

JUKI®

**1-NEEDLE, UNISON-FEED LOCKSTITCH MACHINE
WITH AN AUTOMATIC THREAD TRIMMER**

LU-2210N-7

**2-NEEDLE, UNISON-FEED LOCKSTITCH MACHINE
WITH AN AUTOMATIC THREAD TRIMMER**

LU-2260N-7

ENGINEER'S MANUAL

29227501

No.00

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1. SPECIFICATIONS

No.	Item	Specifications	
1	Model	LU-2210N-7	LU-2260N-7
2	Model name	1-needle, unison feed lockstitch machine with an automatic thread trimmer	2-needle, unison feed lockstitch machine with an automatic thread trimmer
		(with a touch-back device, auto lifter and lifting device)	
3	Applications	For medium-weight materials, car seats and furniture	
4	Sewing speed	Max. 3,500 s.p.m. (Varies according to the sewing conditions.)	
5	Needle	134 x 35R (Nm 110 to Nm 160), Standard 134 x 35R #140	
6	Thread	#4 to #30	#5 to #20
7	Stitch length	Max. 9 mm for both normal feed stitching and reverse feed stitching	Max. 6 mm for both normal feed stitching and reverse feed stitching
8	Presser foot lift	By hand lifter : 9.6 mm By knee lifter : 15.5 mm (equipped with a reversing device)	
9	Stitch length regulating method	By dial	
10	Reverse feed stitching	Externally mounted air pressure cylinder (touch-back switch and hand lever)	
11	Thread take-up lever	Link type	
12	Needle bar stroke	33.8 mm	
13	Hook	Vertical-axis large hook (1.6 times) (automatic lubrication hook)	
14	Opener	Opener shaft eccentric cam speed reduction system (The opener travels by one stroke while the hook rotates twice.)	
15	Feed mechanism	By arc block slider	
16	Hook driving system	Screw gear	
17	Thread trimmer	Rocks around the hook (peripheral cam and solenoid)	
18	Tension release system	By push solenoid for actuating together with the thread trimmer	
19	Adjustment of the amount of alternating vertical movement of the walking foot and presser foot	By dial (peripheral cam)	
20	Main shaft and hook driving shaft driving system	By timing belt	
21	Bobbin winder	Built in the arm	
22	Lubrication	By lead pump	
23	Oil return flow	Circulated by plunger and felts	
24	Lubricating oil	New Defrix Oil No. 1	
25	Space under the needle	263.5 mm (distance from the center of the presser bar to the bottom of arm)	
26	Bed size	517 mm x 178 mm	
27	Auto lifter	Externally mounted air pressure cylinder	
28	Lifting device (DL)	Air pressure cylinder with a built-in type speed controller to control the speed corresponding to the amount of alternating vertical movement of the walking foot and presser foot	
29	Weight of machine head	Approx. 55 kg	Approx. 58 kg
30	Transmission belt	HM type V belt	

Model designation of the LU-2210N machine head

LU2210N **-7-0B**

Walking foot code Presser foot code Feed dog code DL device code Type of thread trimmer

Walking foot	Code
Standard	A
For urethane	B
Right-single-sided foot	C
Left-single-sided foot	D
For piping ø3	E
For piping ø4	F
For piping ø5	G
For piping ø6	H
Adjustable type for piping ø3	J
Adjustable type for piping ø4	K
Adjustable type for piping ø5	L
Adjustable type for piping ø6	M

DL device	
Without DL device	O
DL device without knee switch	A
DL device with knee switch	B

Thread trimmer	
SC-11 specification	7

* Pneumatic auto presser foot lifter is equipped as standard.

Presser foot	Code
Standard	A
For overlapped section	B
For urethane	C
Right-single-sided foot	D
Left-single-sided foot	E
For piping ø3	F
For piping ø4	G
For piping ø5	H
For piping ø6	J
Presser area small	K

Feed dog	
Standard (with groove)	S
Without groove	A
For thin thread (2.5 x 1.6)	B

Model designation of the LU-2260N machine head

LU2260N **-7-0B**

Stitch length code Needle gauge code Walking foot code and presser foot code Feed dog code DL device code Type of thread trimmer

Stitch length	
6 mm	S

Walking foot and presser foot	
Standard	S

DL device	
Without DL device	O
DL device without knee switch	A
DL device with knee switch	B

Needle gauge	
6.0 mm	B
8.0 mm	C
10.0 mm	D
12.0 mm	E
20.0 mm	J

Feed dog	
Standard	S

Thread trimmer	
SC-11 specification	7

The other needle gauges are made to order.

* Pneumatic auto presser foot lifter is equipped as standard.

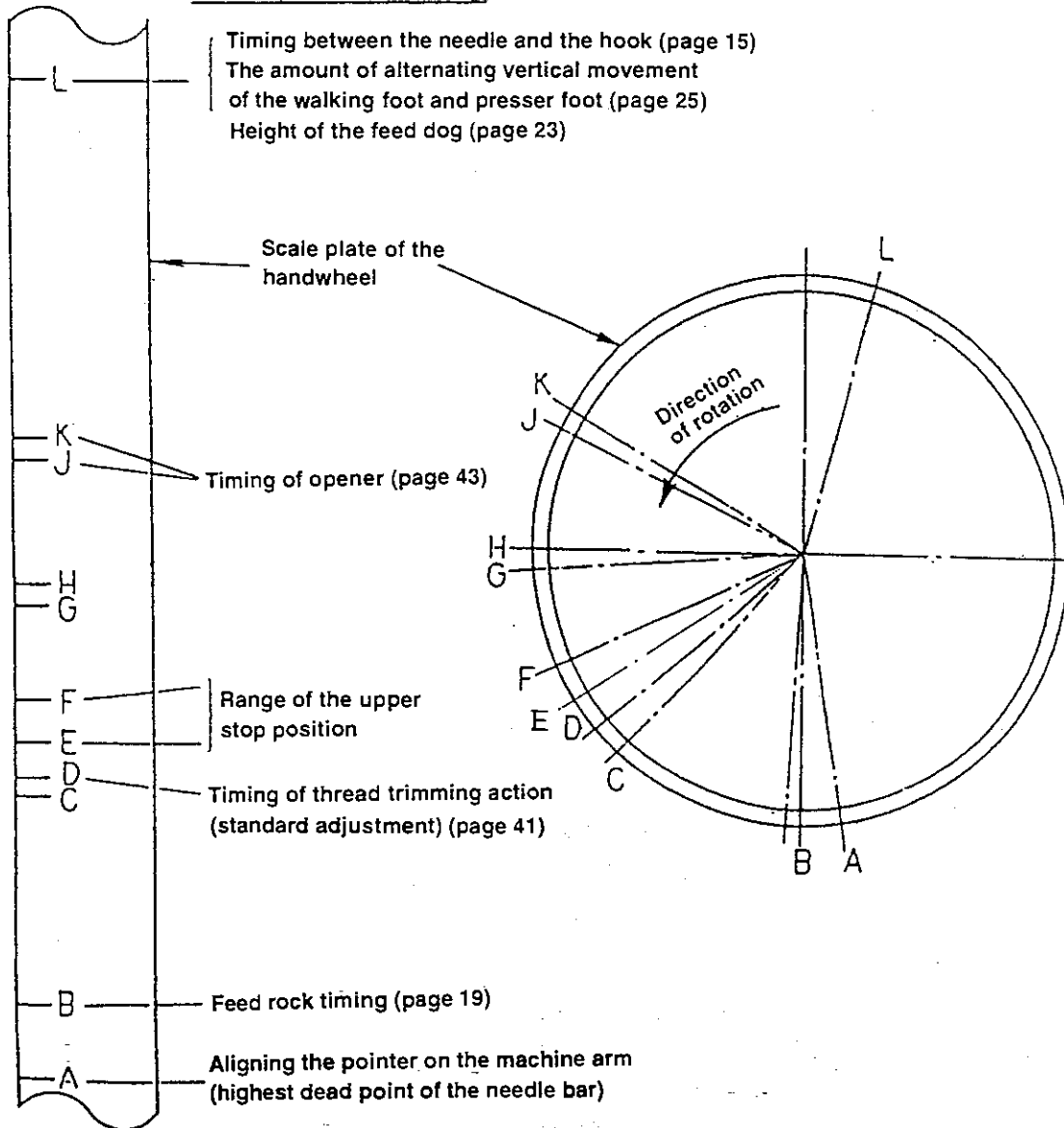
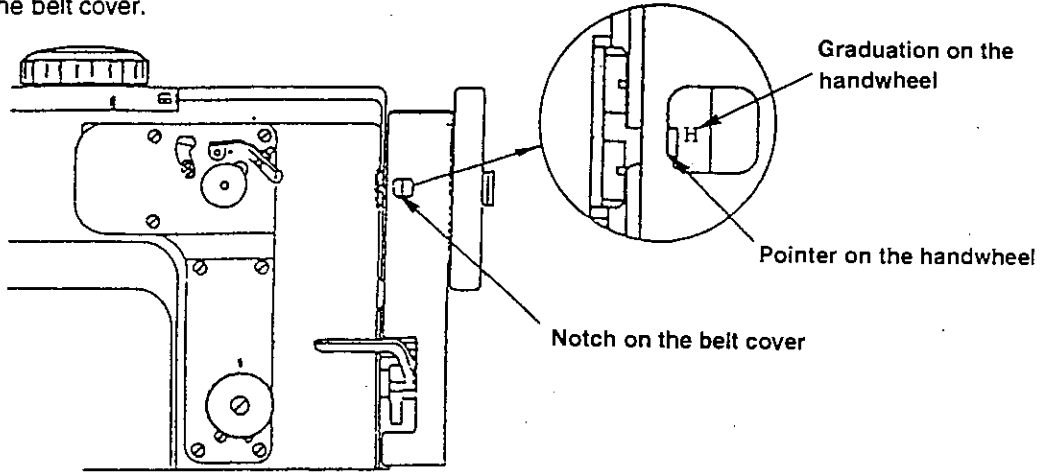
MEMO

2. STANDARD ADJUSTMENT

Standard Adjustment

(1) Kinds and names of graduations on the handwheel

Adjust the timing of each operation of sewing machine while aligning the handwheel pointer with the corresponding graduation on the handwheel. The graduations on the handwheel and the pointer on it can be observed through the notch on the belt cover.



(2) Sewing speed

The max. sewing speed is set according to the sewing conditions as shown in the lists below. Set the max. sewing speed according to each sewing condition so that the sewing speed does not exceed the set value.

- ① Max. sewing speed according to the amount of alternating vertical/movement of the walking foot and presser foot and sewing pitch

Amount of alternating vertical movement (mm)	Max. sewing speed (s.p.m.)	
	Sewing pitch : less than 6 mm	Sewing pitch : More than 6 mm, but less than 9 mm (for LU-2210N-7 only)
Less than 2.5	3,500	2,000
2.5 to less than 4.0	3,000	2,000
4.0 to less than 4.75	2,500	2,000
4.75 or more	2,000	2,000

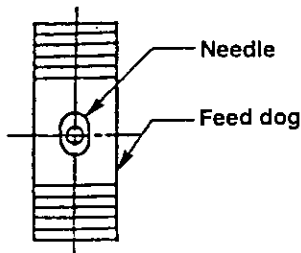
- ② Max. sewing speed according to the needle gauge (for LU-2260N-7 only)

Needle gauge (mm)	Max. sewing speed (s.p.m.)
4 to 10	3,500
12 to 20	3,300
22 to 30	3,000
32 to 36	2,500

Standard Adjustment

(3) Needle entry

1) Needle entry in the needle slot of the feed dog in the lateral direction



Needle entry point

The center of the needle slot in the feed dog should be aligned with the center of the needle.

Requirements :

- Needle bar should be brought to the lowest dead point.
- The stitch dial should be set at "0" on the scale.

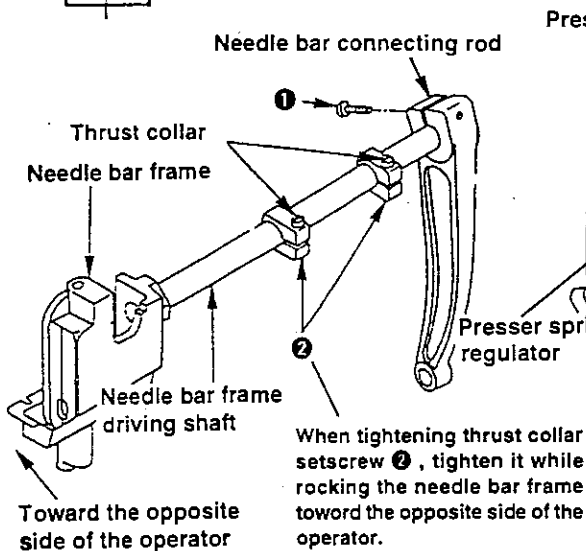


Fig. 1

When tightening thrust collar setscrew ②, tighten it while rocking the needle bar frame toward the opposite side of the operator.

Presser regulating arm

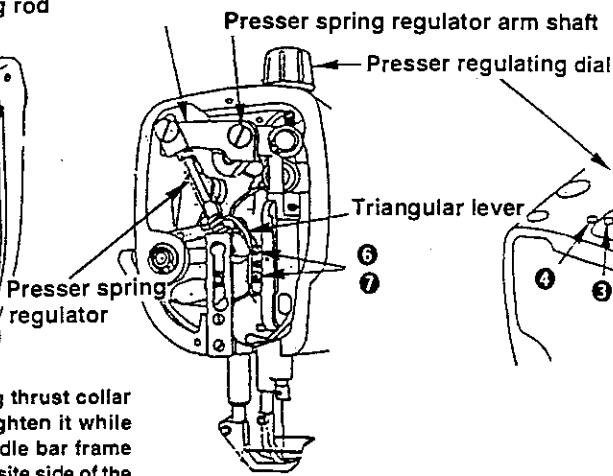


Fig. 2

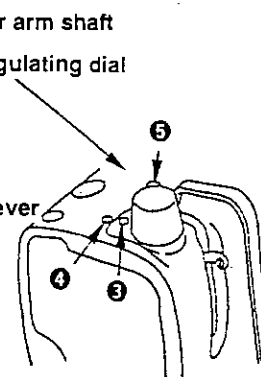


Fig. 3

Assemble the thread take-up crank shaft and the thread take-up crank with the shaft pressed against the end face of the crank.

Assemble the thread take-up crank and the thread take-up crank shaft support so that they come in slight end-to-end contact with each other while provided no clearance between the end faces.

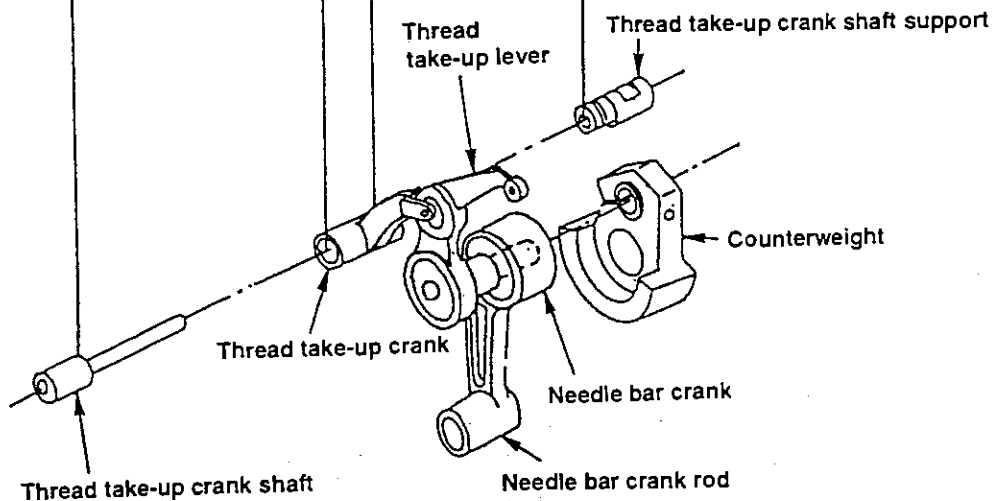


Fig. 4

Adjustment Procedures	Results of Improper Adjustment
<p>I . Needle entry in the needle slot of the feed dog in the lateral direction</p> <ol style="list-style-type: none"> 1. Set the dial to adjust the amount of alternating vertical movement of the walking foot and presser foot to "1" on the scale. 2. Remove the top cover. 3. Set the stitch dial to max. on the scale. 4. Loosen the screw in the reverse feed cylinder. 5. Remove the reverse feed cylinder. 6. Remove the side plate. 7. Loosen screw ① in the needle bar connecting rod. (Fig. 1) 8. Loosen screw ② in the thrust collar of the needle bar frame driving shaft. (Fig. 1) 9. Remove the presser spring regulating dial. (Fig. 2) 10. Loosen screw ③ in the presser spring adjusting arm shaft. (Fig. 3) 11. Remove the presser spring regulator. (Fig. 2) 12. Remove the presser adjusting arm. (Fig. 2) 13. Remove the presser spring regulating arm shaft. (Fig. 2) 14. Loosen screw ④ in the thread take-up crank shaft. (Fig. 3) 15. Loosen screw ⑤ in the thread take-up crank shaft support. (Fig. 3) 16. Draw out the thread take-up crank shaft. (Fig.4) 17. Remove triangular lever shafts ⑥ and ⑦. (Fig. 2) 18. Adjust the needle entry 19. Tighten screws ② of the thrust collar. (Fig. 1) 20. Adjust the position of the thread take-up crank shaft support in accordance with the position of the thread take-up crank. 21. Tighten screw ⑤ in the thread take-up crank shaft support. (Fig. 3) 22. Put the thread take-up crank shaft in the thread take-up crank until the shaft reaches the end face of the thread take-up crank. (Fig. 4) 23. Tighten screw ④ in the thread take-up crank shaft. (Fig. 3) 24. Attach the triangular lever shafts ⑥ and ⑦ in place. (Fig. 2) 25. Attach the presser spring regulating arm in place. 26. Attach the presser spring regulating arm shaft in place. 27. Tighten screw ③ in the presser spring regulating arm shaft. (Fig. 3) 28. Attach the presser spring regulator in place. 29. Attach the presser spring regulating dial in place. 30. Set the stitch dial to "0" on the scale. 31. Adjust the needle entry in the needle slot of the feed dog in the feeding direction. 32. Tighten clamping screw ① in the needle bar connecting rod. (Fig. 1) <p>(Caution) Tighten the screw with a tightening torque of 80 to 90 kgf.cm.</p> <ol style="list-style-type: none"> 33. Attach the side plate in place. 34. Attach the reverse feed cylinder in place, and tighten the screw in it. 	<ol style="list-style-type: none"> 17 Tilt the triangular lever, which is set free, toward the presser bar lifting lever. At this time, eliminate a thrust play at the needle bar frame driving shaft and tighten the screw while oscillating the needle bar frame toward the operator. 20 At this time, adjust so that their end faces come in slight contact with each other while providing no play between them by moving the thread take-up crank shaft support. 21 Tighten the screw while making the contact point of the thread take-up crank shaft support and the screw straight up. 31 Refer to the item of "Needle entry in the needle slot of the feed dog in feeding direction" on page 9. 32 At this time, fluctuate the needle bar connecting rod to the right or left until the needle bar connecting rod is placed approximately at the center of the play, and tighten the clamping screw.

Standard Adjustment

2) Needle entry in the needle slot of the feed dog in feeding direction

- Needle entry point

The center of the needle slot in the feed dog must align the center of the needle. (Fig. 1)

(In case of 2-needle, both the two needles should be applied.)

- Requirements :

- Needle bar should be brought to the lowest dead point.
- The stitch dial should be set at "0" on the scale.
- The needle feeding arm should be made perpendicular. (Fig. 2)
- Following clearances should be provided between operator's side end of the slot in the throat plate and the edge of the feed dog. (Fig. 3)

5.7±0.2 mm → LU-2210N-7

4.2±0.2 mm → LU-2260N-7 (For all gauge sizes)

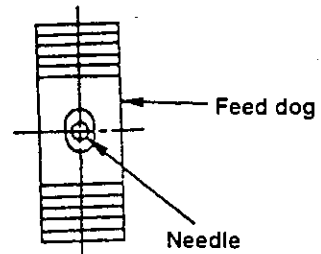


Fig. 1

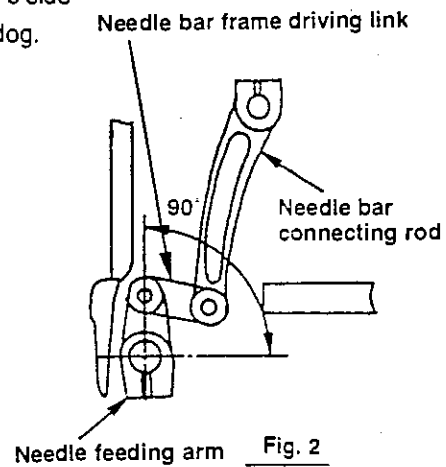


Fig. 2

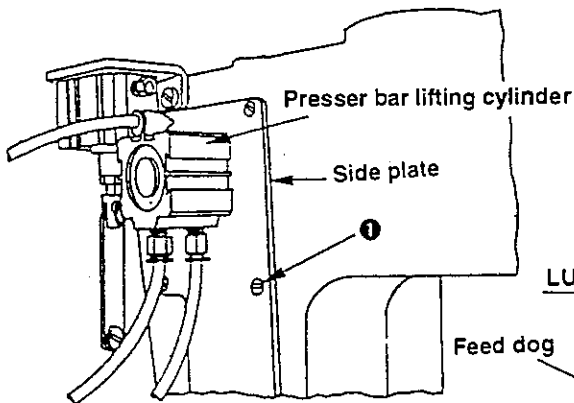


Fig. 4

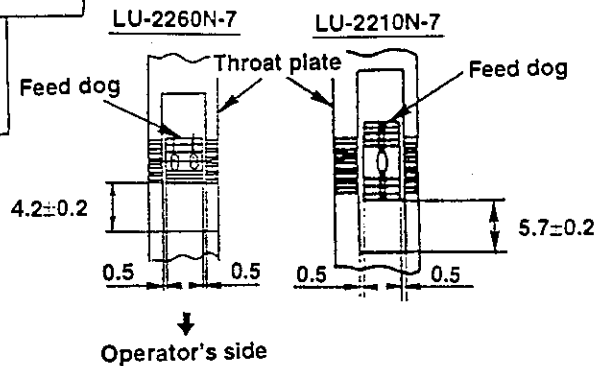


Fig. 3

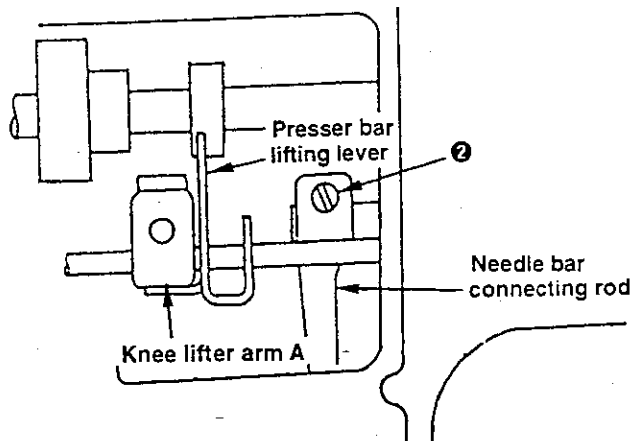
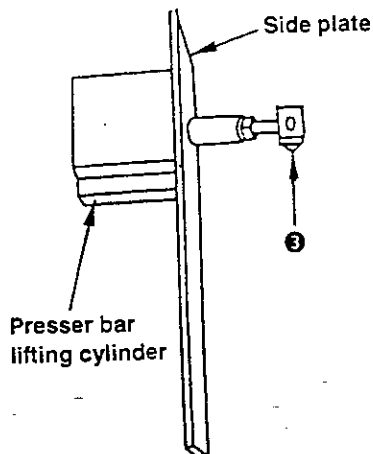


Fig. 5

Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Set the stitch dial to "0" on the scale. 2. Loosen attaching screws ❶ in the side plate. (Fig. 4) 3. Remove the side plate. (Fig. 4) 4. Loosen clamping screw ❷ in the needle bar connecting rod. (Fig. 5) 5. Bring the needle bar to the lowest position of its stroke. 6. Align the center of the needle with the center of the slot in the throat plate. <ol style="list-style-type: none"> 7. Tighten screw ❷ in the needle bar connecting rod. <p style="margin-left: 40px;">(Caution) Tighten the screw with a tightening torque of 80 to 90 kgf.cm.</p> <ol style="list-style-type: none"> 8. Attach the side plate in place. <p style="margin-left: 40px;">(Caution) The feed amount of the needle is mechanically larger than the feed amount of the feed dog by 5%.</p>	<p>☆ If the needle entry is adjusted too close to the operator : The needle may interfere with the feed dog, resulting in needle breakage.</p> <p>☆ If the needle entry is adjusted too far from the operator When the needle comes out of the slot in the throat plate, the needle may interfere with the feed dog, resulting in thread breakage. The needle may come in contact with the feed dog during the reverse feed stitching, resulting in needle breakage.</p> <p>7' At this time, move the needle bar connecting rod to the right or left until the needle bar connecting rod is positioned approximately at the center of the play. If the needle bar connecting rod is not correctly positioned, an excessive torque may result.</p> <p>For the sewing machine equipped with an auto-lifter, attach the side plate following the steps of procedure described below.</p> <ol style="list-style-type: none"> 8. Raise the presser bar lifting lever. 9. Put hinge screw ❸ of the presser bar lifting cylinder in the forked section of the presser lifting lever. 10. Confirm that the bottom face of the knee lifter arm A is engaged with the presser lifting lever. 11. Attach the side plate in place.

Standard Adjustment

(4) Needle-to-hook relation

1) Height of the needle bar

Requirements :

The stitch dial should be set at "0" (Refer to Fig. 1)

Needle bar should be brought to the lowest dead point.

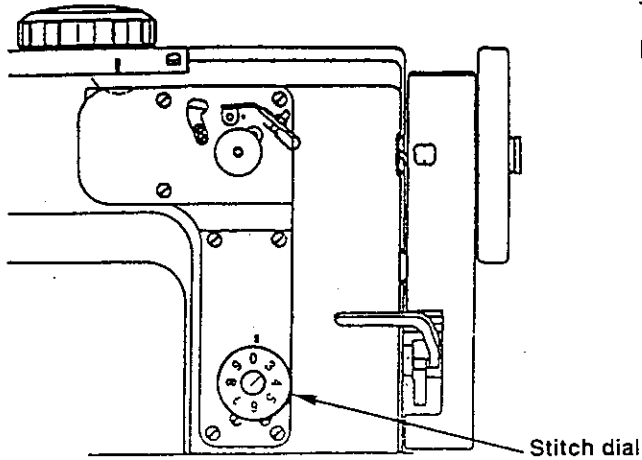


Fig. 1

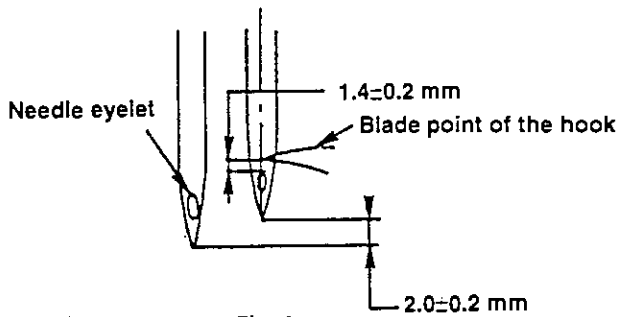


Fig. 2

Adjust the height of the needle bar so that a distance of 1.4 ± 0.2 mm will be provided between the top end of the needle eyelet and the blade point of the hook when the needle bar is raised from its lowest dead point by 2.0 ± 0.2 mm.

Reference

The needle bar lowest dead point is where the lower face of needle bar frame is aligned with the upper marker line engraved on the needle bar.

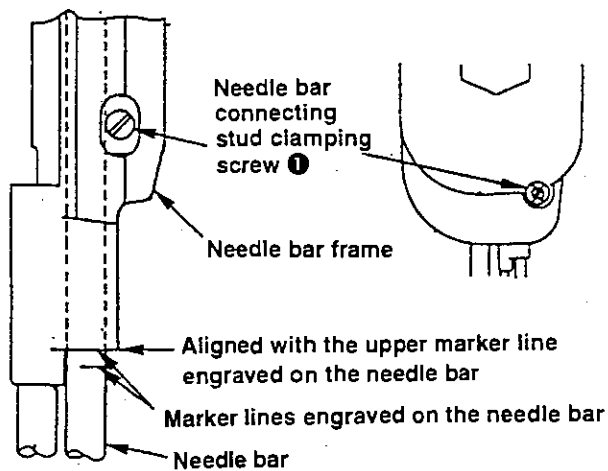
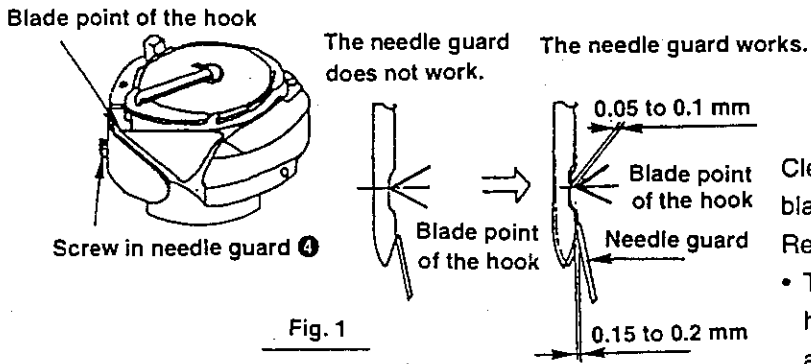


Fig. 3

Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Set the stitch dial at "0" on the scale. (Fig. 1) 2. Turn the handwheel to bring the needle bar to the lowest dead point. 3. Loosen clamping screw ❶ of the needle bar connecting stud (Fig. 3) 4. Adjust the height of the needle bar to the specified dimension. (Fig. 2) 5. Tighten needle bar connecting stud clamping screw ❶. (Fig. 3) 	<ul style="list-style-type: none"> ○ Stitch skipping and thread breakage may result. <p>4' At this time, align the bottom face of the needle bar frame with the marker line engraved on the needle bar (the upper one of the two marker lines engraved on the needle bar). This will enable you to adjust the height of the needle bar almost to the specified dimension.</p>

Standard Adjustment

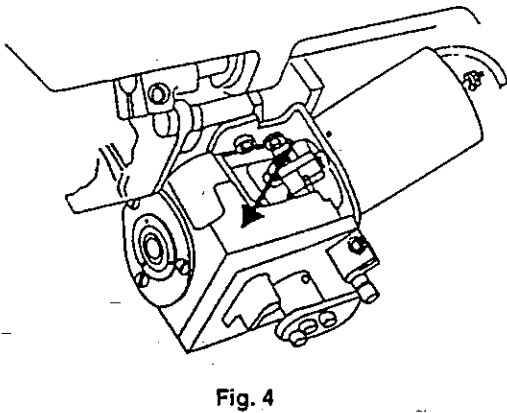
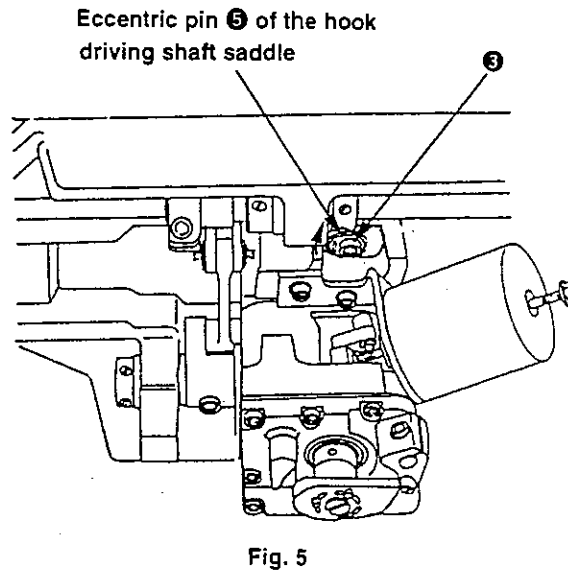
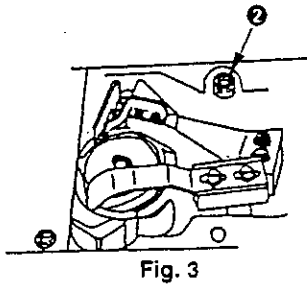
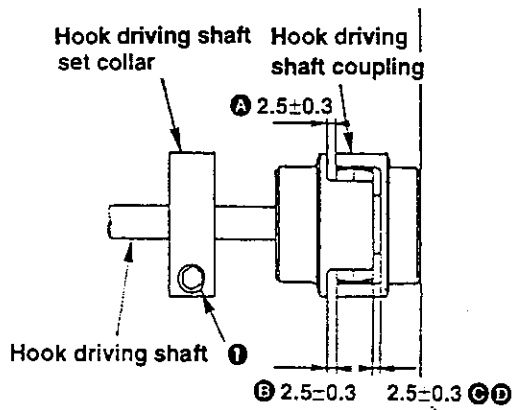
2) Clearance between the needle and the blade point of hook



Clearance between the needle and the blade point of hook = 0.05 to 0.1mm

Requirements :

- The timing between the needle and the hook should have already been adjusted.
- Effective amount of the needle guard = 0.15 to 0.2 mm
- The stitch dial should be set at "0" on the scale.



Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Remove the throat plate. 2. Set the stitch dial at "0" on the scale. 3. Loosen clamping screw ❶ in the hook driving shaft set collar. (Fig. 2) 4. Slightly loosen attaching screws ❷ and ❸ in the hook driving shaft saddle. (Fig. 3) 5. Move the hook driving shaft saddle in the right or left to adjust the clearance provided between the needle and the blade point of hook to 0.05 to 0.1 mm. (Fig. 1) 6. At this time, adjust the effective amount of the needle guard to 0.15 to 0.2 mm by turning adjusting screw ❹. 7. Turn eccentric pin ❺ of the hook driving shaft saddle with a screwdriver to move the hook driving shaft saddle in the opposite direction of the operator (in the direction of arrow) until it will go no further. (Fig. 4) 8. Fix the hook driving shaft saddle holding it in the state described in step 7 by tightening screws ❸ and ❷ in the hook driving shaft saddle in the written order. (Fig. 5) 9. Confirm that the needle-to-hook timing is correct. If the timing is correct, tighten clamping screw ❶ in the hook driving shaft set collar. (Fig. 2) If not, adjust the timing between the needle and the hook properly. (Refer to "Timing between the needle and the hook" on page 15.) 	<p>☆ If the clearance between the needle and the blade point of hook is too large : Stitch skipping and improper threading may result.</p> <p>☆ If the clearance between the needle and the blade point of hook is too small : The needle may interfere with the blade point of hook. As a result, the blade point of hook may be damaged and thread breakage may be caused.</p> <p>At this time, confirm that clearances ❶, ❷, ❸ and ❹ in the hook driving shaft coupling are respectively adjusted to 2.5 ± 0.3 mm. If not, adjust the clearances properly.</p>

Standard Adjustment

3) Timing between the needle and the hook

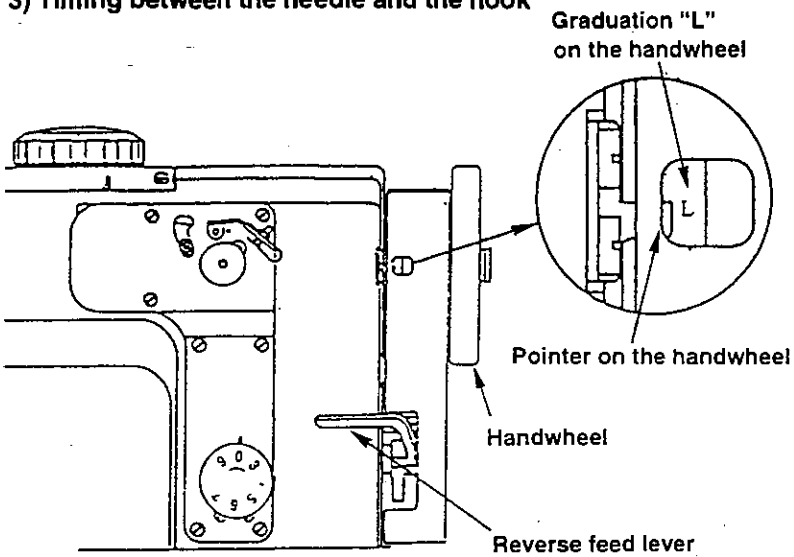


Fig. 1

Align the center of the needle with the blade point of the hook. (Fig. 2)

Requirements :

- Graduation "L" on the handwheel is aligned with the handwheel pointer.
- The stitch dial should be set at "0" on the scale.
- This adjustment should be carried out after the needle bar has been adjusted to the correct height.

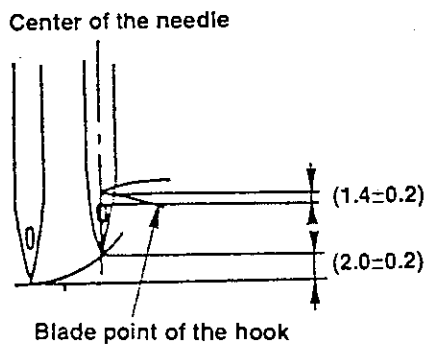


Fig. 2

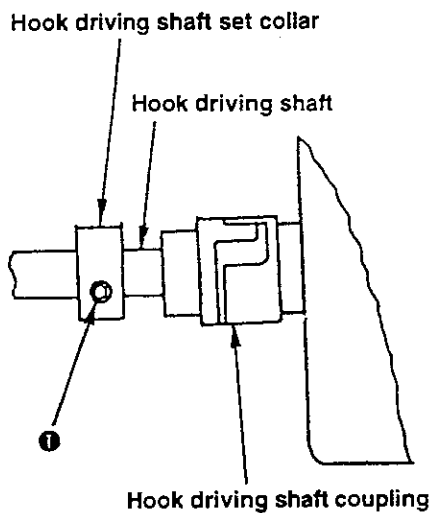


Fig. 3

Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Set the stitch dial at "0" on the scale. (Fig. 1) 2. Loosen screw ❶ in the thrust collar of the hook driving shaft. (Fig. 3) 3. Align the graduation "L" on the handwheel with the handwheel pointer. (Fig. 1) 4. Turn the hook in the normal direction of rotation until the blade point of the hook is aligned with the center of the needle. 5. Tighten screw ❶. <p>(Caution) Adjust the needle entry in the needle slot of the feed dog in terms of the feeding direction in prior to the adjustment of "Timing between the needle and the hook".</p>	<p>☆ Loose stitches, stitch skipping and thread breakage may result.</p> <p>3' Refer to "(1) Kinds and names of graduations on the handwheel" on page 5.</p> <p>At this time, hold the hook by hand at the correct position to maintain the accurate needle-to-hook timing.</p>

Standard Adjustment

(5) Clearance between the throat plate and the bobbin case stopper

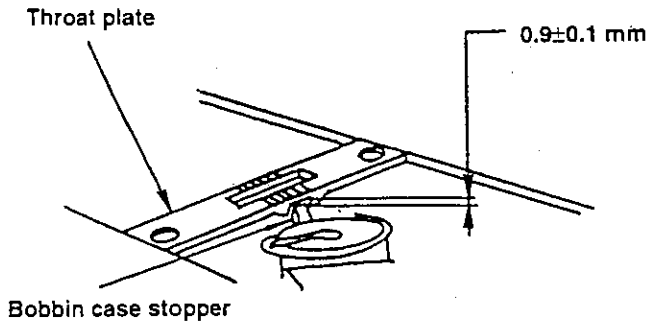
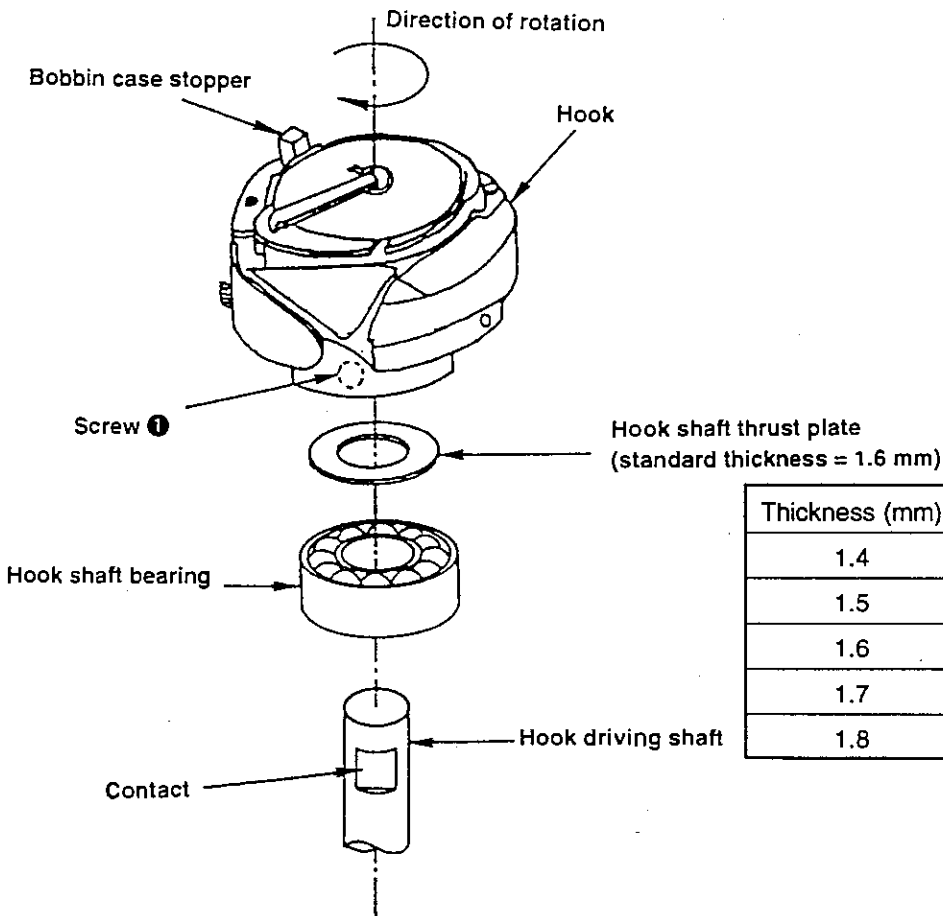


Fig. 1



Thickness (mm)	Part No.
1.4	10111201
1.5	10109809
1.6	10112506
1.7	10112605
1.8	10112704

Fig. 2

Adjustment Procedures	Results of Improper Adjustment
<p>1. Select an appropriate thrust plate of the hook shaft, and adjust the clearance at the thrust plate. (Fig 1)</p> <p>2. Put the hook over the hook shaft while pressing the hook down to prevent an axial play. When tightening screws ❶ in the hook, first tighten the screw No. 1, in terms of the direction of rotation, of screws on the contact plane (flat section) of the hook shaft. Then tighten the screw No. 2, in terms of the direction of rotation, of screws. (Fig. 2)</p> <p>3. Refer to page 35 for how to adjust the thread trimmer after the completion of the adjustment of the clearance between the throat plate and the bobbin case stopper.</p>	<p>If the clearance between the throat plate and the bobbin case stopper is too large :</p> <ul style="list-style-type: none"> ○ The bobbin case may come off the throat plate. <p>If the clearance between the throat plate and the bobbin case stopper is too small :</p> <ul style="list-style-type: none"> ○ Loose stitches (Isolated idling loops) may result. ○ The moving knife may interfere with the hook at the time of thread trimming.

Standard Adjustment

(6) Timing of cloth feed action

1) Feed rock timing

2) Feed driving timing

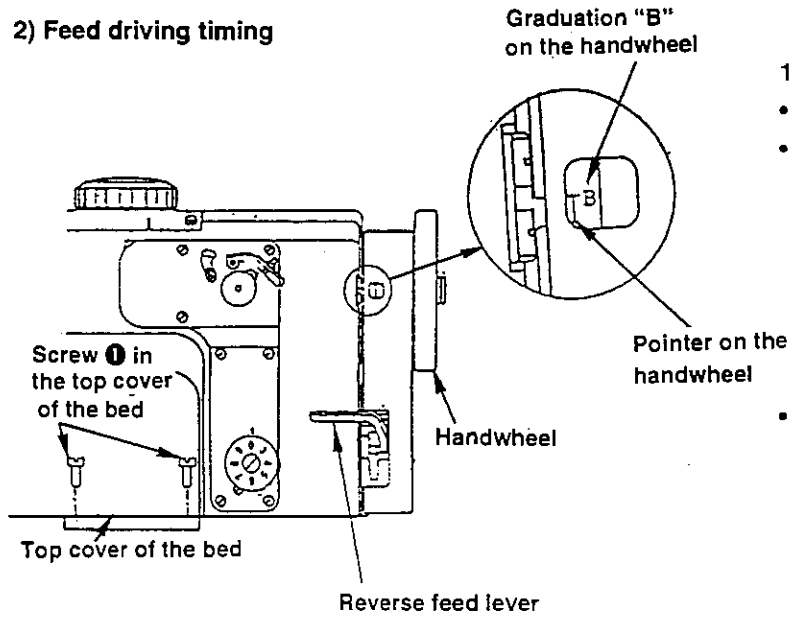


Fig. 1

1) Feed rock timing

- Set the stitch dial to "9" on the scale.
- Align the graduation "B" on the handwheel with the handwheel pointer. In this state, move the reverse feed lever up and down until the position where the feed dog does not move in the feeding direction. Now, tighten screw ② in the feed rock cam.

• Reference :

When the graduation "B" on the handwheel is aligned with the handwheel pointer, screw No. 1 ②, in terms of the direction of rotation, on the feed rock cam is nearly brought to the top.

2) Feed driving timing

Adjust so that marking ③ (marker dot in the end face of the feed rock cam) on the feed rock cam is flush with marking ④ (marker dot on the feed driving cam), and tighten screw ⑤.

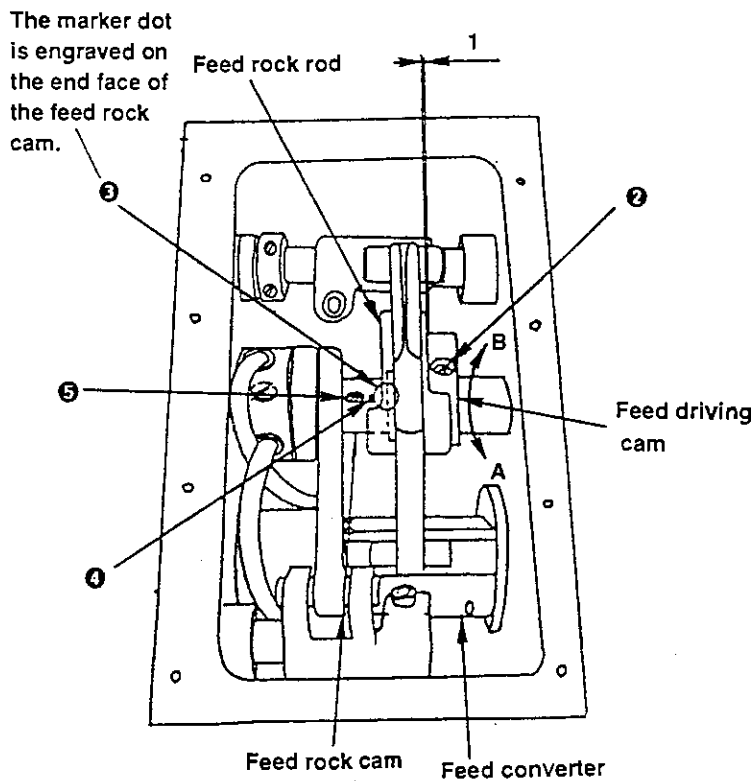
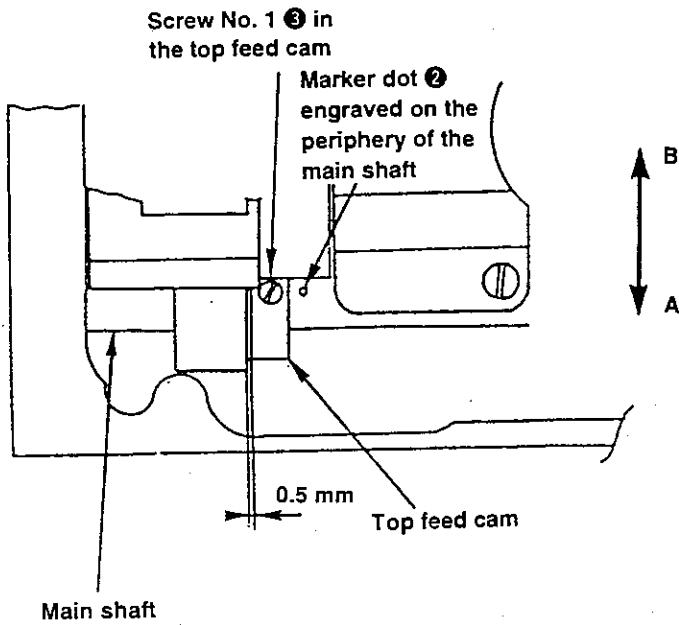


Fig. 2

Adjustment Procedures	Results of Improper Adjustment
<p>1) Feed rock timing</p> <ol style="list-style-type: none"> 1. Loosen screws ❶ in the top cover of the bed. (Fig. 1) 2. Remove the top cover of the bed. (Fig. 1) 3. Loosen screw ❷ in the feed rock cam. (Fig. 2) 4. Observing the notch on the belt cover, turn the handwheel until the graduation "B" on the handwheel is aligned with the handwheel pointer. (Fig. 1) 5. Turn the feed rock cam by hand while moving the reverse feed lever up or down until the feed dog will not fluctuate. Now, fix the feed rock cam. 6. A clearance of 1 mm should be provided between the end face of the feed rock rod and the end face of the feed rock cam. 7. Tighten screw ❷ in the feed rock cam. <p>(Caution)</p> <ol style="list-style-type: none"> 1. Take care not to allow any foreign matter such as a screw to enter the bed tank. 2. Adjust the timing within the range of $\pm 5^\circ$ from the standard timing. 3. After the feed rock timing has been adjusted, re-adjust the feed driving timing. 	<ul style="list-style-type: none"> ☆ Improper stitch length may result when making the machine run at high/low speed. ☆ Thread tension may change from the correct one. ☆ Tightness of normal and reverse stitches may be different from each other. <ol style="list-style-type: none"> 4' Refer to "(1) Kinds and names of graduations on the handwheel" on page 5. 5' At this time, screw No. 1 in the feed rock cam, in terms of the direction of rotation, is almost straight up. <ul style="list-style-type: none"> • Fix the feed rock cam after turning it toward the operator (in the direction of arrow A) from the standard adjustment position to advance the feed rock timing. Fix the feed rock cam after turning it away from the operator (in the direction of arrow B) from the standard adjustment position to retard the feed rock timing.
<p>2) Feed driving timing</p> <ol style="list-style-type: none"> 1. Perform the adjustment after adjusting the feed rock timing. 2. Loosen screw ❸ in the top feed cam. (Fig. 2) 3. Adjust so that marking ❸ (marker dot in the end face of the feed rock cam) on the feed rock cam is in line with marking ❹ (marker dot) on the feed driving cam. <p>(Caution)</p> <ol style="list-style-type: none"> 1. Take care not to allow any foreign matter such as a screw to enter the bed tank. 2. Adjust the timing within the range of $\pm 5^\circ$ from the standard timing. 	<ul style="list-style-type: none"> ☆ Improper stitch length may result when making the machine run at high/low speed. <ol style="list-style-type: none"> 3' • If the feed driving timing is properly adjusted, the feed dog is positioned on the side of the operator and the top surface of the feed dog is almost flush with the top surface of the throat plate. <ul style="list-style-type: none"> • Fix the feed driving cam after turning it toward the operator (in the direction of arrow A) from the standard adjustment position to advance the feed driving timing. Fix the feed driving cam after turning it to the operator (in the direction of arrow B) from the standard adjustment position to retard the feed driving timing.

Standard Adjustment

3) Top feed timing



Top feed timing

Set marker dot ② engraved on the periphery of the main shaft in line with screw No. 1 ③ in the top feed cam, and tighten screws No. 1 ③ and No. 2.

Adjustment Procedures --	Results of Improper Adjustment
<p>Top feed timing</p> <ol style="list-style-type: none"> 1. Loosen the screw in the top cover. 2. Remove the top cover. 3. Turn the handwheel to bring the marker dot ② engraved on the periphery of the main shaft to the top. <ol style="list-style-type: none"> 4. Align the marker dot engraved on the periphery of the main shaft with the screw No. 1 in the top feed cam. 5. Tighten screws No.1 ① and No. 2 in the top feed cam. <p>(Caution) 1. Take care not to allow any foreign matter such as a screw to enter the arm.</p> <ol style="list-style-type: none"> 2. Adjust the timing within the range of $\pm 5^\circ$ from the standard timing. 	<ol style="list-style-type: none"> ☆ Improper stitch length may result when making the machine run at high/low speed. ☆ Turn the top feed cam toward the operator (in the direction of arrow A), and the top feed timing will be earlier than the standard timing. Turn the top feed cam away from the operator (in the direction of B), and the top feed timing will be later than the standard timing. <ol style="list-style-type: none"> 4' At this time, confirm that a clearance of 0.5 mm is provided between the end face of the top feed cam rod and the end face of the periphery of the top feed cam.

Standard Adjustment

4) Height of feed dog

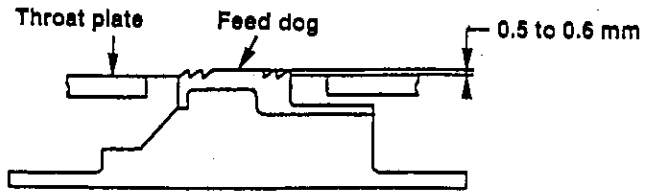


Fig. 1

3) Height of the feed dog : 0.5 to 0.6 mm

Requirements :

- Set the stitch dial to "6" on the scale.
- Align the graduation "L" on the handwheel with the handwheel pointer.

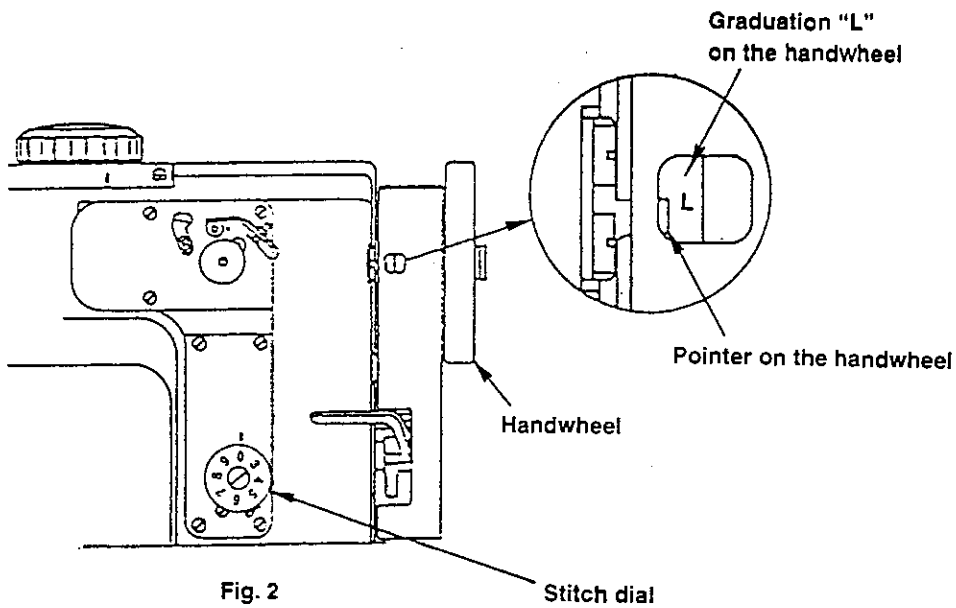


Fig. 2

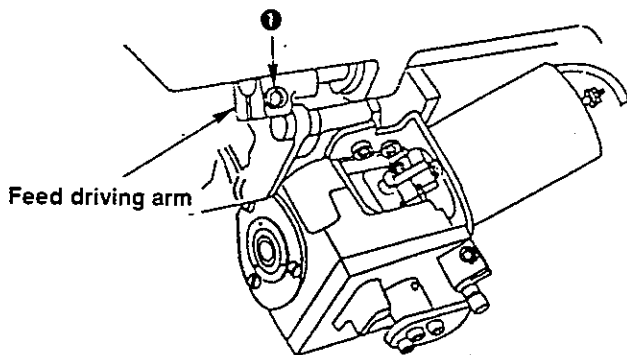


Fig. 3

Adjustment Procedures	Results of Improper Adjustment
<p>4) Height of feed dog</p> <ol style="list-style-type: none"> 1. Set the stitch dial to "6" on the scale. (Fig. 2) 2. Slightly loosen clamping screw ❶ in the feed driving arm. (Fig. 3) 3. Align the graduation "L" on the handwheel with the handwheel pointer. (Fig. 2) 4. Adjust the height of the feed dog to 0.5 to 0.6 mm. (Fig. 1) 5. Tighten clamping screw ❶ in the feed driving arm. <p>(Caution) Tighten the clamping screw with a tightening torque of 60 to 70 kgf.cm.</p>	<ul style="list-style-type: none"> ☆ If the height of the feed dog is excessive : The material may be fed backward under the normal feed mode. ☆ If the height of the feed dog is insufficient : The stitch length may become shorter than the specified value. <p>3' Refer to "(1) Kinds and names of graduations on the handwheel" on page 5.</p>

Standard Adjustment

5) The amount of alternating vertical movement of the walking foot and presser foot (Balance between the lifting amounts of presser foot and walking foot)

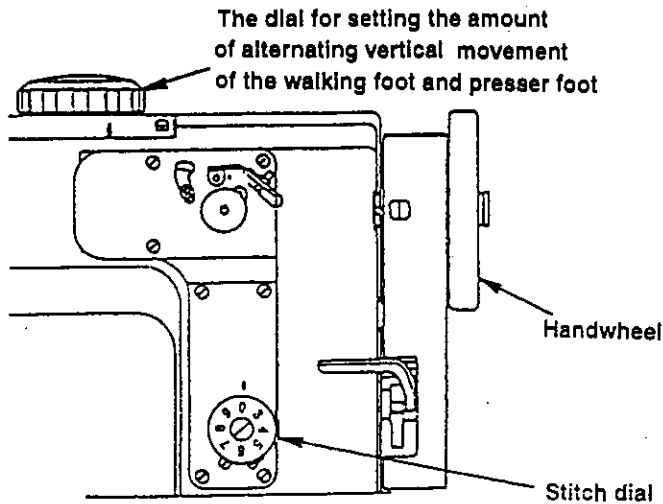


Fig. 1

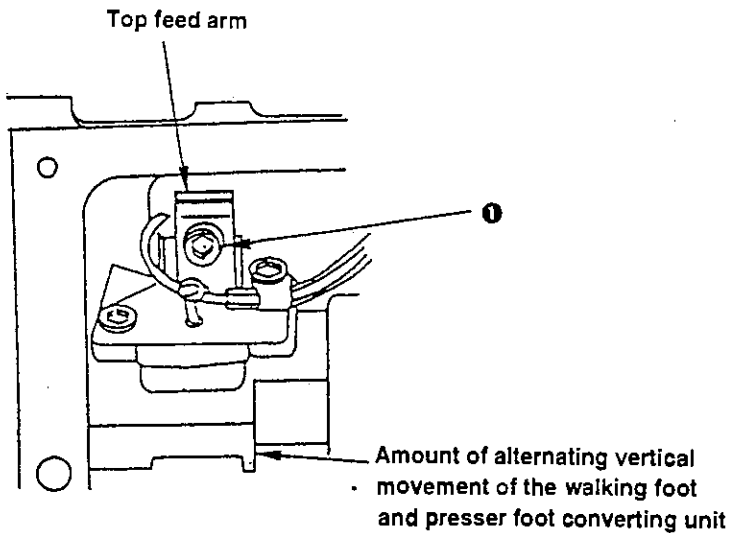


Fig. 2

Align the graduation "L" on the handwheel with the handwheel pointer. Now, tighten top feed arm clamping screw ①.

Requirements :

- The dial for setting the amount of alternating vertical movement of walking foot and presser foot should be set to "1" on the scale.
- The stitch dial should be set to "9" on the scale.
- The sole of the presser foot should rest on the throat plate.
- Make the walking foot come in contact with the feed dog.
- The top feed timing should have been properly adjusted in prior to the adjustment of the amount of alternating vertical movement of the walking foot and presser foot.

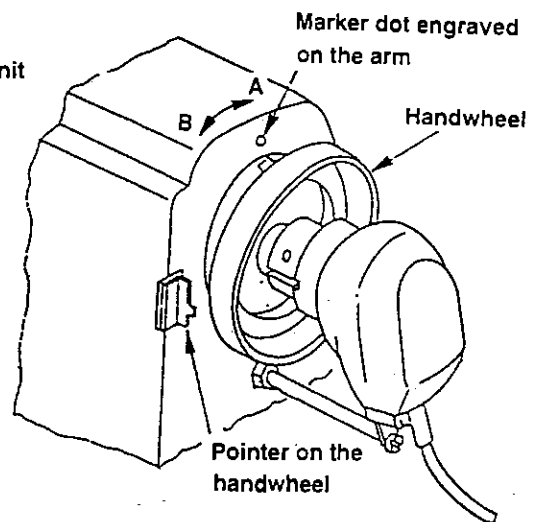


Fig. 3

Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Set the stitch dial at the maximum value on the scale. 2. Set the dial for setting the amount of alternating vertical movement of the walking foot and presser foot to "1" on the scale. 3. Remove the rubber plug from the top cover. 4. Loosen clamping screw ❶ in the top feed arm through the hole in the top cover from which the rubber plug has been removed. (Fig. 2 illustrates the top feed arm after removing the top cover.) 5. Align the graduation "L" on the handwheel with the handwheel pointer. (Fig. 3) 6. In the state described in step 5, make the walking foot rest on the feed dog and make the presser foot come in contact with the throat plate. 7. Tighten clamping screw ❶ in the top feed arm. (Fig. 2) 	<ul style="list-style-type: none"> ☆ Improper stitch length may result when making the machine run at high/low speed. ☆ The lifting amount of the presser foot or the walking foot will be decreased. As a result, the material may not be fed smoothly. <p>5' If the graduations on the handwheel shift in the direction A from the handwheel pointer, the lifting amount of the walking foot will decrease and the lifting amount of the presser foot will increase. If the graduations on the handwheel shift in the direction B, the former will increase and the latter will decrease.</p>

Standard Adjustment

(7) Adjustment of the feed mechanism

1) Zero (0) point of feed adjusting mechanism

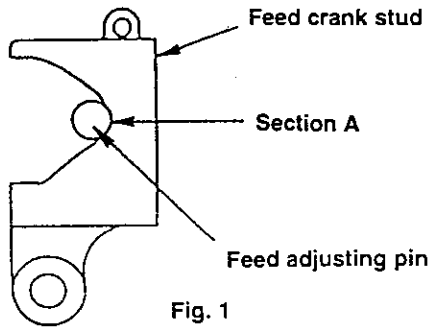


Fig. 1

1) Zero (0) point of feed adjusting mechanism

- Align the feed adjusting pin with section A of the feed crank stud. (Fig. 1)
- Check that the marking of the feed adjusting eccentric pin faces in the direction same as the slot in the feed adjustment converting arm. (Fig. 2)
- Tilt the feed crank stud in the direction C or D until the position where the feed amount of the feed dog becomes zero (0). Tighten screw ② at this position. (Fig. 3)
- Align marking ④ of the side plate on the front face of the machine with "0" on the scale of the stitch dial. (Fig. 4)

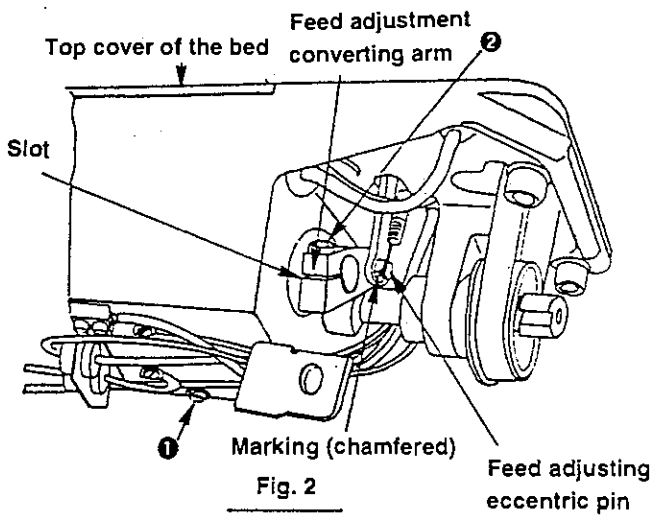


Fig. 2

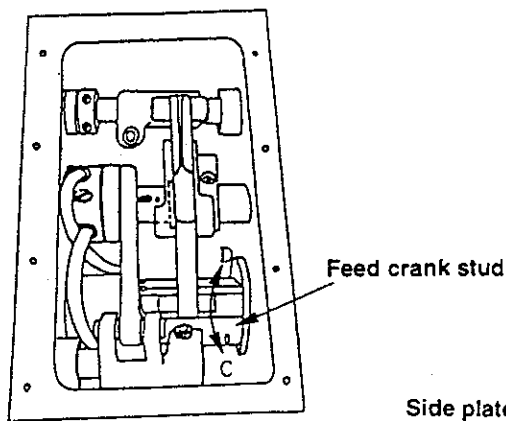


Fig. 3

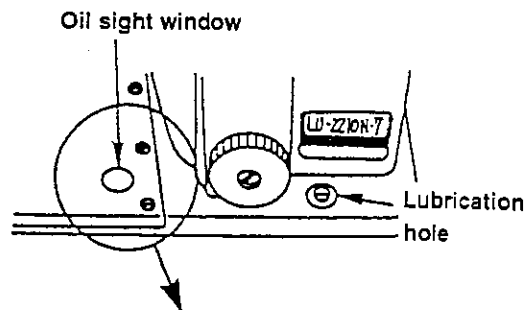


Fig. 5

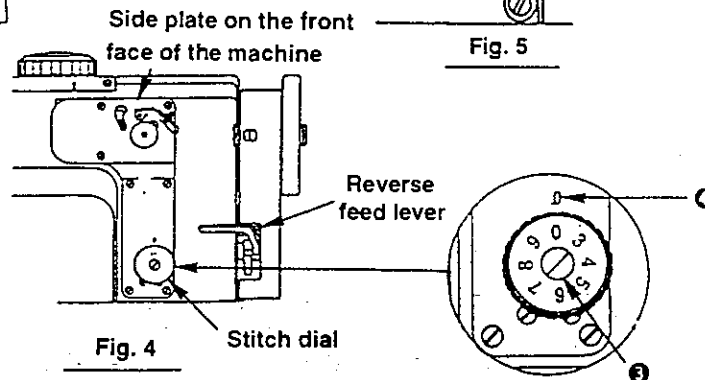


Fig. 4

Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Turn the stitch dial clockwise while moving the reverse feed lever up and down, until the feed adjusting pin meets section A of the feed crank stud. At this time, the feed adjusting pin and the feed crank stud cannot be observed. Performing the adjustment mentioned above, however, allows the operator to feel by hand that the reverse feed lever will no longer come down. 2. Check that the marking (chamfered) of the feed adjusting eccentric pin faces in the direction same as the slot in the feed adjustment converting arm. (Fig. 2) 3. Loosen drain cock ❶, and expel oil from the drain opening. (Fig. 2) 4. Remove the top cover of the bed. (Fig. 2) 5. Loosen screw ❷ in the feed adjustment converting arm. (Fig. 2) 6. Turn the handwheel in the normal direction of rotation to adjust the feed converting unit so that the feed amount of the feed dog is set to zero (0). (Fig. 3) 7. Tighten clamping screw ❷ in the feed adjustment converting arm. (Fig. 2) <p>(Caution) Tighten the screw with a tightening torque of 35 to 45 kgf.cm.</p> <ol style="list-style-type: none"> 8. Supply oil to the machine. (Fig. 5) 9. Loosen attaching screw ❸ of the stitch dial. (Fig. 4) 10. Align zero (0) on the scale of the stitch dial with marking ❹ on the side plate of the front face of the machine. (Fig. 4) 11. Tighten screw ❸ in stitch dial. (Fig. 4) 	<p>☆ The actual stitch length will greatly differ from the value set on the stitch dial.</p> <p>6' Tilt the feed converting unit in the direction of arrow C, and the feeding amount in the normal direction will increase. Tilt the unit in the direction of arrow D, and the feeding amount in the reverse direction will increase.</p> <p>8' Pour oil from the lubrication hole while checking the oil level through the oil sight window. The amount of oil is sufficient when level H is reached.</p> <p>11' At this time, take care not to allow the stitch dial to move to make the zero (0) on the scale of the dial shift from marking ❹ on the side plate.</p>

Standard Adjustment

2) Stitch length in the normal feed and reverse feed

Stitch length will change in accordance with the positions of the marking (chamfered section) of the feed adjusting eccentric pin with respect to the slot in the feed adjustment converting arm as described below.

- If the marking is tilted in the direction of arrow A The stitch length for the normal feed stitching will decrease.
The stitch length for the reverse feed stitching will increase.
- If the marking is tilted in the direction of arrow B The stitch length for the normal feed stitching will increase.
The stitch length for the reverse feed stitching will decrease.

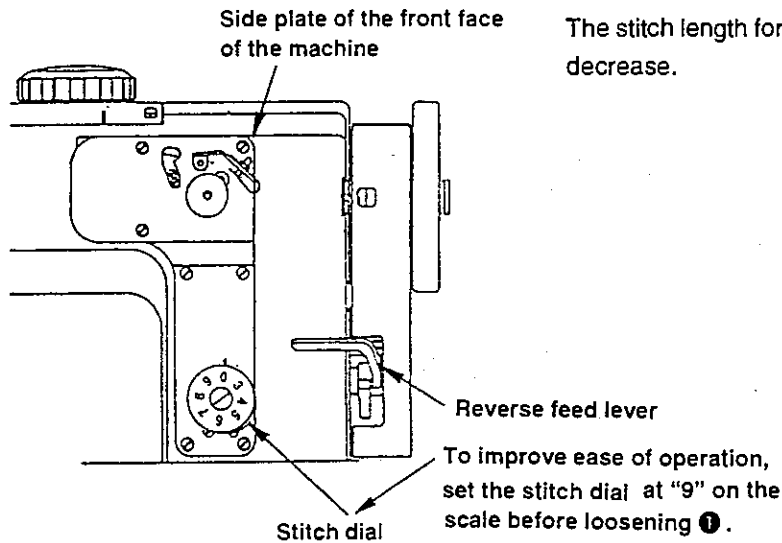


Fig. 1

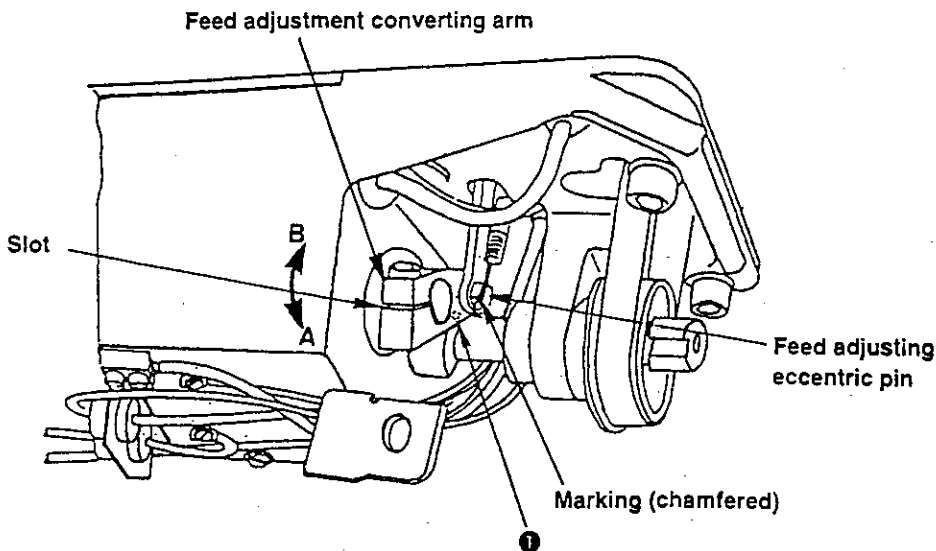
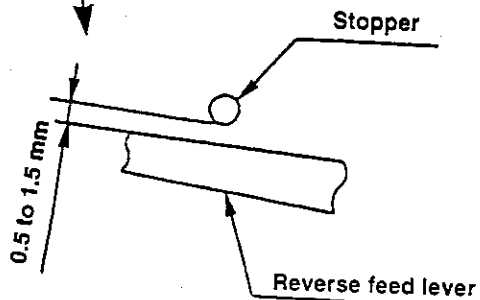
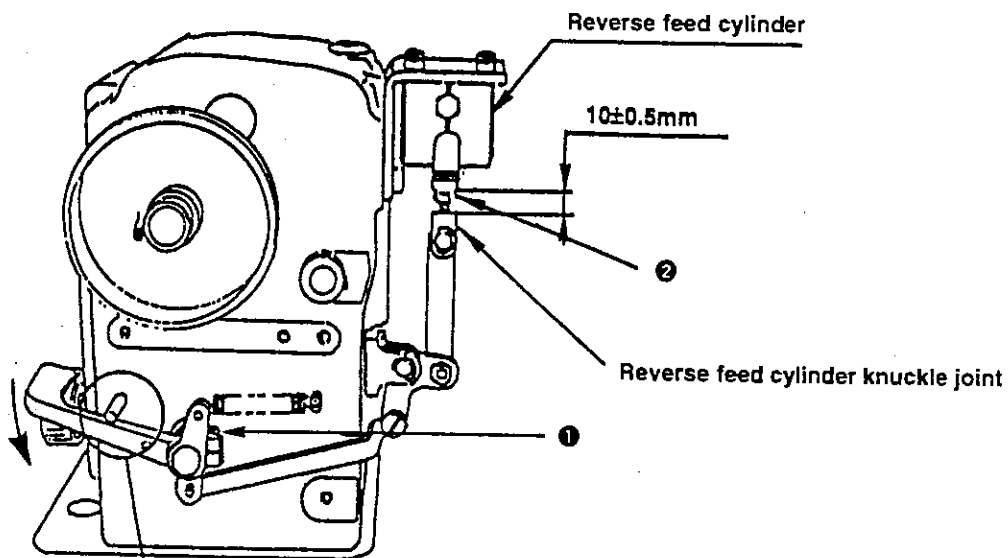


Fig. 2

Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Set the stitch dial at the maximum value on the scale. 2. Lower the reverse feed lever. 3. Slightly loosen screw ❶ in the feed adjusting eccentric pin. 4. Set the stitch dial at "0" on the scale. 5. Make the marking (chamfered section) of the feed adjusting eccentric pin face in the direction of the slot in the feed adjustment converting arm. 6. Tighten screw ❶ in the state described in the aforementioned item 2. 	<p>☆ The stitch length specified may not be equally obtained in the normal feed stitching and the reverse feed stitching, resulting in excessive stitch length error between the normal feed stitching and the reverse feed stitching.</p> <p>5' • Turning the feed adjusting eccentric pin downward (in the direction of arrow A) decreases the stitch length for the normal feed stitching and increases the stitch length for the reverse feed stitching.</p> <p>Turning the feed adjusting eccentric pin upward (in the direction of arrow B) increases the stitch length for the normal feed stitching and decreases the stitch length for the reverse feed stitching.</p> <ul style="list-style-type: none"> • The machine has been factory-adjusted so that stitch length error in the normal/reverse feed stitching does not exceed $\pm 10\%$ of the specified value when the stitch dial is set to "6" on the scale.

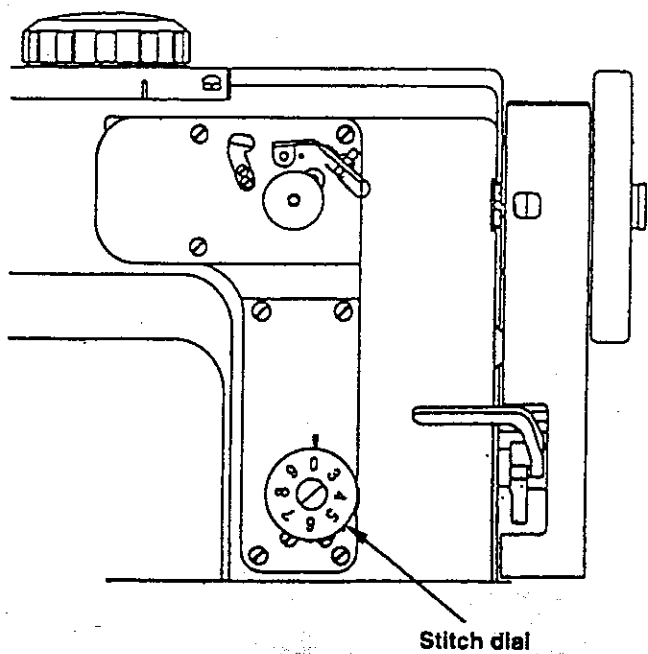
Standard Adjustment

(8) Position of the reverse feed connecting arm



Requirement :

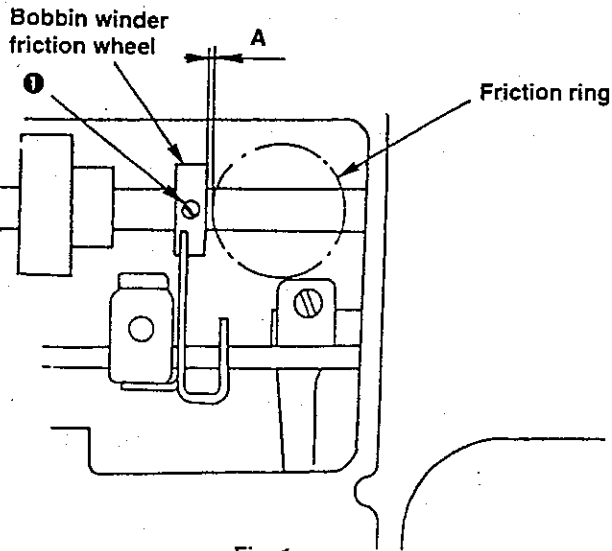
- The stitch dial should be set at the max. on the scale.



Adjustment Procedures	Results of Improper Adjustment
<p>Adjusting the position of the reverse feed lever</p> <ol style="list-style-type: none"> 1. Set the stitch dial at the maximum value on the scale. 2. Loosen clamping screw ❶ in the reverse feed connection arm. 3. Adjust so that a clearance of 0.5 to 1.5 mm is provided between the reverse feed lever and the stopper when the reverse feed lever is slightly pressed down, and tighten clamping screw ❶. <p>(Caution) For the sewing machine equipped with a touch-back mechanism, a clearance of 10 ± 0.5 mm should be provided between the top end of the reverse feed cylinder rod and the reverse feed cylinder knuckle joint.</p> <p>Securely tighten locknut ❷ in the knuckle joint.</p>	<p>☆ If the clearance between the stopper and the reverse feed lever is too large :</p> <p>The top end of the reverse feed lever will interfere with the bed. As a result, stitch length for the reverse feed stitching may be shortened.</p> <p>☆ If the clearance between the stopper and the reverse feed lever is too small :</p> <p>The reverse feed lever will interfere with the stopper. As a result, stitch length for the normal feed stitching may be shortened.</p>

Standard Adjustment

(9) Bobbin winder



A : 0.3 to 0.6 (mm)

B : 25.5 ± 0.5 (mm)

Note that A and B are in the reset state.

Fig. 1

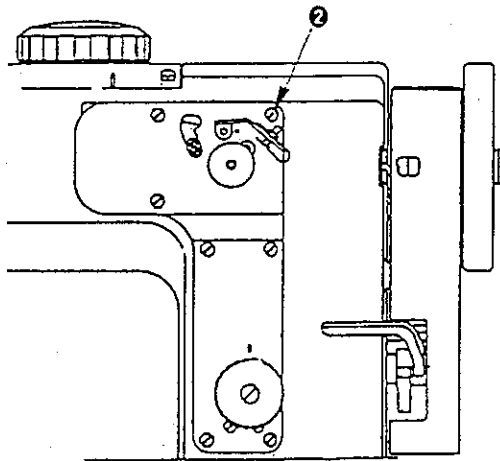


Fig. 2

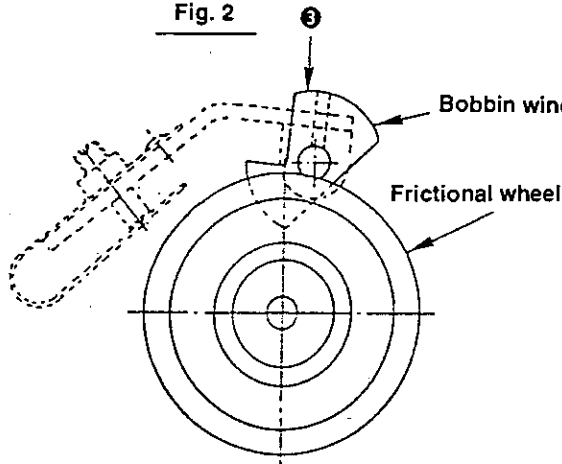


Fig. 3

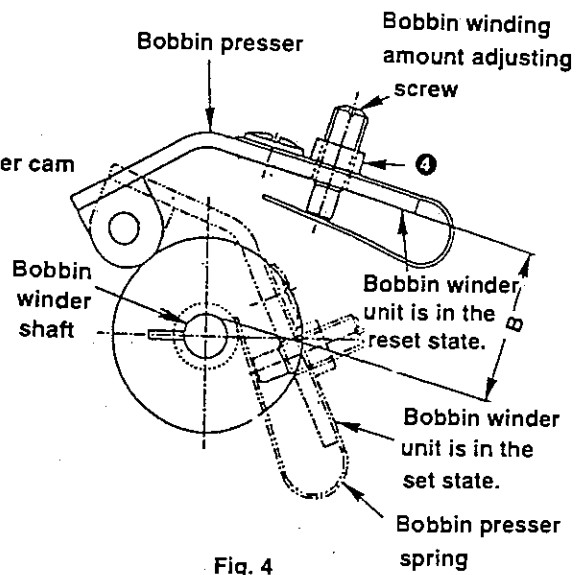


Fig. 4

(Note) Fig. 3 is illustrated as observed from the rear side of the machine head with the side plate on the front of the machine head removed.

Adjustment Procedures	Results of Improper Adjustment
<p>1) Adjusting the bobbin winder friction wheel</p> <ol style="list-style-type: none"> 1. Loosen the screw in the reverse feed cylinder. 2. Remove the reverse feed cylinder. 3. Remove the side plate. 4. Set the bobbin winder in its released state. (Fig. 4) 5. Loosen screws ❶ in the bobbin winder friction wheel. (Fig. 1) 6. Adjust the clearance A between the bobbin winder friction wheel and the friction ring to 0.3 to 0.6 mm. (Fig. 1) 7. Tighten screw No. 1 ❶ in the friction wheel. Then tighten the screw No. 2. (Fig. 1) 8. Set the bobbin winder in the operating position, and check that the bobbin winder shaft rotates normally. 9. Attach the side plate in place. 	<p>8' If the bobbin winder fails to rotate normally, finely adjust the clearance between the bobbin winder friction wheel and the friction ring properly.</p> <p>9' Attach the side plate in place while referring to "8" of "Needle entry in the needle slot of the feed dog in the feeding direction" on page 9.</p>
<p>2) Adjusting the bobbin winding amount</p> <ol style="list-style-type: none"> 1. Loosen screw ❷ in the side plate on the front of the machine head. (Fig. 2) 2. Remove the side plate from the front of the machine head. (Fig. 2) 3. Loosen screw ❸ in the bobbin winder cam. (Fig. 3) 4. Adjust distance B from the bobbin winder shaft to the bobbin presser to 25.5 ± 0.5 mm. (Fig. 4) 5. Tighten screw ❸ in the bobbin winder cam. (Fig. 3) 6. Attach the side plate on the front of the machine head. (Fig. 2) 7. Make the sewing machine perform bobbin winding. 8. Securely tighten hexagon nut ❹. (Fig. 4) 	<p>7' Adjust so that the bobbin is wound with thread approximately up to 80% of its capacity (diameter of the bobbin wound with thread : 23.3 mm) by turning the bobbin winding amount adjusting screw.</p>

Standard Adjustment

(10) Thread trimmer

1) Counter knife

2) Clamp spring

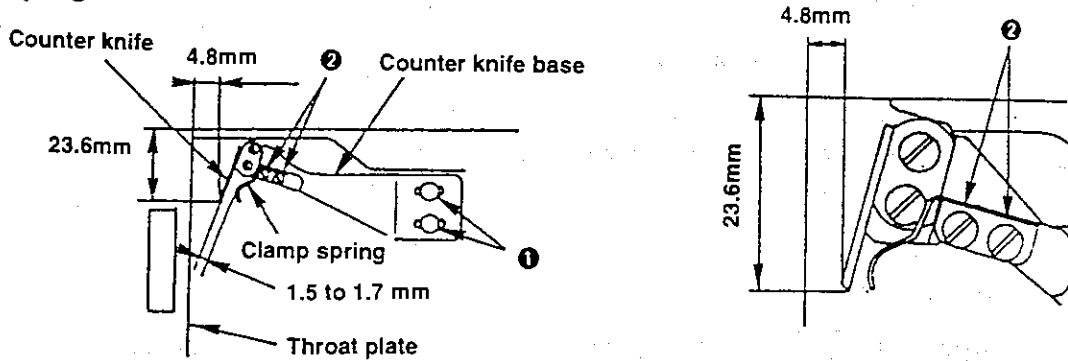


Fig. 1

3) Knife pressure

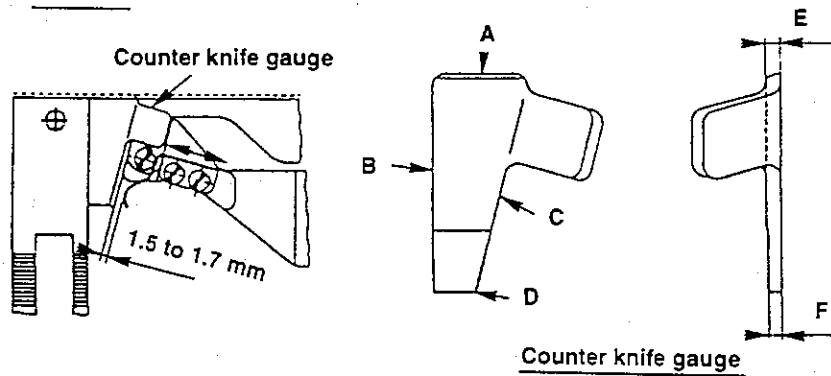


Fig. 2

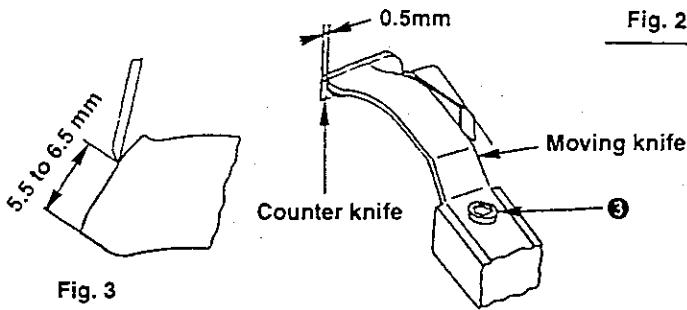


Fig. 3

Fig. 4

4) Moving knife driving arms A, B and C

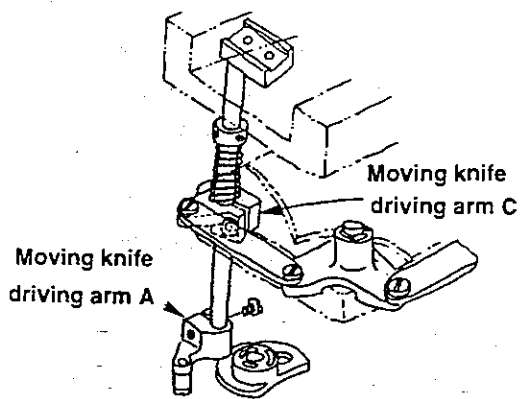


Fig. 6

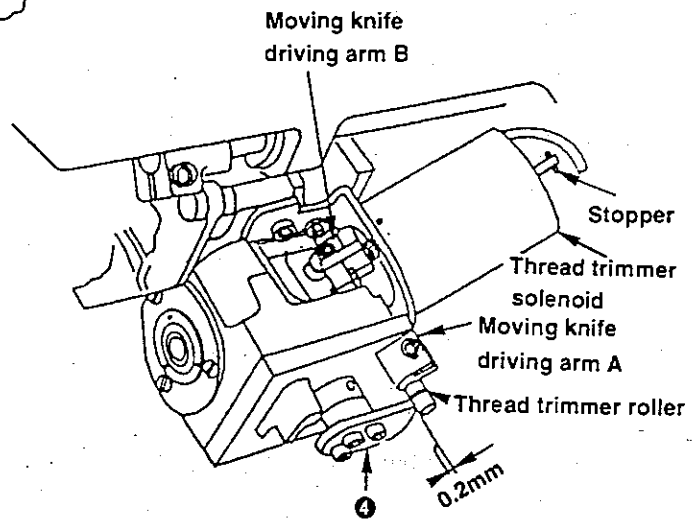


Fig. 5

Adjustment Procedures	Results of Improper Adjustment
<p>1) Counter knife</p> <p>(1) Loosen attaching screw ❶ in the counter knife base. (Fig. 1)</p> <p>(2) Bring the counter knife to the position shown in Fig. 1 using the counter knife gauge supplied with the machine. At this time, adjust the counter knife gauge so that section A of the counter knife gauge should come in contact the attaching groove on the bed slide plate, and section B should come in contact with the end face of the throat plate. (Fig. 1 and Fig. 2)</p> <p>(3) Move the counter knife base to adjust so that the counter knife comes in contact with sections C and D of the counter knife gauge. Then, tighten attaching screw ❶.</p>	<p>If dimension A (4.8 mm) is larger :</p> <ul style="list-style-type: none"> • Knife pressure will be higher. As a result, the motor may be unnecessarily stopped. <p>If dimension A (4.8 mm) is smaller :</p> <ul style="list-style-type: none"> • Knife pressure will be lower, resulting in thread breakage. <p>If dimension B (23.6 mm) is larger :</p> <ul style="list-style-type: none"> • The length of bobbin thread to be clamped will be shortened, resulting in stitch skipping. <p>If dimension B (23.6 mm) is smaller :</p> <ul style="list-style-type: none"> • Thread trimming failure may result.
<p>2) Clamp spring</p> <p>(1) Loosen attaching screw ❷ of the clamp spring. (Fig. 1)</p> <p>(2) Adjust the clearance provided between the clamp spring and the counter knife by sliding the clamp spring along the surface of the counter knife installing base on which the clamp spring is to be attached. At this time, adjust the clearance using sections E and F of the counter knife gauge. Thickness of section E is 1.7 mm and that of section F is 1.5 mm. Adjust the position of the clamp spring so that section E of the gauge does not smoothly pass through the clearance provided between the clamp spring and the counter knife and so that section F of the gauge smoothly passes through it.</p> <p>(3) Tighten attaching screw ❷ of the clamp spring. (Fig. 2)</p>	<p>If the clearance provided between the clamp spring and the counter knife is too large :</p> <ul style="list-style-type: none"> • Bobbin thread clamping failure may result. <p>If the clearance provided between the clamp spring and the counter knife is too small :</p> <ul style="list-style-type: none"> • The clamp spring may clamp the needle thread. This means that the material may not be taken out from the sewing position with ease. As a result, the bobbin thread clamped may be removed together with the material.
<p>3) Knife pressure</p> <p>Adjust, when the moving knife and the counter knife come in contact with each other, the attaching position of the moving knife so that the moving knife starts coming in contact with the counter knife at the position that is 5.5 to 6.5 mm away from the top end of the moving knife. (Fig. 3 and Fig. 4)</p> <p>At this time, perform the aforementioned adjustment after loosening attaching screw ❸ of the moving knife. (Fig. 4)</p>	<ul style="list-style-type: none"> • If the knife pressure is too high : The counter knife blade and the moving knife blade may break. • If the knife pressure is too low : Thread trimming failure may result.
<p>4) Moving knife driving arms A, B and C</p> <p>(1) In case of the right-hand side hook, loosen the screws of moving knife driving arms A and B, and adjust so that the top end of moving knife is spaced 0.5 mm from the top end of the counter knife. In case of the left-hand side hook, loosen the screws of moving knife driving arms A and C, and adjust the same way as the right-hand side hook. (Fig. 4, Fig. 5 and Fig. 6)</p> <p>(2) Put the stopper of the plunger of the thread trimmer solenoid onto the main body of the solenoid, and tighten the clamping screws in the moving knife driving arms B and C. (Fig. 5 and Fig. 6)</p> <p>(3) Adjust so that a clearance of 0.2 mm is provided between the thread trimming cam and the thread trimming cam roller when the thread trimming cam is brought to the highest position of its stroke. (for both the right-hand and left-hand side hooks) (Fig. 5)</p> <p>(4) Tighten the clamping screw in the moving knife driving arm A.</p>	<p>If the distance from the top end of the counter knife to the top end of the moving knife is larger than the specified value :</p> <ul style="list-style-type: none"> • The moving knife may overrun after trimming the thread, resulting in clamping failure. <p>If the distance from the top end of the counter knife to the top end of the moving knife is smaller than the specified value :</p> <ul style="list-style-type: none"> • The main body of the solenoid may come in contact with the stopper of the plunger at the time of thread trimming. <p>Item to be confirmed : Turn the handwheel by hand to make the sewing machine perform thread trimming and align the top end of the moving knife with the top end of the counter knife. This is the initial position of the thread trimming mechanism. At this time, confirm that a clearance of 0.05 to 0.15 mm is provided between the stopper of the thread trimming solenoid and the main body of the thread trimming solenoid.</p>

Standard Adjustment

5) Height of the moving knife (For the right-hand side hook)

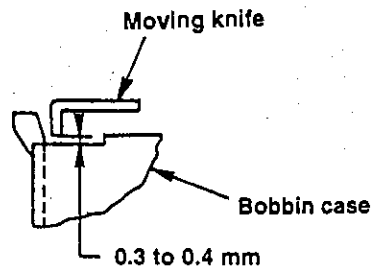


Fig. 1

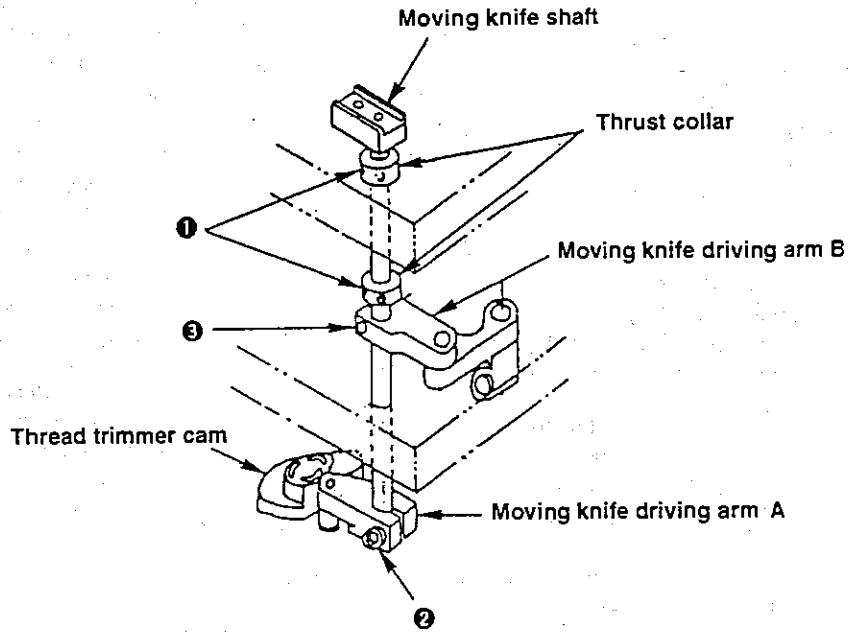
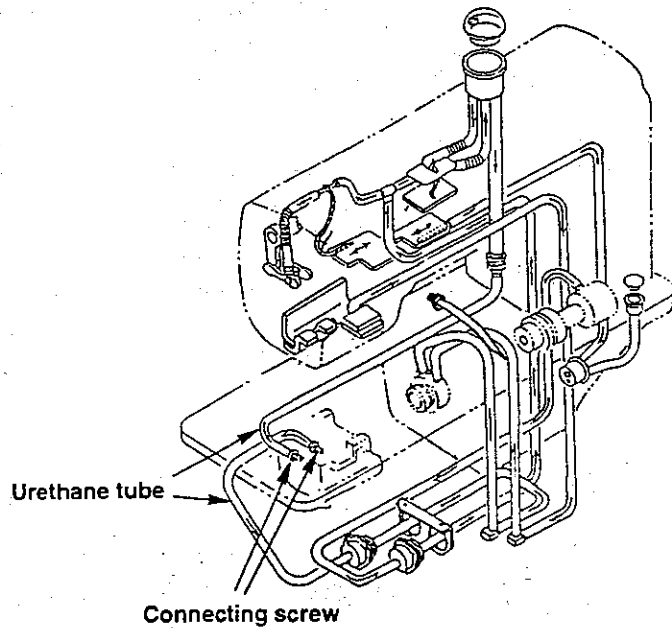


Fig. 2



Adjustment Procedures

- 5) Height of the moving knife (For the right-hand side hook)
- (1) Remove the lead of the thread trimmer solenoid from the terminal board.
 - (2) Loosen the clamping screw in the hook driving shaft set collar.
 - (3) Remove urethane tube from the tube connecting screws of the hook driving shaft saddle.
 - (4) Loosen the attaching screw in the hook driving shaft saddle, and remove the hook driving shaft saddle.
 - (5) Loosen the screw ❶ in the thrust collar of the moving knife. (Fig. 2)
 - (6) Loosen the screw ❷ in the moving knife driving arm A. (Fig. 2)
 - (7) Loosen the screw ❸ in the moving knife driving arm B. (Fig. 2)
 - (8) Adjust so that a clearance of 0.3 to 0.4 mm is provided between the moving knife and the bobbin case by moving the moving knife shaft up and down.
 - (9) Tighten the screw ❶ in the thrust collar of the moving knife.
 - (10) Adjust moving knife driving arm A, and tighten screw ❷. (Refer to "Moving knife driving arms A and B" on page 35.)
 - (11) Adjust moving knife driving arm B, and tighten screw ❸. (Refer to "Moving knife driving arms A and B" on page 35.)
 - (12) Temporarily fix the hook driving shaft saddle.
 - (13) Attach the lead of the thread trimmer solenoid to the terminal board.
 - (14) Attach an urethane tube to the tube connecting screw of the hook shaft saddle. At this time, use the tube connecting screw to which the urethane tube had been attached before removing it.
 - (15) Adjust the clearance provided between the needle and the blade point of the hook.
(Refer to "Clearance between the needle and the blade point of hook" on page 13.)
 - (16) Adjust the needle-to-hook timing.
(Refer to "Timing between the needle and the hook" on page 15.)

Results of Improper Adjustment

If the clearance provided between the moving knife and the bobbin case is too large :

- The needle thread and bobbin thread may fail to be caught by the knife.

If the clearance provided between the moving knife and the bobbin case is too small :

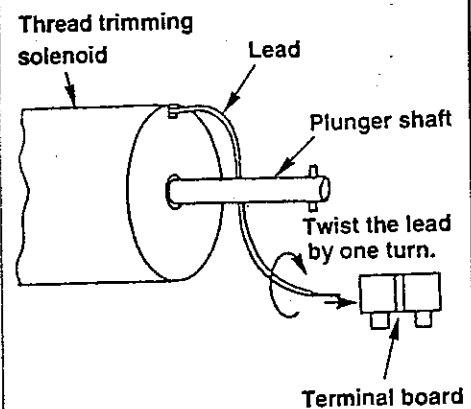
- The moving knife may interfere with the bobbin.

(In the standard adjustment, the machine has been designed so that the moving knife slightly comes in contact with the bobbin.)

- (4) At that time, widen the space in the hook driving shaft coupling, then remove the hook driving shaft saddle.

- (13) Give the lead a clockwise turn and connect it to the terminal board while routing it along the back of the solenoid. At this time, take care not to allow the lead to come in contact with the plunger shaft.

(See the figure shown below.)



Standard Adjustment

6) Height of the moving knife (For the left-hand side hook)

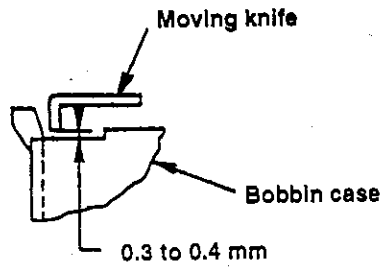


Fig. 1

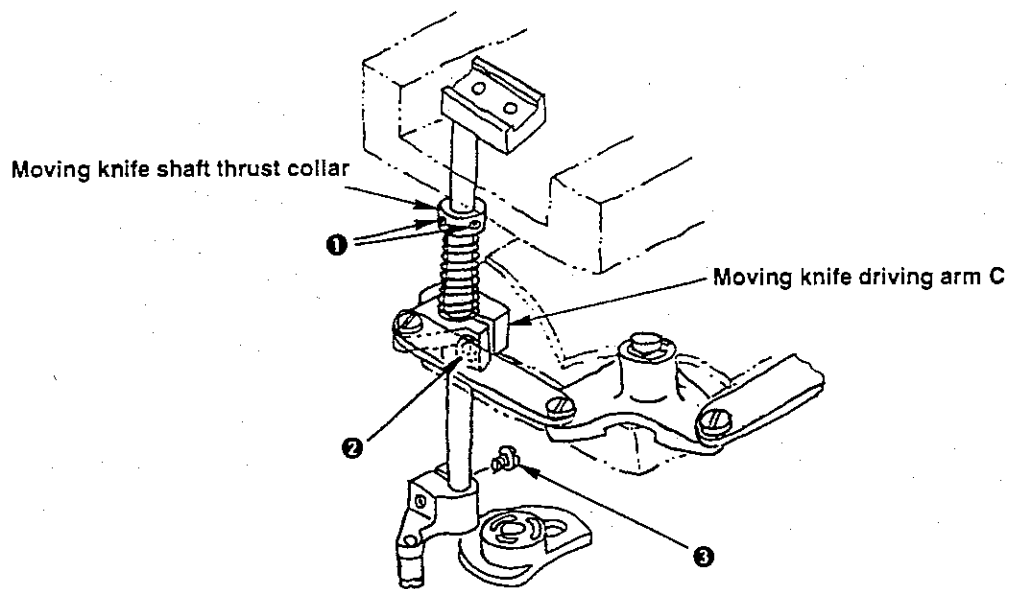


Fig. 2

Adjustment Procedures	Results of Improper Adjustment
<p>Height of the moving knife (For the left-hand side hook)</p> <ol style="list-style-type: none"> 1. Tilt the machine head. 2. Loosen the screws (2 pcs.) ❶ in the moving knife shaft thrust collar and the screw ❷ in the moving knife driving arm C. (Fig. 2) 3. Loosen the screw ❸ in the moving knife driving arm A. (Fig. 2) 4. Adjust so that a clearance of 0.3 to 0.4 mm is provided between the moving knife and the bobbin case by moving the moving knife shaft up and down. (Fig. 1) 5. Tighten the screws (2 pcs.) ❶ in the moving knife shaft thrust collar. 6. Tighten the screw ❷ in the moving knife driving arm C and the screw ❸ in the moving knife driving arm A. (Refer to "Moving knife driving arms A, B and C" on page 35.) 	<p>If the clearance provided between the moving knife and the bobbin case is too large :</p> <ul style="list-style-type: none"> • The needle thread and bobbin thread may fail to be caught by th knife. <p>If the clearance provided between the moving knife and the bobbin case is too small :</p> <ul style="list-style-type: none"> • The moving knife may interfere with the bobbin. <p style="text-align: center;">(In the standard adjustment, the machine has been designed so that the moving knife slightly comes in contact with the bobbin.)</p>

Standard Adjustment

7) Thread trimmer cam

Thread eyelet of the moving knife

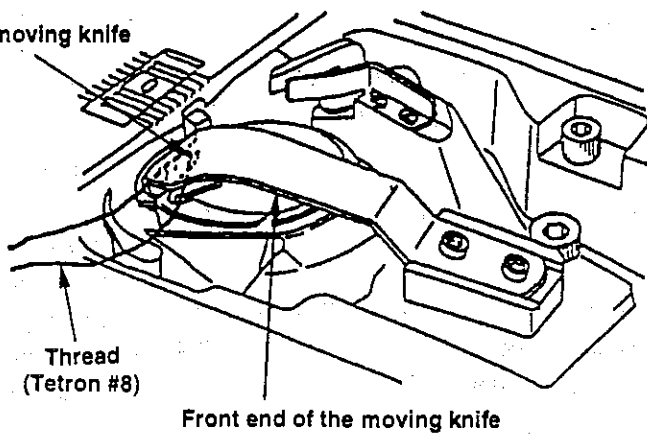


Fig. 1

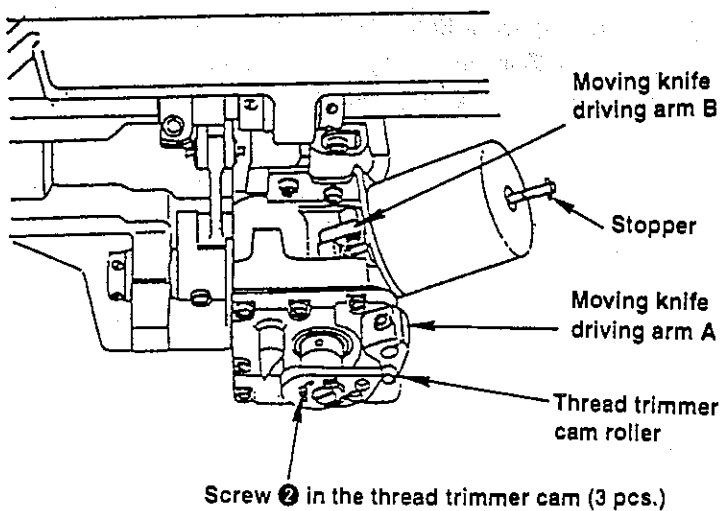


Fig. 2

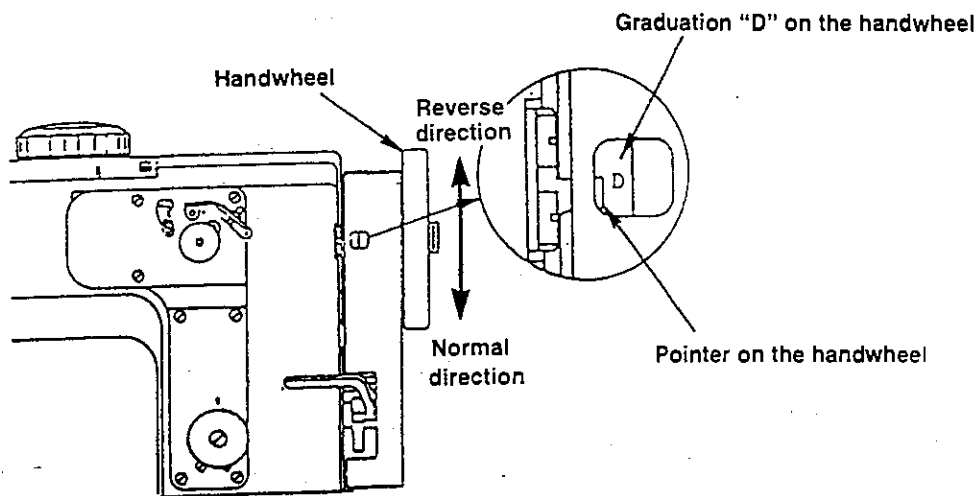


Fig. 3

Adjustment Procedures	Results of Improper Adjustment
<p>(1) Tilt the machine head, and make the head support bar hold the head at that position.</p> <p>(2) Move the moving knife forward by hand until it will go no further. (Fig. 1) (While turning the handwheel by hand, draw the moving knife forward from its initial position and the moving knife will move.)</p> <p>(3) Put a thread (tetron #8) on to the thread eyelet of the moving knife. (The thread should be held slackened until the machine completes thread trimming.)</p> <p>(4) Turn the handwheel slowly by hand in the normal direction of rotation. (Fig. 3)</p> <p>(5) The moving knife engages with the counter knife, and the knives trim the thread. Now, stop turning the handwheel.</p> <p>(6) Turn the handwheel from the position described in step (5) slightly in the reverse direction of rotation. Turn it to the extent where the thread trimmer cam does not come in contact with the thread cam roller. (Fig. 2)</p> <p>(7) Loosen screw ② in the thread trimmer cam. (Fig. 2)</p> <p>(8) Securing the thread trimmer cam by hand so that it does not come in contact with the moving knife driving arm A, turn the handwheel until the graduation "D" on the handwheel meets the handwheel pointer. (Fig. 2)</p> <p>(9) In the state described in step (7), turn the thread trimmer cam until it slightly comes in contact with the cam roller of moving knife driving arm A. (Fig. 2)</p> <p>(10) Tighten screw ② in the thread trimmer cam. (Fig. 2)</p> <p>(11) Check that the timing of thread trimming action has been properly adjusted. Repeat the steps (3) and (4), and make the sewing machine perform thread trimming. Now, check that the graduation "D" on the handwheel meets the handwheel pointer since they meet with each other if the timing of thread trimming action has been properly adjusted.</p>	<p>☆ If the timing of thread trimming is too early :</p> <ul style="list-style-type: none"> • The length of thread remaining at the needle after thread trimming will be insufficient. As a result, the thread may slip off the needle eyelet at the sewing start or after thread trimming. • Stitch skipping may occur at the start of sewing. <p>☆ If the timing of thread trimming is too late :</p> <ul style="list-style-type: none"> • Thread trimming failure may result. <p>8' Refer to "(1) Kinds and names of graduations on the handwheel" on page 5.</p>

Standard Adjustment

(11) Opener

1) Timing of opener

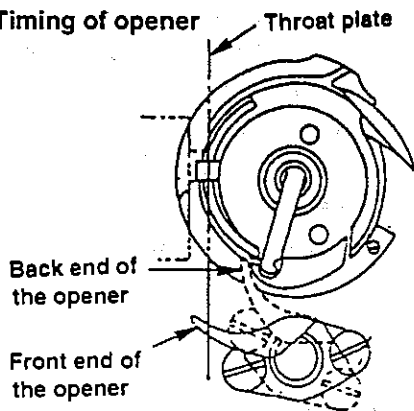


Fig. 1

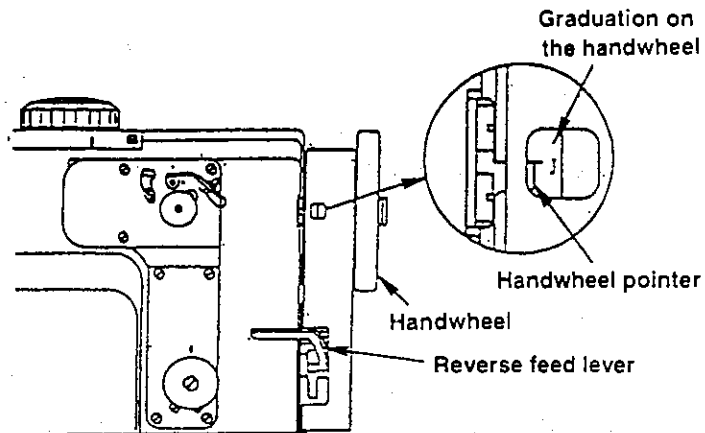


Fig. 2

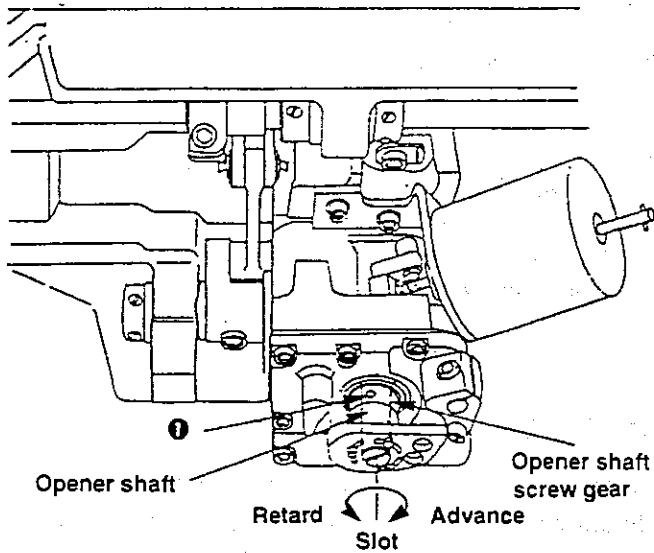


Fig. 3

Condition :

- LU-2210N-7
The opener should be brought to its front end when the graduation "J" on the handwheel meets the handwheel pointer.
- LU-2260N-7
The opener should be brought to its front end when the graduation "K" on the handwheel meets the handwheel pointer.

2) Clearance between the opener and the protruding section of the bobbin case

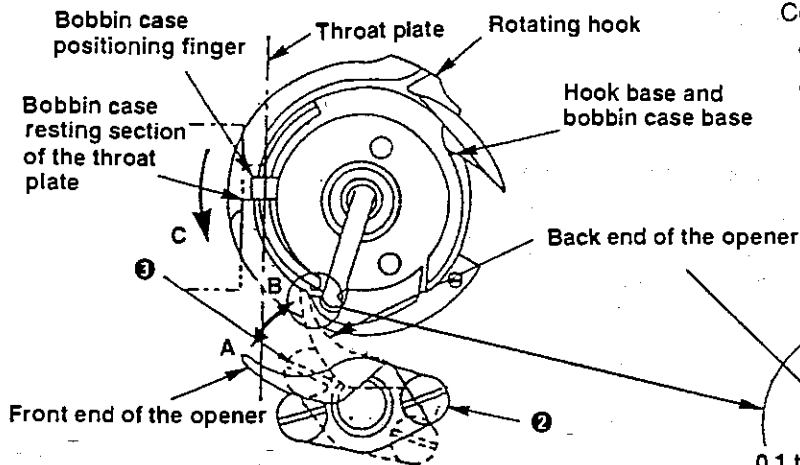


Fig. 4

Condition :

- The opener should be in its back end.
- Press the bobbin case positioning finger against the bobbin case resting groove on the throat plate.

Adjustment Procedures	Results of Improper Adjustment
<p>1) Adjusting the timing of opener</p> <ol style="list-style-type: none"> 1. Loosen screws ❶ (2 pcs.) in the screw gear of the opener shaft. (Fig. 3) 2. For LU-2210-N-7 : Align the graduation "J" on the handwheel with the handwheel pointer. For LU-2260-N-7 : Align the graduation "K" on the handwheel with the handwheel pointer. (Fig. 2) 3. Turn the opener shaft using the slot provided on the bottom end of the opener shaft. (Fig. 3) 4. For the standard adjustment, adjust so that the opener is brought to the extreme forward position in the state described in item 2 by turning the opener shaft. Then, tighten screw ❶ in the screw gear of the opener shaft. (Fig. 1 and Fig. 3) <p>(Caution) Re-adjust the thread trimmer cam after the completion of the adjustment of the opener timing. (Refer to "Thread trimmer cam" on page 41.)</p>	<p>☆ Loose stitches may result.</p> <ol style="list-style-type: none"> 2' Refer to "(1) Kinds and names of graduations on the handwheel" on page 5. 4' At this time, tighten screws ❶ while pressing the opener from the upper side and pressing upward the screw gear of the opener shaft so as to eliminate a play. <p>Turn the opener shaft clockwise as viewed from underside, and the timing of the opener will be advanced. Turn the opener shaft counterclockwise, and it will be retarded.</p>
<ol style="list-style-type: none"> 2) Adjusting the clearance between the opener and the projection of the bobbin case 1. Turn the handwheel to move the opener in the direction of arrow A. Then, loosen opener attaching screw ❷. (Fig. 4) 2. Turn the handwheel to move the opener in the direction of arrow B. Then, loosen opener attaching screw ❸. At this time, be sure to loosen the screw with the opener positioned at its back end. (Fig. 4) 3. Turn the bobbin case in the direction of arrow C, and press the bobbin case positioning finger against the bobbin case resting section of the throat plate. (Fig. 4) 4. Move the opener to adjust so that a clearance of 0.1 to 0.3 mm is provided between the opener and the triangular projection of the bobbin case. (Fig. 4) 5. Tighten opener attaching screw ❸. (Fig. 4) 6. Turn the handwheel to move the opener in the direction of arrow A. Then tighten opener attaching screw ❷. (Fig. 4) 	<p>☆ If the clearance provided between the opener and the protruding section of the bobbin case is too large :</p> <ul style="list-style-type: none"> • Loose stitches may result. <p>☆ If the clearance provided between the opener and the protruding section of the bobbin case is too small :</p> <ul style="list-style-type: none"> • The bobbin case may break.

Standard Adjustment

(12) Presser lifting unit

1) Presser lifting amount

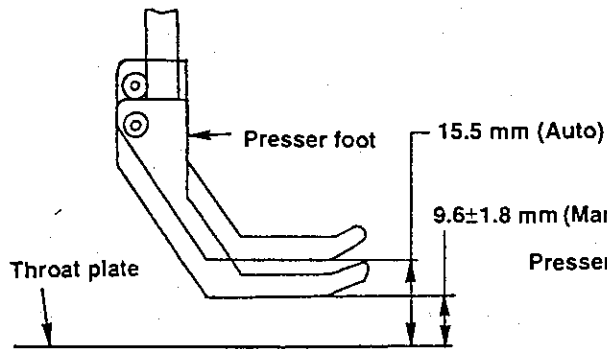


Fig. 1

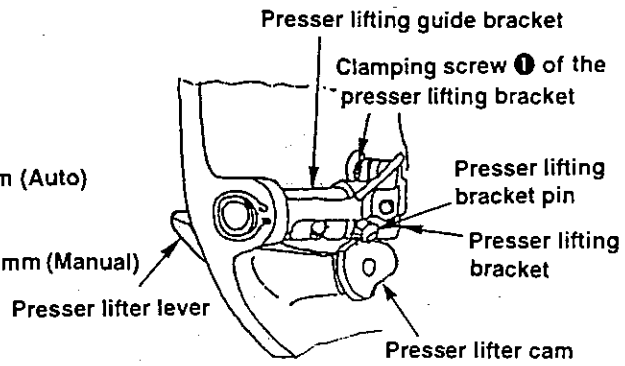
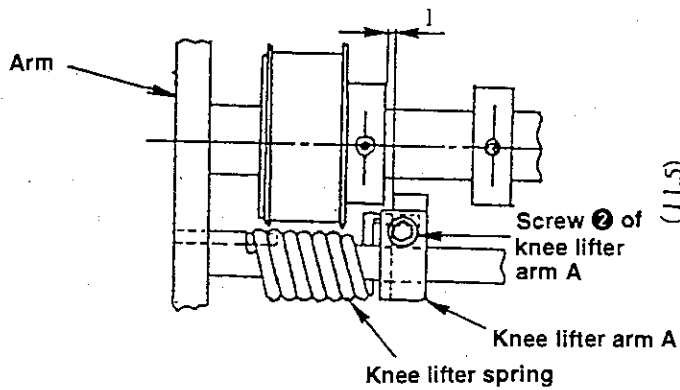
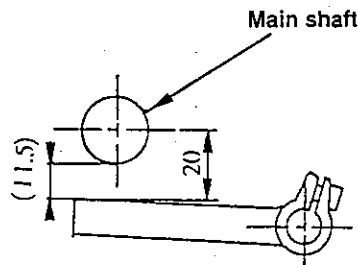


Fig. 2



[As viewed from the side 2]

Fig. 3



* At the time the presser foot is raised by 15.5 mm

[As viewed from the handwheel side]

Fig. 4

2) Presser bar lifting cylinder

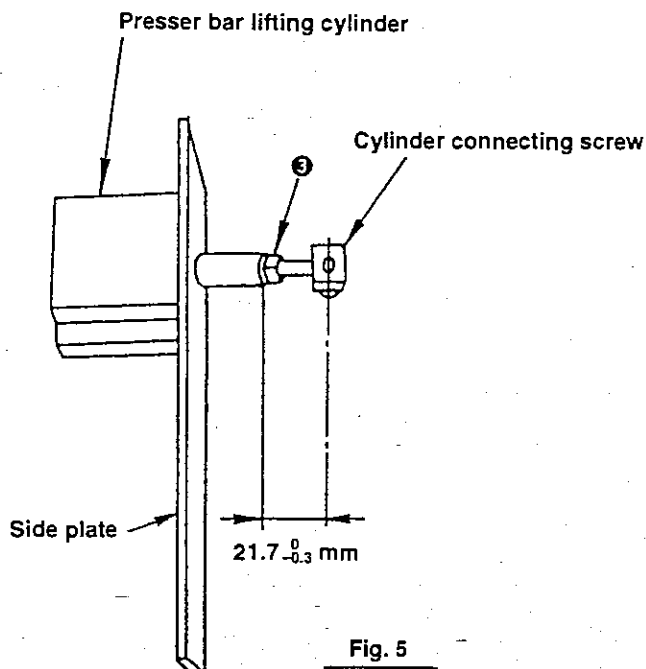


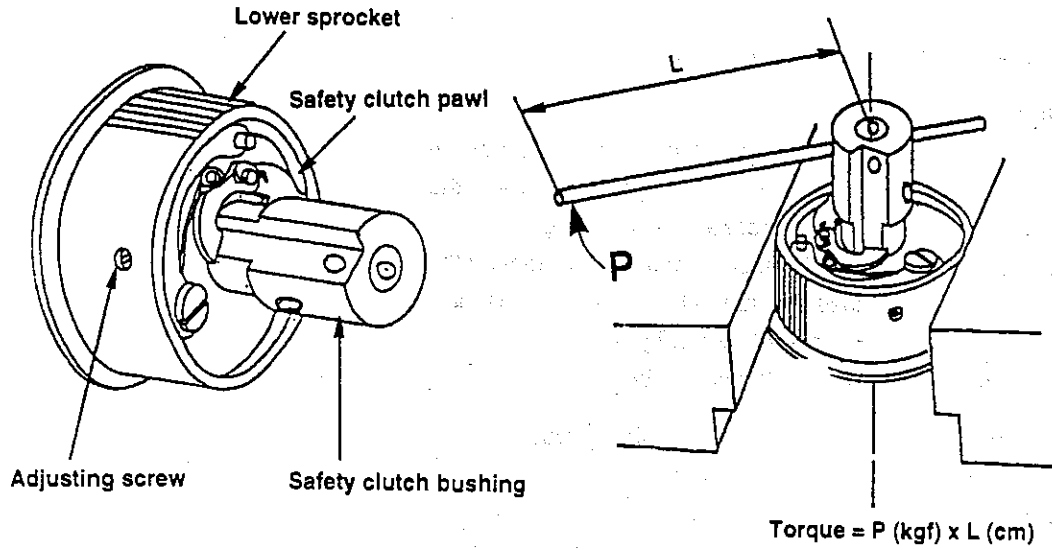
Fig. 5

Adjustment Procedures	Results of Improper Adjustment
<p>1) Presser bar lifting amount</p> <ol style="list-style-type: none"> 1. Remove the face plate and side plate. 2. Loosen screw ❶ in the presser lifting bracket and screw ❷ in the knee lifter arm A. 3. Set the height of the presser foot to 15.5 mm. (Fig. 1) 4. Position of the knee lifter arm A Lateral direction The distance from the end face of the knee lifter arm A to the end face of the upper sprocket is 1 mm. (Fig. 3) Vertical direction ... The distance from the upper face of the knee lifter arm A to the center of the main shaft is 20 mm. (Fig. 4) After adjusting as above, tighten screw ❷ . 5. In the state of step 4., press the presser lifting bracket pin to the presser lifting guide bracket while the end face of the presser lifting bracket is put to the end face of the presser lifting guide bracket. In this state, tighten screw ❶ . (Fig. 2) <p>2) Presser bar lifting cylinder</p> <ol style="list-style-type: none"> 1. Loosen locknut ❸ in the cylinder connecting screw. 2. Adjust so that the top end of the rod of the presser bar lifting cylinder is spaced $21.7_{-0.3}$ mm from the center of the cylinder connecting screw. 3. Tighten the locknut in the cylinder connecting screw. 	

Standard Adjustment

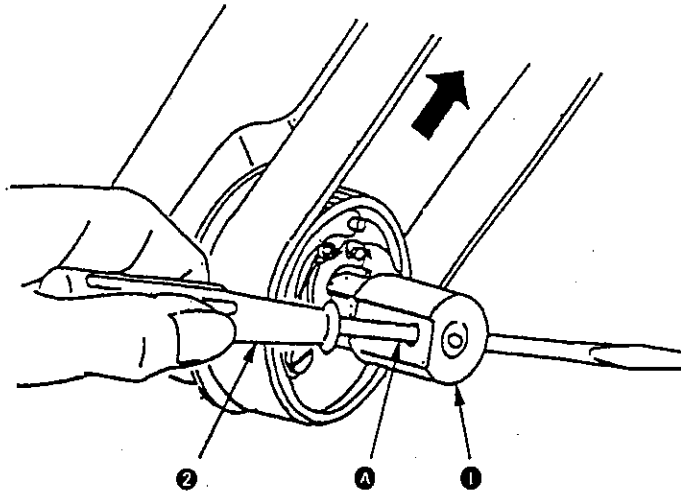
(13) Safety mechanism

1) Adjusting the releasing torque



Standard specification of the releasing torque = 85 to 115kgf.cm

2) Releasing the safety mechanism

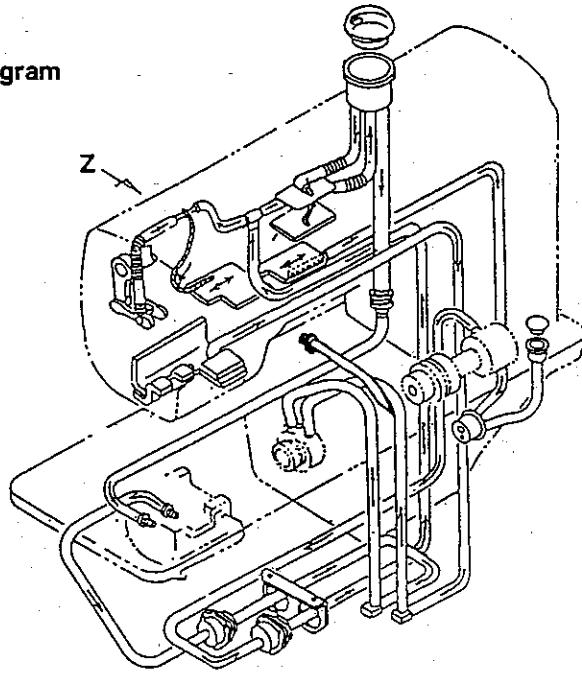


Adjustment Procedures	Results of Improper Adjustment
<p>1) Adjusting the releasing torque</p> <p>Change the pressure of the safety clutch (if the safety clutch is hard to be released or it is released too easily) following the procedures described below.</p> <ol style="list-style-type: none"> 1. Remove the timing belt from the lower sprocket. 2. Tightening the adjusting screw will increase the pressure of the safety clutch or loosening the adjusting screw will decrease it. 3. Fixing the lower sprocket, turn the safety clutch bushing until the safety clutch pawl comes off the groove on the safety clutch bushing. A torque developed at the time when the safety clutch pawl comes off the groove is taken as the releasing torque. 4. Adjust the standard releasing torque to $100 \pm 15 \text{ kgf.cm}$ 5. After the adjustment, put the timing belt on the lower sprocket. (Refer to "Replacing the timing belt" on page 61 for how) to put the timing belt on the lower sprocket. <p>2) Releasing the safety clutch</p> <p>If an excessive load is applied to the hook driving shaft, the safety clutch will be released.</p> <p>In this case, the hook will not rotate even if turning the handwheel.</p> <ol style="list-style-type: none"> 1. Reset the safety clutch with the machine head tilted. 2. Put screwdriver (medium) ② supplied with the machine in hole ④ in safety clutch bushing ①. 3. Hold screwdriver ② by hand to prevent safety clutch bushing ① from turning, make the handwheel rotate in the reverse direction. 4. If the safety clutch clicks, the safety clutch pawl fits in the groove on safety clutch bushing ①. This completes the resetting procedure of the safety clutch. 	<p>If the releasing torque is set to an excessively high value, the hook, hook driving shaft gear or related components will break.</p> <p>If the releasing torque is set to an excessively low value, the safety clutch will be released too easily. This will impair smooth operation of the sewing machine.</p>

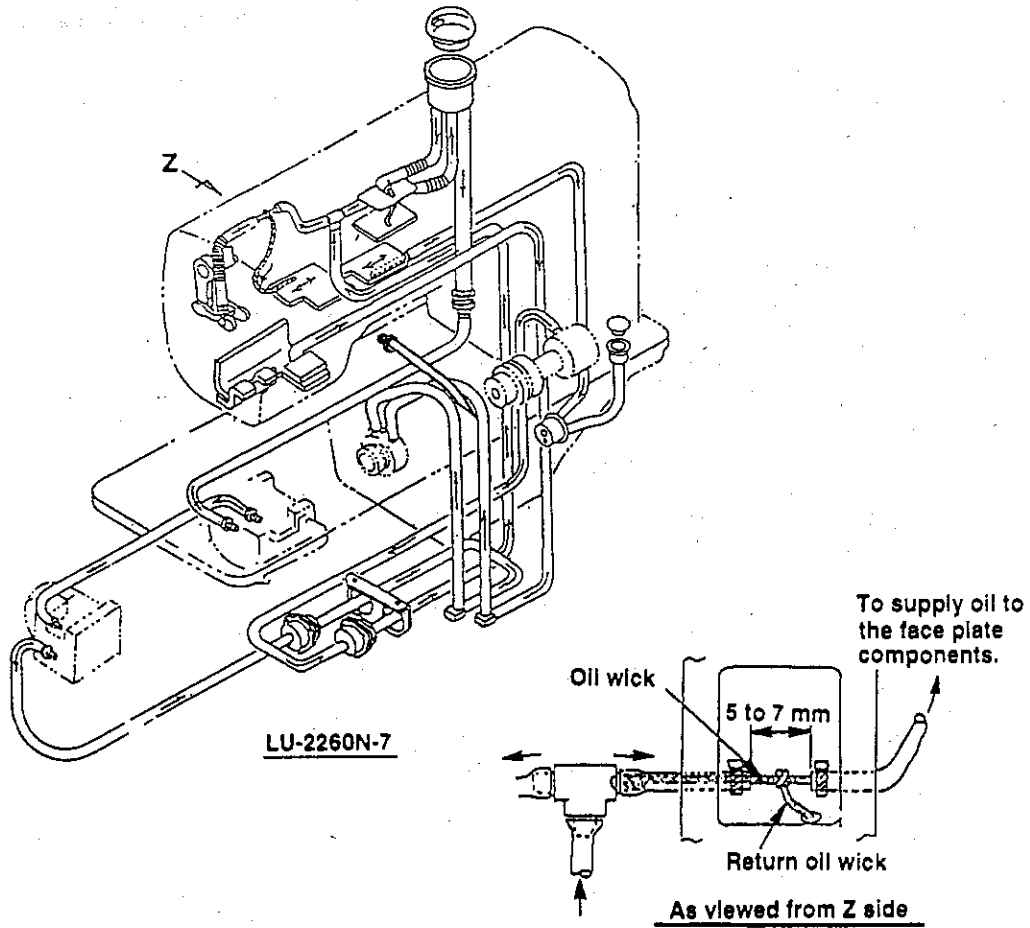
Standard Adjustment

(14) Lubricating unit

1) Oil distribution diagram



LU-2210N-7



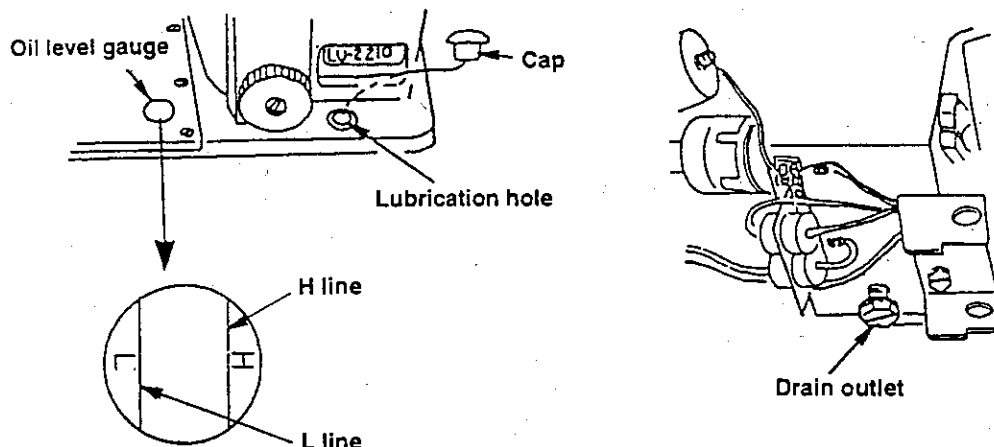
LU-2260N-7

Adjustment Procedures

1) Oil distribution diagram

The oil distribution diagram is shown on the left.

2) Supplying and exchanging oil



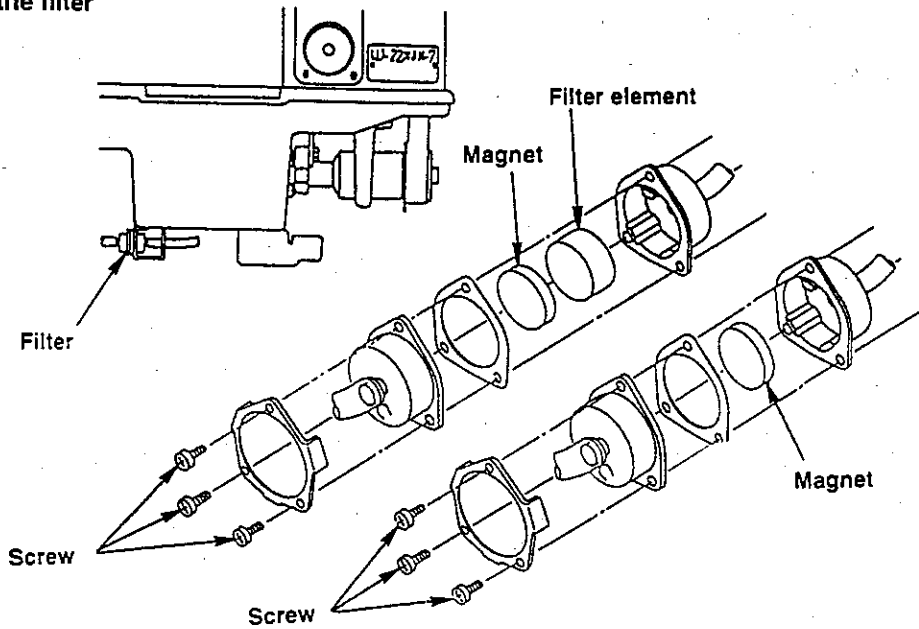
Take care of the following points when operating the sewing machine.

- (1) Check whether or not the amount of oil reaches the specified level on the oil level gauge.
Supply oil to the tank until the "H" line on the oil level check window is reached. Make the machine perform running-in until the oil flows from the hook driving shaft saddle is confirmed. Then, stop the sewing machine.
At this time, the oil surface in the tank should reach a level within the range of "H" and "L" to satisfy the specified amount of oil. If the oil surface fails to reach the specified level, supply oil from the lubrication hole.
- (Caution) **Be sure to close the lubrication hole with the cap.**
- (2) Inspect the oil sight window to confirm that oil is supplied to the hook
(Oil spouts from the oil reservoir and flows toward the hook driving shaft saddle).
(Oil should always accumulate by the depth of approximately 1 mm on the bottom of the oil sight window. This is the proper amount of oil to spout from the oil reservoir.)
- (3) Observe the oil flow in the urethane tube from the lower section of the bed to check whether or not oil is fed to the hook driving shaft saddle and circulated.
- (4) Carefully observe the filter to check whether or not oil changes in color due to oxidization and deterioration. If oil has changed in color obviously, change the deteriorated oil with new oil without delay. To change oil, loosen the drain cock (hexagon head bolt) located under the bed tank and expel the deteriorated oil from the drain outlet. Remove the top cover of the bed, clean inside the bed tank with cleansing oil and dry it up with an air blower. At this time, take care not to allow foreign materials including a screw to enter the bed tank. After the bed tank is drained and cleaned, securely tighten the drain cock. (As reference, exchange the oil, for the first time, when two months have passed after the set-up of the machine, then exchange it every 500 hours of operation of the sewing machine.) When replacing the oil, also replace the filter with a new one. (Refer to the next page for how to replace it.)

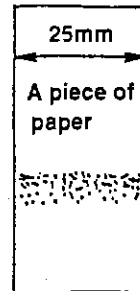
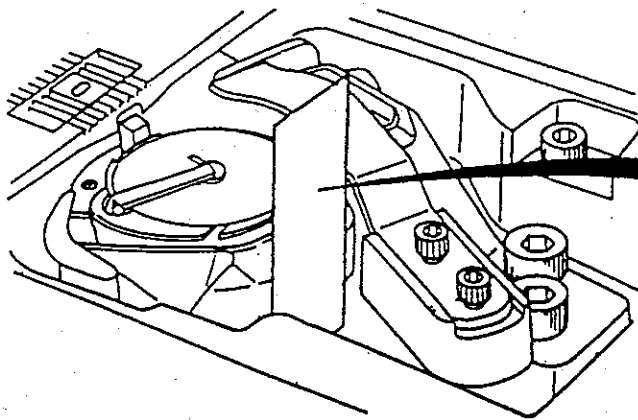
**(Note) When replacing the oil, also replace the packing (Part No. RO-0681901-00) for the drain cock and the packing (Part No. 10701209) for the top cover of bed with new ones.
Be sure not to use any oil other than JUKI New Defrix Oil No. 1.**

Standard Adjustment

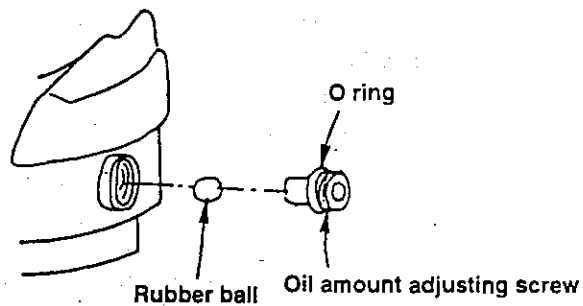
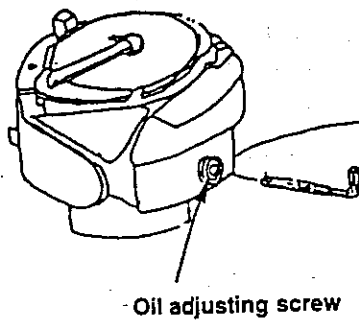
3) Replacing the filter



4) Adjusting the oil amount in the hook and cleaning the hook filter



Requirement :
Run the sewing machine for
5 seconds at the speed of
3,500 s.p.m.



Adjustment Procedures

3) Replacing the filter

Remove the magnet and filter element installed in the filter and wash it once a month after the first operation of the machine. If the filter element is clogged with dust or the like, return oil flow failure may result. In this case, oil may overflow the top of the hook driving shaft saddle, resulting in oil leakage.

4) Adjusting the oil amount in the hook and cleaning the hook filter

Amount of oil in the hook

- (1) Oil splashes from the race surface as illustrated in the sketch.
- (2) Tighten the oil adjusting screw (or turn the screw clockwise) to decrease the amount of oil in the hook. If the amount of oil in the hook is insufficient, the hook may generate heat. As a result, the hook will soon wear out causing seizure.
- (3) Loosen the oil adjusting screw (or turn the screw counterclockwise) to increase the amount of oil in the hook. If the amount of oil in the hook is excessive, the thread or material may be stained with oil. Also, the oil consumption will be larger.

(Caution) The adjusting screw can be turned by a quarter revolution, within which the amount of oil in the hook can be adjusted from the minimum value to the maximum value.

If the adjusting screw is excessively tightened, the rubber ball placed inside the tapped hole will be crushed and the amount of oil in the hook will no longer be adjusted. So, be careful.

Cleaning the filter in the hook

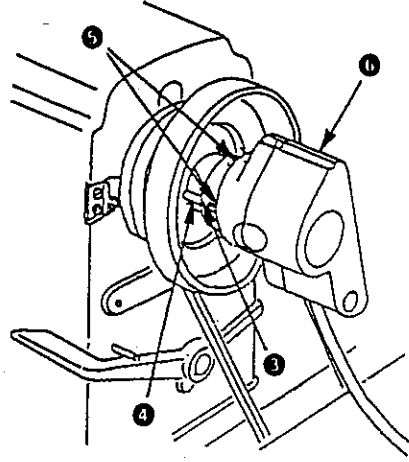
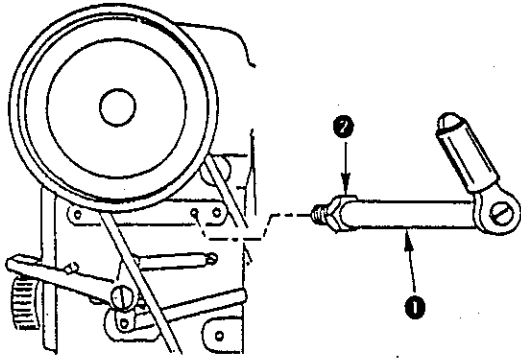
If the filter is clogged, the machine cannot be oiled. So, it is necessary to clean the filter periodically. Clean the filter following the procedure described below.

(Clean the filter approximately every two months.)

- (1) Remove the hook from the main unit of the sewing machine. Loosen the oil amount adjusting screw and take out the rubber ball placed inside the tapped hole.
- (2) Blow air to the tapped hole of the oil amount adjusting screw.

Standard Adjustment

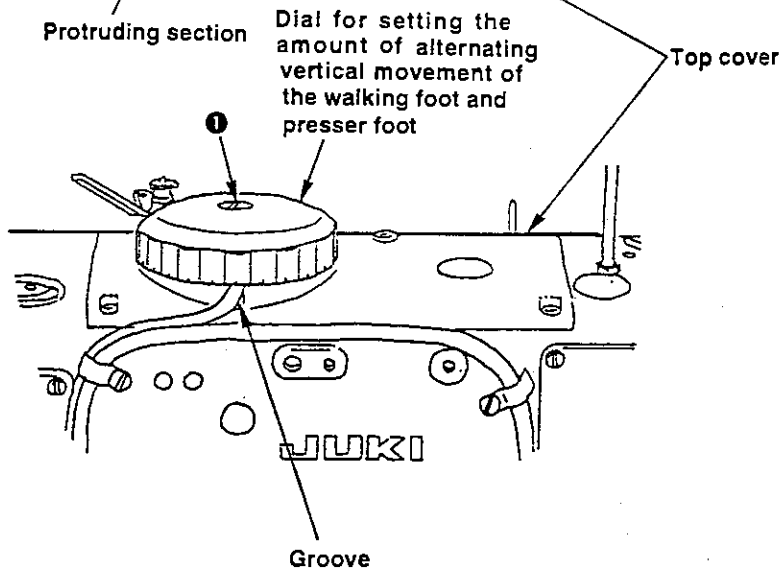
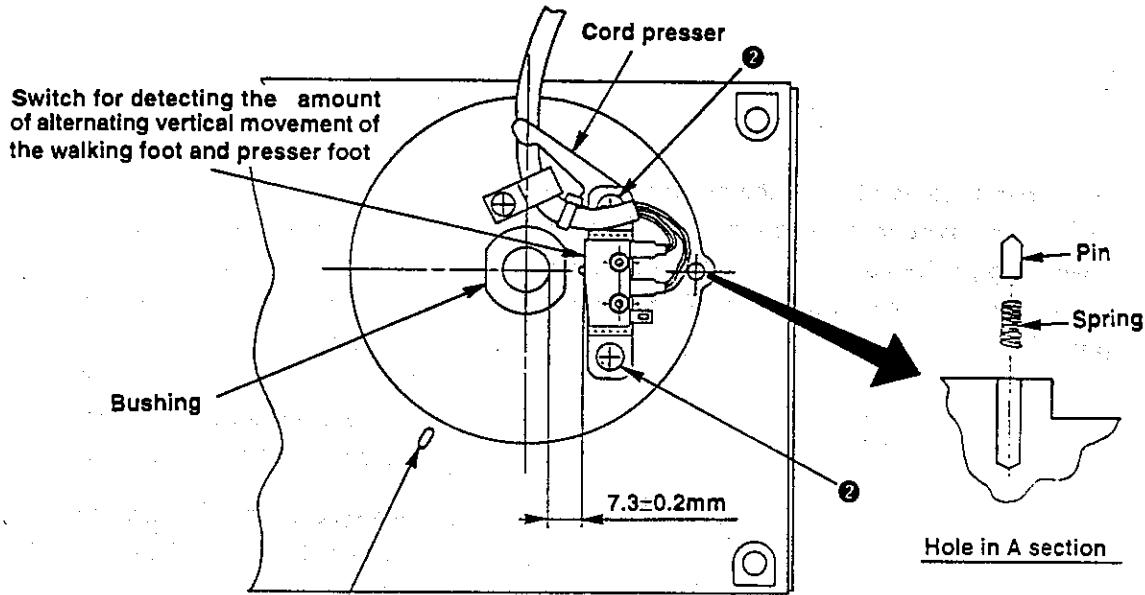
(15) Installing the synchronizer



Adjustment Procedures	Results of Improper Adjustment
<p>1. Screw synchronizer support rod ❶ into the arm, and fix the rod there with attaching nut ❷.</p> <p>2. Tighten screw ❸ so that the marker line ❹ on the synchronizer aligns with the protruding section ❺ of the handwheel.</p> <p>(Note) If the installing position of the synchronizer is not proper, the synchronizer timing at the upper and lower stop positions will be too late or too early. Be sure to securely install the synchronizer in position.</p>	<p>If the synchronizer timing is too late</p> <ul style="list-style-type: none"> ○ The needle will come down at the upper stop position and enter the material. ○ The material will be caught at the tip of the needle when drawing out the material on the machine. <p>If the synchronizer timing is too early</p> <ul style="list-style-type: none"> ○ Thread trimming failure will result.

Standard Adjustment

(16) Installing position of the switch for detecting the amount of alternating vertical movement of the walking foot and presser foot



Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Turn the dial for setting the amount of alternating vertical movement of the walking foot and presser foot so that the graduation 1 on the dial aligns with the protruding section on the top cover. 2. Loosen screw ❶ in the dial for setting the amount of alternating vertical movement of the walking foot and presser foot, and remove the dial for setting the amount of alternating vertical movement of the walking foot and presser foot. At this time, take care to remove it as a pin and a spring are inside the dial. 3. Loosen attaching screws ❷ (2 pcs.) of the switch for detecting the amount of alternating vertical movement of the walking foot and presser foot, and adjust so that a distance of 7.3 ± 0.2 mm is spaced from the inside diameter of the bushing to the end face of the main unit of motor. Then tighten the attaching screws ❷. At this time, put the cord presser which is placed under the switch attaching screws in a position where the cord presser is holding from the upper side the cord which is put in the groove. Then, tighten the attaching screws ❷. 4. Align the graduation 1 on the dial with the protruding section on the top cover, put the pin and the spring in the hole in A section and attach the dial for setting the amount of alternating vertical movement of the walking foot and presser foot. Then tighten the screw ❶. 	<ul style="list-style-type: none"> ○ The sewing speed may not be changed even by turning the dial for setting the amount of alternating vertical movement of the walking foot and presser foot.

Standard Adjustment

3. HOW TO REPLACE THE NEEDLE CLAMP

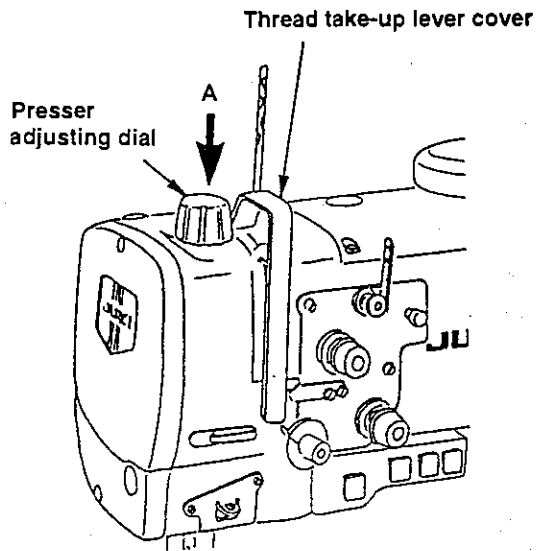


Fig. 1

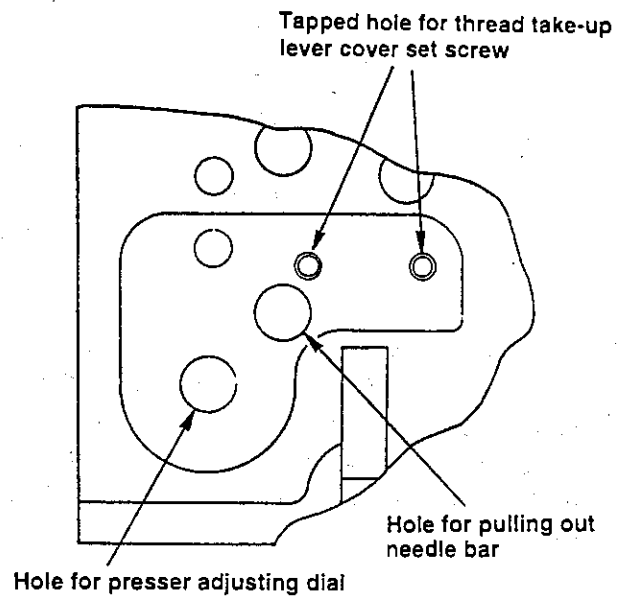


Fig. 2 (As viewed from A side)

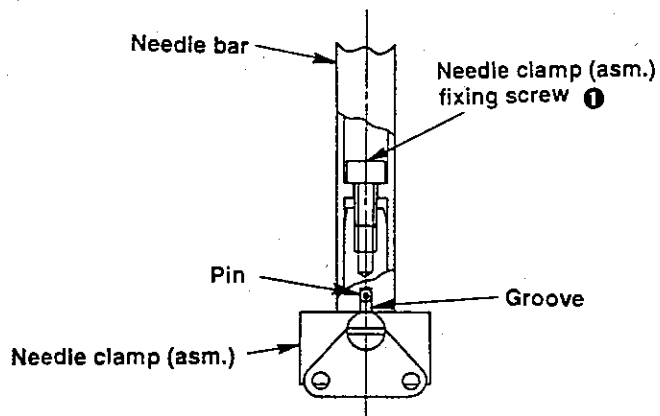
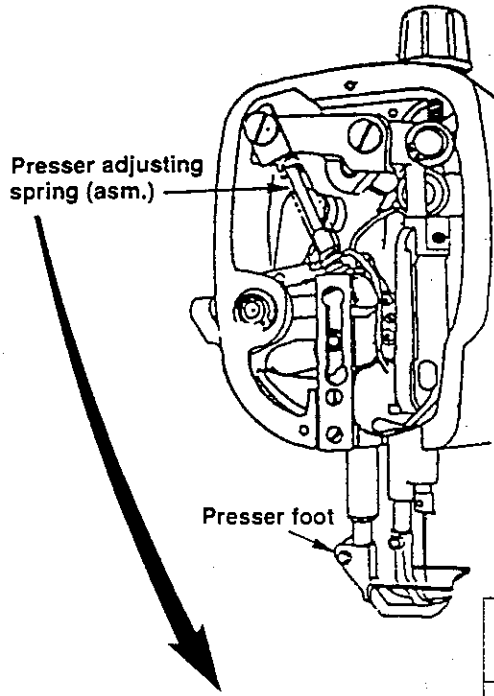


Fig. 3 Section of connecting portion

Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Remove the presser adjusting dial and the thread take-up lever cover. (Fig. 1) 2. Loosen needle clamp (asm.) fixing screw ❶ through the hole for pulling out needle bar with the hexagon wrench supplied with the machine, and remove the needle clamp (asm.). (Fig. 2 and Fig. 3) 3. Insert the pin so that it is placed in the groove of needle bar, and tighten the fixing screw ❶. (Fig. 3) 4. Attach the presser adjusting dial and the thread take-up lever cover. (Set the pressure to the standard adjustment value when the pressure adjusting dial is installed. Refer to page 59.) 5. The maximum sewing speed will change in accordance with the needle gauge. Set the speed to the proper one. (Refer to page 6) 	

Standard Adjustment

4. REPLACEMENT OF THE PRESSER ADJUSTUNG SPRING

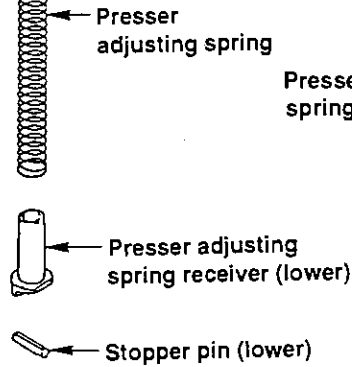
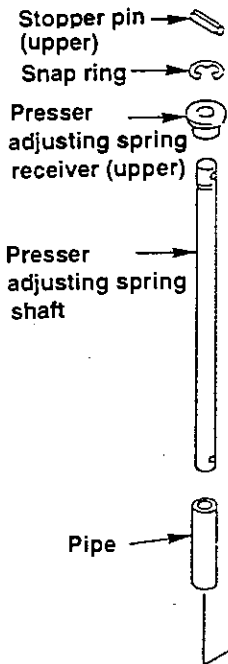


Presser adjusting spring	Diameter
10718302	ø1.4
10715902	ø1.8
10717007	ø2.0

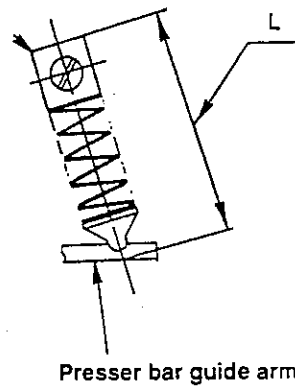
- For LU-2210N-7, ø1.8 is standard. Others are optional.
- For LU-2260N-7, ø2.0 is standard. Others are optional.

Pressure of presser adjusting spring

Model name	Presser adjusting spring (Diameter)	Pressure (kgf)	L (mm)
LU-2210N-7	10715902 (ø1.8)	9	82.5±0.5
LU-2260N-7	10717007 (ø2.0)	10	82.5±0.5



Presser adjusting spring support



Adjustment Procedures**Results of Improper Adjustment**

1. Remove the presser adjusting dial, and lower the presser foot.
2. Remove the presser adjusting spring (asm.):
3. Remove the stopper pin (upper) and snap ring. Then remove the presser adjusting spring receiver (upper).
4. Replace the presser adjusting spring with that for 2-needle ($\phi 2$).
5. Set the presser adjusting spring receiver (upper), snap ring and stopper pin (upper). (Presser adjusting spring (asm.)
6. Attach the presser adjusting spring (asm.). At this time, securely place the stopper pin (upper) into the groove of the presser adjusting spring receiver, and the stopper pin (lower) into the groove of the presser bar guide arm.
7. Attach the presser adjusting dial, and set the pressure to the standard pressure value.

(Note) 1. When the presser adjusting spring is replaced, the above steps 3 to 5 are not necessary if you replace it with (asm.) The part No. of (asm.) is as follows.

Presser adjusting spring (asm.)	Diameter
10718351	$\phi 1.4$
10715951	$\phi 1.8$
10717056	$\phi 2.0$

Standard Adjustment

5. HOW TO REPLACE THE TIMING BELT

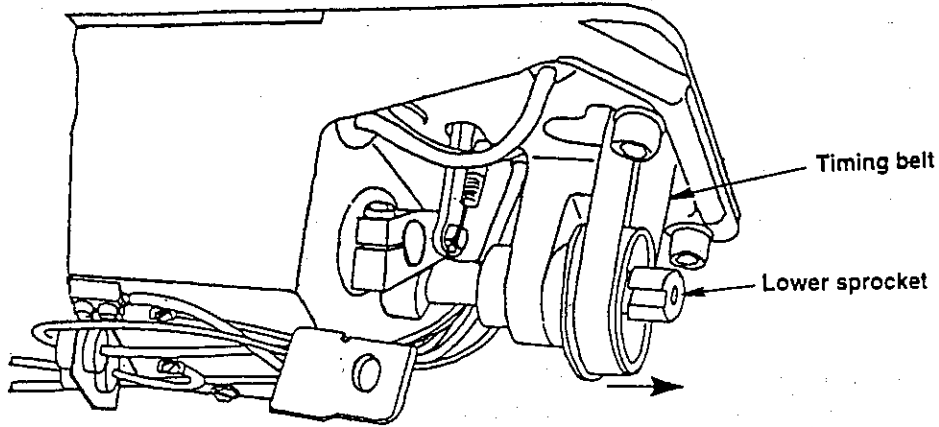


Fig. 1

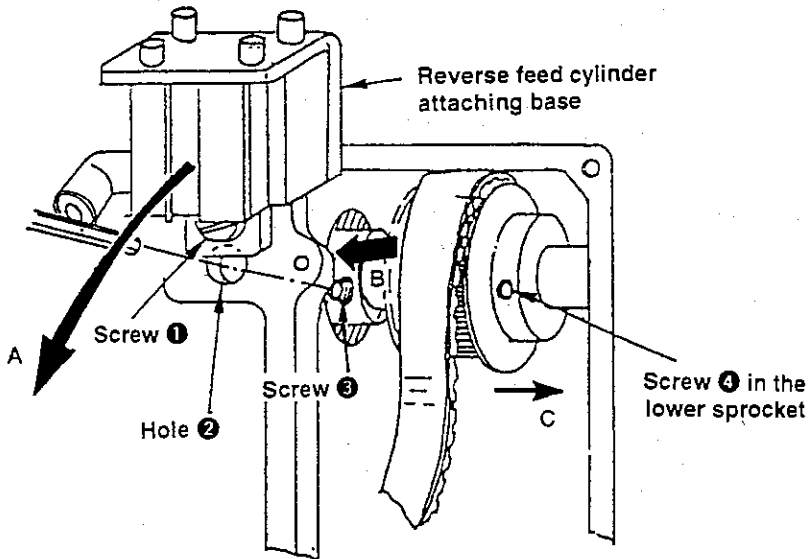


Fig. 2

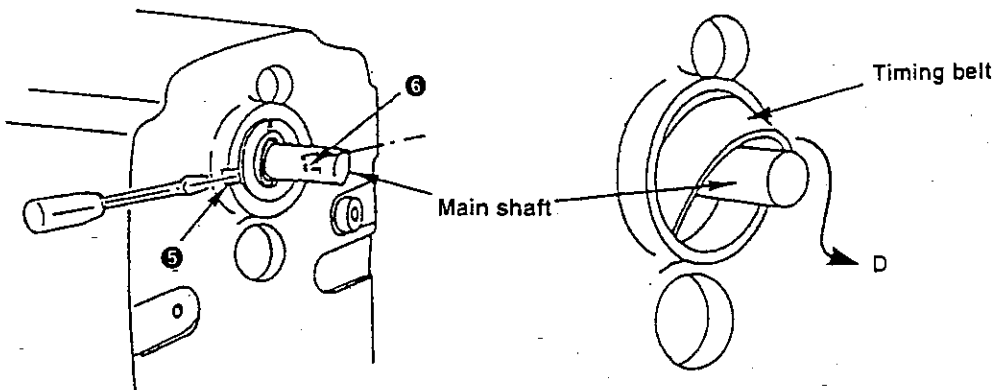


Fig. 3

Fig. 4

Adjustment Procedures	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Remove the timing belt from the lower sprocket. (Fig. 1) 2. Remove the handwheel. 3. Remove the side plate. (Fig. 2) 4. Remove screw ❶ of the reverse feed cylinder attaching base, and lower the attaching base in the direction of arrow A until hole ❷ in the machine arm can be observed. (Fig. 2) 5. Put a hexagon wrench key (3 mm) from hole ❷ and loosen screw ❸ in the main shaft bearing bush. (Fig. 2) 6. Loosen screw ❹ in the sprocket. (Fig. 2) 7. Fit the top end of a screwdriver in notches ❺ and ❻ on the arm and draw out the main shaft bearing bush (asm.). (Fig. 3) 8. Shift the sprocket in the direction of arrow C as illustrated in Fig. 2 and shift the timing belt in the direction of arrow B. (Fig. 2) 9. Push the timing belt out from the hole in the machine arm and draw it in the direction of arrow D to detach it from the main shaft. (Fig. 4) 	

Standard Adjustment

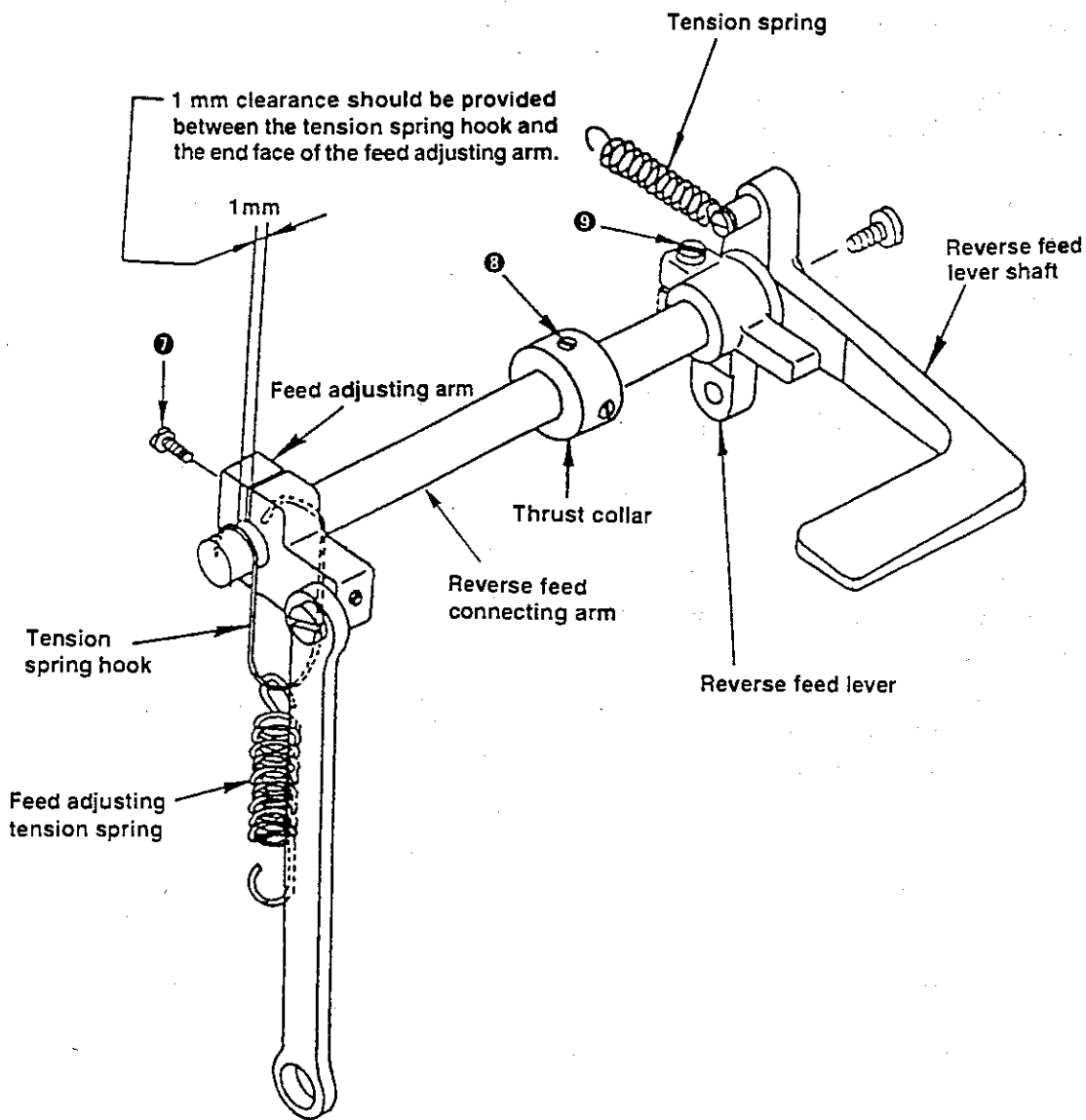


Fig. 5

Adjustment Procedures	Results of Improper Adjustment
<p>10. Loosen clamping screw ⑦ in the feed adjusting arm.</p> <p>11. Loosen screw ⑧ in the thrust collar.</p> <p>12. Loosen clamping screw ⑨ in the reverse feed connecting arm.</p> <p>13. Set stitch dial to the maximum value. Then remove the side plate on the front face of the sewing machine.</p> <p>14. Remove the tension spring of the reverse feed lever. Draw out the reverse feed lever shaft to the position where the timing belt can be removed. Now, remove the tension spring hook, the feed adjusting tension spring and the feed adjusting arm.</p> <p>15. Replace the timing belt with a new one, and put it on the upper sprocket.</p> <p>16. Put the reverse feed lever shaft inside the periphery of the timing belt. Attach the tension spring hook and the feed adjusting arm on the reverse feed lever shaft.</p> <p>17. Fit the reverse feed lever shaft in the shaft hole in the machine arm. Tighten screw ⑧ in the thrust collar.</p> <p>18. Tighten clamping screw ⑦ in the feed adjusting arm. At this time, fluctuate the feed adjusting arm to the right and left until the feed adjusting arm is placed almost at the center of the play, and tighten the clamping screw.</p> <p>(Caution) Tighten the clamping screw with a tightening torque of 40 to 50 kgf.cm.</p> <p>19. Put the feed adjusting arm tension spring on the spring hook and the feed adjusting eccentric pin.</p> <p>20. Tighten clamping screw ⑨ in the reverse feed connecting arm, and attach the side plate on the front face of the machine.</p> <p>21. Attach the tension spring of the reverse feed lever in place.</p>	<p>Fit a screwdriver from the side plate side.</p> <p>Fit a screwdriver from the side plate side and from the under surface of the bed.</p> <p>17' Tighten the screw in the thrust collar while eliminating a thrust play at the reverse feed lever shaft.</p> <p>18' If the feed adjusting arm is not correctly positioned, the feed connecting rod may fail to operate normally, the feed adjusting arm may interfere with the inner wall of the arm and the feed adjusting arm may be pushed against the side face of the feed crank stud. In this case, the reverse feed lever may not be lifted/lowered smoothly.</p> <p>19' Set stitch dial to the maximum value on the scale. Now, tighten clamping screw ⑨ so that a clearance of 0.5 to 1.5 mm is provided between the reverse feed lever and the the stopper when the reverse feed lever is slightly pushed down. (Refer to "Position of the reverse feed connecting arm" on page 31 for detail.)</p>

Standard Adjustment

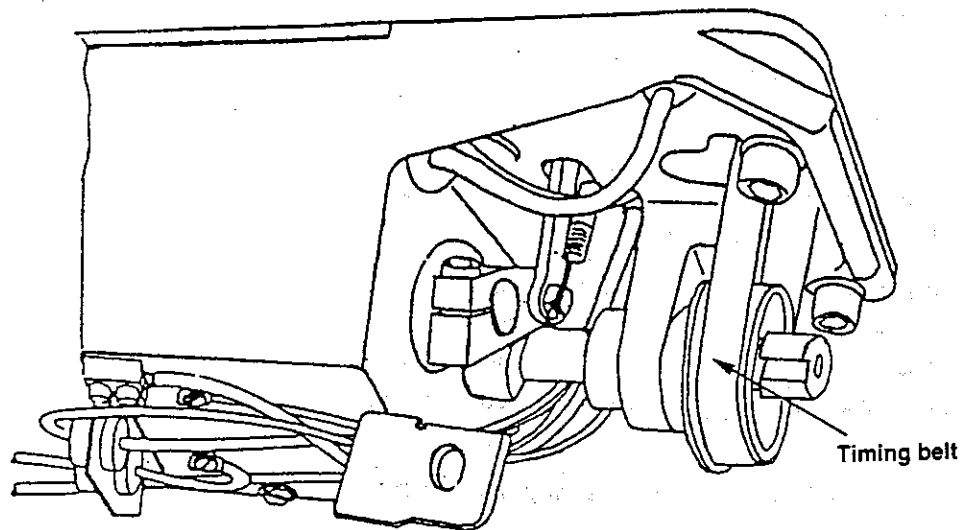


Fig. 6

Put the timing belt on the lower sprocket taking care to provide the correct timing between the needle and the hook.

After the timing belt has been properly set on the machine, check the "timing between the needle and the hook", "feed rock timing", "feed driving timing" and "height of the feed dog".

Adjustment Procedures	Results of Improper Adjustment
<p>22. Put the timing belt on the lower sprocket. At this time, take care not to change the needle-to-hook timing from the correct timing. (Fig. 6)</p> <p>23. Check the timing between the needle and the hook.</p> <p>24. Check the feed rock timing.</p> <p>25. Check the feed driving timing.</p> <p>26. Check the height of the feed dog.</p> <p>27. Tighten the screw while pressing the handwheel against the main shaft bearing.</p>	<p>Refer to "Timing between the needle and the hook" on page 15.</p> <p>Refer to "Feed rock timing" on page 19.</p> <p>Refer to "Feed driving timing" on page 19.</p> <p>Refer to "Height of feed dog" on page 23.</p>

6. HOW TO CHANGE FROM 1-NEEDLE TO 2-NEEDLE SPECIFICATION

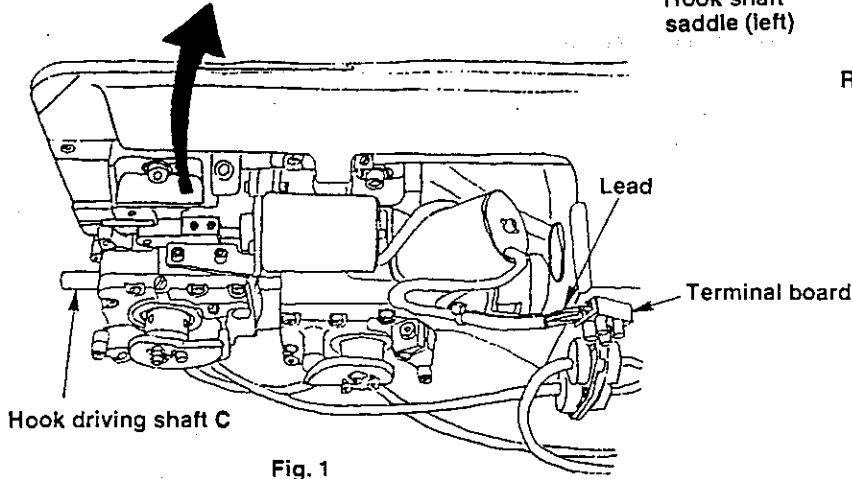
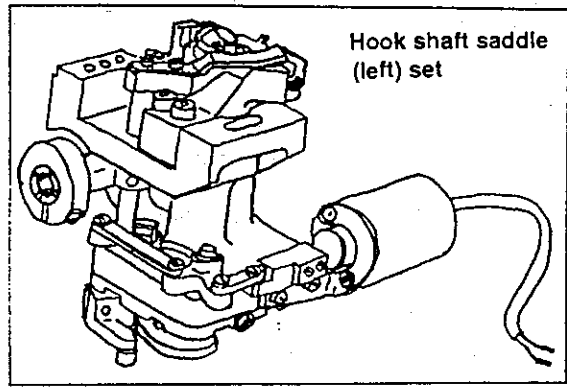


Fig. 1

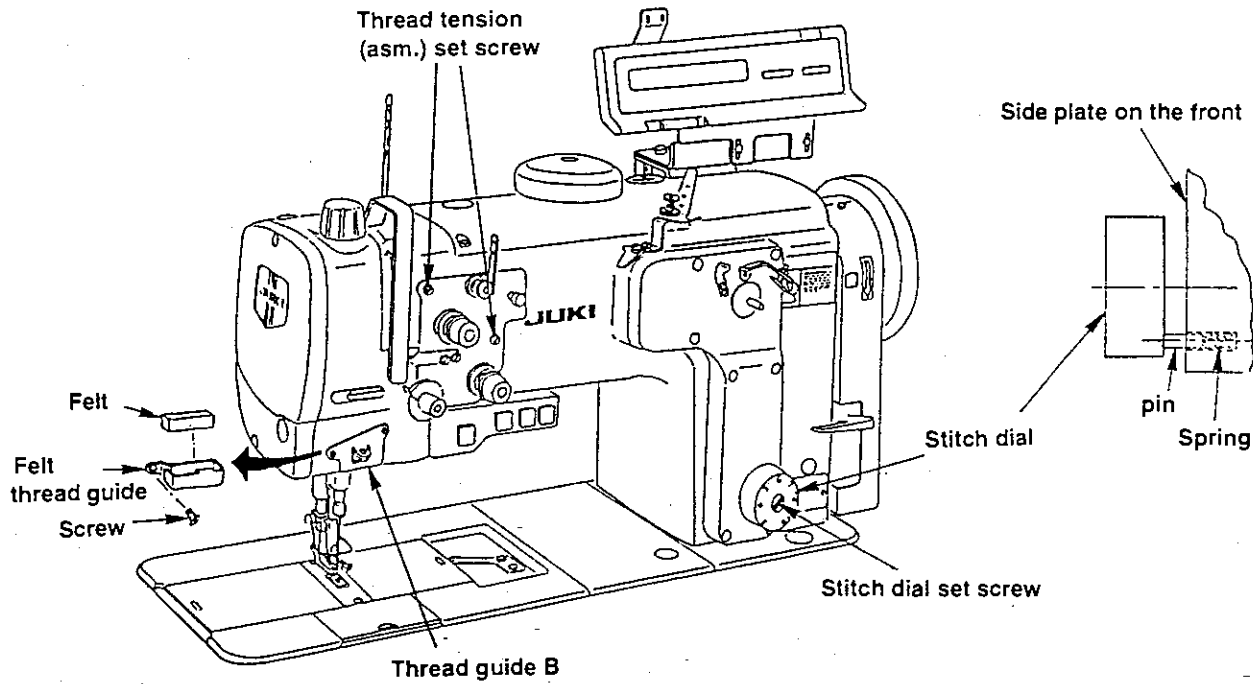
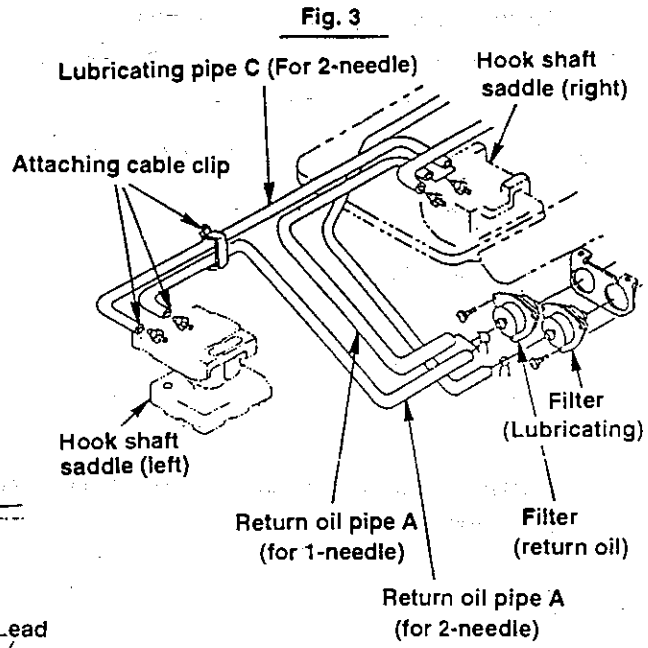


Fig. 2

1. Remove the slide plates, (right) and (left), and the needle. Then tilt the machine head.
2. Loosen the screw in the hook driving shaft set collar.
3. Loosen the screws (2 pcs.) in the hook driving shaft coupling, and pull out the hook driving shaft B.
4. Remove the throat plate, feed dog, presser foot (asm.) and walking foot (asm.)
5. Temporarily fix the hook shaft saddle (left) on the bed. To attach the hook shaft saddle (left), screws (2 pcs.) and washers (2 pcs.) are necessary, but the eccentric pin is not necessary. (Fig. 1)
6. Loosen the screws (2 pcs.) to the extent that the hook shaft saddle (right) moves to the right and left.
7. Attach the feed dog and the throat plate both for the 2-needle.
8. Remove the face plate, presser adjusting screw and thread take-up lever cover, and loosen the screw in the needle bar connecting stud to pull out the needle bar. (Refer to page 11.)
9. Temporarily attach the needle bar for 2-needle. (Refer to page 11.)
10. Attach the needle clamp (asm.). (Refer to page 57.)
11. Attach the hook driving shaft coupling (left) through the hook driving shaft C. (Refer to page 13.)
12. Attach the needle and adjust "Height of the needle bar", "Clearance between the needle and the blade point of hook", "Timing between the needle and the hook" and "Clearance between the throat plate and the bobbin case stopper". The way of adjustment for the left and right needles is the same. (Refer to pages 11 to 18.)
13. Remove the return oil pipe A (for 1-needle), and connect the lubricating pipe C (for 2-needle) from the pipe joint located on the upper side of the hook shaft saddle (right) to the pipe joint located on the lower side of the hook shaft saddle (left). Then, connect the pipe (for 2-needle) from the pipe joint located on the lower side of the hook shaft saddle (left) to the filter (for return oil). Attach the cable clips to the respective pipe joints to fix the pipes. (Fig. 3)
14. Attach the leads for the right and left thread trimmer solenoids. At this time, be sure to put two leads in one hole of the terminal board. (Fig. 1)
15. Adjust the right/left of "Thread trimmer" and "Opener". (Refer to pages 35 to 43.)
16. Replace the presser adjusting spring with a new one for 2-needle. (Refer to page 59.)
17. Loosen the thread tension (asm.) setscrews (2 pcs.)
18. Set the stitch dial to "0" on the scale. In this state, loosen the stitch dial screw, and replace the stitch dial with a stitch dial for 2-needle. At this time, check that the stitch dial pin and spring are placed in position. (Fig. 2)
19. Remove the thread guide B, and attach the felt thread guide and felt. At this time, the set screw should be replaced as well. (Fig. 2)
20. Attach the face plate, the presser adjusting screw, the thread take-up lever cover, and the slide plates, (left) and (right).

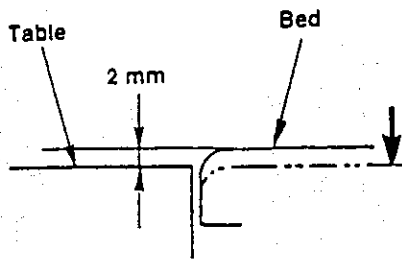
● List of the changing parts

When changing from 1-needle to 2-needle specification, perform the changing work according to the unit as the changing unit part No. has been set.

List of changing unit

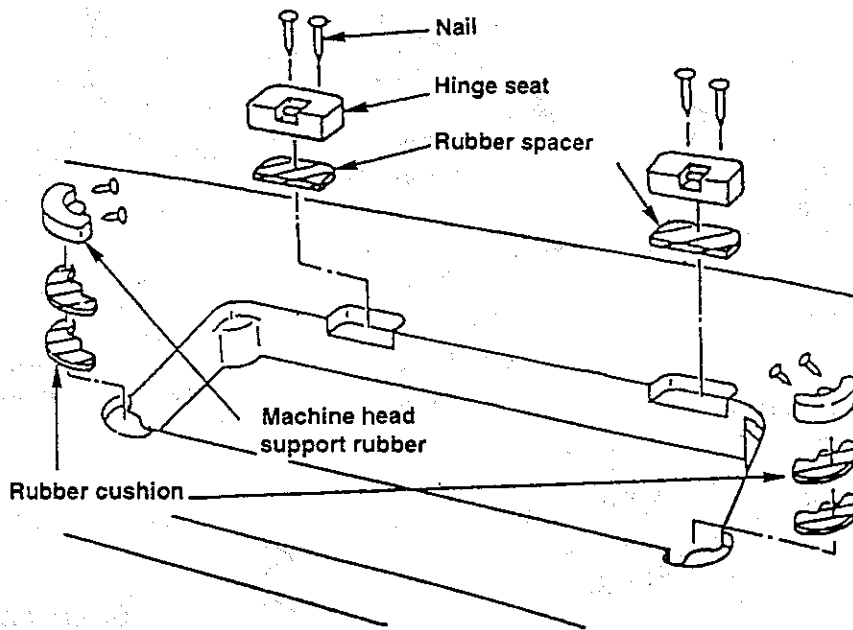
No.	Part No.	Description	Q'ty	Details of set
1	10771772	Changing unit	1	
2	10771764	Hook shaft base (left) set		1
3	10771756	Hook shaft base (left) (asm.)		(1)
4	10726552	Counter knife base (asm.)		(1)
5	SM6052502TP	Counter knife base (asm.) setscrew		(2)
6	WP0520656SA	Counter knife base (asm.) setscrew washer		(2)
7	10726800	Moving knife shaft		(1)
8	10726305	Moving knife		(1)
9	SM6030802TP	Moving knife set screw		(2)
10	WP0320501SC	Moving knife setscrew washer		(2)
11	B2311019000	Moving knife shaft spring		(1)
12	10772804	Thread trimmer solenoid		(1)
13	10772200	Thread trimmer solenoid installing plate (left)		(1)
14	SM6040602TP	Thread trimmer solenoid installing screw		(2)
15	SM6040602TP	Thread trimmer solenoid installing plate setscrew		(2)
16	10772101	Thread trimmer solenoid arm (left)		(1)
17	SM8050602TP	Thread trimmer solenoid arm (left) setscrew		(2)
18	10771806	Moving knife driving arm C		(1)
19	10772507	Moving knife driving arm E		(1)
20	10771905	Moving knife driving link (A)		(1)
21	10772002	Moving knife driving link (B)		(1)
22	SM6041202TP	Moving knife driving arm C clamping screw		(1)
23	SD0500301SP	Moving knife driving link (A) hinge screw		(2)
24	SD0500301SP	Moving knife driving link (B) hinge screw		(2)
25	CS0790731SH	Moving knife shaft thrust plate		(1)
26	SS8110422TP	Moving knife shaft thrust plate setscrew		(2)
27	10728160	Moving knife driving arm A joint		(1)
28	10727709	Thread trimming cam		(1)
29	SM6041202TP	Thread trimming cam setscrew		(3)
30	10722551	Hook (asm.)		(1)
31	10724607	Hook driving shaft set collar		(1)
32	SM6051402TP	Hook driving shaft set collar setscrew		(1)
33	SM6062002TP	Hook shaft base setscrew		2
34	WP0641601SD	Hook shaft base setscrew washer		2
35	10772705	Hook driving shaft C		1
36	10773364	Thread tension (asm.)		1
37	22603609	Felt thread guide		1
38	22603708	Felt		1
39	SS2090710SP	Felt thread guide setscrew		1
40	10771459	Stitch dial (asm.)		1
41	10717007	Presser adjusting spring		1
42	10771103	Needle bar		1
43	SM6030502TP	Needle clamp screw		1
44	BT0600402EA	Hook shaft base lubricating pipe C		0.18 m
45	BT0500300EO	Hook shaft base return oil pipe A		0.26 m
46	EA9500B0100	Cable clip		3
47	10777407	Hexagon wrench 2.5 mm		1

7. ADJUSTING THE HEIGHT OF THE BED



When the sewing machine head is installed on the sewing machine table in the standard state, the top surface of the sewing machine bed is 2 mm higher than the top surface of the table as illustrated in the figure on the left.

If you want to use the sewing machine with the bed lowered as shown by the arrow, remove rubber spacers (2 pcs.), rubber cushions (4 pcs.) shown with oblique lines and attach the hinge seat and the machine head support rubber pieces in place. Then set the machine head on the table.

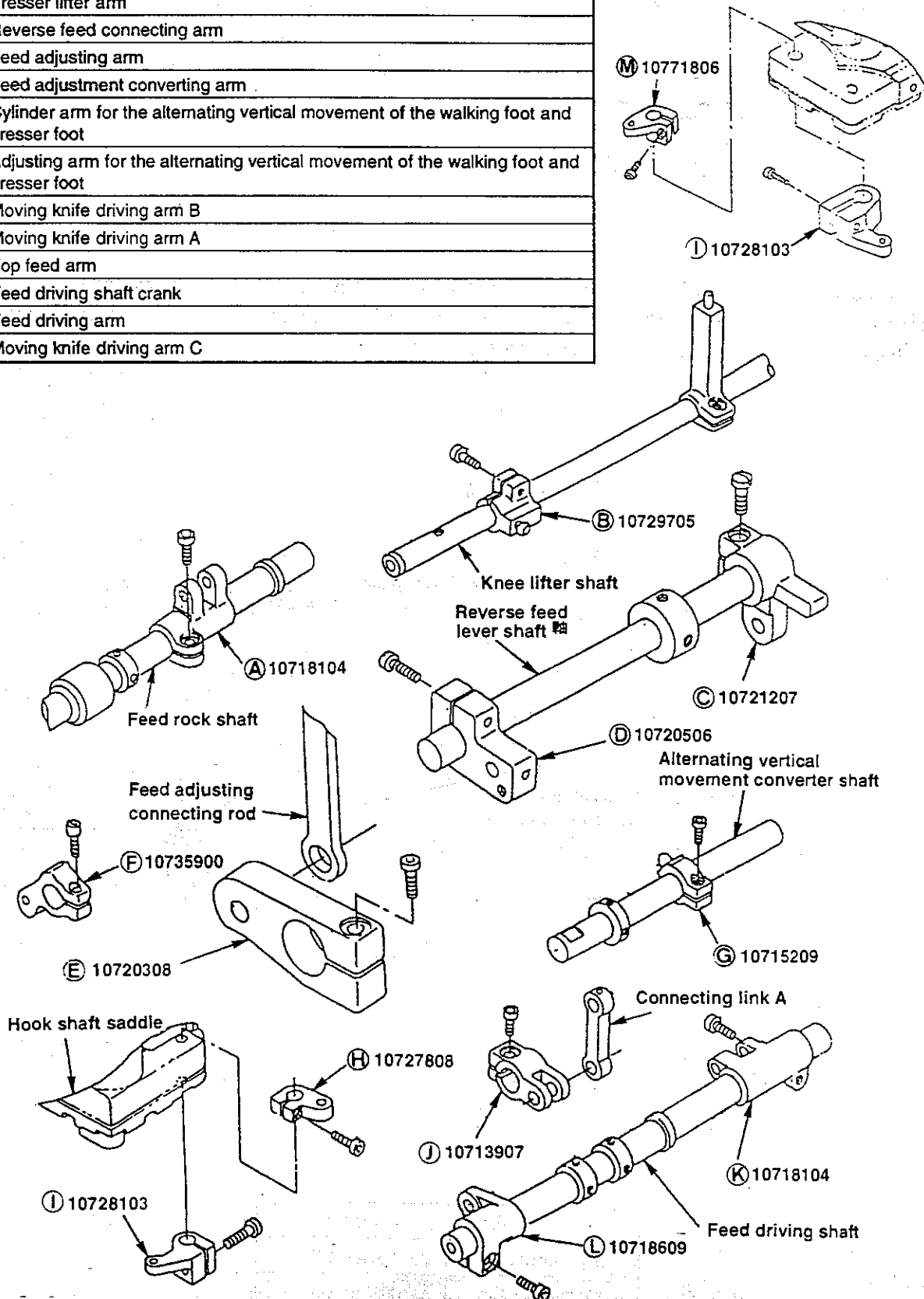


Name of part	Part No.
Rubber spacer	10742005
Rubber cushion	10740900

8. PARTS TO BE CAREFULLY TIGHTENED

The following parts will break if they are excessively tightened. So, carefully tighten the screws in the respective parts.

Ⓐ	Feed rock shaft crank
Ⓑ	Presser lifter arm
Ⓒ	Reverse feed connecting arm
Ⓓ	Feed adjusting arm
Ⓔ	Feed adjustment converting arm
Ⓕ	Cylinder arm for the alternating vertical movement of the walking foot and presser foot
Ⓖ	Adjusting arm for the alternating vertical movement of the walking foot and presser foot
Ⓗ	Moving knife driving arm B
Ⓘ	Moving knife driving arm A
Ⓝ	Top feed arm
Ⓚ	Feed driving shaft crank
Ⓛ	Feed driving arm
Ⓜ	Moving knife driving arm C



9. PARTS TO BE FIXED WITH LOCK-TITE" PAINT

The following parts are fixed with "LOCK-TITE" paint.

If these parts are disassembled, remove residual paint thoroughly using paint thinner and assemble them applying "LOCK-TITE" after removing moisture from the surface.

If the screw which has been fixed with "LOCK-TITE" paint is too hard to loosen, it is advisable to warm it up using a torch lamp. This will make the screw easily come off.

No.	Description	Part No.	LOCK-TITE type No.
1	Hinge screw of moving knife driving link	SD0500481TP	LOCK-TITE #638
2	Hinge screw of cam roller shaft	SD0500721SP	LOCK-TITE #638
3	Screw in feed adjusting base	SS7110710SP	LOCK-TITE #638
4	Hinge screw of safety device spring and hinge screw of safety device claw	SD0640322TP	LOCK-TITE #242
5	Engaging section of feed adjusting arm and feed adjusting pin	10720506, 10721504	LOCK-TITE #638
6	Screw in feed adjusting pin	SS7110810SP	LOCK-TITE #638
7	Screw in top feed connecting link B support pin	SM8050602TP	LOCK-TITE #242
8	Screw in top feed converting unit support pin	SM8050602TP	LOCK-TITE #242
9	Screw in top feed converting unit shaft	SM8050602TP	LOCK-TITE #242
10	Hinge screw in reverse feed connecting arm	SD0800352SP	LOCK-TITE #638
11	Screw in hook driving shaft bearing holder	SS8080610SP	LOCK-TITE #242
12	Thread take-up crank pin	10524106	LOCK-TITE #638
13	Amount of alternating vertical movement of the walking foot and presser foot adjusting arm and converting unit arm pin	10715209, 10715308	LOCK-TITE #638
14	Hinge screw in variable speed variable resistor link	SD0550212TP	LOCK-TITE #638
15	Top cover and dial bush of alternating vertical movement of the walking foot and presser foot	10742609, 10715100	LOCK-TITE #638
16	Needle bar frame and needle bar frame driving shaft	10708402, 10708709	LOCK-TITE #638
17	Needle bar frame and the screw in roller guide base	10708469, SM6041012TP	LOCK-TITE #638
18	Feed adjusting arm and feed adjustment connecting rod pin	10720506, 10725307	LOCK-TITE #638
19	Tension release presser pin and tension release setscrew	10702702, 10702801	LOCK-TITE #242
20	Presser lifter arm and converter arm pin	10729705, 70715308	LOCK-TITE #638
21	Tension release arm and tension release arm pin	10729903, 10730000	LOCK-TITE #638
22	Alternating vertical movement stopper plate and hinge screw in the stopper plate	1071440, B3416552000	LOCK-TITE #638
23	Spring suspension bracket of alternating vertical movement shaft and hinge screw of the spring	10714905, 11007101	LOCK-TITE #638
24	Side plate on the front face and positioning pin of the side plate	10737005, 10704302	LOCK-TITE #638
25	Cylinder connecting screw and hinge screw of the cylinder connecting screw	10737013, SD0720331SP	LOCK-TITE #638
26	Hook shaft saddle lower plate and opener shaft oil seal	10724300, 10726107	LOCK-TITE #638
27	Hook driving shaft and screw in the gear of the hook driving shaft	10722304, SS2090710SP	LOCK-TITE #638
28	Hinge screw of moving knife driving link A and hinge screw of moving knife driving link B	SD0500301SP	LOCK-TITE #638
29	Opener arm shaft B	10770501	LOCK-TITE #242

10. MAINTENANCE PARTS LIST

Basic maintenance parts

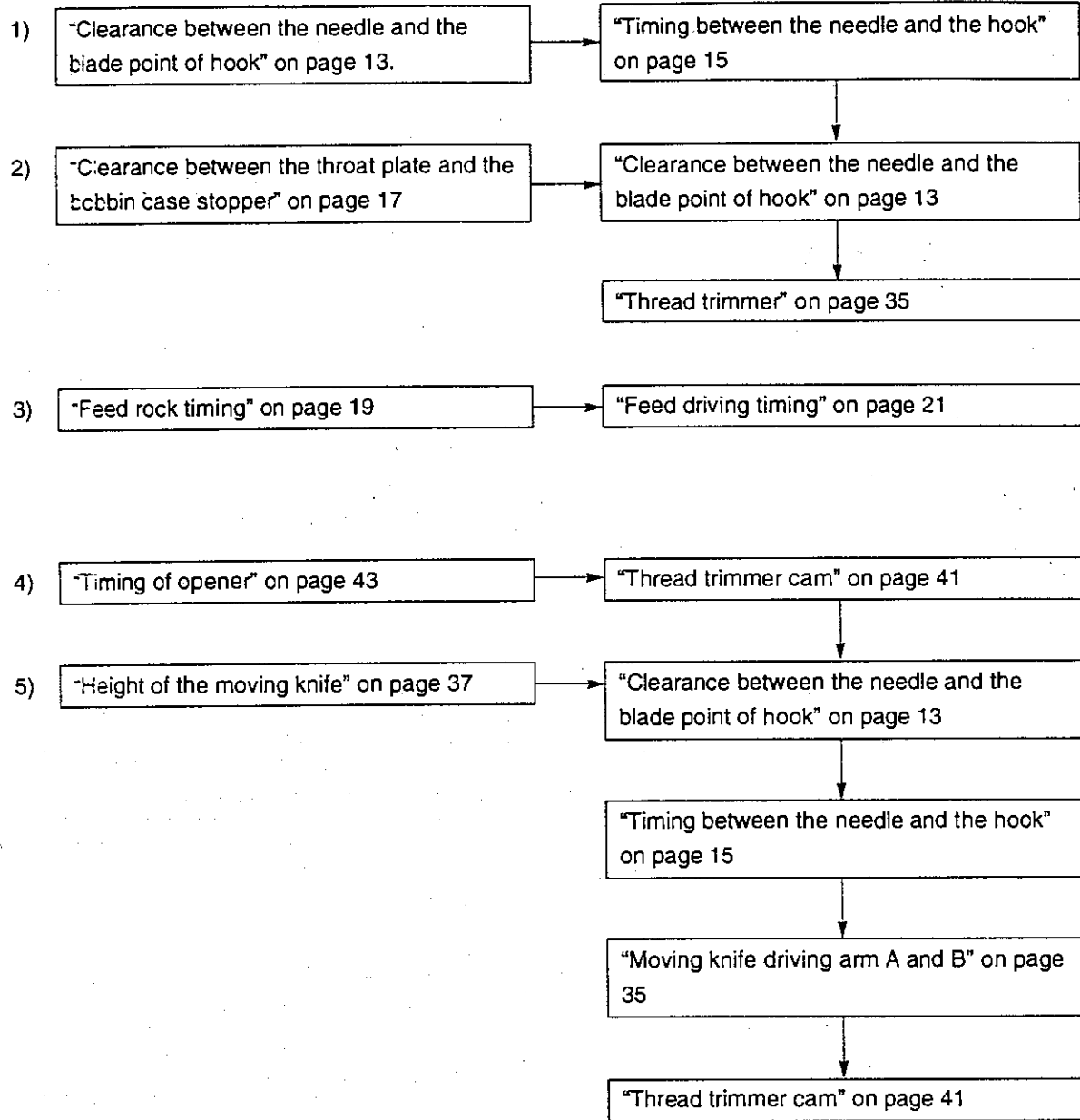
Part No.	Name of part	Remarks on installation
10722551	Needle Hook (asm.)	<ul style="list-style-type: none"> • Orientation of the needle Refer to "Timing between the needle and the hook" on page 15 and "Clearance between the needle and the blade point of hook" on page 13.
10723609	Bobbin	
10726305	Moving knife	<ul style="list-style-type: none"> • Refer to "Knife pressure" on page 35.
10726404	Counter knife	Refer to "Counter knife" on page 35.
10726906	Clamp spring	<ul style="list-style-type: none"> • Refer to "Clamp spring" on page 35.
10727303	Filter	<ul style="list-style-type: none"> • Refer to "Lubricating unit" on page 51.

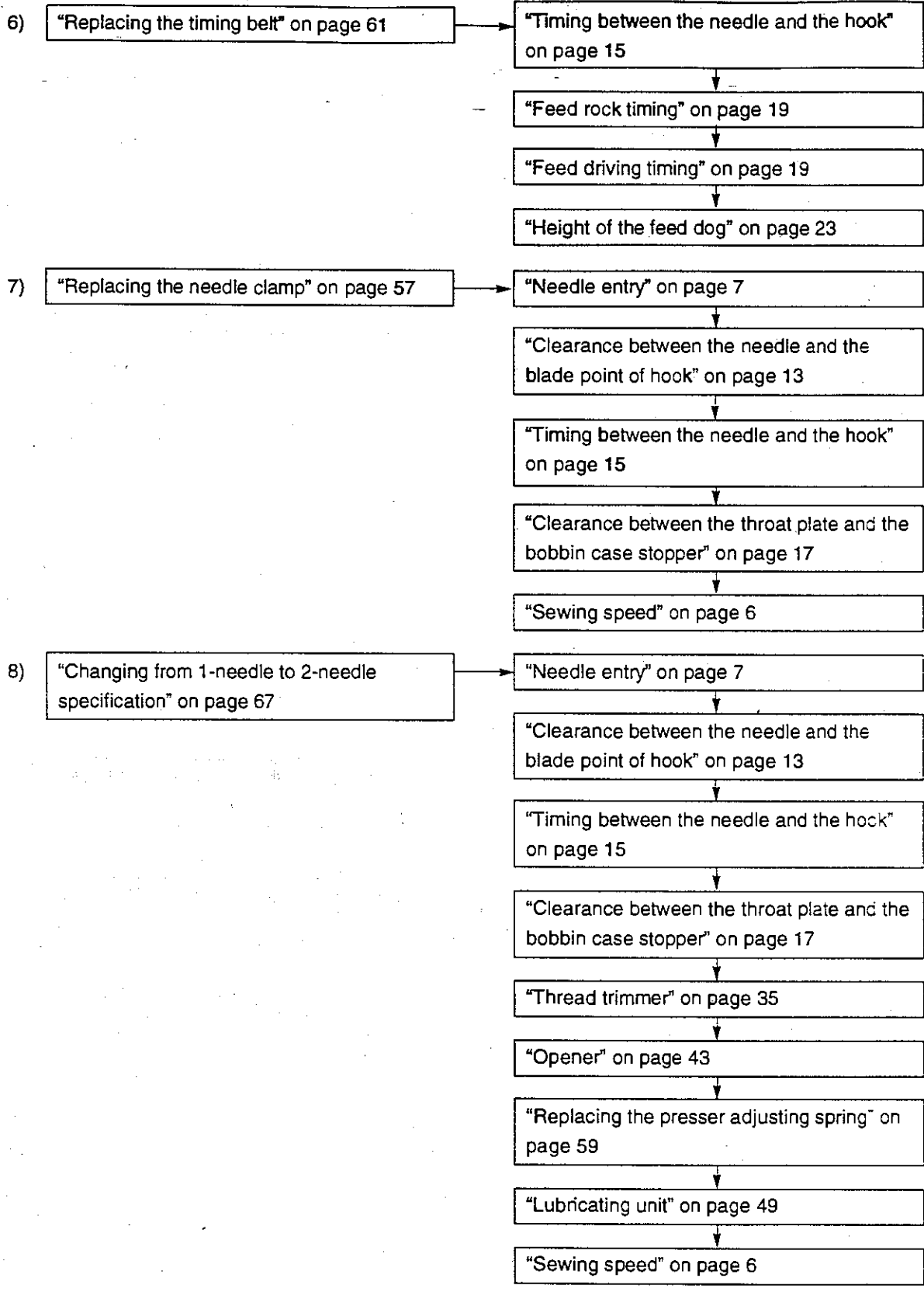
Maintenance parts to be rarely replaced

Part No.	Name of part	Remarks on installation
10702405	Remarks on installation	
10725000	Thread take-up spring Opener	<ul style="list-style-type: none"> • Refer to "Opener" on page 43.
10706703	Timing belt	<ul style="list-style-type: none"> • Refer to "Replacing the timing belt" on page 61.
B3212210000	Bobbin winder friction wheel	<ul style="list-style-type: none"> • Refer to "Adjusting the bobbin winder friction wheel" on page 34.
10744308	Stich dial	<ul style="list-style-type: none"> • Refer to "Zero (0) point of feed adjusting mechanism" on page 27.

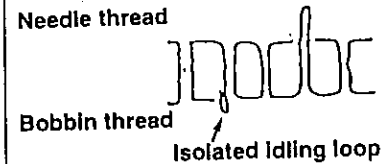
11. MECHANISM ADJUSTING PROCEDURE CHART AT A GLANCE

When you have adjusted items 1) through 8), adjust also the related components according to the arrows.

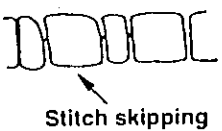




12. TROUBLES IN SEWING AND CORRECTIVE MEASURES

Troubles	Description	Cause (1)	Cause (2)	Corrective measures
1. Isolated idling loop (loose stitches and looped stitches)	<p>Knots of sewing threads are suddenly made on the right side or wrong side of the material as isolated idling loops.</p>  <p>Needle thread</p> <p>Bobbin thread</p> <p>Isolated idling loop</p>	Needle thread tension is too low.		Increase the needle thread tension.
		Tension of the thread take-up spring has been improperly adjusted.	Stroke of the thread take-up spring is too small.	Increase the stroke of the thread take-up spring sufficiently.
			The thread take-up spring is insufficiently tensed.	Increase the tension of the spring
		The amount of thread to be fed by thread take-up lever is excessive.		Move the take-up thread guide to the right to decrease the amount of thread to be fed by the thread take-up lever.
		Hook components are defective.	Clearance between the hook and the bobbin case stopper is too small.	Re-adjust the height of the hook. (Refer to page 17.)
			Hook is defective. (Scratches on the hook)	Replace the hook.
		Thread path is defective.	The thread path is not smooth on the surface.	Smoothen the thread path.
			The thread path has scratches on the surface.	Smoothen the thread path.
			The thread is caught in some part of the thread path.	Correct the thread path.
		Bobbin or bobbin case is defective.	The bobbin is engaged with the bobbin case in a defective way. The thread is caught in the defective engaging section.	Replace the bobbin or the bobbin case.
			Tension adjusting spring of the bobbin case is defective.	Replace the bobbin case.
			The bobbin runs idle in the bobbin case.	Increase the effective amount of the idling prevention spring.
		Bobbin is not wound properly.	Bobbin winder spring pressure is too high or too low.	Adjust the spring pressure to an adequate value.
		Needle slot in the feed dog is too small.		Use a feed dog with a larger needle slot.
		Needle used is too thin for the thread used		Replace the needle or the thread properly.
Defective needle.	Tip of the needle has burrs.	Replace the needle with a new one.		
	Installing direction of the needle is defective.	Re-install the needle properly.		

To the next page

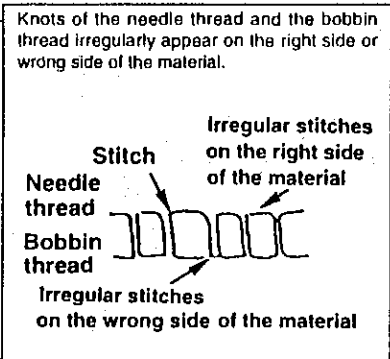
Troubles	Description	Cause (1)	Cause (2)	Corrective measures
		Feed timing is defective.	Feed timing is earlier than the standard timing.	Re-adjust the feed timing property. (Refer to pages 19 to 21.)
			Height of the feed dog differs from the standard value.	Re-adjust the height of the feed dog property. (Refer to page 23.)
		Hook timing is defective.	Hook timing is too early.	Retard the hook timing.
		Needle entry is defective.		Adjust so that the needle enters just the center of the needle slot in the feed dog.
		Bobbin case opening lever is defective.	Clearance between the hook and the bobbin case opening lever is too large.	Decrease the clearance properly.
2. Stitch skipping	Stitches are not completely finished since sewing threads are not made into stitches in part. Needle thread Bobbin thread  Stitch skipping	Needle is defective.	The needle is bent.	Replace the needle with a new one.
			The needle is installed with faced toward the wrong direction.	Re-install the needle in the correct manner.
			The tip of the needle is blunt.	Replace the needle with a new one.
			The needle is too thick or too thin for the thread used.	Replace the needle with a new one suited to the thread used.
		The hook components are defective.	Blade point of the hook is blunt or has worn out.	Correct the blade point of the hook, or replace the hook with a new one.
			The hook timing is defective.	Re-adjust the hook timing property.
			Height of the needle bar is defective.	Re-adjust the vertical position of the needle bar with respect to the blade point of the hook.
			Clearance between the blade point of the hook and the needle is not proper.	Minimize the clearance.
			Effective amount of the needle guard is improper.	Adjust the effective amount of the needle guard properly.
			Thread loops are not made with consistency.	Wind the thread around the needle.
		The needle thread tension is too high.		Decrease the needle thread tension.
		The number of revolutions is too high.		Decrease the number of revolutions.
		Height of the needle bar is not correct.	Height of the needle bar is not adjusted to provide the specified dimension.	Re-adjust the height of the needle bar properly.
		Pressor foot is defective.	The pressor foot fails to rest on the throat plate.	Height of the pressor foot is defective.
		Feed timing is defective. (The needle is bent.)		Re-adjust the feed timing property.

To the next page

Troubles	Description	Cause (1)	Cause (2)	Corrective measures
3. Needle thread breakage		Thread take-up spring has been improperly adjusted.	Stroke of the thread take-up spring is too high.	Decrease the stroke of the thread take-up spring sufficiently.
			The thread take-up spring is insufficiently tensed.	Decrease the tension of the spring.
		Needle entry is defective.	The needle comes in contact with the needle hole in the throat plate.	Adjust the needle entry properly.
		Pressure of the presser foot is defective.	Pressure of the presser foot is too low.	Increase the pressure of the presser foot.
		Thread path is defective.	The thread path is not smooth on the surface.	Smoothen the thread path.
			The thread path has scratches on the surface.	Smoothen the thread path.
			The thread is caught in some part of the thread path.	Correct the thread path.
		Needle thread tension is improper.	The needle thread tension is too high or too low.	Adjust the needle thread tension properly.
			The tension controlled by the tension controller No. 1 is too low.	Adjust the thread tension controlled by controller No. 1 to a value which prevents the thread from flapping.
		Needle is defective.	The needle is bent.	Replace the needle with a new one.
			The needle has scratches.	Replace the needle with a new one.
			The tip of the needle is blunt.	Replace the needle with a new one.
			The needle is installed with faced toward the wrong direction.	Re-install the needle in the correct manner.
			The needle is too thick or too thin for the thread used.	Replace the needle with a one suited to the thread used.
		The hook components are defective.	The thread path of the hook has scratches.	Smoothen the thread path.
			Blade point of the hook is blunt or has worn out.	Correct the blade point of the hook, or replace the hook with a new one.
			Clearance between the blade point of the hook and the bobbin case stopper is too small.	Widen the clearance to allow the thread to come off the hook smoothly. Re-adjust the hook timing properly.
			The hook timing is too early.	Adjust the clearance properly.
			The bobbin case opening lever provides an excessive clearance.	Adjust the clearance properly.
			The needle interferes with the blade point of the hook.	Adjust the needle-to-hook relation properly.

To the next page

Troubles	Description	Cause (1)	Cause (2)	Corrective measures		
		Thread take-up spring has been improperly adjusted.	Stroke of the thread take-up spring is too large or too small.	Re-adjust the stroke of the thread take-up spring sufficiently.		
			Tension of the thread take-up spring is too high or too low.	Re-adjust the tension of the spring properly.		
		The number of revolution is excessive.	The needle generates heat, resulting in thread breakage.	Decrease the number of revolution.		
				Wind the thread around the needle.		
		The installing position of the needle is too low.	The height of the needle bar is insufficient.	Raise the needle bar.		
			The needle is not attached in the needle bar in the correct manner.	Attach the needle in the needle bar properly.		
		The pressure of the presser foot is too low.	Stitches gather on the overlapped section of a material, resulting in thread breakage.	Increase the pressure of the presser foot.		
		Defective needle entry.	The needle interferes with the needle hole edge of the throat plate.	Re-adjust the needle entry point properly. (Refer to page 7.)		
		4. Irregular stitches	Knots of the needle thread and the bobbin thread irregularly appear on the right side or wrong side of the material.	The hook components are defective.	The amount of oil in the hook is insufficient.	Adjust so that a sufficient amount of oil is supplied to the hook. (Refer to page 49.)
					Dust gathers on the reverse side of the bobbin case.	Clean up the bobbin case.
Hook timing is too early.	Retard the hook timing.					
Hook is defective. (The hook has scratches or the thread path is defective, etc.)	Replace the hook with a new one and/or correct the thread path.					
The bobbin case opening lever provides an excessive clearance.	Decrease the clearance at the bobbin case opening lever.					
Clearance between the throat plate and the bobbin case stopper is too small.	re-adjust the height of the hook. (Refer to page 17.)					
The bobbin and the bobbin case are defective.	The bobbin is improperly engaged with the bobbin case. As a result, the bobbin thread cannot be fed smoothly.				Replace the bobbin or the bobbin case.	
	The bobbin has not been wound properly. As a result, the bobbin thread fails to be fed smoothly.				Adjust the tension of the bobbin winder or the position of the bobbin winder tension controller.	
	The bobbin runs idle in the bobbin case.				Increase the idling prevention spring pressure.	
	The tension adjusting spring of the bobbin case has been poorly adjusted.				Replace the bobbin case with a new one.	
	The bobbin is wound with an excessive amount of thread.	Re-wind the bobbin to the extent where the thread wound round the bobbin does not protrude the periphery of the bobbin.				



To the next page

Troubles	Description	Cause (1)	Cause (2)	Corrective measures
	The needle thread tension and bobbin thread tension are too low.			Increase the thread tension properly.
	Thread take-up spring has been improperly adjusted.	Stroke of the thread take-up spring is too large or too small.		Re-adjust the stroke of the thread take up spring sufficiently.
		Tension of the thread take-up spring is too high or too low.		Re-adjust the tension of the spring properly.
	Thread path is defective.	The thread path is not smooth on the surface.		Smoother the thread path.
		The thread path has scratches on the surface.		Smoother the thread path.
		The thread is caught in some part of the thread path.		Correctly thread the thread path.
	The length of thread fed by the thread take-up lever is excessive or insufficient.			Move the take-up thread guide to the right, and adjust the length of thread to be fed by the thread take-up lever appropriately.
	The feed timing is defective.			Adjust the feed timing properly. (Refer to pages 19 to 21.)

13. TROUBLES WITH FUNCTIONS OF THE THREAD TRIMMER AND CORRECTIVE MEASURES





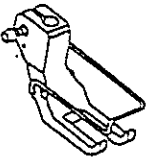

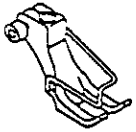
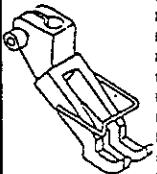

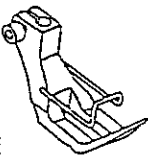




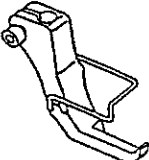

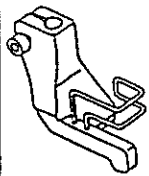
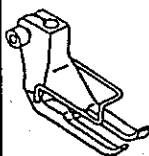
Troubles	Cause (1)	Cause (2)	Corrective measures
1. One or two stitches skip at the start of sewing.	1-1) Length of thread remaining at the needle tip after thread trimming is too short.	1)-A The needle thread path is defective in part, resulting in excessive needle thread tension at the time of thread trimming.	Remove the thread tangling round the thread guide rod and correct the position of the thread guide of the spool rest rod.
		1)-B Tension of the tension disk No. 1 is too high.	Turn the thread tension nut No. 1 counterclockwise to reduce the thread tension.
		1)-C The tension disk No. 2 fails to release the thread sufficiently at the time of thread trimming.	Re-adjust the timing of releasing the thread tension properly. Also, check that the tension releasing solenoid actuates while the sewing machine is being energized.
		1)-D The timing of thread trimming is too early.	Check the timing of thread trimming and adjust it properly referring to page 41.
		1)-E The moving knife and/or the hook has scratches.	Check the hook and the knife for scratches, and buff them up if any. If the knife and/or the hook is seriously damaged, replace them with a new one.
	1-2) The bobbin thread fails to be clamped.	2)-A The installing position of the clamp spring is wrong.	Adjust the installing position of the clamp spring referring to page 35.
		2)-B The clamp spring pressure is too low.	Adjust the clamp spring pressure or replace the clamp spring with a new one referring to page 35.
		2)-C The clamp spring has scratches, or has broken.	Replace the clamp spring with a new one.
		2)-D The needle thread on the material side removes the bobbin thread.	Increase the thread tension of the thread tension No. 1.
	1-3) The needle, walking foot and feed dog used are not suitable. Or the pressure of the walking foot is too low.	3)-A The needle is too thick.	It is advisable to use the thinnest needle as long as loose stitches do not occur.
		3)-B The needle slot in the feed dog is too large.	Replace the feed dog with one which has a smaller needle slot.
		3)-C The pressure of the presser foot is too low.	Increase the pressure of the presser foot, by turning the presser spring regulator clockwise, to the extent where the feed dog does not scratch the material.
		3)-D Walking foot fails to clamp the needle thread.	Replace the walking foot with one which does not have a slit. (Refer to page 84.)





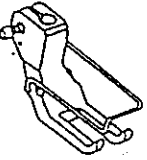
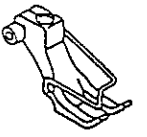
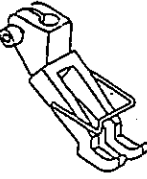
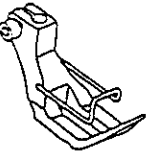
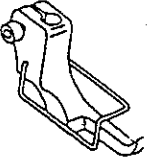
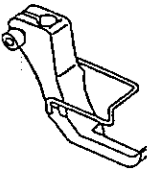
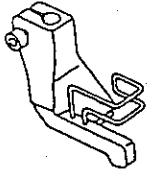


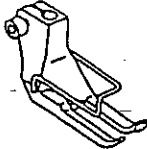
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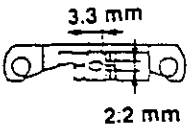
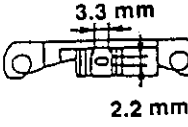
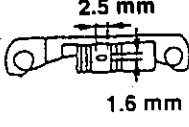
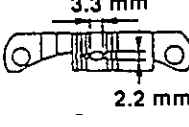
Troubles	Cause (1)	Cause (2)	Corrective measures	
2. The thread is likely to slip off the needle eyelet.	2-1) The needle thread slips off the needle eyelet immediately after thread trimming.	1)-A Length of thread trailing from the needle eyelet after thread trimming is too short.	Refer to "Cause 1-1)-A through E on page 42.	
	2-2) The needle thread slips off the needle eyelet at the start of sewing.	1)-A Length of thread trailing from the needle eyelet at the sewing start is too short.	Refer to "Cause 1-1)-A through E on page 42.	
3. thread trimming failure	3-1) The thread trimmer fails to cut the threads.	1)-A The moving knife blade fails to match the counter knife blade in height and direction.	Check the height of the moving knife and counter knife.	
		1)-B The moving knife blade and counter knife blade have worn out or have broken.	Replace the moving knife and the counter knife with new ones.	
		1)-C The counter knife fails to provide a sufficient pressure.	Re-adjust the knife pressure. (Refer to page 35.)	
	3-2) Single yarn of the thread remains untrimmed.	2)-A The moving knife blade and counter knife blade have worn out or have broken.	Replace the moving knife and the counter knife with new ones.	
		2)-B The moving knife blade fails to match the counter knife blade in height and direction.	Check the height of the moving knife and counter knife.	
		2)-C The timing of thread trimming is too late.	Check the cam for correct timing.	
		2)-D The counter knife fails to provide a sufficient pressure.	Re-adjust the knife pressure. (Refer to page 35.)	
	3-3) The moving knife stops during thread trimming.	3)-A Thread used is too thick.	Use the thread conforming to the specifications.	
		3)-B Clearance between the moving knife blade (outside) and the throat plate is too small.	Check the lateral position of the moving knife, and adjust it correctly.	
		3)-C The needle thread tension is too high.	Decrease the thread tension controlled by the tension controller No. 1.	
		3)-D The needle thread tension is too low.	Increase the thread tension controlled by the tension controller No. 1.	
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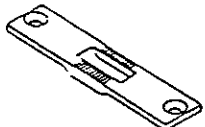
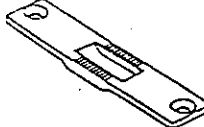
Troubles	Cause (1)	Cause (2)	Corrective measures
		3)-E The bobbin thread tension is too high.	Reduce the bobbin thread tension.
		3)-F The pressure of the counter knife is too high.	Adjust the position of the counter knife.
		3)-G The initial position of the moving knife is excessively forward.	Check the initial position of the moving knife, and adjust it properly.
		3)-H The thread trimming knives are not sharp enough.	Refer to "Cause 3-1) -2)" on pages 35 and 41.
	3-4) The thread trimmer fails to catch the needle thread.	4)-A The last stitch at the end of sewing skips.	Check the installing position of the needle and the hook timing, and adjust them properly.
		4)-B Timing of the thread trimmer cam is too early or too late.	Check the timing of thread trimmer cam, and adjust it properly.
		4)-C The top end of the moving knife has broken or has scratches.	Replace the moving knife with a new one.
	3-5) The thread trimmer fails to catch the bobbin thread.	5)-A Stroke of the moving knife is too small.	Check the initial position of the moving knife, and adjust it properly referring to page 34.
		5)-B Bobbin thread path is defective. (The thread slips off the bobbin thread guide of the bobbin case.)	Check the bobbin thread path.
		5)-C The top end of the moving knife has broken or has scratches.	Replace the moving knife with a new one.
		5)-D The position of the moving knife is too high or too low.	Check the moving knife for the correct height referring to pages 36 to 39.
	3-6) The thread trimmer fails to trim the needle thread and bobbin thread.	6)-A The moving knife blade fails to match the counter knife blade in height and direction.	Check the height of the moving knife and counter knife.
		6)-B The moving knife blade fails to match the counter knife blade in height and direction.	Replace the moving knife and the counter knife with new ones.
		6)-C The counter knife fails to provide a sufficient pressure.	Re-adjust the knife pressure. (Refer to page 35.)
		6)-D The moving knife fails to operate.	Check the installing position of the moving knife driving arm A, and adjust it correctly.
			Check the performance of the thread trimmer solenoid.
			Check the timing of the synchronizer, and adjust it correctly.

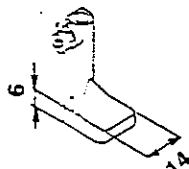
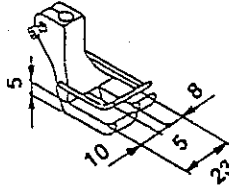
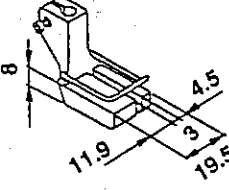
14. REPLACEABLE GAUGE TABLE FOR LU-2210N-7

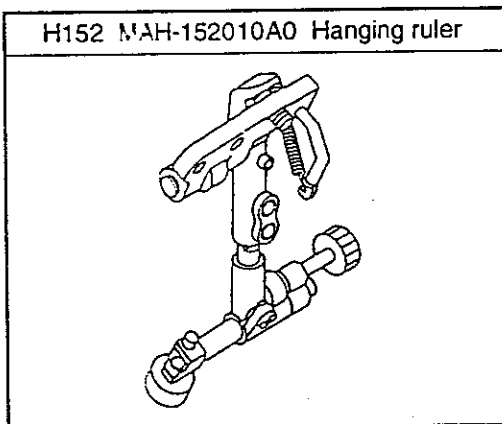
Walking foot					
		10711653	10711752	10711851	10711950
Presser foot					
	10712552	Standard 	—	—	—
	10758456	For overlapped sections of material * To be used both for flat and overlapped sections. The medium type between 10712552 and 10712651.	—	—	—
	10712651	For overlapped sections of material * To be used when the material is not fed smoothly on the overlapped sections. 	—	—	—
	10712750	For light-weight sponge * To be used when sewing resilient materials including sponge. 	For heavy-weight sponge * To be used when sewing more resilient materials. 	—	—
	10712859	—	—	Right-single-sided foot * To be used when sewing the edges of a material. 	—
	10712958	—	—	—	Right-single-sided foot * To be used when sewing the edges of a material. 
	ø3 10747350 ø4 10747459 ø5 10747558 ø6 10747657	—	—	—	—
	10713055	—	—	—	—

Walking foot					
		ø3 10745354 ø4 10745453 ø5 10745552 ø6 10745651	ø3 10746352 ø4 10746451 ø5 10746550 ø6 10746659	10712354 Without slit type * To be used when stitch skipping often occurs.	10712057
Presser foot					
	10712552	—	—	○	—
	10758456	—	—	○	—
	10712551	—	—	○	—
	10712750	—	—	—	—
	10712559	—	—	—	—
	10712958	—	—	—	—
 ø3 10747350 ø4 10747459 ø5 10747558 ø6 10747657	For piping * To be used for piping process in general.		For piping * The position of the needle with respect to the pipe can be adjusted.	Adjustable 	—
	10713055	—	—	—	Wide width type * To be used when a sewing product is not fed smoothly.

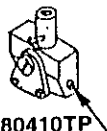

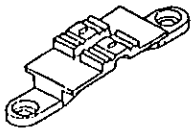
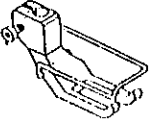



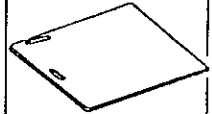


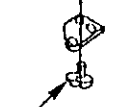
Feed dog			
			
10717106	10717205	10717304	10739001
Standard	With no groove To be used when the needle thread and the bobbin thread do not smoothly interface with each other at the start of sewing.	For thin threads	Throat plate

Throat plate	
	
10701704	10702009
Standard	Wide width type

For machining		
		
10712255	10748358	10713253
Walking foot for machining	Presser foot B for machining	Presser foot A for machining



15. GAUGE SET LIST FOR LU-2260N

Needle width		Thread guide	Food dog	Pressor foot (asm.)	Finger guard	Walking foot (asm.)	Throat plate	Slide plate (left)	Slide plate (right)	
		 SS8080410TP	 SS6060440TP							
		 SS8080410TP	 SS5060310SP				Max. Stich length = 6 mm			
(4)	10777555	10779007	10780005	10781557	10786903	10783058	10784502	10786309	10701803	
6	10777654	10779007	10780104	10781656	10786903	10783157	10784601	10786309	10701803	
8	10777753	10779007	10780203	10781755	10786903	10783256	10784700	10786309	10701803	
10	10777852	10779106	10780302	10781854	10787000	10783355	10784809	10786408	10786002	
12	10777951	10779106	10780401	10781953	10787000	10783454	10784908	10786408	10786002	
(14)	10778058	10779106	10780500	10782050	10787109	10783553	10785004	10786408	10786002	
(16)	10778157	10779106	10780609	10782159	10787109	10783652	10785103	10786408	10786002	
(18)	10778256	10779106	10780708	10782258	10787109	10783751	10785202	10786408	10786002	
20	10778355	B1403526000	10780807	10782357	10787208	10783850	10785301	10786507	10786101	
(22)	10778454	B1403526000	10780906	10782456	10787208	10783959	10785400	10786507	10786101	
(24)	10778553	B1403526000	10781003	10782555	10787208	10784056	10785509	10786507	10786101	
(30)	10778652	B1403526000	10781102	10782654	10787307	10784155	10785608	10786507	10786101	
(36)	10778751	B1403526000	10781201	10782753	10787406	10784254	10785707	10786606	10786200	

(Note) The sets including the needle width with parentheses () are specially made to order.

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