

BE804NT0B0B

MODEL NO. 804

SUPER SPEED SINGLE NEEDLE OVEREDGING
INDUSTRIAL SEWING MACHINE

MODEL NO. 814

SUPER SPEED TWIN-NEEDLE OVEREDGING
INDUSTRIAL SEWING MACHINE

MODEL NO. 816

SUPER SPEED SAFETY STITCH
INDUSTRIAL SEWING MACHINE

INSTRUCTION BOOK

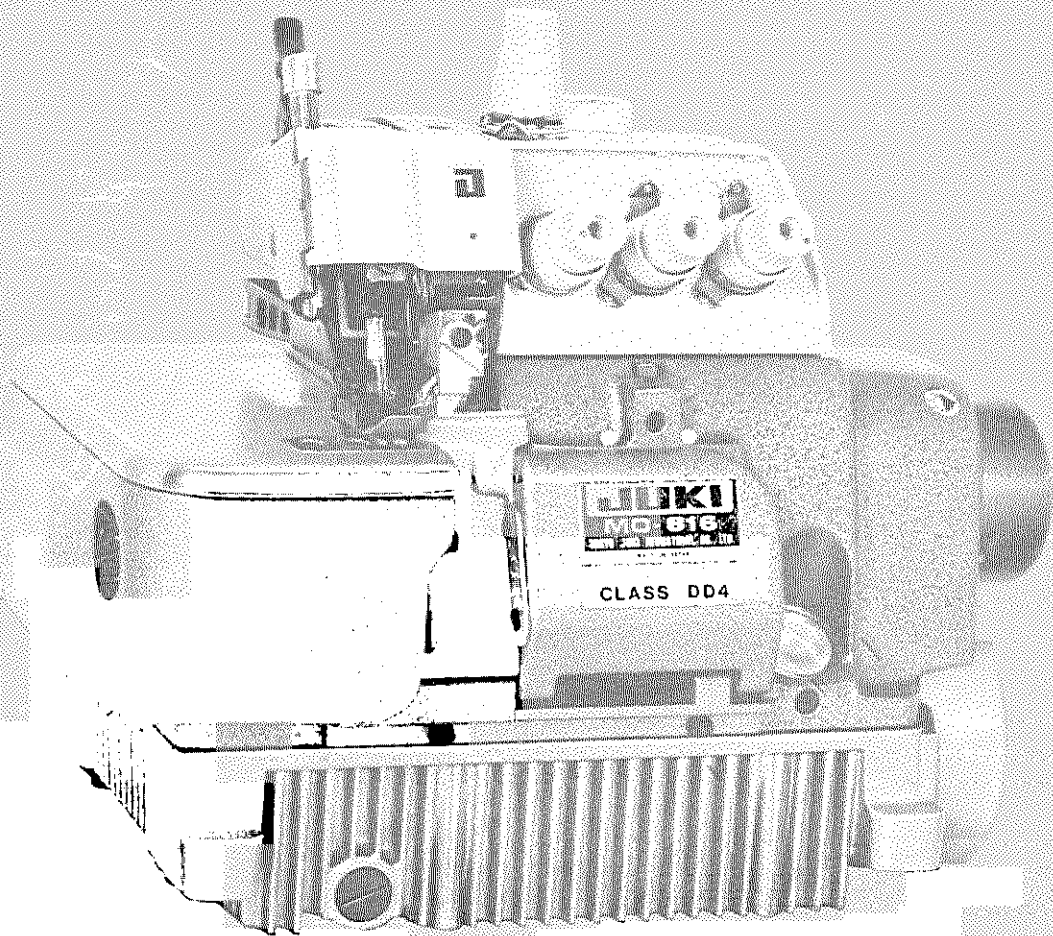
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TOKYO JUKI INDUSTRIAL CO., LTD.

FIRST OF ALL

We thank you for purchasing JUKI MO-800 Series machines.

Before operating this machine, please read and digest the contents of the INSTRUCTION BOOK thoroughly and understand the functions of the machine and cherish it everlastingly.

SPECIFICATIONS

	MO-804-DD4	MO-814-BD4	MO-816-DD4
Sewing speed	Up to 7,500 s.p.m.	Up to 7,000 s.p.m.	Up to 6,500 s.p.m.
Stitch length	0.4 4 mm (1/64" - 9/64")		
Needle gauge		2.0mm(5/64")	3.2mm(1/8")
Overedging width		3.2mm(1/8")	
Ratio of differential feed	Gather sewing: 1:2 (Max. 1:4) Stretch sewing: 1:0.7 (Max. 1:0.6)		
Needle	DCx27 (Standard) DCxJ27 (In case of fine synthetic thread)		
Needle bar stroke	24.2 mm(61/64")		
Lubricating oil	JUKI New Defrix Oil No. 2		

* Many other subclass machines are available to meet all kinds of sewing requirements.

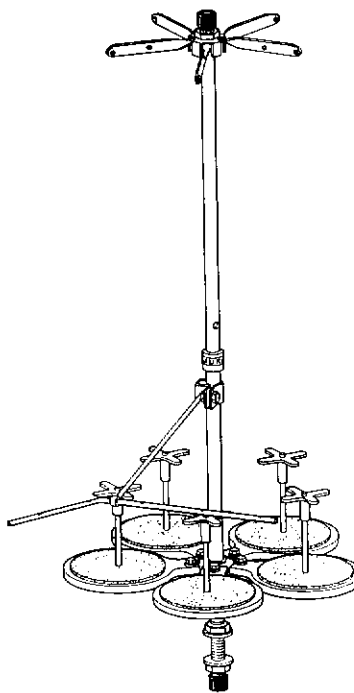
CONTENTS

I. HOW TO INSTALL THE MACHINE	1
1. How to install the thread stand, complete	1
2. How to install the frame support plate	1
3. Motor pulley and the belt	2
4. How to install the head	2
5. Starting pedal and presser foot lifting pedal	2
II. HOW TO OPERATE THE MACHINE	3
1. Cautions on operation	3
2. Lubrication and drainage	3
3. How to install the needle	3
4. Threading the machine	3
MO-804	4
MO-814	5
MO-816	6
5. The thread tension	7
6. Presser foot and feed dog	7
7. Adjusting the stitch length	8
8. Adjusting the differential feed	8
9. Adjusting the differential feed ratio	9
10. On the locking mechanism of feed eccentric cam	9
III. ADJUSTING THE MACHINE	9
1. Knife and overedging width	9
2. Adjusting the needle guard	10
3. Adjusting the height of the needle	11
4. Matching the lower looper	11
5. Matching the upper looper	11
6. Matching the double chain looper (In case of MO-816)	12
7. Adjusting the chain looper thread cam (In case of MO-816)	12
8. Adjusting the double chain looper avoiding motion (In case of MO-816)	12
IV. MAINTENANCE OF THE MACHINE	13
V. CAUSES OF MALFUNCTIONS & CORRECTIVE MEASURES	13
SPECIFICATIONS (Applicable to all models)	13

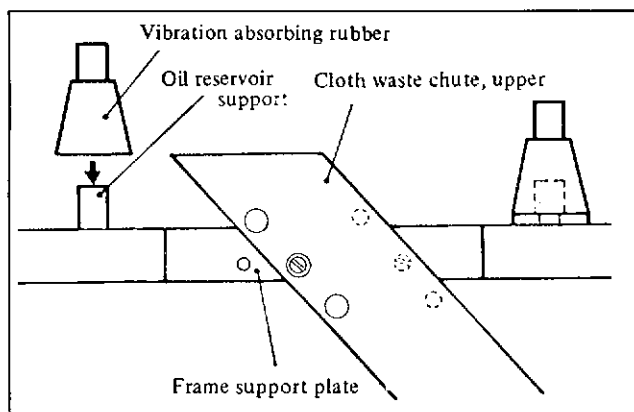
I. HOW TO INSTALL THE MACHINE

1. How to install the thread stand, complete

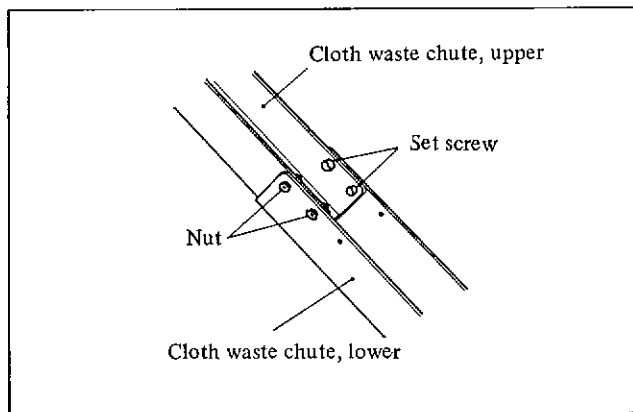
Install the thread stand, complete as shown in the figure and set it to the table.



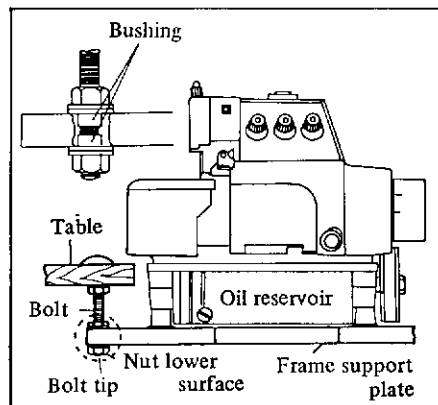
2. How to install the frame support plate



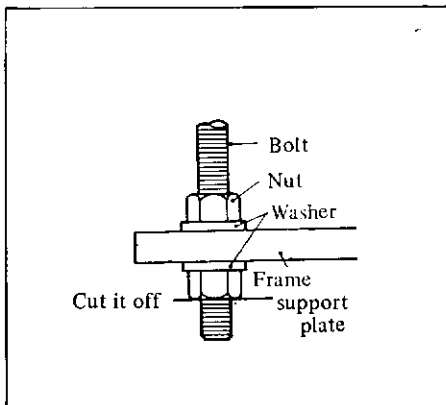
1) First, install the oil reservoir support post and the waste cloth chute (upper) to the frame support plate as shown in the figure.



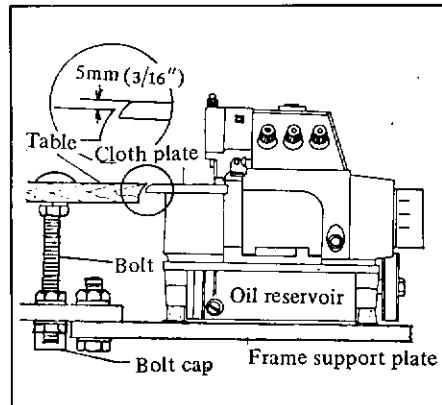
2) Attach the waste cloth chute (lower) to the waste cloth chute (upper) at an appropriate position. The installing length can be adjusted within the area of 40 mm (1-37/64").



3) Height of the frame support plate
 A. In case of semi-sunken type table, match the end surface of the bolt with the lower surface of the end part of the nut. In this case, insert the frame support bushing to the frame support plate.



Also, cut off the end of the bolt which is sticking out from the nut.



B. In case of fully-sunken type, make the upper surface of the cloth plate 5 mm (3/16") higher than the table surface.

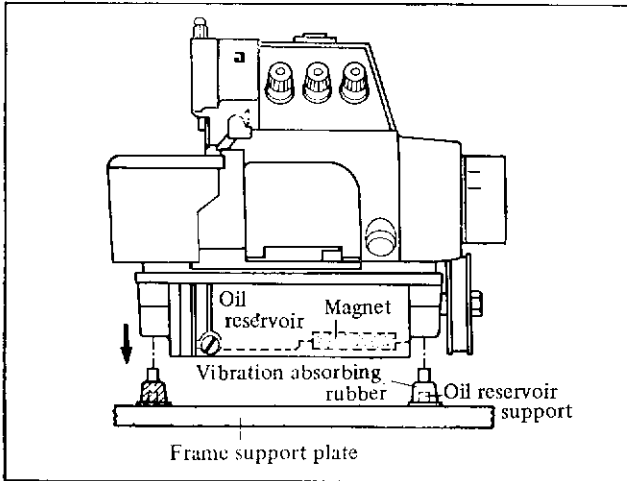
3. Motor pulley and the belt

When connected directly to the power source, use an electric clutch motor of 3-phase 1/2 HP (400 W). The dimensions of the motor pulley and the belt (M type) are shown in the table below.

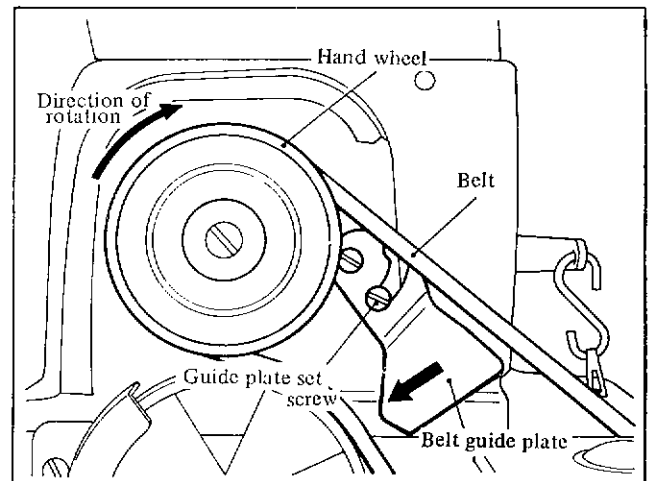
Number of rotation of machine (s.p.m.)	50 Hz			60 Hz		
	Motor pulley P.C.D. (mm)	M-type belt (inch)		Motor pulley P.C.D. (mm)	M-type belt (inch)	
		Semi-sunken type	Fully sunken type		Semi-sunken type	Fully sunken type
5,000	105	36	32	90	34	30
5,500	115	38	32	100	36	32
6,000	125	38	34	110	36	32
6,500	135	38	34	120	38	32
7,000	145	40	34	125	38	32
7,500	155	40	36	135	38	34

(Note) The dimension of the motor pulley is shown in P.C.D. system (outer diameter is P.C.D. + 5.5 mm) and the M-belt dimension in inches.

4. How to install the head

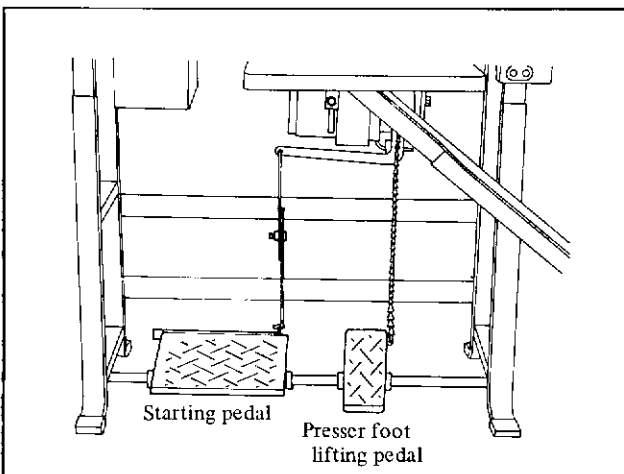


1. When installing the machine head, insert the vibration absorbing rubber to the hole of the oil reservoir.

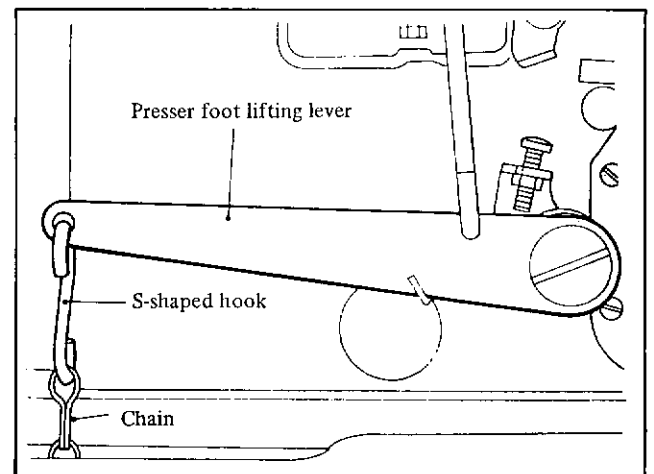


2. Loosen the belt guide plate set screw and put the belt on. When the belt is put on, lower the guide plate to the bottom and tighten the set screw.

5. Starting pedal and presser foot lifting pedal



Install the starting pedal to the left side and the presser foot lifting pedal to the right side as you face the figure.



Attach the chain of the presser foot lifting pedal to the hole at the top of the presser foot lift lever by hooking it up with a S-shaped hook as shown in the figure.

II. HOW TO OPERATE THE MACHINE

1. Cautions on operation

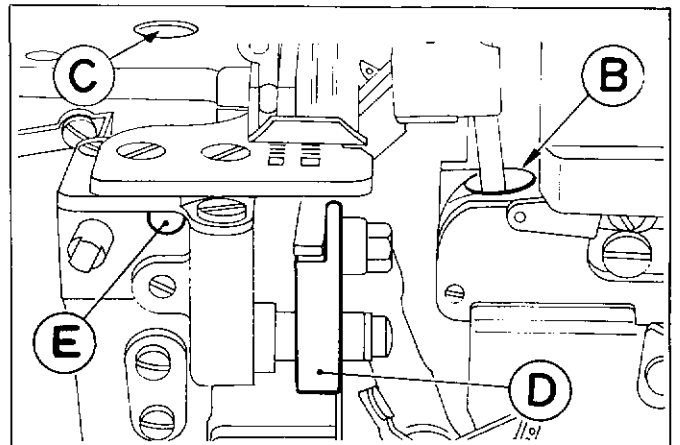
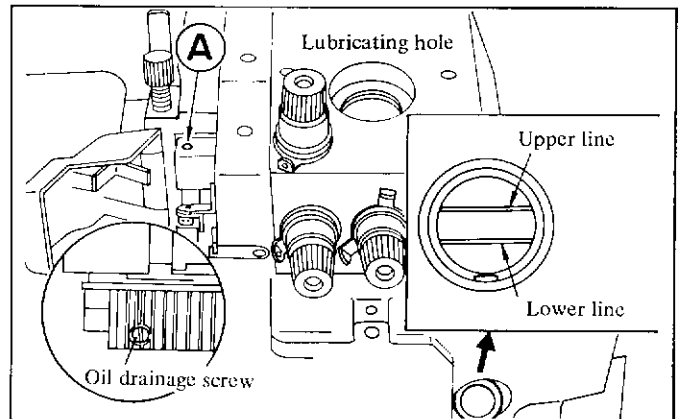
- ❶ Do not, under any circumstances, start the machine before filling up the oil reservoir.
- ❷ The rotational direction of the machine is clockwise as viewed from the pulley side. Do not run the machine in the reverse direction because if you do, the lubrication pump will not function and will invite scorching of the machine.

2. Lubrication and drainage

- ❶ Use JUKI Defrix Oil No. 2 for lubrication.
- ❷ Remove the oil cover, attach the funnel in the accessories box and pour in JUKI Defrix Oil No. 2 until the top of the oil float indicator reaches the top line of the oil sight window. After filling up, cover up the oil cover.
- ❸ Inspect the oil sight window every day before operating the machine. If the oil level falls below the lower line, fill it up to the upper line.
- ❹ To drain out the oil, remove the oil drainage screw.

(Caution)

- ❶ When the machine is to be operated for the first time or when it was idle for a long period of time, be sure to oil the top of the needle clamp guide bar (A), the top part of the upper looper guide (B) and hole for locking screw of the feed mechanism cover (C) before starting the sewing operation.
- ❷ As the lower knife slide shaft (D) moves slightly during the running of the machine, apply a small amount of oil to the oiling hole (E) at the upper part of the lower knife support bracket.
- ❸ If any oil other than designated oil is used, it might invite scorching or oil leakage. Be sure to use only the designated JUKI New Defrix Oil No. 2.

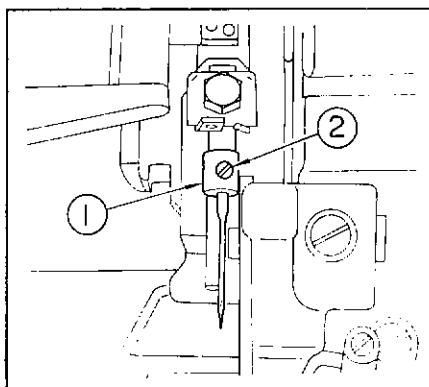


3. How to install the needle

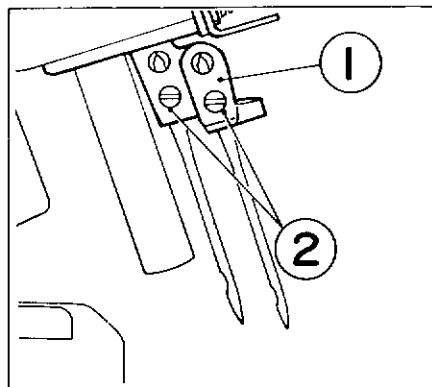
The standard needle size for both overlock, double chain or for left overlock (MO-816 or MO-814) is DC x 27 #11

To install the needle:

- ❶ Rotate the pulley and raise up the needle clamp to the highest position.
- ❷ Loosen the needle clamp screw (2), insert the needle and push it up deep into the needle hole until it stops and tighten the screw.
- ❸ Insert the needle so that the grooved part of the needle is facing the opposite side as seen from the front of the machine.



MO-804



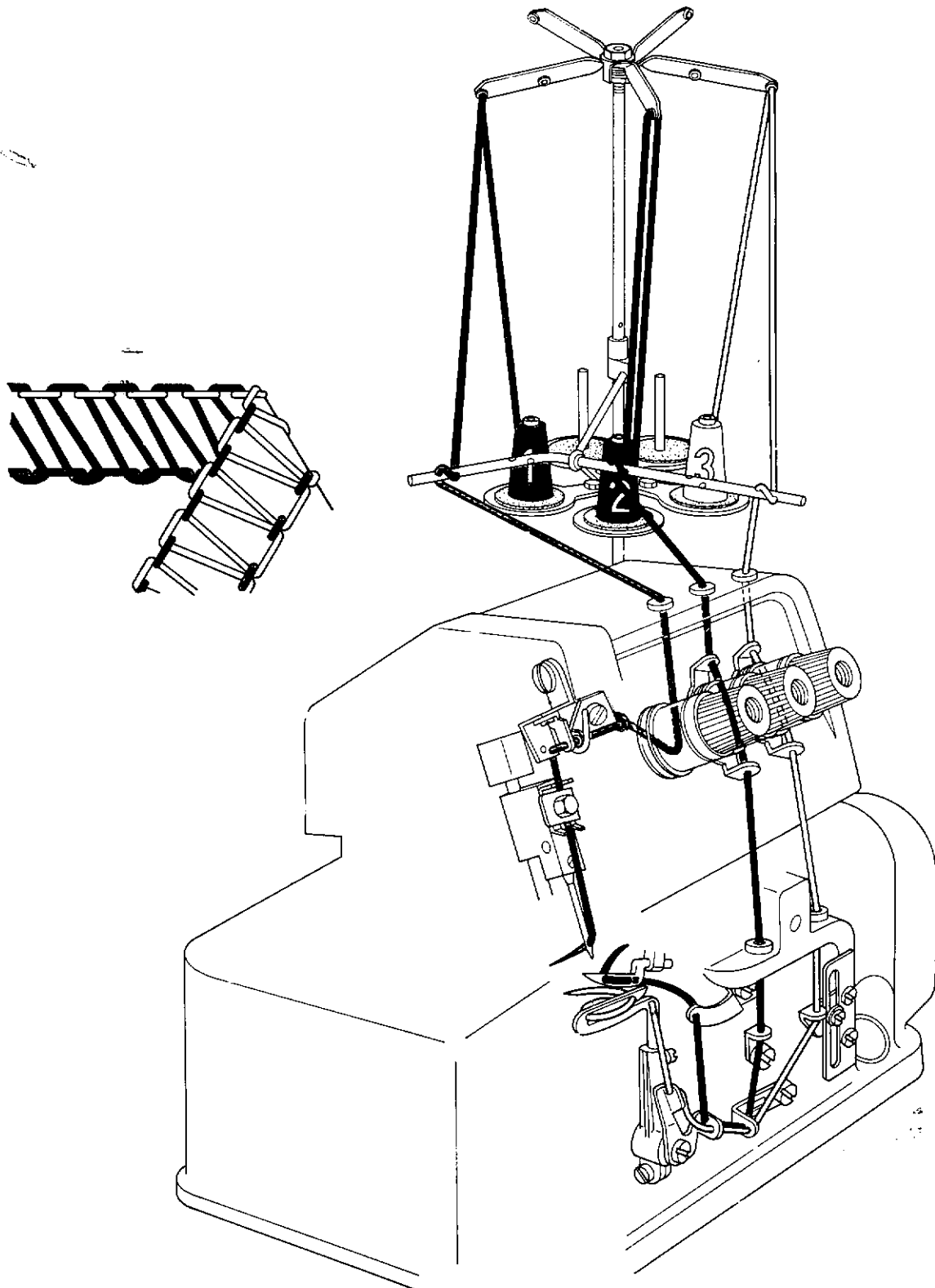
MO-814-816

4. Threading the machine

Refer to the accompanying figure for correct threading of this machine series.

MO-804

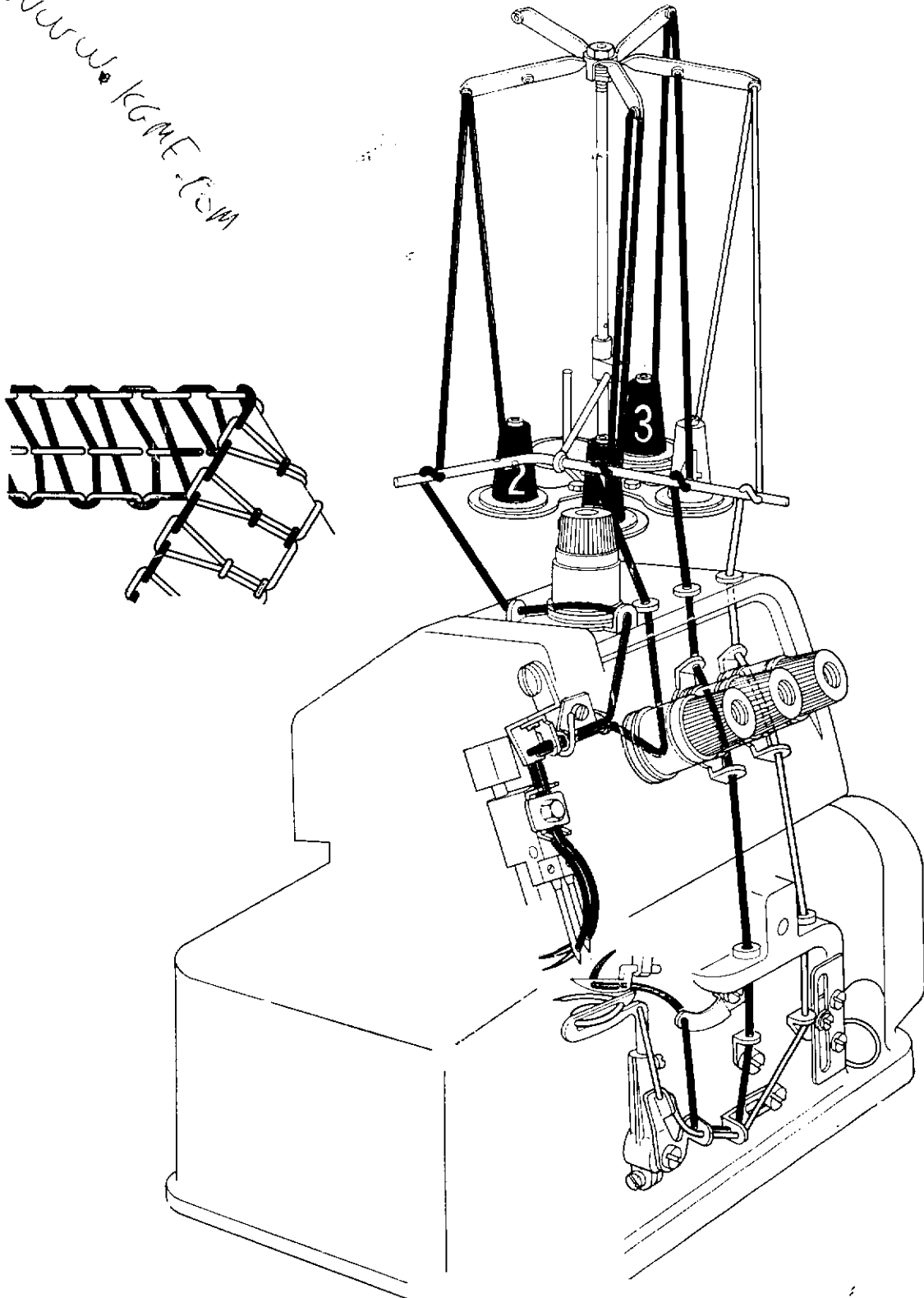
1. Overlock needle thread is No. 1 and is shown in red color.
2. Upper looper thread is No. 2 and is shown in blue color.
3. Lower looper thread is No. 3 and is shown in yellow color.



MO-814

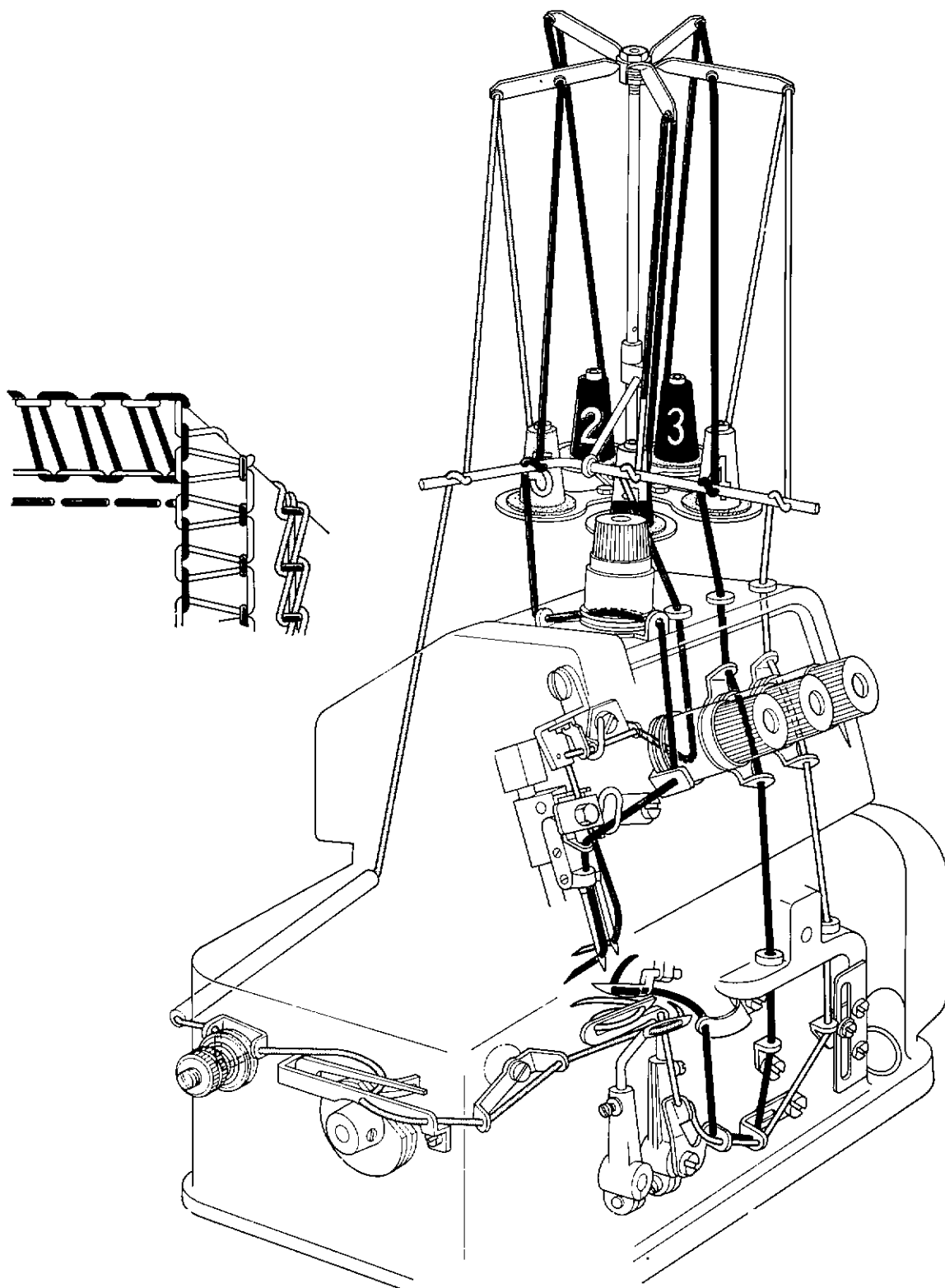
1. Left side needle thread is No. 1 and is shown in red color.
2. Right side needle thread is No. 2 and is shown in green color.
3. Upper looper thread is No. 3 and is shown in blue color.
4. Lower looper thread is No. 4 and is shown in yellow color.

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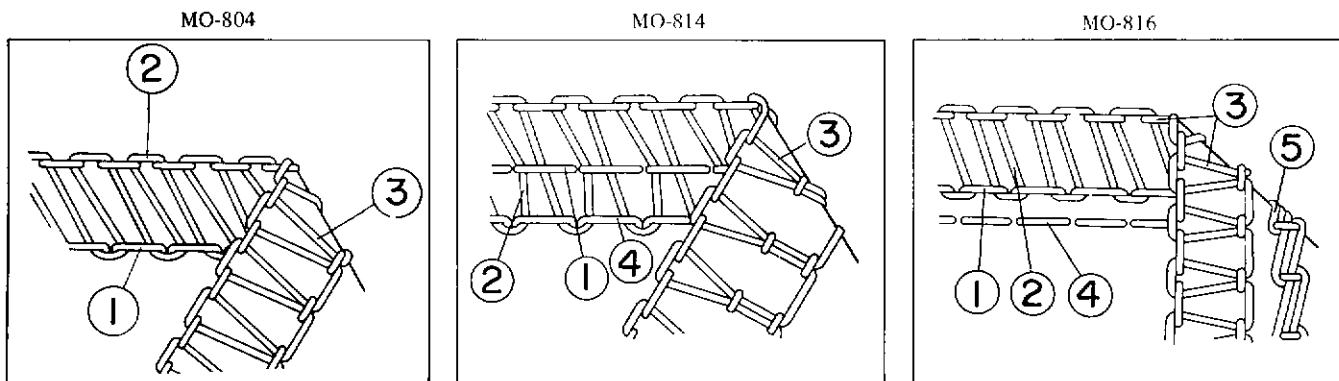
MO-816

1. Overlock needle thread is No. 1 and is shown in red color.
2. Double chain needle thread is No. 2 and is shown in green color.
3. Upper looper thread is No. 3 and is shown in blue color.
4. Lower looper thread is No. 4 and is shown in yellow color.
5. Double chain looper thread is No. 5 and is shown in black color.

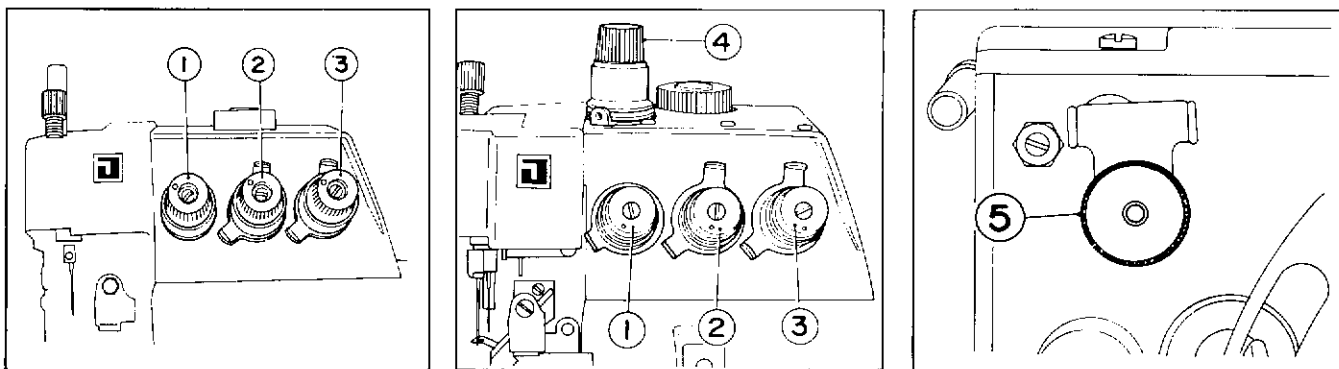


5. The thread tension

The thread tension varies according to the kinds of sewing material, thickness and kinds of sewing thread, overedging width, stitch length and etc. and therefore the pressure of the thread tension disc must be adjusted in each individual case.



- (1) Overlock needle thread should be adjusted by tension knob (1).
- (2) Upper looper thread should be adjusted by tension knob (2).
- (3) Lower looper thread should be adjusted by tension knob (3).
- (4) Double chain needle thread or left side overlock needle thread should be adjusted by tension knob (4). (In case of MO-816 or MO-814)
- (5) Double chain looper thread should be adjusted by tension knob (5). (In case of MO-816)



6. Presser foot and feed dog

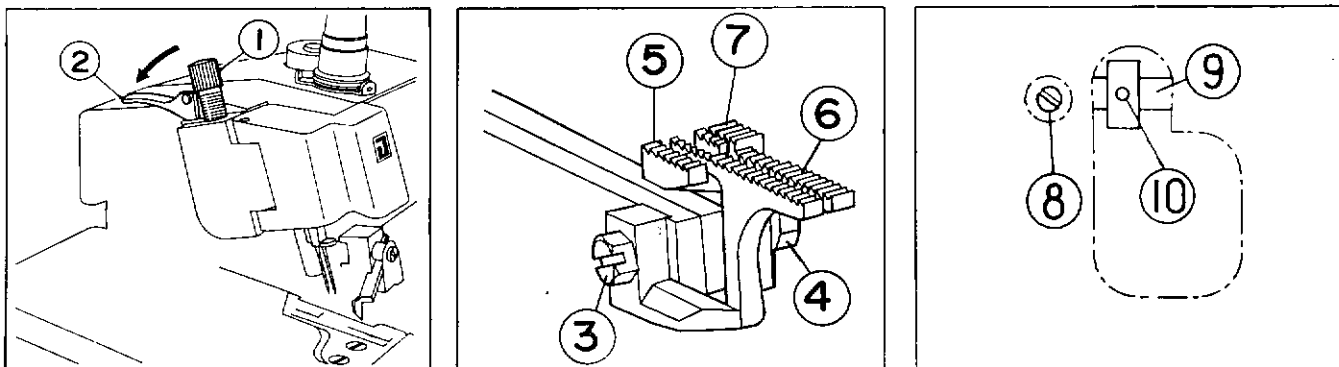
- (1) The pressure of the presser foot is adjusted by rotating the presser foot adjusting screw (1). The standard pressure is 4.5 kg. (9.9 lbs)

* When the presser foot is to be turned sideways, knock down the presser lifting lever (2) to the rear. When the presser foot is returned to the original position, be sure to knock down the presser lifting lever toward front.

- (2) The standard protrusion of the feed dog from the throat plate surface is 0.8 mm (1/32").

For heavy weight materials, make the protrusion amount bigger and for light weight materials make it less.

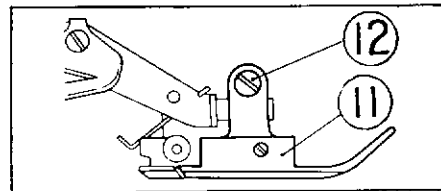
The protrusion amount can be adjusted by the feed dog set screws (3) and (4). When making this adjustment, be sure that the height of the main feed dog (5) and the differential feed dog (6) becomes equal. The auxiliary feed dog (7) should be installed 0.5 mm (1/64") lower than this height.



- (3) Adjusting the slanting of the feed dog

Remove the rear side cover of the machine. Then, remove the rubber cap and loosen the set screw (8). If a round bar is inserted into the hole (10) of the eccentric shaft (9) and rotated, the slanting of the feed dog can be adjusted. After adjustment, tighten the set screw (8).

(4) Unless the bottom surface of the presser foot ⑪ and the upper surface of the throat plate are snugly contacting each other when the feed dog is lowered, the stitches may become curved and the chain-off thread stitching of double chain stitch can not be performed well. Loosen the presser foot hinge screw ⑫ and adjust so that the bottom surface of the presser foot ⑪ drops little to right when the presser foot is raised and when the presser foot is lowered, the bottom surface snugly contacts the throat plate surface. (In case of MO-816)

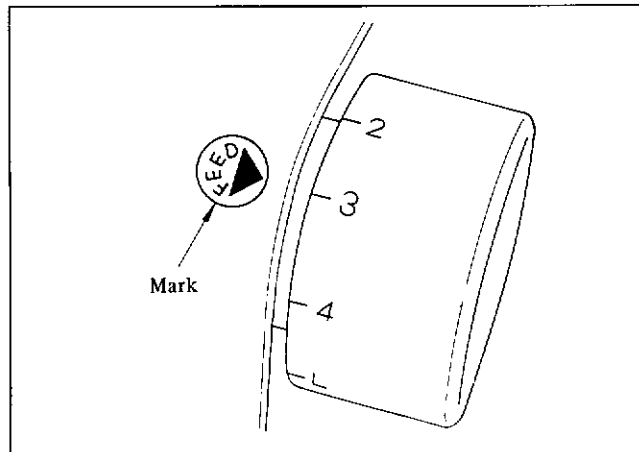
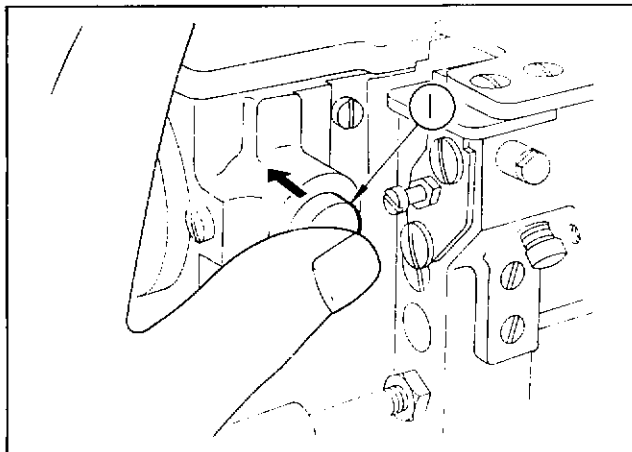


(Note)

* When sewing light weight materials, if the pressing pressure is too strong or the protrusion amount of the feed dog is too great, shrink stitching or damage to the sewing cloth may result. On the contrary, if the pressure is too weak or the protrusion of the feed dog is too small, pitch flaw or contracted stitches might result. Be sure to make correct adjustment.

7. Adjusting the stitch length

The stitch length can be adjusted by changing the eccentric amount of the feed cam.



- (1) As you keep pushing the push button ① with your finger, rotate the pulley toward the desired direction. You will hear a "click" sound and the push button will enter deep inside.
- (2) As you keep pressing the button, match the stitch length which is carved in the pulley with the indicating point of the frame.

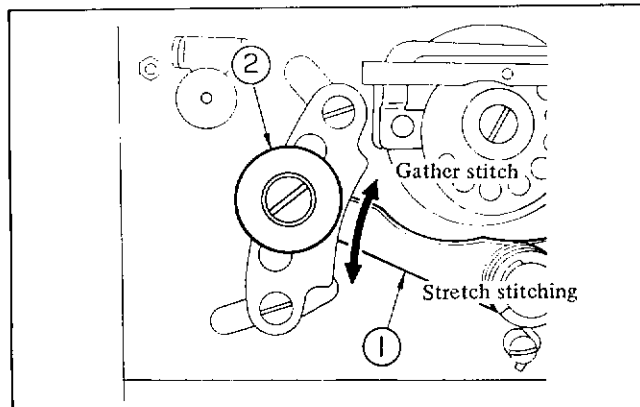
- (3) The figures carved in the pulley indicate the stitch length. If the figure "3" of the pulley is matched with the indicating point of the frame, the stitch length becomes approximately 3 mm.

8. Adjusting the differential feed

The differential feed ratio is adjusted by changing the moving range of the sub feed. If the differential feed lever ① is pushed up, gather stitching can be performed and if it's moved downwards, stretch stitching can be performed.

Loosen the differential feed lock nut ② and by moving the differential feed lever ① either up or down, adjust to the desired differential feed amount. After adjustment, tighten the differential feed lock nut ②.

* The subclass machines, which can adjust the differential feed by the knee during the running of the machine, are also available.



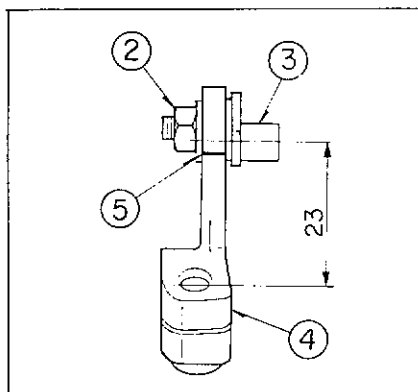
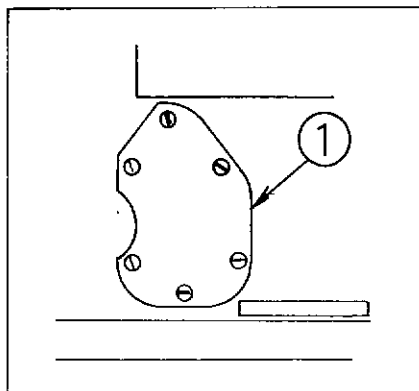
9. Adjusting the differential feed ratio

The standard differential feed ratio of this machine is :

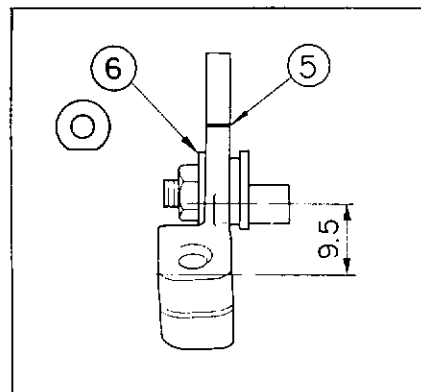
Gather stitching 1:2 Stretch stitching 1:0.7

When this standard differential feed ratio is to be changed due to change of sewing conditions, adjust as follows :

- 1) Remove the cover ① on the back of the machine.
- 2) Loosen the main feed arm pin setting nut ②.
- 3) If the main feed arm pin ③ is moved up and down, the differential feed ratio changes as follows
 - (1) When the main feed arm pin is raised to highest point, the differential feed ratio becomes:
Stretch stitching 1:0.6 Gather stitching 1:1.7
 - (2) When the main feed arm pin is lowered to lowest point, the differential feed ratio becomes :
Gather stitching 1:4
 - (3) When the differential feed ratio is to be changed to the standard differential feed ratio (stretch stitching 1:0.7, gather stitching 1:2), match the center of the nut ② with the carved line ⑤ of the main feed arm ④.



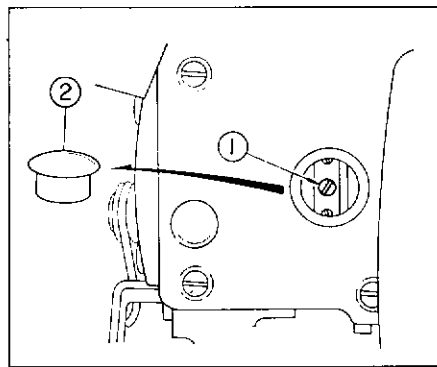
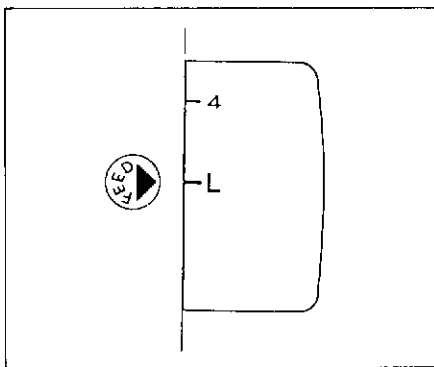
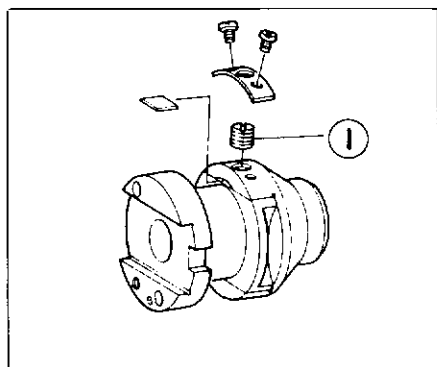
Maximum differential feed ratio for stretch stitching



Maximum differential feed ratio for gather stitching (Note) Installing the bottom direction of flat part for washer ⑥.

10. On the locking mechanism of feed eccentric cam

When the feed is to be used in fixed position, set the feed eccentric cam by means of locking screw ①. This will prevent the abrasion of the feed eccentric cam. In ordinary usage, even if the locking mechanism is not used, there is no problem. Match the L position of the pulley, and if the rubber cap ② of the feed mechanism cover is released, locking of the lock screw can be performed.

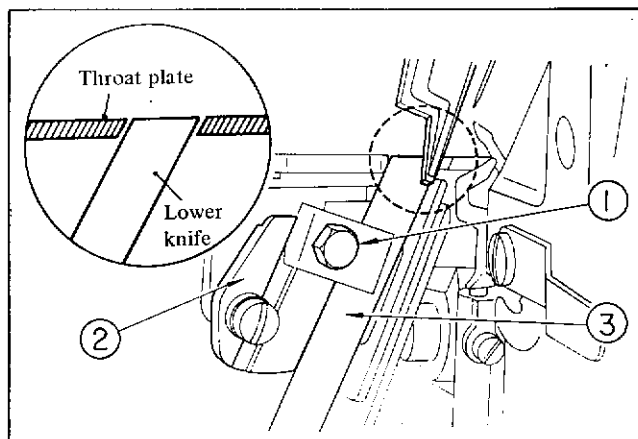


III. ADJUSTING THE MACHINE

1. Knife and overedging width

(1) On the lower knife

Loosen the lower knife set screw ① and insert the lower knife ③ into the groove of the lower knife slide shaft ② as shown in the figure. Make the tip of the lower knife the same height as the surface of the throat plate and tighten the lower knife set screw ①



(2) On the upper knife

To install the upper knife, push the lower knife slide shaft (1) to the left side and tighten the set screw (2).

- 1 Loosen the upper knife set screw (3) and insert the upper knife (4) into the upper knife support (5).
- 2 Make the dimension from needle position to the upper knife little less than the desired overedging width and tightly stop the upper knife by the upper knife set screw from above the upper knife presser (6) and the upper knife guide (7).
- 3 Next, rotate the pulley and when the upper knife has risen to the topmost position, adjust so that the tip of the upper knife comes to 1.5 mm (1/16") below the lower knife.
- 4 When the adjustment is completed, securely tighten the upper knife set screw and upper knife support set screw (8).
- 5 Loosen the lower knife slide set screw (2).
- 6 Rotate the pulley by hand and verify that the knives are not touching the throat plate or the chip guard cover.

* When sewing heavy weight materials, be sure to re-tighten the lower knife shaft set screw (2).

(3) Adjusting the lower knife spring pressure (Refer to sketch below)

Loosen the nut (7) and adjust by the screw (8).

When the overedging width is wide]-----Tighten screw (8).

In case of heavy weight materials]-----Tighten screw (8).

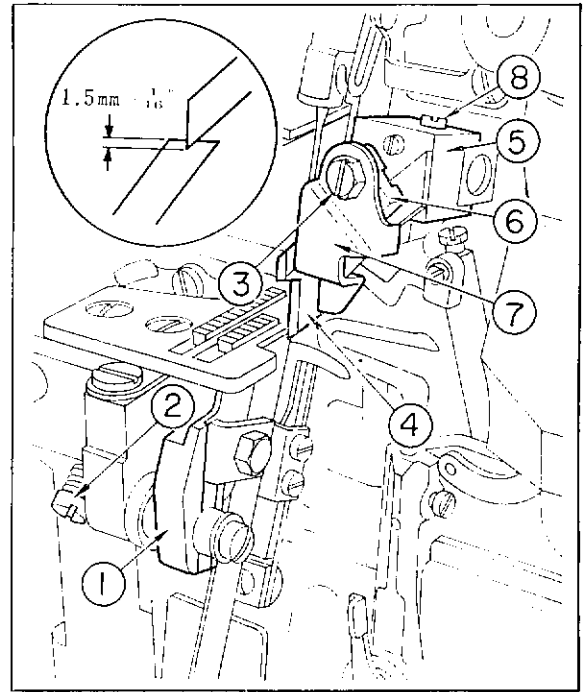
When the overedging width is narrow]-----Loosen screw (8).

In case of light weight materials]-----Loosen screw (8).

When the adjustment is completed, tighten nut (7).

(4) Overedging width

The standard overedging width is 3.2 mm (1/8") but overedging width of 6.35 mm (1/4") is available as a subclass. (The overedging width is slightly larger than the distancer.)



2. Adjusting the needle guard

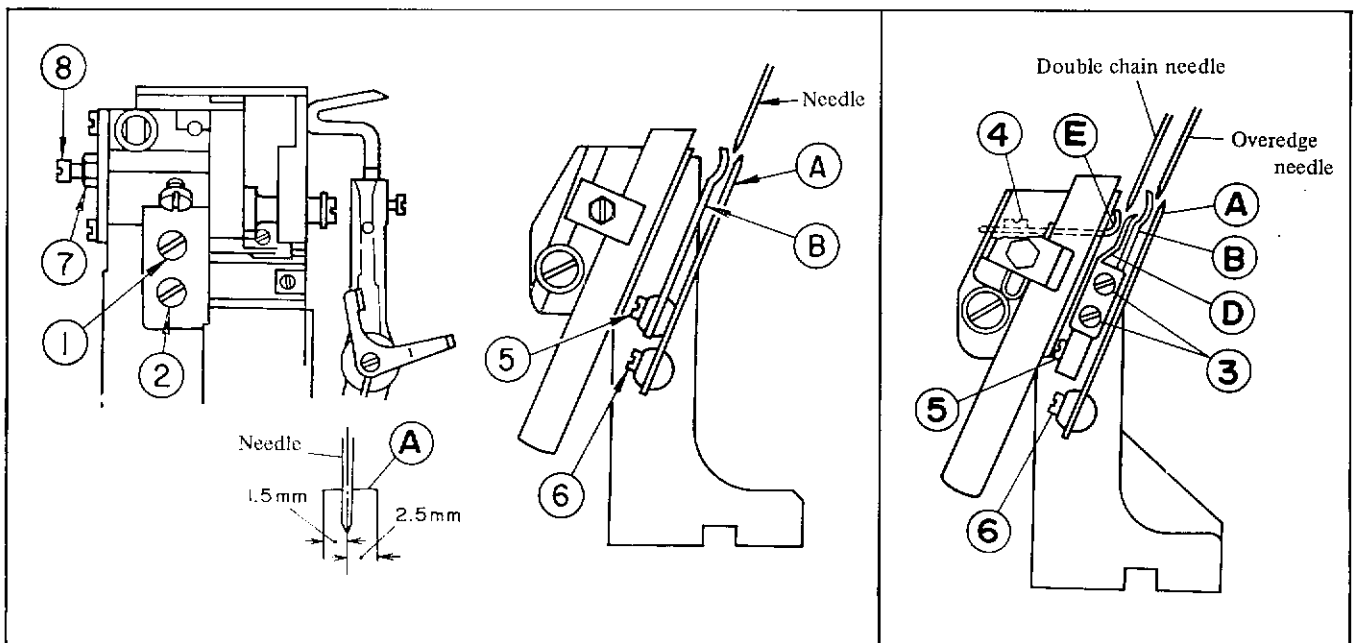
Two needle guards A and B are attached to the Model MO-804 and Model MO-814, while Model MO-816 is equipped with 4 needle guards, A and B for the overedge needle, D and E for the double chain needle.

- 1) Loosen screw (2) and by moving the needle guard A to right and left, adjust as shown in the figure.
- 2) Then, when the needle has dropped to the lowest position, adjust the front and rear slanting of the needle guard A so that the needle barely touches the needle guard. Then tighten screw (2).

3) Adjust the needle guard B by loosening the screw (1) and adjust in the same manner as the needle guard A.

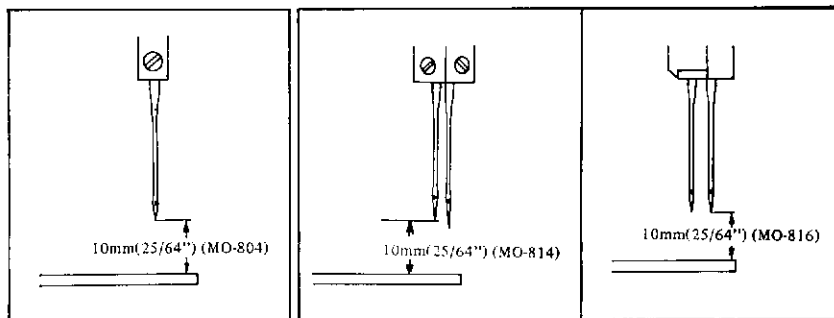
4) For MO-816, adjust the needle guard D with screw (3) and the needle guard E with screw (4) by matching, respectively, with the double chain needles.

5) The up and down height of the needle guard A, needle guard B and needle guard D (MO-816) and the slanting angle of these guards should be adjusted, respectively, by loosening the screw (5) and screw (6).



3. Adjusting the height of the needle

When the needle clamp is at the topmost position, the height of the overlock needle is 10 mm (25/64") from the surface of the throat plate.

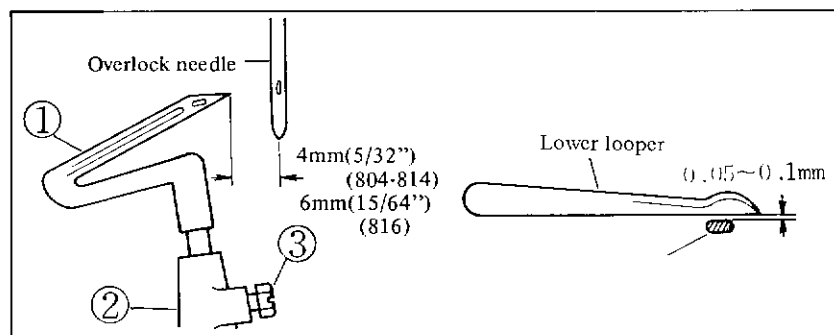
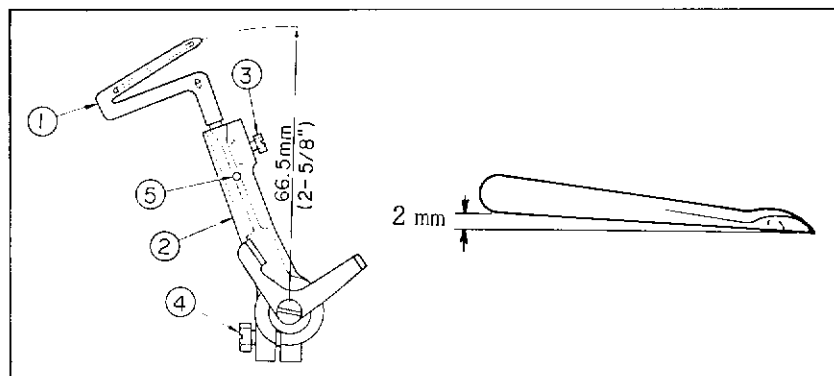


In case of single needle

In case of twin needles

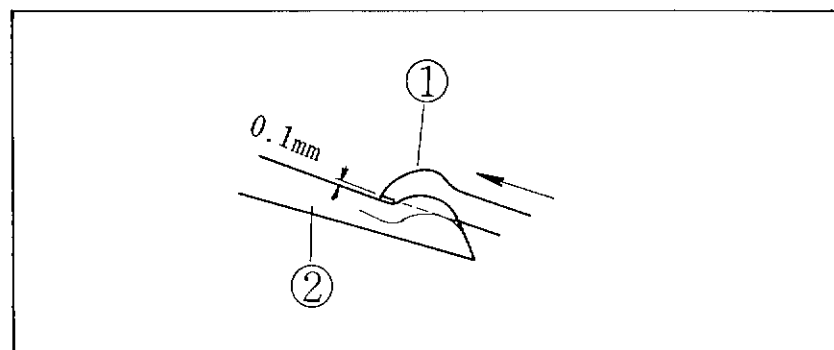
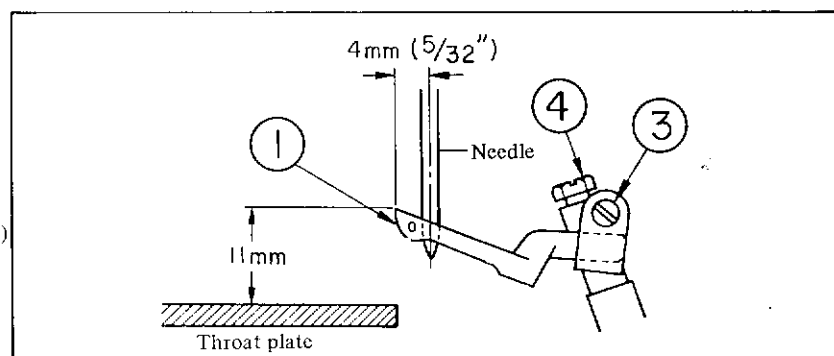
4. Matching the lower looper

- (1) Standard radius 66.5 mm (2-5/8")
Insert the lower looper until stopper pin is reached, then tighten the screw. Thus, the radius of 66.5 mm (2-5/8") can be obtained.
- (2) Fore and aft slant 2 mm (5/64")
Adjust so that the fore and aft slant of the lower looper comes to 2 mm (5/64") and lightly tighten screw (3).
- (3) Clearance between the looper and the needle
Standard thread 0.05-0.1 mm
Fine synthetic thread . . . under 0.05 mm
Loosen the set screw (4), move the lower looper support arm (2) fore and aft and adjust so that the clearance between the blade point of lower looper and back side of the needle comes to the above dimension.
- (4) Returning amount of lower looper
MO-804-OD4 } 4 mm (5/32")
MO-814-BD4 }
MO-816-DD4 } 6 mm (15/64")
Next, when the lower looper comes to the extreme left position, adjust so that the distance between the blade point of looper and the center of the needle (returning amount) comes to the above distance by loosening the screw (4) and (3).



5. Matching the upper looper

- (1) Height of upper looper 11 mm (7/16")
When the upper looper (1) comes to the extreme left position, loosen the upper looper support arm set screw (4) and adjust so that the distance between the looper blade point and the throat plate surface comes to 11 mm (7/16").
- (2) Next, when the upper looper is rising, adjust so that the clearance with the back surface of lower looper (2) comes to about 0.1 mm and lightly tighten screw (4).
- (3) Protruding amount of upper looper... 4 mm (5/32")
When the upper looper comes to the extreme left position, adjust so that the distance between the blade point of looper and the center of the needle becomes 4 mm (5/32") by loosening set screw (3).
- Match the end surface of the looper with the end surface of the looper support arm and tighten the screw (3). Thus, if the 11 mm (7/16") is obtained, the protruding amount comes to 4 mm (5/32").
- (4) At this time re-verify that the distance between the blade point of the upper looper and the throat plate surface is 11 mm (7/16") and then securely tighten the set screw (3) and set screw (4).
- (5) Lastly, be absolutely sure that the upper looper is correctly matched and it is not touching the needle or lower looper.

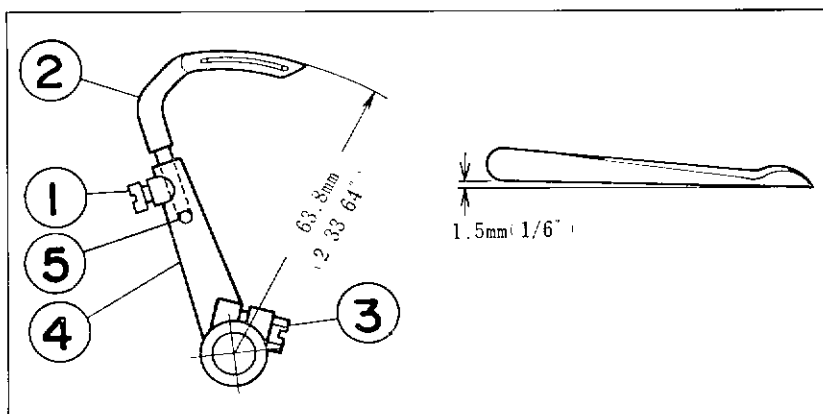


6. Matching the double chain looper (In case of MO-816)

- ① Loosen the double chain looper set screw ① and

A: Adjust so that the standard radius of the double chain looper ② becomes 63.8 mm (2-33/64") (as high as possible as long as it doesn't touch the feed dog). Then, contact the stopper pin ⑤.

B: Adjust so that it slants 1.5 mm (1/16") as viewed from top and lightly tighten the set screw ①.



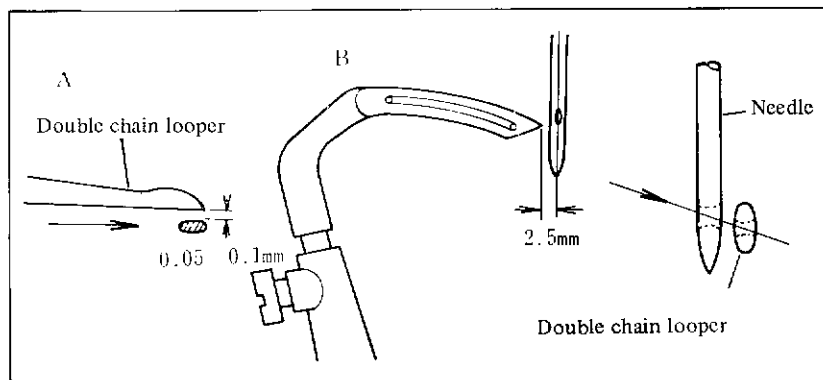
- ② Next, loosen the set screw ③ and adjust so that:

A: When the double chain looper ② moves from left to right, the clearance between the blade point and backside of the needle becomes 0.05–0.1 mm.

B: When the double chain looper has reached the extreme left position, the distance between the blade point and the center of the needle becomes 2.5mm (3/32") by adjusting the double chain looper support arm ④. Then, tighten the set screw lightly.

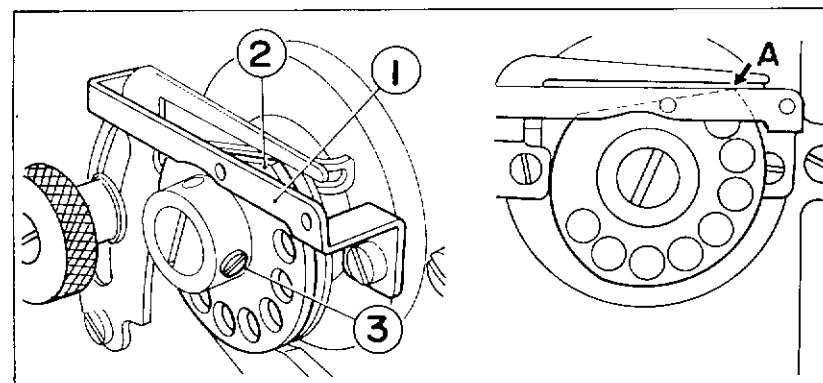
- ③ When all of the above adjustments are completed, verify that the double chain looper ② moves from left to right and when the hole at the tip of the double chain looper comes to the center of the needle that the hole of the double chain looper and the needle eye meet each other as viewed from the top of the slant.

- ④ Then, securely tighten the set screws ① and ③.



7. Adjusting the chain looper thread cam (In case of MO-816)

When the needle has reached its highest position, adjust so that the right corner of the straight line part of the chain looper thread cam ② matches with the upper surface of the chain looper thread guide ①. Loosen the chain looper thread cam screw ③ and adjust the cam.



8. Adjusting the double chain looper avoiding motion (MO-816 Series)

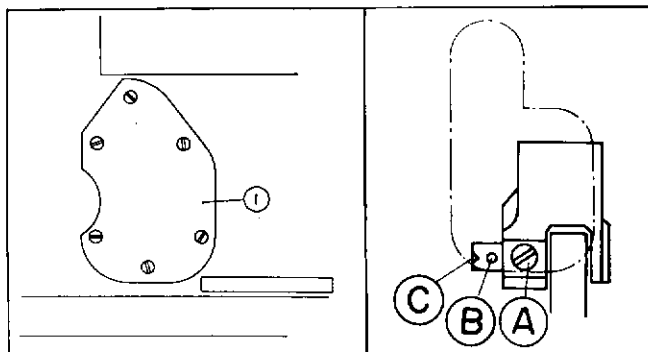
Depending on the size and number of needle, the double chain looper avoiding motion can be changed as follows:

1. Fore and aft looper avoiding motion

	Looper avoiding motion	Number of needle
For heavy weight materials (MO-816-DH6, FF6 Series)	2.80 – 3.06 mm	#14 – #21
For standard weight materials (MO-816-DD4 Series)	2.64 – 2.85 mm	#7 – #16

2. Adjusting method

- ① Remove the cover ① in the back of machine.
- ② Loosen the screw (A) of the chain looper shaft slide arm.
- ③ Insert a bar of 2 φ into the hole of (B) and rotate it.
When the mark (C) is in front looper avoiding motion is least
When the mark (C) is in the opposite side looper avoiding motion is greatest
- ④ After adjustment, securely tighten screw (A)



IV. MAINTENANCE OF THE MACHINE

- ① As the knife of the machine cuts the cloth, much waste cloth will be produced, so clean the machine at least once a day.
Dust and thread hards are liable to be collected especially in the clearances of the throat plate, needle guard and feed dog, so remove the throat plate and clean it thoroughly at least once a week.
- ② Inspect the machine head at least once a year and operate the machine in perfectly maintained condition.

V. CAUSES OF MALFUNCTIONS AND CORRECTIVE MEASURES

No. Malfunctions	Reasons	Corrective measures
1. Needle breaks	(1) Wrong needle (2) Wrong size number needle used (3) Needle installed wrong (4) Needle is curved (5) Wrong relation with needle guard (6) Wrong relation with needle & looper	(1) Use only the designated needle (2) Use needle which fits thickness of cloth and using thread (3) Refer to chapter on "How to install the needle" (4) Exchange with new needle (5) Adjust the needle guard (6) Refer to the chapter on "Matching the looper"
2. Inadequate cutting of knives	(1) Inadequate installation of upper and lower knives (2) Knives are worn out	(1) Refer to the chapter on "Knife and overedging width" (2) Sharpen the lower knife and exchange the upper knife
3. Stitches skip	(1) Relation of needle with looper (2) Knife point of looper is blunted (3) Needle thread is right twist (4) Inadequate adjustment of thread tension (5) Inadequate adjustment of chain looper thread cam (MO-816)	(1) Refer to the chapter on "Matching the looper" (2) Sharpen with oil whetstone or exchange it with new looper (3) Change it to left twist thread (4) Refer to chapter on "The thread tension" (5) Refer to the chapter on "Adjusting the chain looper thread cam"
4. Thread breaks	(1) Inferior quality of thread (2) Thread is thicker than needle (3) Inadequate installation of needle (4) Thread tension is too strong (5) Needle, looper, throat plate, needle guard bruised	(1) Use good quality thread (2) Change to appropriate needle or thread (3) Refer to the chapter on "How to install the needle" (4) Adjust by thread tension nut (5) Sharpen by oil whetstone or buffer
5. Inadequate chain-off thread of double chain stitch (MO-816)	(1) Inadequate installation of presser foot (2) Rattle of rear presser foot (3) Inadequate timing of looper thread cam (4) Inadequate installation of double chain looper	(1) Refer to chapter on "Presser foot and feed dog" (2) Adjust to eliminate rattle (3) Refer to chapter on "Adjusting the looper thread cam" (4) Refer to chapter on "Matching the double chain looper"
6. Wrinkled stitches	(1) Needle is too thick (2) Thread tension too strong (3) Pressing pressure is either too strong or too weak (4) Feed dog protruded too much (5) Knife does not cut well (6) Differential feed is not matched	(1) Use needle appropriate to cloth and thread (2) Adjust by thread tension nut (3) Adjust the pressure by turning the adjusting screw either to right or left (4) Lower the feed dog and match the height of the main feed dog with the height of sub feed (5) Resharpen the knife (6) Refer to chapter on "Adjusting the differential feed"
7. Uneven stitches	(1) Flaw in the thread tension (2) Inadequate thread tightening (3) Needle point is blunted (4) Inadequate pressing pressure (5) Inadequate height of feed dog	(1) Use uniform size thread. Clean up the thread path (2) Strengthen the thread tension (3) Exchange the needle with a sharp pointed needle (4) Refer to chapter on "Presser foot and feed dog" (5) Refer to chapter on "Presser foot and feed dog"

SPECIFICATIONS(Applicable to all models)

Stitch length:	0.4-4.0mm(1/64"-9/64") (Push-button system)(By special specification, up to 5mm(13/64") possible)
Differential feed ratio:	Ratio of auxiliary feed to main feed: Gathering: 1:2 (Max. 1:4) Stretching: 1:0.7 (Max. 1:0.6)
Lower knife pressure:	Spring pressure adjusting system
Overedge width:	Standard 3.2 mm(1/8") By using gauge sets (throat plate, presser foot, feed dog, needle clamp) which conform to the overedging width, possible to adjust up to 6.35 mm(1/4")
Presser lifting amount:	Max. 7.0 mm(9/32")
Needles:	DCx27 (Standard), DCxJ27 (For fine synthetic thread) DCx1
Needle bar stroke:	24.2 mm(61/64")
Upper looper:	Slide type (Possible to change the up and down stroke of looper depending on thickness of the sewing cloth)
Double chain stitch mechanism:	Built-in inside the machine and geared with the lower looper (MO-816)
Presser foot:	Fixed presser foot MO-804, MO-814 Two-stage presser foot . . . MO-816
Lubrication:	Automatic lubrication system by means of gear pump (equipped with oil cooling fan)