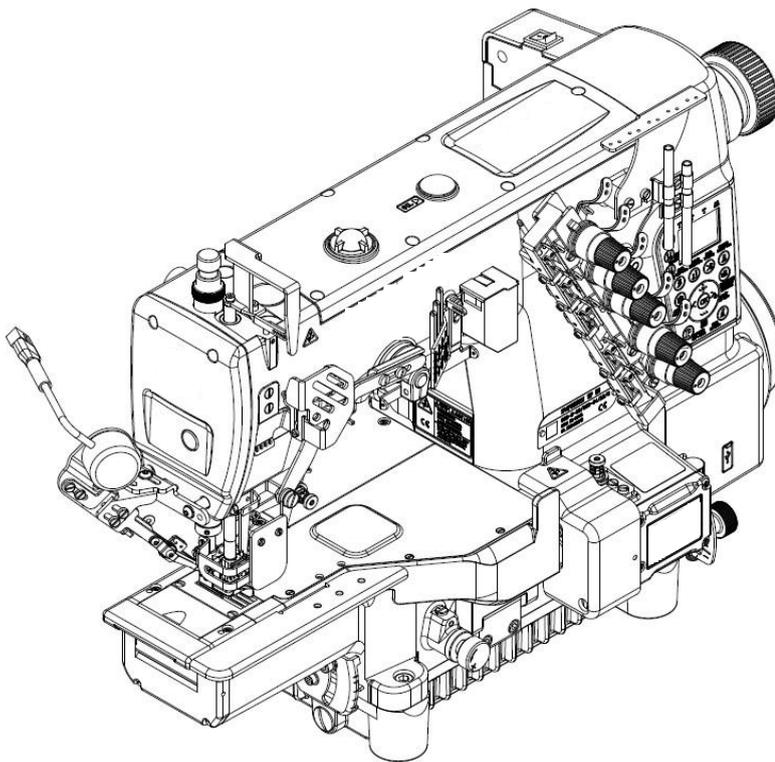


Please read this manual before using the machine.

Please keep this manual within easy reach for quick reference.

799

Computerized Cylinder Bed Interlock Stitch Machine



SAFETY INSTRUCTIONS

[1] Safety indications and their meanings

This instruction manual and the indications and symbols that are used on the machine itself are provided in order to ensure safe operation of this machine and to prevent accidents and injury to yourself or other people.

The meanings of these indications and symbols are given below.

Indications

 DANGER	The instructions which follow this term indicate situations where failure to follow the instructions will result in death or serious injury.
 CAUTION	The instructions which follow this term indicate situations where failure to follow the instructions could cause injury when using the machine or physical damage to equipment and surroundings.

Symbols



.....

This symbol () indicates something that you should be careful of. The picture inside the triangle indicates the nature of the caution that must be taken.
(For example, the symbol at left means "beware of injury".)



.....

This symbol () indicates something that you must not do.



.....

This symbol () indicates something that you must do. The picture inside the circle indicates the nature of the thing that must be done.
(For example, the symbol at left means "you must make the ground connection".)

[2] Notes on safety

 **DANGER**



Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the cover of the control box. Touching areas where high voltages are present can result in severe injury.

 **CAUTION**

Environmental requirements



Use the sewing machine in an area which is free from sources of strong electrical noise such as electrical line noise or static electric noise. Sources of strong electrical noise may cause problems with correct operation.



Any fluctuations in the power supply voltage should be within $\pm 10\%$ of the rated voltage for the machine. Voltage fluctuations which are greater than this may cause problems with correct operation.



The power supply capacity should be greater than the requirements for the sewing machine's power consumption. Insufficient power supply capacity may cause problems with correct operation.



The pneumatic delivery capability should be greater than the requirements for the sewing machine's total air consumption. Insufficient pneumatic delivery capability may cause problems with correct operation.



The ambient temperature should be within the range of 5°C to 35°C during use. Temperatures which are lower or higher than this may cause problems with correct operation.



The relative humidity should be within the range of 45% to 85% during use, and no dew formation should occur in any devices. Excessively dry or humid environments and dew formation may cause problems with correct operation.



In the event of an electrical storm, turn off the power and disconnect the power cord from the wall outlet. Lightning may cause problems with correct operation.

Installation



Machine installation should only be carried out by a qualified technician.



Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.



The sewing machine weighs approximately 55 kg. The handling of the sewing machine head must be carried out by more than two people. When handling the sewing machine head, grasp the handwheel with the right hand, and put the left hand in the machine head, and lift it stably and firmly. If you try to lift the machine head yourself, it may cause injuries such as back injury.



Do not connect the power cord until installation is complete. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.



Hold the machine head with both hands when tilting it back or returning it to its original position. In addition, do not subject the machine head to extra force while it is tilted back. If this is not observed, the machine head may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.



Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.



All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.



Install the safety covers to the machine head and motor.



If using a work table which has casters, the casters should be secured in such a way so that they cannot move.



If the table is too high, the machine head may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.



Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin. If the oil and grease get into your eyes or onto your skin, inflammation can result. Furthermore, do not drink or eat the lubricating oil or grease. They may cause diarrhea or vomiting. Keep the oil out of the reach of children.

CAUTION

Sewing

-  This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.
-  The sewing machine should not be used for any applications other than sewing.
-  Be sure to wear protective goggles when using the machine.
If goggles are not worn, there is the danger that if a needle breaks, parts of the broken needle may enter your eyes and injury may result.
-  Turn off the power switch at the following times. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.
 - When threading the needle
 - When replacing the needle
 - When not using the machine and when leaving the machine unattended
-  If using a work table which has casters, the casters should be secured in such a way so that they cannot move.
-  Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.
-  Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.
-  If an error occurs in machine operation, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest Brother dealer or a qualified technician.
-  If the machine develops a problem, contact your nearest Brother dealer or a qualified technician.

Cleaning

-  Turn off the power switch before carrying out cleaning. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.
-  Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin. If the oil and grease get into your eyes or onto your skin, inflammation can result.
Furthermore, do not drink or eat the lubricating oil or grease. They may cause diarrhea or vomiting.
Keep the oil out of the reach of children.

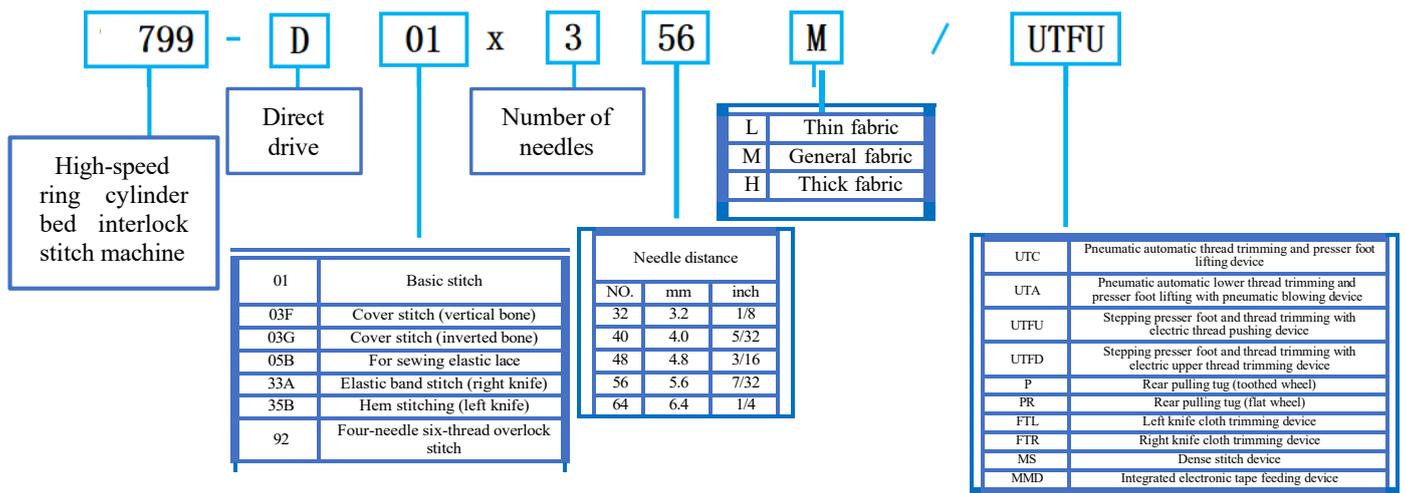
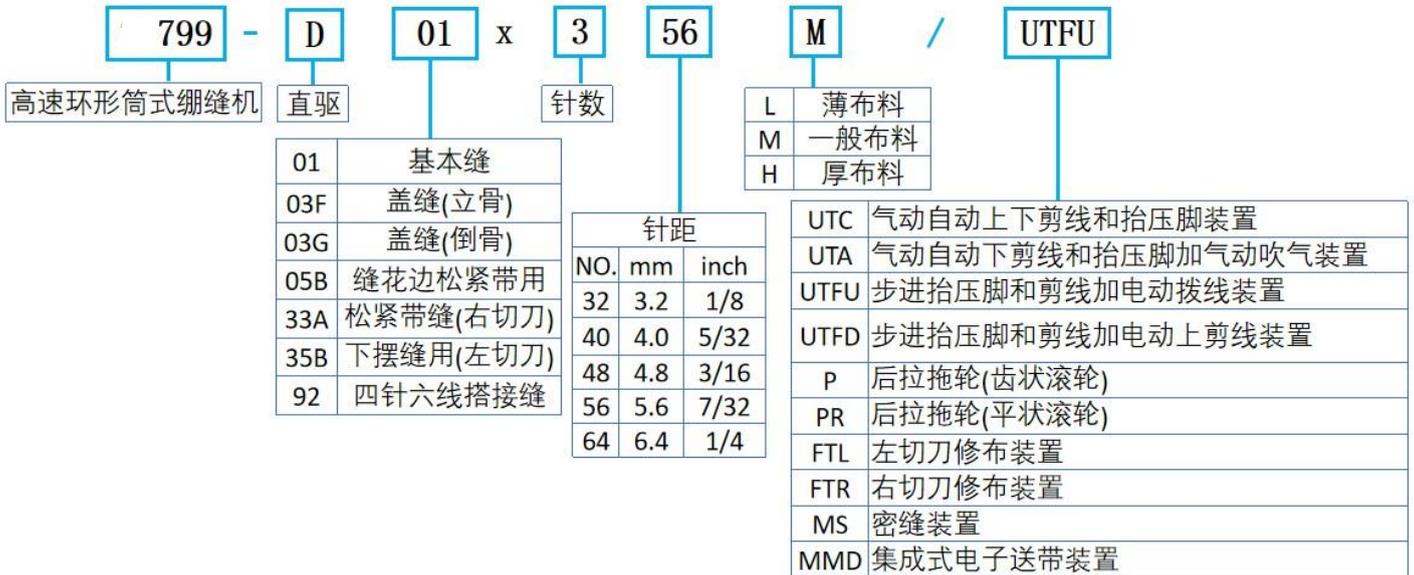
Maintenance and inspection

-  Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.
-  Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.
-  Turn off the power switch and disconnect the power cord before carrying out the following operations. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.
 - Inspection, adjustment and maintenance Replacing
 - consumable parts such as the looper.
-  Disconnect the air hoses from the air supply and wait for the needle on the pressure gauge to drop to "0" before carrying out inspection, adjustment and repair of any parts which use the pneumatic equipment.
-  Hold the machine head with both hands when tilting it back or returning it to its original position.
In addition, do not subject the machine head to extra force while it is tilted back. If this is not observed, the machine head may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.
-  If the power switch and air need to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
-  Use only the proper replacement parts as specified.
-  If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.
-  Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

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1. Specification



2.1. Table processing diagram

Please refer to the diagram below for tabletop processing.

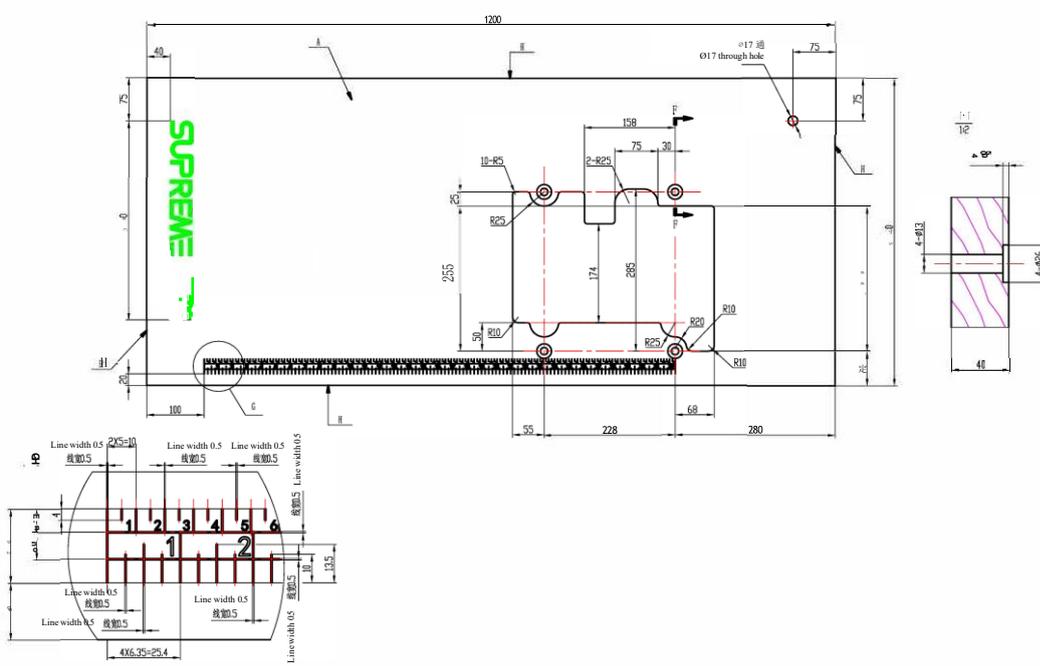


Figure 2-1

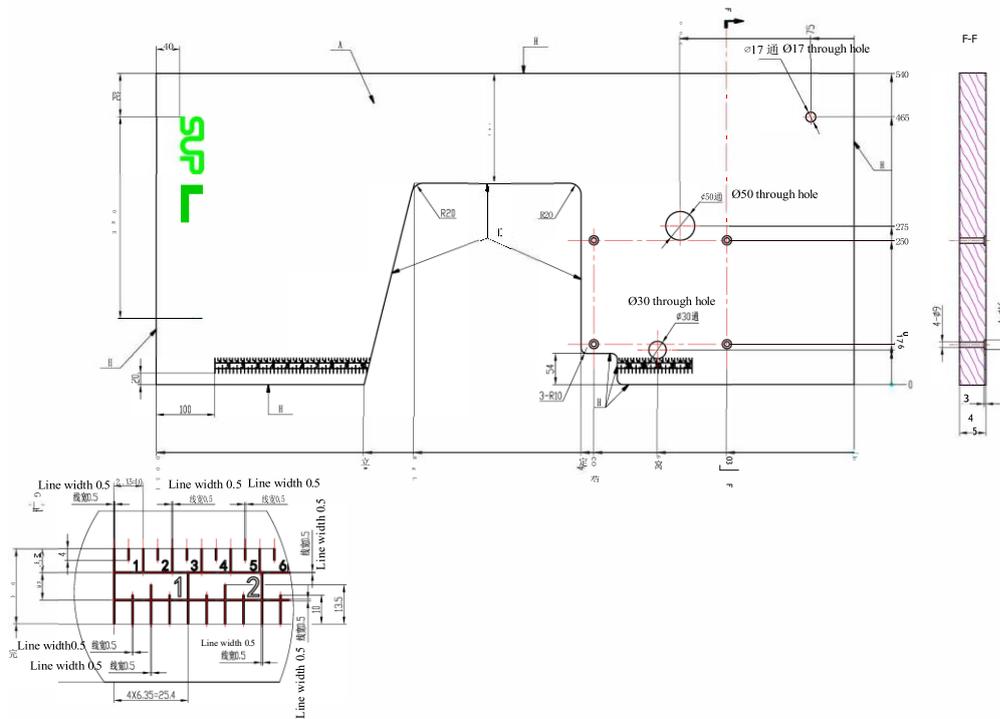


Figure 2-2

2.1. Installation method for semi-recessed table

Refer to the diagram for correct installation of the stitch machine

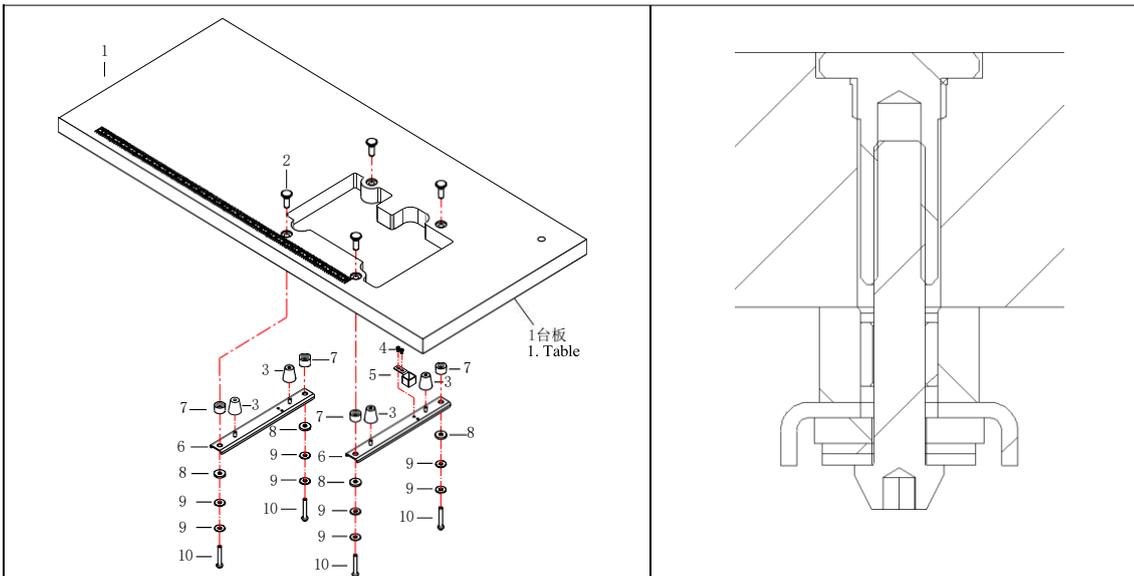


Figure 2-3

2.2. Installation method for upper supporting table

Refer to the diagram for correct installation of the stitch machine

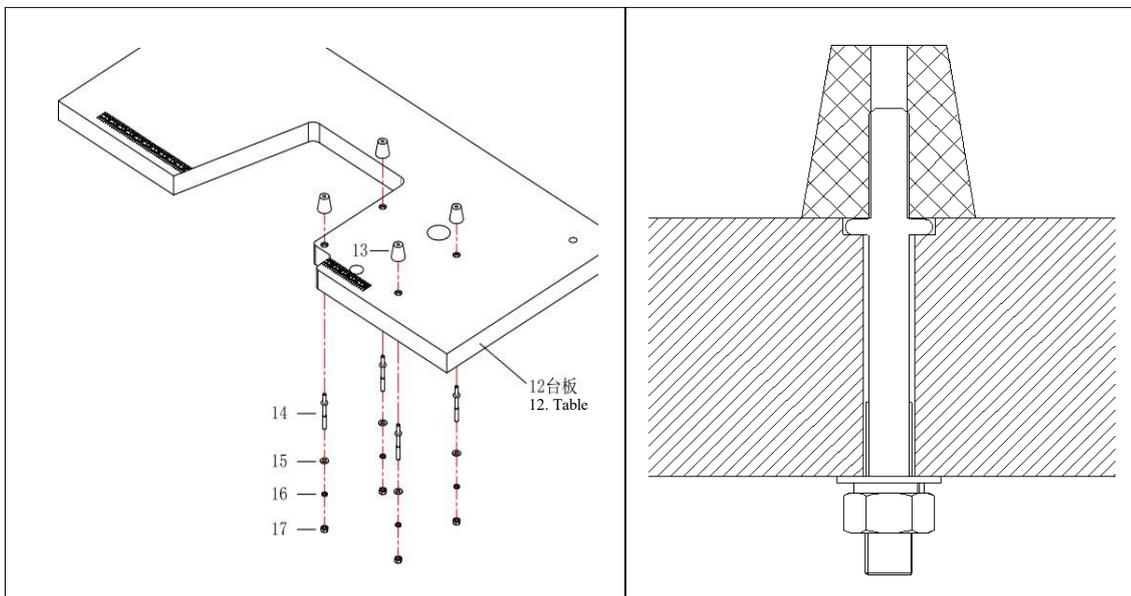


Figure 2-4

3. SP device and HR device

When using high-speed sewing with synthetic thread and fabrics, to prevent issues like thread breakage and skipped stitches, it comes standard with an SP device (thread oiling device) and an HR device (tip cooling device). Please use silicone oil (dimethyl silicone). Periodically open the cover of the SP reservoir① and the HR reservoir② to check the level of silicone oil.

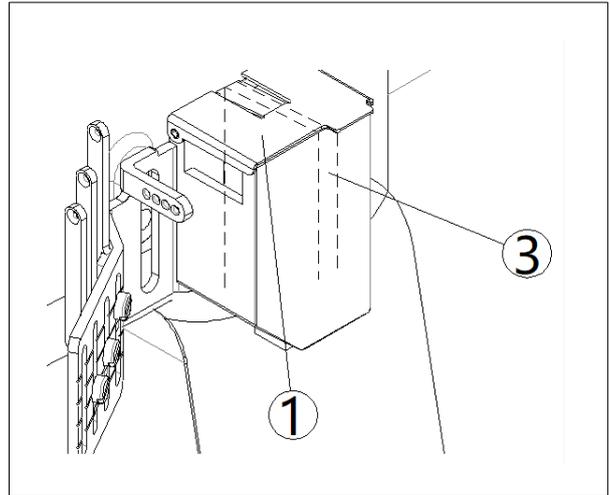


Figure 3-1

Note:

(1) When not using the SP and HR devices, it may adversely affect the sewing condition, so please remove the felts ③④ from the devices.

(2) Silicone oil on parts other than the SP and HR devices can cause stitch machine malfunctions, so it must be wiped clean.

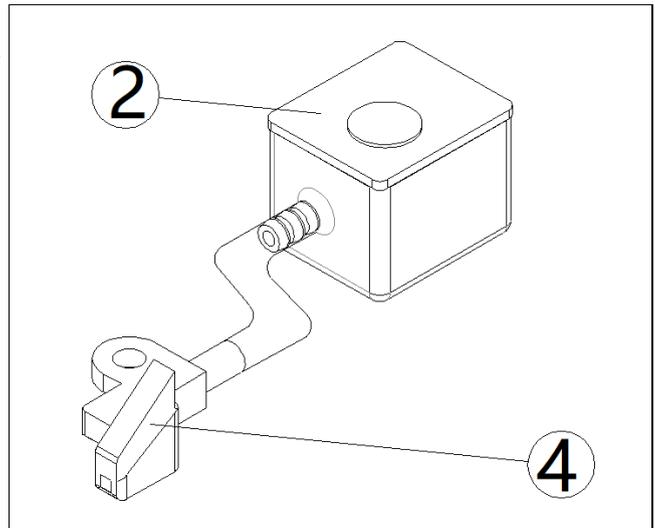


Figure 3-2

4. Cleaning of the stitch machine

Please clean the dust and thread clippings from the stitch machine at the end of each day.

Please clean around the needle plate grooves, tooth grooves, thread holes, and filters once a week.

Note: If the filter is clogged with dust, oil in the machine and cylinder cannot return to the oil cylinder, causing leaks. Accumulated dust may cause damage to parts. Regular inspections by the stitch machine maintenance person is required.

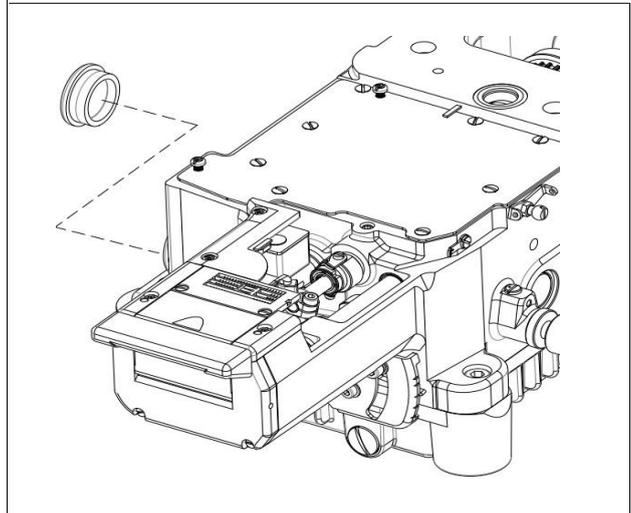


Figure 4-1

1. Daily inspections

(1) In the morning, remove the stitch machine cover and adjust any slack in the thread.

At this time, check to ensure the thread rack is directly above the vertical thread stand. (The thread rack should be fixed and not wobble.)

(2) Check the levels of lubricating oil and silicone oil (SP device and HR device), and refill if necessary.

(3) Check the threading sequence.

(4) Verify the needle for bends, damage at the tip, and correct installation.

(5) Check the scalpel. (Only for models equipped with a scalpel mechanism.)

(6) Check the seam made with test fabric.

(7) Check for missing oil plugs.

2. Weekly inspections

(1) At the end of the week, remove the needle bar, needle plate, etc., and clean the machine.

(2) Verify the tension of the drive belts.

(3) Check the level of lubricating oil and refill as needed.

(4) Check if the oil plug is loose and leaking oil, and replace the oil plug if necessary.

5.1. Oil usage

When adding or changing oil, be sure to use the oil specified by our company, recommended oil to use is <white mineral oil 26# or higher>.

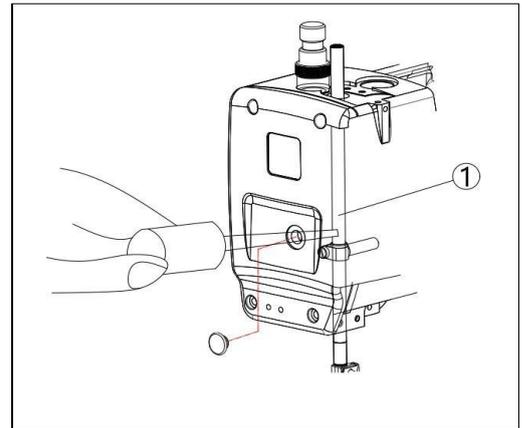


Figure 5-1

5.1. Manual oiling

When using the stitch machine for the first time or after a long period of non-use, remove the rubber stopper marked "OIL"③ and add oil to the level indicated by the line above the oil sight glass④ (Figures 5-3, 5-4). While running the stitch machine, observe the oil sight window⑤ to confirm if oil is being ejected from the nozzle (Figure 5-3).

If there is no oil, refer to "inspection and replacement of the oil filter".

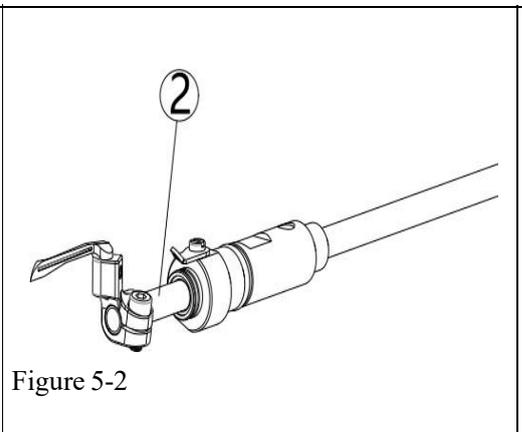


Figure 5-2

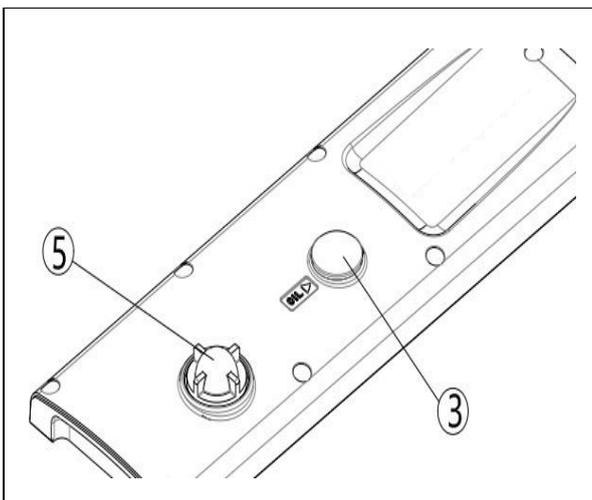


Figure 5-3

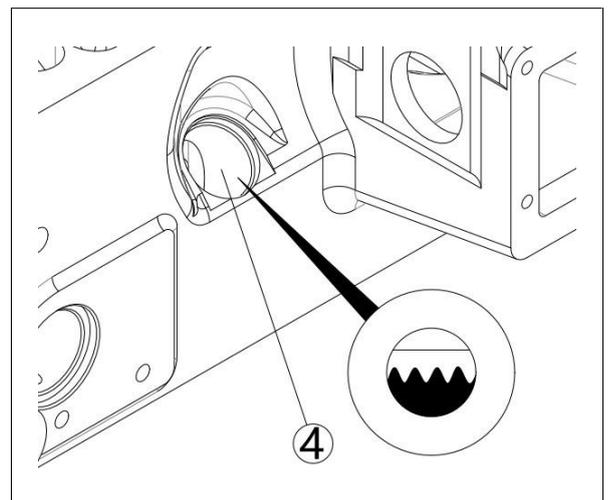
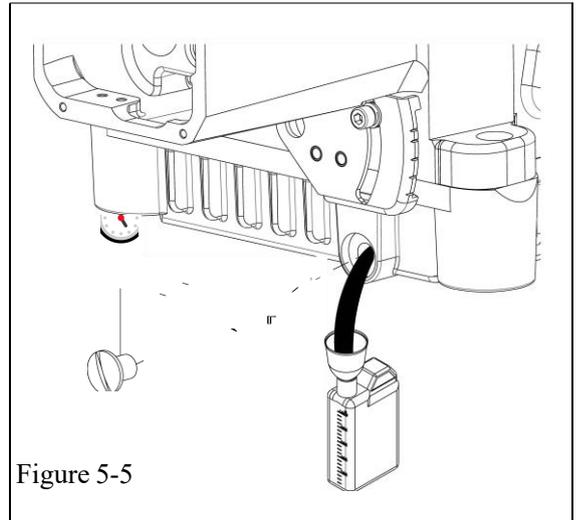


Figure 5-4

5.2. Oil change

Replacement period: For new stitch machines, replace the oil after 200 hours of use (about one month). Afterwards, replace the oil once or twice a year.

Replacement method: Loosen the oil screw ①, then remove the drain screw ① to discharge the lubricant, and reinstall it as it was after draining.



5.2. Inspection and replacement of the oil filter

The oil filter ② may be blocked with foreign objects and may not properly oil. Normally, remove the oil filter cap ③ and oil filter ② every six months; if clogging or damage is found, clean or replace the oil filter.

During use, if the oil amount ejected from the oil cap's nozzle is unusually low compared to the sufficient oil storage, or it contains a large amount of foam, immediately inspect and replace the filter.

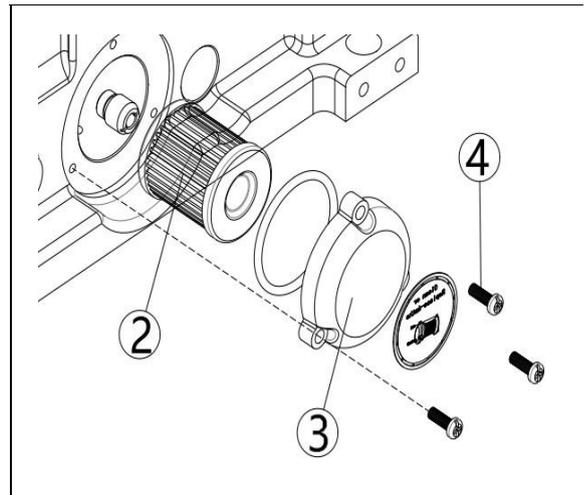


Figure 5-6

6.1. Needle replacement

Before changing the needle, turn off the power to the stitch machine. Use a wrench to loosen the screw①, remove the old needle with tweezers; when replacing the needle, face the needle groove towards yourself, insert the needle into the bottom of the needle head②, and tighten the screw① with a wrench.

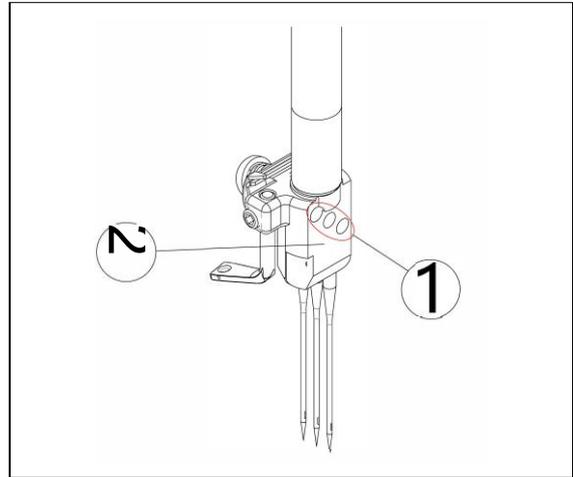


Figure 6-1

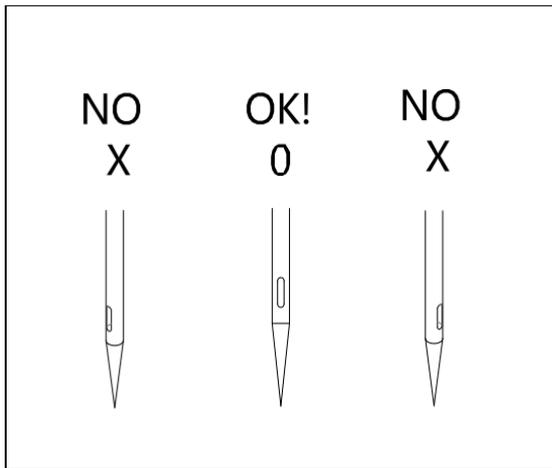


Figure 6-2

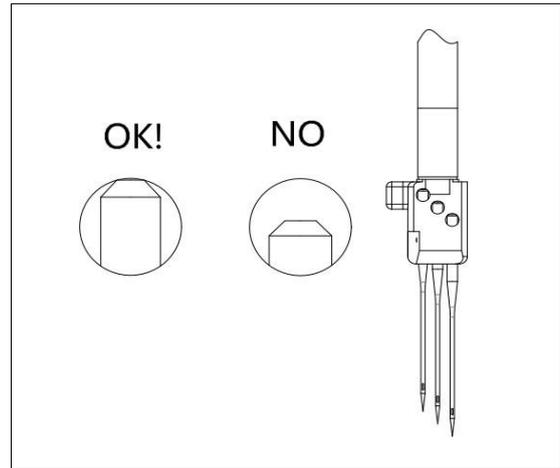


Figure 6-3

6.1. Threading method

1. Connect the threaded needle on the machine with the sewing thread. A thread: Pull the thread in front of the needle eye, cut off the joint, and re-thread the needle. The left needle's thread must be on the innermost side, follow the threading diagram to thread.

B/C thread: After pulling out the joint, cut off the joint with scissors.

2. If there is no thread on the machine, refer to the threading diagram to thread correctly; if there is already thread, secure the sewing thread properly.

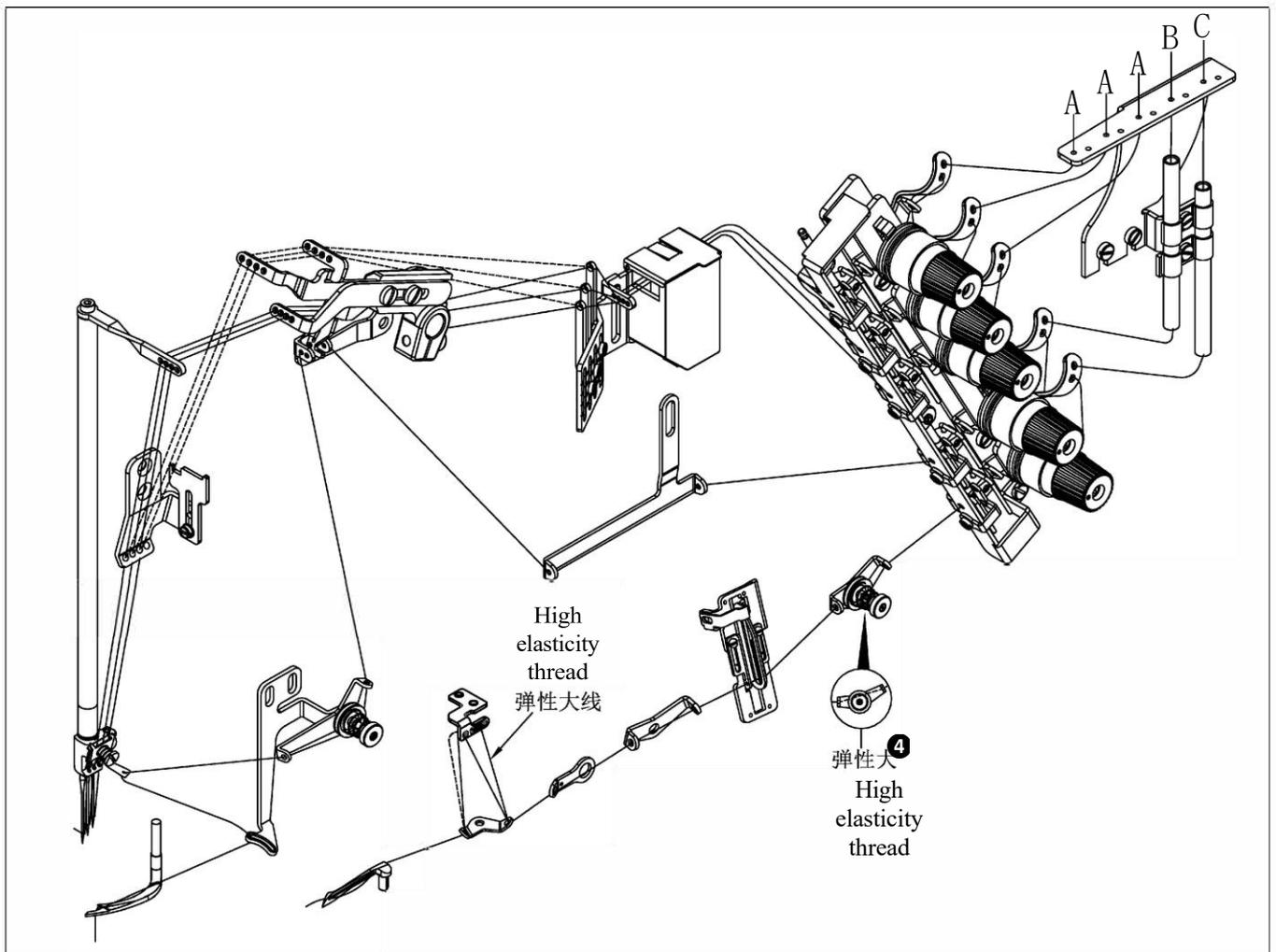


Figure 6-4

6.2. Thread tension adjustment

The thread tension varies depending on the type of fabric, thread, stitch width, stitch length, and usage conditions. Adjust using the thread tension spring cap① based on usage conditions.

Turning clockwise tightens the thread.

Turning counterclockwise loosens the thread.

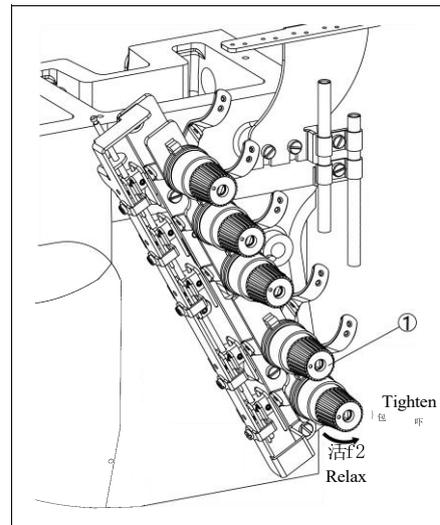


Figure 6-5

7.1. Adjustment of presser foot pressure

Adjustment is done by loosening the locking nut② and turning the adjustment screw③.

Turning clockwise for increasing the pressure

Turning counterclockwise for decreasing the pressure.

Reduce the pressing pressure within the range of stable seams as much as possible.

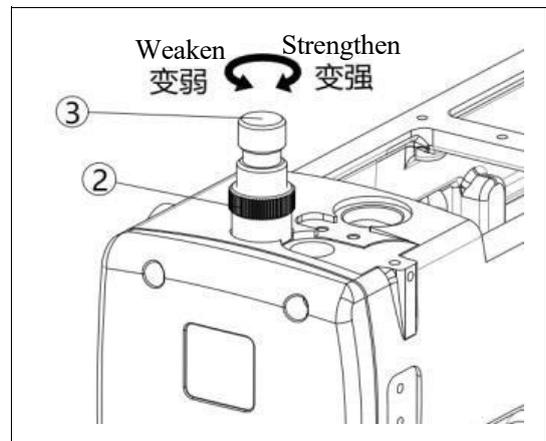


Figure 7-1

7.1. Position of the presser foot

Loosen the fixing screw④ and swing the presser foot left and right so that the needle tip lands on the center point as shown in the diagram; after adjusting, tighten the fixing screw④ again.

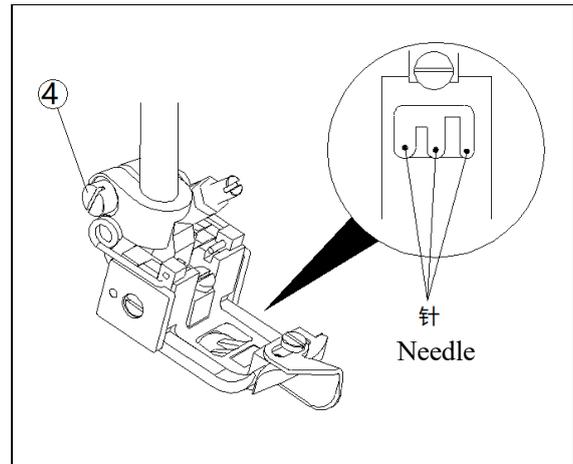


Figure 7-2

7.2. Adjustment of presser foot lift

1. Presser foot height (when needle width is 5.6mm): 6.0mm with upper feed needle; 7.0mm without upper feed needle for electromagnetic and pneumatic models, 10mm for stepper motor models.

2. When the presser foot is raised to the highest position, the upper feed needle should not contact the bottom edge of the presser foot plate, and when the presser foot is raised to a height of 4.0mm, the thread tension disc must be completely lifted.

3. When the presser foot is lowered to the needle plate surface, the bottom surface of the presser foot should fit tightly against the needle plate surface without skewing left or right or making unilateral contact.

4. The deviation between the needle center and the center of the presser needle hole must be within 0.3mm; when the needle bar is at the bottom dead point, operate the presser up and down, ensuring no interference between the presser and the needle.

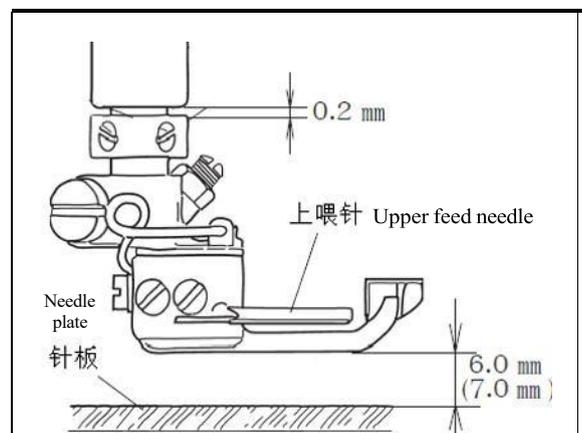


Figure 7-3

7.2. Adjustment of stitch length

Stitch length adjustable from 1.4 to 4.2mm.

The table lists the number of stitches between 25.4 millimeters and 30 millimeters in length.

The transport rod limiter^⑤ is set with a fixing screw^⑥

to ensure that it is not lower than 3.6mm at the factory (Figures 7-6, 7-7).

(

(1) Loosen the locking nut^① (Figure 7-5).

(2) Turn the transport adjustment screw^②, watching the transport scale board^③ to adjust the front end of the transport rod^④ to any position (Figures 7-5, 7-6).

(3) Turning clockwise to shorten the stitch length.

(4) Turning counterclockwise to lengthen the stitch length.

Stitch length (mm)	Number of stitches (Per inch)	Number of stitches (Between 30mm)
1.4	18.0	21.0
2.0	13.0	15.0
3.0	8.5	10.0
3.6	7.0	8.0
4.2	6.0	7.0

Figure 7-4

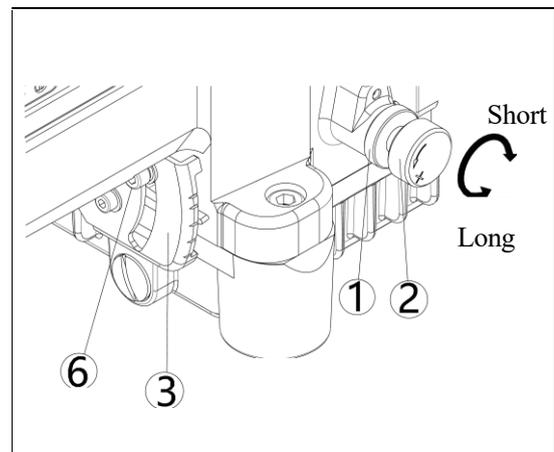


Figure 7-5

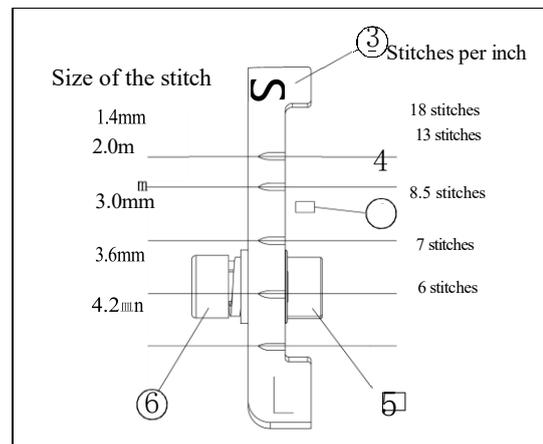


Figure 7-6

7.3. Adjustment of upper feed needle position

- (1) Loosen the upper feed needle adjustment screw③ and fixing screw④. (Figure 7-10)
- (2) Adjust the gap between the left needle and the tip of the upper feed fork② to 0.5–0.8mm. (Figure 7-7)
- (3) When the upper feed needle moves to the left dead point, adjust the distance from the tip of the upper feed fork② to the center of the left needle to 4.5–5.5mm, and tighten the fixing screw④. (Figure 7-8)
- (4) Adjust the distance from the top surface of the needle plate to the bottom surface of the upper feed needle① to 8.5–9.5mm, then tighten the adjustment screw ③. Note: To allow the decorative thread to pass behind the right needle and be picked up by the left needle, adjust within the range according to the width of the needle. (Figures 7-9, 7-10)

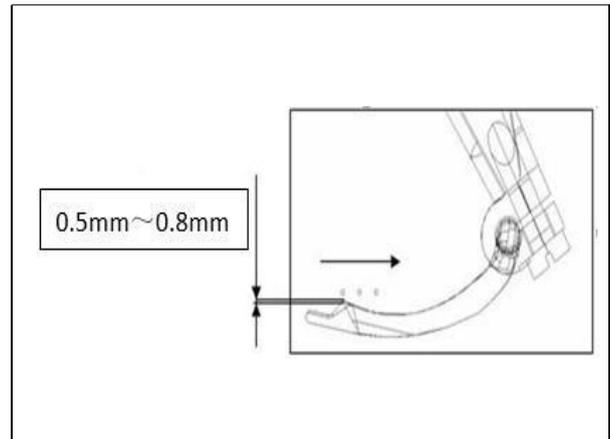


Figure 7-7

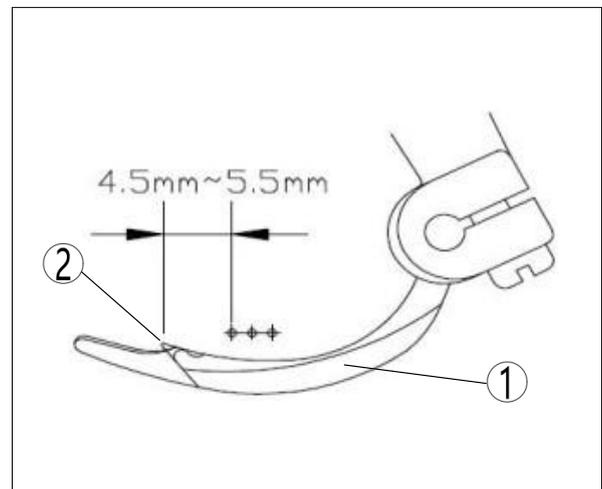


Figure 7-8

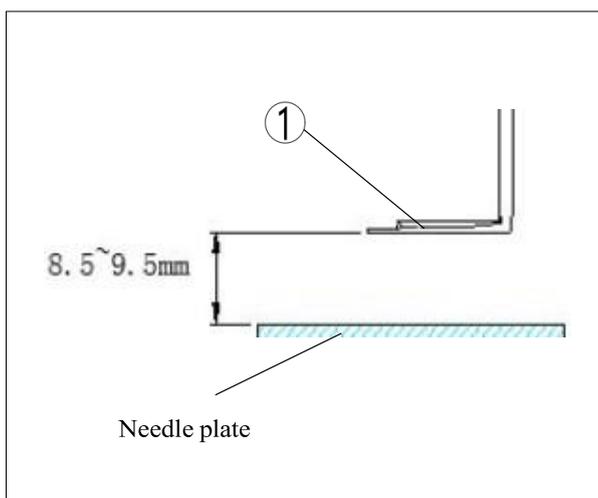


Figure 7-9

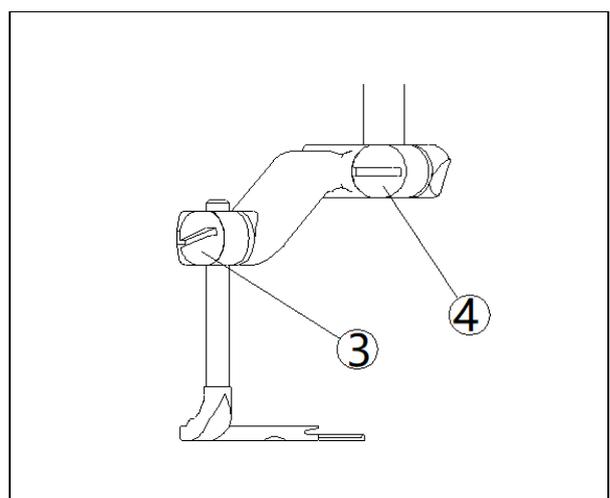


Figure 7-10

7.3. Adjustment of decorative stitch path

(1) Loosen the fixing screw③ of the upper decorative thread guide②. (Figure 7-12)

(2) With the needle bar at the lowest position, set the gap between the upper decorative thread guide② and the top surface of the decorative thread guide ① to $1\pm 0.02\text{mm}$. (Figures 7-11, 7-12)

(3) Align the thread hole of the upper decorative thread guide② with the elongation line of the slot on the decorative thread guide①. (Figure 7-12)

(4) Tighten the fixing screw③. (Figure 7-12)

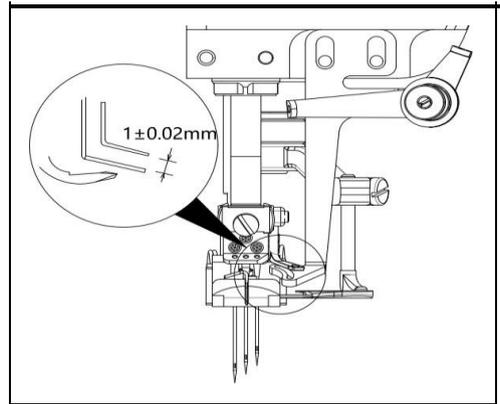


Figure 7-11

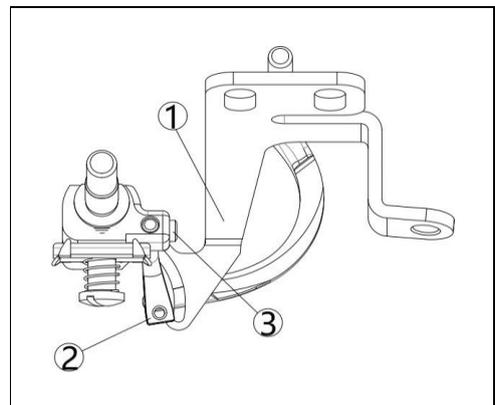


Figure 7-12

7.4. Adjustment of cam track plate

(1) Use the scale line④ as the standard position.

(2) During adjustment, loosen the fixing screws⑤ and ⑥.

(3) Moving the thread path upward tightens the lower hook thread; moving it downward loosens the lower hook thread.

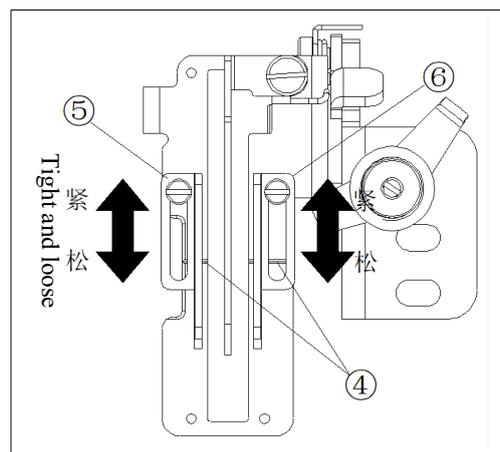


Figure 7-13

7.4 Horizontal distance of the hook

When the needle is at its lowest point and the hook① reaches the far right, the horizontal distance from the tip of the hook to the center of the right needle varies with the width of the needle; adjust according to the table by first loosening the hook fixing screw②.

Note: The maximum horizontal distance from the center of the needle to the tip of the hook① must not exceed 6.0mm.

Needle width (Symbol)	Standard symbol	Horizontal distance (L)
3.2mm(32)	A	4.4mm
4.0mm(40)	B	4.0mm
4.8mm(48)	C	3.6mm
5.6mm(56)	D	3.2mm
6.4mm(64)	E	2.8mm

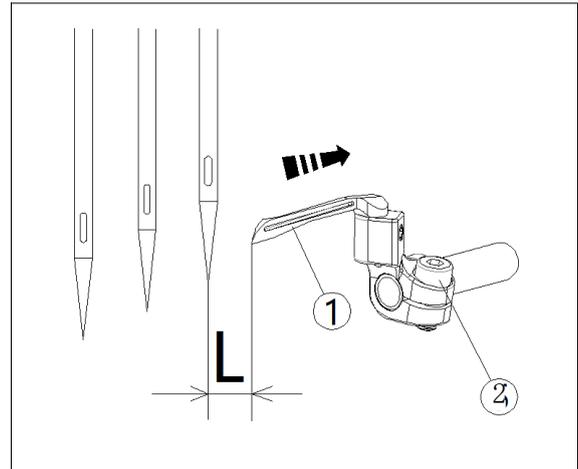


Figure 7-14

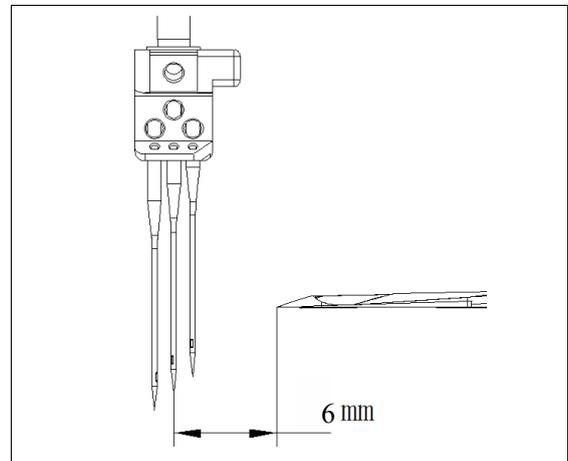


Figure 7-15

7.5 Adjustment of needle height

- (1) Adjust the hook tip to be above the left needle's threading hole on the needle bar.
- (2) Ensure that the hook is deeply inserted into the hook base.
- (3) Turn the handwheel to move the hook tip towards the center of the left needle.
- (4) As the needle moves from bottom to top and the hook moves from right to left, when the center of the needle coincides with the tip of the hook, loosen the needle bar fixing screw① so that the distance from the hook tip to the upper edge of the needle hole is 1.1 ± 0.2 .
- (5) Tighten the needle bar fixing screw①. Confirm that the needle falls into the center of the hole in the needle plate.

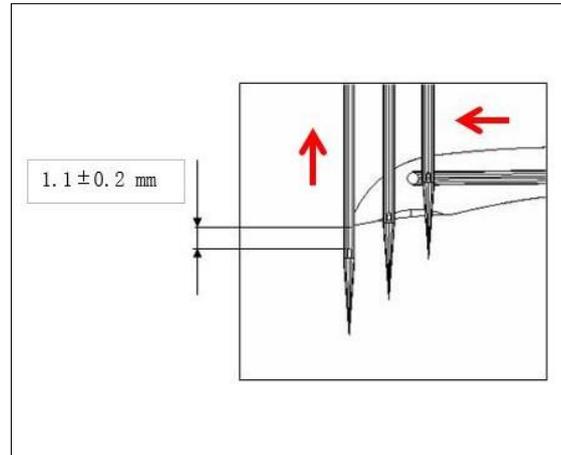


Figure 7-16

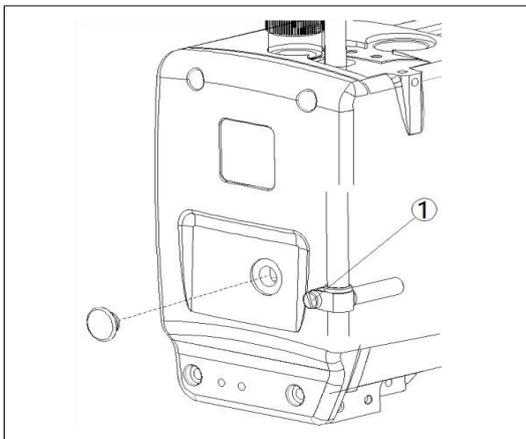


Figure 7-17

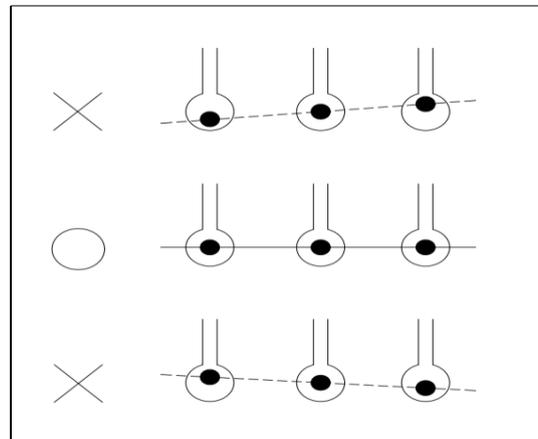


Figure 7-18

7.5 Front and rear position of needle and hook

(1) Rotate the hook tip④ to the center of the left needle⑤.

(2) Loosen the hook's fixing screw③, adjust the hook back and forth so that the distance between the back of the left needle⑤ and the tip of the hook is 0.2–0.3mm, then tighten the fixing screw③.

(3) When tightening the fixing screw③, if the hook moves forwards or backwards, tighten the fixing screw③ and then reconfirm the hook's position.

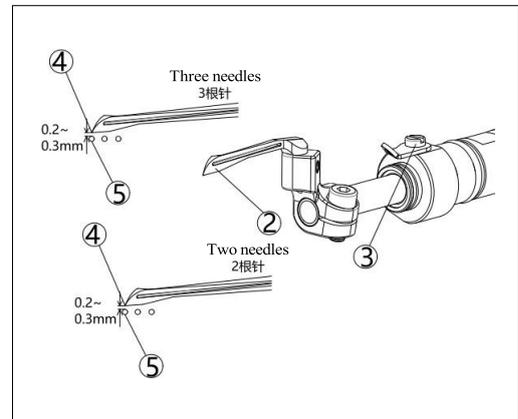


Figure 7-19

7.6 Adjustment of needle and rear thimble plate

1. Height of the rear thimble plate

(1) Turn the handwheel, raise the needle, and move the hook tip① to the center of the left needle②. (Figure 7-20)

(2) Loosen the fixing screw③. (Figure 7-21)

(3) Adjust the edge line⑤ of the rear thimble plate④ to 0–0.3mm from the tip of the left needle②. (Figure 7-20)

(4) Temporarily tighten the fixing screw③. (Figure 7-21)

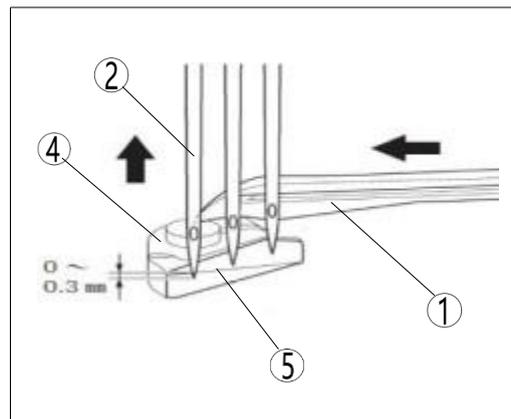


Figure 7-20

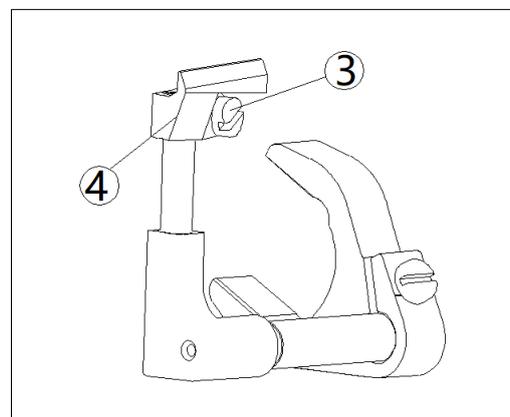


Figure 7-21

7.6 Adjustment of needle and front thimble plate

(1) Align the hook tip with the center of the right needle. (Figure 7-22)

Loosen the fixing screw②. From above, ensure the front thimble plate① is parallel to the line connecting to the needle③. Tighten the fixing screw②. (Figures 7-23, 7-24)

(2) Rotate the handwheel clockwise until the hook tip moves to the center of the left needle. (Figure 7-25)

(3) Loosen the fixing screw②, adjust the front thimble plate① so that its edge line④ is positioned 2.5–3.0mm above the needle head. (Figures 7-23, 7-25)

(4) Tighten the fixing screw②. (Figure 7-23)

(5) Loosen the fixing screws ②⑤, setting the gap between the right and left needles and the front thimble plate① to 0.2–0.3mm. (Figures 7-23, 7-24)

(6) Tighten the fixing screws②⑤. (Figure 7-23)

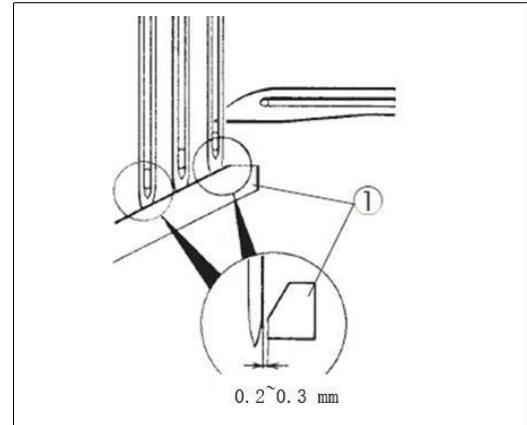


Figure 7-22

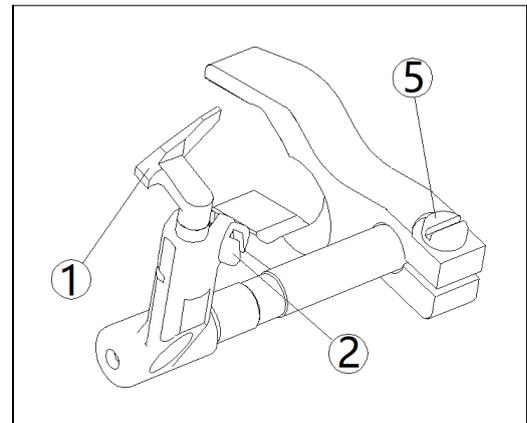


Figure 7-23

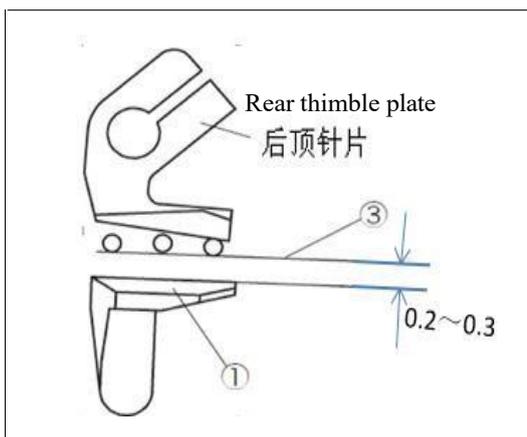


Figure 7-24

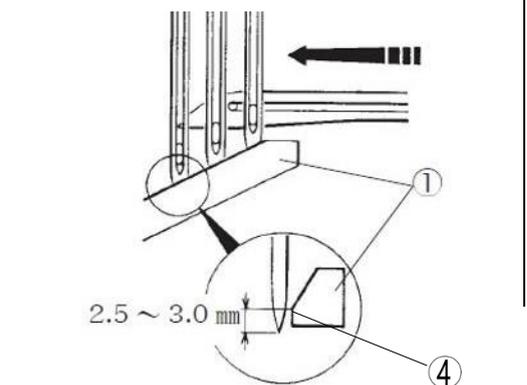


Figure 7-25

7.7 Front and rear position of rear thimble plate

Loosen the fixing screws①② for adjustment under the following conditions.

(1) When the hook③ moves from right to left, and the tip of the hook touches the center of the right needle, use the rear thimble plate ④ to push the right needle forward, creating a 0.2mm interference gap with the hook③. (Figures 7-26, 7-29)

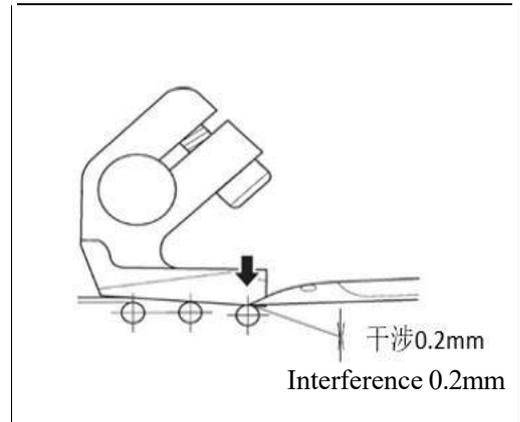


Figure 7-26

(2) Turn the handwheel to raise the needle so that the upper side of the left needle's⑥ needle hole aligns with the edge line⑤ of the rear thimble plate④, setting the gap between the needle and the rear thimble plate④ to 0.2mm. (Figure 7-27)

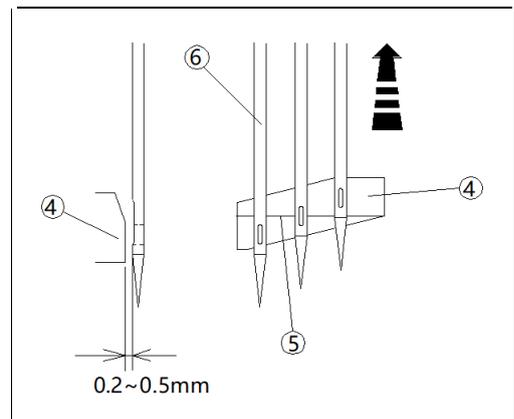


Figure 7-27

(3) When the hook tip moves to the center of the left needle⑥, gently push the left needle⑥ to touch the rear thimble plate④, setting the gap between the back edge of the left needle's groove and the tip of the hook③ to 0.2mm. (Figure 7-29)

(4) After adjustment, tighten the fixing screws ①②. (Figure 7-28)

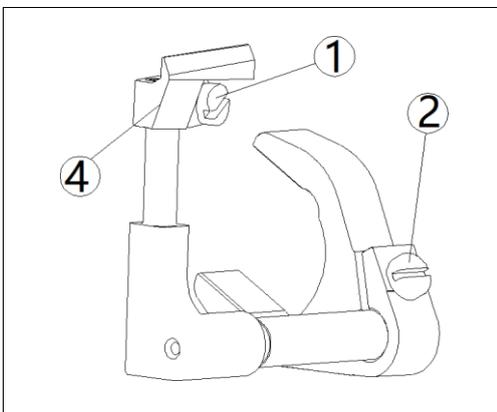


Figure 7-28

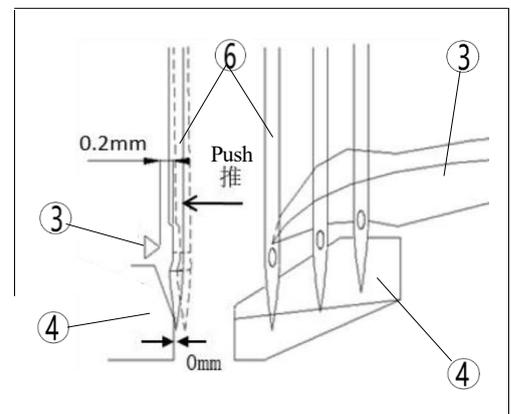


Figure 7-29

7.7 Height of the feed dog

The standard is that when the feed is at its highest, the distance between the two feed teeth and the top surface of the needle plate is 0.9–1.1mm; the front feed tooth① and the rear feed tooth② should be parallel to the top surface of the needle plate. Adjust the height of the feed teeth by loosening screws③④.

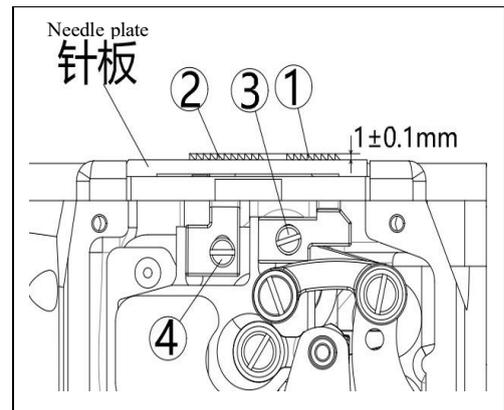


Figure 7-30

7.8 Change of differential ratio range

1. Differential ratio 1:0.9 to 1:1.8

- (1) The stitch distance should not exceed 2.5mm; exceeding this range can cause machine damage.
- (2) Loosen the screw on the control lever stop⑤ and move the control lever stop⑤ to the top position.
- (3) Loosen the adjustment nut⑥, turn the differential adjustment screw⑦, and adjust the differential ratio.
- (4) Tighten the adjustment nut⑥. (Figure 7-31)



Figure 7-31

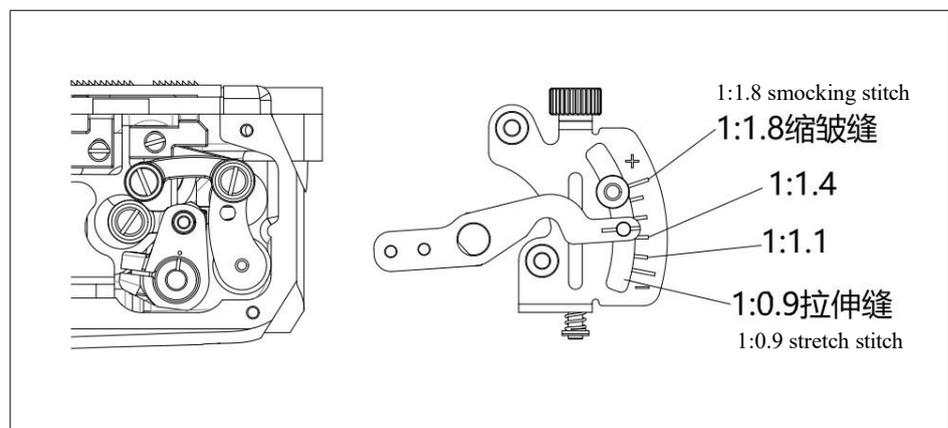


Figure 7-32

2. Differential ratio 1:0.6 to 1:1.1

- (1) Remove the horizontal cover ①. (Screws at four places) (Figure 7-33)
- (2) Remove the fixing screw③ of the differential tooth frame linkage②. (Figure 7-35)
- (3) Use the fixing screw③ to install the differential tooth frame linkage② on the screw hole④. (Figure 7-35)

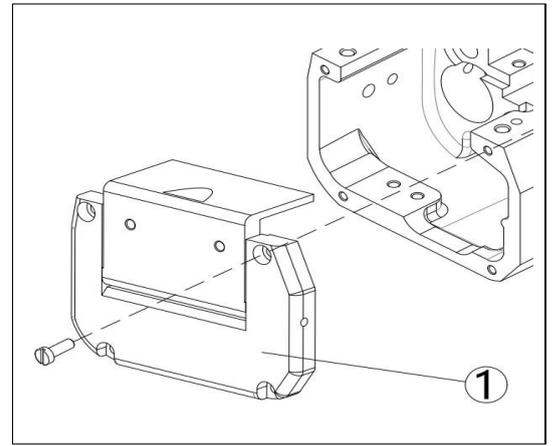


Figure 7-33

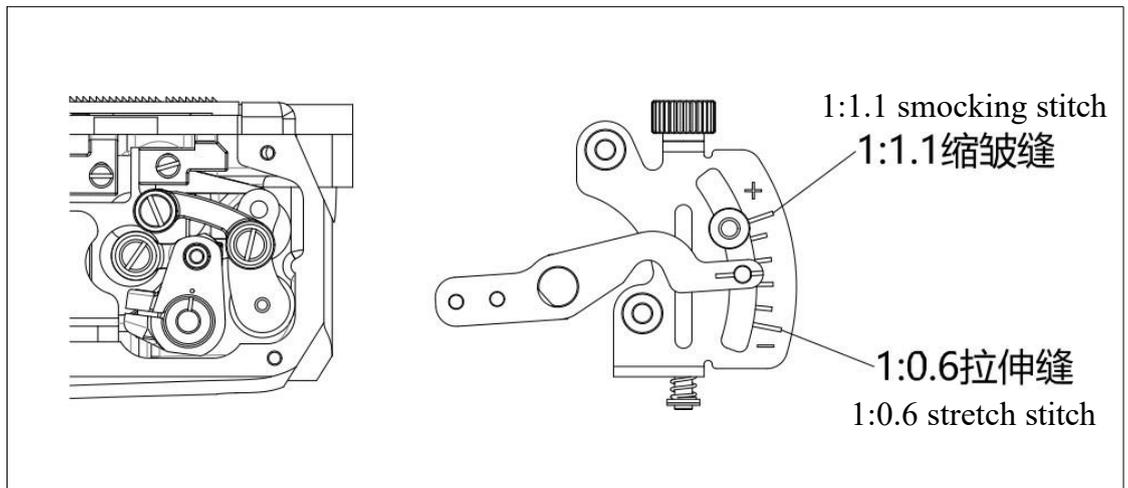


Figure 7-34

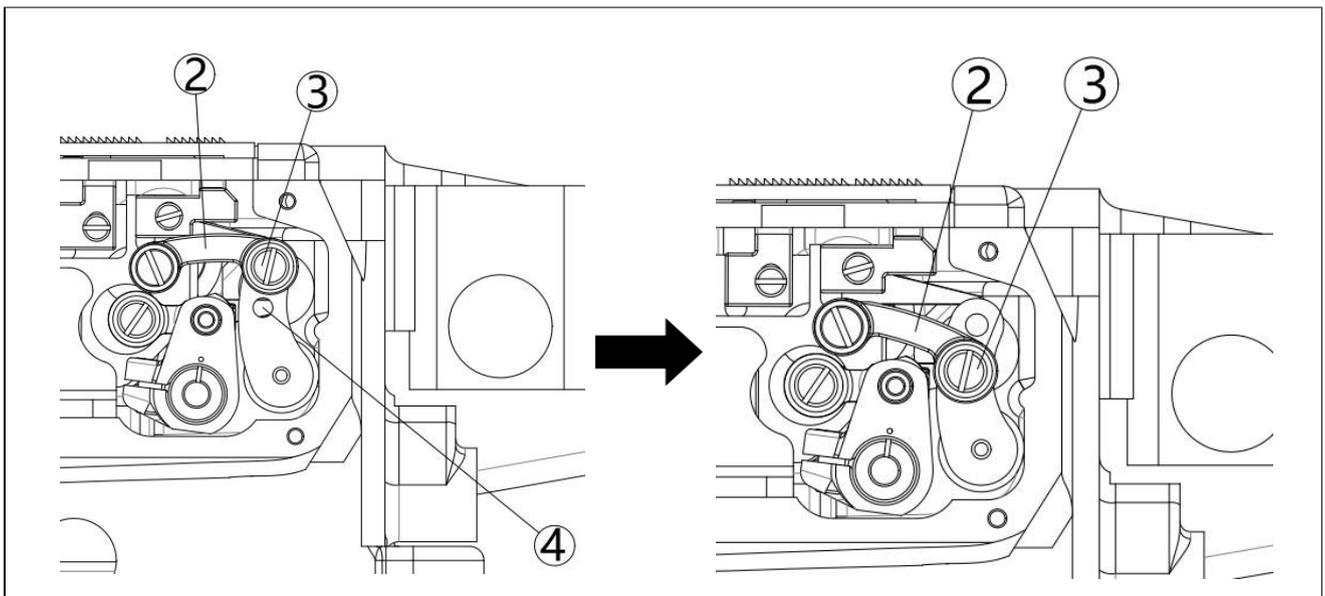


Figure 7-35

7.8 Adjustment of differential ratio

1. The factory-set differential ratio is between 1:0.9 and 1:1.4.
2. When the stitch distance is below 2.5mm, the maximum differential is between 1:0.9 and 1:1.8.
3. Changing the linkage position can achieve a differential of 1:0.6 to 1:1.1.

(1) Loosen the adjustment nut③.

(2) Turn the differential adjustment screw④ to adjust the action of the differential teeth.

When making a smocking stitch, turn clockwise.

When making a stretch stitch, turn counterclockwise.

(3) After adjustment, tighten the adjustment nut③. (Figure 7-37)

When aligning the differential adjustment lever① with the scale line② on the differential feed dial, the action of the differential feed teeth and the main feed teeth will synchronize (differential ratio 1:1), ensuring the sewing action is synchronized. (Figure 7-38)

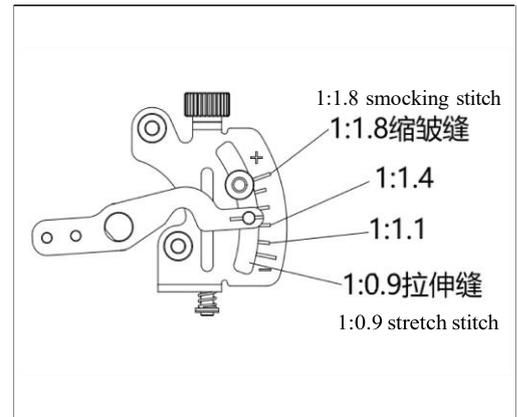


Figure 7-36

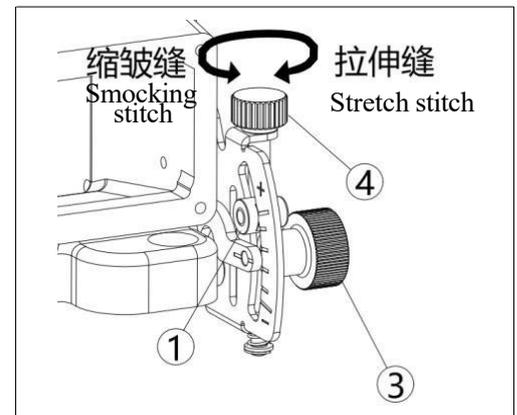


Figure 7-37

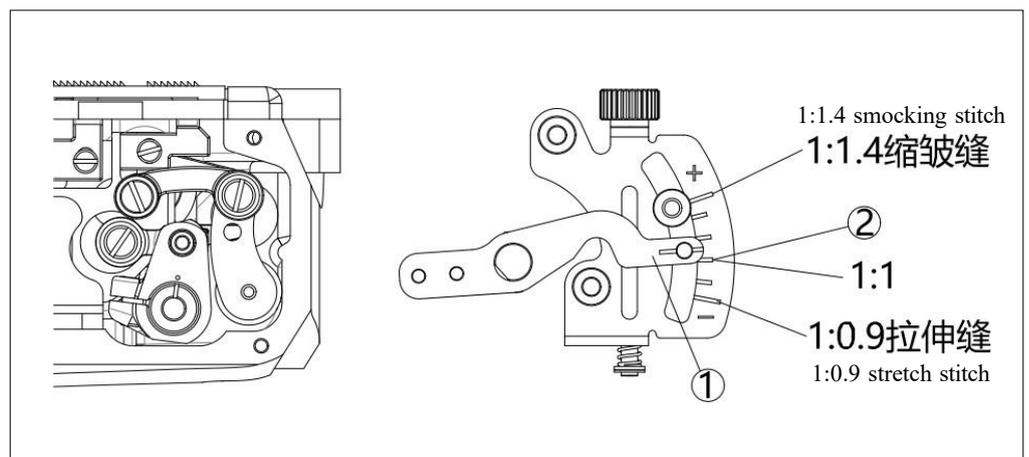


Figure 7-38

