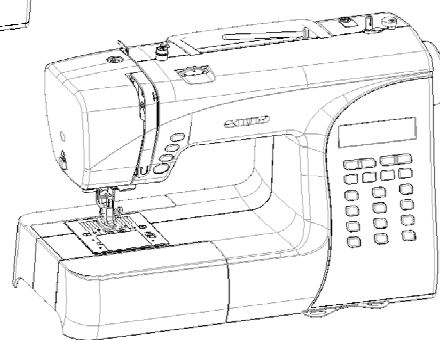
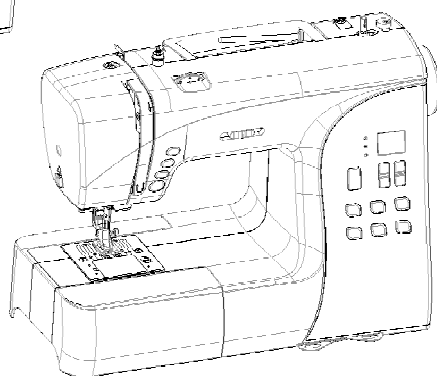
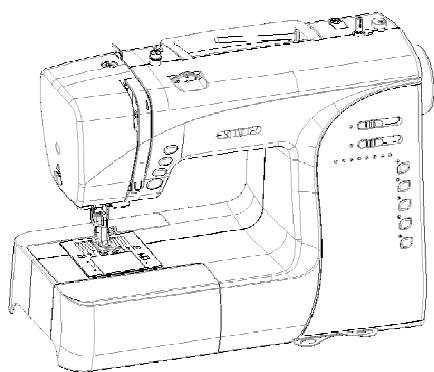
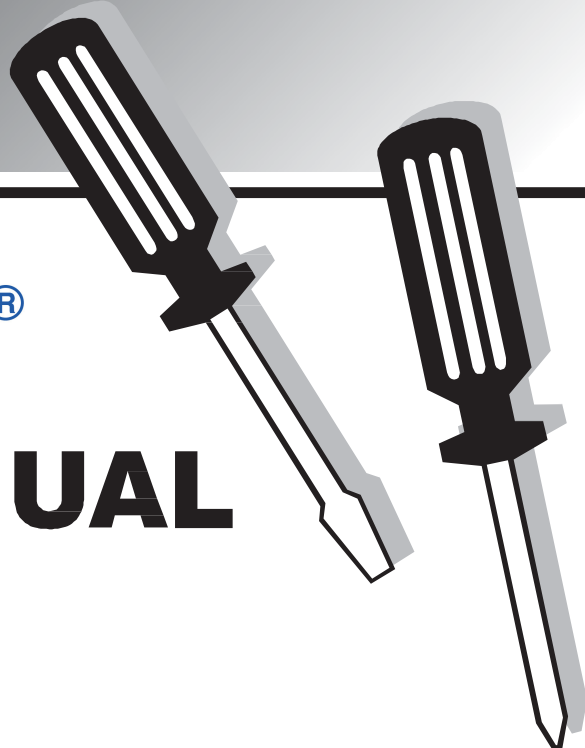


# **JUKI®**

# **REPAIR MANUAL**



**HZL-H Series**

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## ATTENTION

Be sure to observe the following, as they may well become causes for fire, electric-shock, injuries, and damage to parts.

- Be sure to unplug power source before engaged in disassembly, installation, adjustment.
- In case of installing please pay special care to clamp electrical cords, etc., scars to sheath, mis-circuit, etc.
- Be sure to use regular standard part in replacing.

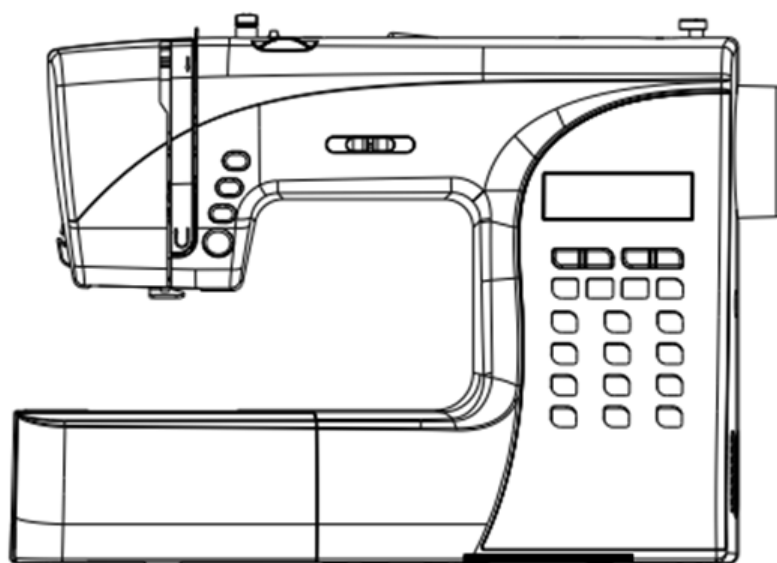
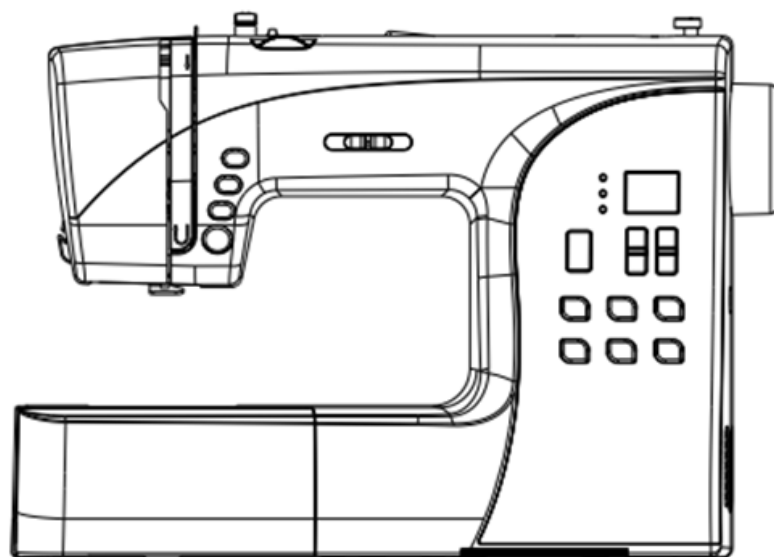
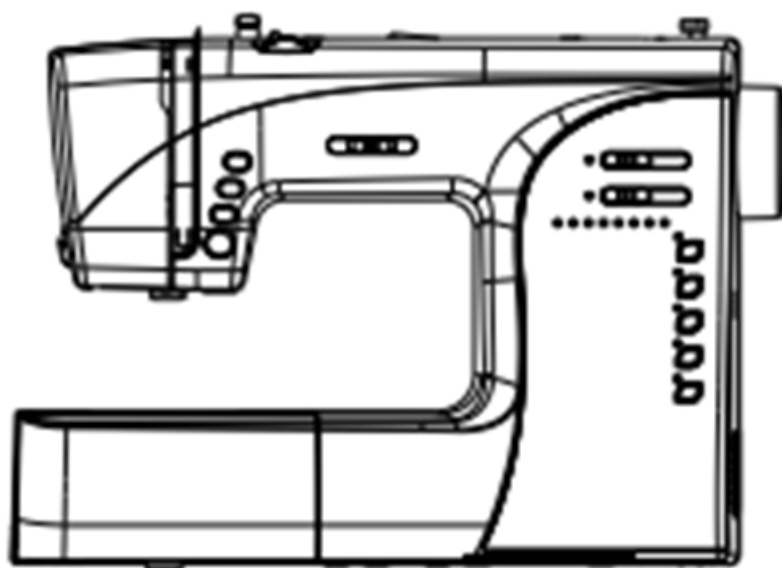
# 1. Products specification

ITEM	TYPE	HZL-H
Machine style		Free arm
Hook system		Drop-in Bobbin
Size of machine (mm) L x W x H		400 x 188 x 290
Weight (kg)		H1:5.8kg H2:5.8kg H3:5.8kg
Power		AC 110~120V/60Hz (U.S.A) 100V~240V (50Hz、60Hz) (Eu)
Revolution per minute (R.P.M)		Straight Stitch 70-800RPM
		Normal Stitch 70-800RPM
		Bobbin Winder 350-1800 RPM
		Reverse Stitch 70 RPM
		Lowest Speed 70 RPM
Needle		HAX1、#9~#18
Max. forward feeding		4.5~4.7mm
Max. reverse feeding		2.8~3.0mm
Max stitch width		7mm
Electricity consuming		70W
Thread take up lever		Slit type
Exchange presser foot		Touch controlling
Presser foot tension adjustment settlement		Dial controlling at the left side
Needle plate		Transparent window
Handle		Handle type
Spool rod		Horizontal style
Thread cutting settlement		Inclusive within face plate
Bobbin Winder		Self releasing with automatic stop
Upper thread threader		Automatic upper thread threader
Sewing table		Accessory placement
Patterns		40/80/197 patterns
Button hole system		One step button hole lever
Dial tension settlement		Standard settlement
Presser foot lift settlement		2 steps
Feed dog up-down change		Yes, lever controlling in the base
Feed dog		7 gears
Slowest speed		Yes. (Both forward and backward)
Slide volume		Feedback function
Auto stop		Self stopping while bobbin winding
Motor		Motor overload settlement
Accessory placement		Inside of sewing table

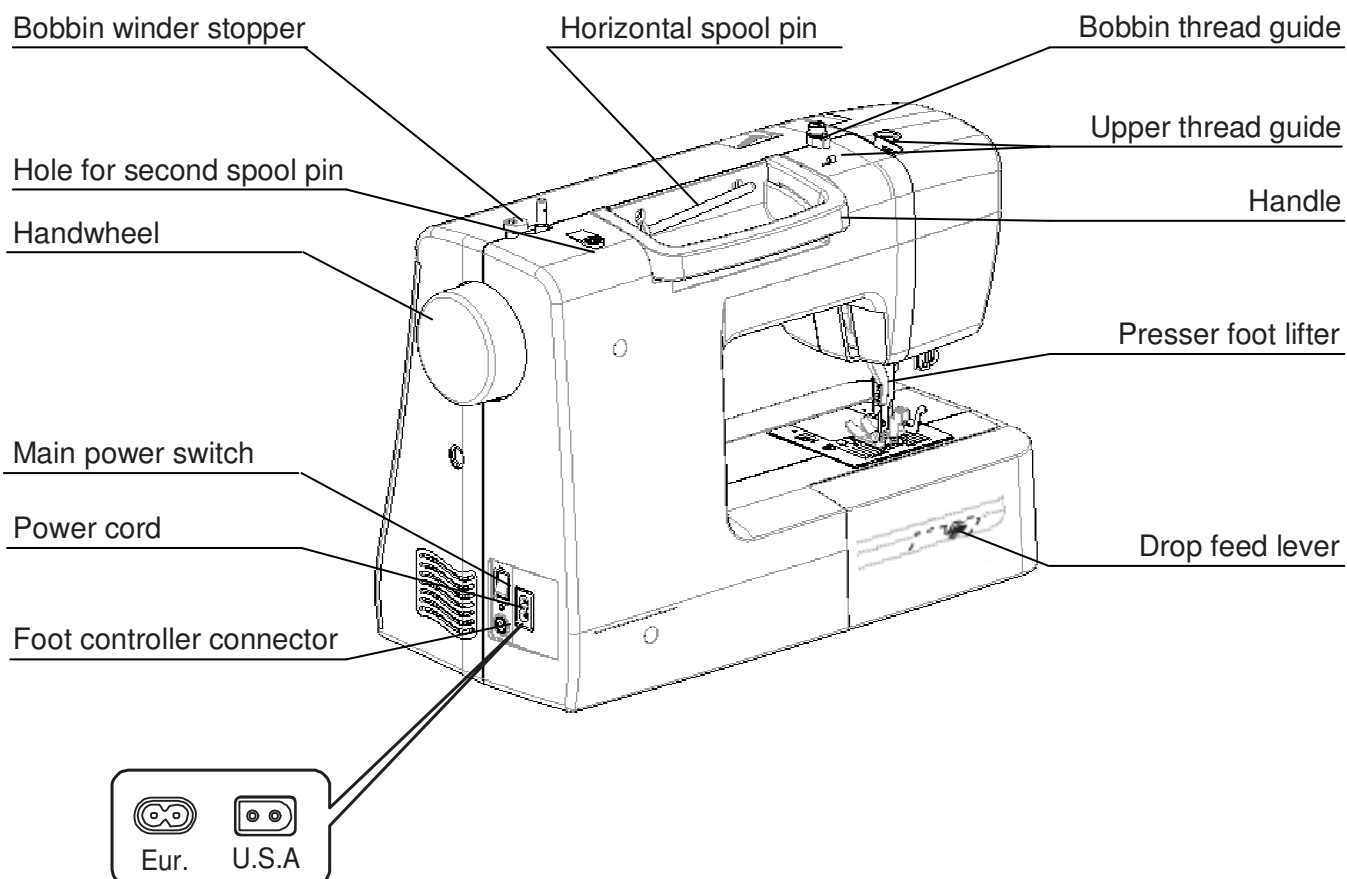
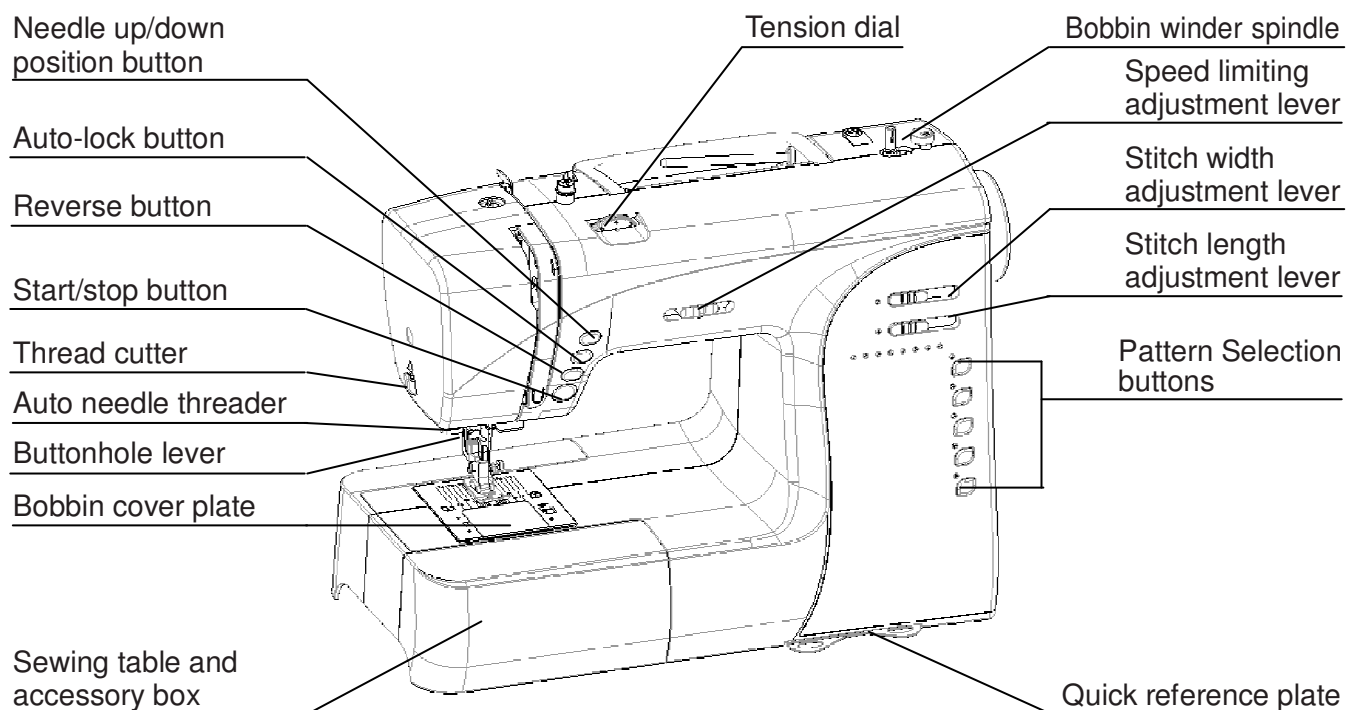


## 2. Out look

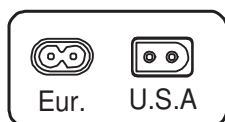
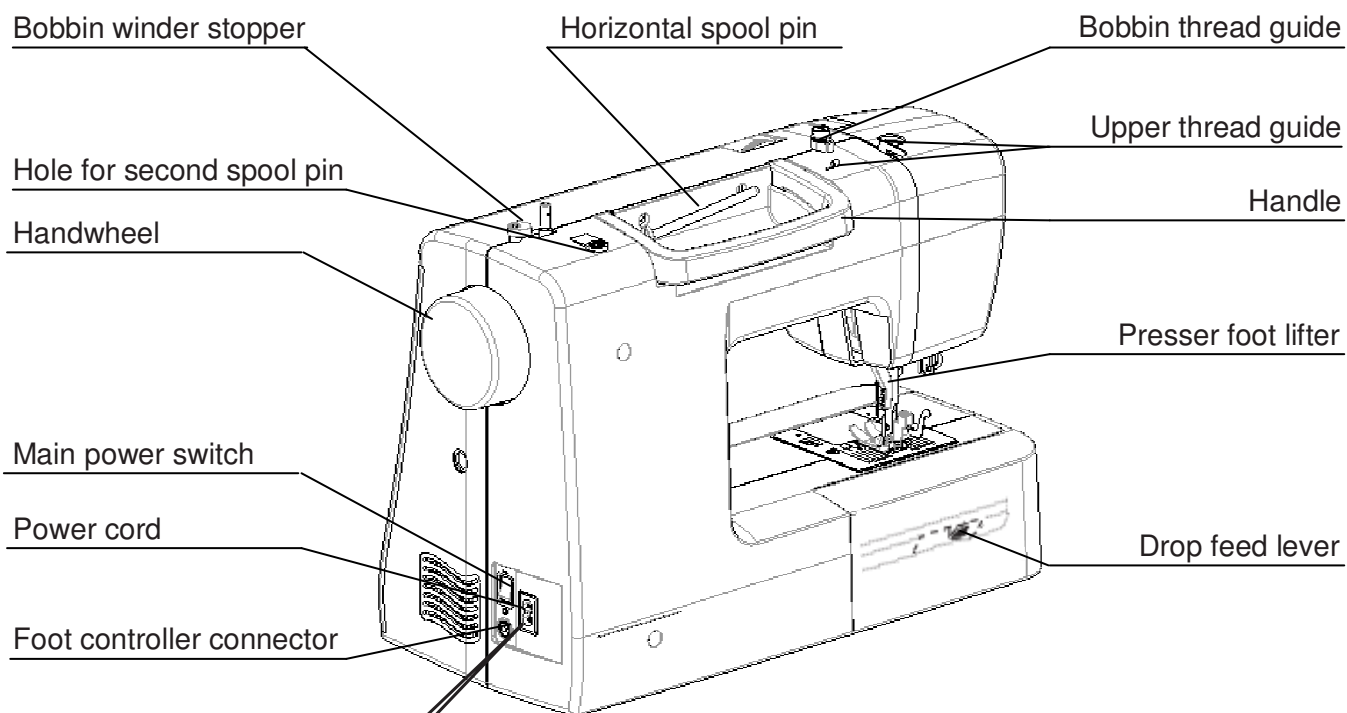
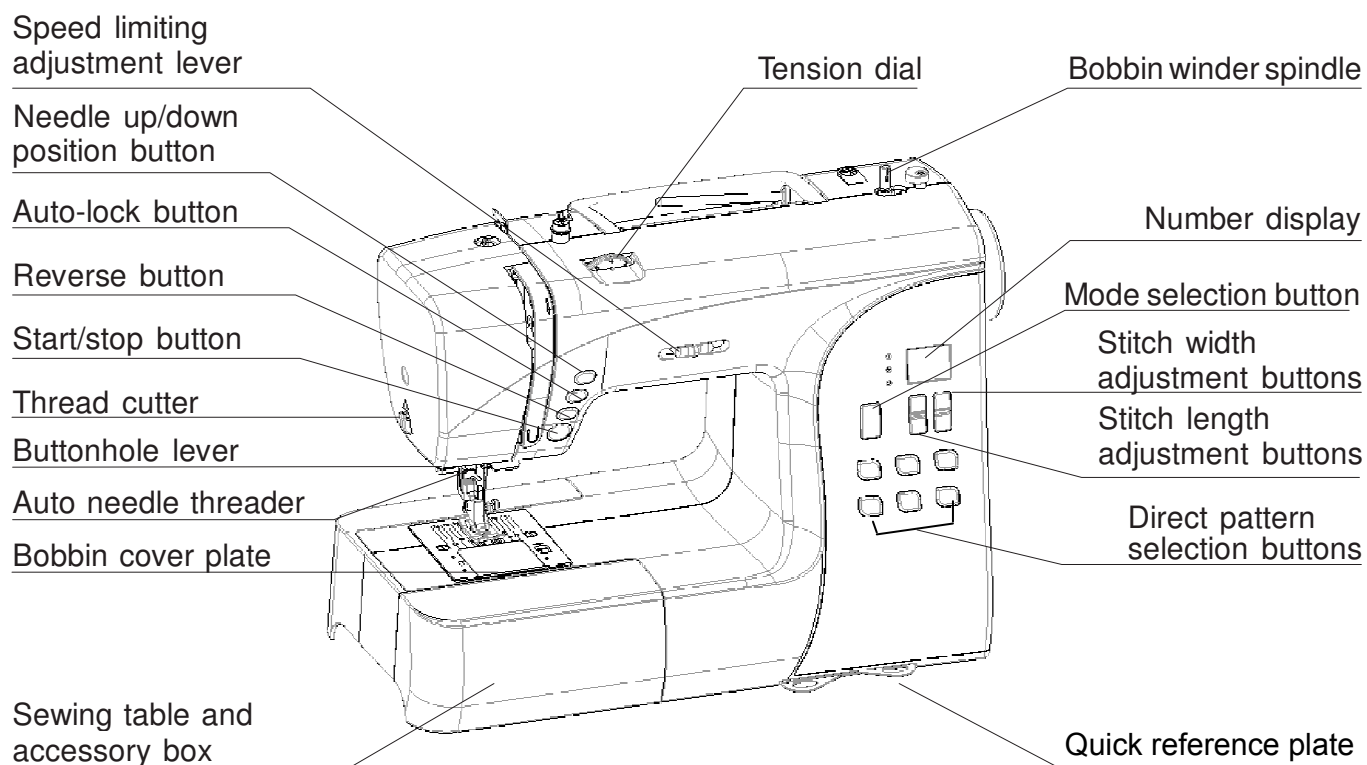
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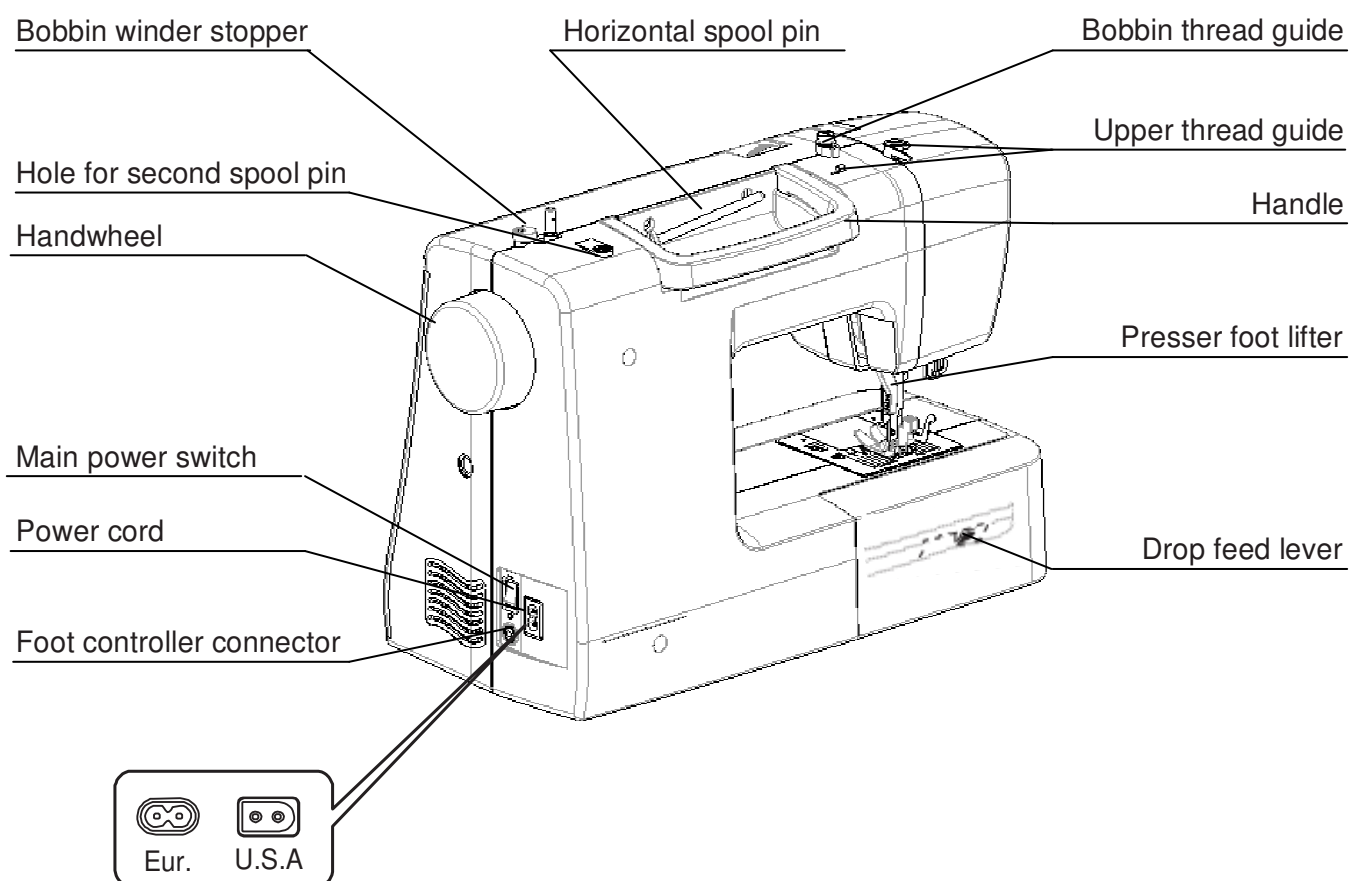
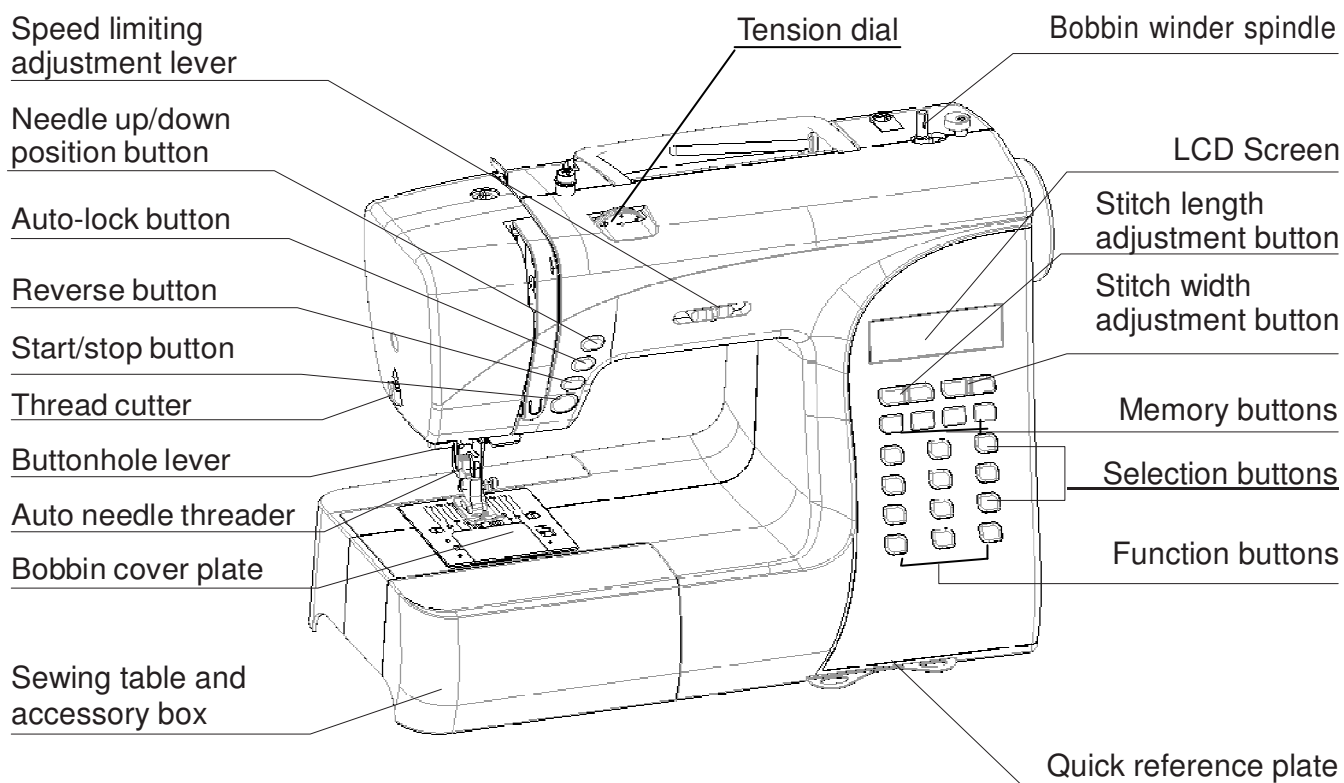
### 3. Names of principal parts



### 3. Names of principal parts

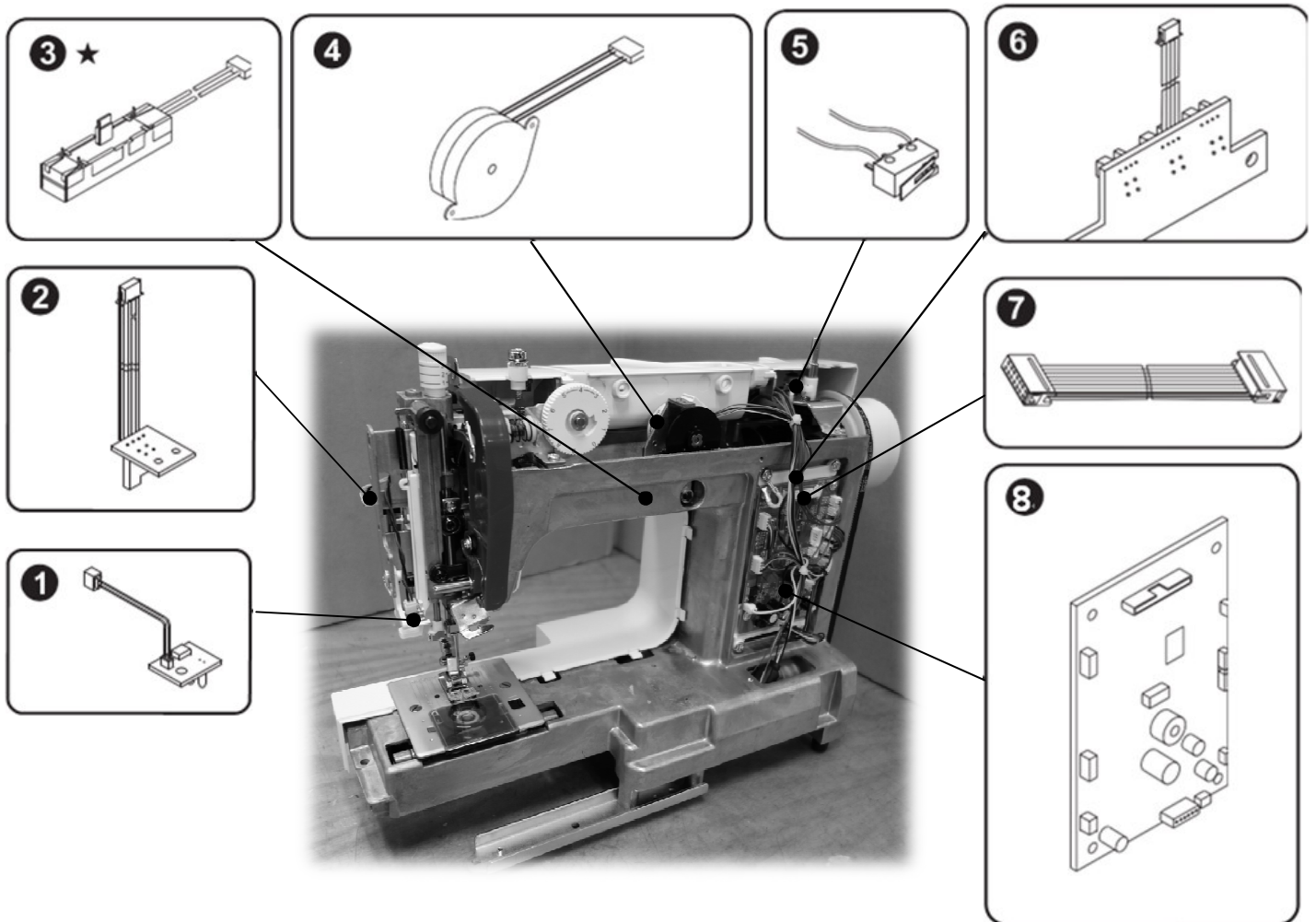


### 3. Names of principal parts



## 4. Names of electronic parts

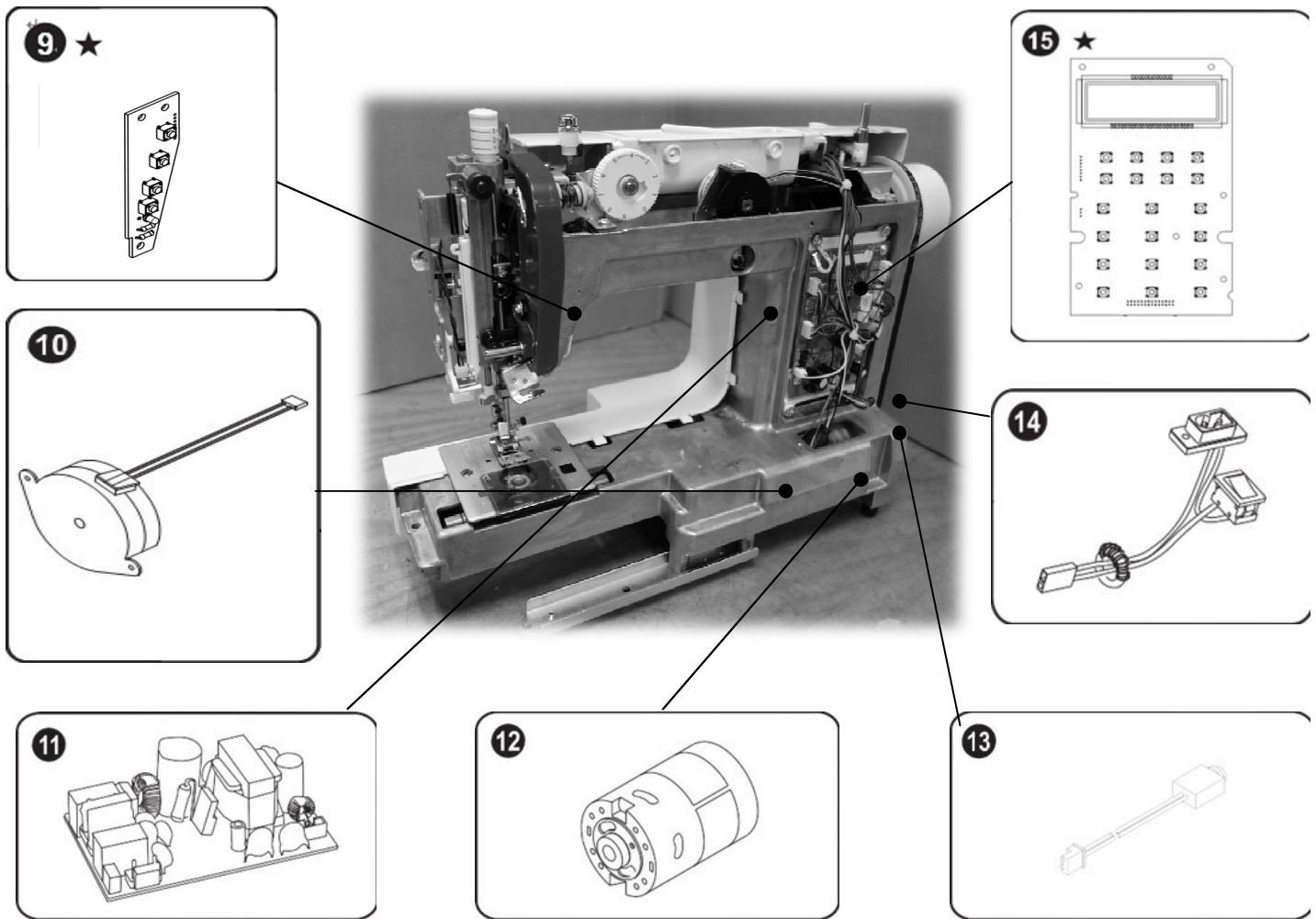
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1. LED light lamp board
2. Photo sensor board (B/ H)
3. Slide resistor complete
4. Step motor complete (zigzag)
5. Bobbin winder micro switch
6. Photo sensor complete
7. Flat cable
8. Main circuit board

★ : Set on the front cover

## 4. Names of electronic parts



- 9. Key plate
- 10. Step motor complete (stitch length)
- 11. HF transformer complete
- 12. DC Motor
- 13. Foot controller receptacle
- 14. Switch receptacle ass'y
- 15. Stitch selection control board

★ : Set on the front cover

## 5. Removing methods of external parts

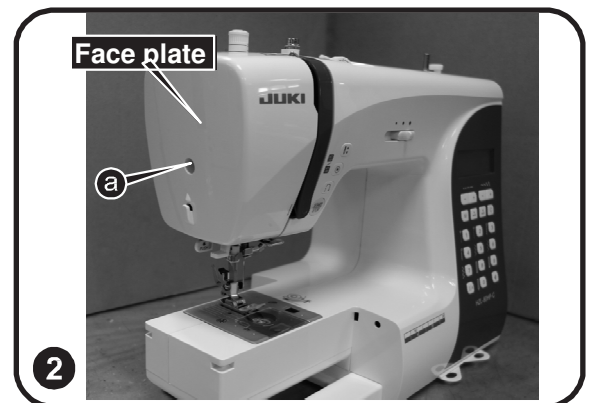
### 5-1 Sewing table complete

Keep the snap-in sewing table horizontal, and pull it in the direction of the arrow. (1)



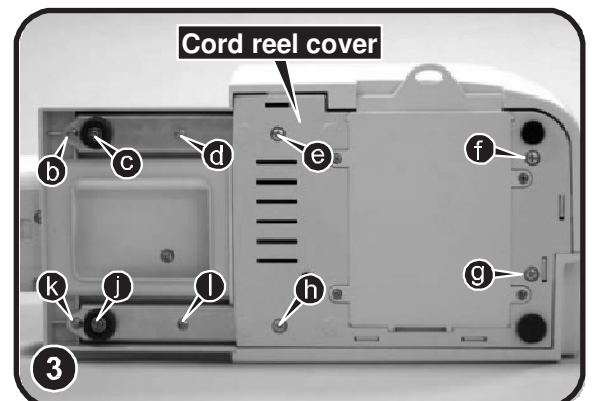
### 5-2 Face plate

Remove plug, remove screw (a) and remove the face plate. (2)



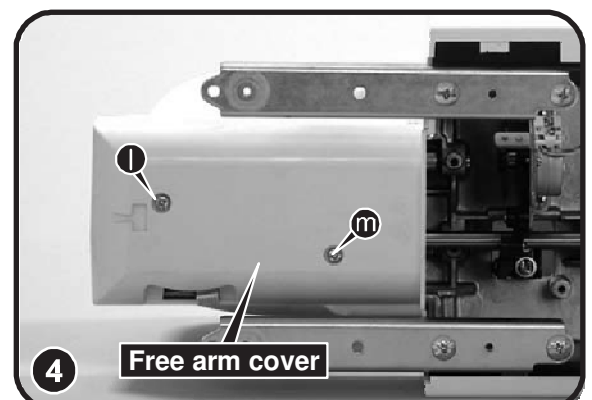
### 5-3 Cord reel cover

- Lay down machine.
- Remove screws (b, c, d, e, f, g, h, i, j, k). (3)
- Remove cord reel cover.



### 5-4 Free arm cover

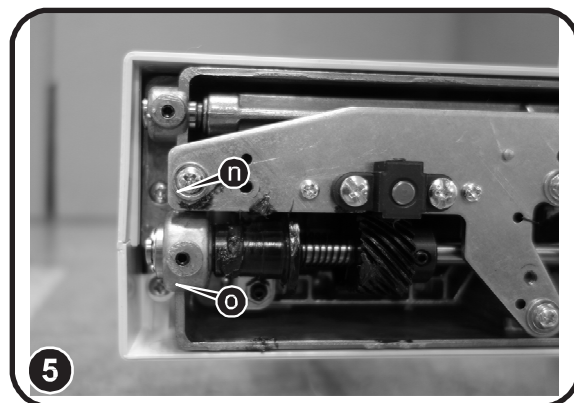
Remove screws (l, m) and remove the free arm cover. (4)



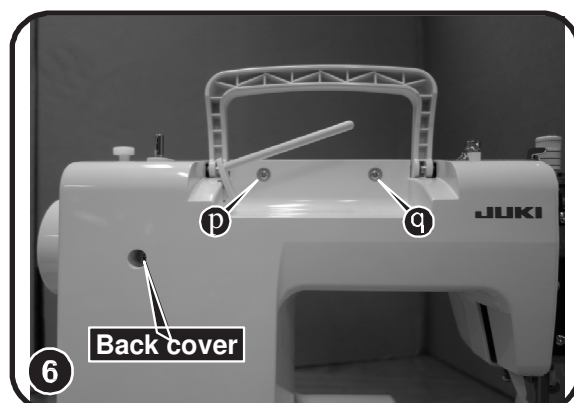


## 5-5 Front cover

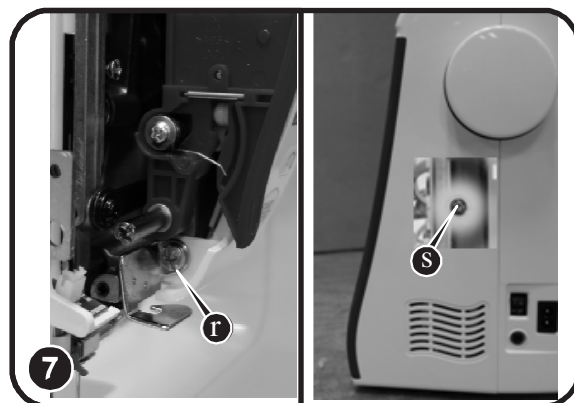
- Remove screws (n, o). (5)



- Stand the machine and face the back cover.
- Remove screws (p, q). (6)



- Loosen screws (r,s) about 3mm. (7)



- Stand the machine and face the front cover.
- Push the right side of front cover to make it separate from the machine. (8)





- Disconnect the flat cable (t), remove the front cover following direction of arrow. (9)

**Attention:**

Be sure to remove the front cover carefully, because the leader wire and the body are connected together.

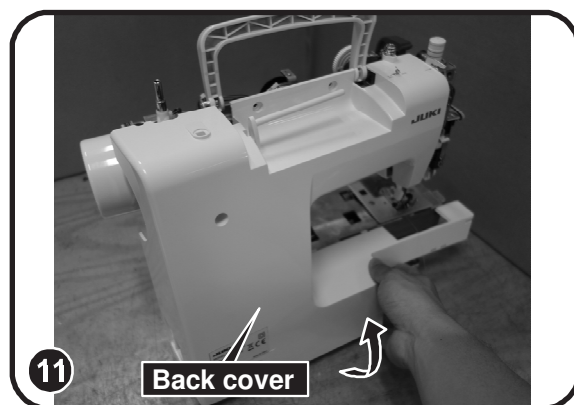


## 5-6 Back cover

- Remove front cover first.
- Remove screws (u, v, w). (10)



- Pull down presser bar lifter lever.
- Remove back cover following direction of arrow. (11)



## 6. Adjusting methods of each part

---

### 6-1 Symbol instructions



Noise occur while the machine is running.



Skip-over stitching, needle breakage, and problems associated with needle.



Delivery of cloth to be in disorder and insufficient, problems associated with delivery amount.



Stitch tightening problem.



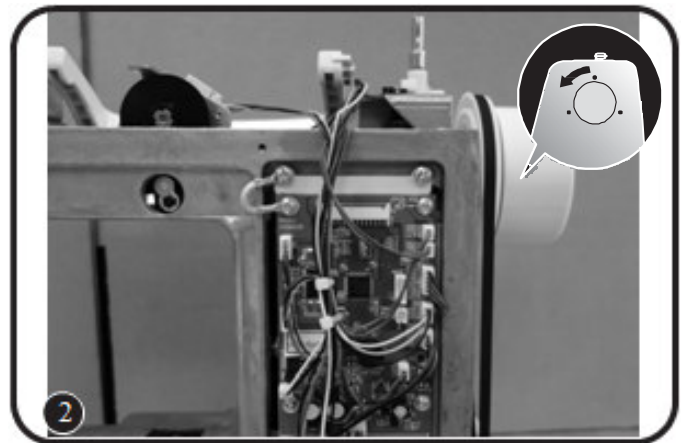
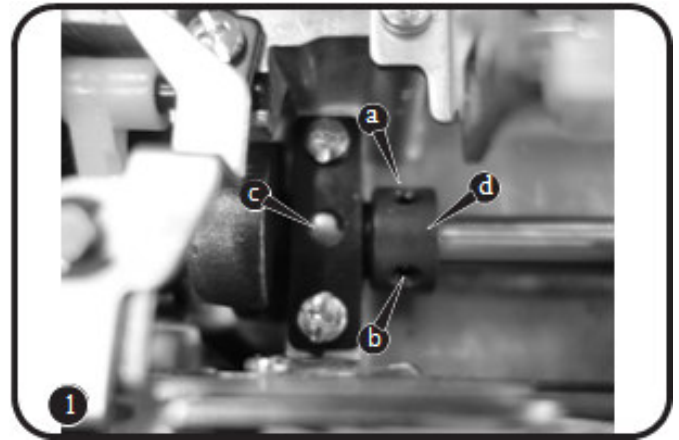
BH right and left stitching is not even, incorrect length and problems associated with buttonhole sewing.



Bobbin winding problem.

## 6-2 Play of arm shaft

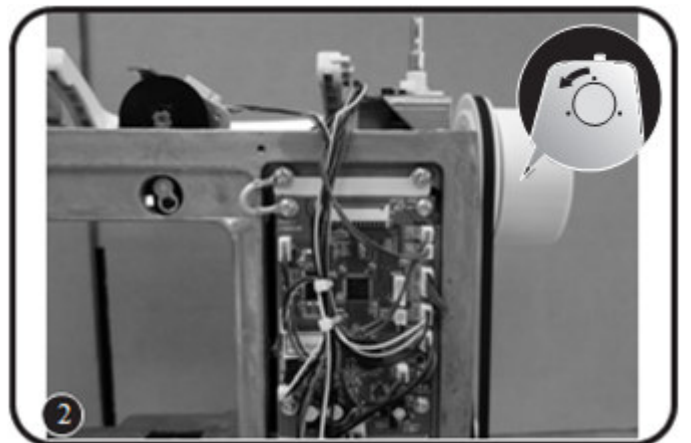
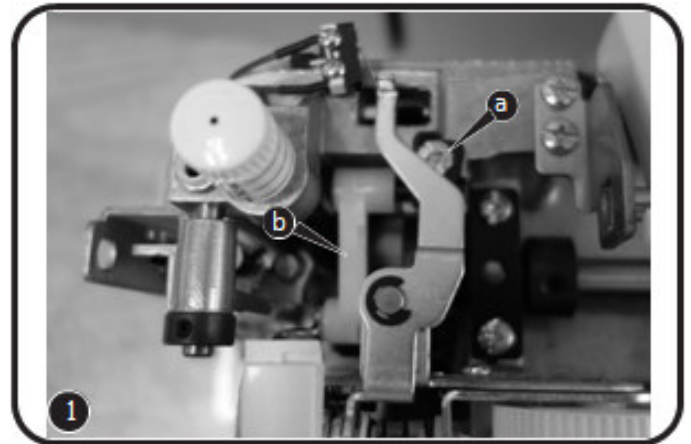
- 1) Remove the face plate and front cover.
- 2) Loosen screws (a, b) on main shaft collar (d). (1)
- 3) Pull hand wheel to the right. (2)
- 4) Push arm shaft collar (d) to left tightly against arm shaft bushing (c), and then fasten and secure screws (a, b). (1)
- 5) Be sure proper distance between arm shaft collar and arm shaft bushing. (1)
- 6) Be sure arm shaft operates smoothly after adjustment.
- 7) Arm shaft collar and arm shaft bushing being too tightly closed might cause insufficient operation of arm shaft.
- 8) Follow steps 1, 2, 3 in order to re-adjust.



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### 6-3 Noisy - take up lever adjustment

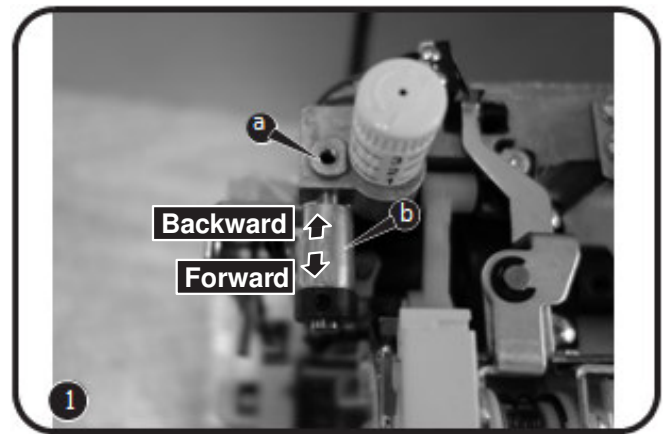
- 1) Remove the face plate and front cover.
- 2) Turn around hand wheel, check noisy and movement.
- 3) Remove screw (a), push take up lever support (b) right to proper location, tight screw. (1)
- 4) If adjustment is too tight, it will be difficult to move during turn around hand wheel.
- 5) If adjustment is too loose, it will be made noisy during turn around hand wheel.



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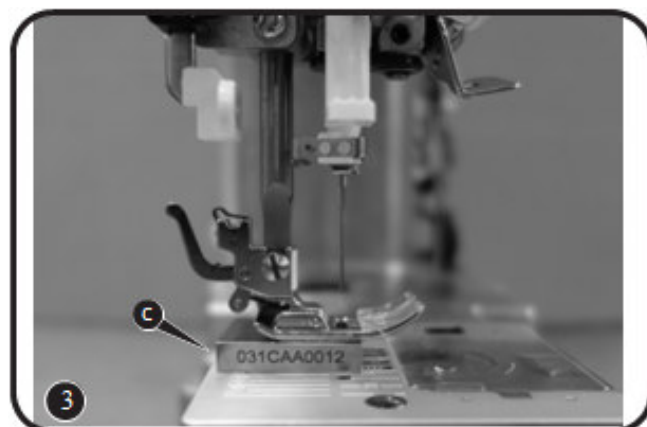
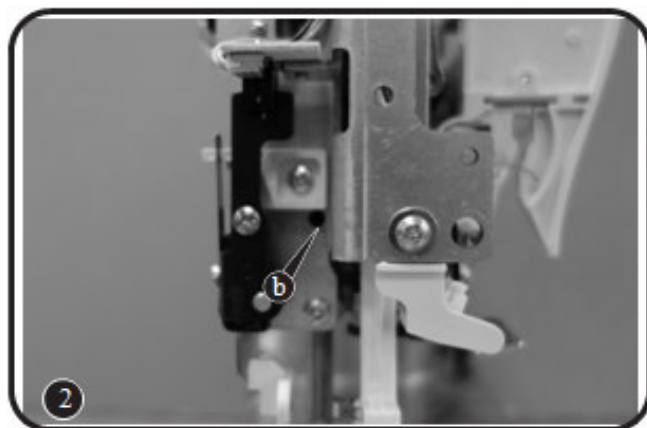
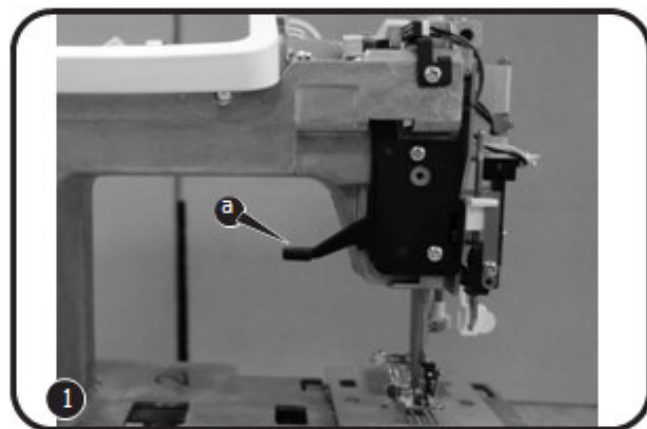
## 6-4 Needle drop position adjustment

- Choose patterns " | " .
- 1) Remove the face plate, front cover and back cover.
- 2) Loosen screw (a) of needle bar supporter.
- 3) Turn needle bar supporter (b) forward / backward to adjust needle.  
Backward = to move needle forward  
Forward = to move needle backward
- 4) Set needle position above center of needle plate and fasten screw (a).
- 5) After above adjusting, make sure of the clearance within 0.05 - 0.10 mm between the hook and the needle.



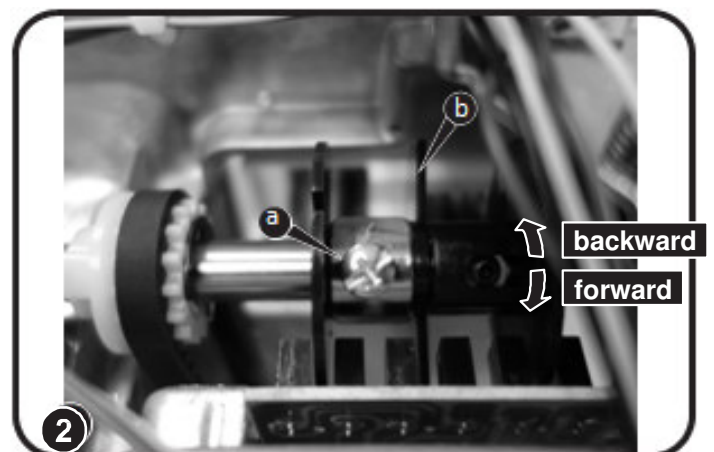
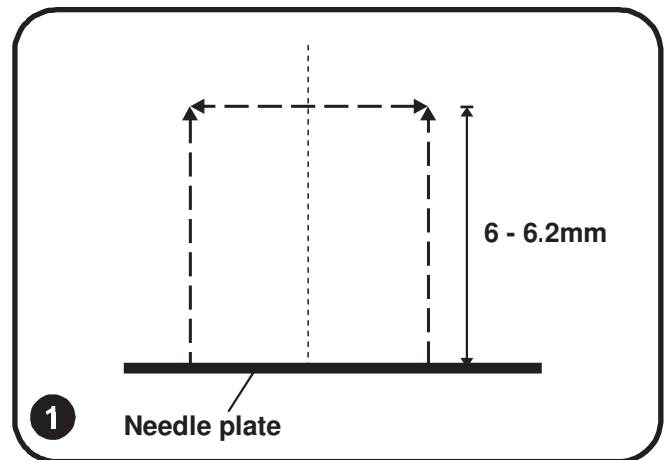
## 6-5 Height of presser foot

- 1) Remove face plate and lift up presser bar lifter lever (a). (1)
- 2) Loosen screw (b) of presser bar bracket. (2)
- 3) Place gauge (c) (6.0~6.2mm) on top of needle plate. (3)
- 4) Pull down presser bar lifter lever so bottom of presser foot and top surface of gauge would meet.
- 5) Secure tightly screw (b).
- 6) The correct setting of gauge should be 6.0~6.2mm.



## 6-6 Zigzag movement of the needle adjustment

- Choose patterns "  $\approx$  ", zigzag 7 mm.
- 1) Remove the face plate, front cover and back cover.
- 2) Set needle bar at its lowest point when it swings to left. Turn hand wheel to move the needle bar upward. The vertical distance in which the needle point goes up at the left position from the top of the needle plate should be 6~6.2m/m. (1)
- 3) If needle flow is less than 6 mm, loosen the screw of rotary sensor collar (a), and turn rotary sensor collar (b) toward back (  $\uparrow$  ). (2)
- 4) If needle flow is more than 6.2 mm, turn rotary sensor collar (b) toward front (  $\downarrow$  ). (2)
- 5) Tighten the screw (a) after making sure the needle flow is between 6 mm to 6.2 mm.



## 6-7 Needle center position adjustment

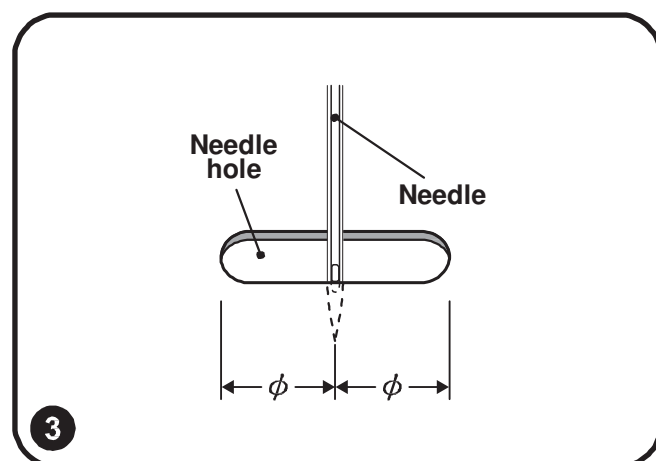
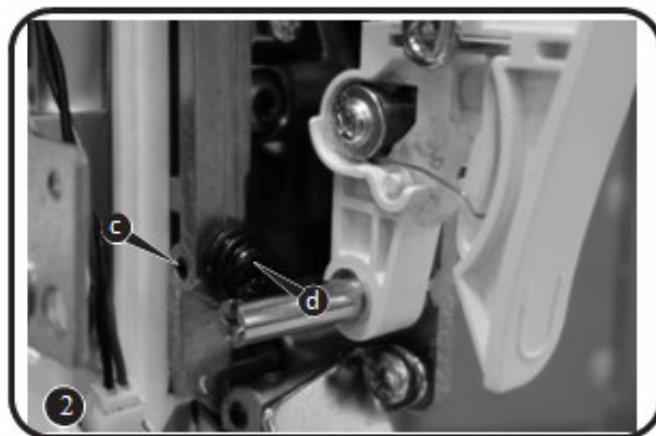
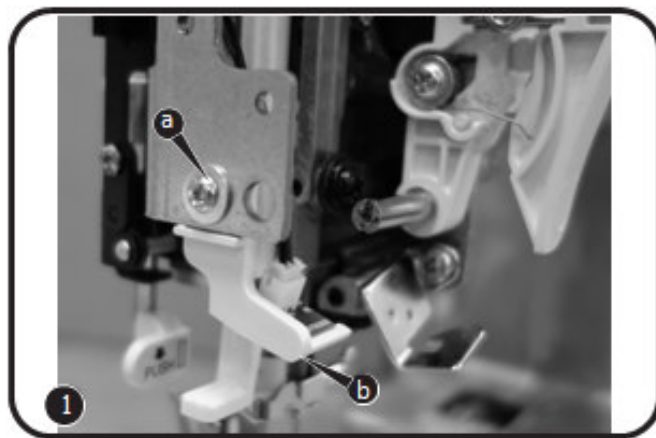
- Choose patterns " | " .

- 1) Remove the face plate.
- 2) Loosen screw (a) and remove the LED holder (b). (1)
- 3) Loosen screw (c) of needle bar driving rod pin (d). (2)
- 4) Adjust needle bar driving rod pin (d) position, clockwise needle will turn left, counter clockwise needle will turn right.

Clockwise = left

Counter-clockwise = right

- 5) Make sure needle drops on middle of needle hole. After adjusting, re-tighten screw. (3)





## 6-8 Needle position on zigzag

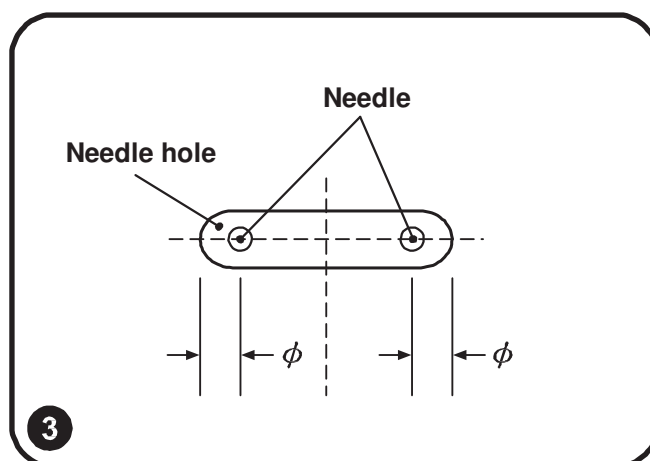
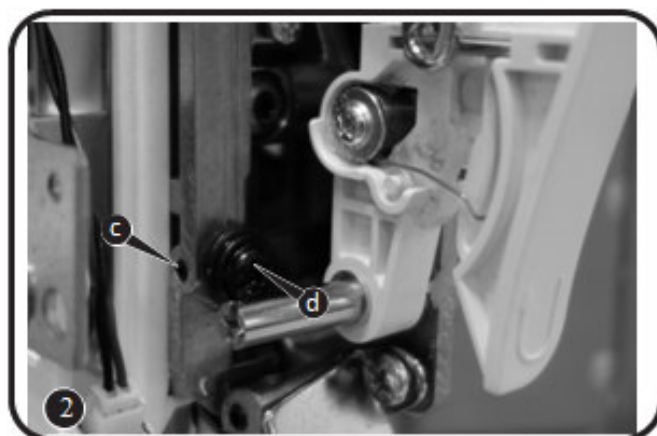
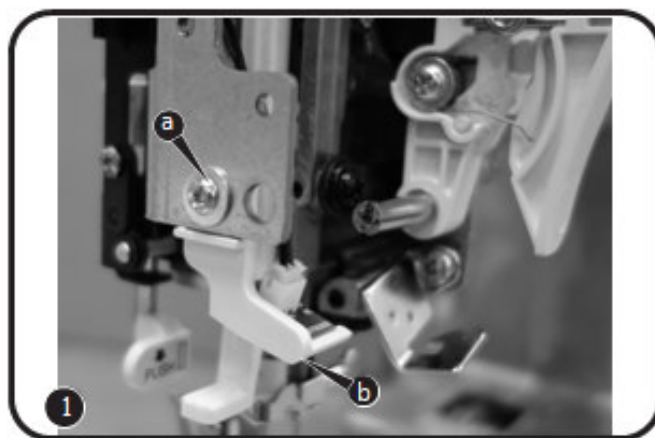
- Choose patterns "  $\approx$  ", zigzag 7 mm.

- 1) Remove face plate
- 2) Loosen screw (a) and remove the LED holder (b). (1)
- 2) Loosen screw (a) of needle bar driving rod pin (c). (2)
- 3) Adjust needle bar driving rod pin (d) position, clockwise needle will turn left, counter clockwise needle will turn right.

Clockwise=left

Counter-clockwise=right

- 4) Make sure needle drop on left / right of needle hole with even distance to the edge of needle hole, and then fasten the screw. (3)
- 5) After the adjustment of z/z needle position, re-confirm the needle position of zigzag.

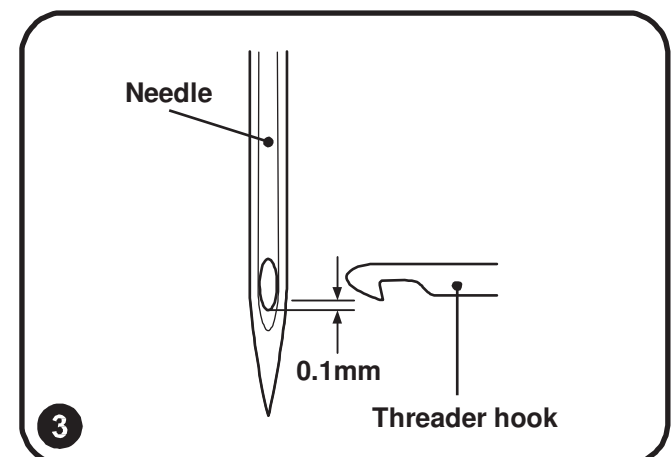
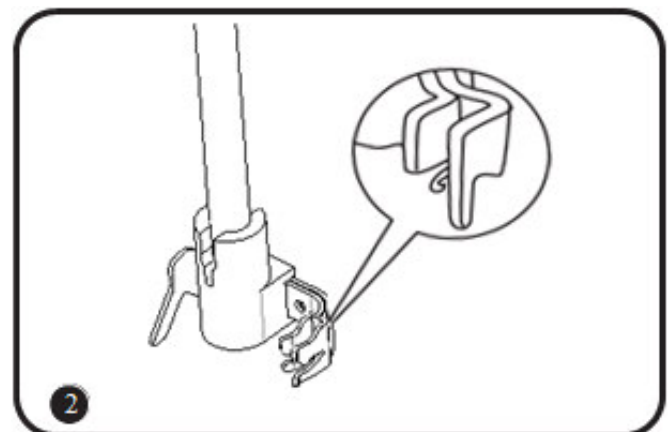
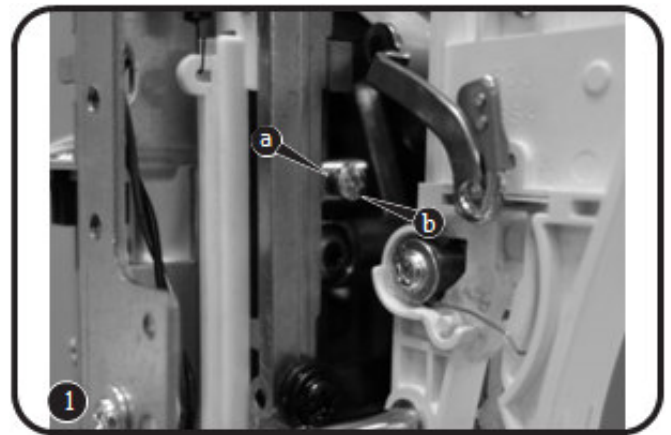


## 6-9 Automatic needle threader adjustment

- 1) Remove face plate and turn hand wheel to raise needle bar to its highest position.
- 2) Loosen screw (b) of threader stopper (a). (1)
- 3) Move stopper (a) upward, the needle threader will be on the needle hole.

Move stopper (a) downward, the needle threader will be under the needle hole.

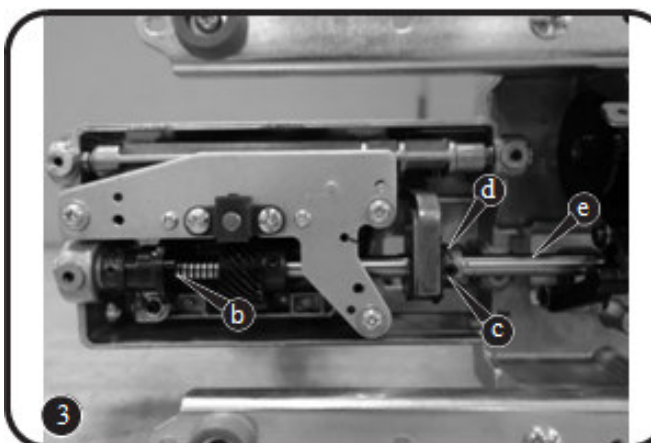
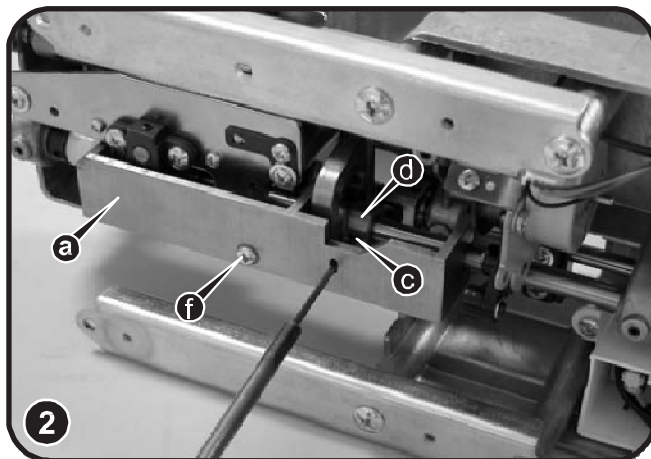
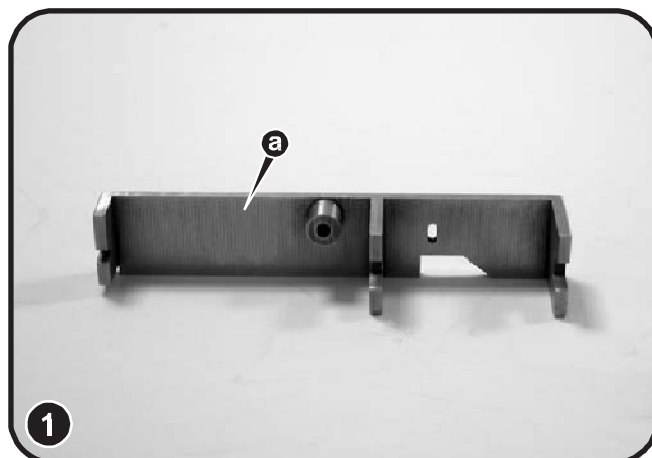
- 4) Adjust stopper to the proper position for entering needle hole freely. (2 / 3)
- 5) Fasten the screw (b) of stopper, and be sure the stopper (a) should be placed correctly. (1)



## 6-10 Adjustment of feed rock shaft and feed lifting rock cam

- 1) Remove cord reel cover and free arm cover.
- 2) Turn the hand wheel to make the needle at its lowest point.
- 3) Tighten screw (f) after attaching the gauge (a) to the feed lifting rock cam (b) and lower shaft (e). (1 / 2)
- 4) Check if the feed lifting rock cam (b) and the screw (c) of feed rock cam (d) are parallel. (2 / 3)
- 5) If the screw of feed rock cam are not parallel:

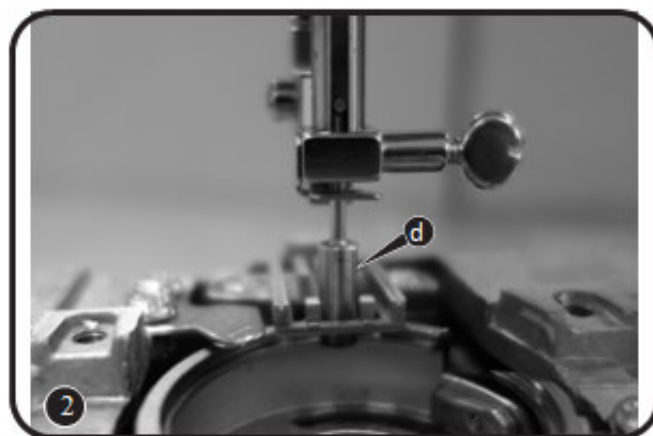
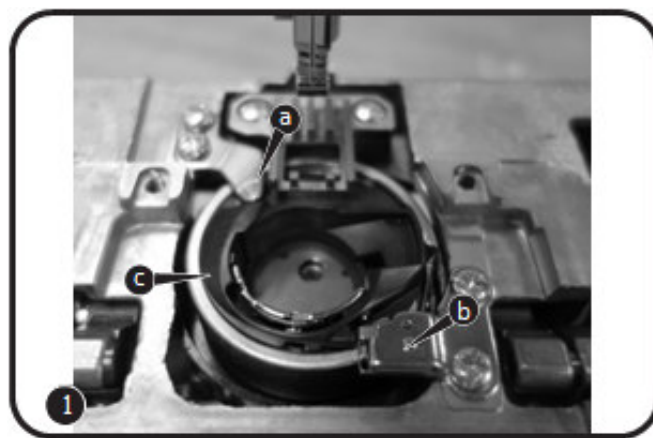
Loosen the screw (c) of feed rock cam (d) adjust the screw and front gauge correction to the middle. (2)



## 6-11 Height of needle bar

- Choose patterns ' | ' ' ' .

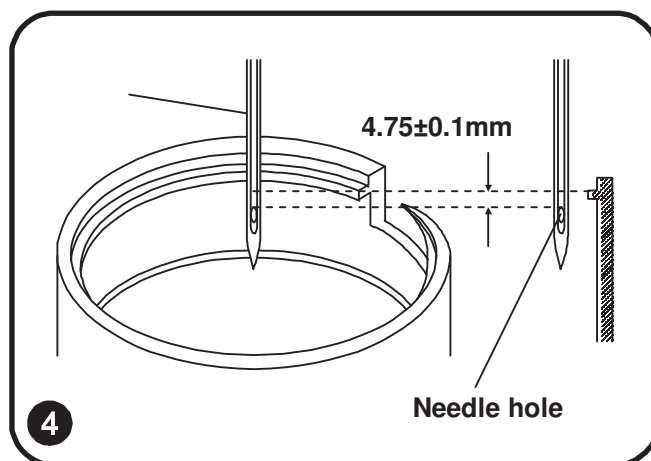
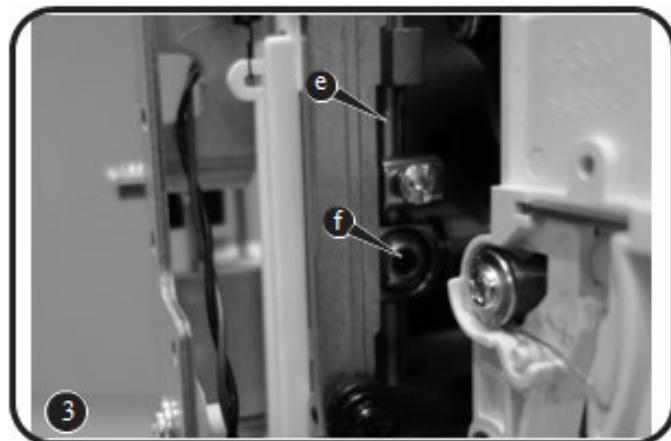
- 1) Remove face plate and needle plate.
- 2) Remove the screws of rotary hook plate (a, b) and rotary hook plate, and take out the shuttle hook (c).
- 3) Put the gauge of height of needle 29.05 $\pm$ 0.05 mm (d) into the shuttle hook holder, and turn the hand wheel to set the needle at the lowest point.
- 4) Turn the gauge of height of needle, and the standard is between 29.05 $\pm$ 0.05



- 5) If it's not fit the standard of measure, loose the needle bar bracket (f) to adjust the needle bar's (e) position for measuring the correct height of needle bar.

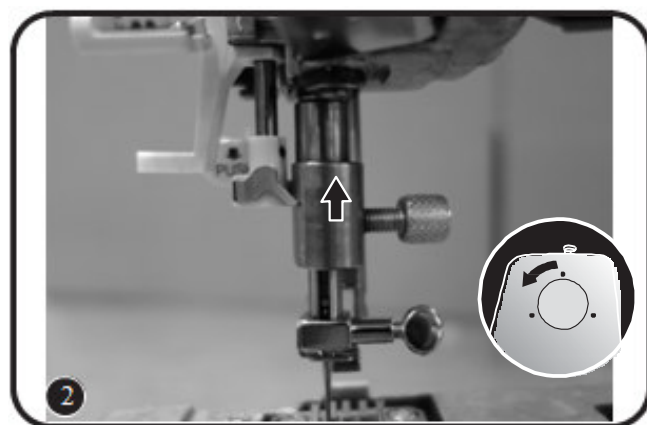
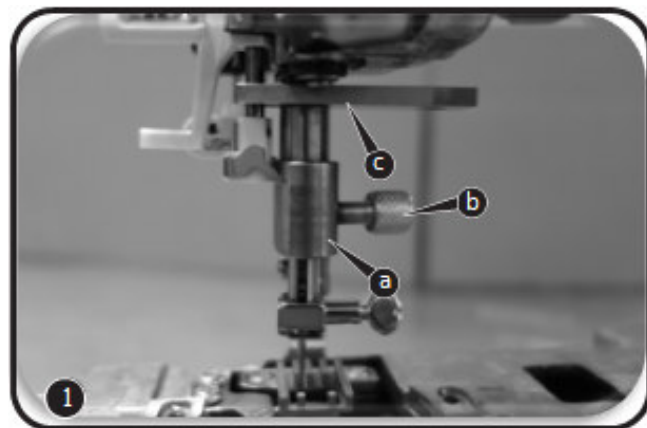
Lift the needle bar will cause insufficient height of needle bar. Pull down the needle bar, and the height of needle bar will be too deep. (3)

- 6) Fasten the screw (f) after confirming the height of needle bar. (When the needle position is on the lowest point, the distance between the top of needle hole and the path of shuttle hook holder should be  $4.75\pm0.1\text{mm}$ , refer to
- 7) Re-assemble back the rotary hook plate after adjusting the height of needle bar. Be sure the play of shuttle driver shaft is correct. (Please reference page 27 for examination)

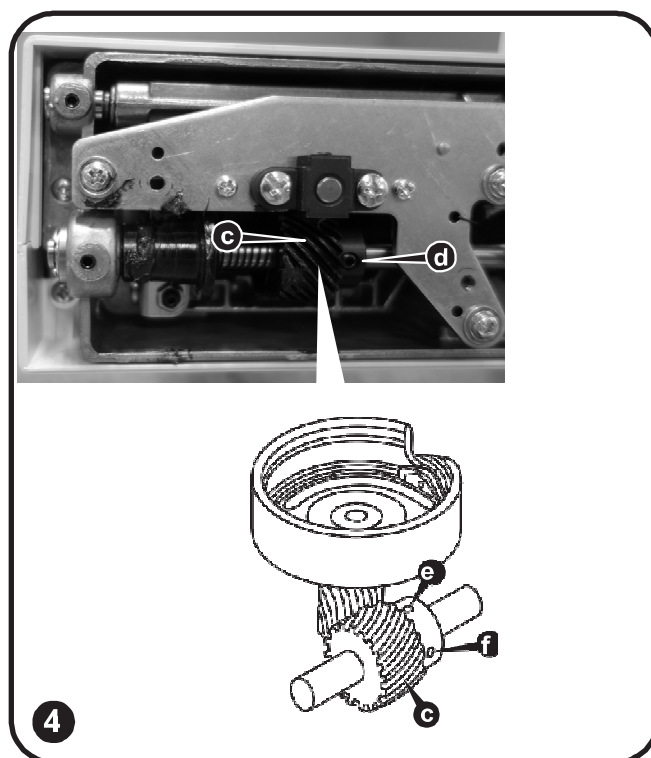
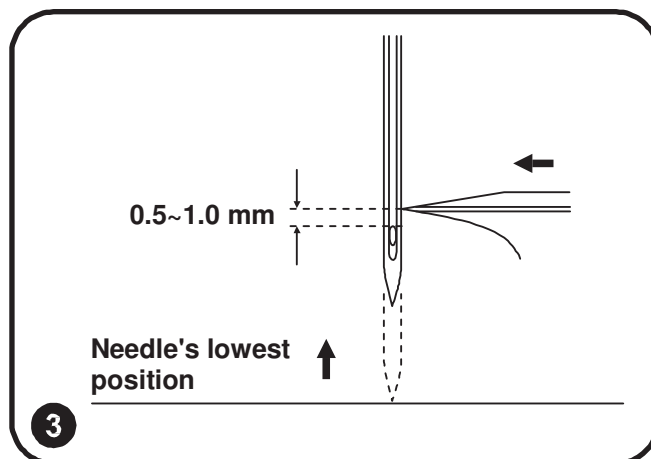


## 6-12 Timing of needle and hook

- Choose patterns "  $\approx$  ", zigzag 7 mm.
- 1) Set the needle bar at its lowest point when it swings to the left. Place clamp (a) around the needle bar, tighten its screw (b) but still allowing movement. (1)
  - 2) Set timing gauge (3.5mm) (a) on the needle bar so that piston touches bottom of needle bar cradle without forcing and tighten screw (b) by hand. (1)
  - 3) Turn the handwheel gently towards you until gauge stops at 3.5mm. (2)



- 4) Turn the hand wheel until the shuttle hook holder point is on the right side of needle, the distance between needle hole and it should be 0.5~1.0 mm. (3)
- 5) If the distance is incorrect, loosen the screws (d, e, f) of lower shaft gear (c), and adjust shuttle hook to correct timing, and tighten the screw. (4)



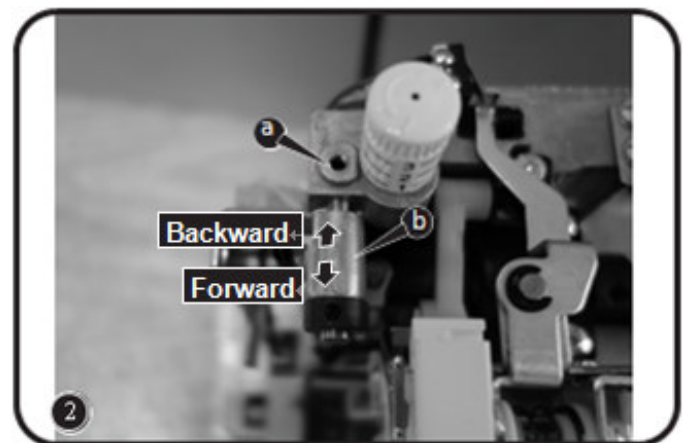
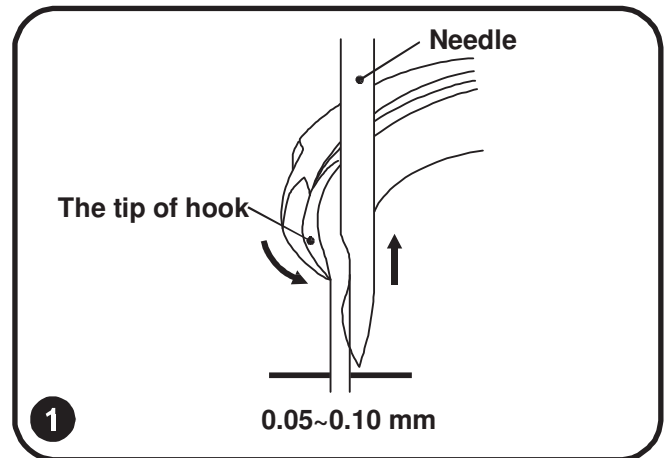
## 6-13 Distance-needle-hook

- Choose patterns "  $\approx$  ", zigzag 7 mm.
- 1) Remove face plate, front cover, back cover and needle plate.
- 2) Take off the shuttle hook.
- 3) Set the needle towards the lowest point of right side and lift it, make sure space between needle and the tip of the shuttle hook holder is 0.05~0.10mm. (1)
- 4) If the space is incorrect:

Loosen the screw (a) of the needle bar supporter.

Push the needle bar supporter (b) backward (  $\uparrow$  ), and the space will become larger.

Push the needle bar supporter forward (  $\downarrow$  ), and the space will become smaller. (2)



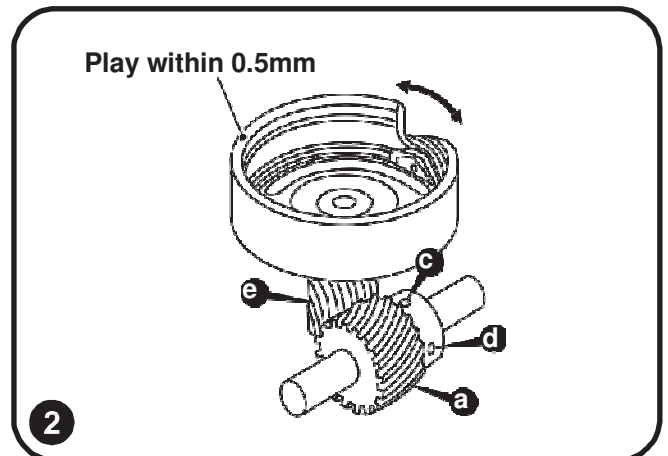
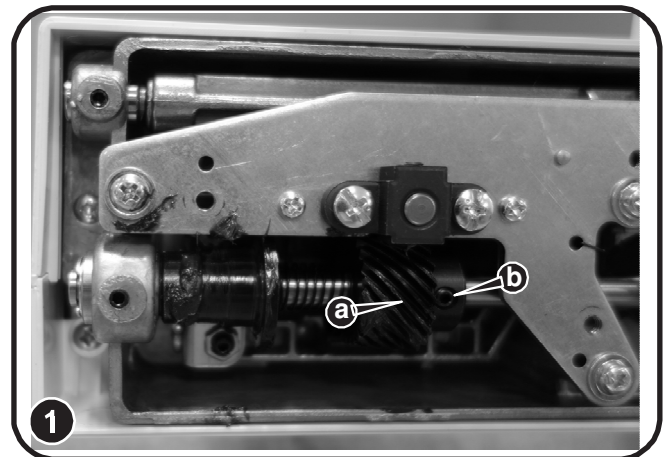


## 6-14 Play between shuttle driver shaft gear and lower shaft gear

- 1) Remove free arm cover and needle plate.
- 2) Take off the shuttle hook.
- 3) Loosen three set screws (b,c,d) of the lower shaft gear (a) and move the lower shaft gear to right or left against axial direction. (But the lower shaft gear never get out of shuttle hook gear (e)).
- 4) When the playing of the shuttle hook holder should be within 0.5 mm tighten three set screws (b,c,d).

### N.B.

Make sure match timing of needle and hook. If not, please adjust according to 6-12, see page 23.



## 6-15 Play of shuttle driver shaft

- 1) Remove the needle plate.
- 2) There are 2 gauges (a, b) for testing the play of shuttle driver shaft. (1)
- 3) When you turn the hand wheel counter-clockwise, the shuttle hook (c) will move to rotary hook plate (d), and generate the play between the shuttle hook and the rotary hook plate (e).

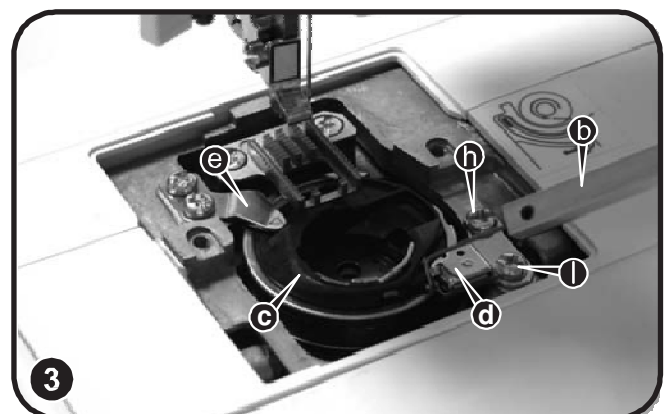
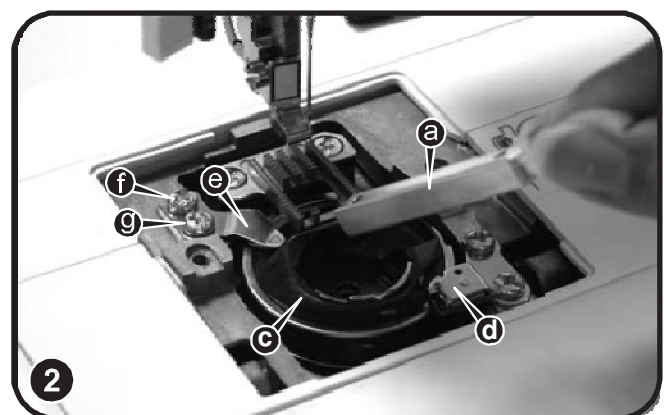
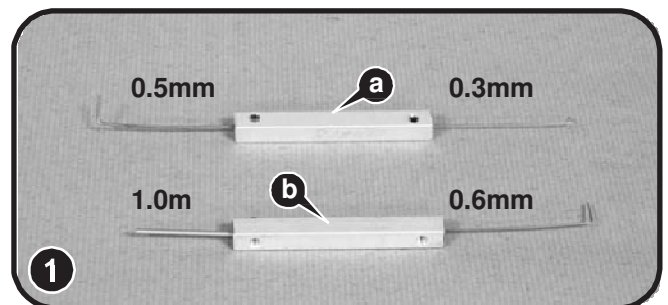
Using the gauge (a) to test the play, and the standard is 0.3 mm to 0.5 mm.

If the play is incorrect, loosen 2 screws (f, g) of rotary hook plate (e) and adjust the plate to the proper position. Finally, re-tighten the screws. (2)

- 4) When you turn the hand wheel clockwise, the shuttle hook (c) will move to rotary hook plate (e), and generate the play between the shuttle hook and the rotary hook plate (d).

Using the gauge (b) to test the play, and the standard is 0.6 mm to 1.0 mm.

If the play is incorrect, loosen 2 screws (h, i) of rotary hook plate (d) and adjust the plate to the proper position. Finally, re-tighten the screws. (3)

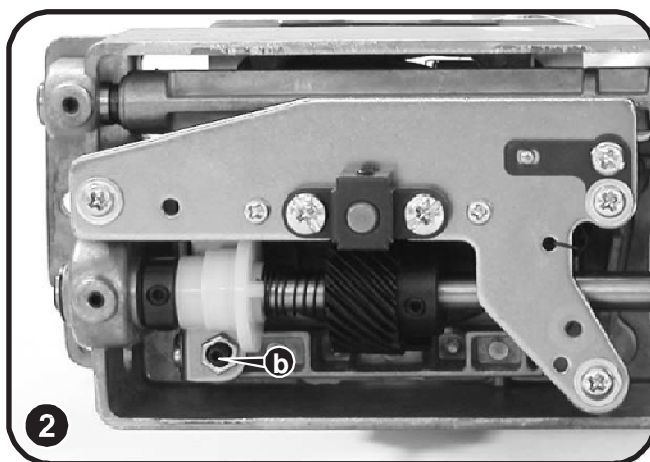
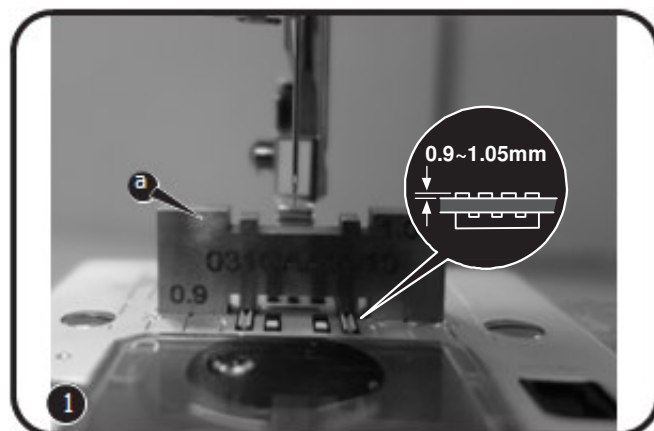


## 6-16 Feed-dog height

- 1) Remove free arm cover and lift needle to its highest position.
- 2) Remove presser foot.
- 3) Place setting gauge (a) (0.9~1.05mm) on needle plate. Then the feed dog height can be checked. (1)
- 4) Press reverse button. At the correct height (0.9mm), the feed dog will be moved freely forward and backward.
- 5) Turn screw (b) of feed rock crank clockwise / counter-clockwise to adjust height of the feed-dog between 0.9~1.05mm. (2)

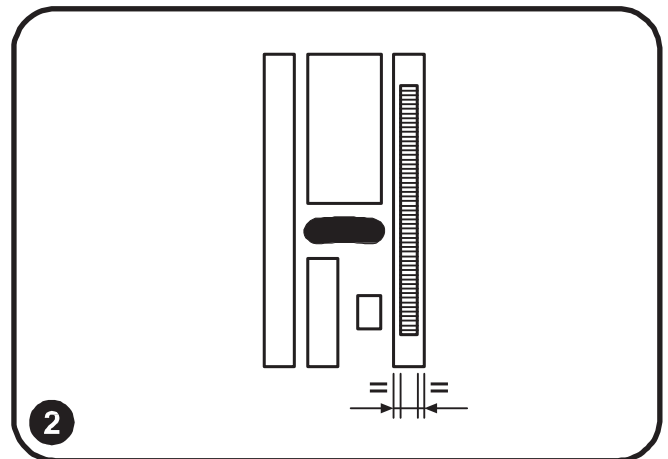
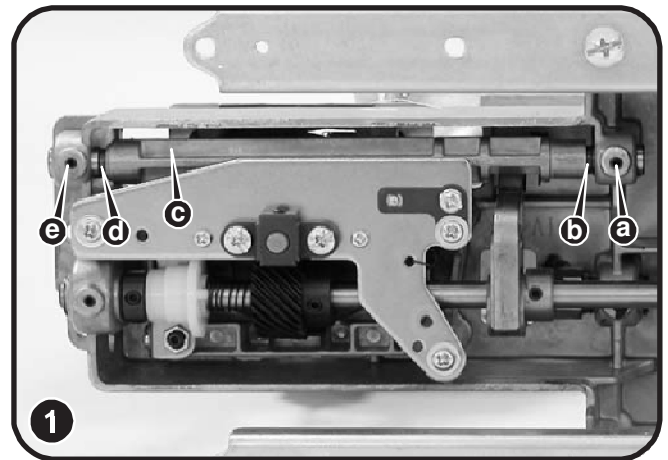
Clockwise = raise the feed dog

Counter-clockwise = lower the feed dog



## 6-17 Position of feed-dog in relation to the needle plate (left to right)

- 1) Remove the cord reel cover and free arm cover.
- 2) Loosen the screw (a) of the feed crank shaft (b) that is on the right side.
- 3) Loosen the screw (e) of the feed crank shaft (d) that is on the left side.
- 4) Adjust feed dog to center position by moving feed crank shaft (d) left / right in accordance with feed rock shaft (c) left / right. (1)
- 5) Tighten screw (e) to fix the left side of feed crank shaft (d).
- 6) Push right side feed crank shaft (b) to left and fasten the screw (a).



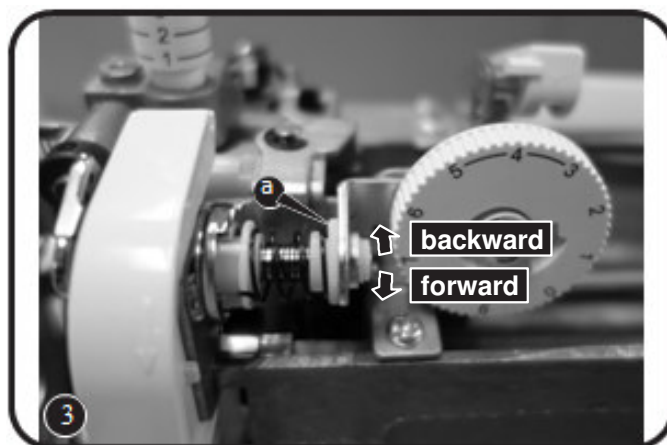
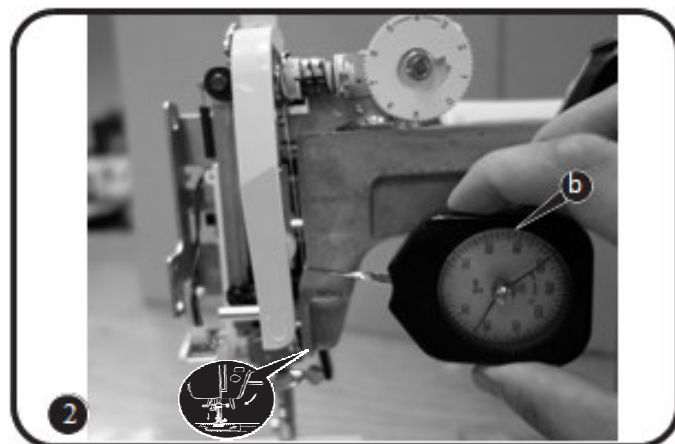
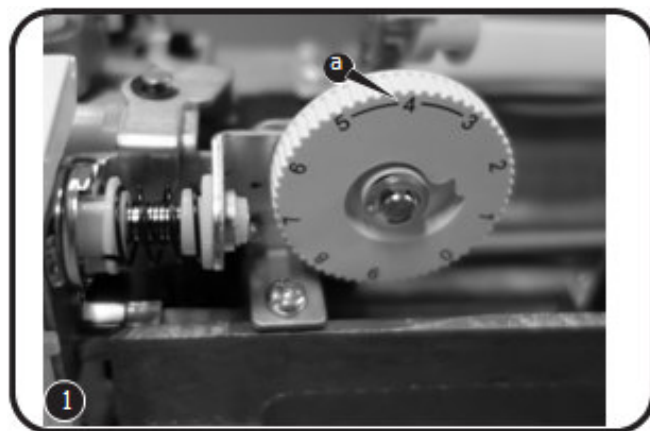
## 6-18 Upper thread tension adjustment

- 1) Remove front cover and set dial tension (a) to "4". (1)
- 2) Use a dial tension gauge (150g) (b) to take measurement. (2)
- 3) Put dial tension thread into gauge's hook and pull, standard range should be 50~60g.
- 4) Adjust tension by turning plastic screw (a) of dial tension regulator forward / backward. (3)

Forward = weaker

Backward = stronger

- 5) Re-check the standard range should be 50~60g.

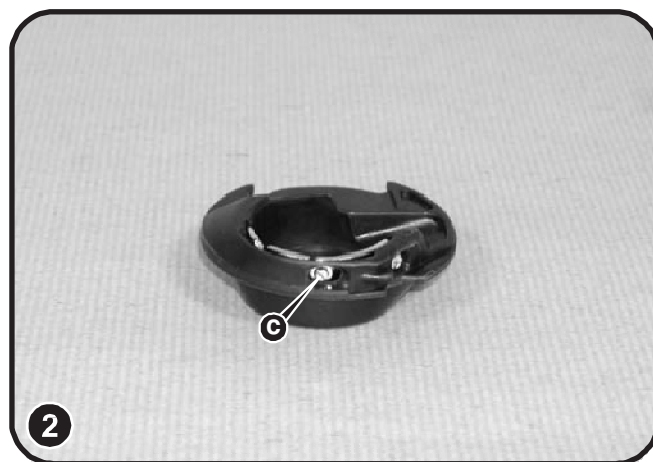


## 6-19 Shuttle hook tension adjustment

- 1) Remove the needle plate.
- 2) Use a dial tension gauge (50g) (a) to take measurement. (1)
- 3) Put dial tension thread into shuttle hook (b) (the same way as inserting the bobbin) and pull it out, the standard range should be 15~20g. (1)
- 4) Adjust the screw (c) of shuttle hook to correct it if necessary. (2)

Turning clockwise makes dial tension stronger; turning counter-clockwise makes it weaker.

Re-check the standard tension range should be 15~20g.

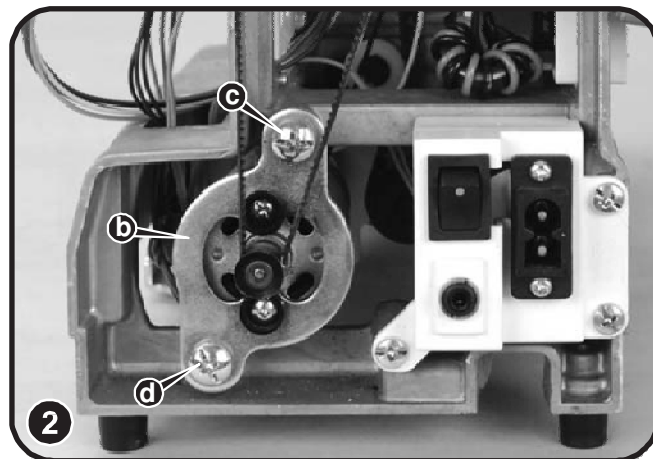
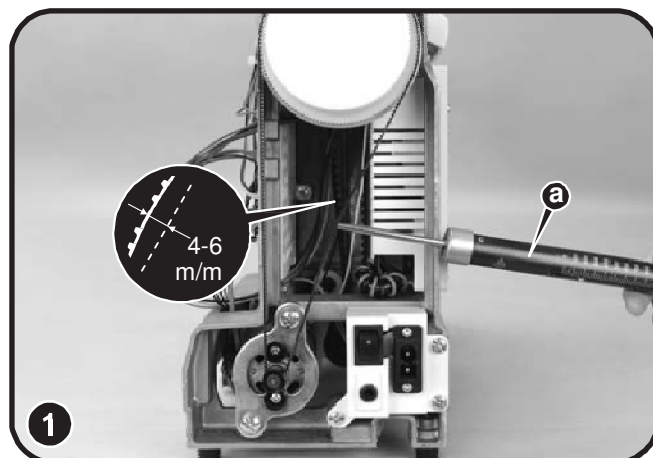


## 6-20 Motor belt tension

- 1) Remove back cover and test tension of motor belt using belt tension gauge (a). Its standard measurement should be 200g. (1)
- 2) Adjusting the belt adjusting plate (b) to regulate the improper belt's tension. The way to adjust is as following:

Loosen the screws (c, d) of adjusting plate (b), and then move it to up, the belt will become loosen; move it to down, it will become more tighter. (2)

Tighten screws (c, d) after confirming the proper belt tension.



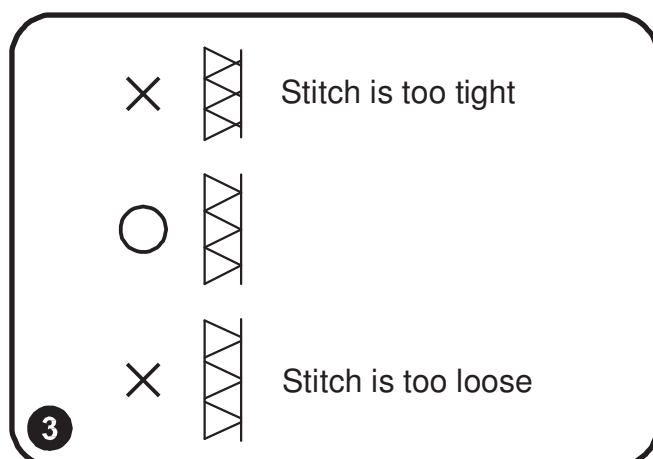
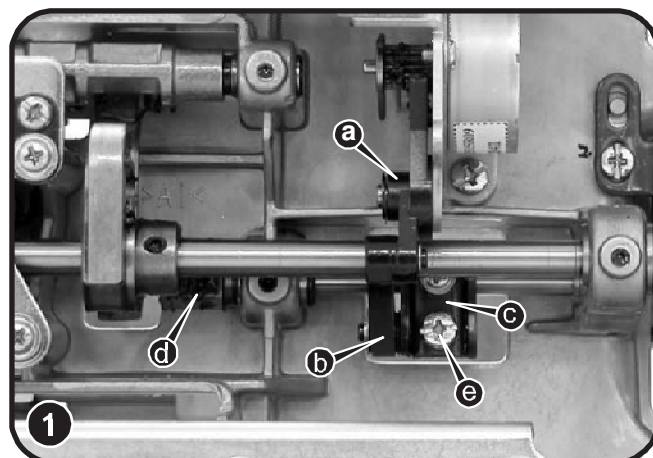


## 6-21 Super position adjustment

- Choose patterns " ▧ " .
- 2) To check if the feed rock crank (a), feed rock rod (b) and feed crank (c, d) are smooth. (1)
- 3) Place a piece of blank paper on top of needle plate and use presser foot to secure paper by pulling presser bar lifter lever down. (2)
- 4) Adjust the speed limiting adjustment lever to the slow speed and step on the foot controller lightly. Check if the needle can drop in the same place while moving forward and backward.
- 5) If it did not in the same place:


When the stitch is too tight, adjust the screw (e) of feed crank clockwise , and the needle will go forward ( ↓ ). (1 / 3)

When the stitch is too loose, adjust the screw (e) of feed crank counter-clockwise, and the needle will go backward ( ↑ ). (1 / 3)



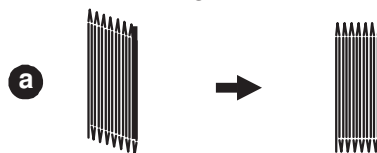


## 6-22 Darning stitch position adjustment

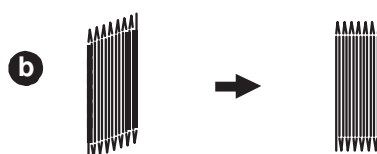
- Choose patterns "  " .
- 1) Sewing one complete darning stitch.
- 2) During the sewing forward is large and reverse is small. turn screw (c) left (a) for adjustment. (1 / 2)
- 3) During the sewing forward is small and reverse is large. turn screw (c) right (b) for adjustment. (1 / 2)



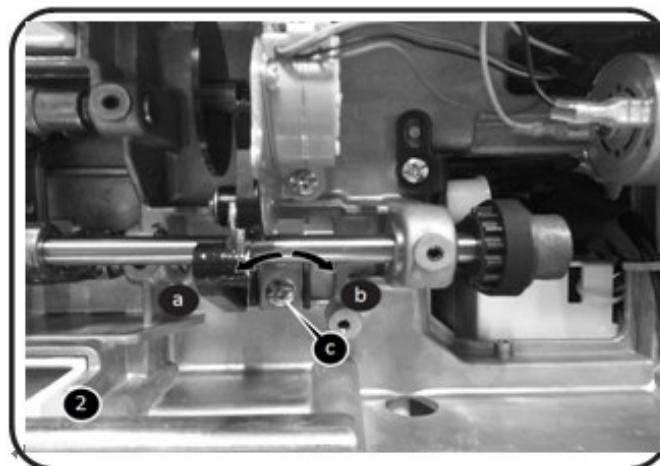
(a) forward is large and reverse is small.



(b) forward is small and reverse is large.



1



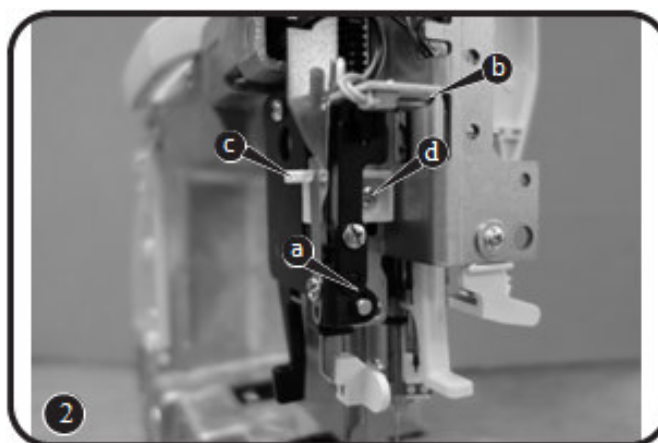
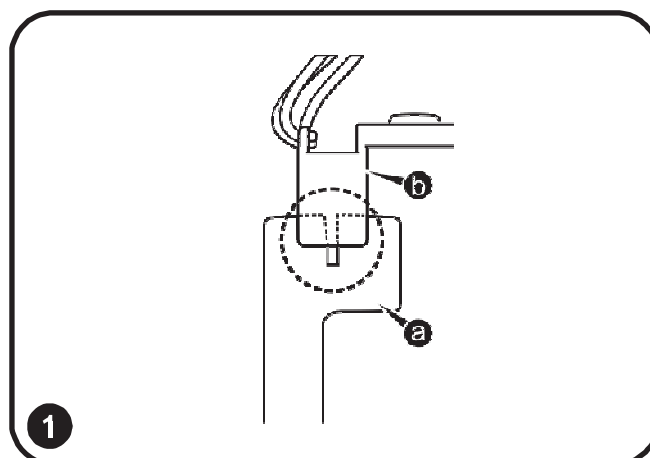
## 6-23 BH photo sensor position adjustment

- 1) Remove the face plate.
- 2) To check if the overhead BH lever crank (a) and the photo sensor's (b) blocking movement are set in the middle place. (1)
- 3) If it is not set in the middle place:

Loosen screw (d) of BH movement crank (c). (2)

Adjust the BH movement crank (c) to right, and the lever crank (a) will follow it. Adjust the BH movement crank (c) to left, and the lever crank (a) will also follow it. (2)

Set the BH lever crank (a) top in back of the middle of photo sensor (b), and then re-tighten the screw (d).



## 6-24 Bobbin winding problem

- 1) Place empty bobbin on spindle and push it to the right.
- 2) Put the thread into the spool rod, and put the spool rod cover on it.
- 3) Let thread from spool to back side of thread guide (a) by following the indication.
- 4) Wind thread clockwise around bobbin winder tension disc. (1)
- 5) Turn on the power switch and step on the foot controller to run the machine.
- 6) Observe the shape of bobbin winding:

When the lower part of bobbin winding is thicker, turn the screw (b) of threader guide counter-clockwise. (2)

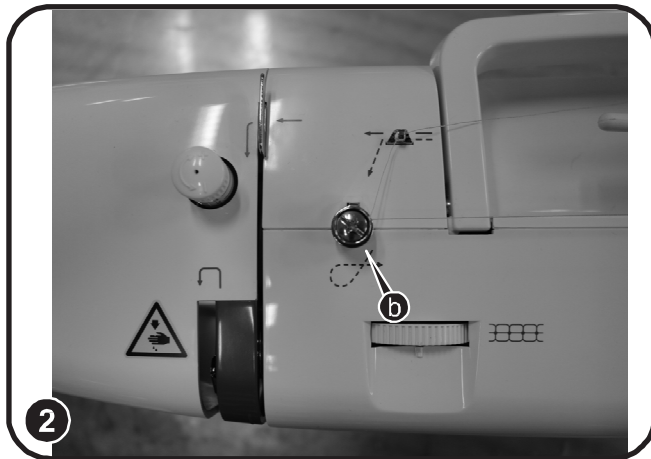
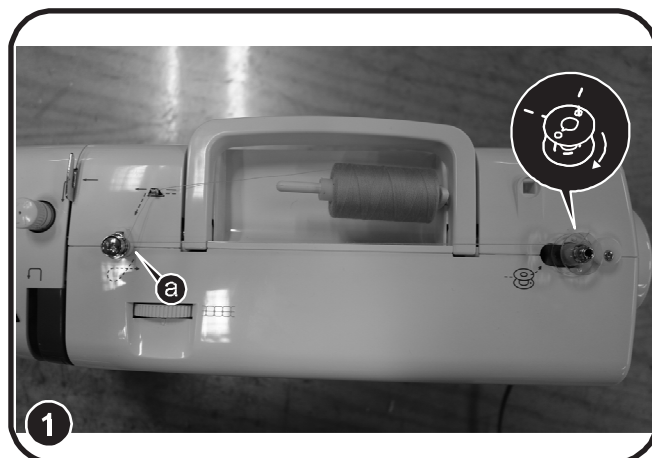
When the upper part of bobbin is thicker, turn the screw (b) of threader guide clockwise.

- 7) Observe the intensity:

If bobbin winding is less 80 percent full, adjust by turning the screw (c) of bobbin winder bracket shaft clockwise. (3)

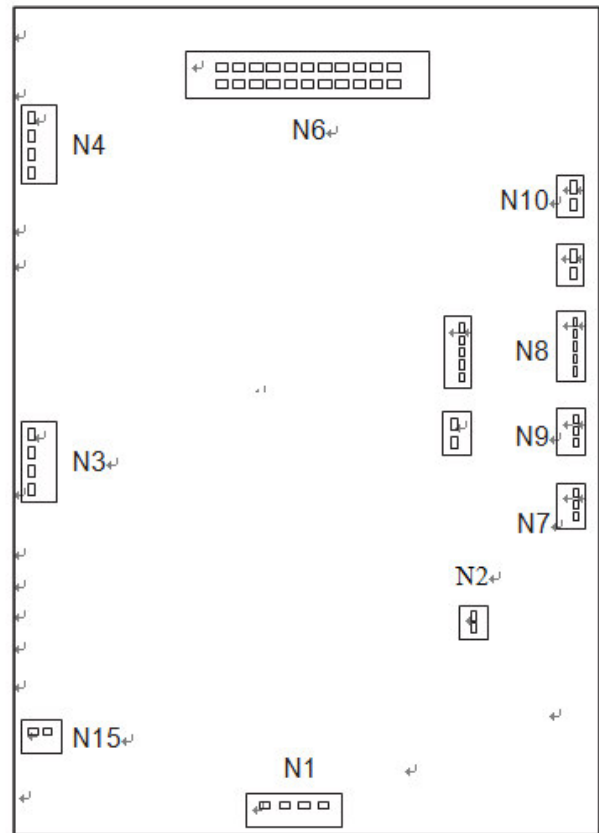
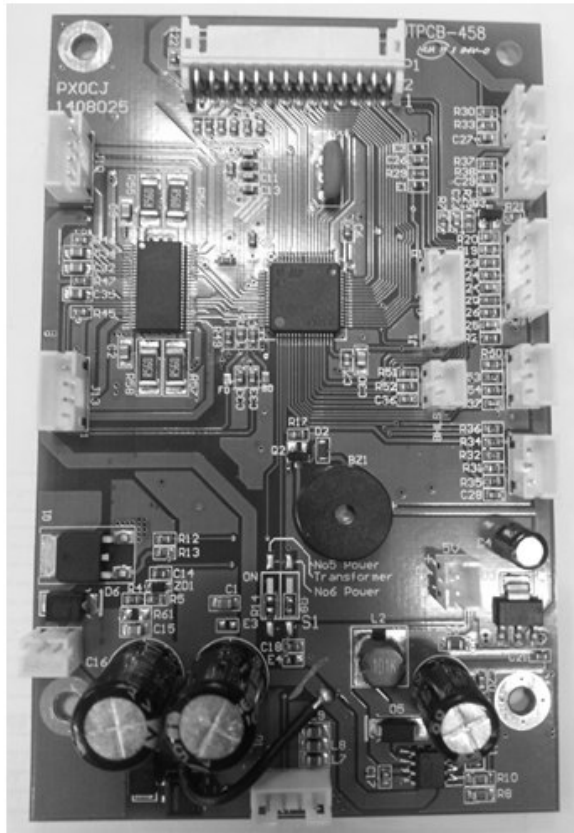
If bobbin is over 80 percent full, adjust by turning the screw (c) of bobbin winder bracket shaft counter-clockwise.

- 8) Bobbin should be 80 percent full and evenly filled after adjustment.
- 9) Push bobbin to left after adjustment before sewing.



## 7. Circuit board

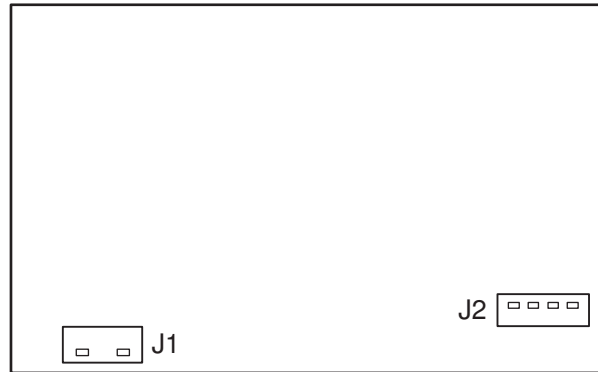
### Main board



### Main board

- N1. HF transformer complete
- N2. LED light lamp board
- N3. Step motor complete (stitch length)
- N4. Step motor complete (zigzag)
- N6. Flat cable
- N7. Foot controller receptacle
- N8. Photo sensor complete (Needle clamp / Needle flow / speed)
- N9. Photo sensor board (B/H)
- N10. Bobbin winder micro switch
- N15. DC motor

## HF transformer board



## HF transformer board

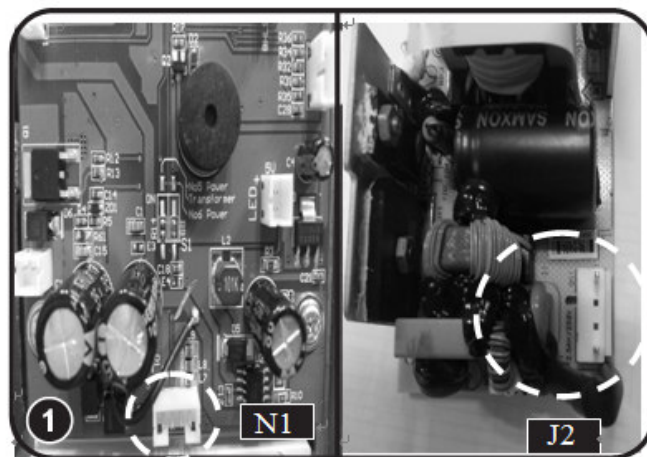
- J1. Switch receptacle ass'y
- J2. To Main board

## 8. Electrical components Trouble shooting

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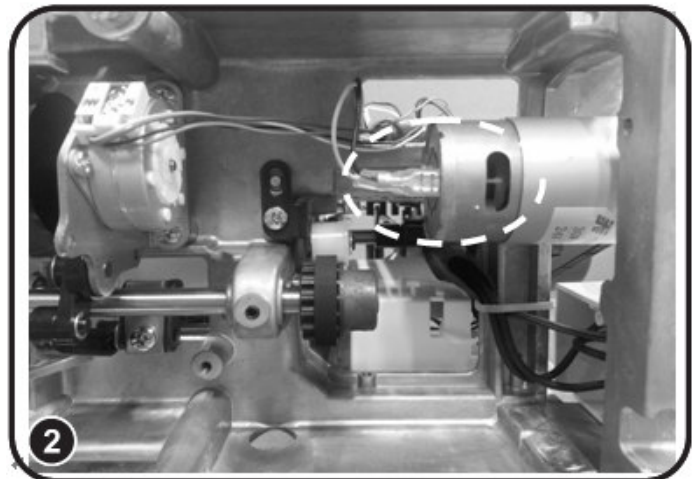
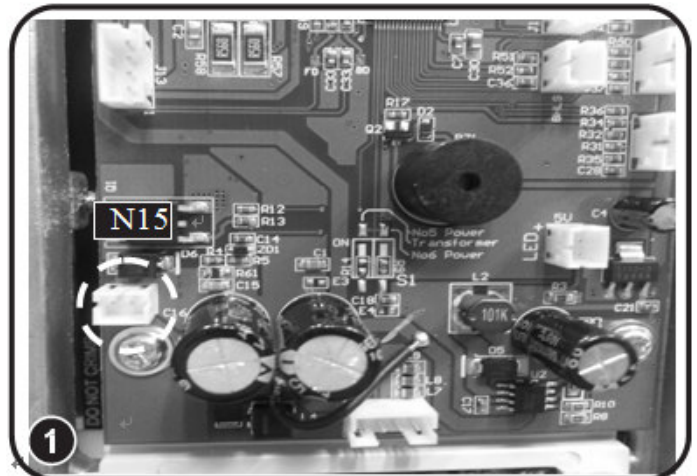
### 8-1 Sewing machine malfunction

Make sure plug "N1" in main board and "J2" in HF transformer board are properly connected. (1)



## 8-2 DC motor malfunction

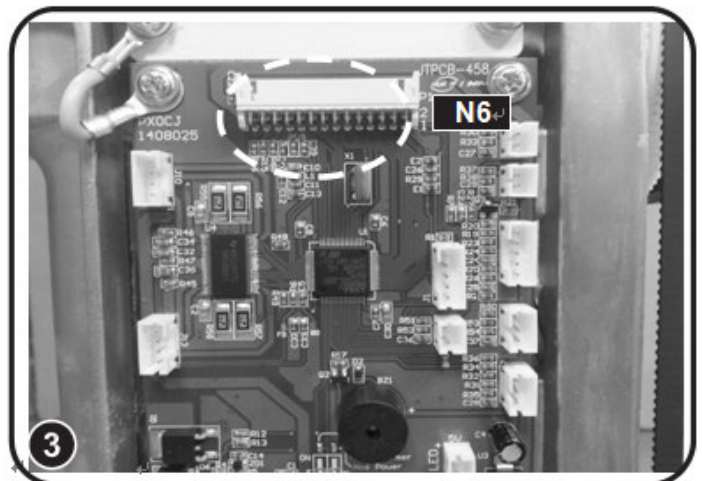
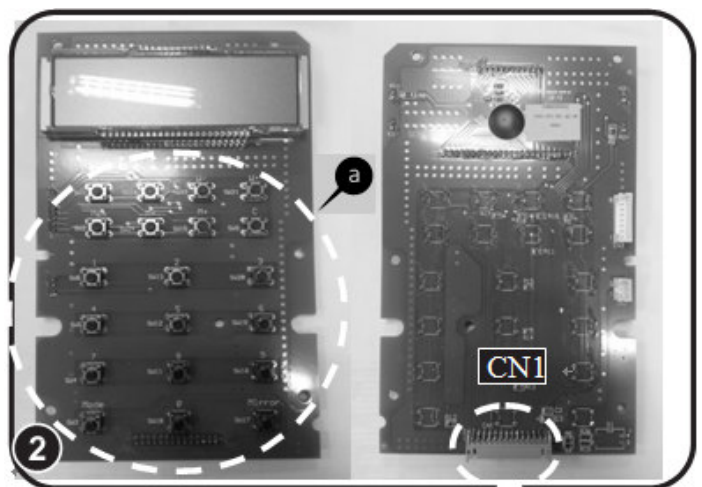
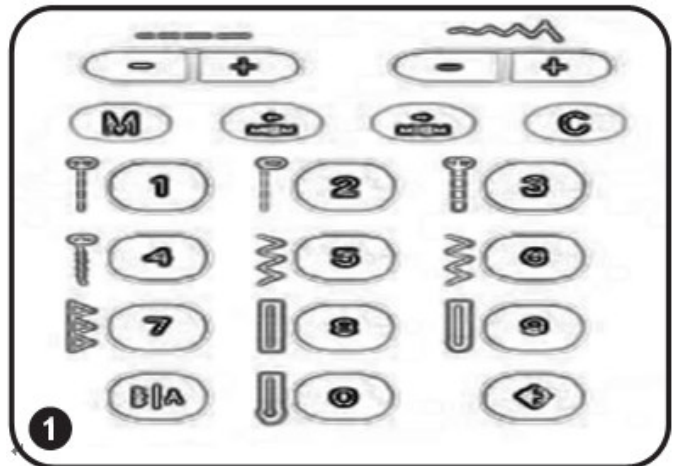
- 1) Make sure plug "N15" in main board is properly connected.
- 2) Replace DC motor or main board if item (1) without any problems.





### 8-3 Function lever not operating

- 1) Make sure buttons (a) are correctly working without any problem. (1/2)
- 2) Make sure plug "CN1" in LCD control board and "N6" in main board are properly connected. (2 / 3)
- 3) Replace main board or LCD control board if items (1-2) without any problems.

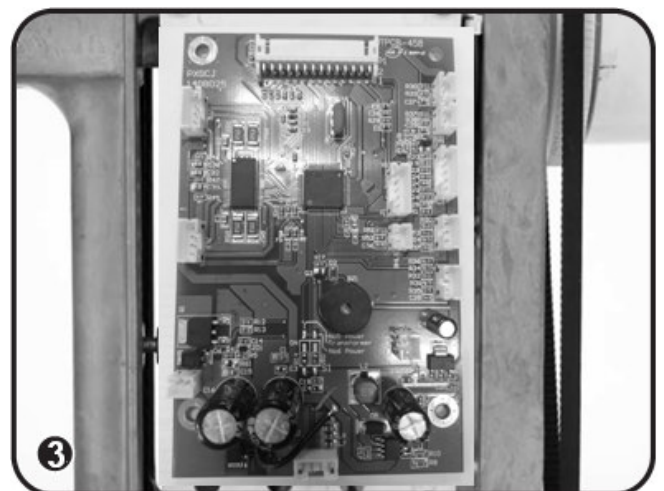
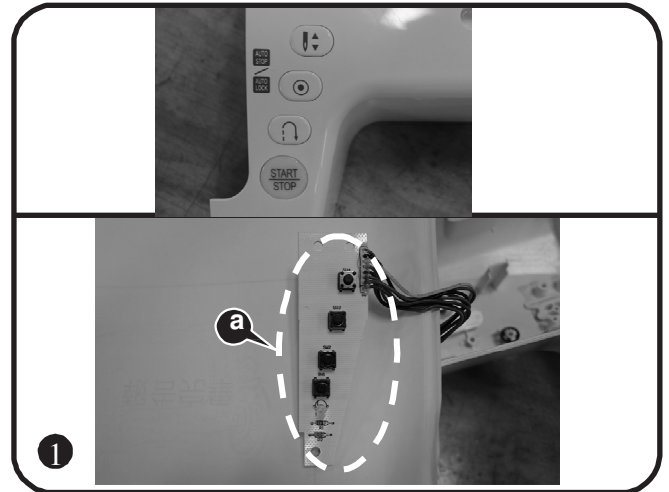




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## 8-4 Start/ Stop, Needle up/ down, Reverse & Autolock malfunction

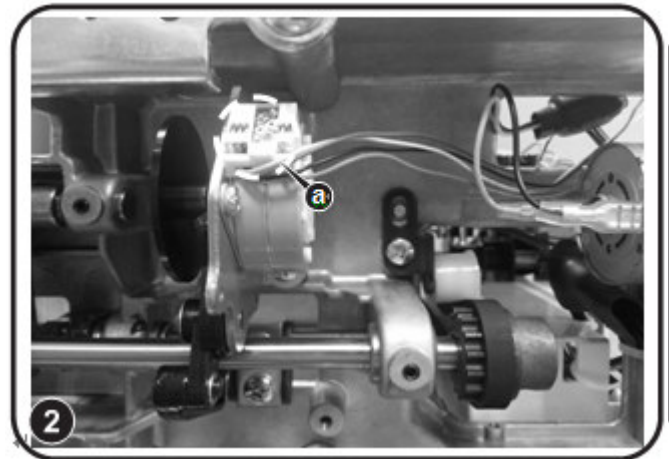
- 1) Make sure buttons (a) working correctly without any problems. (1)
- 2) Make sure plug in function button board and "JP5" in stitch selection control board are properly connected. (1 / 2)
- 3) Replace function button board, main board or stitch selection control board if items (1-2) without any problems.



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## 8-5 Step motor complete (stitch length) malfunction

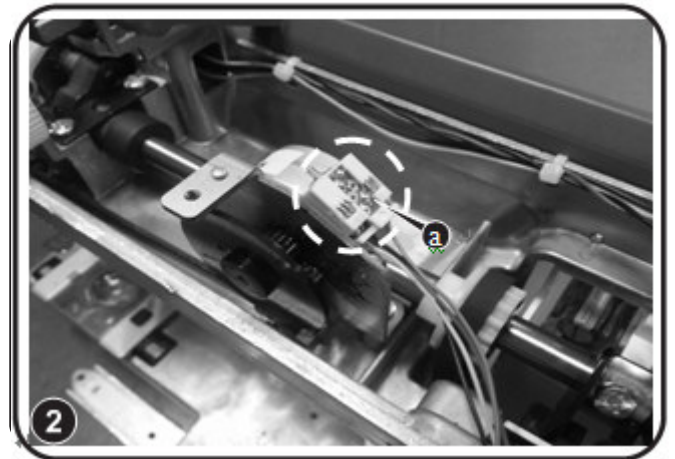
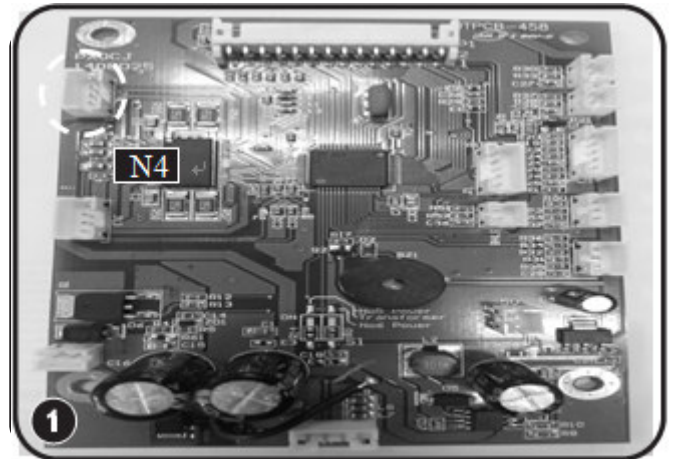
- 1) Make sure plugs "N3" in main board and step motor plug (a) are properly connected.
- 2) Replace stitch length step motor or main board if item (1) without any problems.



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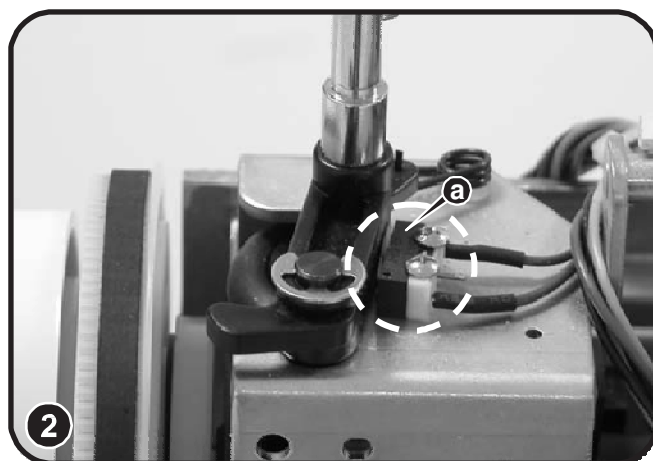
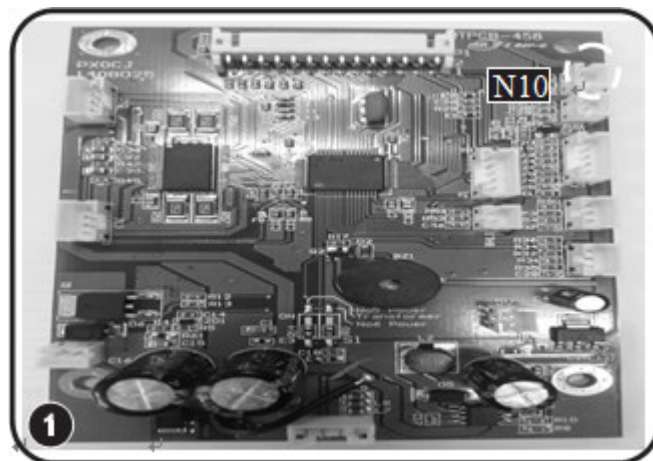
## 8-6 Step motor complete (zigzag) malfunction

- 1) Make sure plugs "N4" in main board and stitch width step motor plug (a) are properly connected. ( 1 / 2 )
- 2) Replace stitch width step motor or main board if item (1) without any problems.



## 8-7 Winding movement is unable to stop

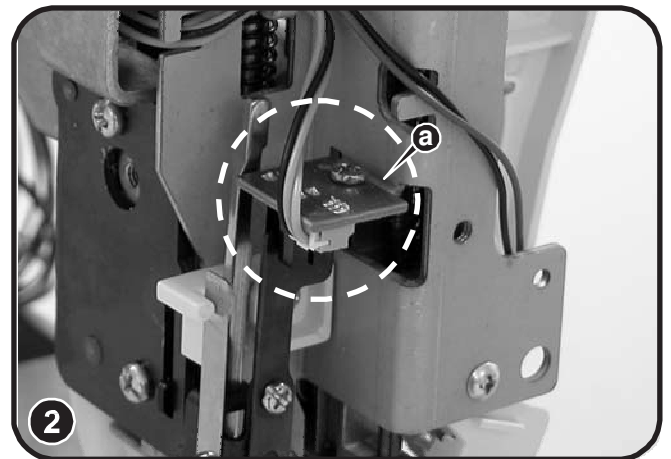
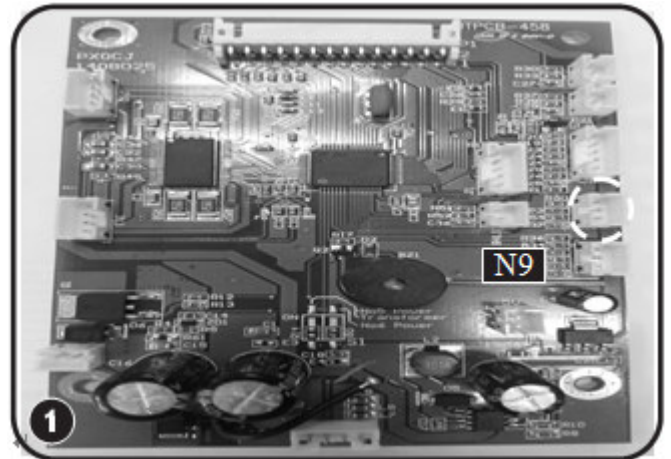
- 1) Make sure plug "N10" in main board is properly connected. Make sure bobbin winder set and micro-switch (a) are properly connected.
- 2) Loosen two screws of micro-switch (a) to make good connection between bobbin winder sets and micro-switch, then lock these screws back. (1 / 2 )
- 3) Replace micro-switch (a) or main board if item (1) without any problems.
- 4) If the item (2) has problem, change micro-switch (a).
- 5) If item (2) without any problems, change the main board.



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## 8-8 BH problem

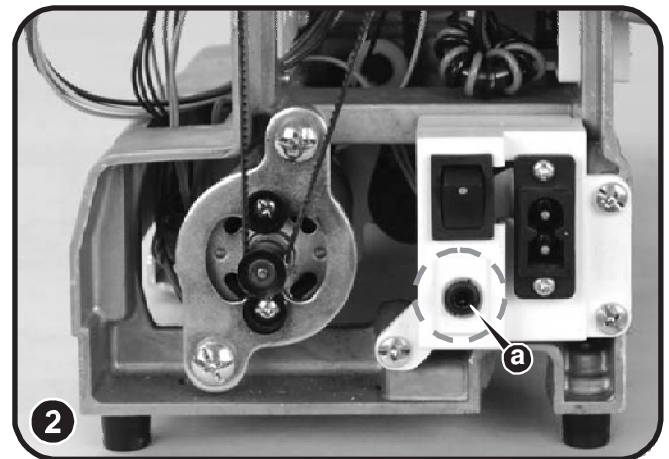
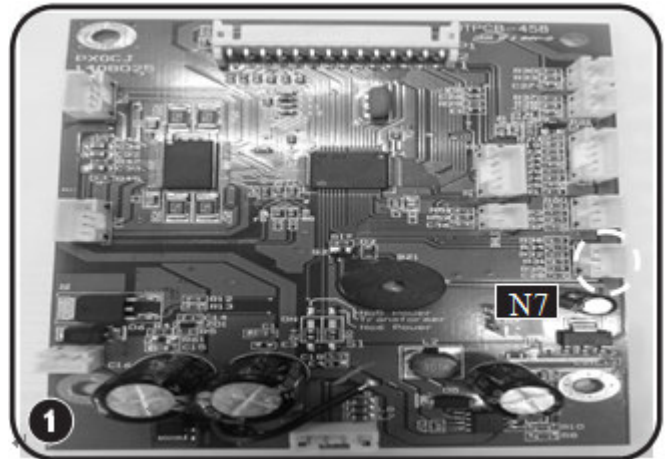
- 1) Make sure plug "N9" in main board is properly connected. Make sure an indentation at the top of BH arm is positioned in the center of Photo-sensor switch (a). Please refer to Page 35 for BH adjustment. (1 / 2)
- 2) Replace Photo-sensor board (BH) or main board if item (1) without any problems.



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## 8-9 Foot controller problem

- 1) Make sure plug "N7" in main board is properly connected. (1)
- 2) Make sure connection on foot control jack (a) is correctly in contact with the foot control plug. If connection is bad replace lead wire foot control jack. (2)
- 3) Replace foot controller or main board if items (1-2) without any problems.





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## 8-10 LED lamp malfunction

- 1) Make sure plug "N2" in main board and plug (a) in LED light lamp board are properly connected. (1 / 2)
- 2) Replace LED light lamp board or main board if item (1) without any problems.

