

ENGLISH

**LK-1900C / IP-510
INSTRUCTION MANUAL**

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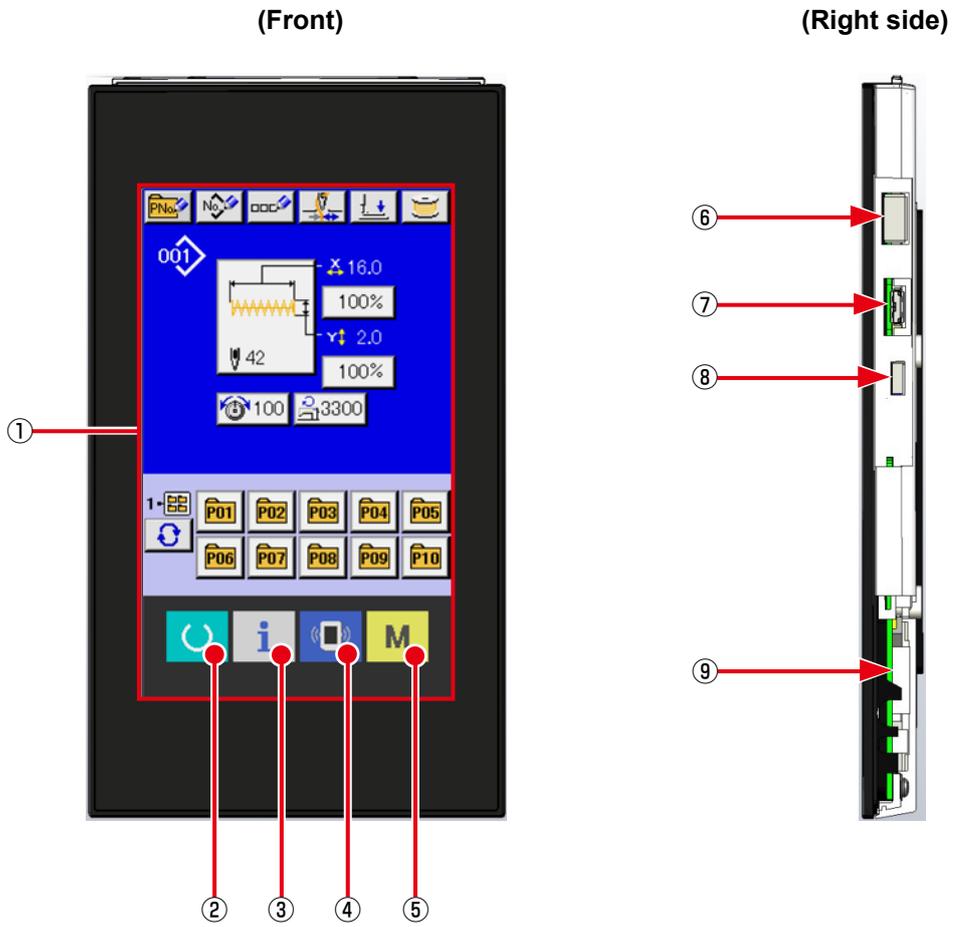
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1. NAME OF EACH SECTION OF THE OPERATION PANEL

1-1 Body



① Touch panel • LCD display section

- ②  READY key → Switches between the standard screen and the sewing screen.
- ③  INFORMATION key → Switches between the standard screen and the information screen.
- ④  COMMUNICATION key → Switches between the standard screen and the communication screen.
- ⑤  MODE key → Switches between the standard screen and the mode changeover screen for various detailed settings.
- ⑥ USB Type-A connector
- ⑦ NFC antenna connector
- ⑧ USB Type-C connector
- ⑨ Power supply connector

1-2 Buttons to be used in common

The buttons which perform common operations in each screen of IP-510 are as follows :



CANCEL button

→ This button closes the pop-up screen.
In case of the data change screen, the data being changed can be cancelled.



ENTER button

→ This button determines the changed data.



UP SCROLL button

→ This button scrolls the button or the display in the upward direction.



DOWN SCROLL button

→ This button scrolls the button or the display in the downward direction.



RESET button

→ This button performs the release of error.



NUMERAL INPUT button

→ This button displays ten keys and input of numerals can be performed.



CHARACTER INPUT button

→ This button displays the character input screen.
→ Refer to “19. NAMING PATTERN” p.51 .



PRESSER DOWN button

→ This button lowers the presser and displays the presser down screen.
To raise the presser, press PRESSER UP button displayed in the presser down screen.



BOBBIN WINDER button

→ This button performs bobbin thread winding.
→ Refer to “12. WINDING BOBBIN THREAD” p.34 .

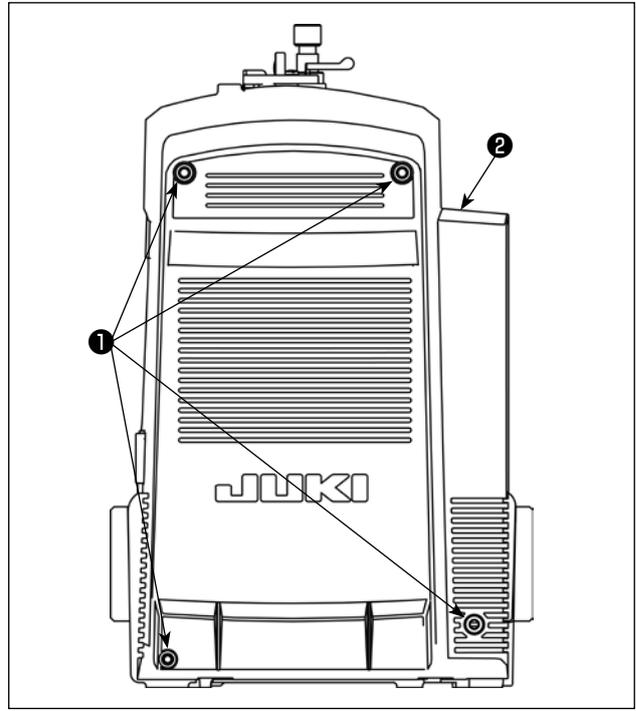
2. INSTALLATION OF IP-510

2-1 Replacing the panel cable

When replacing the operation panel from the standard panel to the IP-510, the panel cable must also be replaced.

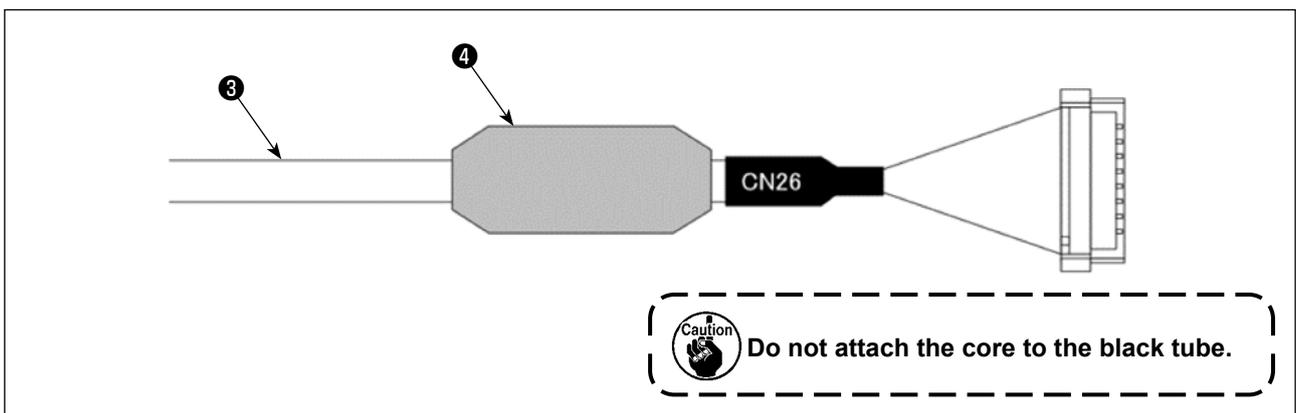
If the panel cable does not need to be replaced, this procedure is not necessary.

- 1) Remove the four screws ①, then remove the motor cover ②.
- 2) Disconnect the CN26 connector from the MAIN PCB, then remove the panel cable for the standard panel.
- * If the panel cable cannot be removed due to a cable clip band, remove the cable clip band first.
- 3) Route the panel cable for the IP-510 along the same path as the standard panel cable, then connect it to CN26 on the MAIN PCB.
- * Secure the panel cable with a cable clip band if necessary.



- 4) Attach core ④ to the CN26 side of panel cable ③ for the IP-510.
- * This procedure is required only for CE models.

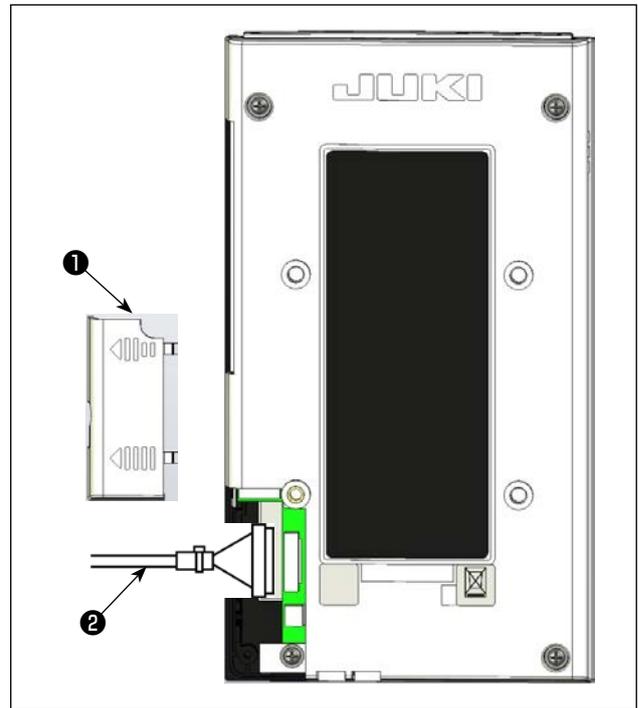
Product name	Part number
Panel cable ③	40300275
Core ④	HN004510000



- 5) Reinstall the removed motor cover with the screws.

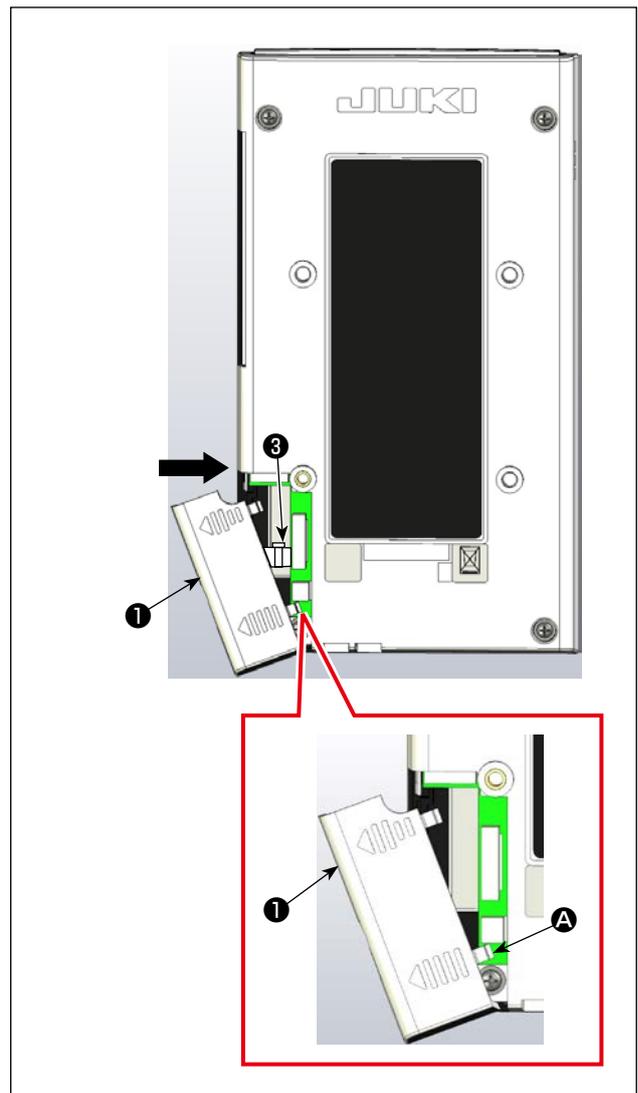
2-2 Installing the IP-510 and panel cable

- 1) Open the power supply cover ❶ on the panel and connect cable ❷ to the power supply connector.



- 2) Secure the cable clip band ❸ in the position shown in the figure, then close the power supply cover ❶.

When closing the power supply cover ❶, first hook the hook section A as shown in the figure below, then slide it in an arc to attach it.

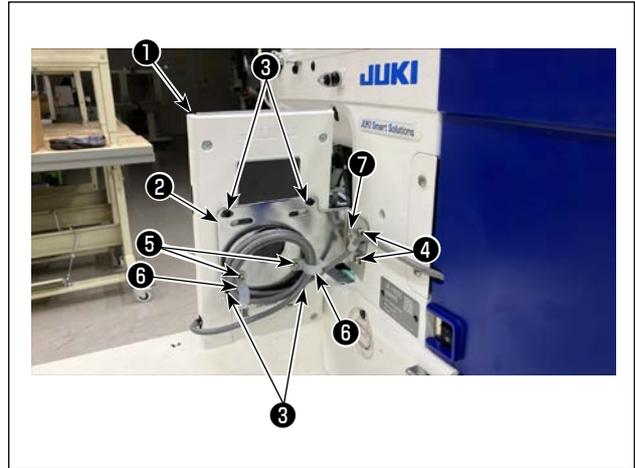


2-3 Installing the IP-510 arm

Secure panel ① to panel mounting plate ② using four M4 screws ③, then install it to the arm using two M5 screws ④.

Bundle the panel cable as shown in the figure, then attach clips ⑥ and ⑦ and fix them to the panel mounting plate ② with three M3 screws ⑤.

* Be careful not to get your hand or other objects caught in the panel pull-out section.

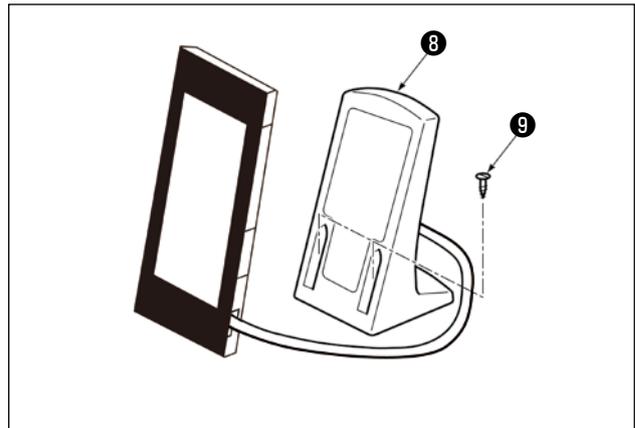


2-4 Installing the IP-510 on a tabletop

Fix the operation box mounting plate ⑧ to any location on the table using two wood screws ⑨.



Operation box mounting plate ⑧ and wood screws ⑨ are optional parts. Refer to the Instruction Manual for LK-1905C for a list of optional parts.

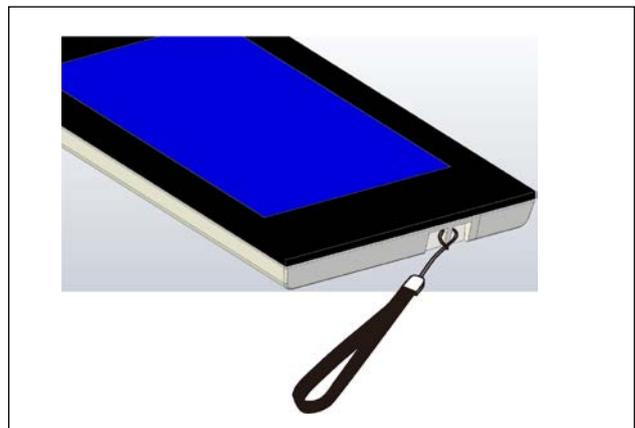


CAUTION :

When operating the panel while holding it in your hand, use a strap or similar accessory to prevent accidental drops.

A strap can be attached to the hole at the bottom of the panel.

As a strap is not included; users must provide their own strap.



3. BASIC OPERATION OF IP-510

LK-1900C is explained as the standard in this Instruction Manual.

① Turn ON the power switch

When the power is turned ON first, the selection screen of the language is displayed. Set the language used. (It is possible to change with memory switch U239 .)



When ending the selection screen with CANCEL button  or ENTER button  without selecting the language, the selection screen of the language is again displayed when turning ON the power next.

② Select the pattern No. you want to sew.

When the power is turned on, the individual sewing standard screen is displayed.

The currently selected sewing shape is displayed at the center of the screen on the SEWING

SHAPE SELECTION button  **A** . Pressing

this button allows you to select a sewing shape. For details on selecting a sewing shape, refer to “5. PERFORMING SEWING SHAPE SELECTION” p.14 .



For the pattern No., refer to the sewing shape list.

When READY key  **B** is pressed, the back color of LCD display is changed to green, and the sewing machine is set to the sewing possible state.

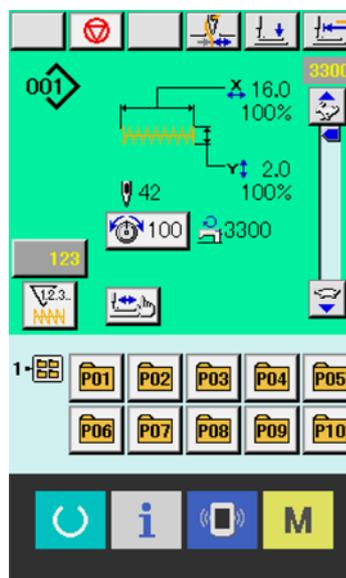
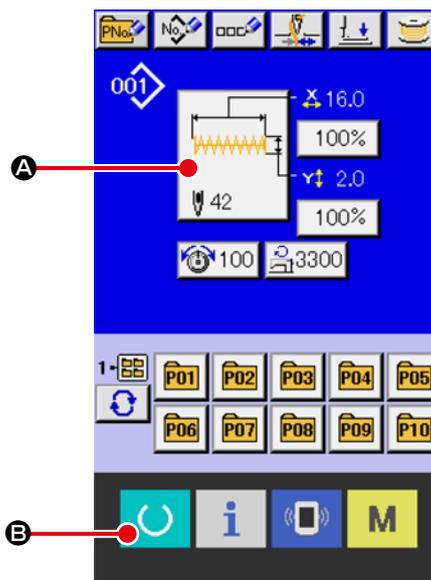


When the presser is raised, be careful that fingers are not caught in the presser since the presser moves after having lowered.

③ Start sewing.

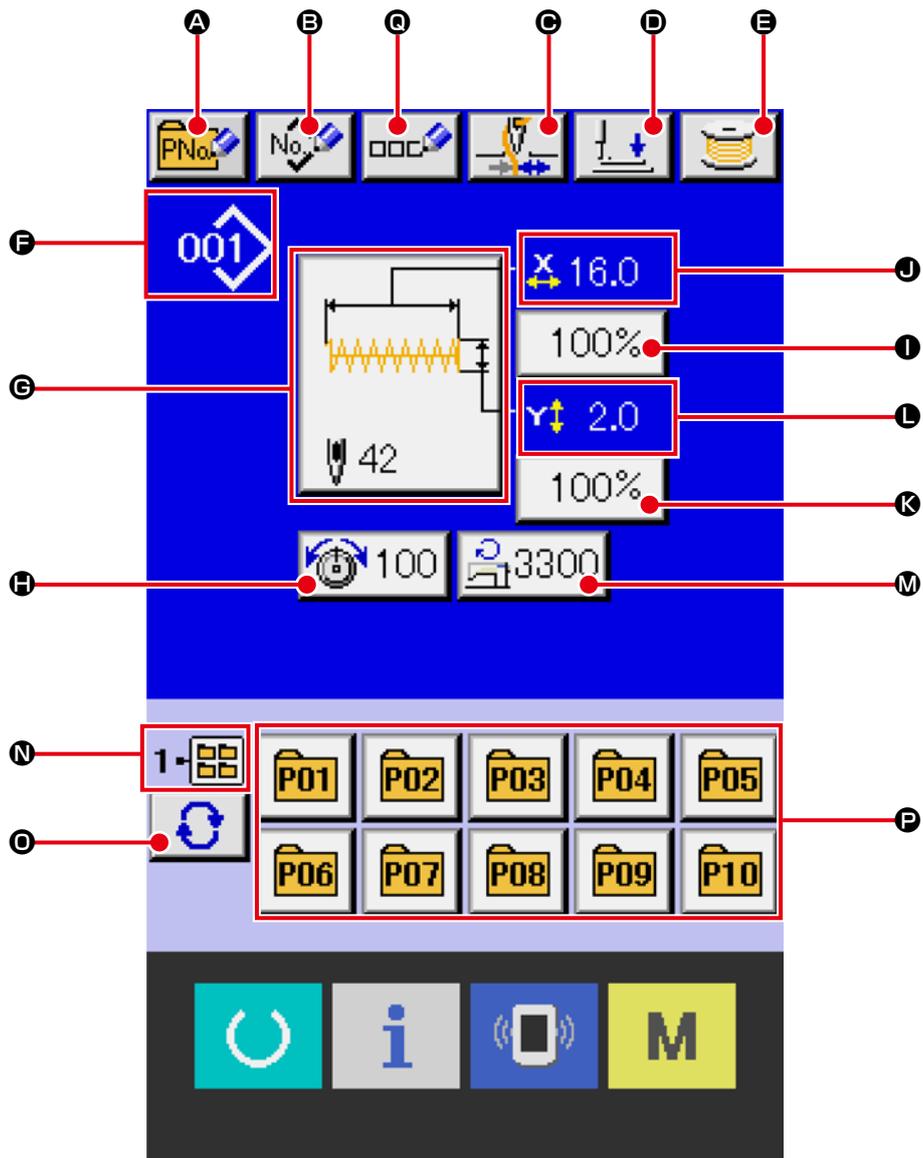
Set the sewing product to the presser portion, and operate the pedal to start the sewing machine, and sewing starts.

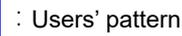
* For the screen, refer to “4. LCD DISPLAY SECTION AT THE TIME OF SEWING SHAPE SELECTION” p.8 .



4. LCD DISPLAY SECTION AT THE TIME OF SEWING SHAPE SELECTION

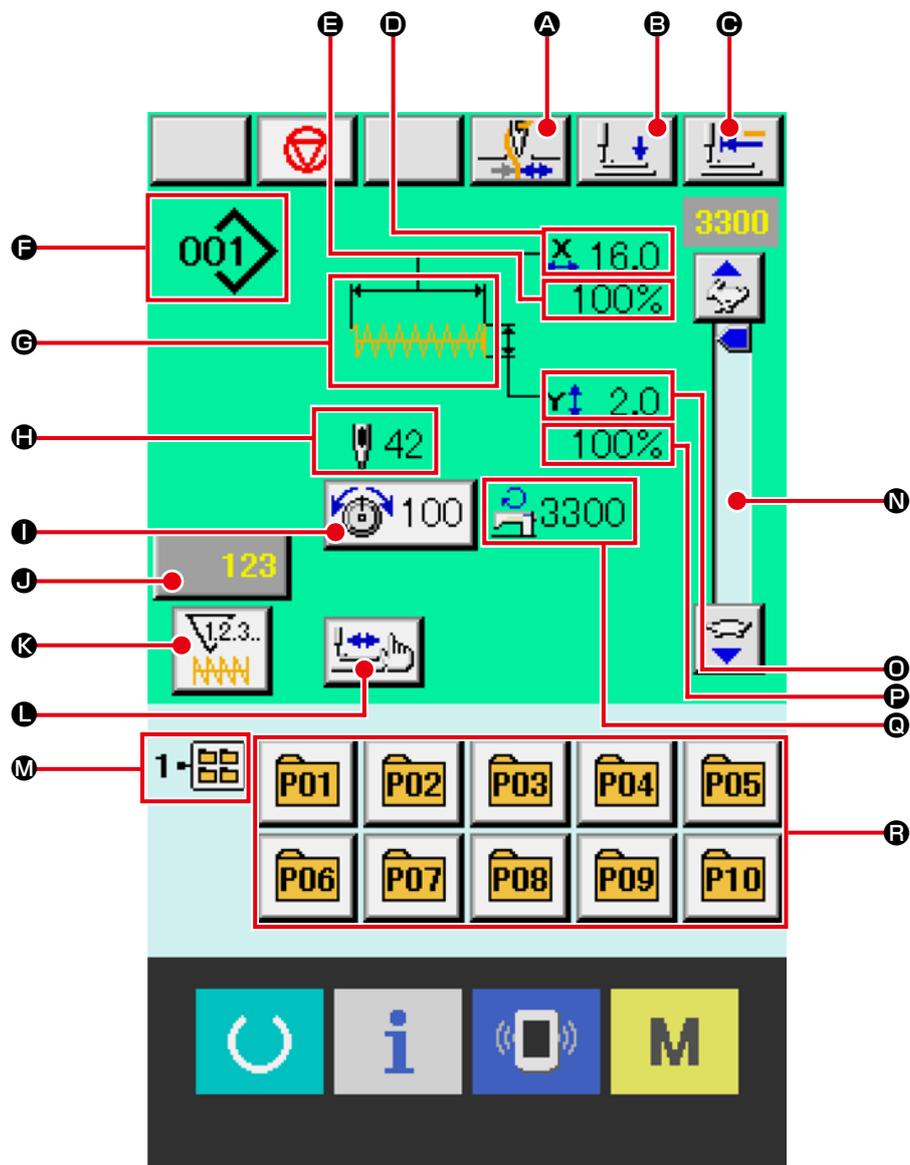
4-1 Individual sewing standard screen



	Button and display	Description
A	NEW DIRECT PATTERN REGISTRATION button	Registers a new direct pattern using the currently selected individual sewing pattern. → Refer to “15. PERFORMING NEW REGISTER OF PATTERN BUTTON” p.40 .
B	USERS' PATTERN NEW REGISTER button	Registers a new user pattern in the sewing machine using the currently selected individual sewing pattern or media pattern. → Refer to “14. PERFORMING NEW REGISTER OF USERS' PATTERN” p.39 .
C	THREAD CLAMP button	Effective/ineffective of thread clamp is selected.  : Thread clamp ineffective  : Thread clamp effective * When the prohibition of thread clamp is set with memory switch U035 , the thread clamp button is not displayed.
D	PRESSER LOWERING button	Presser can be lowered and the presser down screen is displayed. To raise the presser, press the presser up button which is displayed in the presser down screen.
E	BOBBIN WINDER button	Bobbin thread can be wound. → Refer to “12. WINDING BOBBIN THREAD” p.34 .
F	PATTERN No. display	Displays the type and number of the currently selected pattern. There are two types of patterns: ① Individual sewing pattern No.001-100 : Standard pattern No.101-999 : Users' pattern  : Standard pattern  : Users' pattern ② Media pattern  : Media pattern
G	SEWING SHAPE SELECTION button	Sewing shape being selected at present is displayed on this button and when the button is pressed, the sewing shape selection screen is displayed. → Refer to “5. PERFORMING SEWING SHAPE SELECTION” p.14 .
H	NEEDLE THREAD TENSION SETTING button	The needle thread tension value set for the currently selected pattern is displayed on this button. To change the needle thread tension value, press this button to display the item data change screen. → Refer to “7. PERFORMING ITEM DATA CHANGE” p.22 .

	Button and display	Description
①	X ACTUAL SIZE VALUE display	Actual size value in X direction of sewing shape being selected at present is displayed. When the actual size value input is selected by setting memory switch U064 , X actual size value setting button is displayed. → Refer to “7. PERFORMING ITEM DATA CHANGE” p.22 .
②	X SCALE RATE SETTING button	Scale rate in X direction of sewing shape being selected at present is displayed on this button. When the scale input is set to non-selection by setting memory switch U064 , the button goes out and the X scale is displayed. → Refer to “7. PERFORMING ITEM DATA CHANGE” p.22 .
③	Y ACTUAL SIZE VALUE display	Actual size value in Y direction of sewing shape being selected at present is displayed. When the actual size value input is selected by setting memory switch U064 , Y actual size value setting button is displayed. → Refer to “7. PERFORMING ITEM DATA CHANGE” p.22 .
④	Y SCALE RATE SETTING button	Scale rate in Y direction of sewing shape being selected at present is displayed on this button. When the scale input is set to non-selection by setting memory switch U064 , the button goes out and the Y scale is displayed. → Refer to “7. PERFORMING ITEM DATA CHANGE” p.22 .
⑤	MAX. SPEED LIMITATION	Maximum speed limitation which is set at present is displayed on this button and when the button is pressed, the item data change screen is displayed. → Refer to “7. PERFORMING ITEM DATA CHANGE” p.22 .
⑥	FOLDER No. display	Displays the folder number where the displayed DIRECT PATTERN button is saved.
⑦	FOLDER SELECTION button	You can select one folder number from the five folders where direct patterns are registered. Each time you press this button, the folder number changes.
⑧	DIRECT PATTERN button	Displays the direct patterns registered in the currently selected folder number. Direct pattern numbers can be changed with a single touch. → Refer to “15. PERFORMING NEW REGISTER OF PATTERN BUTTON” p.40 .
⑨	TEXT INPUT button	Displays a screen where you can enter the pattern name. → Refer to “19. NAMING PATTERN” p.51.

4-2 Sewing screen

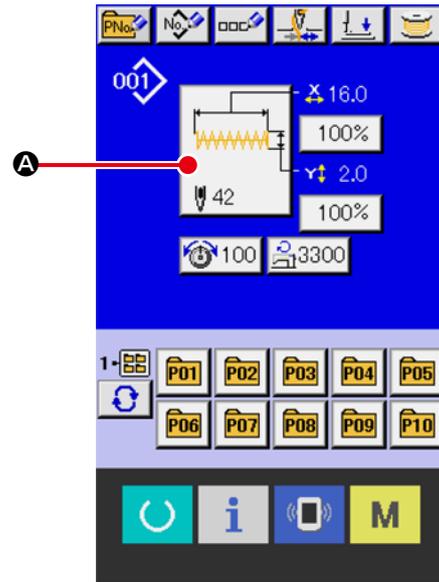


	Button and display	Description
A	THREAD CLAMP button	<p>Effective/ineffective of the thread clamp is selected.</p> <p> : Thread clamp ineffective</p> <p> : Thread clamp effective</p> <p>* When the prohibition of thread clamp is set with memory switch U035 , the thread clamp button is not displayed.</p>
B	PRESSER LOWERING button	<p>Presser can be lowered and the presser down screen is displayed.</p> <p>To raise the presser, press the presser up button which is displayed in the presser down screen.</p>
C	RETURN TO ORIGIN button	This button returns the presser to the start of sewing and raises the presser.
D	X ACTUAL SIZE VALUE display	Actual size value in X direction of sewing shape being selected is displayed.
E	X SCALE RATE display	Scale rate in X direction of sewing shape being selected is displayed.
F	PATTERN No. display	<p>Displays the type and number of the currently selected pattern.</p> <p>There are two types of patterns:</p> <p>① Individual sewing pattern</p> <p>No.001-100 : Standard pattern</p> <p>No.101-999 : Users' pattern</p> <p> : Standard pattern</p> <p> : Users' pattern</p> <p>② Media pattern</p> <p> : Media pattern</p>
G	SEWING SHAPE display	Sewing shape being selected at present is displayed.
H	SEWING SHAPE Total number of stitches display	Total number of stitches of the sewing shape being selected at present is displayed.
I	NEEDLE THREAD TENSION SETTING button	<p>Needle thread tension value which is set to the pattern data being selected at present is displayed on this button and when the button is pressed, the item data change screen is displayed.</p> <p>→ Refer to “7. PERFORMING ITEM DATA CHANGE” p.22 .</p>
J	COUNTER VALUE CHANGE button	<p>Existing counter value is displayed on this button. When the button is pressed, the counter value change screen is displayed.</p> <p>→ Refer to “13. USING COUNTER” p.35 .</p>
K	COUNTER CHANGE OVER button	<p>Display of sewing counter/No. of pcs. counter can be changed over.</p> <p>→ Refer to “13. USING COUNTER” p.35 .</p>

	Button and display	Description
Ⓐ	STEP SEWING button	Display of sewing counter/No. of pcs. counter can be changed over. → Refer to “8. CHECKING PATTERN SHAPE” p.24 .
Ⓜ	FOLDER No. display	Displays the currently selected folder number.
Ⓝ	SPEED variable resistor	Number of rotations of the sewing machine can be changed.
Ⓞ	Y ACTUAL SIZE VALUE display	Actual size value in Y direction of sewing shape being selected is displayed.
Ⓟ	Y SCALE RATE display	Scale rate in Y direction of sewing shape being selected is displayed.
Ⓠ	MAX. SPEED LIMITATION display	Maximum speed limitation which is set at present is displayed.
Ⓡ	PATTERN REGISTER button	Displays the direct patterns registered in the currently selected folder number. Direct pattern numbers can be changed with a single touch. → Refer to “15. PERFORMING NEW REGISTER OF PATTERN BUTTON” p.40 .

5. PERFORMING SEWING SHAPE SELECTION

- ① Selection of the sewing shape is only possible on the individual sewing standard screen (blue).
If the sewing screen (green) is displayed, press the READY key  to display the individual sewing standard screen (blue).

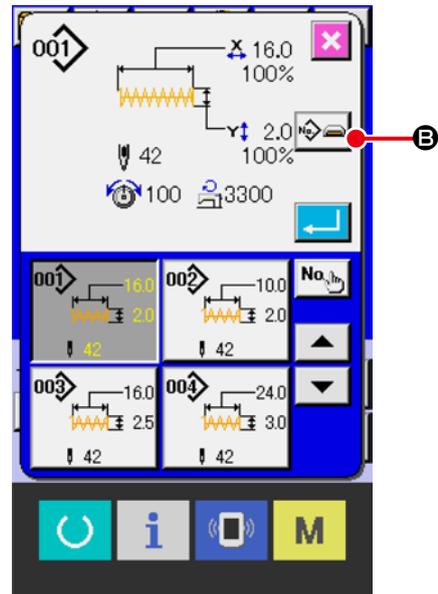


- ② **Call the sewing shape selection screen.**

Press SEWING SHAPE button  **A** and the sewing shape selection screen is displayed.

- ③ **Select the kind of sewing shape.**

There are two types of sewing shapes available.
Press SEWING SHAPE SELECTION button



④ **Determine the kind of sewing shape.**

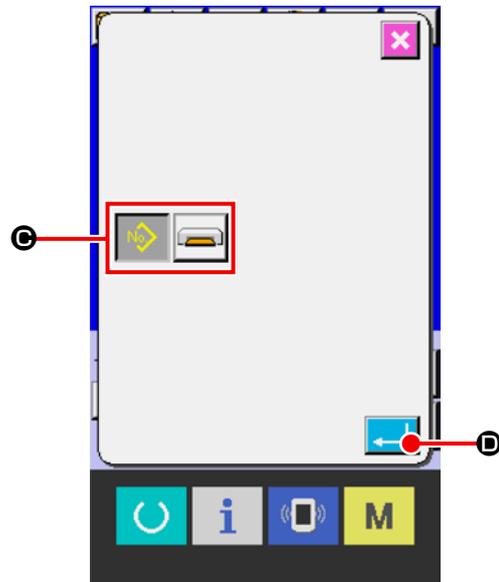
The two sewing shape types are described below.
Select the desired type.

Pictograph	Name	Maximum number of patterns
	Standard pattern (No.001-100)	1900/1901/1902/1905 : 100 1903 : 50
	Users' pattern (No.101-999)	899
	Media pattern	999

Select the sewing shape you desire from SEWING SHAPE SELECTION buttons **C** and press ENTER button **D**.

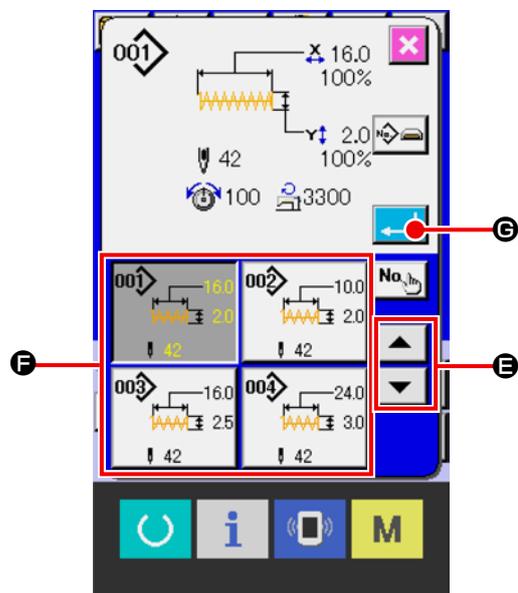
The sewing shape list screen corresponding to the kind of sewing shape you selected is displayed.

Important Be sure to use the media that has been formatted with IP-510.
For the formatting procedure of the media, refer to "27-3 Performing format" p.90.



⑤ **Select the sewing shape.**

When UP or DOWN SCROLL button **E** is pressed, SEWING SHAPE buttons **F** are changed over in order. The description of the sewing shape is displayed in the button. Here, press the SEWING SHAPE button you desire to select. The details of the selected shape is displayed at the upper part of the screen.



⑥ **Determine the sewing shape.**

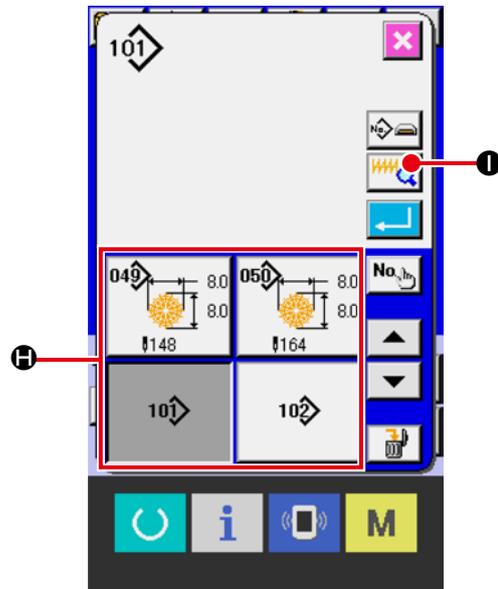
Press the ENTER button **G** to confirm the selected sewing shape and display the individual sewing standard screen.

When the sewing shape is users' pattern or media pattern the screen as shown on the right side is displayed.

PATTERN No. SELECTION buttons  which have been registered to users' pattern or media pattern are displayed. Press the button of the pattern No. you desire to select.

In addition, when you desire to confirm the shape you selected, press VIEWER button  .

Then the viewer screen is displayed and the selected shape is displayed.

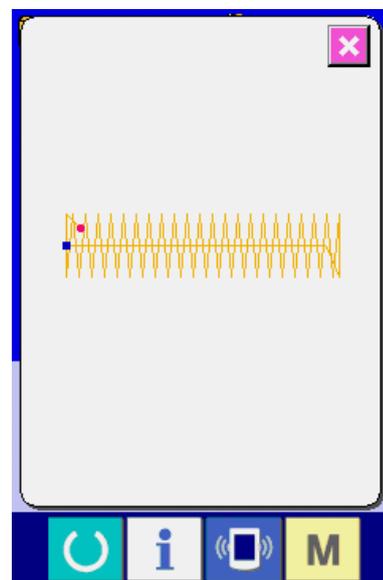
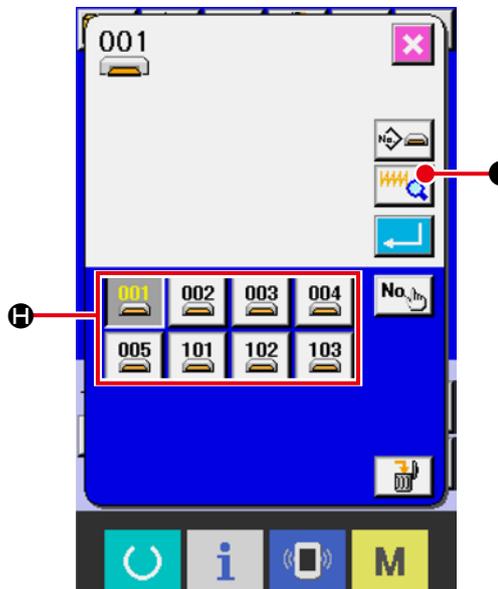


When the sewing shape is media pattern the screen as shown on the right side is displayed.

PATTERN No. SELECTION buttons  which have been registered to media pattern are displayed. Press the button of the pattern No. you desire to select.

In addition, when you desire to confirm the shape you selected, press VIEWER button  .

Then the viewer screen is displayed and the selected shape is displayed.



6. STANDARD PATTERN LIST

6-1 LK-1900C / LK-1901C / LK-1902C / LK-1905C



1. Sewing size shows the dimensions when the scale rate is 100%.
2. Refer the No. of work clamp foot to the separate table of work clamp foot.
3. For ☆ marks, process the work clamp foot blank for use.
4. Use the patterns with * marks for sewing denim.
5. No. 51 is for the machine without thread clamp device.
6. Pattern Nos. 30 to 35 are for the optional work clamp foot No. 12. The origin of the patterns is different by 5 mm up and down from that of lengthwise bartacking pattern Nos. 26 to 29.
7. No. 100 can only be sewn with the LK-1905C series.
If you use a model other than the LK-1905C Series, an X-travel limit error or Y-travel limit error will occur.

	No.	Stitch diagram	Number of stitches	Sewing size (mm)		No. of work clamp foot
				Length-wise	Cross-wise	
Large size bartacking	1(51)		42	2.0	16	1
						2
						3
	2		42	2.0	10	1
						2
						3
	3*		42	2.5	16	1
						4
	4*		42	3.0	24	6
						7
5		28	2.0	10	1	
					2	
					3	
6*		28	2.5	16	1	
					4	
7		36	2.0	10	1	
					2	
					3	
8*		36	2.5	16	1	
					4	
9*		56	3.0	24	6	
					7	
10*		64	3.0	24	6	
					7	
Small size bartacking	11		21	2.5	6	8
	12		28	2.5	6	8
	13		36	2.5	6	8
Knit goods bartacking	14		14	2.0	8	5
	15		21	2.0	8	5
	16		28	2.0	8	5

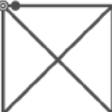
	No.	Stitch diagram	Number of stitches	Sewing size (mm)		No. of work clamp foot
				Length-wise	Cross-wise	
Straight line bartacking	17		21	0	10	1
						2
						3
	18		28	0	10	1
						2
						3
	19			0	25	6
20		36	0	25	6	
					7	
21		41	0	25	6	
					7	
22		44	0	35	☆	
Lengthwise bartacking	23		28	20	4.0	9
						10
	24		36	20	4.0	9
						10
	25		42	20	4.0	9
						10
26		56	20	4.0	9	
					10	

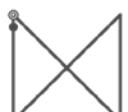
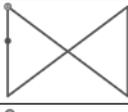
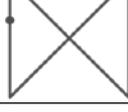
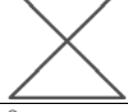
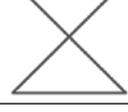
	No.	Stitch diagram	Number of stitches	Sewing size (mm)		No. of work clamp foot
				Length-wise	Cross-wise	
Lengthwise straight line bartacking	27		18	20	0	11
	28		21	10	0	11
	29		21	20	0	11
	30		28	20	0	11
Semilunar bartacking	31		52	7	10	13
	32		63	7	12	13
	33		24	6	10	13
	34		31	6	12	13
	35		48	10	7	14
	36		48	10	7	14
Large size bartacking	37		90	3	24	6 7
Knit goods bartacking	38		28	2.0	8	5
Round bartacking	39		28	ø12	ø12	16
	40		48	ø12	ø12	16

	No.	Stitch diagram	Number of stitches	Sewing size (mm)		No. of work clamp foot
				Length-wise	Cross-wise	
Lengthwise bartacking	41		29	20	2.5	12
	42		39	25	2.5	12
	43		45	25	2.5	12
	44		58	30	2.5	12
	45		75	30	2.5	12
	46		42	30	2.5	12
Radial tacking	47		91	Outside diameter ø8	15	
	48		99		15	
	49		148		15	
	50		164		15	

	No.	Stitch diagram	Number of stitches	Sewing size (mm)		No. of work clamp foot
				Length-wise	Cross-wise	
Cross	52		162	12	12	☆
	53		70	10	10	☆
	54		93	9.6	9.6	☆
Lengthwise bartacking, wide	55		170	28	12.6	☆
	56		184	26	12.6	☆
	57		46	15	9	☆
	58		70	25	9	☆
L-shape	59		60	11.2	11.2	☆
	60		78	15.2	15.2	☆
	61		60	11.2	11.2	☆
	62		78	15.2	15.2	☆

	No.	Stitch diagram	Number of stitches	Sewing size (mm)		No. of work clamp foot	
				Length-wise	Cross-wise		
Radial tacking	63		93	ø8	ø8	15	
	64		93	ø8	ø8	15	
	65		93	ø8	ø8	15	
	66		101	ø8	ø8	15	
	67		101	ø8	ø8	15	
	68		101	ø8	ø8	15	
	69		150	ø8	ø8	15	
	70		150	ø8	ø8	15	
	71		150	ø8	ø8	15	
	Pine needle	72		173	10	11.6	☆
		Semilunar bartacking	73		55	7	10
74			65	7	12	13	

	No.	Stitch diagram	Number of stitches	Sewing size (mm)		No. of work clamp foot
				Length-wise	Cross-wise	
Zigzag stitch	75		76	10	26	☆
	76		116	3	20.5	6/7
Sham button-hole	77		56	1.6	19.8	6/7
	78		142	25	6.6	☆
Eyelet buttonhole with taper bar	79		162	25	6.6	☆
	80		183	25	6.6	☆
	81		143	25	6.6	☆
Eyelet buttonhole with straight bar	82		165	25	6.6	☆
	83		262	20	6	☆
Square cross	84		72	25	25	☆
	85		91	25	25	☆
	86		84	16	16	☆
	87		105	26	30	☆
	88		85	30	40	☆

	No.	Stitch diagram	Number of stitches	Sewing size (mm)		No. of work clamp foot
				Length-wise	Cross-wise	
Square cross	89		97	30	30	☆
	90		77	30	30	☆
Square	91		41	13	30	☆
	92		53	30	40	☆
	93		37	30	30	☆
	94		94	30	30	☆
Butterfly	95		52	25	25	☆
	96		49	30	40	☆
	97		45	30	30	☆
Longitudinal butterfly	98		61	25	25	☆
	99		56	30	30	☆
	100		93	50	60	☆

6-2 LK-1903C

Pattern No.	Stitch shape	Number of threads (thread)	Standard sewing size X (mm)	Standard sewing size Y (mm)	Pattern No.	Stitch shape	Number of threads (thread)	Standard sewing size X (mm)	Standard sewing size Y (mm)		
1 - 34		6-6	3.4	3.4	18 - 44		6	3.4	0		
2 - 35		8-8			19 - 45		8				
3		10-10			20		10				
4		12-12			21		12				
5 - 36		6-6			22		16				
6 - 37		8-8			23 - 46		6			0	3.4
7		10-10			24		10				
8		12-12			25		12				
9 - 38		6-6			26 - 47		6-6	3.4	3.4		
10 - 39		8-8			27		10-10				
11		10-10			28 - 48		6-6				
12 - 40		6-6			29		10-10				
13 - 41		8-8			30 - 49		5-5-5	3.0	2.5		
14		10-10			31		8-8-8				
15 - 42		6-6			32 - 50		5-5-5				
16 - 43		8-8			33		8-8-8				
17		10-10									

* The standard sewing sizes of X and Y are when the enlargement/reduction rate is 100%.

Use pattern Nos. 34 to 50 when the button hole is small ($\phi 1.5$ mm or less).

* For the sewing machine provided with the bird's nest preventing and shorter-thread remaining type thread trimmer, pattern numbers 23 to 25, 30 to 33, 46, 49 and 50 have been factory-set, at the time of delivery, so that they are not displayed.

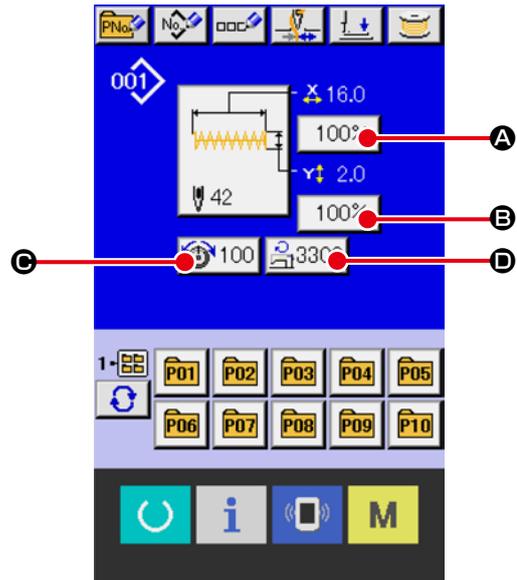
To use those pattern numbers, change the setting so that the memory switch K102 is displayed.

7. PERFORMING ITEM DATA CHANGE

① Display the data input screen.

If the individual sewing standard screen is displayed, you can change item data.

If the sewing screen (green) is displayed, press the READY key to display the individual sewing standard screen (blue).



- * Thread tension value can be changed even in the sewing screen.

② Display the item data input screen.

When the button of the item data you desire to change is pressed, the item data input screen is displayed. There are four items of the item data below.

	Item	Input range	Initial value
Ⓐ	Scale rate in X direction	20 to 200 (%)	100 (%)
Ⓑ	Scale rate in Y direction	20 to 200 (%)	100 (%)
Ⓒ	Thread tension	0 to 200	50
Ⓓ	Max. speed limitation	1900 : 400 to 3300 (sti/min)	3300 (sti/min)
		1901 and 1902 : 400 to 3000 (sti/min)	3000 (sti/min)
		1903 and 1905 : 400 to 2700 (sti/min)	2700 (sti/min)

- * Ⓐ Scale rate in X direction and Ⓑ Scale rate in Y direction can be changed to actual size value input by selection of the memory switch **U064**.
- * Max. inputting range of max.limitation speed Ⓓ and the initial value are determined with memory switch **U001**.

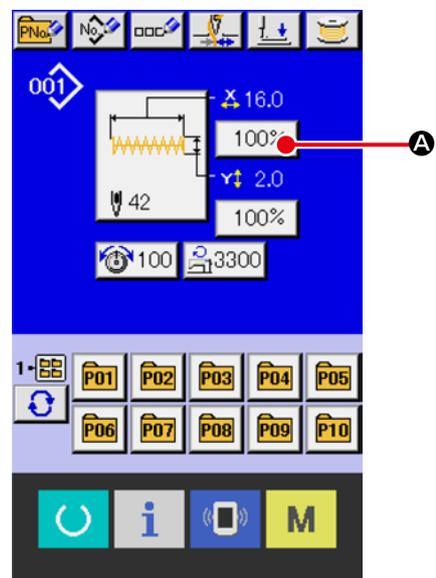


CAUTION :

The setting exceeding 100% is dangerous since needle and the cloth presser interferes with each other and needle breakage or the like will occur.

For example, input X scale rate.

Press Ⓐ to display the item data input screen.



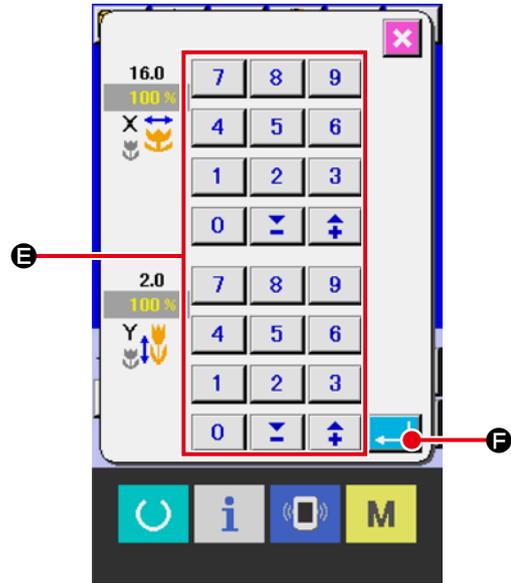
③ **Input the data.**

Input the value you desire with ten keys and +/- keys **E**.

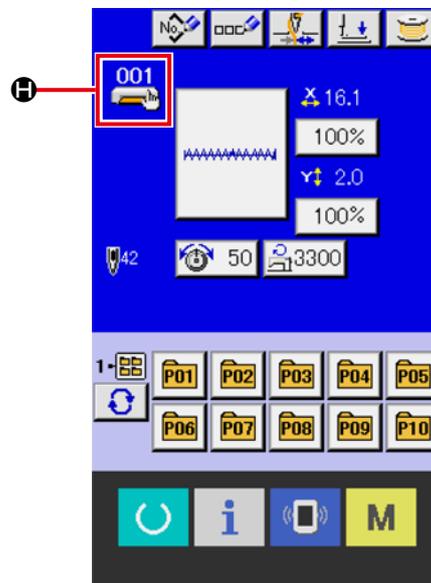
④ **Determine the data.**

When ENTER button  **F** is pressed, the data is determined.

- * For the other item data, the data can be changed by the same operation.
- * X/Y scale or X/Y value of X/Y actual size value can be inputted in one screen.



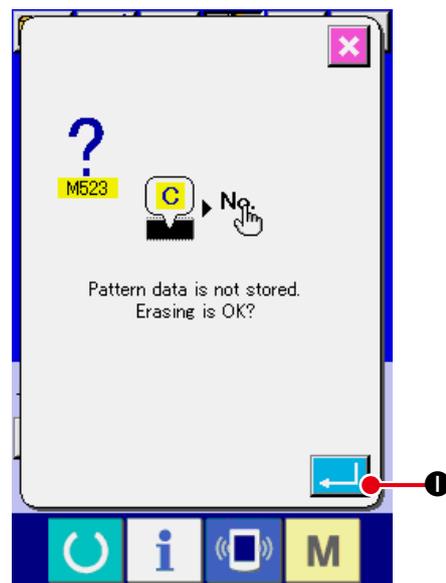
If you add or delete the thread tension or thread tension command of a media pattern, the currently selected pattern type will be displayed with a finger mark in the change display, as the change is not yet saved.



When change display **H** is shown, the change confirmation screen will appear when switching patterns.

When ENTER button  **I** is pressed, the information on the current pattern is invalidated and the pattern No. is changed.

To store the changed pattern, refer to “14. PERFORMING NEW REGISTER OF USERS’ PATTERN” p.39 .



8. CHECKING PATTERN SHAPE

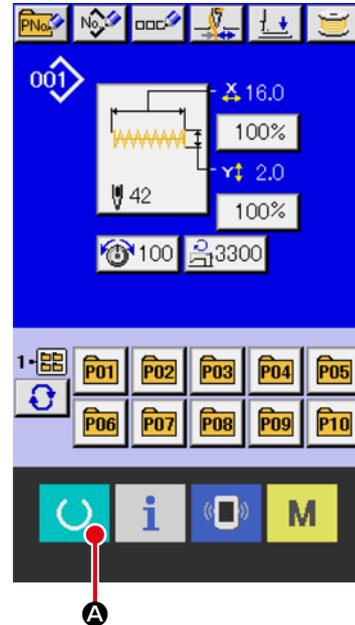


WARNING :

Make sure without fail of the contour of the sewing pattern after selection of the sewing pattern. If the sewing pattern extends outside the work clamp feet, the needle will interfere with the work clamp.

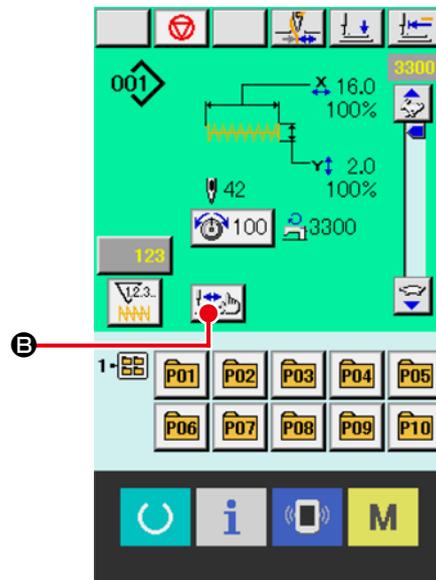
① Display the sewing screen.

If the individual sewing standard screen (blue) is displayed and the READY key  **A** is pressed, the background color of the LCD display will change to green, and the machine will be ready to sew.



② Display the step sewing screen.

When STEP SEWING button  **B** is pressed, the step sewing screen is displayed.



③ **Depress the pedal to lower the presser foot.**

 In this mode, the sewing machine will not start even when the pedal is depressed.

④ **Proceed stitching with the presser lowered.**

Check the shape with PRESSER BACK button



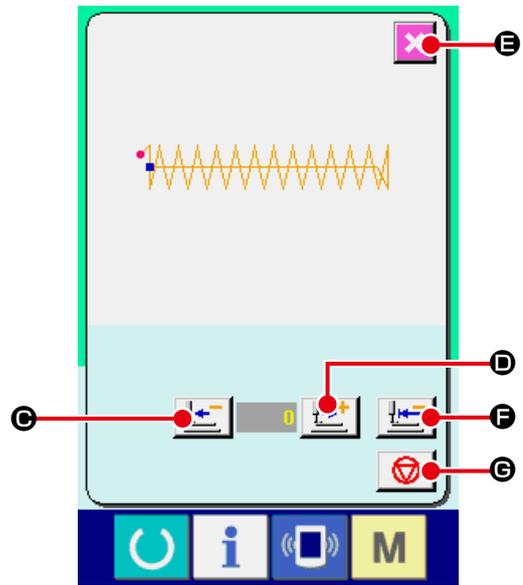
D .

When holding pressing the button for a certain time, the presser continues to move even when the button is released.

When you desire to stop, press STOP button



When ORIGIN MOVE button  F is pressed, the machine moves to the origin and the screen returns to the sewing screen.



 **When pressing the presser forward or presser backward button with the needle bar lowered, the presser moves after automatically returning the needle bar to UP position. So, be careful.**

⑤ **Finish checking the shape.**

When CANCEL button  E is pressed, the screen returns to the sewing screen.

If the presser foot is not at the start or end sewing position, depressing the pedal will allow sewing to resume from the middle of a checking process.

9. CHANGING THREAD TENSION COMMAND AT EVERY NEEDLE ENTRY POINT

9-1 Adding or changing thread tension command at every needle entry point

① Display the thread tension command change screen

When selecting a standard pattern, user pattern or a pattern stored on a medium, press thread tension button  50 **A** on the sewing screen to display the thread tension setting screen. Press THREAD TENSION COMMAND CHANGE button  **B** on the thread tension setting screen and the thread tension command change screen is displayed.

 **In this mode, the sewing machine will not start even when the pedal is depressed.**

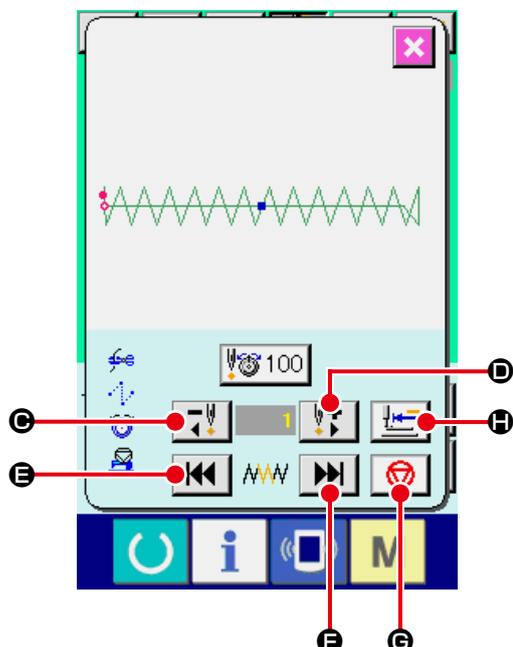
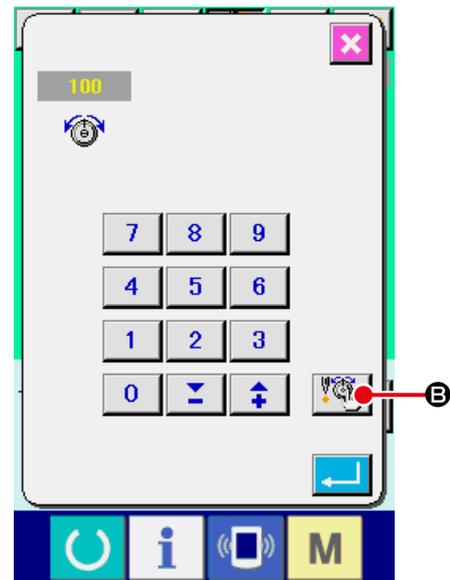
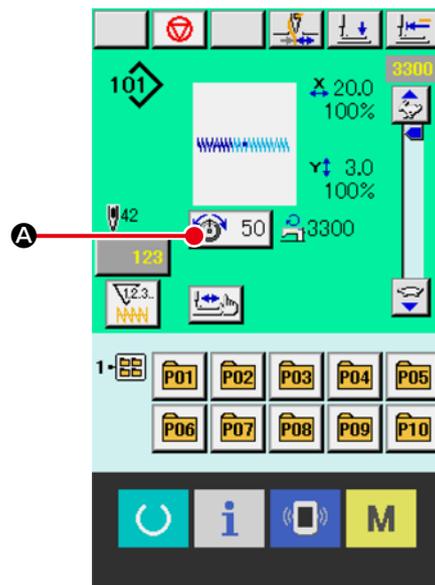
② Specify the command position you desire to change.

Specify the position you desire to add the thread tension command or that you desire to change the thread tension command value with ONE STITCH BACKWARD button  **C** or ONE STITCH FORWARD button  **D** in the state that the presser is lowered.

In addition, the machine moves to the needle entry point where the front or rear thread tension command exists with  **E** or  **F**. When you desire to stop the move, press STOP button  **G**.

When ORIGIN MOVE button  **H** is pressed, the machine moves to the origin.

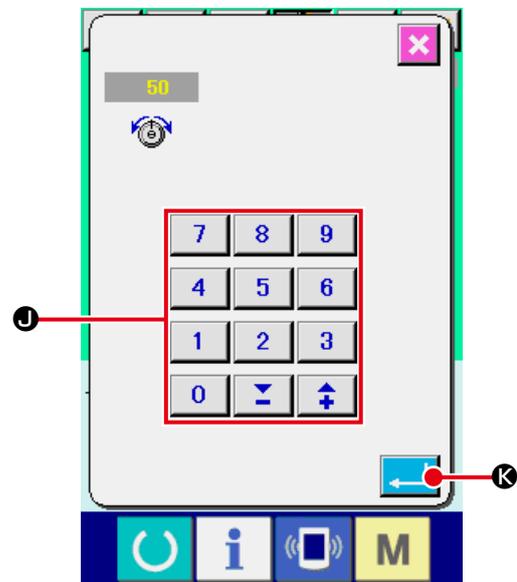
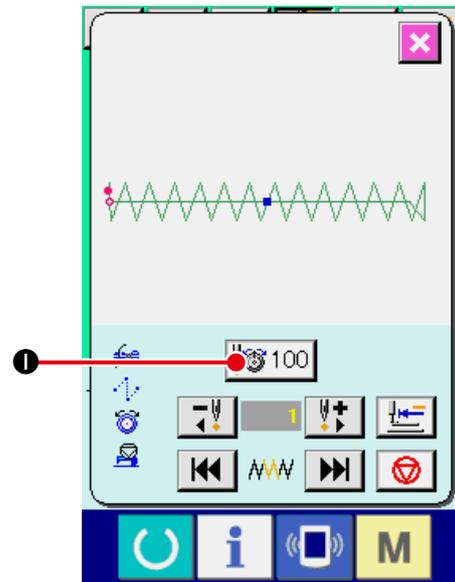
The value to be displayed is the absolute value (thread tension value + thread tension command value).



③ **Input thread tension command value.**

When COMMAND INPUT button  50  is pressed, the thread tension increase/decrease value input screen is displayed. Input the value you desire with TEN keys and +/- keys . When ENTER button   is pressed, the data is determined.

* For the standard patterns, the thread tension command entry button is displayed only at the position where the thread tension command already exists.

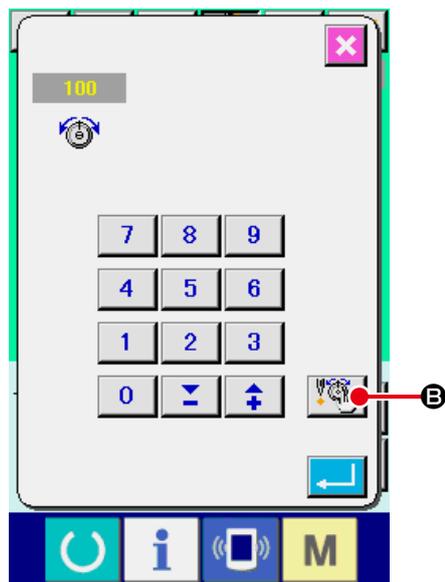
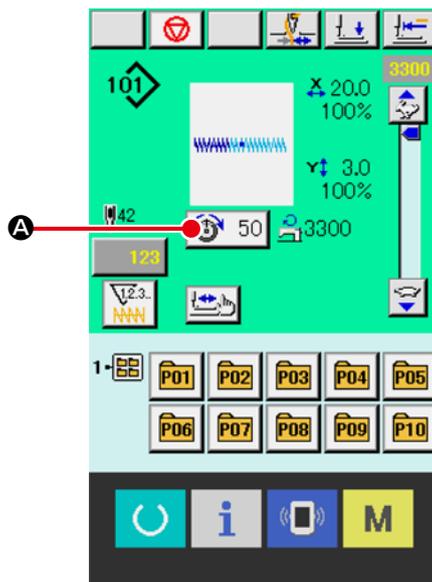


9-2 Deleting thread tension command at every needle entry point

① Display the thread tension command change screen.

When a user pattern or media pattern is selected, press the THREAD TENSION button  50 **A** on the sewing screen to display the thread tension setting screen.

When THREAD TENSION COMMAND CHANGE button  **B** on the thread tension setting screen is pressed, the thread tension command change screen is displayed.



② **Designate the command position desired to be deleted.**

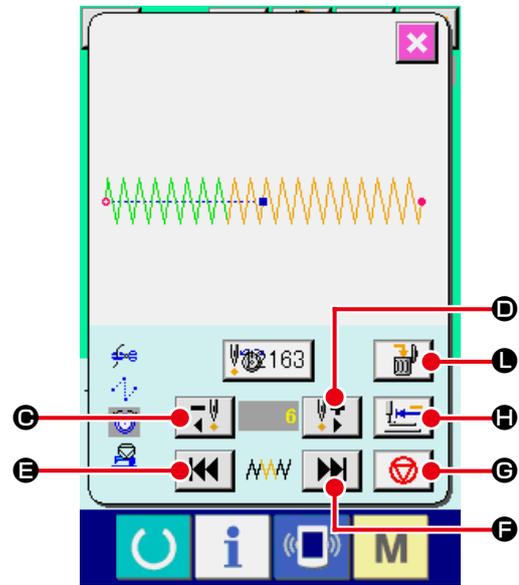
Specify the command position you desire to delete with ONE STITCH BACKWARD button 

 or ONE STITCH FORWARD button  in the state that the presser is lowered.

In addition, the machine moves to the needle entry point where the front or rear thread tension command exists with   or  . When you desire to stop the move, press STOP button  .

When ORIGIN MOVE button   is pressed, the machine moves to the origin.

When the present needle entry point exists on the thread tension command, COMMAND DELETE button   is displayed.

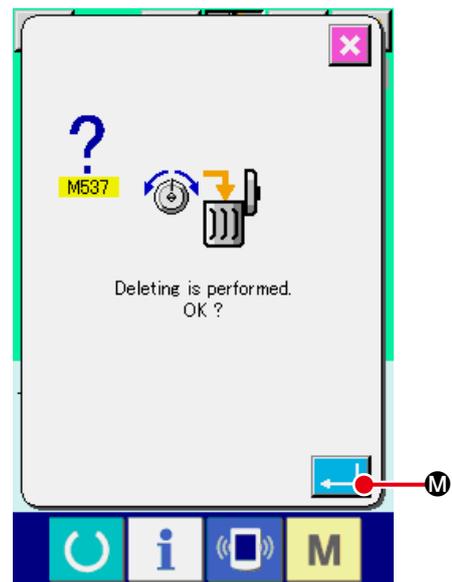


③ **Delete the thread tension command.**

When COMMAND DELETE button   is pressed, the command delete screen is displayed.

When ENTER button   is pressed, the command is deleted.

* For the standard patterns, the thread tension command cannot be deleted.

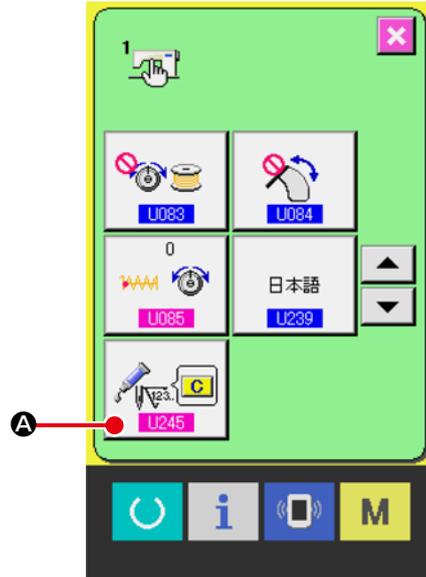


10. PERFORMING RELEASE OF GREASE-UP ERROR

When the number of stitches of grease-up exceeds 100 million stitches or more, E220, grease-up warning occurs when turning ON the power.

Clear the number of stitches of grease-up with memory switch **U245**, grease-up error clear after replenishing grease. E220 is displayed each time turning ON the power until clearing is performed.

When the number of stitches of grease-up exceeds 120 million stitches or more, E221, grease-up error occurs when READY key is pressed. When E221 occurs, it is not possible to sew. Clear the number of stitches of grease-up with memory switch **U245**, grease-up error clear after replenishing grease

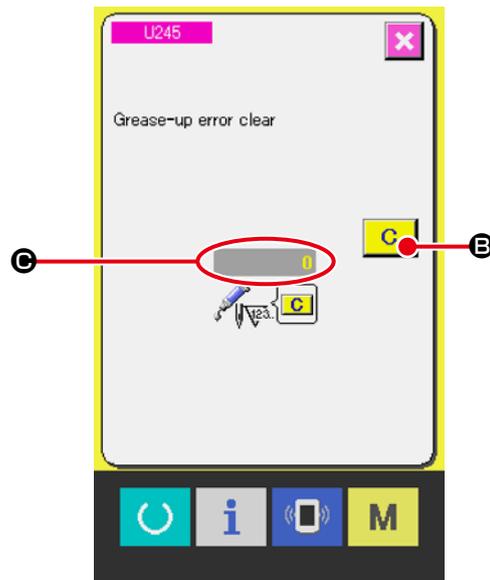


① Display the memory switch data list screen.

Display the memory switch data list screen and select button **A** of **U245** Grease-up error clear. The grease-up error clear screen is displayed.

② Clear the number of stitches of grease-up.

When CLEAR button **C** **B** is pressed, the pop-up is closed and the number of stitches of grease-up can be cleared.



1. Error code E220 or E221 is displayed again unless NUMBER OF STITCHES **C** is changed to "0" after replenishing the designated places with grease. When E221 is displayed, the sewing machine fails to operate. So, be careful.
2. Be sure to turn the power OFF before applying grease.

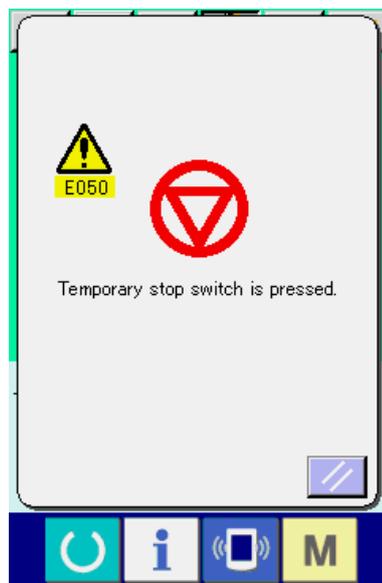
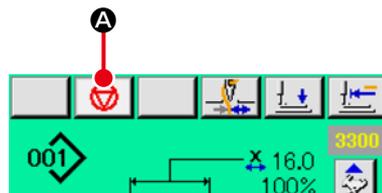
11. USING TEMPORARY STOP

When the panel temporary stop button is selected with memory switch **L031**, TEMPORARY STOP button  **A** is displayed on the sewing screen.

When the TEMPORARY STOP button  **A** is pressed during sewing, the sewing machine can be stopped. At this time, the error screen is displayed to inform that the TEMPORARY STOP button  **A** is pressed.



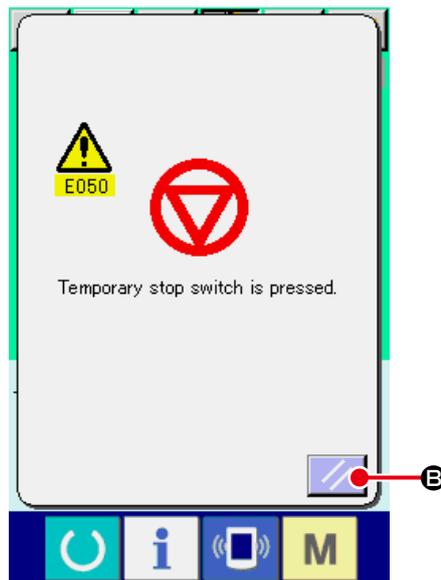
Perform the same operation when the external switch is used for the temporary stop.



11-1 To continue performing sewing from some point in sewing

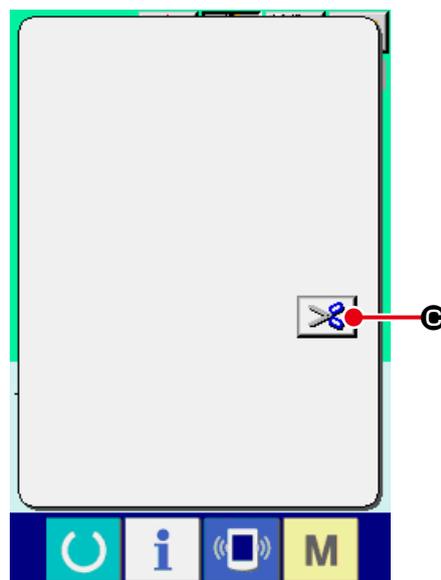
① Release the error.

Press RESET button  **B** to release the error.



② Perform thread trimming.

Press THREAD TRIM button  **C** to perform
When thread trimming has been performed,
FEED BACK button  **D**, FEED FORWARD
button  **E** and RETURN TO ORIGIN button
 **F** are displayed on the screen.

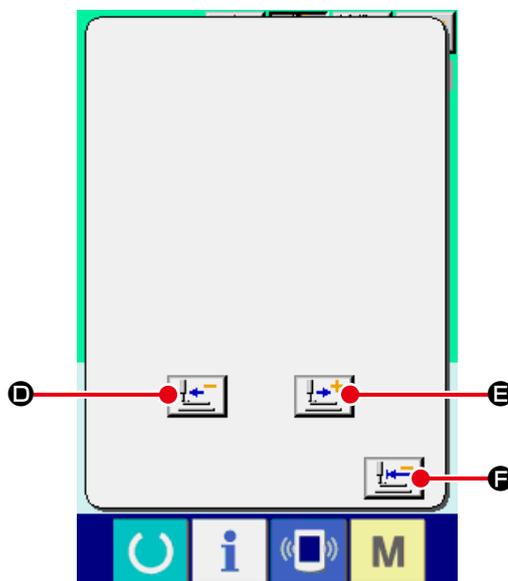


③ Adjust the presser to the re-sewing position.

When FEED BACK button  **D** is pressed,
the presser returns stitch and by stitch and when
FEED FORWARD button  **E** is pressed, it
advances stitch by stitch. Move the presser to the
re-sewing position.

④ Re-start the sewing

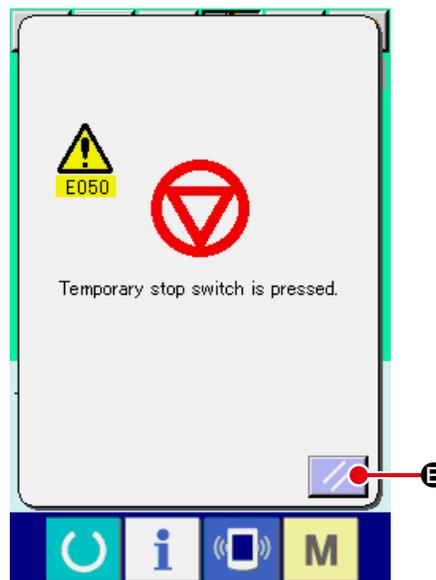
When the pedal is depressed, sewing starts
again.



11-2 To perform re-sewing from the start

① Release the error.

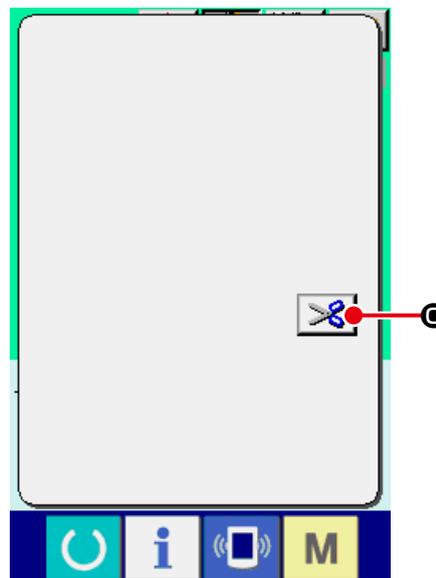
Press RESET button  **B** to release the error.



② Perform thread trimming.

Press THREAD TRIM button  **C** to perform thread trimming.

When thread trimming is performed, FEED BACK button  **D**, FEED FORWARD button  **E** and RETURN TO ORIGIN button  **F** are displayed on the screen.

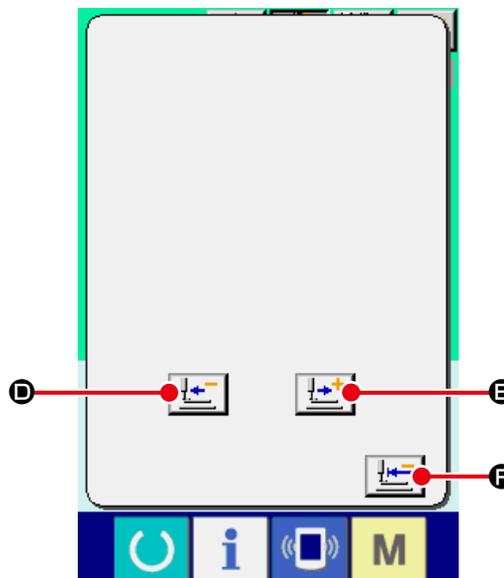


③ Return to the origin.

When RETURN TO ORIGIN button  **F** is pressed, the pop-up is closed, the sewing screen is displayed and the machine returns to the position of the start of sewing.

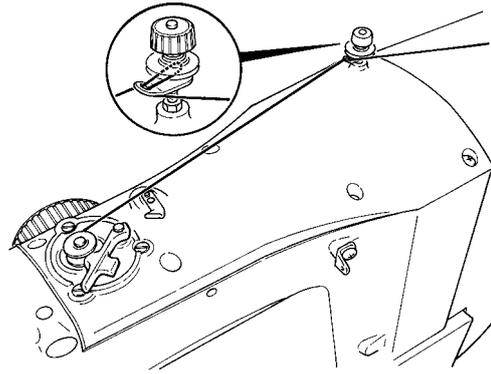
④ Perform again the sewing work from the start

When the pedal is depressed, sewing starts again.



12. WINDING BOBBIN THREAD

Pass the thread to wind bobbin thread as shown in the figure on the right side.



① Display the bobbin winding screen.

If the individual sewing standard screen (blue) is displayed, press the BOBBIN WINDER button



A to display the bobbin winding screen.



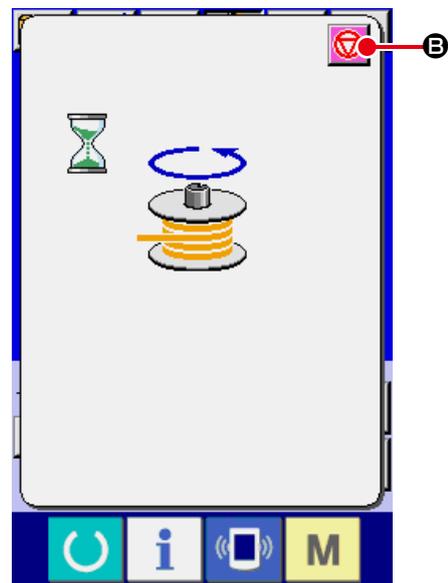
② Start bobbin winding.

Depress the start pedal, and the sewing machine rotates and starts winding bobbin thread.



③ Stop the sewing machine.

Press STOP button  **B** and the sewing machine stops and returns to the normal mode. Or, depress the start pedal again during winding bobbin and the sewing machine stops while the bobbin thread winding mode stays as it is. Depress the start pedal again and the bobbin winding starts again. Use this way when winding bobbin thread around plural bobbins.



Bobbin winder does not work immediately after turning ON the power or moving from the main unit input.



Perform the bobbin winding after setting pattern No. or the like, pressing READY key , and making the sewing screen display.

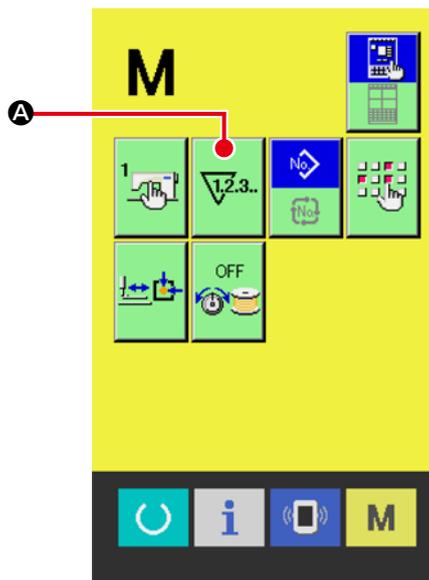
13. USING COUNTER

13-1 Setting procedure of the counter

① Display the counter setting screen.

When you press the **M** key on the independent sewing standard screen, the counter setting button  **A** is displayed on the screen.

When this button is pressed, the counter setting screen is displayed.



② Selection of kinds of counters

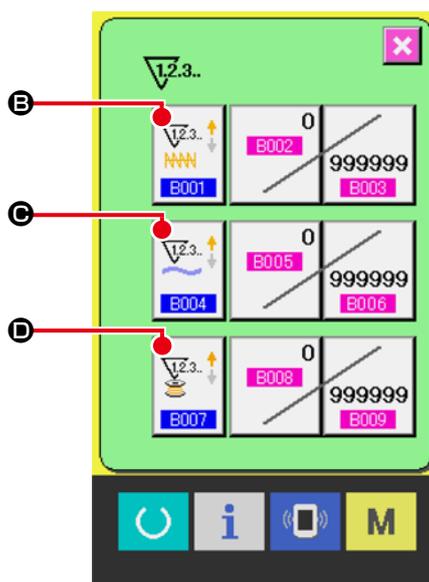
This sewing machine has three different counters; i.e., the sewing counter, No. of pcs. counter and bobbin counter. When SEWING COUNTER TYPE

SELECT button  **B**, NO. OF PCS. COUNTER

TYPE SELECT button  **C** or BOBBIN COUNT-

ER TYPE SELECT button  **D** is pressed, the

corresponding counter type select screen is displayed. On this screen, the counter type can be selected individually.



[Sewing counter]

UP counter :



Every time the sewing of one shape is performed, the existing value is counted up. When the existing value is equal to the set value, the count-up screen is displayed.

DOWN counter :

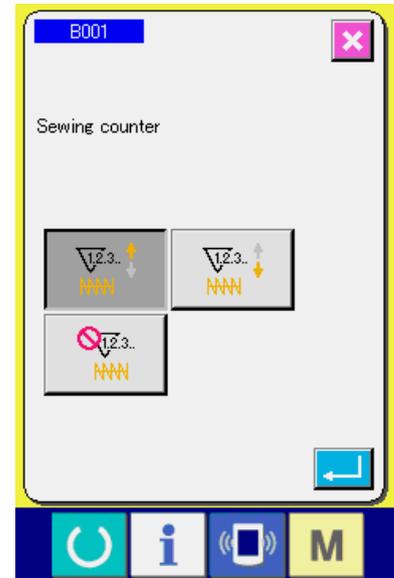


Every time the sewing of one shape is performed, the existing value is counted down. When the existing value is reached to "0", the count-up screen is displayed.

Counter disuse:



The sewing counter does not count a finished shape even when the machine has sewn the shape. The counter screen of the sewing counter is not displayed.



[No. of pcs. Counter]

UP counter :



Every time one combination sewing is performed, the existing value is counted up. When the existing value is equal to the set value, the count-up screen is displayed.

DOWN counter :

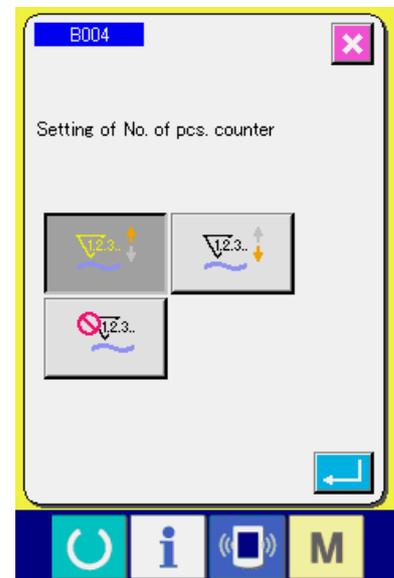


Every time one combination sewing is performed, the existing value is counted down. When the existing value is reached to "0", the count-up screen is displayed.

Counter disuse:



The No. of pcs. counter does not perform counting. The counter screen of the No. of pcs. counter is not displayed.



[Bobbin counter]

UP counter :



The counter increases the existing value by one every time the machine has sewn 10 stitches. When the existing value is equal to the set value, the count-up screen is displayed.

DOWN counter :

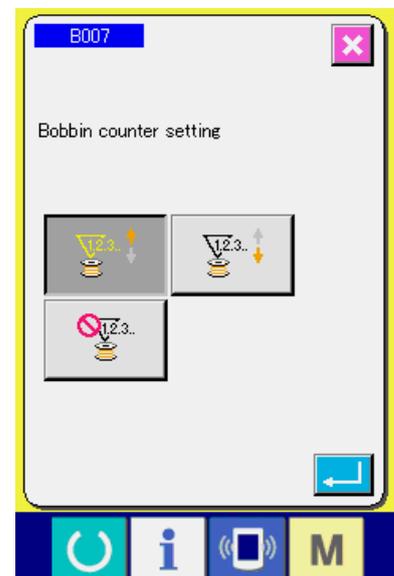


The counter decreases from the existing value by one every time the machine has sewn 10 stitches. When the existing value is reached to "0", the count-up screen is displayed.

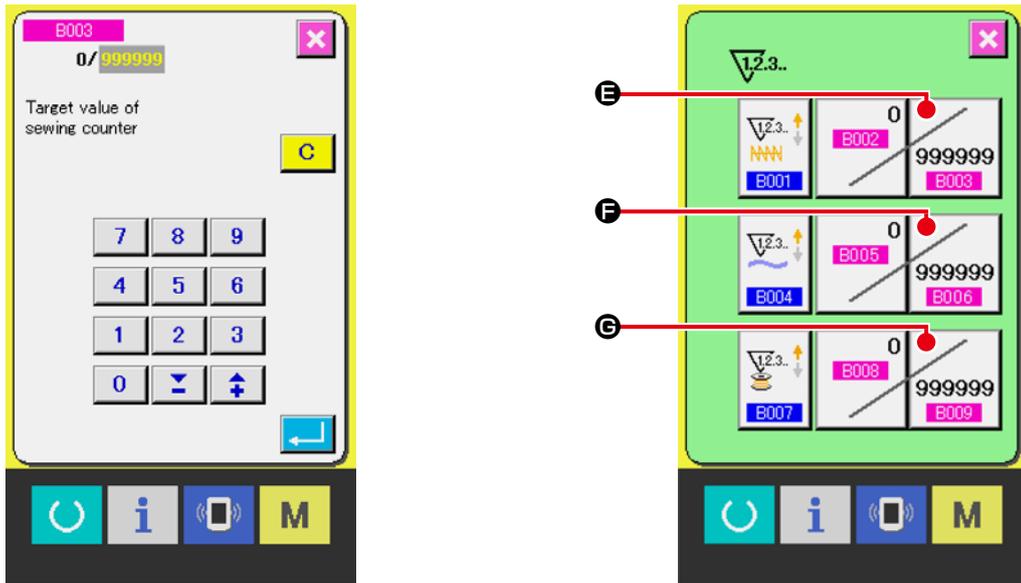
Counter disuse:



The bobbin counter does not perform counting. The counter screen of the bobbin counter is not displayed.



③ Change of counter set value

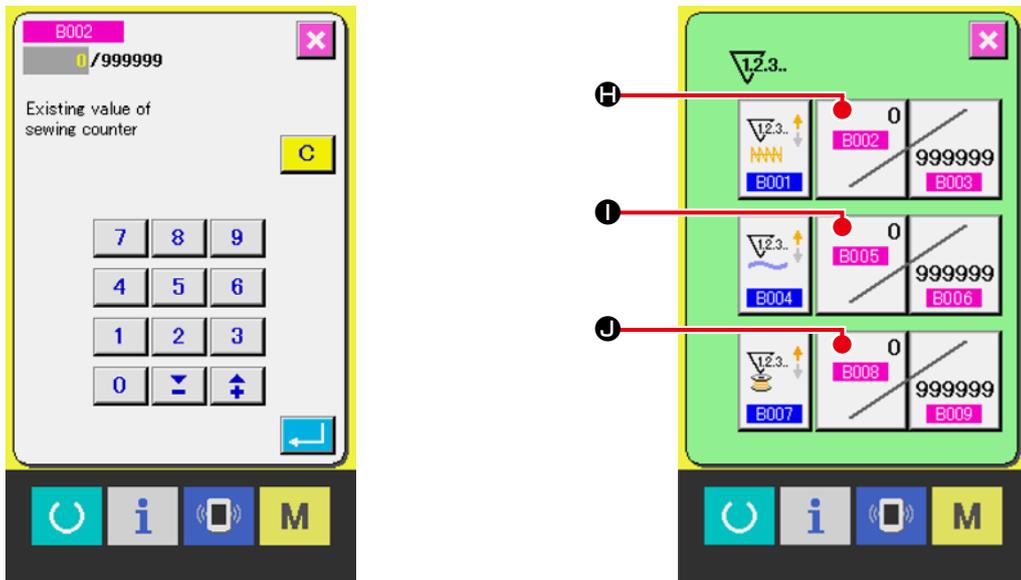


Press button  **E** for the sewing counter, button  **F** for the No. of pcs. counter or button  **G** for the bobbin counter to display the corresponding counter set value input screen.

Here, input the set value.

When "0" is inputted in the set value, the display of count-up screen is not performed.

④ Change of counter existing value

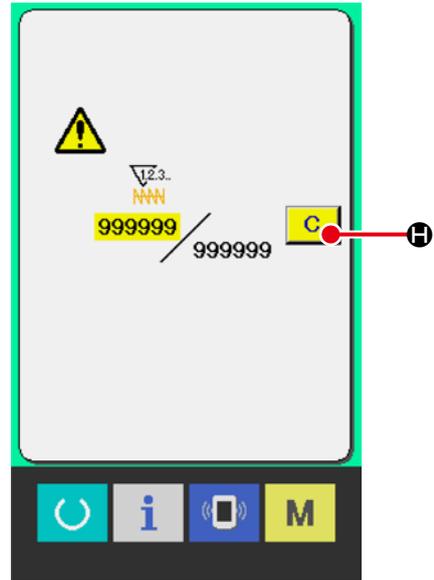


Press button  **H** for the sewing counter, button  **I** for the No. of pcs. counter or button  **J** for the bobbin counter to display the corresponding counter current value input screen.

Here, input the existing value.

13-2 Count-up releasing procedure

When the count-up condition is reached during sewing work, the count-up screen is displayed and the buzzer beeps. Press CLEAR button **C** **H** to reset the counter and the screen returns to the sewing screen. Then the counter starts counting again.

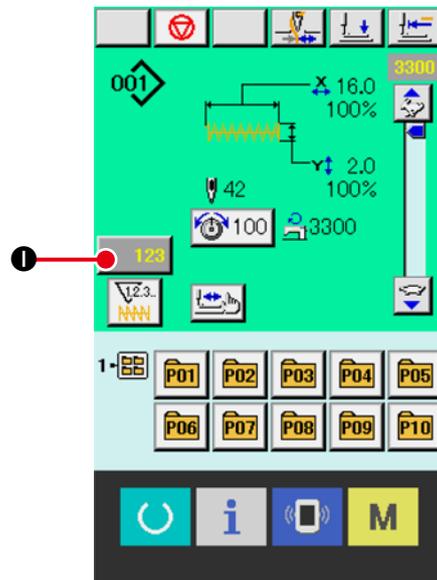


13-3 How to change the counter value during sewing

① Display the counter value change screen.

When you desire to revise the counter value during sewing work due to the mistake or the like, press COUNTER VALUE CHANGE button **123**

I on the sewing screen. The counter value change screen is displayed.



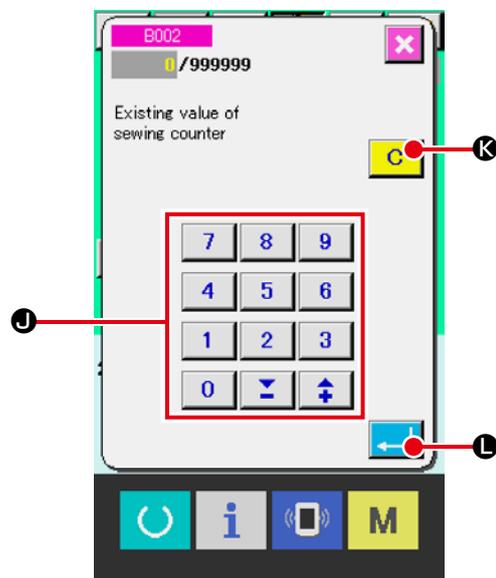
② Change the counter value.

Input the value you desire with ten keys, or + or - key **J**.

③ Determine the counter value.

When ENTER button **L** is pressed, the data is determined.

When you desire to clear the counter value, press CLEAR button **C** **K**.



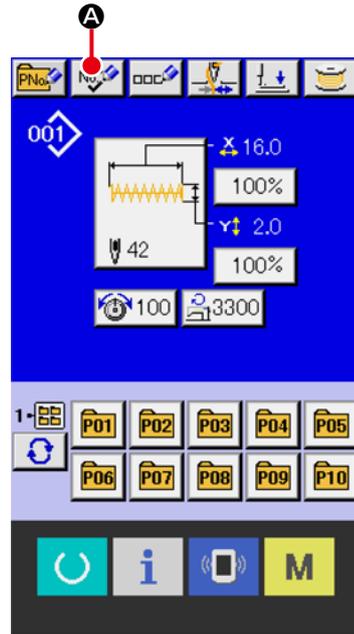
14. PERFORMING NEW REGISTER OF USERS' PATTERN

① Display the data input screen.

New pattern registration is only possible on the individual sewing standard screen (blue). If the sewing screen (green) is displayed, press the READY key  to display the individual sewing standard screen (blue).

② Call the new register of users' pattern screen.

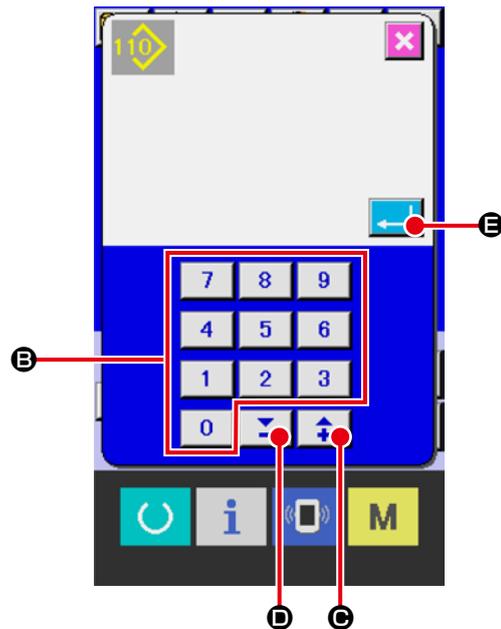
Press NEW REGISTER button  **A** and the new register of users' pattern screen is displayed.



③ Input the users' pattern No.

Input the users' pattern No. you desire to newly register with the ten keys **B**. When the users' pattern No. which has been already registered is inputted, press ENTER button  **E** and E403 is displayed, Then select the users' pattern No. which has not been registered. New register to the users' pattern No. which has been already registered is prohibited.

It is possible to retrieve the users' pattern No. which has not been registered with the + or - button  (**C** and **D**).



④ Determine the users' pattern No.

Press the ENTER button  **E** to confirm the new user pattern number to be registered and display the individual sewing standard screen for user pattern selection.

15. PERFORMING NEW REGISTER OF PATTERN BUTTON

- ① **Display the individual sewing standard screen.**

New direct pattern registration is only possible on the individual sewing standard screen (blue). If the sewing screen (green) is displayed, press the READY key  to display the individual sewing standard screen (blue).

- ② **Call the new direct pattern registration screen.**

When you press the DIRECT PATTERN NEW REGISTER button  **A**, the new direct pattern registration screen will be displayed.

- ③ **Enter the direct pattern number.**

Enter the new direct pattern number you want to register using the numeric keypad **B**.

If you enter a direct pattern number that has already been registered, the registered sewing shape will be displayed at the top of the screen. In this case, select an unregistered direct pattern number, where nothing is displayed.

Registering a new entry for a direct pattern number that has already been registered is prohibited. You can also search for unregistered direct pattern numbers using the + and - buttons  (**C** and **D**).

- ④ **Select the folder to save.**

Direct patterns can be saved in one of the five folders available.

Up to 10 direct patterns can be saved in one folder.

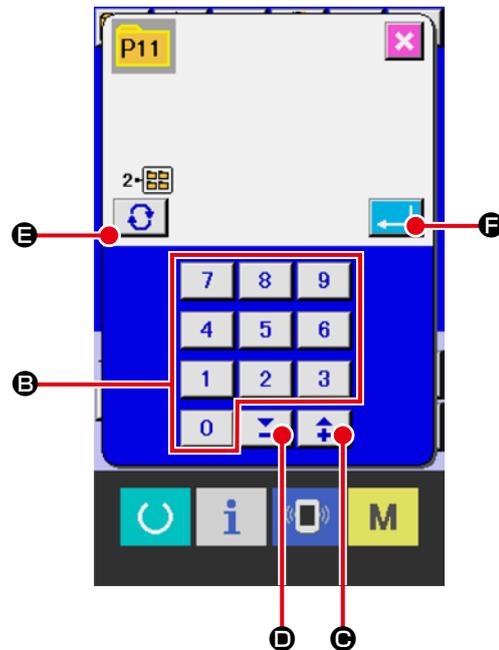
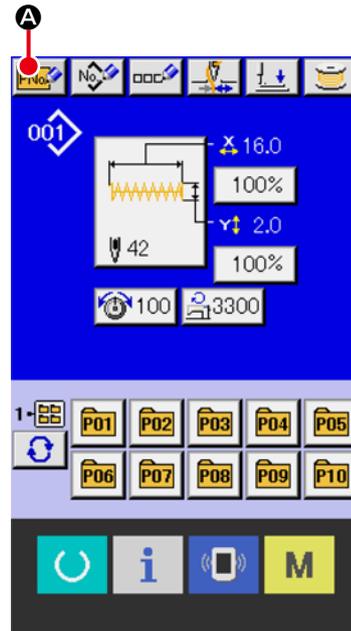
You can select the folder to save using the FOLDER SELECTION button **E**.

The folders that already contain 10 direct pattern will not be displayed.

- ⑤ **Confirm the pattern number.**

Press the ENTER button  **F** to confirm the new direct pattern number to be registered and display the individual sewing standard screen for direct pattern selection.

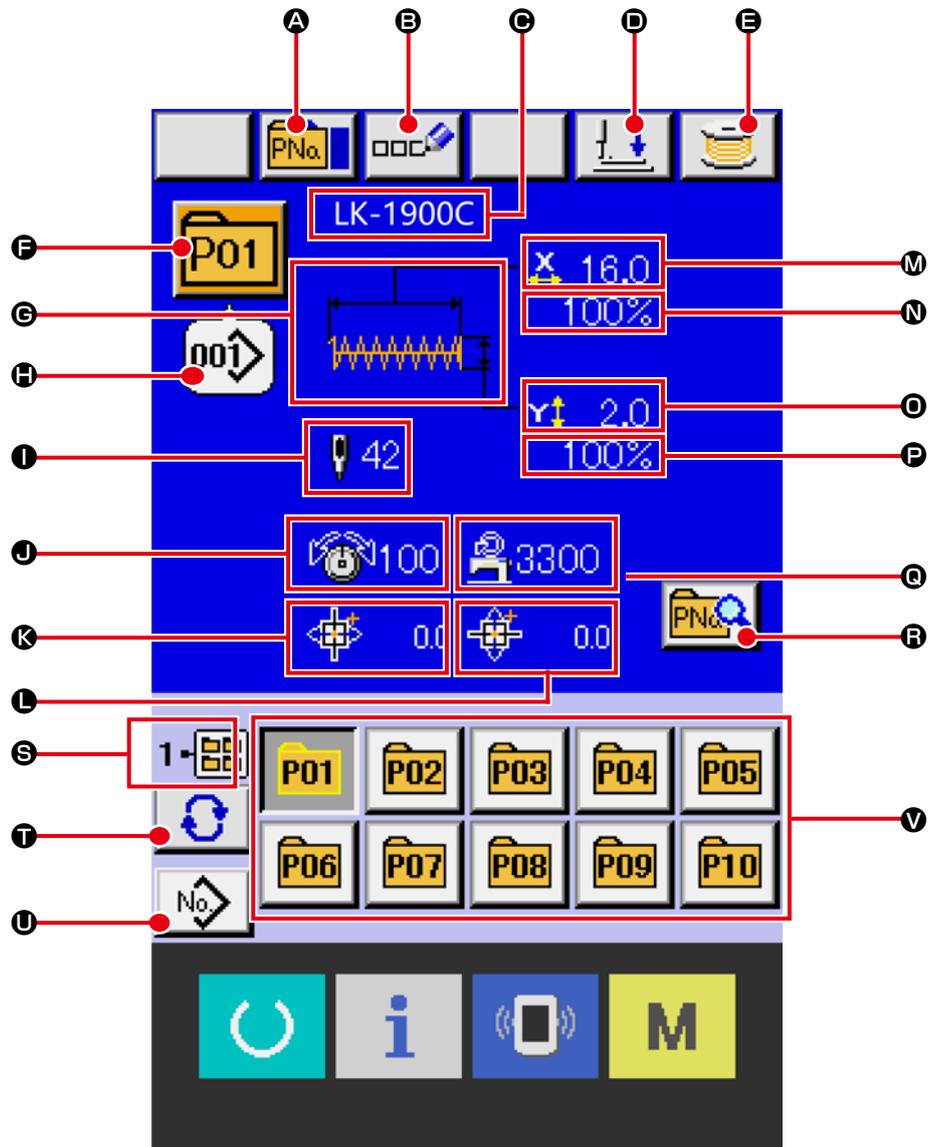
- * When registering a user pattern as a direct pattern, the comments registered in the user pattern will not be copied.



When the sewing screen is displayed and pressing P1 to P50 keys, the presser comes down. Be careful not to allow the fingers to be caught in it.

16. LCD DISPLAY SECTION DURING DIRECT PATTERN SELECTION

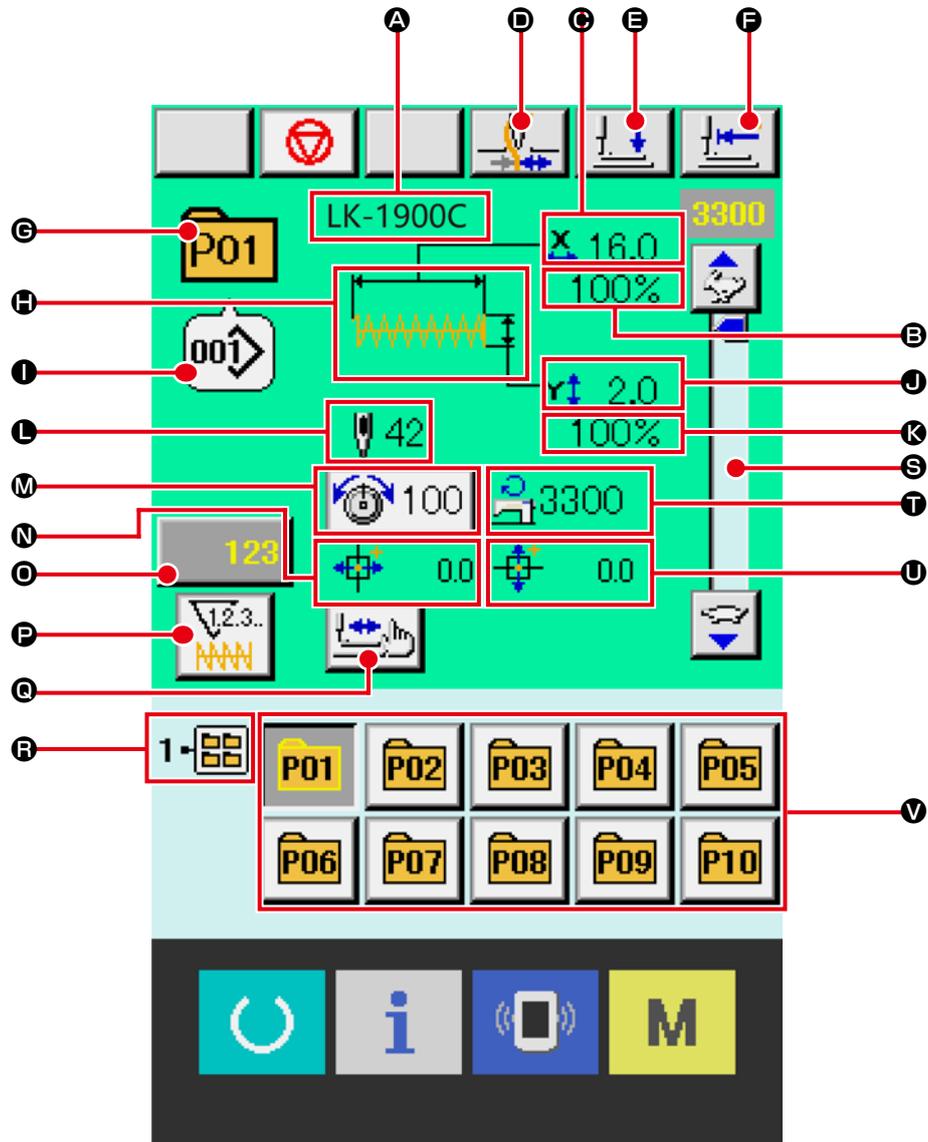
16-1 Individual sewing standard screen (Direct pattern)



	Button and display	Description
A	DIRECT PATTERN COPY button	Displays the direct pattern copy screen. → Refer to “20. COPYING A DIRECT PATTERN” p.52 .
B	DIRECT PATTERN NAME SETTING button	Displays the direct pattern name input screen. → Refer to “19. NAMING PATTERN” p.51 .
C	DIRECT PATTERN NAME display	Shows the characters registered for the currently selected direct pattern number.
D	PRESSER LOWERING button	Presser can be lowered and the presser down screen is displayed. To raise the presser, press the presser up button displayed in the presser down screen.
E	WINDING BOBBIN button	Bobbin thread can be wound. → Refer to “12. WINDING BOBBIN THREAD” p.34 .
F	DIRECT PATTERN No. display	Direct pattern No. being selected at present is displayed on this button and when the button is pressed, the direct pattern No. selection screen is displayed. → Refer to “17. PERFORMING DIRECT PATTERN No. SELECTION” p.47 .
G	SEWING SHAPE	Sewing shape which is registered to the direct pattern No. being selected is displayed.
H	SEWING SHAPE No.	Displays the type and number of the sewing shape registered in the currently selected direct pattern number. There is only one type of sewing shape. ① Individual sewing pattern No.001-100 : Standard pattern No.101-999 : Users' pattern
I	TOTAL No. OF STITCHES	Displays the total number of stitches of the sewing shape registered in the direct pattern number currently being sewn.
J	THREAD TENSION display	Thread tension value which is registered to the direct pattern No. being selected is displayed.
K	TRAVEL AMOUNT IN X DIRECTION display	Travel amount in X direction which is registered to the direct pattern No. being selected is displayed.
L	TRAVEL AMOUNT IN Y DIRECTION display	Travel amount in Y direction which is registered to the direct pattern No. being selected is displayed.
M	X ACTUAL SIZE VALUE display	X actual size value which is registered to the direct pattern No. being selected is displayed.
N	X SCALE RATE display	X scale rate which is registered to the direct pattern No. being selected is displayed.
O	Y ACTUAL SIZE VALUE display	Y actual size value which is registered to the direct pattern No. being selected is displayed.
P	Y SCALE RATE display	Y scale rate which is registered to the direct pattern No. being selected is displayed.
Q	MAX. SPEED LIMITATION	Maximum speed limitation which is registered to the direct pattern No. being selected is displayed.

Ⓡ	Direct pattern edit screen is displayed.	Direct pattern edit screen is displayed. → Refer to “18. CHANGING CONTENTS OF DIRECT PATTERN” p.49 .
Ⓢ	FOLDER No. display	Folder No. in which the displayed direct pattern are stored is displayed.
Ⓣ	FOLDER SELECTION button	Folders to display the direct pattern are displayed in order.
Ⓤ	ORIGINAL PATTERN CHANGE-OVER button	Displays the individual sewing standard screen for a pattern registered as a direct pattern. → Refer to “4-1 Individual sewing standard screen” p.8 .
Ⓥ	DIRECT PATTERN	Pattern buttons stored in Ⓢ Folder No. are displayed. You can switch to the selected direct pattern with a single touch. → Refer to “15. PERFORMING NEW REGISTER OF PATTERN BUTTON” p.40 .

16-2 Sewing screen



	Button and display	Description
A	DIRECT PATTERN NAME display	Character which is registered to the direct pattern No. being sewn is displayed.
B	X SCALE RATE display	Displays the scale rate in the X direction registered in the direct pattern number currently being sewn.
C	X ACTUAL SIZE VALUE display	Displays the actual size value in the X direction registered in the direct pattern number currently being sewn.
D	THREAD CLAMP button	Effective/ineffective of thread clamp is selected.  : Thread clamp ineffective  : Thread clamp effective * When the prohibition of thread clamp is set with memory switch U035 , the thread clamp button is not displayed.
E	PRESSER LOWERING button	Presser can be lowered and the presser down screen is displayed. To raise the presser, press the presser up button displayed in the presser down screen
F	RETURN TO ORIGIN button	Presser is returned to the start of sewing and is raised.
G	PATTERN No. display	Displays the direct pattern number currently being sewn.
H	SEWING SHAPE display	Sewing shape being sewn is displayed.
I	SEWING SHAPE No. display	Displays the type and pattern number of the sewing registered in the pattern currently being sewn.
J	Y ACTUAL SIZE VALUE display	Displays the actual size value in the Y direction registered in the currently selected direct pattern number.
K	Y SCALE RATE display	Displays the scale rate in the Y direction registered in the direct pattern number currently being sewn.
L	TOTAL No. OF STITCHES OF SEWING SHAPE display	Total number of stitches of sewing shape which is registered to the direct pattern No. being sewn is displayed.
M	NEEDLE THREAD TENSION SETTING button	Displays the needle thread tension value, set for the direct pattern currently being sewn, on the button. Press this button to display the item data change screen. → Refer to “7. PERFORMING ITEM DATA CHANGE” p.22 .
N	TRAVEL AMOUNT IN X DIRECTION display	Displays the travel amount in the X direction registered in the direct pattern number currently being sewn.
O	COUNTER VALUE CHANGE button	Existing counter value is displayed on this button. When the button is pressed, the counter value change screen is displayed. → Refer to “13. USING COUNTER” p.35 .
P	COUNTER CHANGEOVER button	Display of sewing counter/No. of pcs. counter can be changed over. → Refer to “13. USING COUNTER” p.35 .
Q	STEP SEWING button	The step sewing screen is displayed. Checking the pattern shape can be performed. → Refer to “8. CHECKING PATTERN SHAPE” p.24 .

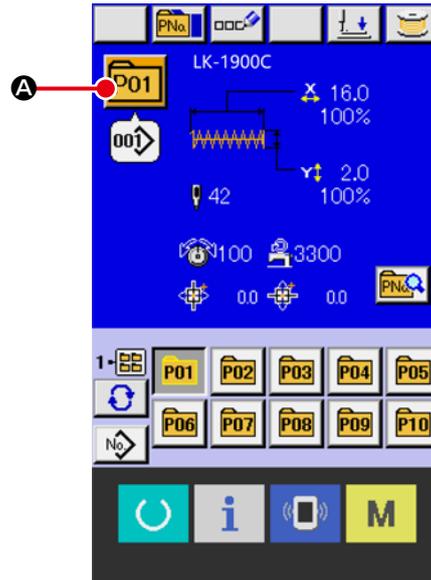
F	FOLDER No. display	Displays the folder number where the displayed direct pattern is saved.
S	SPEED variable resistor	Number of revolutions of the sewing machine can be changed.
T	MAX. SPEED LIMITATION display	Maximum speed limitation which is registered to the direct pattern No. being sewn is displayed.
U	TRAVEL AMOUNT IN Y DIRECTION display	Travel amount in Y direction which is registered to the direct pattern No. being sewn is displayed.
V	DIRECT PATTERN	<p>Pattern button which has been stored in F folder No. is displayed.</p> <p>You can switch to the selected direct pattern with a single touch.</p> <p>→ Refer to “15. PERFORMING NEW REGISTER OF PATTERN BUTTON” p.40 .</p>

17. PERFORMING DIRECT PATTERN No. SELECTION

17-1 Selecting from the individual sewing standard screen

① **Display the individual sewing standard screen.**

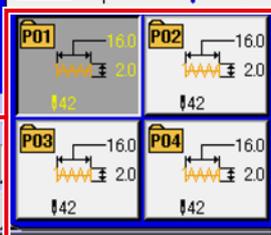
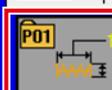
Direct pattern number selection is only possible on the individual sewing standard screen (blue). If the sewing screen (green) is displayed, press the READY key  to display the individual sewing standard screen.

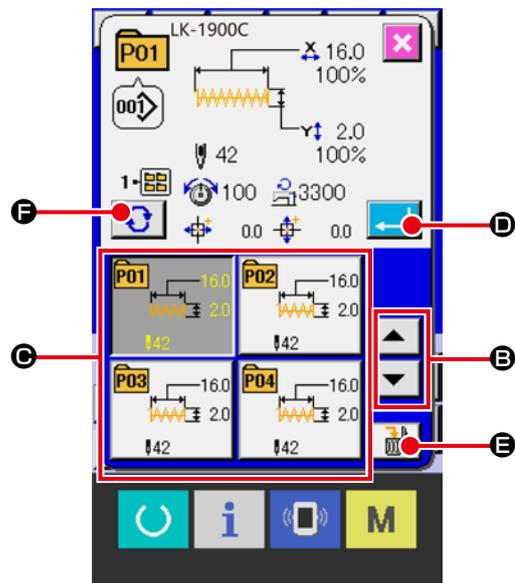


② **Call the direct pattern No. selection screen.**

When DIRECT PATTERN No. SELECTION button  **A** is pressed, the direct pattern No. selection screen is displayed. Direct pattern No. which is selected at present and the contents are displayed on the upper part of the screen, and the list of the direct pattern buttons which have been registered is displayed on the lower part of the screen.

③ **Select the direct direct pattern No.**

When UP or DOWN SCROLL button  **B** is pressed, direct pattern buttons  **C** which have been registered are changed over in order. The contents of sewing data which have been inputted in the direct pattern No. are displayed in the button. Here, press the direct pattern button  **C** you desire to select.



④ **Determine the direct pattern No.**

When ENTER button  **D** is pressed, the direct pattern No. selection screen is closed and the selection is finished.

- * When you desire to delete the direct pattern which has been registered, press DELETE  **E** button. However, the direct pattern which are registered to the combination sewing cannot be deleted.
- * For the pattern No. to be displayed, press FOLDER SELECTION  **F** button and pattern button Nos. which have been stored in the specified folder are displayed in the list. When the folder No. is not displayed, all direct pattern Nos. which have been registered are displayed.

17-2 Selection by means of the shortcut button

① Display the individual sewing standard screen or the sewing screen.

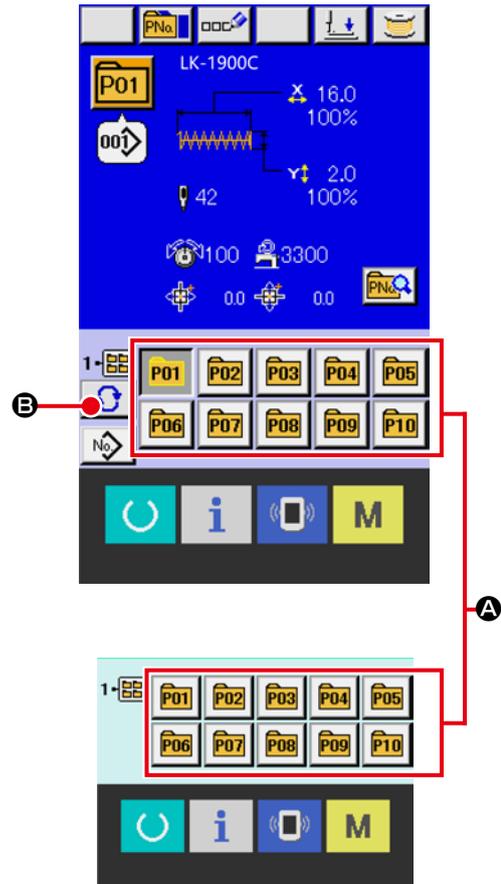
When a direct pattern has been registered in a folder, button **A** is always displayed at the bottom of the individual sewing standard screen and the sewing screen.

② Select the pattern No.

Direct pattern is displayed with every folder which is specified when the pattern is newly created.

When FOLDER SELECTION button  **B** is pressed, the direct pattern to be displayed is changed.

Display and press the button of the direct pattern No. you desire to sew. When it is pressed, the direct pattern No. is selected.



1. Make sure without fail of the contour of the sewing pattern after selection of the sewing pattern. If the sewing pattern extends outside the work clamp feet, the needle will interfere with the work clamp feet during sewing, causing dangerous troubles including needle breakage.
2. When the sewing screen is displayed and pressing P01 to P50 keys, the presser comes down. Be careful not to allow the fingers to be caught in it.

18. CHANGING CONTENTS OF DIRECT PATTERN

- ① Display the individual sewing standard screen for direct pattern selection.

You can change a direct pattern content only on the individual sewing standard screen (blue) for direct pattern selection.

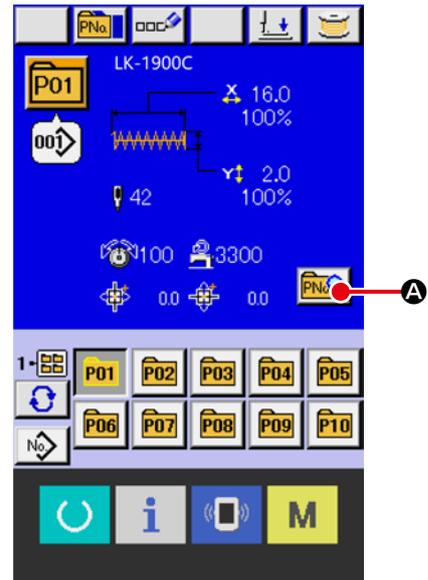
If the sewing screen (green) is displayed, press the READY key



to display the data input screen of the individual sewing standard screen for direct pattern selection.

- ② Display the direct pattern edit screen.

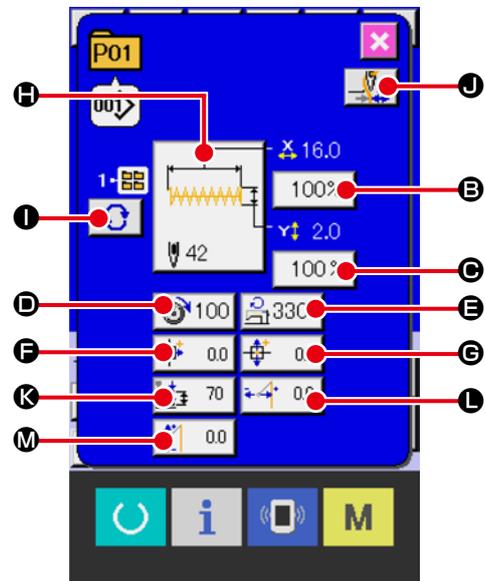
Press the DIRECT PATTERN EDIT button  **A** to display the direct pattern edit screen.



- ③ Display the input screen of the item data you desire to change.

Data which are possible to be changed are 12 items below.

	Item	Input range	Initial value
B	Scale rate in X direction	20 to 200 (%)	100
C	Scale rate in Y direction	20 to 200 (%)	100
D	Thread tension	0 to 200	50
E	Max. speed limitation	1900 : 400 to 3300 (sti/min)	3200
		1901 and 1902 : 400 to 3000 (sti/min)	3000
		1903 and 1905C : 400 to 2700 (sti/min)	2700
F	Travel amount in X direction	-20.0 to 20.0 (mm)	0.0
G	Travel amount in Y direction	-20.0 to 10.0 (mm)	0.0
H	Sewing shape	-	-
I	Folder No.	1 to 5	-
J	Thread clamp	With/without	With
K	2-step stroke height	50 to 90	70
L	Last stitch position X-travel amount	-2.0 to 2.0	0.0
M	Last stitch position Y-travel amount	-2.0 to 2.0	0.0



When each button from **B** to **M** is pressed, the item data input screen is displayed. When the buttons of **I** and **J** are pressed, Folder Nos. and With/without thread clamp are changed over.

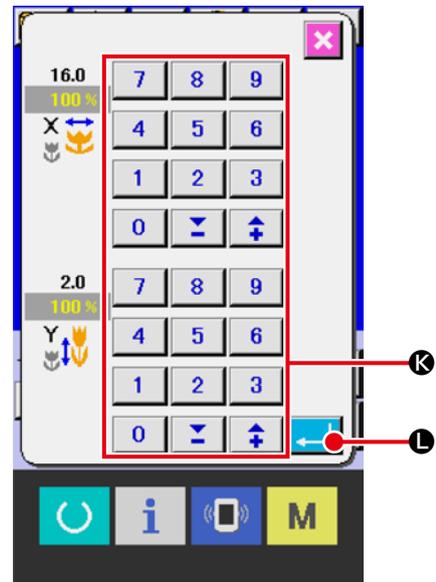
- * **B** Scale rate in X direction and **C** Scale rate in Y direction can be changed to the actual size value input by selection of memory switch **U064**.
- * Range of max input of max. limitation speed **E** and the initial value are determined with memory switch **U001**.
- * When the prohibition of thread clamp is set with memory switch **U035**, the button of thread clamp **J** is not displayed.
- * For the 2-step presser foot stroke height **K**, you can select display/hide using the memory switch **U069**. (Initial setting: Hide)
When set to "Hide", the button will not be displayed.
- * For the last stitch position X-travel amount **L** and last stitch position Y-travel amount **M**, you can select display/hide using the memory switch **U070**. (Initial setting: Hide)
When set to "Hide", the button will not be displayed.

④ **Determine the change of item data.**

For example, input X scale rate. Press **B** to display the item data input screen.

Input the value you desire with the ten keys or + or - key **K**.

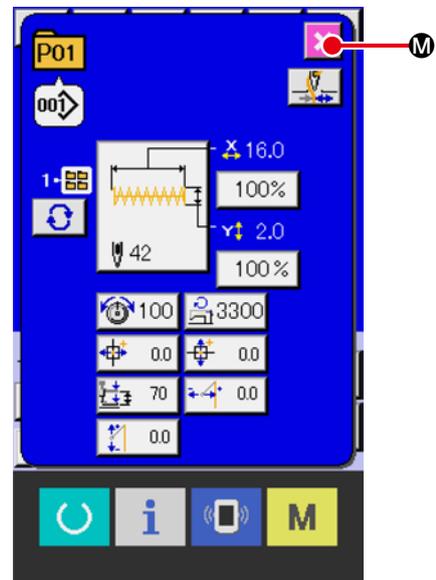
When ENTER button  **L** is pressed, the data is determined.



⑤ **Close the direct pattern edit screen.**

Once the change is complete, press the CANCEL button  **M**. The direct pattern edit screen will close, and the screen will return to the individual sewing standard screen.

* It can be performed to change the other item data by the same operation.



19. NAMING PATTERN

Pattern name can be inputted to the direct pattern, users' pattern, media pattern and combination sewing. It is possible for the direct pattern and combination sewing as many as 14 letters, and for the users' pattern, media pattern as many as 255 letters.

① Call the character input screen.

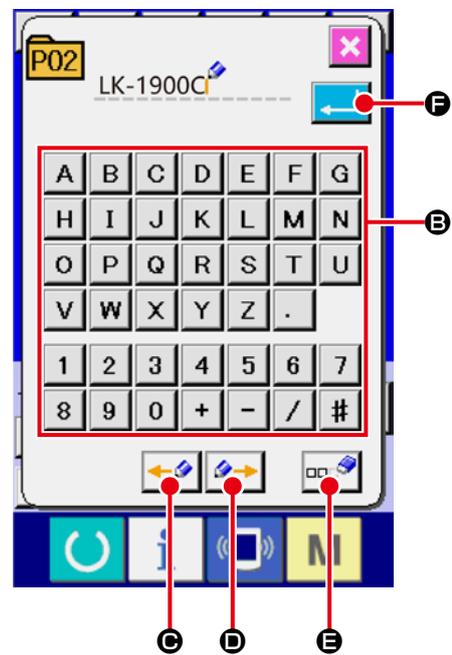
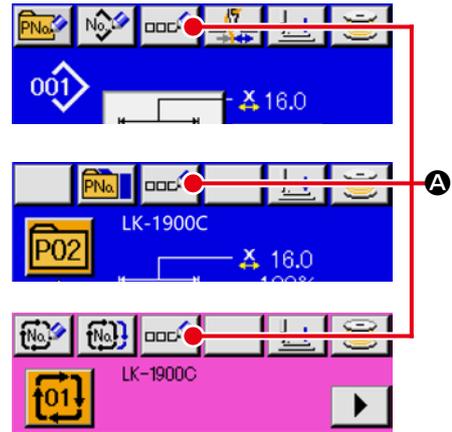
When CHARACTER INPUT button  **A** is pressed, the character input screen is displayed.

② Input the character.

Press CHARACTER button **B** you desire to input and the input of character can be performed. The cursor can be moved with CURSOR LEFT TRAVEL button  **C** and CURSOR RIGHT TRAVEL button  **D**. When you desire to delete the inputted character, adjust the cursor to the position of the character you desire to delete and press DELETE button  **E**.

③ Finish the input of character.

When ENTER button  **F** is pressed, the input of character is finished. After the finish, the inputted character is displayed on the upper part of the data input screen (blue).



20. COPYING A DIRECT PATTERN

You can copy the data of a registered direct pattern to an unregistered direct pattern number.

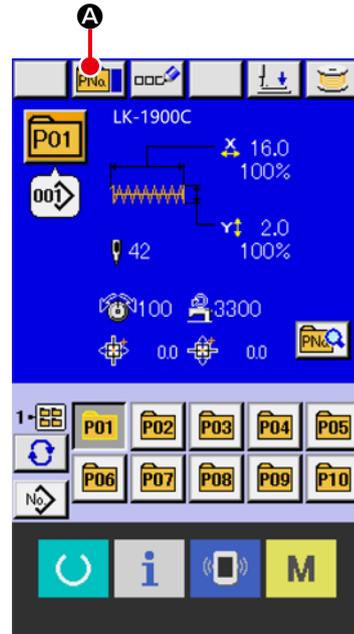
Overwriting copy of the direct pattern is prohibited.

When you desire to overwrite, perform the overwriting after erasing the direct pattern once.

→ Refer to “17. PERFORMING DIRECT PATTERN No. SELECTION” p.47 .

① Display the data input screen.

Copying is only possible on the individual sewing standard screen (blue) for direct pattern selection. If the sewing screen (green) is displayed, press the READY key  to display the individual sewing standard screen (blue).



② Call the direct pattern copy screen.

Press the DIRECT PATTERN COPY button 

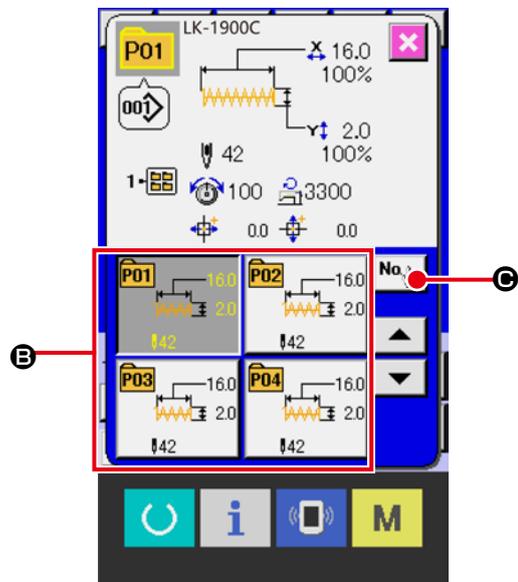
A to display the direct pattern copy (copy source selection) screen.

pressed, the pattern button copy (copy source selection) screen is displayed.

③ Select the pattern No. of copy source.

Select the copy source for the direct pattern number using the DIRECT PATTERN SELECTION button **B** .

Next, press COPY DESTINATION INPUT button  **C** and the copy destination input screen is displayed.



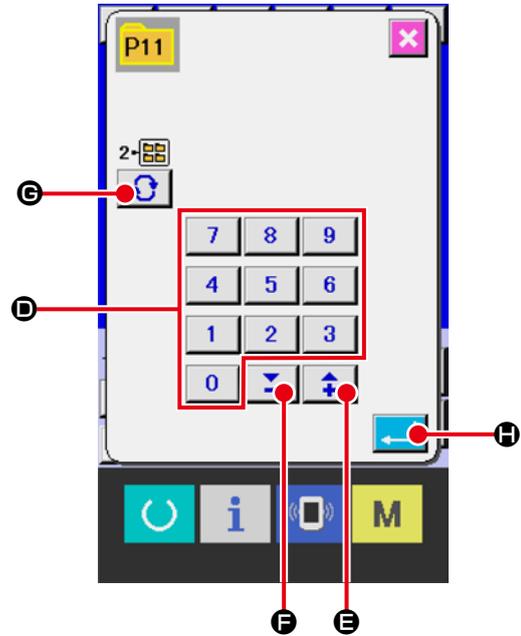
④ **Input the pattern No. of copy destination.**

Input the direct pattern No. of copy destination with ten keys **D** . Direct pattern No. which is not used yet can be retrieved with - and + buttons (**E** and **F**).

In addition, the folder to be stored can be selected with FOLDER SELECTION button  **G** .

⑤ **Start copying.**

When ENTER button  **H** is pressed, copying starts. After the copy is complete, the screen will return to the direct pattern copy (copy source selection) screen with the destination direct pattern number selected.



* Combination data can be copied in the same way.

21. CHANGING SEWING MODE

① Select the sewing mode.

With a direct pattern registered, pressing the **M** key will display the SEWING MODE SE-

LECTION button  **A** on the screen.

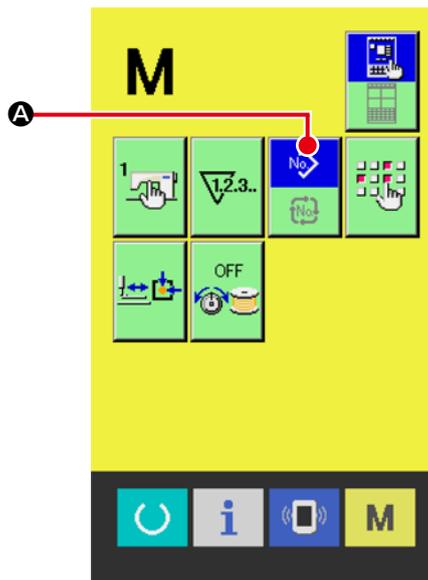
When this button is pressed, the sewing mode changes over alternately to the individual and the combination sewing.

- * The image of the button of sewing mode selection button changes according to the sewing mode which is selected at present.

When individual sewing is selected : 

When combination sewing (cycle) is selected : 

- * When even one of the direct pattern has not been registered, it is not possible to change over from the individual sewing to the combination sewing.



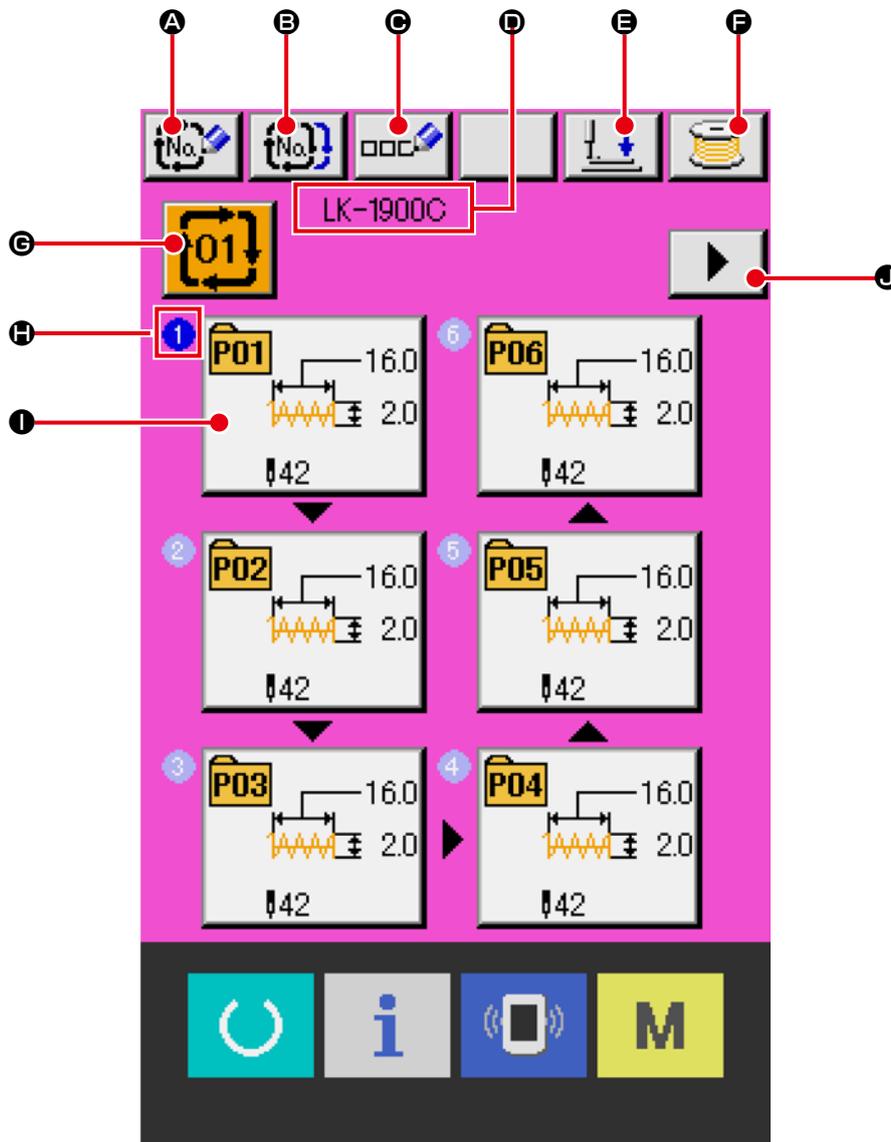
22. LCD DISPLAY SECTION AT THE TIME OF COMBINATION SEWING

The sewing machine is capable of sewing in order by combining the plural pattern data.

As many as 99 patterns can be inputted. Use this function when sewing plural different shapes on the sewing product. In addition, it is possible to register as many as 99 of the combination sewing data. Use this function for new creation and copying in case of need.

→ Refer to “15. PERFORMING NEW REGISTER OF PATTERN BUTTON” p.40 . and “20. COPYING A DIRECT PATTERN” p.52 .

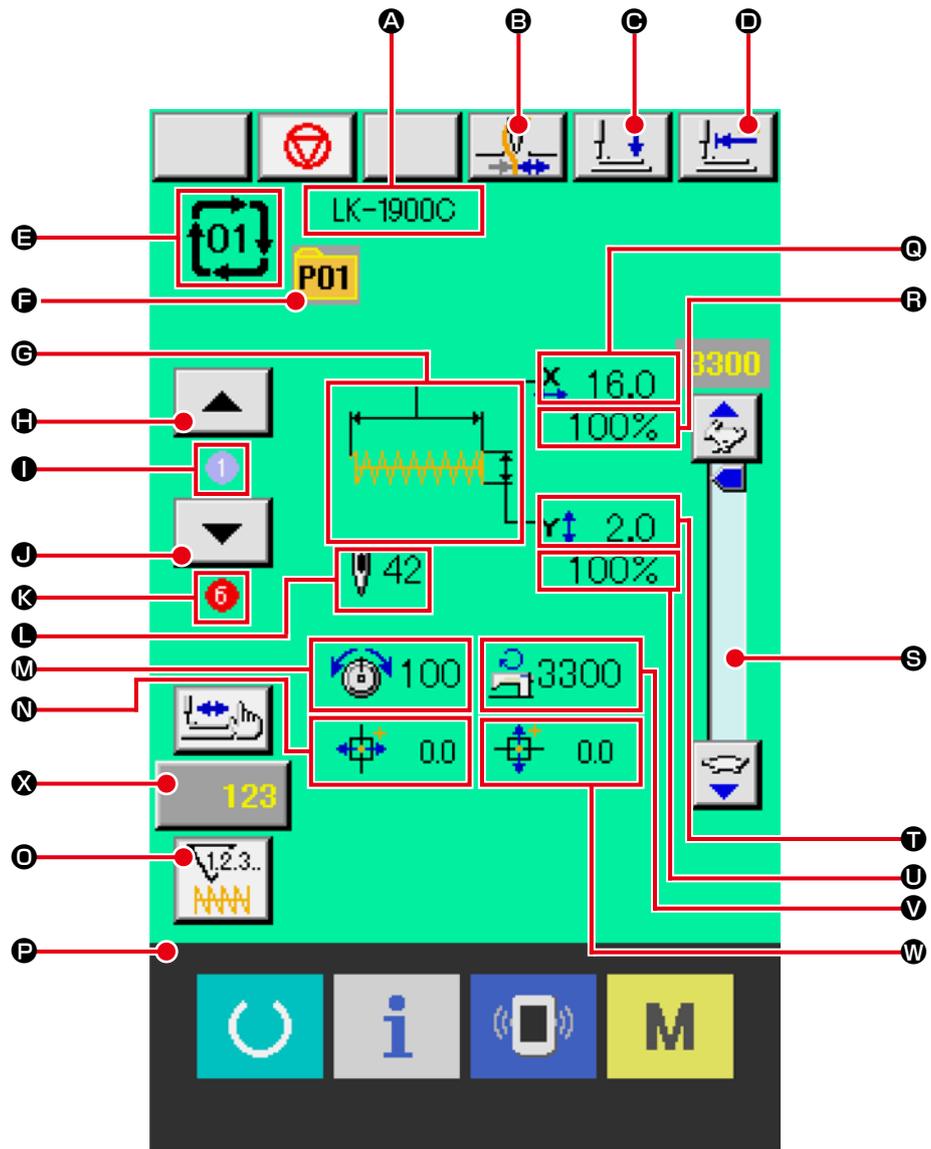
22-1 Cycle sewing standard screen



	Button and display	Description
Ⓐ	COMBINATION DATA NEW REGISTER button	Combination data No. new register screen is displayed. → Refer to “15. PERFORMING NEW REGISTER OF PATTERN BUTTON” p.40 .
Ⓑ	COMBINATION DATA COPY button	Combination pattern No. copy screen is displayed. → Refer to “20. COPYING A DIRECT PATTERN” p.52 .
Ⓒ	COMBINATION DATA NAME INPUT button	Combination data name input screen is displayed. → Refer to “19. NAMING PATTERN” p.51 .
Ⓓ	COMBINATION DATA NAME display	Name which is inputted in the combination data being selected is displayed.
Ⓔ	PRESSER LOWERING button	Presser can be lowered and the presser down screen is displayed. To raise the presser, press the presser up button displayed in the presser down screen.
Ⓕ	BOBBIN WINDING button	Bobbin thread can be wound. → Refer to “12. WINDING BOBBIN THREAD” p.34 .
Ⓖ	COMBINATION DATA No. SELECTION button	Combination data No. being selected is displayed in the button. When the button is pressed, the combination data No. selection screen is displayed.
Ⓗ	SEWING ORDER display	Sewing order of the inputted pattern data is displayed. When the screen is changed over to the sewing screen, the pattern which is sewn first is displayed in blue color.
Ⓘ	PATTERN SELECTION button	Pattern No. , shape, number of stitches, etc. which are registered in Ⓗ Sewing order are displayed on the button. When the button is pressed, the pattern selection screen is displayed.
Ⓢ	NEXT PAGE DISPLAY button	When the patterns which are registered to the combination data become more than 6 pcs. , this button is displayed. It is possible to register the patterns from the 7th to the next page.

* As many as the number of inputted patterns is displayed in Ⓗ and Ⓘ , display and button.

22-2 Sewing screen



	Button and display	Description
A	COMBINATION DATA NAME display	Name which is inputted in the combination data being selected is displayed.
B	THREAD CLAMP button	Effective/ineffective of thread clamp is selected.  : Thread clamp ineffective  : Thread clamp effective * When the prohibition of the thread clamp is set with memory switch U035 , the thread clamp button is not displayed.
C	PRESSER LOWERING button	Presser can be lowered and the presser down screen is displayed. To raise the presser, press the presser up button displayed in the presser down screen.
D	RETURN TO ORIGIN button	Presser can be returned to the start of sewing and is raised.
E	COMBINATION DATA No. display	Combination data No. being selected is displayed.
F	DIRECT PATTERN No. display	Direct pattern No. being sewn is displayed.
G	SEWING SHAPE display	Sewing shape which is registered to direct pattern No. being sewn is displayed.
H	SEWING ORDER RETURN button	Pattern to be sewn can be returned by one.
I	SEWING ORDER ADVANCE button	Pattern to be sewn can be advanced by one.
J	SEWING ORDER ADVANCE button	Pattern to be sewn can be advanced by one
K	TOTAL NUMBER OF REGIS- TERS display	Total number of patterns which is registered to combination No. being select- ed is displayed.
L	TOTAL NUMBER OF STITCHES display	Total number of stitches of sewing shape being sewn is displayed.
M	THREAD TENSION display	Thread tension value which is registered to direct pattern No. being sewn is dis- played.
N	TRAVEL AMOUNT IN X DIREC- TION display	Travel amount in X direction which is registered to the direct pattern No. being sewn is displayed.
O	COUNTER VALUE CHANGE button	Existing counter value is displayed on this button. When the button is pressed, the counter value change screen is displayed. → Refer to “13. USING COUNTER” p.35 .
P	COUNTER CHANGEOVER but- ton	Display of sewing counter/No. of pcs. counter can be changed over. → Refer to “13. USING COUNTER” p.35 .

	Button and display	Description
Ⓒ	X ACTUAL SIZE VALUE display	X actual size value of the sewing shape which is registered to direct pattern No. being sewn is displayed.
Ⓓ	X SCALE RATE display	Scale rate in X direction of the sewing shape which is registered to direct pattern No. being sewn is displayed.
Ⓔ	SPEED variable resistor	Number of revolutions of the sewing machine can be changed.
Ⓗ	Y ACTUAL SIZE VALUE display	Y actual size value of the sewing shape which is registered to direct pattern No. being sewn is displayed.
Ⓘ	Y SCALE RATE display	Y scale rate of the sewing shape which is registered to direct pattern No. being sewn is displayed.
Ⓥ	MAX. SPEED LIMITATION display	Maximum speed limitation which is registered to direct pattern No. being sewn is displayed.
Ⓦ	TRAVEL AMOUNT IN Y DIRECTION display	Travel amount in Y direction which is registered to the direct pattern No. being sewn is displayed.
Ⓧ	STEP SEWING button	The step sewing screen is displayed. Checking the pattern shape can be performed. → Refer to “8. CHECKING PATTERN SHAPE” p.24 .

23. PERFORMING COMBINATION SEWING

First, change the sewing mode to the combination sewing before performing setting.

→ Refer to “21. CHANGING SEWING MODE” p.54 .

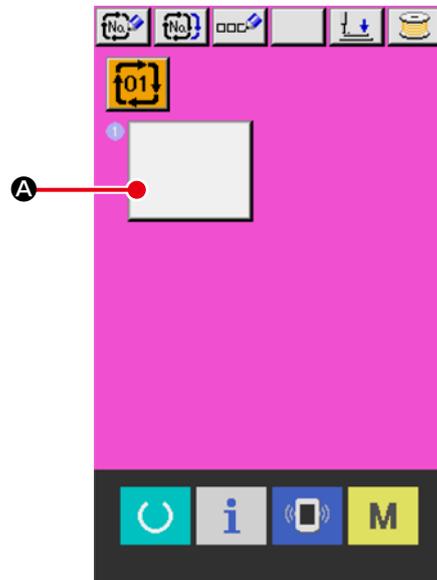
23-1 How to create combination data

① Display the cycle sewing standard screen.

You can enter combination data only on the cycle sewing standard screen (pink).

If the sewing screen (green) is displayed, press the READY key  to display the cycle sewing standard screen (pink).

Pattern No. has not been registered in the initial state, and the first pattern selection button is displayed in the blank state.



② Display the pattern No. selection screen.

When PATTERN SELECTION button  **A** is pressed, the pattern No. selection screen is displayed.

played.

③ Select the pattern No.

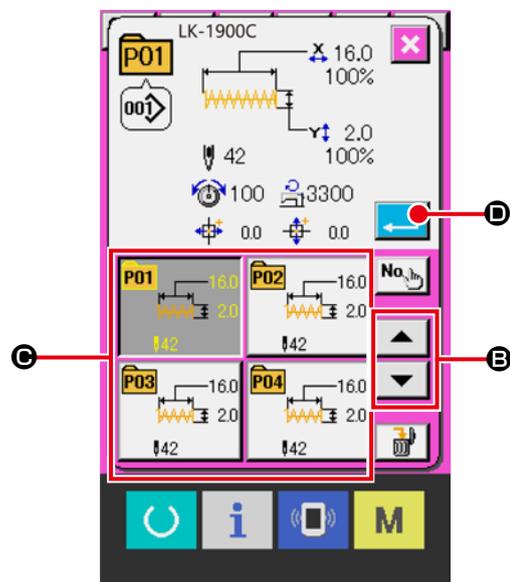
When UP/DOWN SCROLL button  **B** is pressed, direct pattern No. buttons **C** which have been registered are changed over in order.

The contents of pattern data are displayed in the buttons. Here, press the pattern No. buttons you

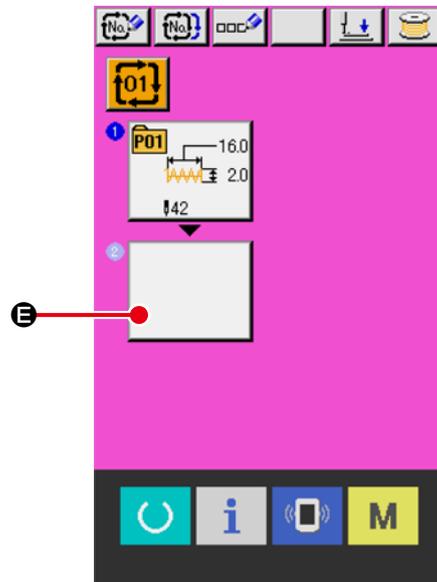
desire to select.

④ Determine the pattern No.

When ENTER button  **D** is pressed, the pattern No. selection screen is closed and the selection is finished.



- ⑤ **Repeat steps ② through ④ as many as the number of pattern Nos. you desire to register.**
 When the first register is determined, the second pattern selection button  **E** is displayed.
 Repeat steps ② through ④ as many as the number of pattern Nos. you desire to register.



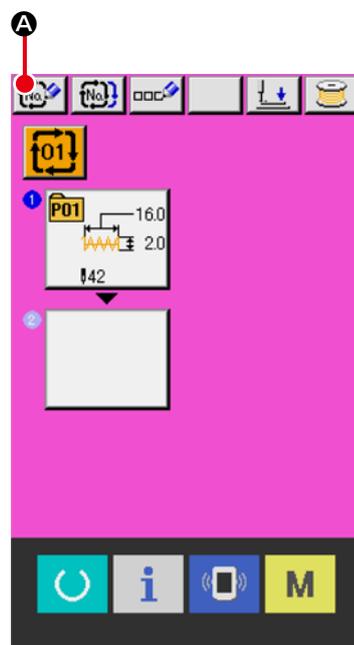
23-2 New registration of combination data

- ① **Display the cycle sewing standard screen.**

You can register new combination data only on the cycle sewing standard screen (pink).
 If the sewing screen (green) is displayed, press the READY key  to display the cycle sewing standard screen (pink).

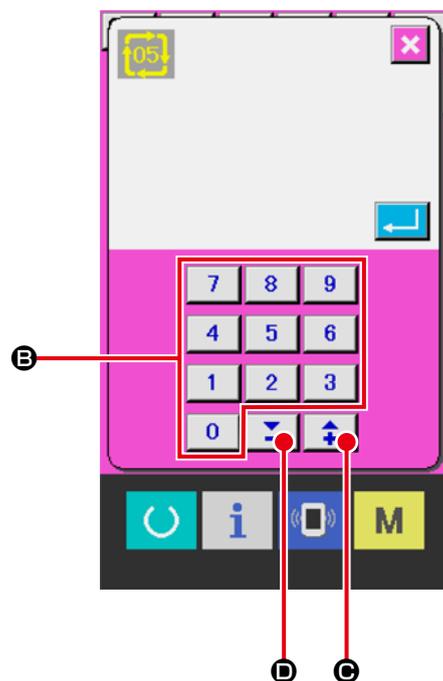
- ② **Display the new combination data registration screen.**

Press the COMBINATION DATA NEW REGISTRATION button  **A** to display the new combination data registration screen.



- ③ **Enter the combination data number.**

Enter the combination data number you want to register using the numeric keypad **B**. If you enter a combination data number that has already been registered, a registration step image will appear at the top of the screen. Enter an unregistered combination data number for which nothing is displayed. Registering a new entry for a combination data number that has already been registered is prohibited. You can also search for unregistered combination data numbers using the + and - buttons  **C**.



- ④ **Confirm the combination data number.**

Press the ENTER button  to confirm the new combination data number to be registered and display the cycle sewing standard screen.

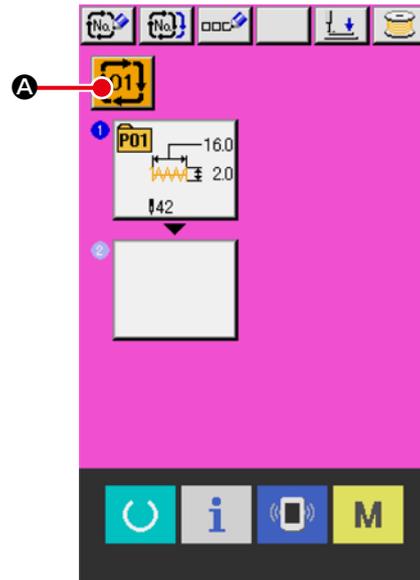
23-3 Selection of combination data

① Display the data input screen.

Only in case of the data input screen (pink), it is possible to select the combination data No.
 If the sewing screen (green) is displayed, press the READY key  to display the cycle sewing standard screen (pink).

② Call the combination data No. screen.

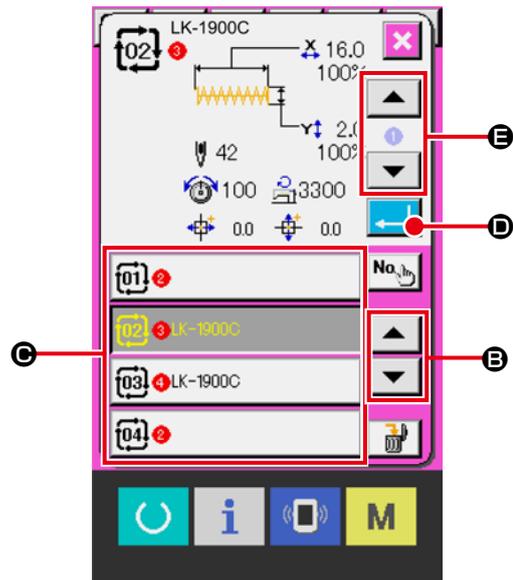
When COMBINATION DATA No. button  **A** is pressed, the combination data No. selection screen is displayed. Combination data No. which is selected at present and the contents are displayed in the upper part of the screen, and other combination data No. buttons which have been registered are displayed in the lower part of the screen.



③ Select the combination data No.

When UP/DOWN SCROLL button  **B** is pressed, the combination data No. buttons **C** which have been registered are changed over in order. The contents of combination data are displayed in the buttons. Here, press the combination data buttons **C** you desire to select.

When STEP CONFIRMATION button  **E** is pressed, the sewing shapes of patterns which have been registered to the combination data are changed over in order and displayed.



④ Determine the combination data No.

When ENTER button  **D** is pressed, the combination data No. selection screen is closed and the selection is finished.

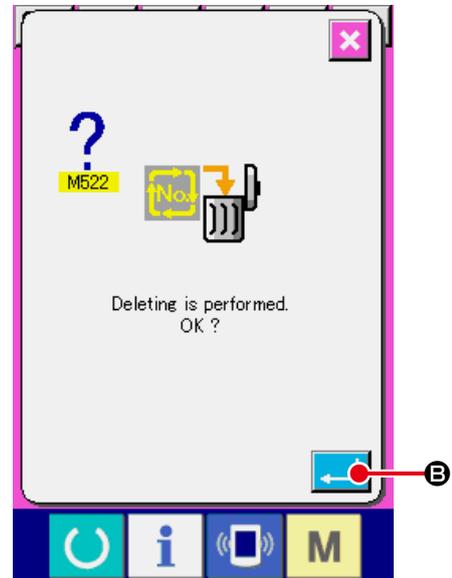
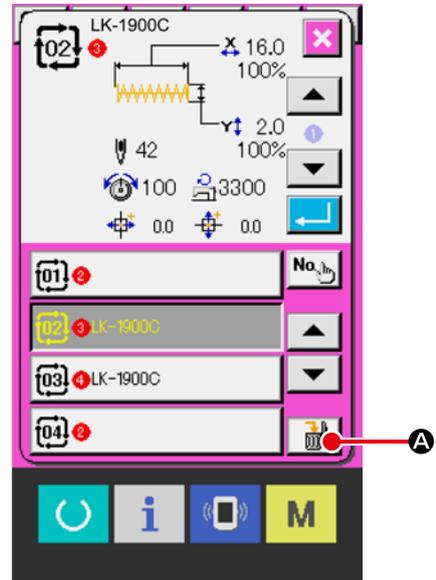
23-4 How to delete combination data

① Select the combination data No.

Perform the steps ① to ③ of “23-3 Selection of combination data” p.62 , and display the combination data to be deleted.

② Delete the combination data.

When DATA DELETE button  A is pressed, the combination data delete confirmation screen is displayed. Here press ENTER button  B and the selected combination data is deleted.



23-5 How to delete combination data

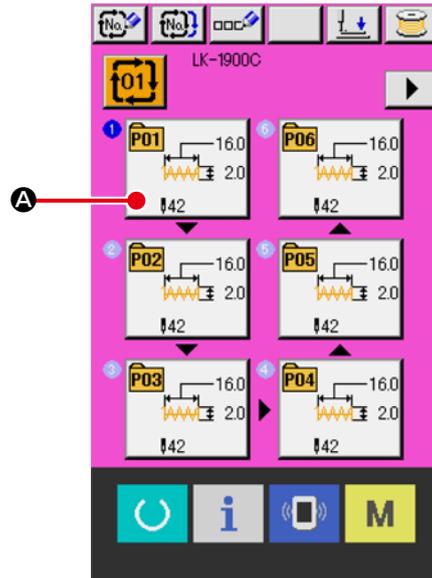
step

① Select the combination data No.

Perform the steps ① through ③ of “23-3 Selection of combination data” p.62 and make the state that the combination data including the step you desire to delete is selected.

② Display the pattern No. selection screen.

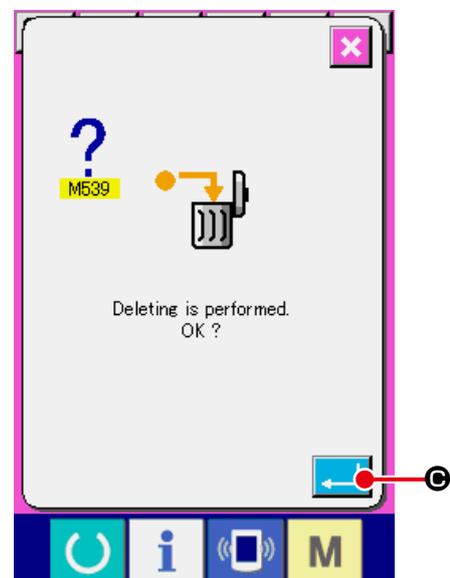
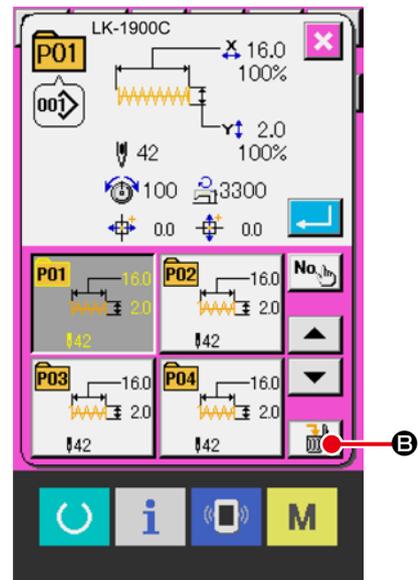
When PATTERN SELECTION button  **A** of the step you desire to delete is pressed, the pattern No. selection screen is displayed.



③ Delete the step of the selected combination data.

Press the STEP DELETE button  **B** to display the combination data step delete confirmation screen.

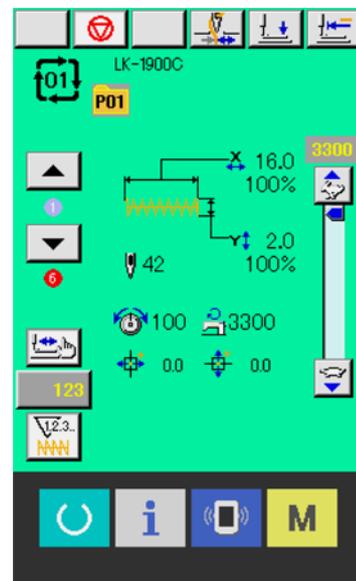
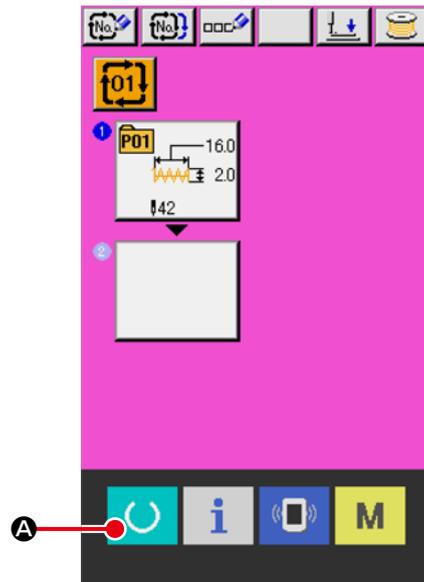
Press the ENTER button  **C** to delete the step from the selected combination data and return to the cycle sewing standard screen (pink).



23-6 Sewing the combination data

① Display the sewing screen.

If the cycle sewing standard screen (pink) is displayed and the READY key  **A** is pressed, the background color of the LCD display will change to green, and the machine will be ready to sew.



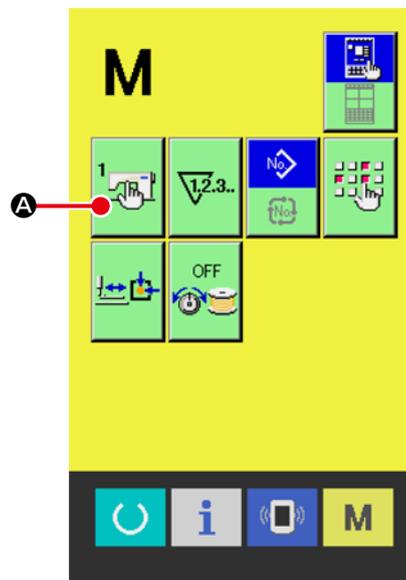
24. CHANGING MEMORY SWITCH DATA

24-1 How to change memory switch data

24-1-1 Level 1

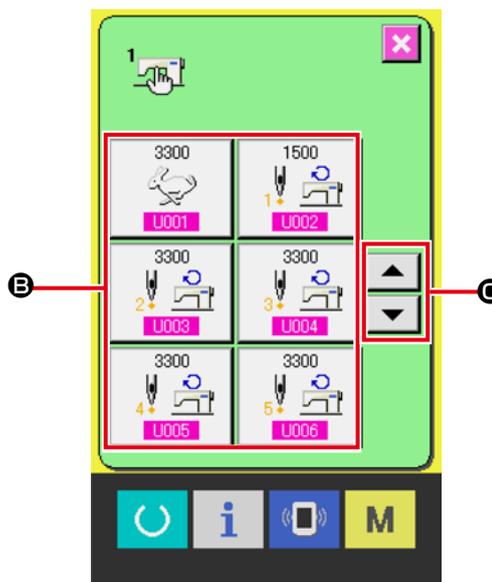
① **Display the memory switch data list screen.**

When **M** key is pressed, memory switch button 1 **A** is displayed. When this button is pressed, the memory switch data list screen of level 1 is displayed.



② **Select the memory switch button you desire to change.**

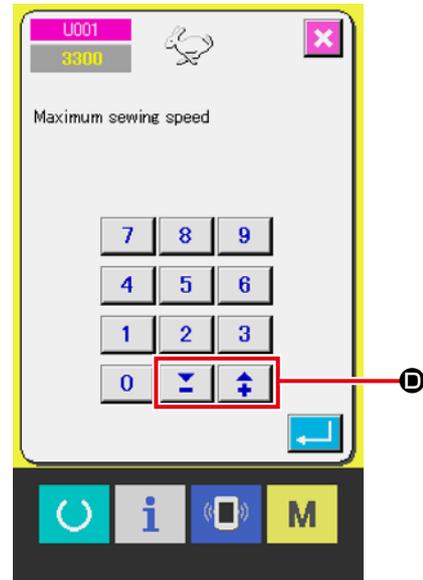
Press UP/DOWN SCROOL button  **C** and select the data item **B** you desire to change.



③ **Change the memory switch data.**

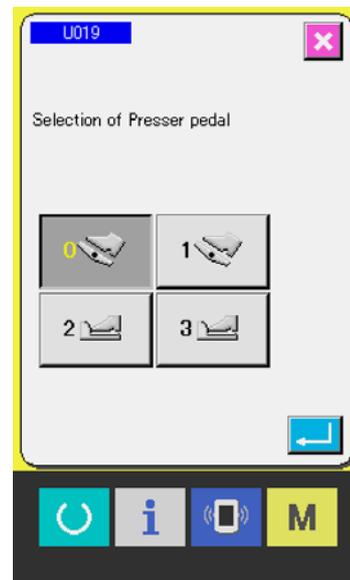
There are data items to change numerals and those to select pictographs in the memory switch data.

No. in pink color such as **U001** is put on the data items to change numerals and the set value can be changed with +/- keys    displayed in the change screen.



No. in blue color such as **U019** is put on the data items to select pictographs and the pictographs displayed in the change screen can be selected.

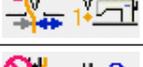
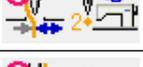
→ For the details of memory switch data, refer to “24-2 Memory switch data list” p.68 .

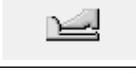
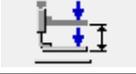


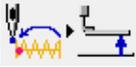
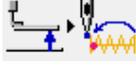
24-2 Memory switch data list

Memory switch data are the motion data that the sewing machine has in common and the data that operate on all sewing patterns in common. However, the maximum speed is limited to 3000 sti/min for the LK-1901C, LK-1902C, and LK-1900CW (double-capacity hook type), and 2700 sti/min for the LK-1903C and LK-1905C.

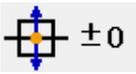
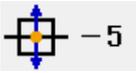
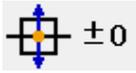
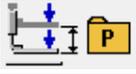
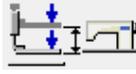
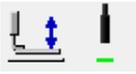
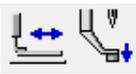
24-2-1 Level 1

No.	Item		Setting range	Edit unit	Initial display
U001	Maximum sewing speed		400 to 3300	100sti/min	3300sti/min
U002	Sewing speed of 1st stitch In case of with thread clamp		400 to 1500	100sti/min	1500sti/min
U003	Sewing speed of 2nd stitch In case of with thread clamp		400 to 3300	100sti/min	3300sti/min
U004	Sewing speed of 3rd stitch In case of with thread clamp		400 to 3300	100sti/min	3300sti/min
U005	Sewing speed of 4th stitch In case of with thread clamp		400 to 3300	100sti/min	3300sti/min
U006	Sewing speed of 5th stitch In case of with thread clamp		400 to 3300	100sti/min	3300sti/min
U007	Thread tension of 1st stitch In case of with thread clamp		0 to 200	1	200
U008	Thread tension setting at the time of thread trimming		0 to 200	1	0
U009	Thread tension changeover timing at the time of thread trimming		-6 to 4	1	0
U010	Sewing speed of 1st stitch In case of without thread clamp		400 to 1500	100sti/min	1500sti/min
U011	Sewing speed of 2nd stitch In case of without thread clamp		400 to 3300	100sti/min	3200sti/min
U012	Sewing speed of 3rd stitch In case of without thread clamp		400 to 3300	100sti/min	3300sti/min
U013	Sewing speed of 4th stitch In case of without thread clamp		400 to 3300	100sti/min	3300sti/min
U014	Sewing speed of 5th stitch In case of without thread clamp		400 to 3300	100sti/min	3300sti/min
U015	Thread tension of 1st stitch In case of without thread clamp		0 to 200	1	0
U016	Thread tension changeover timing at the start of sewing In case of without thread clamp		-5 to 2	1	-5
U019	Presser pedal selection		—	—	
	 : Standard pedal				 0 In case of LK-1903C/BR35, the initial value is  2
	 : Standard pedal (2-step stroke)				
	 : Optional pedal				
	 : Optional pedal (2-step stroke)				

No.	Item	Setting range	Edit unit	Initial display
U020	Start pedal selection  : Standard pedal  : Optional pedal	—	—	 In case of LK-1903C/BR35, the initial value is 
U024	Optional pedal 1-motion  : OFF by toe down  : OFF by releasing	—	—	 In case of LK-1903C/BR35, the initial value is 
U025	Optional pedal 2-motion  : OFF by toe down  : OFF by releasing	—	—	 
U026	Height of presser at the time of 2-step scrolling 	50 to 90	1	70
U030	Scale rate reference point of pattern selection  : Origin  : Sewing start point	—	—	
U031	Sewing machine motion can be stopped with panel button (temporary stop button).  : Ineffective  : Panel temporary stop button  : External switch	—	—	
U032	Buzzer sound can be prohibited.  : Without buzzer sound  : Panel operating sound  : Panel operating sound + error sound	—	—	
U033	Number of stitches of thread clamp release is set. 	1 to 20	1	2
U034	Clamping timing of thread clamp can be delayed. 	-10 to 4	1	0

No.	Item	Setting range	Edit unit	Initial display
U035	<p>Thread clamp control can be prohibited.</p>  : Normal  : Prohibited	—	—	 In case of LK-1903, the initial value is 
U036	<p>Feed motion timing is selected.</p> <p>Set the timing in "-" direction when stitch is not well-tightened.</p> 	-20 to 4	1	0
U037	<p>State of the presser after end of sewing is selected.</p>  : Presser goes up after moving at start of sewing  : Presser goes up immediately after end of sewing.  : Presser goes up by pedal operation after moving at start of sewing.	—	—	
U039	<p>Origin retrieval can be performed every time after end of sewing (other than cycle sewing).</p>  : Without origin retrieval  : With origin retrieval	—	—	
U040	<p>Origin retrieval in cycle sewing can be set.</p>  : Without origin retrieval  : Every time 1 pattern is finished.  : Every time 1 cycle is finished.	—	—	
U041	<p>State of presser when sewing machine stops by temporary stop command can be selected.</p>  : Presser rise.  : Presser rise with presser switch.  : Presser rise is prohibited.	—	—	
U042	<p>Needle stop position is set.</p>  : UP position  : Upper dead point	—	—	

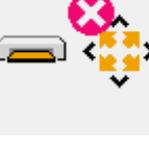
No.	Item	Setting range	Edit unit	Initial display
U046	<p>Thread trimming can be prohibited.</p>  : Normal  : Thread trimming prohibited	—	—	
<p>* If origin retrieval is set with U040, there is a possibility that the thread may be cut when the thread trimmer performs the origin retrieval operation.</p>				
U048	<p>Route of return to origin by return to origin button can be selected.</p>  : Linear return  : Reverse return of pattern	—	—	
U049	<p>Bobbin winding speed can be set.</p> 	800 to 2000	100sti/min	1600sti/min
U050	<p>Motion timing of cloth drawing can be selected. This item is not displayed for the machines other than LK-1901.</p>  : Output prohibited  : Motion when presser comes down.  : Motion at the time of start	—	—	
U051	<p>Motion method of wiper can be selected.</p>  : Motion together with presser rise  : Motion while presser is held down (Wiper does not return at the last thread trimming.)  : Motion while presser is held down (Wiper returns at the last thread trimming.)  : Magnet type wiper	—	—	 In case of LK-1903C/BR35, 
U055	<p>Tie stitching at the start of sewing of button can be prohibited. This item is not displayed for the machines other than LK-1903B.</p>  : Tie stitching effective  : Tie stitching ineffective	—	—	
<p>* This item is not displayed for the machines other than LK-1903C.</p>				
U064	<p>Unit of sewing shape size change can be selected.</p>  % : % input  mm : Actual size input	—	—	

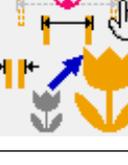
No.	Item	Setting range	Edit unit	Initial display
U065	<p>Origin position is located on the front side by 5 mm. This item is necessary when using the presser and pattern for LK-1904.</p>  : Standard  : Front side	—	—	
U069	<p>Used to select either common or individual for the 2-step work clamp height stroke</p>  : Common  : Individual (can be set for each direct pattern)	—	—	
U070	<p>Used to set display/hide of the last stitch position travel</p>  : Non-display  : Display	—	—	
U072	<p>Number of stitches to disable thread breakage detection at the beginning of sewing</p> 	0 to 15 (stitches)	1	8(stitches)
U073	<p>Number of stitches to disable thread breakage detection on the way</p> 	0 to 15 (stitches)	1	3(stitches)
U075	<p>With/without air pressure detection</p>  : Without  : With <p>* This memory switch is displayed only for the LK-1900CB, LK-1903CB.</p>	—	—	
U076	<p>Correction of thread waste retaining position With this switch, the timing to start traveling from the thread clamping position to the thread releasing/thread waste retaining position can be changed. * This memory switch is displayed only for the LK-1900CB, LK-1903CB.</p> 	-10 to 10 (In the range of -344° - 64° in increments of 4°)	0	
U077	<p>Marking light setting</p>  : Lights up only when operating the work clamp  : Goes out at all times  : Lights up at all times	—	—	 LK-1903C, LK-1905C 
U078	<p>With/without the intermediate presser control</p>  : Without (the intermediate presser is fixed in its lower position)  : Lowered during both feed forward and feed back	—	—	LK-1905C (Provided with intermediate presser) : 

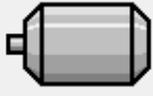
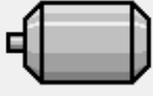
No.	Item	Setting range	Edit unit	Initial display
U081	Bobbin thread amount to start correction of the AT correction The remaining amount of the bobbin thread to start correction of the bobbin thread amount is set. 	0 ~ 100%	1	0%
U082	Last correction amount of the AT correction The correction amount when the bobbin thread is minimized is set. 		1	
U083	Selection of enable/disable of the AT correction  :Disable  :Enable	—	—	
U084	Movable eye protection cover  :Disable  :Enable	—	—	
U085	Thread tension for the last stitch 	0 ~ 200	1	0
U086	Thread waste suction actuation time Length of time to be elapsed from the turning-ON of the thread waste suction nozzle/ thread waste suction to the turning-OFF of it * This memory switch is displayed only for the LK-1900CB, LK-1903CB. 	110 to 3000ms	10 ms	LK-1900CB : 110 LK-1903CB : 140
U087	Thread waste suction nozzle actuation time Length of time to be elapsed from the turning-ON of the thread waste suction nozzle to the turning-OFF of it * This memory switch is displayed only for the LK-1900CB, LK-1903CB. 	110 to 1000	10 ms	110
U088	Number of stitches for releasing thread-waste Number of stitches from when the thread is cut at the start of sewing until it is released. * This memory switch is displayed only for the LK-1900CB, LK-1903CB. 	0 to 100 stitches	1 stitch	LK-1900CB : 3 LK-1903CB : 0
U089	Bird's nest suction time Time during which the thread tangling in at the beginning of sewing (so-called bird's nest) is being sucked * This memory switch is displayed only for the LK-1900CB, LK-1903CB. 	100 to 1000 ms	10 ms	100
U090	Rest time to the start of suction of bird's nest Time lapse from trimming of shorter thread remaining on the material to suction of thread tangling in at the beginning of sewing * This memory switch is displayed only for the LK-1903CB. 	80 to 1000 ms	10 ms	80

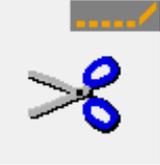
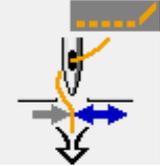
No.	Item	Setting range	Edit unit	Initial display																																
U239	<p>Language selection</p> <p>With this switch, the language to be displayed on the panel is selected.</p> <table border="0" data-bbox="272 280 935 622"> <tr> <td>日本語</td> <td>English</td> <td>中文繁體字</td> <td>中文简体字</td> </tr> <tr> <td>Japanese</td> <td>English</td> <td>Chinese (traditional)</td> <td>Chinese (simplified)</td> </tr> <tr> <td>Español</td> <td>Italiano</td> <td>Français</td> <td>Deutsch</td> </tr> <tr> <td>Spanish</td> <td>Italian</td> <td>French</td> <td>German</td> </tr> <tr> <td>Português</td> <td>Türkçe</td> <td>Tiếng Việt</td> <td>한국어</td> </tr> <tr> <td>Portuguese</td> <td>Turkish</td> <td>Vietnamese</td> <td>Korean</td> </tr> <tr> <td>Indonesia</td> <td>Русский</td> <td>العربية</td> <td></td> </tr> <tr> <td>Indonesian</td> <td>Russian</td> <td>Arabic</td> <td></td> </tr> </table>	日本語	English	中文繁體字	中文简体字	Japanese	English	Chinese (traditional)	Chinese (simplified)	Español	Italiano	Français	Deutsch	Spanish	Italian	French	German	Português	Türkçe	Tiếng Việt	한국어	Portuguese	Turkish	Vietnamese	Korean	Indonesia	Русский	العربية		Indonesian	Russian	Arabic		—	—	Not yet selected
日本語	English	中文繁體字	中文简体字																																	
Japanese	English	Chinese (traditional)	Chinese (simplified)																																	
Español	Italiano	Français	Deutsch																																	
Spanish	Italian	French	German																																	
Português	Türkçe	Tiếng Việt	한국어																																	
Portuguese	Turkish	Vietnamese	Korean																																	
Indonesia	Русский	العربية																																		
Indonesian	Russian	Arabic																																		
U245	<p>Grease-up error clear</p> <p>Clearing of number of stitches of grease-up is performed.</p>  <p>→ Refer to “10. PERFORMING RELEASE OF GREASE-UP ERROR” p.30 .</p>	—	—	—																																

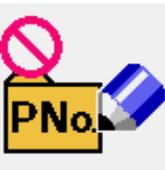
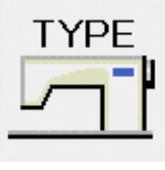
25. ERROR CODE LIST

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E007		Machine-lock Main shaft of the sewing machine does not rotate due to some trouble.	Machine is locked.	Turn OFF the power.	
E010		Pattern No. error Pattern No. which is backed up is not registered to data ROM, or setting of reading inoperative is performed.	Specified pattern does not exist.	Possible to re-enter after reset.	Previous screen
E011		External media not inserted External media is not inserted.	Media is not inserted.	Possible to re-enter after reset.	Previous screen
E012		Read error Data read from external media cannot be performed.	Data cannot be read.	Possible to re-start after reset.	Previous screen
E013		Write error Data write from external media cannot be performed.	Data cannot be written.	Possible to re-start after reset.	Previous screen
E014		Write protect The USB memory is write-protected.	Writing is prohibited.	Possible to re-start after reset.	Previous screen
E015		Format error Format cannot be performed.	Formatting is impossible.	Possible to re-start after reset.	Previous screen
E016		External media capacity over Capacity of external media is short.	Capacity is insufficient. (Media)	Possible to re-start after reset.	Previous screen
E017		Machine memory capacity over Machine memory capacity is insufficient.	Capacity is insufficient. (Machine)	Possible to re-start after reset.	Previous screen

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E019		File size over File is too large.	Pattern data is too large. (Approx. 20,000 stitches)	Possible to re-start after reset.	Previous screen
E024		Pattern data size over Memory size is over.	Memory size to large.	Possible to re-start after reset.	Data input screen
E031		Air pressure drop Air pressure is dropped.	Low air pressure.	Supply air and reset the sewing machine. Then, the operation is enabled again.	Data input screen
E032		File compatibility error File cannot be read.	File cannot be read.	Possible to re-start after reset.	Data input screen
E040		Sewing area over	Move limit is exceeded.	Possible to re-start after reset.	Sewing screen
E043		Max. pitch over error Sewing pitch exceeds 10mm.	Max. Pitch is exceeded.	Possible to re-start after reset.	Data input screen
E045		Pattern data error	Pattern data no good.	Possible to re-start after reset.	Data input screen
E050		Stop switch When stop switch is pressed during machine running.	Temporary stop switch is pressed.	Possible to re-start after reset.	Step screen
E061		Memory switch data error Memory switch data is broken or revision is old.	Memory switch data error	Turn OFF the power.	

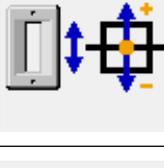
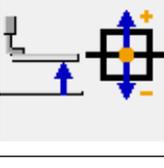
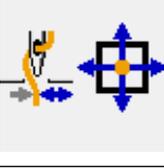
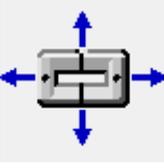
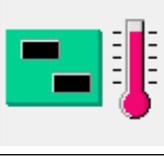
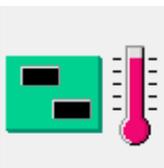
Error code	Display	Description of error	Display message	How to recover	Place of recovery
E204		USB connection error With the number of times of sewing has reached 10 or more, with a USB device connected to the sewing machine	Never connect USB storage device to the machine during sewing.	Possible to re-start after reset.	Sewing screen
E220		Grease-up warning At the time of operation of 100 million stitches	Important : Grease is running out. Replace grease machine.	Possible to re-start after reset.	Data input screen
E221		Grease-up error At the time of operation of 120 million stitches The sewing machine is put in the sewingimpossible status. It is possible to clear with memory switch U245 → Refer to “10. PERFORMING RELEASE OF GREASE-UP ERROR” p.30 .	Important : Grease has run out. Replace grease machine.	Possible to re-start after reset.	Data input screen
E302		Head tilt confirmation When head tilt sensor is OFF.	Head is tilted.	Possible to re-start after reset.	Previous screen
E303		Z phase detection error Detection of upper dead point of the sewing machine cannot be performed.	UP position of sewing machine motor cannot be detected. (Woodruff plate signal of sewing machine motor)	Turn OFF the power.	
E305		Thread clamp position error Thread clamp unit is not in the regular position.	Thread clamp sensor cannot be detected.	Turn OFF the power.	
E386		Work clamp/thread trimmer motor travel limit exceeded error The travel limit of the work clamp/thread trimmer motor has been exceeded.	Travel limit of pres/ thread trimming motor is exceeded.	Turn the power OFF and check the work clamp/thread trimmer motor for abnormalities.	
E387		Work clamp/thread trimmer motor timeout error Timeout of the work clamp/thread trimmer motor has occurred.	Presser/thread trimming motor timeout has occurred.	Turn the power OFF and check the work clamp/thread trimmer motor for abnormalities.	

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E391		Thread clamp motor travel limit exceeded error The travel limit of the thread clamp motor has been exceeded.	Travel limit of the thread clamp motor is exceeded.	Turn the power OFF and check the thread clamp motor for abnormalities.	
E392		Thread clamp motor timeout error Timeout of the thread clamp motor has occurred.	Thread clamp motor timeout has occurred.	Turn the power OFF and check the thread clamp motor for abnormalities.	
E396		Shorter-thread remaining type thread trimmer cylinder error The shorter-thread remaining thread trimmer cylinder fails to operate.	Shorter thread trimming cylinder fails to operate	Turn OFF the power switch. Check whether the air pressure is adequate and whether the shorter-thread remaining thread trimming cylinder sensor and MAIN PCB CN53 have loosened or fallen off.	
E397		Suction nozzle cylinder error The suction nozzle cylinder fails to operate.	Suction nozzle cylinder fails to operate	Turn OFF the power switch. Check whether the air pressure is adequate and whether the suction nozzle cylinder sensor and MAIN PCB CN54 have loosened or fallen off.	
E398		Shorter-thread remaining type thread trimmer cylinder sensor error The shorter-thread remaining type thread trimmer cylinder sensor fails to detect	Shorter thread trimming knife has not returned	Turn OFF the power switch. Check whether the air pressure is adequate and whether the shorter-thread remaining thread trimming cylinder sensor and MAIN PCB CN53 have loosened or fallen off.	

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E399		Suction nozzle cylinder sensor error The suction nozzle cylinder sensor fails to detect.	Nozzle has not returned	Turn OFF the power switch. Check whether the air pressure is adequate and whether the suction nozzle cylinder sensor and MAIN PCB CN54 have loosened or fallen off.	
E401		Copy disapproval error Copy cannot be performed since the pattern has been already registered.	Cannot copy.	Possible to restart after reset.	Previous screen
E402		Pattern button delete disapproval error The button cannot be deleted since it is used for the cycle data.	Data cannot be deleted since it is used for cycle data.	Possible to restart after reset.	Previous screen
E403		New creation disapproval error New creation cannot be performed since the pattern has been already registered.	This No. is already used.	Possible to restart after reset.	Previous screen
E404		Pattern No. selection disapproval error The selected pattern No. cannot be found.	This No. cannot be found.	Possible to restart after reset.	Previous screen
E405		Pattern delete error The pattern cannot be deleted since it is used for the pattern button.	Data cannot be deleted since it is used for direct pattern.	Possible to restart after reset.	Previous screen
E435		Set value exceeds the range.	Set value exceeds the range.	Possible to restart after reset.	Previous screen
E703		Panel is connected to the sewing machine which is not supposed. (Machine type error) When the machine type code of system is not proper in the initial communication.	Model of sewing machine is different from that of panel.	Possible to rewrite program after pressing down communication switch.	Communication screen

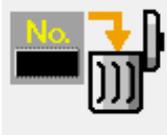
Error code	Display	Description of error	Display message	How to recover	Place of recovery
E704	 R - V - L 	Inconsistency of system version System software version is inconsistent in the initial communication.	Version of program incompatible.	Possible to rewrite program after pressing down communication switch.	Communication screen
E730		Encoder trouble A Encoder A or B phase cannot be detected.	Sewing machine motor is defective. (Encoder A and B phases)	Turn OFF the power switch. Check whether the pin CN31 has come off or has loosened.	
E731		Encoder trouble B Encoder U, V or W phase cannot be detected.	Sewing machine motor is defective. (Encoder U, V, and W phases)	Turn OFF the power switch. Check whether the pin CN31 has come off or has loosened.	
E733		Reverse rotation of main shaft motor When the sewing machine motor rotates in the reverse direction.	Sewing machine motor runs in the reverse direction.	Turn OFF the power.	
E794		X-feed motor encoder communication error X-feed motor encoder communication error is detected.	X-feed motor encoder communication error is detected.	Turn the power OFF. Check the X-feed motor for abnormalities.	
E795		Y-feed motor encoder communication error Y-feed motor encoder communication error is detected.	Y-feed motor encoder communication error is detected.	Turn the power OFF. Check the Y-feed motor for abnormalities.	
E796		Work clamp/thread trimmer encoder communication error Work clamp/thread trimmer motor encoder communication error is detected.	Presser/thread trimming motor encoder communication error is detected.	Turn the power OFF. Check the work clamp/thread trimmer motor for abnormalities.	
E797		Work clamp/thread trimmer motor driver IC communication error Work clamp/thread trimmer motor driver IC communication error is detected.	Presser/thread trimming motor driver IC communication error is detected.	Turn the power OFF. Check the work clamp/thread trimmer motor for abnormalities.	

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E798		Thread clamp motor encoder communication error Thread clamp motor encoder communication error is detected.	Thread clamp motor encoder communication error is detected.	Turn the power OFF. Check the thread clamp motor for abnormalities.	
E799		Thread clamp motor driver IC communication error Thread clamp motor driver IC communication error is detected.	Thread clamp motor driver IC communication error is detected.	Turn the power OFF. Check the thread clamp motor for abnormalities.	
E806		Stepping motor circuit overcurrent error Stepping motor circuit overcurrent error is detected.	Stepping motor circuit overcurrent error is detected.	Turn the power OFF. Check the stepping motor circuit for abnormalities.	
E807		Solenoid circuit overcurrent error Solenoid circuit overcurrent error is detected.	Solenoid circuit overcurrent error is detected.	Turn the power OFF. Check the solenoid circuit for abnormalities.	
E811		Overvoltage When input power is more than the specified value.	Input voltage is too high. (Check input voltage.)	Turn OFF the power.	
E813		Low voltage When input power is less than the specified value.	Input voltage is too low. (Check input voltage.)	Turn OFF the power.	
E901		Main shaft motor IPM abnormality When SERVO CONTROL p. c. b. is abnormal.	SDC p.c.b. is defective. (IPM)	Turn OFF the power.	
E903		Stepping motor power abnormality When stepping motor power of SERVO CONTROL p. c. b. fluctuates more than $\pm 15\%$.	Power of SDC p.c.b. is defective. (Stepping motor power 85 V)	Turn OFF the power.	
E904		Solenoid power abnormality When solenoid power of SERVO CONTROL p. c. b. fluctuates more than $\pm 15\%$.	Power of SDC p.c.b. is defective. (Solenoid power 33 V)	Turn OFF the power.	

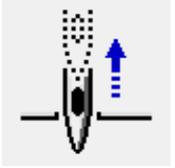
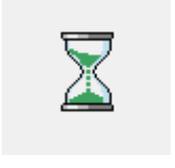
Error code	Display	Description of error	Display message	How to recover	Place of recovery
E905		Heat sink temperature for SERVO CONTROL p. c. b. abnormality Turn ON the power again after taking overheat time of SERVO CONTROL p. c. b.	Temperature of SDC P.C.B is to high.	Turn OFF the power.	
E907		X feed motor origin retrieval error When origin sensor signal is not inputted at the time of origin retrieval motion.	Origin of X motor cannot be found. (X origin sensor)	Turn OFF the power.	
E908		Y feed motor origin retrieval error When origin sensor signal is not inputted at the time of origin retrieval motion.	Origin of Y motor cannot be found. (Y origin sensor)	Turn OFF the power.	
E910		Presser motor origin retrieval error When origin sensor signal is not inputted at the time of origin retrieval motion.	Origin of presser thread trimmer motor cannot be found. (Presser thread trimmer origin sensor)	Turn OFF the power.	
E913		Thread clamp origin retrieval error When origin sensor signal is not inputted at the time of origin retrieval motion.	Origin of thread clamp motor cannot be found. (Thread clamp origin sensor)	Turn OFF the power.	
E914		Feed defective error Timing lag between feed and main shaft occurs.	X/Y feed trouble is detected.	Turn OFF the power.	
E915		Communication abnormality between operation panel and MAIN CPU When abnormality occurs in data communication.	Communication is impossible. (Panel - MAIN p.c.b.)	Turn OFF the power.	
E918		Overheat of MAIN p.c.b. Turn ON the power again after some time has passed.	Main p.c.b temperature to high.	Turn OFF the power.	
E919		Thermistor temperature anomaly error The thermistor has detected a temperature anomaly.	Thermistor has detected a temperature abnormality.	Turn the power OFF, wait a certain period of time and then turn the power back on.	

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E934		Thread clamp motor overload error	Thread clamp motor overload is excessive.	Turn OFF the power.	
E943		MAIN CONTROL p.c.b. trouble When data writing to MAIN CONTROL p.c.b. cannot be performed	MAIN P.C.B. is defective.	Turn OFF the power.	
E946		HEAD RELAY p.c.b. trouble When data writing to HEAD RELAY p.c.b. cannot be performed	Head P.C.B. is defective.	Turn OFF the power.	

26. MESSAGE LIST

Message No.	Display	Display message	Description
M520		Erasing is performed. OK ?	Confirmation of erasing of users' pattern Erasing is performed. O.K. ?
M521		Erasing is performed. OK ?	Confirmation of erasing of pattern button Erasing is performed. O.K. ?
M522		Erasing is performed. OK ?	Confirmation of erasing of cycle pattern Erasing is performed. O.K. ?
M523		Pattern data is not stored. Erasing is OK?	Erase confirmation of backup data Pattern data is not stored in memory. Erase is O.K. ?
M528		Overwriting is performed. OK ?	Confirmation of overwriting of users' pattern Overwriting is performed. O.K. ?
M529		Overwriting is performed. OK ?	Confirmation of overwriting of media Overwriting is performed. O.K. ?
M530		Overwriting is performed. OK ?	Vector data/sewing standard format data of panel Overwriting is performed. O.K. ?
M531		Overwriting is performed. OK ?	Vector data/sewing standard format data of media data Overwriting is performed. O.K. ?
M532		Overwriting is performed. OK ?	Vector data/sewing standard format data on PC Overwriting is performed. O.K. ?

Message No.	Display	Display message	Description
M534		Overwriting is performed. OK ?	Confirmation of overwriting of adjustment data and all sewing machine data of media Overwriting is performed. O.K. ?
M535		Overwriting is performed. OK ?	Confirmation of overwriting of adjustment data and all sewing machine data of PC Overwriting is performed. O.K. ?
M537		Deleting is performed. OK ?	Confirmation of deletion of thread tension command Deletion is performed. O.K. ?
M542		Formatting is performed. OK ?	Confirmation of formatting Formatting is performed. O.K. ?
M544		Data does not exist.	Data corresponding to panel does not exist. Data does not exist.
M545		Data does not exist.	Data corresponding to media does not exist. Data does not exist.
M546		Data does not exist.	Data corresponding to PC does not exist. Data does not exist.
M547		Overwriting cannot be performed since data exists.	Over writing prohibition of pattern data Overwriting cannot be performed since data exists.
M548		Overwriting cannot be performed since data exists.	Overwriting prohibition of media data Overwriting cannot be performed since data exists.
M549		Overwriting cannot be performed since data exists.	Overwriting prohibition of data on PC Overwriting cannot be performed since data exists.

Message No.	Display	Display message	Description
M603		Needle is not in a proper position.	Needle bar position error The needle bar is not in the specified position. Turn the hand pulley to return the needle bar to the specified position.
M604		Eye protective cover is not closed	The eye protection cover is not closed.
M653		Formatting is performed.	During formatting Formatting is performed.
M669		Data is being read.	During reading data Data is being read.
M670		Data is being written.	During writing data Data is being written.
M671		Data is being converted.	During converting data Data is being converted.

27. USING COMMUNICATION FUNCTION

Communication function can download the sewing data created with other sewing machine, creation of sewing data and sewing data created by editing device PM-1 to the sewing machine. In addition, it is also possible to upload the aforementioned data on a medium.

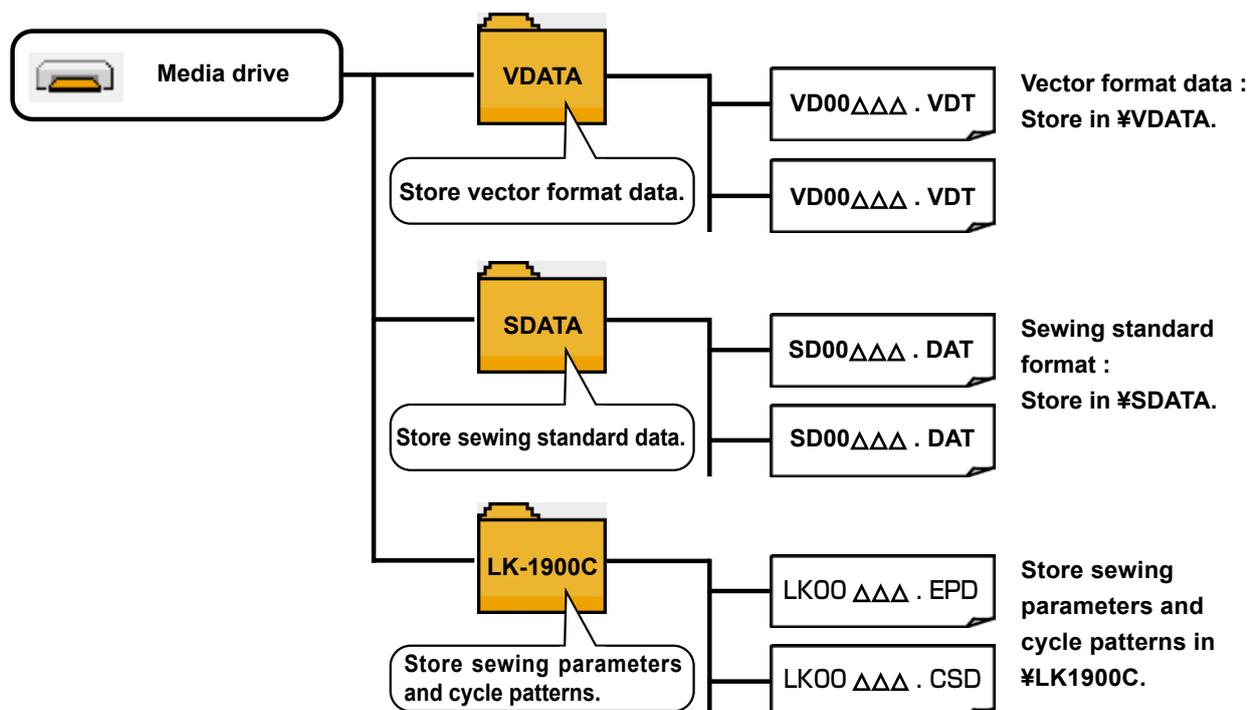
27-1 Handling possible data

The data format that is supported is as shown in the table below.

Data name		Extension	Description of data
Vector format data		VD00xxx.VDT (xxx : 001 ~ 999)	Data of needle entry point created with PM-1. Format of the data which can be used in common among JUKI sewing machines.
Sewing standard format		SD00xxx.DAT (xxx : 001 ~ 999)	Sewing standard format type
Parameter data		LK00xxx.EPD	LK-specific sewing data format created by the sewing machine.
Cycle pattern data		LK00xxx.CSD	Combination data format for multiple direct patterns

[Folder structure of the media]

Store each file in the folders below of the media.



Data that are not stored in the directories above cannot be read. So, be careful.

27-2 Performing communication by using the media

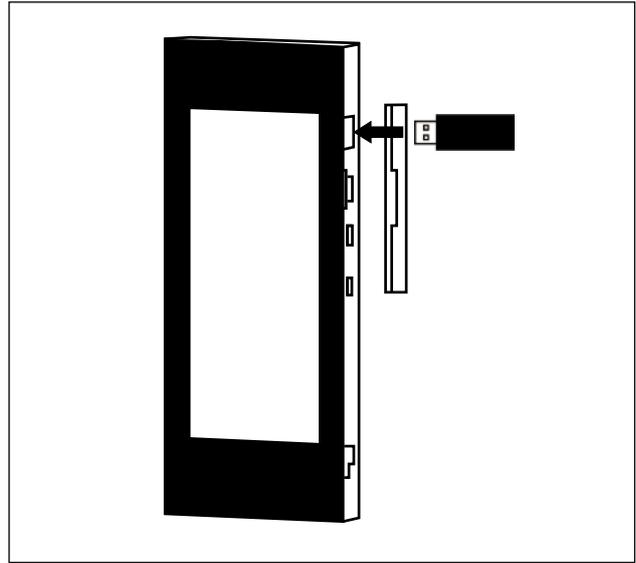
[USB port]

■ Inserting a device into the USB port

Remove the cover on the right side, insert the USB device, and copy the data you want to use to the main body.

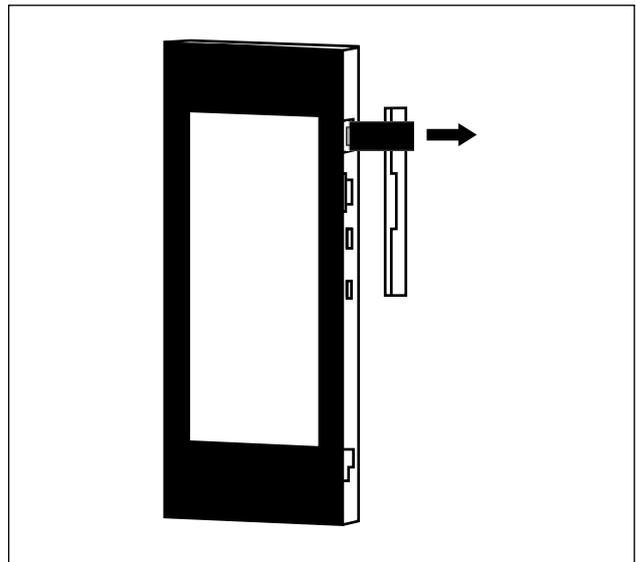
When using a USB memory, only one should be connected at a time.

Both USB Type-A and USB Type-C memory devices are supported.



■ Disconnecting a device from the USB port

Remove the USB device. Put the cover back in place.



Cautions when using the media



- Do not wet or touch it with wet hands. Fire or electric shock will be caused.
- Do not bend, or apply strong force or shock to it.
- Never perform disassembling or remodeling of it.
- Do not put the metal to the contact part of it. Data may be disappeared.
- Avoid storing or using it in the places below.

Place of high temperature or humidity / Place of dew condensation /

Place with much dust / Place where static electricity or electrical noise is likely to occur

① Precautions to be taken when handling USB devices

- Do not leave the USB device or USB cable connected to the USB port while the sewing machine is in operation. The machine vibration can damage the port section resulting in loss of data stored on the USB device or breakage of the USB device or sewing machine.
- Do not insert/remove a USB device during reading/writing a program or sewing data. It may cause data breakage or malfunction.
- When the storage space of a USB device is partitioned, only one partition is accessible.
- Some type of the USB device may not be properly recognized by this sewing machine.
- JUKI does not compensate for loss of data stored on the USB device caused by using it with this sewing machine.
- When the panel displays the communication screen or pattern data list, the USB drive is not recognized even if you insert a medium into the slot.
- When using media such as a USB memory or other device, only one should be connected at a time. When two or more devices/media are connected/inserted, the machine will only recognize one of them. Refer to the USB specifications.
- Insert the USB connector into the USB terminal on the IP panel until it will go no further.
- Do not turn the power OFF while the data on the USB flash drive is being accessed.

② USB specifications

- Conform to USB 2.0 standard
- Applicable devices *1___ Storage devices such as USB memory, USB hub and card reader
- Not-applicable devices __ CD drive, DVD drive, MO drive, FDD drive, tape drive, etc.
- Format supported _____ FAT 12, FAT 16, FAT 32
- Applicable medium size _ 4.1MB ~ (2TB)
- Recognition of drives __ For external devices such as a USB device, the device which is recognized first is accessed.
- Restriction on connection _ Max. 10 devices (When the number of storage devices connected to the sewing machine has exceeded the maximum number, the 11th storage device and beyond will not be recognized unless they are once disconnected and re-connected.)
- Consumption current ___ The rated consumption current of the applicable USB devices is 500 mA at the maximum.

*1: JUKI does not guarantee operation of all applicable devices. Some device may not operate due to a compatibility problem.

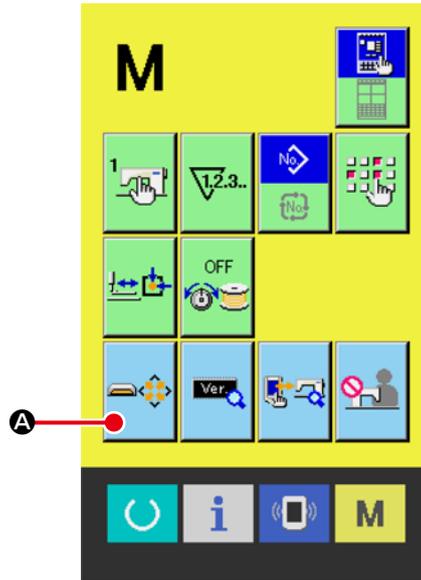
27-3 Performing format

In case of re-formatting the media, be sure to perform it with IP-510. The media formatted with the personal computer cannot be read with IP-510.

① Display the media format screen.

When **M** key is held pressed for three seconds,

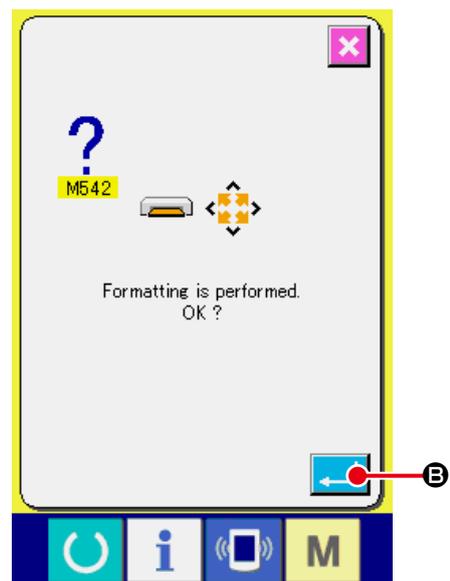
MEDIA FORMAT button  **A** is displayed on the screen. When this button is pressed, the media format screen is displayed.



② Start formatting of the media.

Insert the media you want to format into the USB port and press the ENTER button  **B** to start formatting.

Save necessary data in the media to the other medium before formatting. When formatting is performed, the inside data are erased.



27-4 Performing communication

① Performing communication by using the media

For handling way of the media, read “27. USING COMMUNICATION FUNCTION” p.87 .

② Performing communication by using USB

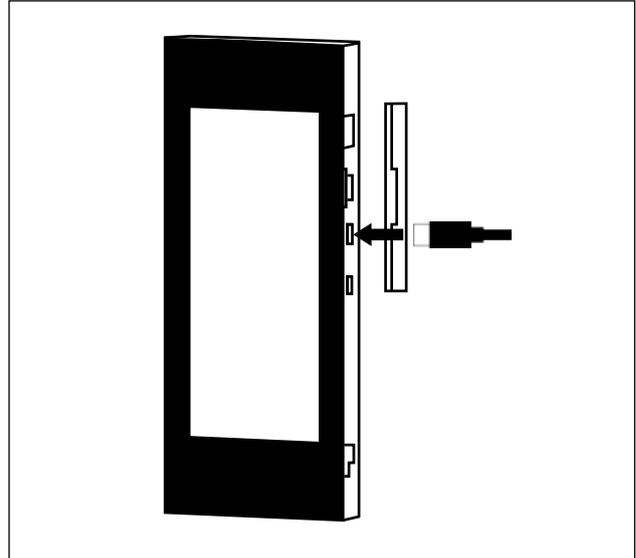
Data can be sent/received to/from a personal computer or the like, by means of a USB cable.

When connecting a PC or other device, only one should be connected at a time.

Both USB Type-A and USB Type-C cables are supported.



If the contact part becomes dirty, failure of contact will be caused. Do not touch by hand, and control so that dust, oil or other foreign material does not adhere to it. In addition, the inside element is damaged by static electricity or the like. So, be very careful when handling.



27-5 Take-in of the data

① Display the communication screen.

When communication switch  **A** of switch seat section is pressed in the data input screen, the communication screen is displayed.

② Select the communication procedure.

There are two communication procedures as described below.

B : Writing data from media to panel

C : Writing data from panel to media

Select the button of communication procedure you desire.

③ Select the data No.

When  **D** is pressed, the writing file selection screen is displayed.

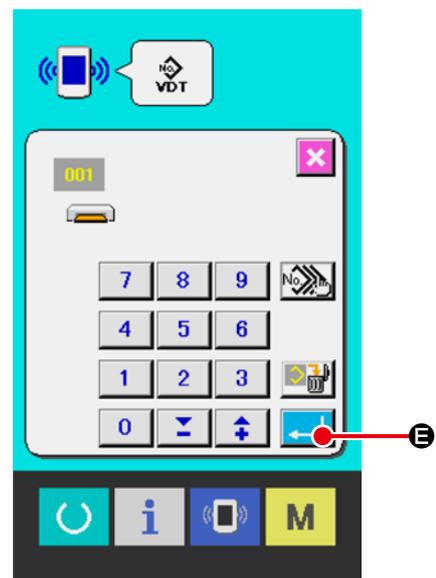
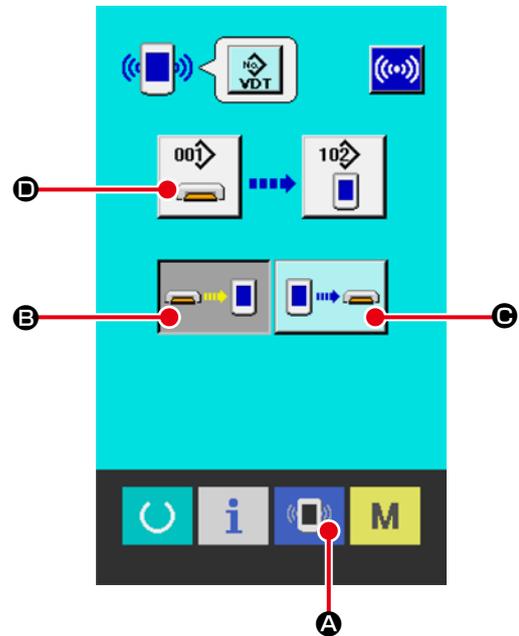
Input the file No. of the data you desire to write. For the file No., input the numerals of the part xxx of VD00xxx .vdt of the file name.

Designation of the pattern No. of writing destination can be performed in the same way.

When the writing destination is the panel, pattern Nos. which have not been registered are displayed.

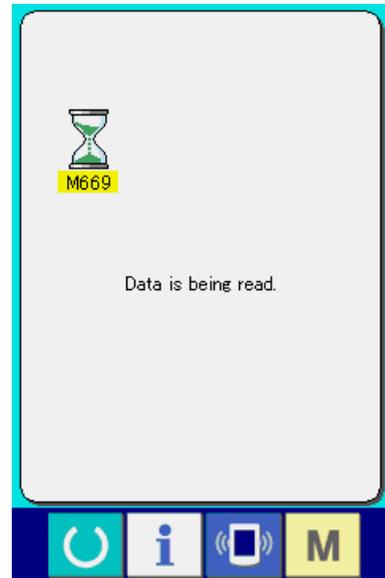
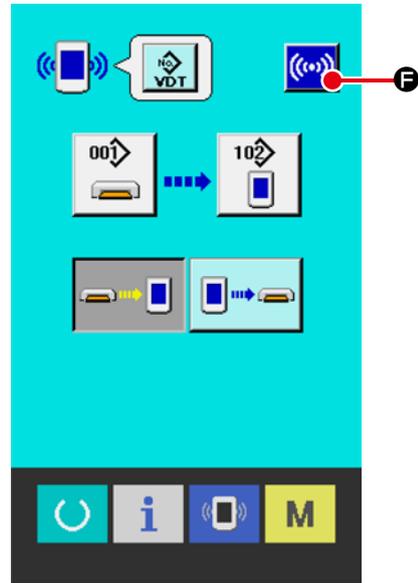
④ Determine the data No.

When ENTER button  **E** is pressed, the data No. selection screen is closed and the selection of the data No. has been completed.



⑤ **Start communication.**

When COMMUNICATION START button  **F** is pressed, the data communication starts. The during communication screen is displayed during communication and the screen returns to the communication screen after the end of communication.



27-6 Taking in plural data together

You can select multiple data to write and write them all at once. The pattern number of the write destination will match the number of the selected data.

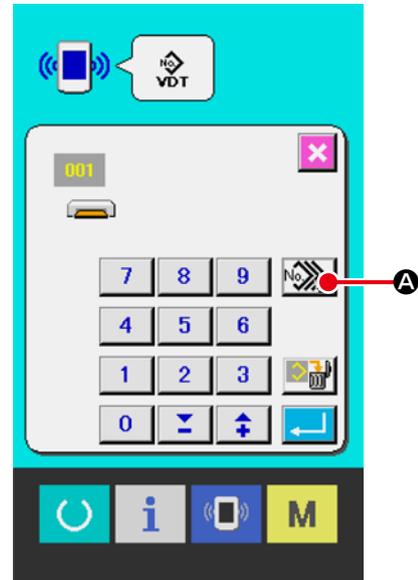


You cannot select multiple media numbers in the range of 001 to 100.

This is because standard patterns are registered in No. 001 to 100 of the copy destination sewing machine and cannot be overwritten.

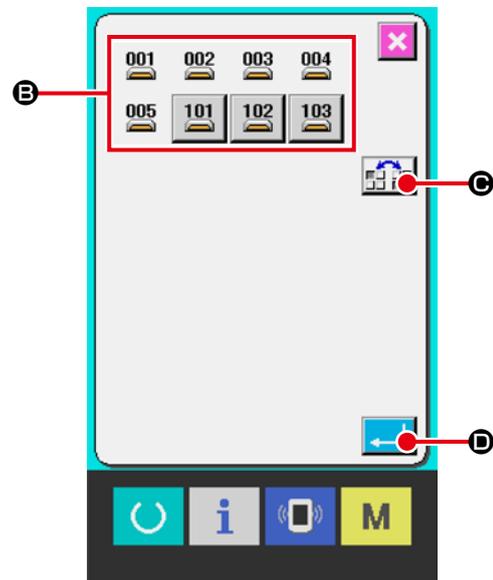
① Display the writing file selection screen.

When PLURAL SELECTION button  **A** is pressed, the data No. plural selection screen is displayed.



② Perform the data No. selection.

Since the list of existing data file numbers is displayed, press FILE No. button **B** you desire to write. It is possible to invert the selected state of the button with INVERSION button  **C**.



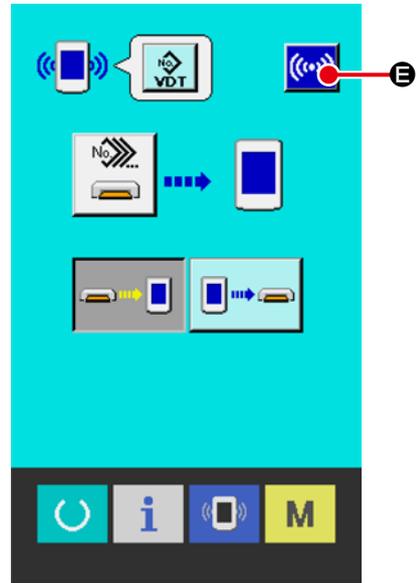
③ Determine the data No.

When ENTER button  **D** is pressed, the data No. plural selection screen is closed and the data selection ends.

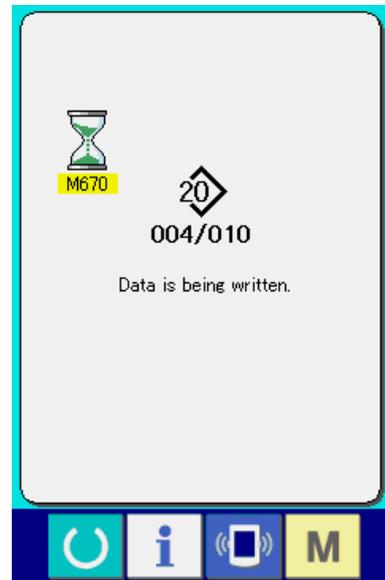
④ **Start the communication.**

When COMMUNICATION START button 

Ⓔ is pressed, the data communication starts.

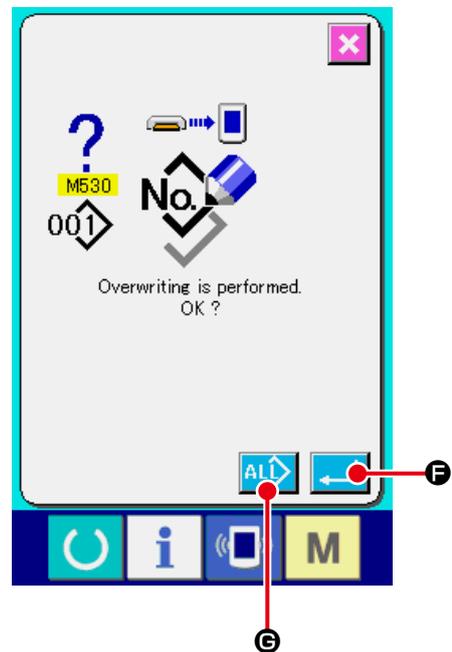


Data No. during communication, total number of writing data and number of data that have ended the data communication are displayed in the during communication screen.



* When performing writing to the pattern No. which already exists, the overwriting confirmation screen is displayed before writing. When performing overwriting, press ENTER button  Ⓕ.

When performing overwriting all without displaying the overwriting confirmation screen, press OVERWRITING button  Ⓖ in all cases.

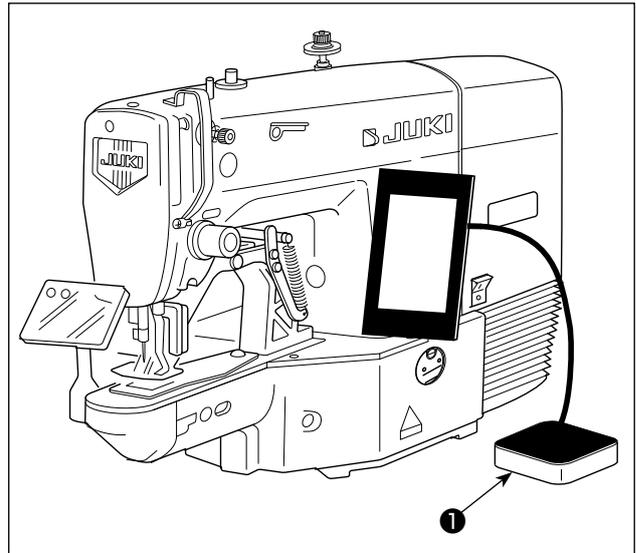


27-7 NFC

The panel supports exclusive external NFC antenna ①.

Sewing data, maintenance information or the like can be viewed, edited, copied, etc., on an Android terminal (such as tablet and smartphone) on which JUKI application for Android “JUKI Smart App” has been installed, by means of the NFC communication function.

Refer to the Instruction Manual for JUKI Smart App for details of JUKI application for Android “JUKI Smart App”.

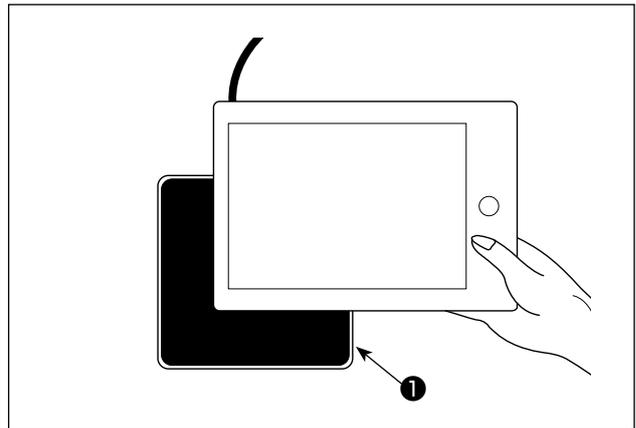


① Position of the NFC antenna

If you carry out the NFC communication with a tablet or a smartphone, bring the NFC antenna of the tablet or smartphone near to NFC antenna ① as illustrated in the figure.

* If the NFC communication has failed, error message will be displayed on the tablet/smartphone screen.

When the error message is displayed on the screen, carry out the NFC communication again.



② Precautions to be taken when handling NFC

- The position of the NFC antenna varies according to the tablet/smartphone used.
Be sure to read the instruction manual of your device before using the NFC communication function.
- To use the NFC communication function, place the NFC communication function setting in “Enable” while referring to the instruction manual for your tablet/smartphone.

28. INFORMATION FUNCTION

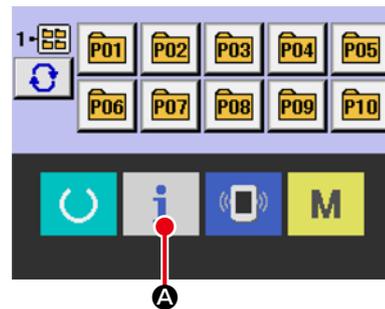
There are three functions below in the information function.

- 1) Oil replacement time, needle replacement time, cleaning time, etc. are designated and the warning notice is performed when the designated time has passed.
→ Refer to “28-1 Observing the maintenance inspection information” p.97 and “28-2 Releasing procedure of the warning” p.99 .
- 2) Speed can be checked at a glance and the target achieving consciousness as a line or group is increased as well by the function to display the target output and the actual output.
→ Refer to “28-3 Observing the production control information” p.100 and “28-4 Performing setting of the production control information” p.103 .
- 3) Information on machine working ratio, pitch time, machine time and machine speed can be displayed from the working state of the sewing machine.
→ Refer to “28-5 Observing the working measurement information” p.107 .

28-1 Observing the maintenance inspection information

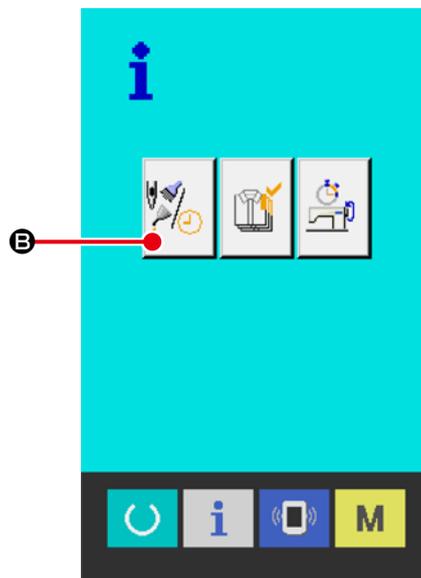
① Display the information screen.

Press the INFORMATION key  **A** on the switch seat section of the individual sewing/cycle sewing standard screen to display the information screen.



② Display the maintenance information screen.

Press maintenance inspection information screen display button  **B** in the information screen.



Information on the following three items is displayed in the maintenance inspection information screen.

- Needle replacement (1,000 stitches) : 
- Cleaning time (hour) : 
- Oil replacement time (hour) : 

The interval to inform button **C** of the inspection for each item is displayed at **D**, and the remaining time up to the replacement is displayed at **E**.

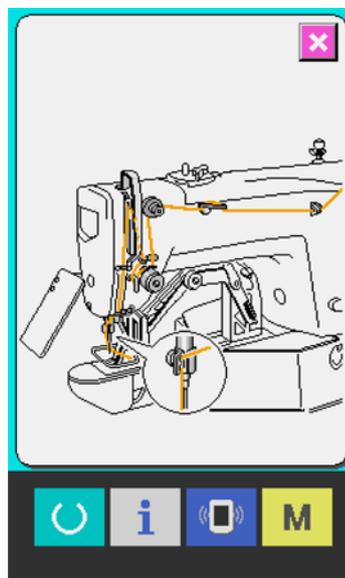
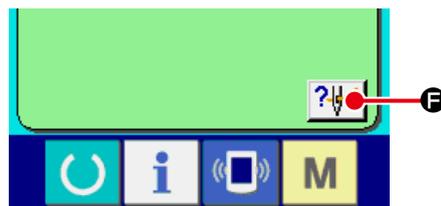
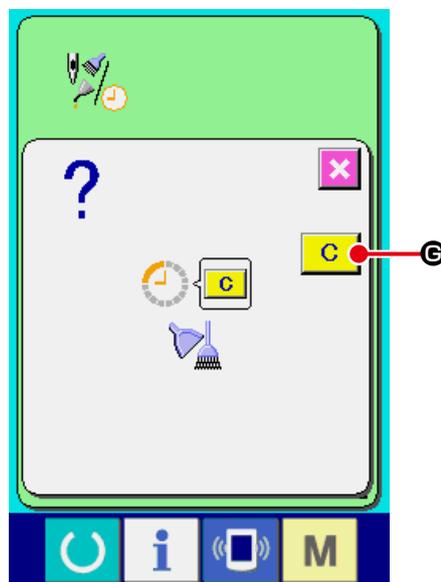
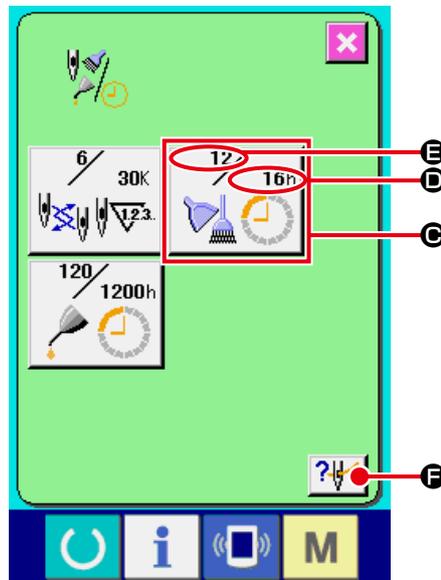
In addition, remaining time up to the replacement can be cleared.

③ Perform clearing remaining time up to the replacement.

When button **C** of the item you desire to clear is pressed, the time of replacement clear screen is displayed. When CLEAR button **C** **C** is pressed, the remaining time up to the replacement is cleared.

④ Display the threading diagram.

When threading button  **F** displayed in the maintenance inspection information screen is pressed, the needle thread threading diagram is displayed. Observe it when performing threading.



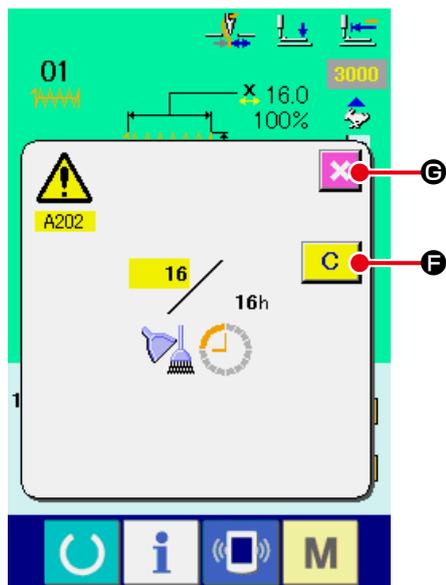
28-2 Releasing procedure of the warning

When the designated inspection time is reached, the warning screen is displayed.

In case of clearing the inspection time, press CLEAR button  . The inspection time is cleared and the pop-up is closed. In case of not clearing the inspection time, press CANCEL button   and close the pop-up. Every time one sewing is completed, the warning screen is displayed until the inspection time is cleared.

Warning Nos. of the respective items are as follows.

- Needle replacement : A201
- Cleaning time : A202
- Oil replacement time : A203



28-3 Observing the production control information

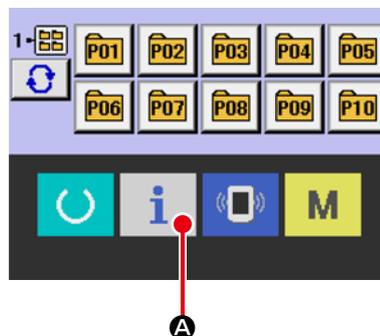
It is possible to designate the start, display the number of pieces of production from the start to the existing time, display the number of pieces of production target, etc. in the production control screen.

There are two kinds of display ways for the production control screen.

28-3-1 When displaying from the information screen

① Display the information screen.

When information key  **A** of the switch seat section is pressed in the data input screen, the information screen is displayed.

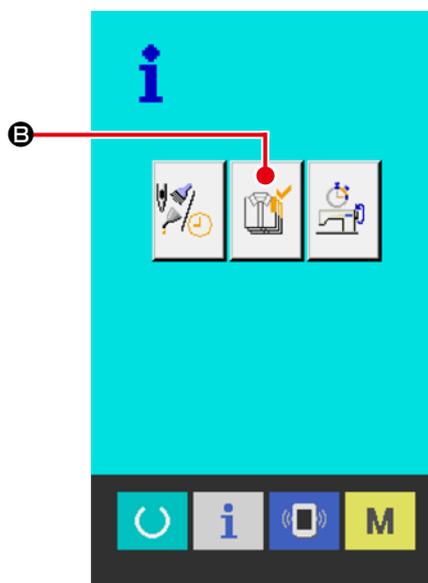


② Display the production control screen.

Press production control screen display button



B in the information screen. The production control screen is displayed.



Information on the following 5 items is displayed in the production control screen.

A : Existing target value

Number of pieces of the target of products at the present time is automatically displayed.

B : Actual results value

Number of pieces of the sewn products is automatically displayed.

C : Final target value

Number of pieces of the final target of products is displayed.

Input the number of pieces referring to “28-4 Performing setting of the production control information” p.103 .

D : Pitch time

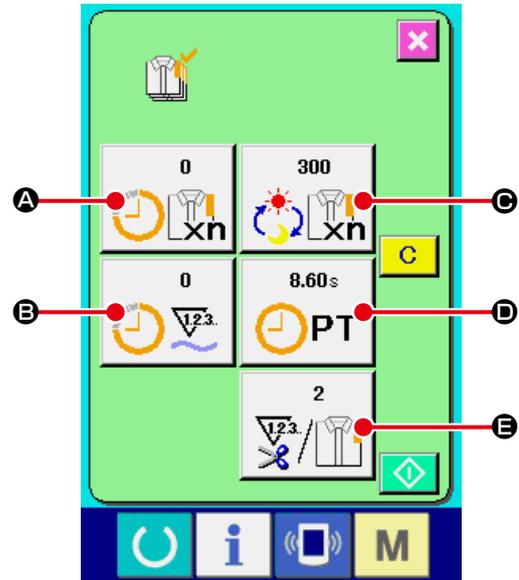
Time (second) required for one process is displayed.

Input the time (unit : second) referring to “28-4 Performing setting of the production control information” p.103 .

E : Number of times of thread trimming

Number of times of thread trimming per process is displayed.

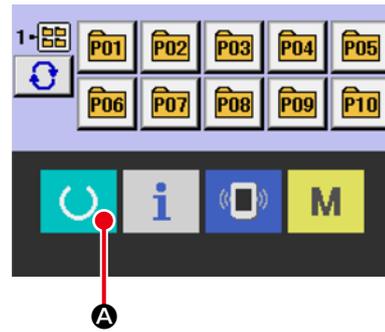
Input the number of times of thread trimming referring “28-4 Performing setting of the production control information” p.103 .



28-3-2 When displaying from the sewing screen

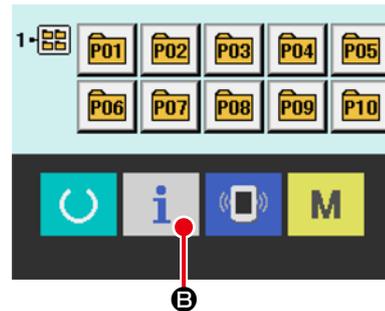
① Display the sewing screen.

When READY key  **A** of the switch seat section is pressed in the data input screen, the sewing screen is displayed.

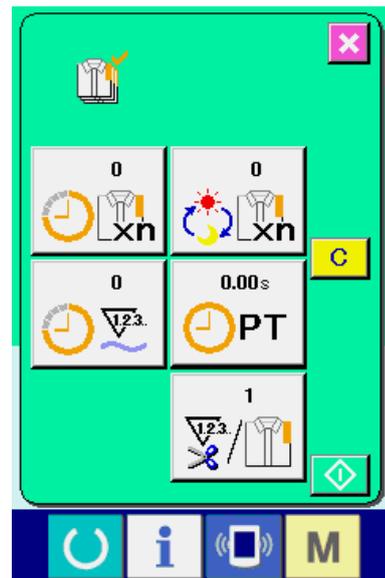


② Display the production control screen.

When information key  **B** of the switch seat section is pressed in the sewing screen, the production control screen is displayed.



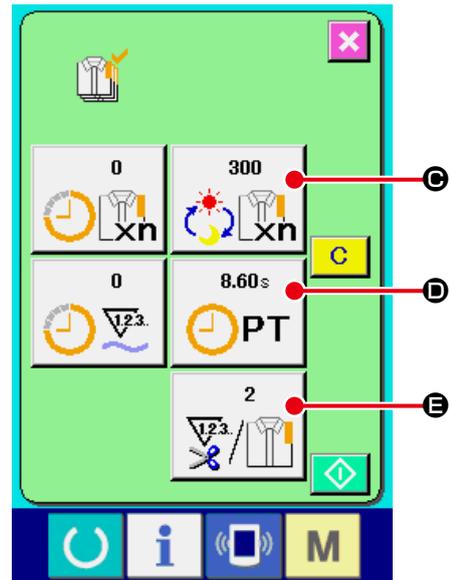
The contents and functions are common to “28-3-1 When displaying from the information screen” p.100 .



28-4 Performing setting of the production control information

① Display the production control screen.

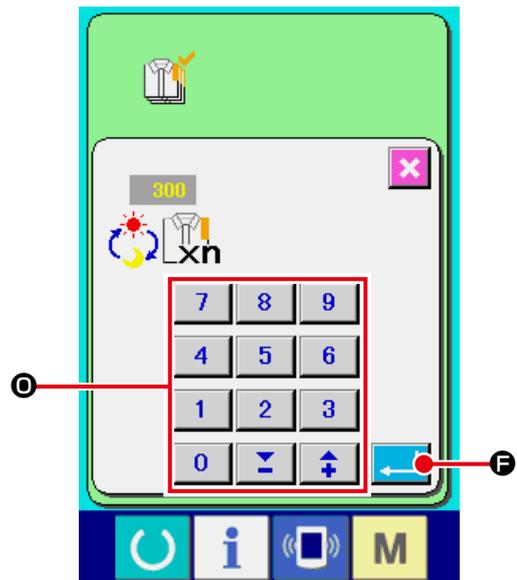
Display the production control screen referring to “28-3 Observing the production control information” p.100 .



② Input the final target value.

First, input the number of pieces of the target of production in the process to which sewing is performed from now on. When final target value button  C is pressed, the final target value input screen is displayed. Input the value you desire with TEN keys or +/- keys D .

After the input, press ENTER button  F .

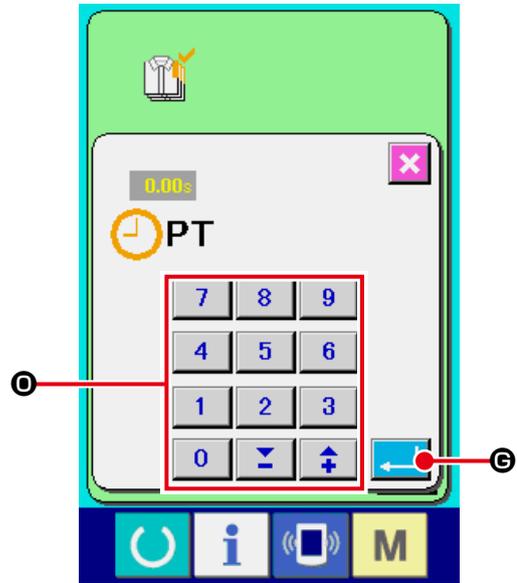


③ **Input the pitch time.**

Next, input the pitch time required for one process. When pitch time button  ① in the previous page is pressed, the pitch time input screen is displayed.

Input the value you desire with TEN keys or +/- keys ② .

After inputting, press ENTER button  ③ .



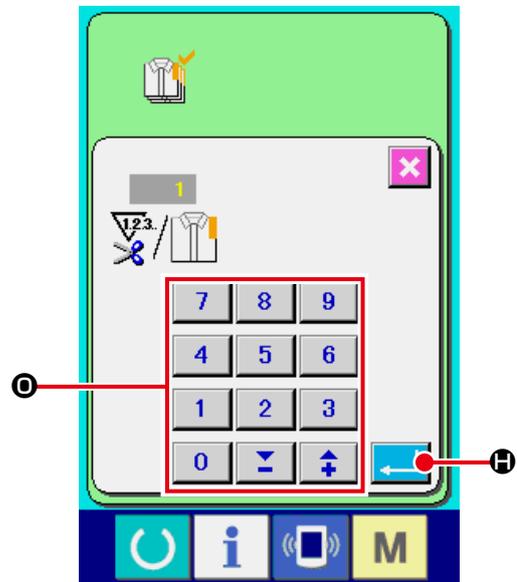
④ **Input the number of times of thread trimming.**

Next, input the number of times of thread trimming per process.

When number of times of thread trimming button  ④ in the previous page is pressed, the number of times of thread trimming input screen is displayed.

Input the value you desire with TEN keys or +/- keys ⑤ .

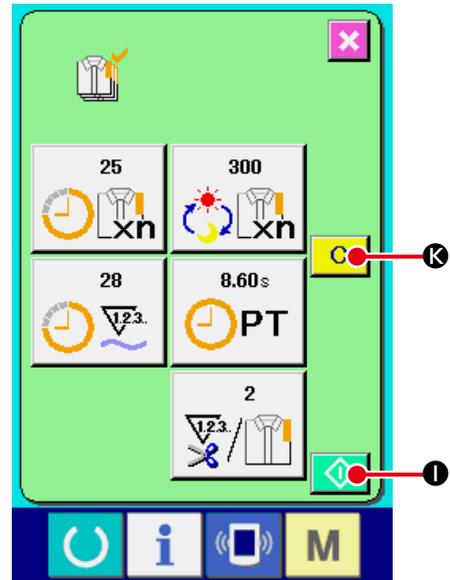
After inputting, press ENTER button  ⑥ .



* When the input value is "0", count of the number of times of thread trimming is not performed. Use this function by connecting the external switch.

⑤ **Start the count of number of pieces of production.**

When START button  **I** is pressed, the count of number of pieces of production is started.

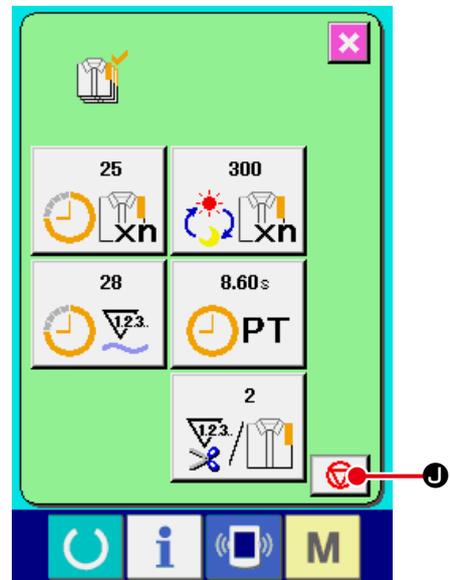


⑥ **Stop the count.**

Display the production control screen referring to “28-3 Observing the production control information” p.100 .

When the count is being performed, STOP button  **I** is displayed. When STOP button  **I** is pressed, the count is stopped.

After the stop, START button is displayed at the position of STOP button. When continuing the count, press START button again. The counted value is not cleared until CLEAR button  **K** is pressed.



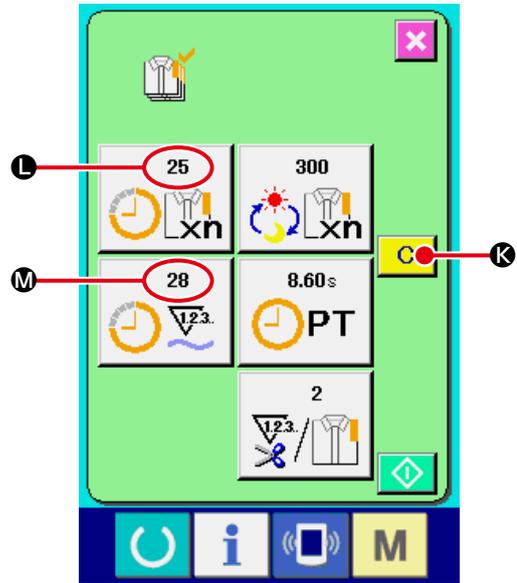
⑦ **Clear the counted value.**

When clearing the counted value, set the count to the stop state and press CLEAR button **C** **K** .

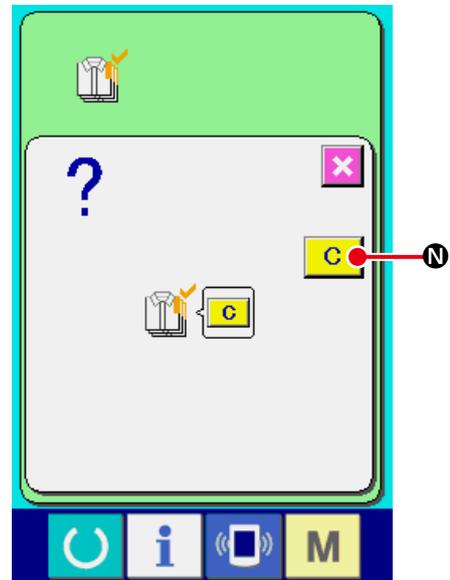
The value to be cleared is the present target value **L** and actual results value **M** only.

Caution CLEAR button **C** **K** is displayed only in case of stop state.

When CLEAR button **C** **K** is pressed, the clear confirmation screen is displayed.



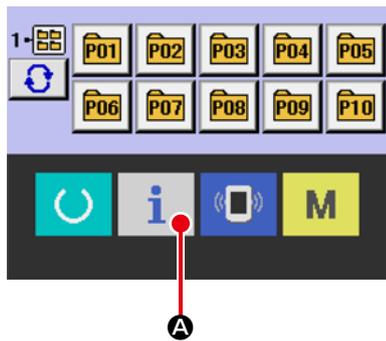
When CLEAR button **C** **N** is pressed in the clear confirmation screen, the counted value is cleared.



28-5 Observing the working measurement information

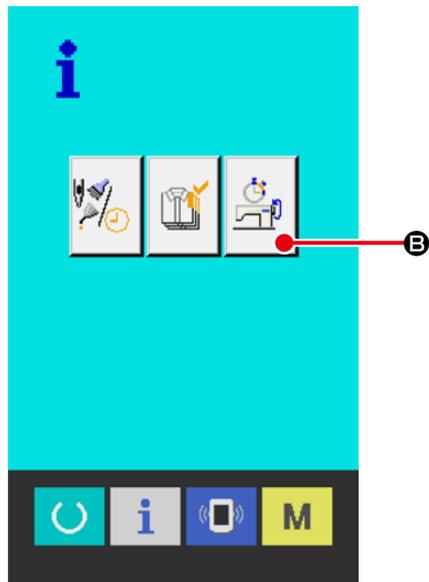
① Display the information screen.

When information key  **A** of the switch seat section is pressed in the data input screen, the information screen is displayed.



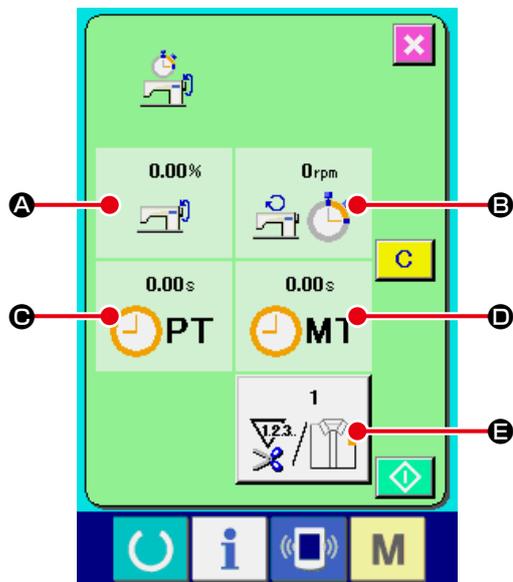
② Display the working measurement screen.

Press working measurement screen display button  **B** in the information screen. The working measurement screen is displayed.



Information on the following 5 items is displayed in the working measurement screen.

- A** : This item automatically displays the machine working ratio from the time of starting the measurement.
- B** : This item automatically displays the machine speed from the time of starting the measurement.
- C** : This item automatically displays the pitch time from the time of starting the measurement.
- D** : This item automatically displays the machine time from the time of starting the measurement.
- E** : Number of times of thread trimming is displayed. Input the number of times referring to the next step ③ .



③ The number of times of thread trimming.

When number of times of thread trimming button

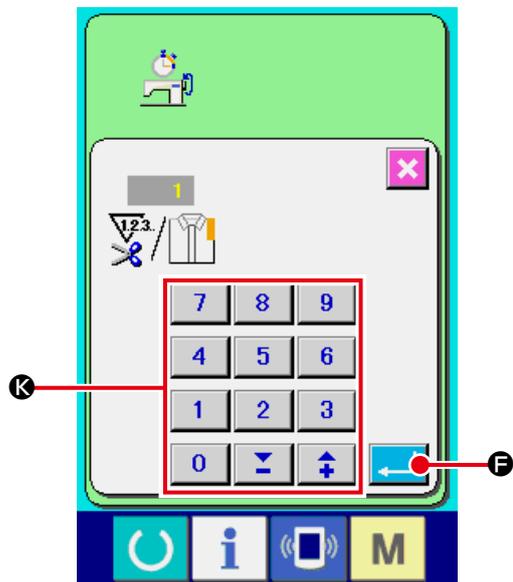


E in the previous page is pressed, the number of times of thread trimming input screen is displayed.

Input the value you desire with TEN keys or +/- keys **K** .

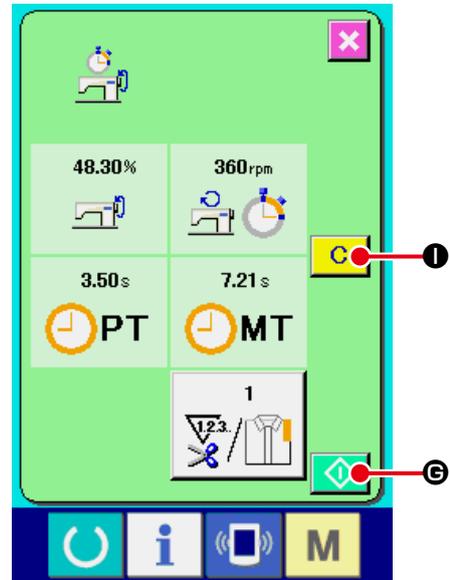
After the input, press ENTER button  **F** .

* When the input value is "0", count of the number of times of thread trimming is not performed. Use this function by connecting the external switch.



④ **Start measurement.**

When START button   is pressed, the measurement of each data is started.



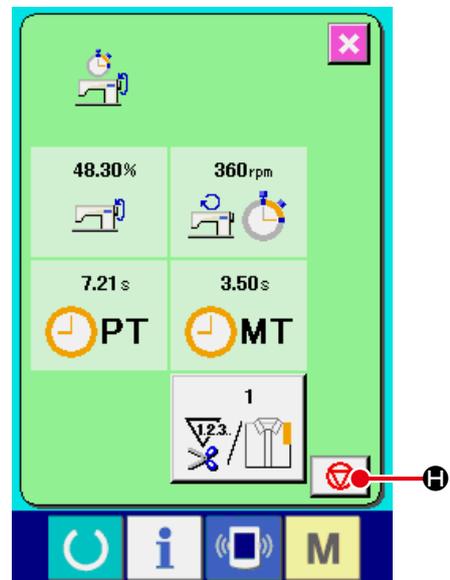
⑤ **Stop count.**

Display the working measurement screen referring to steps ① and ② of **“28-5 Observing the working measurement information” p.107** .

When the measurement is being performed, STOP button   is displayed. When STOP button   is pressed, the measurement is stopped.

After the stop, START button is displayed at the position of STOP button. In case of continuing the measurement, press again START button.

The measured value is not cleared until CLEAR button is pressed   .

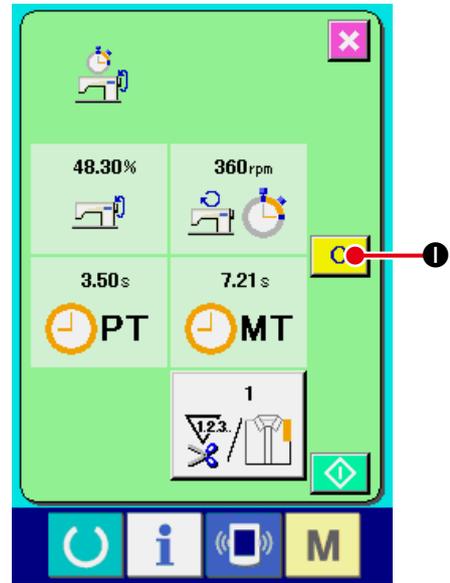


⑥ **Clear the counted value.**

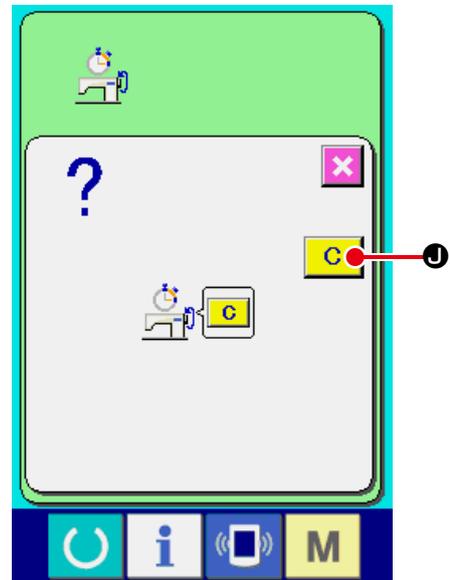
When clearing the counted value, set the count to the stop state and press CLEAR button .

 **CLEAR button  is displayed only in case of stop state.**

When CLEAR button  is pressed, the clear confirmation screen is displayed.

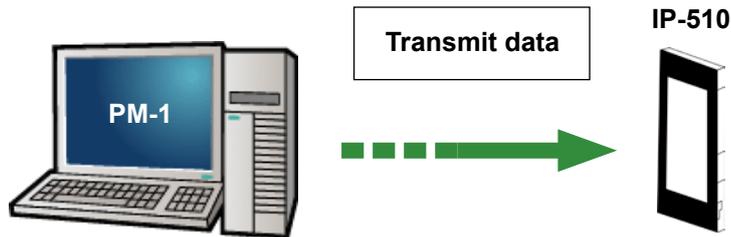


When CLEAR button  is pressed in the clear confirmation screen, the counted value is cleared.



29. TRIAL SEWING FUNCTION

By connecting a PC to the sewing machine via USB, you can perform a trial sewing using the data created with PM-1 (sewing data creation and editing software).



Connect the PC and the IP-510 with a USB cable, create data on PM-1, then send the data to the sewing machine. When the IP-510 is individual sewing/cycle sewing standard screen the trial sewing screen will be displayed automatically. For details on how to operate PM-1, refer to the PM-1 help or similar resources.

29-1 Performing trial sewing

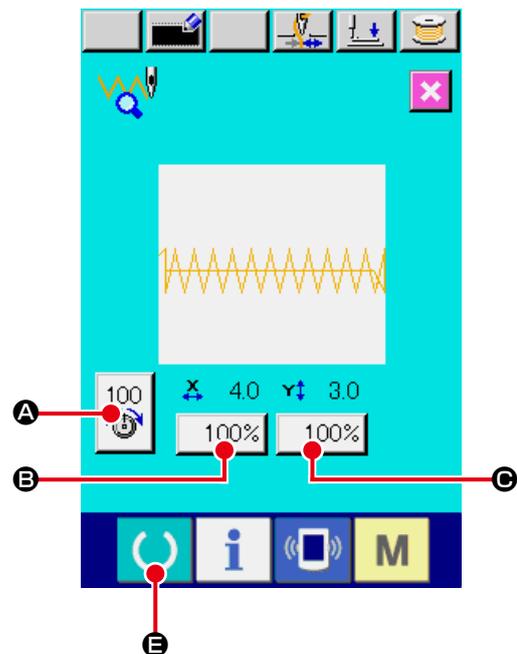
① Receive the trial sewing data from PM-1.

When the trial sewing data (vector format data) is transmitted from PM-1, the screen on the right side is displayed, and the needle entry diagram of the transmitted data is displayed in the center of the screen. The display color of the needle entry diagram is different according to the thread tension value.

② Edit the vector parameter.

For the vector format data transmitted from PM-1, three items below can be set.

- Ⓐ : Thread tension
- Ⓑ : X scale rate or X actual size value
- Ⓒ : Y scale rate or Y actual size value



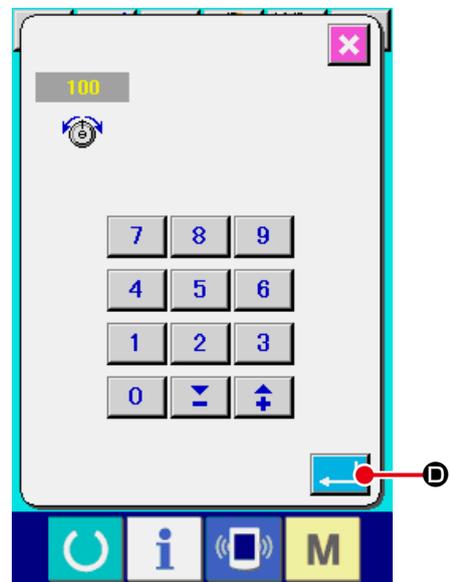
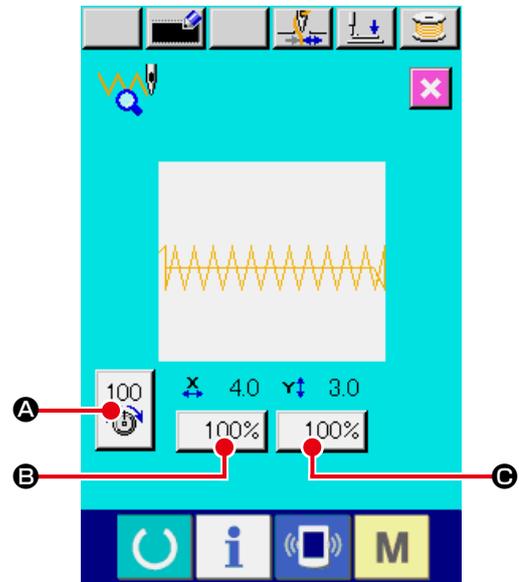
* To input the scale rate or to input the actual size value can be set with memory switch **U064** .

→ Refer to “**24. CHANGING MEMORY SWITCH DATA**” p.66 .

③ **Change the data.**

When the button of the item you desire to change from among buttons (A through C) is pressed, ten keys are displayed. Input the value you desire.

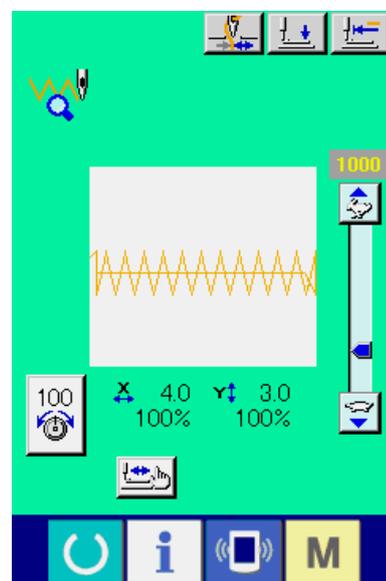
After inputting, press ENTER button  D .



④ **Perform trial sewing.**

When READY key  E in the previous page is pressed, the trial sewing screen is displayed.

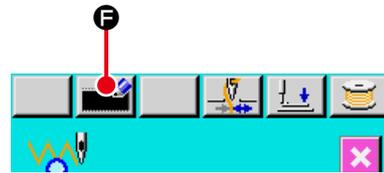
Trial sewing can be performed in this state.



⑤ **Register the data to the users' pattern.**

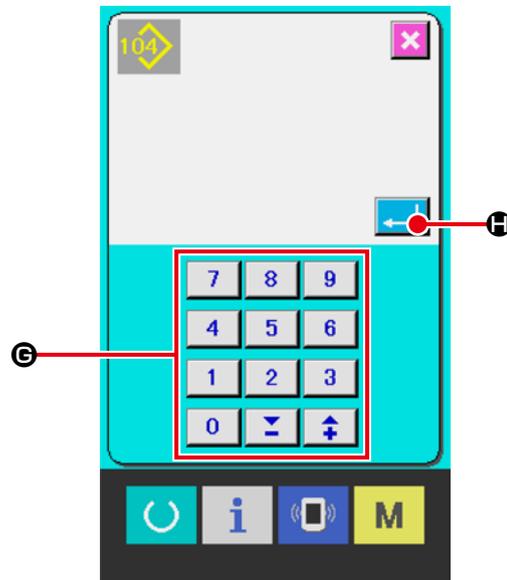
When registering the data of trial sewing to the sewing machine, press REGISTER button 

F and the register screen is displayed. Input the users' pattern No. you desire to register with ten keys **G**.



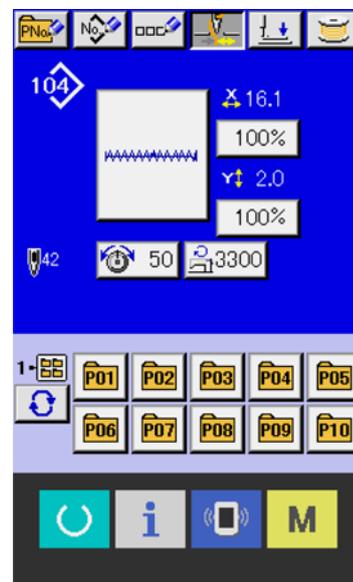
⑥ **Determine the register of data.**

When ENTER button  **H** is pressed, the register screen is closed and the register is finished.



⑦ **Display the individual sewing standard screen.**

Once registration is complete, the individual sewing standard screen will be displayed automatically.



30. THREAD TENSION VALUE DISPLAY COLOR LIST

The display color of the needle entry diagram to be displayed varies according to the thread tension value which is set to the needle entry point. The color displayed according to the thread tension is as described below.

Thread tension value	Display color
0 to 20	 : Gray
21 to 40	 : Purple
41 to 60	 : Blue
61 to 80	 : Light blue
81 to 100	 : Green
101 to 120	 : Yellow green
121 to 140	 : Orange
141 to 160	 : Red
161 to 180	 : Pink
181 to 200	 : Black

* For pre-registered standard patterns, the display color cannot be changed based on the thread tension.

31. SETTING APPROVAL/DISAPPROVAL OF CALLING OF PATTERN DATA

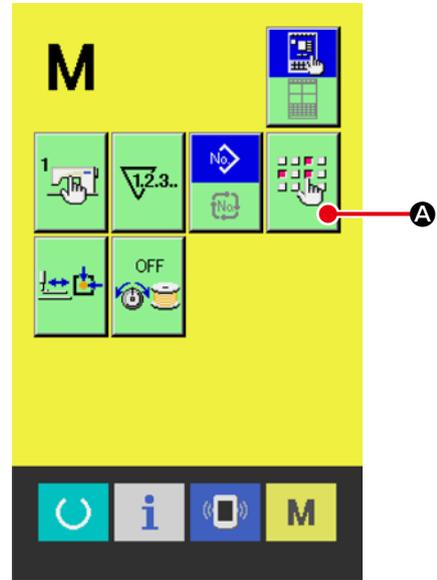
Calling of the wrong pattern by mistake is prevented by making the calling of the unnecessary pattern impossible. In addition, calling and using the necessary pattern can be performed.

① Display the standard pattern selection screen.

When **M** key is pressed, STANDARD PAT-

TERN SELECTION button  **A** is displayed.

When this button is pressed, the standard pattern selection screen is displayed.



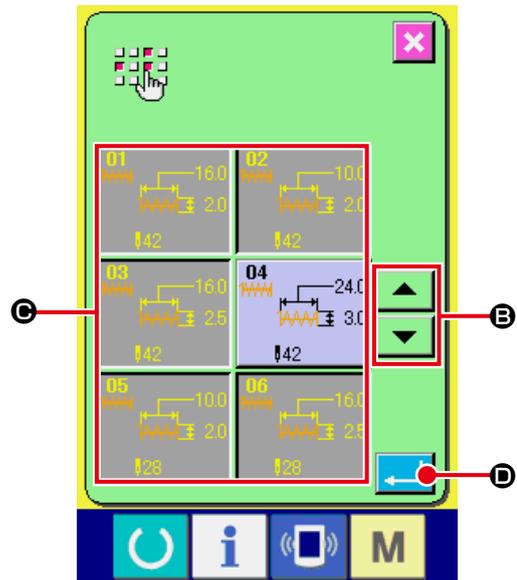
② Setting approval/disapproval of calling

The standard patterns which have been registered are displayed on the standard pattern selection screen. When UP/DOWN SCROLL button  **B** is pressed, the page is changed over.

Every time STANDARD PATTERN button  **C** is pressed, the normal state and the reverse state alternate with each other. In case of the normal state, reading is disapproved and in case of the reverse state, reading is approved.

However, the standard pattern used in the direct pattern cannot be switched to reading disapproved (normal state).

When ENTER button  **D** is pressed, setting of approval/disapproval is determined.



 : Reading disapproved (normal state)

 : Reading approved (reverse state)

③ Determining approval/disapproval of calling

When ENTER button  **D** is pressed, setting of approval/disapproval is determined.

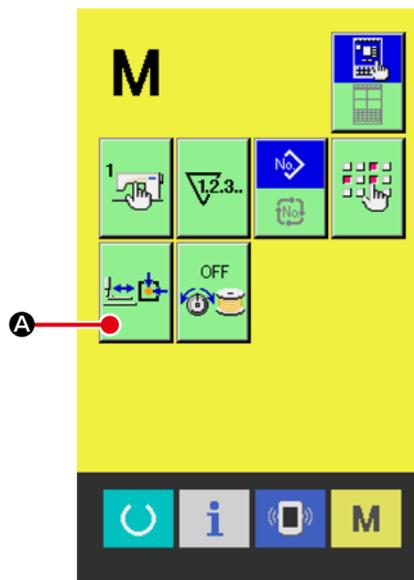
32. PERFORMING ADJUSTMENT OF ORIGIN OF PRESSER

① Display the presser origin adjustment screen.

When **M** key is pressed, PRESSER ORIGIN

ADJUSTMENT button  **A** is displayed. When

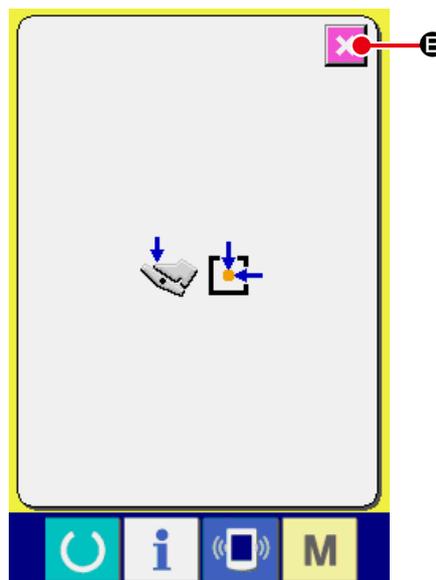
this button is pressed, the presser origin adjustment screen is displayed.



② Perform the adjustment of the presser origin.

Perform the origin retrieval with the start switch.

Press the CANCEL button  **B** to close the presser origin adjustment screen and open the mode changeover screen.



33. CORRECTION OF TENSION (BOBBIN THREAD REMAINING AMOUNT)

The needle thread tension can be corrected according to the bobbin thread remaining amount. The remaining amount of the bobbin thread is calculated using the current and set values of the bobbin thread counter.

Needle thread tension can also be set on the operation panel, and the needle thread tension data is stored in memory.

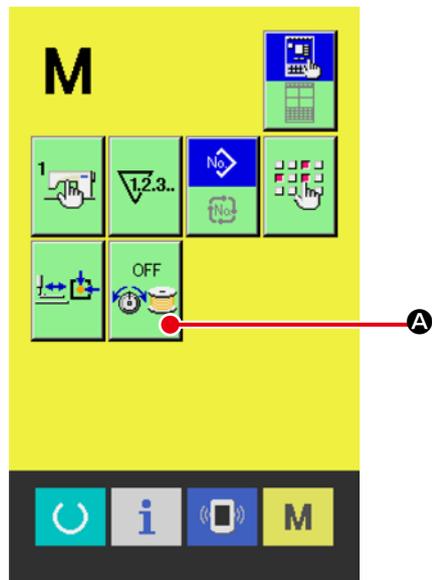
① Display the mode changeover screen.

Press the **M** key on the standard screen to display the mode changeover screen.

The TENSION CORRECTION SETTING button



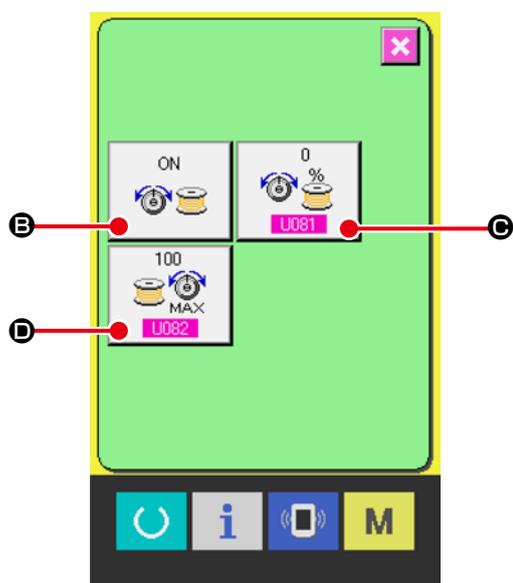
A will appear on the screen. Press this button to display the tension correction setting screen.



② Enable or disable the thread tension correction function.

Each time you press the TENSION CORRECTION FUNCTION button  **B**, the function toggles between enabled or disabled.

When the tension correction function is enabled, the setting button for tension correction data (bobbin thread remaining amount) will be displayed.



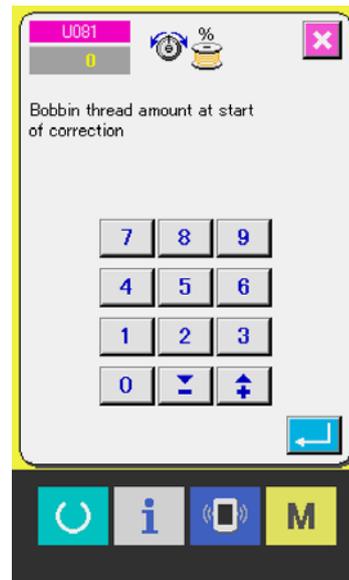
③ **Set the bobbin thread amount to start correction.**

Select “**U081** : Bobbin thread amount to start correction” **C** .

This setting determines the remaining bobbin thread amount (%) at which the needle thread tension correction will begin.

To calculate the remaining amount of the bobbin thread, bobbin thread counter must be set.

For instructions on setting the bobbin thread counter, refer to “Sewing using the counter”.

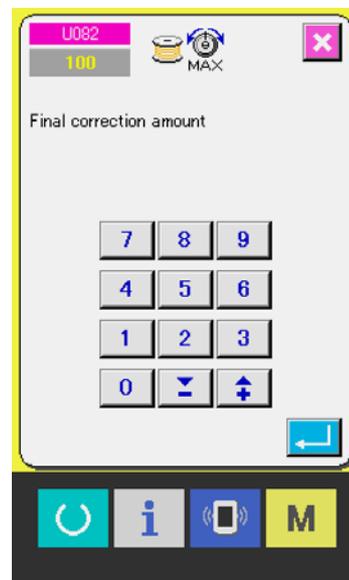


④ **Set the final correction amount.**

Select “**U082** : Final correction amount” **D** .

This setting determines the correction ratio of the needle thread tension.

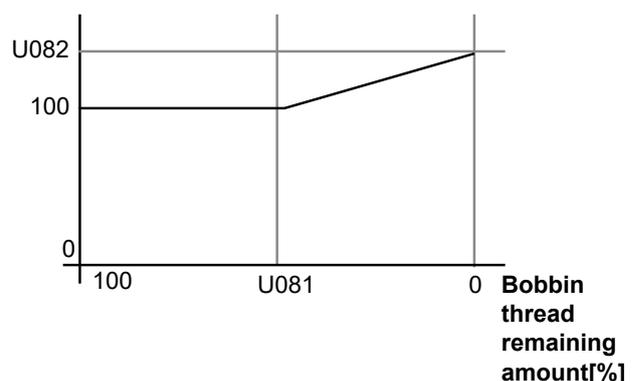
- * Refer to the figure on the left for the relationship between “**U081** Bobbin thread amount to start correction” and “**U082** Final correction amount”.



- * The tension correction (bobbin thread remaining amount) operates only in the case the counter type of the bobbin thread counter is “bobbin thread down counter”.

- * After you have changed the bobbin, re-set the current value of the bobbin thread counter.

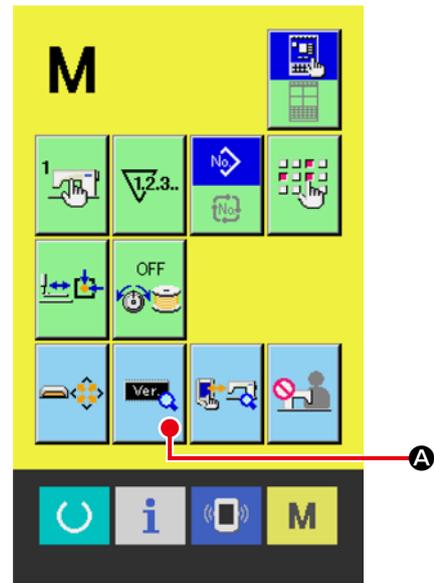
Tension correction amount[%]



34. DISPLAYING VERSION INFORMATION

① Display the version information screen.

When **M** key is held pressed for three seconds, VERSION INFORMATION button  **A** is displayed on the screen. When this button is pressed, the version information screen is displayed.

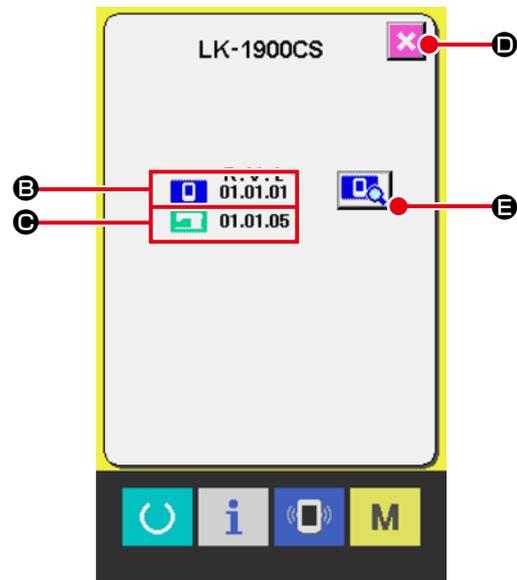


The version information on the sewing machine you use is displayed in the version information screen and it is possible to check.

B : Version information on panel program

C : Version information on main program

Press the CANCEL button  **D** to close the version information screen and open the mode changeover screen.



② Display the details display screen.

When DETAILS SCREEN DISPLAY button  **E** is pressed, the details screen of the panel program is displayed.

F : Module name

G : RVL

H : Check sum

When CANCEL button  **I** is pressed, the details display screen is closed and the version information screen is displayed.

Pressing the **M** key closes the details display screen and returns to the currently selected standard screen.

MODULE	R.V.L	SUM
IPMAINPRGM	01.05.01-0	FF57
IPMAINIMG	01.05.01-	234F
IPJOGIMG1	01.02.07-	F3DA
IPJOGLANI MG 1	01.02.07-	0660
IPJOGLANI MG 2	01.02.07-	5CAB
IPJOGLANI MG 3	01.02.07-	205B
IPMAINLANI MG 1	01.05.01-	32D6
IPMAINLANI MG 2	01.05.01-	FB95
IPMAINLANI MG 3	01.05.01-	440C