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1. Brief introduction

This machine is designed with link type feed mechanism and link lever thread take-up mechanism and full lubrication by pump. It's suitable for sewing leather, canvas and other heavy weight materials, such as suitcase, car seat, tent, sofa, etc. It's reliable and accurate on such functions as thread trimming, needle positioning, etc.

2. Main specifications

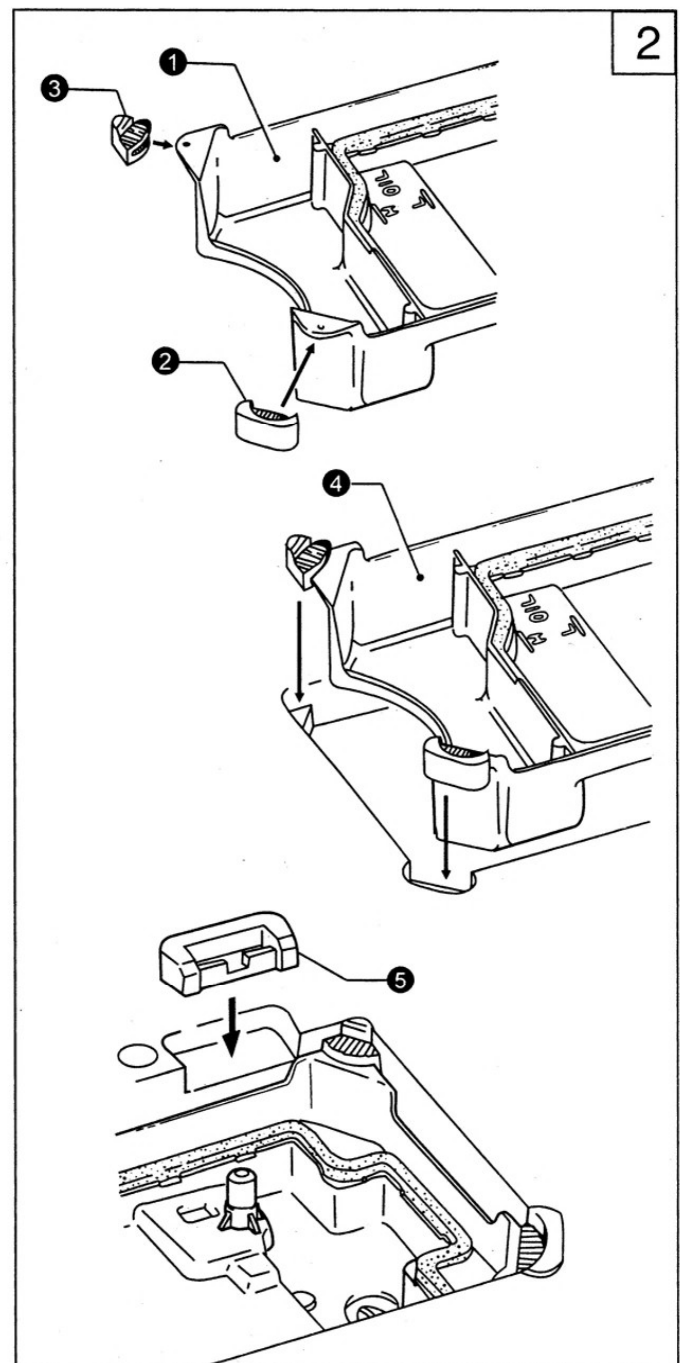
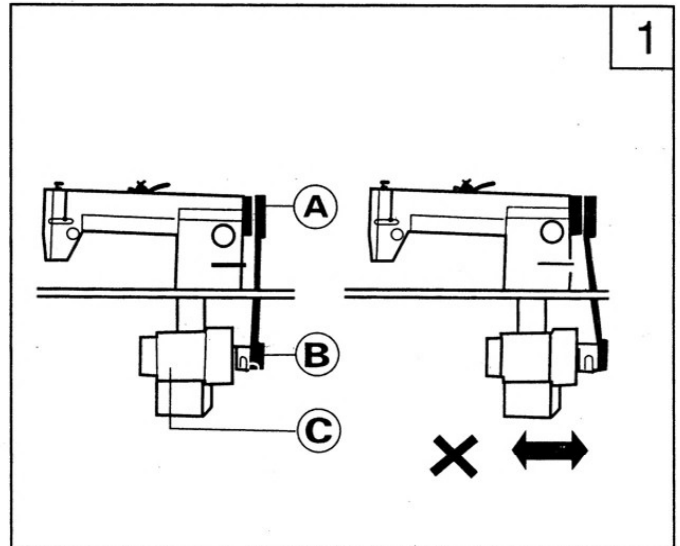
Applications	Medium & heavy weight materials	
Max sewing speed	2000 s.p.m	
Max stitch length	8mm	
Needle bar stroke	37mm	
Lifting amount of presser foot	3.5-5.5mm	
Needle	DP×17 23#	
Presser foot lifting height	By hand	8mm
	By knee	16mm
Hook	Large lubrication hook	
Lubrication	Automatic lubrication	
Motor power	Servo motor	

3. Installing the motor (Fig.1)

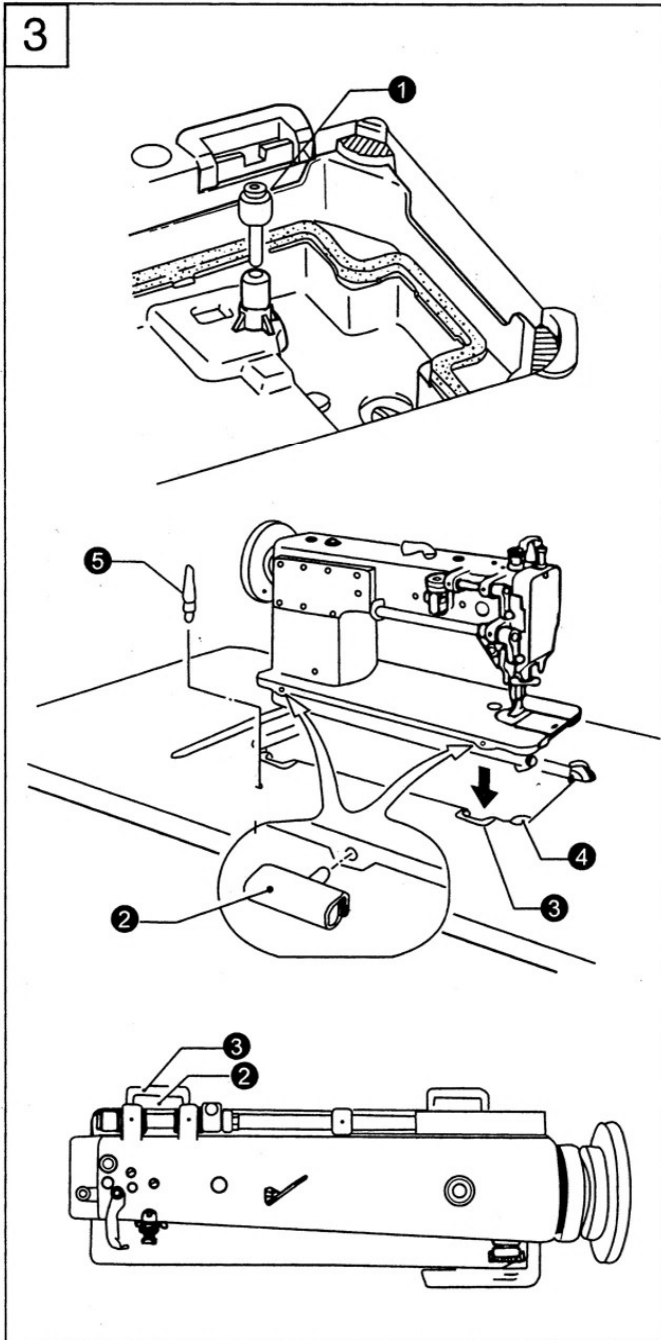
Move the motor (C) leftward or rightward, to make the machine pulley groove (A) and motor pulley groove (B) on one line.

4. Installing the oil pan (Fig.2)

1. Insert the two head cushion ② into the front corners of the oil pan ①;
2. Insert the two head cushion ③ into the back corners of the oil pan ①;
3. Place the oil pan ④ into the cutouts of table;
4. Insert the two rubber cushion ⑤ into the notches of table.



3



5. Installing the machine head (Fig.3)

1.Insert the knee lifter lifting bar ①.

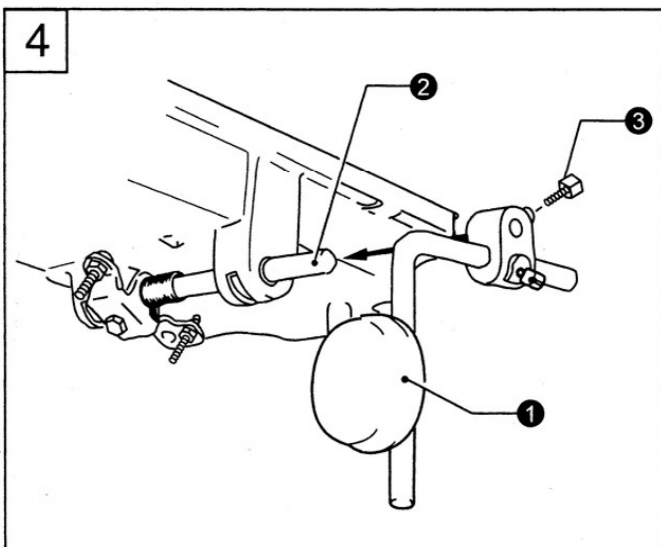
2.Insert the two hinges ② into the holes in the machine bed.

3.Clamp the two hinges onto the rubber cushions ③ in the work table, and then place the machine head onto the head cushions ④ which are on the top of the oil pan corners.

4.Tap the rest bar ⑤ into the table hole.

NOTE: Tap the rest bar securely into the table hole, if not, the machine head will not be safe when it is tilted back.

4

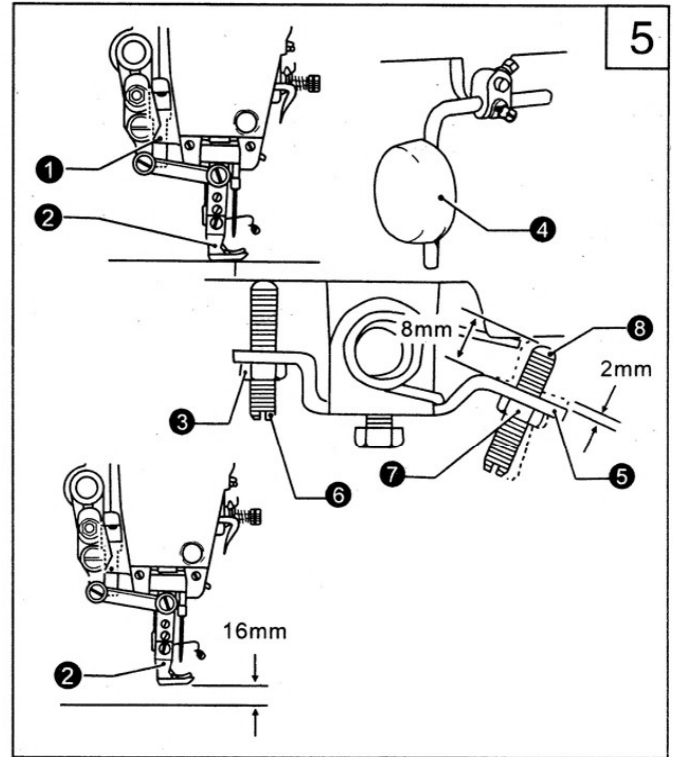


6. Installing the knee lifter assy. (Fig.4)

Insert the knee lifter assy. ① into the shaft ② under the oil pan, and slightly tight the screw ③.

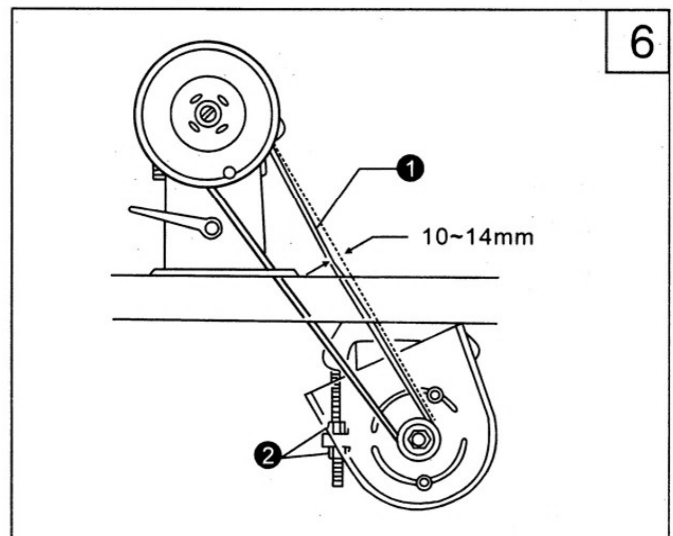
7. Adjusting knee lifter(Fig.5)

- 1.Lower the presser foot ② by turning the presser foot bar lifter ①.
- 2.Loosen the nut ③.
- 3.Turn the screw ⑥ to adjust the bracket ⑤ to 2mm play.
- 4.Securely tighten the nut ③.
- 5.Loosen the nut ⑦.
- 6.Turn the screw ⑧ until the distance between the end of the screw and bracket is approximately 8mm.
- 7.Turn the adjusting screw ⑧ to adjust, so that the presser foot is at the desired position within a distance of 16mm above the needle plate when the knee lifter plate ④ is fully pressed.
- 8.After adjustment, tighten the nut ⑦.



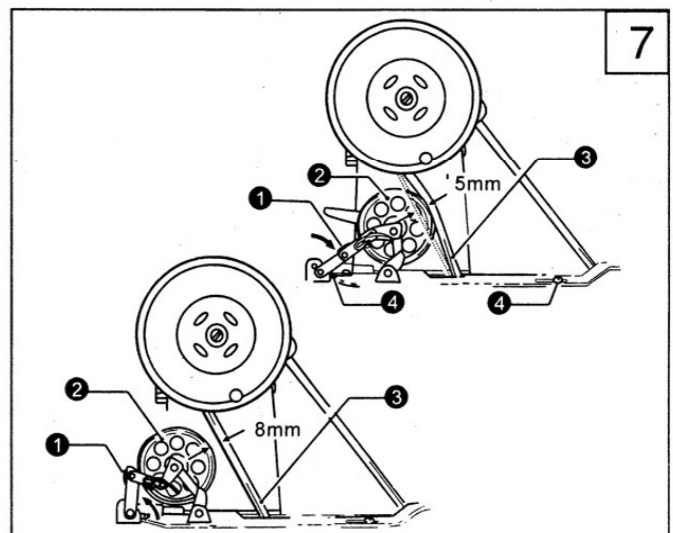
8. Installing the belt (Fig.6)

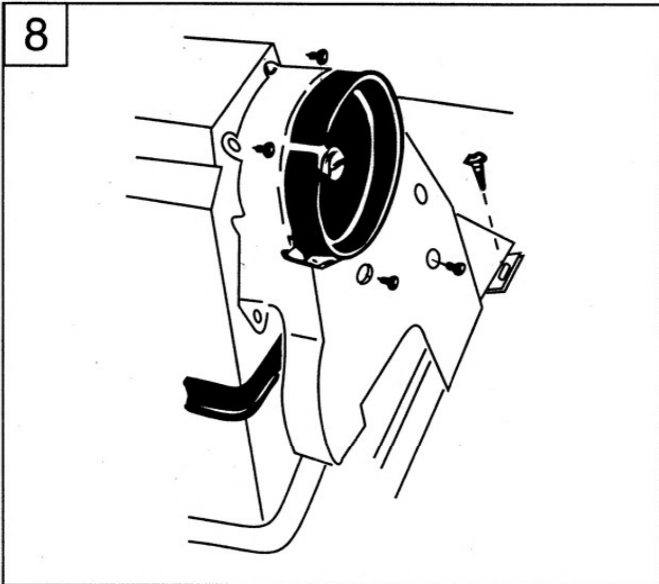
- 1.Tilt back the machine head, and then place the belt ① onto the machine pulley and motor pulley.
- 2.Turn the nut ② to adjust, so that there is 10-14mm of deflection of the belt when it's pressed at the middle point by a force of 5N.



9. Installing the bobbin winder (Fig.7)

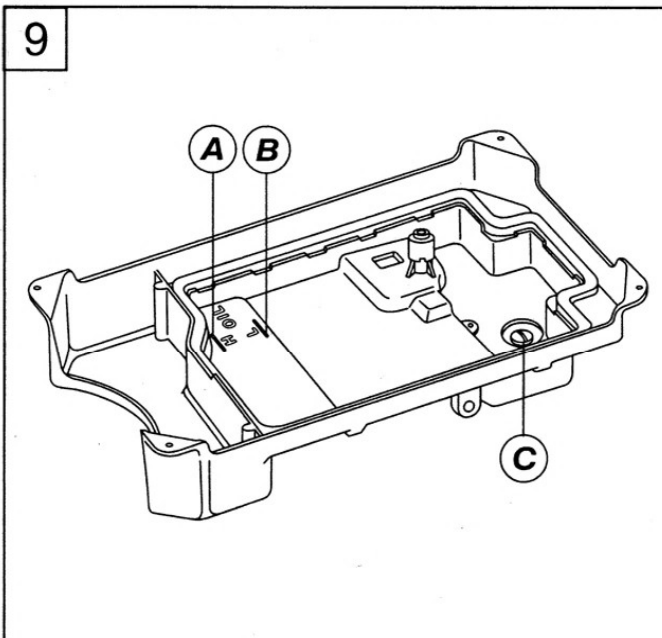
- 1.Push down the bobbin presser arm ① as far as it will go.
- 2.Press the bobbin winder wheel ② on the belt, and push the belt by approximately 5mm, meanwhile make sure that the winder should be parallel with the belt hole in the work table.
- 3.Fix the winder by two screws ④.
- 4.Pull the bobbin presser arm ① back, and check that there is the clearance of approximately 8mm between the bobbin winder wheel ② and the belt ③.





10. Installing the belt cover (Fig.8)

Please install the belt cover as shown in the Fig. 8



11. Lubrication(Fig.9)

1.Oil amount

Please fill the oil according to the mark indicated on the oil pan. Mark (A) means the highest position. Mark (B) means the lowest position. If the oil amount is lower than the Mark (B), oil will not be pumped and machine will be jammed.

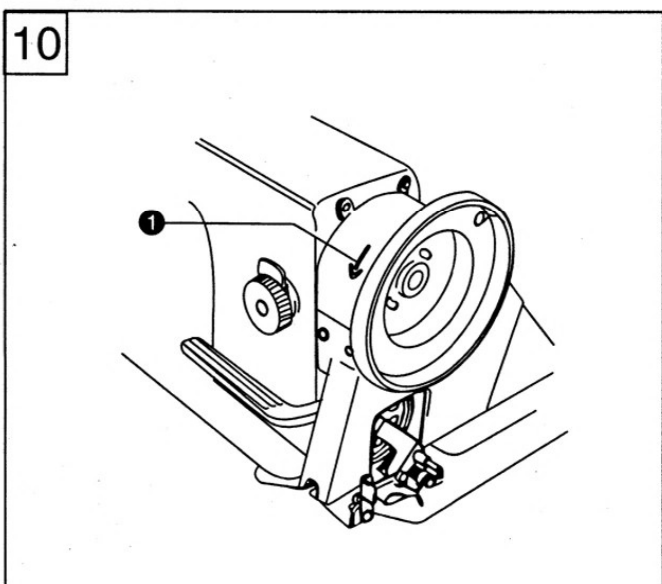
2.Fill the oil

Please fill the 18# sewing oil into the oil pan until to the Mark (A)

3.Change the oil

1.Uninstall the screw (C), and drain out the used oil

2.Clean the oil pan, and tighten the screw (C), fill the fresh oil again according the requirement.



12. Checking the machine pulley rotating direction (Fig.10)

1.Insert the power plug and turn on the switch.
2.Depress the treadle slightly and check if the machine pulley starts to turn in the direction of the arrow.

3.If not, change the direction according to the operation instruction of motor.

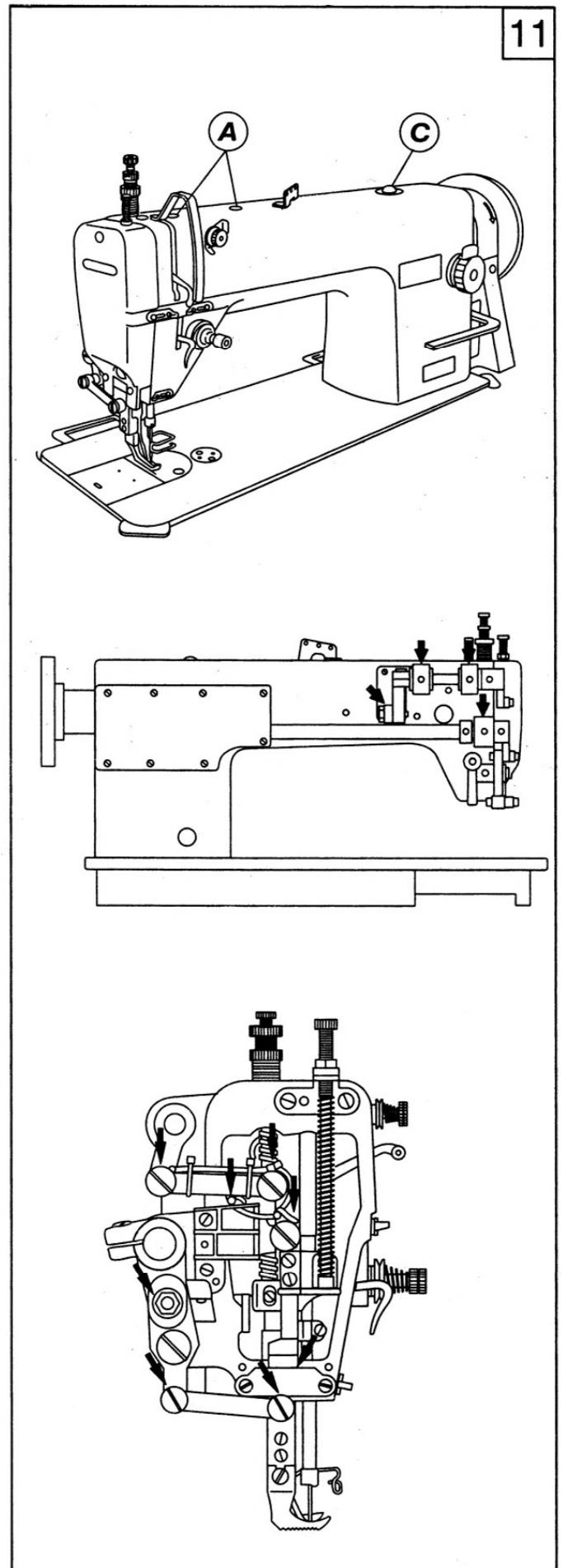
13. Test operation(Fig.11)

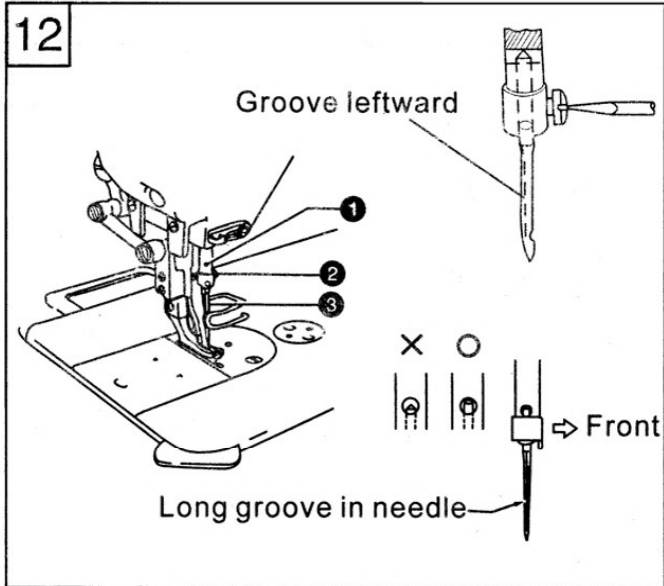
Carry out the test operation when start up a new sewing machine for the first time, or restart after a long period of non-use.

Remove the rubber cap (A) on the top of the arm and face plate, fully lubricate the parts showed by the arrows.

Install the face plate again, lift the presser foot and operate the machine at a lower speed of 1000-1500spm, and observe the oil running through the oil gauge window.

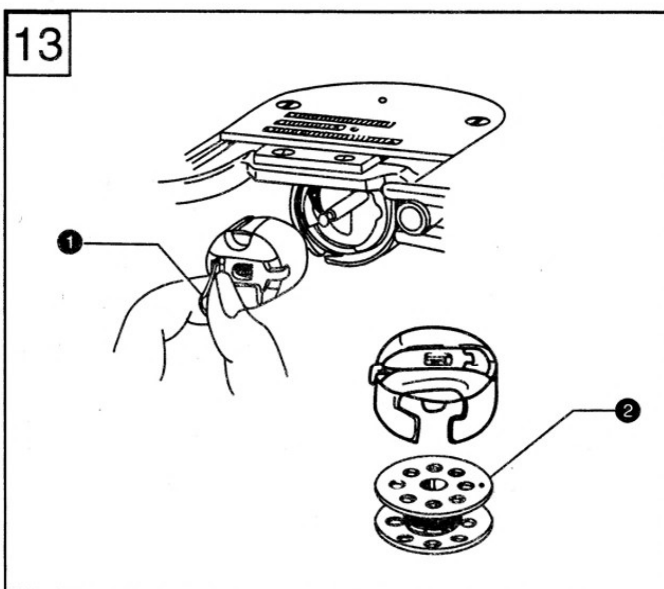
After one month, then the speed can be increased according to the different sewing operation.





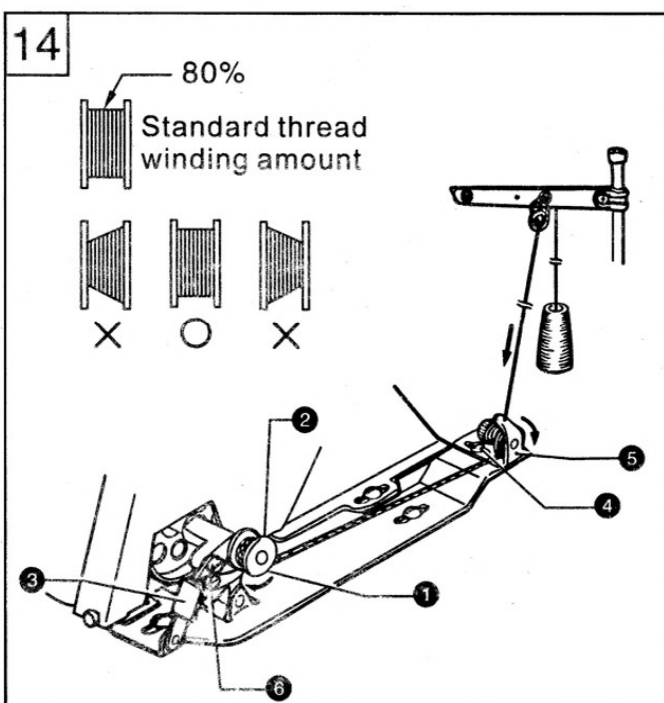
14. Installing the needle (Fig.12)

1. Turn the machine pulley to move the needle bar ① to its highest position;
2. Loosen the screw ②
3. Insert the needle ③ in a straight line as far as it will go, making sure that the long groove on the needle is at the left, and then securely tighten the screw ②



15. Removing the bobbin case(Fig.13)

1. Turn the machine pulley to lift the needle bar to its highest position. Pull the latch ① of the bobbin case upward and then put the bobbin into the bobbin case, finally insert the complete bobbin case with bobbin into the hook shaft.
2. To remove the bobbin case, pull the latch and draw the bobbin case out of the hook.

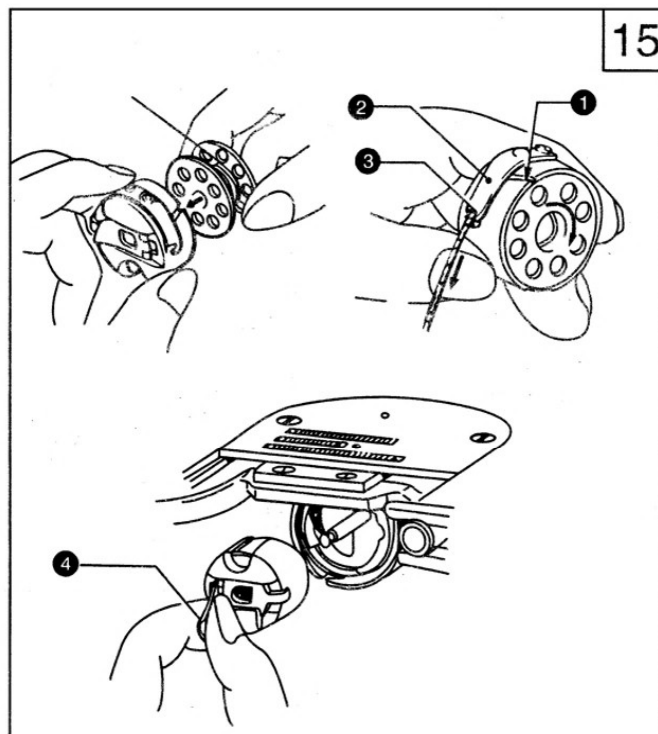


16. Winding the bobbin thread (Fig.14)

1. Turn the power on;
 2. Place the bobbin ① onto the bobbin winder shaft ②;
 3. Wind the thread several circles around the bobbin in the direction indicated by arrow;
 4. Push down the bobbin presser arm ③;
 5. Lift the presser foot;
 6. Depress the treadle, the winding operation will start;
 7. Once finished, the bobbin presser arm ③ will recover automatically.
- * If the thread winding is not neat and even, loosen the screw ④ to adjust the position of bobbin winder base.
- * Turn the screw ⑥ to adjust the bobbin winding amount
- Tighten the screw to increase the winding amount;
 - Loosen the screw to decrease the winding amount.
- Note:
The proper winding amount should be around 80% of the bobbin capacity.

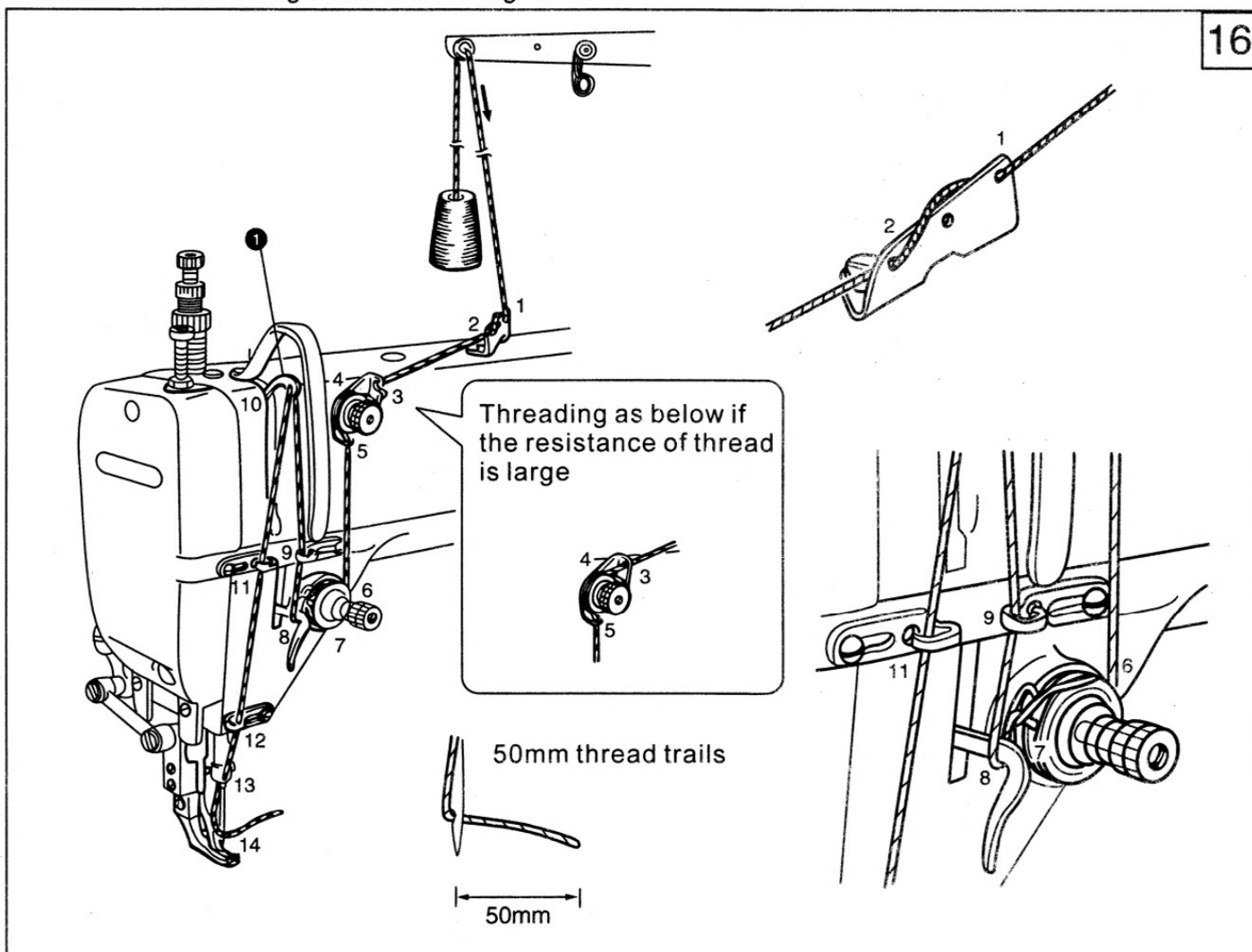
17. Threading the bobbin thread (Fig.15)

1. Turn the machine pulley to lift the needle to its highest position;
2. The bobbin thread should be right twist, place the bobbin into the bobbin case;
3. Pass the thread through the slot ① and spring plate ②, and finally pull it out of the notch ③;
4. Check that the bobbin should turn clockwise if the thread is pulled;
5. Hold the latch ④, and place the bobbin case in the hook.

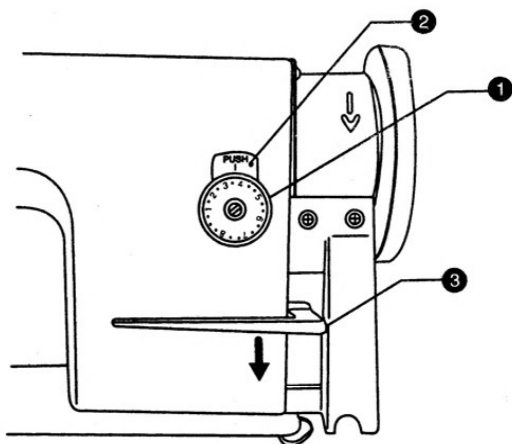


18. Threading the needle thread (Fig.16)

Raise the thread take-up lever to its highest position. This will make threading easier and will prevent the thread from coming out at the sewing start.



17



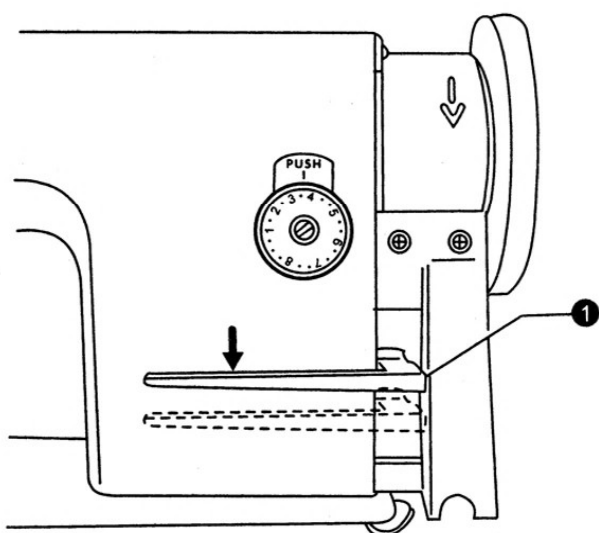
19. Adjusting the stitch length (Fig.17)

While press the stopper ②, turn the stitch length dial ① to make the number on the dial align with the mark on the stopper ②. The number is the stitch length in mm.

* The larger the number, the longer the stitch length will be.

* When turn the dial from a larger setting to a smaller setting, it will be easy to turn if the reverse lever ③ is pressed down.

18

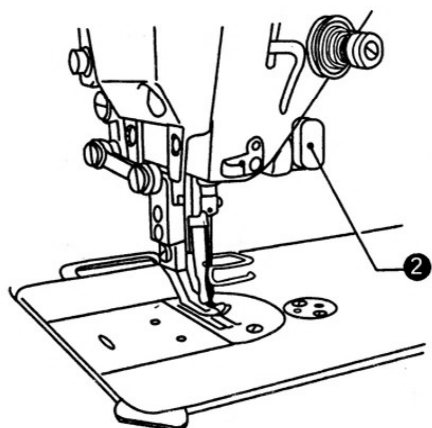


20. Sewing and backtacking (Fig.18)

1. Turn the power on;

2. Depress the treadle to start sewing.

When the reverse lever ① is pressed or the backtacking button is on during sewing, the feed will be reversed. After release, the feed will recover to normal.



21. Adjusting the thread tension (Fig.19)

19

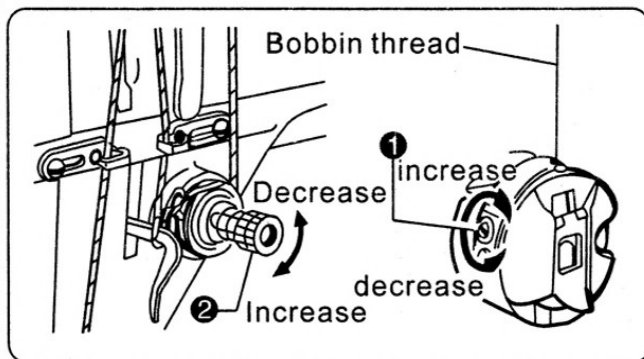
Normal stitch



- increase the needle thread tension
- decrease the bobbin thread tension



- decrease the needle thread tension
- increase the bobbin thread tension



<Bobbin thread tension>

Adjust by turning the screw ① until the bobbin case drops gently by its own weight while the thread end coming out of the bobbin case is held.

<Needle thread tension>

After adjust the bobbin thread tension, adjust the needle thread tension so that a good, even stitch seam is obtained.

1. Lower the presser foot;
2. Adjust by turning the thread tension nut ②.

22. Adjusting the presser foot pressure(Fig.20)

<Adjusting the presser foot pressure>

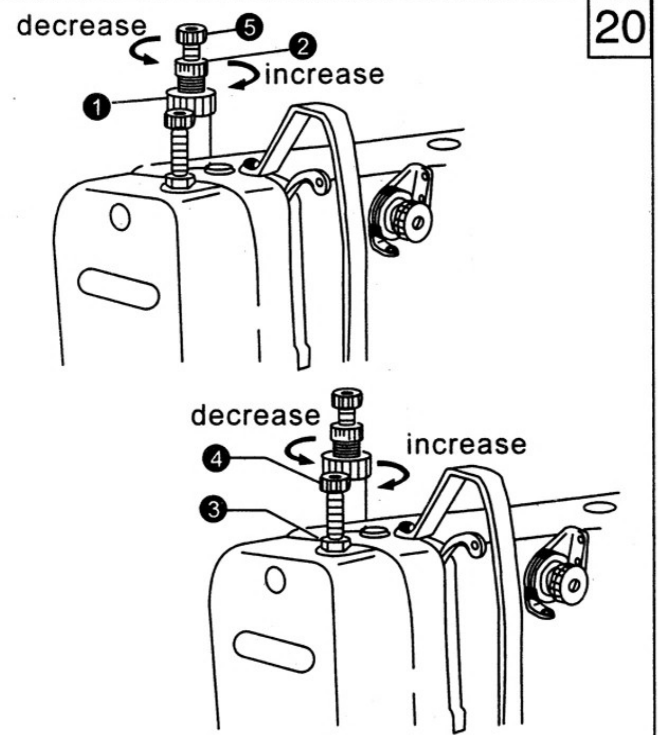
1. Loosen the lock nut ①;
2. Turn the adjusting screw ② to adjust the pressure of presser foot, if it's not enough, please turn the screw ⑤ to increase the pressure.

* The pressure should be as weak as possible, but strong enough so that the material doesn't slip.

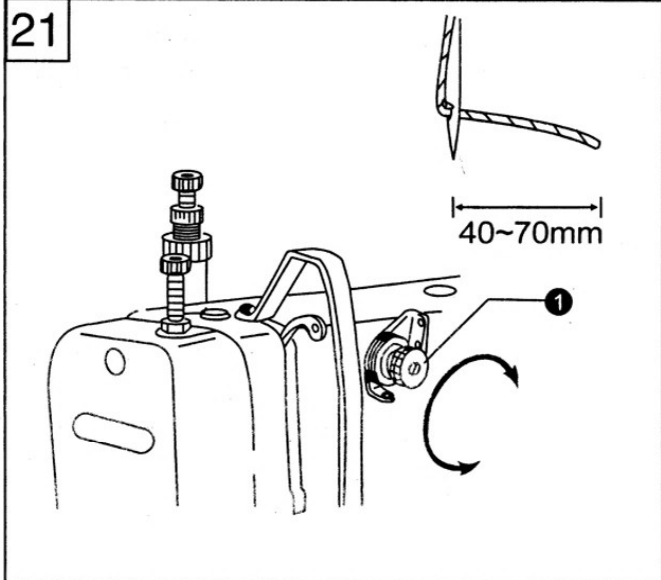
3. Tighten the nut ①.

<Adjusting the walking foot presser>

1. Loosen the nut ③;
2. Turn the screw ④ clockwise to increase the pressure, on the contrary, turn the screw counterclockwise to decrease the pressure;
3. Tighten the nut ③.

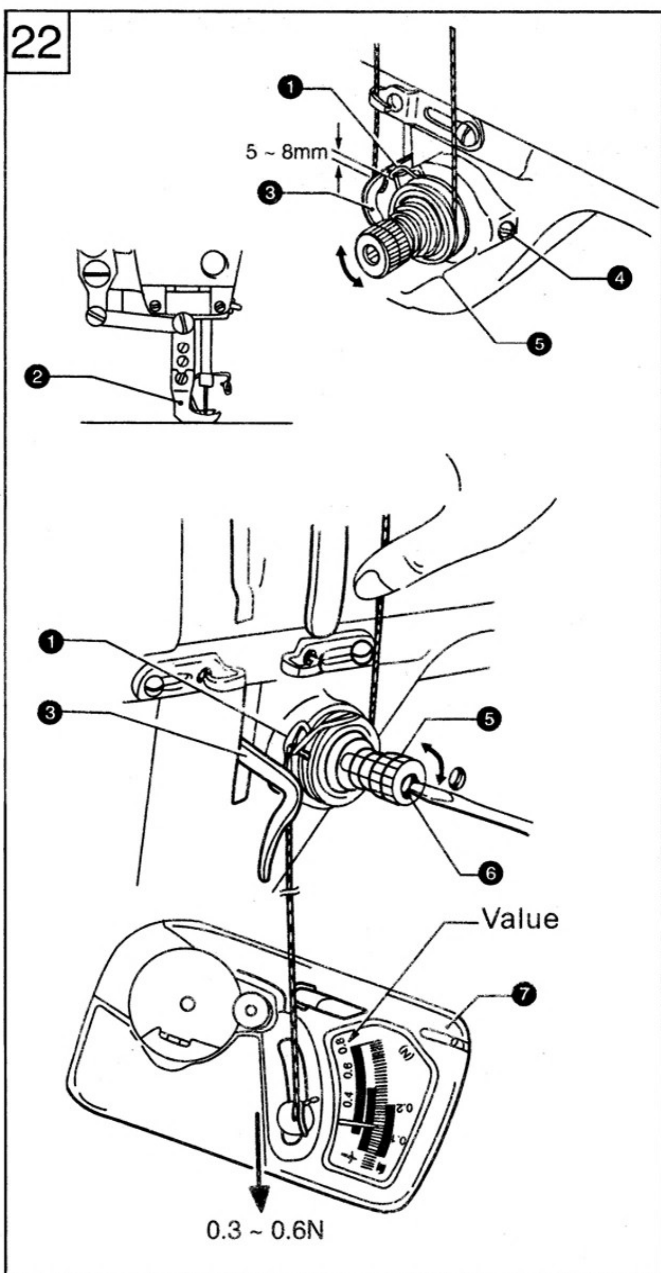


20



23. Adjusting the trailing length after thread trimming(Fig.21)

- Turn the nut ① to adjust the trailing length
- At the time of thread trimming, the thread tension mechanism will release and the needle thread tension is only applied by the thread guide ①;
 - The standard trailing length for the needle thread is 40-70mm;
 - If increase the thread guide tension, the trailing length will be short; if decrease the thread guide tension, the trailing length will be longer.



24. Adjusting the thread tension spring (Fig. 22)

★The standard position of the thread tension spring ① is 5-8mm above the upper surface of the thread guide ③ when the presser foot ② is lowered.

- 1.Lower the presser foot ②;
- 2.Loosen the screw ④;
- 3.Turn the thread tension bracket ⑤ to adjust the spring position;
- 4.Tighten the screw ④.

★The standard tension of the spring is 0.3-0.6N.

- 5.Push the needle thread with your finger until it is slightly higher than the thread tension bracket ⑤ and so that the upper thread is not pulled out;
- 6.Pull the needle thread down until the spring ① is at the same height with the upper surface of thread guide ③, and then measure the tension of the spring.
- 7.Insert a screwdriver into the slot of the thread tension stud ⑥, and turn the stud to adjust the tension of the spring ①.

Note:

If using a tension gauge ⑦ to measure the tension, take the reading from the scale on the side of the red line.

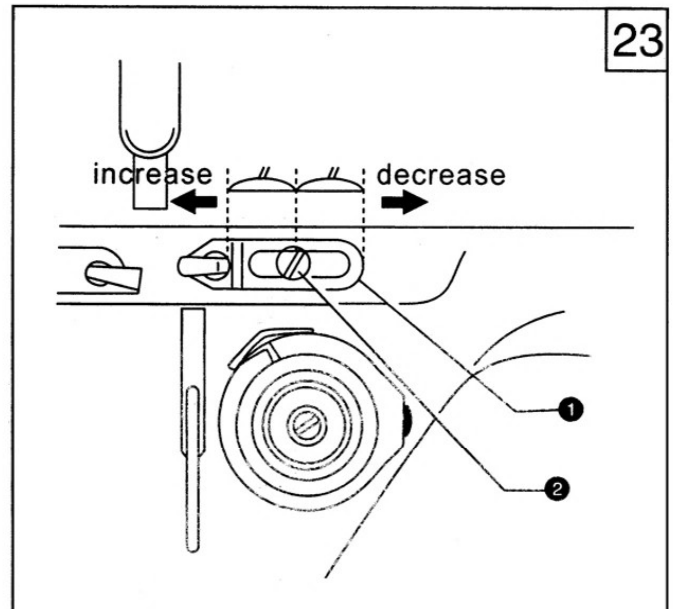
25. Adjusting the upper thread guide (Fig. 23)

The standard position of upper thread guide ① is where the screw ② is in the center of the adjustable range of upper thread guide.

To adjust the position, loosen the screw ② and move the thread guide.

If stitch the heavy materials, move the thread guide leftward. (To increase the thread take-up tension)

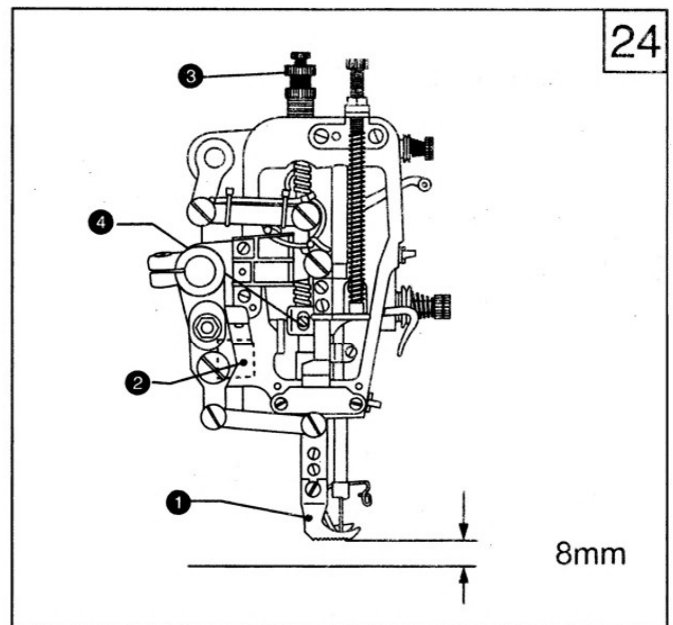
If stitch the light materials, move the thread guide rightward. (To decrease the thread take-up tension)



26. Adjusting the presser foot height (Fig. 24)

The standard height of presser foot ① is 8mm when it is lifted by hand.

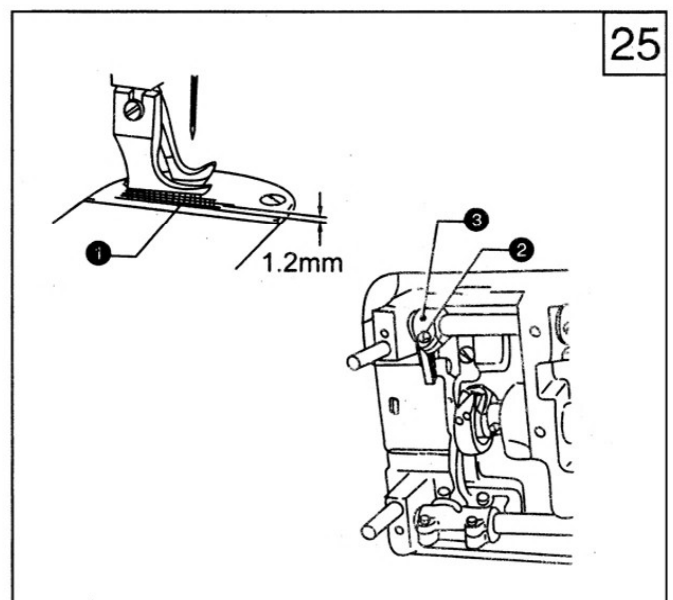
1. Loosen the screw ③ to lift the presser bar
2. Put a measurement gauge with 8mm height under the presser foot;
3. Loosen the screw ④ and adjust the height of presser foot;
4. Tighten the screw ④.

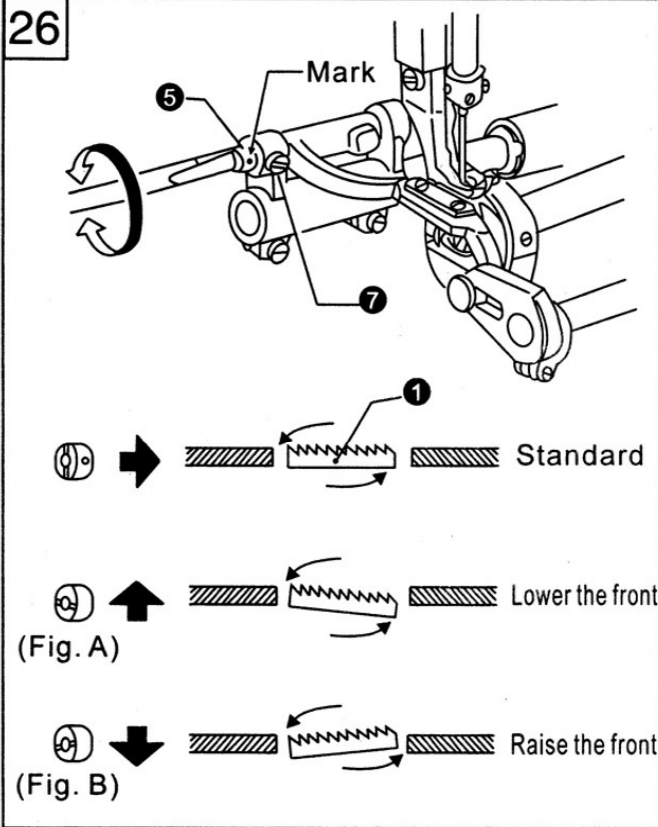


27. Adjusting the feed dog height (Fig. 25)

1. Set the stitch length maximum, when the feed dog ① is at its highest position above the needle plate, the standard height is 1.2mm

2. Loosen the screw ② and turn the feed lifting arm ③ to adjust the height of feed dog.





28. Adjusting the feed dog angle (Fig. 26)

The standard angle of the feed dog is: when the feed dog is at its highest position above the needle plate, the Mark on the feed bracket shaft is on the horizontal position.

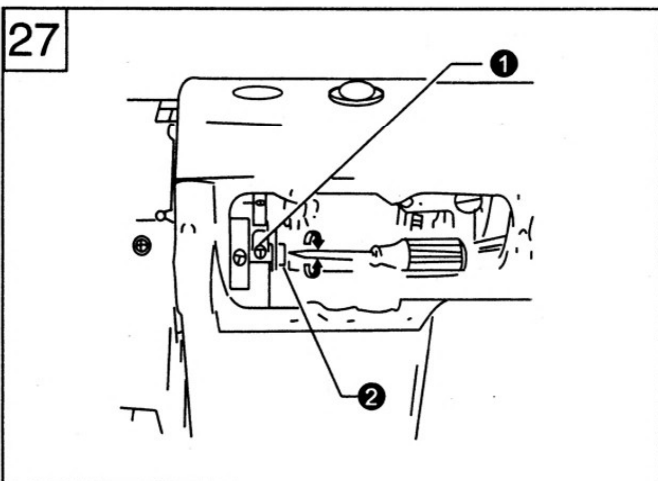
1. Turn the machine pulley to lift the feed dog to its highest position;
2. Loosen the screw ⑦;
3. Turn the feed bracket shaft in the direction of the arrow within a range of 90° with respect to the standard angle position.

* In order to prevent puckering, lower the front of the feed dog (Fig. A)

* In order to keep the materials straight, raise the front of the feed dog (Fig. B)

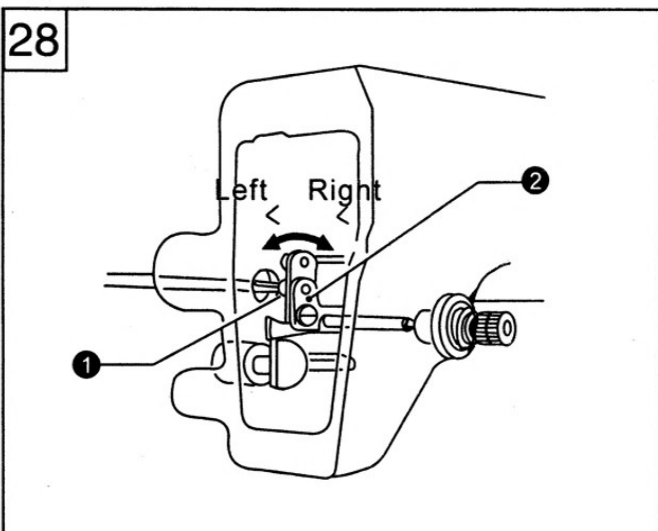
4. Securely tighten the set screw ⑦.

It's necessary to adjust the feed dog height a gain after this adjustment.



29. Adjusting the difference of stitch length between the forward and backtacking (Fig. 27)

1. Remove the rear cover;
2. Loosen the screw ① and turn the connecting stud ②
 - * Turn the stud ② clockwise, the forward stitch length will be longer and the backtacking stitch length will be shorter;
 - * Turn the stud ② counterclockwise, the forward stitch length will be shorter and the backtacking stitch length will be longer;
3. Tighten the screw ①.



30. Adjusting the tension release (Fig. 28)

The opening time of the thread tension discs can be adjusted.

Remove the rubber cap on the rear of arm, and turn the screw ①, then the thread release cam ② can be moved left or right.

Move the cam rightward, the release time will be slow

Move the cam leftward, the release time will be quick.

31. Adjusting the timing of needle and feed mechanism (Fig. 29)

The standard timing is when the feed dog is lowered from its highest position until it is flush with the top of the needle plate ②, and the needle eye ③ is also aligned horizontally with the surface.

Adjust by changing the phases of feed cam and eccentric wheel UD

1. Remove the rear cover

2. Turn the machine pulley in reverse direction, set the second screw ④ on the gear of upper shaft as reference mark, make the third screw ⑤ of eccentric wheel UD slightly lower than the reference mark screw ④;

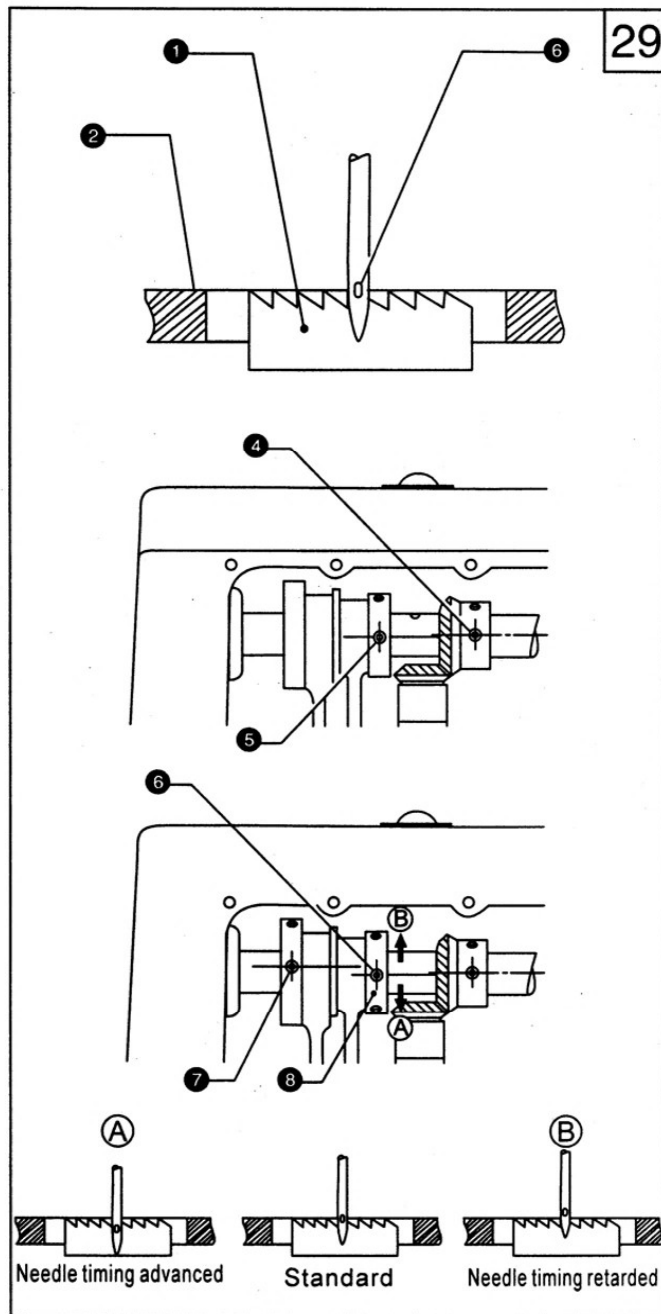
3. Continue to turn the machine pulley, set the second screw ⑥ of eccentric wheel UD as reference mark, make the third screw ⑦ of feed cam slightly higher than the reference mark screw ⑥.

4. If need a non-timing position, loosen the three screws of eccentric wheel UD, adjust the eccentric cam ⑧ in the direction of arrow (A) or (B)

To increase the tension of thread, turn the eccentric cam ⑧ to direction (A)

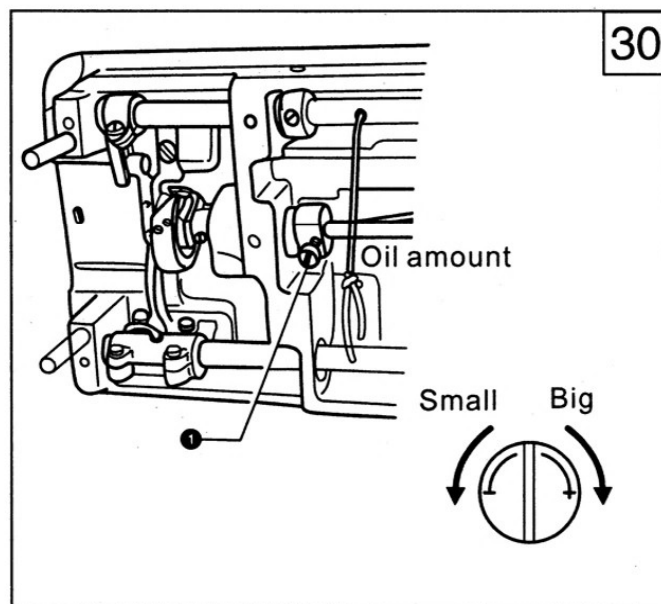
To avoid the needle bent, turn the eccentric cam ⑧ to direction (B)

5. After adjustment, tighten all of the screws.

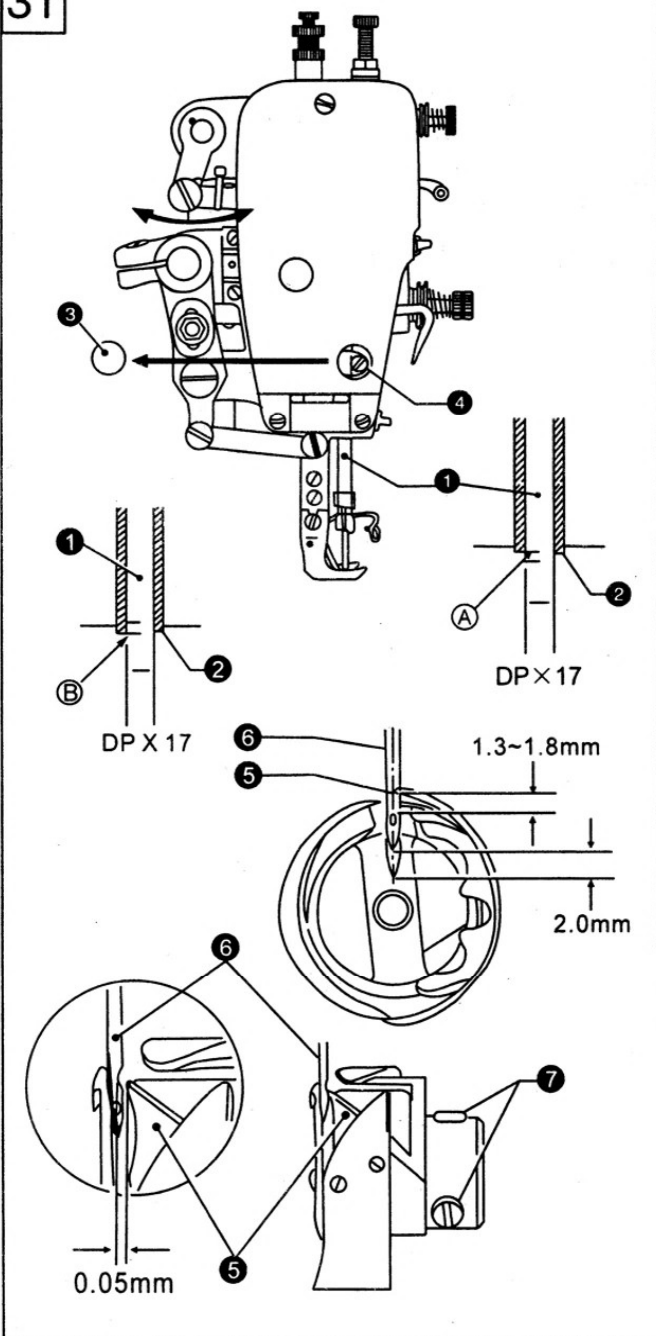


32. Adjusting the rotary hook lubrication amount (Fig. 30)

Tilt back the machine head, and turn the oil adjustment screw ① to adjust the hook oiling amount.



31



33. Adjusting the height of needle bar and the timing with hook (Fig. 31)

When the needle bar ① is at its lowest position, the top reference line (A) on the needle bar should be aligned with the bottom edge of the needle bar bush ②.

1. Turn the machine pulley to lower the needle bar to its lowest position;
2. Take out the rubber cap ③;
3. Loosen the screw ④, and move the needle bar ① to proper position;
4. Tighten the screw ④;
5. Close the rubber cap ③.

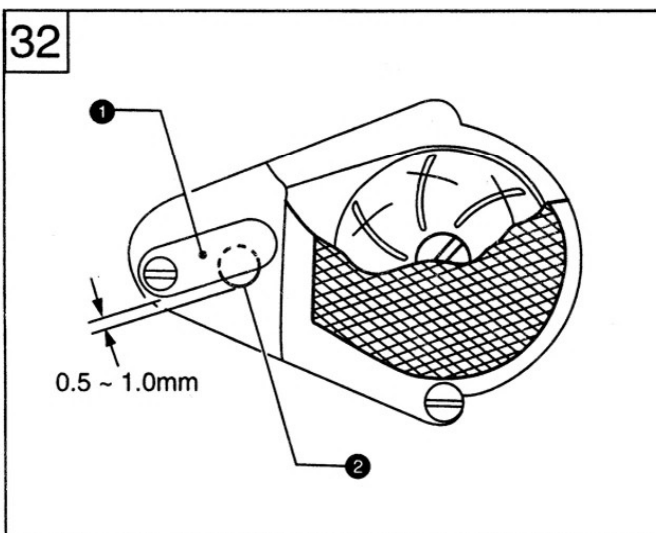
Lift the needle bar ① from the lowest position, when the second reference line (B) on the needle bar is aligned with the bottom edge of the needle bar bush ②, the tip ⑤ of the hook should be aimed at the center of needle ⑥.

1. Turn the machine pulley to raise the needle bar ① from its lowest position until the reference line (B) is aligned with the bottom edge of the needle bar bush ②

* When the needle bar moves up 2mm, the clearance between the upper of needle hole and the hook tip should be 1.3-1.8mm

2. Loosen the screw ⑦, and make the hook tip aimed at the center of needle ⑥, the clearance between the hook tip and needle should be 0.05mm
3. Tighten the screw ⑦.

32



34. Adjusting the oil pump (Fig. 32)

If the oil is not circled observed from the oil gauge window at a lower sewing speed, turn the oil adjustment plate ① to cover the oil hole ②.

35. Adjusting the lifting amount of presser feet (Fig. 33)

1. Vertical movement of presser foot and walking foot

★The walking foot ① and presser foot ② move vertically one after another

★Usually the stroke of walking foot and presser foot is same or the stroke of presser foot is slightly lower.

Place the thread take-up lever at the lowest position, and lower the presser bar lifter, loosen the screw ③ and move the upper feed lifting cam ④.

Move it rightward to make the stroke of two feet be equal

Move it leftward to make the stroke of presser foot be smaller.

2. Adjusting the lifting amount of presser feet

Adjust the lifting amount of two feet to match the materials to be sewn.

Loosen the screw ⑤, and move the screw upward to increase the lifting amount or move the screw downward to decrease the lifting amount.

3. Adjusting the forward/backward clearance of the two feet

To keep the front groove of walking foot not strike the rear of the presser foot, the clearance of C must be kept about 3mm.

Loosen the screw of feed arm R, and then turn the feed rock shaft ⑥ to adjust.

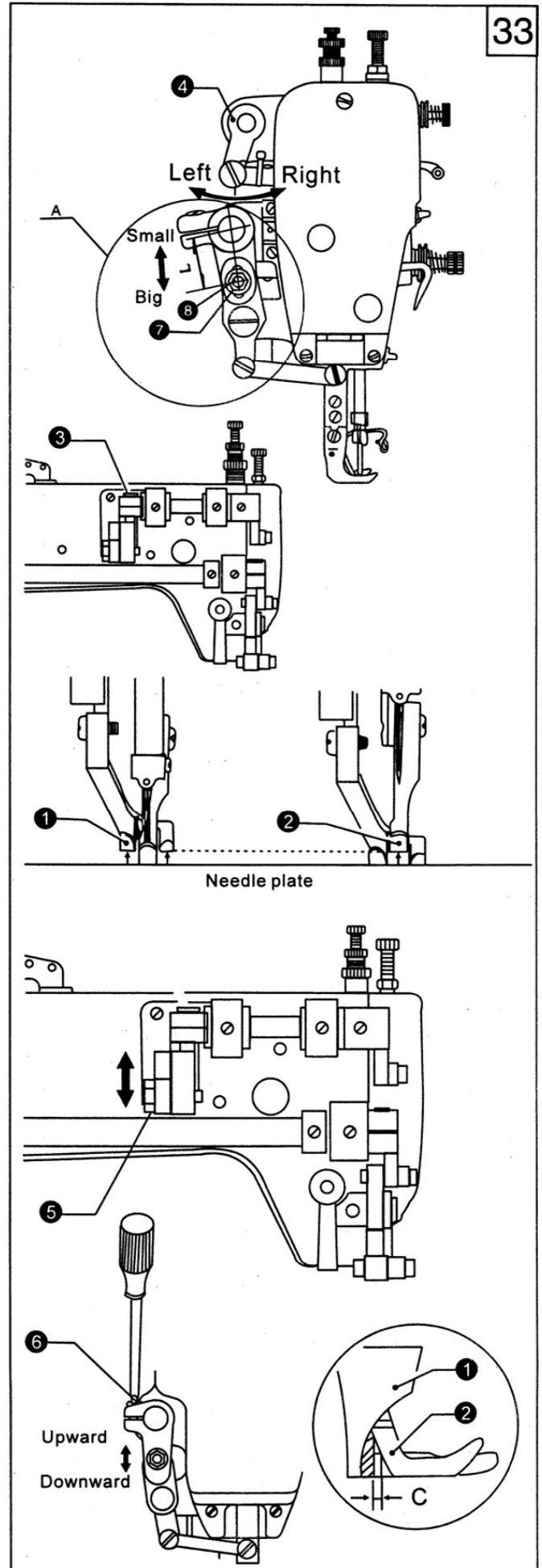
4. Adjusting the feed amount of walking foot (Fig. A)

★The standard ration of feed amount between feed dog and walking foot is 1:1

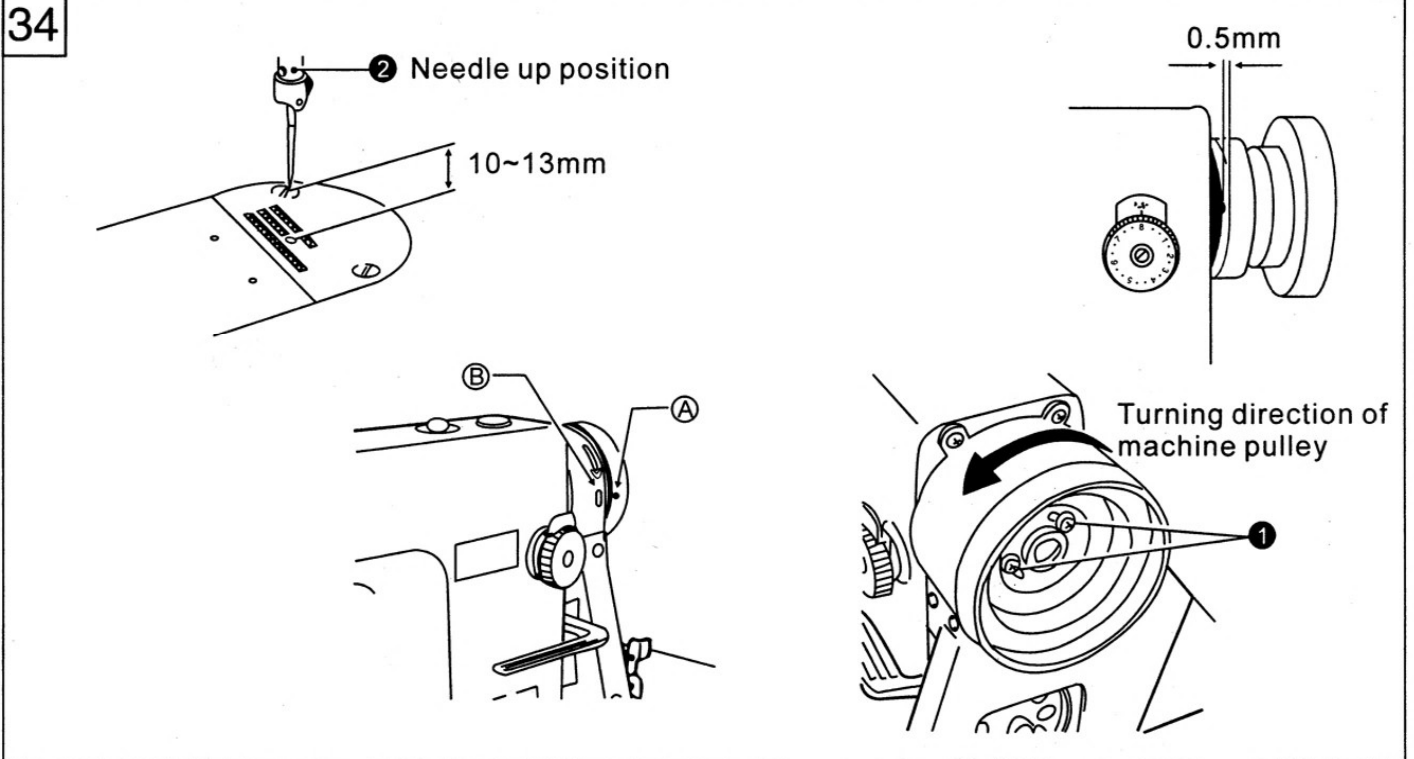
The feed amount of walking foot can be adjusted to suit for the materials to be sewn.

Loosen the nut ⑦, and move the slide block ⑧
Upward: decrease the distance L to make the feed amount be smaller

Downward: increase the distance L to make the feed amount be larger



36. Adjusting the synchronizer (Fig. 34)



The synchronizer consists of two elements which are used to detect the needle position. Both of the two signals of needle down and thread trimming are controlled by one element.

- Turn the power on, the machine will stop at the needle up position after running, and the Mark (A) on the machine pulley will be in the range of hole (B) in the belt cover, meanwhile, the distance between needle plate and needle tip should be 10-13mm.
- if need to adjust, please refer to the procedure below

■ Adjusting the needle up position

1. Turn off the power;
2. Loosen the two screws ①;
3. Move the two screws sets in the direction of machine pulley turning to raise the needle bar, and on the contrary, to make the needle up position lower;
4. Tighten the two set screws ①.

■ Needle down and thread trimming signals

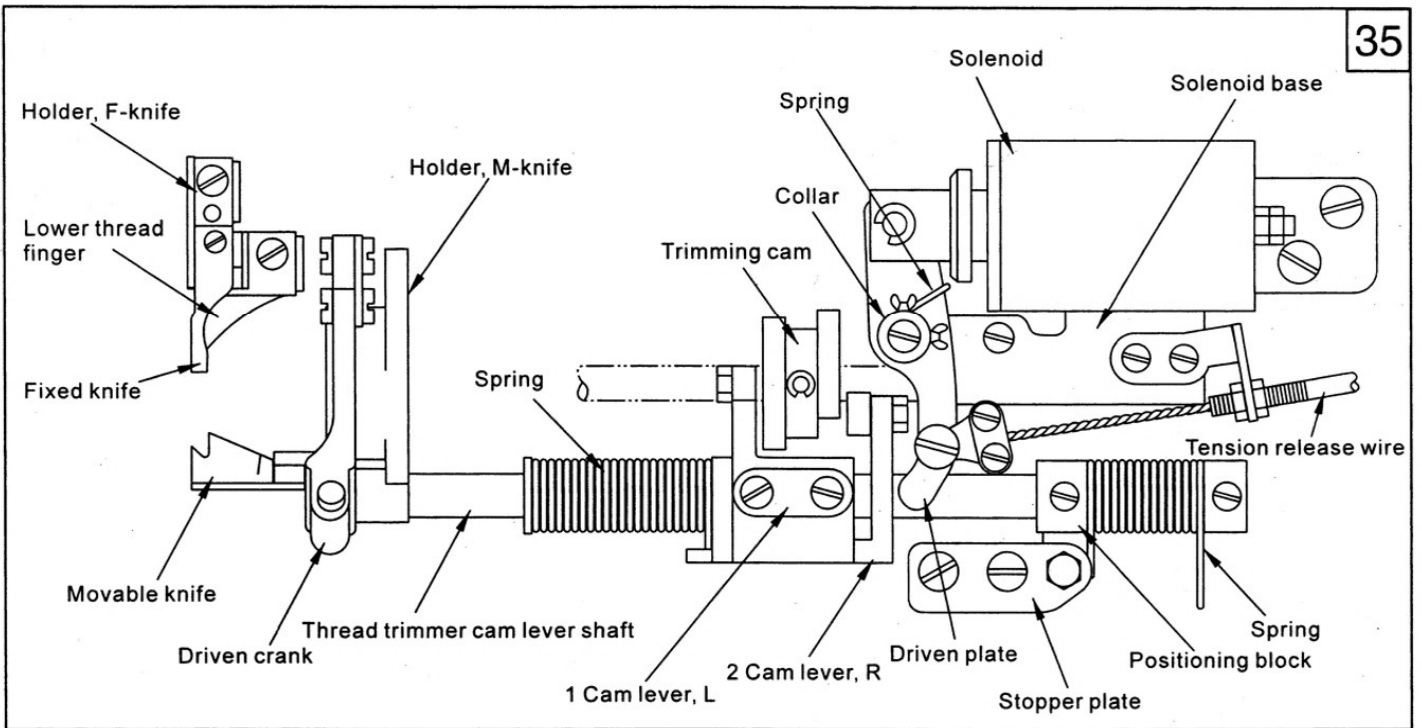
Do not adjust the needle down stop position

Note:

- The synchronizer is pre-adjusted in the factory. Do not set the synchronizer when move the machine pulley.
- When installing the pulley, make sure that there should be a 0.5mm clearance between the synchronizer and pulley edge.

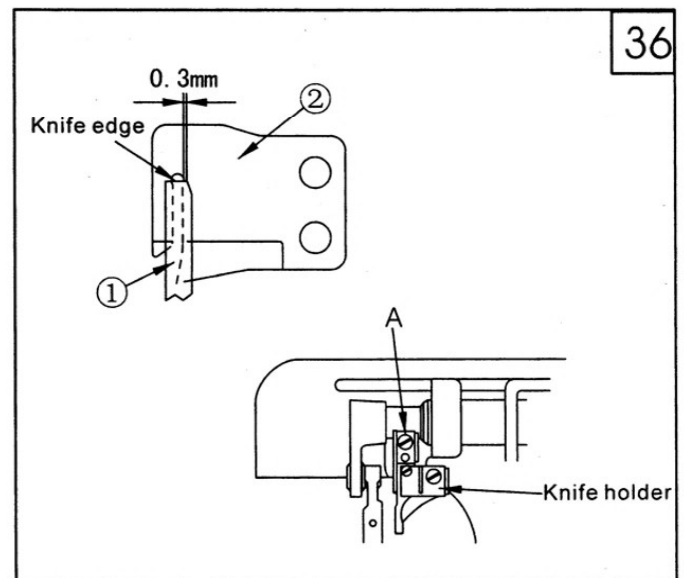
37. Adjusting the trimming mechanism

1. Trimming mechanism (Fig. 35)



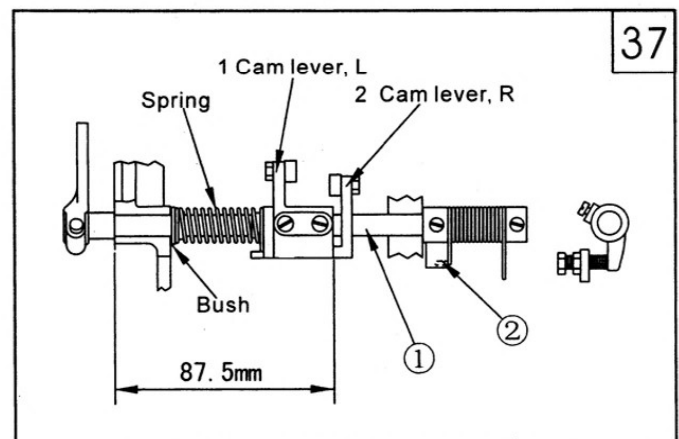
2. The relation between fixed knife and movable knife (Fig. 36)

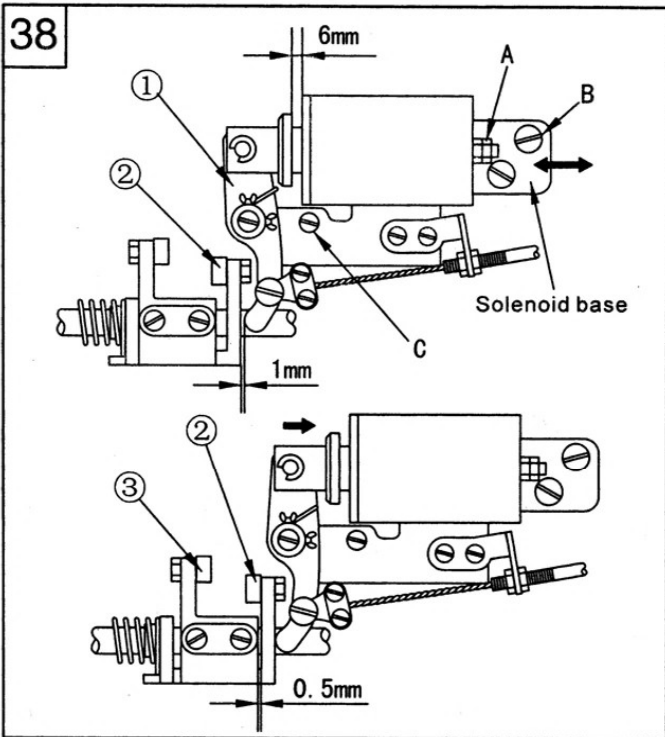
- (1) The clearance between fixed knife ① and movable knife ② should be 0.3mm
- (2) Adjust the position illustrated by the Fig. 35
- (3) Move the bobbin case opener and adjust the holder of fixed knife.



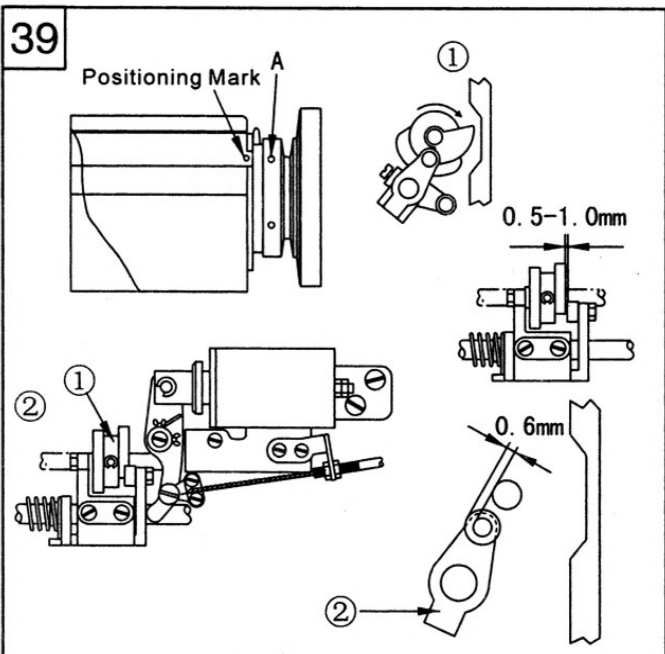
3. Thread trimmer cam lever shaft

- (1) Install the shaft ① on the machine bed first;
- (2) Install the cam lever L on the shaft ① as illustrated;
- (3) Slightly turn the shaft ①, and install the positioning block ② as illustrated.

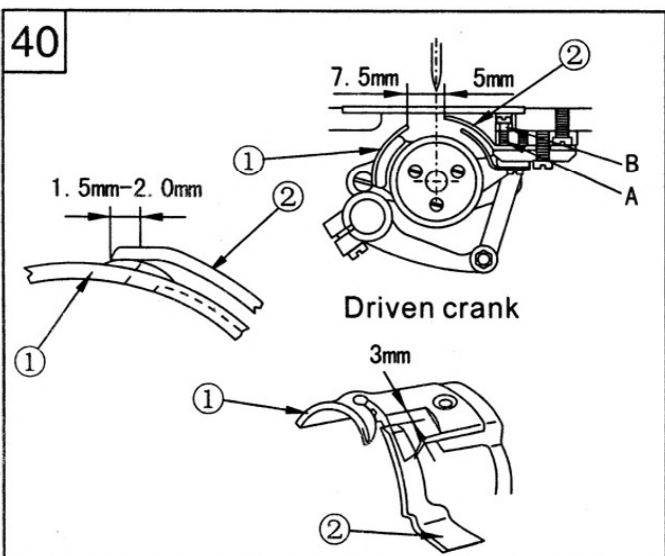




4. Installing the trimming solenoid (Fig. 38)
- (1) The stroke of solenoid
 - a. The standard stroke is 6.0mm
 - b. Turn the nut (A) to adjust the stroke
 - (2) Installing the solenoid
 - a. Fixed the solenoid by the screws B and C;
 - b. Be sure to keep the clearance between the driven plate ① and cam lever R ② 1mm;
 - c. When the solenoid is active, there should be a 0.5mm clearance between the cam lever L ③ and cam lever R ②. If need to adjust, please move the solenoid base shown by the arrow.



5. Installing the trimming cam (Fig. 39)
- (1) Align the second mark A on the machine pulley with the Positioning Mark on the arm;
 - (2) Set the solenoid active and turn the trimming cam ① until the cam is touched with the roller, then fix the cam;
 - (3) Set the solenoid inactive and make the cam lever ② restore to the original position, there should be a 0.5-1.0mm clearance between cam and roller.



6. Adjusting the knives (Fig. 40)
- (1) The relation between fixed knife and movable knife
The clearance between movable knife ① and needle center is 7.5mm, and the clearance between fixed knife ② and needle center is 5mm.
 - (2) Set the solenoid active, the movable knife ① will turn rightward driven by the trimming cam. When the movable knife ① moves to its left furthest position, the clearance between two knives ① and ② should be 1.5-2.0mm
 - (3) Adjusting the trimming solenoid
 - A. If the thread trimming not smoothly, especially the thick thread used, just need to increase the trimming pressure;
 - B. Adjusting the trimming pressure: loosen the nut B, adjust the screw A to get the reasonable pressure.

38.Clean (Fig. 41)

- 1.Raise the presser foot;
- 2.Remove the two screws ① and needle plate ②;
- 3.Clean the feed dog with a soft brush;
- 4.Install the needle plate ② by two screws ①.

5.Turn the machine pulley slowly and check if the needle drops into the hole center of needle plate

★If not

- Check if the needle is bent
- Loosen the screw ①, and reinstall the needle plate ②

6.Turn the machine pulley and lift the needle above the needle plate, check if the needle tip is blunt, if yes, change a new one.

7.Tilt back the machine head

8.Remove the bobbin case ④

9.Clean the hook with a soft cloth and check if the hook is worn out

10.Take out the bobbin from the bobbin case, and clean the bobbin case with a soft cloth

11.Insert the bobbin into the bobbin case and place the bobbin case back into the machine

12.Clean the dust on the filter (A) of oil pump.

