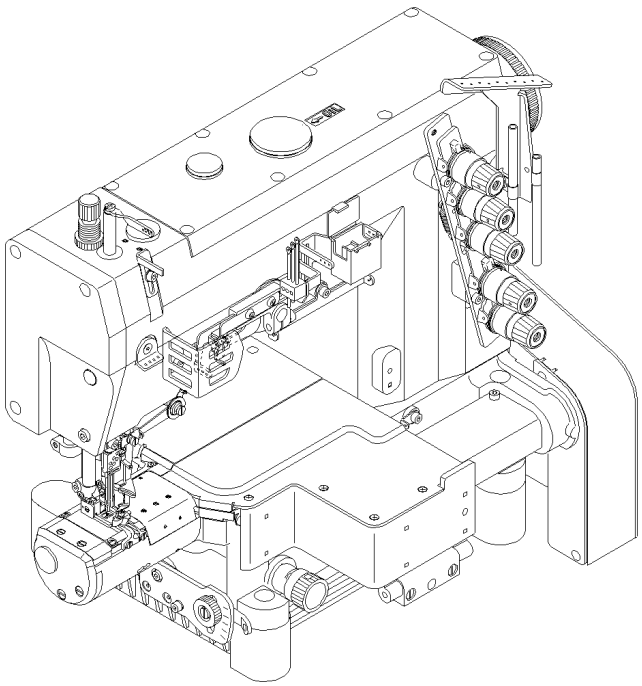
INSTRUCTION

MZ SERIES

Industrial Sewing Machines



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KANSAI SPECIAL®

INTRODUCTION

Thank you for your purchasing Kansai Special's MZ Series.
Read and study this instruction manual carefully before beginning any of the procedures and save it for later use.

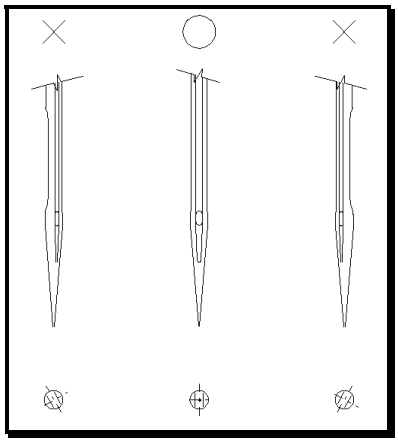
1. This instruction manual describes adjustments and maintenance procedures on this machine.
2. Before starting the machine, check to make sure the pulley cover, safety cover, etc. are secured.
3. Before adjusting, cleaning, threading the machine or replacing the needle, be sure to turn off the power.
4. Never start the machine with no oil in the reservoir.
5. Refer to the parts list as well as this instruction manual before maintenance.
   If the machine includes a thread trimmer, read and study the instruction manual for the thread trimmer carefully.
6. The contents described in this instruction manual are subject to change without notice.

CONTENTS

【1】NEEDLES & THREADING THE MACHINE

1-1 Needles

UY128GAS of Schmetz or Organ
Select the proper needle for the fabric and thread.



< Needles and needle size >

Schmetz	Nm65	Nm70	Nm75	Nm80	Nm90
Organ	#09	#10	#11	#12	#14

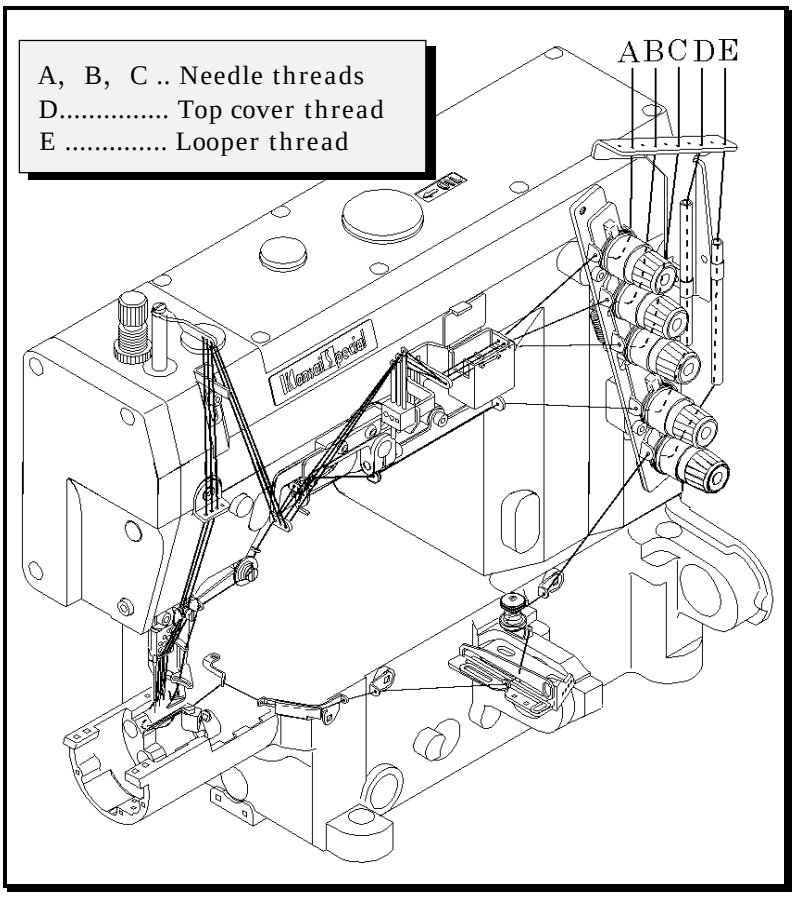
1-2 Replacing the needle

To replace the needle, check the needle carefully to see that the scarf is turned to the rear of the machine (see the illustration). Then install the needle correctly.

< Note >
Before replacing the needle, be sure to turn off the machine.
A clutch motor continues running for a while after the machine is turned off.
Therefore keep on pressing the pedal until the machine stops.

1-3 Threading the machine

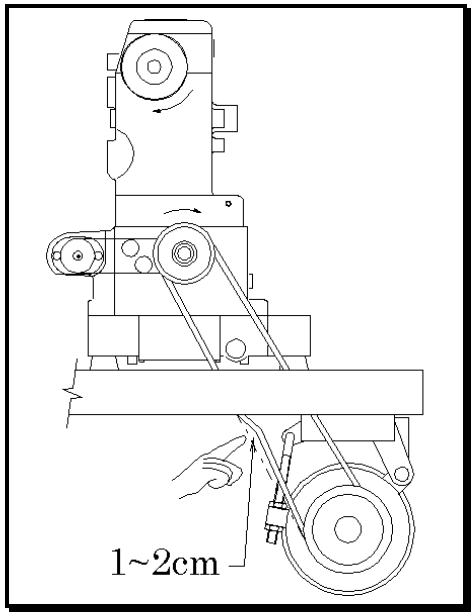
Thread the machine correctly by referring to the illustration below.
Threading the machine incorrectly may cause skip stitching, thread breakage and/or uneven stitch formation. Thread tension should be changed according to various kinds of conditions such as the thread to be used and/or the feeding amount (see Chapter 10 for "Stitch formation").



【2】MACHINE SPEED

2-1 Machine speed & direction in which the machine pulley runs

Refer to the table below for maximum and standard speeds of the Series. To extend machine life, run the machine approximately 15~20% below the maximum speed for the first 200 hours of operation (approx. 1 month). Then run the machine at the standard speed. The machine pulley turns clockwise as the handwheel does as seen from the machine pulley.



2-2 Motor & belt

Motor : 3-phase, 2-pole, 400W clutch motor
Belt : M type V belt

Select the proper motor pulley according to the machine speed (refer to the motor pulley outer diameter on the table below). Adjust where to position the motor by pressing the finger onto the middle of the belt so that 1~2cm deflection can be achieved (see the illustration on the right).

< Machine speed >

Type	Maximum speed	Standard speed
MZ1003	4500SPM	4000SPM
MZ1103	4000SPM	3500SPM

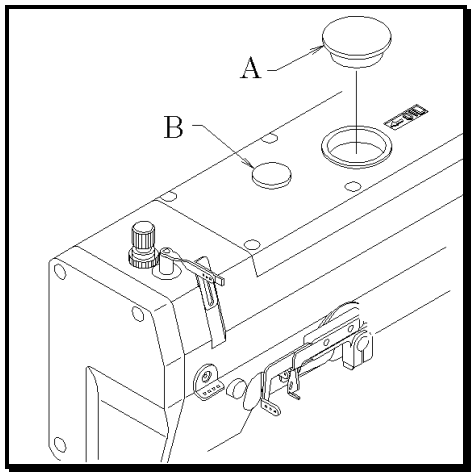
< Motor pulley selection table >

Motor pulley Outer diameter (mm)	Machine speed (SPM)	
	50Hz	60Hz
80	3300	3900
90	3700	4400
100	4100	4900
110	4500	(5400)

【3】LUBRICATION

3-1 Oil

Use Kansai Special's genuine oil.
(Part No. 28-613 : 1000cc)



3-2 Oiling

■ To fill the machine with oil

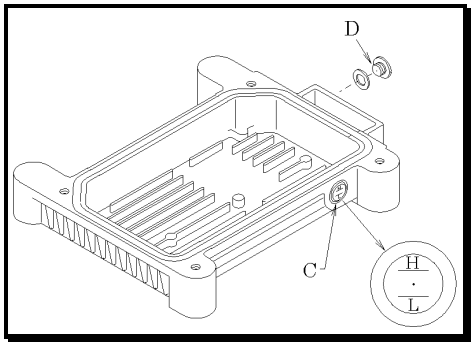
Remove rubber plug A from the oil hole.
Fill the machine with oil until the oil level is at the top line (see H in the illustration) on oil gauge C.
After the first lubrication, add oil so that the oil level will be between H and L.

■ To check for proper oil flow

After filling the machine with oil, run the machine to check the oil is splashing to oil flow sight window B.

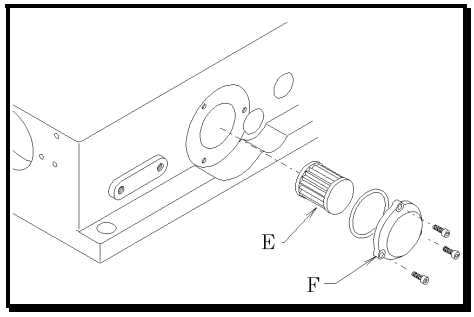
3-3 Replacing the oil and the oil element

To extend machine life, be sure to replace the oil after the first 250 hours of operation.



To replace the oil, follow the procedures below.

1. Remove the V belt from the motor pulley and then remove the machine from the table.
2. Remove screw D and then drain the oil.
   Be careful not to stain V belt with the oil.
3. After draining the oil, be sure to tighten screw D.
4. Fill the machine with oil by referring to 3-2 shown above.



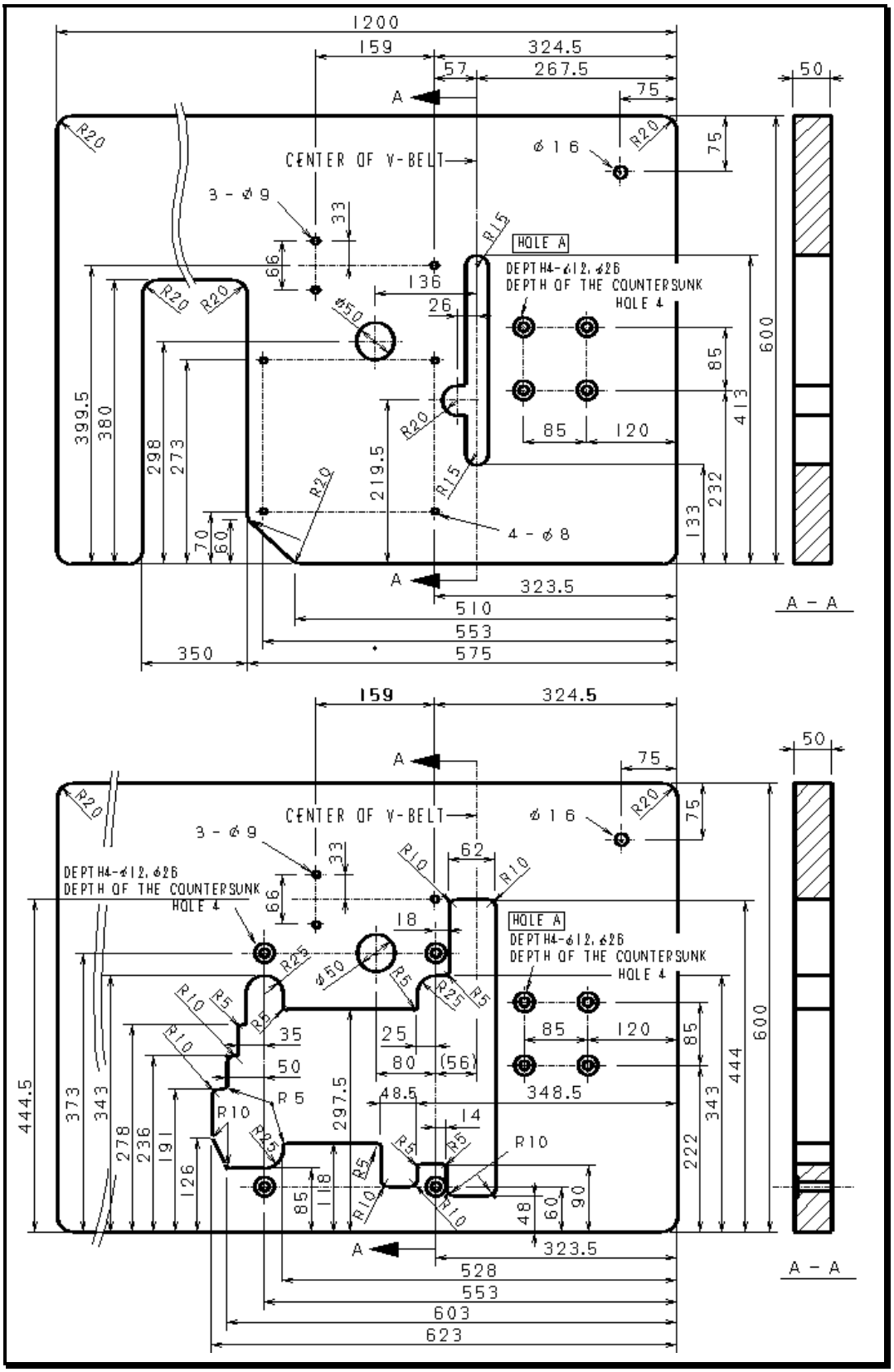
If element E is contaminated, proper oiling may not be performed. Clean the filter element every six months. If just a little or no oil flows out from the nozzle with the proper amount of oil in the machine, check the element. To do so, remove oil filter cap F. Replace the element if necessary.

< Note >
When the oil filter cap is removed, the oil collected on the element drips. Be careful.

【4】SEWING MACHINE INSTALLATION

4-1 Cutting the machine table

■Hole A shown below is for installing the electric presser foot lift.



4-2 Installing the machine

The MZ Series is available in two kinds of installations, non-submerged and semi-submerged.

■Non-submerged installation

Install the machine correctly by referring to the illustration.

Install the bolts and nuts to the machine table.

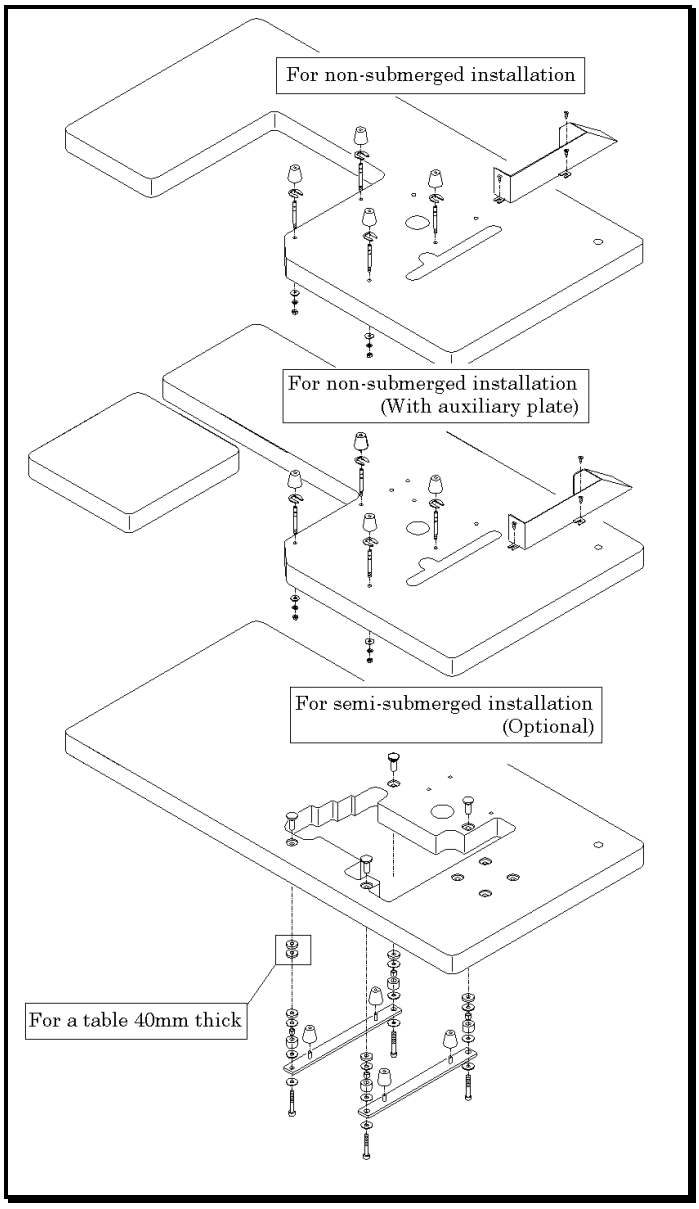
Fit the rubber cushions onto the bolts. Then mount the machine properly onto the rubber cushions.

■Semi-submerged installation

Install the machine correctly by referring to the illustration.

Secure the oil reservoir installation brackets to the machine table with screws. Fit the rubber cushions onto the screws.

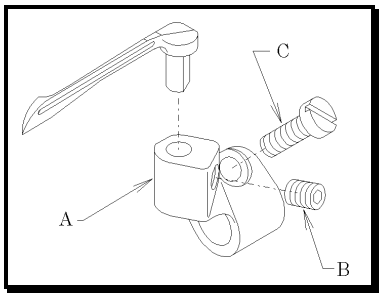
Then mount the machine properly onto the rubber cushions.

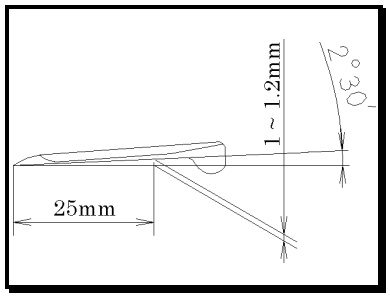


【5】TIMING OF THE LOOPER TO THE NEEDLE

5-1 Angle and height for installing the looper

To obtain the proper angle and height, insert the looper fully into looper holder A and then tighten screw B. The proper angle for the looper is 2º 30'. Distance at 25mm from the point of the looper between the bottom of the looper blade and the extension line from the point of the looper: Approximately 1.1mm

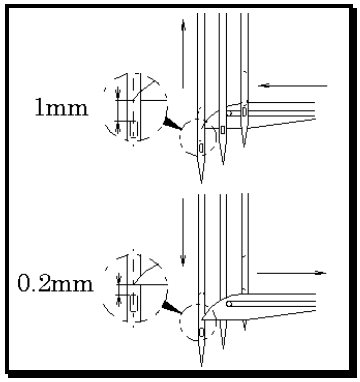


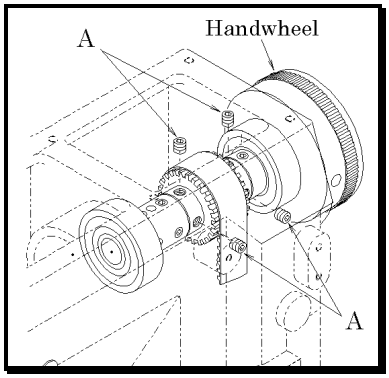


5-2 Looper left-to-right movement

On 2, 3 needle machines the point of the looper should be approximately 1mm above the top of the left needle's eye when the looper moves to the left on the back side of the needles.

The point of the looper should be approximately 0.2mm above the top of the left needle's eye when the looper moves to the right on the front side of the needles (see the illustration below). To adjust the timing of the looper to the needles, remove the machine cover, loosen screws A on the timing pulley (upper), and shift the timing pulley (upper) by turning the handwheel while holding the timing pulley (upper) by hand.



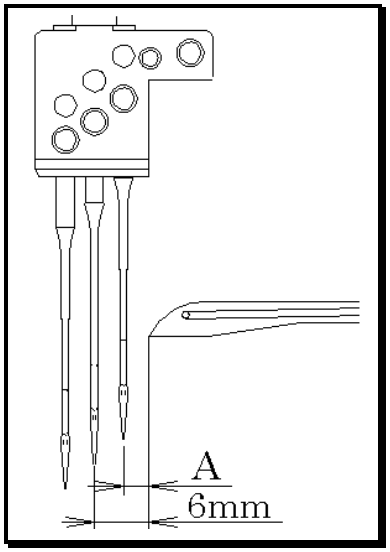


5-3 Looper setting distance

The distance from the point of the looper to the center of the needle bar should be 6mm when the looper is at its farthest position to the right. The table below shows setting distance A from the point of the looper to the center of the right needle when the needle is at the bottom of its stroke and the looper is at its farthest position to the right.

Setting distance A varies according to the needle space.

To make this adjustment, loosen screw C (see 5-1) on the looper holder.



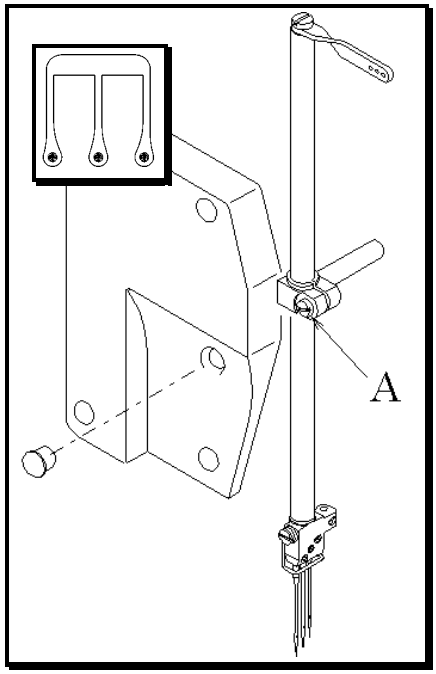
Needle space (inch)	Looper setting distance A
3.2mm (1/8)	4.4mm
4.0mm (5/32)	4mm
4.8mm (3/16)	3.6mm
5.6mm (3/32)	3.2mm
6.4mm (1/4)	2.8mm

5-4 Needle height

The point of the looper should be 0.8~1.2mm above the top of the left needle's eye on the back side of the needle when the point of the looper has reached the center of the left needle with the machine pulley turning in the operating direction (see 5-2).

To adjust the height of the needle,

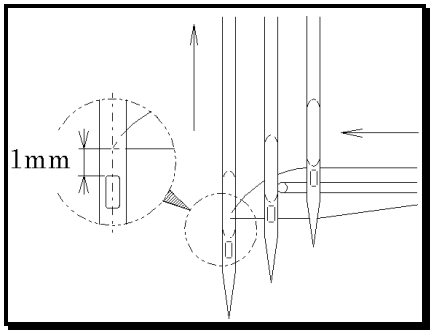
1. Set the needle bar at the top of its stroke.
2. Remove the plug on the head cover.
3. Loosen screw A.
4. Move the needle bar up or down.



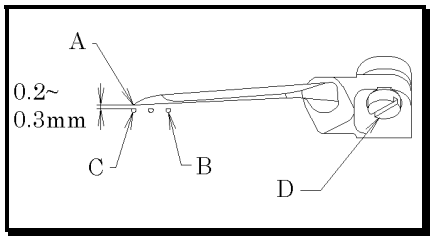
< Note >
After the above adjustment, install the needle plate and check to make sure each needle drops into the center of each needle hole.

5-5 Needle/looper front-to-back relationship

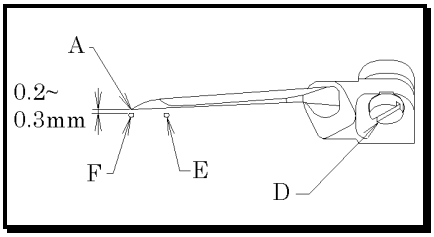
The point of the looper should be 0.8~1.2mm above the top of the left needle's eye on the back side of the needle when it has reached the center of the left needle.
With the point of the looper at this position, set the clearance between the left needle and the point of the looper at approximately 0.2~0.3mm.
Then the looper should barely touch the right needle.



■On 3 -needle machines, the clearance between point A of the looper and left needle C should be 0.2~0.3mm.
To make this adjustment, loosen screw D on the looper holder first. Then adjust the needle guard (rear) so that it presses right needle B slightly to the front.
With the needle guard (rear) and needle B in this position, set the clearance between the point of the looper and needle B at 0~0.05mm.



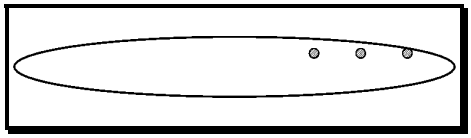
■On 2-needle machines, the clearance between point A of the looper and left needle F should be 0.2~0.3mm.
To make this adjustment, loosen screw D on the looper holder first. Then adjust the needle guard (rear) so that it presses right needle E slightly to the front.
With the needle guard (rear) and needle E in this position, set the clearance between the point of the looper and needle E at 0~0.05mm.



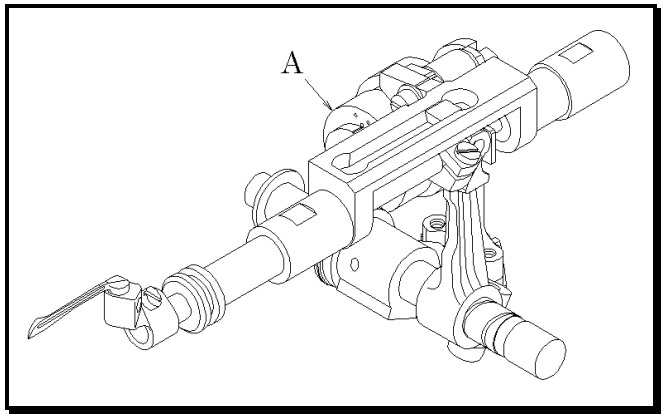
< Note >
When moving the looper holder front or back, be careful not to change the looper setting distance.

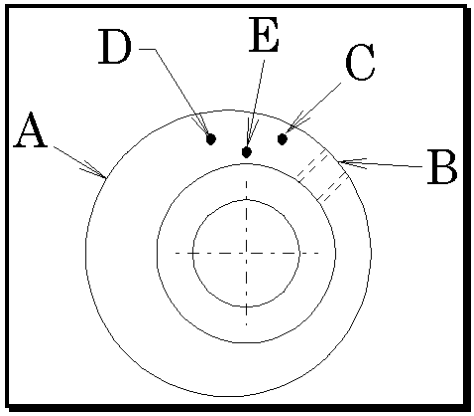
5-6 Changing the looper orbit

When the looper moves around the needles, the point of the looper on 2-needle and 3-needle machines barely touches the right needle and the clearance between the point of the looper and the left needle is approximately 0.2~0.3mm.



< Note >
To sew under good conditions, after changing the amount of the looper front-to-back movement adjust the looper orbit by moving the timing mark slightly to C or D.
To change the looper's orbit, loosen screw B on eccentric A and shift the timing mark by moving eccentric A front or back.
The timing mark is factory-set for standard. Do not change the orbit extremely.

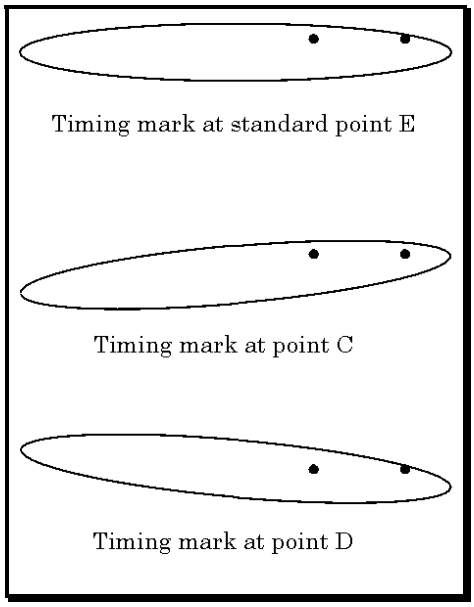




■The timing mark is at point E: standard

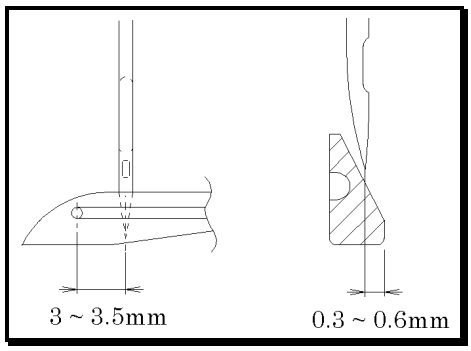
■When the timing mark is at point C, The clearance between the point of the looper and the left needle when the looper moves to the left decreases.
The clearance when the looper moves to the right increases. Then the point of the looper touches the right needle. Skip stitching may occur when the looper moves to the right.
A thread chain is not produced smoothly.

■When the timing mark is at point D, The clearance between the point of the looper and the left needle increases. Skip stitching may occur when the looper moves to the left. The needle extremely touches the back of the looper, causing needle breakage.



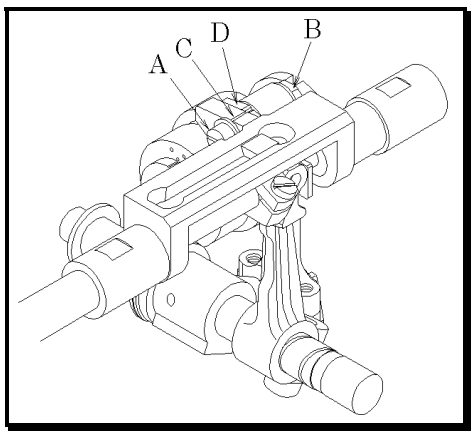
5-7 Changing the amount of the looper front-to-back movement

■The clearance between the point of the left needle and the back side of the looper when the looper moves to the right from the extreme left end of its travel should be 0.3~0.6mm (The needle is pressed to the back). The distance between the point of the left needle and the center of the looper's eye on the back side of the looper should be 3~3.5mm.



■The amount of the looper front-to-back movement is factory-set properly for needle count #11 (Nm75).
If you use needle counts Nm80~90, adjust the amount as required.

■Remove the inside cover.
Loosen nut B while holding screw A for the looper front-to-back adjusting pin with a screwdriver.
Then move the front-to-back rod front or back.
To increase the amount, move alignment mark D on the front-to-back rod to the front from mark C on the looper bar guide. To decrease the amount, move mark D to the back. Adjust according to the needle count.

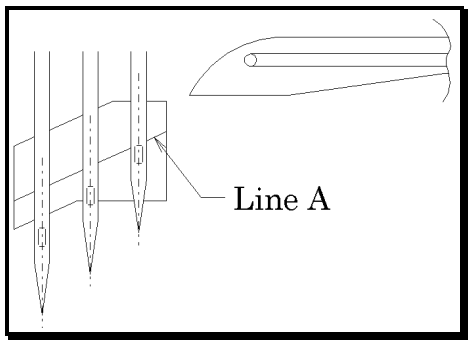


< Note >
If you change the amount of the looper front-to-back movement, the clearance between the point of the left needle and the back side of the looper when the looper moves to the right from the extreme left end of its travel should be 0.3~0.6mm.

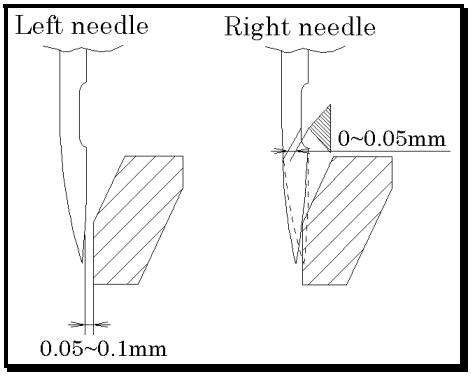
【6】FRONT AND REAR NEEDLE GUARDS

6-1 Position of the needle guard (rear)

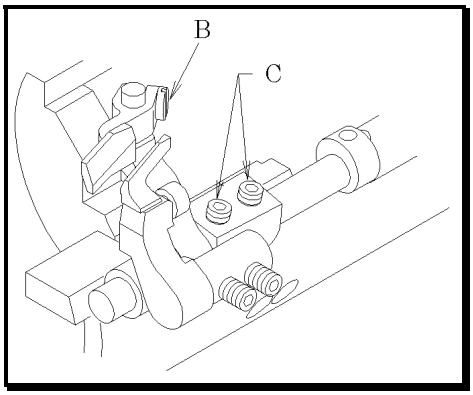
■To adjust the height of the needle guard (rear), align the top of the right needle's eye with line A on the needle guard (rear) when the needle bar is at the bottom of its stroke.



■When the point of the looper has reached the center of the right needle, push out the needle guard (rear) slightly toward you. Then there should be a clearance of 0~0.05mm between the needle and the looper. In addition, there should be a clearance of 0.05~0.1mm between the left needle and needle guard (rear). Adjustment is made by loosening screws (B) and (C). Be careful that the relationship between related parts is not changed.

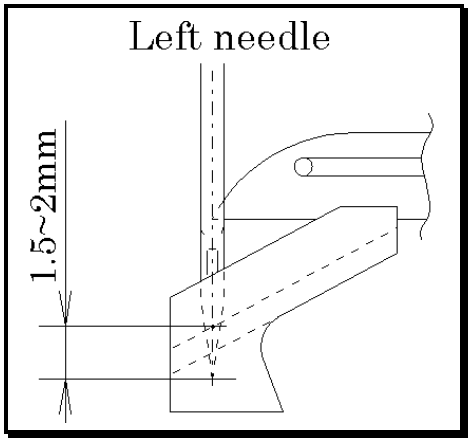


< Note >
After the above adjustment, retighten the screws securely so that the needle guard (rear) will not move left-to-right.



6-2 Position of the needle guard (front)

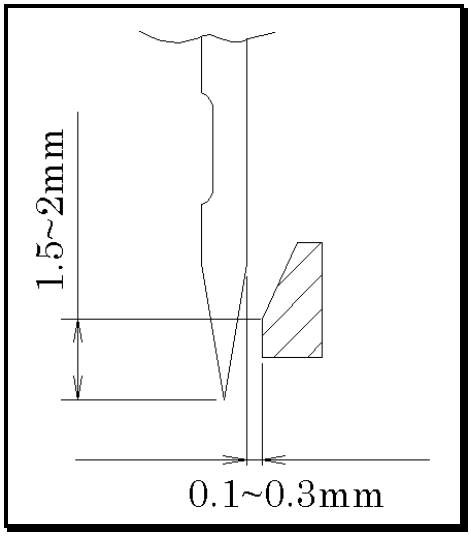
■The needle guard (front) should be 1.5~2mm above the point of the left needle when the point of the looper has reached the center of the left needle.
The clearance between the needle guard (front) and the left or right needle when the point of the looper has reached the center of the left or right needle should be 0.1~0.3mm.

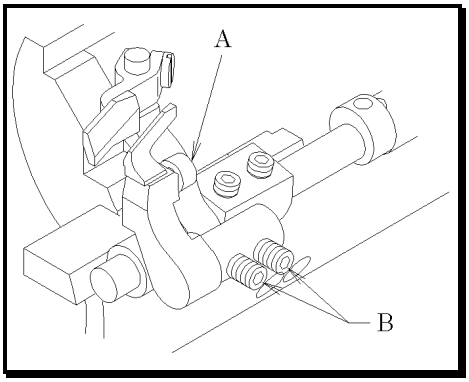


■To adjust the height of the needle guard (front), loosen screw A and set the distance from the point of the left needle to the needle guard (front) when the point of the looper has reached the center of the left needle at 1.5~2mm.

■To adjust the needle guard (front) front to back, loosen screws A and B and set the clearance between the needle guard (front) and the left or right needle when the point of the looper has reached the center of the left or right needle at 0.1~0.3mm.

< Note >
Retighten the screws while checking there is no left-to-right shake on the needle guard (front).



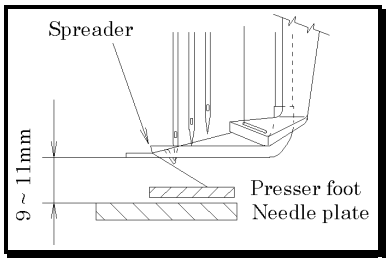


【7】SPREADER

7-1 Position of the spreader

■Height

The distance between the top surface of the needle plate and the bottom surface of the spreader should be 9~11mm.

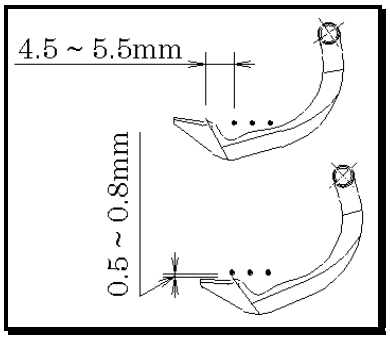


■Left-to-right position

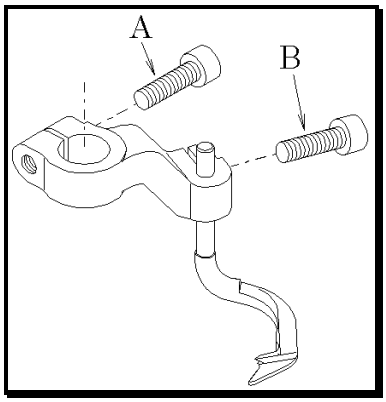
When the spreader is at the extreme left end of its travel, the distance between the center of the left needle and the point of the thread carrying notch should be 4.5~5.5mm.

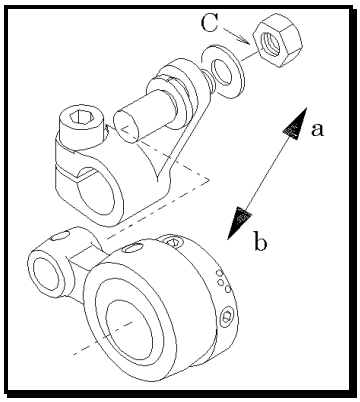
When the spreader passes the left needle, the distance between the point of the thread carrying notch and the left needle should be 0.5~0.8mm.

To make the above adjustment, loosen screws A and B.



■Adjust the amount of the spreader movement according to the number of spreader threads and/or the fabric weight to make this adjustment, remove the arm top cover, loosen nut C and then move the adjusting lever pin in direction (a) or (b). To decrease the amount, move the pin in the direction of (a). To increase the amount, move the pin in the direction of (b).





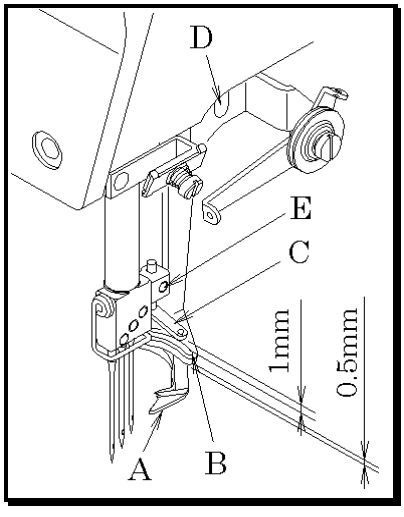
7-2 Position of the spreader thread guide

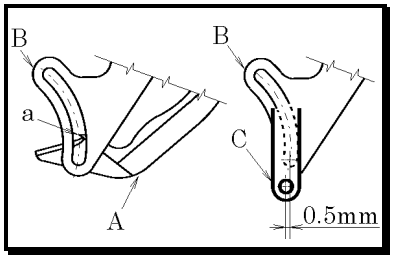
The clearance between spreader thread guide B and spreader A should be 0.5~0.8mm.

When the spreader is at the extreme right end of its travel, point (a) of the spreader thread carrying notch should be aligned with the center line of the slot of spreader thread guide B.

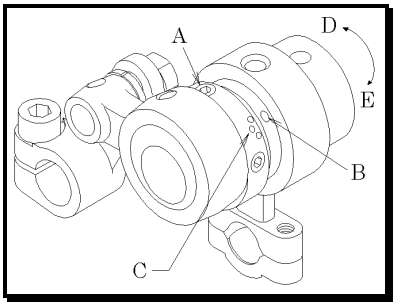
When the needle bar is at the bottom of its stroke, the clearance between the spreader thread guide and spreader thread guide C should be 1mm and the eyelet of spreader thread guide C should be approximately 0.5mm left to the center line of the slot of spreader thread guide B.

To make the above adjustment, loosen two screws D and screw E and move each thread guide up or down, left or right, or front or back as required.





7-3 Timing of the spreader



The timing of the spreader is factory-set by referring to the previous procedure (see 7-2). Adjust according to the thread to be used or other conditions.

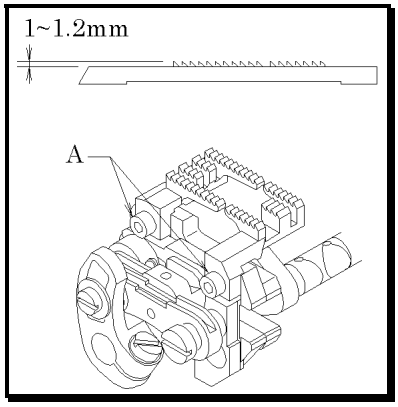
To make this adjustment, remove the top arm cover and loosen two screws for looper eccentric A on the upper shaft.

Then shift alignment mark C front or back while referring to alignment mark B. To advance the timing of the spreader to the needle, shift mark C in the direction of D.

To delay the timing of the spreader to the needle, shift mark C in the direction of E.

【8】FEED DOGS & STITCH LENGTH

8-1 Feed dog height & tilt



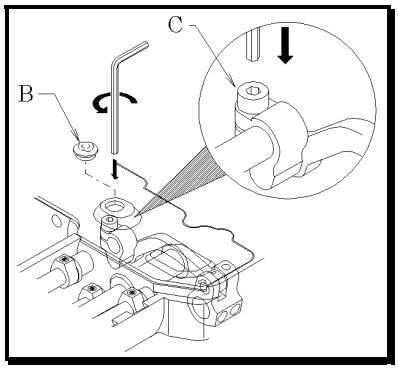
■Height

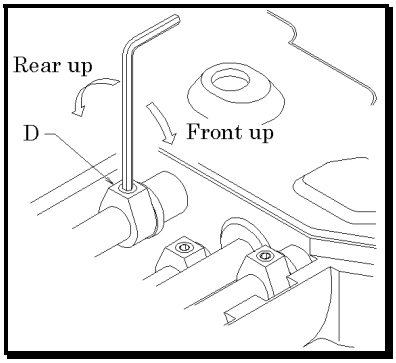
When the feed dogs are at the top of their stroke, the main and differential feed dogs should be parallel with and 1~1.2mm above the needle plate.

■Adjustment is made by loosening screws A and moving each of the feed dogs up or down.

■Tilt adjustment

1. Open the front cover. Remove the cloth plate. Remove plug B on the top cover.
2. Loosen screw C with a 3mm key wrench.
3. Remove the cylinder cover.
   Fit the wrench onto screw D. To tilt up the main feed dog at its rear end, turn the shaft (rear) toward the back side of the machine.
   To tilt up the main feed dog at its front end, turn the shaft toward the front side of the machine.

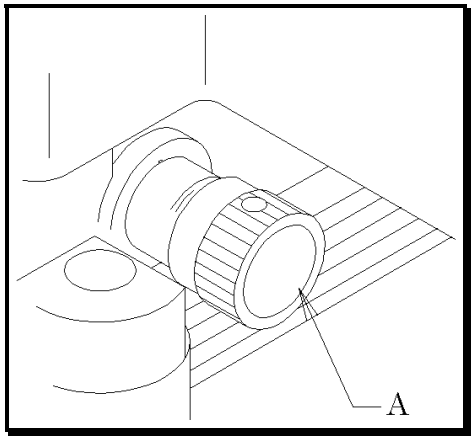




8-2 Stitch length

The stitch length can be adjusted from 1.4 to 4.2mm with no step. The following table shows the stitch length with the number of stitches within 1 inch (25.4mm) and 30mm.

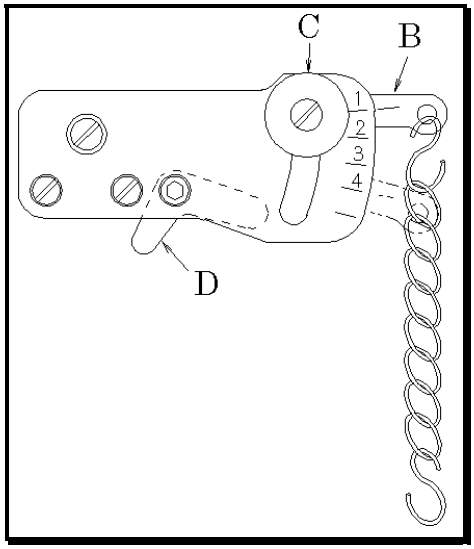
Stitch Length (mm)	No. of stitches (within 1")	No. of stitches (within 30mm)
4.2	6.0	7.5
3.6	7.0	8.0
2.4	10.5	12.5
1.4	18.0	21.0



■To change the stitch length

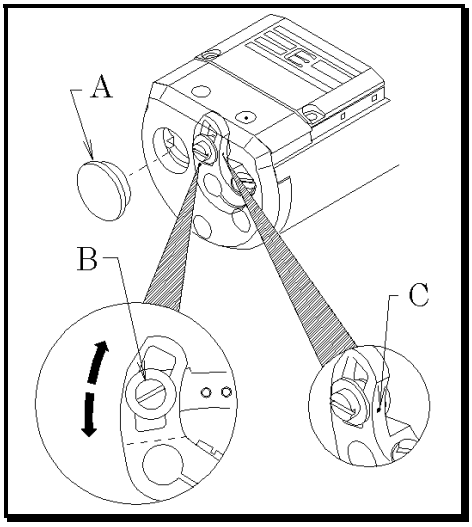
1. To increase the stitch length, turn adjusting knob A clockwise. To decrease the stitch length, turn adjusting knob A counterclockwise.
2. To adjust the stitch length with lever B, secure lever B with nut C as required.
   The range extends from the reading read by lever B when adjusting knob A is turned to the reading at which lever B is stopped by stopper D.
   To adjust the stitch length during sewing,

< Note >
Be sure to turn off the motor before changing the stitch length.



8-3 Differential feed

Remove plug A. Loosen screw B.
To gather the fabric, move up screw B (maximum normal differential feed ratio: 1:4).
To stretch the fabric, move down screw B (maximum reverse differential feed ratio: 1:0.8).
When alignment mark C is aligned with the center of screw B, the differential feed ratio is 1:1.

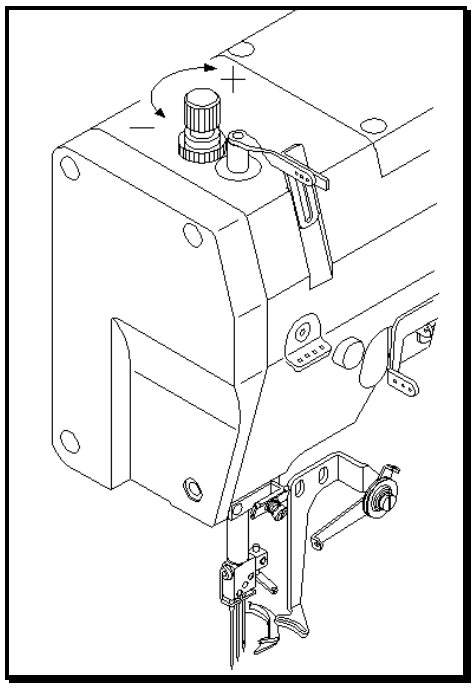


【9】PRESSER FOOT

9-1 Presser foot pressure

The presser foot pressure should be as light as possible, yet be sufficient to feed the fabric and produce uniform stitches.

To increase the presser foot pressure, turn the adjusting knob clockwise.

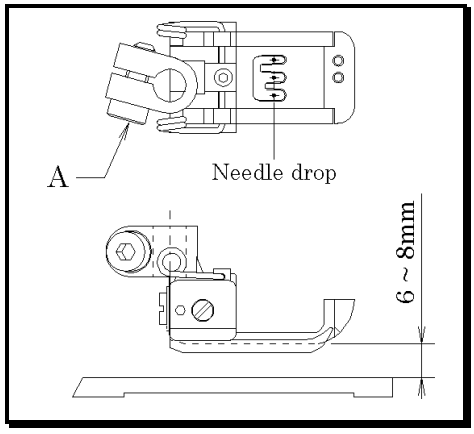


9-2 Position of the presser foot & foot lift

Fit the presser foot onto the presser bar so that the needle can drop correctly to the center of the presser foot needle drop hole.

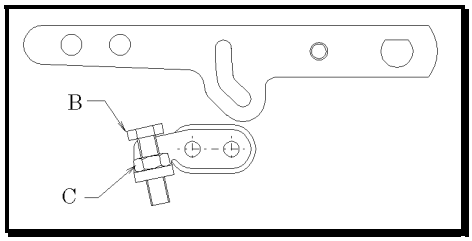
■Position of the presser foot

Loosen screw A. Adjust by moving the presser foot left or right while checking to make sure the needle drops correctly to the center of the presser foot needle drop hole.



■Foot lift

For machines with the spreader, the presser foot should be 6mm above the top surface of the needle plate. Check to make sure presser foot does not touch the spreader with the presser foot in the above position. For machines without the spreader, the presser foot should be 8mm above the top surface of the needle plate.



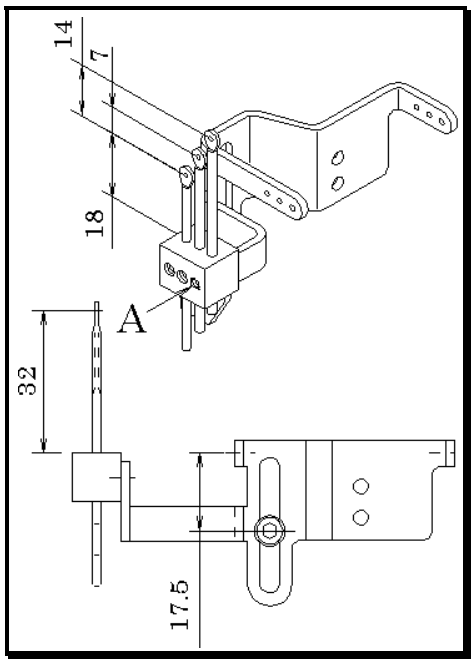
Set stopper B at the required position.

Fasten the presser foot lift lever with nut C so that the lever cannot be lowered.

【10】STITCH FORMATION

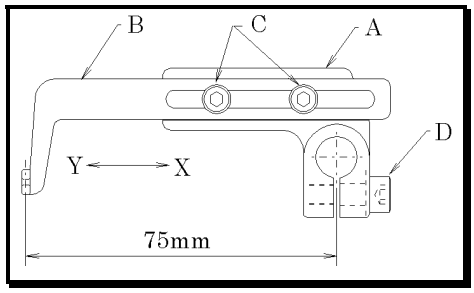
10-1 Position of the needle thread guides

The distance from the center of the eyelet of the needle thread guide to that of the set screw should be approximately 17.5mm (see the illustration).
Adjust the height of the thread guides by loosening screws A and moving each thread guide up or down (refer to the distances shown in the illustration).
If the stitch formation cannot be changed extremely by adjusting the height of the thread guides because of the thread to be used, unravel the thread after test sewing and adjust the height of the thread guides while checking the tension of the needle thread.



10-2 Position of the thread guide on the needle thread take-up

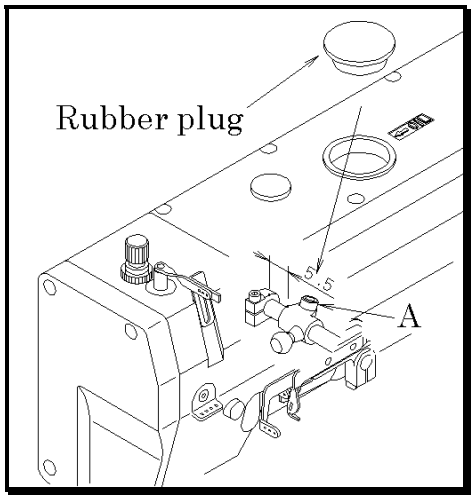
When the needle bar is at the bottom of its stroke, needle thread take-up bracket A should be level and the distance from the center of the shaft to the thread guide of needle thread take-up B should be 75mm.
To make this adjustment, loosen screws C and D.
To tighten the needle thread, move needle thread take-up to Y. To loosen the needle thread, move needle thread take-up to X.



10-3 Timing of the needle thread take-up

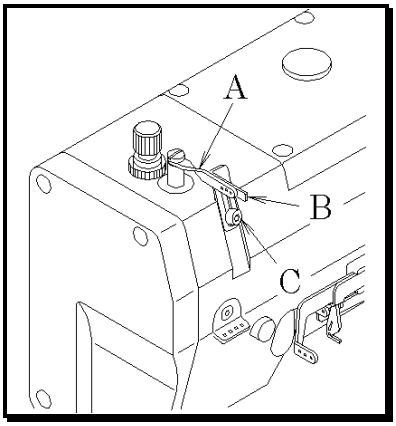
The timing of the needle thread take-up in relation to the up-and-down movement of the needles can be adjusted. This timing is factory-set to synchronize with the up-and-down movement of the needle bar.

< Note >
The rod ball is factory-set at 5.5mm from the rear end of the shaft. To make the needle thread loop small, move the rod ball to the front.
To make the needle thread loop large, move the rod ball to the back. Remove the rubber top plug.
Loosen the screw of (A) with a 5mm wrench.
Then move the rod ball to the front or back.



10-4 Position of the needle thread guard

When the needle bar is at the bottom of its stroke, the center of the eyelet of thread guide A should be level with the top surface of needle thread guard B. In addition, A should be parallel with B. To adjust the height of needle thread guard B, loosen screw C and move needle thread guard B up or down. To tighten the needle thread, move up B. To loosen the needle thread, move down B.

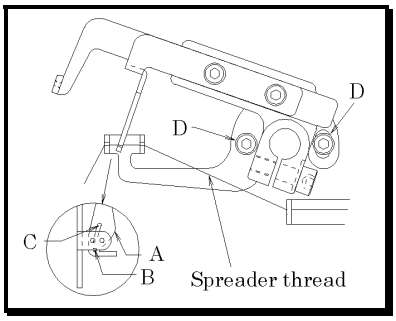


■For cotton threads (non-stretchable threads)
Bring the needle thread guard 2.0mm below the standard, or do not use the needle thread guard.
Loosen screw C and move down the needle thread guard.

■For woolly threads (stretchable threads)
Raise the needle thread guard as high as possible.

10-5 Position of the thread guide of the spreader thread take-up

When the needle bar is at the top of its stroke, thread any one of parts A, B and C on the spreader thread take-up with spreader thread.



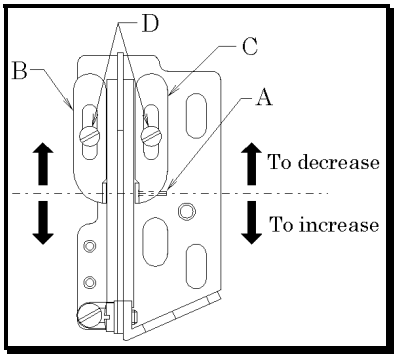
■For woolly threads : Thread B or C.

■For cotton threads or spun threads
Thread A and adjust the spreader thread take-up according to the thread or fabric to be used.

Adjust by moving up or down the spreader thread take-up with screws D.

10-6 Position of the thread guide of the looper thread take-up

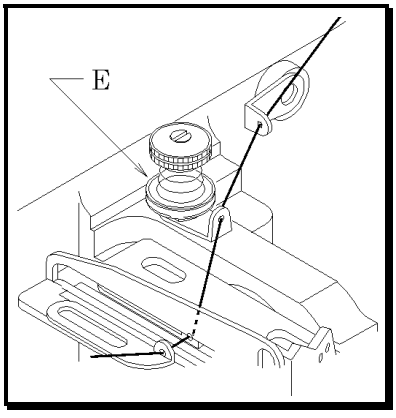
Align the eyes of thread eyelets B and C with mark A on the guide plate. Adjustment is made by loosening screws D.



■To increase the amount of looper thread to be supplied
Move the eyes of B and C to the front.

■To decrease the amount of looper thread to be supplied
Move the eyes of B and C to the back.

■For woolly threads, move thread eyelets B and C all the way to the front. Do not thread disc E.



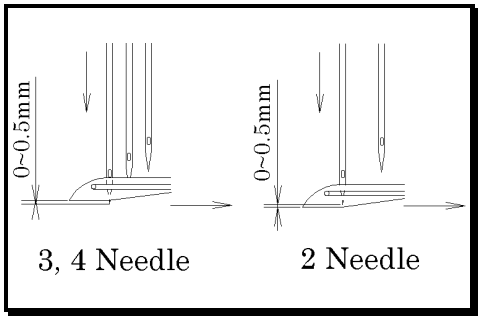
10-7 Position of the looper thread take-up

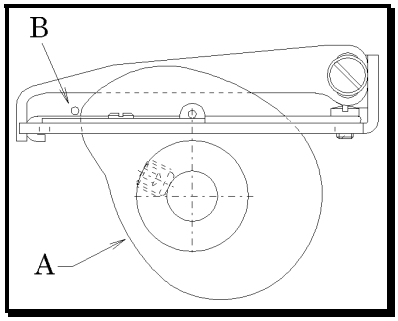
When the point of the left needle descending to the back side of the looper has reached 0~0.5mm above the bottom surface of the looper blade while the looper is moving to the right from the extreme left end of its travel, the looper thread should be removed properly from position B on the looper thread take-up.

■Position of the point of the left needle when the looper thread is removed from point B on the looper thread take-up

On 3 - needle machines the point of the left needle is slightly below the bottom surface of the looper blade.

On 2 - needle machines the point of the left needle is slightly above the bottom surface of the looper blade.

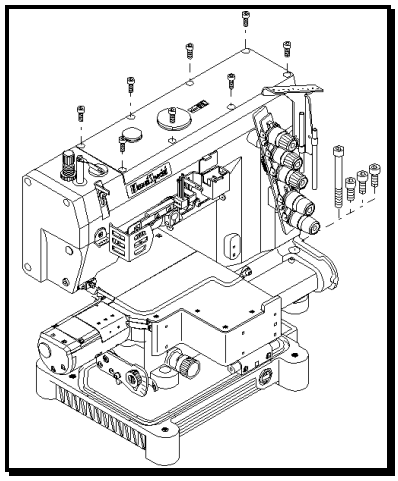




【11】REPLACING THE TIMING BELUT

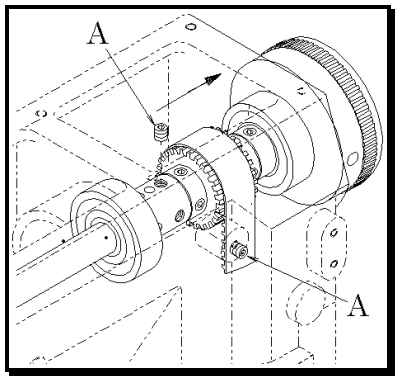
11-1 Marks on the timing belts

The X Series is available in timing belts of [A], [B] and [C] according to the distance between the upper and lower shafts. [A] indicates the longest timing belt.



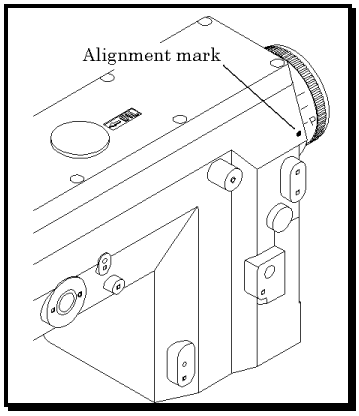
11-2 To remove the timing belt

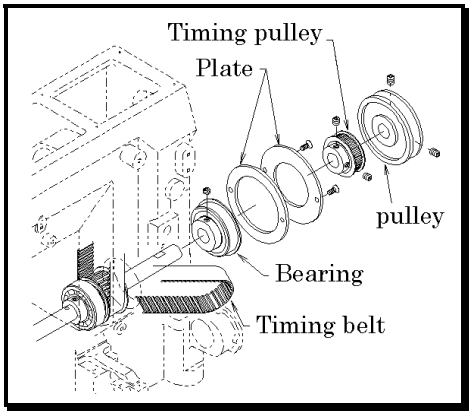
1. Loosen the eight arm cover set screws and the four oil reservoir set screws (see the illustration).
   Remove each part.
2. Loosen two screws A. Remove the handwheel to the right while turning it slowly (see the illustration).
3. Remove the pulley, timing pulley, plates and bearing in sequence by referring to the illustration.
   Then remove the timing belt from the hole for the bearing.



11-3 To place the timing belt

1. Install the timing belt, bearing, plates, timing pulley, pulley and cover by performing the reverse procedure of 13-2 (3).
2. Position the bearing so that the point of the screw is fitted correctly into the positioning hole on the lower shaft. Then tighten the screw to secure the bearing.
3. Move the looper to the extreme right end of its travel by turning the machine pulley. Bring the needle bar down to the bottom of its stroke by hand.
4. Then place the belt onto the timing pulley on the upper shaft. Tighten two screws A.
5. Bring the needle bar up to the top of its stroke by turning the machine pulley. Check to make sure mark "P" on the handwheel is aligned with alignment mark "O" on the bed.
6. To make a fine adjustment for the timing of the needle and looper, refer to 5-2.





【12】CLEANING THE MACHINE

At the end of each day, remove the needle plate and clean the slots of the needle plate and the area around the feed dogs.