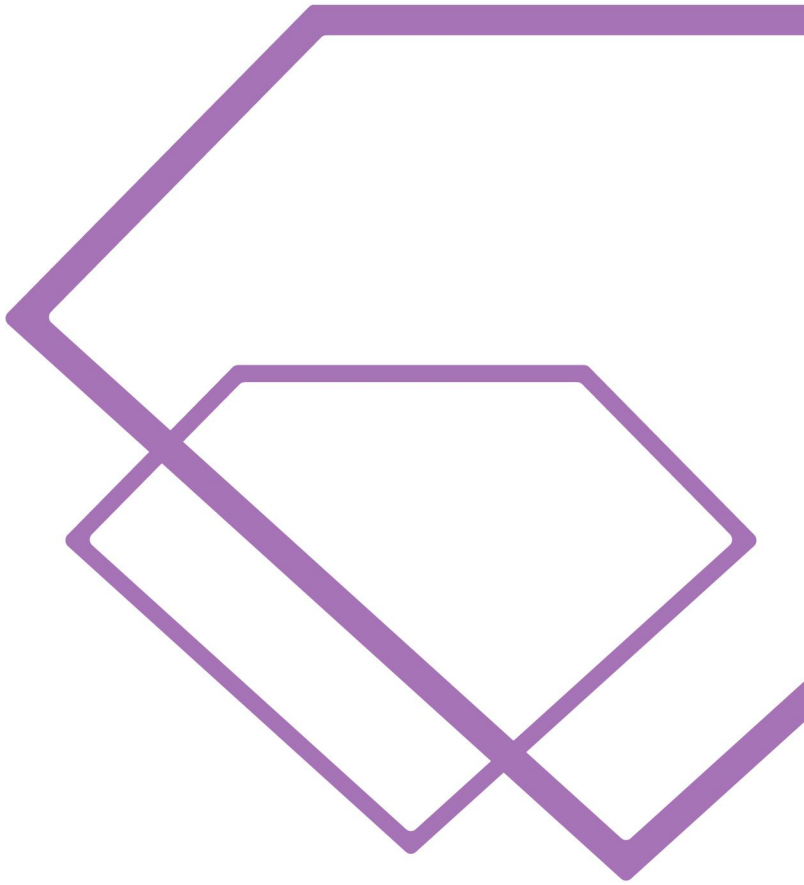
新一代智能缝纫机
THE NEW GENERATION OF INTELLIGENT SEWING MACHINE

HIKARI® 富山

使用说明书
INSTRUCTION MANUAL



HMS-5040 系列 Serles

模板机
AUTOMATIC TEMPLATE MACHINE

V1.00

CONTENTS

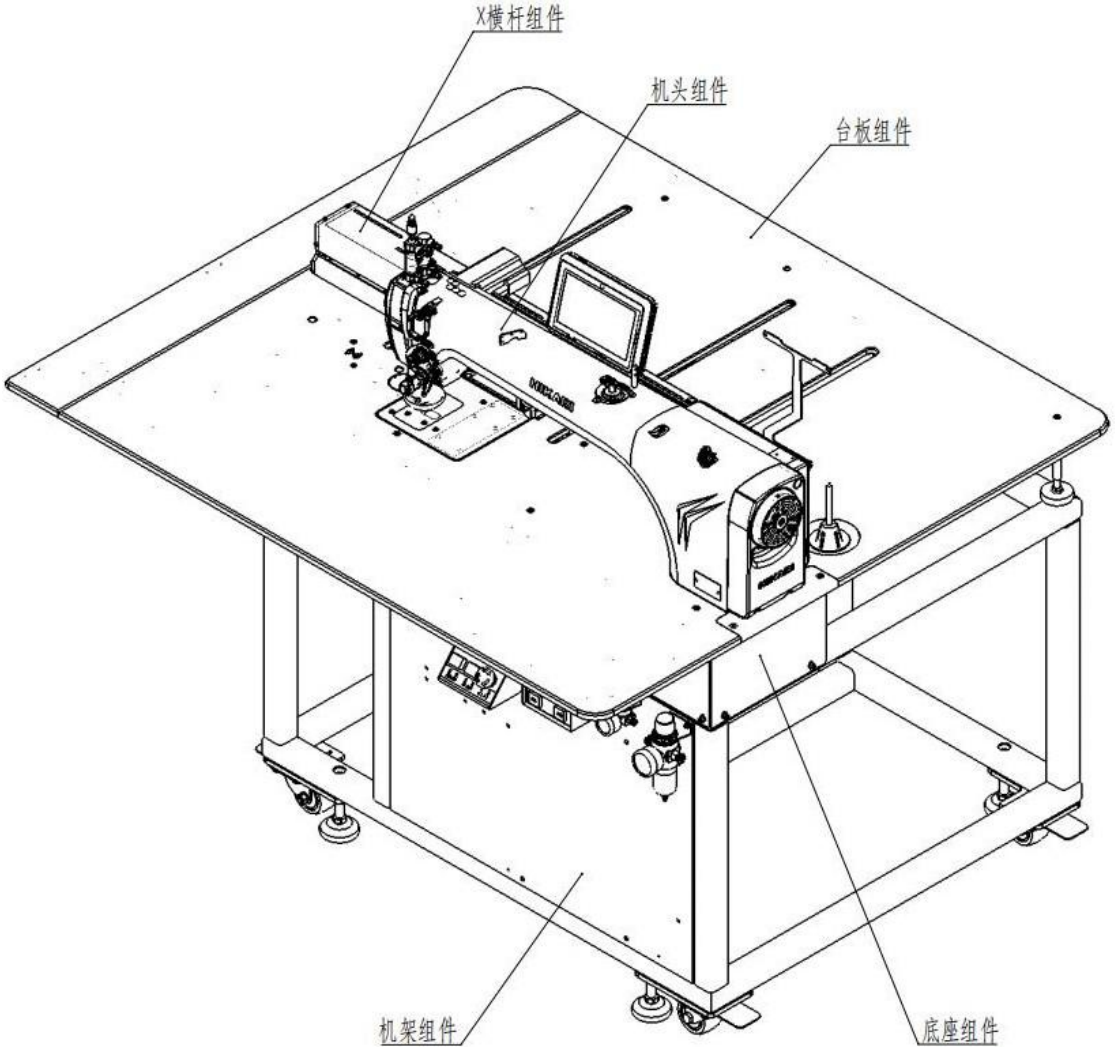
Compact Template Machine

⚠ *Please read the following instructions carefully before using this product.*

Product Performance Index

HMS-5040 Compact Template Machine Performance Index			
	Item(s)	Scope	Specifications
Process Index	Sewing Range	X: 500mm Y: 400mm	
	XY axis driving method	X-axis screw lever drive Y-axis screw lever drive	
	Maximum Sewing Speed	3600(rpm/min)	
	Idling Moving Speed	80m/min	
	Template Sensing Identification	Automatic Identification	
	Remote Data Function	YES	
	Thread Breaking Detection	YES	
	Marker	YES	
	Sewing from the Break Point	YES	
	Automatic Thread Releasing	YES	
	Stitch Spacing	0.1-12.7(mm)	
System Parameters	Panel program upgrading method supported	USB	
	Touch Screen	7- inch Color Touch Screen	
	Thread Breaking Detection Types	Copper Sensing	
	Power Supply Voltage Range	220V/50HZ± 10%	
	Spindle Motor	AC servo motor 550W	
	Operating Environment Temperature	0℃~45℃	
	Operating Environment Humidity	35%～95% (no condensation)	
	Rated Air Pressure	≥0.5MPa, 1.8L/min	
	Pneumatic Components	AIRTAC	
	Operating Atmospheric Pressure	86kPa~106kPa	

1.Parts Description

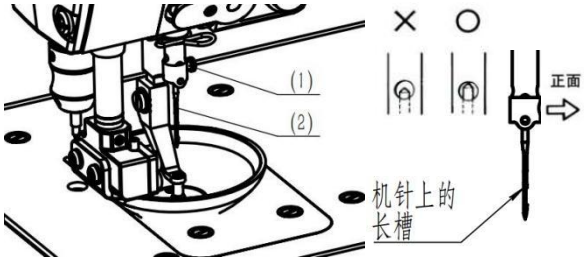


2.Preparation Before Sewing

2-1 How to Install the Needle

Note

Please turn off the power when installing the needle.
The sewing machine movements may cause personal injury once the Start button is accidentally pressed.

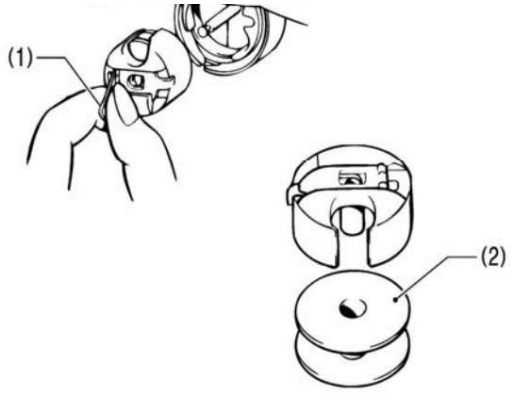


1) Rotate the sewing machine handwheel and move the needle bar to the highest position.
2) Loosen the screw (1).
3) Insert the needle (2) straight into place, ensure that the needle's longer slot is on the left side, and then tighten the screw (1).

2-2 How to Install and Dismantle the Bobbin Case

Note

Please turn off the power when removing the bobbin case.
The sewing machine movements may cause personal injury once the Start



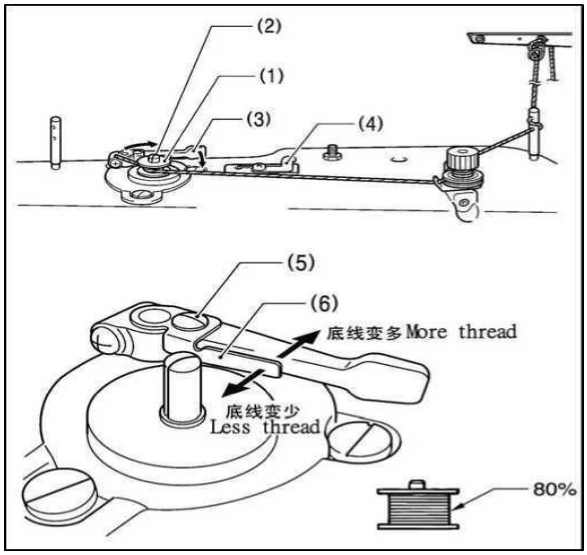
1) Rotate the handwheel to raise the needle until it is above the needle plate.
2) Pull the latch (1) of the bobbin case upward, and then dismantle the bobbin case.
3) Remove the bobbin (2) after the latch (1) is released.

* There is a rotating shuttle freeze spring (3) in the bobbin case. The rotating shuttle freeze spring (3) prevents the bobbin from idling in the event of thread trimming and the like.
* Use of the bobbin (2) made of lightweight alloy.

2-3 How to Wind the Bottom Thread

Note

DO NOT touch any moving parts or put objects against moving parts during the thread winding process, as this may cause personal injury or damage to the sewing machine.



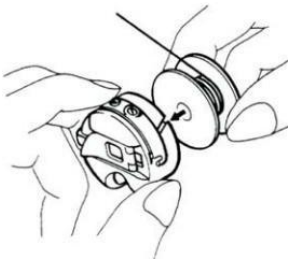
1) Turn on the power switch.
2) Place the bobbin (1) on the spool (2).
3) Wind the thread on the bobbin (1) several times in the direction shown by the arrows.
4) Push the bobbin lever (3) towards the bobbin (1).
5) Click Next Page on the panel and press Start. Then start winding the bottom thread.
6) Once the bottom thread winding is completed, the bobbin lever (3) returns automatically.
7) After the bottom thread is wound, the bobbin is removed, and the thread is cut with the cutter (4).

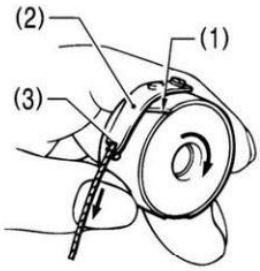
* Loosen the screw (5) and move the bobbin lever (6) to adjust the amount of bottom thread on the bobbin. Note:
The amount of bottom thread on the bobbin should be at most 80% of the bobbin's capacity.

2-4 How to Install and Remove the Bobbin Case

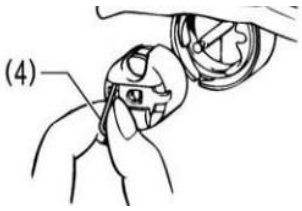
Note

Please turn off the power when removing the bobbin case.
The sewing machine movements may cause personal injury once the Start button is accidentally pressed.





1) Rotate the handwheel to raise the needle until it is on the needle plate.
2) Hold the bobbin in order to wind the bottom thread to the right and insert the bobbin into the bobbin case.
3) Pass the bottom thread through the thread slot (1) and underneath the clamping spring (2), then pull it out of the thread guide (3).
4) While the bottom thread is pulled out, check if the bobbin turns in a clockwise direction.
5) Hold the latch (4) by hand and insert the bobbin case into the rotating shuttle.



2-5 Threading of the Upper Thread

Note

Please turn off the power when removing the bobbin case.
The sewing machine movements may cause personal injury once the Start button is accidentally pressed.

Rotate the handwheel before threading the upper thread, and place the thread take-up lever (1) in the highest position. This makes threading easier and prevents the upper thread from falling off at the beginning of sewing.

3.Sewing

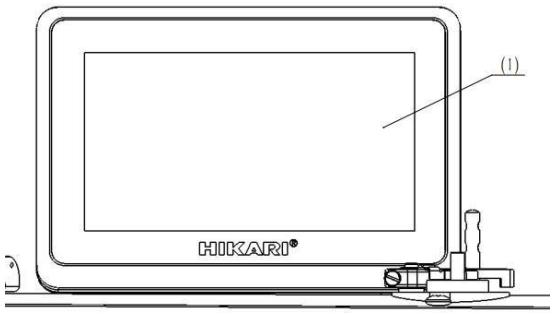
Note

For safety purposes, please install the protective devices before using the sewing machine.

Turn off the power when the following conditions occur.
Otherwise, the sewing machine movements may cause personal injury once the Start button is accidentally pressed.

- The needle is in threading.
- The needle or bobbin is being replaced.
- The sewing machine is not in use or the person using the sewing machine is away.

3-1 Sewing Method



1) Develop the programs required for sewing.

4.Sewing Effect

4-1 Adjustment of Thread Tension

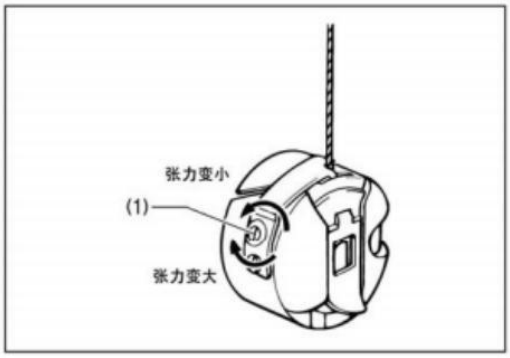
Note

Please turn off the power when removing the bobbin case.
The sewing machine movements may cause personal injury once the Start button is accidentally pressed.

Proper stitching

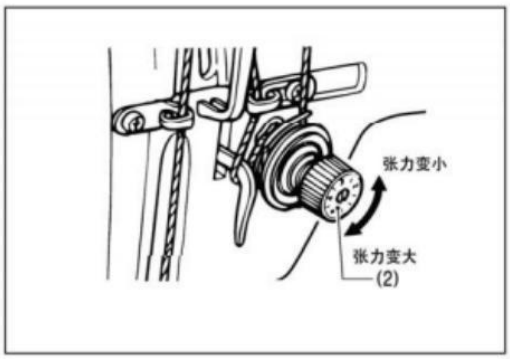
Upper thread
bottom thread

The upper thread tension is too weak, or the bottom thread tension is too strong.	Increase the upper thread tension. Decrease the bottom thread tension.
 The upper thread tension is too strong, or the bottom thread tension is too weak.	Decrease the upper thread tension. Increase the bottom thread tension.



<Bottom thread tension>

Pull the exposed thread end from the bobbin case and adjust it by rotating the tuner screw (1) until the bobbin case slowly drops by its own weight.



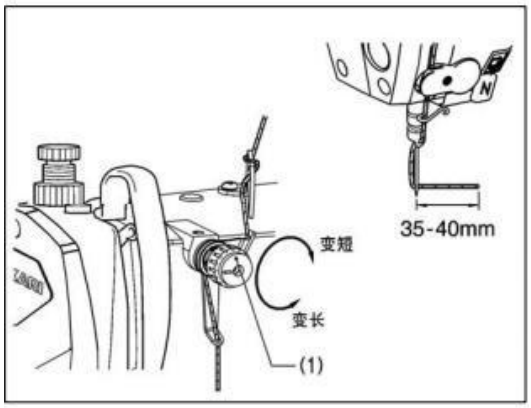
<Upper thread tension>

After adjusting the bottom thread tension, adjust the upper thread tension to make the stitches even and flat.

1) Lower the presser foot.

2) Make any necessary adjustments by rotating the clamping nut (2).

4-2 Adjustment of Residual Length of Upper Thread After Thread Trimming



• Apply tension only with the yarn trapper (1) when the loose thread tension occurs during thread trimming.
• The essential residual length of the upper thread is 35-40mm.
• If the tension is increased by using the yarn trapper (1), the residual length after thread trimming will decrease; if the tension is decreased, the length will increase.

Make any necessary adjustments by rotating the yarn trapper (1).

5.Maintenance

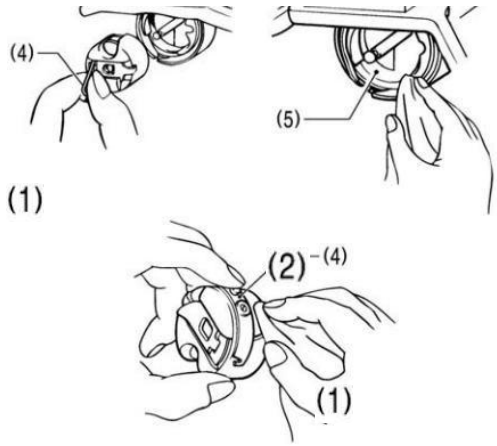
Note

Please turn off the power before starting cleaning.

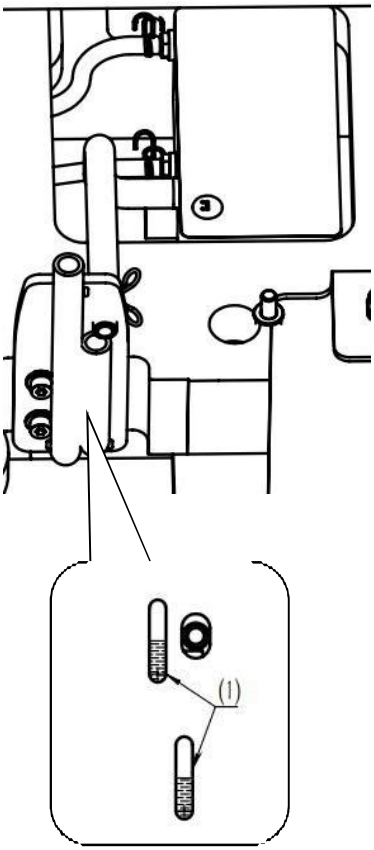
When using lubricants and greases, be sure to wear protective glasses and gloves, to prevent lubricants from falling into the eyes or getting on the skin and causing inflammation.

5-1 Daily Cleaning Procedure

Please maintain your sewing machine daily to ensure its functionality and long-term use. Also, if the sewing machine has not been used for a lengthy period of time, please use it after maintenance as follows.



1) Maintenance
(1) Remove the bobbin case (1).
(2) Wipe off the dust from the rotating shuttle (2) with a soft cloth and check if the rotating shuttle (2) is damaged.
(3) Remove the bobbin from the bobbin case (1) and then clean the bobbin case (1) with a cloth.
(4) Put the bobbin into the bobbin case (1) before reloading the bobbin case (1) into the sewing machine.



2) Lubrication

A.

Gearbox lubricant level Note:

· Check the lubricant level of the gearbox immediately after squatting down in front of the sewing machine.

<Check the lubricant level>

The lubricant level is generally at the position on the center baseline of the viewing window (1). (About 80ml has been added to the gear at delivery)

(1) Examine the viewing window (1) from the front.

(2) If the level is lower than the proper position, add lubricant as follows.

<Refueling method>

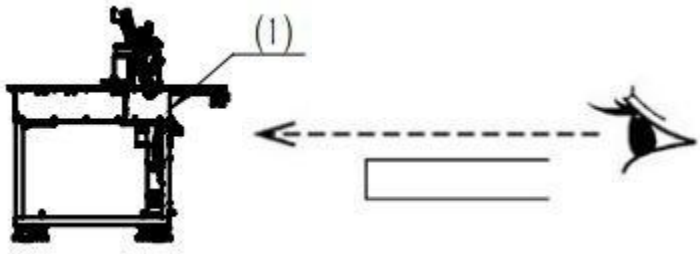
Use ONLY the lubricant specified by HIKARI.

(1) Add lubricant until the level is generally at the position on the center baseline of the viewing window (1).

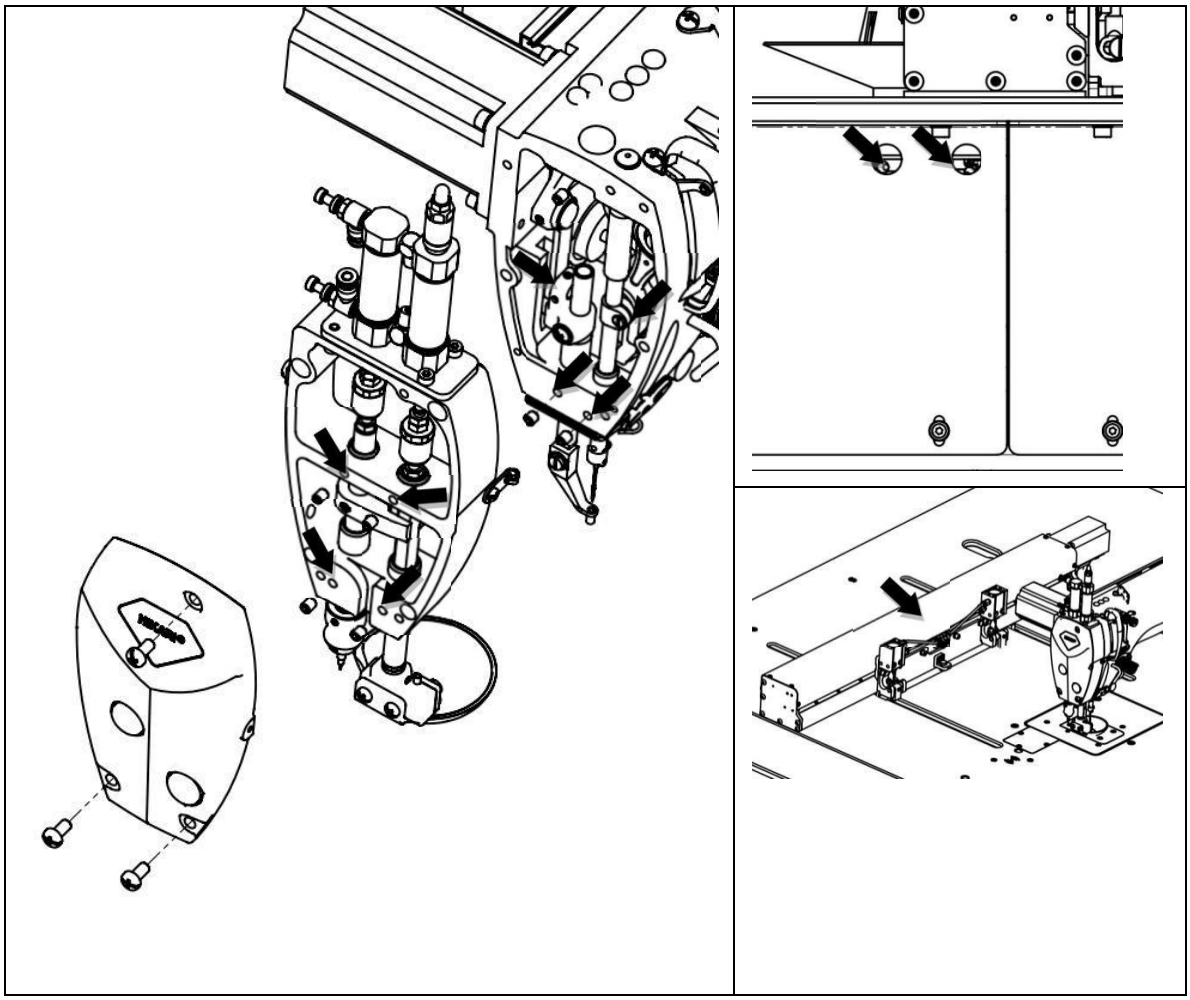
DO NOT immediately fill the can with all of the lubricant at this point. Fill 10 ml of lubricant at a time and check the viewing window (1) simultaneously.

Note:

DO NOT add excessive lubricant at the specified location. Otherwise, it may cause the lubricant leakage.



5-2 Lubrication



(1). Use the grease specified by HIKARI and turn off the power.

(2). Remove the screws and set screws.

(3). Add grease to each hole until the grease comes out slightly.

(4). Tighten the screws and set screws to force in the grease.

(5). Rotate the handwheel by hand and move the needle bar up and down several times to spread the grease.

(6). Wipe off any excessive grease around the screws and set screws and under the needle bar shaft D with a cloth.

(7). Add grease to the corresponding position of the screw guide. Then turn on the sewing machine and make the Y-axis screw guide move to spread the grease.

(8) To add grease to the X-axis screw guide, disassemble the X-axis lever shell and then add grease.

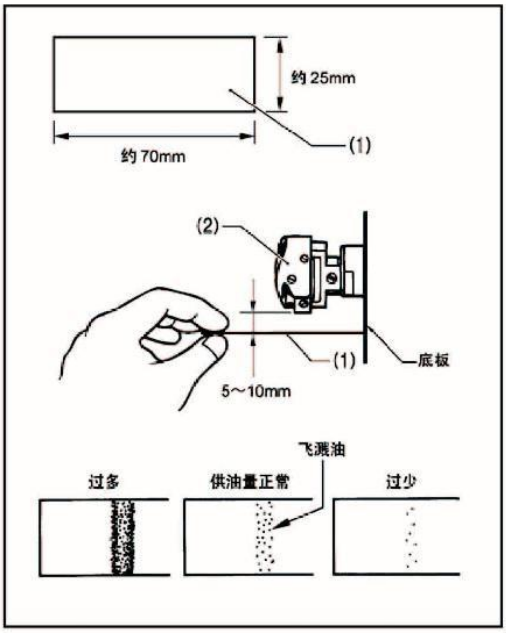
5-3 Inspection

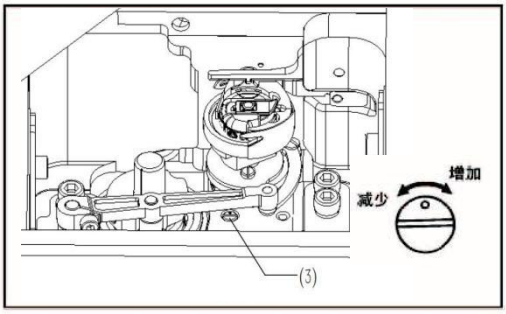
(1) Replace the needle if it is bent or broken.
(2) Check if the upper thread is properly threaded.
(3) Perform a trial stitch.

6. Adjustment of Rotating Shuttle Lubricant Amount

Note

When checking the rotating shuttle lubricant supply, do not let your fingers or the lubricant test strip come into contact with any moving parts, including the rotating shuttle and scissor mechanism. This may cause injury to personnel.





<Confirmation of Lubricant Supply Amount>

1) Remove the thread from the thread take-up lever to the needle.

2) Perform an idling at the actual sewing speed of the sewing machine for about one minute.
(Moderately intermittent operation).

3) Insert the lubricant test strip (1) under the rotating shuttle (2) and hold it, then run the sewing machine for 10 seconds at its actual sewing speed.
(There are no requirements for the lubricant test strip.)

4) Confirm the amount of lubricant splashed onto the test strip.
Make any necessary adjustments as follows

<Adjustment of Lubricant Supply Amount>.

Note:

If the result of the lubricant supply check does not match the status shown in the left figure (the lubricant splashed on the strip is in a full band or not splashed at all), turn the lubricant supply tuner screw (3) to the right to tighten it completely, then turn it to the left to unscrew it two and a half turns. With it loosened, make the following adjustments.

<Adjustment of Lubricant Supply Amount>

1) Turn the lubricant supply tuner screw (3) to adjust the lubricant supply.

- Turn the lubricant supply tuner screw (3) to the right and then the lubricant supply is increased.
- Turn the lubricant supply tuner screw (3) to the left and then the lubricant supply is decreased.

2) Check the lubricant supply amount as described in [Confirmation of Lubricant Supply Amount] above.

*Turn the lubricant supply tuner screw (3) repeatedly to adjust and check the lubricant supply. Until the proper lubricant supply amount is obtained.

3) Check the lubricant supply again after two hours of sewing.

7. Standard Adjustment

Note:

Only trained technical personnel may perform repair, maintenance, and inspection of the sewing machine.

Turn off the power and unplug the power outlet when the following conditions occur.
Otherwise, the sewing machine movements may cause personal injury once the presser foot pedal is accidentally stepped down.

For electrical-related repair, maintenance, and inspection, please have the machine inspected, adjusted, and repaired by the store staff where you purchased it or by an electrical specialist.

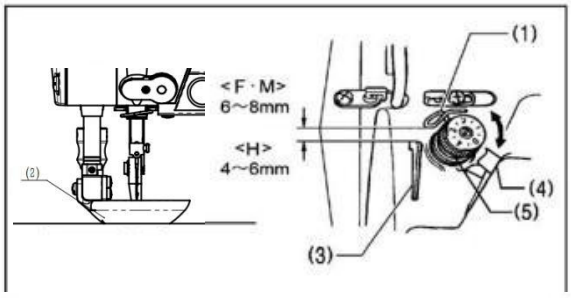
·When reinstalling the safety protection devices removed because of the replacement of the rotating shuttle, cutter, and other fragile parts, be sure to install them in their original position and check that they function properly.

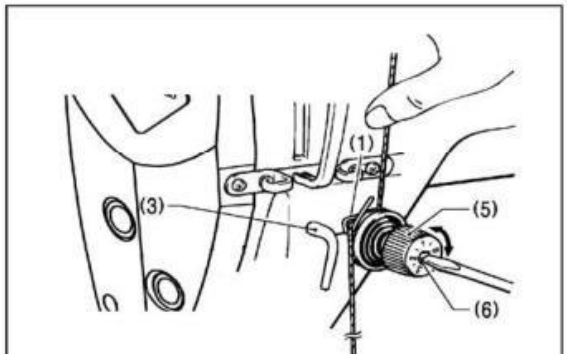
Be sure to follow all safety precautions very carefully when the power has to be ON.

Please use both hands to operate the sewing machine when its head is down or up.

The weight of the sewing machine may cause injury in case of slipping when it is operated with one hand.

7-1 Thread Take-up Spring





<Position of Thread Take-up Spring>

The standard position of the thread take-up spring (1) is 6 to 8 mm above the guide (3) [H specifications: 4 to 6 mm] when the presser foot (2) is down.

1) Lower the presser foot (2).

2) Loosen the screw (4).

3) Adjust the rotatory position of the clamping lever holder (5).

4) Tighten the screw (4).

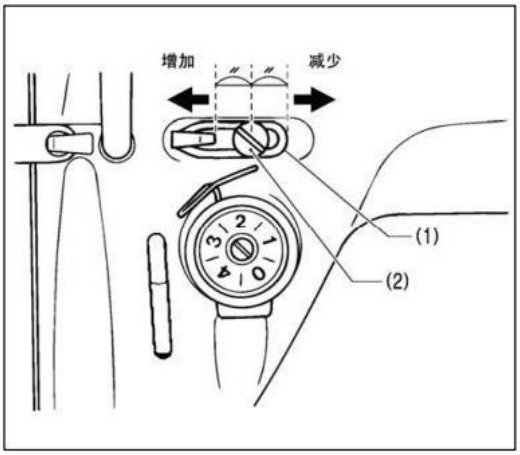
<Strength of Thread Take-up Spring>

The standard strength of the thread take-up spring (1) is shown below, as per the specifications.

F Specifications	0.1-0.24N
M Specifications	0.25-0.35N
H Specifications	0.3-0.5N

1) Hold the upper thread with your fingers at a point slightly above the clamping lever holder (5), so that the thread is not pulled out.
2) Pull the upper thread downward until the thread take-up spring (1) is at the same height as the base of the thread guide (3), and then measure the strength of the thread take-up spring (1).
3) Insert the screwdriver into the slot of the thread clamping screw (6) and rotate the screwdriver to adjust the strength of the thread take-up spring (1).

7-2 Thread Guide of the Shell

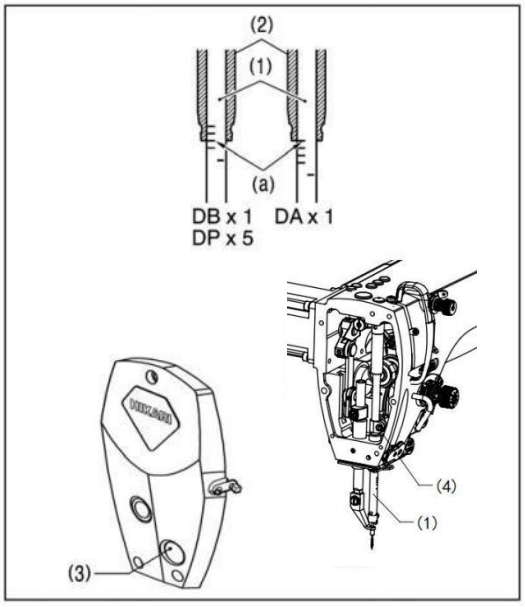


The standard installation position of the thread guide R (1) of the shell is at the point where the screw (2) is located in the center of the adjustable range of the thread guide R (1) of the shell.

*Loosen the screw (2) and move the thread guide R (1) of the shell to adjust the position.

- When sewing thick fabric, move the thread guide R (1) of the shell to the left. (The amount of thread take-up increases)
- When sewing thin fabric, move the thread guide R (1) of the shell to the right. (The amount of thread take-up decreases)

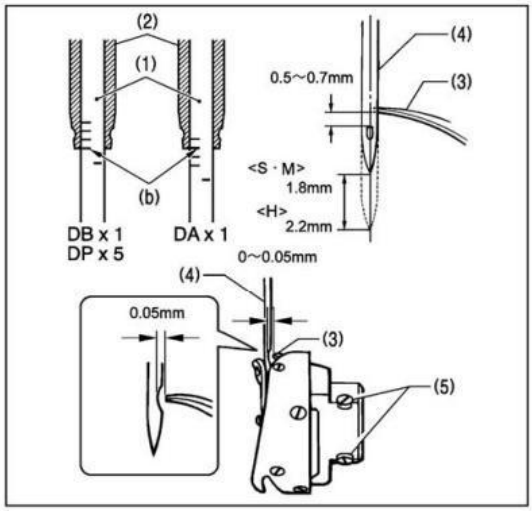
7-3 Height of Needle Bar



When the needle bar (1) reaches its lowest position, the base line (a) of the needle bar (1), as shown in the figure, is to be aligned with the lower end of the needle bar bushing (2).

1) Rotate the sewing machine handwheel and move the needle bar (1) to the lowest position.
2) Remove the rubber plug (3) from the panel.
3) Loosen the bolt (4) and move the needle bar (1) up and down for adjustment.
4) Tighten the screw (4).
5) Install the rubber plug (3)

7-4 Synchronization of Needle and Rotating



When the needle bar (1) is lifted from its lowest position to 1.8 mm (2.2 mm for H specifications), as shown in the figure, and the baseline (b) is aligned with the lower end of the needle bar bushing (2), the center of the rotating shuttle tip (3) and the needle (4) have to be aligned.

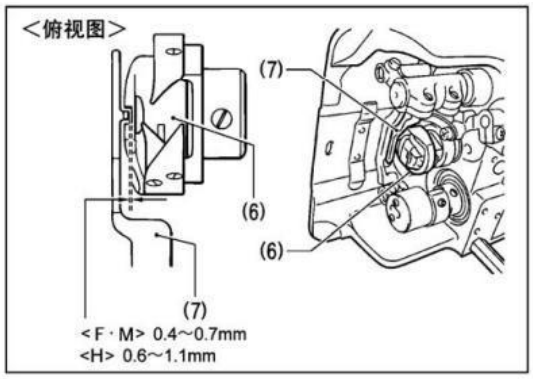
(At this point, the clearance between the upper edge of the needle eye and the rotating shuttle tip is 0.5~0.7mm).

1) Rotate the sewing machine hand wheel so that the needle bar (1) is lifted from its lowest position to the baseline (b) as shown in the figure, which is aligned with the lower end of the needle bar bushing (2).

2) Loosen the screw and three set screws (5) so that the rotating shuttle tip (3) is aligned with the center of the needle (4).

At this point, the clearance between the rotating shuttle tip (3) and the needle (4) is 0~0.05mm.

4) Tighten the set screws (5). [Three screws]



<Clearance confirmation between the rotating shuttle and the rotating shuttle positioning hook>

To allow the thread to pass smoothly, the clearance between the rotating shuttle (6) and the rotating shuttle positioning hook (7) should be ensured as follows:

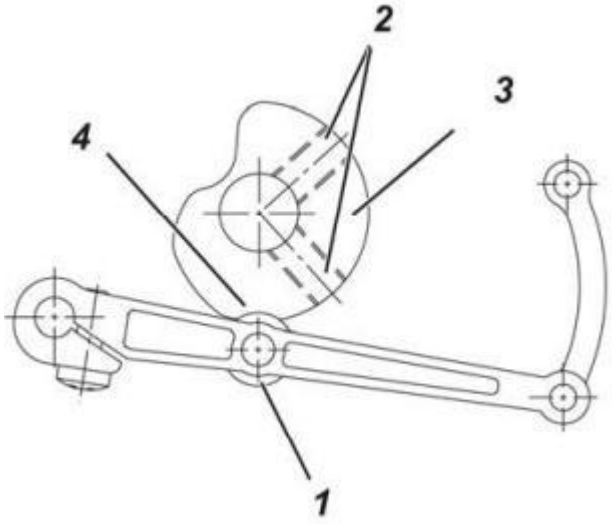
0.4~0.7mm for F, M specifications

0.6~1.1mm for H specifications

7-5 Adjustment of Thread Trimming Device

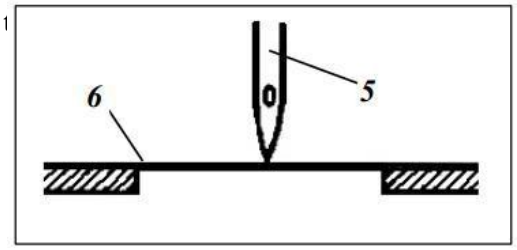
The thread trimming cam 3 controls the travel of the moving cutter and the synchronization of its movements, thus requiring the movement of the moving cutter to match that of the needle. The thread trimming mechanism is automatically controlled by an electromagnet.

1) Thread trimming cam positioning



<Standard Check>

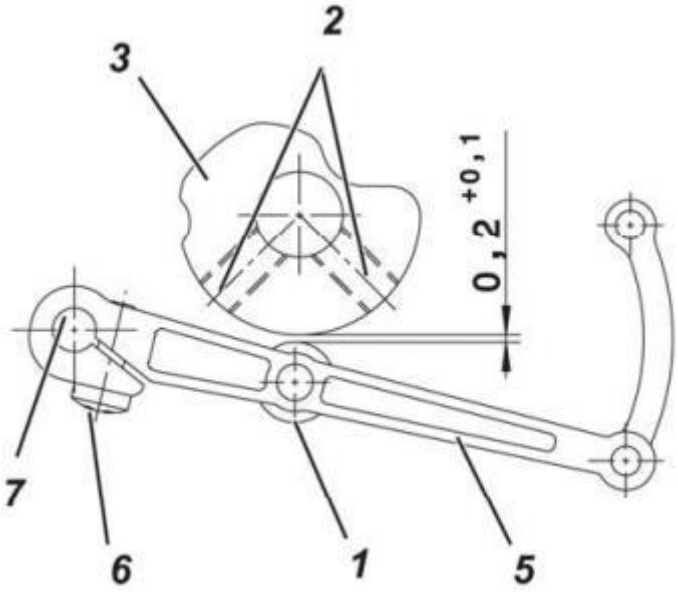
Lock the machine in the locked position "4" and manually press roller 1, which must be in the notch 4 of the



<Adjustment of Thread Trimming Cam>

(1) Rotate the hand wheel so that the needle tip is aligned with the upper plane of needle plate 6 when the needle 5 is lowered.
(2) Loosen the set screws 2 (two) on the control cam;
(3) Turn the control cam on the lower shaft;
(4) Manually press roller 1, which must be in the notch 4 of the thread trimming cam 3;
(5) Re-tighten the set screws 2 (two).

2). Clearance between the roller and thread trimming cam



<Standard Check>

When the thread trimming lever 5 is in the outer position, the clearance between the outer diameter of the thread trimming cam 3 and the roller 1 should be 0.2 + 0.1 mm.

*The above clearance should be checked at a position between the two set screws 2 of the trimmer cam

<Clearance adjustment between the roller and thread trimming cam>

(1) Rotate the handwheel until the roller 1 is between the two set screws 2 of the trimmer cam.
(2) Loosen the set screw 6
(3) Turn the thread trimming lever 5 around the shaft 7 so that the clearance between the outer diameter of roller 1 and control cam 3 is 0.2+0.1mm
(4) Tighten the set screws 6

<Note>

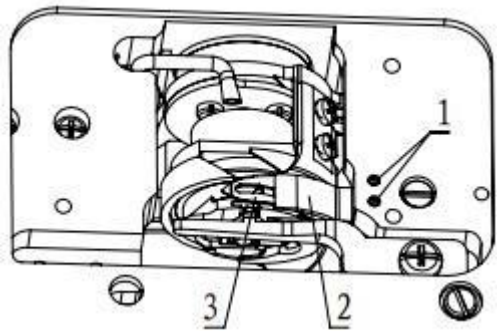
If the clearance here is too large, there may be a risk that:

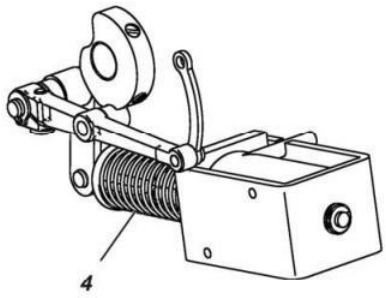
- The thread is not able to be captured

● The thread is not cut

3). Adjustment of Thread Trimming Pressure

When performing the relevant adjustments in the rotating shuttle area, it is advisable to keep both thread cutters on the sewing machine to prevent unnecessary adjustments.





<Standard Check>

The thread should be reliably cut at the lowest thread trimming pressure. The lower the thread trimming pressure, the less wear on the shears!

The two thickest stitches should also be reliably cut simultaneously.

<Adjustment of Thread Trimming Pressure>

(1) Loosen the thread trimming pressure tuner screw 1.

(2) Rotate the cutter forward 3.

(3) Adjust the thread trimming pressure tuner screw 1 so that the fixed cutter 2 precisely touches the moving cutter 3.

(4) Check the thread trimming performance by alternately placing the thread on the left or right.

(5) Adjust the thread trimming screw to the appropriate position.

(6) If reset spring 4 no longer returns the thread trimming mechanism to its initial position, the thread trimming pressure is too high or a new fixed cutter is required.

<Note>

Slight resharpening of the fixed blade is allowed! However, if the fixed cutter is sharpened too short, it will no longer be able to cut the thread, which will not be remedied by readjusting the moving cutter.

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