

***ENGLISH***

**MS-1261A-DWS  
INSTRUCTION MANUAL**

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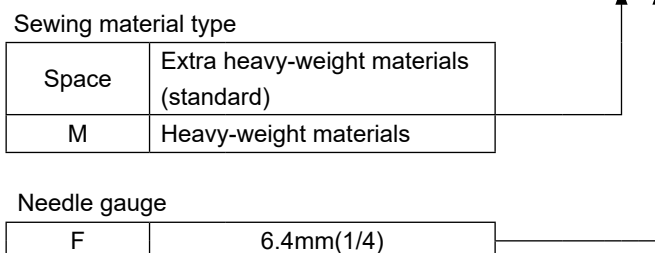
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# 1. SPECIFICATIONS

## 1-1. Specifications of the sewing machine head

### MS-1261A△△DWS



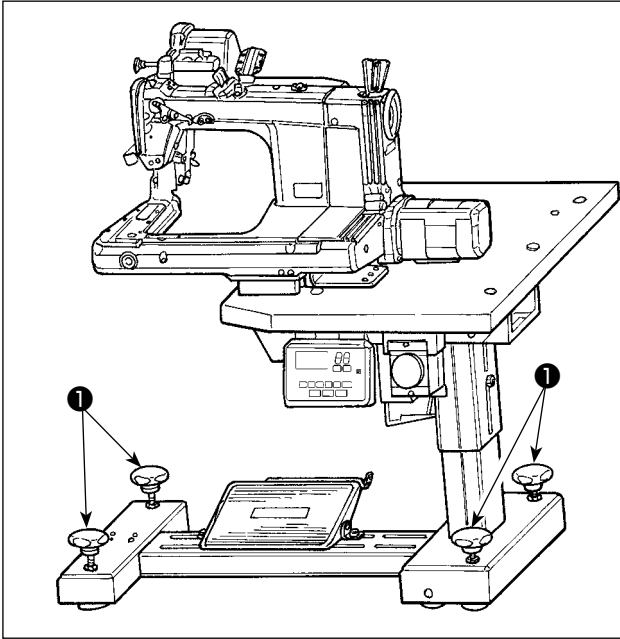
Model	MS-1261A △ DWS	MS-1261AM △ DWS
Application	For heavy- to extra-heavy-weight materials	For medium- to heavy-weight materials
Max. sewing speed	5500 sti/min	
Number of needle	3	
Needle	UY×128GAS #16 to 22 (Standard #21)	UY×128GAS #16 to 21 (Standard #19)
Cloth puller system	Electronic control	
Height of presser foot	10 mm	
Stitch length	1.4 to 4.2 mm	
Needle gauge	6.4 mm(1/4)	
Circumference of cylinder	194 mm	
Lubricating oil	JUKI NEW DEFRIX OIL No. 1 or JUKI CORPORATION GENUINE OIL 7	
Noise	- Equivalent continuous emission sound pressure level (L <sub>pA</sub> ) at the workstation: A-weighted value of 84.5 dB ; (Includes K <sub>pA</sub> = 2.5 dB) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 4,500 sti/min. - Sound power level (L <sub>WA</sub> ); A-weighted value of 91.0 dB; (Includes K <sub>WA</sub> = 2.5 dB); according to ISO 10821- C.6.2 -ISO 3744 GR2 at 4,500 sti/min.	

## 1-2. Specifications of the control box

Supply voltage	3-phase 220 to 240V	Single phase 220 to 240V	Single phase 220 to 240V CE
Frequency	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz
Operating environment	Temperature : 0 to 35°C Humidity : 90% or less	Temperature : 0 to 35°C Humidity : 90% or less	Temperature : 0 to 35°C Humidity : 90% or less
Input	820VA	820VA	680VA

## 2. SETUP

### 2-1. Setting up the sewing machine



Fix the sewing machine on the floor with adjuster bolts ❶ (four pieces).



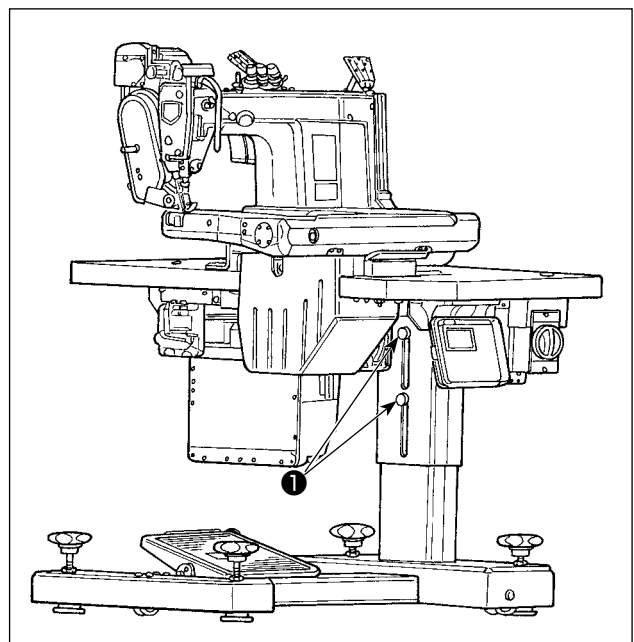
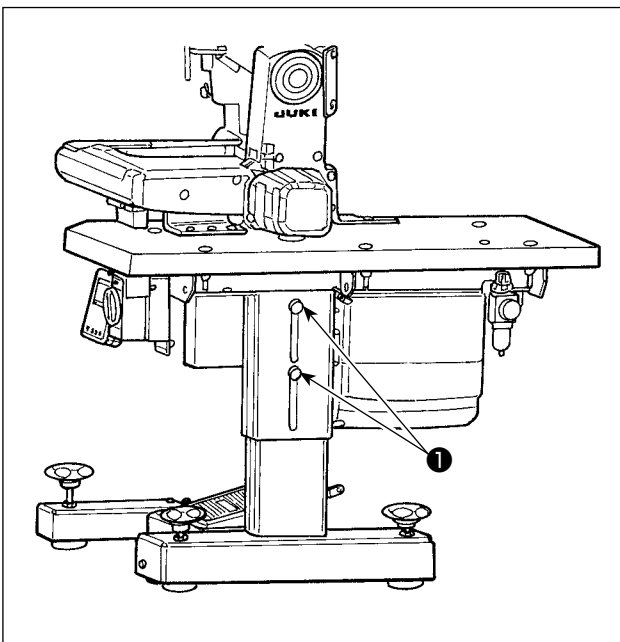
Be sure to move the sewing machine with two or more persons.

#### 2-1-1. Adjusting the sewing machine head

Loosen bolts ❶ (four pieces) and adjust the height of sewing machine.



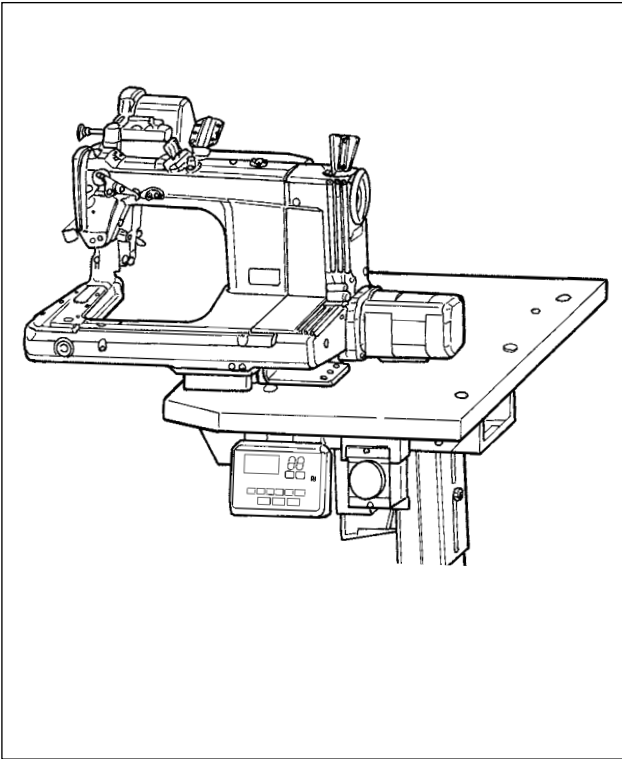
1. Total weight of the sewing machine, machine table and control box is 110 kg or more. It is necessary to adjust the sewing machine height with four or more persons.
2. Adjust the sewing machine height so that it is levelled.



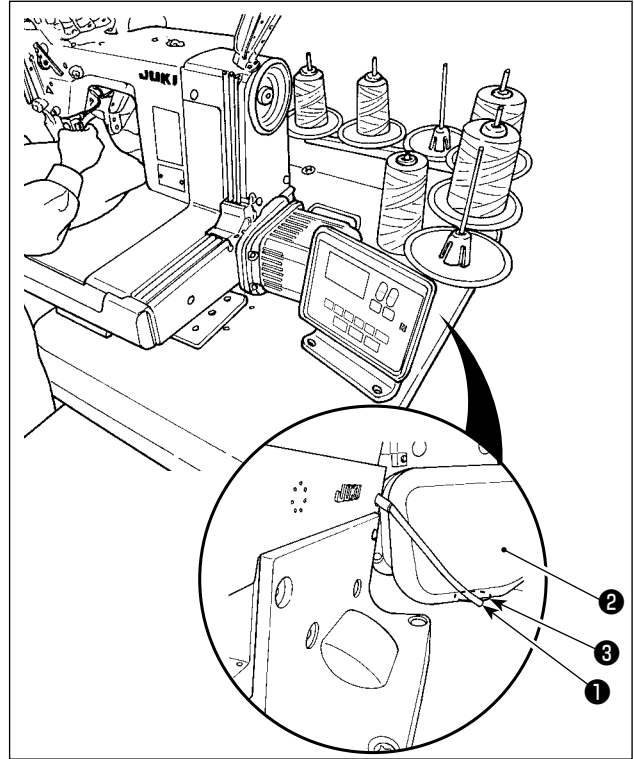
## 2-1-2. Changing the position of the operation panel

The operation panel has been installed on the undersurface of the sewing machine table at the time of delivery. When you install it on the top surface of the sewing machine table, it is necessary to pass panel cord ① through hole ③ in the lower section of motor cover ②.

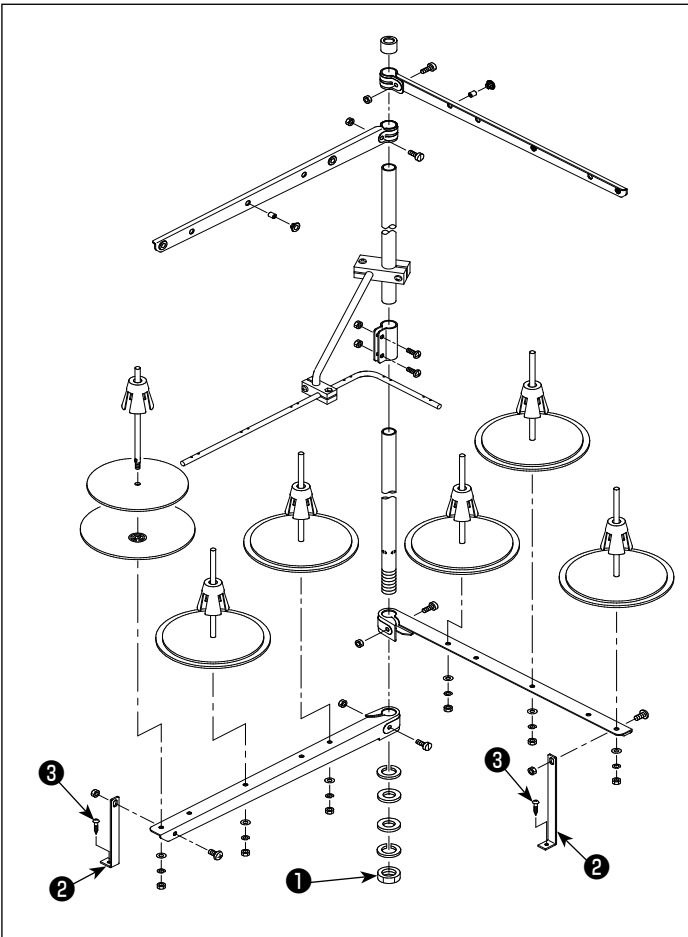
At the time of shipment  
(undersurface of the sewing machine table)



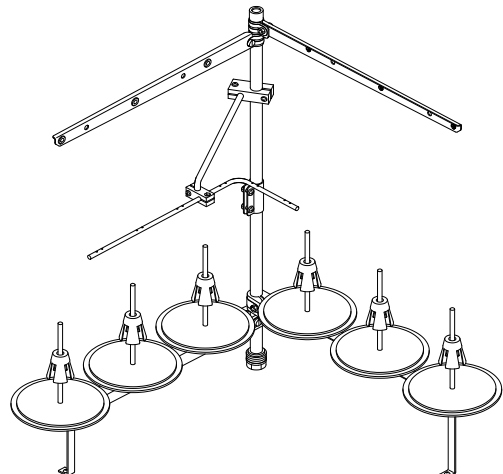
In the case of changing the position of the operation panel to the top surface of the sewing machine table



## 2-2. Installing the thread stand

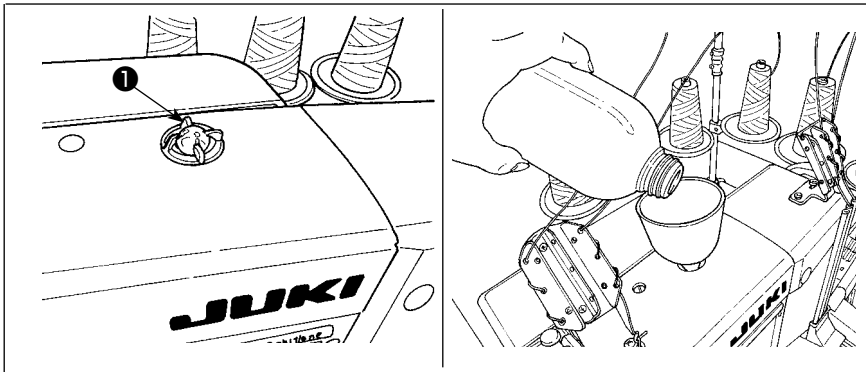


- 1) Assemble the thread stand device. Fit it in the hole in the table. Tighten locknut ① so that the thread stand does not fluctuate.
- 2) Fix thread stand bracket ② on the table with wood screw ③.



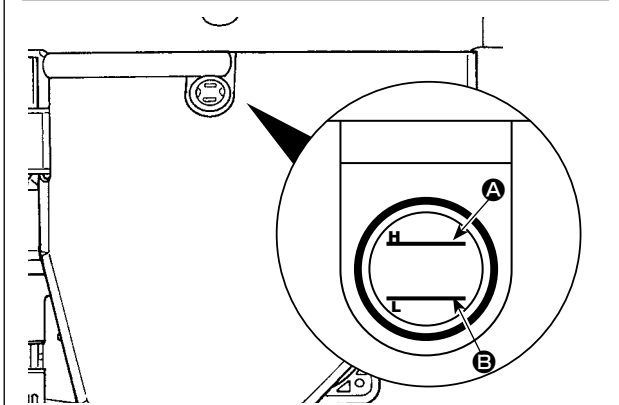
## 2-3. Oiling and draining of oil

Before putting your sewing machine into use, fill the oil tank with the oil supplied with the sewing machine.



### 1) Feeding oil

Detach oil sight window ①. Put JUKI New Defrix Oil No. 1 or JUKI CORPORATION GENUINE OIL 7 into the oil tank through the oil hole.



Fill the oil tank with the aforementioned oil until the oil surface reaches between two indicator lines (upper marker line ④ and lower marker line ⑤). After filling the oil tank, be sure to fit oil sight window ① back to its home position.

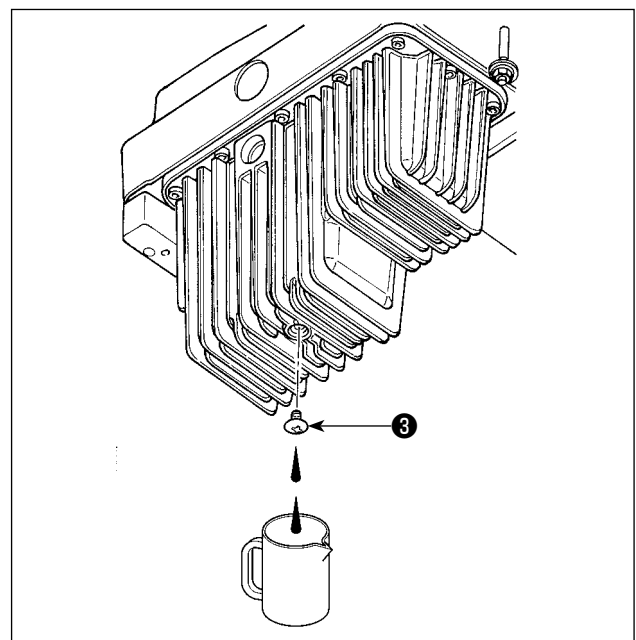
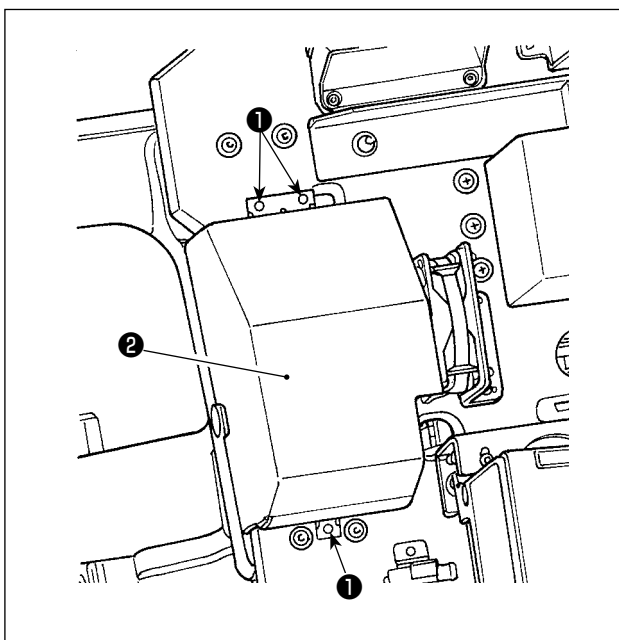
### 2) Draining the oil and changing the oil

Firstly, loosen wood screws ① (three pieces). Detach oil tank cover ②. Then, loosen screw ③. Discharge the oil remaining in the oil tank completely. After discharging the oil, be sure to tighten screw ③.

In order to increase durability of the sewing machine, it is recommended to change the oil with new oil after the first four weeks have passed since the first use of the sewing machine, then carry out an oil change at an appropriate interval.



The waste oil must be disposed of properly according to the relevant laws and regulations in your area.



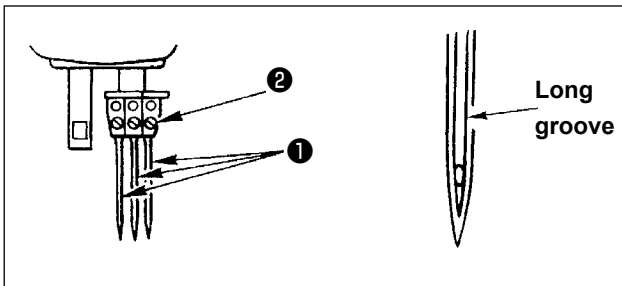
### 3. PREPARATION BEFORE SEWING

#### 3-1. Attaching the needle



**WARNING :**

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



Make a choice of the needle count in accordance with thickness of the thread and type of the material to be used.

- 1) Turn the hand wheel until the needle bar reaches to the highest position of its stroke.
- 2) Loosen screw ② in the needle clamp, and turn needles ① so that the long groove on the respective needles is brought in front of you.
- 3) Insert the needles into the needle clamp hole until they will go no further.
- 4) Securely tighten needle clamp screw ② .

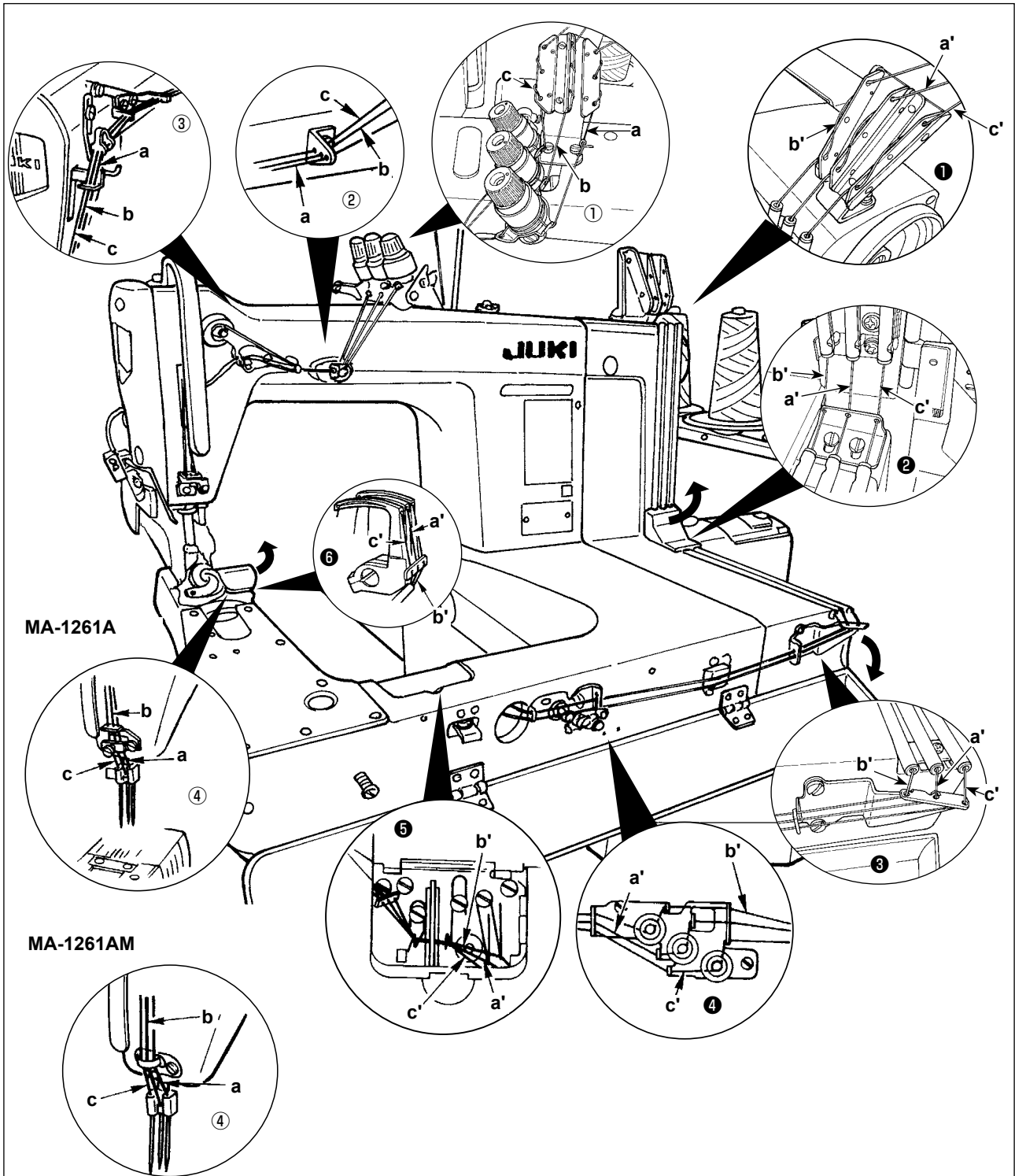


### 3-2. Threading the machine head



**WARNING :**

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



Pass the needle thread on the sewing machine head in numerical order from ① .

Pass the looper thread on the sewing machine head in numerical order from ① .

a = Right-hand needle thread

b = Intermediate needle thread

c = Left-hand needle thread

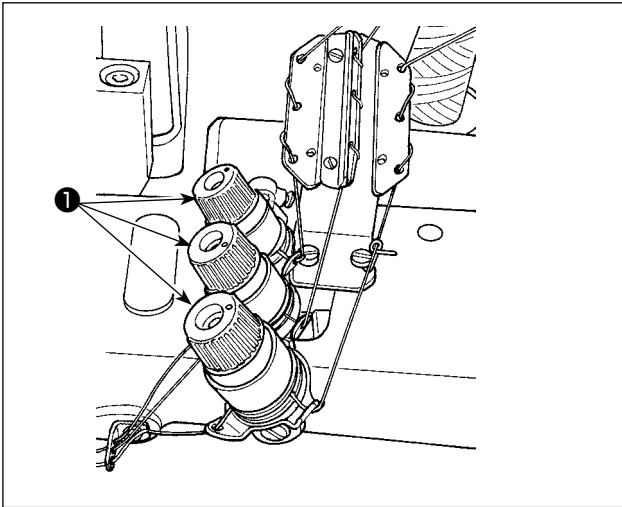
a' = Right-hand looper thread

b' = Intermediate looper thread

c' = Left-hand looper thread

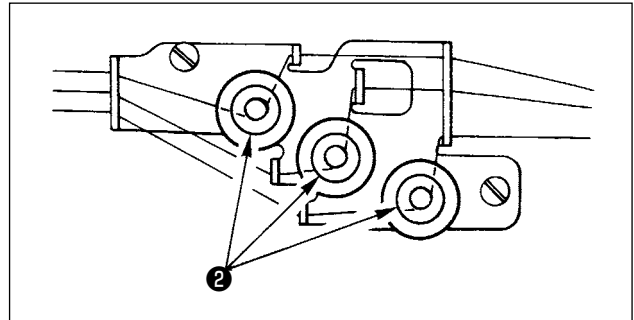
### 3-3. Adjusting the thread tension

#### 1) Adjusting the needle thread tension



Turn thread tension nut **1** clockwise to increase or counterclockwise to reduce the needle thread tension.

#### 2) Adjusting the looper thread tension



Turn tension adjusting screw **2** clockwise to increase or counterclockwise to reduce the looper thread tension.

### 3-4. Adjusting the stitch length

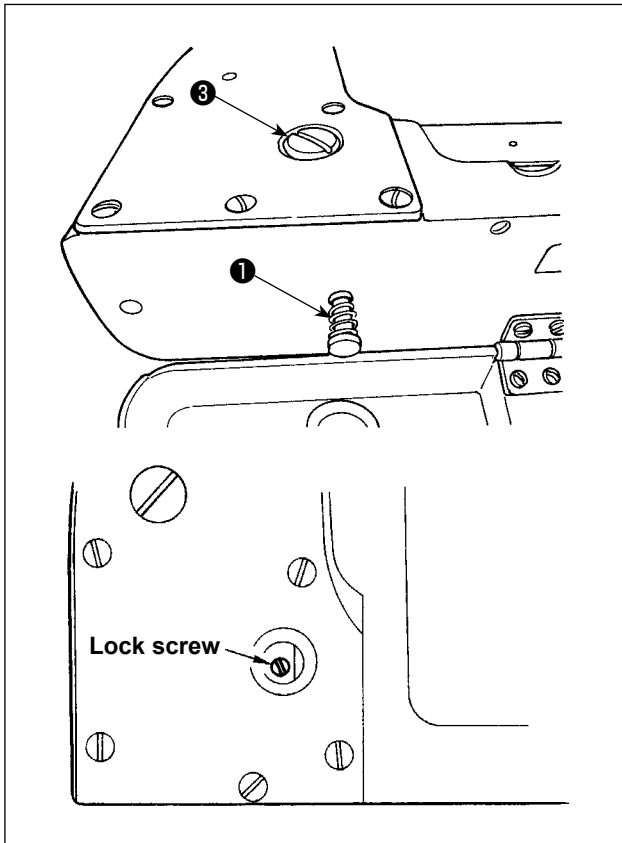


**WARNING :**


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

For the stitch length, adjust it on the sewing machine alone. Then, adjust the feed amount of the cloth puller belt. Then, finely adjust the stitch length while visually checking the finished state of sewing material.

■ Adjusting the stitch length of the sewing machine alone

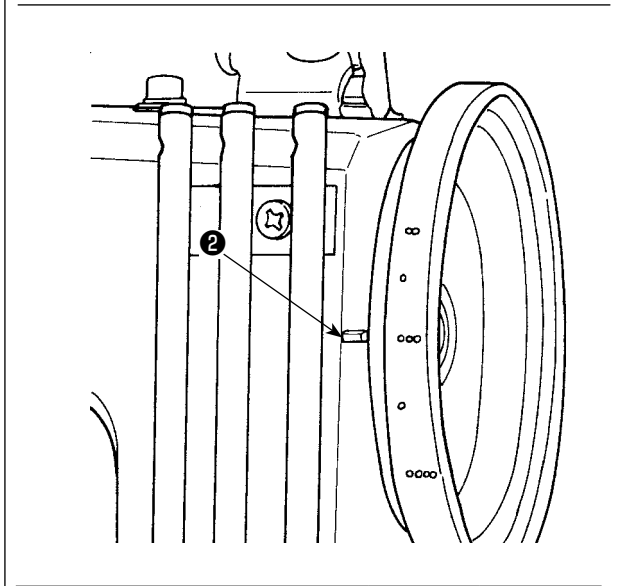


- 1) Remove screw ③, and loosen the lock screw in the feed rock cam.
- 2) Lightly pressing push-button ①, turn the hand-wheel by hand.
- 3) When push-button ① bites, the sewing machine will stop running.
- 4) In the aforementioned state, further pressing the push-button ①, turn the handwheel by hand.
- 5) Aligning the marker dot (to be used for reference) on the handwheel with marker line ② on the timing belt cover, release your hand from push-button ①.
- 6) Tighten the lock screw in the feed rock cam.
- 7) Attach screw ③ in place.



**Caution**

1. Never press the push-button ① while the sewing machine is in operation.
2. Be sure to operate the sewing machine after tightening the lock screw.
3. Never operate the machine with screw ③ removed.
4. The lock screw has a locking setscrew to prevent the screw from loosening. The lock screw head can be damaged if you forcefully remove it.



Marker dot on the handwheel	oo	ooo	oooo
Stitch length	2	3	4

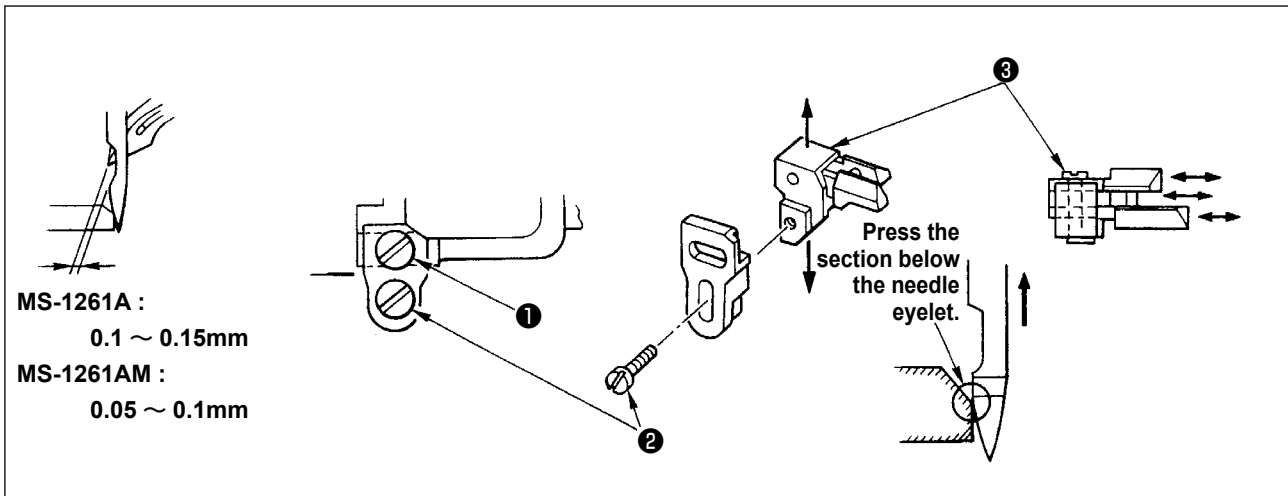
\* The aforementioned marker dot is only a reference. Be aware that the adjustment result may differ with the material used.

### 3-5. Adjusting the needle guard



#### WARNING :

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



The needle guard has been mounted on the feed dog. It therefore necessary to adjust the needle guard whenever the feed amount is changed.

#### (Adjusting the clearance provided between the needle and the looper)

- 1) Turn the hand wheel to make the top end of the looper align with the center of the needle.
- 2) Loosen screw ❶, move the entire unit of the needle guard to the right or left to make the needle guard press the needle so that the clearance of 0.1 to 0.15 mm is provided between the looper and the needle. (0.05 to 0.1 mm for MS-1261AM)

#### (Adjusting the vertical position of the needle guard)

- 1) Turn the handwheel to bring the needle guard at a position where the needle guard starts pressing the needle.
- 2) Loosen screw ❷, and move the entire unit of the needle guard up or down so that the needle guard is located at a position where it does not press and deform needle thread loops (just below the needle eyelet).

#### (Adjusting the clearances between the respective needles and loopers)

If the clearances between the respective loopers and needles are not equal after the clearance between each needle and looper has been adjusted by moving the entire unit of the needle guard, adjust so that the equal clearance is provided between the respective loopers and needles following the steps described below.

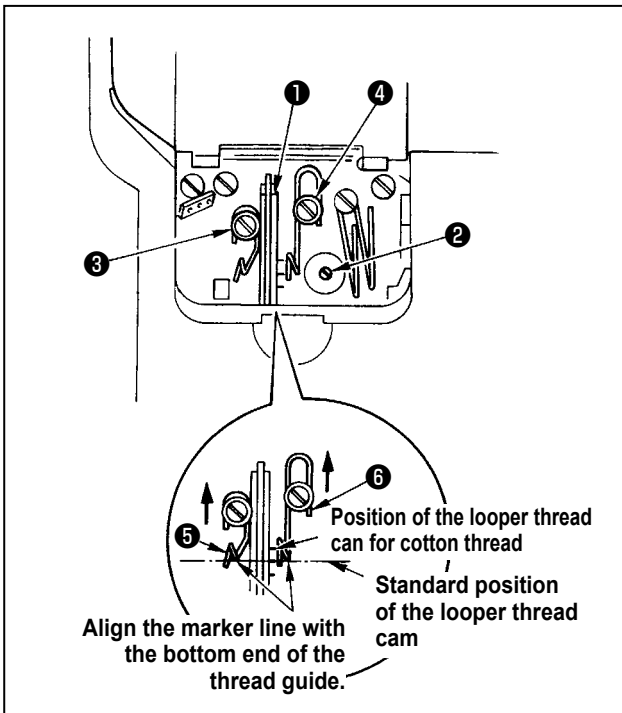
- 1) Turn the handwheel to make the top end of the looper align with the center of the needle.
- 2) Loosen screw ❸, move the respective needle guards to adjust so that the equal clearance is provided between the respective needles and loopers.

### 3-6. Adjusting the looper thread cam



**WARNING :**

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



Loosen screw ②, and adjust looper thread cam ① so that the looper starts drawing the thread when it starts returning to its home position after it has projected the most.

**■ Adjusting the looper thread cam thread guide**

1) Align the end face of thread guide ⑥ to the marker line on thread guide ⑤. Then adjust thread guide ⑤ so that its end face is flush with the end face of thread guide ⑥.

The standard position of the thread guide is obtained when the end face of the thread guide is aligned with the center marker line.

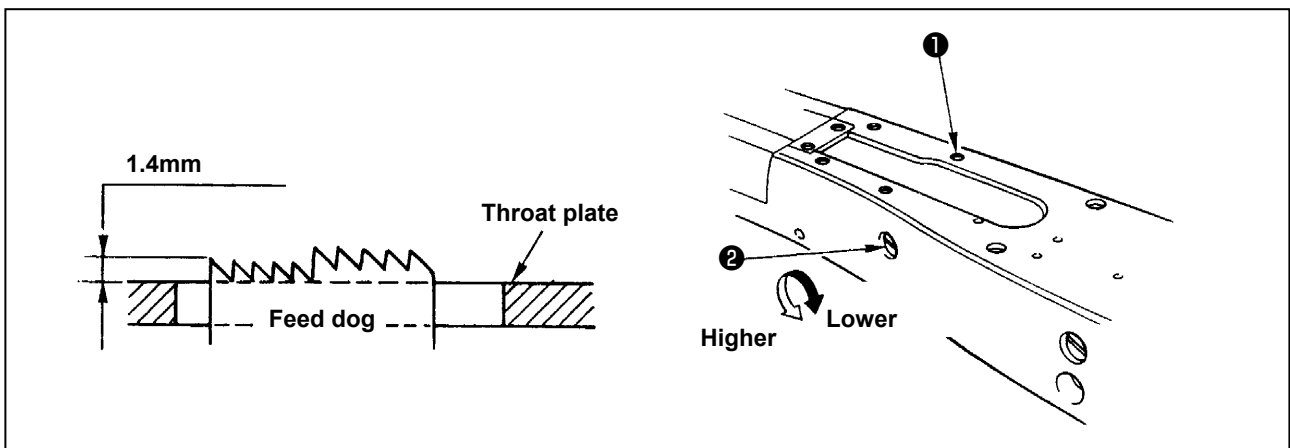
2) When using a cotton thread, loosen screws ③ and ④, and align the end faces of thread guides ⑤ and ⑥ to the marker line located far side. At this time, it is not necessary to re adjust the looper thread cam timing.

### 3-7. Adjusting the feed dog height



**WARNING :**

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



The top end of the feed dog should rise 1.4 mm above the surface of the throat plate when the feed dog is in the highest position of its stroke.

**■ Adjusting the feed dog height**

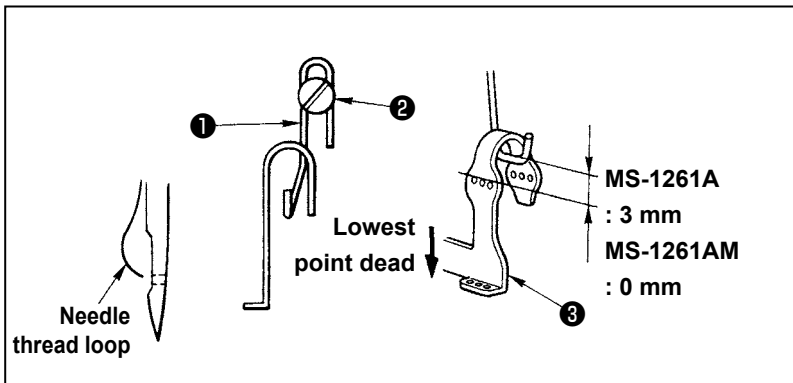
- 1) Loosen screw ① in the side plate of the bed and remove it.
- 2) Remove the screw ①, and loosen a hexagon socket head screw under the screw ① with an L-shaped hexagon wrench key.
- 3) Adjust the feed dog height by turning feed driving amount adjusting shaft ②.
- 4) Fix the shaft with the hexagon socket head screw and tighten screw ①.

### 3-8. Adjusting the take-up thread tension control lever



**WARNING :**

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



Needle thread loop size is determined by adjusting the position of take-up thread tension control lever ①.

The needle thread loop size changes in accordance with the thread and material used. So, adjust the thread loop size upon occasion.

1) Loosen two screws ②, and adjust the position of the thread take-up lever guide by moving it up or down.

- 2) Adjust so that, when the needle bar is in the lowest dead point, the top end of the thread tension control lever is positioned 3 mm above the top end of thread hole in needle bar thread take-up lever ③. (0 mm for MS-1261AM)
- 3) Lowering thread tension control lever ① decrease the loop size. Lifting the lever increases it.

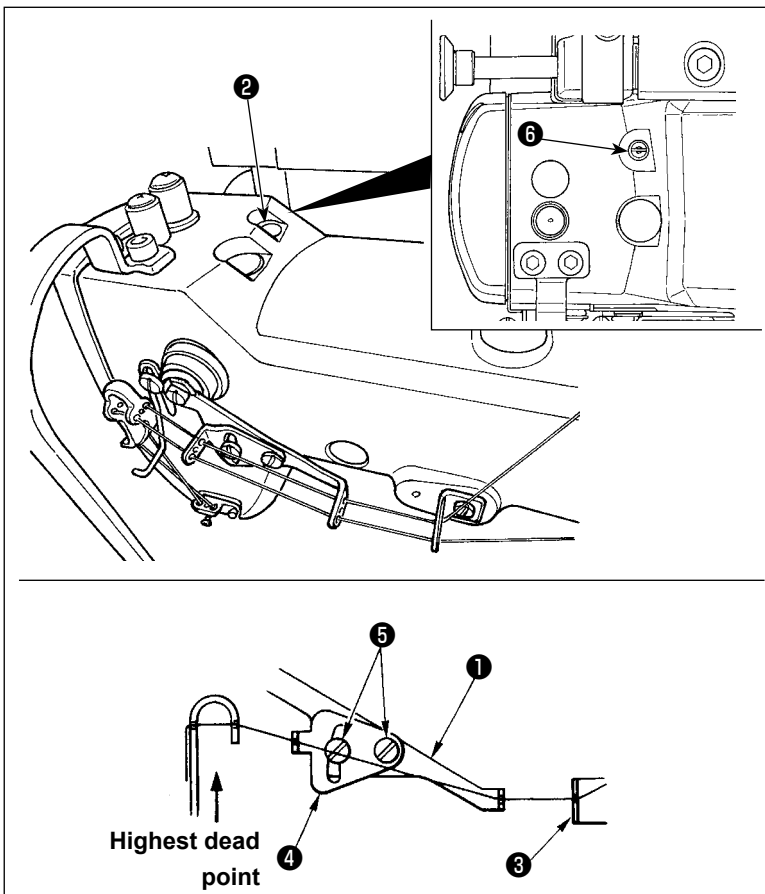
### 3-9. Adjusting the position of the intermediate tension release lever and needle thread tension controller



**WARNING :**

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

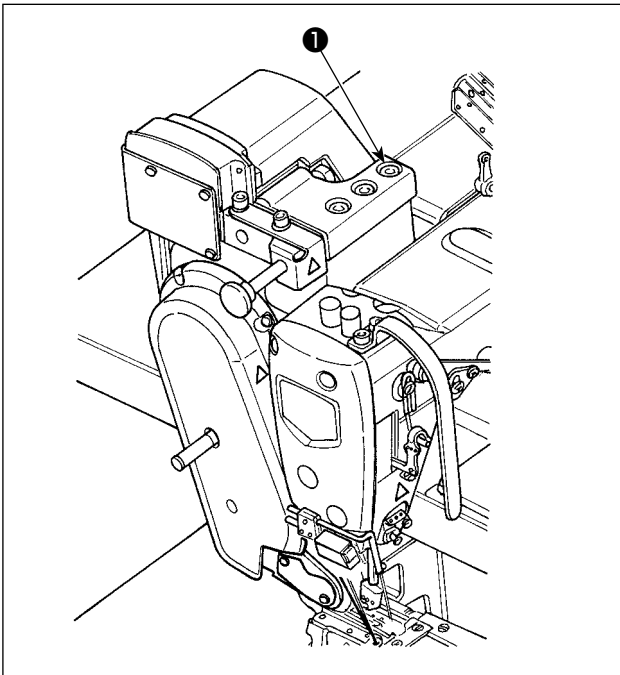
Adjust the position of intermediate thread tension releasing lever ① and thread guide ④ of the needle thread tension controller as described below.



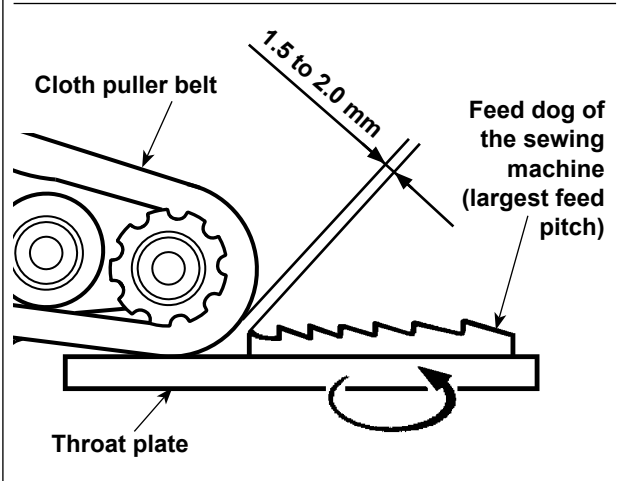
- 1) Turn the handwheel to bring the needle bar to the highest dead point.
- 2) Remove rubber cap ②. Loosen setscrew ⑥ locating under the rubber cap. Adjust intermediate thread tension release lever ① so that the thread coming out of intermediate needle thread guide ③ is horizontal.
- 3) Then, loosen two screws ⑤, and adjust the position of thread guide ④ of the needle thread tension controller so that the thread coming from intermediate thread tension releasing lever ① makes a beeline.

### 3-10. How to adjust the cloth puller

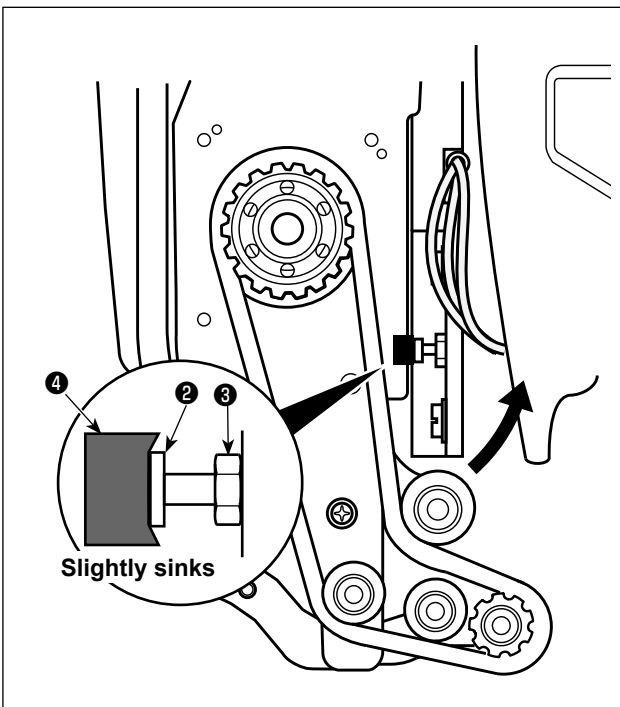
#### 3-10-1. Adjusting the cloth puller belt and its longitudinal position



- 1) Loosen hexagon head setscrews ❶ (three pieces).



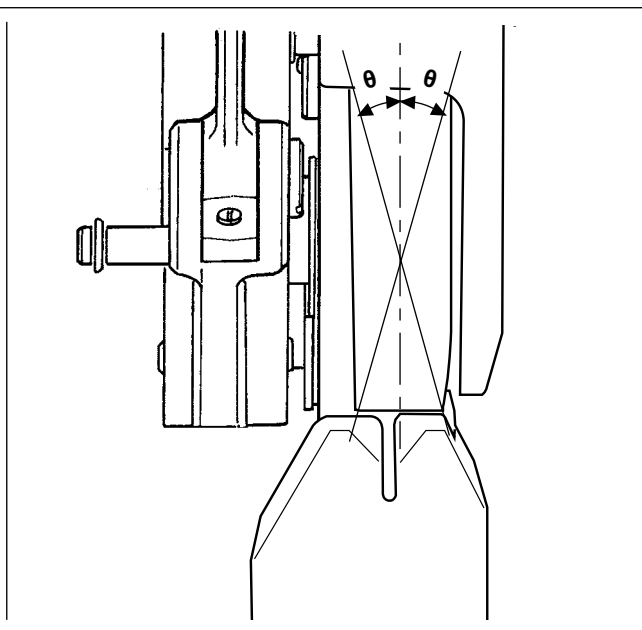
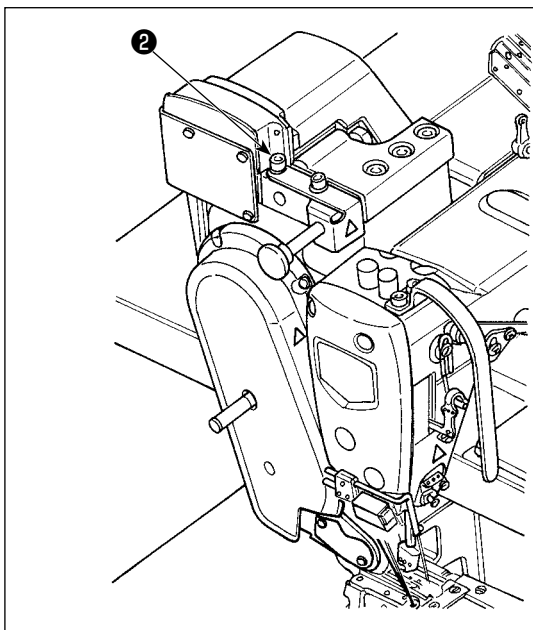
Maximize the feed amount of the main body of sewing machine. Adjust the feed amount to 1.5 to 2.0 mm by moving the cloth puller back and forth when the feed dog approaches closest to the belt.




- 2) Loosen screw ❷ and adjust the longitudinal position of the cloth puller so that the head of screw ❷ comes in contact with rubber ❹ to such an extent that rubber ❹ slightly sinks.
- 3) Tighten nut ❸ to secure the cloth puller.

❷	SM9051603SC	Screw
❸	NM6050003SC	Nut
❹	40201874	Anti-vibration rubber

### 3-10-2. Adjusting the inclination of the cloth puller belt



- 1) Loosen hexagon head setscrews **2** (two pieces).  
Rotate the cloth puller so that it is in parallel with the feed dog.

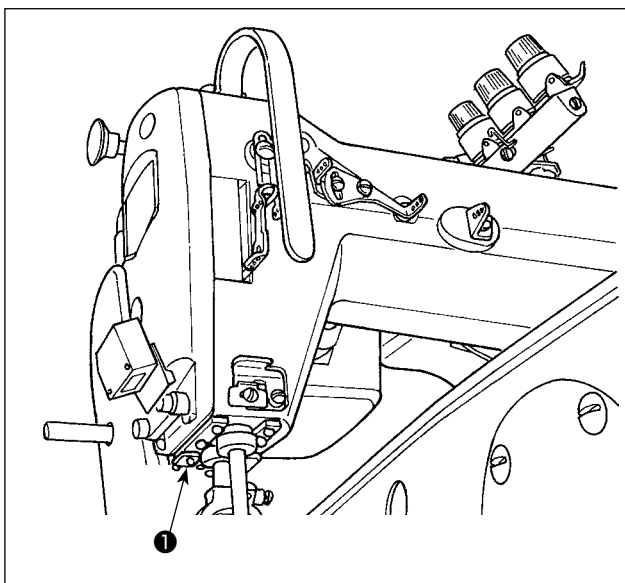


**Caution** If the cloth puller inclines (as shown with  $\theta$ ), the chain-off thread skipping may occur.

### 3-11. LED hand light



**WARNING :** When adjusting the sensor, neither put your hand close to the needle entry area nor put your foot on the pedal in order to protect against injuries.



**\* This LED is intended to improve operability of the sewing machine and is not intended for maintenance.**

The sewing machine is provided as standard with an LED light which illuminates the needle entry area. Intensity adjustment and turn-off of the light is carried out by pressing switch **1**. Every time the switch is pressed, the light is adjusted in intensity in five steps and is turned off in turn.

**[Change of intensity]**

1 ⇒ ..... 4 ⇒ 5 ⇒ 1  
Bright ⇒ ..... Dim ⇒ Off ⇒ Bright

In this way, every time the switch **1** is pressed, the hand lamp status is changed in repetition.



### 3-12. To use the sewing machine with a cloth puller for sewing heavy-to medium-weight materials



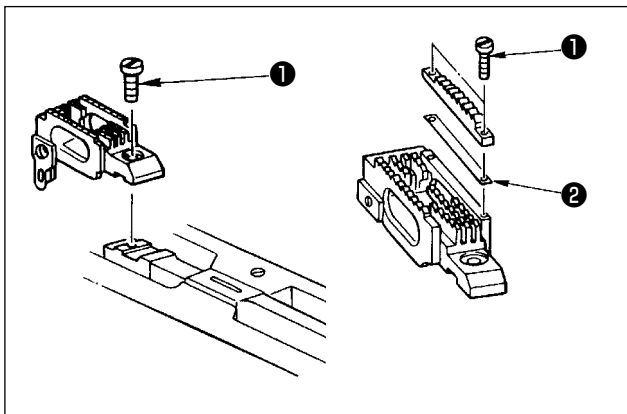
#### **WARNING :**

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

The MS-1261A has been developed to sew extra heavy-weight materials as standard.

When you use this sewing machine for sewing heavy-weight materials or medium-weight materials, it is necessary to change the gauges following the procedure described below.

#### 3-12-1. Replacing the feed dog



Remove the throat plate. Loosen screw ❶ in the feed dog and remove the feed dog. Then, replace the feed dog with an appropriate one.



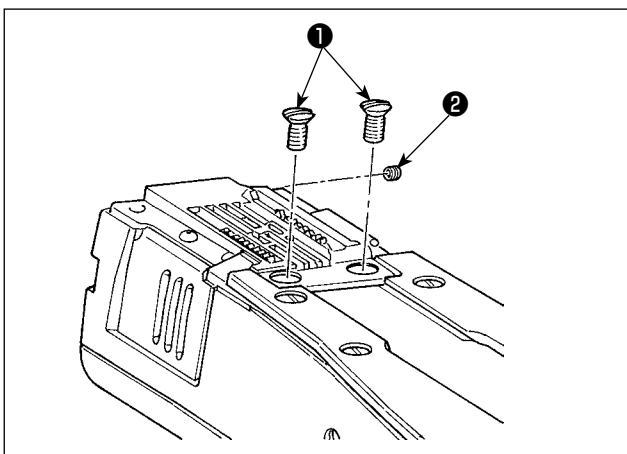
Each of the feed dogs for heavy- to medium-weight materials has been designed so that it can be used only by replacing it without adjusting the feed dog height. However, it is really necessary to adjust the feed dog height, refer to "3-7. Adjusting the feed dog height" p. 10

#### ★ To change the height in difference on the righthand side of the feed dog

Loosen two screws ❶ in the adjusting feed dog and remove spacer ❷ (plate thickness: 0.5 mm).

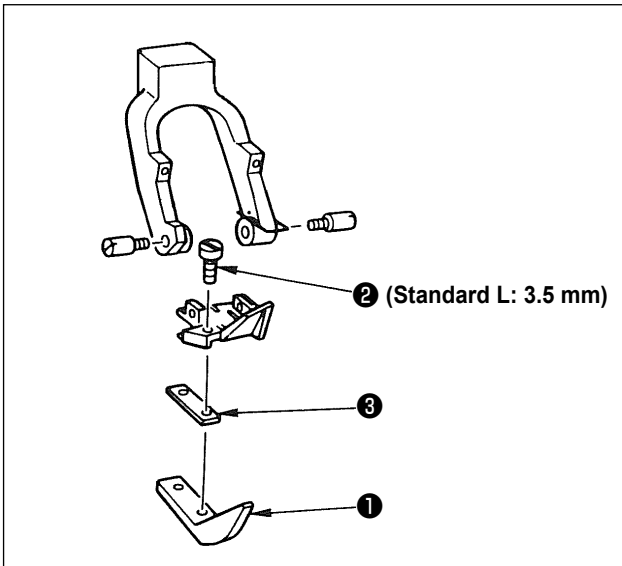
Many different types of spacers are available.

#### 3-12-2. Changing the throat plate



Detach throat plate setscrews ❶ (two pieces) and ❷ (one piece). Then, change the throat plate with an appropriate one.

### 3-12-3. Adjusting the difference in height of the presser foot

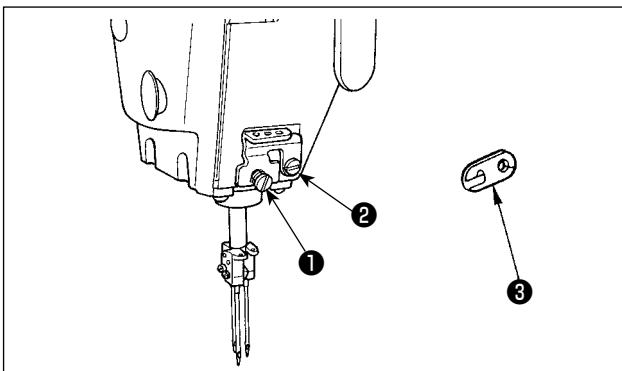


Remove two screws ② that are used to retain adjusting presser foot ①, and adjust the difference in height of the presser foot by replacing spacer ③. Thicknesses of spacers that match the respective throat plates and feed dogs are as shown in the table.

No. Plate	Thickness	Specification
1	1.0mm	Extra heavy-weight materials (standard)
2	0.5mm	Heavy-weight materials
3	None	Medium-weight materials

To replace spacer ③ with a spacer (0.5 mm or none), replace screw ② with a shorter one (L=3.0 mm SS5060310SP).

### 3-12-4. Replacing the needle thread guide



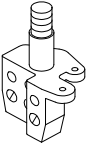
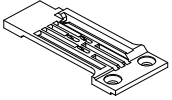
When sewing a medium-weight material using a thin thread, larger needle thread loops will be produced and they will be likely to tilt causing stitch skipping. To prevent the aforementioned trouble, replace thread guide ① located above the needle clamp with an appropriate one.

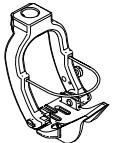
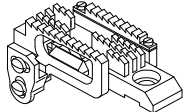
Loosen screw ② that is used to fix thread guide ①, and replace the thread guide with thread guide ③ for medium-weight materials.

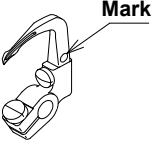
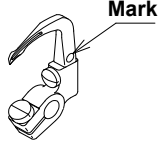
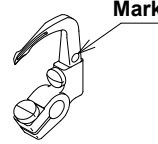
### 3-13. Table of replaceable gauges

Gauge set				
		Extra-heavy-weight materials	Medium-heavy-weight materials	Heavy-weight materials
inch	mm	Part No.	Part No.	Part No.
7/32	5.6	40213673	40213678	40213683
1/4	6.4	40213670	40213675	40213680
9/32	7.1	40213674	40213679	40213684
5/16	7.9	40213672	40213677	40213682
3/8	9.5	40213671	40213676	40213681

Extra-heavy-weight materials : MS-1261A  
 Medium-heavy-weight materials : MS-1261AM  
 Heavy-weight materials : Optional

Part name			Needle clamp (asm.)			Throat plate		
Needle gauge								
Code	inch	mm	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
E	7/32	5.6	12956355	12956355	12956355	40204582	40204591	40204586
F	1/4	6.4	12956256	12956256	12956256	40204542	40204592	40204587
G	9/32	7.1	12956454	12956454	12956454	40204583	40204593	40204588
H	5/16	7.9	12956553	12956553	12956553	40204584	40204594	40204589
K	3/8	9.5	12956652	12956652	12956652	40204585	40204595	40204590

Part name			Presser foot (asm.)			Feed dog		
Needle gauge								
Code	inch	mm	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
E	7/32	5.6	40232575	40232585	40232580	12963450	12975058	12974259
F	1/4	6.4	40232574	40232584	40232579	12963351	12974952	12974150
G	9/32	7.1	40232576	40232586	40232581	12963559	12975157	12974358
H	5/16	7.9	40232577	40232587	40232582	12963658	12975256	12974457
K	3/8	9.5	40232578	40232588	40232583	12963757	12975355	12974556

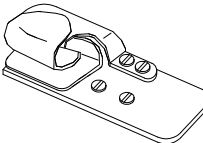
Part name			Looper (L) (asm.)				Looper (R) (asm.)				Looper (C) (asm.)			
Needle gauge														
Code	inch	mm	Part No.	Part No.	Part No.	Mark No.	Part No.	Part No.	Part No.	Mark No.	Part No.	Part No.	Part No.	Mark No.
E	7/32	5.6	12968855	12968855	12968855		1	12968558	12968558		12968558	1	12969150	
F	1/4	6.4	12968855	12968855	12968855	1	12968558	12968558	12968558	1	12969150	12969150	12969150	1
G	9/32	7.1	12968855	12968855	12968855		12968558	12968558	12968558		12969150	12969150	12969150	
H	5/16	7.9	12968954	12968954	12968954	2	12968657	12968657	12968657	2	12969150	12969150	12969150	2
K	3/8	9.5	12968954	12968954	12968954		12968657	12968657	12968657		12969150	12969150	12969150	

\* The looper is not included in the gauge set.

### Options

1. Spacer for presser foot			2. Setscrews	
Plate thickness (mm)	Part No.	Part name	Part No.	Plate
0.1	40215447	Presser foot adjusting plate F	SS5060310SP	2
0.3	12973509	Presser foot adjusting plate B		2
0.5	12973608	Presser foot adjusting plate C		2
0.8	12973707	Presser foot adjusting plate D	SS5060410SP	2
1.0	12962106	Presser foot adjusting plate A		2
1.2	12973806	Presser foot adjusting plate E		2

3. Spacer for feed dog		
Plate thickness (mm)	Part No.	Part name
0.1	40215448	Feed dog adjusting plate E
0.3	12975702	Feed dog adjusting plate B
0.5	12964102	Feed dog adjusting plate A
0.8	12975801	Feed dog adjusting plate C
1.0	12975900	Feed dog adjusting plate D

Part name			Holder (asm.)		
Needle gauge					
Code	inch	mm	Part No.	Part No.	Part No.
E	7/32	5.6	MAM2990AABA	MAM2970DDBA	MAM2980AABA
F	1/4	6.4	40215412	40215413	40215414
G	9/32	7.1	MAM2990CCBA	MAM2970FFBA	MAM2980CCBA
H	5/16	7.9	MAM2990DDBA	MAM2970GGBA	MAM2980DDBA
K	3/8	9.5	MAM2990EEBA	MAM2970HHBA	MAM2980EEBA

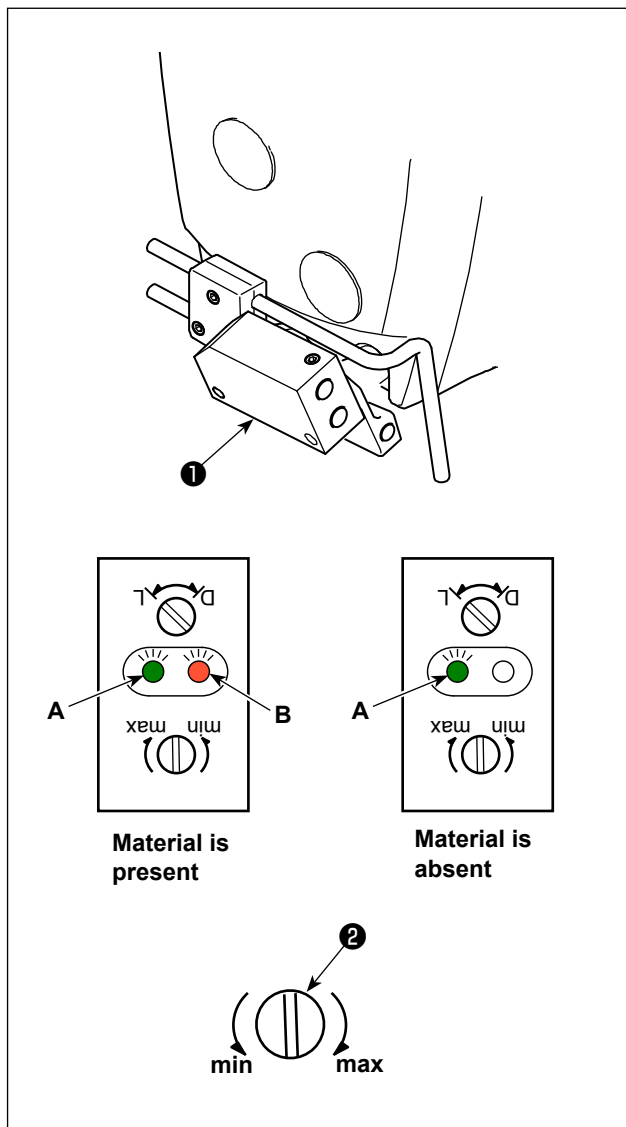
\* The spacer, setscrew and holder are not included in the gauge set.

### 3-14. Adjusting the material edge detector



#### **WARNING :**

When adjusting the sensor, neither put your hand close to the needle entry area nor put your foot on the pedal in order to protect against injuries.



Material edge detector **1** detects the presence / absence of the material at the beginning and end of sewing.

When the material is present, the green LED (**A**) and the orange LED (**B**) light up at all times.

When the material is absent, only the green LED (**A**) lights up.

The detecting device of the sewing machine has been factory-adjusted at the time of shipment so that it detects the presence / absence of the material without additional adjustment. However, the detecting device may fail to detect the material properly depending on the type of material used.

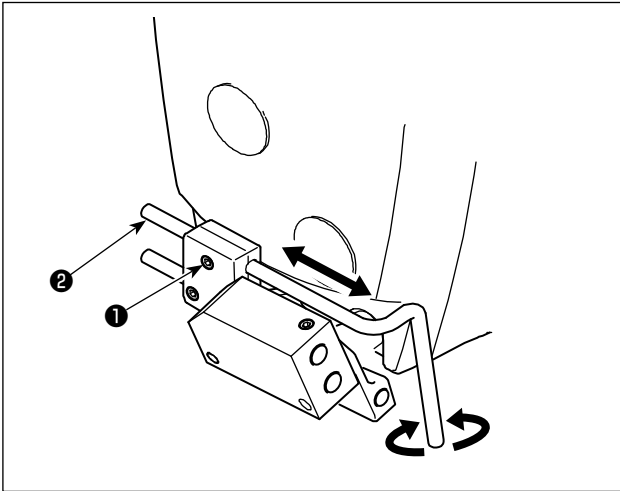
In such a case, adjust the detecting device of the sewing machine by turning control knob **2**.

#### [Adjustment procedure]

- \* The orange LED (**B**) lights up even when the material is not present on the sewing machine.  
→ Turn control knob **2** toward the "min".
- \* The orange LED (**B**) goes out even when the material is present on the sewing machine.  
→ Turn control knob **2** toward the "max".

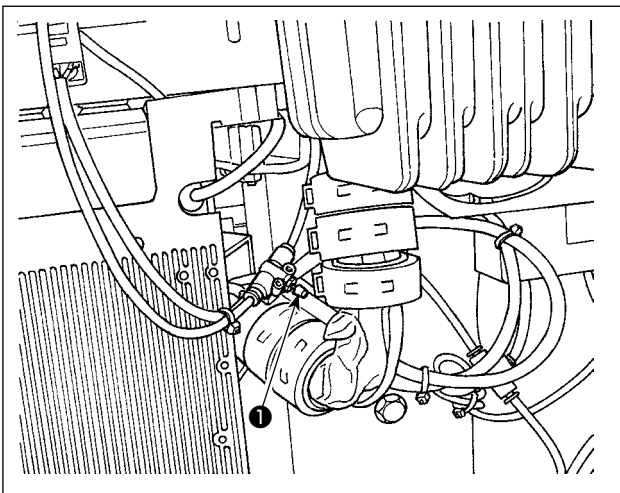
### 3-15. Needle cooler

#### 3-15-1. Adjusting the position of the blow pipe



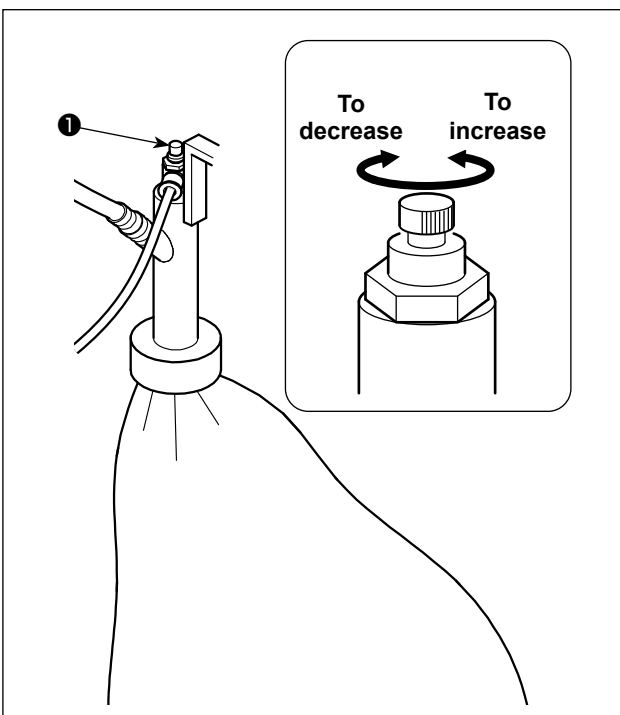
- 1) Loosen screw ① .
- 2) Adjust the position of blow pipe ② in terms of the longitudinal direction and rotational direction.
- 3) Tighten screw ① to secure blow pipe ② .

#### 3-15-2. Adjusting the air flow



Adjust the air flow of the needle cooler by turning speed controller knob ① . Turn the speed controller knob clockwise to decrease the air flow or counter-clockwise to increase it.

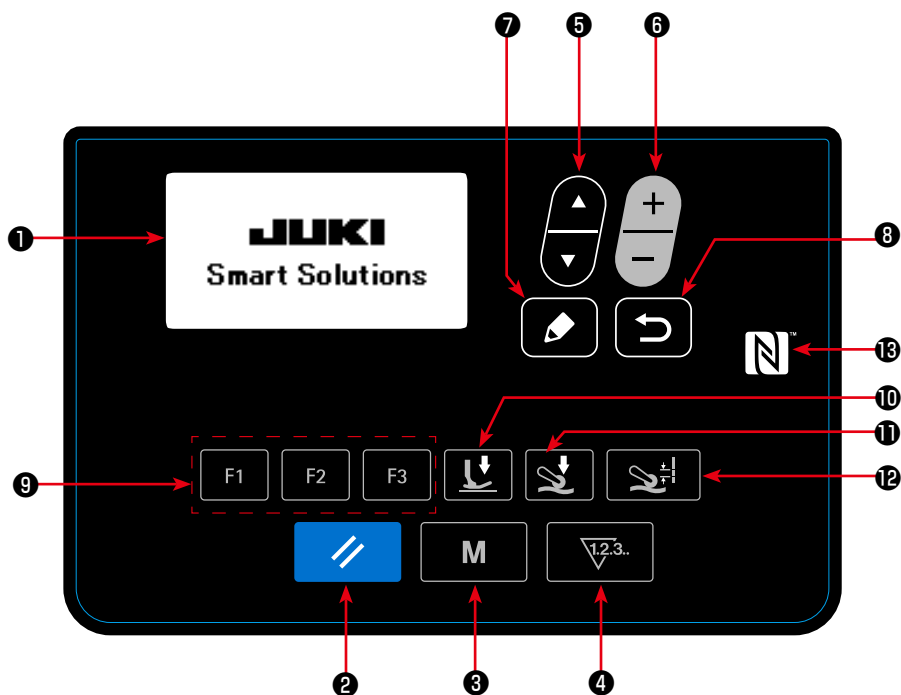
### 3-16. Chain-off thread cutter (suction of thread waste)















Adjust the air flow of the needle cooler by turning speed controller knob ① . Turn the speed controller knob clockwise to decrease the air flow or counter-clockwise to increase it.

## 4. HOW TO USE THE OPERATION PANEL

### 4-1. Explanation of the operation panel switch



No.	NAME	FUNCTION
①	LCD display	Various data such as pattern No., shape, etc. are displayed.
②	RESET key 	Press this key to reset the error or reset the counter(s), etc.
③	MODE key 	This key is used for displaying the mode screen.
④	COUNTER key 	This key selects counter display.
⑤	ITEM SELECT key 	This key is used to select the data No. and other kinds of data.
⑥	DATA CHANGE key 	This key is used to change the pattern No. and other kinds of data.
⑦	EDIT key 	This key is used to display the edit screen, to select the item or to display the detail screen.

No.	NAME	FUNCTION
⑧	RETURN key 	This key is used to return the screen to the previous one.
⑨	F key 	When data or function is registered to the F key, the registered data or the function can be used by pressing the F key.
⑩	Presser foot pressure key 	Sewing data about the presser foot pressure is displayed by pressing this key.
⑪	Cloth puller pressure key 	Sewing data about the cloth puller pressure is displayed by pressing this key.
⑫	Cloth pulling amount key 	Sewing data about the cloth pulling amount is displayed by pressing this key.
⑬	NFC mark 	Bring the tablet or smartphone close to the NFC mark when carrying out communication.

## 4-2. Operation to be done at first

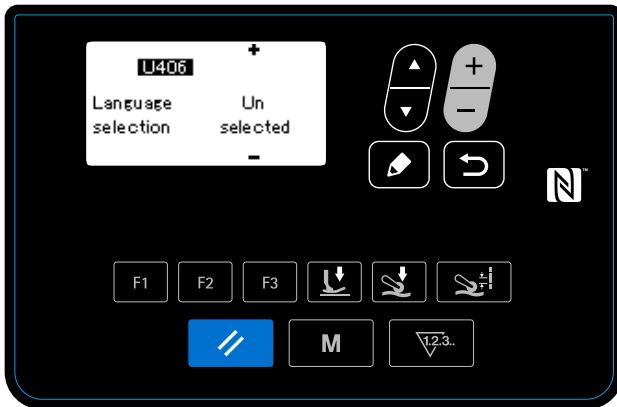
### 4-2-1. Selection of the language

Select the language to be displayed on the operation panel when you turn ON the power to your sewing machine for the first time after the purchase. Note that, if you turn the power OFF without selecting the language, the language selection screen will be displayed every time you turn ON the power to the sewing machine.

#### ① Turning ON the power switch



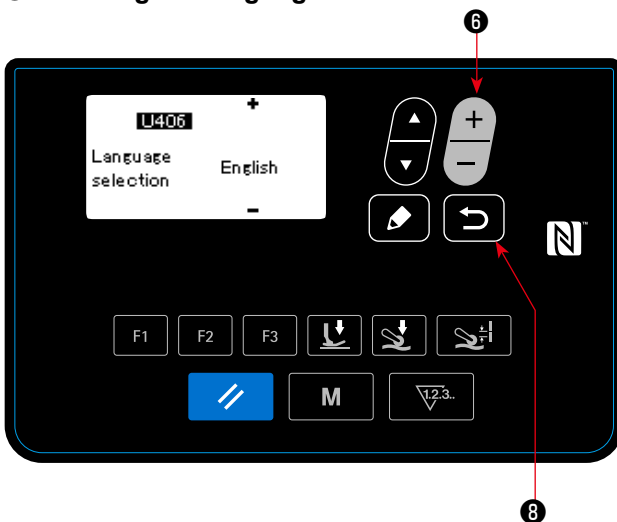
Be aware that the needle bar moves automatically when you turn ON the power to the sewing machine for the first time after the purchase. It is also possible to prevent the needle bar from moving automatically using the memory switch U090. Refer to "4-5-1. Memory switch data" p. 47 for details.





<Language selection screen>

When you turn ON the power switch, the language selection screen is displayed.

#### ② Selecting the language



Select the language you want to use for display with the  **6**. Then, press  **8** to finalize your selection of the language.

The language to be displayed on the operation panel can be changed using the memory switch U406. Refer to "4-5-1. Memory switch data" p. 47 for details.



If you do not select your language for display, English will be used for display as default.



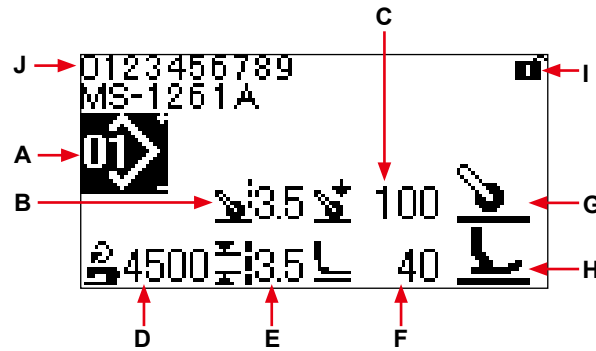
When you turn ON the power to the sewing machine, the sewing screen for the pattern that is currently selected is displayed.

This sewing machine is able to sew free sewing patterns and step sewing patterns. As many as 99 different sewing patterns can be created by combining free sewing patterns and step sewing patterns.



In the case of a free sewing pattern, different sewing conditions can be adopted respectively for sewing flat sections and multi-layered sections of material.

In the case of a step sewing pattern, separate sewing conditions can be adopted for sewing a material on a step-by-step basis.







The below-stated section of this Instruction Manual describes the free sewing patterns. Refer to ["4-4-6. How to edit a step sewing pattern" p. 35](#) for the description about step sewing patterns.






**Sewing screen <Free sewing pattern>**

	Display	Content
<b>A</b>	Pattern No.	Pattern No. that is being selected is displayed. (No. 1 to No. 99)
<b>B</b>	Cloth pulling amount *1	Cloth pulling amount is displayed.
<b>C</b>	Cloth puller pressure *1	Cloth puller pressure is displayed.
<b>D</b>	Sewing speed *1	Sewing speed is displayed.
<b>E</b>	Stitch length *3	Stitch length set with the memory switch S003 is displayed.
<b>F</b>	Presser foot pressure *1	Presser foot pressure is displayed.
<b>G</b>	State of the material under the cloth puller	State of the material placed under the cloth puller is displayed. Top end of material    Flat section    Multi-layered section begins    No material    Cloth puller is not used 
<b>H</b>	State of the material under the presser foot	State of the material placed under the presser foot is displayed. Top end of material    Flat section    Multi-layered section begins    During the multi-layered section of material    End of the multi-layered section of material    No material 
<b>I</b>	Simple-locked state	ON / OFF of the simple lock is displayed.
<b>J</b>	Part number / process or comment	Part number is displayed on the upper line and the process is displayed on the lower line. Or, comment is displayed on two lines (upper and lower lines). (Content of display, i.e., the "part number and process" or the "comment", can be changed over with the memory switch U404. Refer to <a href="#">"4-5-1. Memory switch data" p. 47</a> for details).

**\*1 Cloth pulling amount, the cloth puller pressure, sewing speed and the presser foot pressure can be set using the sewing data items given below according to the state of the material placed under the presser foot.**

State of the material under the presser foot	Cloth pulling amount	Cloth puller pressure	Sewing speed	Presser foot pressure
Flat section  / End of the multi-layered section of material 	S006 Cloth pulling amount	S007 Cloth puller pressure	S004 Limit of sewing speed	S005 Presser foot pressure
Multi-layered section begins 	S015 Cloth pulling amount when the presser foot runs on the multi-layered section	S016 Cloth puller pressure when the presser foot runs on the multi-layered section	S012 Multi-layered section sewing speed	
During the multi-layered section of material 	S019 Cloth pulling amount for sewing the multi-layered section	S020 Cloth puller pressure for sewing the multi-layered section		S018 Presser foot pressure for sewing the multi-layered section
No material 	S072 Cloth pulling amount when detecting no material (In the case the material under the cloth puller is flat section, the cloth pulling amount set with S006 will be employed.)	S073 Cloth puller pressure when detecting no material (In the case the material under the cloth puller is flat section, the cloth pulling pressure set with S007 will be employed.)	S052 Limit to the sewing speed to be applied after the detection of absence of material (While the sewing machine is at rest, the highest one of four sewing speeds shown in the table is displayed.)	S005 Presser foot pressure
Top end of material 	S072 Cloth pulling amount when detecting no material	S073 Cloth puller pressure when detecting no material	S031 Sewing speed for starting sewing of the top end of material	S032 Presser foot pressure for starting sewing of the top end of material

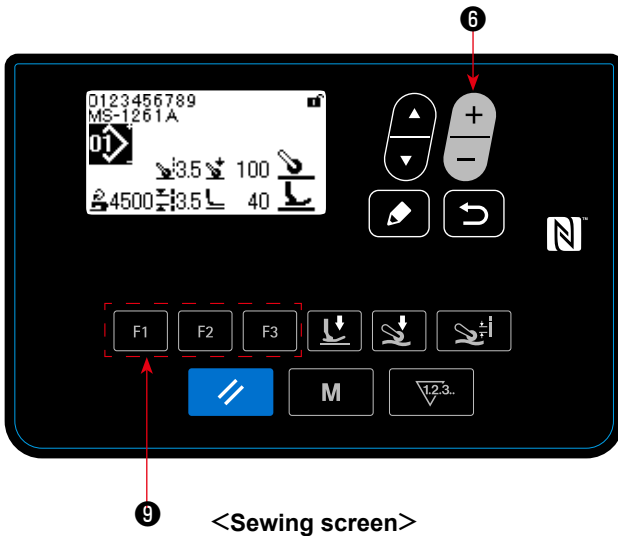
**It should be noted, however, that the presser foot pressure, cloth pulling amount and the cloth puller pressure can be set as sewing data as described below according to the condition of material placed under the cloth puller.**


State of the material placed under the cloth puller	Presser foot pressure	Cloth pulling amount	Cloth puller pressure
Multi-layered section begins 	S078 Presser foot pressure when the cloth puller runs on the multi-layered section	S070 Cloth pulling amount when the cloth puller runs on the multi-layered section	S071 Cloth puller pressure when the cloth puller runs on the multi-layered section
Top end of material 	(The presser foot pressure will be as given in the table shown above.)	S076 Cloth pulling amount when the cloth puller runs on the multi-layered section	S077 Cloth puller pressure when the cloth puller runs on the top end of material
No material 	(The presser foot pressure will be as given in the table shown above.)	S072 Cloth pulling amount when detecting no material	S073 Cloth puller pressure when detecting no material

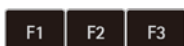
**Refer to "4-4-9. List of sewing data" p. 41 for details of sewing data items to be used in the respective states of the material.**

- \*2. For the sewing speed, the maximum sewing speed is limited by the set values of the stitch length and cloth pulling amount. The set value of sewing speed before the limit is applied is displayed on the operation panel.  
 In the case the set value of stitch length is 3.1 mm or more: Maximum sewing speed 5000 sti/min  
 In the case the set value of cloth pulling amount is 4.6 mm or more: Maximum sewing speed 4000 sti/min
- \*3. Input the stitch length using the memory switch S003 according to the feed amount of the sewing machine. (If this value is changed, the feed amount of the sewing machine itself will not change.)  
 → Refer to "4-4. How to change the sewing data" p. 25.

### 4-3. How to select a sewing pattern



The sewing pattern can be selected by pressing  ⑥ on the sewing screen.

The sewing pattern can also be changed by pressing  ⑨ to which a sewing pattern has been registered.

→ Refer to "4-5-6. How to use the F key" p. 61.

Four different standard sewing patterns have been factory-stored as sewing patterns 01 to 04.

- 01: Sewing patterns for heavy- to extra heavy-weight materials
- 02: Sewing patterns for extra heavy-weight materials
- 03: Sewing patterns for stretch materials
- 04: Sewing patterns for medium-weight materials

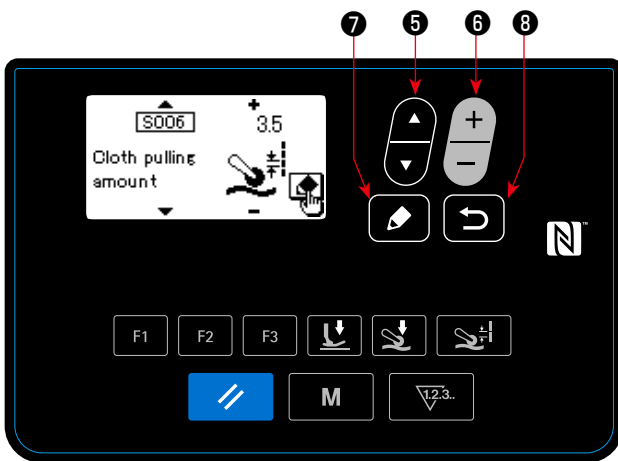
Select one from the aforementioned four sewing patterns according to the sewing product you want to sew. Then, you can create a sewing pattern that matches the sewing product or the operator by copying the sewing pattern you have selected and edit its data appropriately.

→ Refer to "4-5-4. How to copy / newly create a pattern" p. 56 for how to copy the sewing pattern.

→ Refer to "4-4-1. Method of changing the sewing data" p. 25 and "5. Correcting the sewing pattern" p. 73 for how to correct the sewing pattern.

## 4-4. How to change the sewing data

### 4-4-1. Method of changing the sewing data



< Sewing data edit screen >

#### ① Calling the sewing data edit screen

When the 7 is pressed on the sewing screen, the sewing data edit screen for the currently-selected sewing pattern is displayed.

#### ② Selecting the sewing data to change

Data you want to change can be selected by pressing 5 .

#### ③ Changing the sewing data

Data can be changed by pressing 6 .

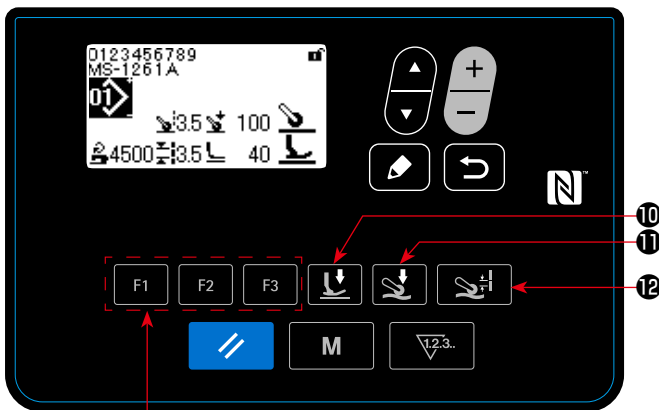
The sewing data edit screen is returned to the sewing screen by pressing 8 .

### 4-4-2. Method of selecting a specific sewing data item

When 9 to which the sewing data has been registered, 10 , 11 or 12 is pressed, the sewing data edit screen is displayed according to the key pressed.

(Refer to "4-5-6. How to use the F key" p. 61 for the method of registering sewing data to the F key.)

Screens to be displayed are as shown below:



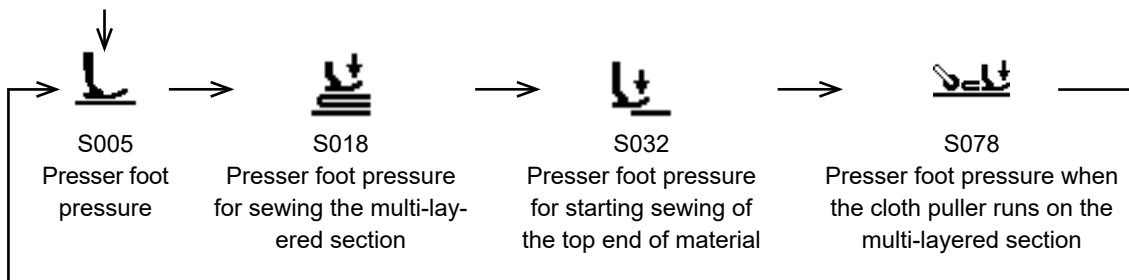
9 <Sewing screen>

(1) F key  ⑨

<Sewing screen> → <Sewing data edit screen>  
 (The state the sewing data which has been registered to the F key is selected)

(2) Presser foot pressure key  ⑩

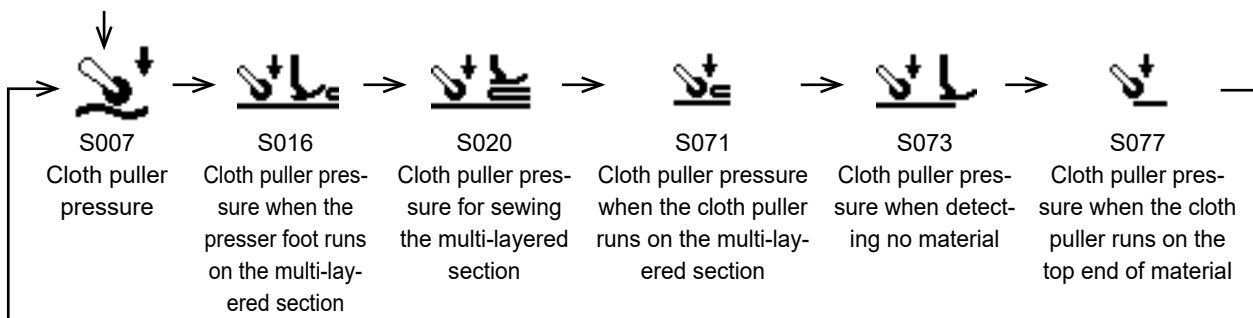
<Sewing screen>



< Sewing data edit screen >

(3) Cloth puller pressure key  ⑪

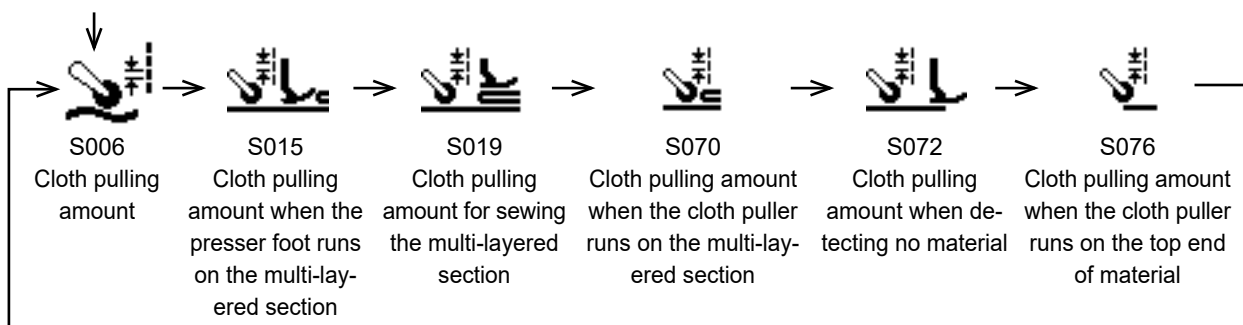
<Sewing screen>



< Sewing data edit screen >

(4) Cloth pulling amount key  ⑫

<Sewing screen>

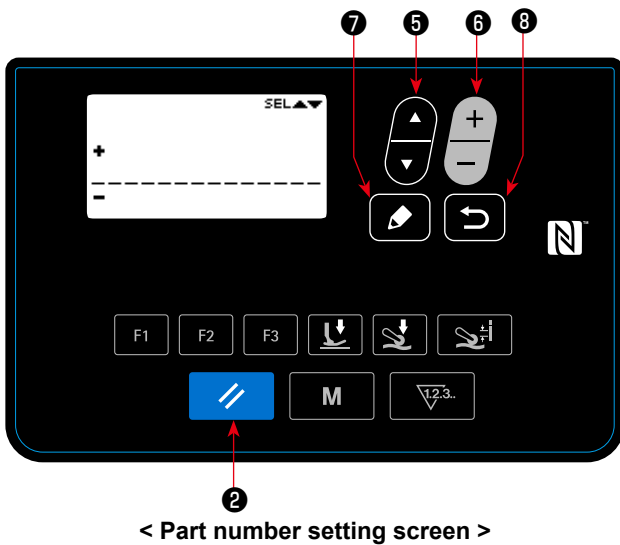


< Sewing data edit screen >

### 4-4-3. How to change the part number, process and/or comment

Part number, process or comment can be entered to allow the operator to easily understand the application of sewing pattern.

The method to enter a part number is described below. Same method applies when entering a process or comment.



#### ① Calling the part number setting screen

The part number setting screen is displayed by pressing 7 after selecting "S061 Part number" on the sewing data edit screen.

#### ② Entering the part number

The place (what character number) at which a part number is entered can be selected by pressing 5 . Characters (representing the part number) can be entered at that place by pressing



One of the entered characters that is selected can be deleted by 2 . All entered characters can be deleted by keeping reset key held pressed for one second.

When 8 is pressed, the current screen returns to the sewing data edit screen.

Characters that can be entered

A - Z, 0 - 9, ., +, -, /, #, (line feed), (blank)



Whether the part number / process or the comment is displayed can be changed with the memory switch U404. Refer to "4-5-1. Memory switch data" p. 47 for details.

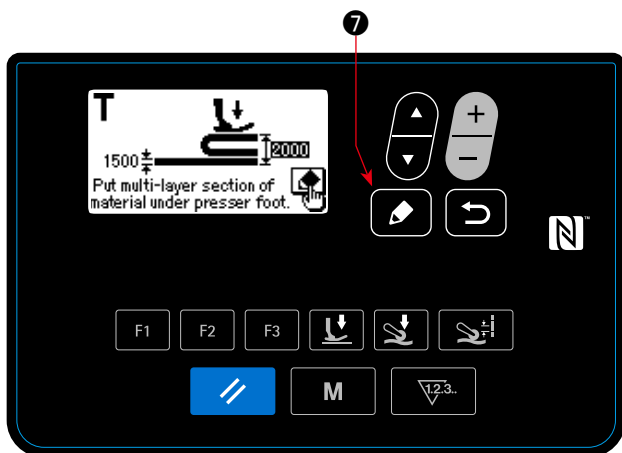
#### 4-4-4. How to carry out teaching of the multi-layered section of material

It is possible to perform teaching of the thresholds of the lower part (thinner part) and of the upper part (thicker part) of multi-layered section of material while using the actual sewing product.

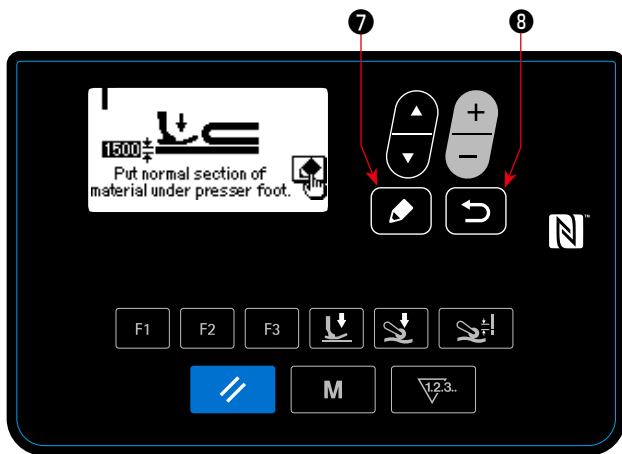
Sewing data items that can be used for teaching are as follows:

Sewing pattern that is currently selected	Sewing data that can be used for teaching
Free sewing patter	S011 Multi-layered section changeover sensor ON value S021 Multi-layered section changeover sensor OFF value
Step sewing pattern	"S103 Step changeover" sensor *

\* "S103 Step changeover sensor value" can only be selected in the case "S101 Step changeover" is set to the material thickness sensor value.





< Teaching screen for the lower part of multi-layered section >




< Teaching screen for the upper part of multi-layered section >



① Teaching of the multi-layered section starts and the teaching screen for the lower part of multi-layered section is displayed by pressing edit key

 ⑦ after selecting the aforementioned data on the sewing data edit screen.

② Put the lower layer before the multi-layered portion of material under the presser foot. Sew the material by several stitches. Then, press  ⑦ to display the teaching screen for the upper layer of multi-layered portion of material.

③ Teaching screen returns to the sewing data edit screen by pressing edit key  ⑦ after placing the upper part of multi-layered section under the presser foot. Value of the data selected in the aforementioned 1) will be automatically changed to the intermediate value between the thickness of lower part and that of upper part of multi-layered section.

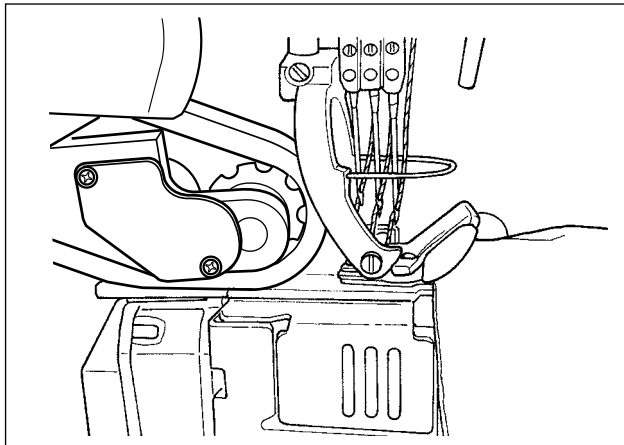


1. When the pedal is depressed during teaching of the multi-layered section of material, the sewing machine operates. It is convenient to depress the pedal to feed the material until the upper part of multi-layered section is brought to the presser foot after having carried out teaching of the lower part of multi-layered section.
2. If the  ⑧ is pressed in the aforementioned ② or ③, the sewing machine will quit from the teaching of the multi-layered section of material and the screen will return to the sewing data edit screen.
3. If the feed dog appears above the throat plate in the aforementioned ② or ③, the  ⑦ cannot be operated.
4. Be aware that the sensor may detect the multi-layered section of material by mistake by excessively decreasing the aforementioned data value.
5. The "S021 (Multi-layered portion changeover OFF sensor value) takes effect when the "S017 (Number of stitches to be sewn on the multi-layered portion) is 0 (zero). In the case you want to use the sewing machine while setting the S017 to 0 (zero), the S021 must be set without exceptions. For the default pattern data, the S017 is set to a value other than 0 (zero).

#### 4-4-5. Sewing data on a free sewing pattern

The following sewing data are used in each sewing state of a free sewing pattern.

##### ① Top-of-material sewing



Setting of the sewing data to be used from the time at which the material is detected to the time at which the top of material reaches the cloth puller is carried out.

State display on the operation panel:  

The following data items are used.

S031 Sewing speed for starting sewing of the top end of material

← (When the sewing machine completes sewing of "S033 The number of stitches at which the sewing speed is changed at the beginning of sewing the top of material", the sewing state shifts to "S004 Sewing speed.")

S032 Presser foot pressure for starting sewing of the top end of material

S073 Cloth puller pressure when detecting no material

S072 Cloth pulling amount when detecting no material

S033 Number of stitches for changing the sewing speed for starting sewing of the top end of material

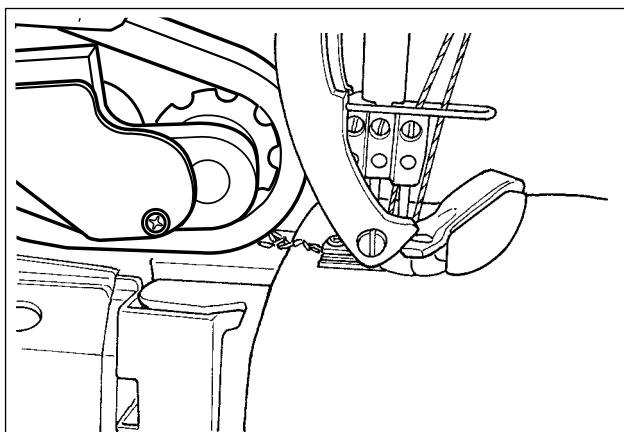
S034 Number of stitches for changing the presser foot pressure for starting sewing of the top end of material

**\* If the material cannot be fed consistently from the time at which the material is detected to the time at the top of material reaches the cloth puller, change the setting appropriately.**

When the sewing machine completes sewing of "S034 The number of stitches at which the presser foot pressure is changed at the beginning of sewing the top of material" in the "top of material sewing state", the sewing state shifts to "Flat section state".



##### ② Flat section



State display on the operation panel:  

The following data items are used.

S004 Limit of sewing speed

S005 Presser foot pressure

S007 Cloth puller pressure

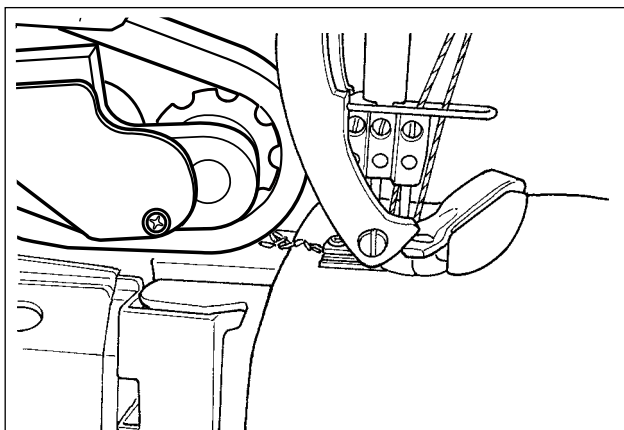
S006 Cloth pulling amount

When the sewing machine completes sewing of "S074 The number of stitches from which the cloth puller runs on the top of material" from the beginning of sewing of the top of material ( ① ), the sewing state shifts to the "cloth puller runs on the top of material".





### ③ Cloth puller runs on the top of material



Setting of the sewing data to be used when the top of material is fed to reach the cloth puller is carried out.

State display on the operation panel: 

\* Depending on the "S034 The number of stitches at which the presser foot pressure is changed at the beginning of sewing the top of material" and the "S074 The number of stitches from which the cloth puller runs on the top of material", the state of the presser foot side may remain in the "state of sewing the top end of material".

Parameter

S004 Limit of sewing speed

S005 Presser foot pressure

S077 Cloth puller pressure when the cloth puller runs on the top end of material

S076 Cloth pulling amount when the cloth puller runs on the top end of material

S074 Number of stitches at which the cloth puller starts running on the top end of material

S075 Number of stitches while the cloth puller runs on the top end of material

S005 Presser foot pressure

S007 Cloth puller pressure

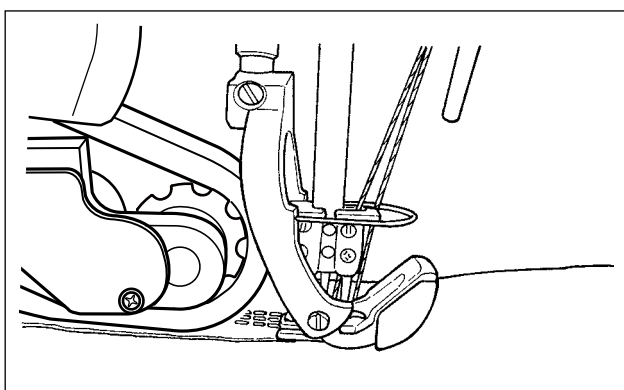
S006 Cloth pulling amount

**\* If the top of material is caught in the cloth puller, change the setting appropriately.**

When the sewing machine completes sewing of "S075 The number of stitches at which the cloth puller runs on the top of material" in the "state the cloth puller runs on the top of material", the sewing state shifts to the "flat section state".



### ④ While the sewing machine sews a flat section of material



Setting of the sewing data for normal sewing is carried out.

State display on the operation panel: 

The following data items are used.

S004 Limit of sewing speed

S005 Presser foot pressure

S007 Cloth puller pressure

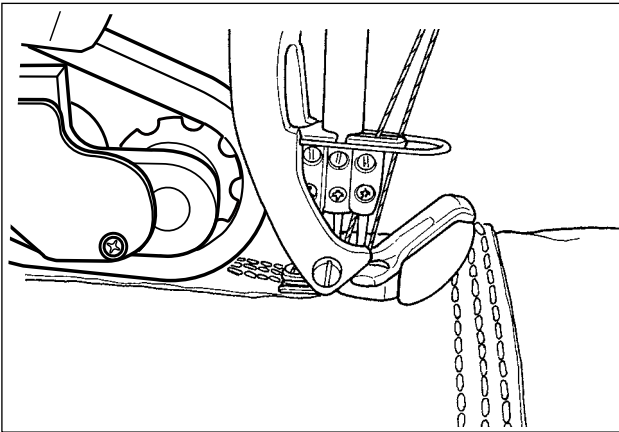
S006 Cloth pulling amount

When the measured value by the multi-layered section sensor reaches the "S011 Multi-layered section changeover sensor ON" value or more, the sewing state shifts to the "state of running on the multi-layered section".



**\* The multi-layered section detection timing can be advanced by decreasing the "S011 Multi-layered section changeover sensor ON" set value. Be aware, however, that false detection of the multi-layered section can occur if the timing is advanced excessively.**



**⑤ State the sewing machine runs on the multi-layered section of material**



Setting of the sewing data to be used from the time at which a multi-layered section of material is detected to the time at which the the presser foot of the sewing machine completely runs on the multi-layered section is carried out.

State display on the operation panel:  

The following data items are used.

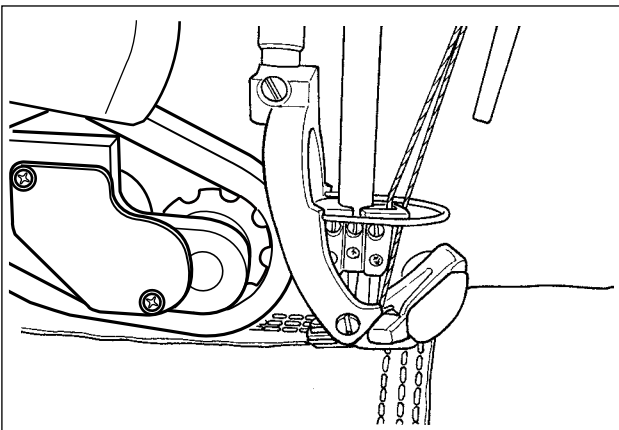
- S012 Multi-layered section sewing speed
- S005 Presser foot pressure
- S016 Cloth puller pressure when the presser foot runs on the multi-layered section
- S015 Cloth pulling amount when the presser foot runs on the multi-layered section
- S011 Multi-layered section changeover ON sensor value
- S013 Number of stitches when the presser foot runs on the multi-layered section

After the sewing machine completes sewing of "S013 The number of stitches to be sewn when running on the multi-layered section" in the "state of the sewing machine runs of the multi-layered section of material", the sewing state shifts to the "state of sewing the multi-layered section of material".



Set "S013 Number of stitches to be sewn when running on the multi-layered section" according to the length and shape of the multi-layered section of material.



**⑥ State of sewing the multi-layered section of material**



Setting of the sewing data to be used after the presser foot of the sewing machine completely runs on the the multi-layered section of material is carried out.

State display on the operation panel:  

The following data items are used.

- S012 Multi-layered section sewing speed
- S018 Presser foot pressure for sewing the multi-layered section
- S020 Cloth puller pressure for sewing the multi-layered section
- S019 Cloth pulling amount for sewing the multi-layered section
- S017 The number of stitches to be sewn on the multi-layered section
- S021 Multi-layered section changeover OFF sensor value

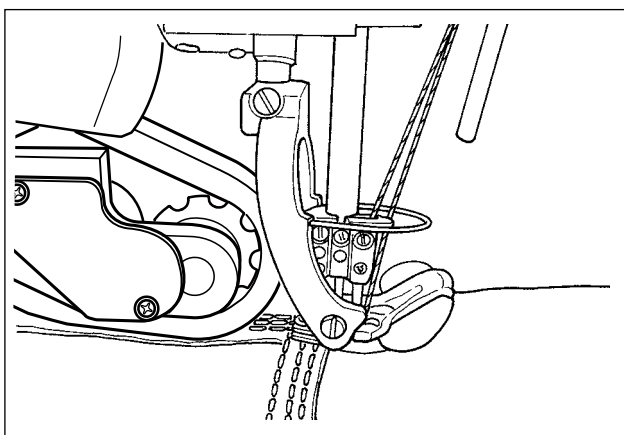
After the sewing machine completes sewing of "S017 The number of stitches to be sewn on the multi-layered section" in the "state of sewing the multi-layered section of material", the sewing state shifts to the state of the "end of the multi-layered section of material". (In the case the number of stitches set for "S017 The number of stitches to be sewn on the multi-layered section" is "0 (zero)", the sewing states will shift to the state of the "end of the multi-layered section of material" when the measured value by the multi-layered section sensor reaches the "S021 Multi-layered section changeover sensor OFF value" or less.)

Set "S017 Number of stitches to be sewn on the multi-layered section" according to the length and shape of the multi-layered section of material

\* **Sewing conditions may differ according to the type of material and the condition of the multi-layered section. If the stitch gathers at the multi-layered section of material, change the settings of sewing data to be used in ⑤ and ⑥ .**



### ⑦ The end of the multi-layered section of material



State display on the operation panel:  

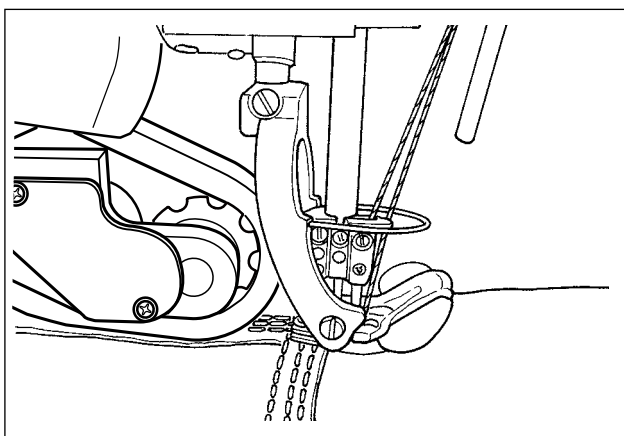
The following data items are used.

- S004 Limit of sewing speed
- S005 Presser foot pressure
- S007 Cloth puller pressure
- S006 Cloth pulling amount

When the measured value by the multi-layered section sensor reaches the "S011 Multi-layered section changeover sensor ON" value or less, the sewing state shifts to the "state of the flat section of material".



### ⑧ Flat section



State display on the operation panel:  

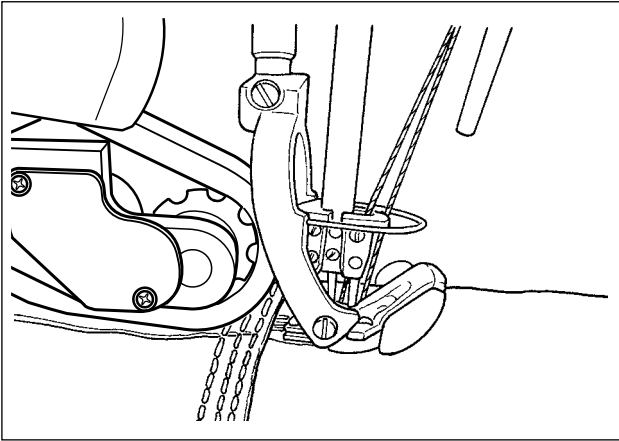
The following data items are used.

- S004 Limit of sewing speed
- S005 Presser foot pressure
- S007 Cloth puller pressure
- S006 Cloth pulling amount


After the sewing machine completes sewing of "S068 The number of stitches at which the cloth puller runs on the multi-layered section" from the start of running on the multi-layered section ( ⑤ ), the sewing state shifts to the state of the "cloth puller runs on the multi-layered section of material".



### ⑨ Cloth puller runs on the multi-layered section of material



Setting of the sewing data to be used while the cloth puller runs on the multi-layered section of material is carried out.

State display on the operation panel:  

\* Depending on the "S017 The number of stitches to be sewn on the multi-layered section" and "S068 The number of stitches at which the cloth puller runs on the multi-layered section", the state of the presser foot side may remain in the "state of sewing the multi-layered section of material".

The following data items are used.

S004 Limit of sewing speed

S078 Presser foot pressure when the cloth puller runs on the multi-layered section

S071 Cloth puller pressure when the cloth puller runs on the multi-layered section

S070 Cloth pulling amount when the cloth puller runs on the multi-layered section

S068 Number of stitches at which the cloth puller starts running on the multi-layered section

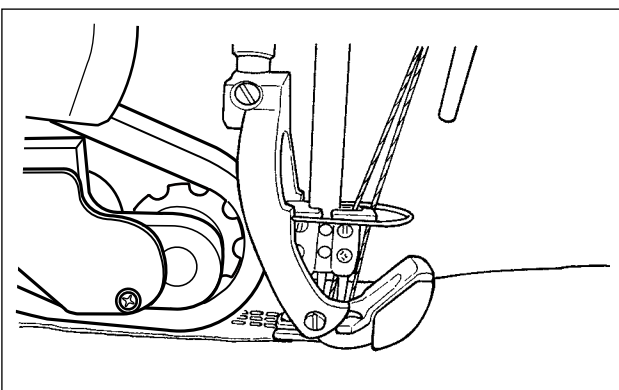
S069 Number of stitches during which the cloth puller runs on the multi-layered section

**\* If the stitch gathering occurs at the multi-layered section of material in the cloth puller, change the setting appropriately.**

After the sewing machine completes sewing of "S069 The number of stitches during which the cloth puller runs on the multi-layered section" in the "cloth puller runs on the multi-layered section" state, the sewing state shifts to the state of the "flat section of material".



### ⑩ Flat section



State display on the operation panel:  

The following data items are used.

S004 Limit of sewing speed

S005 Presser foot pressure

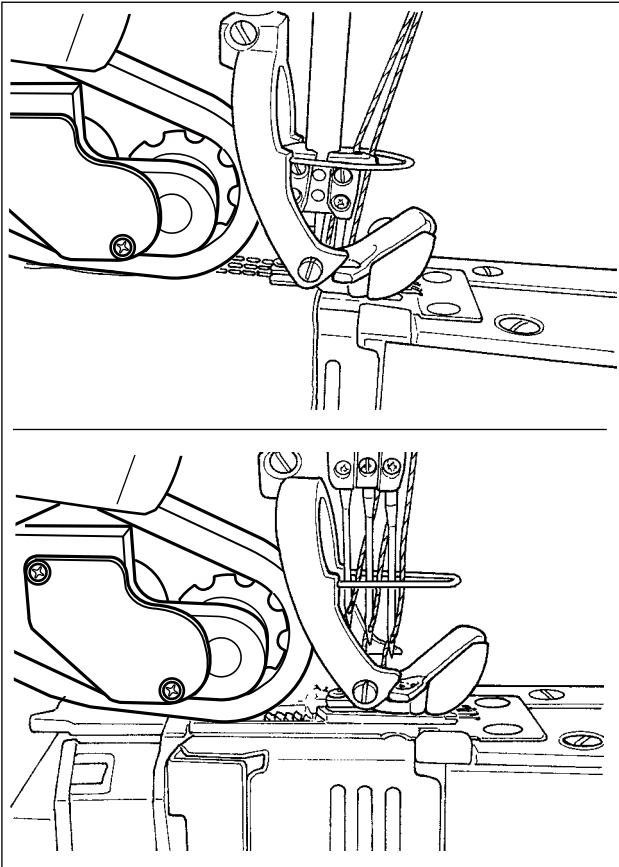
S007 Cloth puller pressure

S006 Cloth pulling amount



When the cloth detection sensor detects "absence of material", the sewing state shifts to the "no material state".



① No material



Setting of the state no material is detected is carried out.

State display on the operation panel:  

The following data items are used.

- S052 Limit to the sewing speed to be applied after the detection of absence of material
- S005 Presser foot pressure
- S073 Cloth puller pressure when detecting no material
- S072 Cloth pulling amount when detecting no material

When the cloth detection sensor detects a material from the "no material state", the sewing state shifts to the "top of material" sewing state.



( ① Return to the sewing of the top end of material)



1. Regardless of the current status of sewing such as the sewing of the flat section or that of the multi-layered section of material, the sewing machine state will shift to the "no-material" state whenever the cloth detection sensor detects the absence of material.
2. False detection of material can occur if the operator places his / her hand under the cloth detection sensor. Take care not to place the hand under the sensor.

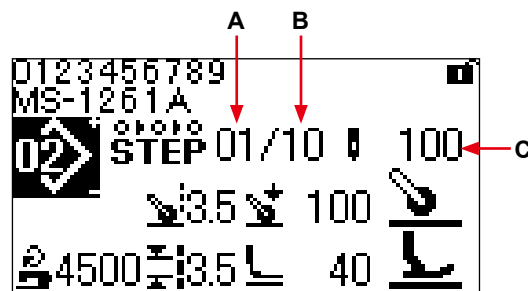
#### 4-4-6. How to edit a step sewing pattern

A step sewing pattern consists of 10 steps at the maximum. Different sewing conditions can be set for each step on a step-by-step basis.

The condition to be satisfied to proceed to the next step can be set with "S101 Step changeover condition". As many as 10 different step sewing patterns can be created.

Step changeover condition	Details
Number of stitches	When the sewing machine completes sewing of the number of stitches set with "S102 The number of stitches for step changeover", the sewing machine proceeds to the next step.
Material thickness	When the material thickness that exceeds the value set with "S103 The sensor value for step changeover" changes to a value that is smaller than the aforementioned set value (or the material thickness that falls below the aforementioned set value changes to a value that is larger than the set value), the sewing machine proceeds to the next step.
Optional input	When the sewing machine accepts an optional input, the sewing machine proceeds to the next step.
Final step	No further step is possible. When there is no material on the sewing machine, the sewing machine returns to the first step.

**Caution** In the state there is no material on the sewing machine, the sewing machine will not proceed to the next step.

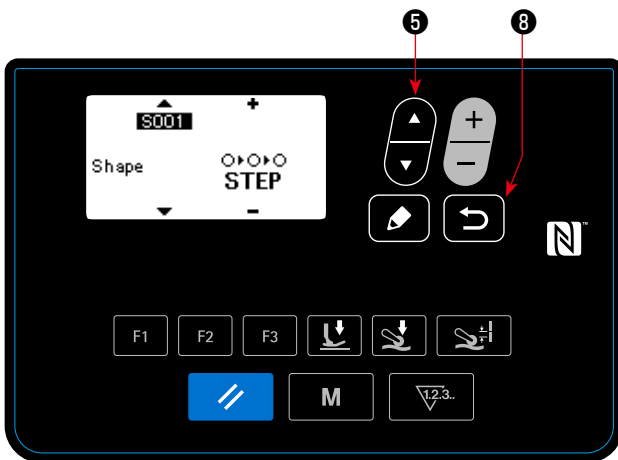


< Sewing screen (Step sewing pattern) >

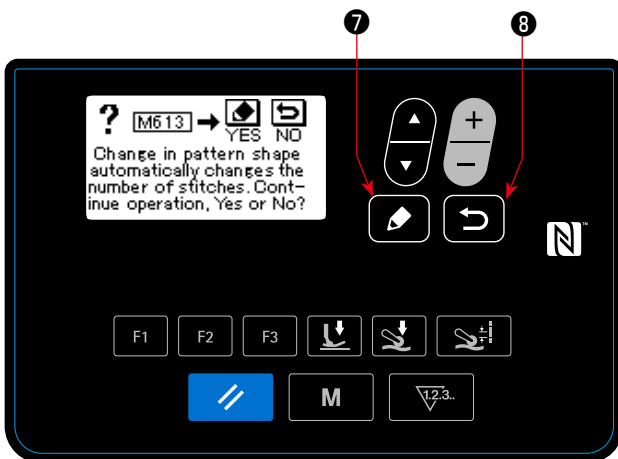
	Display	Content
<b>A</b>	Current step	The number of the current step is displayed.
<b>B</b>	Total number of steps	The total number of steps is displayed.
<b>C</b>	Step changeover condition set value	The set value for the step changeover condition is displayed. This set value is not displayed at the final step. The number of stitches      Material thickness sensor value      Optional input <div style="display: flex; justify-content: space-around; align-items: center;"> <span>▮</span> <span>◀</span> <span>⊕</span> </div>

No step sewing pattern is registered in the sewing machine at the time of purchase. It is, therefore, necessary to create a step sewing pattern using one of the below-stated procedures.

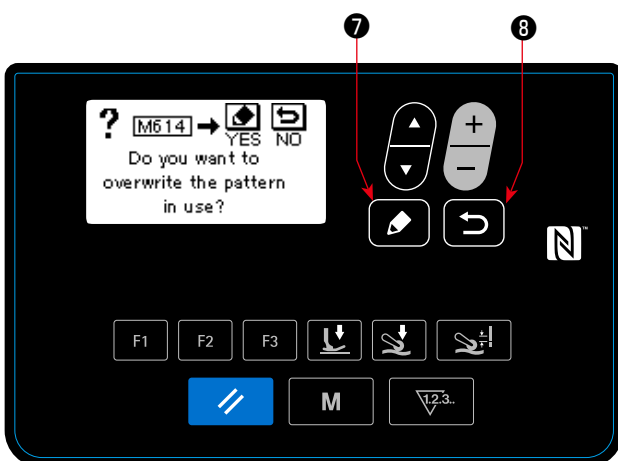
### (1) Changing the shape of a free sewing pattern to a step sewing pattern



< Sewing pattern edit screen >





< M613 Message screen >




< M614 Message screen >


#### ① Starting the change in shape


When  5 (or  8) is pressed after changing "S001 Shape" to the step sewing on the sewing data edit screen for the free sewing pattern, "Are you sure you want to continue? Yes / No" message is displayed.


When  7 is pressed after the aforementioned message is displayed, "Are you sure you want to overwrite the pattern in use? Yes / No" message is displayed.



If  8 is pressed, the change in shape is cancelled and the screen returns to the sewing data edit screen.

#### ② Changing the shape

When  7 is pressed, the shape is changed to a step sewing. Then, the screen returns to the sewing screen.

If  8 is pressed, the screen for selecting a pattern number with which a step sewing pattern is newly created.

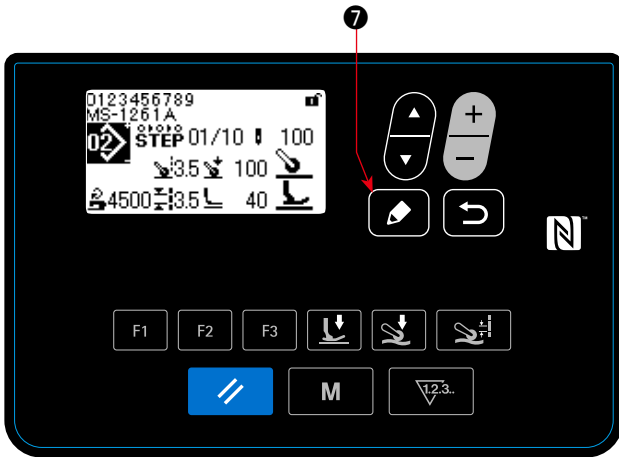
In the case there is no pattern number with which a new pattern is created, the message "Overwrite" message is displayed by pressing  8.

 When  7 is pressed after the aforementioned screen is displayed, the screen for selecting the pattern number of the pattern to be overwritten with a step sewing pattern.

### (2) Creating a new step sewing pattern

Refer to "4-5-4. How to copy / newly create a pattern" p. 56 for details.

① Displaying the step sewing pattern edit screen



< Sewing screen (Step sewing pattern) >

Display the step sewing edit screen by keeping

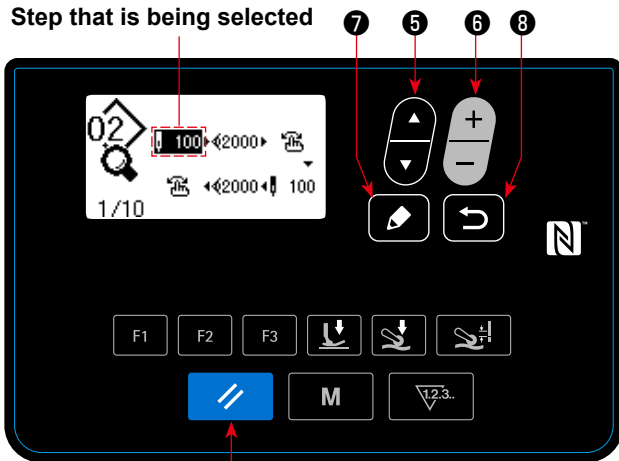


7


held pressed for one second on the sewing screen for selecting the step sewing.



② Selecting the step you want to edit


Step that is being selected





< Step sewing pattern edit screen >


1. Select the step by pressing  5. (The step that is being selected is displayed in reverse video.)
2. In the case there is an unused step(s), a step(s) can be added by following the procedure described below.

If  8 is pressed, the addition of a step will be cancelled and the sewing screen will be displayed. (Added step is confirmed by pressing  7 while a step that is being added is selected.)

- A step is added after the currently-selected step by pressing "+", or before the currently-selected step by pressing "-" of  6.

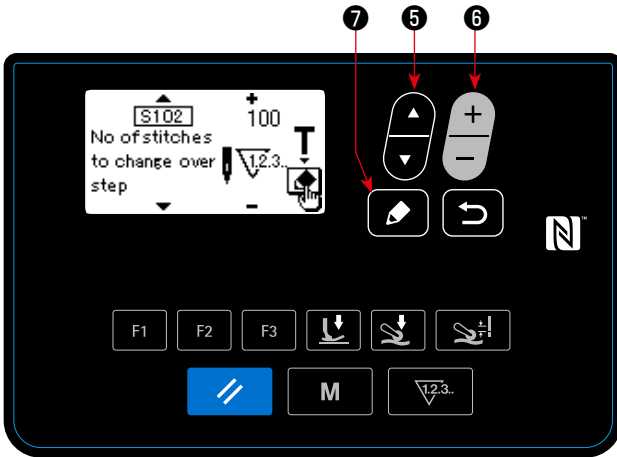
- A step is added at the end of steps by pressing "▼" of  5 while the leading step is being selected.

- When "▲" of  5 is pressed while the last step of the existing steps is being selected, a new step is added at the end of the existing steps.




3. The step that is being selected can be deleted by pressing  2. If reset key is held pressed for one second, all existing steps in the sewing pattern can be deleted.



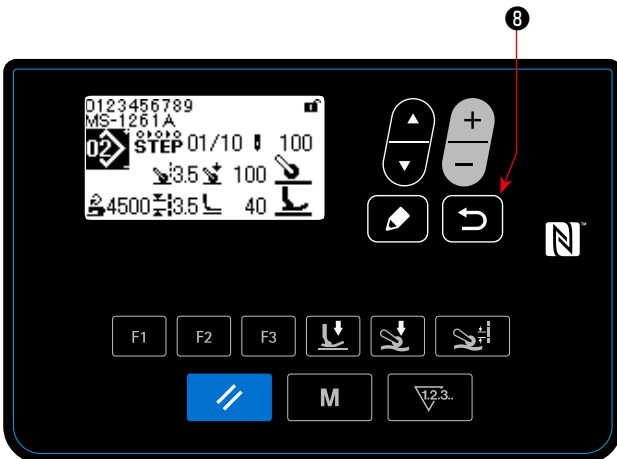
### ③ Editing the selected step





< Step sewing pattern step edit screen >

1. When  7 is pressed while the step is being selected, the step sewing pattern step edit screen is displayed.
2. Select the sewing data item you want to edit by pressing  5 . Edit the item by pressing  6 .  
Refer to **"4-4-9. List of sewing data" p. 41** for details.
- \* When the edit key is pressed while the number of stitches of "S102 Step changeover condition" is being selected, the number of stitches teaching screen is displayed. Refer to **"4-4-7. How to carry out the teaching of the number of stitches" p. 39** for the number of stitches teaching function.

### ④ Sewing the sewing pattern you have edited



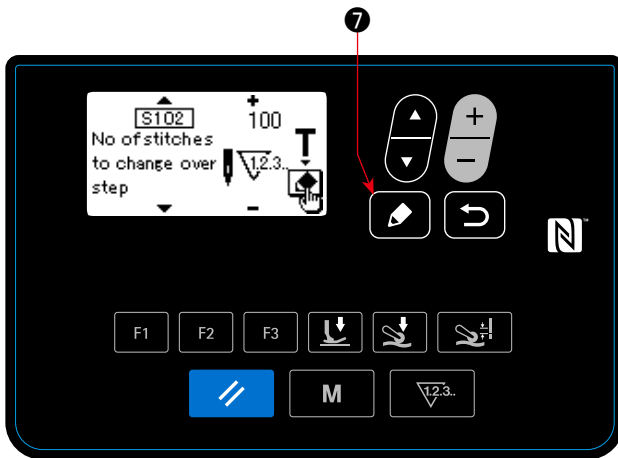
< Sewing screen (Step sewing pattern) >

When  8 is pressed, the edited data is confirmed, and the screen returns to the step sewing pattern edit screen.  
The data you have set is reflected on the screen.  
When  8 is pressed again, the screen returns to the sewing screen for the step sewing pattern that has been edited.


#### 4-4-7. How to carry out the teaching of the number of stitches

Teaching of the number of stitches is possible for a step sewing pattern in the case the number of stitches is used as the step changeover condition.

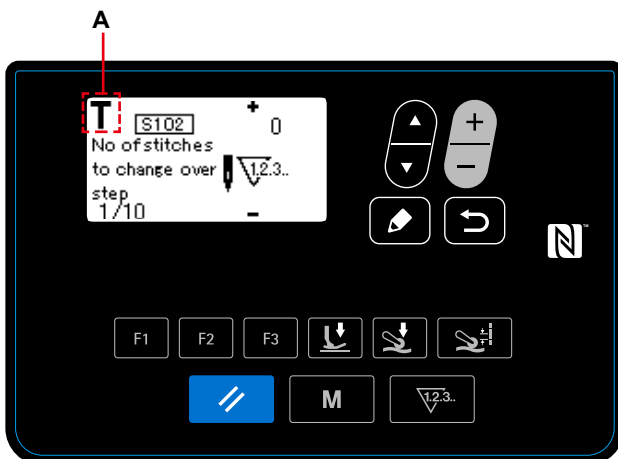
##### ① Displaying the number of stitches teaching screen



< Step sewing pattern step edit screen >

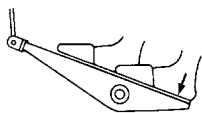
Display the teaching screen by pressing  **7** after selecting "S102 The number of stitches for step changeover" on the step sewing pattern step edit screen.

##### ② Starting the teaching of the number of stitches



<The number of stitches teaching screen >

Pictograph **A** is displayed and the operation mode enters the teaching mode.



Depress the back part of pedal after completing the sewing of a pattern (until the last stitch is sewn). Then, the sewing machine exits from the teaching mode and returns to the previous screen.

#### 4-4-8. Micro-lifter function

When the sewing data items (S005, S018, S032, S078) are set to a negative set value on the panel, the micro lifter can be used at the timing corresponding to the set value of relevant data item.

Damage to the material can be reduced by appropriately adjusting the respective set values.

\* Refer to the table shown below for a rough indication of the relation among the value input on the panel, the presser foot height and the presser foot pressure.

Input value on the panel	Presser foot height	Presser foot pressure (Reference)
0	0 mm	Approx. 30 N (3 kg)
-200	Approx. 2.0 mm	Approx. 10 N (1 kg)
-350	Approx. 3.5 mm	Approx. 10 N (1 kg)

\*1 The presser foot height 0 mm means the state the sole of presser foot comes in contact with the top surface of throat plate.

\*2 The presser foot pressure varies when the presser foot or the throat plate is changed.

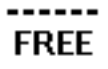



\*3 Range of input values on the panel is from -350 to 200.



- 1. Be sure to input a positive value on the operation panel in the case the micro-lifter function is not used. If not, the presser foot is slightly raised and the feed dog is unable to provide a sufficient efficiency of feed.**
- 2. In the case of using the micro-lifter function, the efficiency of feed is likely to be insufficient. To achieve the sufficient efficiency of feed, reduce the sewing speed or help feed the material by hand.**

#### 4-4-9. List of sewing data

##### (1) Sewing data to be used for free sewing patterns and step sewing patterns

No.	Item name	Input range		
S001	Shape	Free sewing 	Step sewing 	
S003	Stitch length	1.4 to 4.2mm		Enter the stitch length according to the feed amount of sewing machine. (The feed amount of the sewing machine will not change if this value is changed.)
S004 *1	Limit of sewing speed	150 to 5500sti/min	-	
S005 *2	Presser foot pressure	-350 to 200	-	
S006	Cloth pulling amount	1.2 to 5.5mm	-	
S007 *3	Cloth puller pressure	-90 to 120	-	
S011	Multi-layered section changeover ON sensor value	500 to 3000  Multi-layered section is not detected 	-	If the multi-layered section sensor value exceeds this value, the multi-layered section is detected.
S012 *1	Multi-layered section sewing speed	150 to 5500sti/min	-	This data item is used for setting the sewing speed to be applied from the time at which the multi-layered section is detected to the time at which the multi-layered section sewing ends.
S013	Number of stitches when the presser foot runs on the multi-layered section	0 to 200 stitches	-	This data item is used for setting the number of stitches to be sewn from the time at which the multi-layered section of material is detected to the time at which the entire presser foot runs on the multi-layered section. While the sewing machine is engaged in the sewing of this number of stitches, the sewing machine operates using the cloth pulling amount set with "S015" and the cloth puller pressure set with "S016".
S015	Cloth pulling amount when the presser foot runs on the multi-layered section	1.2 to 5.5mm	-	
S016 *3	Cloth puller pressure when the presser foot runs on the multi-layered section	-90 to 160	-	

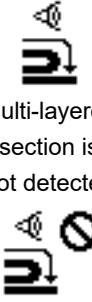
\*1: The actual sewing speed is limited by "S003 Stitch length" and the set value of cloth pulling amount.

In the case the set value of stitch length is 3.1 mm or more: Maximum sewing speed 5000 sti/min

In the case the set value of cloth pulling amount is 4.6 mm or more: Maximum sewing speed 4000 sti/min

\*2: If this value is set to a negative value (minus value), the presser foot will go up.

\*3: If this value is set to a negative value (minus value), the cloth puller will go up.

No.	Item name	Input range		
S017	The number of stitches to be sewn on the multi-layered section	0 to 200 stitches	-	This data item is used for setting the number of stitches to be sewn from the time at which the presser foot runs on the multi-layered section to the time at which the presser foot leaves the multi-layered section. While the sewing machine is engaged in sewing of this number of stitches, the sewing machine operates using the presser foot pressure set with "S018", the cloth pulling amount set with "S019" and the cloth puller pressure set with "S020".
S018 *2	Presser foot pressure for sewing the multi-layered section	-350 to 200	-	
S019	Cloth pulling amount for sewing the multi-layered section	1.2 to 5.5mm	-	
S020 *3	Cloth puller pressure for sewing the multi-layered section	-90 to 160	-	
S021	Multi-layered section changeover OFF sensor value	500 to 3000  Multi-layered section is not detected	-	When the multi-layered section sensor value falls below this value while the sewing machine is engaged in the sewing of the multi-layered section of material, the sewing machine finishes the sewing of the multi-layered section. This set value is rendered effective in the case the number of stitches for multi-layered section (S017) is not set (0 stitch).
S031 * 1	Sewing speed for starting sewing of the top end of material	150 to 550sti/min		This data item is used for setting the sewing speed to be employed when the material is detected after the state no material has been detected. In the case a cloth sensor is not used, the speed limit by this parameter will not be applied. In the case both this function and "U037 Soft start function" are enabled, the sewing machine will operate using the lower sewing speed.
S032 * 2	Presser foot pressure for starting sewing of the top end of material	-350 to 200		This data item is used for setting the presser foot pressure to be applied when the material is detected after the state no material has been detected.
S033	Number of stitches for changing the sewing speed for starting sewing of the top end of material	0 to 200 stitches		This data item is used for setting the number of stitches to be sewn with the sewing speed set with "S031 Sewing speed for starting sewing of the top end of material".
S034	Number of stitches for changing the presser foot pressure for starting sewing of the top end of material	0 to 200 stitches		This data item is used for setting the number of stitches to be sewn with the sewing speed set with "S032 Sewing speed for starting sewing of the top end of material".
S041	Number of stitches to be sewn from the beginning of sewing until the chain-off thread cutter is actuated	0 to 2000 stitches		This data item is used for setting the number of stitches to be sewn from the time at which the material is detected to the time at which chain-off thread cutter is actuated.

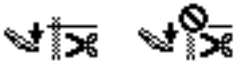


\*1: The actual sewing speed is limited by "S003 Stitch length" and the set value of cloth pulling amount.

In the case the set value of stitch length is 3.1 mm or more: Maximum sewing speed 5000 sti/min

In the case the set value of cloth pulling amount is 4.6 mm or more: Maximum sewing speed 4000 sti/min

\*2: If this value is set to a negative value (minus value), the presser foot will go up.

\*3: If this value is set to a negative value (minus value), the cloth puller will go up.

No.	Item name	Input range		
S042	Number of stitches at which the chain-off thread cutter is actuated after the detection of absence of material	0 to 2000 stitches		This data item is used for setting the number of stitches to be sewn before actuating the chain-off thread cutter after the detection of the absence of material.
S043	Selection of chain-off thread cutter operation by a depress on the back part of pedal	Operate / Not operate 		This data item is used for selecting the operation of the chain-off thread cutter when the back part of pedal is depressed to the second level.
S051	Needle bar stop position	Stop at the upper position  Stop at the lower position 	-	
S052 * 1	Limit to the sewing speed to be applied after the detection of absence of material	150 to 5500sti/min		This data item is used for setting the sewing speed to be employed when the absence of material is detected.
S053	Needle-cooler ON delay number of stitches	0 to 200 stitches		This data item is used for setting the number of stitches to be sewn from the time at which the sewing machine is started to the time at which the needle cooler is actuated.
S061	Part number	0 - 24 characters		
S062	Process	0 - 24 characters		
S063	Comment	0 - 50 characters		
S068	Number of stitches at which the cloth puller starts running on the multi-layered section	0 to 200 stitches	-	This data item is used for setting the number of stitches to be sewn from the time at which the multi-layered section of material is detected to the time at which the multi-layered section is brought to the cloth puller.
S069	Number of stitches during which the cloth puller runs on the multi-layered section	0 to 200 stitches	-	This data item is used for setting the number of stitches to be sewn while the cloth puller runs on the multi-layered section of material.
S070	Cloth pulling amount when the cloth puller runs on the multi-layered section	1.2 to 5.5mm	-	This data item is used for setting the cloth pulling amount to be used while the cloth puller runs on the multi-layered section of material.
S071 *3	Cloth puller pressure when the cloth puller runs on the multi-layered section	-90 to 160	-	This data item is used for setting the cloth puller pressure to be applied while the cloth puller runs on the multi-layered section of material.
S072	Cloth pulling amount when detecting no material	1.2 to 5.5mm		

\*1: The actual sewing speed is limited by "S003 Stitch length" and the set value of cloth pulling amount.

In the case the set value of stitch length is 3.1 mm or more: Maximum sewing speed 5000 sti/min

In the case the set value of cloth pulling amount is 4.6 mm or more: Maximum sewing speed 4000 sti/min

\*2: If this value is set to a negative value (minus value), the presser foot will go up.

\*3: If this value is set to a negative value (minus value), the cloth puller will go up.

No.	Item name	Input range		
S073 * 1	Cloth puller pressure when detecting no material	-90 to 120		
S074	Number of stitches at which the cloth puller starts running on the top end of material	0 to 200 stitches		This data item is used for setting the number of stitches to be sewn from the time at which the presence of material is detected to the time at which the top of material is brought to the cloth puller.
S075	Number of stitches while the cloth puller runs on the top end of material	0 to 200 stitches		This data item is used for setting the number of stitches to be sewn while the cloth puller runs of the top end of material.
S076	Cloth pulling amount when the cloth puller runs on the top end of material	1.2 to 5.5mm		This data item is used for setting the cloth pulling amount to be used while the cloth puller runs on the top end of material.
S077 * 3	Cloth puller pressure when the cloth puller runs on the top end of material	-90 to 120		This data item is used for setting the cloth puller pressure to be applied while the cloth puller runs on the top end of material.
S078 * 2	Presser foot pressure when the cloth puller runs on the multi-layered section	-350 to 200	-	This data item is used for setting the presser foot pressure to be applied while the cloth puller runs on the multi-layered section of material

\*1: The actual sewing speed is limited by "S003 Stitch length" and the set value of cloth pulling amount.












In the case the set value of stitch length is 3.1 mm or more: Maximum sewing speed 5000 sti/min

In the case the set value of cloth pulling amount is 4.6 mm or more: Maximum sewing speed 4000 sti/min

\*2: If this value is set to a negative value (minus value), the presser foot will go up.

\*3: If this value is set to a negative value (minus value), the cloth puller will go up.

**(2) Sewing data that are used only for step sewing patterns**

No.	Item name	Input range				
S101	Step change-over	Number of stitches 	Material thickness sensor value 	Optional input 	No change-over (final step) 	
S102	Number of stitches for changing over the steps	0 to 2000 stitches	-	-	-	
S103	Step change-over sensor value	-	500 to 3000	-	-	While the sewing machine is engaged in the sewing of a step for which "S101 Step changeover" is set to the "Material thickness sensor value", the sewing machine will proceed to the next step when the material thickness sensor value decreases from a value that is larger than the set value to a value that is smaller than that (or increases from a value that is smaller than the set value to a value that is larger than that).
S104	Needle bar stop position	Stop at its upper position / 	Stop at its lower position / 	Not stop 		
S105 *1	Sewing speed limit	150 to 5500sti/min				
S106	Presser foot pressure	-350 to 200				
S107	Cloth pulling amount	1.2 to 5.5mm				
S108 *2	Cloth puller pressure	-90 to 120				
S111	One shot	ON / OFF  / 				If the sewing machine is started with the one-shot function enabled, the sewing machine will run automatically until the step changeover condition is satisfied.
S112	Presser foot stop position	0.0 to 10.0mm / Comes down  / 				

\*1: The actual sewing speed is limited by "S003 Stitch length" and the set value of cloth pulling amount.

In the case the set value of stitch length is 3.1 mm or more: Maximum sewing speed 5000 sti/min

In the case the set value of cloth pulling amount is 4.6 mm or more: Maximum sewing speed 4000 sti/min

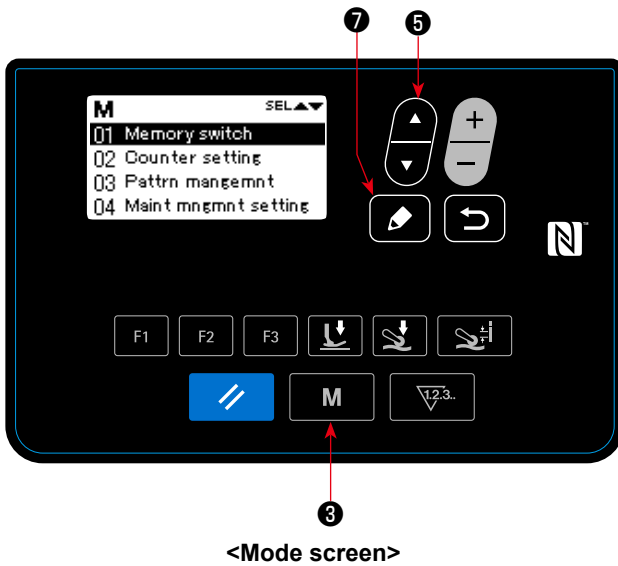
\*2: The cloth puller goes up when this data item is set to a negative value.



## 4-5. How to edit/check the data other than sewing data


The screen for editing/checking the various data is invoked by selecting the menu on the mode screen.


### ① How to invoke the mode screen.



Then, keep **M** ③ held pressed for three seconds to display the mode screen.

### ② Selecting the menu.

Select the target menu by pressing  ⑤.

When  ⑦ is pressed during selection of a menu, the following screen can be called.

1. Memory switch.....Refer to ["4-5-1. Memory switch data" p. 47](#) for details.
2. Counter setting .....Refer to ["4-5-2. Counter function" p. 52](#) for details.
3. Sewing pattern management.....Refer to ["4-5-4. How to copy / newly create a pattern" p. 56](#) for details.
4. Maintenance setting .....Refer to ["4-5-5. How to use the warning function" p. 58](#) for details.
5. F key registration .....Refer to ["4-5-6. How to use the F key" p. 61](#) for details.
6. Version display .....Refer to ["4-5-7. Checking the version information" p. 64](#) for details.
7. Contrast setting .....Refer to ["4-5-8. Adjusting the contrast of the LCD of the operation panel" p. 64](#) for details.
8. Communication.....Refer to ["4-5-9. Communication function" p. 65](#) for details.



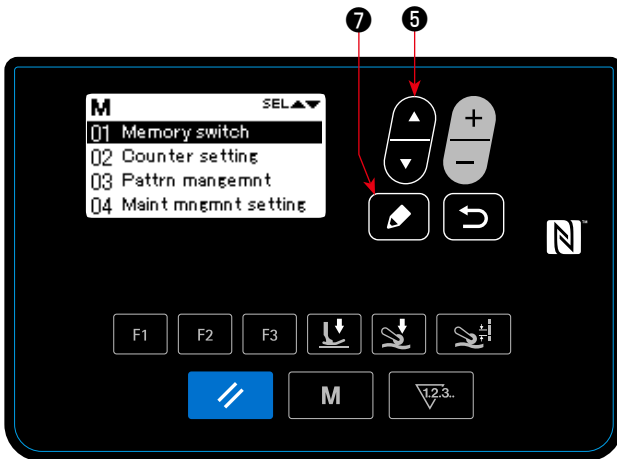
For the functions which are not described in this manual, only the maintenance personnel is allowed to operate while referring to the Engineer's Manual since operating those functions can lock up the sewing machine or can cause unforeseen accidents.

## 4-5-1. Memory switch data



Memory switch data are the data on sewing machine operation and affect all sewing patterns commonly.

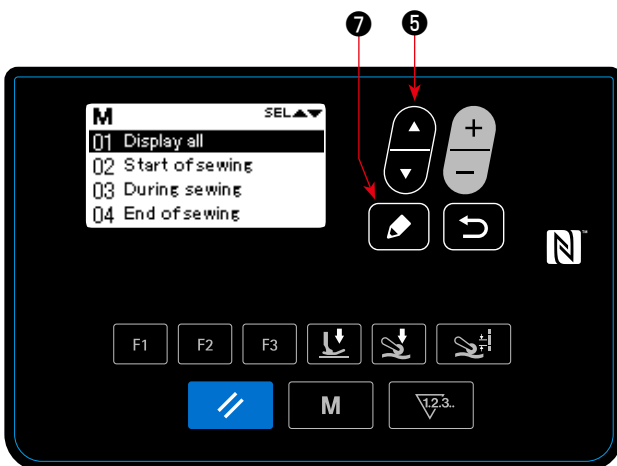
### (1) Setting up the memory switch data

#### ① Selecting the category of the memory switch data.





<Mode screen>

1. Select "01 Memory switch" by pressing  5 on the mode screen. Then, press  7 to display the memory switch classification selection screen.

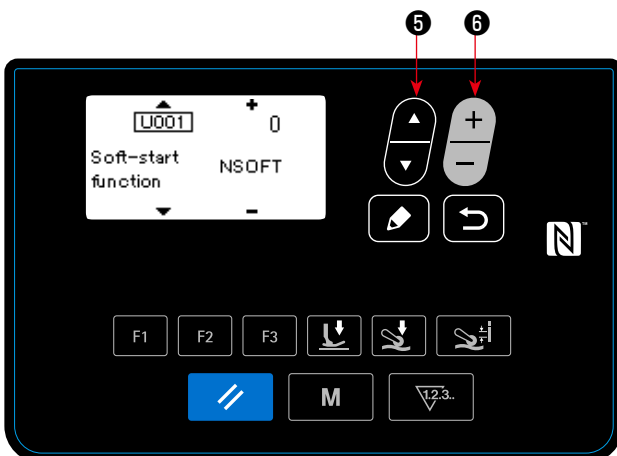


<Memory switch classification and selection screen>



2. Select "01 Display all" by pressing  5. Then, press  7 to display the memory switch setting screen.

\* In the case any item other than "01 Display all" is selected, only the memory switch which corresponds to the selected item is displayed on the memory switch setting screen.

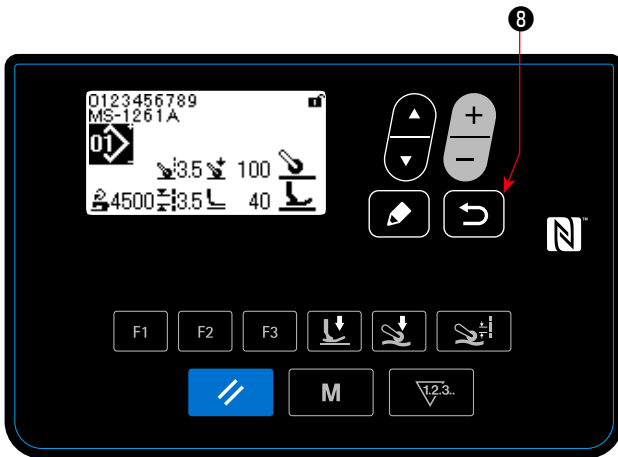
#### ② Setting the memory switch




<Memory switch setting screen>


1. Select the memory switch by pressing  5. Then, edit the memory switch by pressing  6.


### ③ Confirming the data entered



<Sewing screen>


1. Press  8 to confirm the data and return the current screen to the memory switch category selection screen.

Press  8 again to return the current screen to the mode screen.

Press  8 yet again to return the current screen to the sewing screen.



The memory switch setting screen can also be displayed by pressing the F key to which the memory switch has been registered on the sewing screen.

In such a case, the memory switch setting screen will be returned to the sewing screen by pressing  8 .

**(2) List of memory switch data**

No	Item	Setting range	
U001	Soft start function	0 to 9 stitches	0: No soft start 1 - 9: Number of stitches to be sewn at the soft-start sewing speed
U014	Sewing count function	1 to 3	1: Counter counts one when the back part of the pedal is depressed to the second level. 2: Sewing counter switch input 3: Counter counts one every time the absence of material is detected after the sewing machine has performed sewing in the state the material is present.
U021	Presser foot goes up when the pedal is at its neutral position	0 to 1	
U035	Lowest sewing speed by pedal	150 to 420 sti/min	
U037	Sewing speed for soft-start function	100 to 5500 sti/min	This memory switch data item is used for setting the sewing speed to be employed while the soft-start function works.
U038	One-shot sewing speed	100 to 5500 sti/min	This memory switch data item is used for setting the sewing speed to be employed while the one-shot sewing function works.
U039	Rotation starting position	10 to 1000	This memory switch data item is used for setting the position from which the sewing machine starts operating by depressing the pedal. (Pedal stroke)
U040	Acceleration starting position	10 to 1000	This memory switch data item is used for setting the acceleration starting position of the pedal with reference to its neutral position. (Pedal stroke)
U041	Presser-foot lifting starting position	-500 to -10	This memory switch data item is used for setting the upper position of the presser foot by operating the pedal. (Pedal stroke)
U042	Presser-foot lowering starting position	10 to 500	This memory switch data item is used for setting the position of the pedal at which the presser foot starts coming down with reference to its neutral position.
U043	Cloth-puller lifting and chain-off thread-cutter operation starting position	-1000 to -100	This memory switch data item is used for setting the position of the pedal at which the cloth puller goes up (in the case the pedal position at which the cloth puller goes up is set so that it goes up after the presser foot with U206), and for setting the position of the pedal at which the chain-off thread cutter operates (in the case the operation of chain-off thread cutter by depressing the back part of pedal is enabled with S043), with reference to its neutral position. (Pedal stroke)
U044	Maximum sewing speed position	10 to 15000	This memory switch data item is used for setting the position of the pedal at which the sewing machine reaches its maximum sewing speed with reference to its neutral position. (Pedal stroke)
U045	Pedal neutral position correction value	-150 to 150	This memory switch data item is used for setting the neutral position of the pedal.
U047	Presser-foot lifting end position	-1000 to -100	This memory switch data item is used for setting the position reached by depressing the back part of pedal to the first level (first-level spring position)
U049	Presser-foot lowering time	0 to 500 ms	This memory switch data item is used for setting the time during which the presser foot comes down.






No	Item	Setting range	
U055	Presser-foot lifting after depressing the back part of pedal to the 2nd level	0 to 1	This memory switch data item is used for setting the function for keeping the presser foot at its upper position when the back part of pedal is depressed to the 2nd level after the completion of sewing. 0: Disabled 1: Enabled
U068	Presser-foot operation changeover	0 to 1	This memory switch data item is used for setting the presser-foot lifting operation when the back part of pedal is depressed. 0:2-step operation 1: Manual operation according to the stroke determined by depressing depth of the back part of pedal
U069	First-level presser-foot lifting height	0.1 to 10.0 mm	This memory switch data item is used for setting the lifting height of the presser foot when the back part of the pedal is depressed to the first level.
U070	Second-level presser-foot lifting height	0.1 to 10.0 mm	This memory switch data item is used for setting the lifting height of the presser foot when the back part of the pedal is depressed to the second level.
U073	Re-try function	0 to 1	0: No re-try 1: Normal re-try
U087	Pedal acceleration characteristic	-10 to 10	-10 - -1: Low-range low acceleration 0: Standard 1 - 10:Low-range high acceleration
U090	Upper stop function at the initial operation	0 to 1	0: The sewing machine stops with its needle up after checking the setting on the operation panel 1:The sewing machine stops with its needle up automatically
U096	Maximum sewing speed	150 to 5500 sti/min	
U120	Main-shaft reference angle correction	-30 to 30 degrees	This memory switch data item is used for setting the set value for correcting the angle (0 degree) of the main shaft reference signal.
U121	Upper-position starting angle correction	-15 to 15 degrees	This memory switch data item is used for setting the set value for correcting the main shaft angle at which the sewing machine stops with its needle up.
U122	Lower-position starting angle correction	-15 to 15 degrees	This memory switch data item is used for setting the set value for correcting the main shaft angle at which the sewing machine stops with its needle down.
U182	Sewing count stop function	0 to 1	0: The sewing machine does not stop according to the sewing count 1: Start of sewing machine is prohibited after performing thread trimming when the counter has reached the set value.
U183	Number of times of thread trimming for the sewing counter	1 to 99	In the case of "U14 = 1", this memory switch data item is used for setting the number of times of thread trimming (the number of times that the back part of pedal is depressed to the 2nd level) when using the sewing counter In the case of "U14 = 3", this memory switch data item is used for setting the number of times of sewing of materials to be performed until the sewing counter value increases one.
U201	Cloth puller lifting height	0.1 to 10.0 mm	This memory switch data item is used for setting the height of the cloth puller to be reached when lifting the cloth puller by depressing the back part of pedal.
U205	Selection of the upper-position returning operation by a depression on the back part of pedal	0 to 1	0:Normal returning to the upper position 1: Returning to the upper dead point by reverse rotation

No	Item	Setting range	
U206	Function for lifting the cloth puller by a depress on the back part of pedal	0 to 2	This memory switch data item is used for setting the depressing position of the back-part of pedal to lift the cloth puller. 0: Simultaneously with the presser foot (by depressing the back part of pedal to its 1st level) 1: After the presser foot (by depressing the back part of pedal to its 2nd level) 2: The cloth puller is not lifted
U211	Number of stitches for sewing the material while the sewing counter is enabled	0 to 2000 stitches	This memory switch data item is used for setting the number of stitches to be sewn before allowing the sewing counter to start counting. The sewing counter will not perform counting unless the sewing machine has performed sewing by the preset number of stitches or more while the presence of material is detected.
U226	Material thickness sensor value without material	0 to 3000	This memory switch data item is used for setting the material thickness sensor value when the presser foot is lowered with the feed dog lowered without material. If this value is not correct, the presser foot pressure cannot be corrected properly.
U231	Cylinder function of the cloth puller	0 to 1	0: Cylinder ON 1: Cylinder OFF After the completion of setting of the cylinder function, return the screen to the sewing screen and depress the back part of pedal.
U401	Stitch-length input unit	0 to 2	0:Stitch length (mm) 1:Number of stitches per inch 2:Number of stitches in 3 cm
U402	Automatic lock time	0 to 300 second	This memory switch data item is used for setting the period of time to be passed, in the state the operation panel is not operated, before the automatic lock function is actuated.
U403	Automatic OFF of the back light	0 to 20	This memory switch data item is used for setting the period of time to be passed, in the state the operation panel is not operated, before the back light for the operation panel is automatically turned OFF. 0 : Not turn OFF automatically 1 - 20 : Period of time until the back light is automatically turned OFF (in minute)
U404	Selection of display between the "part number and process" and "comment"	0 to 1	This memory switch data item is used for selecting either the "part number and process" or the "comment" is displayed on the sewing screen. 0: Part number and process 1: Comment
U406	Language selection	-	Not selected / Japanese / English / Simplified Chinese / Un selected 日本語 English 中文 简体字 Spanish / German / French / Italian / Español Deutsch Français Italiano Turkish Türkçe
U407	Operation sound for the operation panel	0 to 1	0 : OFF 1 : ON

#### 4-5-2. Counter function

This function counts sewing in the predetermined unit and gives a visible alarm on the screen when the pre-set value is reached.

The following counters can be used.

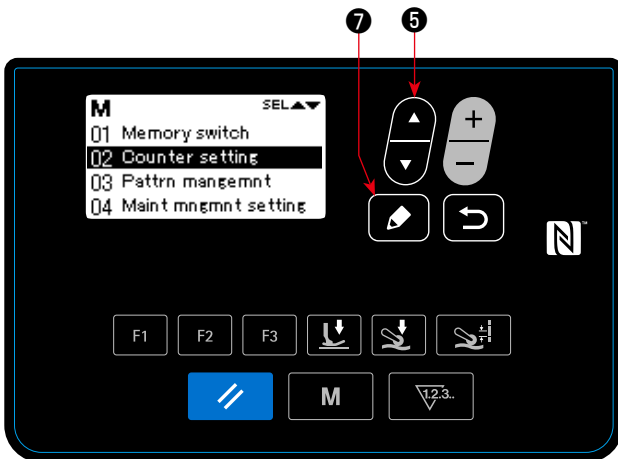
Display on the sewing screen	Display on the counter setting screen	Content
		<p><b>Sewing counter (count-up counter)</b></p> <p>The current value shown on the counter increases one by one. When the current value reaches the set value, the "count completed" screen is displayed.</p>
		<p><b>Sewing counter (count-down counter)</b></p> <p>The current value shown on the counter decreases one by one. When the current value reaches "0" (zero), the "count completed" screen is displayed.</p>
		<p><b>Pitch time counter</b></p> <p>The current value shown on the counter increases one by one. In addition, the counter value also increases by one every time the preset pitch time is reached.</p>

The timing at which the current value shown on the sewing counter is as shown below. It can be changed over according to the setting of "U014 Sewing counter function".



Set value of U014	Content
1	The sewing counter increases by one when the back part of pedal is depressed to its 2nd level by the set value of "U183 Number of times of thread trimming for the sewing counter".
2	The sewing counter increases by one when an external input is accepted.
3	The sewing counter increases by one after the sewing machine has repeated the sewing sequence by "U183 Number of times of sewing of materials" (one sewing sequence = when the absence of material is detected after the sewing machine performs sewing of material). If the number of stitches sewn on the material is smaller than "U211 Number of stitches for sewing the material while the sewing counter is enabled", the relevant sewing sequence will be invalid.

## (1) How to set the counter

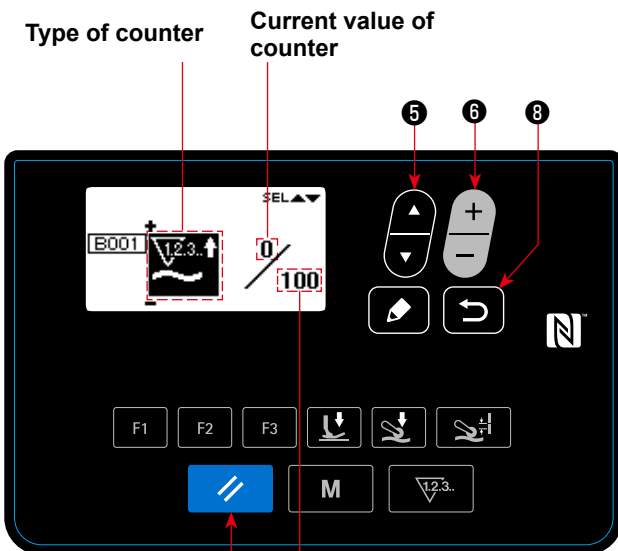
### ① Selecting the counter setting



<Mode screen>







Press  ⑤ on the mode screen. Select "02 Counter setting". Press  ⑦ to display the counter setting screen.





### ② Setting the type of counter, current value of counter and preset value for counter



② Preset value for counter

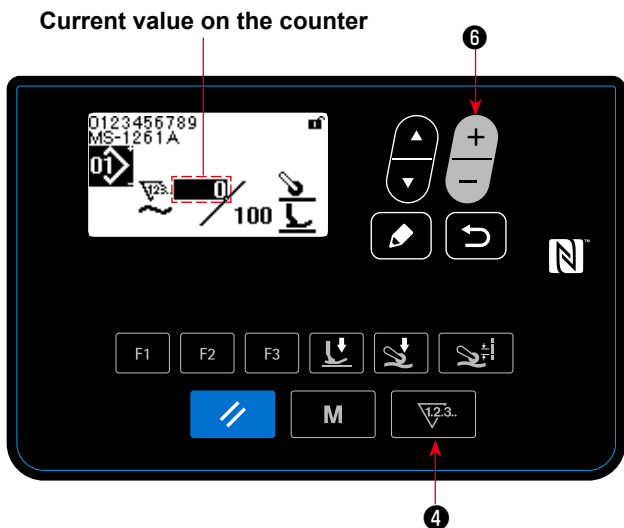
<Counter type selection screen>

1. The type of counter can be selected by pressing  ⑥.
2. Select the target item by pressing  ⑤. The value of the item you have selected can be changed by pressing  ⑥. If  ② is pressed while the current value or set value of the sewing counter is selected, the current value or set value can be reset to "0" (zero).
3. When  ⑧ is pressed, the screen returns to the mode screen. When  ⑧ is pressed again, the screen returns to the sewing screen.

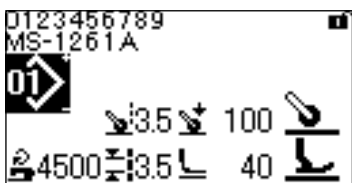
Type of counter	Setting item	Setting range
Sewing counter (Count-up counter) (Count-down counter)  	Current value	0 to 9999
	Set value	0 to 9999
Pitch time counter  PT	Pitch time	1.0 to 999.9 (Unit: Second)
Counter unused 	(No setting item)	



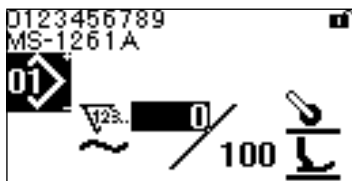
**(2) Displaying the sewing screen under the counter display mode**



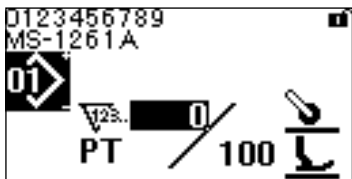
< Sewing screen (display of the sewing counter) >



Pattern display



Sewing counter



Pitch time counter

1. When ④ is pressed on the sewing screen, the screen changes over to the counter display.

① In the case of using the sewing counter

2. When the display changes over to the sewing counter display, the current value is brought in the "selected state". The current value can be

changed by pressing ⑥ .

When ④ is pressed, the display returns to the pattern display.

② In the case of using the pitch time counter

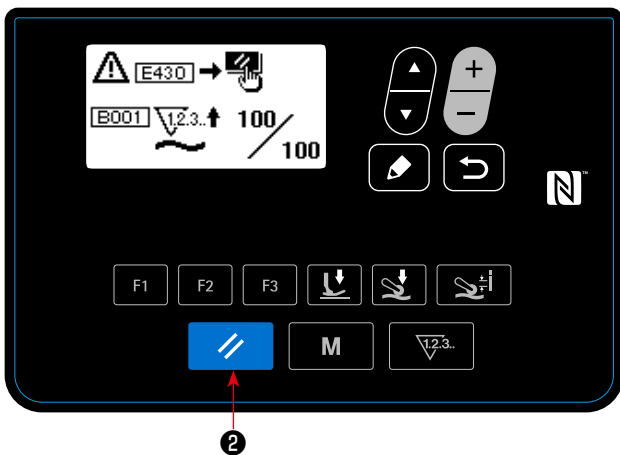
2. When the display changes over to the pitch time counter display, the set value is brought in the "selected state".

When ④ is pressed while the set value is being selected, the current value can be changed.

When ⑥ is pressed, the value that is in the "selected state" can be changed.

When ④ is pressed while the current value is being selected, the display returns to the pattern display.

### (3) How to reset the count-completion state



<Count-completion screen>

When the predetermined conditions are satisfied during sewing, the count-completion screen is displayed.

The counter is reset by pressing  ②.


Then, the mode is returned to the sewing mode. In this mode, the counter starts counting again.

### 4-5-3. Cylinder function of the cloth puller

The pressure of the cloth puller can be increased / decreased by changing over the set value of U231. By adjusting the set value of U231 in combination with the set value of the cloth puller pressure key, the pressure of the cloth puller can be set as given in the table below. It should also be remembered that the air cylinder should be placed in OFF when sewing a light-weight material.



Air cylinder (U231)	Cloth puller pressure	
	MAX (160)	MIN (0)
ON (0)	23 kgf	11 kgf
OFF (1)	12 kgf	0 kgf

\* In the case the air pressure is set to 0.3 MPa  
Return the screen to the sewing screen. Depress the back part of the pedal to reflect the changeover you have carried out on the previous screen.

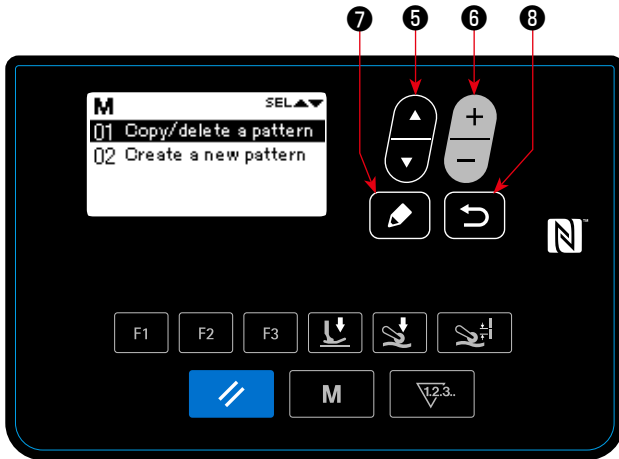
 The air pressure should be set to 0.3 MPa or less. If the sewing machine is used with a higher air pressure, the machine failure can be caused.

#### 4-5-4. How to copy / newly create a pattern

1. Displaying the sewing pattern management screen


Press  5 on the mode screen. Select "03 Sewing pattern management". Then, press  7 to display the sewing pattern management screen.

##### ① In the case of copying a pattern








<Sewing pattern edit screen>

2. Displaying the sewing pattern copy / delete screen

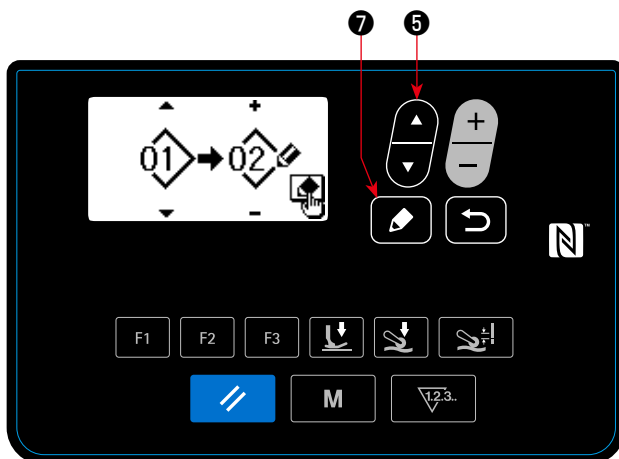
Press  5 . Select "01 Copying / deleting a pattern". Then, press  7 to display the sewing pattern copy / delete screen.

3. Performing copying

Select the pattern number you want to use as the copy source by pressing  5 . Also select the pattern number you want to use as the copy destination by pressing  6 . Then, press  7 to perform copying.

When  8 is pressed, the message "Not copied" is displayed. When  8 is pressed again, the screen returns to the sewing pattern management screen

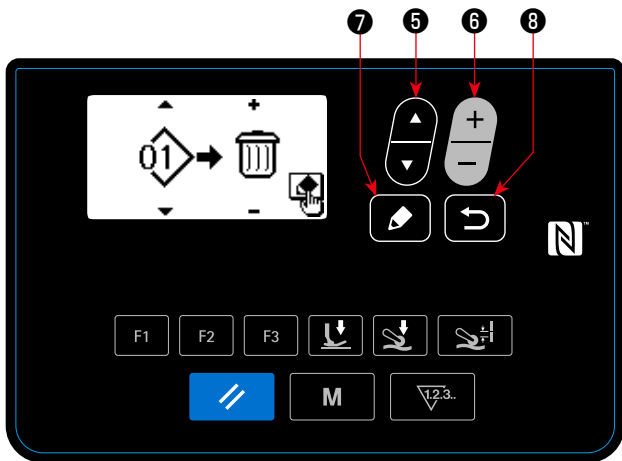
##### ② In the case of deleting a pattern



<Sewing pattern copy / delete screen>

2. Displaying the sewing pattern copy / delete screen

Press  5 . Select "01 Copying / deleting a pattern". Then, press  7 to display the sewing pattern copy / delete screen.



<Sewing pattern copy / delete screen>

### 3. Performing deletion

Select the pattern number you want to delete by pressing 5. Also select the recycle bin by pressing 6. Then, press 7 to perform deletion.

When 8 is pressed, the message "Not deleted" is displayed. When 8 is pressed again, the screen returns to the sewing pattern management screen.



If there is only one sewing pattern, the pattern deleting function will be disabled.

### ③ In the case of creating a new pattern

#### 2. Displaying the new pattern creation screen

Select 5. Select "02 Creating a new pattern". Then, press 7 to display the new pattern creating screen.

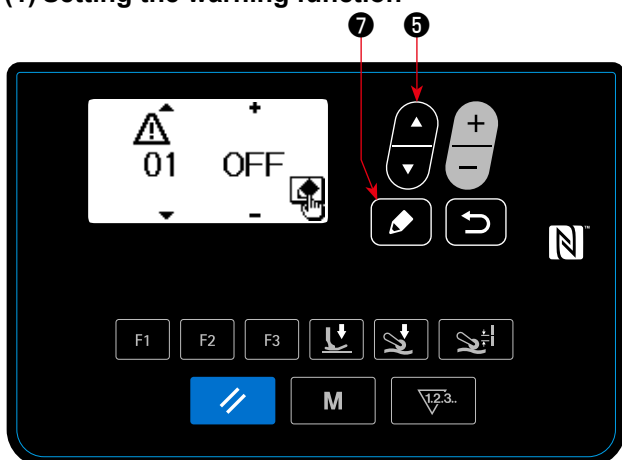
#### 3. Performing creation of a new pattern

Select the shape you want to create by pressing 5. Then, select a pattern number you want to assign to the new pattern by pressing 6. Then, the new pattern can be created by pressing 7. When 8 is pressed, the message "New pattern is not created" is displayed. When 8 is pressed again, the screen returns to the sewing pattern management screen.

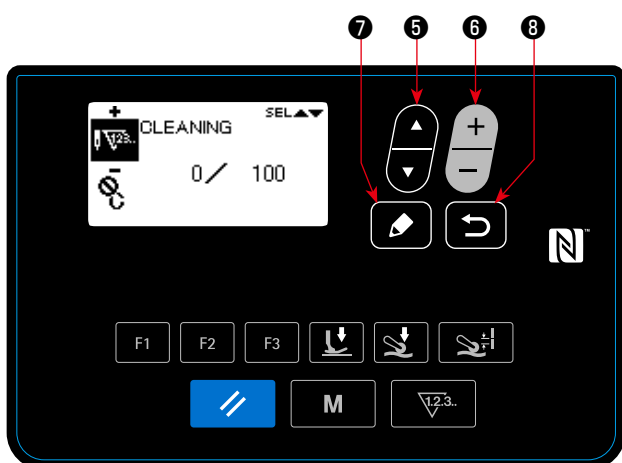
## 4-5-5. How to use the warning function

Reminder for maintenance can be generated after the sewing machine has been used for a predetermined period of time. Five different warning messages can be generated at the maximum depending on the generation conditions.

### (1) Setting the warning function






<Warning number selection screen>



<Warning counter details setting screen>

#### ① Selecting the warning number

Select "04 Maintenance setting" by pressing 



 on the mode screen. Then, display the warning number selection screen by pressing 



 .


After the warning number selection screen is displayed, the warning number can be selected by

pressing   .



#### ② Warning is canceled

The warning counter details setting screen is displayed by pressing   on the warning number selection screen.

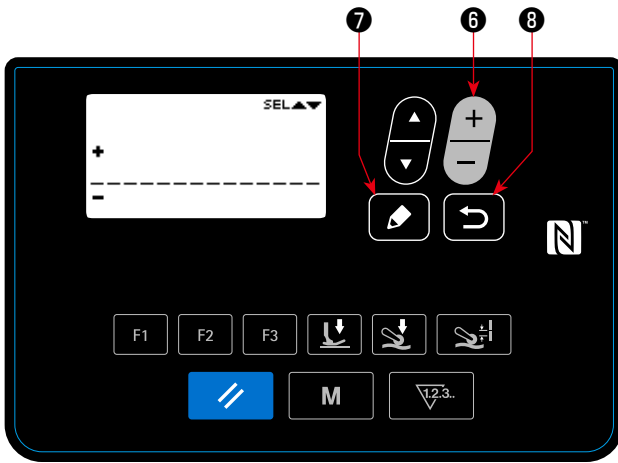
After the warning number selection screen is displayed, select the target item by pressing   .

Set the details of the target item by pressing 

 . The items described below can be set.


When   is pressed, the screen returns to the warning number selection screen.


Setting items	Setting range		
Clearing of the counter by operator	Allowed (ON) · Prohibited (OFF)		
Comment	0 - 16 characters		
Object of counter	Number of stitches (in increment of 1000 stitches)	Operating time (unit: Hour)	Energizing time (unit: Hour)
Numerator for counter	1 to 99999		
Dominator for counter	1 to 99999		



<Warning counter comment input screen>


### ③ Adding a comment to the warning

Select the comment on the warning counter details setting screen. Then press  ⑦ to display the warning counter comment input screen. The comment you input will be displayed on the screen when the relevant warning is generated. It is therefore recommended to input a comment that represents details of the maintenance (for example, CLEANING) for convenience.

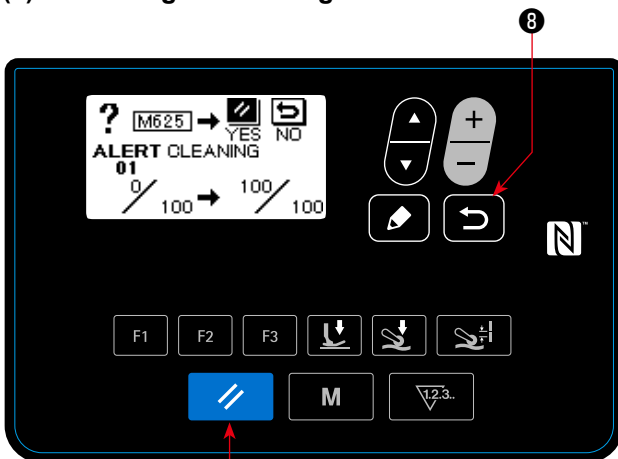
When  ⑧ is pressed, the screen returns to the warning counter details setting screen.

### ④ Enabling the warning function

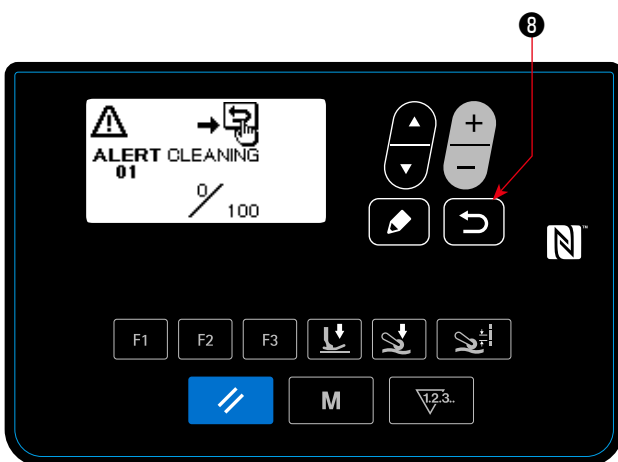
Select "ON" on the warning number selection

screen by pressing  ⑥ to enable the warning function.

## (2) Cancelling the warning function



<Warning screen (in the case clearing of the counter by operator is allowed)>




<Warning screen (in the case clearing of the counter by operator is prohibited)>


### ① A warning is generated

When the warning counter value reaches the set value at the completion of sewing, the warning screen is displayed.

### ② Closing the warning screen

The warning counter is reset and the screen is returned to the previous screen by pressing .

 ② on the warning screen.

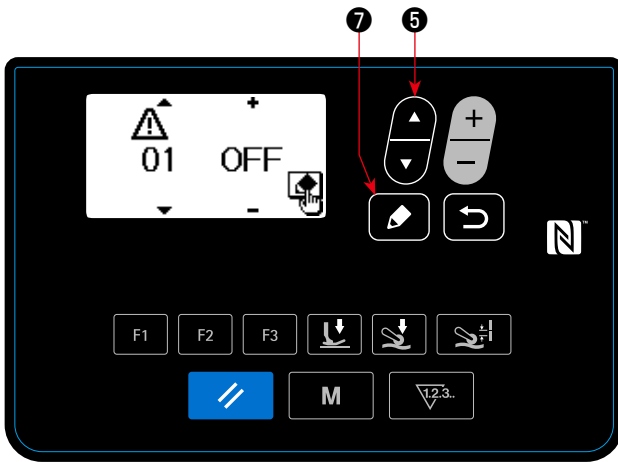
If  ⑧ is pressed, the screen will return to the previous screen without resetting the warning counter. In this case, the warning screen will be displayed every time the sewing machine completes sewing until the warning counter is reset.



**Operation of the reset key (as described in ②.) is enabled in the case clearing of the counter by operator is allowed.**

### (3) Resetting the warning when no warning is generated

In order to reset the warning in the case that no warning is generated, return the numerator of the counter to the same value with the dominator of the counter on the warning counter details setting screen, or carry out the following steps of procedure.



<Warning number selection screen>

#### ① Selecting the warning number

Select "04 Maintenance setting" by pressing



5 on the mode screen. Then, display the warning number selection screen by pressing



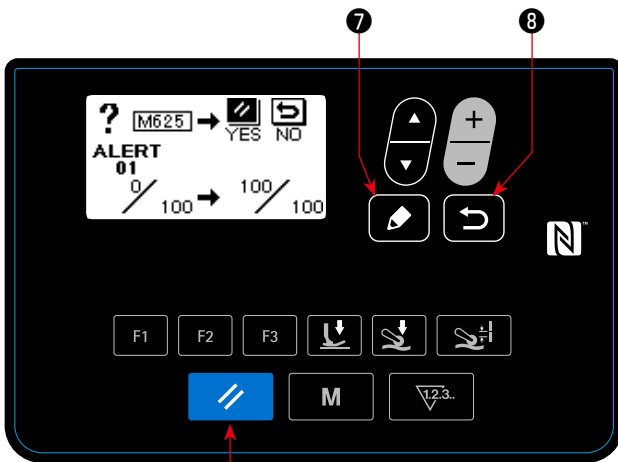
7.

After the warning number selection screen is displayed, the warning number can be selected by

pressing



5.



<Warning counter clearing screen>

#### ② Setting details of the warning

When



7 is pressed on the warning number selection screen, the warning counter clearing screen is displayed.

After the warning counter clearing screen is displayed, reset the warning counter and return the screen to the previous screen by pressing



2.

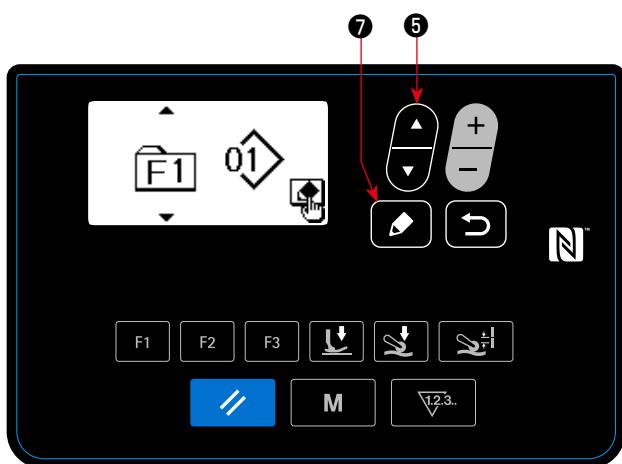
If



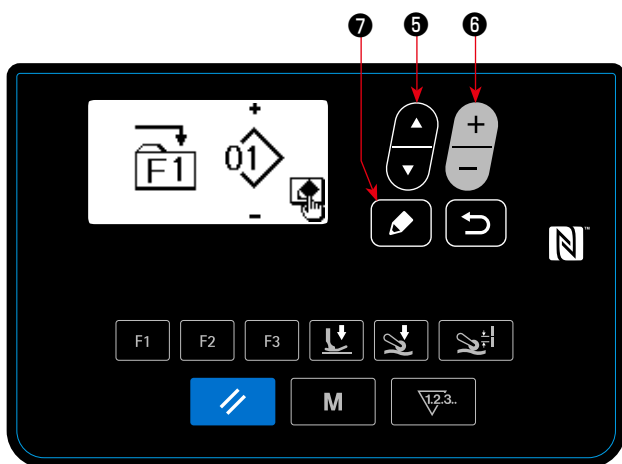
8 is pressed, the screen will return to the previous screen without resetting the warning counter.

## 4-5-6. How to use the F key

### (1) How to use the F key



<F key number selection screen>



<F key registration data selection screen>

#### ① Displaying the F key number selection screen

Select "05 F Key registration" by pressing



⑤ on the mode screen. Then, press



⑦ to

display the F key number selection screen.

#### ② Displaying the F key registration data selection screen

Select the F key number by pressing



⑤ on

the F key number selection screen. Then, press



⑦ to display the F key registration data

selection screen.

#### ③ Carrying out registration

Select the data / function you want to register to

the F key by pressing



⑥ on the F key reg-

istration data selection screen. Then, registration is carried out (the selected data / function will be returned to the unregistered state if the recycle bin is selected) and the screen returns to the pre-

vious screen by pressing



⑦.



The F key registration data selection screen can also be displayed by keeping the F key held pressed for one second on the sewing screen.

In this case, the F key registration data selection screen will return to the sewing screen if the



⑦ (or






⑧ ) is pressed.



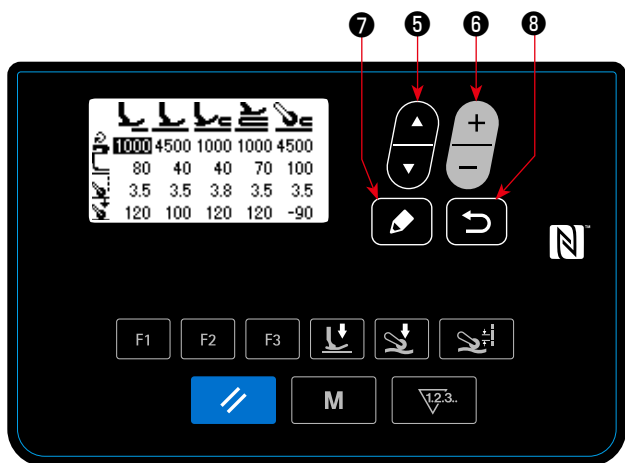
**(2) Data / function that can be registered to the F key**

The following data / function can be registered to the F key.

The F key can be operated on the sewing screen, sewing data edit screen and the memory switch setting screen.




Data / function	Function
Pattern	A pattern is selected.
Sewing data	The sewing data edit screen is displayed.
Memory switch (Level 1)	The memory switch setting screen is displayed.
One-touch function * 	Step of the step sewing pattern proceeds to the next one.
Sewing data list display function 	The list of sewing data is displayed.
Cloth puller up / down travel function * 	The cloth puller is moved upward (or downward). This function is useful for lifting the cloth puller in the case you do not want to use the cloth puller temporarily.
Recycle bin	(cannot be used)


\*: It is the function that can only be on the sewing screen.



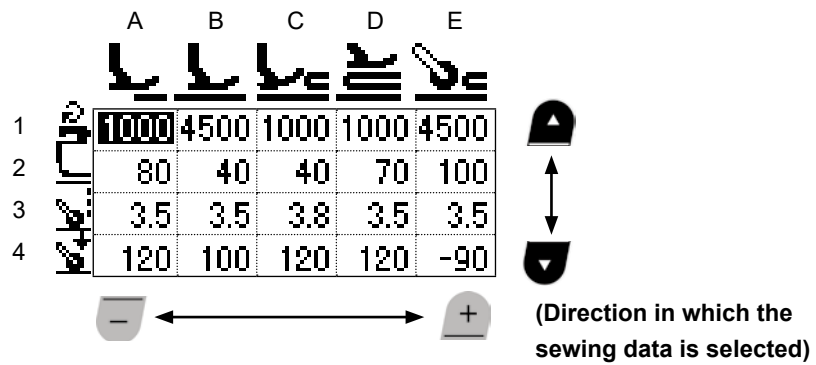
<Sewing data list display screen>

When the F key to which the "sewing data list display function" is registered is pressed, the sewing data list display screen appears.

Select the sewing data by pressing "  5 (or  6)". Then, press  7 to display the sewing data edit screen.

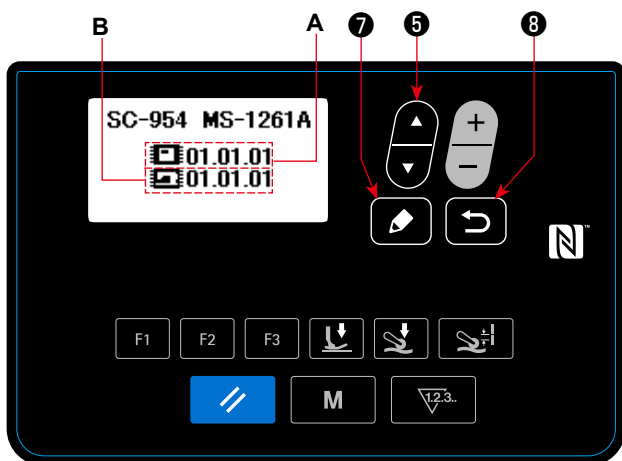
If  8 is pressed, the screen will return to the sewing screen.

The positions at which the respective sewing data items are displayed on the sewing data list display screen are as follows.







	A	B	C	D	E
1	S031 Sewing speed for starting sewing of the top end of material	S004 Limit of sewing speed	S012 Multi-layered section sewing speed	S012 Multi-layered section sewing speed	S004 Limit of sewing speed
2	S032 Presser foot pressure for starting sewing of the top end of material	S005 Presser foot pressure	S005 Presser foot pressure	S018 Presser foot pressure for sewing the multi-layered section	S078 Presser foot pressure when the cloth puller runs on the multi-layered section
3	S072 Cloth pulling amount when detecting no material	S006 Cloth pulling amount	S015 Cloth pulling amount when the presser foot runs on the multi-layered section	S019 Cloth pulling amount for sewing the multi-layered section	S070 Cloth pulling amount when the cloth puller runs on the multi-layered section
4	S073 Cloth puller pressure when detecting no material	S007 Cloth puller pressure	S016 Cloth puller pressure when the presser foot runs on the multi-layered section	S020 Cloth puller pressure for sewing the multi-layered section	S071 Cloth puller pressure when the cloth puller runs on the multi-layered section

#### 4-5-7. Checking the version information



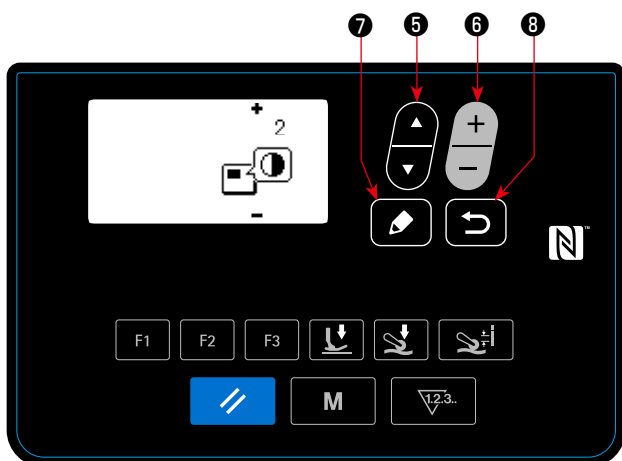
<Version information screen>

- ① Select "06 Version display" by pressing  ⑤ on the mode screen. Then, press  ⑦ to display the version information screen. **A** represents the version of the panel software. **B** represents the version of the main-body software.
- ② Press  ⑧ again to return the current screen to the sewing screen.  
Press  ⑧ yet again to return the current screen to the mode screen.










The version of the sewing machine is subject to change in accordance of improvement, etc. without prior notice.

#### 4-5-8. Adjusting the contrast of the LCD of the operation panel



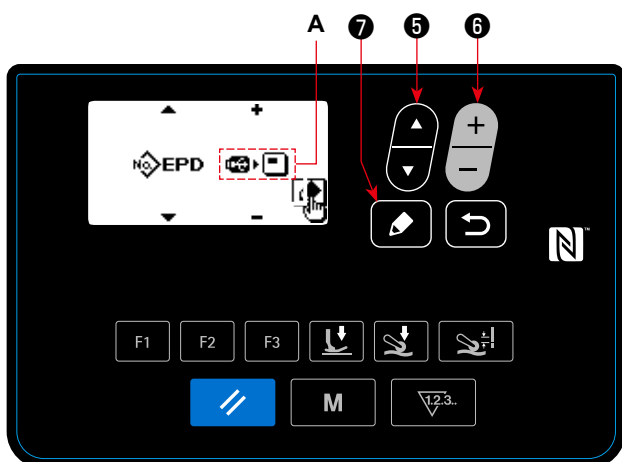
<Contrast setting screen>

- ① **Selecting the contrast setting function**  
Select "07 Contrast setting" by pressing  ⑤ on the mode screen. Then, press  ⑦ to display the contrast setting screen.
- ② **Setting the contrast**  
Set the contrast by pressing  ⑥.  
Setting range : 0 (bright) to 4 (dark)  
If the  ⑤ is pressed, the entire screen will be turned white to allow you to check for unevenness of display on the screen.  
(When the  ⑤ is pressed again, the screen returns to the previous display.)
- ③ Press  ⑧ to confirm the data and return the current screen to the sewing screen.  
Press  ⑧ yet again to return the current screen to the mode screen.

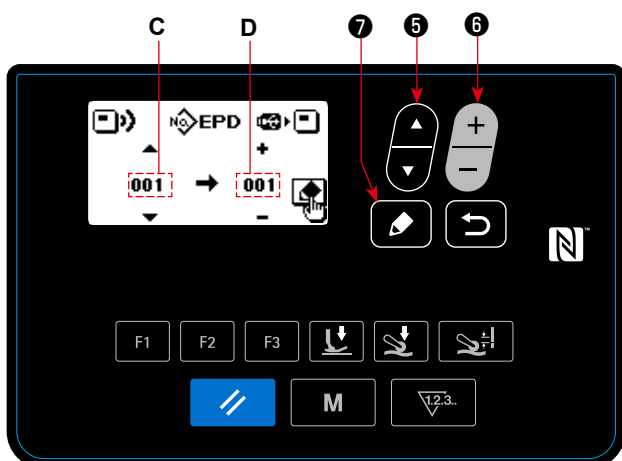
## 4-5-9. Communication function

Data can be input/output by means of a USB thumb drive.

### (1) How to use the communication function





<Communication data/communication direction selection screen>



<Communication data number selection screen>


#### ① Selecting the communication function


1. Select "08 Communication" by pressing  **5** on the mode screen. Then, press  **7** to display the communication data / direction selection screen.


#### ② Select the communication direction.

1. Select the communication data **A** by pressing






: Data stored on the operation panel is written to the USB thumb drive.

: Data stored on the USB thumb drive is written to the operation panel.

2. Press  **7** to display the communication data number selection screen.


#### ③ Selecting the target data number

1. Select the source data No. **C** by pressing  **5**.
2. Select the destination data number **D** by pressing  **6**.
3. Press  **7** to display the during-communication screen and write the data.

After the completion of writing, the current screen returns to the communication data number selection screen.

\* If the "POWER OFF" screen prompt is displayed after the completion of writing, turn the power OFF.

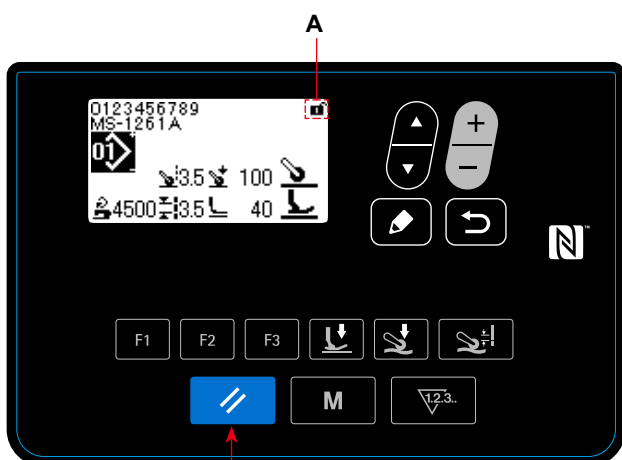
### (2) List of communication data formats

Data name	Pictograph	Extension	Description of data
Sewing data		SC00XXX.EPD (XXX:001 to 999)	MS-1261A-specific sewing data format for sewing shape and stitch length created on the sewing machine

## 4-6. Information


### 4-6-1. Simple lock



Once the simple lock is enabled, key operation can be disabled if no operation is carried out on the sewing screen for a certain period of time, thereby preventing maloperation.



②

<Sewing screen>

The status of the simple lock can be changed over between enable/disable by keeping  ② held pressed for one second on the sewing screen. Pictograph display **A** will be as shown below:

-  : Simple lock is enabled
-  : Simple lock is disabled

- \* The time to be elapsed until the simple lock is enabled can be set with the memory switch U402. Refer to "[4-5-1. Memory switch data](#)" p. 47 for details.
- \* Even if the simple lock is disabled once, the status of the simple lock will return to "enable" if no operation is carried out in a certain period of time. In the case you do not want to use the simple lock function, set U402 to 0 (zero).

#### 4-7. List of errors

Error code	Description of error	Cause	Item to be checked
E000	Execution of data initialization (This is not an error.)	<ul style="list-style-type: none"> <li>In the case the control box is changed.</li> <li>In the case the initialization operation is executed.</li> </ul>	Not a failure
E007	Motor overload	<ul style="list-style-type: none"> <li>In the case the machine head is locked.</li> <li>In the case of sewing extra-heavy weight material that exceeds the guaranteed material thickness.</li> <li>In the case the motor fails to rotate.</li> <li>In the case of the motor or driver failure.</li> </ul>	<ul style="list-style-type: none"> <li>Check whether the pulley is entangled with thread.</li> <li>Check whether the motor output connector has loosened.</li> <li>Check whether the motor can be turned smoothly by hand.</li> </ul>
E011	Media is not inserted	<ul style="list-style-type: none"> <li>In the case no media is inserted.</li> </ul>	<ul style="list-style-type: none"> <li>Turn the power OFF and check for a media.</li> </ul>
E012	Read error	<ul style="list-style-type: none"> <li>In the case data stored on the media cannot be read.</li> </ul>	<ul style="list-style-type: none"> <li>Turn the power OFF and check for a media.</li> </ul>
E013	Write error	<ul style="list-style-type: none"> <li>In the case data cannot be written on the media.</li> </ul>	<ul style="list-style-type: none"> <li>Turn the power OFF and check for a media.</li> </ul>
E014	Write protect	<ul style="list-style-type: none"> <li>In the case the media is placed in the write-prohibition state.</li> </ul>	<ul style="list-style-type: none"> <li>Turn the power OFF and check for a media.</li> </ul>
E015	Format error	<ul style="list-style-type: none"> <li>In the case formatting of the media cannot be carried out.</li> </ul>	<ul style="list-style-type: none"> <li>Turn the power OFF and check for a media.</li> </ul>
E016	External media over-capacity	<ul style="list-style-type: none"> <li>In the case the capacity of media is not enough.</li> </ul>	<ul style="list-style-type: none"> <li>Turn the power OFF and check for a media.</li> </ul>
E019	File size over	<ul style="list-style-type: none"> <li>In the case of attempting to read the file that exceeds the maximum possible size from the USB thumb drive to the operation panel.</li> </ul>	<ul style="list-style-type: none"> <li>Turn the power OFF and check the USB thumb drive.</li> </ul>
E022	File undetected	<ul style="list-style-type: none"> <li>In the case of attempting to read the file that is not stored in the USB thumb drive to the operation panel.</li> </ul>	
E031	Air pressure drop	<ul style="list-style-type: none"> <li>In the case the air pressure has dropped.</li> </ul>	
E032	File compatibility error	<ul style="list-style-type: none"> <li>In the case the file is not compatible.</li> </ul>	<ul style="list-style-type: none"> <li>Turn the power OFF and check for a media.</li> </ul>
E071	Motor output connector disconnection	<ul style="list-style-type: none"> <li>The motor connector has slipped off.</li> </ul>	<ul style="list-style-type: none"> <li>Check for looseness and slip-off of the motor output connector.</li> </ul>
E079	Overload operation error	<ul style="list-style-type: none"> <li>An excessive load is applied to the main shaft motor.</li> </ul>	
E081	Cloth puller motor deviation error	<ul style="list-style-type: none"> <li>Load applied to the cloth puller motor is too large for the motor to operate.</li> </ul>	<ul style="list-style-type: none"> <li>Check whether the cloth puller motor runs smoothly.</li> </ul>
E204	USB thumb drive insertion	<ul style="list-style-type: none"> <li>This error message is displayed in the case the sewing machine is started while a USB thumb drive remains in the sewing machine.</li> </ul>	<ul style="list-style-type: none"> <li>Remove the USB thumb drive.</li> </ul>

<b>Error code</b>	<b>Description of error</b>	<b>Cause</b>	<b>Item to be checked</b>
E231	"With no magnetic-property adjustment data" error	<ul style="list-style-type: none"> <li>• In the case the magnetic property of the motor is not adjusted after the motor replacement.</li> <li>• In the case the motor magnetic property adjustment data cannot be read.</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust the magnetic property of the motor. (Refer to the Engineer's Manual for details.)</li> <li>• Check the motor-encoder connector.</li> </ul>
E302	Tilt detection switch	<ul style="list-style-type: none"> <li>• In the case the Tilt detection switch is turned ON when the power to the sewing machine remains ON.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the machine head is tilted before turning OFF the power switch (The sewing machine operation is prohibited for the sake of safety.).</li> </ul>
E303	Meniscus sensor error	<ul style="list-style-type: none"> <li>• In the case the meniscus sensor signal cannot be detected.</li> </ul>	<ul style="list-style-type: none"> <li>• Check for a break in the motor encoder connector.</li> </ul>
E402	Deletion disabled error		
E407	Wrong password	<ul style="list-style-type: none"> <li>• In the case the password you have entered is not correct.</li> </ul>	
E411	Step sewing pattern registration disabled error	<ul style="list-style-type: none"> <li>• In the case of attempting to create 11 or more step sewing patterns.</li> </ul>	
E414	Already existing file	<ul style="list-style-type: none"> <li>• In the case of attempting to creating the keylock resetting file which has the name that is same as the existing file in the USB thumb drive.</li> </ul>	
E415	File name contains an unusable character(s)	<ul style="list-style-type: none"> <li>• In the case of attempting to assign a name that contains an unusable character(s) when creating a file.</li> </ul>	
E416	Enter a file name	<ul style="list-style-type: none"> <li>• In the case of attempting to confirm the created file without assigning a name to it.</li> </ul>	
E489	Internal error		
E499	Simplified program fault		
E703	Sewing machine model error	<ul style="list-style-type: none"> <li>• In the case the model name of sewing machine does not match the model name registered on the operation panel.</li> </ul>	
E704	Data failure (system-version mismatch)	<ul style="list-style-type: none"> <li>• In the case the system version does not match the machine head setting.</li> </ul>	<ul style="list-style-type: none"> <li>• Re-write the system version to the applicable one.</li> </ul>
E706	Operation panel fault		
E731	Motor hole sensor fault	<ul style="list-style-type: none"> <li>• In the case the motor signal is not input properly.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the motor signal connector has loosened or slipped off.</li> <li>• Check whether the motor signal cord has broken by being caught under the machine head.</li> <li>• Check whether the insertion direction of the motor encoder connector is correct.</li> </ul>
E733	Reverse rotation of motor	<ul style="list-style-type: none"> <li>• This error occurs in the case the motor rotates at the speed of 500 sti/min or more, in the direction opposite to the indicated direction of rotation.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the main shaft motor encoder wire connection is correct.</li> <li>• Check whether the main shaft motor wire connection for power is correct.</li> </ul>
E750	Sewing machine stops	<ul style="list-style-type: none"> <li>• In the case the safety switch for the optional input is pressed.</li> </ul>	

<b>Error code</b>	<b>Description of error</b>	<b>Cause</b>	<b>Item to be checked</b>
E811	Over-voltage	<ul style="list-style-type: none"> <li>• In the case a voltage that is equal to or more than the guaranteed voltage is input.</li> <li>• In the case a voltage of 400 V is applied to the box of "CE: 230 V".</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the supply voltage of "rated supply voltage <math>\pm 10</math> % or more" is applied.</li> </ul> <p>In the above-described cases, the power PCB has broken.</p>
E813	Low voltage	<ul style="list-style-type: none"> <li>• In the case a voltage that is equal to or less than the guaranteed voltage is input.</li> <li>• In the case the internal circuit has broken due to the application of over-voltage.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the supply voltage of "rated supply voltage -10 % or less" is applied.</li> </ul> <p>In the above-described cases, the power PCB has broken.</p>
E815	Regenerative resistor is not connected	<ul style="list-style-type: none"> <li>• In the case the regenerative resistor is not connected.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the regenerative resistor is connected to the regenerative resistor connector (CN11).</li> </ul>
E900	Protection of the main shaft motor against IPM overcurrent	<ul style="list-style-type: none"> <li>• Main shaft motor maloperation.</li> </ul>	
E902	Main shaft overcurrent		
E903	85-V power supply fault	<ul style="list-style-type: none"> <li>• In the case the 85-V voltage is not properly output.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the motor is faulty</li> <li>• Check the F2 fuse.</li> </ul>
E904	24-V power supply fault	<ul style="list-style-type: none"> <li>• In the case the 24-V voltage is not properly output.</li> </ul>	
E910	The presser motor origin retrieval error	<ul style="list-style-type: none"> <li>• In the case the presser motor has failed to return to its origin.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the presser setting is correct (memory switch No. 23).</li> <li>• Check whether the presser motor origin has been correctly adjusted.</li> </ul>
E912	Main shaft motor speed detection error	<ul style="list-style-type: none"> <li>• In the case the main shaft motor runs at a speed that exceeds the assumed speed.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether connection encoder wire of the main shaft motor is correct.</li> <li>• Check whether connection of the main shaft motor wire is correct.</li> </ul>
E915	Failure of communication with operation panel	<ul style="list-style-type: none"> <li>• In the case the operation panel connector is not inserted properly.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether CN64 of the CTL PCB or CN200 of the panel is connected properly or whether the cable has broken.</li> </ul>
E918	Main PCB temperature error	<ul style="list-style-type: none"> <li>• The temperature of the CTL PCB is excessively high.</li> </ul>	
E922	Main shaft control failure	<ul style="list-style-type: none"> <li>• In the case the main shaft fails to operate as assumed.</li> </ul>	
E924	Motor driver fault	<ul style="list-style-type: none"> <li>• In the case the motor driver has broken.</li> </ul>	
E946	Machine-head EEPROM write error	<ul style="list-style-type: none"> <li>• The machine head PCB is not properly connected.</li> </ul>	<ul style="list-style-type: none"> <li>• Check the connector CN32 for looseness of slip-off.</li> </ul>
E955	Current sensor fault	<ul style="list-style-type: none"> <li>• Main shaft motor failure</li> <li>• Current sensor failure.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the main shaft motor has short-circuited.</li> </ul>
E961	Cloth puller presser motor deviation error	<ul style="list-style-type: none"> <li>• Load applied to the cloth puller presser motor is too large for the motor to operate.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the cloth puller presser motor runs smoothly.</li> </ul>
E962	Presser motor deviation error	<ul style="list-style-type: none"> <li>• In the case the presser fails to operate because of an excessive load.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the presser motor runs smoothly.</li> </ul>
E963	IPM temperature error	<ul style="list-style-type: none"> <li>• The temperature of the CTL PCB is excessively high.</li> </ul>	
E967	Main shaft motor temperature fault	<ul style="list-style-type: none"> <li>• Load applied to the main shaft motor is excessively large.</li> </ul>	



<b>Error code</b>	<b>Description of error</b>	<b>Cause</b>	<b>Item to be checked</b>
E971	Protection of the cloth puller motor against IPM overcurrent	<ul style="list-style-type: none"> <li>• Cloth puller motor maloperation.</li> </ul>	
E972	Cloth puller presser motor overload error	<ul style="list-style-type: none"> <li>• Load applied to the cloth puller presser motor is excessively large.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the cloth puller presser motor runs smoothly.</li> </ul>
E973	Protection of the cloth puller motor against IPM overcurrent	<ul style="list-style-type: none"> <li>• Cloth puller motor maloperation.</li> </ul>	
E974	Cloth puller motor overload error	<ul style="list-style-type: none"> <li>• Load applied to the cloth puller motor is excessively large.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the feed driving motor runs smoothly.</li> </ul>
E975	Presser foot motor overcurrent error	<ul style="list-style-type: none"> <li>• Presser motor maloperation.</li> </ul>	
E976	Presser foot motor overload	<ul style="list-style-type: none"> <li>• In the case the presser motor is applied with an excessive load.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the presser motor runs smoothly.</li> </ul>
E977	CPU fault	<ul style="list-style-type: none"> <li>• In the case the program is faulty.</li> </ul>	
E978	Network communication fault	<ul style="list-style-type: none"> <li>• Data received from the network has broken.</li> </ul>	
E985	Cloth puller presser motor origin retrieval error	<ul style="list-style-type: none"> <li>• In the case the cloth puller presser motor has failed to travel to its origin.</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether the cloth puller presser motor runs smoothly.</li> </ul>
E999	Main software rewriting	<ul style="list-style-type: none"> <li>• In the case the software has been rewritten.</li> </ul>	<ul style="list-style-type: none"> <li>• This is not an error.</li> </ul>

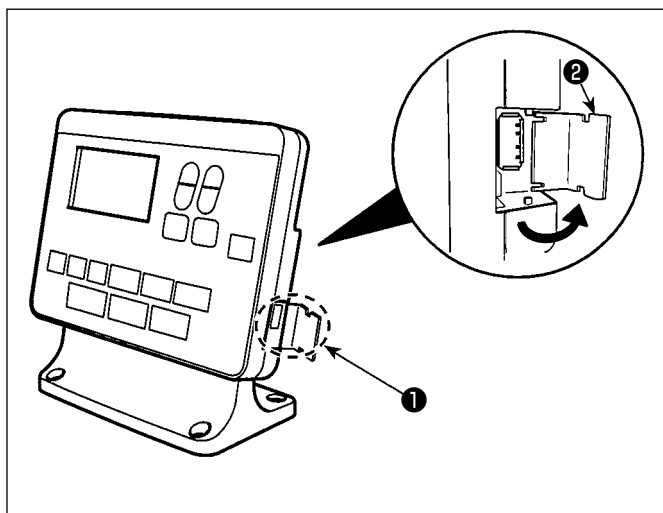
## 4-8. External interface

### 4-8-1. USB

It is possible to copy the sewing data using the commercially-available USB thumb drive.

Refer to "[4-5-9. Communication function](#)" p. 65 for details of how to copy the sewing data on a USB thumb drive.

#### ① Position of the USB connector



#### [USB thumb drive insertion position]

The USB connector is provided on top ① of the operation panel.

To use a USB thumb drive, remove connector cover ② and insert the USB thumb drive into the USB connector.

\* In the case a USB thumb drive is not used, the USB connector should be protected with connector cover ② without exceptions. If dust or the like enters the USB connector, a failure can be caused.

#### ② Precautions to be taken when handling USB devices

- Do not connect to the USB connection terminal other than the USB memory. It may cause failure.
- 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 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.
- Never forcefully insert a USB thumb drive into the USB connector while carefully checking the orientation of the USB thumb drive. Forceful insertion of the USB thumb drive can cause failure.
- JUKI does not compensate for loss of data stored on the USB device caused by using it with this sewing machine.
- In principle, connect only one USB thumb drive to the operation panel. When two or more devices/media are connected/inserted, the machine will only recognize one of them. Refer to the USB specifications.
- Do not turn the power OFF while the data on the USB flash drive is being accessed.

#### ③ USB specifications

- Conform to USB 1.1 standard
- Applicable devices \*1 \_\_\_\_\_ USB memory
- Format supported \_\_\_\_\_ FAT 12, FAT 16, FAT 32
- Applicable medium size \_\_\_ 4.1MB ~ (2TB)
- 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.

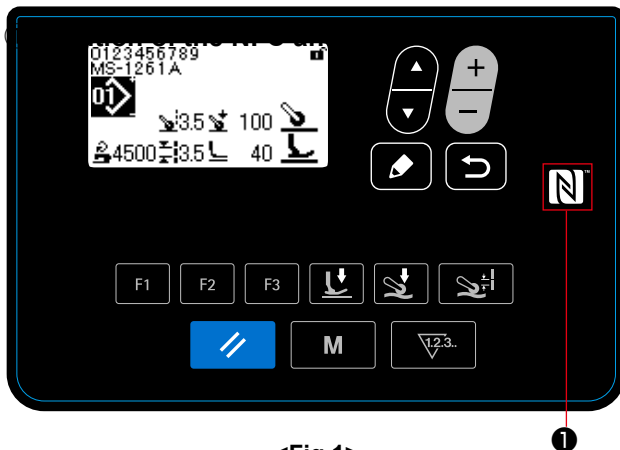
## 4-8-2. NFC

The operation panel supports NFC (Near Field Communication).

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

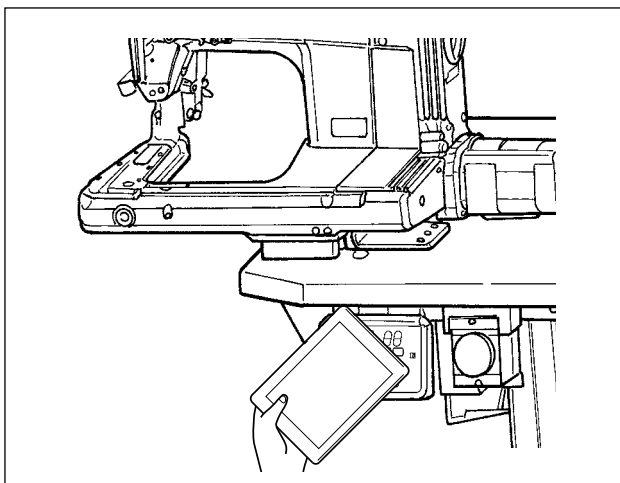
Refer to the Instruction Manual for JUKI Smart App for details of JUKI application for Android [JUKI Smart App].

### ① Position of the NFC antenna



<Fig.1>

In the case of carrying out the NFC communication between the sewing machine and a tablet or smartphone, bring the antenna of the tablet or smartphone near to NFC mark ① as shown in Fig. 2.



<Fig.2>

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

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

### ② Precautions to be taken when handling NFC

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

## 5. Correcting the sewing pattern

### 5-1. Checking the length of stitch sewn without using the cloth puller



- 1) Register "Cloth-puller up/down travel function" to the F key button.

(Refer to **"4-5-6. How to use the F key"** p. 61 for how to carry out registration of function to the F key.)

- 2) At the beginning of lapping of flat portion, sew several stitches with the cloth puller lowered.



- 3) Lift the cloth puller using the F key to which you have registered the "Cloth-puller up/down travel function".

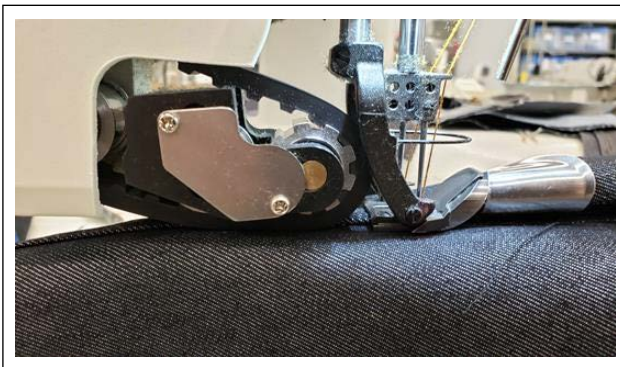
- 4) Carry out sewing with the cloth puller lifted. Check the stitch length.

- 5) Adjust the stitch length to the desired one.

(Refer to **"3-4. Adjusting the stitch length"** p. 8 for how to adjust the stitch length.)



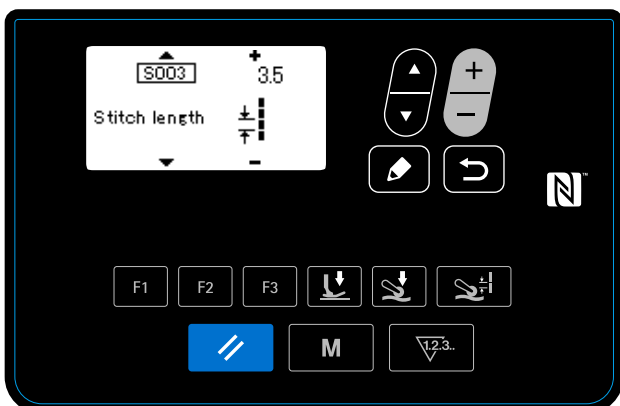
**After the completion of adjustment, be sure to tighten the lock screw.**



- 6) After the adjustment of stitch length to the desired one, lower the cloth puller using the F key to which you have registered "Cloth-puller up/down travel function".

- 7) Check the needle guard.

(Refer to **"3-5. Adjusting the needle guard"** p. 9 for how to adjust the needle guard.)



- 8) Set the stitch length after the adjustment for the Sewing Data No. S003.

## 5-2. Correction of the sewing data

If the finished stitches sewn with the selected sewing pattern data have defects, copy new pattern data and correct it following the procedure described below.

### 5-2-1. Teaching of the multi-layered portion of material

Refer to "[4-4-4. How to carry out teaching of the multi-layered section of material](#)" p. 28 for how to carry out teaching of the multi-layered portion of material.



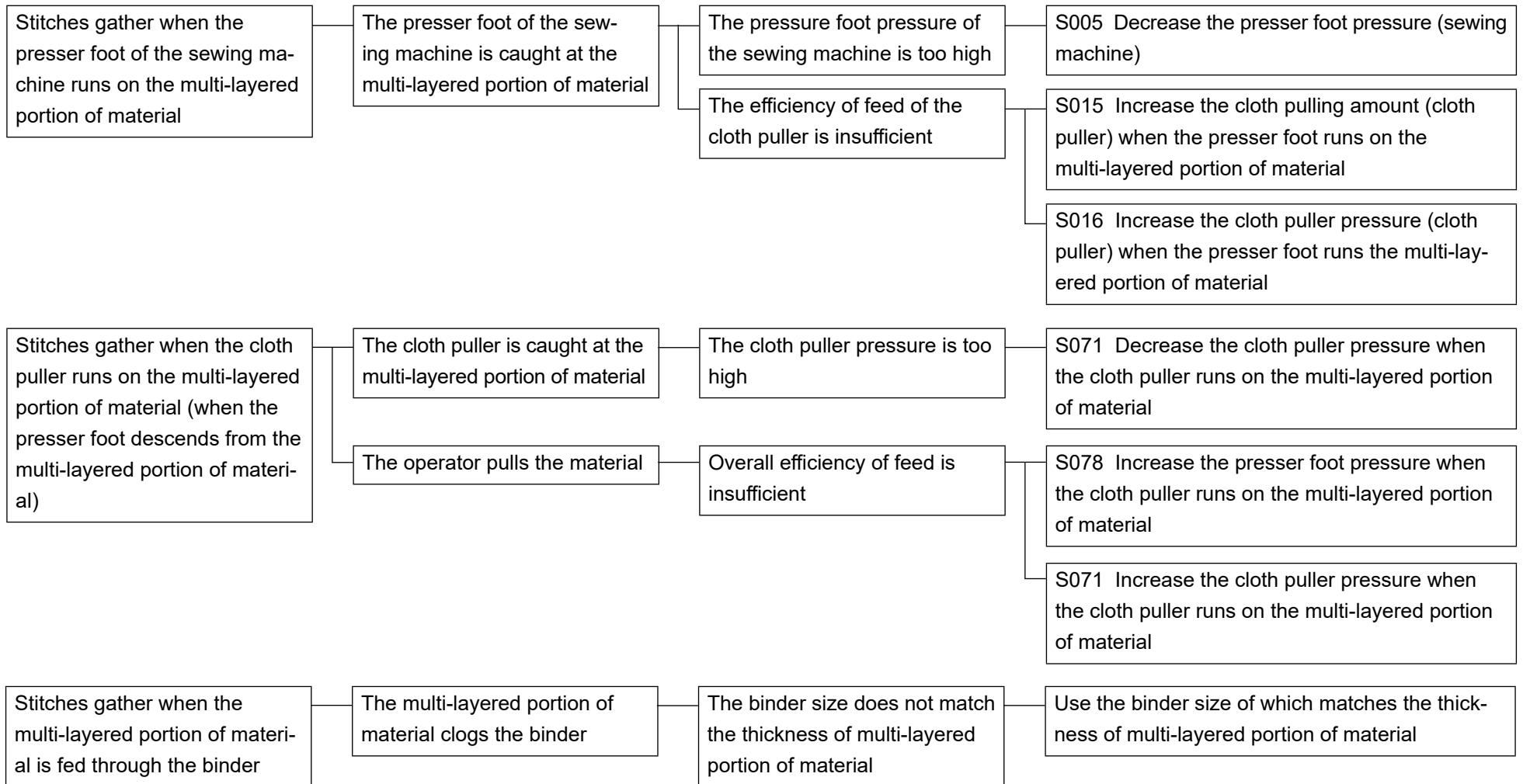
**If the changeover timing is not correct, stitch gathering can be caused.**

### 5-2-2. Adjustment values on the operation panel

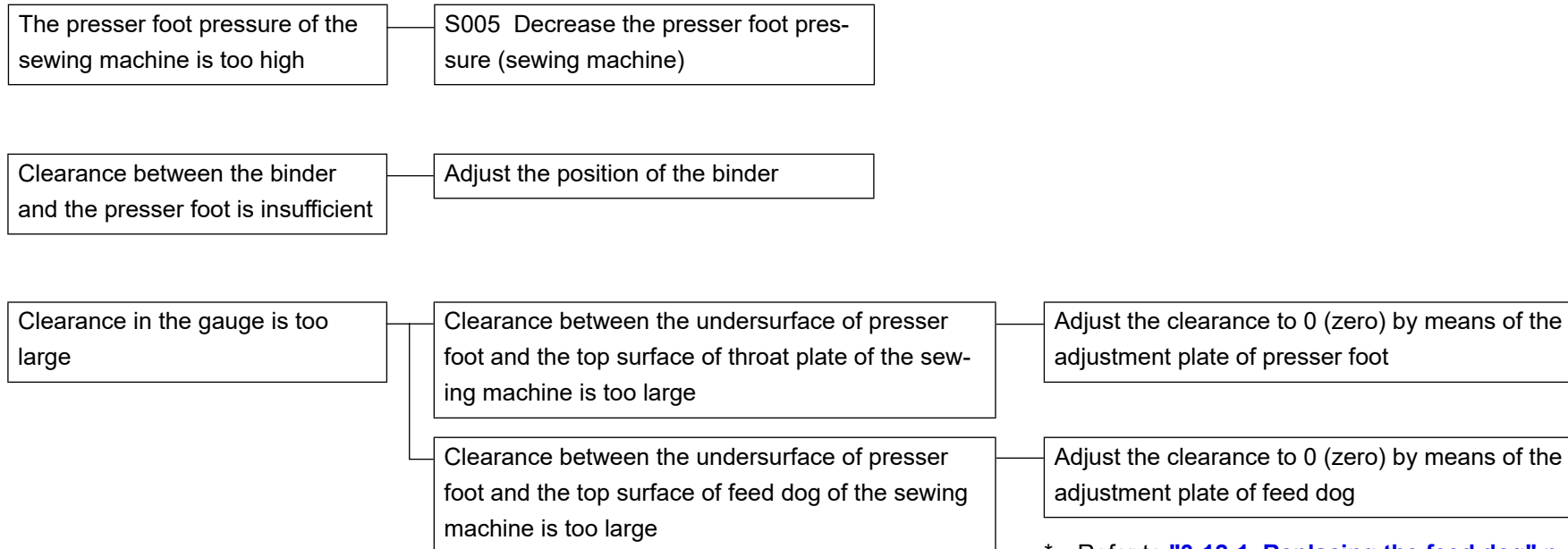
Checking the finished stitches, adjust the sewing data as described below.

No.	Data	Initial set values	Precautions regarding stitch gathering
S005	Presser foot pressure (sewing machine)	25	If the presser foot pressure is too high, stitches are likely to gather at the multi-layered portions of material. To prevent stitch gathering, set the presser foot pressure to a low value. It should be noted, however, that the presser foot pressure should be set to the highest possible value as long as stitch gathering does not occur. Higher presser foot pressure helps stabilize the feed.
S015	Cloth pulling amount when the presser foot runs on the multi-layered portion of material (cloth puller)	3.5	Do not set the cloth pulling amount to a value that is smaller than stitch pitch. If the cloth pulling amount is smaller than stitch pitch, stitch gathering can be caused.
S016	Cloth pulling pressure when the presser foot runs on the multi-layered portion of material (cloth puller)	100	If the cloth puller pressure (cloth puller) when running on the multi-layered portion of material is too low, the efficiency of feed will be decreased causing stitch gathering at that portion. To prevent this problem, it is necessary to set the aforementioned cloth puller pressure to a high value.
S071	Cloth puller pressure when the cloth puller runs on the multi-layered portion of material	-30	If the cloth puller pressure is too high, stitches are likely to gather at the multi-layered portions of material. To prevent stitch gathering, set the cloth puller pressure to a low value. It should be noted, however, that the cloth puller pressure should be set to the highest possible value when using the material that causes no problem. In the case the cloth puller pressure is set to a higher value, stitch gathering will not be likely to occur even when the material is pulled.
S078	Presser foot pressure when the cloth puller runs on the multi-layered portion of material	150	If the presser foot pressure is too low, stitch gathering can be caused (in particular when the operator pulls the material).

### 5-2-3. How to handle stitch gathering on the multi-layered portion of material







#### 5-2-4. How to handle uneven material feed



\* Refer to **"3-12-1. Replacing the feed dog" p. 14** and **"3-12-3. Adjusting the difference in height of the presser foot" p. 15** for details.

### 5-3. Case example of sewing

	Pattern No. 1 (heavy- to extra heavy-weight materials)	Pattern No. 2 (For extra heavy-weight materials)	Pattern No. 3 (For stretch materials)	Pattern No. 4 (For medium-weight materials)
Sewn product (measure of material thickness)	12-oz jeans (heavy-weight material)	14-oz jeans (extra heavy-weight material)	Stretch jeans	Working pants (medium-weight material)
Material thickness	0.7 mm	0.9 mm	0.6 mm	0.5 mm
Thickness of the 4-ply flat portion of material for roll hemming	2.3 mm	2.6 mm	2.1 mm	1.6 mm
Thickness of the multi-layered (16-ply) portion of material for roll hemming	7.3 mm	9.2 mm	6.7 mm	5.1 mm
				

\* Refer to ["5-4. List of initial values of sewing data" p. 78](#) for the sewing data.



## 5-4. List of initial values of sewing data

### Basic pattern

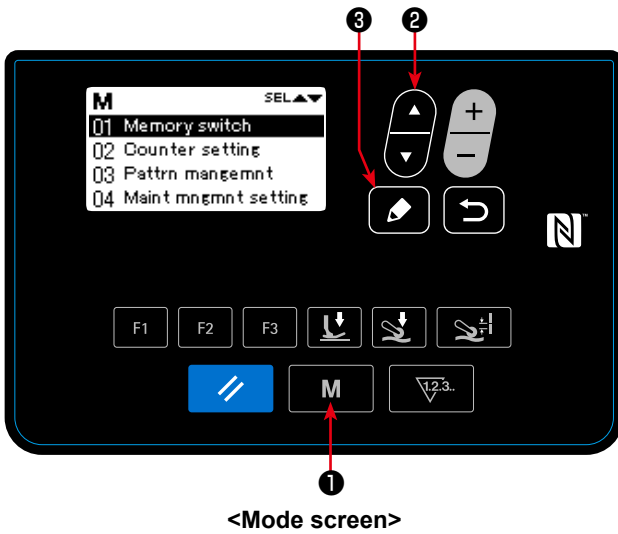
	Factory-set pattern number at the time of shipment	No.1	No.2	No.3	No.4
No.	Item	For heavy-to extra heavy-weight materials	For extra heavy-weight materials	For stretch materials	For medium-weight materials
U231	Not-use of the cloth puller presser solenoid valve output	0	0	0	1
S001	Shape	FREE	FREE	FREE	FREE
S003	Sewing length	3	3.5	3	3
S004	Sewing speed	4000	4000	4000	4000
S005	Presser foot pressure	25	40	25	25
S006	Cloth pulling amount	3.5	3.5	3.5	3.5
S007	Cloth puller pressure	10	30	10	70
S011	Material thickness that turns ON the sensor for changing over the set values to those for sewing the multi-layered portion of material	1800	1700	1700	1600
S012	Sewing speed to be employed for sewing the multi-layered portion of material	2500	1000	2500	2500
S013	Number of stitches to be sewn before running on the multi-layered portion of material	4	3	4	4
S015	Cloth pulling amount when running on the multi-layered portion of material	3.5	3.8	3.5	4
S016	Cloth puller pressure when running on the multi-layered portion of material	100	70	100	100
S017	Number of stitches for sewing the multi-layered portion of material	4	2	6	4
S018	Presser foot pressure when sewing the multi-layered portion of material	150	70	200	80
S019	Cloth pulling amount when sewing the multi-layered portion of material	3.5	3.5	3.5	3.1
S020	Cloth puller pressure when sewing the multi-layered portion of material	70	70	120	100
S021	Material thickness that turns OFF the sensor for changing over the set values from those for sewing the multi-layered portion of material	2000	2000	2000	2000
S031	Sewing speed when starting sewing of the top end of material	1000	1000	1000	1000
S032	Presser foot pressure when starting sewing of the top end of material	100	80	100	80
S033	Number of stitches for changing the sewing speed to that for starting sewing of the top end of material	8	8	8	8
S034	Number of stitches for changing the presser foot pressure to that for starting sewing of the top end of material	8	8	8	8
S041	Number of stitches to be sewn from the beginning of sewing before actuating the chain-off thread cutter	100	100	100	100

S042	Number of stitches to be sewn until the sewing machine stops after the absence of material is detected and the chain-off thread cutter is actuated	100	100	100	100
S043	Selection of the chain-off thread cutter operation by depressing the back part of pedal	ON	ON	ON	ON
S051	Needle bar stopping position	Stop with the needle down	Stop with the needle down	Stop with the needle down	Stop with the needle down
S052	Speed limiting value after the detection of the absence of material	1500	1500	1500	1500
S053	Number of stitches for delaying turning-ON of the needle cooler	0	0	0	0
S061	Part number	-	-	-	-
S062	Process	-	-	-	-
S063	Comment	-	-	-	-
S068	Number of stitches to be sewn before the cloth puller starts running on the multi-layered portion of material	8	8	8	6
S069	Number of stitches at which the cloth puller runs on the multi-layered portion of material	8	10	8	8
S070	Cloth pulling amount when the cloth puller runs on the multi-layered portion of material	3.5	3.5	3.5	3.1
S071	Cloth puller pressure when the cloth puller runs on the multi-layered portion of material	-30	70	10	65
S072	Cloth pulling amount when the absence of material is detected	3.5	3.5	3.5	3.5
S073	Cloth puller pressure when the absence of material is detected	120	70	120	80
S074	Number of stitches to be sewn before the cloth puller starts running on the top end of material	9	8	9	9
S075	Number of stitches at which the cloth puller runs on the top end of material	5	6	5	5
S076	Cloth pulling amount when the cloth puller runs on the top end of material	3	3.5	3	3
S077	Cloth puller pressure when the cloth puller runs on the top end of material	100	30	100	100
S078	Presser foot pressure when the cloth puller runs on the multi-layered portion of material	150	100	100	80



- \* When you use pattern data Nos. 1, 2 and 3, set "U231 Not-use of the cloth puller presser solenoid valve output" to "0 (zero)".
- \* When you use pattern data No. 4 (for medium-weight materials), set "U231 Not-use of the cloth puller presser solenoid valve output" to "1". The cloth puller presser cylinder is placed in "OFF".  
When the cloth puller presser cylinder is placed in "OFF", set the cloth puller pressure (S007, S016, S071 and S077) to "65" or more on the operation panel. If not, the cloth puller can float.
- \* "S061: Part number", "S062: Process" and "S063: Comment" have not been factory-set at the time of shipment. Give names to the sewing patterns that the user can understand with ease (ex. "Heavy", "Extra heavy", etc.)

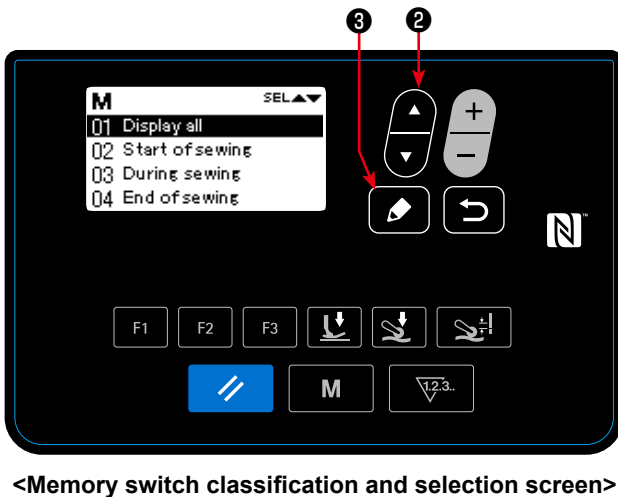
## 5-5. Checking / adjusting the phase Z of the main shaft motor


### 5-5-1. Checking the phase Z of the main shaft motor




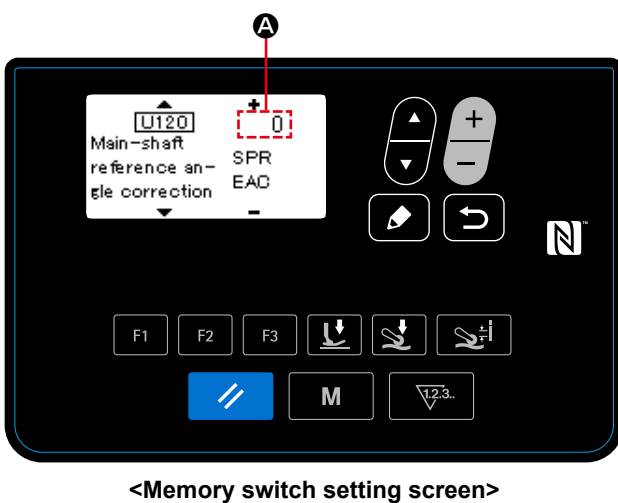
1) When **M** ① is pressed, to display the mode screen.

2) Select "01 Memory switch" by pressing  ② on the mode screen. Then, press  ③ to display the memory switch classification selection screen.



3) Select "01 Display all" by pressing  ② .

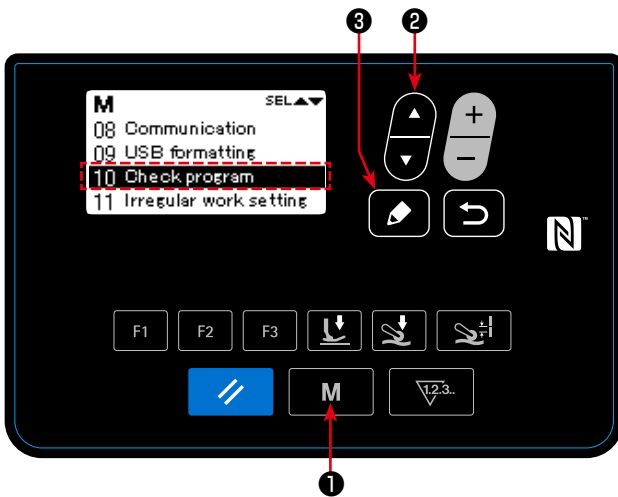
Then, press  ③ to display the memory switch setting screen.




4) Check the numeric value **A** of "U120 Main-shaft reference angle correction".


In the case the numeric value is "0 (zero)", adjust the phase Z.

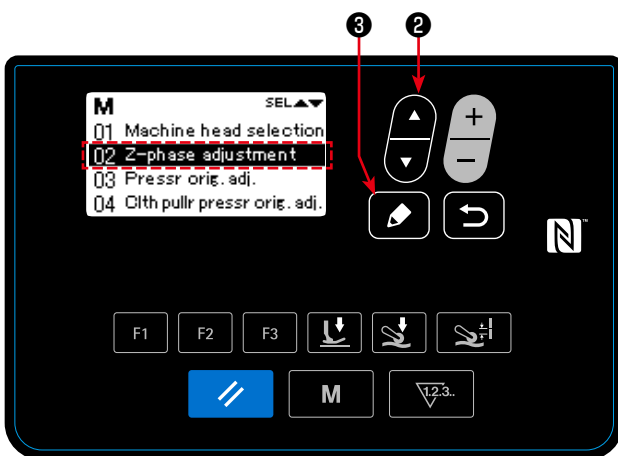
## 5-5-2. Adjusting the phase Z of the main shaft motor




1) On the edit screen, keep **M** **1** held pressed for six seconds.

2) Select "10 Check program" by pressing  **2**.

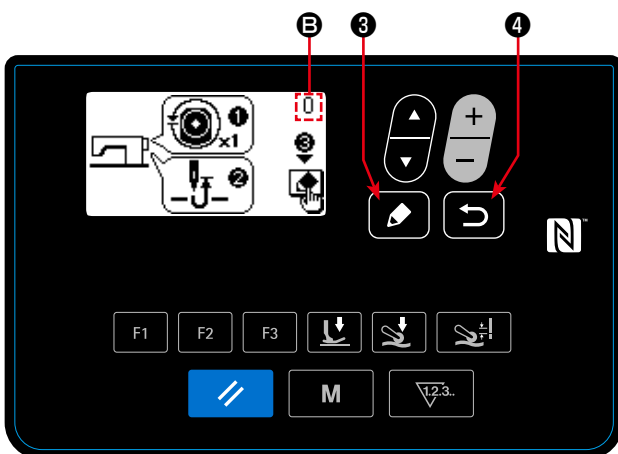
Then, press  **3** to display the "Check program selection" screen.



3) Select "02 Z-phase adjustment" by pressing  **2**.


Then, press  **3** to display the Phase Z adjustment screen.


<Check program selection screen>



4) Manually give a turn to the pulley to detect the edge of the phase-Z signal. When the phase Z is detected, the numeric value **B** of the main shaft angle changes from 0 (zero). (Allow the main shaft angle display to become any value other than 0 (zero).)

Turn the pulley to bring the needle bar to the upper dead position.

5) When you press  **3**, the corrected value of the phase Z is determined.

6) When you press  **4**, the adjusted content is determined and the screen returns to the check program selection screen.

<Z-phase adjustment screen>

## 6. CARE

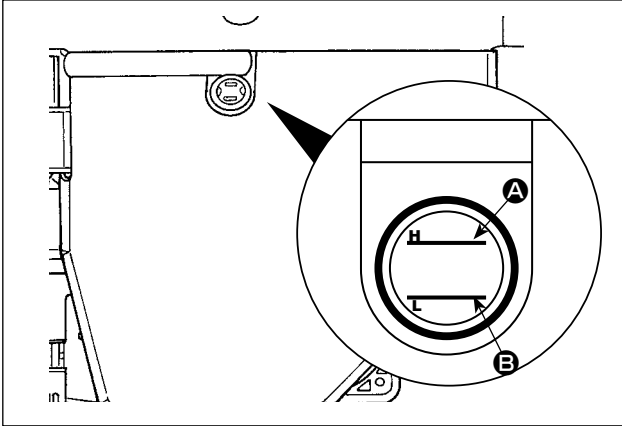
Perform the maintenance below every day for longer use of your machine.

### 6-1. Oil quantity in the oil tank



**WARNING :**

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



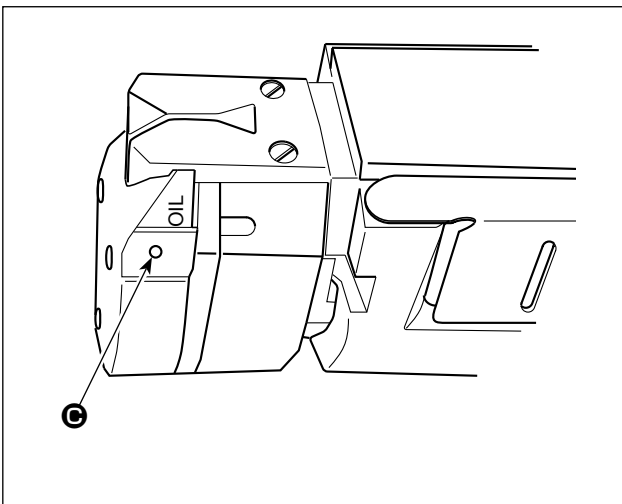
Check to make sure that the oil surface remains between two indicator lines (upper marker line **A** and lower marker line **B**) on the oil-quantity gauge window. Refer to "**2-3. Oiling and draining of oil**" p. 4 for details.

### 6-2. Lubricating the chain off thread cutter



**WARNING :**

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



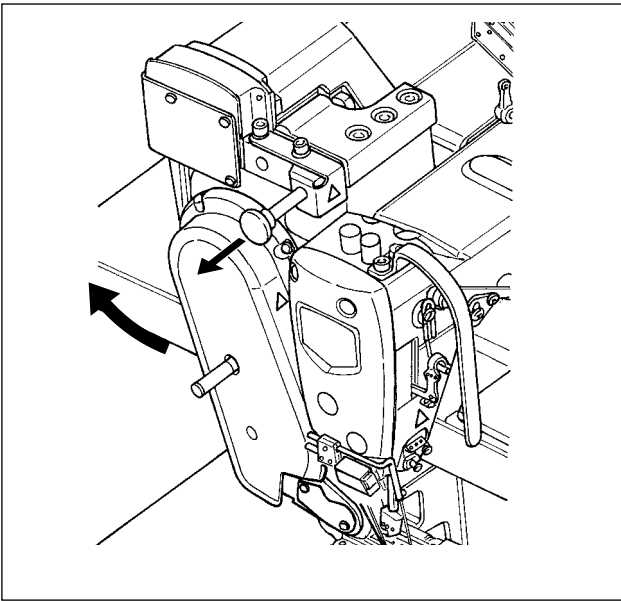
Apply several drops of oil to the portion **C** once or more every week.

### 6-3. Changing the cloth puller belt

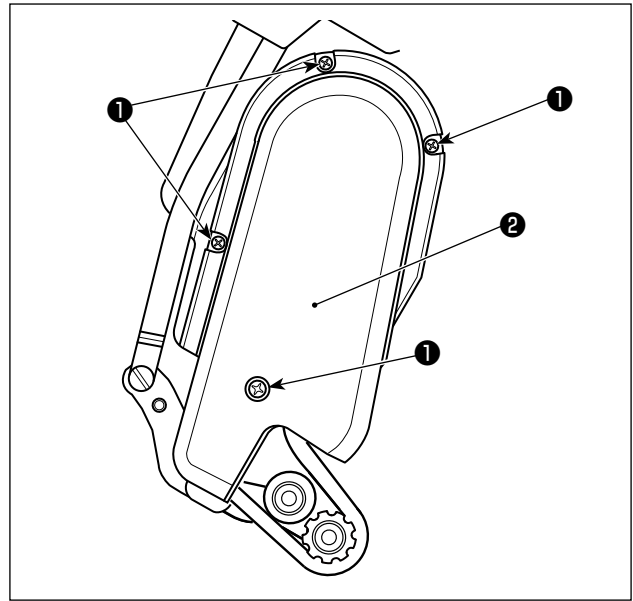


**WARNING :**

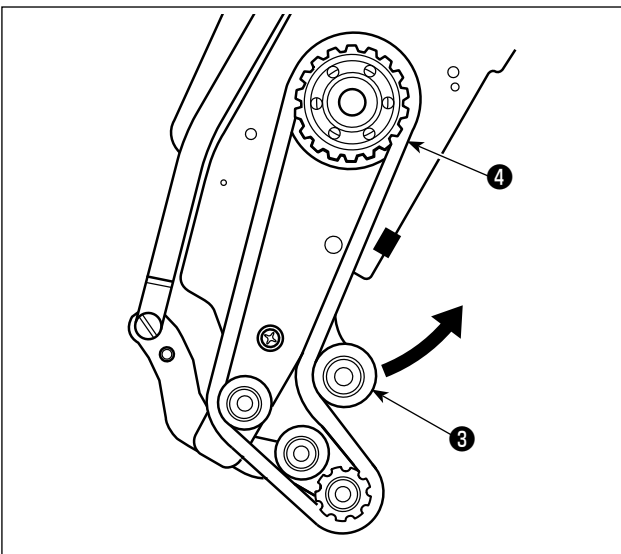
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



1) Raise the cloth puller.



2) Loosen cloth puller belt cover setscrews ①. Then, detach cloth puller belt cover ②.



3) Pull up tension pulley ③ in the direction of the arrow to loosen cloth puller belt ④ until it can be detached.

4) Attach new cloth puller belt. Then, attach cloth puller belt cover ②.



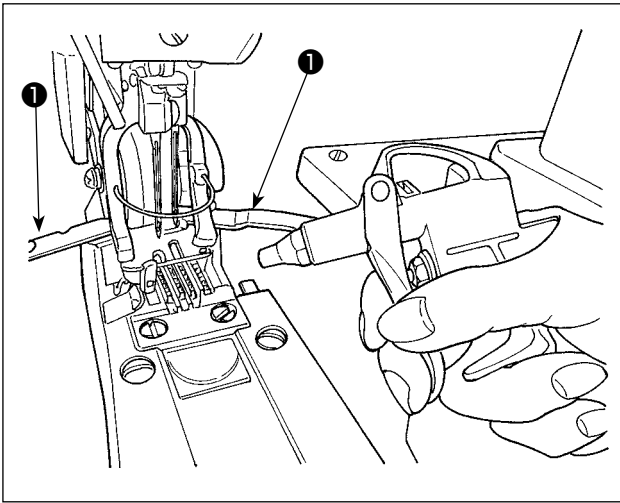
With respect to the time for changing the cloth puller belt, change it with a new one when the cloth belt puller slips or you observe malfunction (cracks, abrasion, etc.) in appearance.

## 6-4. Cleaning



### WARNING :

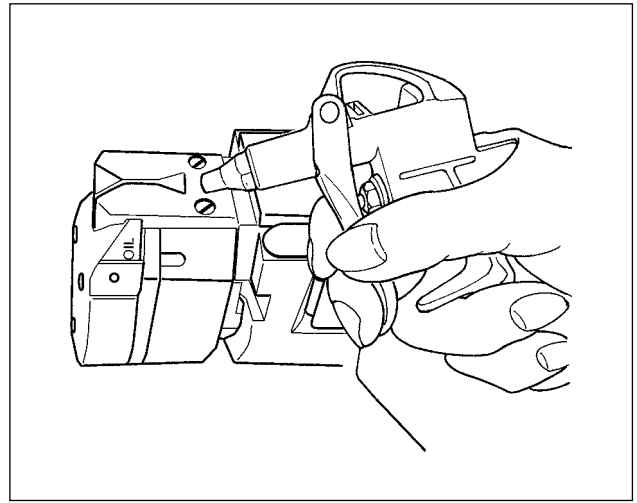
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Open looper cover ①. Blow out dust gathering on / in the feed dog, etc. with an air gun provided for the sewing machine while covering the other parts with a piece of cloth, etc.



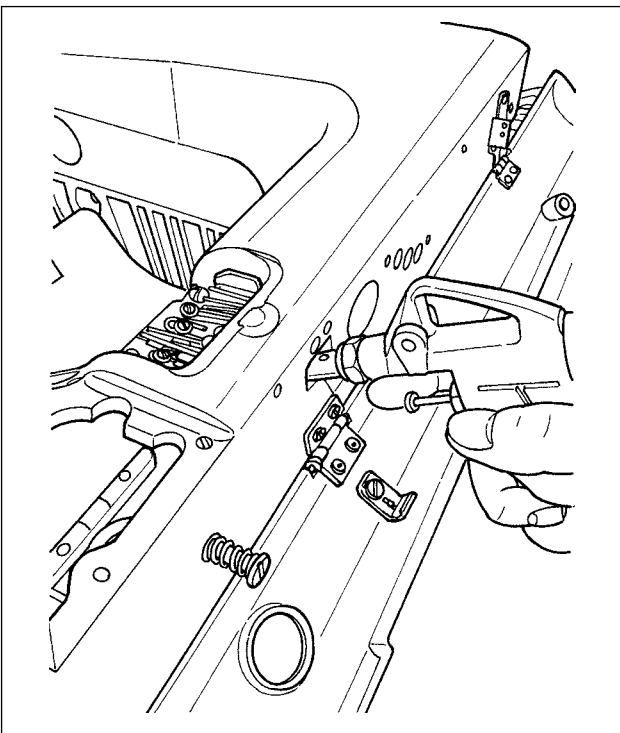
If dust has accumulated in the sewing machine head, sewing machine failures such as breakage of feed dog or looper can occur.



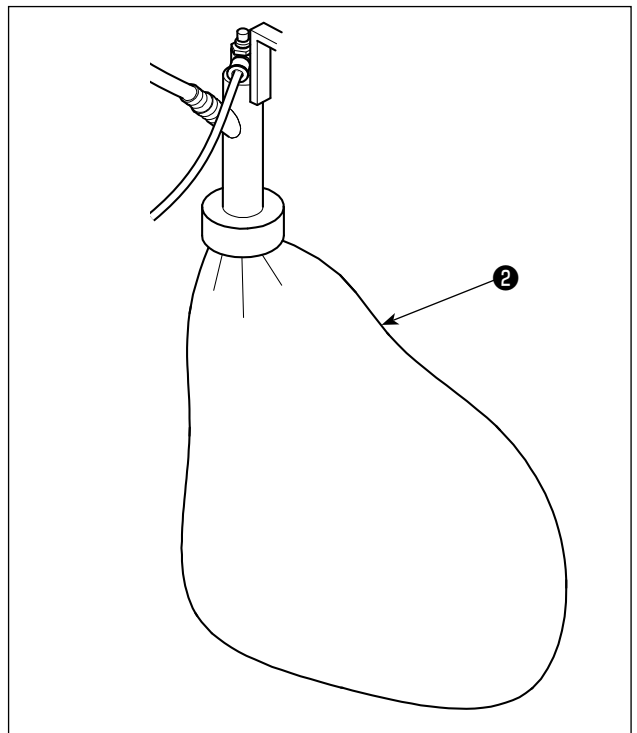
Blow off dust accumulated on the cutter, etc. with an air gun provided for your sewing machine while covering the air gun with a piece of cloth.



If dust accumulates on the cutter, the cutter failure such as breakage can be caused.



Blow away the dust accumulated in near side of the looper thread cam through the hole in the cover stopper screw section.

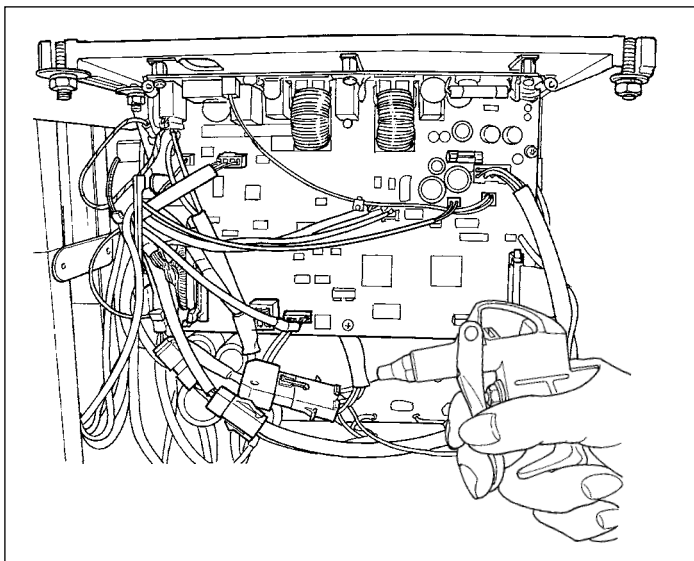


When bag ② is full of thread waste, empty the bag.



**DANGER :**

To avoid electrical shock hazards, turn OFF the power and open the control box cover after about five minutes have passed.



At least once a month, open the electrical box and blow away dust adhered on the cord, etc. in the electrical box with the air gun that is provided for sewing machine.



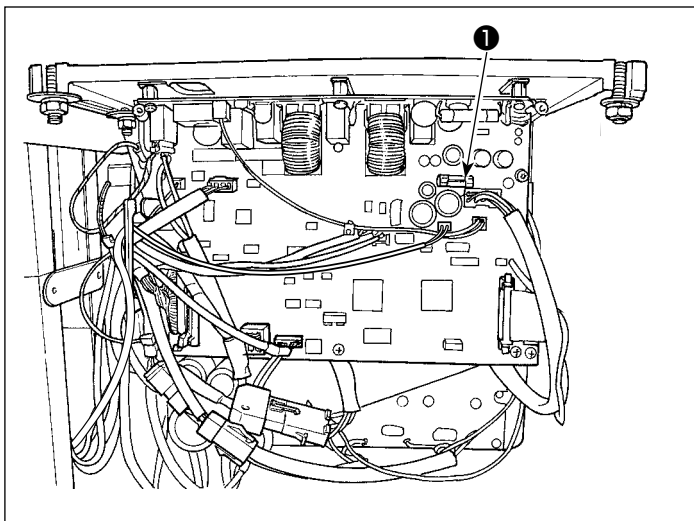
If dust has accumulated, the machine can fail or catch fire.

### 6-5. Replacing the fuse



**DANGER :**

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.



The machine uses the following one fuse :  
MAIN PWB

- ① For 85V power supply protection  
5A (time-lag fuse)