

ENGLISH

**MO-6800S(D)/DD20 Series
INSTRUCTION MANUAL**

CONTENTS

1. SPECIFICATION	1
1-1. Specifications of the sewing machine head	1
1-2. Specifications of the control box	1
2. NAMES OF MAJOR PARTS	2
3. INSTALLATION	3
3-1. Installing the suction device	3
3-2. Installing the table and the table stand	5
3-3. Installing the pedal sensor	6
3-4. Attaching the connecting rod	7
3-5. Air piping	8
3-6. Connecting the connector	10
3-7. Installing the reactor box [only for the EU type models]	11
3-8. How to install the power plug	14
3-9. Power switch	15
4. LUBRICATION AND DRAINAGE	16
4-1. Lubrication oil	16
4-2. Drainage and refill the oil	16
4-3. Exclusive grease replenishment [only for the MO-6800D]	18
5. PREPARATION BEFORE SEWING	19
5-1. Threading	19
5-2. Adjusting the thread tension	22
5-3. Replace the needle	23
5-4. Adjusting the stitch length	24
5-5. Adjusting the differential feed ratio	24
5-6. Replace the knives	25
5-7. Adjusting the overedge width	26
5-8. Adjusting the needle height	26
5-9. Adjusting the presser foot	27
5-10. Adjusting the feed dog	29
5-11. The relationship between the needle and the looper	30
5-12. Adjusting the amount of travel of the double chainstitch looper	32
6. OPERATION PROCEDURE	33
6-1. Operation panel	33
6-2. Font comparison table	34
6-3. Function setting	35
6-4. Function setting table	36
6-5. Details of setting of the main functions	44
6-6. Adjusting the sensitivity of sensors	52
6-7. No. of pcs. counter	55
6-8. Initialization of the function setting data	57
6-9. Hand LED light	58
6-10. Audio guidance	59
6-11. Clock setting	61
6-12. Backlight	63
6-13. About the USB	64
6-14. Pedal operation	65

7. MAINTENANCE	67
7-1. Periodical Maintenance Items	67
7-2. How to remove the batteries.....	68
8. ADJUSTMENT DIMENSION VALUES	70
8-1. Dimensions use to adjusting the looper and the needle guard	70
8-2. Dimensions related to the position of the thread take-up and the looper thread cam (standard adjustment).....	71
9. ERROR CODE LIST	73
10. TABLE DRAWING	74

1. SPECIFICATION

1-1. Specifications of the sewing machine head

	MO-6804S(D)	MO-6814S(D)	MO-6816S(D)
Sewing speed	Max. 7,000 sti/min (Excluding some subclass models)		
Stitch length	0.6 to 3.8 (4.5) mm		
Needle gauge	-	2.0 mm	3.0, 5.0 mm
Overedge width	* ¹ 1.5, 4.0 mm	2.0, 3.0, 4.0 mm	4.0, 5.0, * ¹ 6.0 mm
Differential feed ratio	Gathering stitch1 : 2(Max. 1 : 4) Stretching stitch1 : 0.7(Max. 1 : 0.6)		
Needle	DC × 27 (Standard)		
Motor	DD motor		
Presser foot lift	5 to 7 mm		
Lubricating oil	JUKI MACHINE OIL #18		
* ² Grease	Exclusive grease Part number: 23640204 (100 g tube) Part number: 40006323 (10 g tube)		
Weight	28 kg		
Noise	<ul style="list-style-type: none"> - Equivalent continuous emission sound pressure level (L_{pA}) at the workstation: A-weighted value of 83.0 dB; (Includes $K_{pA} = 2.5$ dB); according to ISO 10821-C.6.2 - ISO 11204 GR2 at 6,500 sti/min. - Sound power level (L_{WA}); A-weighted value of 88.0 dB; (Includes $K_{WA} = 2.5$ dB); according to ISO 10821-C.6.2 - ISO 3744 GR2 at 6,500 sti/min. 		

*¹ Only for the MO-6800S

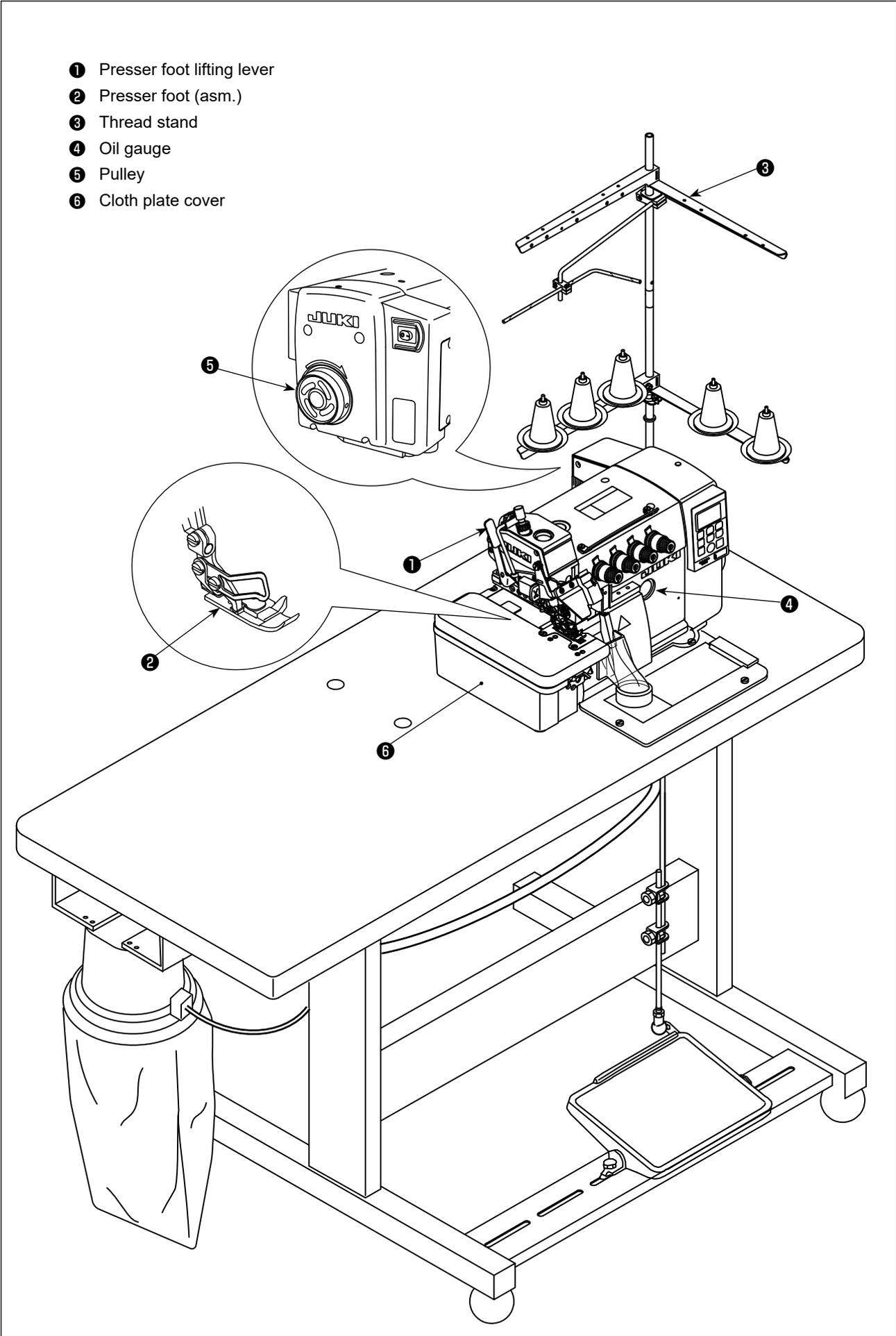
*² Only for the MO-6800D

1-2. Specifications of the control box

	Single phase 220 to 240V	Single phase 220 to 240V (EU type)	Single phase 110 to 120V
Supply voltage	Single phase 220 to 240V	Single phase 220 to 240V (EU type)	Single phase 110 to 120V
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	370VA	330VA	370VA

2. NAMES OF MAJOR PARTS

- ❶ Presser foot lifting lever
- ❷ Presser foot (asm.)
- ❸ Thread stand
- ❹ Oil gauge
- ❺ Pulley
- ❻ Cloth plate cover



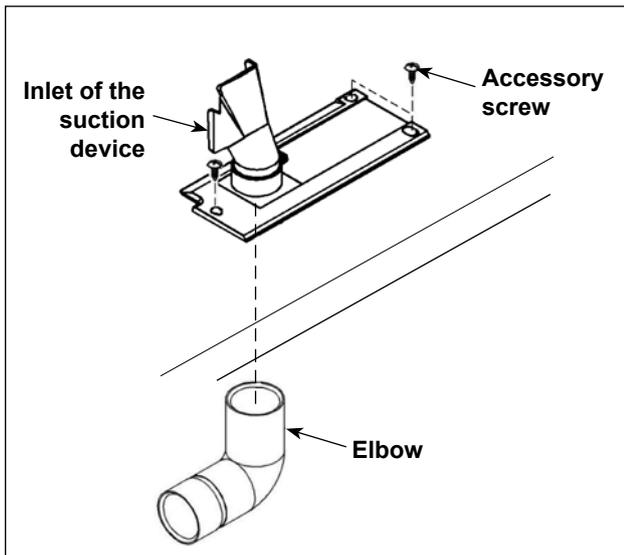
3. INSTALLATION

WARNING :

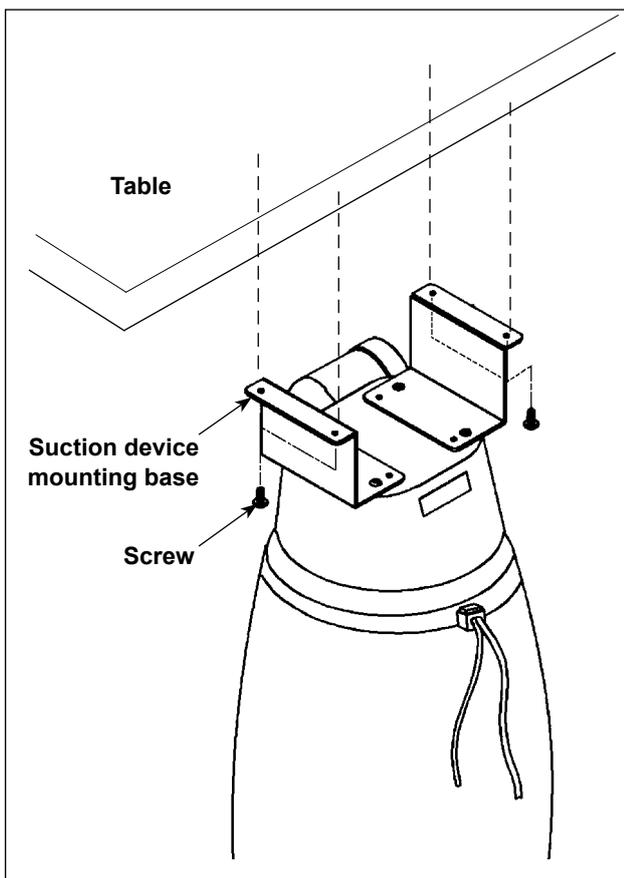
- Machine installation should only be carried out by a qualified technician.
- Contact your dealer or a qualified electrician for any electrical work that may need to be done.
- The sewing machine weighs 28 kg. The installation should be carried out by two or more people.
- Do not connect the power cord until installation is complete. The machine may operate if the treadle is depressed by mistake, which could result in injury.
- Use both hands to hold the machine head when tilting it back or returning it to its original position. If only using one hand, the weight of the machine head may be too heavy to hold, and may cause human physical injuries.
- To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



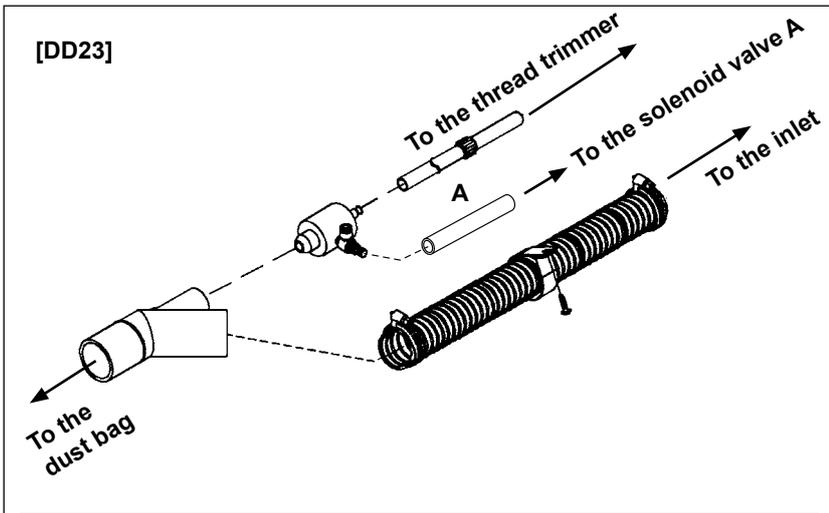
3-1. Installing the suction device



- 1) Attach inlet of the suction device to the table with accessory screws supplied with the unit. Fit the elbow in the inlet from the underside of the table.

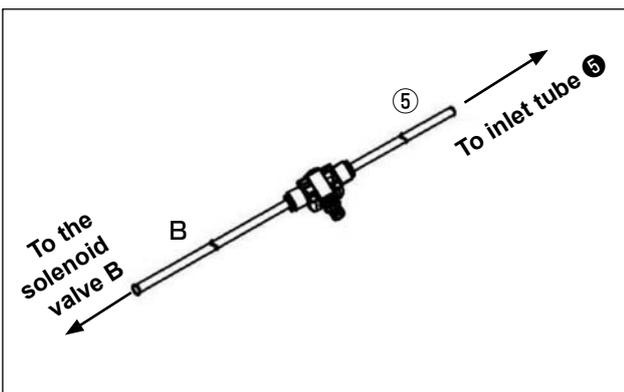
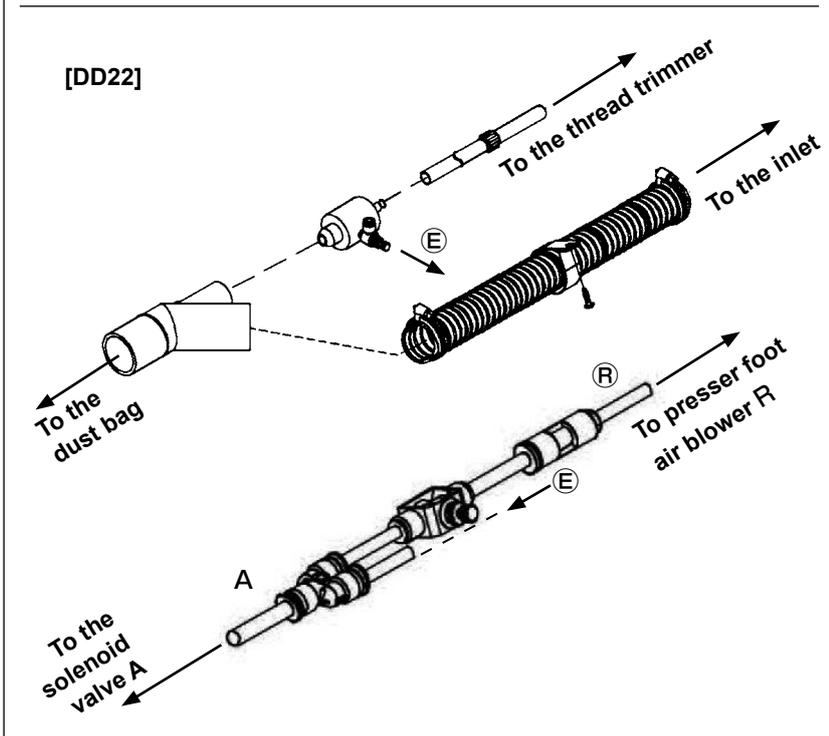


- 2) Attach the dust bag mounting base to the table with the accessory screws.



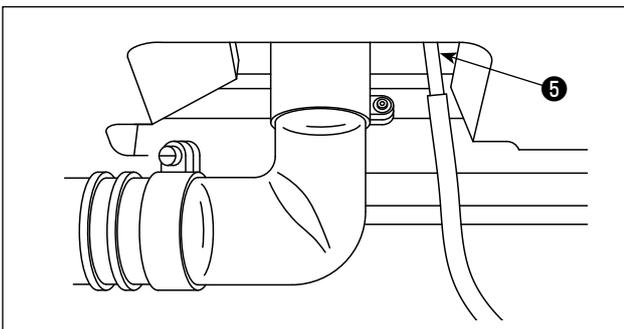
3) Fit pipe in Y elbow.
 Connect the Y elbow side of the pipe to the dust bag. Connect the hose side of the pipe to the elbow of the inlet.
 Connect the air tube **A** to the solenoid valve **A**. Connect air tube **R** to air blower **R** of the machine head presser foot.

* Refer to **"3-5. Air piping" p.8** for how to connect the solenoid valve.

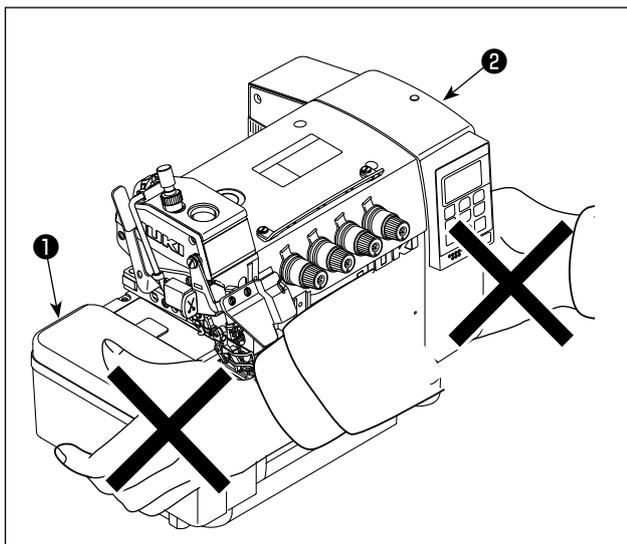


4) Connect air tube **5** to inlet tube **5**. Connect the air tube **B** to the solenoid valve **B**.

* Refer to **"3-5. Air piping" p.8** for how to connect the solenoid valve.

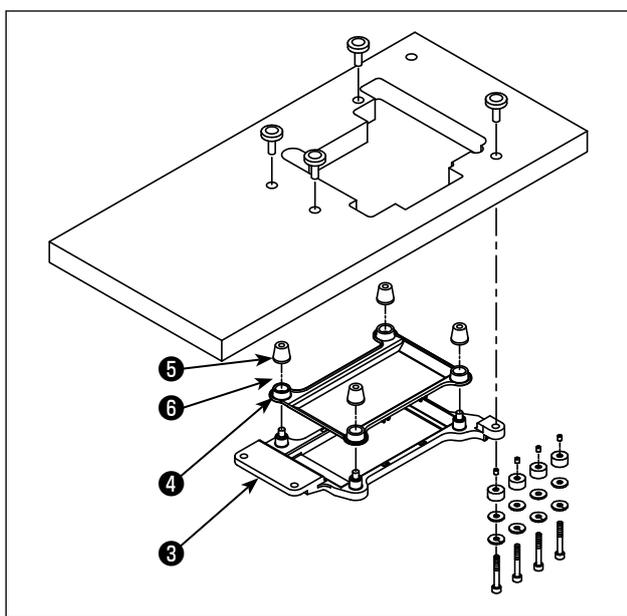


3-2. Installing the table and the table stand

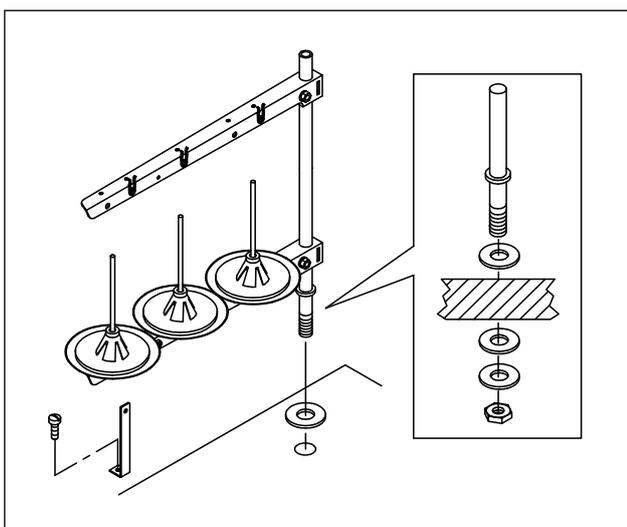


1. After unpacking, do not carry the sewing machine holding the lower section of cloth plate cover **1** .

2. Do not hold the bottom section of the electrical box cover **2** .

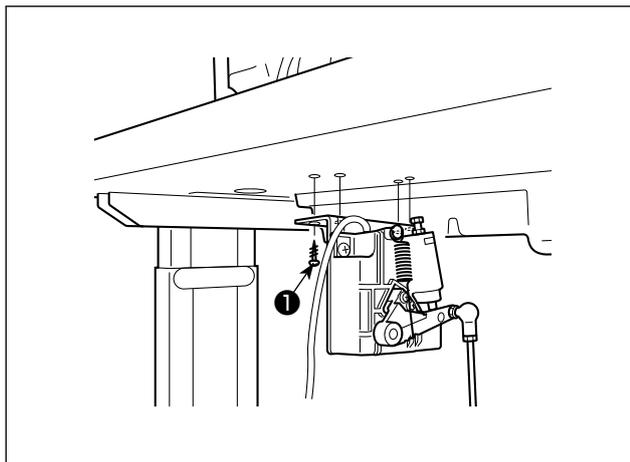


1) Install, air-blower case **4** , rubber washer **6** , and rubber cushion **5** to frame support plate **3** , referring to the table drawing and parts list.

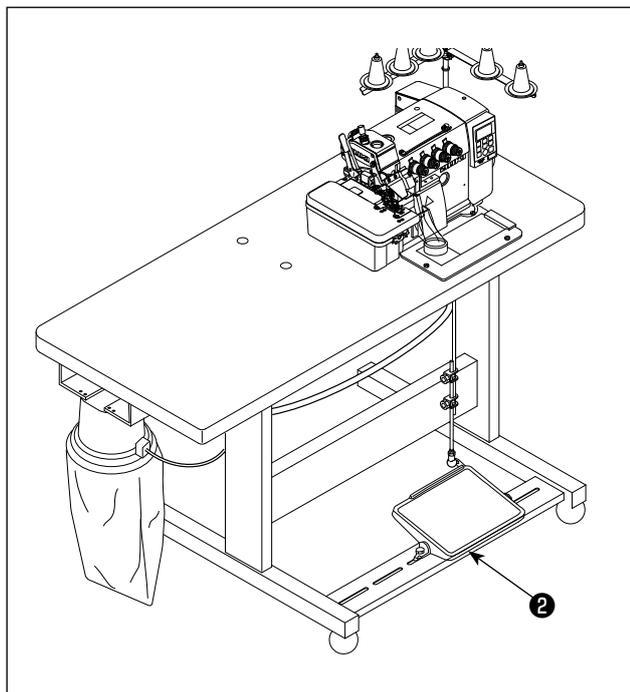


2) Assemble the waste disposal set and the thread stand.

3-3. Installing the pedal sensor



- 1) Install the pedal sensor to the table with mounting screws ❶ supplied with the unit. It is necessary to install the pedal sensor at such a position that the connecting rod is perpendicular to the table.
- 2) After the completion of installation of the pedal sensor on the table, place the sewing machine head on the table.



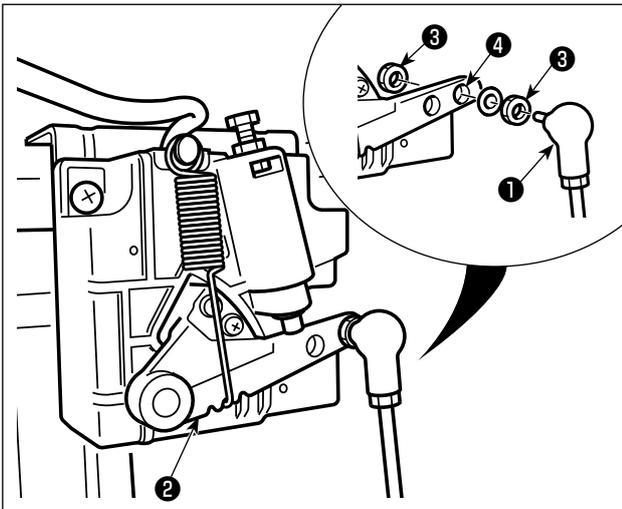
- 3) Assemble motor starting pedal ❷ .

3-4. Attaching the connecting rod



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and a lapse of 5 minutes or more.



Fix connecting rod ① to installing hole ④ of pedal lever ② with nut ③ .

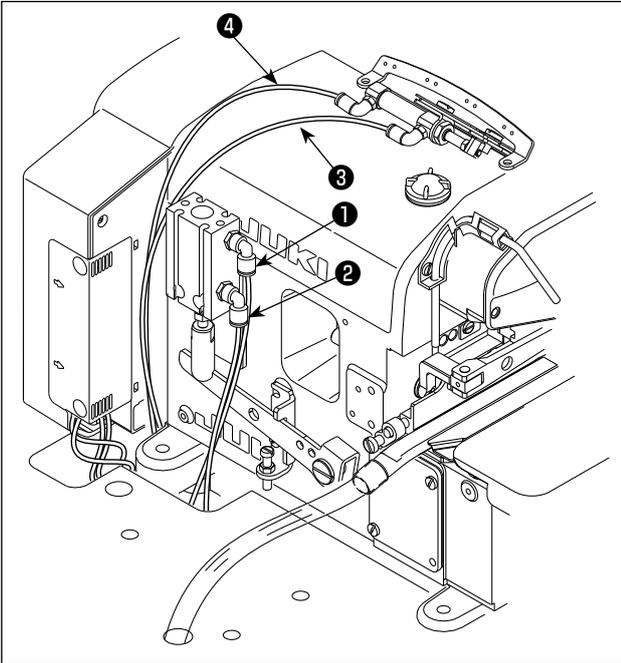
3-5. Air piping



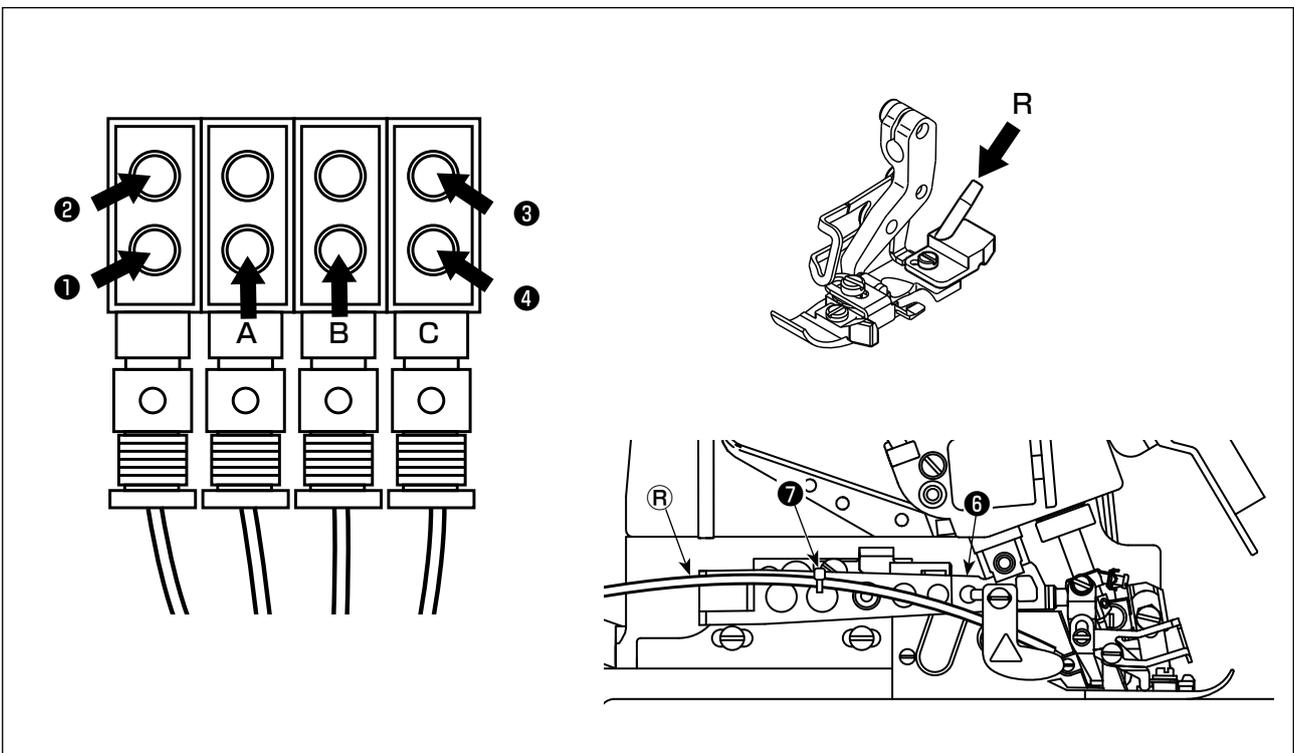
WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

[DD22]



- 1) Pass air tubes ①, ②, ③ and ④ coming from the tension releasing device and air cylinder under the table.

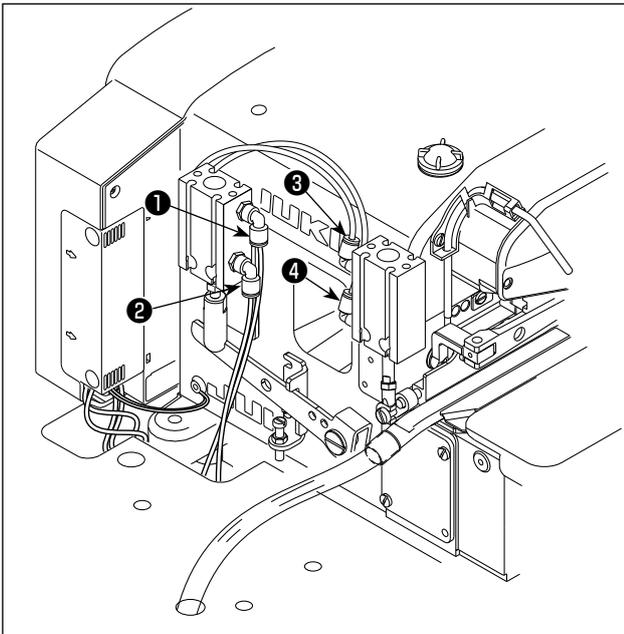


- 2) Connect air tubes ①, ②, ③ and ④ to the solenoid valve located under the table.
Connect air tubes A and B coming from the suction device to A and B respectively. Connect air tube ⑤ to the connection port of presser foot air blower R.

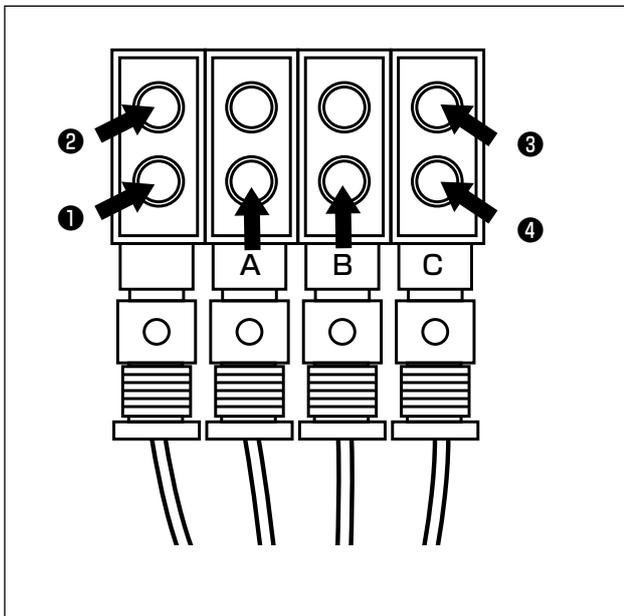
* Be sure to pass air tube ⑤ to be connected to the presser foot air blower along the upper side of presser arm ⑥ and secure with cable clip band ⑦.

Refer to "[3-1. Installing the suction device](#)" p.3 for details of the air tubes coming from the suction device.

[DD23]



- 1) Pass air tubes ①, ②, ③ and ④ coming from the air cylinder under the table.



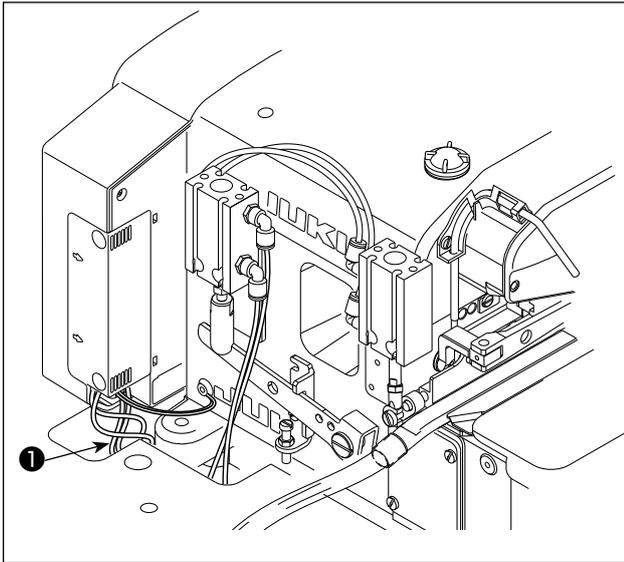
- 2) Connect air tubes ①, ②, ③ and ④ to the solenoid valve located under the table.
Connect air tubes **A** and **B** coming from the suction device to **A** and **B** respectively.
Refer to **"3-1. Installing the suction device"** p.3 for details of the air tubes coming from the suction device.

3-6. Connecting the connector

WARNING :

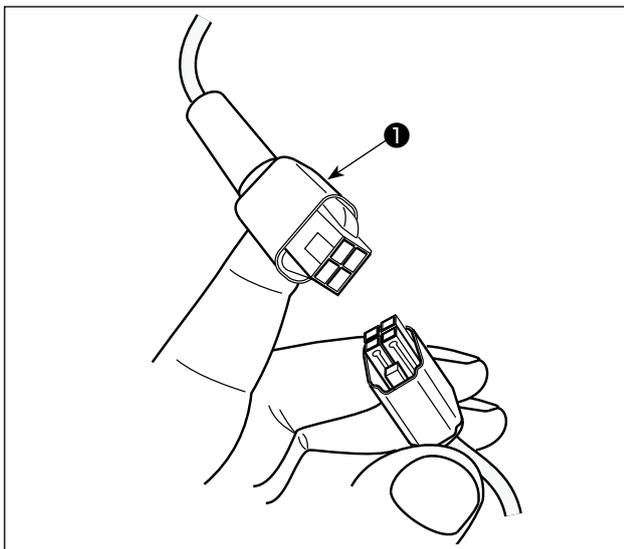


- To protect against personal injury resulting from abrupt start of the sewing machine, be sure to turn the power OFF, unplug the machine and wait for five minutes or more before installing the pedal sensor.
- To prevent damage of device caused by maloperation and wrong specifications, be sure to connect all the corresponding connectors to the specified places. (If any of the connectors is inserted into a wrong connector, not only the device corresponding to the connector can break but also it can start abruptly, inviting the risk of personal injury.)
- To prevent personal injury caused by maloperation, be sure to lock the connector with lock.
- Do not connect the power plug until the connection of cords is completed.
- Fix the cords while taking care not to forcibly bend them or excessively clamp them with staples.
- As for the details of handling respective devices, read carefully the Instruction Manuals supplied with the devices before handling the devices.



1. Do not insert the power plug into the wall outlet.
2. Check to be sure that the power switch is turned OFF.
3. Be sure to fully insert the connectors into the corresponding ports until they are locked.

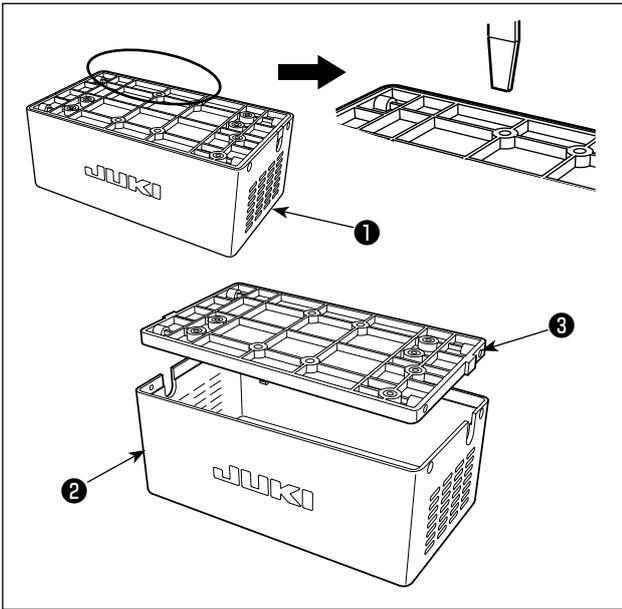
- 1) Draw out pedal sensor cable ❶ coming from the electrical box to the undersurface of the table.



- 2) Connect pedal sensor cable ❶ and the connector under the table.

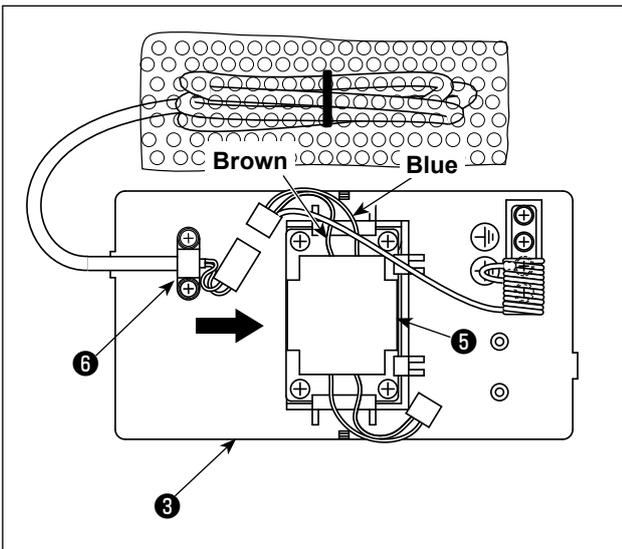
3-7. Installing the reactor box [only for the EU type models]

* For the EU-type models, install the reactor box that is supplied with the sewing machine.



1) Detach reactor cover ② from reactor box ① to separate from reactor base asm. ③ .

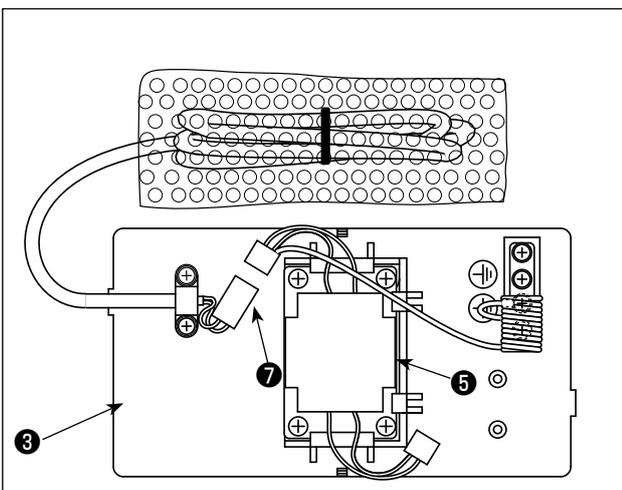
* The reactor cover can be detached with ease by inserting a tool that has a thin flat tip such as a flat-blade screwdriver between the cover and base.



2) Slide reactor ⑤ in the direction of the arrow to insert into reactor base asm. ③ .

Caution

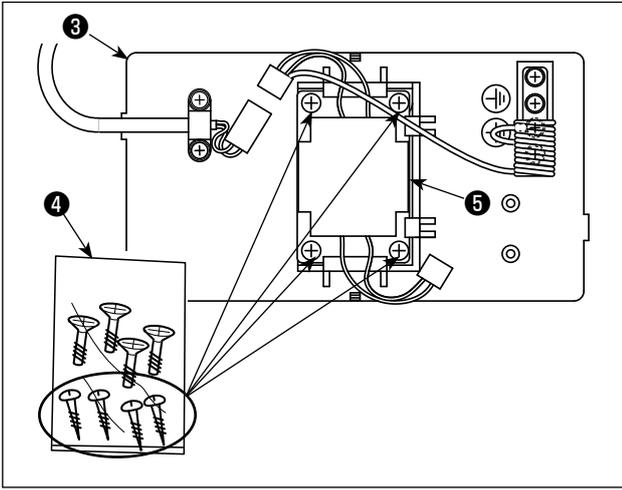
1. When inserting the reactor, detach bundled wire clamp ⑥ beforehand.
2. Insert reactor ⑤ into the reactor base asm. while facing brown and blue lead wires side upward.



3) Connect the connector ⑦ of the power cord that is fixed to reactor base asm. ③ to the connector of reactor ⑤ .

Caution

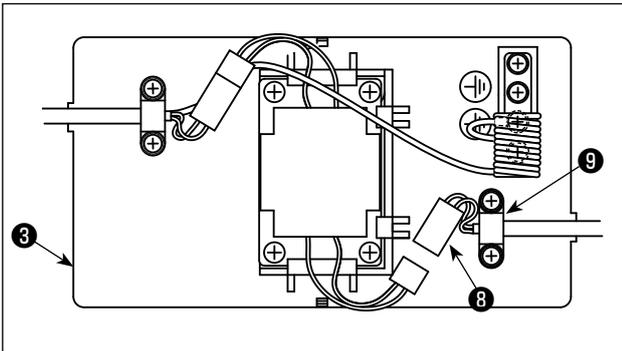
Be sure to insert the former fully into the latter until the connector is locked.



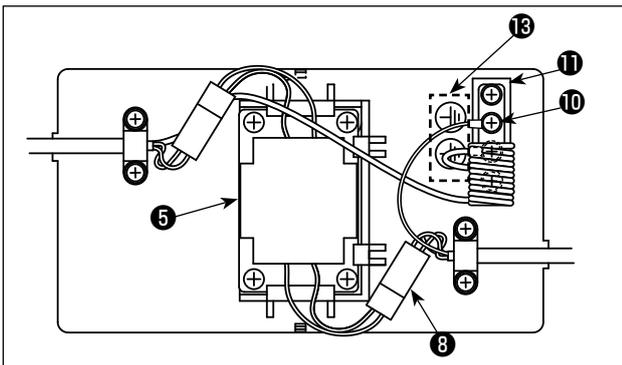
- 4) Take out wood screws (ST4.2 x 25) from screw bag 4 . Secure reactor base asm. 3 and reactor 5 to the undersurface of sewing machine table with the wood screws (at four locations).



Refer to the instruction figure shown in the following step of procedure 10) for the mounting positions of the reactor cover and reactor base asm.



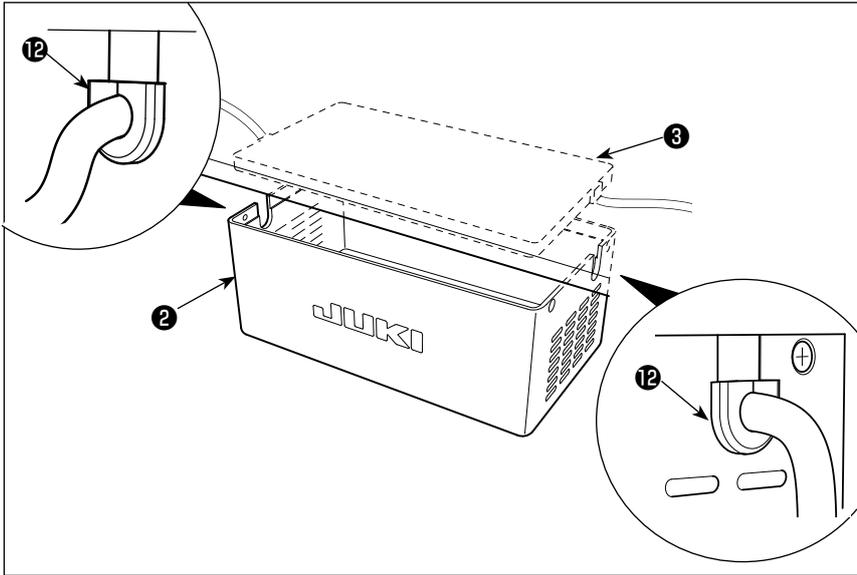
- 5) Secure power cord asm. 8 coming from the electrical box to reactor base asm. 3 with bundled wire clamp 9 .



- 6) Connect the connector of power cord asm. 8 to connector of reactor 5 .
- 7) Secure earth terminal 10 of power cord asm. 8 to earth base 11 with a screw.



Secure the earth terminal to the screw with earth mark 13.

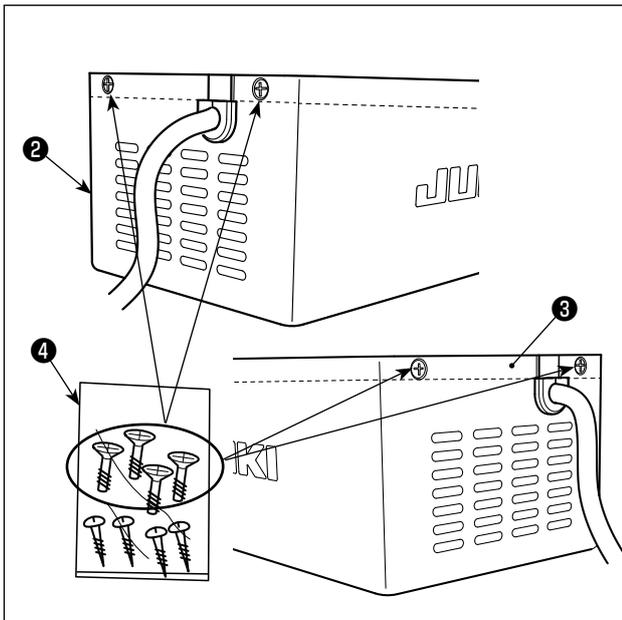


- 8) Fit reactor cover ② over reactor base asm. ③ .

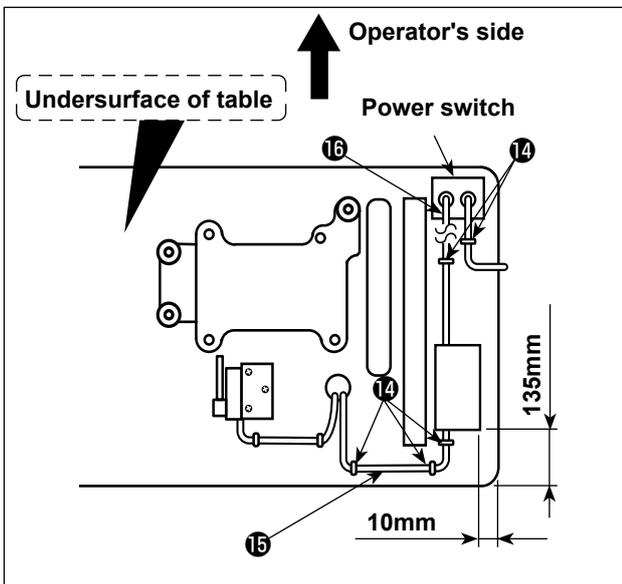


Take care not to allow the cord to be caught under reactor cover ②.

Pass the power cord through cord bushing ⑫. Then, insert the power cord into the slit portion of reactor cover ② and hold it with reactor base asm. ③.



- 9) Take out reactor cover fixing screws from screw bag ④ . Secure reactor cover ② to reactor base asm. ③ with the fixing screws (at four locations).



- 10) Attach AC input cable ⑮ and output cable ⑯ on the undersurface of table using supplied staple ⑭ .

At this time, take care not to cross the input- and output-cables ⑮⑯ .



AC input cable ⑮ and output cable ⑯ should be used with lightly bundled with an accessory cable clip band.

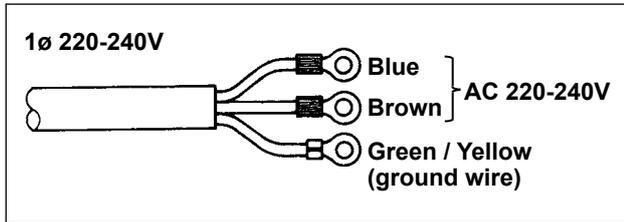
3-8. How to install the power plug



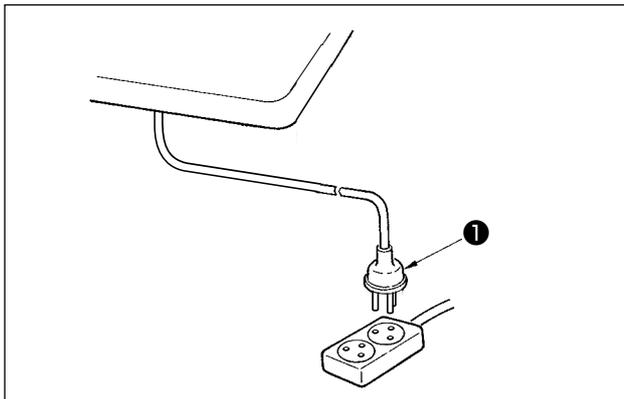
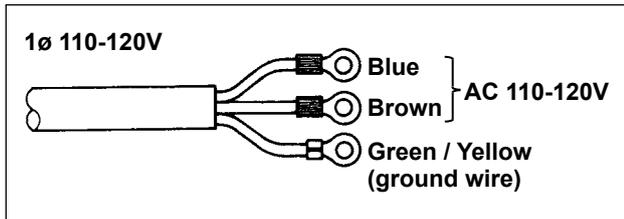
WARNING :

1. Be sure to attach the ground wire (green/yellow) to the specified location (on the ground side).
2. Take care not to allow terminals to come in contact with each other.

[SINGLE PHASE 220-240V]



[SINGLE PHASE 110-120V]



- 1) Connect the power cord to power plug ❶. Connect the blue and brown wires (1ø) to the power supply side and the green/yellow wire to the earth side as illustrated in the figure.



1. Be sure to prepare the power plug ❶ which conforms to the safety standard.
2. Be sure to connect the ground lead (green/yellow) to the grounding side.

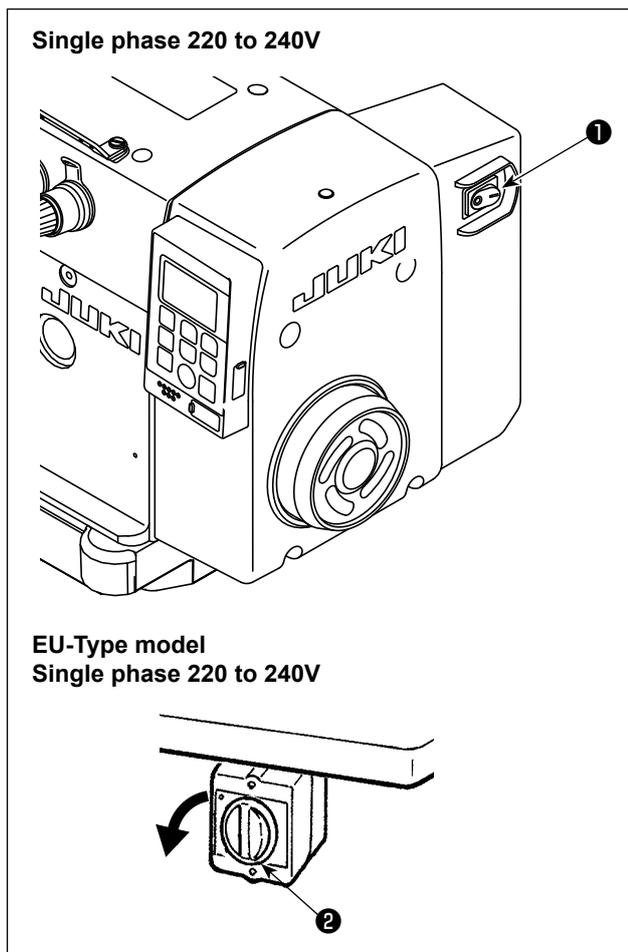
- 2) Check that the power switch is in the OFF state. Then, insert the power plug ❶ coming from the power switch into the plug receptacle.



In prior to the connection of the power plug ❶, re-check the supply voltage specification indicated on the control box.

- * The power plug ❶ is different in shape according to the destination of the sewing machine.

3-9. Power switch



- 1) Turning the power ON with the power switch **1**.
The power to the sewing machine is placed in the ON state when the "I" mark side of power switch **1** (1ø 220 - 240V type) is pressed; or in the OFF state when the "0" mark side is pressed. The power to the sewing machine is placed in the ON state when the knob of power switch **2** (EU type, 1ø 220 - 240V type) is turned by 90 degrees counterclockwise; or in the OFF state when it is turned clockwise to return to its home position.

1. Do not strongly tap the power switch by hand.
2. If the power indicator LED on the panel does not light up after having turned ON the power switch **1****2**, immediately turn OFF the power switch and check the supply voltage.
When you want to re-turn ON power switch **1****2** after carrying out the aforementioned steps, it is necessary to wait for five minutes or more after you have turned OFF power switch **1****2**.
3. Do not place your hand or anything under the needle since the needle bar may automatically move according to the memory switch setting when you turn ON the power to the sewing machine.
4. When you turn ON the power to the sewing machine while the full automatic mode is set selected, the sewing machine will not start sewing for the sake of safety as long as the front sensor is blocked.

If you want to re-start sewing under the full automatic mode, remove the obstacle that blocks the front sensor, block the front sensor again with the material to be sewn and depress the front part of the pedal once.



5. When you turn ON the power to the sewing machine while the full automatic mode is set selected, "PEDL" will be displayed on the operation panel as shown in the figure on the left.
If you want to start sewing, depress the front part of the pedal once.
6. When you turn ON the power to the sewing machine for the first time after purchase, the sewing machine will start under the semi-automatic mode for the sake of safety.
Change the mode from the semi-automatic mode to any sewing mode you want to use.
Refer to ["6-5. Details of setting of the main functions" p.44](#) for details of the changes made to the sewing machine.

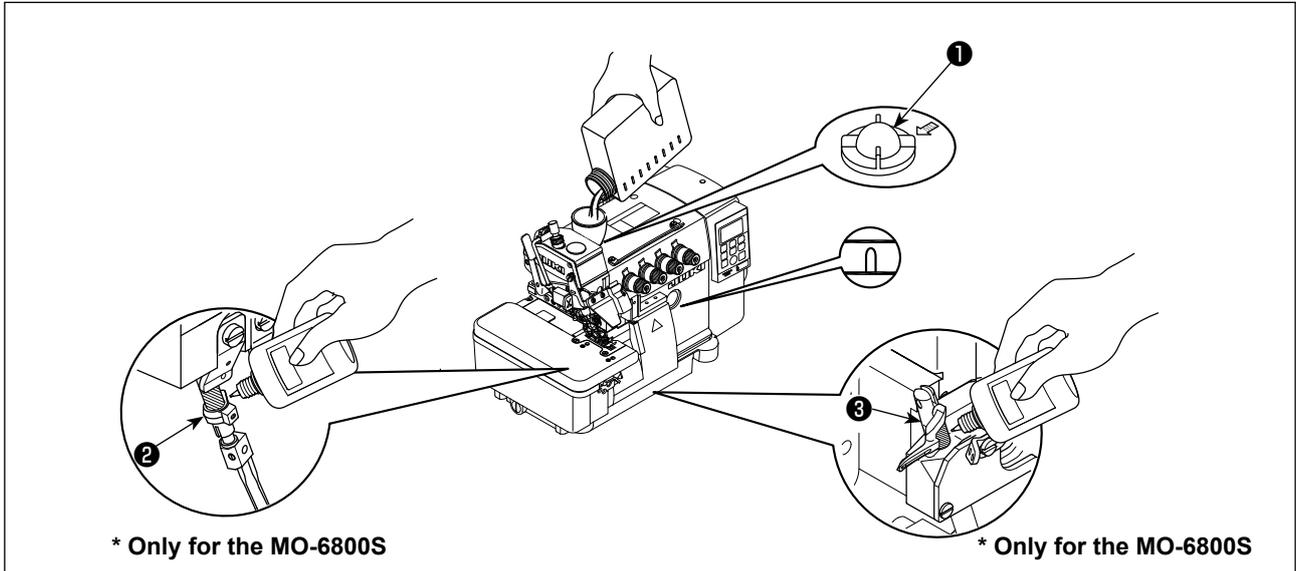
4. LUBRICATION AND DRAINAGE



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

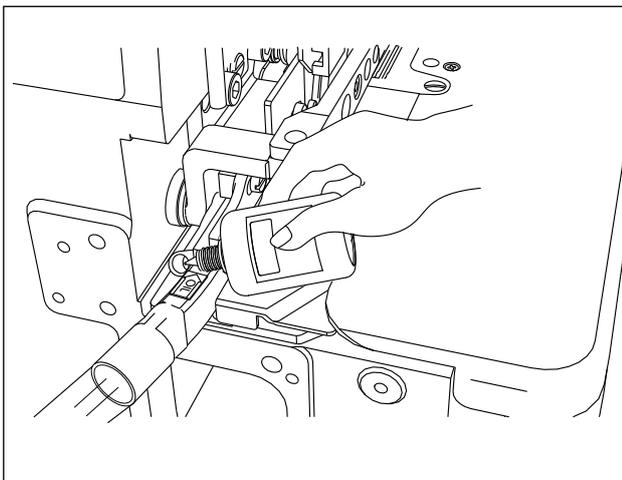
4-1. Lubrication oil



- 1) Remove oil sight window ❶ from the oil inlet. Add lubricating oil specifically made for machines which run at a super-high speed (JUKI MACHINE OIL #18) supplied with the unit or equivalent through the oil inlet. When the oil surface reaches the space between two marker lines on the oil gauge, tighten oil sight window ❶.
- 2) (Only for the MO-6800S) Before using a new sewing machine for the first time after the purchase or the sewing machine which has not been used for an extended period of time, the shaded sections of needle bar ❷ and upper looper guide ❸ have to be lubricated.

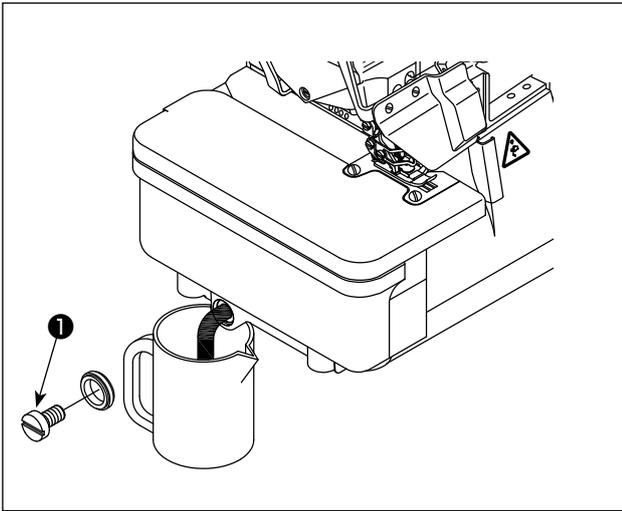


Take care not to pour too much amount of lubricating oil at the time of lubrication. If the machine is lubricated with an excessive amount of oil, oil leakage can be caused.

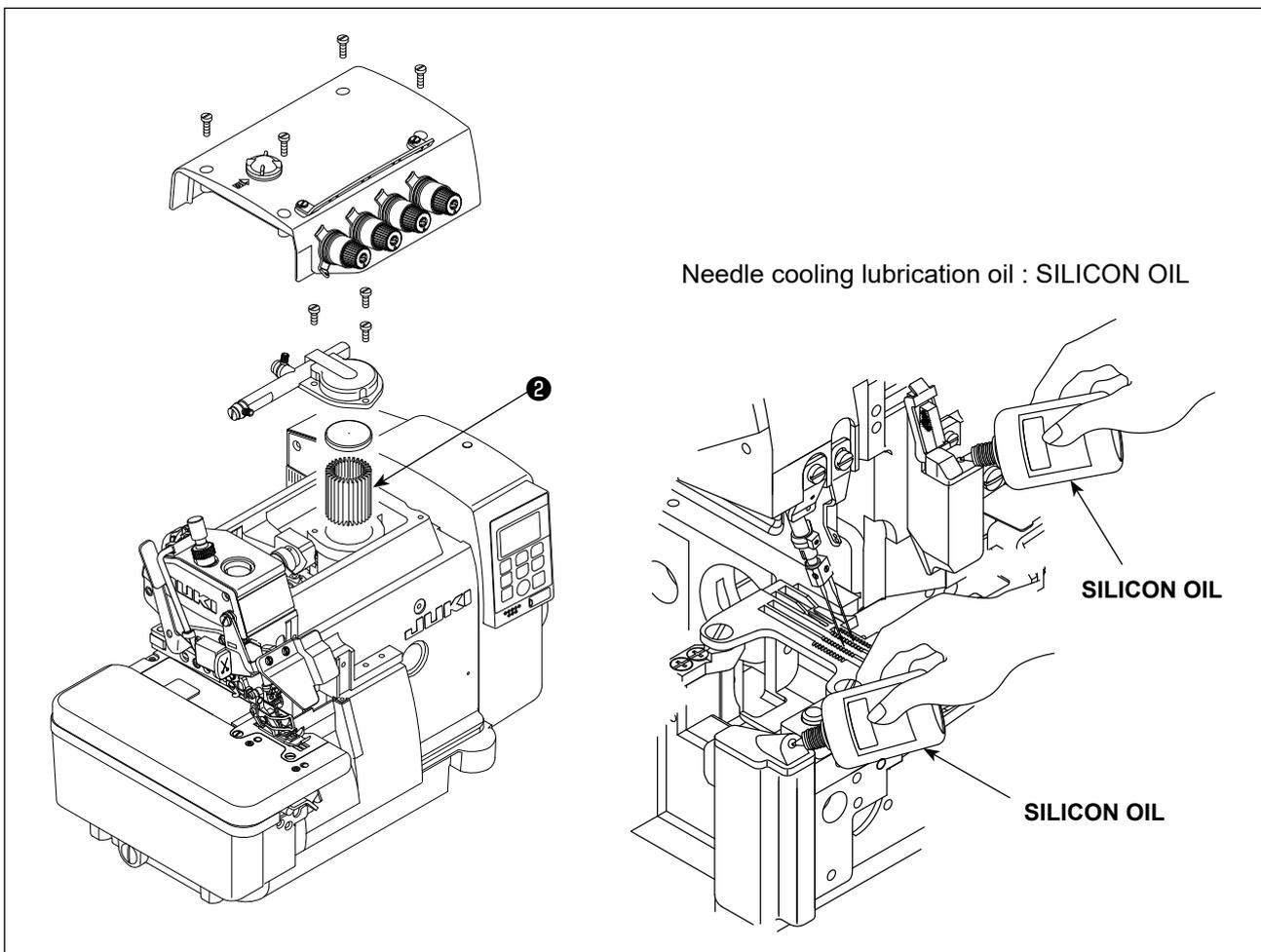


- 3) For the DD22 type model, periodically apply lubricating oil to the oil wick at the side-cutter oil hole in order to prevent the oil wick becoming dry.

4-2. Drainage and refill the oil



- 1) Loosen the screw ❶ and drain all the oil inside the oil tank. Then, tighten the screw ❶ again.

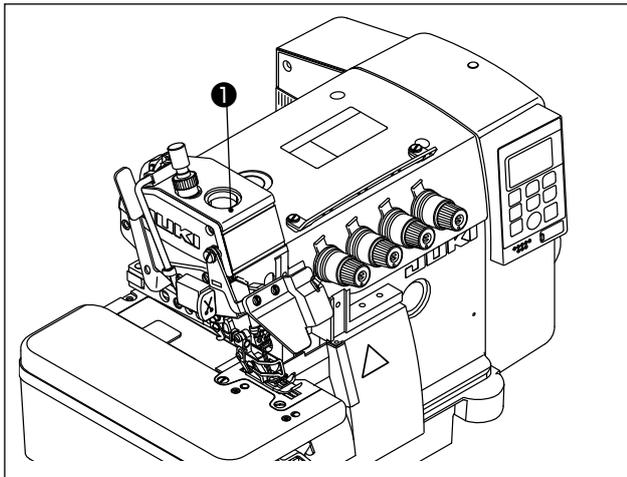


- 2) In order to extend the term of usage, please replace the oil after the first four weeks, and then replace it every four months.
- 3) To extend the usage term, this machine has equipped an oil filter ❷ . Clean up this oil filter ❷ once every month and change it with a new one where necessary.

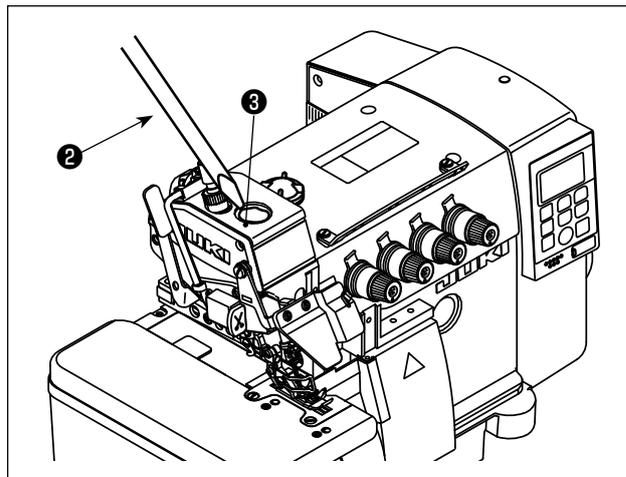
4-3. Exclusive grease replenishment [only for the MO-6800D]

* Periodical replenishment of the exclusive grease (once every one or two years) will be effective to ensure smooth operation of the machine.

1. How to replenish the needle bar compartment with grease

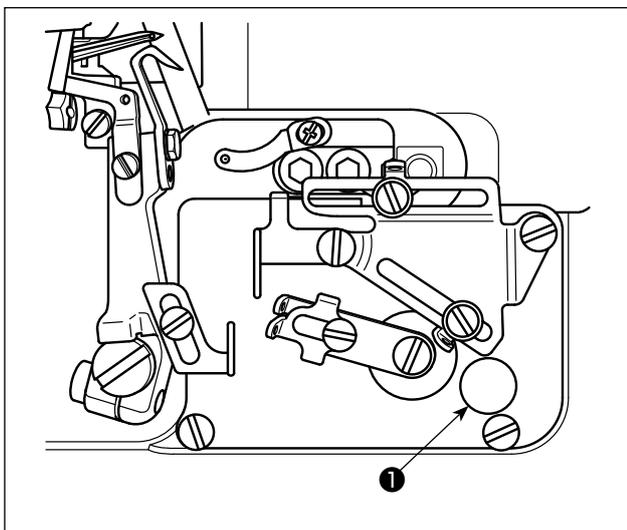


1) Remove grease replenishing rubber plug ❶ from the needle bar compartment.

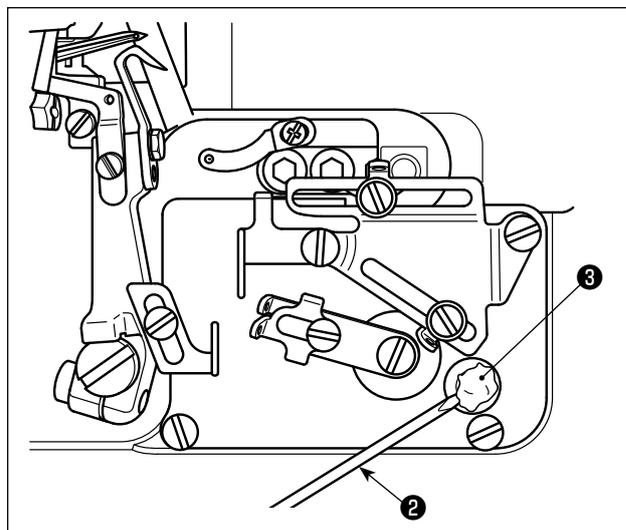


2) Replenish grease by means of a tip of screwdriver ❸, ❷ or the like. Use JUKI GREASE A for the replenishment of grease
JUKI GREASE A: 40006323 (part number)

2. How to replenish the looper compartment with grease



1) Remove grease replenishing rubber plug ❶ from the looper compartment.



2) Replenish grease by means of a tip of screwdriver ❸, ❷ or the like. Use JUKI GREASE A for the replenishment of grease
JUKI GREASE A: 40006323 (part number)

5. PREPARATION BEFORE SEWING

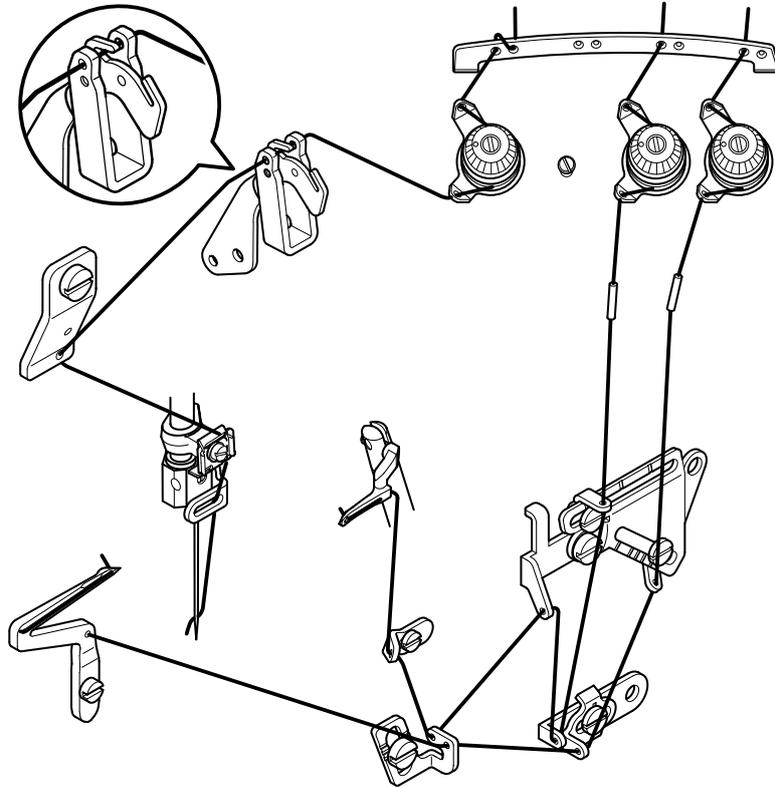
5-1. Threading



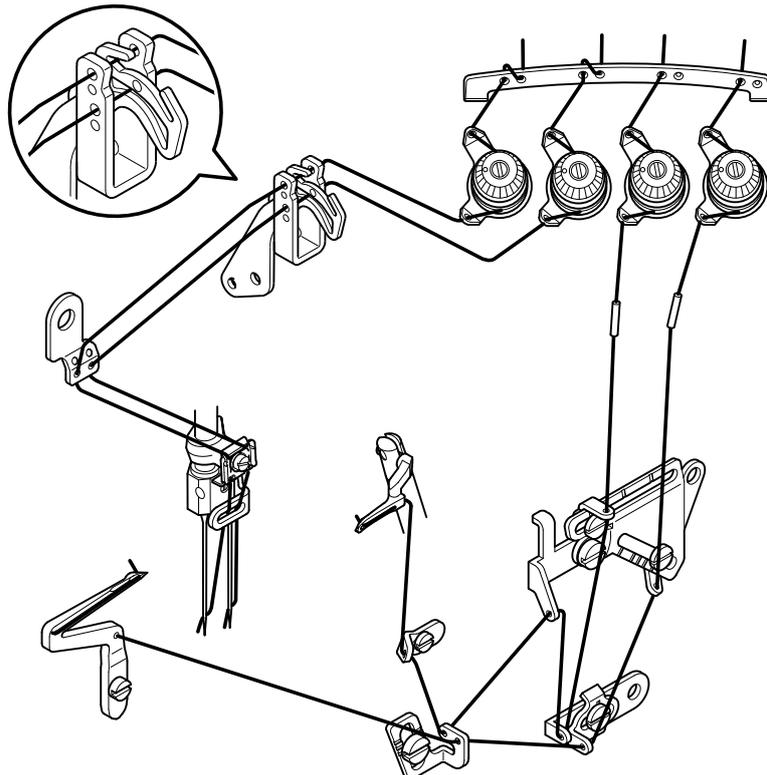
WARNING :

Follow the procedures for threading. Wrong threading can cause stitching troubles such as thread breakage, stitch skipping and puckering.

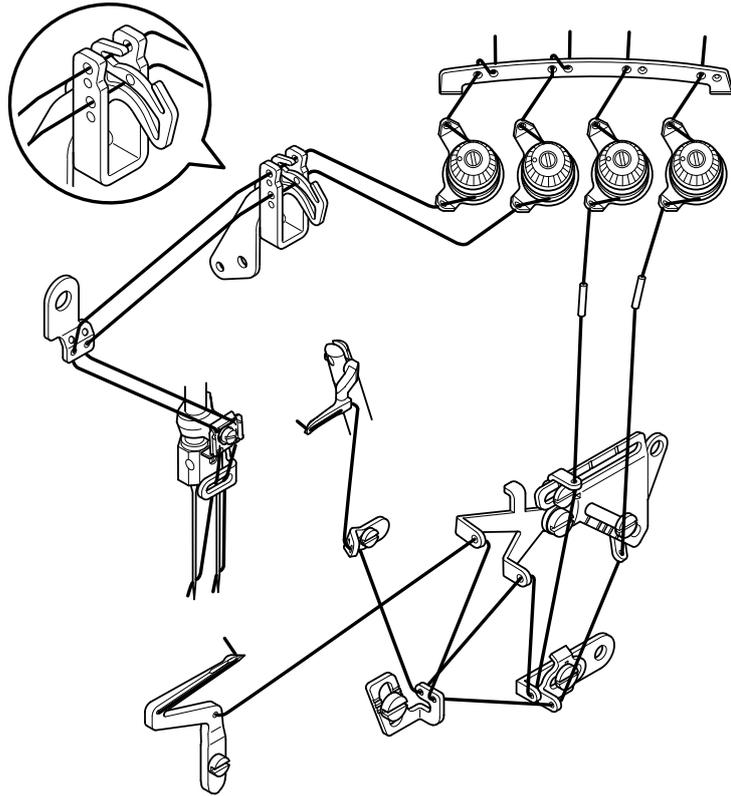
MO-6804



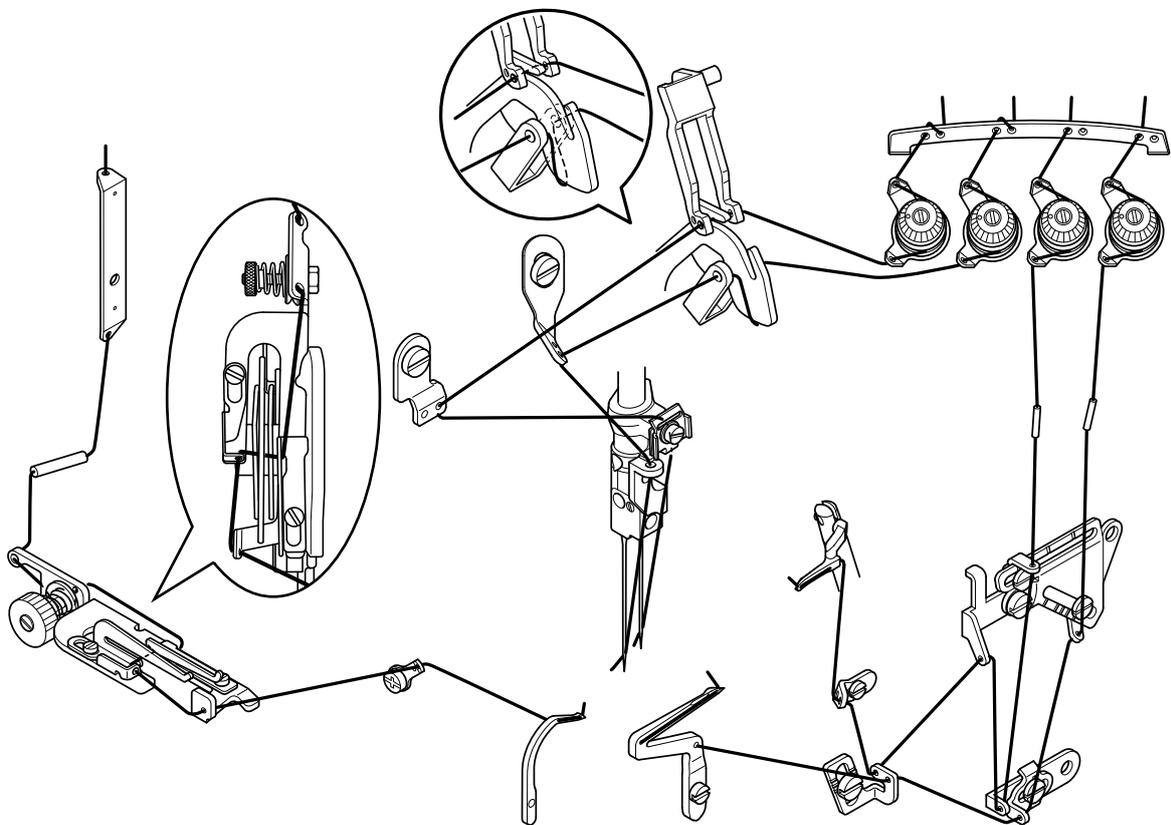
MO-6814



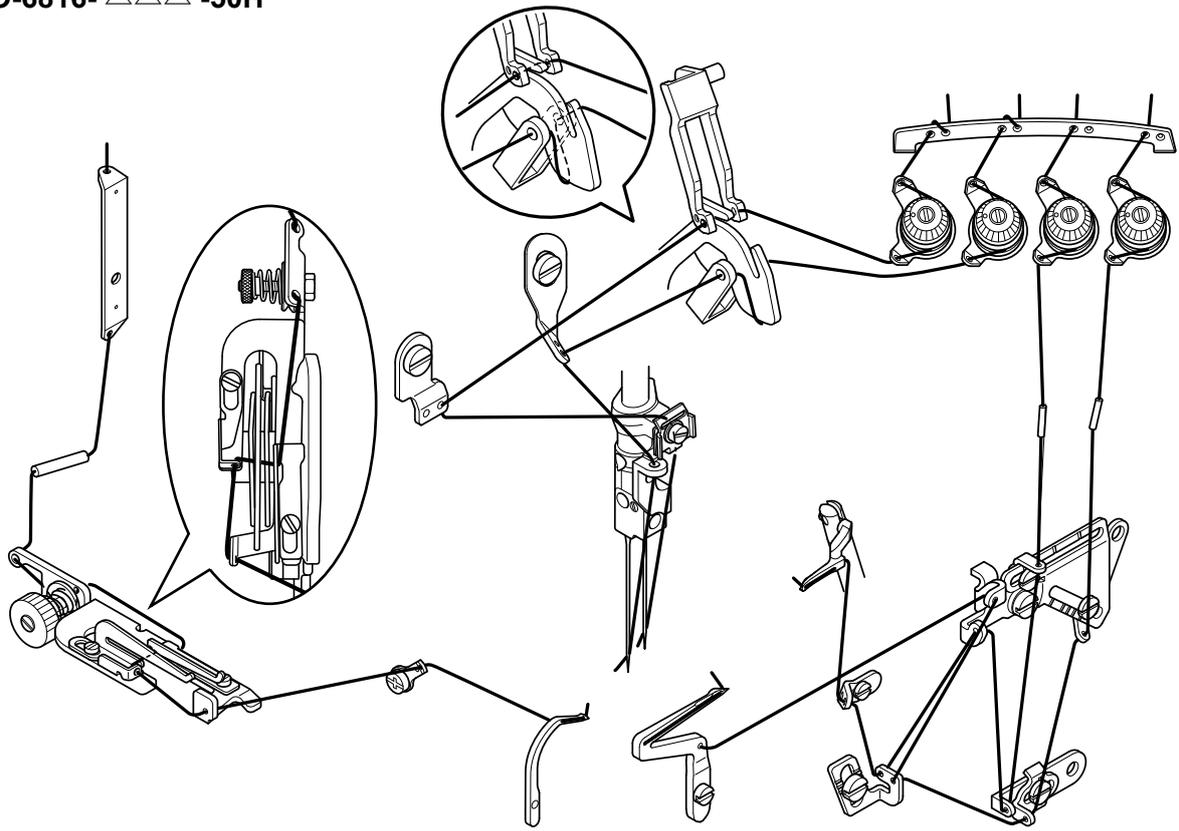
MO-6814- ▲▲▲ -44H



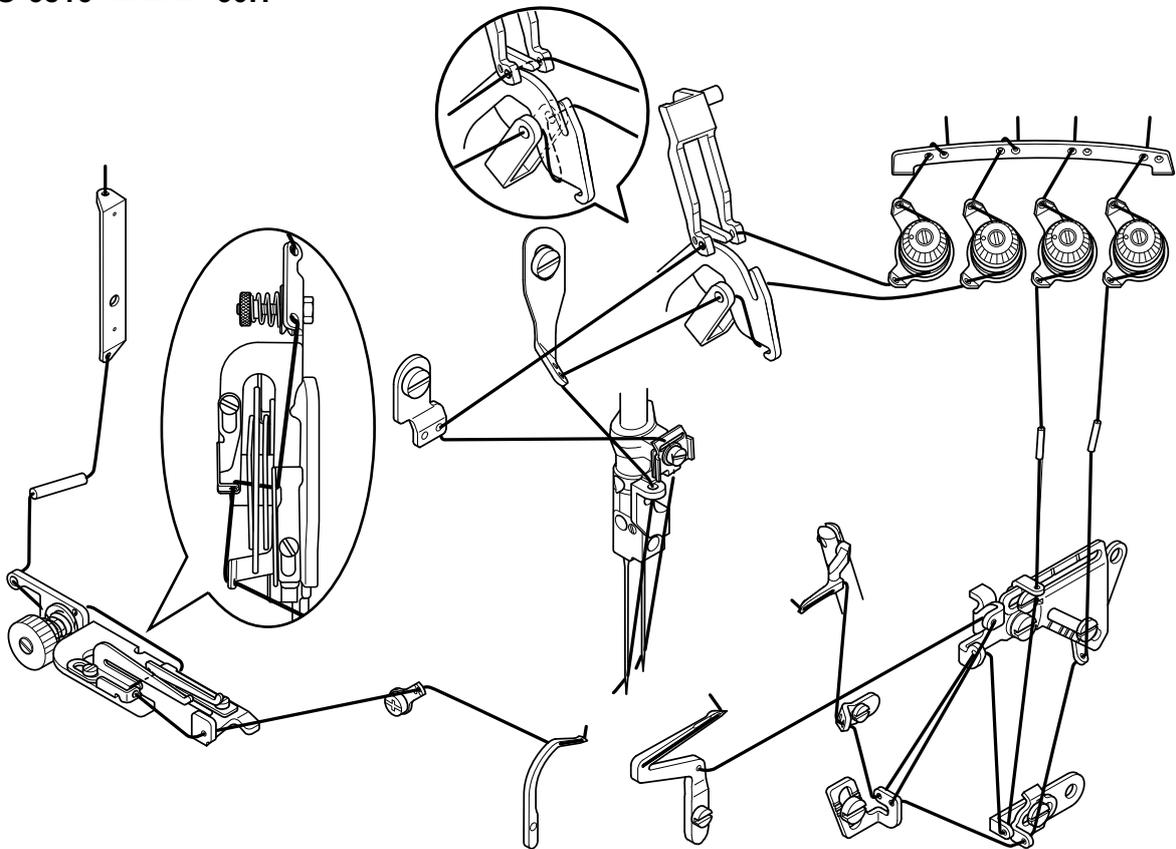
MO-6816



MO-6816- ▲▲▲▲ -50H



MO-6816- ▲▲▲▲ -60H

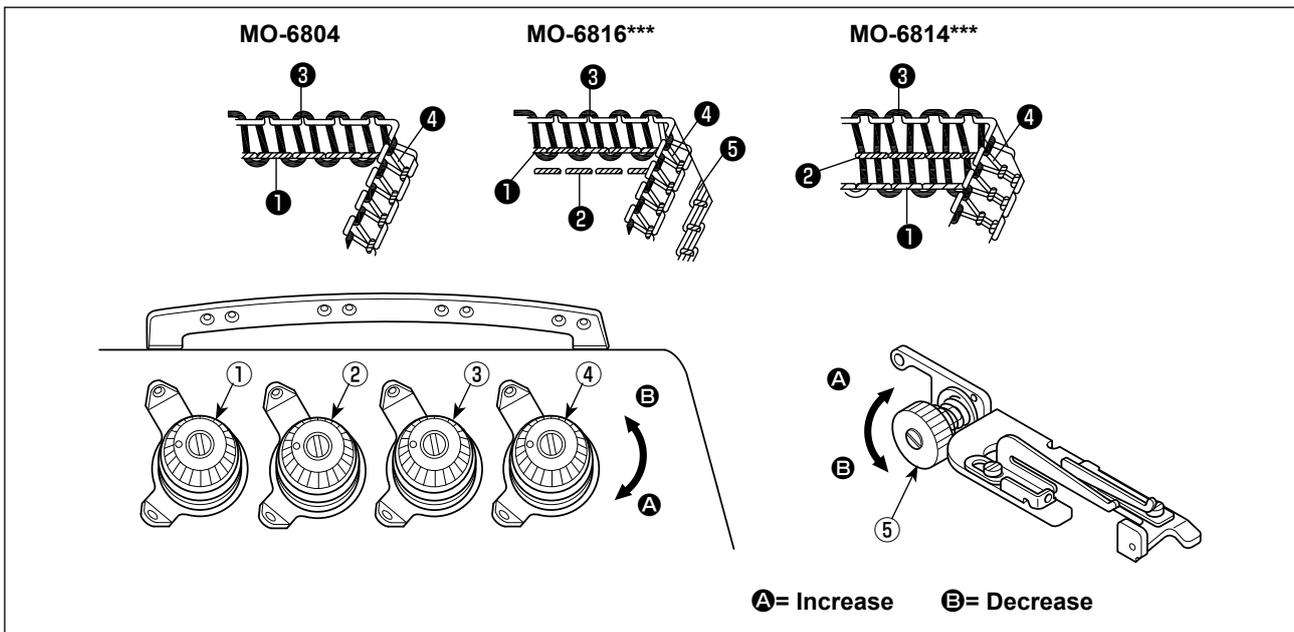


5-2. Adjusting the thread tension

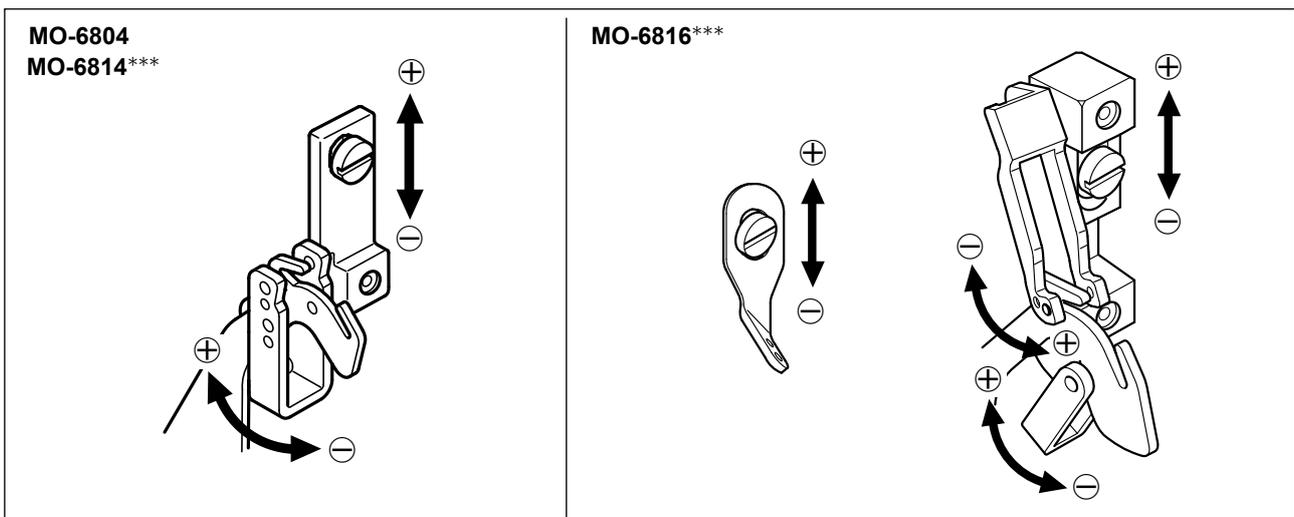
The thread tension should be adjusted properly according to the kinds and the thickness of the materials, stitch length, and seam width, etc. In addition, adjust the nuts case by case individually. Turn the nuts clockwise will increase the thread tension. Otherwise, the thread tension will be decreased.

(1) Thread tension adjusting nuts

- 1) Tension adjusting nut No. ① controls thread ① .
- 2) Tension adjusting nut No. ② controls thread ② .
- 3) Tension adjusting nut No. ③ controls thread ③ .
- 4) Tension adjusting nut No. ④ controls thread ④ .
- 5) Tension adjusting nut No. ⑤ controls thread ⑤ .

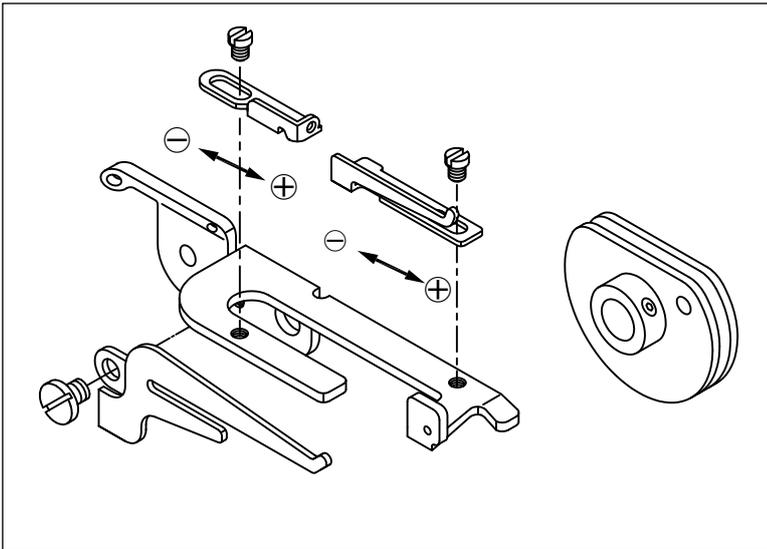


(2) Adjusting the needle thread length



- 1) Adjust the needle thread length by turning the thread guide in the directions of arrows.
- 2) The ⊕ direction indicates to increase the needle thread length.
- 3) The ⊖ direction indicates to decrease the needle thread length.

(3) Adjusting the looper thread cam thread guide



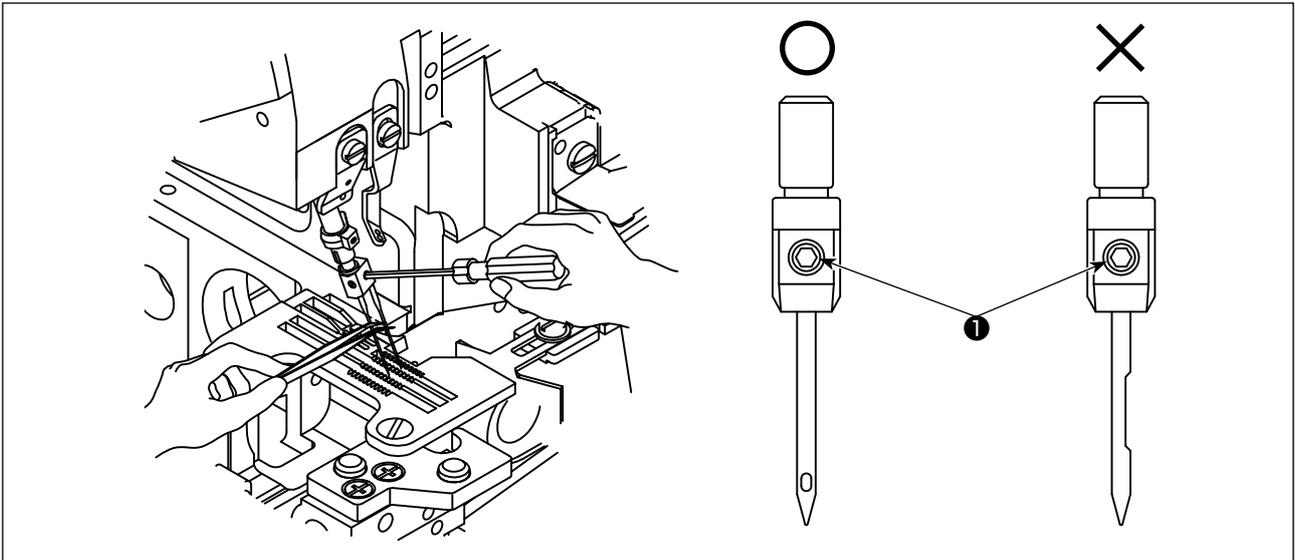
- 1) In the case the looper thread is not appropriately adjusted, thread loops cannot be formed with consistency. (Thread can be excessively loosened or thread loops cannot be formed.)
- 2) ⊕ means to have more thread amount while sewing.
- 3) ⊖ means to have less thread amount while sewing.

5-3. Replace the needle



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



- 1) Please use the needle DC × 27 or the equivalents.
- 2) Loosen the screw ❶ and take off the needle.
- 3) Fully insert the new needle into the needle clamp hole with the needle recess facing backwards as viewed from the operator's side.
- 4) Tighten the screw ❶.

5-4. Adjusting the stitch length

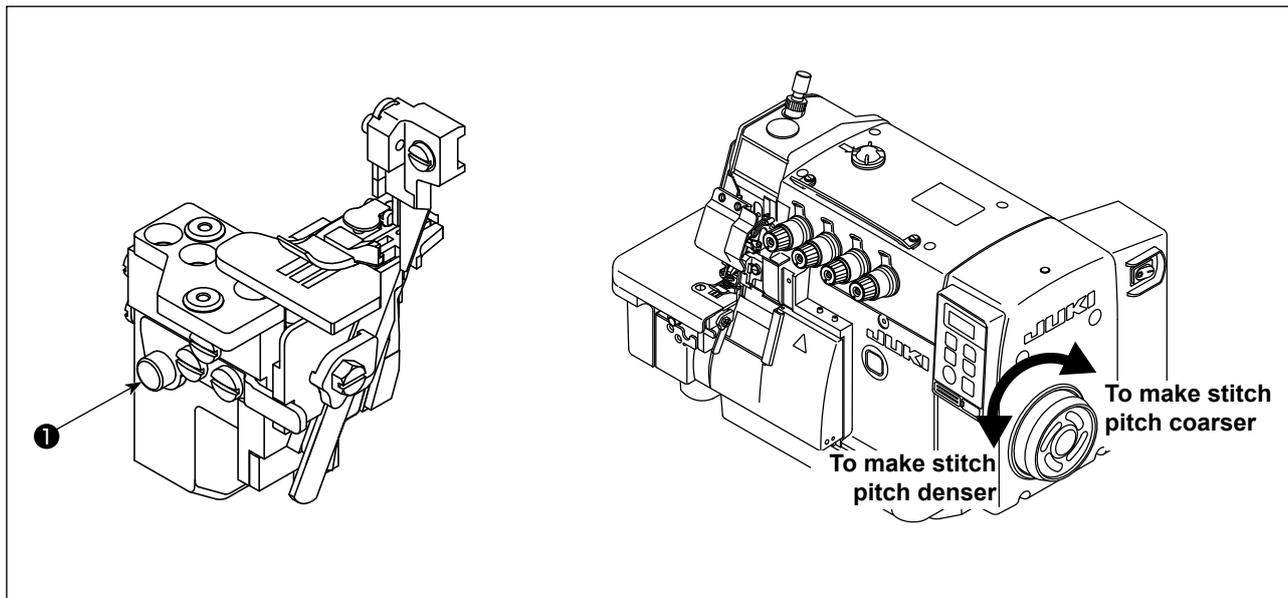


WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

Change the stitch length appropriately according to the material to be used, differential feed ratio or other relevant factors.

Keep pressing the button ❶ and turn the pulley till the button is locked. Then, release the button after reaching the desired stitch length.

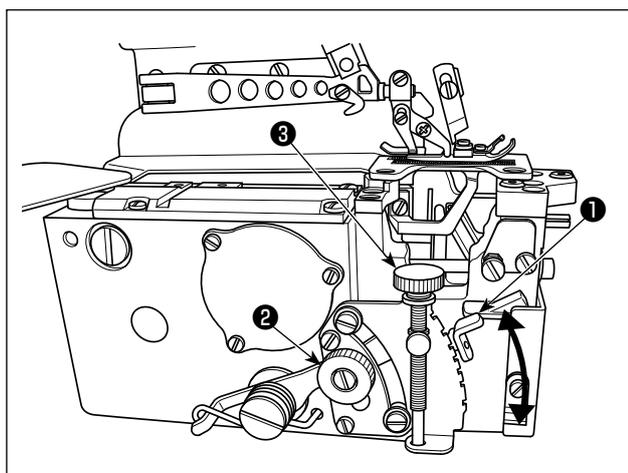


5-5. Adjusting the differential feed ratio



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



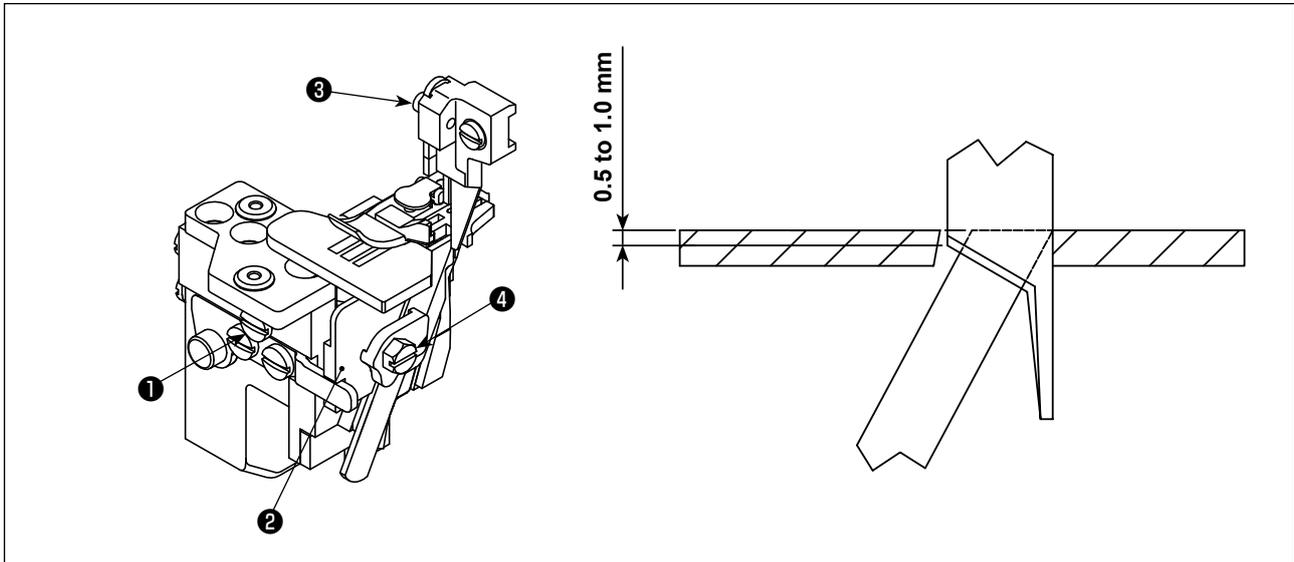
- 1) Loosen differential feed adjusting nut ❷ . Move differential feed adjusting rod ❶ upward to perform stretching sewing, or downward to perform shirring.
- 2) When you want to move the lever ❶ only slightly, use differential feed minute-adjust screw ❸ .
- 3) After the adjustment, securely tighten differential feed adjusting nut ❷ .

5-6. Replace the knives



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



(1) Replace the upper knife

- 1) Loosen the screw ❶ and move the lower knife holder ❷ to the left. Then, tighten the screw ❶ a little.
- 2) Remove the screw ❸ and put the new upper knife. Then, tighten the screw ❸ a little.
- 3) Turn the pulley to move the upper knife to the lower dead point. Adjust the height of the upper knife so that the upper knife can cross the lower knife about 0.5 to 1.0 mm. After that, tighten the screw ❸ .
- 4) Loosen the screw ❶ and return the lower knife holder ❷ to its original position.
Test if the upper and the lower knife can cut the thread exactly, and then tighten the screw ❶ .

(2) Replace the lower knife

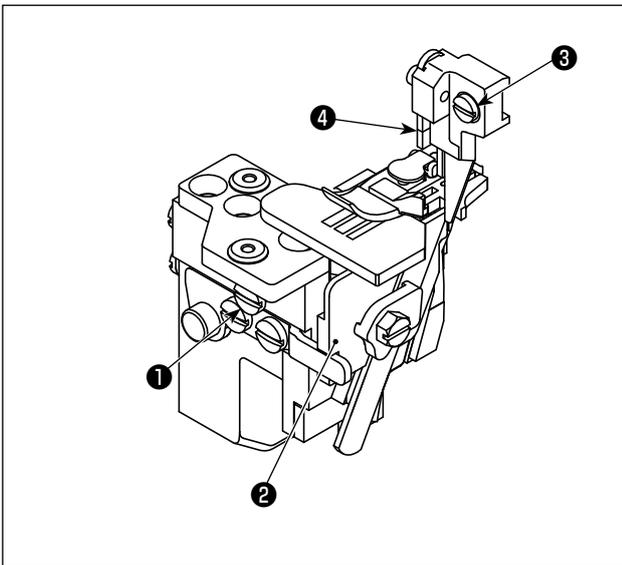
- 1) Loosen the screw ❶ and move the lower knife holder ❷ to the left. Then, tighten the screw ❶ a little.
- 2) Loosen the screw ❹ . Take off the lower knife and replace a new one.
- 3) Adjust the edge of the lower knife to be aligned with the surface of the throat plate. Then, tighten the screw ❹ .
- 4) Loosen the screw ❶ to return the lower knife holder ❷ to its original position and test if the upper and the lower knife can cut the thread exactly. Then, tighten the screw ❶ .

5-7. Adjusting the overedge width



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



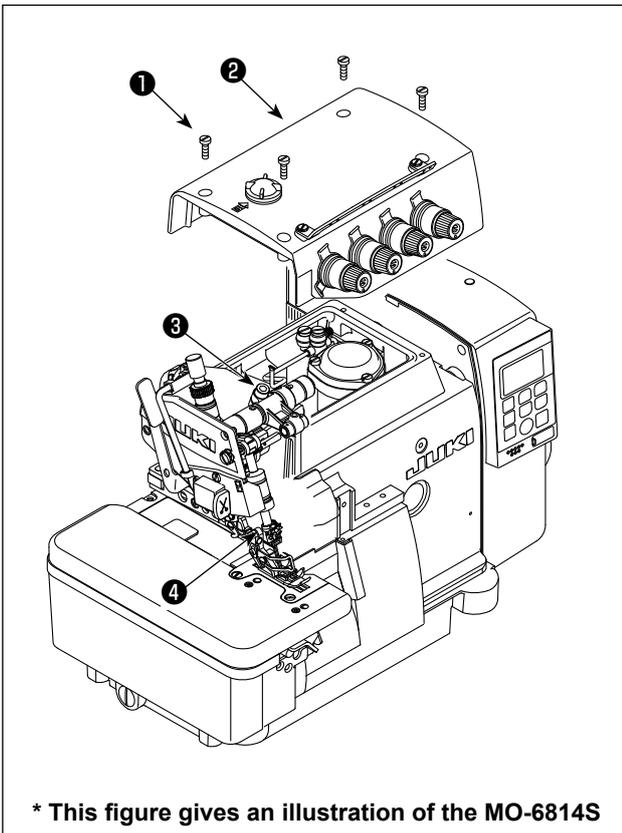
- 1) Turn the pulley to move the upper knife ④ to the lower dead point.
- 2) Loosen the screw ① and move the lower knife holder ② to the left, and then tighten the screw ① a little.
- 3) Loosen the screw ③, and move the upper knife holder left or right till reaching the desired width. Then, tighten the screw ③.
- 4) Loosen screw ①. Move the lower knife holder ② until the lower knife comes in contact with the upper knife.
Test if the knives can cut the thread, and then tighten the screw ①.

5-8. Adjusting the needle height



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



Turn the pulley to bring the needle to its upper end. At this time, adjust the distance from the needle tip to the top surface of the throat plate appropriately.

- 1) Loosen four screws ①. Open top cover ② and detach it.
- 2) Loosen the screw ③, and move the needle bar ④ to the desired height. Then, tighten the screw ③.
- 3) Close top cover ②. Tighten four screws ①.



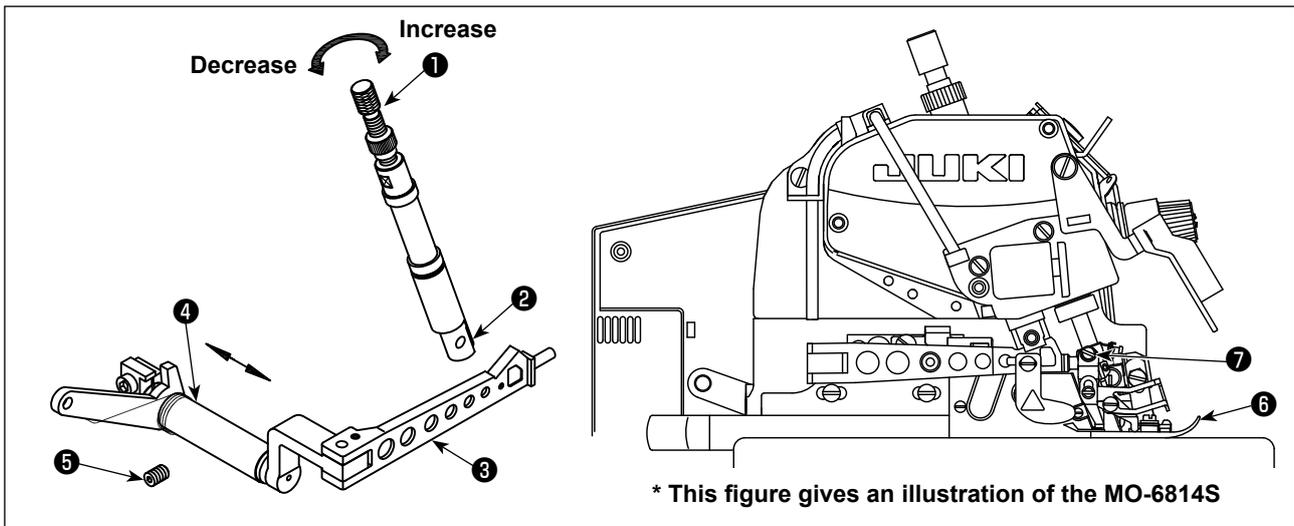
After the adjustment of the needle bar height, check the relation between the needle and the looper.



Refer to "8-1. Dimensions use to adjusting the looper and the needle guard" p.70 for the adjustment values of the needle height.

5-9. Adjusting the presser foot

(1) Adjusting the presser foot position

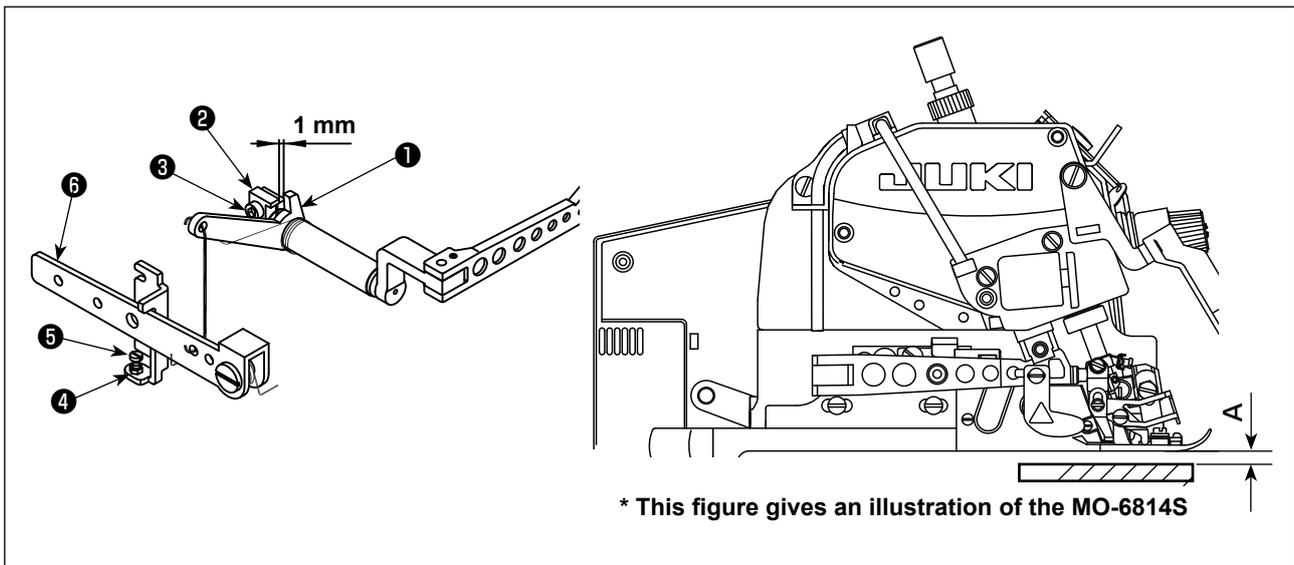


- 1) Loosen adjusting screw ① and screw ⑦ of the presser foot.
- 2) Move the presser foot ⑥ so that the groove of the presser foot can align with the groove of the throat plate. Also the bottom of the presser foot can stand on the throat plate flatly and then tighten the screw ⑦.
- 3) Loosen the screw ⑤ and move ④ left and right so that ③ can match ② and ② can move upward and downward smoothly. Then, tighten the screw ⑤.
- 4) To adjust to a proper pressure: turn the screw ① clockwise will increase the pressure, whereas turn it counter clockwise will decrease the pressure.



1. When you carry out adjustment work with the presser foot lifting arm removed, the sewing machine can start running if the sensor is blocked by mistake if you have not turned OFF the power switch. To prevent such an abrupt start of the sewing machine, it is necessary to turn OFF the power to the sewing machine before starting adjustment work.
2. When you want to activate the sewing machine, make sure that the presser foot arm is fitted in the groove on the presser bar assembly before turning ON the power to the sewing machine.

(2) Adjusting the lift amount of the presser foot



- 1) Turn the pulley to lower the feed dog until the bottom of the presser horizontally comes in contact with the throat plate.
- 2) Provide a 1 mm clearance between presser foot lifting arm ① and fixing bracket ② . This clearance can be adjusted by slightly loosening screw ③ .
- 3) Loosen nut ④ . Press presser foot lifting lever ⑥ to lift the presser foot from the throat plate surface. The lift of the presser foot differs with the model. Adjust the lift of the presser foot according to the model referring to the table shown below.
Then, adjust screw ⑤ so that it comes in contact with presser foot lifting lever ⑥ . Tighten nut ④ .
- 4) After all the adjustments above, please tighten the screw ③ .

(Unit : mm)

Model	Lift amount of the presser foot (A)
MO-6804	6
MO-6814-2 △ H	5.5
MO-6814-3 △ H	5.5
MO-6814-4 △ H	7
MO-6814-30P	5
MO-6816-3 △ H	5.5
MO-6816-50H	6.5
MO-6816-60H	7
MO-6816-30P	5

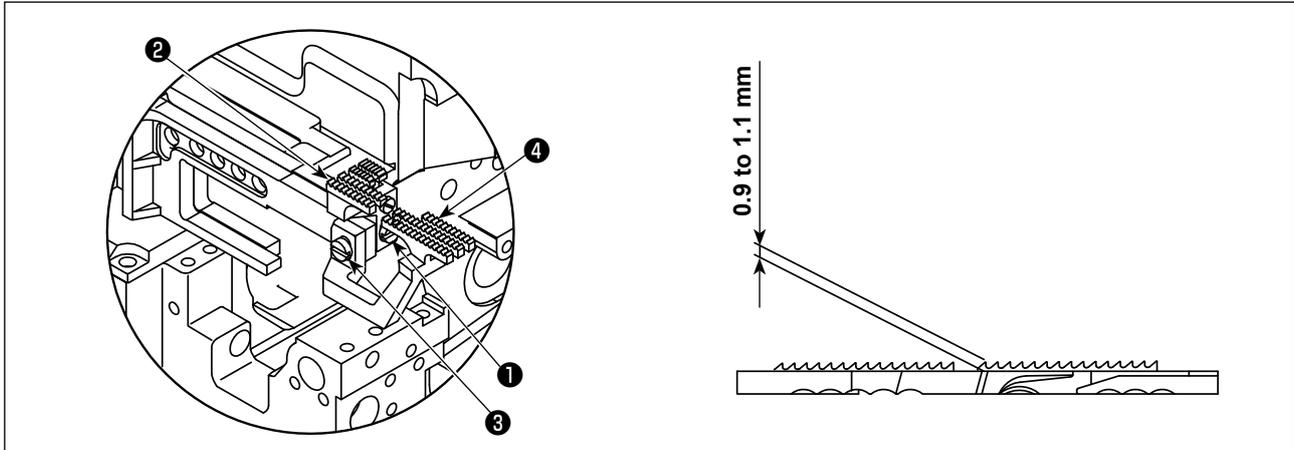
5-10. Adjusting the feed dog



WARNING :

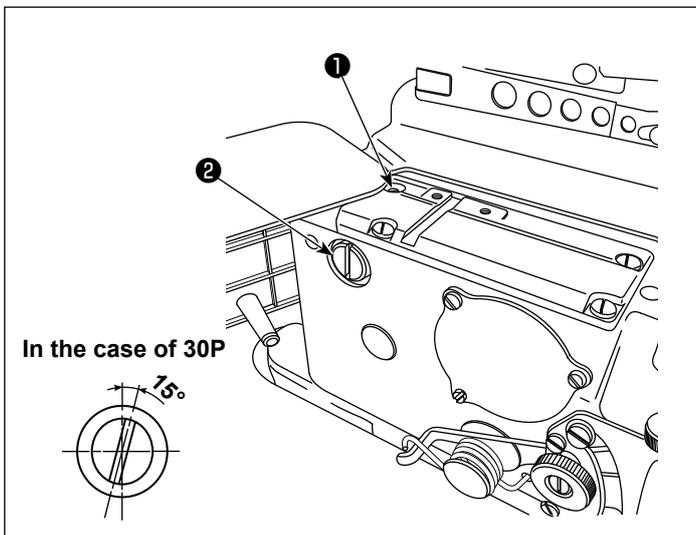
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

(1) Adjusting the feed dog height



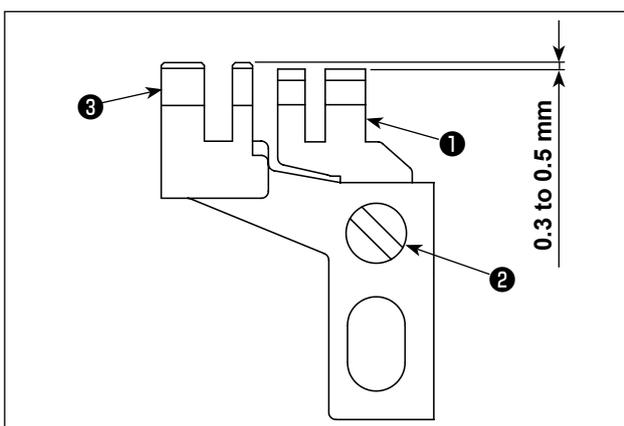
- 1) Turn the pulley to rise the feed dog the highest point.
- 2) Loosen the screw ❶ . and move the main feed dog ❷ up and down in order to keep the teeth side over the throat plate about 0.9 to 1.1 mm (30P: 0.7 to 0.9 mm, 60H: 1.0 to 1.2 mm). Then, tighten the screw ❶ .
- 3) Loosen screw ❸ . Move differential feed dog ❹ up and down to adjust so that it is flush with main feed dog ❷ . Then, tighten screw ❸ .

(2) Adjusting the inclination of the feed dog



To adjust the inclination of the feed dog, loosen screw ❶ and turn rear support shaft ❷ . When the feed dog is flush with the top surface of the throat plate and the feed dog is levelled (30P: The feed dog is positioned with its front part low), tighten screw ❶ .

(3) Adjusting the auxiliary feed dog height



The teeth section of auxiliary feed dog ❶ has to be positioned lower than main feed dog ❸ by 0.3 to 0.5 mm (30P: 0.1 to 0.3 mm, 60H: 0.25 to 0.35 mm). The height can be adjusted by loosening the screw ❷ .

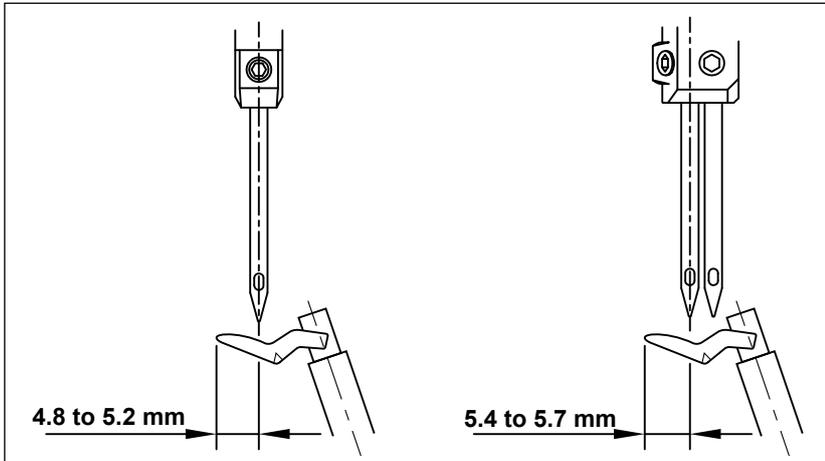
5-11. The relationship between the needle and the looper



WARNING :

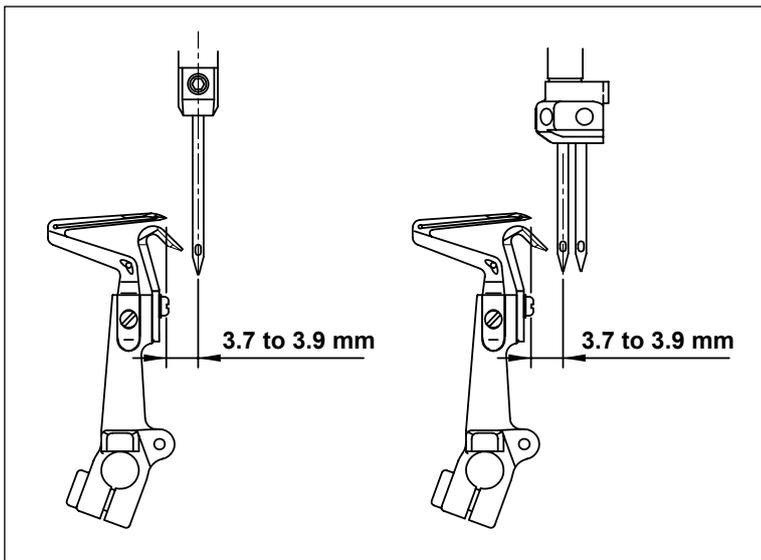
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

(1) The relationship between the needle and the upper looper

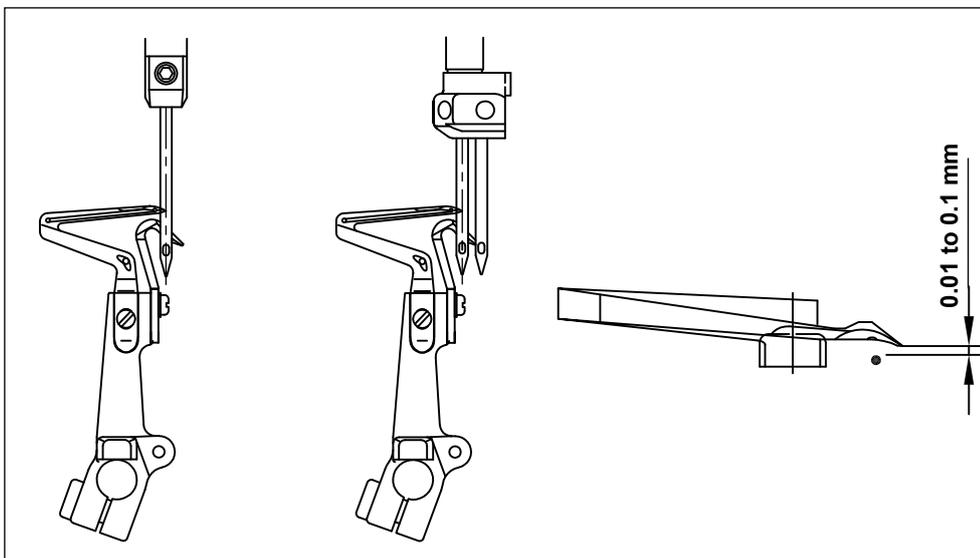


When the upper looper moves to the leftmost point, the distance from the looper tip to the center line of the needle is 4.8 to 5.2 mm. For 2-needle model, the distance from the looper tip to the center line of the left needle is 5.4 to 5.7 mm (60H: 5.0 to 5.5 mm).

(2) The relationship between the needle and the lower looper

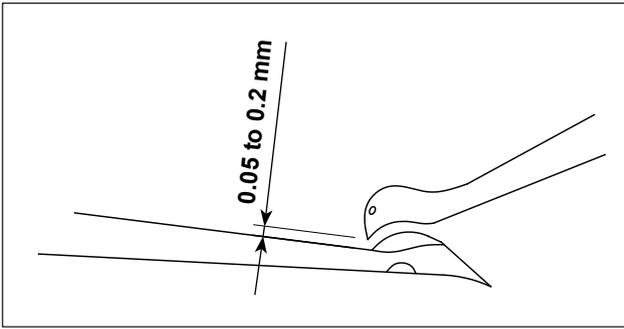


1) When the lower looper moves to the leftmost point, the distance between the looper tip and the center line of the needle should be about 3.7 to 3.9 mm (40H, 44H, 50H and 60H : 4.1 to 4.3 mm). For 2-needle model, the distance is from the lower looper tip to the center line of the left needle.



2) Adjust the distance from the looper tip to the scarf of the needle to 0.01 to 0.1 mm when the lower looper moves to the right toward the center line of the needle (for the 2-needle models, the left needle is used as the reference).

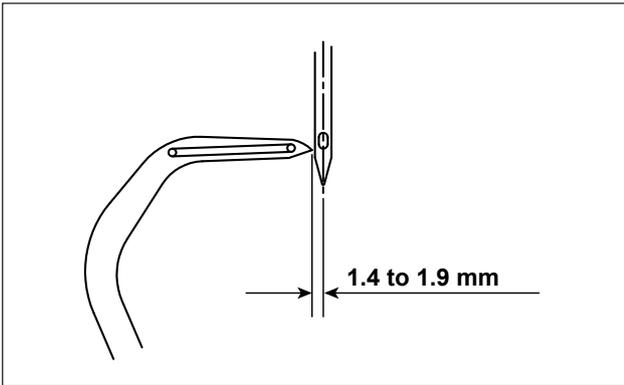
(3) The relationship between the upper looper and the lower looper



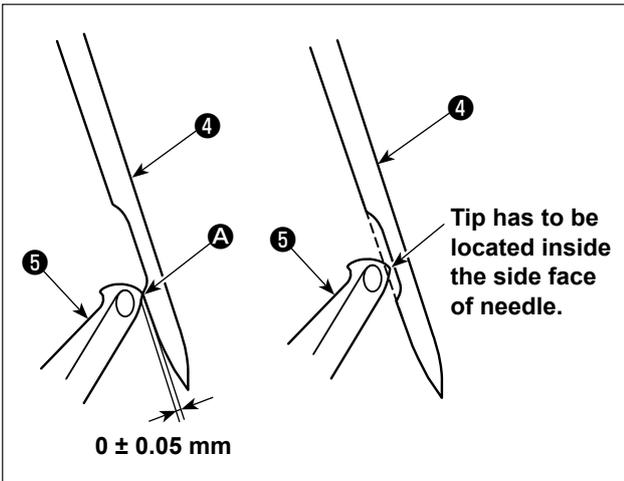
When the upper and the lower loopers cross, keep them as close as possible.

Somehow, the loopers shall not either touch nor collide to each other. The clearance of 0.05 to 0.2 mm should be provided between the upper and lower loopers when they are crossing.

(4) The relationship between the needle and the double chainstitch looper



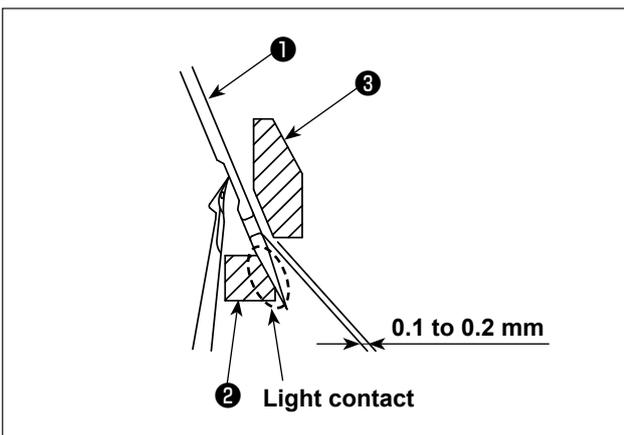
When the double chainstitch looper moves to reach its leftmost position, the distance from the double chainstitch looper to the center line of the needle should be 1.4 to 1.9 mm (50H, 60H: 1.6 to 2.3 mm).



Adjust so that the clearance of 0 ± 0.05 mm is provided between crest **A** of the lower end of scarf of double chainstitch needle **4** and double chainstitch looper **5**.

At this time, the tip of double chainstitch looper **5** should be located inside the side face of double chainstitch needle **4**.

(5) The relationship between the needle and the needle guard



Adjust so that movable needle guard **2** comes in light contact with the needle when overlock needle **1** (left needle for the 2-needle model) is brought to its lower end position.

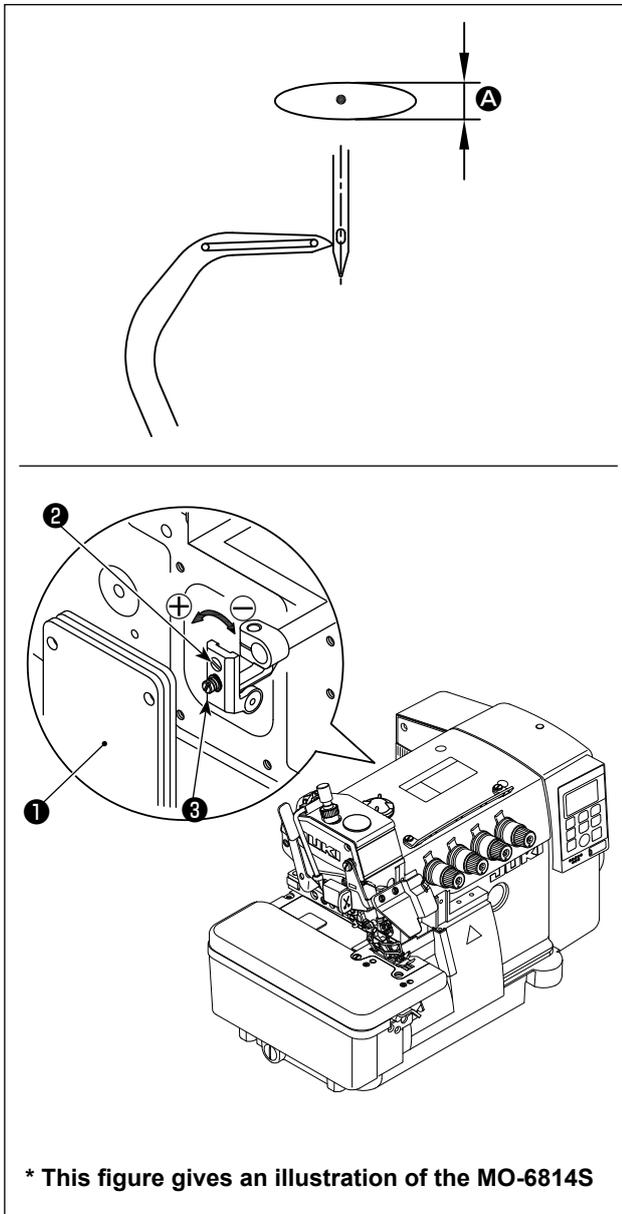
Adjust so that the distance from needle **1** to front needle guard **3** to 0.1 to 0.2 mm.

5-12. Adjusting the amount of travel of the double chainstitch looper



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

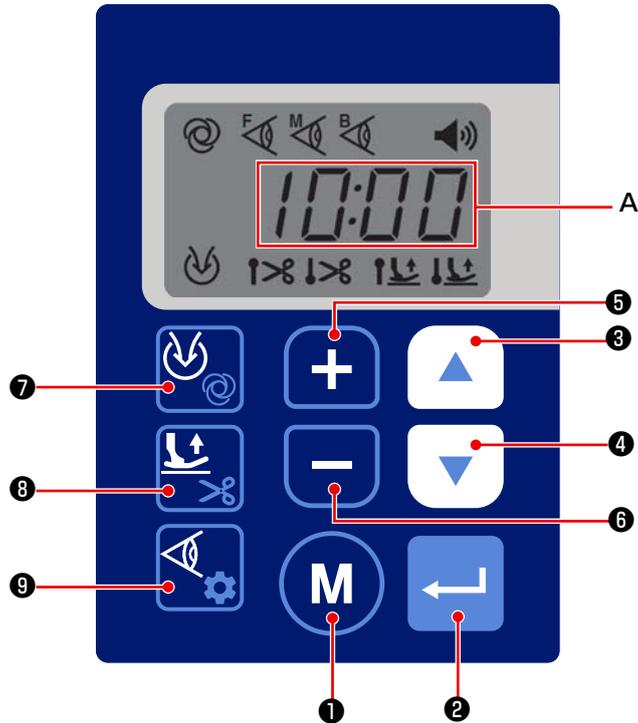


The double chainstitch looper makes elliptic movement. Adjust the amount of front/rear travel **A** of the double chainstitch looper following the steps of procedure described below where necessary.

- 1) Open rear cover **1** of the sewing machine.
- 2) Loosen the screw **3** slightly.
- 3) Turn the screw **2** to adjust.
To increase the amount of travel, turn to \oplus direction.
To decrease the amount of travel, turn to \ominus direction.
- 4) Tighten the screw **3** after the adjustment.
- 5) At the end of the adjustment, close rear cover **1**.

6. OPERATION PROCEDURE

6-1. Operation panel



No.		How to press the button	Function
①		Short time	This button is used for changing over the current mode to the function setting mode.
		Long time	This button is used for setting the time.
②		Short time	This button is used for confirming the setting you have changed.
③		Short time	This button is used for increasing the maximum sewing speed.
		Long time	Continuous input is enabled
④		Short time	This button is used for decreasing the maximum sewing speed.
		Long time	Continuous input is enabled
⑤		Short time	This button is used for increasing the current numerical value on the function setting screen.
		Long time	Continuous input is enabled
⑥		Short time	This button is used for decreasing the brightness of the hand illumination LED.
		Long time	Keeping this button held pressed changes the color of the hand illumination LED.
⑦		Short time	This button is used for changing the setting of the suction device.
		Long time	Keeping this button held pressed changes over the sewing mode.
⑧		Short time	This button is used for changing the setting of the presser foot.
		Long time	Keeping this button held pressed changes the setting of the thread trimmer (only for the DD23 model).

No.		How to press the button	Function
9		Short time	This button is used for displaying the sensor values.
		Long time	Keeping this button held pressed changes over the screen to the sensor sensitivity adjustment screen.
	A		This LCD displays the current time. " : " blinks on this LCD while the sewing machine is in operation.

6-2. Font comparison table

Arabic figures:

Actual shape of figure	0	1	2	3	4	5	6	7	8	9
Display										

Arabic figures:

Actual shape of figure	A	B	C	D	E	F	G	H	I	J	K	L	M
Display													
Actual shape of figure	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Display													

6-3. Function setting

Functions can be selected and set as described below.



- 1) Press **M** ①.

The display on the display section **A** is changed over to display the Function setting No. (P- * *).

(The display item that has been previously changed is displayed unless you have turned the power OFF after you changed the setting last time.)

- * If the display on the screen fails to change, carry out the operation procedure 1) again.

Be sure to re-turn ON the power switch after 10 seconds or more have passed after you turned OFF the power switch. If you re-turn ON the power switch immediately after you have turned it OFF, the sewing machine may fail to operate normally. In such a case, be sure to re-turn ON the power switch. Functions can be selected and set as described below.

- 2) When you want to change the function setting number,

change it by pressing **+** ⑤ and **-** ⑥.

- 3) When you press **←** ② after you have changed the function setting number, the set value of the relevant function setting number is displayed.

- 4) Change the set value by pressing **+** ⑤ and **-** ⑥.

- 5) Confirm the set value by pressing **←** ②.

- * If you have changed the set value during sewing, there is a parameter that enable the set value when you depress the back part of the pedal.

- 6) If you keep **↺** ⑦ held pressed without confirming the set value in step 5), only the set value that is currently selected can be saved to memory. While the set value is being saved, the word "SAVE" is displayed on the screen.

After the set value has been saved, the screen returns to the normal sewing screen.

Refer to "**6-8. Initialization of the function setting data**" p.57 for how to initialize the function setting data.

- 7) If you press **⚙** ⑨ without confirming the set value in step 5), the set value that is currently selected can be changed to the value you have stored in memory in step 6).

If you do not store the set value in memory as described in step 6), the set value will be restored to the initial value that has been factory-set at the time of shipment.

6-4. Function setting table

No	Item	Description	Range	Initial value					
				DD22			DD23		
				0 : General	1 : High lift	2 : Extra- high lift	0 : General	1 : High lift	2 : Extra- high lift
P001	Maximum sewing speed	The maximum sewing speed is limited with the function setting number P121. (It can be set under the Service Level mode.) (Unit: sti/mn) Refer to "■ Model selection table" p.43 for the model selection (0: General 1: High lift 2: Extra-high lift).	200-7000	6500	6000	5500	6500	6000	5500
P002	Soft start ON / OFF	This function setting number is used for setting ON / OFF of the soft-start function. (0: OFF 1: ON)	0-1	1			1		
P003	Soft-start sewing speed	This function setting number is used for setting the soft-start sewing speed at the beginning of sewing. (Unit: sti/min)	200-6000	3000			3000		
P004	Number of soft-start stitches	This function setting number is used for setting the number of stitches to be sewn with the soft-start function at the beginning of sewing. (Unit: stitch)	1-100	30			30		
P005	Sewing-end speed reduction ON / OFF	0 : OFF / 1 : ON	0-1	0			0		
P006	Sewing-end speed reduction, number of stitches	Number of stitches to be sewn before starting reduction in speed after the material end has passed the front sensor (Unit: stitch)	1-200	1			1		
P007	Sewing-end speed reduction, sewing speed	This function setting number is used for setting the reduced sewing speed to be employed at the end of sewing. (Unit: sti/min)	500-7000	3500			3500		
P008	Foot pedal acceleration factor	The more the acceleration factor is increased, the less the stepping depth of the foot pedal to reach the maximum number of revolutions becomes. The less the acceleration factor is decreased, the more the stepping depth of the foot pedal to reach the maximum number of revolutions becomes. It should be remembered, however, the maximum speed will not be reached even when you depressed the foot pedal as far as it goes if the acceleration factor is excessively decreased.	0-100	32			32		
P009	Acceleration factor of the foot pedal for standing work		0-100	32			32		
P013	Stop position selection	This function setting number is used for setting the needle stop position. (0: Lower stop position / 1: Upper stop position)	0-1	0			0		
P014	Selection of needle stop position after the completion of thread trimming	This function setting number is used for setting the stop position of the needle after the completion of thread trimming. (0: Lower stop position / 1: Upper stop position)	0-1	1			1		
P017	One shot	When the full automatic mode is selected, it is possible to set the sewing starting method; either automatic start or by pressing the foot pedal, to be used after the front sensor has detected the material. (0: Automatic / 1: Foot pedal)	0-1	1			1		
P018	Full / semi automatic mode	In the case "ON" is selected with the function setting number "P20: Automatic sensor ON / OFF", the type of automatic mode; either full-automatic or semi-automatic mode, should be selected with this function setting number. (0: Semi automatic / 1: Full automatic)	0-1	0			0		
P019	Continuous sewing under semi-automatic mode	In the case the semi-automatic mode is selected, it is possible to start the next sewing with the front part of the foot pedal held depressed after the completion of thread trimming. If the function is set to "OFF", it will be necessary to return the foot pedal to its neutral position. (0 :OFF / 1: Continuous sewing by depressing the front part of foot pedal)	0-1	1			1		
P020	Automatic sensor ON / OFF	This function setting number is used for selecting use / no-use of the sensor. If "OFF" is selected, the sewing machine will be operated under the manual mode. (0: OFF / 1: ON)	0-1	1			1		
P021	Front sensor ON / OFF setting	In the case the front sensor has failed, this function setting number should be set to "OFF". If P021 is set to "OFF", the full automatic mode cannot be used. (0: OFF / 1: ON)	0-1	1			1		

No	Item	Description	Range	Initial value	
				DD22	DD23
P022	Intermediate sensor ON / OFF setting	In the case the front sensor has failed, this function setting number should be set to "OFF". (0: OFF / 1: ON)	0-1	1	1
P023	Rear sensor ON / OFF setting	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". If both P022 and P023 are set to "OFF", the automatic mode of DD23 cannot be used. (0: OFF / 1: ON)	0-1	0	0
P024	Number of stitches between both sensors	This function setting number is used for setting the number of stitches to be sewn after one sensor has detected the material and before the next sensor does. If the next sensor fails to detect the material, the sewing machine will stop running after it has sewn the number of stitches set with this function setting number. (Unit: stitch)	1-600	20	20
P025	Stop-delay number of stitches	This function setting number is enabled in the case the rear thread trimmer is set to "OFF". The sewing machine stops after it operates by the number of stitches set with this function setting number after the material has passed the last sensor. (Unit: stitch)	0-99	0	0
P026	Free stitching ON / OFF	It is possible to select either the semi-automatic mode or the free stitching with this function setting number. In the case the free stitching is selected, the sewing machine will not stop running if the front part of the pedal is held depressed after the completion of thread trimming. (0: OFF / 1: ON)	0-1	0	0
P029	Automatic thread trimming ON / OFF	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". It is possible to select the operation of the automatic thread trimmer with this function setting number. (0: OFF / 1: Front thread trimmer / 2: Rear thread trimmer / 3: Front and rear thread trimmers)	0-3	3	3
P030	Automatic constant-speed thread trimming ON / OFF	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". It is possible to select the operation of the automatic thread trimmer with this function setting number. (0: OFF / 1: Automatic constant-speed thread trimming)	0-1	0	0
P031	Front thread trimmer, starting number of stitches	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the number of stitches to be sewn until the front thread trimmer operates after the material has passed the intermediate sensor. The smaller this value is set, the longer the remaining thread length becomes. (Unit: stitch)	0-50	3	3
P032	Rear thread trimmer, starting number of stitches	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the number of stitches to be sewn until the rear thread trimmer operates after the material has passed the rear sensor. The smaller this value is set, the shorter the remaining thread length becomes. (Unit: stitch)	0-50	3	3
P033	Number of stitches to prevent cloth trimming	In the case "DD22" is selected with the function setting number "P125 Model selection" (setting is enabled for the Service level), the sewing machine stops running or the rear thread trimmer operates after the sewing machine has sewn the number of stitches set with this function setting number after the material has passed the intermediate sensor. In the case "DD23" is selected with the function setting number "P125 Model selection" (setting is enabled for the Service level), and the function setting number "P023 Rear sensor ON / OFF setting" is set to "OFF", the sewing machine stops running or the rear thread trimmer operates after the sewing machine has sewn the number of stitches set with this function setting number (P033) and the number of stitches set with P032 after the material has passed the intermediate sensor. The number of stitches set with this function setting number should be referred to in the case "1: Check pattern material" is selected with the function setting number "P089 Check pattern material". (Unit: stitch)	0-50	0	8

No	Item	Description	Range	Initial value	
				DD22	DD23
P034	Number of stitches to prevent cloth trimming	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". If the rear sensor detects the material before the front thread trimmer operates, the operation of the front thread trimmer will be cancelled. (0: OFF / 1: ON)	0-1	1	1
P035	Thread trimming time	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". Thread trimmer operating time is set with this function setting number. (Unit: ms)	30-990	60	60
P036	Manual mode, thread trimming by depressing back-part of foot pedal ON / OFF	In the case the manual mode is selected, thread trimmer operation carried out by depressing the back part of the foot pedal is set with this function setting number. (0: Without thread trimming / 1: With thread trimming)	0-1	0	0
P038	Tension release ON / OFF	This function setting number is enabled only in the case "DD22" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the tension release function to ON or OFF. (0: OFF / 1: Front open / 2: Rear open / 3: Front and rear open)	0-3	3	0
P039	Tension-release continuing number of stitches at the beginning of sewing	This function setting number is enabled only in the case "DD22" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the number of stitches to be sewn at the beginning of sewing with the thread tension released continuously after the front sensor has detected the material. (Unit: stitch)	1-50	5	1
P040	Tension-release continuing number of stitches at the end of sewing	This function setting number is enabled only in the case "DD22" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the number of stitches to be sewn at the end of sewing with the thread tension released continuously after the material has passed the intermediate sensor. (Unit: stitch)	1-50	15	1
P041	Number of stitches to start releasing the tension at the end of sewing	This function setting number is enabled only in the case "DD22" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the delaying number of stitches to be sewn before the tension-release operation is started at the end of sewing after the material has passed the intermediate sensor. (Unit: stitch)	0-50	0	0
P042	Manual thread trimming, duration	This function setting number is enabled only in the case "DD22" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the duration during which the thread trimmer operation is continued after the hand switch is pressed and released. (Unit: x100ms) As long as the hand switch is held pressed, the thread trimmer continues operation.	1-50	3	3
P043	Manual thread trimming, motor speed	This function setting number is enabled only in the case "DD22" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the number of revolutions of the motor that operates the thread trimmer when the hand switch is pressed. (Unit: sti/min)	500-7000	3500	3500
P044	Manual thread trimming, the number of times	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the number of times to operate the thread trimmer. (Unit: Number of times)	1-5	1	1
P045	Manual thread trimming, time interval	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". In the case the number of times of thread trimming is set to "2 or more" with the function setting number P044, the time interval set with this function setting number (P045) is used. (Unit: ms)	30-990	50	50

No	Item	Description	Range	Initial value	
				DD22	DD23
P049	Automatic suction ON / OFF	Type of operation of the automatic suction can be selected with this function setting number. (0: OFF / 1: Front suction / 2: Rear suction / 3: Front and rear suction)	0-3	3	3
P050	Front suction, continuing number of stitches	This function setting number is used for setting the number of stitches to be sewn continuously until the front suction stops after the intermediate sensor has detected the material. (Unit: stitch)	0-50	5	5
P051	Intermediate suction, continuing number of stitches	This function setting number is enabled only in the case "DD22" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the number of stitches to be sewn continuously until the rear suction stops after the material has passed the intermediate sensor. (Unit: stitch)	0-50	35	5
P052	Intermediate suction, starting number of stitches	This function setting number is enabled only in the case "DD22" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the delaying number of stitches to be sewn before the rear suction starts after the material has passed the intermediate sensor. (Unit: stitch)	0-50	0	0
P053	Rear suction, duration	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". This function setting number is used for setting the duration of suction until the rear suction is stopped after the rear thread trimmer has started. (Unit: ms) If the rear thread trimmer is set to "OFF", the rear suction will not operate.	0-5000	200	200
P054	Manual suction ON / OFF	It is possible to select the type of operation of manual suction to be carried out by pressing the hand switch. (0: OFF / 1: Rear suction / 2: Front and rear suction)	0-2	1	1
P055	Manual suction, duration	This function setting number is used for setting the duration of suction until the suction (set with P054) is stopped by pressing the hand switch. (Unit: ms)	0-2000	500	500
P056	Low pressure mode ON / OFF	If the supplied air pressure is low, set this function setting number to "ON". Then, the function set with the function setting number P057 is enabled. (0: OFF / 1: ON)	0-1	0	0
P057	Suction synchronization time	This function setting number is enabled when "P056 Low pressure mode" is set to "ON". The device connected to Suction 2 will operate simultaneously with the device connected to Suction 1 during the time set with this function setting number. (Unit: ms)	0-2000	200	200
P058	Continuous material feeding section ON / OFF	It is possible to select the type of operation of the device connected to Suction 2. (0: OFF / 1: Long suction / 2: Synchronized suction / 3: Intermittent suction (controlled by time) / 4: Intermittent suction (controlled by the number of stitches)) Refer to the Engineer's Manual for how to connect the device to Suction 2.	0-4	2	2
P059	Intermittent suction, time	This function setting number is enabled when P058 is set to "3: Intermittent suction (controlled by time)". The operating time of the intermittent suction. (Unit: x100ms)	1-600	2	2
P060	Intermittent suction, duration	This function setting number is enabled when P058 is set to "3: Intermittent suction (controlled by time)". The operating time of the intermittent suction. (Unit: x100ms)	1-600	2	2
P061	Intermittent suction, the number of stitches	This function setting number is enabled when P058 is set to "4: Intermittent suction (controlled by the number of stitches)". The number of stitches to be sewn while operating the intermittent suction. (Unit: stitch)	0-200	50	50
P062	Intermittent suction, stopping number of stitches	This function setting number is enabled when P058 is set to "4: Intermittent suction (controlled by the number of stitches)". The number of stitches to be sewn while operating the intermittent suction. (Unit: stitch)	0-200	50	50
P066	Auto lifter ON / OFF	It is possible to select the type of operation of the auto lifter with this function setting number. (0: OFF / 1: Front lifter / 2: Rear lifter / 3: Front and rear lifters)	0-3	0	0

No	Item	Description	Range	Initial value	
				DD22	DD23
P067	Presser foot lifting during sewing ON / OFF	This function setting number is enabled when the sewing machine is operated with the foot pedal (except for the full automatic mode). It is used for setting whether or not the presser foot is automatically lifted when the foot pedal is returned to its neutral position. (0: OFF / 1: ON)	0-1	0	0
P068	Presser foot lifting by depressing the back part of foot pedal by half of its depressing depth	It is possible to select the type of presser foot lifting operation to be carried out when the back part of the foot pedal is fully depressed or depressed by half of its depressing depth. (0: Lifting the presser foot by depressing the back part of pedal by half-depth or by fully depressing the back part of pedal / 1: Lifting of the presser foot is OFF / 2: Lifting the presser foot by fully depressing the back part of pedal)	0-2	0	0
P069	Front lifter, duration	This function setting number is enabled when the function setting number P066 is set to "1: Front lifter" or "3: Front and rear lifters". It is used for setting the time that elapses from lifting to lowering of the presser foot. (Unit: ms)	50-2000	500	500
P070	Rear lifter, starting time	This function setting number is enabled when the function setting number P066 is set to "2: Rear lifter" or "3: Front and rear lifters". It is used for setting the delay time that elapses before the presser foot lifting operation starts. (Unit: ms)	0-2000	120	120
P071	Presser foot lifting time	The presser foot lifting time should be entered when the solenoid valve is used. It is an extended parameter for future use. (Not used)	10-990	50	50
P072	Presser foot retaining DUTY		10-90	20	20
P073	Presser foot protection time	This function setting number is used for setting the time during which the presser foot lifter is held in the ON state. (Unit: s)	1-120	5	5
P076	Front sensor, irradiation intensity	It is possible to adjust the output intensity of the front sensor (light projecting side). (Unit: %) * This parameter cannot be changed to the initial value that has been factory-set at the time of shipment.	0-100	80	80
P077	Intermediate sensor, irradiation intensity	It is possible to adjust the output intensity of the intermediate sensor (light projecting side). (Unit: %) * This parameter cannot be changed to the initial value that has been factory-set at the time of shipment.	0-100	80	80
P078	Rear sensor, irradiation intensity	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". It is possible to adjust the output intensity of the rear sensor (light projecting side). (Unit: %) * This parameter cannot be changed to the initial value that has been factory-set at the time of shipment.	0-100	80	80
P079	Front sensor, material detection threshold	This is the threshold of detecting the presence / absence of the material with the front sensor. * This parameter cannot be changed to the initial value that has been factory-set at the time of shipment.	0-700	300	300
P080	Intermediate sensor, material detection threshold	This is the threshold of detecting the presence / absence of the material with the intermediate sensor. * This parameter cannot be changed to the initial value that has been factory-set at the time of shipment.	0-700	300	300
P081	Rear sensor, material detection threshold	This function setting number is enabled only in the case "DD23" is selected with the function setting number "P125 Model selection". This is the threshold of detecting the presence / absence of the material with the rear sensor. * This parameter cannot be changed to the initial value that has been factory-set at the time of shipment.	0-700	375	375
P085	Transparent fabric, correction of material-detection threshold	The correction value set with this function setting number applies to the threshold of detecting in the case "0: Transparent fabric" is selected with the function setting number P088.	0-800	10	10

No	Item	Description	Range	Initial value	
				DD22	DD23
P086	Translucent fabric, correction of material-detection threshold	The correction value set with this function setting number applies to the threshold of detecting in the case "1: Translucent fabric" is selected with the function setting number P088.	0-800	50	50
P087	Standard fabric, correction of material-detection threshold	The correction value set with this function setting number applies to the threshold of detecting in the case "2: Standard fabric" is selected with the function setting number P088.	0-800	200	200
P088	Type of fabric	This function setting number is used for selecting the type of fabric to be sewn in order to correct the sensors' threshold of detecting the material. (0: Transparent fabric / 1: Translucent fabric / 2: Standard fabric)	0-2	2	2
P089	Selection of check pattern fabric	This function setting number is used in the case the fabric with grid pattern holes. In the case "DD22" is selected with the function setting number "P125 Model selection" (can be set in the Service level), the value of "P033 Number of stitches to prevent cloth trimming" must be changed from the initial value. (0: General fabric / 1: Check pattern fabric)	0-1	0	0
P090	Front sensor, reaction time	When the front sensor detects the presence of the material, the sewing machine's next operation is delayed by the time set with this function setting number. The smaller the value is set, the earlier the reaction time becomes. (Unit: ms)	10-990	50	50
P097	Number of products	The number of finished products is counted with this function setting number (Unit: Piece) It is necessary to set the counting method with the function setting number J13.	0000-9999	0000	0000
J04	Selection of voice language	This function setting number is used for selecting the voice language. (0: English / 1: Chinese / 2: Vietnamese / 3: Bengali / 4: Khmer / 5: Indonesian / 6: Turkish / 7: Korean / 8: Spanish / 9: Portuguese / 10: Italian / 11: French / 12: German / 13: Japanese) * At the time of shipment from the factory, audio output is available only in "0: English" and "1: Chinese". If you want to use any other language, it will be necessary to separately install the relevant audio file. Refer to the Engineer's Manual for details. * This parameter cannot be changed to the initial value that has been factory-set at the time of shipment.	0-13	0	0
J05	Voice setting ON / OFF	This function setting number is used for setting the voice guidance to ON or OFF. (0: OFF / 1: ON)	0-1	1	1
J06	Voice volume setting	This function setting number is used for setting the volume of the voice guidance. (1: Small / 2: Medium / 3: Large) * This parameter cannot be changed to the initial value that has been factory-set at the time of shipment.	1-3	2	2
J10	Backlight brightness setting	This function setting number is used for setting the brightness of the backlight. (1: Dark / 2: Medium / 3: Bright)	1-3	3	3
J11	Backlight OFF time	This function setting number is used for setting the time to turn off the LCD backlight when the operation panel is left not-operated. (0: Backlight is not turned off / 1 - 250: Time to be elapsed until the backlight is turned off) (Unit: Minute)	0-250	30	30
J13	Counting method ON / OFF	This function setting number is used for setting the method to count the number of finished products for "P097 Number of products". (0: OFF / 1: Ascending order / 2: Descending order / 3: Ascending order (audio notification) / 4: Descending order (audio notification))	0-4	0	0

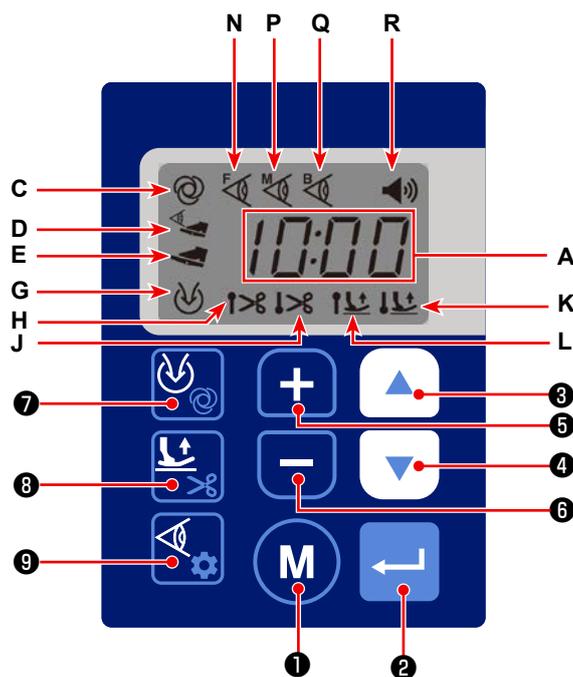
No	Item	Description	Range	Initial value	
				DD22	DD23
U01	Daily target	This function setting number is used for setting the daily target number of products to be sewn. (Unit: Piece)	0000-9999	100	100
U02	Number of times to count a piece of product	This function setting number is used for setting the number of times of thread trimming to be counted before the number of products increases by one. (Unit: Number of times)	1-50	10	10
U03	Working hours (Start time -)	This function setting number is used for setting the start time of sewing work.	00:00 ~ 23:59	8:00	8:00
U04	Working hours (- Ending time)	This function setting number is used for setting the ending time of sewing work. * This setting is used for the audio guidance.	00:00 ~ 23:59	17:00	17:00
U05	Break time 1 (Start time -)	This function setting number is used for setting the start time and ending time of a break. This setting is used for the audio guidance.	00:00 ~ 23:59	00:00	00:00
U06	Break time 1 (- Ending time)	* If no break time is provided, set U05 to "00:00". In this case, no audio guidance is provided. (Caution)	00:00 ~ 23:59	00:00	00:00
U07	Break time 2 (Start time -)	* If the break times 1, 2 and 3 are provided, it will be necessary to enter the start time and ending time of those break times in the descending order.	00:00 ~ 23:59	00:00	00:00
U08	Break time 2 (- Ending time)	* If you enter a break time that is not included in the working hours, no audio guidance will be given.	00:00 ~ 23:59	00:00	00:00
U09	Break time 3 (Start time -)		00:00 ~ 23:59	00:00	00:00
U10	Break time 3 (- Ending time)		00:00 ~ 23:59	00:00	00:00
N01	Main software version	This function setting number is used for displaying the main software version.			
N02	Operation panel software version	This function setting number is used for displaying the operation panel software version.			
N14	Sub software version	This function setting number is used for displaying the version of the software that is used by the sub CPU.			
N20	Voice language version	This function setting number is used for displaying the version of the language of the audio file.			

■ **Model selection table**

No.	Model name	Model selection (P125)		Maximum number of revolutions setting (P121)	Maximum sewing speed (P01) initial value
1	MO-6804S-0E4-30H	General	0,3	7000	6500
2	MO-6804S-0A4-150	General	0,3	7000	6500
3	MO-6814S-BE6-40H	High lift	1,4	6500	6000
4	MO-6814S-BE6-24H/ G44/Q143	General	0,3	7000	6500
5	MO-6814S-BE6-34H/ G44/Q143	General	0,3	7000	6500
6	MO-6814S-BE6-44H/ G44/Q143	High lift	1,4	6500	6000
7	MO-6816S-DE6-30H	General	0,3	7000	6500
8	MO-6816S-FF6-30H	General	0,3	7000	6500
9	MO-6816S-FF6-50H	High lift	1,4	6500	6000
10	MO-6816S-FH6-60H	Extra-high lift	2,5	6000	5500
11	MO-6816S-DE4-30H-E35	General	0,3	7000	6500
12	MO-6843S-1D6-40H	General	0,3	7000	6500
13	MO-6804D-0E4-30H	General	0,3	7000	6500
14	MO-6814D-BE6-30P	General	0,3	7000	6500
15	MO-6814D-BE6-30P	General	0,3	7000	6500
16	MO-6814D-BE6-24H/ G44/Q143	General	0,3	7000	6500
17	MO-6814D-BE6-34H/ G44/Q143	General	0,3	7000	6500
18	MO-6816D-DE4-30H	General	0,3	7000	6500
19	MO-6816D-DE4- 30H-E35	General	0,3	7000	6500
20	MO-6843D-1D6-40H	General	0,3	7000	6500

* **Model selection (P125) and the maximum number of revolutions setting (P121) are the parameters that can be set under the Service Level mode. Refer to the Engineer's Manual for details.**

6-5. Details of setting of the main functions



<p>When the manual mode is selected</p>  E	<p>If you change any of the below-stated parameters during sewing, the set value of the parameter will be rendered effective by depressing the back part of the pedal (refer to "6-14. Pedal operation" p.65).</p> <p>If you change any parameter other than those stated below during sewing, the set value of the parameter will be rendered effective immediately.</p> <p>If you change the parameter before starting sewing, the set value of the parameter will be rendered effective immediately.</p> <table border="1" data-bbox="475 1167 1412 1547"> <tr><td>P002</td><td>Soft start ON / OFF</td></tr> <tr><td>P003</td><td>Soft-start sewing speed</td></tr> <tr><td>P004</td><td>Number of soft-start stitches</td></tr> <tr><td>P038</td><td>Tension release ON / OFF</td></tr> <tr><td>P039</td><td>Tension-release continuing number of stitches at the beginning of sewing</td></tr> <tr><td>P049</td><td>Automatic suction ON / OFF</td></tr> <tr><td>P050</td><td>Front suction, continuing number of stitches</td></tr> <tr><td>P056</td><td>Low pressure mode ON / OFF</td></tr> <tr><td>P057</td><td>Suction synchronization time</td></tr> <tr><td>P058</td><td>Continuous material feeding section ON / OFF</td></tr> </table>	P002	Soft start ON / OFF	P003	Soft-start sewing speed	P004	Number of soft-start stitches	P038	Tension release ON / OFF	P039	Tension-release continuing number of stitches at the beginning of sewing	P049	Automatic suction ON / OFF	P050	Front suction, continuing number of stitches	P056	Low pressure mode ON / OFF	P057	Suction synchronization time	P058	Continuous material feeding section ON / OFF
P002	Soft start ON / OFF																				
P003	Soft-start sewing speed																				
P004	Number of soft-start stitches																				
P038	Tension release ON / OFF																				
P039	Tension-release continuing number of stitches at the beginning of sewing																				
P049	Automatic suction ON / OFF																				
P050	Front suction, continuing number of stitches																				
P056	Low pressure mode ON / OFF																				
P057	Suction synchronization time																				
P058	Continuous material feeding section ON / OFF																				
<p>When any mode other than the manual mode is selected</p>	<p>If you change the parameter during sewing, the set value of the parameter will be rendered effective after the completion of sewing.</p> <p>If you change the parameter during sewing and stop sewing before the end of sewing is reached, the set value of the parameter will be rendered effective when you start sewing from the beginning.</p> <p>If you change the parameter before starting sewing, the set value of the parameter will be rendered effective immediately.</p>																				

① Selection of the soft-start function (Function setting No. P002)

- P002 0: Soft-start OFF
1: Soft-start ON

In addition, the speed limit during the soft-start operation and the number of stitches that are sewn with the soft-start function can also be changed. (Function setting Nos. P003 - P004)

- P003 Settable range: 200 - 6000 [sti/min] <100 sti/min>
P004 Setting range: 1 - 100 stitches

② **Selection of the sewing-end speed reduction function (Function setting No. P005)**

P005 0: Sewing-end speed reduction function OFF
1: Sewing-end speed reduction function ON

In addition, the speed limit during the sewing-end speed reduction and the number of stitch at which the sewing-end speed reduction function starts can also be changed. (Function setting Nos. P006 - P007)

P007 Settable range: 500 - 7000 [sti/min] <100 sti/min>
P006 Setting range: 1 - 200 stitches

③ **Stop-position setting (Function setting Nos. P013 - P014)**

This function setting number is used for setting the needle stop position when the sewing machine stops.

P013 0: Lower stop position
1: Upper stop position

It is also possible to set the needle stop position after the completion of thread trimming. (Function setting No. P014)

P014: 0: Lower stop position
1: Upper stop position

④ **One-shot function (Function setting No. P017)**

It is possible to select either the sewing machine is automatically started after the front sensor has detected the material or it is started by depressing the pedal once after the front sensor has detected the material.

P017 0: Automatic
1: Pedal

(Caution) This function is enabled only when  C is displayed on the operation panel while the full automatic mode is selected.

Added care should be taken when you change the set value of the P017. If you change the set value of the P017 from the initial value "1: Pedal" to "0: Automatic", the sewing machine will automatically start running immediately after the front sensor has detected the material.

Added care should be taken when you change the sewing mode to the full automatic mode if the P017 is set to "0: Automatic". In this case, the sewing machine will start sewing if the front sensor is blocked.

⑤ **Sewing mode (Function setting Nos. P018, P020 and P026)**

Function setting No. P018: Used for selecting either the sewing machine is operated under the full automatic mode or under the semi-automatic mode while the "P020 Automatic sensor" is set to "1: ON".

P018 0: Semi-automatic
1: Full automatic

While the full automatic mode is selected,  C is displayed on the operation panel. While the semi-automatic mode is selected,  D is displayed on the operation panel.

It is also possible to change the sewing mode by keeping button  ⑦ on the operation panel held pressed.

(Caution) While the full automatic mode is set selected, be aware that the sewing machine will start sewing if the front sensor is blocked with the material or fingers. Added care should be taken while the full automatic mode is selected.

Function setting No. 020: Used for selecting whether or not the sensor is used. If "0: OFF" is selected, the sewing machine will be placed under the manual mode.

P020: 0: OFF (Manual)
1: ON (Full automatic, semi-automatic, free stitching)

While the manual mode is selected,  E is displayed on the operation panel.

Function setting No. P026: It is possible to select either the semi-automatic mode or the free stitching mode with this function setting number.

Under the free stitching mode, the sewing machine will not stop as long as the front part of the pedal is held depressed after the completion of thread trimming.

P026: 0: OFF (Semi-automatic)
1: ON (Free stitching)

While the free stitching mode is selected, any of  C,  D and  E is not displayed on the operation panel.

[Simplified list]

This list indicates the setting method and function of the main parameters with respect to sewing modes.

Refer to the function setting list for the parameters that are not included in this simplified list.

Sewing mode		Full automatic	Semi automatic	Manual	Free stitching	Remarks
Operation panel display					No display	
P018: Full automatic / Semi-automatic mode		1 : Full automatic	0 : Semi automatic	—	0 : Semi automatic	Function is not changed over under the manual mode.
P020: Automatic sensor ON/OFF		1 : ON	1 : ON	0 : OFF	1 : ON	
P26: Free stitching ON/OFF		—	0 : OFF	—	1 : ON	Under the full automatic mode and the manual mode, free stitching function is not changed over.
P21: Front sensor ON/OFF		1 : ON 0 : OFF *1	1 : ON 0 : OFF	1 : ON 0 : OFF	1 : ON 0 : OFF	*1 If the front sensor is set to "OFF", the sewing machine operation will be disabled.
Start of sewing		Front sensor *2	Front sensor + Pedal	Pedal	Front sensor + Pedal	*2 If the "P017: One shot" is changed to "0: OFF", the sewing machine can be started only with the front sensor.
End of sewing	DD22	Intermediate sensor	Intermediate sensor	—	—	Under the manual mode or the free stitching mode, the sewing machine is operated with the pedal instead of the sensor.
	DD23	Rear sensor	Rear sensor	—	—	
	Pedal operation	Depressing on the back part of pedal	Neutral position	Neutral position	Neutral position	

Sewing mode	Full automatic	Semi automatic	Manual	Free stitching	Remarks
It is necessary to depress the back part of the pedal when turning the power ON.	○	—	—	—	For the sake of safety, the pedal operation is required only under the full automatic mode.
It is necessary to depress the back part of the pedal before starting sewing, when resetting the sewing machine from the backlight-OFF state.	○	—	—	—	

Caution) Under the full automatic mode, the sewing machine is started with the front sensor. It is therefore necessary to be careful to prevent the front sensor from being blocked.

Unlike other modes, under the full automatic mode, the sewing machine operates when the front sensor reacts to the material, etc. Only the operators who have received training on safety must operate the sewing machine under the automatic mode.

⑥ Sensor ON/OFF setting (Function setting Nos. P021 - P023)

Function setting No. P021: In the case the front sensor is set to "ON" with this function setting number,



N will be displayed on the operation panel when the front sensor detects the material.

If the front sensor has failed, set the P021 to "OFF".

P021 0: OFF
1: ON

(Caution) If the front sensor is set to "OFF", the automatic mode cannot be used.

Function setting No. P022: In the case the intermediate sensor is set to "ON" with this function setting number,



P will be displayed on the operation panel when the intermediate sensor detects the material.

If the intermediate sensor has failed, set the P021 to "OFF".

P022 0: OFF
1: ON

Function setting No. P052: In the case the "P020 Automatic sensor" is set to "ON" and the "P022 Intermediate sensor" is set to "OFF", while "DD22" is set selected with the "P125 Model selection" (setting of this function is enabled under the Service level), the number of stitches to be sewn after the material has passed the front sensor can be set with this function setting number so as to stop the sewing machine or activate the rear suction device. (Function setting No. P052)

P052 Setting range: 0 - 50 stitches

Function setting No. P023: In the case the rear sensor is set to "ON" with this function setting number,



Q will be displayed on the operation panel when the rear sensor detects the material.

If the rear sensor has failed, set the P023 to "OFF".

P023 0: OFF
1: ON

(Caution) This function setting number is only enabled when "DD23" is selected with the "P125 Model selection" (setting of this function is enabled under the Service level). In addition, the full automatic mode is disabled for the DD23 model when both the "P022 Intermediate sensor" and "P023 Rear sensor" are set to OFF.

⑦ Selection of the automatic thread trimming function (Function setting No. P029)

Operation of the automatic thread trimmer can be selected with this function setting number.

- P029 0: OFF
1: Front thread trimming
2: Rear thread trimming
3: Front and rear thread trimming

Setting of the automatic thread trimming function can also be changed by keeping button  ⑧ on the operation panel held pressed.

When the front thread trimming is selected,  H is displayed on the operation panel.

When the rear thread trimming is selected,  J is displayed on the operation panel.

When the front and rear thread trimming is selected,  H and  J are displayed on the operation panel.

(Caution) This function setting number is only enabled while "DD23" is selected with the "P125 Model selection" (setting of this function is enabled under the Service level).

While "DD22" is selected with the "P125 Model selection", the number of stitches to be sewn before starting front thread trimming after the intermediate sensor has detected the material can be set with the function setting number P031.

P031 Setting range: 1 - 50 stitches

Function setting No. 032: Used for setting the number of stitches to be sewn before starting the rear thread trimming after the rear sensor has detected the material.

P032 Setting range: 1 - 50 stitches

Function setting No. P035: Used for setting the thread trimming operating time.

P035 Setting range: 10 - 990 [ms]

⑧ Automatic constant-speed thread trimming (Function setting No. P030)

Automatic constant-speed thread trimming is set with this function setting number.

- P030 0: OFF
1: Automatic constant-speed thread trimming

(Caution) This function setting number is only enabled while "DD23" is selected with the "P125 Model selection" (setting of this function is enabled under the Service level). In addition, the manual mode is not the subject of this function setting number.

From the time the front sensor detects the material to the time the intermediate sensor detects it, the sewing machine operates at the speed that is set with the "P003 Soft-start sewing speed". During this section, the sewing machine can be controlled with the pedal.

From the time the intermediate sensor detects the material to the time the front thread trimming is completed, the sewing machine operates at the speed set with the "P003 Soft-start sewing speed". During this section, the sewing machine cannot be controlled with the pedal.

(Caution) If you turn the main shaft at a speed that is lower than the set value of the "P003 Soft-start sewing speed", the main shaft running speed will suddenly increase when the sewing machine performs front thread trimming.

From the time the front thread trimming is completed to the time the rear sensor detects the material, the sewing machine operates at the speed that is set with the "P001 Maximum sewing speed". During this section, the sewing machine can be controlled with the pedal.

From the time the material passes the rear sensor to the time the rear thread trimming is completed, the sewing machine operates at the speed that is set with the "P007 Sewing-end speed reduction"

During this section, the sewing machine cannot be controlled with the pedal.

⑨ **Selection of the tension release function (Function setting No. P038)**

This function setting number is used for selecting the tension release operation.

- P038 0: OFF
1: Front open
2: Rear open
3: Front and rear open

(Caution) This function setting number is enabled only when "DD22" is selected with the "P125 Model selection" (setting of this function is enabled under the Service level).

Function setting No. P039: Used for setting the number of stitches for which the tension release operation is continued at the beginning of sewing after the front sensor has detected the material.

- P039 Setting range: 1 - 50 stitches

Function setting No. P040: Used for setting the number of stitches for which the tension release operation is continued at the end of sewing after the material has passed the intermediate sensor.

- P040 Setting range: 1 - 50 stitches

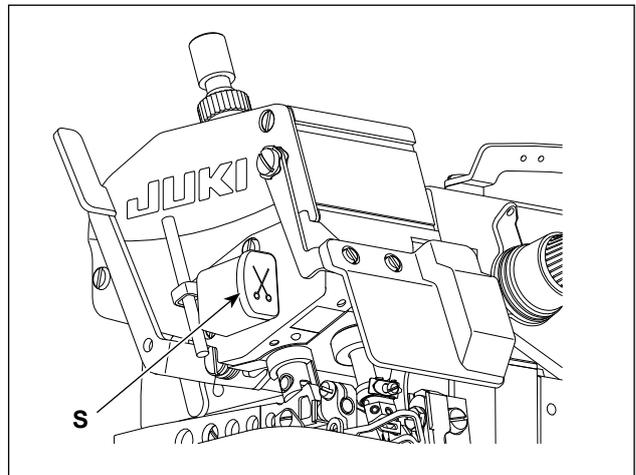
Function setting No. 041: Used for setting the delaying number of stitches to be sewn before the tension-release operation is started at the end of sewing after the material has passed the intermediate sensor.

- P041 Setting range: 1 - 50 stitches

(Caution) If the function setting number "P041 Number of stitches to start releasing the tension at the end of sewing" is set to the number of stitches that exceeds the total number of stitches set with the "P051 Intermediate suction continuing number of stitches" and with the "P052 Intermediate suction starting number of stitches", the tension will not be released at the end of sewing.

⑩ **Manual thread trimming (Function setting Nos. P042 - P045, P054 - P055)**

Manual thread trimming is carried out by pressing the hand switch **S**.



Function setting No. P042: Used for setting the manual thread trimming duration.

- P042 Setting range: 1 - 50
[x 100 ms]

(Caution) This function setting number is enabled only when "DD22" is selected with the "P125 Model selection" (setting of this function is enabled under the Service level).

The sewing machine continues thread trimming operation as long as the hand switch is held pressed.

Even if the duration elapsed from pressing to releasing the hand switch is shorter than the set value of the P042, the sewing machine will perform thread trimming during the time set with this function setting number P042.

Function setting No. P043: Used for setting the number of revolutions of the main shaft in the case of manual thread trimming.

P043 Setting range: 500 - 7000 [sti/min] <10 sti/min>

(Caution) This function setting number is enabled only when "DD22" is selected with the "P125 Model selection (setting of this function is enabled under the Service level). The main shaft will not rotate at a speed that exceeds the maximum sewing speed set with the "P001 Maximum sewing speed".

Function setting No. P044: Used for setting the number of times of thread trimming in the case of the manual thread trimming.

P044 Setting range: 1 - 5 times

(Caution) This function setting number is enabled only when "DD23" is selected with the "P125 Model selection (setting of this function is enabled under the Service level).

Function setting No. P045: In the case the function setting number "P044 Number of times of manual thread trimming" is set to two or more, the interval between two consecutive times of thread trimming can be set with the function setting number P045.

P045 Setting range: 30 - 990 [ms]

(Caution) This function setting number is enabled only when "DD23" is selected with the "P125 Model selection (setting of this function is enabled under the Service level). If a short interval is set, the knife may fail to operate in time, resulting in poor trimming of the thread. Set the thread trimmer operation interval appropriately.

Function setting No. P054: Used for selecting the type of the suction operation for manual thread trimming.

P054 0: OFF
1: Rear suction
2: Front and rear suction

(Caution) In the case the suction operation for manual thread trimming is different from the operation set with the "P049 Automatic suction ON/OFF", both suction operations will be carried out separately.

Function setting No. P055: Used for setting the suction time for manual thread trimming.

P055 Setting range: 0 - 200 [ms]

(Caution) In the case the "DD22" is set selected with the "P125 Model selection (setting of this function is enabled under the Service level), suction operation will be carried out continuously the hand switch is held pressed.

Even if the duration elapsed from pressing to releasing the hand switch is shorter than the set value of the P055, the suction device will operate during the time set with this function setting number P055.

⑪ Selection of the automatic suction function (Function setting No. P049)

The type of the automatic suction operation can be selected.

P049 0: OFF
1: Front suction
2: Rear suction
3: Front and rear suction

The setting of the automatic suction function can also be changed by pressing button  7 on the operation panel. When the front suction, rear suction or the front and rear suction is selected,  G is displayed on the operation panel.

Function setting No. P050: Used for setting the number of stitches to be sewn continuously before the front suction device stops after the intermediate sensor has detected the material.

P050 Setting range: 0 - 50 stitches

Function setting No. P051: Used for setting the continuing number of stitches to be sewn before the rear suction operation stops after the material has passed the intermediate sensor.

P051 Setting range: 0 - 50 stitches

(Caution) This function setting number is enabled only when "DD22" is selected with the "P125 Model selection (setting of this function is enabled under the Service level).

Function setting No. P052: Used for setting the delaying number of stitches to be sewn before the rear suction operation is started after the material has passed the intermediate sensor. If the "P022 Intermediate sensor" is set to "OFF", the sewing machine will stop or carry out rear suction operation after it has sewn this number of stitches after the material has passed the front sensor.

P052 Setting range: 0 - 50 stitches

(Caution) This function setting number is enabled only when "DD22" is selected with the "P125 Model selection (setting of this function is enabled under the Service level).

Function setting No. P053: Used for setting the duration to be elapsed before the rear suction operation is stopped after the sewing machine has started the rear thread trimming.

P053 Setting range: 0 - 2000 [ms]

(Caution) This function setting number is enabled only when "DD23" is selected with the "P125 Model selection (setting of this function is enabled under the Service level). If the rear suction is set to "OFF", the rear suction operation will not be carried out.

⑫ Selection of the auto-lifter function (Function setting No. P066)

Type of the auto-lifter operation can be selected.

P066 0: OFF

1: Front lifting

2: Rear lifting

3: Front and rear lifting

The setting of the auto-lifter function can also be changed by pressing button  8 on the operation panel.

When the front lifting is selected,  K is displayed on the operation panel.

When the rear lifting is selected,  L is displayed on the operation panel.

When the front and rear lifting is selected,  K and  L are displayed on the operation panel.

Function setting No. P069: Used for setting the duration to be elapsed before the front lifter comes down after it has gone up.

P069 Setting range: 50 - 2000 [ms]

Function setting No. P070: Used for setting the delaying time to be elapsed until the rear lifting is started.

P070 Setting range: 0 - 2000 [ms]

⑬ Selection of the grid pattern fabric (Function setting No. P089)

Select this function setting number when sewing a fabric with holes arranged in a grid pattern.

P089 0: General fabric

1: Grid pattern fabric

Function setting No. P033: Used for setting the number of stitches to allow the sensor to skip the holes arranged in a grid pattern.

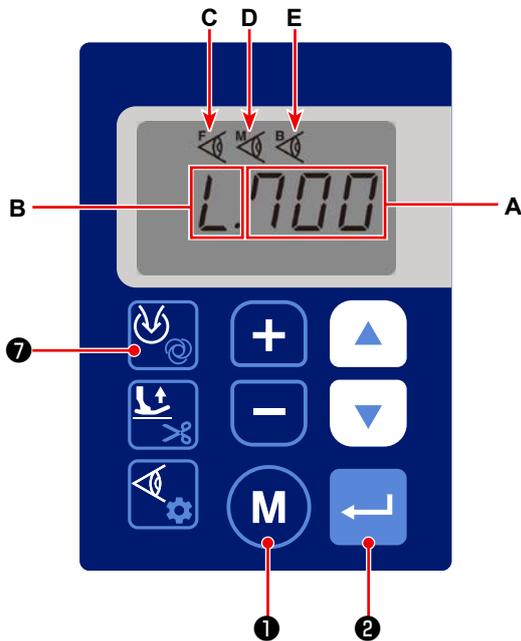
P033 Setting range: 0 - 50 stitches

(Caution) Set an appropriate number of stitches in accordance with the hole configuration.

The initial value of the function setting number P033 is "0" when "DD22" is selected or "8" when "DD23" is selected with the "P125 Model selection (setting of this function is enabled under the Service level)

6-6. Adjusting the sensitivity of sensors

It is possible to adjust the sensitivity of the sensors that detect the material placed on the main body (near the needle entry area) of the sewing machine.



- 1) Sensor values can be checked by pressing  ⑦ on the normal sewing screen.

Every time  ⑦ is pressed, the set values of the sensors are displayed in the written order repeatedly: Current set value of the front sensor, material-detection threshold of the front sensor (function setting No. P079), current set value of the intermediate sensor, material-detection threshold of the intermediate sensor (function setting No. P080), current set value of the rear sensor, material-detection threshold of the rear sensor (function setting No. P081); then returns to the current set value of the front sensor, and so on.



The current set value and the material-detection threshold of the rear sensor are displayed only in the case "DD23" is set selected with the "P125 Model selection (setting of this function is enabled under the Service level).

Press  ① or  ② to exit from sensitivity display and return to the sewing screen.

While the current set value of the front sensor is being displayed, the numeric value **A** and  **C** are displayed on the operation panel.

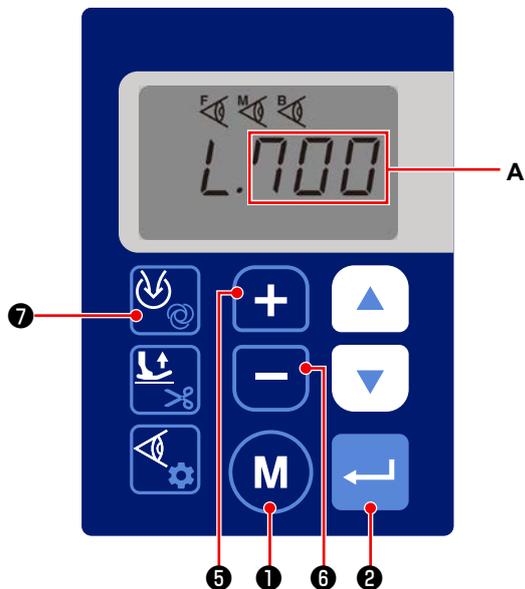
While the material-detection threshold of the front sensor is being displayed, the numeric value **A**,  **B** and  **C** are displayed on the operation panel.

While the current set value of the intermediate sensor is being displayed, the numeric value **A** and  **D** are displayed on the operation panel.

While the material-detection threshold of the intermediate sensor is being displayed, the numeric value **A**,  **B** and  **D** are displayed on the operation panel.

While the current set value of the rear sensor is being displayed, the numeric value **A** and  **E** are displayed on the operation panel.

While the material-detection threshold of the rear sensor is being displayed, the numeric value **A**,  **B** and  **E** are displayed on the operation panel.



2) Material-detection thresholds of the sensors can be changed by keeping  9 held pressed on the normal sewing screen.

Every time  9 is held pressed, the material-detection thresholds of the sensors are displayed for changing in the written order repeatedly: Material-detection threshold of the front sensor (function setting No. P079), material-detection threshold of the intermediate sensor (function setting No. P079), material-detection threshold of the rear sensor (function setting No. P079); then returns to the material-detection threshold of the front sensor, and so on.

 **The rear sensor data are displayed only when "DD23" is selected with the "P125 Model selection (setting of this function is enabled under the Service level).**

If you want to change the threshold and numeric value A of the sensors, change them with  5 and  6.

While you are changing the threshold of one sensor, the current entry will be confirmed and saved by keeping  9 held pressed to display the next sensor.

If you want to cancel the entry of the threshold of the sensor before confirming it and restore the screen to the sewing screen, press  1.

If you want to confirm the current entry of the threshold and restore the screen to the sewing screen, press  2.

Thresholds of the sensors can also be set with the function setting numbers P079 to P081.

P079 - P081 Setting range: 0 - 700

3) Irradiation intensity of the sensors (output intensity on the light projection side) can be changed with the function setting numbers P076 to P078.

P076 - P078 Setting range: 0 - 100

Input increment is [%]. Zero (0) is the minimum irradiation intensity and 100 is the maximum irradiation intensity.

 **The rear sensor data are displayed only when "DD23" is selected with the "P125 Model selection (setting of this function is enabled under the Service level).**

The material-detection thresholds of the sensors (function setting numbers P079 - P081) as described in 2) and the irradiation intensities of the sensors (function setting numbers P076 - P078) can be automatically set with the "P091 Automatic adjustment of sensors" (setting of this function is enabled under the Service level).

Refer to the Engineer's Manual for details.

4) Type of fabric for sewing is set with the function setting number P088.

P088 0: Transparent fabric

1: Translucent fabric

2: Standard fabric

When the transparent fabric is selected, the sensitivity of the sensors is increased to be able to detect the fabric with a higher transmission. On the other hand, short threads or cloth chips may be detected mistakenly.

Function setting No. P085: In the case the transparent fabric is selected, the value set with this function setting number will be used as a correction value for the material-detection threshold of the sensors.

P085 Setting range: 0 - 800

When the translucent fabric is selected, the sensitivity of the sensors becomes medium to be able to detect the translucent fabric.

Function setting No. P086: In the case the translucent fabric is selected, the value set with this function setting number will be used as a correction value for the material-detection threshold of the sensors.

P086 Setting range: 0 - 800

When the standard fabric is selected, the sensitivity of the sensors is decreased to detect the fabric with a lower transmission. Likelihood of false detection of short threads or cloth chips is reduced.

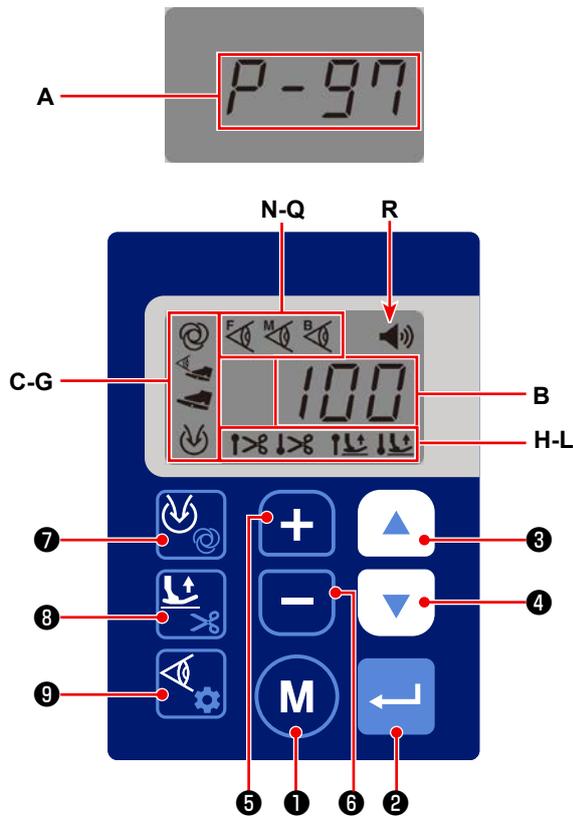
Function setting No. P087: In the case the standard fabric is selected, the value set with this function setting number will be used as a correction value for the material-detection threshold of the sensors.

P087 Setting range: 0 - 800

The final thresholds of the sensors are obtained by reducing the correction values for the material-detection thresholds set with the function setting numbers P085 to P087 from the material-detection thresholds set with the function setting numbers P079 to P081. If the values detected by the sensors are smaller than the final thresholds, the sensors will confirm the presence of a fabric.

6-7. No. of pcs. counter

The number of pieces produced can be counted.



1) Referring to "6-3. Function setting" p.32, call the function setting number P097 (A).

Press  ② to display the No. of pcs. counter.

If you want to return to the normal sewing screen, press  ①.

2) The current No. of pcs. counter is displayed (B).

It is possible to carry out sewing with the No. of pcs. counter displayed on the operation panel.

On the LCD screen, the currently-selected function setting (C - L, R) and ON/OFF state of the sensors (N - Q) are displayed.

 On the explanation screen, functions that are not displayed when "DD22" is selected with the "P125 Model selection" (setting of this function is enabled under the Service level) are included.

Every press on  ③ increases the current value on the No. of pcs. counter one by one.

The displayed number on the No. of pcs. counter on the LCD screen increases immediately.

Every press on  ④ decreases the current value on the No. of pcs. counter one by one.

The displayed number on the No. of pcs. counter on the LCD screen decreases immediately.

Function setting No. U02: With this function setting number, it is possible to change the number of times of thread trimming to be counted before increasing the No. of pcs. counter by one.

Every time  ⑤ is pressed, the current set value of the number of times of thread trimming to be counted before adding one to the No. of pcs. counter can be increased one by one.

Every time  ⑥ is pressed, the current set value of the number of times of thread trimming to be counted before adding one to the No. of pcs. counter can be decreased one by one.



When the number of times of thread trimming counted reaches the set value of the function setting number U02 by pressing  ⑤ and  ⑥, one is added to the No. of pcs. counter.

Use this function to change the current value of the number of times of thread trimming in such a case as to re-start sewing from the middle of production. It is not possible to display the current value of the number of times of thread trimming to be counted before adding one to the No. of pcs. counter.

3) It is possible to set the method to count the number of pieces produced. (Function setting No. J13)

- J13 0: OFF
- 1: Ascending order
- 2: Descending order
- 3: Ascending order (audio notification)
- 4: Descending order (audio notification)

The audio notification is given when the function setting number "J05 Audio setting" is set to "ON" and "R" is displayed on the operation panel.

In the case the ascending order is selected, the audio message "Set value is reached on the counter" will be given when the daily target number of pieces that is set with the function setting number "U01 Daily target" is reached.

In the case the descending order is selected, the audio message will be given when the counter reaches zero (0).

4) It is possible to reset the No. of pcs. counter by keeping  ③ and  ④ held pressed simultaneously.

While the ascending order is selected, the counter is reset to zero (0).

While the descending order is selected, the counter is reset to the target value set with the function setting number "U01 Daily target".

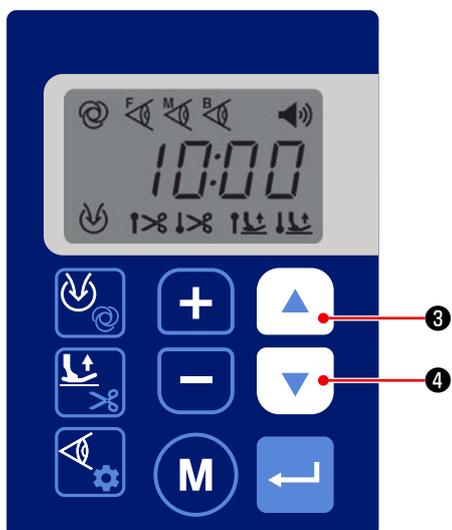
5) Press  ① if you want to return to the function setting screen.

Function setting parameters cannot be changed while the No. of pcs. counter is displayed on the operation panel including operation of buttons  ⑦,  ⑧,  ⑨.

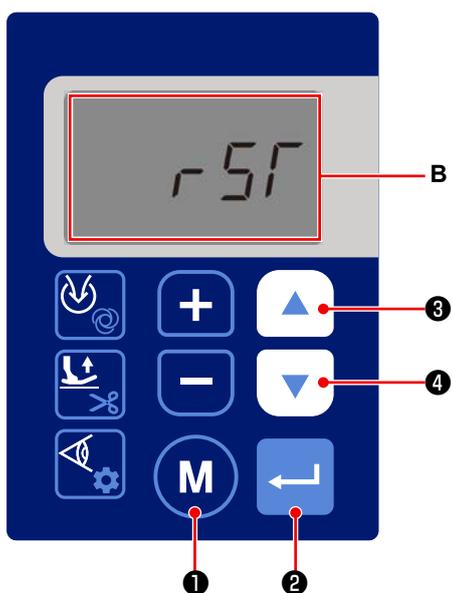
If you want to change the setting of the parameter, press  ① once to return to the function setting screen, and change the parameter appropriately referring to **"6-3. Function setting" p.35**.

6-8. Initialization of the function setting data

The function setting data you have changed arbitrarily can be stored in memory. If you change the data afterward, it can be returned to the aforementioned data that you have stored in memory.



- 1) If you simultaneously hold down  **3** and  **4** or turn ON the power to the sewing machine while simultaneously pressing  **3** and  **4** under the normal state of sewing, the initialization screen "RST" (B) will be displayed.



- 2) After you have kept  **3** and  **4** held pressed simultaneously to display the initialization screen, all set values can be initialized to those stored in memory as described in **"6-3. Function setting" p.35** by pressing  **2**.

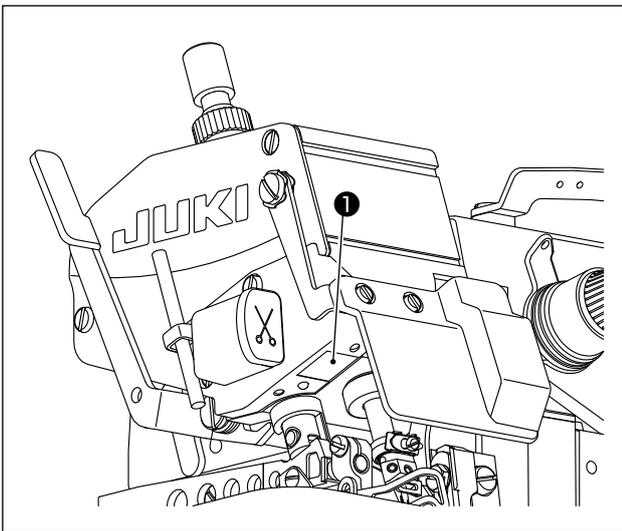
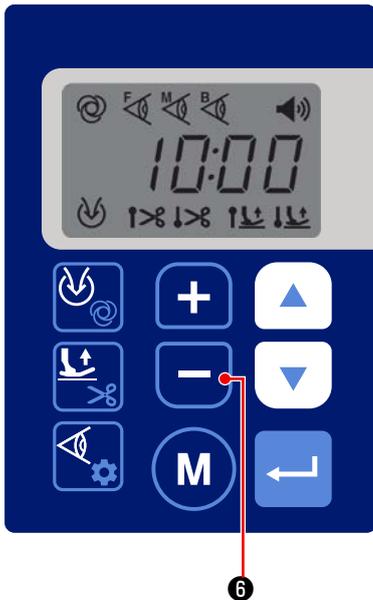
In the case you have turned the power ON by pressing  **3** and  **4** simultaneously, the set values will be reset to the factory-set initial values at the time of shipment. In this case, the set values you have stored in memory as described in **"6-3. Function setting" p.35** will also be initialized to the factory-set values.

Initialization can be cancelled by pressing  **1**.



- 3) During the initialization, the full-screen is displayed. After the completion of the initialization, the screen returns to the normal sewing-state screen.

6-9. Hand LED light



Brightness of hand LED light ① can be changed by pressing ⑥. When you keep ⑥ held pressed for a long time, the light adjustment function is changed over to the color temperature changing function. In this state, the color temperature can be changed by pressing ⑥. If you wait for three seconds without pressing any button, the color temperature changing function will be automatically returned to the light adjustment function.

In the case the audio output is placed in ON, the sewing machine operation may differ from the audio message depending on the timing of changeover of adjustment target between the dimming and the color temperature. If such a difference occurs, temporarily stop operating the sewing machine (for three seconds or more) before re-starting it.



Brightness / color temperature changing method is as shown in the tables given below.

(Values [%] in the table only provide reference data that helps clarify the explanation.)

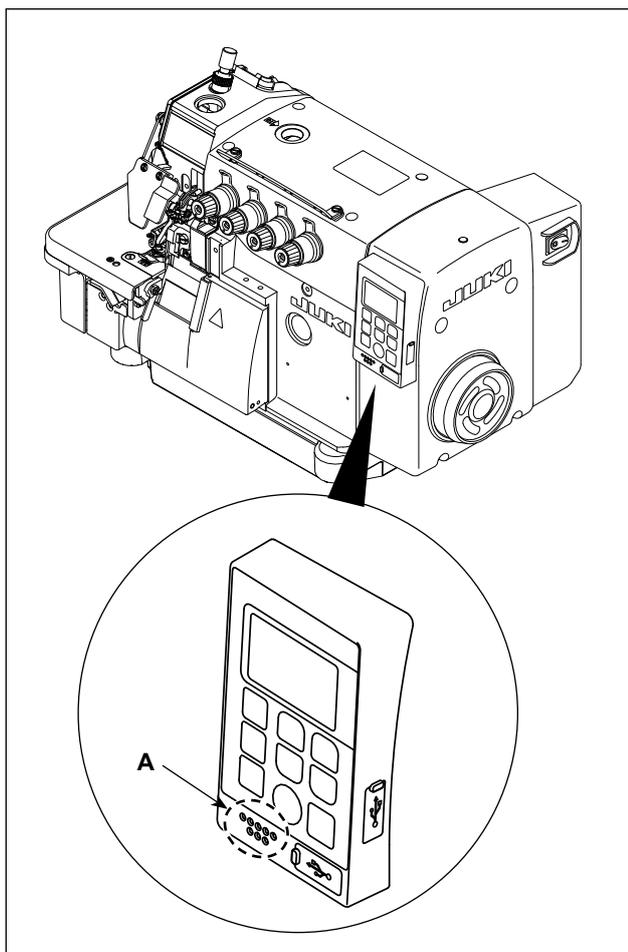
* If you want to change the color temperature, change it when you select the light adjustment (dimming) step from five different steps (1 - 5).

Color temperature		
Steps	White [%]	Yellow [%]
0	100	0
1	90	10
2	80	20
3	70	30
4	60	40
5	50	50
6	40	60
7	30	70
8	20	80
9	10	90
10	0	100

Light adjustment (Dimming)	
Steps	Intensity [%]
0	0
1	20
2	40
3	60
4	80
5	100

6-10. Audio guidance

Audio guidance messages, as described below, are given from the portion **A** when you turn the power ON/OFF, operate the sewing machine or operate the operation panel.

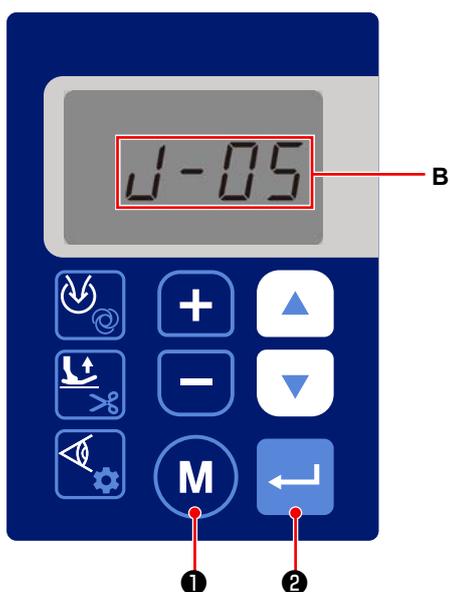


- ① **When turning the power ON**
..... "It is (day of week), (month) (day)", etc.
- ② **When turning the power OFF**
..... "Thank you for your work", etc.
- ③ **When operating the sewing machine**
..... "Set value on the counter has been reached"
..... "Presser foot protection ON"
..... "Cloth plate cover protection ON"
..... "Eye protection cover ON"
..... "Kindly refer to the "Lists of errors" by using the QR code.", etc.
- ④ **When operating the operation panel**
..... Content of the parameter you have changed is notified with the audio guidance.

Depending on the sewing machine operation status while the audio guidance is being given, the next audio guidance may begin before the current audio guidance is completed, normally-output audio guidance may be omitted or the audio guidance may be given later than the actual operation.



ON/OFF state and sound volume of the audio guidance can be set.



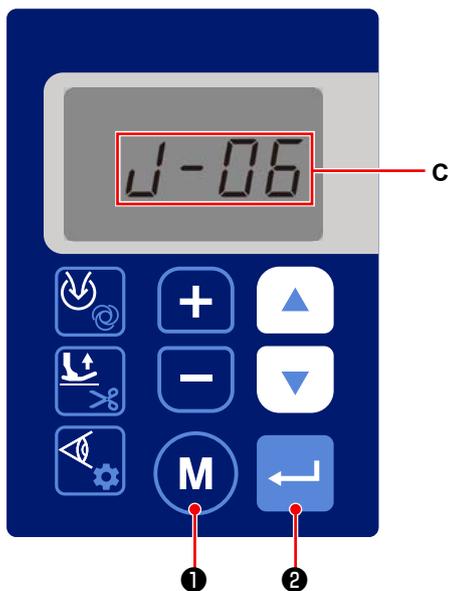
- 1) Call the function setting number J05 referring to "**6-3. Function setting**" p.35 (**B**). The status of the audio guidance can be set to ON / OFF.
(Function setting No. J05)

J05 0: OFF

 1: ON

Press ② to confirm ON/OFF setting of the audio guidance. The status of the audio guidance is changed over to ON/OFF immediately after the screen is restored to the function setting screen.

Press ① if you want to cancel this procedure and return to the function setting screen.



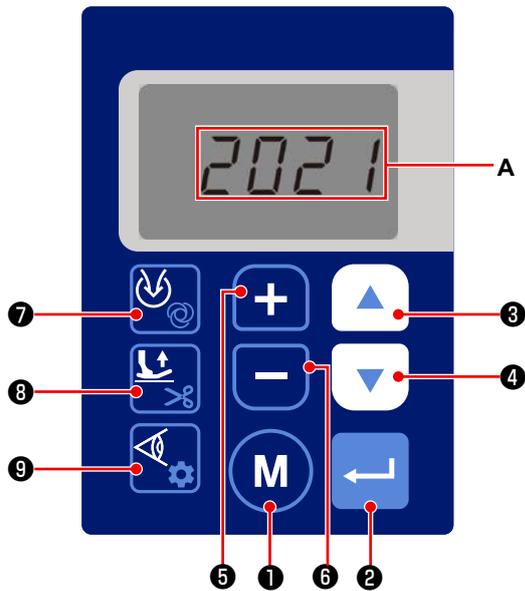
2) Call the function setting number J06 referring to "**6-3. Function setting**" p.35 (C). The sound volume of the audio guidance can be adjusted (function setting No. J06).

- J06 1: Small
- 2: Medium
- 3: Large

Press  ② to confirm the sound volume of the audio guidance. The sound volume of the audio guidance is changed over to the confirmed setting immediately after the screen is restored to the function setting screen. Press  ① if you want to cancel this procedure and return to the function setting screen.

6-11. Clock setting

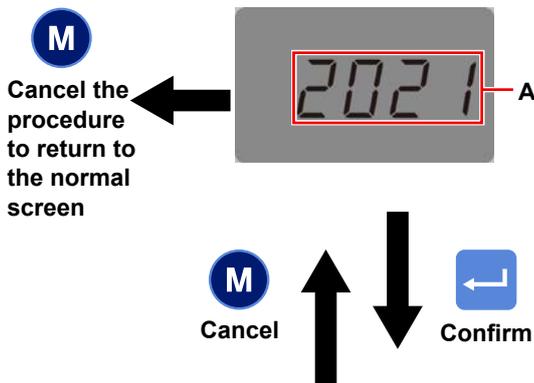
The time displayed on the operation panel can be changed.



- 1) The time change screen is displayed by keeping

M ① held pressed in the normal sewing state.

[Year]

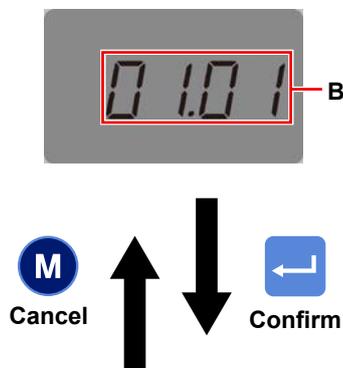


- 2) Firstly the "Year" (A) is displayed. Change it with

+ ⑤ and **-** ⑥ if necessary.

Press **←** ② to proceed to the setting of the "Month and day". Press **M** ① if you want to cancel this procedure and return to the normal sewing screen.

[Month and day]

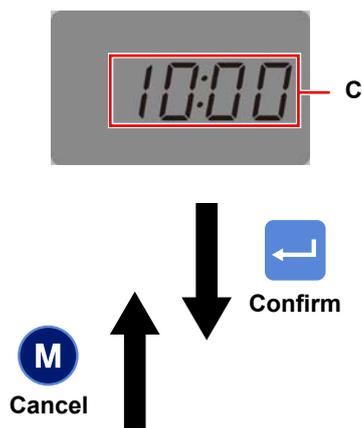


- 3) When you press **←** ②, the "Month and day" (B)

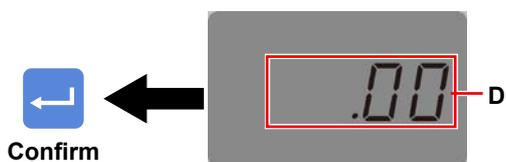
is displayed. Change it with **+** ⑤ and **-** ⑥ if necessary. Change the "Day" with **↑** ③ and **↓** ④.

Press **←** ② to proceed to the setting of the "Hour and minute". Press **M** ① if you want to cancel this procedure and return to the year setting.

[Minute and Second]



[Second]



4) When you press  ②, the "Hour: Minute" (C) is displayed. Change the "Hour" with  ⑤ and  ⑥ if necessary. Change the "Minute" with  ③ and  ④ if necessary.

Press  ② to proceed to the setting of the "Second". Press  ① if you want to cancel this procedure and return to the setting of the "Month and day".

5) When you press  ②, the "Second" (D) is displayed. Change it with  ⑤ and  ⑥ if necessary.

Press  ② to confirm the time setting. Then, the screen is restored to the normal sewing screen.

Press  ① if you want to cancel this procedure and return to the setting of the "Hour: Minute".

6) In the case the function setting number "J05 Audio guidance" is set to "ON", the audio guidance will be given according to the time you have set following the steps of procedure 2) to 5) and the time you have set with the function setting number "U04 Working hours (- Ending time)".

In addition, the audio guidance will be given in the case the break times are set respectively with the function setting numbers "U05 Break time 1 (start time -)", "U07 Break time 2 (start time -)" and "U09 Break time 3 (start time -)".



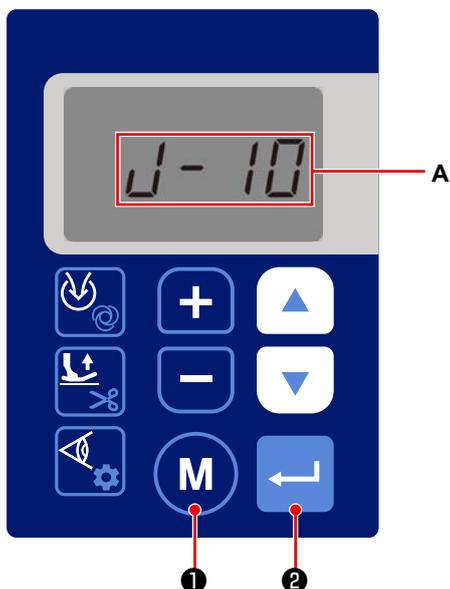
Enter the break times to the "Break time 1", "Break time 2" and "Break time 3" in descending order of time.

If you input a break time that is out of the working hours, the audio guidance will not be given.

6-12. Backlight

Brightness of the backlight for the operation panel LCD can be set.

It is also possible to set the time to turn OFF the LCD backlight when the operation panel is left without any operation for a predetermined time period.

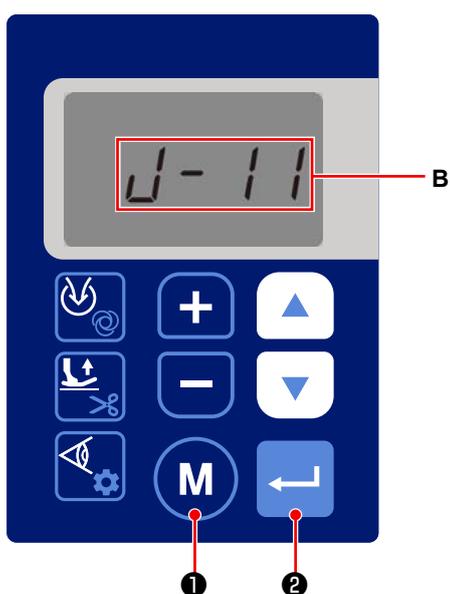


- 1) Call the function setting number J10 referring to "**6-3. Function setting**" p.35 (A). The brightness of the backlight can be set (function setting No. J10).

J06 1: Dark
 2: Medium
 3: Bright

Press  ② to confirm the brightness of the backlight. The backlight brightness is changed over to the confirmed setting immediately after the screen is restored to the function setting screen.

Press  ① if you want to cancel this procedure and return to the function setting screen.



- 2) Call the function setting number J11 referring to "**6-3. Function setting**" p.35 (B). The time to be elapsed before turning OFF the backlight when the operation panel is left without any operation can be set (function setting No. J11).

J11 0: Backlight is not turned OFF
 Setting range: 1 - 250 minutes

Press  ② to confirm the backlight turn-off time.

Press  ① if you want to cancel this procedure and return to the function setting screen.

While the backlight is OFF, the sewing machine will not be able to perform sewing even if you operate it (including the pedal switch and hand switch).

When the time to output the audio guidance is reached, the audio guidance is given even if the backlight is OFF as usual.

The backlight for the operation panel lights up only when you press any of the switches on the operation panel to allow the sewing machine to return to the normal mode.

The sewing machine does not react to the switch that you press at the time of resetting.

If an error occurs while the backlight is OFF, the backlight will be turned ON to display the error screen.

The sewing machine may be returned to the normal mode depending on the type of the error.

6-13. About the USB



WARNING :

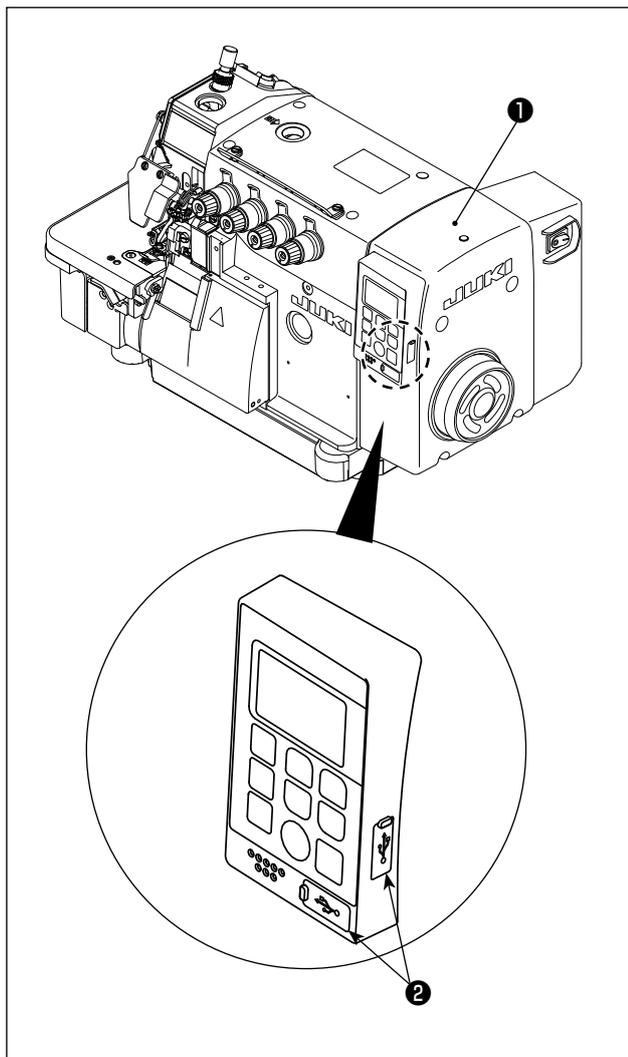
The device to be connected to the USB port should have the rated current value or less as shown below.

If any device rated current value of which is higher than the rated current value, the main body of the sewing machine or the USB device connected can be damaged or malfunction.

Rated current value of the USB port

USB port on the electrical box side: Maximum rated current value of 1 A

[Insertion position of the USB thumb drive]



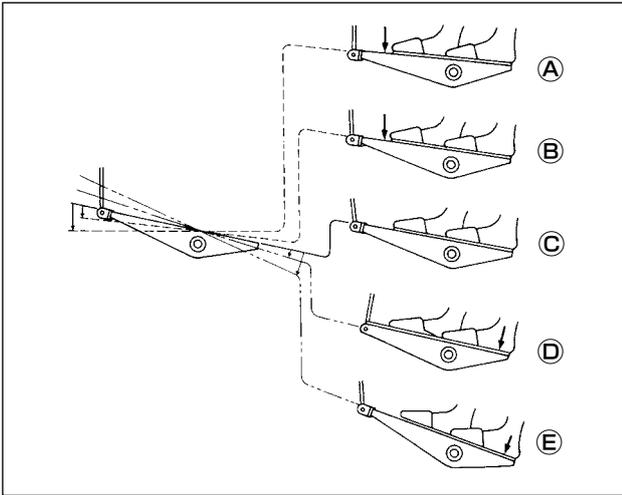
A USB connector is provided for electrical box ① .

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.

6-14. Pedal operation



[Pedal operation under the semi-automatic mode (factory-set at the time of shipment)]

- 1) Lightly depress the front part of the pedal to carry out low-speed sewing. (B)
- 2) Further depress the front part of the pedal to carry out high-speed sewing. (A)
- 3) Put your foot lightly on the pedal to stop the sewing machine. (C)

(The needle stop position differs depending on the setting of the relevant function you have selected on the operation panel. Refer to the explanation of the function setting for details.)

4) Depress the back part of the pedal during sewing to lift the presser foot. (D), (E)

5) Depress the pedal after the completion of sewing to lift the presser foot. (D), (E)

* Operation to lift the presser foot or stop the needle differs depending on the relevant function setting.

The sewing machine has been factory-set to the semi-automatic mode. The operation mode can be changed to the full automatic mode or manual mode by setting the relevant function appropriately.

[Full automatic mode]

When you change the status of the power switch from "OFF" to "ON", the characters [PEdL] appears on the operation panel.

Depress the back part of the pedal to place the sewing machine in the sewing state. (D), (E)

While the front sensor is blocked, depress the front part of the pedal to start the sewing machine. (A), (B)

If you lift your foot off the pedal to return it to the stop position swiftly, the sewing machine may malfunction depending on the relevant function setting. (C)

Carry out the operation to start and stop the sewing machine without lifting your foot off the pedal. (A), (B), (C)

* Memory switch P17: In the case the start mode is changed from "1" to "0", the sewing machine will start running even if you do not depress the front part of the pedal when the sensor is blocked. Added care should be taken in this mode. The method to temporarily stop the sewing machine remains the same. Depress the back part of the pedal to make a temporary stop. (D), (E)

* In the case the main shaft stops rotating before the material is fed to the next sensor after the sewing machine has sewn the number of stitches set with the parameter "P024 Number of stitches between sensors", the sewing machine will re-start sewing when you depress the front part of the pedal. (A), (B)



When you depress the back part of the pedal during sewing, the sewing machine stops and the characters [SToP] appear on the operation panel. (D), (E)

If you want to re-start sewing, press  on the operation panel to reset the previous operation, then depress the front part of the pedal to re-start sewing. (A), (B)

* Presser foot lifting operation, needle operation, thread trimming operation and suction operation differ depending on the setting of the relevant functions. (Refer to the explanation of the function setting for details.)

* Be aware that the sewing machine will start sewing when the front sensor is blocked not only by the material but also by other obstacle.

[Manual mode]

Under the manual mode, the material sensor is disabled. Under this mode, the sewing machine is operated with the pedal or the hand thread trimming switch.

Depress the back part of the pedal to lift the presser foot.

Depress the pedal to start sewing.

When you press the hand switch, the sewing machine rotates and the suction device operates. (Only for the DD22 model)

When you press the hand switch, the chain-off thread cutter and the suction device operate. (Only for the DD23 model)

- * In accordance with the setting on the operation panel, the thread trimmer operates when you depress the back part of the pedal. (For the DD22 model, the sewing machine rotates.)
- * In the case the parameter "P036 Thread trimming by depressing back-part of pedal" is set to "1: With thread trimming", the sewing machine carries out thread trimming operation when you depress the back part of the pedal.

7. MAINTENANCE

WARNING :



1. Turn off the power switch before carrying out cleaning. The machine may operate if the treadle is pressed incautiously, which could result in injury.
2. Be sure to wear protective goggles and gloves when handling the lubricating oil and grease so that they do not get into your eyes or onto your skin, otherwise inflammation can be resulted.
3. Furthermore, do not drink or eat the oil nor the grease for they can cause vomiting and diarrhea. Keep the oil away of the reach of children.
4. Use both hands to hold the machine head when tilting or returning it to its original position. If only using one hand to move the machine, the weight of the machine head may cause slipping and you may get hurt.

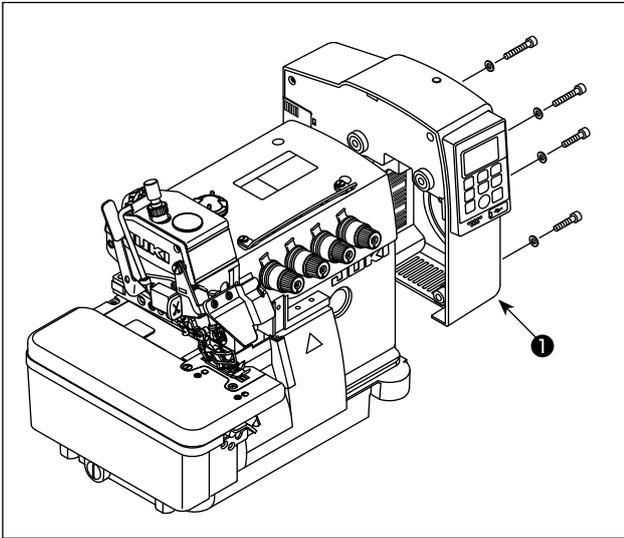
7-1. Periodical Maintenance Items

Maintenance Cycle	Maintenance Items
Daily	1. Clean the lint on the feed dog.
	2. Check to be sure that the oil pan is filled with an adequate quantity of oil. (The oil surface level must be kept between the upper and lower red marker lines on the oil gauge.)
	3. Keep the sewing machine and the operation table clean at all time.
	4. Lubricate the side cutter with an appropriate amount of oil.
Weekly	1. Keep the power cords looking clean and neat.
	2. Keep the operational panel clean.
	3. Check if the power parts is loosening or still at the right position.
Once every four months	1. Change the oil in the oil pan with new oil.

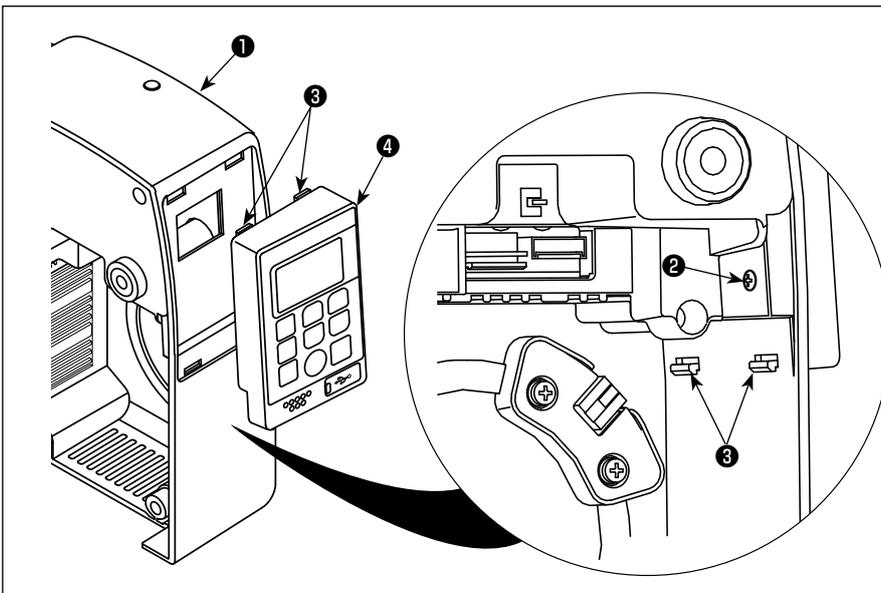
7-2. How to remove the batteries



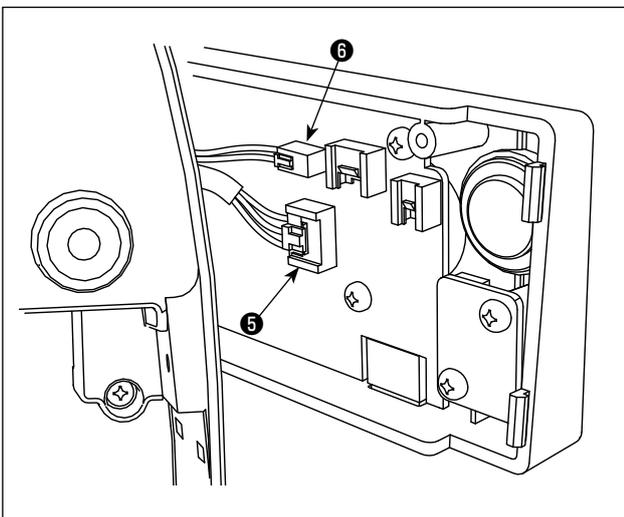
The operation panel has a built-in battery in order to allow the clock to work even when the power to the sewing machine is turned OFF. It is necessary to discard the battery properly in accordance with the relevant local laws and regulations.



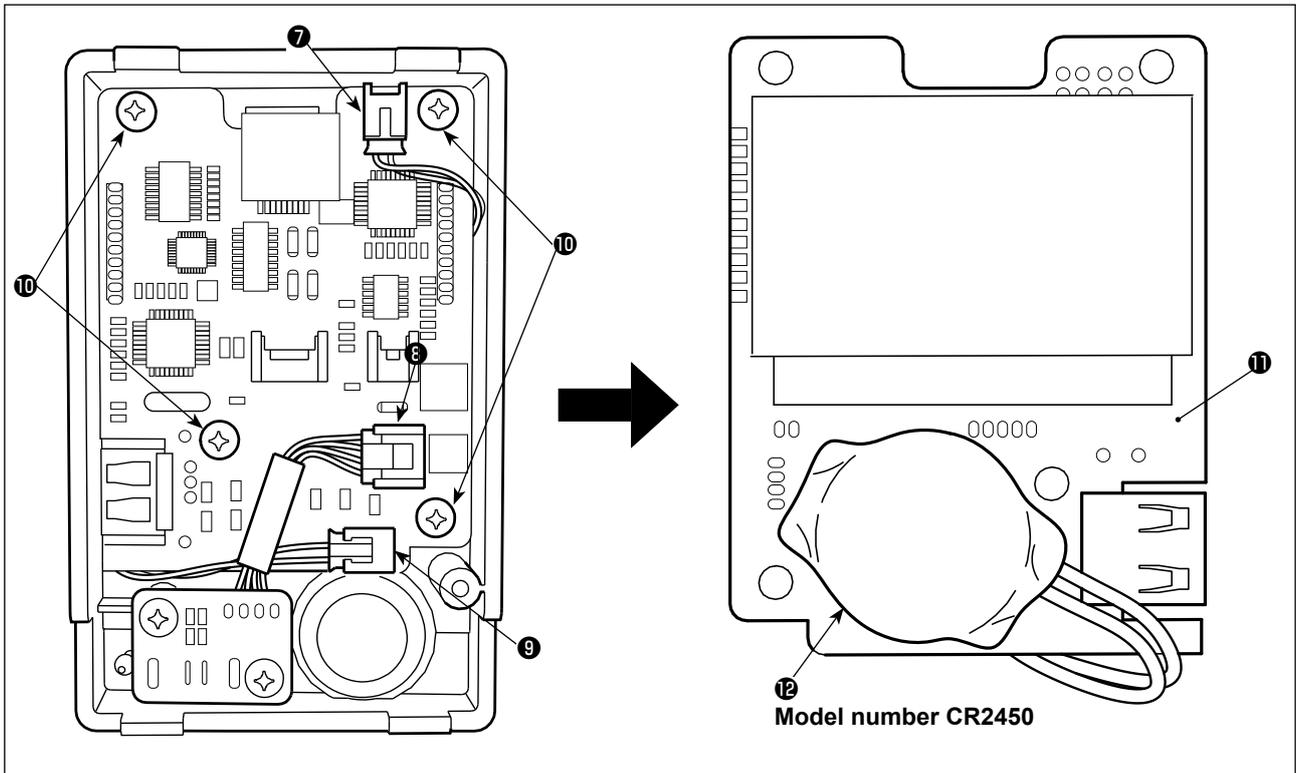
- 1) Detach electrical box ① from the sewing machine head.



- 2) Remove screw ② from electrical box ①. Remove hooks ③ at four locations. Detach operation panel ④ from electrical box ①.



- 3) Remove connectors ⑤ and ⑥ that connect operation panel ④ and electrical box ①. Separate operation panel ④ from the electrical box.



- 4) Remove connectors 7 , 8 and 9 from the operation panel.
- 5) Remove PCB fixing screws 10 (at four locations) to take out PCB 11 .
- 6) 12 installed at the lower part of the front face of the PCB is the battery for clock .
- 7) Remove the main body of the battery together with its case from the PCB.
(Battery 12 is secured on PCB 11 with double-sided adhesive tape.)

8. ADJUSTMENT DIMENSION VALUES

8-1. Dimensions use to adjusting the looper and the needle guard

WARNING :



1. To avoid possible accidents due to unfamiliarity with the machine, get a maintenance man who has a good knowledge of the machine or serviceman of our distributor to adjust the machine or replace any of its parts.
2. To avoid possible personal injury when the machine starts, it has to be ascertained in prior to the actuation of the machine that no screws are loosened and no components come in contact with one another.



The dimensions given in the table are standard ones to be used to adjust the looper. They are intended to be used for reference and should be changed more or less in accordance with the sewing products and thread to be used.

(Unit : mm)

Model							
	A	B	C	D	E	F	G
MO-6804	10.4-10.6	-	-	(10.8)	4.8-5.2	3.7-3.9	-
MO-6814-2 △ H	10.4-10.6	(9.1)	-	(10.5)	5.4-5.7	3.7-3.9	-
MO-6814-3 △ H	10.4-10.6	(9.1)	-	(10.5)	5.4-5.7	3.7-3.9	-
MO-6814-4 △ H	11.8-12	(10.5)	-	(12)	5.4-5.7	4.1-4.3	-
MO-6814-30P	10.4-10.6	(9.1)	-	(10.5)	5.4-5.7	3.7-3.9	-
MO-6816-3 △ H	10.4-10.6	-	(7.6)	(10.8)	4.8-5.2	3.7-3.9	1.4-1.9
MO-6816-50H	11.8-12	-	(9)	(12)	4.8-5.2	4.1-4.3	1.6-2.3
MO-6816-60H	12.6-12.8	-	(9.8)	(12.7)	5-5.5	4.1-4.3	1.6-2.3
MO-6816-30P	10.4-10.6	-	(7.6)	(10.8)	4.8-5.2	3.7-3.9	1.4-1.9

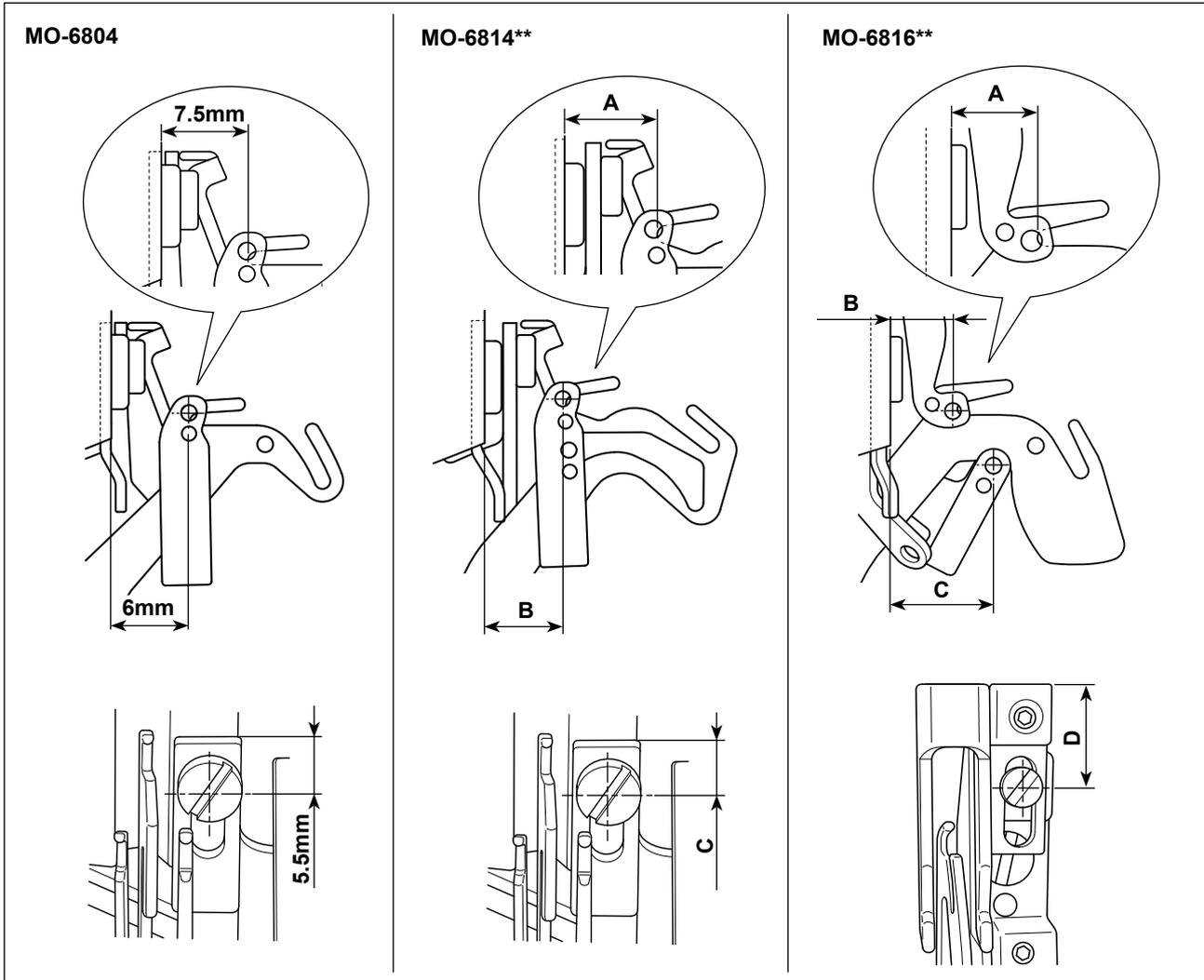
8-2. Dimensions related to the position of the thread take-up and the looper thread cam (standard adjustment)



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

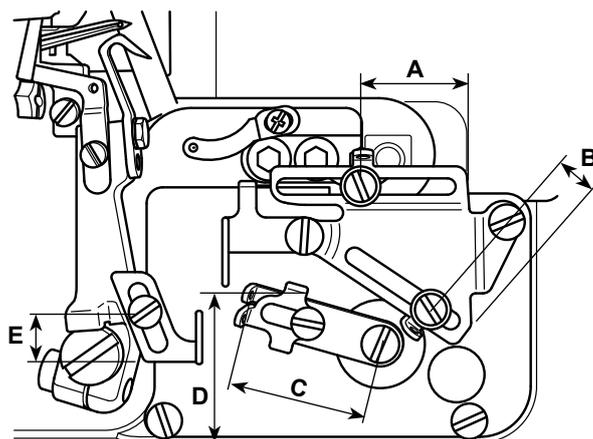
(1) Position of the needle thread take-up and the needle thread guide



(Unit : mm)

	MO-6814			MO-6816			
	A	B	C	A	B	C	D
Excluding 30P, 60H	6.5	6	5.5	8.5	8	14	12
30P	6.5	6	5.5	11.5	11	13	13
60H	-	-	-	7.5	8	14	13

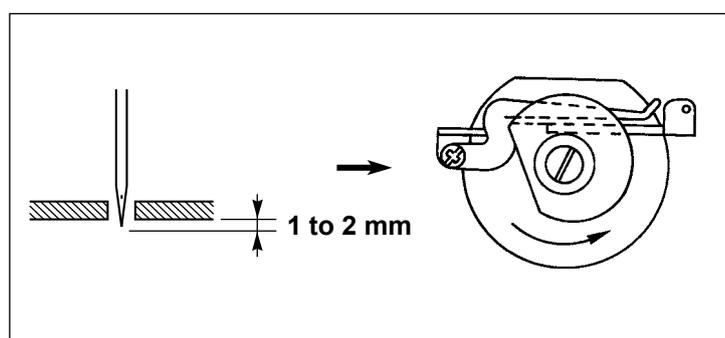
(2) Position of the looper thread take-up and the looper thread guide



(Unit : mm)

Model	A	B	C	D	E
MO-6804	11.5	17.5	20	28.5	11
MO-6814-2 △ H	21.5	14.5	28	32	11
MO-6814-3 △ H	21.5	14.5	28	32	11
MO-6814-4 △ H	21.5	14.5	25	28.5	9
MO-6814-30P	11.5	17.5	20	28.5	9
MO-6816-3 △ H	21.5	17.5	20	28.5	9
MO-6816-50H	33.5	10.5	20	28.5	9
MO-6816-60H	33.5	10.5	20	38	9
MO-6816-30P	21.5	10.5	28	35	15

(3) Adjustment value of the looper thread cam



Adjust the looper thread cam timing so that the looper thread cam releases the looper thread when the needle tip comes down to project the undersurface of the throat plate by 1 to 2 mm.

9. ERROR CODE LIST

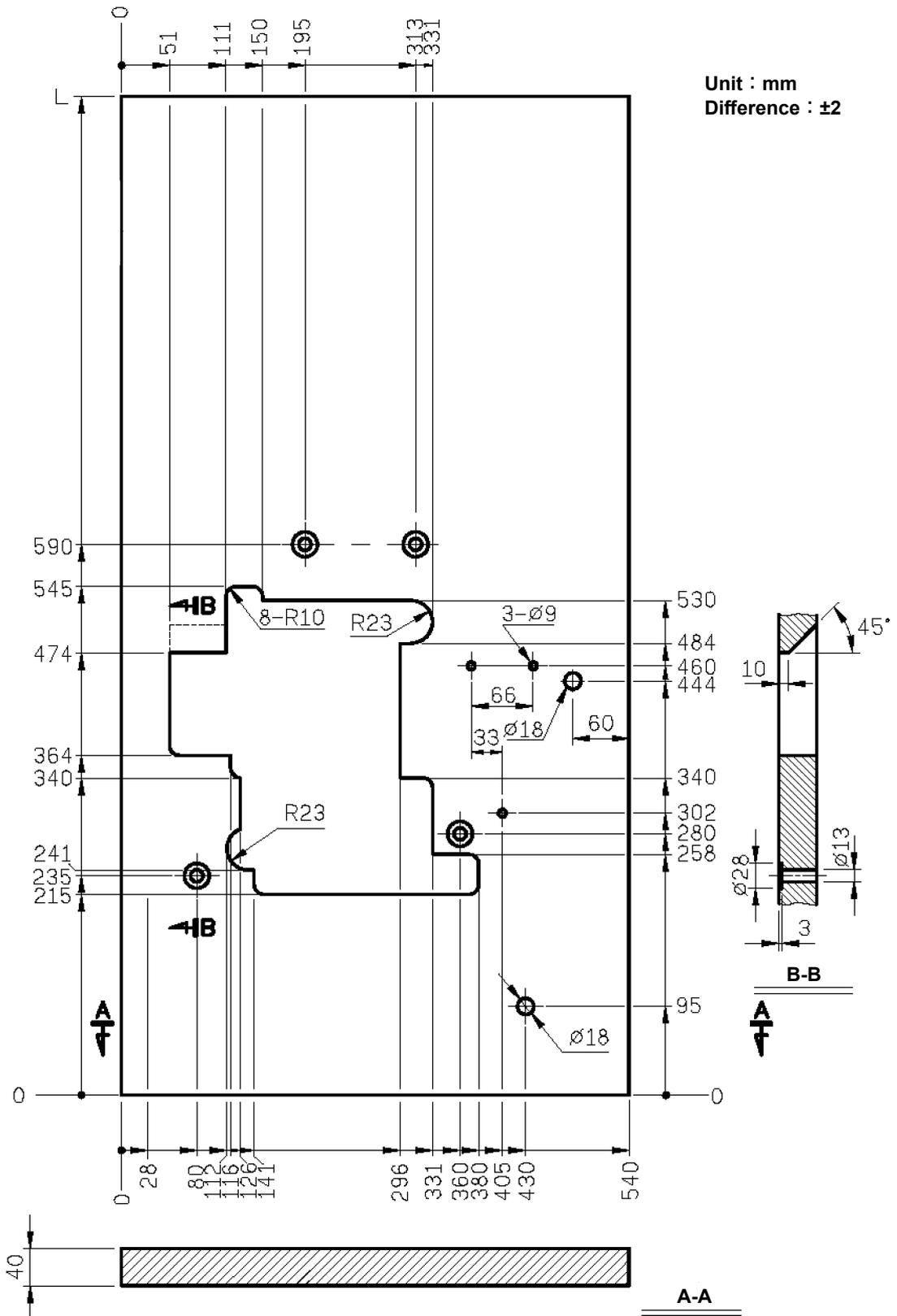
Error code	Description
E01	Overvoltage error
E02	Low voltage error
E03/E03P	Communication fault between the operation panel and the electrical box
E05	Pedal signal fault
E07	Lock error This error is automatically reset when the pulley is turned.
E09	Upper stop position cannot be found during operation.
E10	Solenoid current is excessively large.
E11	Upper stop position cannot be found after the power is turned ON.
E14	Encoder signal or hall signal is not normal.
E15	Hardware overcurrent signal (fault signal)
E16	The presser foot is not placed in its correct position.
E17	The cloth plate cover is not placed in its correct position.
E18	The eye protection cover is not placed in its correct position.
E19	Electrolytic capacity connection error
E21	The operation panel PCB has re-started.
E41	There is no MAIN software program.
E42	There is no SUB software program.
E44	There is no voice software.

If there is no operation panel software program, "----" will be displayed.

Only for errors E16, E17 and E18, return the relevant parts to their correct positions and press  on the operation panel. Then, the sewing machine will be reset and return to its normal state. Be sure to check that there is no obstacle that may block the sensors before pressing

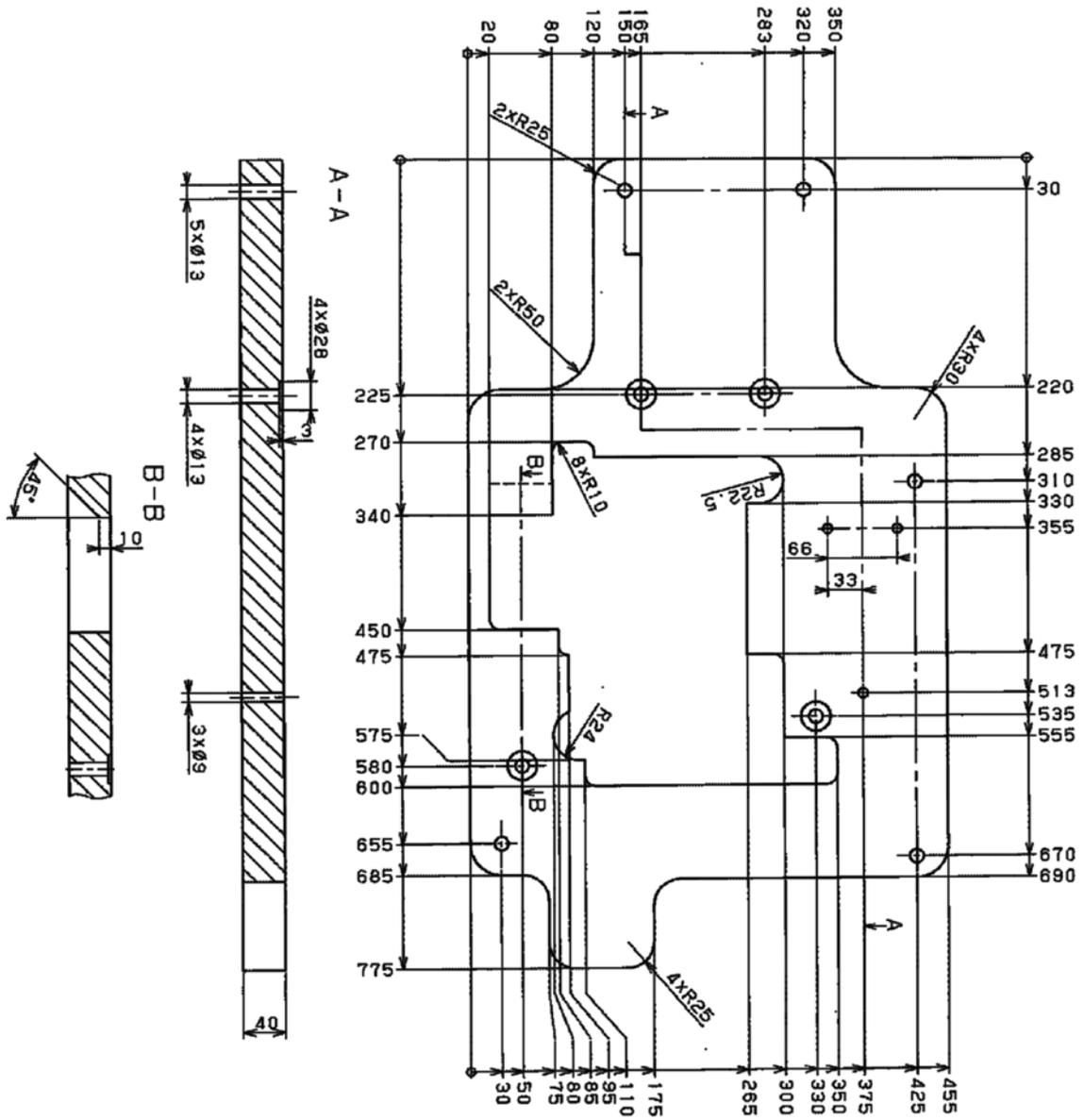
 . If any of the sensor is blocked, the sewing machine may run suddenly.

10. TABLE DRAWING



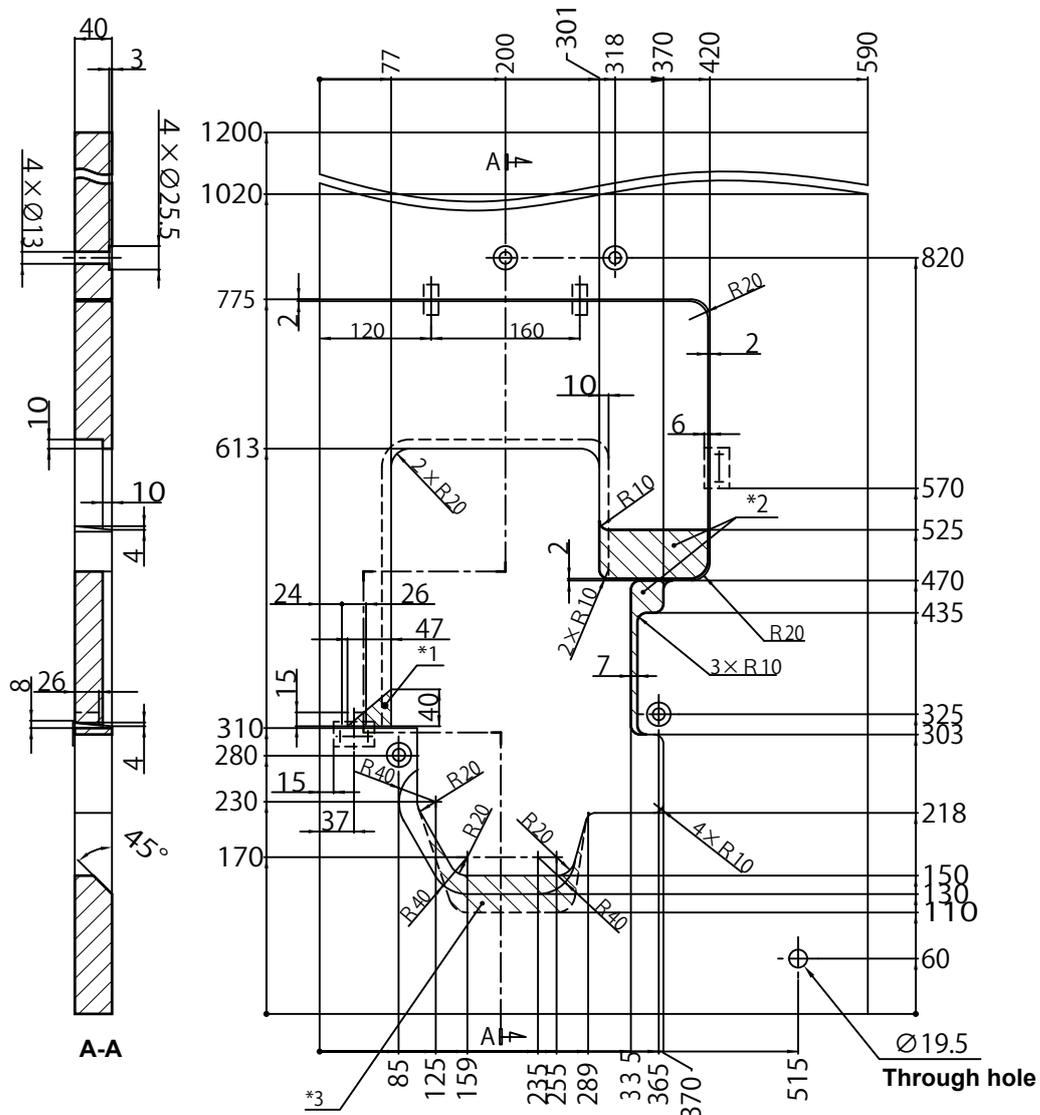
Auxiliary table for fully-sunken type table

Unit : mm
Difference : ±2



Fully-sunken type table (bracket type)

Unit : mm
Difference : ±2



***1** This part has to be removed when installing the auto hemmer device to the sewing machine.

***2** If you want to install the thread trimming device, remove these portions.

***3** If you want to use the external synchronizer, remove this portion.

***** Adjust the dimensions of the portion to be cut off according to the size of the synchronizer you want to use.