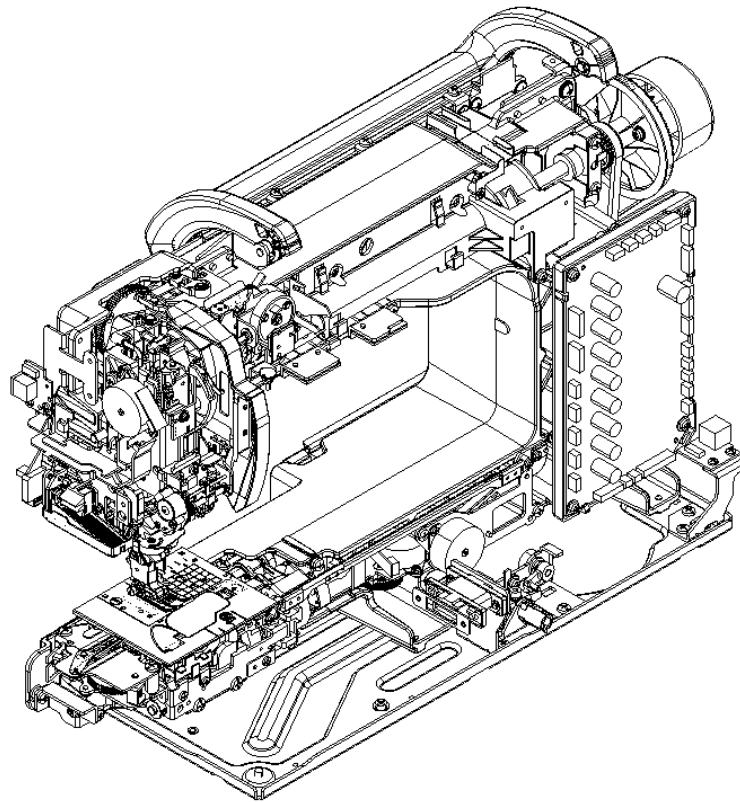


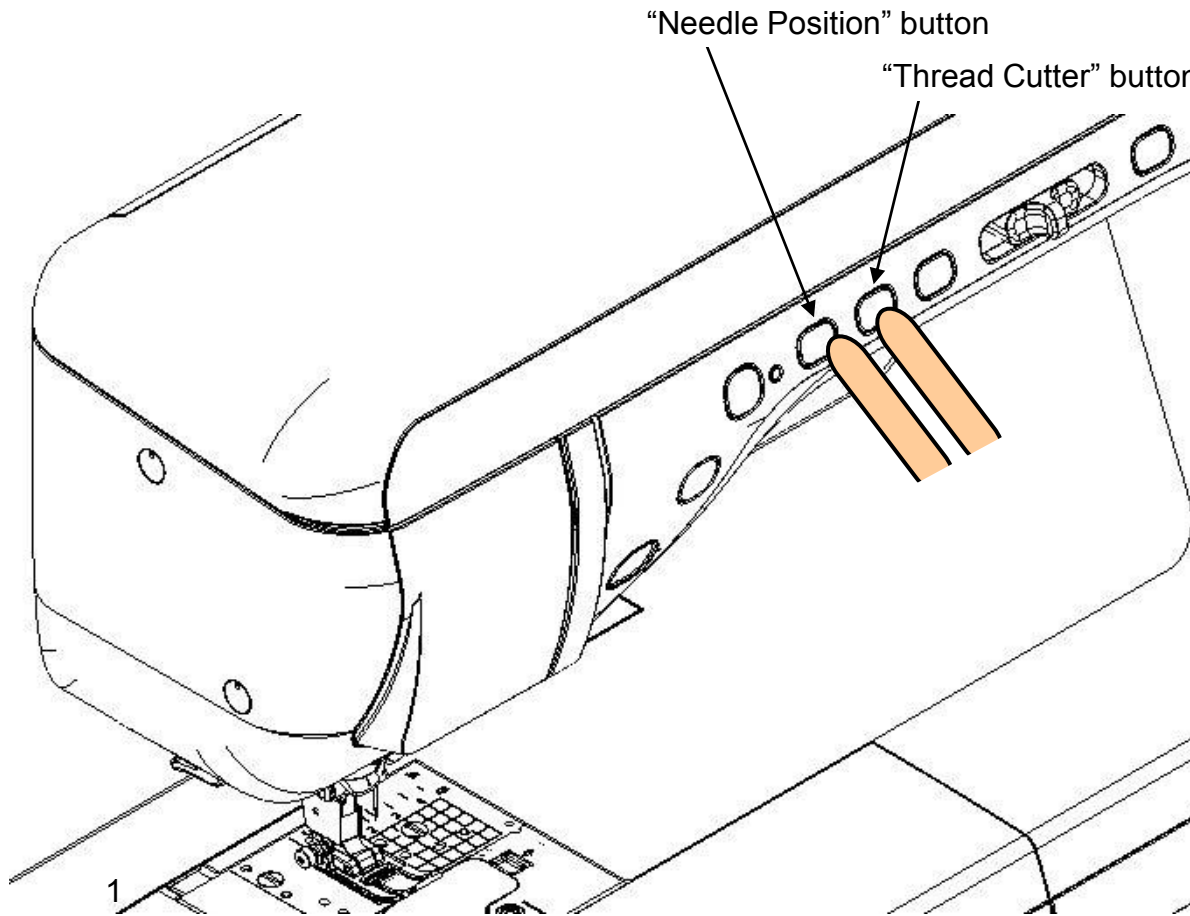
BLTY Adjustments



Starting the Test mode

Keep pressing the **“Needle Position button”** and **“Thread Cutter button”**, and turn on the machine.

“Test mode selection screen” appears.



01	02	03	04	05	06	07	08
09	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72

Touch panel

Standard : In the adjustment screen, touch the center of “+” 1 to 5 and “**SUCCESS**” is displayed.

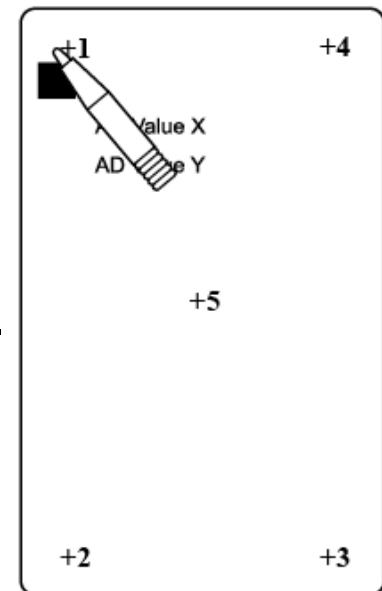
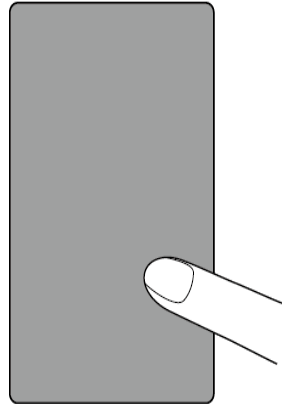
In case the setting of touch panel is not correct,

1. Turn off the machine.
2. Touch anywhere inside the touch panel, then turn on the machine again.
*Continue touching the touch panel until the “Adjustment screen” appears.
3. Touch the center of “+” from 1 to 5 in order with the included touch pen.

“**SUCCESS**” : Setting of Touch panel is correct.

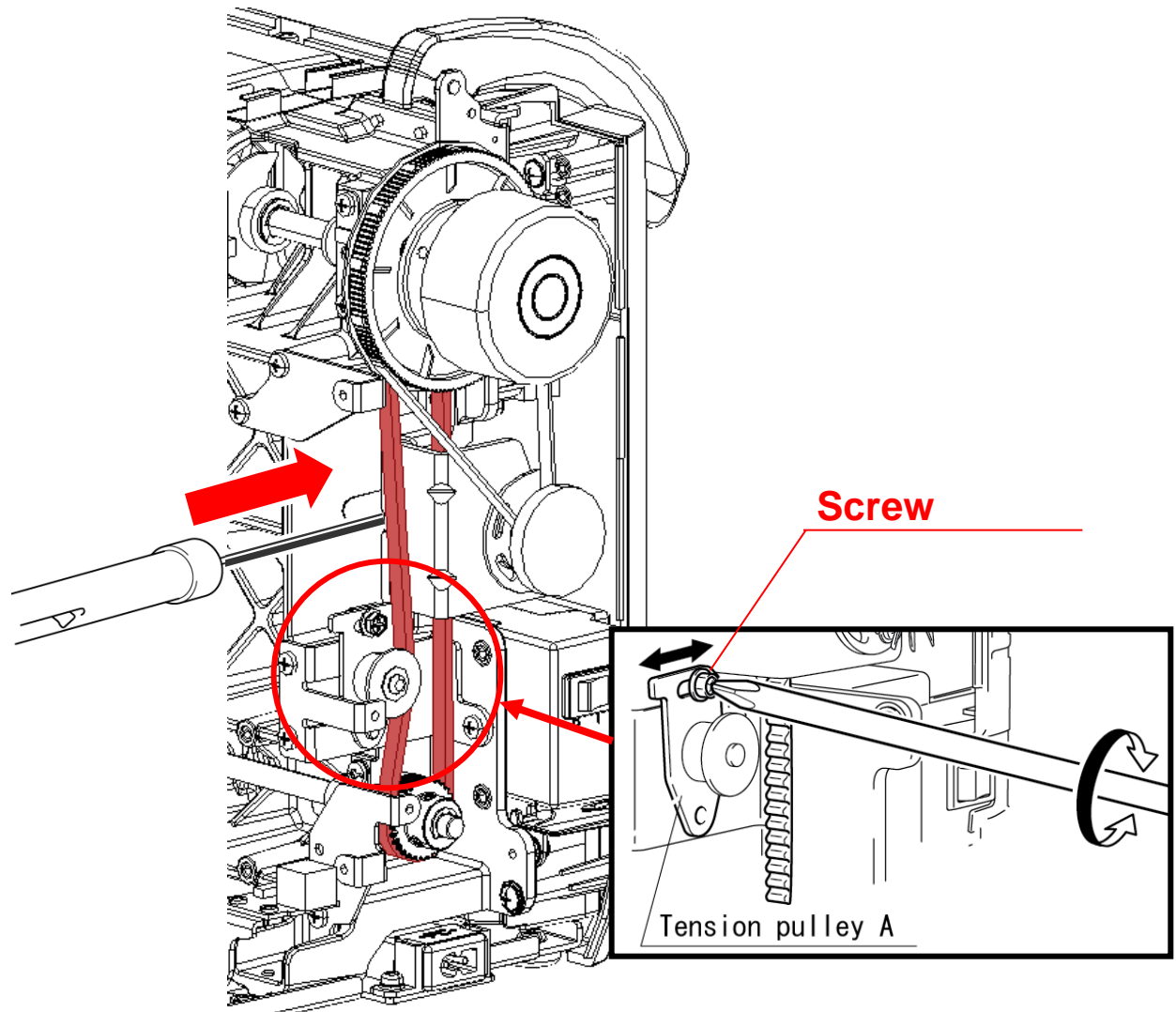
“**ERROR**” : Setting of Touch panel is not correct.
Touch the center of “+” from 1 to 5 in order again.

This also for customer calibration



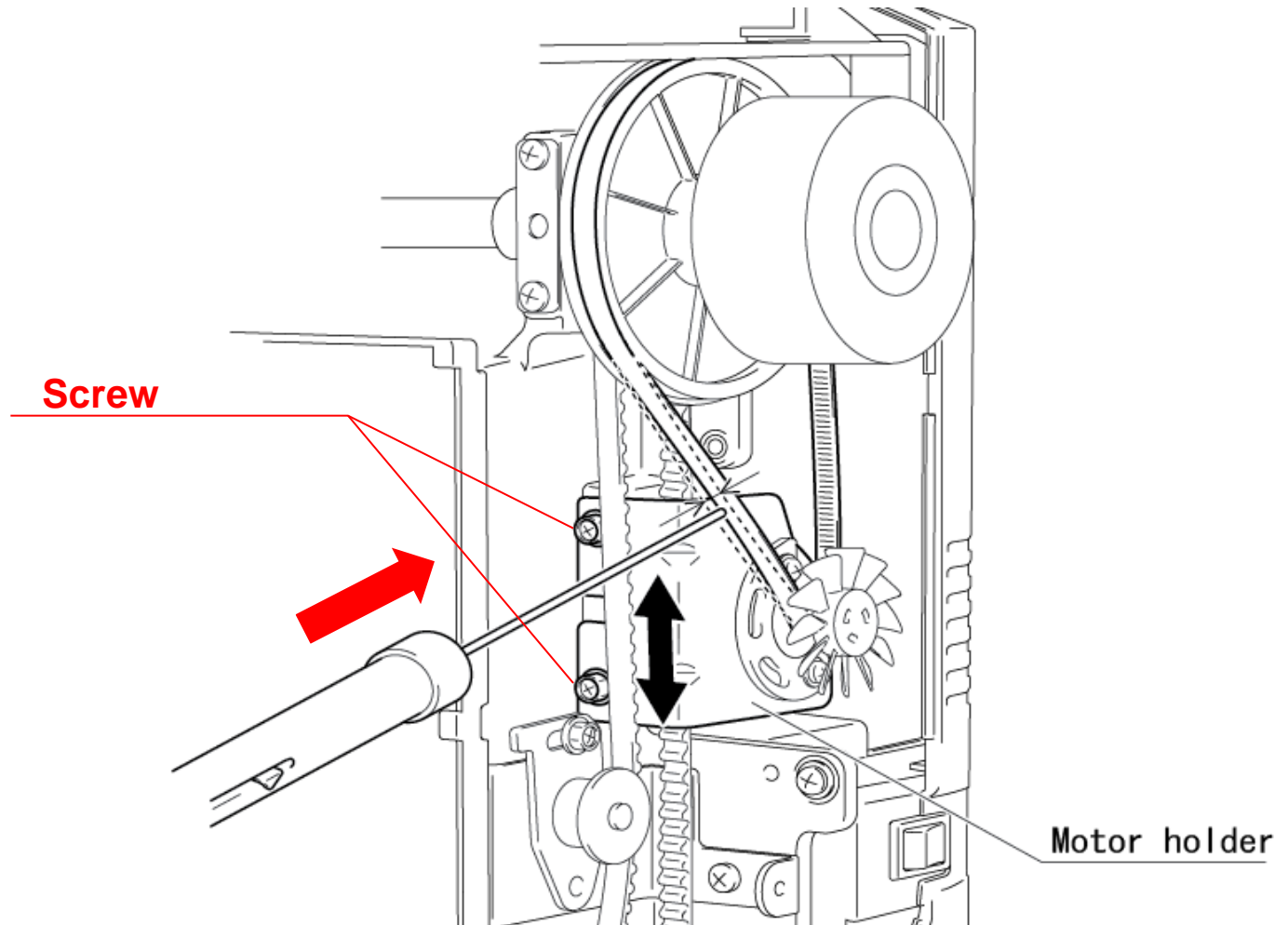
Timing belt tension

Standard : The slack of belt is **1.5 to 2.5mm** when pushing the center of belt with a force of 1.96N(200g).



Motor belt tension

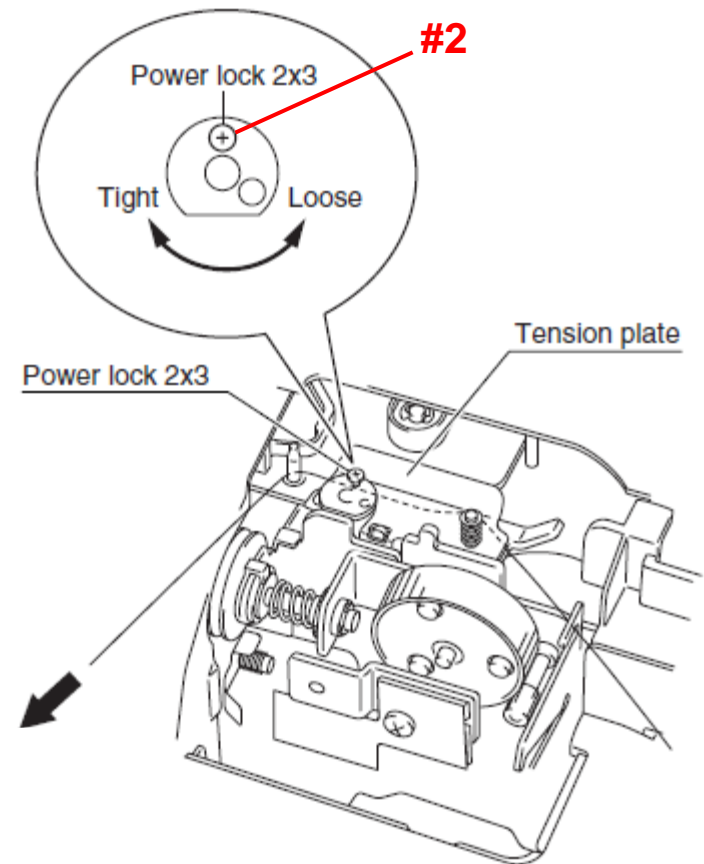
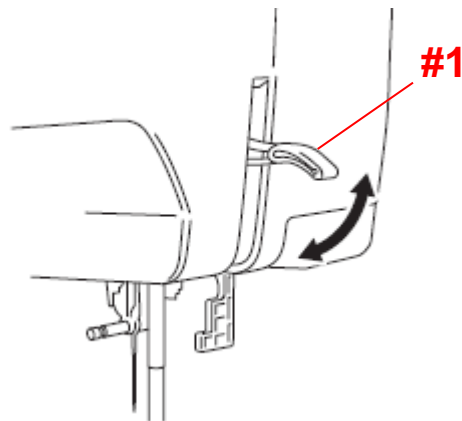
Standard : The slack of belt is 1.5 to 3.5mm when pushing the center of belt with a force of 0.98N(100g).



Fine tension

Standard : The tension of thread is 0.08 to 0.11N (8 to 11g) when pulling the thread.

1. Raise the presser foot lifter (#1).
2. Pass the Metrosene Thread #60 through the tension plate.
3. Lower the presser foot lifter (#1).
4. Turn the screw (#2) to adjust tension.

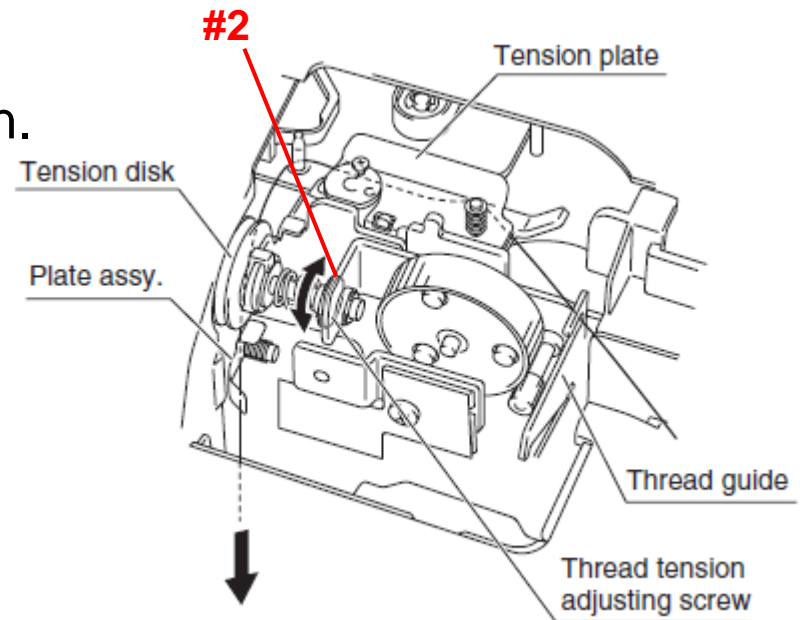
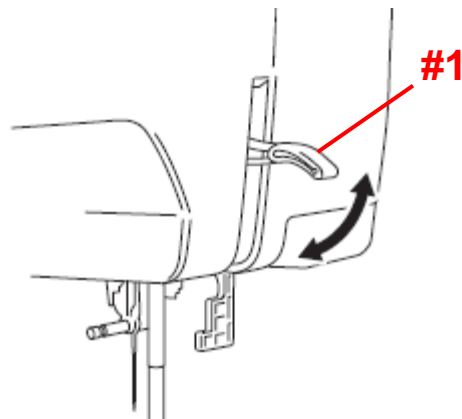


Upper thread tension

Standard : The tension of thread is 0.44 to 0.48N (45 to 49g) when pulling the thread.

1. Start the test mode.
2. Raise the presser foot lifter (#1).
ATPM initializes
3. Pass the Metrosene Thread #60.
4. Lower the presser foot lifter (#1).
5. Turn the gear (#2) to adjust tension.

**Note.. If adjusting gear #2 appears tight,
Soft adjustment can be made in test
mode number '25'**

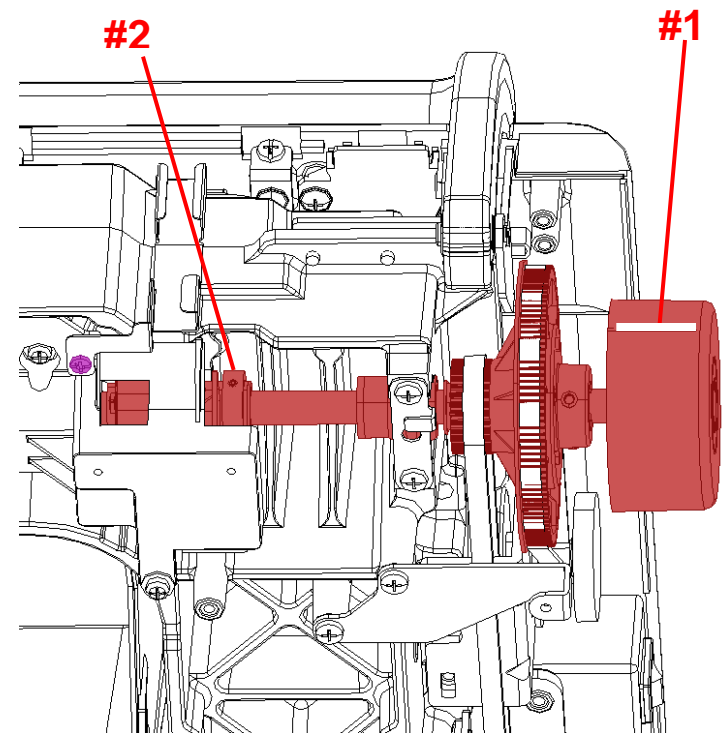
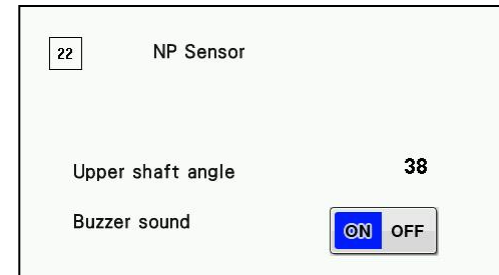
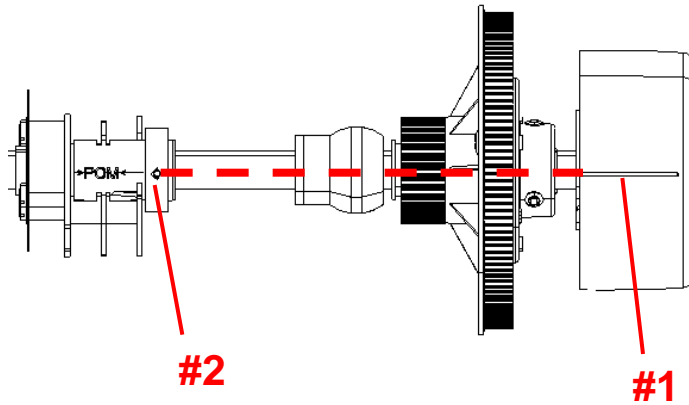


Upper shaft shutter angle

Standard : In the test mode #22, buzzer stops when the pulley base line comes to the top.

1. Go to the test mode #22.
2. Turn the pulley until the base line (#1) comes to the top.
3. Loosen the screw (#2) , then fix it when the buzzer stops.

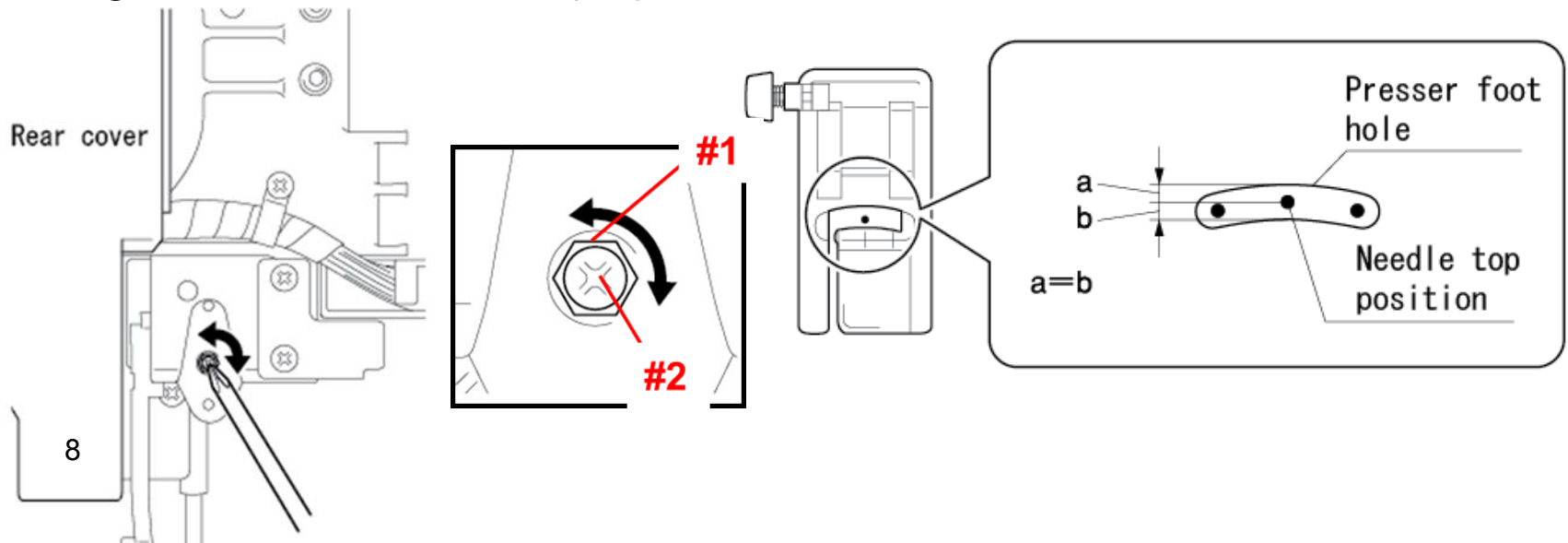
When looking from upper side, the pulley base line (#1) and screw (#2) should be on the line.



Presser foot and Needle plate position

Standard : The presser foot opening and needle plate opening should be aligned.

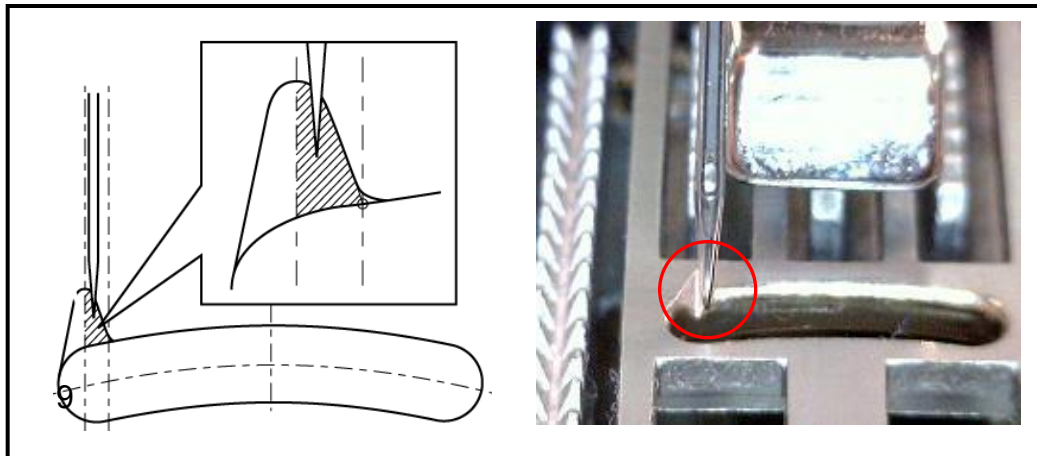
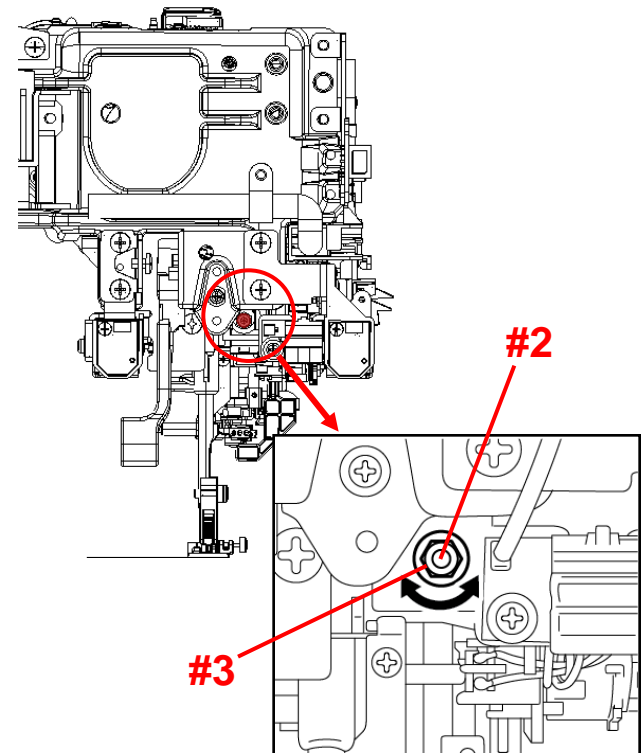
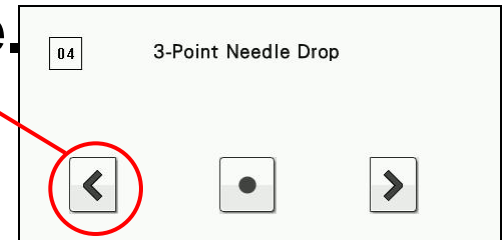
1. Make sure that the 'J' foot is attached..
2. Lower the presser foot. Compare that the opening of the presser foot and needle plate are aligned.
3. Turn the nut (#1) little by little to adjust the Front/ Back presser foot position.
4. Tighten the lock screw (#2).



Left base line needle drop position

Standard : Left base line needle drop is in “V” shape shadow area of needle plate.

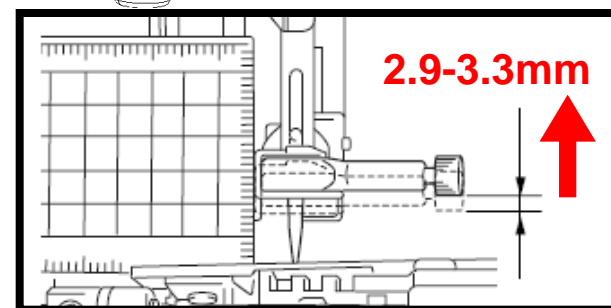
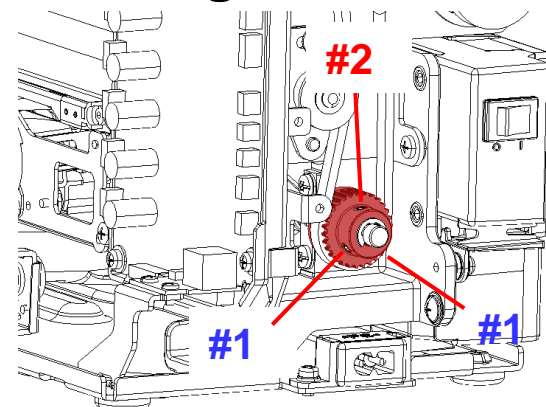
1. Go to the test mode #4 and move the needle to the left by pressing the button (#1).
2. Turn the pulley until the needle point comes to the needle plate surface.
3. Loosen the black screw (#2) and turn the eccentric screw (#3) to adjust the needle drop position.
4. Tighten the screw (#2).



Needle bar rising (Outer rotary hook timing)

Standard : When the needle bar rises 2.9 to 3.3 mm from its lowest position, the rotary hook point aligns with the right side of needle.

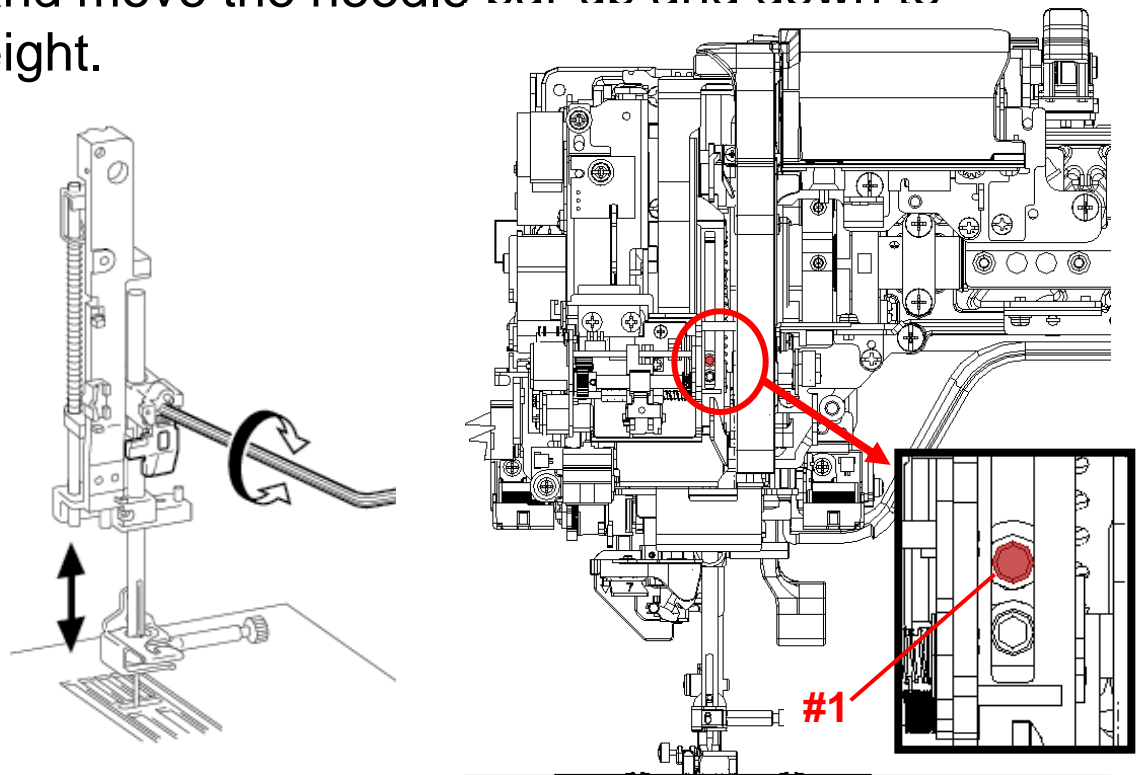
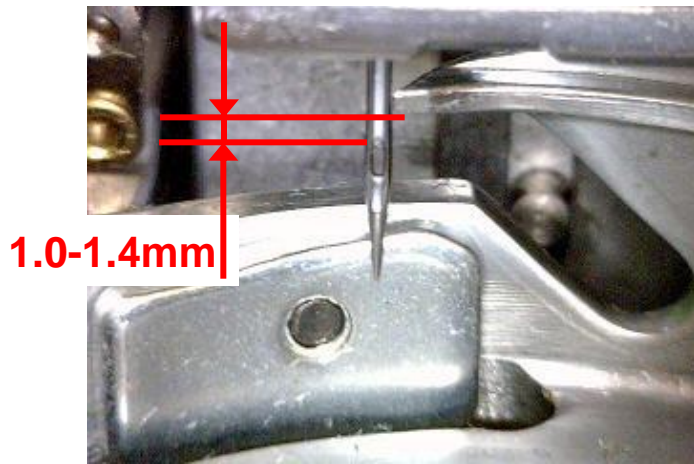
1. Go to the test mode #4 and move the needle bar to the left.
2. Turn off the machine.
3. Turn the pulley until the needle meets the rotary hook point.
4. Check the 2 screws (#1), then turn the pulley and loosen them.
5. Lower the needle bar to its lowest position.
6. Raise the needle bar 2.9 mm to 3.3 mm.
7. Loosen the screw (#2).
8. Turn the outer rotary hook by hand until the rotary hook point aligns with the right side of needle.
9. After adjustment, tighten the 3 screws.



Needle bar height

Standard : The gap between the top of needle eye and the lower end of outer rotary hook is 1.0 to 1.4 mm.

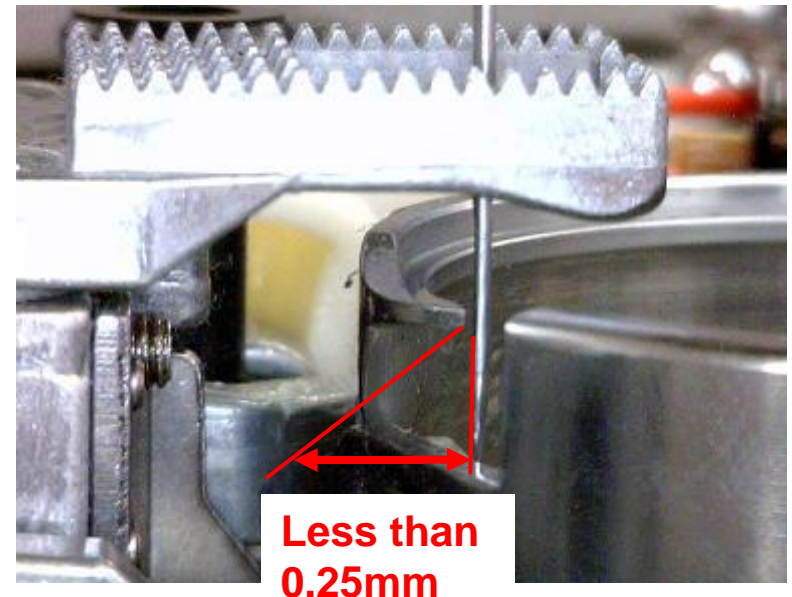
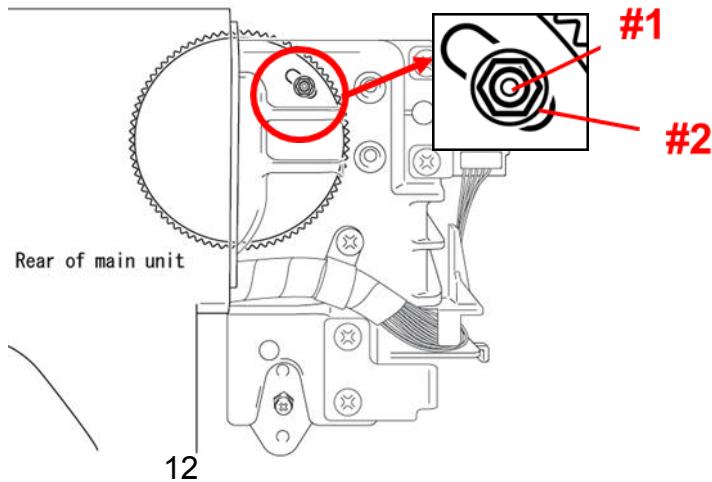
1. Go to the test mode #4 and move the needle bar to the left.
2. Turn off the machine.
3. Turn the pulley until the needle meets the rotary hook point.
4. Loosen the screw (#1) and move the needle bar up and down to adjust the needle bar height.
5. Tighten the screw (#1).



Clearance between needle and rotary hook point

Standard : The clearance between the needle and the rotary hook point is less than 0.25mm.

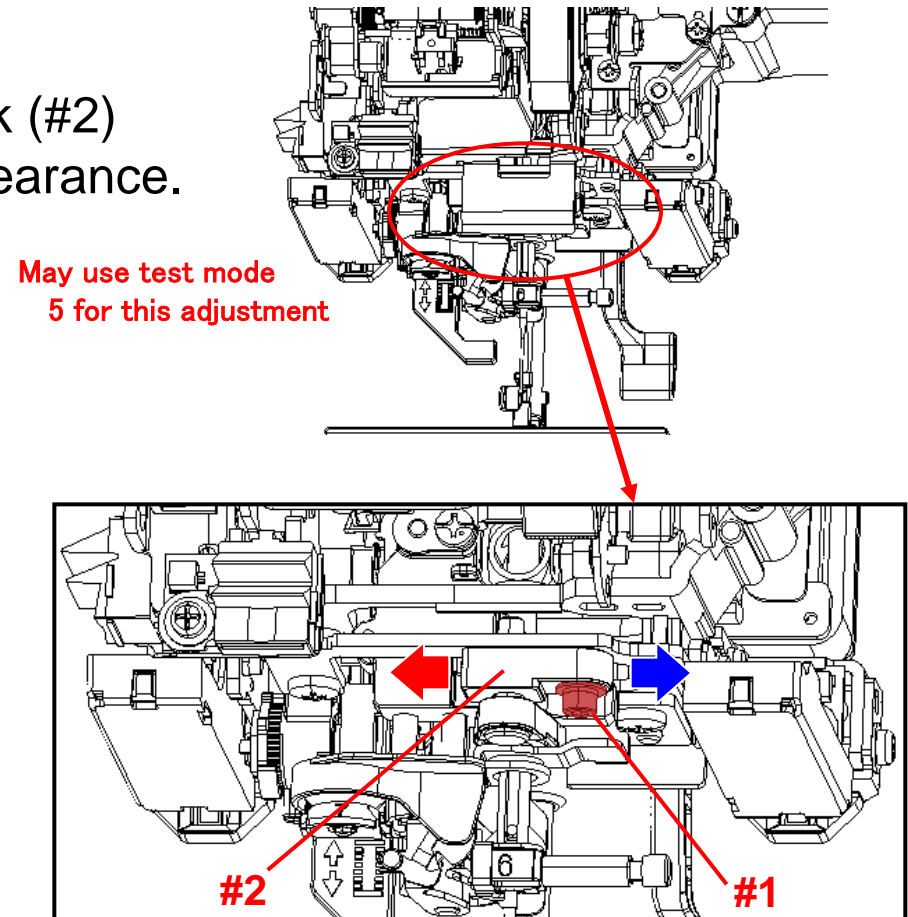
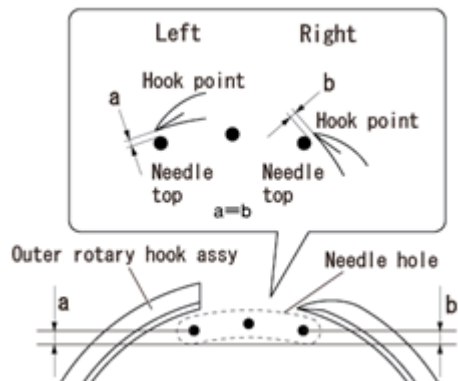
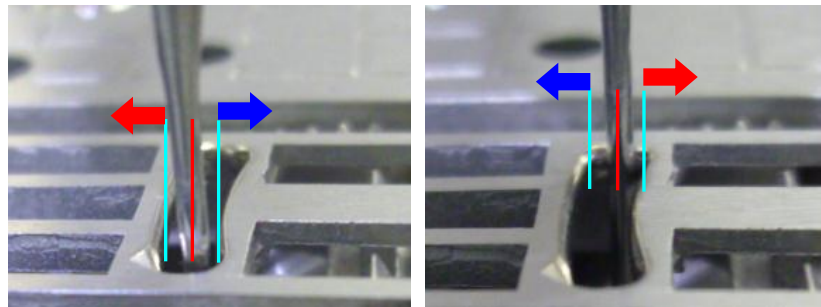
1. Go to the test mode #4 and move the needle bar to the left.
2. Turn off the machine.
3. Turn the pulley until the needle meets the rotary hook point.
4. Turn adjusting screw (# 1) to adjust the needle / hook clearance
4. Make sure that nut (#2) remains tight.



Left / Right needle clearance




Standard : Front - rear clearance between the needle and the edge of needle plate hole is the same at the left and right.

1. Go to the test mode #4 and move the needle bar to the left and right to check the clearance.
2. Loosen the screw (#1) .
3. Move the needle holder shaft block (#2) to the left and right to adjust the clearance.
4. Tighten the screw (#1).



Needle Threading

Standard : The clearance between the upper edge of hook and the upper edge of needle hole is 0mm.

1. Go to the test mode #28.
2. Press  , move the needle bar to its upper stop position.
3. Press button  , then the hook goes down. (Every time you press this button, the hook turns clockwise step by step.)
4. Check the hook through the needle eye (#1).
5. Move the thread block screw (#2) up and down to adjust.
6. Push button  several time, the hook goes back in place.

*Note : Hook does not work, if the needle thread block is in Fig.1 and Fig.2.

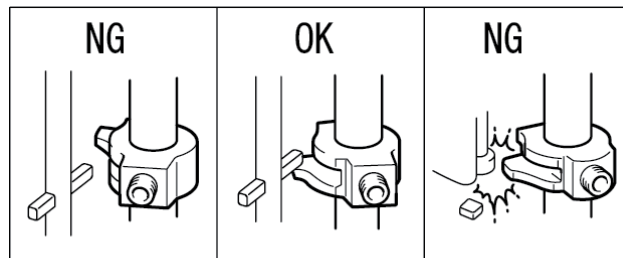
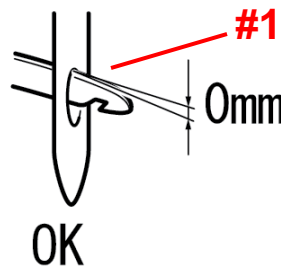
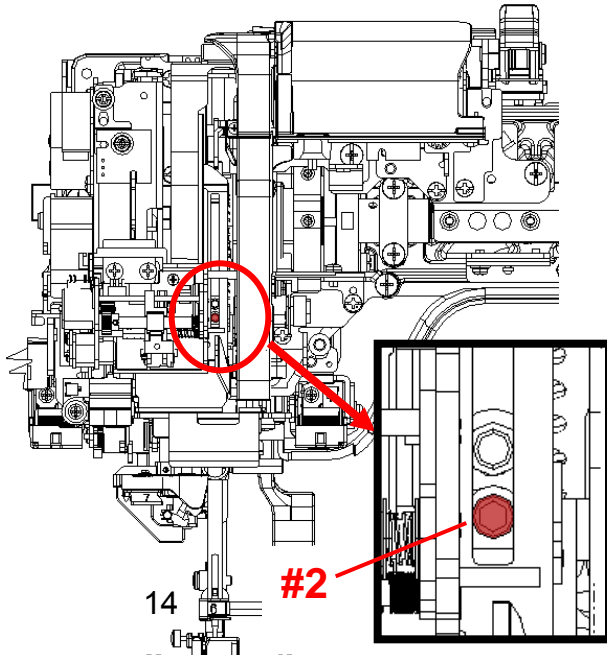
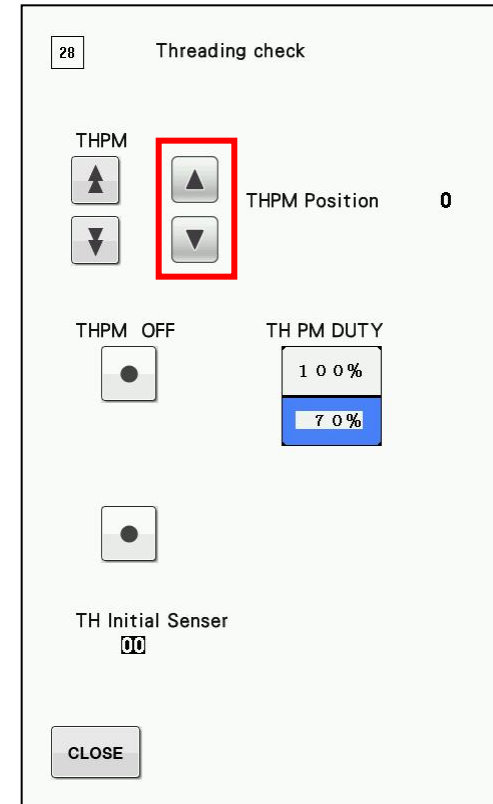


Fig. 1

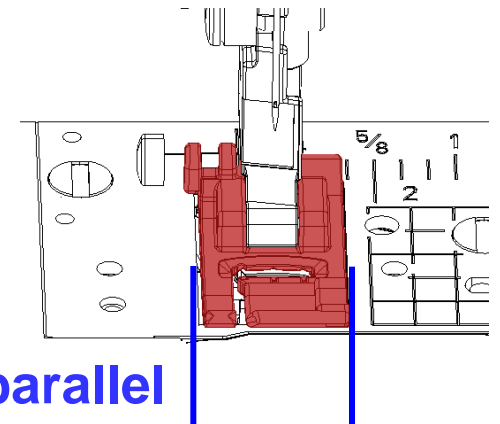
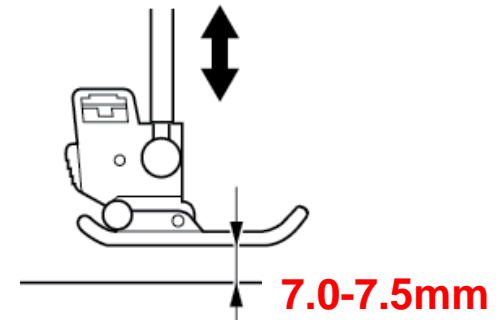
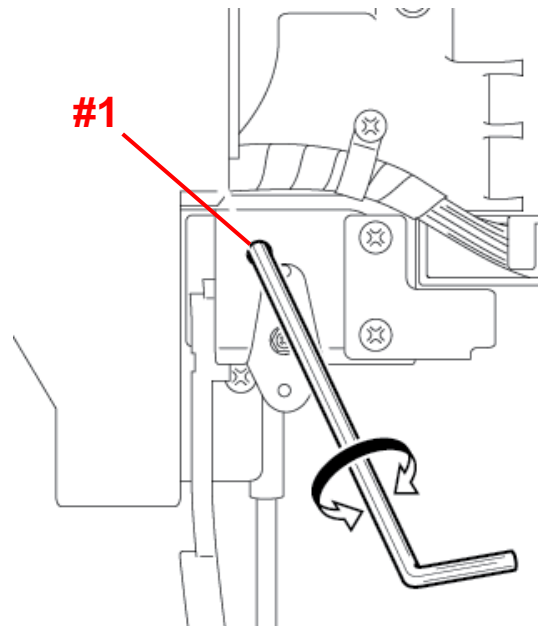
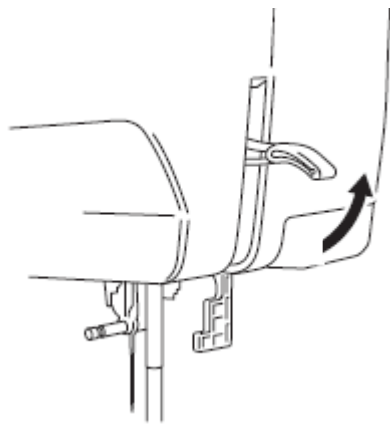
Fig. 2



Presser bar height and parallelism

**Standard : The clearance between the needle plate A and the bottom surface of presser foot is 7.0 to 7.5mm.
The presser foot is parallel to the feed dog holes.**

1. Raise the presser foot lifter.
2. Turn the pulley until the feed dog drops under the needle plate.
3. Loosen the screw (#1) and adjust the clearance and parallelism.
4. After adjustment, tighten the screw (#1).

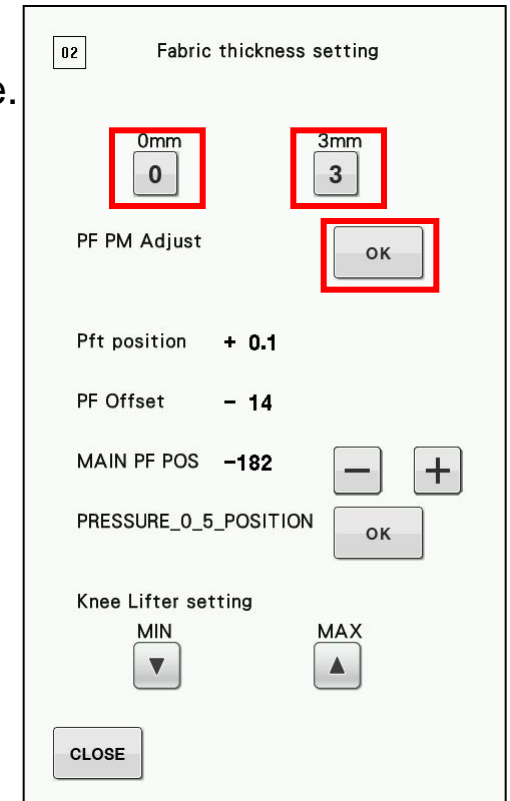
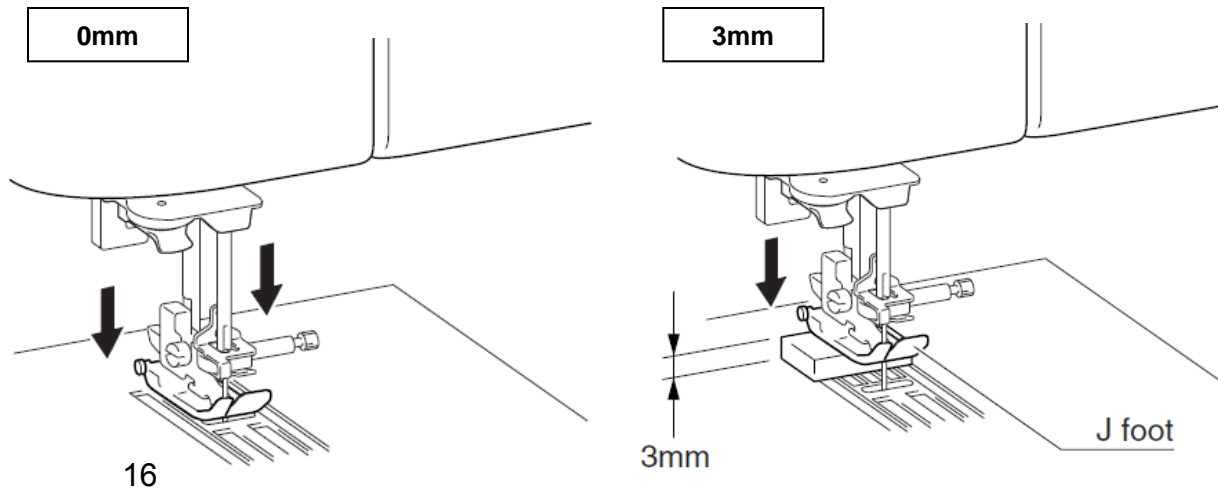


Fabric Thickness Sensor setting

Standard : In the test mode #02, set the presser bar pressure when cloth thickness is 0mm and 3mm.




1. Go to the test mode #2, and attach the “J” presser foot.
2. Turn the pulley until the feed dog drops under the needle plate.
3. Lower the presser foot lever (PF lever) then press .
4. Put 3mm gauge (#1), then lower PF lever and press .
5. Remove 3mm gauge and press “PF PM Adjust ”.

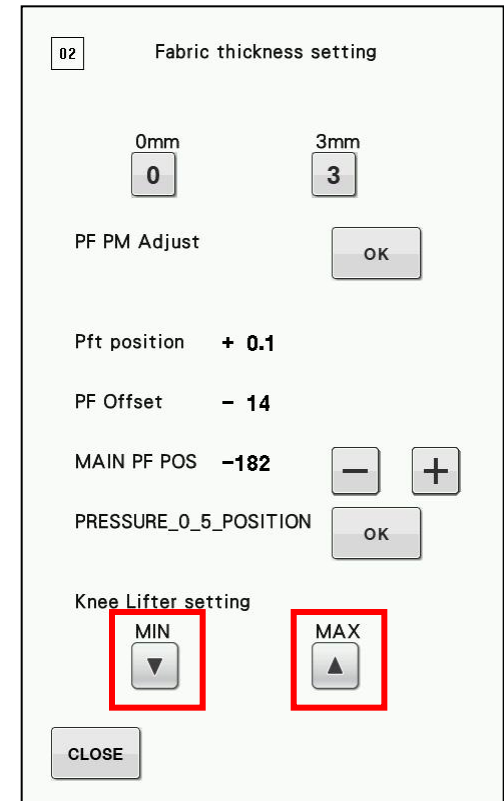
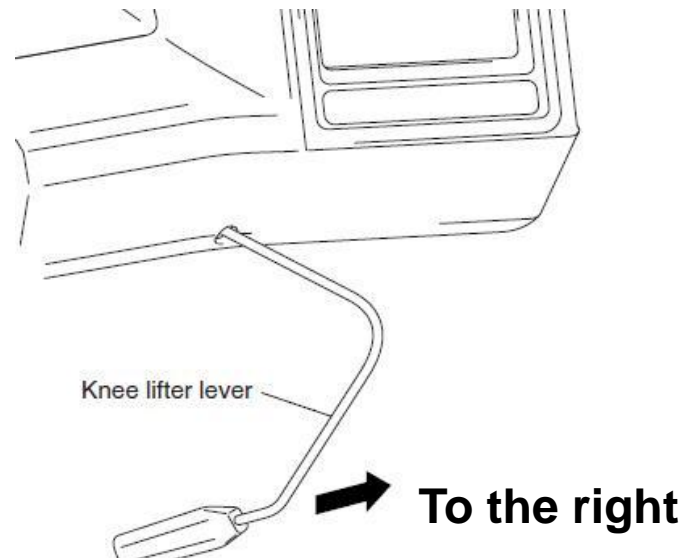
Then machine recognize PF pressure when cloth thickness is 0mm and 3mm so that machine is capable to find proper PF pressure in case Sewing various cloth thickness.



Knee lifter position

Standard : In the test mode #02, set the maximum and minimum knee lifter position.

1. Go to the test mode #2.
2. Turn the pulley until the feed dog drops under the needle plate.
3. Move presser foot lever to left, then press  .
4. While pushing the knee lifter lever to right fully, then press  .
5. Press  .

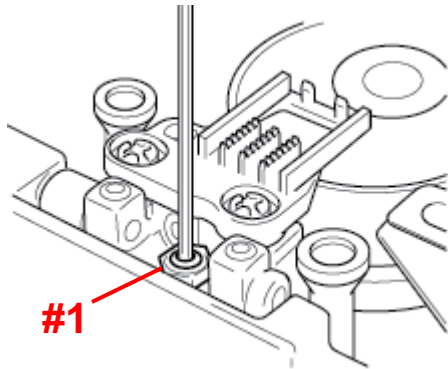


Feed dog height and parallelism

Feed dog height

Standard: The feed dog height from the needle plate A surface is **0.9 to 1.1mm.**

1. Turn the pulley until the feed dog comes to its highest position.
2. Turn the screw (#1) to adjust the rear side feed dog height.



Feed dog highest position

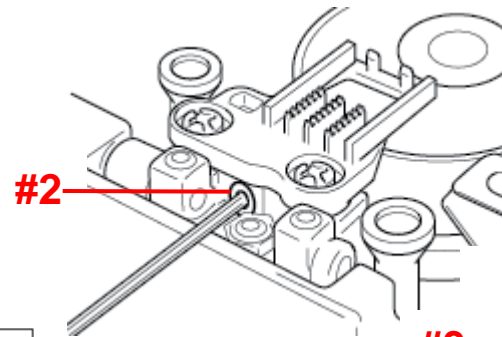
Needle plate A surface

0.9 - 1.1mm

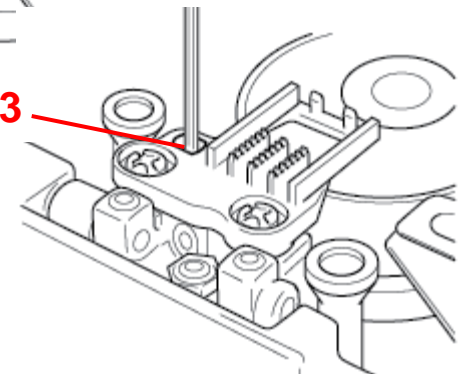
Feed dog parallelism

Standard: The feed dog is parallel with the needle plate A.

1. Loosen the screw (#2).
2. Turn the screw (#3) to adjust the feed dog parallelism.
* Check that the feed dog front side and rear side are parallel to the needle plate A.
3. Tighten the screw (#2).



#3




Feed dog position

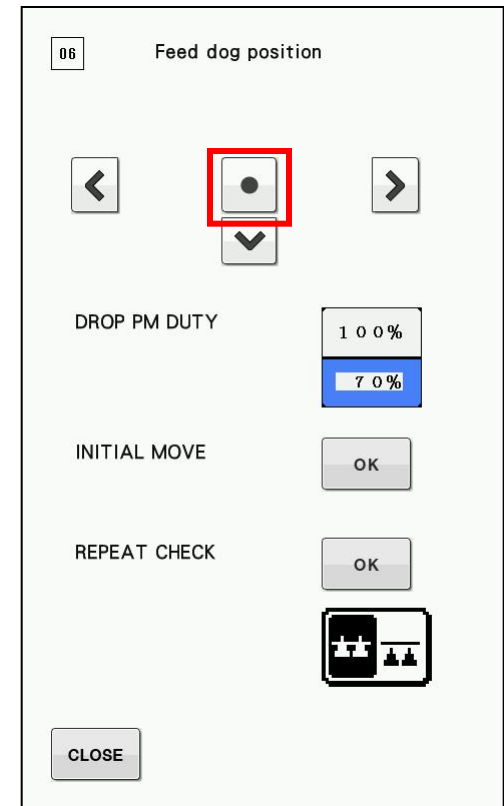
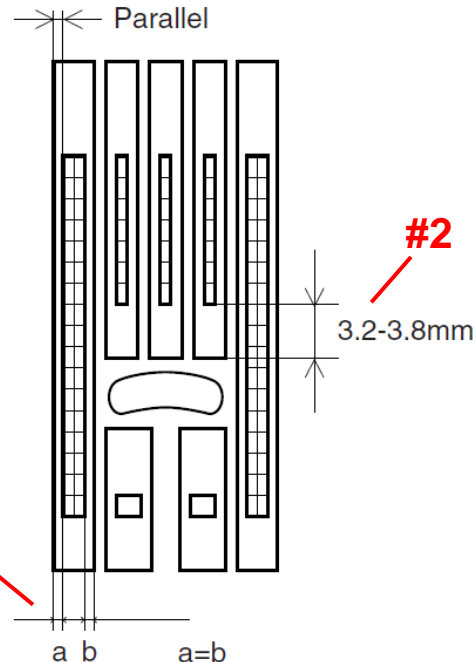
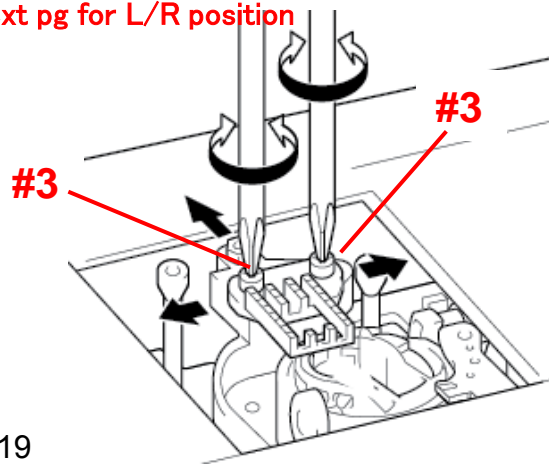
Standard :

Left - right : Feed dog comes to the center, means $a=b$ (#1).

Front - rear : The clearance between feed dog and needle plate is 3.2 to 3.8mm (#2).

1. Go to the test mode #06, then press .
2. Remove the needle plate A.
3. Loosen the 2 screws (#3), then adjust feed dog position. (Temporarily attach the needle plate A.)
4. Tighten the 2 screws (#3).
5. Attach the needle plate A.

Only loosen to adjust F/B position
See next pg for L/R position



Forward and Backward feed

Standard : The difference between the length of forward and backward feed is within 5 mm.

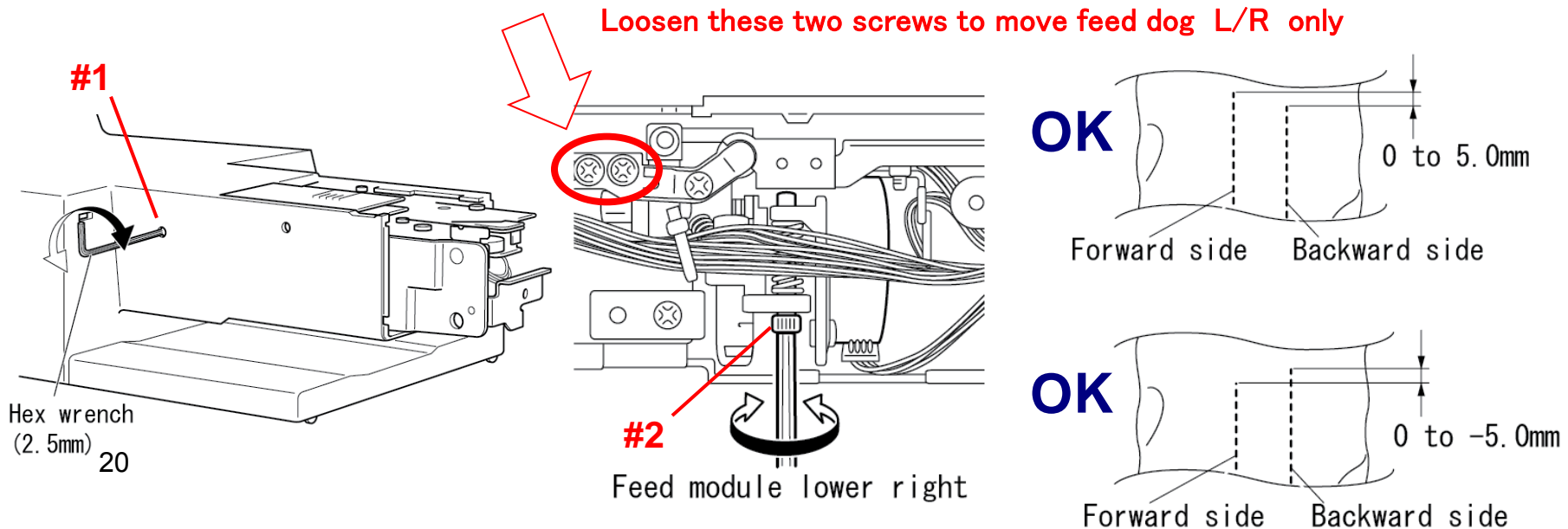
1. Go to the test mode #13, and attach the “J” presser foot.
2. Press the Start/Stop button. ➡ Sewing starts.
3. Loosen the screw (#1), then turn the screw (#2) to adjust the feed length.

*Point : Use one piece of muslin fabric.

Tighten the screw (#2) : Backward feed is shorter.



Loosen the screw (#2) : Backward feed is longer.

4. Tighten the screw (#1).

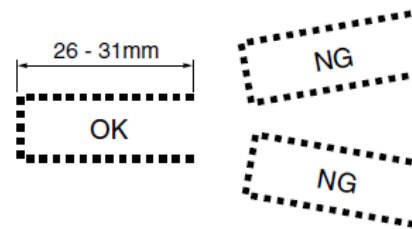


Side feed adjustment

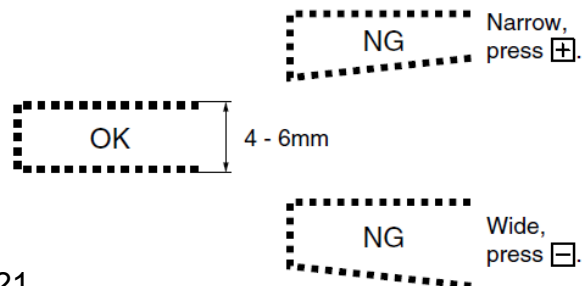
Standard : The shape of sewn pattern should be meets the standard.

1. Go to the test mode #36, and attach the “N” presser foot.
2. Use the Shappe spun #60 thread, and sew the test pattern.
3. Press   to adjust the shape of sewn pattern as below.

- a. Pattern should be parallel. And upper section length is 26mm to 31mm.
In case it's not parallel, adjust feed dog height and parallelism.

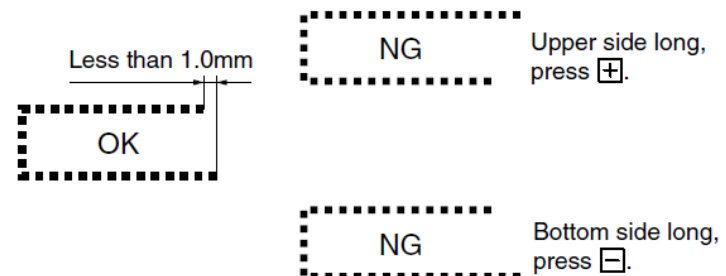


- b. Pattern height should be 4 to 6mm.





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- c. Difference between upper section and lower section should be within 1.0mm.



One point adjustment

Standard : The shape of sewn pattern should be meets the standard.

1. Go to the test mode #03, and attach the “N” presser foot.
2. Use the Shappe spun #60 thread, and sew the test pattern.
3. Press   to adjust the shape of sewn pattern as below.



NG#1



Lap : Push vertical 

NG#2



Open : Push vertical 

NG#3



Not align

If lower part short : Push horizon 

NG#4

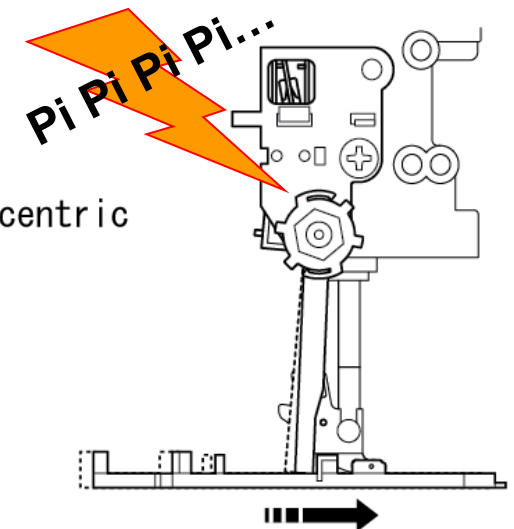
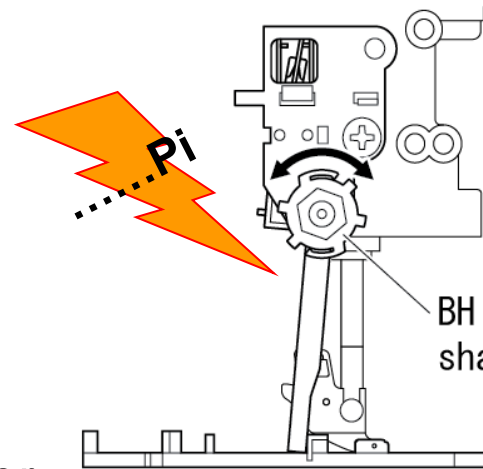
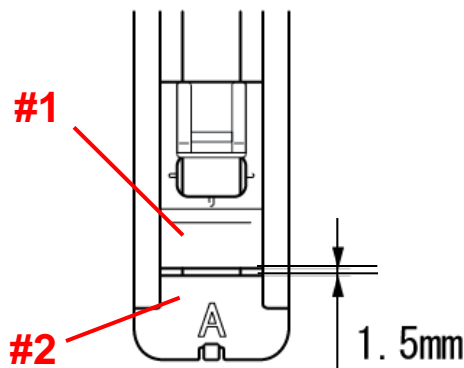
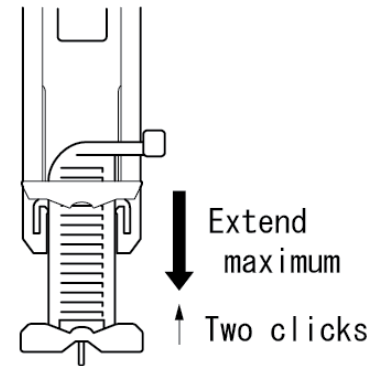


Not align : Push horizon

If lower part long : Push horizon 

Buttonhole laver switch position

1. Extend the Buttonhole foot (BH foot) maximum and pull back it 2 clicks. Then attach the BH foot.
2. Turn the pulley until the feed dog drops below the needle plate.
3. Lower the presser foot lever while keeping that the clearance between the part #1 and #2 is 1.5mm.
4. Lower the Buttonhole lever (BH lever), and set it to the BH foot.
5. Go to the test mode #16, and rotate the BH lever eccentric shaft to the position where the buzzer begins to sound.

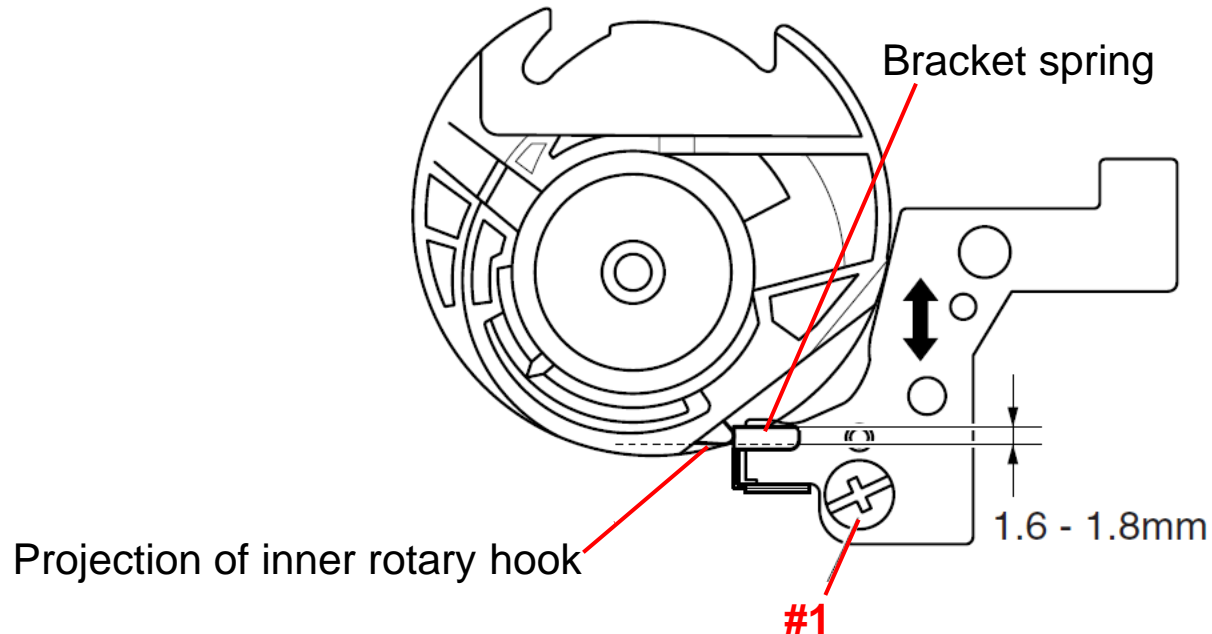


6. Raise the presser foot lever.
7. Check that the buzzer sounds continuously when pulling the BH foot forward fully.

Inner hook bracket position

Standard : The overlap between the projection of inner rotary hook and the bracket spring is 1.6 to 1.8mm.

1. Put the inner rotary hook in the outer rotary hook.
2. Loosen the screw (#1).
3. Move the inner rotary hook bracket to adjust the overlap between the projection and the bracket spring.
4. Tighten the screw (#1).



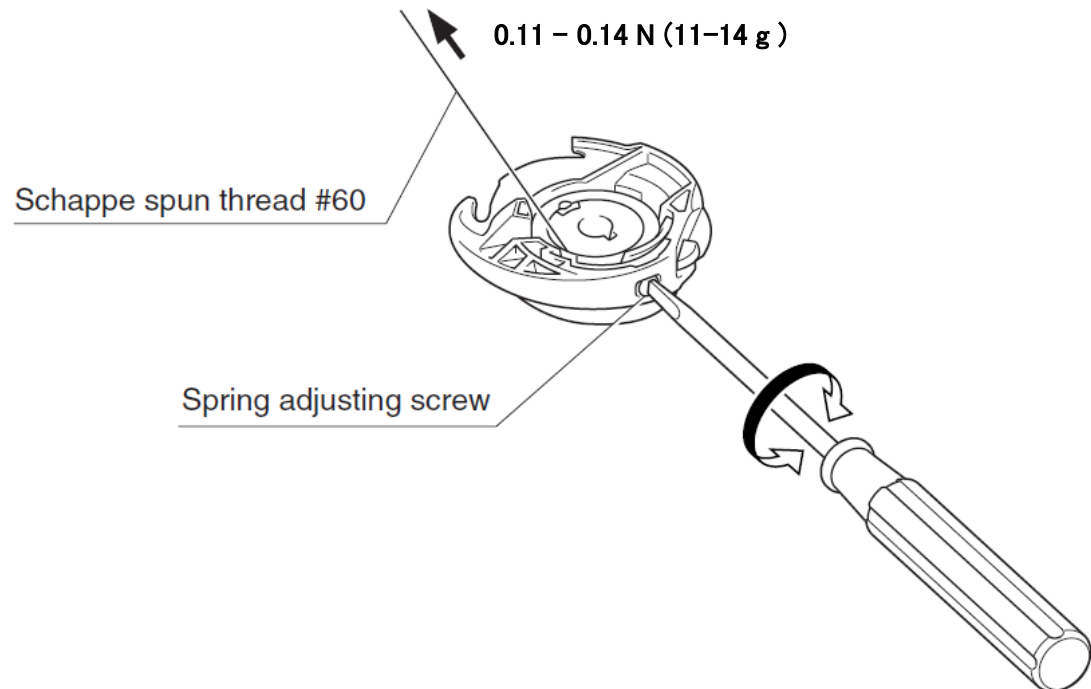
Lower thread tension (Inner rotary hook)

Standard : Pull a thread and adjust to **0.11 to 0.14N (11 to 14g)**.


1. Set the bobbin (Metrosene Thread #60) in the inner rotary hook.
2. Pull the thread with tension gauge and check the tension.


*Adjust the tension by turning the screw.

After adjusting, apply a small amount of Thread-lock to the screw.

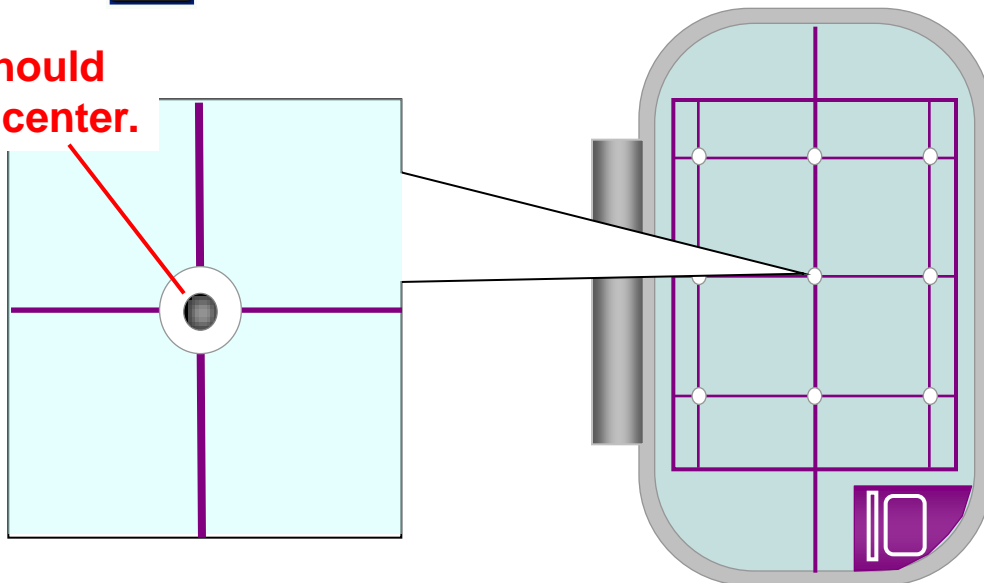


Frame center position (Embroidery unit) 1 of 2

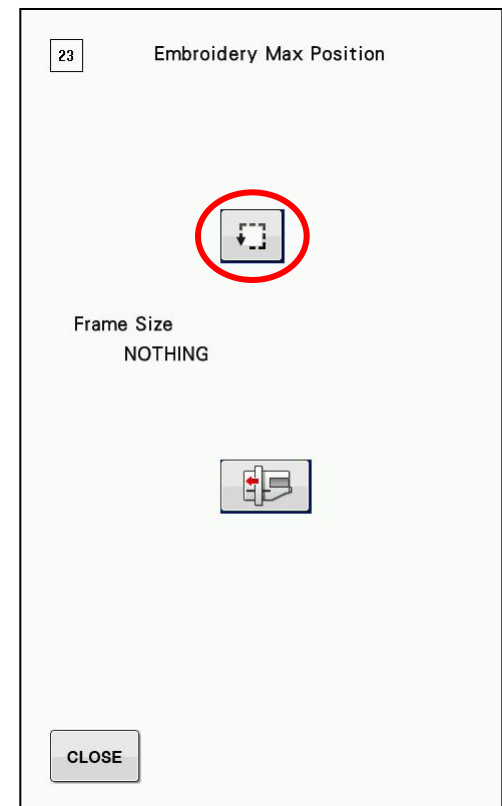
Standard : In the test mode #23, when pressing , the needle drops in the center of embroidery sheet hole.

1. Remove the presser foot.
2. Turn off the machine, then attach the embroidery unit.
3. Attach the extra large embroidery frame.
 - *Size: LL,300x180mm (12inch x7inch)
4. Put the embroidery sheet on the frame.
5. Go to the test mode #23.
6. Press , and check the needle drop position.


Needle should be at the center.



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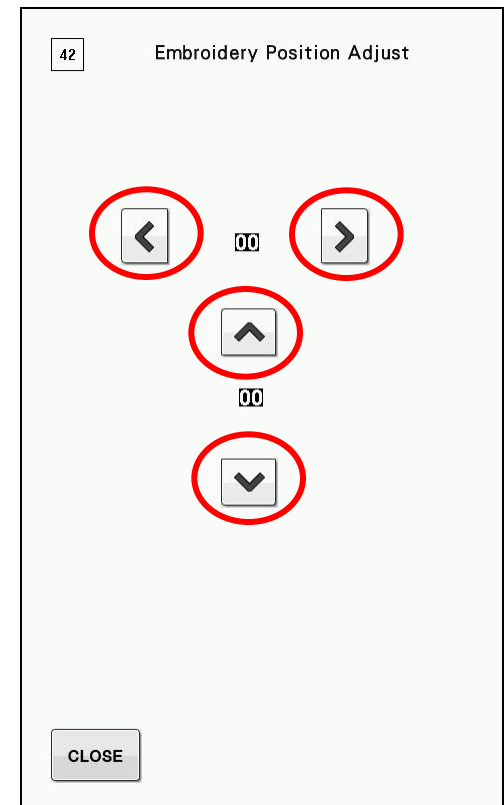
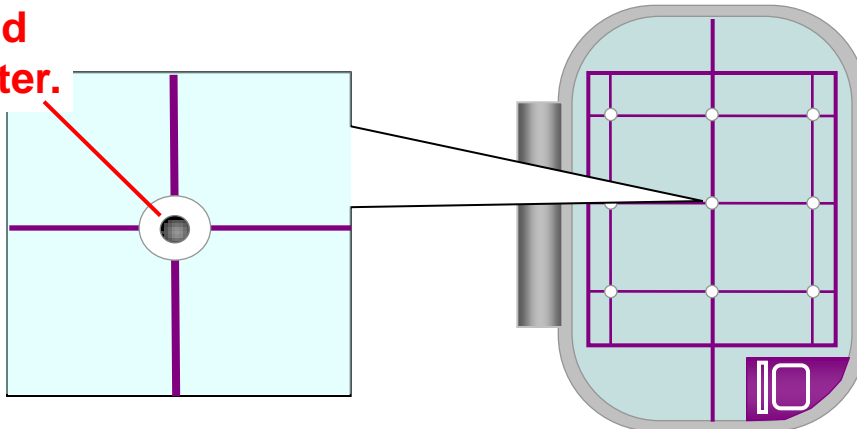
Frame center position (Embroidery unit) 2 of 2

Standard : In the test mode #23, when pressing , the needle drops in the center of embroidery sheet hole.

In case the needle does not drop in the center of embroidery sheet hole,

1. Go to the test mode #42.
2. Turn the pulley until the needle bar comes to its highest position.
3. Press the buttons on the screen to adjust the needle drop position.
4. After this adjustment, turn off the machine.
* The offset value is memorized in the machine automatically.

Needle should be at the center.



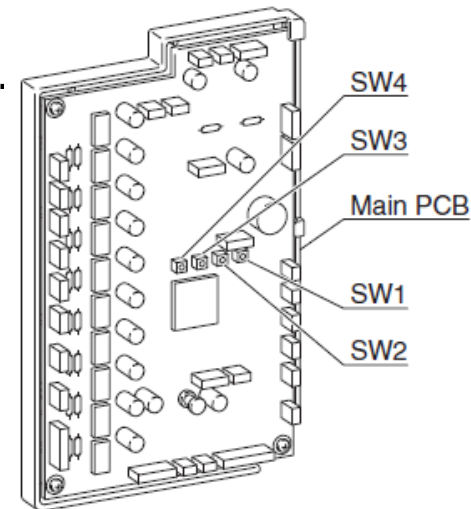
F and Z pulse motor phase

In case below, need to this adjustment.

* When Feed module (F pulse motor) or Needle-presser module (Z pulse motor) was replaced.

* When F initial PCB or Z initial PCB was replaced or re-assembled.

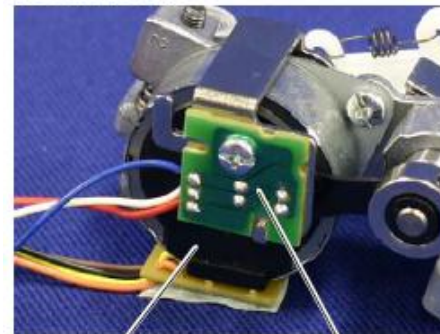
1. Remove the front cover.
2. Turn on the machine while pushing SW2 on the main PCB.
Test mode starts.
3. Push SW1, then the needle bar move down.
4. Push SW3, then the machine automatically sets the F pulse motor phase.
5. Push SW1, then the needle bar move up.
6. Push SW4, then the machine automatically sets the Z pulse motor phase.
7. Turn off the machine, and attach the front cover.



*Key point

Need to adjust “Forward/backward feed” and “Left base line needle drop” again.

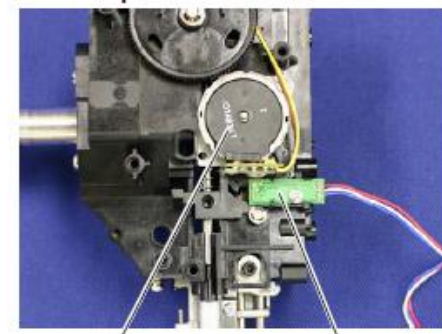
Feed module



F pulse motor

F INIT PCB assy.

Needle-presser module



Z pulse motor

Z INIT PCB assy.

Thread take up spring tension

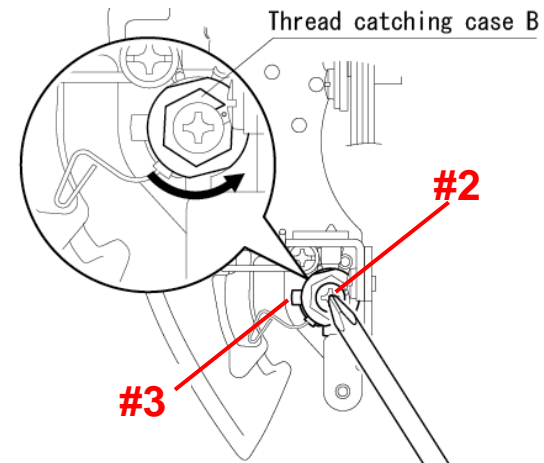
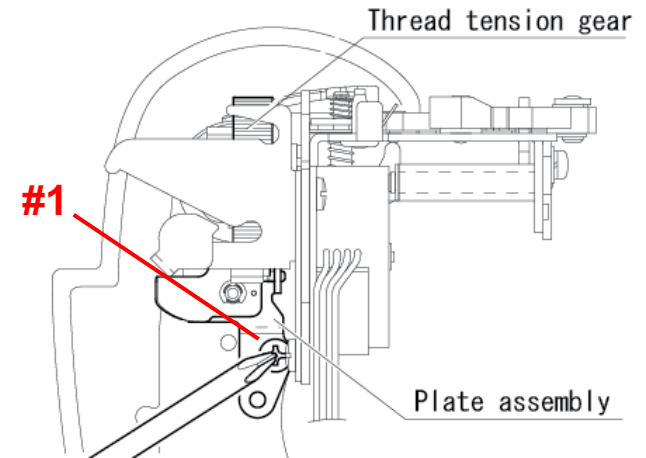
1 of 3

In case below, need to this adjustment.

* When Thread take up spring or Thread catching case was replaced or re-assembled.

Standard : The tension of thread is 0.15 to 0.19N (15 to 19g) when pulling the thread.

1. Remove the Thread unit from the Arm bed.
2. Remove the screw (#1), then remove the Plate assembly.
3. Turn the Thread tension gear to the left fully. Tension disc opens.
4. Loosen the screw (#2).
5. Turn the Thread catching case B counterclockwise until it stops, while holding the protrusion (#3) of thread catching case A.



<T&sup9next page>

Thread take up spring tension

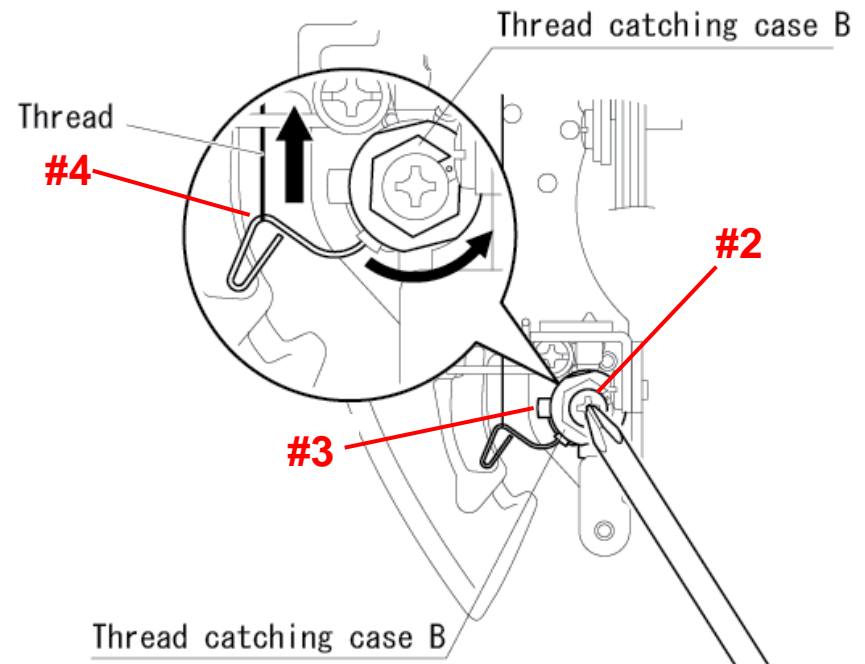
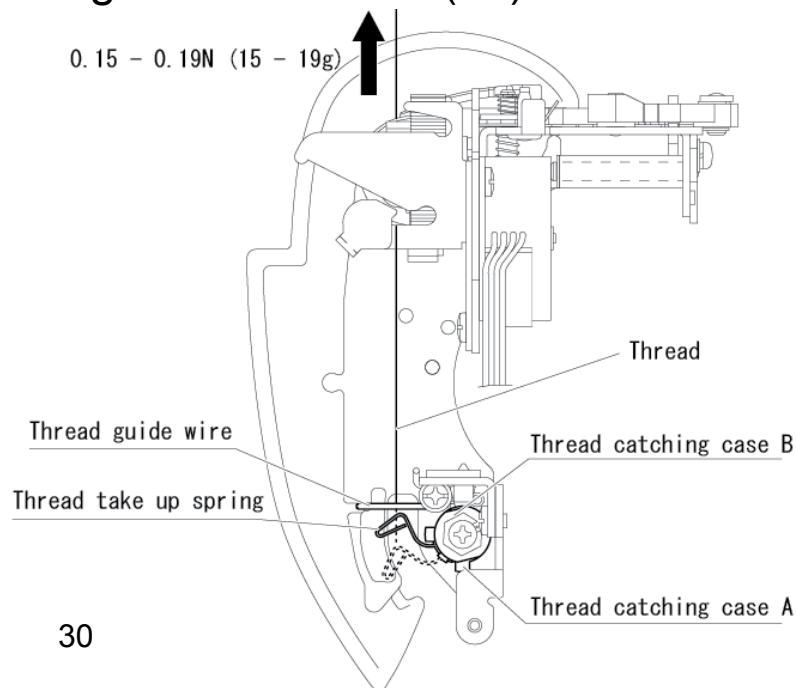
2 of 3

Standard : The tension of thread is 0.15 to 0.19N (15 to 19g) when pulling the thread.

6. Through a thread inside the Thread guide wire, then tie the thread at the point (#4) of the Thread take up spring.
7. Pull the thread to above with a tension gauge, and check the tension.
And Turn the Thread catching case B clockwise to adjust the tension, while holding the protrusion (#3) of Thread catching case A.

***Key point : In case tension is less than 0.15N (15g), go back procedure 4.**

8. Tighten the screw (#2).

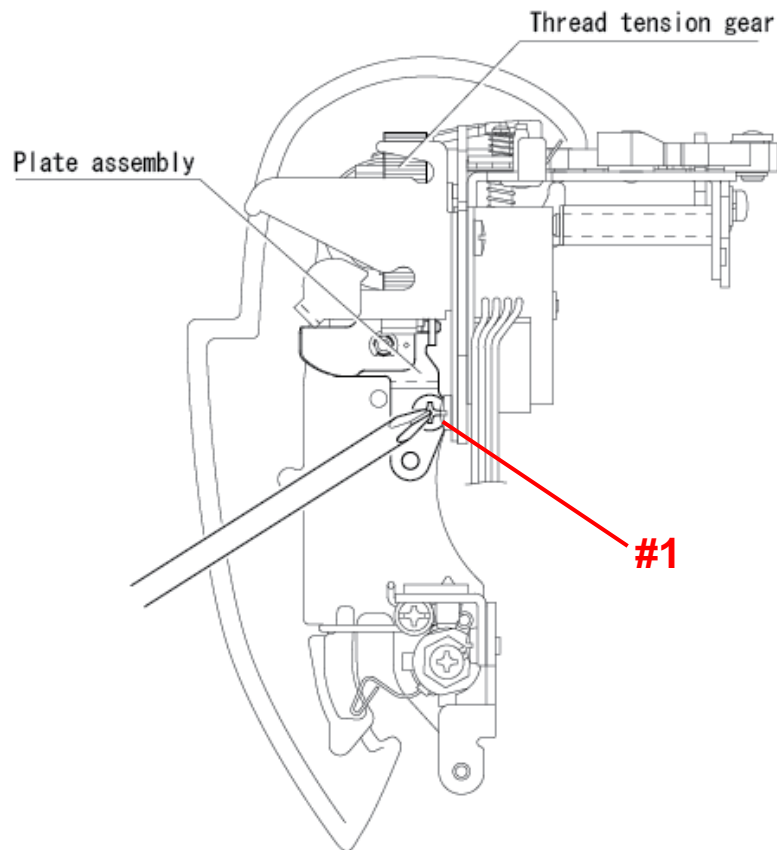


Thread take up spring tension

3 of 3

Standard : The tension of thread is 0.15 to 0.19N (15 to 19g) when pulling the thread.

9. Attach the Plate assembly to the Thread unit with the screw (#1).
10. Attach the thread unit to the arm bed.



Guide line position

1 of 2

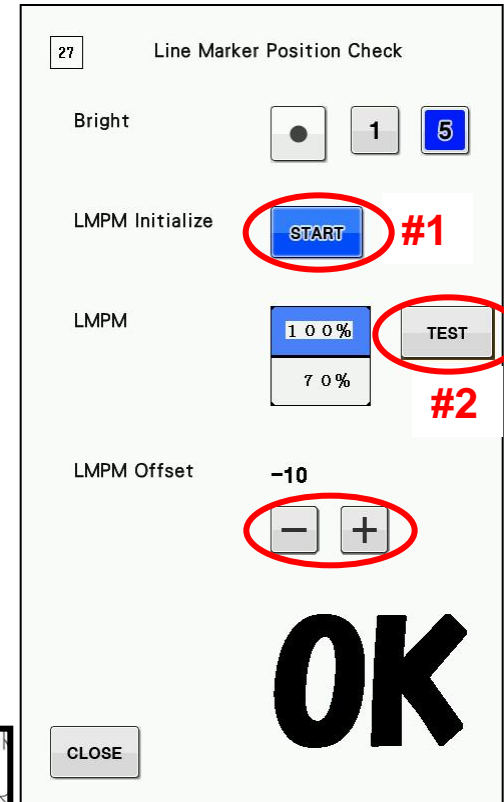
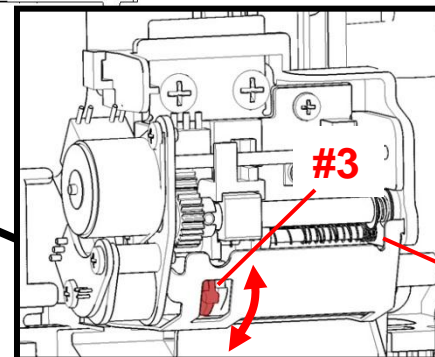
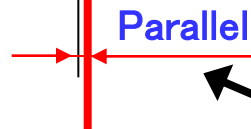
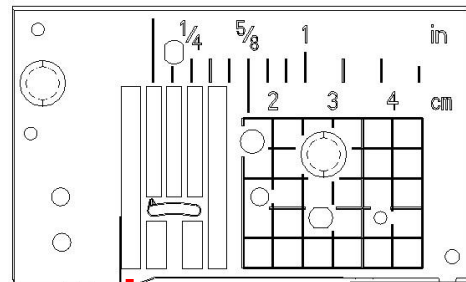
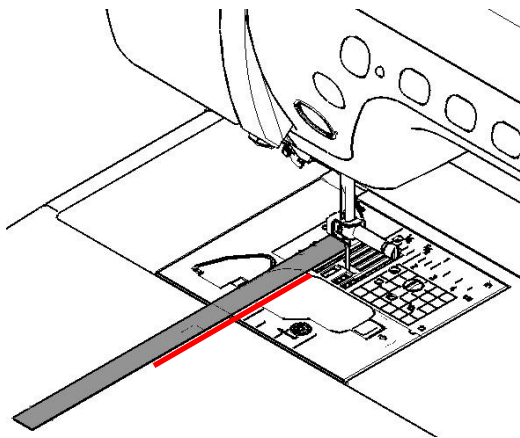
Standard : Guide line is parallel to the feed dog hole of needle plate. Match the center position of guide line with the center needle position.

1. Remove the presser foot.
2. Go to the test mode #27.
3. Press **START** (#1).
4. Press **TEST** (#2). The guide line moves to the left.
5. Check that the guide line is parallel to the feed dog hole.

In case not parallel,

5-1. Remove the face plate assy.

5-2. Move the notch (#3) of laser module to adjust the guide line parallelism.



Guide line position

2 of 2

Standard : Guide line is parallel to the feed dog hole of needle plate. Match the center position of guide line with the center needle position.

6. Press **START** (#1). ➡ The guide line moves to the center.

7. Turn the pulley until the needle point comes to the needle plate surface. Then check the position of guide line and needle.

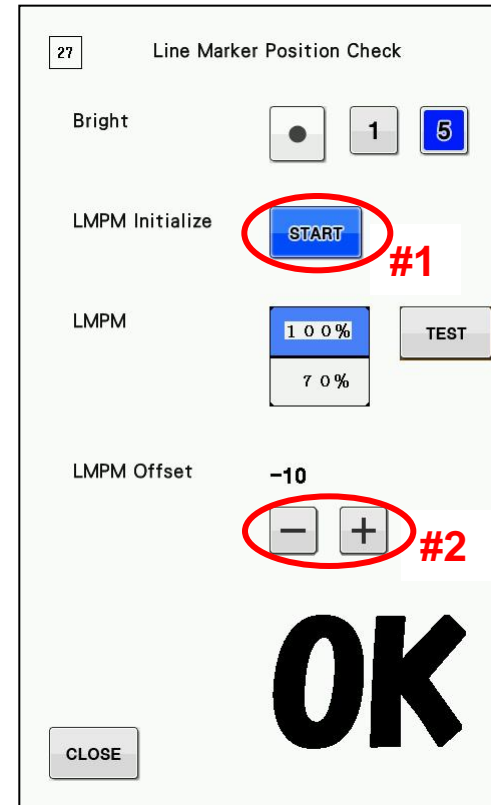
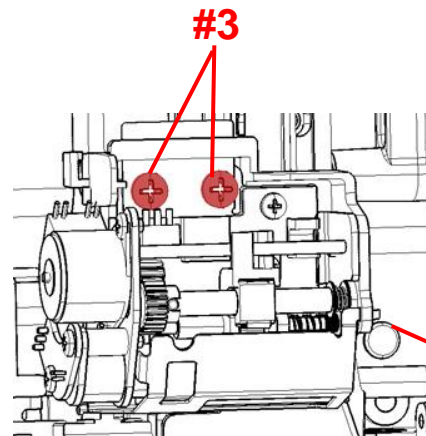
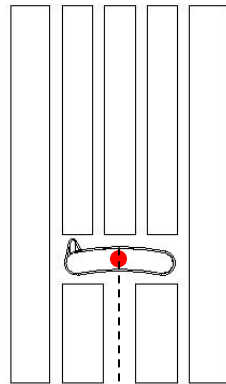
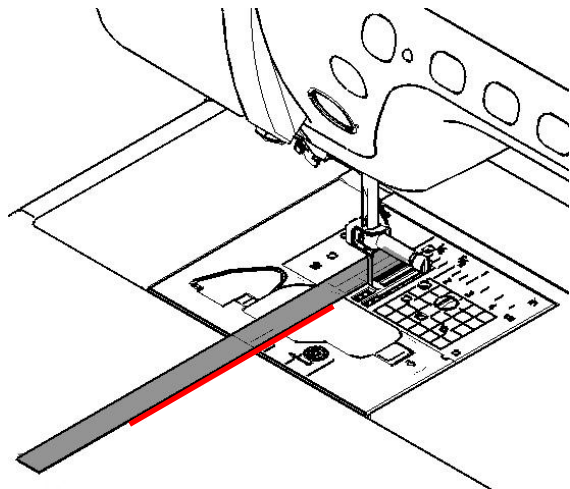
➡ **In case not same,**

7-1. Press **+** **-** (#2) to adjust the guide line position.

7-2. **If you can not adjust by pressing** **+** **-** (#2),

Loosen the 2 screw (#3) of laser module, then adjust the guide line position.

8. Press "CLOSE".

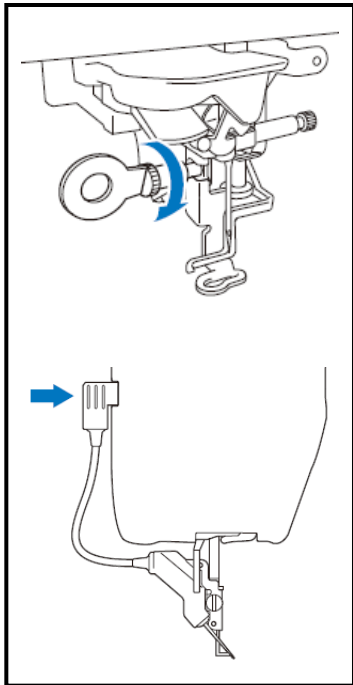


Laser module

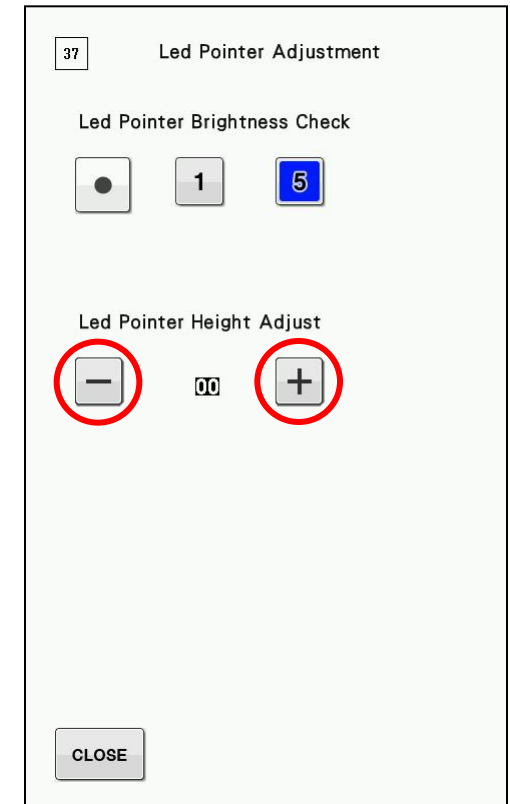
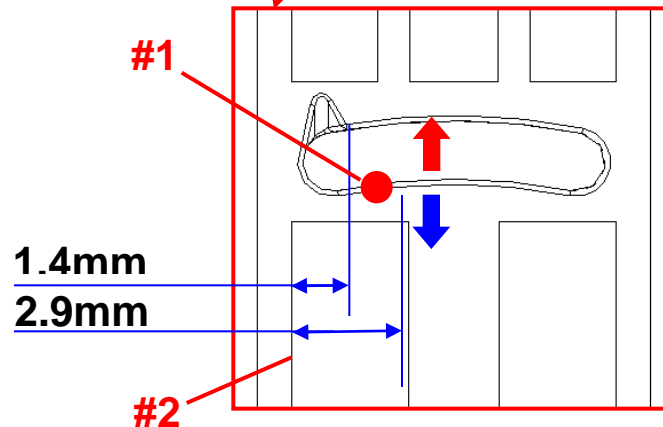
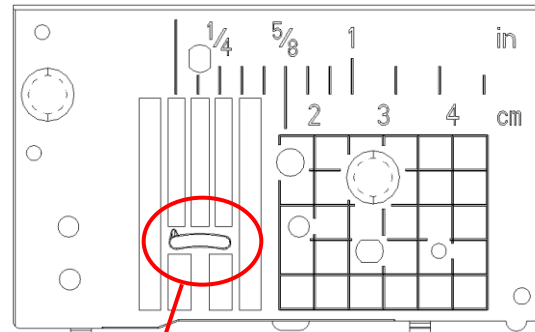
LED pointer position (“W+” foot)

Standard : There is a needle drop point on the inside of pointer beam.

1. Attach the embroidery presser foot with LED pointer.
2. Go to the test mode #37.
3. Press **+** **-** to adjust the pointer beam position.
Match the center of pointer beam with the front edge (#1) of needle hole of needle plate.
4. Check that there is a pointer beam in the range of 1.4 to 2.9mm from the edge (#2) of the feed dog hole of needle plate.
5. Press “CLOSE”.



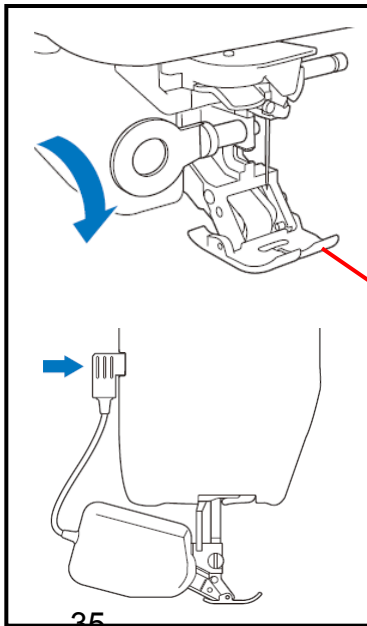
34



Dual feed

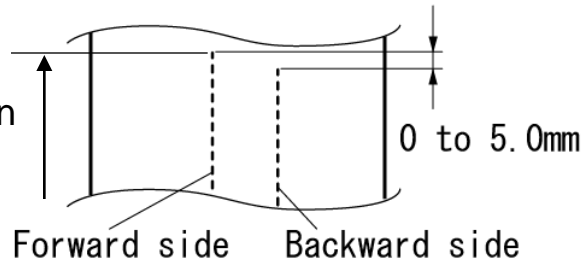
Standard : In the test mode #39, Total length of forward feed is more than 140mm. And the difference between the length of forward and backward feed is within 5 mm.

1. Attach the dual feed foot and go to the test mode #39.
2. Detach the foot part (#1) of dual feed foot, then put a paper.
3. Press the Start/Stop button. ➡ Sewing starts.
4. Check the total length of each feed.
5. Press **+** **-** to adjust the feed length.
6. Press "CLOSE".



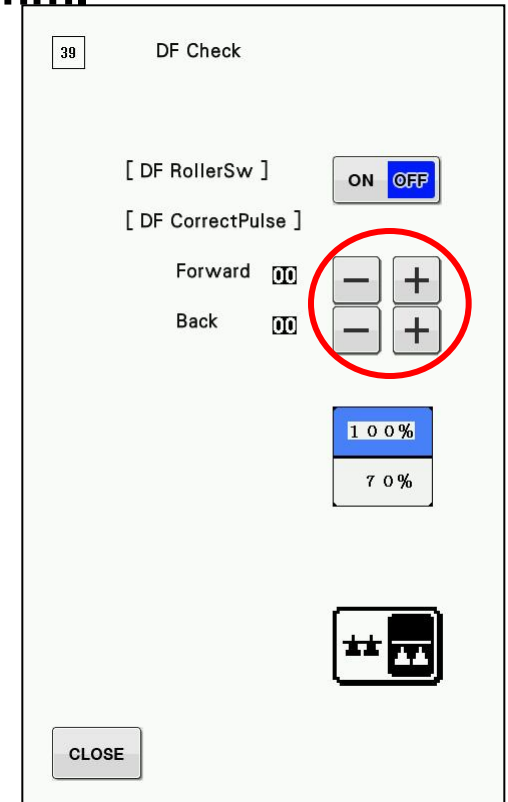
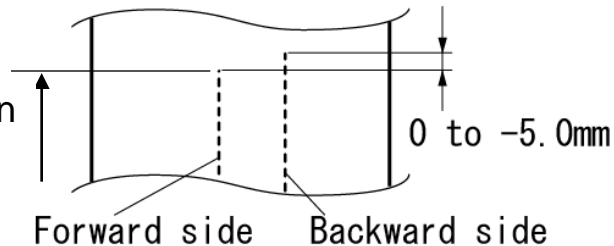
OK

more than
140mm



OK

more than
140mm




Sensor pen

1 of 2

Standard : User calibration is performed correctly.

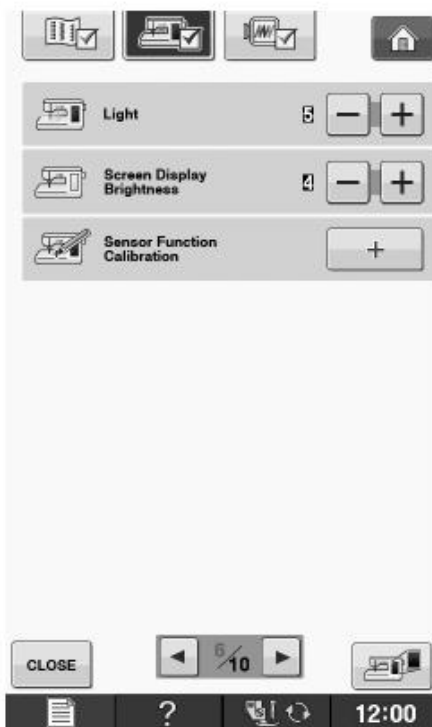
1 Press .


→ The settings screen appears.

2 Press .

→ The General settings screen appears.

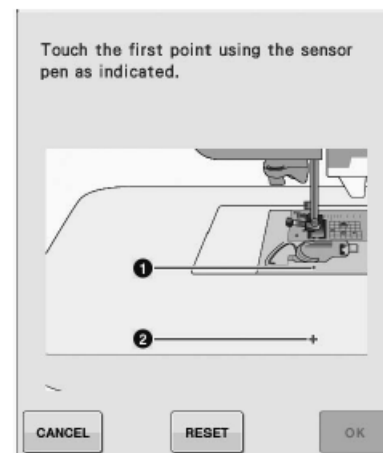
3 Display page 6 of the General settings screen.



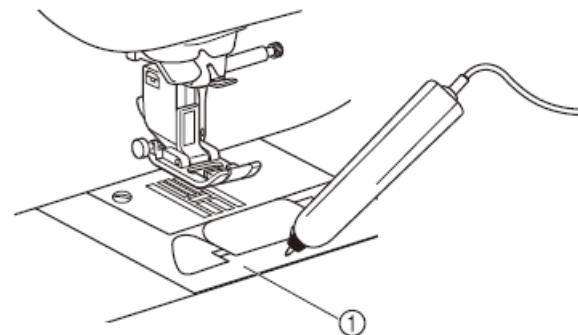
4 Press  while connecting the sensor pen to the machine.

→ The Sensor Function Calibration screen appears.

5 Touch the first point of green dot marking using the sensor pen.



* Touch on the needle plate cover.

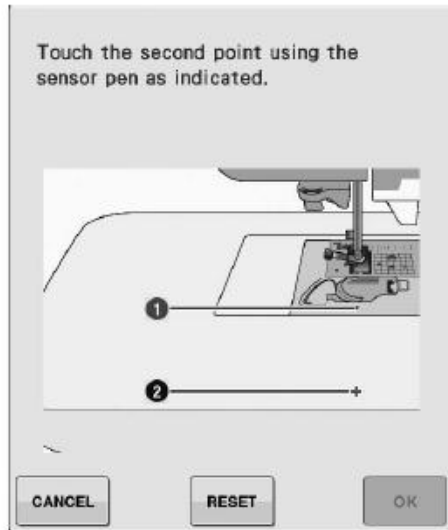


① Needle plate cover

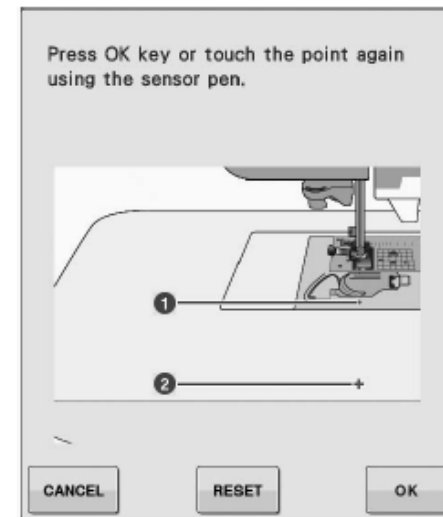
Sensor pen

2 of 2

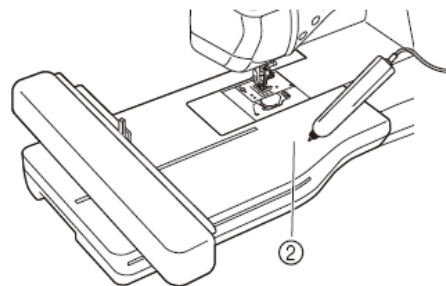
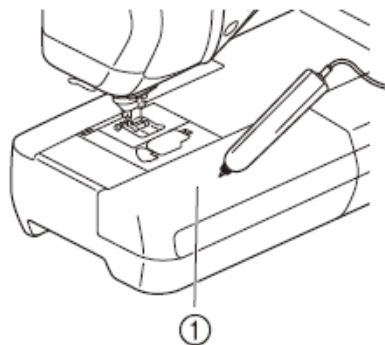
- 6** Touch the second point of center of cross-hair using the sensor pen.



- 7** Press **OK** to finish the calibration. To repeat the calibration touch the first point again using the sensor pen, and continue with step **6**.



* Touch on the point in the illustrations.



- ① Flat bed attachment
② Embroidery unit

37

- * Press **CANCEL** to return to the original screen without finishing the calibration.
- * Press **RESET** to reset the calibration.

