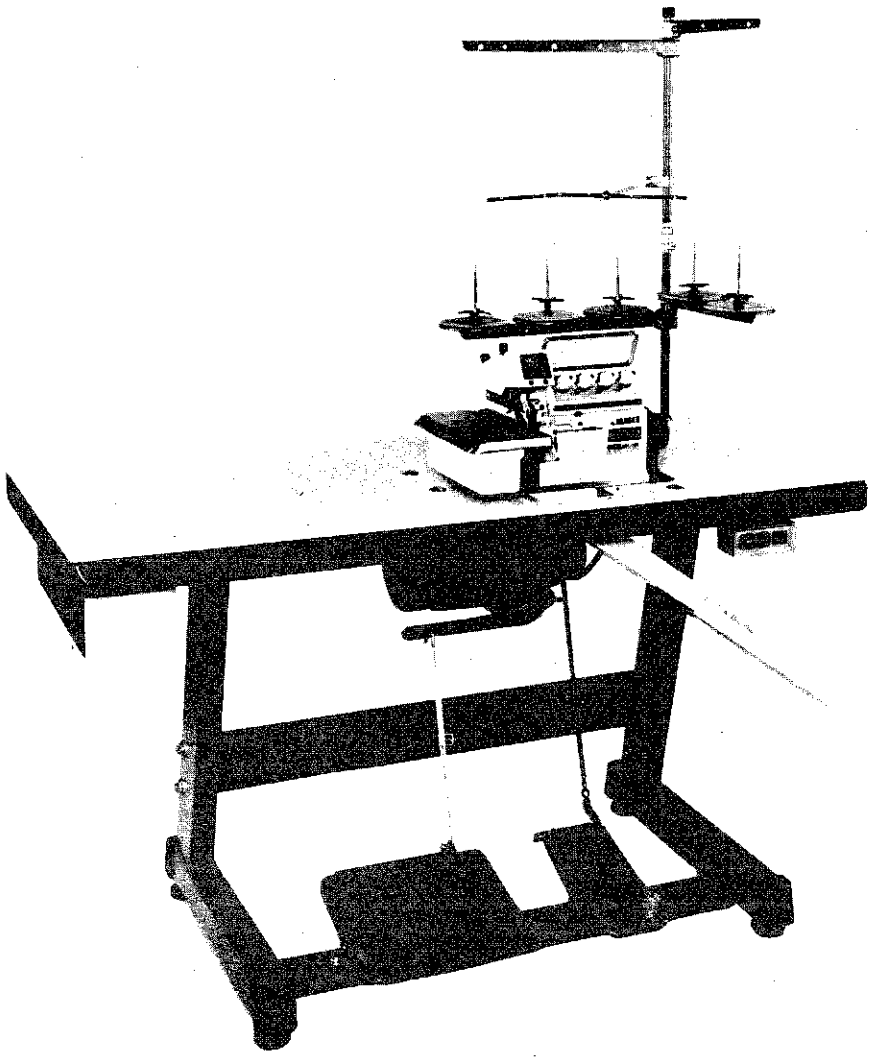
JUKI

Overlock and sefety stitch
Industrial sewing machine

MO-2500 Series
MO-2400 Series
ENGINEER'S MANUAL



PREFACE

This Engineer's Manual is written for the technical personnel who are responsible for the service and maintenance of the machines.

The Instruction Book for these machines intended for the maintenance personnel and operators at an apparel factory contains operating instructions in detail. And this manual describes "Standard Adjustment", "Adjustment Procedures", "Results of Improper Adjustment", and other important information which are not covered by the Instruction Book.

It is advisable to use the relevant Instruction Book and Parts Book together with this Engineer's Manual when carrying out the maintenance of these machines.

CONTENTS

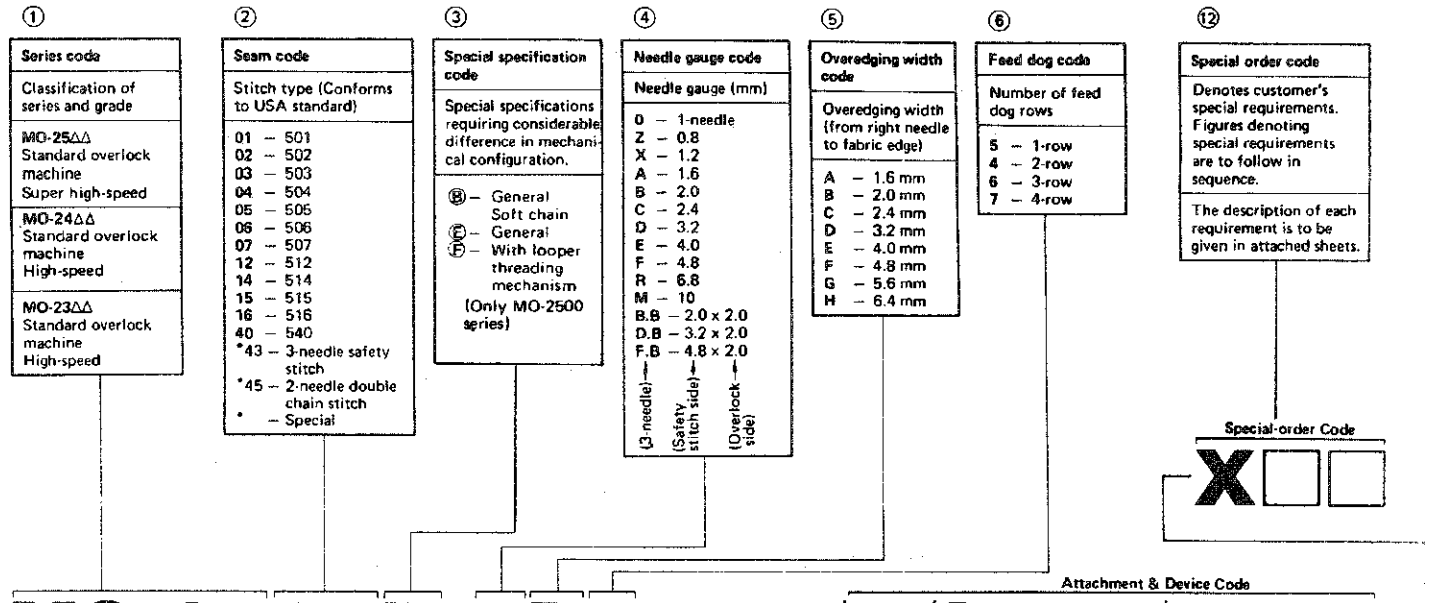
1. SPECIFICATIONS

MO-2500 SERIES

1	Model	MO-2504	MO-2514	MO-2516
2	Description	1-needle 3-thread Overlock machine	2-needle 4-thread Overlock machine	2-needle 5-thread Safety stitch machine
3	Stitch type F.S.T.	504	514	516
4	Sewing speed (max.)	8,500 s.p.m.	8,000 s.p.m.	7,500 s.p.m.
5	Stitch length	0.8 ~ 4 mm (Up to 5 mm by special specification)		1.5 ~ 4 (5) mm
6	Needle gauge (mm)	–	0.8, 1.2, 1.6, 2, 2.4	1.6, 2, 2.4, 3.2, 4.8, 6.8
7	Overedging width (mm)	1.6, 2.4, 3.2, 4, 4.8, 6.4	2, 3.2, 4, 4.8	3.2, 4, 4.8, 5.6, 6.4
8	Differential feed ratio	Gathering 1:2 (Max. 1:4), Stretching 1:0.7 (Max. 1:0.6)		
9	Needle bar stroke	24.3 mm		
10	Needle tilt angle	20°		
11	Needle	Organ DC x 27 (DC x 1 also usable), Schmetz B-27		
12	Presser lifting amount (max.)	7.0 mm (except for some subclasses)		
13	Presser foot pressure	6 kg		
14	Adjustment of stitch length	By pushbutton		
15	Upper knife	Square knife (standard)		
16	Differential feed adjustment	By lever + Micro-adjustment		
17	Weight	23 kg		
18	Lubrication	Gear-type automatic lubrication		
19	Lubricating oil	New Defrix Oil No. 2		
20	Needle cooling device	Needle cooler		
21	Needle thread cooling device	Needle thread cooler	Needle thread cooler	–
22	Motor	2P 550 W (3/4 HP) (for 7,500 s.p.m. or more) 2P 400 W (1/2 HP) (below 7,500 s.p.m.)		clutch motor

MO-2400 SERIES

1	Model	MO-2404	MO-2414	MO-2416
2	Description	1-needle 3-thread Overlock machine	2-needle 4-thread Overlock machine	2-needle 5-thread Safety stitch machine
3	Stitch type F.S.T.	504	514	516
4	Sewing speed (max.)	6,500 s.p.m.	6,500 s.p.m.	6,500 s.p.m.
5	Stitch length	0.8 ~ 4 mm (Up to 5 mm by special specification)		1.5 ~ 4 (5) mm
6	Needle gauge (mm)	–	0.8, 1.2, 1.6, 2, 2.4	1.6, 2, 2.4, 3.2, 4.8, 6,8
7	Overedging width (mm)	1.6, 2.4, 3.2, 4, 4.8, 6.4	2, 3.2, 4, 4.8	3.2, 4, 4.8, 5.6, 6.4
8	Differential feed ratio	Gathering 1:2 (Max. 1:4), Stretching 1:0.7 (Max. 1:0.6)		
9	Needle bar stroke	24.3 mm		
10	Needle tilt angle	20°		
11	Needle	Organ DC x 27 (DC x 1 also usable), Schmetz B-27		
12	Presser lifting amount (max.)	7.0 mm (except for some subclasses)		
13	Presser foot pressure (max.)	6 kg		
14	Adjustment of stitch length	By lever		
15	Upper knife	Square knife (standard)		
16	Differential feed adjustment	By lever + Micro-adjustment		
17	Weight	23 kg		
18	Lubrication	Gear-type automatic lubrication		
19	Lubricating oil	New Defrix Oil No. 2		
20	Needle cooling device	Needle cooler		
21	Needle thread cooling device	Option	Option	–
22	Motor	2P 400 W (1/2 HP) clutch motor		



⑦

Material code		
Classification based on materials to be used (The figures show grade of material thickness)		
1	Extra-light ~ Light-weight materials	
2	Light-weight materials	For training wear, knit, etc.
3	Medium-weight materials	Standard (for dress skarts to sport wear)
4	Medium-weight materials	Knit sweater, bulky etc.
5	Heavy-weight materials	Standard (General fabrics)

⑧

Application code	
Classification based on type of operation	
0	For Runstitching
1	For blind hemming
2	For gathering
3	For piping
4	For attaching tape
5	For rolling in
6	For rolling in tape
A	For wool
B	For piping & gather
C	For Doeskin
B. Codes A and subsequent are exclusively used for combinations of codes 1 to 7 and special materials.	

⑨

Special machine code	
Special specifications other than gauge set	
0	Standard
2	Missing No.
3	Missing No.
4	–
5	Missing No.
6	Juki Europe Spec. (Feed dog with tip)
7	Upper looper with larger travel
A	Juki Europe Spec. + Upper looper with larger travel
A. Codes A and subsequent are exclusively used for combinations of codes 1 to 9, and	

⑩

Specifying code for class			
These codes indicate partial change or specifying of subclass model components. (See below for the details.)			
*1	Classification	Parts	Symbol
Gauges	Upper knife *4	Square knife	K
		Flat knife	F
		Corrugated square knife	W
	Replacement gauge	Throat plate	E01 ~
		Feed dog	F01 ~
		Presser foot	G01 ~
		Looper	H01 ~
*2	Blind hemming		L001
Attachments	Gathering		S057 S058 S097 S098
	Piping		M075 M076 M056 M077
	Tape binder		N067 N077
	Feller		K006
	Overedging width regulator		D025 D026
	Tape guide		G056
Others			A01 ~

*3

⑪

Labor-saving device code	
Device for achieving labor saving, higher productivity, automation and greater ease of operation	
Z072	Chain-off thread rolling-in device
Z073	Chain-off thread rolling-in device (can be stopped at a fixed position)
L012	Blind hemming attachment (with automatic preventer of stitch deviation)
S084	Pattern seamer
T005	One-touch type thread trimming device
T016	Automatic chain-off thread trimming device
T022	Suction type flat cutter
T023	Suction type side cutter

*1 Mainly concerned with separate gauges except for inseparable gauge sets such as throat plate & feed dog (in this case, list the simultaneous replacement parts).
When replacing some discrete gauges, write as follows :
(Example) G09/H01/H03

*2 Attachments or the like that will work as a unit or a set and that can be mounted on standard machines.
(Accompanied by simultaneous replacement gauge parts)

*3 Necessary when any special-order parts or the like other than gauges or attachments are required to be mounted on machine heads before shipment.
(See Code Table.)

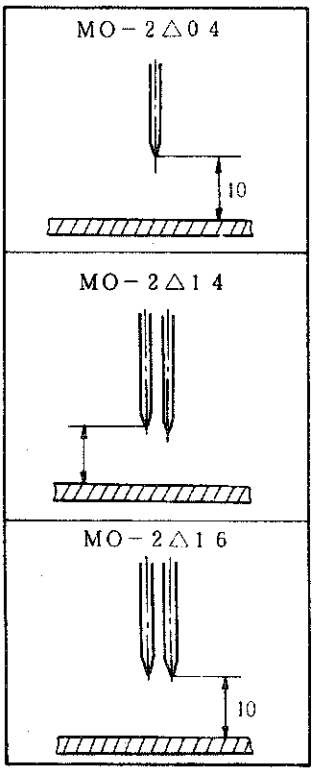
*4 The knife code is not given for a standard knife flat knife for domestic market, and square knife for export). In other words, the knife code is used only when a knife other the standard ones is specified.

3. STANDARD ADJUSTMENT (FOR MAIN UNIT)

Standard Adjustment

(1) Adjusting the needle height

The needle or needles should be 10 mm above the throat plate surface when it or they are at the highest point of its or their stroke.



Height of needles of the 2-needle overlock machine

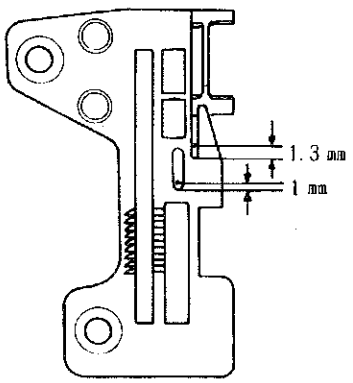
Model	Left needle	Right needle
MO–2Δ14E– ZA5	10 mm	10 mm
XB5	10	10
AB4	10	9.7
AD4	10	9.7
BB4	10	8.6
BD4	10	8.6
BE4	10	8.6
BD6	10	8.6
BE6	10	8.6
BD7	9.5	8.1 Δ
CD4	10.2	8.8 Δ
CD6	10.2	8.8
MO–2Δ12E– CF6	10.5	9.1 Δ
DD6	10.5	8.9
DF6	10.5	8.9

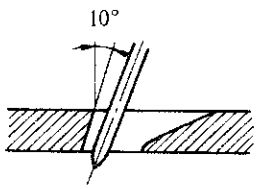
The adjustment of needle height for the 2-needle overlock machine should be made in reference to the left needle.

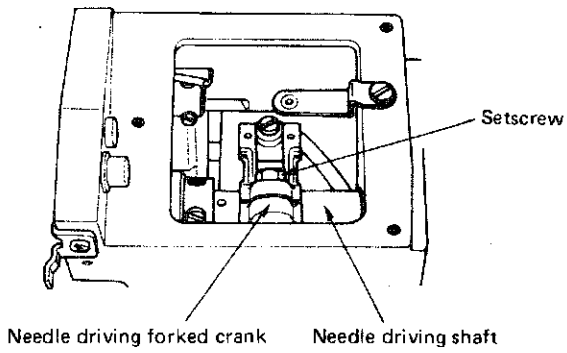
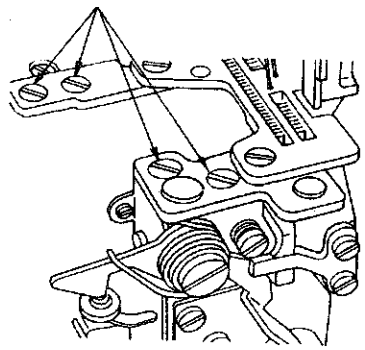
Note : Refer to the Subclass List for the triangular marks Δ.

(2) Positioning the throat plate

The needle entry point should be such that the distance between the needle groove edge of the throat plate and the needle center is 1.3 mm for the overlocking needle, and 1 mm for the double chain-stitching needle.

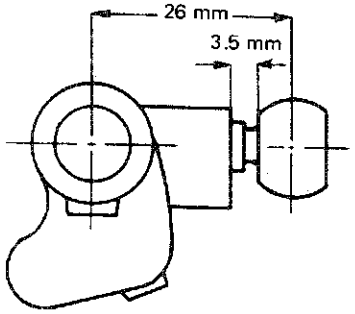




Adjustment Procedures	Results of Improper Adjustment
○ Take off the upper cover, and loosen the setscrew of the needle driving forked crank to perform the adjustment of the needle height.  	○ Any other needle height than specified here will badly affect the action of the lower looper, the timing for catching the upper looper thread, etc.
Caution : Do not fully loosen the setscrew of the needle driving forked crank. **If the needle driving forked crank has got out of position laterally when its setscrew was loosened, fully loosen the setscrew and turn the pulley to allow the forked crank to turn until it settles by itself. Then tighten the setscrew to fix the forked crank at that position.**	○ Improper lateral position of the needle driving forked crank will cause seizure, play, or other troubles.
○ Loosen the setscrews of the throat plate base to make the adjustment. Setscrews 	○ Improperly positioned throat plate will cause needle breakage, contact of the needles with the throat plate, or other troubles.

(3) Adjusting the length of the lower looper holder (Applicable only to MO-2Δ16 group)

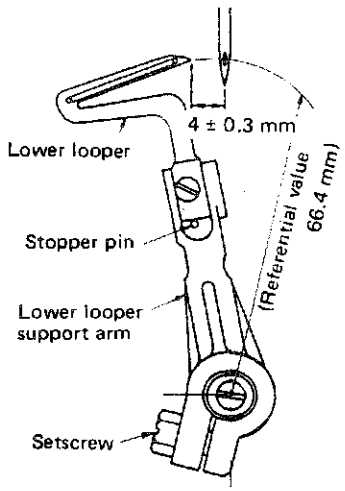
The center-to-center distance should be 26 mm.
At this time, the clearance between the end surface of the arm and the neck of the ball should be 3.5 mm.



(4) Adjusting the lower looper

1) Returning amount of the lower looper

The distance between the blade point of the lower looper and the center of the needle should be 4 ± 0.3 mm when the lower looper is at the extreme left of its stroke.



For models other than standard models

Model	Returning amount of the lower looper
2Δ14E–BD7	3.5 ± 0.3 mm
CD4	3.2
CD6	3.2
2Δ12E–CF6	2.2
DD6	2.2
DF6	2.2

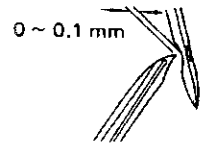
Note : Refer to Subclass List for the triangular marks Δ.

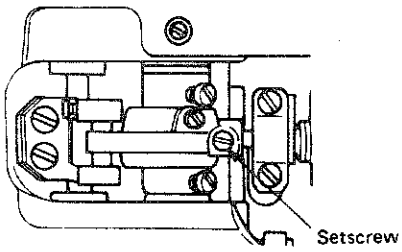
Note 1 : For MO-2Δ14E-BD7, the looper radius will be 66.9 mm, and have a lower looper of Part No. 11888500, throat plate base (A) of 11893401 and throat plate base (B) of 11893500.

Note 2 : For a machine equipped with a looper threading mechanism (Type F), adjust the returning amount of the lower looper to 4 mm.

2) Clearance between the lower looper and the needle

The clearance should be 0 to 0.1 mm.



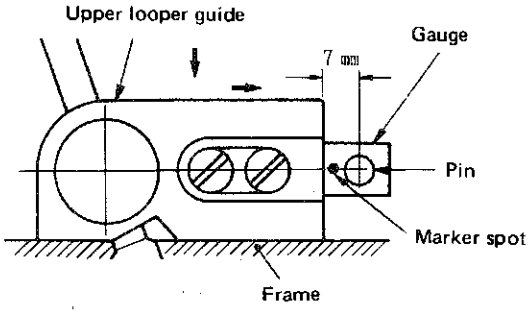
Adjustment Procedures	Results of Improper Adjustment
○ Loosen the setscrew of the lower looper holder from the rear of the frame. Since it is difficult to accurately measure the center-to-center distance, perform adjustment to provide a 3.5 mm distance between the end surface of the arm and the neck of the ball as illustrated.  	○ Increasing the center-to-center distance will give a smaller stroke of the double chain looper or lower looper, and decreasing the distance will give larger stroke.
○ Loosen the setscrew of the lower looper support arm to make adjustment of the returning amount of the lower looper. **Referential information :** **1. The radius of the lower looper will be 66.4 mm when the lower looper is inserted into the support arm until it contacts with the stopper pin and then fixed.** **2. The rocking angle of the lower looper will be 26°.**	○ Excessive return of the lower looper tends to cause stitch skipping when filament thread is used. ○ Insufficient return of the lower looper tends to cause needle thread stitch skipping when mixed yarn is used. ○ For an F-type machine with the looper threading mechanism, the distance is desirably very close to 4 mm. If it is smaller than 4 mm, the threading needle will be apt to come in contact with the main feed dog, and also the thread clamp timing is required to be adjusted by the thread clamp cam.
○ Loosen the setscrew of the lower looper support arm, and move back or forth the lower looper together with its support arm.	○ Excessive clearance will often cause needle thread stitch skipping. ○ Insufficient clearance will cause needle breakage due to the contact of the looper with the needle, or produce scratches on the blade point of the looper, leading to needle thread breakage or other troubles.

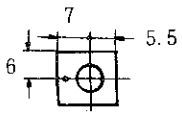
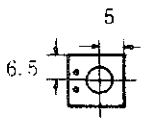
(5) Positioning the upper looper guide

Vertical position : To be in close contact with the frame surface

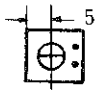
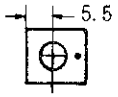
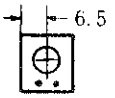
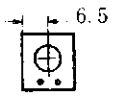
Lateral position : To be pressed against the gauge

Gauge length : 7 mm



Gauge		
	Standard, 2 △12E, 2414E-BD7 for wool	Machines for heavy weight materials and larger over-edgeing width 2 △16E-RH6

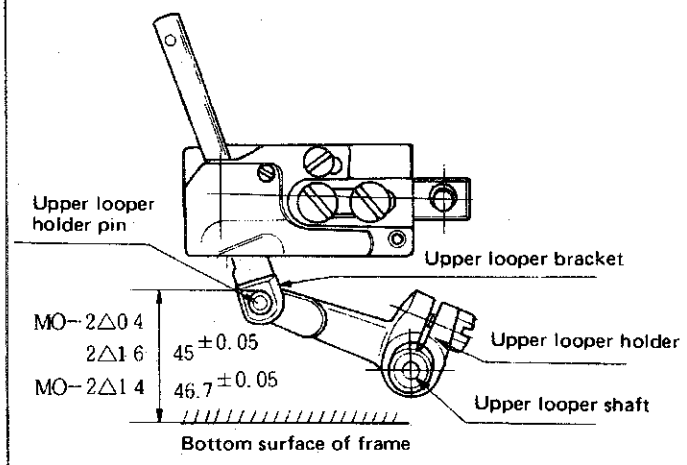
For models other than standard models

Model	Gauge position
MO–2△16E– RH6	
MO–2△14E– BD7	
MO–2△04E– OF4 OH4 OF6 OH6 MO–2△14E– CD4 CD6	
MO–2△12E– CF6 DD6 DF6	
MO–2△16E– △F△ △G△ △H△	

Note : Refer to the Subclass List for the triangular marks △.

(6) Positioning the upper looper holder

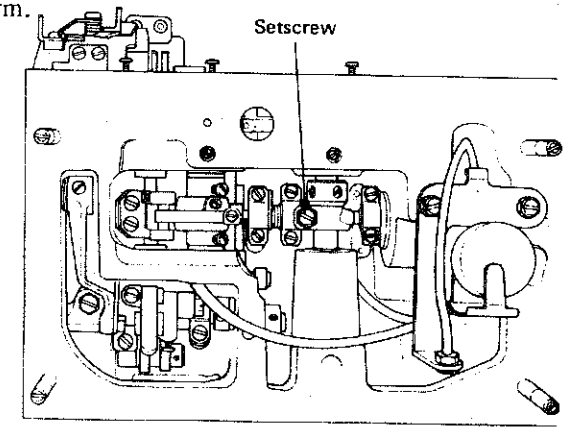
The distance between the frame bottom surface and the upper end of the upper looper holder pin should be as shown below when the upper looper holder is at the highest point of its stroke.



For models other than standard models

Model	Dimension
MO–2△04E– OF4	46.9 ±0.05 mm
OH4	〃
OF6	〃
OH6	〃
MO–2△14E– ZA5	45
XB5	〃
BD7	47.3
CD4	47.3
CD6	47.3
MO–2△12E– CF6	46.6
DD6	46.7
DF6	46.7
MO–2△16E– △F△	46.9
△G△	〃
△H△	〃
RH6	〃

Note : Refer to Subclass List for triangular marks △.

Adjustment Procedures	Results of Improper Adjustment
○ Fit the gauge onto the gauge fixing pin which has been driven into the frame, and retain it with an O-ring. Then make the marker spot face to the left (toward the upper looper guide). ○ See the figure at left when making adjustment for models which requires other positioning values that the standard values. ○ When installing the upper looper guide, press it against the gauge while bringing the upper looper guide into close contact with the frame surface, then tighten the screws.	○ If the upper looper guide has improperly positioned vertically, it will cause oil leakage or disturbed path of the upper looper with resultant stitch skipping. ○ If the upper looper guide has been inaccurately positioned laterally, it will cause stitch skipping, or contact with the looper.
(Adjustment order) 1. Loosen the setscrew of the upper looper ball arm. 2. Position the upper looper holder so that it smoothly moves when it is allowed to have a slightly larger stroke than that of the upper looper clamp, then tighten the setscrew of the upper looper holder. (Make sure that the upper looper holder smoothly moves together with the shaft.) 3. Then properly adjust the distance between the bottom surface of the frame and the top of the upper looper holder pin before tightening the setscrew of the upper looper ball arm.  	○ Inaccurately positioned upper looper holder will cause excessive projection of the upper looper, resulting in stitch skipping, or other troubles. ○ If the upper looper ball arm has been improperly positioned longitudinally, seizure will result (mainly because the arm sticks when it goes up).

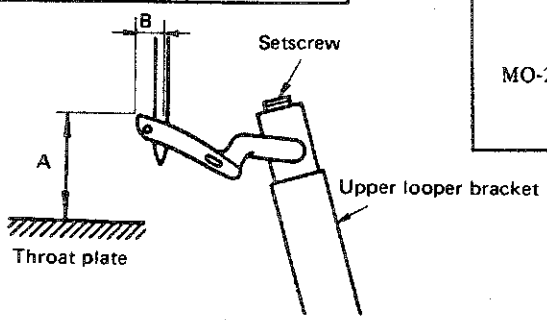
Standard Adjustment

(7) Positioning the upper looper

1) Height of the upper looper

The distance between the throat plate surface and the blade point of the looper should be as follows when the upper looper is at the extreme left of its travel.

	A	B
MO-2Δ14	10.7 ± 0.3 mm	(4.8 mm)
MO-2Δ04 MO-2Δ16	11 ± 0.3 mm	(4 mm)



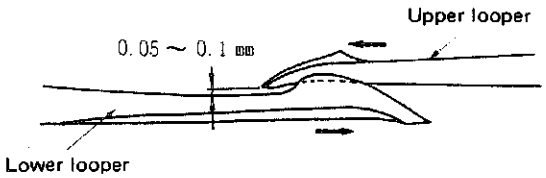
For models other than standard models

Model	Dimension A	Dimension B
MO-2Δ14E- ZA5	11 ± 0.3 mm	(4 mm)
XB5	11 ± 0.3 mm	(4 mm)
BD7	10.2 ± 0.3 mm	(4.5 mm)
CD4	10.5 ± 0.3 mm	(4.3 mm)
CD6	10.5 ± 0.3 mm	(4.3 mm)
MO-2Δ12E- CF6	10.8 ± 0.3 mm	(3.6 mm)
DD6	10.8 ± 0.3 mm	(4.3 mm)
DF6	10.8 ± 0.3 mm	(4.3 mm)

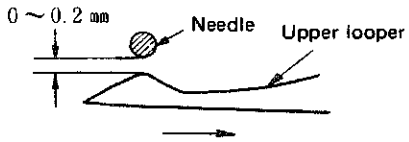
Note : Refer to Subclass List for the triangular marks Δ .

2) Longitudinal position of the upper looper

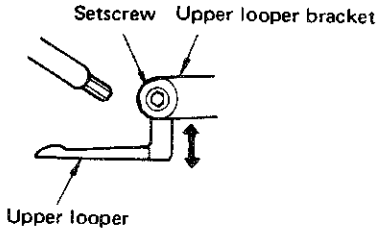
① The clearance between the upper and lower loopers should be 0.05 to 0.1 mm when they cross with each other.



② The clearance between the upper looper and the needle should be 0 to 0.2 mm.



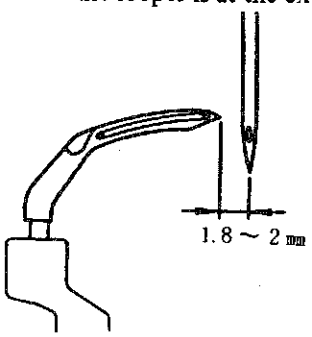
For proper use of the upper loopers according to the needle No., refer to the clause (4) of "Other Cautions".

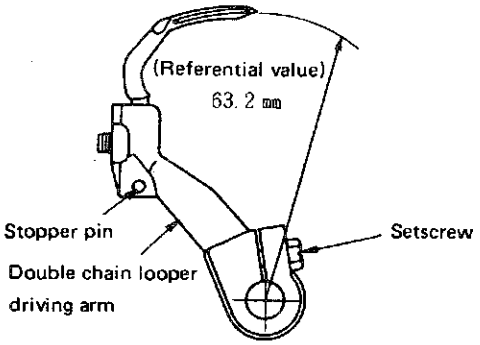
Adjustment Procedures	Results of Improper Adjustment
○ Set a hexagon screwdriver onto the setscrew at the end of the upper looper bracket to adjust the height of the upper looper. When adjusting the height, pay attention also to the clearance produced between the upper looper and lower looper at the time of their crossing.	○ If the upper looper has been positioned too high, an excessive clearance will be produced between the upper looper and the needle. As the result, the upper looper thread will fail to catch the needle thread, and stitch skipping occur. ○ On the contrary, if the upper looper has been positioned too low, the needle point will hit the looper, causing needle breakage. Also the looper will touch other component when the presser foot goes up.
○ Use the setscrew at the end of the upper looper bracket to move the looper back or forth for positioning.  	○ Excessive clearance will cause stitch skipping. ○ Insufficient clearance will cause the upper looper to come in contact with the lower looper.

(8) Adjusting the double chain-looper (applicable only to MO-2△16 group)

1) Returning amount of the double chain looper

The distance between the needle center and the blade point of the double chain looper should be 1.8 to 2 mm when the looper is at the extreme left of its travel.



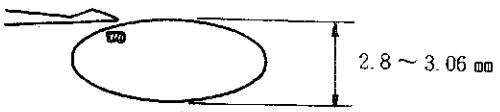


2) Tilt of the double chain looper

The tilt of the double chain looper should be 1 mm

3) Longitudinal motion (Avoid motion)

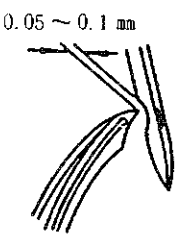
The standard minor axis of the elliptical motion should be 2.93 mm (central value).

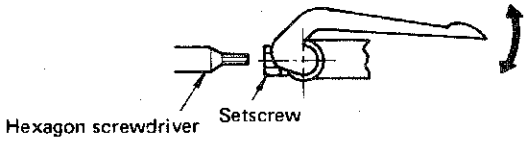
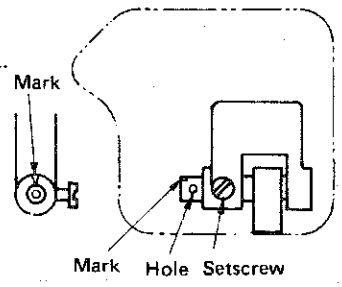
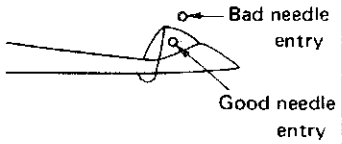
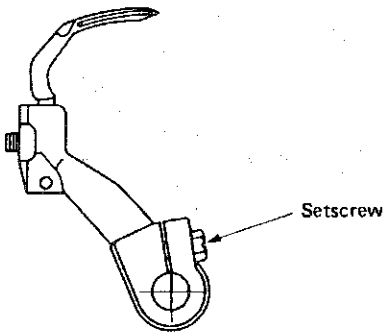


Note : The avoid motion should be adjusted in accordance with Needle No.

4) Clearance between the double chain looper and the needle

The clearance should be 0.05 to 0.1 mm.



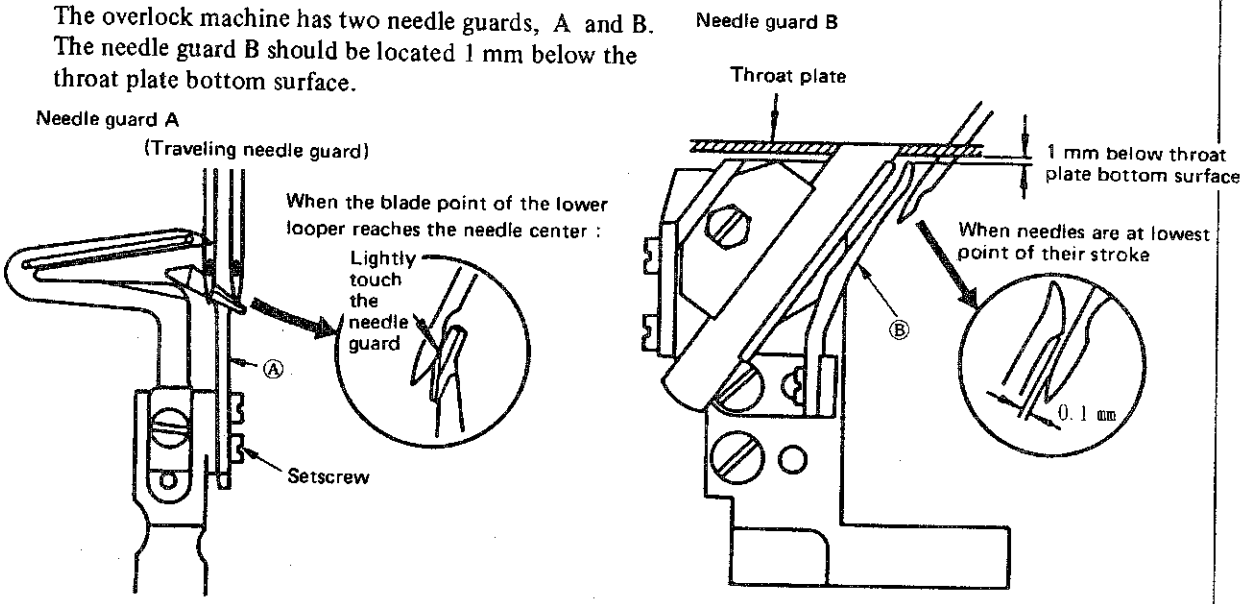
Adjustment Procedures	Results of Improper Adjustment
○ Loosen the setscrew of the double chain looper driving arm to make this adjustment. **Referential information :** **The radius of the double chain looper driving arm will be 63.2 mm when it is lowered until it comes in contact with the stopper.**	○ Excessive return of the double chain looper will cause frequent stitch skipping. ○ Insufficient return of the double chain looper will cause frequent thread stitch skipping when a mixed yarn is used.
○ Adjust the tilt of the double chain looper by its setscrew.  	○ Any greater or smaller tilt than the standard tilt will cause the double chain looper to come in contact with the needle guard.
○ Opening the cover on the back of the frame, loosen the setscrew, and insert a $\phi 2$ rod into the hole to turn it to make adjustment. Mark on the top : Standard Mark on this side : Min. Mark on the other side : Max.  	○ If the avoid motion is too large, triangle stitch skipping will often occur.  ○ Insufficient avoid motion will cause the needle point to hit the looper, producing scratches on the needle point or looper.
○ Loosen the setscrew of the double chain looper driving arm, and move back or forth the double chain looper together with its driving arm.  	○ Excessive clearance will cause frequent needle thread stitch skipping. ○ Insufficient clearance will cause the looper to hit the needle, leading to needle breakage or scratches on the looper blade point with consequent thread breakage.

Standard Adjustment

(9) Positioning the needle guard

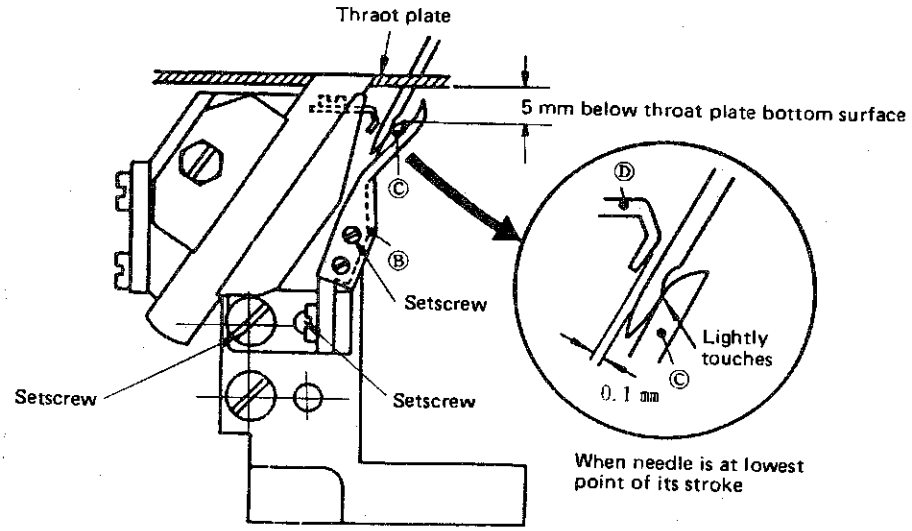
1) For 1-needle or 2-needle overlock machine

The overlock machine has two needle guards, A and B. The needle guard B should be located 1 mm below the throat plate bottom surface.



2) For safety stitch machine

The safety stitch machine has four needle guards, A, B, C and D. The needle guards A and B are positioned in the same manner as those for the overlock machine.
The needle guard C should be positioned 5 mm below the throat plate bottom surface.

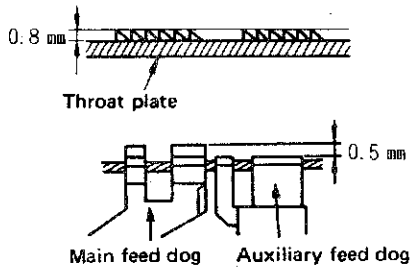


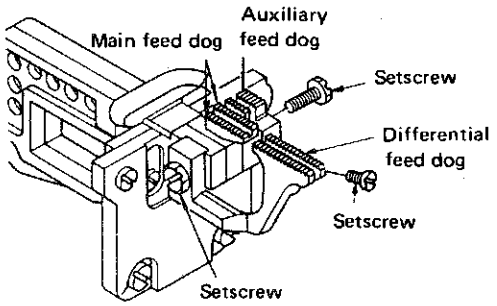
Adjustment Procedures	Results of Improper Adjustment
○ Adjust the clearance between the needle guard A and the needles by the setscrews of the needle guard. ○ Turn the setscrew of the needle guard holder to adjust the clearance between the needle guard B and the needles. Adjust the vertical position of the needle guard by its setscrews.	○ Excessively close contact between the needle guard A and the needles will lead to needle bend or stitch skipping. ○ A clearance left between the needle guard A and the needles will cause the looper blade point to come in contact with the needles, leading to needle or blade point breakage, or other troubles. ○ If the needle guard B is too high, thread loops will be damaged with resultant stitch skipping. Also, double chain loops will be affected, causing double chain stitch skipping. ○ If the needle guard B is too low, the needle cooling felt will be lowered, resulting in deteriorated effect of the cooling and needle gaurd. ○ Excessive clearance between the needle gaurd B and the needle will cause stitch skipping due to needle shake. On the contrary, insufficient clearance will cause the needle guards to catch the needles between them, leading to wear on the needle guards and scratches on the needles.
○ Adjust the clearance between the needle guard C and the needles by turning the setscrew of the needle guard holder. Adjust the vertical position of the needle guard by its setscrew. At this time, the needle guard B gets out of position, therefore it must be re-positioned. ○ The needle guard D can not be adjusted in height. Adjust the clearance between the needle guard D and the needles by the needle guard setscrew.	○ If the needle guard C is too high, the needle thread loops will be damaged, and stitch skipping occur. If it is too low, the needle points will be crushed. ○ If the clearance between the needle guard C and the needles is too large, the double chain looper blade point will come in contact with the needles, causing the breakage of the needles or looper blade point. No clearance left between them will cause them to come in excessively close contact with each other, and wear on the needle guard and scratches on the needles will occur. ○ Excessive clearance left between the needle guard D and the needles will cause stitch skipping due to needle shake, and insufficient clearance will cause the needle guards to catch the needles between them, leading to wear on the needle guards and scratches on the needles.

Standard Adjustment

(10) Adjusting the height of the feed dog

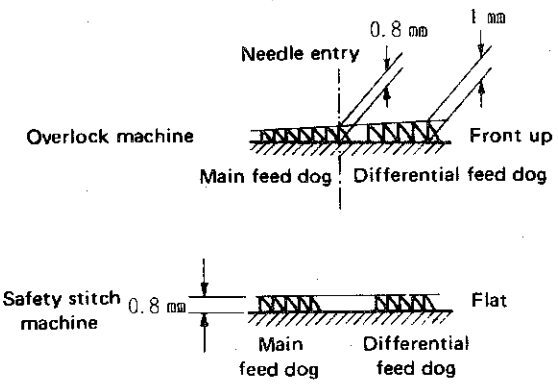
The main feed dog should protrude 0.8 mm from the throat plate top surface when it is at its highest position, and the differential feed dog, 0.5 mm lower than the main feed dog.

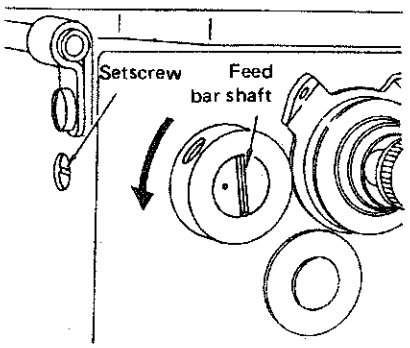




(11) Adjusting the tilt of the feed dog

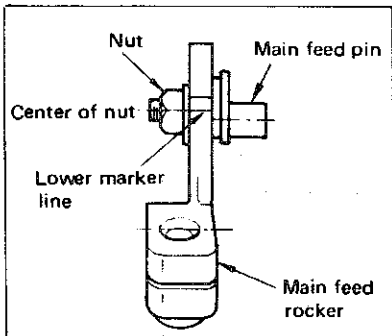
When the feed dogs have come up most, they should tilt with their front higher than their back for the overlock machine, and should be flat for the safety stitch machine.



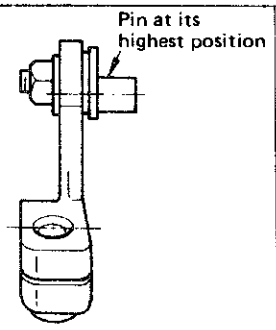


(12) Changing the differential feed ratio

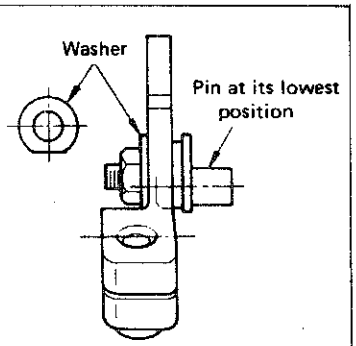
Generally, the adjustment of differential feed is made by the differential feed adjusting lever. However, if a desired adjustment cannot be made by this lever, the differential feed ratio should be changed.



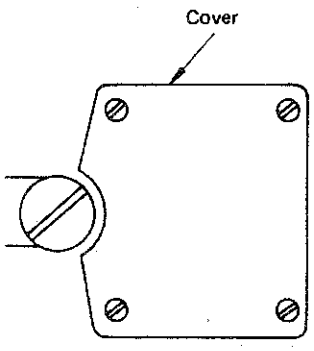
(Standard) Gathering: 1:2
Stretching: 1:0.7



(Max. streching) Gathering: 1:1.6
Streching: 1:0.6



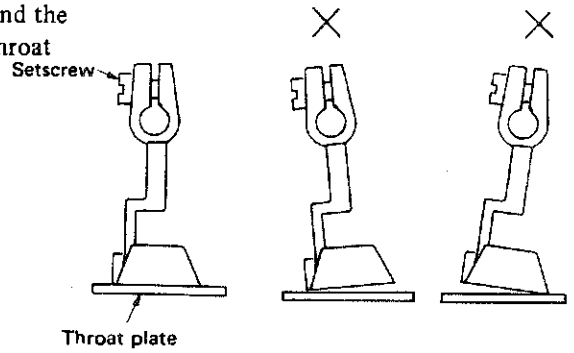
(Max. gathering) Gathering: 1:4
Stretching: 1:1.3
*Virtually no stretching

Adjustment Procedures	Results of Improper Adjustment
○ Perform adjustment by the setscrews.	○ If the feed dogs are too high, the needles will be deflected and broken when sewing heavy-weight materials. The feed dogs will tend to suffer scratches when sewing light-weight materials. Puckering will frequently occur. ○ If the feed dogs are too low, insufficient feed power will result. ○ If the auxiliary feed dog is too high, chain-off thread will be often jammed. ○ If the main feed dog and differential feed dog are set at different heights, proper differential feeding action will be hindered.
○ The feed bar shaft consists of an eccentric shaft. Loosen the setscrew to perform adjustment. When the marker spot is set at middle . . . . . The feed dog will be flat. When the marker spot is set at bottom . . . . . The feed dog will be tilted with its front up (in the arrowed direction). When the marker spot is set at top . . . . . The feed dog will be tilted with its front down. **Note : The marker spot should be used just as a measure. Confirm the accurate tilt of the feed dog by observing the feed dog itself.**	○ When tilted with the front up Good material catching will be obtained. ○ When tilted with the front down Uneven feed and puckering will be effectively prevented.
○ Removing the cover on the rear of the frame, loosen the nut of the main feed pin to adjust the position of the pin. The standard adjustment is obtained by aligning the lower marker line with the center of the nut. When the pin is set at its highest position . . . . . Max. stretching is provided. When the pin is set at its lowest position . . . . . Max. gathering is obtained.  	

Standard Adjustment

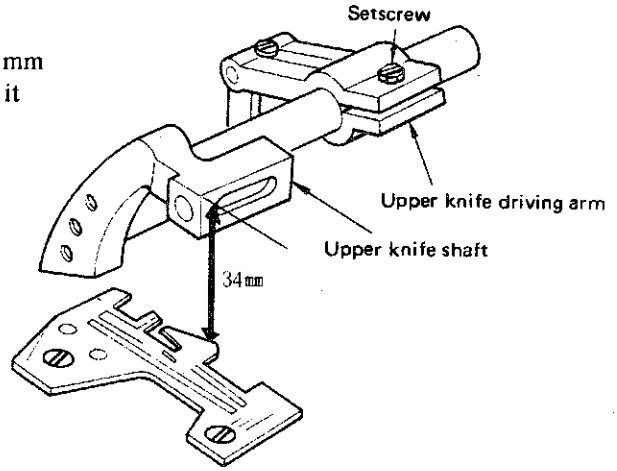
(13) Positioning the presser foot

The presser foot should be positioned so that the feed dogs go down under the specified presser foot pressure, and the presser foot sole comes in contact evenly with the throat plate surface.



(14) Positioning the upper knife arm shaft

The upper knife shaft should be positioned 34 mm above the top surface of the throat plate when it is at its highest position.



(15) Positioning the upper and lower knives, and available overedge widths

1) Lower knife

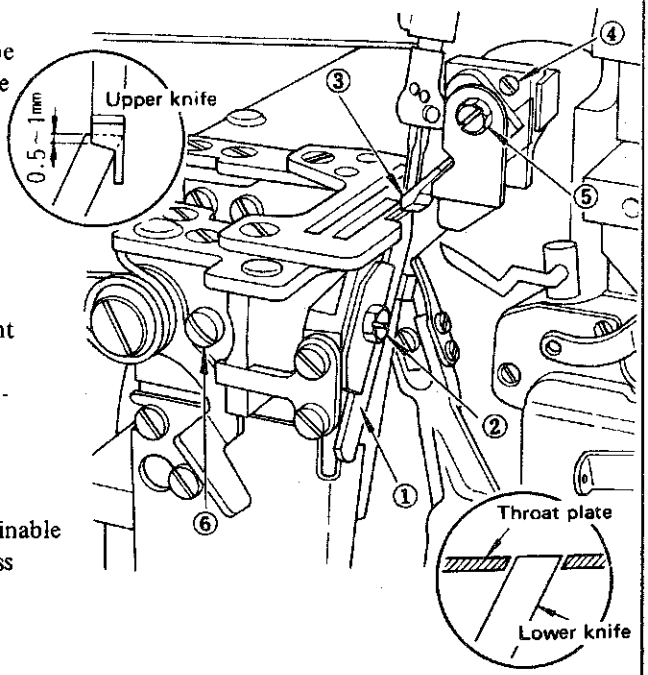
The vertical position of the lower knife should be adjusted to make its blade top end flush with the throat plate top surface. The lateral positioning should be done in accordance with a desired overedging width.

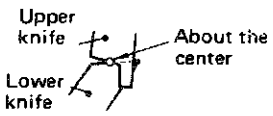
2) Upper knife

The upper knife should be positioned vertically so that it engages with the lower knife 0.5 to 1 mm when the upper knife is at the lowest point of its travel.
The lateral positioning should be done in accordance with a desired overedging width.

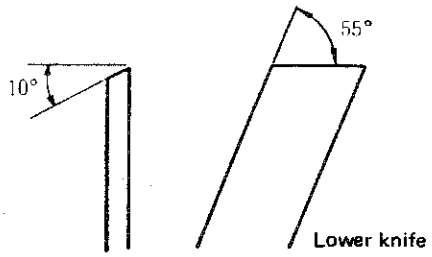
3) Overedging width

Overedging widths from 1.6 to 6.4 mm are obtainable by replacing the components or by using subclass machines.



Adjustment Procedures	Results of Improper Adjustment
○ Loosen the setscrew, and perform adjustment so that the presser foot sole comes in contact evenly with the throat plate top surface. Accurate adjustment can be made by using two pieces of thin paper to check for even drawing-out tension. ○ Even contact of the presser foot with the throat plate top surface is achieved rather easily by tightening the screw while pushing the right side of the presser foot.	○ Uneven contact will result in bad straight material feed, weak feed power, or puckering.
○ Removing the upper cover, loosen the setscrews of the upper knife driving arm, and turn the upper knife shaft to perform vertical positioning. **Caution : Be sure to fully tighten the setscrews since the knife shaft is subjected to high load.**	○ Improperly positioned upper knife arm shaft will come in contact with the frame. If it is moved with the position of the upper knife unchanged, proper engagement of the knives will be disturbed, prohibiting sharp cutting of the knives.
○ Adjust the vertical position of the lower knife by screw ②. ○ Adjust the lateral position of the lower knife by screw ⑥. **On completion of the adjustment, be sure to securely tighten the screws.** Loose screws will badly affect the durability of the knife. Tighten the screws at about the center of the engagement of the upper and lower knives. ○ Adjust the vertical position of the upper knife by screw ④⑤. ○ Adjust the lateral position of the upper knife by screw ④⑤ ○ Adjust the overedging width in the following way: Laterally position the upper knife before loosening screw ⑥ Tighten screw ⑥ when the upper knife has settled by itself under the pressure applied by the spring. Repeat this adjustment procedure to obtain desired overedging width. 	○ The lower knife, if positioned too high, will catch materials or cause no contact of the presser foot with the throat plate top surface. ○ If the lower knife is positioned too low, the cutting width will be changed or materials will be caught by the lower knife. ○ The upper knife, if positioned too high, will fail to cut materials. ○ Unsharp cutting or abnormal wear on the knives will result unless the lower knife is laterally positioned and fixed at a position where it has settled by itself under the upper knife spring.

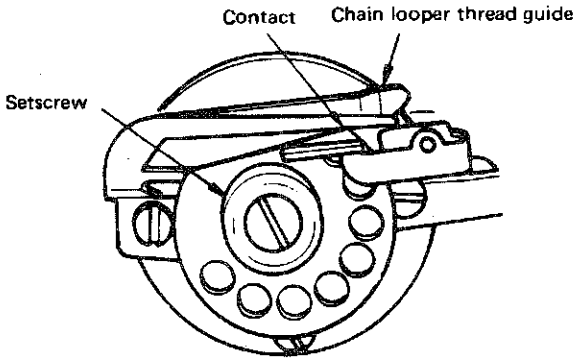
(16) Resharpening the lower knife



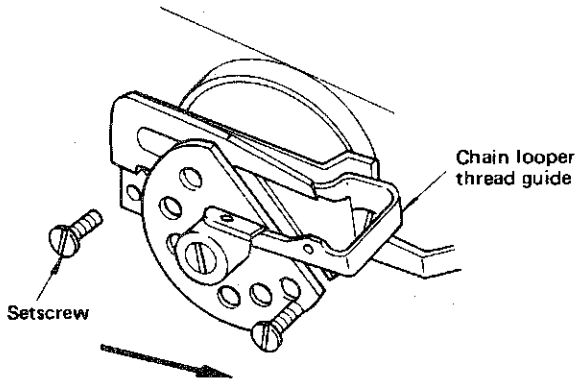
(17) Positioning the thread cam (Applicable only to MO-2△16 group)

1) Adjusting the thread cam

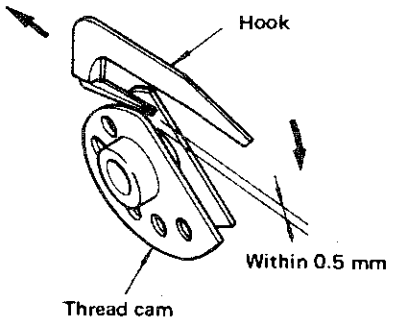
Position the thread cam so that a corner of the thread cam contacts with the bottom surface of the hook when the needles are at the highest point their stroke.



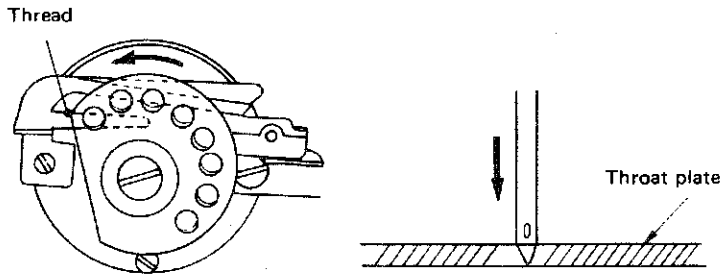
2) Positioning the chain looper thread guide and the hook



Set the chain looper thread guide at the slot end on the operator's side.

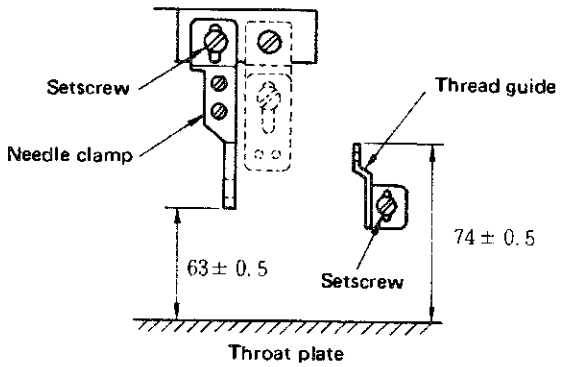


Set the hook at the slot end on the opposite from the operator's side and closest to the thread cam inner boss.

Adjustment Procedures	Results of Improper Adjustment
○ When the lower knife has become dull, fully resharpen it. ○ In principle, no resharpening of the upper knife is done. When the upper knife has become dull, replace it. (This is because the upper knife is a serrated carbide knife.)	○ If the 10° angle of the lower knife is exceeded, the durability of the knife will be deteriorated, often resulting in blade chipping. ○ If the angle is smaller than 10°, the knife will be dull. ○ If the 55° angle is not observed, the knife may catch materials.
○ Adjust the position of the thread cam by its setscrew with the needles at their upper dead point. ○ Laterally position the thread cam so that the hook is located at the center of the thread cam groove. **(How to check for proper positioning)** Check that the thread cam releases the looper thread when the needle point begins to come out of the bottom surface of the throat plate.  	○ If the timing of the thread cam is too early, the needle point will fail to enter a thread triangle, resulting in looper thread stitch skipping. ○ If the timing of the thread cam is too late, puckering and loose looper thread stitches will result.
○ Set the chain looper thread guide at the slot end on the operator's side, and tighten the setscrew on the operator's side first. Then push back the hook until it reaches the far end of the slot, and set the hook closest to the thread cam inner boss, leaving a clearance of 0.5 mm or less between them.	○ If the chain looper thread guide is positioned away from the operator's side, the looper thread taking amount will be reduced with resultant puckering. ○ The hook, if positioned closer to the operator's side, will touch the thread cam. If a clearance greater than 0.5 mm is left between the hook and the thread cam inner boss, the hook may roll in the looper thread.

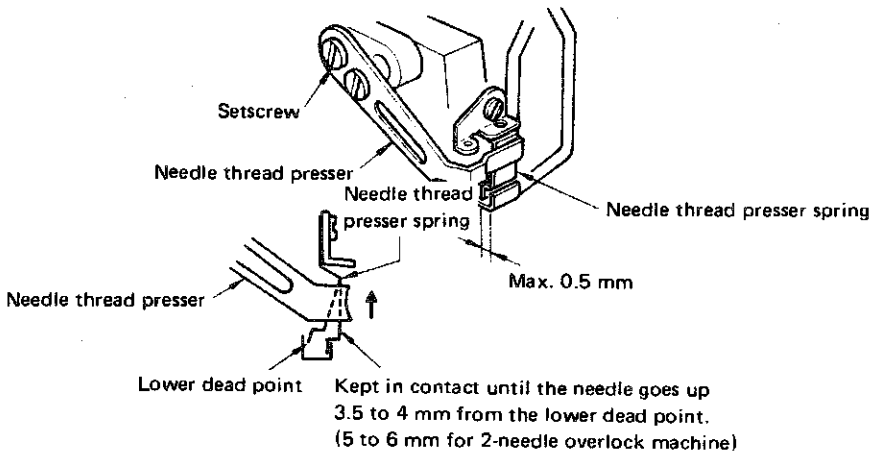
(18) Positioning the needle thread clamp and the thread guide

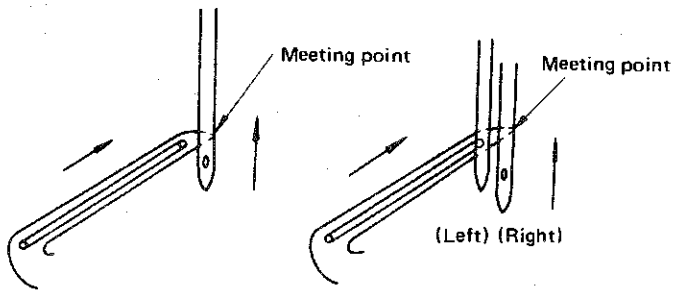
The end of the needle clamp base should be 63 mm above the throat plate top surface.
The clamp pressure should be 5 to 12 g.
The top end of the thread guide should be 74 mm above the throat plate top surface.



(19) Mounting position of the needle thread presser

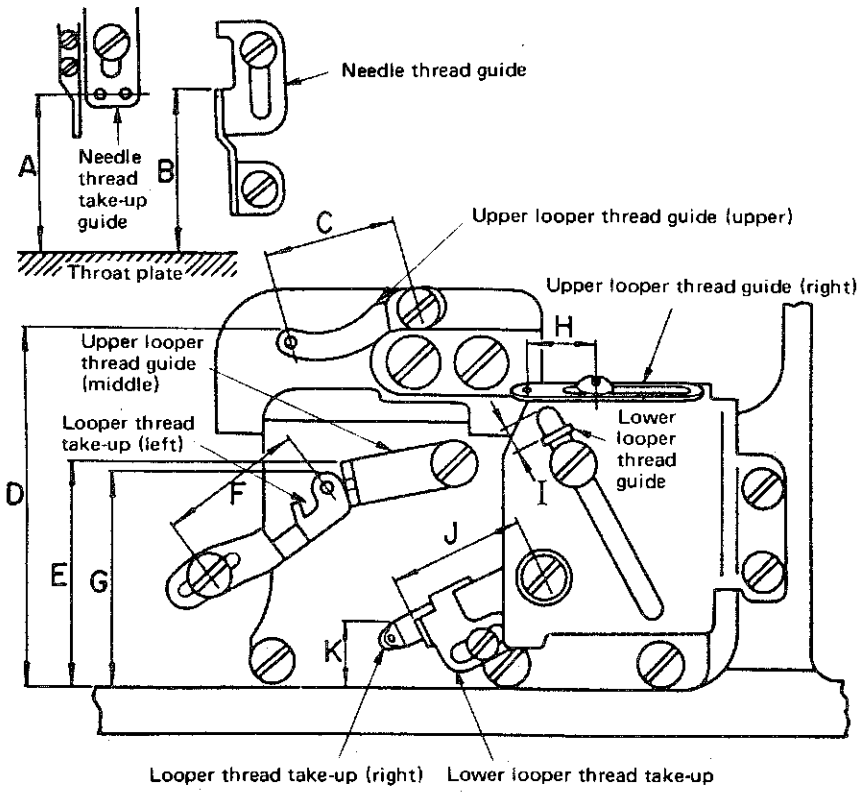
For a 1-needle overlock machine or a safety stitch machine, install the needle thread presser so that it is kept in contact with the needle thread presser spring until the needle goes up 3.5 to 4 mm from its lower dead point.
For a 2-needle overlock machine, install the needle thread presser so that it is kept in contact with the spring until the needles go up 5 to 6 mm from its lower dead point.



Adjustment Procedures	Results of Improper Adjustment
○ Adjust the position of the needle thread clamp and thread guide by the setscrews. Be very careful when installing the needle thread clamp base since the clearance between the thread guide and needle thread presser spring is very small. ○ The clamp pressure cannot be adjusted. The correct clamp pressure of the clamp set is 5 to 12g. Replace the set if it does not provide the correct pressure.	○ If the needle thread clamp base is positioned to high, it will release the needle thread too early, resulting in poor feed of chain-off thread. On the contrary, if it is positioned too low, it will hold the needle thread too long. As a result, the needle thread will not be fully drawn up, also causing poor feed of chain-off thread.
○ Using the setscrews, adjust the position of the needle thread presser so that it lightly touches the needle thread presser spring when the needle goes up 3.5 to 4 mm (5 to 6 mm for 2-needle overlock machine) from the lowest point of its stroke. At this time, make sure that the needle thread presser spring lightly holds the needle thread until the lower looper catches the needle thread.  1-needle overlock machine (2Δ04) 2-needle overlock machine (2Δ14) Safety stitch machine (2Δ16)	○ Excessive spring flexure will lead to breakage of the spring. ○ If the spring flexure is not enough, the spring will fail to hold the needle thread until the needle goes up 3.5 to 4 mm (5 to 6 mm for 2-needle overlock machine) from its lowest point, often resulting in needle thread stitch skipping due to too large thread loops.

Standard Adjustment

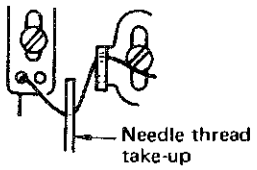
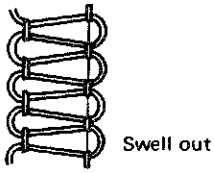
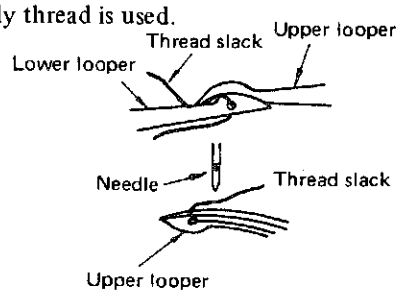
(20) Positioning the thread guide and the looper thread take-up



Required adjustment values when the upper looper is at its fully retracted position

Symbol	MO－2△04 MO－2△16 (Standard)		MO－2△14 (Standard)		MO－2△05 (Blind hemming)		MO－2△04 (Soft chain)	
	General thread	Wooly thread	General thread	Wooly thread	General thread	Wooly thread	General thread	Wooly thread
A	74	←	←	←	←	←	79.5	←
B	74	←	←	←	←	←	79	←
C	22.5	←	←	←	←	←	←	←
D	63.5	←	←	←	←	←	←	←
E	40.5	←	←	←	←	←	←	←
F	26	←	←	←	←	←	←	←
G	37.5	45	40.5	45	37.5	45	41	47
H	12	←	13	18.5	9.5	12	13	26.5
I	6.5	←	14	←	24.5	33.5	28	33.5
J	24	←	23	←	19	←	←	←
K	14	←	←	←	←	←	←	←

Note : If wooly thread is used also for the needle thread in the soft chain stitch, the dimension B shall be 79.5 mm.

Adjustment Procedures	Results of Improper Adjustment
○ Perform the adjustment by the setscrews. ○ For producing soft chains or 503 stitches, set distances A and B larger to make the needle thread take-up catch the thread ○ Set distance F a little smaller when using synthetic thread or the like which tends to form stitches swelling out of the cloth edge. A smaller F is effective for preventing stitch skipping. ○ Distance G is related to the vertical knotting point of the upper and lower looper threads. Set this distance larger for wooly thread, and set is smaller for thin thread which is likely to cause stitch skipping. ○ It is desirable to set distance H larger for stretchy threads such as wooly thread. ○ Set distance I a little larger when making blind hemming soft chain stitches. ○ Set distance J a little smaller for blind hemming or making soft chain stitches. ○ Set distance K larger if stitch skipping occurs due to looper thread slack. Set it smaller for better appearance and touch of produced stitches when wooly thread is used.   ○ Set distance K larger if stitch skipping occurs due to looper thread slack. Set it smaller for better appearance and touch of produced stitches when wooly thread is used.  	○ Distance A When set smaller, better tightness of needle thread stitches will be obtained. ○ Distance B When set smaller, better tightness of needle thread stitches will be obtained. When set larger, loose needle thread stitches will result. ○ Distance C, D, and E exert least influence on stitch formation, however, improper setting of these distances will cause contact between the moving parts. ○ Distance G When set larger, the amount of the upper looper thread will be increased. When set smaller, the amount of the upper looper thread will be decreased. ○ Distance H When set larger, the amount of the upper looper thread will be decreased. When set smaller, the amount of the upper looper thread will be decreased. ○ Distance I When set larger, the amount of the lower looper thread will be decreased. When set smaller, the amount of the lower looper thread will be increased. ○ Distance J When set larger, the amount of the lower looper thread will be increased. When set smaller, the amount of the lower looper thread will be decreased. ○ Distance F When set larger, the amount of the upper and lower looper threads will be increased. When set smaller, the amount of the upper and lower looper threads will be decreased. ○ Distance K When set lrger, the amount of the upper and lower looper threads will be decreased. When set smaller, the amount of the upper and lower looper threar will be increased.

☆ How to set machine with standard adjustment for soft chain stitching

(1) Increase the amount of needle thread taken up by the needle thread take-up
Set A and B for the soft chain distances.

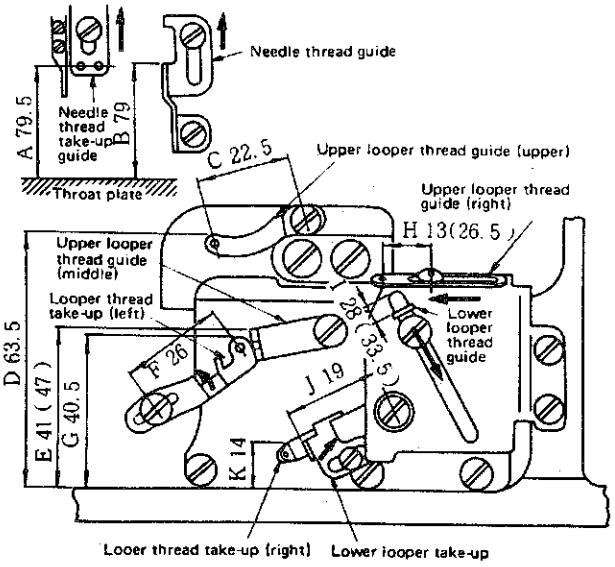
(2) Reduce the feed of the looper threads. (mainly lower looper thread)
Set G, H, I, and J for the soft chain distances.
Fine adjustment of G and I is required to produce even stitches.

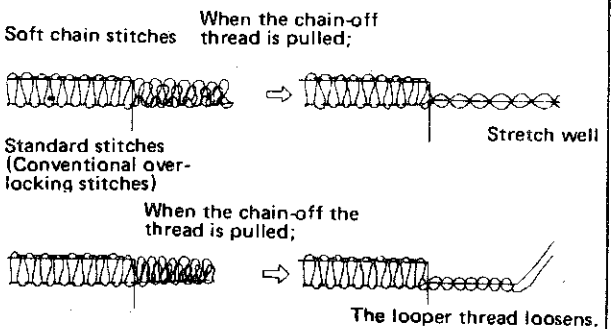
(3) Adjust the thread tension while checking the appearance and touch of the stitches produced.
1) Minimize the needle thread tension as far as satisfactory tighteness of needle thread stitches is obtained.
2) Increase the upper looper thread tension as much as possible.

(4) If the chain-off thread does not stretch satisfactorily (if not satisfied with (1)), proceed with the following.
1) Increase the upper looper thread tension.
2) Further increase distances G and H.
3) Further increase the upper looper thread tension.
4) Increase the lower looper thread tension to a maximum as far as good tightness of needle thread stitches is maintained.
5) If an increase in distance B has caused loose needle thread stitches, increase the needle thread tension.

(5) Fine adjustment for producing stitches with better appearance and touch
1) If the knotting point varies at high or low sewing speed, slightly reduce I, and increase the lower looper thread tension.
2) If a knot is made at a high point, increase G and F.
3) If the needle thread often breaks, reduce B and the needle thread tension.

(6) Pay attention to the following
1) Minimize the needle thread tension as far as satisfactory tightness of needle thread stitches is obtained.
2) The knot of upper and lower looper threads should be made near the upper edge of a material.
3) Minimize the lower looper thread tension as far as even stitches are maintained.





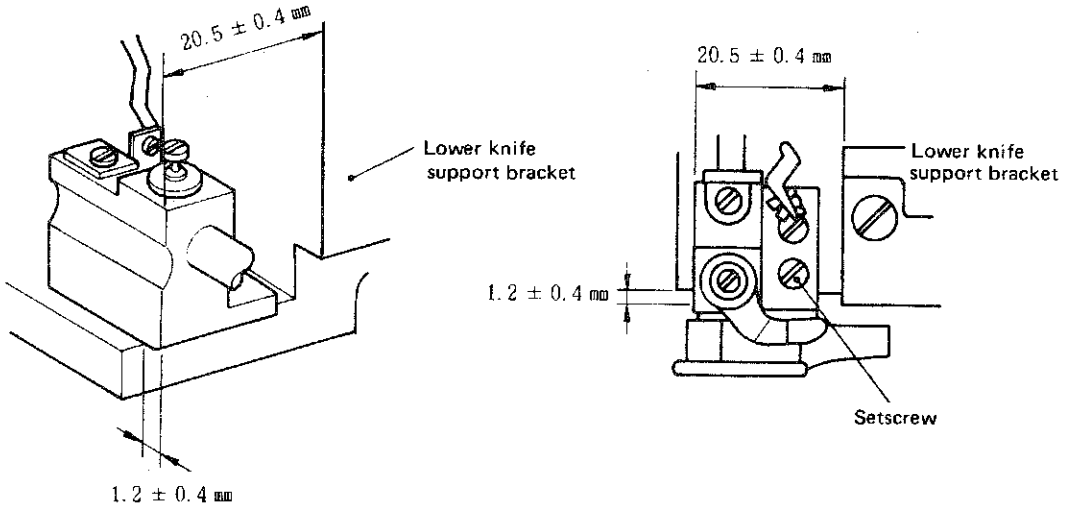
Note : The parenthesized apply to wooly thread.

4. STANDARD ADJUSTMENT (FOR THREADER COMPONENTS)

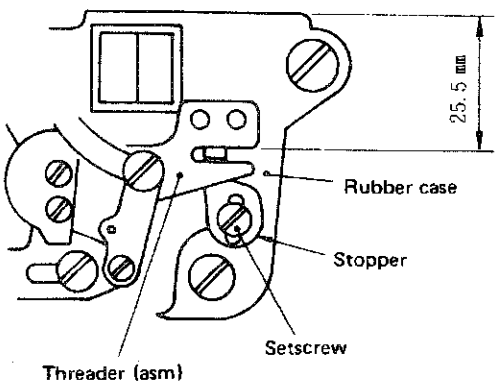
Standard Adjustment

(1) Lower looper threader

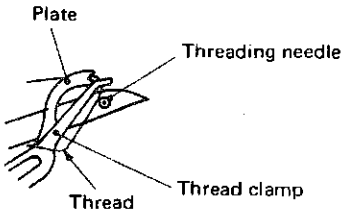
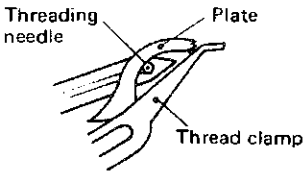
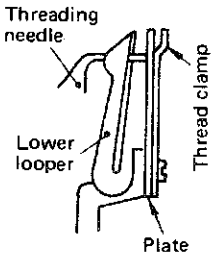
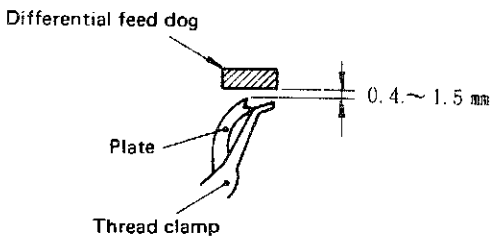
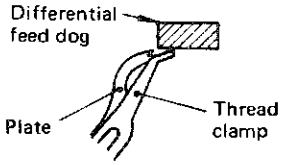
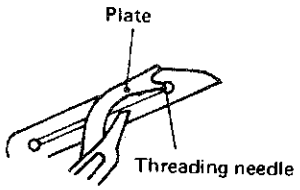
1) Positioning the holder



2) Adjusting the height of the stopper

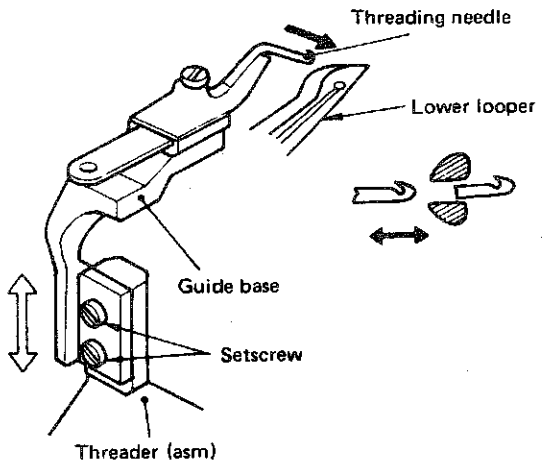


The standard distance between the top end of the stopper and that of the rubber case is 25.5 mm.

Adjustment Procedures	Results of Improper Adjustment
○ Adjust the position of the holder by the setscrew.	○ If the specified distance 20.5 ± 0.4 mm is exceeded, the plate will not reach the correct point above the threading can not be done.  ○ If the distance is smaller than 20.5 ± 0.4 mm, the plate will come in contact with the threading needle, interfering with the thread clamping action  ○ If the distance 1.2 ± 0.4 mm, specified in Standard Adjustment is not observed, the plate will be improperly positioned. As a result, the plate will not come to the correct point above the threading needle, or the thread clamp will touch the threading needle. 
○ Loosen the stopper and setscrew to perform the adjustment. At this time, make sure that a clearance of about 0.4 to 1.5 mm is provided between the plate and differential feed dog when the threader is actuated. This must be done because the rubber case sometimes moves up or down within the screw clearance hold at the time of installation. If the above clearance is not provided, make readjustment by moving the stopper up or down. 	○ If the stopper is set too high, the differential feed dog will come in contact with the plate.  ○ If the stopper is set too low, the plate will come in contact with the threading needle. 

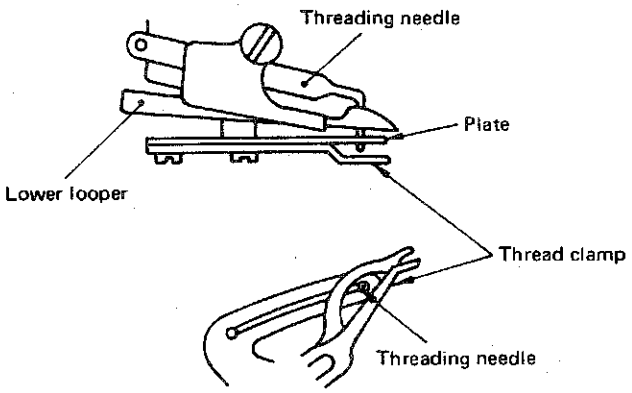
Standard Adjustment

3) Adjusting the height of the threading needle

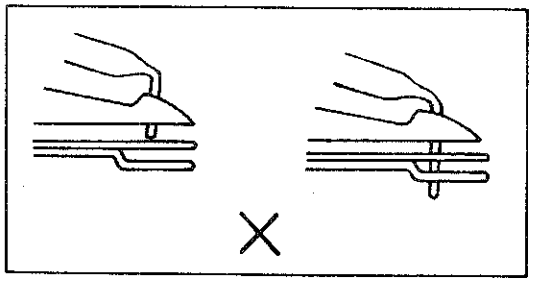


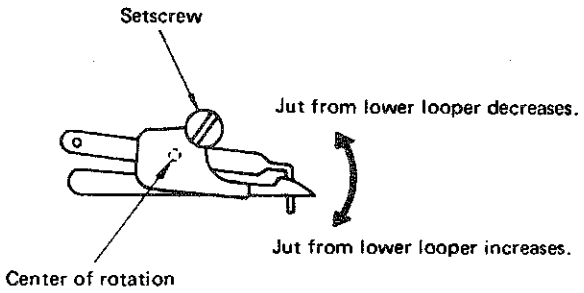
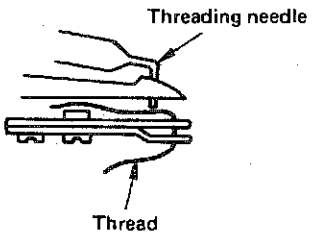
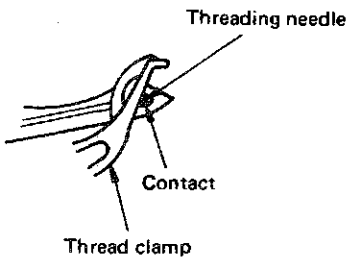
The hook of the threading needle should smoothly enter the hole in the tip of the lower looper when the threading lever is pulled with the lower looper at its most retracted position.

4) Adjusting the tilt of the threading needle



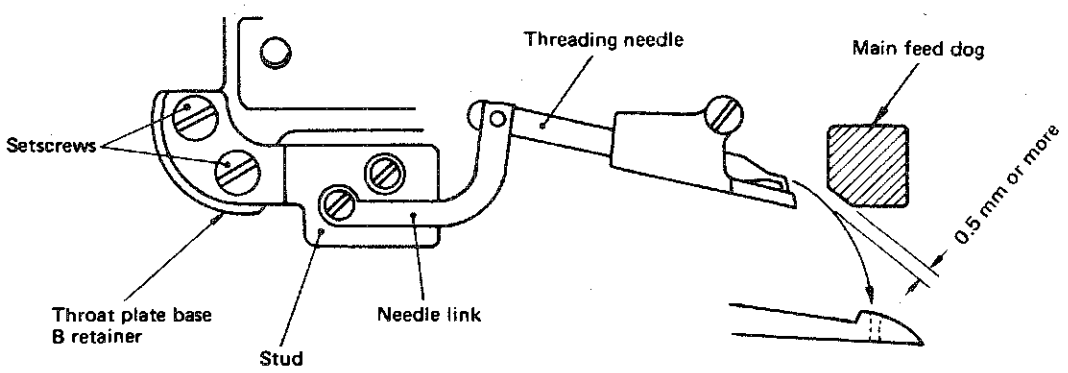
The end of the hooked tip of the threading needle should be located between the plate and thread clamp when the threader is actuated.



Adjustment Procedures	Result of Improepr Adjustment
○ To perform this adjustment, loosen the setscrew of the guide base and move the guide base up or down.	○ Improper height of the threading needle will prohibit threading. The threading needle may be damaged if forcibly actuated.
○ By loosening the setscrew of the guide cover, the guide cover can be slightly turned on the near-center of the threading needle to adjust the jut of the threading needle from the lower looper  	○ If the jut of the threading needle from the lower looper is not enough;  The threading needle will fail to catch the thread when the thread clamp has taken the thread from the plate. ○ If the threading needle juts out excessively from the lower looper;  The thread clamp will touch the threading needle, causing the thread clamp to fail to clamp the thread on the plate.

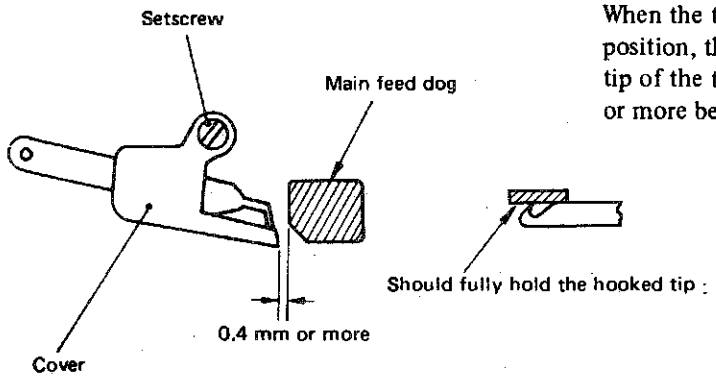
Standard Adjustment

5) Adjusting the path of the threading needle



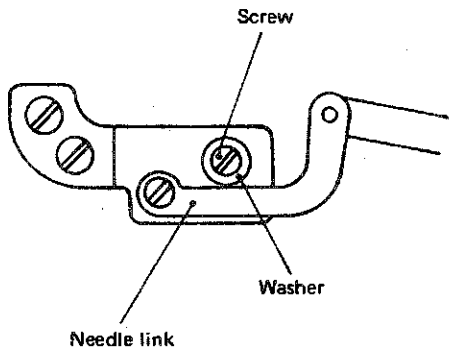
The hooked tip of the threading needle should enter smoothly the hole in the tip of the lower looper. A clearance of 0.5 mm or more should be provided between the threading needle and the main feed dog when the needle is actuated.

6) Adjusting the cover



When the threader has returned to its original position, position, the cover should securely hold the hooked tip of the threading needle, with a clearance of 0.4 mm or more between the cover and the main feed dog.

7) Adjusting the needle link stopper

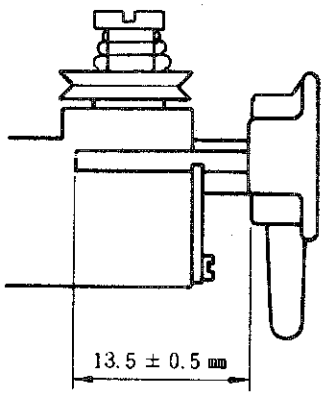


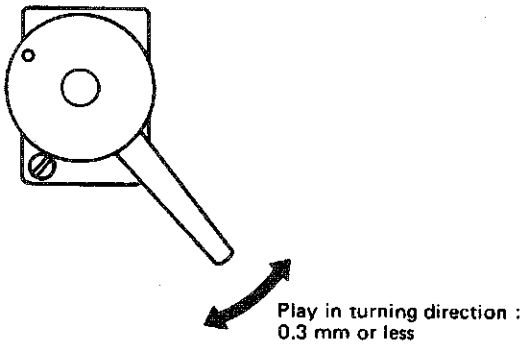
The washer should come in contact with the needle link when the threader has returned to it original position.

Adjustment Procedures	Results of Improper Adjustment
○ Loosen the setscrew of the stud to make the adjustment. When the stud is moved laterally or longitudinally, the threading needle will move in the same way.	○ Improper adjustment will prohibit threading. The threading needle will be damaged if forcibly actuated.
○ Loosen the setscrew of the guide cover to perform the adjustment. Take care not to disturb the tilt of the threading needle.	○ If the cover fails to securely hold the hooked tip of the threading needle, the thread will not be clamped, so that stitches will not be formed after the threader is operated.
○ Loosen the screw of the needle link stopper, pull the threading lever once, and return it slowly. At this time, tighten the screw so that the washer comes in contact with the needle link.	○ The absence of the needle link stopper will cause sticking between the threading needle and the guide cover when the threader is suddenly operated, prohibiting the threading lever from being pulled toward the operator.

Standard Adjustment

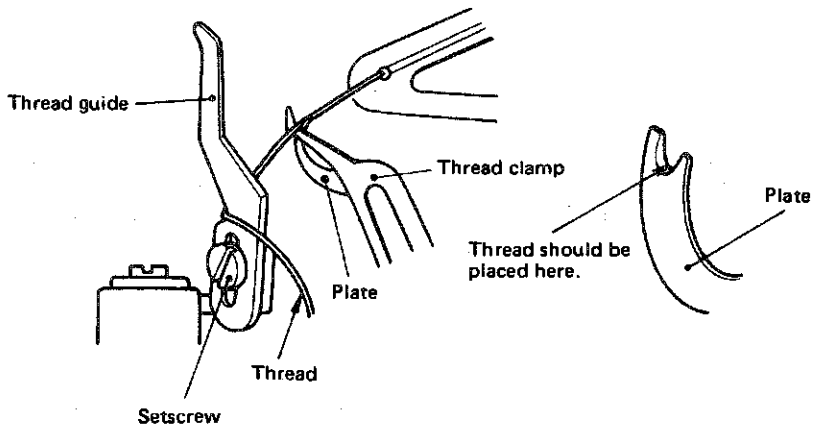
8) Adjusting the pin

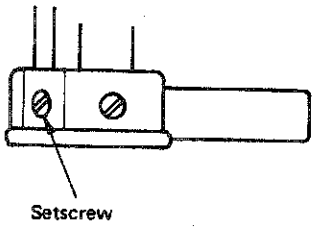
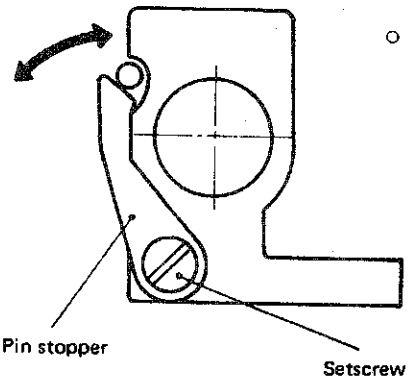
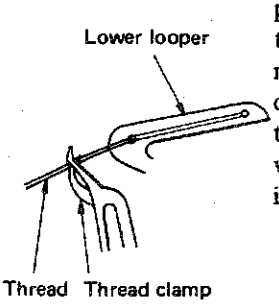




9) Adjusting the thread guide

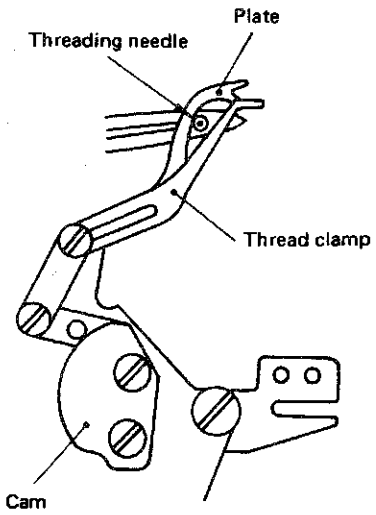
The thread guide should be adjusted so that thread is put onto the forked tip of the plate when the threading lever is pulled.



Adjustment Procedures	Results of Improper Adjustment
○ Loosen the setscrew of the pin to make adjustment for the 13.5 mm distance specified in the Standard Adjustment.   ○ Loosen the setscrew of the pin stopper, and adjust the play in the turning direction by the pin stopper	○ If the distance is smaller than 13.5 ± 0.5 mm, the plate and the thread clamp will have longitudinal play, causing them to come in contact with the lower looper from time to time. On the contrary, if the distance is greater than 13.5 ± 0.5 mm, the lever will not turn at all even when it is fully pulled. If an excessive play is left, thread may not be placed on the forked tip of the plate when the lever is pulled. 
○ Loosen the setscrew of the thread guide, and perform adjustment by moving the thread guide up or down.	○ If thread is not put on the forked tip of the plate, the thread will not be carried any further, totally making the threading impossible.

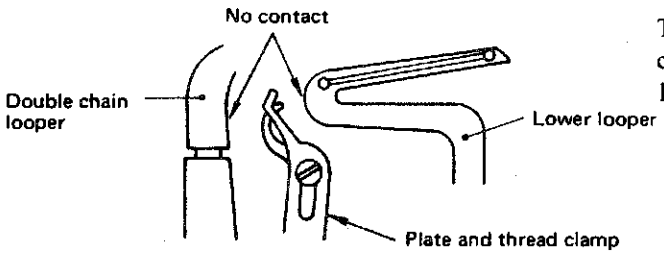
Standard Adjustment

10) Adjusting the cam



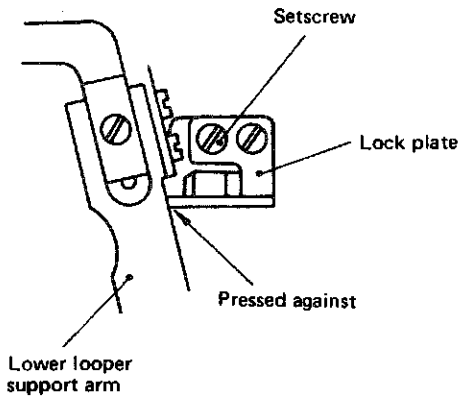
The cam should be adjusted so that the thread clamp takes the thread away from the forked tip of the plate after the forked tip passes by the point just above the threading needle.

11) Adjusting the lever

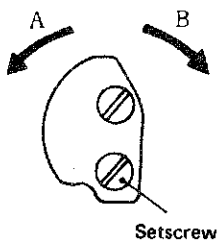
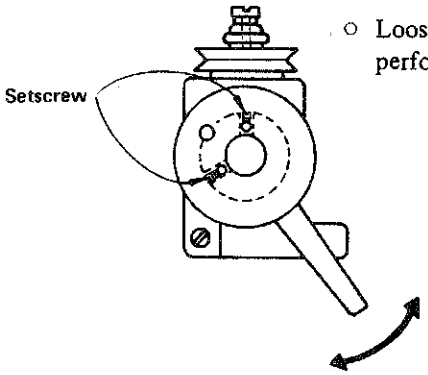


The plate and thread clamp should not come in contact with the double chain looper or lower when looper when the lever is pulled toward you.

12) Adjusting the lock plate

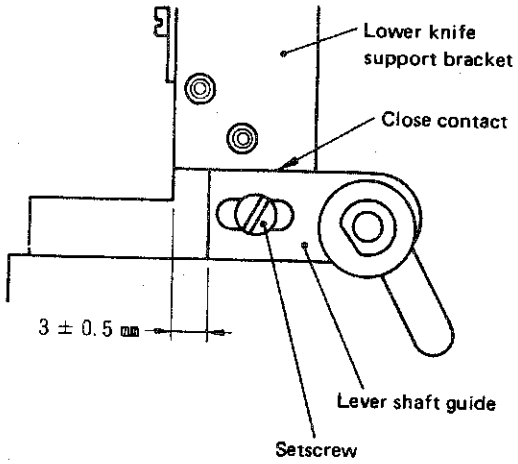


The lock plate should be pressed against the lower looper support arm when the lower looper is at its most retracted position.

Adjustment Procedures	Results of Improper Adjustment
 ○ Loosen the setscrews of the cam to make the adjustment. Tilt the cam if direction A to advance the timing of the thread clamp to catch thread, or tilt it in direction B to delay the timing. (Too much tilt in direction B may make the thread clamp totally unable to clamp thread.)	○ If the thread clamp takes thread away from the forked tip of the plate before the forked tip reaches the point just above the threading needle, the thread will drop before the needle and therefore threading cannot be done.
 ○ Loosen the setscrews of the lever to perform the adjustment.	
○ Loosen the setscrews of the lock plate to make the adjustment.	○ Lack of the lock plate will often lead to failures (most often, damage to the threading needle) since the threader is allowed to be actuated even if the lower looper is not at its most retracted position.

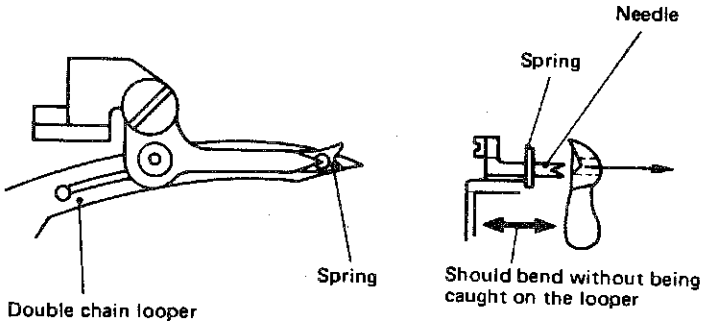
(2) Double chain looper threader

1) Positioning the lever shaft guide



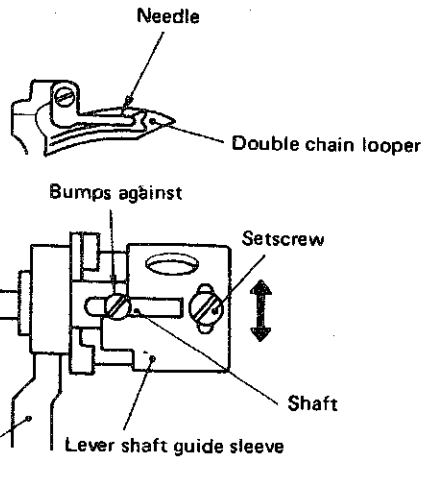
The distance between the lower knife support bracket and the left end of the lever shaft guide should be 3 ± 0.5 mm as shown at left. The upper end of the lever shaft guide should be brought into close contact with the lower knife support bracket.

2) Adjusting the needle and the spring

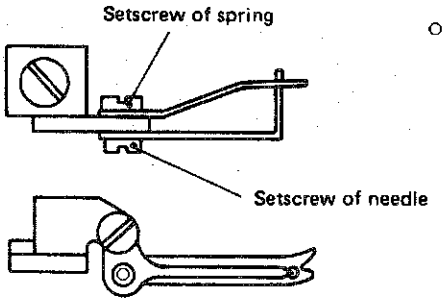


The needle and spring should be adjusted to allow the needle to smoothly enter the hold in the tip of the double chain looper. Further, adjustment should be performed so that the spring bends without being caught on the looper when the needle goes through the hole in the looper.

3) Adjusting the lever shaft guide sleeve

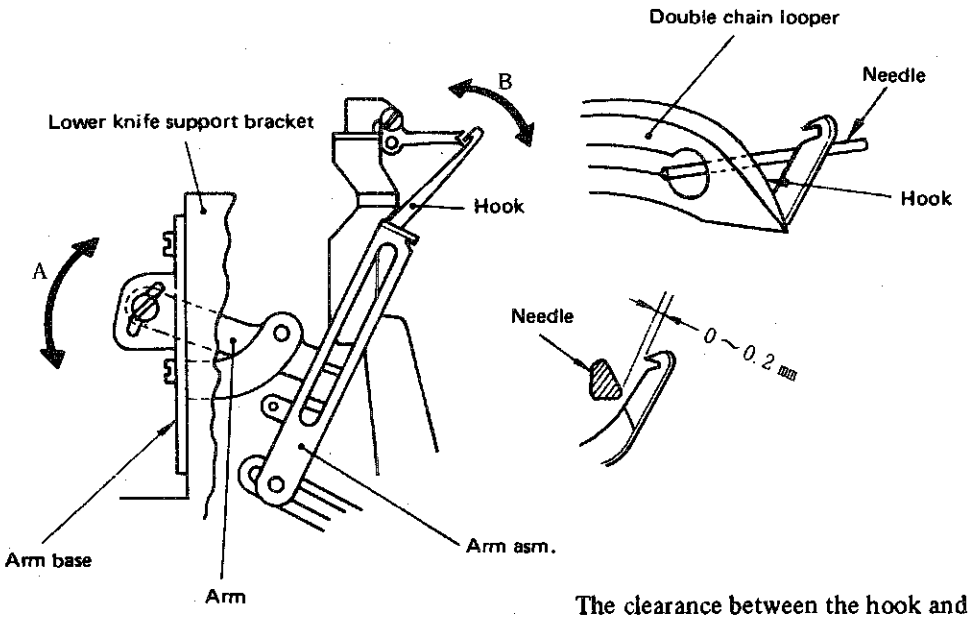


Adjustment should be made so that the shaft bumps against the lever shaft guide sleeve when the lever is turned and the needle aligns with the hold in the tip of the double chain looper.

Adjustment Procedure	Results of Improper Adjustment
○ Loosen the setscrew of the lever shaft guide to perform the adjustment.	○ If the lever shaft guide has been improperly positioned, the spring may fail to catch thread through the left hole in the double chain looper.
 ○ Loosen the needle setscrew and spring setscrew to perform the adjustment.	○ Improperly adjusted needle and spring will prevent threading, and if they are actuated forcibly, the needle may be damaged.
○ Loosen the setscrew of the lever shaft guide sleeve to perform the adjustment.	○ The lever shaft guide sleeve, if adjusted improperly, will prevent the needle from entering the hole in the tip of the double chain looper, making threading impossible.

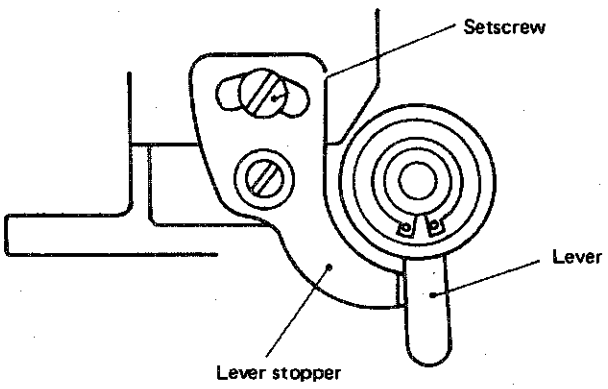
Standard Adjustment

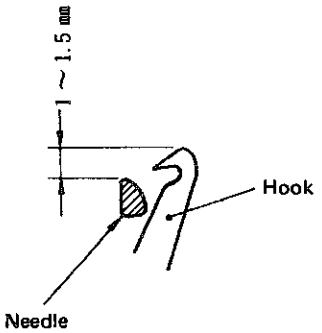
4) Adjusting the hook



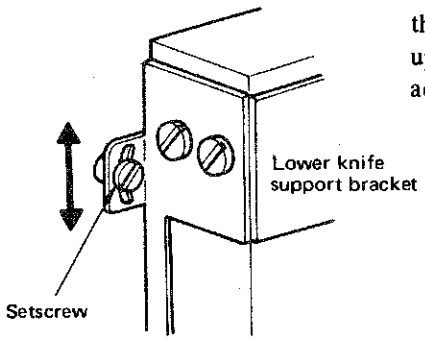
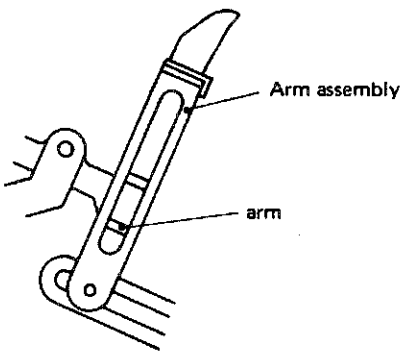
The clearance between the hook and the needle should be 0 to 0.2 mm. The adjustment of the clearance is made by turning the arm in direction A. The hook will move in direction B as the arm is moved in direction A.

5) Adjusting the lever stopper





The lever stopper should be adjusted so that the stopper works at the moment the upper end of the hook has reached a point 1 to 1.5 mm above the upper end of the needle when the lever is turned.

Adjustment Procedures	Results of Improper Adjustment
○ Loosen the setscrew of the arm, and move the arm up or down to make this adjustment.  	○ An excessive clearance between the hook and needle will prevent threading. On the contrary, if the hook is too close to the needle, the needle will catch the hook, preventing smooth return of the hook.
○ To make this adjustment, loosen the setscrew of the lever stopper, which also serves as the setscrew of the chip guard cover (left).	○ The lever stopper is provided to prevent the hook from hitting the throat plate when the lever is powerfully turned, or to prevent the arm from sticking againt the slot in the arm assembly, which will prohibit lever return. 

5. OTHER CAUTIONS

(1) Identifying the tension spring by color

1) Tension of the tension springs

Part No.	Color	Natural length	Working length	Weight required to compress spring to working length
B3101804000	Red	19.5 mm	11.5 mm	430 g ± 50 g
B3102804000	Yellow	17.8 mm	9.8 mm	320 g ± 35 g
B3103804000	Blue	17.3 mm	9.3 mm	150 g ± 20 g
B3121804000	Colorless	(Faint blue)		

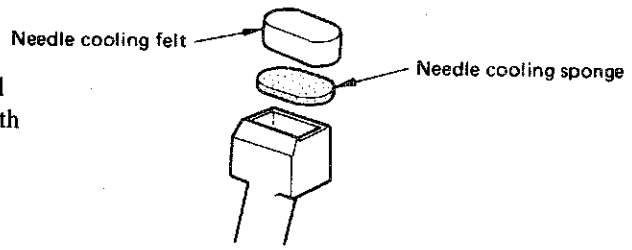
2) Spring used for each model

Model \ Where to use	Needle thread	Double chain needle thread	Upper looper	Lower looper
MO – 2Δ02E–0A4	Red	–	–	Blue
2Δ02E–0D4	Red	–	–	Blue
2Δ03E–0D4	Blue	–	–	Yellow
2Δ04E–0D4	Red	–	Yellow	Blue
2Δ05E–0D4	Yellow	–	Blue	Yellow
2Δ06E–BD4	Colorless, Yellow	–	Blue	Yellow
2Δ07E–DF6	Colorless, Red	–	Blue	Yellow
2Δ12E–CD4	Red, Yellow	–	Blue	Yellow
2Δ14E–ZA5	Yellow, Yellow	–	Yellow	Blue
2Δ14E–BD4	Red, Yellow	–	Yellow	Blue
2Δ15E–BD4	Blue	Yellow	–	Yellow
2Δ16E–DD4	Red	Yellow	Yellow	Blue
2Δ16E–DG4	Red	Red	Blue	Yellow

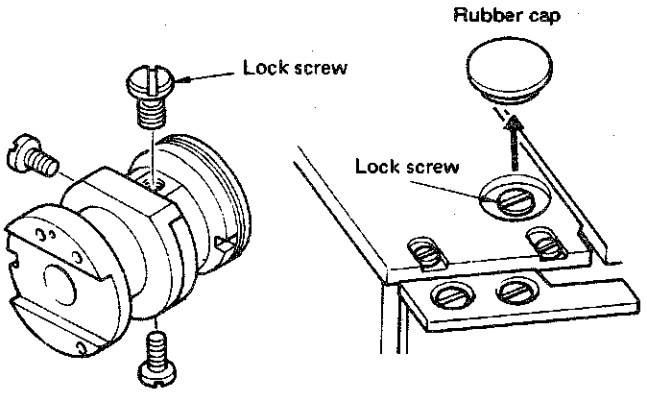
(2) Needle cooler

A machine of these series is provided with a needle cooler to prevent needle thread breakage caused by needle heat. The needle cooling effect may be enhanced by removing the needle cooling sponge in the cooler, which serves to prevent excessive supply of the coolant. However, when the sponge has been removed, the coolant may leak out due to fibrous dust. Therefore, always wipe off such dust around the needle cooling felt.

Whenever adjusting the needle cooler, be careful not to cause the cooler to come into contact with the traveling needle guard.



No problem occurs in normal operation even if the cam is not locked.
(However, locked cam will prevent wear on the cam.)
To lock the feed cam, remove the rubber cap and tighten the lock screw when it comes to the top.
(The lock screw comes to the top when the "L" mark on the machine pulley has nearly reached just the top.)



(4) Additional information on the upper looper

Use a proper upper looper in accordance with the needle No. When ordering, specify the boxed numbers shown in the table at right. The loopers with asterisks will be attached to standard machine heads.

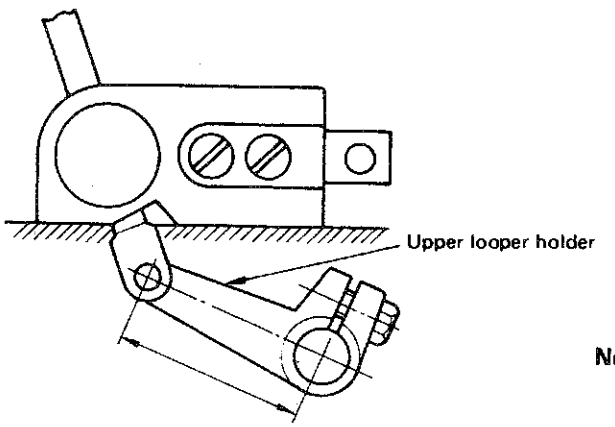
Model	Nos. engraved on upper looper	Needle No.	Upper looper thickness A
1-needle overlock machine	* 1 1 8 8 [8 0]	# 8 ~ # 13	2.2 mm
	1 1 8 8 [8 1]	# 14 ~ # 20	2.1 mm
Safety stitch machine	1 1 8 8 [8 3]	# 21	1.8 mm
2-needle overlock machine	1 1 8 8 [8 1]	# 6 ~ # 8	2.1 mm
	* 1 1 8 8 [8 3]	# 9 ~ # 16	1.8 mm

The following upper loopers in the conventional models MO-800 series may be also used, depending on application.
(The upper loopers are to be used together with their holders)

B2519-804-000 (Upper looper) For MO-2504, 2516
B2519-814-000 (Upper looper) For MO-2514
155-44756 (Upper looper holder)

(5) Center-to-center distance of the upper looper holder

The standard center-to-center distances are as shown below.



MO－2△04 } 38mm
2△16 }
MO－2△14 39mm

For models other than standard

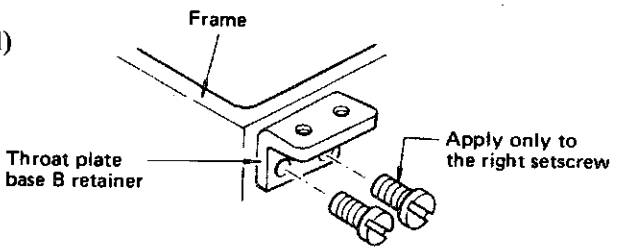
Model	Center-to-center
MO－2△04E－ OF4	39
OH4	〃
OF6	〃
OH6	〃
MO－2△14E－ ZA5	38
XB5	〃
MO－2△16E－ △F△	39
△G△	〃
△H△	〃

Note : See Subclass List for triangular marks △.

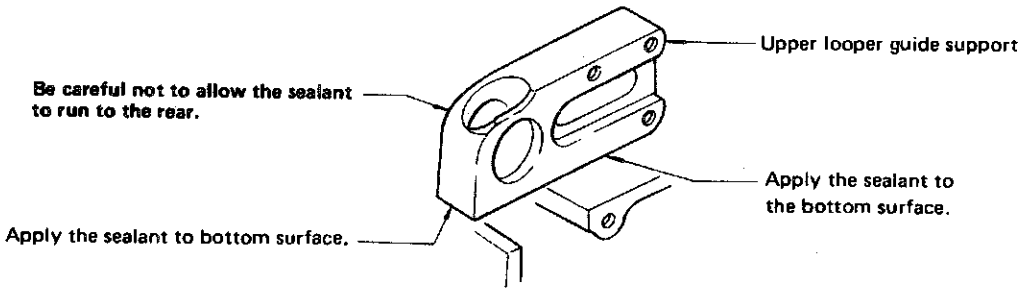
(6) Caution in assembly

1) Application of sealant

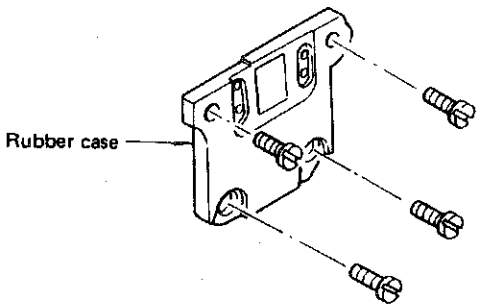
① Setscrew of the throat plate base B retainer (Juki seal)
Apply the sealant only to the right setscrew.



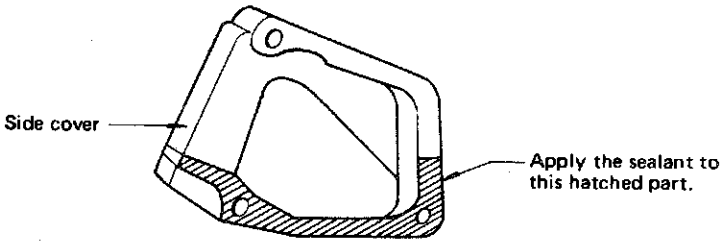
② Bottom surface of the upper looper guide support (Three-bond TB1102)
Apply the sealant to the bottom surface of the upper looper guide support, which contacts with the frame surface.



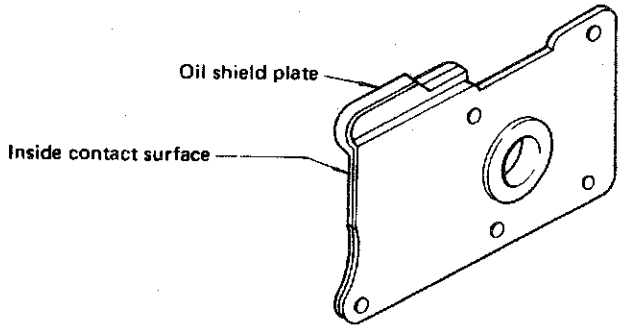
③ Setscrews of the rubber case (Juki seal)
Apply the sealant to the four setscrews.



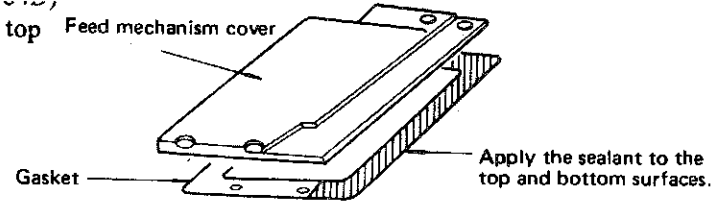
④ Lower part of the side cover (Juki seal)
Apply the sealant to the hatched portion shown at right.



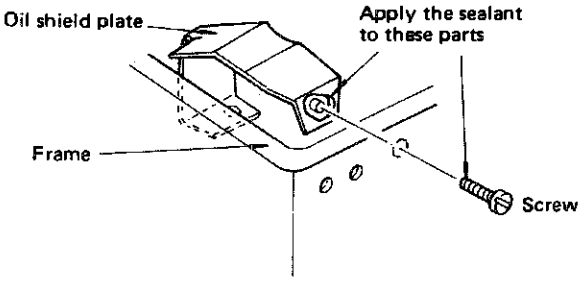
⑤ Oil shield plate assembly (Juki seal)
Apply the sealant to the inside of the oil shield plate.



Apply the sealant to the hatched parts on the top and bottom surfaces of the gasket.



⑦ Oil shield plate (Juki seal)
Apply the sealant to the area around the screw hole in the oil shield plate and to the tip of the screw.

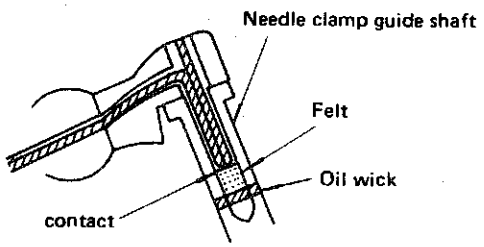


2) Caution in lubrication

① Needle clamp guide shaft assembly

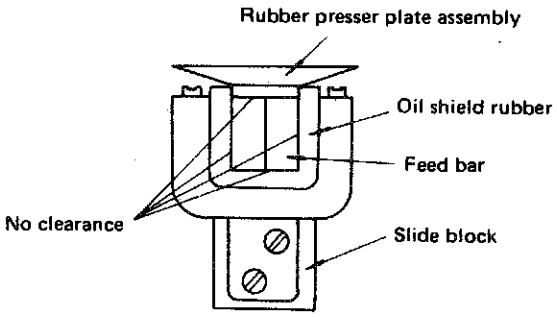
- Make sure to bring the oil wick into contact with the felt.
- The oil wick is slightly shorter than the bore of the guide shaft. Push the oil wick into the bore so that it is placed evenly on either side.

Note : The oil wick shall not extend beyond the outer diameter of the needle clamp guide shaft.



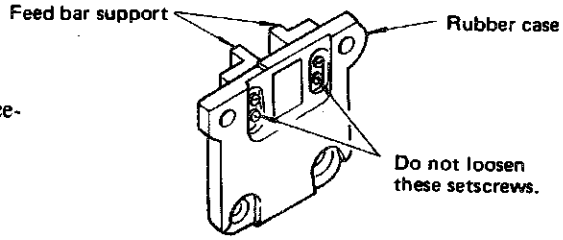
② Feed bar assembly

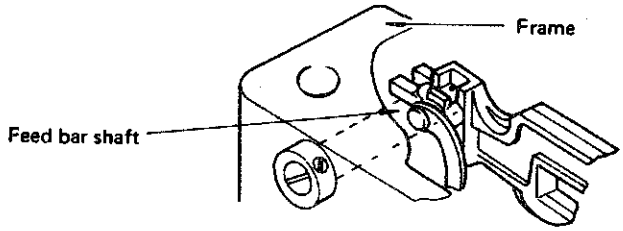
- Make the rubber presser plate assembly flush with the upper side of the feed bar.
- Set the oil shield rubber on the slide block so that it contacts evenly with the lower side of the feed bar and is evenly positioned on the right and left. Ensure that no clearance is left vertically and laterally.



- Avoid loosening the setscrews of the feed bar support so as not to disturb the clearance between the support and the feed bar. If its setscrews should be loosened, attach the support very carefully not to leave any clearance or uneven contact.

To adjust the needle entry point after gauge replacement, move the feed bar support to the right or left together with the rubber case, and laterally move the feed bar shaft on the back for further adjustment as required.

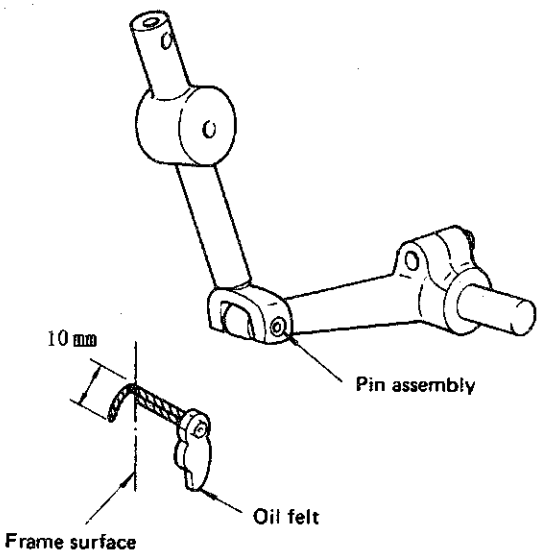




③ Upper looper guide assembly

- Be sure to cut the oil wick in the pin assembly at the both ends of the pin assembly. (The oil wick should not extend beyond the both ends of the pin assembly.)

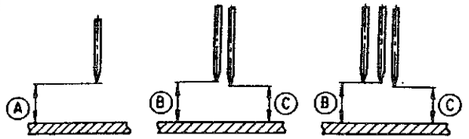
- The oil felt is lubricated by the oil wick in the frame.
  Take care not to make the oil wick too long.
  Space the oil wick 10 mm from the frame inner surface, and make the folded-back oil wick flush with the frame surface.



6. ADJUSTMENT OF THE NEEDLE HEIGHT AND LOOPER TIMING

Needle height

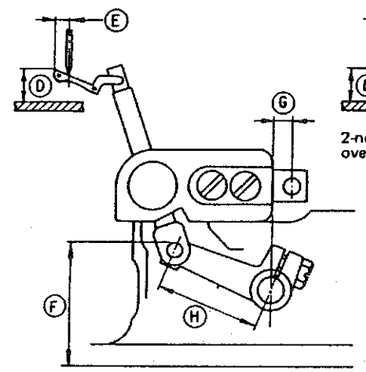
1-needle overlock machine/ safety stitch machine



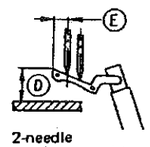
2-needle overlock machine

3-needle safety stitch machine

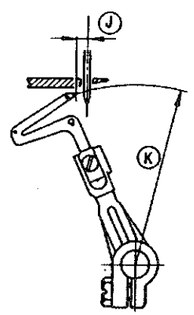
Upper looper components



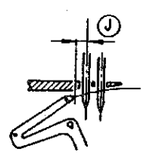
2-needle overlock machine



Lower looper components



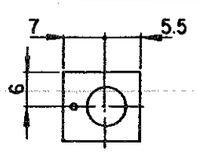
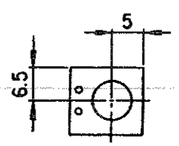
2-needle overlock machine



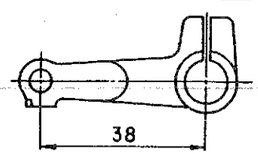
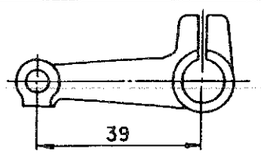
Classification	Subclass	Description	Needle height: 1-needle 2-needle (left) Ⓐ Ⓑ	Needle height: 2-needle (right) Ⓒ	Upper looper components: Upper looper height (central value) Ⓓ	Upper looper components: Projection of upper looper Ⓔ	Upper looper components: Height of pin asm. Ⓕ	Upper looper components: Position of guide support Ⓖ	Upper looper components: Center-to-center of looper arm Ⓗ	Upper looper components: Center-to-center of looper arm Ⓗ	Lower looper components: Return of lower looper (central value) Ⓙ	Lower looper components: Radius of lower looper Ⓚ	Double-chain looper components: Return of ⌣	Double-chain looper components: Radius of ⌣
1-needle overlock machine	2Δ04E	OA5 ~ OF5 OA4 ~ OE4 OD6	10	–	11	4	45.02	7	38 (11831401)	–	4	66.4	–	–
	2Δ04E	OF4 ~ OH4 OF6 ~ OH6	10	–	11	4	46.9	6.5	–	39 (11831500)	4	66.4	–	–
	2Δ04E 4A0	OF6	9.5	–	10.2	4.5	47.3	5.5	–	39 (11831500)	3.5	66.9	–	–
2-needle overlock machine	2Δ14E	ZA5 XB5	10	10	11.3	4	45.02	7	38 (11831401)	–	3.5	66.4	–	–
	2Δ14E	AB4 ~ AD4	10	9.7	10.7	4.8	46.69	7	–	39 (11831500)	4	66.4	–	–
	2Δ14E	BB4 ~ BD4 BD6	10	8.6	10.7	4.8	46.69	7	–	39 (11831500)	4	66.4	–	–
	2Δ14E	BE4 BE6	10	8.6	10.5	4.3	47.3	6.5	–	39 (11831500)	3.2	66.4	–	–
	2Δ14E □□7	BD4 ~ BE4 BD6 ~ BF6	10	8.6	10.3	4.3	47.3	6	–	39 (11831500)	3.5	66.4	–	–
	2Δ14E 4A0	BD6 BD7	9.5	8.1	10.2	4.5	47.3	5.5	–	39 (11831500)	3.5	66.9	–	–
	2Δ14E	CD4 CD6	10.2	8.8	10.5	4.3	47.3	6.5	–	39 (11831500)	3.2	66.4	–	–
	2Δ12E	CD4 CD6	10.5	9.1	10.3	For the right needle 4.3	46.6	5.5	–	39 (11831500)	3.5	66.4	–	–
	2Δ12E	CF6	10.5	9.1	10.8	For the right needle 3.6	46.6	6	–	39 (11831500)	2.2	66.4	–	–
	2Δ12E	DD6 ~ DF6	10.5	8.9	10.8	For the right needle 4.3	46.6	6	–	39 (11831500)	2.2	66.4	–	–
Safety stitch machine	2Δ16E	~ ΔE4 ~ ΔE6	10	–	11	4	45.02	7	38 (11831401)	–	4	66.4	1.8 ~ 2	63.2
	2Δ16E	ΔF4 ~ ΔH4 ΔF6 ~ ΔH6	10	–	11	4	46.9	6.5	–	39 (11831500)	4	66.4	1.8 ~ 2	63.2
	2Δ16E	RH6 MF7	10	–	11	4	46.9	5	38 (11831401)	–	3.5	66.4	1.8 ~ 2	63.2
	2Δ43E	DBD6 BBD6 FBD6	10	8.6	10.2	4.5	47.3	6.5	–	39 (11831500)	4	66.4	1.8 ~ 2	63.2
	2Δ43E 307	DBD6 BBD6 FBD6	10	8.6	10.3	4.3	47.3	6	–	39 (11831500)	3.5	66.4	1.8 ~ 2	63.2
	2Δ45E	DD4, ED4	10	–	–	–	–	–	–	–	–	–	2 ~ 2.5	63.2

(Note)
All dimensions are in millimeter.

Gauge

11831807	11893609
	
Standard, 2Δ12E, 2414E-BD7 for wool	For heavy-weight materials and large overedge width 2Δ16E-RH6

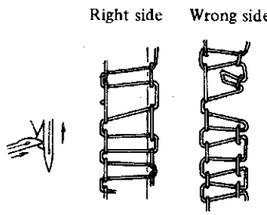
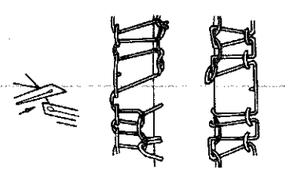
Looper holder

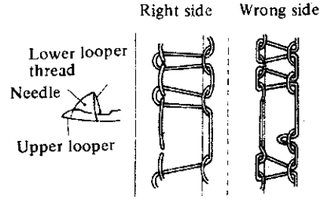
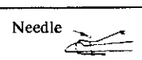
11831401	11831500
	
Standard, 2Δ16E-RH6	For 2-needle overlock machines, heavy-weight materials, and large overedge width

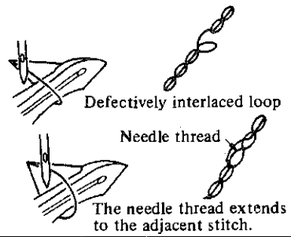
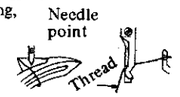
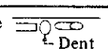
8. TROUBLES AND CORRECTIVE MEASURES

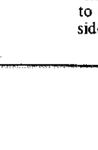
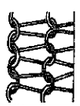
(1) Main unit components

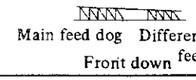
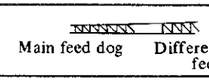
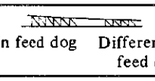
Trouble	Case (1)	Case (2)	Check and Corrective measures	Relevant page
1. Needle thread breakage	Threading	The thread is entangled with the thread guide, or the machine head has been incorrectly threaded.	Refer to the threading diagram.	
	Thread path	Scratches, burrs or rust on the pawls or needle holes of the throat plate, stitch tongue, lower looper, double chain looper, needle thread take-up, needle thread presser spring, thread guide, or tension discs causes friction.	Remove such scratches, burrs, etc. and perform thread path finishing. Replace major components such as looper, which have been deformed, causing thread breakage.	
	Needle guard	The needle hits the needle guard intensely, and sharp edges are produced on them, causing thread breakage.	Replace the needle and needle guard if they have worn.	14
	Needle	The needle is too thin for the thread.	Replace the needle by a proper one.	
	Needle heat	The needle gets very hot, depending on the type of materials, number of plies and sewing speed, and causes the thread to burn and break.	Use a thinner needle. Reduce the sewing speed. Use the needle cooler. Use an S-point needle or needle for synthetic thread.	42
	Thread	The thread is weak because of its poor quality.	Replace the thread by one with good quality.	
	Thread tension	The thread tension is too high.	Reduce the thread tension. Check whether the needle thread take-up guide and needle thread guide are positioned too high, causing such excessive thread tension.	
	Contact	The double chain looper or lower looper has been improperly positioned and strikes the feed dog or throat plate.	Properly position the double chain looper or lower looper.	6, 12
	Needle thread clamp (only for double chain stitch)	A sharp edge has been produced on the tip of the needle thread clamp	Remove the sharp edge using buff or the like, and eliminate the cause for the sharp edge.	
	Double thread hooking (only for double chain stitch)	Poor drawing up of the needle thread causes the looper to catch it again	Increase the needle thread tension. Properly position the thread cam	20
	Deffective double chain-off thread (only for double chain stitch)	Refer to the clause referring to defective double chain-off thread.		
2. Looper thread breakage	Threading	The thread is entangled with the thread guide, or the looper has been incorrectly threaded.	Refer to the threading diagram.	
	Thread path	Scratches, burrs, rust, etc. on the pawl of the throat plate, stitch tongue, looper, looper thread take-up, thread guide, or tension discs causes friction.	Remove such scratches, burrs, etc. and carry out thread path finishing. Replace loopers or other components which have been deformed, causing thread breakage.	
	Adjustment of the looper thread take-up	The looper thread take-up or thread guide has been improperly positioned, causing excessive thread tension.	Refer to the pertinent Standard Adjustment.	24, 25
	Thread tension	The looper thread tension is too high.	Reduce the tension while checking the tension balance other looper thread.	
	Thread	The thread is weak because of its poor quality.	Replace the thread by one with good quality.	
	Position of the thread guides	The upper looper thread guide is too high, and the thread taking balance is disturbed, resulting in the thread breakage.	Refer to the pertinent Standard Adjustment.	24
	Double chain looper avoid (only for double chain stitch)	The double chain looper strikes the needle at the back, causing the thread breakage.	Correct the longitudinal motion of the double chain looper so as not to cause the looper to strike the needle.	12
	Needle heat	The needle gets hot, and the looper thread breaks when it comes in contact with the hot needle at the time of needle stop.	Refer to the clause relating to the needle heat causing needle thread breakage.	

Trouble	Case (1)	Case (2)	Check and Corrective measures	Relevant page
3. Needle breakage	Needle entry	The needle entry has not been correctly adjusted, and the needle strikes the throat plate or presser foot.	Correct the needle entry.	4
	Upper looper position	The upper looper juts out too much or it is too low.	Refer to the related Standard Adjustment.	8
	Contact with the looper	The needle strikes the looper, resulting in needle breakage.	Re-position the looper so that it does not come in contact with the needle. Adjust the longitudinal motion of the double chain looper for the contact of its back with the needle.	12
	Needle guards	A needle guard has been improperly positioned, causing the needle point to strike it.	Refer to the pertinent Standard Adjustment.	14
	Needle No.	The needle is too thin for the materials.	Replace the needle with a thicker one.	
	Thread tension	The thread tension is too high.	Reduce the thread tension.	
	Height of the feed dog or needle	The feed dog is too high, or the needle is too low, causing the needle to deflect with resultant needle breakage.	Refer to the related Standard Adjustment.	4, 16
4. The needle point is crushed. (Double chain stitch needle)	Needle guard	The needle guard C is too low, or its longitudinal position is not correct.	Increase the height of the needle guard C. Check the clearance between the needle and needle guard.	14
	Contact with the looper	The tilt of the looper is not correct. The longitudinal motion of the looper is not correct.	Check the tilt of the looper. Correct the longitudinal motion of the looper, and increase the clearance between the looper and needle when the looper reaches its most retracted position.	12
5. Overlocking needle thread stitches are skipped. The lower looper fails to catch needle thread loops. Right side Wrong side 	Lower looper	The blade point has defective shape and does not catch needle thread loops.	Replace the lower looper	
	Adjustment of the loopers.	The clearance or the amount of return is not correct.	Refer to the relevant Standard Adjustment.	6
	Needle thread presser	The duration in which the presser holds the needle thread is not correct, and unstable loop result.	Refer to the pertinent Standard Adjustment.	22
	Needle	The needle is bent or improperly oriented. A needle or DC x 1 is used.	Replace the bent needle. Correctly orient and attach the needle. Use a DC x J27 needle for a stretchy thread.	
	Needle guards	Incorrect height or clearance prohibits correct guide for the needle. If a needle guard is too high, loops are crushed with consequent stitch skipping.	Refer to the pertinent Standard Adjustment.	14
	Height of needle	The needle has incorrect height and does not properly pick up loops even if the looper has a correct return.	Refer to the related Standard Adjustment	4
	Needle heat	Stitch skipping occurs before the thread breaks due to needle heat.	Refer to the clause relating to the needle thread breakage due to needle heat.	42
	Positioning of the needle thread take-up guide and needle thread guide	They are positioned too high, and the needle thread take-up takes too much thread, producing too small loops.	Refer to the pertinent Standard Adjustment.	24
	Threading	The thread has been entangled with a thread guide. Threading has not been correctly done.	See the threading diagram.	
6. Lower looper stitches are skipped. The upper looper does not catch the lower looper thread. Right side Wrong side 	Upper looper	The blade point has a bad shape, and fails to catch the loops.	Replace the upper looper with badly deformed blade point.	
	Lower looper	The dimensions shown at right are not correct.	Replace the lower looper having a deformed tip.	
	Adjustment of the loopers	The feed amount of the lower looper, height of the upper looper, or clearance produced at time of crossing of the upper and lower loopers is not correct.	Refer to the relevant Standard Adjustment.	6
	Thread amount	Too much lower looper thread is fed, giving slack of thread. Slack of thread	Slightly lower the looper thread take-up (left) (reduction in distance G), or slightly reduce distance F to decrease the amount of thread.	24
			Slightly raise the looper thread take-up (right) (increase in dimension K) to decrease the amount of thread. Lower the lower looper thread guide (increase in distance I), and decrease distance J to reduce the amount of thread.	24
	Threading	The thread has been entangled with a thread guide. Threading has not been done correctly.	Refer to the threading diagram.	

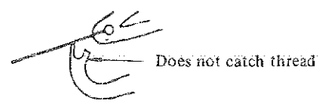
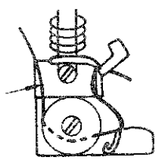
Trouble	Case (1)	Case (2)	Check and Corrective measures	Relevant page
7. Upper looper thread stitches are skipped. The needle does not take the upper looper thread. 	Threading	The thread has been entangled with a thread guide. Threading has not been done correctly.	See the threading diagram.	
	Needle height	The needle, if positioned too high or low, may fail to catch the upper looper thread.	Refer to the related Standard Adjustment.	4
	Needle	The needle is bent or crushed.in its point.	Replace the needle. At this time, be sure to eliminate the cause for such needle bend or needle point crush.	
	Adjustment of the upper looper.	The height of the blade point is not correct, making the upper looper unable to properly pass the thread to the needle. The clearance between the needle and the back of the upper looper is not correct.	Refer to the relevant Standard Adjustment.	8
	Amount of thread	Excessive upper looper thread is fed, producing slack of thread. 	Slightly lower the looper thread take-up (reduction in distance G) or slightly reduce distance F to decrease the amount of thread. Make the upper looper thread guide (right) shorter decrease in distance H) to reduce the amount of thread.	24
			Slightly raise the looper thread take-up (right) (increase in distance K) to decrease the amount of thread.	24
			If the thread tension is not enough, increase it.	
8. Double chain stitches are skipped. The double chain looper fails to catch needle thread loops. 	Needle height	If the needle height is not correct, stitch skipping occurs even when the return of the chain looper is correct.	Refer to the pertinent Standard Adjustment.	4
	Needle	The needle is bent or attached with wrong orientation. A DC x 1 needle is used.	Replace the bent needle. (Remove the cause for the needle bend.) Correct the orientation of the needle. Use a DC x 27 needle (with a better recess configuration).	
	Double chain looper	The lower part of the blade point has been deformed, and the blade point fells loops.	Replace the double chain looper.	
	Adjustment of looper	Clearances or returning amount is not correct.	Refer to the related Standard Adjustment.	12
	Thread tension	The thread tension is too high, preventing formation of good loops.	Reduce the tension. However, be careful not to reduce the tension too much, otherwise unstable loops will result.	
	Needle guards	A needle guard is too high, and loops are crushed. The clearance is too big, causing the needle to shake.	Refer to the relevant Standard Adjustment.	14
	Needle heat	The thread breaks due to heat generated on the needle, depending on the type of materials, number of plies, and sewing speed.	Use a thinner needle. Reduce the sewing speed. Check the coolant if necessary.	
9. Triangle double chain looper thread stitches are skipped. The needle fails to catch the double chain looper thread. 	The needle point is crushed.	The needle point has been crushed and got thicker and shorter.	Refer to the clause relating to the needle point crush.	
	Double chain looper	The thread hole in the tip has worn, and the looper thread does not reach the needle as shown at right. 	Replace the double chain looper.	
	Adjustment of looper	Excessive return or longitudinal motion will often cause this stitch skipping.	Refer to the pertinent Standard Adjustment.	12
	Thread cam timing	The thread cam timing is too early, causing the looper thread to slack before the needle enters a thread triangle.	Refer to the pertinent Standard Adjustment.	20
	Thread tension	The lower thread tension is very low, and the thread is not stretched.	Increase the thread tension a little.	
	Threading	The area around the thread cam has been threaded erroneously.	Correct the threading.	

Trouble	Case (1)	Case (2)	Check and Corrective measures	Relevant page
10. Triangle double chain needle thread stitches are skipped. The needle fails to catch the needle thread loop on the double chain looper, resulting in the stitch skipping shown below.  	Double chain looper	The chain looper is too high and too close to the throat plate, or has bad shape as shown at right.  	Correct the height of the chain looper by pushing it down until it comes into contact with the stopper. Replace the chain looper having a bad shape.	
	Adjustment of looper	The return is not enough, causing the needle to miss the loop as shown at right.  	Refer to the related Standard Adjustment.	12
	Needle thread clamp	The position or tension of the clamp is not correct. If the spring of the clamp has been broken, the needle thread will slack, causing skipped stitches.	Correctly position the needle thread clamp so that it holds needle thread until the needle point reaches the point above the looper. 	
	Thread tension	The needle thread tension is too low.	Slightly increase the needle thread tension.	
	Stitch length	The stitch length is as small as 1.5 mm or less.	Increase the stitch length.	
	Needle guard	A needle guard is too high, and catches needle thread loops.	Refer to the related Standard Adjustment.	14
11. Overlocking chain-off thread is bad. (Provided that no chain-off trouble occurred when sewing operation was done with materials set on the machine.)	Position of the throat plate	The throat plate has been improperly positioned longitudinally, and chain-off thread gets in between the main feed dog and throat plate, causing defective chain-off thread.	Correct the position of the throat plate.	
	Feed dog	The auxiliary feed dog has scratch.	Repair or replace the auxiliary feed dog.	
		The auxiliary feed dog is too high, and interferes with chain-off thread. The auxiliary feed dog is too low. (Lower than the main feed dog by more than 0.5 mm)	Refer to the pertinent Standard Adjustment.	16
	Adjustment of looper	Adjustment of loopers for producing chain-off thread without materials requires higher accuracy.	Refer to the relevant Standard Adjustment.	6, 8, 10
	Thread tension	The thread tension is too low.	Slightly increase the tension.	
		The needle thread tension is too high, causing damaged balance with other thread tension.	Check whether the needle thread take-up guide or needle thread guide is positioned too high with consequent excessive needle thread tension. And if so, correct it.	24
12. Problems with double chain stitch chain-off thread	Adjustment of loopers	Adjustment of the loopers for producing chain-off thread without materials requires higher accuracy.	Refer to the related Standard Adjustment	12
	Needle Guard	The needle guard C is too high, damaging loops.	Refer to the related Standard Adjustment.	14
	Needle thread clamp	Eigher the position or clamping pressure of the needle thread clamp is wrong, causing the clamp to release the thread before the needle point enters a thread triangle. (Should hold thread until needle enters thread triangle)  	Refer to the pertinent Standard Adjustment.	22
	Position of the throat plate	The needle comes into contact with the front edge of the needle hole in the throat plate.	Correctly position the throat plate.	
		The lateral position of the throat plate with respect to the feed dogs is wrong, causing chain-off thread to drop in. 		
	Throat plate	A dent exists on the flat part between the rear edge of the needle hole and feed dog groove.  	Repair or replace the throat plate, since such dent causes chain-off thread to slip out.	
	Presser foot	The rear pressure foot is indented and not flush with the presser foot sole, so that it cannot hold chain-off thread.	Replace it, or correct it to make it flush with the presser foot sole.	
	Main feed dog	The leading edge of the main feed dog is too sharp and cuts chain-off thread.	Buff the leading edge of the main feed dog.	
	Double hooking	The needle thread is not drawn up fully because of the insufficient return insufficient return of the double chain looper or wrong threading.	Refer to the related Standard Adjustment for the return of the double chain looper. See the threading digram for correct threading.	12
	Thread tension	The needle is bend or chain-off thread runs back due to excessive needle thread tension.	Reduce the needle thread tension.	
		Both the needle thread and looper thread tension are too low.	Slightly increase the both tensions.	

Trouble	Case (1)	Case (2)	Check and Corrective measures	Relevant page
13. Overlocking needle thread is loose.	Position of the needle thread take-up guide and needle thread guide	They are positioned too high, and the thread take-up draws out excessive needle thread.	Refer to the pertinent Standard Adjustment.	24
	Thread tension	The thread tension balance has been disturbed.	Refer to the Standard Adjustment for the looper thread take-up components, and increase the tension if necessary.	
	Needle	The needle is too thin for the thread used.	Replace it with a proper one.	
14. Double chain stitch needle thread is loose.	Thread tension	The looper thread tension is too high, and the needle thread tension is too low.	Reduce the looper thread tension to a minimum, and increase the needle thread tension.	
	Thread cam	The thread cam draws out an insufficient amount of thread.	Refer to the relevant Standard Adjustment.	20
		The thread cam timing is bad.	Refer to the relevant Standard Adjustment.	20
	Needle	The needle is too thin for the thread used.	Replace the needle with a proper one.	
15. Uneven overlocking stitches	Looper thread tension	The upper and lower looper thread tensions are not enough.	Slightly increase the upper and lower looper thread tensions.	24
The knotting position of the upper and lower threads varies as shown below. 	Looper thread take-up	The looper thread take-up (left) is too high.	Slightly lower the looper thread take-up (left)	24
	Knife width	The knife width is unsuited for the overedging width.	Make the overedging width slightly smaller than that given for the knife width.	18
	Thread path	Scratches on the thread path catch thread.	Check the thread path for scratches.	
	Presser foot	The presser foot comes into contact unevenly with the throat plate and feed dogs and tends to meander.	Make the presser foot come into contact with them evenly.	18
16. Uneven double chain stitches	Thread tension	The looper thread tension is not enough.	Slightly increase the tension.	
	Presser foot	The presser foot comes into contact with the throat plate unevenly.	Make the presser foot come into contact with the throat plate evenly.	
		The presser foot pressure is not enough.	Increase the presser foot pressure.	
	Knife width	The material is pulled because of the knife width unsuited to the overedging width.	Make the overedging width slightly smaller than that gives for the knife width.	
17. The looper thread bulges out	Knife width	The knife width is too small for the overedging width.	Use a knife having width suited to the overedging width.	
	Looper thread take-up adjustment	The looper thread take-up draws out excessive looper thread.	Decrease the radius of the looper thread take-up (left) (reduction in dimensions F). Raise the looper thread take-up (right) (increase in distance K)	24
18. Looper thread bite	Knife width	The knife width is too large for the overedging width.	Use a knife having width suited to the overedging width.	
	Adjustment of the looper thread take-up	The looper thread take-up draws out insufficient amount of looper thread.	Increase the radius of the looper thread take-up (left) (increase dimension F). Lower the looper thread take-up (right) (reduction in distance K)	24
19. Knotting position is not correct.	Threading	Re-threading after thread breakage, etc. has been done erroneously.	See the threading diagram.	
Right side  Knots are deflected to the upper looper side.	Adjustment of the looper thread take-up	The height of the looper thread take-up (left) is not correct.	Raise the looper thread take-up (left) to increase the amount of upper looper thread, and the knotting position moves toward the lower looper side.	24
		The upper looper thread guide (right) is too short.	Increase distance H.	24

Trouble	Case (1)	Case (2)	Check and Corrective measures	Relevant page
20. Uneven material feed	Presser foot pressure	The presser foot pressure is too high.	Reduce the presser foot pressure except for the uneven material feed due to puckering.	
	Presser foot	The hinge is too stiff.	Remove the stiffness provided no hinge play is produced.	
		Scratches on or defective finish on the presser foot sole produce friction between the presser foot and materials.	Buff the presser foot sole for good surface finish.	
	Tilt of feed dogs	The front is too high.	Make the front down. However, be sure to align the differential feed dog with the main feed dog. 	16
	Height of feed dogs	A different in level exists between the main feed dog and differential feed dog.	Eliminate the difference in level.	
	Adjustment of differential feed	The differential feed has been improperly adjusted.	Provide differential feed suited to the material.	
21. Puckering (main concerned with double chain stitch)	Needle	The needle is too thick.	Use a thin needle as much as possible.	
	Thread	The thread used is too thick.	Use a thin thread as much as possible.	
	Thread tension	Both the needle thread and looper thread tensions are too high.	Reduce the both thread tensions to a minimum.	
	Throat plate	The throat plate has a large needle hole.	Replace the throat plate with one with a small needle hole.	
	Thread cam timing	The thread cam timing is too late.	Advance the cam timing. Refer to the related Standard Adjustment.	20
	Feed dogs	The leading edge of the feed dog teeth has been rounded off.	Replace the feed dog.	
		The feed dogs are tilted with their front up. 	Tilt them with their front down. 	
		A difference in level exists between the main feed dog and differential feed dog.	Eliminate such difference in level.	
	Presser foot pressure	The presser foot pressure is not high enough, providing poor ironing effect.	Increase the presser foot pressure.	
	Differential feed ratio	The differential feed ratio has been set for gathering.	Set it for stretching. When stretching light-weight materials, be careful not to cause the presser foot to contact unevenly with the materials.	
	Thread amount	The looper thread amount is not enough, causing excessively tensed stitches.	Bring the thread cam thread guide fully to the front to increase the amount of looper thread.	20

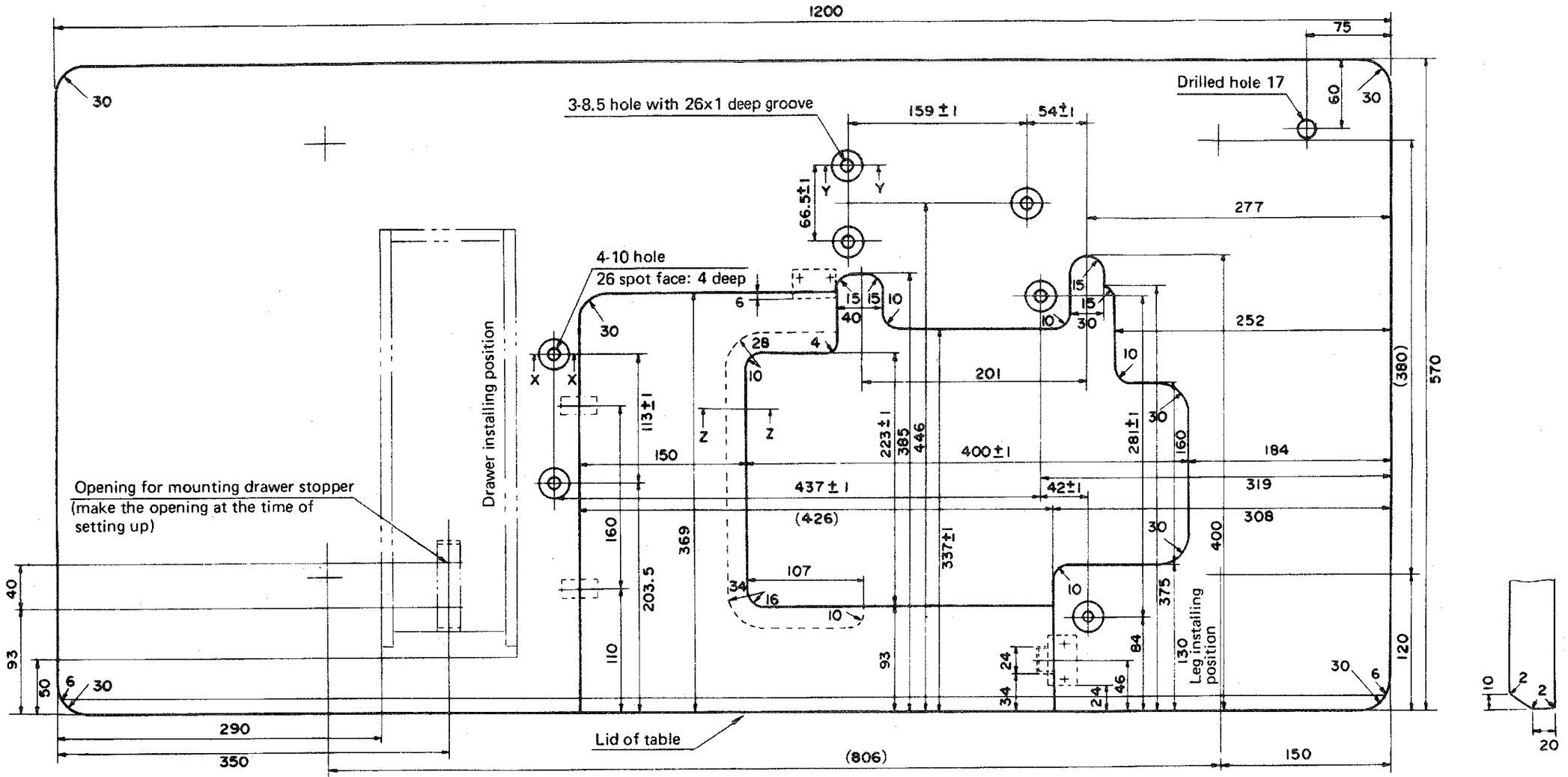
(2) Threader components

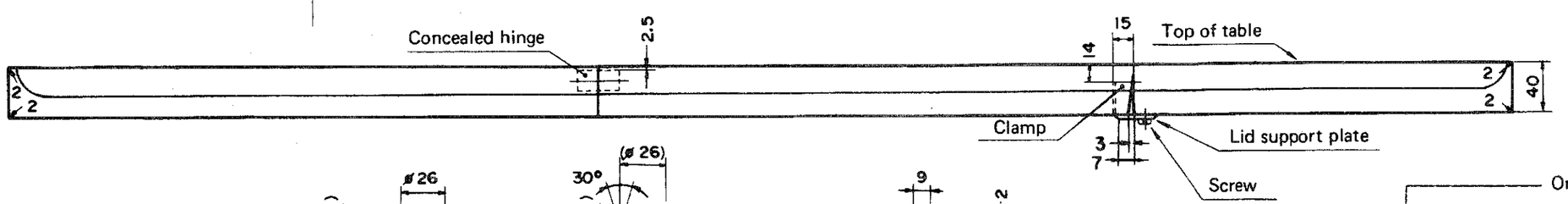
Trouble	Case (1)	Case (2)	Check and Corrective measures	Relevant page
1. The lower looper threader fails to do threading.	1-1) The plate does not carry the thread.	1)-A The plate does not catch the thread. 	Correct the height of the thread guide.	34
		1)-B The threading lever has a play.	Remove the play by the pin stopper.	34
	1-2) The thread clamp does not take thread from the plate.	2)-A The thread clamp comes into contact with the threading needle. (Too much tilt of the threading needle)	Loosen the setscrew of the guide cover, and correct the tilt of the threading needle.	30
		2)-B The thread clamp or the plate strikes the feed dogs.	Lower the stopper.	30
		2)-C The plate strikes the threading needle.	Raise the stopper.	28
		2)-D Contact of the plate with the threading needle.	Shift the position of the holder. (Move it in direction opposite from the pulley.)	28
		2)-E The cam has been improperly positioned.	Tilt the cam in the arrowed direction. 	36
	1-3) The hooked tip of the threading needle does not come out of the hole in the lower looper.	3)-A The height of the threading needle with respect to the lower looper hole is not correct.	Correct the height of the guide base.	30
		3)-B The threading needle has been improperly positioned laterally with respect to the lower looper hole.	Correct it by moving the stud to the right or left.	32
	1-4) The hooked tip of the threading needle does not come between the plate and thread clamp.	4)-A The tilt of the threading needle is not enough.	Loosen the setscrew of the guide cover, and correct the tilt.	30
		4)-B The plate and thread clamp come to the front beyond the looper.	Move back the holder	28
	1-5) The thread clamped by the thread clamp is not placed onto the threading needle	5)-A The cam has been improperly positioned.	Tilt the cam in the arrowed direction 	36
		5)-B The forked tip of the plate does not reach the point above the threading needle.	Move the holder to the right (toward the pelley.)	28
		5)-C The thread slips off the tension discs.	Correctly set the thread on the tension discs. Enough care should be exercised when using a thick thread. Securely set thread on tension discs. 	
	1-6) The threading needle does not hook thread	The hooked tip has been damaged.	Replace the threading needle.	

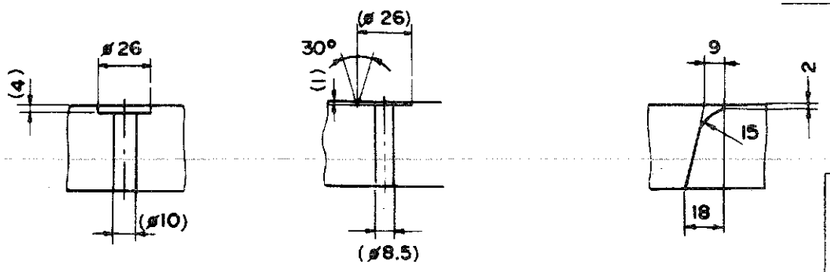
Trouble	Case (1)	Case (2)	Check and Corrective measures	Relevant page
2. Stitches are not produced immediately after the lower looper threader is operated.	2-1) Threading has not been done.	See 1.		
	2-2) Thread slips off the threading needle.	The cover does not securely hold the hooked tip of the threading needle.	Loosen the guide cover setscrew, and correct it.	32
3. Troubles with the lower looper threader lever	3-1) The threader lever cannot be pulled at all.	1)-A The pin sticks against the holder.	Loosen the setscrew of the lever, and correct the sticking.	
		1)-B The pin sticks against the pin stopper.	Loosen the setscrew of the pin stopper to correct it.	
		1)-C The threading needle sticks against the guide cover.	Correct it by adjusting the needle link stopper. (Put the stopper into operation earlier.)	32
	3-2) The threader lever can be drawn halfway towards the operator.	2)-A The threading needle comes into contact with the main feed dog.	Change the position of the stud.	32
		2)-B The plate or thread clamp come into contact with the lower looper or double chain looper.	Loosen the setscrew of the lever, and make correction.	36
		2)-C The lock plate strikes the lower looper holder.	Change the position of the lock plate.	
	3-3) The lever threader cannot be turned even if it can be fully drawn toward the operator.	The pin juts out from the lever too much.	Loosen the setscrew of the pin to correct it.	34
4. The lower looper threader does not return to its original position after operation.	4-1) The plate and thread clamp do not return.	The threader is clogged with dust.	Clean the threader using compressed air.	
	4-2) The lever turns but does not return to its original position.	The pin sticks against the holder.	Loosen the setscrew of the lever to eliminate the sticking.	
5. The double chain looper fails to do threading.	5-1) The spring does not catch the thread.	1)-A The lever shaft guide assembly has been improperly positioned.	Loosen the setscrew, and re-position it in accordance with the Standard Adjustment.	38
	5-2) The threading needle tip fails to hook the thread.	The spring is caught on the threading needle, and does not return fully.	Loosen the setscrews of the spring and threading needle, and correct it.	38
	5-3) The threading needle does not enter the hole in the tip of the double chain looper.	3)-A The height of the threading needle is not correct.	Loosen the setscrew and correct the height.	38
		3)-B The position of the threading needle in the rotational direction is not correct.	Correct it by moving the stopper of the lever shaft guide sleeve.	38
	5-4) The hook does not draw the thread.	The clearance between the hook and threading needle is too large.	Correct the clearance by adjusting the arm.	40
6. The double chain looper threader does not return to its original position after operation.	6-1) The hook is caught by the threading needle.	The hook is brought into extreme contact with the threading needle.	Correct it by the arm	40
	6-2) The arm sticks in the slot of the arm assembly.	The chain looper threader lever has been excessively turned.	Adjust the lever stopper to prevent the lever from being excessively turned.	40

Dimensions of table (fully sunken type)

Table Part No. : 11849155





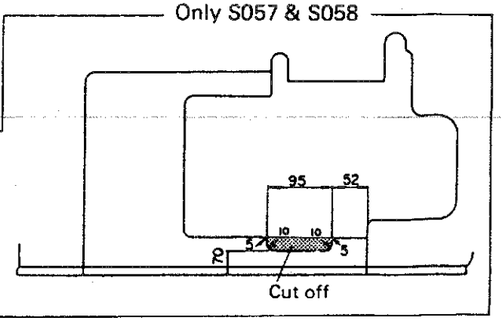


Section X-X Section Y-Y Section Z-X

(Note) All dimensions are in millimeter.

(Note) Modification of table dimensions required (when using fully-sunken type table)

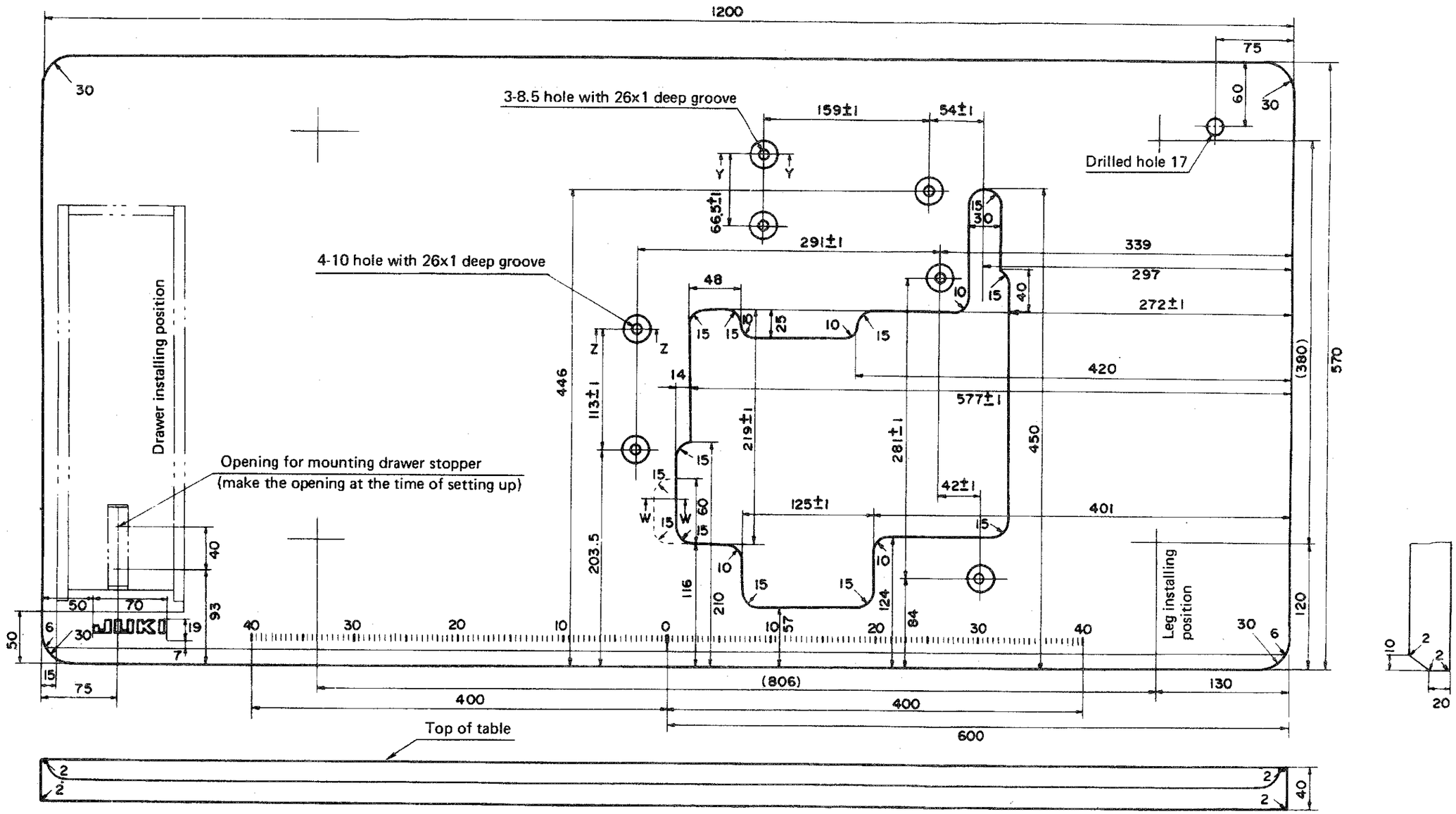
Modify the table dimensions as shown below when using S057 or S058 with a fully-sunken type table.

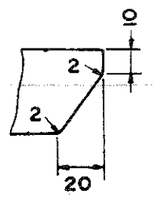


Applicable models :
MO-2500 Series
MO-2400 Series

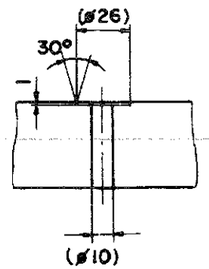
Dimensions of table (semi-sunken type)

Table Part No. : 11849007

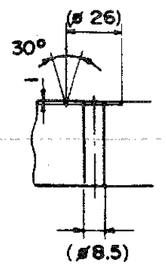




Section W-W



Section Z-Z



Section Y-Y

(Note) All dimensions are in millimeter.

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