

# **EX** *Series Technical Manual*

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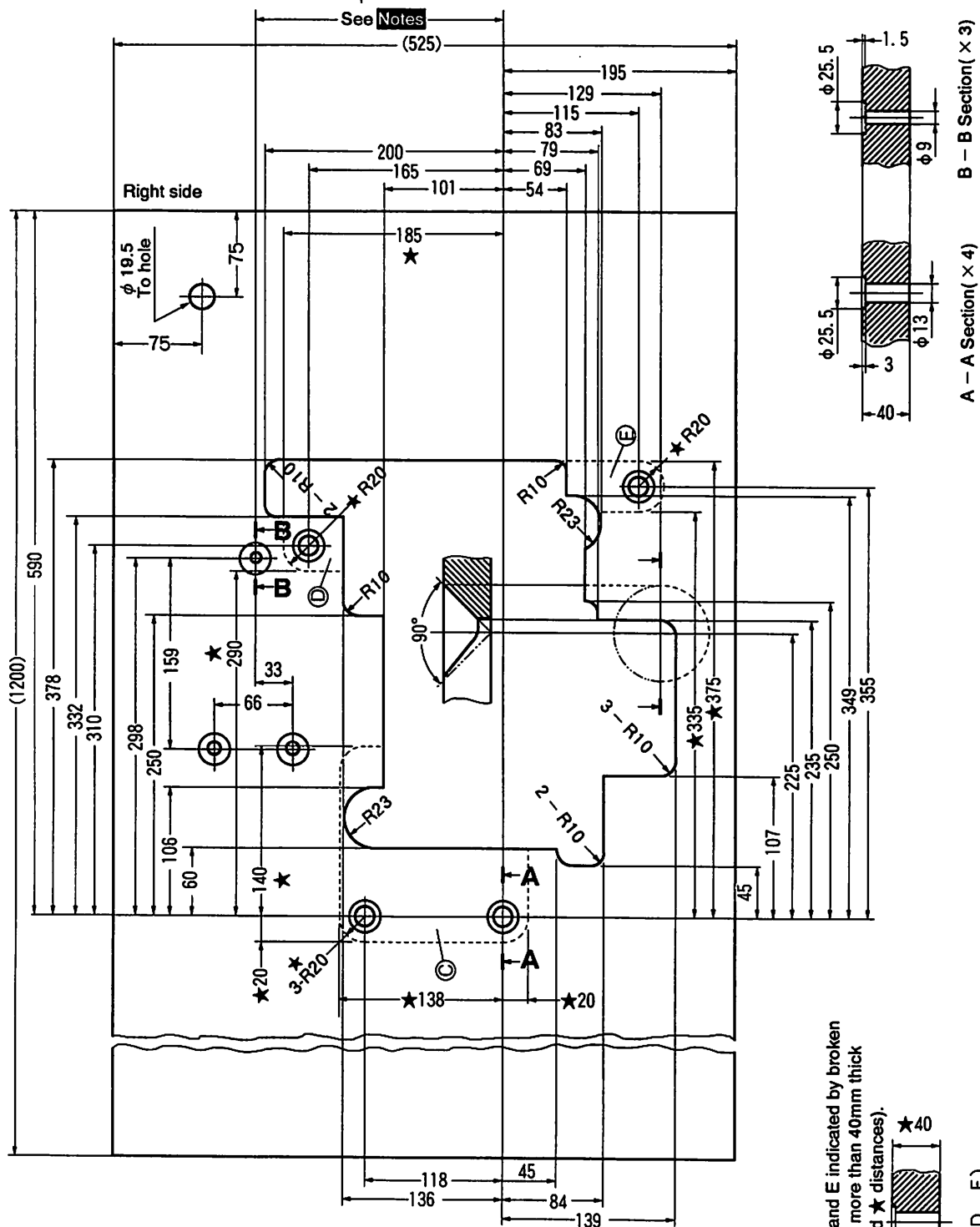
- ADJUSTING THE HEMMING WIDTH.....30

# SCHEMATIC DIAGRAM

## 1. Semi-submerged mounting

Note

- For motors made in Japan.....210mm
- For Efka motor .....238mm



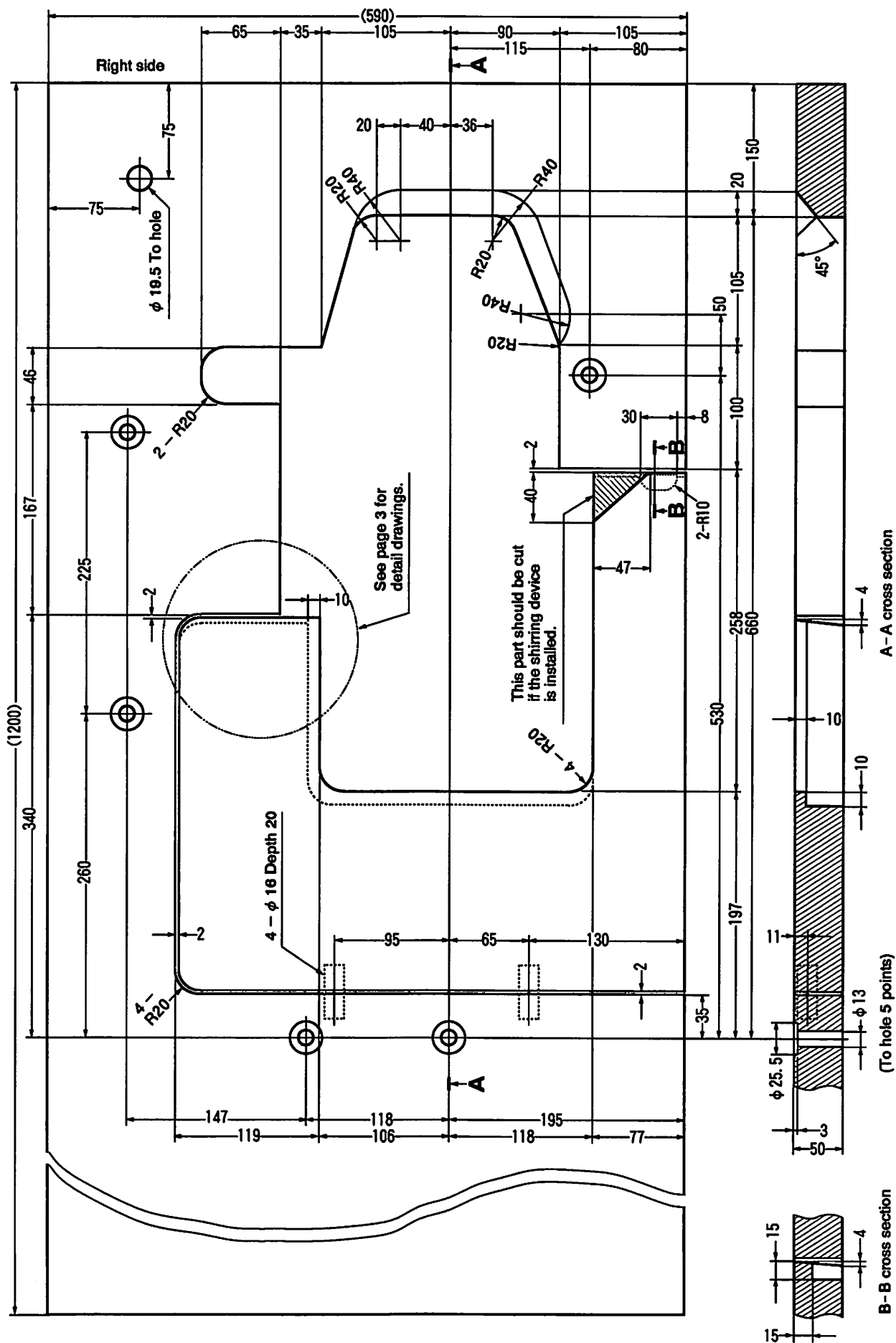
Note) Cut parts C,D and E indicated by broken line for a table more than 40mm thick (see asterisked ★ distances).



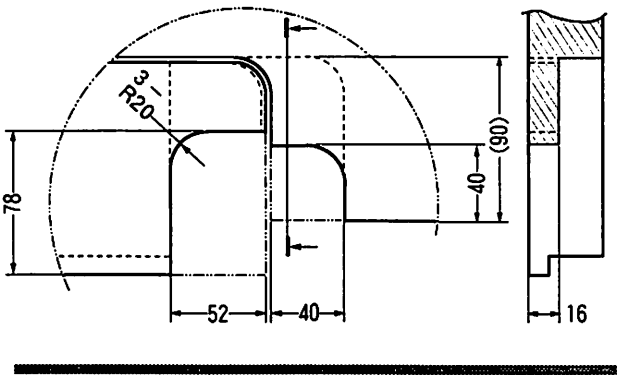
(C, D, E)

A - A Section( × 4) B - B Section( × 3)

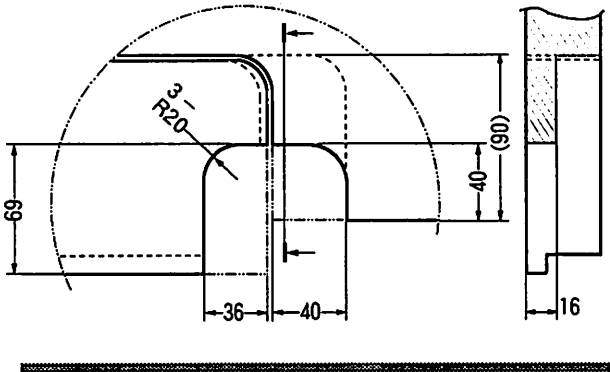
2.Fully-submerged mounting



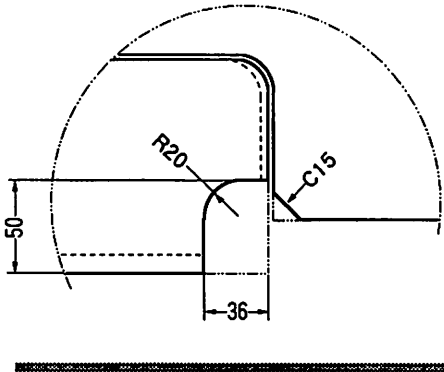
■AT121, 221, 204



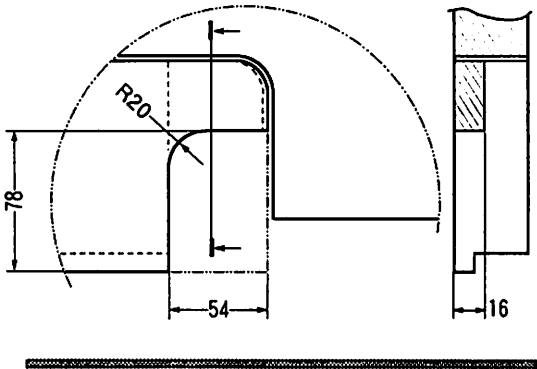
■TK120, 121  
AT120



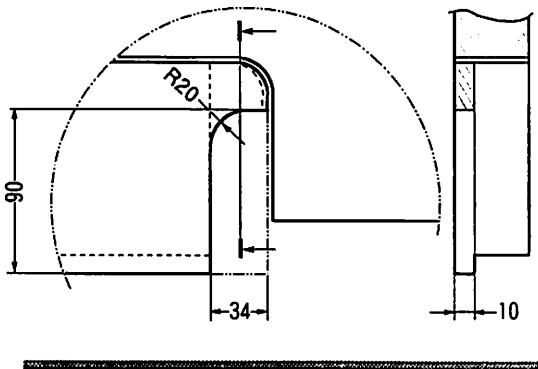
■TK022



■KH020A~E, H



■KS371~373

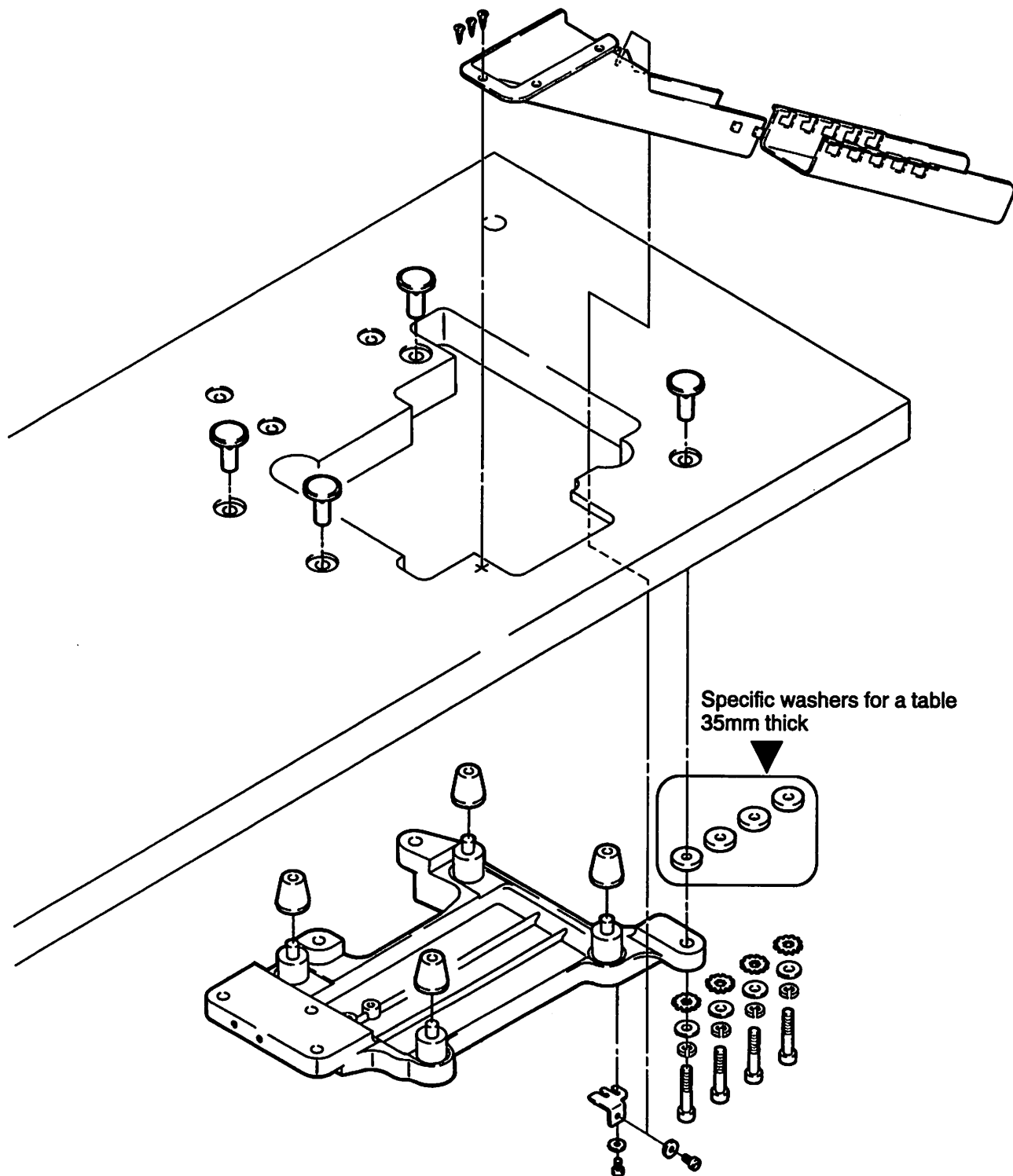


## INSTALLATION CHART OF THE TABLE MOUNTING

### 1. Semi-submerged table

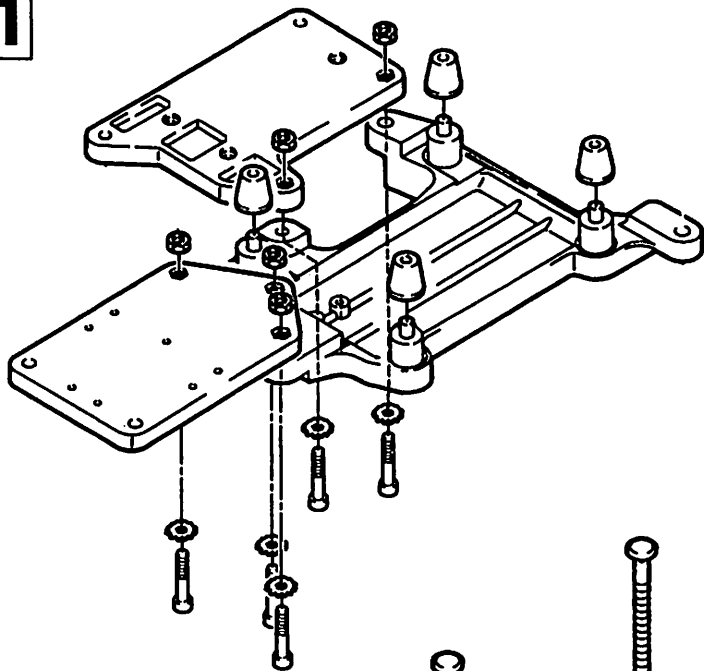
#### Note

There are two kinds of tables, 35mm and 40mm thick, for the EX Series. Specific washers are needed for a table 35mm thick.

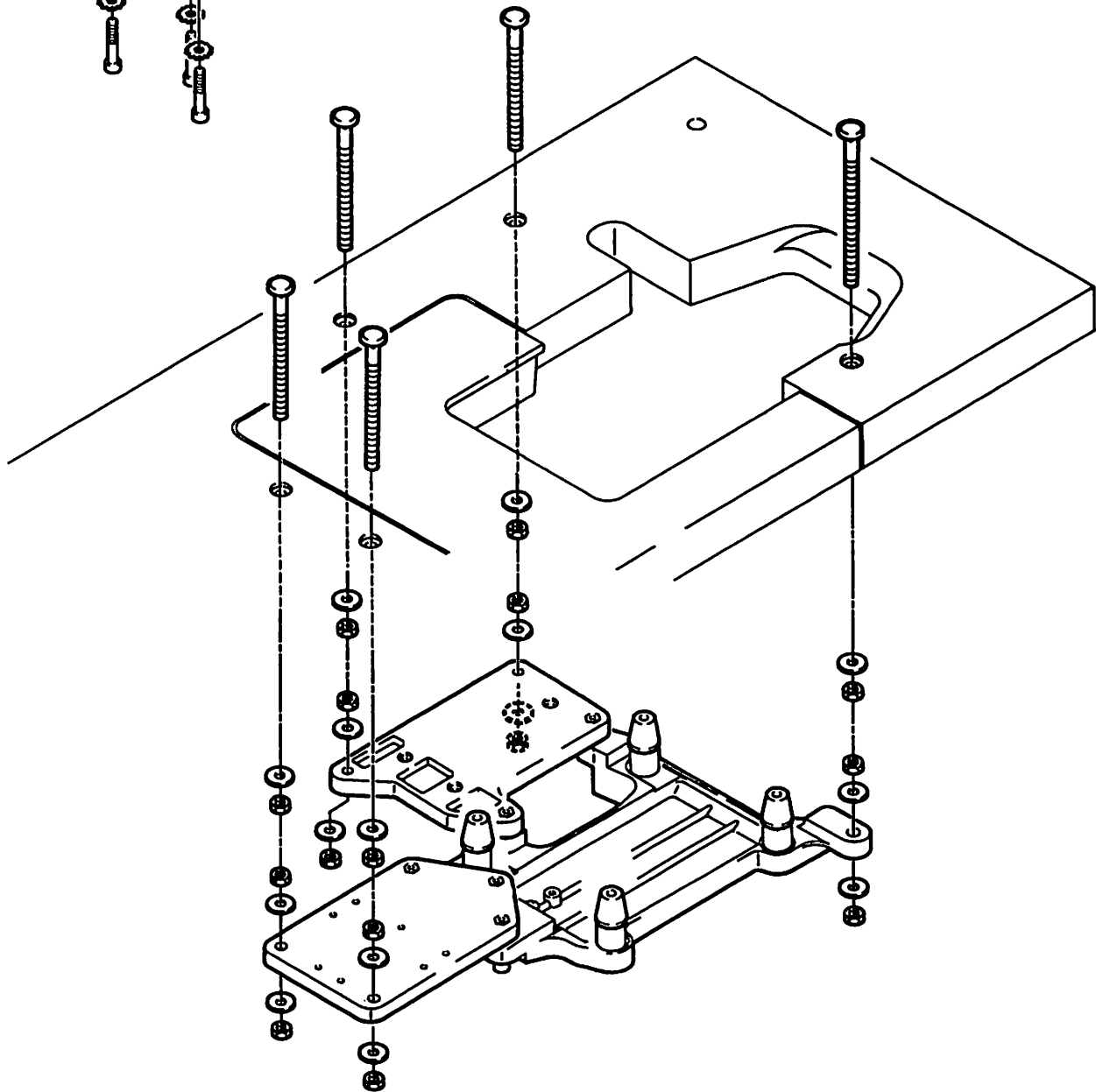


2.Fully submerged table

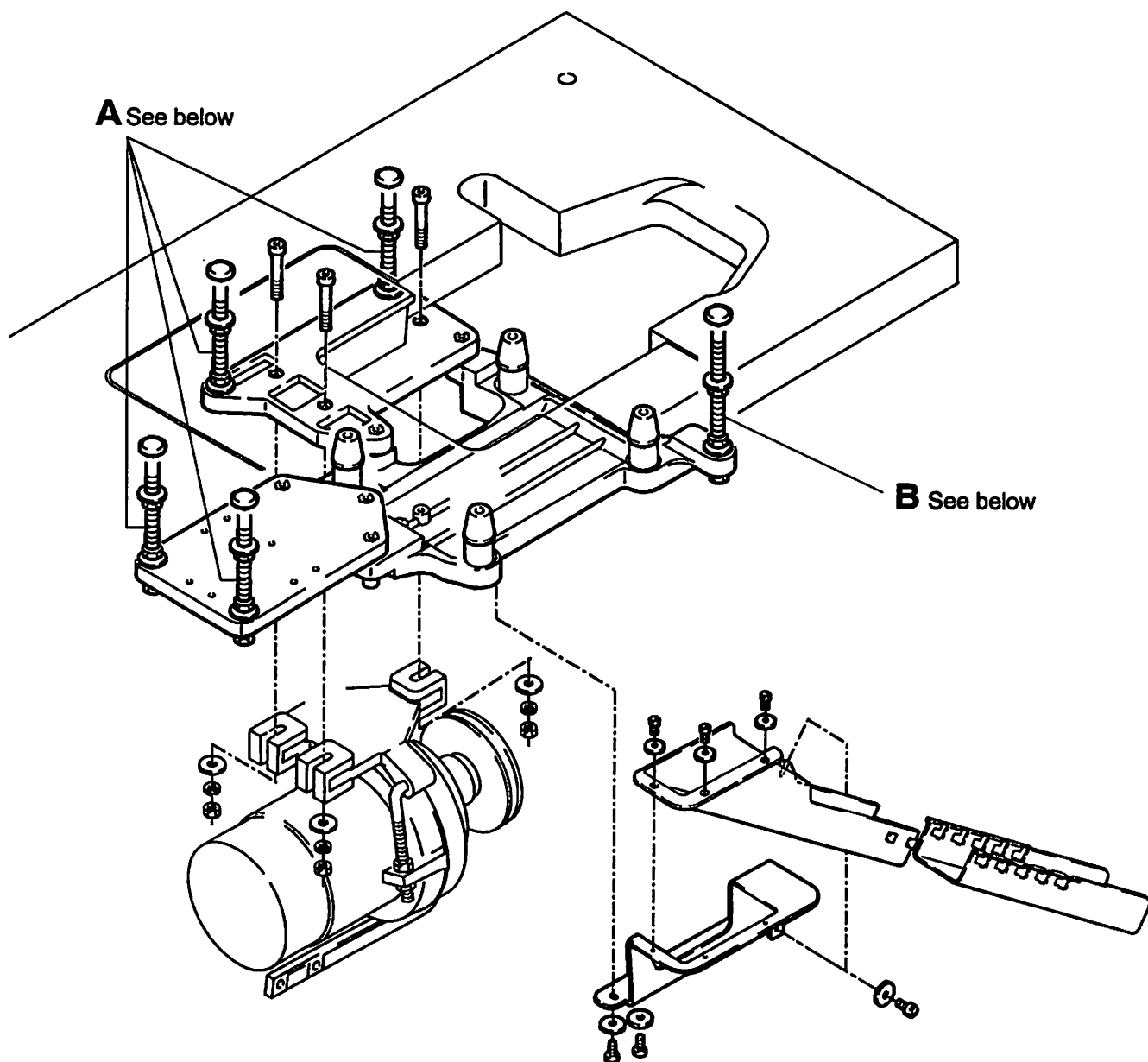
1



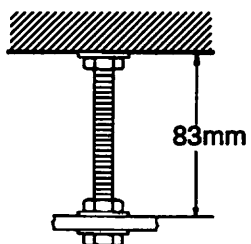
2



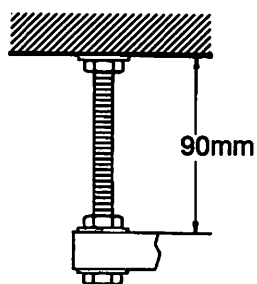
# 3 - 1



**A** Distance for the shafts of bolts A



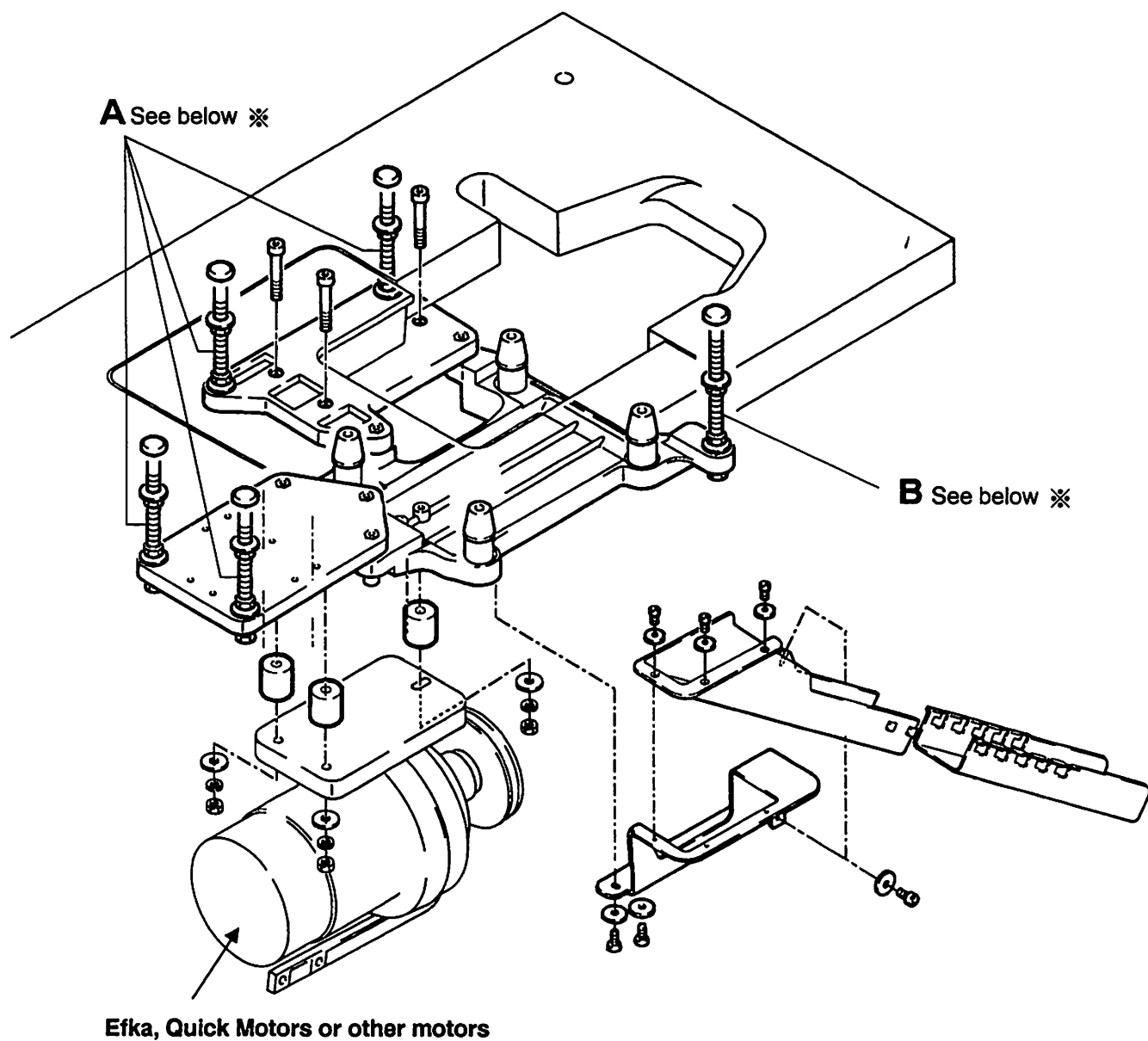
**B** Distance for the shafts of bolt B





# 3 - 2

【 For Efka, Quick Mortor or other motors 】



※ Refer to page 6 for A and B.

MOTOR PULLEY AND BELT

- 1.Belt: M type V belt
- 2.Select the proper motor pulley by referring to Table 1.

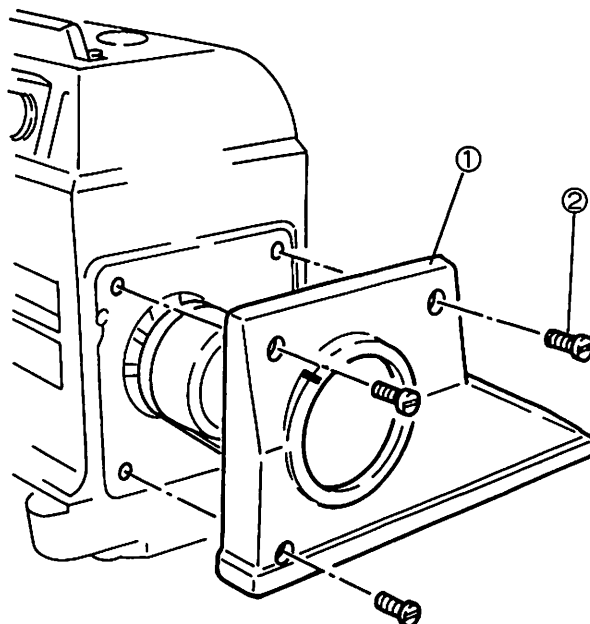
Table 1  
Relationship between machine speed and motor pulley

Motor pulley diameter (mm)	Machine speed (S.P.M.)	
	60Hz	50Hz
30	1,880	1,570
35	2,195	1,830
40	2,510	2,100
45	2,820	2,360
50	3,140	2,620
55	3,450	2,880
60	3,760	3,140
65	4,080	3,400
70	4,390	3,665
75	4,705	3,930
80	5,020	4,190
85	5,330	4,450
90	5,645	4,710
95	5,960	4,970

Motor pulley diameter (mm)	Machine speed (S.P.M.)	
	60Hz	50Hz
100	6,270	5,240
105	6,590	5,500
110	6,900	5,760
115	7,210	6,020
120	7,530	6,280
125	7,840	6,545
130	8,155	6,810
135	8,470	7,070
140	8,780	7,330
145	9,095	7,590
150	9,410	7,850
155	9,720	8,120
160	10,040	8,930

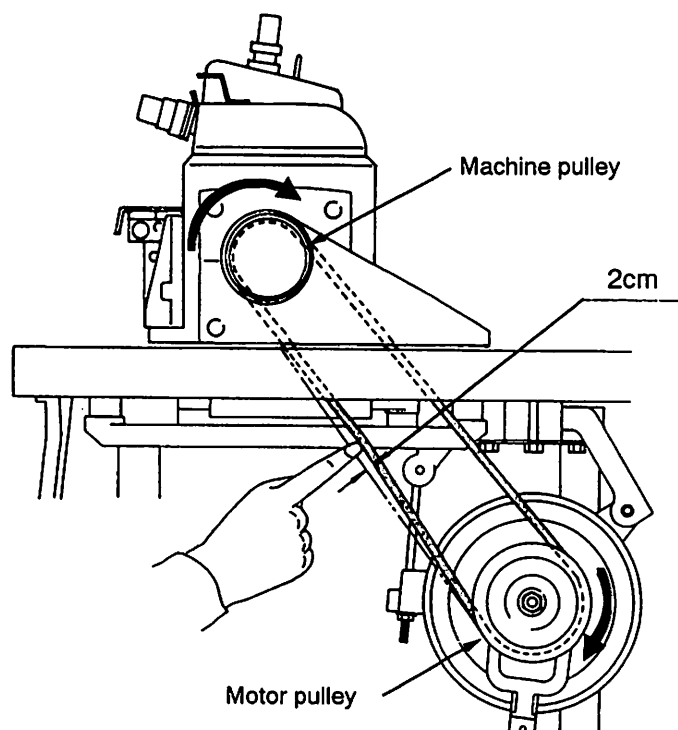
## INSTALLING THE MACHINE HEAD

1. Mount the machine head on the machine table board and place the belt on the machine pulley. Then place the belt on the motor pulley.  
Adjust the belt tension.
2. Adjust the belt tension so that approximately 2cm deflection can be obtained when the middle point of the belt is pressed.
3. Install belt cover ① with screws ②.



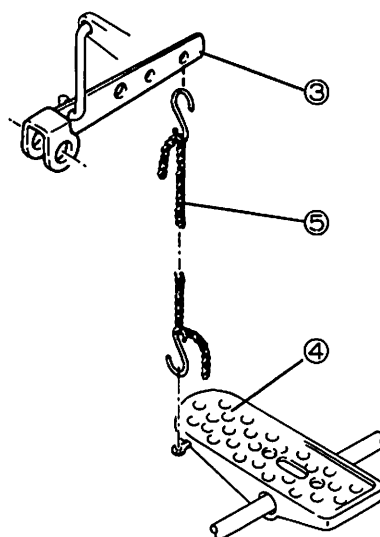
## TURNING DIRECTION OF THE MACHINE PULLEY

The machine pulley (handwheel) rotates clockwise as seen from the handwheel end of the machine.



## HOOKING THE CHAIN FOR THE PRESSER FOOT LIFT TREADLE.

Connect presser foot lever ③ and treadle ④ by using chain ⑤.  
Adjust the length of chain ⑤ so that treadle ④ can be easily pressed.



## LUBRICATION

### 1. Oil

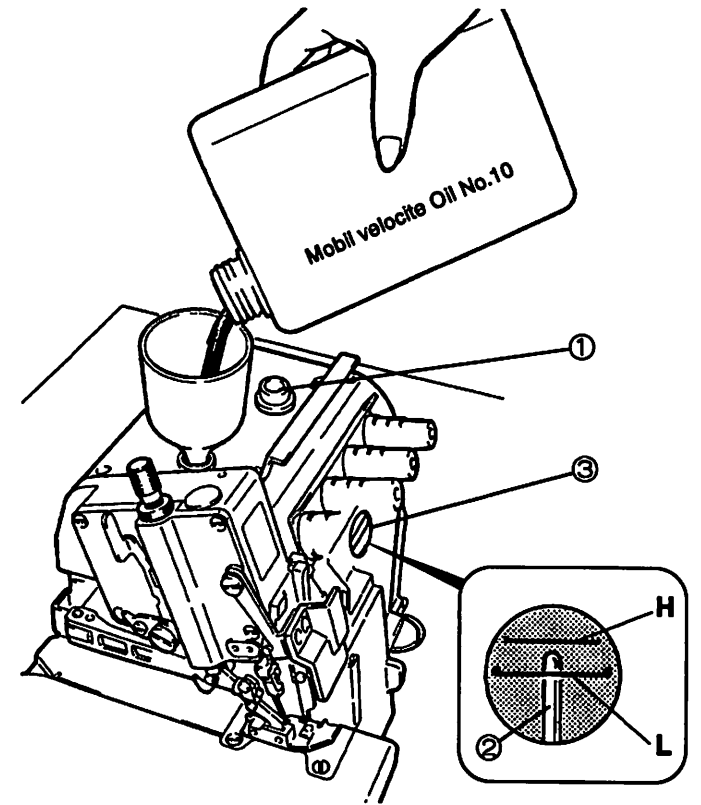
Mobil Velocite Oil No. 10  
(ISO Viscosity Grade 22)

### 2. To fill the machine with oil

Remove oil plug ①.  
Supply oil until the top of indicator ② reaches line (H) of oil gauge ③.

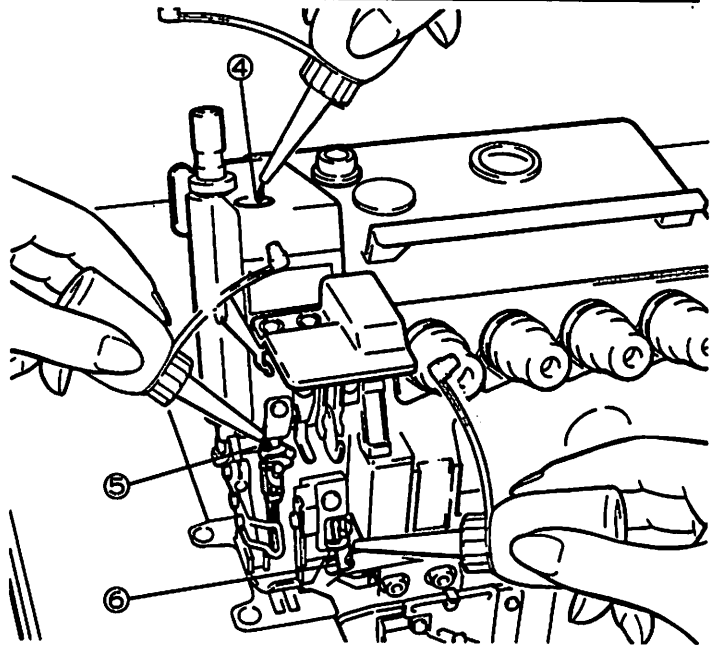
### 3. Oil level

Add oil to ensure the top of indicator ② always lies between (H) and (L) lines.



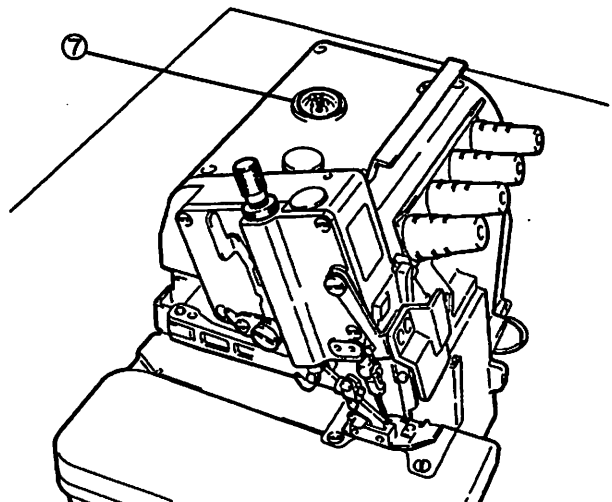
### 4. Manual lubrication

Apply 2 or 3 drops of oil by hand to oil hole ④, needle bar ⑤ and upper looper holder ⑥ when the machine is used for the first time or has been left unused for some time.



### 5. Checking oil circulation

Once the machine has been properly filled with oil, press the machine treadle to run the machine and check oil gauge window ⑦ to see if the oil is flowing.



### SILICONE OIL for H.R. DEVICE

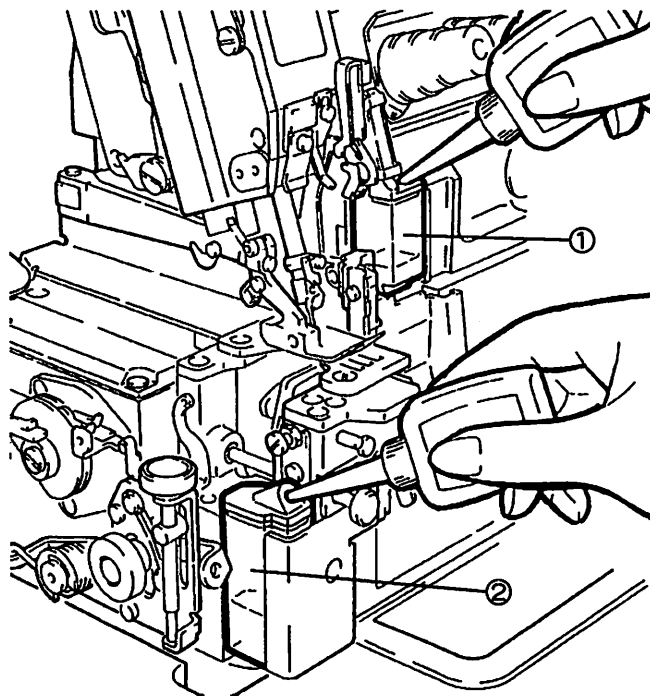
Fill silicone oil tanks ①, ② with silicone oil.

To prevent thread breakage or fabric damage, add the silicone oil before it is too low.

Note :

Use Pegasus recommended silicone oil.

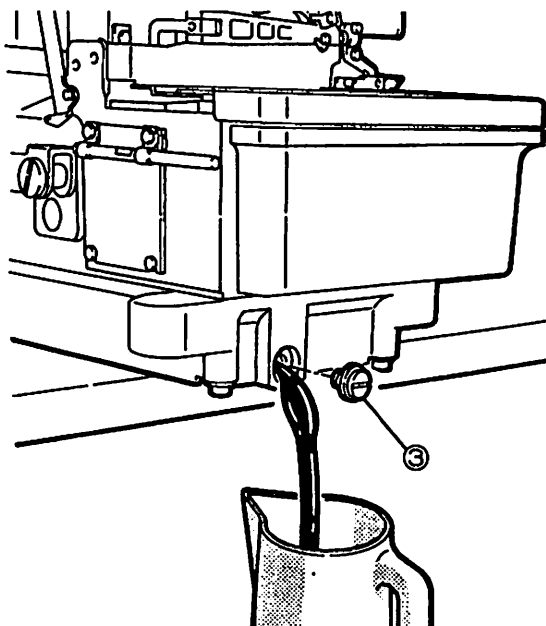
[UNION CARBIDE CORPORATION UCC L-45(350)]



### OIL REPLACEMENT

Replace the oil one month after the first use and thereafter every six months.

If you keep using the old oil, shortening machine life.



### TO DRAIN THE OIL

1. Drain the oil by removing screw ③ on the left side of the oil pan.

2. Tighten screw ③ after draining.

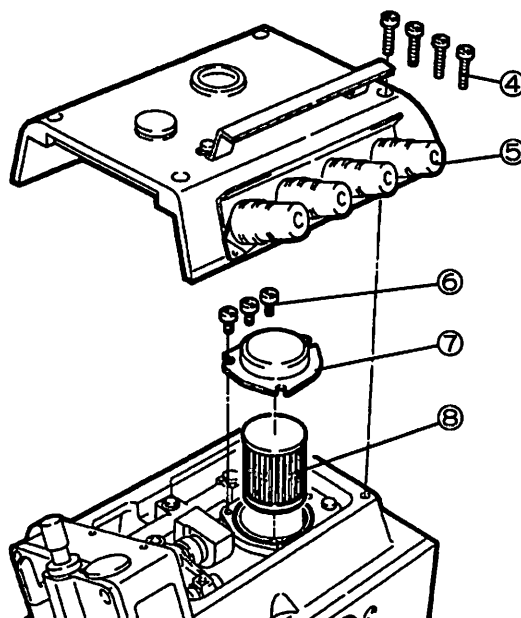
### REPLACING THE OIL FILTER

1. Contaminants on oil filter ⑧ may cause improper lubrication.

Check and clean oil filter ⑧ every six months by removing ④ to ⑥.

Replace the oil filter if necessary.

2. After cleaning or replacing the oil filter, install ④ to ⑧.

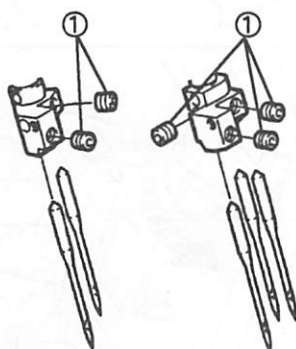


## REPLACING THE NEEDLE

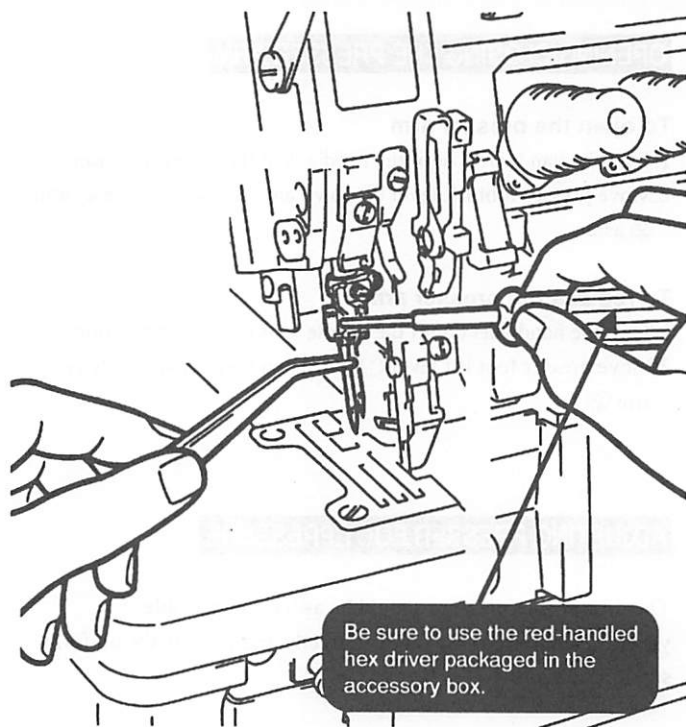
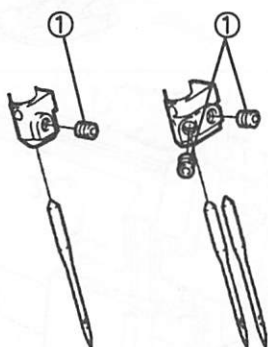
To replace the needle, loosen screws ① as shown below (do not remove screws). Check the needle carefully to see that the scarf is turned to the rear of the machine and insert the needle to the proper depth.

Then tighten screws ①.

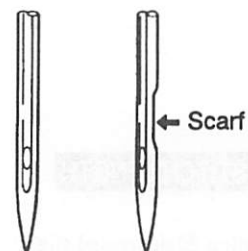
EX3200Series



EX5200Series

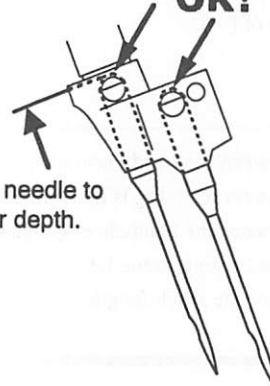


**OK! NO!**



**OK!**

Insert the needle to the proper depth.



## ADJUSTING THE THREAD TENSION

To tighten the thread, turn each knob clockwise.

To loosen the thread, turn each knob counterclockwise.

Each thread tension should be as light as possible, yet be sufficient to produce balanced and beautiful stitches.





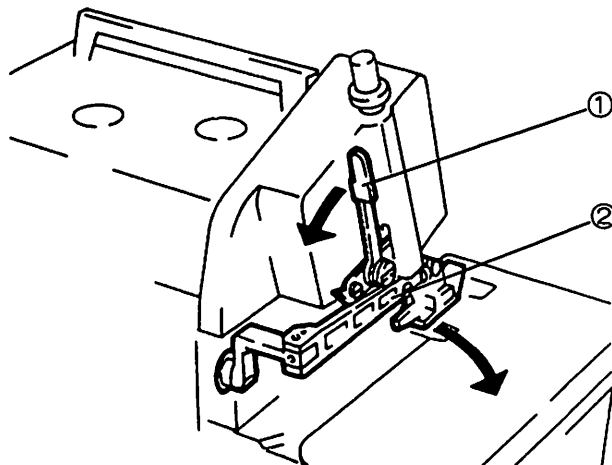
## OPENING/CLOSING THE PRESSER ARM

### To open the presser arm

1. Turn the handwheel until the needle is at its highest position.
2. Move presser foot lift lever ① down and then swing presser arm ② aside.

### To replace the presser arm

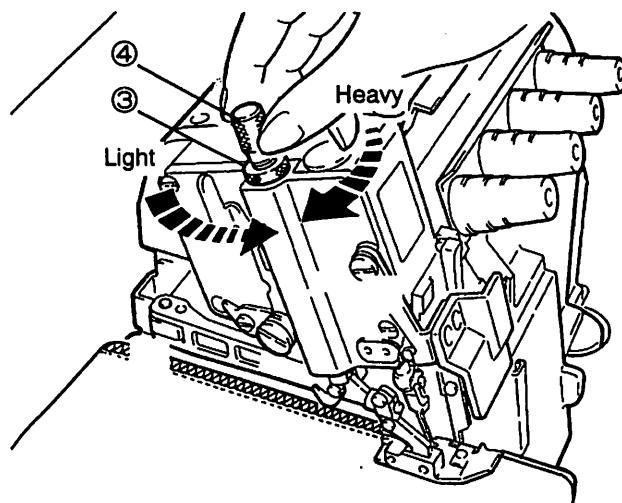
1. Turn the handwheel until the needle is at its highest position.
2. Move presser foot lift lever ① down and then replace presser arm ②.



## ADJUSTING PRESSER FOOT PRESSURE

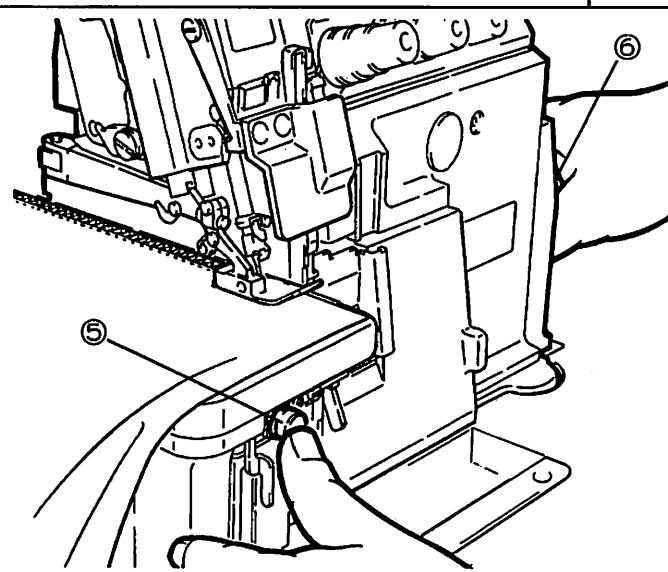
The presser foot pressure should be as light as possible, yet sufficient to feed the fabric correctly and provide the uniform stitch formation.

1. To adjust the presser foot pressure, loosen lock nut ③ and turn adjusting screw ④ as required.
2. After this adjustment, tighten lock nut ③.



## ADJUSTING STITCH LENGTH

1. With push button ⑤ depressed slightly, turn the handwheel. The push button will become depressed further.
2. In this condition, to produce coarse stitches, turn handwheel ⑥ in the direction of (+) and to produce fine stitches, turn handwheel ⑥ in the direction of (-).



### Note

The relationship between the handwheel gauge settings and the amounts fed by the main feed dog is listed in Table 2 (P.14). The relationship between the handwheel gauge setting and the stitch length varies according to the fabric to be used, differential feed ratio, etc. Adjust the stitch length for sewing conditions by referring to Table 2.

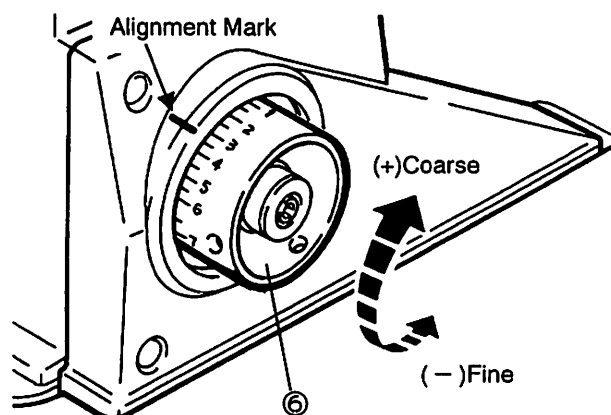


Table 2

Relationship between the handwheel gauge settings and the feeding amounts of the main feed dog - EX3200 Series (mm)

Application	Subclass	Handwheel gauge setting						
		1	2	3	4	5	6	7
Plain seaming	(15) EX3216-01/222	0.6	1.13	1.66	2.19	2.72	3.25	3.8
	(15) EX3216-01A/222							
	(15) EX3216N-01/222	1.0	1.84	2.68	3.52	4.36	5.2	-
	(15) EX3216N-01/232							
	(15) EX3216-02/223							
	(15) EX3216-02A/223							
	(15) EX3216-02A/233	0.6	1.13	1.66	2.19	2.72	3.25	3.8
	(15) EX3216-03/233							
	(15) EX3216-03/333							
	EX3244-03/333							
	(15) EX3216-04/435							
	EX3244-04/435	0.8	1.5	2.2	2.9	3.6	4.3	5.0
	(15) EX3216H-05/535							

Application	Subclass	Handwheel gauge setting						
		1	2	3	4	5	6	7
Shirring	(15) EX3216-42/233	0.6	1.03	1.46	1.89	2.32	2.75	3.2
	(15) EX3216-43/335							
Inserting tape	EX3216-53/233	0.6	1.13	1.66	2.19	2.72	3.25	3.8

Relationship between the handwheel gauge settings and the feeding amounts of the main feed dog - EX5200 Series (mm)

Application	Subclass	Handwheel gauge setting						
		1	2	3	4	5	6	7
Plain seaming	EX5204-01/223	0.6	1.13	1.66	2.19	2.72	3.25	3.8
	EX5214-01/233							
	EX5204N-01/232	1.0	1.84	2.68	3.52	4.36	5.2	-
	EX5214N-01/282							
	EX5204-02/233							
	EX5212-02/333	0.6	1.13	1.66	2.19	2.72	3.25	3.8
	EX5214-03/333							
	EX5214-M03/333							
	EX5214-03C3/333	0.6	1.02	1.44	1.86	2.28	2.7	-
	EX5214-M03C3/333							
Plain seaming Blindstitch hemming	EX5204-02H/223	0.6	1.13	1.66	2.19	2.72	3.25	3.8
Blindstitch hemming	EX5205-12/223							
	EX5203-12/223							
Serging	EX5203-22/233							
	EX5204-24/445	0.8	1.5	2.2	2.9	3.6	4.3	5.0
	EX5214-24/445							
Turn-down hemming	EX5204-32R1/223							
	EX5204-32R2/223	0.6	1.12	1.64	2.16	2.68	3.2	-
	EX5204-32R2/223L							

Application	Subclass	Handwheel gauge setting						
		1	2	3	4	5	6	7
Shirring	EX5214-43/333							
Shirring Piping	EX5214-43P1/333	0.6	1.03	1.46	1.89	2.32	2.75	3.2
	EX5214-43P2/333							
Attaching tape	EX5214-53/333	0.6	1.12	1.64	2.16	2.68	3.2	-
	EX5214-M53/333							
	EX5214-53C3/333	0.6	1.02	1.44	1.86	2.28	2.7	-
	EX5214-M53C3/333							
	EX5214-54/433	0.6	1.03	1.46	1.89	2.32	2.75	3.2
	EX5214-54/443	0.6	0.9	1.2	1.5	1.8	2.1	2.4
	EX5214-54/445	1.1	1.45	1.8	2.15	2.5	2.85	3.2
	EX5214H-55/545							
Backdatching	EX5204-82/223							
	EX5204-82/233	0.6	1.13	1.66	2.19	2.72	3.25	3.8
	EX5214-83/323							
Versatile	EX5214-84/423	0.6	0.9	1.2	1.5	1.8	2.1	2.4
	EX5204-92M1/223	0.6	1.13	1.66	2.19	2.72	3.25	3.8
	EX5214-92M2/223							

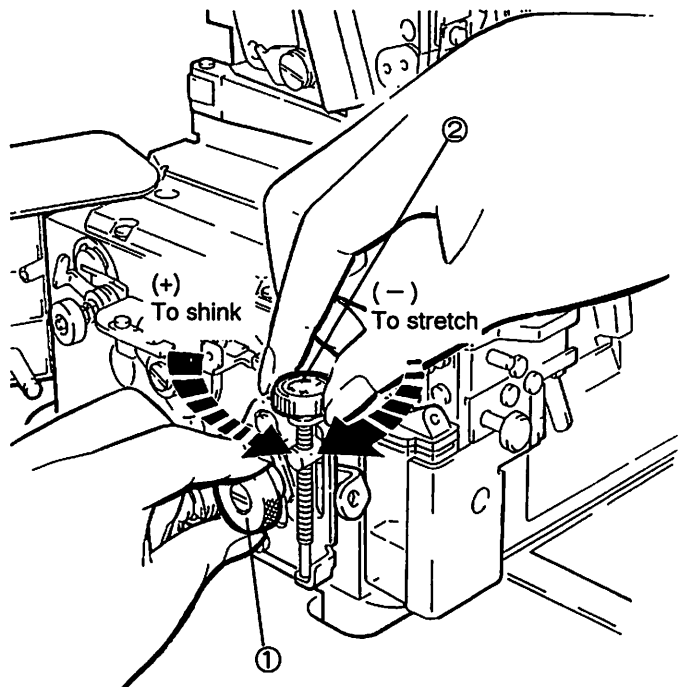
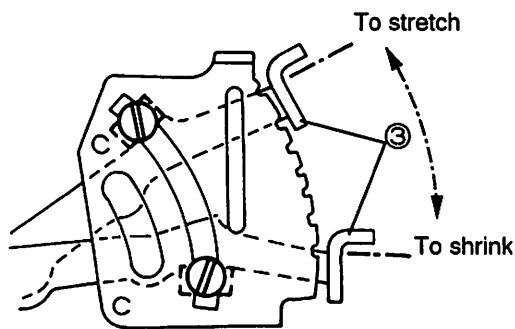


## ADJUSTING DIFFERENTIAL FEED RATIO

1. To obtain large differential feed ratio, loosen nut ①, turn screw ② in the direction of (+) and move lever ③ down. The finished fabric may be shrunk.

To obtain small differential feed ratio, turn screw ② in the direction of (-) and move lever ③ up. The finished fabric may be stretched.

2. After this adjustment, tighten nut ①.



## MAXIMUM/MINIMUM DIFFERENTIAL FEED RATIO

(Changing the movement amount of the main feed dog)

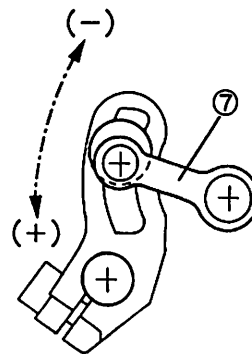
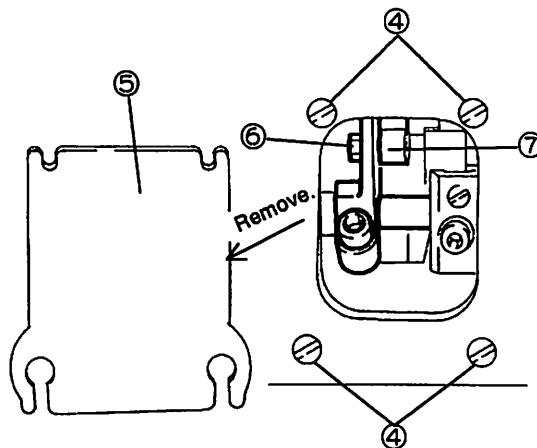
1. Loosen screws ④ and remove cover ⑤ from the rear side of the machine bed.

2. Loosen nut ⑥. Move link ⑦ up or down.

To increase the differential feed ratio, move link ⑦ in the direction of (+).

To decrease the differential feed ratio, move link ⑦ in the direction of (-).

3. After this adjustment, replace cover ⑤ to the rear side of the machine bed and tighten screws ④.



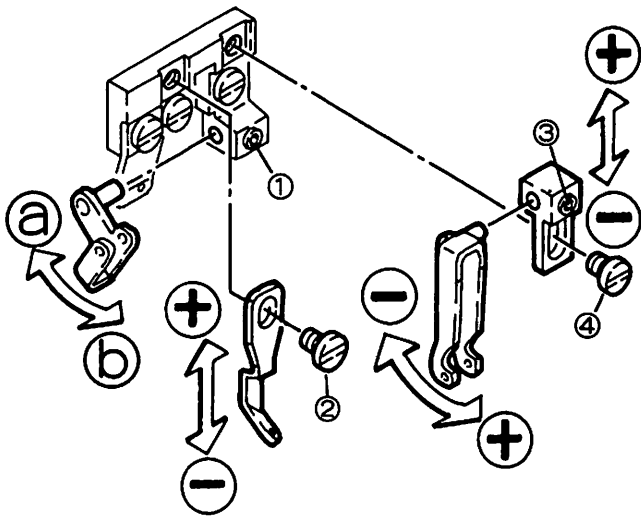
## ADJUSTING THE AMOUNT OF THREAD TO BE FURNISHED

### 1. Needle thread guides

To make this adjustment, loosen screws ① - ⑥.

#### EX3200 Series

If the needle misses the loop of the looper, move the thread guide in the direction of ② (see below).

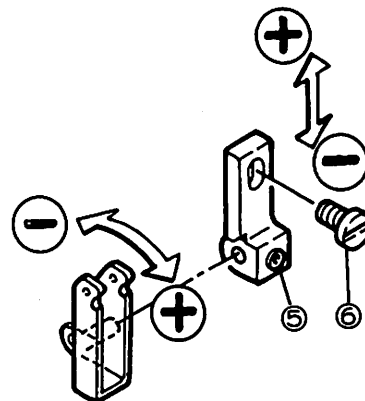


#### Note

To increase the amount of thread, move in the direction of (+) as shown below.

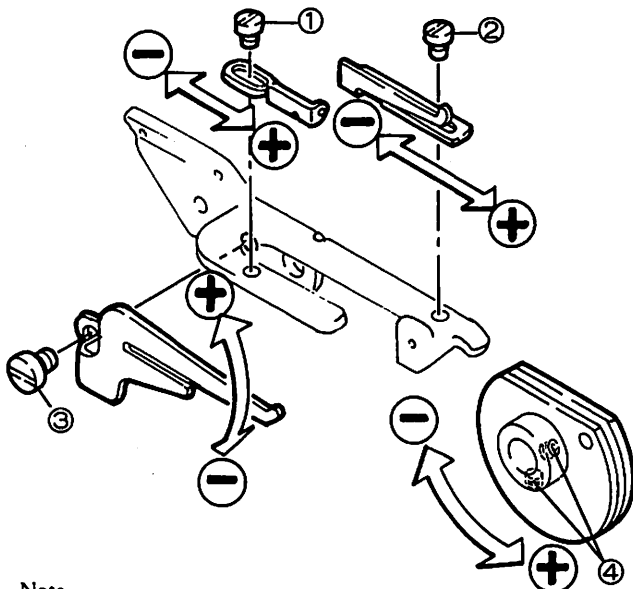
To decrease the amount of thread, move in the direction of (-) as shown below.

#### EX5200 Series



### 2. Double chainstitch looper thread take-up and thread guides

Loosen screw ① - ④ and adjust the double chainstitch looper thread take-up and thread guides.



#### Note

The amount of double chainstitch looper thread can be changed by adjusting the thread take-up or thread guide.

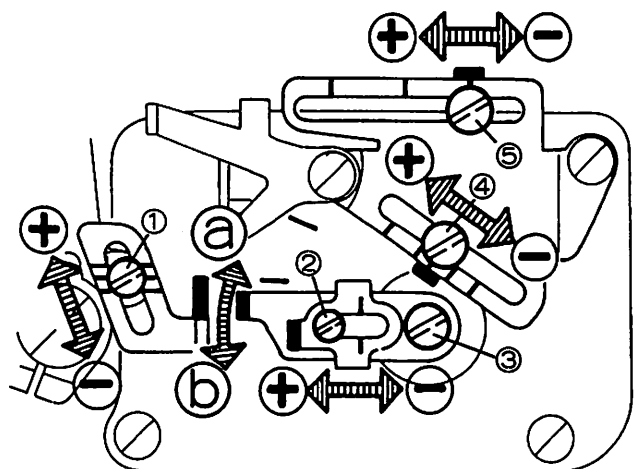
If the needle misses the loop of the looper, tangle of threads and/or skip stitching occurs, adjust the double chainstitch looper thread take-up and thread guides.

To increase/decrease the amount of looper thread, adjust thread guides.

### 3. Looper thread take-up thread guides

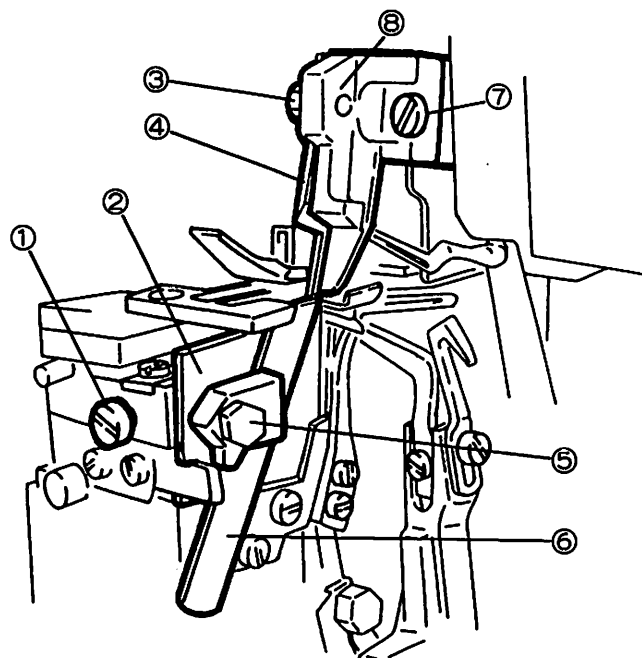
Loosen screws ① - ⑤ and adjust the looper thread take-up and thread guides.

To balance the amounts of upper and lower looper threads (to decrease the amounts, move in the direction of ② and to increase the amounts, move in the direction of ③.)



## REPLACING THE UPPER KNIFE

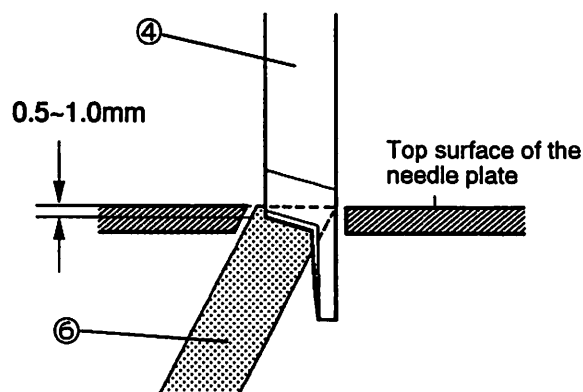
1. Loosen screw ①.  
Move lower knife holder ② to the extreme left position.  
Tighten screw ① temporarily.
2. Remove screw ③ and then upper knife ④.  
● To install a new upper knife, turn the handwheel until the upper knife holder reaches the lowest position of its stroke.  
Overlap the cutting edges of the upper and lower knives by 0.5 ~ 1.0mm according to the overedge width (Fig. A).
3. Overlap the cutting edges of the upper and lower knives so that midpoint (A) on upper knife ④ and the midpoint of lower knife ⑥ are crossed (Fig. B). Loosen screw ①.  
Make sure the upper and lower knives mate positively.  
Then tighten screw ①.
4. Place a thread between the upper and lower knives.  
Check the cutting action by turning the handwheel.



(Fig. A)

## REPLACING THE LOWER KNIFE

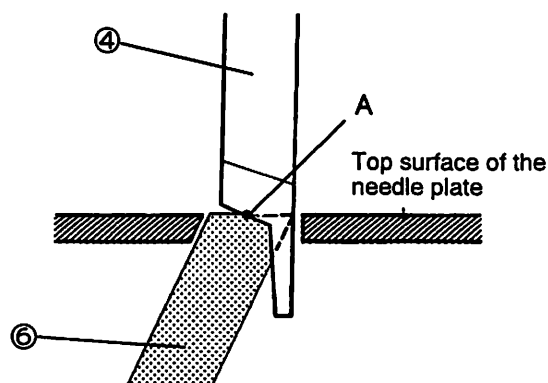
1. Loosen screw ①.  
Move lower knife holder ② to the extreme left position.  
Tighten screw ① temporarily.
2. Loosen screw ⑤ and remove lower knife ⑥.  
Install a new knife by referring to "REPLACING THE UPPER KNIFE" procedures ③ - ④.
- To install a new lower knife, the cutting edge of the lower knife should be flush with the top surface of the needle plate.



(Fig. B)

## ADJUSTING OVEREDGE WIDTH

1. Loosen screw ①, move lower knife holder ② all the way to the left and then tighten the screw ① temporarily.
2. Loosen screw ⑦, move upper knife clamp ⑧ left or right as required.  
Install upper and lower knives by referring to "REPLACING THE UPPER KNIFE" procedures ③ - ④.



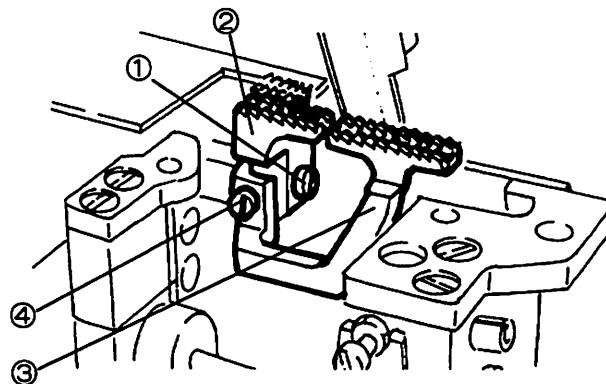
## REPLACING THE FEED DOGS

### 1. Differential feed dog

- Loosen screw ④ and remove differential feed dog ③.
- Install a new differential feed dog and tighten screw ④.

### 2. Main feed dog

- Loosen screw ① and remove main feed dog ②.
- Install a new main feed dog and tighten screw ①.



## FEED DOG HEIGHT

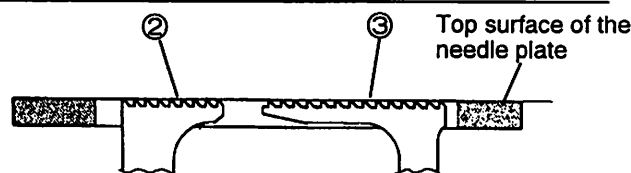
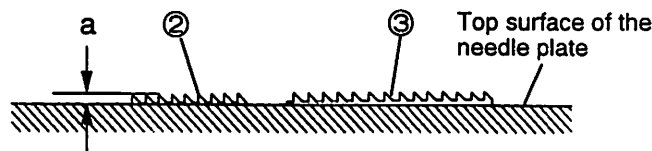
### 1. Turn the handwheel until the main feed dogs ② reach the highest position of their stroke.

### 2. Adjust distance (a) between the top surface of the needle plate and the tips of two or three teeth from the rear end of the main feed dog as specified by the machine type.

To make this adjustment, loosen screw ① and move main feed dog ② up or down as required.

### 3. Raise the feed dogs by turning the handwheel.

When tips of main feed dog ② are level with the top surface of the needle plate, tips of differential feed dog ③ should be also level with the top surface of the needle plate. Tighten screw ④.

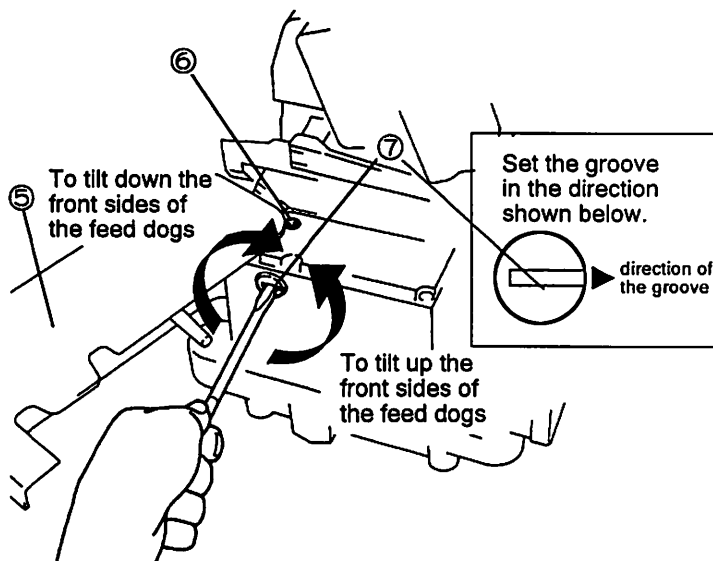


## TILT ADJUSTMENT

### 1. When the main feed dog and the differential feed dog have been raised from the bottom of their stroke to the top surface of the needle plate, they should be level with the top surface of the needle plate.

### 2. To make this adjustment, open cloth plate ⑤, and loosen screw ⑥. Then turn screw ⑦ as required.

**Note**  
Check the direction of the groove on the head of screw ⑦.



## AUXILIARY FEED DOG HEIGHT

Distance (d) between the tips of the main feed dog and those of auxiliary feed dog ⑨ is pre-adjusted according to the machine type.

Normally, increase this distance for heavy weight fabrics, and decrease for light weight fabrics.

To change the distance, refer to Table 8, loosen screw ⑧ and move auxiliary feed dog ⑨ up or down as required.

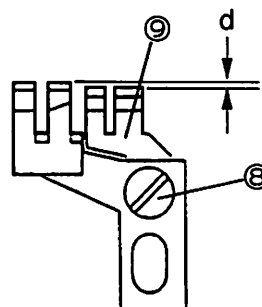


Table 3

## Feed dog height – EX3200 Series

Application	Subclass	Feed dog height (a) (mm)	Auxiliary feed dog height (d) (mm)
Plain seaming	(15) EX3216-01/222	0.7~0.9	0.5
	(15) EX3216-01A/222	0.7~0.9	0.5
	(15) EX3216N-01/222	0.6~0.7	0.05
	(15) EX3216N-01/232	0.6~0.7	0.05
	(15) EX3216-02/223	0.7~0.9	0.5
	(15) EX3216-02A/223	0.7~0.9	0.5
	(15) EX3216-02A/233	0.7~0.9	0.5
	(15) EX3216-03/233	0.7~0.9	0.5
	(15) EX3216-03/333	0.7~0.9	0.5
	EX3244-03/333	0.7~0.9	0.5
	(15) EX3216-04/435	1~1.2	0.3
	EX3244-04/435	1~1.2	0.3
	(15) EX3216H-05/535	1.1~1.3	0.3

Application	Subclass	Feed dog height (a) (mm)	Auxiliary feed dog height (d) (mm)
Shirring	(15) EX3216-42/233	0.7~0.9	0.5
	(15) EX3216-43/335	0.7~0.9	0.5
Inserting tape	EX3216-53/233	0.7~0.9	0.5

## Feed dog height – EX5200 Series

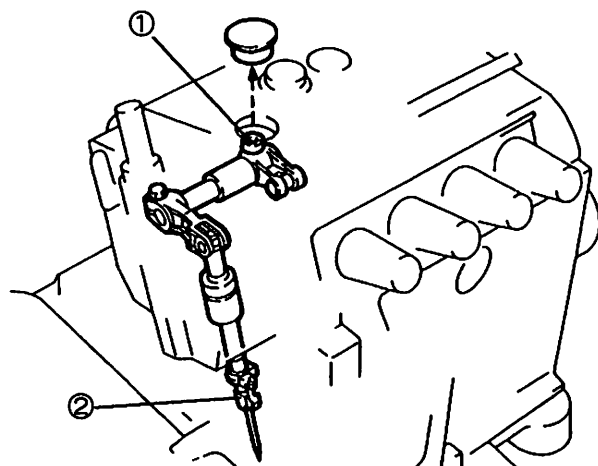
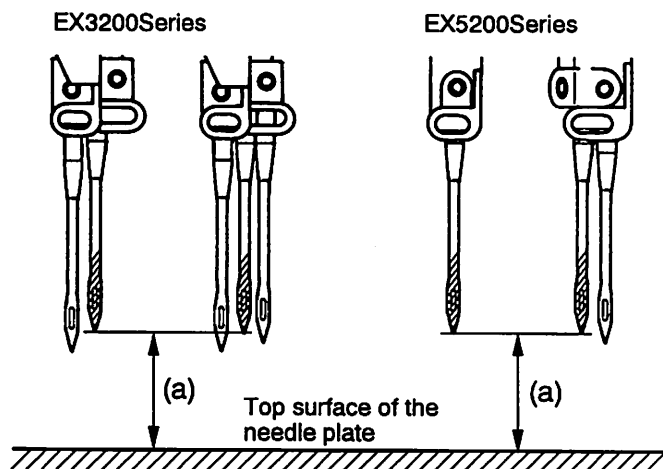
Application	Subclass	Feed dog height (a) (mm)	Auxiliary feed dog height (d) (mm)
Plain seaming	EX5204-01/223	0.7~0.9	0.5
	EX5214-01/233	0.7~0.9	0.5
	EX5204N-01/232	0.6~0.7	0.05
	EX5214N-01/282	0.6~0.7	0.05
	EX5204-02/233	0.7~0.9	0.5
	EX5212-02/333	0.7~0.9	0.5
	EX5214-03/333	0.7~0.9	0.5
	EX5214-M03/333	0.7~0.9	0.5
	EX5214-03C3/333	0.7~0.9	0.5
	EX5214-M03C3/333	0.7~0.9	0.5
Plain seaming Blindstitch hemming	EX5204-02H/223	0.7~0.9	0.5
Blindstitch hemming	EX5205-12/223	0.7~0.9	0.5
	EX5203-12/223	0.7~0.9	0.5
Serging	EX5203-22/233	0.7~0.9	0.5
	EX5204-24/445	0.9~1.1	0.5
	EX5214-24/445	0.9~1.1	0.5
Turn-down hemming	EX5204-32R1/223	0.7~0.9	0.3
	EX5204-32R2/223	0.7~0.9	0.3
	EX5204-32R2/223L	0.7~0.9	0.3

Application	Subclass	Feed dog height (a) (mm)	Auxiliary feed dog height (d) (mm)
Shirring	EX5214-43/333	0.7~0.9	0.5
Shirring Piping	EX5214-43P1/333	0.7~0.9	0.5
	EX5214-43P2/333	0.7~0.9	0.5
Attaching tape	EX5214-53/333	0.7~0.9	0.5
	EX5214-M53/333	0.7~0.9	0.5
	EX5214-53C3/333	0.7~0.9	0.5
	EX5214-M53C3/333	0.7~0.9	0.5
	EX5214-54/433	0.9~1.1	0.5
	EX5214-54/443	0.9~1.1	0.5
	EX5214-54/445	0.9~1.1	0.5
	EX5214H-55/545	1~1.2	0.5
Backlatching	EX5204-82/223	0.7~0.9	0.5
	EX5204-82/233	0.7~0.9	0.5
	EX5214-83/323	0.7~0.9	0.5
	EX5214-84/423	0.9~1.1	0.5
Versatile	EX5204-92M1/223	0.7~0.9	0.5
	EX5214-92M2/223	0.7~0.9	0.5

## NEEDLE HEIGHT

1. First, check to see if the needle is inserted to the proper depth.
2. Turn the handwheel until the needle reaches the highest position of its stroke.
3. Adjust vertical distance (a) between the point of the needle and the top surface of the needle plate. To make this adjustment, loosen screw ① with a supplied T wrench and move needle holder guide ② up or down as required.

The needle height depends on the machine type. Check the name plate for the type of your machine and then select the proper height by referring to Table 4(P.21).



## ADJUSTING THE LOWER LOOPER

### Lower looper setting distance

When the lower looper is at the farthest position to the left, adjust setting distance (b) between the center line of the overlock needle and the point of the lower looper according to the machine type. To make this adjustment, loosen screw ⑤ and move looper holder ⑦ left or right as required.

### Lower looper front-to-back adjustment

When the point of the lower looper has reached the center line of the needle from the left, the needle should be deflected 0-0.03mm toward to the operator by the lower looper.

To make this adjustment, loosen ⑤ and move looper holder ⑦ front or back as required by turning front-to-back adjusting screw ⑥.

The lower looper setting distance depends on the machine type. Check the name plate for the type of your machine and then select the proper setting distance by referring to Table 4(P.21).

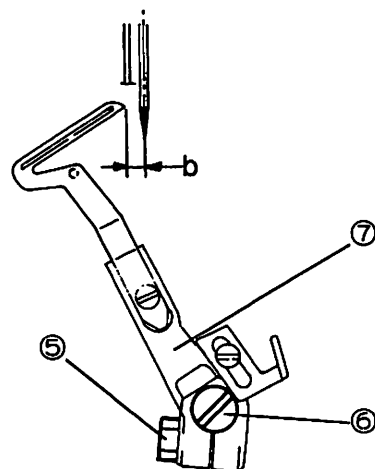
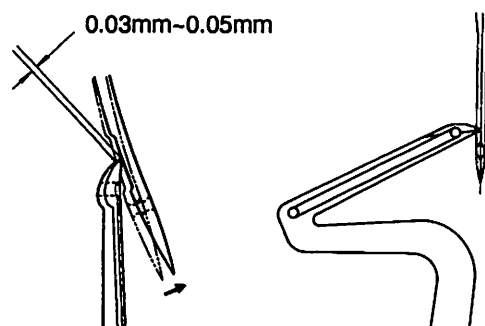


Table 4

## Needle height &amp; Lower loop setting distance- EX3200 Series

Application	Subclass	Needle height (a) (mm)	Lower loop setting (b) (mm)
Plain seaming	(15) EX3216-01/222	10.4~10.6	3.7~3.9
	(15) EX3216-01A/222	10.4~10.6	3.7~3.9
	(15) EX3216N-01/222	10.4~10.6	3.7~3.9
	(15) EX3216N-01/232	10.4~10.6	3.7~3.9
	(15) EX3216-02/223	10.4~10.6	3.7~3.9
	(15) EX3216-02A/223	10.4~10.6	3.7~3.9
	(15) EX3216-02A/233	10.4~10.6	3.7~3.9
	(15) EX3216-03/233	10.4~10.6	3.7~3.9
	(15) EX3216-03/333	10.4~10.6	3.7~3.9
	EX3244-03/333	10.4~10.6	3.7~3.9
	(15) EX3216-04/435	11.8~12	4.1~4.3
	EX3244-04/435	11.8~12	4.1~4.3
	(15) EX3216H-05/535	14.4~14.6	3.7~3.9

Table 9

Application	Subclass	Needle height (a) (mm)	Lower loop setting (b) (mm)
Shirring	(15) EX3216-42/233	10.4~10.6	3.7~3.9
	(15) EX3216-43/335	10.4~10.6	3.7~3.9
Inserting tape	EX3216-53/233	10.4~10.6	3.7~3.9

## Needle height &amp; Lower loop setting distance- EX3200 Series

Application	Subclass	Needle height (a) (mm)	Lower loop setting (b) (mm)
Plain seaming	EX5204-01/223	10.4~10.6	3.7~3.9
	EX5214-01/233	10.4~10.6	3.7~3.9
	EX5204N-01/232	10.4~10.6	3.7~3.9
	EX5214N-01/282	10.4~10.6	3.7~3.9
	EX5204-02/233	10.4~10.6	3.7~3.9
	EX5212-02/333	10.9~11.1	3.7~3.9
	EX5214-03/333	10.4~10.6	3.7~3.9
	EX5214-M03/333	10.4~10.6	3.7~3.9
	EX5214-03C3/333	10.4~10.6	3.7~3.9
	EX5214-M03C3/333	10.4~10.6	3.7~3.9
Plain seaming Blindstitch hemming	EX5204-02H/223	10.4~10.6	3.7~3.9
Blindstitch hemming	EX5205-12/223	10.4~10.6	3.7~3.9
	EX5203-12/223	10.4~10.6	3.7~3.9
Serging	EX5203-22/233	10.4~10.6	3.7~3.9
	EX5204-24/445	11.8~12	4.1~4.3
	EX5214-24/445	11.8~12	4.1~4.3
Turn-down hemming	EX5204-32R1/223	9.9~10.1	3.7~3.9
	EX5204-32R2/223	10.4~10.6	3.7~3.9
	EX5204-32R2/223L	10.4~10.6	3.7~3.9

Application	Subclass	Needle height (a) (mm)	Lower loop setting (b) (mm)
Shirring	EX5214-43/333	10.4~10.6	3.7~3.9
Shirring Piping	EX5214-43P1/333	10.4~10.6	3.7~3.9
	EX5214-43P2/333	10.4~10.6	3.7~3.9
Attaching tape	EX5214-53/333	10.4~10.6	3.7~3.9
	EX5214-M53/333	10.4~10.6	3.7~3.9
	EX5214-53C3/333	10.4~10.6	3.7~3.9
	EX5214-M53C3/333	10.4~10.6	3.7~3.9
	EX5214-54/433	11.8~12	4.1~4.3
	EX5214-54/443	11.8~12	4.1~4.3
	EX5214-54/445	11.8~12	4.1~4.3
	EX5214H-55/545	14.4~14.6	3.7~3.9
Backlatching	EX5204-82/223	10.4~10.6	3.7~3.9
	EX5204-82/233	10.4~10.6	3.7~3.9
	EX5214-83/323	10.4~10.6	3.7~3.9
	EX5214-84/423	11.8~12	4.1~4.3
Versatile	EX5204-92M1/223	10.4~10.6	3.7~3.9
	EX5214-92M2/223	10.4~10.6	3.7~3.9



## ADJUSTING THE UPPER LOOPER

1. When the upper looper is at the farthest position to the left, adjust distance (a) between the center line of the overlock needle and the point of the upper looper (for stitch type 512, distance (a) is between the center line of the overlock needle and the center of the looper's eye) by referring to Table 5 (P.23). After this adjustment, tighten screw ② temporarily.

When the point of the upper looper and the back of the lower looper are going to cross, set distance (c) at approximately 0.5mm and distance (d) at approximately 0.2mm. Then tighten screw ②.

2. When the upper looper is at the farthest position to the left, adjust distance (b) between the center line of the overlock needle and the point of the upper looper by referring to Table 5 (P.23) and tighten screw ② temporarily.

The setting distance and positioning of the upper looper depend on the machine type.

Check the name plate for the type of your machine and then select the correct upper looper setting distance and positioning of the upper looper by referring to Table 5 (P.23).

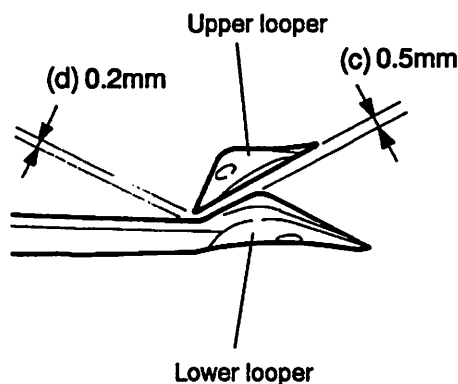
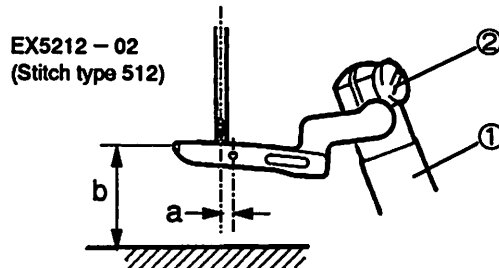
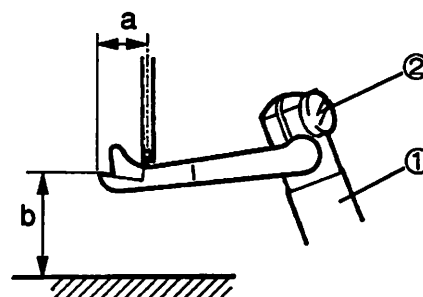
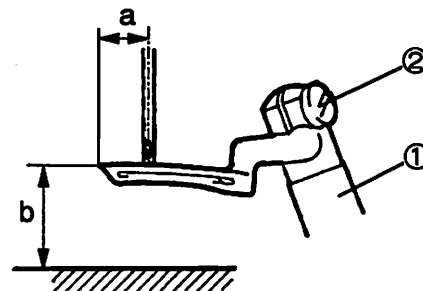




Table 5

## Positioning the upper looper – EX3200 Series

Application	Subclass	a (mm)	b (mm)
Plain seaming	(15) EX3216-01/222	4.4~4.7	10.8
	(15) EX3216-01A/222	4.4~4.7	10.8
	(15) EX3216N-01/222	4.4~4.7	10.8
	(15) EX3216N-01/232	4.4~4.7	10.8
	(15) EX3216-02/223	4.4~4.7	10.8
	(15) EX3216-02A/223	4.4~4.7	10.8
	(15) EX3216-02A/233	4.4~4.7	10.8
	(15) EX3216-03/233	4.4~4.7	10.8
	(15) EX3216-03/333	4.4~4.7	10.8
	EX3244-03/333	5.4~5.7	10.5
	(15) EX3216-04/435	4.4~4.7	12
	EX3244-04/435	5.4~5.7	11.8
	(15) EX3216H-05/535	4.9~5.2	12.8

Application	Subclass	a (mm)	b (mm)
Shirring	(15) EX3216-42/233	4.4~4.7	10.8
	(15) EX3216-43/335	4.4~4.7	10.8
Inserting tape	EX3216-53/233	4.4~4.7	10.8

## Positioning the upper looper – EX5200 Series

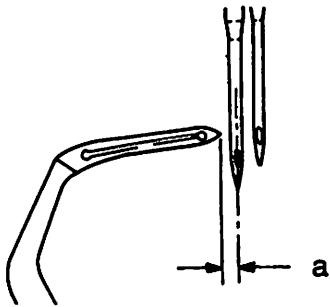
Application	Subclass	a (mm)	b (mm)
Plain seaming	EX5204-01/223	4.4~4.7	10.8
	EX5214-01/233	4.9~5.2	10.7
	EX5204N-01/232	4.4~4.7	10.8
	EX5214N-01/282	4.9~5.2	10.7
	EX5204-02/233	4.4~4.7	10.8
	EX5212-02/333	1~1.3	10.5
	EX5214-03/333	5.4~5.7	10.5
	EX5214-M03/333	5.4~5.7	10.5
	EX5214-03C3/333	5.4~5.7	10.5
	EX5214-M03C3/333	5.4~5.7	10.5
Plain seaming Blindstitch hemming	EX5204-02H/223	4.4~4.7	10.8
Blindstitch hemming	EX5205-12/223	4.4~4.7	10.8
	EX5203-12/223	4.4~4.7	10.8
Serging	EX5203-22/233	4.4~4.7	10.8
	EX5204-24/445	4.4~4.7	12
	EX5214-24/445	5.4~5.7	11.8
Turn-down hemming	EX5204-32R1/223	4.4~4.7	10.3
	EX5204-32R2/223	4.4~4.7	10.8
	EX5204-32R2/223L	4.4~4.7	10.8

Application	Subclass	a (mm)	b (mm)
Shirring	EX5214-43/333	5.4~5.7	10.5
Shirring Piping	EX5214-43P1/333	5.4~5.7	10.5
	EX5214-43P2/333	5.4~5.7	10.5
Attaching tape	EX5214-53/333	5.4~5.7	10.5
	EX5214-M53/333	5.4~5.7	10.5
	EX5214-53C3/333	5.4~5.7	10.5
	EX5214-M53C3/333	5.4~5.7	10.5
	EX5214-54/433	5.4~5.7	11
	EX5214-54/443	5.4~5.7	11
	EX5214-54/445	5.4~5.7	11.8
	EX5214H-55/545	5.4~5.7	12.8
Backlatching	EX5204-82/223	4.4~4.7	10.8
	EX5204-82/233	4.4~4.7	10.8
	EX5214-83/323	5.4~5.7	10.5
	EX5214-84/423	5.4~5.7	11
Versatile	EX5204-92M1/223	4.4~4.7	10.8
	EX5214-92M2/223	4.9~5.2	10.7

ADJUSTING THE DOUBLE CHAINSTITCH LOOPER  
FOR EX3200 SERIES

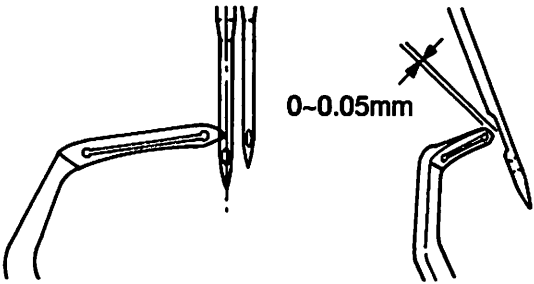
1.Adjust clearance (a) between the center line of the double chainstitch needle and the point of the looper correctly by referring to Table 6.

- 1)Turn the handwheel until the double chainstitch looper is at its farthest position to the left.
- 2)loosen screw ① and move looper holder ③ left or right as required.
- 3)Tighten screw ① temporarily.



2.Adjusting the clearance between the looper and the needle

- 1)Move the double chainstitch looper from the extreme left end of its travel to the center line of the double chainstitch needle by turning the handwheel.
- 2) loosen ① and move looper holder ③ front or back as required by turning front-to-back adjusting screw ②.
- 3)Tighten screw ①.



3.Adjusting the amount of the front-to-back movement of the double chainstitch looper.

Remove cover ④, loosen screw ⑤ and turn hinge pin ⑥ as required.  
To decrease the amount, turn in the direction of (-).  
To increase the amount, turn in the direction of (+).

- Adjust the amount when changing the double chainstitch needle.  
When changing to the needle of larger number, turn hinge pin ⑥ in the direction of (+).  
When changing to the needle of smaller number, turn hinge pin ⑥ in the direction of (-).

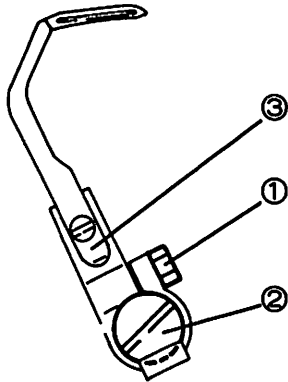
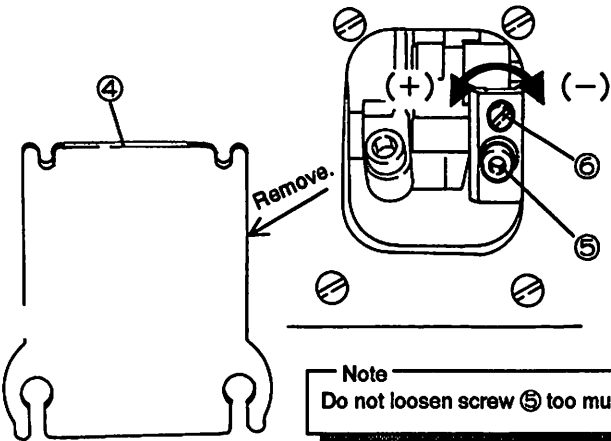


Table 6  
Double chainstitch looper setting distance- EX3200 Series

Application	Subclass	a (mm)
plain seaming	(15) EX3216-01/222	1.4~1.6
	(15) EX3216-01A/222	1.4~1.6
	(15) EX3216N-01/222	1.4~1.6
	(15) EX3216N-01/232	1.4~1.6
	(15) EX3216-02/223	1.4~1.6
	(15) EX3216-02A/223	1.4~1.6
	(15) EX3216-02A/233	1.4~1.6
	(15) EX3216-03/233	1.4~1.6

Application	Subclass	a (mm)
plain seaming	(15) EX3216-03/333	1.4~1.6
	EX3244-03/333	1.4~1.6
	(15) EX3216-04/435	1.6~1.8
	EX3244-04/435	1.6~1.8
	(15) EX3216H-05/535	1.4~1.6
Shirring	(15) EX3216-42/233	1.4~1.6
	(15) EX3216-43/335	1.4~1.6
Inserting tape	EX3216-53/233	1.4~1.6

## ADJUSTING THE NEEDLE GUARD

### EX3200 Series

#### 1. Adjusting the overlock needle guards

When the point of the lower looper has reached the center line of the overlock needle from the left, check to see if the needle is deflected 0 ~ 0.03mm toward the operator by the lower looper. (Refer to page 20 "ADJUSTING THE LOWER LOOPER" for this adjustment.)

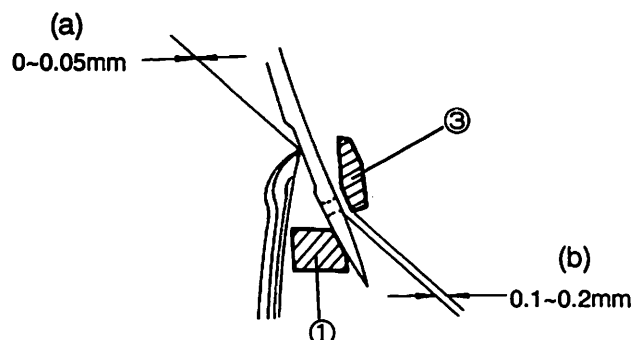
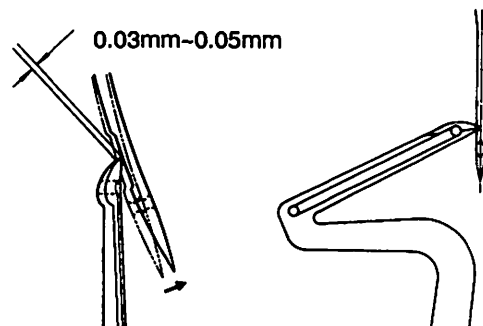
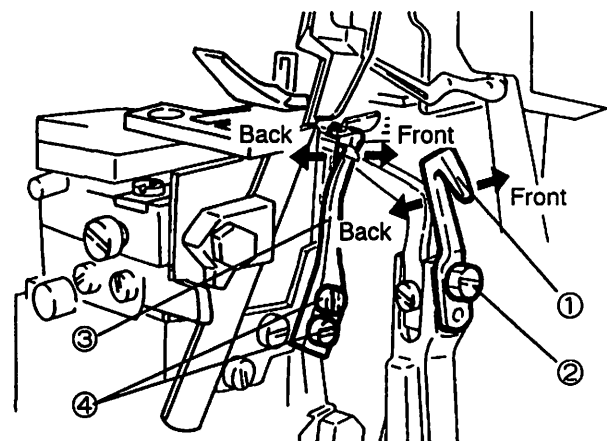
##### •To adjust rear needle guard ①

In the above condition, adjust rear needle guard ① so that the needle is deflected by rear needle guard ① and clearance (a) is 0 ~ 0.05mm. To make this adjustment, loosen screw ② and move rear needle guard ① front or back as required.

##### •To adjust front needle guard ③

When the point of the lower looper is at the center line of the needle and the needle is deflected most by rear needle guard ①, clearance (b) between the needle and front needle guard ③ should be 0.1 ~ 0.2mm.

To make this adjustment, loosen screws ④ and front move needle guard ③ front or back as required.



#### 2. Adjusting the double chainstitch needle guards

##### •To adjust rear needle guard ⑤

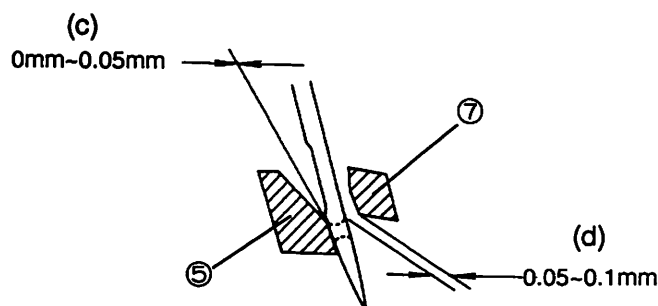
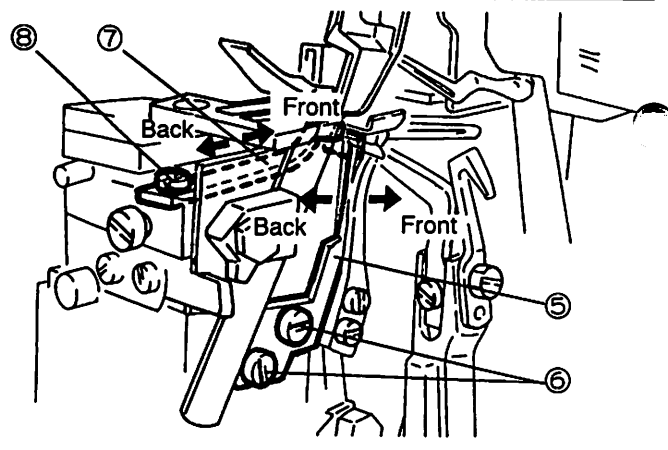
When the double chainstitch needle is at the lowest position of its stroke, clearance (c) between the double chainstitch needle and rear needle guard ⑤ should be 0mm~0.05mm.

To make this adjustment, loosen screws ⑥ and move rear needle guard ⑤ front or back as required.

##### •To adjust front needle guard ⑦

Adjust clearance (d) between the double chainstitch front needle and needle guard ⑦ to 0.05mm ~ 0.1mm.

To make this adjustment, loosen screw ⑧ and move front needle guard ⑦ front or back as required.

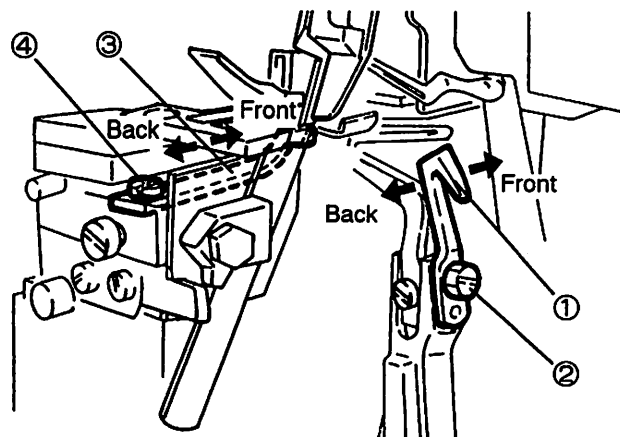


## ADJUSTING THE NEEDLE GUARD

### EX5200 Series

#### 1. Adjusting the overlock needle guards

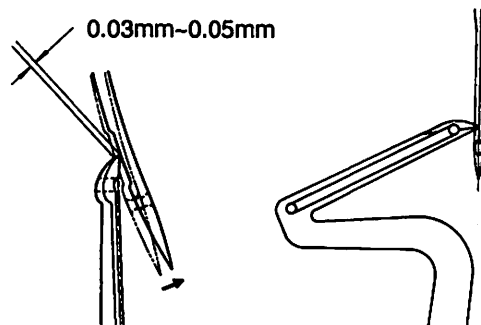
When the point of the lower looper has reached the center line of the overlock needle from the left, check to see if the needle is deflected 0 ~ 0.03mm to the operator by the lower looper  
(Refer to page 39 "ADJUSTING THE LOWER LOOPER" for this adjustment.)



##### •To adjust rear needle guard ①

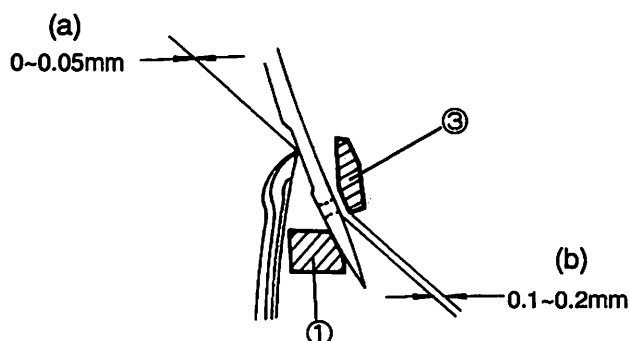
In the above condition, adjust rear needle guard ① so that the needle is deflected by rear needle guard ① and clearance (a) is 0 ~ 0.05mm.

To make this adjustment, loosen screw ② and move rear needle guard ① front or back as required.



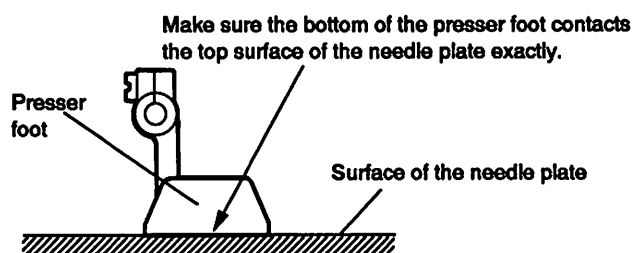
##### •To adjust front needle guard ③

When the point of the lower looper is at the center line of the needle and the needle is deflected most by rear needle guard ①, clearance (b) between the needle and front needle guard ③ should be 0.1 ~ 0.2mm. To make this adjustment, loosen screw ④ and move front needle guard ③ front or back as required.



## INSTALLING THE PRESSER FOOT

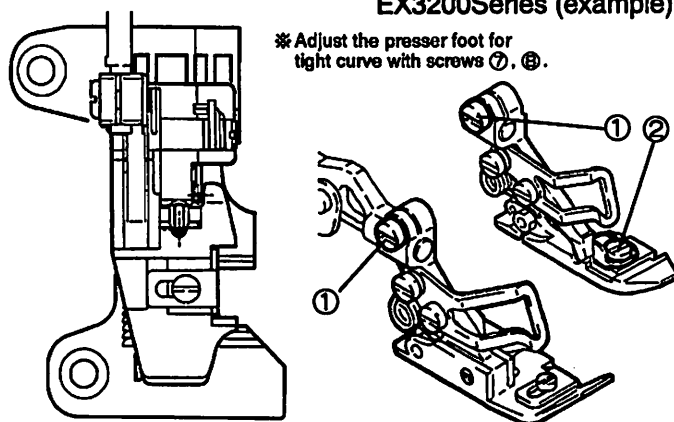
1. Loosen adjusting screw ⑤ until the spring pressure on the presser arm is removed.
2. Turn the handwheel until the needle reaches the highest position of its stroke.
3. Install the presser foot so that the bottom of the presser foot contacts the top surface of the needle plate exactly with the needle slots of the presser foot aligned with those of the needle plate.  
To make this adjustment, loosen screw ① for the EX3200 Series, and loosen screws ③ and ④ for the EX5200 Series.



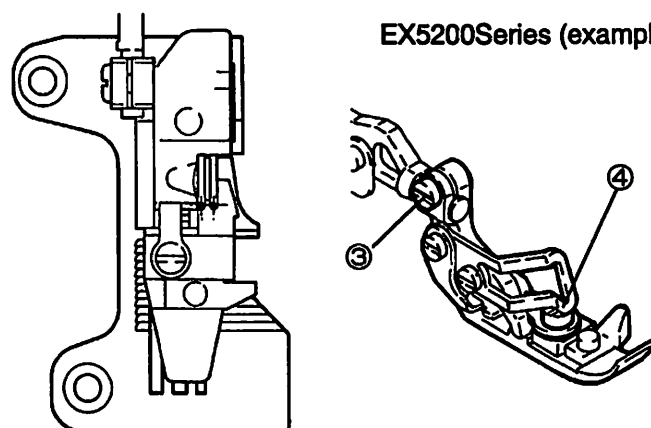
4. Tighten presser foot pressure adjusting screw ⑤ while adjusting the presser foot pressure.

## EX3200Series (example)

\* Adjust the presser foot for tight curve with screws ⑦, ⑧.

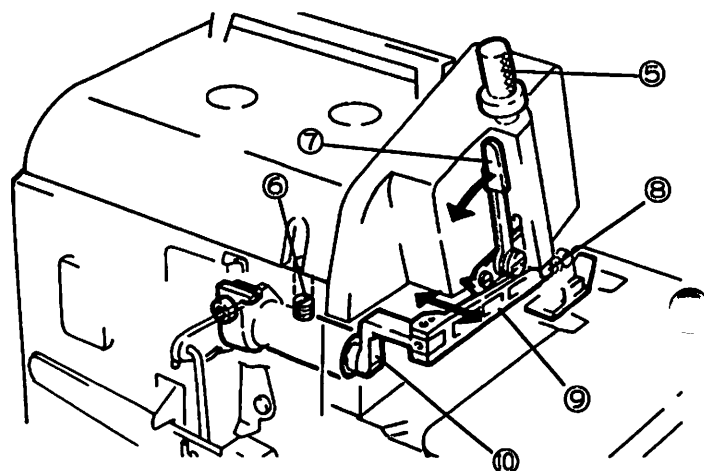


## EX5200Series (example)



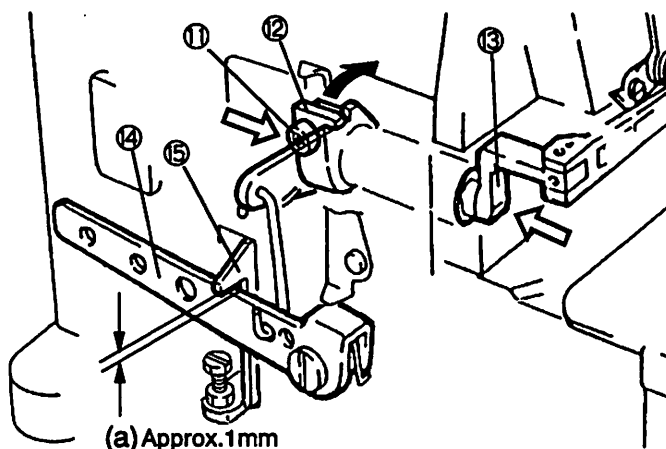
## ADJUSTING THE PRESSER ARM LEFT TO RIGHT

1. Loosen screw ⑥.
2. Move hand lift lever ⑦ down. Presser bar ⑧ should be removed from presser arm ⑨ smoothly. To make this adjustment, move presser arm shaft ⑩ left or right as required.
3. Tighten screw ⑥.



## ADJUSTING THE PRESSER FOOT LIFT LEVER

1. Set the feed dog above the needle plate.
2. Loosen screw ⑪.
3. While pushing collar ⑫ and presser arm shaft ⑬ in the direction of the arrow (there should be no left-to-right shake.), turn collar ⑫ in the direction of the arrow. Then set the clearance between presser foot lift lever ⑭ and stopper ⑮ at approximately 1mm.
4. Tighten screw ⑪.



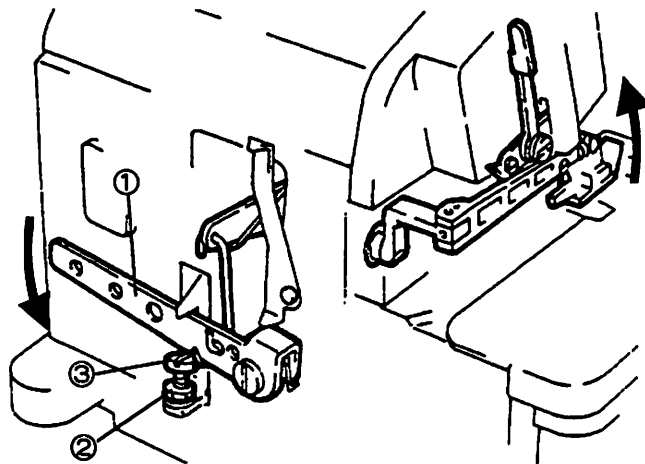
## ADJUSTING THE PRESSER FOOT LIFT

Presser foot lift depends on the machine type.

Check the name plate for the type of your machine and select the proper presser foot lift by referring to Table 7 (P.29).

### EX3200 Series

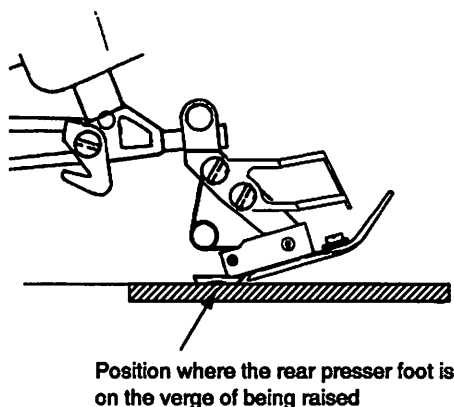
1. Loosen nut ②.
2. When presser foot lift lever ① is lowered, the rear presser foot should be on the verge of being raised from the top surface of the needle plate. To make this adjustment, move stopper bolt ③ up or down as required.
3. Tighten nut ②.



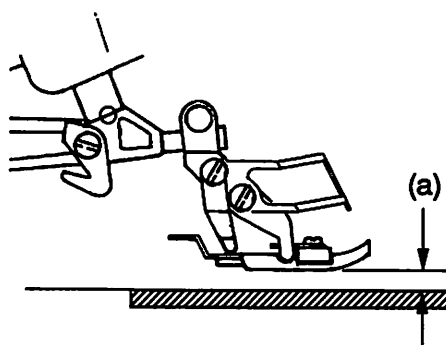
### EX5200 Series

1. Tighten nut ②.
2. Lower lever ① and then adjust clearance (a) between the top surface of the needle plate and the bottom of the presser foot. To make this adjustment, move stopper bolt ① up or down as required.
3. Tighten nut ②.

EX3200Series (example)

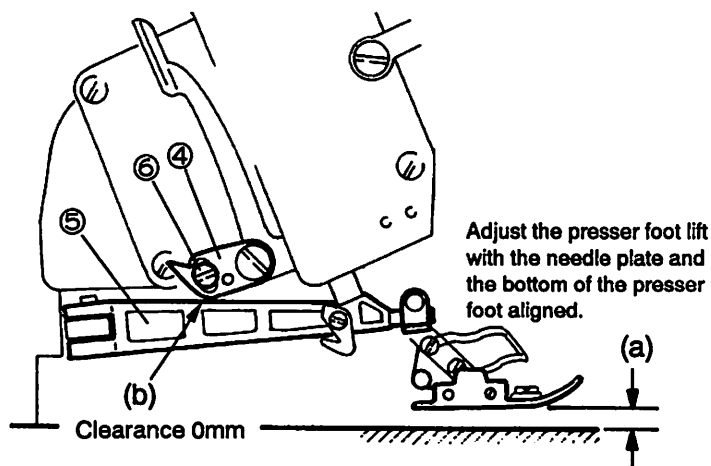


EX5200Series (example)



## ADJUSTING THE PRESSER FOOT STOPPER

1. Loosen nut ⑥.
2. When the presser foot is raised, set clearance (b) between stopper ④ and presser arm ⑤ at 0mm. To make this adjustment, move stopper ④ up or down as required.
3. Tighten ⑥.



**Table 7****Presser foot lift – EX3200 Series**

Application	Subclass	Presser foot lift (a) (mm)
Plain seaming	(15) EX3216-01/222	5
	(15) EX3216-01A/222	5
	(15) EX3216N-01/222	5
	(15) EX3216N-01/232	5
	(15) EX3216-02/223	5
	(15) EX3216-02A/223	5
	(15) EX3216-02A/233	5
	(15) EX3216-03/233	5
	(15) EX3216-03/333	5.5
	EX3244-03/333	5.5
	(15) EX3216-04/435	7
	EX3244-04/435	7
	(15) EX3216H-05/535	7

Application	Subclass	Presser foot lift (a) (mm)
Shirring	(15) EX3216-42/233	5
	(15) EX3216-43/335	5.5
Inserting tape	EX3216-53/233	5

**Presser foot lift – EX5200 Series**

Application	Subclass	Presser foot lift (a) (mm)
Plain seaming	EX5204-01/223	5
	EX5214-01/233	5
	EX5204N-01/232	5
	EX5214N-01/282	5
	EX5204-02/233	5
	EX5212-02/333	5.5
	EX5214-03/333	5.5
	EX5214-M03/333	5.5
	EX5214-03C3/333	5.5
	EX5214-M03C3/333	5.5
Plain seaming Blindstitch hemming	EX5204-02H/223	5.5
Blindstitch hemming	EX5205-12/223	5.5
	EX5203-12/223	5.5
Serging	EX5203-22/233	5
	EX5204-24/445	7
	EX5214-24/445	7
Turn-down hemming	EX5204-32R1/223	5
	EX5204-32R2/223	5
	EX5204-32R2/223L	5

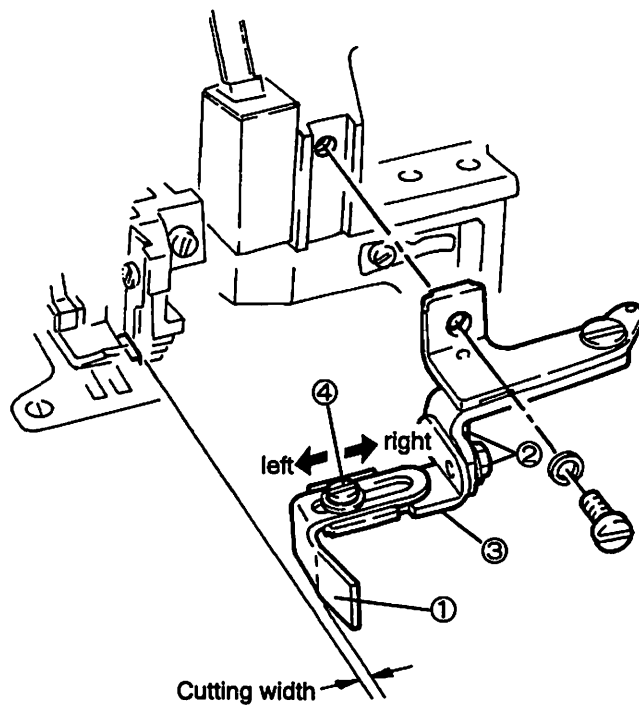
Application	Subclass	Presser foot lift (a) (mm)
Shirring	EX5214-43/333	5.5
Shirring Piping	EX5214-43P1/333	5.5
	EX5214-43P2/333	5.5
Attaching tape	EX5214-53/333	5.5
	EX5214-M53/333	5.5
	EX5214-53C3/333	5.5
	EX5214-M53C3/333	5.5
	EX5214-54/433	7
	EX5214-54/443	7
	EX5214-54/445	7
	EX5214H-55/545	8
Backlatching	EX5204-82/223	5
	EX5204-82/233	5
	EX5214-83/323	5.5
	EX5214-84/423	7
Versatile	EX5204-92M1/223	5
	EX5214-92M2/223	5.5

## ADJUSTING THE HEMMING WIDTH

1. The bottom of hemming guide ③ should touch the top surface of the needle plate lightly.

To make this adjustment, loosen screw ④ and move bracket ⑤ up or down as required.

2. To adjust the cutting width, loosen screw ④ and move hemming guide ① left or right as required. Then tighten screw ④.





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