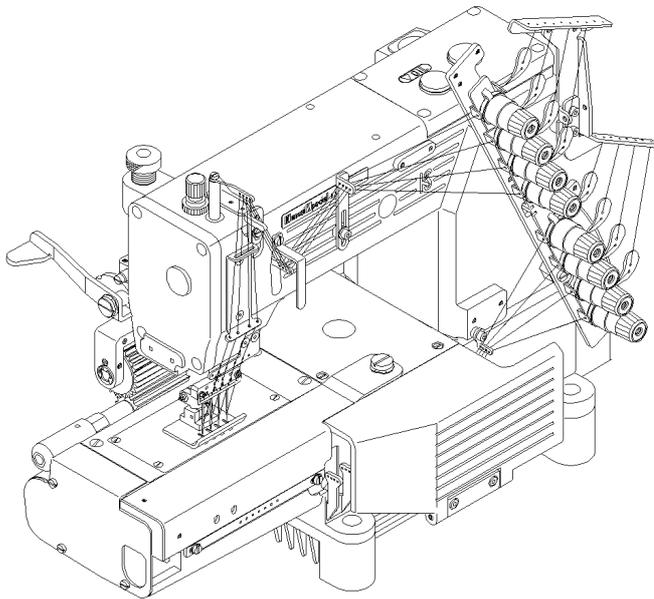


INSTRUCTION

FX SERIES

Industrial Sewing Machines



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No. 980050

KANSAI
SPECIAL®

INTRODUCTION

Thank you for your purchasing Kansai Special's FX 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.

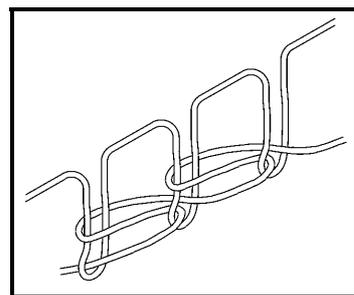
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【1】 SPECIFICATIONS

1-1 Stitch type

JIS401 double chainstitch machines

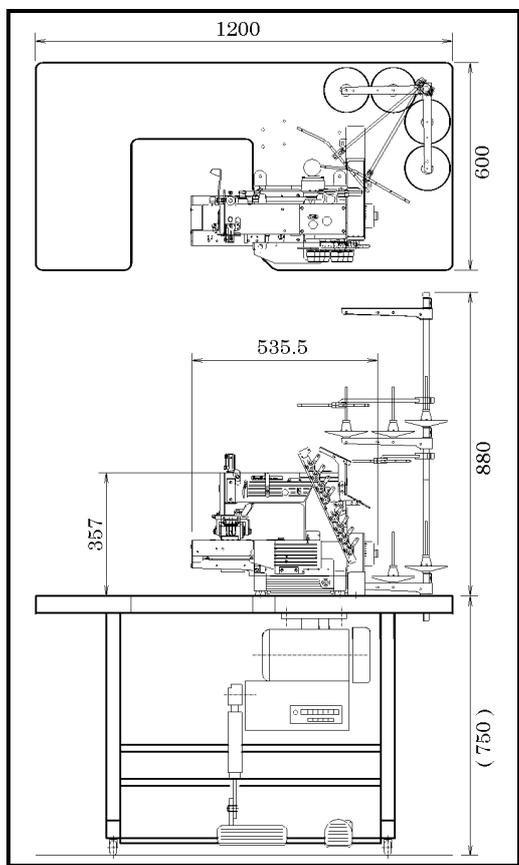


1-2 Models

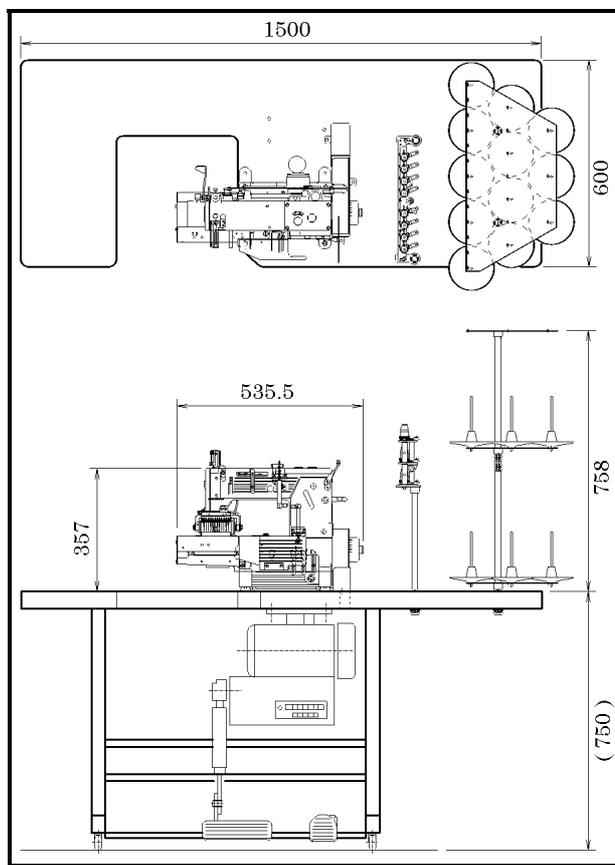
Model	FX4404P,4404P/UTC	FX4406P,4406P/UTC	FX4412P,4412P/UTC
No. of needles	2 ~ 4	5 ~ 6	7 ~ 12
No. of threads	4 needle threads	6 needle threads	12 needle threads
	4 looper threads	6 looper threads	12 looper threads
Type of tension set	Mounted type	Separate type	Separate type
Puller width	55mm	88mm	88mm
Minimum gauge width	4.76mm (3/16 inch)		
Maximum gauge width	50mm	Without UTC 70mm With UTC 76.2mm (3 inch)	

1-3 Diagrammatic sketch of the Series

< FX4404 >



< FX4412 >



【2】 NEEDLES & THREADING THE MACHINE

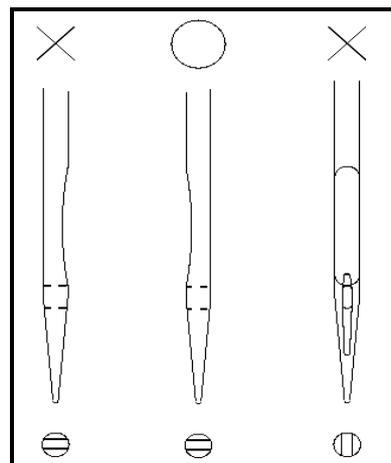
2-1 Needles

DV × 57 of Schmetz or Organ

Select the proper needle for the fabric and thread to be used.

< Needle count comparison table >

Schmetz DV × 57	Nm75	Nm80	Nm90	Nm100
Organ DV × 57	#11	#12	#14	#16



2-2 Replacing the needle

When replacing the needle, check the needle carefully to see that the scarf is turned to the left (see the illustration).

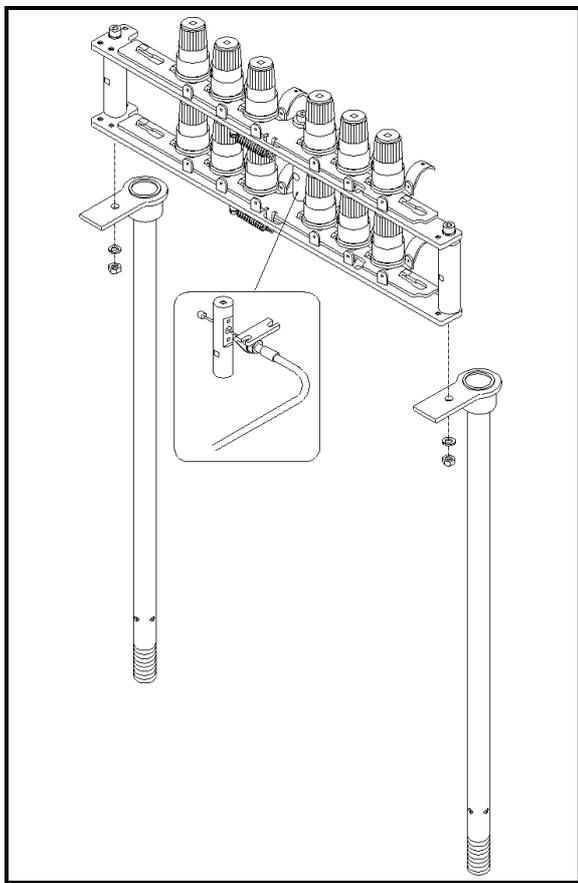
< Note >

Be sure to turn off the machine before replacing the needle. A clutch motor continues running for a while after the machine is turned off. Therefore keep on pressing the pedal until the machine stops.

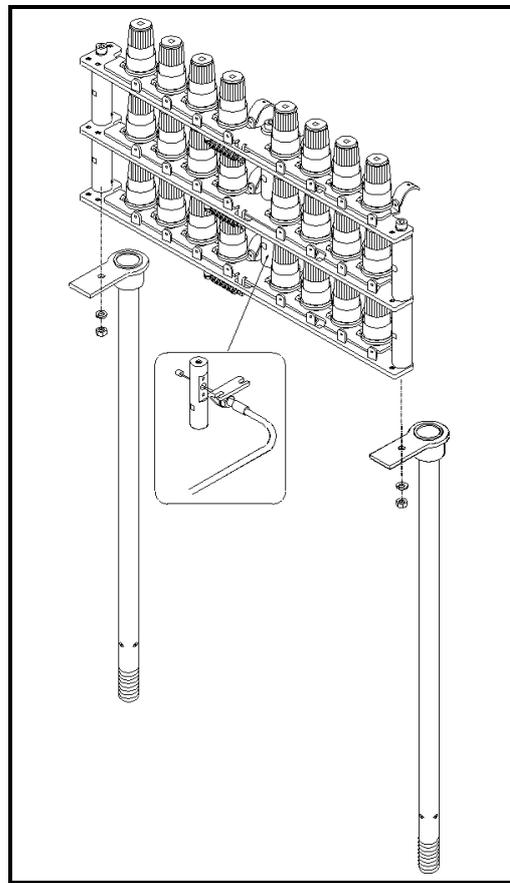
2-3 Assembling the tension stand

A 6-needle or 12-needle machine has a separate type of tension stand. Assemble each stand correctly by referring to the illustration.

< For a 6-needle machine >



< For a 12-needle machine >



2-4 To thread the machine

Thread the machine correctly by referring to pages 4 to 6.

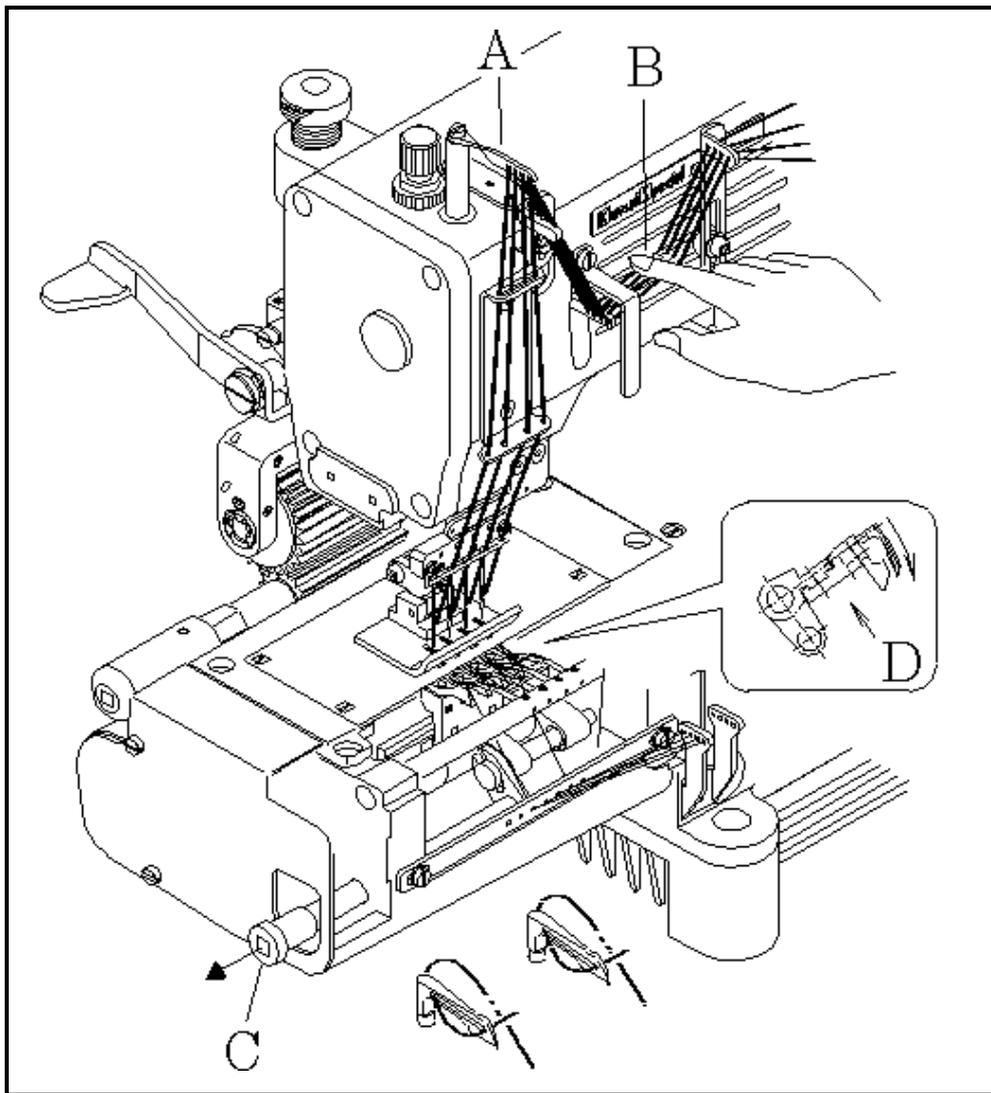
Incorrect threading may cause skip stitching, thread breakage and/or uneven stitch formation. When threading the looper, tilt the looper holder toward the front of the machine using the looper drawing bar.

To tilt the looper toward the front

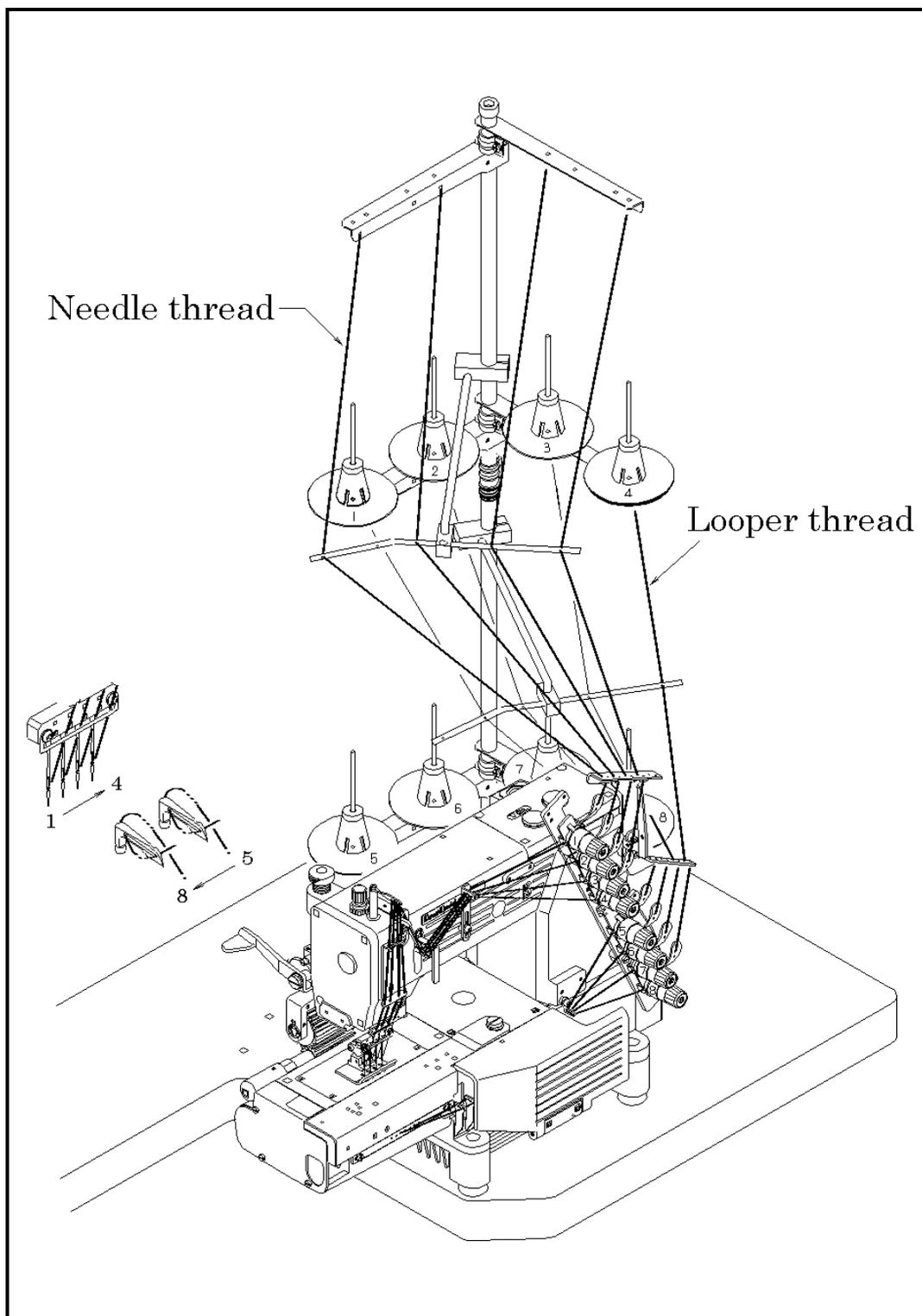
1. Bring needle bar A to the top of its stroke.
2. Pay out the needle thread from the spool by pressing a finger down on needle threads B.
3. Pull looper drawing bar knob C out to the left so that the looper holder is tilted toward the front of the machine.
4. After the machine is threaded, replace the looper by pressing looper holder D into the machine until it clicks.

< Note >

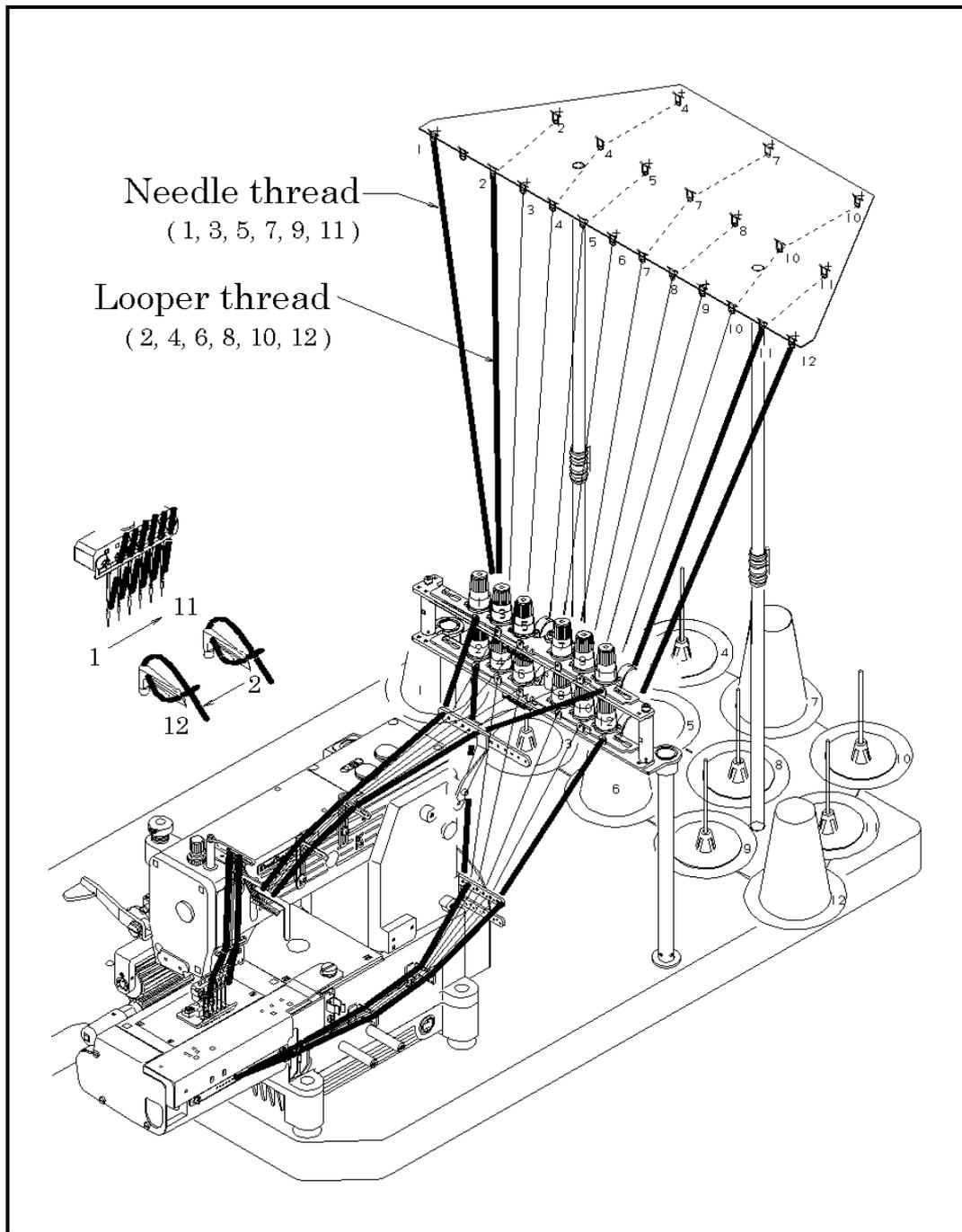
The looper pops out of the machine as soon as knob C is pulled, so do not bring your fingers close to the looper.



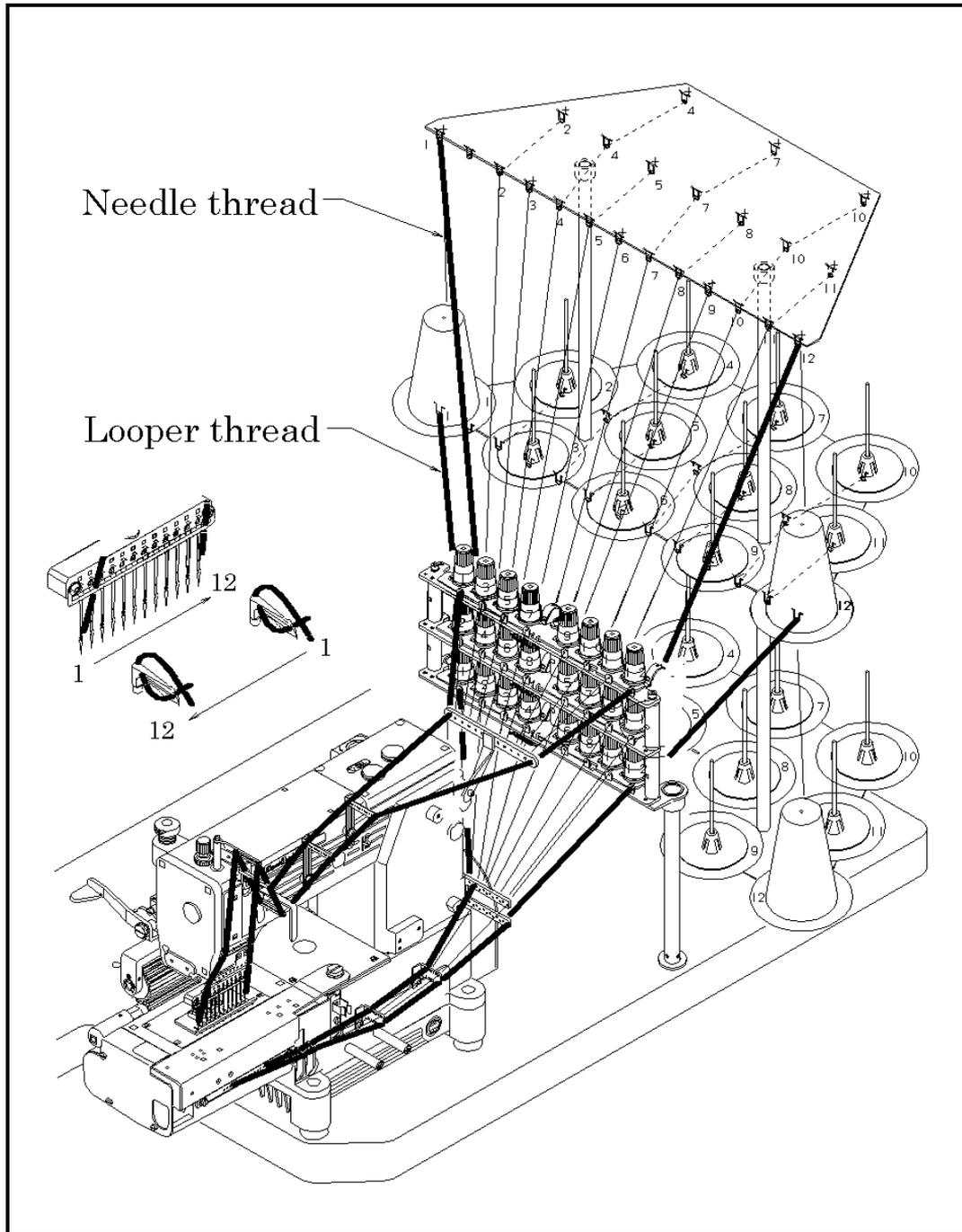
Threading diagram for FX4404



Threading diagram for FX4406



Threading diagram for FX4412



【3】 MACHINE SPEED

3-1 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 seen from the end of the machine pulley.

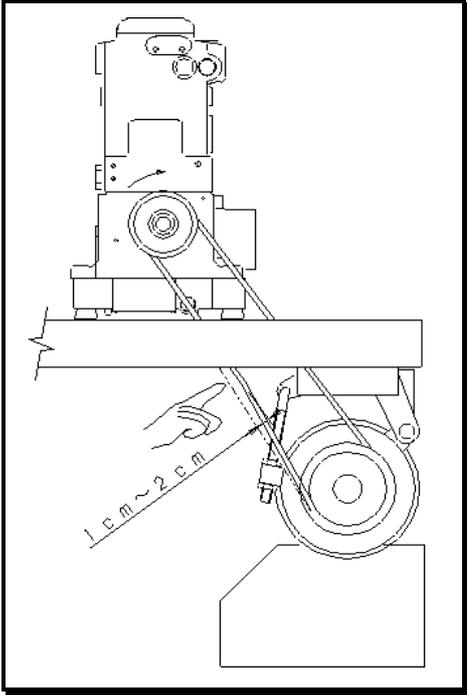
3-2 Motor & belt

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 the position of 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 >

Model	Maximum speed	Standard speed
FX4404P	4500	4000
FX4412P	4000	3500

< Motor pulley selection table >

Motor pulley outer diameter (mm)	Machine speed (SPM)	
	50Hz	60Hz
60	3150	2950
70	2300	3450
80	3300	3900
90	3700	4400
100	4100	(4900)
110	4500	(5400)

【4】 LUBRICATION

4-1 Oil

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

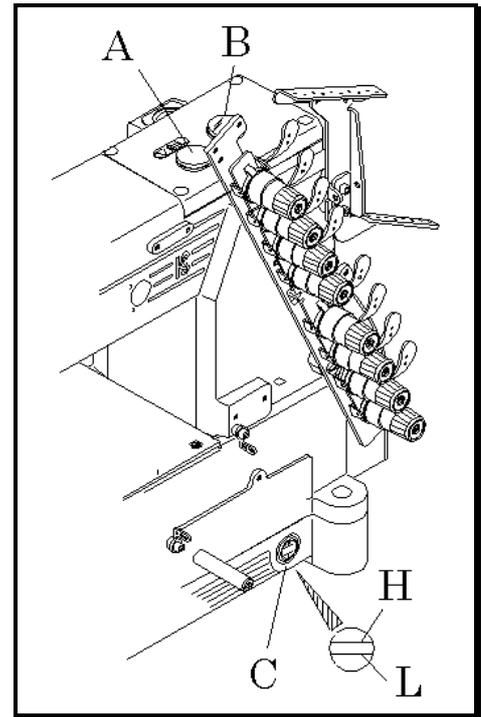
4-2 To fill the machine with oil

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.

After filling the machine with oil, run the machine to check the oil is splashing onto oil pot A.

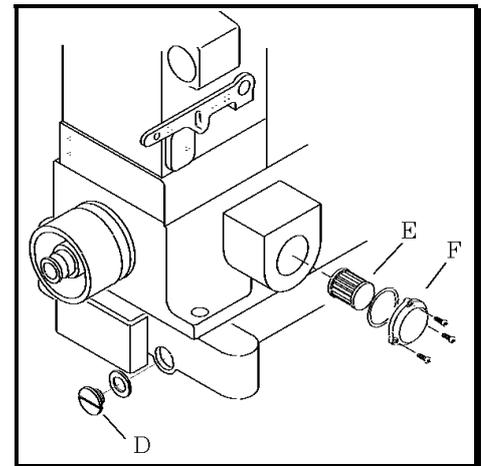


4-3 Replacing the oil and the oil element

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 4-2 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.

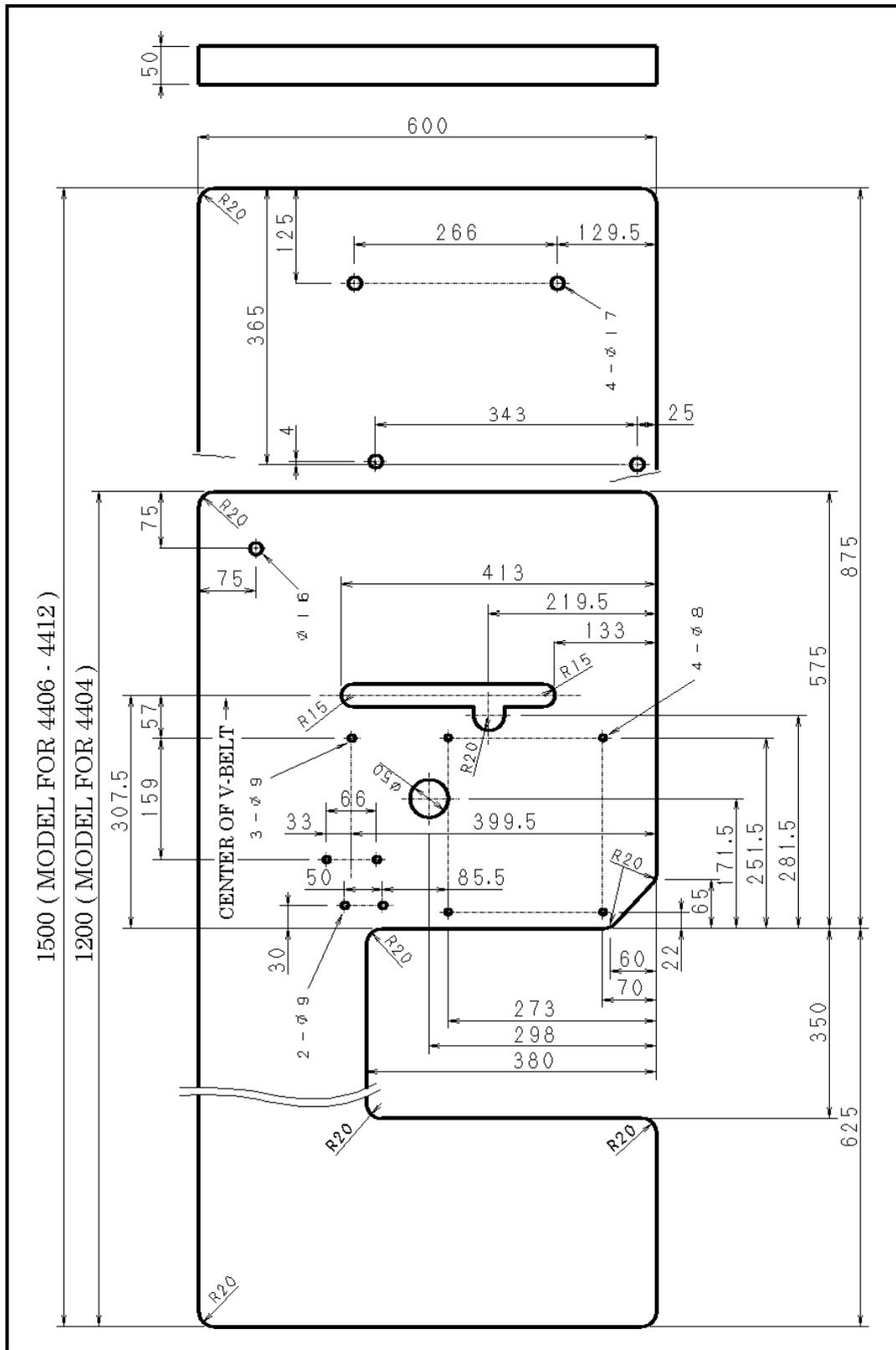
To do so, remove oil filter cap F. Replace the element if necessary.

< Note >

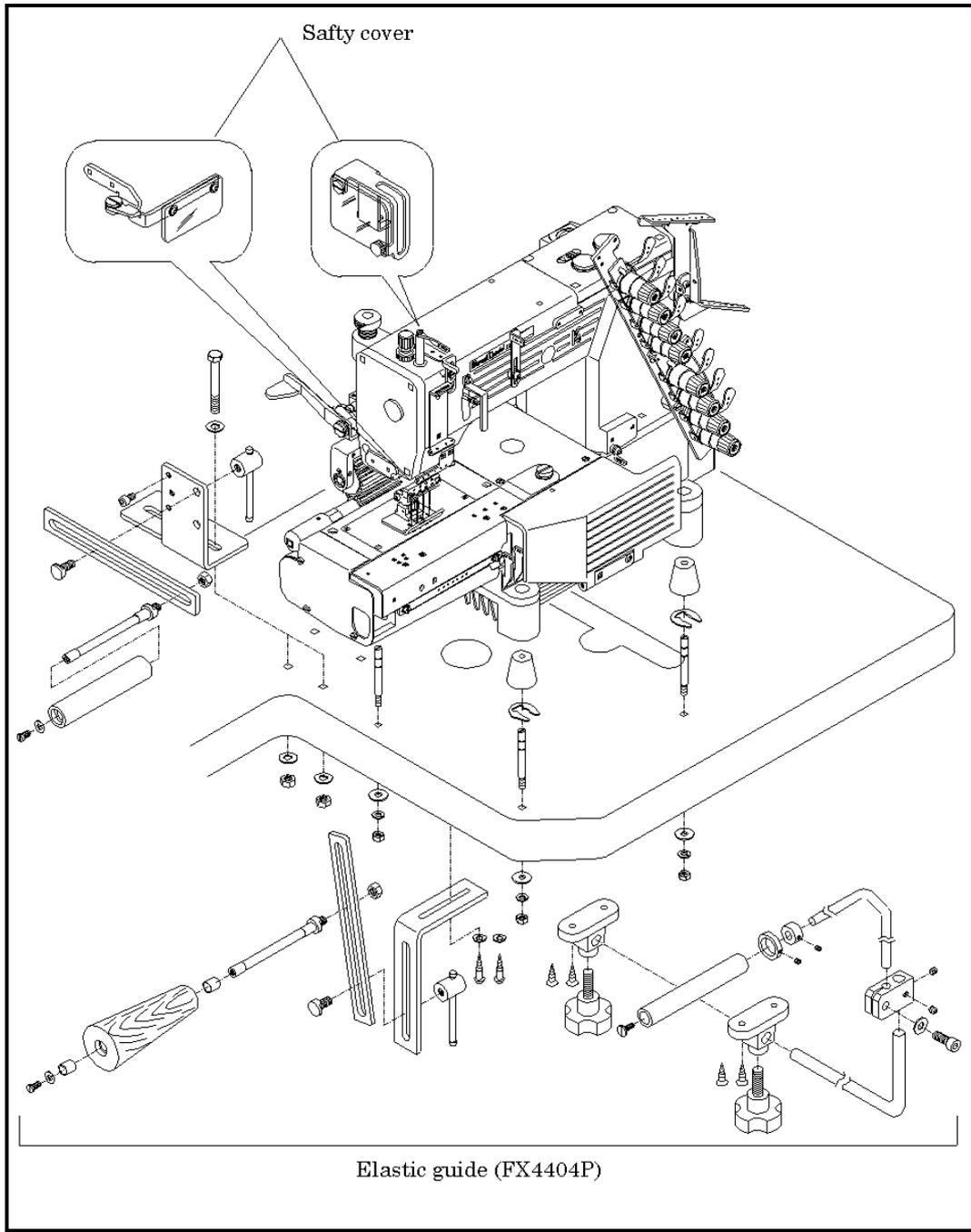
When the oil filter cap is removed, the oil collected on the element drips. Be careful.

【5】 SEWING MACHINE INSTALLATION

5-1 Cutting the machine table



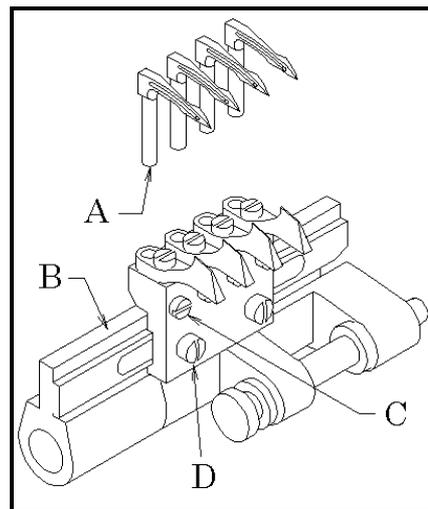
5-2 How to install the machine



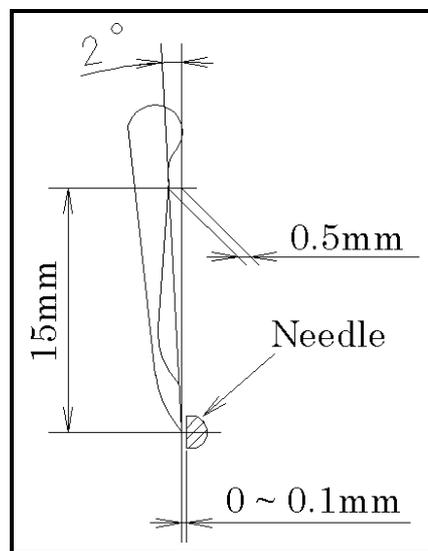
【6】 TIMING OF THE LOOPER TO THE NEEDLE

6-1 Positioning the looper and the looper rocker

Insert the looper into the looper holder until bottom A of the looper touches to looper rocker B.
Then tighten screw C.

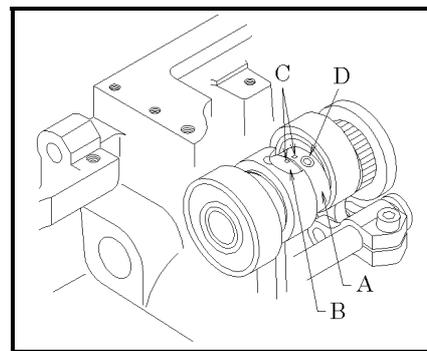
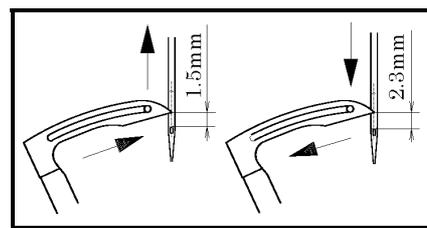


Install the looper of the FX Series at a 2° angle.
Difference in level within 15mm is approximately 0.5mm. The clearance between the looper and the needle when the point of the looper passes the scarf on the needle should be 0~0.1mm.
Adjustment is made by loosening screw D and moving the looper rocker to the left or right as required.



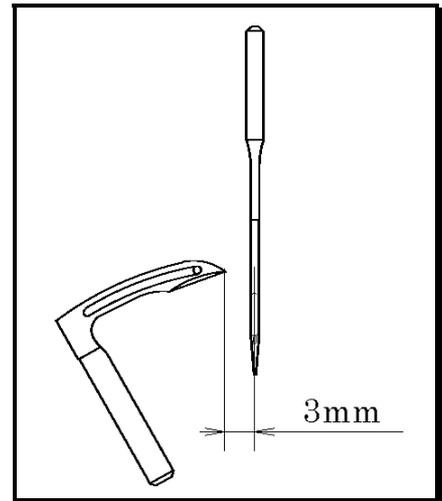
6-2 Looper left-to-right movement

The timing of the looper to the needle is as follows.
When the point of the looper, moving to the right, has reached the center of the needle, the point of the looper should be 1.5mm above the top of the needle's eye.
When the point of the looper, moving to the left, has reached the center of the needle, the point of the looper should be 2.3mm above the top of the needle's eye.
To make this adjustment, remove the top cover first.
Loosen screw D. Then move eccentric A.
For standards, marks C is turned upward when the needle is at the top of its stroke (at the same position as eccentric B).

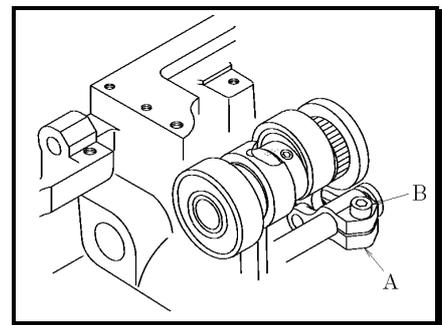


6-3 Looper setting distance

When the needle bar is at the bottom of its stroke, there should be a distance of 3mm from the point of the looper to the center of the needle bar.



Adjustment is made by removing the top cover and loosening screw B for lever A.

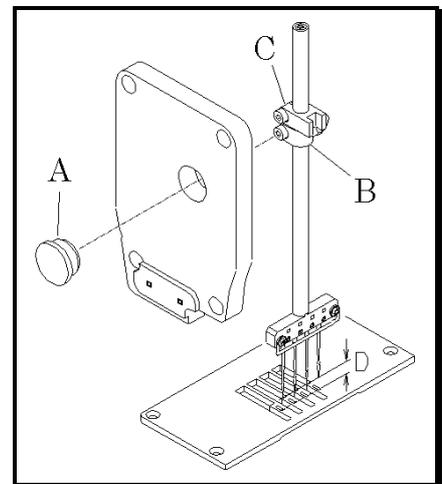


6-4 Needle height

When the needle bar is at the top of its stroke, remove plug A on the head plate, loosen needle bar clamp B with a hex. wrench and then move the needle bar up or down.

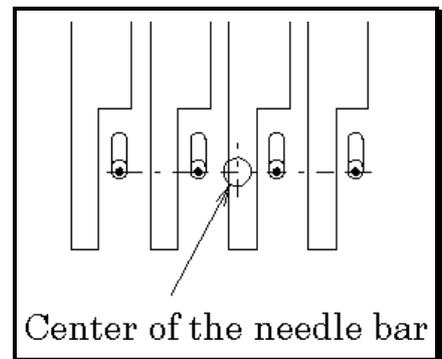
< Standard needle height (distance D) >

Stroke	Standard model	With thread trimmer
34.5mm	14.5~14.9mm	13.6~14mm



< Note >

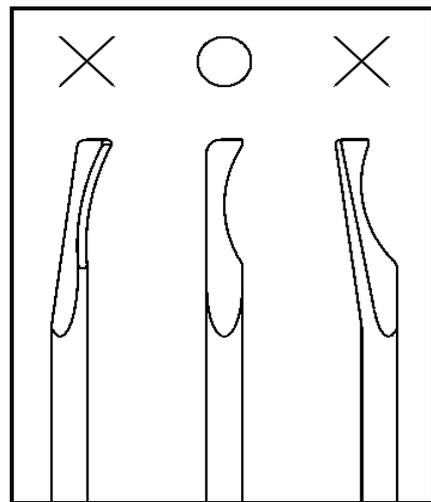
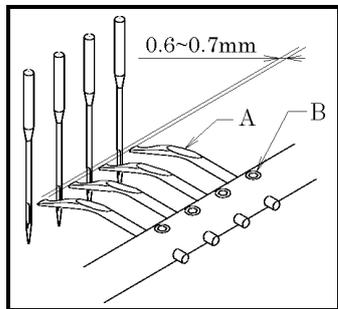
*Do not loosen the screw on needle bar guide C.
If this screw is loosened, make sure each needle drops into the center of the needle drop hole and then retighten the screw.*



【7】 TIMING OF THE RETAINER LOOPER

7-1 Installing the retainer looper

Install retainer looper A with its flat surface turned upward. There should be a clearance of 0.6~0.7mm between the needle and the point of the retainer looper. After this adjustment, tighten screw B.

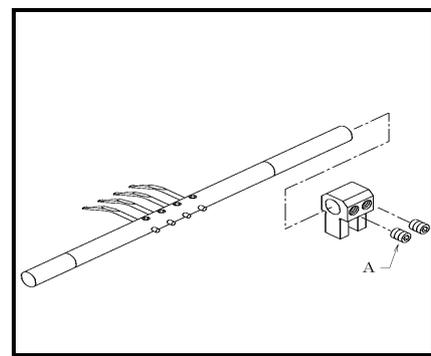
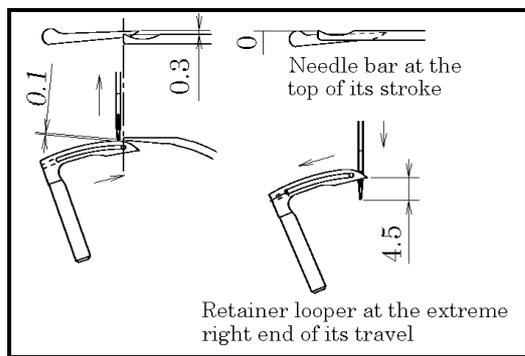


7-2 Timing of the retainer looper to the needle

When the point of the needle, descending from the top to the bottom of its stroke and entering the triangle formed by the looper thread, has reached approximately 4.5mm below the point of the looper, the retainer looper should be at the extreme right end of its travel.

When the looper's eye is close to the point of the retainer looper while the needle bar is ascending to the top of its stroke, there should be a clearance of 0.3mm between the right side of the retainer looper and that of the looper. When the needle bar is at the top of its stroke, there should be a clearance of 0mm between the right side of the retainer looper and

that of the top surface (heel) of the looper blade.



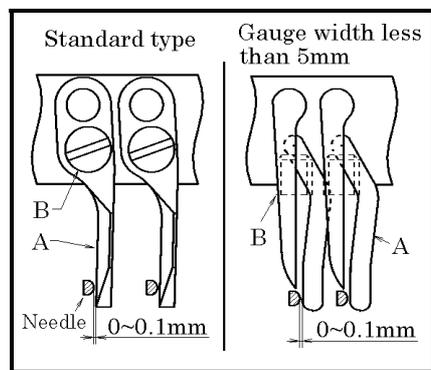
【8】 ADJUSTING THE NEEDLE GUARD

8-1 Position of the needle guard

When the right side of the needle is the closest to needle guard A, there should be a clearance of 0~0.1mm between them. Adjustment is made by loosening screw B.

< Note >

For a standard type of needle guard, loosen the looper set screw after positioning the looper rocker, adjust the needle guard and then tighten screw B.

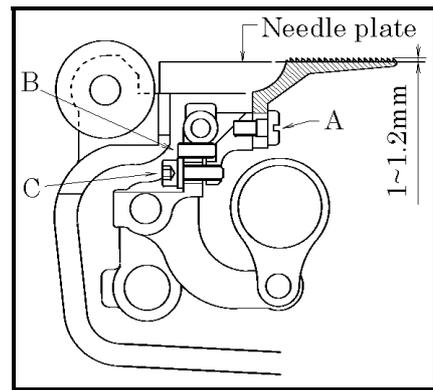


【9】 ADJUSTING THE FEED DOG & STITCH LENGTH

9-1 Feed dog height & tilt

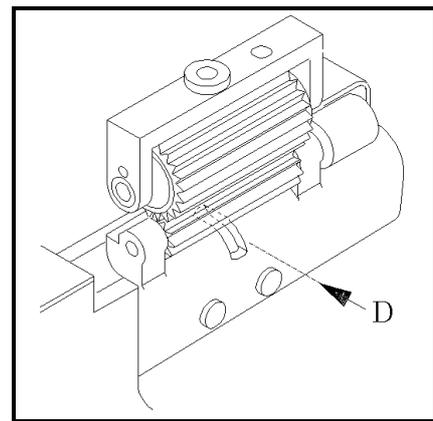
When the needle bar is at the top of its stroke, the feed dog teeth should be 1~1.2mm above the top surface of the needle plate. Adjustment is made by loosening screw A. Tilt adjustment is made by inserting a tool from D and adjusting screws B and C.

After making this adjustment, make sure the feed dog is parallel with the top surface of the needle plate.



< Note >

Before adjusting the height of the feed dog, tilt the looper holder.



9-2 Stitch length

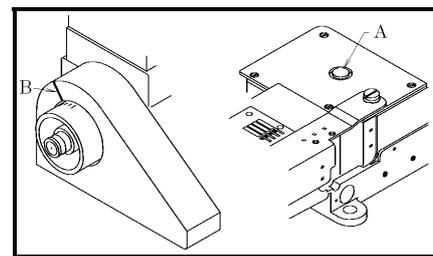
The stitch length can be adjusted from 2 to 5mm with no step.

The following table shows the stitch length with the number of stitches within 1 inch (25.4mm) and 30mm.

Position of pulley	Stitch length (mm)	No. of stitches	
		within 1"	within 30mm
S	2	13	15
M	3	8.5	10
L	5	5	6

To change the stitch length

1. Press push button A lightly with the right hand until the end of push button A touches an inside part and clicks.
2. With push button A depressed, turn the handwheel with the left hand until the push button goes further into the depth.
3. Press the push button strongly again.
Then turn the machine pulley to select the stitch length as required.
4. Align the desired stitch length with alignment mark B.
Then release the left hand.



< Note >

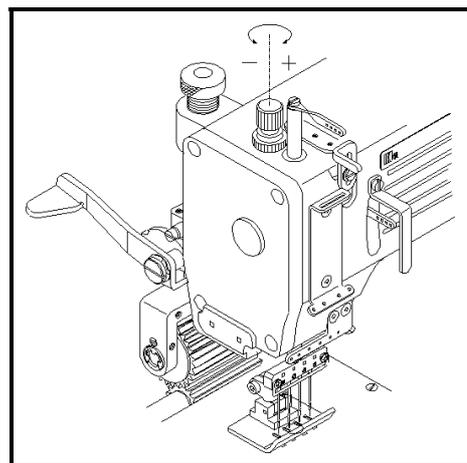
Before changing the stitch length, be sure to turn off the motor.

【10】 ADJUSTING THE PRESSER FOOT

10-1 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 (see the illustration).

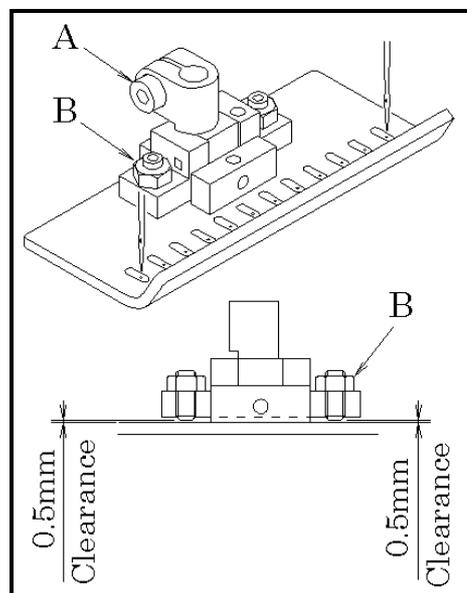


10-2 Position of the presser foot and foot lift

Fit the presser foot properly onto the presser bar.

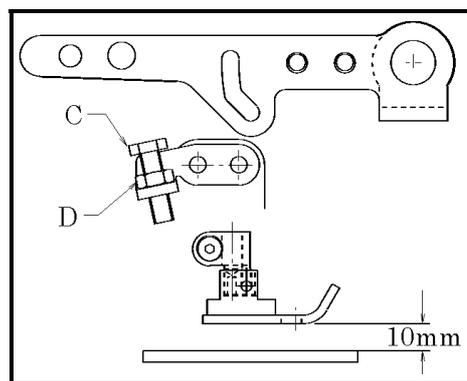
Make sure the needle is centered left to right in the needle drop hole on the presser foot when the needle is descending. Adjustment is made by loosening screw A. There should be a clearance of 0.5mm on both sides as shown in the illustration.

Adjustment is made by loosening nuts B (on FX4406-FX4412).



Foot lift

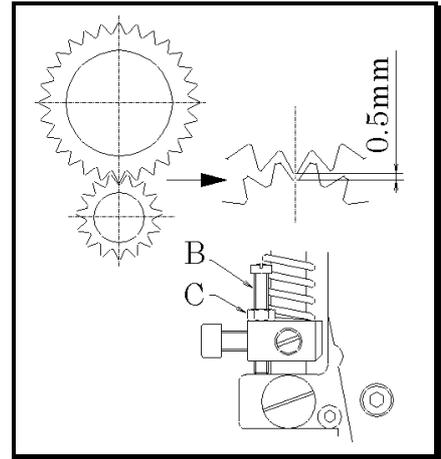
Position stopper C with the presser foot approximately 10mm above the top surface of the needle plate and then tighten nut D.



【11】 ADJUSTING THE REAR PULLER DEVICE

11-1 Manual lever and position of the stopper

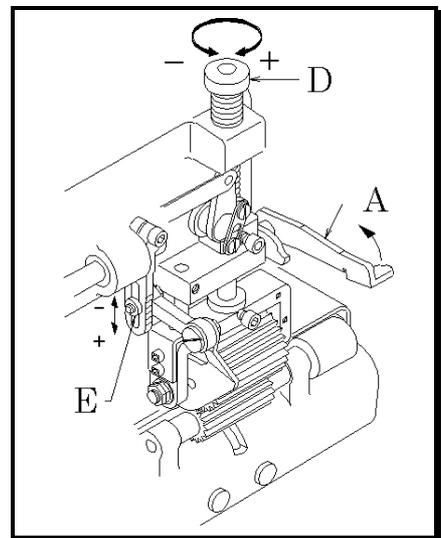
To position or remove the fabric, raise manual lever A. With the manual lever lowered, hold stopper B so that the clearance between the upper and lower pullers is 0.5mm. Then tighten nut C.



11-2 To adjust the puller pressure

The puller pressure should be as light as possible, yet be sufficient to feed the fabric smoothly.

To increase the pressure, turn adjusting knob D clockwise. To decrease the pressure, turn adjusting knob D counterclockwise.



11-3 To adjust the feeding amount of the rear puller

Adjust the feeding amount of the rear puller according to that of the feed dog.

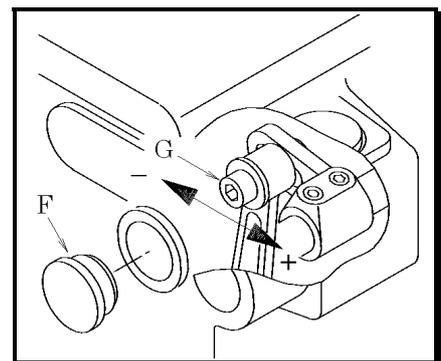
To increase the amount, loosen nut E and move it down.

To decrease the amount, loosen nut E and move it up.

If the feeding amount is too large or small, remove rubber plug F, loosen screw G with a hex. wrench and move screw G to the left or right.

To increase the amount, move screw G to the right.

To decrease the amount, move screw G to the left.



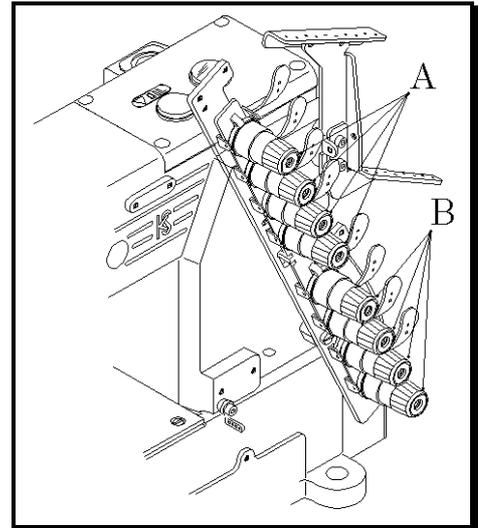
【12】 ADJUSTING THE STITCH FORMATION

12-1 Thread tension adjustment

Thread tension varies according to sewing conditions such as the fabric, thread and stitch length to be used. Tension on the needle thread can be adjusted with nuts A. Tension on the looper thread can be adjusted with nuts B. To increase the tension, turn the nuts clockwise.

< Note >

The tension should be as light as possible, yet be sufficient to produce uniform stitches.

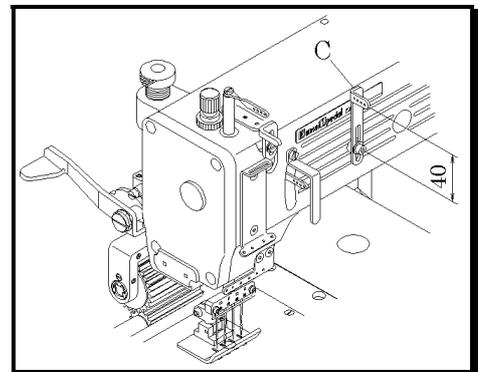


12-2 Position of the needle thread eyelet

Position needle thread eyelet C so that the distance from the center of the screw to the eyes of C is approximately 40mm.

< Note >

Adjust the needle thread eyelet according to the thread to be used. To tighten the needle thread, raise the needle thread eyelet.

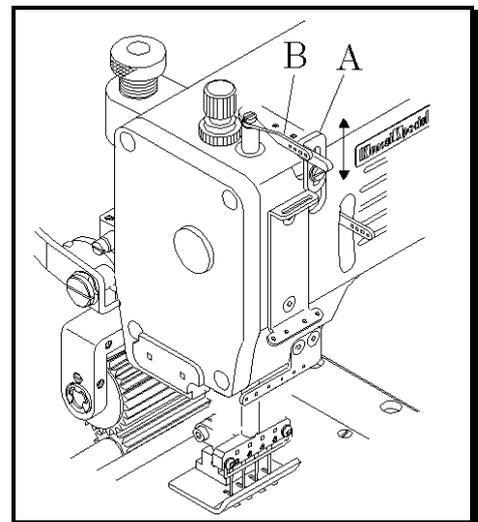


12-3 To adjust the needle thread guard

With the needle bar at the bottom of its stroke, the centers of the eyes on needle bar eyelet B should be level and parallel with the top surface of needle thread guard A.

< Note >

*Raising needle thread guard A increases the size of the needle thread loop.
Lowering needle thread guard A decreases the size of the needle thread loop.*

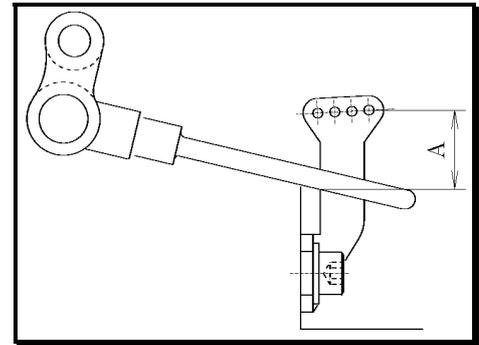
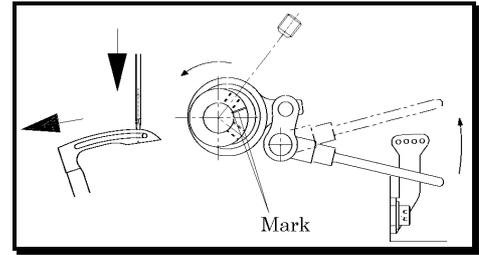


12-4 Position and timing of the looper thread take-up eyelet

When the point of the needle is level with the top surface of the looper while the needle bar is descending from the top to bottom of its stroke on the back side of the looper, the looper thread take-up bar should start ascending.

Adjustment is made by loosening the screw and aligning the mark on the eccentric with that on the main shaft. When the looper thread take-up bar is at the bottom of its stroke, adjust distance A from the eyes on the thread eyelet to the looper thread take-up bar by referring to the table below.

Thread type	Distance A
Polyester	8mm
Spun	10mm
Woolly	15mm



【13】CLEANING THE MACHINE

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

