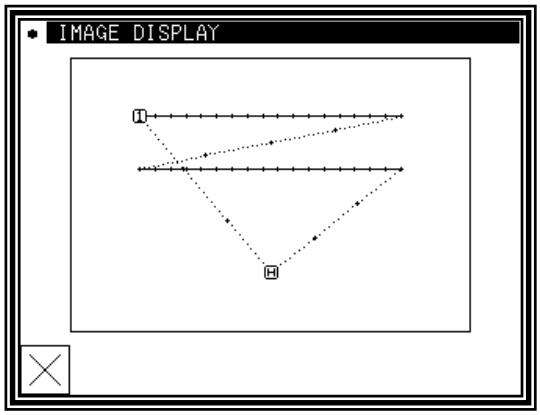


(3)Confirming on the image screen

►press  on the screen displayed in step 2.

►Confirm the multiple No., etc.

►Press  to return to the original screen.



(4)Setting the conversion method

►Select and input the multiple stitching method, direction, distance and number of times.

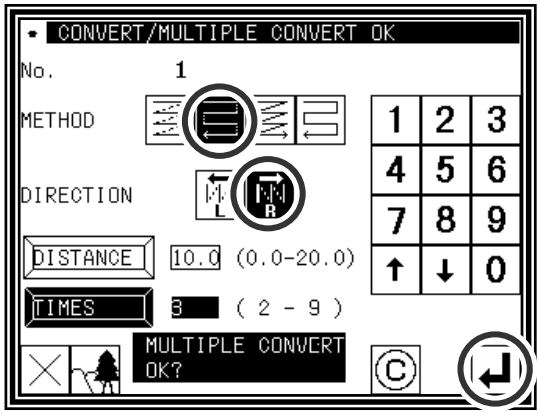
Multiple (Feed data)

Multiple (Stitching specifications)

Reverse Multiple (Feed data)

Reverse Multiple (Stitching specifications)

(In this case, select the "Multiple (Stitching specifications)")



►Select the direction. (In this case, select "right".)

Left direction

Right direction

►Input the distance value. (In this case, input "10 mm".)

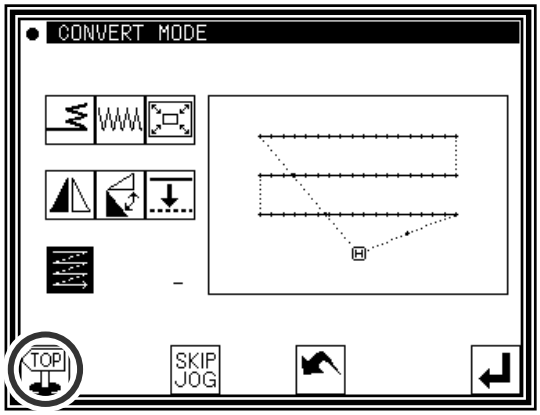
►Input the number of times. (In this case, input "3 times".)

►Press  .

(6)Confirming execution of conversion

►Quit the conversion mode. Press  to change to the Saving mode screen. Press  to return to the Standard screen after saving the data.

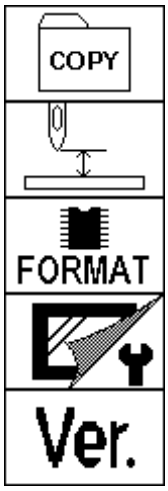
(When  is pressed, the conversion executed last will be undone.)



[13] Function mode

1.Outline

■List of function modes



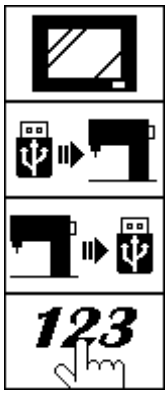
Copy mode

Needle down angle setting

Format mode

Screen customize

Version confirmation



Panel related settings

Set file read

System, set file write

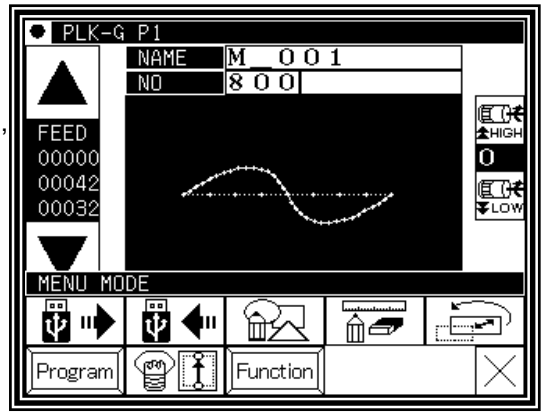
Advanced functions

■Entering the function mode

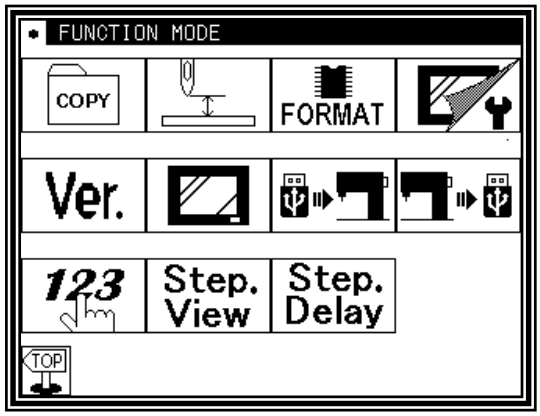
►Press 

and 

on the Standard screen, and open the Function Mode screen.

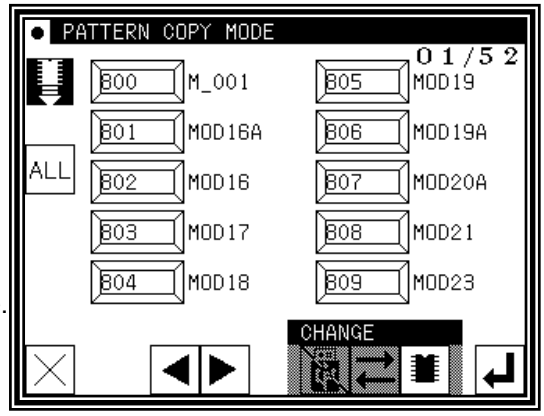


■Function Mode screen



2.Explanation of each function mode

Copy mode



The sewing data is copied "from the internal memory to an USB memory" or "from an USB memory to the internal memory".

[Memo] Please erase all data of the USB memory beforehand when copying sewing data from an internal memory.

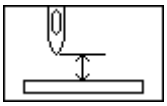
[Memo] Sewing data will be copied in the overwriting mode. For this reason, if the sewing data having the same data number is in the internal memory, the new sewing data will be overwritten on the old sewing data.

Select the copying direction in the same way as the data reading/writing operation. (Check the picture of the key shown at the upper left section of the screen.)

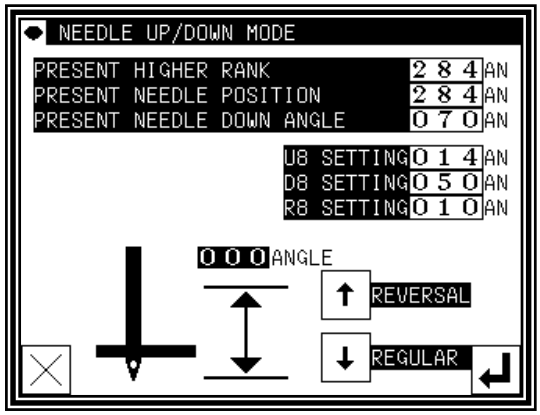

From internal memory to USB memory


From USB memory to internal memory

Select the data you would like to copy by pressing the corresponding numeric key (maximum 10). After that, press  to copy the data. (To select all the data, press ALL .)



Needle DOWN angle setting



Before setting (to move to this screen), machine should be run once, and move needle to up position by pressing  icon.

The needle position angle for the needle UP/DOWN key is set here.

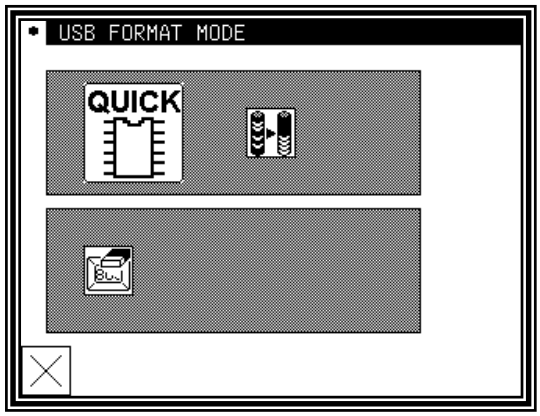
U8 setting: Needle UP position stop setting
D8 setting: Needle DOWN position stop setting
R8 setting: Reverse run angle setting

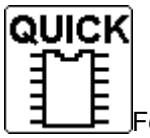
[Memo] Refer to Program mode [Needle Position] for details on these settings. (Page [16]-4)

⚠Caution Be careful!

Pressing the key (↑ ↓) will lift or lower the needle.

Format mode





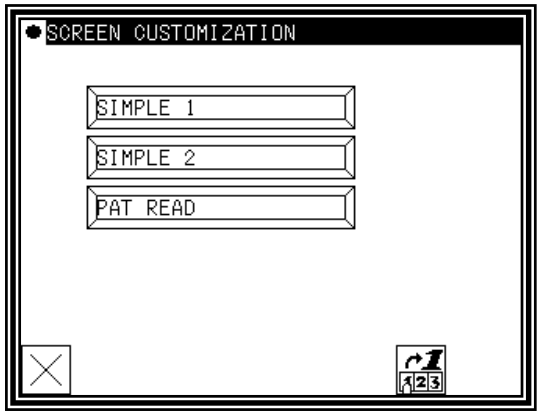
Formats the internal memory.
All the pattern datas are cleared.
If the message like [Internal memory is defect] is appeared, please press this button.

Please back up data always so as not to lose data.

Optimizes the internal memory.
The pattern datas are not erased.
When preserved sewing pattern data increased and an empty space of an internal memory decreases, empty space might be able to be increased by executing optimization. (It is recommended to backup and perform optimization sometimes)

Clears the registration of the shortcut key displayed on a standard screen.

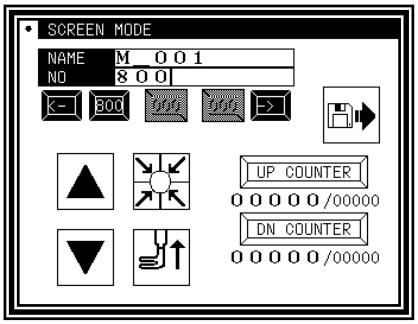
Screen customize



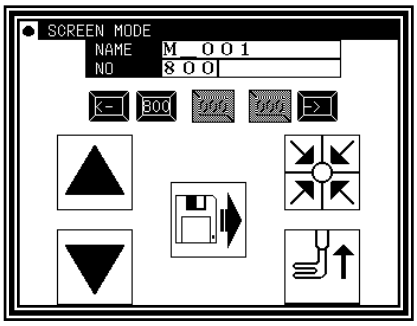
The key arrangement on the screen can be customized to the simplified screen.

(Please consult the sewing machine agent about details of the screen customize. Here explains the setting of "Simple 1 and 2" screen.)

Two kinds of simple screens are prepared like as bellows.
Press [Simple 1] or [Simple 2] to change the screen.



[Simple 1]



[Simple 2]

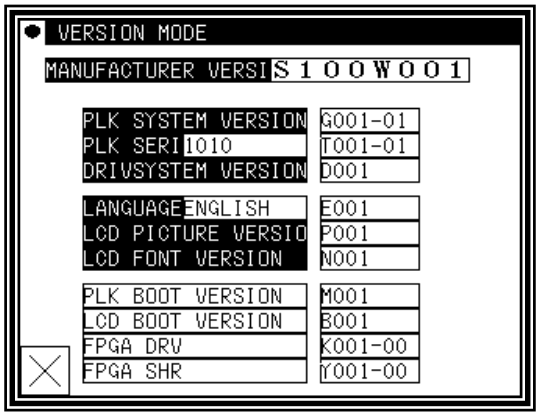
►To return to the standard screen, press title bar on the top of the screen more than 5 second.

►Press  , to rerutn to function mode screen.

Ver. Version confirmation

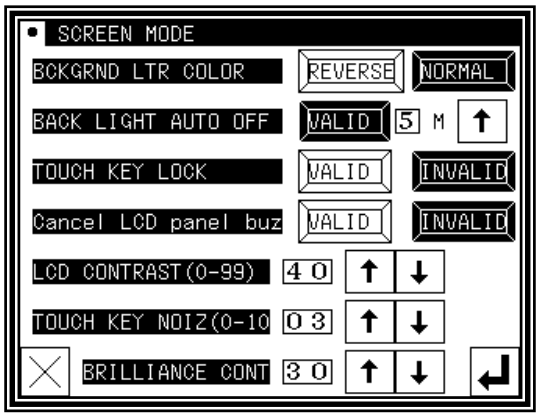
The version of each model's current system can be confirmed.

(The version shown on the right is an example.)



Panel related settings

Various settings related to the panel can be made.



[Wallpaper Color Selection]

The wallpaper color (black/white) is reversed. Select the wallpaper that is easy to view.

[LCD Backlight Auto OFF]

The panel will automatically turn OFF if the panel is not touched within the set time.
Setting range : 1 to 9 minutes
Canceling method : Touch the panel which is turned OFF.
(The automatic OFF function will remain "Valid" until the LCD backlight automatic OFF function is set to "Invalid".)

[Touch Key Lock]

When this function is set to "Valid", the keys will be ignored even if pressed, and the incorrect operation prevention mode will be entered.
Canceling method: To cancel the incorrect operation prevention mode, press any place on the panel for five or more seconds. A beep will sound to indicate that the function has been canceled. (The touch key lock will be completely set to "Invalid" with this cancellation.)

[Cancel LCD panel buzzer]

When it is set to enable, sounds will not ring.

[LCD Contrast]

Set the panel contrast.
Setting range: 0 to 99 (The screen will dim as the value is increased.)

[Key Noise Processing]

The noise will increase as this value is increased. The key response speed will also drop. (The opposite will occur when the value is decreased.)
Setting range: 0 to 10

[Brilliance control]

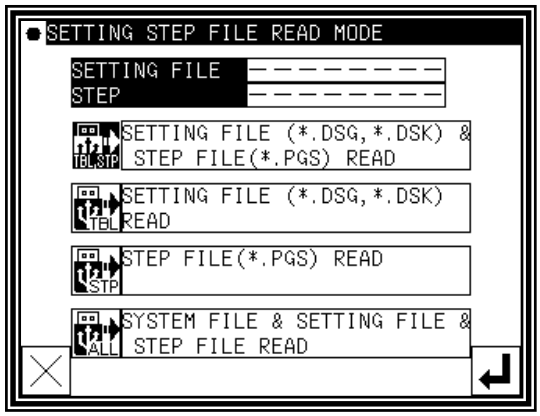
Sets brightness of the operation panel.
Setting range: 0 to 50

Setting file read

Setting files or step files written (backed up) on an USB memory are read out.

[Memo] The data is read in the overwrite mode, so the setting file originally in the internal memory will be erased.
[*.DSG] ---The Simple setting table
[*.DSK] ---The multiplication data
[*.PGS] ---The step file

For detail operation, reffer P.[15]-5.

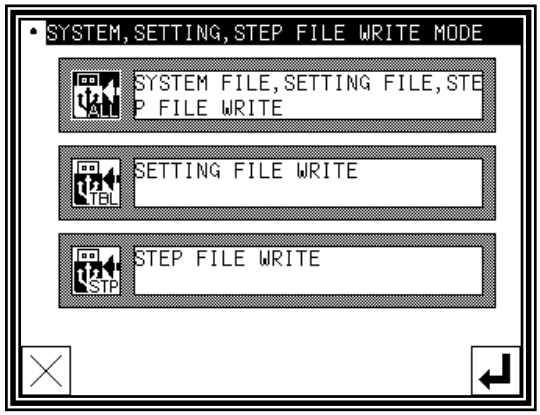


System, setting file write

The system setting files and step files are written (backed up) on an USB memory.

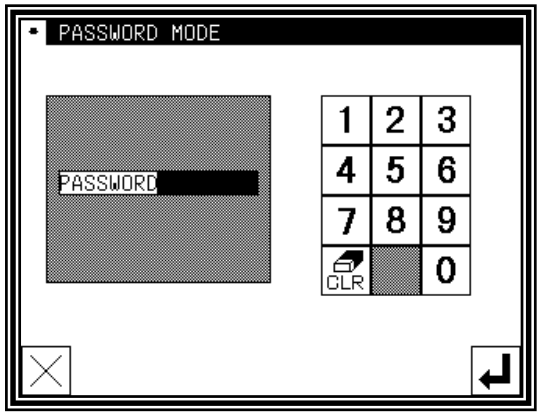
If various files are stored, be careful not to overwrite new data on a file.

For detail operation, reffer P.[15]-4.



Advanced functions

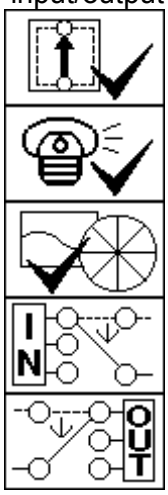
"Advanced functions" can be set by inputting a password.



[14] Input/output setting mode

1.Outline

■List of input/output setting modes



Input signal confirmation (Be careful! The sewing machine is ready for operation.)

Output signal confirmation (Be careful! The sewing machine is ready for operation.)

Home position/encoder/detector confirmation
(Be careful! The sewing machine is ready for operation.)

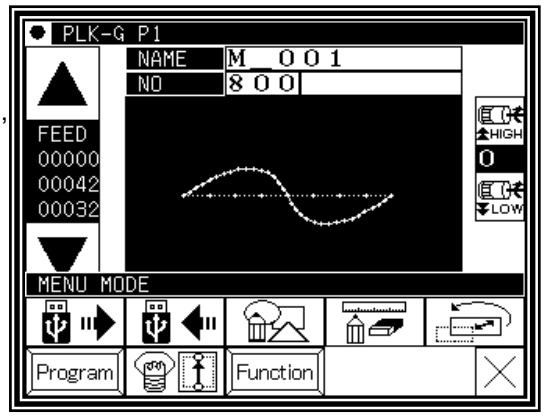
Input setting (Custom input)

Output confirmation (Custom output)

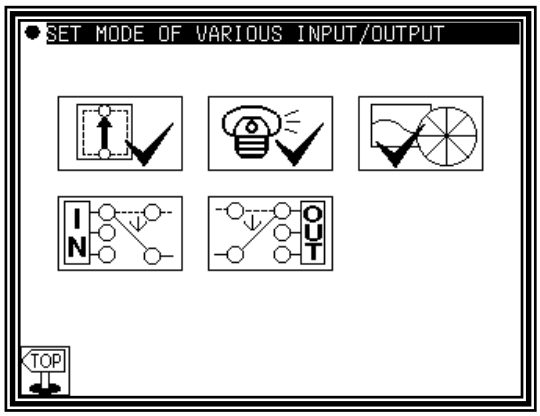
■Entering the input/output setting mode

►Press 

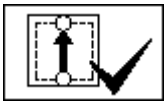
and  on the Standard screen, and open the Input / Output Setting Mode screen.



■Input / Output Setting Mode screen

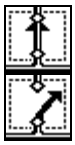


2.Explanation of input/output setting mode



Input signal confirmation

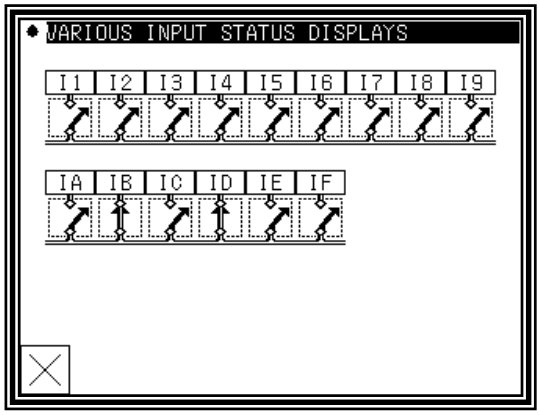
The ON/OFF status of the input signal can be confirmed.



Indicates that the input signal is ON.

Indicates that the input signal is OFF.

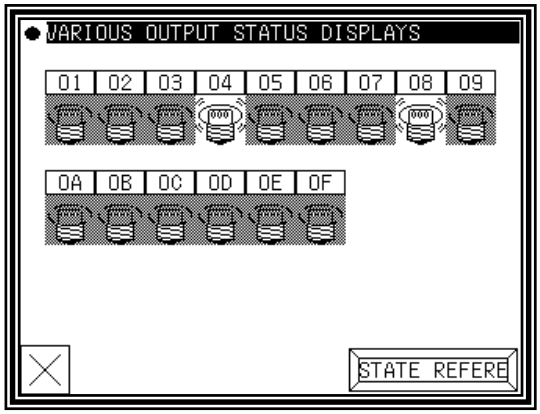
[Memo] Input ON/OFF display might be concealed by the error message's giving priority according to the kind of the input or other conditions and being displayed.



⚠Caution Be careful! The sewing machine is ready for operation.

Output signal confirmation

The output signal can be confirmed.
The [1] Status reference mode and the [2] Test output mode are available. Press the mode changeover key to change the screen.



[1]Status reference mode

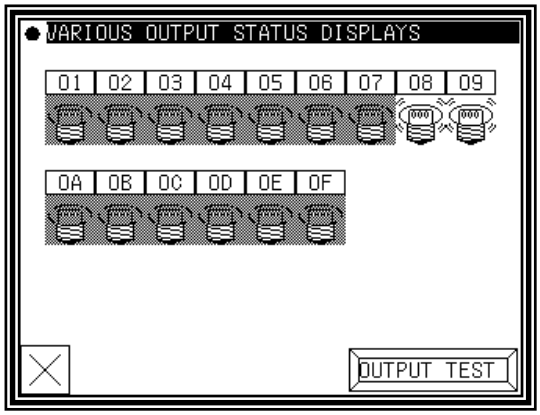
The current output status can be confirmed.

Indicates that the output signal is ON.

Indicates that the output signal is OFF.

[2]Test output mode

The signal for which the key is pressed will be output as a test.



Indicates that the output signal is ON.

Indicates that the output signal is OFF.

[Memo] Output ON/OFF display might be concealed by the error message's giving priority according to the kind of the output and other conditions and being displayed.

⚠Caution Be careful! The sewing machine is ready for operation.

⚠Caution Be careful !! Please not to bring the hand close to the sewing machine for safety while confirming the output signal.

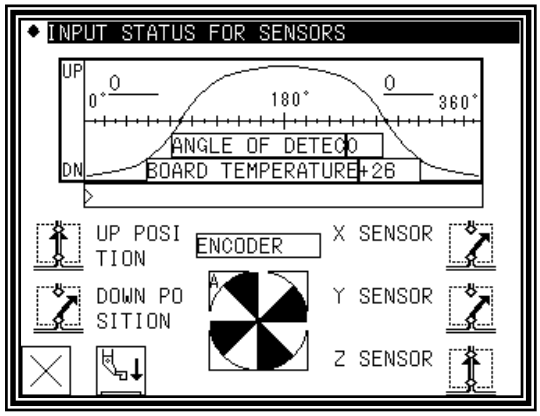
Home position/encoder/detector confirmation

The status of the home position and encoder detector is displayed in an easy-to-read format.

- The detector angle is the angle from the detected DOWN position.
- The encoder color will be alternately highlighted.

This means detection.

This means non-detection.



[Memo] Each display might be concealed by the error message's giving priority according to the situation and being displayed. The magnetic of pulls motor is released when entering this mode. When the starting point return/the drive signal enters, the magnetic of pulls motor is turned on again.

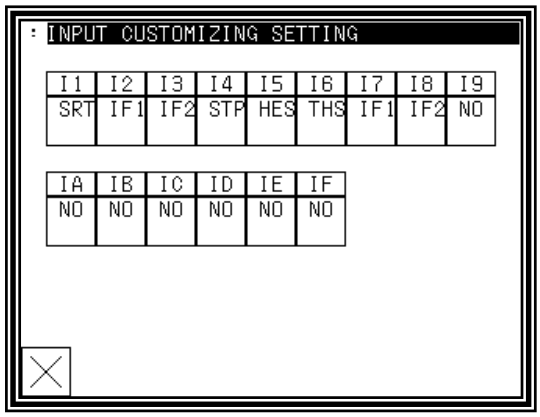
⚠Caution Be careful! The sewing machine is ready for operation.

Input setting (Custom input)

[Password function]

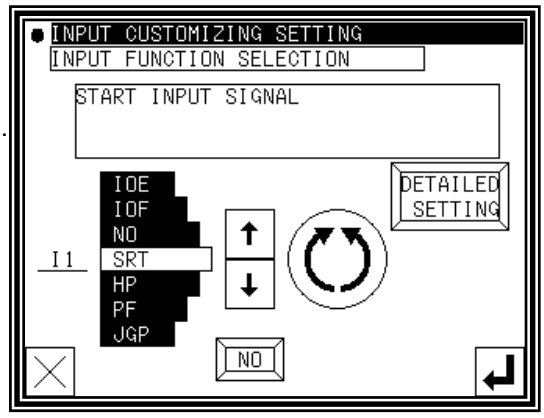
(1)Input Customize Setting screen

- ►Press the physical input RAM (I1 to I9, IA to IP) to be customized. The Function Section screen will open.
- ►Box which setting is changed from initiall setting is displayed in revese.



(2)Function Selection screen

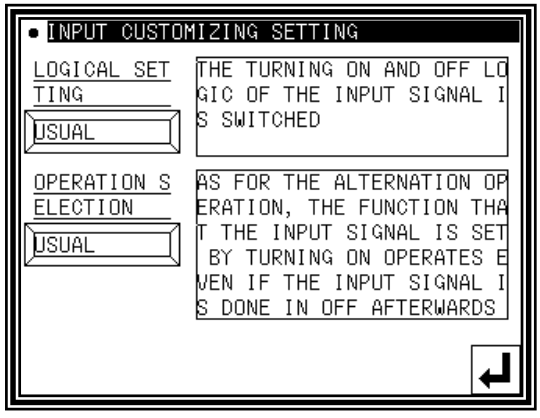
- ►Press the ↑ ↓ keys and select the signal type. (In this case, "SRT" is selected.) (Refer to 3. Input signal setting table for details on the signal types.)
- ►To make detailed settings, press the "Details setting" key.

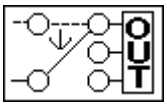


(3)Details Setting screen

- ►Change the logic of the input signal. (Normal/reversed)
- ►Change the operation of the input signal. (Normal/alternate)
- ►Press the ↵ to fix the setting. (The previous screen will open.)

[Memo] Refer to [Control unit] Page [8]-3 for details on the signal logic and operation.



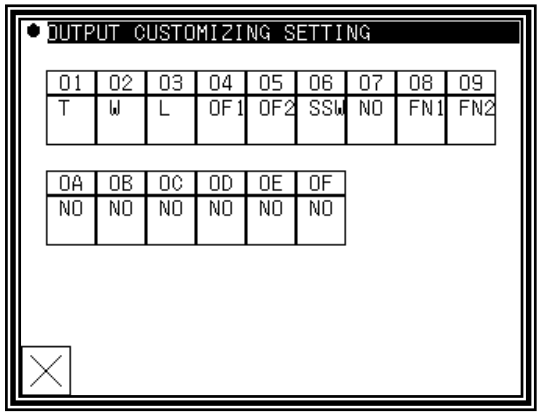


Output confirmation (Custom output) **[Password function]**

(1)Output Customize Setting screen

►Press the physical output RAM (O1 to O9, OA to OO) to be customized. The Function Section screen will open.

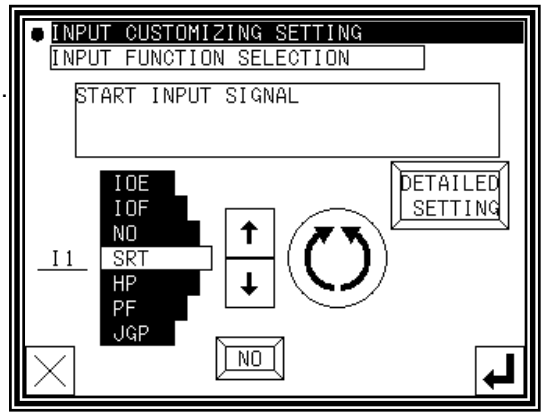
►Box which setting is changed from initiall setting is displayed in revese.



(2)Function Selection screen

►Press the ↑ ↓ keys and select the signal type. (In this case, "T" is selected.)
(Refer to 4. Output signal setting table for details on the signal types.)

►To make detailed settings, press the "Details setting" key.

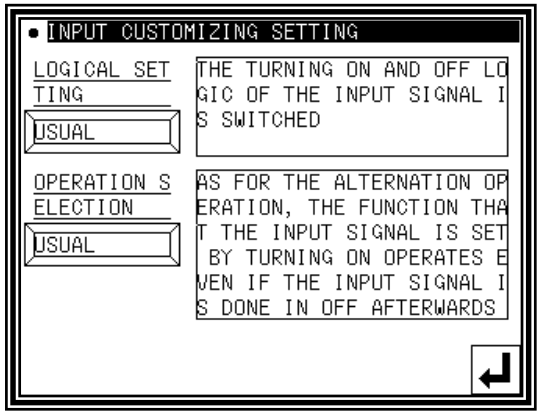


(3)Details Setting screen (1)

►Change the logic of the output signal. (Normal/reversed)

►Change the operation of the output signal. (Normal/alternate)

►The Details Setting screens (1) to (3) are available. Press ◀ ▶ to change the screen.

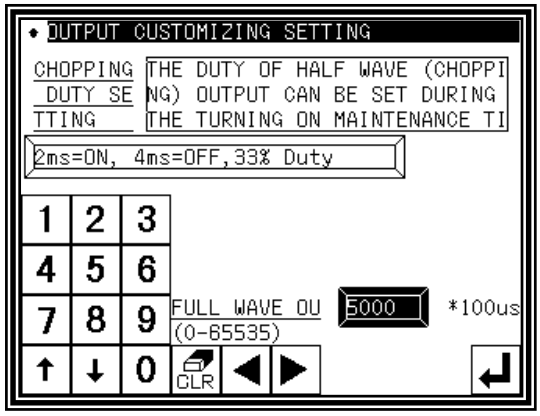


(4)Details Setting screen (2)

►Set the chopping duty. (Eight types)

►Set the full wave output time. (0 to 6553.5ms)

[Memo] Refer to [Control unit] Page[8]-4 for details on the signal logic and chopping.

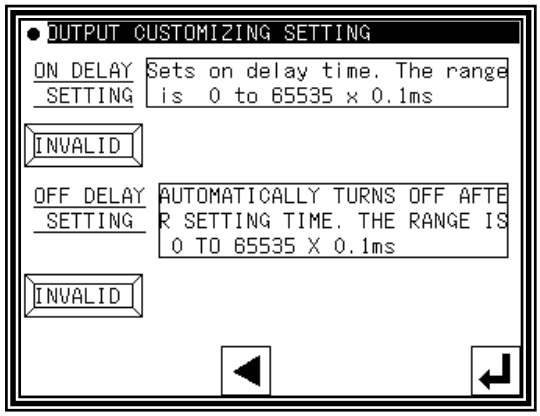


(5)Details Setting screen (3)

►Set the ON delay.
(Valid/Invalid, delay time (0 to 6553.5ms))

►Set the OFF delay.
(Valid/Invalid, delay time (0 to 6553.5ms))

►Press the  to fix the setting.
(The previous screen will open.)



3.Input signal setting table

Code	Function	Specifications
FSP	Clamp all step ON signal	Whenever FSP input is on, clamp output [1],[2],[3],[4],[5],[6],[7],[8] turned on one by one. However, when [Program mode > Clamp output > number of effective clamp (FN)] is set to 1, FSP input is ineffective.
FSM	Clamp all step OFF signal	Whenever FSM input is on, clamp output [8],[7],[6],[5],[4],[3],[2],[1] turned off one by one. However, when [Program mode > Clamp output > number of effective clamp (FN)] is set to 1, FSM input is ineffective.
FP1	Clamp division1 step ON signal	Whenever FP1 input is on, clamp output [1],[2],[3],[4] turned on one by one.
FM1	Clamp division1 step OFF signal	Whenever FM1 input is on, clamp output [4],[3],[2],[1] turned off one by one. However [Program mode> clamp output block division number setting (OFB)] is set to no or set to 4, or [number of valid clamp setting (F21N)] is set to 1, FM1 input is ineffective.
FP2	Clamp division2 step ON signal	Whenever FP2 input is on, clamp output [5],[6],[7],[8] turned on one by one.
FM2	Clamp division2 step OFF signal	Whenever FM2 input is on, clamp output [8],[7],[6],[5] turned off one by one. However [Program mode> clamp output block division number setting (OFB)] is set to no or set to 4, or [number of valid clamp setting (F22N)] is set to 1, FM2 input is ineffective.
IFR	All clamp output clear signal	If IFR signal is on, all clamp outputs are turned off.
A2F	Pneumatic two-step clamp switch input signal	Whenever A2F input is on, following operation (1), (2), (3) is repeated. This signal is effective when [Program mode > Setting for Pneumatic two-step clamp(AF2)] is on. (1)When A2F input is on first time, AFL output is turned on. (2)When A2F input is on second time, AFH output is turned on. (3) When A2F input is on third time, AFE output is turned on.
IF1~IF8	Clamp input signal 1 ~ 8	When IF1 input is on, OF1 output is turned on. When IF1 input is on again, OF1 output is turned off. (same from IF2 toIF8）
F1C~F8C	Clamp output prohibition signal 1 ~ 8	When F1C input is on, OF1 output is prohibited. （same from F2C to F8C）
OFC	All clamp output cancel signal	When OFC input is on, OF1 to OF8 outputs are prohibited.
WC	Wiper output cancel signal	When WC input is on, W output is prohibited.
TC	Trimmer output cancel signal	When TC input is on, Thread trimmer sequence output T, L and W is prohibited.
S6	Thread trimming protection signal	When S6 input is on while machine is driving, the machine is stopped and when S6 input is off, the machine start driving again. When S6 input is on while thread trimming operation, machine is stopped after trimming.
HPC	Home positioning prohibition signal	When HPC is ON, home returning operation by the home positioning key or HP signal is prohibited.
--1	DO NOT USE	
THS	Thread breakage detection signal	When setting of [Program mode > Thread breakage sensor on/off] is on, the signal can be used for thread breakage detection input.
ARS	Less pressure detection signal	When ARS input is on, all operation is interrupted, and error [E-025] is displayed. (Returns by power supply re-turning on)
IO0~IOF	General purpose input 0 ~ F	When IO0 input is on, OT0 output is turned on at the same time. (same from IO1 to IOF)
NO	No operation signal	Anything does not operate, if NO input is turned on.
SRT	Start signal	When SRT input is on, sewing operation is started. However, when clamp output is turned off, this signal is invalid.
HP	Home position returning signal	When HP input is on, home position returning operation is executed. However, please note there is a timing that becomes invalid, for example while machine is running.
PF	Presser foot signal	When PF input is on, The presser foot will return to home position. When PF input is on again, presser foot goes to down position.
JGP	JOG plus signal	When JGP input is on, XY table is moved in positive direction according to the pattern.
JGM	JOG minus signal	When JGP input is on, XY table is moved in negative direction according to the pattern.
STP	Halt signal	When STP input is on, machine is stopped.

< sequel to INPUT SIGNAL >

Code	Function	Specifications
BC	Fixed angel (rotation/reverse rotation) signal	To confirm the needle thrust position, the needle is stopped just before the sewing material. Whenever BC input is ON, operation of [rotation] → [reverse rotation] → [rotation] is repeated. When the start switch is on afterwards, following sewing operation is started. However, if the following data is non stitch feed, the message [M-020] is appeared, in this case please move the needle to up position and re-turning on the start switch. Setting value of fixed angle can be set in the [Function mode > Needle down angle setting].
CCL	Counter clear signal	When CCL input is on, UP/DOWN counter is cleared.
SRC	Start cancel signal	When SRC input is on, sewing operation with Stringhalt is prohibited.
CCU	Up counter clear signal	When CCU input is on, UP counter is cleared.
CCD	Down counter clear signal	When CCD input is on, DOWN counter is cleared.
UAD	Up counter addition signal	When UAD input is on, 1 is added to UP counter
UDC	Up counter subtraction signal	When UDC input is on, 1 is subtracted from UP counter
DAD	Down counter addition signal	When DAD input is on, 1 is added to DOWN counter
DDC	Down counter subtraction signal	When DDC input is on, 1 is subtracted from DOWN counter
KNK	Signal that invalidates MENU key	When KNK is on, “MENU” key becomes invalid.
RNK	Signal that invalidates “pattern read” key	When RNK is on, “pattern read” key becomes invalid.
WNK	Signal that invalidates “pattern write” key	When WNK is on, “pattern write” key becomes invalid.
INK	Signal that invalidates “teaching input” key	When INK is on, “teaching input” key becomes invalid.
MNK	Signal that invalidates “teaching modification” key	When MNK is on, “teaching modification” key becomes invalid.
CNK	Signal that invalidates “teaching conversion” key	When CNK is on, “teaching conversion” key becomes invalid.
PNK	Signal that invalidates “program mode” key	When PNK is on, “program mode” key becomes invalid.
NNK	Signal that invalidates “IN/OUT setting” key	When NNK is on, “IN/OUT setting” key becomes invalid.
FNK	Signal that invalidates “function mode” key	When FNK is on, “function mode” key becomes invalid.
SNK	Signal that invalidates “speed” key	When SNK is on, “speed” key becomes invalid.
P01	Pattern number switch signal +1	When P01 is on, pattern data number is switch to 801 (800+1).
P02	Pattern number switch signal +2	When P01 is on, pattern data number is switch to 802 (800+2).
P04	Pattern number switch signal +4	When P01 is on, pattern data number is switch to 804 (800+4).
P08	Pattern number switch signal +8	When P01 is on, pattern data number is switch to 808 (800+8).
P16	Pattern number switch signal +16	When P01 is on, pattern data number is switch to 816 (800+16).
P32	Pattern number switch signal +32	When P01 is on, pattern data number is switch to 832 (800+32). < When you want to change to other patterned numbers > ex.1) pattern number to 803 turns on P01 input and P02 input P01 (+1) + P02 (+2) + 800 = 803 ex.1) pattern number to 811 turns on P01, P02 and P08 input P01 (+1) + P02 (+2) + P08 (+8) + 800 = 811 *Pattern number can be changed within the range from 800 to 863. *P01,P02,P04,P08,P16,P32 is effective when [Pattern select function by external signal(APC)] has been set to ON.
HES	Machine head tilting detection signal	When HES input is on, message [M-038] is displayed.
I_9	DO NOT USE	
I_A	DO NOT USE	

4.Output signal setting table

Code	Function	Specifications
OT0~OTF	General purpose output 0 ~ F	When IO0 is on, OT0 output at the same time(same from OT1 to OTF)
FN1~FNH	Function code output 1 ~ H	When FUN1 code is read while sewing operation, FN1 output is reversed. (same from FN2 to FNH)
OF1~OF8	Clamp output 1 ~ 8	When IF1 is on, OF1 output is reversed (same OF2 to OF8)
NO	[NO]output	Nothing is done
T	Trimmer output	Trimming operation is done
L	Thread tension release output	Thread tension release operation is done
W	Wiper output	Wiper operation is done
PF	Presser foot output	Presser foot operation is done
AFL	Pneumatic two-step switch clamp low pressure output	When A2F input is on first time, AFL output is turned on. Setting is effective when [Program mode > Clamp > Pneumatic two-step switch clamp ON/OFF (AF2)] is on.
AFH	Pneumatic two-step switch clamp high pressure output	When A2F input is on second time, AFH output is turned on. Setting is effective when [Program mode > Clamp > Pneumatic two-step switch clamp ON/OFF (AF2)] is on.
AFE	Pneumatic two-step switch clamp excess pressure release output	When A2F input is on third time, AFE output is turned on. Setting is effective when [Program mode > Clamp > Pneumatic two-step switch clamp ON/OFF (AF2)] is on.
DHP	Home position output	When XY table is sopped on the home position, DHP output is turned on.
D2H	Second home position output	When XY table is sopped on the second home position, DHP output is turned on.
RED	Preparation ready output	When the machine is ready state (when clamp output is on), RED output is turned on. When machine is start sewing, RED is turned off.
DSW	Sewing in progress output	When the machine is sewing, DSW output is turned on. When machine is stopping on the home position, DSW output is turned off.
SP	Sewing machine rotation start output	After non stitch feed, when the sewing machine start to rotate, SP output is turned on. When home positioning is executed, SP output is turned off.
TSE	Trimming start output	When trimming sequence (down position) is started, TSE outpu is turned on. When trimming sequence is finished (when all the outputs of T, L and W are turned off), TSE output is turned off.
END	Sewing completion output	When a sewing pattern operation is finished, END output is turned on. When the next sewing is started, END output is turned off.
DCS	Halt code output	When the halt code data (USTP, DSTP) is read while sewing, DCS output is turned on. When the machine restarts DCS output is turned off.
DST	Halt in progress output	When the machine is on halt state, DST output is turned on. When the machine restarts DST output is turned off. However, it is not output while stopping by the USTP code or the DSTP code.
HPO	Home returning in progress output	While the operation of home returning by the home positioning key or HP signal, HPO outpu is turned on.
ERR	Error output	When the error or message is displayed on the operation panel, ERR output is turned on.
CUE	Count up completion output	When the current value of up counter is reached at counter set value, CUE output signal is turned on. When the current value is cleared, CUE output is turned off.
CDE	Countdown completion output	When the current value of down counter is reached at 0, CDE output signal is turned on. When the current value is initialized, CDE output is turned off.
DTS	Halt in progress output after upper thread sensor detection	When the machine is on halt state with thread breakage, DTS output is turned on. When the machine restarts, DTS output is turned off.
--1	DO NOT USE	
DRT	Sewing machine rotation in progress output	While the machine is rotating, DRT output is turned on. (includes rotation in winding mode)
DN	Down position output	When the needle is down position, DN output is turned on.
CB	Buzzer output	While the buzzer in the operation panel is on, CB output is turned on. (including count up/countdown message display)
UP	Up position output	When the needle is up position, UP output is turned on.
PWR	Power on output	While power supply is on, PWR output signal is turned on.
PUS	Presser hoot home position output	While presser foot is on the home position, PUS output is turned on.
MSG	Message display output	When the message is displayed on the operation panel, ERR output is turned on.
OP1	Option output 1	
OP2	Option output 2	
SSW	Halt signal being on output	SSW is turned on during power supply is on. However, input signal STP turns on SSW is turned on with blinking.
O_5	DO NOT USE	

[15] Program mode

MEMO For each function explanation, please refer to [16] Program mode list

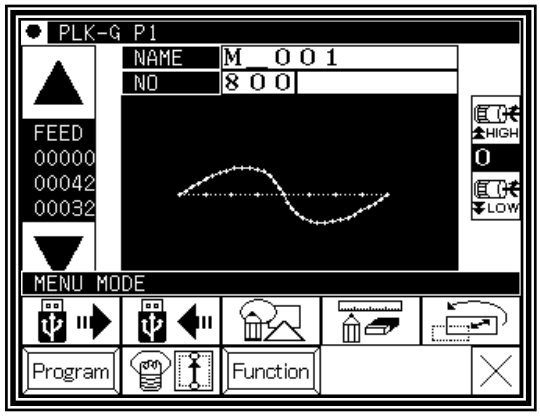
1.Setting methods

■Entering the program mode

►Press 

and 

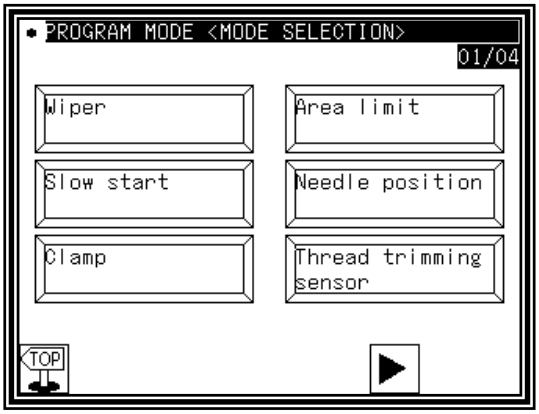
on the Standard panel, and open the Program Mode panel.

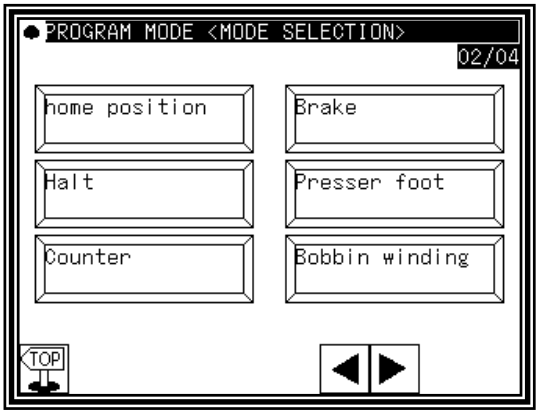


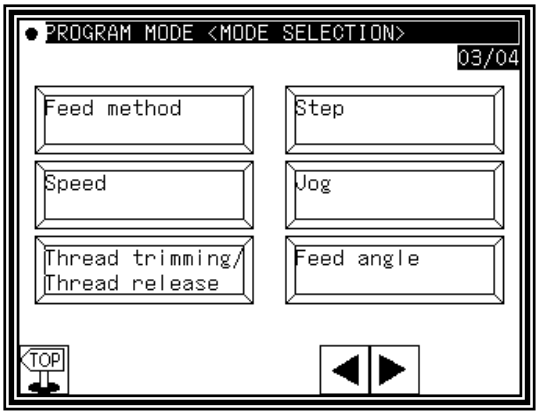
■Program Mode panel

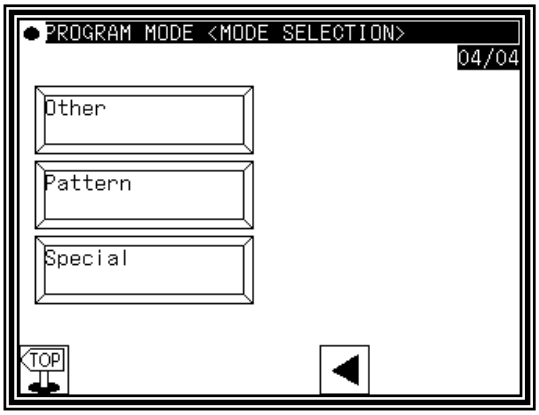
This panel is used to select the program mode. There are several mode selection pages.

Press the  keys to change the page.





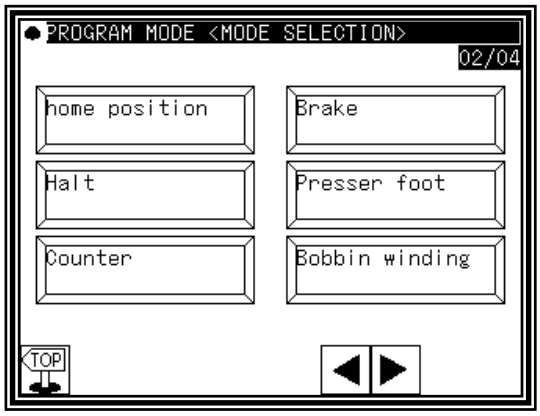




■Example of setting

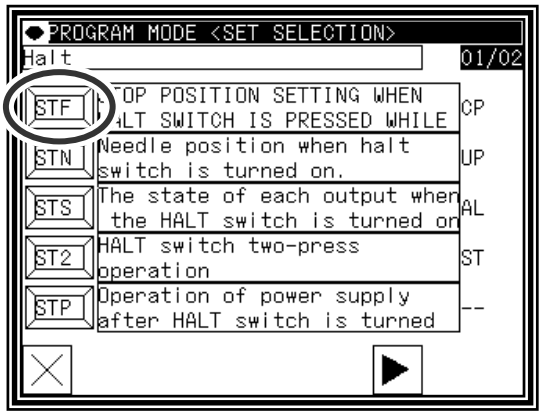
(1)Selection of mode

►When the key for the mode to be set is pressed, the "Setting Selection panel " will open.
(In this example, "HALT" is pressed.)



(2)Selection of function

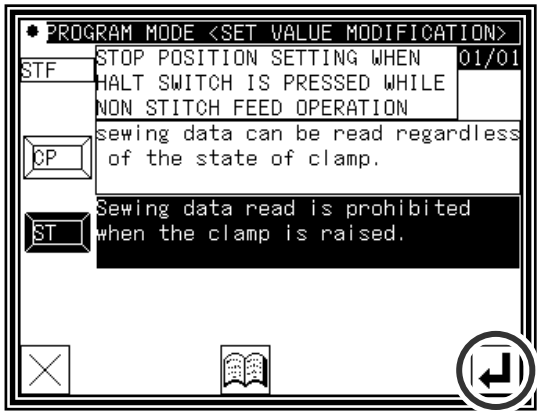
►When the key for the function to be set is pressed, the "Setting Value Change panel " will open.
(In this example, "STF" is pressed.)



(3)Chaning setting value

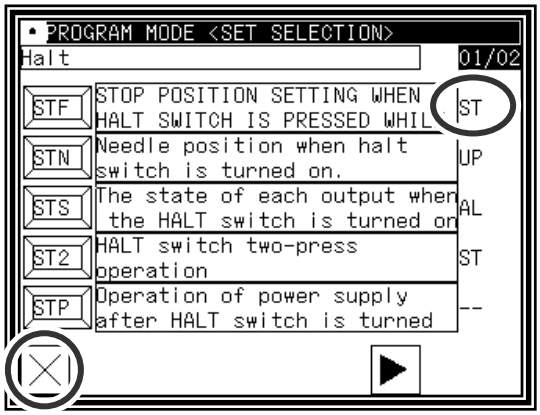
►After changing setting value （selecting status key）（Hear, pressing [ST]）, press  to confirm setting.

MEMO To show all explanation of these status key, press  .

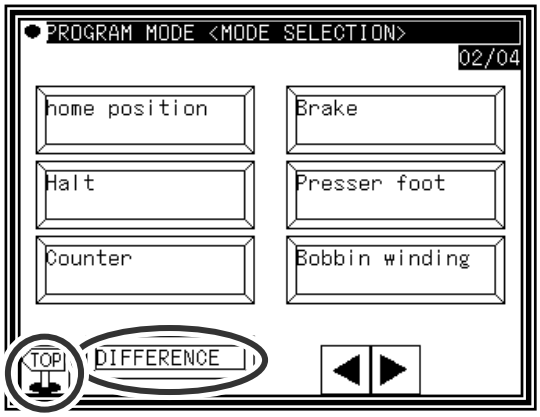


(4)Checking function setting change

►Return [Setting selection] window.
After check setting value press  .



(5)Return to the mode selection screen

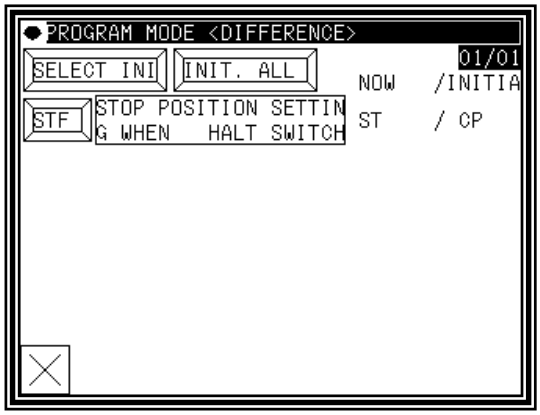


► If some setting has been changed, difference list will be appeared in the mode selection screen

►To return to the standard screen, press TOP.

►To show different list, press [Difference] key.

(6)Checking different list



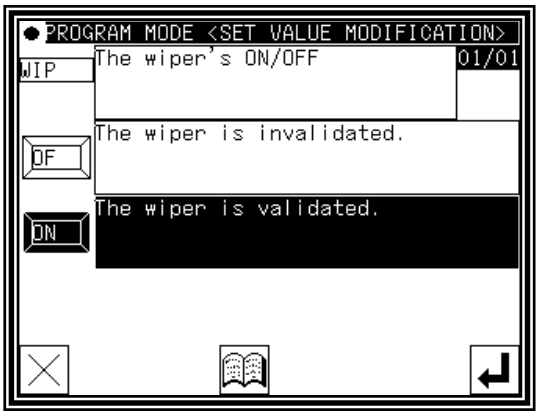
►Press [Difference] key.

►The list where the setting has been changed are displayed. Each list keys are selectable and setting value can be changed again from this screen.

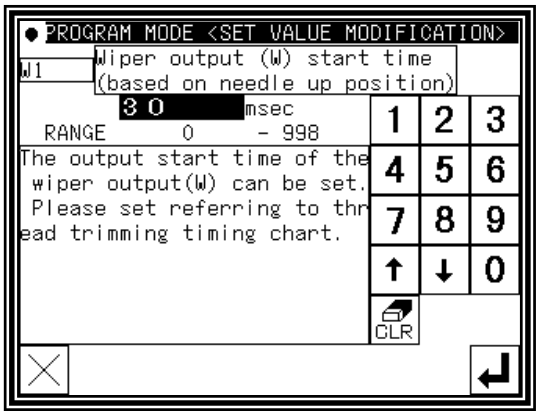
►To initiallize all settings, press [INIT. ALL]. To initialize only selected items, press the frame of the explanation (frame will be displayed in reverse), then press [SELECT INIT].

MEMO Type of setting

There are few types of setting. One is status selection type like described above. Other is ON/OFF setting type , or numeral setting type. In the numeral setting type, numeric button will be appeared.



Example of ON／OFF setting type



Example of numeral setting type

2."System, setting file write" and "Setting file read"

It is possible to restore easily by storing setting changed program mode on the USB memory to return later.

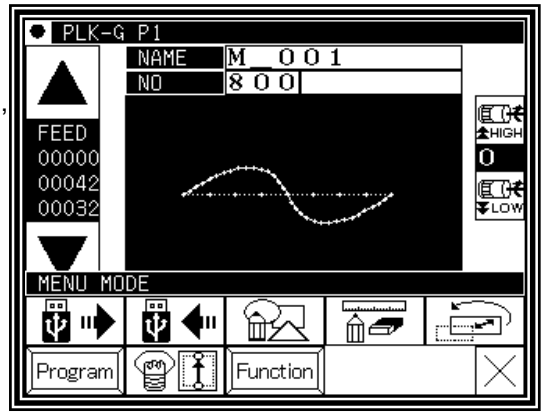
■System, setting file write

(1)Entering the function mode

►Press 

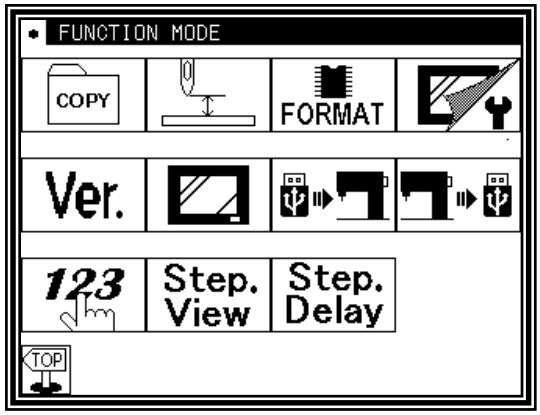
and 

on the Standard screen, and open the Function Mode screen.



(2)Function mode screen

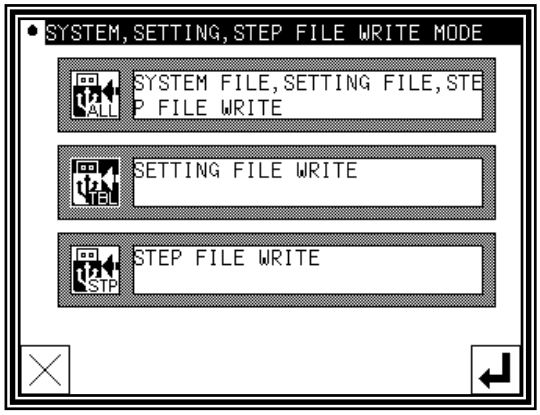
►Press  .



(3)Writing setting file

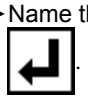
►Press 

, then press  .

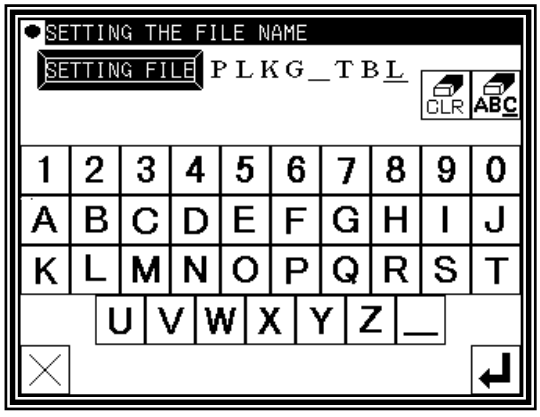


(4)Naming setting file

►Insert the USB memory to the connector.

►Name the setting file by character buttons, then press  .

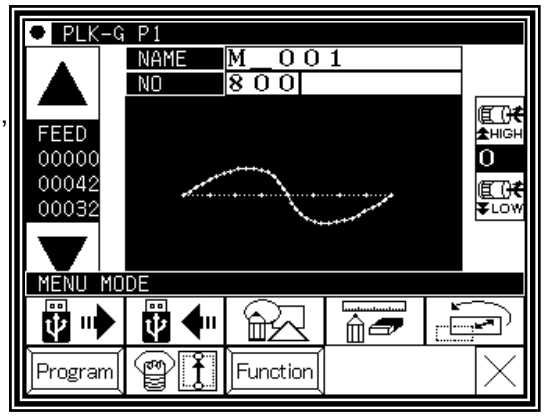
►Setting file will be preserved into the [¥USER_system] folder in the USB memory.
Please note if the same name is exist, it is overwritten.



■Setting file read

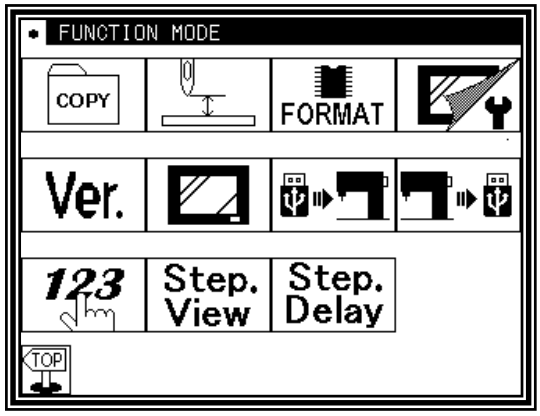
(1)Entering the function mode

►Press [MENU] and [Function] on the Standard screen, and open the Function Mode screen.



(2)Function mode screen

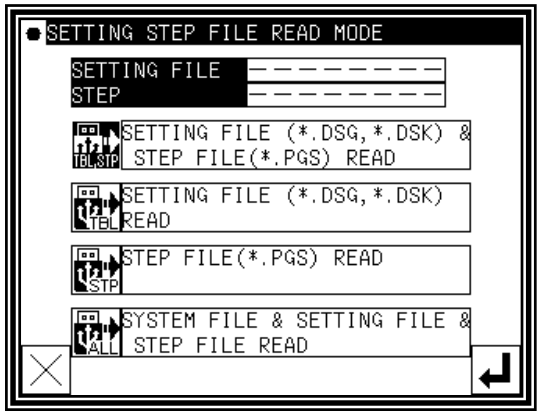
►Press [ ].



(3)Reading setting file

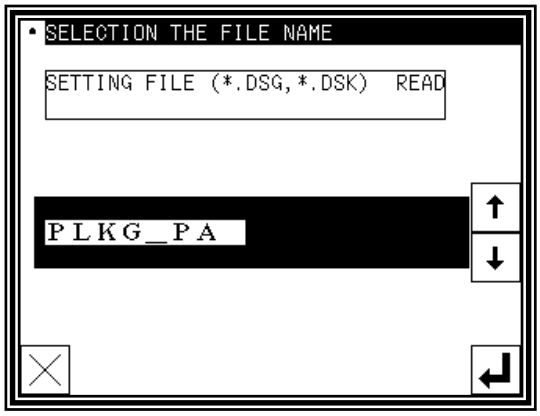
►Insert USB memory where the sewing data is preserved to the connector.

►Press [TBL], then press [ ].



(4)Selecting setting file

►Select setting file by using up and down arrow, then press [ ].



MEMO Reading is proceeded by overwrite mode. Original setting data will be erased.

►When message like as [Please turn the power supply off] is displayed, follow the instruction.

[16] Program mode list

1.Wiper

Function	Unit	Setting range	Specification
WIP Wiper ON/OFF	Valid/invalid of the wiper output is switched.		
	-	OF	The wiper is invalidated.
		ON	The wiper is validated.
W1 Wiper output (W) start time (based on needle up position)	ms	0 ~ 998	The output start time of the wiper output(W) can be set. Please set referring to thread trimming timing chart.
W2 Wiper output (W) start time	ms	0 ~ 998	The output time of the wiper output(W) can be set. Please set referring to thread trimming timing chart.

2.Slow start

Function	Unit	Setting range	Specification
SL Slow start ON/OFF	Valid/invalid of the slow start is set.		
	-	OF	The slow start is invalidated.
		ON	The slow start is validated. Slow start will be applied to the start of all stitching (when power is turned ON, during HALT, and during jogging operation, etc.).
SLN No. of slow start stitches	stitches	0 ~ 5	Number of stitches of the first sewing speed (slow start) can be set.
S Slow start speed	rpm	Maximum speed range	The speed (slow start) of the first sewing can be set.
SLS Super slow start ON/OFF	Sets effective/ineffective for super-slow start		
	-	OF	Super slow start is set ineffective
		ON	Super slow start is set effective. When (SL) setting is set effective, the first stitch will start by super-slow speed.
SLP Super slow start speed	rpm	25 ~ 100	Sets Super slow start speed.

3.Clamp

Function	Unit	Setting range	Specification
RPT Repeat sewing ON/OFF	The repeat sewing operation is set.		
	-	OF	The normal stitching operation is entered. (Repeat sewing RP1-RP8 is invalidated.)
		ON	The repeat sewing RP1-RP8 is validated.
RP1 Repeat sewing 1	RP1: The repeat sewing operation is set.		
	-	OF	The normal stitching operation is entered. (Repeat sewing RP1 is invalidated.)
		ON	The repeat sewing RP1 is validated.(when the (RPT.) setting [ON] only)
RP2 Repeat sewing 2	RP2: The repeat sewing operation is set.		
	-	OF	The normal stitching operation is entered. (Repeat sewing RP2 is invalidated.)
		ON	The repeat sewing RP2 is validated.(when the (RPT.) setting [ON] only)
RP3 Repeat sewing 3	RP3: The repeat sewing operation is set.		
	-	OF	The normal stitching operation is entered. (Repeat sewing RP3 is invalidated.)
		ON	The repeat sewing RP3 is validated.(when the (RPT.) setting [ON] only)
RP4 Repeat sewing 4	RP4: The repeat sewing operation is set.		
	-	OF	The normal stitching operation is entered. (Repeat sewing RP4 is invalidated.)
		ON	The repeat sewing RP4 is validated.(when the (RPT.) setting [ON] only)
RP5 Repeat sewing 5	RP5: The repeat sewing operation is set.		
	-	OF	The normal stitching operation is entered. (Repeat sewing RP5 is invalidated.)
		ON	The repeat sewing RP5 is validated.(when the (RPT.) setting [ON] only)

<Continuation of [Clamp]>

Function	Unit	Setting range	Specification
RP6 Repeat sewing 6	RP6: The repeat sewing operation is set.		
	-	OF	The normal stitching operation is entered. (Repeat sewing RP6 is invalidated.)
		ON	The repeat sewing RP6 is validated.(when the (RPT.) setting [ON] only)
RP7 Repeat sewing 7	RP7: The repeat sewing operation is set.		
	-	OF	The normal stitching operation is entered. (Repeat sewing RP7 is invalidated.)
		ON	The repeat sewing RP7 is validated.(when the (RPT.) setting [ON] only)
RP8 Repeat sewing 8	RP8: The repeat sewing operation is set.		
	-	OF	The normal stitching operation is entered. (Repeat sewing RP8 is invalidated.)
		ON	The repeat sewing RP8 is validated.(when the (RPT.) setting [ON] only)
WHY Priority of clamp mode	Sets the priority of clamp.		
	-	OF	The movement setting of clamp 1 - clamp 8 can be randomly set.
		ON	The movement of clamp 1 - clamp 8 will be in the order of clamp 1 - clamp 8.
FSR All cancel at over-step movement	The method of the clamp up for the step clamp movement is set.		
	-	OF	After all of the clamps have been lowered [ON], the clamps are not raised [OFF] regardless the clamp step input signal is turned [ON].
		ON	After all of the step clamps have been lowered [ON], when the clamp step input signal is turned [ON] once, all of the clamps are raised[OFF].
1PD Valid or invalid 1 pedal action	Sets the pedal specification (1 pedal/2 pedals).		
	-	OF	The normal operation (two pedal) is effective.
		ON	1 pedal action is valid. when start switch is pressed, clamp is lowered and sewing is started automatically.
1T Start delay setting for 1 pedal action	ms	0 ~ 5000	Waiting time between clamp down and start SEWING IS SET
1A Clamp 1 of output on delay setting	ms	0 ~ 10000	Sets the time (TA1) from the clamp input 1 ON to clamp output 1 ON.
2A Clamp 2 of output on delay setting	ms	0 ~ 10000	Sets the time (TA2) from the clamp input 2 ON to clamp output 2 ON.
3A Clamp 3 of output on delay setting	ms	0 ~ 10000	Sets the time (TA3) from the clamp input 3 ON to clamp output 3 ON.
4A Clamp 4 of output on delay setting	ms	0 ~ 10000	Sets the time (TA4) from the clamp input 4 ON to clamp output 4 ON.
5A Clamp 5 of output on delay setting	ms	0 ~ 10000	Sets the time (TA5) from the clamp input 5 ON to clamp output 5 ON.
6A Clamp 6 of output on delay setting	ms	0 ~ 10000	Sets the time (TA6) from the clamp input 6 ON to clamp output 6 ON.
7A Clamp 7 of output on delay setting	ms	0 ~ 10000	Sets the time (TA7) from the clamp input 7 ON to clamp output 7 ON.
8A Clamp 8 of output on delay setting	ms	0 ~ 10000	Sets the time (TA8) from the clamp input 8 ON to clamp output 8 ON.
1B Clamp 1 of output off delay setting	ms	0 ~ 10000	Sets the time (TB1) from the clamp input 1 ON to clamp output 1 ON.
2B Clamp 2 of output off delay setting	ms	0 ~ 10000	Sets the time (TB2) from the clamp input 2 ON to clamp output 2 ON.

<Continuation of [Clamp]>

Function	Unit	Setting range	Specification
3B Clamp 3 of output off delay setting	ms	0 ~ 10000	Sets the time (TB3) from the clamp input 3 ON to clamp output 3 ON.
4B Clamp 4 of output off delay setting	ms	0 ~ 10000	Sets the time (TB4) from the clamp input 4 ON to clamp output 4 ON.
5B Clamp 5 of output off delay setting	ms	0 ~ 10000	Sets the time (TB5) from the clamp input 5 ON to clamp output 5 ON.
6B Clamp 6 of output off delay setting	ms	0 ~ 10000	Sets the time (TB6) from the clamp input 6 ON to clamp output 6 ON.
7B Clamp 7 of output off delay setting	ms	0 ~ 10000	Sets the time (TB7) from the clamp input 7 ON to clamp output 7 ON.
8B Clamp 8 of output off delay setting	ms	0 ~ 10000	Sets the time (TB8) from the clamp input 8 ON to clamp output 8 ON.
OFB The divisions of clamp blocks	8 clamps can be bundled to blocks.		
	-	NO	Use 8 clamp types in 1 block (OF1-OF8). The following functions become valid: [Setting of valid clamp(FN.)] and [Setting of clamp link (CF.)].
		2	Use 8 clamps in 2 blocks (OF1-OF4)(OF5-OF8). The following functions become valid: (F21N.) (F22N.) (CF1.) (CF2.).
		4	Use 8 clamp types in 4 blocks (OF1,OF2), (OF3,OF4), (OF5,OF6), (OF7,OF8). The following functions become valid: [No. of valid clamp blocks setting(F4BN.)] and [No. of block steps used setting(F4SN.)]
FN Setting for valid number of clamp	-	1 ~ 8	[Divisions of clamp (OFB.)] is validated when set to [NO]. Number of outputs (clamp) from [PR1(OF1)] to [PR8(OF8)] can be set. Sewing is possible when all selected number of outputs (clamp) are [ON].
CF Clamp synchronize ON/OFF setting	The [The divisions of clamp (OFB.)] is validated when set to [NO].		
	-	OF	The clamps are not synchronized.
		ON	The clamps are synchronized. (For details, see the timing chart.)
F21N Number of valid clamp with clamp block setting (OF1-OF4)	-	1 ~ 4	Setting is effective when OFB=[2]. 1:Use clamp output OF1. 2:Use clamp output OF1+OF2. 3:Use clamp output OF1+OF2+OF3. 4:Use clamp output OF1+OF2+OF3+OF4.
F22N Number of valid clamp with clamp block setting (OF5-OF8)	-	1 ~ 4	Setting is effective when OFB=[2]. 1:Use clamp output OF5. 2:Use clamp output OF5+OF6. 3:Use clamp output OF5+OF6+OF7. 4:Use clamp output OF5+OF6+OF7+OF8.
CF1 Clamp synchronize setting with clamp block setting(OF1-OF4)	The [The divisions of clamp(OFB.)] is validated when set to [2]. (For details, see the timing chart.)		
	-	OF	Clamps (OF1-OF4) will not link.
		ON	Clamps (OF1-OF4) will link.
CF2 Clamp synchronize setting with clamp block setting(OF5-OF8)	The [The divisions of clamp(OFB.)] is validated when set to [2]. (For details, see the timing chart.)		
	-	OF	Clamps (OF5-OF8) will not link.
		ON	Clamps (OF5-OF8) will link.

<Continuation of [Clamp]>

Function	Unit	Setting range	Specification
F4BN Setting for number of valid clamp blocks	-	1 ~ 4	Setting is effective when OFB=[4]. Following blocks are used depends on the setting. 1:Block1, 2:Block1+2, 3:Block1+2+3, 4:Block1+2+3+4. (Block1=OF1+OF2, Block2=OF3+OF4, Block3=OF5+OF6, Block4=OF7+OF8)
F4SN Setting for number of block when block step is used	-	1 ~ 4	When set the OFB=[4], the clamp blocks of this value executes step movement. 1:Block1, 2:Block1+2, 3:Block1+2+3, 4:Block1+2+3+4 (Block1=OF1,OF2 Block2=OF3,OF4 Block3=OF5,OF6 Block4=OF7,OF8).
AF2 Selection of pneumatic pressure two-step clamp	The pneumatic presser two-step clamp is set.		
	-	OF	Use the normal clamp.
		ON	Use the pneumatic pressure two-step clamp (Option). In this case, all of the specifications of the other clamps are invalidated.
OPR Prohibition of sewing data reading when clamp is raised	Reading the sewing data is prohibited by the state of the clamp.		
	-	OF	sewing data can be read regardless of the state of clamp.
		ON	Sewing data read is prohibited when the clamp is raised.
OST Prohibition of operation (sewing, JOG) when clamp is raised	Prohibition of operation (sewing, JOG) when clamp is raised		
	-	OF	Operation (sewing, JOG) is prohibited when clamp is raised.
		ON	Starts even if the clamp is not down position.

4.Area limit

Function	Unit	Setting range	Specification
ALC Area limit cancel ON/OFF	Change the sewing area limit effect.		
	-	OF	The stitching area limit is validated. (XL,XR,YU,YD setting is reflected)
		ON	The stitching area limit is invalidated. (The stitching area limit is canceled.) Please use this setting with attention.
XL [X axis left side] area limit setting	mm	0 ~ 65535	The numerical value of the X motor left side area limit can be setting in the software. The default setting for the X motor left side area limit differs according to the model.
XR [X axis right side] area limit setting	mm	0 ~ 65535	The numerical value of the X motor right side area limit can be setting in the software. The default setting for the X motor right side area limit differs according to the model.
YU [Y axis rear side] area limit setting	mm	0 ~ 65535	The numerical value of the Y motor rear side area limit can be setting in the software. The default setting for the Y motor rear side area limit differs according to the model.
YD [Y axis front side] area limit setting	mm	0 ~ 65535	The numerical value of the Y motor front side area limit can be setting in the software. The default setting for the Y motor front side area limit differs according to the model.

5.Needle position

Function	Unit	Setting range	Specification
RU Reverse needle lifting operation after thread trimming function	Sets reverse needle lifting operation after thread trimming function.		
	-	OF	The reverse needle lifting after thread trimming is invalidated.
		ON	The reverse needle lifting operation after thread trimming is validated. Reverse angle is set by [S8] setting.
R8 Reverse run angle setting	deg.	0 ~ 360	The reverse run angle from the UP position after thread trimming can be set when the reverse run needle lifting [RU] is ON.
U8 Needle UP position coasting angle	deg.	0 ~ 360	The coasting angle at the needle UP position can be set. Caution. The needle bar is collide to the presser foot when the SET VALUE is high.
D8 Needle down position stop angle	deg.	0 ~ 360	The coasting angle at the needle down position can be set.

6.Thread trimming sensor

Function	Unit	Setting range	Specification
S1 Needle thread breaking sensor ON/OFF	Sets Valid/invalid of the needle thread breaking sensor.		
	-	OF	The needle thread trimming sensor is ineffective
		ON	The needle thread trimming sensor is effective
S2 The number of ignore stitches at the beginning of sewing.	stitches	0	The number of ignore stitches at the beginning of sewing is set.
S3 Invalid stitches of the stitch in progress sensor	stitches	0	Sets the number of valid stitches which is detected by thread break sensor
B Rotation speed to disregard thread breaking sensor	rpm	0	Rotation speed to disregard thread breaking sensor can be set. When the machine rotate below this setting, thread breaking sensor becomes invalid.
TST Sets ON/OFF of thread trimming at needle thread breaking detection.	Valid/invalid of the thread trimming is switched, when the needle thread trimming sensor is detected.		
	-	OF	The thread trimming when the needle thread trimming sensor detection is invalidated.
		ON	The thread trimming when the needle thread trimming sensor detection is validated.

7.Home position

Function	Unit	Setting range	Specification
HPM Home return method after HALT	Home return method after HALT position is set.		
	-	--	Home return is executed when the home reset key is turned ON.
		JS	When the home reset key is turned ON at the HALT position, the machine will automatically be moved like as JOG [-] key operation.
		JE	When the home reset key is turned ON at the HALT position, the machine will automatically be moved like as JOG [+] key operation.
		JC	When the home reset key is turned ON at the HALT position, home returning will automatically be executed. *If the position is at the [center] or [in the first half], the machine return to home like as [JS].. *If the position is [in the latter half], the machine return to home like as [JE].
HPC Selection of home returning operation after power on	Sets valid/invalid of the home returning operation after power on.		
	-	OF	The home returning operation is executed automatically when the power is turned on.
		ON	Automatic home returning operation is prohibited at power supply on.
HPF Prohibition of automatic home returning when clamp is raised	Sets prohibition of home returning when the clamp is raised.		
	-	OF	Home return is executed regardless of state of the clamp.
		ON	Home returning is prohibited when the clamp is raised.
HPK Home return key setting	The home returning key operation is selected.		
	-	--	The home return operation is executed when the home reset key is turned ON once.
		2	The home returning operation is executed when the home reset key is turned ON twice in succession. If the home reset key is turned ON only once, the home returning operation will not be executed.
		2L	The power of the stepping motor is turned OFF (the XY table can be moved by hands) when the home reset key is turned ON once, and when turned ON the second time, the home returning operation is executed.
		NO	The home returning operation by the home reset key is prohibited.
2HS Setting for stop method at Second home position	Action at a time when the machine reads second home position is selected.		
	-	ST	When the machine reads second home position, machine is stopped.
		SW	When the machine reads second home position, machine is stopped and clamp goes up.
		NS	The sewing machine does not stop on the second home position..

<Continuation of [Home position]>

Function	Unit	Setting range	Specification
SHX Do not use	Do not use		
	-	OF	
		ON	
SHY Do not use	Do not use		
	-	OF	
		ON	
HPS Setting for the home returning operation when the clamp rises at power on.	Sets the home returning operation when the clamp rises at power on.		
	-	OF	Home return is executed regardless of clamp state.
		ON	Home return operation is prohibited when the clamp is up.
NNU Home positioning prohibition when needle is not the UP position	Home return prohibition when needle is not the UP position		
	-	OF	When needle is deviated from the up position, the it is automatically moved to up position and home positioning is executed,
		ON	Home return is disabled when needle is not the UP position.
SHP Home returning method since the second time returning	Sets home returning method since the second time returning		
	-	OF	Does not use home returning sensor for XY stepping motor
		ON	Uses home returning sensor for XY stepping motor

8.Halt

Function	Unit	Setting range	Specification
STF Stop position setting when halt switch is pressed while non stitch feed operation	Stop position when halt switch is pressed while non stitch feed operation can be set		
	-	CP	When the HALT switch is turned ON, non-stitching feed will be executed until the breakpoint (the position where non-stitching feed direction changes).
		ST	When the HALT switch is turned ON, the machine will stop at that position.
STN Needle position when halt switch is turned on.	Sets needle positioning when the halt switch is turned on.		
	-	DN	When the HALT switch is on, the needle will stop at the DOWN position.
		UP	When the HALT switch is on, the needle will stop at the UP position.
STS The state of each output when the HALT switch is turned on	Selects the state of each output when the HALT switch is turned on.		
	-	AL	All outputs will be held (ON is maintained). (exclude wiper, trimmer, thread release)
		FU	Keeps outputs condition for clamp relation.（output for general purpose, wiper, thread trimmer and tension release are not kept condition）
		OF	Clears outputs for clamp relation, general purpose, wiper, threadtrimmer and tension release.
ST2 HALT switch two-press operation (stop at down position)	The operation for when the HALT switch is pressed twice at the needle down position can be selected.		
	-	UT	When the HALT switch is turned on again, the needle will stop at the up position after thread trimming.
		UP	When the HALT switch is turned on again, the needle will stop at the up position without thread trimming. (when set (STN.)=[DN])
		ST	The needle will stay at the down position even if the HALT switch is turned ON again.
STP Operation of power supply after HALT switch is turned on and off.	Sets the operation after HALT switch is turned on.		
	-	--	Restarting is possible after the sewing machine is stopped by the foot switch.
		PD	same behavior as emergency stop switch. please turn off the power and restart again.
STD Clamp condition during halt state by the STOP code	Sets the clamp condition during halt state by the STOP code		
	-	FU	Clamp goes up after machine is stop
		FD	Keeps clamp condition after machine is stop
STL Prevention of two drops at the same point after HALT	After needle down position stop, restart operation can be selected.		
	-	OF	After needle down position stop, machine restarts from the stop position (needle goes down at the same position twice)
		ON	After needle down position stop, machine restarts from next stitch point (needle does not go down at the stop position)

9.Counter

Function	Unit	Setting range	Specification
CUP Sets function of UP counter	Sets function of UP counter		
	-	--	Up counter is not executed
		ED	Up counter increases every 1 sewing pattern is executed
		ST	Up counter increases every N stitches (N is set by [CNU] setting)
		CY	Do not use
CDN Sets function of DOWN counter	Sets function of DOWN counter		
	-	--	Down counter is not executed
		ED	Down counter increases every 1 sewing pattern is executed
		ST	Down counter increases every N stitches (N is set by [CNU] setting)
		CY	Do not use
CNU Setting number of stitches of each 1 count for UP counter	stitches	1 ~ 1000	Setting of the number of stitches when "ST" of the CUP setting is selected
CND Setting number of stitches of each 1 count for DOWN counter	stitches	1 ~ 1000	Setting of the number of stitches when "ST" of the CDN setting is selected
UCM Method of clearing (UP) counter setting value	Up counter clear method at the pattern data change is selected		
	-	--	The UP counter value and current value are both not changed.
		RE	When pattern data is changed, up counter SET VALUE is change to the number which is contained in the pattern data.
		IT	When pattern data is changed, up counter SET VALUE is not changed and up counter current value is set to 0.
		CL	When pattern data is changed, up counter SET VALUE and current value is set to 0.
DCM Setting number of stitches of each 1 count for UP counter	Down counter clear method at the pattern data change is selected		
	-	--	The DOWN counter value and current value are both not changed.
		RE	When pattern data is changed, down counter SET VALUE is change to the number which is contained in the pattern data.
		IT	When pattern data is changed, down counter SET VALUE is not changed and down counter current value is changed to SET VALUE.
		CL	When pattern data is changed, down counter SET VALUE and current value is set to 0.
PCM Valid/invalid for initialization of UP/DOWN counter value at power on.	Sets counter clear method at power supply on.		
	-	--	The counter is not initialized.
		IT	Initializes (The UP counter current value is set to 0, and the DN counter current value is set to counter setting.)
CN stitch number pre-check function	Selects stitch number check function at the beginning of sewing..		
	-	OF	The machine does not check next stitch number at the beginning of sewing.
		ON	The machine checks next stitch number at the beginning of sewing.
UCC Prohibition of UP counter current value correction	Sets prohibition of UP counter current value		
	-	OF	The current value of the UP counter can be modified.
		ON	The current value of the UP counter can not be modified.

<Continuation of [Counter]>

Function	Unit	Setting range	Specification
DCC Prohibition of DOWN counter current value correction	Sets prohibition of DOWN counter current value		
	-	OF	The current value of the DOWN counter can be modified.
		ON	The current value of the DOWN counter can not be modified.
USC Restart sewing ON/OFF after count up completion	Setting for restart sewing by UP counter completion		
	-	OF	Even when the count value of the UP counter reaches the set value, the next sewing machine operation can be continued.
		ON	When the count value of the UP counter reaches the set value, the next sewing machine operation will be prohibited. When the message is cleared, sewing operation can be continued.
DSC Restart sewing ON/OFF after count down completion	Setting for restart sewing by DOWN counter completion		
	-	OF	Even when the count value of the DOWN counter reaches the set value, the next sewing machine operation can be continued.
		ON	When the count value of the DOWN counter reaches the set value, the next sewing machine operation will be prohibited. When the message is cleared, sewing operation can be continued.
GU1 ON/OFF for grease refueling warning 1	Sets ON/OFF for grease refueling warning 1		
	-	OF	Invalidates grease refueling warning 1
		ON	Validates grease refueling warning 1
GL1 Setting for number of stitches for grease refueling error 1	100000 stitches	0 ~ 9999	Number of stitches for grease refueling error 1 can be set
GW1 Setting for number of stitches for grease refueling warning 1	100000 stitches	0 ~ 9999	Number of stitches for grease refueling warning 1 can be set Sets stitch numbers until grease refueling error occurred after grease refueling warning 1 is displayed.
GU2 Do not use	Do not use		
	-	OF	
		ON	
GL2 Do not use	100000 stitches	0 ~ 9999	Do not use
GW2 Do not use	100000 stitches	0 ~ 9999	Do not use
GU3 Do not use	Do not use		
	-	OF	
		ON	
GL3 Do not use	100000 stitches	0 ~ 9999	Do not use
GW3 Do not use	100000 stitches	0 ~ 9999	Do not use
GU4 Do not use	Do not use		
	-	OF	
		ON	
GL4 Do not use	100000 stitches	0 ~ 9999	Do not use
GW4 Do not use	100000 stitches	0 ~ 9999	Do not use

10.Brake

Function	Unit	Setting range	Specification
WBK Weak brakes setting	Sets effective/ineffective of the weakening brake.		
	-	OF	The weak brakes is set ineffective
		ON	The weak brakes is set effective
BKM Weak brake type setting	Sets type of weak brake during sewing machine is stopping.		
	-	E	Brakes that can be rotated by hand.
		H	Brakes that cannot be rotated by hand.
BKT Main axis brake time setting	ms	0 ~ 1000	Sets main axis brake time

11.Presser foot

Function	Unit	Setting range	Specification
PLP Setting for stroke of presser foot	×0.2 mm	0 ~ 150	Presser foot up & down standard value (only even number can be set)
ZU8 Start angle for presser foot going up (based on needle up position)	deg.	0 ~ 360	Sets start angle for the presser foot up. Angle is based on needle up position.
ZD8 Start angle for the presser foot down (based on needle up position)	deg.	0 ~ 360	Sets start angle for the presser foot down. Angle is based on needle up position.
ZTM Synchronization of presser foot data in the teaching mode	Sets synchronization of presser foot data in the teaching mode		
	-	OF	Does not Synchronize presser foot data in the teaching mode
		ON	Synchronizes presser foot data in the teaching mode

12.Bobbin winding

Function	Unit	Setting range	Specification
W Bobbin winding speed setting	rpm	LOW ~ HIGH	Sets the speed of the sewing machine during bobbin winding.
WSM Bobbin winding operation setting	Sets the operation of the winder		
	-	NO	While the operation signal SRT is turned [ON], the sewing machine rotates. When the signal is turned [OFF], the sewing machine stops.
		AL	When start signal SRT is turned ON, the sewing machine continues its operation. Furthermore, when the start signal SRT is ON, machine is stopped.
		T	When the operation signal SRT is turned [ON], the sewing machine continues to run within the time which is set in (WT.) function.
WT Bobbin winding operation time	s	0 ~ 500	The bobbin winding operation time (timer) can be set.

13.Feed method

Function	Unit	Setting range	Specification
WET Clamp weight selection	Sets the feeding method corresponding to the clamp weight. If the unusual clamp is adapted, please set the value corresponding to the clamp weight.		
	-	L	For standard delivery clamp
		M	Heavy weight setting [M]
		H	Heavy weight setting [H]
WEL Setting value when clamp [L] is selected	%	1 ~ 100	SET value is applied when CLAMP WEIGHT SELECTION (WET.)=[L]. It limits maximum sewing speed of each stitch length.
WEM Setting value when clamp [M] is selected	%	1 ~ 100	SET value is applied when CLAMP WEIGHT SELECTION (WET.)=[M]. It limits maximum sewing speed of each stitch length.

<Continuation of [Feed method]>

Function	Unit	Setting range	Specification
WEH Setting value when clamp [H] is selected	%	1 ~ 100	SET value is applied when CLAMP WEIGHT SELECTION (WET.)=[H]. It limits maximum sewing speed of each stitch length.
THI Cloth thickness selection	Table feed timing corresponding to the sewing material thickness can be selected. Set value according to the sewing material thickness. The number in the () indicates the approximate thickness.		
	-	L	Standard setting----------(0-3mm)
		M	Thick material setting [M]---(3-6mm)
		H	Thick material setting [H]---(6-8mm)
TL Setting value when cloth thickness [L] is selected	%	1 ~ 100	SET value is applied when material THICKNESS SELECTION(THI.)=[L]. It limits maximum sewing speed of each stitch length. The factory setting is for approx (0 to 3mm).
TM Setting value when cloth thickness [M] is selected	%	1 ~ 100	SET value is applied when material THICKNESS SELECTION(THI.)=[M]. It limits maximum sewing speed of each stitch length. The factory setting is for approx (3 to 6mm).
TH Setting value when cloth thickness [H] is selected	%	1 ~ 100	SET value is applied when material THICKNESS SELECTION(THI.)=[H]. It limits maximum sewing speed of each stitch length. The factory setting is for approx (6 to 8mm).
FED Feed setting	The table feeding method is selected.		
	-	ID	Table is stopped when needle point is under sewing material.
		S	Do not use
FEM Setting for non stitch feed	NON STITCH FEED TRACKS CAN BE SELECTED		
	-	K	Non stitch feed which traces the inputted tracks (slower than [S] setting)
		S	Non stitch feed is moved at high speed. table moves diagonally (45 degree) at first, then moves either x or y direction
FSL Non stitch feed speed setting for long distance	-	0 ~ 9	Non stitch feed speed for long distance can be set from [0 (slow)] to [9 (fast)].
FSS Non stitch feed speed setting for short distance	-	0 ~ 9	Non stitch feed speed for short distance can be set from [0 (slow)] to [9 (fast)].
TSL Teaching speed setting	-	0 ~ 9	Teaching speed can be set from [0 (slow)] to [9 (fast)].
TSS Teaching speed setting for short distance	-	0 ~ 9	Teaching speed for short distance can be set from [0 (slow)] to [9 (fast)].
STQ Power setting of XY stepping motor (gain)	-	1 ~ 20	Sets gain for XY stepping motor. [1(weak)] - [20(strong)]
FFS Setting of feedforward 100% for XY stepping motor	Setting feedforward of XY stepping motor control 100% or not		
	-	OF	Sets feedforward of XY stepping motor control not 100%
		ON	Sets feedforward of XY stepping motor control 100%

14.Speed

Function	Unit	Setting range	Specification
HIGH High speed	rpm	Maximum speed range	The speed of HIGH speed code can be set.
LOW Low speed	rpm	Minimum speed range	The speed of LOW speed code can be set.
MD1 Middle speed 1 [MD1]	rpm	Maximum speed range	Speed for MD1 code (medium speed 1) can be set.
MD2 Middle speed 2 [MD2]	rpm	Maximum speed range	Speed for MD2 code (medium speed 2) can be set.

15.Thread trimming/Thread release

Function	Unit	Setting range	Specification
TRM Thread trimming ON/OFF	Sets valid/invalid of the thread trimming.		
	-	OF	The thread trimming is invalidated.
		ON	The thread trimming is validated.
LTM Setting for thread trimming output (T) timing.	Thread trimming output (T) timing can be set. (Please refer to timing chart for details.)		
	-	T1	Thread trimming is begun at TRS setting (degree) from needle down position, and is ended at TRE setting (time) from needle up position.
		T2	Thread trimming is begun at TRS setting (degree) from needle down position, and is ended at TRE setting (degree).
		T3	Thread trimming is begun at TRS setting (degree) from needle down position, and is ended at TRE setting (time).
		T4	Thread trimming is begun at TRS setting (time) from needle down position, and is ended at TRE setting (time) from needle down position.
		T5	Thread tension release is begun at TRS setting (time) from needle up position, and is ended at TRE setting (time).
TRS Thread trimming output start time/angle	ms/deg.	0 ~ 998	The output start time of the thread trimming output(T) can be set. Refer to timing chart for details.
TRE Thread trimming output time/angle	ms/deg.	0 ~ 998	The output end time of the thread trimming output(T) can be set. Refer to timing chart for detail.
T Thread trimming speed	rpm	Minimum speed range	Thread trimming speed between needle down position and needle up position can be set. Refer to timing chart for details.
ETC Thread trimming ON/OFF at needle up key operation	Sets the ON/OFF the trimming by the needle up key at the halt state.		
	-	OF	Thread trimming is executed (effective when STN = DN)
		ON	Thread trimming is not executed (effective when STN = DN)
LSP Do not use	Do not use		
	-	OF	
		ON	
LLM Setting for thread tension release output (L) timing	Thread tension release output (L) timing can be set. (Please refer to timing chart for details.)		
	-	L1	Thread tension release is begun at LRS setting (degree) from needle down position, and is ended at LRE setting (time) from needle up position.
		L2	Thread tension release is begun at LRS setting (degree) from needle down position, and is ended at LRE setting (degree).
		L3	Thread tension release is begun at LRS setting (degree) from needle down position, and is ended at LRE setting (time).
		L4	Thread tension release is begun at LRS setting (time) from needle down position, and is ended at LRE setting (time) from needle down position.
		L5	Thread tension release is begun at LRS setting (time) from needle up position, and is ended at LRE setting (time).
LRS Thread release output start time/angle	ms/deg.	0 ~ 998	Start time/angle of thread release output can be set. Please refer timing chart for details.
LRE Thread release output time/angle	ms/deg.	0 ~ 998	End time/angle of thread release output can be set. Please refer timing chart for details.
LP Setting for tension release outputs time length at presser foot rise	s	0 ~ 10000	Outputs tension release signal when the presser foot goes up

16.Step

Function	Unit	Setting range	Specification
STO Step sequence ON/OFF	Sets ON/OFF step sequence		
	-	OF	Sets step sequence OFF
		ON	Sets step sequence ON
SUU Execution number of lines of one main loop in step sequence.	lines	1 ~ 10	Sets execution number of lines of one main loop in step sequence.
SP1 AND priority execution ON/OFF for step sequence	Sets AND priority execution ON/OFF for step sequence		
	-	OF	Operation (sewing, JOG) is prohibited when clamp is raised.
		ON	Starts even if the clamp is not down position.

17.Jog

Function	Unit	Setting range	Specification
JGM JOG key function setting	Sets function of the JOG [+/-] keys.		
	-	--	The XY table moves according to the pattern data while the JOG key is ON, and stops when turned OFF.
		AL	The JOG [+] key is turned ON : The XY table moves, automatically proceeds to the end point. The JOG [-] key is turned ON : The XY table moves, automatically returns to the start point. During movement, the operation will stop if either of the JOG [+/-] keys is turned ON again.
		HA	The JOG [+] or [-] key is turned ON until XY table reached at high speed : The XY table will automatically move to the end point or start point. If the key is turned OFF before the high speed is reached, the operation will stop immediately. During movement, the operation will stop if either of the JOG [+/-] keys is turned ON again.
UJC Valid setting of JOG key excluding needle UP position	The operation (valid/invalid) of the JOG key excluding a needle up position can be selected.		
	-	OF	The JOG operation is possible only when the needle is at UP stop position.
		ON	The JOG operation is possible regardless needle position. Be aware that the JOG operation becomes valid even when the needle is in the fabric.
JGS Action of stop code between continuous JOG.	Between continuous JOG, table keeps moving even the needle up stop code (USTP) or the needle down stop code (DSTP) is appeared.		
	-	OF	Between continuous JOG, table keeps moving even the needle up stop code (USTP) or the needle down stop code (DSTP) is appeared.
		ON	Between continuous JOG moving, when the needle up stop code (USTP) or the needle down stop code (DSTP) is appeared, table is stopped.
SJC Do not use	Do not use		
	-	OF	
		ON	
JSL JOG speed setting for long distance	-	0 ~ 9	JOG speed for long distance can be set from [0 (slow)] to [9 (fast)].
JSS JOG speed setting for short distance	-	0 ~ 9	JOG speed for short distance can be set from [0 (slow)] to [9 (fast)].

18.Feed angle

Function	Unit	Setting range	Specification
S8 Setting for feed start angle of clamp	deg.	0 ~ E8 setting value	Sets the timing to start movement of the clamp during sewing machine rotation. The setting indicates the angle from the down position. This setting is validated when the FED setting is ID.
E8 Setting for feed end angle of clamp	deg.	S8 setting value ~ 356	Sets the timing to end movement of the clamp during sewing machine rotation. The setting indicates the angle from the down position. This setting is validated when the FED setting is ID, IT.

19.Other

Function	Unit	Setting range	Specification
SCI Valid/invalid serial communication	Valid/invalid serial communication		
	-	OF	Invalidates serial communication
		ON	Validates serial communication
BPS Setting for baud rate for serial communication	Sets baud rate for serial communication		
	-	96	Sets baud rate 9600bps
		384	Sets baud rate 38.4kbps
		576	Sets baud rate 57.6kbps
		1152	Sets baud rate 115.2kbps
		OF	Set baud rate to the value which is set by BST
BST Arbitrary setting for serial communication	×100 bps	96 ~ 2560	Sets arbitrary board rate of serial communication
MIL DO NOT USE	DO NOT USE		
	-	OF	
		ON	
BOM Setting for the control box temperature warning	Sets valid/invalid for the warning of the control box temperature.		
	-	OF	Warning is disabled.
		ON	Warning is enabled.

20.Pattern

Function	Unit	Setting range	Specification
APC Pattern select function by external signal	The sewing data selection method is set.		
	-	OF	Selects sewing pattern data number by using the operation panel.
		ON	Select sewing pattern number by external signal. In this case input customize setting is ignored. Setting range is from 800 to 863.(Input signal function P01,P02,P04,P08,P16,P32 are used)
POF Pattern offset selection by external signal	Offset number for pattern data number selection by external signal.		
	-	8	Sewing data number becomes specified number plus 800.
		6	DO NOT USE
		4	DO NOT USE
PTC Change in setting table number from the sewing data	Selects setting table change action at the pattern data change when pattern data contains setting table number information.		
	-	OF	The change in the setting table number from the sewing data is unavailable.
		ON	The change in the setting table number from the sewing data is available.
SPC Sewing pattern data selection by serial communication	Sets effective/ineffective sewing pattern data selection by serial communication		
	-	OF	Sets ineffective sewing pattern data selection by serial communication
		ON	Sets effective sewing pattern data selection by serial communication
APT Setting of pattern selection timing by using of external signal	Chooses sewing pattern number switching timing by external signal.		
	-	OF	The pattern number is changed at the sewing end, at the beginning of sewing or at the beginning of +Jog.
		ON	When a new pattern number is input, it is switched immediately. (However, only at home position)
HPW Setting for presser foot correction amount in the sewing pattern	Sets ON/OFF for presser foot correction amount in the sewing pattern		
	-	OF	Sets ineffective presser foot correction which written in the sewing pattern data
		ON	Sets effective presser foot correction which written in the sewing pattern data
M2H Second home positioning operation with pattern data which includes second home position	Selects second home positioning operation with pattern data which includes second home position.		
	-	OF	When pattern data which includes second home position is read, machine does not move to second home position automatically.
		ON	When pattern data which includes second home position is read, machine moves to second home position automatically.

[17] Error display

1. [E-***] Error code (Restoration impossible)

*. When the error message is displayed, confirm the contents and investigate according to the following table.

*. The machine can be restored to the normal mode by turning off the power once and turning on again.

CODE	ERROR NAME	PROBABLE CAUSE	INSPECTION
E-001	Main Motor Overcurrent Error	-Wiring to the main motor is short-circuited. -The load torque of the sewing machine is too large.	-Check the wiring for the main motor. -Check the sewing machine.
E-002	Excess Voltage Error	-The power-supply voltage is too high. -The inertia of the sewing machine is too large.	-Check the power –supply voltage. -Please consult the sewing machine shop of the order.
E-003	Main Motor Encoder Error	-The main motor encoder connector has not been firmly inserted. -The signal from the main motor encoder has been disconnected. -Sewing machine is locked. -Main motor is locked -Main motor connector has been firmly inserted.	-Check the insertion of the connector. -Check the encoder A/B/ phase signal by using IN/OUT setting mode. -Check the sewing machine. -Check the motor.
E-005	Board Temperature Error	-The load torque of the sewing machine is to large. -The output such as solenoids is an overload.	-Check the sewing machine. -Check the output current of 24V used with the solenoid etc. Attention) Please turn on the power supply again after falling the temperature in the board.
E-006	X/Y axis initial excitation error	-The clamp position is mechanical end or the clamp is interfered with obstacle.	-Check the clamp position. Please turn the switch on again.
E-008	Detector Error	-The main motor encoder connector has not been firmly inserted. -The signal from the UP/DOWN sensor has been disconnected.	-Check the insertion of the connector. -Check the detector signal by using IN/OUT settingmode.
E-009	Solenoid Overcurrent Error	-The solenoid connecting wires is short-circuited. -The cable of solenoid is short-circuited.	-Check the wiring for the solenoid. -Exchange the solnoid.
E-014	Solenoid 24V Power Supply Error	-The solenoid 24V supply connector has not been firmly inserted.	-Check the insertion of the connector.
E-015	Solenoid Valve Overcurrent Error	-The solenoid valve connecting wires is short-circuited. -The coil of the solenoid valve isshort-circuited. -The total of the output current exceeds from the ratings value.	-Check the wiring for the solenoid valve. -Exchange the solenoid valve. -Decrease the number of the solenoid valves which is turned on at the same time.
E-017	Solenoid Communication 1 Error	-The solenoid communication connector has not been firmly inserted. -The solenoid communications cable has been disconnected.	-Check the wiring for the solenoid valve. -Check the wiring for the cable.
E-018	Solenoid Communication 2 Error	-The solenoid communication connector has not been firmly inserted. -The solenoid communications cable has been disconnected.	-Check the wiring for the solenoid valve. -Check the wiring for the cable.
E-019	Gpal Excess Voltage Error	-The backlight of GPAL is damaged.	-Exchange GPAL.
E-020	Gpal communication Error	-The GPAL communication connector has not been firmly inserted -The GPAL communications cable has been disconnected.	-Check the insertion of the connector. -Check the wiring for the cable.
E-022	Main Axis Reverse Rotation Error	-The connector of the main motor encoder has not been firmly inserted. -The signal from the main motor encoder has been disconnected.	-Check the insertion of the connector. -Check the encoder Z phase signal by using IN/OUT setting mode.
E-025	Lower Air Pressure Error	-Air pressure decrease detection input signal (ARS) was detected.	-Check the air pressure.
E-027	System Error	-The system damaged by some causes.	-Re-install the system.

CODE	ERROR NAME	PROBABLE CAUSE	INSPECTION
E-029	X-Motor A Phase Defect Error	-The connector of X-axis motor cable has not been firmly inserted. -X-axis motor cable has been disconnected.	-Check insertion of the connector. -Check the wiring of the cable.
E-030	X-Motor B Phase Defect Error	-The connector of X-axis motor cable has not been firmly inserted. -X-axis motor cable has been disconnected.	-Check insertion of the connector. -Check the wiring of the cable.
E-031	Y-Motor A Phase Defect Error	-The connector of Y-axis motor cable has not been firmly inserted. -Y-axis motor cable has been disconnected.	-Check insertion of the connector. -Check the wiring of the cable.
E-032	Y-Motor B Phase Defect Error	-The connector of Y-axis motor cable has not been firmly inserted. -Y-axis motor cable has been disconnected.	-Check insertion of the connector. -Check the wiring of the cable.
E-033	System file error for installation	-The system files in USB memory are insufficient or broken.	-Check the system files in USB memory
E-034	System program error	-The system damaged by some causes.	-Re-install the system.
E-037	Main Axis Overload	-The load torque of the sewing machine is too large.	-Check the sewing machine.
E-038	Main Axis Uvw Signal Disconnecting Error	-The connector of the main motor has not been firmly inserted. -The signal from the main motor encoder has been disconnected.	-Check insertion of the connector. -Check the UVW phase signal by using IN/OUT setting mode.
E-039	Needle Up Position Signal Disconnecting Error	-The connector of the main motor has not been firmly inserted. -The signal from the main motor encoder has been disconnected.	-Check insertion of the connector. -Check the UP signal by using IN/OUT setting mode.
E-040	Needle Down Position Signal Disconnecting Error	-The connector of the main motor has not been firmly inserted. -The signal from the main motor encoder has been disconnected.	-Check insertion of the connector. -Check the DN signal by using IN/OUT setting mode.
E-041	Main Axis A/B Phase Signal Disconnecting Error	-The connector of the main motor has not been firmly inserted. -The signal from the main motor encoder has been disconnected.	-Check insertion of the connector. -Check the A/B phase signal by using IN/OUT setting mode.
E-042	Main Axis Z Phase Signal Disconnecting Error	-The connector of the main motor has not been firmly inserted. -The signal from the main motor encoder has been disconnected.	-Check insertion of the connector. -Check the Z phase signal by using IN/OUT setting mode.
E-043	Main Axis U Phase Current Offset Error	-Current sensor (CT2) of B substrate is damaged.	-Please exchange B substrate.
E-044	Main Axis V Phase Current Offset Error	-Current sensor (CT1) of B substrate is damaged.	-Please exchange B substrate.
E-046	Main Axis U Phase Defect Error	-Wiring to the main motor has been disconnected.	-Check wiring of the main motor.
E-047	Main Axis V Phase Defect Error	-Wiring to the main motor has been disconnected.	-Check wiring of the main motor.
E-048	Main Axis W Phase Defect Error	-Wiring to the main motor has been disconnected.	-Check wiring of the main motor.
E-049	Grease Refueling 1 Error	-Number of needle stitches has been reached to the setting value 1 that had to refuel grease.	-There is danger of the sewing machine damage. Please turn on the power supply again after irefueling and clear the error.
E-050	Grease Refueling 2 Error	-Number of needle stitches has been reached to the setting value 2 that had to refuel grease.	-There is danger of the sewing machine damage. Please turn on the power supply again after irefueling and clear the error.
E-051	Grease Refueling 3 Error	-Number of needle stitches has been reached to the setting value 3 that had to refuel grease.	-There is danger of the sewing machine damage. Please turn on the power supply again after irefueling and clear the error.
E-052	Grease Refueling 4 Error	-Number of needle stitches has been reached to the setting value 4 that had to refuel grease.	-There is danger of the sewing machine damage. Please turn on the power supply again after irefueling and clear the error.
E-053	X Motor Encoder Error	-X-axis encoder connector has not been firmly inserted. -The signal from X-axis encoder has been disconnected.	-Check insertion of the connector. -Check the XA/XB phase signal by using IN/OUT setting mode.
E-054	YMotor Encoder Error	-Y-axis encoder connector has not been firmly inserted. -The signal from Y-axis encoder has been disconnected.	-Check insertion of the connector. -Check the YA/YB phase signal by using IN/OUT setting mode.
E-055	X Motor Lock Error	-X-axis is locked.	-Check the sewing machine.
E-056	Y Motor Lock Error	-Y-axis is locked.	-Check the sewing machine.

CODE	ERROR NAME	PROBABLE CAUSE	INSPECTION
E-058	X Motor Home Position Sensor Error	-The connector of X-home sensor cable has not been firmly inserted. -X-home sensor cable has been disconnected.	-Check the insertion of the connector. -Check the X-axis home sensor signal by using IN/OUT setting mode.
E-059	Y Motor Home Position Sensor Error	-The connector of Y-home sensor cable has not been firmly inserted. -Y-home sensor cable has been disconnected.	-Check the insertion of the connector. -Check the Y-axis home sensor signal by using IN/OUT setting mode.
E-060	PF Motor Home Position Sensor Error	-The connector of PF-home sensor cable has not been firmly inserted. -PF-home sensor cable has been disconnected.	-Check the insertion of the connector. -Check the PF-axis home sensor signal by using IN/OUT setting mode.
E-061	X Motor A Phase Current Offset Error	-The current sensor of the PMD substrate is damaged.	-Please exchange PMD board.
E-062	X Motor B Phase Current Offset Error	-The current sensor of the PMD substrate is damaged.	-Please exchange PMD board.
E-063	Y Motor A Phase Current Offset Error	-The current sensor of the PMD substrate is damaged.	-Please exchange PMD board.
E-064	Y Motor B Phase Current Offset Error	-The current sensor of the PMD substrate is damaged.	-Please exchange PMD board.
E-066	PMD Overcurrent Error	-Wiring to X-motor or Y-motor is short-circuited. -The load torque of the XY table is too large.	-Check the wiring of the X and Y motor. -Check the sewing machine.
E-067	X Motor Overcurrent Error	-Wiring to X-motor is short-circuited. -The load torque of the XY table is too large.	-Check the wiring of the X motor. -Check the sewing machine.
E-068	Y Motor Overcurrent Error	-Wiring to Y-motor is short-circuited. -The load torque of the XY table is too large.	-Check the wiring of the Y motor. -Check the sewing machine.
E-069	PF Motor Error	-Wiring to PF-motor is short-circuited. -PF-axis 24V power supply cable has been disconnected. (inxide of control box)	-Check the wiring of the PF motor.
E-080	12V Fuse Blowing Error	-The fuse of 12V in the control box is disconnected.	-Check the 12V fuse.

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