

**elna**  
**745/845**

# SERVICE MANUAL

## TABLE OF CONTENTS MODEL 745/845

- A. General directions and recommendations
  - B. Recommendations
  - C. Mechanical sewing disorders
  - D. Adjustment of the automatic tension unit
  - E. Position of program selection - display drum indicator and display window
  - F. Position of display drum indicator and upper looper shifting cam
  - G. Adjustment of the Chain looper tension dial
  - H. Gauge for the after - sales service
- 

- 1. Removing Machine Base and Back Cover
  - 2. Removing Front Cover and Mounting Covers
  - 3. Angular position of balance weights and position of eccentrics
  - 4. Height and alignment of cloth presser bar
  - 5. Height and orientation of needle bar in relation to the needle plate holes
  - 6. Height - clearance - angular position of lower looper
  - 7. Clearance of needle guards
  - 8. Timing of lower looper
  - 9. Angular position of upper looper
  - 10. Clearance and timing of upper looper to lower looper
  - 11. Chain looper : angular position - clearance - orbital timing - clearance of chain needles guards
  - 12. Chain looper thread take up rotary cam
  - 13. Height of feed dog
  - 14. Moving cutter and vertical feed timing
  - 15. Horizontal feed timing against chainstitch needle
  - 16. Differential feed
  - 17. Position of fixed cutter and cutting width dial setting
  - 18. Position of loopers threads take up lever
  - 19. Safety device - Side Cover and Front Flap
  - 20. Safety device - Presser foot and Needle Clamp Safety Lever
  - 21. Top Cover device(for Model 845)
- 

### ANNEX

- I Tools for setting SL/DF Dials
- II Setting positions of SL/DF Dials
- III Clearance between Feed Dog and Needle Plate
- IV Trouble shooting - Cover Hems
- V Cover Hem stitch formations

### Safety

For safety reasons, the sewing machine **must** be disconnected from the mains:

- Whenever the machine is left unattended
- Whenever preparing the machine for sewing
- Whenever servicing
- Whenever replacing mechanical or electrical parts or accessories

### Needles

Usually needles of the system 130/705 H may be used. However, in certain cases stitch quality may be improved by using type ELX 705 needles.

Choose needle size No.80 for sheer materials and No.90 for normal or thick materials.

### Threads

Choose a good quality polyester thread or blended thread.

### Lubrication

Besides the 2 oiling points marked in red, the machine is equipped with self-lubrication bearings and parts. Lubricate the machine as follows: when using it for the first time - if it has not been used for some time - when it has been intensively during 7 to 8 hours.



1. Never connect the machine to a different voltage than that marked on the specification plate.
2. For safety reasons, never perform any repairs on the power supply circuit without first removing the mains lead from the machine.
3. Never plug in or run the machine unless all the connections are correctly set.
4. When changing the light bulb, it is necessary to disconnect the mains lead.

First of all, please refer to the paragraph entitled "**maintenance**" in the instruction manual, especially when machine does not turn freely by turning the flywheel by hand. If necessary, check and adjust tightness of motor belt.

Given below are the most frequent disorders. In most cases, they can be remedied by checking the adjustments in the following order. However, before checking the adjustments, make sure that the threading is correct and that all the thread passages are okay.

### 1. Skipped overlock stitches

---

Check and adjust if necessary:

- Needle bent or with a dull point - replace needle
- Needle not set correctly - refer to "**changing the needle**" in the instruction manual
- Burrs on upper or lower looper - polish
- Burrs on stitch tongue - polish
- Excessive tension on the needle thread
- Height and orientation of needle bar
- Clearance between point of lower loopers and needle
- Clearance between upper and lower loopers
- Timing of upper and lower loopers against needle
- Feed timing

### 2. Skipped chainstitches - Cover hems

---

Check and adjust if necessary:

- Needle and chain looper thread tensions not balanced
- Needle bent or with a dull point - replace needle
- Needle not set correctly - refer to "**changing the needle**" in the instruction manual
- Burr on chain looper - replace or polish
- Dull blade edge on moving cutter - replace
- Chain looper needle clearance
- Chain needle guard clearance
- Angular position of chain looper
- Orbital timing of chain looper
- Chain thread take up lever timing
- Height and orientation of needle bar
- Needle plate spring plate bent
- Clearance and position between back of chain looper and needle L0

Note: For more information, see pages **ANNEX IV– V**.

### 3. Thread breakage

---

Before checking the adjustment, make sure of the good quality of the thread and the needle, the correctness of threading and the smoothness of all the thread passages. Quite often, an injury to thread passage is the cause of thread breakage. If all these points are in order, check the following:

- Dull point of needle or bent needle - replace.
- Dull or burred point of looper - replace.
- Scratch or injury on stitch tongue of needle plate - replace.
- Too strong thread tension.
- Unsmooth or injured edge of needle hole on needle plate (thread breakage of chain stitches)  
- replace.

### 4. Irregular stitches

---

- Inadequate setting of thread tensions - re-adjust.
- Unsmooth thread passage - polish.
- Height of feed dog.
- Position of looper thread take up levers and thread guides.
- Dull blade edge of moving cutter - replace.
- Injury on needle plate face or presser foot sole - replace.
- Incorrect alignment of pulled-up thread antenna with spool pins - reset it at correct position to align to spool pins.

### 5. Breakage of needle

---

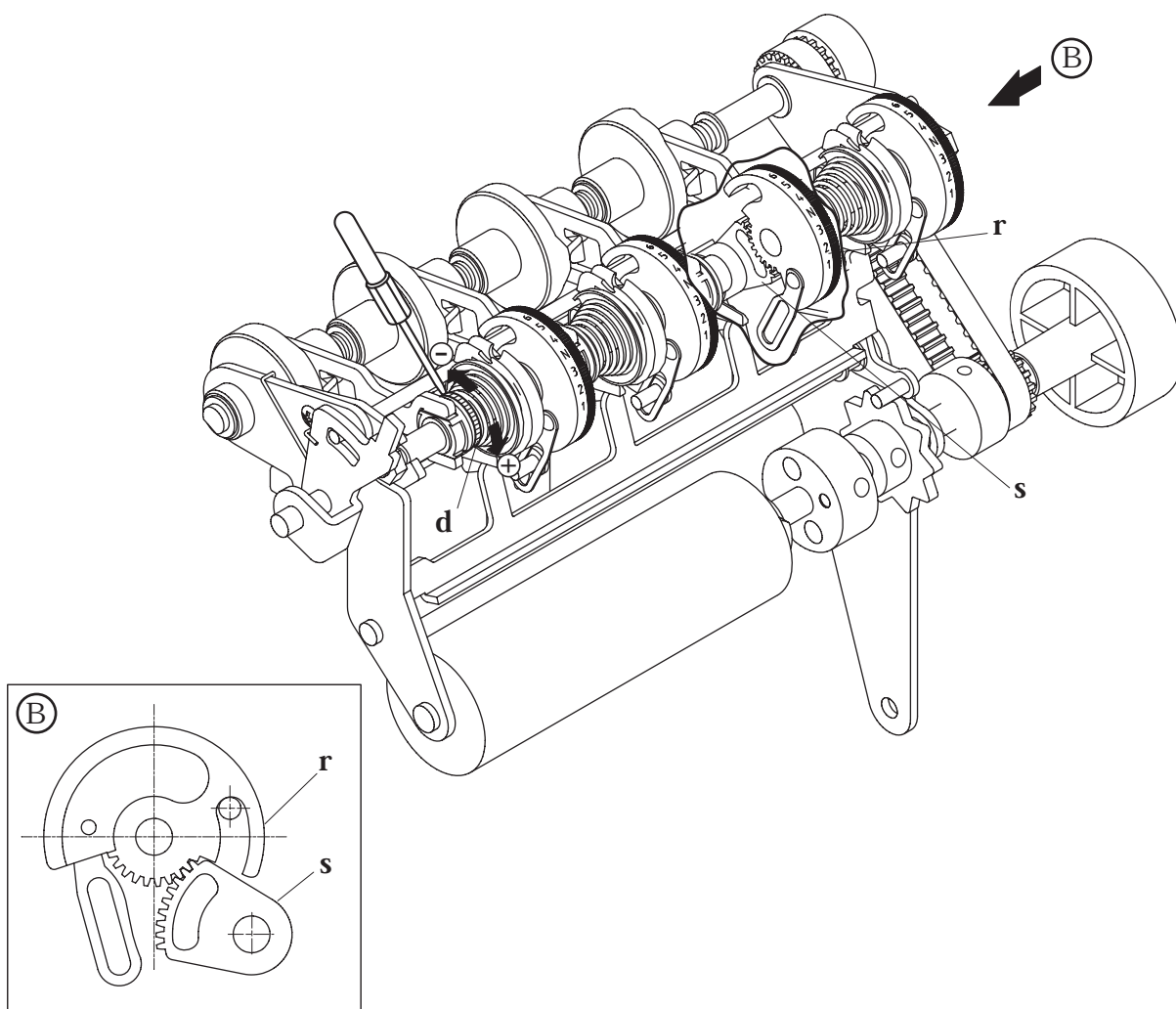
Check and adjust if necessary

- Dull point of needle or bent needle - replace.
- Incorrect placement of needle - refer to "changing the needle" in the **instruction manual**.
- Clearance of needle guard and (chain needle).
- Incorrect alignment of needle holes of presser foot and needle plate.
- Clearance from needle to lower looper.
- Clearance between the upper and lower loopers.
- Feed timing.
- Horizontal feed timing against chain-stitch needle.

1. Remove: Mains lead - Front cover.
2. Select sewing program 1 "**SAFETY 4 THREAD**"
3. Make sure that all the tensiondials are set at "**N**" position
4. Use a 50 (3ply) cotton thread to check the tension values with the tension gauge.
  - Blue tension : 50 to 60 gr.
  - Red tension : 35 to 45 gr.
  - Yellow tension : 10 to 15 gr.
  - Green tension : 20 to 25 gr.
5. If not, adjust the tension(s) with the fine tuning dial "**d**". The tension can be adjusted by using small minus screw driver.
6. If one of the tension dial "**r**" is not aligned with the other dials when tensions are set at "**N**" position, then proceed as follow:
 

Slide and hold the dial to the left side, make sure that the pinion on the dial "**r**" is disconnected to the drive gear "**s**".

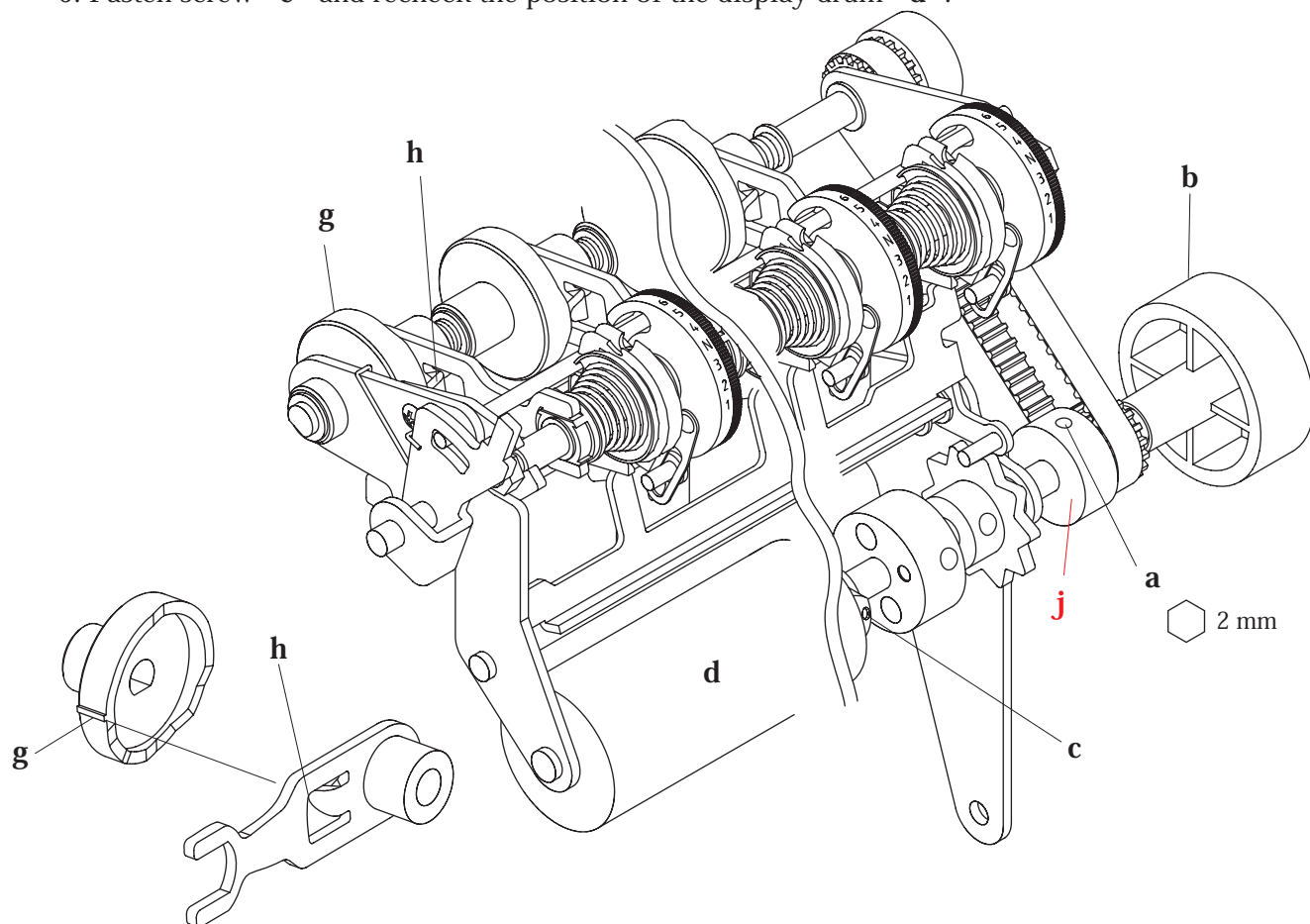
Rotate dial "**r**" towards the back (maximum position), and set drive gear "**s**" in its initial position. See figure **(B)**. Then slide pinion dial "**r**" back into drive gear "**s**" and recheck the position.



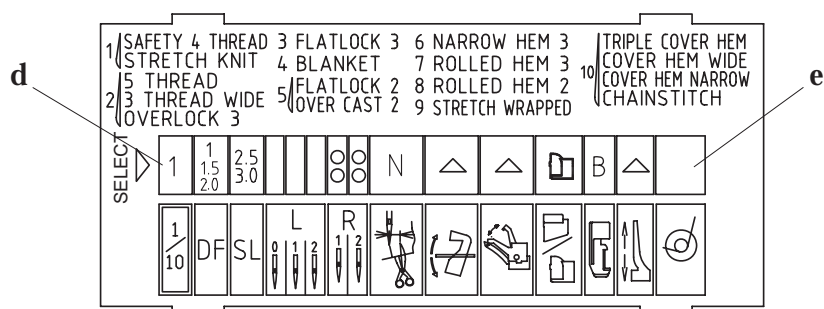
## POSITION OF PROGRAM SELECTION-DISPLAY DRUM INDICATOR AND DISPLAY WINDOW

E

1. Remove: Mains lead - Front cover.
2. Select sewing program 1 "SAFETY 4 THREAD"
3. Check and make sure that the lever "h" is facing the notch of tension cam "g" for blue needle thread.
4. If not, loosen screw "a" and turn DT cam pulley "j" forward or backward until the lever "h" is facing the notch of tension cam "g". Then, tighten screw "a".
5. If the position of the display drum indicator "d" is not aligned with the display window "e", then loosen screw "c" and adjust the position of drum.
6. Fasten screw "c" and recheck the position of the display drum "d".



Note: In order to check the alignment of the display drum indicator "d" and the display window "e", it is necessary to set the front cover onto the machine.

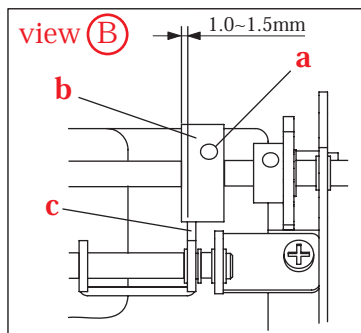
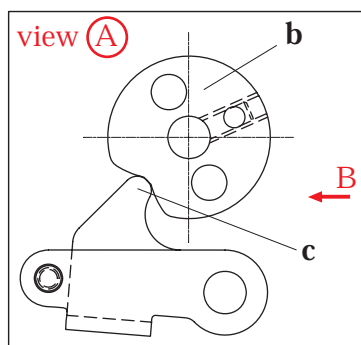
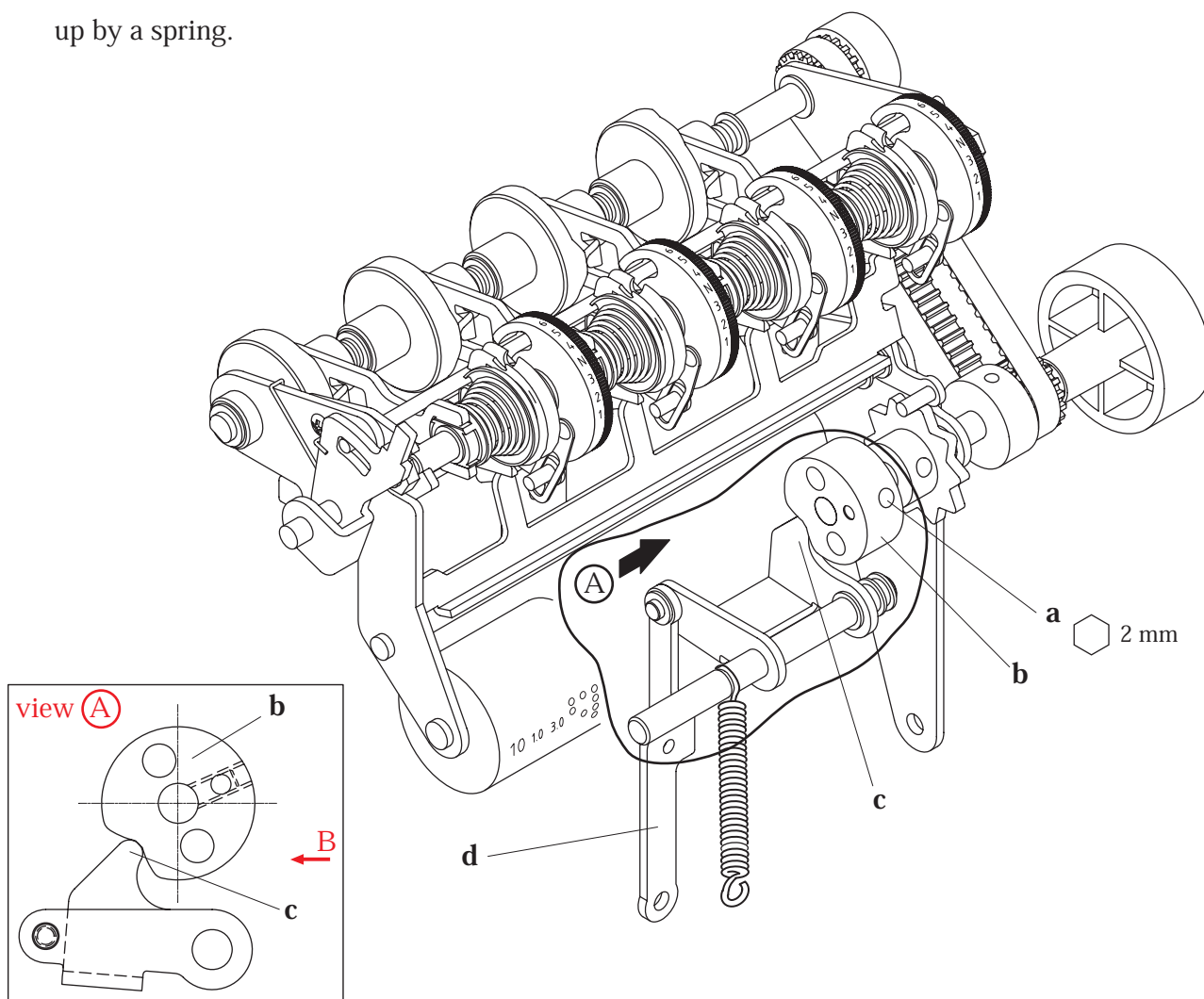




## POSITION OF THE DISPLAY DRUM INDICATOR & UPPER LOOPER SHIFTING CAM

F

1. Remove: Mains lead - Front cover
2. Make sure if tension cams and levers are set in proper positions when selecting sewing program 1 "**SAFETY 4 THREAD**". (See and Check Page E).
3. Select sewing program 10 "**COVER HEM/CHAINSTITCH**".
4. Bring the needle bar to its lowest position by turning a handwheel toward you.
5. Loosen screw "**a**" and turn the upper looper shifting cam "**b**" until the hook of the looper follower "**c**" falls into the V-shaped hollow of the cam "**b**" (See View (A)). Check if a cam "**b**" and looper follower "**c**" are positioned as shown in View (B).
6. Fasten screw "**a**" and recheck if the upper looper shifting connector "**d**" is pulled up by a spring.



1 SAFETY 4 THREAD	3 FLATLOCK 3	6 NARROW HEM 3	10 TRIPLE COVER HEM COVER HEM WIDE COVER HEM NARROW CHAINSTITCH
5 STRETCH KNIT	4 BLANKET	7 ROLLED HEM 3	
2 3 THREAD	5 FLATLOCK 2	8 ROLLED HEM 2	
3 THREAD WIDE OVERLOCK 3	5 OVER CAST 2	9 STRETCH WRAPPED	
SELECT ▷			
10	1.0	3.0	1 ▽ NA □ A △ N
1/10	DF	SL	L R 1 2 1 2
			8 7 6 5 4 3 2 1

## THE ADJUSTMENT OF THE CHAIN LOOPER TENSION DIAL

G

1. Remove: Mains lead - Front cover
2. Open Front Flap.
3. Peel a label "a" from the surface of screw "b" with a needle or a tool with sharp point and remove a tension dial "c" (brown) by loosening a screw "b".
4. Use a 50 (3 ply) cotton thread to check the tension value with the tension gauge.

Brown tension : 15 to 20 gr.

5. If not, adjust the tension value with the tension adjustment plate screw "d".  
Turn the screw "d" by one notch clockwise to increase or in reverse to decrease tension value.
6. Make sure if a notch of the screw "d" faces against an indicator "p". (See Fig. 1)
7. Set back a tension dial "c" with the mark "N" above into a shaft "e". (See Fig. 2)
8. Fasten a screw "b" and put back a label "a" with glue.

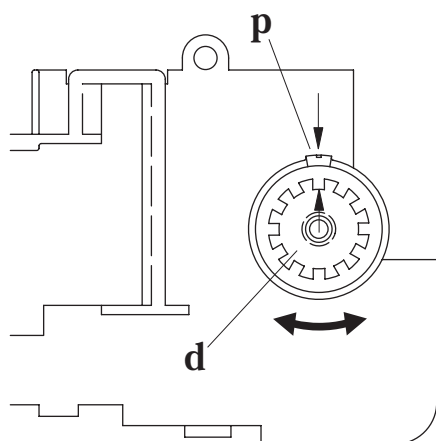
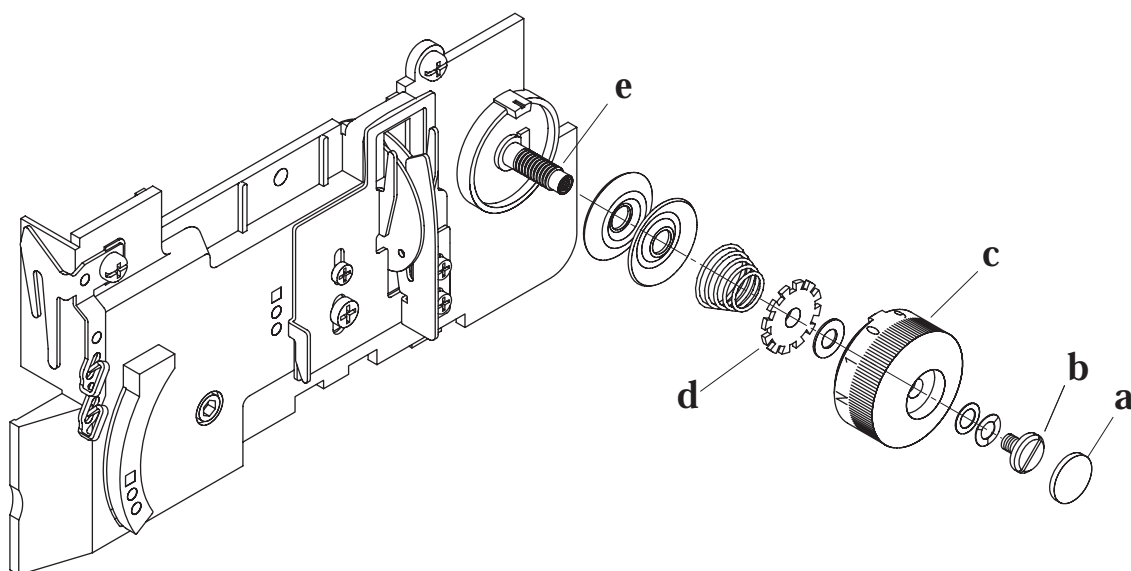


Fig.1

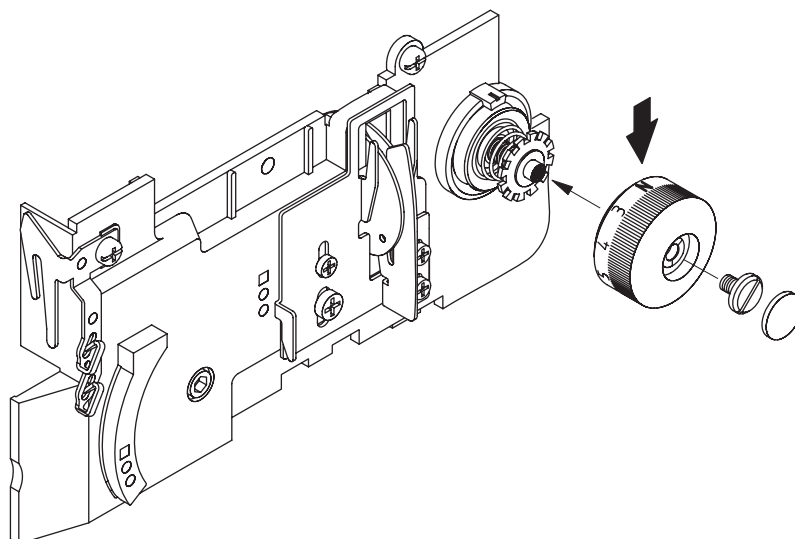
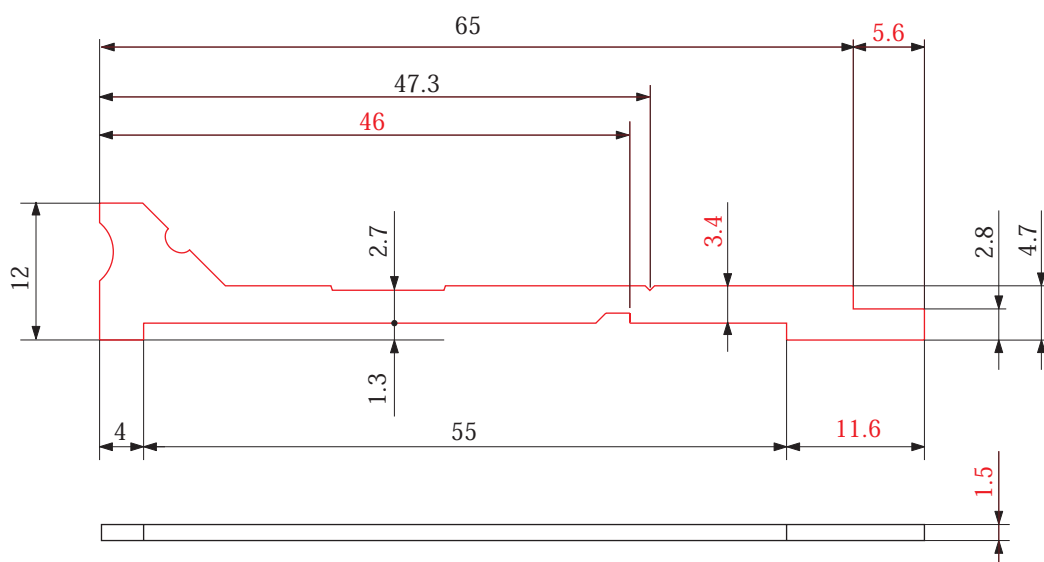
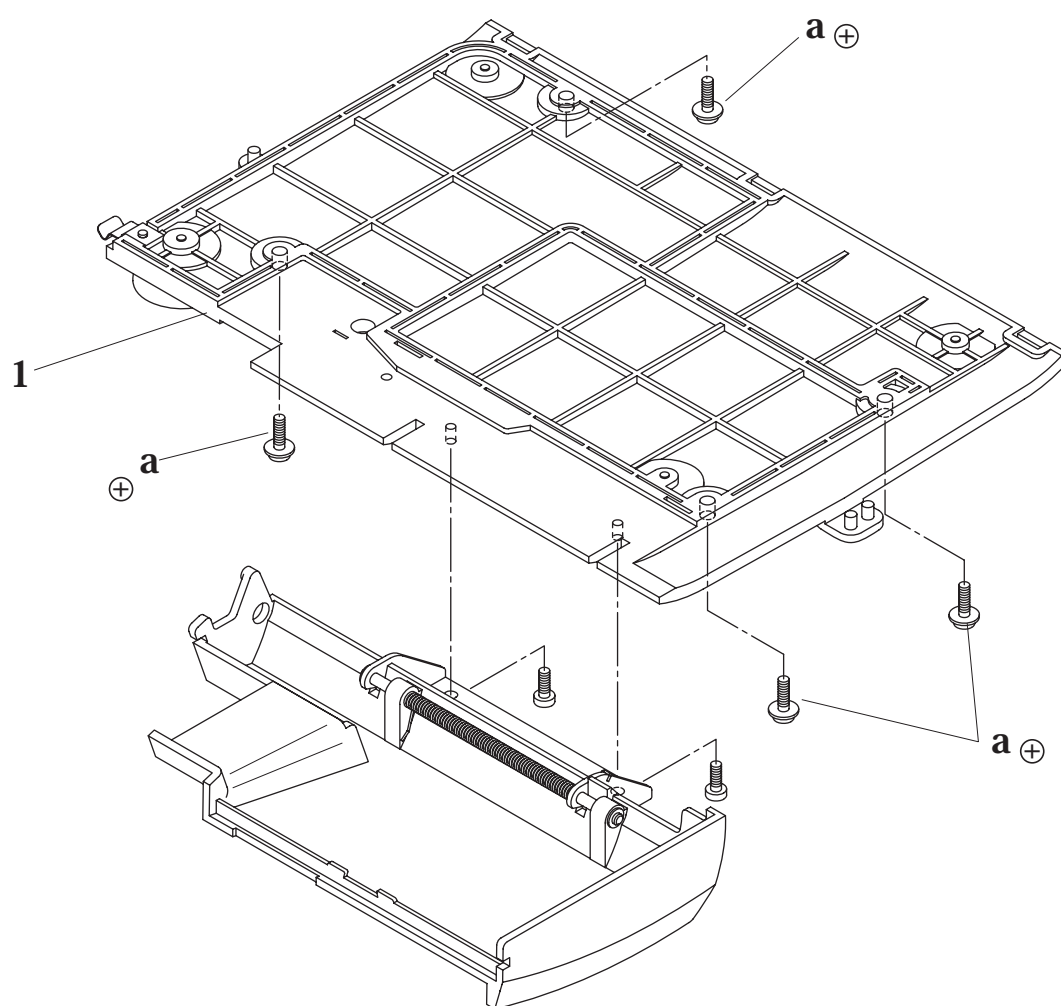


Fig.2

	Dimension	Use
Gauge Nb. 11951	4.7mm	Height of cloth presser bar
	12.0mm	Height of needle bar
	2.8mm	Angular position of lower looper to needle
	65.0mm	Height of lower looper
	5.6mm	Angular position of upper looper to needle
	1.5mm	Chain looper angular position
	46.0mm	Position of upper looper thread take up lever
	1.3mm	Height of feed dogs
	2.7mm	Position of feed dog

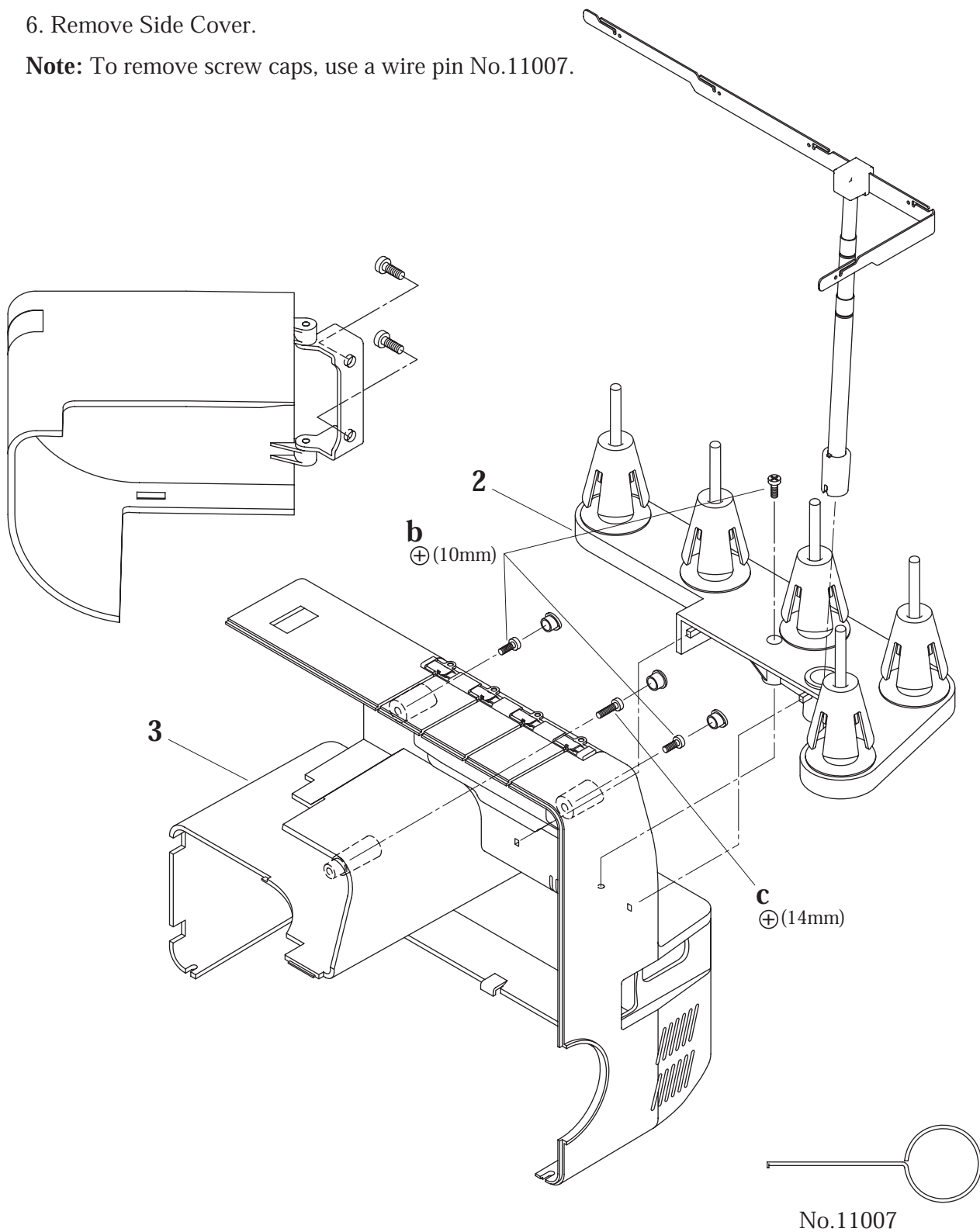


1. Remove: Mains lead
2. Remove Machine base Unit "1" by loosening screws "a".

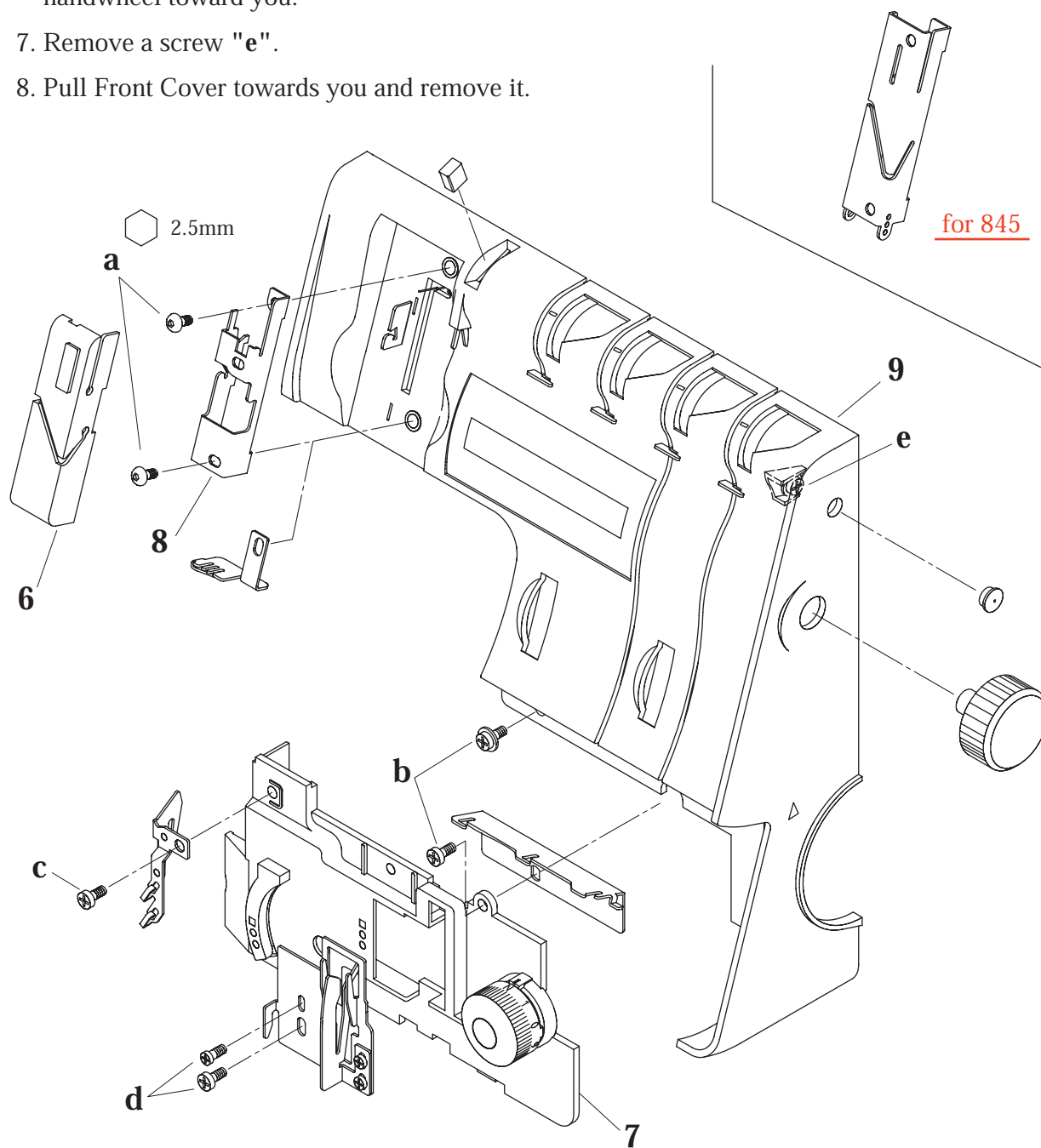


3. Remove Antenna Pole from Spool pin base.
4. Remove screw caps and screws "b" and "c" from Back Cover.
5. Remove Back Cover Unit "3" and Spool Stand "2".
6. Remove Side Cover.

**Note:** To remove screw caps, use a wire pin No.11007.

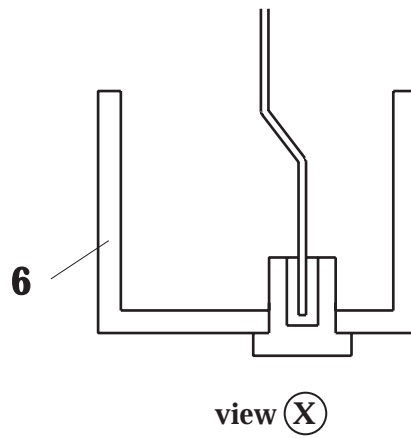
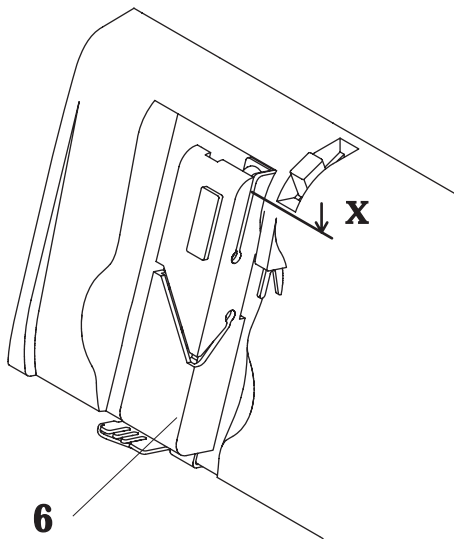


1. Remove: Mains lead
2. Remove screws "b", "c", "d" and Inside Cover Unit "7".
3. Remove Program Selection Dial and a screw cap from Front Cover.
4. Remove snap-on Noise Cover Unit "6". (Spread its sides.)
5. Remove screws "a" and Take-up Noise Cover Bracket "8" with Allen Screw Driver (2.5mm).
6. Position Needle Thread Take-up Lever in the middle of the slot by turning handwheel toward you.
7. Remove a screw "e".
8. Pull Front Cover towards you and remove it.



When mounting covers, please follow in reverse order (pages 2b-2a-1).

Note: When mounting Snap-on Noise Cover "6" in front cover, make sure if a check spring takes its place in a slot as shown in view (X).



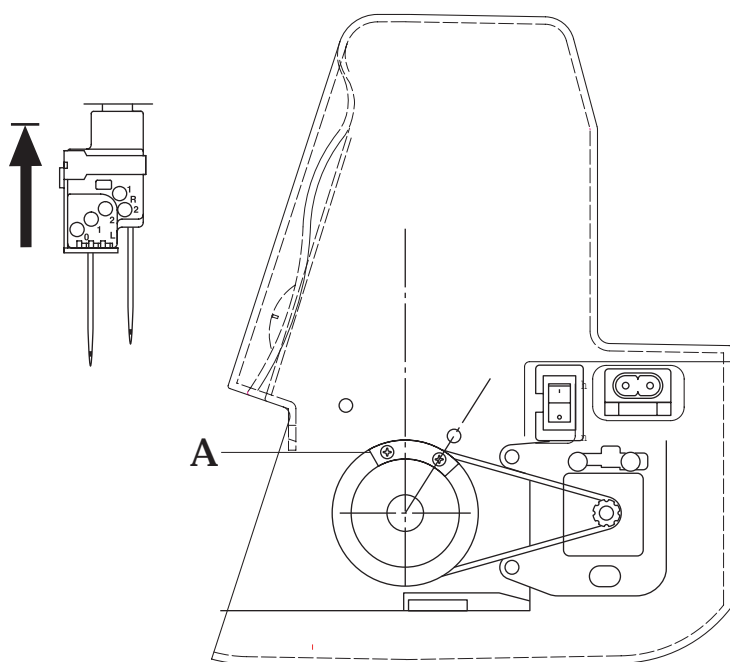


Fig.1

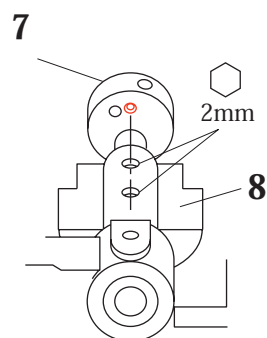


Fig.2

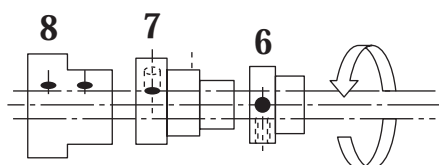


Fig.3

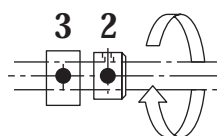


Fig.4

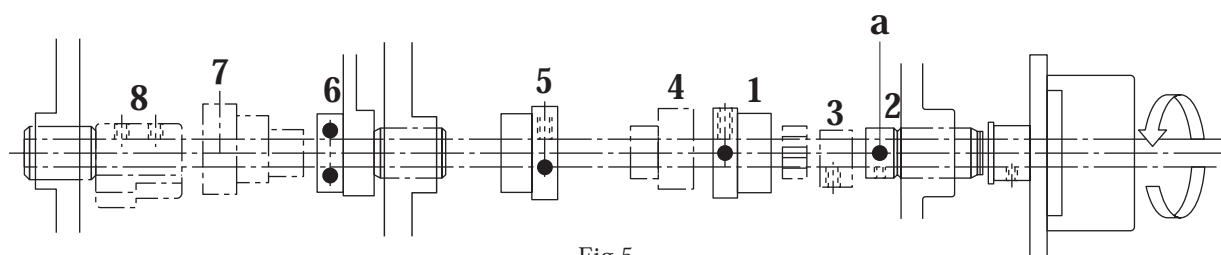


Fig.5

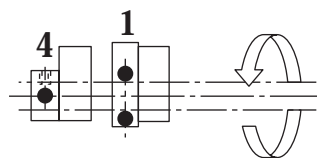


Fig.6

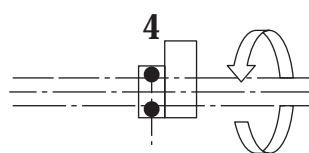


Fig.7

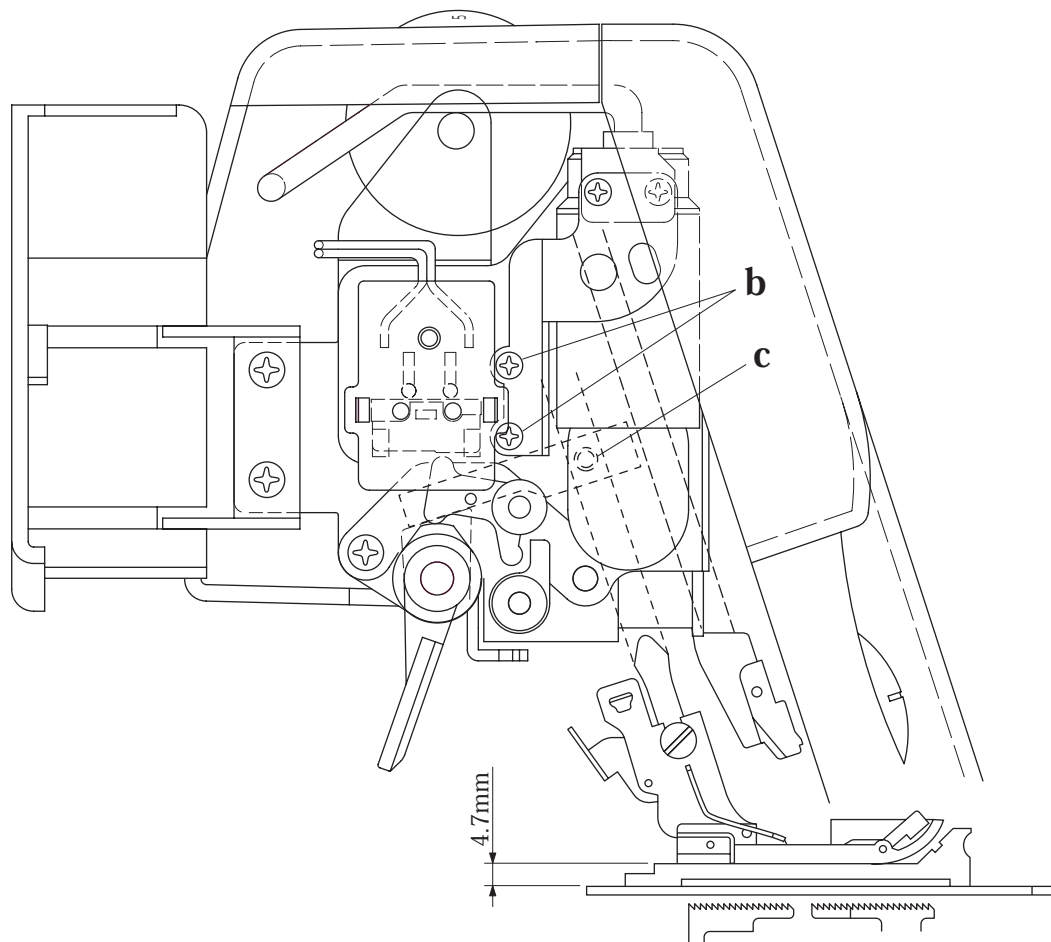
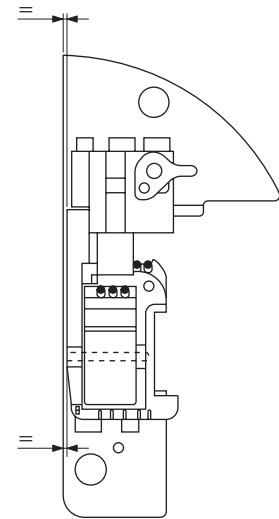
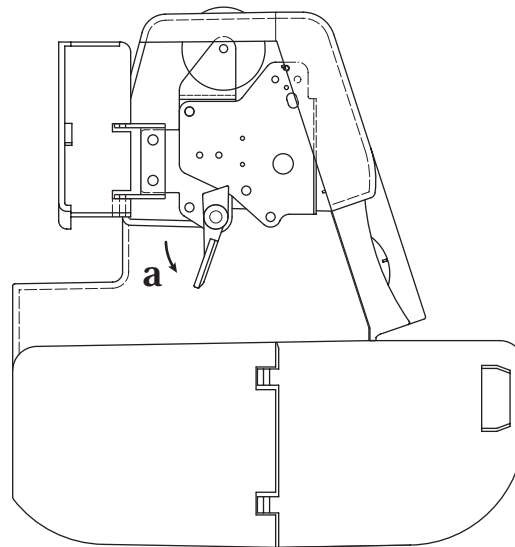


1. Remove: Mains lead - Back - Front cover - Machine base.
2. In case of dismantling the lower shaft or if one of the eccentrics is damaged or badly fixed, the positions shown in page 3a, allow resetting the eccentrics approximately. These should be adjusted correctly with each relative adjustment. Each angular position of eccentrics as shown is based primarily on the angular positions of screw "a" of main shaft collar. It is useful to turn handwheel by (90°) to check the correct position of the eccentrics. See procedure shown below.
3. Check and set screw "a" of collar "2" at the same level of the screw of needle bar timing eccentric "1".(Fig.5) Turn the handwheel toward you and check if the screw on collar "2" is set at the same level of eccentric "3".(Fig.4)
4. Turn handwheel towards you and bring needle bar to its highest position. Check if the balance weight "A" is positioned as shown in Fig. 1.  
@Note: If position of eccentric "3" is correctly set, it is possible to see the screw of eccentric "3" from the opening on the thread take up rotary cam when needle bar is set in its highest position.
5. Turn handwheel towards you and check if the eccentric "7" and the balance weight "8" are positioned as shown in Fig. 2
6. Turn handwheel (180°) counterclockwise and check position of balance weight "8" and eccentric screws "6-7".(Fig.3)
7. Turn handwheel (90°) clockwise and check position of screw on collar "2" and eccentric screw "3".(Fig.4)
8. Turn handwheel (90°) counterclockwise and check position of screw "a" of collar "2" with eccentric "1-5-6".(Fig.5)
9. Turn handwheel (90°) counterclockwise and check position of eccentric screws "1-4".(Fig.6)
10. Turn handwheel (90°) counterclockwise and check position of eccentric screws "4".(Fig.7)

---

### Position and function of the eccentrics:

- 1) Needle bar timing
- 2) Main shaft collar
- 3) Horizontal feed eccentric
- 4) Upper looper timing
- 5) Lower looper and chain looper timing
- 6) Orbital motion of chain looper
- 7) Moving cutter and vertical feed timing
- 8) Balance weight



1. Remove: Mains lead.
2. Lower lever "a" and open lamp cover.
3. Loosen screws "b" to remove bracket with lamp holder.
4. Make sure that the shank holder of presser foot is in its highest position.
5. Turn handwheel towards you and bring feed dog below needle plate.
6. Loosen screw "c".
7. With lever "a" in its lowered position, push cloth presser bar down from the top so that the presser foot touches gauge. (No.11951)
8. Align the needle opening(s) of the presser foot with those of the needle plate, and fasten screw "c".
9. Refit bracket with lamp holder.

# HEIGHT AND ORIENTATION OF NEEDLE BAR IN RELATION TO THE NEEDLE PLATE HOLES

5a

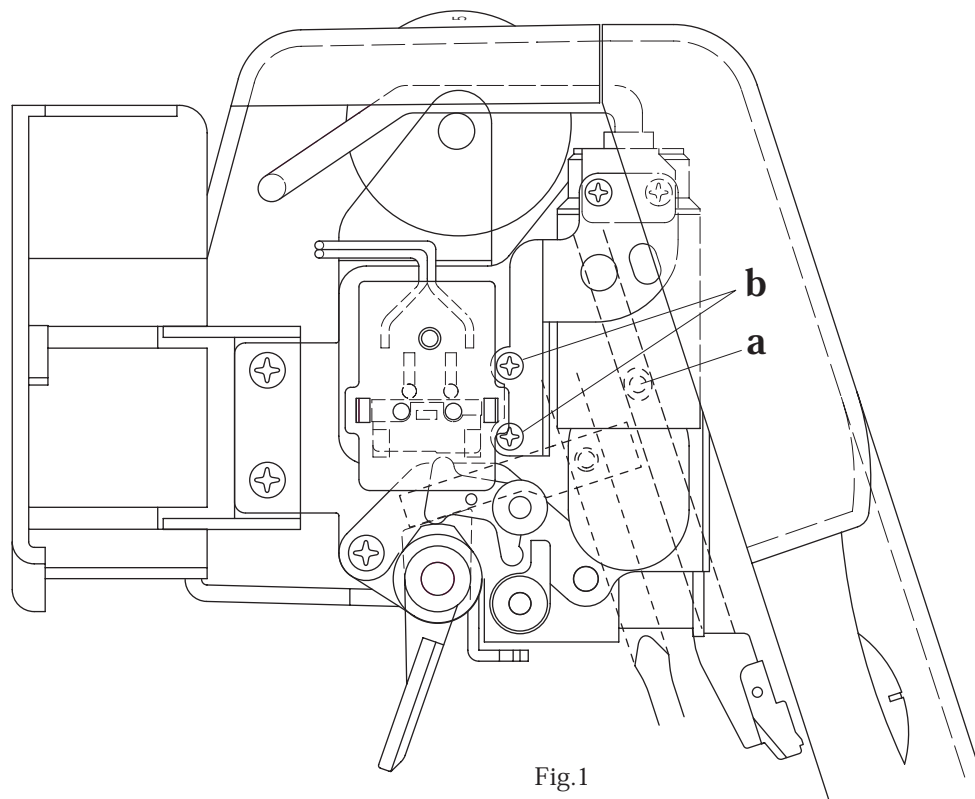


Fig.1

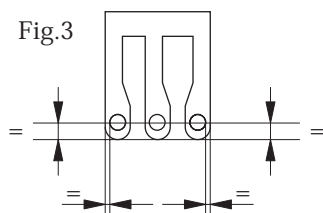


Fig.3

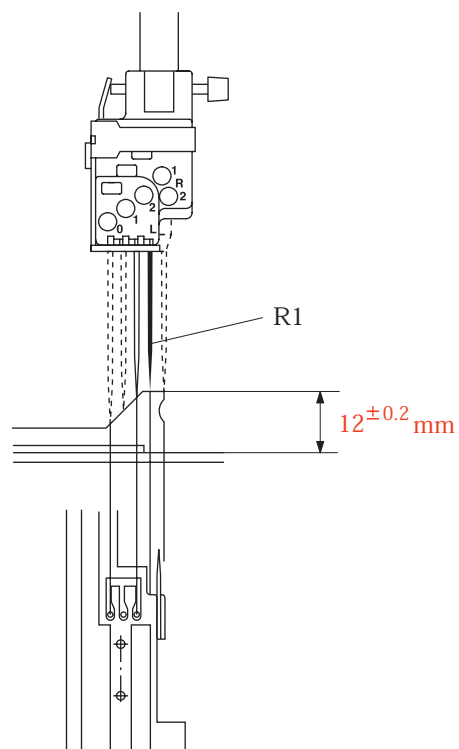


Fig.2

## HEIGHT AND ORIENTATION OF NEEDLE BAR IN RELATION TO THE NEEDLE PLATE HOLES

5b

1. Remove: Mains lead - Sewing foot.
2. Insert a new needle (No.90) in "**R1**".
3. With needle bar at its highest position, loosen screws "**a**" just enough so that needle bar slides with friction.(Fig.1)
4. Place gauge on needle plate and adjust height of needle bar so that needle "**R1**" grazes the gauge.(Fig.2)
5. For the orientation of needle bar or needle holder, insert new needles in "**L0** , **L1** and **L2**", orientate needle bar so that the needles are centered in the needle plate holes. Make sure that neither needle "**L0** , **L1** nor **L2**" is touching the inside of the needle plate holes. Tighten screw "**a**" and recheck the height.(Fig.3)
6. Remove needle plate and check the clearance between the chain and lower looper and needle(s). If necessary, adjust clearance of chain looper (see page 11) and clearnace of lower looper (see page 6).

1. Remove: Mains lead - Sewing foot
2. Make sure that there is no axial play on looper shaft "x".
3. Loosen screw "a", adjust height of lower looper as shown and tighten screw "a".
4. Adjust clearance of overlock needle guard.
5. Insert a new needle (No.90) in R1 and check height and orientation of needle bar.
6. Remove needle plate and machine base.
7. Loosen screw "b" just enough to be able to shift lever "c".
8. Adjust lever "c" axially to obtain a clearance of less than **0.05mm** between point of looper and needle. (See Fig.2)
9. Turn the handwheel towards you and bring lower looper to its far left swing position and adjust lever "c" angularly to obtain **2.8 to 3.1mm** between point of looper and the left side of the overlock needle. (See Fig.1)
10. Recheck clearance and carefully tighten screw "b".

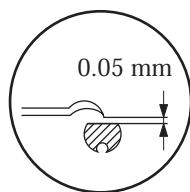


Fig.2

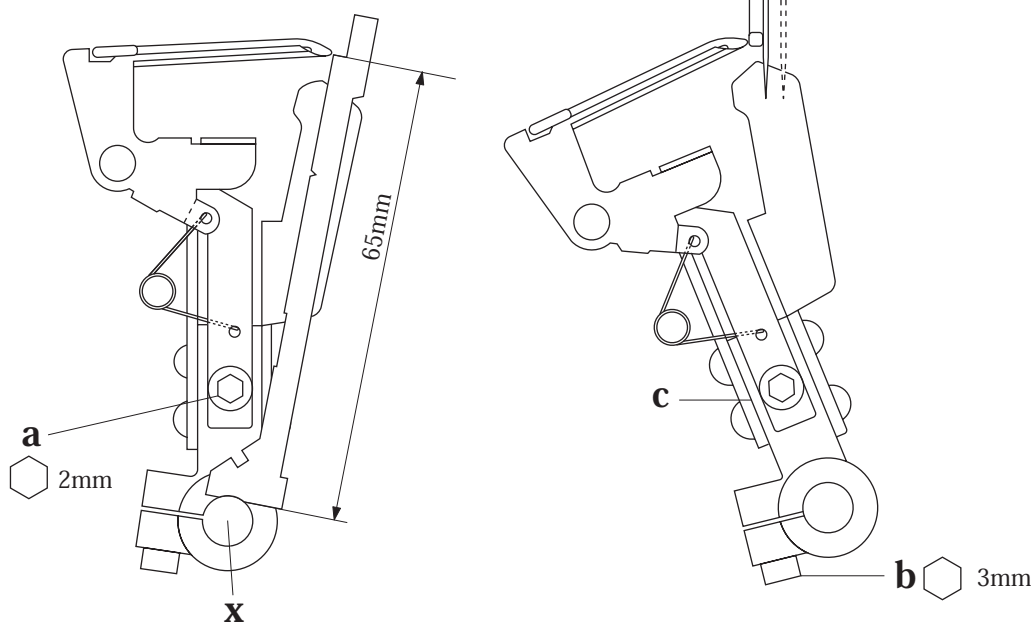
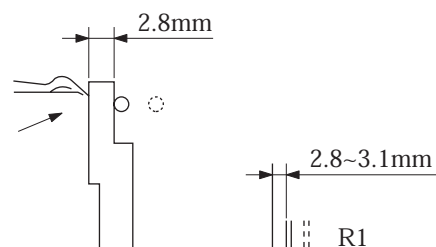
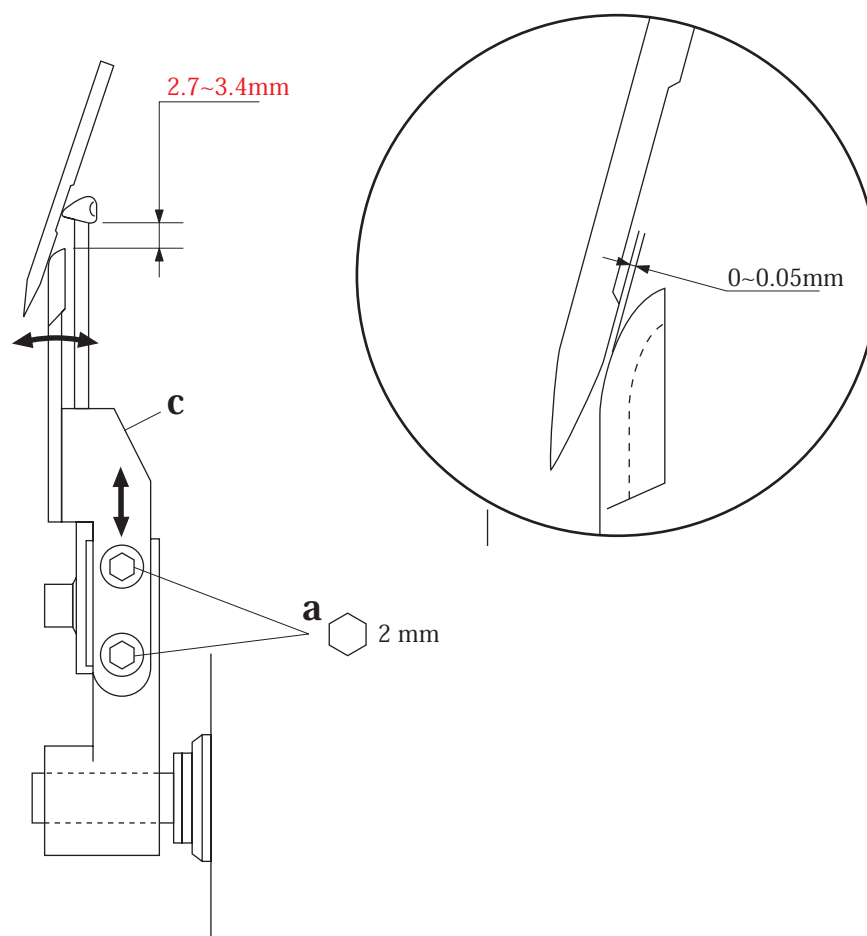


Fig.1

1. Remove: Mains lead - Needle plate.
2. Insert 2 new needles (**No.90**) in "**R1**" and "**R2**" positions.
3. Check height - clearance - angular position of lower looper.
4. Turn the handwheel towardas you and bring needle bar in its lowest position.
5. Loosen screws "**a**".
6. Shift needle guard "**c**" back and forth to obtain a clearance of **0.05mm** between needle guard "**c**" and needles, tighten both screws "**a**".



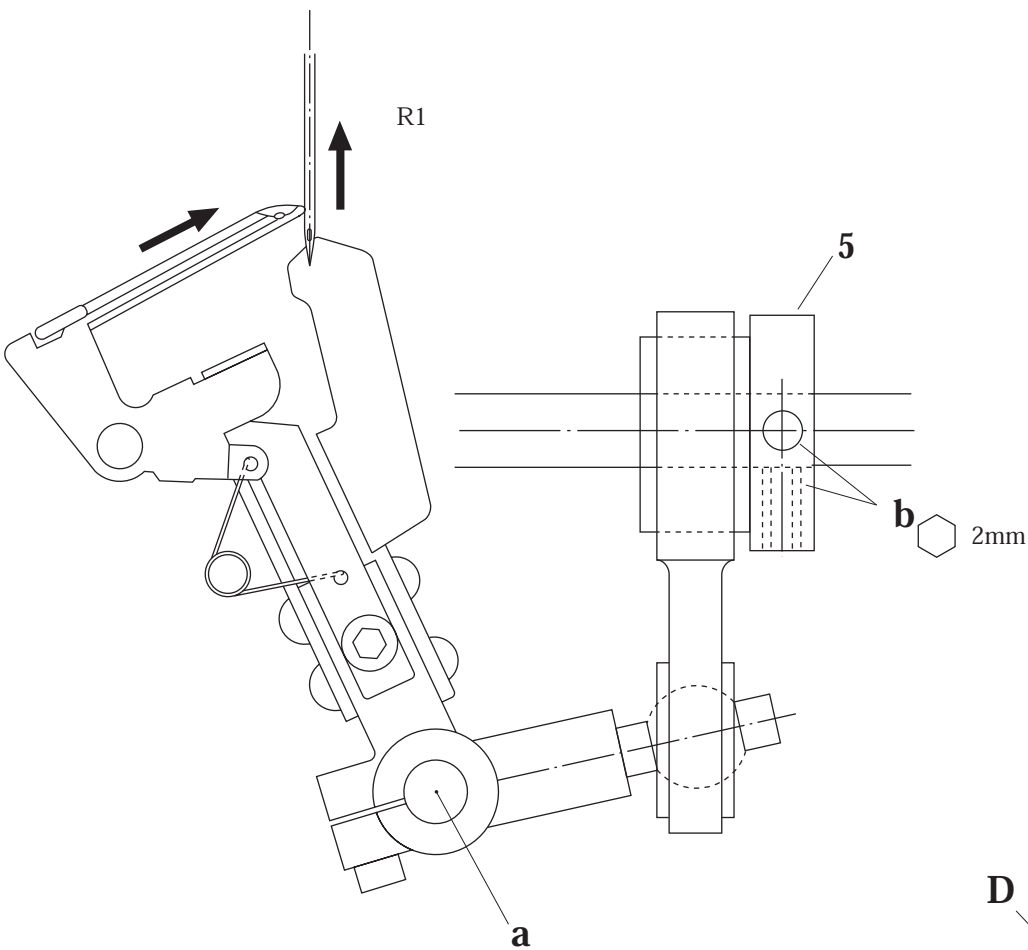


Fig.1

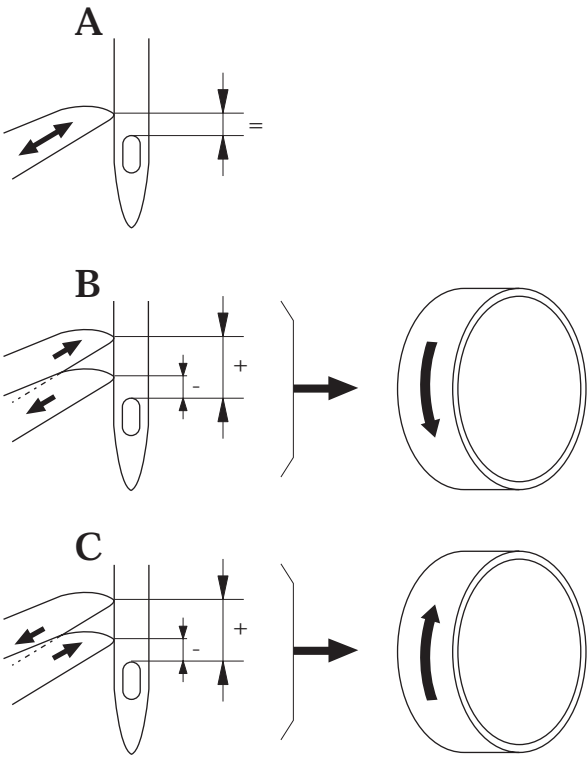


Fig.2

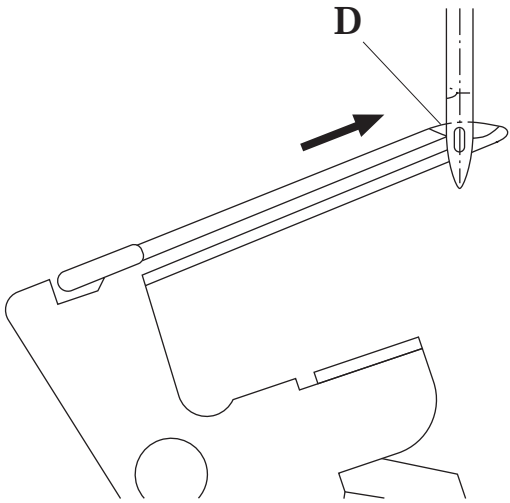


Fig.3



1. Remove: Mains lead - Sewing foot.
2. Make sure that there is no axial play on lower looper shaft "a".
3. Insert a new needle (**Nm 90**) in "**R1**" and check height and orientation of needle bar (page 5), height and angular position of lower looper (page 6).
4. Remove needle plate and machine base.
5. Bring needle bar to its lowest position and check whether lower looper starts its left to right motion simultaneously with up motion of needle bar. (Fig.2)
  - Turn the handwheel towards you and bring point of looper from left - to - right against the left side of the overlock needle "**R1**". Observe the vertical distance between point of looper and upper edge of needle eye.
  - Turn the handwheel towards you and bring point of looper from right - to - left against the left side of the overlock needle "**R1**". The distances between point of looper and upper edge of needle eye must be identical as per sketch "**A**".
6. If necessary, loosen both screws "**b**" of lower looper eccentric. By means of one screw, hold eccentric carefully. (Fig.1)
 

If, in relation to the upper edge of the needle eye, the point of the lower looper is higher in the left - to - right motion than in the right - to - left motion, see sketch "**B**", turn handwheel very slightly towards you or in reverse. If the result is opposed, see sketch "**C**".
7. Tighten both screws "**b**" of eccentric.
8. Check timing of upper looper to lower looper (see page 10).
9. Refit machine base and needle plate.

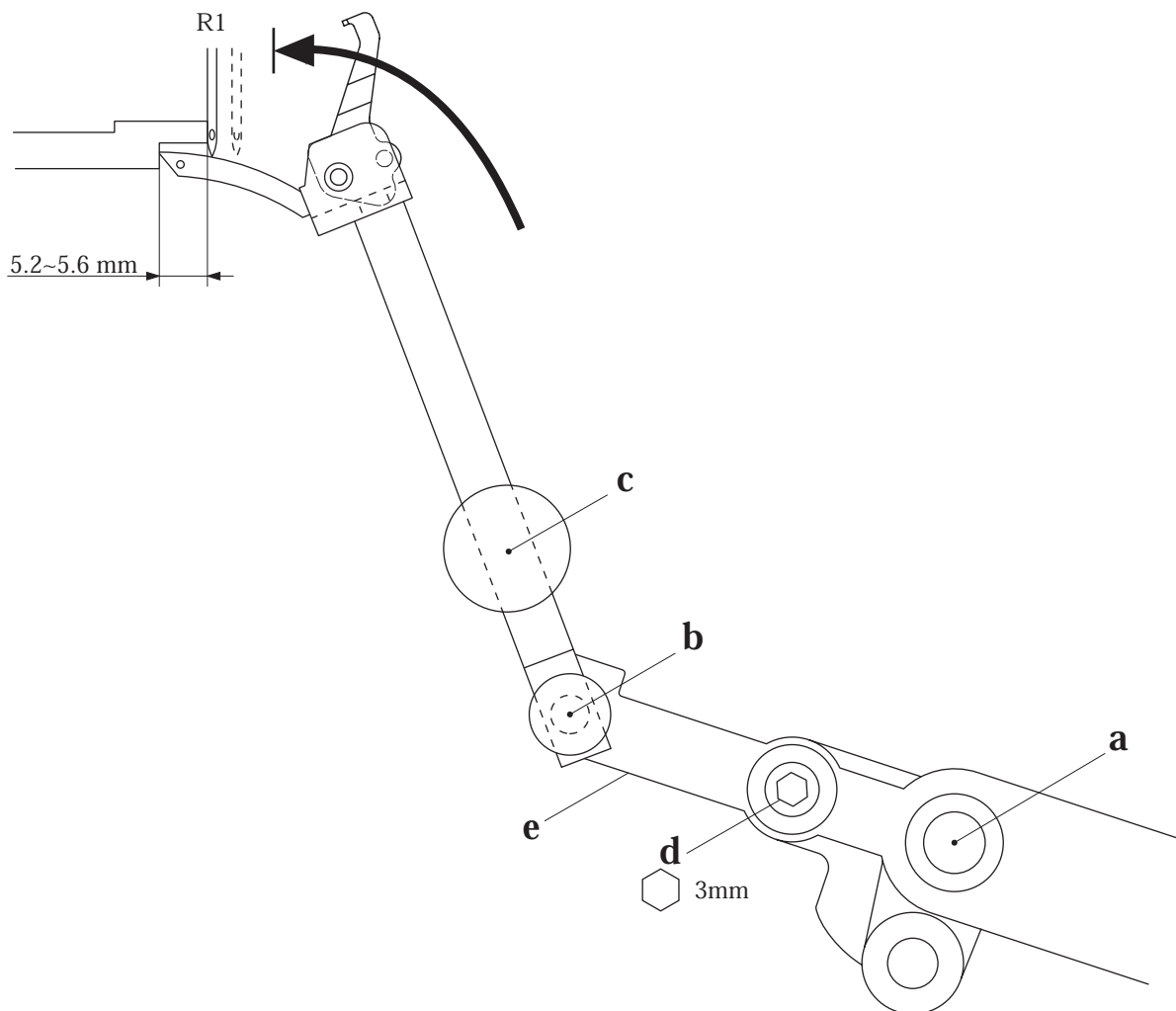
Note:

For an easy check of the lower looper timing, check and make sure that height of needle bar, height of lower looper and angular position of lower looper are correctly set.

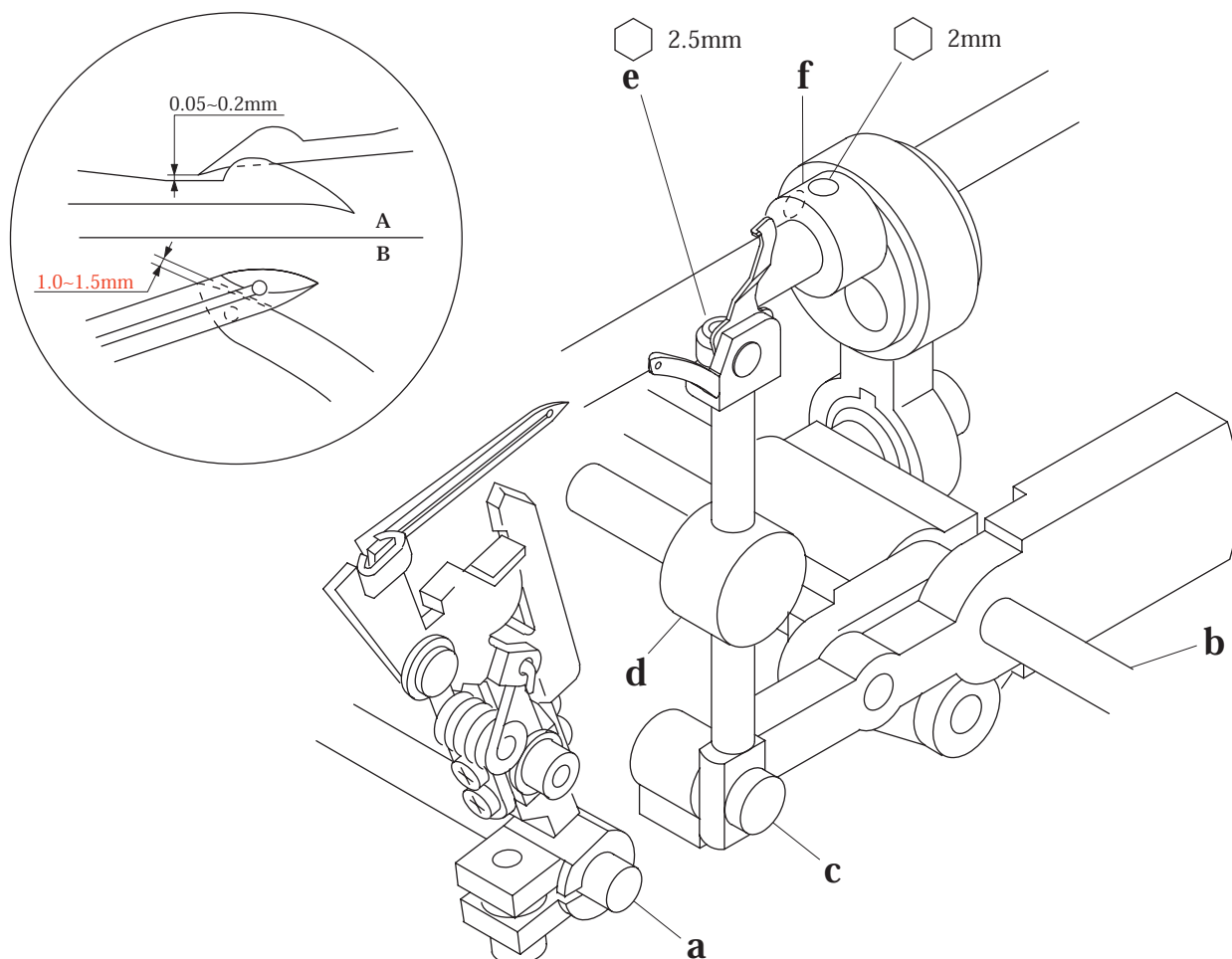
Turn the handwheel towards you, bring eye of lower looper from left to right behind the eye of needle "**R1**". If not, adjust timing stroke with eccentric "**5**" (see page 3 position of eccentrics and "**D**" in page 8a-Fig.3 ).

F.Y.I. Eccentric "**5**" is used for both chain and lower looper stroke. When checking this adjustment make sure that you also check adjustment of chain looper stroke (see page 11).

1. Remove: Mains lead - Machine base.
2. Make sure that there is no axial play neither on the upper looper shaft "a" nor on the 2 pivoting axles "b" and "c".
3. Bring upper looper to its far left swing position.
4. Loosen screw "d" just enough so that lever "e" articulates with friction and adjust lever "e" angularly to obtain a **5.6mm** gap between point of looper and the left side of the overlock needle.
5. Tighten screw "d". It is very important that the machine turns quite freely without any biding effect caused by an axial shifting from lever "e".
6. Check clearance and timing of upper looper to lower looper.



1. Remove: Mains lead - Sewing foot.
2. Check adjustments:
  - Height and orientation of needle bar (see page 5).
  - Height - clearance - angular position of lower looper (see page 6 ).
  - Timing of lower looper (see page 8a & 8b).
  - Angular position of upper looper (see page 9).
3. Remove machine base.
4. Make sure that there is no axial play, neither on the lower looper shaft "a", the upper looper shaft "b", nor on the 2 pivoting axles "c" and "d".
5. Clearance: Loosen screw "e" slightly and adjust upper looper to lower looper to obtain a clearance of **0.05 to 0.2mm** between them when they pass each other; see detailed drawing "A".
6. Tighten screw "e" securely and recheck clearance.
7. Timing: Adjust timing of upper looper so that its point passes **1.0 to 1.5mm** below the hump of lower looper; see detailed drawing "B". If necessary, loosen both screws of upper looper eccentric "f" (Eccentric "4" in page 3), then, by means of one screw, hold eccentric "f" and turn slightly handwheel, either forward to advance or backward to retard, upper looper in relation to lower looper.
8. Tighten both screws of eccentric "f".
9. Refit machine base.



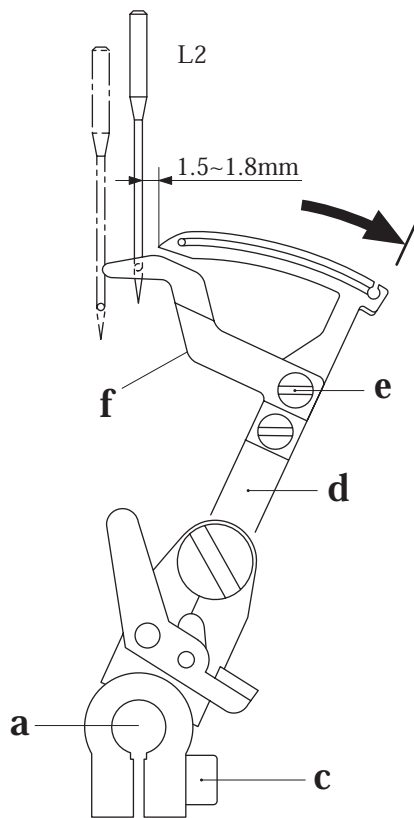


Fig.1

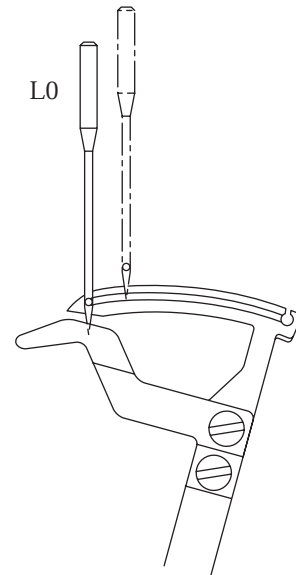


Fig.2

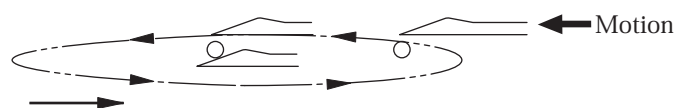
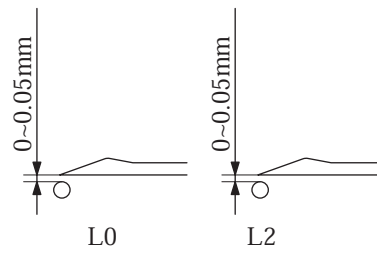


Fig.3

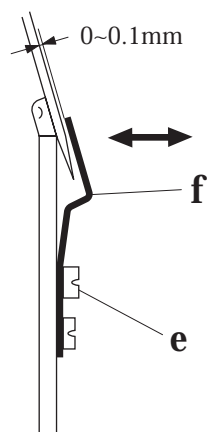


Fig.4

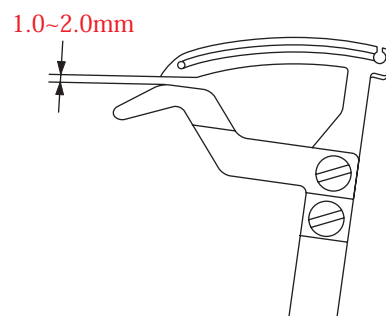


Fig.5

1. Remove: Mains lead - Sewing foot - Machine base - Needle plate.
2. Make sure that there is no axial play on chain looper shaft "**a**". If necessary, adjust with stop collar inside shaft "**g**" in Fig.6 in page 11c.
3. **Angular position of chain looper:** Insert a new needle (No 90) in "**L2**". Check height and orientation of needle bar in page 5. Bring chain looper to its far right swing position. Check distance from point of chain looper to chain needle with thickness of gauge. If necessary, loosen screw "**c**" just enough to adjust the chain looper arm "**d**" angularly to obtain a clearance of **1.5 to 1.8mm**. Then tighten screw "**c**".(Fig.1)

Note: At this step, an easy check of the chain looper timing can be done as follows:

Chain looper motion right to left and the needle bar stroke should start at the same time. Turn the handwheel towards you, bring the chain looper eye from right to left motion behind the cover hem needle eye "**L0**". Check if eye of chain looper matches with eye of needle (eye to eye).(Fig.2) If not, recheck all the above adjustments and adjust timing stroke with eccentric "**5**". See page 3a & 3b for the position of eccentric. The eccentric "**5**" is used for both chain and lower looper timing. When adjusting this timing, make sure that you also check the adjustment of lower looper stroke.  
( See page 6 and 8 )

4. **Clearance of chain looper:** Bring point of looper - from right to left - behind the cover hem needle "**L2**", and check if clearance is less than **0.05mm**. Then bring tip of looper behind the cover hem needle "**L0**", and check if clearance is less than **0.05m**.(Fig.3)
5. **Clearance of chain needle(s) guard:** Turn handwheel towards you until coverhem needle(s) approaches to chain needle guard as close as possible. At this time, the clearance between coverhem needle(s) and chain needle guard should be less than 0.1 mm. (See Fig. 4). If necessary, adjust the clearance with screw "**e**" (See Fig. 4) and make sure that the gap between chain needle guard and the tip of chain looper is set at 1.0~2.0 mm. (See Fig. 5).

Note: Make sure that the chain needle "**L0**" is correctly positioned behind the chain looper in its motion left to right. The (**L0**) needle tip (motion down) should be positioned at the beginning of the chain looper hump (back of chain looper). See chain looper orbital motion on Fig.3.

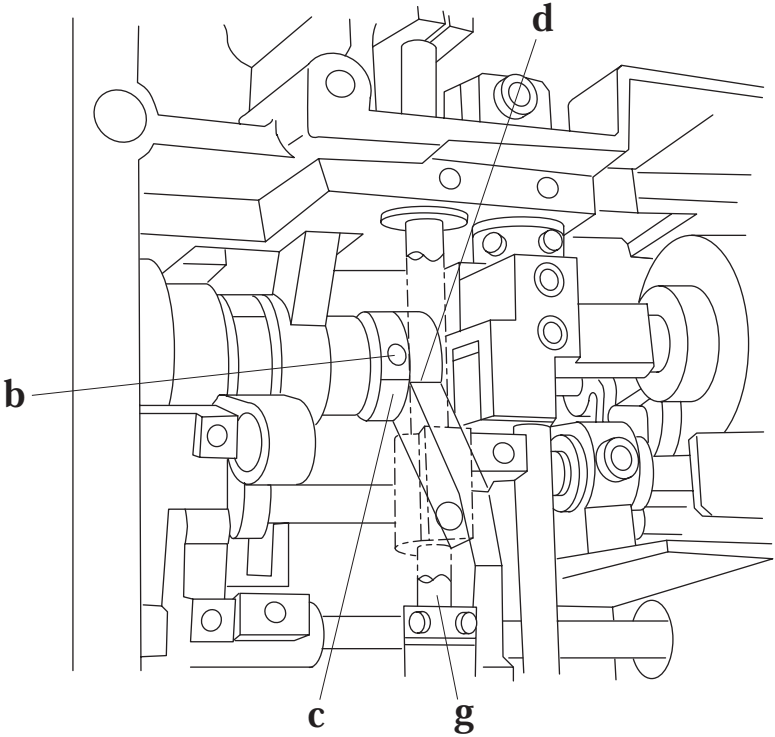


Fig.6

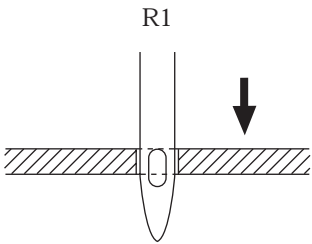


Fig.7

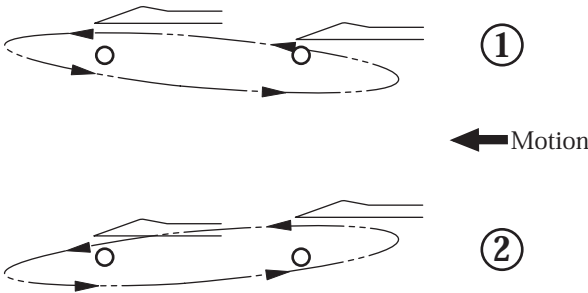


Fig.9

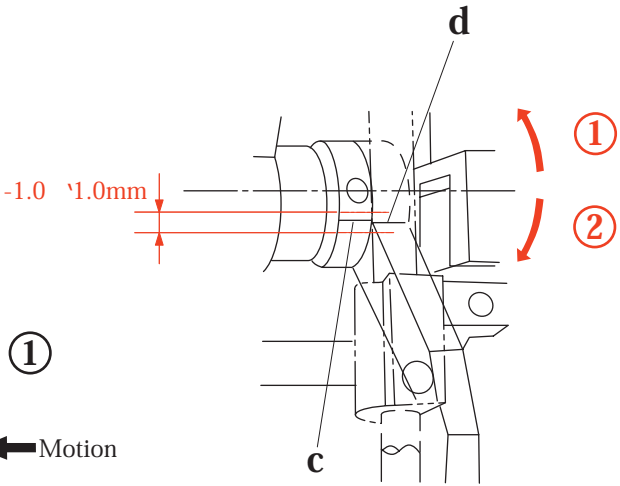


Fig.8

**6. Orbital timing of Chain Looper - Eccentric:**

Make sure that there is no axial play on chain looper shaft. If necessary, adjust with stop collar inside shaft "g".

Check angular position of Chain Looper and height and orientation of Needle Bar in accordance with pages 11a and 11b.

Turn the handwheel towards you to bring the needle bar to the upper edge of "R1" needle eye in its downward stroke flush with the needle plate. (Fig. 7)

Check if the orbital motion of chain looper from right to left is as per Fig. 3 in page 11a.

If not, loosen screws "b" of eccentric "6" (See page 3) and bring eccentric mark "c" close to mark "d". The distance between marks "c" and "d" should be within -1.0 to 1.0 mm. (Fig. 8).

Turn eccentric "6" forward (to the direction ①) and chain looper runs as per motion ①. (See Fig. 9).

Turn eccentric "6" backward (to the direction ②) and chain looper runs as per motion ②. (See Fig. 9).

Tighten screw "b".

## 7. Lower Looper:

Turn handwheel towards you to bring lower looper to its far right position. Press lever "a" downwards. Turn handwheel towards you again and check if lever "a" returns automatically to its initial position. If not, loosen screw "h" and insert a washer under the plate "b" to get the gap 0.5 ~ 2.0 as shown in Fig. 12.

## Chain Looper:

Turn handwheel towards you to bring needle bar to its lowest position. Lift up lever "A" to disengage chain looper. Turn handwheel towards you again and check if chain looper is automatically engaged. If not, loosen screw "h" and slide the plate "b" right or left to get the gap 0.5 ~ 2.0mm as shown in Fig. 13.

Note: If either lower looper or chain looper is set apart from the plate "b" so far or if either of two touches the plate "b", handwheel is blocked and can not be turned.

Lower Looper

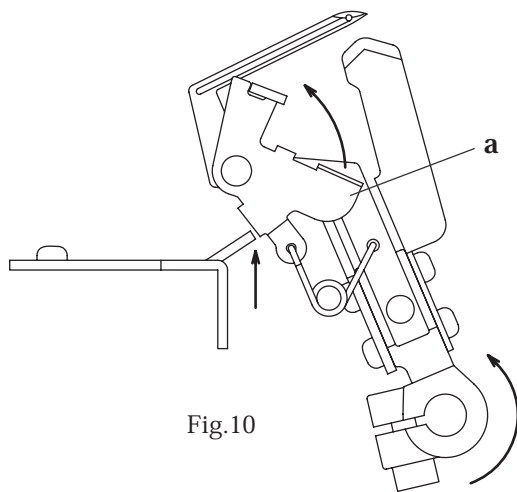


Fig.10

Chain Looper

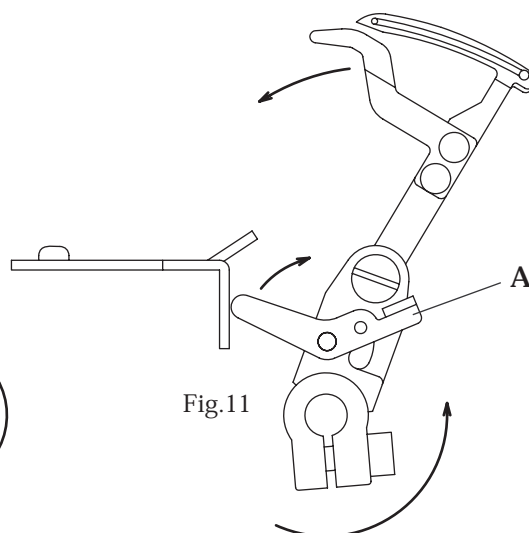


Fig.11

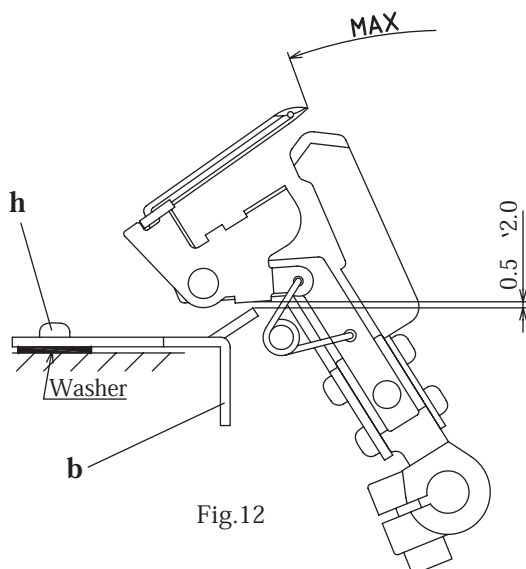


Fig.12

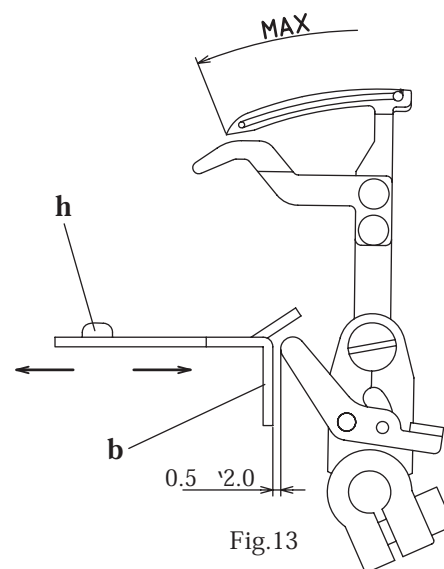


Fig.13



1. Timing adjustment for chain looper thread take up rotary Cam "c":

When the small hole "d" on "c" adjoins at the surface of chain looper thread guide plate "a", the needle "L2" in its downward movement must be positioned as shown in Fig.1.

2. Setting for the timing adjustment:

Loosen the screws "e", then turn "c", either in the direction of "F" or "R" depend on the requirement, until "c" is set as shown in Fig.2. Tighten the screws "e".

Screw driver can insert out of left side opening between left side "c" and "a" near by set screws on the setting stud of "c".

3. When chain looper stitch formation shows either too tight (Fig.3) or too loose (Fig.4), this can be corrected with the following manner:

In case of too tight (stitch formation), loosen the screws "e" and turn (adjust) "c", slightly (may be about for a small hole) in the "F" direction. At the contrary, in case of too loose, turn (adjust) "c", slightly (may be about for a small hole) in the "R" direction. After correcting properly, tighten the screws "e".

4. Beside above adjustment, if chain looper thread holder "b" placed upper, stitch formation becomes tight and placed lower, stitch formation becomes loose.

In connection with above adjustment (correction), if "a" adjusted toward upper position, Chain looper thread stitch formation becomes loose and if adjusted to the lower, Chain looper thread stitch formation becomes tight. It is required to make sure that "c" takes up chain looper thread properly when "a" adjusted its set position at the highest of adjustable long hole of "a".

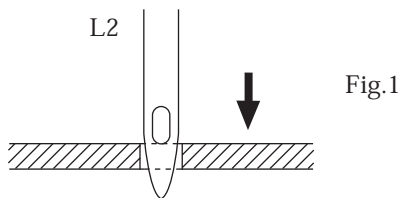


Fig.1



Fig.3



Fig.4

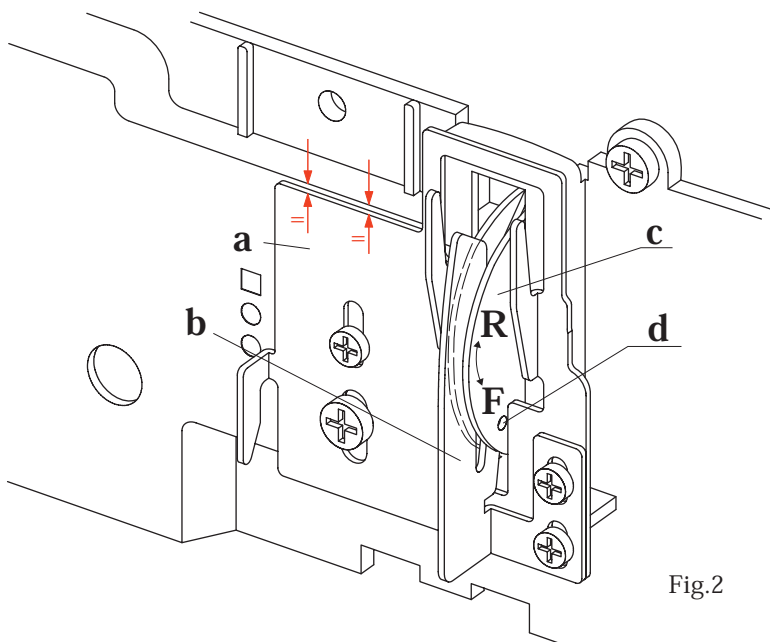
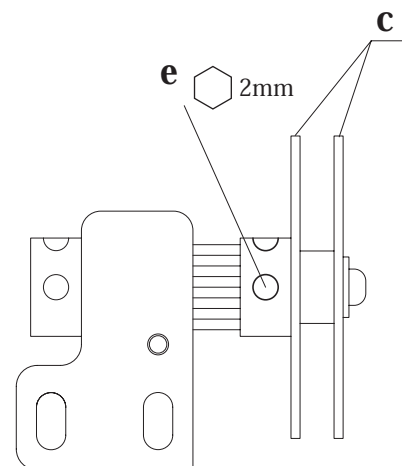
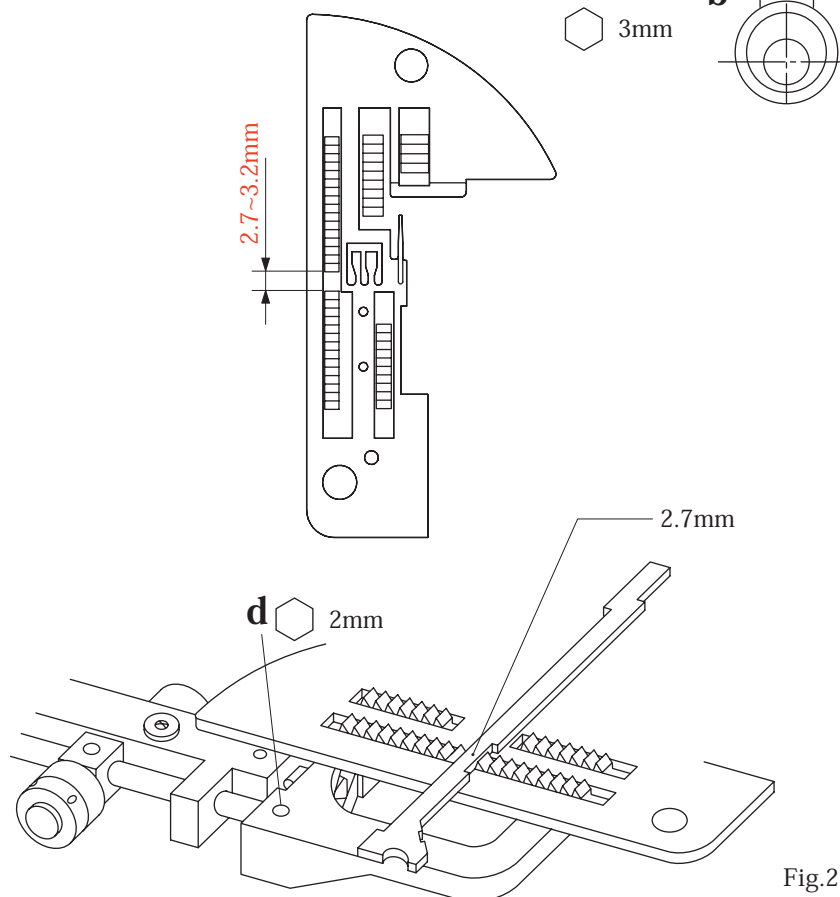
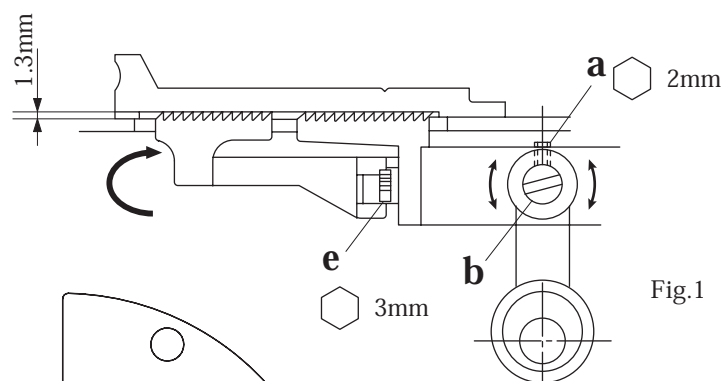


Fig.2



1. Remove: Mains lead - Sewing foot - Needles and Back cover
2. Set stitch length at "**0.5**" and differential feed at "**1**".
3. Turn the handwheel towards you and bring feed dogs to their highest position.
4. Loosen screw "**a**".
5. Refit sewing foot, lower cloth presser bar to press gauge against needle plate.
6. Adjust feed dogs height with eccentric "**b**" to touch gauge and tighten screw "**a**". (Fig.1)
7. Turn the handwheel towards you at least 3 complete turns and recheck adjustments.
8. Check gap between front and back feed dog (**2.7 to 3.2mm**).
9. If necessary, loosen screw "**d**", position gauge as per Fig.2, push front feed dog against gauge and tighten screw "**d**".

Note: Feed dogs should be both at the same level. If necessary, loosen screw "**e**" and adjust rear feed dog level to front feed dog.



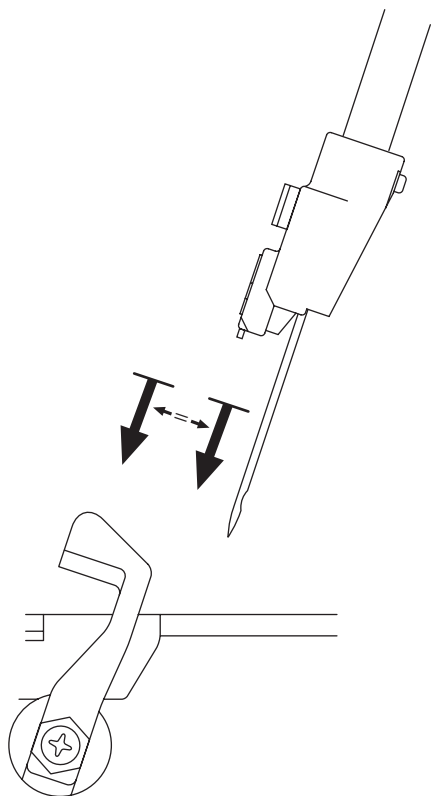


Fig.1

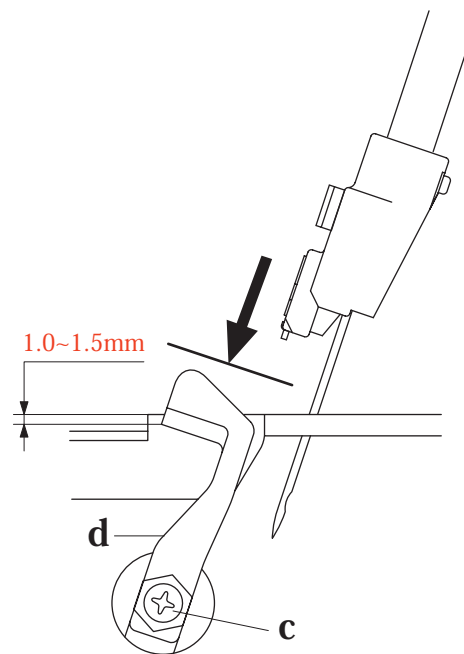


Fig.2

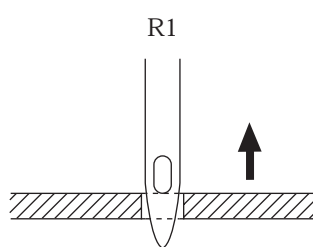


Fig.3

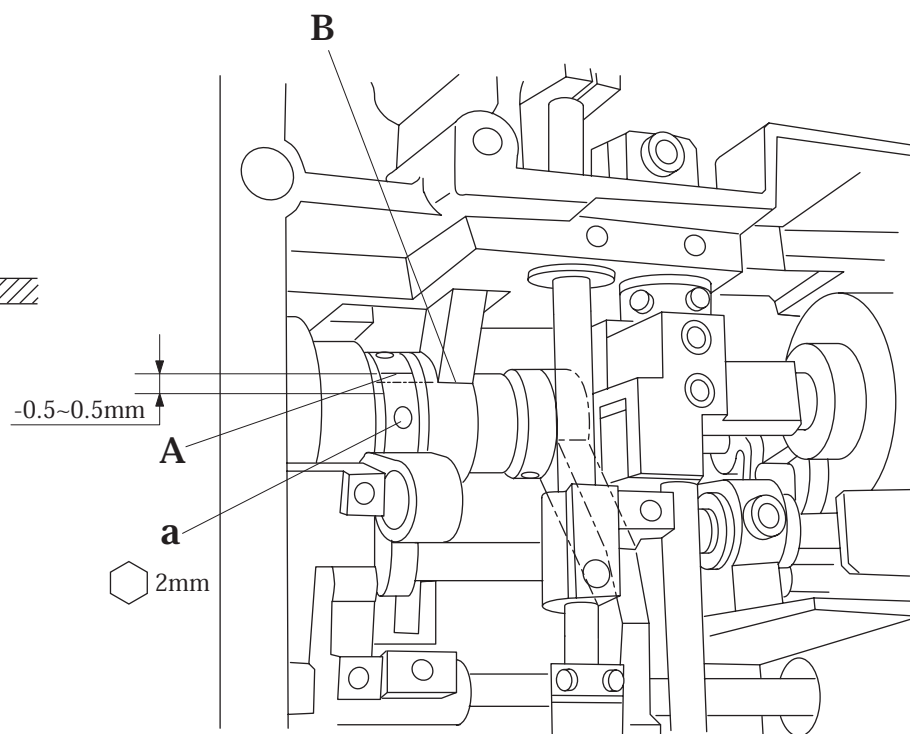


Fig.4

**Caution:** The eccentric "7" is used for feed and moving cutter timing. See page 3.

1. Remove: Mains lead - Sewing foot - Machine base.
2. Check height and orientation of needle bar - height of feed dog. See pages 5&13.
3. Turn the handwheel towards you and bring the needle bar to its highest position. Check and make sure if moving cutter and needle bar start simultaneously from their highest position.(Fig.1)
4. If necessary, turn the handwheel towards you and bring needle bar to its lowest position. Then bring up the needle bar to the lower edge of "R1" needle eye flush with the needle plate.(Fig.3) Loosen both screws "a" bring eccentric mark "A" close to mark "B". The distance between marks "A" and "B" should be within -0.5 to 0.5mm. Fasten both screws "a". Recheck the above adjustments.(Fig.4)  
Note: Make sure that the machine turns freely without any bidding effect.
5. Height of moving cutter: Turn the handwheel towards you to bring moving cutter to its lowest position. Check and make sure that the tip of moving cutter blade is at **1.0 to 1.5mm** below the fixed cutter. (Fig.2) If necessary, loosen screw "c" and adjust height by sliding moving cutter "d" up or down. Loosen screw "c" firmly and recheck its height.

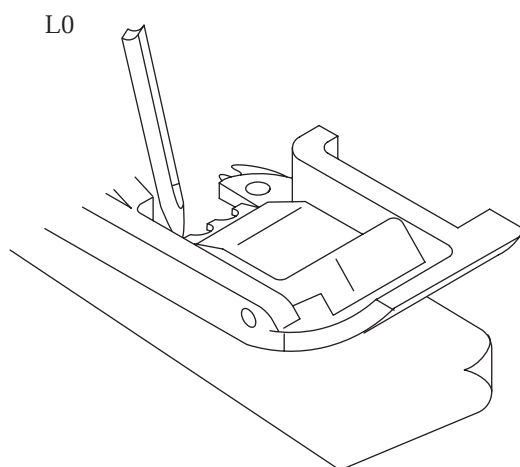


Fig.1

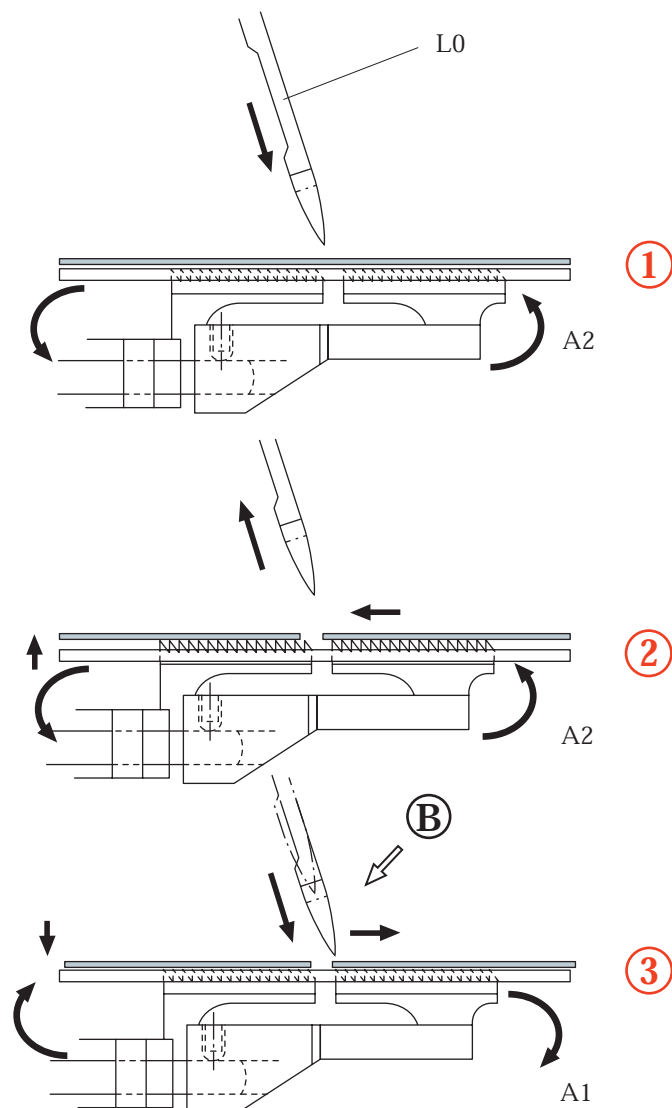


Fig.2

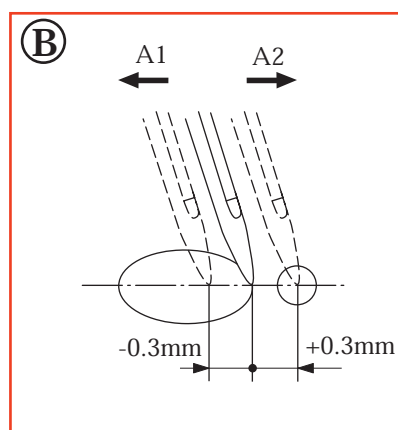


Fig.3

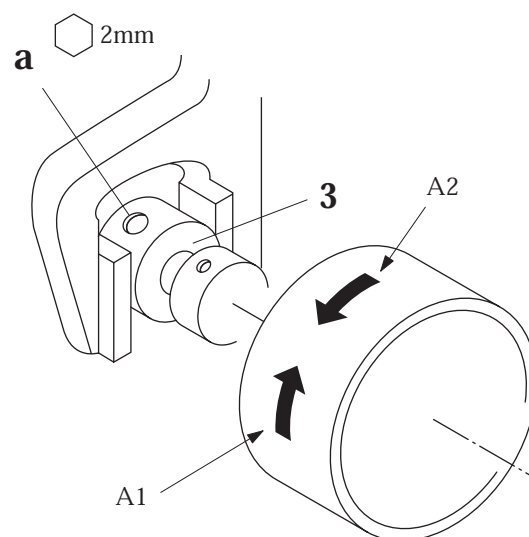


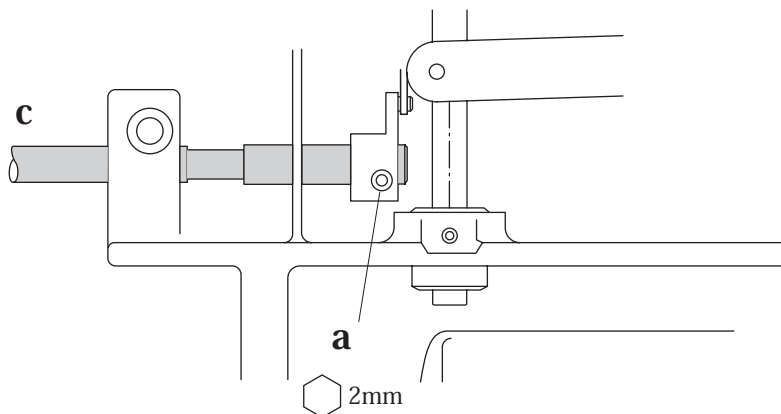
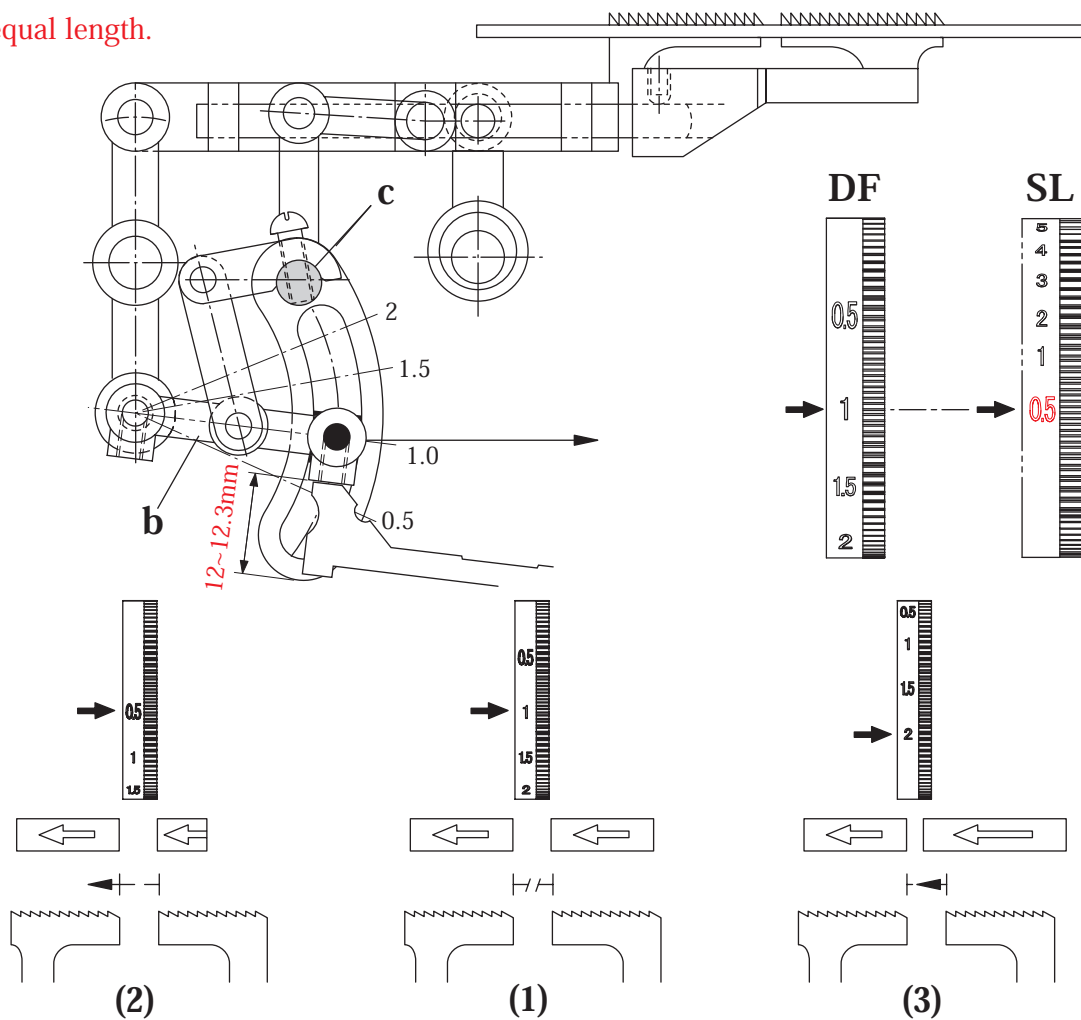
Fig.4

Note: It is essential to precisely check and adjust this timing.

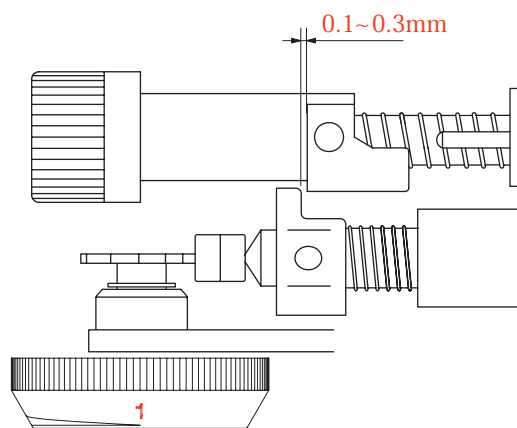
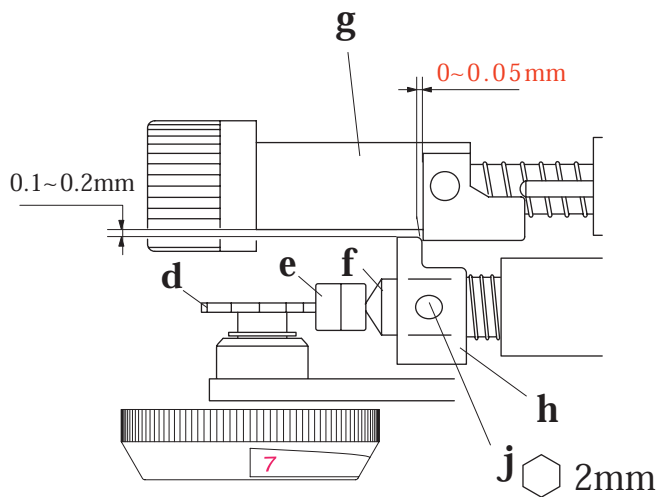
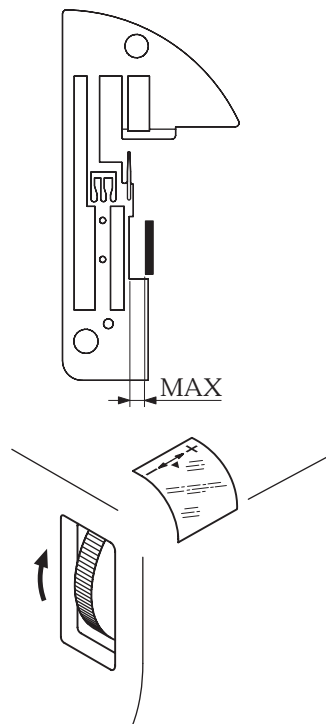
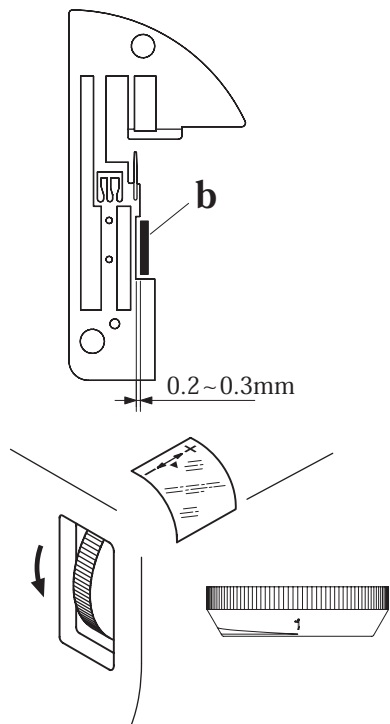
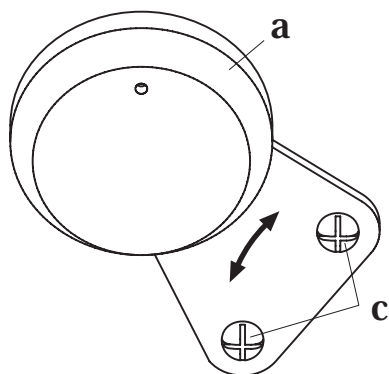
This adjustment avoids bending the chain needle(s) when sewing through maximum thickness of materials.

1. Remove: Mains lead - Machine base
2. Check height of feed dog and vertical feed timing. (See page 13 and 14)
3. Set Stitch Length at "4" and differential feed dial at the neutral position "1".
4. Bring needle bar to its heighest position.
5. Place a sheet of paper underneath the presser foot. Lower presser foot. (Fig.1)
6. Turn handwheel towards you (A2 direction in Fig. 4) to bring tip of "L0" needle into the paper (See Fig. 2- ①).  
Turn handwheel towards you further and bring tip of "L0" needle flush to the paper (See Fig. 2- ②).  
Then, turn handwheel backwards (A1 direction in Fig. 4) until tip of "L0" needle comes into the paper slightly (See Fig. 2- ③).
7. Check if the needle point is set in the middle or in the front edge of the open hole on the paper. See Figure 3 for correct setting.
8. If not, loosen screw "a" and hold the feed eccentric "3" in position. Then turn the handwheel clockwise "A1" or counterclockwise "A2" as shown in Figure 4 in order to get the correct setting and tighten screw "a".
9. Recheck the adjustment and if necessary re-adjust the position of feed eccentric "3".

1. Remove: Mains lead - Machine base.
2. Set Stitch Length at "5" and differential feed dial at the neutral position "1".
3. Turn the handwheel towards you, check whether both front and back feed dogs move at equal lengths and the distance between them in motion does not vary, as shown on sketch (1) below.
4. If not, set Stitch Length at "0.5", loosen screw "a" and then adjust crank "b" so that both feed dogs move at equal length.
5. Tighten screw "a". Set Stitch Length at "5" and double check if both feed dogs move at equal length.



### POSITION OF FIXED CUTTER AND CUTTING WIDTH DIAL SETTING 17a

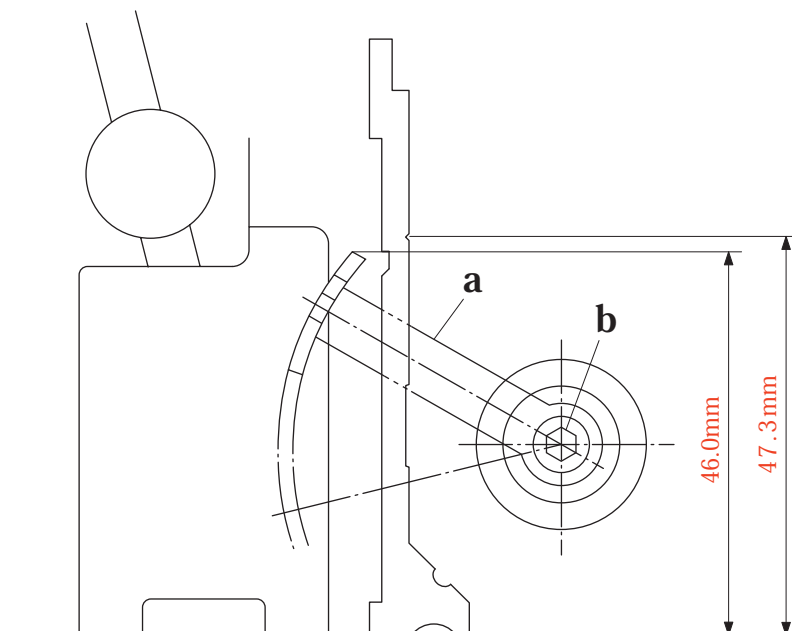




## POSITION OF FIXED CUTTER AND CUTTING WIDTH DIAL SETTING 17b

1. Remove: Mains lead - Sewing foot - Needles.
2. Disengage moving cutter.
3. Basic position: Turn dial "a" to bring indicator to position mark "1" and check if clearance of **0.2 to 0.3mm** is obtained between fixed blade "b" and needle plate edge.  
Make sure that there is no play among cutting width cam unit "d", lever "e" and shaft "f".
4. If not, loosen screws "c".
5. Push dial "a" to the right to obtain a clearance of **0.2 to 0.3mm**.
6. Fasten screws "c" and check the clearance between fixed blade "b" and needle plate edge.
7. Re-engage moving cutter. Turn handwheel towards you and bring moving cutter to its lowest position. Make sure if the moving cutter release knob "g" is not touching the shaft support "h" (the gap between "g" and "h" is 0.1 ~ 0.2mm).
8. Turn cutting width dial "a" to the widest position "7" and check if the knob "g" touches the shaft support "h". Then, turn cutting width dial to the narrowest position "1" and check if the gap between the knob "g" and the shaft support "h" is within 0.1 ~ 0.2mm.
9. If those gaps are not available, loosen screw "j" and get them by turning the shaft support "h" forward/backward or right or left.
10. Tighten screw "j".

1. Remove: Mains lead and Inside cover unit ("7" in page 2a).
2. Turn the handwheel towards you and bring upper looper thread take up lever "a" in its highest position.
3. Check and make sure that the distance between thread take up lever guide and inside of the machine base is at **46.0 to 47.3 mm**.
4. If not, loosen allen screw "b" and adjust position.
5. **Tighten screw "b"**.



The device is built in order to switch off the machine as soon as one (or both) of the covers is opened.

In case that machine is still switch off by the device with both covers closed: check if switch clicks ON and OFF when opening / closing covers.

If necessary, make adjustment in following order; -

Loosen screw "a" and remove a bracket and push rod "c" with switch head "b".

Set switch head "b" upside down by turning push rod "c" 180 degrees. (See Fig. 2)

Install a bracket and push rod "c" with switch head "b" in the proper position. Tighten screw "a".

Check and make sure if switch head "b" does not touch switch (A) when Side Cover opens and push rod "c" is pressed. (See Fig. 3- (A)).

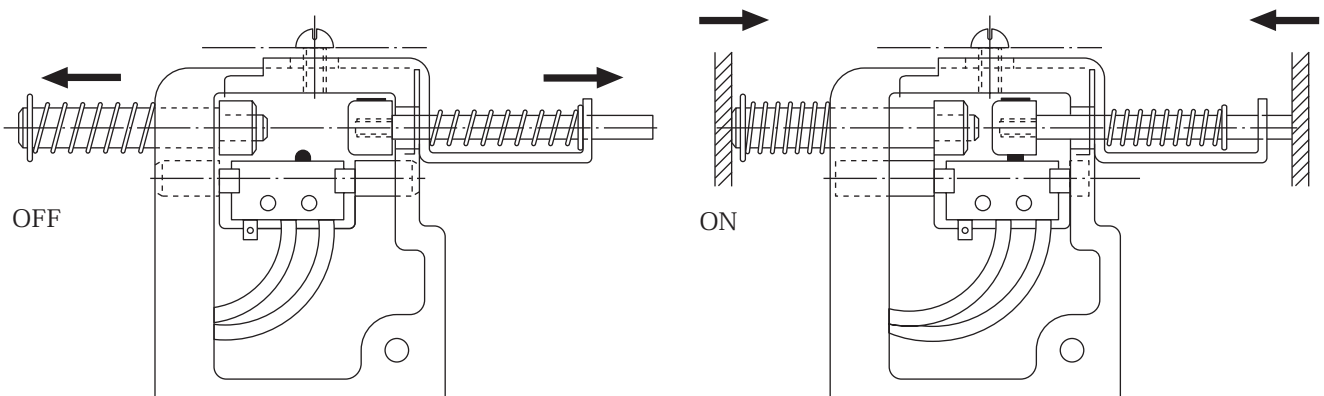


Fig.1

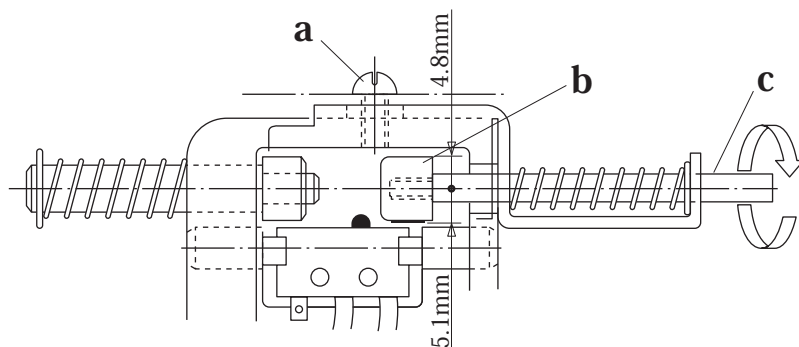


Fig.2

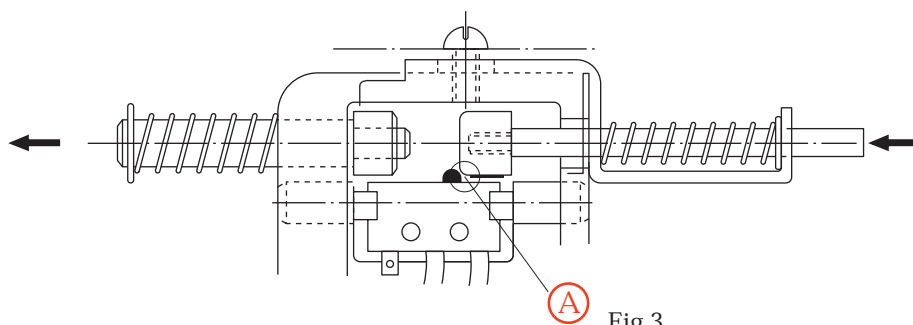
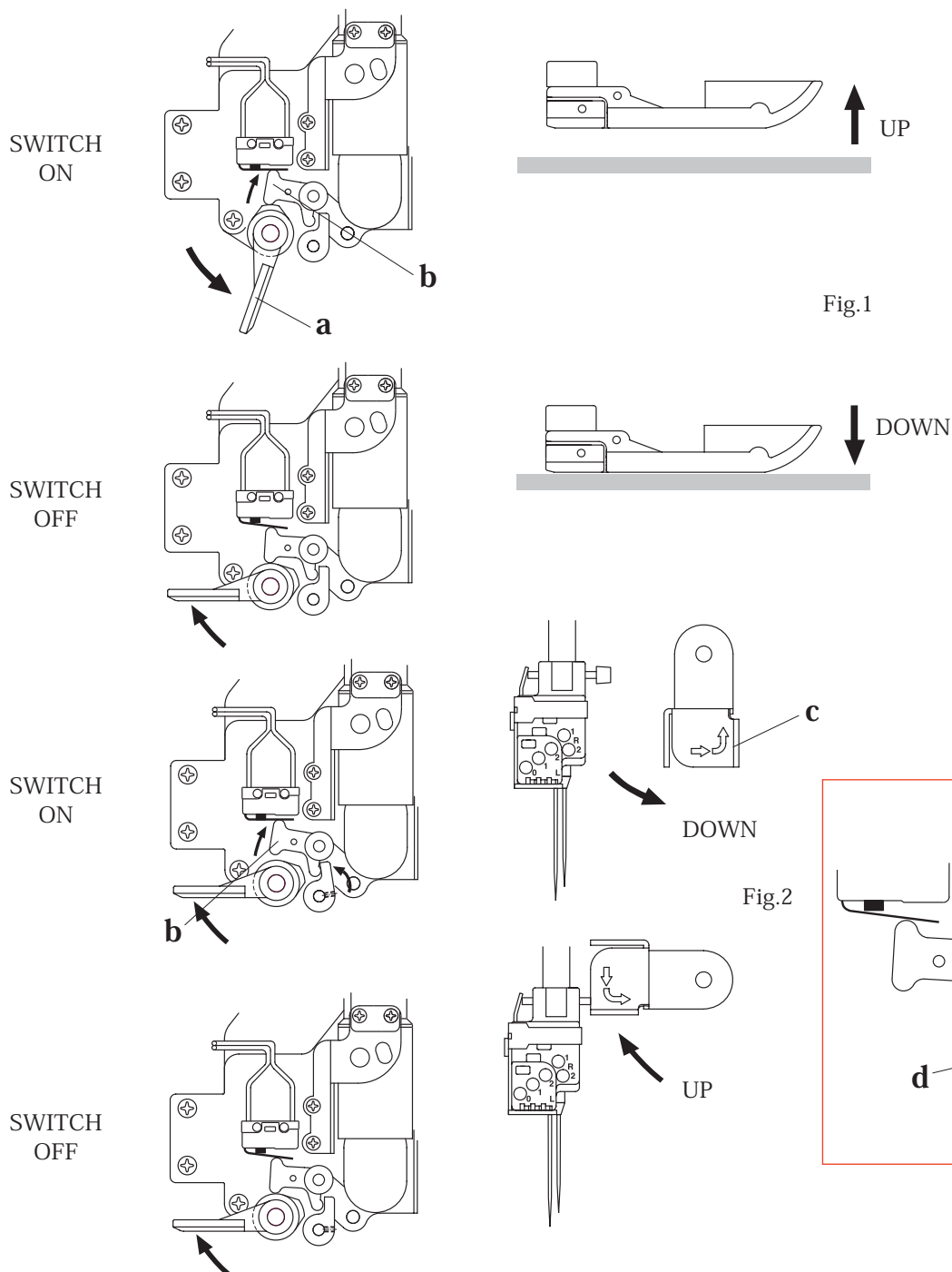


Fig.3

1. Remove: Mains lead
2. Open Lamp Cover.
3. Check and make sure that when presser foot lever "a" and needle clamp safety lever "c" are in up position, lever "b" of Safety lever cam turns off the micro switch.
4. Lower lever "a" or swing down needle clamp safety lever "c" to the right.  
Check if lever "b" turns on the micro switch.
5. If not, lower lever "a" and swing down lever "c" to the right so that the micro switch is turned off. Loosen screw "e" on safety lever "d" and adjust the position of safety lever "d" to get the gap 0~0.2mm as shown in Fig. 3.
6. Fasten screws "e" tightly.



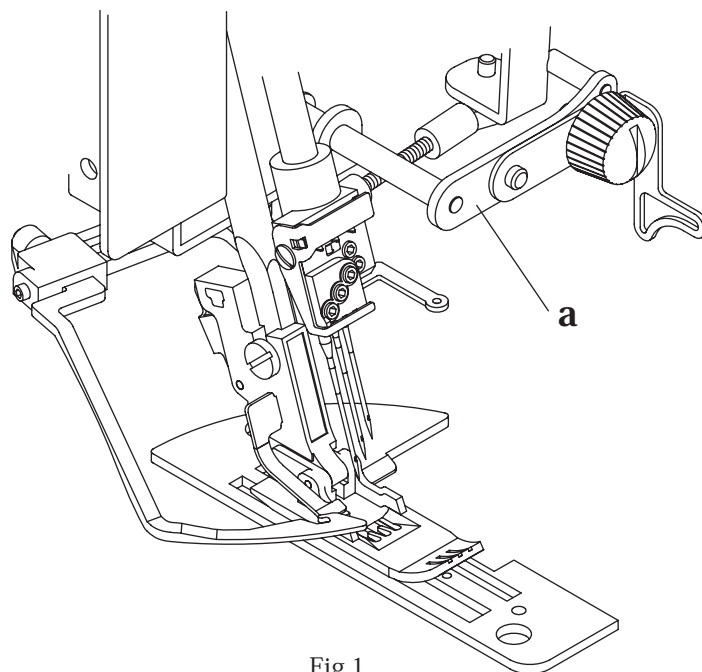


Fig.1

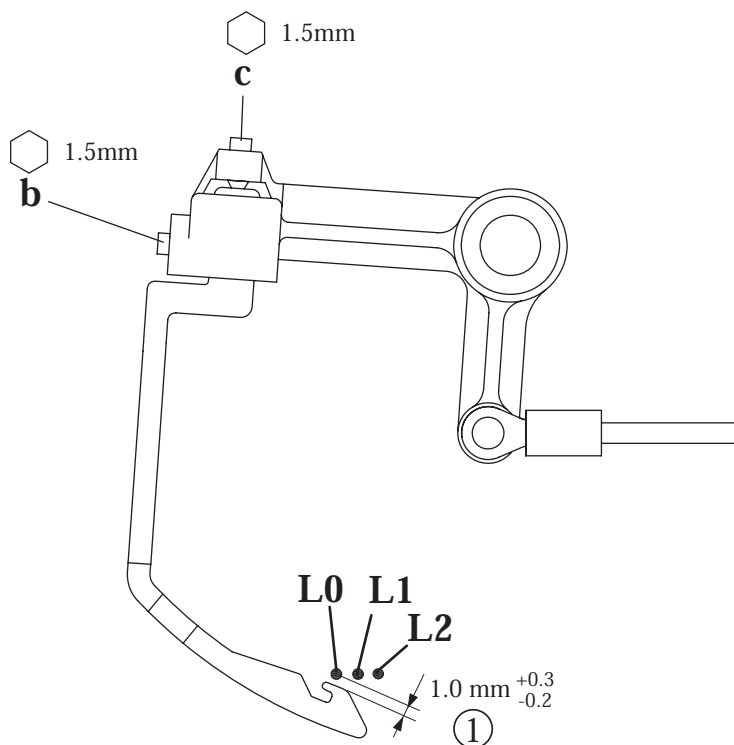


Fig.2

**Adjustment of the Top Cover Device**  
**- Model 845 exclusive -**

**21b**

- 1.Remove: Mains lead
- 2.Select sewing program 10 "**COVERHEM/CHAINSTITCH**".
- 3.Turn handwheel towards you and make sure that the upper looper is set at disengaged position.
- 4.Change the presser foot from standard A/B foot to Top Cover foot (part No. 11636).
- 5.Lower the presser foot.
- 6.Insert the top cover hook into the slot of the holder and fasten screw "**b**".
- 7.Swing down a lever "**a**" with triangle thread guide.
- 8.Turn handwheel towards you and bring the top cover hook in front of Coverhem needles (L0, L1 and L2)
- 9.Make sure that the gap between the top cover hook and Coverhem needle "**L0**" is 1.0 mm (①) as shown in Fig. 2.
- 10.If not, loosen screw "**b**" and turn screw "**c**" clockwise or counterclockwise to get the gap 1.0 mm.
- 11.Tighten screw "**b**".

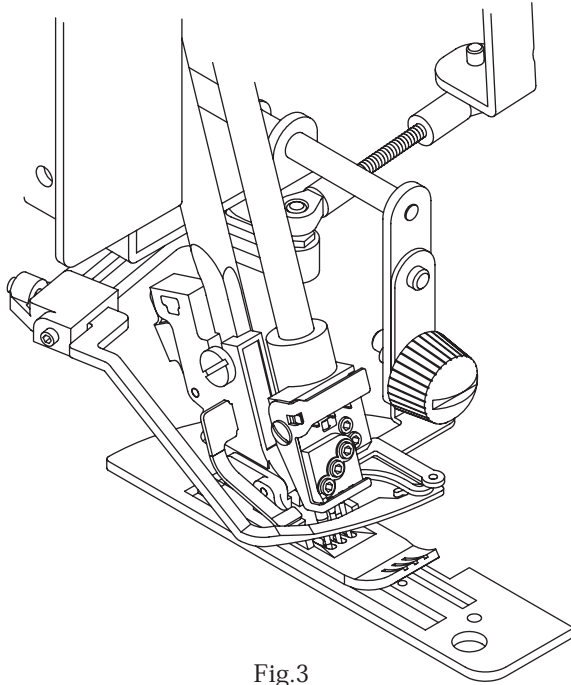


Fig.3

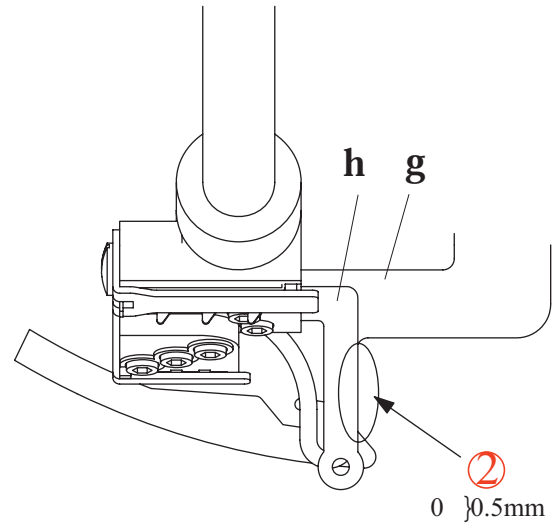


Fig.4

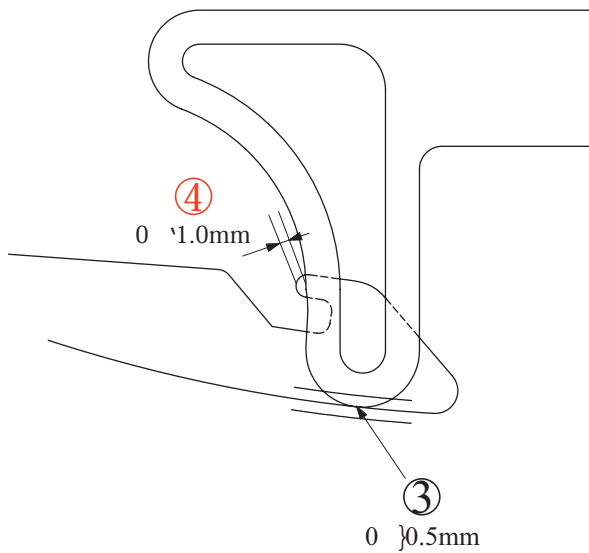


Fig.5

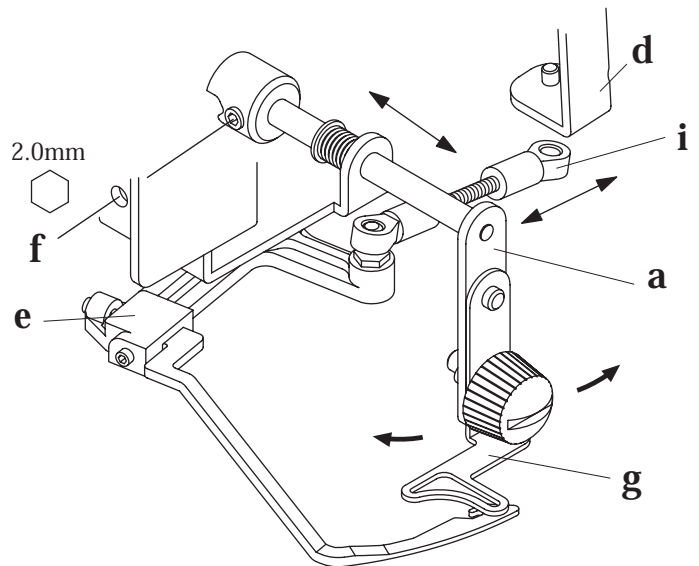


Fig.6

12. Turn handwheel towards you and bring the top cover hook to its far right side.

(See Fig. 3).

13. Check if the right side edge of the round thread guide "h" is lapped over the right side edge of the triangle thread guide "g". (See Fig. 4- ②) and if the top cover hook is positioned below the triangle thread guide as shown in Fig. 5- ③ & ④.

14. If not, make adjustment in following order; -

- 1. Loosen screw "f" and bring lever "a" forward or backward until you get  $0 \pm 0.5\text{mm}$  (See Fig. 5- ③ & ④).
- 2. Hold lever "a" and bring it to the right or left so that the right side edge of the triangle thread guide "g" comes just below the right side edge of the round thread guide "h". Those edges must be positioned in parallel. (See Fig. 4- ②).
- 3. Tighten screw "f".
- 4. Pull out lever "i" from the holder "d" and turn it clockwise or counterclockwise to adjust its length to be longer or shorter until you get 0~1.0mm. (See Fig. 5- ④).
- 5. Push lever "i" to catch the ball on the bottom of holder "d".

15. If the stitch quality is still not good, please make further adjustment in following order; -

- 1. Turn handwheel towards you to bring the top cover hook to its far right side.  
(See Fig. 3).
- 2. Loosen screw "j" and slide the round thread guide "h" to right or left until you get 2.5~3.0mm height between the top cover hook and the round thread guide "h".  
(See Fig. 7- ⑤).
- 3. Tighten screw "j".

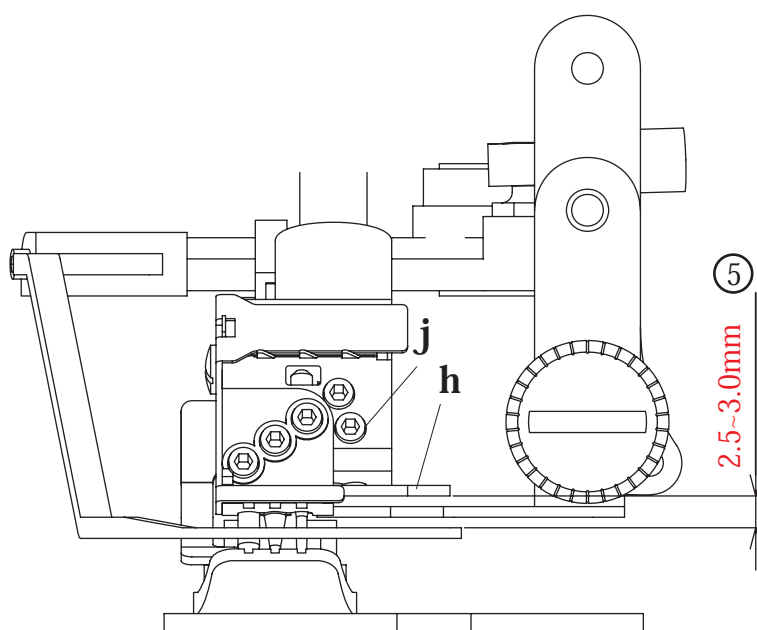


Fig. 7



**ANNEX I**  
**TOOLS FOR SETTING SL/DF DIALS**

**Tool (A) (part No.11960)**

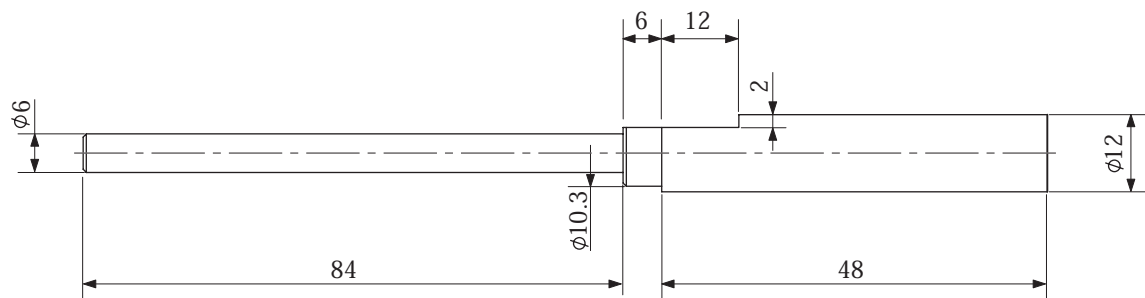
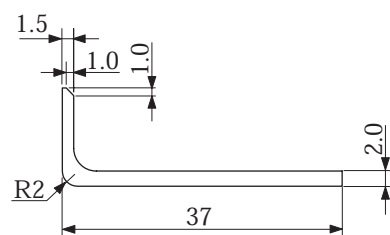


Fig.2

**Tool (B) (part No.11961)**

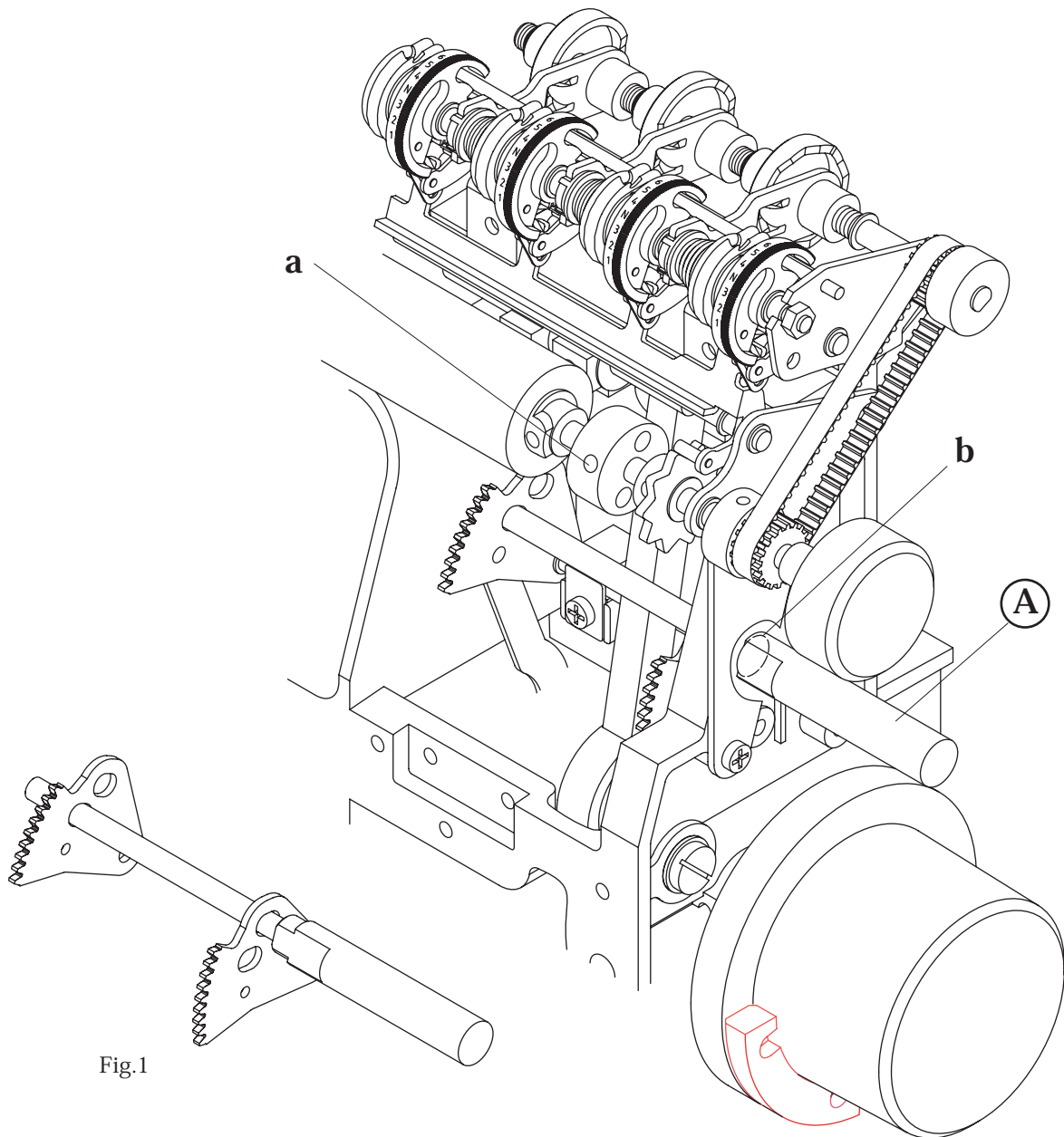


## ANNEX II

### SETTING POSITIONS OF SL/DF DIALS

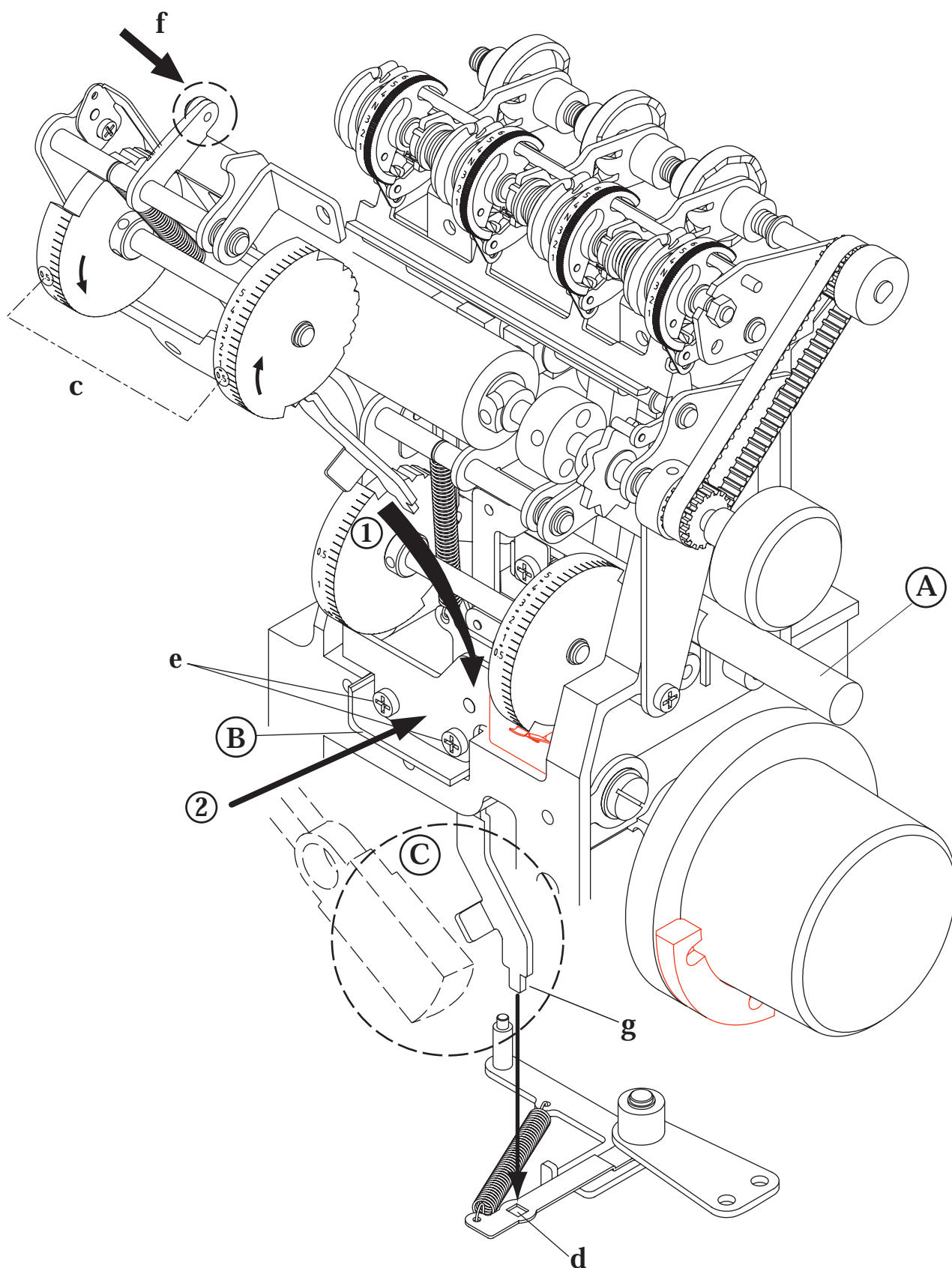
a

1. For easy adjustment, loosen screw "a" of the upper looper shifting cam first.
2. Use tools "Ⓐ" and "Ⓑ".
3. Insert a tool "Ⓐ" into a hole "b" from the right to the left through holes on Gear Shifting Levers as shown in Fig.1.



ANNEX II  
SETTING POSITIONS OF SL/DF DIALS

b



## ANNEX II

### SETTING POSITIONS OF SL/DF DIALS

c

4. Turn SL Dial upward to select "0.5" and DF Dial downward to select "0.5" as indicated by "c".
5. Turn handwheel towards you and bring a balancer to the lower side. Check and make sure if there is enough space around the area © to install the unit of SL/DF dials "c". Hold on pressing looper follower "f" from the left side and install the unit of SL/DF dials "c" carefully so that the end of upper looper shifting lever "g" can fit into the hole "d" on upper looper release lever exactly.
6. Place a tool "B" on the casing and push the unit of SL/DF dials forward. Fasten screws "e" tightly. Remove a tool "A" and "B".

**d**



Fig.4

ANNEX II  
SETTING POSITIONS OF SL/DF DIALS

e

7. Check and make sure if a shaft "i" is parallel to a shaft "h". Fasten a screw "j".  
(See Fig. 2&3)
8. Check and make sure if gear shifting levers catch gears inside of SL/DF dials as shown in Fig. 4. "A" shows the position where a tool "A" goes through.
9. Check and make sure if the hook of the looper follower "c" falls into the V-shaped hollow of the upper looper shifting cam "b". (See adjustment of the page F **"POSITION OF THE PDISPLAY DRUM INDICATOR & UPPER LOOPER SHIFTING CAM"** and view A). Tighten screw "a".
10. If stopper spring plate "p" gives too heavy or light pressure on SL dial, loosen screw "n" and adjust the position of stopper spring plate by sliding upper or lower. Tighten screw "n". (See Fig. 3).

### ANNEX III

## CLEARANCE BETWEEN FEED DOG AND NEEDLE PLATE

1. To adjust a clearance between feed dog and needle plate, set SL dial at "5" and DF dial at "1". Turn the handwheel towards you until feed dog moves to far rear position. Loosen screw "k" and move feed bar "m" back and forth to obtain a clearance "F" of 0.3 to 0.5 mm. (Fig. 1) Fasten screw "k".
2. Turn the handwheel towards you until feed dog moves to far front position. Check and make sure if a clearance between feed dog and needle plate is 0.7 mm. (Fig. 2)

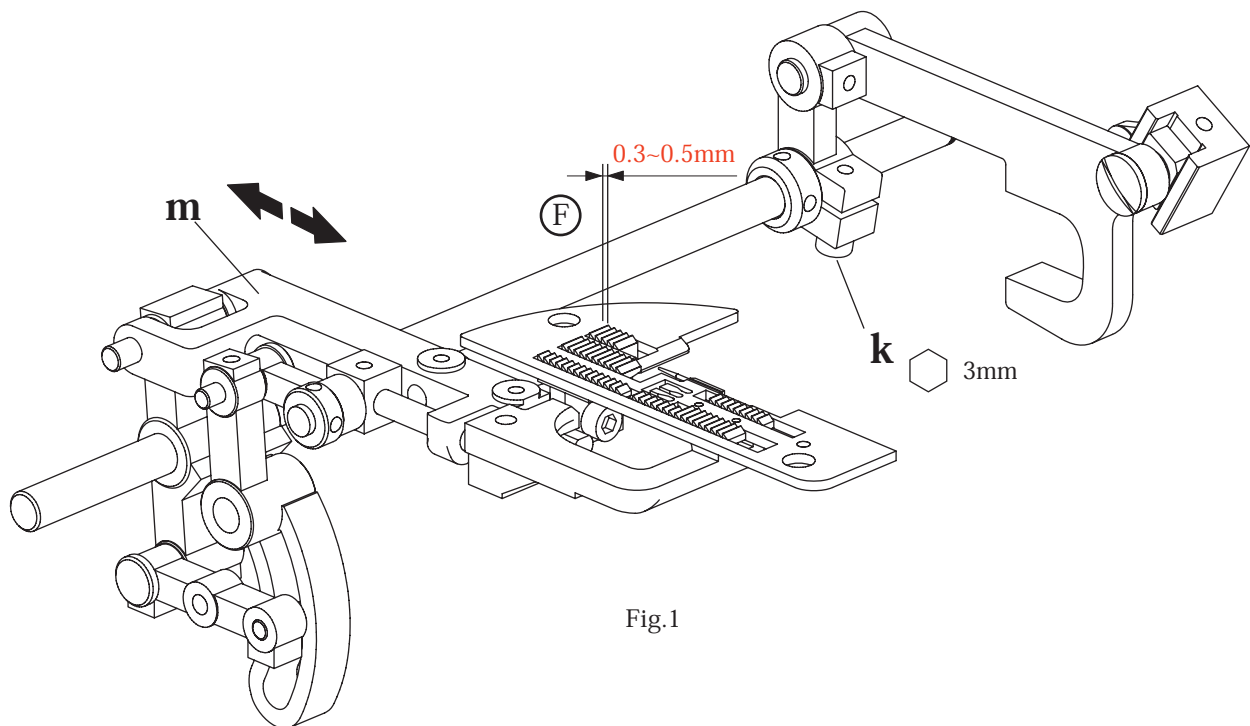


Fig.1

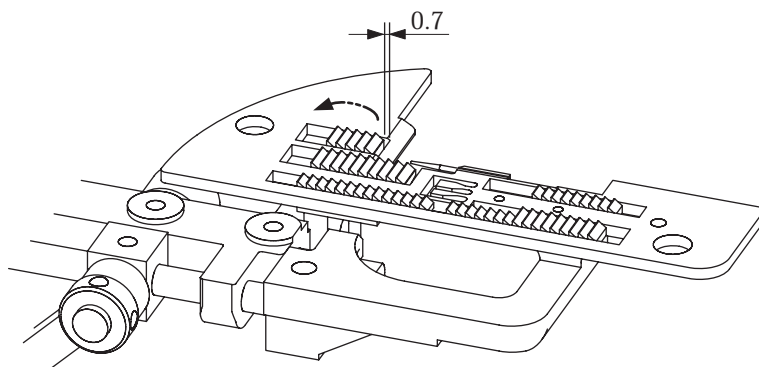


Fig.2

**ANNEX IV**  
**TROUBLE SHOOTING - COVER HEMS**  
**- cover hems stitch being pulled -**

**a**

1. If "**L0** or **L1**" needle thread is being pulled to the right (Fig.1), then check the following points:
2. Insert new needles (No. 90) .
3. Check and make sure that needles are correctly inserted into the needle clamp.
4. Check and make sure that the needle (**L0** or **L1**) is not touching the needle plate holes. If necessary, check adjustment on page 3. "Height and orientation of needle bar in relation to the needle plate holes".

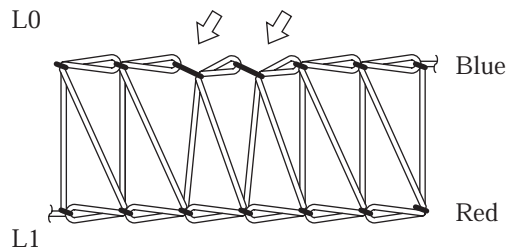
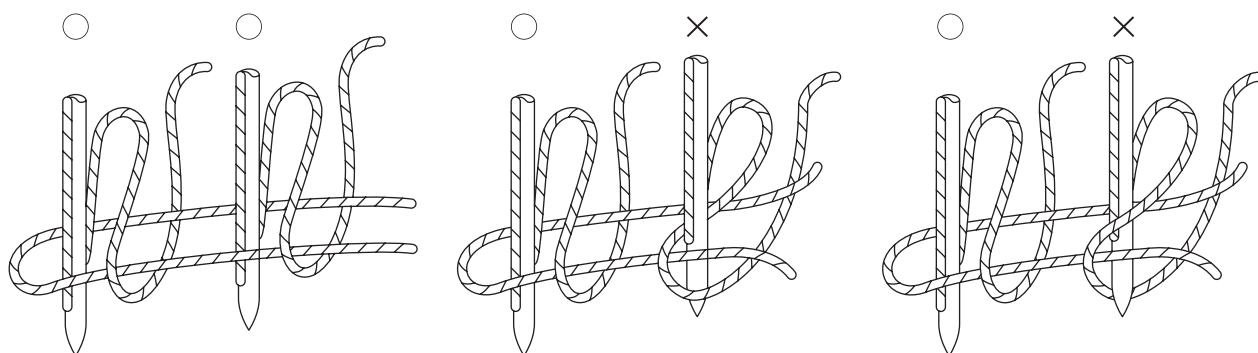


Fig.1

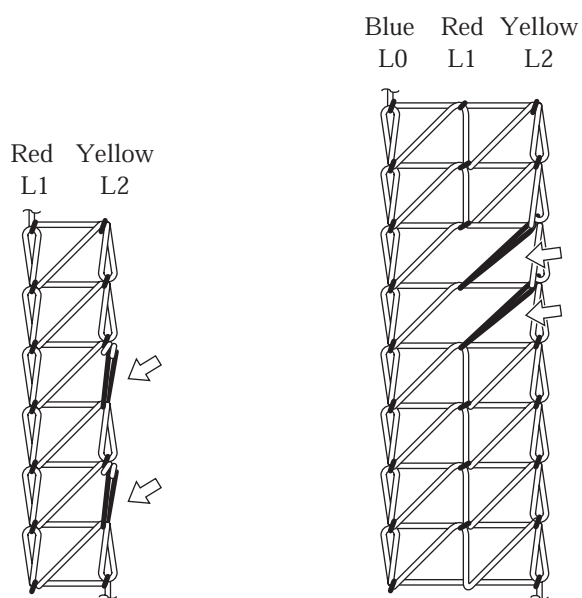


**ANNEX IV**  
**TROUBLE SHOOTING - COVER HEMS**  
**- irregular loop formation on the chain needles -**

**b**

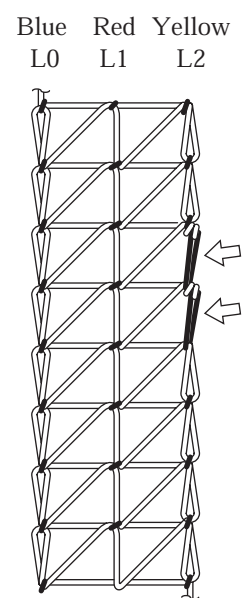


**Fig.1**

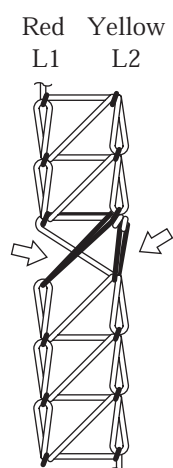


**Fig.2**

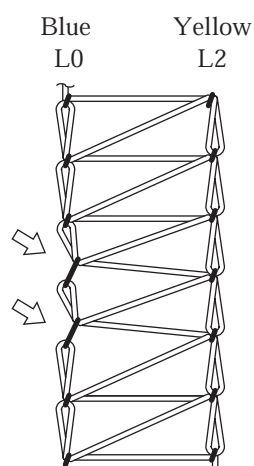
**Fig.3**



**Fig.4**



**Fig.5**



**Fig.6**

**ANNEX IV**  
**TROUBLE SHOOTING - COVER HEMS**  
**- irregular loop formation on the chain needles -**

**c**

When chain needles start rising from their lowest positions, Chain looper also starts its motion from its far right position to the left. Turn handwheel towards you to bring Chain needles up and make sure if Chain looper passes into loops of Chain needle thread behind each needle.

See cover hem stitch formation on page **V** . However, it is possible that some irregular loops will appear on the chain needle threads. In that case, the chain needle threads will not be positioned correctly and will fall down to the right or left (Fig.1).

As result of the above, the following problems may happen.

---

**1. Cover Hem (Narrow & Wide)**

If "**L2**" needle falls into its needle thread loop (Fig.1-2). Check position of chainstitch eccentric (0.5-1.0mm). See page 11 for adjustment. Check clearance between chain looper and "**L0 / L1**" needle. If sewing result is the same, replace chain looper.

---

**2. Triple Cover Hem**

If "**L2**" needle falls into the Red needle thread loop (Fig.3). Check if the tension is correctly set. Check the chain looper clearance and orbital timing "**L0-L2**". See page 11 for adjustment. If sewing result is the same, replace chain looper.

---

**3. Triple Cover Hem**

If "**L2**" needle falls into its needle thread loop (Fig.4). Replace chain looper.

---

**4. Cover Hem (Narrow & Wide)**

If "**L2**" needle falls into both of the "**L2**" and "**L1**" needle thread loops (Fig.5). Replace chain looper.

---

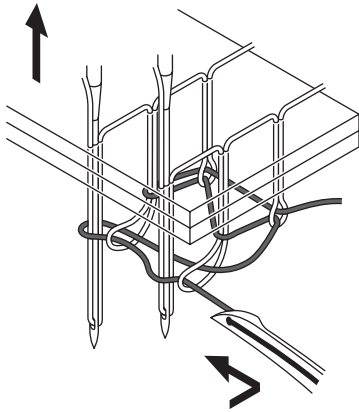
**5. Cover Hems**

If "**L0**" or "**L1**" needle thread is pulled to the right (Fig.6). Check and make sure that the "**L0**" or "**L1**" needle is not touching the needle plate hole. When checking the above, use new needle.

# ANNEX V COVER HEM STITCH FORMATIONS

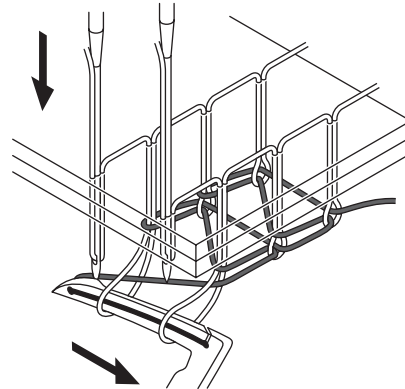
a

1



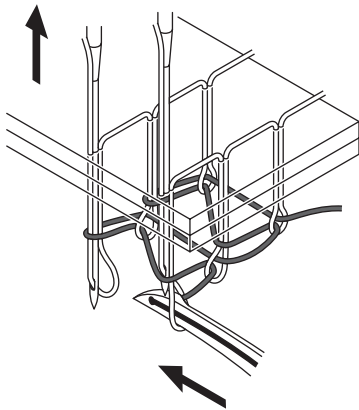
Needles rise to form loops. Chain looper start its motion from right to left.

4



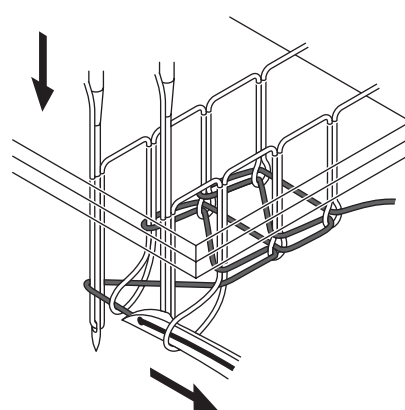
Needles go down into the thread triangle, and chain looper is moving to the right.

2



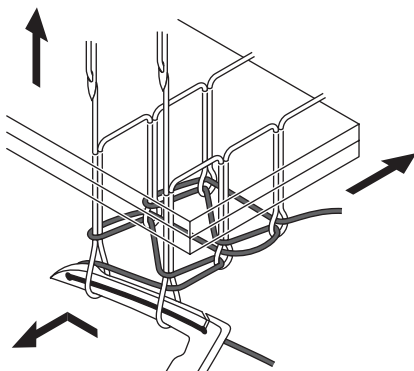
Chain looper pass into needle thread loops.

5



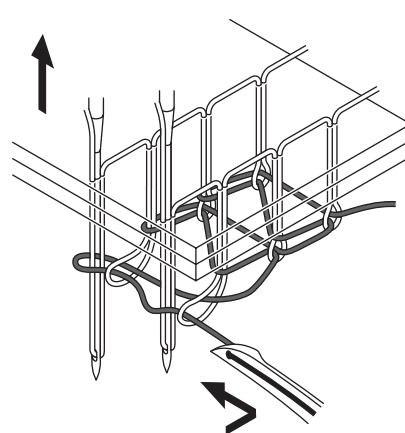
Chain looper is releasing needle thread loops.

3



Fabric move forward to the next stitch and chain looper move to the front of the needles.

6

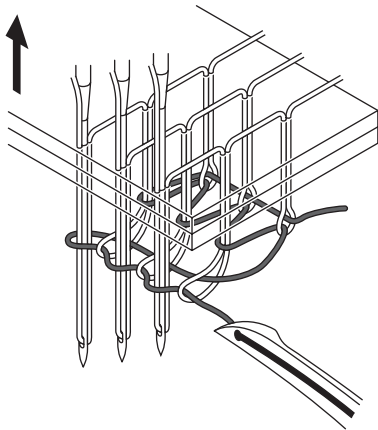


Needles are in the lowest position and chain looper is set at the extreme right position.

## ANNEX V COVER HEM STITCH FORMATIONS

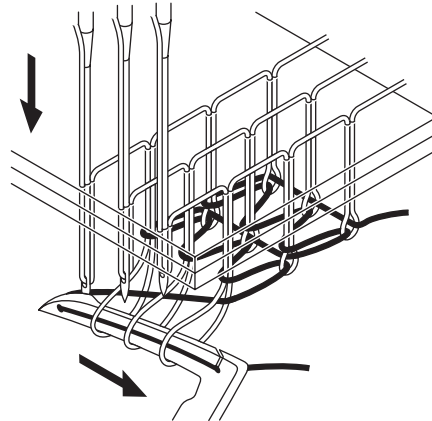
b

1



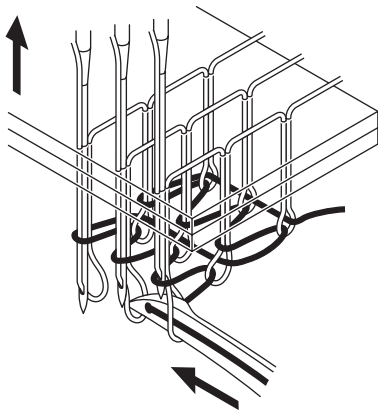
Needles rise to form loops. Chain looper start its motion from right to left.

4



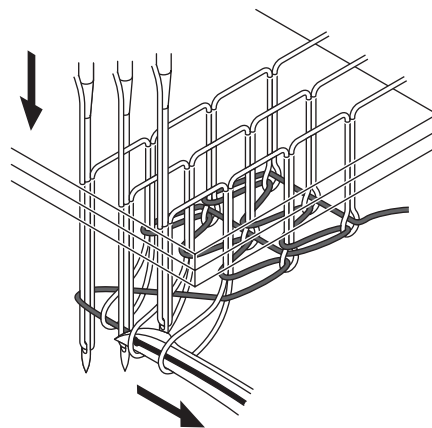
Needles go down into the thread triangle, and chain looper is moving to the right.

2



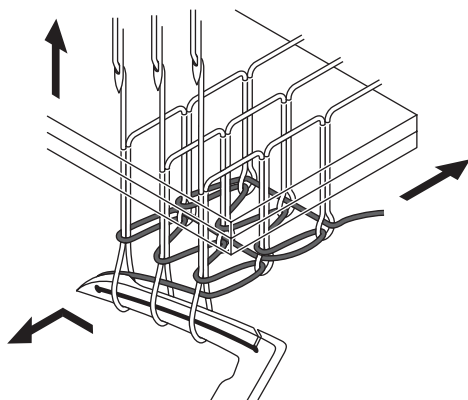
Chain looper pass into needle thread loops.

5



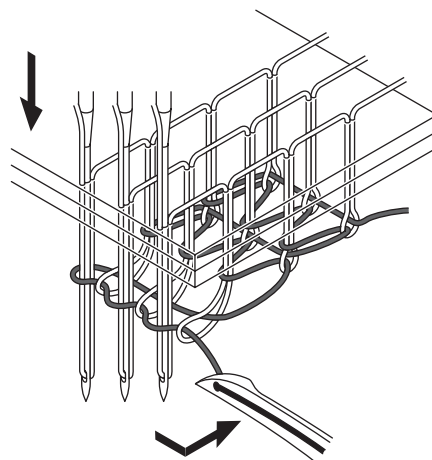
Chain looper is releasing needle thread loops.

3



Fabric move forward to the next stitch and chain looper move to the front of the needles.

6



Needles are in the lowest position and chain looper is set at the extreme right position.

