

EXT *Series Technical Manual*



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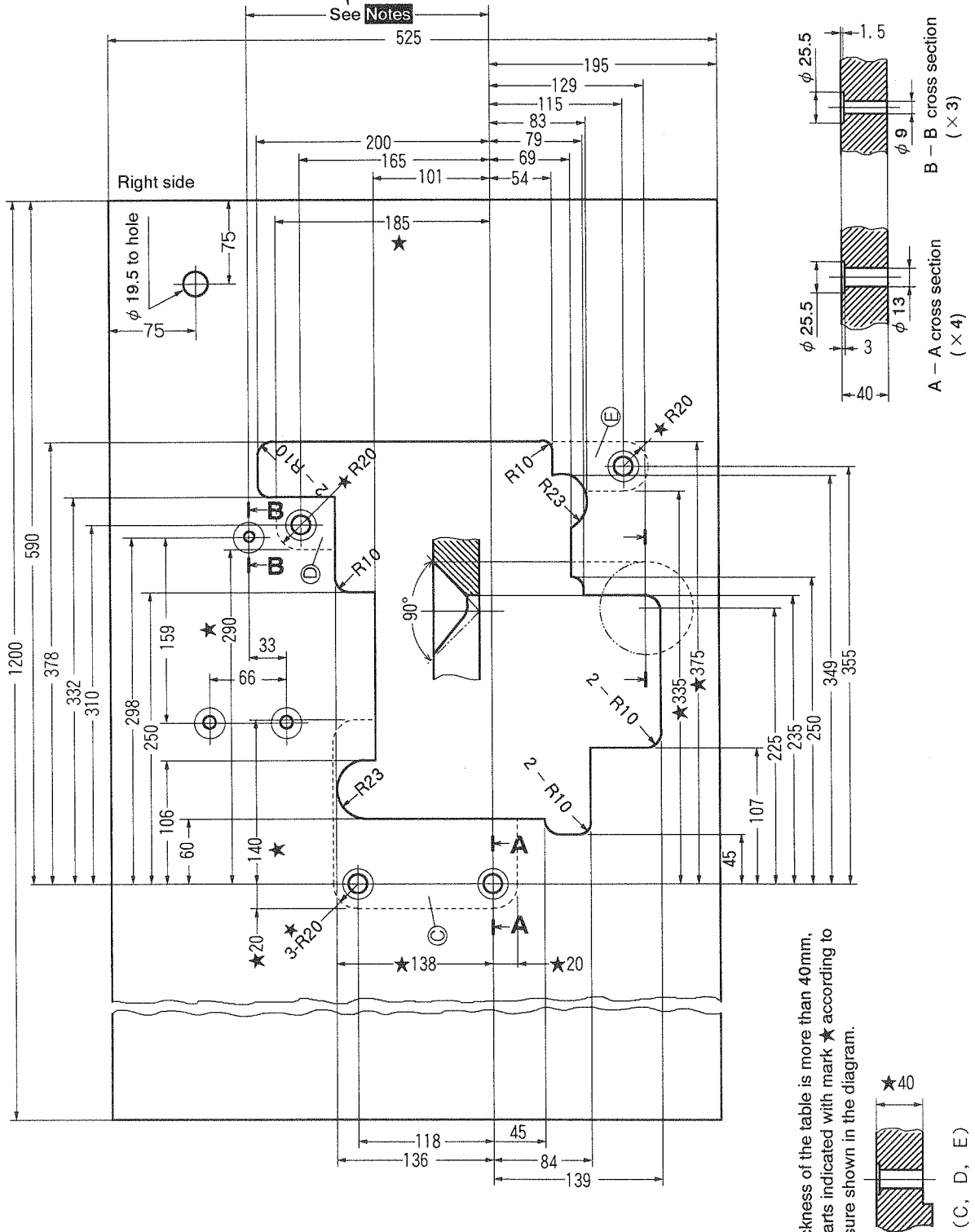
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SCHEMATIC DIAGRAM

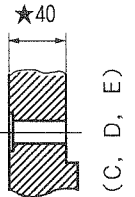
1. Semi-submerged mounting

Note

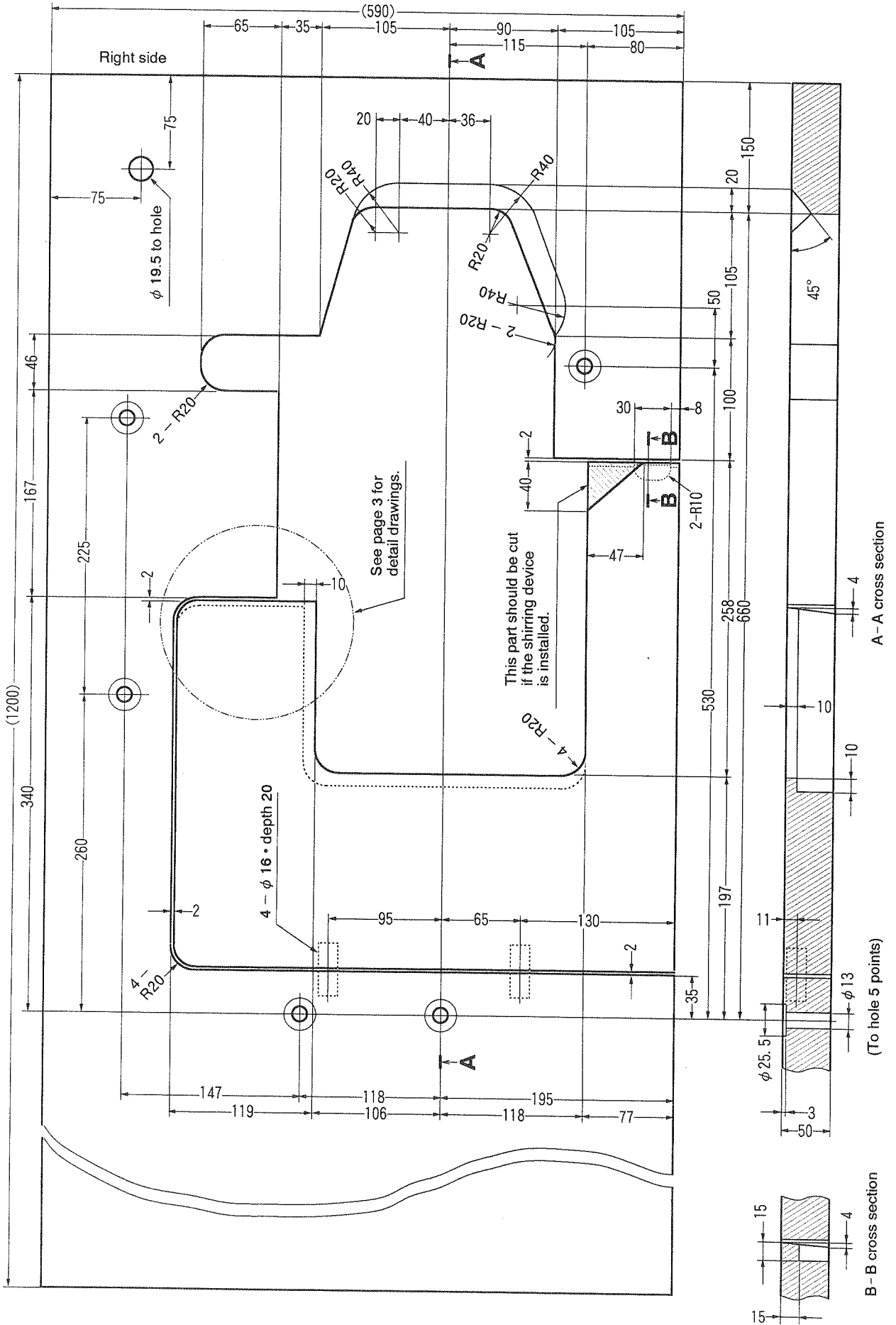
- For motors made in Japan.....210mm
- For Efka, Quick motors or other motors.....238mm



Note) If the thickness of the table is more than 40mm, cut the parts indicated with mark ★ according to the measure shown in the diagram.

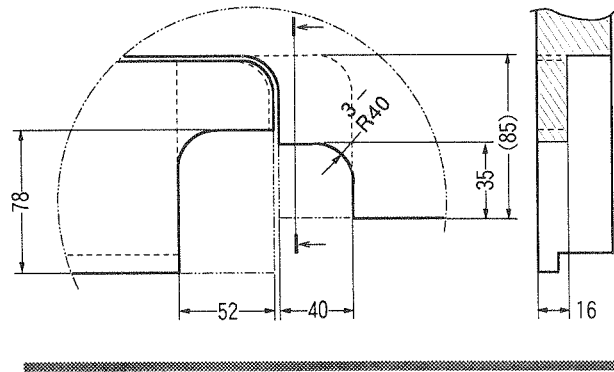


2. Fully-submerged mounting

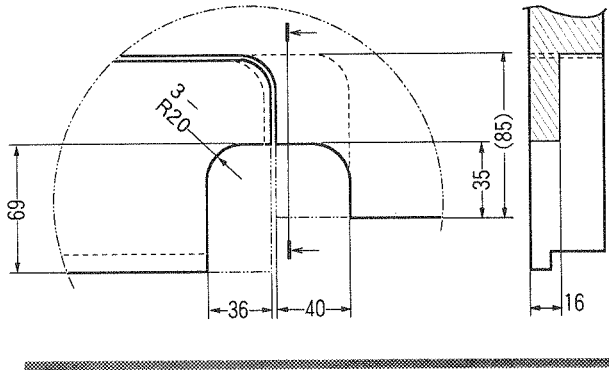


3.Detail drawings for the fully submerged table installation

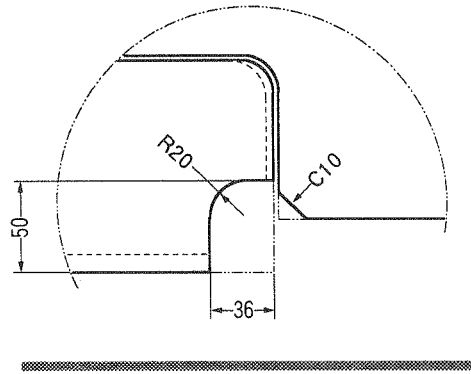
■ AT123, 124, 205



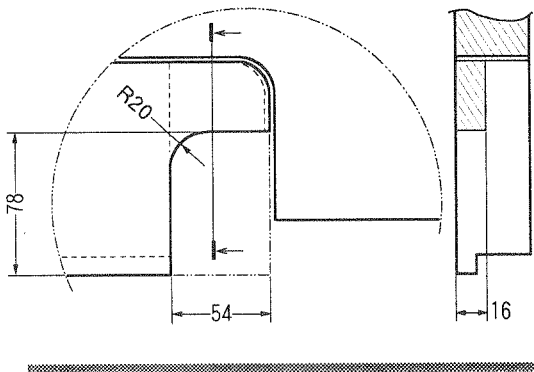
■ TK122, 123
AT122



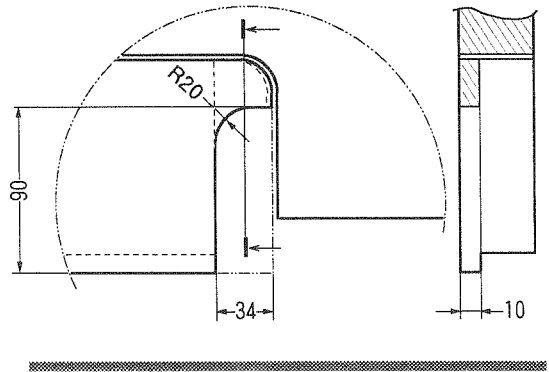
■ TK023



■ KH021A~C, H



■ KS374~376

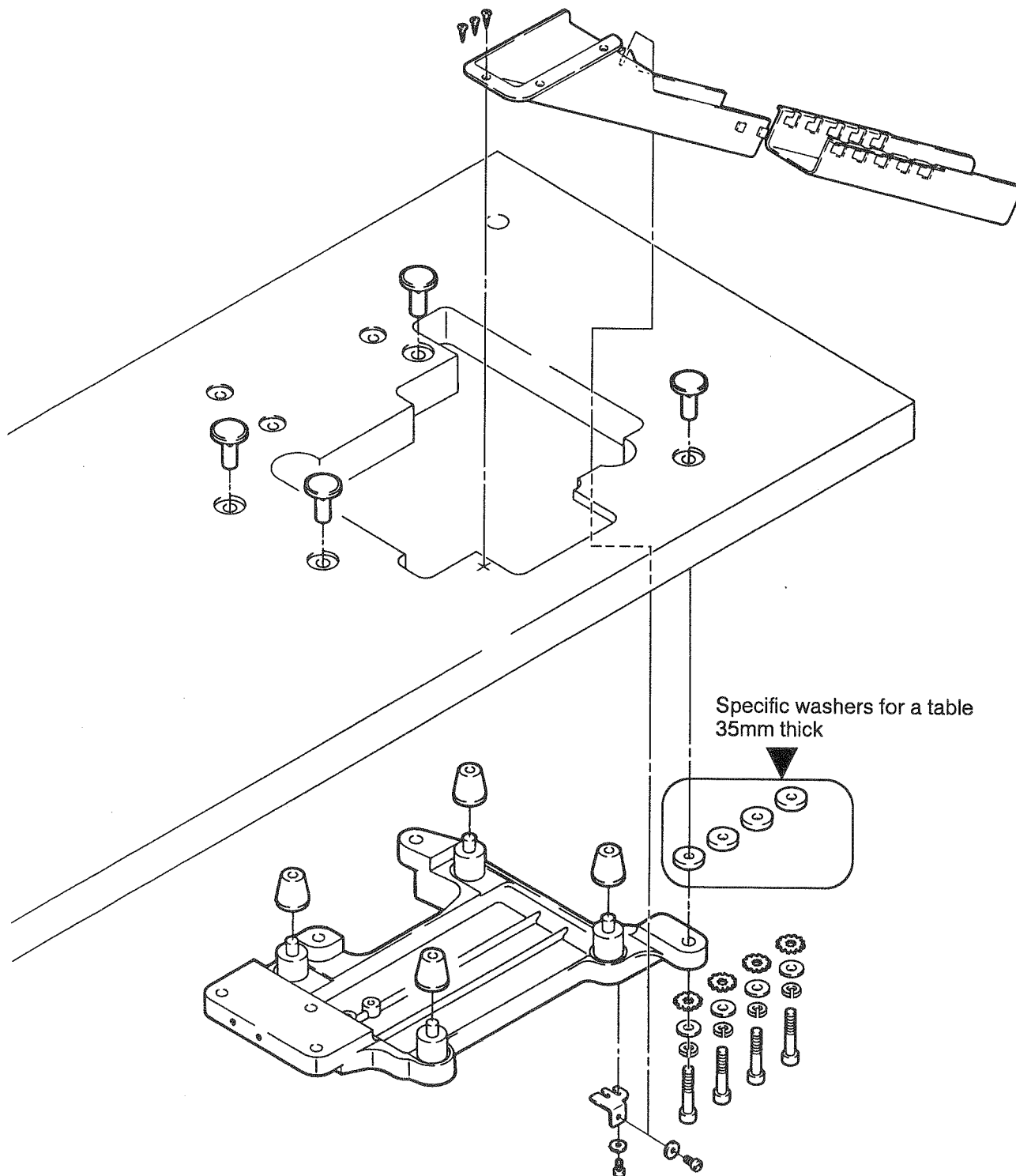


INSTALLATION CHART OF THE TABLE MOUNTING

1. Semi-submerged table

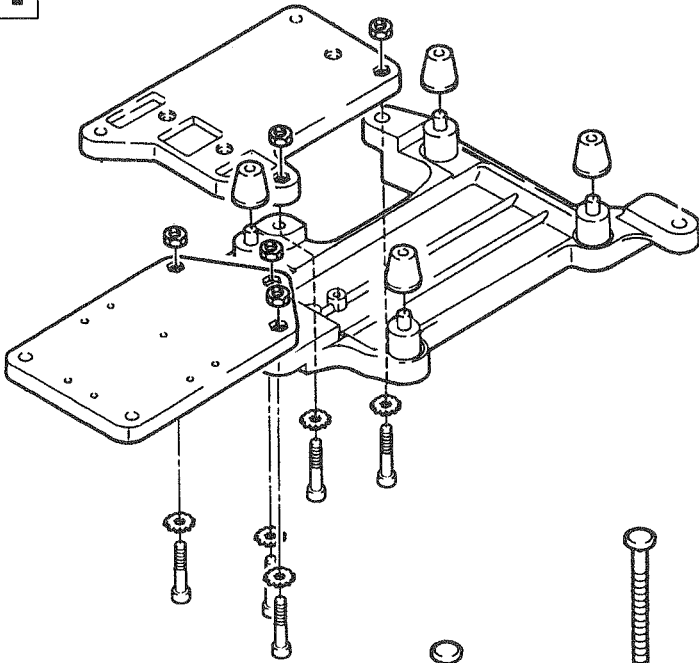
Note

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

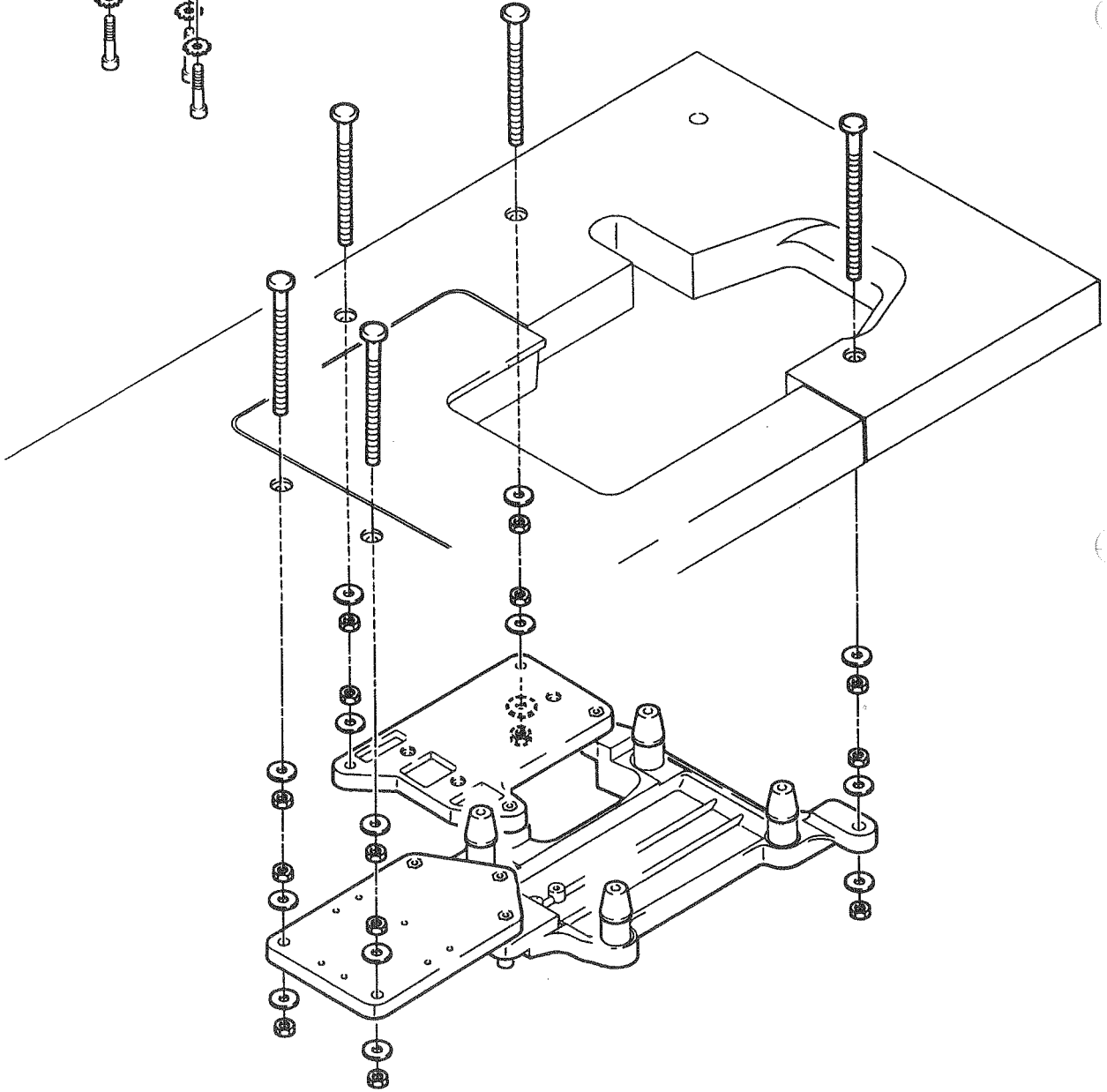


2. Fully-submerged table

1

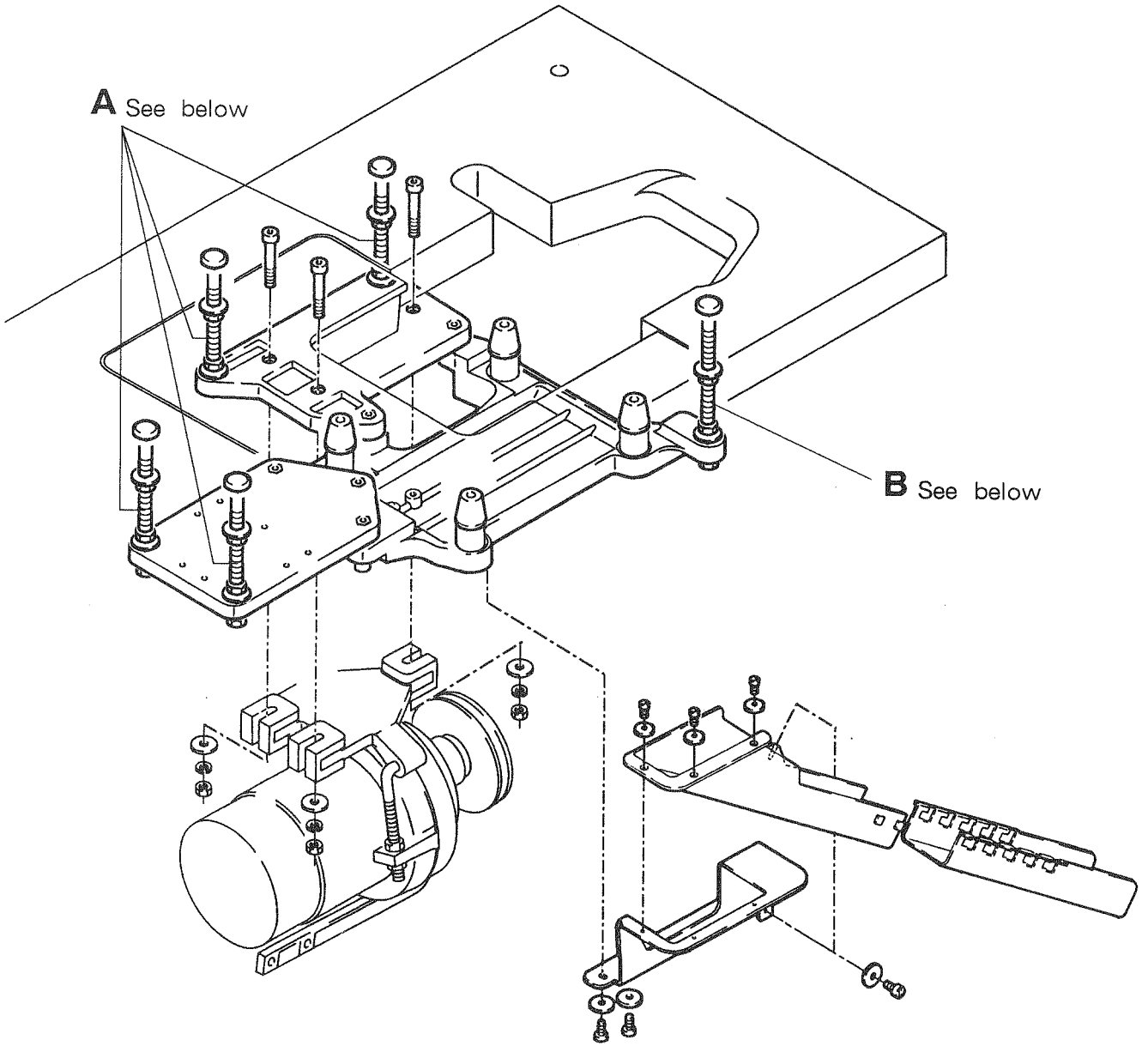


2

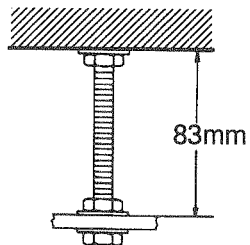


3-1

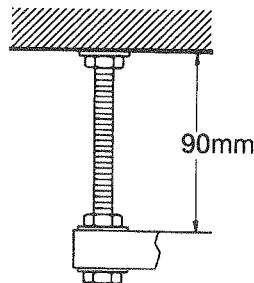
【Standard】



A Distance for the shafts of bolts A

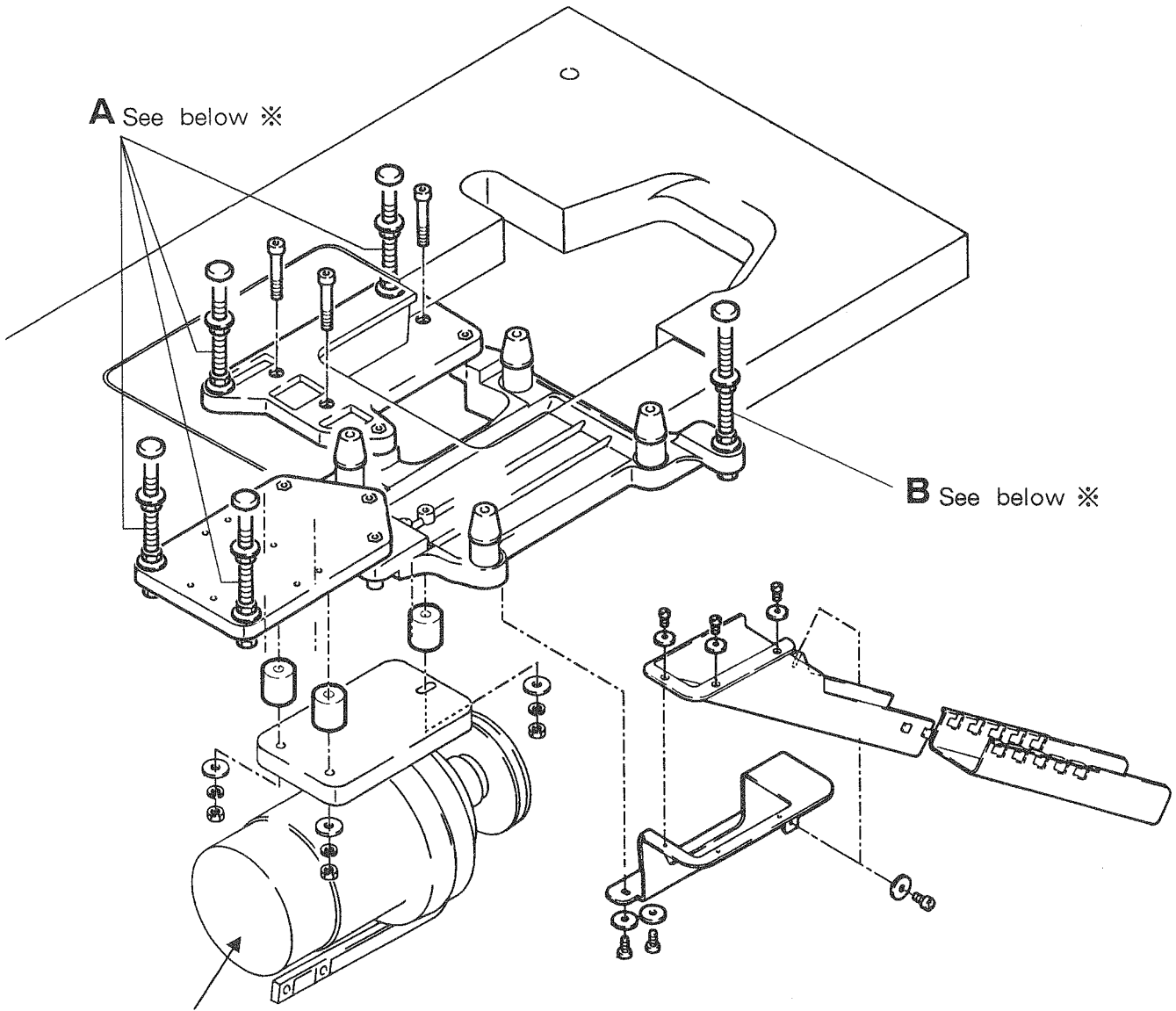


B Distance for the shafts of bolts B



3-2

【 For Efka, Quick Motors or other motors 】



A See below ※

B See below ※

Efka, Quick Motors or other motors

※ Refer to page 6 for A and B.

MOTOR PULLEY AND BELT

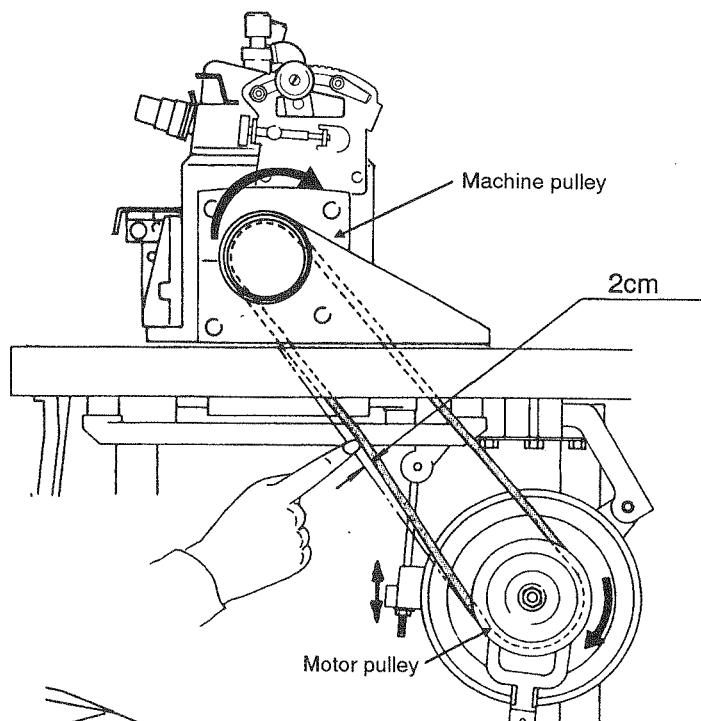
1. Belt: M type V belt
2. Select the proper motor pulley by referring to Table 1.

Table 1 Machine speed and motor pulley

Machine speed (s.p.m)	Motor pulley diameter (mm)	
	60Hz	50Hz
4,000	65	80
4,500	75	90
5,000	80	100
5,500	90	105
6,000	100	115
6,500	105	125
7,000	110	130

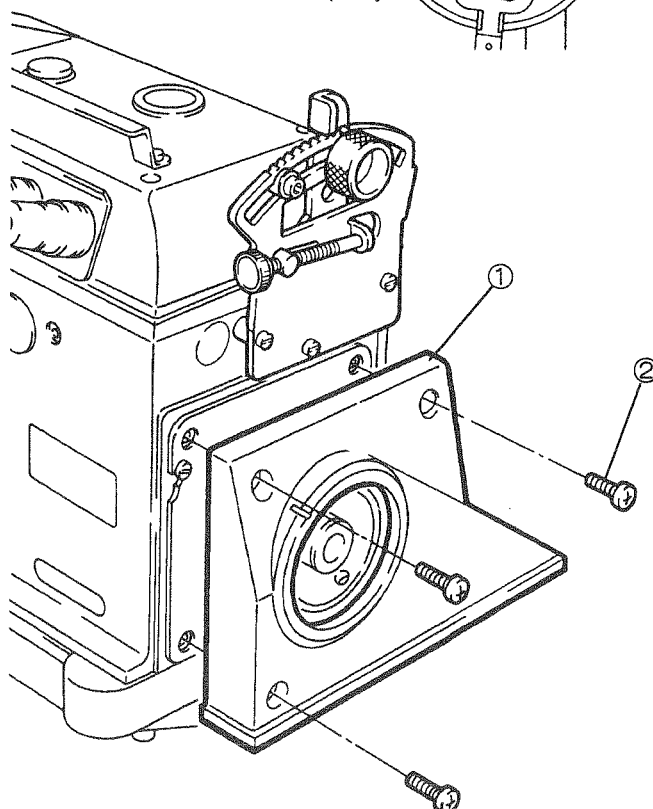
INSTALLING THE MACHINE HEAD

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.
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 screw ②.



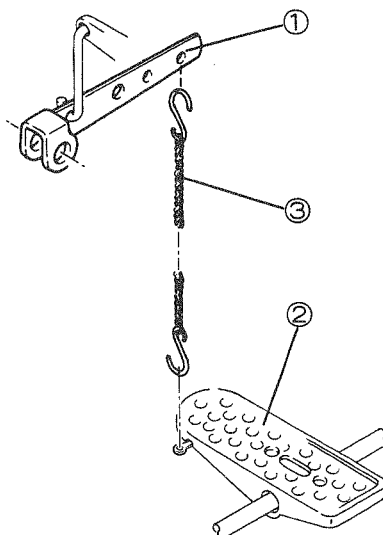
TURNING DIRECTION OF THE MACHINE PULLEY

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



HOOKING THE CHAIN FOR THE PRESSER FOOT LEFT TREADLE

Connect presser foot lever ① and treadle ② by using chaine ③.
Adjust the length of chain ③ so that treadle ② can be easily pressed.



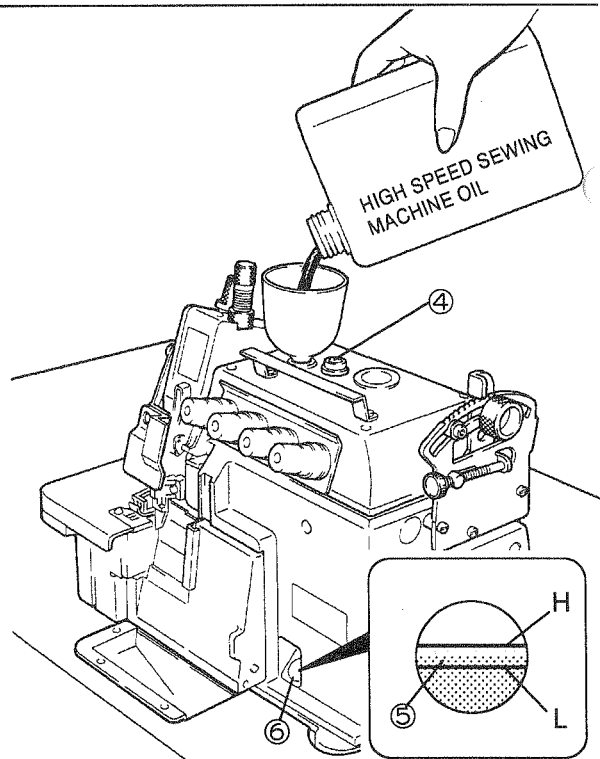
LUBRICATION

1. Oil

Pegasus' "HIGH SPEED SEWING MACHINE OIL"
(ISO Viscosity Grade 22)

2. To fill the machine with oil

Remove oil plug ④.
Supply oil until the oil surface ⑤ reaches line (H) of oil gauge ⑥.
Then replace oil plug ④.

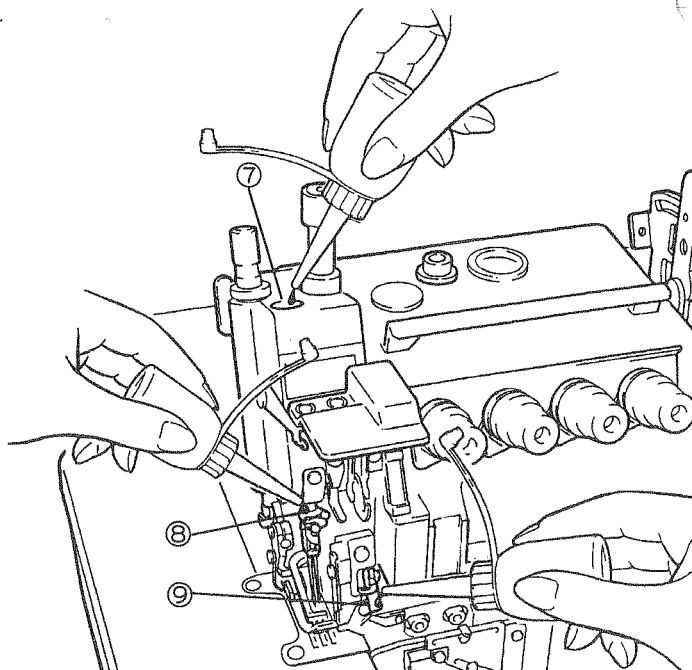


3. Oil level

Add oil to ensure the oil surface always lies between (H) and (L) lines.

4. Manual lubrication

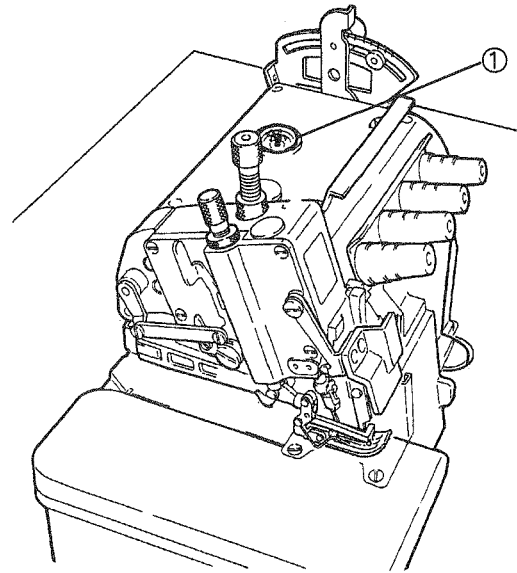
Apply 2 or 3 drops of oil by hand to oil hole ⑦, needle bar ⑧ and upper looper holder ⑨ when the machine is used for the first time or has been left unused for some time.



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 ① to see if the oil is flowing.

① to see if the oil is flowing.



SILICONE OIL for H.R. DEVICE

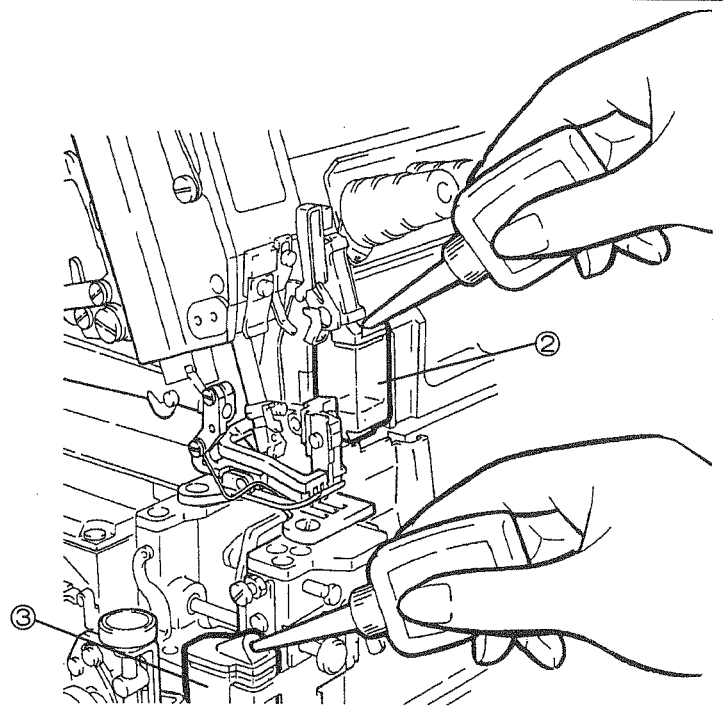
Fill silicone oil tanks ②, ③ with silicone oil.

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

OIL REPLACEMENT

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

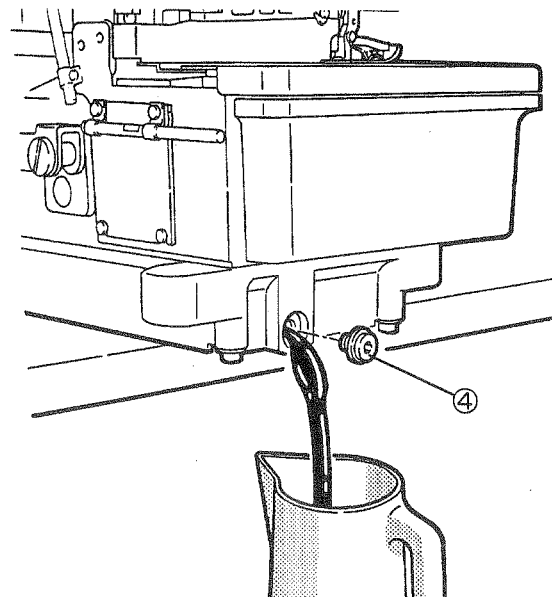
If you keep using the old oil, shortening machine life.



DRAINING THE OIL

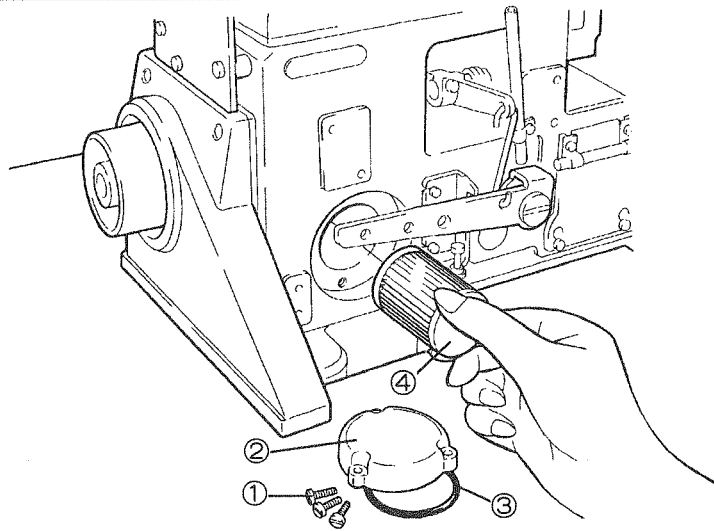
1. Drain the oil by removing screw ④ on the left side of the oil pan.

2. Tighten screw ④ securely so that oil leakage will not occur when filling the machine with oil.



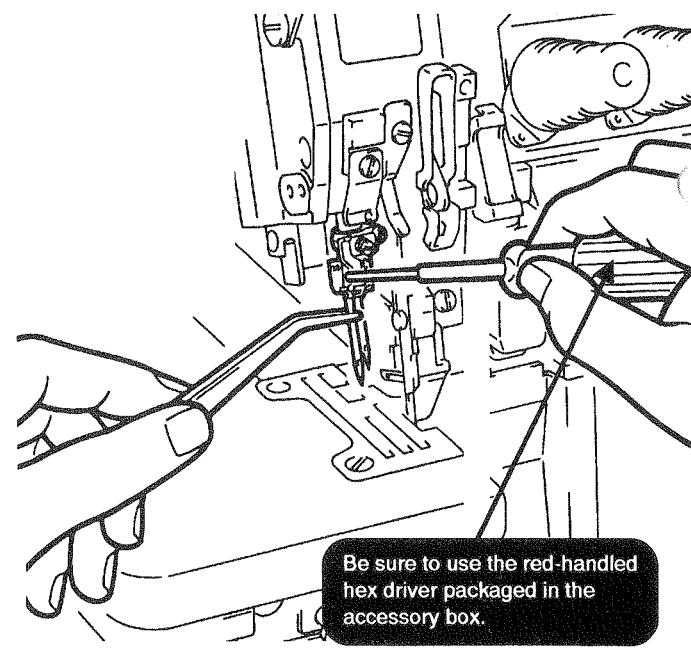
REPLACING THE OIL FILTER

1. Contaminants on oil filter ④ may cause improper lubrication. Check and clean oil filter ④ every six months by removing ① to ④. Replace it if necessary.
2. After cleaning or replacing the oil filter, install ① to ④.



REPLACING THE NEEDLE

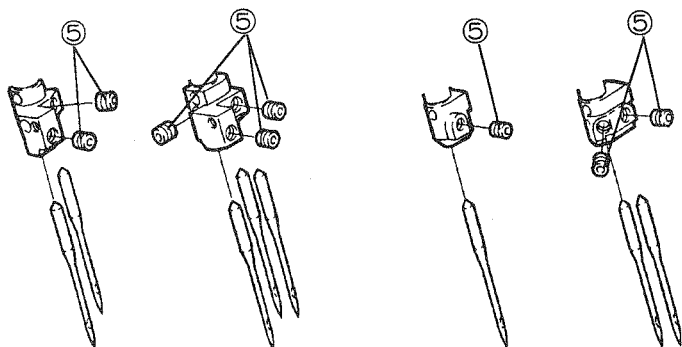
1. Loosen screw ⑤ (do not remove the screw). Then remove the needle from the needle holder.
2. Turn the scarf of the needle to the rear of the machine as seen from the front. Then insert it to the proper depth.
3. Tighten screw ⑤.



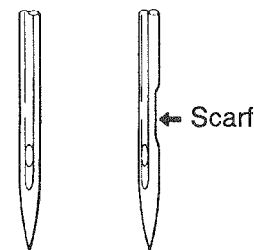
Be sure to use the red-handled hex driver packaged in the accessory box.

EXT3200Series

EXT5200Series



OK! NO!



OK!

Insert the needle to the proper depth.

Note:

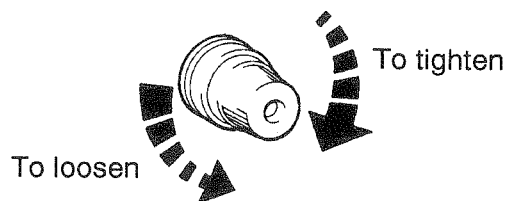
If you adopt a needle of extremely different size, adjust the amount of looper front - to - back movement after replacing the needle (see pag 20).

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.



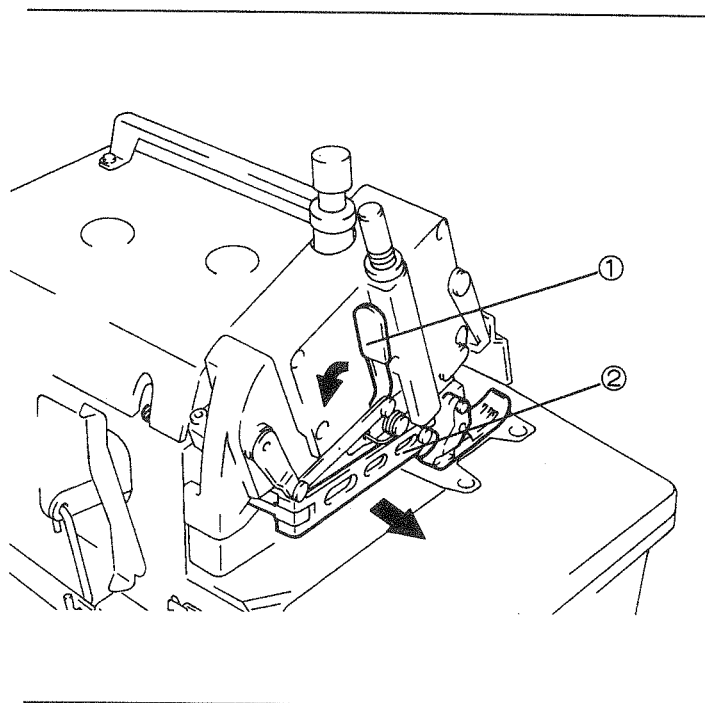
OPENING/CLOSING THE PRESSER ARM

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.

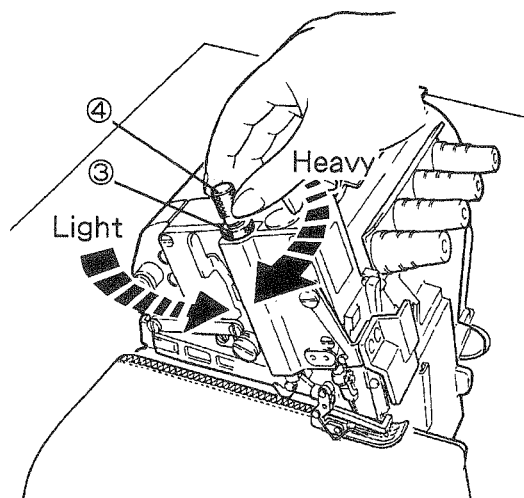
To replace the presser arm

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.



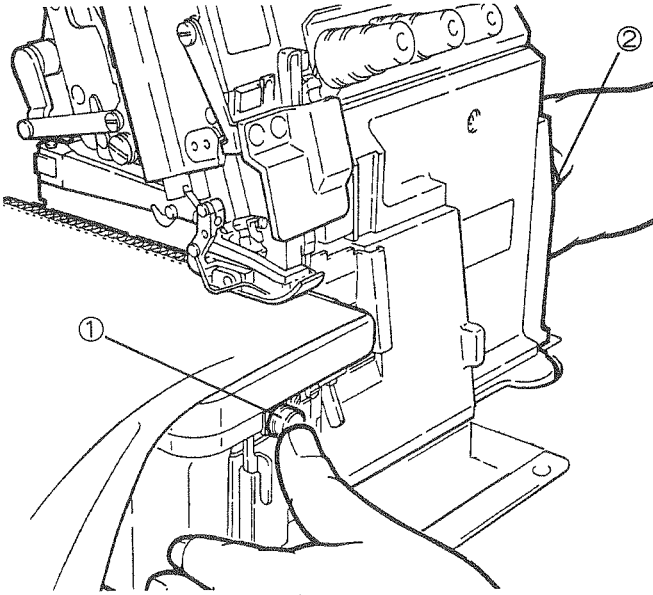
ADJUSTING THE PRESSER FOOT PRESSURE

1. Loosen lock nut ③.
2. Adjust the presser foot pressure with adjusting screw ④.
The presser foot pressure should be as light as possible, yet be sufficient to feed the fabric and obtain the proper stitch formation.
3. Tighten lock nut ③.

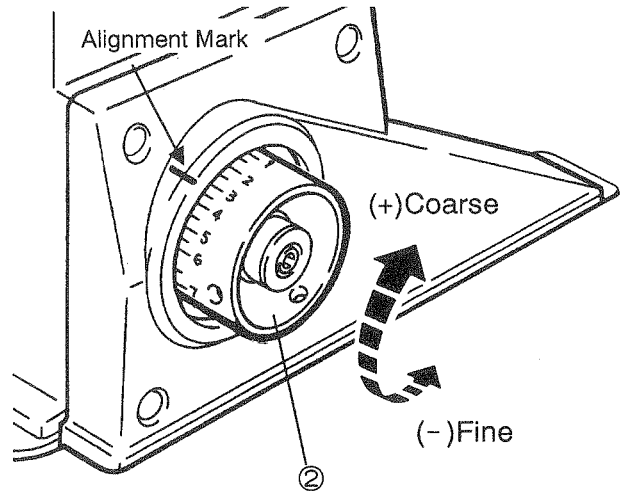


ADJUSTING STITCH LENGTH

1. With push button ① pressed slightly, turn the handwheel. The push button will become depressed further.

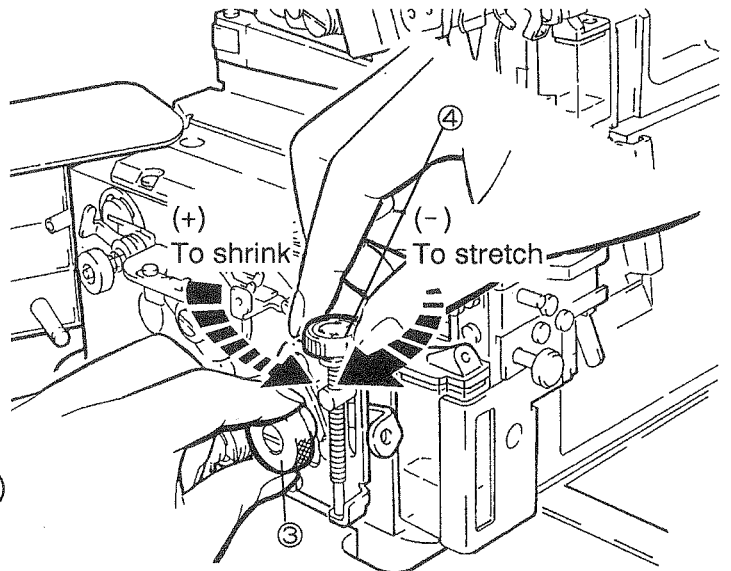
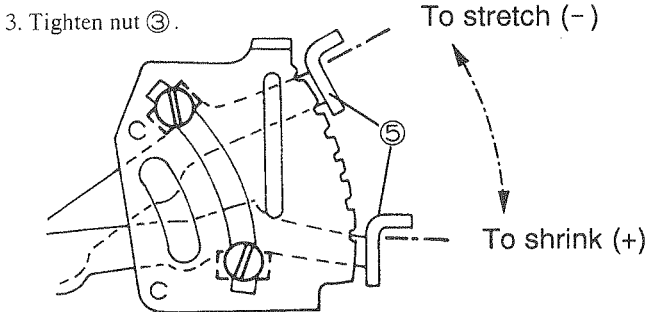


2. In this condition, to produce coarse stitches, turn handwheel ② in the direction of (+) and to produce fine stitches, turn handwheel ② in the direction of (-).



ADJUSTING DIFFERENTIAL FEED RATIO

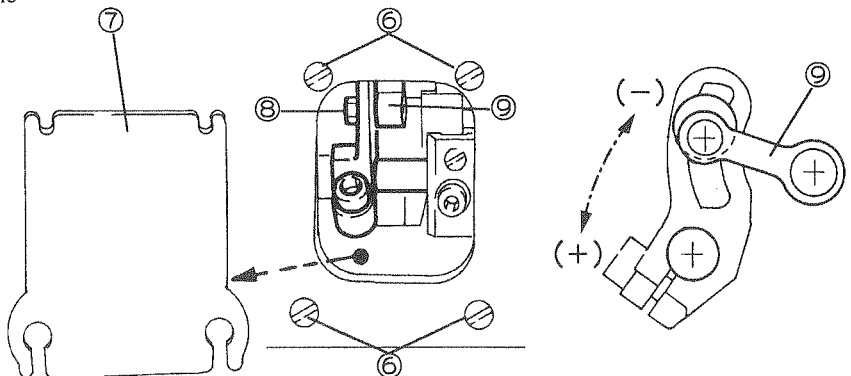
1. Loosen nut ③.
2. To increase the differential feed ratio, turn adjusting screw ④ or lever ⑤ in the direction of (+). To decrease the differential feed ratio, turn adjusting screw ④ or lever ⑤ in the direction of (-).



MAXIMUM/MINIMUM DIFFERENTIAL FEED RATIO

(Changing the movement amount of the main feed dog)

1. Loosen screws ⑥ and remove cover ⑦ from the rear side of the machine bed.
2. Loosen nut ⑧. Move link ⑨ up or down. To increase the differential feed ratio, move link ⑨ in the direction of (+). To decrease the differential feed ratio, move link ⑨ in the direction (-).
3. Replace cover ⑦ to the rear side of the machine bed and tighten screws ⑥.



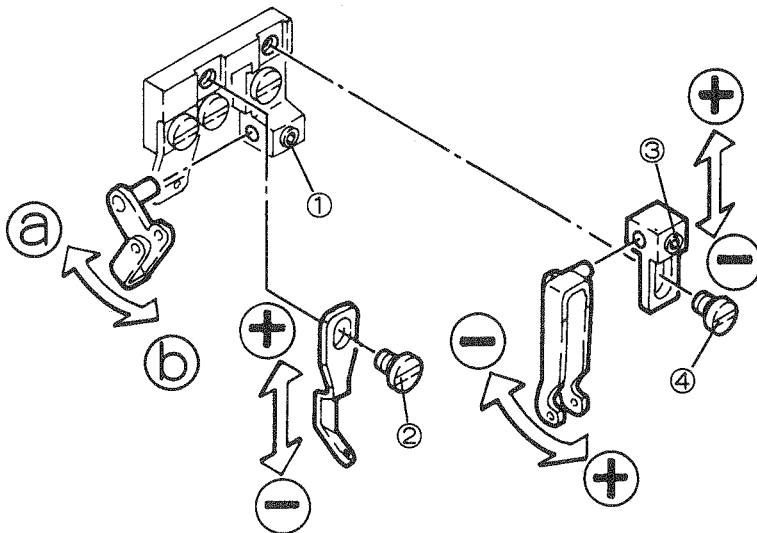
ADJUSTING THE AMOUNT OF THREAD TO BE FURNISHED

1. Needle thread guides

To make this adjustment, loosen screws ① - ⑥.

EXT3200 Series

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

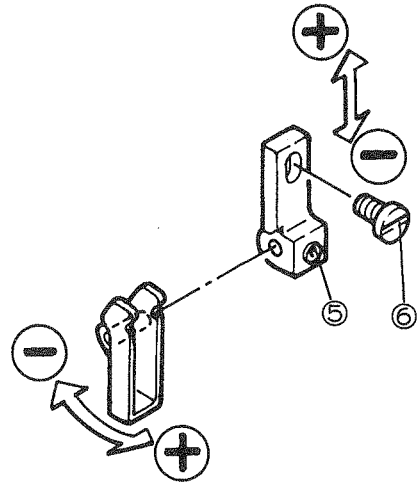


Note

To increase the amount of thread, move in the direction of ⊕ as shown below.

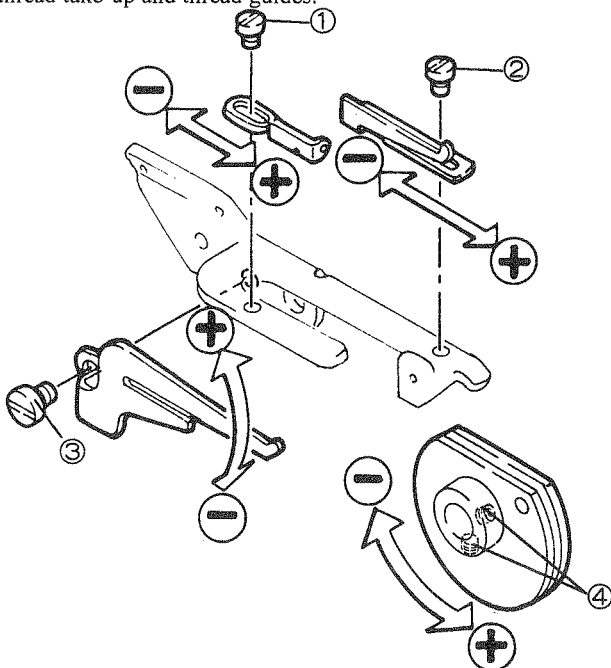
To decrease the amount of thread, move in the direction of ⊖ as shown below.

EXT5200 Series



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

Loosen screws 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.

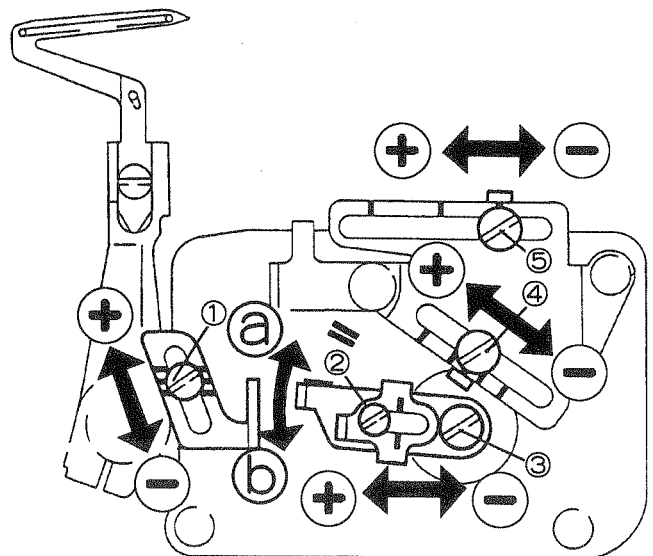
If the needle misses the loop of the looper, tangle of threads and/or skip stitching occurs, adjust the double chainstitch looper thread take-up and thread guides.

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

3. Looper thread take-up and thread guides

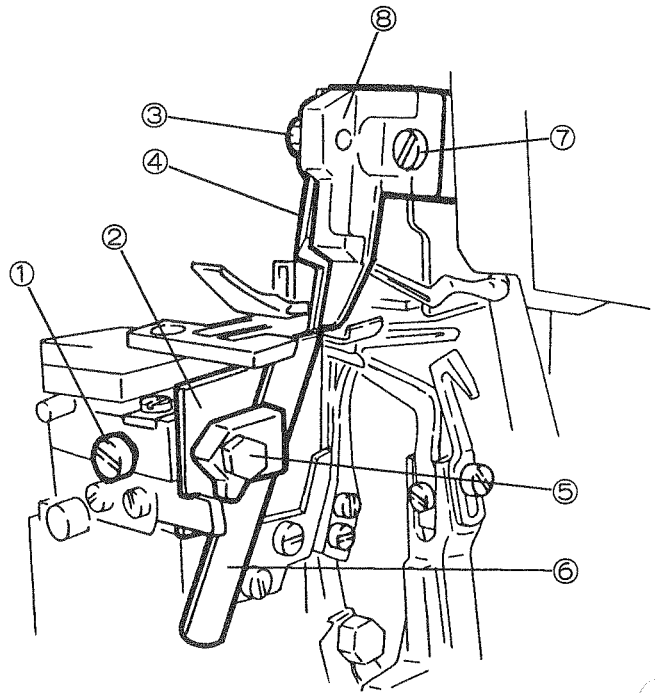
Loosen screws ① - ⑤ and adjust the looper thread take-up and thread guides.

To balance the amounts of upper and lower looper threads to decrease the amounts, move in the direction of ⊕ and to increase the amounts, move in the direction of ⊖.



TO REPLACE THE UPPER KNIFE

1. Loosen screw ① . Bring the lower knife holder ② to the extreme left end of its travel. Then tighten screw ① slightly.
2. Remove screw ③ and then remove upper knife ④ .
3. Turn the machine pulley until the upper knife holder is at the bottom of its travel.
4. Install upper and lower knives ④ and ⑥ so that an overlap of 0.5-1.0mm is obtained. Then tighten screw ③ (See figure A).
5. Position upper and lower knives ④, ⑥ so that each cutting edge intersects at its middle point (see point A). Then upper and lower knives ④, ⑥ should contact tightly. Tighten screw ① (See figure B).
6. Place a thread between the upper and lower knives, and then check to see if the thread can be cut smoothly by turning the machine pulley.



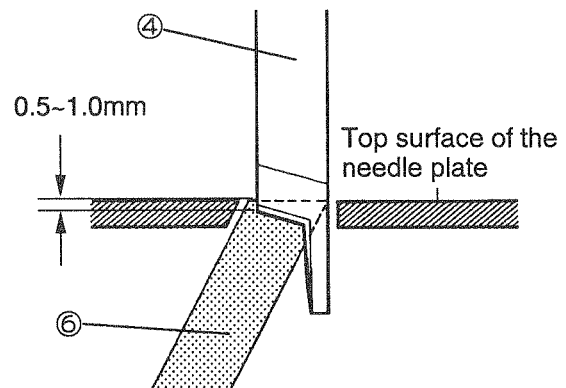
TO REPLACE THE LOWER KNIFE

1. Loosen screw ① . Bring lower knife holder ② to the extreme left end of its travel. Then tighten screw ① slightly.
2. Loosen screw ⑤ . Remove lower knife ⑥ .
3. Install lower knife ⑥ . Then the top surface of the lower knife edge should be flush with that of the needle plate.
4. Adjust the lower knife by referring to procedures 5 - 6 to be performed for replacing the upper knife.

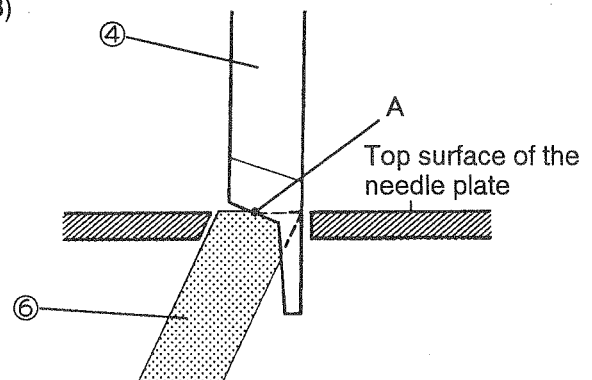
TO ADJUST THE OVEREDGE WIDTH

1. Loosen screw ① . Bring lower knife holder ② to the extreme left end of its travel. Then tighten screw ① slightly.
2. Loosen screw ⑦ . Adjust the overedge width by moving upper knife clamp ⑧ as required.
3. Adjust the lower knife by referring to procedures 5 - 6 to be performed for replacing the upper knife.

(Fig.A)



(Fig.B)



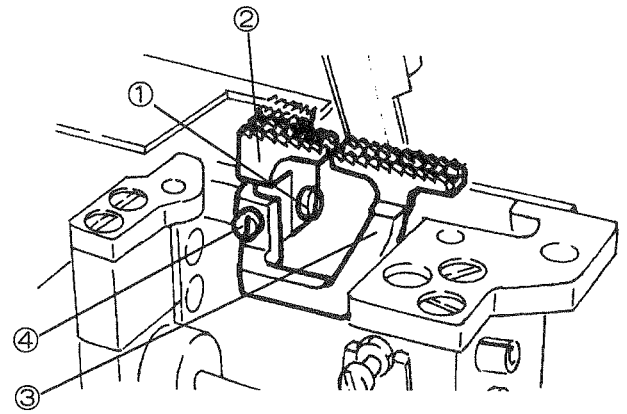
REPLACING THE FEED DOGS

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.

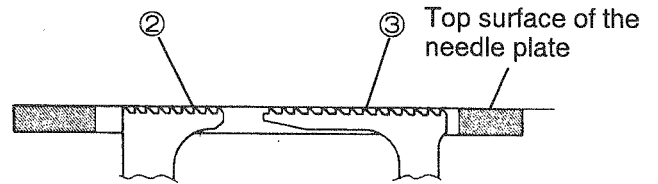


ADJUSTING THE BOTTOM FEED DOG

Tilt adjustment

1. Raise main and differential feed dogs ②, ③ by turning the machine pulley. Align all the feed dog teeth flush 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.

Height adjustment

1. Turn the machine pulley until main feed dog ② is at the top of its travel.

2. Loosen screw ①. Adjust height (a) above the top surface of the needle plate with two or three teeth from the rear end of main feed dog ②. Tighten screw ① (See table 2).

3. Adjust by turning the machine pulley so that main feed dog teeth ② are flush with the top surface of the needle plate. Loosen screw ④. Align differential feed dog teeth ③ flush with the top surface of the needle plate. Tighten screw ④.

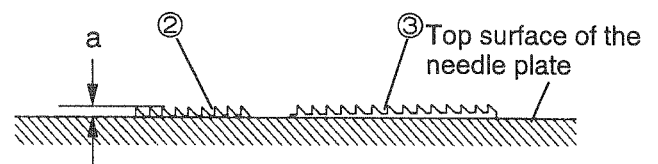
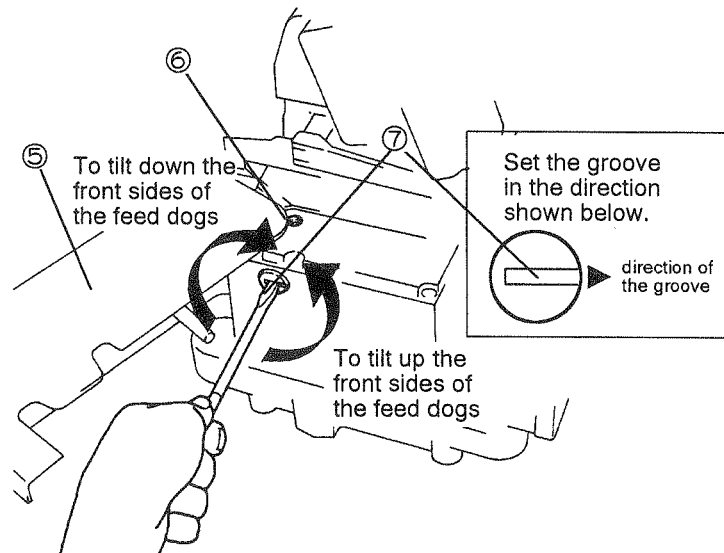


Table 2 Feed dog height

EXT3200 Series

Application	Subclass	a (mm)
Plain seaming	(15) EXT3216-02/223	0.7~0.9
	(15) EXT3216-03/233	0.7~0.9
	EXT3244-03/333	0.7~0.9
	(15) EXT3216-03/433	0.9~1.1
	(15) EXT3216-04/435K	1.0~1.2
	EXT3244-04/435K	1.0~1.2
	(15) EXT3216H-05/535K	1.1~1.3
	EXT3244H-05/535K	1.1~1.3
Shirring	(15) EXT3216-42/233	0.7~0.9
Shirring Piping	EXT3216H-45P1/574K	1.1~1.3
Piping	(15) EXT3216-C3P1/233	0.7~0.9
	(15) EXT3216-C3P2/233	0.7~0.9
	EXT3216H-C5P1/574K	1.1~1.3

EXT5200 Series

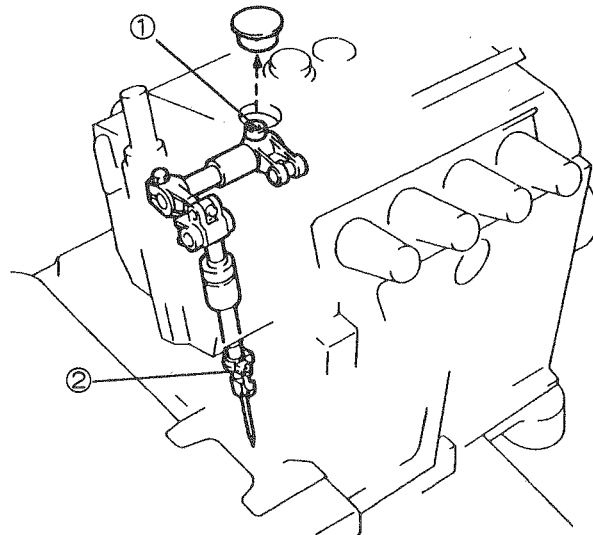
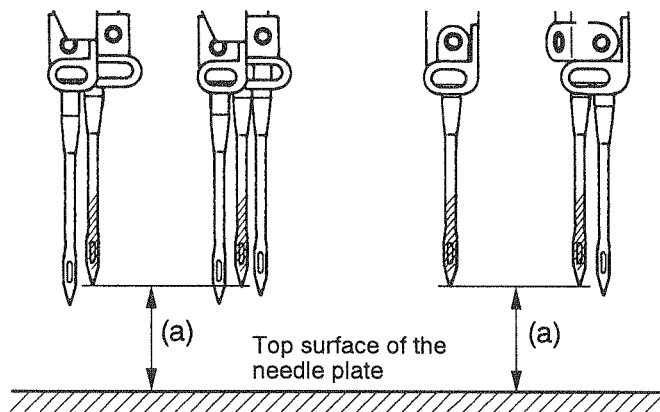
Application	Subclass	a (mm)
Plain seaming	EXT5204-02/233	0.7~0.9
	EXT5214-03/333	0.7~0.9
	EXT5214-M03/333	0.7~0.9
Blindstitch hemming	EXT5205-12/233	0.7~0.9
Shirring	EXT5214-43/333	0.7~0.9
Attaching tape	EXT5214-54S1/433	0.9~1.1
	EXT5214-54S2/433	0.9~1.1
	EXT5214-54S1/443	0.9~1.1
	EXT5214-54S2/443	0.9~1.1
	EXT5214H-55/545	1.0~1.2
Backlatching	EXT5214-84/433	0.9~1.1
	EXT5204-82B/233	0.7~0.9
	EXT5214-83B/333	0.7~0.9
Piping	EXT5214-84B/433	0.9~1.1
	EXT5214-C3P1/333	0.7~0.9
	EXT5214-C3P2/333	0.7~0.9

NEEDLE HEIGHT

1. Insert the needles properly into the holders, then fix them.
(See replacing the needle)
2. Turn the machine pulley until the needles are at their highest position.
3. Loosen screw ①.
4. Move the needle holder ② to adjust the distance "a" from the needle point to the needle plate.(see Table 3).

EXT3200Series

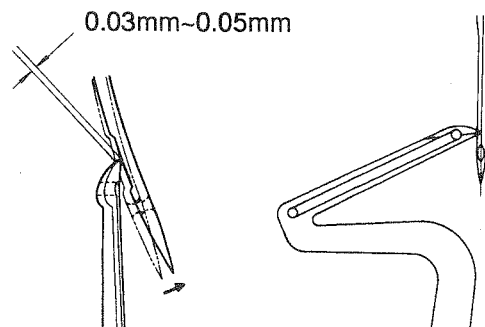
EXT5200Series



TO ADJUST THE LOWER LOOPER

Left-to-right adjustment

1. Turn the machine pulley until the lower looper is at the extreme left end of its travel.
2. Loosen screw ①. Adjust the distance "b" from the looper point to the center line of the overlock needle, moving looper holder ③ to the left or right as required (see Table 3).
3. Tighten screw ③.



Front-to-back adjustment

1. Bring the point of the looper from the extreme left end of its travel to the center of the overlock needle by turning the machine pulley.
2. Loosen screw ①.
3. Loosen front-to-back adjusting screw ②. The lower looper should push the needle 0.03mm - 0.05mm toward the operator. To make this adjustment, move looper holder ③ as required.

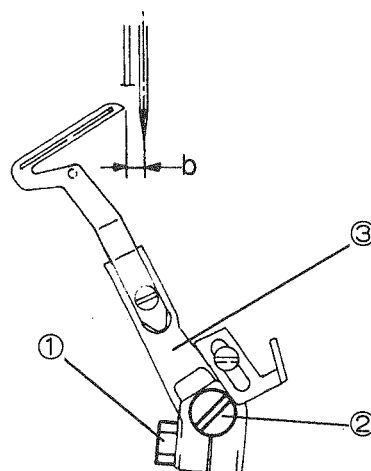


Table 3

Needle height & Lower looper setting distance

EXT3200 Series

Application	Subclass	a (mm)	b (mm)
Plain seaming	(15) EXT3216-02/223	10.4~10.6	3.7~3.9
	(15) EXT3216-03/233	10.4~10.6	3.7~3.9
	EXT3244-03/333	10.4~10.6	3.7~3.9
	(15) EXT3216-03/433	11.8~12.0	4.1~4.3
	(15) EXT3216-04/435K	11.8~12.0	4.1~4.3
	EXT3244-04/435K	11.8~12.0	4.1~4.3
	(15) EXT3216H-05/535K	14.4~14.6	3.7~3.9
	EXT3244H-05/535K	14.4~14.6	3.7~3.9
Shirring	(15) EXT3216-42/233	10.4~10.6	3.7~3.9
Shirring Piping	EXT3216H-45P1/574K	13.4~13.6	3.7~3.9
Piping	(15) EXT3216-C3P1/233	10.4~10.6	3.7~3.9
	(15) EXT3216-C3P2/233	10.4~10.6	3.7~3.9
	EXT3216H-C5P1/574K	13.4~13.6	3.7~3.9

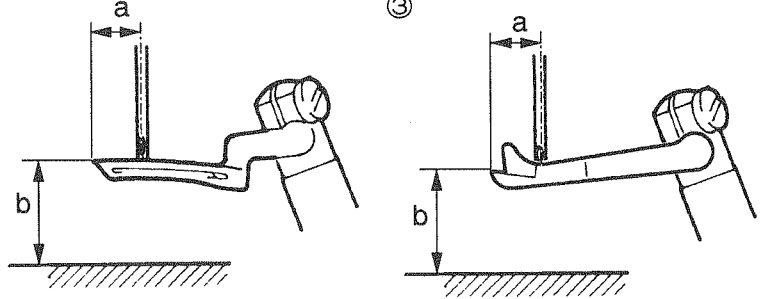
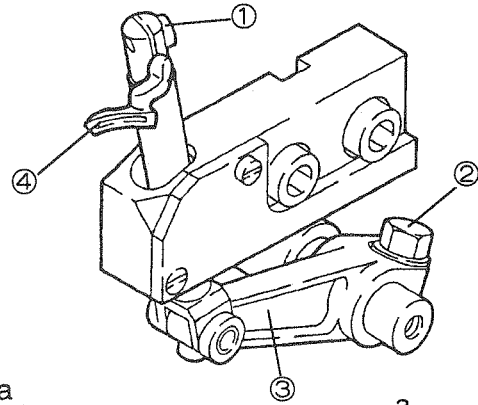
EXT5200 Series

Application	Subclass	a (mm)	b (mm)
Plain seaming	EXT5204-02/233	10.4~10.6	3.7~3.9
	EXT5214-03/333	10.4~10.6	3.7~3.9
	EXT5214-M03/333	10.4~10.6	3.7~3.9
Blindstitch hemming	EXT5205-12/233	10.4~10.6	3.7~3.9
Shirring	EXT5214-43/333	10.4~10.6	3.7~3.9
Attaching tape	EXT5214-54S1/433	11.8~12.0	4.1~4.3
	EXT5214-54S2/433	11.8~12.0	4.1~4.3
	EXT5214-54S1/443	11.8~12.0	4.1~4.3
	EXT5214-54S2/443	11.8~12.0	4.1~4.3
	EXT5214H-55/545	14.4~14.6	3.7~3.9
Backlatching	EXT5214-84/433	11.8~12.0	4.1~4.3
	EXT5204-82B/233	10.4~10.6	3.7~3.9
	EXT5214-83B/333	10.4~10.6	3.7~3.9
	EXT5214-84B/433	11.8~12.0	4.1~4.3
Piping	EXT5214-C3P1/333	10.4~10.6	3.7~3.9
	EXT5214-C3P2/333	10.4~10.6	3.7~3.9

TO ADJUST THE UPPER LOOPER

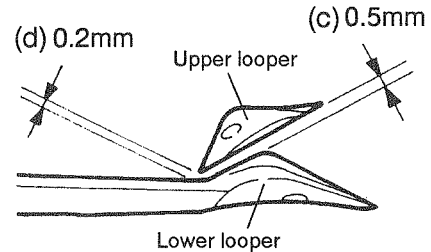
Left-to-right adjustment

1. Turn the machine pulley until the upper looper is at the extreme left end of its travel.
2. Loosen screw ① and ②. Adjust distance (a) (see Table 4) from the center of the overlock needle to the point of the upper looper, moving upper looper crank ③ or looper ④.
3. Tighten screw ① and ②.



Front-to-back adjustment

1. Loosen screw ①. Adjust clearances (c) and (d) when the point of the upper looper is going to intersect the back of the lower looper.
2. Tighten screw ①.



Note:

Check height (b) between the top surface of the needle plate and the point of the upper looper (see Table 4).

Table 4 Positioning the upper looper

EXT3200 Series

Application	Subclass	a (mm)	b (mm)
Plain seaming	(15) EXT3216-02/223	4.4~4.7	10.8
	(15) EXT3216-03/233	4.4~4.7	10.8
	EXT3244-03/333	5.4~5.7	10.5
	(15) EXT3216-03/433	4.4~4.7	12.0
	(15) EXT3216-04/435K	4.4~4.7	12.0
	EXT3244-04/435K	5.4~5.7	11.8
	(15) EXT3216H-05/535K	4.9~5.2	12.8
	EXT3244H-05/535K	5.4~5.7	12.8
Shirring	(15) EXT3216-42/233	4.4~4.7	10.8
Shirring Piping	EXT3216H-45P1/574K	4.9~5.2	11.8
Piping	(15) EXT3216-C3P1/233	4.4~4.7	10.8
	(15) EXT3216-C3P2/233	4.4~4.7	10.8
	EXT3216H-C5P1/574K	4.9~5.2	11.8

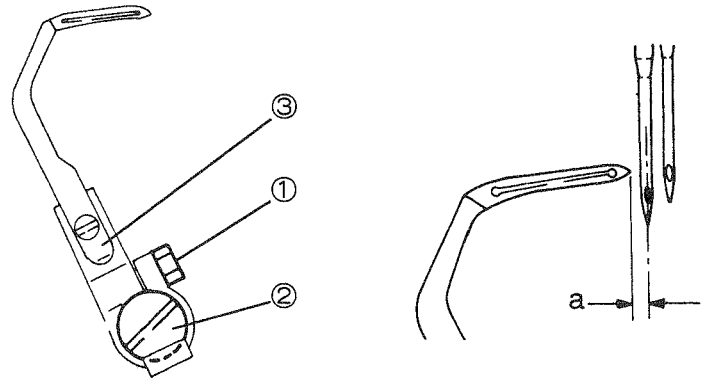
EXT5200 Series

Application	Subclass	a (mm)	b (mm)
Plain seaming	EXT5204-02/233	4.4~4.7	10.8
	EXT5214-03/333	5.4~5.7	10.5
	EXT5214-M03/333	5.4~5.7	10.5
Blindstitch hemming	EXT5205-12/233	4.4~4.7	10.8
Shirring	EXT5214-43/333	5.4~5.7	10.5
Attaching tape	EXT5214-54S1/433	5.4~5.7	11.0
	EXT5214-54S2/433	5.4~5.7	11.0
	EXT5214-54S1/443	5.4~5.7	11.0
	EXT5214-54S2/443	5.4~5.7	11.0
	EXT5214H-55/545	5.4~5.7	12.8
Backlatching	EXT5214-84/433	5.4~5.7	11.0
	EXT5204-82B/233	4.4~4.7	10.8
	EXT5214-83B/333	5.4~5.7	10.5
	EXT5214-84B/433	5.4~5.7	11.0
Piping	EXT5214-C3P1/333	5.4~5.7	10.5
	EXT5214-C3P2/333	5.4~5.7	10.5

TO ADJUST THE DOUBLE CHAINSTITCH LOOPER (for EXT3200 Series)

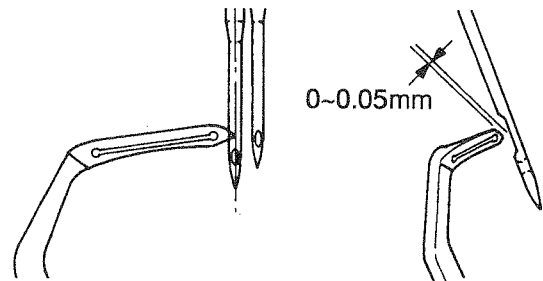
Left-to-right adjustment

1. Turn the machine pulley until the double chainstitch looper is at the extreme left end of its travel.
2. Loosen screw ①. Adjust the double chainstitch distance "a" from the center line of the needle to the looper point moving looper holder ③ (see Table 5).
3. Tighten screw ①.



Front-to-back adjustment

1. Bring the double chainstitch looper from the extreme left end of its travel to the center of the double chainstitch needle by turning the machine pulley.
2. Loosen screw ①. Adjust the double chainstitch looper front to back by moving looper holder ③ front to back as required with front-to-back adjusting screw ②.
3. Tighten screw ①.

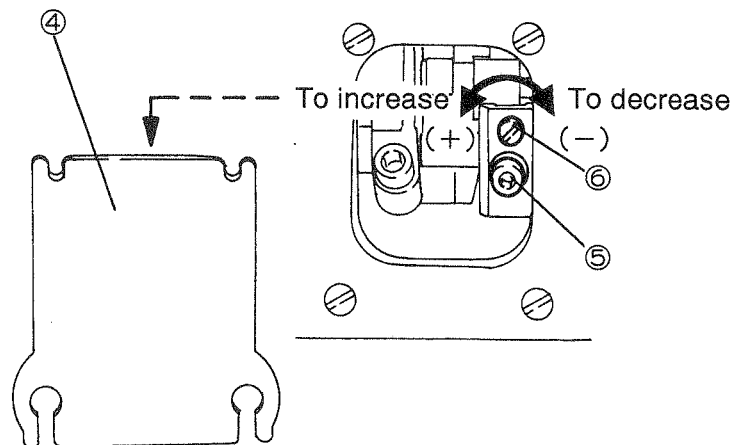


Front-to-back movement amount

1. Remove cover ④ and loosen screw ⑤. Adjust the amount with pin ⑥.

To increase the amount, turn pin ⑥ in the direction of (+).
To decrease the amount, turn pin ⑥ in the direction of (-).

2. Tighten screw ⑤ and replace cover ④.



Note:

If you replace the double chainstitch needle with a thicker needle than the standard needle, turn pin ⑥ in the direction of (+) to adjust the amount.

If you replace the double chainstitch needle with a thinner needle than the standard needle, turn pin ⑥ in the direction of (-) to adjust the amount.

Table 5 Double chainstitch looper setting distance-EXT3200 Series

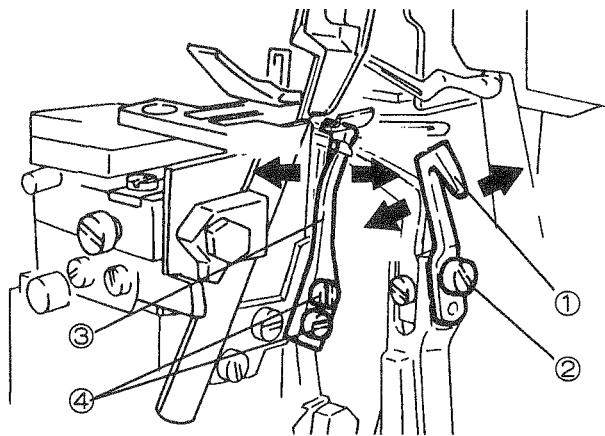
Application	Subclass	a (mm)
Plain seaming	(15) EXT3216-02/223	1.4~1.6
	(15) EXT3216-03/233	1.4~1.6
	EXT3244-03/333	1.4~1.6
	(15) EXT3216-03/433	1.6~1.8
	(15) EXT3216-04/435K	1.6~1.8
	EXT3244-04/435K	1.6~1.8
	(15) EXT3216H-05/535K	1.4~1.6
	EXT3244H-05/535K	1.4~1.6

Application	Subclass	a (mm)
Shirring	(15) EXT3216-42/233	1.4~1.6
Shirring and piping	EXT3216H-45P1/574K	1.4~1.6
Piping	(15) EXT3216-C3P1/233	1.4~1.6
	(15) EXT3216-C3P2/233	1.4~1.6
	EXT3216H-C5P1/574K	1.4~1.6

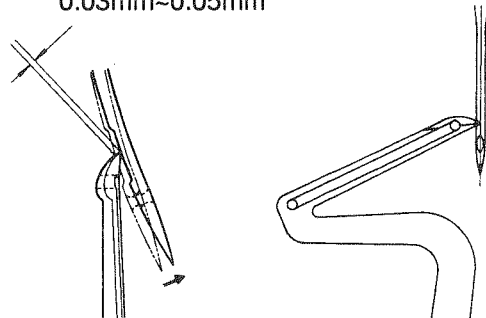
TO ADJUST THE NEEDLE GUARD

Overedge needle guard ①

1. Loosen screw ② . Adjust needle guard ① so that it is not touching the needle.
2. Bring the point of the lower looper from the extreme left end of its travel to the center of the overedge needle by turning the machine pulley.
3. Make sure the lower looper is pushing the needle 0.03mm - 0.05mm toward the operator (see "To adjust the lower looper").
4. Set clearance (a) between the point of the lower looper and the needle at 0 - 0.05mm by moving needle guard ① as required.
5. Tighten screw ② .



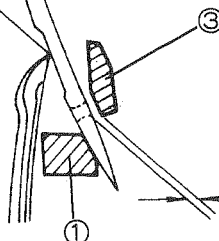
0.03mm~0.05mm



Overedge needle guard ③

1. Bring the point of the lower looper from the extreme left end of its travel to the center of the overlock needle by turning the machine pulley. Then the needle guard ① should be pushing the needle.
2. Loosen screws ④ . Set clearance (b) between the needle and needle guard ③ at 0.1mm - 0.2mm by moving needle guard ③ as required.
3. Tighten screw ④ .

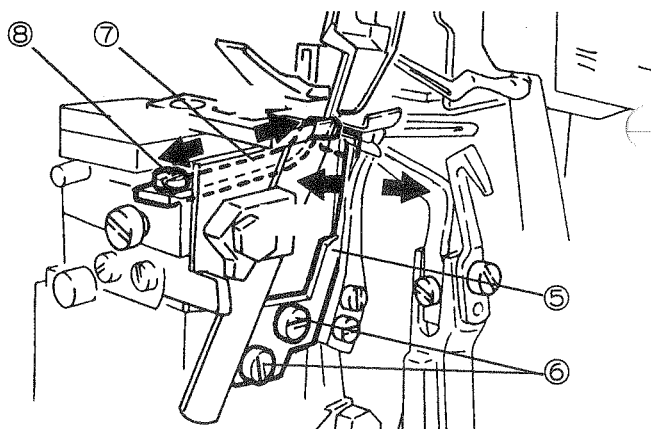
(a) 0~0.05mm



(b)
0.1~0.2mm

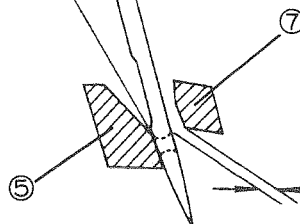
Double chainstitch needle guard ⑤

1. Turn the machine pulley until the double chainstitch needle is at the bottom of its stroke.
2. Loosen screws ⑥ . Set clearance (c) between the double chainstitch needle and needle guard ⑤ at 0 - 0.05mm by moving needle guard ⑤ .
3. Tighten screw ⑥ .



(c)

0mm~0.05mm



(d)

0.05~0.1mm

TO ADJUST THE TOP FEED DOG

To adjust front-to-back the feeding amount

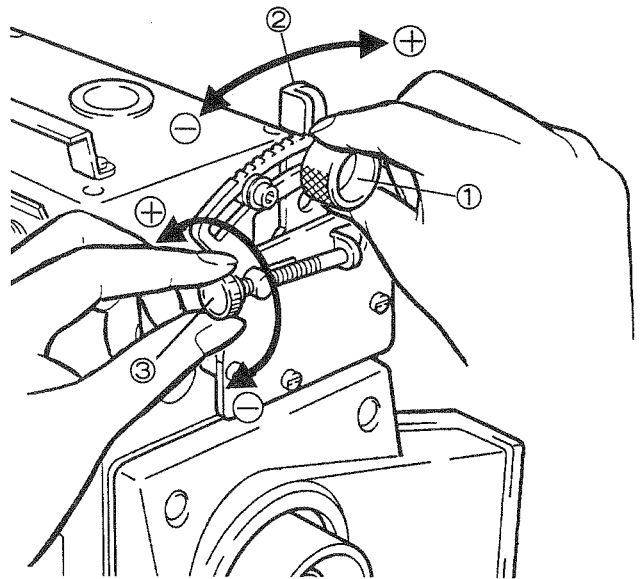
1. Loosen knob ①. Adjust the amount by moving lever ② as required. To increase the amount, move in the direction of (+). To decrease the amount, move in the direction of (-).

2. Tighten knob ①.

※ To make a fine adjustment, loosen knob ① first and then turn knob ③ as required. After this adjustment, tighten knob ①.

Note:

- For plain seaming, adjust the feeding amount of the top feed dog to that of the bottom feed dog because the top ply should be aligned with the bottom ply at the start and end of sewing.
- Adjust the amount according to the characteristics of the fabric and/or the garment.



To change the adjusting range of front-to-back feeding amount

Loosen screws ①. Adjust the range by moving stoppers ② and ③.

Note:

- One graduation indicates 1mm as a reference.
- The maximum value on the regulator is 12. However, do not exceed the maximum value set for each model. (Table 6).

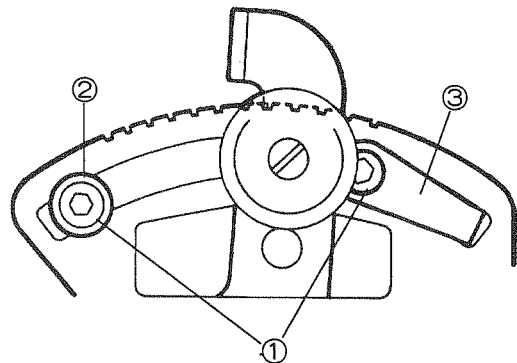


Table 6 Adjusting range of the front-to-back feeding amount for top feed dog

EXT3200 Series

Application	Subclass	Feeding amount
Plain seaming	(15) EXT3216-02/223	1~6
	(15) EXT3216-03/233	1~6
	EXT3244-03/333	1~6
	(15) EXT3216-03/433	1~6
	(15) EXT3216-04/435K	1~7
	EXT3244-04/435K	1~7
	(15) EXT3216H-05/535K	1~7
	EXT3244H-05/535K	1~7
Shirring	(15) EXT3216-42/233	2~8
Shirring Piping	EXT3216H-45P1/574K	1~7
Piping	(15) EXT3216-C3P1/233	1~6
	(15) EXT3216-C3P2/233	1~6
	EXT3216H-C5P1/574K	1~7

EXT5200 Series

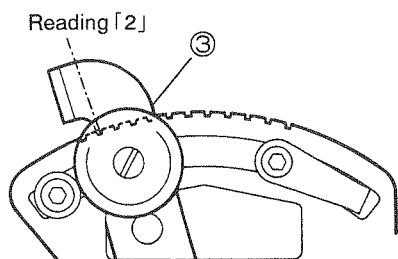
Application	Subclass	Feeding amount
Plain seaming	EXT5204-02/233	1~6
	EXT5214-03/333	1~6
	EXT5214-M03/333	1~6
Blindstitch hemming	EXT5205-12/233	1~6
Shirring	EXT5214-43/333	2~8
Attaching tape	EXT5214-54S1/433	1~8
	EXT5214-54S2/433	1~8
	EXT5214-54S1/443	1~8
	EXT5214-54S2/443	1~8
	EXT5214H-55/545	1~8
Backlatching	EXT5214-84/433	1~8
	EXT5204-82B/233	1~6
	EXT5214-83B/333	1~8
Piping	EXT5214-84B/433	1~8
	EXT5214-C3P1/333	1~6
	EXT5214-C3P2/333	1~6

ADJUSTING THE UP-AND-DOWN POSITION

ADJUSTING THE AMOUNT OF UP-AND-DOWN MOVEMENT

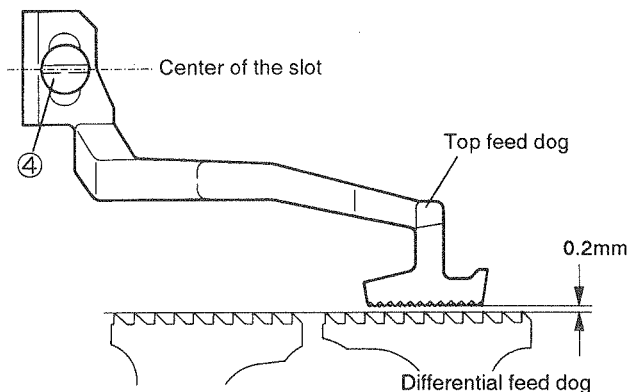
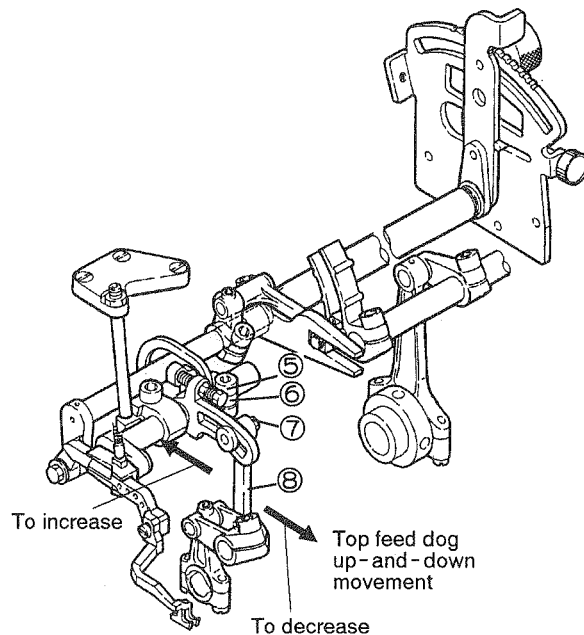
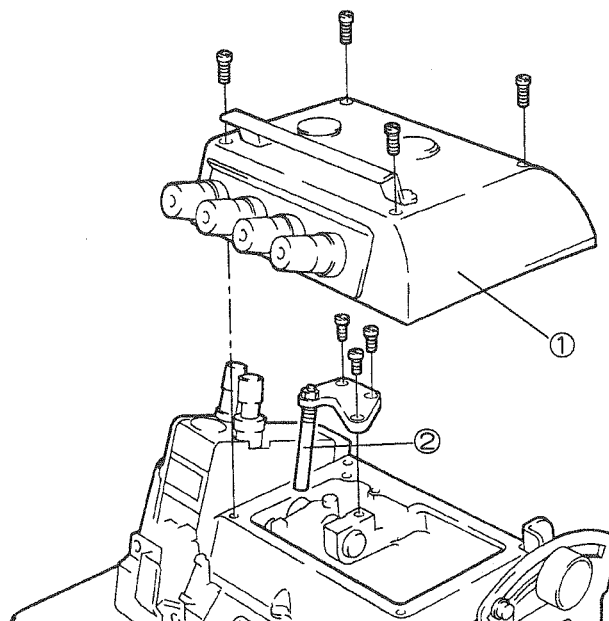
Standard adjustment (except the machines for shirring)

1. Turn the machine pulley until the top feed dog is at the top of its stroke. Remove top cover ① and track limitation stopper ②.
 ※ All the EXT Series manufactured before September, 1995 include track limiting stopper ②. Thereafter only the machines for shirring include this stopper. If stopper ② is not included, remove only top cover ①.
2. Loosen knob ③ and set the top feed adjusting lever at 2 on the indicator. Then tighten knob ③.



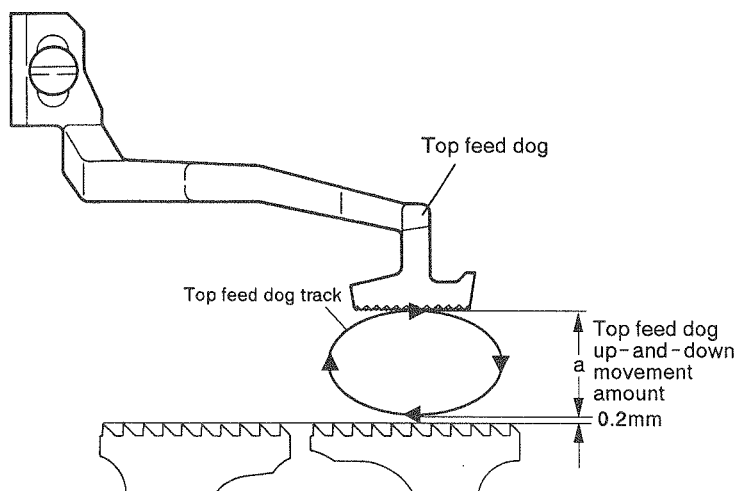
3. To adjust the up-and-down position.

- 1) Loosen screw ④. Center screw ④ in the slot of the top feed dog. Then tighten screw ④.
- 2) Turn the machine pulley until the top feed dog is at the bottom of its stroke.
- 3) Loosen screw ⑤. Set the clearance between the top feed dog and the differential feed dog at 0.2mm by moving the top feed dog.
- 4) Tighten screw ⑤.



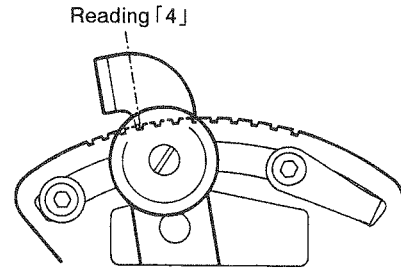
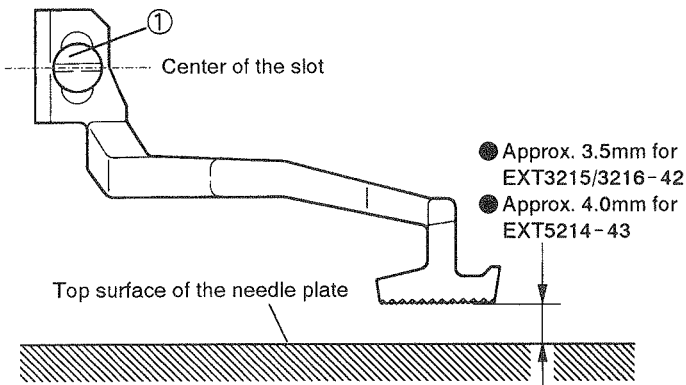
4. To adjust the amount of the top feed dog up-and-down movement.

- 1) Loosen screw ⑥. Adjust top feed dog up-and-down movement amount (a) by moving link ⑦ as required.
 To set up-and-down movement amount (a), turn the machine pulley until the top feed dog is at the top of its travel, and then measure the height of the top feed dog with a ruler or caliper (refer to Table 7 for (a)).
- 2) Tighten screw ⑥.



**Adjustment applicable to the machines for shirring
(EXT3215 – 42, EXT3216 – 42, EXT5214 – 43)**

1. Turn the machine pulley until the top feed dog is at the top of its stroke. Remove the top cover and the track limitation stopper (see the standard adjustment).
2. Set the top feed adjusting lever at 4 on the indicator (see the standard adjustment).
3. To adjust the position of the top feed dog up-and-down.
 - 1) Turn the machine pulley until the top feed dog is at the top of its stroke.
 - 2) Loosen screw ①. Center screw ① in the slot by moving the top feed dog up and down. Tighten screw ①.
 - 3) Loosen screw ②. Adjust the distance between the top surface of the needle plate and the top feed dog teeth by moving the top feed dog. (See below). Tighten screw ②.



4. To adjust the amount of up-and-down movement
 - 1) Loosen screw ③. Adjust up-and-down movement amount (a) of the top feed dog by moving link ④. To set (a), turn the machine pulley until the top feed dog is at the top of its travel, and then measure the height of the top feed dog with a ruler or caliper (refer to Table 7 for (a)).

- 2) Tighten screw ③.

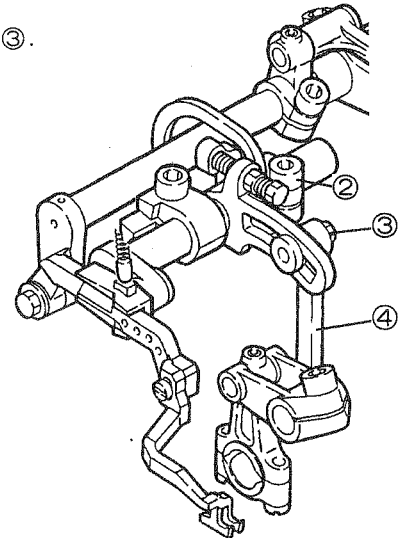


Table 7 Amount of the top feed dog up-and-down movement

EXT3200 Series

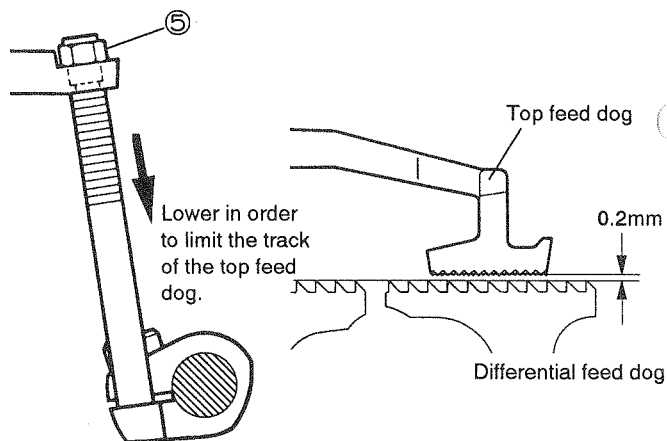
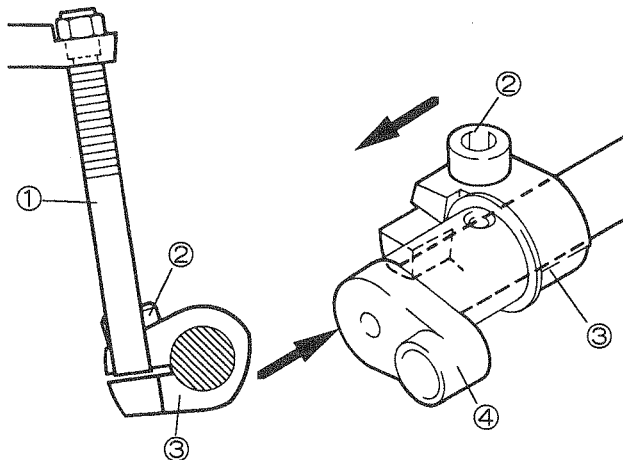
Application	Subclass	a (mm)
Plain seaming	(15) EXT3216-02/223	3.5
	(15) EXT3216-03/233	3.5
	EXT3244-03/333	4.5
	(15) EXT3216-03/433	3.5
	(15) EXT3216-04/435K	5.5
	EXT3244-04/435K	5.5
	(15) EXT3216H-05/535K	6.5
	EXT3244H-05/535K	6.5
Shirring	(15) EXT3216-42/233	4.0
Shirring Piping	EXT3216H-45P1/574K	7.5
Piping	(15) EXT3216-C3P1/233	3.5
	(15) EXT3216-C3P2/233	3.5
	EXT3216H-C5P1/574K	6.5

EXT5200 Series

Application	Subclass	a (mm)
Plain seaming	EXT5204-02/233	3.5
	EXT5214-03/333	4.5
	EXT5214-M03/333	4.5
Blindstitch hemming	EXT5205-12/233	4.5
Shirring	EXT5214-43/333	5.0
Attaching tape	EXT5214-54S1/433	5.5
	EXT5214-54S2/433	5.5
	EXT5214-54S1/443	5.5
	EXT5214-54S2/443	5.5
	EXT5214H-55/545	6.5
Backlatching	EXT5214-84/433	5.5
	EXT5204-82B/233	3.5
	EXT5214-83B/333	4.5
Piping	EXT5214-84B/433	5.5
	EXT5214-C3P1/333	4.5
	EXT5214-C3P2/333	4.5

5. Adjust the track of the top feed dog.

- 1) Loosen screw ②. Move collar ③ to the left so that it is fitted tightly onto the crank shaft ④ (See the illustration). Tighten screw ② slightly.
- 2) Install track limiting stopper ① on the machine bed when the shaft of the stopper is at its highest position.
- 3) Raise the upper knife to its highest position. Touch collar ③ onto the end of the stopper shaft.
- 4) Remove track limiting stopper ① from the machine bed. Tighten screw ② so that collar ③ cannot be moved.
- 5) Install track limiting stopper ① on the machine bed. Make sure the top feed dog is at the bottom of its stroke. Lower stopper shaft ① until a 0.2mm clearance between the differential feed dog and the top feed dog is obtained. Tighten nut ④ securely.

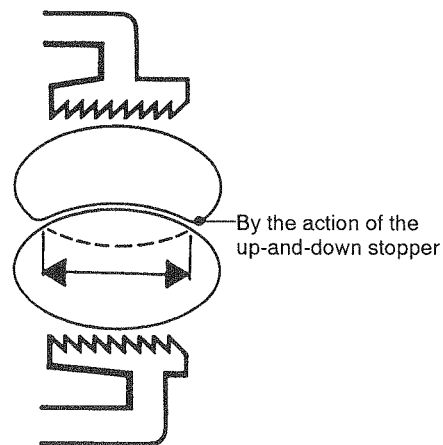
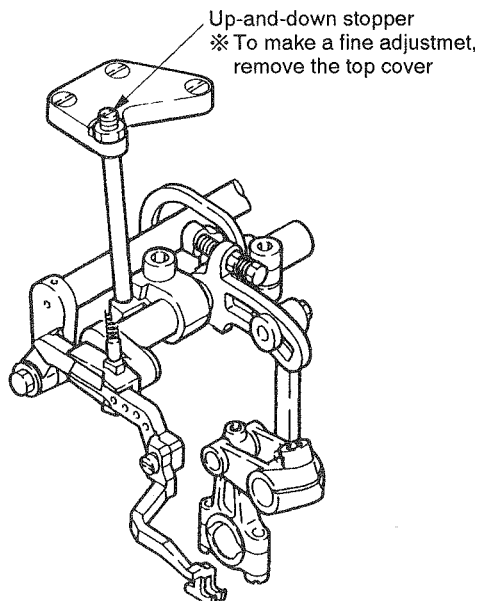


Note:

Adjust the up-and-down position and/or the amount of up-and-down movement of the top feed dog according to the fabric to be used and/or the characteristics of sewn products.

(For the machines for shirring)

- Since the track of the top feed dog is limited by the up-and-down stopper immediately before the top feed dog touches the bottom feed dog, the machine feeds the fabric longer, thus performing a shirring operation neatly.



To adjust the top feed dog front to back

1. Loosen knob ①. Set top feed dog adjusting lever ② at the maximum reading for each machine on the indicator. Tighten knob ① (see Table 6).
2. Turn the machine pulley until the top feed dog is at the extreme rear end of its stroke.
3. Loosen screw ③. Adjust distance (a) from the front end of the needle plate and that of the top feed dog by moving the top feed dog (See Table 8).
4. Tighten screw ③.

Set at the maximum reading for each machine

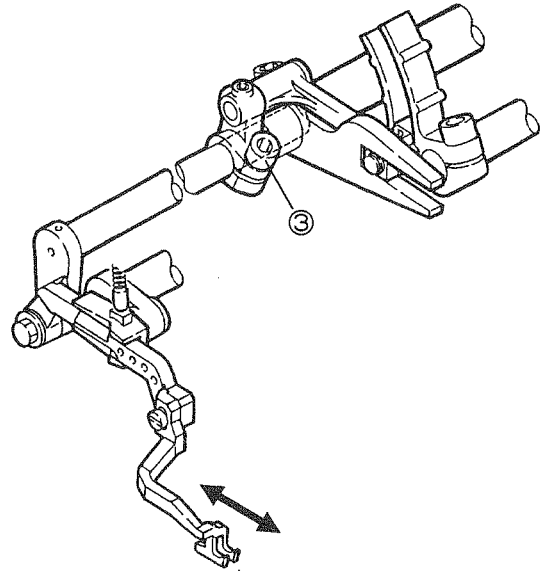
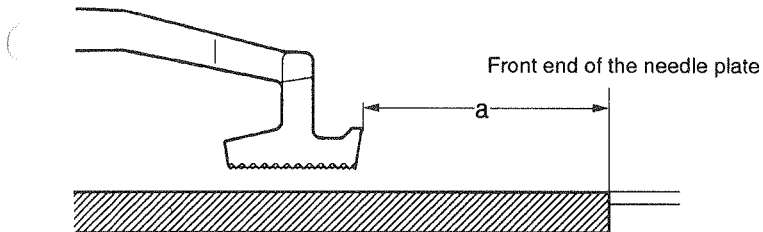
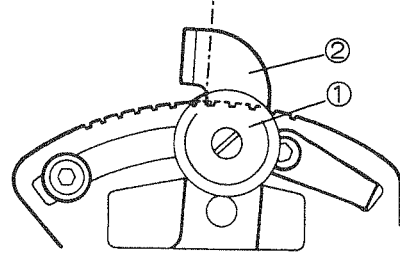


Table 8 Top feed dog front- to- back position
EXT3200 Series

Application	Subclass	a (mm)
Plain seaming	(15) EXT3216-02/223	18.0
	(15) EXT3216-03/233	18.0
	(15) EXT3216-03/433	18.0
	EXT3244-03/333	18.0
	(15) EXT3216-04/435K	18.5
	(15) EXT3216H-05/535K	18.5
	EXT3244-04/435K	18.5
	EXT3244H-05/535K	18.5
Shirring	(15) EXT3216-42/233	19.0
Shirring Piping	EXT3216H-45P1/574K	16.0
Piping	(15) EXT3216-C3P1/233	18.0
	(15) EXT3216-C3P2/233	18.0
	EXT3216H-C5P1/574K	16.0

EXT5200 Series

Application	Subclass	a (mm)
Plain seaming	EXT5204-02/233	23.5
	EXT5214-03/333	23.5
	EXT5214-M03/333	23.5
Blindstitch hemming	EXT5205-12/233	23.5
Shirring	EXT5214-43/333	22.0
Attaching tape	EXT5214-54S1/433	23.5
	EXT5214-54S2/433	23.5
	EXT5214-54S1/443	21.0
	EXT5214-54S2/443	21.0
	EXT5214H-55/545	21.0
Backlatching	EXT5214-84/433	21.0
	EXT5204-82B/233	23.5
	EXT5214-83B/333	21.0
	EXT5214-84B/433	21.0
Piping	EXT5214-C3P1/333	21.0
	EXT5214-C3P2/333	21.0

To adjust the top feed dog pressure

1. Loosen nut ①.

2. Adjust the pressure with adjusting screw ② properly.

The pressure should be sufficient to feed the fabric correctly, but the top feed dog must not damage the fabric.

See table 9 for standard measures.

To increase the pressure, turn it in the direction of (+).

To decrease the pressure, turn it in the direction of (-).

Note:

If the pressure is too light, the top feed dog may perform jumping, causing uneven feed and/or noise.

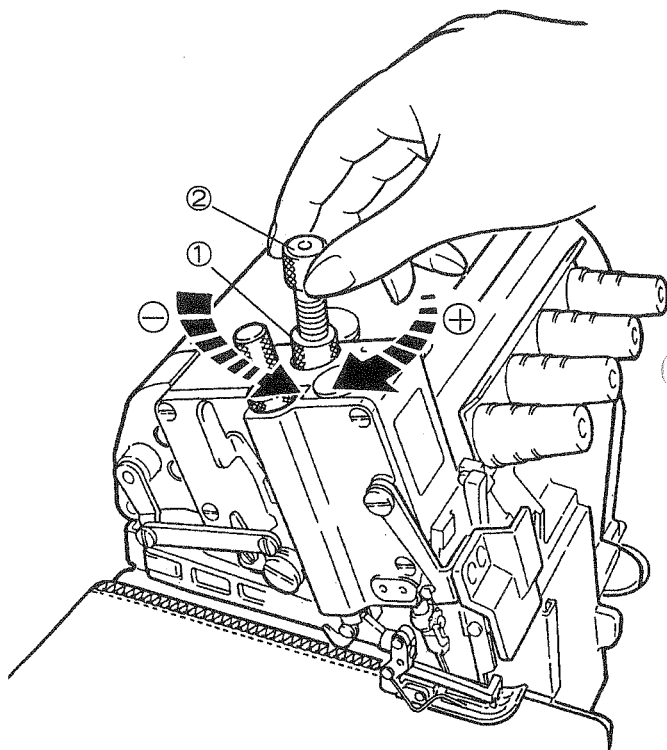
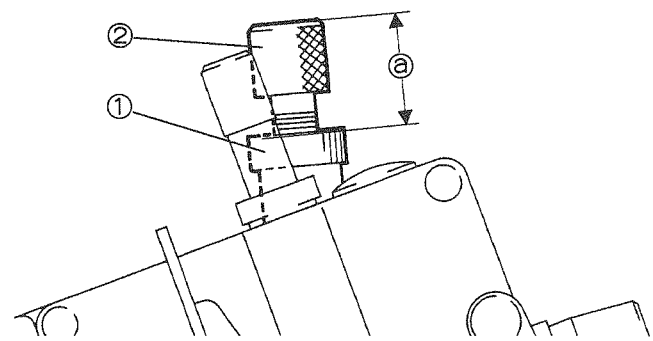


Table 9 Height of the top feed dog pressure adjusting screw

EXT3200 Series

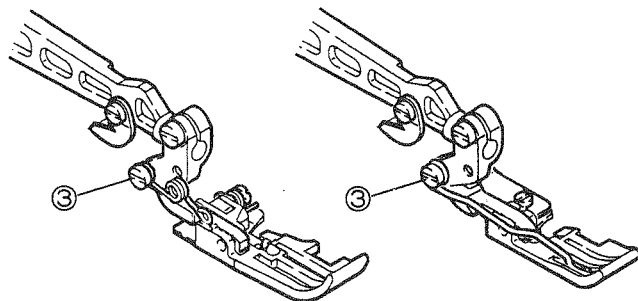
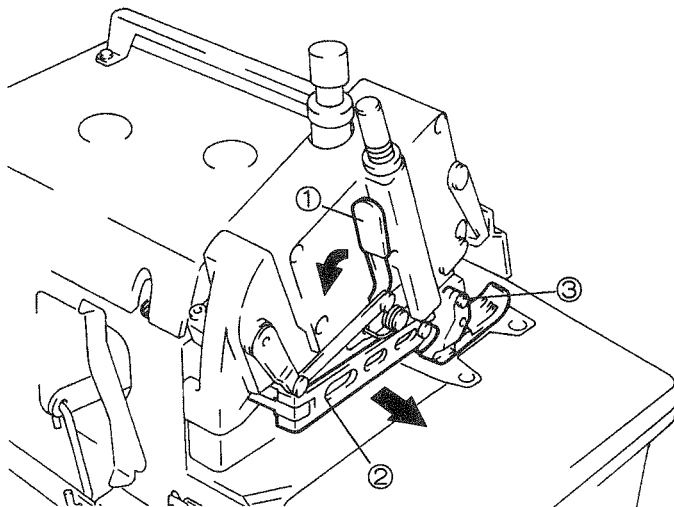
Application	Subclass	a (mm)
Plain seaming	(15) EXT3216-02/223	24.0
	(15) EXT3216-03/233	24.0
	EXT3244-03/333	25.5
	(15) EXT3216-03/433	24.0
	(15) EXT3216-04/435K	23.5
	EXT3244-04/435K	23.5
	(15) EXT3216H-05/535K	25.5
	EXT3244H-05/535K	25.5
Shirring	(15) EXT3216-42/233	25.0
Shirring Piping	EXT3216H-45P1/574K	25.5
Piping	(15) EXT3216-C3P1/233	24.0
	(15) EXT3216-C3P2/233	24.0
	EXT3216H-C5P1/574K	25.5

EXT5200 Series

Application	Subclass	a (mm)
Plain seaming	EXT5204-02/233	24.0
	EXT5214-03/333	25.5
	EXT5214-M03/333	25.5
Blindstitch hemming	EXT5205-12/233	25.5
Shirring	EXT5214-43/333	25.5
Attaching tape	EXT5214-54S1/433	25.5
	EXT5214-54S2/433	25.5
	EXT5214-54S1/443	25.5
	EXT5214-54S2/443	25.5
	EXT5214H-55/545	25.5
Backlatching	EXT5214-84/433	25.5
	EXT5204-82B/233	24.0
	EXT5214-83B/333	25.5
Piping	EXT5214-84B/433	25.5
	EXT5214-C3P1/333	25.5
	EXT5214-C3P2/333	25.5

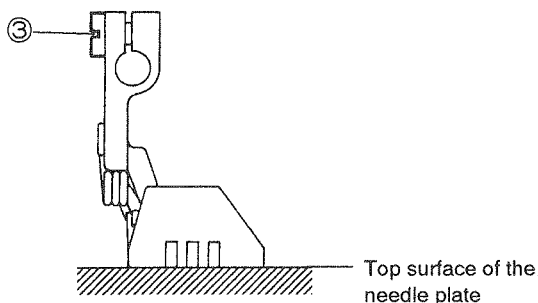
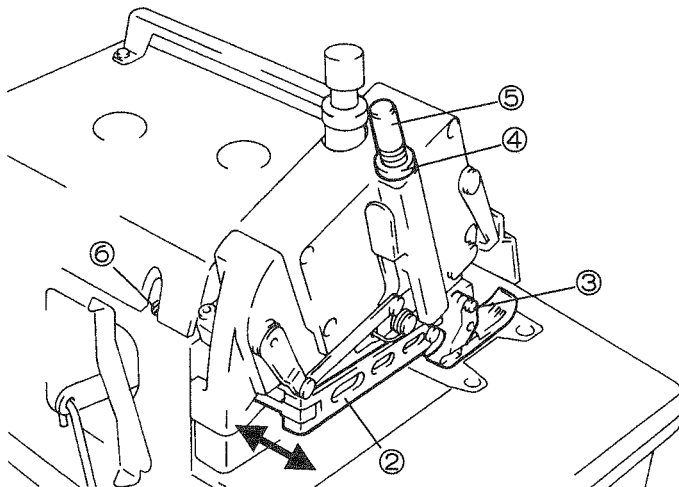
TO REPLACE THE PRESSER FOOT

1. Turn the machine pulley until the needle is at the top of its stroke.
2. Press lever ① down and swing presser arm ② aside to the cloth plate.
3. Loosen screw ③. Replace the presser foot. Then tighten screw ③.
4. Press lever ① down and put presser arm ② back.

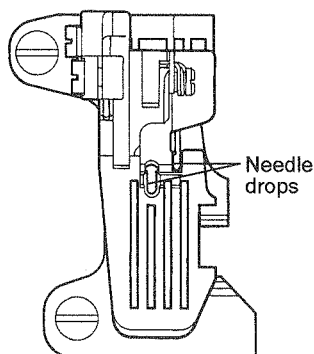


TO ADJUST THE POSITION OF THE PRESSER FOOT

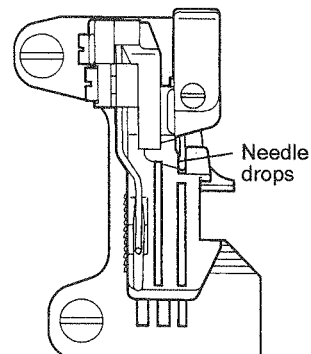
1. Loosen nut ④. Loosen screw ⑤ to remove pressure on presser arm ②.
2. Turn the machine pulley until the needle is at the bottom of its stroke.
3. Loosen screw ③. Align the needle drop on the presser foot with that of the needle plate. Adjust the presser foot so that it touches the top surface of the needle plate tightly. Then tighten screw ③.
4. Loosen screw ⑥. Move presser arm ② to make a fine adjustment.
5. Tighten screw ⑥.
6. Tighten screw ⑤ while adjusting the pressure. Then tighten nut ④.



EXT3200 Series
Ex. 2 - needle



EXT5200 Series
Ex. 1 - needle

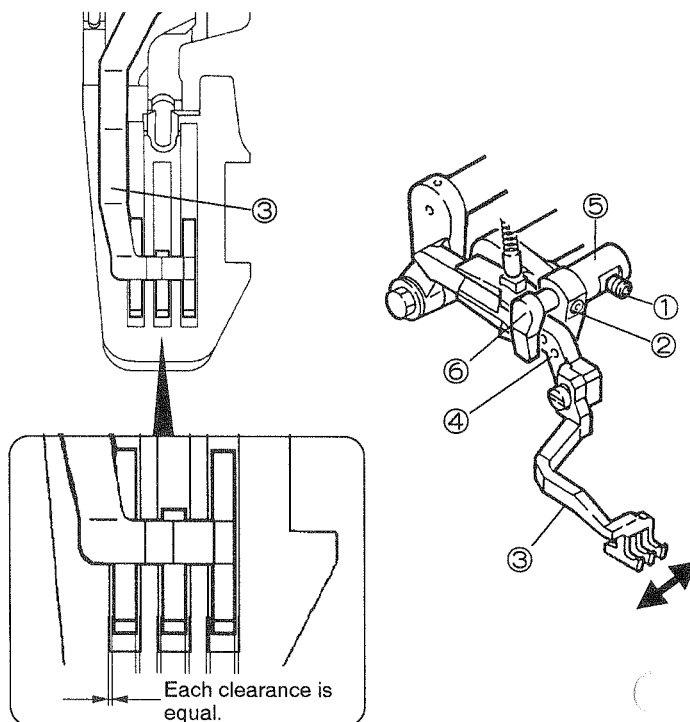


TO ADJUST THE LEFT-AND-RIGHT POSITION OF THE TOP FEED DOG

1. Adjust the position of the presser foot by referring to "To adjust the position of the presser foot."
2. Loosen screws ① and ②. Adjust the position of top feed dog ③ by moving top feed bar guides ⑤ and ⑥.
3. Check the position of top feed bar guides ⑤ and ⑥ by turning the machine pulley so that top feed bar ④ can move smoothly.
4. Tighten screws ① and ②.

Note:

If top feed bar guides ⑤ and ⑥ touch top feed bar too tightly, it will cause trouble.



ADJUSTING THE RISING TIMING OF THE PRESSER FOOT AND THE TOP FEED DOG

- 1) Turn the machine pulley until the needle is at the bottom of its stroke.

(To adjust the rising timing of the presser foot)

- 2) Press down foot lift lever ⑦. Hold distance ① (see Table 10) using the gauge, etc.

- 3) Loosen screw ⑬. Press collar ⑨ lightly in the direction of the arrow so that it touches lever ⑩ and simultaneously fits onto presser arm ⑫. Tighten screw ⑬.

(To adjust the rising timing of the top feed dog)

- 4) Press down foot lift lever ⑦. Hold distance ① (see Table 10) using the gauge, etc.

- 5) Loosen screw ⑭. Press collar ⑪ lightly in the direction of the arrow so that it touches lever ⑩. Tighten screw ⑭.

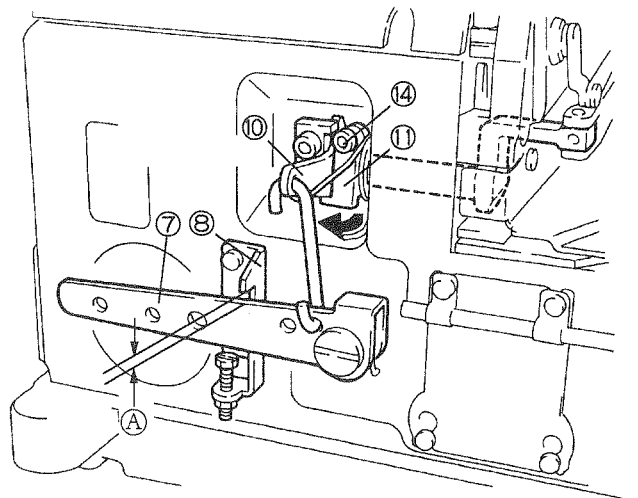
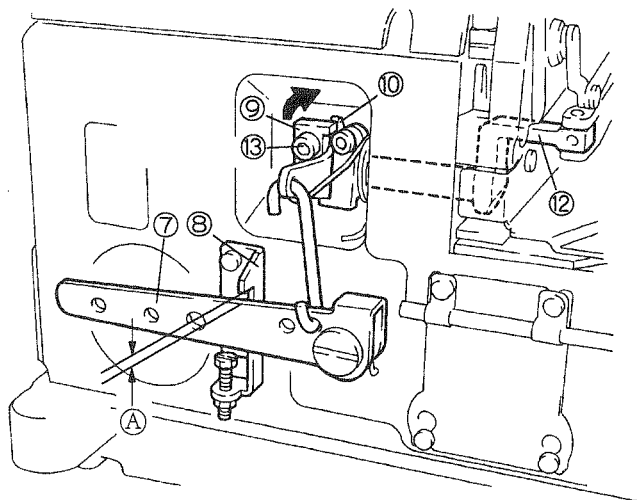


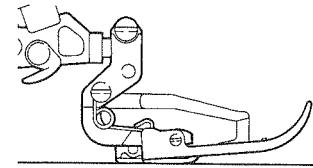
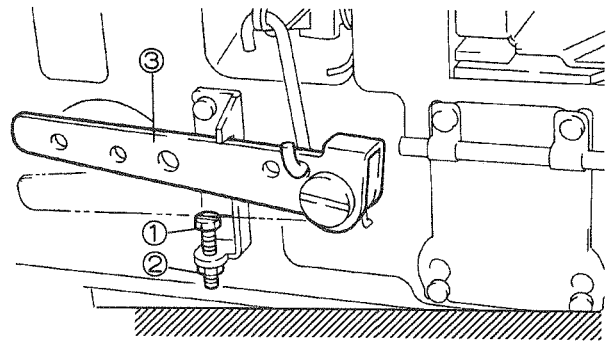
Table 10 Rising timing distance for the presser foot and the top feed dog

Presser foot		Top feed dog	
EXT5200	EXT3200	EXT5200	EXT3200
2 mm	8 mm	6 mm	1 mm

TO ADJUST THE LIFT OF THE PRESSER FOOT AND THE TOP FEED DOG

EXT3200 Series

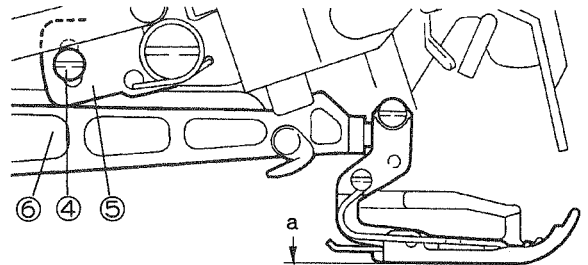
1. Turn the machine pulley until the teeth of the bottom feed dog are below the top surface of the needle plate.
2. Make sure the bottom surface of the small presser foot touches the top surface of the needle plate tightly.
If it does not, follow the procedures below.
3. Loosen nut ②.
4. Lower presser foot lift lever ③ until it touches screw ①. Adjust the height of the small presser foot by turning screw ① as required so that its bottom surface touches the top surface of the needle plate.
5. Replace presser foot lift lever ③ and tighten nut ② to fasten screw ① securely.
6. Raise the presser foot. Loosen screw ④.
7. Adjust foot lift (a) (see Table 11) with stopper ⑤ touching presser arm ⑥ tightly.
8. Tighten screw ④.



Small presser

EXT5200 Series

1. Turn the machine pulley until the teeth of the top feed dog are below the top surface of the needle plate.
2. Loosen nut ②.
3. Lower foot lift lever ③ until it touches screw ①. Adjust foot lift (a) (see Table 11) by turning screw ① as required.
4. Replace foot lift lever ③. Tighten nut ②.
5. Raise the presser foot. Loosen screw ④. Adjust stopper ⑤ so that it touches presser arm ⑥. Tighten screw ④.



Top surface of the needle plate

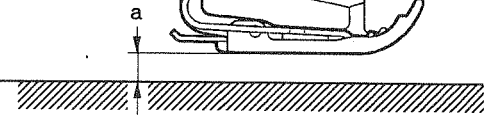


Table 11 Foot lift of the presser foot and the top feed dog

EXT3200 Series

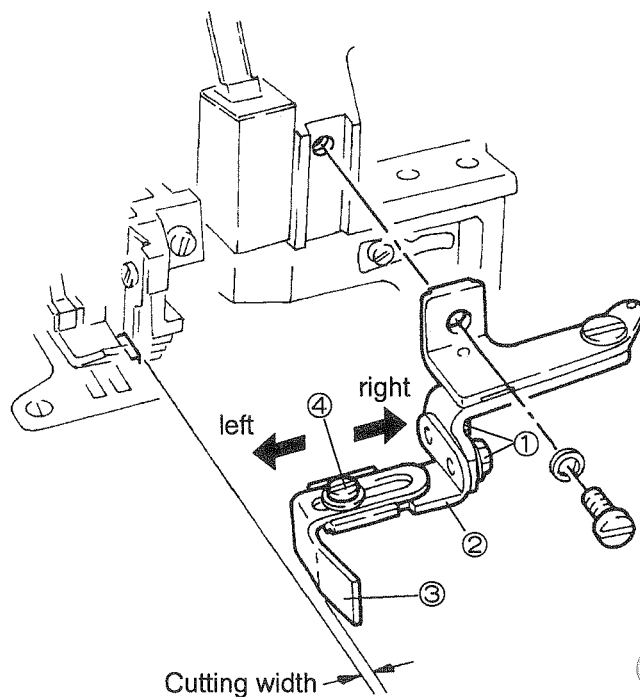
Application	Subclass	a (mm)
Plain seaming	(15) EXT3216-02/223	5.0
	(15) EXT3216-03/233	5.0
	EXT3244-03/333	5.5
	(15) EXT3216-03/433	5.0
	(15) EXT3216-04/435K	7.0
	EXT3244-04/435K	7.0
	(15) EXT3216H-05/535K	8.0
	EXT3244H-05/535K	8.0
Shirring	(15) EXT3216-42/233	5.0
Shirring Piping	EXT3216H-45P1/574K	7.0
Piping	(15) EXT3216-C3P1/233	5.0
	(15) EXT3216-C3P2/233	5.0
	EXT3216H-C5P1/574K	7.0

EXT5200 Series

Application	Subclass	a (mm)
Plain seaming	EXT5204-02/233	5.0
	EXT5214-03/333	5.5
	EXT5214-M03/333	5.5
Blindstitch hemming	EXT5205-12/233	5.0
Shirring	EXT5214-43/333	5.5
Attaching tape	EXT5214-54S1/433	6.0
	EXT5214-54S2/433	6.0
	EXT5214-54S1/443	6.0
	EXT5214-54S2/443	6.0
	EXT5214H-55/545	7.5
Backlatching	EXT5214-84/433	6.0
	EXT5204-82B/233	5.0
	EXT5214-83B/333	5.7
Piping	EXT5214-84B/433	6.0
	EXT5214-C3P1/333	5.5
	EXT5214-C3P2/333	5.5

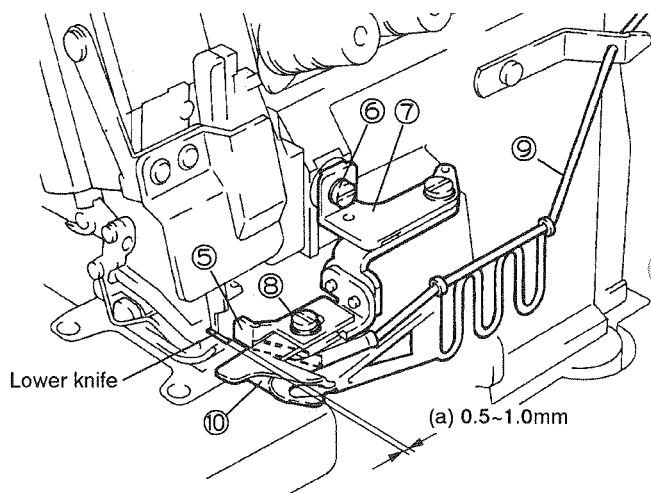
ADJUSTING THE CUTTING WIDTH

1. Loosen screw ①. Adjust edge guide ③ by moving bracket ② up or down as required so that the bottom surface of edge guide ③ lightly touches the top surface of the needle plate.
2. Tighten screw ①.
3. To adjust the cutting width, loosen screw ④ and move hemming guide ③ left or right as required. Then tighten screw ④.



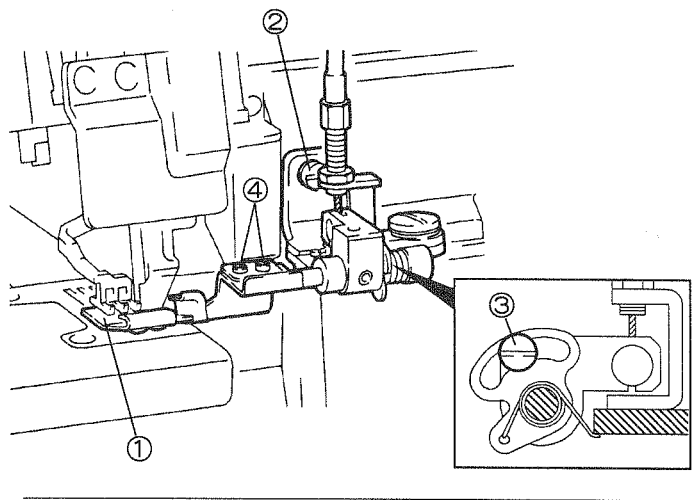
TO ADJUST THE PIPING BINDER

1. Loosen screw ⑥.
2. Adjust guide ⑤ by moving bracket ⑦ so that the bottom surface of guide ⑤ lightly touches the top surface of the needle plate.
3. Tighten screw ⑥.
4. Loosen screw ⑧.
5. Set clearance (a) between the edge of the lower knife and guide ⑤ at 0.5 - 1.0mm by moving guide ⑤.
6. Adjust code ⑨ by moving piping binder ⑩ so that code ⑨ goes correctly to the slots on the bottom surface of the presser foot through piping binder ⑩.
7. Tighten screw ⑧.

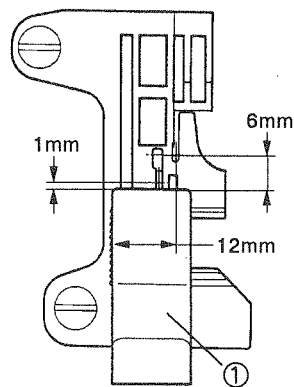


TO ADJUST THE SHIRRING DEVICE

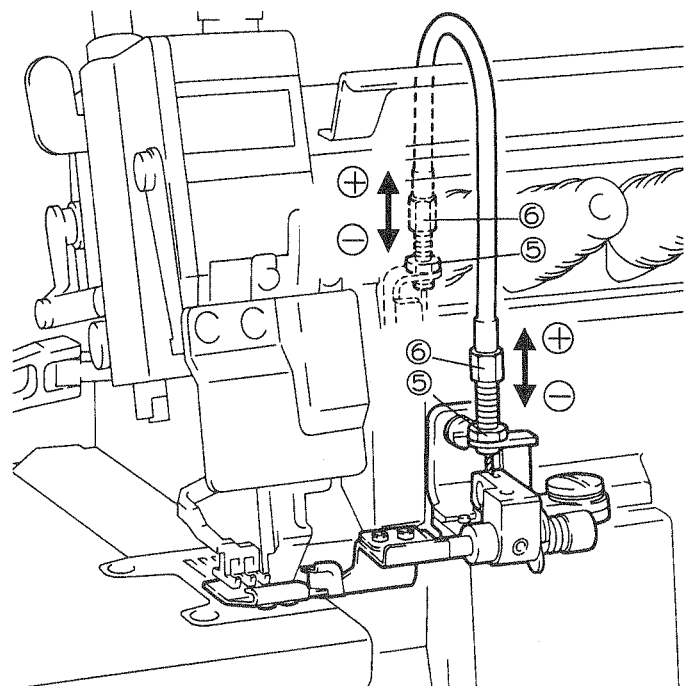
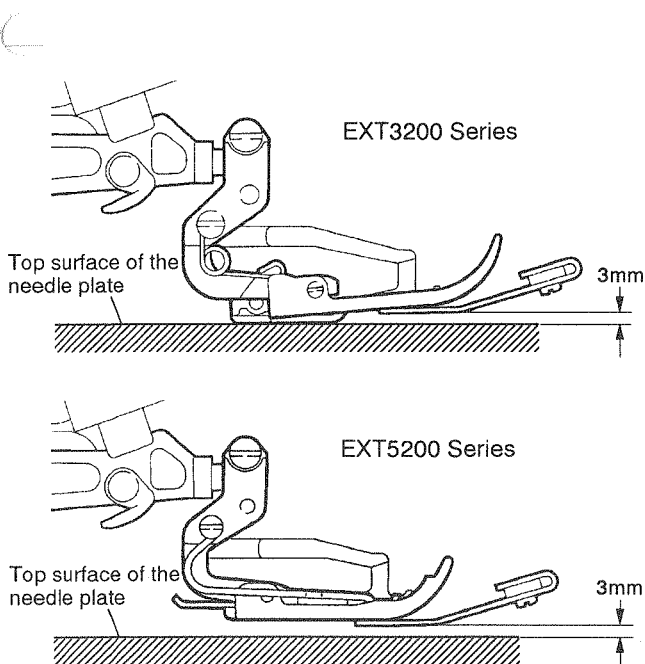
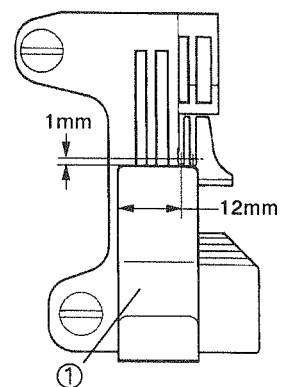
1. Swing the presser arm aside (see "To open/close the presser arm").
2. Loosen screw ②. Adjust the shirring device by moving the shirring device complete so that the end of blade ① touches the top surface of the needle plate.
3. Loosen screw ③. Center screw ③ in the slot.
4. Tighten screw ③.
5. Loosen screw ④. Set the clearance between the end of blade ① and the needle drop on the needle plate at 1mm by moving blade ①. Set the clearance between the overedge needle drop and the left end of the blade at 12mm.
6. Tighten screw ④.
7. Replace the presser arm. Raise the presser foot and the top feed dog by pressing the foot lift treadle with toes.
8. Loosen nut ⑤. Set the clearance between the top surface of the needle plate and blade ① at 3mm by turning cable guard ⑥ as required.
 - To increase the height of the blade, move the cable guard in the direction of (+).
 - To decrease the height of the blade, move the cable guard in the direction of (-).
9. Tighten nut ⑤.



EXT3200 Series



EXT5200 Series



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