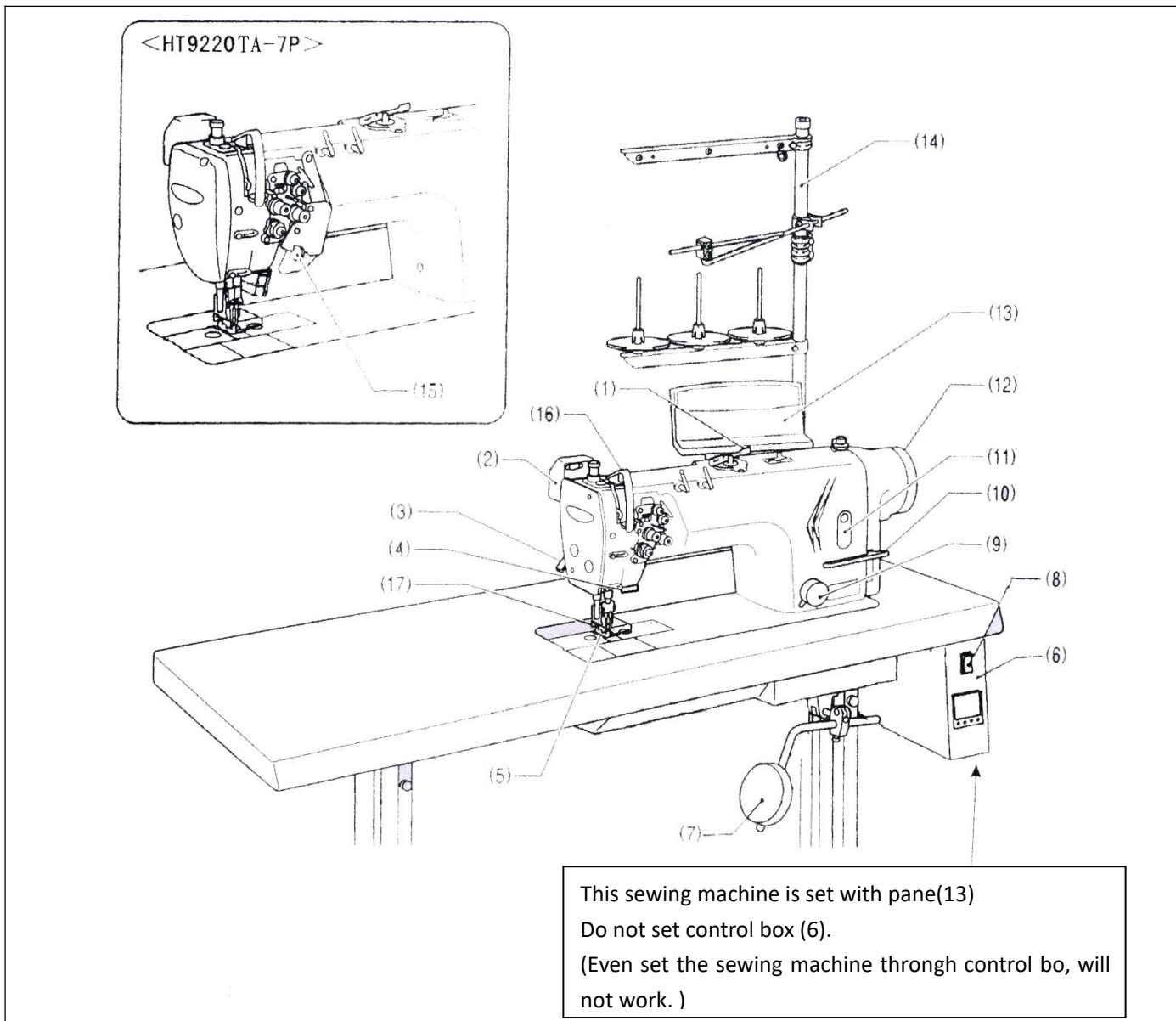


CONTENTS

1. MACHINE SPECIFICATIONS.....	1
2. NAMES OF MAJOR PARTS.....	2
3. INSTALLATION.....	3
3-1. Table processing diagram	4
3-2. Installation.....	4
3-3. Lubrication	8
3-4. Operational testing (pedal operation).....	10
4. PREPARATION BEFORE SEWING.....	11
4-1. Installing the needle.....	11
4-2. removing the bobbin.....	12
4-3. Winding the lower thread	13
4-4. Installing the bobbin.....	14
4-5. Threading the upper thread	16
4-6. Adjusting the stitch length.....	18
4-7. Using the knee lifter.....	18
4-8. Using the thread wiper asm (only available with threading trimming function)	18
4-9. Comer sewing method (HT9200-7P).....	19
5. SEWING	20
5-1. Sewing	20
5-2. Backtacking	21
5-3. Sewing condensed stitches.....	22
6. THREAD TENSION	23
6-1. Adjusting the thread tension	23
6-2. Adjusting the presser foot pressure	24
6-3. Adjusting the length of the thread ends after trimming (available only with machines of thread trimming function)	24
6-4. Adjusting the thread take-up amount.....	25
7. CLEANING AND MAINTIENCE	26
7-1. Daily cleaning procedures	26
7-2. Lubricating via the oil cover (every6months).....	27
8. ADJUSTING THE ROTARY HOOK LUBRICATION AMOUNT	28
9. TROUBLE SHOOTING	29
9-1. Sewing.....	29
9-2. Error code.....	33

2. NAMES OF MAJOR PARTS








- | | |
|-------------------------------|--------------------------------------|
| (1) Bobbin winder | (2) Thread wiper device |
| (3) Lifting lever | (4) Reverse stitch button (Adjuster) |
| (5) Presser foot | (6) Control box |
| (7) Knee lifter assembly | (8) Power switch |
| (9) Stitch length dial | (10) Reverse lever |
| (11) Oil gauge window | (12) Machine pulley |
| (13) Panel | (14) Thread stand |
| (15) Stop lever <HT9220TA-7P> | |

Safety devices

- | | |
|---------------------------|-------------------|
| (16) Thread take-up cover | (17) Finger guard |
|---------------------------|-------------------|

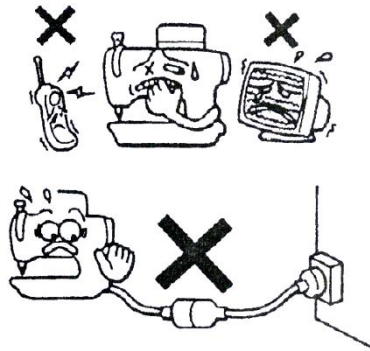
3. INSTALLATION

CAUTION

-  Machine installation should only be carried out by a qualified technician.
-  Contact your HIKARI dealer or a qualified Electrician for any electrical work that may need to be done.
-  The sewing machine weighs approximately 50kg. The installation should be carried out by two or more people.
-  Do not connect the power cord until installation is complete. The machine may operate if the treadle is depressed by mistake, which could result in injury.
-  Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.

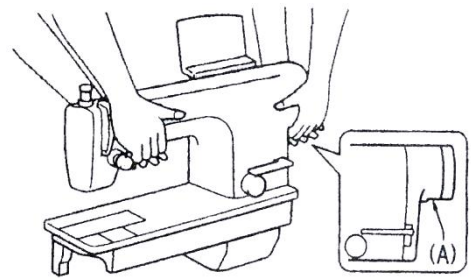
Where to place the sewing machine

- Don't place the sewing machine near equipments such as television, radio and wireless telephone ect, or else the equipments may be affected by electric noise of the sewing machine.
- The sewing machine should be connected to an AC power Socket directly. Using extended wire may cause operation.



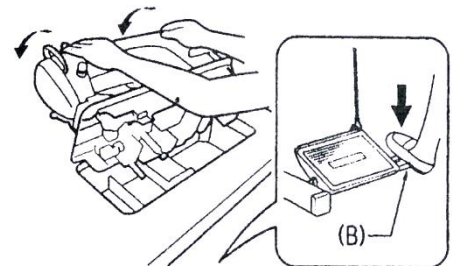
Carrying the machine

- The machine should be carried by the arm by two People as shown in the illustration.
- *Hold motor cover (A) to make sure that the machine Pulley does not turn.



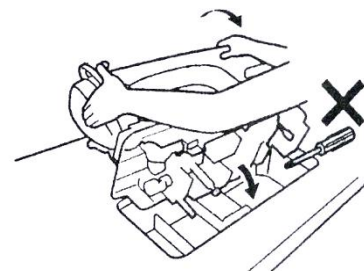
Tilting back the machine head

- Hold section (B) with your foot so that the table does not move and then push the arm with both hands to tilt back the machine head.



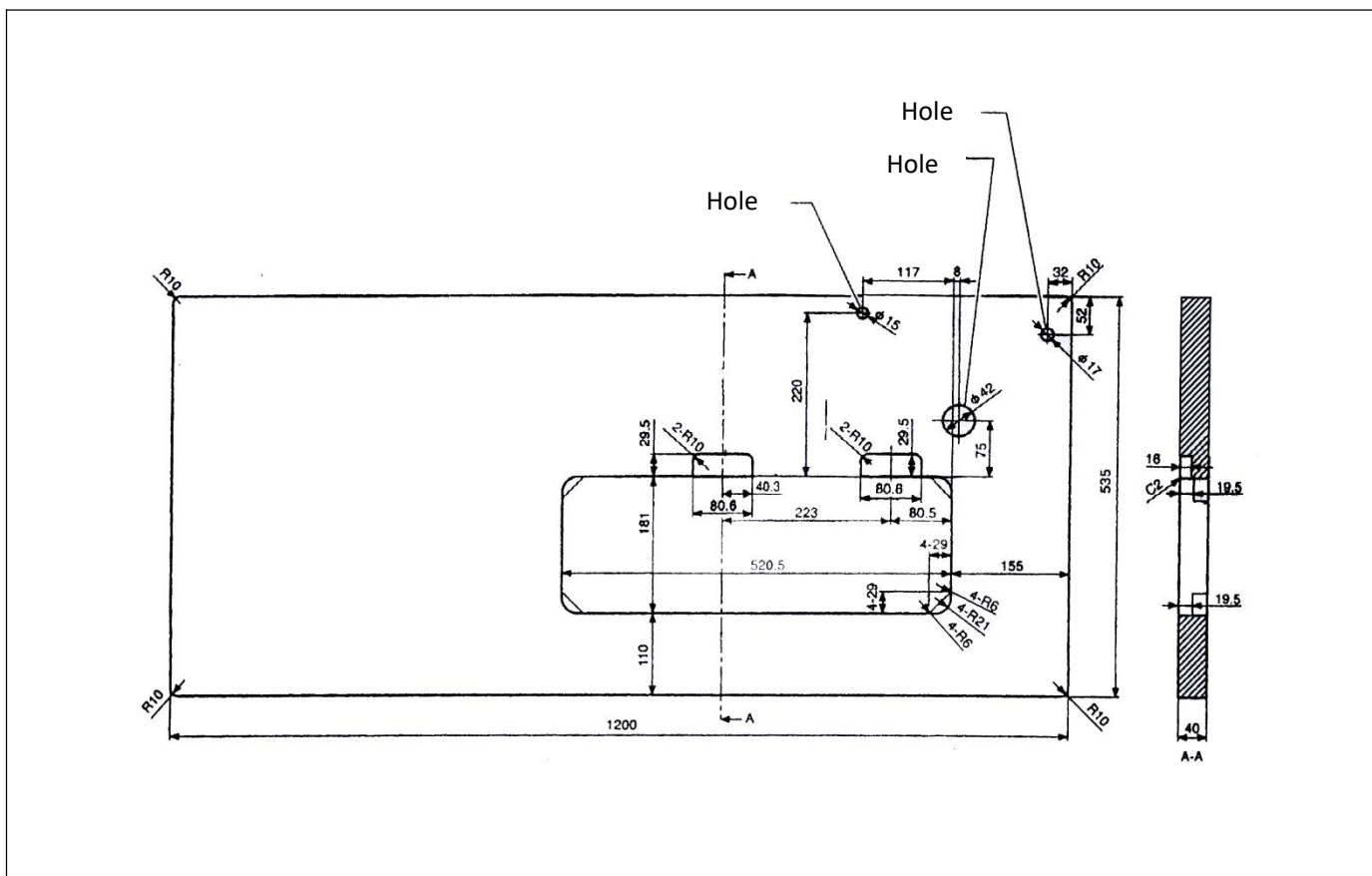
Returning the machine head to the upright position

1. Clear away any tools, which may be near the table holes.
2. While holding the face plate with your left hand, gently return the machine head to the upright position with your right hand.

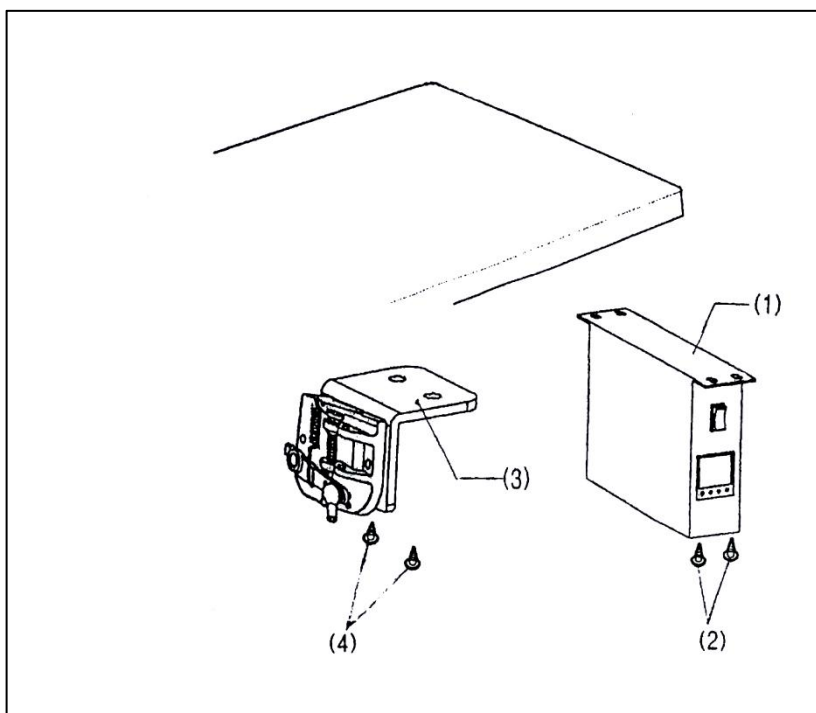


3-1. Table processing diagram

- The top of the table should be 40mm in thickness and should be strong enough to hold the weight and with-stand the vibration of the sewing machine.
- Drill holes as indicated in the illustration below.

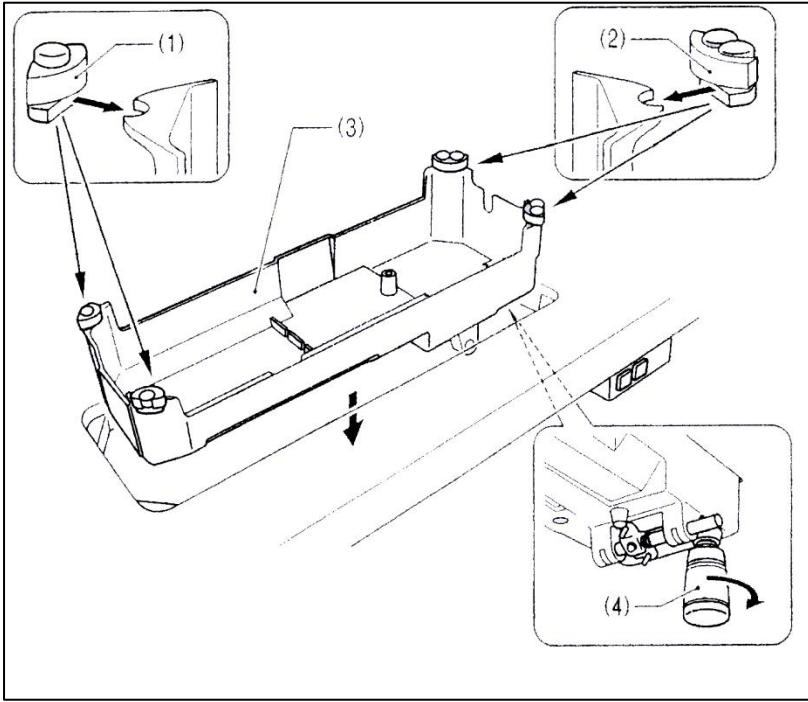


3-2. Installation



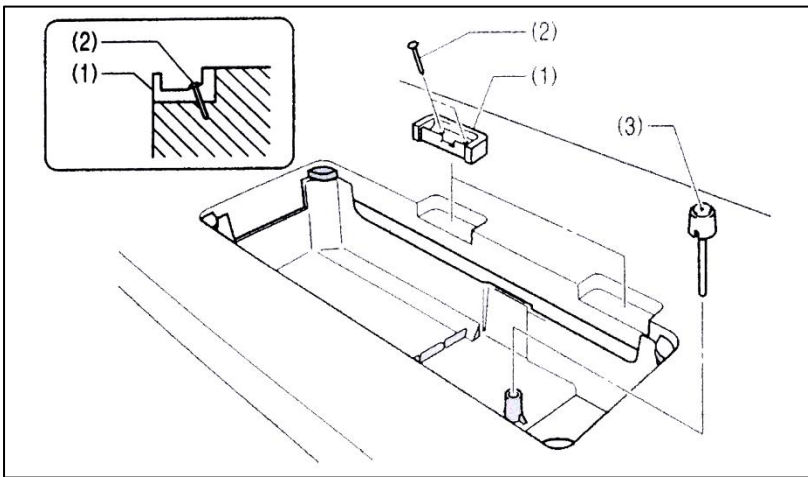
1. Control box
- (1) control box
- (2) Screws (four)

2. Treadle control unit asm.
- (3) Treadle control unit
- (4) Screws (two)



3. Oil pan

- (1) Head cushions(left) (2pcs)
- (2) Head cushions(right) (2Pcs)
- (3) Oil pan
- (4) Oiler

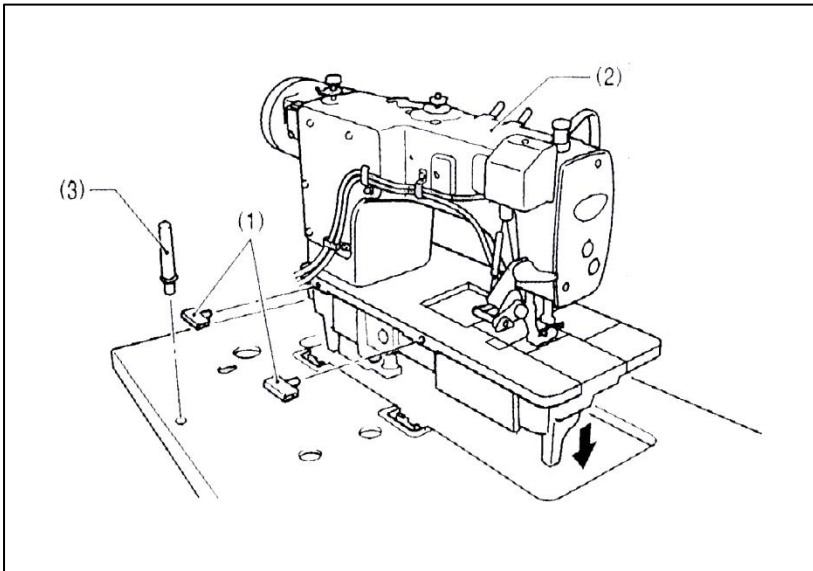


4. Rubber cushions

- (1) Rubber cushions(2pcs)
- (2) Nails(4pcs)

5. Knee lifter complying bar

- (3) Knee lifter complying bar

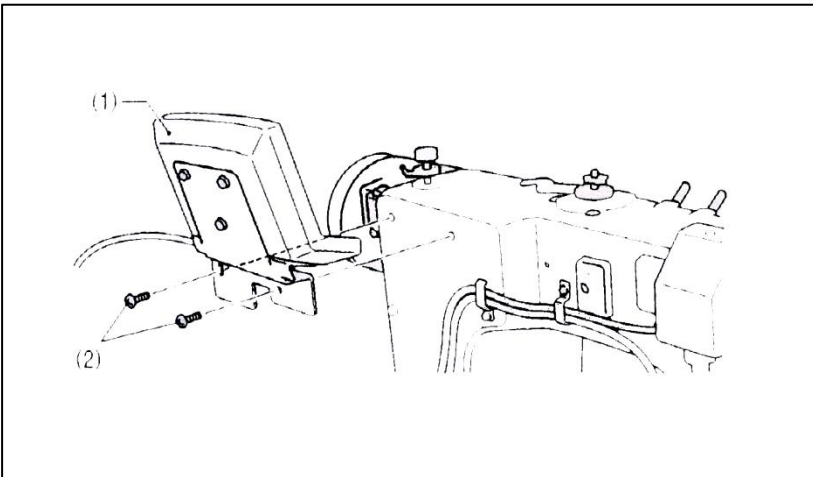


6. Machine head

- (1) Hinges (2pcs)
- (2) Machine head
- (3) Head rest

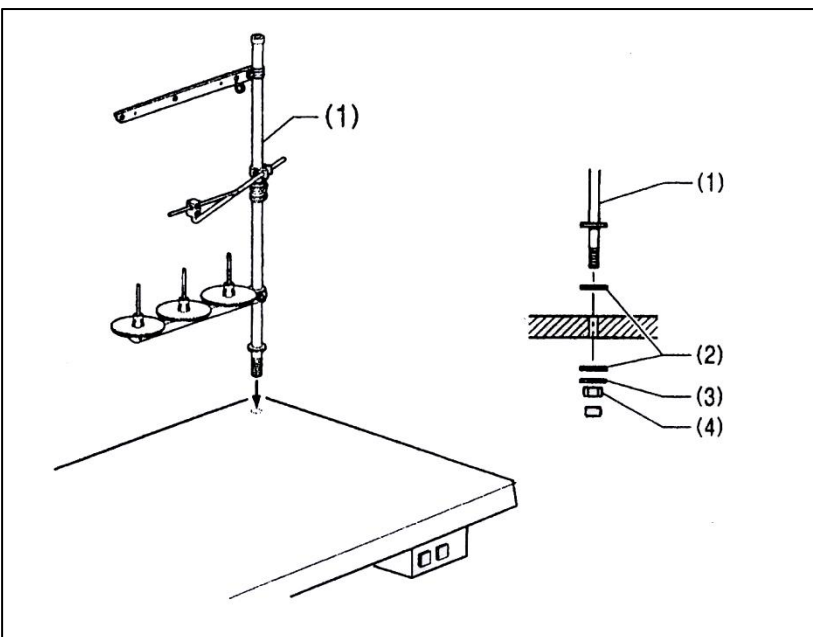
NOTE

• Tap the head rest (3) securely into the table hole. If the head rest (3) is not pushed in as far as it will go, the machine head will not be sufficiently stable when it is tilted back.



7. Panel

- (1) Panel
- (2) Screws (2pcs) (nail the screws sufficiently to tighten the panel)

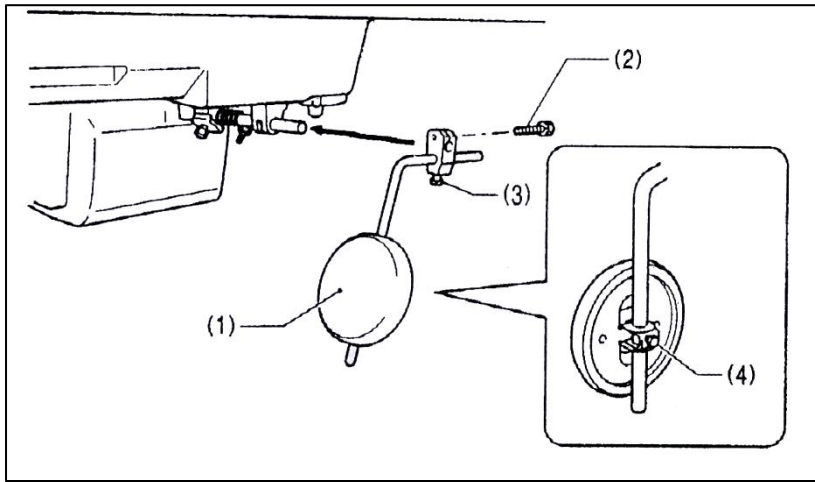


8. Thread stand

- (1) Thread stand

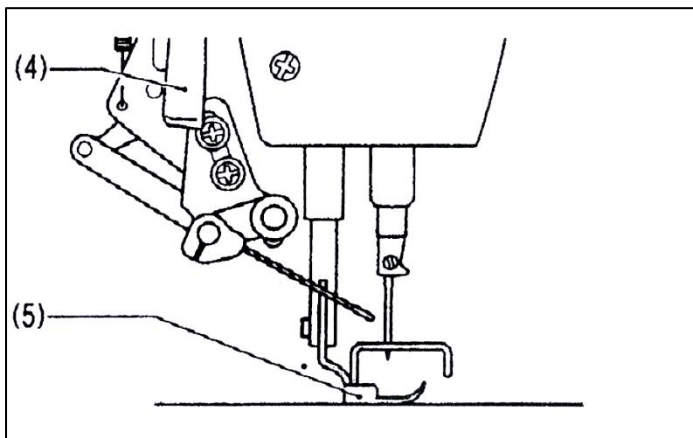
NOTE:

• Securely tighten the nut (4) so that the two rubber cushions (2) and the washer (3) are securely clamped and so that the thread stand (1) does not move.



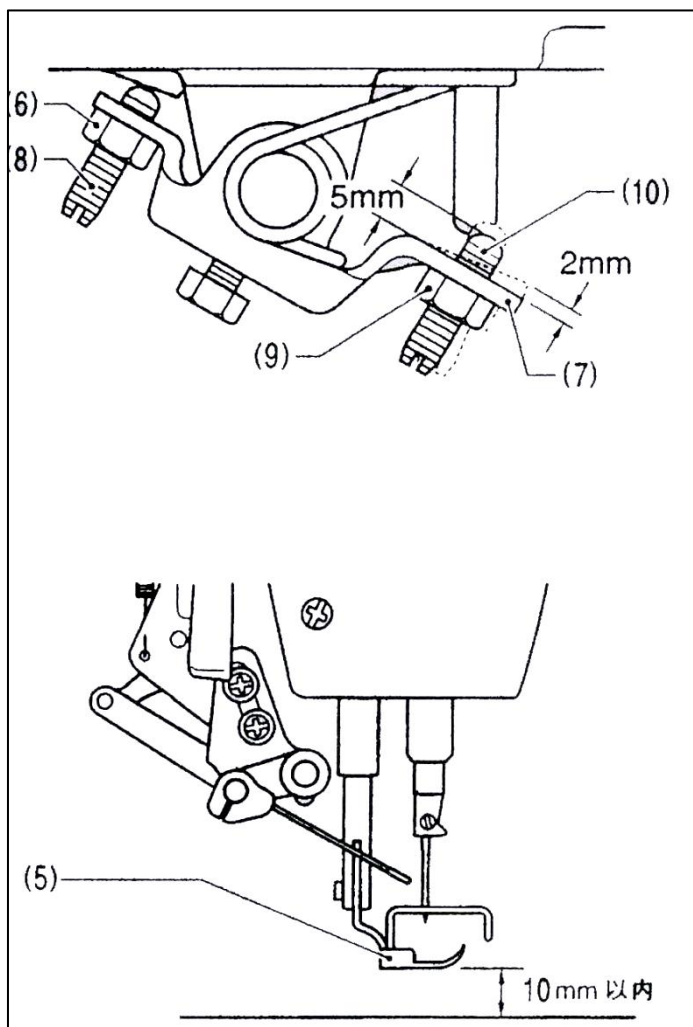
9. Knee lifter plate
 (1) Knee lifter plate
 (2) Bolt

* Loosen the bolt(3) and the bolt(4), move the knee lifter plate(1) to a position where it is easy to use.



<Knee lifter adjustment>



1. Turn the machine pulley so that the feed dog is below the top of needle plate.
2. Lower the presser foot (5) by using the lifting lever (4).



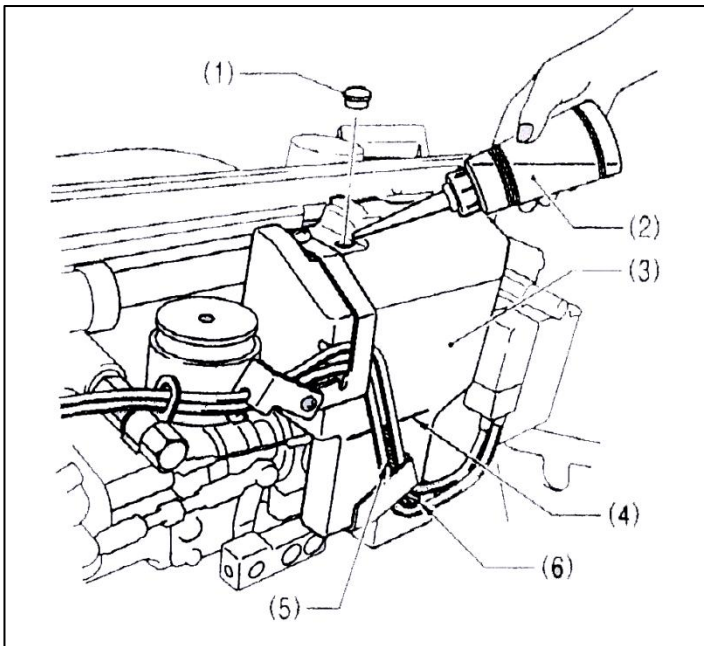
3. Loosen nut (6).
4. Turn the screw (8) to adjust so that the amount of play in the knee lifter (7) is approximately 2mm when the knee lifter plate (1) is gently pressed.
5. Securely tighten nut (6)
6. Loosen nut (9)
7. Turn the screw (10) until the distance between the end of screw (10) and knee lifter (7) is approximately 5mm.
8. Turn adjusting screw (10) to adjust so that presser foot (5) is at the desired position within a distance of 10mm above the needle plate when the knee lifter plate (1) is fully pressed.
9. After adjustment, securely tighten nut (9).

3-3. Lubrication

CAUTION

-  Do not connect the power cord until lubrication has been completed, otherwise the machine may operate if the treadle is depressed by mistake, which would result in injury.
-  Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result. Furthermore do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhea.
Keep the oil out of the reach of children.

- The sewing machine should always be lubricated and the oil supply replenished before it is used for the first time, also after long periods of non-use.
- Use only the lubricating oil (日 Nisseki Mitsubishi Sewing Lube 10N: VG10) specified by HIKARI.
* If this type of lubricating oil is difficult to obtain, the recommended oil to use are (Exxon Mobil ESSOTEX Sm10; VG10) and <Hangzhou Xingang Petrochemical Co.Ltd. LuBu: 7Exsn10>



<Lubricating via the oil cover>

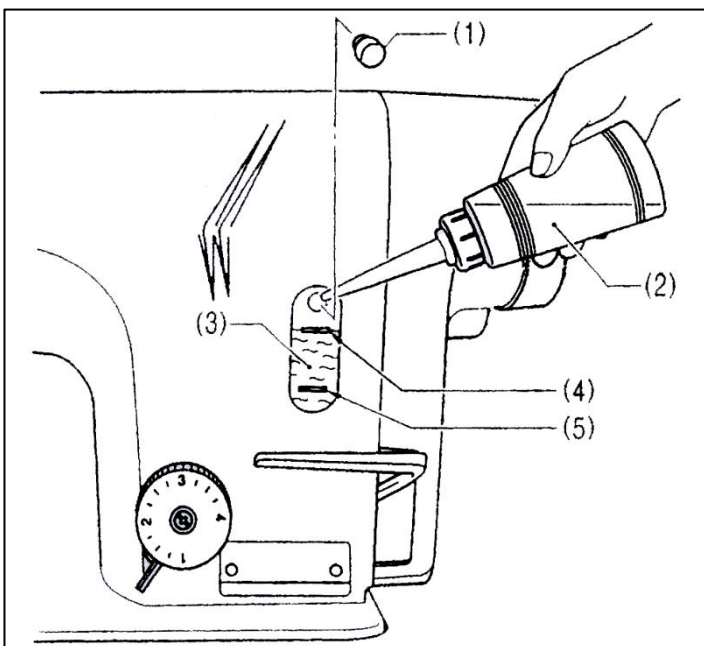
1. Tilt back the machine head.
2. Remove the rubber cap(1).
3. Use accessory oiler(2) to pour lubricating oil into the oil cover (3) until the oil level reaches the reference line(4).

NOTE:

Do not fill the lubricating oil to pass the reference line(4). If you pour in too much lubricating oil, it may spill out when the machine head is tilted back.

4. Put back the rubber cap(1).
5. Return the machine head to its original position.

* If the lubricating oil level drops below the bottom(6) of the oil gauge window(5), be sure to add more oil.



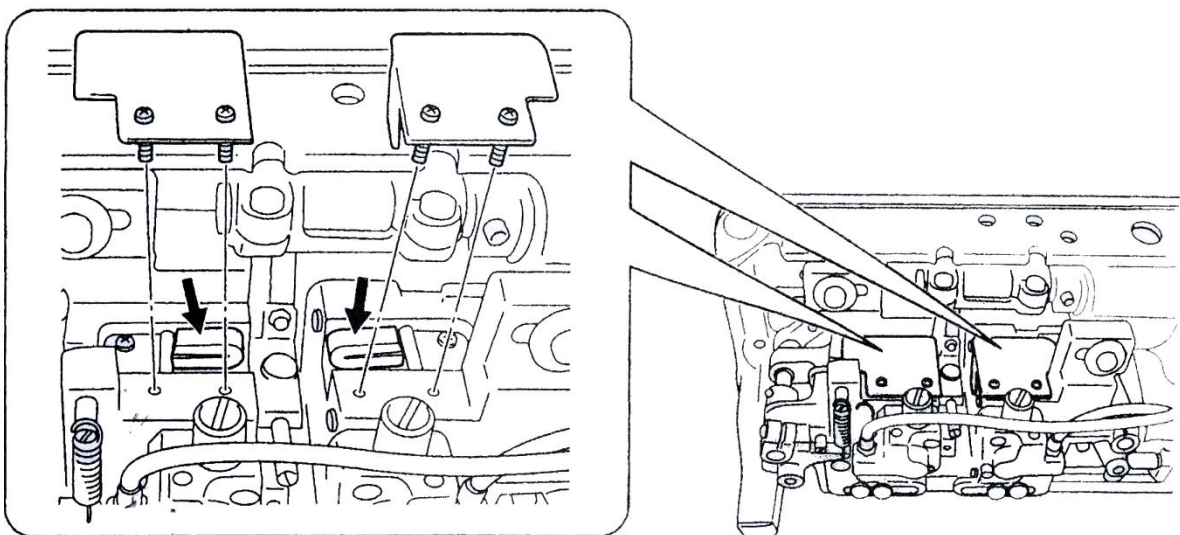
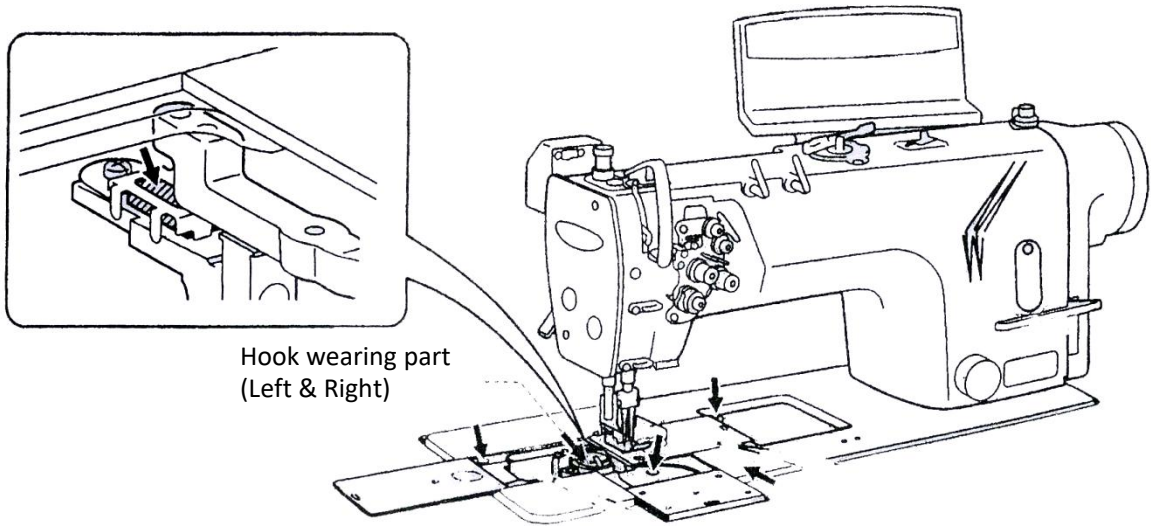
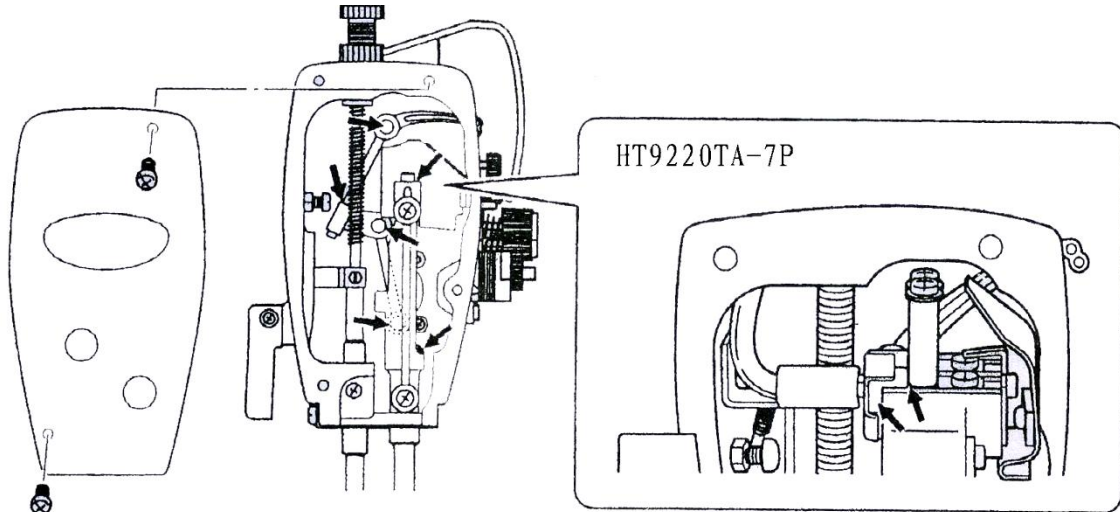
<Lubricating via the oil tank>

1. Remove the rubber cap(1).
2. Use the accessory oiler(2) to pour in lubricating oil until the oil level reaches the top reference line(4) of the oil gauge window(3)
3. Put back the rubber cap(1).

* If the lubricating oil level drops below the bottom reference line(5), be sure to add more oil.

■ Lubrication

Apply 1-2 drops of oil to the places indicated by the arrows.

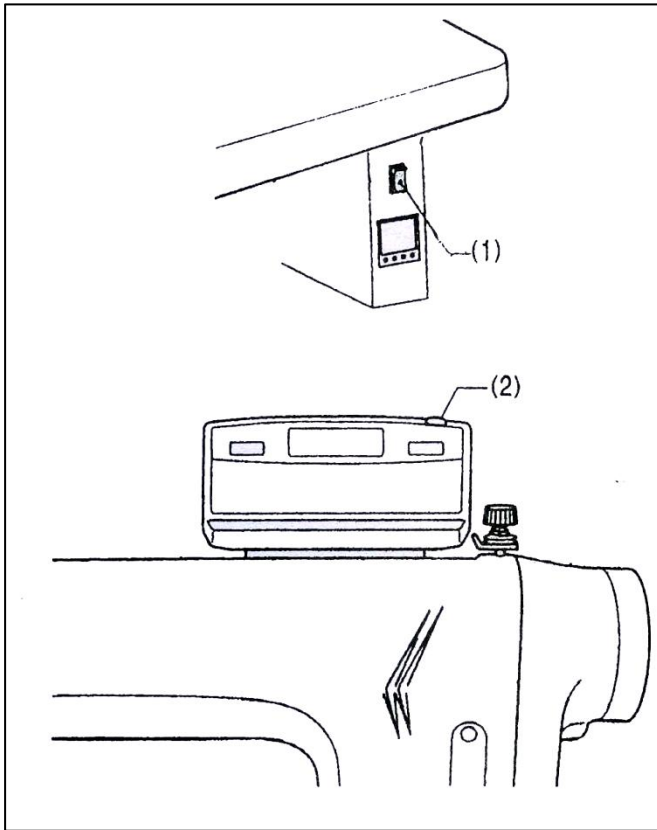


3-4. Operational testing (pedal operation)

CAUTION



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.

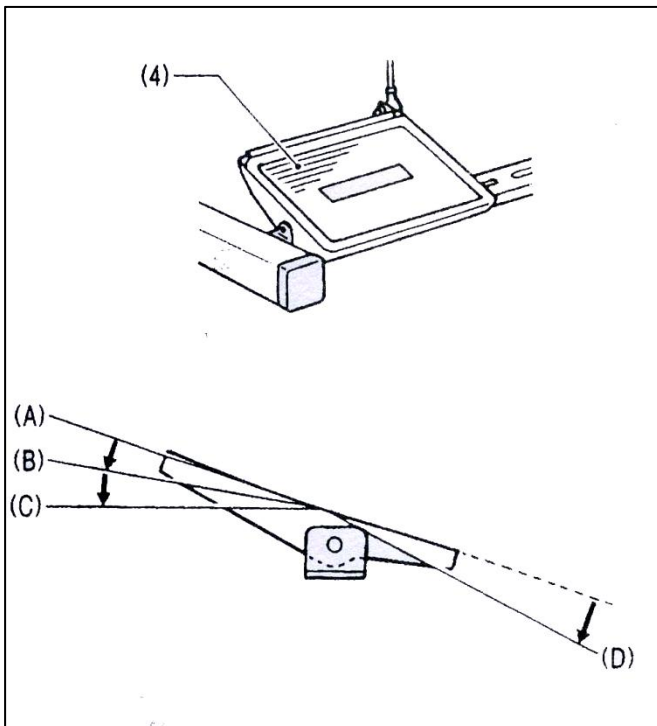


<Turn on power>

Turn on power switch (1), power indicator (2) lighted.

NOTE: when turning on the power switch for the first time

1. Make sure power voltage lies in the required range of (190V-245V);
2. Operate according to the manual of the electronic control box.



<Operational testing>

1. Press pedal (4) to position (B) to check the low-speed operation of the sewing machine.
2. Press pedal (4) further to position (C) to check the high-speed operation of the sewing machine.
3. Press pedal (4) and then release, pedal (4) will come to neutral position (A), then check the needle to see whether it has descended under the needle plate (on condition it has been set to position the needle under the needle plate when the machine stops)
4. Press pedal (4) to position (D) (for machine with auto trimming, this function is after trimming), the needle will ascend and stop above the needle plate.

4. PREPARATION BEFORE SEWING

4-1. Installing the needle

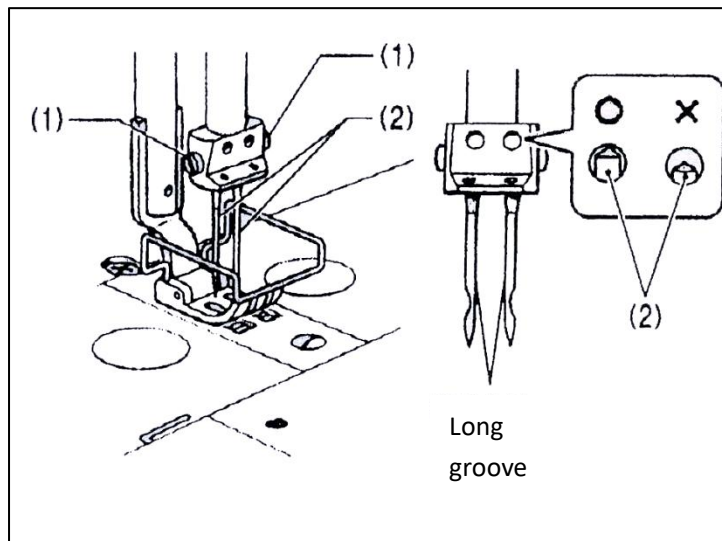
CAUTION



Turn off the power switch before installing the needle.

The machine may operate if the switcher is turned on by mistake, which could result in injury.

HT9210TA-7P

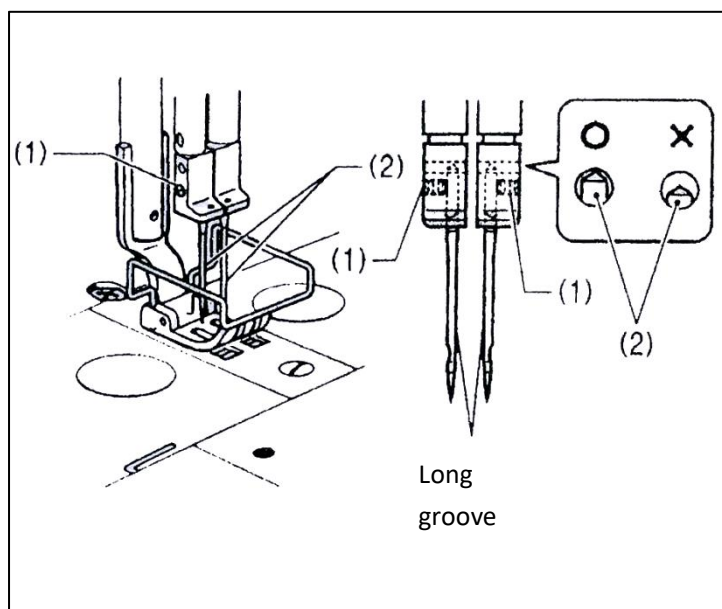


1. Turn the machine pulley to move the needle bar to its highest position.

2. Loosen the screws (1).

3. Insert the needle (2) straight in as it will go so and keep the long groove facing inward, then securely tighten screws (1).

HT9220TA-7P



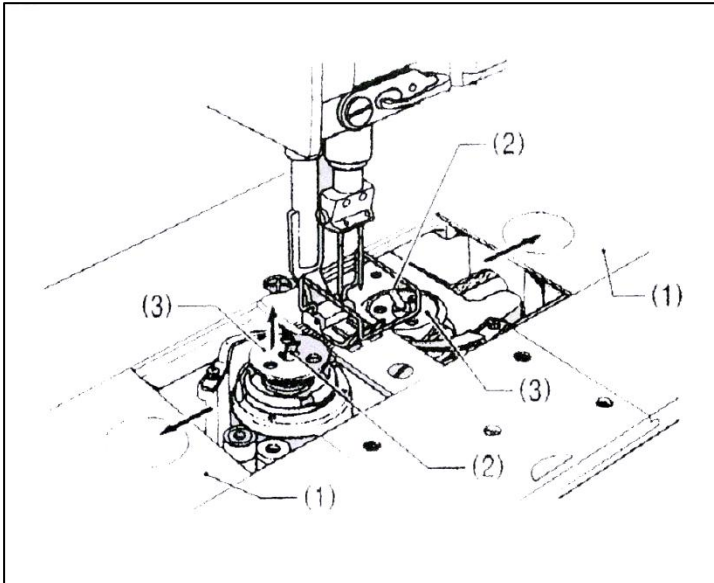
4-2. Removing the bobbin

CAUTION



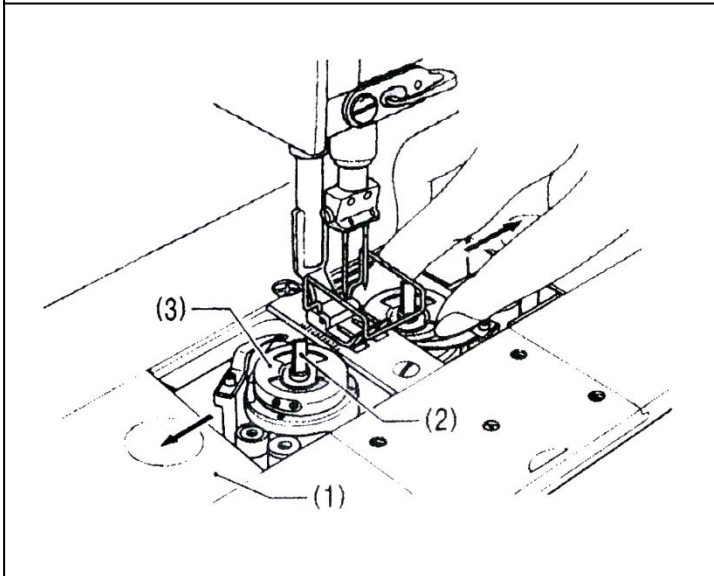
Turn off the power switch before removing the bobbin.

The machine may operate if the power switch is turned on by mistake, which could result in injury.



<Latch type>

1. Open the slide plates(1) by moving them to the right and left respectively.
2. Pull the rotary hook latches(2) upward and remove the bobbins(3).




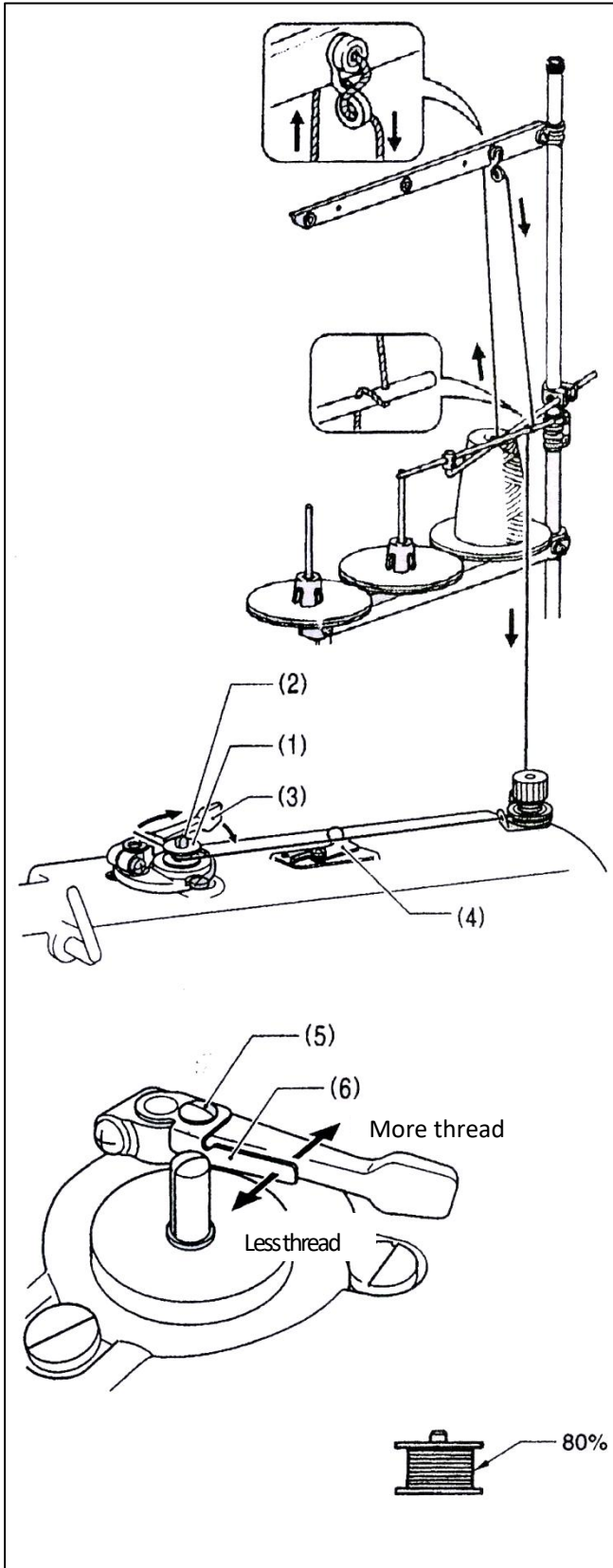
<Bobbin case type>

1. Open the slide plates(1) by moving them to the right and left respectively.
2. Lift up the latch(2) of the rotary hook and remove the bobbin case(3).
3. Remove the bobbin.

4-3. Winding the lower thread

CAUTION

 Do not touch any of the moving parts or press any objects against the machine while winding the lower thread, as this may result in personal injury or damage to the machine.



1. Turn on the power switch.
2. Place the bobbin(1) onto the bobbin winder shaft (2) .
3. Wind the thread several times around the bobbin(1) in the direction indicated by the arrow.
*Check that the thread is not loose anywhere along the thread path.
4. Push the bobbin presser arm (3) toward the bobbin(1).
5. Raise the presser foot with the lifting lever.
6. Press the treadle underneath, thread winding will then start.
7. Once thread winding is completed, the bobbin presser arm(3) will return automatically.
8. After the thread has been wound on, remove the bobbin and cut the thread with knife(4).

* Loosen screw(5), and move bobbin presser (6) to adjust the amount of thread wound onto the bobbin.

NOTE:

The amount of thread wound onto the bobbin should be a maximum of 80% of the bobbin capacity.

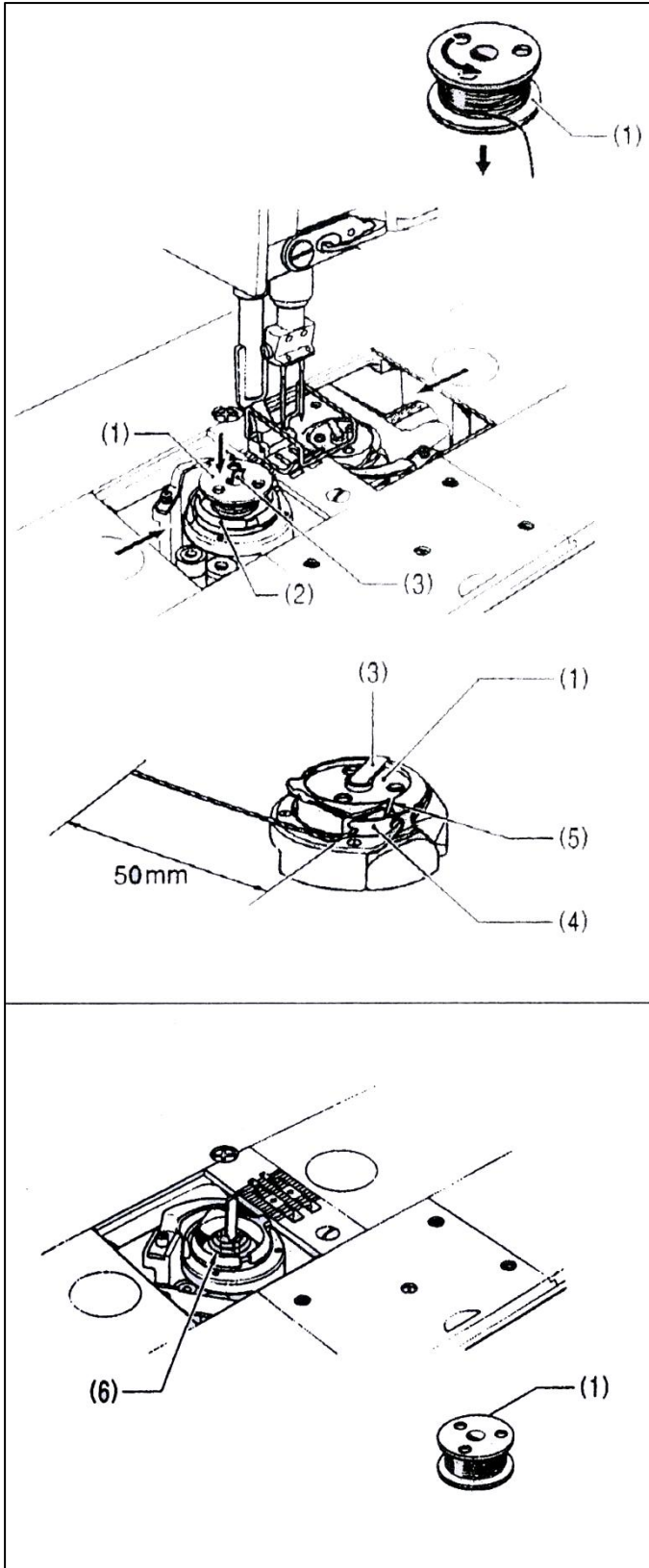
4-4. Installing the bobbin

⚠ CAUTION



Turn off the power switch before installing the bobbin.

The machine may operate if the power switch is turned on by mistake, which could result in injury.

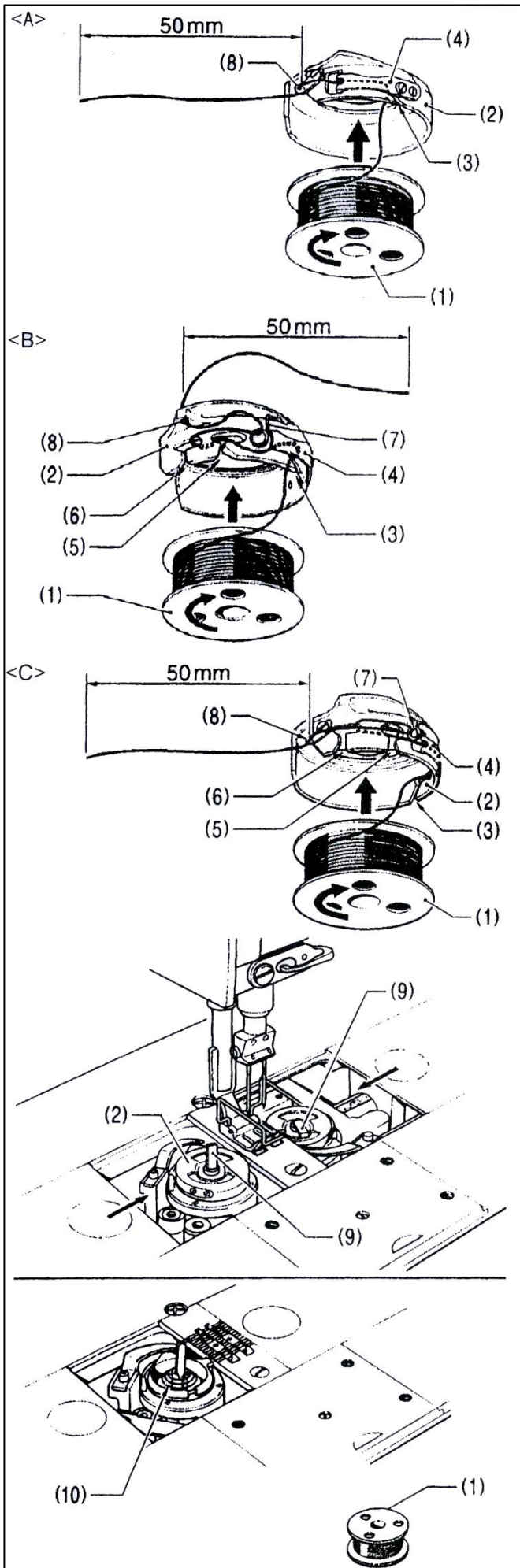


<Latch type>

1. Insert the bobbin(1) into the rotary hook(2) so that the winding direction is as shown in the illustration.
2. Return the rotary hook latch(3) to its original position.
3. Turn the machine pulley to rotate the rotary hook(2) until the tension spring(4) is visible.
4. Pass the thread through slit(5) in the rotary hook and then pass it under the thread tension spring(4).
5. Pull out the thread to a length of approximately 50mm.
6. Close the slide paltes.

· There is spring(6) inside the rotary hook, which could prevent the bobbin from racing when being trimmed.

· Use bobbins(1) made of light alloy as specified by HIKARI.



<Bobbin case type>

1. Insert bobbin(1) into the bobbin case(2) so that the winding direction is as shown in the illustration.
2. There are three types of bobbin case(2) <A>, , <C>.

Thread the thread by one of the following methods in accordance with the shape of bobbin case(2) being used.

<A>

- 1) Pass the thread through slot(3) and under the thread tension spring(4).
- 2) Pass the thread through the thread hole(8) and pull out about 50mm.

<C>

- 1) Pass the thread through slot(3) and under the thread tension spring(4).
- 2) Pass the thread through slots(5) and(6) then through spring(7).
- 3) Pass the thread through the thread hole(8) and pull out about 50mm.

3. Insert the bobbin case(2) into the rotary hook.
4. Push latch(9) of the rotary hook flat.
5. Close the slide plates.

- There is spring(10) inside the rotary hook, which could prevent the bobbin from racing when being trimmed.
- Use bobbins(1) made of light alloy as specified by HIKARI.

4-5. Threading the upper thread

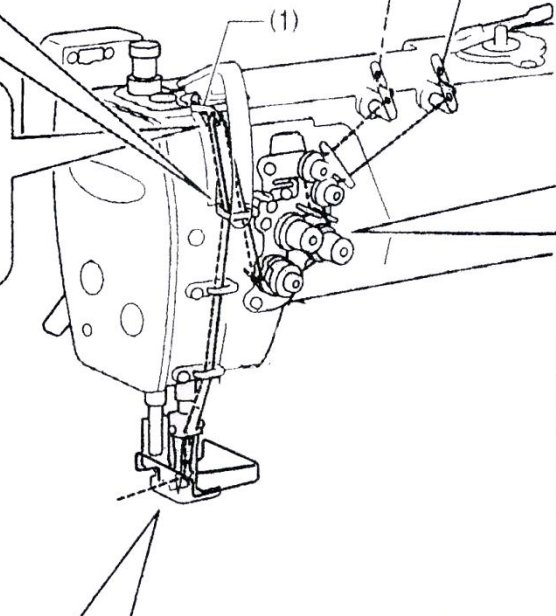
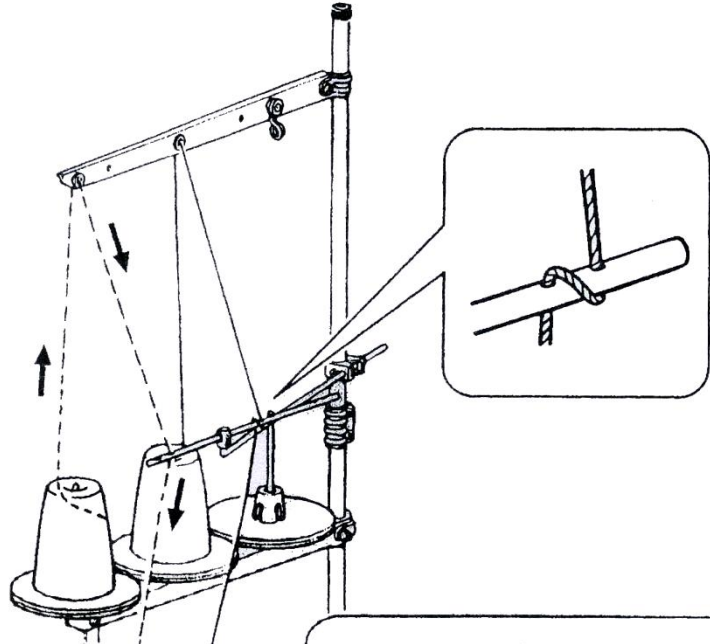
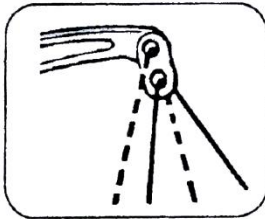
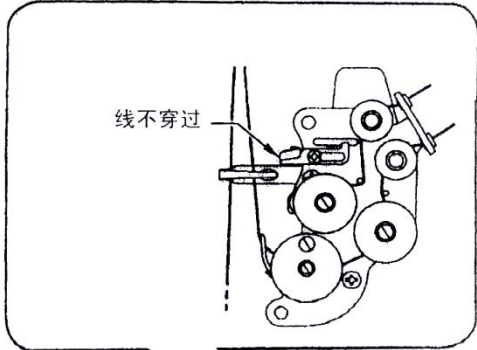
CAUTION



Turn off the power switch before threading the upper thread.

The machine may operate if the power switch is turned on by mistake, which could result in injury.

- Turn the machine pulley to raise the thread take-up(1) before threading the upper thread.
This will make threading easier and it will prevent the thread from coming out at the sewing start.
- Thread the left-side thread first.



If the tension discs are opened as follows, it will be easier to thread.

<With thread trimming>

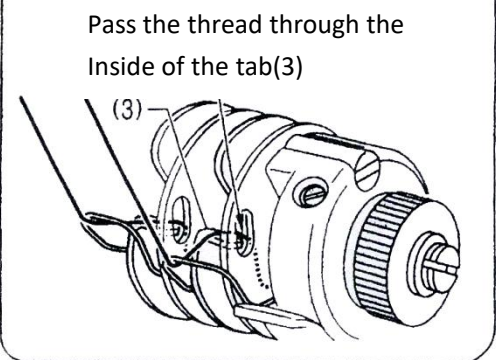
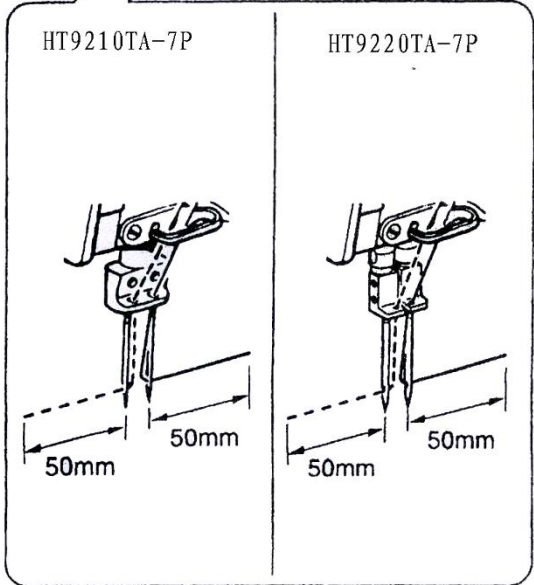
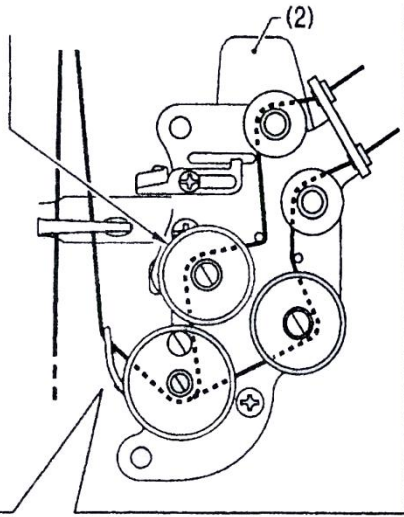
- Press the tension release plate(2).

<Without thread trimming>

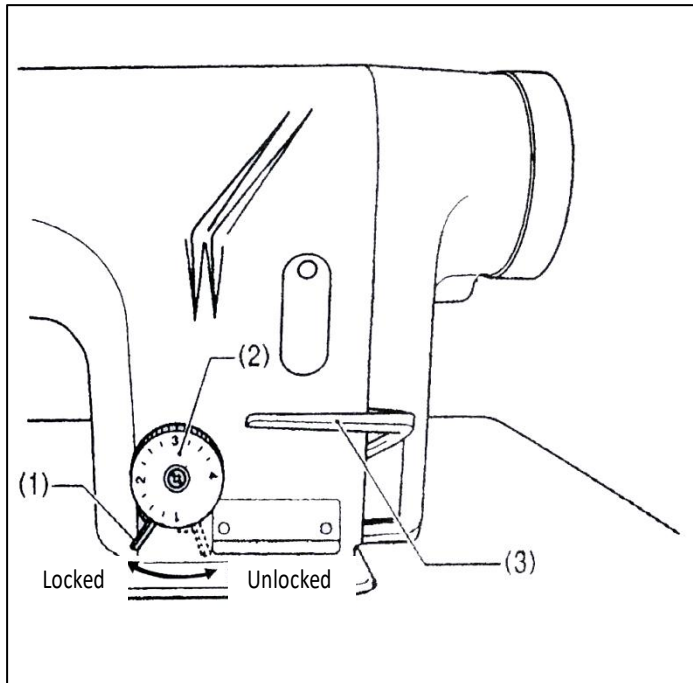
- Press the tension release plate(2).

Operate the lifting lever or the knee lifter to raise the presser foot.

Make sure the thread pass
Securely between the tension discs.



4-6. Adjusting the stitch length



1. Unlock the stitch length dial (2) by turning the dial lock lever (1) to the right until a click is heard.

2. Turn the stitch length dial (2) clockwise or counterclockwise so that the desired stitch length is at the uppermost position on the dial.
• The larger the number, the longer the stitch length will be.

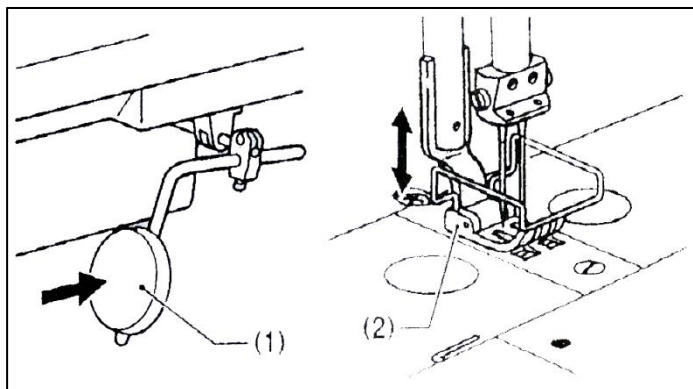
(The numbers on the dial are for use as a guide. The length of the finished stitches may vary depending on the type and thickness of material being sewn. Adjust while checking the finished stitches.)

• When turning the stitch length dial (2) from a larger dial if the reverse lever (3) is pushed to the halfway down position.

3. Turn the dial lock lever (1) firmly to the left to lock the stitch length dial (2).

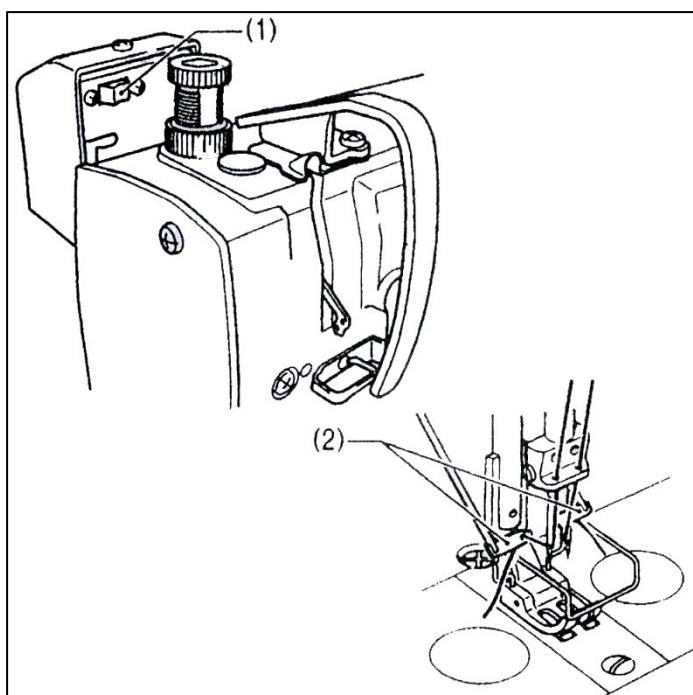
* Make sure that the stitch length dial (2) does not rotate.

4-7. Using the knee lifter



The presser foot (2) can be raised by pressing the knee lifter plate (1).

4-8. Using the thread wiper asm. (Only available with threading trimming function)



Press the thread wiper switch to [•] side.

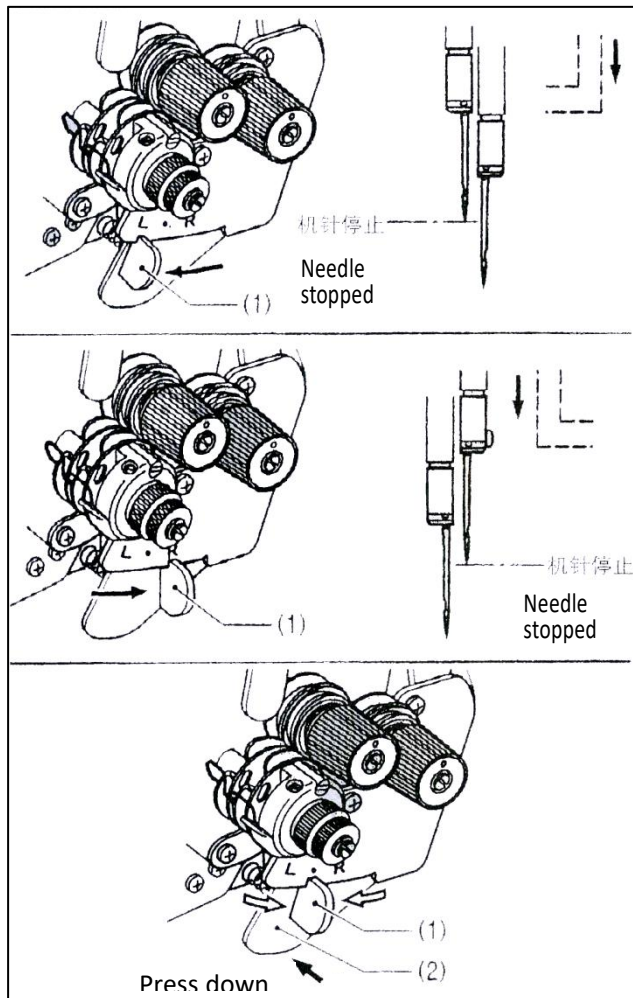
Thread wiper (2) will pull up the thread after the thread has been trimmed.

4-9. Corner sewing method (HT9220TA-7P)

NOTE:

If using this machine as a single-needle machine, remove the needle that is not being used. In such cases, do not use the procedures given below to stop the unused needle bar from moving, otherwise damage to the machine may result.

4-9-1. To stop the needle bars (right and left)



- Operate the stop lever after the needle has penetrated the material and has stopped moving.
 - Do not sew at speeds more than 1,000rpm while one of the needle bars has been stopped.

<To stop operation of the left needle bar>

Move stop lever (1) to the "L" position.

< To stop operation of the left needle bar >

Move stop lever (1) to the "R" position.

<To resume twin-needle sewing>

Press push lever (2); stop lever (1) will then return to its original position automatically.

Original position automatically.

4-9-2. Number of stitches: quick-reference guide

Sewing angle NO of stitches	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
2					4.6	3.8	3.2	2.7	2.2	1.8	1.5	1.1
3			4.6	3.5	3.0	2.5	2.1	1.8	1.5	1.2		
4		4.4	3.4	2.8	2.3	1.9	1.6	1.3				
5	4.8	3.5	2.7	2.2	1.8	1.5	1.3					
6	4.0	2.9	2.3	1.9	1.5	1.3						
7	3.7	2.5	2.0	1.6								
8	3.0	2.2	1.7									

<For 1/4 needle width>





Determine the stitch length from the chart above to make beautiful corner stitching.

The number of stitches of the outer needle varies according to the combination of sewing of sewing angle and stitch length.

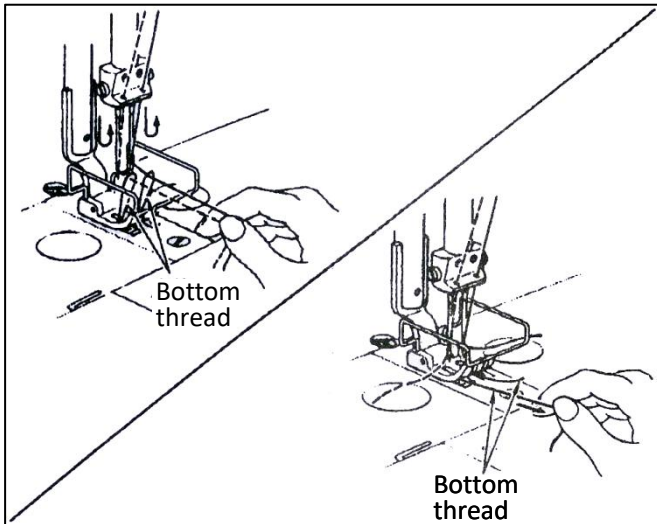
[Example] For a sewing angle 40° and a stitch length of 2.9mm, the number of stitches becomes 6.

5. SEWING

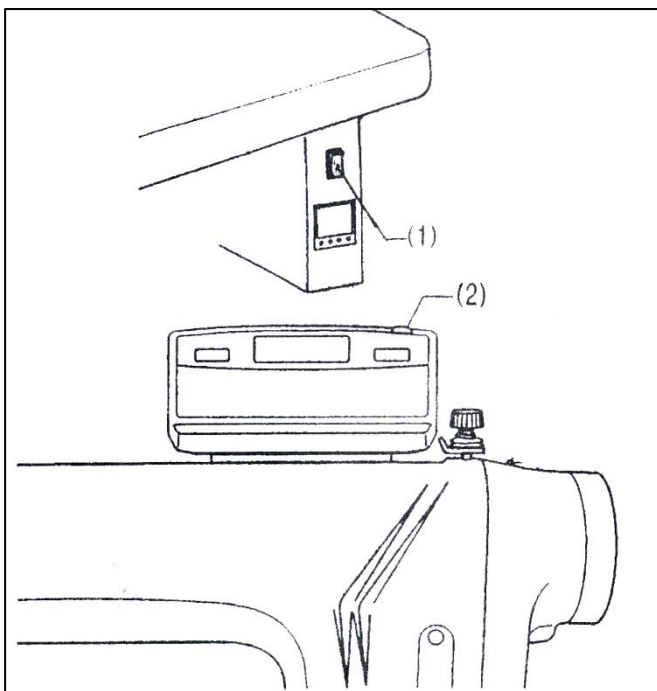
CAUTION

-  Attach all safety devices before using sewing machine.
If the machine is used without these devices attached, injury may result.
-  Turn off the power switch at the following times.
The machine may operate if the power switch is turned on by mistake, which could result in injury.
 - When threading the needle
 - When replacing the bobbin and needle
 - When not using the machine and when leaving the machine unattended
-  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.
-  Use both hands to hold the machine head when tilting it back or returning it to its original position.
If only one hand is used, the weight of the machine head may cause your hand to slip and your hand may get caught.

5-1. SEWING

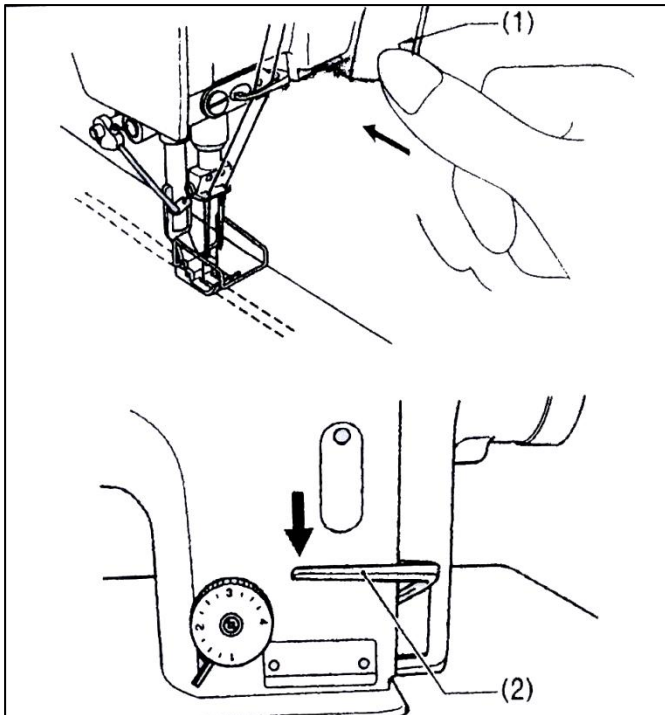


1. While holding the two upper threads with your fingers, turn the machine pulley by hand toward you until the lower threads come out onto the feed dog.
2. Pull the lower threads toward you to make sure that they come out smoothly.



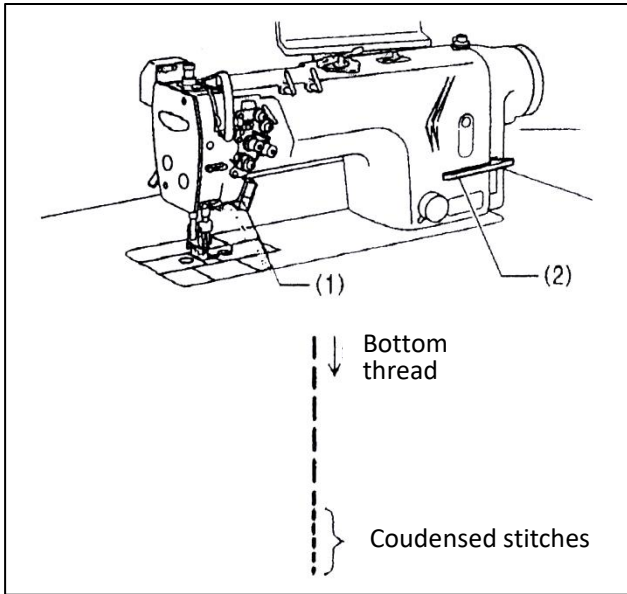
3. Turn on power switch(1), power indicators(2) will be lighted.
4. Program sewing patterns on the panel.
5. Depress the treadle to start sewing.

5-2. Backtacking

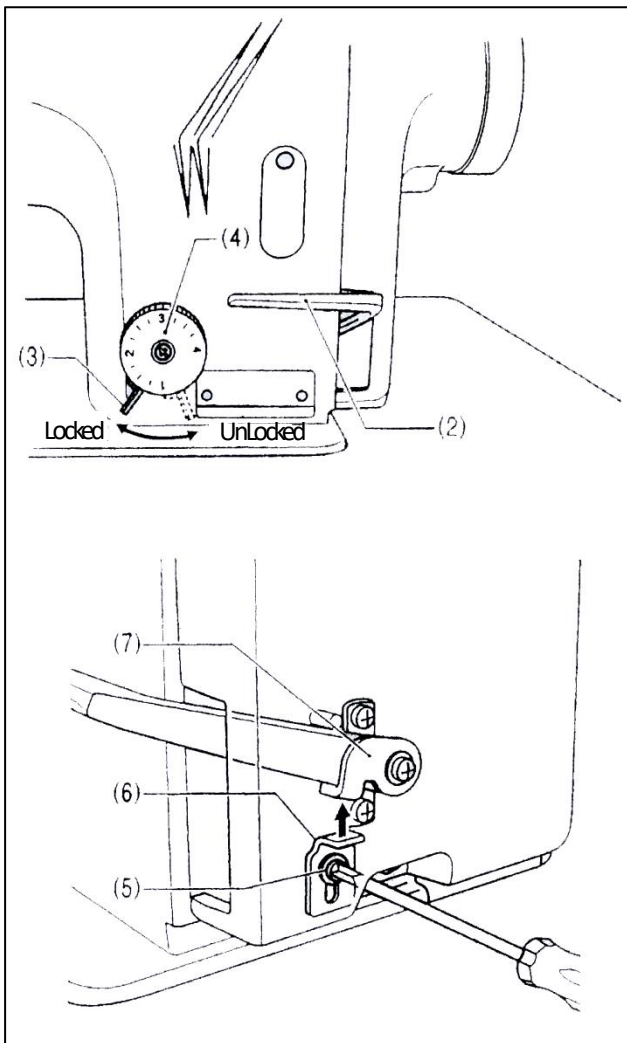


When reverse stitch button(1) or reverse lever (2) is pressed during sewing, the feed direction will be reversed. When released, the feed direction will return to normal.

5-3. Sewing condensed stitches



- If you press reverse stitch button(1) or reverse lever(2) while sewing is in progress, you can sew stitches(forward direction)with small stitch lengths.
- Before carrying out sewing, set the stitch length for condensed stitches as follows.



<Setting>

1. Unlock the stitch length dial (3) by turning the dial lock lever (3) to the right.
2. Turn the stitch length dial (4) to the stitch length to be used for condensed stitches.
3. Loosen screw (5) and lift up the stopper (6) until it touches the reverse stitching lever plate (7).
4. Tighten screw (5) to secure stopper (6).

<Sewing>

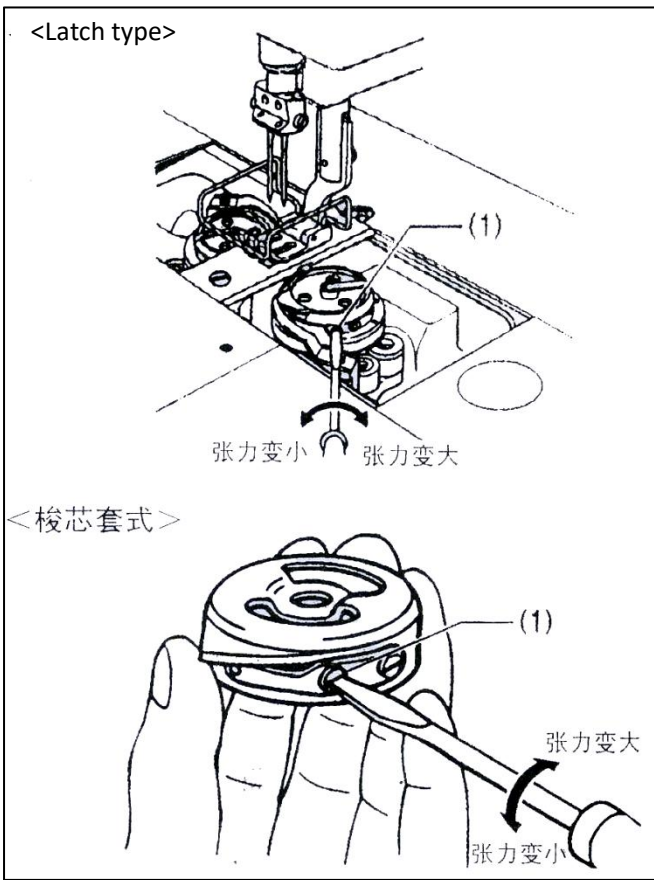
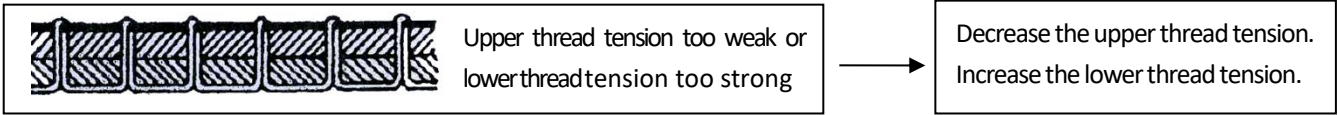
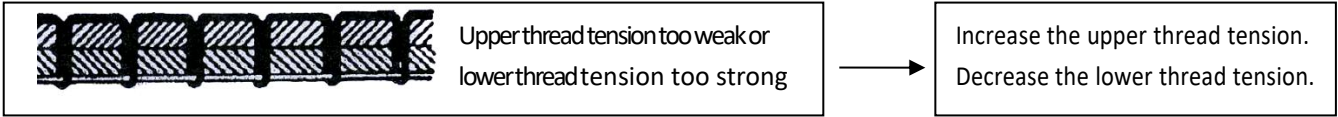
1. Return the stitch length dial (4) to the stitch length for normal sewing.
2. Turn dial lock lever (3) firmly to the left to lock stitch length dial (4).
3. Start sewing.
4. At the position where you would like to start sewing condensed stitches, press reverse stitch button (1) or reverse lever (2). (Condensed stitches are sewn while reverse stitch button (1) or reverse lever (2) is being pressed.)

* To stop sewing condense stitches and return to using the back tack function, lower the stopper (6) so that it does not touch the reverse stitching lever plate (7).

6. THREAD TENSION

6-1. Adjusting the thread tension

Good even stitches



<Lower thread tension>

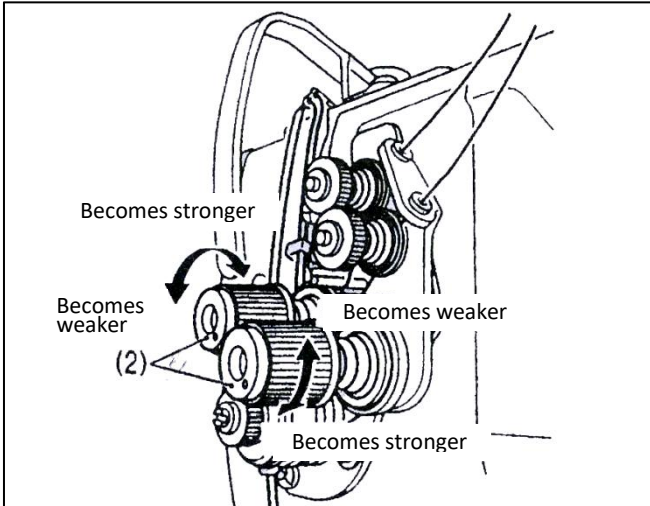


CAUTION



Turn off the power switch before adjusting the lower thread tension. The machine may operate if the treadle is depressed by mistake, which could result in injury.

Turn adjusting screw (1) to adjust.



<Upper thread tension>

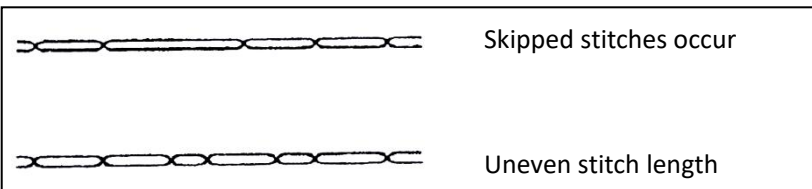
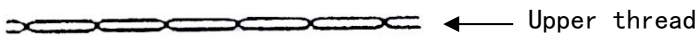
After the lower thread tension has been adjusted, adjust the upper thread so that a good, even stitch is obtained.

1. Lower the presser foot.
2. Adjust by turning tension nut (2).

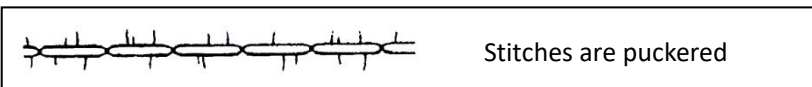
6-2. Adjusting the presser foot

pressure

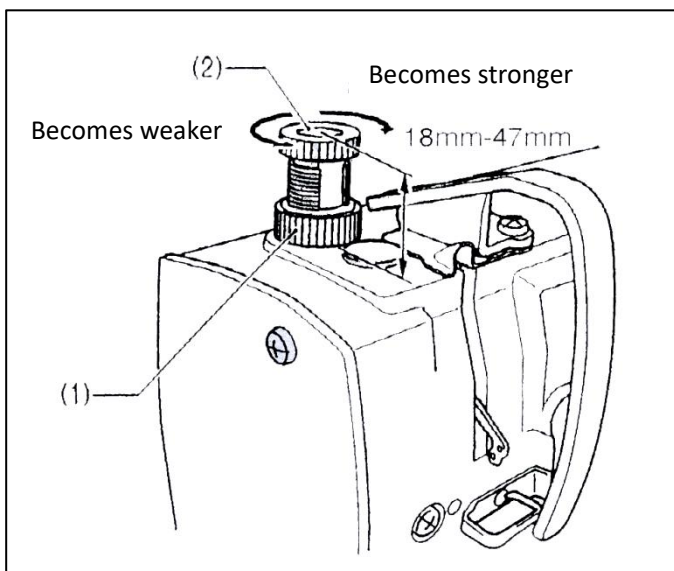
Correct stitches



→ Increase the pressure



→ Decrease the pressure



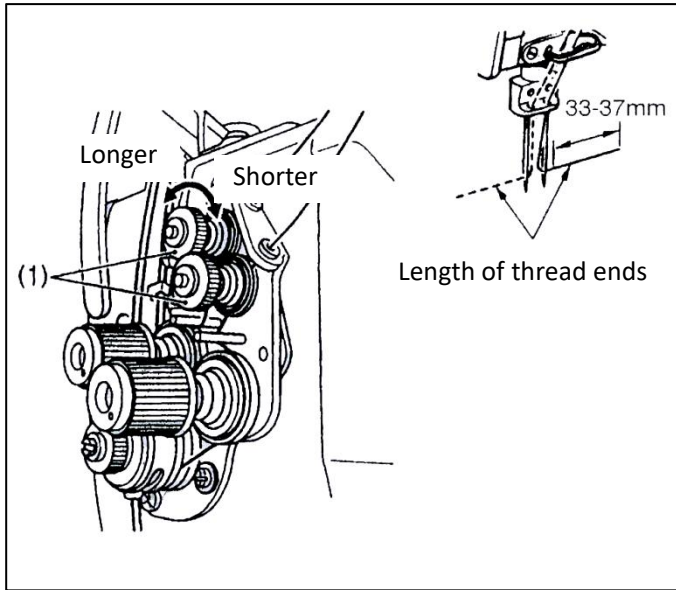
The presser foot pressure should be as weak as possible but strong enough so that the material does not slip. (Refer to "Adjusting screw height" in the table below as a guide to adjustment.)

1. Loosen adjusting (1).
2. Turn the presser adjusting screw (2) to adjust the presser foot pressure.
3. Tighten adjusting nut (1).

Reference values

Use	Adjusting screw height
For women underwear	Approx. 34mm
For light-weight and medium-weight materials	Approx. 34mm
For heavy-weight materials	Approx. 29mm

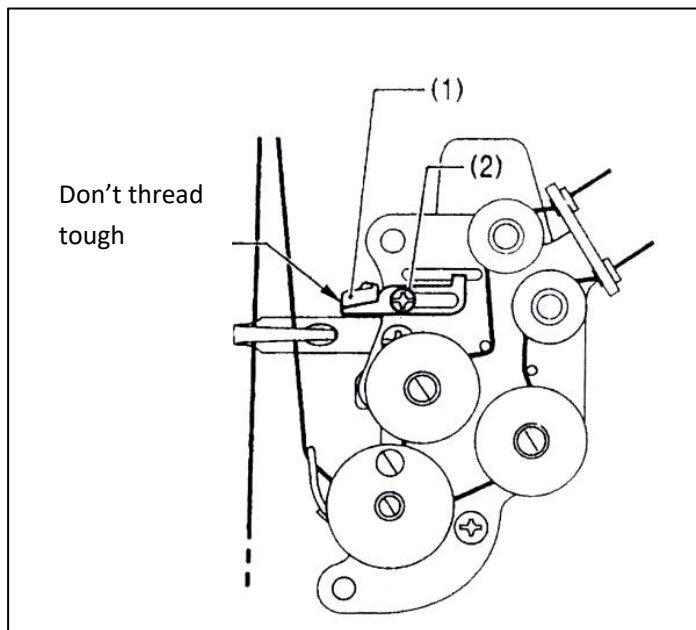
6-3. Adjusting the length of the thread ends after trimming (available only with machines of thread trimming function)



- Only thread tension adjusters (1) hold the thread when the thread being trimmed; the thread is loose at this time.
- The standard length of the upper thread ends is 33-37mm
- The length of the upper thread ends will decrease if thread tension adjusters (1) are tightened; if loosened, it will increase.

It can be adjusted by turning the thread tension adjusters (1).

6-4. Adjusting the thread take-up amount



The thread take-up amount is adjusted by how the thread is passed through the thread amount adjuster (1).

<Using the standard thread amount adjuster (1)>
Do not pass the thread through the thread amount adjuster (1). Loosen the screw (2) and slide the thread amount adjuster (1) to the right-side position.

<Adjusting the thread take-up amount>
When the thread has been passed through the thread amount adjuster (1), the thread take-up amount becomes less when the thread amount adjuster (1) is moved to the right.

It is better not to pass the thread through the thread amount adjuster (1) :

- When sewing heavy materials using a sewing machine with underwear specifications.
- When the thread take-up amount is not enough, such as when the stitch length is increased.

It is better to pass the thread through the thread amount adjuster (1) :

- When sewing with slippery threads such as synthetic yarns.
- When sewing light materials
- When sewing with a stitch length of 2mm or less
- When sewing under any of the above three conditions and you would like to prevent skipped stitches, thread tightening problems such as

looping or thread breakages.

7. CLEANING AND MAINTENANCE

CAUTION



Turn off the power switch before carrying out cleaning.
The machine may operate if the power switch is depressed by mistake, which could result in injury.



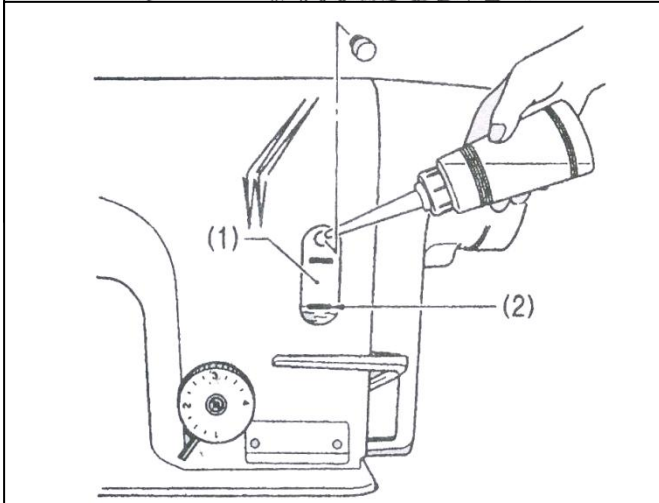
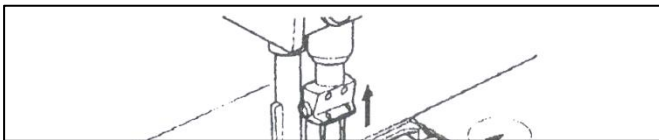
Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhea.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



Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip and your hand may get caught.

7-1. Daily cleaning procedures

The following cleaning should be carried out each day in order to maintain the performance of this machine and to ensure a long serving life. Furthermore, if the sewing machine has not been used for a long period of time, carry out the following cleaning procedures before using it again.



<Cleaning>

1. Turn the machine pulley to move the needle to the highest position.
2. Open the slide plates at the left and right.
3. Remove the bobbin.
4. Clean the thread scraps from the rotary hook.
5. Install the bobbin (and the bobbin case).

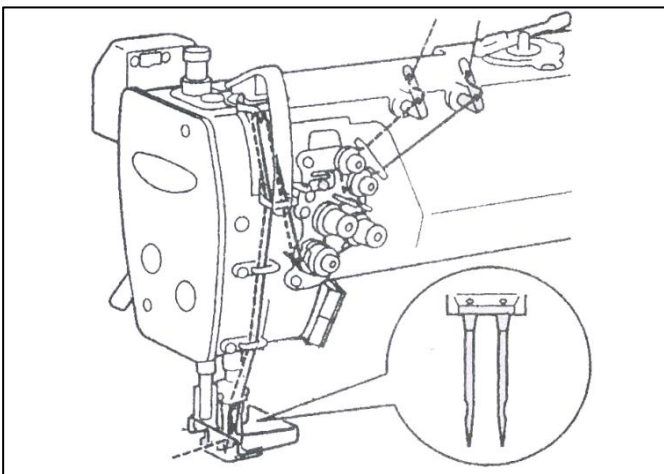
<Filling the oil tank>

Use only the lubricating oil (Nisseki Mitsubishi sewing lube 10N: VG10).

* If this type of lubricating oil is difficult to

obtain, the recommended oil to use are<Exxon Mobil ESSOTEX SM10; VG10>and<Hangzhou Xingang Petrochemical Co. Ltd. LuBu:7Exsn10>

1. If the lubricating oil level drops below the bottom reference line (2) of the oil gauge window(1), be sure to add more oil. (Refer to page 8.)

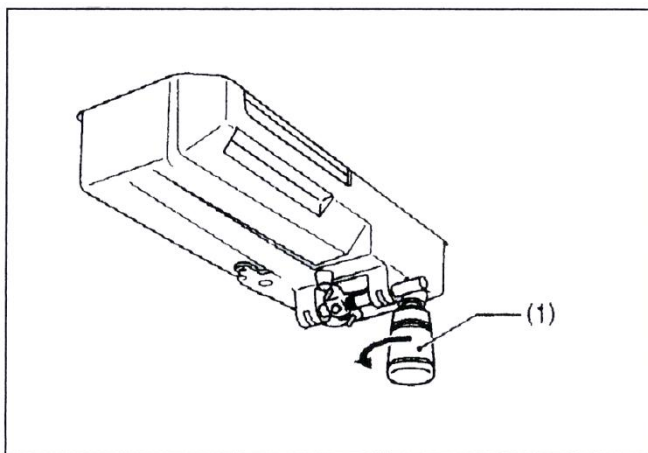


<Checking>

1. Replace the needle if it is bent or if the tip is broken.
 2. Check that the upper threads have been threaded correctly. (Refer to page 17)
 3. Carry out a test sewing.
- lubricating oil>
1. If the oiler (1) has filled with oil, the oiler (1) and dispose of the oil inside
 2. Screw the oiler (1) back into the oil pan.

<Draining>

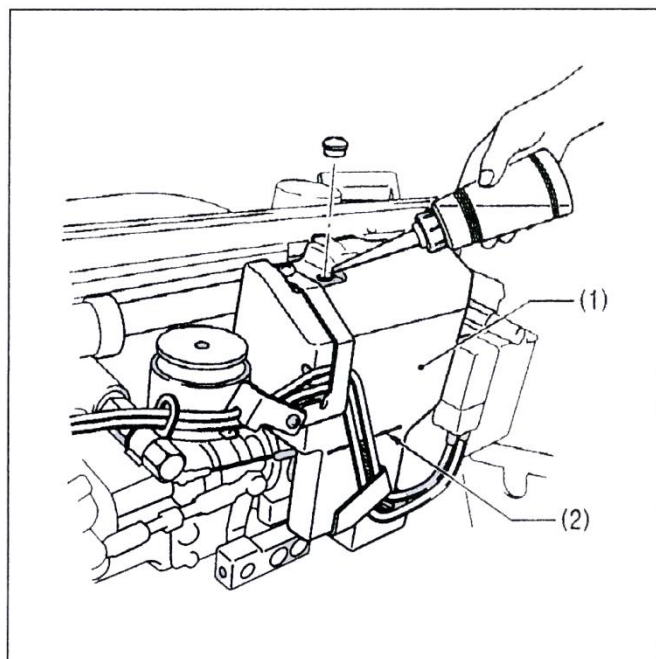
1. If the oiler (1) has filled with oil, the oiler (1) and dispose of the oil inside
2. Screw the oiler (1) back into the oil pan.



<Draining
ng

unscrew
it.

7-2. Lubricating Via the oil cover (every 6 months)



<Minimum lubrication type>

Pour lubricating oil into the oil cover (1) about once every six months.

<Semi dry type>

Pour lubricating oil into the oil cover (1) about as often as grease is applied.

Use only the lubricating oil (Nisseki Mitsubishi Sewing Lube 10N; VG10) specified by HIKARI.

* If this type of lubricating oil is difficult to obtain, the recommended oil to use are<Exxon Mobil ESSOTEX SM10; VG10>and<Hangzhou Xingang Petrochemical Co. Ltd. LuBu:7Exsn10>

3. Tilt back the machine head.
4. Pour lubricating oil into the oil cover (1) until the oil level reaches the reference line (2). (Refer to page 8.)
5. Return the machine head to its normal position.

8. ADJUSTING THE ROTARY HOOK LUBRICATION AMOUNT

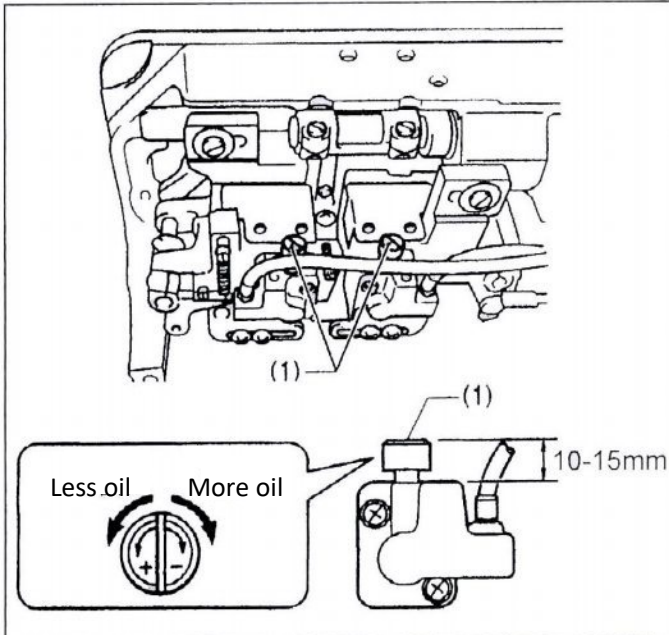


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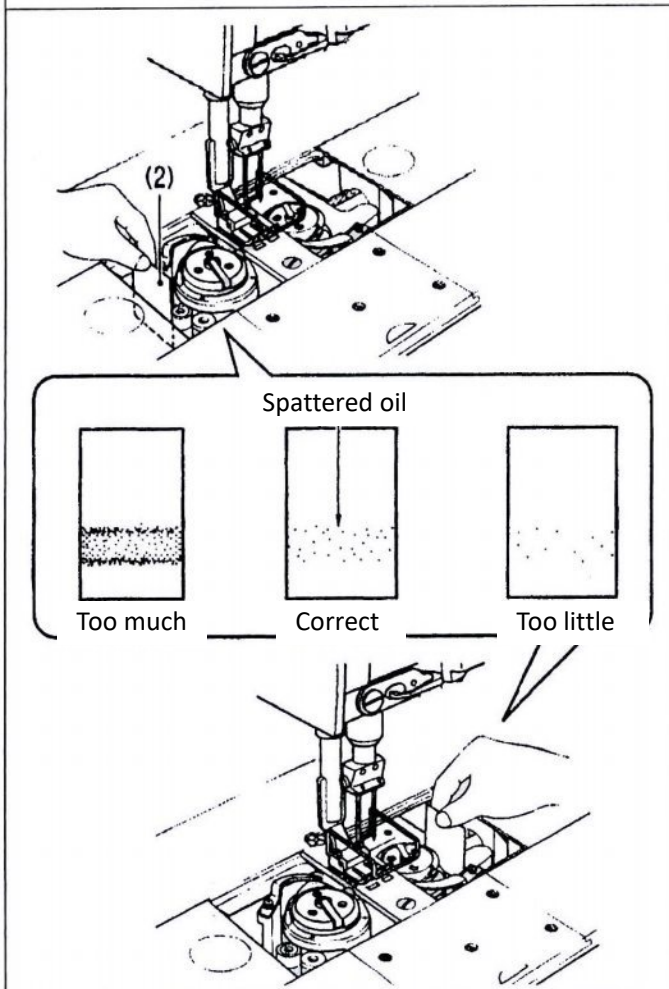
Be careful not to touch your fingers or the lubrication amount check sheet against moving parts such as the rotary hook or the feed mechanism when checking the amount of oil supplied to the rotary hook, otherwise injury may result.

Use the following procedure to check the amount of oil being supplied to the rotary hook when replacing the rotary hook or when changing the sewing speed.



<Guide to lubrication adjustment>

1. Tilt back the machine head.
2. Turn the oil adjusting screw(1) to adjust the height to within 10-15mm.



<Checking the lubrication amount>

1. Turn off the power switch.
2. Remove the thread from all points from the thread take-up to the needle.
3. Remove the needle and the bobbin.
4. Use the lifting lever to lift the presser foot.
5. Turn on the power switch.
6. Run the machine at the normal sewing speed for approximately 1 minute without sewing any material (following the same start/stop pattern as when actually sewing).
7. Place the lubrication amount check sheet (2) to the left of the rotary hook (the right side is the right side of the rotary hook), hold it in place while running the sewing machine at the normal sewing speed for approximately 8 seconds. (Any type of paper can be used as the lubrication amount check sheet (2).)
8. Check the amount of oil which has spattered onto the sheet.

<Adjusting the lubrication amount>

1. Tilt back the machine head.
2. Turn the adjusting screw(1) to adjust the lubrication amount.
 - If the rotary hook adjusting screw(1) is turned counterclockwise, the lubrication amount becomes more.
 - If the rotary hook adjusting screw(1) is turned clockwise, the lubrications amount becomes less.
3. Check the lubrication amount again according to the procedure given in "Checking the lubrication amount" above.
 - * Turn the adjusting screw(1) and check the lubrication amount repeatedly until the lubrication amount is correct.
4. Check the lubrication amount again after the sewing machine has been used for approximately two hours.

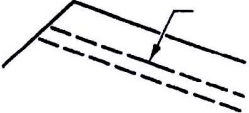
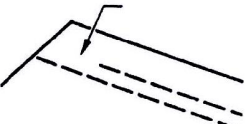
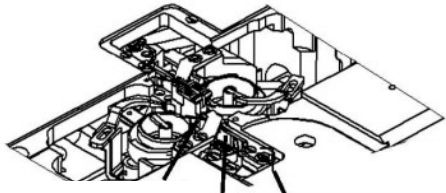

9. TROUBLESHOOTING

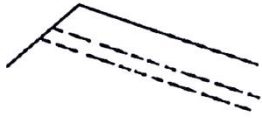

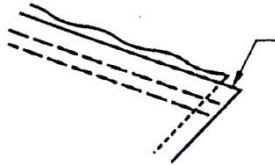


- Please check the following points before calling for repairs or service.
- If the following remedies do not fix the problem, turn off the power switch and consult a qualified technician of purchase.

DANGER

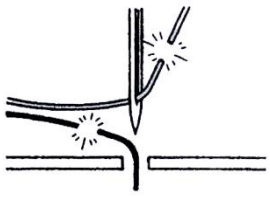
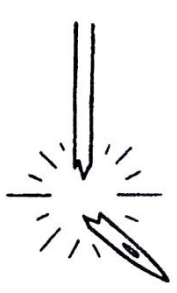
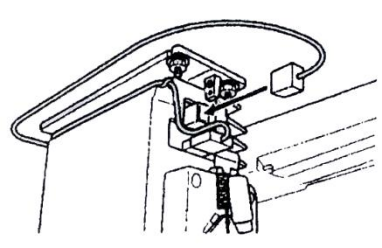


Before opening the control box cover, turn off the power switch and disconnect the power cord, wait till 5 minutes later then open the control box cover. Failing to follow the above instruction may cause personal injury if an area of high voltage is touched.

<p>3</p>	<p>Skipped stitches occur while sewing</p> 	<ul style="list-style-type: none"> ▪ Is the needle tip bent? Is the needle tip blunt? If the needle tip is bent or broken, replace the needle. ▪ Is the needle properly installed? If it is incorrect, install the needle correctly. ▪ Is the machine properly thread? If it is incorrect, thread the thread correctly. ▪ The press foot pressure too weak? Adjust the presser foot pressure. ▪ Is the needle too thin? Replace the needle with a needle that is one rank thicker. ▪ Is the presser foot too high? Adjust the height of the presser foot. ▪ Is the thread take-up spring too weak? Adjust the tension of the thread take-up spring. ▪ Is the thread take-up amount too large? Adjust the thread take-up amount. 	<p>11</p> <p>16-17</p> <p>24</p> <p>*</p> <p>*</p> <p>25</p>
<p>4</p>	<p>Skipped stitches at sewing start Thread unraveling at sewing start</p> 	<ul style="list-style-type: none"> ▪ Is the thread take-up spring tension too strong? Reduce the tension of the thread take-up spring. ▪ Is the thread take-up spring operating range too large? Raise the position of the stopper. ▪ Is the upper thread ends too short after trimming? Adjust the tension of the upper thread. ▪ Is the thread neatly trimmed? Sharpen the fixed knife or replace the fixed knife and active knife according to needs. ▪ Is the needle too thick? Try using a needle with a count that is one lower than the current needle. ▪ Is the sewing speed too high when start sewing? Use low speed start-up function. ▪ Is the upmost stop position of the needle too high? Adjust the upmost stop position of the needle. ▪ Is the bottom thread hold by the bottom thread holding spring(1) after trimming? If not, the installing position of active knife(2) should be adjust.  <p style="text-align: center;">Bottom thread 1 2</p> <ul style="list-style-type: none"> ▪ If sewing light or medium-weight material, is a presser foot with slots on the underside or grooved feed dog being used? Used a presser foot without slots. Used a feed dog without grooves. 	<p>*</p> <p>*</p> <p>24</p> <p>*</p> <p>Adjust according to the electronic control box manual</p> <p>Adjust according to the electronic control box manual</p>
<p>Problem</p>	<p>Possible cause</p>	<p>Page</p>	

5	<p>Uneven seam</p> 	<ul style="list-style-type: none"> ▪ Is the presser foot pressure too weak? Adjust the presser foot pressure. ▪ Is the feed dog too low? Adjust the feed dog height. ▪ Is the bobbin scratched? If the bobbin is damaged, smooth it with an oiled grindstone or replace it. 	<p>24</p> <p>*</p>
6	<p>Large degree of puckering (excess tension)</p> 	<ul style="list-style-type: none"> ▪ Is the upper thread tension too strong? Make the upper thread tension as weak as possible. ▪ Is the lower tension too strong? Make the lower thread tension as weak as possible. ▪ Is the thread take-up spring tension too strong? Make the thread take-up spring tension as weak as possible. ▪ Is the thread take-up spring operating range too large? Move the stopper to a position as high as possible. ▪ Is the presser foot pressure too strong? Adjust the presser too pressure. ▪ Is the sewing speed too high? Slow down the sewing speed gradually using the speed control button. ▪ Is the thread take-up amount too small? Adjust the thread take-up amount. 	<p>23</p> <p>23</p> <p>*</p> <p>*</p> <p>24</p> <p>Adjust according to the electronic control box manual 25</p>
7	<p>Material slippage</p> 	<ul style="list-style-type: none"> ▪ Is the presser foot pressure too strong? Adjust the presser foot pressure. 	<p>24</p>
8	<p>Lower thread is tangled at sewing start. The bobbin is racing when trimming.</p> <p>Bottom thread</p> 	<ul style="list-style-type: none"> ▪ Is the bobbin spinning direction correct when the lower thread is being pulled? Set the bobbin so that it turns in the opposite direction to the rotary hook. ▪ Is there too much thread wound onto the bobbin? The bobbin winding amount should not be  More than 80%. ▪ Has the hook racing preventing spring been installed? Install the hook racing preventing spring. ▪ Is the bobbin turning smoothly? If the bobbin is not turning smoothly, replace the bobbin. ▪ Is a bobbin other than the light-alloy bobbins specified by HIKARI being used? Use only bobbins that are specified by HIKARI. 	<p>14</p> <p>13</p> <p>14-15</p> <p>14-15</p>

Problem	Possible cause	Page
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<p>9</p>	<p>Upper and lower threads are breaking</p> 	<ul style="list-style-type: none"> • Is the needle bent or is the needle tip broken? Replace the needle if it is bent or broken. • Is the needle properly installed? If it is incorrect, install the needle correctly. • Is the machine properly threaded? If it is incorrect, thread the thread correctly. • Is the oil tank filled with lubricating oil? If the level of lubricating oil is below the bottom reference line, add more oil. • Is the upper or lower thread tension too weak or too strong? Adjust the upper thread or lower thread tension. • Is the rotary hook blocked with dust or thread scraps? Clean the rotary hook. • Is the upper thread loose because of the thread take-up spring operating range too small? Adjust the position of the stopper. • Is the rotary hook, feed dog or other parts damaged? If they are damaged, smooth them with an oiled grindstone or replace the damaged parts. • Is the thread path damaged? If the thread path is damaged, smooth it with sandpaper or replace the damaged parts. • Is the thread take-up amount correct? Adjust the thread take-up amount. 	<p>15 17-21 8 27 30 * * * 29</p>
<p>10</p>	<p>Trimming trouble</p>	<ul style="list-style-type: none"> • Is the active knife scratched or bent? Replace the active knife. 	<p>*</p>
<p>11</p>	<p>Broken needles</p> 	<ul style="list-style-type: none"> • Is the material being pushed or pulled with excessive force during sewing? • Is the needle bent, the needle tip broken or the needle hole blocked? Replace the needle. • Does the needle drop into the center of the needle hole in the feed dog? Check the needle drop position. If the needle does not drop into the center of the needle hole in the feed dog, reinstall the feed dog. If the needle bar has rotated, rotate the needle bar to the correct position. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>CAUTION: It is extremely dangerous to leave any pieces of broken needle sticking in the material. If the needle breaks, search for all pieces until the whole of the needle is found again.</p> <ul style="list-style-type: none"> • Furthermore, we recommend taking steps to account for such needles to comply with product liability regulations. </div>	<p>15 * *</p>
<p>12</p>	<p>Sewing machine doesn't work after the power switch has been turned on and the treadle has been pressed</p>	<ul style="list-style-type: none"> • Is the power plug disconnected? From the control box? Insert the plug into the control box firmly. 	<p>12</p>

Problem		Possible cause	Page
13	Sewing machine cannot work at high speed	<ul style="list-style-type: none"> ▪ Are the sewing speed setting and backtack sewing speed setting correct? Use speed control button to set the high sewing speed. 	Adjust according to the electronic control box manual
14	Sewing machine stops operating when sewing	<ul style="list-style-type: none"> ▪ Is the needle positioning button turned on? Turn off the needle positioning button. ▪ Is the power voltage too low? Check the power supply.(If the power wire too long or one socket connected with too many electrical appliances, it may reduce the power voltage and cause the reset function, which stop the sewing machine from operation even the voltage of power supply itself is proper.) 	Adjust according to the electronic control box manual *

9-2. Error code

If there's any error code showing on the panel, please refer to the Electronic Control Box Manual for details.