

ENGLISH

LZ-2280B
INSTRUCTION MANUAL



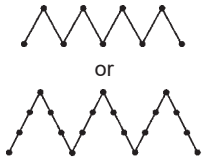
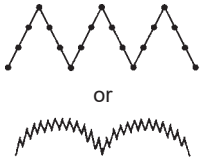
CONTENTS

I. SPECIFICATIONS	1
1. Specifications of the sewing machine head	1
2. Specifications of the control box	1
3. DRAWING OF TABLE	2
II. INSTALLATION.....	3
1. Installation of the sewing machine.....	3
2. Installing the pedal sensor.....	4
3. How to install the needle	4
4. Connecting the connector.....	5
5. Installing the reactor box [Only for the EU type models].....	6
6. Lubrication.....	9
7. Adjusting the amount of oil in the hook	10
8. Adjusting the amount of oil (oil splashes).....	11
9. Winding the bobbin thread.....	12
10. Inserting the bobbin case and the bobbin.....	13
11. Threading the machine head	14
12. Adjusting the pedal.....	15
III. ADJUSTING THE SEWING MACHINE	16
1. Adjusting the thread tension	16
2. Adjusting the zigzag width.....	17
3. Adjusting the pressure of the presser foot	18
4. Adjusting the height of the presser bar	18
5. Adjusting the micro-lifting mechanism of the presser foot.....	18
6. Adjusting the stitch length.....	19
7. Adjusting the denser stitching	19
8. Height and inclination of the feed dog.....	20
9. Attaching/removing the hook	20
10. Adjusting height of the needle bar	21
11. Adjusting the needle-to-hook timing and the needle guard	21
12. Marker dots on the handwheel	22
13. Adjusting the thread trimmer	22
14. Needle thread feeding device	23
15. Position of the wiper.....	24
16. One-touch type reverse feed switch	24
17. Changing over the needle-throwing method.....	25
18. LED light	25
IV. CARE	26
1. Cleaning the hook section	26
2. Checking the amount of oil in the oil pan.....	26
V. OPTIONAL.....	27
1. Joining foot for the lockstitch presser foot.....	27
2. Auxiliary thread take-up kit.....	27

VI. FOR THE OPERATOR	28
1. Operating procedure of the sewing machine	28
2. Operation panel built in the machine head.....	30
3. Operating procedure of the sewing pattern	33
4. Setting of functions	38
5. Digital types operation	40
6. Function setting list	41
7. Details of setting of the main functions	45
8. Stitch balance for back-tacking	50
9. How to use the bobbin counter	53
10. Saving and initialization of the function setting data	54
11. About the USB.....	56
12. List of error codes.....	57
 VII. TROUBLES AND CORRECTIVE MEASURES.....	 58

I. SPECIFICATIONS

1. Specifications of the sewing machine head

Model	LZ-2280B		LZ-2284B			LZ-2287B	
Type of zigzag	Standard zigzag		Selectable between standard zigzag stitching and 3-step zigzag stitching			Selectable between 3-step zigzag stitching and 24-stitch standard scallop zigzag stitching	
Motor	AC servomotor, 550 W						
Specification	A (Narrow width)	B (Wide width)	-	-7	T	-	
Stitch diagram							
Max. zigzag width (mm)	5 [4 at the time of delivery]	8	3-step zigzag : 10 [8 at the time of delivery] Standard zigzag : 5 [5 at the time of delivery]			10 [8 at the time of delivery]	
Max. feed pitch (mm)	2.5 (Normal/reverse feed) [2 at the time of delivery]	5 (Normal feed) 4 (Reverse feed)	2.5 (Normal/reverse feed) [2 at the time of delivery]			2.5 (Normal/reverse feed) [2 at the time of delivery]	
Max. sewing speed (sti/min)	5000 (Feed amount: 4 mm or less) If the feed amount exceeds 4 (mm), the maximum sewing speed will be 4000.		5000 (Standard zigzag : Zigzag width = less or 5 mm, 3-step zigzag : Zigzag width = less or 8 mm) 4000 (Standard zigzag : Zigzag width = more than 5 mm, 3-step zigzag : Zigzag width = more than 8 mm)			5000 (Zigzag width = less or 8 mm) 4000 (Zigzag width = more than 8 mm)	
Needle	SCHMETZ 438SUK (Nm75) : Nm65 to 90, DP x 134 (#10) : #9 to 14						
Oil	JUKI CORPORATION GENUINE OIL 7						
Noise	Equivalent continuous emission sound pressure level (L_{pA}) at the workstation: A-weighted value of 77.5 dBA ; (Includes $K_{pA} = 2.5$ dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 3,400 sti/min. (*1) A-weighted value of 84.0 dBA ; (Includes $K_{pA} = 2.5$ dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 5,000 sti/min. (*1)		Equivalent continuous emission sound pressure level (L_{pA}) at the workstation: A-weighted value of 77.5 dBA ; (Includes $K_{pA} = 2.5$ dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 3,400 sti/min. (*1) A-weighted value of 84.0 dBA ; (Includes $K_{pA} = 2.5$ dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 5,000 sti/min. (*1) A-weighted value of 77.5 dBA ; (Includes $K_{pA} = 2.5$ dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 3,300 sti/min. (*2) A-weighted value of 82.0 dBA ; (Includes $K_{pA} = 2.5$ dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 5,000 sti/min. (*2)			Equivalent continuous emission sound pressure level (L_{pA}) at the workstation: A-weighted value of 77.5 dBA ; (Includes $K_{pA} = 2.5$ dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 3,400 sti/min. (*1) A-weighted value of 84.0 dBA ; (Includes $K_{pA} = 2.5$ dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 5,000 sti/min. (*1)	

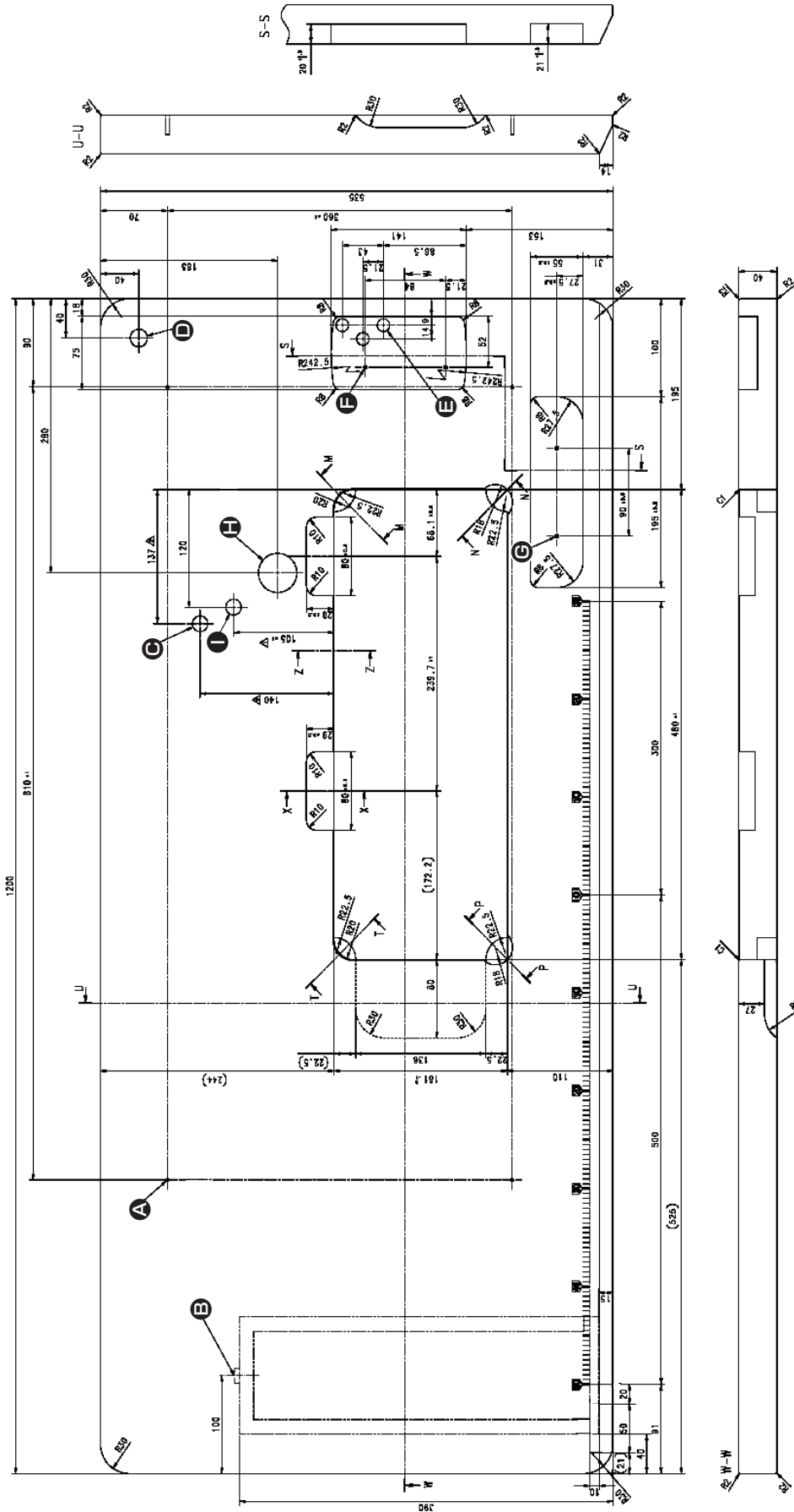
*1 Noise during steady operation refers to the noise that is generated when the sewing machine performs straight stitching by 300 mm without operating any device.

*2 Noise when accessory devices are in operation refers to the noise that is generated when the sewing machine performs sewing of a standard sewing pattern by 300 mm while operating the automatic back-tack device, thread trimmer and wiper.

2. Specifications of the control box

Supply voltage	Single phase 220 to 240V	3-phase 200 to 240V Single phase 100 to 120V	Single phase 220 to 240V CE
Frequency	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz
Operating environment	Temperature : 0 to 35°C Humidity : 90% or less	Temperature : 0 to 35°C Humidity : 90% or less	Temperature : 0 to 35°C Humidity : 90% or less
Input	250VA	250VA	250VA

3. DRAWING OF TABLE

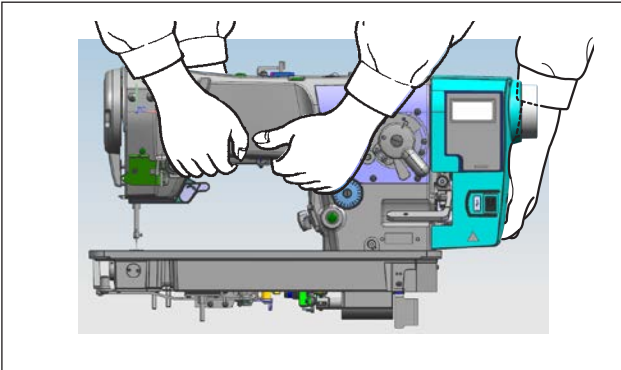


- A** 4xØ3.4 on the bottom surface, depth 20 (drill a hole at the time of set-up.)
- B** Installing position of drawer stopper (on the reverse side)
- C** Ø16 depth 30 (Hole for the head support rod of the LZ-2280B)
- D** Ø18 drilled hole
- E** 3xØ13 drilled hole
- F** 2xØ3.5 depth 10
- G** 2xØ3.5 depth 10
- H** Ø40±0.5 drilled hole
- I** Ø16 depth 30 (Hole for the head support rod of the DDL-7000A)

Note: ① If you want to seal the hole for the head support rod of the DDL-7000A, separately use HX00326000C (separately available).
 ② Part number of the table: 40131524 (in common with the DDL-7000A)

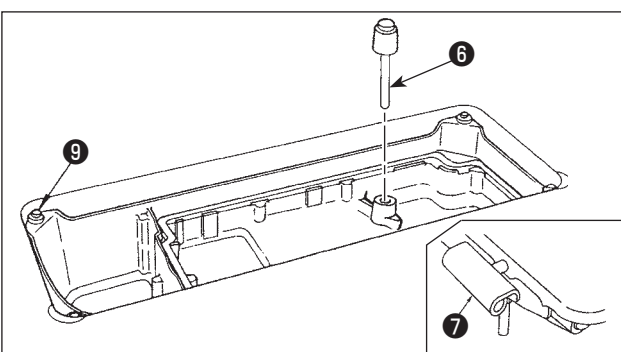
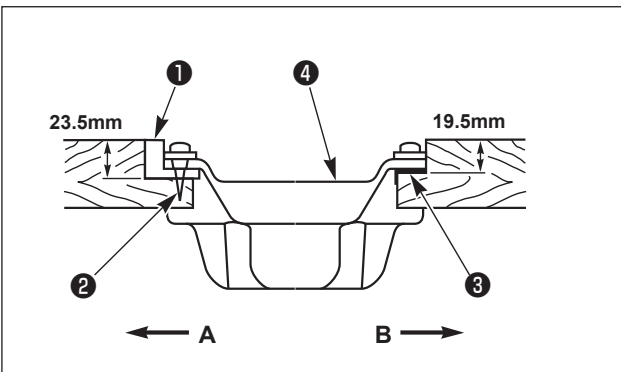
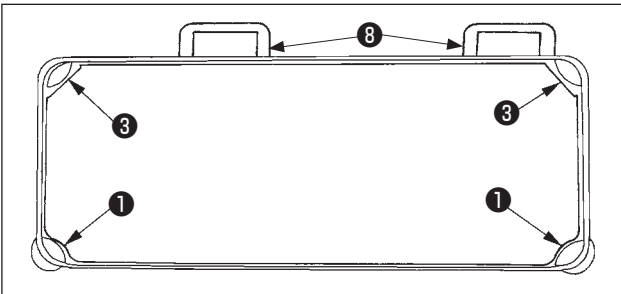
II. INSTALLATION

1. Installation of the sewing machine

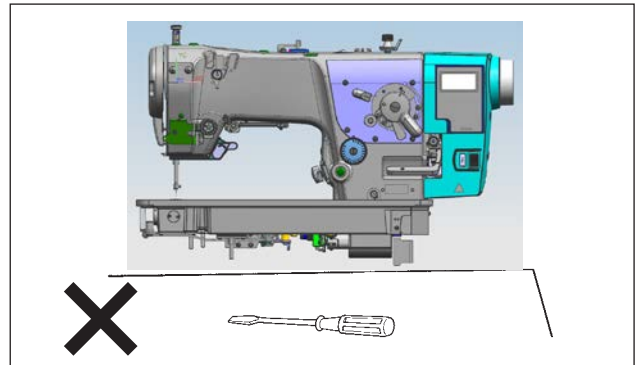


- 1) Carry the sewing machine with two persons as shown in the figure.

(Caution) Never hold the handwheel since it rotates.



- 5) Fit knee lifter pressing rod **6**. Fit hinge **7** into the opening in the machine bed, and fit the machine head to table rubber hinge seat **8** before placing the machine head on cushions **9** on the four corners.
- 6) Securely attach head support rod **10** to the table until it goes no further.
*** Be sure to install the machine head support bar supplied with the unit.**
- 7) Draw out cable **11** of the control box through cable draw-out hole **12** to route it to the underside of the sewing machine table.
- 8) Remove the temporary fixing band **13** of the power cable.



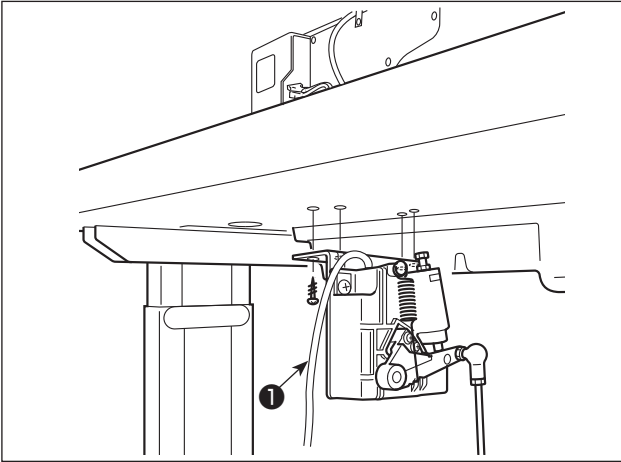
- 2) Place the sewing machine on a horizontal and plane place when placing it and do not place any protruding thing such as a screwdriver or the like.

- 3) Adjust so that the oil pan is supported at the four corners of the table. Mount rubber hinge seat **8** on the table and fix it on the table with a nail.

- 4) Fix two rubber seats **1** on side **A** (operator's side) using nails **2** as illustrated above. Fix two cushion seats **3** on side **B** (hinged side) using a rubber-based adhesive. Then place oil pan **4** on the fixed seats.



2. Installing the pedal sensor



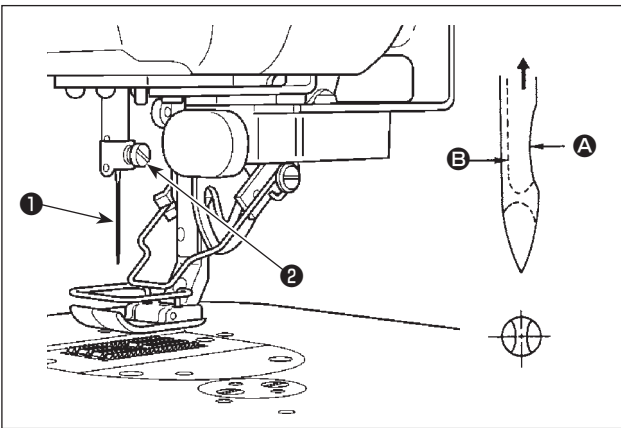
- 1) Install the pedal sensor to the table with mounting screws **1** supplied with the unit.
It is necessary to install the pedal sensor at such a position that the connecting rod is perpendicular to the table.
- 2) After the completion of installation of the pedal sensor on the table, place the sewing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

3. How to install 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.

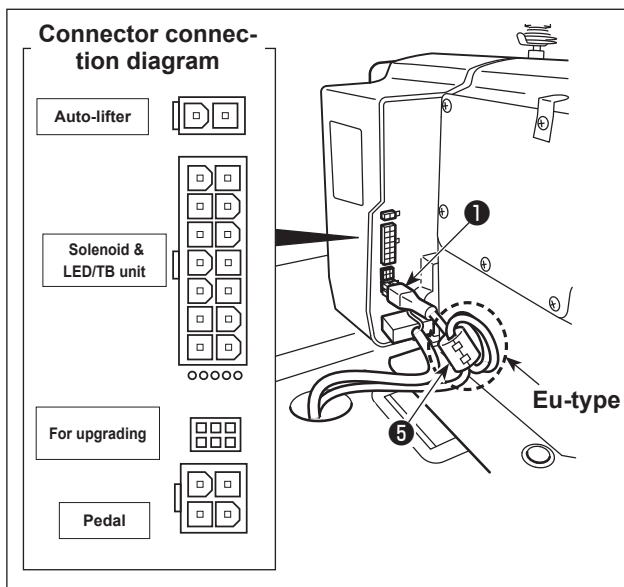


- 1) Turn the handwheel by hand to raise the needle bar to the highest point.
- 2) Loosen the needle clamp screw **2** . Hold the needle **1** so that the long groove **B** on the needle is facing exactly toward you.
- 3) Insert the needle deep into the hole of the needle bar in the direction of the arrow until it will go no further.
- 4) Securely tighten the screw **2** .
- 5) Confirm that the long groove **B** on the needle faces toward you.

4. 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.



Do not insert the power plug into the wall outlet.



Check to be sure that the power switch is turned OFF.

[EU-type models]

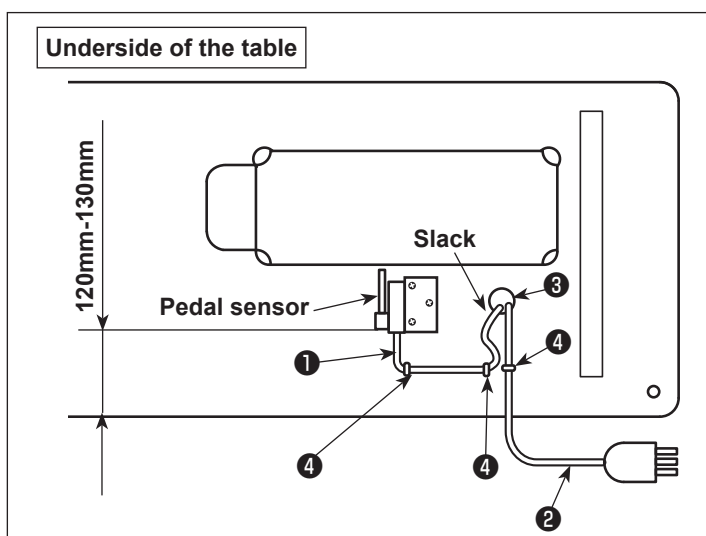
Install ring core **5** .

For one ring core **5** , clamp the pedal sensor cable **1** after winding the cable round the torus of the ring core three times.

- 1) Connect pedal sensor cable **1** supplied with the unit to the control box.

Refer to the connector connection diagram for connecting ports of the cables.

Be sure to fully insert the connectors into the corresponding ports until they are locked.



- 2) Secure pedal sensor cable **1** and AC input cable **2** with staples **4** .

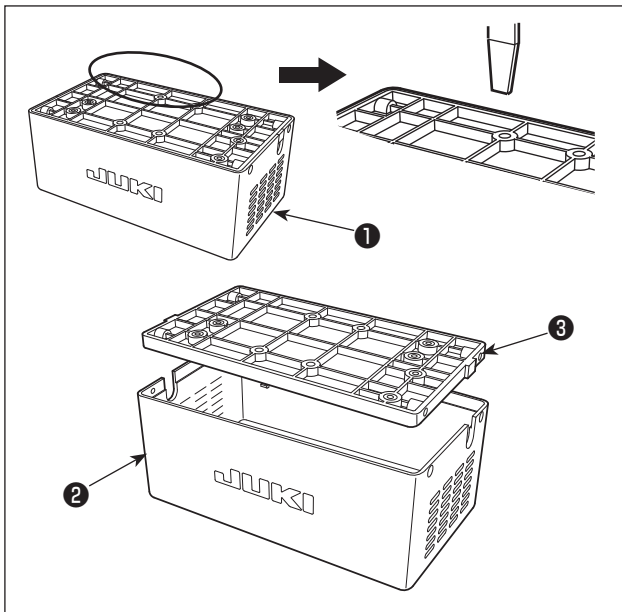
The lateral position of the pedal sensor should be adjusted so that the connecting rod is positioned straight. Then, secure the pedal sensor at that position.



For the EU type models, carry out the work described in "II-5. Installing the reactor box [Only for the EU type models]" p.6 , then carry out the securing work with staples.

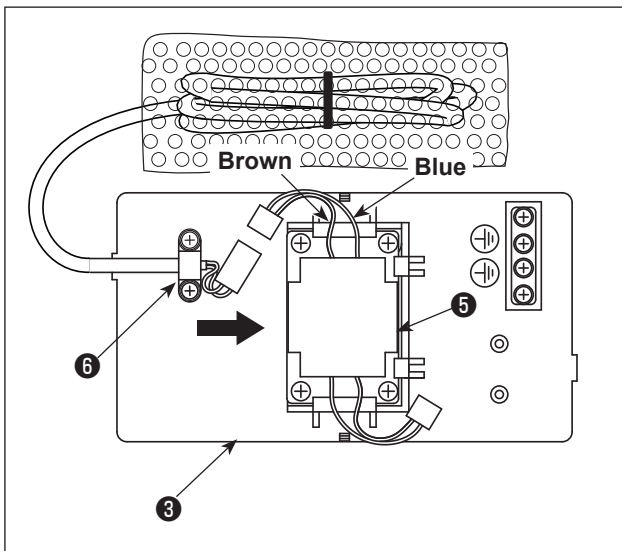
5. Installing the reactor box [Only for the EU type models]

* 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.

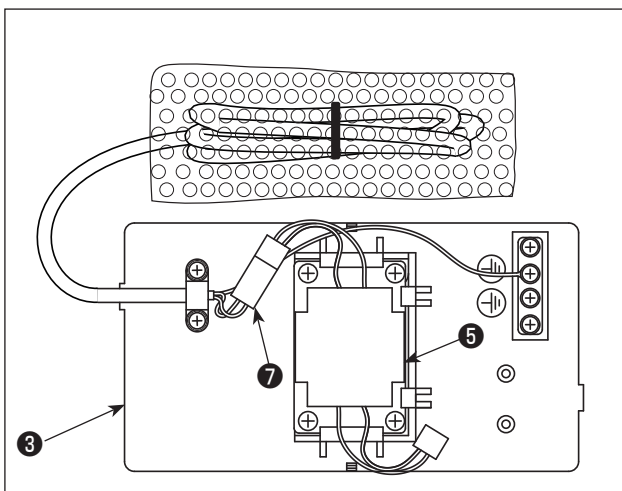


2) Slide reactor ⑤ in the direction of the arrow to insert into reactor base asm. ③ .

1. When inserting the reactor, detach bundled wire clamp ⑥ beforehand.



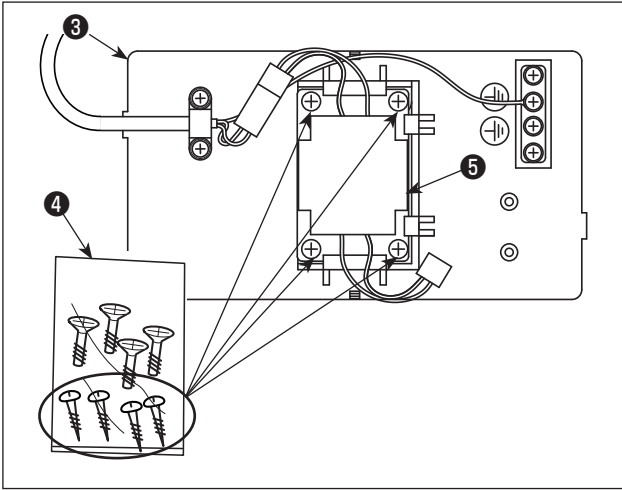
2. Insert reactor ⑤ into the reactor base asm. while facing brown and blue lead wires side upward.



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



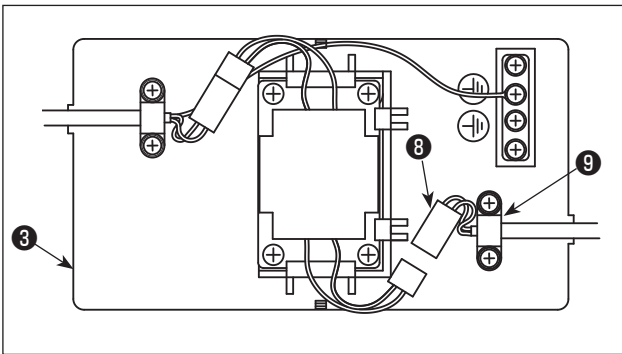
Be sure to insert the former fully into the latter until the connector is locked.



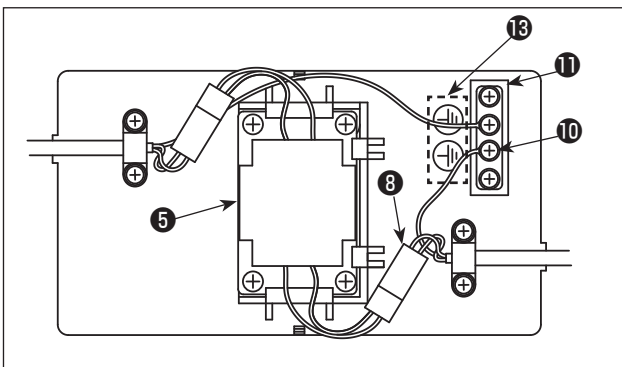
- Take out wood screws (ST4.2 x 25) from screw bag 4 . Secure reactor base asm. 3 and reactor 5 to the undersurface of sewing machine table with the wood screws (at four locations).



Refer to the instruction figure shown in the following step of procedure 11) for the mounting positions of the reactor cover and reactor base asm.



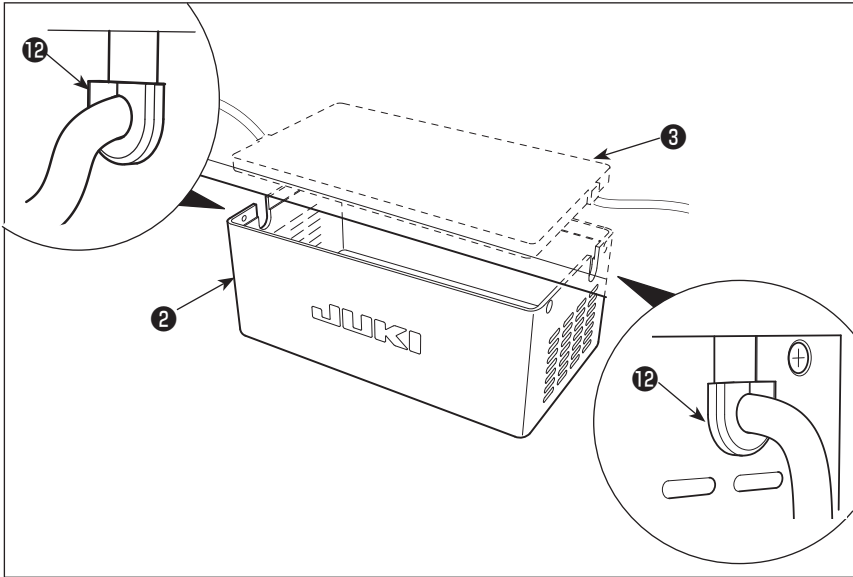
- Secure power cord asm. 8 coming from the electrical box to reactor base asm. 3 with bundled wire clamp 9 .



- Connect the connector of power cord asm. 8 to connector of reactor 5 .
- 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 .

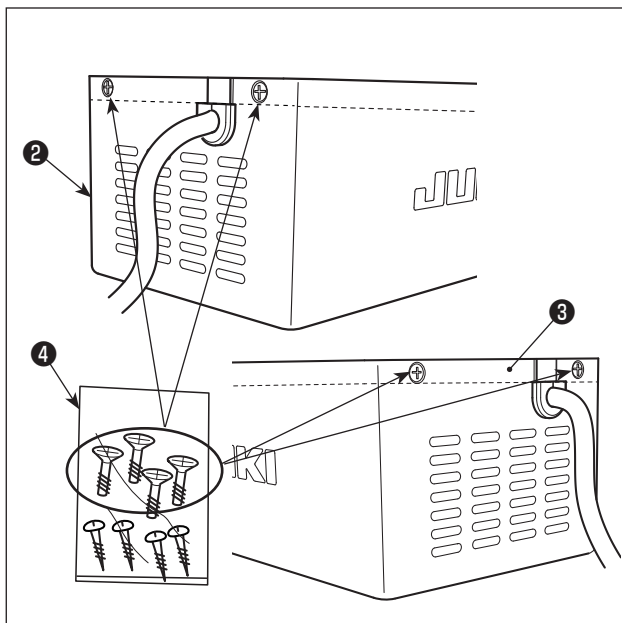


- 8) Fit reactor cover ② over reactor base asm. ③ .

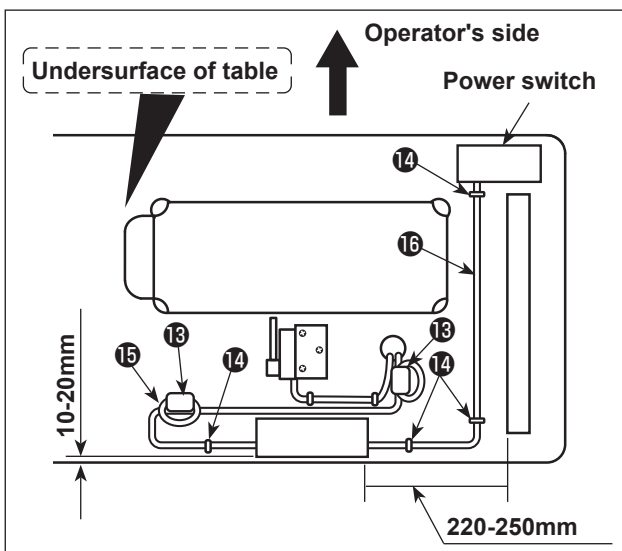


Take care not to allow the cord to be caught under reactor cover ② .

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) Install two ring core ⑬ .

For core ⑬ , clamp the power cord of the electrical box after winding the cable round the torus of the ring core twice.

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

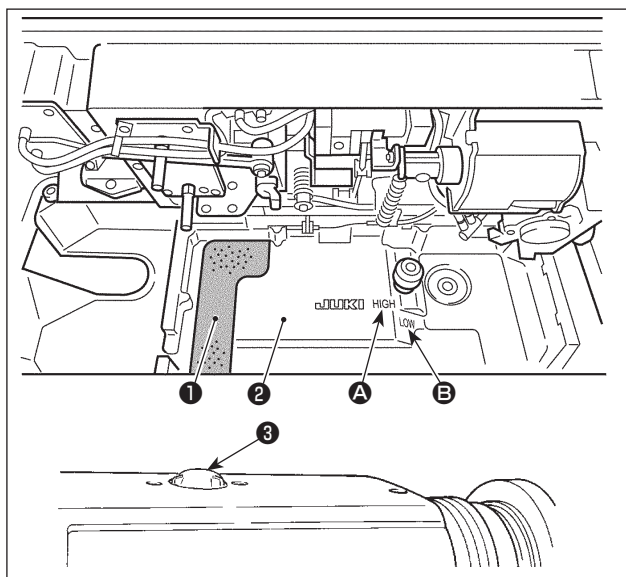
At this time, take care not to cross the input- and output-cables ⑮⑯ .

6. Lubrication



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) Put foamed polyurethane pad ① in the oil pan ②.
- 2) Fill the oil pan ② with JUKI CORPORATION GENUINE OIL 7 up to the level of "HIGH" mark ④.
- 3) Add the oil as soon as the oil level comes down to "LOW" mark ⑤ or lower.
- 4) Run the sewing machine after the lubrication. As long as the machine is lubricated normally, the oil splash is seen through the oil sight window ③. (The amount of splashing oil does not depend on the amount of oil.)

* If dust has gathered in the oil pan, remove it. When changing the sewing machine oil, squeeze urethane foam ① and remove dust from it.



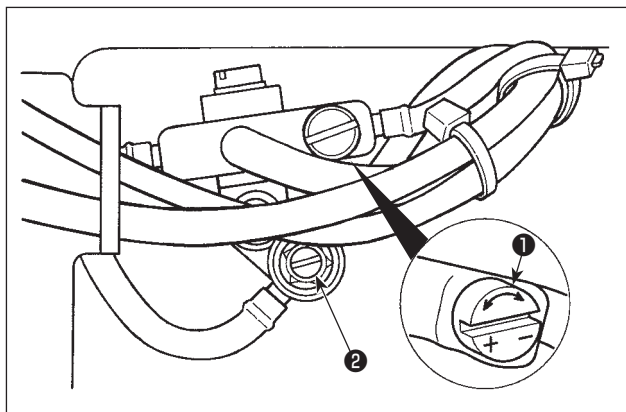
1. When using a new sewing machine for the first time or using the sewing machine which has not been used for a long time, run the sewing machine at a low speed (approximately 2,000 sti/min) for approximately ten minutes.
2. When the machine is continuously used at a low speed (2,000 sti/min or less), make the machine run idle at a high speed (4,000 sti/min or more) for approximately 5 minutes once a week.
3. Use clean oil and when the oil becomes dirty, replace it with clean oil as soon as possible. When you continue to use the machine with dirty oil, the trouble will be caused.

7. Adjusting the amount of oil in the hook



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.



Tilt the machine head, and adjust the amount of oil in the hook by turning the oil amount adjustment screw ❶ mounted on the gear box B.

Turn the adjusting screw in the “+” direction (counterclockwise) to increase the amount of oil in the hook. Turn the adjusting screw in the “-” direction (clockwise) to decrease it.

1. After the adjustment, idle the sewing machine at the sewing speed to be used for sewing about 30 seconds. Then, check the oil quantity by comparing with the sample which shows the appropriate oil splash (marks).
2. When adjusting the amount of oil in the hook, perform the adjustment in a way of reducing the oil amount after somewhat increasing it.
3. The amount of oil in the hook has been adjusted at the max. sewing speed at the time of delivery.



When you always use the sewing machine at low sewing speed, there is a possibility that trouble occurs due to the lack of amount of oil in the hook. When the sewing machine is used always at low sewing speed, perform the adjustment of the amount of oil in the hook.

4. Oil may leak from the hook driving shaft section if oil amount adjustment screw ❶ is fully loosened during operation. Do not use it with fully loosened. If the required amount of oil is not fed to the hook unless oil amount adjustment screw ❶ is nearly fully loosened, the hook driving shaft oil wick (JUKI part number: 11015906) may have problems such as clogging. In such a case, replace the hook driving shaft oil wick with a new one.
5. Never adjust screw ❷ of the hook oil quantity adjusting valve since it is fixed.

8. Adjusting the amount of oil (oil splashes)

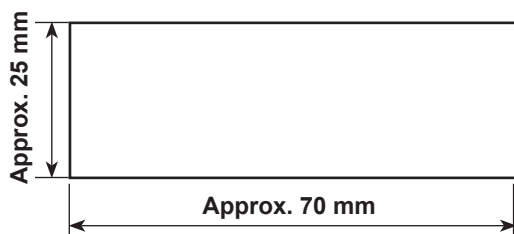


WARNING :

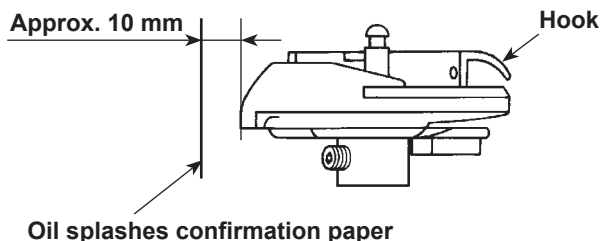
Be extremely careful about the operation of the machine since the amount of oil has to be checked by turning the hook at a high speed.

(1) Confirmation of the amount of oil in the hook

① Amount of oil (oil splashes) confirmation paper



② Position to confirm the amount of oil (oil splashes)



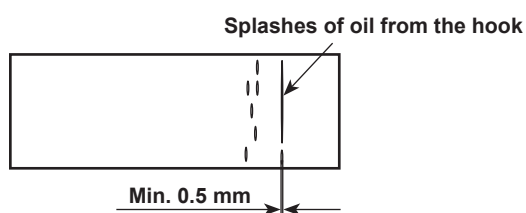
* Use any paper available regardless of the material.

* When carrying out the procedure described below in 1) and 2), confirm the state that the needle thread from the thread take-up lever to the needle and the bobbin thread are removed, the presser foot is lifted and the slide plate is removed. At this time, take extreme caution not to allow your fingers to come in contact with the hook.

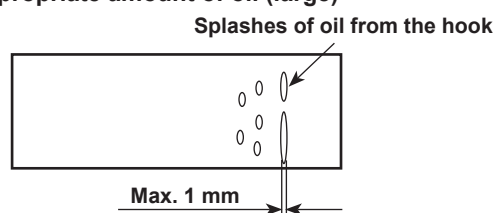
- 1) If the machine has not been sufficiently warmed up for operation, make the machine run idle for approximately three minutes. (Moderate intermittent operation)
- 2) Place the amount of oil (oil spots) confirmation paper under the hook immediately after the machine stops running.
- 3) Confirm the height of the oil surface in the oil reservoir is within the range between "HIGH" and "LOW".
- 4) Confirmation of the amount of oil should be completed in five seconds. (Check the period of time with a watch.)

(2) Sample showing the appropriate amount of oil in the hook

Appropriate amount of oil (small)



Appropriate amount of oil (large)



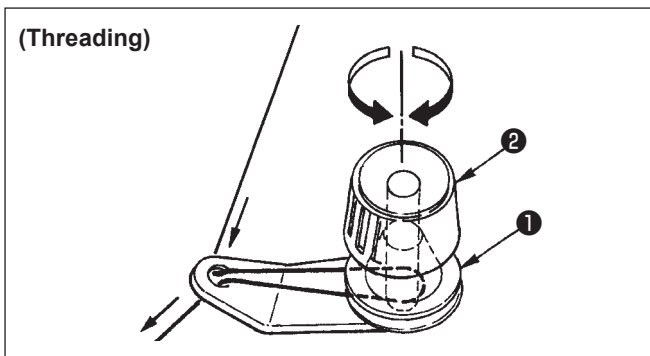
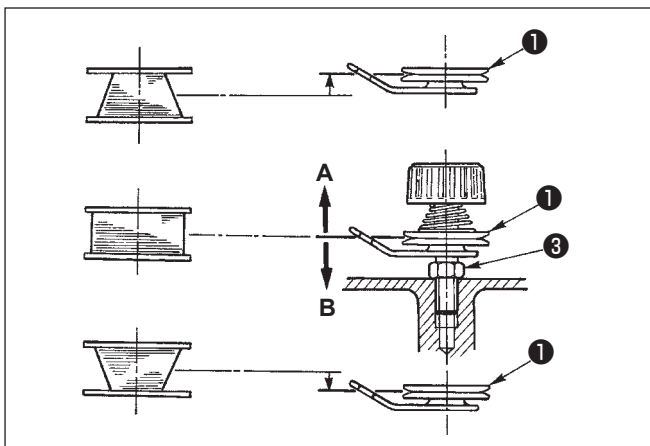
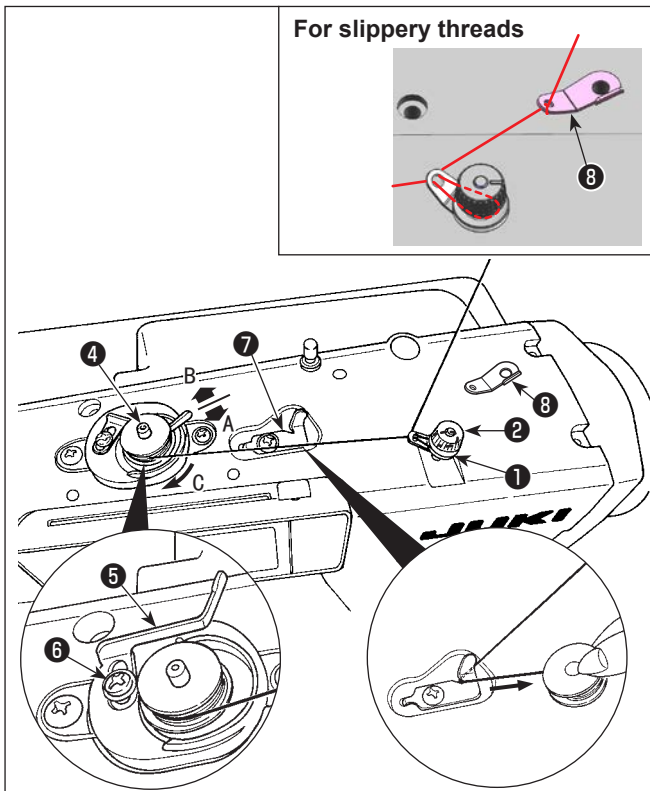
- 1) The amount of oil shown in the samples on the left should be finely adjusted in accordance with sewing processes.
Be careful not to excessively increase/decrease the amount of oil in the hook. (If the amount of oil is too small, the hook will be seized (the hook will be hot). If the amount of oil is too much, the sewing product may be stained with oil.)
- 2) Adjust the amount of oil in the hook so that the oil amount (oil splashes) should not change while checking the oil amount three times (on the three sheets of paper).

9. Winding the bobbin thread



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) Insert the bobbin deep into the bobbin winder spindle ④ until it will go no further.
- 2) Pass the bobbin thread pulled out from the spool rested on the right side of the thread stand following the order from ① as shown in the figure on the left. Then, wind the end of the bobbin thread on the bobbin several times. Then, wind the end of the bobbin thread on the bobbin several times.
 - * In the case of using slippery threads such as Resilon, pass the thread through ⑧ (wind the thread by two turns) and thread the bobbin winder thread tension controller.
- 3) Press the bobbin winder adjusting plate ⑤ in the direction of A and start the sewing machine. The bobbin rotates in the direction of C and the bobbin thread is wound up. The bobbin winder spindle ④ will automatically stop as soon as the winding is finished.
- 4) Remove the bobbin and cut the bobbin thread with the thread cut retainer ⑦ .
- 5) To adjust the winding amount of the bobbin thread, loosen setscrew ⑥ and move bobbin winder adjusting plate ⑤ to the direction of A or B. Then, tighten setscrew ⑥ .
 - To the direction A: The amount is decreased.
 - To the direction B: The amount is increased.
- 6) In case that the bobbin thread is not wound evenly on the bobbin, loosen the nut ③ and turn the bobbin thread tension to adjust the height of the thread tension disk ① .
 - It is the standard that the center of the bobbin is as high as the center of the thread tension disk.
 - Move the position of the thread tension disk ① to the direction A as shown in the figure on the left when the winding amount of the bobbin thread on the lower part of the bobbin is excessive and to the direction B as shown in the figure on the left when the winding amount of the bobbin thread on the upper part of the bobbin is excessive.
 After the adjustment, tighten the nut ③ .
- 7) Turn the thread tension nut ② to adjust the tension of the bobbin thread winder.



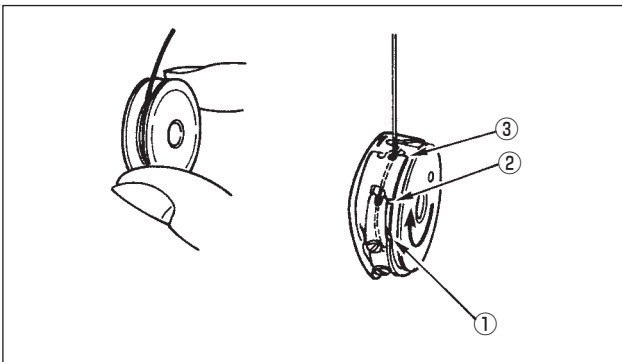
1. When winding the bobbin thread, start the winding in the state that the thread between the bobbin and thread tension disk ① is tense.
2. When winding the bobbin thread in the state that sewing is not performed, remove the needle thread from the thread path of thread take-up and remove the bobbin from the hook.

10. Inserting the bobbin case and the bobbin



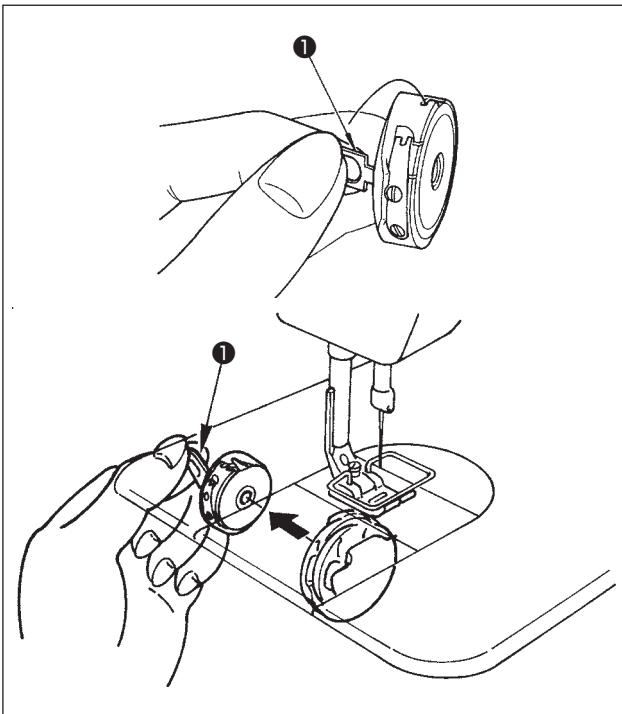
WARNING :

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.



Placing a bobbin into the bobbin case

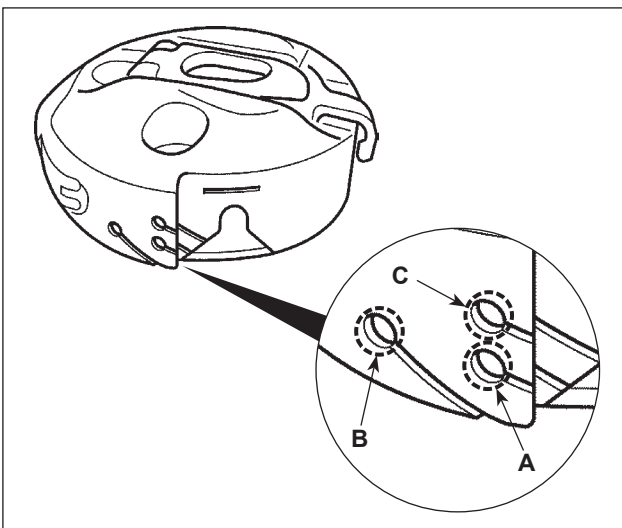
- 1) Take a bobbin by your right hand with the thread drawn out about 5 cm and place it into the bobbin case as illustrated.
- 2) Thread the bobbin case in the order of the numbers and pull it out through the thread path as illustrated.
- 3) When the bobbin is correctly loaded in the bobbin case, the bobbin rotates in the direction of the arrow when the thread is pulled.



Inserting and removing the bobbin case

- 1) Turn the handwheel by hand to raise the needle to the highest point.
- 2) Raise the bobbin case latch ❶ and hold it between your two fingers as shown in the figure on the left.
- 3) Insert the bobbin case as it is being held into the sewing hook shaft as far as it will go by putting your hand from the under of the oil reservoir.
- 4) Release the bobbin case latch ❶ to let it steadily rest in the closing position.

* Reverse the above procedures when removing the bobbin case.



How to use the bobbin case thread hole

- 1) For normal sewing, use hole **A**. To increase the thread tension when the needle throws to the left, use hole **B**. (Hole **C** is intended for special processes.)



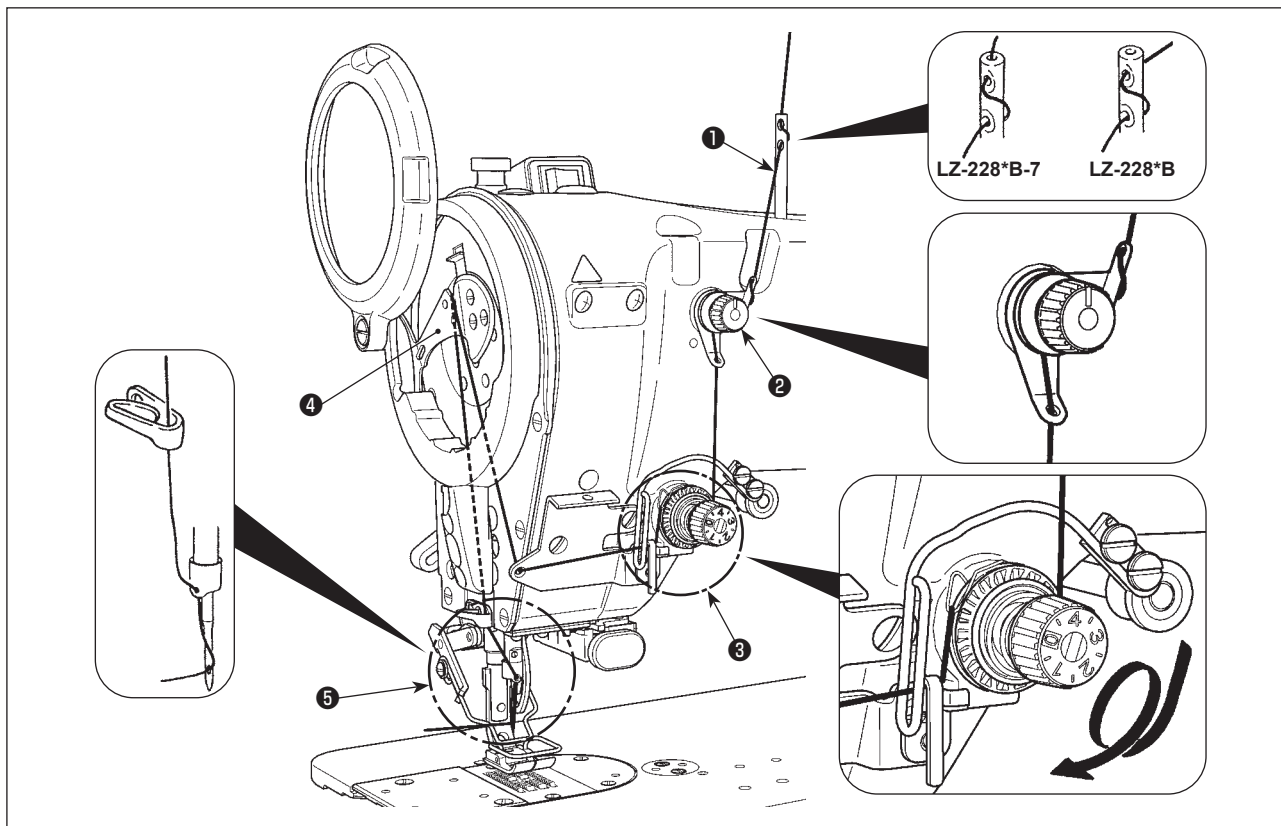
There may be a case where several stitches at the start of sewing are difficult to be knotted when thread trimmer is used with thin filament thread such as (#50, #60 or #80) using hole B. At this time, use the other hole or perform the sewing starting from the right.

11. Threading the machine head



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.



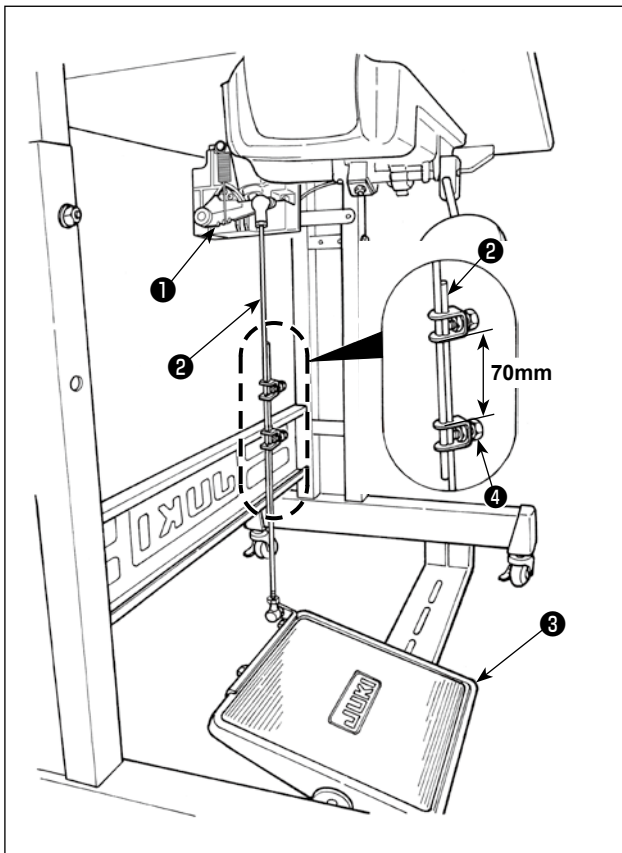
- 1) Turn the handwheel by hand to raise the needle to the highest point.
- 2) Pass the thread in the order of the numbers as illustrated.
- 3) Pull out the thread about 10 cm from the needle after passing it through the needle.

12. Adjusting the pedal



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) Attaching the connecting rod

- 1) Move the pedal adjusting plate ③ in the direction of the arrow to make the motor control lever ① and the pedal connecting rod ② straight.

(2) Inclination of the pedal

- 1) Inclination of the pedal can be adjusted by changing the length of the pedal connecting rod.
- 2) Loosen the adjusting screw ④, and move up or down the connecting rod ② to change its length as desired.

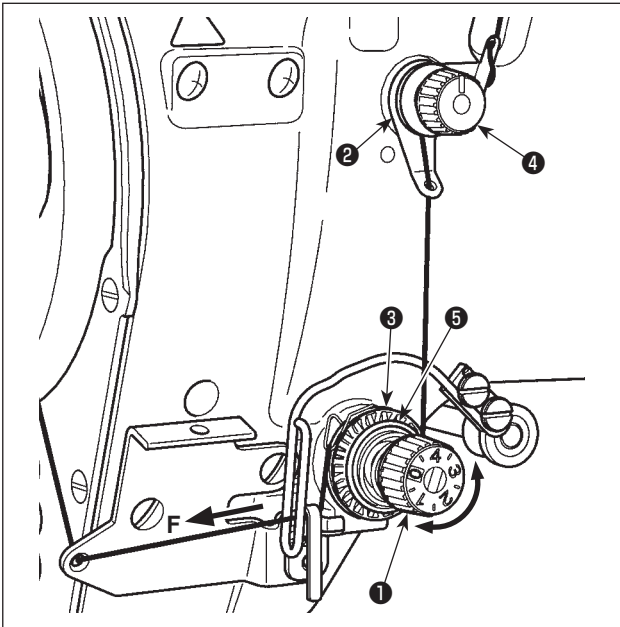
III. ADJUSTING THE SEWING MACHINE

WARNING :



In case of thread-breakage, it may occur that the thread tangles on the thread take-up lever. In such a case, turn the power off, raise the thread take-up cover and remove the thread which has twined around the thread take-up. At this time, be extremely careful to protect your hand from being cut by the knife.

1. Adjusting the thread tension



(1) Adjusting the needle thread tension

- 1) Adjust the needle thread tension using the tension nut ① .

Turning the tension nut clockwise increases the needle thread tension, or counterclockwise decreases it.

1. If the thread tension of pre-tension ② is too low, the thread may slip out of rotary disc ③ . Adjust the thread tension of the pre-tension, using pre-tension adjusting nut ④ taking care of tension balance between the pre-tension and the rotary disc.



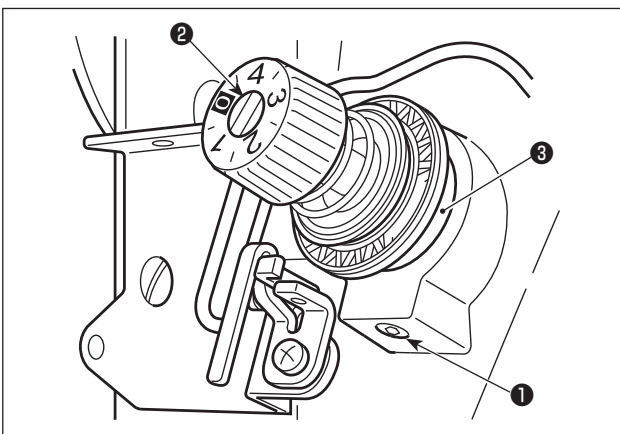
2. When setting the needle thread tension, draw the thread in the direction F to check that rotary disc ③ smoothly rotates with no slippage. If the rotary disk slips, tighten pre-tension adjusting nut ④ .

3. Thread tension disc felt ⑤ is a consumable part.

When rotary disc ③ slips, there is a possibility that the thread tension disc felt has been consumed. Replace the felt ⑤ with new one (Part No. : 22528509 x 4 pcs.).



4. When thick thread (approximately #30 or lower) is used for needle thread, thread tension is apt to be insufficient with the rotary tension controller of the standard delivery. In this case, use the optional thread tension disk asm. (part No. : 40017095).



(2) Adjusting the thread take-up spring

- 1) To change the tension of the thread take-up spring, firmly tighten the screw ① which fastens the tension post socket to the machine arm and insert the blade of a screwdriver into the slot in the tension post ② to adjust the tension of the thread take-up spring.

Turn it clockwise to increase.

Turn it counterclockwise to decrease.

- 2) To change the amount of thread taken by the thread take-up spring, loosen the clamping screw ① of the tension post socket and turn the tension post socket ③ .

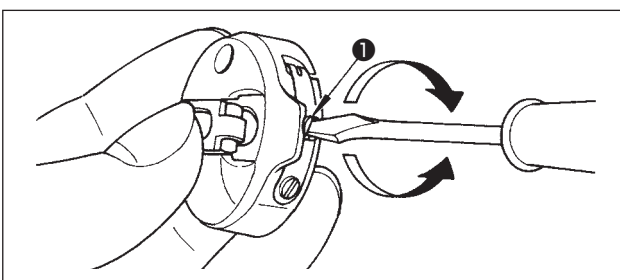
Adjustable range of the amount of thread taken by the thread take-up spring : 8 to 12 mm

(3) Adjusting the bobbin thread tension

- 1) The tension of the bobbin thread is adjusted by turning the tension adjusting screw ① .

Turn it clockwise to increase.

Turn it counterclockwise to decrease.

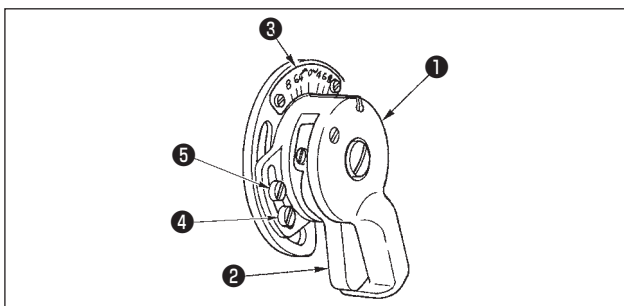


2. Adjusting the zigzag width



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) Adjusting the zigzag width

The zigzag width is adjusted by the knob ① .

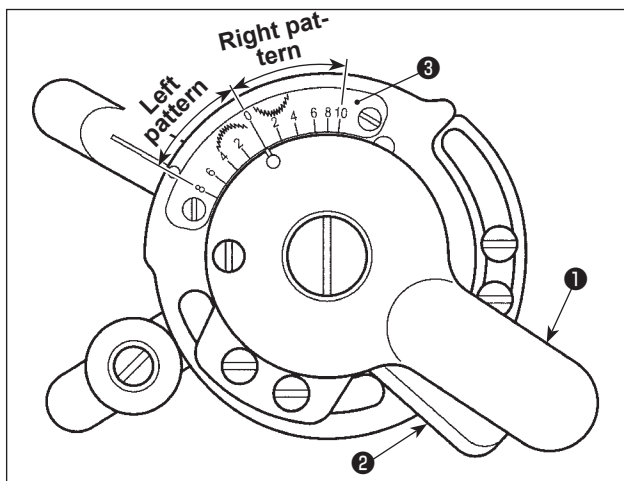
- 1) Push the lever ② with your finger.
- 2) Turn the knob as you are pushing the lever and set the pointing line to a desired zigzag width which is indicated by the zigzag width scale ③ in mm.
- 3) Release the lever, and the knob will be locked up in the given position.

★ For the LZ-2284B and LZ-2287B, the needle throwing width has been factory-set to 8 mm at the time of shipment. It should be noted, however, the needle throwing width can be increased to 10 mm at the maximum by changing the throat plate and feed dog and changing the location of stopper screws ④ and ⑤ . In this case, adjust the height of the needle bar so that the blade point of the hook passes the upper end of the needle eyelet when the needle throws to the leftmost end of its zigzag stroke. In the case the needle throwing width exceeds 8 mm, however, the sewing machine should be operated at 4,000 sti/min or less.

Presser foot	22580369
Throat plate	10041010
Feed dog	10047017



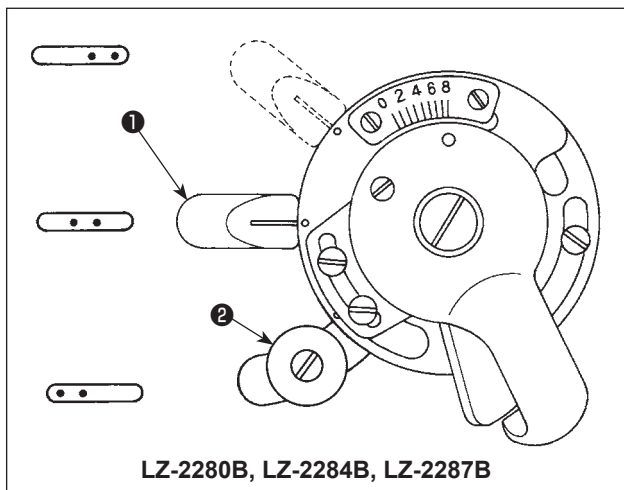
1. Take care not to tighten the screws ④ and ⑤ too firm causing the breakage of the knob ① .
2. For the LZ-2284B, the maximum needle throwing width of the standard zigzag stitching is 5 mm.
3. It is necessary to bring the needle bar to its upper stop position to carry out adjustment of the needle throwing width. Turn the handwheel by hand to check that the needle does not interfere with the presser foot.



(2) Pattern inversion adjustment

★ In the case the LZ-2287B is used for sewing a scallop pattern, the pattern can be inverted. Normally, the right pattern is sewn.

- 1) Push the lever ② with your finger.
- 2) Turn the knob as you are pushing the lever and set the pointing line to a desired zigzag width which is indicated by the zigzag width scale ③ in mm.
- 3) Release the lever, and the knob will be locked up in the given position.



(3) Adjusting the needle position

★ JUKI models LZ-2280B, LZ-2284B and LZ-2287B have the needle position changing lever by which the needle position can be changed as desired.

To change the needle entry point, move needle position changing lever ① as shown in the figure.

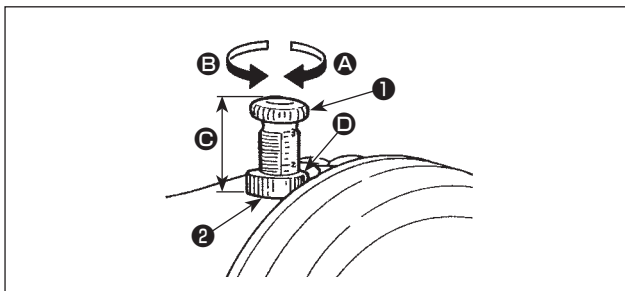
For the LZ-2284B, loosen screw ② and move needle position changing lever ① to adjust the needle entry point. After the adjustment, tighten screw ② .

3. Adjusting the pressure of the presser foot



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 presser spring regulator ① clockwise **A** to increase the pressure given by the presser foot.
- 2) Turn the presser spring regulator counterclockwise **B** to decrease it.

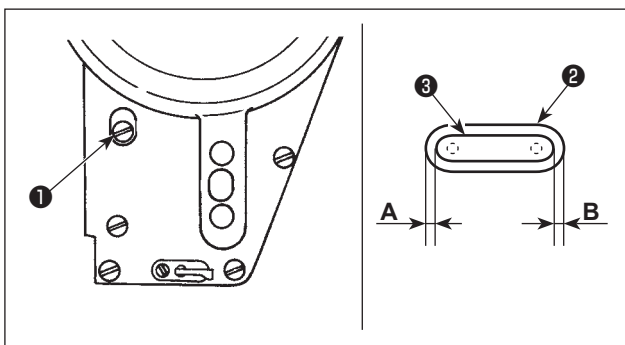
* Height **C** of the presser spring regulator ① can be measured by reading the scale mark of presser spring regulator ① on top surface **D** of nut ② . Use the measurement for the management of sewing processes, etc.

4. Adjusting the height of the presser bar



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) Adjust the height of the needle bar by loosening presser bar bracket setscrew ① when adjustment is necessary.
- 2) After the adjustment, securely tighten the screw.



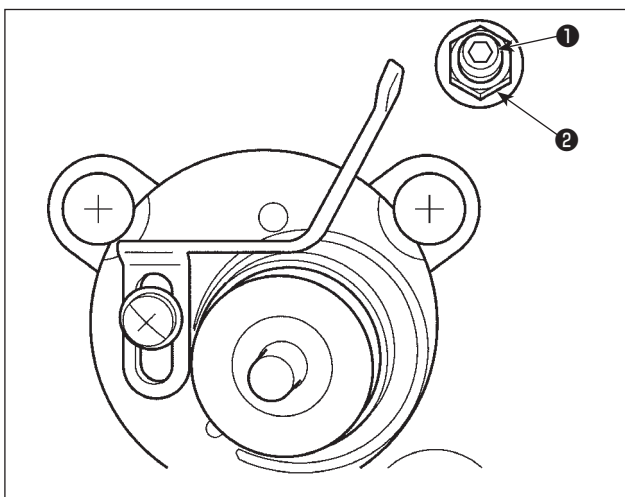
In order to prevent the needle breakage due to interference between the needle and the presser foot, adjust so that the clearance between needle hole ② in the presser foot and needle hole ③ in the throat plate is equal at both sides (A = B). Then, tighten setscrew ① .

5. Adjusting the micro-lifting mechanism of the presser foot



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.



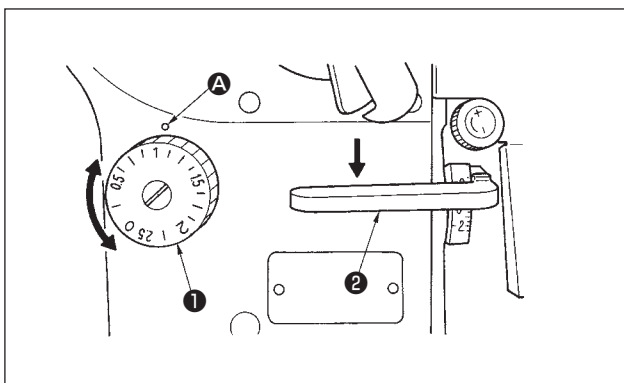
Some type of material needs to be sewn with the presser foot slightly lifted. In this case, perform this adjustment following the procedure described below.

- 1) Loosen nut ② Turn the micro-lifter floating amount by turning the micro-lifter floating screw ① .
- 2) Turn presser foot floating screw ① clockwise until the presser foot goes up by the required amount. Then, tighten nut ② to fix the presser foot.



If you do not use the micro-lifting mechanism of the presser foot, fully return the presser foot micro-lifting screw ① to its home position. The standard of lifting amount of the presser foot is as thick as a sheet of paper.

6. Adjusting the stitch length



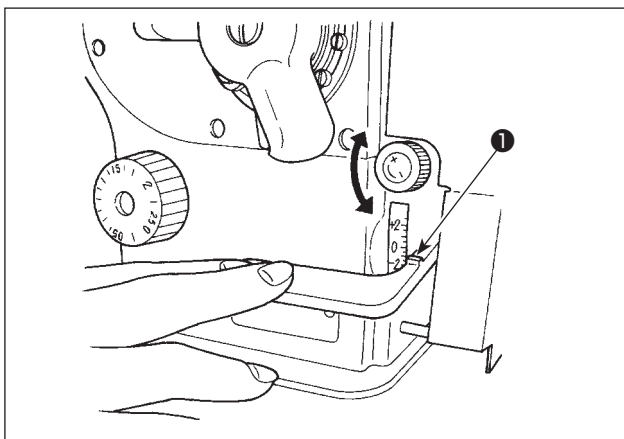
- 1) Turn the stitch length dial ❶ in the direction of the arrow so that the number corresponding to the desired stitch length meets the marker dot ❸ engraved on the machine arm.
- 2) Numbers on the stitch length dial are calibrated in “mm”.
- 3) To change the stitch length from a larger value to a small value, turn the stitch length dial ❶ while pressing the feed lever ❷ in the direction of the arrow.

To perform reverse feed stitching, press down the feed lever ❷. The sewing machine performs reverse feed stitching as long as you keep the feed lever held pressed. The feed lever will return to its home position and the sewing machine will run in the normal stitching direction when you release the feed lever.

* The graduations on the dial are mere reference.

So, adjust the denser stitching while actually observing the finished seam.

7. Adjusting the denser stitching



Stitch length can be reduced at the start or end of sewing. This feature is used for fastening stitch.

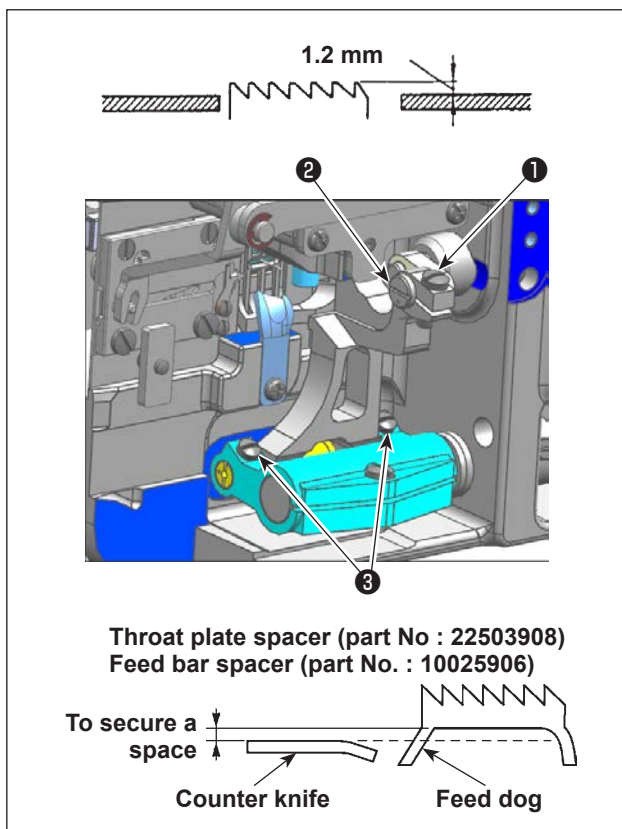
- 1) Feed lever is moved by turning the dial while keeping the feed lever held depressed. Adjust the stitch pitch for condensation stitching while observing the scale mark which aligns with marker line ❶ on the top surface of the lever.
- 2) Turn the dial in the “+” direction to reduce the reverse feed stitch length (i.e. the feeding direction gradually changes to the normal one).
“+2” means “normal feed stitch length is 2 mm” and “-2” means “reverse feed stitch length is 2 mm”.
* For the LZ-2280BB, +5 means “forward feed by 5 mm” and -4 means “reverse feed by 4 mm”.
- 3) The denser stitching can be adjusted under the normal stitching mode (when the one-touch type reverse feed switch is actuated, the feed will not move in the reverse direction but the normal feed stitch length will be reduced).
* The graduations on the dial are mere reference.
So, adjust the denser stitching while actually observing the finished seam.

8. Height and inclination of 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) Height of the feed dog

- 1) To adjust the height of the feed dog, loosen setscrew ①, shown in the figure, and turn feed driving link shaft ② with a screwdriver.
- 2) The standard height of the feed dog is 1.2 mm.
- 3) To adjust the inclination of the feed dog relative to the throat plate, loosen two setscrews ③, shown in the figure, and turn the feed bar shaft with a screwdriver through the hole in the bed.
- 4) For the machine with a thread trimmer, there can be no space between the counter knife and the underside of the feed dog when adjusting the feed mechanism (change in height and timing) or using a commercially-available feed dog. In this case, place a feed bar spacer (part number : 10025906) under the feed mechanism and a throat plate spacer (part number : 22503908) under the throat plate so as to secure a space between the counter knife and the underside of the feed dog.

(2) Inclination of the feed dog

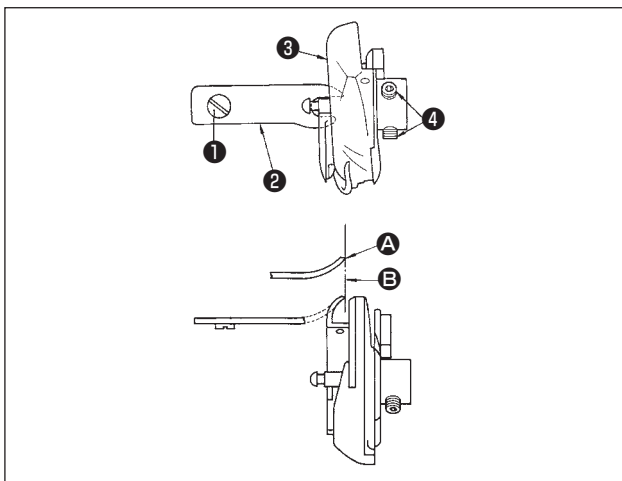
The standard inclination of the feed dog is obtained by adjusting so that the feed dog becomes level when the feed dog goes up above the top surface of the throat plate.

9. Attaching/removing the hook



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.



When you replace the sewing hook, remove it in the following procedures;

- 1) Turn the handwheel until the needle reaches to its highest position.
- 2) Remove the needle, presser foot, throat plate, feed dog and bobbin case from the machine.
- 3) Remove the setscrew ① and take out the bobbin case positioning finger ②.
- 4) Loosen the two screws ③ and remove the sewing hook ④.

* Reverse the above procedures when inserting the sewing hook.

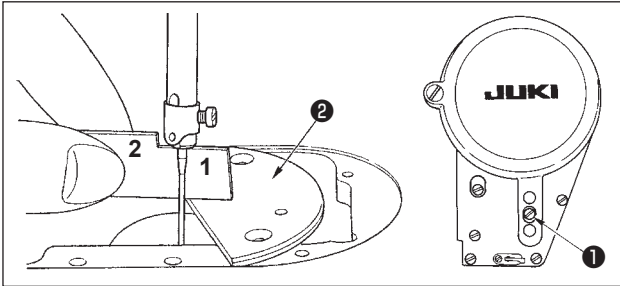
At this time, make sure that top end ① of the bobbin case positioning finger is aligned with line ② as shown in the figure on the left. Never let ① protrude from line ②.

10. Adjusting height of the needle bar



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) Set the zigzag width to "0". Bring the needle to the center of the zigzag stroke.
- 2) Remove the presser foot, throat plate, semicircle plate ② and feed dog.
- 3) Place half-moon shaped plate ② on the throat-plate installing surface of the bed. Loosen setscrew ①. Adjust so that the distance from the top surface of the half-moon shaped plate ② to the bottom end of the needle bar equals to the height of timing gauge 1.



1. Thickness of the semicircle plate ② is different from that of the throat plate. So, be sure to use the semicircle plate ② when adjusting the height of the needle bar.

Be sure to perform the adjustment with zigzag width set to zero and with the needle positioned at the center of the zigzag stroke.

2. For the LZ-2280BA, timing gauge D should be used.

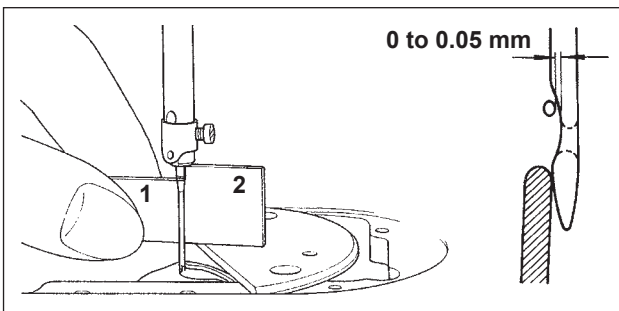
For the LZ-2280BB, LZ-2284B and LZ-2287B, timing gauge E should be used.

11. Adjusting the needle-to-hook timing and the needle guard



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) Positioning the hook

- 1) After the completion of the adjustment of the needle bar height, adjust the hook using timing gauge 2 so that the blade point of the hook is aligned with the center of the needle.
- 2) At this time, the blade point of the hook should slightly come in contact with the needle when the needle guard does not touch the needle.

(2) Confirmation

In the case of the maximum needle throwing width (adjustment at the time of shipment....LZ-2280BA : 4mm, Other models: 8 mm), check to be sure that the distance from the top end of the needle eyelet to the blade point of the hook is 0.2 to 0.5 mm while the needle throws to the left.

* If the zigzag width of 10 mm is used or the shape of indented part of the needle is different from that of indented part of the needle at the time of delivery, re-adjust the height of the needle bar.

(3) Adjusting the needle guard

- 1) Maximize the zigzag width. Bend the needle guard to adjust so that the needle does not come in contact with the blade point of the both at the leftmost and rightmost positions of the zigzag stroke. At this time, adjust the clearance provided between the needle and the blade point of the hook to 0 to 0.05 mm.
- 2) The needle guard functions to keep the needle away from the blade point of the hook, thereby preventing damage to the blade point of the hook. Whenever you have replaced the hook with a new one, be sure to adjust the position of the needle guard.



When thread breakage has occurred, there is a case where thread is caught in the hook.

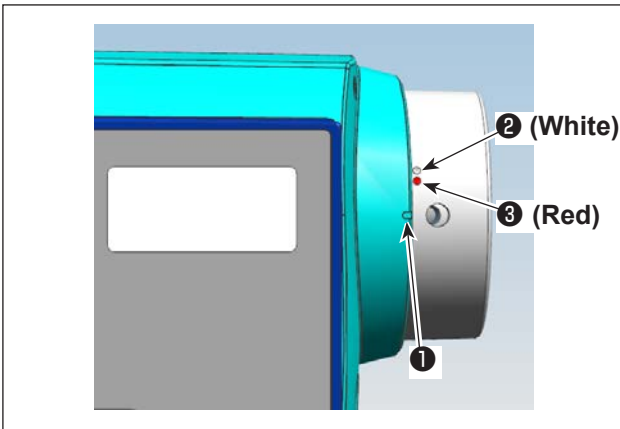
Be sure to perform sewing after removing the thread caught in the hook.

12. Marker dots on the handwheel



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 upper stop position of the needle bar is obtained by aligning marker dot ① on the cover with white marker dot ② on the handwheel.

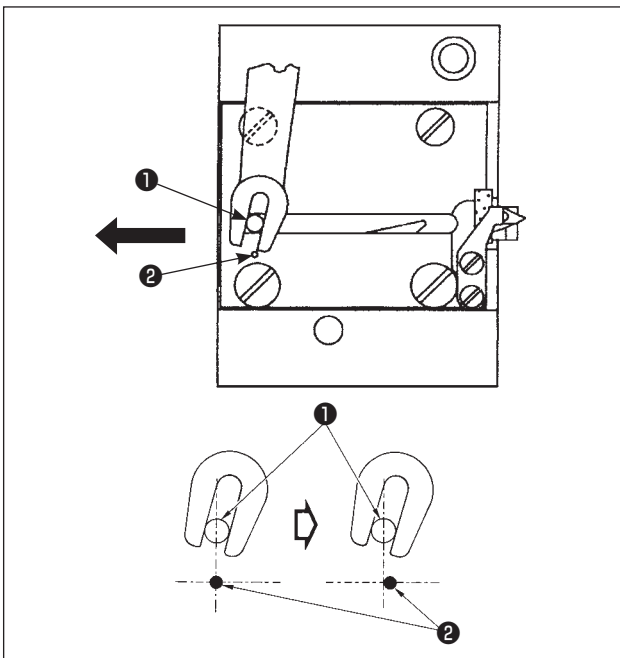
The standard timing of the thread trimming cam is obtained at the position where marker dot ① on the cover is aligned with red marker dot ③ on the handwheel.

13. Adjusting the thread trimmer



WARNING :

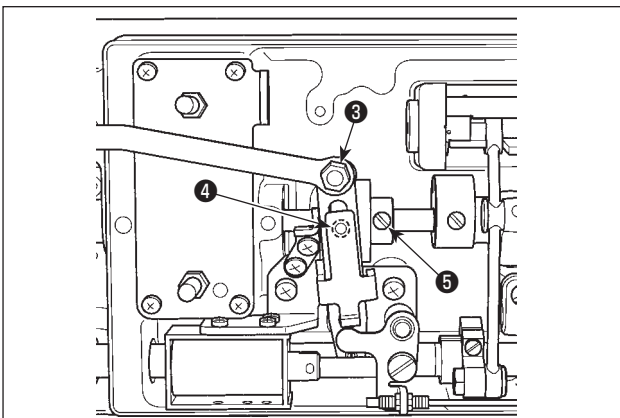
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



(1) Initial position of the moving knife

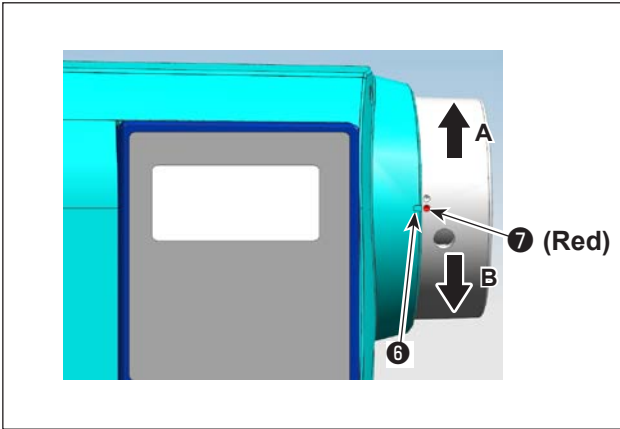
When the moving knife is in its initial position, the moving knife pin ① should be aligned with the engraved marker dot ② as shown in the figure on the left.

1. When the gauge size which is more than that delivered as standard or the gauge size of other manufactures is used, and the counter knife interferes with the feed dog, loosen nut ③, move the initial position of moving knife pin ① to the left from engraved marker dot ② by approximately one half of engraved marker dot ② and fix the pin.
2. Guarantee of the sharpness of the thread trimmer knife unit is #80 to #50. When using thick threads thicker than these Nos., replace the knife with thread trimmer knife unit for thick thread (Part No. : 22556054).



If the initial position of the moving knife is not correct

Loosen the nut ③, and move the moving knife to the right or left until the pin ① meets the marker dot ②. Then, tighten the nut ③.



(2) Adjusting the thread trimming timing

Put roller ④ in the cam groove. Then, gradually turn the handwheel in the reverse direction of rotation (direction **A**). The handwheel will go no further when marker dot ⑥ on the pulley cover is aligned with red marker dot ⑦ on the handwheel.

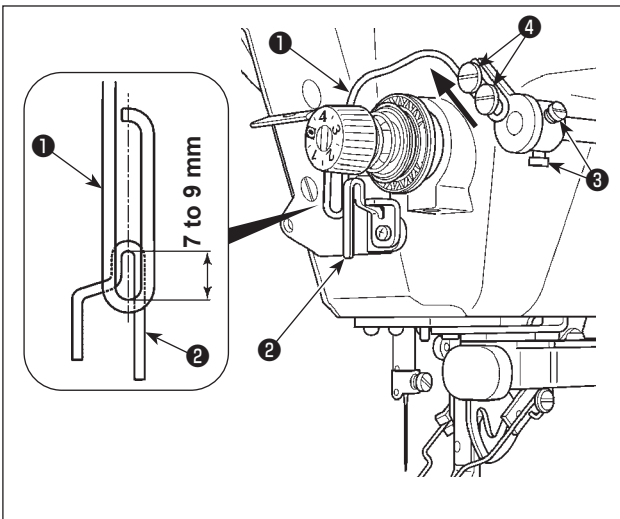
When you want to adjust the thread trimming cam, align the red marker dot on the pulley cover with the red marker dot on the handwheel, put the roller in the groove of the thread trimming cam, and slowly turn the handwheel in the direction opposite to the direction of rotation of the hook driving shaft until it will go no further. Then, tighten two screws ⑤ .

14. Needle thread feeding device



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 feeding wire

Adjust the installing position of the feeding wire ① so that a distance of 7 to 9 mm is provided between the guide portion ② of the thread guide and the top end of the wire. Then, tighten the two screws ③ .

At this time, adjust the longitudinal position of thread draw-out wire ① so that thread draw-out wire is brought to the approximate center of thread take-up thread guide ② .

(2) Adjusting the stroke of the feeding wire

- 1) Increase the feeding amount of the needle thread if the needle thread fails to interlace with the bobbin thread or is likely to slip out of the needle eyelet at the start of sewing.
- 2) Loosen two setscrews ④ . Shift thread draw-out wire ① in the direction of the arrow.

If the feeding amount of the needle thread is excessive, the thread will be likely to break.

(3) When turning OFF the feeding device

If it is not necessary to move thread draw-out wire ① , turn OFF draw-out device.

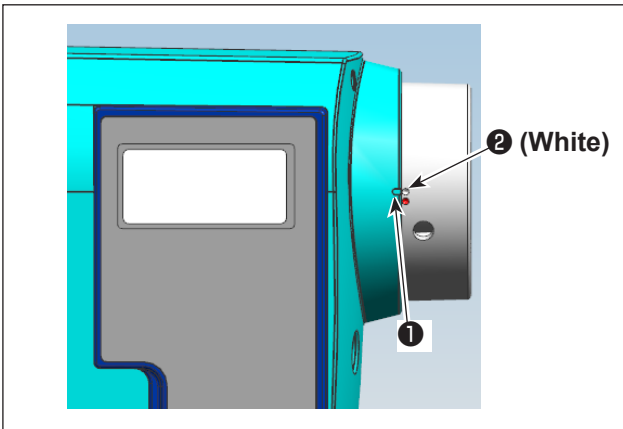
- * Refer to "[VI-2. Operation panel built in the machine head](#)" p.30 for the detailed adjustment procedure.

15. Position of the wiper



WARNING :

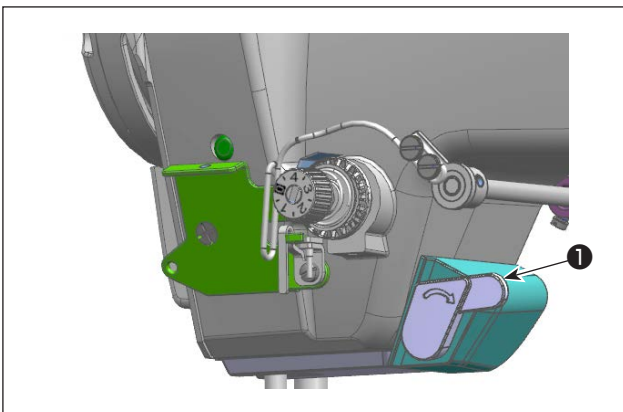
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



- 1) Align marker dot **1** on the pulley cover with white marker dot **2** on the handwheel.
- 2) Move the rod in the direction of the arrow, and adjust the clamping screw so that an approximate 2 mm clearance is provided between the top end of the needle and the wiper .
- 3) If it is not necessary to use the wiper, turn OFF the wiper.

* Refer to "**VI-2. Operation panel built in the machine head**" p.30 for the detailed adjustment procedure.

16. One-touch type reverse feed switch



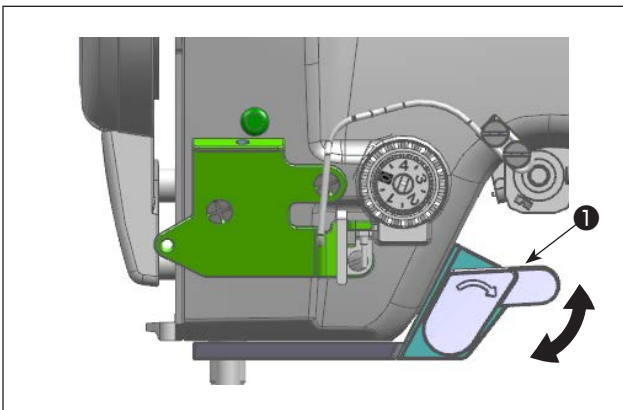
(1) How to use the reverse feed switch

- 1) Press down the switch **1** , and the machine will immediately run in the reverse direction.
- 2) Reverse stitching is performed as long as you keep the switch held pressed down.
- 3) Release the switch, and the machine will immediately run in the normal direction.



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.



(2) Position of the reverse feed switch

The position of the switch can be adjusted to an easy-to-operate position, according to the sewing process.

Adjust the position with switch **1** where necessary.

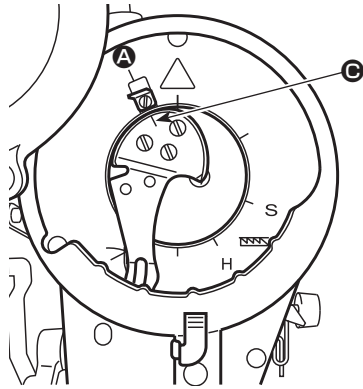
17. Changing over the needle-throwing method



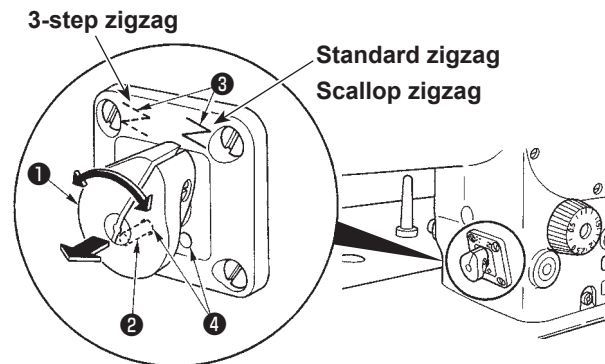
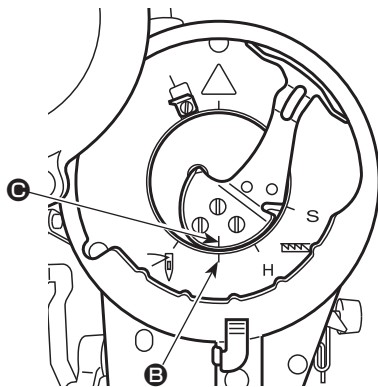
WARNING :

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.

LZ-2284B



LZ-2287B



For the LZ-2284B, needle-throwing method is selectable between the standard zigzag stitching and 3-step zigzag stitching. For the LZ-2287B, it is selectable between the 3-step stitching and scallop zigzag stitching.

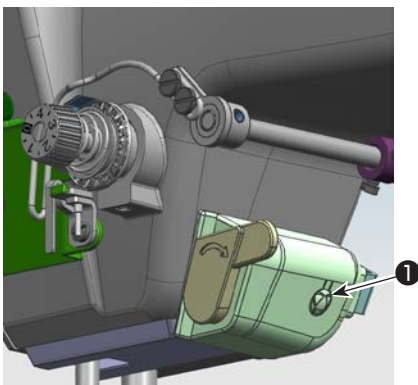
- 1) Turn the handwheel to respectively align marker dot **C** with the following.
 - * LZ-2284B: Toward thread take-up knife **A**
 - * LZ-2287B: Toward the lower end of the needle bar **B**
- 2) Pull changeover lever **1** toward this side and pull out lock pin **2** from positioning hole **4**.
- 3) Slightly turn the handwheel forward and backward to turn change-over lever **1** so that the lever aligns with desired zigzag mark **3** to find the change-over point.
- 4) At the change-over position, securely insert lock pin **2** into positioning hole **4** to complete the setting.
- 5) If the pattern cannot be changed over, give the handwheel a turn and repeat the aforementioned steps from 1).

Make sure that lock pin 2 is securely placed in positioning hole 4 .



In addition, never operate the sewing machine in the state that lock pin 2 is not placed in positioning hole 4 (on the way of changeover). It will cause the trouble of the sewing machine.

18. LED light

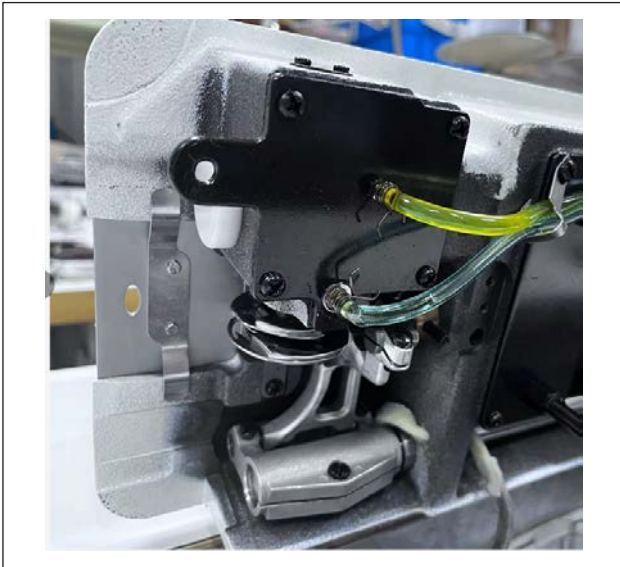


The LZ-2280B Series is provided with an LED light.

- 1) The brightness of the LED light can be adjusted with brightness adjustment switch **1** shown in the figure on the left. (To three types and in five steps)
 - * The types of colors: Cold color, warm color and mixed color. When you want to change over the type of color, press and hold switch **1** for three seconds and press it again. Every time you press **1**, the type of color is changed over.
- 2) For the brightness of the LED light, re-adjustment is not necessary when you turn ON the power after you have turned it OFF since the sewing machine is provided with the brightness memory function.

IV. CARE

1. Cleaning the hook section



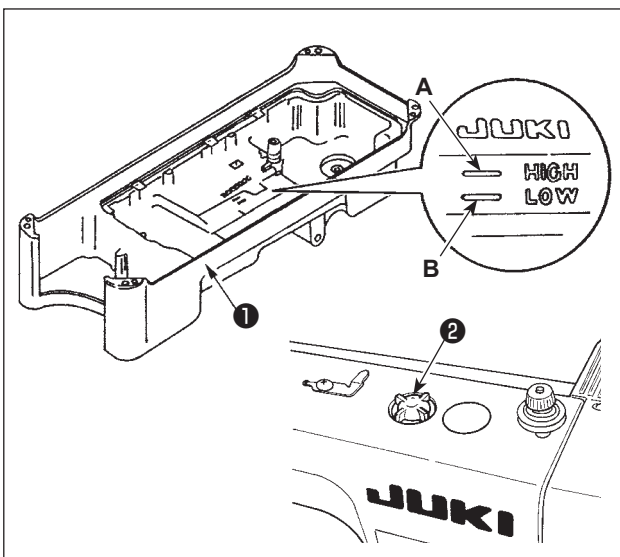
When cloth waste or the like gathers around or adheres to the hook section, trouble (defective sewing, seizure of hook, etc.) of sewing machine will be caused. Periodically clean the section.

2. Checking the amount of oil in the oil pan

WARNING :



1. Do not connect the power plug until the lubrication has been completed so as to prevent accidents due to abrupt start of the sewing machine.
2. To prevent the occurrence of an inflammation or rash, immediately wash the related portions if oil adheres to your eyes or other parts of your body.
3. If oil is mistakenly swallowed, diarrhea or vomiting may occur. Put oil in a place where children cannot reach.



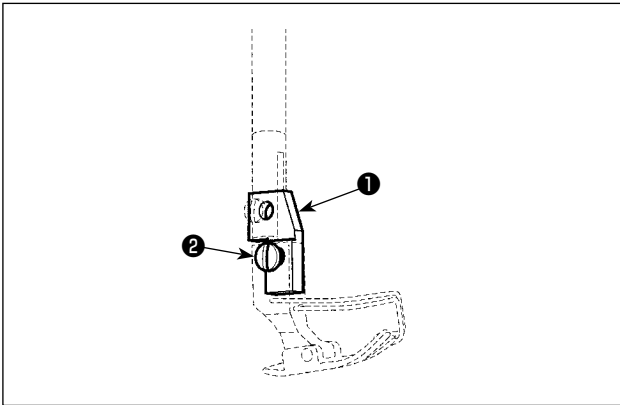
- 1) Before starting the sewing machine, fill oil pan ① with JUKI MACHINE OIL #7 up to HIGH mark A.
- 2) Add oil before the oil surface comes down to reach the LOW mark B.
- 3) When you operate the machine after lubrication, you will see splashing oil through oil sight window ② if the lubrication is adequate.
- 4) Note that the amount of the splashing oil is unrelated to the amount of the lubricating oil.



1. If the oil level comes down to the "LOW" mark or lower, lubrication may become unstable. In such a case, be sure to add oil before the oil level comes down to the "LOW" mark in order to prevent seizure of the motion mechanism.
2. If the oil splashing on the oil sight window is not seen, the oil amount is insufficient. In this case, do not run the sewing machine.

V. OPTIONAL

1. Joining foot for the lockstitch presser foot



To use the presser foot for lockstitch, the "joining foot for the lockstitch presser foot" has to be used

- ❶ Joining foot for the lockstitch presser foot (Part No.: B1551586000)
- ❷ Setscrew (Part No.: SS7090910TP)

2. Auxiliary thread take-up kit

In the case the sewing machine is used for blind stitching and high-speed sewing processes, it is recommended to use the "auxiliary thread take-up kit" which helps stabilize the needle thread loops.

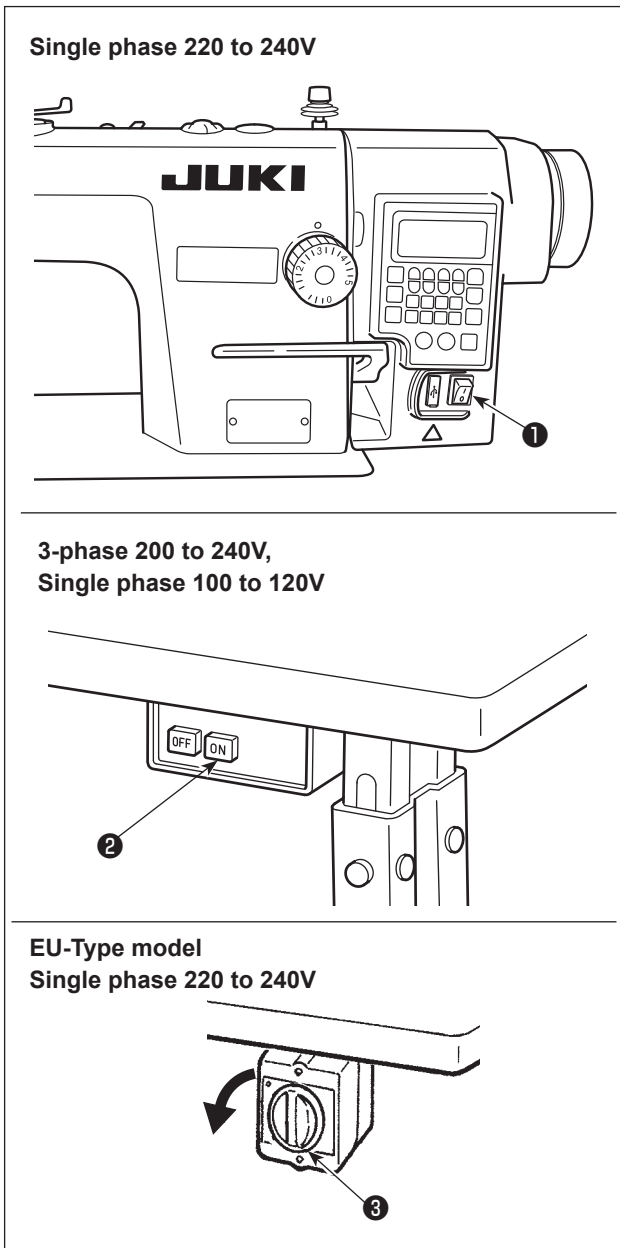
Thread breakage and stitch skipping can be prevented by stabilizing the needle thread loops.

* Auxiliary thread take-up kit Part No.: 40135178

VI. FOR THE OPERATOR

1. Operating procedure of the sewing machine

* The switch configuration differs with the specifications.



- Turning the power ON with the power switch
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 "O" mark side is pressed.

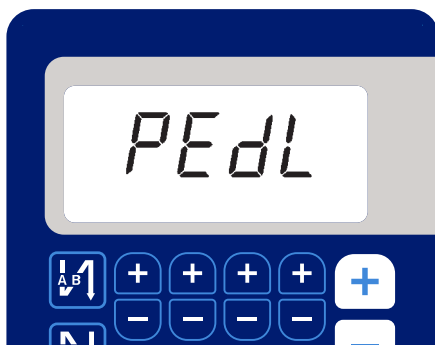
The power to the sewing machine is placed in the ON state when the ON button of power switch ② (3ø 200 - 240V type) is pressed; or in the OFF state when the OFF button is pressed.

The power to the sewing machine is placed in the ON state when the knob of power switch ③ (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.

- Do not strongly tap the power switch by hand.
- If the power indicator LED on the panel does not light up after having turned ON the power switch, immediately turn OFF the power switch and check the supply voltage.

When you want to re-turn ON power switch after carrying out the aforementioned steps, it is necessary to wait for five minutes or more after you have turned OFF power switch.

- 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.

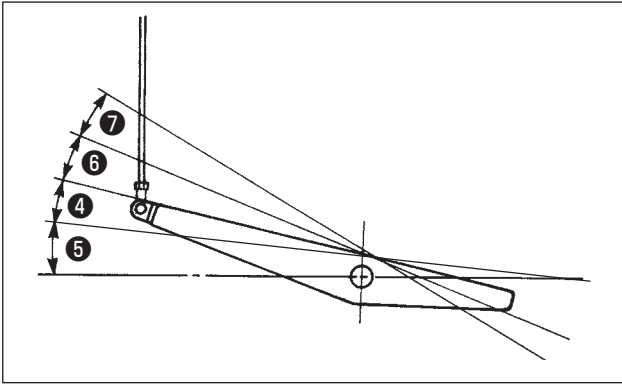


< Origin retrieval screen >

- When you depress the back part of pedal, the needle bar and the presser lifting motor carry out their initial operation to allow the sewing machine to start sewing.

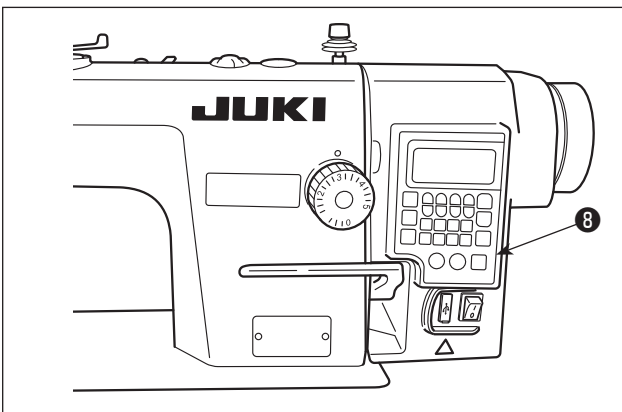
If you attempt to start sewing without depressing the back part of pedal, the warning message screen will be displayed. To prevent this, be sure to start sewing after depressing the back part of pedal.






- 3) The pedal is operated in the following four steps:
 - a. The machine runs at low sewing speed when you lightly depress the front part of the pedal. **4**
 - b. The machine runs at high sewing speed when you further depress the front part of the pedal. **5** (If the automatic reverse feed stitching has been preset, the machine runs at high speed after it completes reverse feed stitching.)
 - c. The machine stops (with its needle up or down) when you reset the pedal to its original position.
 - d. The machine trims threads when you fully depress the back part of the pedal. **7**

* When the auto-lifer (AK device) is used, one more operating switch is provided between the sewing machine stop switch and thread trimming switch. The presser foot goes up when you lightly depress the back part of the pedal **6** , and if you further depress the back part **7** , the thread trimmer is actuated.

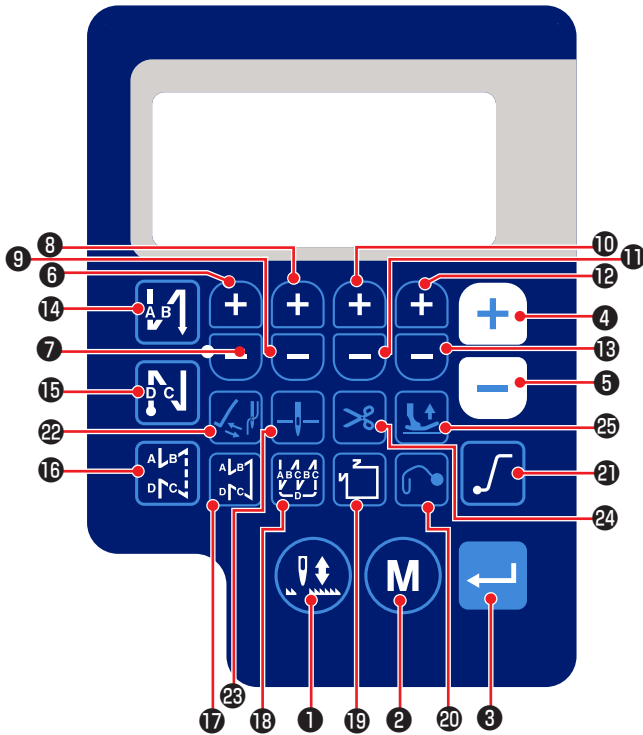


- 4) Reverse feed stitching at the beginning of sewing, reverse feed stitching at the end of sewing and various sewing patterns can be set on built-in panel **8** of the machine head.
- 5) After the completion of sewing, check to make sure that the sewing machine has stopped. Then, press power switch **1** or **2** (or turn EU-type power switch **3**) to turn it OFF.

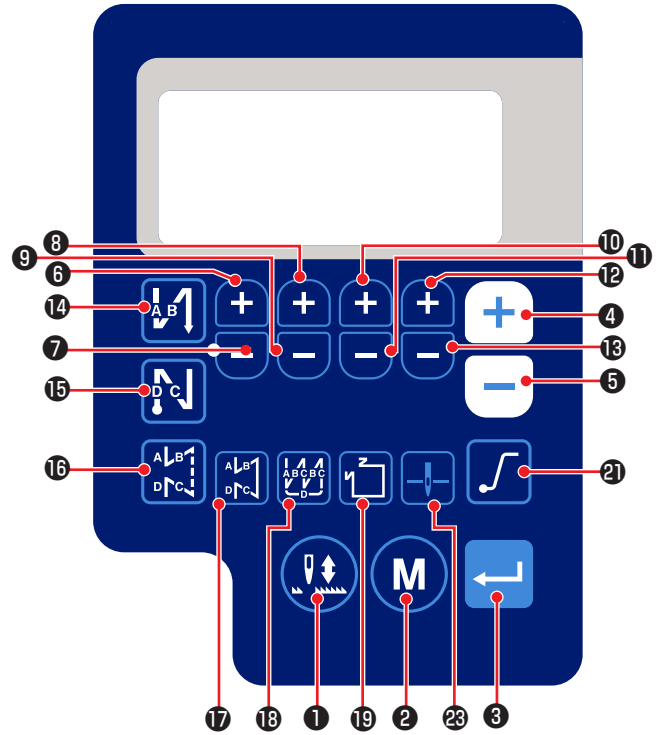

In the case the machine is not used for a long time, remove the power plug from the plug receptacle.

2. Operation panel built in the machine head

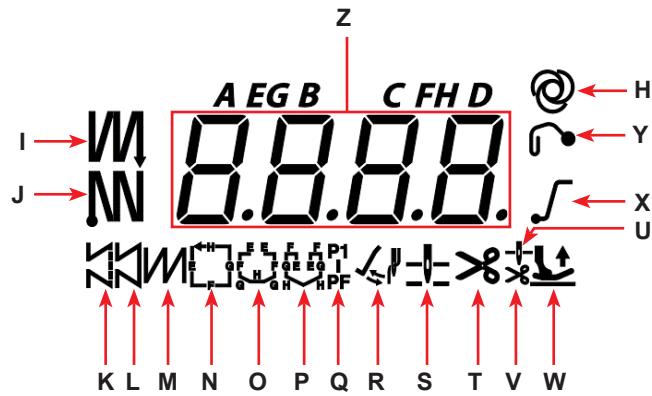
For the type with a thread trimmer
















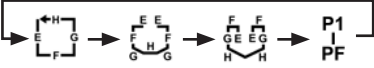
For the type without a thread trimmer








Sewing information display screen



Key No.	Screen display		How long the key must be pressed	Function
①	-		Short time	This key is used to carry out needle up / down correction stitching.
②	-		Short time	Used to change over the operation mode to the function setting mode
③	-		Short time	This key is used to confirm the setting you have changed.
④	Z		Short time	Used to increase the maximum sewing speed
			Long time	Continuous input is possible (by keeping the key held pressed for three seconds or more)

Key No.	Screen display		How long the key must be pressed	Function
5	Z		Short time	Used to decrease the maximum sewing speed
			Long time	Continuous input is possible (by keeping the key held pressed for three seconds or more)
6	Z		Short time	This key is used to add one stitch to the number of reverse feed stitches at the beginning and end of sewing (process A).
			Long time	Continuous input is possible
7	Z		Short time	This key is used to subtract one stitch from the number of reverse feed stitches at the beginning and end of sewing (process A).
			Long time	Continuous input is possible
8	Z		Short time	This key is used to add one stitch to the number of reverse feed stitches at the beginning and end of sewing (process B).
			Long time	Continuous input is possible
9	Z		Short time	This key is used to subtract one stitch from the number of reverse feed stitches at the beginning and end of sewing (process B).
			Long time	Continuous input is possible
10	Z		Short time	This key is used to add one stitch to the number of reverse feed stitches at the beginning and end of sewing (process C).
			Long time	Continuous input is possible
11	Z		Short time	This key is used to subtract one stitch from the number of reverse feed stitches at the beginning and end of sewing (process C).
			Long time	Continuous input is possible
12	Z		Short time	This key is used to add one stitch to the number of reverse feed stitches at the beginning and end of sewing (process D).
			Long time	Continuous input is possible
13	Z		Short time	This key is used to subtract one stitch from the number of reverse feed stitches at the beginning and end of sewing (process D).
			Long time	Continuous input is possible
14	I		Short time	Used to changing over the automatic reverse feed stitching at the beginning of sewing to: Reverse feed stitching / Double reverse feed stitching / Disable
15	J		Short time	Used to change over the automatic reverse feed stitching at the end of sewing to: Reverse feed stitching / Double reverse feed stitching / Disable
16	K		Short time	Used to set the type of stitching to free stitching
17	L		Short time	This key is used to set the sewing mode to the constant-dimension sewing (straight line).
18	M		Short time	Used to set the type of stitching to overlapped stitching
19	N - Q		Short time	Used to change over the constant-dimension stitching pattern 
20	Y		Short time	This key is used to change over enable/disable of the needle draw-out function.
			Long time	This key is used to initialize the function setting data. (Refer to P.55.)

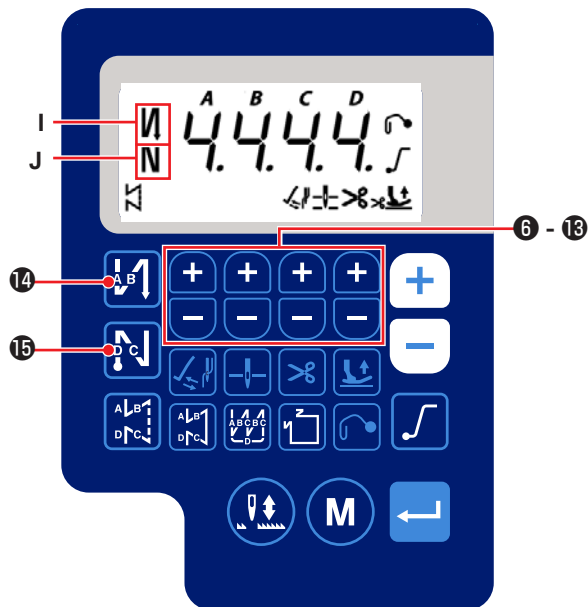
Key No.	Screen display		How long the key must be pressed	Function
21	X		Short time	Used to change over the soft-start function between enable and disable
			Long time	This key is used to save the function setting data. (Refer to P.54.)
22	R		Short time	This key is used to change over enable/disable of the wiper function.
23	S		Short time	This key is used to change over the stop position of the needle bar when the sewing machine stops between upper and lower positions.
24	T		Short time	This key is used to change over the thread trimming function between enable / disable.
			Long time	This key is used to display the thread trimming counter.
25	U,V,W		Short time	This key is used to change over the presser foot lifting status among four different states: Presser foot automatically goes up after the presser bar goes up / Presser foot automatically goes up after thread trimming / Presser foot automatically goes up both after the presser foot goes up and the thread trimming is performed / Presser foot does not automatically go up.

* Refer to the Engineer's Manual for the display "H".


3. Operating procedure of the sewing pattern


(1) Reverse feed stitching pattern

Reverse feed stitching at sewing start and reverse feed stitching at sewing end can be separately programmed.





[Setting procedure of the reverse feed stitching]

- 1) The reverse feed stitching pattern at the beginning of sewing can be changed over to "enable / double reverse feed stitching / disable" by pressing  **14**.

The reverse feed stitching pattern at the end of sewing can be changed over to "enable / double reverse feed stitching / disable" by pressing  **15**.

The current setting state of the reverse feed stitching is displayed on the display sections **I** and **J**.

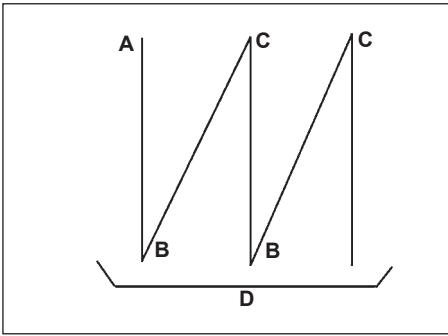
- 2) Change the number of stitches to be sewn in target process (A, B, C, D) with   **6** to **13**.

The number which exceeds 9 is indicated as follows:

A = 10, b = 11, c = 12, d = 13, E = 14, and F = 15.

(2) Overlapped stitching pattern

Overlapped stitching pattern can be programmed.

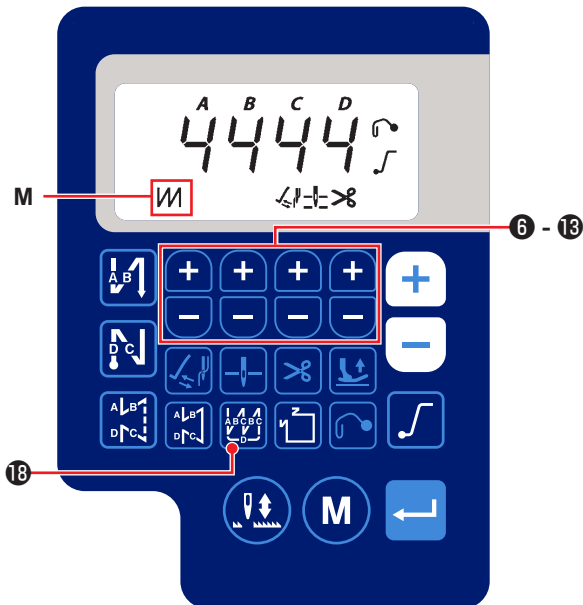






- A : Number of stitches of normal stitching setting : 0 to 15 stitches
- B : Number of stitches of reverse stitching setting : 0 to 15 stitches
- C : Number of stitches of normal stitching setting : 0 to 15 stitches
- D : Number of times of repetition : 0 to 15 times



1. When process D is set to 5 times, the sewing is repeated as A → B → C → B → C.
2. The number which exceeds 9 is indicated as follows: A = 10, b = 11, c = 12, d = 13, E = 14, and F = 15.

[Setting procedure of the overlapped stitching]



- 1) Press  **18** to enable the overlapped stitching pattern.
When the overlapped stitching pattern is enabled,  is displayed in the display section **M**.
- 2) Change the number of stitches and the number of times for the target process (A, B, C, D) with   **6** to **13**.



Seam by condensation stitching (for reference)

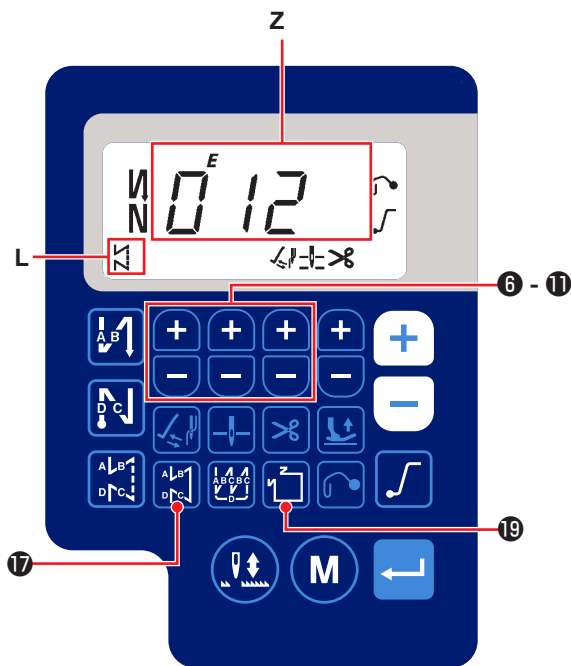
- * The overlapped stitch function can be used for the purpose of condensation stitching by carrying out the following setting.
 - ① Referring to **"III-6. Adjusting the stitch length" P.19**, adjust the stitch length to 0 to 0.5 mm.
 - ② Referring to **"III-7. Adjusting the denser stitching" P.19**, adjust the stitch pitch for condensation stitching to 0 mm.
 - ③ Select "Overlapped stitching" function.
 - ④ Set the number of stitches to "0" (zero) for the process A, four for the processes B and C and to an arbitrary value for the process D.






(3) Constant-dimension stitching pattern

The constant-dimension stitching pattern can be set.

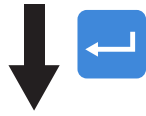
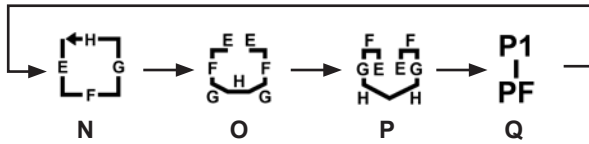
[How to set the constant-dimension stitching]

* Straight stitching

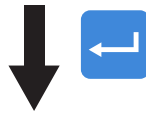
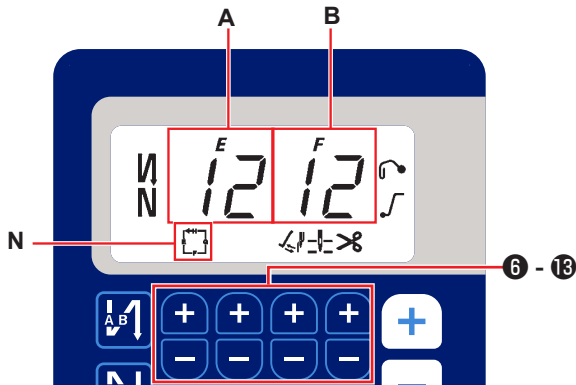


- 1) Press  **17** to enable the constant-dimension sewing pattern (straight stitch).
When the constant-dimension sewing pattern is enabled,  is displayed on the display portion **L**.
Immediately after the constant-dimension stitching is enabled, the numbers of reverse feed stitching processes (A, B, C and D) are displayed on the display section **Z**.
- 2) When  **3** is pressed, the content shown on display section **Z** is changed over to the number of stitches for the constant-dimension stitching.
The number of stitches (0 to 999) for the constant-dimension stitching can be selected by pressing   **6** to **11**.

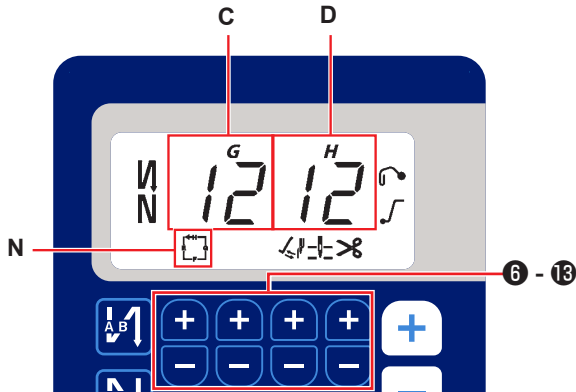
* Others



[E/F process]



[G/H process]

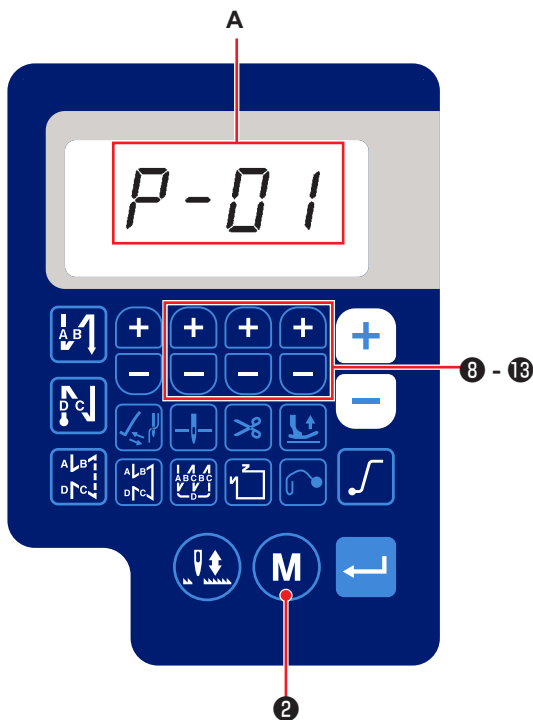


The screen is shifted to the sewing information display screen

- 1) Enable / disable of the sewing pattern can be changed over by pressing 19 . Every time 19 is pressed, the selected pattern is enabled and the valid patterns are displayed on display portion N to Q. Immediately after one of the stitching patterns is enabled, the numbers of reverse feed stitching processes (A, B, C and D) are displayed on the display section Z.
- 2) When switch 3 is pressed, the display section A and B changes its display to the number of stitches for the constant-dimension stitching process (EF) is displayed. The number of stitches for the process (EF) can be set by pressing 6 to 13 .
- 3) Then, the content shown on display sections C and D are changed over to the number of stitches for the constant-dimension stitching process (GH) by pressing switch 3 . The number of stitches (0 to 99) for the process (GH) can be set by pressing 6 to 13 .
- 4) When switch 3 is pressed, the content shown on display section Z is changed over to the numbers of stitches for the reverse feed stitching processes (A, B, C and D).

4. Setting of functions

Functions can be selected and specified.



- 1) Press **M** ② .

The content on display section A is changed over to display function setting number (P-**).

(The display item which was previously changed is displayed unless the power has not been turned off after the previous change.)

- * If the screen display does not change, re-carry out operation described in step 1).

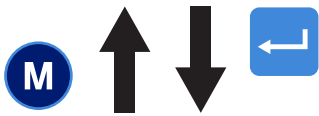
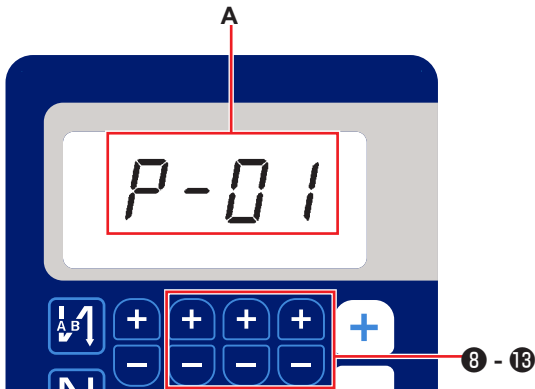
Be sure to re-turn ON the power switch when ten or more seconds have passed after turning it OFF. If the power switch is re-turned ON immediately after turning it OFF, the sewing machine may fail to operate normally. In such a case, be sure to turn ON the power switch again properly.

- 2) To change the function setting number press **+** **-** ⑧ to ⑬ and change it to a desired one.
- 3) After having changed the function setting number to a desired one, press switch **←** ③ to display the set value of the selected function setting No.
- 4) Press **+** **-** ⑧ to ⑬ change the set value.
- 5) Press switch **←** ③ to confirm the set value.

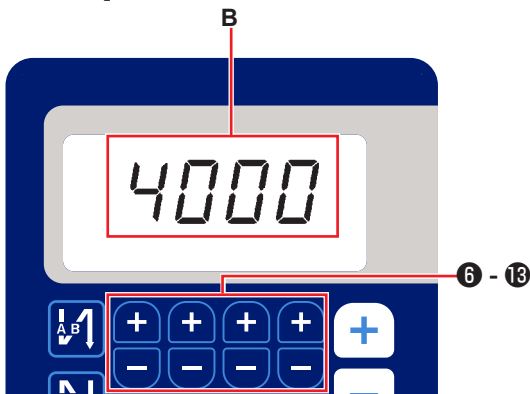
Screen returns to the previous screen.



[Parameter number]



[Parameter data]



Screen returns to the previous screen.

Example)

To change the setting No. P-01 "the maximum number of revolutions":

Press **M** ② to change over to the setting number display.

Press **+** **-** ⑧ to ⑬ to select setting number P-01.

Press switch **←** ③ to confirm the number (A).

If **M** ② is pressed before confirming the data, the operation being carried out will be cancelled and the screen will return to the previous screen.

The current set value (maximum number of revolutions) of function setting number P-01 is displayed. Change the maximum number of revolutions with **+** **-** ⑥ to ⑬ and confirm the set value.

Then, confirm the setting with switch **←** ③ (B).

If **M** ② is pressed before confirming the data, the operation being carried out will be cancelled and the screen will return to the [Parameter number] screen.

5. Digital types operation

(1) Comparison Table of LCD Display Fonts and Actual Fonts

Arabic Numerals :

Actual	0	1	2	3	4	5	6	7	8	9
Display	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>

(2) Digital Display on the Key Board

English Alphabet :

Actual	A	B	C	D	E	F	G	H	I	J	K	L	M
Display	<i>A</i>	<i>b</i>	<i>C</i>	<i>d</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>,</i>	<i>J</i>	<i>t</i>	<i>L</i>	<i>M</i>
Actual	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Display	<i>n</i>	<i>o</i>	<i>P</i>	<i>q</i>	<i>r</i>	<i>S</i>	<i>T</i>	<i>U</i>	<i>v</i>	<i>W</i>	<i>X</i>	<i>Y</i>	<i>Z</i>

6. Function setting list

No.	Item	Description	Setting level		Setting range		Default	
			With a thread trimmer	Without a thread trimmer	With a thread trimmer	Without a thread trimmer	With a thread trimmer	Without a thread trimmer
P01	Maximum sewing speed	The maximum sewing speed reached by fully depressing the pedal is set with this function setting item. The maximum sewing speed can be changed within the sewing speed range specified for [P68 Maximum sewing speed].	U		100-5000		4000	
P04	Reverse feed stitching speed at the beginning of sewing	The sewing speed to be used during the reverse feed stitching at the beginning of sewing is set with this function setting item.	U		100-3000		1350	
P05	Reverse feed stitching speed at the end of sewing	The sewing speed to be used during the reverse feed stitching at the end of sewing is set with this function setting item.	U		100-3000		1350	
P06	Overlapped stitching speed	The sewing speed to be used during the overlapped stitching is set with this function setting item. * The overlapped stitching speed can be changed with the switch on the operation panel.	U		100-3000		1350	
P07	Sewing speed for soft start	The sewing speed for soft start at the beginning of sewing is set with this function setting item.	U		100-5000		800	
P08	Soft start function	The number of stitches to be sewn with the soft-start function at the beginning of sewing is set with this function setting item. 0 - 99 : The number of stitches to be sewn with the soft-start function	U		0-99		2	
P09	Sewing speed of the constant dimension sewing	This parameter is used to set the sewing speed to be employed when the constant dimension sewing is performed. * The sewing speed can be changed with the switch on the operation panel.	U		100-5000		4000	
P10	Setting of the reverse feed stitching at the end of constant dimension sewing	This parameter is used to set whether or not the reverse feed stitching is automatically performed at the end of constant dimension sewing. ON : Reverse feed stitching is automatically performed at the end of sewing OFF : Sewing machine stops sewing before starting reverse feed stitching at the end of sewing. It performs reverse feed stitching when the front part of pedal is depressed.	U		ON/OFF		ON	
P11	Selection of operation of BTSW	This parameter is used to select the operation of the BTSW. 0: Reverse feed stitching at the midpoint of sewing 1: Needle up / down correction switch 2: If you press the BTSW during sewing, the reverse feed stitching at the midpoint of sewing will be selected. If you press the BTSW while the sewing machine is at rest, the needle up/down correction will be selected.	U		0-2		0	
P12	Changeover of the reverse feed stitching at the start of sewing between Auto / Manual	The sewing speed for the reverse feed stitching at the beginning of sewing is set with this function setting item. 0: The reverse feed stitching is performed by manually operating the pedal. 1: The reverse feed stitching is performed at the sewing speed set with [P04 Reverse feed stitching speed at the beginning of sewing].	U		0-1		1	
P13	Function of stop immediately after the reverse feed stitching at the beginning of sewing	Operation to be carried out at the end of the reverse feed stitching at the beginning of sewing is selected with this function setting item. CON : The sewing machine does not stop temporarily after completion of the reverse feed stitching at the beginning of sewing STP : The sewing machine stops temporarily after completion of the reverse feed stitching at the beginning of sewing	U		CON/STP		CON	

No.	Item	Description	Setting level		Setting range		Default	
			With a thread trimmer	Without a thread trimmer	With a thread trimmer	Without a thread trimmer	With a thread trimmer	Without a thread trimmer
P15	Changeover of the needle up/down correction function	The function of needle up/down correction switch is changed over with this function setting item. 0 : Needle up/down correction 1 : One stitch correction 2 : Continuous half stitch 3 : Continuous one stitch	U		0-3		0	
P18	Correction of solenoid-on timing for the reverse feed stitching at the beginning of sewing	Stitch alignment can be carried out by changing the timing of actuating the reverse-feed stitching solenoid at the time of reverse feed stitching at the beginning of sewing. When the set value for this parameter is increased, the length of stitch at the end of A process is increased and the length of stitch at the beginning of B process is decreased.	U		0-200		120	
P19	Correction of solenoid-off timing for the reverse feed stitching at the beginning of sewing	Stitch alignment can be carried out by changing the timing of releasing the reverse-feed stitching solenoid at the time of reverse feed stitching at the beginning of sewing. When the set value for this parameter is increased, the length of stitch at the beginning of B process is increased.	U		0-200		120	
P25	Correction of solenoid-on timing for the reverse feed stitching at the end of sewing	Stitch alignment can be carried out by changing the timing of actuating the reverse-feed stitching solenoid at the time of reverse feed stitching at the end of sewing. When the set value for this parameter is increased, the length of stitch at the beginning of C process is increased.	U		0-200		100	
P26	Correction of solenoid-off timing for the reverse feed stitching at the end of sewing	Stitch alignment can be carried out by changing the timing of releasing the reverse-feed stitching solenoid at the time of reverse feed stitching at the end of sewing. When the set value for this parameter is increased, the length of stitch at the end of C process is decreased and the length of stitch at the beginning of D process is increased.	U		0-200		150	
P32	Correction of solenoid-on timing for the overlapped stitching	Stitch alignment can be carried out by changing the timing of actuating the reverse feed stitching solenoid at the time of overlapped stitching. When the set value for this parameter is increased, the length of stitch at the end of A (C) process is increased and the length of stitch at the beginning of B process is decreased.	U		0-200		125	
P33	Correction of solenoid-off timing for the overlapped stitching	Stitch alignment can be carried out by changing the timing of releasing the reverse-feed stitching solenoid at the time of overlapped stitching. When the set value for this parameter is increased, the length of stitch at the end of B process is increased and the length of stitch at the beginning of C process is decreased.	U		0-200		160	
P41	Thread trimming counter	This item is used to display the current value of the thread trimming counter.	U	---	0-9999	---	0	---
P46	Setting of the function of reverse revolution to lift the needle	This function rotates the main shaft in the reverse direction of sewing to bring the needle bar to the highest position. ON : Reverse-revolution operation is in the ON state OFF : Reverse-revolution operation is in the OFF state	U	---	ON/OFF	---	OFF	---
P48	Sewing speed at a low speed	The minimum sewing speed of the sewing machine by operating the pedal is set with this function setting item.	U		100-500		200	
P53	Setting of operation of the presser foot when the back part of pedal is depressed	The operation of the presser foot when the back part of pedal is depressed is set with this function setting item. 0 : Presser foot does not operate even when the back part of pedal is depressed. 1 : When the back part of pedal is depressed, the presser foot goes up to its upper position.	U	---	0-1	---	1	---
P57	Work clamp lifting operation time	This parameter is used to set the time at which the work clamp lifting solenoid is turned ON.	U	---	10-120	---	60	---

No.	Item	Description	Setting level		Setting range		Default	
			With a thread trimmer	Without a thread trimmer	With a thread trimmer	Without a thread trimmer	With a thread trimmer	Without a thread trimmer
P77	Back-tack solenoid ON timing at the end of sewing	The BT solenoid ON timing at the end of sewing is set with this function setting item. * This parameter applies only to the free stitching.	U		50-330		150	
P113	Bobbin counter	The largest value that the bobbin counter can count is set with this function setting item.	U	---	0-9999	---	0	---
P116	Function of prohibiting the correction operation after turning the handwheel by hand	This item is used to set the compensating stitch function activated by turning the handwheel by hand after the completion of constant-dimension sewing. 0: Correction sewing function is disabled 1: Correction sewing function is enabled * This parameter is enabled in the case "P11 Selection of operation of BSW" is set to "1: Needle up/down correction switch".	U	---	0-1	---	0	---
P117	Thread trimming operation after turning the handwheel by hand	The thread trimming operation after turning the pulley by hand to move the sewing machine from the upper and lower positions is set with this function setting item. 0: Thread trimming operation is not carried out after turning the pulley by hand. 1: Thread trimming operation is carried out after turning the pulley by hand	U	---	0-1	---	1	---
P118	Setting of the needle up/down switch operation after thread trimming	The operation of the needle up/down switch after thread trimming is set with this function setting item. 0: Needle up/down operation is carried out 1: One-stitch operation is carried out	U	---	0-1	---	0	---
P136	Selection of the presser foot operation when the power is turned ON	Operation of the presser foot when the power is turned ON is selected with this function setting item. 0: The presser foot does not operate (It operates when the back part of the pedal is depressed.) 1: The presser foot goes up after automatically retrieving the origin 2: The presser foot comes down after automatically retrieving the origin	U	---	0-2	---	0	---
P138	Function of pedal curve selection	Pedal curve is selected. (Improving pedal inching operation)	U		0-2		0	
P139	Function of reverse feed stitching on the way	The function activated when the reverse feed stitching on the way switch is pressed is selected with this function setting item. 0: Normal back-tack function 1: Function of reverse feed stitching on the way is enabled (In the case the function for reverse feed stitching at midpoint of sewing is enabled, P142 function can be used.) 2: Condensation stitching (without reverse feed) function	U		0-2		0	
P140	Number of stitches of reverse feed stitching on the way	The number of stitches of reverse feed stitching on the way is set with this function setting item.	U		1-19		4	
P141	Condition to be satisfied to enable the reverse feed stitching on the way while the sewing machine is at rest	The condition to be satisfied to enable the reverse feed stitching switch while the sewing machine is at rest is set with this function setting item. 0: Disabled while the sewing machine is at rest 1: Enabled while the sewing machine is at rest	U		0-1		0	
P142	Thread trimming function after performing reverse feed stitching on the way	Automatic thread trimming operation after performing the reverse feed stitching on the way is set with this function setting item. 0: Automatic thread trimming is not performed after the completion of reverse feed stitching on the way 1: Automatic thread trimming is performed after the completion of reverse feed stitching on the way 2: The sewing machine stops with its needle up after the completion of the reverse feed stitching on the way without performing thread trimming.	U	---	0-2	---	0	---

No.	Item	Description	Setting level		Setting range		Default	
			With a thread trimmer	Without a thread trimmer	With a thread trimmer	Without a thread trimmer	With a thread trimmer	Without a thread trimmer
P143	Sewing speed for reverse feed stitching on the way	Sewing speed during the reverse feed stitching on the way is set with this function setting item.	U		200-3200		1350	
P144	Correction of solenoid-on timing for the reverse feed stitching on the way	It is possible to adjust the stitch balance by changing the solenoid operation timing during the reverse feed stitching on the way. If you increase the setting, the reverse feed stitch length for the reverse feed stitching will be increased.	U		0-200		101	
P145	Setting of the valid time of the back tack switch during the reverse feed stitching on the way	During the reverse feed stitching on the way, a press on the switch is recognized by keeping the back tack switch held pressed for the set time or longer.	S		10-3000		1000	

No.	Item	Description	Setting level	Setting range	Default
J10	Setting of brightness of the backlight	Brightness of the backlight is set with this function setting item.	U	1-3	3
N01	Main software version	Main software version is displayed with this function setting item.	U	---	---
N02	Panel software version	Panel software version is displayed with this function setting item.	U	---	---

7. Details of setting of the main functions

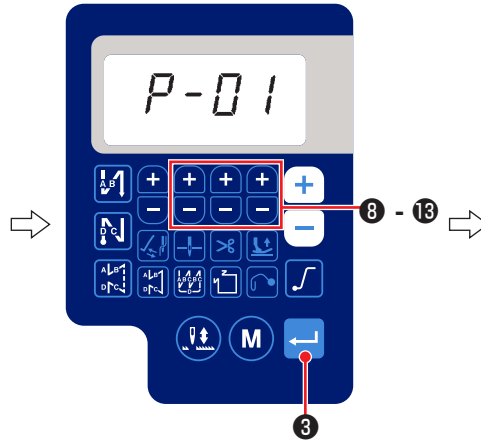


1. In following parameter operation **+** **-** key, it will display corresponding speed value.
2. In following function, after value changed, press **←** key to save the value, otherwise they will lost after turning power off.

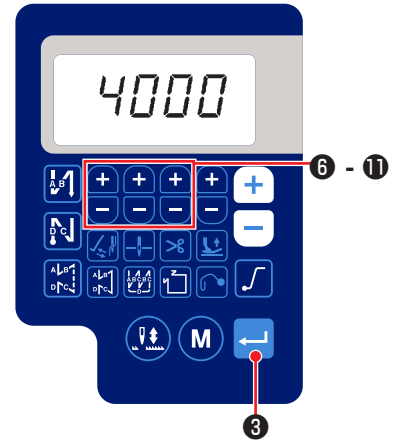
① How to set [Maximum Sewing Speed]



Press **M** ② to enter user parameter.

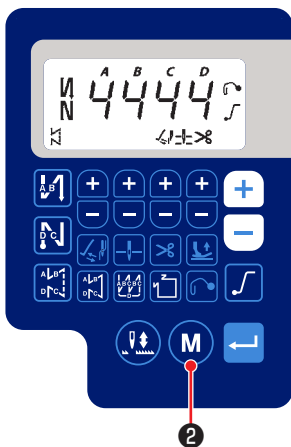


Press **+**, **-** ⑧ to ⑬ select the parameter code P01. Then, press **←** ③ to enter [Function setting data].

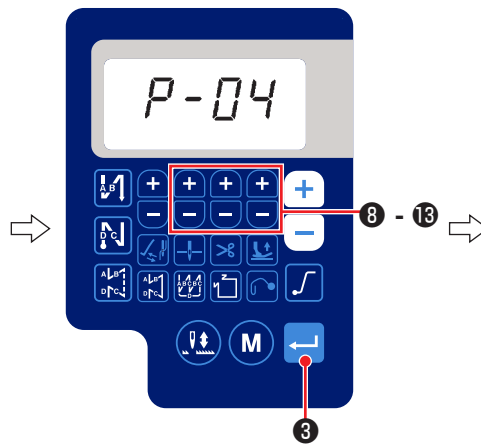


- ① Press **+**, **-** ⑥ to ⑪ key to adjust the Maximum Sewing Speed.
- ② After adjustment press **←** ③ to save value.

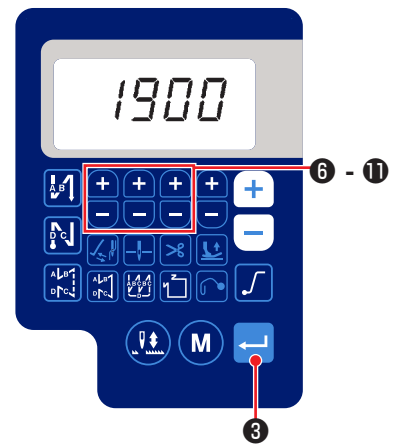
② How to set [Start Back-Tacking Speed]



Press **M** ② to enter user parameter.

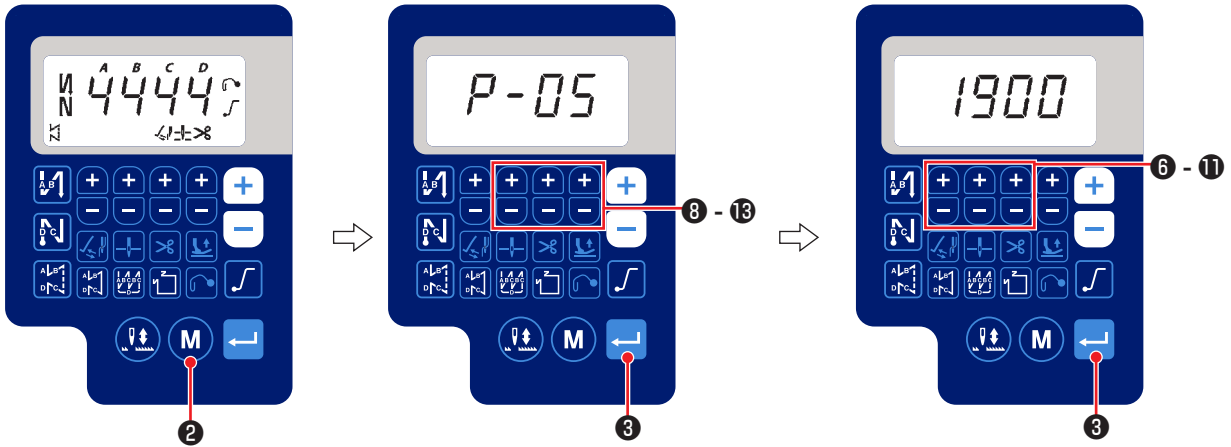


Press **+**, **-** ⑧ to ⑬ select the parameter code P04. Then, press **←** ③ to enter [Function setting data].



- ① Press **+**, **-** ⑥ to ⑪ key to adjust the Start Back-Tacking Speed.
- ② After adjustment press **←** ③ to save value.

③ How to set [End Back-Tacking Speed]

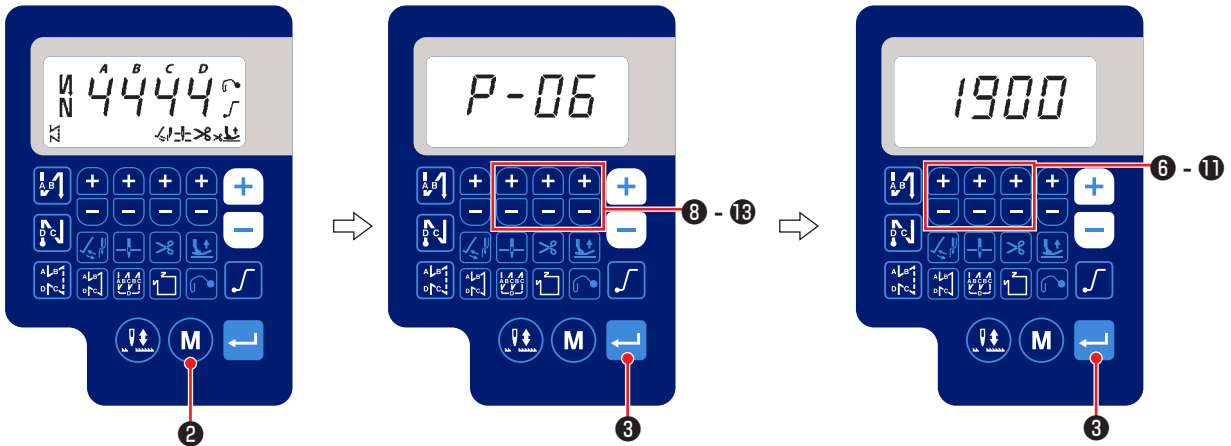


Press **M** ② to enter user parameter.

Press **+**, **-** ⑧ to ⑬ select the parameter code P05. Then, press **↵** ③ to enter [Function setting data].

① Press **+**, **-** ⑥ to ⑪ key to adjust the End Back-Tacking speed.
② After adjustment press **↵** ③ to save value.

④ How to set [Bar-Tacking Speed]



Press **M** ② to enter user parameter.

Press **+**, **-** ⑧ to ⑬ select the parameter code P06. Then, press **↵** ③ to enter [Function setting data].

① Press **+**, **-** ⑥ to ⑪ key to adjust the Bar-Tacking Speed.
② After adjustment press **↵** ③ to save value.

⑤ How to set [Constant-Stitch Sewing Speed]

Press **M** ② to enter user parameter.

Press **+**, **-** ⑧ to ⑬ select the parameter code P09. Then, press **↵** ③ to enter [Function setting data].

① Press **+**, **-** ⑥ to ⑪ key to adjust the Constant-Stitch Sewing speed.
② After adjustment press **↵** ③ to save value.

⑥ Selection of the soft-start function (Function setting No. P08)

The needle thread may fail to interlace with the bobbin thread at the start of sewing when the stitching pitch (stitch length) is small or a thick needle is used. To solve such problem, this function (called "soft-start") is used to limit the sewing speed, thereby assuring successful formation of the starting stitches.

P 0 8 0 to 99 : The number of stitches to be sewn under the soft-start mode.

The sewing speed limited by the soft-start function can be changed. (Function setting No. P07)

P 0 7 Data setting range : 100 to 5000[sti/min]

⑦ Changeover of the needle up/down switch function (Function setting No. P15)

The function of the needle up/down switch is changed over with this function setting number.

P 1 5 0 : Needle up/down correction

1 : One-stitch correction

2 : Continuous half stitch

3 : Continuous one stitch

It should be noted that one-stitch correction is only enabled in the middle of sewing. In other cases, the needle up/down correction is performed.

The "Continuous half stitch" and "Continuous one stitch" functions work when function setting No. P11 is set to "1" or "2" and the BTSW is pressed in the middle of sewing or at the end of sewing.

⑧ **Function of reverse feed stitching on the way (Function setting Nos. P139 to P143)**

Functions of the limit of number of stitches and thread trimming command can be added to the touch back switch on the sewing machine head.

Function setting No.139 Function of reverse feed stitching on the way is selected.

- 1 3 9 0 : OFF Normal back-tack function
- 1 : ON Function of reverse feed stitching on the way
- 2 : ON Condensation stitching (reverse feed only) is enabled.

Function setting No.140 Function of reverse feed stitching on the way is selected.

- 1 4 0 Setting range : 1 to 19 stitches

Function setting No.141 Number of stitches performing reverse feed stitching is set.

- 1 4 1 0 : OFF Inoperative when the sewing machine stops. (The reverse feed stitching on the way functions only while the sewing machine is in operation.)
- 1 : ON Operative when the sewing machine stops. (The reverse feed stitching on the way functions while both the sewing machine is in operation and is at rest.)

(Caution) Either condition is operative when the sewing machine is running.

Function setting No.142 Effective condition of reverse feed stitching on the way

- 1 4 2 0 : OFF Without thread trimming
- 1 : ON Thread trimming is executed.
- 2 : OFF The sewing machine stops with its needle up without operating the thread trimmer and wiper.

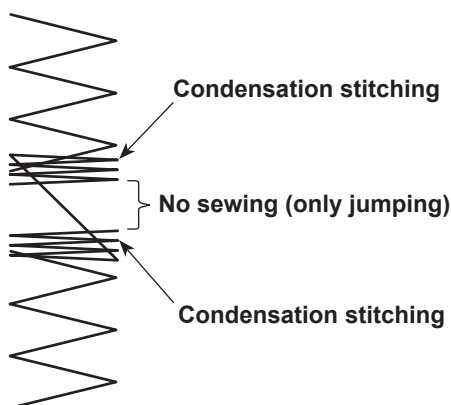
Function setting No.143 Thread trimming is performed when reverse feed stitching on the way is completed.

- 1 4 3 Setting range : 200 to 3200 [sti/min]

[Jump stitching process]

If you want to carry out the jump stitching process as shown in the figure below, perform the following setting.

- P139 → 2
- P140 → Number of stitches for the condensation stitching (as desired)
- P141 → 1
- P142 → 2



[Steps of procedure]

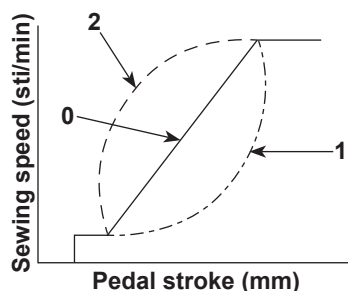
- 1) Depress the pedal to carry out normal sewing.
- 2) Press the touch-back switch at an arbitrary timing.
- 3) The sewing machine automatically starts condensation stitching to sew the number of stitches set with P140. After the completion of the condensation stitching, the needle bar goes up.
- 4) Move the material by yourself.
- 5) Press the touch-back switch.
- 6) The sewing machine automatically starts condensation stitching to sew the number of stitches set with P140.
- 7) Depress the pedal to carry out normal sewing.

⑨ Function of pedal curve selection (Function setting No. P138)

This function can perform the selection of the curve of sewing speed of the sewing machine against the depressing amount of the pedal.

Change to this function when you feel that inching operation is hard or that pedal response is slow.

- 1 3 8**
- 0 : Sewing speed in terms of the depressing amount of the pedal increases linearly.
 - 1 : Reaction to intermediate speed in terms of the depressing amount of the pedal is delayed.
 - 2 : Reaction to intermediate speed in terms of the depressing amount of the pedal is advanced.



⑩ Selection of the presser foot operation when the power is turned ON (Function setting No. P136)

The needle bar goes up to its upper position and the presser motor carries out origin retrieval operation immediately after the power is turned ON.

- 1 3 6**
- 0 : Neither the needle bar nor the presser motor (Operates when the back part of pedal is depressed)
 - 1 : Needle bar goes up to its upper position and the presser motor automatically goes up after automatic origin retrieval.
 - 2 : Needle bar automatically goes up to its upper position and the presser motor comes down after automatic origin retrieval.



⑪ Setting of the operation of needle up/down switch after thread trimming (Function setting No. P118)


One stitch operation can be performed only when the needle up / down compensating switch is pressed at the time of upper stop immediately after turning ON the power switch or upper stop immediately after thread trimming.



- 1 1 8**
- 0 : Normal (Only needle up / down compensating stitching operation)
 - 1 : One stitch compensating stitching operation (upper stop / upper stop) is performed only when aforementioned changeover is made.

⑫ Thread trimming counter (Function setting No. P41)

- P 4 1**
- This parameter is used to display the current value of the thread trimming counter. The sewing machine is able to perform sewing while displaying the counter value. When you want to reset the counter to 0 (zero), press needle up/down correction key

 to change the screen display to "0" (zero). Then, press .

The thread trimming counter can also be displayed by holding down .

The count value can be adjusted with  .

8. Stitch balance for back-tacking

① How to balance stitches for [Start Back-Tacking] (Function setting Nos. P18 and P19)

Example) Step 1 : Setting stitch number for Start Back-Tacking A and B = 3

Step 2 : Sewing the pattern in normal speed.

Step 3 : If unbalanced situation is appeared please correct it as below:

Suggestion : Select the balance stitches for Section A before selecting for B.

Start point - - -



Case 1 : Longer A and shorter B

Adjustment : [P18] Decrease the set value.

A becomes shorter and B becomes longer.

Start point - - -



Case 2 : Shorter A and longer B

Adjustment : [P18] Increase the set value.

A becomes longer and B becomes shorter.

Start point - - -

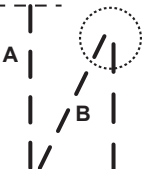


Case 3 : Normal A and longer B

Adjustment : [P19] Decrease the set value.

B becomes shorter.

Start point - - -



Case 4 : Normal A and shorter B

Adjustment : [P19] Increase the set value.

B becomes longer.

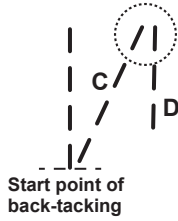
② How to balance stitches for [End Back-Tacking] (Function setting Nos. P25, P27 and P77)

Example) Step 1 : Setting stitch number for End Back-Tacking C and D = 3

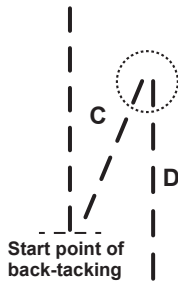
Step 2 : Sewing the pattern in normal speed.

Step 3 : If unbalanced situation is appeared please correct it as below:

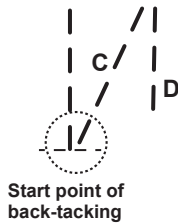
Suggestion : Select the balance stitches for Section C before selecting for D.



Case 1 : Longer C and shorter D
Adjustment : [P26] Decrease the set value.
C becomes shorter and D becomes longer.



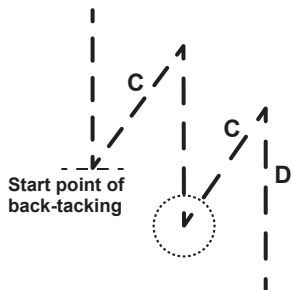
Case 2 : Shorter C and normal D
Adjustment : [P26] Increase the set value.
C becomes longer and D becomes shorter.



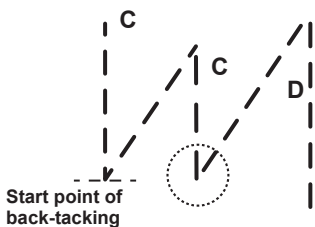
Case 3 : C is longer.
Adjustment : [P77] Change the set value to such a value that shortens C.



Case 4 : C is short.
Adjustment : [P77] Increase the set value.
C becomes longer.



Case 5 : Normal C and longer D
Adjustment : [P25] Decrease the set value.
C becomes longer and D becomes shorter.



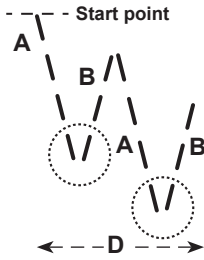
Case 6 : Normal C and shorter D
Adjustment : [P25] Increase the set value.
C becomes shorter and D becomes longer.

③ How to balance stitches for [Bar Tacking] (Function setting Nos. P32 and P33)

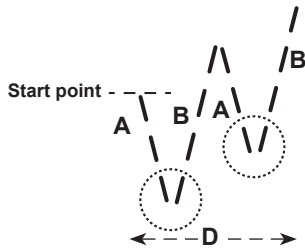
Example) Step 1: Setting stitch number for Bar-Tacking A = B = 4 and turns of Bar-Tacking D = 4

Step 2: Sewing the pattern in normal speed.

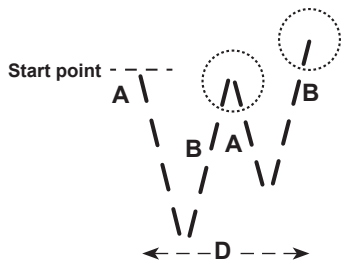
Step 3: If unbalanced situation is appeared please correct it as below:



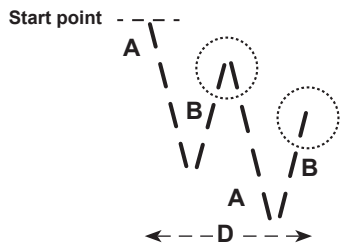
Case 1 : Longer A and shorter B
Adjustment : [P32] Decrease the set value.
A becomes shorter and B becomes longer.



Case 2 : Shorter A and normal B
Adjustment : [P32] Increase the set value.
A becomes longer and B becomes shorter.



Case 3 : Normal A and longer B
Adjustment : [P33] Decrease the set value.
B becomes shorter.



Case 4 : Normal A and shorter B
Adjustment : [P33] Increase the set value.
B becomes longer.

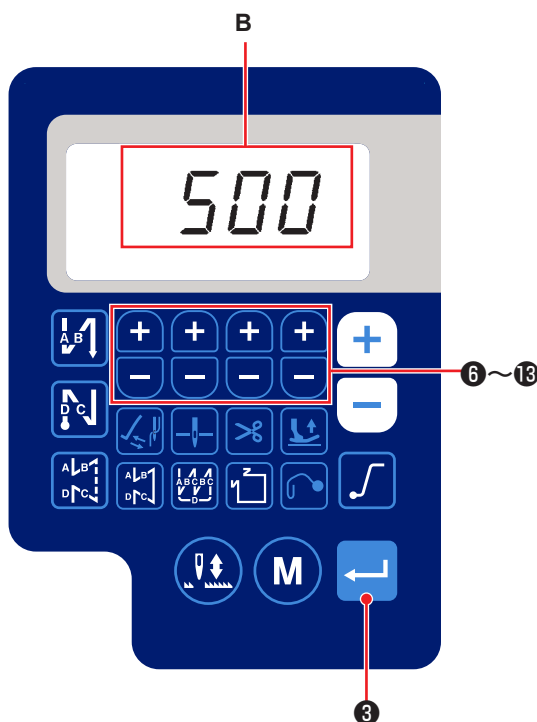
9. How to use the bobbin counter

In the case the number of stitches that can be counted on the bobbin counter (Function setting number P113) is set to "x10", the bobbin count complete screen is displayed when the bobbin counter reaches the set value to notify the operator that the bobbin has to be changed.




- 1) Call the function setting No. P113 (A).

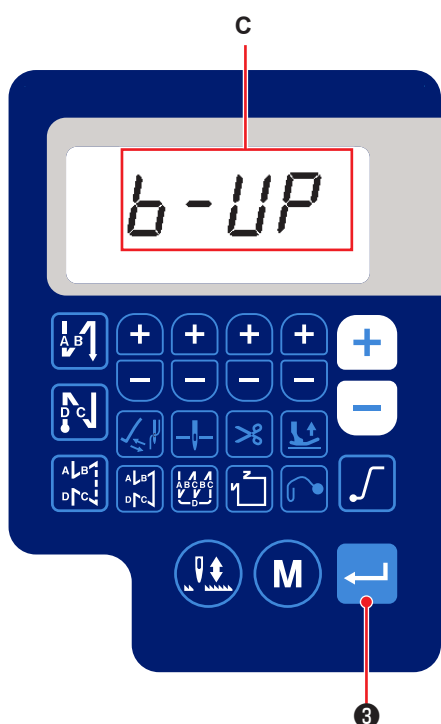
Confirm the data with  ③.




- 2) Press   ⑥ to ⑬ to set the bobbin counter value (B).

When the bobbin counter reaches the "bobbin counter value x 10", the bobbin count complete screen is displayed.

- 3) Press  ③ to determine the set value and return the sewing machine to the normal sewing state.



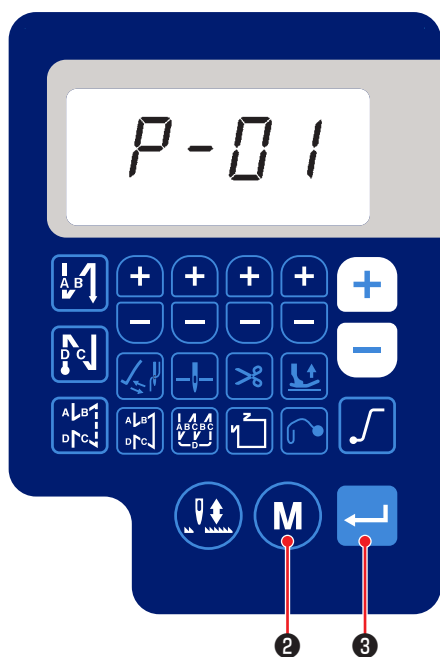
- 4) Carry out sewing. When the bobbin counter value becomes "0" (zero), the count complete screen is displayed.(C)

When you press  ③, the current value on the bobbin counter returns to the value set with "function setting No. P113 Bobbin counter" and the sewing machine returns to the normal sewing state.

10. Saving and initialization of the function setting data

(1) Saving the function setting data

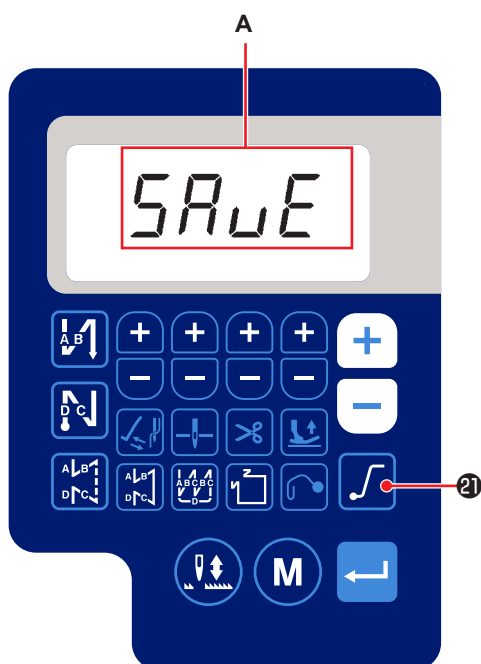
It is possible to save the function setting data you have changed arbitrarily.




- 1) Press **M** ② under the normal sewing state to display the function setting screen. Referring to the explanation given in "**VI-4. Setting of functions**" p.38, select the function setting number you want to save and press

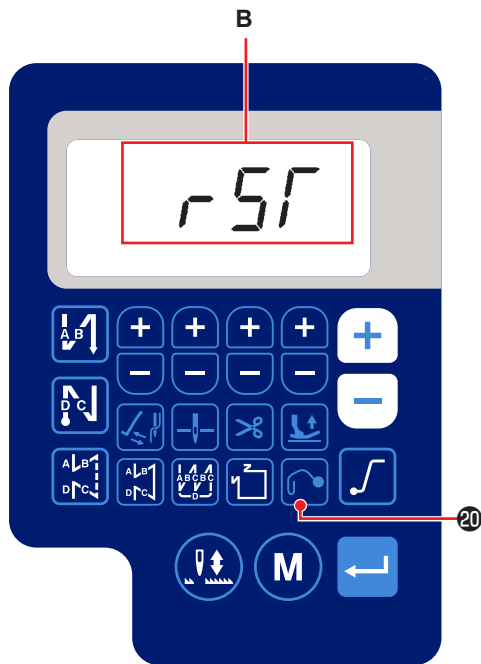



- 2) The set value change screen is displayed. Change the set value to an arbitrary value.

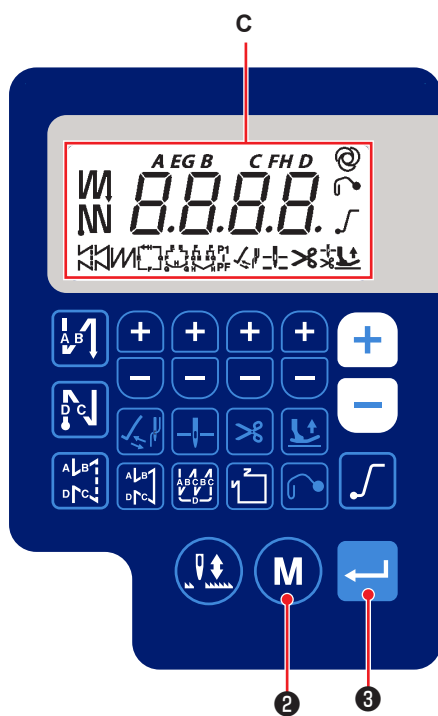




- 3) When you keep  ② held pressed for three seconds on the set value change screen, the "SAVE" screen (A) will be displayed and the set value of the function setting number you are currently set will be saved.

(2) Initializing the function setting data



- 1) Keep  20 held pressed for three seconds in the normal sewing state to display the "rst" screen (B).



- 2) When you press  3, the LCD will change to full-screen display (C) for a moment and the set value of the function setting number you have saved as described in "Saving the function setting data" will return to the saved value. For the set values of the function setting numbers you have not saved will be initialized to the factory-set defaults.
- 3) Data initialization is cancelled by pressing  M 2. Then, the sewing machine returns to the normal sewing state.

11. About the USB

WARNING :

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

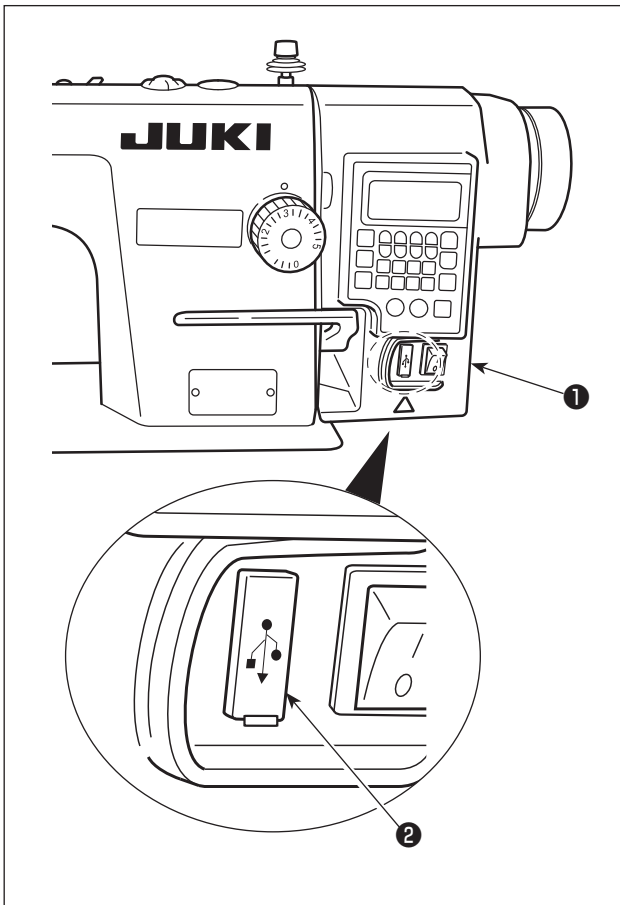


If any device rated current value of which is higher than the rated current value, the main body of the sewing machine or the USB device connected can be damaged or malfunction.

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]



The USB connector is equipped on the 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.

12. List of error codes

Error number	Description	How to correct
E-01	High-voltage error (320 V or more)	Turn the power OFF. Check the supply voltage.
E-02	Low-voltage error (170 V or less)	Turn the power OFF. Check the supply voltage.
E-03 E03P	CPU communication fault	Turn the power OFF. Check the connection of the connector to the operation panel and the cable.
E-05	Pedal connection fault	Turn the power OFF. Check the connection of the connector to the pedal and the cable.
E-07	Main shaft rotation fault	Check whether the main shaft motor is locked by turning the pulley. Check the connection encoder cable and motor power cable to the connectors. Check whether the supply voltage is normal. Check whether the sewing speed is set extremely high.
E-08	Reverse feed stitching lever operation time is exceeded.	Turn the OFF. Then, re-turn ON the power.
E-09 E-11	Encoder Z-phase detection fault	Turn the power OFF. Check the connection of the motor encoder cable to the connector.
E-10	Solenoid overcurrent	Turn the power OFF. Check whether the solenoid has failed.
E014	Encoder AB-phase detection fault	Turn the power OFF. Check the connection of the motor encoder cable to the connector.
E015	Main shaft motor overcurrent error	Turn the power OFF. Then, re-turn the power ON.
E017	Machine head tilting error	Raise the machine head. Then, turn the power OFF and re-turn the power ON. Check whether the machine head tilt switch has broken.
E020	Main shaft rotation fault	Turn the power OFF. Check the connection of the main shaft motor encoder cable and motor power cable to the connectors.

VII. TROUBLES AND CORRECTIVE MEASURES

Trouble	Cause	Corrective measures	See page
Thread breakage	① When the thread gets entangled in the thread take-up lever.	Remove the entanglement.	14
	② When the needle thread is threaded in a wrong way.	Thread it correctly.	14
	③ When the thread gets entangled in the sewing hook.	Remove the entanglement.	21
	④ When the needle thread is excessively tight or loose.	Adjust the thread tension.	16
	⑤ When the needle thread slips in the rotary tension.	Increase the tension of the pretension disk.	16
	⑥ When the tension of the thread take-up spring is excessively high or low.	Adjust the tension of the take-up spring.	16
	⑦ When the stroke of the thread take-up spring is excessively large or small.	Adjust the stroke of the take-up spring. (8 to 12 mm)	16
	⑧ When the timing of the sewing hook and the needle is not matched.	Adjust the timing.	21
	⑨ When there is a scratch on the thread path of hook, bobbin case, thread take-up lever or any other part.	Remove such a scratch or replace the component.	
	⑩ When the thread is not suitable. a. The quality of the thread is poor. b. The thread is too thick for the needle. c. The thread is broken by heat.	Use a thread of good quality. Use a suitable thread or needle. Use JUKI Silicone Oil Lubricant unit.	
	⑪ When the stitch is skipped.	Refer to the following paragraphs, Stitch skipping.	
At the beginning of sewing, several stitches skip or the thread slips out of the needle eyelet.	① The thread remaining at the needle tip after thread trimming is too short. a. The thread tension provided by the pretension disk is too high. b. The tension disk does not float at the time of thread trimming. c. The tension disk comes in contact with the thread take-up spring guard. d. The cam timing is too early.	Loosen the pretension disk to such an extent that the thread and the rotary disk do not slip. Inspect and adjust the tension release solenoid components. Adjust their positions to prevent them from coming in contact with each other. Adjust the timing of thread trimming.	16 23
	② Thread drawn-out amount is insufficient. a. Position of the thread draw-out wire is defective. b. Thread slips out of the thread draw-out wire and/or the thread guide.	Adjust the position of the thread draw-out wire. Re-thread the thread draw-out wire and thread guide. If the thread frequently slips out of the thread draw-out wire, change the wire with a new one.	23 14
	③ The bobbin thread tension is too strong to cause a thread trimming failure. As a result, the length of bobbin thread remaining after thread trimming is too short.	Loosen the bobbin thread tension to such an extent that a sufficient thread tension is provided.	
	④ Defective clamping of the bobbin thread due to deterioration of the clamp felt.	Change the clamp felt with a new one.	
	⑤ The sewing speed at the beginning of sewing is too high. As a result, the needle thread and bobbin thread are not smoothly intertwined.	Adjust the soft-start speed to 800 sti/min. Item No. P07 Adjust the number of stitches to be sewn with the soft-start function to "4". Item No. P08	41 41
	⑥ Threads are rubbed by the counter knife and broken before the moving knife and the counter knife engage with each other. The length of thread remaining at the needle tip after thread trimming varies.	Re-sharpen the counter knife, or change it with a new one.	
	⑦ Blind stitches are sewn at the beginning of sewing. The needle thread and the bobbin thread fail to make knots since no fabric resistance is applied to them.	Place the threads under the presser foot at the beginning of sewing and start sewing while retaining them by hand.	

Trouble	Cause	Corrective measures	See page
Stitch skipping	① When the needle is inserted in a wrong way. a. The needle is not entirely inserted into the needle bar. b. The needle eye is not facing straight to the operator. c. The needle is facing backwards.	Fully insert the needle. Let the needle eye face straight to the operator. Let the long groove on the needle face to the operator.	4 4 4
	② When the needle itself is not suitable. a. The needle is bent. b. The quality of the needle is not good. c. The needle is too thin for the thread. d. Blunt needle is used.	Replace it with a new needle. Use a needle of good quality. Use a suitable needle or thread. Replace it with a new needle.	4 4
	③ When the hook blade point is not sharp enough or damaged.	Resharpen the hook or replace it.	21
	④ When the timing of the sewing hook and the needle is not matched.	Adjust the timing properly.	21
	⑤ When the height of the needle bar is not correct.	Adjust the height of the needle bar.	21
	⑥ When the clearance between the needle and the sewing hook is too great.	Adjust the clearance.	21
	Loose stitch	① When the needle thread tension is too low.	Increase the needle thread tension.
② When the tension of the thread take-up spring is too low.		Increase the tension of the spring.	16
③ When the tension of the bobbin thread is too high.		Decrease the bobbin thread tension.	16
④ When the timing of the sewing hook and the needle is not matched		Adjust the timing correctly.	21
⑤ When the thread is too thick for the needle.		Use a suitable needle or thread.	
⑥ Thread slips out of the rotary tension.		Increase the tension of the pretension disk.	16
Irregular stitch tightness	① When the bobbin thread tension is too low.	Increase the bobbin thread tension.	16
	② When the bobbin thread is not wound correctly.	Wind up the bobbin thread evenly.	12
	③ When there is a scratch on the thread path of the sewing hook, bobbin case, thread take-up lever or any other parts.	Remove such a scratch or replace the component.	
Needle breakage	① When the needle is bent.	Replace it with a new needle.	4
	② When the quality of the needle is not good.	Use a needle of good quality.	
	③ When the needle is not entirely inserted into the needle bar.	Insert the needle into the needle bar as far as it will go.	4
	④ When the needle hits the sewing hook.	Adjust the timing and clearance between the needle and the sewing hook and also the position of the needle guard.	21
	⑤ The needle is too thin for the sewing material and thread.	Replace a suitable needle.	
	⑥ The needle hole in the throat plate is too narrow.		
	⑦ The needle hits against the throat plate.		
	⑧ The needle hits against the presser foot.		