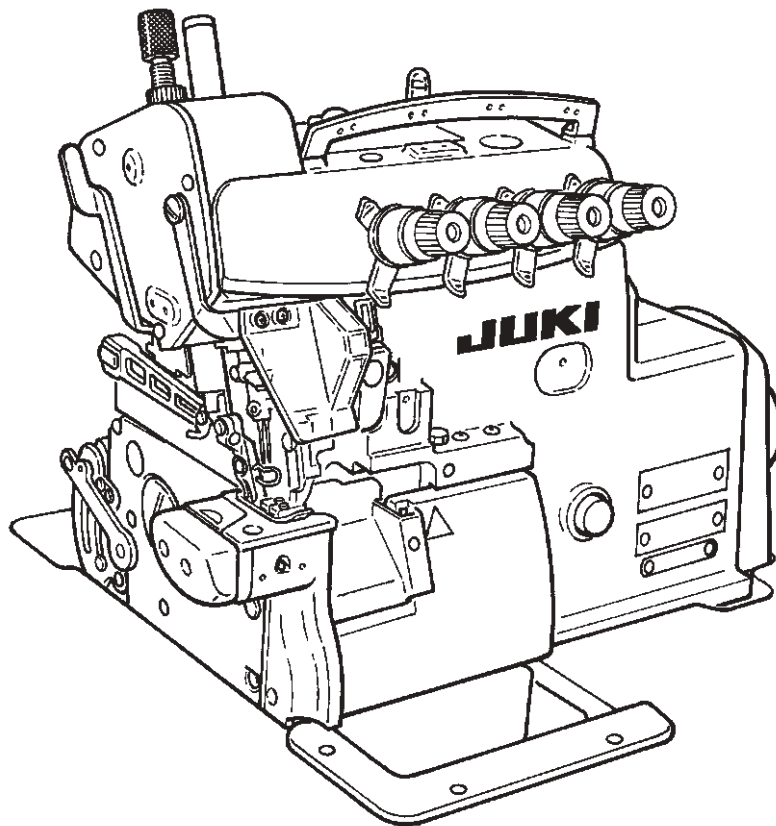


**JUKI®**

**Super-high-speed, Cylinder-bed, Overlock Machine**

**MO-6900C series**

**ENGINEER'S MANUAL**



**40010632**  
**No.E354-00**

## **PREFACE**

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

The Instruction Manual 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 Manual.

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

In addition, for the motor for the sewing machine with thread trimmer, refer to the separate Instruction Manual or Engineer's Manual for the motor. And for the control panel, refer to the Instruction Manual for the control panel.

This manual gives the "Standard Adjustment" on the former page under which the most basic adjustment value is described, and on the latter page "Results of Improper Adjustment" under which stitching errors and troubles arising from mechanical failures are described together with the "Adjustment Procedures".

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# 1. SPECIFICATIONS

## MO-6900C SERIES

No.	Item	Specifications	
1	Model	MO-6904C	MO-6914C
2	Description	1-needle Overlock machine	2-needle Overlock machine
3	Stitch type F. S. T.	JIS E13 (USA standard : 504)	JIS E24 (USA standard : 514)
4	Sewing speed	8,000 rpm	
5	Stitch length	0.8 to 3.5 mm	
6	Needle gauge	—	2 mm
7	Overedging width	3.2, 4, 4.8 mm	3.2, 4 mm
8	Differential feed ratio	Gathering 1 : 2.3 (Max.1 : 4.5), Stretching 1 : 0.8	
9	Needle bar stroke	24.5 mm	
10	Needle tilt angle	20°	
11	Needle	ORGAN DC X 27 (Standard) (DC X 1 can be used as well.)	
12	Presser lifting amount	7.0 mm	6.5 mm
13	Presser foot pressure	Max. 49N (5Kg)	
14	Stitch adjusting method	By pushbutton	
15	Upper knife	Flat knife	
16	Differential feed adjustment	By lever	
17	Weight	28 kg	
18	Lubrication	Gear-type automatic lubrication	
19	Lubricating oil	* JUKI MACHINE OIL 18 (Equivalent to ISO VG 18)	
20	Needle cooler	Provided as standard	
21	Needle thread heat remover	Provided as standard	
22	Micro presser lifting device	Provided as standard	
23	Motor	2P 550W (In case of 7,000 rpm) 2P 400W (in case of less than 7,000 rpm)	

\* JUKI MACHINE OIL 18 (Equivalent to ISO VG 18)

Part No. : MML018900CA (900 m ℓ )

## 2. MODEL NUMBERING SYSTEM

### MO-6900C SERIES MODEL NUMBERING SYSTEM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18  
**MO69** △ △ **C** ◇ □ △ **307** / □ △ △ △

3 to 6	Model code
6904	1-needle 3-thread overlock
6914	2-needle 4-thread overlock

7	Specification code
C	Cylinder-bed

8	Needle gauge code
0	1-needle
B	2.0 mm

9	Overedging width code
D	3.2 mm
E	4.0 mm
F	4.8 mm

10	Feed dog code
4	2-row
6	3-row

11	Material code (Classification based on materials to be used)	
3	Light-weight to medium-weight materials	General fabrics

12	Application code (Classification based on type of operation and process)	
0	Standard	

13	Special machine code (Special classification of machine, structure and specification other than gauge set)	
7	Upper looper high throw type	

15 to 18	Device and attachment code
T043	Pneumatic side cutter
TR01	Small-diameter roller for rib attaching
TR02	Large-diameter cloth tensioner

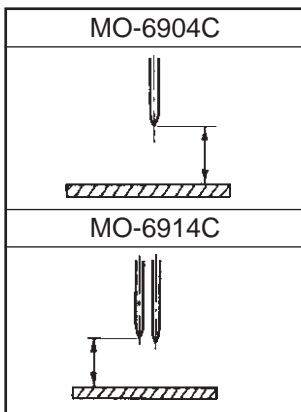
A blank sheet of lined paper with rounded corners and horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. The top and bottom corners are rounded.

### 3. STANDARD ADJUSTMENT

#### Standard Adjustment

#### (1) Adjusting the needle height

When the needle(s) is in the highest position, the needle height from the throat plate surface should be as shown below.



(Unit : mm)

Model	1-needle/ 2-needle : left	2-needle : right
MO- 6904C -0△△ -307	10.5	—
MO- 6914C -B△△ -307	10.5	9.1

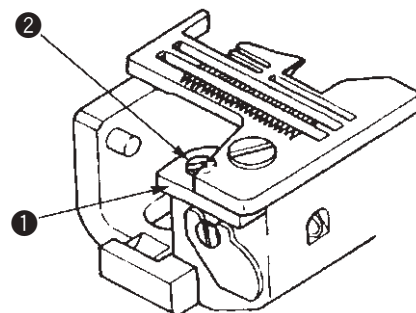
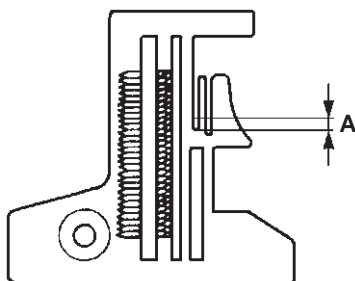
The adjustment of needle height for the 2-needle overlock machine should be made in reference to the left needle.

#### (2) Positioning the throat plate

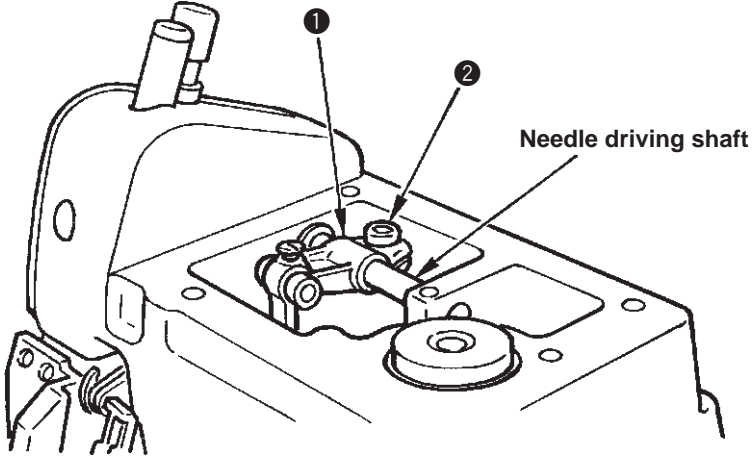
The needle entry point should be such that the distances listed below are provided between the needle slot edge of the throat plate and the center of needle.

(Unit : mm)

Dimension A on the overlock side	1.3
----------------------------------	-----



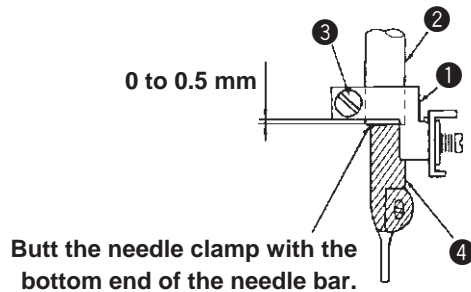


Adjustment Procedures	Results of Improper Adjustment
<p>1) Remove the top cover, loosen setscrew ② of needle driving forked crank ① and move needle driving forked crank ① up or down to adjust the needle height.</p>  <p><b>(NOTE) Do not fully loosen the setscrew ② of the needle driving forked crank ①.</b>  <b>If the needle driving forked crank has got out of position laterally when its setscrew was loosened, fully loosen the setscrew and turn 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.</b></p>	<ul style="list-style-type: none"> <li>○ 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.</li>   <li>○ Improper lateral position of the needle driving forked crank will cause seizure, play, or other troubles.</li> </ul>
<p>1) Loosen setscrews ② of throat plate base ① and move throat plate base ① back and forth to adjust dimension A.</p>	<ul style="list-style-type: none"> <li>○ Improperly positioned throat plate will cause needle breakage, contact of the needles with the throat plate, or other troubles.</li> </ul>

## Standard Adjustment

### (3) Installing position of the needle clamp

Needle clamp connecting stud ❶ should be spaced 0 to 0.5 mm from the bottom end of needle bar ❷.

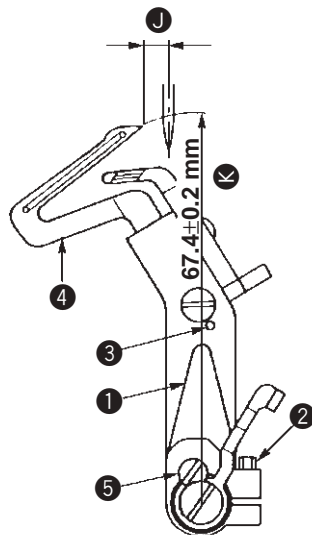


### (4) Adjusting the lower looper

#### 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 as follows when the lower looper is at the extreme left of its stroke.

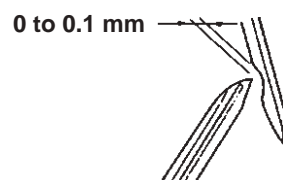
(Unit : mm)



	Model			Dimension ❶ (Returning amount of the lower looper)
1-needle overlock machine	MO- 6904C	-0△△	-307	3.6±0.3
2-needle overlock machine	MO- 6914C	-B△△	-307	3.6±0.3

#### 2) Clearance between the lower looper and the needle

The clearance should be 0 to 0.1 mm.



Adjustment Procedures	Results of Improper Adjustment
<p>1) Loosen setscrew ③ and adjust, by slightly turning needle clamp ④, the clearance provided between the right-hand side needle and the lower looper.</p>	<ul style="list-style-type: none"> <li>○ If the clearance provided between the needle and the looper is excessive, the needle thread will be likely to skip at the time of tucking.</li> <li>○ If the clearance provided between the needle and the looper is smaller than the specified value, the needle will break when the looper comes in contact with the needle or the looper blade point will be damaged causing thread breakage.</li> </ul>
<p><b>1) Returning amount of the lower looper</b></p> <p>① Loosen setscrew ② of lower looper support arm ① and adjust lower looper ④ to make adjustment of the returning amount.</p> <p><b>(Referential information)</b></p> <p>1. Radius K of lower looper ④ will be 67.4 mm when the lower looper is inserted into lower looper support arm ① until it contacts with stopper pin ③ and then is fixed.</p> <p>2. The rocking angle of the lower looper will be 27°.</p> <p> </p> <p><b>2) Clearance between the lower looper and the needle</b></p> <p>① Loosen setscrew ② of lower looper support arm ① to the extent that it is temporarily tightened. Then finely adjust the longitudinal position of the looper using fine adjustment screw ⑤.</p> <p>② Turn fine adjustment screw ⑤ clockwise to move lower looper ④ away from the needle. Turn the screw counterclockwise to move lower looper ④ closer to it.</p>	<ul style="list-style-type: none"> <li>○ Excessive return of the lower looper tends to cause needle thread stitch skipping when tetoron thread is used.</li> <li>○ Insufficient return of the lower looper tends to cause needle thread stitch skipping when spun thread is used.</li>   <li>○ Excessive clearance will often cause needle thread stitch skipping.</li> <li>○ 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.</li> </ul>

## Standard Adjustment

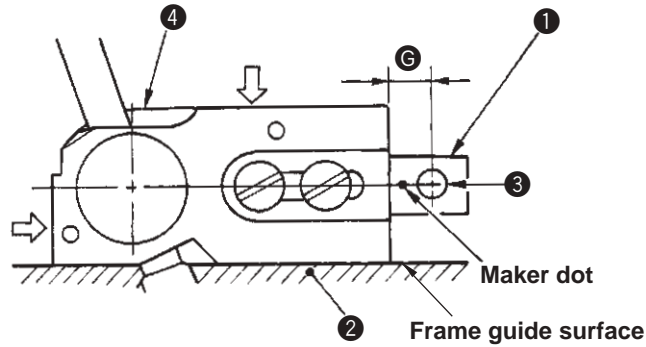
### (5) Position of the upper looper guide

Vertical position :

To be in close contact with the frame guide surface.

Lateral position :

To be pressed against the upper looper guide support gauge ①.



(Unit : mm)

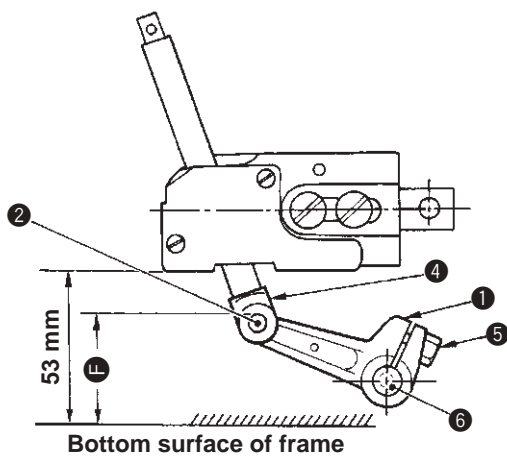
Upper looper guide support gauge	
	13131909

(Unit : mm)

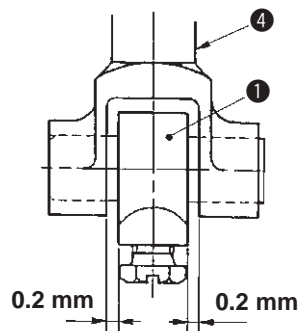
	Model	Guide support position Dimension G
1-needle overlock machine	MO- 6904C -0△△ -307	
2-needle overlock machine	MO- 6914C -B△△ -307	

### (6) Positioning the upper looper holder

The height from the bottom surface of the frame to the top surface of upper looper holder pin ② when upper looper holder ① is at the highest point of its stroke.

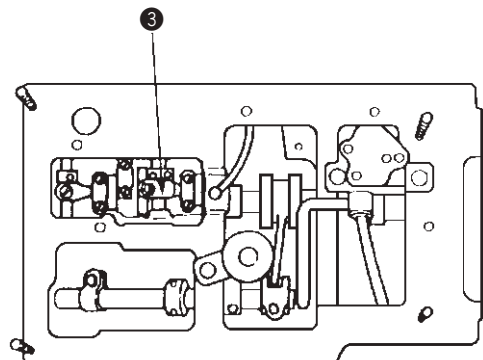


Bottom surface of frame



(Unit : mm)

	Model	Dimension F
MO- 6904C -0△△ -307	47.15±0.05	
MO- 6914C -B△△ -307	47.15±0.05	



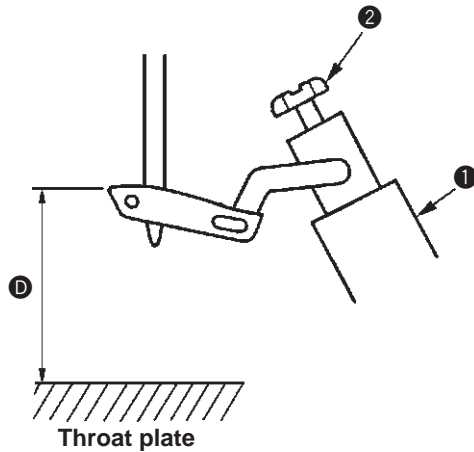
Adjustment Procedures	Results of Improper Adjustment
<p>1) Fit upper looper guide support gauge <b>1</b> over gauge fixing pin <b>3</b> which has been driven in frame <b>2</b> and secure the gauge with an O ring. Then position the gauge taking the direction of the marker dot engraved on it as reference.</p> <p>2) When installing upper looper guide <b>4</b>, press it against the gauge while keeping the upper looper guide into close contact with the frame surface, then tighten the screws.</p>	<ul style="list-style-type: none"> <li>○ 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.</li> <li>○ If the upper looper guide has been inaccurately positioned laterally, it will cause stitch skipping, or contact with the looper.</li> </ul>
<p>1) Loosen the setscrew of upper looper ball arm <b>3</b> and setscrew <b>5</b> of the upper looper holder.</p> <p>2) Adjust the clearances between upper looper bracket <b>4</b> and upper looper holder <b>1</b> to approximately 0.2 mm respectively, and tighten setscrew <b>5</b> of the upper looper holder. (Make sure that the upper looper holder smoothly moves together with upper looper shaft <b>6</b>.)</p> <p>3) Then determine dimension <b>F</b> from the bottom surface of the frame to the top surface of upper looper holder pin <b>2</b> before tightening the setscrew of upper looper ball arm <b>3</b>.</p>	<ul style="list-style-type: none"> <li>○ Inaccurately positioned upper looper holder will cause excessive projection of the upper looper, resulting in stitch skipping, or other troubles.</li> </ul> <p><b>(Caution) To adjust the upper looper ball arm, take dimension <b>F</b> as standard. Remember that the projecting amount and the height of the upper looper should eventually be properly adjusted. So, confirm the dimensions related to the upper looper.</b></p>

## 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.

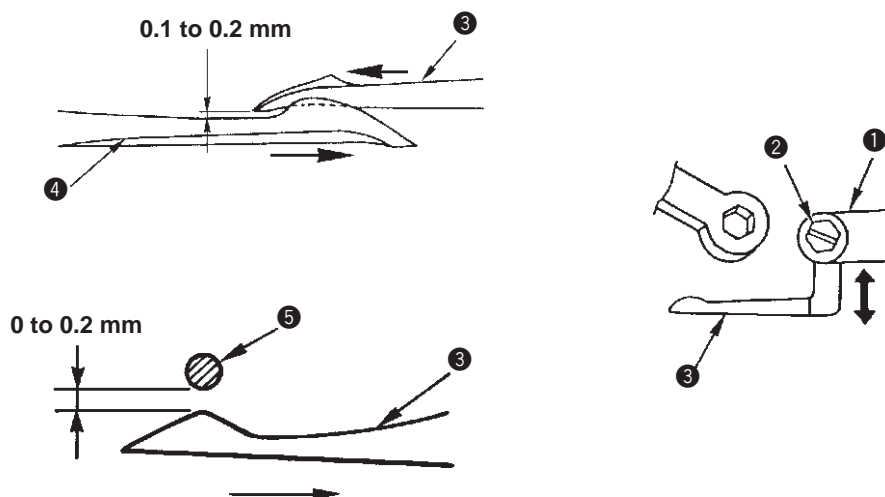


(Unit : mm)

Model			Dimension <b>D</b>
MO- 6904C	-0△△	-307	10.9±0.3
MO- 6914C	-B△△	-307	10.9±0.3

#### 2) Longitudinal position of the upper looper

- ① The clearance between upper looper **3** and lower looper **4** should be 0.1 to 0.2 mm when they cross with each other.
- ② The clearance between upper looper **3** and needle **5** should be 0 to 0.2 mm.

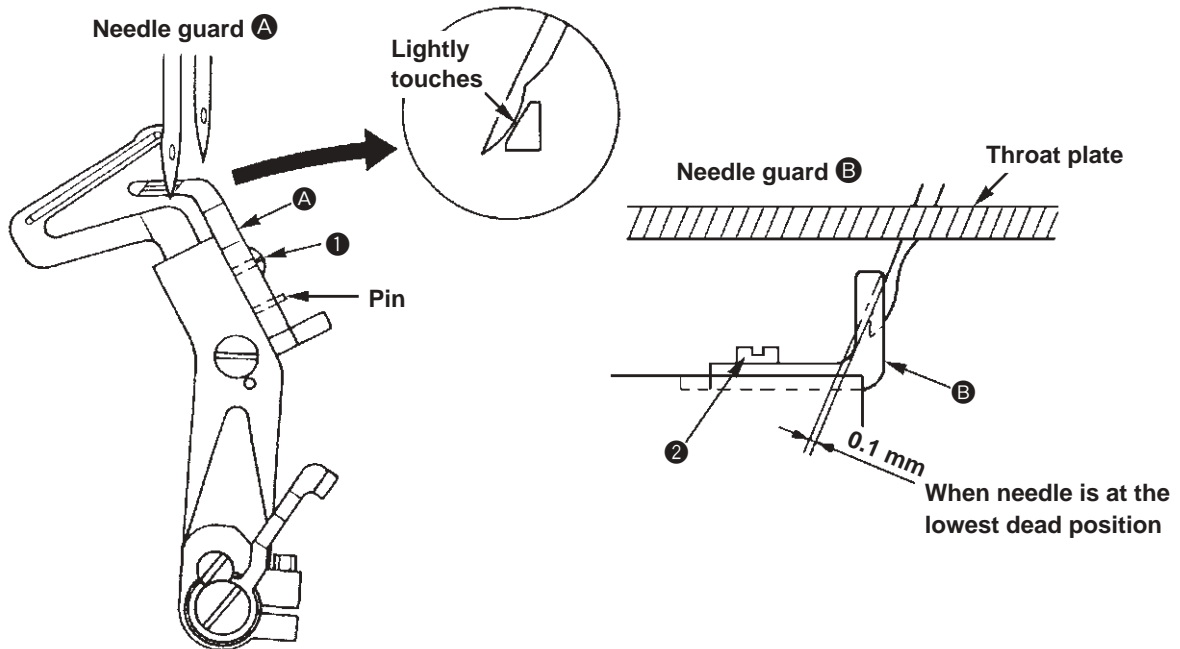


Adjustment Procedures	Results of Improper Adjustment
<p><b>1) Height of the upper looper</b></p> <ul style="list-style-type: none"><li>① Set a hexagon spanner onto setscrew ② located at the upper section of upper looper bracket ① to adjust height ④.</li><li>② When adjusting the height, pay attention also to the clearance produced between the upper looper and the lower looper at the time of their crossing.</li></ul> <p><b>2) Longitudinal position of the upper looper</b></p> <ul style="list-style-type: none"><li>① Loosen setscrew ② at the top end of upper looper bracket ① to move upper looper ③ back or forth for positioning the clearance of 0.1 to 0.2 mm between upper looper ③ and lower looper ④ at the time of their crossing and the clearance of 0 to 0.2 mm between upper looper ③ and needle ⑤.</li></ul>	<ul style="list-style-type: none"><li>○ 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 occurs.</li><li>○ 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.</li> <li>○ Excessive clearance will cause stitch skipping.</li><li>○ Insufficient clearance will cause the upper looper to come in contact with the lower looper.</li></ul>

## Standard Adjustment

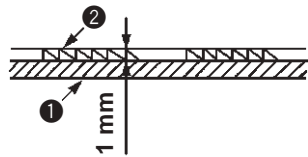
### (8) Position of the needle guard

1. Make needle guard **A** lightly touch (bend needle by 0 to 0.05 mm) with the top end of the needle when the lower looper blade point scoops thread.
2. The clearance between needle guard **B** and the needle should be 0.1 mm when the needle is at the lowest dead position.

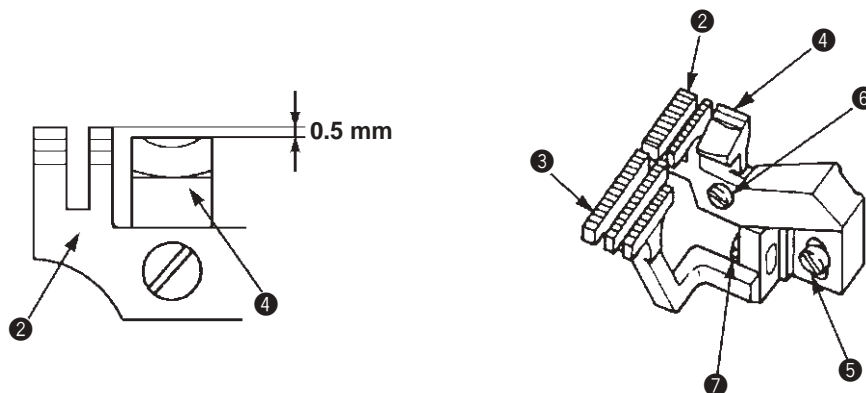


### (9) Height of the feed dog

The height of main feed dog **2** from the top surface of throat plate **1** is 1 mm at the needle entry position when it is at its highest position.



Make auxiliary feed dog **4** lower by 0.5 mm than main feed dog **2**.



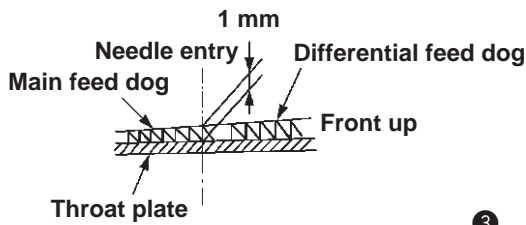


Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> <li>1) Adjust needle guard <b>A</b> so that it lightly touches with the needle (bend the needle by 0 to 0.05 mm) when the lower looper blade point comes to the center of the needle using setscrew <b>1</b> in the needle guard.</li> <li>2) Loosen setscrew <b>2</b> and move needle guard <b>B</b> back or forth to adjust the clearance between needle guard <b>B</b> and the needle to 0.1 mm.</li> </ol>	<ul style="list-style-type: none"> <li>○ Excessively close contact between the needle guard <b>A</b> and the needles will lead to needle bend or stitch skipping.</li> <li>○ A clearance left between the needle guard <b>A</b> 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.</li> <li>○ Excessive clearance between the needle guard <b>B</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.</li> </ul>
<ol style="list-style-type: none"> <li>1) Adjust the height of main feed dog <b>2</b> to 1 mm with setscrew <b>5</b>.</li> <li>2) Adjust the height of differential feed dog <b>3</b> with setscrew <b>7</b> so that there is no difference with main feed dog <b>2</b>.</li> <li>3) Adjust the height of auxiliary feed dog <b>4</b> with setscrew <b>6</b> so that it is 0.5 mm lower than main feed dog <b>2</b>.</li> </ol>	<ul style="list-style-type: none"> <li>○ 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.</li> <li>○ If the feed dogs are too low, insufficient feed power will result.</li> <li>○ If the auxiliary feed dog is too high, chain-off thread will be often jammed.</li> <li>○ If the main feed dog and differential feed dog are set at different heights, proper differential feeding action will be hindered.</li> </ul>

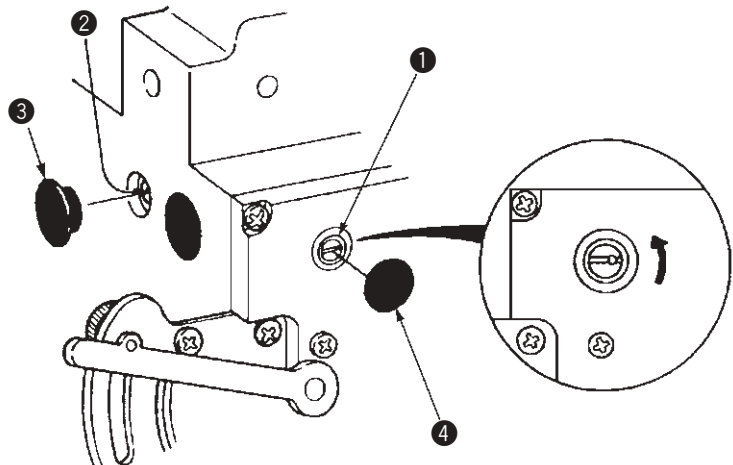
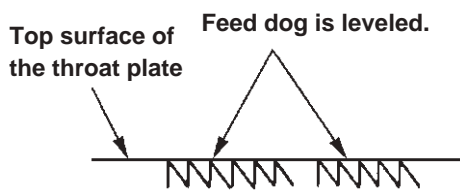
## Standard Adjustment

### (10) Adjusting the tilt of the feed dog

Tilt of the feed dogs when the feed dogs have come up most.



When the feed dog juts out the top surface of the throat plate

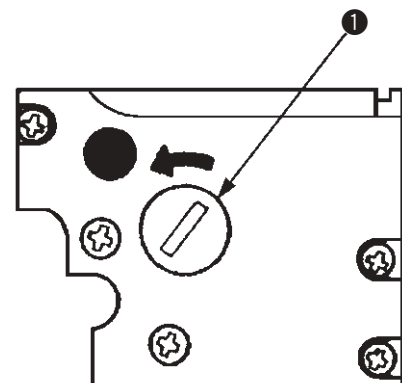


Use the tilt of the feed dog when it is in its highest position as a reference and adjust so that the feed dog is flush with the throat plate when the feed dog juts out the throat plate.

### (11) Adjusting the differential feed ratio

Change of the differential feed ratio is adjusted by the differential feed adjusting lever. However, when further differential feed ratio is required, perform the change of the position of the main feed pin.

<p><b>(Standard position)</b> <b>Pin at its highest position</b></p>	<p><b>Pin at its lowest position</b></p>
<p>(Standard) Gathering: 1: 2.3 Stretching: 1: 0.8</p>	<p>(Max, gathering) Gathering: 1: 4.5</p>

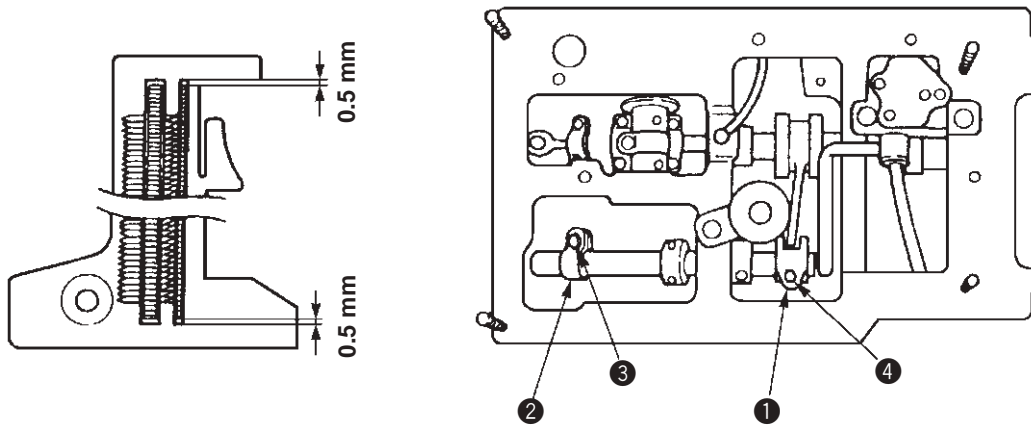


Adjustment Procedures	Results of Improper Adjustment
<p>1) Feed bar shaft ❶ consists of an eccentric shaft. Loosen setscrew ❷ to perform adjustment.</p> <p>2) Loosen setscrew ❷ after removing rubber cap ❸ with collar located on the back side.</p> <p>3) Turn feed bar shaft ❶ after removing rubber cap ❹ with collar located on the left side.</p> <p>When the groove is level and the marker dot is on the front side (operator side) ..... Feed dog is level.</p> <p>When the marker dot is higher than the standard position ..... Feed dog is tilted with its front up (in the arrowed direction).</p> <p>When the marker dot is lower than the standard position ..... Feed dog is tilted with its front down.</p>	<ul style="list-style-type: none"> <li>○ When tilted with the front up Good material catching will be obtained.</li> <li>○ When tilted with the front down Uneven feed and puckering will be effectively prevented.</li> </ul>
<p>1) Remove cover ❶ on the left side of the frame and loosen main feed pin setscrew ❷ to adjust the position of the main feed pin.</p> <p>Pin at its highest position .... Standard</p> <p>Pin at its lowest position .... Max. gathering</p>	

## Standard Adjustment

### (12) Longitudinal position of the feed bar

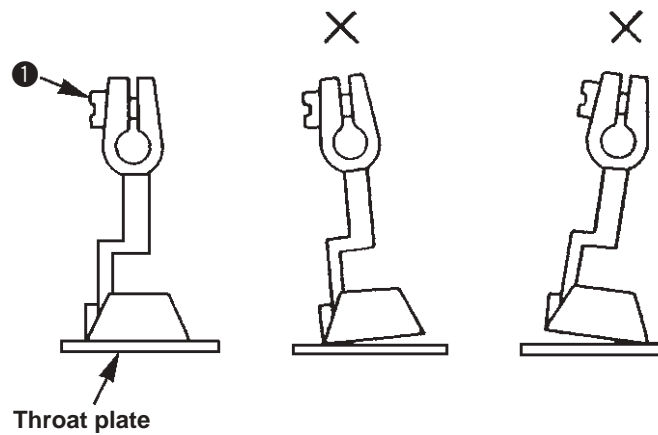
When the feed pitch is maximized and the differential feed ratio is also maximized, the clearances of the front and rear ends of the feed dog, and the groove of the throat plate should be spaced approximately 0.5 mm respectively.



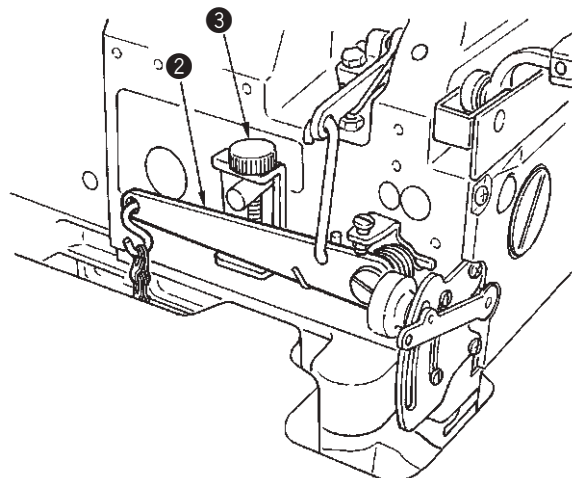
### (13) Position of the presser foot

#### 1) Adjusting the tilt of 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.



#### 2) Adjusting the micro-lifting mechanism of the presser foot

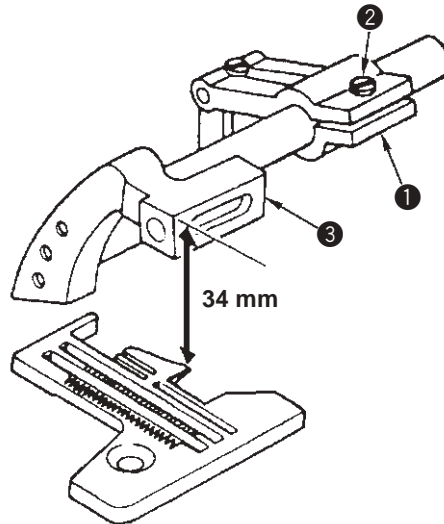


Adjustment Procedures	Results of Improper Adjustment
<p>1) Remove the oil reservoir and loosen clamping screws ③ and ④ in feed forked crank ① and differential feed rocker ② to perform the adjustment.</p> <p>2) When adjusting the differential feed bar only, loosen clamping screw ③ in differential feed rocker ② to perform the adjustment.</p> <p>3) When adjusting the main feed bar only, loosen clamping screw ④ in feed forked crank ① to perform the adjustment. At this time, loosen clamping screw ③ in differential feed rocker ② to perform the adjustment since the differential feed bar slips out of the position as well.</p> <p>4) When adjusting both the main feed and differential feed bars, first adjust the main feed bar and then adjust the differential feed bar.</p>	<ul style="list-style-type: none"> <li>○ If the clearance provided between the throat plate and the feed dog is too small, they will come in contact with each other when the sewing machine runs at high speed.</li> </ul>
<p><b>1) Adjusting the tilt of the presser foot</b></p> <p>① Turn the handwheel and place the feed dog in the position where the feed dog does not jut out the top surface of the throat plate.</p> <p>② Loosen setscrew ① and adjust so that the presser foot sole comes in contact evenly with the throat plate top surface. Then tighten setscrew ①.</p> <p><b>(Reference) Accurate adjustment can be made by using two pieces of thin paper to check for even drawing-out tension. In addition, 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.</b></p> <p><b>2) Adjusting the micro-lifting mechanism of the presser foot</b></p> <p>① When moving presser lifting lever ② just a little, perform it with fine adjustment screw ③.</p>	<ul style="list-style-type: none"> <li>○ Uneven contact will result in bad straight material feed, weak feed power, or puckering.</li> </ul>

## Standard Adjustment

### (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.

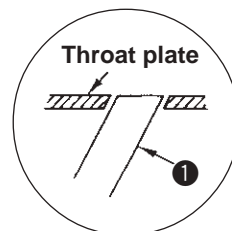


### (15) Positioning the upper and lower knives, and available overedge widths

#### 1) Lower knife

Adjust the vertical position of the lower knife so that the blade top aligns with the top surface of the throat plate.

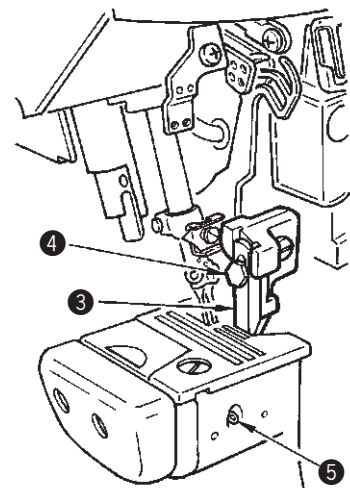
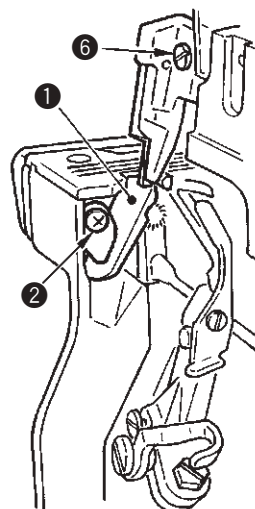
The lateral position is determined by the overedging width.



#### 2) Upper knife

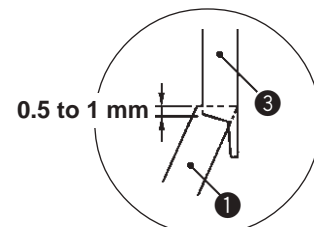
Adjust the vertical position of the upper knife so that the engagement with the lower knife is 0.5 to 1 mm when the upper knife is in the lowest position of its stroke.

The lateral position is determined by the overedging width.



#### 3) Overedging width

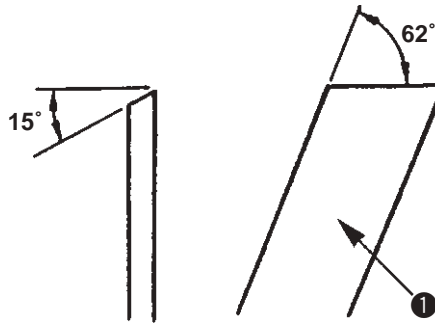
Overedging width can be adjusted from 3.2 to 4.8 mm. Replacement of components or subclass is prepared.



Adjustment Procedures	Results of Improper Adjustment
<p>1) Remove the top cover, loosen setscrew ② in upper knife driving arm ①, and turn upper knife shaft ③ to adjust the vertical position.</p> <p><b>(Caution) Be sure to fully tighten the setscrew since upper knife shaft ③ is subjected to high load.</b></p>	<ul style="list-style-type: none"> <li>○ Improperly positioned upper knife arm shaft will come in contact with the frame.</li> <li>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.</li> </ul>
<p><b>1) Lower knife</b> Loosen setscrew ② and adjust so that the blade top of lower knife ① aligns with the top surface of the throat plate.</p> <p><b>2) Upper knife</b> Loosen setscrew ④ and adjust so that the engagement with lower knife ① is 0.5 to 1 mm when upper knife ③ is in the lowest position of its stroke.</p> <p><b>3) Overedging width</b> Loosen setscrew ⑤ and push lower knife ① to the left side to fix it. Loosen setscrew ⑥, move upper knife ③ as much as is necessary and fix it. Lower upper knife ③ to its lowest position, loosen setscrew ⑤ and tighten setscrew ⑤ when lower knife ① comes in contact with upper knife ③.</p> <p><b>(Caution)</b></p> <ol style="list-style-type: none"> <li>1. When using the machine, be sure to fix setscrew ⑤.</li> <li>2. After the adjustment, cut the thread with the knives and make sure of the sharpness.</li> </ol>	<ul style="list-style-type: none"> <li>○ The lower knife, if positioned too high, will catch materials or cause no contact of the presser foot with the throat plate top surface.</li> <li>○ If the lower knife is positioned too low, the cutting width will be changed or materials will be caught by the lower knife.</li> <li>○ The upper knife, if positioned too high, will fail to cut materials.</li> <li>○ 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.</li> </ul>

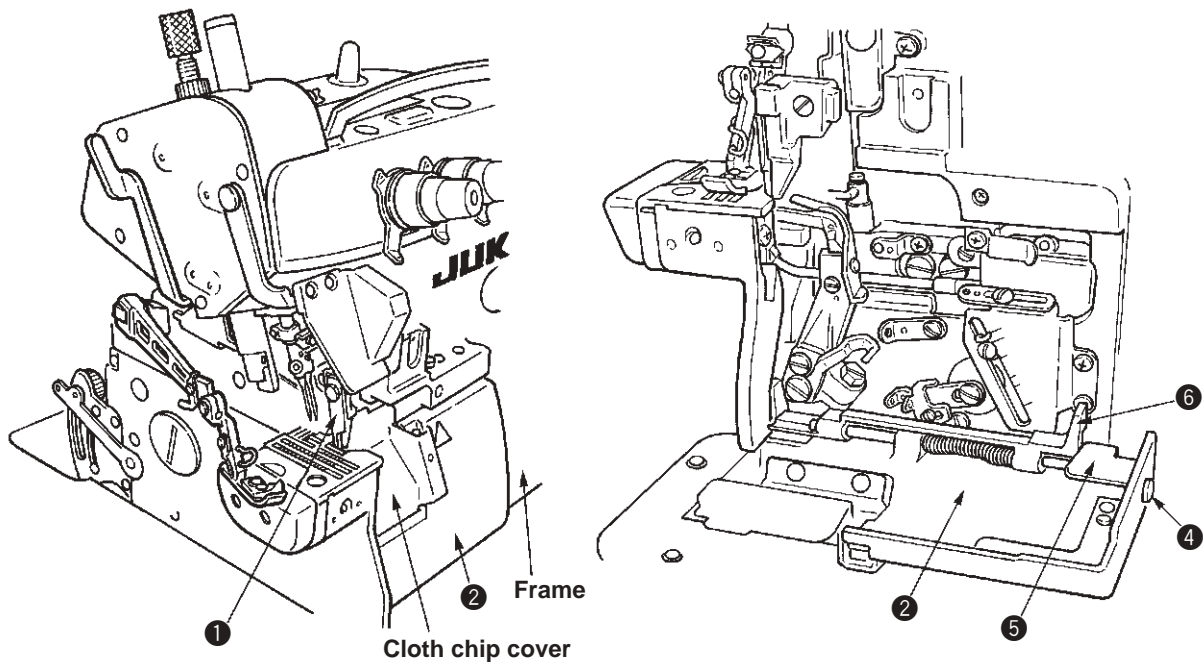
## Standard Adjustment

### (16) Resharpener of the knife



### (17) Adjusting the looper cover

- The looper cover should smoothly close without coming in contact with upper knife ① when slowly closing looper cover ② with upper knife ① in its lowest position of its stroke.



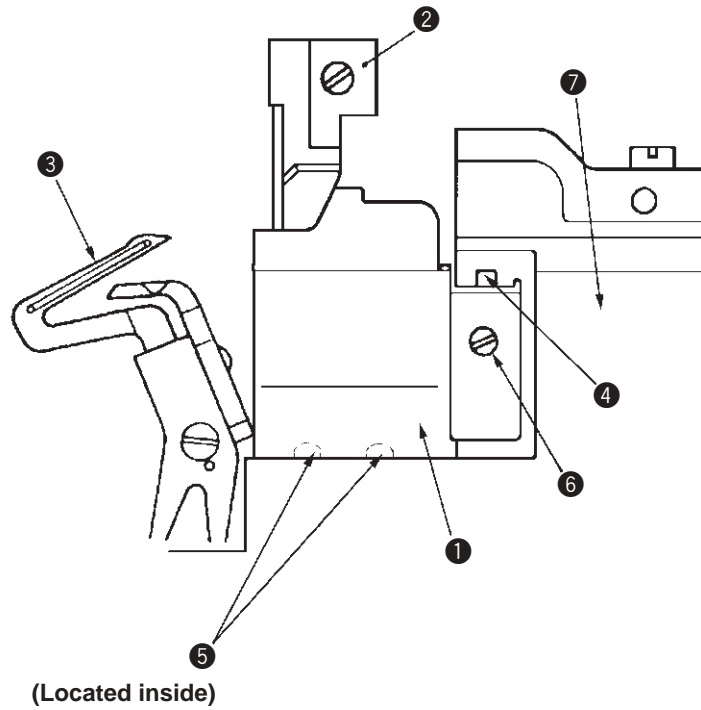


Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> <li>1) When the knives have become dull, fully sharpen lower knife ❶ until the contact mark of it disappears.</li> <li>2) When the upper knife has become dull, replace it with a new one. (This is because the upper knife is a serrated carbide knife.)</li> </ol>	<ul style="list-style-type: none"> <li>○ If the 15° angle of the lower knife is exceeded, the durability of the knife will be deteriorated, often resulting in blade chipping.</li> <li>○ If the angle is smaller than 15°, the knife will be dull.</li> <li>○ If the 62° angle is not observed, the knife may catch materials.</li> </ul>
<ol style="list-style-type: none"> <li>1) Close looper cover ❷, loosen setscrew ❹, and move looper cover guide plate ❺ back and forth until the looper cover is brought to a position where the cover smoothly closes.</li> <li>2) Move looper cover guide plate ❺ until it slightly comes in contact with looper cover receiving bracket ❻. Now, fix the guide plate by tightening setscrew ❹.</li> </ol>	

## Standard Adjustment

### (18) Adjusting the cloth chip cover

- When cloth chip cover ① is pressed away from you, it should not rattle. In addition, the cloth chip cover should not come in contact with upper knife ② and lower looper ③.

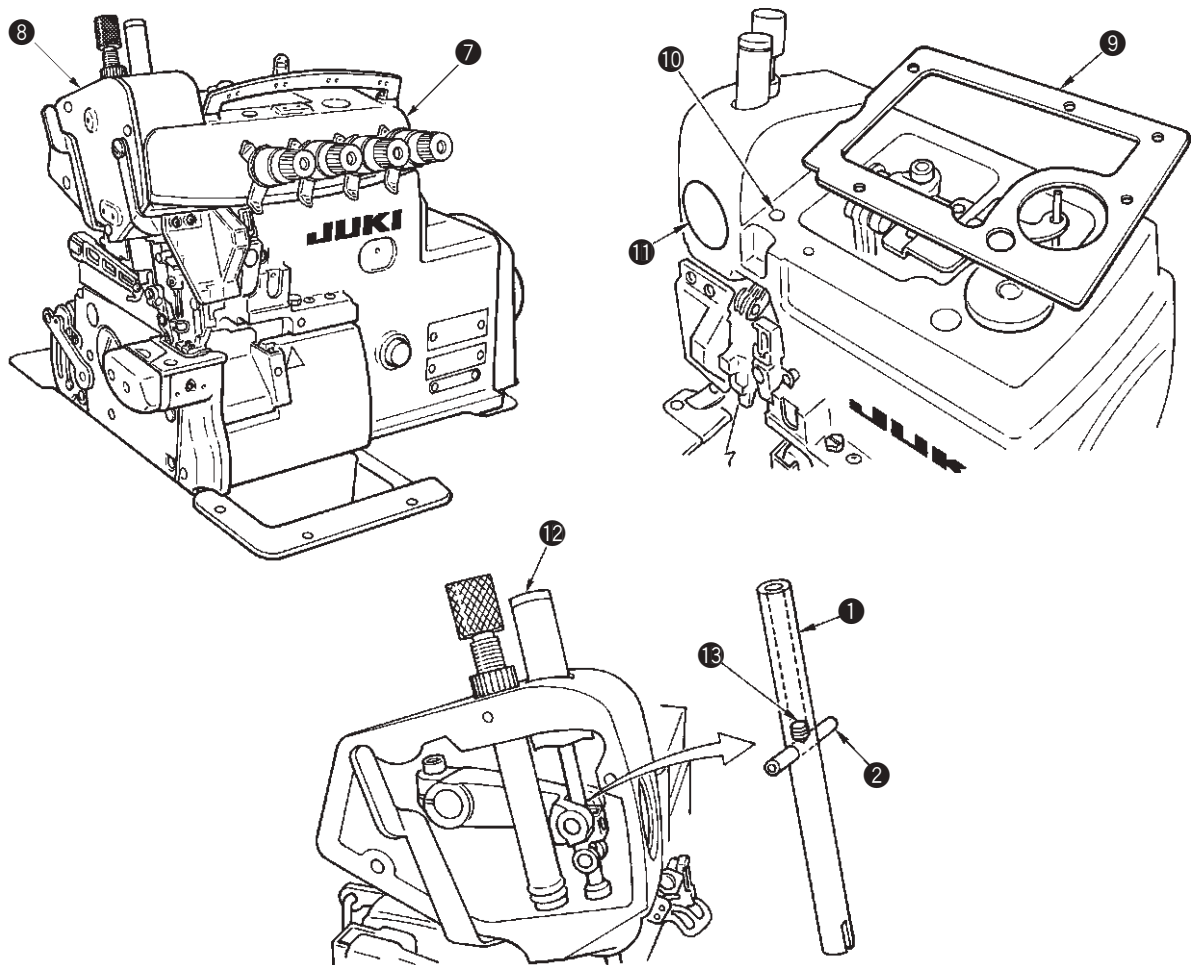


Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> <li>1) Temporarily tighten the setscrew ⑥ with cloth chip cover stopper ④ raised.</li> <li>2) Loosen setscrews ⑤ (2 pcs.) in the cloth chip cover ①, and adjust the longitudinal position of cloth chip cover ①.</li> <li>3) Loosen setscrew ⑥ in the cloth chip cover stopper ④ again, and press cloth chip cover stopper ④ downward until the stopper slightly comes in contact with looper cover ⑦. Now, tighten setscrew ⑥.</li> <li>4) Finally, confirm that cloth chip cover ① comes in contact with neither upper knife ② nor lower looper ③.</li> </ol>	

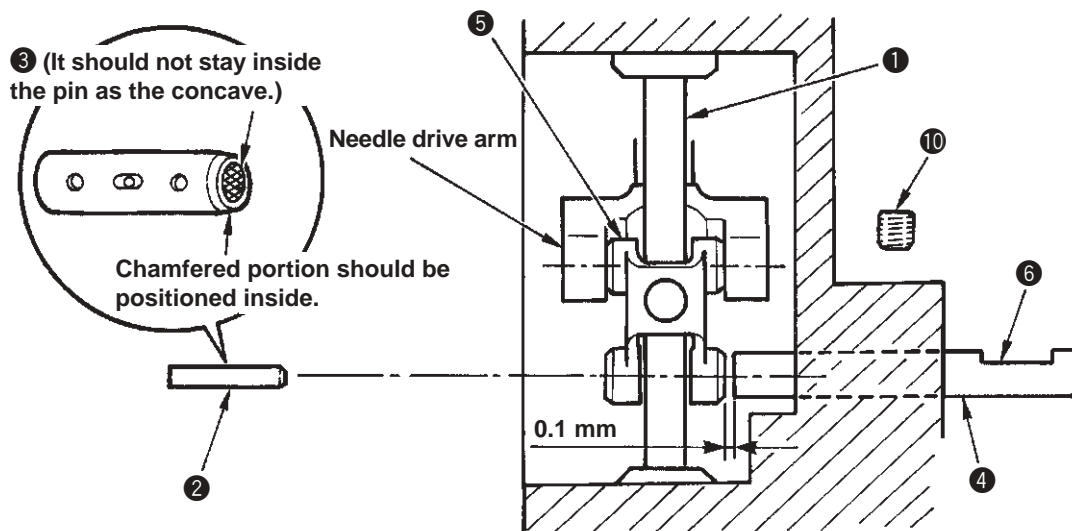
## Standard Adjustment

### (19) Adjusting the needle mechanism

#### 1. Disassembling



#### 2. Adjustment



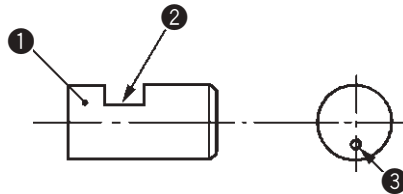
Adjustment Procedures	Results of Improper Adjustment
<p><b>1. Disassembling</b></p> <ol style="list-style-type: none"> <li>1) Remove top cover 7 and side cover 8.</li> <li>2) If packing 9 of the top cover has been adhered on the frame, also remove packing 9.</li> <li>3) Remove needle front plug 11.</li> <li>4) Loosen setscrew 10 of needle lubricating pin 4 and remove needle lubricating pin 4.</li> <li>5) Remove needle bar upper bushing cap screw 12 and loosen setscrew 13 in the needle drive pin.</li> <li>6) Fitting needle drive pin 2 in the hole on the frame side, thrust the pin until it can be drawn out.</li> </ol> <p><b>2. Adjustment</b></p> <ol style="list-style-type: none"> <li>1) Bring needle bar 1 to the lower dead point.</li> <li>2) Adjust oil wick 3 in needle drive pin 2 so that it should be flush with the chamfered plane of the pin. (If oil wick 3 sinks inside the chamfered plane as the concave, oil will not be fed smoothly.)</li> <li>3) Install needle lubricating pin 4 in place with its oil inlet 6 faced above.</li> <li>4) Adjust with setscrew 10 so that the clearance between needle lubricating pin 4 and needle drive connecting link 5 is 0.1 mm using the clearance gauge or the like.</li> </ol>	<ul style="list-style-type: none"> <li>○ If the oil wick is installed in the needle drive connecting link pin inside the pin as the concave, oil will not be lubricated properly resulting in seizure.</li> <li>○ If the clearance provided between the needle lubricating pin and the needle drive connecting link is too small, the related components will come in contact with each other.</li> <li>○ If the clearance provided between the needle lubricating pin and the needle drive connecting link is too large, oil will not be fed properly resulting in seizure.</li> <li>○ If the oil inlet does not face upward, oil will not be fed resulting in seizure.</li> </ul>

## Standard Adjustment

### (20) Position of the upper looper lubricating pin

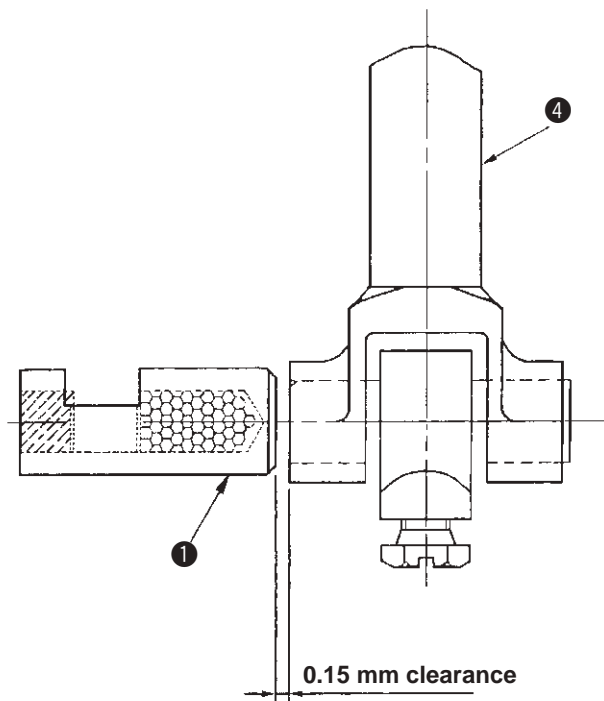
#### 1) Orientation of the lubricating pin

Oil inlet ② of upper looper lubricating pin ① should face upward.



#### 2) Setting the lubricating pin

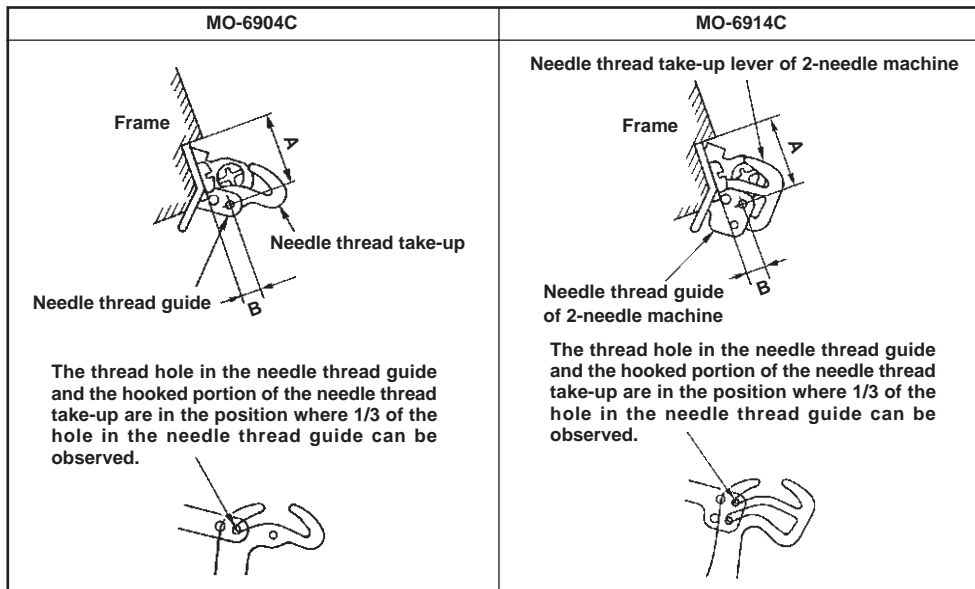
The clearance provided between upper looper lubricating pin ① and upper looper bracket ④ should be 0.15 mm.



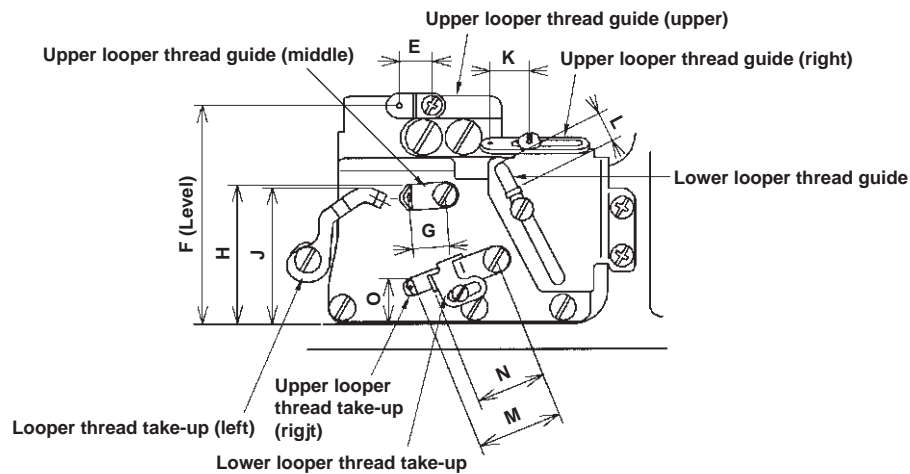


## Standard Adjustment

### (21) Position of the thread guides and the looper thread take-ups



**(Caution)** The needle thread take-up shall be positioned at the lower dead point.



Set the looper thread take-ups and the looper thread guides as shown in the figure above, excluding the special case.

In addition, the adjustment values of the upper looper thread take-up (right) and the looper thread take-up (left) are when the upper looper is at the extreme right position of its stroke.

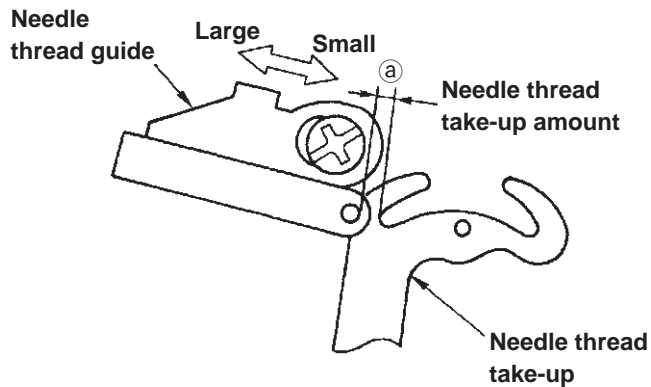
Respective adjustment values when the upper looper is in the backward travel end (Unit : mm)

Symbol	MO-6904C		MO-6914C	
	General thread	Woolly thread	General thread	Woolly thread
A	15.8	←	←	←
B	3.4	←	←	←
E	13.5	—	—	—
F	Level	←	←	←
G	15	←	←	←
H	42	←	←	←
J	38	←	←	←
K	13	←	←	←
L	6	←	←	←
M	28	←	←	←
N	21	←	←	←
O	9	←	←	←



## Adjustment Procedures

- 1) Perform the adjustment with the respective screws.



- 2) Distance J is effective to move up or down the knotting point of upper and lower looper threads.

Set this distance larger for wooly thread, and set it smaller for thin thread which is likely to cause stitch skipping.

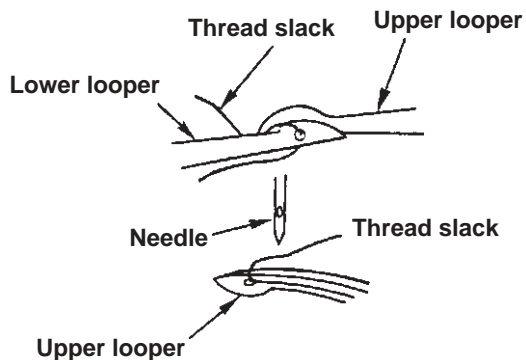
- 3) It is desirable to set distance K larger for stretchy threads such as wooly thread.

- 4) Set distance L a little larger for blind hemming.

- 5) Set distance N a little smaller for blind hemming.

- 6) Set distance O 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.



## Results of Improper Adjustment

- Distance ①  
When set smaller, better tightness of needle thread stitches will be obtained.  
When set larger, loose needle thread stitches will result.
- Distance E, F and H exert least influence on stitch formation, however, improper setting of these distances will cause contact between the moving parts.
- Distance J  
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 K  
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 L  
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 N  
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 O  
When set larger, the amount of the upper and lower looper threads will be decreased.  
When set smaller, the amount of the upper and lower looper threads will be increased.

## 4. ADDITIONAL INFORMATION AND PRECAUTIONS

### (1) Thread tension

#### 1) Strength of tension spring

Part No.	Color	Natural length (mm)	Operating length (mm)	Weight required to compress spring to working length
13137807	Red	19.5 mm	11.5 mm	4.21±0.49N (430 ± 50 g)
13138508	Yellow	17.8 mm	9.8 mm	3.14±0.34N (320 ± 35 g)
13138805	Blue	17.3 mm	9.3 mm	1.47±0.20N (150 ± 20 g)

#### 2) Springs used for each model.

Model	Where to use	Needle thread	Upper looper thread	Lower looper thread
MO-6904C series		Red	Yellow	Blue
MO-6914C series		Red • Yellow	Blue	Yellow

### (2) Upper looper

Use a proper upper looper in accordance with the needle No. When ordering, refer to the Parts List. The numbers shown in  frame are engraved markers.

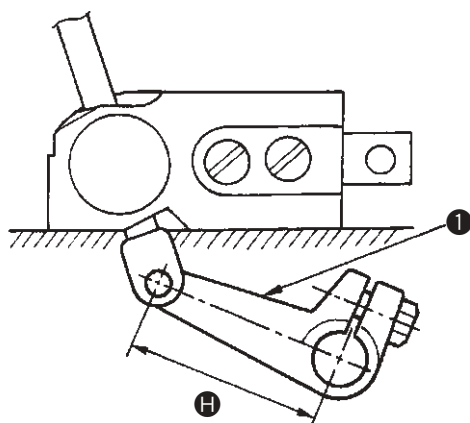
(Unit : mm)

Model	Nos.engraved on upper looper	Needle No. (kind)	Dimension A : Thickness of upper looper
6904C series	*1224 <input type="text" value="73"/>	#9 #11 #14	2.05
6914C series	*1224 <input type="text" value="73"/>	#9 #11 #14	2.05



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

The center-to-center distance of upper looper holder ①.




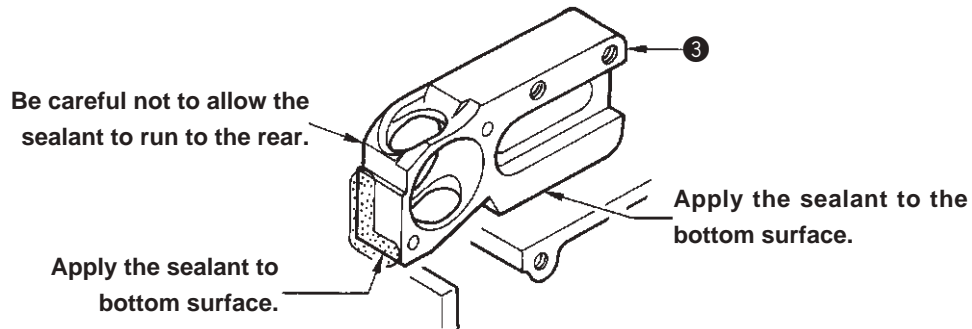
(Unit : mm)

Model	Center-to-center distance ①
MO- 6904C -0△△ -307	41
MO- 6914C -B△△ -307	41

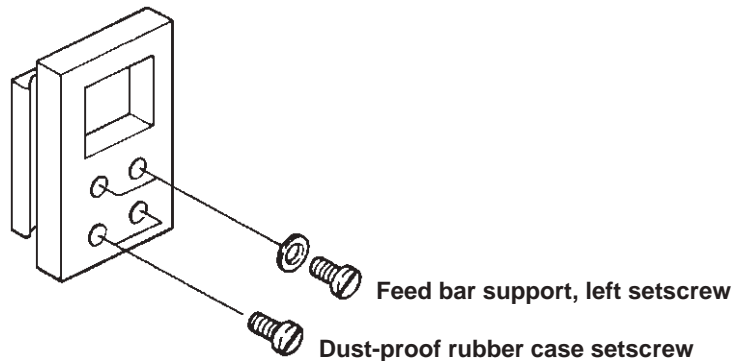
## (4) Caution in assembly

### 1) Application of sealant

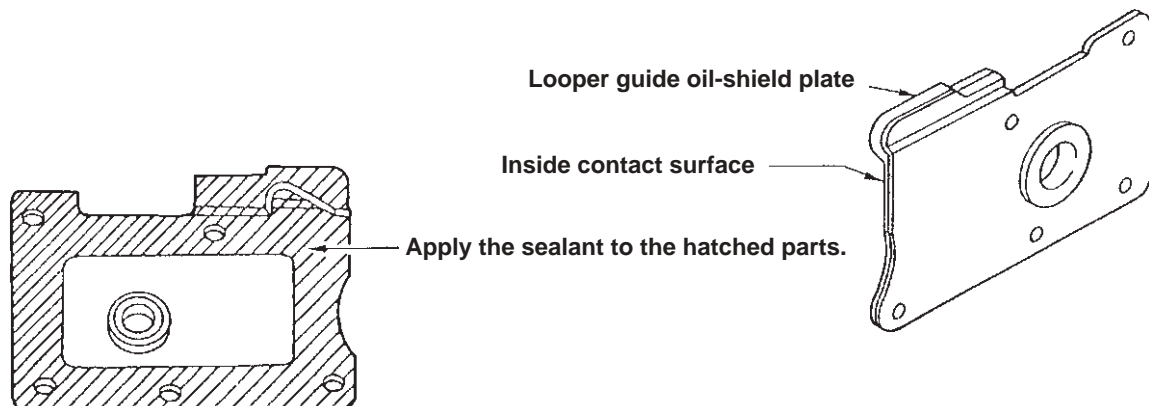
- ① Bottom surface of upper looper guide support ③ (Three-bond 1104) Apply the sealant between the bottom surface of upper looper guide support ③ and the frame surface.  
Front edge of upper looper guide support (Three-bond 1212)  
After assembling the front edge of upper looper guide support ③, apply the sealant to the gap of the contact surface between the frame and upper looper guide support ③ (  section in the illustration).



- ② Apply the sealant to setscrews (4 pcs.) of the dust-proof rubber case setscrews and the feed bar support, left setscrews (JUKI seal).

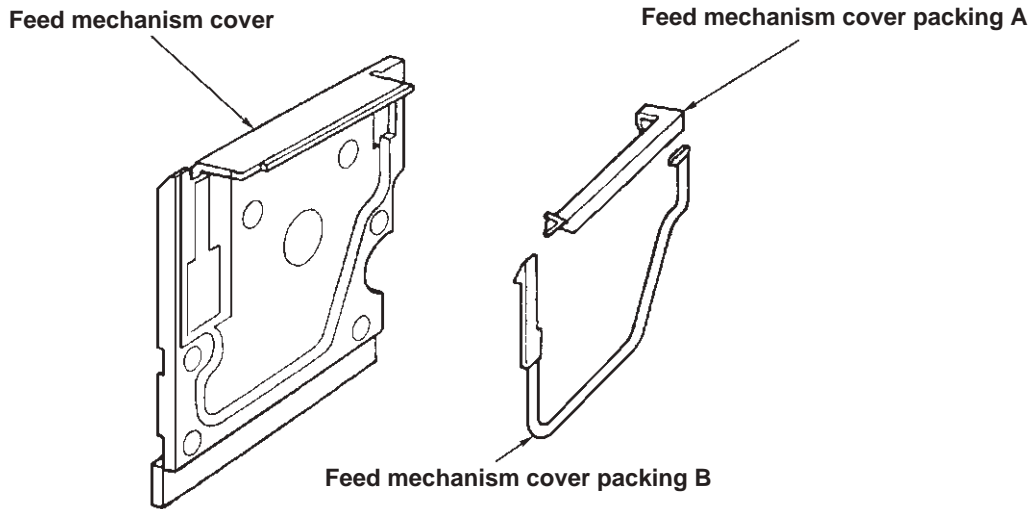


- ③ Looper guide oil shield plate (JUKI seal)  
Apply the sealant to the inside of the looper guide oil-shield plate.



④ Portion of the feed mechanism cover packing (Three-bond 1212)

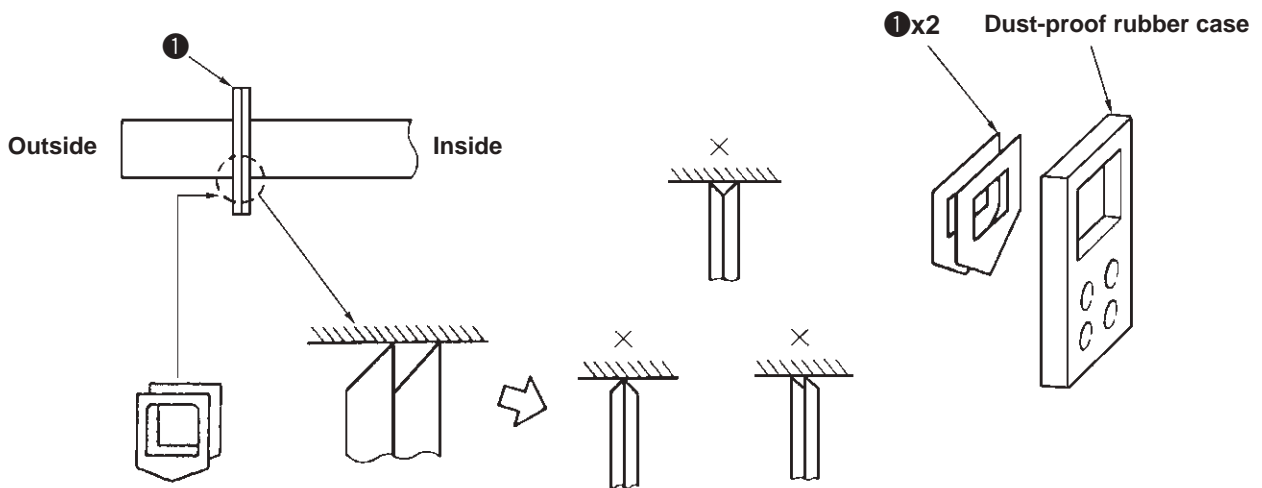
Insert the feed mechanism cover packings A and B to the feed mechanism cover, and apply sealant (Three-bond 1212) to the packing portion.



2) Precautions to be taken with respect to the lubricating components

Feed bar components

- Be careful of the orientation of the dust-proof rubber ①.



\* Assembling as shown in the illustration will result in oil leakage. So, be careful.

## (5) Kinds of motor pulleys, belts and frame support plate bolts

### 1) Motor pulleys and belts

Sewing speed of sewing machine (rpm)	50 Hz			60 Hz		
	Outside diameter of motor pulley mm (Effective diameter mm)	V-belt		Outside diameter of motor pulley mm (Effective diameter mm)	V-belt	
		Semi-sunken type mm (inch)	Fully-sunken type mm (inch)		Semi-sunken type mm (inch)	Fully-sunken type mm (inch)
8000	150 (145)	1016 (40)	864 (34)	125 (120)	965 (38)	813 (32)
7500	140 (135)	965 (38)	864 (34)	120 (115)	965 (38)	813 (32)
7000	130 (125)	965 (38)	864 (34)	110 (105)	914 (36)	813 (32)
6500	120 (115)	965 (38)	813 (32)	100 (95)	914 (36)	813 (32)
6000	110 (105)	914 (36)	813 (32)	95 (90)	889 (35)	762 (30)
5500	100 (95)	914 (36)	813 (32)	85 (80)	889 (35)	762 (30)
5000	90 (85)	889 (35)	762 (30)	80 (75)	864 (34)	762 (30)
4500	85 (80)	889 (35)	762 (30)	70 (65)	864 (34)	762 (30)
4000	75 (70)	864 (34)	762 (30)	60 (55)	864 (34)	737 (29)

- \* Use a motor of 3/4 HP (550 W) when the sewing machine runs at 7,000 rpm or higher speed.  
Use a motor of 1/2 HP (400 W) when the sewing machine runs at a speed lower than 7,000 rpm.

**(Caution) If a motor of less than 400W is used, in the low temperature area, viscosity of oil increases and the sewing speed may not increase or the sewing machine may fail to run in some cases.**

\* Part No. of motor pulley

MTKP0xxx000 (Enter the effective diameter to "xxx.")

If the outside diameter of the motor pulley is 150 mm, the effective pulley will be 145.

.....So, the part No. will be MTKP0145000.

If the outside diameter of the motor pulley is 90 mm, the effective pulley will be 085.

.....So, the part No. will be MTKP0085000.

\* Part No. of belt

MTJVM00xx00 (Enter a number that shows the belt length to "xx.")

If the belt length is 1016 mm (40 inches), enter "40" to "xx."

.....So, the part No. will be MTJVM004000.

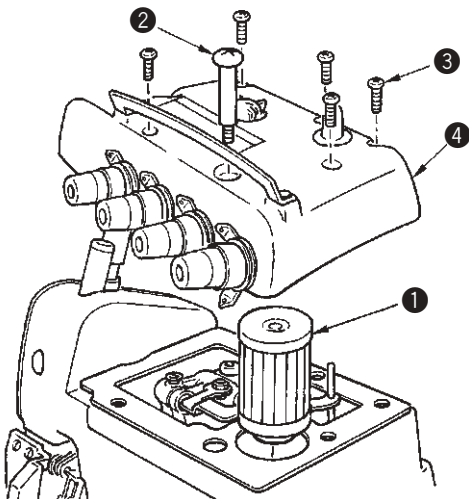
If the belt length is 889 mm (35 inches), enter "35" to "xx."

.....So, the part No. will be MTJVM003500.

### 2) Pat No. of frame support plate bolt

Support plate bolt (A)	13155007	x4
Support plate bolt lock nut	NS6240630SE	x4
Support plate bolt lock washer	WP1002036SE	x4
Support plate bolt lock spring washer	WS1002560KR	x4

## (6) Inspection and replacement of the cartridge filter



1. When the sewing machine is used for many hours, cartridge filter 1 may be clogged with dust.

When this state continues, oil is not fed through cartridge filter 1 and abnormal worn-out or seizure of the sewing machine will be caused.

\* Normally, be sure to check cartridge filter 1 every 6 months, and clean or replace it.

2. Inspecting/replacing procedure

1) First, remove drain screw 2.

2) Remove setscrews 3 and remove upper cover 4 toward right above.

**(Caution) When upper cover 4 is moved in the lateral direction, the oil amount indicating rod or the filter may be damaged.**

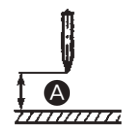
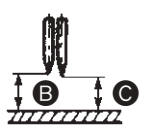
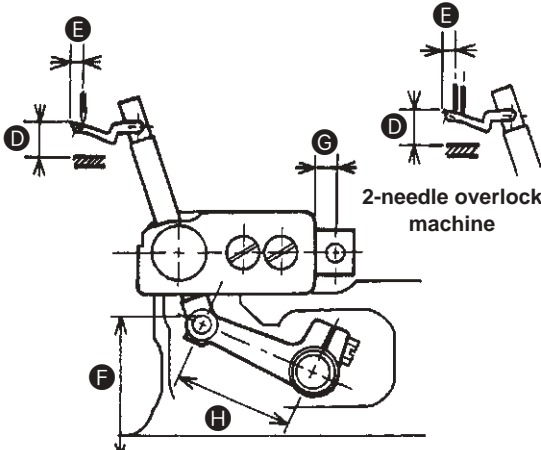
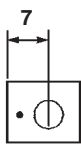
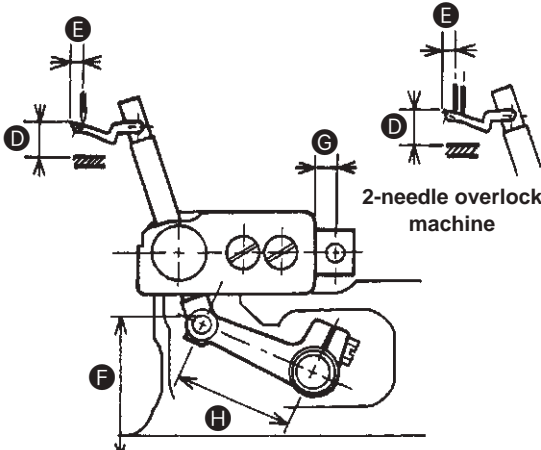
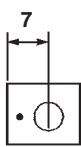
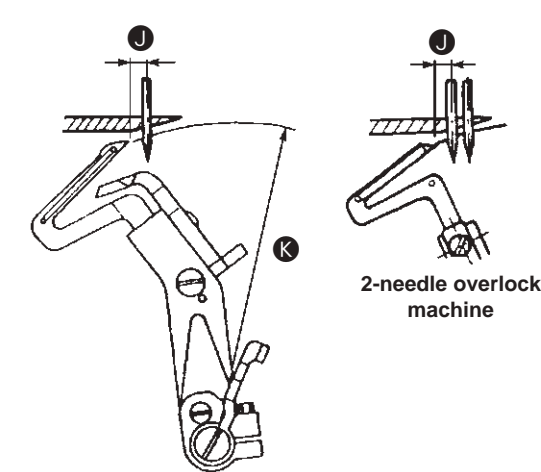
3) Remove and inspect cartridge filter 1. If cartridge filter 1 is clogged with dust, clean it or replace it with a new one.

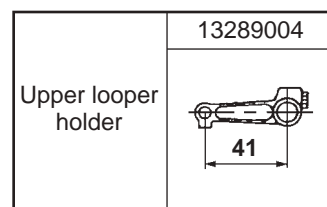
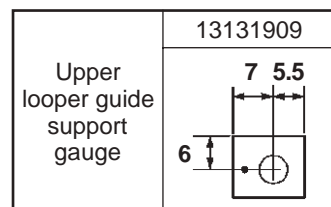
4) Insert cartridge filter 1 in place and install upper cover 4 with setscrews 3.

\* Part No. of cartridge filter : 11843208

# 5. ADJUSTMENT OF THE NEEDLE HEIGHT AND LOOPER TIMING

(Unit : mm)

Needle height	1- needle overlock machine/safety stitch machine 	2- needle overlock machine 	Classification	Description	Needle height		Upper looper components					Lower looper components		
					1-needle 2-needle (left) A B	2-needle (right) C	Upper looper height D	Projection of upper looper E	Height of pin F	Position of guide support G	Center-to-center of upper looper holder H	Feed amount of lower looper J	Radius of lower looper K	
Upper looper components			1-needle overlock machine	MO- 6904C	OF4 - -307 OD6 to OE6	10.5	-	10.9	4.4	47.15		41	3.6	67.4
				MO- 6914C	BD4 - -307 BD6 to BE6	10.5	9.1	10.9	4.4	47.15		41	3.6	67.4
Lower looper components			2-needle overlock machine											

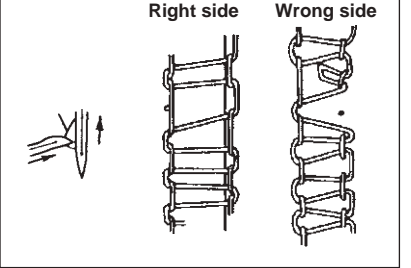


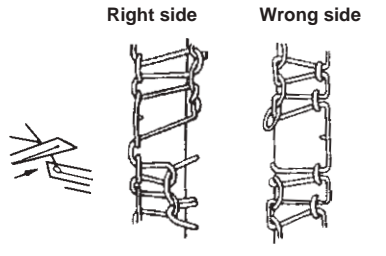
## 6. TROUBLES AND CORRECTIVE MEASURES

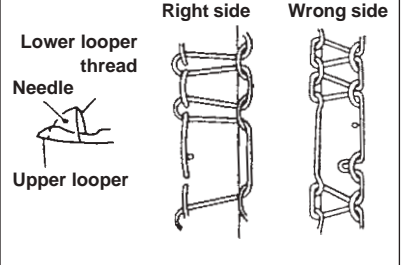

Trouble	Case (1)	Case(2)	Check and Corrective measures	Page
1. Needle thread breakage	Threading	The thread is entangled with the thread guide, or the machine head has been incorrectly threaded.	Refer to the threading diagram.	12
	Thread path	Scratches, burrs or rust on the pawls or needle holes of the 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,	
	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.	
	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.	6
	Contact	The lower looper has been improperly positioned and strikes the feed dog or throat plate.	Properly position the lower looper.	
	Threading	The thread is entangled with the thread guide, or the looper has been incorrectly threaded.	Refer to the treading diagram.	

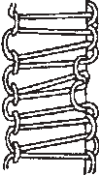


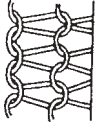
Trouble	Case (1)	Case(2)	Check and Corrective measures	Page
2. Looper thread breakage	Thread path	Scratches, burrs, rust, etc, on the paw of the throat plate, stitch tongue, looper, looper thread take-up, thread guide, or tension discs causes friction.	Remove such scratches, burrs, etc. and carry out 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.	28
	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.	28
	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.	
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.	10
	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.	
	Needle guards	A needle guard has been improperly positioned, causing the needle point to strike it.	Refer to the pertinent Standard Adjustment.	12
	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, 12

Trouble	Case (1)	Case(2)	Check and Corrective measures	Page
4. Overlocking needle thread stitches are skipped.	Lower looper	The blade point has defective shape and does not catch needle thread loops.	Replace the lower looper.	
The lower looper fails to catch needle thread loops.	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.	
	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.	12
	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, 6
	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.	
	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.	28
	Threading	The thread has been entangled with a thread guide. The reading has bot been correctly done.	See the threading diagram.	

Trouble	Case (1)	Case(2)	Check and Corrective measures	Page
5. Lower looper stitches are skipped.	Threading	The thread has been entangled with a thread guide. Threading has not been done correctly.	Refer to the threading diagram.	
<p data-bbox="125 300 510 347"><b>The upper looper does not catch the lower looper thread.</b></p> <div data-bbox="125 363 510 619">  </div>	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 clearance between the needle and the back of lower looper 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, 10
	Thread amount	Too much lower looper thread is fed, giving slack of thread.	Slightly lower the looper thread take-up (left) (reduction in distance J), or slightly reduce distance I to decrease the amount of thread.	28
			Slightly raise the looper thread take-up (right) (increase in dimension O) to decrease the amount of thread. Lower the lower looper thread guide (increase in distance L), and decrease distance N to reduce the amount of thread.	28
	Threading	The thread has been entangled with a thread guide. The reading has bot been correctly done.	See the threading diagram.	

Trouble	Case (1)	Case(2)	Check and Corrective measures	Page
6. Upper looper thread stitches are skipped.	Threading	The thread has been entangled with a thread guide. Threading has not been done correctly.	See the threading diagram.	
<p data-bbox="114 293 526 347"><b>The needle does not take the upper looper thread.</b></p> 	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.	4, 10
	Amount of thread	Excessive upper looper thread is fed, producing stack of thread.	Slightly lower the looper thread take-up (left) (reduction in distance J), or slightly reduce distance I to decrease the amount of thread. Make the upper looper thread guide (right) (shorter decrease in distance K), to reduce the amount of thread.	28
			Slightly raise the looper thread take-up (right) (increase in dimension O) to decrease the amount of thread.	28
			If the thread tension is not enough, increase it.	
7. Overlocking chain-off thread is bad.	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.	Correctly position the throat plate.	4
<p data-bbox="114 932 526 1005">Provided that no chain-off trouble occurred when sewing operation was done with materials set on the machine.</p>	Feed dog	The auxiliary feed dog has scratch.	Repair or replace the auxiliary feed dog.	12
		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.	
	Adjustment of looper	Adjustment of loopers for producing chain-off thread without materials requires higher accuracy.	Refer to the related 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.	28

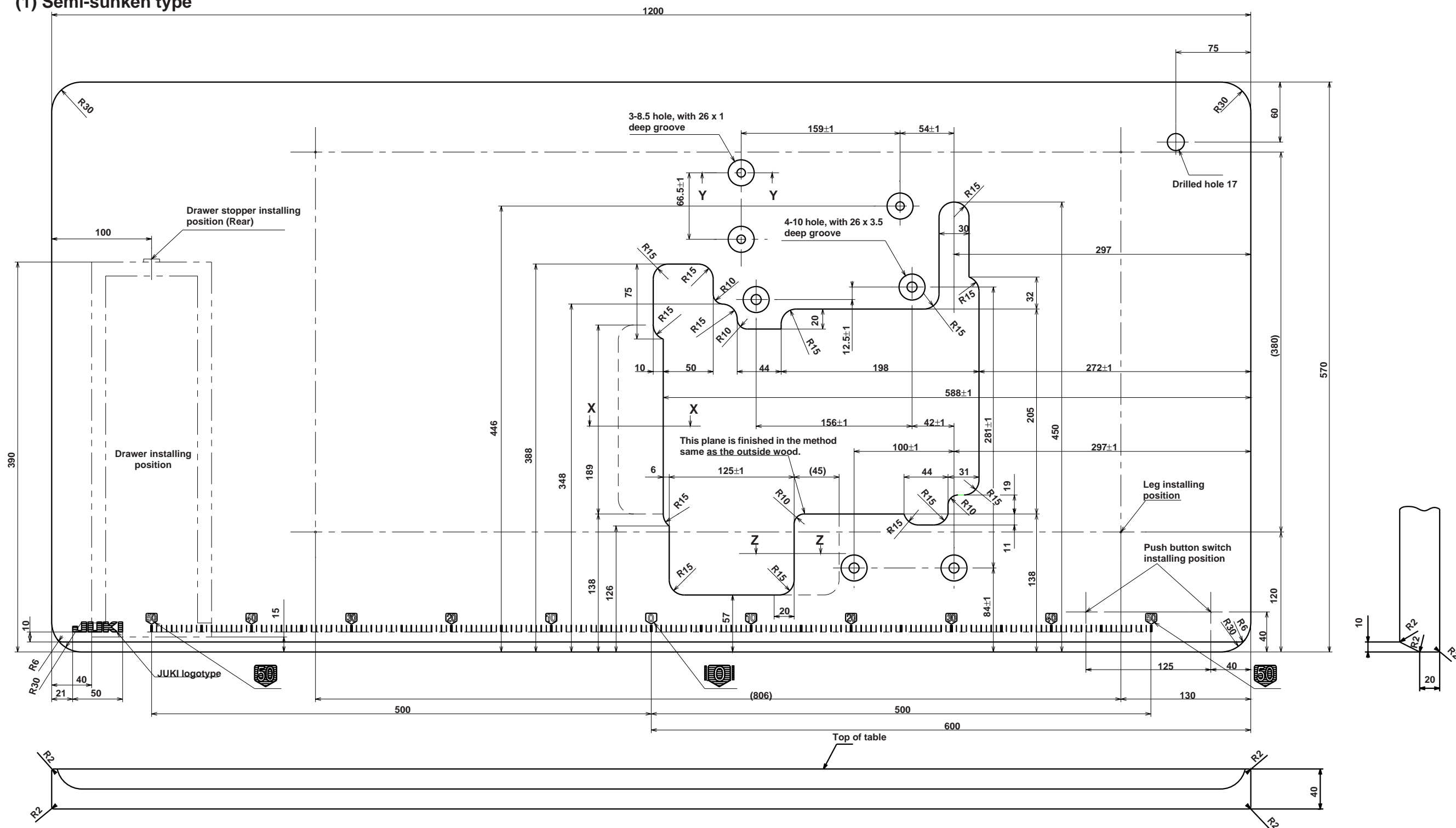
Trouble	Case (1)	Case(2)	Check and Corrective measures	Page
8. Overlocking needle thread is loose.	Position of the needle thread take-up guide and needle thread guide	They are positioned too high, and the thread take-up draws out excessive needle thread.	Refer to the pertinent Standard Adjustment.	28
	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.	
9. 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.	
<p data-bbox="114 523 524 568"><b>The knotting position of the upper and lower looper threads varies as shown below.</b></p> 	Looper thread take-up	The looper thread take-up (left) is too high.	Slightly lower the looper thread take-up (left)	28
	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 cones into contact unevenly with the throat plate and feed dogs and tends to meander.	Make the presser foot come into contact with them evenly.	16
	Thread stand	Thread dose not come out smoothly.	Make the thread come out smoothly.	
	10. 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 dimension I). Raise the looper thread take-up (right) (increase in distance O).	28
11. 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 I). Lower the looper thread take-up (right) (reduction in distance O).	28

Trouble	Case (1)	Case(2)	Check and Corrective measures	Page
12. Knotting position is not correct.	Threading	Re-threading after thread breakage, etc. has been done erroneously.	See the threading diagram.	
<p data-bbox="152 328 250 347"><b>Right side</b></p>  <p data-bbox="264 408 474 453"><b>Knots are deflected to the upper looper side.</b></p>	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.	28
		The upper looper thread guide (right) is too short.	Increase distance K.	
13. 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 packing.	
	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.	14
	Height of feed dogs	A difference in level exists between the main feed dog and differential feed dog.	Eliminate the difference in level.	12
	Adjustment of differential feed	The differential feed has been improperly adjusted.	Provide differential feed suited to the material.	14

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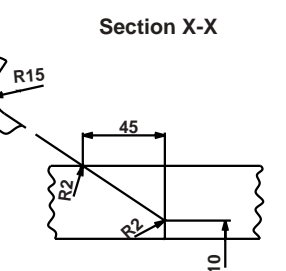
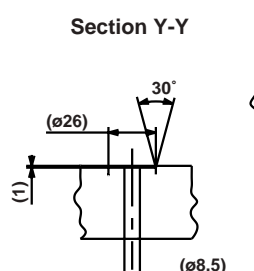
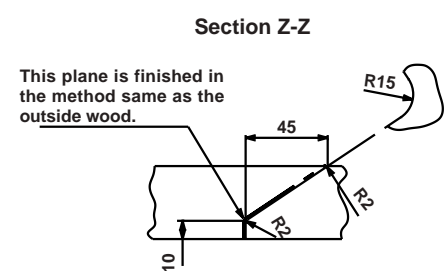
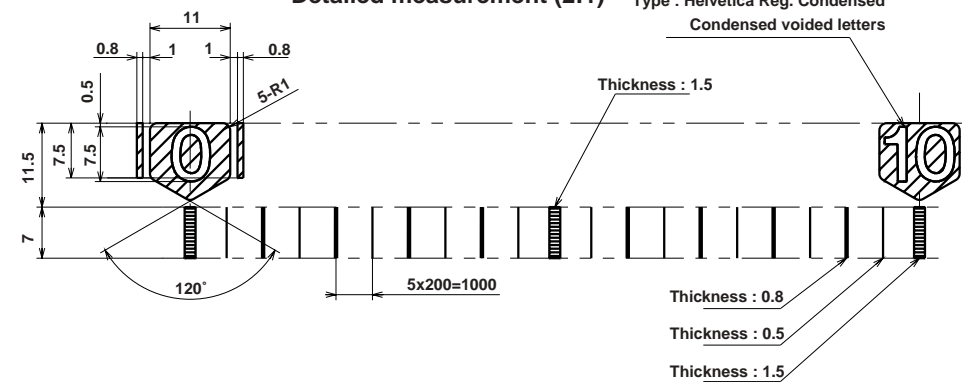
# 7. DIMENSIONS OF TABLE

## (1) Semi-sunken type



### Detailed measurement (2:1)

Type : Helvetica Reg. Condensed  
Condensed voided letters



Part No. of table : 12221602

(Note) All dimensions are in millimeter.  
Detailed dimensions of section  
X-X, section Z-Z and section Y-Y



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