





ENGLISH

**IT-100
INSTRUCTION MANUAL**

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I . INTRODUCTION

This Instruction Manual describes JUKI operation panel "IT-100".

Be sure to read "Safety precautions" in the Instruction for the SC-920 (control box) before reading this Instruction Manual to fully understand them.

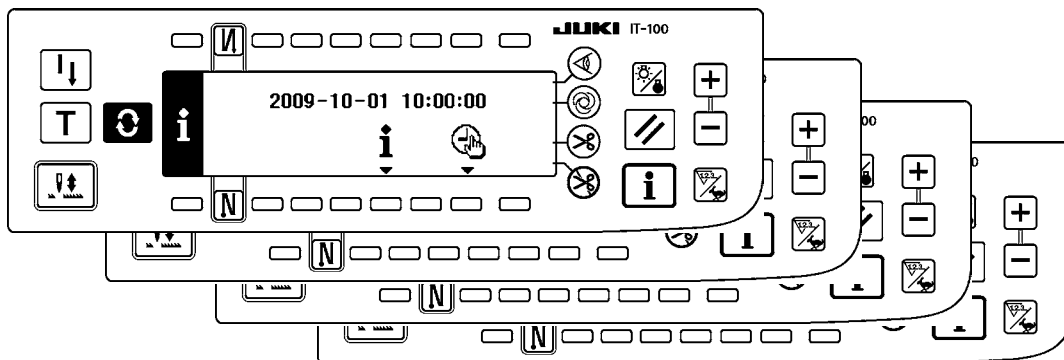
In addition, this product is precision equipment. It requires careful handling. Take care not to drop or roughly handle it to protect against any physical shock.

The operations of the IT-100 operation panel mainly consist of those carried out under the "normal sewing mode" and those under the "information mode." These two modes can be changed over by means of the information switch .

Information mode


Under this mode, function settings for the production support function are carried out and the sewing machine operation is set/checked.

Refer to "**IV. INFORMATION**" for how to operate the operation panel under the information mode.



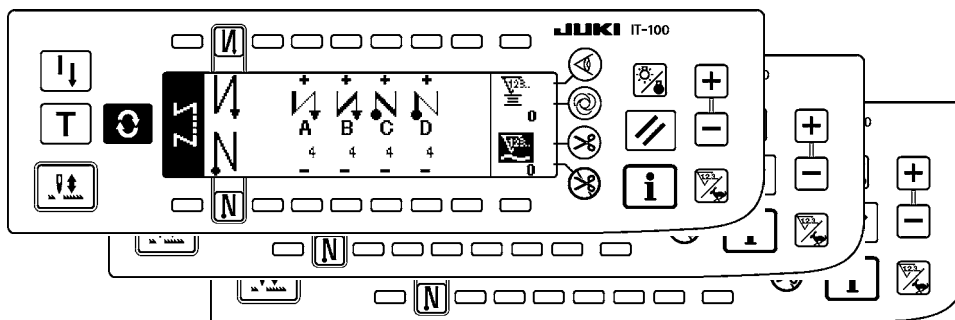
Normal sewing mode

Under this mode, the sewing machine performs sewing.

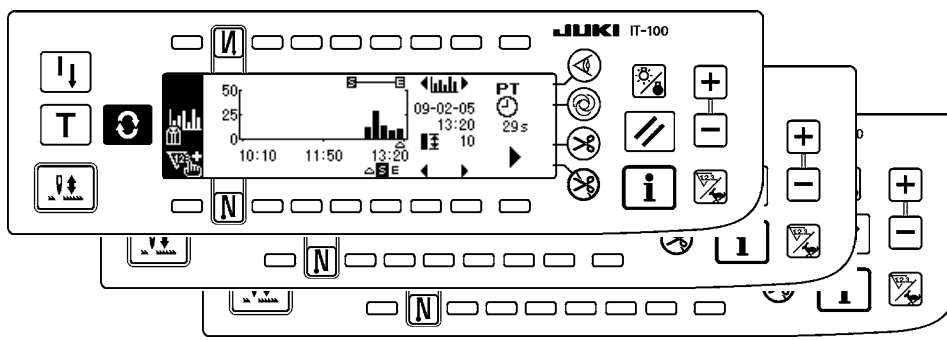
The sewing screen differs on a model-by-model basis. It is possible to use the IT-100 by changing over the screen, with the Screen changeover switch , between the sewing screen and the production support function screen on which the production support operation is enabled.

Refer to "**III. 2. SEWING SCREEN**" for how to operate the operation panel under the normal sewing mode.

<Sewing screen which differs on a model-by-model basis>



<Production support function screen on which the production support operation is enabled>



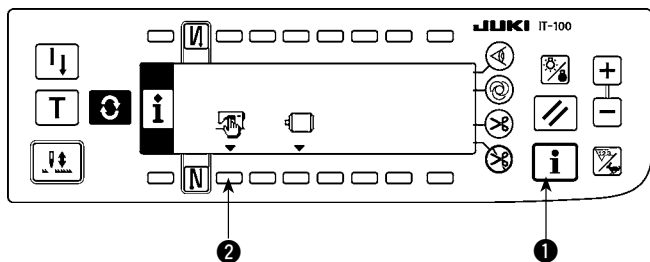
Press
the
switch
.

II. SETTING

1. INITIAL SETTING

1-1. Machine head settings

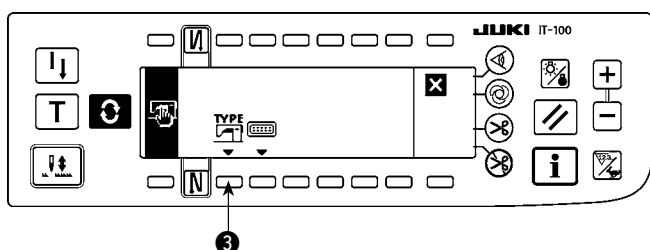
[Function settings list screen]



- 1) Keeping switch ❶ held pressed, turn the power ON. Then the screen is changed over to the function settings list screen.

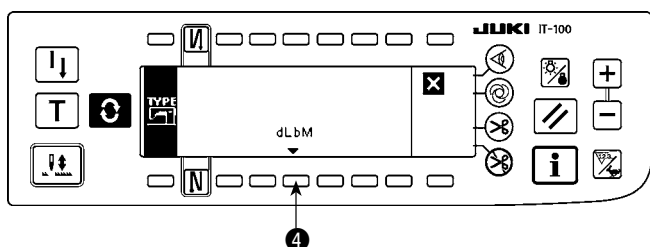
When you press switch ❷, the screen is changed over to the sewing common data screen.

[Sewing common data screen]



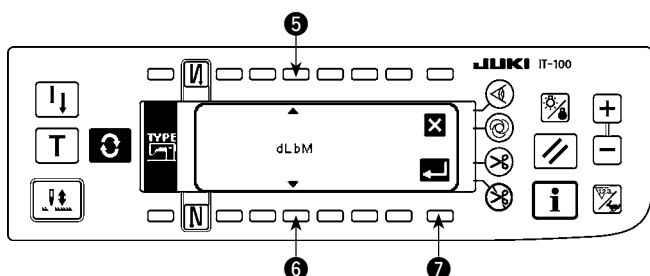
- 2) When you press switch ❸, the screen is changed over to the machine head type display screen.

[Machine head type display screen]



- 3) The displayed machine head type is the machine head you have selected. When you press switch ❹, the screen is changed over to the machine head type setting popup screen.

[Machine head type setting popup screen]



- 4) You may selected the machine head as desired by pressing switches ❺ and ❻.

* Refer to the separate sheet of "Sewing machine setup precaution" or the "Machine head list" given on the separate sheet for the machine head types.

- 5) Once you have determined the machine head type, press switch ❼. The screen is changed over to the "machine head type display screen" to display the machine head type you have selected. Turn the power switch OFF to exit from the machine head setting.

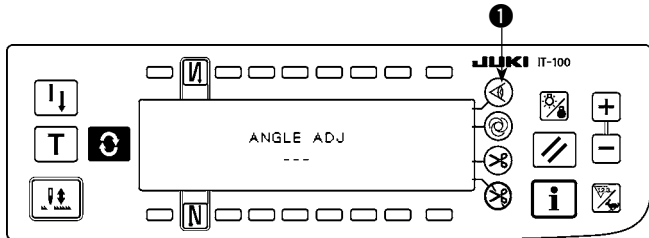
1-2. Adjusting the machine head angle (direct-drive motor type sewing machine only)



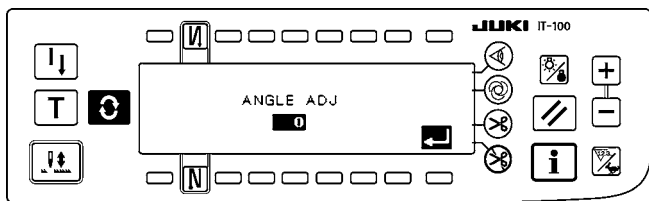
WARNING :

If the white marker dot on the pulley is far out of alignment with the recess on the pulley cover, it is necessary to adjust the angle of the machine head taking the steps of procedure described below.

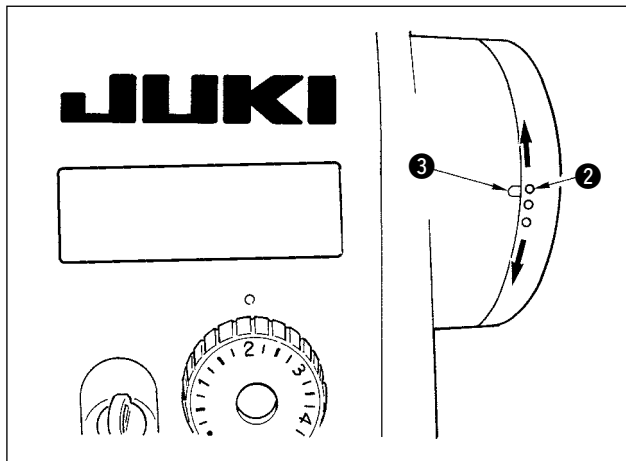
[Machine head angle adjusting screen]



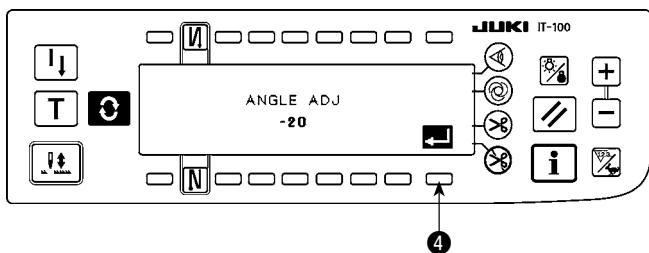
- 1) Keeping switch ① held pressed, turn the power ON. Then the screen is changed over to the machine head angle adjusting screen.



- 2) Turn the machine head pulley by hand until the main shaft reference signal is detected. Then, the angle transmitted by the main shaft reference signal is displayed in reverse video. (The value shown in the figure is a value for reference.)

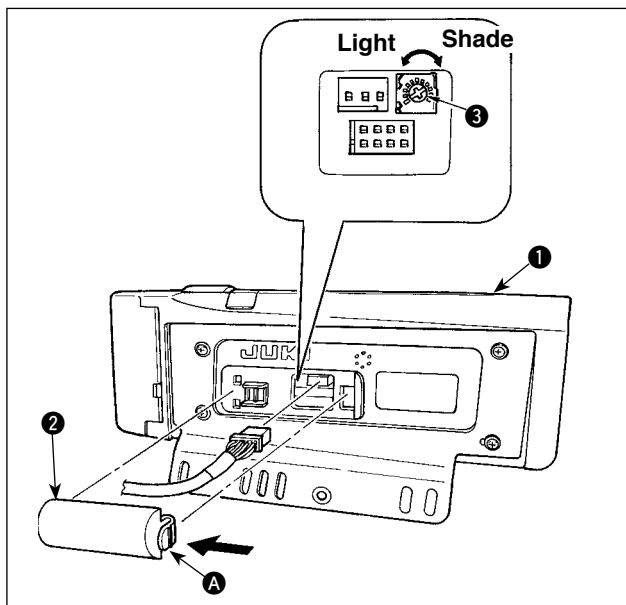


- 3) In this state, align the white dot ② of the handwheel with the concave ③ of the handwheel cover as shown in the figure.



- 4) Once the angle is determined, press switch ④. The angle displayed in reverse video is now displayed in normal video and the angle is replaced by the adjusted one. Turn the power switch OFF to exit from the angle adjustment.

1-3. Adjusting the contrast of the operation panel screen

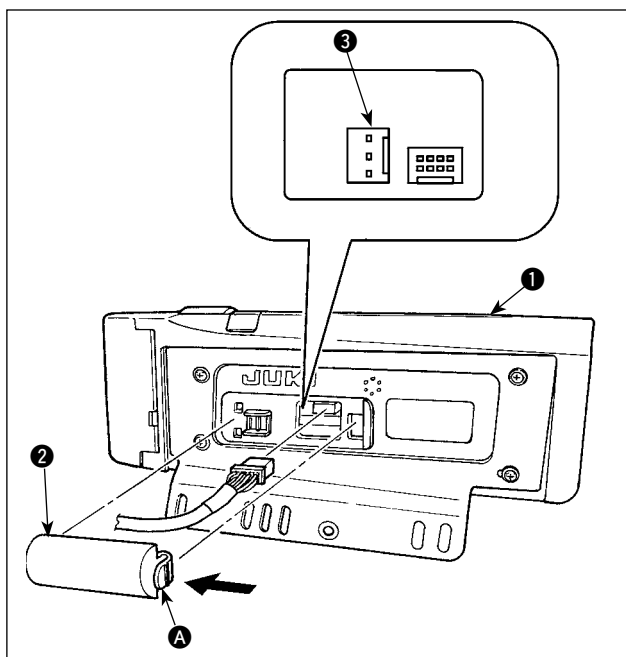


- 1) Press in the direction of arrow mark the click of section **A** of cord outlet cover **2** assembled in the rear of operation panel **1** and remove the cover.
- 2) Turn LCD screen display brightness adjustment variable resistor **3** to adjust the brightness (contrast) of LCD screen.

Caution

1. To prevent the operation panel from breakage, do not touch the circuit board pattern and the connector terminal.
2. Do not disassemble the operation panel to prevent it from breakage.

1-4. Connecting the count manual switch

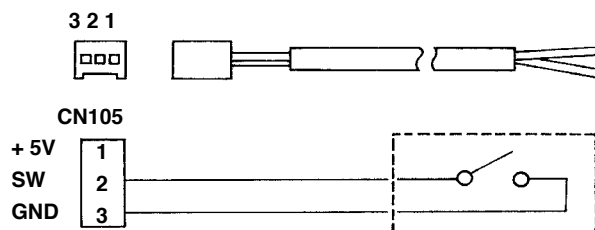


- 1) Press in the direction of arrow mark the click of section **A** of cord outlet cover **2** assembled in the rear of operation panel **1** and remove the cover.
- 2) Connect optional junction cable connector to connector CN105 **3** of the count manual switch.

Note) Prepare the switch main unit by the customers or ask JUKI business office about it.

Optional relay cable A (asm.)

JUKI Part No. 40008168



1-5. USB port

- 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.
- ② USB specifications
 - Conform to USB 1.1 standard
 - Format supported _____ FAT 32
 - Consumption current _____ The rated consumption current of the applicable USB devices is 500 mA at the maximum.

2. HOW TO SET THE PRODUCTION SUPPORT FUNCTION

2-1. Overview of the work support function

The production support function is achieved by installing the IT-100 operation panel (Intelligent Terminal) to the sewing machine and operating it. This function measures the operating status of the sewing machine and visually displays the measured data on the operation panel to help improve efficiency of sewing work in various aspects. Measured and recorded data on the operation status of the sewing machine can be loaded on a personal computer by way of Ethernet or various data storage media. It is therefore possible to analyze the data by means of IA-1 and to accumulate the results of the analysis on the personal computer by gathering detailed operation data from two or more sewing machines and loading them on the personal computer. As a result, the continued efficiency-improving activities for the entire sewing plant can be carried out.

* Refer to the Help for the IA-1 for the details of the IA-1.

The production support function by means of the IT-100 is categorized into four functional parts, i.e., work management function, pitch time monitor function, sewing recorder function and production management function. Each of them has its own support capability. Use them by selecting an appropriate one according to your needs.

* It should be noted that the work management function cannot be disabled since it manages data on the sewing machine operation. Operation of the other three functions can be changed over between the enable and disable.

(1) Work management function

To use the work management function, work history data such as the operator ID, product number and process number, which are to be embedded in the operation data recorded by each sewing machine, should be entered. The IA-1 carries out operational status analysis based on those pieces of data.

This function is also used when loading the operation data from the sewing machine into a personal computer.

(2) Pitch time monitor function

With the pitch time monitor function, it is possible to specify an arbitrary target section to monitor the transition of the production volume (i.e., the quantity of sewn items) per unit time and the pitch time distribution and display them on the IT-100 as a bar chart. In addition, the operational status such as the total production volume and average pitch time in the specified section can be analyzed and indicated numerically. Through these capabilities, the sewing work can be monitored over a long time and visually analyzed to enable tracking down of the time when a problem has occurred.

(3) Sewing recorder function

The sewing recorder function continuously measures the number of revolutions and thread trimming timing of the sewing machine at all times to show the results on the IT-100 as a line chart. The sewing machine operator's skill level is checked and technical training is provided based on the line graph. It is possible to display an operator's skill level together with that of a skilled operator or with his/her work data of the past on a screen for the purpose of comparison, so that the complicated and hard-to-understand sewing machine operation can be visualized for easier analysis.

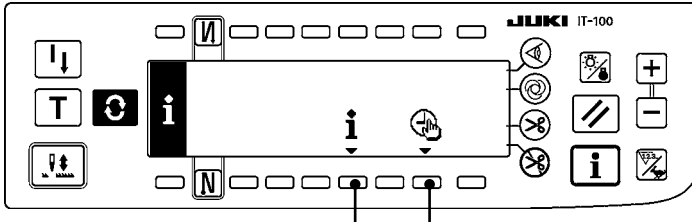
(4) Production management function

The production management function displays the target production volume for given working hours and the actual production volume to notify the operator of a delay or progress of sewing work in real time. With this function, the operator is able to carry out his/her work while checking his/her work pace. This enhances his/her motivation to achieve his/her goal, thereby leading to an increase in productivity. In addition, this function allows early detection of a delay in work making it possible to identify a problem and take an appropriate measure at an early stage.

2-2. Displays on the screen for the production support function

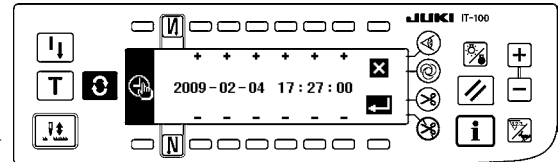
The production support function is to be set on the information screen. Press the **i** switch to call the information screen. Refer to the item page given under the screen for detailed explanation of the operation setting procedure for each screen.

<Information mode screen No.1>



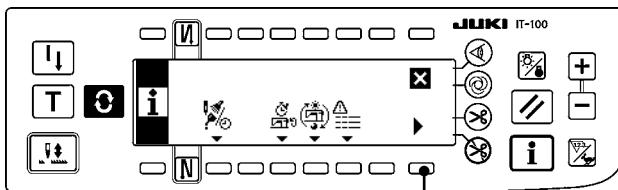
Pressed for three seconds

<Date and time setting screen>

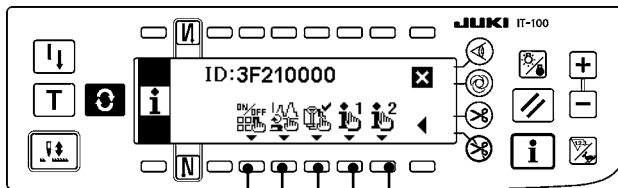


II. 2-3.(2) Setting the date and time

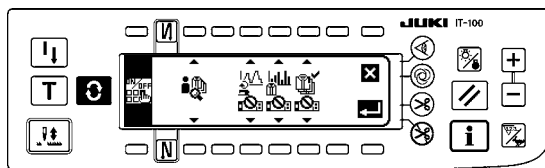
<Sewing management information screen No.1>



<Sewing management information screen No.2>

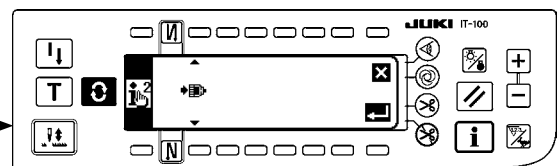


<Production support function operation enable/disable setting screen>



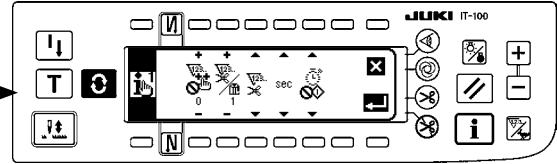
II. 2-4.(2) Setting the enable/disable of the operation of the production support function

<ISS setting screen>



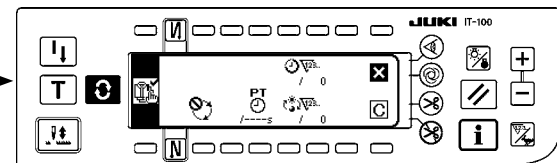
II. 2-4.(5)-2 ISS setting screen

<Production support common setting screen No. 1>



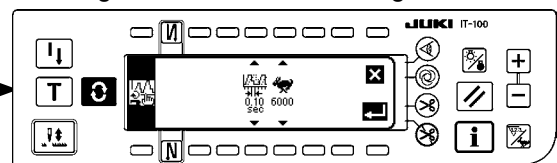
II. 2-4.(5)-1 Production support common setting screen No. 1

<Production management function setting screen>



II. 2-4.(4) Setting the production management function

<Sewing recorder function setting screen>



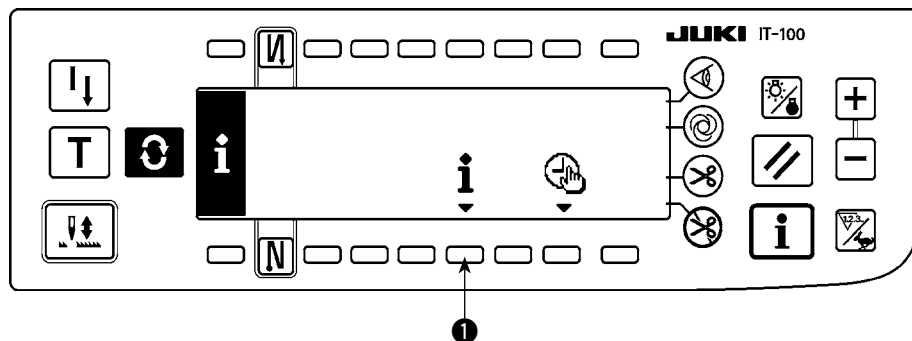
II. 2-4.(3) Setting the sewing recorder function

2-3. Setting procedure to be taken before first use

To use the production support function, the “production support function operation enable setting” and “date and time setting” have to be carried out without exceptions. Be sure to enter data on the required items following the steps of procedure described below.

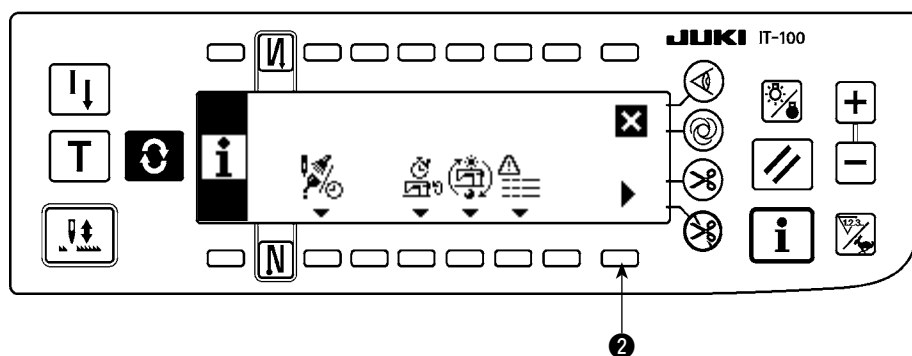
(1) Enabling the operation of the production support function.

<Information mode screen No.1>



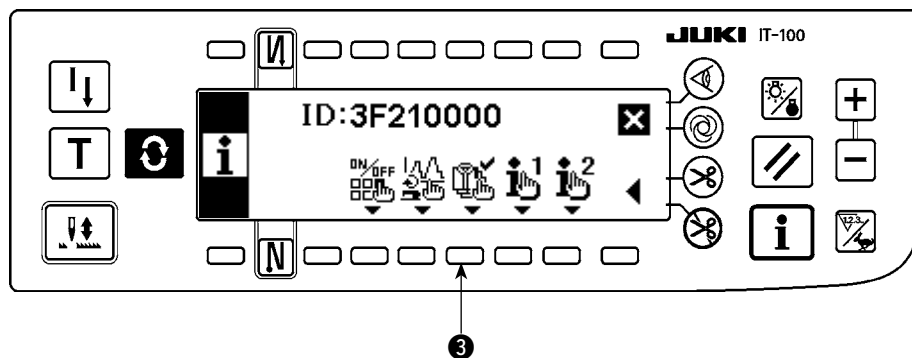
- 1) Keep switch ❶ on the information mode screen No. 1 held pressed for three seconds to display the sewing management information screen No. 1 (Maintenance personnel level).

<Information mode screen No.2>



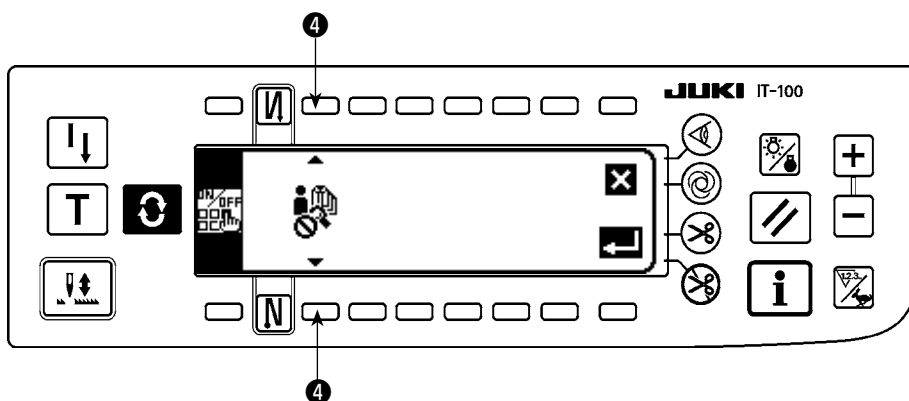
- 2) On the sewing management information screen No. 1, press sewing management information screen No. 2 changeover switch ❷ to display the sewing management information screen No. 2.

<Sewing management information screen No.2>



- 3) Then press Production support function operation enable/disable changeover switch ❸ to display the production support function operation enable/disable setting screen.

<Production support function operation enable/disable setting screen>



4) Select the enable for the operation of the production support function with Function selector switch ④ .

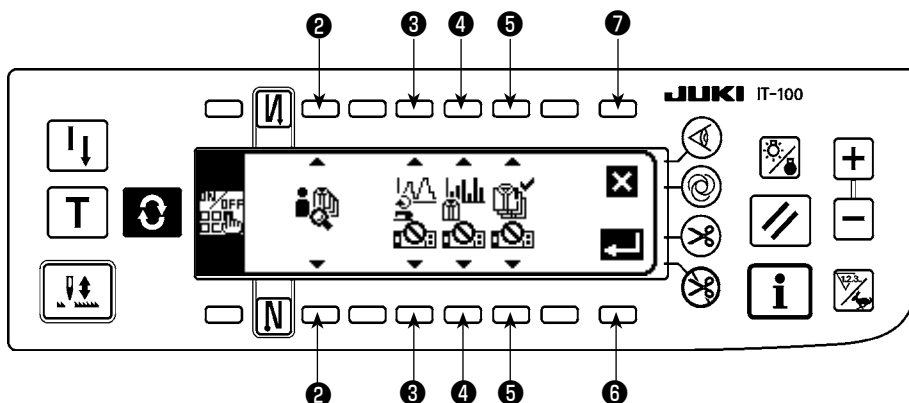
Operation of the production support function is enabled


Operation of the production support function is disabled



When the operation of the production support function is enabled, the item for setting display/non-display of the pitch time monitor function screen, sewing recorder function screen and production management function screen additionally appears to allow the respective functions to be used under the normal sewing mode.

<Production support function operation enable/disable setting screen>



5) Select the function to be used from among the sewing recorder function, pitch time monitor function and production management function and set its display status between the display and non-display using switches ③ , ④ and ⑤ . The screen of the function which is set to the display is displayed by pressing the switch  under the normal sewing mode.

It should be noted, however, the work management function screen is displayed only by setting the operation of the production support function to the enable with Function selector switch ② because the information common to all of the functions need to be managed on this screen.

Switch ③ : Used to set the sewing recorder function screen to the display/non-display

Switch ④ : Used to set the pitch time monitor function screen to the display/non-display

Switch ⑤ : Used to set the production management function screen to the display/non-display

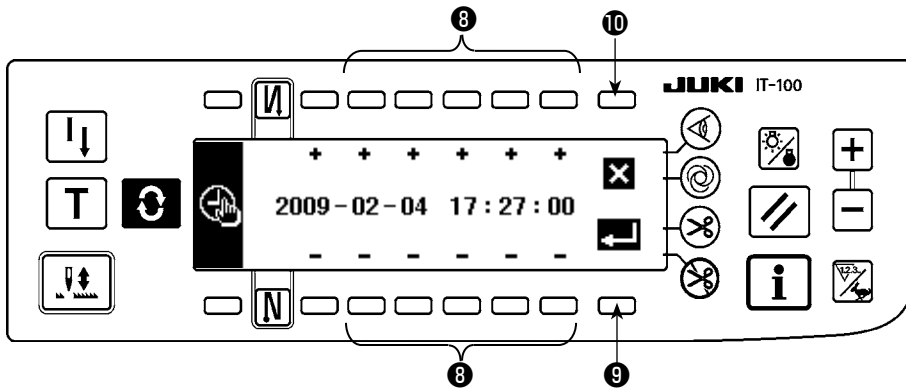
6) When Enter switch ⑥ is pressed, the input settings are confirmed and the date and time setting screen is displayed.

* If the date and time have already been set, the sewing machine ID setting screen is displayed. If the sewing machine ID has also been set, the screen is restored to the sewing management information screen No. 2.

When Cancel switch ⑦ is pressed, the settings will be cleared and the screen will be restored to the sewing management information screen No. 2.

(2) Setting the date and time

<Date and time setting screen>



- 1) Set the current date and time with Time setting switch ⑧. If any date which does not exist on a calendar (such as the 31st and a leap year) is set, the relevant date will be shown in black-and-white reverse video.
- 2) When Enter switch ⑨ is pressed, the settings are confirmed and the sewing machine ID setting screen is displayed.
- 3) If any date which does not exist on a calendar (black-and-white reverse video) is set, a prohibition sound sounds and cannot be confirmed.
When Cancel switch ⑩ is pressed, the settings will be cleared and the screen will be restored to the sewing management information screen No. 2.

(3) Setting other setting items

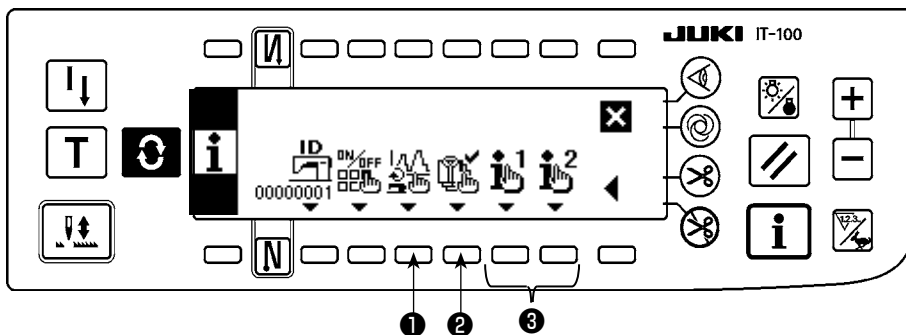
When you complete " II .2-3 (1) Enabling the production support function operation" and " II . 2-3 (2) Setting the date and time" according to this Instruction Manual, the screen returns to the sewing management information screen No. 2. The following setting items can be set through this screen.

On this screen, the following can be carried out :

- Switch ① : Setting the details of the sewing recorder function
 - Switch ② : Setting the details of the production management function
 - Switch ③ : Setting the common items for the production support
- Carry out setting according to the usage of the sewing machine.

* Refer to " II . 2-4. Setting procedure to be taken before regular operation" for details of setting procedure.

<Sewing management information screen No.2>



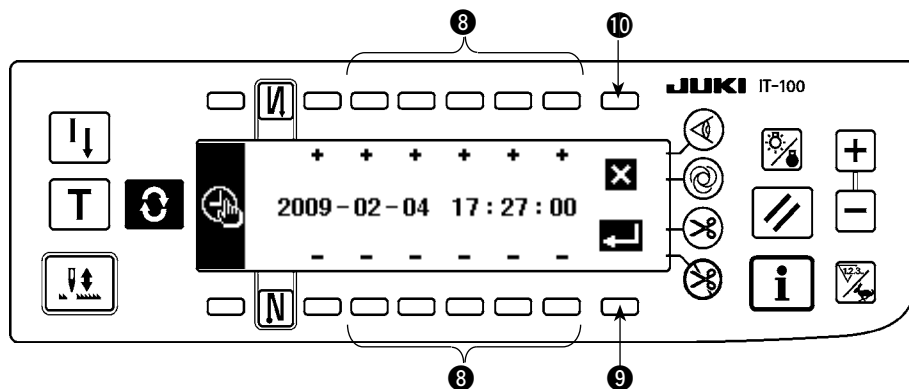
2-4. Setting procedure to be taken before regular operation

To set data on the operation of the production support function, press the Information switch **i** under the normal sewing mode to change over to the information mode.

(1) Setting the date and time

* Refer to "II. 2-2. Displays on the screen for the production support function" for the operating procedure to be taken until this screen is displayed.

<Date and time setting screen>



1) Set the current date and time with Time setting switch **8**.

* If any date which does not exist on a calendar (such as the 31st and a leap year) is set, the relevant date will be shown in black-and-white reverse video and the setting cannot be confirmed.

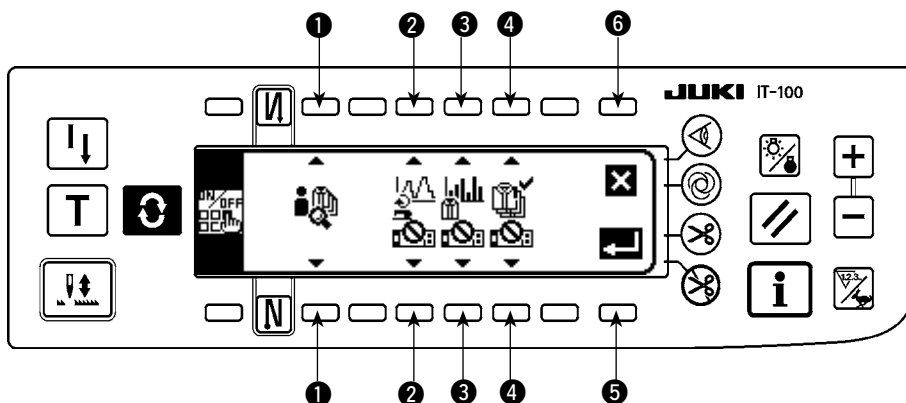
2) When Enter switch **9** is pressed, the setting is confirmed. When cancel switch **10** is pressed, the setting is cancelled and the screen is restored to the previous one.

(2) Setting the enable/disable of the production support function

* Refer to "II. 2-2. Displays on the screen for the production support function" for the operating procedure to be taken until this screen is displayed.









On the <Production support function operation setting screen> under the information mode, the enable/disable setting for the entire production support function can be carried out, and the display/non-display setting for the sewing recorder function screen, pitch time monitor function screen and production management function screen can be carried out on function-by-function basis.

<Production support function operation enable/disable setting screen>



Input the item to be set referring to the table given below.

When Enter switch ⑤ is pressed, the input data is confirmed. When Cancel switch ⑥ is pressed, the input data is cancelled and the screen is restored to the previous screen.

No.	Item to be set	Description
①	Enable/disable of the operation of the production support function	<p>Enable/disable of the operation of the entire production support function is set.</p> <p>Operation enabled :  Operation disabled : </p> <p>*When the operation is enabled, items ② to ④ for setting the display/non-display of the sewing recorder screen, pitch time monitor screen and production management screen additionally appear on the screen.</p>
②	Display/non-display of the sewing recorder screen	<p>Display/non-display of the sewing recorder screen is set. (*1)</p> <p>Display :  Non-display : </p>
③	Display/non-display of the pitch time monitor screen	<p>Display/non-display of the pitch time monitor screen is set. (*1)</p> <p>Display :  Non-display : </p>
④	Display/non-display of the production management screen	<p>Display/non-display of the production management screen is set. (*1)</p> <p>Display :  Non-display : </p>

*1. When the screen is set to the display, the screen is added to the normal sewing mode screen and it becomes available.

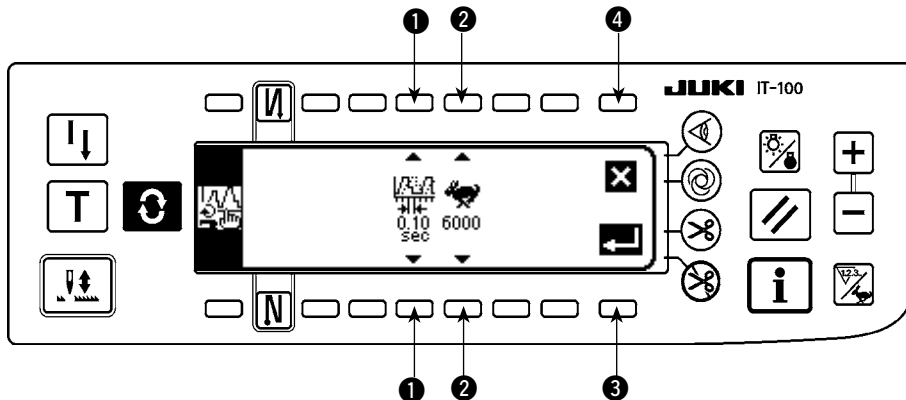
Refer to "III. 5-1. How to change over the screen under the normal sewing mode" for the operating procedure under the normal sewing mode.

(3) Setting the sewing recorder function

* Refer to "II. 2-2. Displays on the screen for the production support function" for the operating procedure to be taken until this screen is displayed.

The operation and the display-related basic items of the sewing recorder function can be set on the <Sewing recorder function setting screen> under the information mode.

<Sewing recorder function setting screen>



Input data on items ① and ② referring to the table given below.

When Enter switch ③ is pressed, the input data is confirmed. When Cancel switch ④ is pressed, the input data is cancelled and the screen is restored to the previous screen.

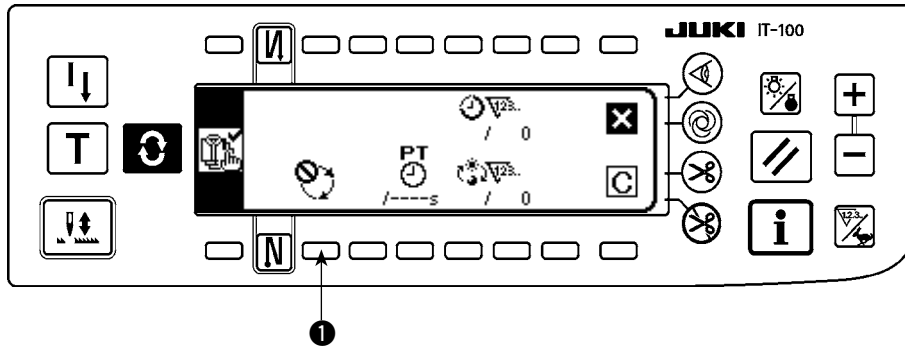
No.	Item to be set	Description
①	Data sampling time	<p>Sets the time interval for measuring and recording the sewing speed of the sewing machine.</p> <p>Set value : 0.05, 0.10, 0.50, 1.00, 1.50, 2.00 (sec)</p> <p>Initial value : 0.10 (sec)</p> <p>* Data over the time interval specified by the set value "0.05: 25 minutes," "0.10: 50 minutes," "0.50: 250 minutes," "1.00: 500 minutes," "1.50: 750 minutes," or "2.00: 1000 minutes" can be stored in memory of the sewing machine. When the memory capacity is exceeded, the oldest piece of data is erased to store the latest piece of data at all times.</p> <p>* The accuracy of the graph plotted depends on the time interval set vale.</p>
②	Upper limit value of vertical axis of the chart (sewing speed)	<p>The upper limit of the graph displayed on the sewing recorder screen No. 2 is set.</p> <p>Set value : 6000, 9000 (sti/min)</p> <p>Initial value : 6000 (sti/min)</p> <p>* On the sewing recorder screen No. 2, the graph can be used under the auto range mode or by setting an arbitrary range in increments of 1000 (sti/min) not more than the upper limit.</p>

(4) Setting the production management function

* Refer to "II. 2-2. Displays on the screen for the production support function" for the operating procedure to be taken until this screen is displayed.

The operation and the display-related basic items of the production management function can be set on the <Production management function setting screen> under the information mode.

<Production management function setting screen>



The production management function screen displays the target production volume for given working hours and the actual number of sewn products to notify the operator of a delay or progress of his/her sewing work in real time.

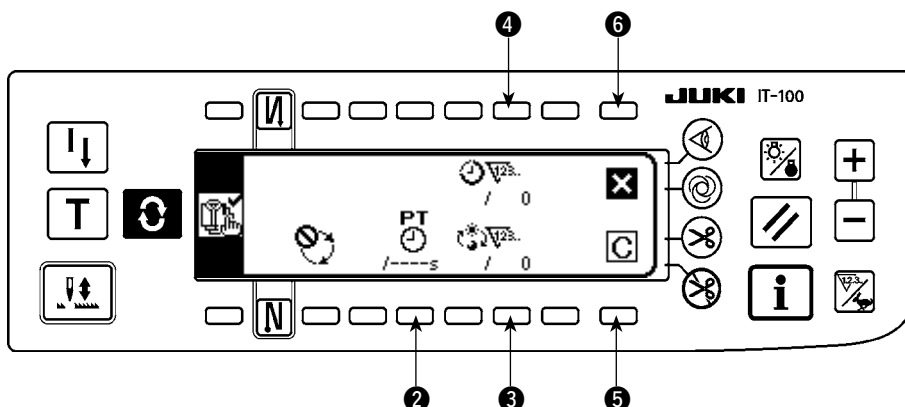
The target production volume is calculated in two different methods. The method can be changed over using switch ① for setting the target production volume count-up method.

- ① Counting up the target production volume according to the lapse of a specified pitch time
 : Counting up according to the target pitch time
- ② Calculating the target production volume as of the current time of day according to the specified starting/finishing times of day of work and total production volume
 : Calculating from the working time of day 1
 : Calculating from the working time of day 2
 : Calculating from the working time of day 3

(4)-1 In the case of counting up the target production volume according to the pitch time

The target production volume is counted up according to the lapse of a specified target pitch time.

<Production management function setting screen (in the case of count-up according to the pitch time)>



Input data on items ② to ④ referring to the table given in the next item.

When Screen closing switch ⑥ is pressed, the screen is closed and restored to the previous screen.

When Clear switch ⑤ is pressed, the target pitch time, target production volume for a day and the current target production volume can be totally cleared.

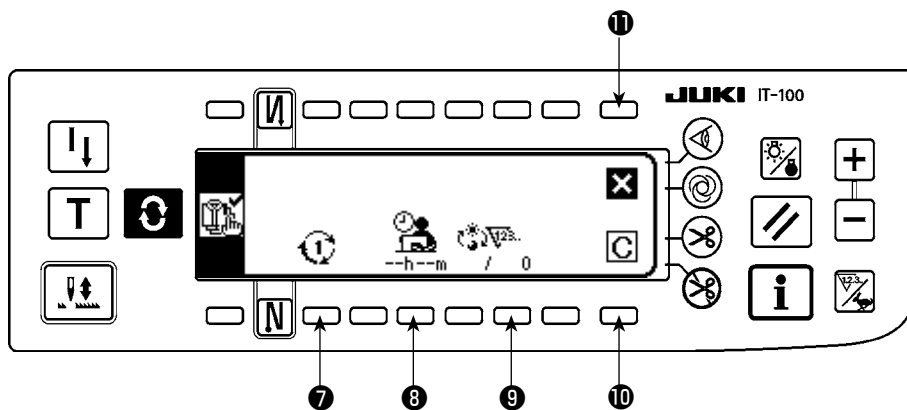
No.	Item to be set	Description
②	Target pitch time setting switch	The target pitch time for sewing work is set. Every time the length of time corresponding to the target pitch time is elapsed, the current target production volume is counted up. * When the switch is pressed, the numeric input popup screen is displayed. Input a set value in the popup screen. * When the target pitch time is changed, the current target production volume ④ is automatically cleared.
③	Daily target production volume setting switch	The target production volume to be produced from the starting to the end of working hours in a day is set. * When the switch is pressed, the numeric input popup screen is displayed. Input a set value in the popup screen.
④	Current target production volume correction switch	The current target production volume that is counted up every time the length of time corresponding to the target pitch time is elapsed can be corrected. * When the switch is pressed, the numeric input popup screen is displayed. Input a corrected value in the popup screen.

(4)-2 In the case of calculating the target production volume according to the specified starting/finishing times of day of work and total production volume

The target production volume as of the current time of day is calculated and displayed on the production management screen under the sewing mode by setting data on the time period during which sewing work is carried out such as the starting/finishing/resting times of day and a daily target production volume.

* Three different working conditions ① to ③ can be entered. When two or more operators use one sewing machine, the machine should be used after the entry of working hours on an operator-by-operator basis.

<Production management function setting screen (in the case of calculating the target production volume by setting the starting/finishing times of day and the total production volume)>



Input data on items ⑦ to ⑨ referring to the table given in the next item.

When Screen closing switch ⑪ is pressed, the screen is closed and restored to the previous screen.

When Clear switch ⑩ is pressed, the operating time and rest time and the daily target production volume of the selected working conditions ① to ③ can be totally cleared.

No.	Item to be set	Description
7	Working condition selector switch	On the assumption that one sewing machine is used by the operators working the shift or for sewing two or more different sewing items, three different daily working conditions (working hours and total production volume) ① ② ③ can be set. The working conditions set in this step can be invoked on the production management screen under the normal sewing mode. This eliminates re-setting of detailed working conditions at the shift time or the sewing item changing.
8	Working/resting times setting switch	The starting/finishing times of work and the resting time of day are set. The working time period can be set more finely with working time and resting time each of which can be set to three different values. → Refer to the next item "① How to set the working time and resting time" for details of setting procedure. * The actual working time, obtained by subtracting the resting time from the length of time elapsed from the starting to the end of daily work, is displayed.
9	Daily target production volume setting switch	The target production volume to be produced from the starting to the end of working hours in a day is set. * When the switch is pressed, the numeric input popup screen is displayed. Input a set value in the popup screen.

① . How to set the working time and resting time

Daily working time is set finely by the working time and resting time each of which can be set to three different values.

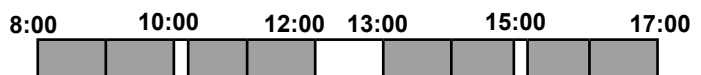
The following shows an example of the setting procedure. Input data appropriately referring to the example.

Example) Set the following time period for working condition ① .

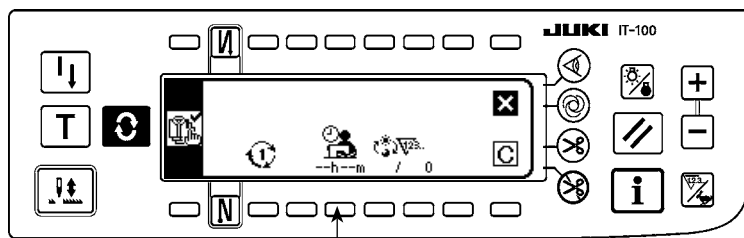
Working hours : 8:00 - 17:00

Lunch break : 12:00 - 13:00

Work break s : 10:00 - 10:10, 15:00 - 15:10

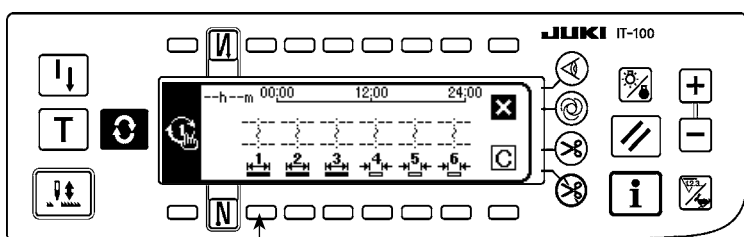


<Setting procedure>




Working/resting times setting ①

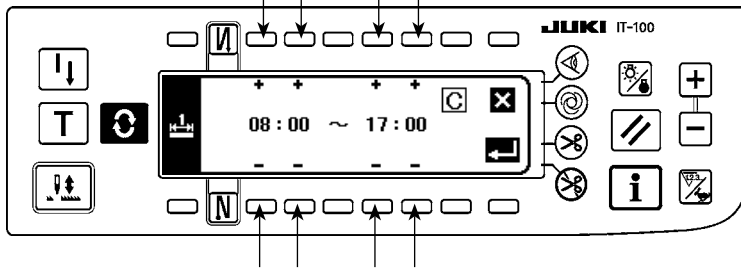
- 1) Start setting the working time and resting time
Start inputting data on working condition ① .



Input of data on working time 1 ②

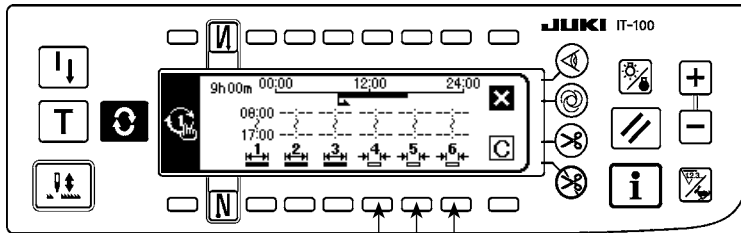
- 2) Set the working time.
Select the input of working time 1  . Input of data on working time 1

Input of working hours ③



3) Input the working hours 8:00 to 17:00.

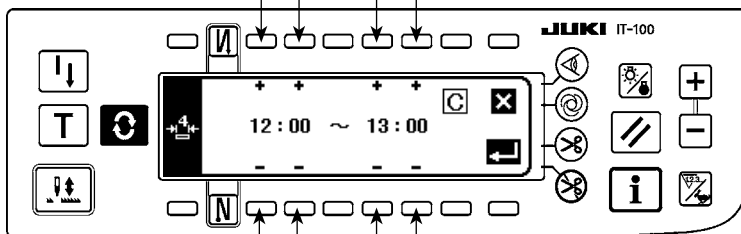
Input of working hours ③



4) Set the resting time
Select the input of data on resting times 4 \rightarrow 4 \rightarrow , 5 \rightarrow 5 \rightarrow and 6 \rightarrow 6 \rightarrow .

Input of resting times 4, 5 and 6 ④

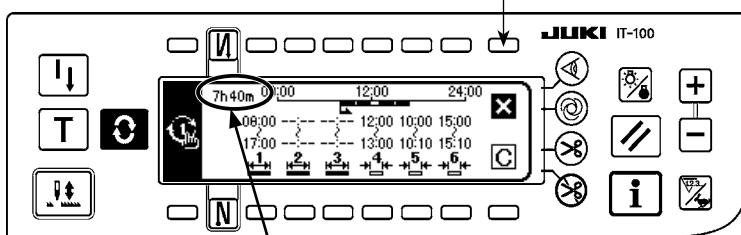
Input of a work break ⑤



5) Input the lunch break 12:00 to 13:00.
Input the work break 10:00 to 10:10.
Input the work break 15:00 to 15:10.

Input of a work break ⑤

Setting is completed ⑥



6) Setting is completed.

* Section A displays the actual working hours obtained by subtracting the resting time from the length of time elapsed from the starting to the end of daily work.

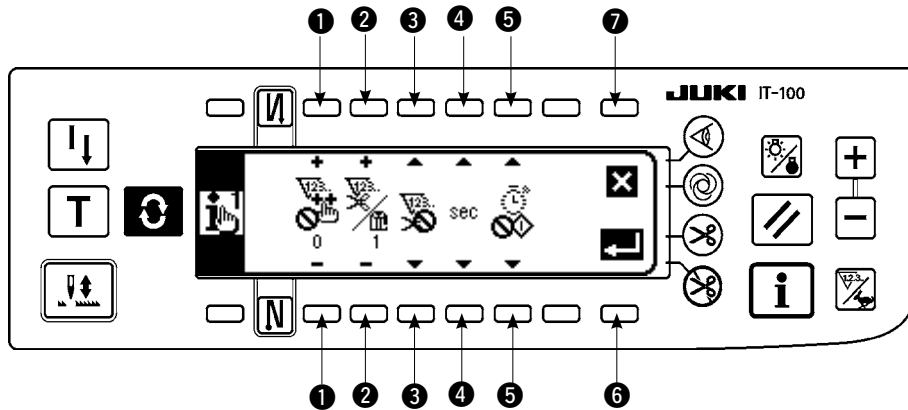
It is possible to load the data edited by means of the IA-1 as the working hours setting data.
In the case of using a USB thumb drive, turn the power ON with a medium registered in a given folder inserted, the data on the medium will be automatically loaded onto the personal computer.
The working hours data cannot be output from the IT-100.

(5) Setting common data for the production support function

* Refer to "II. 2-2. Displays on the screen for the production support function" for the operating procedure to be taken until this screen is displayed.

Items commonly applied to each production support function are set on the production support common setting screens No. 1 and No. 2.

(5)-1 Production support common setting screen No. 1



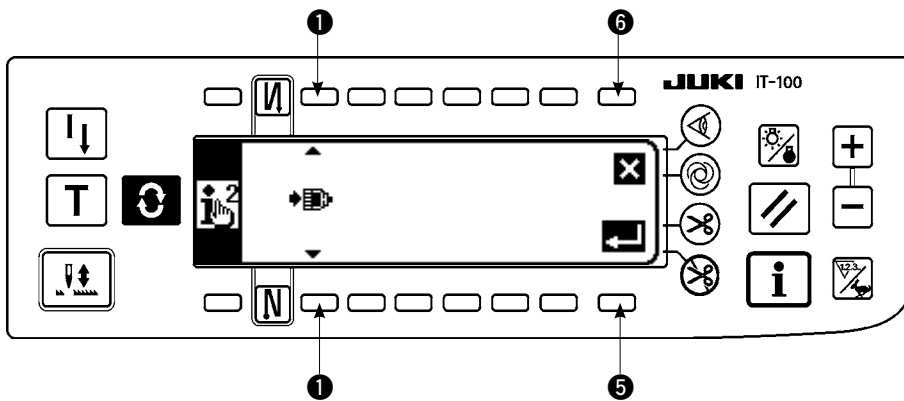
Input data on items ① to ⑤ referring to the table given below.

When Enter switch ⑥ is pressed, the input data is confirmed. When Cancel switch ⑦ is pressed, the input data is cancelled and the screen is restored to the previous screen.

No.	Item to be set	Description
①	Acceptable number of stitches for count-up	When the sewing machine stops after thread trimming and the number of sewn stitches exceeds the preset number of stitches, an input of the count-up of production volume is accepted. Setting range : 0 - 99 Initial value : 0 * Input of the production volume count-up : Production volume count-up switch and the optional production management switch input, displayed on each production support screen under the normal sewing mode. This setting is used for preventing incorrect input or fraudulent input.
②	The number of times of thread trimming per count	The number of times of thread trimming per count on the production volume counter is set. Setting range : 1 - 999 Initial value : 1 * This setting is used in the case of automatic count up by the thread trimming operation without using the production volume counter.
③	Enable/disable of count by thread trimming	Enable/disable of the automatic count-up of the production volume counter and the quantity of sewn items counter. Enable Disable Initial setting : Disable * When this item is set to the enable, the number of times of thread trimming described in ② is referred.
④	Display method selector switch	The unit employed to display the time data on each production support function screen is set. sec : Displayed in second min : Displayed in minute Initial setting : Displayed in second
⑤	Resting status	On each production support function screen, the measurement of the operational status of the sewing machine and recording of data can be temporarily halted. This halt status is set. Measurement is at halt : Measurement is at halt and starting of the sewing machine is prohibited :

(5)-2 ISS setting screen

* Refer to "II. 2-2. Displays on the screen for the production support function" for the operating procedure to be taken until this screen is displayed.



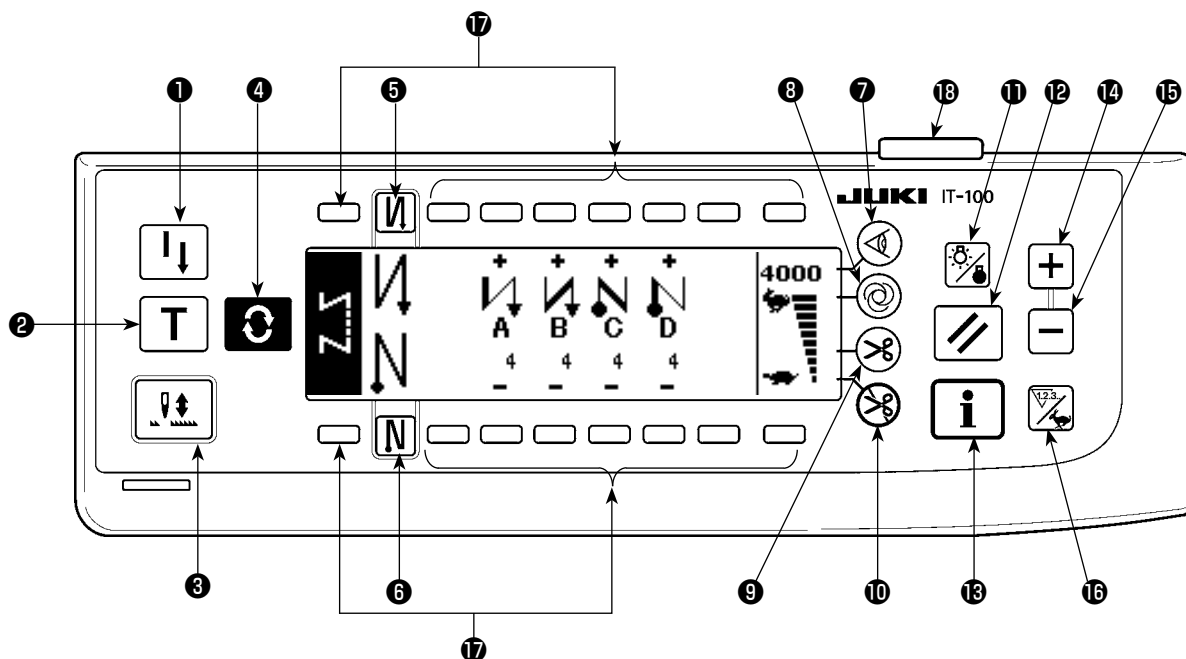
Input the item to be set referring to the table.

When Enter switch ⑤ is pressed, the input data is confirmed. When Cancel switch ⑥ is pressed, the input data is cancelled and the screen is restored to the previous screen.

No.	Item to be set	Description
①	Setting the function for automatically uploading ISS data on the network	Changes over the enable/disable of automatic uploading of the ISS data on the network











III . OPERATION

1. CONFIGURATION OF THE OPERATION PANEL



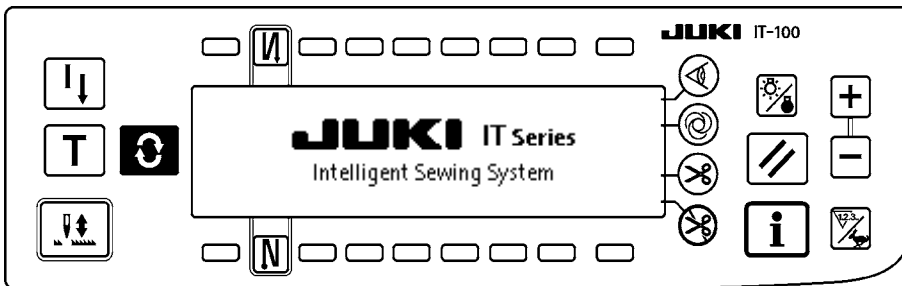
- | | | |
|---|--|-----------------------------------|
| ① Re-sewing switch | ⑦ Material edge sensor switch | ⑫ Reset switch |
| ② Teaching switch | ⑧ One-shot automatic sewing switch | ⑬ Information switch |
| ③ Needle up/down compensating switch | ⑨ With/without automatic thread trimmer switch | ⑭ + switch |
| ④ Screen changeover switch | ⑩ Thread trimming prohibiting switch | ⑮ - switch |
| ⑤ With/without reverse feed stitch at sewing start switch | ⑪ Backlight switch | ⑯ Counter/speed changeover switch |
| ⑥ With/without reverse feed stitch at sewing end switch | | ⑰ General-purpose switch |
| | | ⑱ Power display lamp |


	Switch	Description
①	Re-sewing switch 	This switch is used to continue sewing from the step on the way after replacing bobbin thread when bobbin thread has run out during program stitching step.
②	Teaching switch 	This is the switch to set the setting of the number of stitches with the value of number of stitches which has been actually sewn.
③	Needle up/down compensating switch 	This is the switch to perform needle up/down compensating stitching. (Needle up/down compensating stitching and one stitch compensating stitching can be changed over with function setting No. 22.)
④	Screen changeover switch 	This is the switch to change over the screen.
⑤	With/without reverse feed stitch at sewing start switch 	This is the switch to turn ON/OFF automatic reverse feed stitch at sewing start. * This switch cannot be used with the sewing machine which is not provided with automatic reverse feed stitching device.
⑥	With/without reverse feed stitch at sewing end switch 	This is the switch to turn ON/OFF automatic reverse feed stitch at sewing end. * This switch cannot be used with the sewing machine which is not provided with automatic reverse feed stitching device.

	Switch		Description
7	Edge sensor switch		Selects use/disuse of the material edge sensor in the case the material edge sensor (edge) is installed on the sewing machine
8	One-shot automatic sewing switch		When this switch is pressed, the sewing machine automatically operates until the material edge sensor detects the material edge or until the set number of stitches is reached.
9	With/without automatic thread trimmer switch		This switch is used to automatically trim the thread when the material edge sensor detects the material edge or until the set number of stitches is reached. * This switch cannot be used with the sewing machine which is not provided with the automatic thread trimming device.
10	Thread trimming prohibiting switch		This switch prohibits all thread trimmings. * This switch cannot be used with the sewing machine which is not provided with the automatic thread trimming device.
11	Backlight switch		This switch is used to change over the operation of the backlight of the LCD between ON and OFF.
12	Reset switch		This is the switch to make the value of bobbin thread counter or sewing counter the set value. This switch is enabled after thread trimming.
13	Information switch		This switch is used to change over the screen between the information function screen (sewing common data mode, function setting mode, communication mode, version display, etc.) and the normal sewing screen. This switch is enabled after thread trimming.
14	Plus switch		This switch is used to increase the set value of the bobbin thread counter or the number of pcs. counter at the time of setting. It should be remembered that this switch is enabled after thread trimming.
15	Minus switch		This switch is used to decrease the set value of the bobbin thread counter or the number of pcs. counter at the time of setting. It should be remembered that this switch is enabled after thread trimming.
16	Counter/speed changeover switch		This switch is used to change over the display between the counter display and the maximum sewing speed limitation display.
17	General-purpose switch		This switch has different functions depending on the screen.
18	Power display lamp		This lamp lights up when the power switch is turned ON.

2. SEWING SCREEN

When you turn ON the power to the IT-100 panel, the welcome screen will appear.



The screen which appears immediately after the welcome screen is the one which has been selected immediately before the power is turned OFF. Then, the screen is changed over every time the screen changeover switch  is pressed.

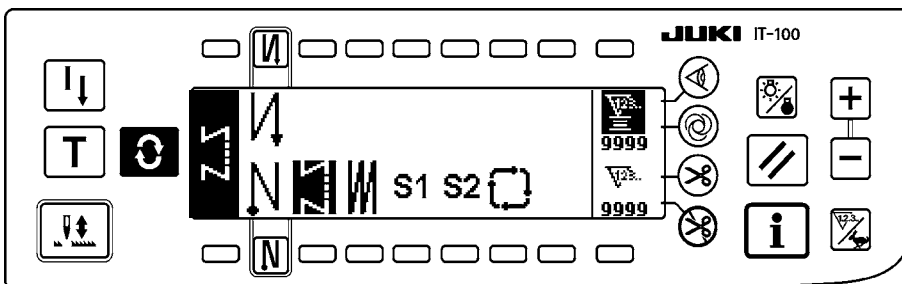


Type and screen configuration of the normal sewing mode vary according to the model of the sewing machine.

Refer to "[III-3. HOW TO OPERATE THE SEWING PATTERN](#)" for the operation procedure to be taken on each screen.

■ Pattern list screen

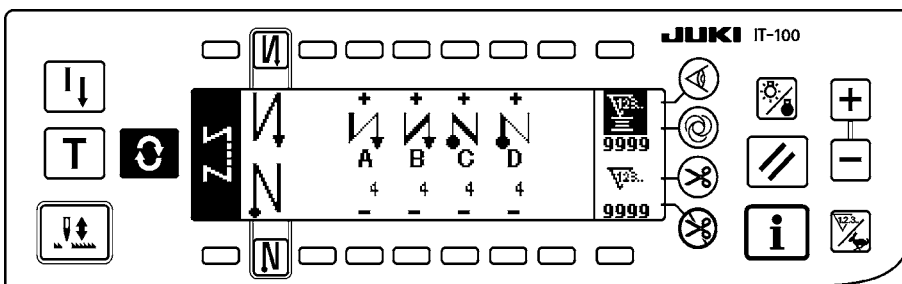
Selection of the respective shapes is performed.



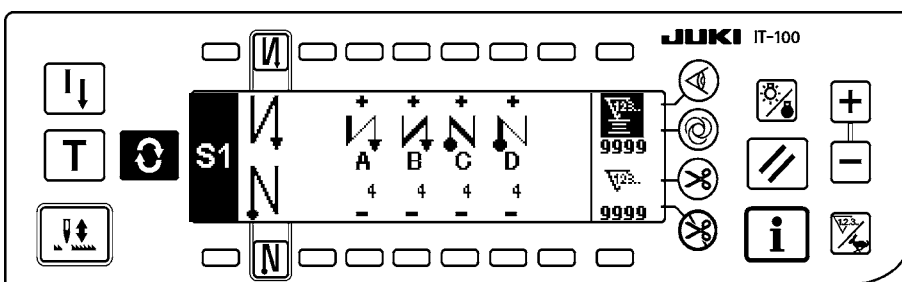
■ Number of stitches of back tuck stitching setting screen

Setting of number of stitches of reverse stitching is performed.

< When reverse stitching pattern is selected >

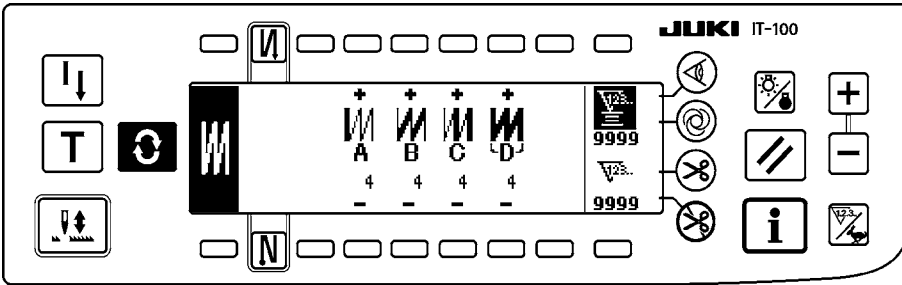


< When programmed stitching pattern 1 is selected >



Number of stitches of overlapped stitching setting screen

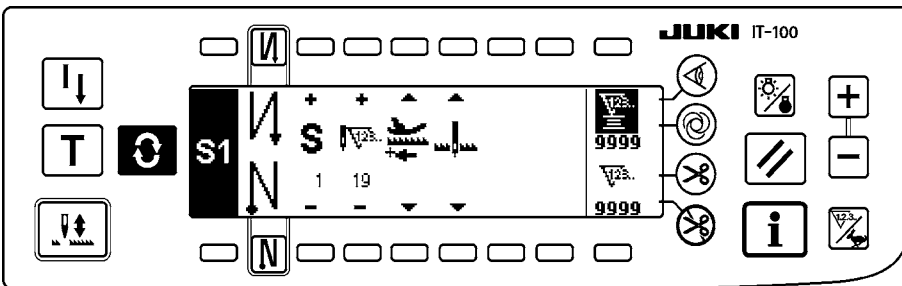
Setting of number of stitches of overlapped stitching is performed.



Programmed stitching setting screen

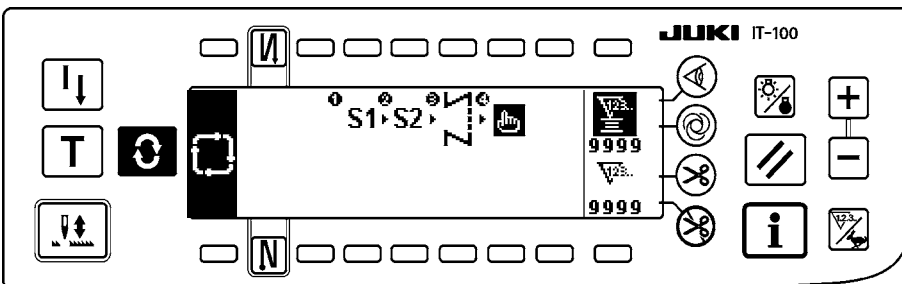
Setting of the respective conditions of programmed stitching is performed.

< When programmed stitching pattern 1 is selected >



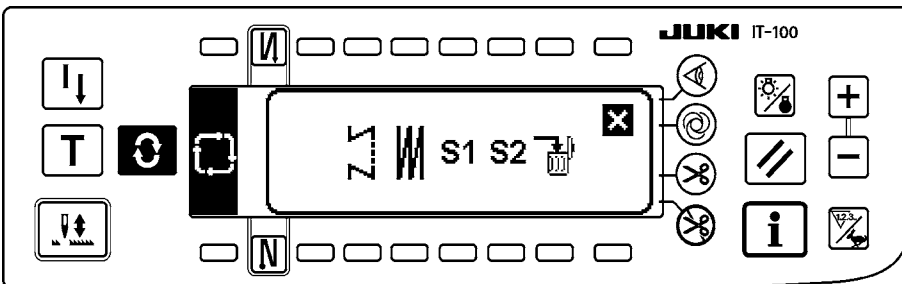
Cycle sewing setting screen

Setting of the step of cycle sewing is performed.



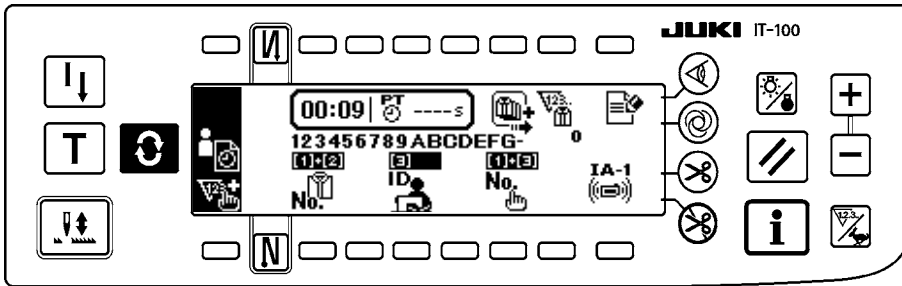
Cycle sewing pattern setting pop-up


Setting of the pattern of cycle sewing is performed.



■ Work management screen







On this screen, the contents of display related to the production support function and those called up by operating the switches can be set or changed.



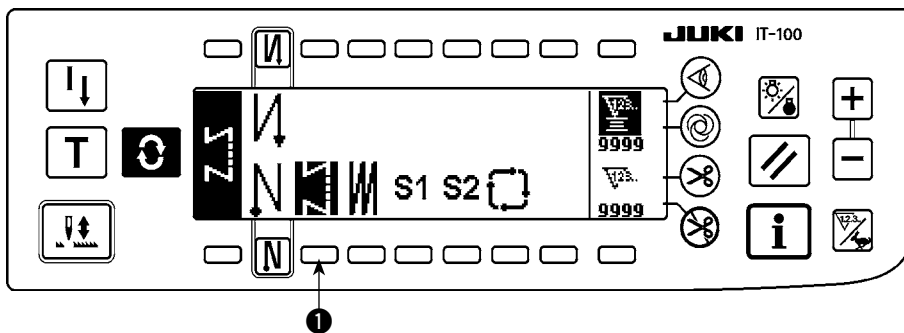
When the production support function is enabled under the information mode, the respective production support function screens can be displayed by means of the screen changeover switch  from the work management screen. Refer to "[II-2-2. Displays on the screen for the production support function](#)" for details.

3. HOW TO OPERATE A SEWING PATTERN

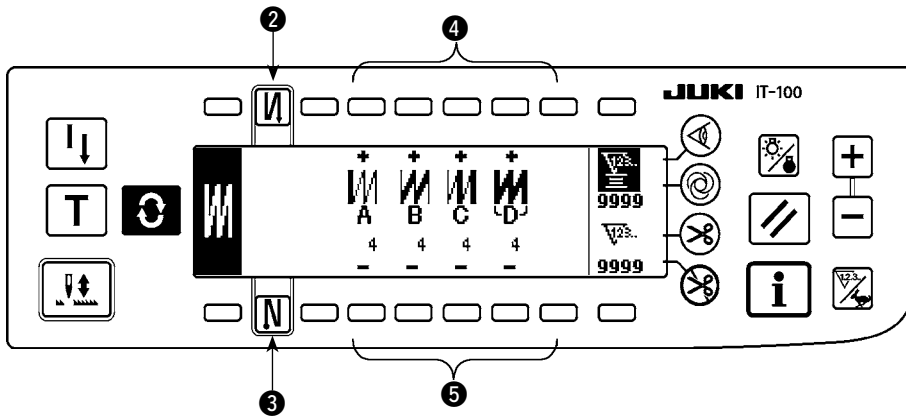
3-1. Reverse stitching pattern

 ②	OFF	ON	OFF	ON
Sewing pattern				
 ③	OFF	OFF	ON	ON

Press the screen changeover switch  to display the pattern list screen.

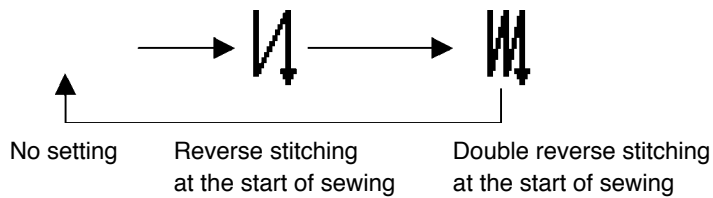


- 1) Press switch ① to select the reverse stitching pattern, and the screen is automatically changed over to the number of stitches of reverse stitching setting screen to display the number of stitches which has already been set.

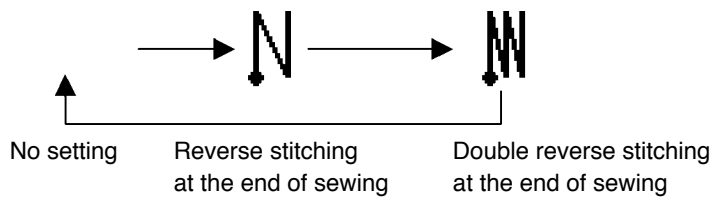


2) When changing the number of stitches, change it with switches 4 and 5 for setting the number of stitches A through D.
 (The range of the number of stitches that can be changed : 0 to 99 stitches)

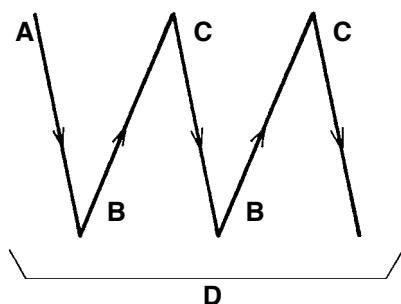
3) Press switch 2 to set the reverse stitching at the start of sewing.



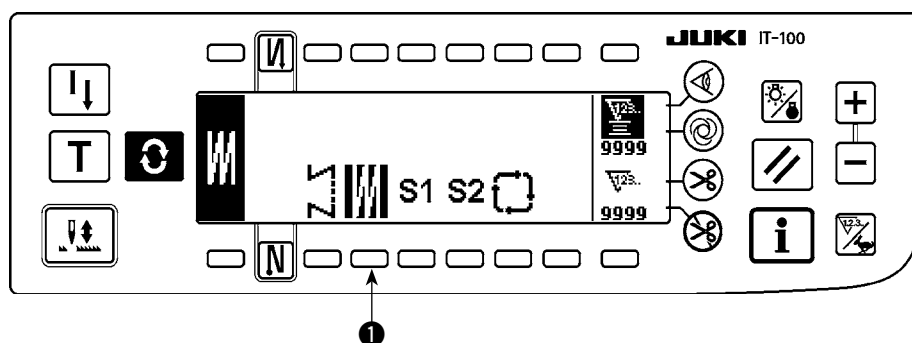
4) Press switch 3 to set the reverse stitching at the end of sewing.



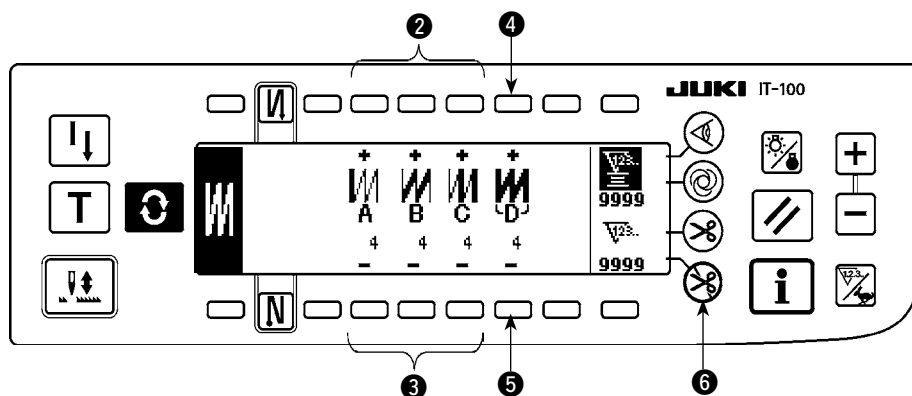
3-2. Overlapped stitching pattern



Press to display the pattern list screen.



- 1) Press switch **1** to select the overlapped stitching pattern, and the screen is automatically changed over to the number of stitches of overlapped stitching setting screen to display the number of stitches which has already been set.

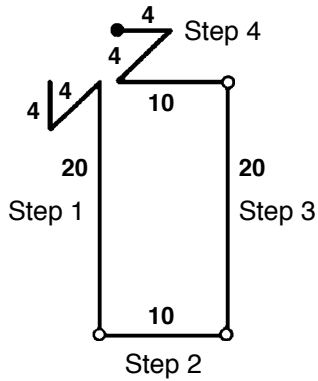


- 2) When changing the number of stitches, change it with switches **2** and **3** for setting the number of stitches for processes A through C. To change the number of times of the whole processes, change it with switches **4** and **5** for setting the number of processes D.
(The range of the number of stitches A, B and C that can be changed : 0 to 19 stitches. The range of the number of processes D that can be changed : 0 to 9 times)
- 3) Depress the front part of the pedal once, and the sewing machine will repeat the normal stitching and reverse stitching as many as the number of specified times. Then the sewing machine will automatically make the thread trimmer actuate and will stop to complete the overlapped stitching procedure. (The one-shot automatic stitching cannot be turned OFF.)
- 4) When thread trimming prohibiting function **6** is selected, the machine will stop with the needle up upon completion of the overlapped stitching procedure without performing thread trimming.


3-3. Programmed stitching pattern

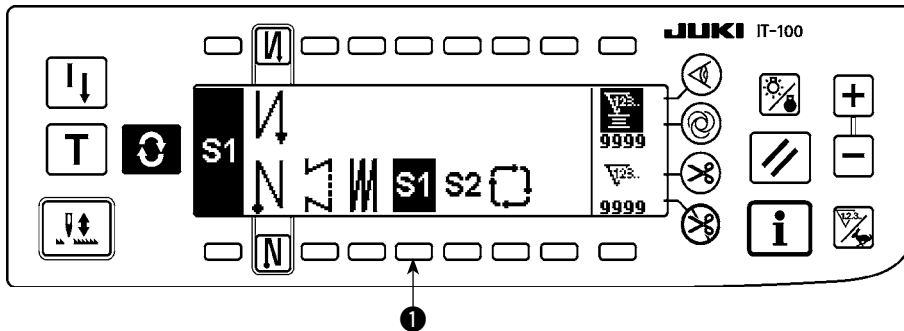
The constant-dimension stitching process can be programmed as many as 20 operation steps. The sewing conditions including the number of stitches, needle up/down stop mode, automatic thread trimming, continuous operation steps, lifting/lowering of presser foot and normal/reverse feed stitching can be separately specified for the respective operation steps. If the lifting of presser foot is specified, the time during which the presser foot is raised can be also specified.


Example of programmed stitching pattern



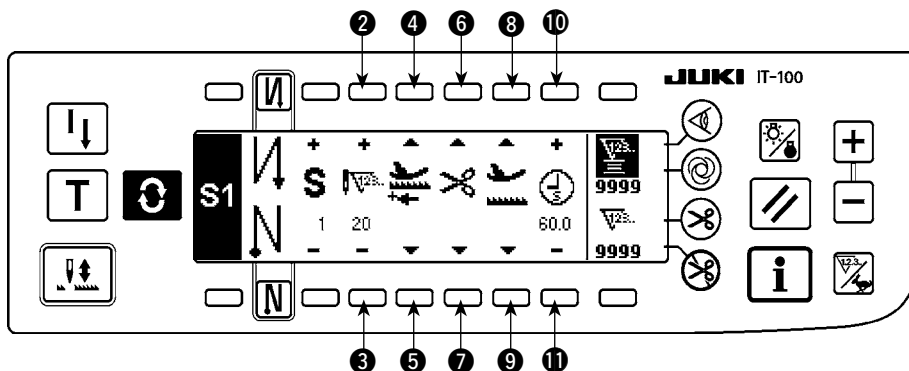
Programming procedure is described below taking the pattern on the left side as an example.

Press  to display the pattern list screen.



- 1) Press switch  to select the programmed stitching pattern, and the screen is automatically changed over to the programmed stitching setting screen to display the number of stitches and data on the operation step 1 which have already been specified.

[Step 1]



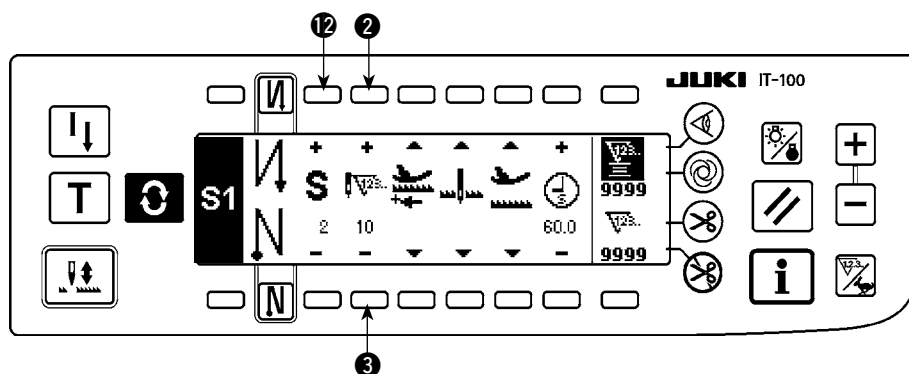
- 1) Confirm that step 1 is displayed on the panel. Now, set the number of stitches to 20 using switches 2 and 3.
- 2) Set the feeding direction to the normal direction using switches 4 and 5.
- 3) Set the stop state of the sewing machine to the needle-down stop mode using switches 6 and 7.

Caution If the number of stitches is set to 0 stitch or the stop-state of the sewing machine is set to the automatic thread trimming mode ✂, the machine will not proceed to the subsequent operation step.

- 4) Set the position of the presser foot, when the sewing machine stops, to the upper stop position using switches 8 and 9.
(If you want to specify, In particular, the length of time during which the presser foot is raised, set it as desired using switches 10 and 11. In the Initial state, the length of time is 60 seconds. Possible setting range of the time during which the presser foot is raised : 0.1 sec. to 99.9 sec.)

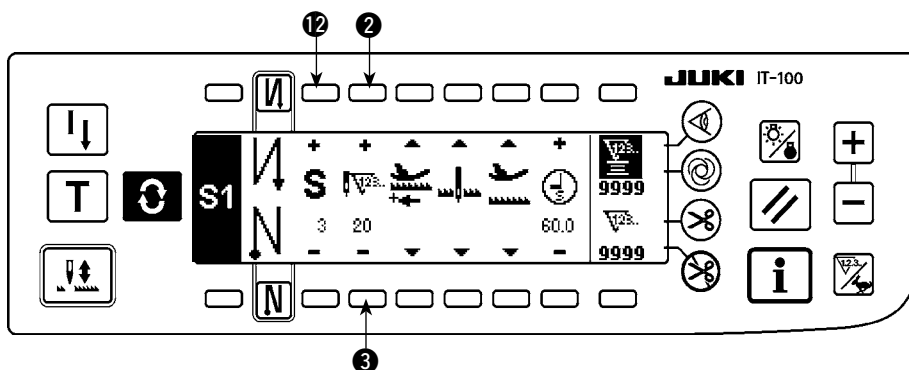
Caution Settings done by switches 8, 9, 10 and 11 are only available under the setting where the auto-lifter can be used (i.e., FL ON).

[Step 2]



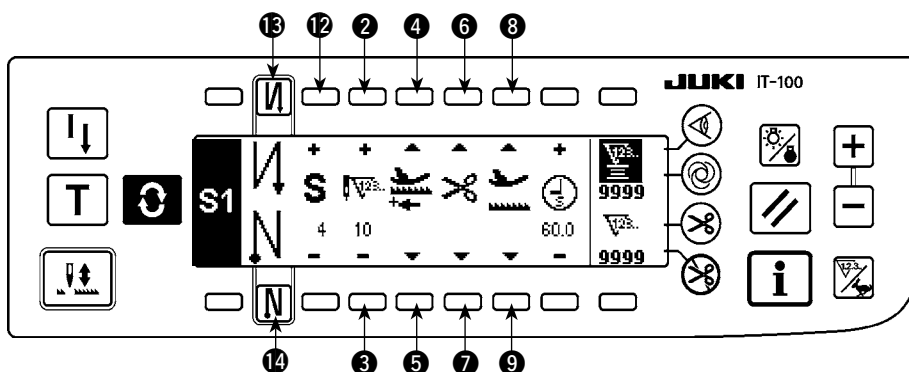
- 5) Press switch 12 once to display step 2.
- 6) Set the number of stitches to 10 using switches 2 and 3.

[Step 3]



- 7) Set the feeding direction to the normal direction, the stop-state of the sewing machine to the needle-down stop mode and the position of the presser foot to the upper stop position as in the case of step 1.
- 8) Press switch 12 once to display step 3.
- 9) Set the number of stitches to 20 using switches 2 and 3.
- 10) Set the feeding direction to the normal direction, the stop state of the sewing machine to the needle-down stop mode and the position of the presser foot to the upper stop position as in the case of steps 1 and 2.

[Step 4]




- 11) Press switch 12 once to display step 4.
- 12) Set the number of stitches to 10 using switches 2 and 3.
- 13) Set the feeding direction to the normal direction using switches 4 and 5.
- 14) Set the stop state of the sewing machine to the automatic thread trimming mode ✂ using switches 6 and 7.
- 15) Set the position of the presser foot, when the sewing machine stops, to the upper stop position using switches 8 and 9.
- 16) Select the reverse stitching using switches 13 and 14. This completes the data setting procedure.
- 17) It is also possible to specify the double reverse stitching using switches 13 and 14.

Every time each step is finished, operate the touch-back switch, and the sewing machine runs at a low speed (stitch compensation operation).

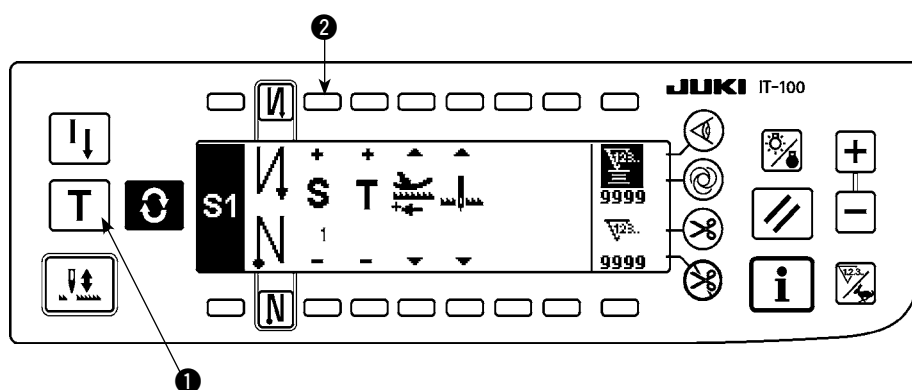
You can program another sewing processes in the programmed stitching pattern 2 following the aforementioned procedure.

In case of pattern 2, the display on the left end of the screen becomes **S2** .

When switch  is pressed in the programmed stitching setting screen, the screen is changed over to the number of stitches of reverse stitching screen and the number of stitches of reverse stitching at the time of programmed stitching can be set. The number of stitches of reverse stitching can be separately set for patterns 1 and 2.

< Teaching mode >

In the teaching mode, it is possible to set the number of stitches of the step in a programmed stitching pattern to the number of stitches that has been actually sewn.



- 1) In the programmed stitching setting screen, press teaching switch **1** to select the teaching mode.
- 2) The indication shown on the number of stitches input section changes to **T**. This shows that the sewing machine has entered the teaching mode.
- 3) Depress the front part of the pedal to make the sewing machine perform sewing until the last stitch of the current operation step is reached.

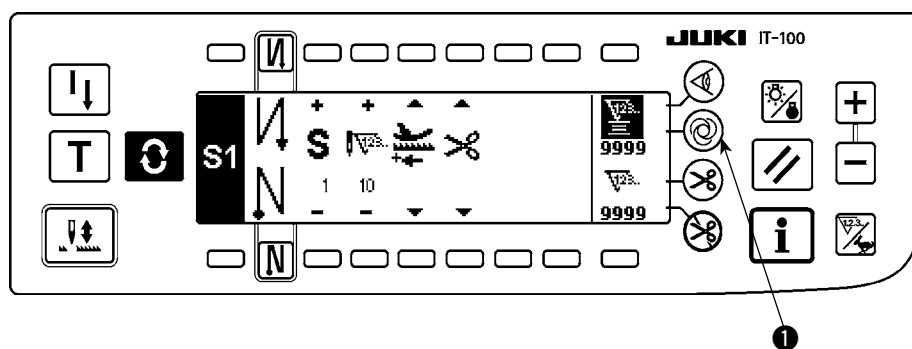


The number of stitches is not counted for the stitch sewn by manually turning the sewing machine or using the needle up/down switch.

- 4) Return the pedal to its neutral position to make the sewing machine stop running. Now, the number of stitches which has been sewn is displayed.
- 5) Proceed to the subsequent step using switch **2** or make the sewing machine perform thread trimming. This completes the input of the number of stitches for operation step 1.

< One-shot automatic stitching >

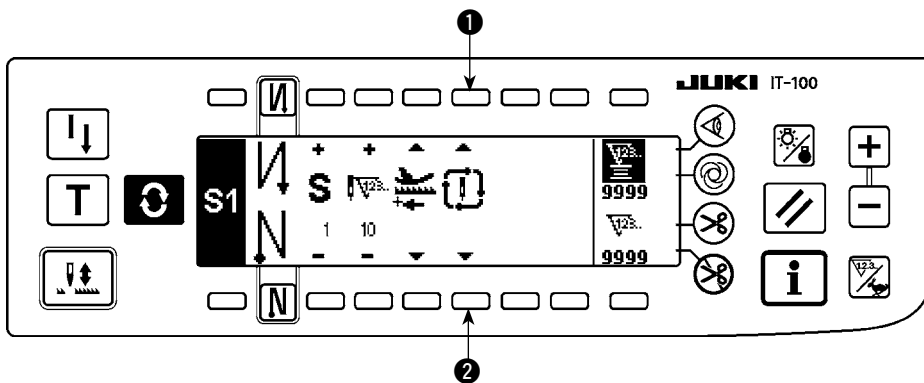
The one-shot automatic stitching function can be separately set by steps.



- 1) In the programmed stitching pattern setting screen, press one-shot automatic stitching switch **1** to select the one-shot automatic stitching function.
- 2) A mark is displayed on LCD section of the switch, which shows the one-shot automatic stitching function has been selected.
- 3) In the step where the one-shot automatic stitching function has been selected, the sewing machine will automatically continue sewing, once the sewing machine starts running, until the end of the step is reached.

< Continuous stitching mode >

In this mode, it is possible to make the sewing machine execute the subsequent step after the completion of the current step.



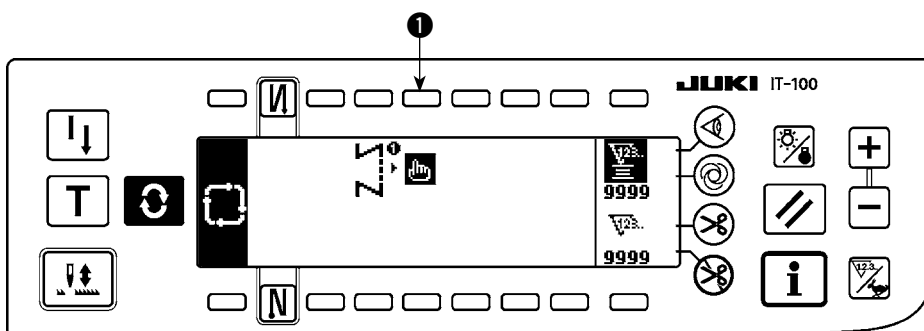
- 1) In the programmed stitching pattern setting screen, select the continuous stitching mode using switches ① and ②.
- 2) As long as the continuous stitching mode is selected, you can make the sewing machine execute the subsequent step set in the program after the completion of the current step by depressing the front part of the pedal.

< To operate the operation panel in combination with the material edge sensor >

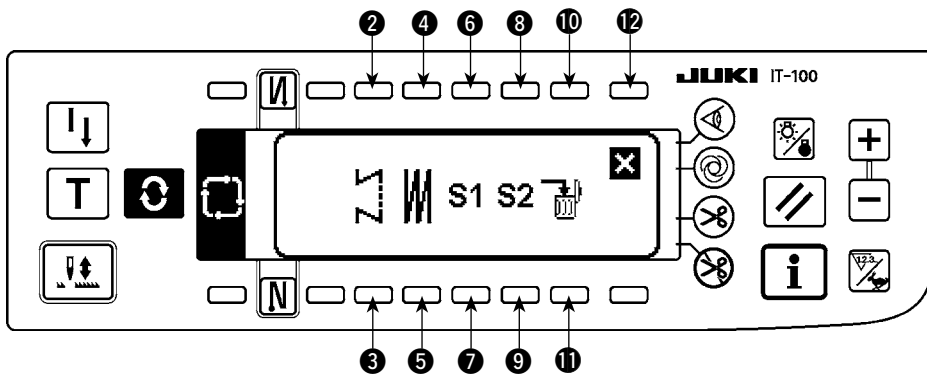
- When the operation panel is used in combination with the material edge sensor, the sewing process can be completed not by the predetermined number of stitches but by the input signal of the material edge sensor.
- Carefully read the Instruction Manual for the material edge sensor before using the sensor with the operation panel.

3-4. Cycle sewing pattern

Reverse stitching pattern, overlapped stitching pattern, programmed stitching pattern 1 and programmed stitching pattern 2 can be set and sewn as desired. (As many as eight different patterns can be set.)

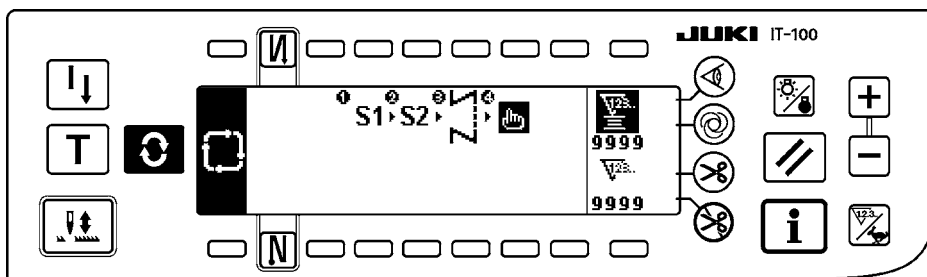


- 1) Press switch ① to display the cycle sewing edit pattern setting pop-up.

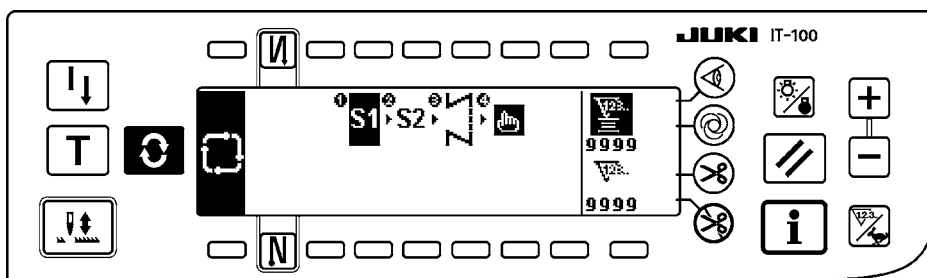


- Switches ② and ③ : These switches set the reverse stitching pattern.
- Switches ④ and ⑤ : These switches set the overlapped stitching pattern.
- Switches ⑥ and ⑦ : These switches set the programmed stitching pattern 1.
- Switches ⑧ and ⑨ : These switches set the programmed stitching pattern 2.
- Switches ⑩ and ⑪ : These switches delete the editing step.
- Switch ⑫ : The screen returns to the cycle sewing setting screen.

[Example of setting]



- 2) Every time the thread trimmer actuates, the machine proceeds to the subsequent pattern which has been selected. (The step which is being executed is shown in reverse video during execution.)



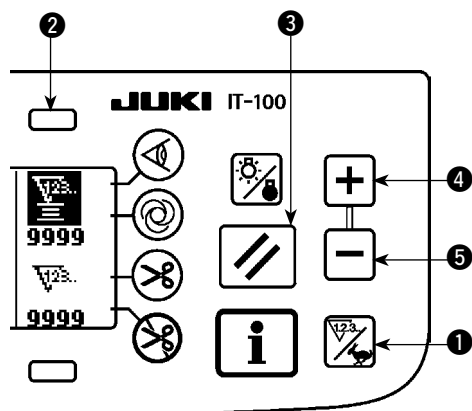
Caution If the thread trimmer actuates before completion of a pattern, the machine will proceed to the subsequent program.

4. HOW TO OPERATE THE COMMON FUNCTIONS

The common functions are operated in the same way regardless of the model of sewing machine. (The screen display varies depending on the model of sewing machine.)

4-1. Bobbin counter

The number of stitches sewn by the sewing machine is detected. The detected number of stitches is decremented from the preset counter value (in units of the number of stitches preset using function setting No. 7 "Unit of bobbin thread counting down." When the counter value changes from the positive value to the negative value (... → 1 → 0 → -1), the buzzer sounds (3 sets of two consecutive blips) and the notification is shown on the popup window to alert the operator to change the bobbin.



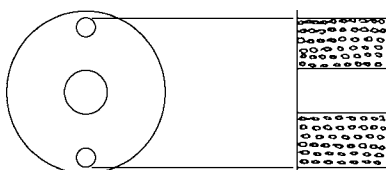
- 1) Press counter/speed changeover switch **1** to change over the screen to the counter screen. Press switch **2** to select the bobbin counter. Then, press counter reset switch **3** to return the bobbin counter display to the initial set value (set value at the time of delivery is "0").

Caution The bobbin thread counter cannot be reset during sewing. In this case, make the thread trimmer actuate once.

- 2) Set an initial value using counter value setting switches **4** and **5**.

The table below gives the initial setting values for reference when the bobbin is wound with thread to the extent that the pinhole in the outside of the bobbin case is reached as shown in the figure on the left side.

Initial value on the bobbin thread counter for reference



Thread used	Length of thread wound round the bobbin	Value on bobbin thread counter
Polyester spun thread #50	36 m	1200 (stitch length : 3 mm)
Cotton thread #50	31 m	1000 (stitch length : 3 mm)

Thread tension rate 100 %

- * The aforementioned values actually vary depending on the material thickness and sewing speed. Adjustment is necessary according to the conditions of use.

- 3) Once the initial value is specified, start the sewing machine.
- 4) When a minus value is shown on the counter, the buzzer peeps three times and the pop-up display appears, replace the bobbin thread.
- 5) After the bobbin thread has been properly replaced, press counter reset switch **3** to return the value on the bobbin thread counter to the initial value. Now, re-start the sewing machine.
- 6) If the remaining amount of bobbin thread is excessive or the bobbin thread runs out before the bobbin thread counter indicates a minus value, adjust the initial value appropriately using counter value setting switches **4** and **5**.

If the remaining amount of bobbin thread is excessive Increase the initial value using the "+" switch.
If the remaining amount of bobbin thread is insufficient Decrease the initial value using "-" switch.

Bobbin thread replacement warning pop-up

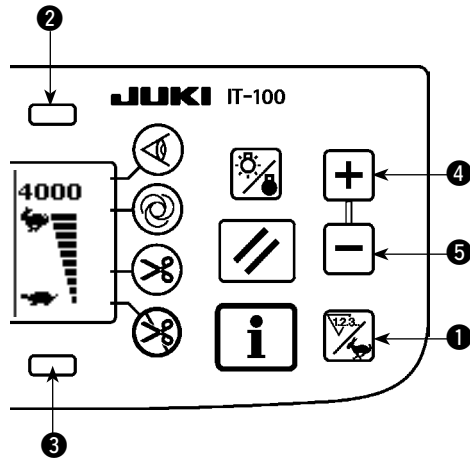


1. The remaining amount of thread may vary depending on how the thread is wound on the bobbin and the material thickness. It is therefore better to set the remaining amount of thread with a slight allowance.
2. If the bobbin thread counter is used in combination with the bobbin thread remaining amount detecting device, the bobbin thread counter indicates the number of detections of the bobbin thread remaining amount detecting device. So, be sure to use the device after carefully reading the Instruction Manual for the bobbin thread remaining amount detecting device.



4-2. Setting the maximum sewing speed

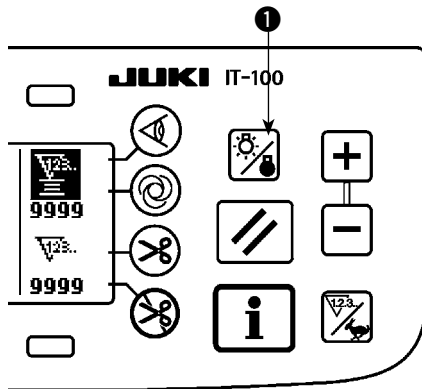
Set the maximum sewing speed.



Press counter/speed changeover switch ① to change over the screen to the maximum sewing speed setting screen. Press switch ② or ④ to increase the sewing speed, or switch ③ or ⑤ to decrease it. (In increments of 50 sti/min)

4-3. Setting the backlight

Change over the backlight between ON and OFF.



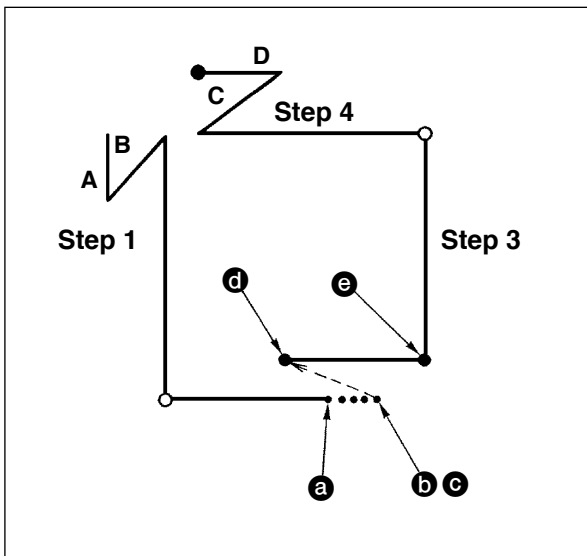
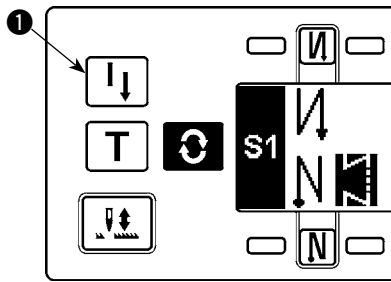
When press backlight switch ① while the backlight is in the off state, it will light up. When you press the switch while the backlight is in the on state, it will go out.



The IT-100 has adopted a semi-transmission liquid crystal display. It is therefore necessary to turn on the backlight in the dark. In the light, the display reduces power consumption by utilizing the reflection of outside light.

4-4. Re-sewing switch

The re-sewing switch is used when the bobbin thread runs out during the programmed stitching pattern sewing steps or the like.

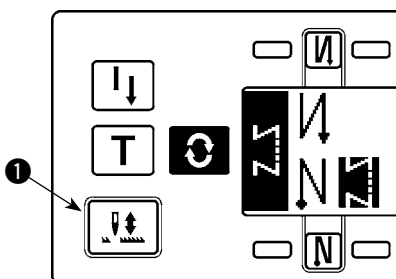


- 1) The bobbin thread runs out during the operations steps for sewing. **a**
 - 2) Bring the pedal to its neutral position to make the sewing machine stop. Now, depress the back part of the pedal to make the thread trimmer actuate. **b**
 - 3) Turn ON re-sewing switch **1**. **c**
 - 4) Replace the bobbin. Slightly feed the material on the machine in the reverse direction to return the material to the position where the sewing was interrupted to allow the sewing machine to sew over the finished seam in step 2. **d**
 - 5) Depress the front part of the pedal until stop position **e** of step 2 is reached.
 - 6) Turn ON re-sewing switch **e** again at position **1** where the sewing has been interrupted, and the next step will be indicated on the operation panel. Now, you can re-start sewing of the programmed stitching pattern.
- * If the needle thread breaks or any other trouble occurs, which is caused by re-sewing switch **1** during the operation steps (**d** → **e**) in the free sewing mode, bring the pedal to its neutral position, Then depress the back part of the pedal to actuate the thread trimmer. Thread the machine head and slightly feed the material in the reverse direction, and press re-sewing switch **1**. This enables the sewing machine to continue the sewing under the free sewing mode. Then operate the operation panel as described in the aforementioned steps 5) and 6).

To return to the first step of the programmed stitching pattern without using re-sewing switch **1, depress the back part of the pedal to actuate the thread trimmer. This makes the operation panel give the step indication 1. Now, you can start sewing from the first step of the programmed stitching pattern.**

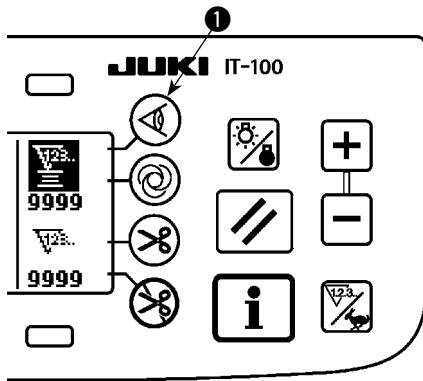


4-5. Needle up/down compensation switch



Every time needle up/down compensation switch **1** is pressed, the needle goes up when it is in its lowest position or comes down when it is in its highest position. This compensates the stitch by a half of the predetermined stitch length. Note, however, that the machine does not run continuously at a low speed even if you keep the switch held pressed. Also, note that the needle up/down compensation switch is inoperative after turning the handwheel by hand. Thread trimming is operative only at the time of stitch compensation after depressing the front part of the pedal once.

4-6. On/off switch of the material edge sensor

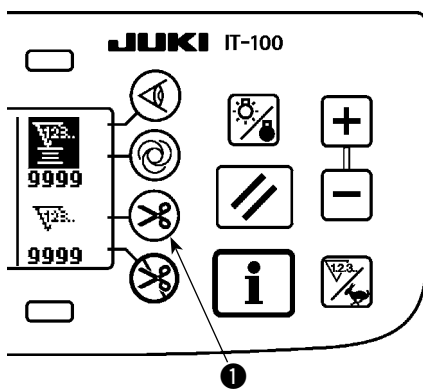


- When material edge sensor **1** is pressed, ON/OFF of the material edge sensor is changed over.
- When the material edge sensor, which is optionally available, is connected to the operation panel, the ON/OFF switch of the material edge sensor becomes effective.
- If the material edge sensor is specified, the sewing machine will automatically stop running or perform thread trimming when the sensor detects the material edge.



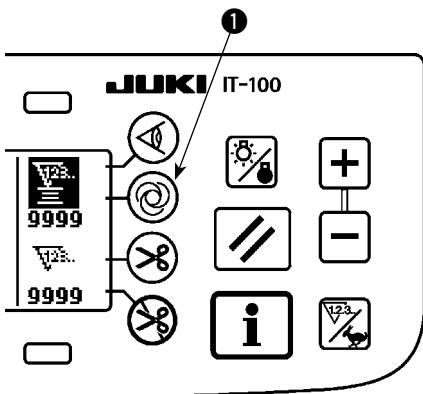
If the material edge sensor is used in combination with the operation panel, carefully read the Instruction Manual for the material edge sensor beforehand.

4-7. Automatic thread trimming switch



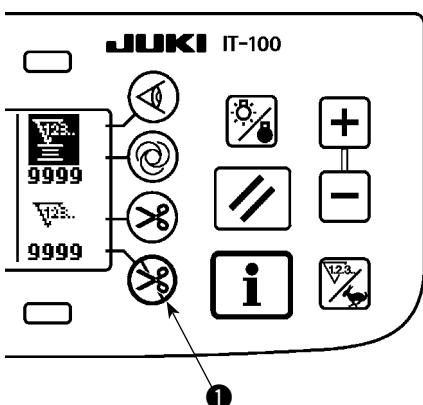
- When automatic thread trimming switch **1** is pressed, ON/OFF of the automatic thread trimming is changed over.
- This switch is rendered effective, when the material end sensor is turned ON for the reverse feed stitching pattern, to automatically activate the thread trimmer upon detection of the material end.
(if the automatic reverse stitching (for end) is specified, the thread trimmer will actuate after the sewing machine completes the automatic reverse stitching (for end).)



4-8. One-shot automatic stitching switch



- When one-shot automatic stitching switch **1** is pressed, ON/OFF of the one-shot automatic stitching is changed over.
- This switch is used, in the constant-dimension stitching mode, rectangular stitching mode, or in the process where the material edge sensor is specified, to make the sewing machine automatically perform sewing at the specified speed until the end of the process is reached only by driving the sewing machine once.

4-9. Thread trimming prohibition switch



- When thread trimming prohibition switch **1** is pressed, ON/OFF of the thread trimming prohibition is changed over.
- This switch is used to temporarily make the thread trimming function inoperative.
The other performance of sewing machine is not affected by this switch.
(If the automatic reverse stitching (for end) is specified, the sewing machine will perform the automatic reverse stitching at the end of sewing.)
- If the automatic thread trimming switch  and the thread trimming prohibition switch  are both specified, the machine will not perform thread trimming but stop with its needle up.

4-10. Simplified function setting

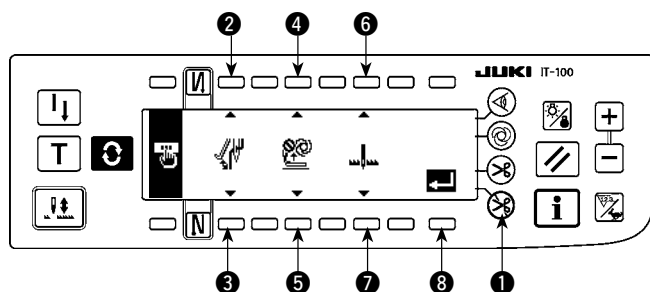


WARNING :

If the solenoid is used under the air drive mode, the solenoid can burn out. Be sure to carefully avoid the wrong setting of the presser foot lifting device specification.

Function setting items can be simplified in part.


[Simplified function setting screen]



- 1) Keeping thread trimming prohibiting switch **1** held pressed, turn the power ON. Then, the screen is changed over to the simplified function setting screen. The details displayed on the screen represent the current settings.
- 2) Function items can be changed by pressing switches **2** and **3**, **4** and **5** or **6** and **7**.

■ Wiper function (WiP): Switches **2** and **3**

This function activates the wiper.

oFF  : The wiper does not operate after thread trimming.


on  : The wiper operates after thread trimming (standard setting at the time of delivery)


■ Auto-lifter (FL): Switches **4** and **5**

This function activates the auto-lifter function when the presser foot lifting device (AK) is installed on the sewing machine.

For the presser foot lifting device specifications, solenoid drive mode (+33 V) or air drive mode (+24 V) can be selected.

The drive source voltage (CN37) is changed over between +33 V and +24 V according to the drive mode specification selection.

oFF  : Auto-lifter does not operate. (standard setting at the time of delivery)
(The presser foot does not automatically go up when the program sewing is completed.)

on S  : Auto-lifter operates. (Solenoid drive mode [+33 V])

on A  : Auto-lifter operates. (Air drive mode [+24 V])

■ Needle position changeover function for the time when the sewing machine stops (nP) : Switches **6** and **7**

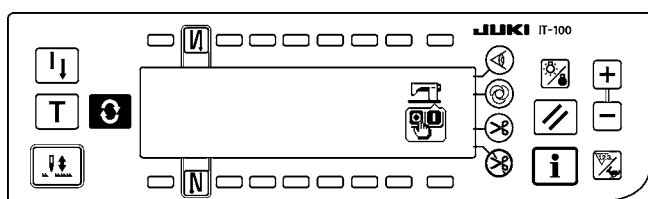
The needle position at the time when the sewing machine stops can be changed over.

Lo  : Lower stop position (standard setting at the time of delivery)

UP  : Upper stop position

- 3) Once you have completed the setting, press switch **8**. The screen is changed over to the power switch OFF notification screen.

[Power switch OFF notification screen]



- 4) Turn OFF the power switch to exit from the simplified function setting.

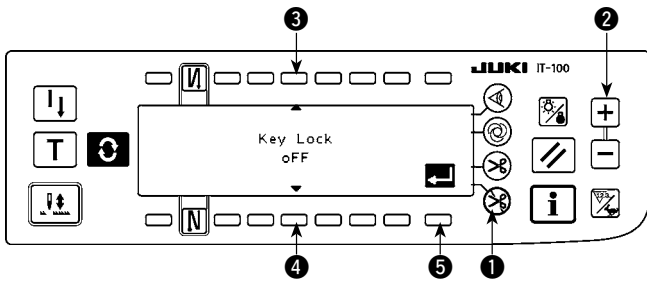


If "on" (auto-lifter operates) is selected without the auto-lifter installed, the machine startup is momentarily delayed at the beginning of sewing. In addition, the one-touch type reverse feed (touch-back) switch may be disabled. To avoid these troubles, be sure to select "oFF" (auto-lifter does not operate) when the auto-lifter device is not installed.

4-11. Key-lock function setting

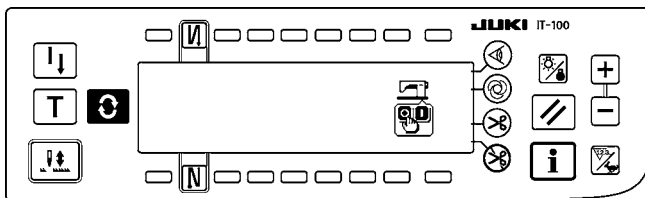
In order to prevent settings of the number of stitches or detailed settings for processes (A, B, C and D), it is possible to lock the function setting switches in the current state. (Even under the key-lock mode, the patterns or bobbin counter can be changed.)

[Key-lock function setting screen]



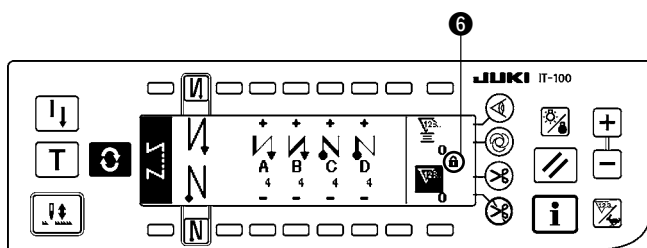
- 1) Keeping thread trimming prohibiting switch ❶ and counter value setting switch (+) ❷ held simultaneously, turn the power ON. Then, the screen is changed over to the key-lock function setting screen. Setting displayed on the screen represents the current setting of the key-lock function.
- 2) The key-lock function can be changed over between "on" (key-lock function is effective) and "oFF" (key-lock function is ineffective [standard setting at the time of delivery]) by pressing switches ❸ and ❹.
- 3) Once you have completed the setting, press switch ❺. The screen is changed over to the power switch OFF notification screen.

[Power switch OFF notification screen]



- 4) Turn OFF the power switch to exit from the simplified function setting.

[Number of reverse feed stitches setting screen] (Example of display)



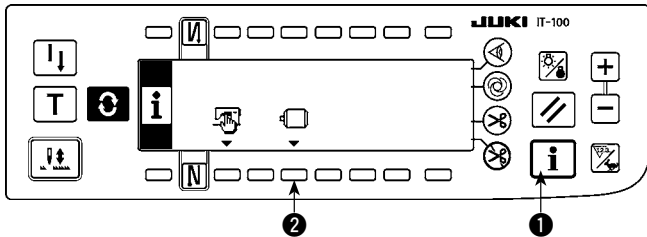
- 5) When the key-lock function is "on" (key-lock function is effective), key icon ❻ is displayed on the screen.

4-12. Function setting

Functions of the sewing machine can be programmed and the number of stitches and the sewing speed can be changed.

Refer to the Instruction Manual for the SC-920 for how to change the function setting items and for the details of the functions.

[Function settings list screen]



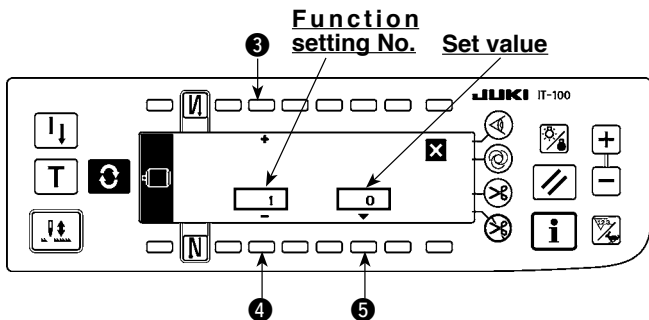
- 1) Keeping switch ① held pressed, turn the power ON. Then the screen is changed over to the function settings list screen.

When you press switch ②, the screen is changed over to the function setting display screen.



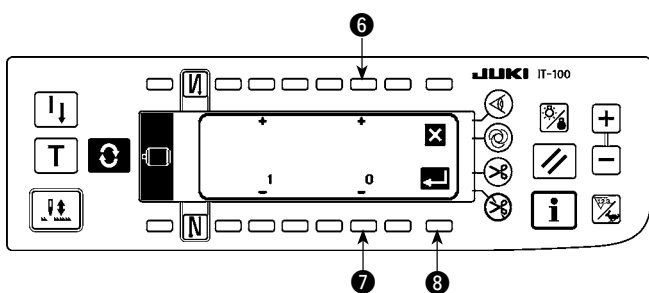
The function setting list screen can be displayed from the information screen (maintenance personnel level). Refer to "IV-2. MAINTENANCE PERSONNEL LEVEL".

[Function setting display screen]



- 2) Function setting item number can be incremented or decremented by pressing switches ③ and ④.
- 3) Once you have determined the target function setting number, press switch ⑤. The screen is changed over to the function setting popup screen.

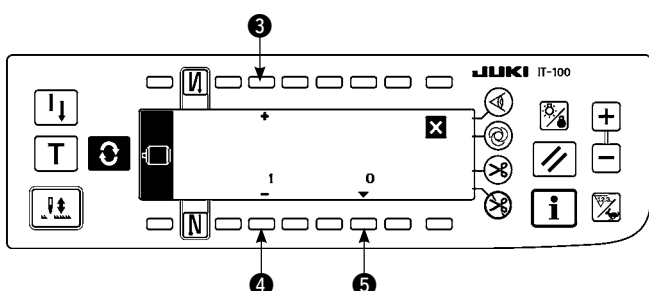
[Function setting popup screen]



- 4) Function setting item number can be incremented or decremented by pressing switches ⑥ and ⑦.
 - 5) Once you have completed set value changing, press switch ⑧. The screen is changed over to the function setting display screen and the changed set value is displayed on the screen.
 - 6) Turn OFF the power switch to exit from the function setting.
- * To change two or more different function setting numbers, repeat the aforementioned steps of procedure 2) through 5) as required.

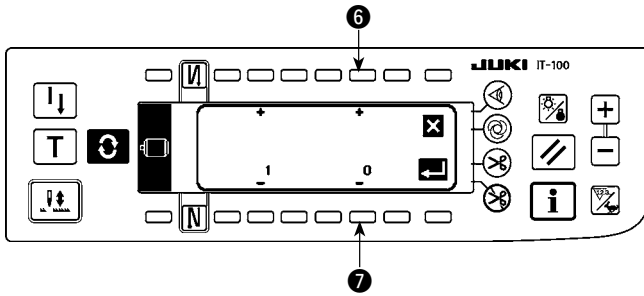
Example) [To change the number of stitches 0 to 3 using the soft-start function (function setting No. 1)]

[Function setting display screen]

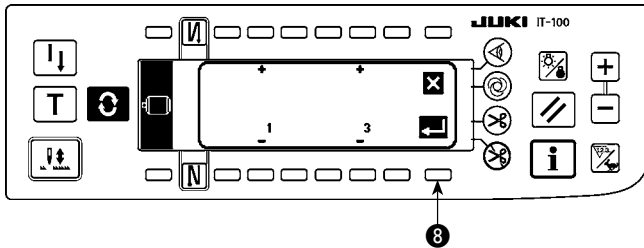


- 1) Press switches ③ and ④ to select function setting No. 1.
- 2) Press switch ⑤. The screen is changed over to the function setting popup screen.

[Function setting popup screen]

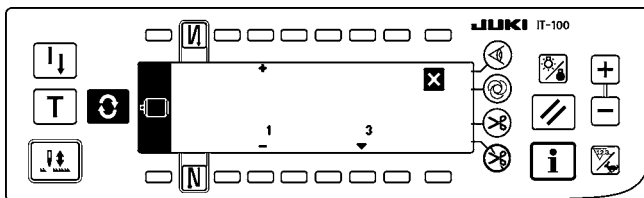


- 3) Press switches **6** and **7** to change the set value to 3.



- 4) Press switch **8**. The screen is changed over to the function setting display screen.

[Function setting display screen]



- 5) The changed set value is displayed on the function setting display screen.
- 6) Turn OFF the power switch to exit from the function setting.



Refer to the Instruction Manual for the SC-920 for the function setting list and the details of the function setting items.

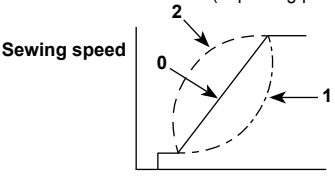
Function setting list

No.	Item	Description	Setting range	Indication of function setting
1	Soft start function	The number of stitches to be sewn at a low speed when the soft-start function is used at the start of sewing. 0 : The function is not selected. 1 to 9 : The number of stitches to be sewn under the soft-start mode.	0 to 9 (Stitches)	N-SOFT
2	Material end sensor function	This item is not used on the IT-100.	0/1	ED
3	Thread trimming function by material end sensor	This item is not used on the IT-100.	0/1	EDTRM
4	Number of stitches for material end sensor	This item is not used on the IT-100.	0 to 19 (Stitches)	EDN
5	Flicker reducing function	Flicker reducing function 0 : Flicker reducing function is not operative. 1 : Flicker reducing function is effective	0/1	T-ACC
6	Bobbin thread counting function	Bobbin thread counting function 0 : Bobbin thread counting function is not operative. 1 : Bobbin thread counting function is operative.	0/1	SCBOB
* 7	Unit of bobbin thread counting down	Unit of bobbin thread counting down 0 : 1 Count/10 stitches 1 : 1 Count/15 stitches 2 : 1 Count/20 stitches 3 : 1 Count/thread trimming	0 to 3	RATIO
* 8	Sewing speed of reverse feed stitching	Sewing speed of reverse feed stitching	150 to 3,000 (sti/min)	S-BT
9	Thread trimming prohibiting function	This item is not used on the IT-100.	0/1	TRMINH
10	Setting of needle bar stop position when the sewing machine stops.	Position of needle bar is specified when the sewing machine stops. 0: The needle bar stops at its lower position. 1: The needle bar stops at its upper position.	0/1	NPS
11	Operation confirmation sound for operation panel	Operation confirmation sound for operation panel 0 : Operation confirmation sound is not generated 1 : Operation confirmation sound is generated.	0/1	SOUND
12	Optimal switch function selection	Switching of function of optional switch.		
* 13	Function of prohibiting start of the sewing machine by bobbin thread counter	Function of prohibiting start of the sewing machine by bobbin thread counting 0 : When counting is out (-1 or less) Function of prohibiting start of the sewing machine is not operative. 1 : When counting is out (-1 or less) Function of prohibiting start of the sewing machine after thread trimming is operative. 2 : When counting is out (-1 or less), the sewing machine stops once. Function of prohibiting start of the sewing machine after thread trimming is operative.	0 to 2	ASCNT
14	Sewing counter	Counting function of sewing (number of completion of process) 0 : Sewing counter function is not operative. 1 : Sewing counter function is operative. (Every time thread trimming is performed) 2 : With the sewing counting switch input function	0 to 2	NTO
15	Thread wiping function after thread trimming	Thread wiping operation after thread trimming is specified. 0 : Thread wiping is not carried out after thread trimming 1 : Thread wiping is carried out after thread trimming	0/1	N-WIPER
21	Function of automatic presser foot lifting at pedal's neutral position	Function of lifting presser foot when the pedal is in neutral position. 0 : Function of neutral automatic presser lifting is not operative. 1 : Selection of function of neutral presser lifting.	0/1	N-NPL
22	Needle up/down correction switch changeover function	Function of the needle up/down correction switch is changed over. 0 : Needle up/down compensation 1 : One stitch compensation	0/1	F-CMSP
25	Thread trimming operation after turning the handwheel by hand	Thread trimming operation after moving the needle away from its upper or lower position by turning the handwheel by hand is specified. 0 : Thread trimming operation is carried out after turning the handwheel by hand 1 : Thread trimming operation is not carried out after turning the handwheel by hand	0/1	F-TRMC
29	Setting of one-touch type reverse feed solenoid pull-in time	This function sets the suction time of initial motion of back-tack solenoid. 50 ms to 500 ms	50 to 500 (ms)	T-RSS
30	Function of reverse feed stitching on the way	Function of reverse feed stitching on the way 0 : Normal one-touch type reverse feed stitching function 1 : Function of reverse feed stitching on the way is operative.	0/1	OBT

* Do not change the set values with asterisk (*) mark as they are functions for maintenance. If the standard set value set at the time of delivery is changed, it is in danger of causing the machine to be broken or the performance to be deteriorated. If it is necessary to change the set value, please purchase the Engineer's Manual and follow the instructions.

No.	Item	Description	Setting range	Indication of function setting
31	Number of stitches of reverse feed stitching on the way	Number of stitches of reverse feed stitching on the way.	0 to 19 (Stitches)	N-OBT
32	Effective condition of reverse feed stitching on the way when the sewing machine is stopping.	Effective condition of reverse feed stitching on the way 0 : Function is not operative when the sewing machine stops. 1 : Function is operative when the sewing machine stops.	0/1	OBTS
33	Thread trimming function by reverse feed stitching on the way	Thread trimming function by reverse feed stitching on the way 0 : Automatic thread trimming function after completion of reverse feed stitching on the way is not operative. 1 : Automatic thread trimming after completion of reverse feed stitching on the way is performed.	0/1	OBTT
*	35 Sewing speed at a low speed	Lowest speed by pedal (The MAX value differs by machine head.)	150 to MAX (sti/min)	S-POS
*	36 Sewing speed of thread trimming	Thread trimming speed (The MAX value differs by machine head.)	100 to MAX (sti/min)	S-TRM
	37 Sewing speed of soft-start	Sewing speed at the start of sewing (soft-start) (The MAX value differs by machine head.)	100 to MAX (sti/min)	S-SOFT
	38 One-shot speed	One-shot speed (The max. value depends on the sewing speed of the sewing machine head.)	150 to MAX (sti/min)	S-ASS
*	39 Pedal stroke at the start of rotation	Position where the sewing machine starts rotating from pedal neutral position (Pedal stroke)	10 to 50 (0.1 mm)	P-SSP
*	40 Low speed section of pedal	Position where the sewing machine starts accelerating from pedal neutral position (Pedal stroke)	10 to 100 (0.1 mm)	P-LSA
*	41 Starting position of lifting presser foot by pedal	Position where the cloth presser starts lifting from pedal neutral position (Pedal stroke)	- 60 to -10 (0.1mm)	P-FLW
*	42 Starting position of lowering presser foot	Starting position of lowering presser foot Stroke from the neutral position	8 to 50 (0.1 mm)	P-FLD
*	43 Pedal stroke 2 for starting thread trimming	Position 2 where the thread trimming starts from pedal neutral position (When the function of lifting presser foot by pedal is provided.) (Pedal stroke) (Effective only when Item No. 50 is set at 1.)	- 60 to -10 (0.1 mm)	P-TRM2
*	44 Pedal stroke for reaching the maximum sewing speed	Position where the sewing machine reaches its highest sewing speed from pedal neutral position (Pedal stroke)	10 to 150 (0.1 mm)	P-MAX
*	45 Compensation of neutral point of the pedal	Compensation value of the pedal sensor	-15 to 15	P-ANP
	47 Auto-lifter selecting function	Limitation time of waiting for lifting solenoid type auto-lifter device	10 to 600 (second)	T-FL
*	48 Pedal stroke 1 for starting thread trimming	Position where thread trimming starts from pedal neutral position (Standard pedal) (Pedal stroke) (Effective only when Item No. 50 is set at 0.)	- 60 to - 10 (0.1 mm)	P-TRM1
	49 Lowering time of presser foot	Sets the time required until the lowering of the presser foot is completed after a depress on the pedal	0 to 500 (10 ms)	T-FLWT
	50 Pedal specification	Type of pedal sensor is selected. 0 : KFL 1 : PFL	0/1	PFL
	51 Compensation of solenoid-on timing of reverse feed stitching at the start of sewing	Compensation of starting the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed.	- 36 to 36 (10°)	T-SON
	52 Compensation of solenoid-off timing of reverse feed stitching at the start of sewing	Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the start of sewing is performed.	- 36 to 36 (10°)	T-SOFF
	53 Compensation of solenoid-off timing of reverse feed stitching at the end of sewing	Compensation of releasing the solenoid for reverse feed stitching when reverse feed stitching at the end of sewing is performed.	- 36 to 36 (10°)	T-EOFF
	55 Foot lift after thread trimming	Function of lifting presser foot at the time of (after) thread trimming 0 : Not provided with the function of automatic lifting of work-clamp after thread trimming 1 : Provided with the function of lifting presser foot automatically after thread trimming	0/1	FLAT
	56 Reverse revolution to lift the needle after thread trimming	Function of reverse revolution to lift the needle at the time of (after) thread trimming 0 : Not provided with the function of reverse revolution to lift the needle after thread trimming 1 : Provided with the function of reverse revolution to lift the needle after thread trimming	0/1	RATRMM

* Do not change the set values with asterisk (*) mark as they are functions for maintenance. If the standard set value set at the time of delivery is changed, it is in danger of causing the machine to be broken or the performance to be deteriorated. If it is necessary to change the set value, please purchase the Engineer's Manual and follow the instructions.

No.	Item	Description	Setting range	Indication of function setting
58	Function of holding predetermined upper/lower position of the needle bar	Function of holding predetermined upper/lower position of the needle bar 0 : Not provided with the function of holding predetermined upper/lower position of the needle bar 1 : Provided with the function of holding predetermined upper/lower position of the needle bar (holding force is weak.) 2 : Provided with the function of holding predetermined upper/lower position of the needle bar (holding force is medium.) 3 : Provided with the function of holding predetermined upper/lower position of the needle bar (holding force is strong.)	0 to 3	HPOS
59	Function of Auto/Manual change-over of reverse feed stitching at the start of sewing	This function can specify the sewing speed of reverse feed stitching at the start of sewing. 0 : The speed will depend on the manual operation by pedal, etc. 1 : The speed will depend on the specified reverse feed stitching speed (No. 8).	0/1	SBTO
60	Function of stop immediately after reverse feed stitching at the start of sewing	Function at the time of completion of reverse feed stitching at the start of sewing 0 : Not provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing 1 : Provided with the function of temporary stop of the sewing machine at the time of completion of reverse feed stitching at the start of sewing.	0/1	SBTQ
64	Change-over speed of condensation stitch or EBT (end back tack)	Initial speed when starting condensation stitch or EBT	0 to 250 (sti/min)	S-WAIT
70	Function of soft-down of presser foot	Presser foot is slowly lowered. 0 : Presser foot is rapidly lowered. 1 : Presser foot is slowly lowered.	0/1	
71	Double reverse feed stitching function	This item is not used on the IT-100.	0/1	F-SDFL
72	Sewing machine startup selecting function	Current limit at the startup of sewing machine is specified. 0 : Normal (Current limit is applied during startup) 1 : Rapid (Current limit is not applied during startup)	0/1	F-ACRA
73	Retry function	This function is used when needle cannot pierce materials . 0 : Normal 1 to 10 : Retry function is provided.	0 to 10	F-ACR
* 74	With/without thread trimmer for MF	With/without thread trimmer for MF is selected. 0 : Not provided with the tread trimmer 1 : Provided with the thread trimmer	0/1	F-RET
76	One-shot function	This item is not used on the IT-100.	0/1	DM
* 84	Initial motion suction time of presser foot lifting solenoid	Suction motion time of presser foot lifting solenoid	50 to 500 (ms)	T-PUT
87	Function of pedal curve selection	Pedal curve is selected. (Improving pedal inching operation) 	0/1/2	F-PCS
90	Initial motion up stop function	Automatic UP stop function is set immediately after turning ON the power. 0 : off 1 : on	0/1	NUO
91	Function of prohibiting compensation operation after turning handwheel by hand	It is effective in combination with the machine head provided with tension release function. 0 : Tension release function is ineffective. 1 : Tension release function is effective.	0/1	F-PMAT
92	Function of reducing speed of reverse feed stitching at the start of sewing	Function to reduce speed at the time of completion of reverse feed stitching at the start of sewing. 0 : Speed is not reduced. 1 : Speed is reduced.	0/1	F-DSBT
93	Function added to needle up/down compensating switch	Operation of needle up/down compensating switch is changed after turning ON the power or thread trimming. 0 : Normal (needle up/down compensating stitching only) 1 : One stitch compensating stitching is performed only when aforementioned changeover is made. (Upper stop → upper stop)	0/1	F-MADF
94	Continuous + One-shot nonstop function	The function that does not stop the sewing machine by combining continuous stitching with one-shot stitching using the program sewing function which is available in the operation panel. 0 : Normal (The sewing machine stops when a step is completed.) 1 : The sewing machine does not stop when a step is completed and proceeds to next step.	0/1	F-SBTC
95	Head selection function	Machine head to be used is selected. (When the machine head is changed, each setting item is changed to the initial value of the machine head.)		
96	Max. sewing speed setting	Max. sewing speed of the sewing machine head can be set. (The MAX value differs by machine head.)	150 to MAX (sti/min)	S-MAX

* Do not change the set values with asterisk (*) mark as they are functions for maintenance. If the standard set value set at the time of delivery is changed, it is in danger of causing the machine to be broken or the performance to be deteriorated. If it is necessary to change the set value, please purchase the Engineer's Manual and follow the instructions.

No.	Item	Description	Setting range	Indication of function setting
100	Number of stitches sewn before thread clamp works at the beginning of sewing	Sets the number of stitches to be sewn at the beginning of sewing before the thread clamp solenoid (CN36-7) starts operating 0 : Thread clamp solenoid does not operate. 1-9 : The number of stitches to be sewn before the thread clamp solenoid operates	0-9 (stitches)	N-GAST
103	Needle cooler output OFF delay time	Delay time from the stop of sewing machine to the output OFF is specified using the needle cooler output function.	100 to 2000 ms	T-DNCOFF
120	Main shaft reference angle compensation	Main shaft reference angle is compensated.	-60 to 60	A-ZDET
121	Up position starting angle compensation	Angle to detect UP position starting is compensated.	-15 to 15	A-UDET
122	DOWN position starting angle compensation	Angle to detect DOWN position starting is compensated.	-15 to 15	A-DDET
124	Setting of energy-saving function during standby	Setting to reduce the power consumption while the sewing machine is in standby state 0: Energy-saving mode is ineffective 1: Energy-saving mode is effective	0/1	F-PSAVE

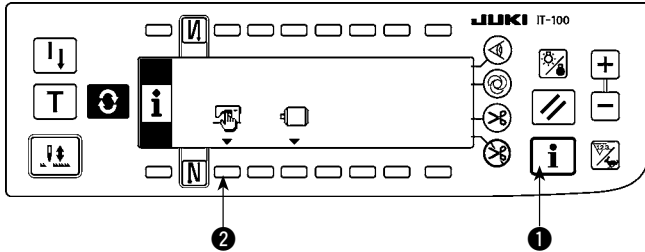
* Do not change the set values with asterisk (*) mark as they are functions for maintenance. If the standard set value set at the time of delivery is changed, it is in danger of causing the machine to be broken or the performance to be deteriorated. If it is necessary to change the set value, please purchase the Engineer's Manual and follow the instructions.

4-13. Optional input/output settings

The optional input/output function is used for outputting signals which are allocated to the connectors and for controlling a certain simple operation of the sewing machine by allocating various functions to the input/output connectors of the SC-920 (control box).

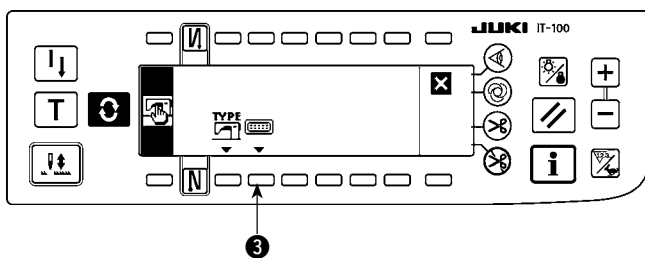
Refer to the Instruction Manual for the SC-920 for details.

[Function settings list screen]

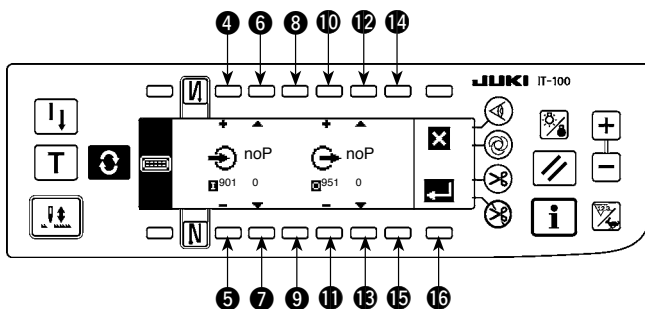


- 1) Keeping switch ❶ held pressed, turn the power ON. Then the screen is changed over to the function settings list screen. When you press switch ❷, the screen is changed over to the sewing common data screen.

[Sewing common data screen]



- 2) When you press switch ❸, the screen is changed over to the option input/output setting screen.



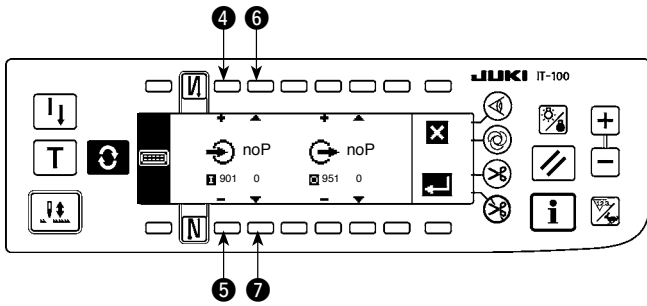
- To allocate a function to the input connector
- 3) Press switches ❹ and ❺ to select the optional input number corresponding to the input connector pin number.
 - 4) Press switches ❻ and ❼ to select the function code number and abbreviation of the input function.
 - 5) Press switches ❽ and ❾ to select the input status (L: Active when Low is input, or H: Active when High is input) of the selected input function. If function code No. 0 is selected, the input status selection is not required.
- To allocate a function to the output connector
- 6) Press switches ❿ and ⓫ to select the optional output number corresponding to the output connector pin number.
 - 7) Press switches ⓬ and ⓭ to select the function code number and abbreviation of the output function.
 - 8) Press switches ⓮ and ⓯ to select the output status (L: Low is output when Low is active, or H: High is output when High is active) of the selected input function. If function code No. 0 is selected, the output status selection is not required.
- 9) Once you have completed the setting, press switch ⓰. The screen is changed over to the sewing common data screen.
 - 10) Turn OFF the power switch to exit from the function setting.



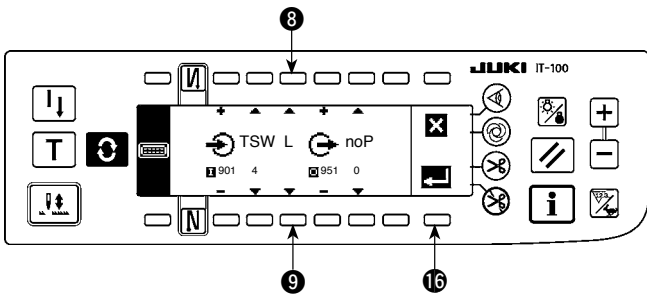
Refer to the Instruction Manual for the SC-920 for the input/output connector numbers and pin numbers and the relation between these numbers and the displayed number.

(Example) [To allocate the thread trimming function to the input connector (CN48,1)]

[Option input/output setting screen]

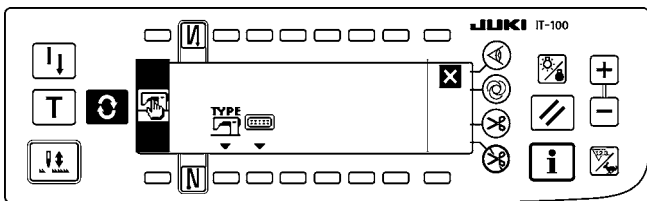


- 1) Press switches ④ and ⑤ to select input display No. 901 which represents the input connector (CN48, 1.)
- 2) Press switches ⑥ and ⑦ to select the function code No. 4 and abbreviation "TSW" of the input function.



- 3) Press switches ⑧ and ⑨ to select the input status of the input function. Set the input status code "L" if the thread trimmer activates when the input signal is Low, or "H" if the thread trimmer activates when the signal is High.
- 4) Press switch ⑩. The screen is changed over to the sewing common data screen.

[Sewing common data screen]



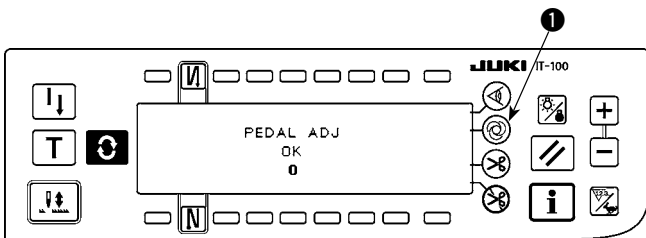
- 5) Turn OFF the power switch to exit from the function setting.

Caution Refer to the Instruction Manual for the SC-920 for the input/output connector numbers and pin numbers and the relation between these numbers and the displayed number.

4-14. Automatic compensation of neutral point of the pedal sensor

Whenever you have replaced the parts such as the pedal sensor and spring, be sure to carry out the following procedure.

[Pedal-sensor neutral-point automatic compensation screen]



- 1) Keep one-shot automatic sewing switch ① held pressed, turn the power ON. Then, the screen is changed over to the pedal-sensor neutral-point automatic compensation screen.
- 2) When the neutral point of the pedal sensor is properly corrected, the message "OK" and the compensation value (the compensation value "0" shown in the figure on the left is a value for reference) are displayed and the buzzer sounds (one short blip).

- 3) Turn OFF the power switch to exit from the function setting.

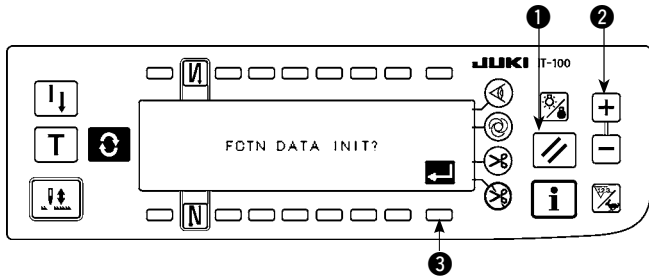
Caution

1. The pedal is depressed when the power is turned ON, the correct compensating operation cannot be carried out. Never place your foot or anything on the pedal. The audible warning sounds (two single tones, i.e., two blips) and neither the message "OK" nor the compensation value are displayed.
2. If any message or value other than "OK" or the compensation value, refer to the Engineer's Manual.

4-15. Initialization of the setting data

Data on the function setting items can be returned to the standard set values.

[Function setting data initialization screen]

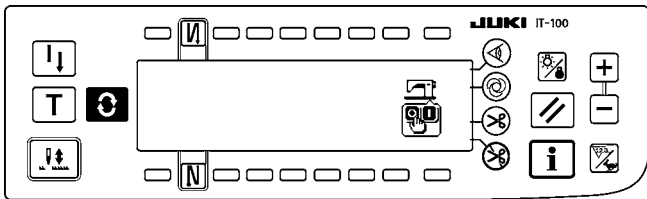


- 1) Keeping reset switch ❶ and counter value switch (+) ❷ held simultaneously pressed, turn the power ON. Then the screen is changed over to the function setting data initialization screen.
- 2) When you press switch ❸, the process for totally returning the function setting data to the standard set values (initialization operation) is executed.
- 3) Once the process is completed (approximately one second later), the buzzer sounds (three single tones, i.e., blip, blip, blip) and screen is changed over to the power switch OFF notification screen.



Do not run the power OFF during the initialization operation. It can damage the program of the main body.)

[Power switch OFF notification screen]



- 4) Turn OFF the power switch to exit from the initialization.



1. The neutral point compensation value of the pedal sensor is also initialized by carrying out the initialization operation. It is therefore necessary to carry out the automatic compensation of the neutral point of the pedal sensor without exceptions before using the sewing machine. (Refer to "III. 4-14. Automatic compensation of neutral point of the pedal sensor".)
2. The machine head angle adjustment value is also initialized by carrying out the initialization operation. It is therefore necessary to carry out the machine head angle adjustment without exceptions before using the sewing machine. (Refer to "II. 1-2. Adjusting the machine head angle".)
3. Sewing data programmed on the operation panel are not initialized by carrying out the initialization operation.

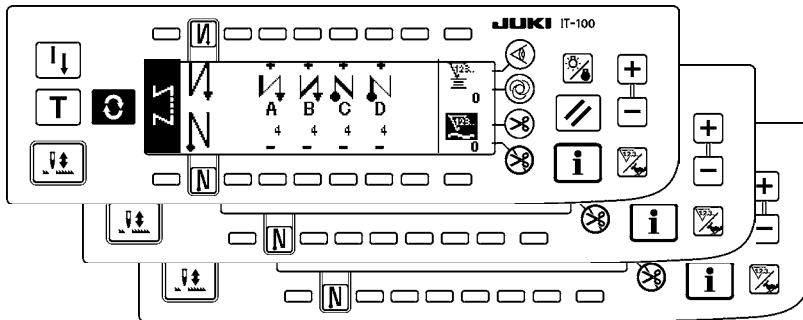
5. HOW TO OPERATE THE PRODUCTION SUPPORT FUNCTION

5-1. How to change over the screen under the normal sewing mode

The screens for the pitch time monitor, sewing recorder and production management are displayed by setting the display on a function-by-function basis after the production support function operation has been enabled under the information mode.

The following shows how to change over the screen under the normal sewing mode.

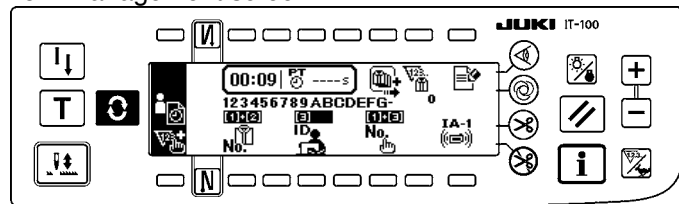
<Sewing screen which differs on a model-by-model basis>



The screen is changed over with the switch.

(Caution)
The screen displayed differs by the sewing machine model.

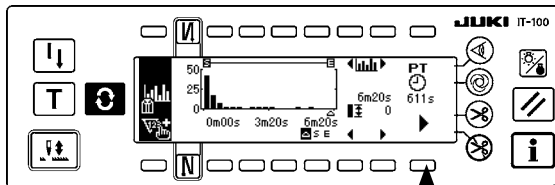
<Work management screen>



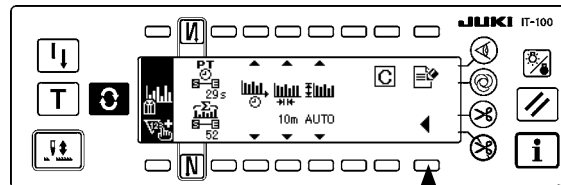
* When the production support function operation is enabled, the work management screen is shown without exceptions regardless of the display setting of other functions.

III.5-2. Operating the work management screen

<Pitch time monitor screen No. 1>

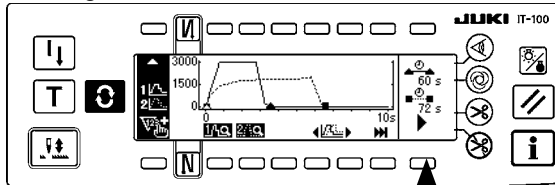


<Pitch time monitor screen No. 2>

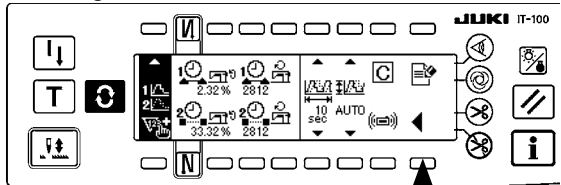


III. 5-3. Operating the pitch time monitor screen

<Sewing recorder screen No. 1>

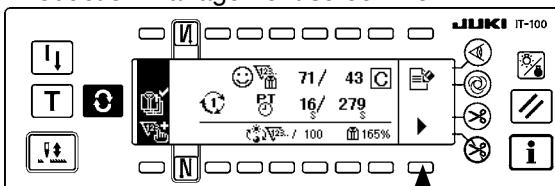


<Sewing recorder screen No. 2>

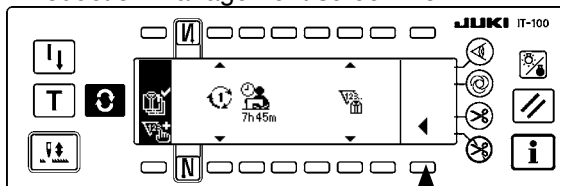


III. 5-4. Operating the sewing recorder

<Production management screen No. 1>



<Production management screen No. 2>



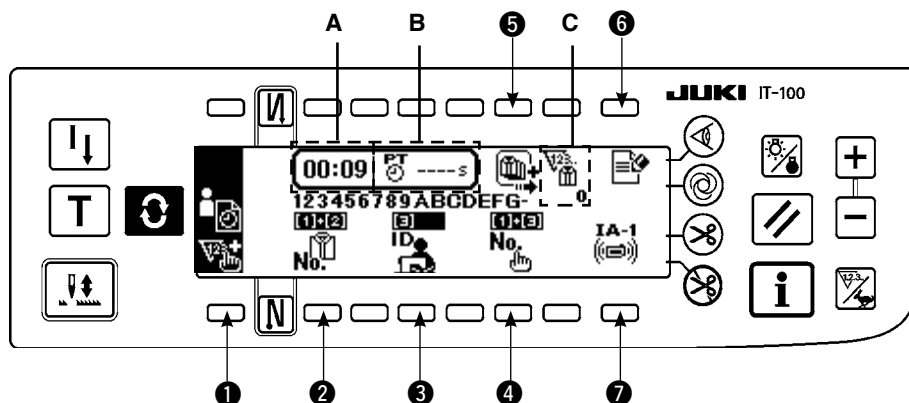
III. 5-5. Operating the production management function



5-2. Operating the work management screen

(1) Work management screen

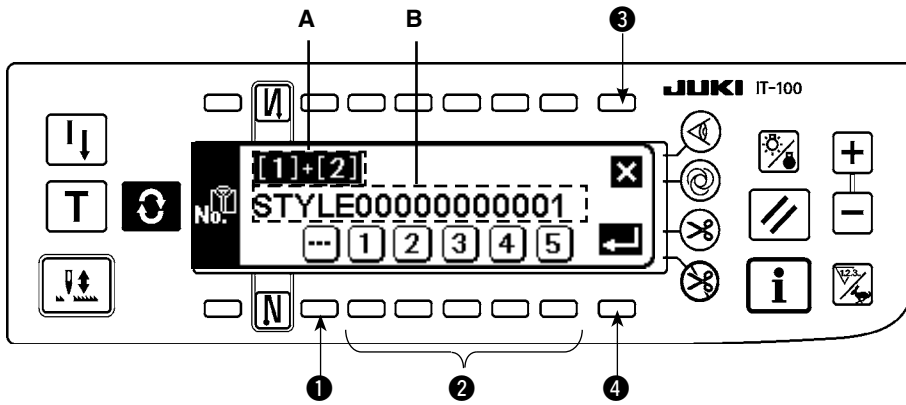
On the work management screen, work data such as the operator ID, product number and process number, which are to be embedded in the operation data recorded by each sewing machine are entered and managed. In addition, the recorded operation data can be uploaded. Furthermore, on the work management screen, operations required for procedures such as count-up of the production volume and stopping of measurement can be carried out. This means that sewing work can be done with this screen displayed.

* Refer to "III. 5-1. How to change over the screen under the normal sewing mode" for the operating procedure to be taken until this screen is displayed.



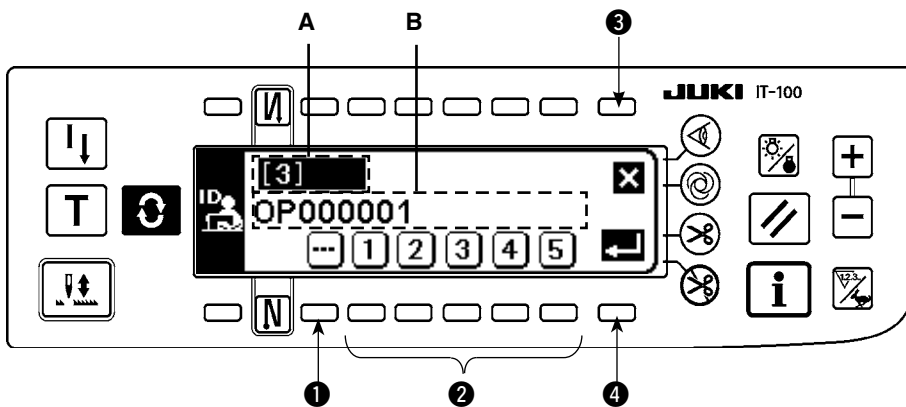
	Switch/display	Description
①	Manual switch	A press on this switch increases the number of sewn pieces by one.
②	Product number selection switch	This switch is used to display an abbreviated number for the selected product number. When this switch is pressed, the sewing product's product number input screen is displayed. Refer to "III-5-2. (2) Sewing product's product number input screen".
③	Operator ID selection switch	This switch is used to display an abbreviated number for the selected operator ID. When this switch is pressed, the operator ID selection popup screen is displayed. Refer to "III-5-2. (3) Operator ID selection screen".
④	Optional ID selection switch	This switch is used to display an abbreviated number for the selected optional ID. When this switch is pressed, the optional ID selection screen is displayed. Refer to "III-5-2. (4) Optional ID selection screen".
⑤	No. of pcs. in lot setting switch	In the case of the lot production, the number of pieces in a lot can be counted collectively. The total number of pieces in a lot should be entered. When this switch is pressed, the No. of pcs. in lot input screen is displayed. Refer to "III-5-2. (5) No. of pcs. in lot setting screen".
⑥	Measurement changeover switch	This switch is used to stop measurement and recording of the sewing machine operation data. * Measurement is carried out (state):  * Measurement is stopped: Sewing machine startup is stopped (state): 
⑦	Communication selection switch	This switch is used to upload measurement data. When the switch is pressed, the communication selection screen is displayed. Refer to "III-5-2. (6) Communication selection screen".
A	Display of the current time of day	The current time of day is displayed.
B	Display of the latest pitch time	The time period between two times of thread trimming is measured and displayed.
C	Display of the production volume	The production volume under sewing work is displayed.

(2) Sewing product's product number selection screen



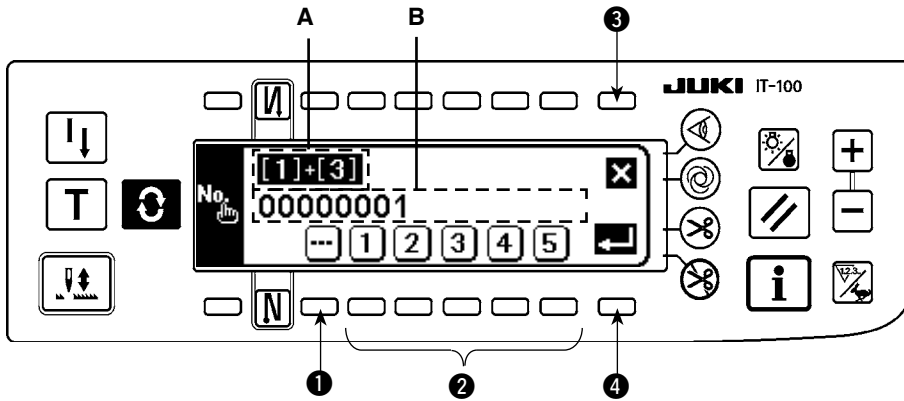
	Switch/display	Description
①	Clear switch	This switch is used to bring the ID status to the unselected state.
②	No. setting switch	This switch is used to select an abbreviated number for the product number.
③	Cancel switch	This switch is used to cancel the product number selection and to return the screen to the work management screen.
④	Enter switch	This switch is used to confirm the selected product number and to return the screen to the work management screen.
A	Abbreviated number display	This section displays the two-digit abbreviated number selected with ①.
B	Sewing product's product number display	This section displays the product number which is designated as the one for selected abbreviated number with 16-digit alphanumeric characters at the maximum.

(3) Operator ID selection screen



	Switch/display	Description
①	Clear switch	This switch is used to bring the ID status to the unselected state.
②	No. setting switch	This switch is used to select an abbreviated number for the operator ID.
③	Cancel switch	This switch is used to cancel the operator ID selection and to return the screen to the work management screen.
④	Enter switch	This switch is used to confirm the selected operator ID and to return the screen to the work management screen.
A	Abbreviated number display	This section displays the two-digit abbreviated number selected with ①.
B	Operator ID display	This section displays the operator ID which is designated as the one for selected abbreviated number with 8-digit alphanumeric characters at the maximum.

(4) Optional ID selection screen



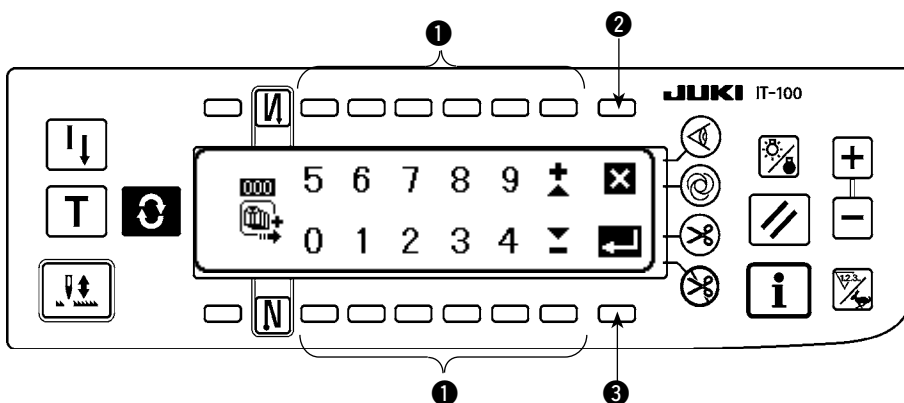
	Switch/display	Description
①	Clear switch	This switch is used to bring the ID status to the unselected state.
②	No. setting switch	This switch is used to select an abbreviated number for the optional ID. In the case an irregular work is selected, the ongoing irregular work screen is displayed.
③	Cancel switch	This switch is used to cancel the optional ID selection and to return the screen to the work management screen.
④	Enter switch	This switch is used to confirm the selected optional ID and to return the screen to the work management screen.
A	Abbreviated number display	This section displays the two-digit abbreviated number selected with ①.
B	Optional ID display	This section displays the optional ID which is designated as the one for selected abbreviated number with 8-digit alphanumeric characters at the maximum.

It is possible to load the ID setting data edited by the IA-1 on the operational panel.



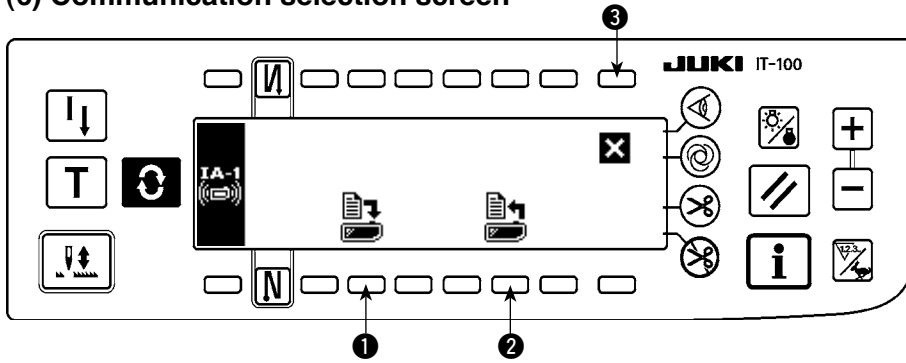
In the case you use a USB thumb drive, insert the medium recorded in a given folder into the sewing machine. In this state, the data are automatically loaded on the operation panel by turning ON the power to the sewing machine.

(5) No. of pcs. in lot input screen



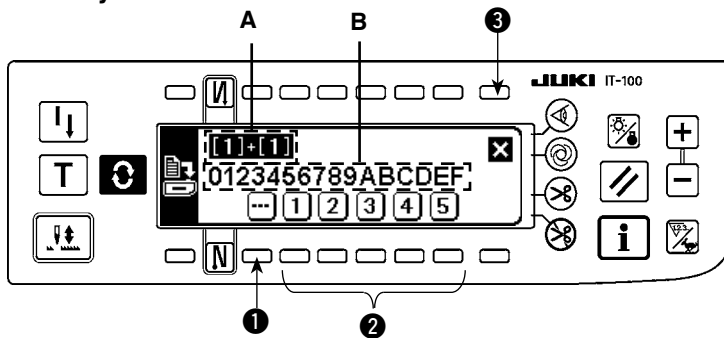
	Switch/display	Description
①	No. setting switch	This switch is used to enter the number of pieces in a lot.
②	Cancel switch	This switch is used to cancel the entered number of pieces in a lot and to return the screen to the work management screen.
③	Enter switch	This switch is used to confirm the entered number of pieces in a lot and to return the screen to the work management screen.

(6) Communication selection screen



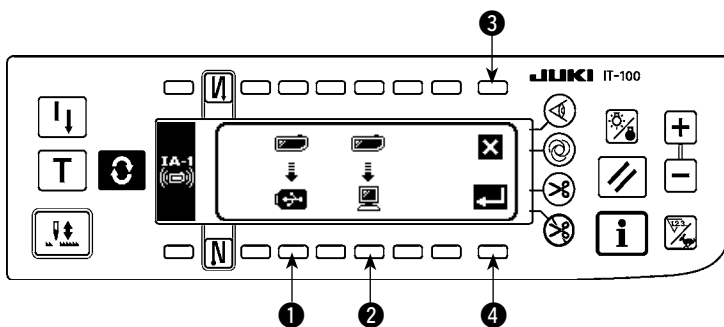
	Switch/display	Description
①	Delivery data selection switch	This switch is used to select the data to be delivered. When it is pressed, the communication data selection screen is displayed.
②	ISS data communication switch	This switch is used to select the type of ISS communication data. When it is pressed, the ISS communication type selection screen is displayed.
③	Cancel switch	This switch is used to close the communication selection screen and to return the screen to the work management screen.

<Delivery data selection screen>



	Switch/display	Description
①	Clear switch	This switch is used to bring the ID status to the unselected state.
②	Delivery data setting switch	This switch is used to select an abbreviated number for the data to be delivered.
③	Cancel switch	This switch is used to cancel the operator ID selection and to return the screen to the work management screen.
A	Delivery data display	This section displays the two-digit abbreviated number selected with ①.
B	Delivery data display	This section displays the delivery data which is designated as the one for selected abbreviated number with 16-digit alphanumeric characters at the maximum.

<ISS communication data selection screen>



	Switch/display	Description
①	USB selection switch	This switch is used to set the destination of the ISS data to the USB thumb drive.
②	PC selection switch	This switch is used to set the destination of the ISS data to the personal computer.
③	Cancel switch	This switch is used to cancel the selected communication data and to return the screen to the work management screen.
④	Enter switch	This switch is used to output the data to the selected destination and to return the screen to the work management screen.

5-3. Operating the pitch time monitor screen




The pitch time monitor screen has two different screens, i.e., the screen No. 1 that displays the production volume and pitch time as a graph, and the screen No. 2 on which the graph-related setting is carried out.

(1) Pitch time monitor screen No. 1

The pitch time monitor screen No. 1 is operated under two different modes, i.e., the production volume graph mode for displaying the transition of the production volume with time, and the pitch time graph mode for displaying the distribution and variation of pitch time (operation time) per sewing item. The sewing work status can be checked by changing over the mode between these two on the pitch time monitor screen No. 2.

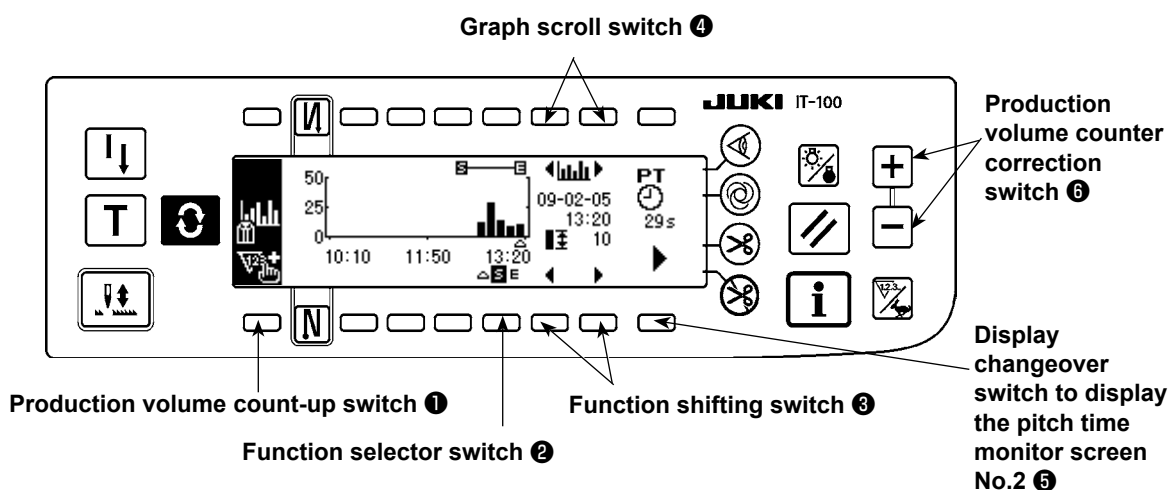
(1)-1 Production volume graph mode

A graph vertical axis of which represents the production volume and horizontal axis of which represents the working time of day is displayed. With this graph, the production status over a long period of time can be checked and the time period where a problem occurs can be found.

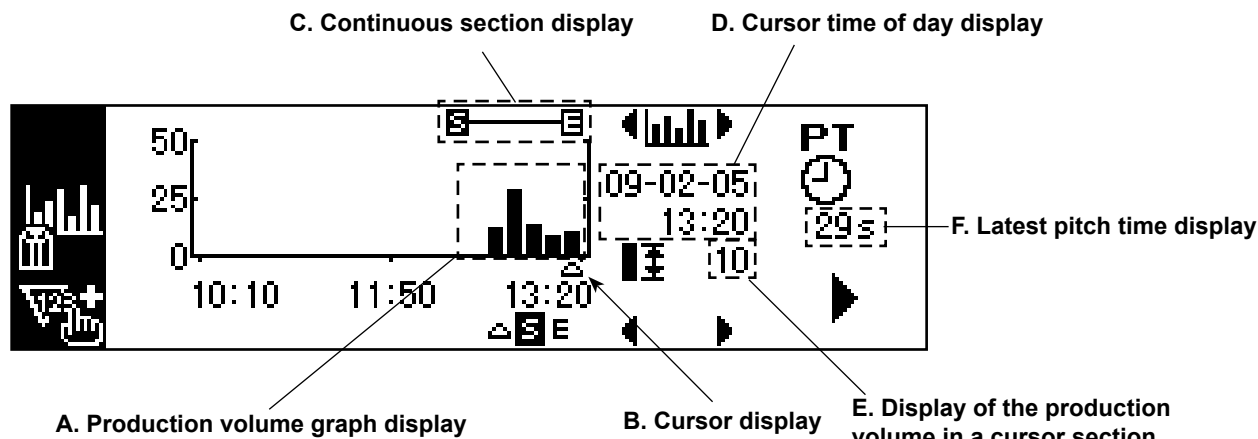
In addition, the production volume in the section specified with the cursor  can be displayed, and the total production volume and average pitch time in the section specified with  and  can be checked on the pitch time monitor screen No. 2. In this way, detailed information on an arbitrary section can be checked.

* Refer to " III . 5-1. How to change over the screen under the normal sewing mode" for the operating procedure to be taken until this screen is displayed.

<Pitch time monitor screen No.1 (Production volume graph mode operating switch)>



<Pitch time monitor screen No.1 (Production volume graph mode displayed information)>






**Explanation of displayed information and operating switches on the pitch time monitor screen No. 1
(production volume graph mode)**

	Switch/display	Description
A	Production volume graph display	A graph vertical axis of which represents the production volume and horizontal axis of which represents the working time of day is displayed. The ranges of the vertical and horizontal axes can be set on the pitch time monitor screen No. 2.
B	Cursor display	The location of the cursor is displayed.
C	Continuous section display	The continuous section set on the graph is displayed. The total production volume and average pitch time in a continuous section selected on the pitch time monitor screen No.2 can be checked.
D	Cursor time of day display	The time of day for the section specified with the cursor on the graph is displayed.
E	Display of the production volume in a cursor section	The production volume in the section specified with the cursor on the graph is displayed.
F	Latest pitch time display	The length of time between two times of thread trimming is measured and displayed. * If the pitch time is equal to or longer than 1800 seconds (30 minutes), it will be regard as defective data and ---- will be displayed instead of the pitch time.
①	Production volume count-up switch	The production volume is counted up with one item added.
②	Function selector switch	The cursor or the continuous section selection (beginning and end) is selected.
③	Function shifting switch	Selected function is shifted to the right or left.
④	Graph scroll switch	When this switch is pressed shortly, the graph is scroll to the right or left by one section. When this switch is held pressed for a longer time, the graph is scrolled to the right or left on a page-by-page basis.
⑤	Display changeover switch to display the pitch time monitor screen No. 2	The pitch time monitor screen No. 2 is displayed.
⑥	Production volume counter correction switch	The production volume can be corrected by increasing/decreasing the number shown on the counter in increments of 1.

(2) Pitch time graph mode

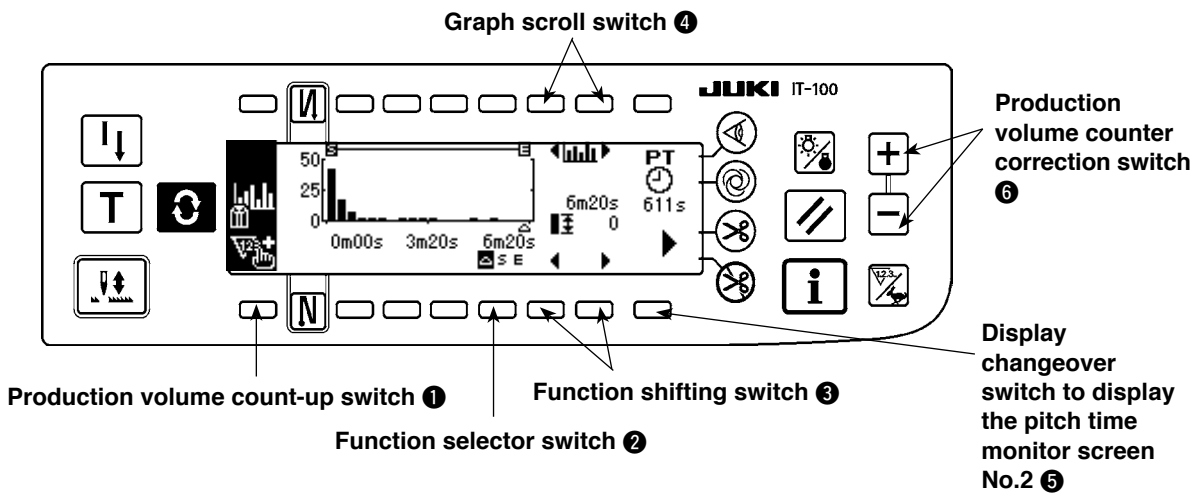
A graph vertical axis of which represents the production volume and horizontal axis of which represents the pitch time is displayed. On this graph, variation in the working time is visualized to enable checking whether there is a problem work.

In addition, the production volume in the section specified with the cursor  can be displayed, and the total production volume and average pitch time in the section specified with  and  can be checked on the pitch time monitor screen No. 2. In this way, detailed information on an arbitrary section can be checked.

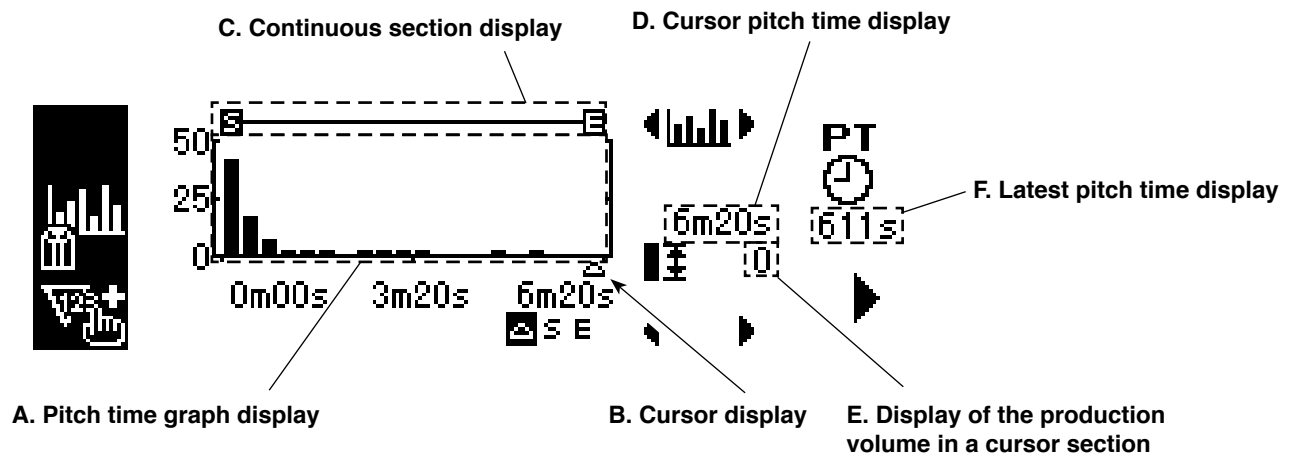
* Refer to "III. 5-1. How to change over the screen under the normal sewing mode" for the operating procedure to be taken until this screen is displayed.

<Pitch time monitor screen No. 1 (pitch time graph mode operating switch)>

<Pitch time monitor screen No.1>



<Pitch time monitor screen No.1 (Pitch time graph mode displayed information)>




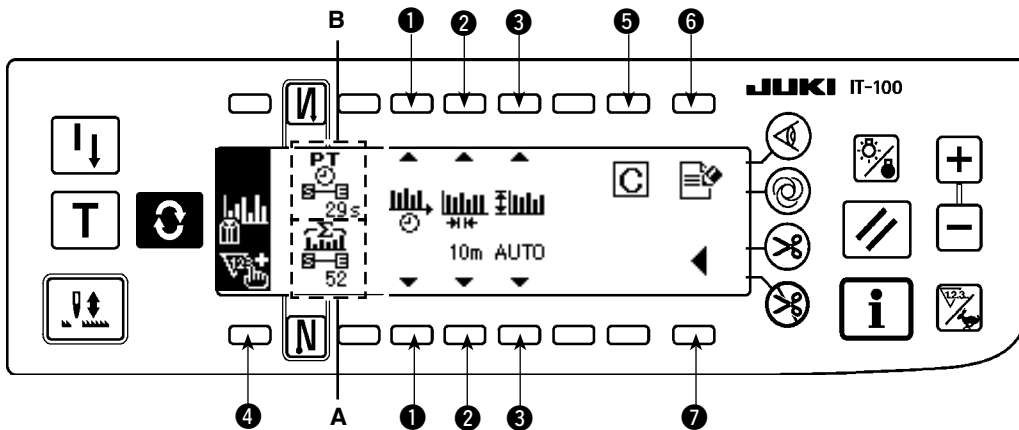
**Explanation of displayed information and operating switches on the pitch time monitor screen No. 1
(pitch time graph mode)**









	Switch/display	Description
A	Pitch time graph display	A graph vertical axis of which represents the production volume and horizontal axis of which represents the pitch time is displayed. The ranges of the vertical and horizontal axes can be set on the pitch time monitor screen No. 2.
B	Cursor display	The location of the cursor is displayed.
C	Continuous section display	The continuous section set on the graph is displayed. The total production volume and average pitch time in a continuous section selected on the pitch time monitor screen No.2 can be checked.
D	Cursor pitch time display	The pitch time in the section specified by the cursor on the graph is displayed.
E	Display of the production volume in a cursor section	The production volume in the section specified with the cursor on the graph is displayed.
F	Latest pitch time display	The length of time between two times of thread trimming is measured and displayed. * If the pitch time is equal to or longer than 1800 seconds (30 minutes), it will be regard as defective data and ---- will be displayed instead of the pitch time.
①	Production volume count-up switch	The production volume is counted up with one item added.
②	Function selector switch	The cursor or the continuous section selection (beginning and end) is selected.
③	Function shifting switch	Selected function is shifted to the right or left.
④	Graph scroll switch	When this switch is pressed shortly, the graph is scroll to the right or left by one section. When this switch is held pressed for a longer time, the graph is scrolled to the right or left on a page-by-page basis.
⑤	Display changeover switch to display the pitch time monitor screen No. 2	The pitch time monitor screen No. 2 is displayed.
⑥	Production volume counter correction switch	The production volume can be corrected by increasing/decreasing the number shown on the counter in increments of 1.

(3) Pitch time monitor screen No. 2

<Pitch time monitor screen No. 2>

On the pitch time monitor screen No. 2, the total production volume and the average pitch time in the continuous section  selected on the pitch time monitor screen No. 1 are measured and displayed. (Sections A and B in the figure given below) In addition, the display method employed on the pitch time monitor screen No. 1 is specified.



Switch/display	Description
A	Total production volume display The total production volume in the continuous section  selected on the pitch time monitor screen No. 1 is displayed. (Caution) The production volume is approximately 3200 at the maximum due to the restriction by the pitch time monitor data capacity.
B	Average pitch time display The average pitch time in the continuous section  selected on the pitch time monitor screen No. 1 is displayed. It should be noted, however, that pitch time data equal to or longer than 1800 seconds (30 minutes) is judged to be abnormal sewing work and is excluded from calculation.
①	Graph mode changeover switch The mode of graph displayed on the pitch time monitor screen No. 1 is changed over. Production volume graph mode :  Pitch time graph mode :  Vertical axis : Production volume Vertical axis : Production volume Horizontal axis : Working time of day Horizontal axis : Pitch time
②	Graph's horizontal axis range setting switch The range of the horizontal axis (time unit in one section) of the graph displayed on the pitch time monitor screen No. 1 is set. • Under the production volume graph mode : Setting range : 10 m, 15 m, 20 m, 30 m, 1 h, 2 h, 4 h, 8 h, 12 h, 1 d Initial setting : 30 m * "m" represents minute, "h" represents hour and "d" represents day. • Under the pitch time graph mode: Setting range : 3 s, 5 s, 10 s, 15 s, 20 s, 30 s, 1 m Initial setting : 5 s * "s" represents second and "m" represents minute.
③	Graph's vertical range setting switch The range of the vertical axis of the graph displayed on the pitch time monitor screen No. 1 is set. Setting range: 10, 20, 50, 100, 200, 500, 1000, 2000, 3000, 5000, auto Initial setting : auto * In the case of "auto," the range is automatically selected to display the production volume on the vertical axis as large as possible at all times.
④	Production volume count-up switch The production volume is counted up with one item added.
⑤	Clear switch The pitch time monitor data recorded in the sewing machine memory are cleared. * When this switch is pressed, the clear confirmation popup screen appears. Press  switch to clear the data, or  switch to cancel clearing.
⑥	Measurement stop switch Measurement and recording of sewing machine operation data are stopped. When measurement is being carried out,  is displayed. When measurement is in the stop status,  is displayed.
⑦	Display changeover switch to display the pitch time monitor screen No. 1 The pitch time monitor screen No. 1 is displayed.

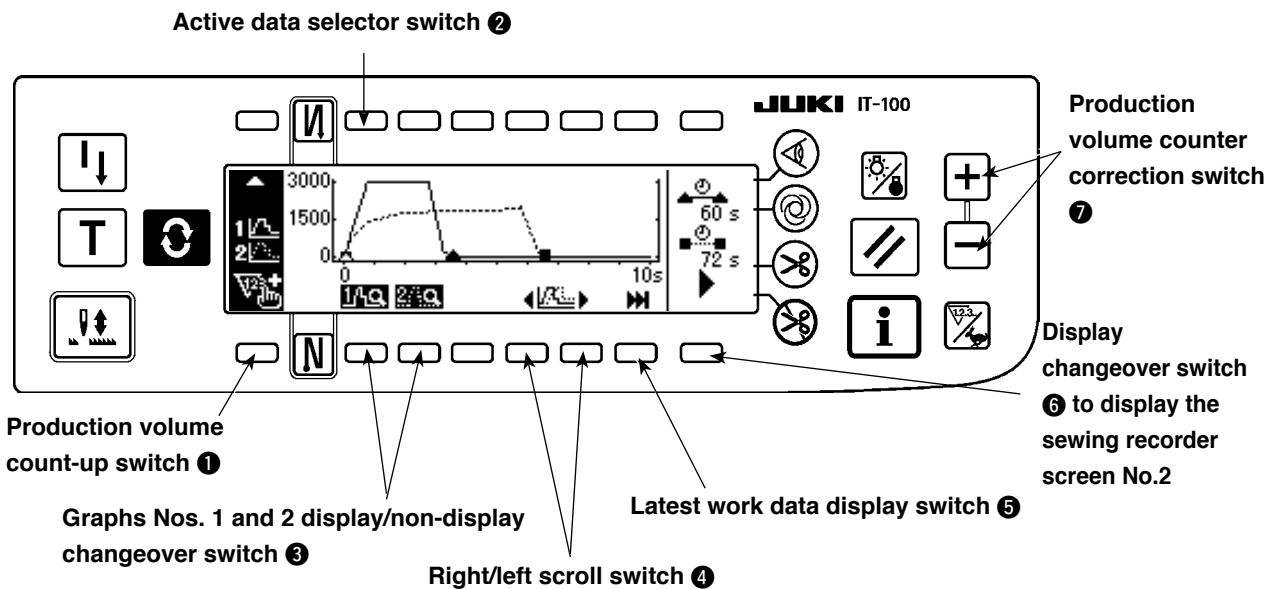
5-4. Operating the sewing recorder

The sewing recorder screen consists of two different screens; i.e., the screen No. 1 on which the sewing speed and the thread trimming timing are continuously measured and displayed as a line graph and the screen No. 2 on which the sewing machine operation rate/average sewing speed are displayed and setting of the graph display on the screen No. 1 carried out.

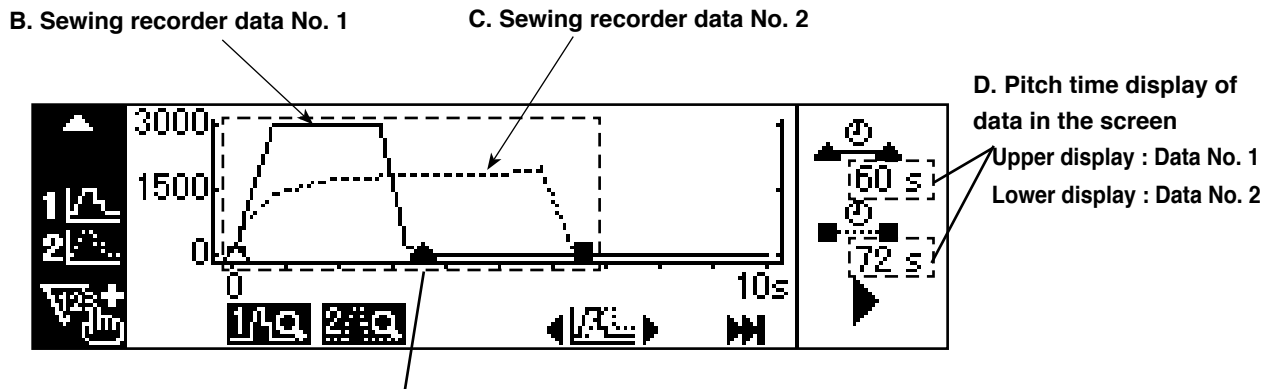
(1) Sewing recorder screen No. 1

On the sewing recorder screen No. 1, the operator's sewing performance is displayed by means of the line graph showing the sewing speed and the time. Based on the graph, the sewing skill level check and training of the sewing machine operator can be carried out. Two different data can be indicated on the graph as data No. 1 and data No. 2. This means that the target operator's data can be shown together with data on a highly skilled operator's work or the data on his/her work in the past for the purpose of comparison. The comparison through visualization enables easy analysis of complicated and hard-to-understand sewing machine operation.

<Sewing recorder screen No. 1 (operating switches)>



<Sewing recorder screen No. 1 (displayed information)>



A. Sewing recorder graph







Point \triangle represents the sewing starting point, thread trimming point or the manual-switch pressing point in the data No.1.

Point \blacktriangle represents the starting and end points of the pitch time of the data No.1.

Point \square represents the sewing starting point, thread trimming point or the manual-switch pressing point in the data No.2.

Point \blacksquare represents the starting and end points of the pitch time of the data No.2.

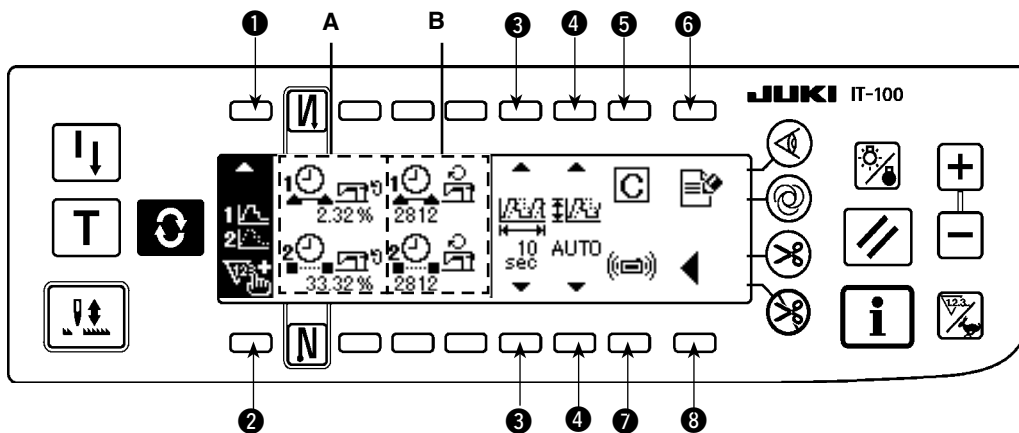
Explanation of displayed information and operating switches on the sewing recorder screen No. 1







	Switch/display	Description
A	Sewing recorder graph display	The graph the vertical axis of which shows the sewing speed and the horizontal axis of which shows the time is displayed. The ranges of the vertical and horizontal axes can be set on the sewing recorder screen No. 2. Point \triangle represents the sewing starting point, thread trimming point or the manual-switch pressing point in the data No.1. Point \blacktriangle represents the starting and end points of the pitch time of the data No.1. Point \square represents the sewing starting point, thread trimming point or the manual-switch pressing point in the data No.2. Point \blacksquare represents the starting and end points of the pitch time of the data No.2.
B	Sewing recorder screen No. 1	The sewing recorder data No. 1 is shown on the graph in solid lines —.
C	Sewing recorder screen No. 2	The sewing recorder data No. 2 is shown on the graph in dotted lines -----.
D	Pitch time display of data in the screen	The pitch time of the sewing work in which the last thread trimming, on the current screen, is performed is displayed. Upper display : Data No. 1 Lower display : Data No. 2
①	Production volume count-up switch	The production volume is counted up with one item added.
②	Active data selector switch	Active data (data to be shifted with switch ④ or ⑤, data to be additionally recorded when sewing operation is carried out, or data which can be cleared with Clear switch  on the screen No. 2) is selected. Setting only data No. 1 to be active :  Setting only data No. 2 to be active :  Setting both data to be active : 
③	Graphs Nos. 1 and 2 display/non-display change-over switch	Graphs No. 1 and No. 2 are respectively changed over between the display and non-display. Display :  Non-display : 
④	Right/left scroll switch	Data graph that is set to be active is displayed with scrolled to the right or left.
⑤	Latest work data display switch	The latest work of the data which is set to be active is displayed in a graph from the beginning of sewing.
⑥	Display changeover switch to display the sewing recorder screen No. 2	The sewing recorder screen No. 2 is displayed.
⑦	Production volume counter correction switch	The production volume can be corrected by increasing/decreasing the number shown on the counter in increments of 1.

(2) Sewing recorder screen No. 2

On the sewing recorder screen No. 2, the sewing machine operation rate and the average sewing speed in the pitch time section displayed on the screen No. 1 is calculated and displayed. (Sections A and B in the figure given below) In addition, the display method employed on the sewing recorder screen No. 1 is specified.

<Sewing recorder screen No.2>



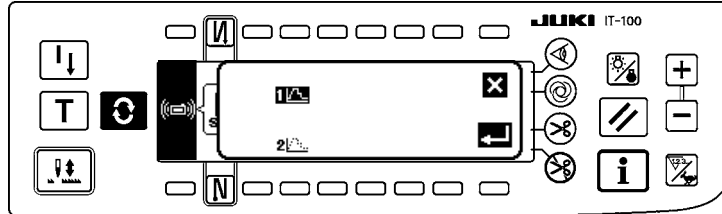
	Switch/display	Description
A	Sewing machine operation-rate display	The rate of the time during which the sewing machine operates in the pitch time shown on the sewing recorder screen No. 1 is displayed. Upper display : Data No. 1 Lower display : Data No. 2
B	Average sewing speed display	The average sewing speed of the sewing machine in the sewing machine operating section within the pitch time shown on the sewing recorder screen No. 1 is displayed. Upper display : Data No. 1 Lower display : Data No. 2
①	Active data selector switch	This switch is used to select the active data (data to be moved by means of switch ④ or ⑤ on the screen No. 1, data to be additionally recorded by sewing operation and data that can be erased by means of the clear switch  on the screen No. 2). Setting only data No. 1 to be active  Setting only data No. 2 to be active  Setting both data to be active 
②	Production volume count-up switch	The production volume is counted up with one item added.
③	Graph's horizontal axis range setting switch	The range of the horizontal axis (time unit in one section) of the graph shown on the sewing recorder screen No. 1 is set. Setting range : 10, 30, 60, 120, 180, 300, 600sec Initial setting : 10 sec
④	Graph's vertical axis range setting switch	The range of the vertical axis of the graph displayed on the pitch time monitor screen No. 1 is set. Setting range : auto, 1000, 2000, 3000, 4000, 5000sti/min Initial setting : auto In the case of "auto," the range is automatically selected to display the sewing speed on the vertical axis as large as possible at all times. * It should be noted, however, that the maximum measurable sewing speed can be increased to 9000 sti/min using " II.2-4.(3) Setting the sewing recorder functions " on the sewing recorder function setting screen.
⑤	Clear switch	Data which is set to be active is cleared.
⑥	Measurement stop switch	Measurement and recording of sewing machine operation data are stopped. When measurement is being carried out,  is displayed. When measurement is in the stop status,  is displayed.
⑦	Data upload/download switch	The sewing recorder data No. 1 and No. 2 can be uploaded on a medium or downloaded from it, and can be deleted. * Refer to the next item " III. 5-4.(3) Uploading/downloading the sewing recorder data " for the procedure in detail.
⑧	Display change-over switch to display the sewing recorder screen No. 1	The sewing recorder screen No. 1 is displayed.

(3) Uploading/downloading the sewing recorder data

When the "data upload/download switch" (switch 7 described on the previous page) is pressed, the sewing recorder communication screen is displayed as shown below.

On this screen, the data can be downloaded from a medium into the sewing machine and can be uploaded from the sewing machine into a medium.

Data No. 1/No. 2 selector popup screen appears. Select either the data No. 1 or the data No. 2.

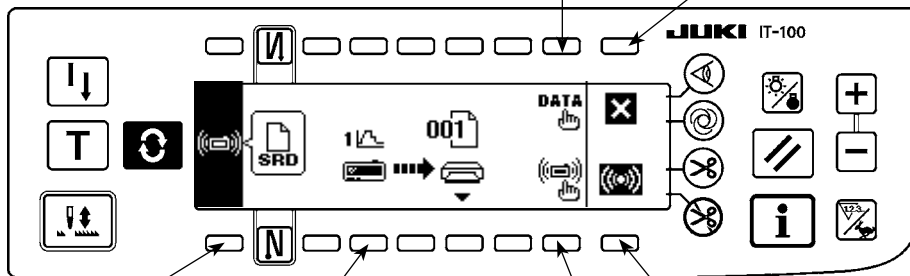


A. Data No. 1/No. 2 selector switch

E. End switch

The popup screen is closed to restore the screen to the previous one.

<Sewing recorder communication screen>

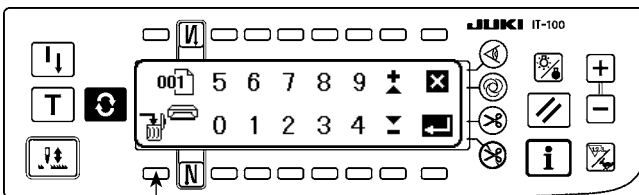


Production volume count-up switch 1

D. Upload/download start switch

After having made selections with switches A, B and C, start uploading or downloading.

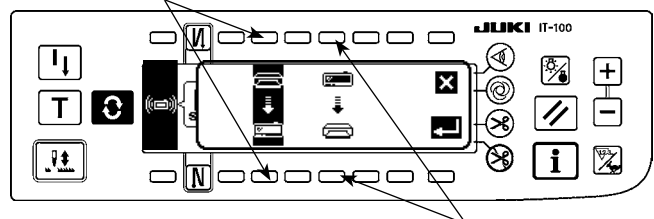
C. File No. selector switch



* File of the selected number stored in a medium can be deleted.

B. Upload/download selector switch

Download from a medium into the sewing machine



Upload from the sewing machine into a medium

The file No. selector popup screen appears. Select a file number of uploaded files on a medium using the Numeric switches 0 to 9 and + and - switches.

The upload/download selector popup screen appears. Select either uploading from the sewing machine into a medium or downloading from a medium into the sewing machine.

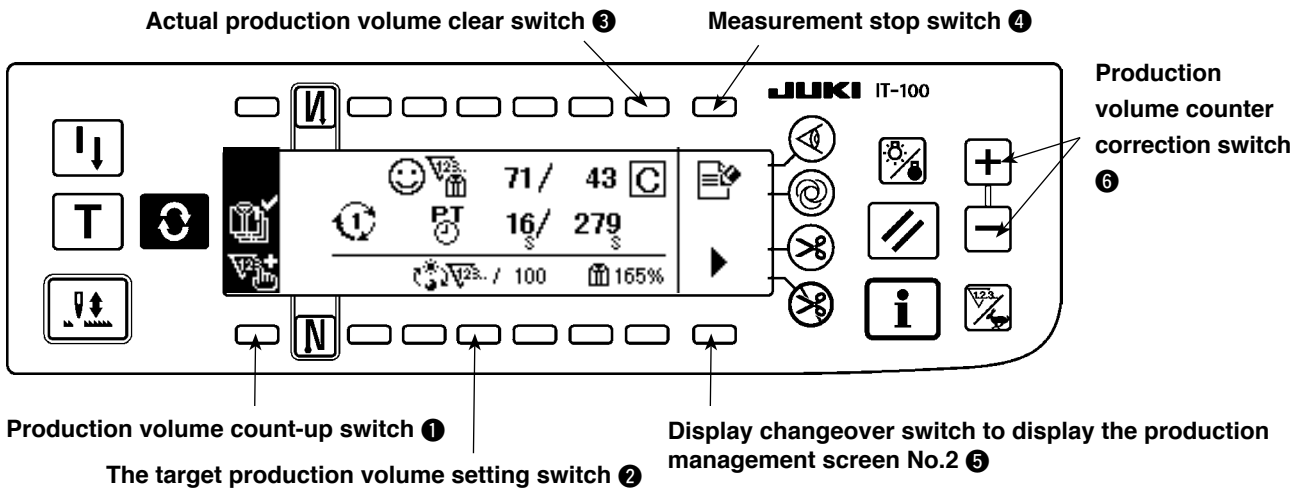
5-5. Operating the production management function

The production management screen has two different screens, i.e., the screen No. 1 for displaying information on production volume produced by sewing work, and the screen No. 2 for setting the operation for the screen No. 1.

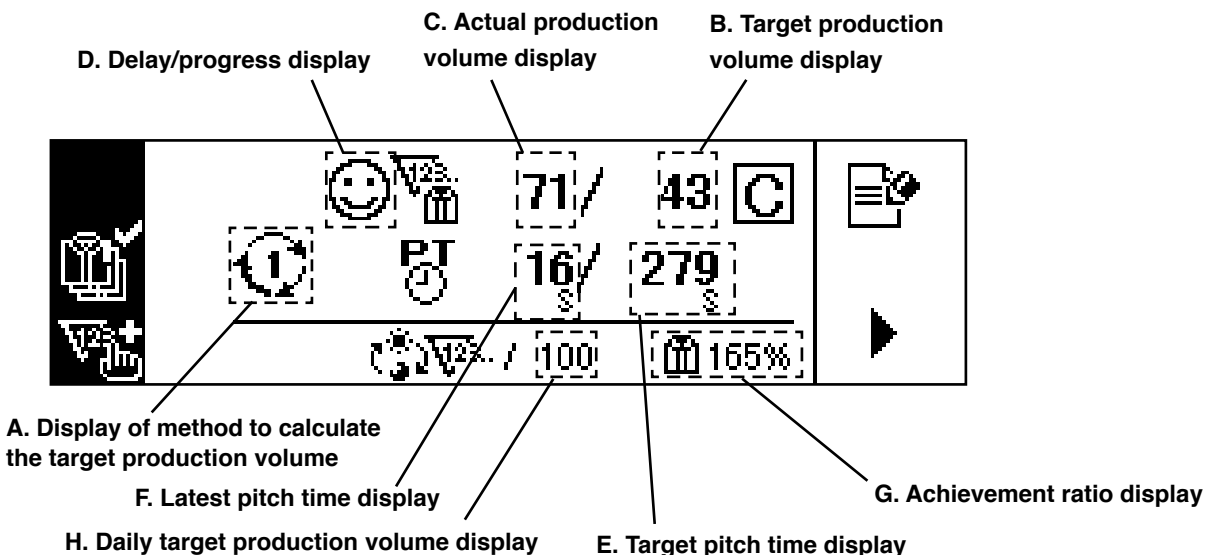
(1) Production management screen No. 1

On the production management screen No. 1, the target production volume according to the working hours and the actual production volume are displayed to notify the operator of a delay or progress of sewing work in real time. With this function, the operator is able to carry out his/her work while checking his/her work pace. This enhances his/her motivation to achieve his/her goal, thereby leading to a substantial increase in productivity.

<Production management screen No. 1 (Operation switch)>













<Production management screen No.1 (displayed information)>



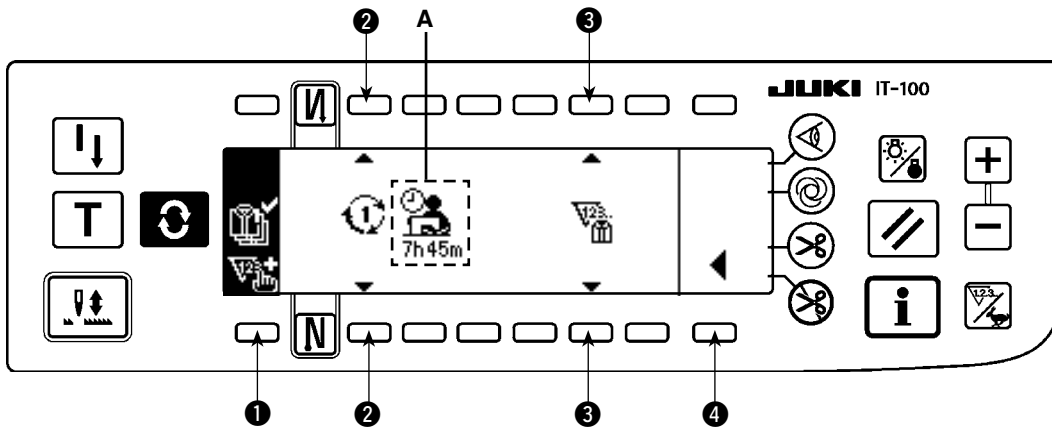
Explanation of displayed information and operating switches on the production management screen









No. 1

	Switch/display	Description
A	Display of method to calculate the target production volume	The method to calculate the currently selected target production volume is displayed.  : Count-up by the pitch time  to  : Count-up by the beginning/finishing times of day of work and the total production volume
B	Target production volume display	The target production volume as of the current time is displayed.
C	Actual production volume display	The actual production volume is displayed.
D	Delay/progress display	 is displayed when the actual production volume as of the current time is smaller than the target production volume, or  is displayed when the former is equal to or larger than the latter one.
E	Target pitch time display	The target pitch time for counting up the target production volume according to the lapse of time is displayed.  : In the case of count-up by the pitch time, the pitch time that is set on the production management function setting screen is displayed.  to  : In the case of count-up by the beginning/finishing times of day of work and the total production volume, the pitch time calculated from the working hours and total production volume are displayed.
F	Latest pitch time display	Length of time between two times of thread trimming is measured and displayed. * If the pitch time is equal to or longer than 1800 seconds (30 minutes), it will be regarded as defective data and ---- will be displayed instead of the pitch time.
G	Achievement ratio display	The ratio of the actual production volume to the target production volume as of the current time is displayed. It allows the operator to know his/her work pace up to the present
H	Daily target production volume display	The daily target production volume corresponding to the currently selected target production volume calculation method is displayed.
①	Production volume count-up switch	The production volume is counted up with one item added.
②	Daily target production volume setting switch	The daily target production volume is set. * When the switch is pressed, the numeric input popup screen is displayed. Input a set value in the popup screen.
③	Actual production volume clear switch	The actual production volume is cleared. On every working day, the existing actual production volume should be cleared before starting work.
④	Measurement stop switch	Measurement and recording of sewing machine operation data are stopped. When measurement is being carried out,  is displayed. When measurement is in the stop status,  is displayed.
⑤	Display changeover switch to display the production management screen No. 2	The production management screen No. 2 is displayed.
⑥	Production volume counter correction switch	The production volume can be corrected by increasing/decreasing the number shown on the counter in increments of 1.

(2) Production management screen No. 2

On the production management screen No. 2, the count-up method for the target production volume and actual production volume employed on the production management screen No.1 is selected.



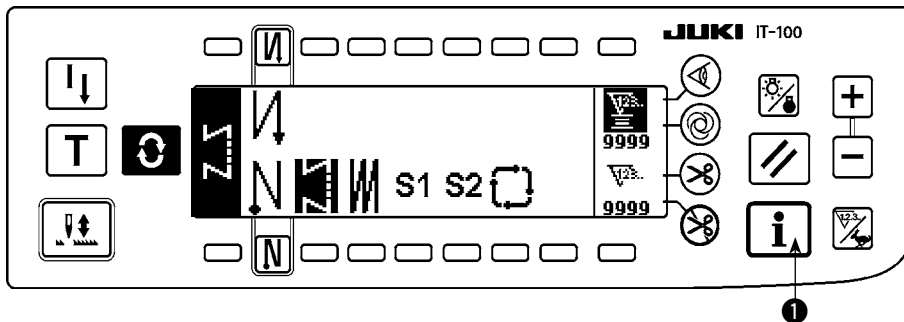
	Switch/display	Description
A	Display of the target pitch time or the total working hours	 : In the case of count-up by the pitch time, the pitch time set on the production management function setting screen is displayed.  to  : In the case of count-up by the starting/finishing times of day of work and the total production volume, the total working hours that are calculated by adding a resting time to the length of time between the starting time and the finishing time of work is displayed.
①	Production volume count-up switch	The production volume is counted up with one item added.
②	Target production volume count-up method selector switch	The count-up method for the target production volume is selected.  : Count-up by the pitch time The target production volume is counted up by the pitch time A set on the production management function setting screen.  to  : Count-up by the starting/finishing times of day of work and the total production volume The target production volume is counted up by the pitch time that is calculated using the total working hours and the total daily target production volume. The total working hours are calculated by adding a resting time to the length of time between the starting time and the finishing time of day of work.
③	Actual production volume count-up method selector switch	The actual production volume is displayed and managed on the production management screen No. 1. This switch is used to select whether or not the actual production volume is managed with associated with the operator ID, product number or process number.  : The actual production volume is counted up without being associated with the operator ID, product number and process number which are set on the work management screen.  : The only actual production volume, which is produced under the condition where its operator ID, product number and process number totally agree with those set on the work management screen, is displayed and managed.
④	Production management screen No. 1 display switch	The production management screen No. 1 is displayed.

IV. INFORMATION

Various data can be set or checked on the information screen.

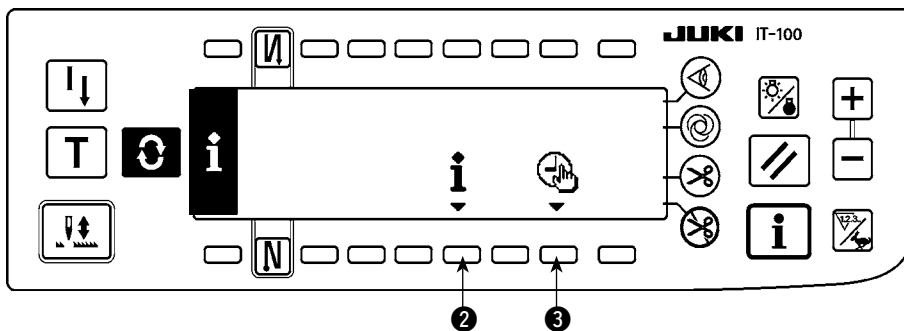
The information consists of two different levels, i.e., the operator level and the maintenance personnel level.

1. OPERATOR LEVEL



- 1) Turn ON the power.
- 2) Press switch ❶ to display the information screen.

■ Information screen



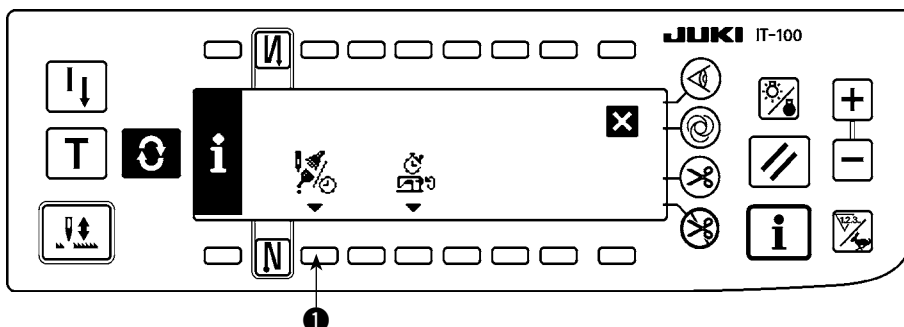
- 3) When you press switch ❷, the sewing management information screen is displayed. When you press switch ❸, the time setting screen is displayed.

1-1. Sewing management information

The sewing management information consists of the maintenance management function and working measurement function.

(1) Maintenance management function

■ Sewing management function screen

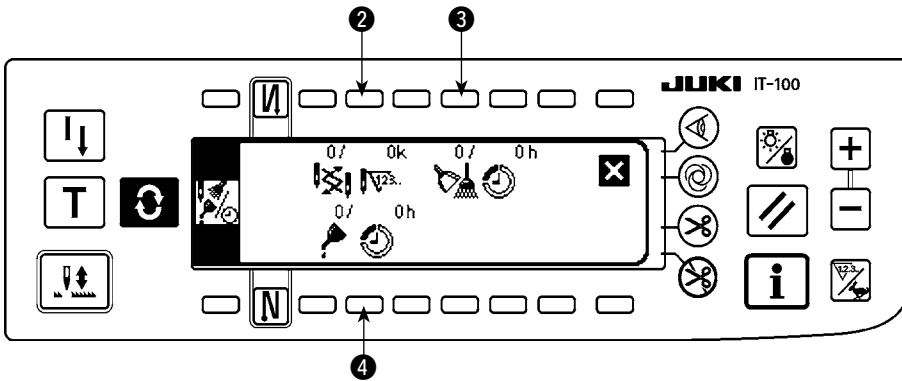


- 1) Press switch ❶ to change over the screen to the maintenance management function screen.

■ Maintenance function screen

The time for needle changing, the time for cleaning and the time for oil changing can be set to continuously display numeric values or display the notification after the lapse of preset time.

Refer to the Engineer's Manual for details.



[Explanation of the respective items]

- ② Time of replacement of needle Unit : X 1,000 stitches
- ③ Time of cleaning Unit : Hour
- ④ Time of replacement of oil Unit : Hour

[Explanation of the contents of display]

(Numerator / denominator)

* Number of remaining stitches up to * thousand stitches / ** thousand stitches

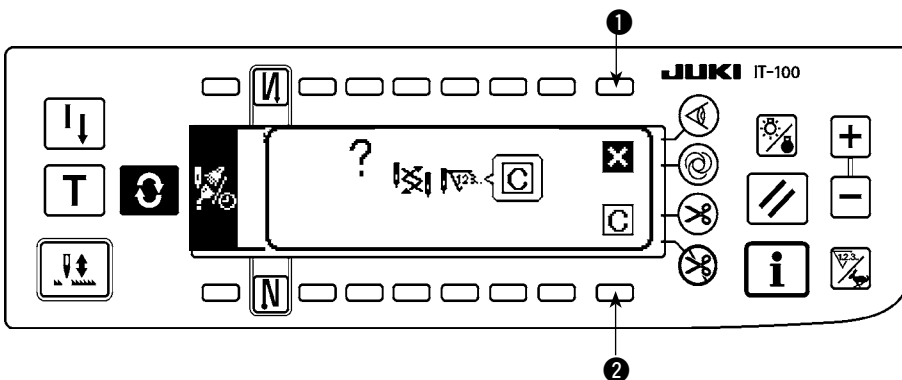
Example) Replacement of needle

100 / 1600 k

- ↑ Time of replacement of needle is informed every 1,600 thousand stitches.
- ↑ Time of replacement of needle is informed after 100 thousand stitches.

When ②, ③ and ④ switches are pressed, the clear checking screen is displayed.

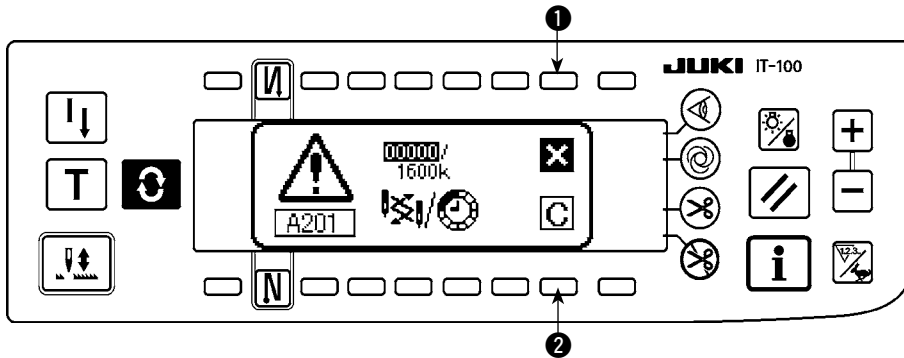
■ Clear screen



- ① : The screen returns to the maintenance function screen without performing clearing.
- ② : The screen returns to the maintenance function screen after executing clearing.

■ Warning screen

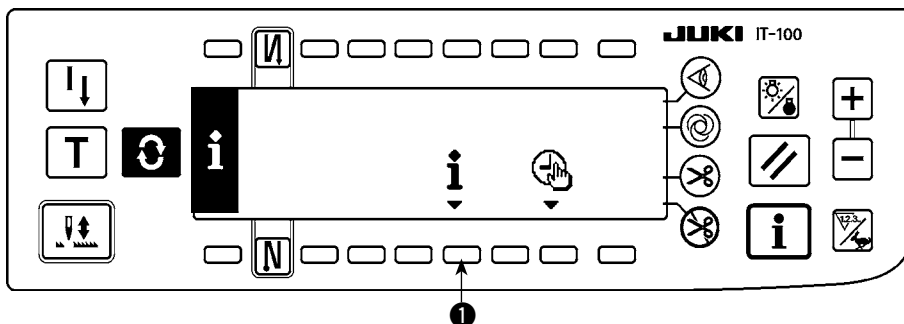
Warning screen is displayed when the warning time is reached.



- ① : When ① is pressed, the screen can be cleared. However, the counter itself cannot be cleared. In case of the replacement of needle, the warning screen is displayed at intervals of 10 minutes until clearing is performed. In case of other warnings, the warning screen is displayed at the time of turning ON the power until the counter is cleared.
- ② : When ② is pressed, the screen is cleared and the counter value is cleared as well. From this time, counting starts newly.

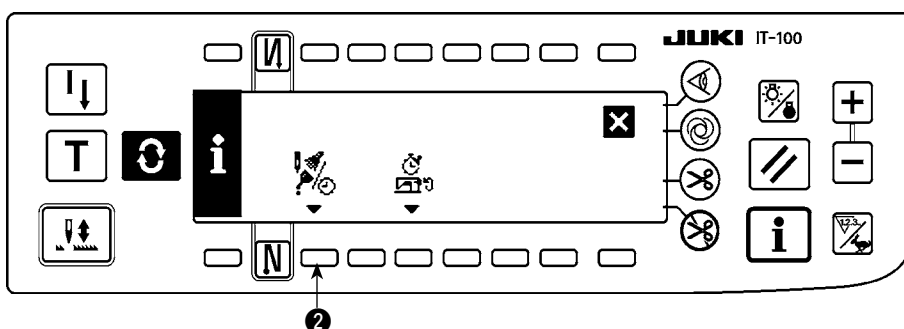
[Setting of the warning setting time]

■ Information screen



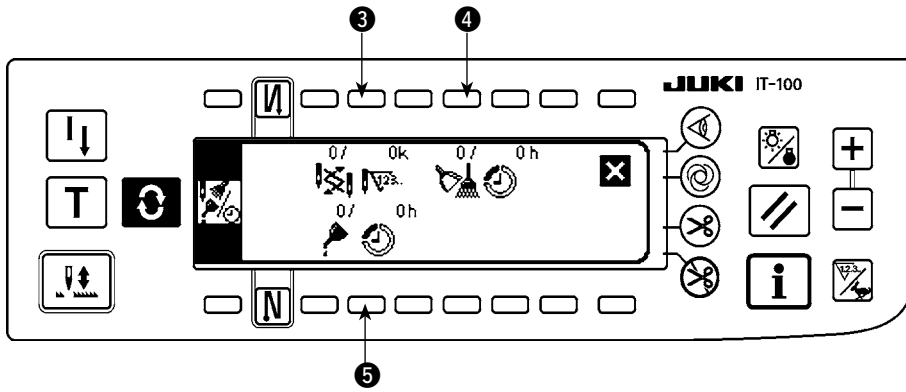
- 1) Press switch ① for approximately three seconds in the information screen.

■ Sewing management function screen



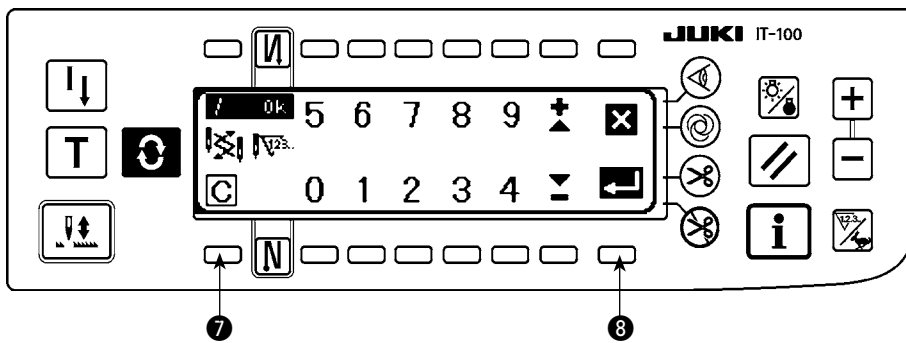
- 2) Press ② to display the maintenance function screen.
(For other functions, refer to the Engineer's Manual.)

■ Maintenance function screen



- ③ : Input screen of time of replacement of needle (number of stitches : unit : X 1,000 stitches) is displayed.
- ④ : Input screen of time of cleaning (time : unit : h) is displayed.
- ⑤ : Input screen of time of replacement of oil (time : unit : h) is displayed.

■ Various input screen (Time for needle changing, time for cleaning and the time for oil changing)

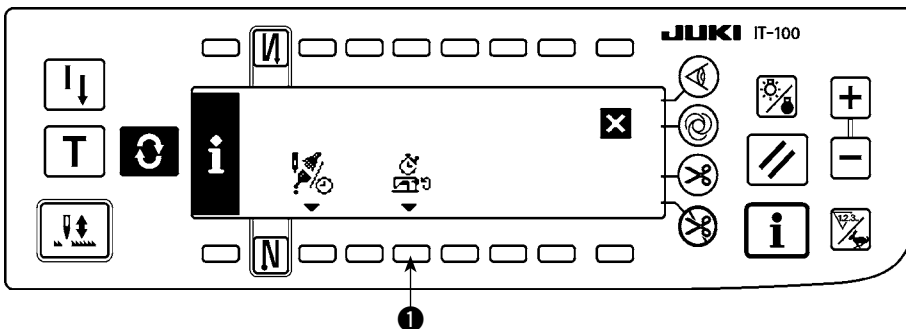


Press ⑦ to display the clear checking screen. After inputting the set value, press ⑧ to determine.

Important In case of stopping the warning function, set the set value to "0".
It is possible to individually set replacement of needle, cleaning, and replacement of oil respectively. In case of stopping all, set "0" to each.

(2) Working measurement function

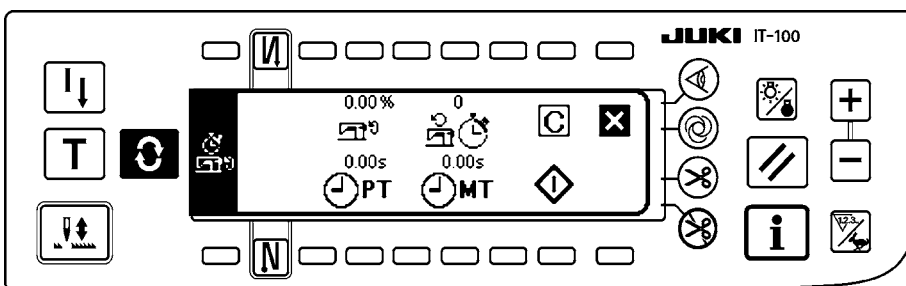
■ Sewing management function screen







1) Press switch ❶ to change over the screen to the working measurement function screen.

■ Working measurement function screen

Working factor, working mean speed, pitch time and machine time can be measured on this screen.



[Explanation of the respective items]

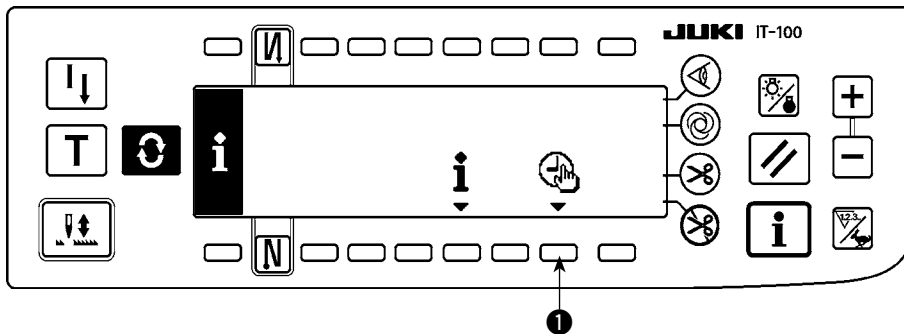
-  Working factor..... Unit : %
-  Working mean speed..... Unit : sti/min
-  PT Pitch time Unit : Second
-  MT Machine time Unit : Second

- 2) Press ❸ to start the working measurement.
- 3) To stop the measurement, press ❸ again.
- 4) The result of measurement can be cleared with ❹.

Caution When “Clear” is not executed, the measurement from the last time can be continued.

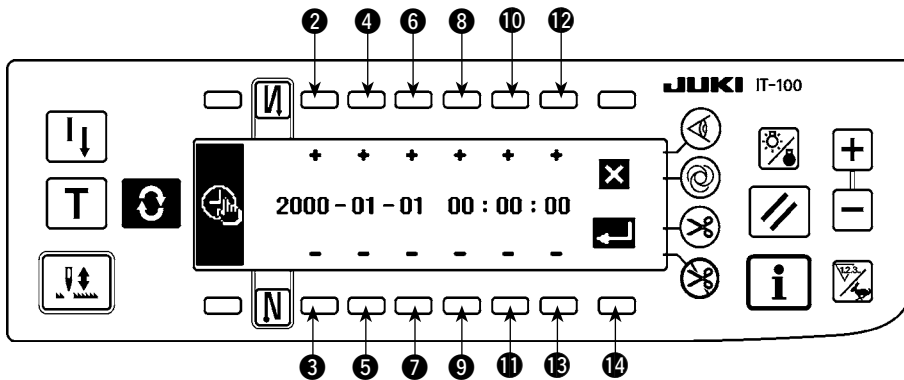
1-2. Setting the date and time

■ Information screen



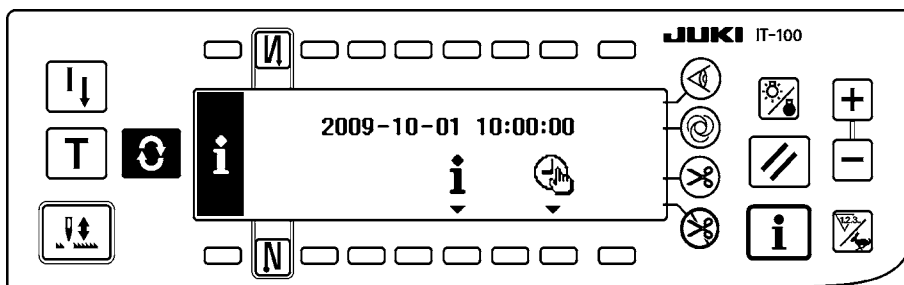
- 1) Press switch **1** to change over the screen to the date and time setting screen.

■ Date and time setting screen



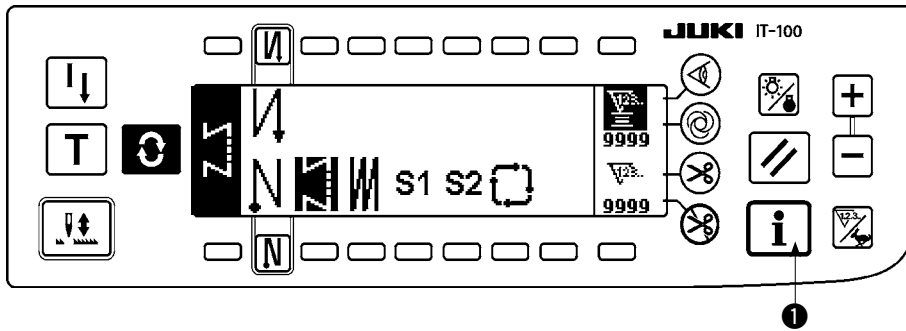
- 2) Press switches **2** and **3**, **4** and **5**, and **6** and **7** to increment/decrement the date.
- 3) Press switches **8** and **9**, **10** and **11**, and **12** and **13** to increment/decrement the time.
- 4) Once you have set the date and time, press switch **14**. The screen is changed over to the information screen.

■ Information screen



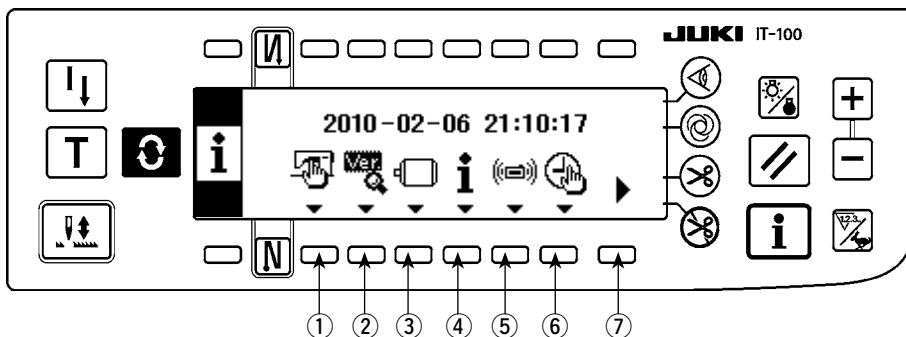
- 5) The set date and time are displayed on the information screen and the clock starts to operate. (When you have set the date and time to "2009-10-01 10:00:00" and press switch **14**, the screen display will be as shown in the above figure.)

2. MAINTENANCE PERSONNEL LEVEL



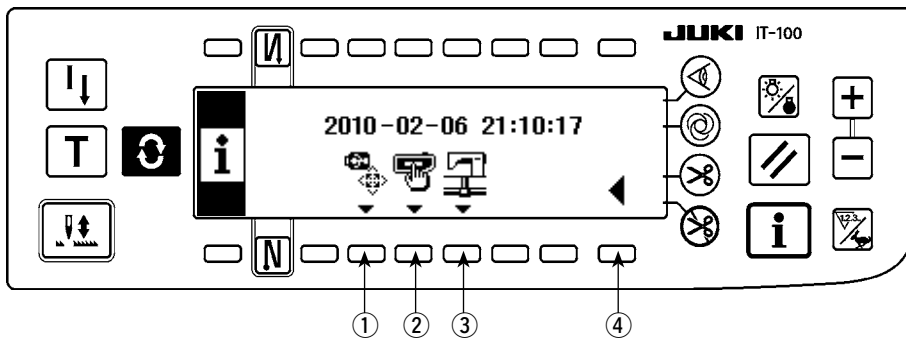
- 1) Turn the power ON.
- 2) Keep switch ❶ held pressed for approximately three seconds to display the information screen.

■ Information screen No. 1 (maintenance personnel level)



No.	Setting item	Description
❶	Sewing common data screen display switch	This switch is used to set the machine-head type and to set the optional input/output. Refer to " IV.2-1. Sewing common data screen ".
❷	Ver. display	Refer to the Engineer's Manual for details.
❸	Function setting	With this setting item, the various functions of the sewing machine can be set and the number of stitches and the sewing speed can be changed. Refer to " III.4-12. Function setting ".
❹	Sewing management information	With this setting item, the sewing management information screen No. 1 is displayed. Refer to " IV. 1-1. Sewing management information ".
❺	Communication mode	Refer to the Engineer's Manual for details.
❻	Time setting screen	On this screen, the time is set. Refer to " IV. 1-2. Setting the date and time ".
❼	Changeover to information screen No. 2	When this key is held pressed for a longer time, the information screen No. 2 is displayed.

■ Information screen No. 2 (maintenance personnel level)

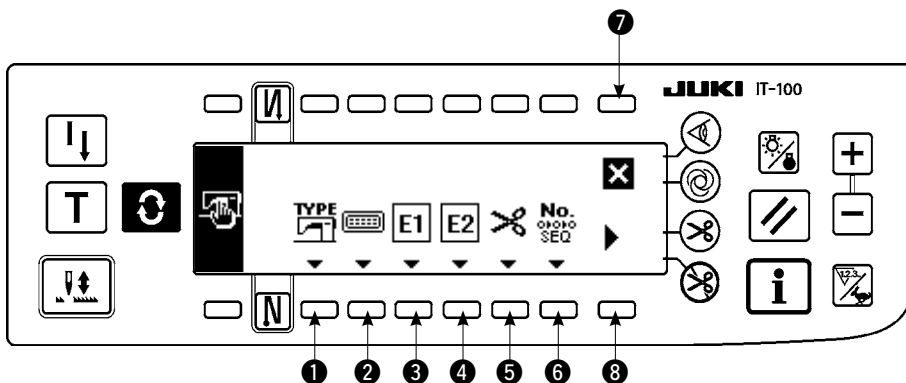


No.	Setting item	Description
①	USB thumb drive format confirmation screen display switch	Refer to the Engineer's Manual for details.
②	Memory switch setting	With this setting item, the contents of display related to the work management function and those called up by operating the switches can be set or changed. Refer to "IV. 2-2. Memory switch setting".
③	Network setting screen display switch	This switch is used to set or change the data related to the network function. Refer to "IV.2-3. Network setting".
④	Information screen No. 1 changeover switch	This switch is used to display the information screen No. 1.

Caution When you execute formatting of the USB thumb drive, all pieces of data stored on it are erased. Do not format the USB thumb drive in any case other than initialization of the medium.

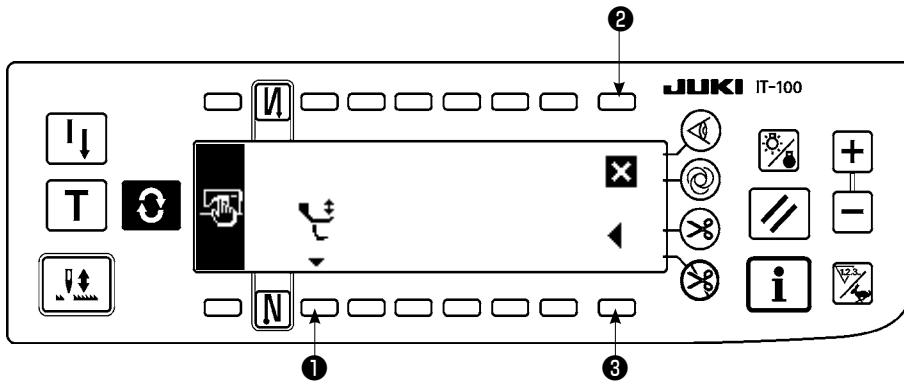
2-1. Sewing common data screen

■ Sewing common data screen No. 1 (maintenance personnel level)



- 1) Press the respective switches to display the corresponding function screens.
 - ① Machine head selection.....With this key, the type of the sewing machine head is set. Refer to "II.1-1. Machine head setting".
 - ② Optional input/output setting.....With this key, the optional input/output is set. Refer to "III.4-13. Optional input/output setting".
 - ③ Ancillary device 1 setting
 - ④ Ancillary device 2 setting
 - ⑤ Thread trimmer setting
 - ⑥ Simplified program editing
- 2) When you press ⑧, the sewing common data screen No. 2 is displayed. When you press ⑦, the screen is returned to the information screen (maintenance personnel level). When you press **i**, the screen is returned to the one displayed before the information mode is entered.

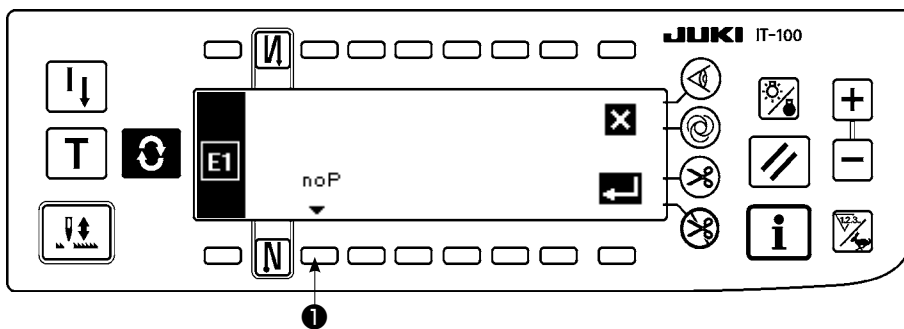
■ Sewing common data screen No. 2 (maintenance personnel level)



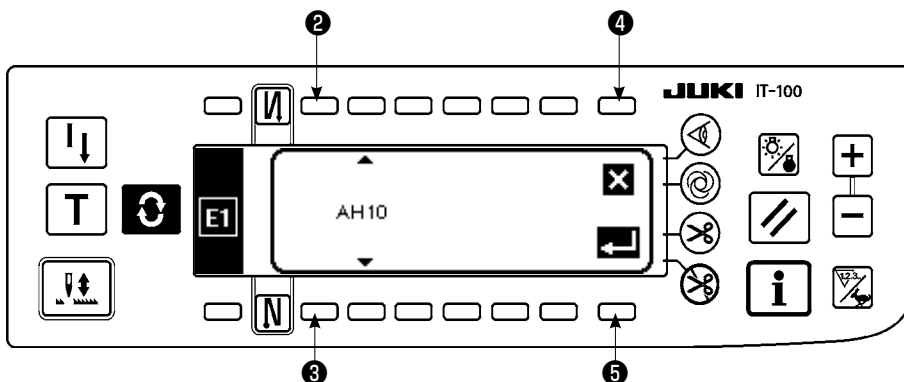
- 1) Press the respective switches to display the corresponding function screens.
 - ① Alternating vertical movement speed limitation function setting
- 2) When you press ③, the screen is changed over to the sewing common data screen No. 1. When you press ②, the screen is returned to the information screen (maintenance personnel level). When you press **i**, the screen is returned to the one displayed before the information mode is entered.

■ Ancillary device setting screen

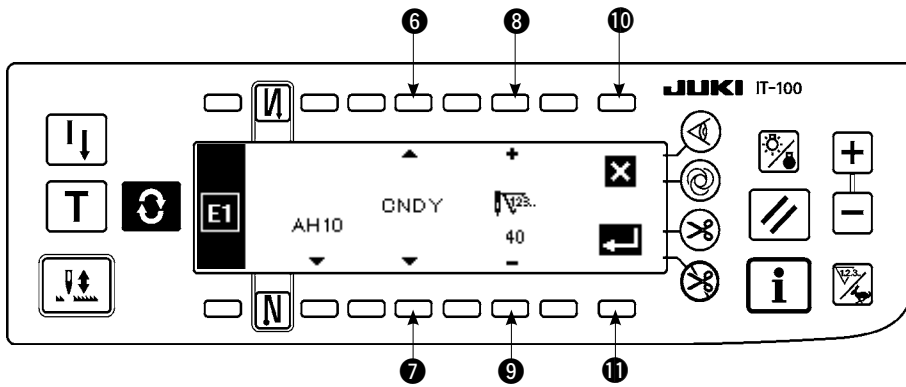
The ancillary devices 1 and 2 are totally same in terms of their functions and specifications. This means the devices are operated in the same way.



- 1) Press switch ① to display the screen on which the type of the ancillary device is selected.

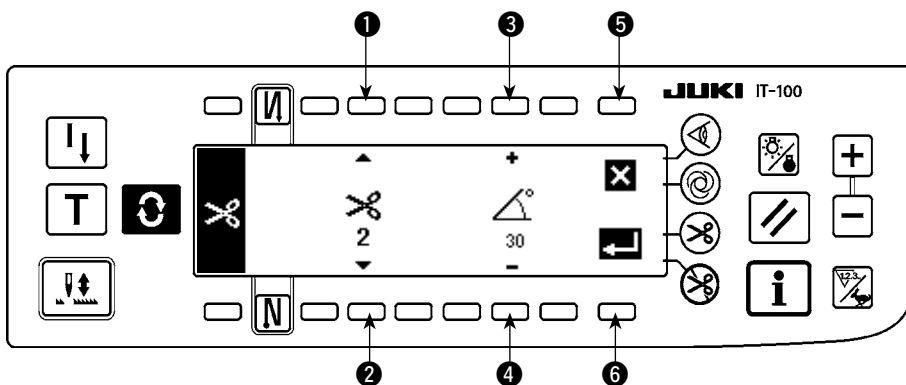


- 2) Press switch ② or ③ to select the type of the ancillary device.
- 3) Press switch ⑤ to confirm the selected device. When you press switch ④, the selected device is discarded and the ancillary device status is brought back to the unselected state.
- 4) To select AH10MF auto hemmer device as an example, the screen display is changed to the one shown below.



- 5) Press switch **6** or **7** to check the parameter functions (Nos. 1 to 3) and the parameter set values (displayed above switch **9**) related to the ancillary device "AH10" (MF auto hemmer device). The type of the parameter function and the parameter set value vary depending on the ancillary device to be selected.
- 6) To change the parameter set value, press switch **6** or **7** to display the parameter function and its set value you want to change. Press switch **8** or **9** to change the parameter set value.
- 7) After the completion of the changing procedure, press switch **11** to return the screen to the previous one. When you press switch **10**, the parameter set value is discarded and is returned to the value before it is changed.

■ Thread trimmer setting screen

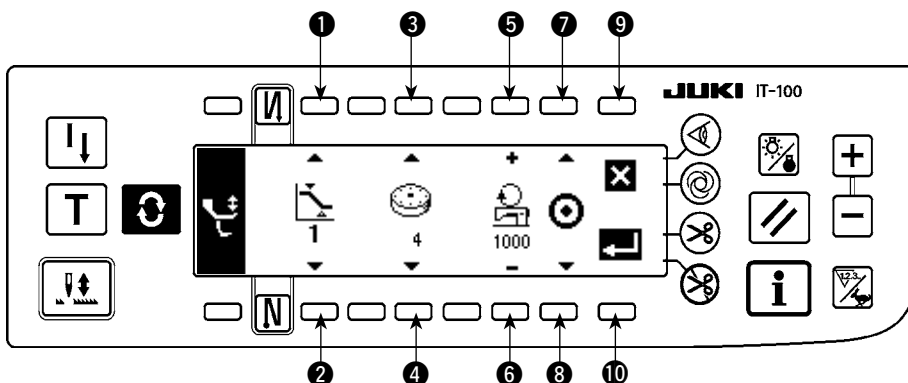


- 1) Fine adjustment of the thread trimming action can be carried out.
- 2) In the case of the thread trimmer of LU-151* series, for example, the following parameters can be adjusted.
 1: Instantaneous stop time of thread trimmer
 2: Thread trimmer OFF angle 3: Tension release ON angle
- 3) Select the parameter you want to adjust with switch **1** or **2**. Change the set value of the parameter by means of switch **3** or **4**.
- 4) After the completion of the changing procedure, press switch **6** to return the screen to the previous one. When you press switch **5**, the parameter set value is discarded and the parameter set value status is returned to the state before it is changed.

■ Alternating vertical movement speed limitation function setting screen

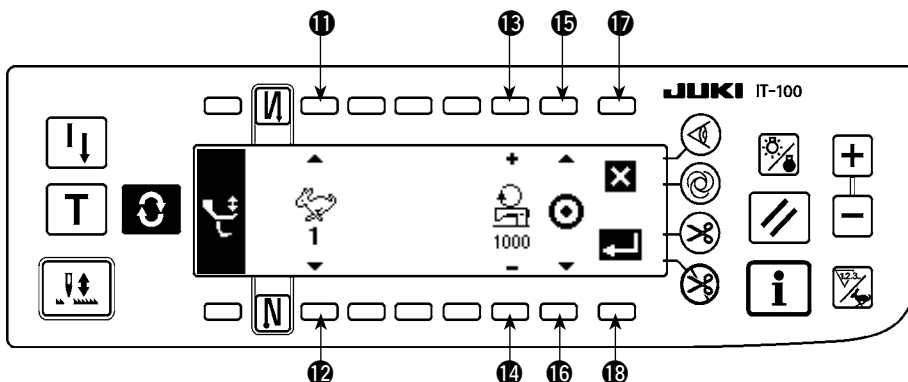
- 1) The maximum sewing speed needs to be changed depending on the amount of the alternating vertical movement of the walking foot and presser foot. (Refer to the Engineer's Manual for the SC-922 for details.) The setting screen differs with the machine head type.

Example of setting (for the LU-2200VR type machine head)



- 2) : Press switch **1** or **2** to select the set value 1 or 2 of the amount of alternating vertical movement. Set the dial value of the amount of the alternating vertical movement to be assigned using switch **3** or **4**. Specify the speed for the dial value using **5** or **6**.
- 3) When you press **7** or **8**, the status of the alternating vertical movement limitation you have set is changed over between ON and OFF. After the completion of the setting procedure, press **10** to return the screen to the previous one. When you press **9**, the parameter is discarded and the parameter status is returned to the state before it is changed.

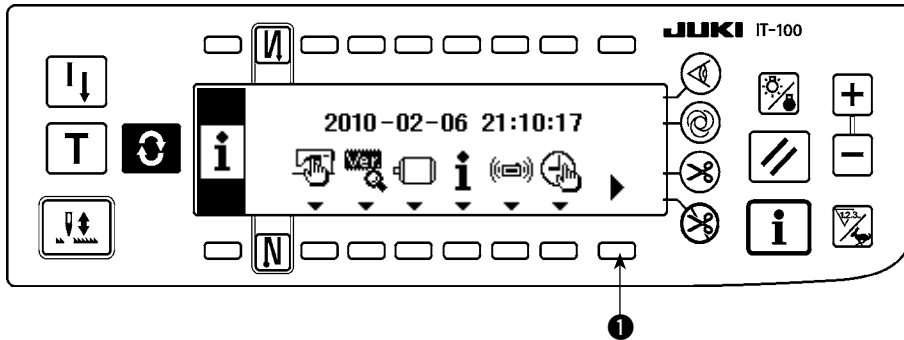
Example of setting (for the machine head other than the LU-2200VR type)



- 4) Press switch **11** or **12** to specify the speed set value to one from 1 through 4. Specify the speed you want to set by means of **13** or **14**.
- 5) When you press **15** or **16**, the status of the alternating vertical movement limitation you have set is changed over between ON and OFF. After the completion of the setting procedure, press **18** to return the screen to the previous one. When you press **17**, the parameter is discarded and the parameter status is returned to the state before it is changed.

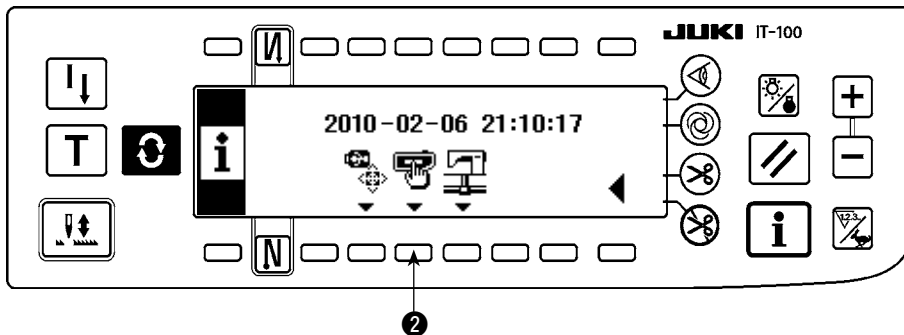
2-2. Memory switch setting

■ Information screen No. 1 (maintenance personnel level)



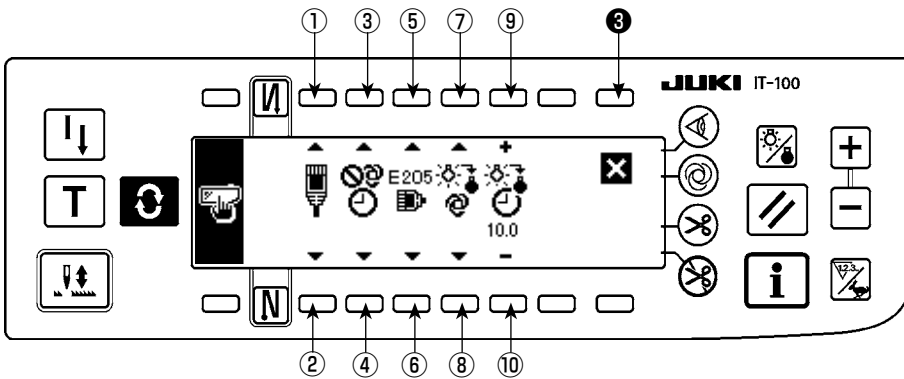
- 1) Turn the power ON.
- 2) Keep switch ① held pressed for a longer time until the information screen No. 2 is displayed.











■ Information screen No. 2 (maintenance personnel level)



- 3) Press switch ② to display the memory switch setting screen.

■Memory switch setting screen

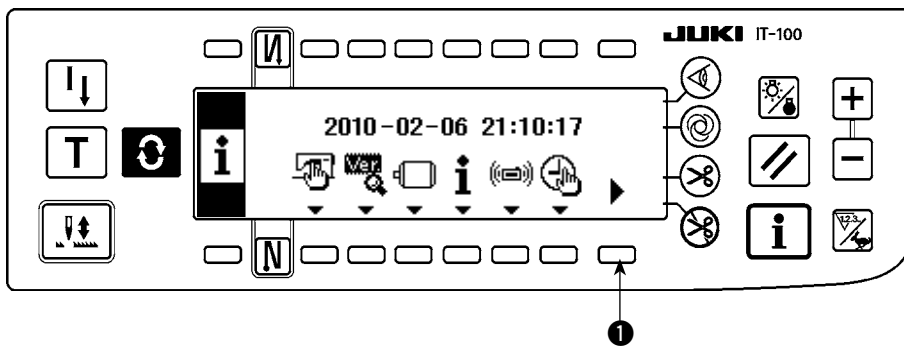


No.	Description	Initial value
①②	<p>Network offline setting Network connection validity/invalidity is selected.</p> <p> : Network connection is enabled.</p> <p> : Network connection is prohibited.</p>	
③④	<p>Clock correction function Clock correction validity/invalidity when there is network connection is set up.</p> <p> : Clock correction is not enabled.</p> <p> : The panel clock is corrected in reference to the host PC clock when there is network connection.</p>	
⑤⑥	<p>Remaining buffer for ISS measurement warning Warning (E205) is generated when the ISS measurement data capacity stored in the panel becomes small.</p> <p> : No warning is generated.</p> <p> : A warning (E205) is generated when the data capacity to output to the network is becoming small (if this warning is generated even when the system is connected to the network, there may be a problem in network connection).</p> <p> : A warning is generated when the data capacity to output to USB thumb drive is becoming small. Insert a USB memory in the panel and output data if this warning is generated.</p> <p>* It is strongly recommended to select the last one to gather data by means of the USB thumb drive instead of connecting the operation panel to the network.</p>	
⑦⑧	<p>Backlight off setting These keys are used to change over the backlight off setting.</p> <p> : The backlight is automatically turned off.</p> <p> : The backlight status is changed over between on/off by means of the backlight switch.</p>	
⑨⑩	<p>Backlight off time setting This item should be set in the case the backlight automatic-off is selected.</p> <p> : With this switch, the time to be elapsed until the backlight is automatically turned off is set. (Unit: Second)</p>	10.0

4) After the completion of the aforementioned setting, press switch ③ . Then, the screen is changed over to the information screen.

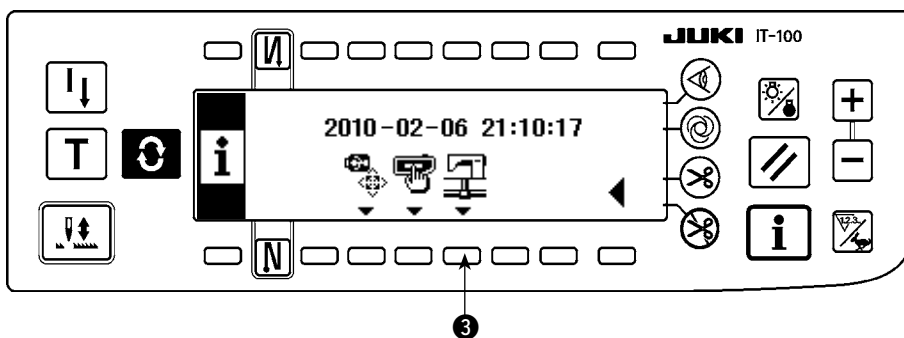
2-3. Network setting

Information screen No. 1 (maintenance personnel level)



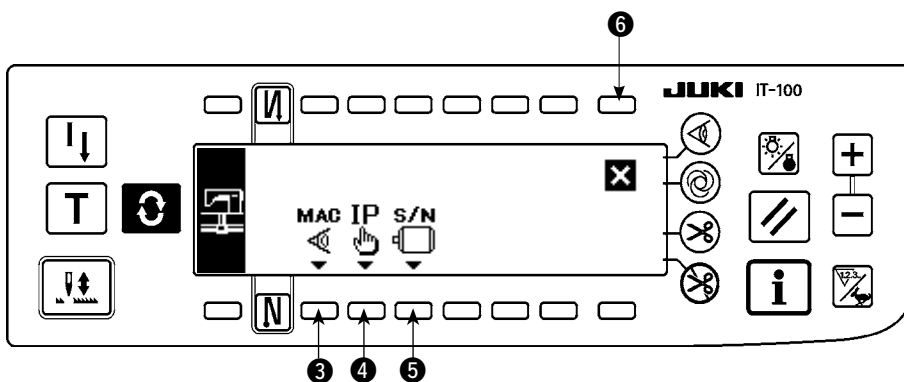
- 1) Turn the power ON.
- 2) Keep switch ① held pressed for a longer time until the information screen No. 2 is displayed.

Information screen No. 2 (maintenance personnel level)



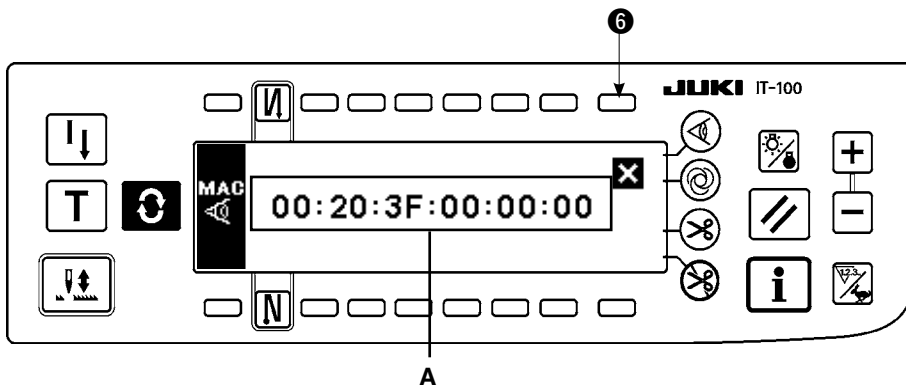
- 3) Press switch ③ to display the network setting screen.

Network setting screen



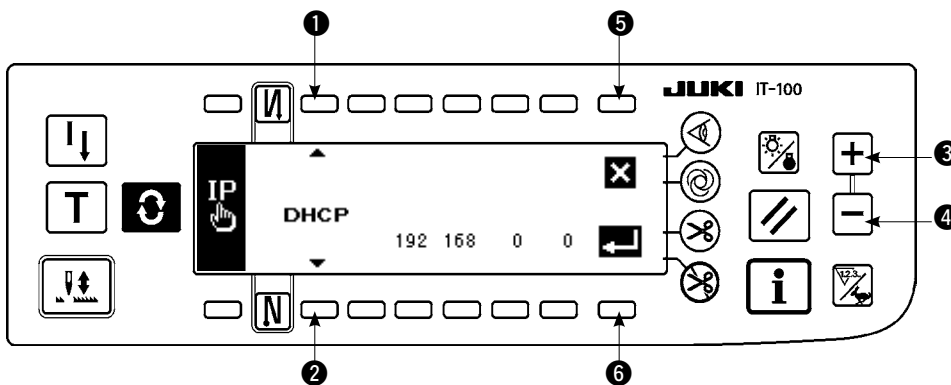
- 4) When you press switch ③, the MAC address confirmation screen is displayed.
- 5) When you press switch ④, the IP address confirmation screen is displayed.
- 6) When you press switch ⑤, the serial number confirmation screen is displayed.
- 7) After the completion of the aforementioned setting, press switch ⑥. Then, the screen is changed over to the information screen.

■ MAC address confirmation screen



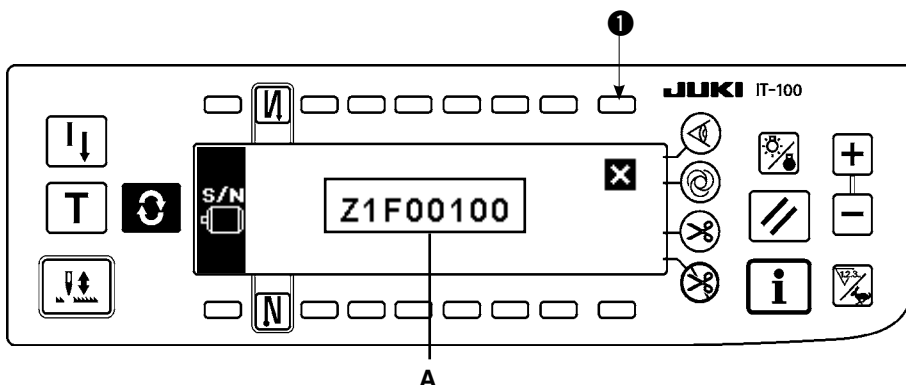
- 1) The MAC address is displayed in A. When you press switch 6, the network setting screen is displayed.

■ IP address confirmation screen



- 1) When you press switch 1 or 2, the IP address acquisition method is changed over as described below.
DHCP → AUTO → Direct input
- 2) In the case the IP address is directly input, the IP address can be set by pressing switch 3 or 4.
- 3) When you press switch 5, the network setting screen is displayed.
- 4) When you press switch 6, the input you have made is confirmed. If you have changed the data, the power OFF screen is displayed.
- 5) Turn the power off to finish the operation.

■ Serial number confirmation screen



- 1) The serial number of the motor is displayed in A. When you press switch 1, the network setting screen is displayed.

V . EXTERNAL INTERFACE

External interface means the section to connect the operation panel and the system which is different from the operation panel.

For the use and details, refer to the Engineer's Manual.

1) Media slot

Media slot is installed in the face cover located on the left side of operation panel.

2) Ethernet port

An Ethernet connector is provided inside the right side face cover of the operation panel.

3) RS-232C port

RS-232C connector is installed in the rubber cap located on the back side of operation panel.

4) General input port (Production support switch connecting connector)

General input connector, CN105 is installed in the cord outlet cover located on the back side of operation panel.

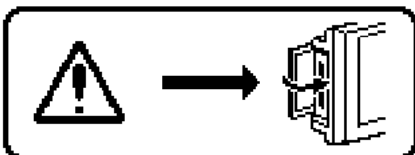
VI . ERROR

1. ERROR DISPLAY

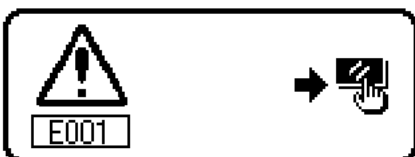


There are two different kinds of errors, those output from the operation panel and those from the SC-920 (control box). Both kinds of errors are notified by the error screen and the buzzer.

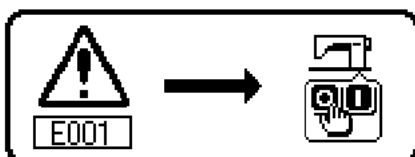
Three different kinds of screens of the panel display screen appear due to the difference of the procedures.



- 1) Error screen disappears when the operator removes the cause.
Example) Cover of the slot of media is open. Close the cover.



- 2) Press the reset switch, and remove the cause of error after erasing the error screen.



- 3) Remove the cause of error after turning OFF the power.

2. ERROR CODE LIST (ERROR DISPLAY IN PANEL)

There are the following error codes in this device. These error codes interlock (or limit function) and inform the problem so that the problem is not enlarged when any problem is discovered. When you request our service, please confirm the error codes.

No.	Description of error detected	Cause of occurrence expected	Items to be checked
–	Media cover open	• Cover of the slot of media is open.	• Close the cover.
E000	Execution of data initialization (This is not the error.)	• When the machine head is changed. • When the initialization operation is executed	
E003	Disconnection of synchronizer connector	• When position detection signal is not input from the sewing machine head synchronizer.	• Check the synchronizer connector (CN33) for loose connection and disconnection.
E004	Synchronizer lower position sensor failure	• When the synchronizer has broken.	• Check whether the synchronizer cord has broken since the cord is caught in the machine head. • Check the belt tension. • Check the setting of the machine head. • Check the setting of the motor pulley.
E005	Synchronizer upper position sensor failure	• Belt is loose. • Machine head is not proper. • Motor pulley is not proper.	
E007	Overload of motor	• When the machine head is locked. • When sewing extra-heavy material beyond the guarantee of the machine head. • When the motor does not run. • Motor or driver is broken.	• Check whether the thread has been entangled in the motor pulley. • Check the motor output connector (4P) for loose connection and disconnection. • Check whether there is any holdup when turning the motor by hand.
E011	Media is not inserted.	• Media is not inserted.	• Turn the power OFF and check the media.
E012	Read error	• Data of media cannot be read.	• Turn the power OFF and check the media.
E013	Write error	• Data of media cannot be written.	• Turn the power OFF and check the media.
E014	Write protect	• Media is in the state of writing prohibition.	• Turn the power OFF and check the media.
E015	Format error	• Formatting cannot be performed.	• Turn the power OFF and check the media.
E016	External media capacity over	• Capacity of media is short.	• Turn the power OFF and check the media.
E019	File size over	• File is too large.	• Turn the power OFF and check the media.
E032	File interchangeability error	• There is no interchangeability of file.	• Turn the power OFF and check the media.
E041	Sewing recorder error	• This error number is displayed in the event of a sewing recorder data fault.	• Reset switch
E044	Date and time error	• This error number is displayed in the event of operation/data fault concerning date or time of day.	• Reset switch
E053	Notification of production support function initialization (This is not an error)	• This error number is displayed after the execution of initialization of the production support function or upgrading of the program.	
E055	Production management error	• This error number is displayed in the event of production management work management data fault.	• Reset switch
E056	Work management error	• This error number is displayed in the event of data fault.	• Reset switch
E057	Pitch time monitor error	• This error number is displayed in the event of pitch time monitor data fault.	• Reset switch
E065	Network transmission failed	• This message is displayed in the case data cannot be sent to the personal computer by way of the network.	• Check whether the network has any fault.
E067	ID reading failed	• This message is displayed in the case data in the ID file is broken.	• Check whether the data has any fault.
E070	Slip of belt	• When the machine head is locked. • Belt is loose.	• Check whether there is any holdup when turning the motor by hand. • Check the belt tension.
E071	Disconnection of motor output connector	• Disconnection of motor connector	• Check the motor output connector for loose connection and disconnection.
E072	Overload of motor at the time of thread trimming motion	• Same as E007	• Same as E007
E204	USB insertion	• This message is displayed in the case the sewing machine is activated with the USB thumb drive inserted.	• Remove the USB thumb drive.
E205	Warning of ISS buffer remaining amount	• This message is displayed in the case the buffer storage for storing the ISS data is almost full. If the sewing machine is continuously used with the buffer storage full, the stored pieces of data will be erased from the earliest one.	• Output the data.

No.	Description of error detected	Cause of occurrence expected	Items to be checked
E220	Grease-up warning	<ul style="list-style-type: none"> When the predetermined number of stitches has been reached. 	<ul style="list-style-type: none"> Replenish the specified places with grease and reset. (For the details, refer to the data of the machine head.)
E221	Grease-up error	<ul style="list-style-type: none"> When the predetermined number of stitches has been reached and the sewing is not possible. 	<ul style="list-style-type: none"> Replenish the specified places with grease and reset. (For the details, refer to the data of the machine head.)
E302	Fall detection switch failure (When the safety switch works)	<ul style="list-style-type: none"> When fall detection switch is input in the state that the power is turned ON. 	<ul style="list-style-type: none"> Check whether the machine head is tilted without turning OFF the power switch (sewing machine operation is prohibited for safety sake). Check whether the fall detection switch cord is caught in the sewing machine or the like. Check whether the fall detection switch lever is caught in something. Check whether the contact of the tilt detection switch lever with the machine table is inadequate. (The table has a dent or the mounting location of the bed strut is too far)
E303	Semicircular plate sensor error	<ul style="list-style-type: none"> Semicircular plate sensor signal cannot be detected. 	<ul style="list-style-type: none"> Check whether the machine head corresponds with the machine type setting. Check whether the motor encoder connector is disconnected.
E703	Operation panel is connected to the unexpected sewing machine. (Error of sewing machine model)	<ul style="list-style-type: none"> The operation panel and the sewing machine model do not match in the initial communication. 	<ul style="list-style-type: none"> Connect the operation panel to the correct model of the sewing machine.
E704	System version mismatch	<ul style="list-style-type: none"> The system version is different from the correct one in the initial communication. 	<ul style="list-style-type: none"> Re-write the system version to the one that can be used with the operation panel.
E730	Encoder failure	<ul style="list-style-type: none"> When the motor signal is not properly inputted. 	<ul style="list-style-type: none"> Check the motor signal connector (CN39) for loose connection and disconnection. Check whether the motor signal cord has broken since the cord is caught in the machine head. Check whether the inserting direction of the motor encoder connector is wrong.
E731	Motor hole sensor failure		
E733	Inverse rotation of motor	<ul style="list-style-type: none"> This error occurs when the motor is running at 500 sti/min or more in the opposite direction of that of rotation indication during motor is running. 	<ul style="list-style-type: none"> Connection of the encoder of main shaft motor is wrong. Connection for the electric power of main shaft motor is wrong.
E808	Solenoid short circuit	<ul style="list-style-type: none"> Solenoid power does not become normal voltage. 	<ul style="list-style-type: none"> Check whether the machine head cord is caught in the pulley cover or the like.
E809	Holding motion failure	<ul style="list-style-type: none"> Solenoid is not changed over to holding motion. 	<ul style="list-style-type: none"> Check whether the solenoid is abnormally heated. (CTL circuit board asm. Circuit is broken).
E810	Solenoid current abnormality	<ul style="list-style-type: none"> Solenoid rare short-circuit. 	<ul style="list-style-type: none"> Solenoid resistance
E811	Abnormal voltage	<ul style="list-style-type: none"> When voltage higher than guaranteed one is inputted. 200V has been inputted to SC-920 of 100V specifications. JA : 220V is applied to 120V box. CE : 400V is applied to 230V box. 	<ul style="list-style-type: none"> Check whether the applied power voltage is higher than the rated voltage + (plus) 10% or more. Check whether 100V/200V changeover connector is improperly set. In the aforementioned cases, POWER p.c.b is broken.
		<ul style="list-style-type: none"> When voltage lower than guaranteed one is inputted. 100V has been inputted to SC-920 of 200V specifications. JA : 120V is applied to 220V box Inner circuit is broken by the applied overvoltage 	<ul style="list-style-type: none"> Check whether the voltage is lower than the rated voltage - (minus) 10% or less. Check whether 100V/200V changeover connector is improperly set. Check whether fuse or regenerative resistance is broken.
E906	Operation panel transmission failure	<ul style="list-style-type: none"> Disconnection of operation panel cord Operation panel has broken. 	<ul style="list-style-type: none"> Check the operation panel connector (CN38) for loose connection and disconnection. Check whether the operation panel cord has broken since the cord is caught in the machine head.
E924	Motor driver failure	<ul style="list-style-type: none"> Motor driver has broken. 	
E942	Faulty EEP-ROM	<ul style="list-style-type: none"> Data cannot be written on the EEP-ROM. 	<ul style="list-style-type: none"> Turn the power OFF.