

ENGLISH

**AB-1360
INSTRUCTION MANUAL**

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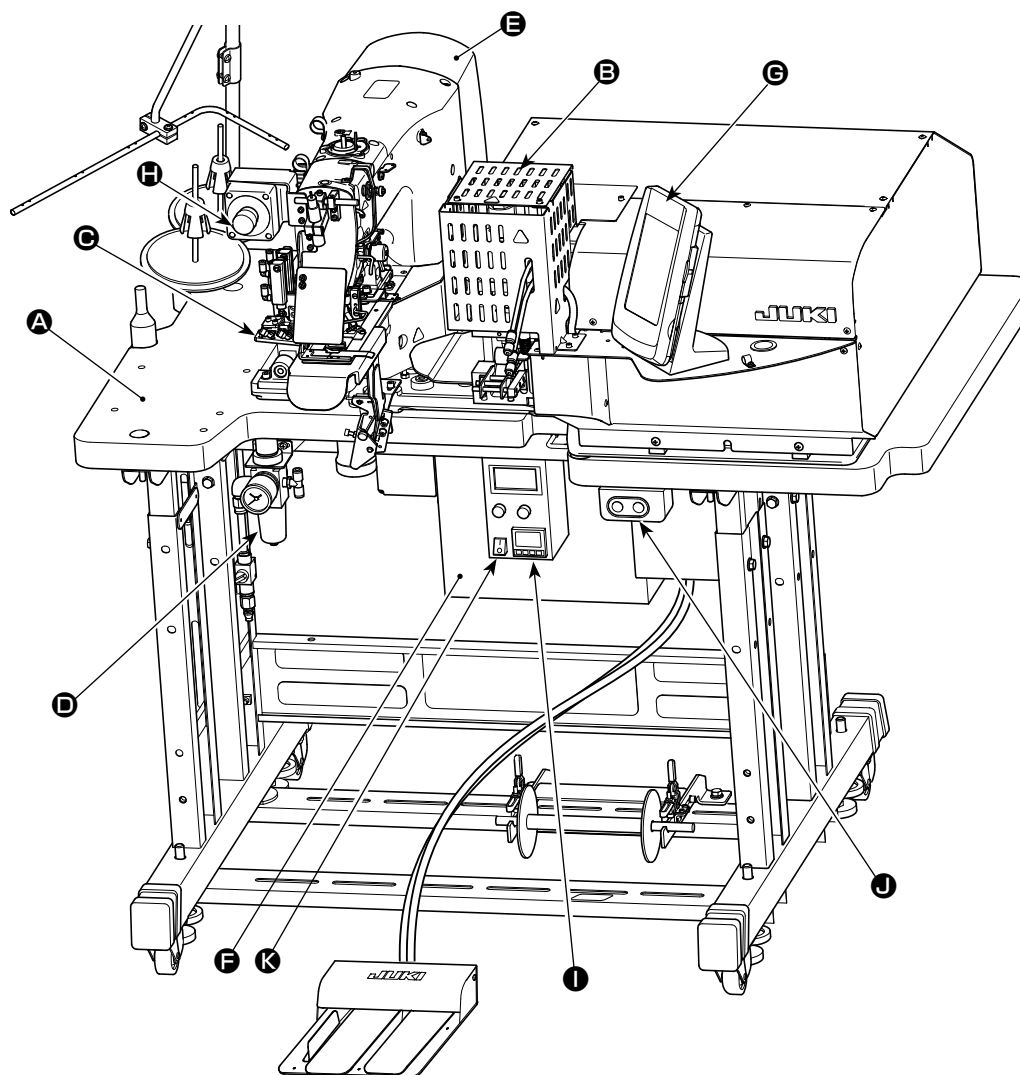
I. MACHINE (ABOUT THE SEWING MACHINE)

Precautions for use

Following items have to be checked every working day before the operation of the machine and before the start of work hours.

- 1. Ascertain that the oil pan is filled with the predetermined amount of oil.**
- 2. Never operate the machine unless the oil pan has been filled up with oil.**
- 3. Ascertain that the pressure gauge indicates the designated air pressure of 0.5 MPa.**
* (This is necessary particularly when the compressor is stopped for a lunch break or the like.)
If the compressed air pressure is equal to or less than the designated value, troubles such as interference between the parts can occur. It is therefore necessary to carefully check the compressed air pressure.
- 4. Check whether the needle thread/bobbin thread need to be replenished.**
- 5. To perform sewing immediately after turning ON the power switch, perform trial stitching first, then proceed with sewing of actual products after the test sewing.**
- 6. In the case drainage water accumulates in the regulator section, expel it from there before starting work.**
- 7. Be sure to turn ON the power to the sewing machine after returning the loop clamp (loop feeder unit) inside the unit cover.**
* Be aware that the loop clamp interferes with the unit when the ready key is pressed while the loop clamp rests on the sewing machine side after the power to the machine is turned ON

1. Configuration



This machine consists of the following eleven sections.

The machine is able to automatically sew desired shoelace loop only by operating the start switch after having placed a material (garment body) at the predetermined position on the machine.

When you press emergency stop switch **H**, the power to the devices are turned OFF to stop them.

- A** Mechanical section of the main body structure (table stand, table, covers, start switch, etc.)
- B** Loop feeder unit (loop feeding device, loop drawing device, heat cutter)
- C** Loop tension releasing unit
- D** Pneumatic control equipment section (pneumatic equipment, pneumatic piping, etc.)
- E** Sewing machine section
- F** Control device
- G** Operation panel
- H** Emergency stop switch
- I** Heat cutter controller
- J** Power switch
- K** Heat cutter controller power switch

Heat the heat cutter to enable its operation, it is necessary to turn ON the heat cutter controller power switch **K**.


The power switch of the heat cutter is independent from the sewing machine power switch. It is therefore necessary to turn OFF not only the heat cutter controller power switch but also sewing machine power switch **J** when the sewing machine is not used.

In addition, it should be remembered that the heat cutter requires a certain period of time until it becomes sufficiently hot for use after turning ON the power switch. To ensure that the heat cutter is operable whenever necessary, be sure to turn ON heat cutter controller power switch **K** in prior and check that the heat cutter temperature is sufficiently high. (For the adjustment of temperature, refer to "1.5-8. Adjusting the heat cutter temperature" p.20.)



2. Specifications

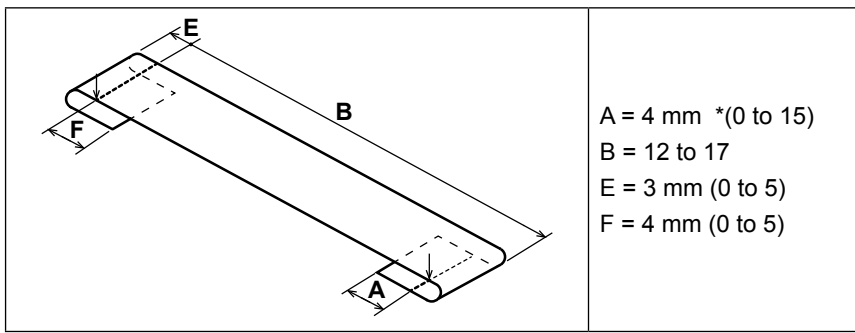
2-1. Mechanical specifications

1	Sewing machine in use	LK-1962/AB H (exclusive intermediate machine head AB-1360 based on LK-1900A SS)
2	Sewing speed	Max. 2,500 sti/min (adjustable range: 400 to 2,500 sti/min) The stitching pitch has to be set at 3.2 mm or less. (Stitching pitch is input in increments of 100 sti/min.)
3	Loop shape	
4	Shoelace loop width	6 to 12 mm
5	Standard sewing pattern	* Linear bartacking (exclusive pattern for AB-1360) Pattern number selection method (from among 16-stitch) is adopted. The widthwise pattern size is input on the operation panel. The lengthwise pattern size is restricted to the 0 mm, and the widthwise one is restricted to the range from 7.6 to 15 mm. (The lengthwise pattern size is input in increments of 0.1 mm.)
6	Lift of the work clamp foot of sewing machine	The distance from the top surface of the throat plate to the undersurface of the work clamp foot is 20 mm.
7	Needle bar stroke	45.7 mm (for 1903A)
8	Needle	ORGAN needle DP×17 #18 (Standard)
9	Hook in use	Semi-rotary standard hook (x1.0)
10	Thread	Filament #40
11	Safety feature	The machine automatically stops in the case a loop clamping fault or thread breakage is detected.
12	Lubrication oil	JUKI New Defrix Oil No.2
13	Air pressure used	0.5 MPa
14	Air consumption	10 dm ³ (ANR)/min or less
15	Dimensions	W: 1,200 mm L: 850 mm H: 1,210 mm
16	Weight	205.5 kg
17	Noise	Declaration - Equivalent continuous emission sound pressure level (LpA) at the workstation : A-weighted value of 82.0 dB; (Includes KpA = 2.5 dB); according to ISO 10821 - C.6.3 -ISO 112112 04 GR2 at 2,500 sti/min for the sewing cycle, 5.5s ON. (Pattern: No.4, 21 Stitches, Max Speed) - Sound power level (LWA) ; A-weighted value of 85.0 dB; (Includes KWA = 2.5 dB); according to ISO 10821 - C.6.3 -ISO 3744 GR2 at 2,500 sti/min for the sewing cycle, 5.5s ON. (Pattern: No.4, 21 Stitches, Max Speed)
18	Laser marking	Class 2 laser product Maximum output: 1.0 mW Wave length: 650 nm Safety standard JIS C 6802:2005 IEC60825-1+A2:2007

2-2. Electrical specifications

1	Number of patterns that can be stored in memory	99 patterns can be set.
2	Number of cycles that can be stored in memory	Number of programs: 20 For each program, as many as 30 loops can be set.
3	Input power source	Single-phase 220 – 240 VAC, 50/60Hz Supply voltage fluctuation: Rated voltage \pm 10 % or less
4	Power consumption	Single-phase, 220 V type: 420 VA (instantaneous maximum power consumption: 655 VA) * Average power when the machine sews 2,100 loops in eight hours.

2-3. Shoelace specifications



The dimensions of the shoelace loop sewing shape displayed on the operation panel are only for reference. The dimensions vary according to the shoelace loop material. Be sure to adjust the settings of shoelace loop dimensions so that your desired finished dimensions are achieved.

* Numerical values shown in parentheses are set values. They are not the finished dimensions.

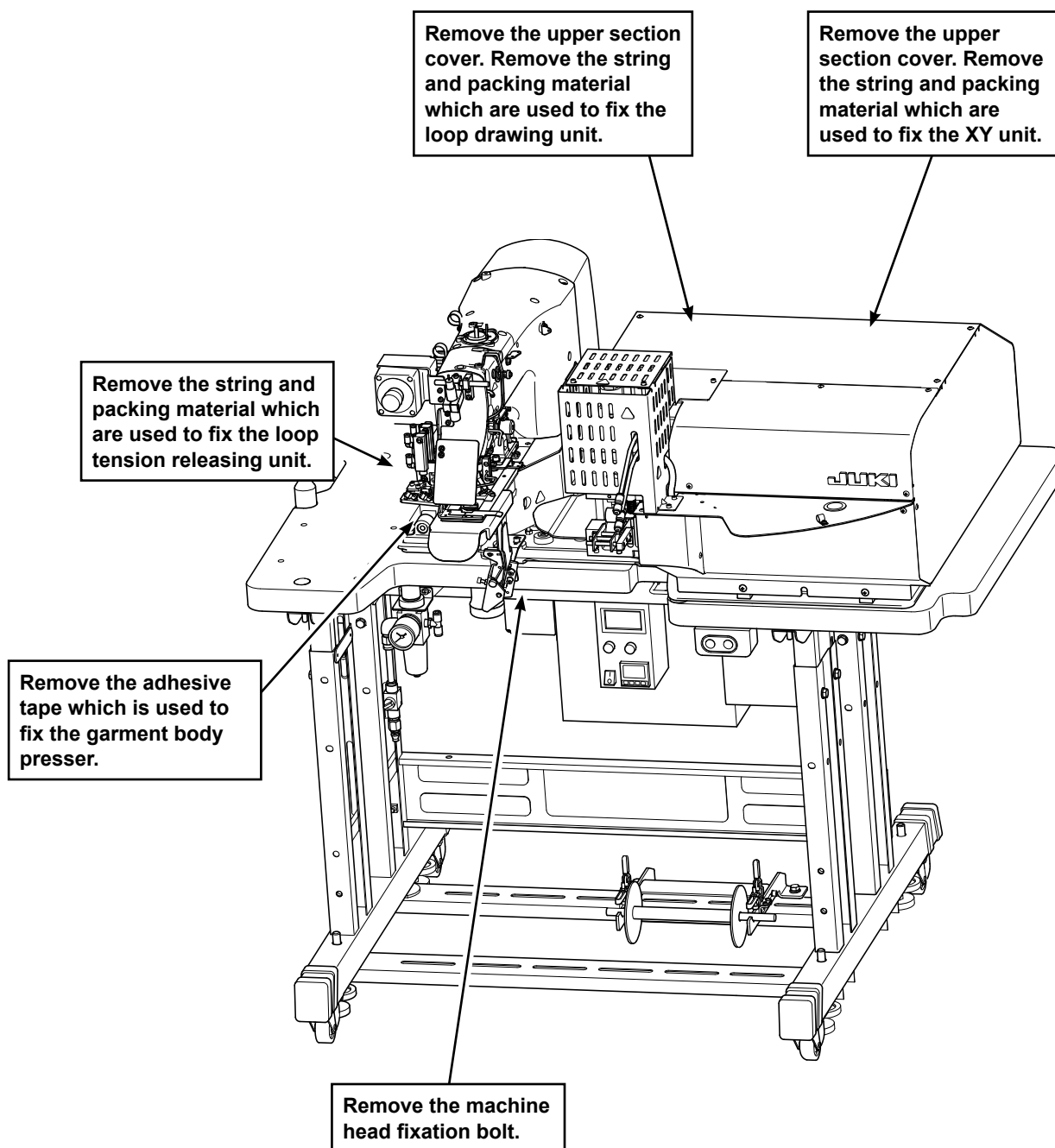
3. Installation

3-1. Removing the packing materials



CAUTION :

1. If you lift the machine, do not hold any of the devices or the mechanical section of the sewing machine but hold the table.
2. When you move the machine, the machine head fixation bolt must be attached to the machine. Be sure to carefully keep the machine head fixation bolt.

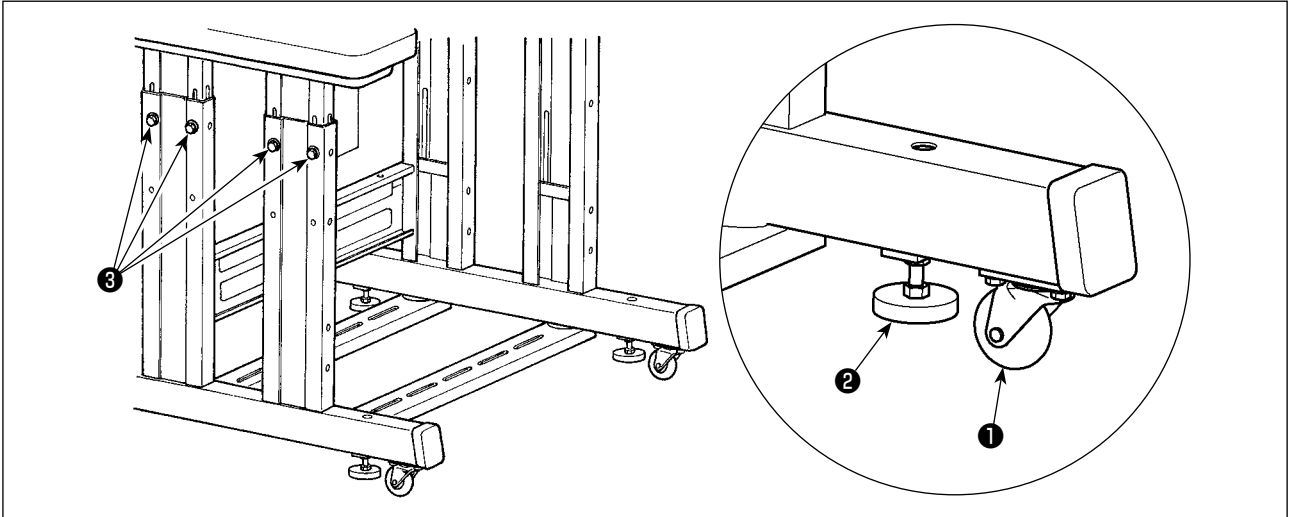


3-2. Fixing the machine

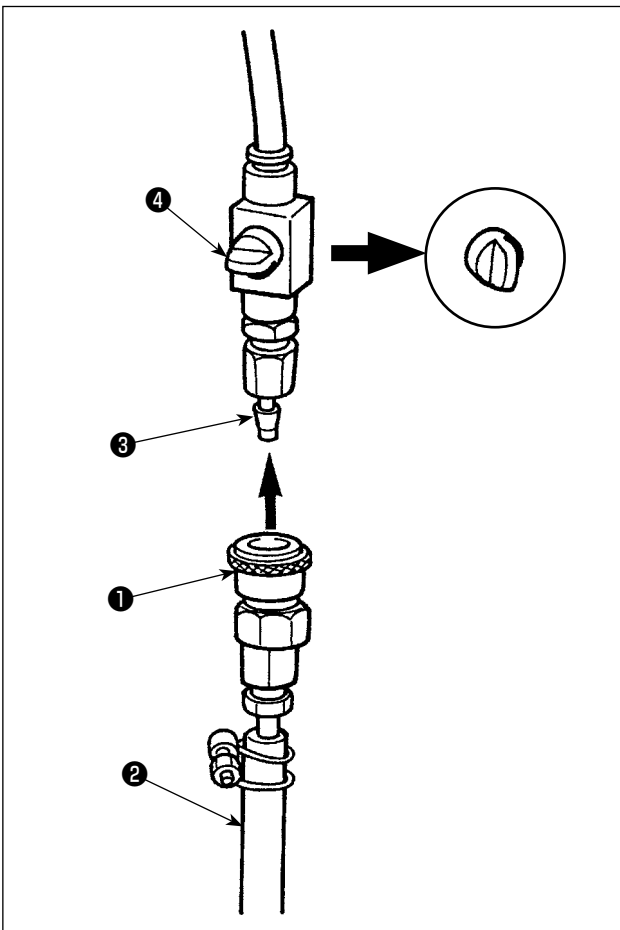
CAUTION :



1. In order to protect against accidents causing personal injury or death, move the machine to a level and stable place and secure it by lowering adjuster bolts ② (at four locations) placed at the side of casters ①.
2. When adjusting the leg height of the sewing machine, the leg fixing bolts ③ need to be loosened to move the leg up or down. When the fixing bolts have been loosened, there is a danger for the legs to suddenly drop down. Therefore, be careful when loosening the bolts.



3-3. Connecting the air coupler



Connect air coupler ① supplied with the unit as an accessory to air hose ②. Then, connect the air coupler to coupler ③ on the main body side.



1. After having connected coupler ① with air cock ④ closed, carefully open air cock ④ to supply air.
2. Check to be sure that the pressure gauge of the regulator indicates 0.5 MPa.

3-4. Connecting the power plug



CAUTION :

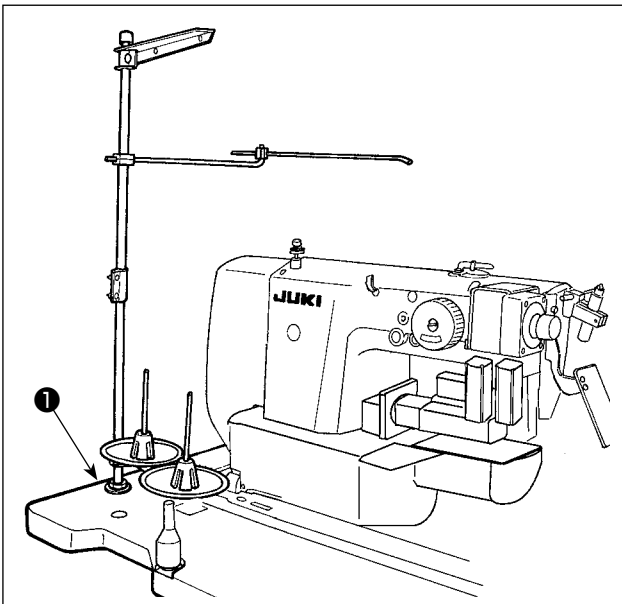
In order to protect against accidents caused by a ground fault or dielectric voltage, be sure to have the adequate power plug mounted by a person who has electrical expertise. It is also important to connect the power plug to the grounded receptacle.

The method to connect the product to the power source differs by the product specifications. Be sure to connect the product to the power source according to the power specifications.

① For the single-phase, 220 - 240 V type product

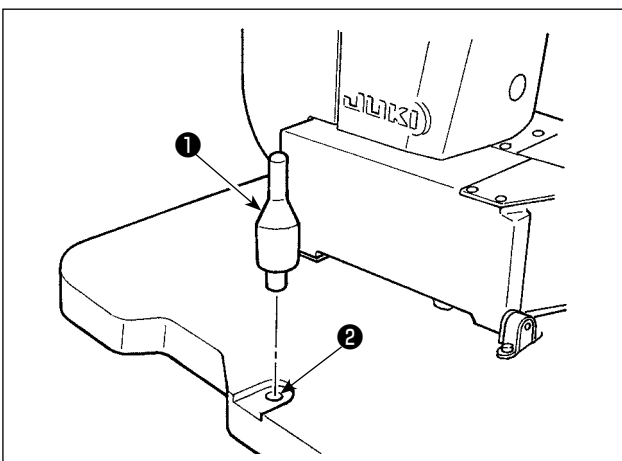
Connect the sky-blue/brown wire of the power cord to the supply terminal (220 - 240 VAC) and the yellow/green one to the earth terminal respectively.

3-5. Assembling the thread stand and installing on the machine



Insert the thread stand in the hole in table ❶ and fix by fastening a washer and a nut placed on the top and underside of table.

3-6. Installing the machine head support bar



Securely mount machine head support bar included in the accessories supplied with the unit.

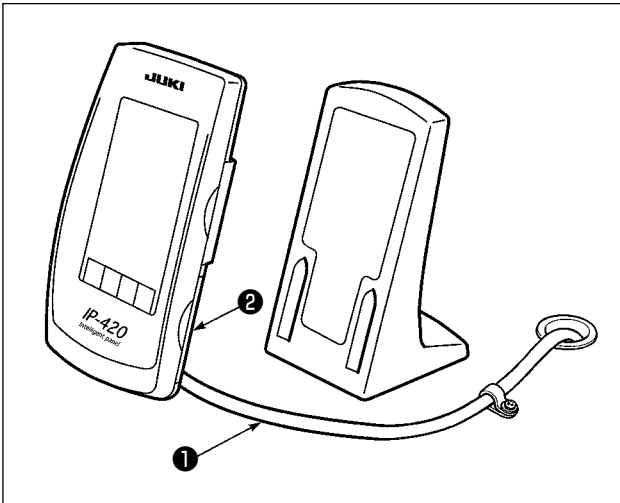
Drive machine head support bar ❶ in hole ❷ in the machine table.



When tilting the sewing machine, tilt the sewing machine slowly so that no excessive force will be applied to the head support bar.

And when returning the sewing machine back to its original position, be careful not to have your hand get caught between the base and the sewing machine bed.

3-7. Installing the operation panel IP-420

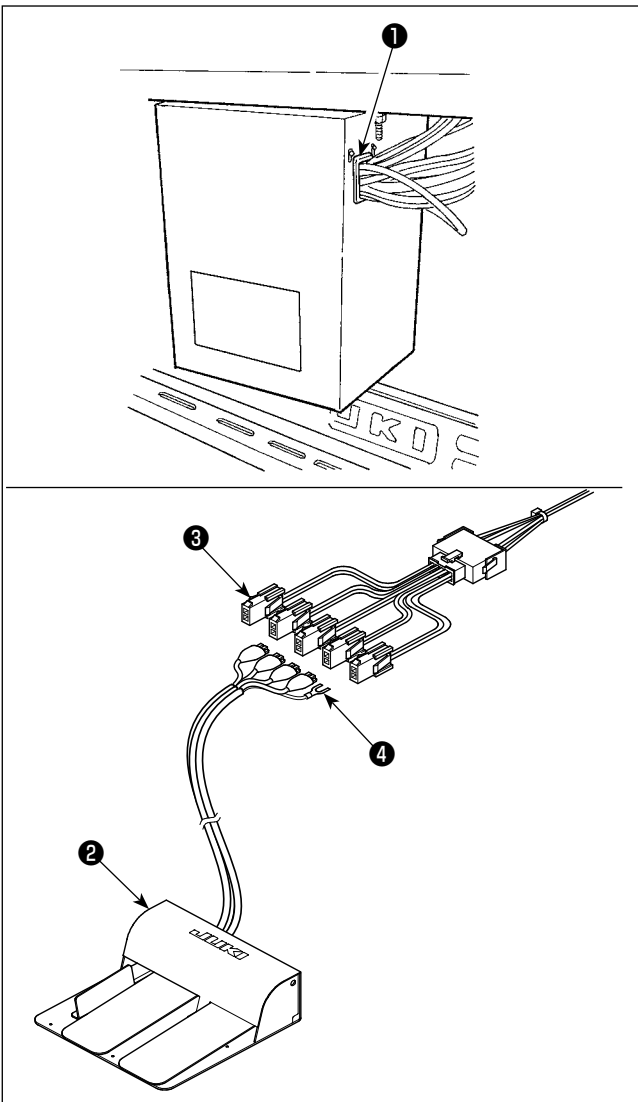


Open the cover on right side face ② section of the IP-420 and connect the connector of cable ① which is secured with adhesive tape on the upper right face of the table to the IP-420.

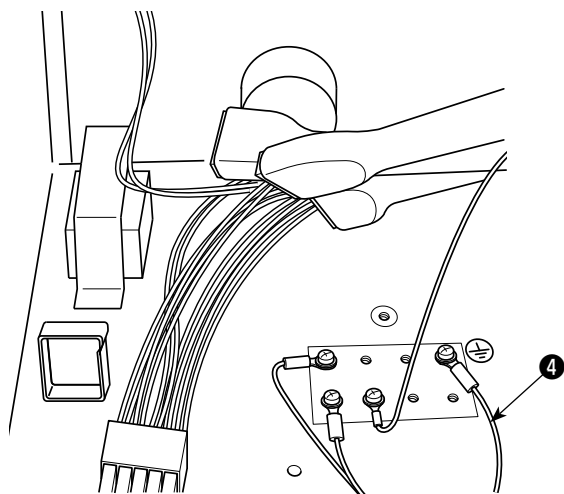


To protect the operation panel IP-420 from malfunctioning due to static electricity, mount the operation panel on the operation panel base.

3-8. Installing the 3-pedal unit

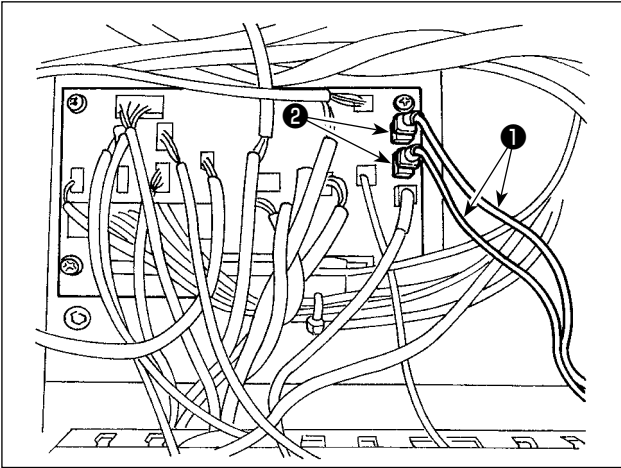


- 1) Remove cord retaining plate (17845009) ① which is attached to the wiring draw-out opening of the control box.
- 2) Pass the cable of 3-pedal unit (GPK470010AB) ② into the inside of the control box through wiring draw-out opening.
- 3) Connect the connectors CN1 and CN2 of 3-pedal unit ② to the connectors CN2 and CN5 of junction cable (40033875) ③ in the written order.
- 4) Fix earth cable ④ of the 3-pedal unit to the inner bottom of the control box.
- 5) Attach cord retaining plate ① to the wiring draw-out opening of the control box.



If the cable of 3-pedal unit ④ is wrongly connected to junction cable ③, the pedal will fail to operate though the machine will not fail. It is necessary to connect the cables as indicated. In addition, do not connect two remaining connectors other than connectors CN1 and CN2 of 3-pedal unit ②.

3-9. Installing the additional marking light (optional)



Insert exclusive junction cable ❶ into connector CN85 ❷ of the junction board located behind the main body.

(There are three CN85 connectors including the one used as standard. You may insert the junction cable any of the three connectors.)

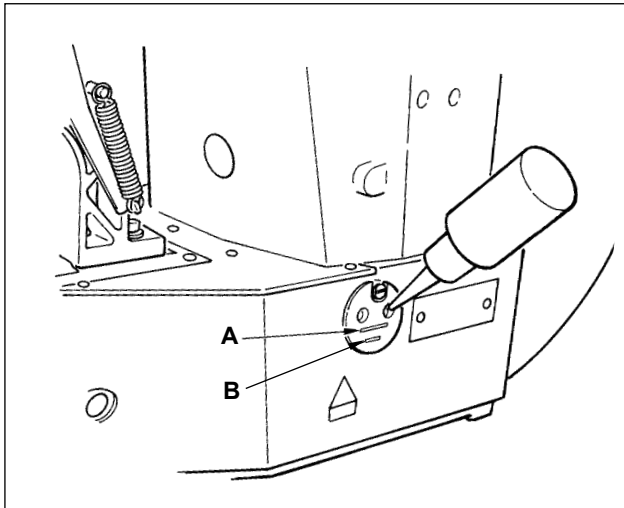
4. Preparation of the sewing machine

4-1. Lubrication



CAUTION :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Check that the place between lower line **B** and upper line **A** is filled with oil. Fill there with oil using the oiler supplied with the machine as accessories when oil is short.

* The oil tank which is filled with oil is only for lubricating to the hook portion.

It is possible to reduce the oil amount when the sewing speed used is low and the oil amount in the hook portion is excessive. (Refer to **"III.1-10. Amount of oil supplied to the hook" p.112.**)

1. Do not lubricate to the places other than the oil tank and the hook of Caution 2 below. Trouble of components will be caused.



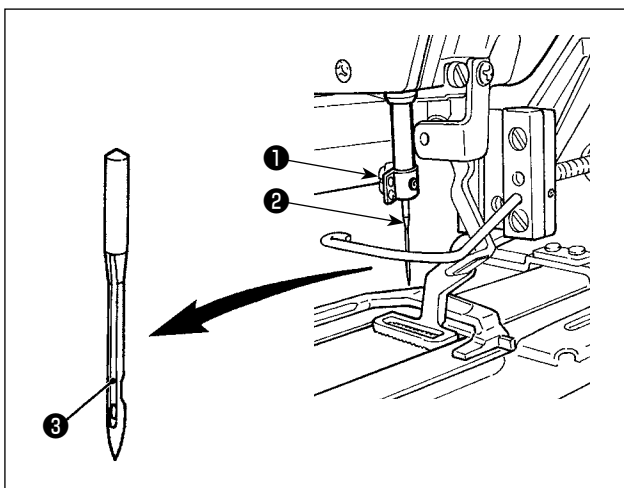
2. When using the sewing machine for the first time or after an extended period of disuse, use the machine after lubricating a small amount of oil to the hook portion. (Refer to **"III.1-3. Adjusting the needle-to-shuttle relation" p.109.**)

4-2. Attaching the needle



CAUTION :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



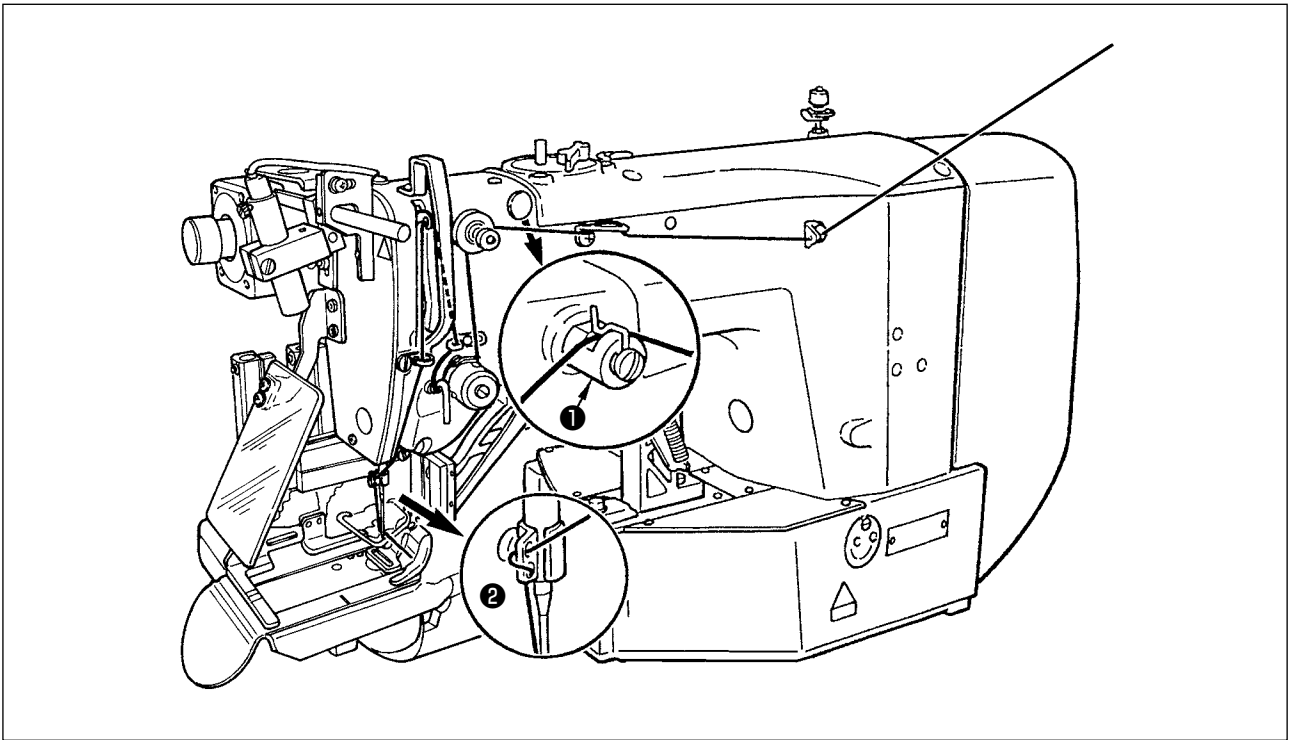
Loosen setscrew **1** and hold needle **2** with the long groove facing **3** toward you. Then fully insert it into the hole in the needle bar, and tighten setscrew **1**.

4-3. Threading the machine head



CAUTION :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Draw the thread after having threaded the needle so that approximately 4 cm thread trails from the needle eyelet.



1. When you use silicon oil, pass the thread through silicon-thread thread guide ①. (Silicon-thread thread guide is an optional part.)

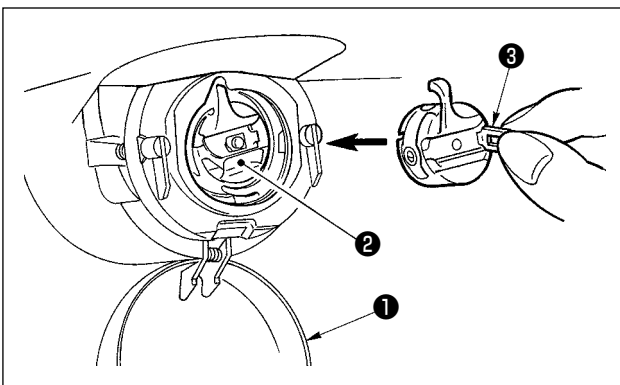
2. Wind thread on needle clamp thread guide ② to form an S-shape as shown in the figure given above in order to ensure stable sewing and thread trimming.

4-4. Installing and removing the bobbin case



CAUTION :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



1) Open hook cover ①.

2) Raise latch ③ of bobbin case ②, and remove the bobbin case.

3) When installing the bobbin case, fully insert it into the hook shaft, and close the latch.



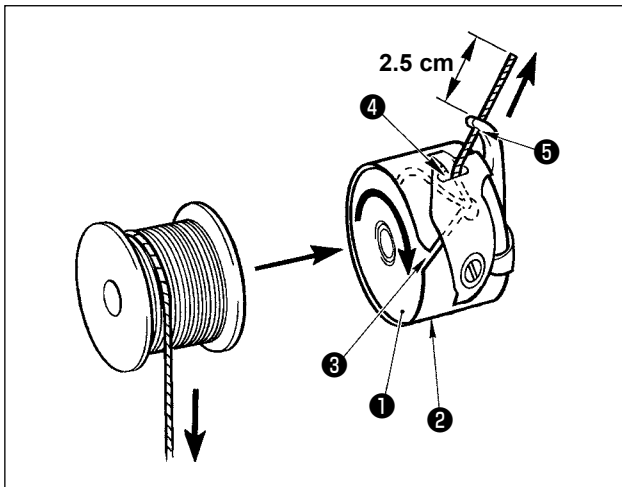
If it is not fully inserted, bobbin case ② may slip off during sewing.

4-5. Installing the bobbin



CAUTION :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

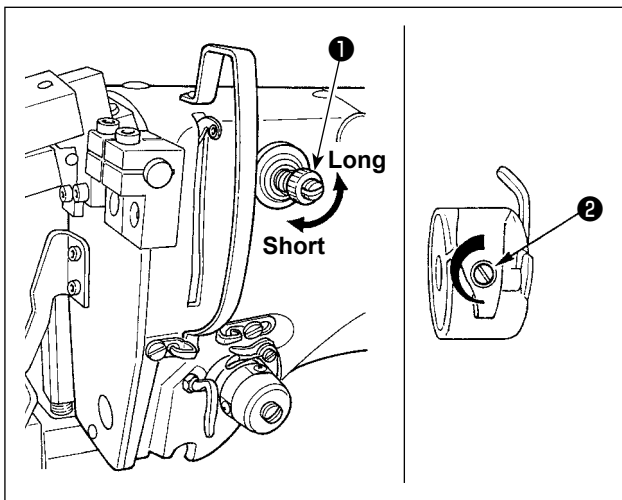


- 1) Set the bobbin ① into bobbin case ② in the direction shown in the figure.
- 2) Pass the thread through thread slit ③ of bobbin case ②, and pull the thread as it is. By so doing, the thread will pass under the tension spring and be pulled out from thread hole ④.
- 3) Pass the thread through thread hole ⑤ of the horn section, and pull out the thread by 2.5 cm from the thread hole.



If the bobbin is installed in the bobbin case orienting the reverse direction, the bobbin thread pulling out will result in an inconsistent state.

4-6. Adjusting the thread tension

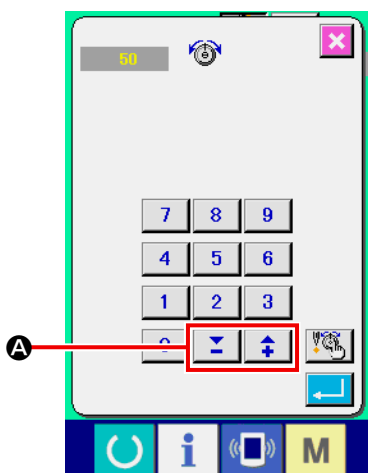


If thread tension controller No. 1 ① is turned clockwise, the length of remaining thread on the needle after thread trimming will be shorter. If it is turned counterclockwise, the length will be longer. Shorten the length to an extent that the thread is not slipped off.

(The standard length of thread remaining on the needle is approximately 4 cm.)

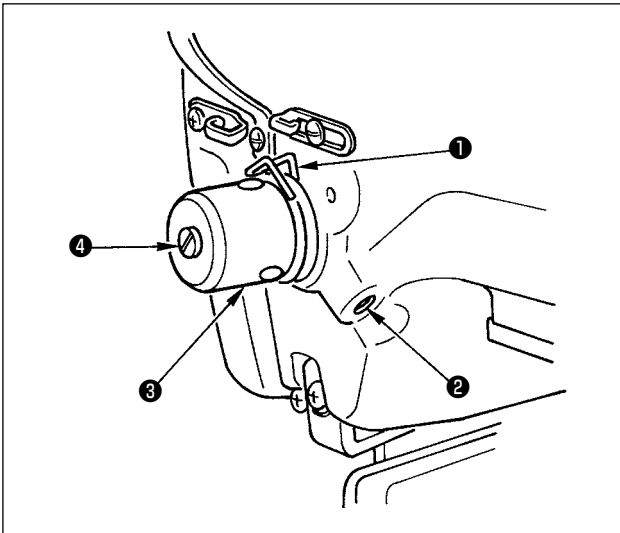
The needle thread tension is adjustable on the operation panel. The bobbin thread tension is adjustable by means of ②.

Adjusting the needle thread tension



The needle thread tension to be applied to the bartacking sections can be set by means of thread tension setting button ① on the operation panel.

4-7. Adjusting the thread take-up spring



The standard stroke of thread take-up spring ❶ is 10 to 11 mm, and the pressure at the start is 0.5 to 0.6 N.

1) Adjusting the stroke

Loosen setscrew ❷, and turn thread tension asm.

❸.

Turning it clockwise will increase the moving amount and the thread drawing amount will increase.

2) Adjusting the pressure

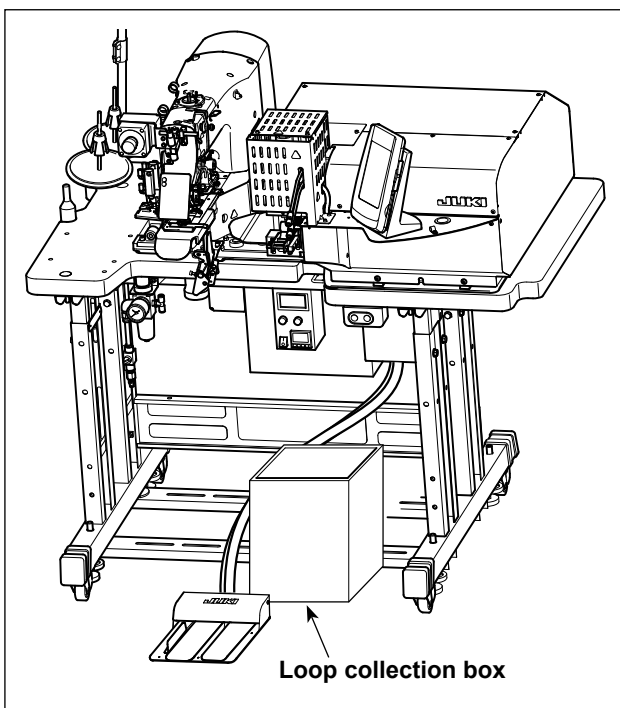
To change the pressure of the thread take-up spring, insert a thin screwdriver into the slot of thread tension post ❹ while screw ❷ is tightened, and turn it. Turning it clockwise will increase the pressure of the thread take-up spring. Turning it counterclockwise will decrease the pressure.

4-8. Example of the thread tension

When using the sewing machine for the first time, adjust the thread tension referring to the table below.

Thread	Material	Needle thread tension setting	Thread take-up spring moving amount [Thread drawing amount]	Strength
Nylon bonded thread #40	Sports shoes material	60 to 65	10 mm [13 mm]	0.5 N

4-9. Installing the ejected loop receiver

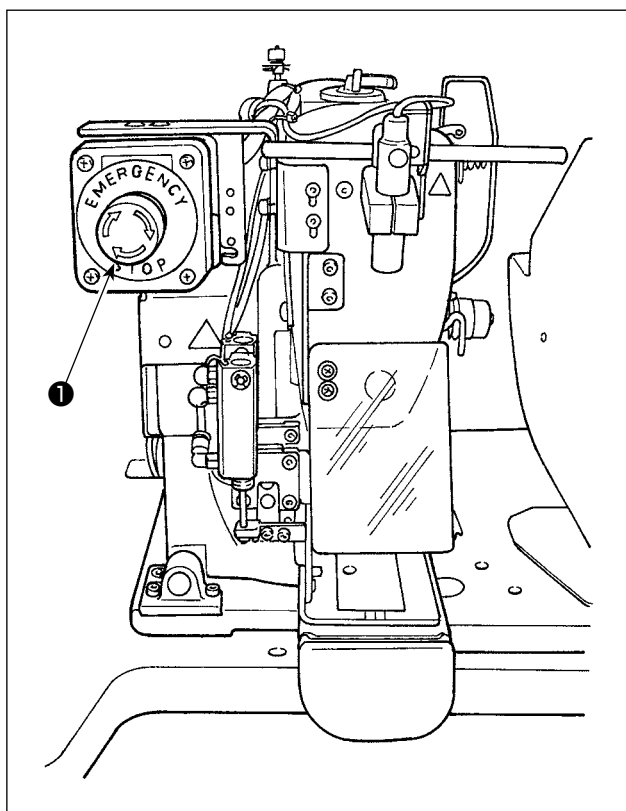


The loop feeder unit ejects the first loop before starting sewing in order to ensure the predetermined cutting length. Install a large collection box for collecting ejected loops.

5. Operating the sewing machine

5-1. Emergency stop switch

(1) Method for operating the emergency stop switch



Emergency stop switch ❶ is mounted on the upper left section of the sewing machine head.

Emergency stop switch ❶ is turned ON by strongly pressing in the red button. It is turned OFF by turning it counterclockwise.

If you turn ON emergency stop switch ❶ while the machine is in operation, the power is turned OFF to cause the machine to stop operation.

At this time, the loop cutting operation as well as the loop feeding switch of the heat cutter also stop.



If you turn OFF emergency stop switch ❶ with the power switch remained ON, the power is re-turned ON. Take care of abrupt re-turn ON of the power.

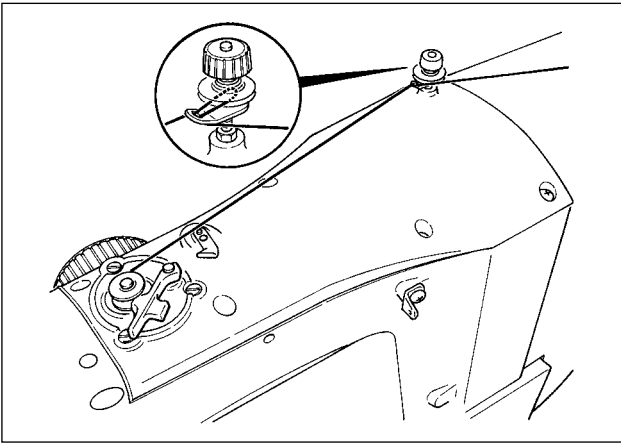
To turn OFF the power for any purpose other than an emergency stop, operate the power switch.

(2) Precautions with the emergency stop switch

When emergency stop switch ❶ stays ON, the sewing machine cannot be powered up even if you turn ON/OFF the power switch. The work clamp foot of the sewing machine may depress the loop clamp or the loop loosening rod according to the operation timing of emergency stop switch ❶. If this phenomenon occurs, turn OFF the power to the sewing machine and manually lift the work clamp foot of the sewing machine to move it so as to avoid interference. Then, re-turn ON the power to the sewing machine.

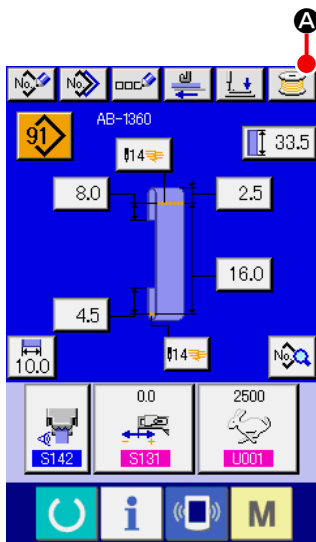
5-2. Winding a bobbin

(1) To wind a bobbin while the sewing machine is performing sewing




Thread the bobbin winder and wind the bobbin thread onto the bobbin as illustrated in the figure.

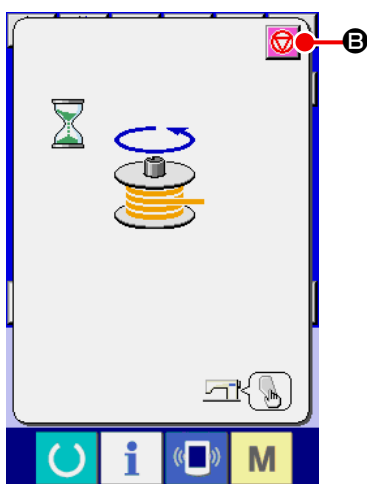
(2) To wind a bobbin independently



In the case you only want to carry out bobbin winding on the sewing machine, unthread the needle and remove the bobbin from the hook.

① Displaying the bobbin thread winding screen


Press bobbin winding button  **A** on the shoelace loop data input screen (blue), and the bobbin winding screen appears on the screen.




② Starting bobbin winding

Press the start switch, and the sewing machine rotates to start bobbin winding.

③ Stopping the sewing machine



Press stop button  **B**, and the sewing machine stops and returns to the normal mode. If you press the start switch again during bobbin winding, the sewing machine stops under the bobbin winding mode. If you press the start switch again in this state, the sewing machine re-starts bobbin winding. Use this operating procedure when you want to wind thread on two or more bobbins.




The bobbin winding will not start immediately after turning the power ON. To activate the bobbin winding function, set a pattern number or the like first, then press the set ready key  to invoke the sewing screen. In this state, the bobbin winding function is enabled.


5-3. Thread clamp device

Trouble of sewing (slip-off of needle thread, stitch skipping, or stain of needle thread) at the time of high-speed start can be prevented with the thread clamp device.

The thread clamp device will operate when the thread clamp button has been selected  , but it will not operate when the thread clamp button has not been selected .

Changeover of ON/OFF motion is performed with  key. When the thread clamp device is in the OFF state, the sewing machine is automatically set to the soft-start mode.

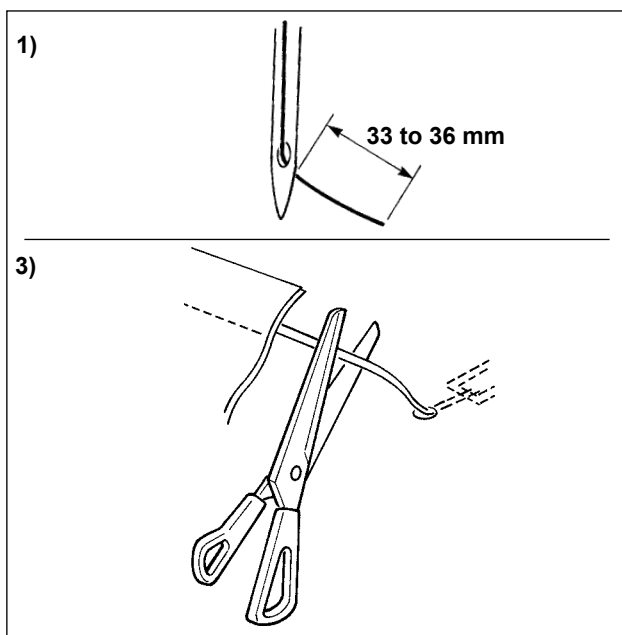


1. When memory switch **U035** is "1" (prohibited), the thread clamp does not work. Furthermore, the thread clamp key  will not be displayed.


2. Memory switch, refer to "II.2-26. How to change the memory switch data" p.75.

* Matters that demand special attention when using the needle thread clamp

(1) In case of with the needle thread clamp (motion), make shorter the length of needle thread remaining on the needle at the sewing start for use. When the length of needle thread is lengthened, needle thread on the wrong side of material is apt to protrude. In addition, when the length is excessively lengthened, the end of needle thread held by the needle thread clamp may be rolled in the seams.



1) In case of with the needle thread clamp, the standard of the length of needle thread is 33 to 36 mm.

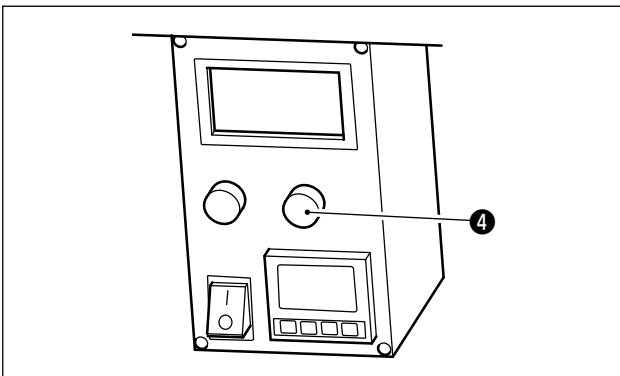
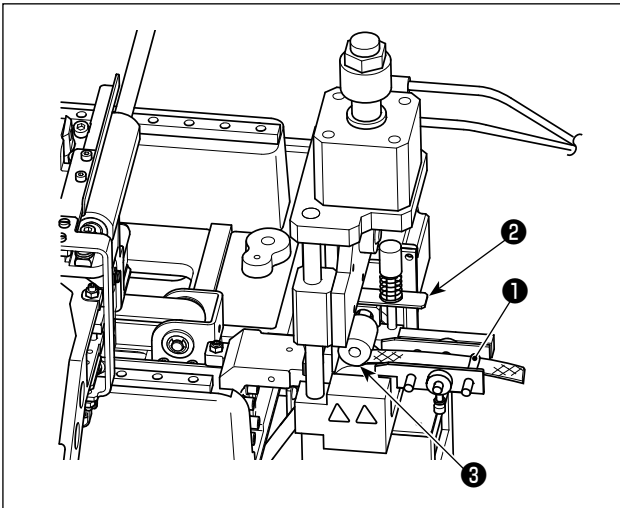
2) When needle thread is long after replacing thread or the like or sewing while holding needle thread by hand, turn OFF the THREAD CLAMP  key.

3) When the needle thread held with the thread clamp is rolled in the seams, do not draw the material forcibly and cut the connecting needle thread with the scissors or the like. The seams are not damaged since it is the needle thread at the sewing start.

(2) It is possible to adjust needle thread shorter by making the needle thread clamp work while holding the stabilized sewing at the start of sewing and the gathering (bird's nest) of needle thread on the wrong side of material can be lessened. However, for the pattern which the stitch length for neatly rolling in needle thread is short, needle thread may protrude from the wrong side of material.

In addition, thread waste could accumulate around the hook due to thread trimming when the thread clamp device is used. Be sure to periodically clean inside the hook cover referring to "II.1-12. Cleaning inside the hook cover" p.113.

5-4. Placing a shoelace loop



Pass the loop through guide ①, pull up lever ② at the roller section and insert the loop under roller ③.

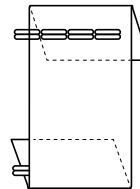


When you route the shoelace loop under the gear, insert it until it appears from the loop cutting knife.

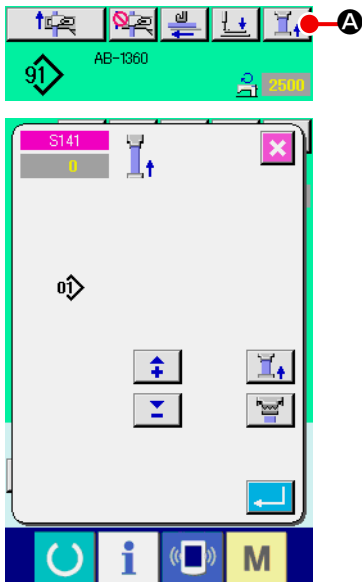
* When the heat cutter controller power is ON, a shoelace loop is fed by means of the motor by pressing loop feeding switch ④ of the heat cutter controller is pressed.




When the machine is used under a high shoelace loop tension, the entire length of the fed shoelace loop is shortened. In such a case, malfunctions such that the shoelace of the predetermined length cannot be sewn or that the shoelace loop cut edge is not straight can occur. To prevent those malfunctions, it is necessary to adjust the shoelace loop tension adequately.



5-5. Adjusting the shoelace loop tension



When you have changed the shoelace loop, you need to re-adjust the shoelace loop tension without exceptions.

Press the shoelace loop tension button  A on the sewing screen.

The more the shoelace loop tension is adjusted in a negative direction, the less the shoelace loop tension becomes. (The shoelace loop tension can be set and stored in memory on a sewing-pattern by sewing-pattern basis.)

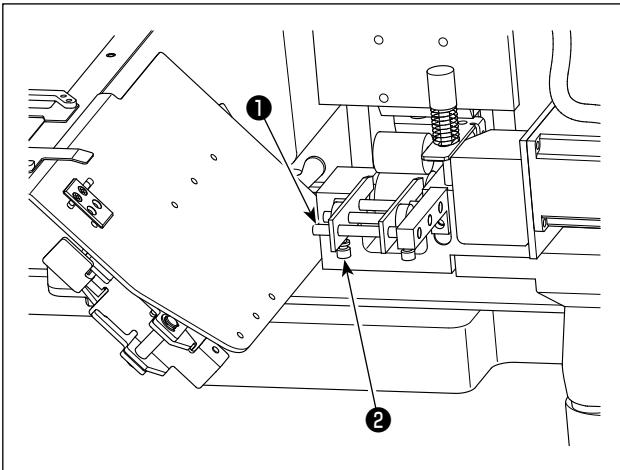
As a guide, adjust the shoelace loop tension so that the entire length of the shoelace loop fed from the shoelace loop feeding section and clamped at the loop clamping section is shorter than the entire shoelace loop length displayed when selecting a sewing pattern by approximately 1 mm.

To change the shoelace loop length after the aforementioned adjustment, finely adjust the feed length so that the entire loop length as shown in the relevant sewing pattern is achieved, referring to **S313** in **p.72**.



If the sewing machine is operated under a high shoelace loop tension, the entire length of the shoelace loop fed becomes shorter than required. In this case, problems such that the shoelace loop cannot be sewing at the predetermined length or that the cut end of the shoelace loop is not straight can occur. To prevent such problems, adjust the shoelace loop tension adequately.

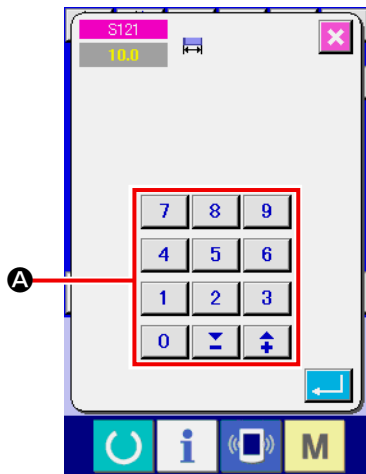
5-6. Method for changing the loop width



- 1) To change the loop width, loosen setscrew ② of left-side shoelace loop guide ① and adjust the guide width so that it matches the shoelace loop width. Lightly pressing guide ① against shoelace loop, adjust guide ① to allow the shoelace loop smoothly pass through the guide with no lateral play.



The right-side shoelace loop guide is used as an across-the-width reference. So, it is not necessary to adjust it every time the loop width is changed. However, adjust the guide position in the similar matter as described above if the lateral position of shoelace loop does not align with the reference.



- 2) Enter a value of shoelace loop width into shoelace loop width setting section ① on the operation panel screen. At the same time, change the dimensions of a seam for attaching a shoelace loop. Refer to "[II.2-5. How to change the shoelace loop length](#)" p.32 for the method for changing the seam dimensions.



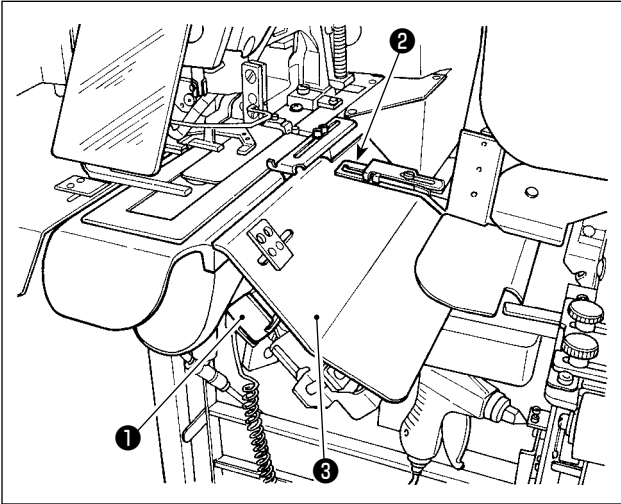
If the bartacking width of which is extremely wider than the shoelace loop width setting specified through the operation panel is sewn, the garment body presser and the loop clamp can interfere with each other (error No. M596). If the alarm is given, change the bartacking width setting to decrease the bartacking width.

5-7. Start switch



CAUTION :

When you press the start switch, the garment body presser comes down. At the same time, the loop clamp moves toward the sewing machine at a high speed. Take added care to keep your hands away from the loop clamp during work.



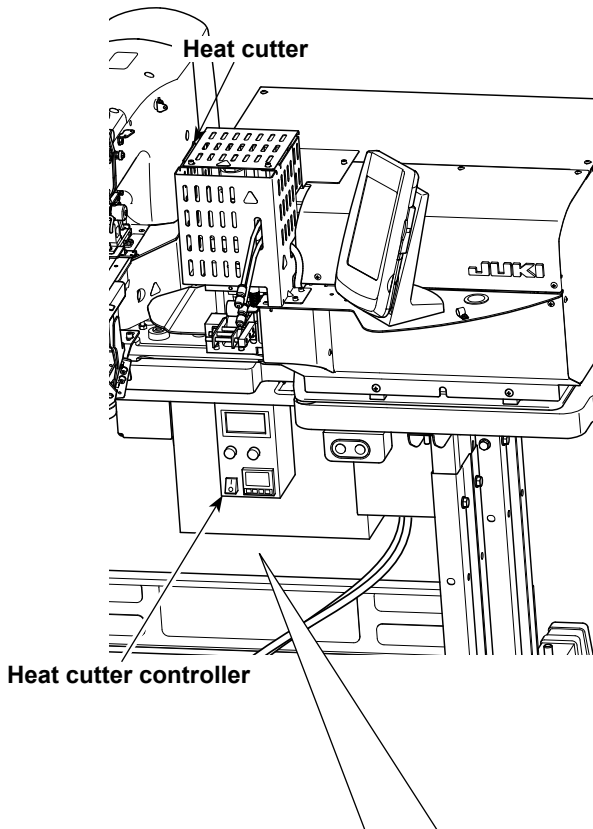
Once you have completed preparation for sewing, you can bring the sewing machine into operation by pressing start switch ① .

When the loop clamp ② has clamped the shoelace loop, operation of the start switch ① will be accepted.

1. Operate the sewing machine taking care not to allow your hands move above safety cover ③ since the hands can interfere with the loop clamp.
2. If you do not keep the start switch held pressed for a sufficiently long time, sewing will be interrupted. Be sure to keep the start switch fully held pressed.
3. You may also press the start switch while the loop clamp clamps the shoelace loop and travels to the standby position after the completion of sewing. In that case, the loop clamp will not stop at the standby position but will move directly to the sewing position to start the next sewing. Be sure to exercise added care during this procedure.



5-8. Adjusting the heat cutter temperature



It is necessary to adjust the heat cutter temperature so that it can cut the shoelace loop to be sewn. (Standard temperature: 360 °C)

Gradually raise the heat cutter temperature while carrying out trial stitching the shoelace loop to be sewing until the heat cutter is hot enough to cut the shoelace loop and weld the cut end without fail. If the temperature is raised excessively high, the loop cut end will melt and cut thread waste will be likely to be produced. In such a case, lower the heat cutter temperature.

①	Preset temperature increases.
②	Preset temperature decreases.
③	Preset temperature is displayed.
④	Actual temperature of the cutter section is displayed.
⑤	Preset temperature is confirmed.

Adjustment of temperature is carried out on the heat cutter controller panel.

Set the temperature with buttons ① and ② and confirm the setting with button ⑤.



CAUTION :

When the temperature indication is displayed on the heat cutter controller panel, the heater built in the heat cutter is in the heated state.

The temperature of the heat cutter is very high. Be sure to keep your body from the heat cutter so as to prevent a burn.

II. OPERATION (OPERATION PANEL)

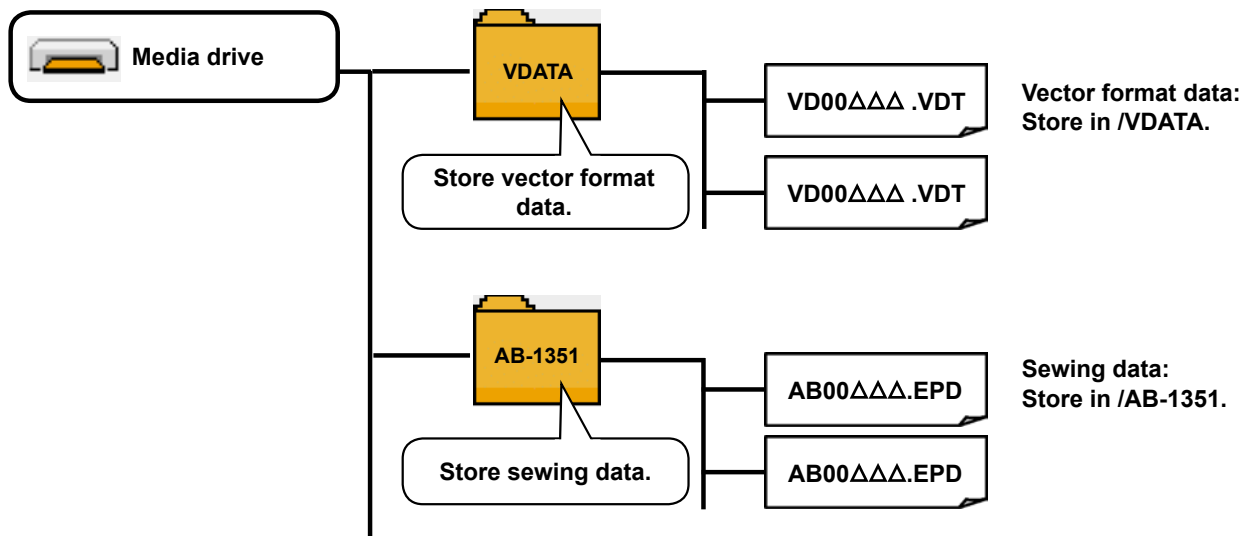
1. Introduction

1) Type of sewing data handled by the IP-420

Pattern name	Description
Vector format data	File that extension is “.VDT” Read from media. Max. 999 patterns can be used.
Sewing data	File that extension is “.EPD” Read from media. Max. 999 patterns can be used.

2) Folder structure of the media

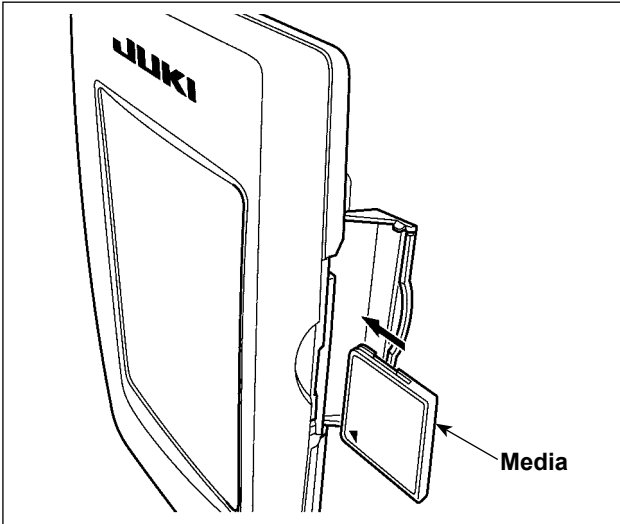
Store each file in the directories below of the media.



1. Data that are not stored in the directories above cannot be read. So, be careful.
2. Be aware that the AB-1360 is not able to read the data of the AB-1351 (for belt-loop attaching).

3) CompactFlash (TM)

■ Inserting the CompactFlash (TM)

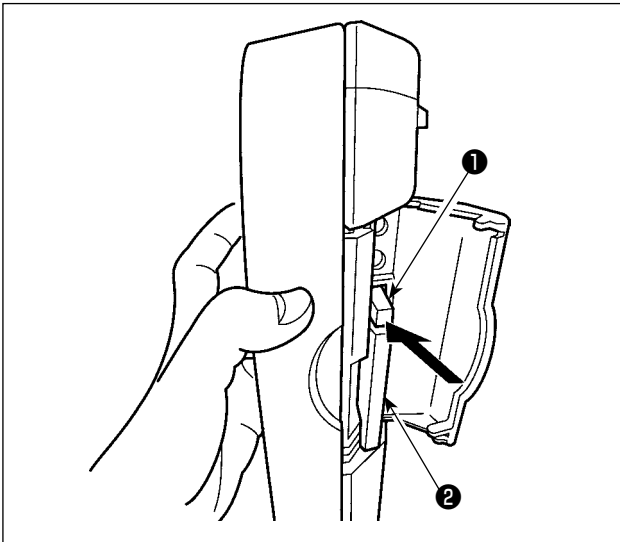


- 1) Turn the label side of the CompactFlash (TM) to this side (place the notch of the edge to the rear.) and insert the media that has a small hole to the rear.
- 2) After completion of setting of the media, close the cover. By closing the cover, it is possible to access. If the media and the cover come in contact with each other and the cover is not closed, check the following matters.
 - Check that the media is securely pressed until it goes no further.
 - Check that the inserting direction of the media is proper.



1. When the inserting direction of the media is wrong, panel or media may be damaged.
2. Do not insert any item other than the CompactFlash (TM).
3. The media slot in the IP-420 accommodates to the CompactFlash (TM) of 2GB or less.
4. The media slot in the IP-420 supports the FAT16 which is the format of the CompactFlash (TM). FAT32 is not supported.
5. Be sure to use the CompactFlash (TM) which is formatted with IP-420. For the formatting procedure of the CompactFlash (TM), see "[II-2-30. Performing formatting of the media](#)" p.86.

■ Removing the CompactFlash (TM)



- 1) Hold the panel by hand, open the cover, and press the media removing lever ①. The media ② is eject.

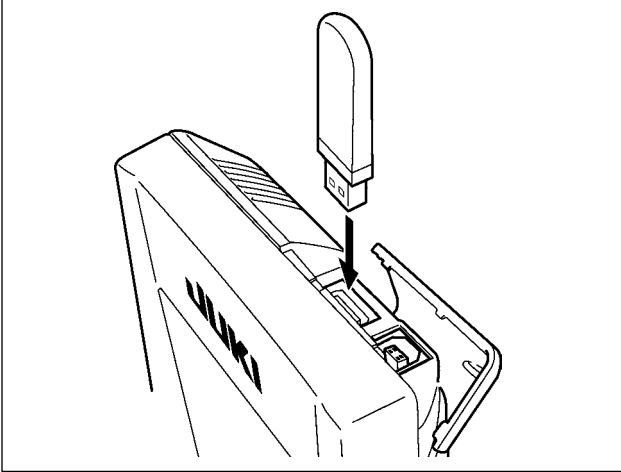


When the lever ① is strongly pressed, the media ② may be broken by protruding and falling.

- 2) When the media ② is drawn out as it is, removing is completed.

5) USB port

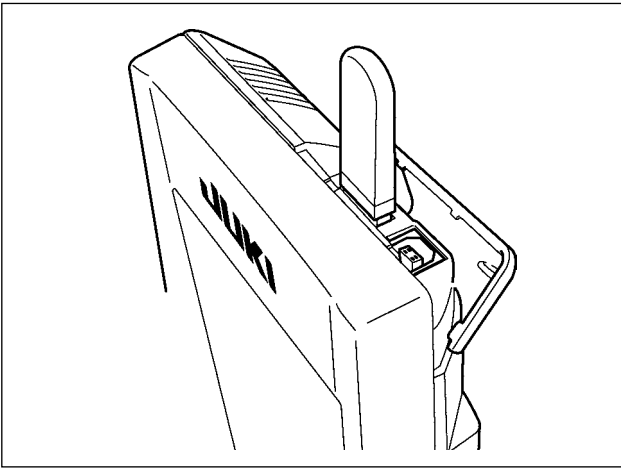
■ Inserting a device into the USB port



Slide the top cover and insert the USB device into the USB port. Then, copy data to be used from the USB device onto the main body.

After completion of copying the data, remove the USB device.

■ Disconnecting a device from the USB port



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

Cautions when using the media



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

Place of high temperature or humidity

Place of dew condensation

Place with much dust

Place where static electricity or electrical noise is likely to occur

① Precautions to be taken when handling USB devices

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

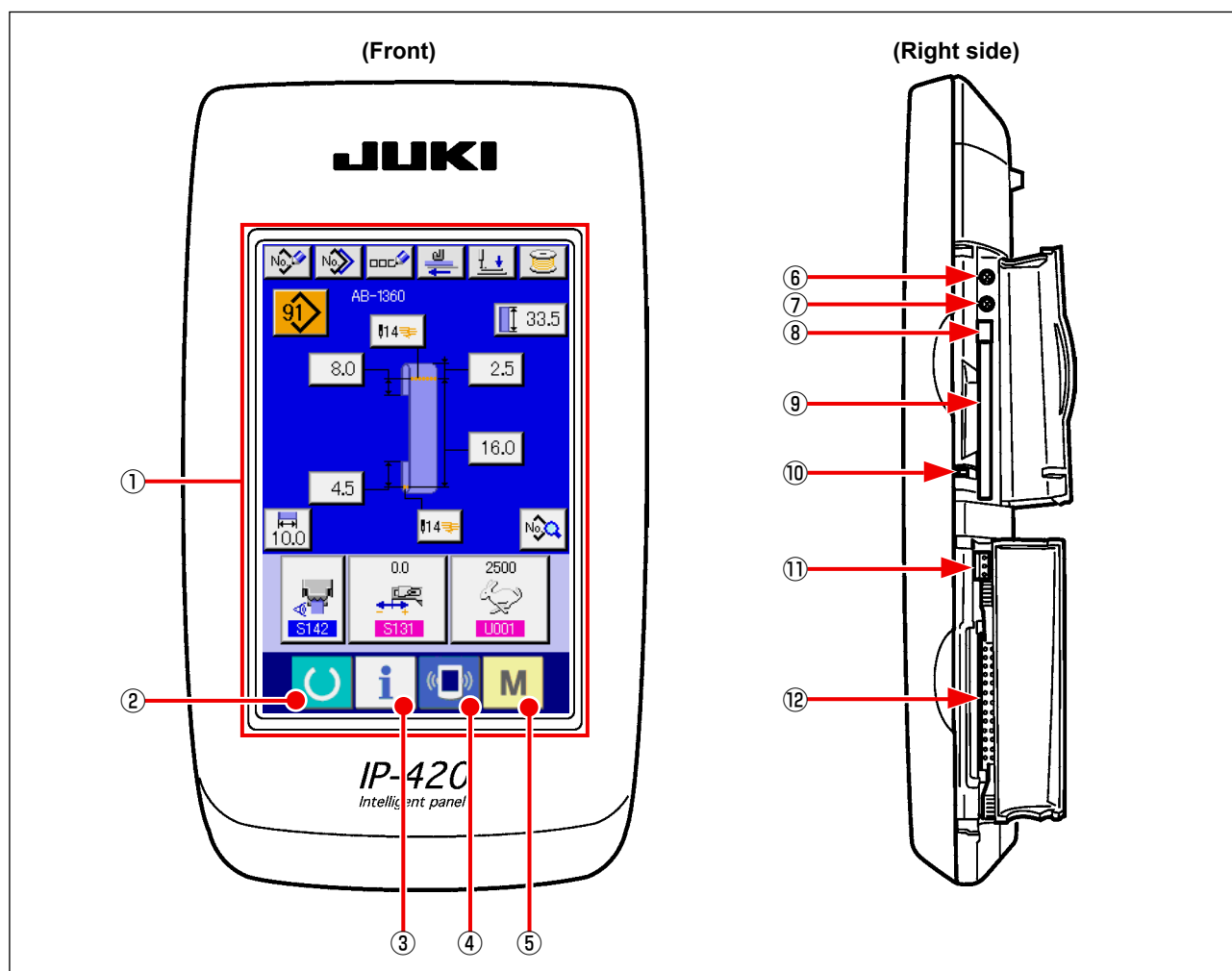
② USB specifications

- Conform to USB 1.1 standard
- Applicable devices *1 _____ Storage devices such as USB memory, USB hub, FDD and card reader
- Not-applicable devices _____ CD drive, DVD drive, MO drive, tape drive, etc.
- Format supported _____ FD (floppy disk) FAT 12
Others (USB memory, etc.), FAT 12, FAT 16, FAT 32
- Applicable medium size _____ FD (floppy disk) 1.44MB, 720kB
Others (USB memory, etc.), 4.1MB ~ (2TB)
- Recognition of drives _____ For external devices such as a USB device, the device which is recognized first is accessed. However, when a medium is connected to the built-in media slot, the access to that medium will be given the highest priority. (Example: If a medium is inserted into the media slot even when the USB memory has already been connected to the USB port, the medium will be accessed.)
- Restriction on connection _____ Max. 10 devices (When the number of storage devices connected to the sewing machine has exceeded the maximum number, the 11th storage device and beyond will not be recognized unless they are once disconnected and re-connected.)
- Consumption current _____ The rated consumption current of the applicable USB devices is 500 mA at the maximum.


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


2. Method for using the operation panel


2-1. Name of each section of IP-420




① Touch panel • LCD display section

②  SET READY key → Changeover of the data input screen and the sewing screen can be performed.

③  INFORMATION key → Changeover of the data input screen and the information screen can be performed.

④  COMMUNICATION key → Changeover of the data input screen and the communication screen can be performed.

⑤  MODE key → Changeover of the data input screen and the mode changeover screen which performs various detail settings can be performed.

⑥ Contrast control

⑦ Brightness control

⑧ CompactFlash (TM) eject button

⑨ CompactFlash (TM) slot










⑩ Cover detection switch

⑪ Connector for external switch

⑫ Connector for control-box connection

2-2. Buttons to be used in common

The buttons which perform common operations in each screen of IP-420 are as follows:



- | | | |
|---|-------------------------|--|
|  | CANCEL button | → This button closes the pop-up screen.
In case of the data change screen, the data being changed can be cancelled. |
|  | ENTER button | → This button determines the changed data. |
|  | UP SCROLL button | → This button scrolls the button or the display in the upward direction. |
|  | DOWN SCROLL button | → This button scrolls the button or the display in the downward direction. |
|  | RESET button | → This button performs the release of error. |
|  | NUMERAL INPUT button | → This button displays ten keys and input of numerals can be performed. |
|  | CHARACTER INPUT button | → This button displays the character input screen.
→ Refer to "II-2-9. How to name a shoelace loop pattern number" p.41. |
|  | PRESSER LOWERING button | → Presser is lowered, and the presser lowering screen is displayed. To lift presser, press presser lift button displayed in the presser lowering screen. |
|  | Bobbin winder button | → Bobbin thread winding is performed.
→ Refer to "I-5-2. Winding a bobbin" p.15. |

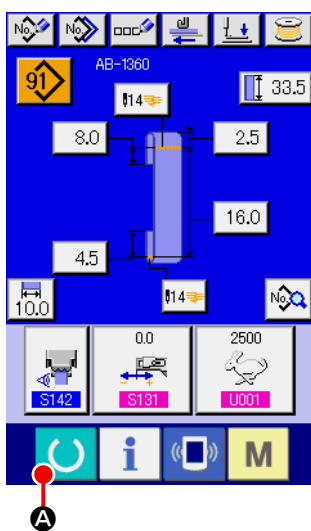
2-3. Basic operation of IP-420




① Turn ON the power switch

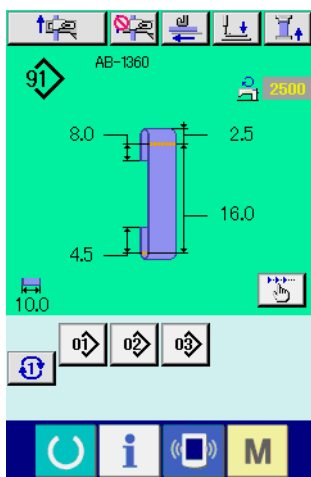
When the power is turned ON first, the language selection screen is displayed. Set the language you use. (It is possible to change with Memory switch **U239**).

Important When ending the selection screen with **CANCEL** button  or **ENTER** button  without performing the language selection, the language selection screen is displayed whenever the power is turned ON.



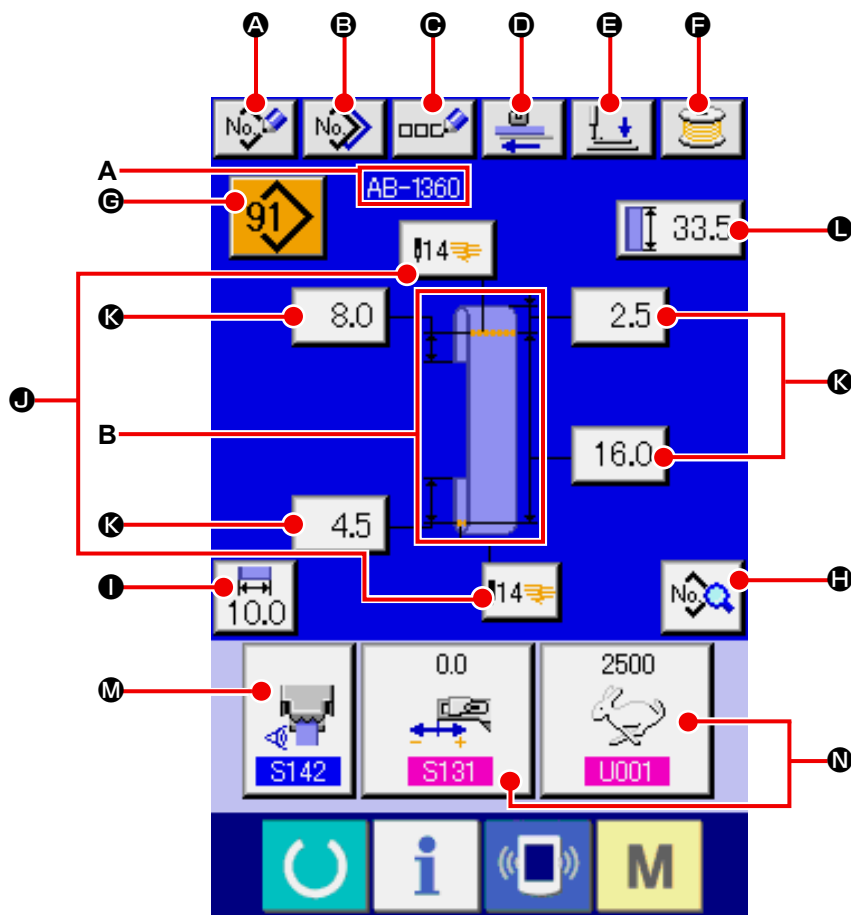
② Press SET READY key to move on to the sewing ready state

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



2-4. LCD section when the shoelace loop individual sewing is selected





(1) Shoelace loop individual sewing data entry screen



Symbol	Name of button	Description
A	New pattern creating button	Displays the new shoelace loop pattern number creation screen to allow registration of new pattern data. → Refer to "II-2-8. How to register a new shoelace loop pattern number" p.39.
B	Copy button	Displays the copy source shoelace loop pattern number selection screen to allow copying of pattern data. → Refer to "II-2-11. How to copy a shoelace loop pattern number" p.44.
C	Character input button	Displays the shoelace loop individual sewing character entry screen to allow entry of the name of pattern data. → Refer to "II-2-9. How to name a shoelace loop pattern number" p.41.
D	Feed button	Insert a shoelace loop into the loop feeder unit and press this button to feed the shoelace loop.
E	Presser lowering button	The machine lowers the garment body presser and the work clamp foot and displays the presser lowering screen. → Refer to "II-2-6. How to lower the garment body presser and the work clamp foot" p.34.
F	Bobbin winding button	Displays the bobbin winding screen to allow the machine to wind a bobbin. → Refer to "I-5-2. Winding a bobbin" p.15.

Symbol	Name of button	Description
Ⓔ	Pattern number list button	Displays the shoelace loop pattern number list screen to allow selection of pattern data. → Refer to "II-2-10. How to select a shoelace loop pattern number" p.42.
Ⓕ	Sewing data list button	Displays the sewing data list screen. Detailed sewing data which is not displayed on the entry screen can be selected to edit sewing data.
Ⓖ	Shoelace loop width button	Displays the shoelace loop width setting screen.
Ⓙ	Bartacking button	Displays the LK individual data entry screen to shift to the bartacking setting mode. The number of buttons to be displayed on the screen differs with the sewing shape. The number of stitches and the types of sewing shape (linear bartacking or zigzag bartacking) will be displayed on the button. → Refer to "II-2-14. How to carry out the bartacking setting" p.49.
Ⓚ	Shoelace loop length button	Displays the shoelace loop length setting screen. The buttons are displayed according to the sewing shape and the settable shoelace loop length that can be set. The number of buttons to be displayed on the screen differs with the sewing shape.
Ⓛ	Shoelace loop length input button	Displays the shoelace loop length entry screen.
Ⓜ	Sewing data customization button	Displays the sewing data setting screen specified on the customization setting screen of the data entry screen.
Ⓝ	Sewing data / adjustment data customization screen	Displays the sewing data setting screen or the adjustment data setting screen specified on the customization setting screen of the data entry screen.

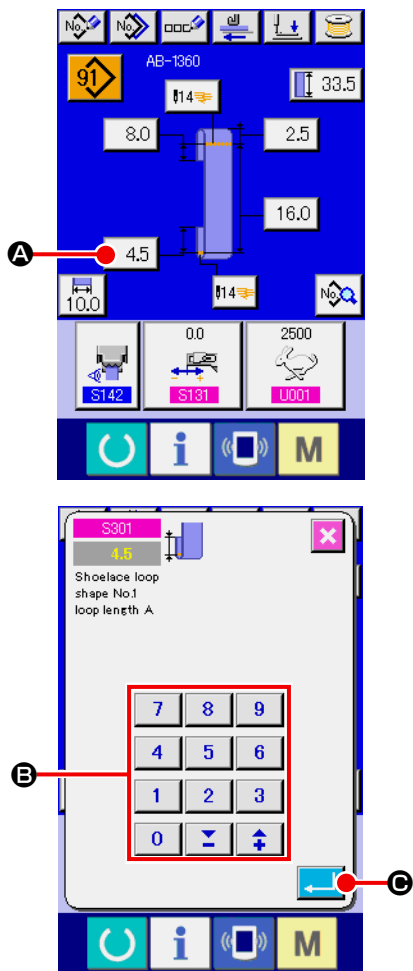
Symbol	Name of image	Description
A	Name of shoelace loop individual sewing data	Displays the name entered in the shoelace loop individual sewing data which is currently selected.
B	Sewing shape display	Sewing shape is displayed.

Symbol	Name of button	Description
Ⓔ	Counter value change button	Displays the current counter value on the button. When this button is pressed, the counter value change screen is displayed. → Refer to "II-2-7. Using counter" p.35.
Ⓕ	Counter changeover button	Bartacking counter display/shoelace loop counter display/bobbin thread counter display can be changed over. The button is displayed only in the case two or more of the aforementioned counters are in the ON state.  : Bartacking counter  : Shoelace loop counter  : Bobbin thread counter → Refer to "II-2-7. Using counter" p.35.
Ⓖ	Direct-pattern next page button	Displays shoelace loop pattern numbers registered on the next page on J section.
Ⓗ	Direct pattern button	Displays the shoelace loop pattern number specified on the direct pattern selection screen. <div style="border: 1px dashed black; padding: 5px; display: inline-block;">  Be aware that a press on this button activates the work clamp foot and the garment body presser. </div>


Symbol	Name of image	Description
A	Shoelace loop pattern number	Displays the shoelace loop pattern number which is currently selected.
B	Shoelace loop pattern description	Displays the description (sewing shape, dimensions) of the shoelace loop pattern to be sewn.
C	Shoelace loop width	Displays the shoelace loop width which is currently set.
D	Name of shoelace loop individual sewing data	Displays the name entered in the shoelace loop individual sewing data which is currently selected.
E	Sewing speed	Displays the sewing speed (set value) of the bartacking pattern which is being sewing.

2-5. How to change the shoelace loop length

(1) How to change the shoelace loop dimensions




① Displaying the shoelace loop individual sewing data entry screen

The shoelace loop dimensions can be changed on the shoelace loop individual sewing data entry screen. On the sewing screen of the shoelace loop individual sewing (green), press the set ready key  to display the shoelace loop individual sewing data entry screen (blue).

② Bringing up the shoelace loop length entry screen

When you press the button for the shoelace loop length you want to change, the corresponding shoelace loop length entry screen is displayed.


Change the shoelace loop length A as an example.

Press button  **A** to display the shoelace loop length entry screen.

③ Entering data

Enter a desired value with numeric keys and +/- button **B**.

④ Confirming your entry

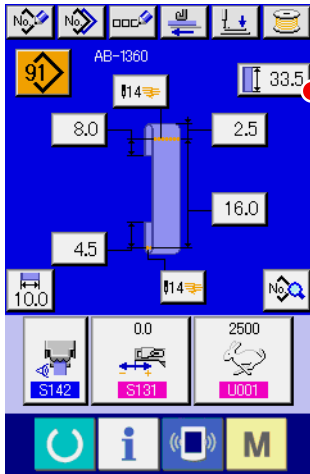
Press enter button  **C**, and the data you have entered is confirmed.


* For the other shoelace loop lengths, you can change the data following the steps of procedure described above.

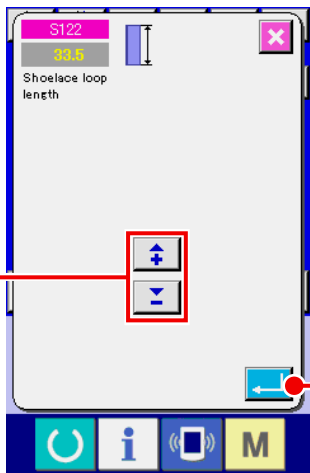



The dimensions of the shoelace loop sewing shape displayed on the operation panel are only for reference. The dimensions vary according to the shoelace loop material. Be sure to adjust the settings of shoelace loop dimensions so that your desired finished dimensions are achieved.

(2) Changing the shoelace loop length (entire length) and precautions to be taken



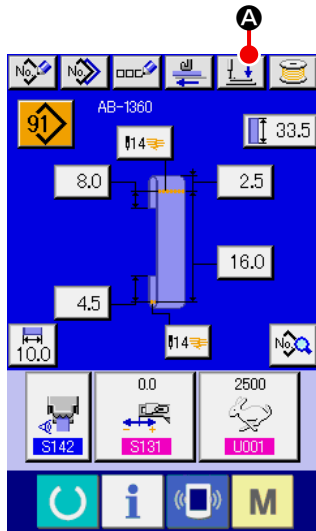
When you press button  **F**, the shoelace loop length (entire length) entry screen is displayed to allow you to change shoelace loop length (entire length).




Enter the desired value with +/- button **G**. Then confirm your entry with enter button  **H**.

 **In the case the shoelace loop length (entire length) is changed, the final dimension (shoelace loop length F) will change. So, be careful.**


2-6. How to lower the garment body presser and the work clamp foot

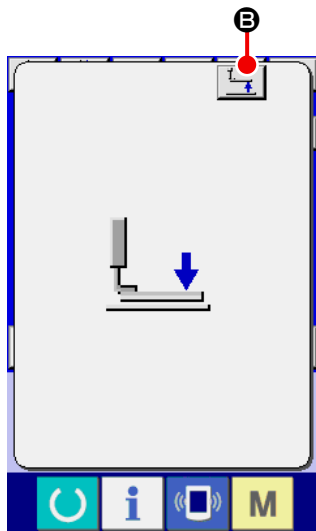



When you press presser lowering button  **A** on the shoe lace loop individual sewing data entry screen (blue) on the sewing screen of the shoe lace loop individual sewing (green), the presser lowering screen is displayed.



Even if you press the presser lowering button immediately after turning the power ON, the error buzzer will sound and the presser lowering will not start.


Press set ready key  to retrieve the origin to bring up the sewing screen before pressing the presser lowering button.



When you press presser lowering button  **A**, the sewing machine carries out the following operation and displays the presser lowering screen.

The garment body presser comes down and moves backward.


The work clamp foot of the machine head comes down.


When you press presser lifting button  **B** on the presser lowering screen, the sewing machine carries out the following operation and goes back to the entry screen (or sewing screen).

The garment body presser moves forward and goes up.

The work clamp foot of the machine head goes up.

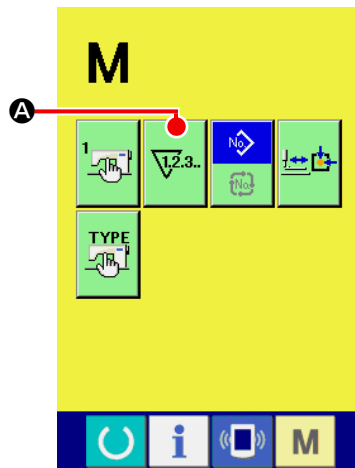


When you press presser lowering button  **A**

or lifting button  **B, the work clamp foot of the machine head and the garment body presser operate respectively. Take care not to allow your hands to be caught by the garment body presser and the work clamp foot.**

2-7. Using counter

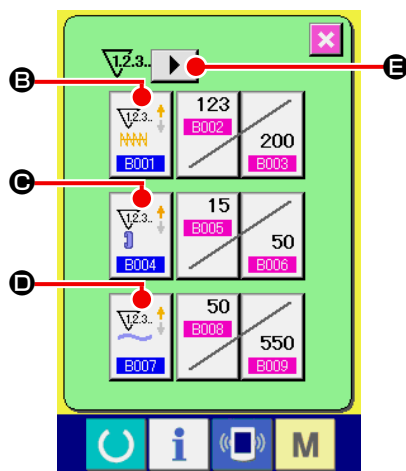
(1) Setting procedure of the counter



① Display the counter setting screen

Press **M** switch and the COUNTER SETTING button .

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



② Selection of kinds of counters

This sewing machine has four different counters; i.e., the bartacking counter, shoelace loop counter, No. of pcs. counter and bobbin thread counter.

When BARTACKING COUNTER TYPE SELECT button  **B**,

SHOELACE LOOP COUNTER TYPE SELECT button  **C**

or NO. OF PCS. COUNTER TYPE SELECT button  **D** is

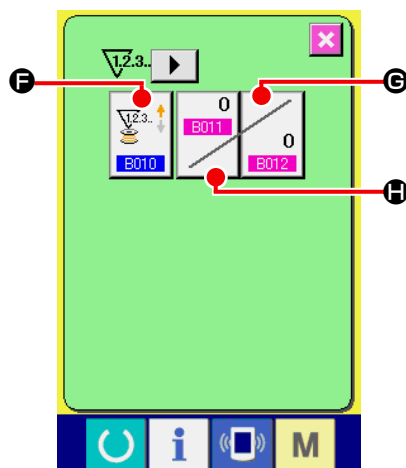
pressed, the corresponding counter type select screen is displayed. On this screen the counter type can be selected individually.

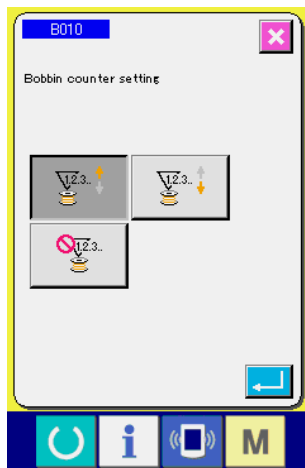
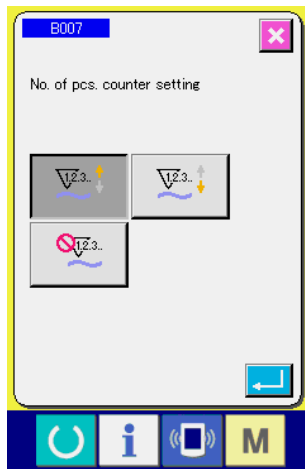
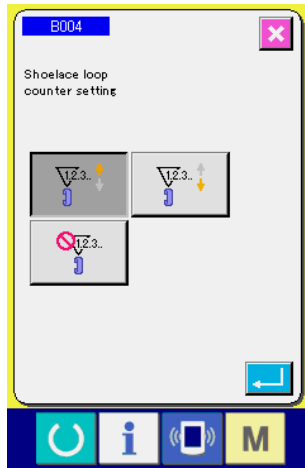
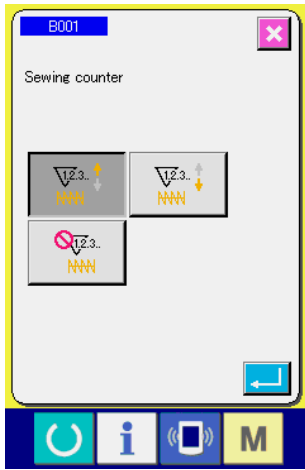
To set the bobbin thread counter, press page changeover button

 **E** to change over the page shown on the screen. Then,

press the bobbin thread counter type selection button  **F**

to display the counter type selection screen.



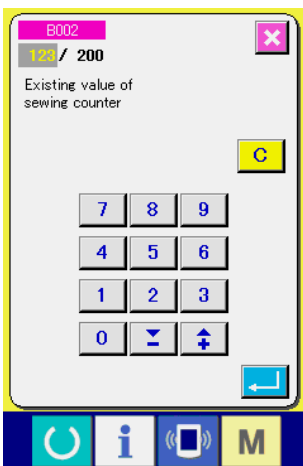
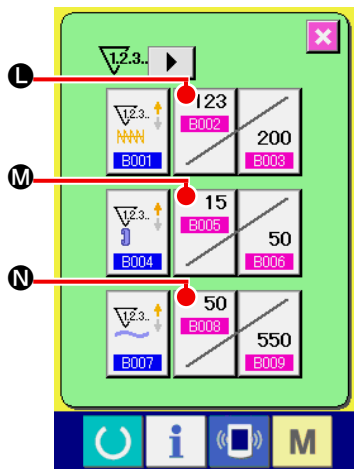
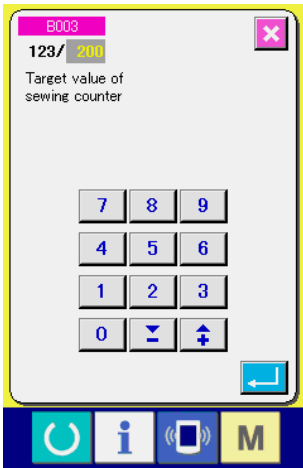
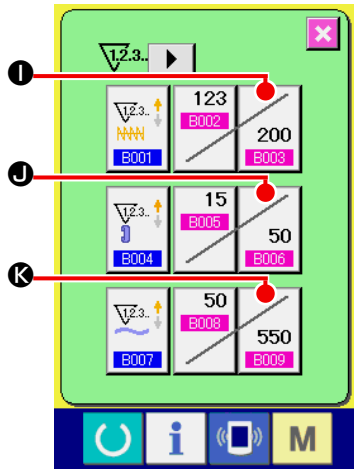


[Bartacking counter]	
	UP counter: Every time the sewing machine sews a bartack, the counter increases its current value by one. When the current value equals to the preset value, the count-complete screen is displayed.
	DOWN counter: Every time the sewing machine sews a bartack, the counter decreases its current value by one. When the existing value is reached "0", the count-up screen is displayed.
	Counter disuse: The bartacking counter does not count a finished shape even when the machine has sewn the shape. The counter screen of the sewing counter is not displayed.





[Shoelace loop counter]	
	UP counter: Every time the sewing machine sews a shoelace loop, the counter increases its current value by one. When the current value equals to the preset value, the count-complete screen is displayed.
	DOWN counter: Every time the sewing machine finishes all the shoelace loops of a garment under the cycle sewing .mode, the counter decreases its current value by one. When the current value reaches 0 (zero), the count-complete screen is displayed.
	Counter disuse: The shoelace loop counter does not count a finished shape even when the machine has sewn the shape. The counter screen of the sewing counter is not displayed.

[No. of pcs. counter]	
	UP counter: Every time the sewing machine finishes all the shoelace loops of a garment under the cycle sewing mode, the counter increases its current value by one. When the current value equals to the preset value, the count-complete screen is displayed.
	DOWN counter: Every time the sewing machine sews a shoelace loop, the counter decreases its current value by one. When the existing value is reached "0", the count-up screen is displayed.
	Counter disuse: The shoelace loop counter does not count a finished shape even when the machine has sewn the shape. The counter screen of the No. of pcs. counter is not displayed.

[Bobbin thread counter]	
	UP counter: The value shown on the counter increases by one for every 10 bartacking stitches. When the current value shown on the counter reaches the set value, the count-complete screen is displayed.
	DOWN counter: The value shown on the counter decreases by one for every 10 bartacking stitches. When the current value shown on the counter reaches zero (0), the count-complete screen is displayed.
	Counter disuse: The bobbin thread counter does not work even the machine performs sewing. The count-complete screen for the bobbin thread counter will not be displayed.







③ Change of counter set value

Press button  **I** for the bartacking counter, button  **J** for the shoelace loop counter, button  **K** for the No. of pcs. counter or button  **G** for the bobbin thread counter to display the corresponding counter set value entry screen.

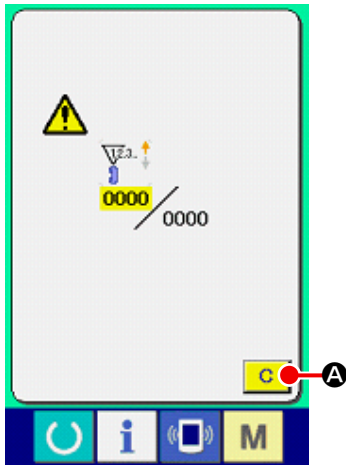
Here, enter the set value.
When "0" is entered in the set value, the display of count-up screen is not performed.

④ Changing the current value on the counter

Press button  **L** for the bartacking counter, button  **M** for the shoelace loop counter, button  **N** for the No. of pcs. counter or button  **H** for the bobbin thread counter to display the corresponding counter current value entry screen.

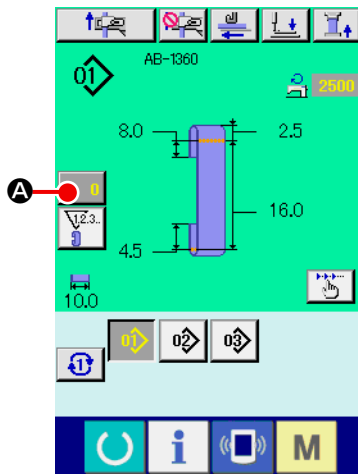
Here, enter the existing value.

(2) Count-up releasing procedure



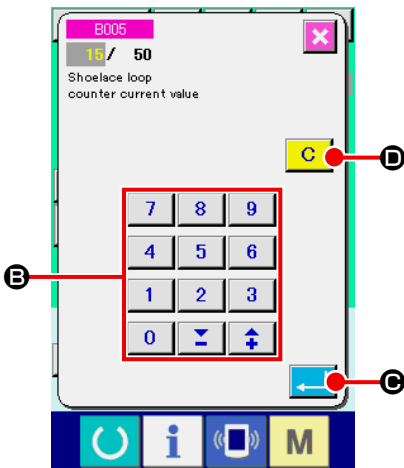
When the count-up condition is reached during sewing work, the count-up screen is displayed and the buzzer beeps. Press CLEAR button **C** **A** to reset the counter and the screen returns to the sewing screen. Then the counter starts counting again.

(3) How to change the counter value during sewing



① Display the counter value change screen

When you desire to revise the counter value during sewing work due to the mistake or the like, press COUNTER VALUE CHANGE button **C** **A** on the sewing screen. The counter value change screen is displayed.



② Change the counter value

Enter the value you desire with ten keys, or “+” or “-” key **B**.

③ Determine the counter value

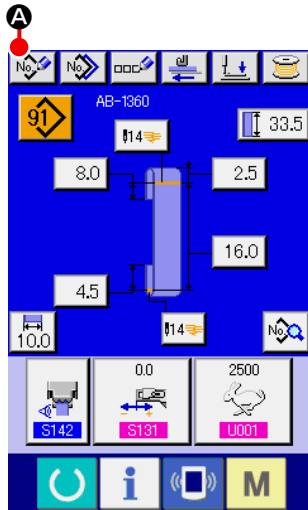
When ENTER button **E** is pressed, the data is determined.

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

2-8. How to register a new shoelace loop pattern number

This section describes how to create a new shoelace loop pattern using the following shoelace loop pattern as an example.

Pattern number	15
Shoelace loop width	11 mm
Bartacking shape	22-stitch linear bartacking
Bartacking width	12 mm

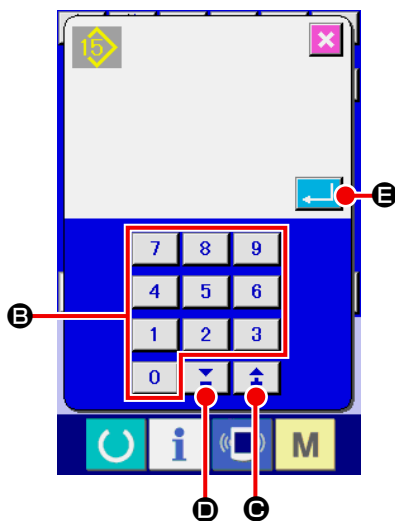


① Displaying the data entry screen

When you bring up the entry screen under the shoelace loop individual sewing mode or the shoelace loop cycle sewing mode, new pattern creation is enabled. Press new creation button



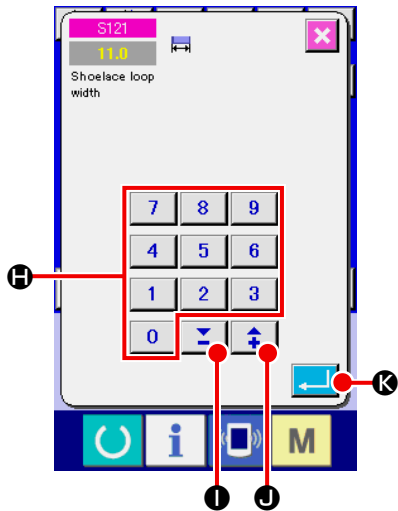
A to display the new shoelace loop pattern number creation screen.






② Entering a pattern number

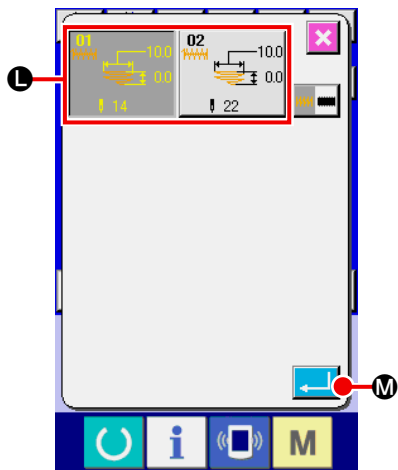
Enter new pattern number 15 with numeric keys **B**. It is also possible to search for an unregistered sewing pattern number using +/- buttons **C**, **D**.

When you press enter button **E**, the new pattern number to create is confirmed and the shoelace loop width entry screen is displayed.




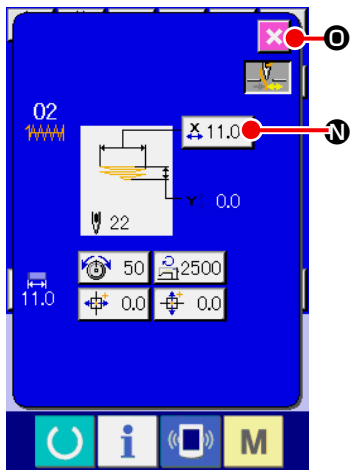
③ Entering a shoelace loop width

Enter 15 with numeric keys **H** or +/- buttons   (**I**, **J**) to set the shoelace loop width to 11 mm. Press enter button  **K** to confirm your entry. Then, the standard pattern selection screen is displayed.







④ Selecting a standard pattern

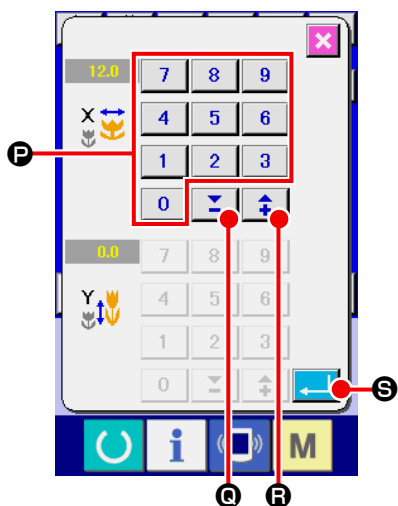
Standard sewing pattern, 22-stitch bartacking with button **L**. Press enter button  **M** to confirm your entry. Then, the bartacking information entry screen is displayed.

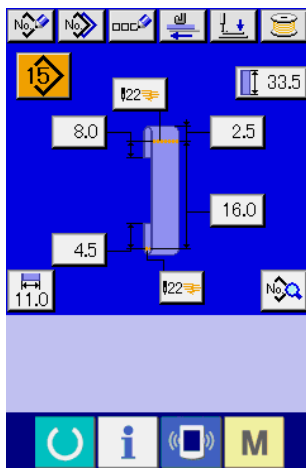


⑤ Entering a bartacking width


When you press X actual dimension value button  **N** on the bartacking information entry screen, and the first bartacking X actual dimension value setting screen is displayed.

Enter 12 with numeric key **P** or +/- buttons   (**Q**, **R**) to set the bartacking width to 12 mm. Press enter button  **S** to confirm your entry. Then screen goes back to the bartacking information entry screen.





⑥ Finishing the creation of a new pattern

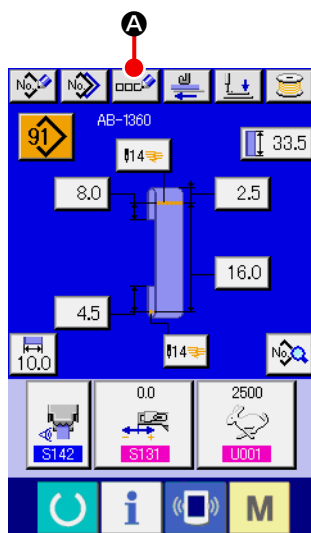
When you press close button  on the bartacking information entry screen, the screen goes back to the shoelace loop data entry screen. Check to make sure that the parameters you have set are included on the data entry screen.




If you press the cancel button on any of the screens which appear on the steps of procedure beyond ③, the screen returns to the shoelace loop data entry screen. In this case, the values of the parameters you have not set shown on the shoelace loop data entry screen are their initial values.

2-9. How to name a shoelace loop pattern number


It is possible to enter as many as 14 characters for each shoelace loop pattern number.

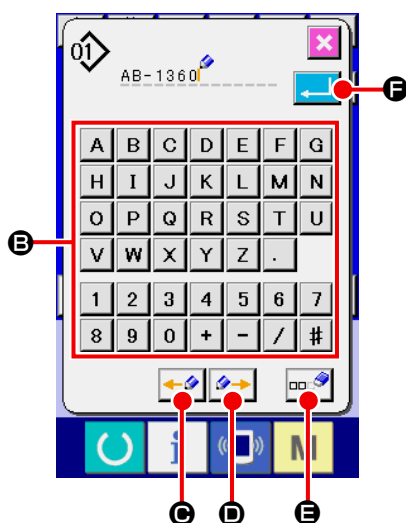


① Displaying the data entry screen




Only on the shoelace loop individual sewing data entry screen (blue), the name of a shoelace loop pattern number can be entered. On the sewing screen (green), press the set ready key  to display the data entry screen (blue).

② Bringing up the character entry screen


When you press character input button  **A**, and the character entry screen is displayed.



③ Entering characters

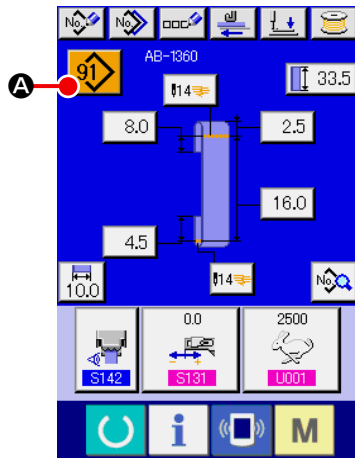
Characters can be entered by pressing character button **B** corresponding to the desired character. As many as 14 alphanumeric characters (**A** to **Z**, **0** to **9**) and symbols (**+**, **-**, **/**, **#** and **.**). The cursor can be moved by means of cursor leftward-travel button  **C** or cursor rightward-travel button  **D**. If you want to delete the entered character, move the cursor to the character to delete and press delete button  **E**.

④ Finishing the entry of characters


When you press enter button  **F**, the character entry is finished. After the end of the character entry, the characters you have entered are displayed on the upper part of the data entry screen (blue).

2-10. How to select a shoelace loop pattern number


(1) Selection on the data entry screen

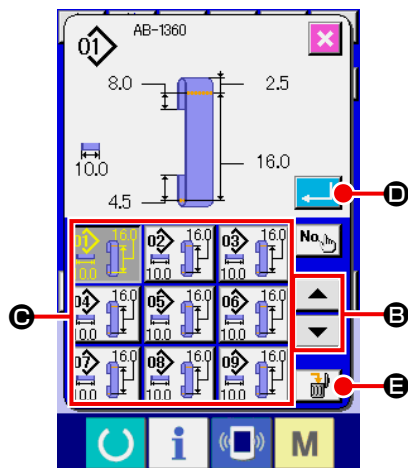


① Displaying the data entry screen


The shoelace loop pattern number can be selected on the data entry screen (blue). If the sewing screen (green) is displayed, press set ready key  to display the data entry screen.

② Bringing up the pattern number selection screen


When you press shoelace loop pattern number selection button  **A**, the shoelace loop pattern number selection screen is displayed. The shoelace loop pattern number which is currently selected and its details are displayed on the upper part of the screen and the list of the shoelace loop pattern number buttons is displayed on the lower part of the screen.




③ Selecting a shoelace loop pattern number

Every time you press up/down scroll buttons  **B**, the registered shoelace loop pattern number button **C** changes over one after another. The button indicates the details of the sewing data entered for the shoelace loop pattern number. Press shoelace loop pattern number button **C** corresponding to the pattern you want to select.

④ Confirm the shoelace loop pattern number

When you press enter button  **D**, the shoelace loop pattern number selection screen is closed to finish the selection.

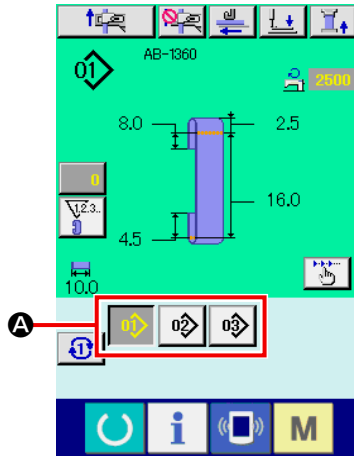
* If you want to delete the registered shoelace loop pattern number, press delete button  **E**. It should be noted, however, that the shoelace loop pattern number registered in the cycle sewing cannot be deleted.

(2) Selection by the direct button



CAUTION :

1. Make sure without fail of the contour of the sewing pattern after selection of the sewing pattern. If the sewing pattern extends outside the work clamp foot, the needle will interfere with the work clamp foot.
2. Be aware that a press on the direct pattern button activates the work clamp foot and the garment body presser.



① Displaying the data entry screen or the sewing screen

When the pattern has already been registered on the direct pattern selection screen, pattern button **A** is displayed on the lower side of the sewing screen without exceptions.

② Selecting the shoelace loop pattern number

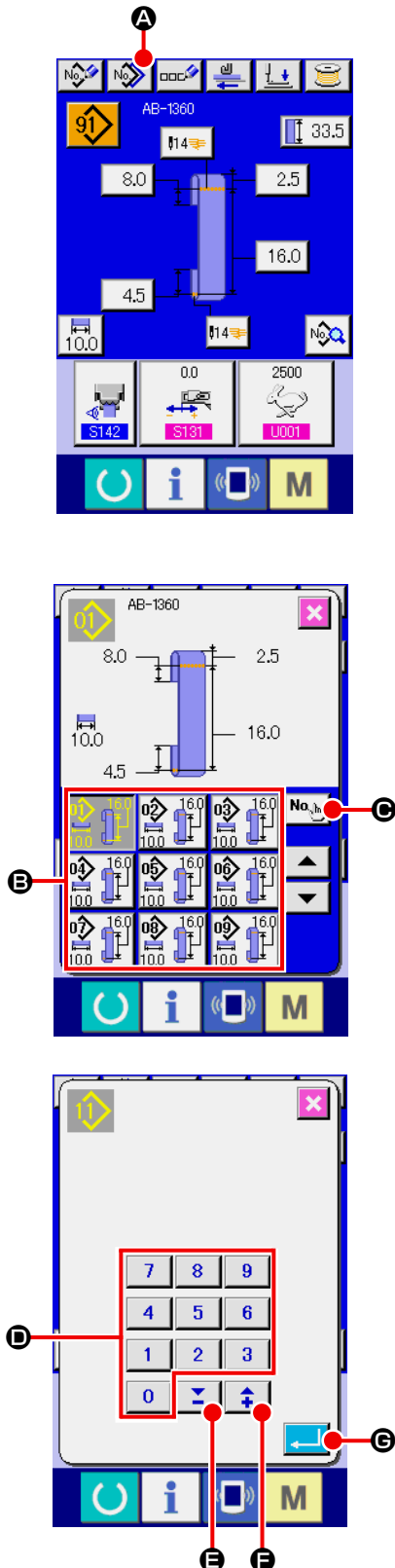
When pattern button **A** is pressed, the shoelace loop pattern number to be displayed is changed.

Display and press the button of the shoelace loop pattern number you desire to sew. When it is pressed, the shoelace loop pattern number is selected.


2-11. How to copy a shoelace loop pattern number

It is possible to copy the sewing data of a registered shoelace loop pattern number can be copied to an unregistered shoelace loop pattern number. Overwrite copy of the shoelace loop pattern number is prohibited. If you want to overwrite a shoelace loop pattern number, it is necessary to delete the pattern number you do not need in advance.


→ Refer to "II-2-10. How to select a shoelace loop pattern number" p.42.



① Displaying the data entry screen


Only on the shoelace loop individual sewing data entry screen (blue) on which the pattern button is selected, the shoelace loop pattern number can be copied. If the sewing screen (green), is displayed, press the set ready key  to display the data entry screen (blue).

② Bringing up the pattern copy screen



When you press pattern copy button  **A**, the pattern button copy (selection of the source pattern to be copied) screen is displayed.

③ Selecting a copy source pattern number


Select a copy source shoelace loop pattern number from shoelace loop pattern number list button **B**.

Then, when you press copy destination input button  **C**, the copy destination entry screen is displayed.

④ Entering a copy destination pattern number

Enter a copy destination shoelace loop pattern number using numeric keys **D**. It is also possible to search for an unused shoelace loop pattern number using +/- buttons   (**E**, **F**).

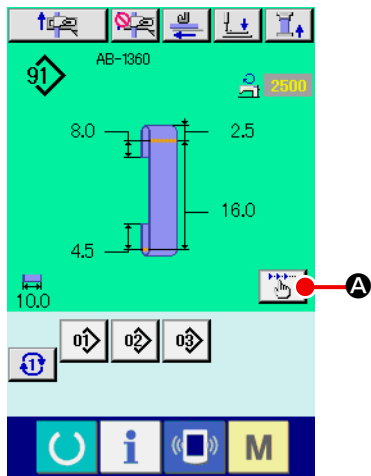
⑤ Starting copying



Press enter button  **G** to start copy of the shoelace loop pattern number. The screen will return to the shoelace loop pattern number copy (copy source selection) screen with the copied shoelace loop pattern number being selected.

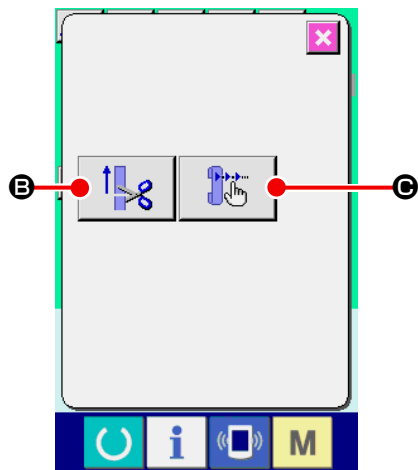
* It is also possible to copy the cycle sewing data following the similar procedure.



2-12. How to carry out the step operation

The step operation is the function which enables step-by-step operation of the sewing machine. For the AB-1360, two different operations, i.e., setback and sewing position can be checked by means of the step operation.



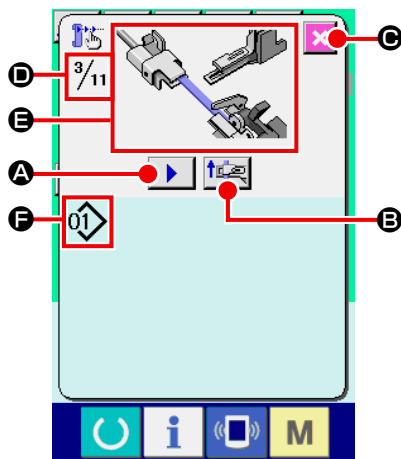
When you press step operation button  **A** on the sewing screen of the shoelace loop individual sewing or of the cycle sewing, the step operation selection screen is displayed. If the screen displays the data entry screen (blue), press the set ready key  to display the sewing screen (green).




When you press setback step button  **B**, the screen changes to the setback step operation screen. When you press sewing position step operation button  **C**, screen changes to the sewing position step operation screen.

(1) Setback step operation

The setback operation can be operated on a step-by-step basis.



① Carrying out the step operation


When you press step feed button  **A**, the loop feeder unit carries out one step operation. Picture **E** is displayed to show the aforementioned operation process as it looks.

In addition, the step number under edition, the number of entire steps **D** and shoelace loop pattern number **F** under edition are displayed.

② Finishing the step operation

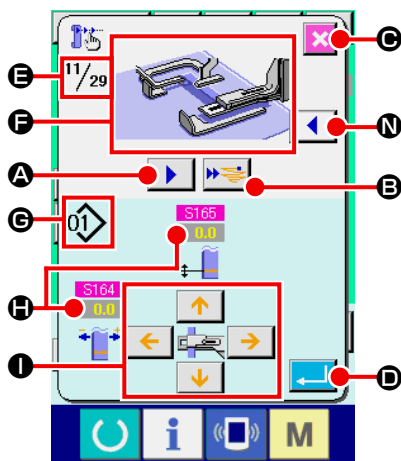
Press cancel button  **C** to close the screen.

③ Carrying out the sequential setback operation


If you want to carry out setback operation not on a step-by-step basis but on the basis of sequential operation, press setback operation button  **B** to allow you to check the sequence of setback operation.

(2) Sewing position step operation

The shoelace loop sewing operation can be carried out on a step-by-step basis.



① Carrying out the step operation

When you press step feed button  **A**, the loop feeder unit carries out one step operation. Picture **F** is displayed to show the aforementioned operation process as it looks.

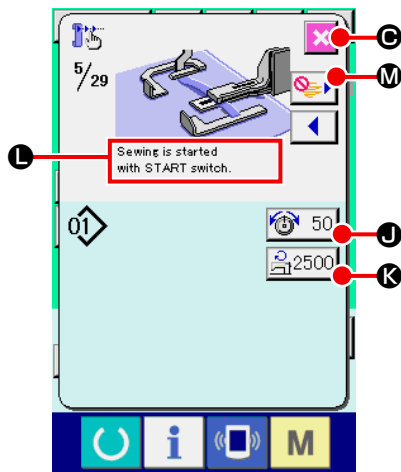
In addition, the step number under edition, the number of entire step **E** and shoelace loop pattern number **G** under edition are displayed.



In the case of the operation step where the loop clamp operates, the confirmation screen is displayed. Be aware that the shoelace loop clamp goes forward if you press the button on the confirmation screen.

② Changing the sewing data

When you check the step operation, changeable sewing data **H** is displayed. Values of the XY directions can be changed by means of parameter change button **I**.

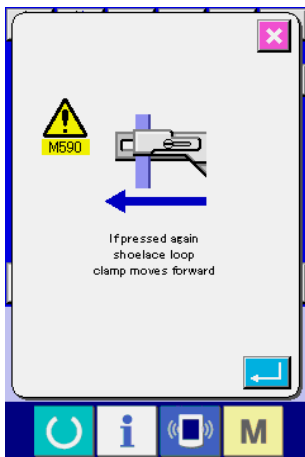


③ Starting sewing

When you proceed to the sewing step, message **L** telling that the sewing can be started with the start switch is displayed. At that time, thread tension button 50 **J** and setting button of max. sewing speed 2500 **K** are displayed. If you want to set those values, you may change the respective values. Press the start switch to start actual sewing.

④ Finishing the step operation

When you press cancel button **C**, the loop feeder unit will move to the standby position to complete the step operation.



⑤ Confirming your entry

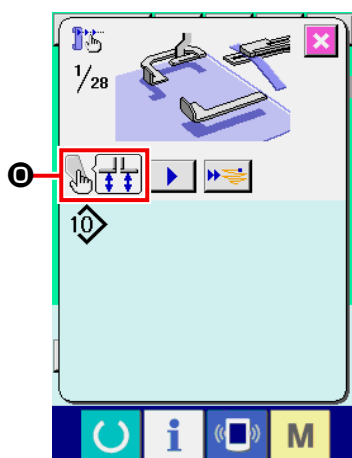
To confirm your entry, press enter button **D**. If you proceed with the step operation without pressing enter button **D** or terminate the step operation by pressing cancel button **C**, the data you have entered in the current step will be cancelled.

⑥ Carrying out the sewing on the basis of sequential sewing of a shoelace loop

If you want to carry out sewing of a shoelace loop not on a step-by-step basis but on the basis of sequential sewing of a shoelace loop, press one-function forward button **B**.

Then, the sewing machine will carry out a sequential operation until the next sewing-start step. (Every time you press the button, step operation ③ is carried out.)

As with ③, the sewing machine starts sewing by a press on the start switch.



⑦ No sewing performed

In the sewing step, if the sewing skip button **M** is pressed, the machine will move on to the next step without performing the sewing.

⑧ Step backward

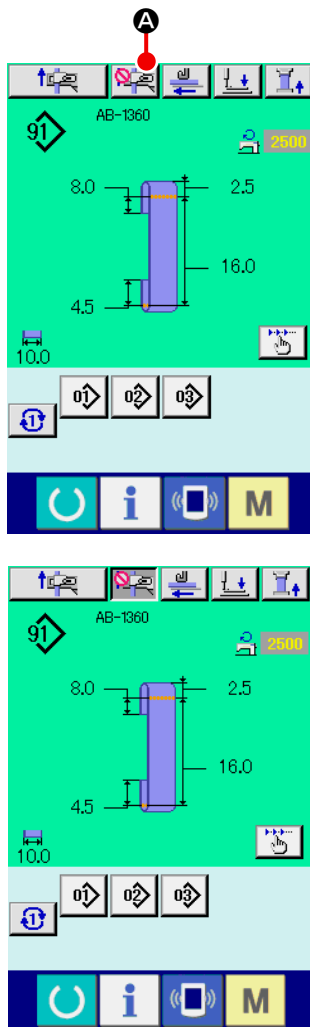
When the step is desired to be moved backward, press the step backward button **N**, and the system can be moved backward up to the step allowed by the system.



⑨ Lifting/lowering the garment body presser

The garment body presser can be lifted/lowered by pressing the start switch at the first step (**O** is displayed) of the sewing position step operation.

2-13. Function of canceling of a loop clamping for the next sewing

This function is used to prohibit the setback operation after the end of sewing. In the case you know that the power to the machine will be turned off after the end of sewing, or in the case you don't need to setback the next shoelace loop so as to change over the product, this function is used to prevent the next shoelace loop from being clamped uselessly.



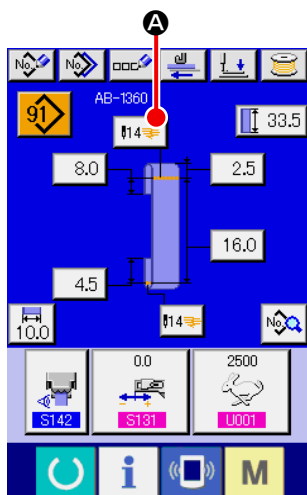
When press button  **A**, the button is brought to the depressed state (ON state)  to prohibit the setback operation after the end of sewing. When one sequence of shoelace loop sewing is finished in the ON state, the button is reset (OFF state).

In addition to the end of sewing as described above, the canceling of a loop clamping for the next sewing (prevention of the setback operation after the end of sewing) can be reset from the state where button **A** is pressed in the following cases:




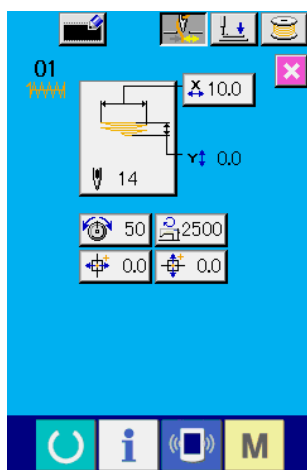
- When the button, which is in the ON state, is pressed again (to place it in the OFF state)
- When the ready key is pressed on the sewing screen (green) to return to the data entry screen (blue);
- When the power is turned OFF;
- When the error screen is displayed;
- When you carry out sewing using the step operation function (the screen changes to the step operation selection screen).

2-14. How to carry out the bartacking setting



① Changing the screen to the LK unit data entry screen

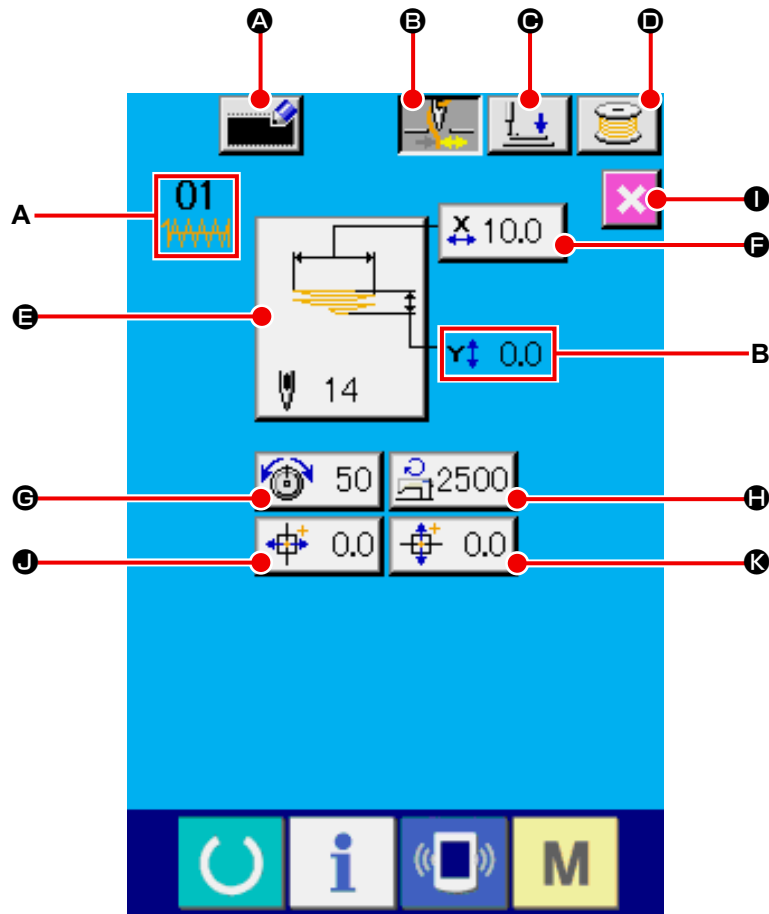
When you press bartacking button  **A** on the shoelace loop individual sewing data entry screen, the LK unit data entry screen is displayed. You can set the bartacking on this screen.





LK unit data entry screen



2-15. LCD section at the time of setting the bartacking

(1) LK unit data entry screen

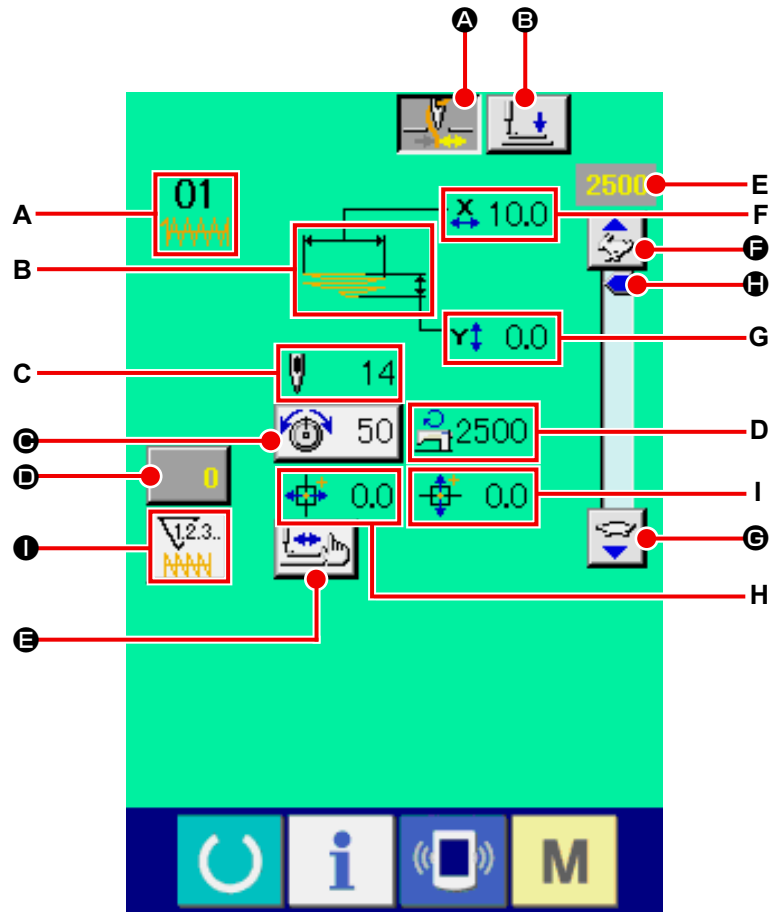




Symbol	Name of button	Description
Ⓐ	New user-pattern register button	Displays the new user-pattern register screen. → Refer to " II-2-21. How to register a new user-pattern " p.61.
Ⓑ	Thread clamp button	Selects "enable/disable" of the thread clamp.  : Thread clamp is enabled  : Thread clamp is disabled * In the case the thread clamp prohibition is selected with the memory switch U035, the thread clamp button is not displayed.
Ⓒ	Presser lowering button	Lowers the garment body presser and the work clamp foot and displays the presser lowering screen. It should be remembered, however, the error alarm buzzer sounds and a press on the button is disabled if the set ready key has not at all pressed up to that time. → Refer to " II-2-6. How to lower the garment body presser and the work clamp foot " p.34.
Ⓓ	Bobbin winding button	The bobbin winding button thread-winding screen is displayed. It should be remembered, however, the error buzzer will sound to disable the press-down operation unless the Ready key has been pressed in prior.. → Refer to " I-5-2. Winding a bobbin " p.15.



Symbol	Name of button	Description
Ⓔ	Sewing shape selection button	Displays the sewing shape which is currently selected. When you press the button, the standard pattern number list screen is displayed in the case you have selected a standard pattern or the user-pattern list screen is displayed in the case you have selected a user-pattern. → Refer to "II-2-18. How to change the item data (bartacking setting)" p.56.
Ⓕ	Actual X-direction value button	Displays the actual dimension value in X direction of the sewing shape which is currently selected. When you press this button, the actual X/Y actual value setting screen is displayed. → Refer to "II-2-18. How to change the item data (bartacking setting)" p.56.
Ⓖ	Thread tension setting button	Displays, on this button, the needle thread tension value set in the pattern data which is currently selected. When you press the button, thread tension setting screen is displayed. → Refer to "II-2-18. How to change the item data (bartacking setting)" p.56.
Ⓗ	Max. sewing speed control setting button	Displays the controlled max. sewing speed which is currently set on the button. When you press the button, max. sewing speed control setting screen is displayed. → Refer to "II-2-18. How to change the item data (bartacking setting)" p.56.
Ⓘ	Close button	Displays the shoelace loop individual sewing data entry screen and enters the shoelace loop individual sewing mode.
Ⓝ	X-travel amount setting button	Displays the travel amount of the currently-selected sewing shape in X direction. When pressed, the X-travel amount setting screen is displayed. → Refer to "II-2-18. How to change the item data (bartacking setting)" p.56.
Ⓚ	Y-travel amount setting button	Displays the travel amount of the currently-selected sewing shape in Y direction. When pressed, the X-travel amount setting screen is displayed. → Refer to "II-2-18. How to change the item data (bartacking setting)" p.56.



Symbol	Name of image	Description
A	Pattern number and type of pattern	Displays the pattern number and the type of pattern (standard pattern/user pattern) which are currently selected.  : Standard pattern  : User pattern
B	Actual Y-direction value	Displays the actual dimension value in Y direction of the sewing shape which is currently selected. If the actual dimension value in Y direction is any value other than 0.0, the actual Y-direction value button is displayed.

(2) LK unit sewing screen

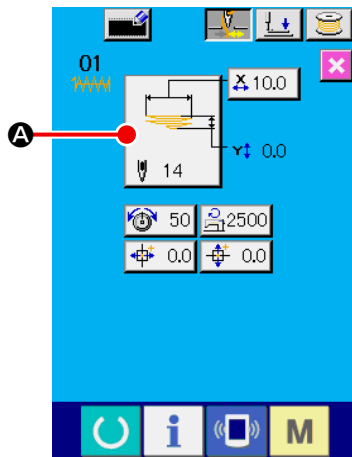


Symbol	Name of button	Description
Ⓐ	Thread clamp button	<p>Selects "enable/disable" of the thread clamp.</p>  : Thread clamp is enabled  : Thread clamp is disabled <p>* In the case the thread clamp prohibition is selected with the memory switch U035, the thread clamp button is not displayed.</p>
Ⓑ	Presser lowering button	<p>Lowere the work clamp foot and displays the presser lowering screen. → Refer to "II-2-6. How to lower the garment body presser and the work clamp foot" p.34.</p>
Ⓒ	Thread tension setting button	<p>Displays, on this button, the needle thread tension value set in the pattern data which is currently selected. When you press the button, the thread tension setting screen is displayed. → Refer to "II-2-18. How to change the item data (bartacking setting)" p.56.</p>
Ⓓ	Counter value change button	<p>Displays the current counter value on the button. When you press the button, the counter value change screen is displayed. → Refer to "II-2-7. Using counter" p.35.</p>
Ⓔ	Step sewing button	<p>Displays the machine-head jump step sewing screen. You can check the pattern shape on this screen. → Refer to "II-2-19. How to check the sewing shape" p.57.</p>
Ⓕ	Speed-dial setting increase button	<p>Increases the sewing speed in increments of 100.</p>


Symbol	Name of button	Description
E	Speed-dial setting decrease button	Decreases the sewing speed in increments of 100.
H	Speed-dial setting button	Increases/decreases the sewing speed when the button is moved upward or downward.
I	Counter changeover button	<p>Bartacking counter display/bobbin thread counter display can be changed over. The button is displayed only in the case both the bartacking counter and bobbin thread counter are in the ON state.</p>  : Bartacking counter  : Bobbin thread counter <p>→ Refer to "II-2-7. Using counter" p.35.</p>

Symbol	Name of image	Description
A	Pattern number and type of pattern	<p>Displays the pattern number and the type of pattern (standard pattern/user pattern) which are currently selected.</p>  : Standard pattern  : User pattern
B	Sewing shape	Displays the sewing shape which is currently selected.
C	Number of stitches	Displays the total number of stitches of the sewing shape which is currently selected.
D	Max. sewing speed control setting	Displays the Max. sewing speed control setting which has been set under the setting mode.
E	Sewing speed	Displays the sewing speed preset with the speed dial.
F	X actual dimension value button	Displays the actual dimension value, in X direction, of the sewing shape which is currently selected.
G	Y actual dimension value button	Displays the actual dimension value, in Y direction, of the sewing shape which is currently selected.
H	X-travel amount display	Displays the travel amount of the currently-selected sewing shape in X direction.
I	Y-travel amount display	Displays the travel amount of the currently-selected sewing shape in Y direction.

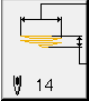
2-16. How to select the sewing shape (bartacking setting)

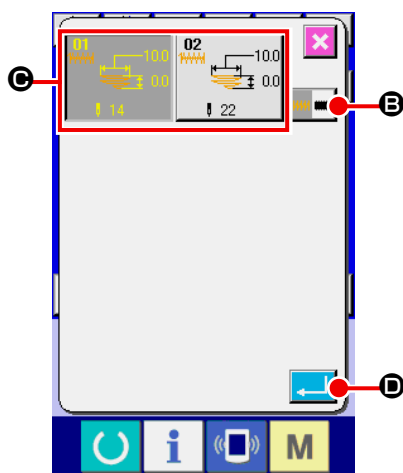


① Displaying the data entry screen


Only on the data entry screen (light blue), the sewing shape selection is enabled. On the sewing screen (green), press the set ready key  to the data entry screen (light blue).



② Bringing up the sewing shape selection screen

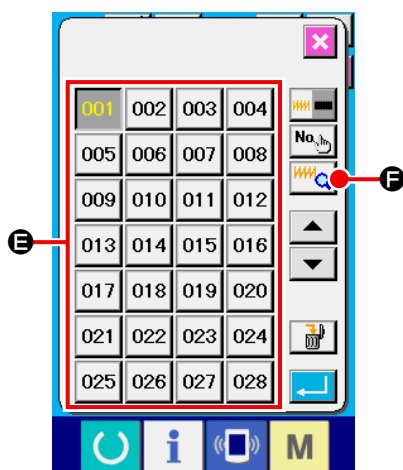
When you press sewing shape selection button  **A**, the sewing shape selection screen is displayed.



③ Selecting the desired type of sewing shape

The following two different types of sewing shapes are available. If you want to change the standard pattern to the user pattern or vice versa, press sewing shape type selection button  **B**.


Pictograph	Name	Max. number of patterns
	Standard pattern	2
	User pattern	200




④ Selecting the sewing shape

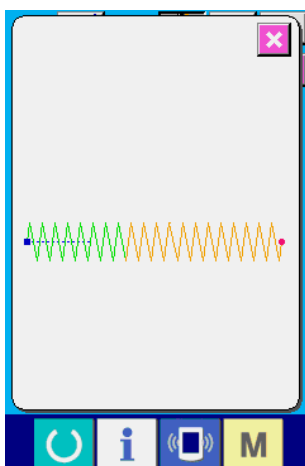
Press sewing shape button **C** which corresponds to the one you want.

⑤ Confirming the sewing shape

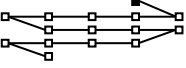
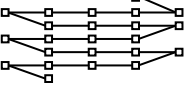
Press enter button  **D** to confirm the sewing shape you have selected. Then, the data entry screen is displayed.

In the case you have selected the user pattern, the screen at left is displayed. Pattern number selection button **E** appears on the screen. Press the pattern number button which corresponds to the one you want.

If you want to check the sewing shape you have selected, press viewer button  **F**. Then, the viewer screen is displayed to show the sewing shape you have selected.

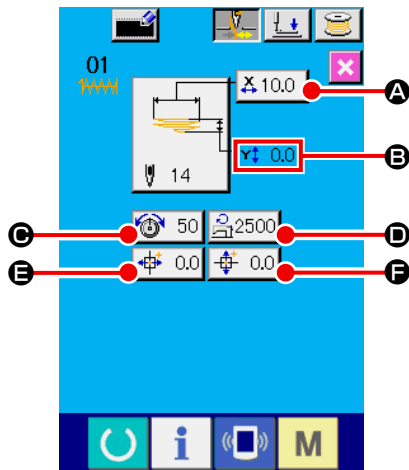


2-17. List of sewing shapes


No.	Needle-entry diagram	Number of stitches	Sewing size (mm)	
			Length	Width
1		14	0	12.0
2		22	0	12.0

* The sewing size indicated applies when the enlargement factor is 100 %.

2-18. How to change the item data (bartacking setting)



① Displaying the data entry screen



On the data entry screen, the item data can be changed. On the sewing screen (green), press the set ready key  to display the data entry screen (light blue).

* The thread tension value can also be changed on the sewing screen.

② Displaying the item data entry screen



When the item data button corresponding to the item you want to change is pressed, the item data entry screen is displayed. There are following six data items.

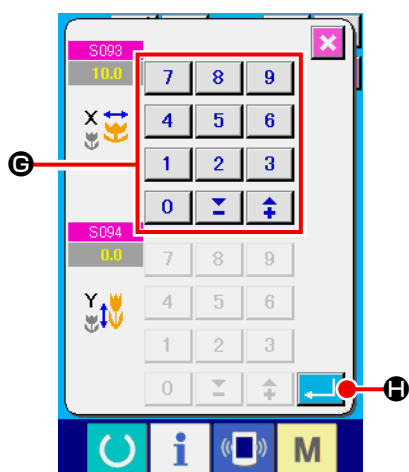
	Item	Input range	Initial value
A	X actual dimension value	6.0 to 14.0 (mm)	10.0 (mm)
B	Y actual dimension value	0.0 to 3.2 (mm)	0.0 (mm)
C	Thread tension	0 to 200	50
D	Max. sewing speed control	400 to 2,500 (sti/min)	2,500 (sti/min)
E	X travel amount	-23.0 to 23.0 (mm)	0.0 (mm)
F	Y travel amount	-3.2 to 3.2 (mm)	0.0 (mm)

* The maximum input range and initial value of max. limiting speed  depend on the memory switch .


* Even if the set value of the X/Y travel amount falls within the input range, the actual sewing range may reach the travel limits of the sewing machine. In this case, the out-of-range error E042 will occur.

For example, the X actual dimension value entry procedure is as follows.

Press   to display the item data entry screen.



③ Entering data

Enter a desired value with the numeric keys and +/- buttons .

④ Confirming your entry

When you press enter button  , the data you have entered is confirmed.

* For the other item data, data can be changed in the similar procedure.

* X/Y values of the X/Y actual dimension values can be entered on one and the same screen.



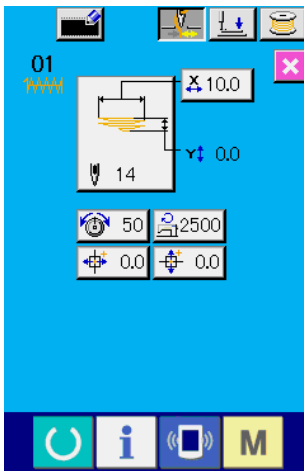
- If you turn OFF the power to the sewing machine without having pressed the set ready key, the set values of the pattern number, X/Y actual dimension values, the max. sewing speed, thread tension and X/Y travel amount will not be stored in memory.
- If you change the Y travel amount, the dimensions between bartacks will change.
- Be sure to check the sewing shape by means of the machine head jump step sewing after having changed the X/Y travel amount. If the sewing range exceeds the work clamp foot, the needle can come in contact with the work clamp foot during sewing resulting in needle breakage.

2-19. How to check the sewing shape




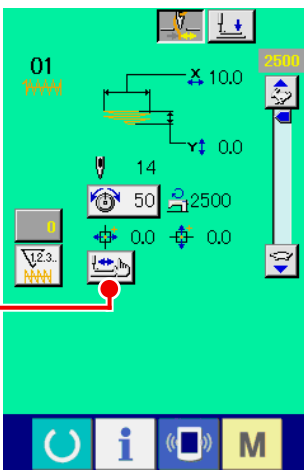
CAUTION :

After the pattern selection, be sure to check the shape of the sewing pattern you have selected at all times. If the pattern size is larger than the work clamp foot, the needle can interfere with the work clamp foot during sewing resulting in needle breakage.




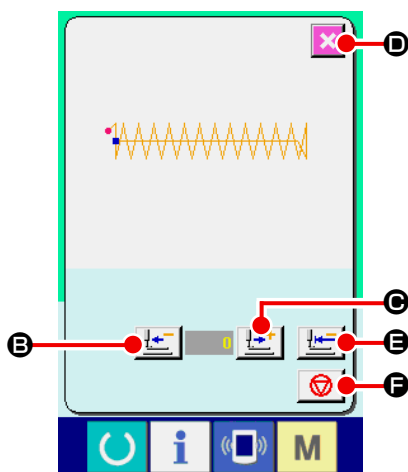
① Displaying the sewing screen

Bring up the data entry screen (light blue). When you press the set ready key , the background color of the LCD changes from blue to green. On this screen, sewing is enabled.



② Displaying the machine-head jump step sewing screen

When you press step sewing button  **A**, the machine-head jump step sewing screen is displayed.







③ Lowering the work clamp foot by means of the start switch



In this mode, the sewing machine will not start even if you press the start switch.

④ Performing jump sewing with the work clamp foot lowered

Check the sewing shape by means of the work clamp foot backward button  **B** and work clamp foot forward button  **C**. When you keep either button held pressed, the work clamp foot keeps moving even if you release your finger from the button. When you want to stop the work clamp foot, press stop button  **F**. When you press "move to initial position" button  **E**, the screen is closed and the LK unit sewing screen is displayed.



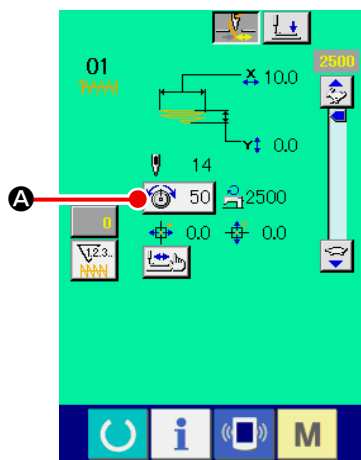
If you press the work clamp foot forward/backward button with the needle bar lowered, the work clamp foot will automatically lift the needle bar to its upper position before moving. Be careful.

⑤ Finishing checking the sewing shape



When you press cancel button  **D**, the screen returns to the sewing screen.

2-20. How to change the thread tension command from needle entry point to needle entry point

(1) How to add/change the thread tension command from needle entry point to needle entry point



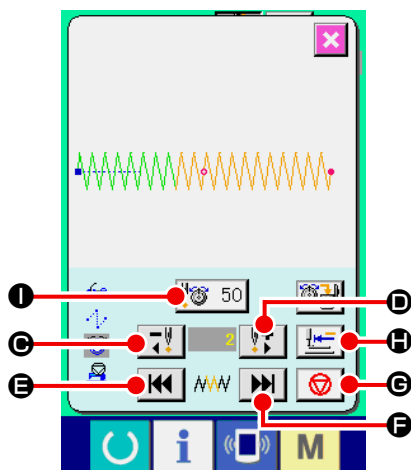
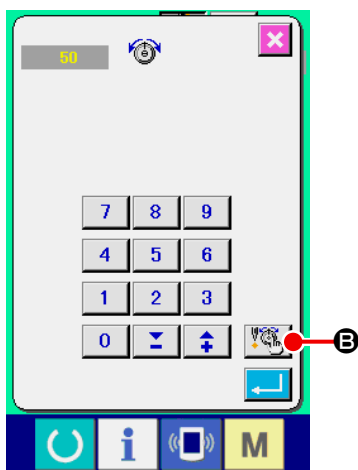
① Displaying the thread tension command change screen

Press thread tension button  50 **A** on the sewing screen when you select a user pattern to display the thread tension setting screen. When you press thread command change button  **B** on the thread tension setting screen, the thread tension command change screen is displayed.



If the start switch is pressed, the work clamp foot will be lowered.







In this mode, the sewing machine will not start even if you press the start switch.



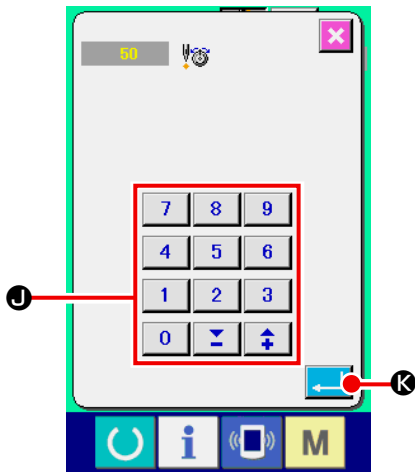
② Specifying the location of the command to be changed

Specify the location to which a new thread tension command you want to add, or at which the current thread tension command value you want to change by means of 1-stitch backward button  **C** or 1-stitch forward button  **D** with the work clamp foot lowered.



You can also move the needle entry point to another one, before or after the current point, at which a thread tension command value is set by means of  **E** or  **F**. To stop moving the needle entry point, press stop button  **G**.

When you press return-to-origin button  **H**, the screen is closed and displays the LK unit sewing screen.

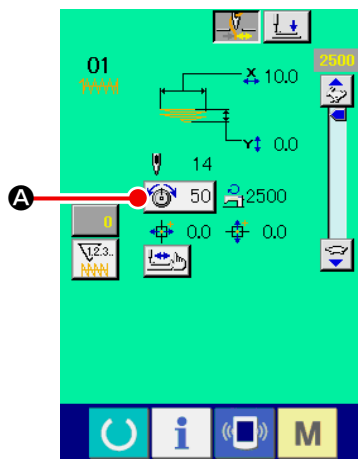
The values shown on the screen are absolute values (thread tension value + Thread tension command value).





③ Entering a thread tension command value

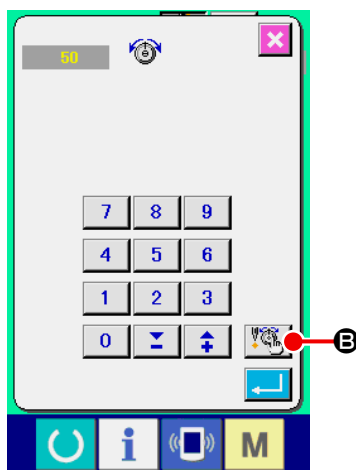
When you press command input button  **A**, the thread tension increase/decrease value entry screen is displayed. Enter a desired value using the numeric keys and +/- buttons **J**. When you press enter button  **K**, your entry is confirmed.

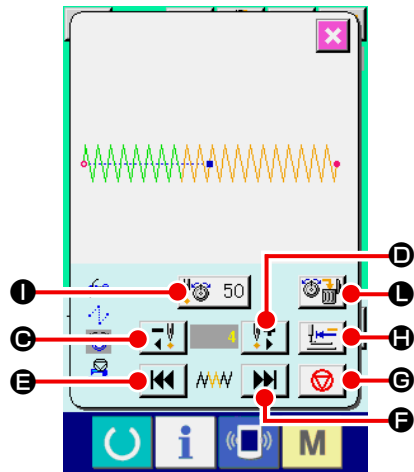
(2) How to delete the thread tension command from needle entry point to needle entry point





① Displaying the thread tension command change screen




Press thread tension button  **A** on the sewing screen when you select a user pattern to display the thread tension setting screen. When you press thread command change button  **B** on the thread tension setting screen, the thread tension command change screen is displayed.







② Specifying the location of the command to be deleted



Specify the location of the command you want to delete by means of 1-stitch backward button  **C** or 1-stitch forward button  **D** with the work clamp foot lowered.

You can also move the needle entry point to another one, before or after the current point, at which a thread tension command is set by means of  **E** or  **F**. To stop moving the needle entry point, press stop button  **G**.

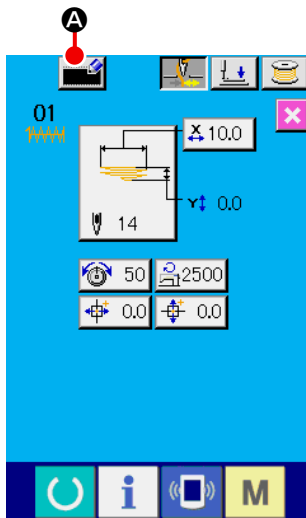
When you press "move to initial position" button  **H**, the screen is closed and the LK unit sewing screen is displayed. In the case the current needle entry point is located on the thread tension command, command delete button  **L** is displayed.




③ Deleting the thread tension command

When you press command delete button  **L**, the command delete screen is displayed. When you press enter button  **M**, the command is deleted.


2-21. How to register a new user-pattern

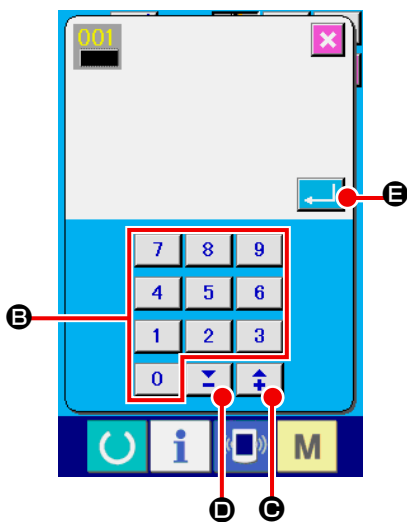


① Displaying the data entry screen


Only on the data entry screen (light blue), a new pattern can be registered. On the sewing screen (green), press the set ready key  to display the data entry screen (light blue).



② Bringing up the new user-pattern register screen

When you press new register button  **A**, the new user-pattern register screen is displayed.




③ Entering a user pattern number

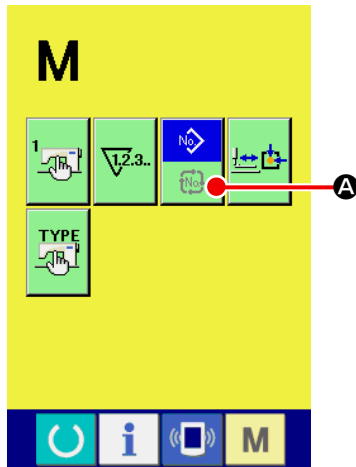
Enter a new user-pattern number you want to register with numeric keys **B**. If you enter the user pattern number which has already been used, E403 will be displayed when you press enter button  **E**. In this case, select another user pattern number which has not been used. It is prohibited to register a new user-pattern to the user pattern number which has already been used.

It is also possible to search user pattern numbers by means of +/- buttons   (**C**, **D**).


④ Confirming the user pattern number

When you press enter button  **E**, the new user pattern number to be registered is confirmed. Then, the data entry screen for the user-pattern selection is displayed.

2-22. How to change the sewing mode



① Selecting the sewing mode

When you press the **M** switch in the state where a pattern has already been selected, sewing mode selection button 

A is displayed on the screen. When you press this button, the sewing mode is changed over between the individual sewing mode and the cycle sewing mode.

* The look of the sewing mode selection button varies according to the sewing mode which is currently selected.

When the individual sewing is selected:



When the cycle sewing is selected:



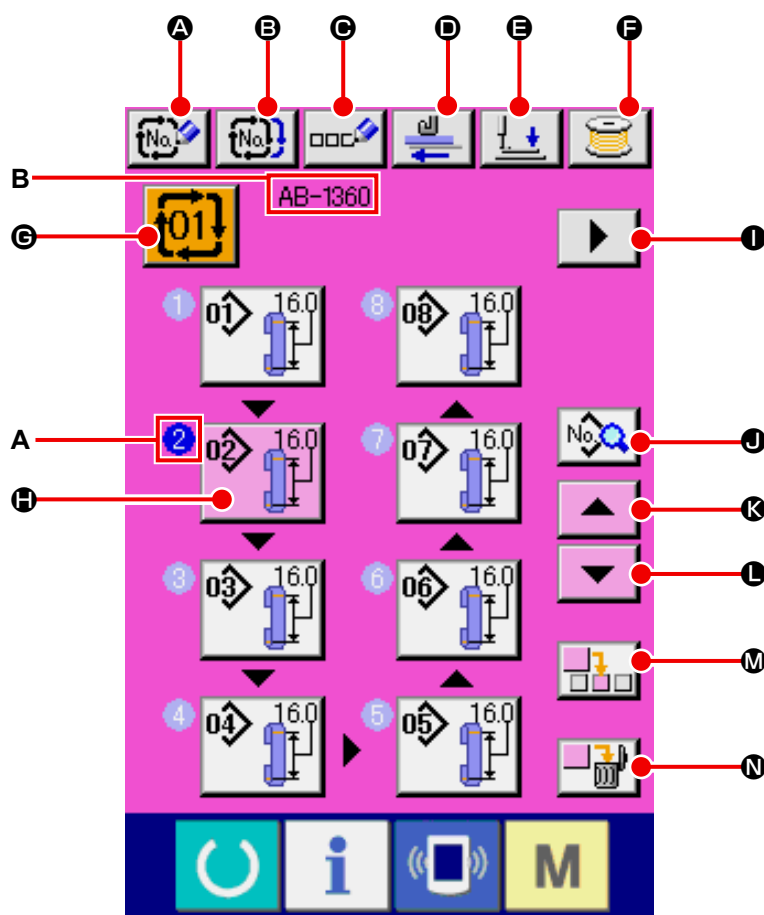
2-23. LCD section when the cycle sewing is selected

This model of sewing machine is able to sew shoelace loops sequentially with several different pieces of shoelace loop pattern data combined. As many as 30 different shoelace loop patterns can be entered in a cycle. Use the cycle sewing for sewing shoelace loops of two or more different sewing shapes for one apparel product.

As many as 20 different pieces of cycle sewing data can be registered. Use the cycle sewing by creating a new sewing cycle or copying the existing one according to your need.

→ Refer to "II-2-8. How to register a new shoelace loop pattern number" p.39 and "II-2-11. How to copy a shoelace loop pattern number" p.44.

(1) Cycle sewing data entry screen

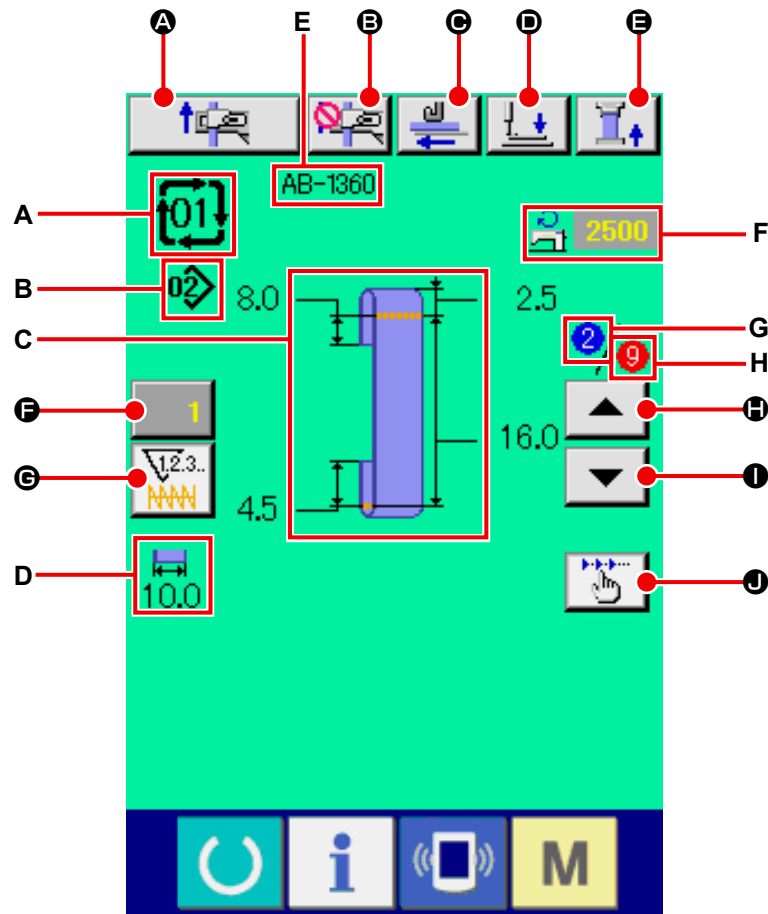


Symbol	Name of button	Description
A	Cycle-sewing new data register button	Displays a new cycle-sewing data number register screen. → Refer to "II-2-8. How to register a new shoelace loop pattern number" p.39.
B	Cycle-sewing data copy button	Displays the cycle-sewing shoelace loop pattern number copy screen. → Refer to "II-2-11. How to copy a shoelace loop pattern number" p.44.
C	Cycle-data name input button	Displays the cycle-sewing data name entry screen. → Refer to "II-2-9. How to name a shoelace loop pattern number" p.41.
D	Feed button	Insert a shoelace loop into the loop feeder unit and press this button. Then the unit feeds the shoelace loops.
E	Presser lowering button	Lowers the garment body presser and the work clamp foot and displays the presser lowering screen. → Refer to "II-2-6. How to lower the garment body presser and the work clamp foot" p.34.







Symbol	Name of button	Description
F	Bobbin winding button	Enables bobbin winding → Refer to " I-5-2. Winding a bobbin " p.15.
G	Cycle-sewing data number selection button	Displays, on the button, the cycle-sewing data number which is currently selected. When you press the button, the cycle-sewing data number selection screen is displayed.
H	Pattern selection button	A Displays, on the button, the shoelace loop pattern numbers registered in the order of sewing sequence and their shoelace loop shapes. Displays the shoelace loop pattern data entry screen. * Button pictograph/display of button H or A is shown by the number of entered shoelace loop patterns.
I	Next-page display button	Displayed when the number of shoelace loop patterns registered in the cycle sewing data becomes 8 or more.
J	Cycle-sewing sewing data list button	Displays the cycle-sewing sewing data list screen.
K	Scroll up button	Scrolls up the shoelace loop pattern number to display the previous one.
L	Scroll down button	Scrolls down the shoelace loop pattern number to display the next one.
M	Step insert button	Inserts a step just before the shoelace loop pattern number which is currently selected.
N	Step delete button	Deletes the step which is currently selected.

Symbol	Name of image	Description
A	Order of sewing	Displays the order of sewing of shoelace loot pattern data which is being entered. If the screen is changed over to the sewing screen, the shoelace loop pattern to be sewn first will be displayed in blue. * Button pictograph/display of button H or A is shown by the number of entered shoelace loop patterns.
B	Cycle-sewing data name	Displays the name enter into the cycle-sewing data which is currently selected.

(2) Sewing screen of the cycle sewing



Symbol	Name of button	Description
Ⓐ	Setback operation button	Carries out the setback operation.
Ⓑ	Next loop clamping cancel button	The machine carries out prohibition (cancel) or reset of loop clamping for the next sewing. → Refer to "II-2-13. Function of canceling of a loop clamping for the next sewing" p.48.
Ⓒ	Feed button	When you press draw-out this button after having inserted a shoelace loop into the loop feeder unit, the loop feeder unit draws out the shoelace loop. However, a press on this button is disabled during sewing or setback operation.
Ⓓ	Presser lowering button	Lowers the garment body presser and the work clamp foot and displays the presser lowering screen. However, a press on this button is disabled during sewing or setback operation. → Refer to "II-2-6. How to lower the garment body presser and the work clamp foot" p.34.
Ⓔ	Shoelace loop tension button	Displays the shoelace loop tension entry screen. At this time, the start switch action will be prohibited.
Ⓕ	Counter value change button	Displays the current counter value on the button. When you press the button, the counter value change screen is displayed. → Refer to "II-2-7. Using counter" p.35.

Symbol	Name of button	Description
Ⓔ	Counter changeover button	<p>Bartacking counter display / shoelace loop counter display / No. of pcs. counter display / bobbin thread counter display can be changed over. The button is displayed only in the case two or more of the aforementioned counters are in the ON state.</p> <p> : Bartacking counter</p> <p> : Shoelace loop counter</p> <p> : No. of pcs. counter</p> <p> : Bobbin thread counter</p> <p>→ Refer to "II-2-7. Using counter" p.35.</p>
Ⓕ	Order-of-sewing backward button	<p>Restores the shoelace loop pattern to be sewn to the previous one.</p> <p> Be aware that a press on this button activates the work clamp foot and the garment body presser.</p>
Ⓖ	Order-of-sewing forward button	<p>Restores the shoelace loop pattern to be sewn to the next one.</p> <p> Be aware that a press on this button activates the work clamp foot and the garment body presser.</p>
Ⓙ	Step operation button	<p>Displays the step operation selection screen and enables the step operation mode. While the machine is carrying out the set-back operation, however, this button is disabled even if it is pressed.</p> <p>→ Refer to "II-2-12. How to carry out the step operation" p.45.</p>

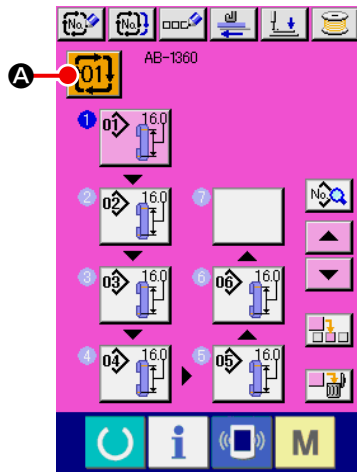
Symbol	Name of image	Description
A	Cycle-sewing data number	Displays the cycle-sewing data number which is currently selected.
B	Shoelace loop pattern number	Displays the shoelace loop pattern number which is currently selected.
C	Shoelace loop pattern description	Displays the description of the shoelace loop pattern to be sewn.
D	Shoelace loop width	Displays the shoelace loop width which is currently set.
E	Cycle-sewing data name	Displays the name enter into the cycle-sewing data which is currently selected.
F	Sewing speed	Displays the sewing speed (set value) for the bartacking pattern which is being sewn.
G	Order of sewing	Displays the order of sewing which is being carried out.
H	Display of the total number of registered patterns	Displays the total number of shoelace loop patterns registered in the cycle-sewing data number which is being sewn.

2-24. How to carry out cycle sewing


It is necessary first to change sewing mode to the cycle sewing before setting data.

→ Refer to "II-2-22. How to change the sewing mode" p.62.


(1) Selection of the cycle-sewing data

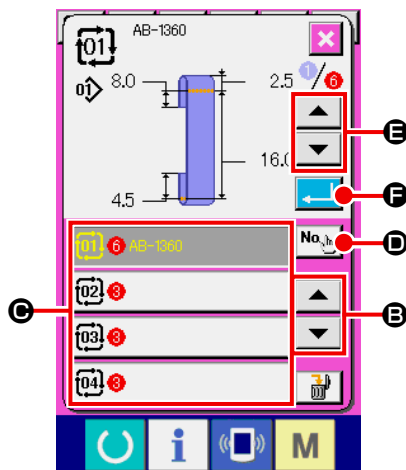


① Displaying the data entry screen


Only on the data entry screen (pink), the cycle-sewing data number can be selected. On the sewing screen (green), press the set ready key  to display the data entry screen (pink).


② Bringing up the cycle-sewing data number selection screen

When you press cycle-sewing data number button  **A**, the cycle-sewing data number selection screen is displayed. The cycle-sewing data number which is currently selected and its description are displayed on the upper part of the screen. The other registered cycle-sewing data numbers and buttons are displayed on the lower part of the screen.




③ Selecting the cycle-sewing data number


Every time you press upper/lower scroll buttons  **E**, the cycle-sewing data number button **C** changes over one after another.

It is also possible to bring up the cycle-sewing data number entry screen with numeral input button  **D** and directly enter the cycle-sewing data number.

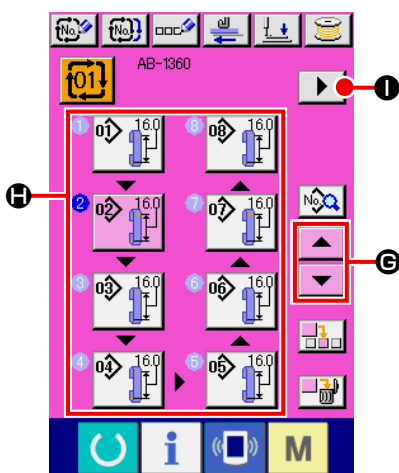
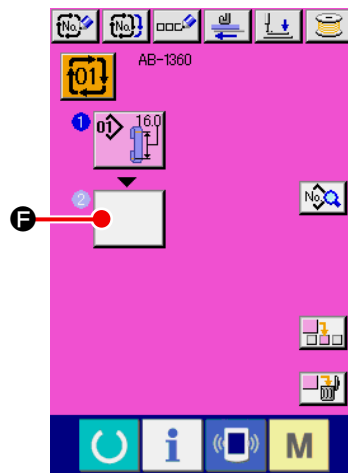
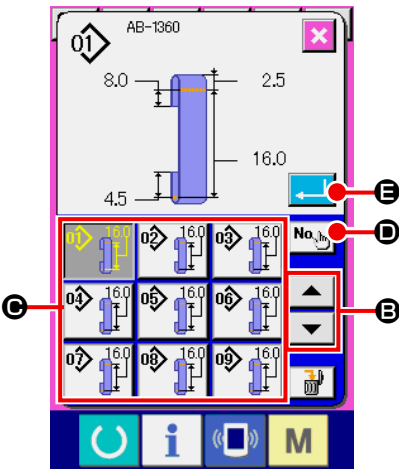
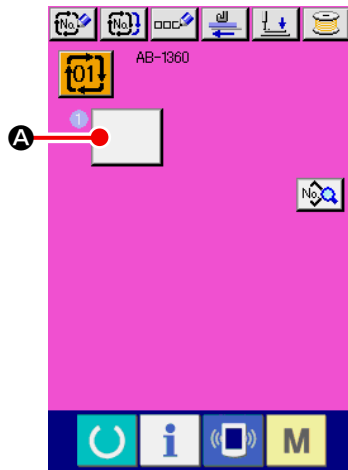
Now, press cycle-sewing data number button **C** you want to select.

When you press step confirmation buttons  **E**, sewing shape, etc. registered in the cycle-sewing data are displayed one after another.


④ Confirming the cycle sewing data number

When you press enter button  **F**, the cycle-sewing data number selection screen is closed to finish selection.

(2) Method to create the cycle-sewing data




① Displaying the data entry screen


Only on the data entry screen (pink), the cycle-sewing data number can be selected. On the sewing screen (green), press the set ready key  to display the data entry screen (pink).


Since no pattern number is registered in the initial screen, the first pattern selection button is displayed in the blank state.

② Displaying the pattern number selection screen

When you press pattern selection  **A**, the pattern number selection screen is displayed.

③ Selecting a pattern number


Every time you press up/down scroll buttons  **B**, the registered pattern number button **C** changes over one after another.

It is also possible to bring up the pattern number entry screen with numeral input button  **D** and directly enter the pattern number.


The button displays the description of the pattern data.

Now, press pattern number button you want to select.


④ Confirming the pattern number


When you press enter button  **E**, the pattern number selection screen is closed to finish selection.


⑤ Repeating steps of procedure ② through ④ by the number of patterns you want to register

Once the first registration is confirmed, the 2nd pattern selection button  **F** will be displayed.


Repeat steps of procedure ② through ④ by the number of patterns you want to register.

You can select the pattern number button by pressing up/down scroll buttons  **G**. The selected pattern number button

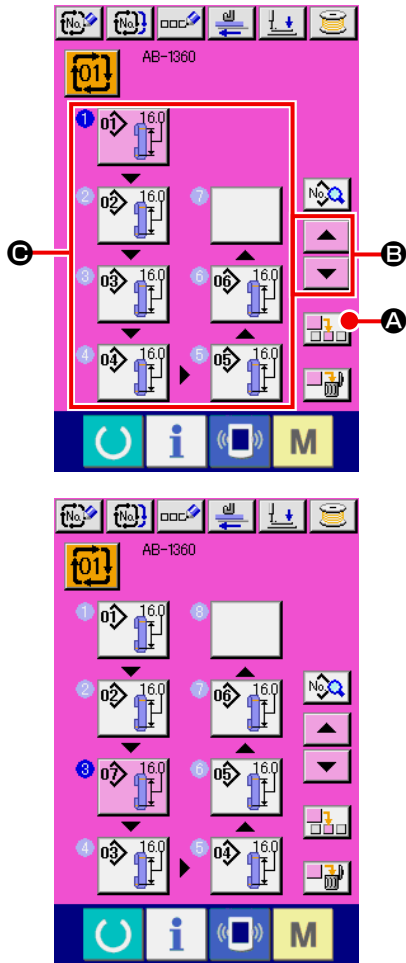
is displayed in pink .

When you press pattern number button **H** shown on the display, the shoelace loop pattern data entry screen is displayed. On this screen, you can set each parameter of the pattern data separately. If you change the parameter on the shoelace loop pattern data entry screen of the cycle sewing screen, the parameter of the original shoelace loop pattern will be changed. When setting a parameter, the confirmation screen M589 is displayed. Press enter button  **E** as long as no problem will be caused by changing the parameter.


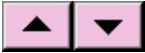

→ Refer to "[II-2-5. How to change the shoelace loop length](#)" p.32 for details.

When the combined data you have created requires several screens, you can display the next screen with screen scroll button  **I**.


(3) Method to insert the cycle-sewing data



① Determining the insertion position

When you press pattern number insert button  **A**, a sewing step is inserted into the location between the previous pattern number and the pattern number which is being selected (displayed in pink). Determine location **C** into which a sewing step is to be inserted by means of up/down scroll buttons  **B** and press pattern number insert button  **A**.

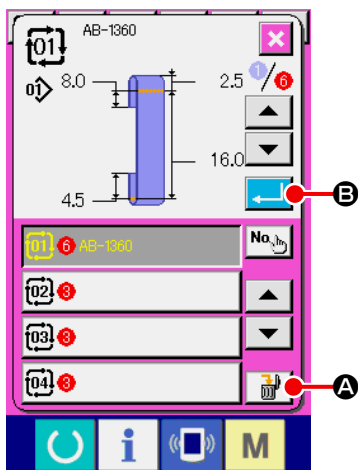
② Selecting the pattern number to be inserted and confirming it



When you press pattern number insert button  **A**, the pattern number list screen is displayed.

Carry out steps of procedure ③ through ④ described in **"(2) Method to create the cycle-sewing data" p.68.**

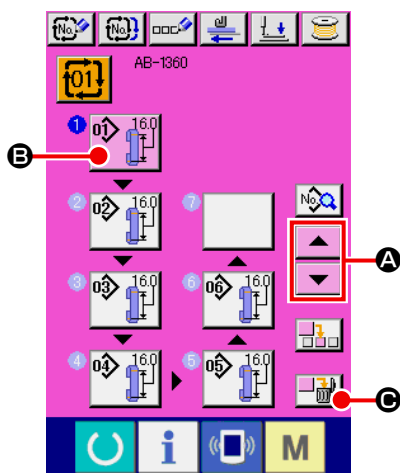
Once you have confirmed the pattern number, the selected pattern number is displayed at the determined location of insertion.




(4) Method for deleting the cycle sewing data

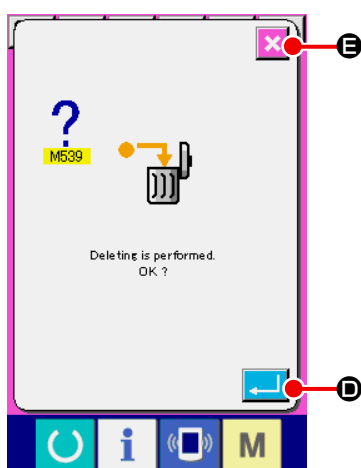




- ① **Selecting the cycle sewing data number**
Carry out steps of procedure ① to ③ described in "(1) Selection of the cycle-sewing data" p.67 to display the cycle sewing data you want to delete.
- ② **Deleting the cycle sewing data**
When you press date delete button  **A**, the cycle sewing data delete confirmation popup window will appear on the screen. If you press  **B** on the popup window, the cycle sewing data you have selected is deleted.

(5) Method for deleting a step of the cycle sewing data



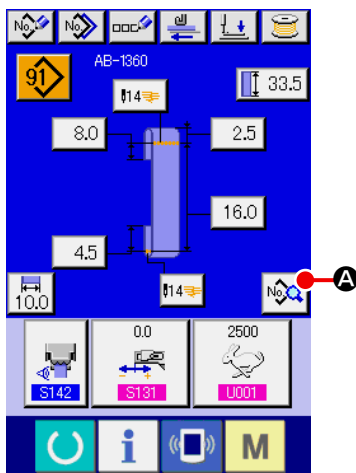
- ① **Selecting the cycle sewing data number**
Carry out steps of procedure ① to ② described in "(1) Selection of the cycle-sewing data" p.67 to place the cycle sewing data which contains the step you want to delete in the selected state.
- ② **Displaying the pattern number selection screen**
Press up/down scroll buttons  **A** to place the pattern selection button of the step you want to delete in selected state  **B**, and press step delete button  **C**. Then, the data step delete popup window is displayed.



- ③ **Deleting the step of the cycle sewing data you want to delete**
When you press enter button  **D**, the selected step of the cycle sewing data is deleted.
If you press cancel button  **E**, the screen returns to the cycle sewing data entry screen without deleting the selected step.

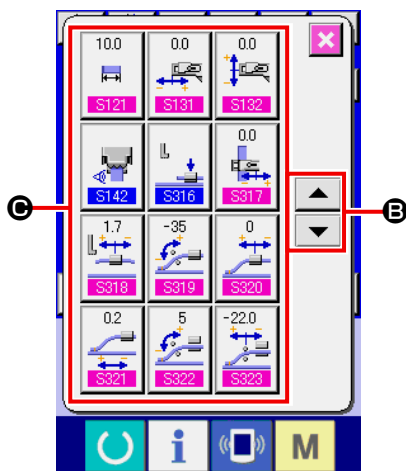
2-25. How to edit the sewing data

(1) Method for changing the sewing data






① Displaying the entry screen

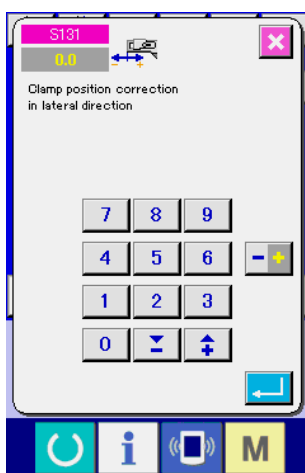
When you bring up the data entry screen for the shoelace loop individual sewing mode or the shoelace loop cycle-sewing mode, you can change the sewing data.



② Selecting the sewing data to be changed

When you press sewing data list button  **A**, the sewing data list screen is displayed. Select the data you want to change.

Select data item button **C** you want to change by pressing up/down scroll buttons   **B**.



③ Changing the sewing data

Sewing data consists of two different types of data items; one type of data item requires changing of the numeric data, and the other type of data item requires changing of the pictograph.

The data item requiring changing of the numeric data is assigned with a number such as **S131** displayed in pink. The numeric data can be changed by means of the numeric keys and +/- buttons shown on the data change screen.

The data item requiring changing of the pictograph is assigned with a number such as **S142** displayed in blue. The pictograph can be selected from those shown on the change screen.

* Refer to "(2) Sewing data list" p.72 for the details of sewing data.
















If you turn OFF the power to the sewing machine without having pressed the set ready key, the set values of the sewing data will not be stored in memory.




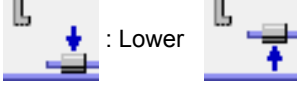










The dimensions of the shoelace loop sewing shape displayed on the operation panel are only for reference. The dimensions vary according to the shoelace loop material. Be sure to adjust the settings of shoelace loop dimensions so that your desired finished dimensions are achieved.

(2) Sewing data list

No.	Item		Input range/ selection range	Initial value
S301 *	Loop length A for shoelace loop sewing shape		0 to 20.0 (mm)	4.5 (mm)
S302 *	Loop length B for shoelace loop sewing shape		10.0 to 22.0 (mm)	16.0 (mm)
S303 *	Loop length E for shoelace loop sewing shape		-1.0 to 9.0 (mm)	2.5 (mm)
S304 *	Loop length F for shoelace loop sewing shape		-10.0 to 30.0 (mm)	8.0 (mm)
S313	Correcting the loop length This data number is used for correcting the length of loop to be cut by the loop feeder unit. When the type of loop is changed, adjust the loop length to the one displayed on the panel using this sewing data number.		-10.0 to 10.0 (mm)	0 (mm)
S121 *	Shoelace loop width When the shoelace loop width is changed, the bartacking width is automatically changed according to the new shoelace loop width. At this time, the bartacking width out-of-range error (E435) can take place for some set values of the shoelace loop width.		8.0 to 12.0 (mm)	10.0 (mm)
S122 *	Shoelace loop length		20.0 to 70.0 (mm)	33.5 (mm)
S131	Clamp position correction in lateral direction This switch is used to correct the lateral position of the shoelace loop clamp when sewing shoelace loops.		-3.0 to 3.0 (mm)	0 (mm)
S132	Clamp supply position correction in longitudinal direction This switch is used to correct the longitudinal position of the shoelace loop clamp when feeding shoelace loops.		-5.0 to 5.0 (mm)	0 (mm)
S141	Shoelace loop tension This switch is used to adjust the shoelace loop tension that is applied by the shoelace loop drawing device when the device places the shoelace loop in sewing position. +: Increases the shoelace loop tension - : Decreases the shoelace loop tension → Refer to " I-5-5. Adjusting the shoelace loop tension " p.17 for details.		-100 to 100	-5
S142	Enable/disable of detection of shoelace loop drawing device failure  : Enable  : Disable In the case of a light-weight material, disable this function setting.		—	Enable
S143	Loop cutter section feeding correction This function reduces the loop feeding amount to be clamped by the loop drawing device immediately after cutting of the loop which is not clamped by the drawing device.		-3.0 to 0 (mm)	0 (mm)












* : Data marked with an asterisk (*) are not displayed on the sewing data list screen. They are displayed, however, from the data entry screen.

 : Data in a gray box are not displayed in the standard state. To display them, refer to the Engineer's Manual.

No.	Item	Input range/ selection range	Initial value
S184	Correction of clamp position in lateral direction before pulling out the fork This data number is used to correct the clamp position in lateral direction before pulling out the fork. 	-7.0 to 7.0 (mm)	0 (mm)
S316	Clamp lowering operation at the loop feeding position This data number is used to select whether the clamp is lowered or not when feeding a loop.  In the case of a light-weight material, disable this function setting.	—	Lower
S317	Correction of clamp position in lateral direction at the first sewing position This data number is used to correct the clamp position in lateral direction at the time of first sewing. 	-5.0 to 5.0 (mm)	0 (mm)
S318	Correction of clamp position in longitudinal direction at the first sewing position This data number is used to correct the clamp position in longitudinal direction at the time of first sewing is corrected. 	-10.0 to 10.0 (mm)	1.7 (mm)
S319	Correction of fork angle when the fork moves forward This data number is used to correct the fork angle when it is moved forward. 	-100 to 100	-20
S320	Correction of clamp position in longitudinal direction when the fork moves forward This data number is used to correct the clamp position in longitudinal direction when the fork is moved forward. 	-10.0 to 10.0 (mm)	0 (mm)
S321	Correction of garment body feeder position when the fork moves forward This data number is used to correct the garment body feeder position in longitudinal direction when the fork is moved forward. 	-10.0 to 10.0 (mm)	0.2 (mm)
S322	Correction of fork angle after it has moved forward This data number is used to correct the fork angle after it has move forward is corrected. 	-100 to 100	-5
S323	Correction of clamp position in longitudinal direction when the fork starts rotating This data number is used to correct the fork position in longitudinal direction when the fork starts rotating. 	-30.0 to 30.0 (mm)	-22.0 (mm)
S324	Correction of garment body feeder position when the fork starts rotating This data number is used to correct the garment body feeder position in longitudinal direction when the fork starts rotating. 	-30.0 to 10.0 (mm)	-21.0 (mm)
S325	Correction of fork angle when it starts rotating This data number is used to correct the fork angle when it starts rotating. 	-150 to 150	100
S326	Correction of clamp position in longitudinal direction while fork is rotating This data number is used to correct the clamp position in longitudinal direction while the fork is rotating. 	-100 to 10.0 (mm)	-0.6 (mm)

* : Data marked with an asterisk (*) are not displayed on the sewing data list screen. They are displayed, however, from the data entry screen.

 : Data in a gray box are not displayed in the standard state. To display them, refer to the Engineer's Manual.

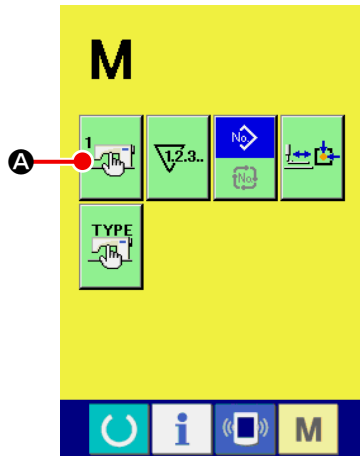
No.	Item		Input range/ selection range	Initial value
S327	Correction of fork angle while the fork is rotating This data number is used to correct the fork angle when it rotates until it rolls a loop partway.		-100 to 100	-35
S328	Correction of clamp travel amount in longitudinal direction when garment body feeder travels to the 2nd sewing position This data number is used to correct the amount of travel of the clamp in longitudinal direction when the garment body feeder travels to the 2nd sewing position.		-10.0 to 10.0 (mm)	0 (mm)
S329	Correction of clamp position in longitudinal direction when fork finishes loop rolling This data number is used to correct the clamp position in longitudinal direction when the fork finishes rolling of a loop.		-10.0 to 10.0 (mm)	2.5 (mm)
S330	Correction of fork angle upon completion of loop rolling This data number is used to correct the fork angle when it completes rolling of a loop.		-100 to 100	5
S331	Correction of 2nd sewing position of clamp in lateral direction This data number is used to correct the clamp position in lateral direction at the time of 2nd sewing.		-10.0 to 10.0 (mm)	-0.8 (mm)
S332	Correction of clamp position in longitudinal direction after fork comes down This data number is used to correct the clamp position in longitudinal direction after the fork has been lowered.		-10.0 to 10.0 (mm)	0 (mm)
S333	Correction of clamp position in lateral direction when removing fork (shorter) This data number is used to correct the clamp position in lateral direction when the shorter-side fork pin is removed.		-30.0 to 10.0 (mm)	13.0 (mm)
S334	Correction of clamp position in longitudinal direction when fork pulls a loop This data number is used to correct the clamp position in longitudinal direction when the fork pulls a loop.		-10.0 to 30.0 (mm)	0 (mm)
S335	Correction of garment body feeder in longitudinal direction when the fork pulls a loop This data number is used to correct the garment body feeder position in longitudinal direction when the fork pulls a loop.		-10.0 to 3.0 (mm)	-3.5 (mm)
S336	Correction of garment body feeder standby position This data number is used to correct the standby position of the garment body feeder.		-10.0 to 10.0 (mm)	0 (mm)
S337	Correction of clamp position in lateral direction after the first sewing This data number is used to correct the clamp position in lateral direction after the completion of the first sewing.		-5.0 to 5.0 (mm)	0 (mm)

* : Data marked with an asterisk (*) are not displayed on the sewing data list screen. They are displayed, however, from the data entry screen.

 : Data in a gray box are not displayed in the standard state. To display them, refer to the Engineer's Manual.


2-26. How to change the memory switch data

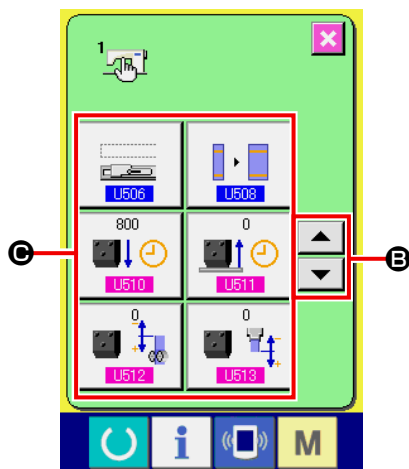
(1) Method for changing the memory switch data




① Displaying the memory switch data list screen

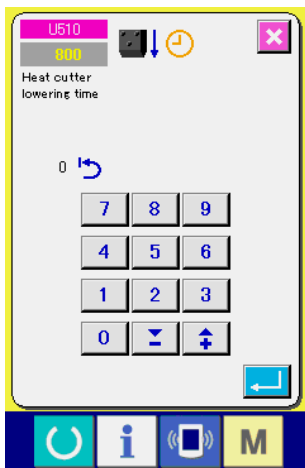
When you press mode changeover key **M**, memory switch

data button  **A** is displayed on the screen. When you press this button, the memory switch data list screen is displayed.



② Selecting the memory switch data button data of which you want to change

Press up/down scroll buttons  **B** to select data item button **C** data of which you want to change.



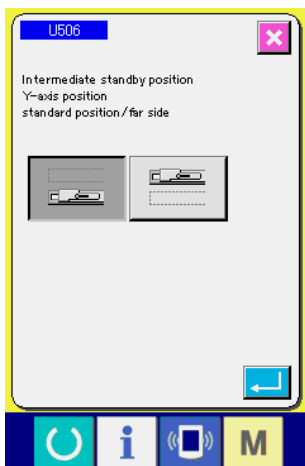
③ Changing the memory switch data

There are two types of memory switch data according to the data changing method; one is changed by changing figures and the other is changed by selecting a pictograph.

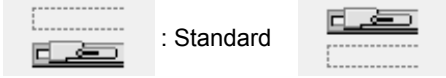
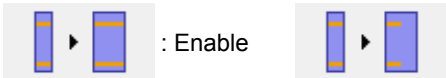











For data items data of which are changed with figures are assigned with a number in pink as **U510**.
















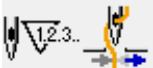




For these items, set values can be changed with the numeric keys and +/- buttons displayed on the data change screen. For data items data of which are changed by selecting a pictograph are assigned with a number in blue as **U506**. For these data items, a pictograph can be selected from those displayed on the screen.










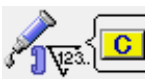
* Refer to "**(2) Memory switch data list**" p.76 for details of the memory switch data.



(2) Memory switch data list

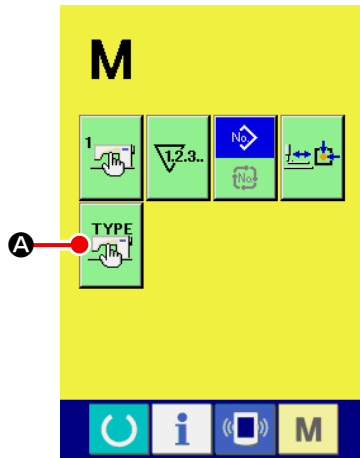
No.	Item	Input range/ selection range	Initial value
U506	<p>Shoelace loop clamp standby at intermediate position: Selection of longitudinal position With this switch, the standby position of the shoelace loop clamp in terms of longitudinal direction at the intermediate standby position can be selected. If the far-side is selected, the operator has a wider space to handle the sewing product.</p> 	—	Standard
U508	<p>Loop width/bartacking width interlocking function This is the function that automatically changes the bartacking width when the shoelace loop width is changed according to the change rate of the latter.</p> 	—	Enable
U510	<p>Heat cutter lowering time This data number is used to set the period of time to wait for lowering of the heat cutter (unit: msec).</p> 	0 to 1500	800
U511	<p>Heat cutter lifting waiting time This data number is used to set the period of time to wait until the heat cutter starts going up after the draw-out device has moved backward (unit: msec).</p> 	0 to 500	0
U512	<p>Correction of loop feeding amount for clamping when heat cutter is used This data number is used to correct the feeding amount of the loop to be clamped by the draw-out device when the heater is used (unit: mm).</p> 	-10.0 to 10.0	0
U513	<p>Correction of loop cutting length when heat cutter is used This data number is used to correct the loop length to be cut when the heat cutter is used (unit: mm).</p> 	-30.0 to 50.0	0
U514	<p>Loop draw-out device backward-travel waiting time when heat cutter is used This data number is used to correct the lapse of waiting time until the draw-out device moves backward after it has released the loop (unit: mm).</p> 	0 to 500	0
U001	<p>Maximum sewing speed</p> 	400 to 2500	2500
U002	<p>Sewing speed of 1st stitch In case of with thread clamp</p> 	400 to 1500	1000
U003	<p>Sewing speed of 2nd stitch In case of with thread clamp</p> 	400 to 2500	1500
U004	<p>Sewing speed of 3rd stitch In case of with thread clamp</p> 	400 to 2500	2500
U005	<p>Sewing speed of 4th stitch In case of with thread clamp</p> 	400 to 2500	2500
U006	<p>Sewing speed of 5th stitch In case of with thread clamp</p> 	400 to 2500	2500

No.	Item	Input range/ selection range	Initial value
U007	Thread tension of 1st stitch In case of with thread clamp		0 to 200 200
U008	Thread tension setting at the time of thread trimming		0 to 200 0
U009	Thread tension changeover timing at the time of thread trimming In case of with thread clamp		-6 to 4 0
U010	Sewing speed of 1st stitch In case of without thread clamp		400 to 1500 400
U011	Sewing speed of 2nd stitch In case of without thread clamp		400 to 2500 900
U012	Sewing speed of 3rd stitch In case of without thread clamp		400 to 2500 2500
U013	Sewing speed of 4th stitch In case of without thread clamp		400 to 2500 2500
U014	Sewing speed of 5th stitch In case of without thread clamp		400 to 2500 2500
U015	Thread tension of 1st stitch In case of without thread clamp		0 to 200 0
U016	Thread tension changeover timing at the time of sewing start In case of without thread clamp		-5 to 2 -5
U030	Selection of reference point for pattern enlargement/reduction  : Origin  : Sewing starting point	—	Origin
U032	Buzzer sound can be prohibited  : Without buzzer sound  : Panel operating sound  : Panel operating sound + error	—	Panel operating sound + error
U033	Number of stitches of thread clamp can be delayed		1 to 7 (Stitch) 2
U034	Clamping timing of thread clamp can be delayed		-10 to 0 0
U035	Thread clamp control can be prohibited  : Normal  : Prohibited	—	Normal
U036	Feed motion timing is selected Set the timing in “-” direction when stitch is not well-tightened.		- 8 to 16 0


No.	Item	Input range/ selection range	Initial value																
U049	Bobbin winding speed can be set 	800 to 2000	1600																
U071	Thread breakage detection selection  : Thread breakage detection invalid  : Thread breakage detection valid	—	Valid																
U072	Number of invalid stitches at the start of sewing of thread breakage detection 	0 to 15 (stitches)	8																
U073	Number of invalid stitches at the end of sewing of thread breakage detection 	0 to 15 (stitches)	3																
U074	Re-sewing function after thread breakage This is the function that re-starts sewing of shoelace loops from the position where the machine has stopped by the detection of thread breakage.  : Enable (Sewing is re-started by means of the start switch after resetting the sewing machine on the thread breakage detection error screen.)  : Disable (The screen is returned to the data entry screen by resetting the sewing machine on the thread breakage error detection screen.)	—	Enable																
U239	Language selection <table border="0" style="width: 100%; text-align: center;"> <tr> <td>日本語 Japanese</td> <td>English English</td> <td>中文繁體字 Chinese (traditional)</td> <td>中文简体字 Chinese (simplified)</td> </tr> <tr> <td>Español Spanish</td> <td>Italiano Italian</td> <td>Français French</td> <td>Deutsch German</td> </tr> <tr> <td>Português Portuguese</td> <td>Türkçe Turkish</td> <td>Tiếng Việt Vietnamese</td> <td>한국어 Korean</td> </tr> <tr> <td>Indonesia Indonesian</td> <td>Русский Russian</td> <td></td> <td></td> </tr> </table>	日本語 Japanese	English English	中文繁體字 Chinese (traditional)	中文简体字 Chinese (simplified)	Español Spanish	Italiano Italian	Français French	Deutsch German	Português Portuguese	Türkçe Turkish	Tiếng Việt Vietnamese	한국어 Korean	Indonesia Indonesian	Русский Russian			—	English
日本語 Japanese	English English	中文繁體字 Chinese (traditional)	中文简体字 Chinese (simplified)																
Español Spanish	Italiano Italian	Français French	Deutsch German																
Português Portuguese	Türkçe Turkish	Tiếng Việt Vietnamese	한국어 Korean																
Indonesia Indonesian	Русский Russian																		
U245	Grease-up error clear Clearing of number of stitches of grease-up is performed. → Refer to " "III.1-15.(1) Addition of grease to the machine head" p.115. 	—	—																
U267	Clearing of the number of times of sewing to be carried out before heat cutter grease replenishment This data number is used to clear the number of times of shoelace sewing to be carried out until the heat cutter requires grease replenishment. → Refer to " "III.1-15.(2) Addition of grease to devices" p.117. 	—	—																
U269	Clearing of the number of times of sewing shoelace loops before grease replenishment Number of shoelace loops to be sewn with grease run-out state is cleared. → Refer to " "III.1-15.(2) Addition of grease to devices" p.117. 	—	—																

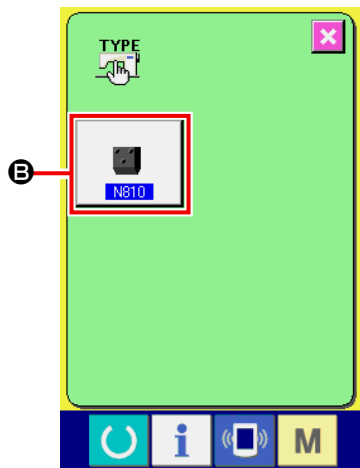
2-27. How to set the device

(1) Device setting changing procedure



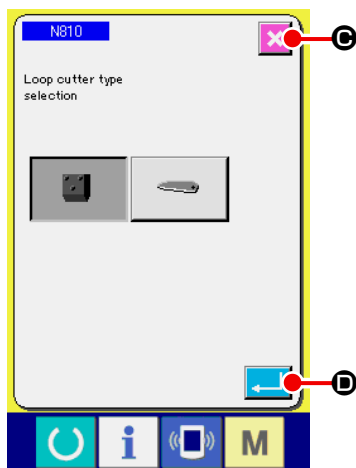
① Displaying the device setting screen

Press the **M** switch, and device setting button  **A** will be displayed on the screen. When you press this button, the device setting screen is displayed.



② Selecting the memory switch button setting of which is to be changed

Select data item **B** setting of which you want to change.





③ Changing data

Data items are assigned with number such as **N810** displayed in blue. The pictograph to be displayed on the data changing screen can be selected.

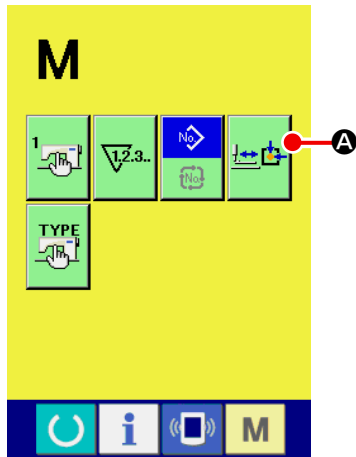
When you press enter button  **D**, the data is confirmed.

When you press cancel button  **C**, the changed data is not updated.

(2) Listing of the device settings


No.	Item	Input range/ selection range	Initial value
N810	<p>Selection of type of loop cut device This data number is used to select the loop cut device to be used. The device operation differs according to this setting. Be sure to match the setting with the device to be actually used.</p> <p> : Heat cutter</p> <p> : Knife-type cutter</p>	—	Heat cutter

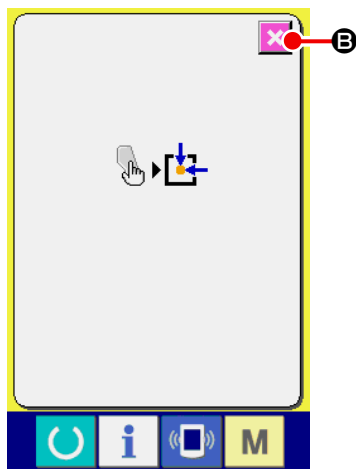
2-28. How to adjust the origin of work clamp foot



① Displaying the work clamp foot origin adjustment screen


When you press the mode changeover key **M**, work clamp

foot origin adjustment button  **A** is displayed. When you press this button, the work clamp foot origin adjustment screen is displayed.



② Adjusting the origin of the work clamp foot

Retrieve the origin with the start switch.

When you press cancel button  **B**, the work clamp foot origin adjustment screen is closed and the mode screen is displayed.



2-29. Using communication function

Communication function can download the sewing data created with other sewing machine, creation of sewing data and sewing data created by editing device PM-1 to the sewing machine. Furthermore, the above data can be uploaded to a media.

As the means of communication, a media slot and USB port are prepared.

(1) Handling possible data

Sewing data that can be handled are 2 kinds below, and the respective data formats are as shown below.

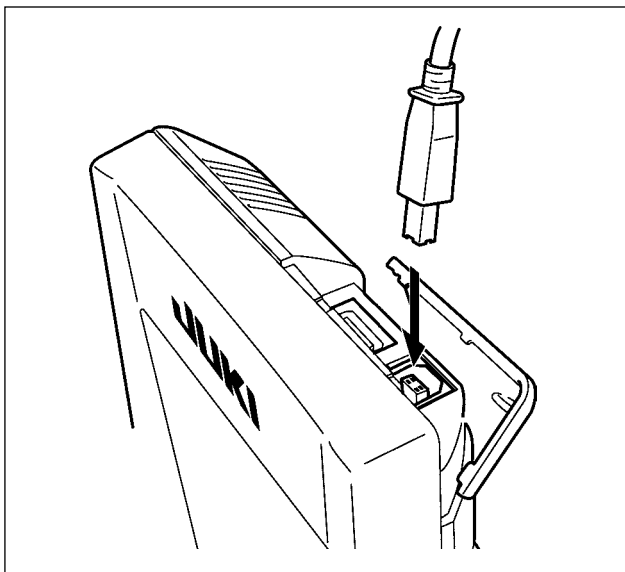
Data name		Extension	Description of data
Vector format data		VD000XXX.VDT	It is the data of needle entry point created with PM-1, and the data format that can be operated in common between JUKI sewing machines.
Sewing data		AB00XXX.EPD	Exclusive sewing data for AB model of the sewing machine created with the sewing machine.

XXX: File No.

(2) Performing communication by using the media

For handling way of the media, read "[II-1. Introduction](#)" p.21.

(3) Performing communication by using USB

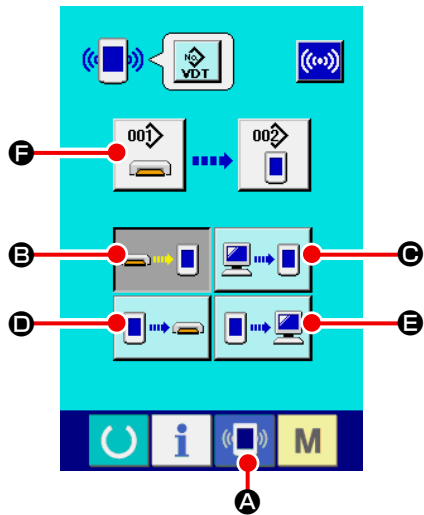


Data can be sent/received to/from a personal computer or the like, by means of a USB cable.




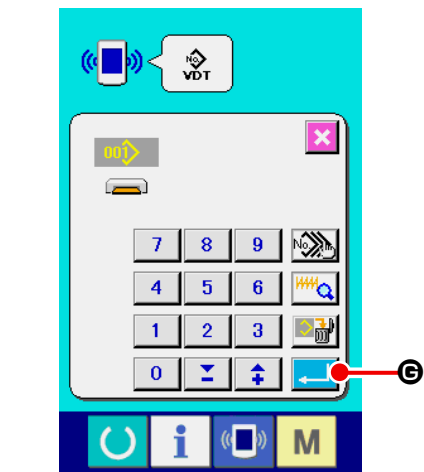
If the contact part becomes dirty, failure of contact will be caused. Do not touch by hand, and control so that dust, oil or other foreign material does not adhere to it. In addition, the inside element is damaged by static electricity or the like. So, be very careful when handling.

(4) Take-in of the data



① Display the communication screen

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




② Select the communication procedure

There are four communication procedures as described below.

- B** Writing data from media to panel
- C** Writing data from personal computer (server) to panel
- D** Writing data from panel to media
- E** Writing data from panel to personal computer (server)

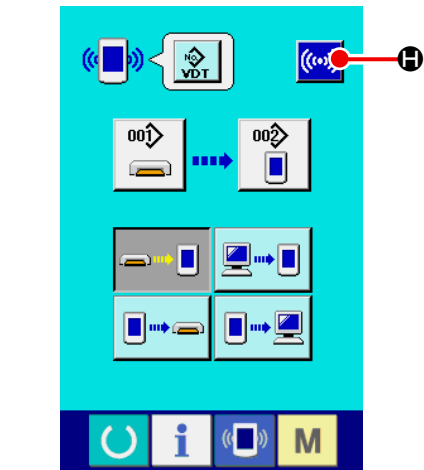
Select the button of communication procedure you desire.

③ Select the data number


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

Enter the file number of the data you desire to write. For the file number, enter the numerals of the part xxx of VD00xxx.vdt of the file name.


Designation of the pattern number of writing destination can be performed in the same way. When the writing destination is the panel, pattern numbers which have not been registered are displayed.

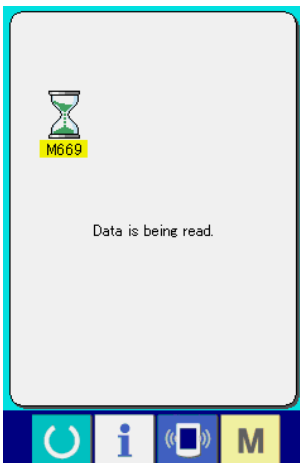



④ Determine the data number

When ENTER button  **G** is pressed, the data number selection screen is closed and the selection of the data number has been completed.

⑤ Start communication

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



 **Do not open the cover during reading the data. Data may not be read in.**

(5) Taking in plural data together


It is possible for vector data, sewing data to select plural writing data and write them together. Pattern number of writing destination will become the same number of the selected data number.

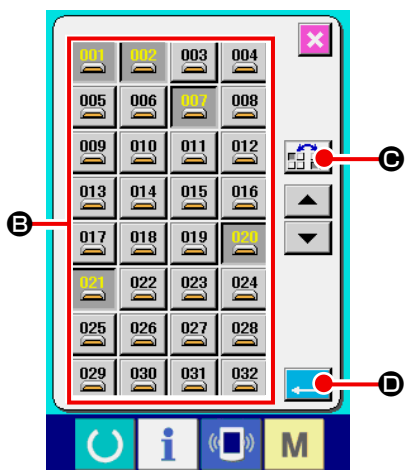


It is not possible for the No. after No. 201 of media to select plural No.




① Display the writing file selection screen


When PLURAL SELECTION button  **A** is pressed, the data number plural selection screen is displayed.

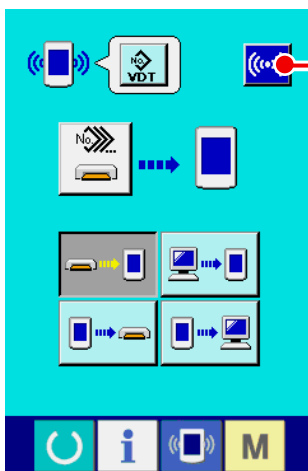


② Perform the data number selection


Since the list of existing data file numbers is displayed, press FILE NUMBER button **B** you desire to write. It is possible to invert the selected state of the button with INVERSION button  **C**.

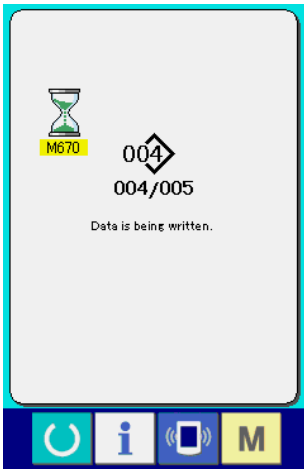
③ Determine the data number

When ENTER button  **D** is pressed, the data number plural selection screen is closed and the data selection ends.

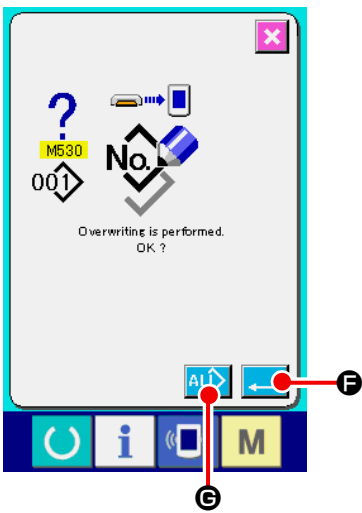




④ Start the communication

When COMMUNICATION START button  **E** is pressed, the data communication starts.



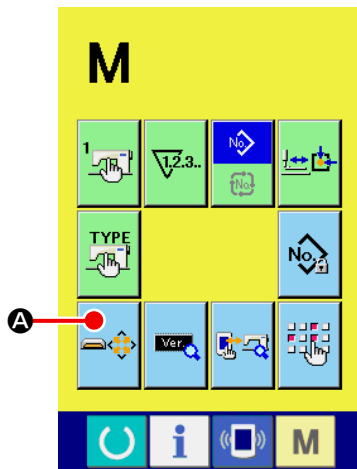
Data number during communication, total number of writing data and number of data that have ended the data communication are displayed in the during communication screen.



* When performing writing the pattern number which already exists, the overwriting confirmation screen is displayed before writing. When performing overwriting, press ENTER button  **F**. When performing overwriting all without displaying the overwriting confirmation screen, press OVERWRITING button  **G** in all cases.


2-30. Performing formatting of the media

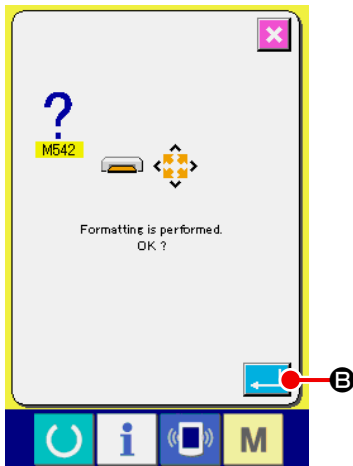
To re-format a medium, the IP-420 has to be used. The IP-420 is not able to ready any medium which is formatted on a personal computer.




① Display the media format screen

When **M** switch is held pressed for three seconds, MEDIA

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



② Start formatting of the media

Set the media you desire to format to the media slot, close the cover, press ENTER button  **B** and formatting starts. Save necessary data in the media to the other media before formatting. When formatting is performed, the inside data are deleted.

When two or more media are connected to the sewing machine, the medium to be formatted is determined by the predetermined priority order.

High ← Low

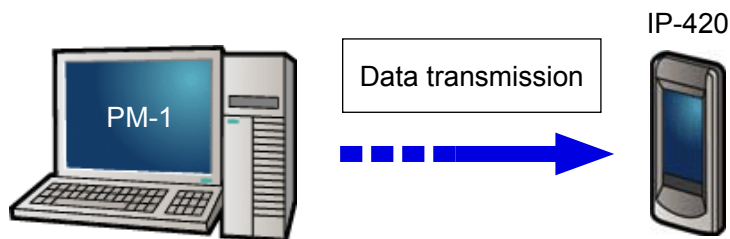
CF(TM) slot ← USB device 1 ← USB device 2 ← ...
When a CF (TM) is inserted in the CF (TM) slot, the CompactFlash (TM) will be formatted according to the priority order as shown above.

Refer to the USB specifications for the priority order of access.



2-31. Trial stitching function

Data created with PM-1 (sewing data programming/editing software) can be used for trial stitching by connecting the personal computer and the sewing machine online.

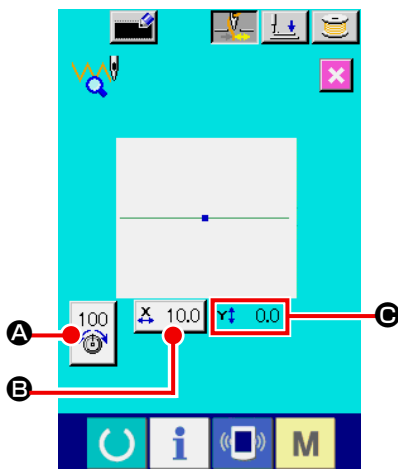


Connect the personal computer with the IP-420. Create data with the PM-1. Then, transmit the data to the sewing machine. When the IP-420 displays the data entry screen, the trial stitching screen is automatically displayed. Refer the HELP for the PM-1 for how to operate the PM-1.



When programming a pattern, the starting point has to be set at coordinates (0, 0) or enter a second origin at coordinates (0, 0). Be aware that the garment body presser and the wiper can interfere with each other depending on the location of the sewing starting position.

● How to carry out trial stitching



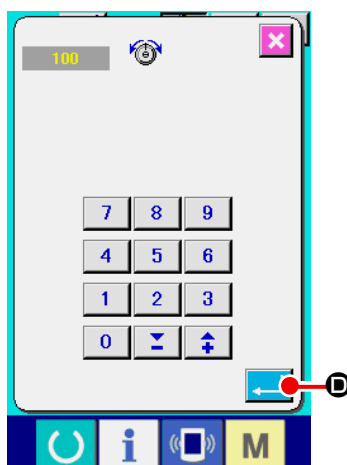
① Receiving trial stitching data from the PM-1

When the data on trial stitching (vector form data) is sent from the PM-1, the trial stitching screen shown at left is displayed. At the center of the screen, the needle entry diagram of the transmitted data is displayed. The needle entry diagram differs in color according to the thread tension value.

② Editing the vector data

Three items show described below can be set for the vector-form data transmitted from the PM-1.

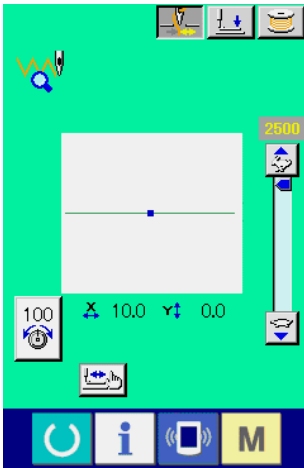
- Ⓐ : Thread tension
- Ⓑ : X actual-dimension value
- Ⓒ : Y actual-dimension value




③ Changing the data

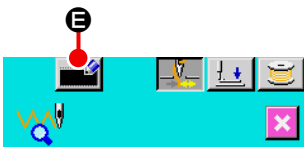
When you press item (Ⓐ - Ⓒ) button you want to change, the numeric keys are displayed. Enter a desired value.

After the data entry, press enter button  Ⓓ.




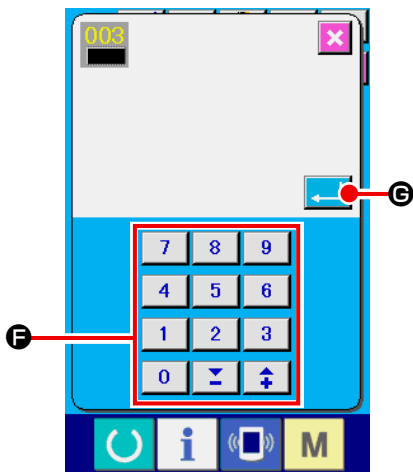
④ Carrying out trial stitching

When you press set ready key  on the previous page, the trial stitching screen is displayed. In this state, you can carry out trial stitching.




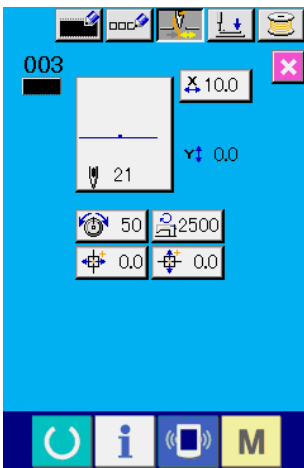
⑤ Registering the data on a user pattern

If you want to register the data on trial stitching you have carried out, press register button  **E** displayed on the trial stitching screen. Enter the user pattern number under which you want to register the trial stitching data with numeric keys **F**.



⑥ Confirming the data registration

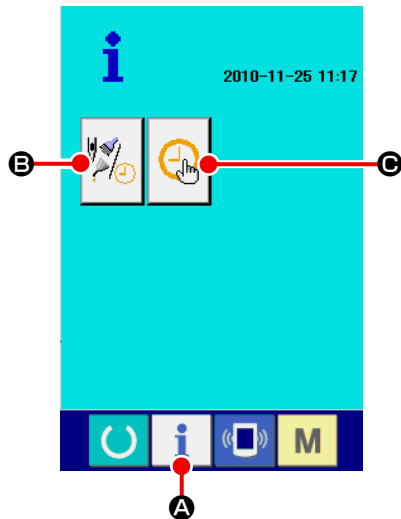
When you press enter button  **G**, the register screen is closed to finish registration.



⑦ Displaying the data entry screen

After registration, the data entry screen is automatically displayed.

2-32. How to use information



When you press information key **i** **A** on the switch sheet section of the data entry screen, the information screen is displayed.

B Maintenance/inspection information

Time for changing oil (grease run-out), time for changing the needle and time for cleaning can be specified to output a warning notice when the specified time is reached.

→ Refer to "**(1) How to visually check maintenance/inspection information**" p.89.

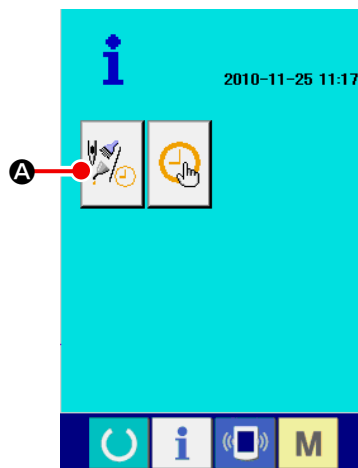
→ Regarding the method to designate a time, refer to the Engineer's Manual.

C Time setting


The current time can be set.

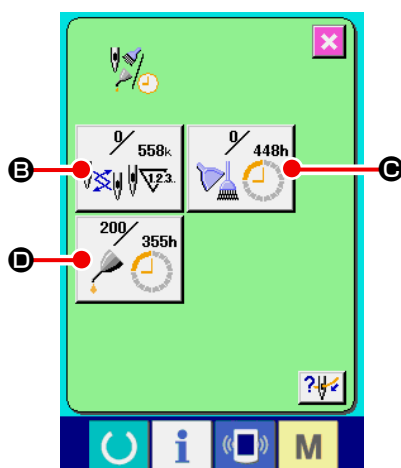
→ Refer to "**(3) How to set the time**" p.91.

(1) How to visually check maintenance/inspection information



① Displaying the maintenance/inspection information screen

Press maintenance/inspection information button  **A** on the information screen.

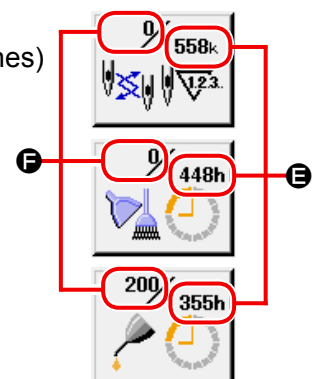


Three information items are displayed on the maintenance/inspection information screen.

B : Needle changing (unit: 1,000 stitches)

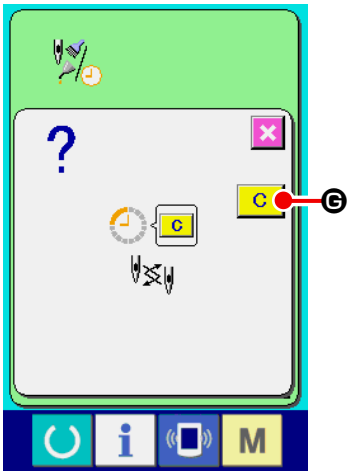
C : Cleaning time (unit: hour)

D : Oil changing time (unit: hour)



Items buttons **B**, **C** and **D** display inspection warning interval **E** and the remaining time before changing **F**.

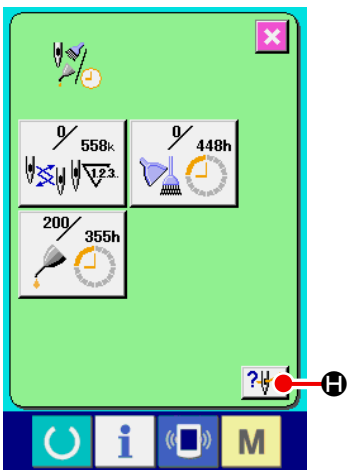
In addition, the remaining time before changing can be cleared.



② **Clearing the remaining time before changing**

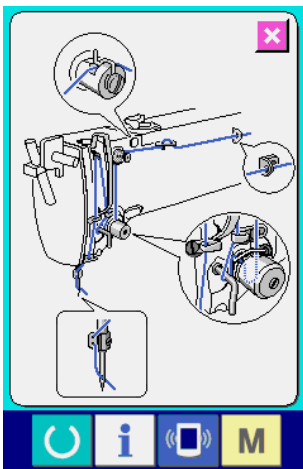
When you press item button **E**, **C** or **D** you want to clear, the changing time clear screen is displayed.

When you press clear button **C** **E**, the remaining time before changing is cleared.

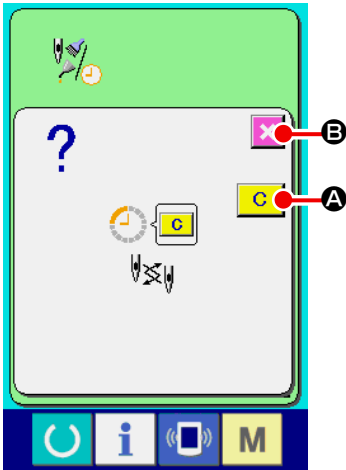


③ **Displaying the threading diagram**

When you press threading button **H** displayed on the maintenance/inspection information screen, the machine-head threading diagram is displayed. Use this diagram when you thread the machine head.



(2) How to reset the warning



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

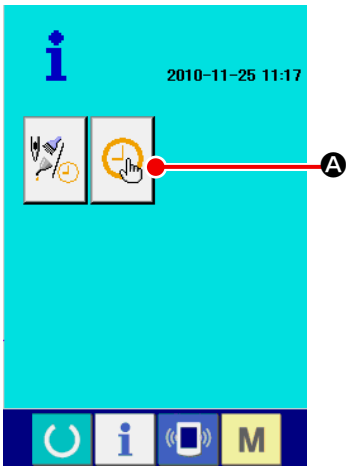
To clear the inspection time, press clear button **C** **A**. The inspection time is cleared and the popup screen is closed.

If you do not clear the inspection time, press cancel button **X** **B** to close the popup screen. It should be noted, however, the warning screen will be displayed every time one sewing sequence is finished until the inspection time is cleared.

Warning number for each inspection item is as follows:

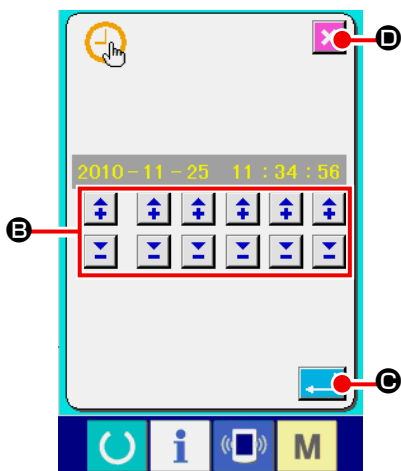
- Needle changing : A201
- Cleaning time : A202
- Time for changing oil : A203

(3) How to set the time



① Displaying the time setting screen

Press time setting button **A** on the information screen.



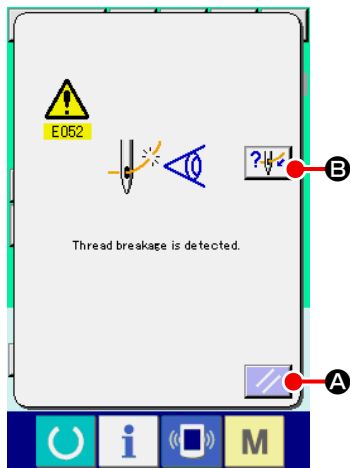
② Setting the current time of day

Press respective buttons **B** to set the time of day (year, month, day, hour: minute: second).

When you press enter button **C**, the set time is registered.


When you press cancel button **X** **D**, the set time becomes invalid and the screen returns to the information screen.

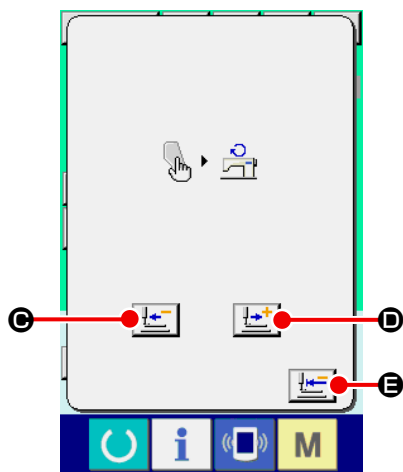
2-33. How to re-start sewing from the position where the machine has stopped by the detection of thread breakage





① Reset the error

Press reset button  **A** to reset the error.

Press threading button  **B**, and the threading diagram will be displayed.




② Align the work clamp foot with the re-sewing position

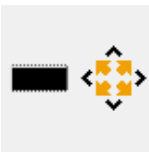
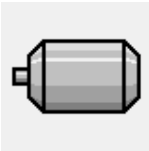









When you press feed backward button  **C**, the work clamp foot is moved backward in 1-stitch steps. When you press feed forward button  **D**, the work clamp foot is moved forward in 1-stitch steps. Move the work clamp foot to the re-sewing position.







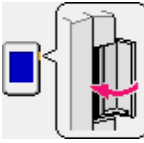
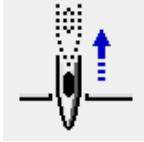




③ Re-start sewing

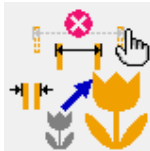
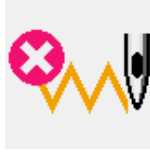

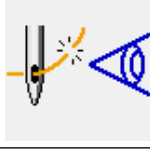

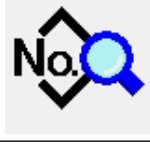



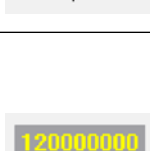
Press the start switch, and the sewing machine will re-start sewing.






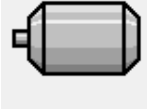
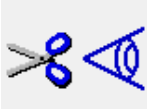

If you do not want to carry out re-sewing, press initial position travel button  **E** to return the screen to the setting screen.




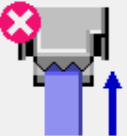
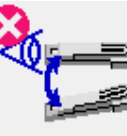





3. Error code list


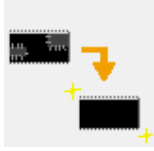

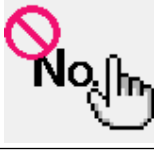

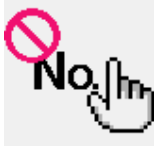

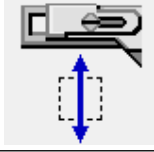
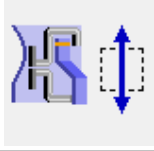

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E001		Main CPU EEPROM is initialized Machine head and the control box differ in the type of model, or they have broken.	Data is initialized.	Turn OFF the power	
E007		Machine lock Main shaft of the sewing machine fails to rotate due to some trouble.	Machine is locked.	Turn OFF the power	
E008		Undefined machine head is selected Memory of machine head cannot be read.	Undefined head is selected.	Turn OFF the power	
E010		Pattern number error Pattern number which is backed up is not registered to data ROM, or setting of reading inoperative is performed.	Specified pattern does not exist.	Possible to re-enter after reset.	Previous screen
E011		External media not inserted External media is not inserted.	Media is not inserted.	Possible to re-enter after reset.	Previous screen
E012		Read error Data read from external media cannot be performed.	Data cannot be read.	Re-start after resetting is enabled.	Previous screen
E013		Write error Data write from external media cannot be performed.	Data cannot be written.	Re-start after resetting is enabled.	Previous screen
E014		Write protect The medium is in the write-protected state.	Writing is prohibited.	Re-start after resetting is enabled.	Previous screen
E015		Format error Format cannot be performed.	Formatting is impossible.	Re-start after resetting is enabled.	Previous screen
E016		External media capacity over Capacity of external media is insufficient.	Capacity is insufficient. (media)	Re-start after resetting is enabled.	Previous screen
E017		EEPROM capacity over Machine memory capacity is insufficient.	Capacity is insufficient. (Machine)	Re-start after resetting is enabled.	Previous screen

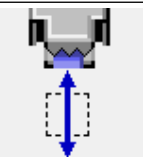





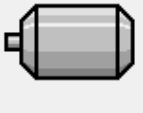
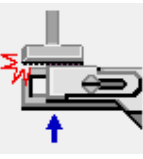
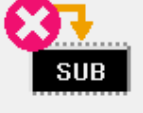

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E018		EEPROM type error The type of ROM is different from the correct one.	ROM type is different.	Re-start after resetting is enabled.	Previous screen
E019		File size over File is too large.	Pattern data is too large. (Approx. 20000 stitches)	Re-start after resetting is enabled.	Previous screen
E022		File number error The specified file does not exist on the server or the medium.	Specified file does not exist.	Re-start after resetting is enabled.	Previous screen
E024		Pattern data size over Memory size is over.	Memory capacity has run out.	Re-start after resetting is enabled.	Data entry screen
E027		Server reading error Data cannot be read from the server.	Data cannot be read.	Re-start after resetting is enabled.	Previous screen
E028		Server writing error Data write from server cannot be performed.	Data cannot be written.	Re-start after resetting is enabled.	Previous screen
E029		Media lid open error Lid of media slot is open.	Cover of media slot is open.	Re-start after resetting is enabled.	Previous screen
E030		Needle bar position missing error Needle bar is not in the predetermined position.	Needle is not in a proper position.	Re-start after resetting is enabled.	Data entry screen
E031		Air pressure drop Air pressure is dropped.	Low air pressure.	Re-start after resetting is enabled.	Data entry screen
E032		File compatibility error Incompatibility between files.	File cannot be read.	Re-start after resetting is enabled.	Data entry screen
E040		Moving limit is over The sewing data exceeds the allowable sewing range.	Move limit is exceeded.	Re-start after resetting is enabled.	Setting screen
E042		Operation error	Operation cannot be performed.	Re-start after resetting is enabled.	Data entry screen


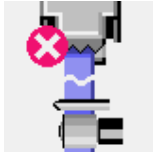




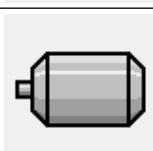
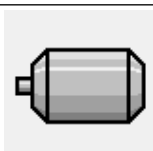
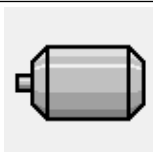
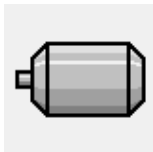
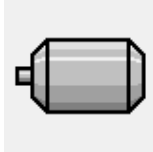
Error code	Display	Description of error	Display message	How to recover	Place of recovery
E043		Max. pitch over error Max. pitch is exceeded.	Max. Pitch is exceeded.	Re-start after resetting is enabled.	Data entry screen
E045		Pattern data error	Pattern data no good.	Re-start after resetting is enabled.	Data entry screen
E050		Stop switch When the stop switch is pressed.	Temporary stop switch is pressed.	Re-start after resetting is enabled.	Data entry screen
E052		Thread breakage detection error When thread breakage is detected.	Thread breakage is detected.	Re-start after resetting is enabled.	Step entry screen
E061		Memory switch data error Memory switch data is broken or revision is old.	Memory switch data error.	Turn OFF the power	
E062		Pattern data error In the case the memory switch data has corrupted or is of an earlier version.	-	Re-start after resetting is enabled.	Data entry screen
E063		Machine head identification error The identified machine head does not match the control box. (The machine head and the EEPROM on the main PWB are different in model)	-	Turn OFF the power	
E064		Read-only attribute The destination file is placed in the read-only state by the read-only attribute.	Data cannot be written.	Re-start after resetting is enabled.	Data entry screen
E220		Grease run-out warning Every time the number of stitches sewn has reached 100 million. → Refer to " III.1-15.(1) Addition of grease to the machine head " p.115.	Important: Grease is running out. Add grease.	Re-start after resetting is enabled.	Data entry screen
E221		Grease run-out error Every time the number of stitches sewn has reached 120 million, the sewing machine is placed in "sewing disabled" state. This error can be cleared with memory switch U245 . → Refer to " III.1-15.(1) Addition of grease to the machine head " p.115.	Important: Grease has run out. Add grease.	Re-start after resetting is enabled.	Data entry screen

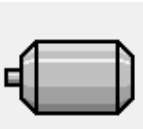
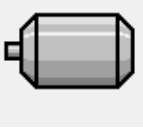


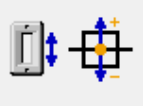
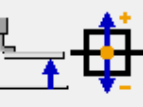

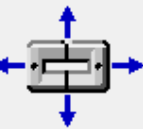



Error code	Display	Description of error	Display message	How to recover	Place of recovery
E288		Heat cutter grease-replenishment alarm When the shoelace loop sewing has been performed for 50,000 times. → Refer to " III.1-15.(2) Addition of grease to devices " p.117.	Important:Add grease to heat cutter since it almost runs out of grease	Re-start after resetting is enabled.	Data entry screen
E289		Heat cutter grease-replenishment error When the shoelace loop sewing has been performed for 54,000times, the machine will no longer be able to continue sewing. This situation can be reset by the memory switch U267 . → Refer to " III.1-15.(2) Addition of grease to devices " p.117.	Important:Add grease to heat cutter since it has runs out of grease	Re-start after resetting is enabled.	Data entry screen
E290		Shoelace loop grease up alarm When the shoelace loop sewing has been performed for one million times. → Refer to " III.1-15.(2) Addition of grease to devices " p.117.	Important:Belt-loop feeder is running out of grease. Add grease.	Re-start after resetting is enabled.	Data entry screen
E291		Shoelace loop grease up error When the shoelace loop sewing has been performed for 1.2 million times, the machine will no longer be able to continue sewing. This situation can be reset by the memory switch U269 . → Refer to " III.1-15.(2) Addition of grease to devices " p.117.	Important:Belt-loop feeder has run out of grease. Add grease.	Re-start after resetting is enabled.	Data entry screen
E302		Machine head tilt check When the machine head tilt sensor is in the OFF state.	Head is tilted.	Re-start after resetting is enabled.	Data entry screen
E303		Meniscus sensor error	UP position of sewing machine motor cannot be detected. (Woodruff plate signal of sewing machine motor)	Turn OFF the power	
E305		Thread trimming knife sensor error The thread trimming knife is out of its normal position.	Thread trimmer knife sensor cannot be detected.	Turn OFF the power	
E306		Thread clamping sensor error The thread clamp device is out of its normal position.	Thread clamp sensor cannot be detected.	Turn OFF the power	



Error code	Display	Description of error	Display message	How to recover	Place of recovery
E363		Sub-PWB error is detected (Power is turned OFF)	-	Turn OFF the power	
E364		Sub-PWB error is detected (Reset)	-	Turn OFF the power	
E377		Loop clamping failure	Failed to clamp shoelace loop	Re-start after resetting is enabled.	Data entry screen
E378		Loop draw-out failure	Failed to draw out shoelace loop	Re-start after resetting is enabled.	Data entry screen
E386		Clamp upper-position sensor fault (upper position) The upper position sensor is in the OFF state or the lower position sensor is in the ON state when the clamp rests at its upper position.	Input of sensor at the upper position of clamp is abnormal.	Re-start after resetting is enabled.	Data entry screen
E387		Clamp lower-position sensor fault (lower position) The lower position sensor is in the OFF state or the upper position sensor is in the ON state when the clamp rests at its lower position. → This error also occurs in the case the clamp fails to come down to the sensor input position when a heavy-weight sewing material is used.	Input of sensor at the lower position of clamp is abnormal.	Re-start after resetting is enabled.	Data entry screen
E388		Clamp position sensor fault (upper and lower positions) The clamp position sensor input is wrong at both the upper and lower positions.	Clamp upper/lower position sensor input is abnormal	Re-start after resetting is enabled.	Data entry screen
E401		Copy is disabled	Cannot copy.	Possible to re-enter after reset.	Previous screen
E402		Erase is disabled (in use for cycle operation)	Data cannot be deleted since it is used for cycle data.	Possible to re-enter after reset.	Previous screen
E403		Creation of new data is disabled	This No. is already used.	Possible to re-enter after reset.	Previous screen


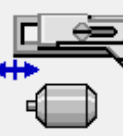







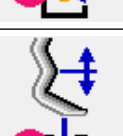

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E404		Pattern number selection is disabled	This No. cannot be found.	Possible to re-enter after reset.	Previous screen
E435	-	Out of input range error	Set value exceeds data setting range.	Possible to re-enter after reset.	Previous screen
E476		Sub-PWB backup data conversion	Old backup data has been changed to new format	Turn OFF the power	
E479		Pattern number cannot be deleted (pattern number individual key-lock is set) In the case deletion of the pattern number for which the pattern number individual key-lock is set is attempted.	Not erasable since keys are under key lock state	Re-start after resetting is enabled.	Previous screen
E480		Bartacking data fault In the case the bartacking pattern which is selected as the shoelace loop pattern has not yet registered.	Unregistered bartacking is selected.	Re-start after resetting is enabled.	Previous screen
E482		Feeder position pattern data fault → If this error is detected, re- turn the power ON. Then the parameter which was the cause of the error is cleared to return to the initial value.	Pattern data value of belt loop feeder is abnormal.	Turn OFF the power	
E484		Data cannot be erased (user pattern) In the case deletion of the user pattern which has been registered to the shoelace loop pattern is attempted.	Cannot clear since it is used for shoelace loop pattern	Re-start after resetting is enabled.	Previous screen
E485		Feeder X-axis motor travel range fault	Travel destination of feeder X-axis motor is out of setting range.	Turn OFF the power	
E486		Feeder Y-axis motor travel range fault	Travel destination of feeder Y-axis motor is out of setting range.	Turn OFF the power	
E487		Garment body moving motor travel-range fault	Travel destination of garment body moving motor is out of setting range.	Turn OFF the power	
E488		Loop loosening motor travel-range fault	Travel destination of loop loosening motor is out of setting range.	Turn OFF the power	

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E489		Loop draw-out motor travel-range fault	Travel destination of draw-out motor is out of setting range.	Turn OFF the power	
E702		CPU runaway is detected	Program is abnormal. (CPU)	Turn OFF the power	
E703		Machine type error (Panel is connected to the sewing machine which is not supposed.) When the machine type code of system is not proper in the initial communication.	Model of sewing machine is different from that of panel.	Possible to rewrite program after pressing down communication switch.	Communication screen
E704		Inconsistency of system version System software version is inconsistent in the initial communication.	Version of program incompatible.	Possible to rewrite program after pressing down communication switch.	Communication screen
E730		Main shaft motor encoder is defective or lacking for phases When encoder of the sewing machine motor is abnormal.	Sewing machine motor is defective. (Encoder A and B phases)	Turn OFF the power	
E731		Main motor hole sensor is defective or position sensor is defective Hole sensor or position sensor of the sewing machine motor is defective.	Sewing machine motor is defective. (Encoder U V and W phases)	Turn OFF the power	
E733		Reverse rotation of main shaft motor When the sewing machine motor rotates in the reverse direction.	Sewing machine motor runs in the reverse direction.	Turn OFF the power	
E762		LK work clamp foot interferes with the clamp In the case the clamp hits against the work clamp foot of the LK machine when the former passes under the latter.	Work clamp foot and clamp of LK interfere each other.	Turn OFF the power	
E763		Sub-PWB CPU fault	Sub-PWB CPU is abnormal.	Turn OFF the power	
E764		Sub-PWB backup data is initialized	Data has been initialized. (Sub-PWB backup data)	Turn OFF the power	




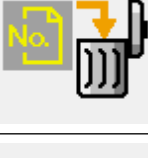



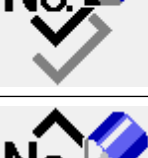

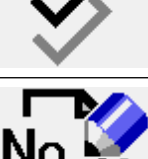

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E765		Sub-PWB correction-value backup data is initialized	Data has been initialized. (Sub-PWB correction backup data)	Turn OFF the power	
E786		Preset device status fault	Response from preset device has not been received.	Turn OFF the power	
E787		Feeder X-axis motor stop position fault In the case the incorrect stop position of the loop feeder unit in X-axis direction is detected.	Feeder X-axis stop position is not correct.	Turn OFF the power	
E788		Predetermined wait time for LK to start sewing has run out	Change in S.STATE signal cannot be detected.	Turn OFF the power	
E789		Predetermined wait time for LK to lift the work clamp foot has run out	Change in LK work clamp foot position signal cannot be detected.	Turn OFF the power	
E794		Selected type mismatch error This error occurs when the type information does not match the actual device.	Selected model mismatch error	Turn OFF the power	
E802		Power electrical discontinuity detection	Power instantaneously lost.	Turn OFF the power	
E811		Over voltage When input power is more than the specified value.	Input voltage is too high. (Check input voltage.)	Turn OFF the power	
E813		Low voltage When input power is less than the specified value.	Input voltage is too low. (Check input voltage.)	Turn OFF the power	
E901		Main shaft motor IPM abnormality When IPM of servo control p.c.b. is abnormal.	SDC P.C.B. is defective. (IPM)	Turn OFF the power	
E902		Main shaft motor over current	-	Turn OFF the power	

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E903		Stepping motor power abnormality When stepping motor power of SERVO CONTROL p.c.b. fluctuates more than $\pm 15\%$.	Power of SDC P.C.B. is defective. (Stepping motor power 85 V)	Turn OFF the power	
E904		Solenoid power abnormality When solenoid power of SERVO CONTROL p.c.b. fluctuates more than $\pm 15\%$.	Power of SDC P.C.B. is defective. (Solenoid power 33 V)	Turn OFF the power	
E905		Main-shaft heat sink temperature fault Overheat of servo control p.c.b. Turn ON the power again after taking time.	Temperature of SDC P.C.B. is too high.	Turn OFF the power	
E907		X feed motor origin retrieval error When origin sensor signal is not inputted at the time of origin retrieval motion.	Origin of X motor cannot be found. (X origin sensor)	Turn OFF the power	
E908		Y feed motor origin retrieval error When origin sensor signal is not inputted at the time of origin retrieval motion.	Origin of Y motor cannot be found. (Y origin sensor)	Turn OFF the power	
E910		Presser motor origin retrieval error When origin sensor signal is not inputted at the time of origin retrieval motion.	Origin of presser thread trimmer motor cannot be found. (Presser thread trimmer origin sensor)	Turn OFF the power	
E913		Thread clamp origin retrieval error When origin sensor signal is not inputted at the time of origin retrieval motion.	Origin of thread clamp motor cannot be found. (Thread clamp origin sensor)	Turn OFF the power	
E914		X, Y Feed defective error Timing lag between feed and main shaft occurs	X/Y feed trouble is detected.	Turn OFF the power	
E915		Communication abnormality between operation panel and MAIN CPU When abnormality occurs in data communication.	Communication is impossible. (Panel - MAIN P.C.B.)	Turn OFF the power	
E916		Communication abnormality between MAIN CPU and main shaft CPU When abnormality occurs in data communication.	Communication is impossible. (MAIN P.C.B. - SDC P.C.B.)	Turn OFF the power	
E917		Communication failure between operation panel and personal computer When abnormality occurs in data communication.	Communication is impossible. (Panel - PC)	Turn OFF the power	


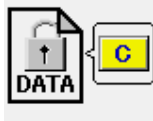
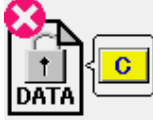
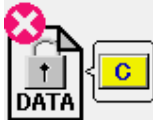
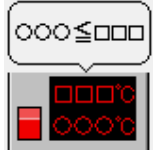
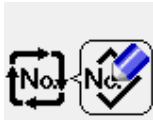
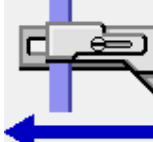
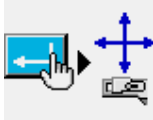
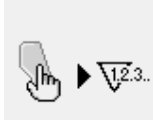
Error code	Display	Description of error	Display message	How to recover	Place of recovery
E918		Main p.c.b. heat sink temperature fault Overheat of MAIN p.c.b. Turn ON the power again after taking time.	Main P.C.B. temperature is too high.	Turn OFF the power	
E926		X-motor excessive location deviation error	X-feed motor position is off.	Turn OFF the power	
E927		Y-motor excessive location deviation error	Y-feed motor position is off.	Turn OFF the power	
E931		X-motor overload error	X-feed motor overload is excessive.	Turn OFF the power	
E932		Y-motor overload error	Y-feed motor overload is excessive.	Turn OFF the power	
E943		EEPROM of main CPU is defective When data writing to MAIN CONTROL p.c.b. cannot be performed.	MAIN P.C.B. is defective.	Turn OFF the power	
E946		Machine head EEPROM write failure When data writing to machine head p.c.b. cannot be performed.	Head P.C.B. is defective.	Turn OFF the power	
E975		Fork rotating motor step-out detection	Out-of-step of fork rotating motor has been detected.	Re-start after resetting is enabled.	Data entry screen
E976		Fork rotating motor origin-retrieval error In the case the origin sensor signal is not input when the origin retrieval operation is carried out.	Origin of fork rotating motor could not be found.	Turn OFF the power	
E977		Operation panel ↔ Sub-PWB CPU communication disabled In the case data communication fault has occurred.	Communication cannot be carried out. (Operation panel – Sub-PWB)	Turn OFF the power	
E978		Sub-PWB temperature fault Sub-PWB overheats Re-turn the power ON after the lapse of a certain period of time.	Sub-PWB temperature is rising.	Turn OFF the power	

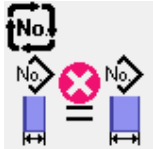





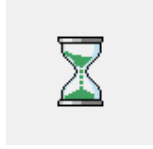

Error code	Display	Description of error	Display message	How to recover	Place of recovery
E979		Loop feeder unit ↔ Main control CPU communication disabled In the case data communication fault has occurred.	Communication cannot be carried out. (Feeder – Main PWB)	Turn OFF the power	
E980		Feeder X-axis motor step-out detection	Out-of-step of feeder X-axis motor has been detected.	Turn OFF the power	
E981		Feeder Y-axis motor step-out detection	Out-of-step of feeder Y-axis motor has been detected.	Turn OFF the power	
E982		Garment body moving motor step-out detection	Out-of-step of garment body moving motor has been detected.	Turn OFF the power	
E983		Loop loosening motor step-out detection	Out-of-step of loop loosening motor has been detected.	Turn OFF the power	
E984		Loop draw-out motor step-out detection	Out-of-step of draw-out motor has been detected.	Turn OFF the power	
E985		Feeder X-axis motor origin-retrieval error In the case the origin sensor signal is not input when the origin retrieval operation is carried out.	Origin of feeder X-axis motor could not be found.	Turn OFF the power	
E986		Feeder Y-axis motor origin-retrieval error In the case the origin sensor signal is not input when the origin retrieval operation is carried out.	Origin of feeder Y-axis motor could not be found.	Turn OFF the power	
E987		Garment body moving motor origin-retrieval error In the case the origin sensor signal is not input when the origin retrieval operation is carried out.	Origin of garment body moving motor could not be found.	Turn OFF the power	
E988		Loop loosening motor origin-retrieval error In the case the origin sensor signal is not input when the origin retrieval operation is carried out.	Origin of loop loosening motor could not be found.	Turn OFF the power	
E989		Shoelace loop draw-out motor origin-retrieval error In the case the origin sensor signal is not input when the origin retrieval operation is carried out.	Origin of draw-out motor could not be found.	Turn OFF the power	

4. Message list

Message No.	Display	Displayed message	Description
M520		Erasing is performed. OK ?	Confirmation of user pattern erasure Erases the user pattern Yes or No?
M522		Erasing is performed. OK ?	Confirmation of cycle pattern Erases the user pattern Yes or No?
M524		Erasing is performed. OK ?	Confirmation of erasure on communication screen (pattern data) Erases the user pattern Yes or No?
M525		Erasing is performed. OK ?	Confirmation of erasure on communication screen (sewing machine data) Erases the user pattern Yes or No?
M526		Erasing is performed. OK ?	Confirmation of erasure on communication screen (program data) Erases the user pattern Yes or No?
M528		Overwriting is performed. OK ?	Confirmation of user pattern overwrite Overwrites user pattern Yes or No?
M529		Overwriting is performed. OK ?	Confirmation of media data overwrite Overwrites user pattern Yes or No?
M530		Overwriting is performed. OK ?	Confirmation of overwrite on communication screen (operation panel + pattern data) Overwrites user pattern Yes or No?
M531		Overwriting is performed. OK ?	Confirmation of overwrite on communication screen (media + pattern data) Overwrites user pattern Yes or No?
M532		Overwriting is performed. OK ?	Confirmation of overwrite on communication screen (server + pattern data) Overwrites user pattern Yes or No?
M533		Overwriting is performed. OK ?	Confirmation of overwrite on communication screen (operation panel + sewing machine data) Overwrites user pattern Yes or No?

Message No.	Display	Displayed message	Description
M534		Overwriting is performed. OK ?	Confirmation of overwrite on communication screen (media + pattern data) Overwrites user pattern Yes or No?
M535		Overwriting is performed. OK ?	Confirmation of overwrite on communication screen (server + pattern data) Overwrites user pattern Yes or No?
M537		Deleting is performed. OK ?	Confirmation of tension data deletion (thread tension) Deletes thread-tension data Yes or No?
M539		Deleting is performed. OK ?	Confirmation of cycle sewing data deletion Deletes thread-tension data Yes or No?
M541		All data in cycle data are deleted. OK ?	Confirmation of all cycle data deletion Deletes all pieces of data contained in cycle data Yes or No?
M542		Formatting is performed. OK ?	Confirmation of formatting Formats the data storage medium Yes or No?
M544		Data does not exist.	Communication screen input number disabled (operation panel) No data exists.
M545		Data does not exist.	Communication screen input number disabled (media) No data exists.
M546		Data does not exist.	Communication screen input number disabled (server) No data exists.
M547		Overwriting cannot be performed since data exists.	Communication screen overwrite disabled (operation panel) Overwrite is disabled since data exists.
M548		Overwriting cannot be performed since data exists.	Communication screen overwrite disabled (media) Overwrite is disabled since data exists.

Message No.	Display	Displayed message	Description
M549		Overwriting cannot be performed since data exists.	Communication screen overwrite disabled (server) Overwrite is disabled since data exists.
M554		Key-lock customization data have been initialized.	Customized data initialization notification Key-lock customized data has been initialized.
M555		Key-lock customization data are broken. Initializing is OK?	Customized data breakage notification Key-lock customized data has broken. Do you want to initialize it?
M556		Key-lock customization data are to be initialized. OK?	Confirmation of customized data initialization Initializes key-lock customized data Yes or No?
M588		Confirm upper-displayed temp on heatr cntrlr has risen to lower-displayed preset value	Heat cutter temperature check Sewing should be started after confirming that the heater temperature indication displayed on the upper section of the heat cutter controller has increased to the preset temperature displayed on the lower section of the controller. → Refer to " I-5-8. Adjusting the heat cutter temperature " p.20. This message is displayed immediately after the power is turned ON and when the Ready key is pressed for the first time after the power-ON. This message will not be displayed again by pressing the Enter button once until the power is turned ON again. Be aware that the heat cutter operates when you press the Enter button.
M589		Shoelace loop data content in registration source will be changed Is it OK?	Confirmation of the change made to the shoelace loop pattern data under the cycle sewing mode Registered original shoelace loop pattern data content will be changed. Do you want to change the data content? Yes or No?
M590		If pressed again shoelace loop clamp moves forward	Confirmation of the shoelace loop clamp operation Press this key again to move the shoelace loop clamp forward.
M591		Pressing ENTER key makes device move.	Check program (adjustment mode) Device operation confirmation at the time screen transition. Press the enter key to move the device.
M592		Counter set value is reached during next shoelace loop sewing	Upon sewing screen transition/upon completion of sewing When the next shoelace loop is sewn, the sewing counter increments one count.

Message No.	Display	Displayed message	Description
M594		Cycle-pattern registered shoelace loop pattern width mismatch	Shoelace loop width for cycle sewing pattern The shoelace loop pattern width registered in the cycle pattern does not match the actual shoelace loop width.
M596		The garment-body presser may interfere with loop clamp. OK?	Garment body presser/loop clamp interference In the case the shoelace loop width is set at a small value and the bartacking width is set to a large value, the garment body presser and the clamp can interfere with each other.
M598		X motor range is out of setting range	Loop feeder unit X-axis motor is out of range The X-axis motor travel range is out of the allowable range. The allowable range within which the X-axis motor can move forward during sewing of a shoelace loop is exceeded because of the X-axis motor position correction setting.
M599		Y motor range is out of setting range	Loop feeder unit Y-axis motor is out of range The Y-axis motor travel range is out of the allowable range. The allowable range within which the Y-axis motor can move forward during clamping of a shoelace loop is exceeded because the shoelace loop length is too short.
M653		Formatting is performed.	Formatting Formatting is being carried out.
M669		Data is being read.	Reading data Data is being read.
M670		Data is being written.	Writing data Data is being written.
M671		Data is being converted.	Converting data Data is being converted.

III. MAINTENANCE



CAUTION :

In the case of maintenance, be sure to turn OFF the power to the heat cutter and wait until the temperature of the heat cutter drops sufficiently in order to protect against a burn on your body.

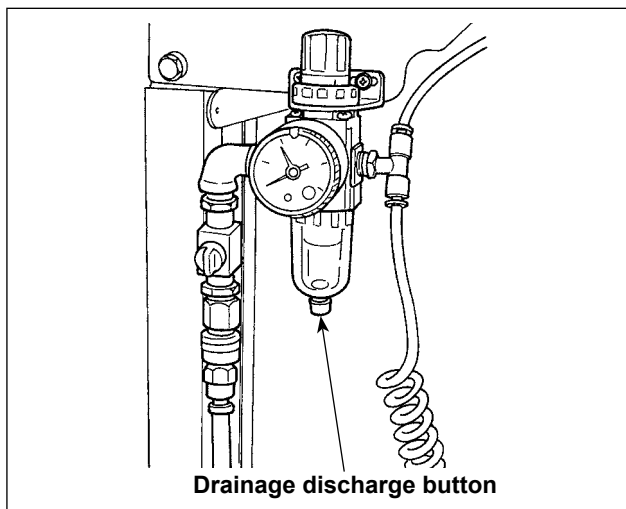
1. Maintenance

1-1. Discharging drainage water



CAUTION :

Do not place hands, feet, face or tools on the moving part of the main body so as to protect against possible accidents caused by abrupt start of the machine.



Be sure to discharge drainage water from the filter.

Press the drainage discharge button on the underside of the filter to discharge water accumulated in the filter.

Loosen the screw of the drainage discharge button on the underside of the filter to discharge water accumulated in the filter.

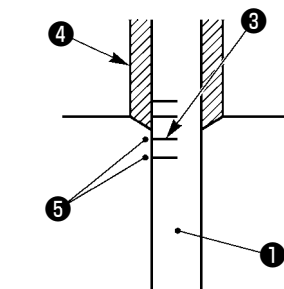
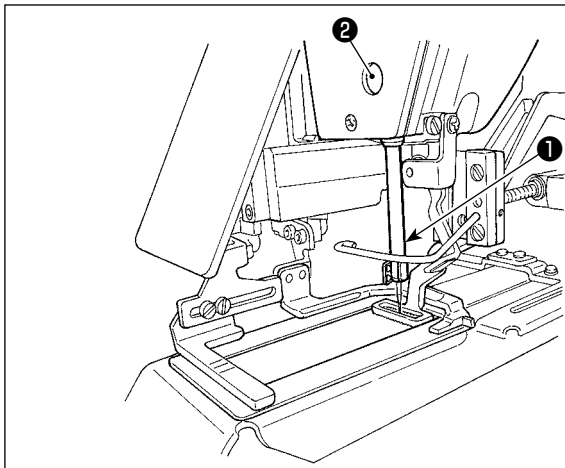
After having drained the filter, firmly tighten the screw of the drainage discharge button.

1-2. Adjusting the height of the needle bar



CAUTION :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



⑤ : Engraved line for DP×17

Bring needle bar ① to the lowest position of its stroke. Loosen needle bar connection screw ② and adjust so that upper marker line ③ engraved on the needle bar aligns with the bottom end of needle bar bushing, lower ④ .



After the adjustment, make sure that there is no uneven torque.

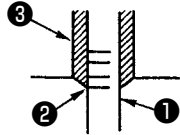
* When stitch skipping occurs in accordance with the sewing conditions, adjust the height of the needle bar so as to lower it by 0.5 to 1 mm from the needle bar engraved line ③ .

1-3. Adjusting the needle-to-shuttle relation

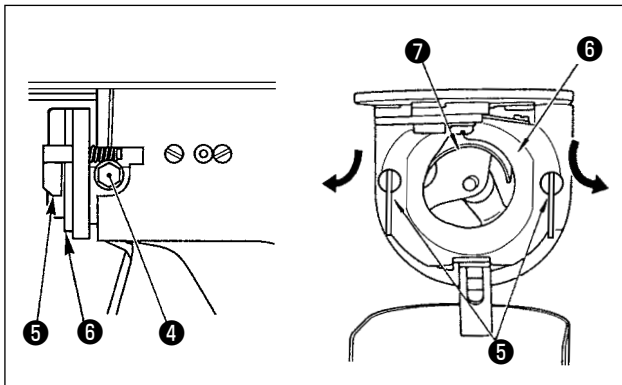


CAUTION :
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

Relation between needle and engraved lines



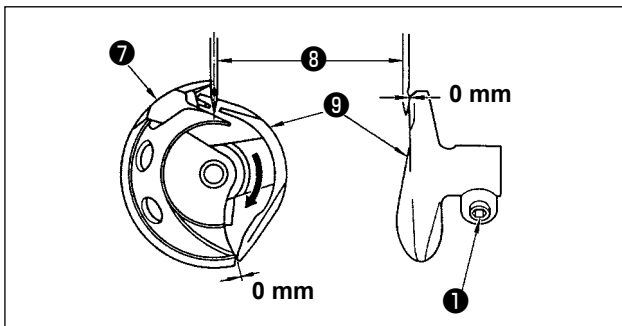
- 1) Turn the handwheel by hand. When needle bar **1** has gone up, adjust so that lower marker line **2** engraved on the needle bar aligns with the bottom end of the needle bar bushing, lower **3**.



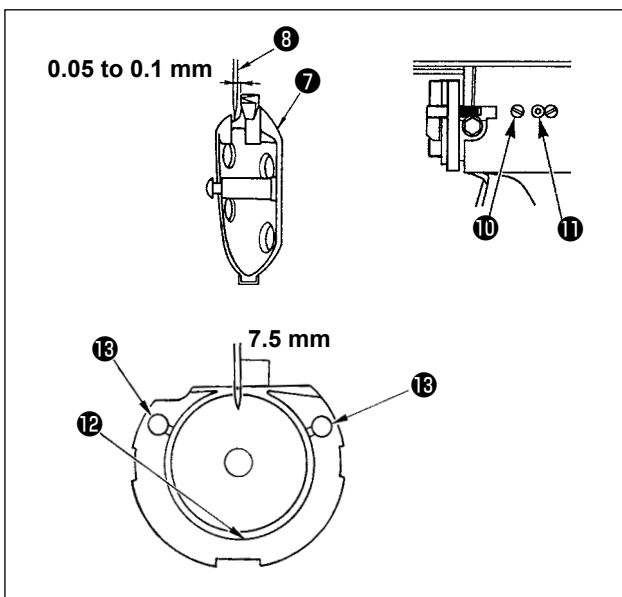
- 2) Loosen setscrew **4** in the driver. Open inner hook pressers **5** to the right and left, and remove inner hook presser **6**.



At this time, be careful not to let inner hook **4 come off and fall.**



- 3) Adjust so that the blade point of inner hook **7** aligns with the center of needle **8**, and that a clearance of 0 mm is provided between the front end of the driver and the needle as the front end face of driver **9** receives the needle to prevent the needle from being bent. Then tighten setscrew **4** of the driver.



- 4) Loosen setscrew **10** of the shuttle, and adjust the longitudinal position of the shuttle. To do this adjustment, turn shuttle race adjusting shaft **11** clockwise or counterclockwise to provide a 0.05 to 0.1 mm clearance between needle **8** and the blade point of inner hook **7**.
- 5) After adjusting the longitudinal position of the shuttle, further adjust to provide a 7.5 mm clearance between the needle and the shuttle by adjusting the rotating direction. Then tighten setscrew **10** of the shuttle.



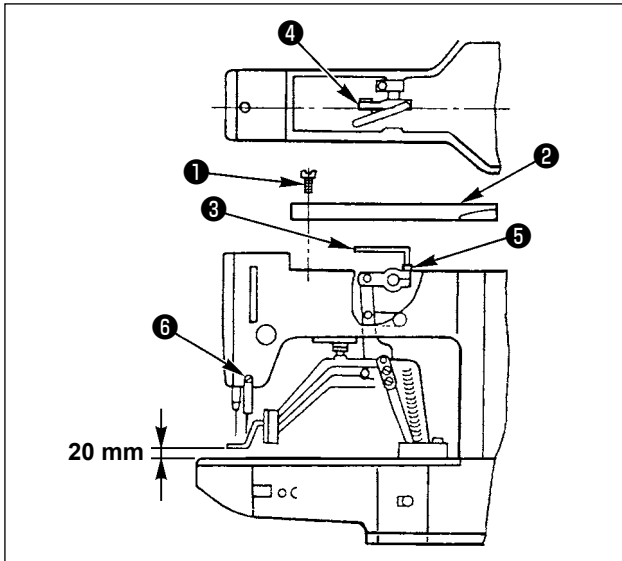
Apply a small amount of oil to race section **12 and oil wick **13**, and use the sewing machine after an extended period of disuse or cleaning the periphery of hook portion.**

1-4. Adjusting the lift of the work clamp foot



CAUTION :

As the work is performed while the power is ON, never touch the switches other than the necessary one so as to prevent accidents caused by the malfunction of switches.



- 1) With the machine in stop mode, remove six setscrews ① of the top cover, and take off top cover ② .
- 2) Apply L-shaped wrench ③ to socket bolt ⑤ of clamp ④ , and loosen the socket bolt.
- 3) Push down L-shaped wrench ③ to increase the lift of the work clamp foot, or pull it up to decrease the lift.
- 4) After the adjustment, securely tighten socket bolt ⑤ .



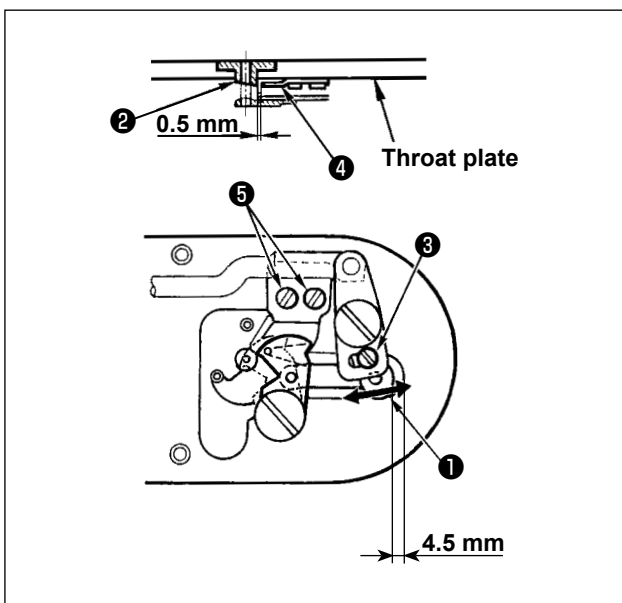
If the work clamp foot lever support plate interferes with the wiper, readjust the height of the wiper using setscrew ⑥ in the wiper installing base.

1-5. The moving knife and counter knife



CAUTION :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



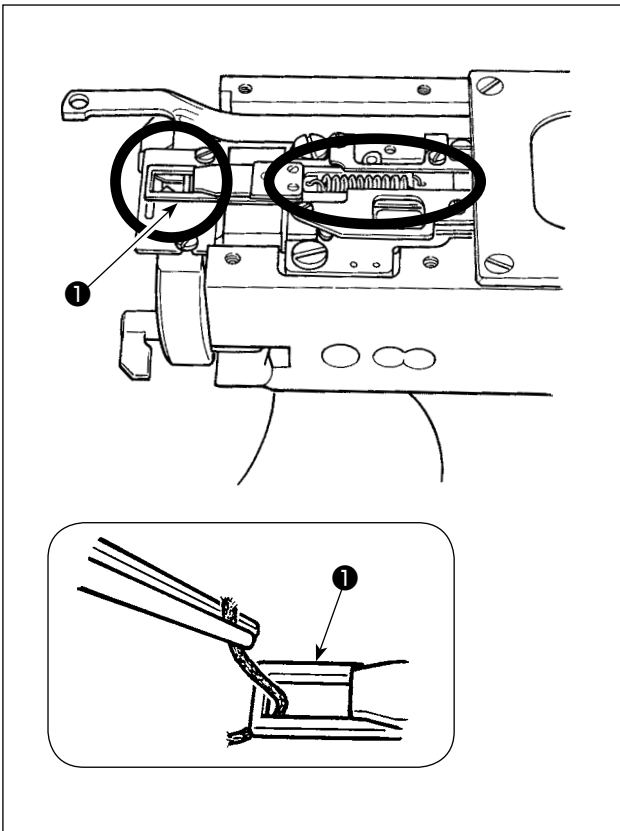
- 1) Loosen adjusting screw ③ so that a clearance of 4.5 mm is provided between the front end of the throat plate and the top end of thread trimmer lever, small ① . To adjust, move the moving knife in the direction of arrow.
- 2) Loosen setscrew ⑤ so that a clearance of 0.5 mm is provided between needle hole guide ② and counter knife ④ . To adjust, move the counter knife.

1-6. Needle thread clamp device



CAUTION :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



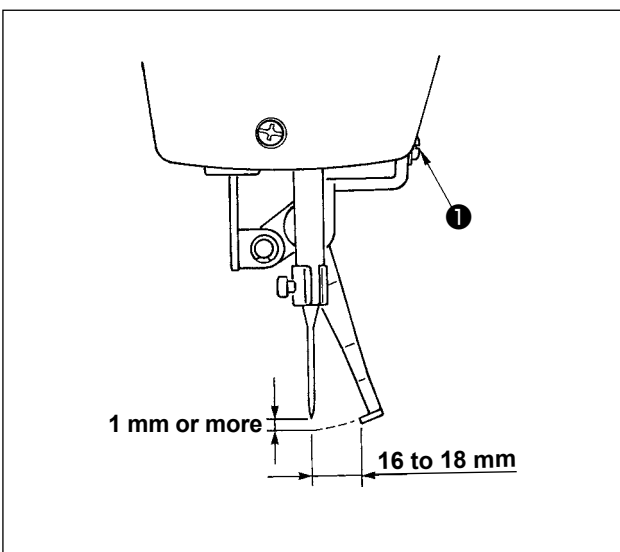
- 1) When thread is caught at top end ❶ of the thread clamp, thread clamp becomes incomplete and sewing trouble at the sewing start will be caused.
Remove it with tweezers or the like.
- 2) When removing thread waste or thread dust collected on the thread clamp device, remove it after removing the throat plate.

1-7. Adjustment of the wiper



CAUTION :

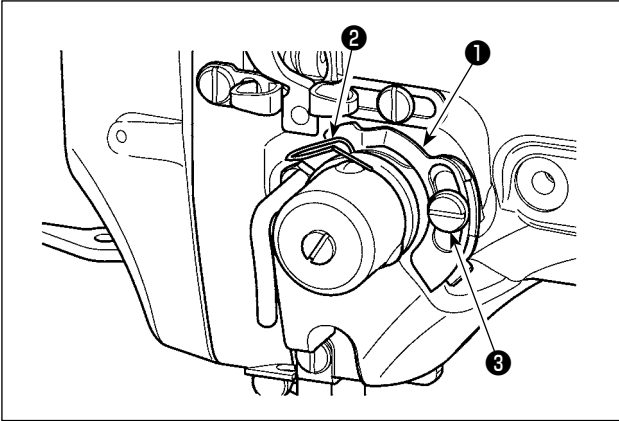
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



- 1) Loosen screw ❶ to adjust so that a clearance of 1 mm or more is provided between the wiper and the needle.
At this time, the standard of the distance between the wiper and the needle is 16 to 18 mm. By adjusting the distance wide, the work clamp foot can prevent stepping on needle thread when it comes down.

* The position of the needle is when the sewing machine has stopped after the sewing finished.

1-8. Thread breakage detector plate

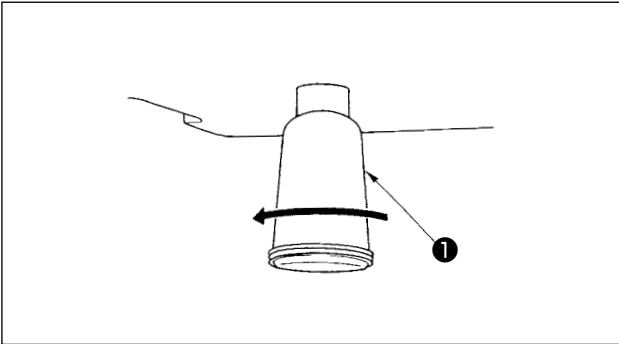


- 1) Adjust so that thread breakage detector plate ① is always in contact with thread take-up spring ② in the absence of needle thread. (Slack: approx. 0.5mm)
- 2) Whenever the stroke of thread take-up spring ② has been changed, be sure to readjust thread breakage detector plate ①. To make this adjustment, loosen screw ③.



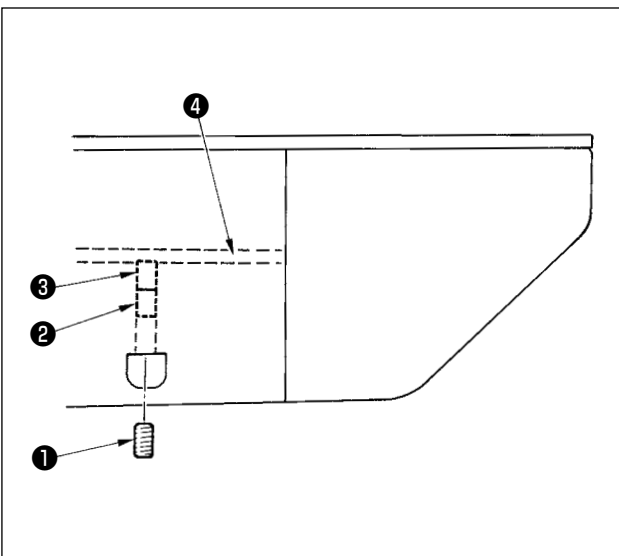
Adjust so that thread breakage detector plate ① does not touch any adjacent metallic parts other than thread take-up spring ②.

1-9. Draining waste oil



When polyethylene oiler ① becomes filled with oil, remove polyethylene oiler ① and drain the oil.

1-10. Amount of oil supplied to the hook

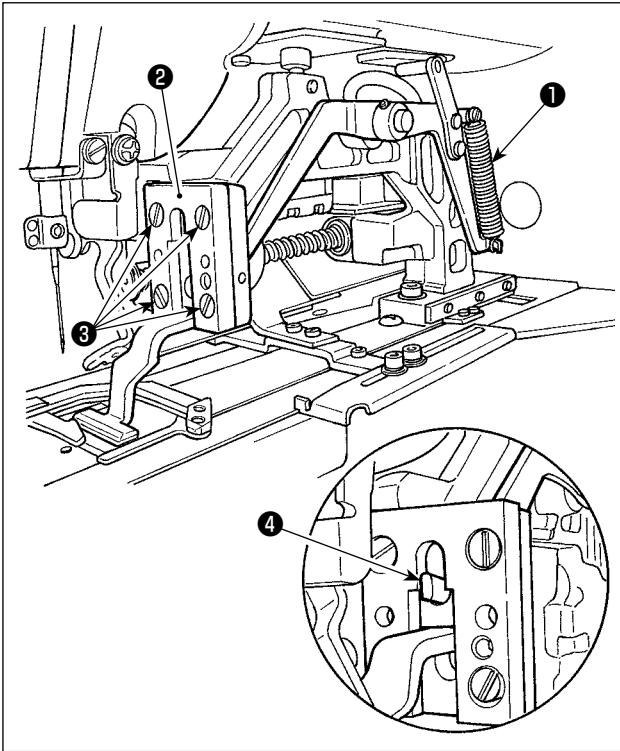


- 1) Loosen setscrew ① and remove setscrew ①.
- 2) When screwing in adjustment screw ②, the amount of oil of oil pipe, left ④ can be reduced.
- 3) After the adjustment, screw in setscrew ① and fix it.



1. The state of standard delivery is the position where ③ is lightly screwed in and returned by 4 turns.
2. When reducing the amount of oil, do not screw in the screw at once. Observe the state for approximately half a day at the position where ③ is screwed in and returned by 2 turns. If reducing is excessive, worn-out of the hook will result.

1-11. Replacing the work clamp foot of the sewing machine

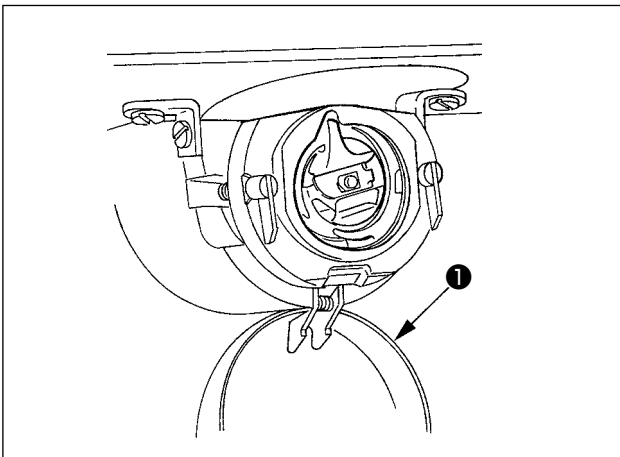


Remove spring **1** which presses down the work clamp foot. Loosen setscrews **3** which secures work clamp foot guide **2** to replace the work clamp foot of the sewing machine.

When placing the replacement work clamp foot, check to be sure that top end **4** of lifting lever fits in the work clamp foot.

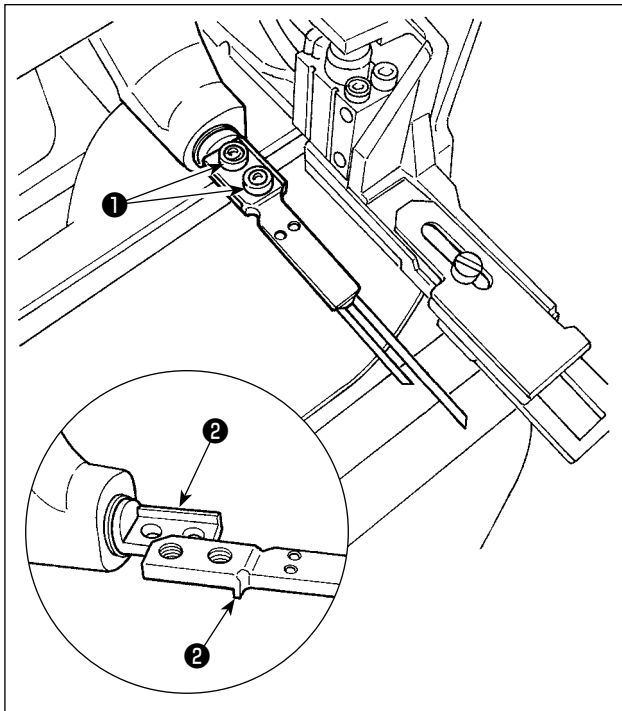
After the replacement, securely tighten setscrews **3** in the work clamp foot guide.

1-12. Cleaning inside the hook cover



Be sure to periodically open hook cover **1** to remove cotton dust and thread waste with an air blower to retain the performance of the machine.

1-13. Replacing the fork



For the fork, the pin section is integral with the base section. To replace the fork, both the pin section and the base section have to be replaced together.

Loosen two setscrews ❶ and replace the fork pin asm. with a new one.

The fork pin is to be mounted with fitted in seating section ❷ in terms of both the longitudinal and lateral directions as shown in the figure at left. Be sure to securely tighten setscrews ❶ with the fork pressed against the seating section.



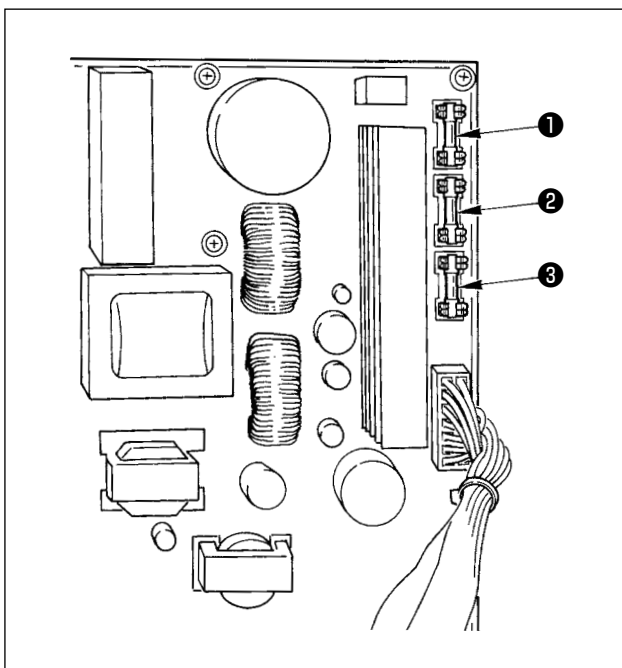
The fork section is always pressed by the work clamp foot of the sewing machine. Daily checkup is necessary to check whether the fork pin is damaged, the fork is bent or the setscrews have loosened.

1-14. Replacing the fuse



WARNING:

1. To avoid electrical shock hazards, turn OFF the power and open the control box cover after about five minutes have passed.
2. Open the control box cover after turning OFF the power without fail. Then, replace with a new fuse with the specified capacity.



Check first that the power switch is in the OFF state, and disconnect the power cord from the wall outlet.

Then, wait for five minutes or more.

Remove four screws which secure the back cover of control box. Carefully open the back cover.

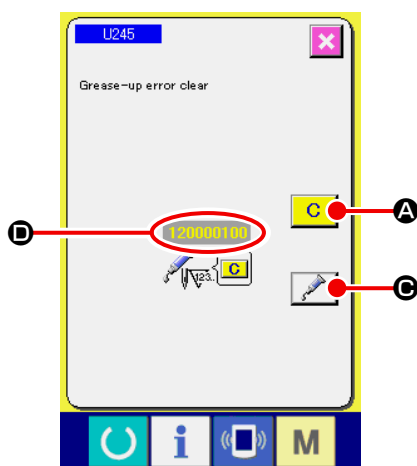
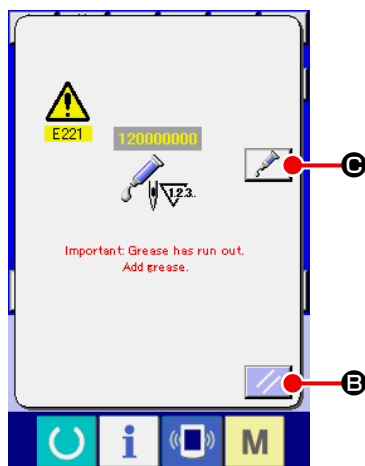
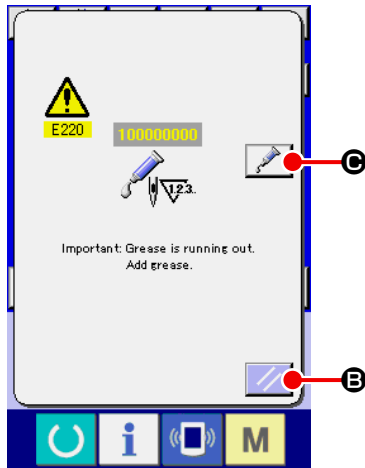
There are three fuses placed on the upper right section of the SDC PWB.

- ❶ For stepping motor power supply protection 5A (time-lag fuse)
- ❷ For solenoid power supply protection 3.15A (time-lag fuse)
- ❸ For control power supply protection 2A (fast-blow type fuse)

1-15. Replenishing the designated places with grease

* Perform grease supplement when the errors below are displayed or once a year (either one which is earlier). If grease has decreased due to cleaning of the sewing machine or any other reasons, be sure to immediately add grease.

(1) Addition of grease to the machine head



When the sewing machine has been used for a certain number of stitches, error “E220 Grease-up warning” is displayed. This display informs the operator of the time of replenishing the designated places with grease. Be sure to replenish the places with the grease below. Then call the memory switch U245, press CLEAR button **C** **A** and set NUMBER OF STITCHES **D** to “0”.

Ever after the display of the error “E220 Grease-up warning”, when RESET key **B** is pressed, the error is released, and the sewing machine can be continuously used. Afterwards, however, error code “E220 Grease-up warning” is displayed every time the power is re-turning ON.

In addition, when the sewing machine is used further for a certain period of time without replenishing the places with grease after the display of error No. E220, error “E221 Grease-up error” is displayed and the sewing machine fails to operate since the error cannot be released even when the RESET key **B** is pressed.

When error “E221 Grease-up error” is displayed, be sure to replenish the designated places below with grease. Then call the memory switch U245, press CLEAR button **C** **A** and set NUMBER OF STITCHES **D** to “0”.

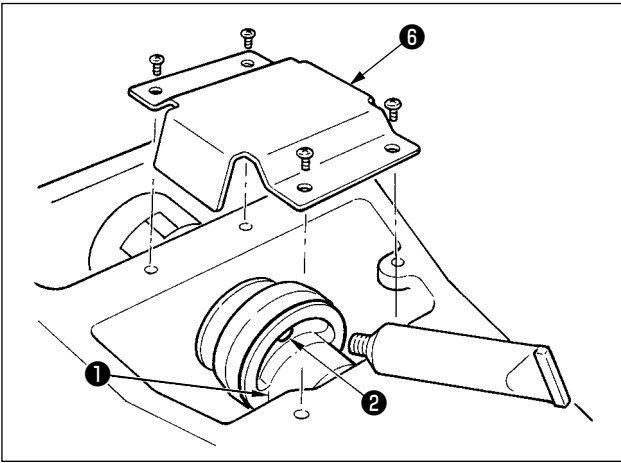
When RESET key **B** is pressed without replenishing the designated places with grease, error code “E221 Grease-up warning” is displayed every time the power is re-turning ON afterwards and the sewing machine fails to operate. So, be careful.



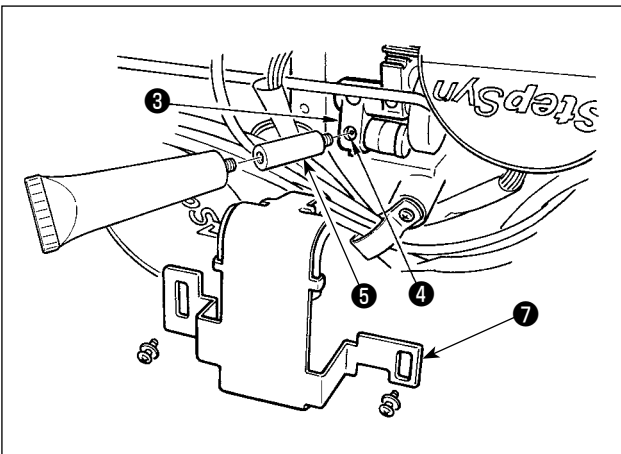
1. Error code E220 or E221 is displayed again unless NUMBER OF STITCHES **D** is changed to “0” after replenishing the designated places with grease. When E221 is displayed, the sewing machine fails to operate. So, be careful.
2. When GREASE APPLYING POSITION DISPLAY button **C** is pressed in each screen, the grease applying position can be confirmed in the panel display. Be sure, however, to perform the grease applying after turning OFF the power.

**CAUTION :**

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

1) Replenishing the eccentric cam section with grease

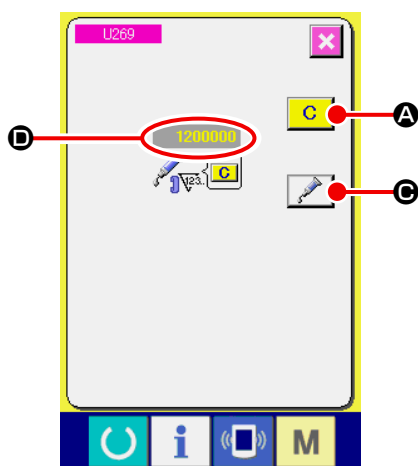
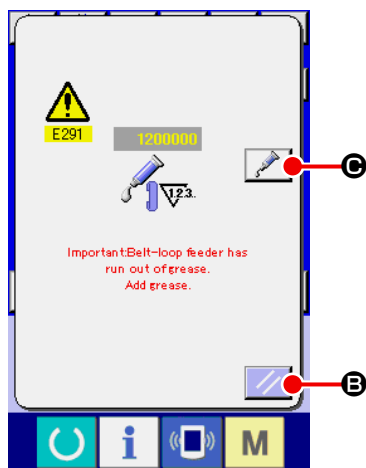
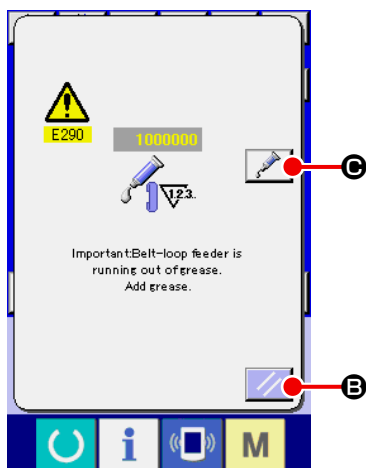
- 1) Open the upside cover and remove the grease cover **6** .
- 2) Remove rubber cap **2** located on the side of eccentric cam **1** . Then replenish there with grease.

2) Replenishing the oscillator pin section with grease

- 1) Tilt the machine head and remove the grease cover **7** .
- 2) Remove setscrew **4** in oscillator gear **3** , screw in the grease tube attached joint **5** supplied as accessories, and replenish there with the grease.
- 3) Securely tighten setscrew **4** which has been removed after replenishing with the grease.

(2) Addition of grease to devices

1) Replenishing the shoelace loop feeder unit with grease



When the sewing machine has been used for a certain number of stitches, error “E290 Grease-up warning” is displayed. This display informs the operator of the time of replenishing the designated places with grease. Be sure to replenish the places with the grease below. Then call the memory switch U269, press CLEAR button **C** **A** and set NUMBER OF STITCHES **D** to “0”.

Ever after the display of the error “E290 Grease-up warning”, when RESET key **B** is pressed, the error is released, and the sewing machine can be continuously used. Afterwards, however, error code “E290 Grease-up warning” is displayed every time the power is re-turning ON.

In addition, when the sewing machine is used further for a certain period of time without replenishing the places with grease after the display of error No. E290, error “E291 Grease-up error” is displayed and the sewing machine fails to operate since the error cannot be released even when the RESET key **B** is pressed.

When error “E291 Grease-up error” is displayed, be sure to replenish the designated places below with grease. Then call the memory switch U269, press CLEAR button **C** **A** and set NUMBER OF STITCHES **D** to “0”.

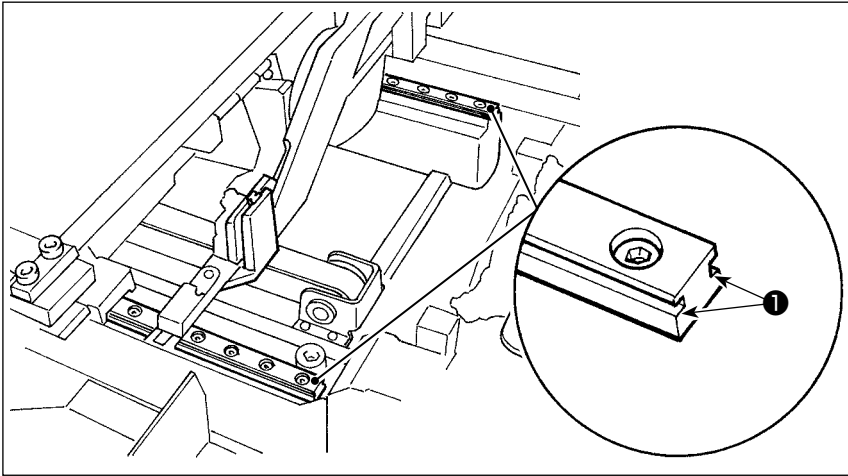
When RESET key **B** is pressed without replenishing the designated places with grease, error code “E291 Grease-up warning” is displayed every time the power is re-turning ON afterwards and the sewing machine fails to operate. So, be careful.

- Caution**

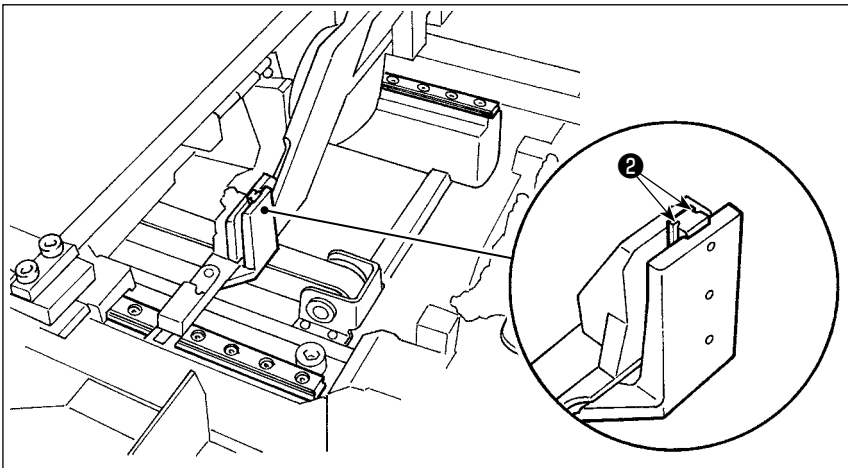
 1. Error code E290 or E291 is displayed again unless NUMBER OF STITCHES **D** is changed to “0” after replenishing the designated places with grease. When E291 is displayed, the sewing machine fails to operate. So, be careful.
 2. When GREASE APPLYING POSITION DISPLAY button **C** is pressed in each screen, the grease applying position can be confirmed in the panel display. Be sure, however, to perform the grease applying after turning OFF the power.

**CAUTION :**

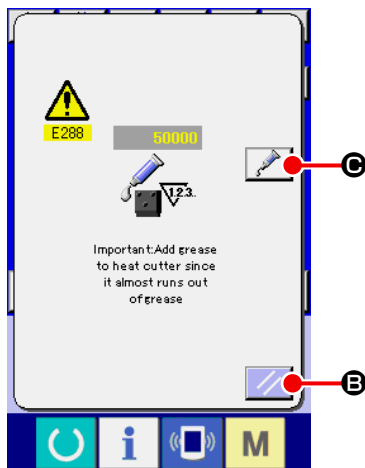
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

2) Adding grease to the Y linear guide section

Remove the exterior cover. Add grease to the entire part of two right and left rail sections **1** of the LM guide of the loop feeder unit.

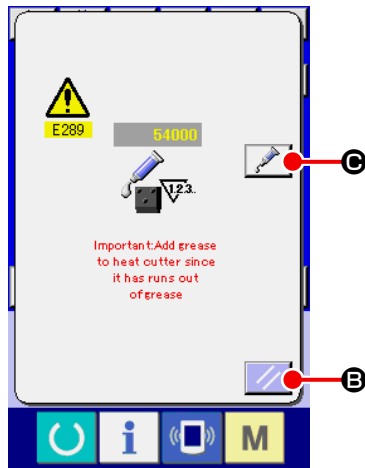
3) Adding grease to the loop clamp linear guide section


Add grease to rail section **2** of the loop clamp linear guide.

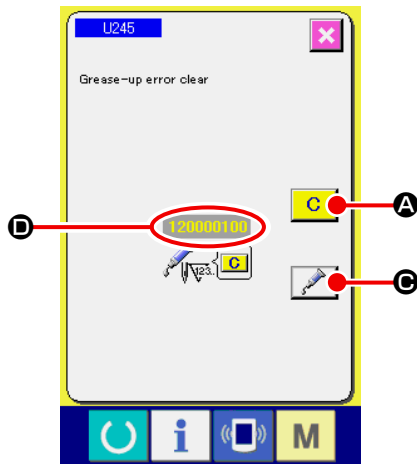
4) Replenishing the heat cutter with grease


When the sewing machine has been used for a certain number of stitches, error “E288 Grease-up warning” is displayed. This display informs the operator of the time of replenishing the designated places with grease. Be sure to replenish the places with the grease below. Then call the memory switch U267, press CLEAR button **C** **A** and set NUMBER OF STITCHES **D** to “0”.


Ever after the display of the error “E288 Grease-up warning”, when RESET key **B** is pressed, the error is released, and the sewing machine can be continuously used. Afterwards, however, error code “E288 Grease-up warning” is displayed every time the power is re-turning ON.




In addition, when the sewing machine is used further for a certain period of time without replenishing the places with grease after the display of error No. E288, error “E289 Grease-up error” is displayed and the sewing machine fails to operate since the error cannot be released even when the RESET key  **B** is pressed.



When error “E289 Grease-up error” is displayed, be sure to replenish the designated places below with grease. Then call the memory switch U267, press CLEAR button  **C** **A** and set NUMBER OF STITCHES **D** to “0”.

When RESET key  **B** is pressed without replenishing the designated places with grease, error code “E289 Grease-up warning” is displayed every time the power is re-turning ON afterwards and the sewing machine fails to operate. So, be careful.



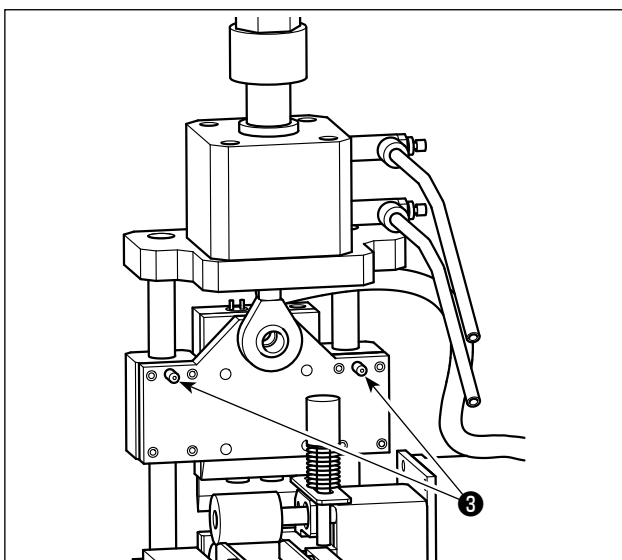
1. Error code E288 or E289 is displayed again unless NUMBER OF STITCHES **D** is changed to “0” after replenishing the designated places with grease. When E289 is displayed, the sewing machine fails to operate. So, be careful.
2. When GREASE APPLYING POSITION DISPLAY button  **C** is pressed in each screen, the grease applying position can be confirmed in the panel display. Be sure, however, to perform the grease applying after turning OFF the power.

5) Replenishing the heat cutter guide shaft section with grease



WARNING :

The heat cutter temperature is very high during use. When it is necessary to replenish the heat cutter with grease, be sure to turn OFF the power to the heat cutter and wait until its temperature decreases sufficiently. Then, replenish the heat cutter with grease.



Remove the cover of heat cutter. Apply grease to grease nipples (at two locations) **3** of the guide shaft section.

1-16. Troubles and corrective measures (sewing conditions)

Trouble	Cause	Corrective measures	Page
1. The needle thread slips off at the start of bar-tacking.	① Stitches are slipped at the start.	○ Adjust the clearance between the needle and the shuttle to 0.05 to 0.1 mm.	109
	② The needle thread remaining on the needle after thread trimming is too short.	○ Set the sewing machine so that the sewing speed is lowered at the beginning of sewing.	76
		○ Correct the thread tension release timing of the thread tension controller No. 2.	-
	③ The bobbin thread is too short.	○ Increase the tension of the thread take-up spring, or decrease the tension of the thread tension controller No. 1.	12,13
		○ Decrease the tension of the bobbin thread.	12
	④ Needle thread tension at 1st stitch is too high.	○ Increase the clearance between the needle hole guide and the counter knife.	110
⑤ Thread clamp is unstable (material is apt to be expanded, thread is hard to slide, thread is thick, etc.).	○ Decrease the tension at 1st stitch.	77	
	○ Decrease the sewing speed at 1st stitch at the sewing start. (Extent of 600 to 1,000 sti/min)	76	
2. Thread often breaks or synthetic fiber thread splits finely.	① The shuttle or the driver has scratches.	○ Increase the number of stitches of thread clamp to 3 to 4 stitches.	77
		○ Make the pitch at 1st stitch longer.	-
	② The needle hole guide has scratches.	○ Decrease the needle thread tension at 1st stitch.	77
		○ Take it out and remove the scratches using a fine whetstone or buff.	-
	③ The needle strikes the work clamp foot.	○ Buff or replace it.	-
		○ Correct the position of the work clamp foot.	-
④ Fibrous dust is in the groove of the shuttle race.	○ Take out the shuttle and remove the fibrous dust from the shuttle race.	109	
⑤ The needle thread tension is too high.	○ Reduce the needle thread tension.	12	
⑥ The tension of the thread take-up spring is too high.	○ Reduce the tension.	13	
	○ Use silicone oil.	11	
3. The needle often breaks.	① The needle is bent.	○ Replace the bent needle.	10
	② The needle hits the work clamp foot.	○ Correct the position of the work clamp foot.	-
		○ Replace it with a thicker needle according to the material.	10
	④ The driver excessively bends the needle.	○ Correctly position the needle and the shuttle.	109
	⑤ Needle thread is stepped on by the work clamp foot at the start of sewing. (Needle bend)	○ Widen the distance between the needle and the wiper. (16 to 18 mm)	111
4. Threads are not trimmed. (Bobbin thread only)	① The counter knife is dull.	○ Replace the counter knife.	110
	② The difference in level between the needle hole guide and the counter knife is not enough.	○ Increase the bend of the counter knife.	110
		○ Correct the position of the moving knife.	110
	④ The last stitch is skipped.	○ Correct the timing between the needle and the shuttle.	109
	⑤ Bobbin thread tension is too low.	○ Increase the bobbin thread tension.	12

Trouble	Cause	Corrective measures	Page
5. Stitch skipping often occurs.	① The motions of the needle and shuttle are not properly synchronized.	<input type="radio"/> Correct the positions of the needle and shuttle.	109
	② The clearance between the needle and shuttle is too large.	<input type="radio"/> Correct the positions of the needle and shuttle.	109
	③ The needle is bent.	<input type="radio"/> Replace the bent needle.	10
	④ The driver excessively bends the needle.	<input type="radio"/> Correctly position the driver.	109
6. The needle thread comes out on the wrong side of the material.	① The needle thread tension is not high enough.	<input type="radio"/> Increase the needle thread tension.	12
	② The tension release mechanism fails to work properly.	<input type="radio"/> Check whether or not the tension disc No. 2 is released during bartacking.	-
	③ The needle thread after thread trimming is too long.	<input type="radio"/> Increase the tension of the thread tension controller No. 1.	12
	④ Number of stitches is too few.	<input type="radio"/> Turn OFF the thread clamp.	77
	⑤ When sewing length is short (End of needle thread protrudes on the wrong side of sewing product.)	<input type="radio"/> Turn OFF the thread clamp.	77
7. Threads break at time of thread trimming.	① The moving knife has been improperly position.	<input type="radio"/> Correct the position of the moving knife.	110
		<input type="radio"/> Turn OFF the thread clamp.	77
8. The thread clamp is entangled with needle thread.	① The needle thread at the sewing start is too long.	<input type="radio"/> Tighten thread tension controller No. 1 and make the length of needle thread 33 to 36 mm.	12
9. Uneven length of the needle thread.	① The tension of thread take-up spring is too low.	<input type="radio"/> Increase the tension of the thread take-up spring.	13
10. The length of needle thread does not become short.	① The tension of thread tension controller No. 1 is too low.	<input type="radio"/> Increase the tension of thread tension controller No. 1.	12
	② The tension of thread take-up spring is too high.	<input type="radio"/> Decrease the tension of thread take-up spring.	13
	③ The tension of thread take-up spring is too low and motion is unstable.	<input type="radio"/> Increase the tension of thread take-up spring and lengthen the stroke as well.	13
11. The knotting section of bobbin thread at 2nd stitch at the sewing start appears on the right side.	① Idling of bobbin is large.	<input type="radio"/> Adjust the position of the moving knife.	110
	② The bobbin thread tension is too low.	<input type="radio"/> Increase the bobbin thread tension.	13
	③ The needle thread tension at 1st stitch is too high.	<input type="radio"/> Decrease the needle thread tension at 1st stitch.	77
		<input type="radio"/> Turn OFF the thread clamp	77
12. Loop length is not constant.	① Loop is caught in some part of its route.	<input type="radio"/> Adjust so that the loop is fed smoothly without being hitched.	17
	② Loop tension is not adequate when it is being fed.	<input type="radio"/> Adequately adjust the loop tension when it is being fed.	17
13. Lateral position of the loop is not consistent.	① The loop slide guides are positioned to provide a larger width than the loop width, or are installed with tilted.	<input type="radio"/> Adjust the loop slide guides so that they are in parallel to each other according to the loop width.	18
	② The position of loop clamp C provides a larger width than the loop width.	<input type="radio"/> Adjust the position of loop clamp C to the loop width.	18
14. Dog-eared shoelace loop is produced.	① The fork pin has flaws or is bent.	<input type="radio"/> Replace the fork pin with a flawless new one.	114
	② The fork pin is installed with tilted.	<input type="radio"/> Install the fork pin with its tilt corrected.	114

2. Option

2-1. Optional parts

Part name	Part number	Usage
LED marking light asm.	40111891	To be assembled as an additional marking light

2-2. Miscellaneous

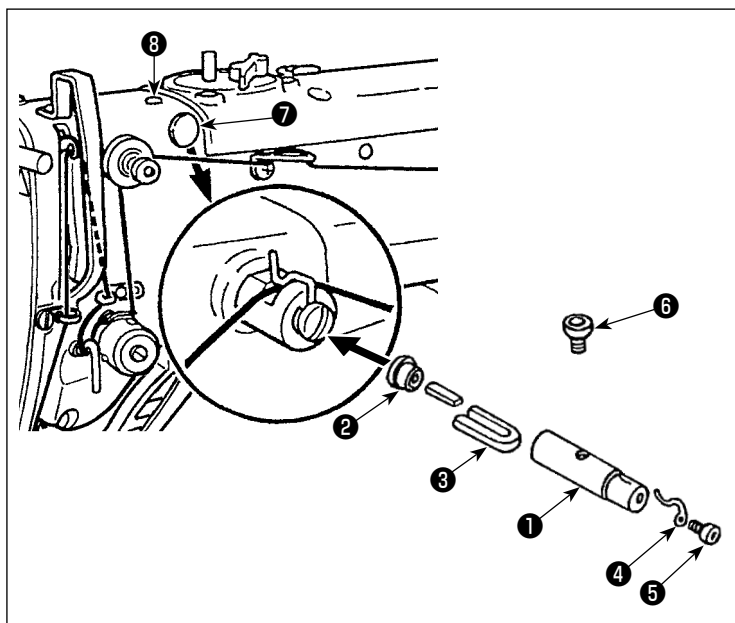
Part name	Part number	Usage
Sponge blank	40091162	Sponge blank (200 × 100) installed as standard on the machine

2-3. Silicon oil pipes



CAUTION :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Remove plugs **7** and **8** on the machine head. Fix silicon oil pipes **1** to **5** on the machine head with the fixing screw.

	Part name	Part number
1	Silicon oil pipe	40040910
2	Plug	TA1050504R0
3	Felt	13501705
4	Thread guide	B1127280000
5	Thread guide setscrew	SS4110515SP
6	Fixing screw for the silicon oil inlet and silicon oil pipes	13501408