

Baby Lock Radiance Technical Training Manual

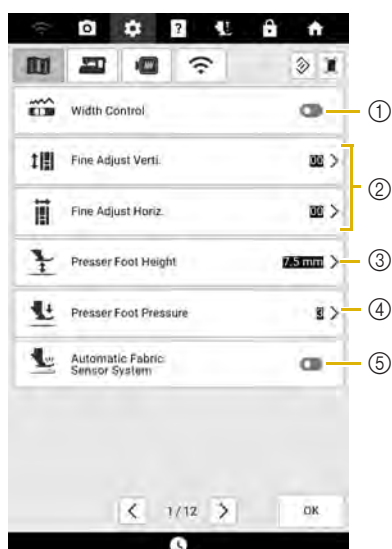


FOR THE LOVE OF SEWING



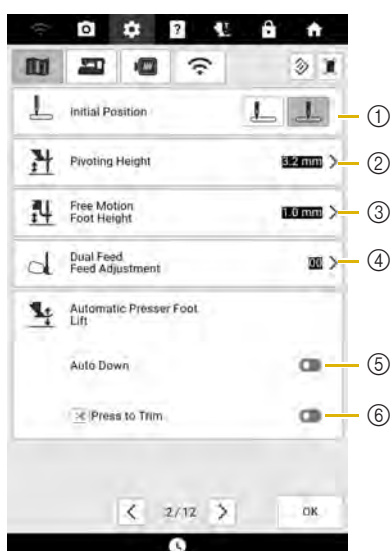
■ Sewing Settings

□ Page 1



- ① Select whether to use the sewing speed controller to determine the zigzag width. (page 79)
When a straight stitch is selected, the sewing speed controller can be used to change the needle position. (page 87)
- ② Make adjustments to character or decorative stitch patterns. (page 111)
- ③ Adjust the presser foot height. Select the height of the presser foot when the presser foot is raised.
- ④ Adjust the presser foot pressure. The higher the number, the greater the pressure will be. Set the pressure at [3] for normal sewing.
- ⑤ When set to on, the thickness of the fabric is automatically detected by an internal sensor while sewing. This enables the fabric to be fed smoothly. (page 79, page 85)

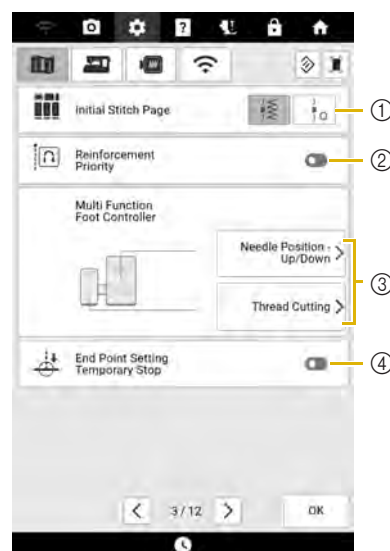
□ Page 2



- ① Select whether [1-01 Straight stitch (Left)] or [1-03 Straight stitch (Middle)] is the utility stitch that is automatically selected when the machine is turned on.
- ② Change the height of the presser foot when sewing is stopped when the pivot setting is selected. (page 78)

- ③ Change the height of the presser foot when the machine is set to free motion sewing mode. (page 117)
- ④ Adjust the amount of fabric feeding of the compact digital dual feed foot. (page 55)
- ⑤ Pressing the “Start/Stop” button or depressing the foot controller automatically lowers the presser foot (if it is raised) before starting sewing.
- ⑥ Pressing  (Thread cutter button) automatically lowers the presser foot before cutting the thread. The presser foot will be raised after the thread is cut.

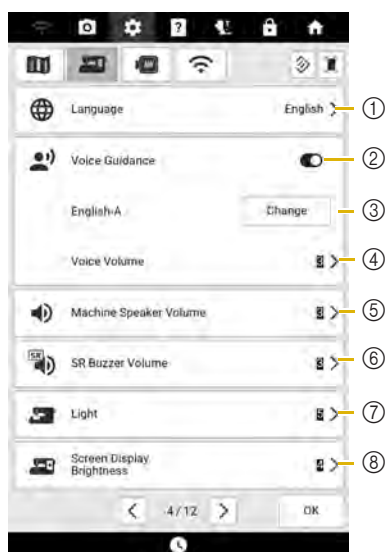
□ Page 3



- ① Select whether utility stitches () or quilting stitches () are displayed first in the stitch selection screen.
- ② When set to on, reinforcement stitches are sewn at the beginning and/or end of sewing for a reinforcement stitch pattern, even when  (Reverse stitch button) is pressed. (page 61)
- ③ Select the functions to be performed by the multi-function foot controller. (page 59)
- ④ If this setting is set to on with [End Point Setting] in the stitch edit menu, the machine will temporarily stop so the end point sticker can be peeled off. (page 81)

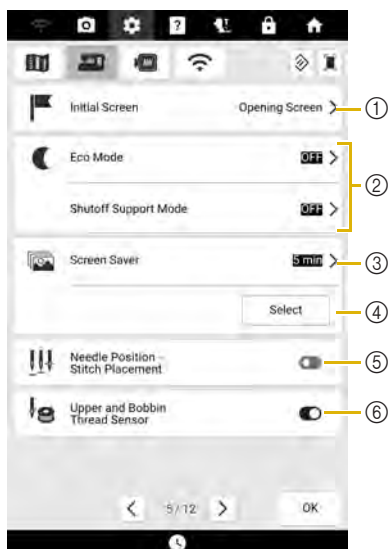
■ General Settings

□ Page 4



- ① Change the display language.
- ② Turn on/off the voice guidance function. (page 32)
- ③ Change the language and voice of the voice guidance. (page 32)
- ④ Adjust the voice guidance volume.
- ⑤ Change the speaker volume.
- ⑥ Adjust the stitch regulator warnings volume. (page 124)
- ⑦ Change the brightness of the needle area and work area lights.
- ⑧ Adjust the brightness of the screen.

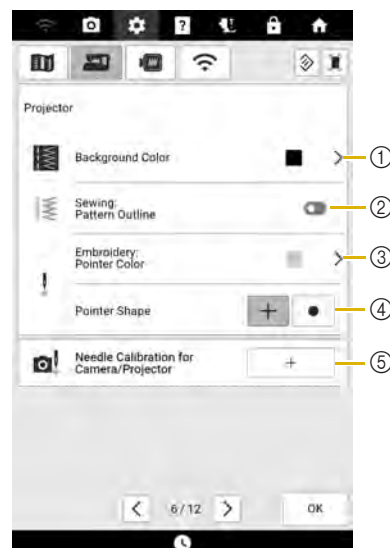
□ Page 5



- ① Select whether to display the opening screen video when the machine is turned on.
- ② Select to save the machine power by setting the [Eco Mode] or the [Shutoff Support Mode]. (page 31)
- ③ Select the length of time until the screen saver appears.

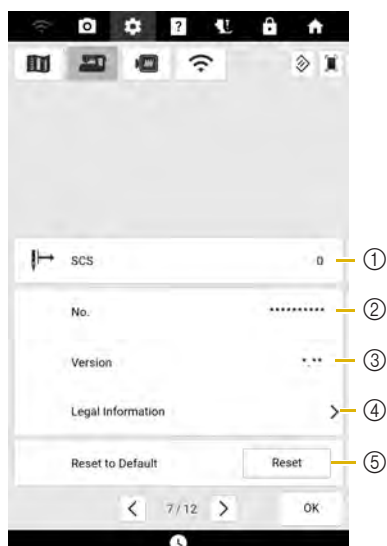
- ④ Change the image of the screen saver. (page 31)
- ⑤ Select the operation of the [Needle Position - Stitch Placement] to on or off. (page 81)
- ⑥ Turn both the upper and bobbin thread sensor on or off. If it is turned off, the machine can be used without thread.

□ Page 6



- ① Select which background color will display when using projector function. (page 76)
- ② Select whether to display outline of the stitch pattern. (page 76)
- ③ Select the color of the pointer. (page 141)
- ④ Select a cross shape or a point as the shape for the pointer. (page 141)
- ⑤ Gauge the needle drop point to adjust the accuracy of the camera display area and of the projection area. (page 257)

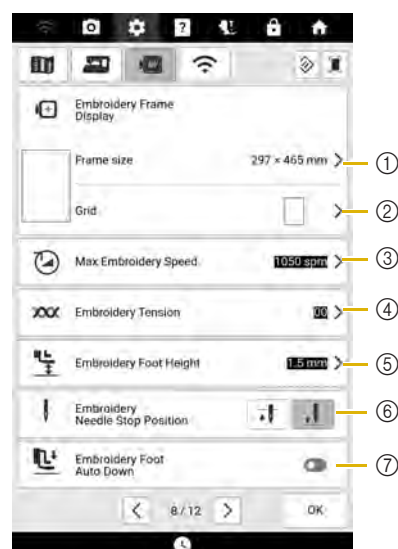
□ Page 7



- ① Display the total number of stitches sewn on this machine, which is a reminder to take your machine in for regular servicing. (Contact your authorized Baby Lock retailer for details.)
- ② The [No.] is the internal machine number for the machine.
- ③ Display the program version.
- ④ Display legal information.
- ⑤ Erase all saved data, customized settings and network information in the machine. (page 258)

■ Embroidery Settings

□ Page 8

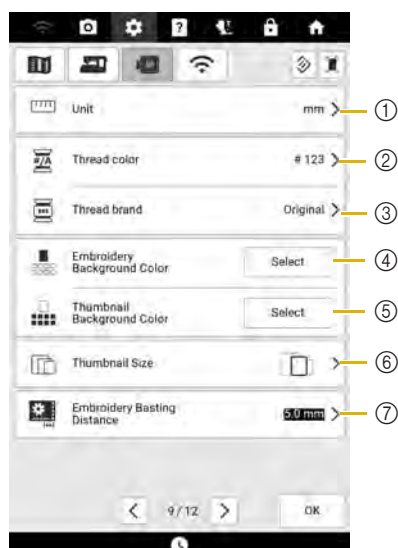


- ① Select the embroidery frame to be used. (page 227)
- ② Change the center point marker or grid lines.
- ③ Adjust the maximum embroidery speed setting.
- ④ Adjust the upper thread tension for embroidering. (page 167)
- ⑤ Select the height of the embroidery foot during embroidering.
- ⑥ Select the needle stop position for embroidering.
- ⑦ When set to on, and the presser foot is raised, pressing the "Start/Stop" button will automatically lower the presser foot when starting embroidering.

1

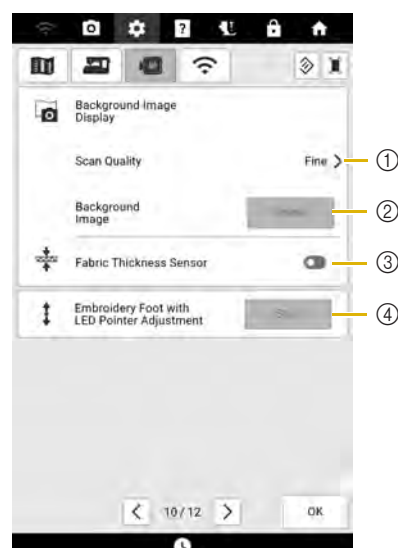
Getting Ready

□ Page 9



- ① Change the display units (mm/inch).
- ② Change the thread color display on the embroidery screen. Select [Name of Color] or [#123] (thread number).
- ③ Select the thread brand of the thread color display. [Original] is set as a default and will retain the brand thread used by the designer who created the pattern. The thread brand setting is reflected the next time a pattern is imported. (page 142)
- ④ Change the color of the background for the embroidery display area.
- ⑤ Change the color of the background for the thumbnail area.
- ⑥ Touch to specify the size of pattern thumbnails.
- ⑦ Adjust the distance between the pattern and the basting stitching. (page 175)

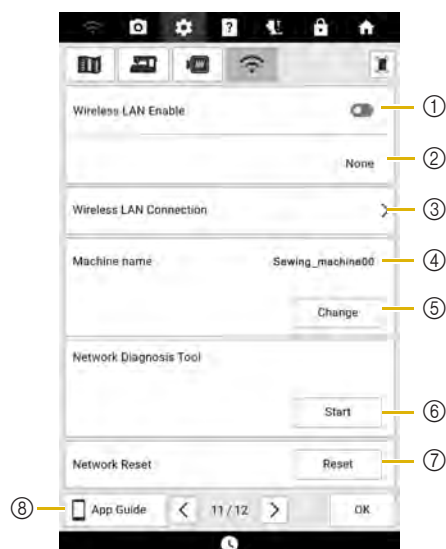
□ Page 10



- ① Select the quality for displaying the fabric in the screen. (page 159)
- ② Erase the scanned image.
- ③ When set to on, the built-in camera adjusts the display of the background image according to the thickness of the fabric. (page 160)
- ④ Adjust the position and brightness of the embroidery foot "W+" with LED pointer (sold separately).

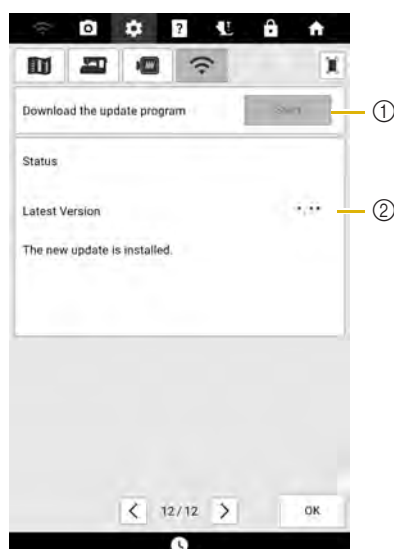
■ Wireless LAN Settings

□ Page 11



- ① Enable/disable the wireless LAN function. (page 36)
- ② Display the connected SSID.
- ③ Set the machine to connect wireless LAN function. (page 36)
- ④ Display the machine name of wireless LAN function.
- ⑤ Change the machine name of wireless LAN function.
- ⑥ Check the wireless LAN status.
- ⑦ Reset network settings.
- ⑧ Displays the introduction to the applications.

□ Page 12



- ① If there is a new software version, download the update file. (page 259)
- ② Display program information. (page 259)

■ Selecting the [Eco Mode] or [Shutoff Support Mode]

You can save the machine power by setting the [Eco Mode] and the [Shutoff Support Mode]. If you leave the machine without using for a specified period of time, the machine enters into one of these modes. Touch to display [Eco Mode] and [Shutoff Support Mode]. (page 28)

[Eco Mode];

Machine will enter a sleep mode. Touch the screen or press the “Start/Stop” button to continue operating.

[Shutoff Support Mode];

Machine will enter the lower power mode after set period of time. Turn machine off and then back on to restart operating.

Memo

- If you turn off the machine while the machine is in the [Eco Mode] or the [Shutoff Support Mode], wait for about 5 seconds before turning on the machine again.
- For details on condition of the [Eco Mode] and [Shutoff Support Mode], refer to “Specifications” on page 272.

■ Changing the Screen Saver Image

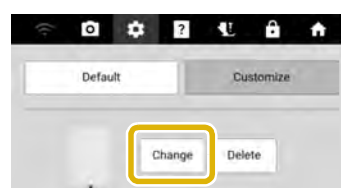
Instead of the default image, you can select your own personal images for the screen saver of your machine.

For details on compatible image files, refer to “Specifications” on page 272.

- 1 Touch to display [Screen Saver] of the settings screen.
- 2 Touch [Select], and then touch [Customize].



- 3 Connect the USB media that contains your personal image to the USB port of the machine.
- 4 Touch [Change] to select the first image.



* Touch [Delete] to delete the selected image.

5 Touch the device that is connected.

- * If two USB media are connected to the machine, check the USB media names that are displayed, and then touch the name of the USB media that you wish to use.



6 Touch a file name to select image. Touch [Set] and then touch [OK].

Memo

- Touch [Default] to select default images for the screen saver.

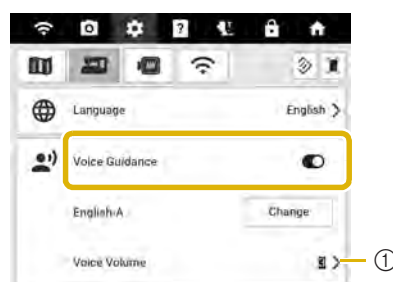


■ Voice Guidance

The guidance messages can be read out loud.

1 Connect the machine to your wireless network to change voice option. (page 36)

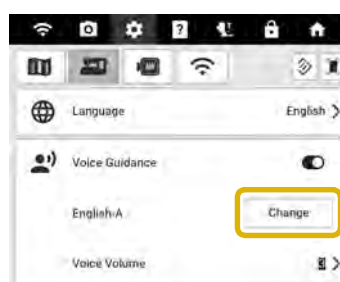
2 Touch to display [Voice Guidance] of the settings screen and set the function to on.



① Adjust the voice guidance volume.

3 Touch [Change] and then select the language and voice of the voice guidance.

- * Touch  to hear sample audio for the selected setting.



4 Touch [Next].

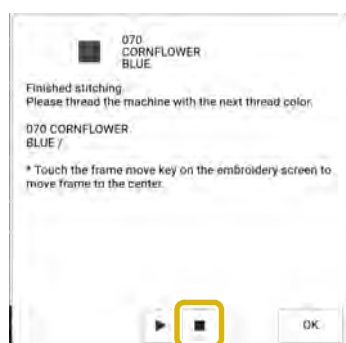
→ A message appears, indicating that the machine is checking for the voice guidance data. If the voice guidance data must be downloaded, downloading begins.

5 After a message appears, indicating that voice guidance has been turned on, touch [OK].

→ The guidance messages will now be read out loud.

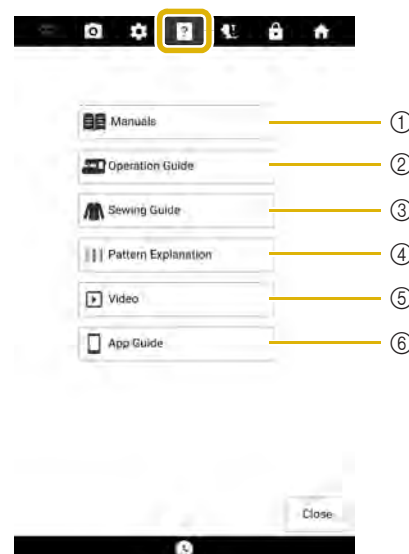
Memo

- Touch  in the message that was read out loud in order to hear the message again. To stop read out loud, touch .



Machine Help Screen

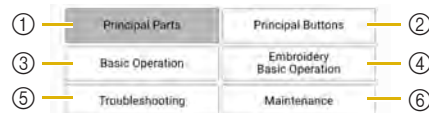
Touch  to open the machine help screen. Functions are available from the screen shown below.



- ① Manuals for this machine. (page 34)
- ② Explanation for how to use the machine. (page 33)
- ③ Procedures for sewing utility stitches. (page 34)
- ④ Explanation of the stitch selected. (page 34)
- ⑤ Use the QR code that appears in the screen to access instructional videos for the machine. The specifications shown in the video may display different details than the actual product.
- ⑥ Displays the introduction to the applications. Touch the key of the app whose information you want to display.

■ Using the Operation Guide Function

Touch [Operation Guide] to open the screen shown below. Categories are displayed at the top of the screen. Touch a key to see more information about that category.



- ① Information about the main parts of the machine and their functions
- ② Information about the operation buttons
- ③ Information about threading the machine, changing presser feet, etc.
- ④ Information about attaching the embroidery unit, preparing fabric for embroidering, etc.
- ⑤ Information about troubleshooting
- ⑥ Information about cleaning the machine, etc.

■ Using the Sewing Guide Function

Use this function when you are not sure which stitch to use for your application, or to get advice about sewing particular stitches.

- 1 Enter Utility Stitch category from the home page.
- 2 Touch [?].
- 3 Touch [Sewing Guide].
- 4 Touch the key of the category whose sewing instructions you wish to view.



- 5 Read the explanations and select the appropriate stitch.

→ The screen displays directions for sewing the selected stitch. Follow the directions to sew the stitch.

■ Using the Stitch Pattern Explanation Function

If you want to know more about the uses of a stitch pattern, select the stitch pattern and touch [?] and then [Pattern Explanation] to see an explanation of the stitch selection.

Example: Displaying information about

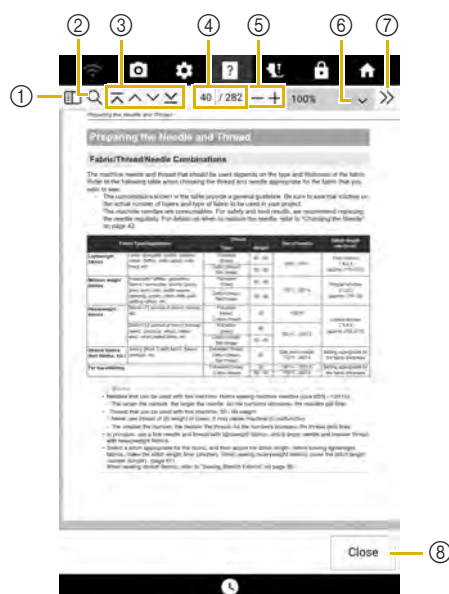


- 1 Touch [?].
- 2 Touch [?].
- 3 Touch [Pattern Explanation].

■ Viewing the Instruction and Reference Guide (PDF File) on the Machine

- 1 Touch [?].
- 2 Touch [Manuals].
- 3 Select the document to be viewed.
- 4 Read the Instruction and Reference Guide.
Swipe the screen with your finger to turn the page.

* To change the direction that the pages are turned, touch >> (7).



- 1 Touch to display a thumbnail of each page.
- 2 Touch to use the search function.
- 3 Touch to display the first page/previous page/next page/last page.
- 4 Shows the current page/total number of pages. To display a specific page, enter the page number in the box.
- 5 Touch to display the page enlarged/reduced.
- 6 Select a page magnification ratio.
- 7 Touch to display other settings.
- 8 Touch to close the screen.

■ Instructional Videos

The instructional videos are available online and can be viewed on any mobile device or computer.



<https://babylock.com/radiance-training>

You can also access them using the QR code that appears in the screen. (page 33)

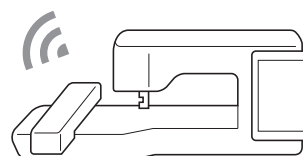
Wireless Network Connection Functions

Available Operations

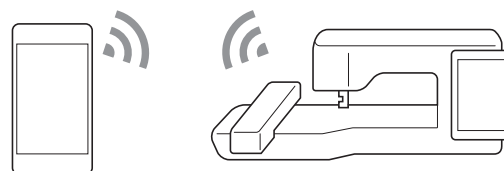
The following useful operations will be available if the machine is connected to a wireless network.

■ For Updating

Directly download the update file to the machine. (page 259)

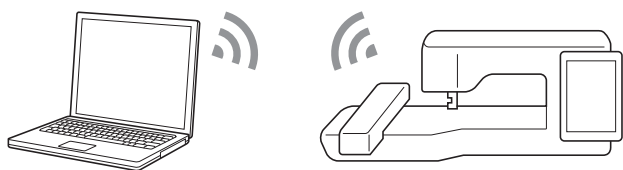


■ Mobile Application



Name	Function	Reference
IQ Intuition Monitoring	Conveniently check the operating status of the machine from your mobile device.	225
IQ Intuition Positioning	Transfer an image from the mobile device to the machine to create a design to embroider.	225

■ Windows application



Name	Function	Reference
Design Database Transfer	Wirelessly transfer an embroidery pattern from your computer to the machine. The application can be downloaded to your computer from the following URL. https://www.babylock.com/accessories/software/design-database-transfer Settings must be specified in Design Database Transfer. For more information, refer to the manual for Design Database Transfer.	—
Palette (Sold separately)	Wirelessly transfer to the machine an embroidery pattern edited with embroidery editing software (Palette version 11 or later) on a computer. Also, transfer to Palette an embroidery pattern edited on the machine. Settings must be specified in Palette. For more information, refer to the manual for Palette.	—

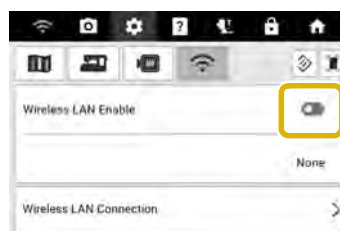
Set Up the Wireless Network Connection

The machine can be connected to your wireless network. For the requirements for a wireless network connection, refer to “Specifications” on page 272.

1 Touch .

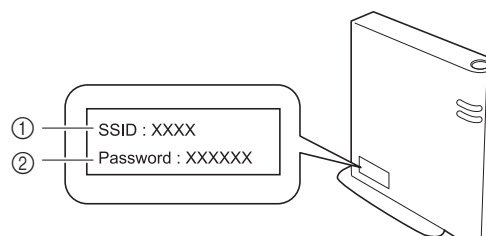


2 Set [Wireless LAN Enable] to on.



→ The machine will begin to emit the wireless network signal.

3 In order to connect your machine to a wireless network, the security information (SSID and password) for your home network will be required. The password may also be called a network key, security key or encryption key. First, find your security information and note it.



- ① SSID
- ② Password (network key)

Memo

- The wireless network connection cannot be set up if you do not have the security information.
- How to find the security information
 - Check the manual provided with your home network.
 - The default SSID may be the manufacturer's name or the model name.
 - If you cannot find the security information, contact the manufacturer of the router, your network administrator or your Internet provider.
 - Some SSIDs and password (network key) are case (upper case and lower case) sensitive. Please properly record your information.

4 Touch > beside [Wireless LAN Connection].

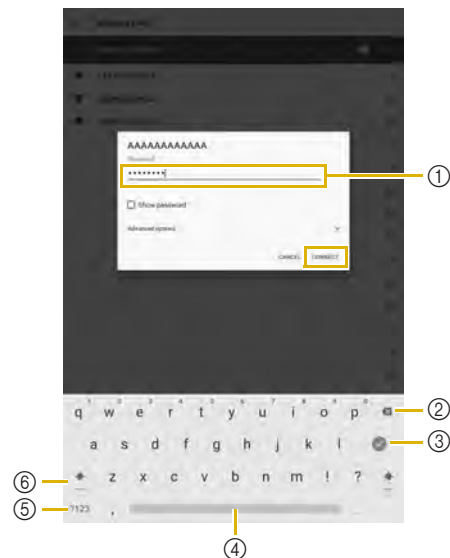
→ A list of available SSIDs appears.

5 Select the SSID that was noted in step 3.

→ The screen for entering the password (network key) appears.

Memo

- If the wireless access point/router is not broadcasting the SSID, the SSID will not automatically be detected. In this case, touch [Add network], and then type in the necessary information.
- If the machine had already been connected to the home network, touch [Saved networks]. Select the saved SSID and then touch [CONNECT].

6 Enter the password (network key) that was noted, and then touch [CONNECT].

- ① Text input area
- ② Backspace key (Deletes the character at the cursor's position.)
- ③ Touch to hide the keyboard. Touch the text input area to display the keyboard again.
- ④ Space key
- ⑤ Letter/number selection key
- ⑥ Uppercase/lowercase selection key

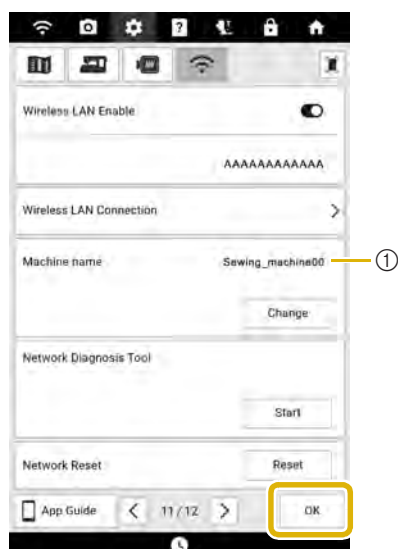
7 After confirming that [Connected] is displayed under the SSID, touch ←.**Note**

- If the password was entered incorrectly, touch the SSID again, and then enter the correct password. If the screen for entering the password does not appear, touch its SSID then touch  in the appeared screen to show the screen for entering password then enter the correct password.
- If an incorrect SSID was selected, touch the correct SSID. If an incorrect SSID was manually entered, touch [Add network], and then type in the necessary information.

Memo

- Touch the connected SSID to display its detailed information. Touch  in the upper-right corner and display [Advanced options] to specify the IP address and proxy settings.

8 Touch [OK] to exit the setup.



- ① The name in the [Machine name] field will be used with the apps described in “Available Operations” on page 35.

Memo

- While connected, the signal strength is indicated by the icon in the upper-left corner of the display.
- Once a wireless network connection has been set up, a wireless network connection will be established each time the machine is turned on. However, [Wireless LAN Enable] in the Wireless LAN settings screen must remain set to on.



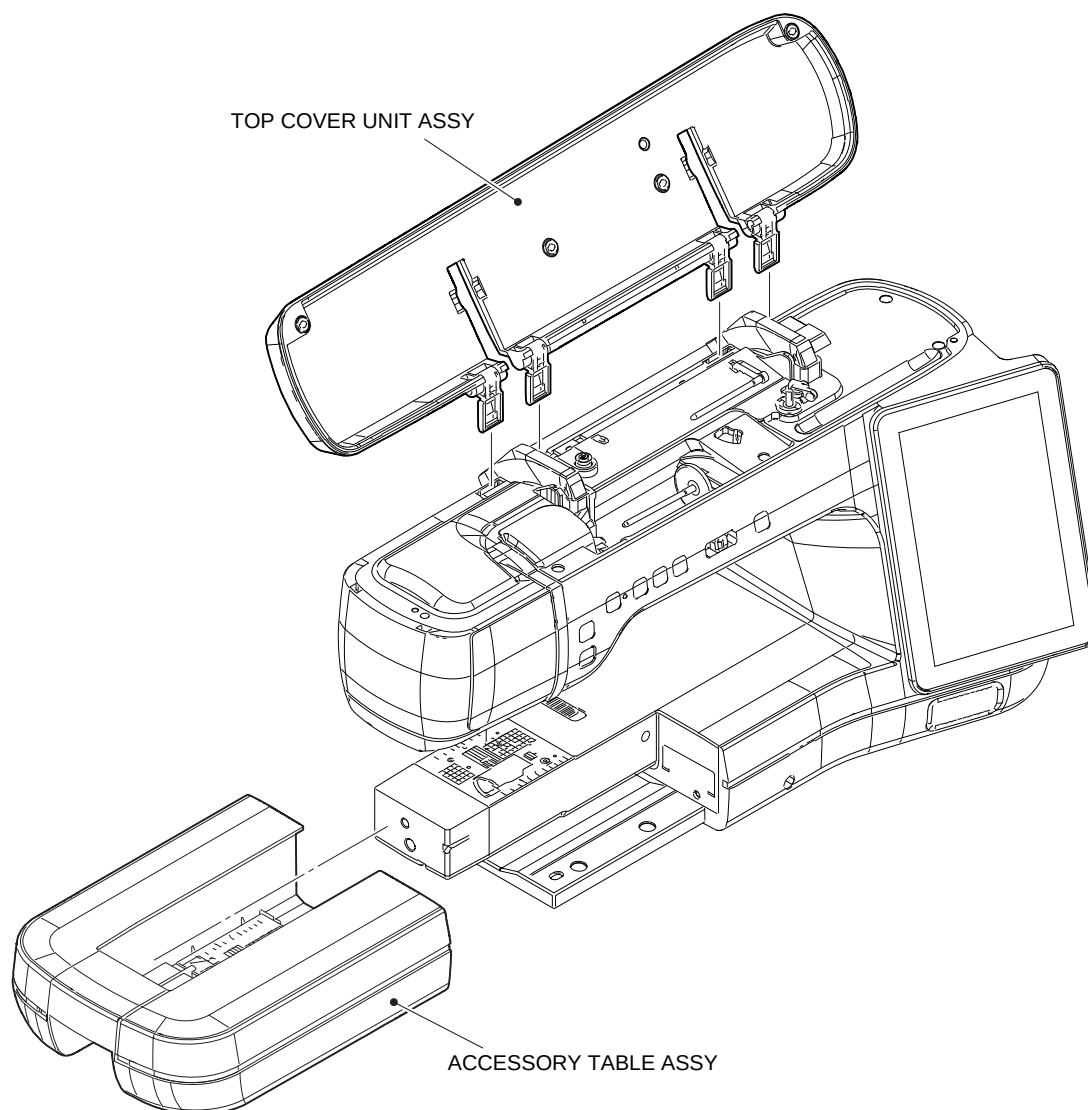
Baby Lock Radiance Cover removal



2 Removal of Cover

1 TOP COVER UNIT ASSY and ACCESSORY TABLE ASSY

1. Remove the TOP COVER UNIT ASSY.
2. Remove the ACCESSORY TABLE ASSY.

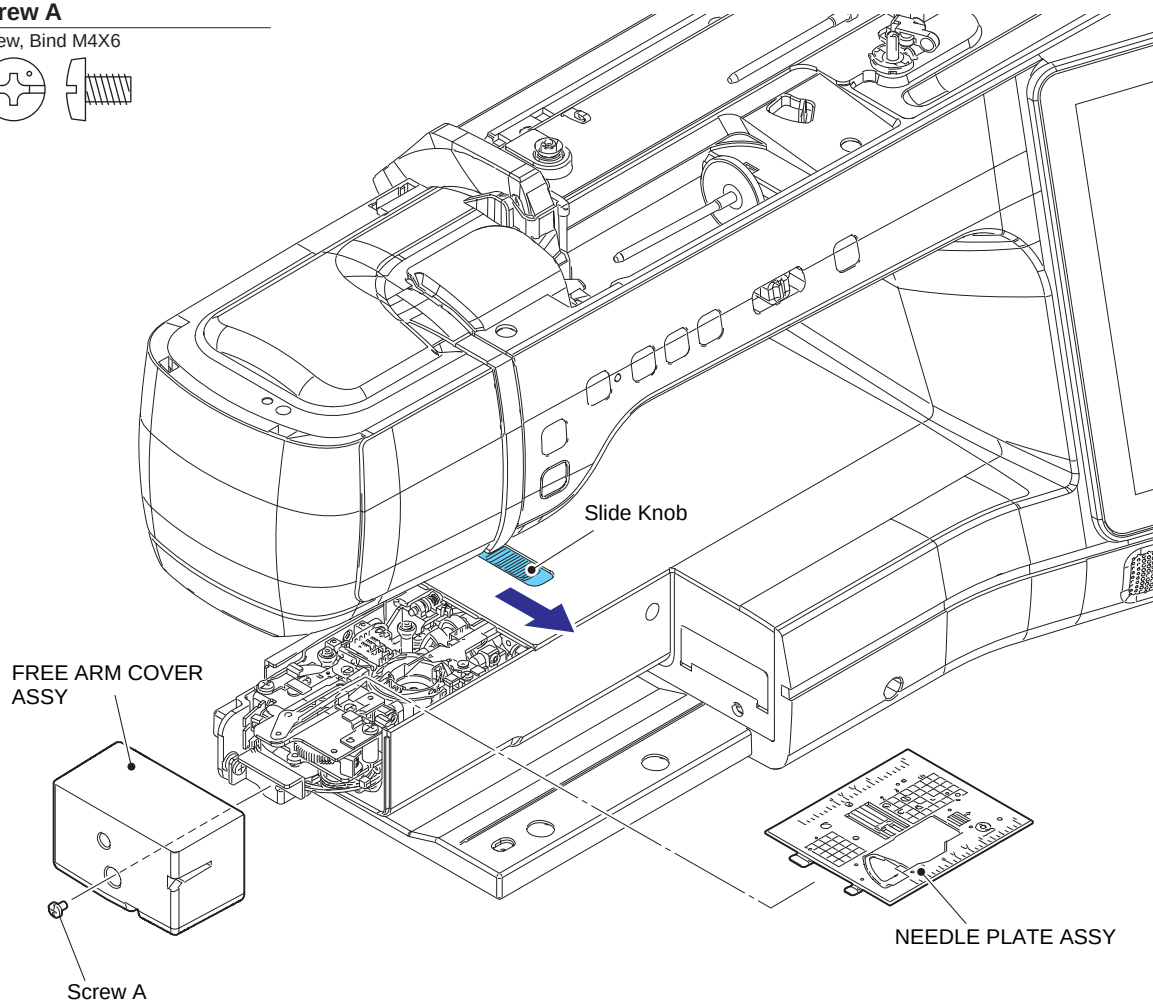


2 NEEDLE PLATE ASSY and FREE ARM COVER ASSY

1. Remove the NEEDLE PLATE ASSY while pushing the slide knob in the direction of the arrow.
2. Remove the screw A to remove the FREE ARM COVER ASSY.

Screw A

Screw, Bind M4X6



3 FREE ARM FRONT COVER ASSY

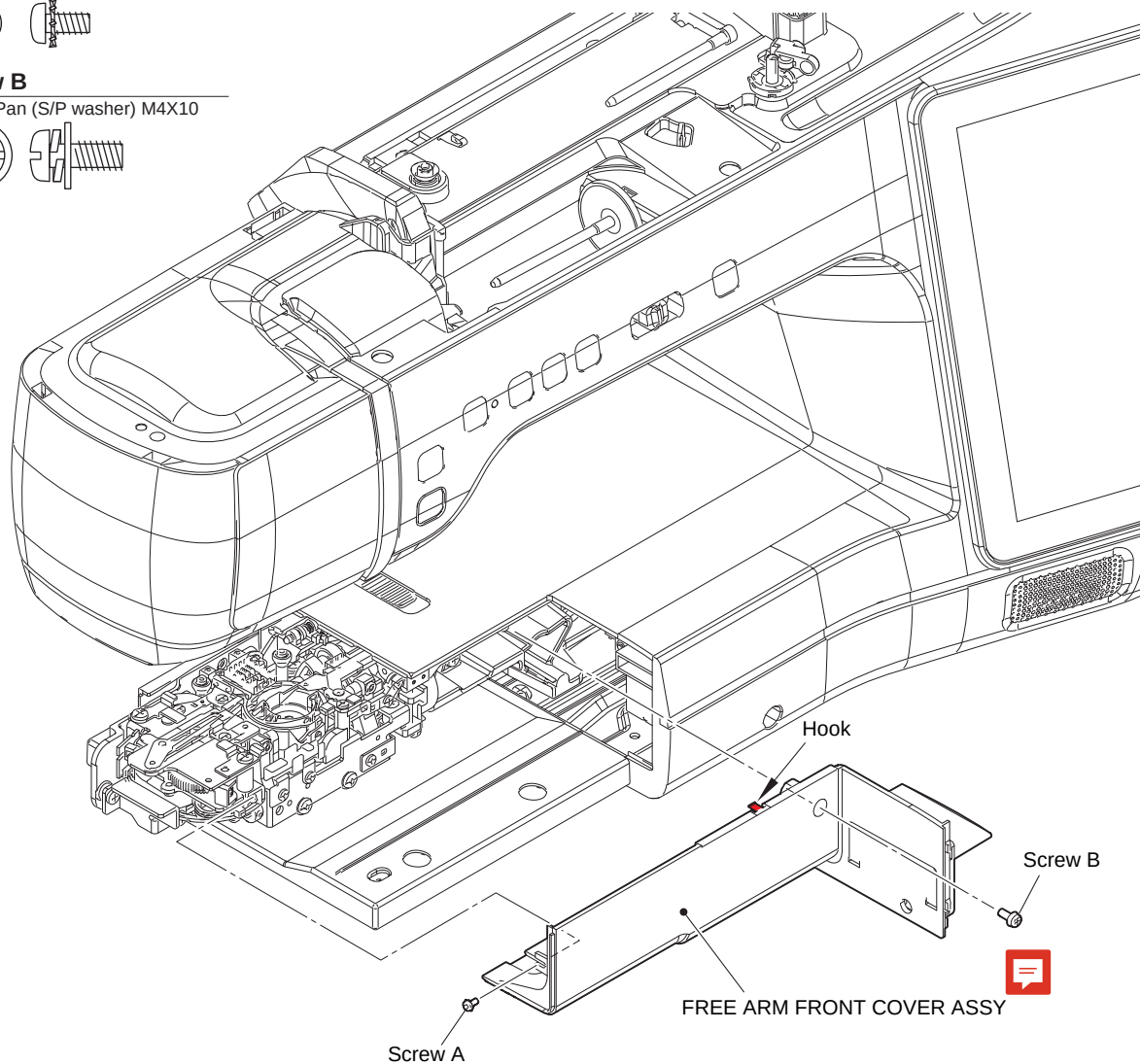
1. Remove the screw A and the screw B, and then release the hook to remove the FREE ARM FRONT COVER ASSY.

Screw A

Screw, Pan (T washer) M3X6

**Screw B**

Screw, Pan (S/P washer) M4X10

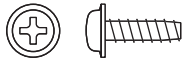


4 FACE PLATE SIDE and FACE PLATE MAIN

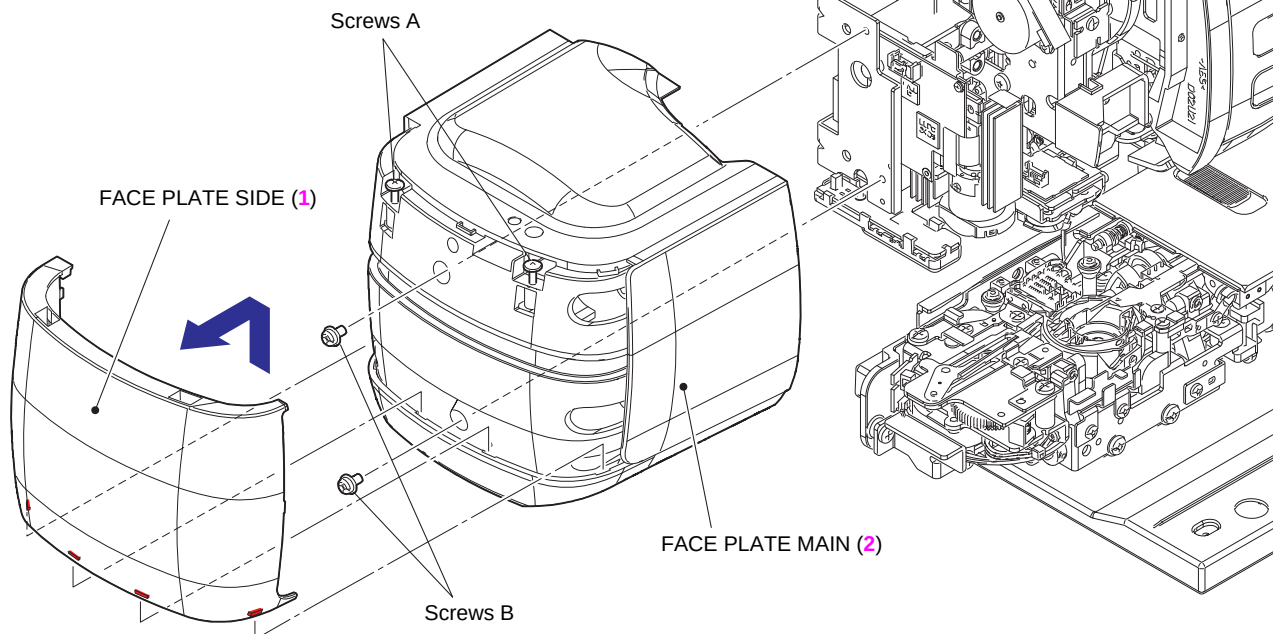
1. Loosen the two screws A and slide the FACE PLATE SIDE (1) in the direction of the arrow to remove it from the FACE PLATE MAIN (2).
2. Remove the two screws B to remove the FACE PLATE MAIN (2).

Screw A

Taptite, Cup B M3X10

**Screw B**

Screw, Pan (S/P washer) M4X8



5 FRONT THREAD GUARD COVER and BOBBIN WINDER UNIT COVER

1. Remove the SCREW CAP (1) from the FRONT THREAD GUARD COVER (2). Remove the screw A to remove the FRONT THREAD GUARD COVER (2).



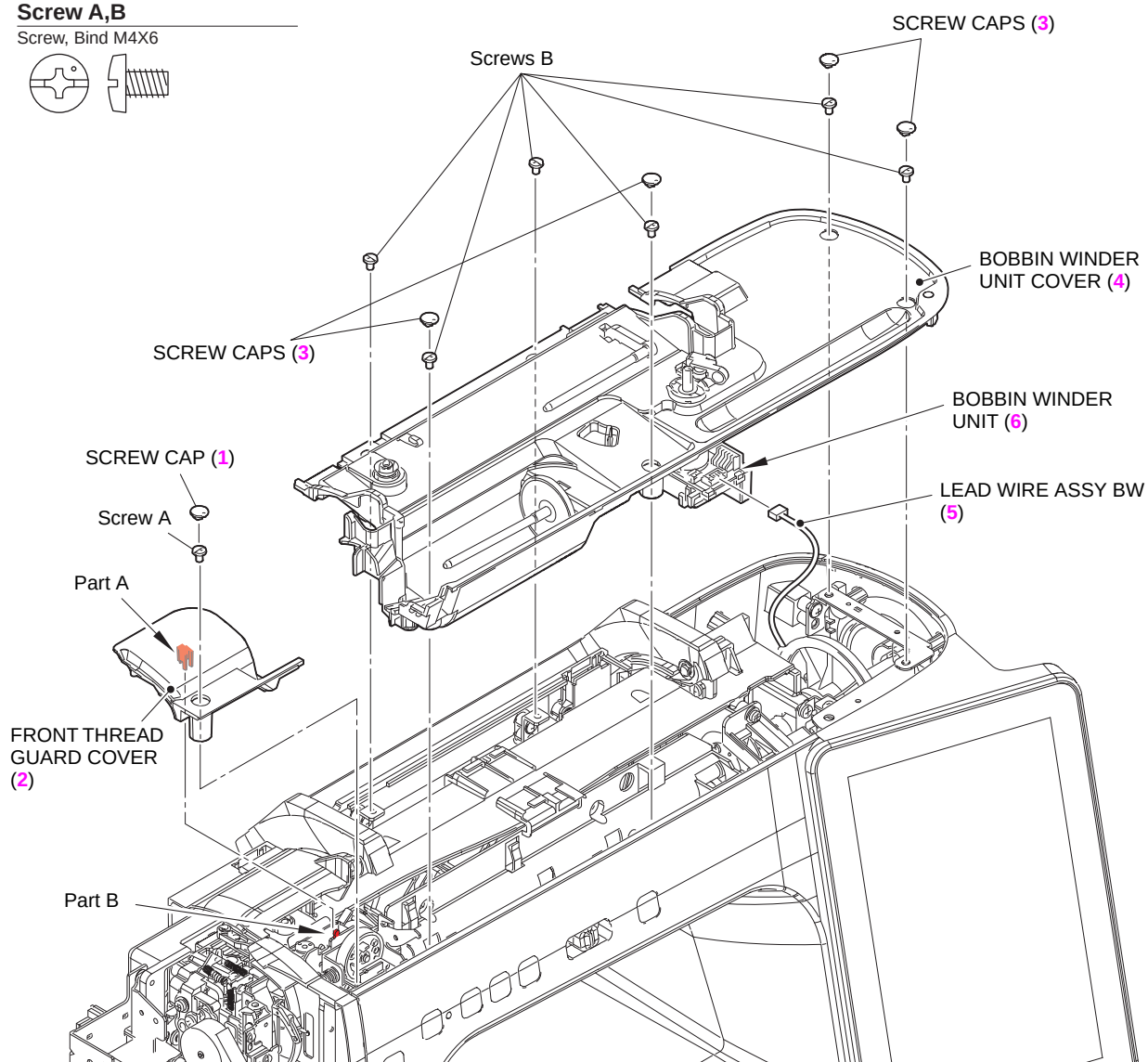
Assembling note

- When assembling the FRONT THREAD GUARD COVER (2), fit the part A inside the FRONT THREAD GUARD COVER (2) into the part B of the machine.

2. Remove the four SCREW CAPS (3) from the BOBBIN WINDER UNIT COVER (4). Remove the six screws B to remove the BOBBIN WINDER UNIT COVER (4).
3. Lift the BOBBIN WINDER UNIT COVER (4) to disconnect the connector of LEAD WIRE ASSY BW (5) from the BOBBIN WINDER UNIT (6), and then remove the BOBBIN WINDER UNIT COVER (4).

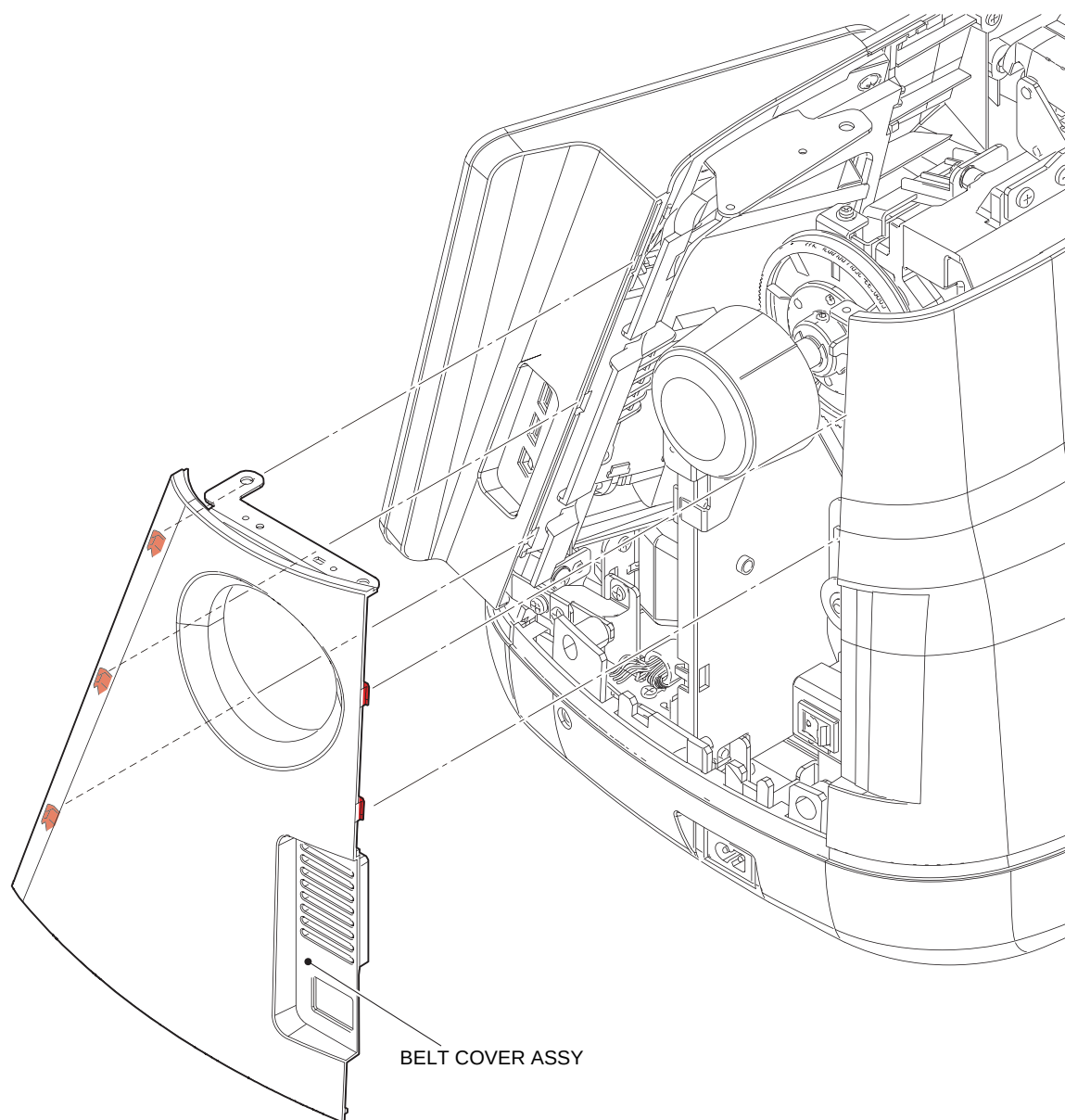
Screw A,B

Screw, Bind M4X6



6 BELT COVER ASSY

1. Remove the BELT COVER ASSY.



7 LCD ASSY

1. Remove the two screws A to remove the GROUND PLATE B.
2. Remove the two screws B.

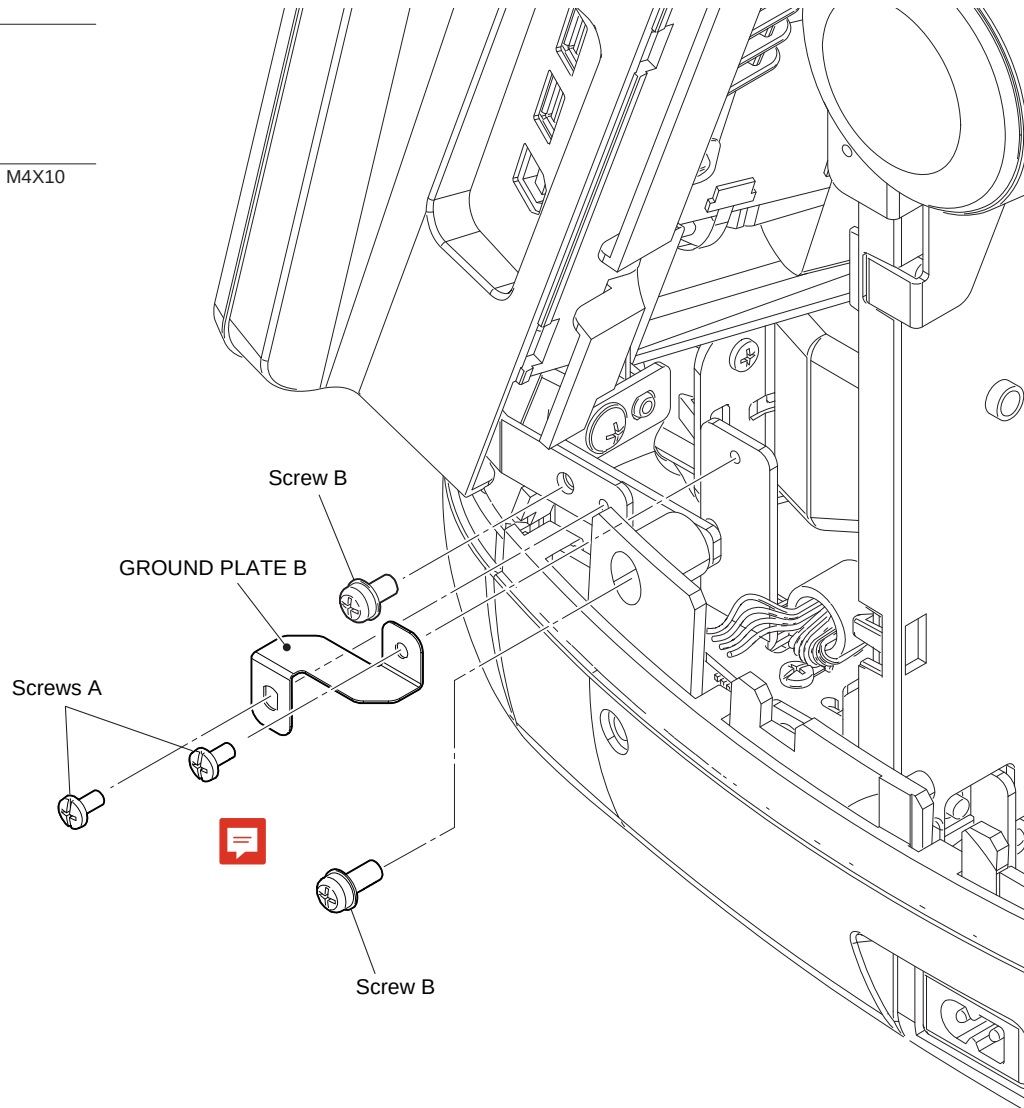
Screw A

Screw, Blind M3X6



Screw B

Screw, Pan (S/P washer) M4X10



3. Slide the LCD ASSY (1) in the direction of the arrow and slightly away from the machine. Disconnect all the connectors from the PANEL PCB ASSY:B (2).

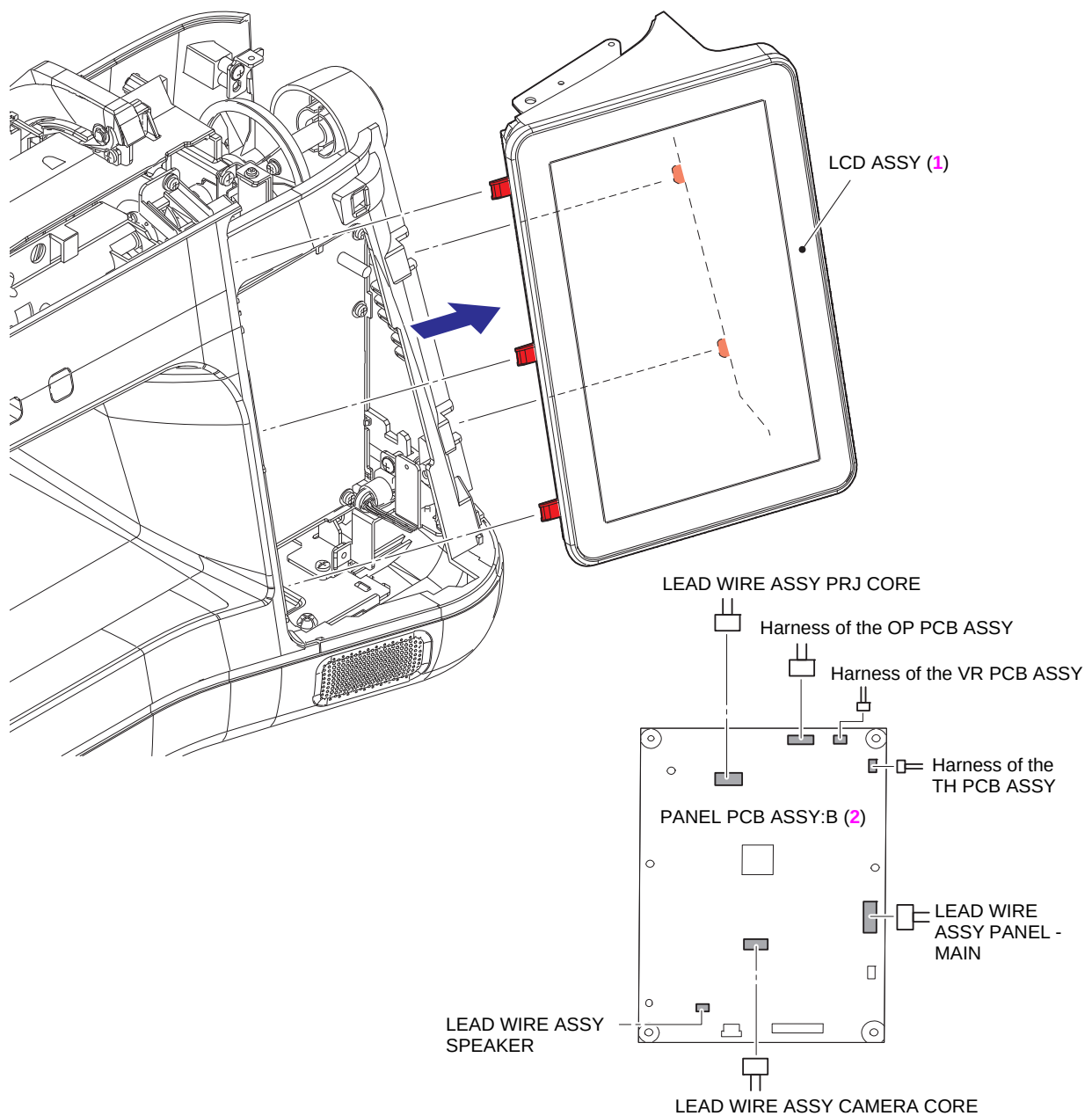
**Note**

- Disconnect the LEAD WIRE ASSY PANEL - MAIN, the LEAD WIRE ASSY CAMERA CORE, and the LEAD WIRE ASSY PRJ CORE after releasing each lock.

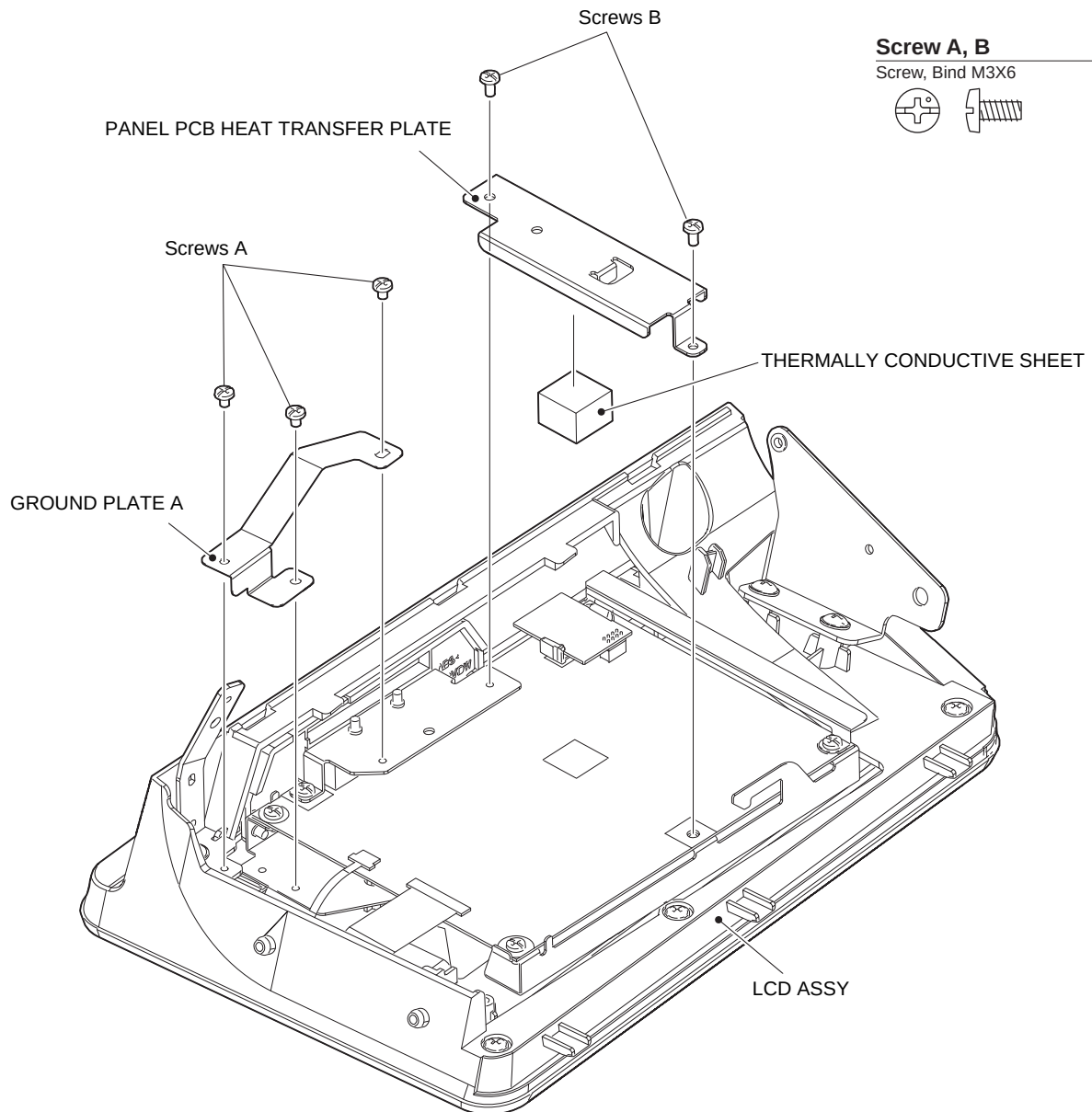
4. Remove the LCD ASSY (1).

**Assembling note**

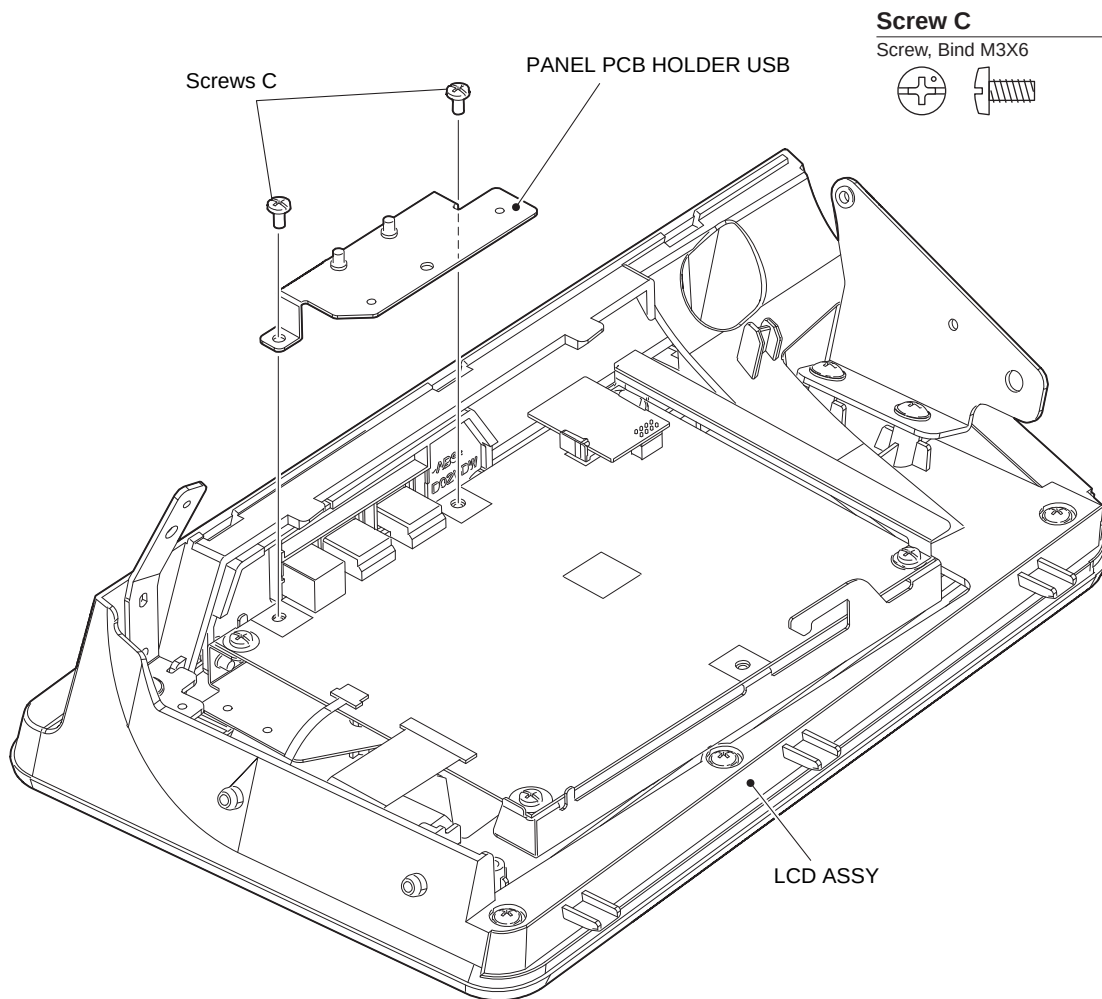
- Refer to "Wiring of PANEL PCB ASSY:B - Main body", "Wiring of FRONT COVER ASSY".



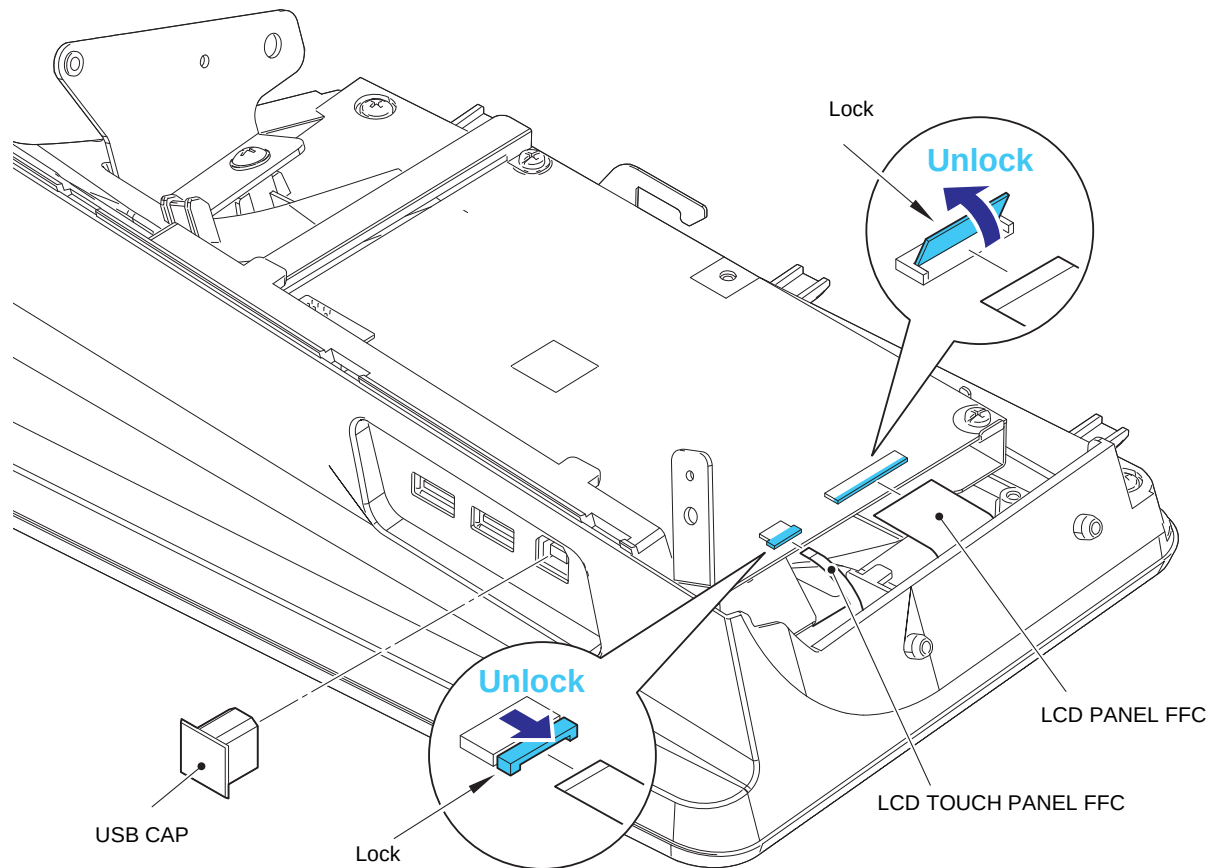
1. Remove the three screws A to remove the GROUND PLATE A.
2. Remove the two screws B to remove the PANEL PCB HEAT TRANSFER PLATE.
3. Remove the THERMALLY CONDUCTIVE SHEET from the PANEL PCB HEAT TRANSFER PLATE.



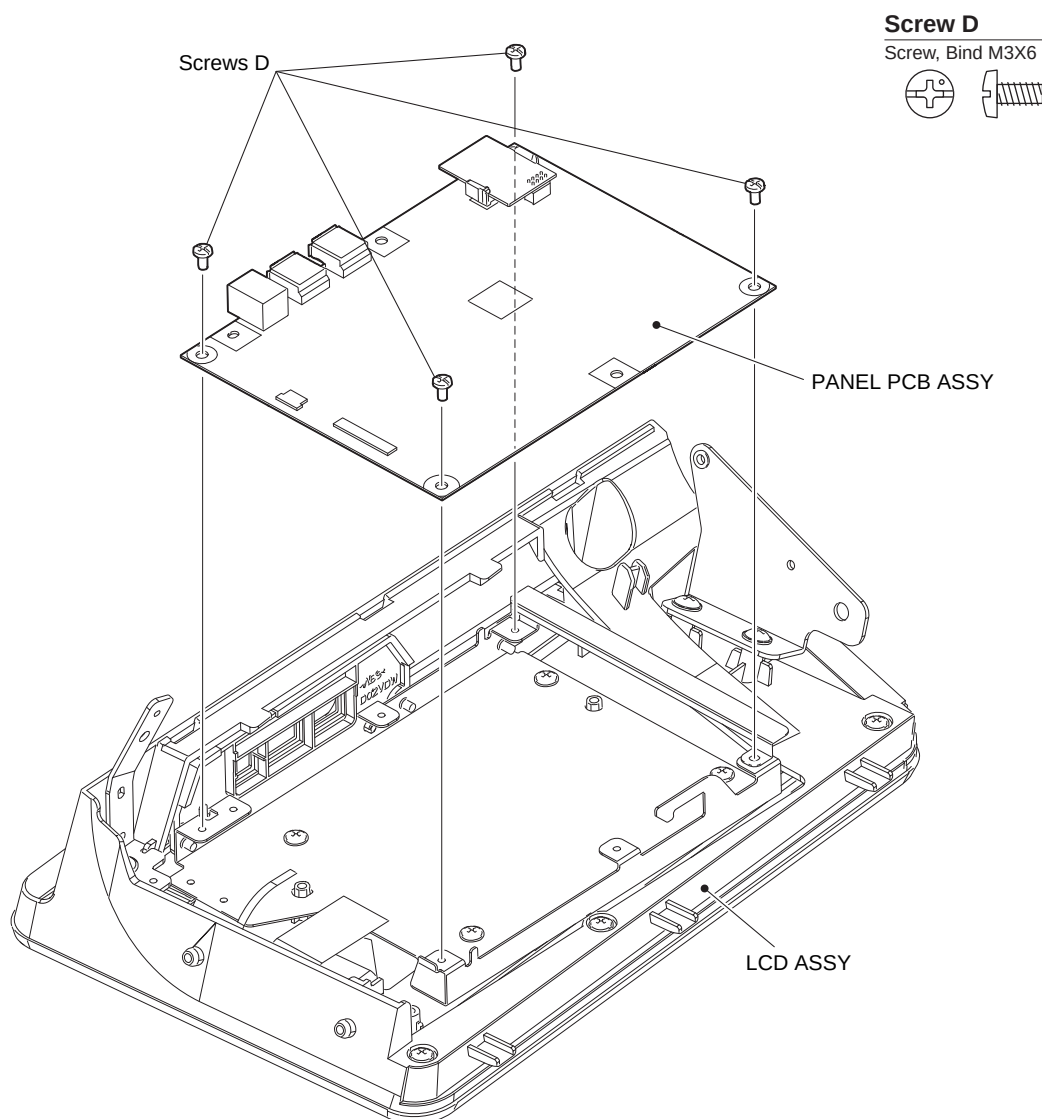
4. Remove the two screws C to remove the PANEL PCB HOLDER USB.



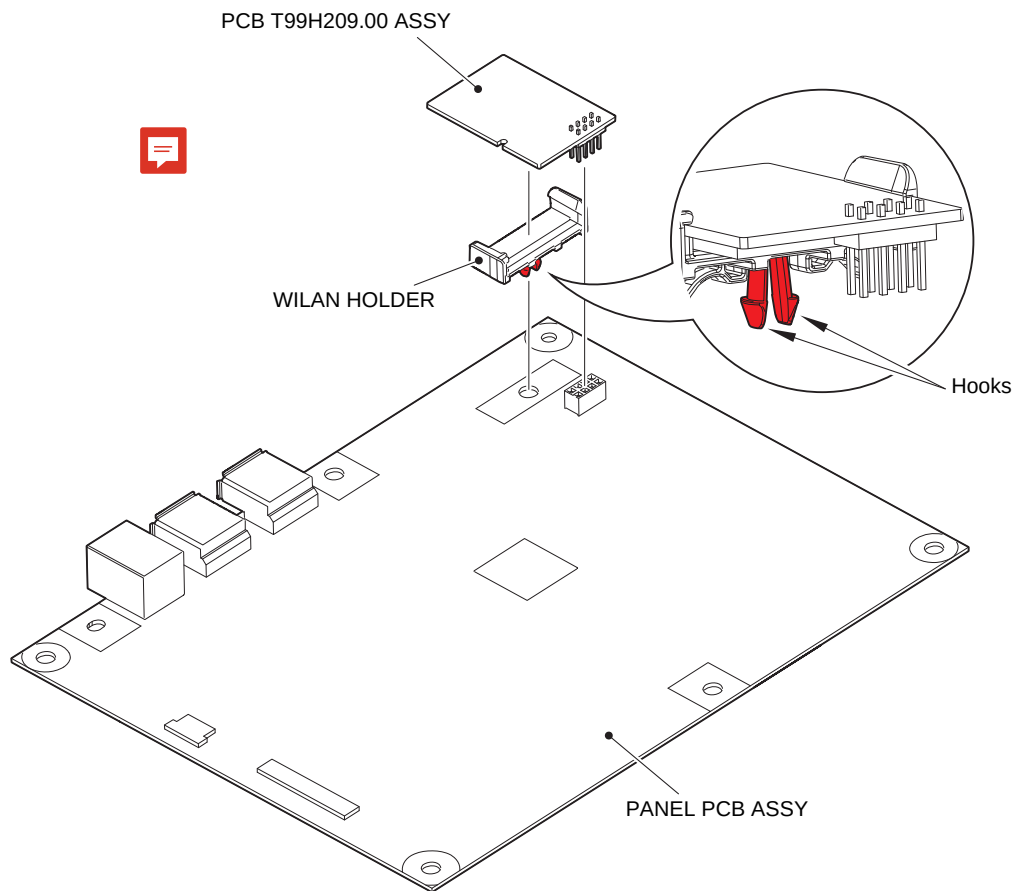
5. Remove the USB CAP.
6. Unlock the lock to disconnect the LCD PANEL FFC.
7. Unlock the lock to disconnect the LCD TOUCH PANEL FFC.



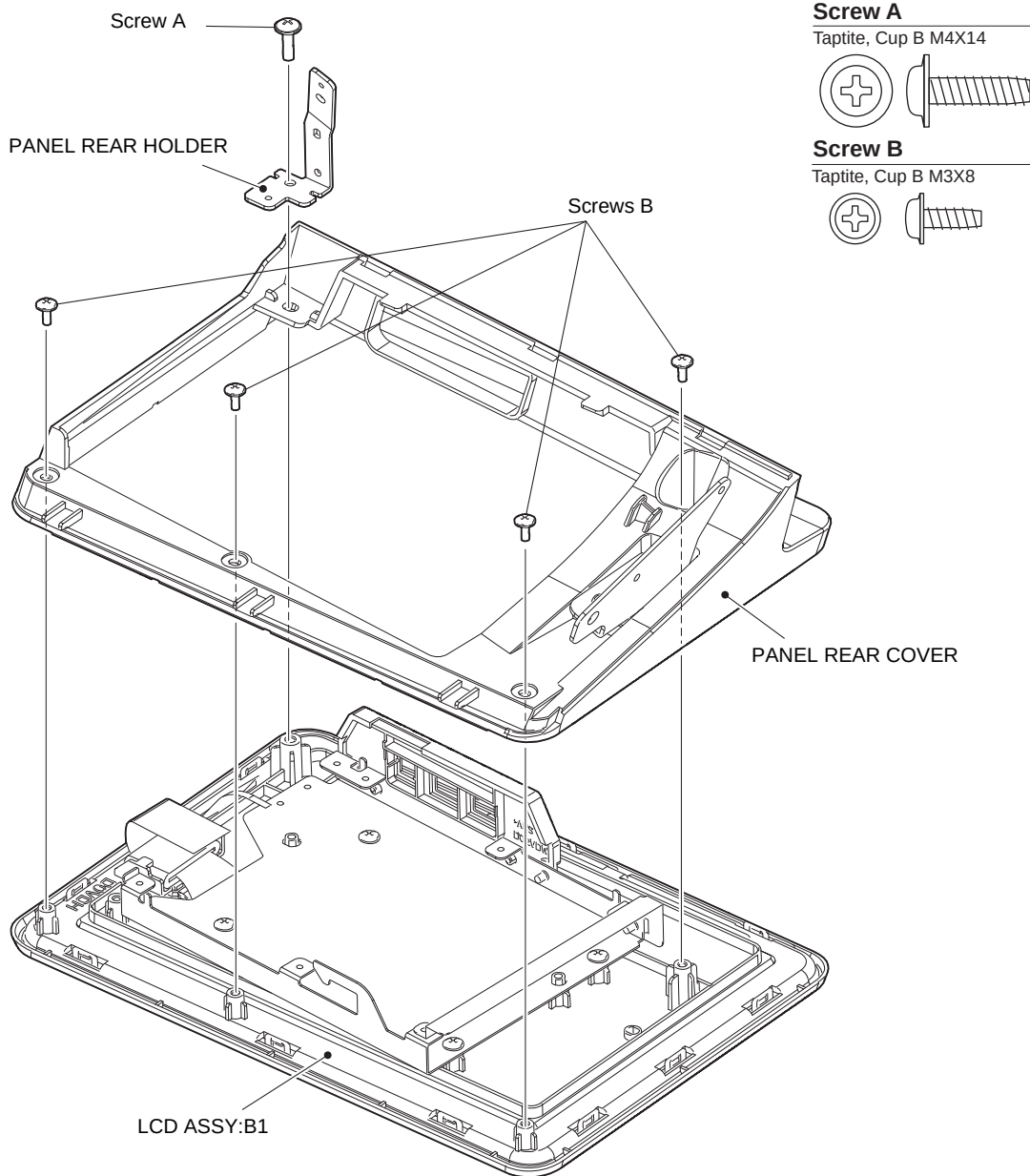
8. Remove the four screws D to remove the PANEL PCB ASSY.



1. Release the two hooks to remove the WILAN HOLDER.
2. Remove the PCB T99H209.00 ASSY from the WILAN HOLDER.



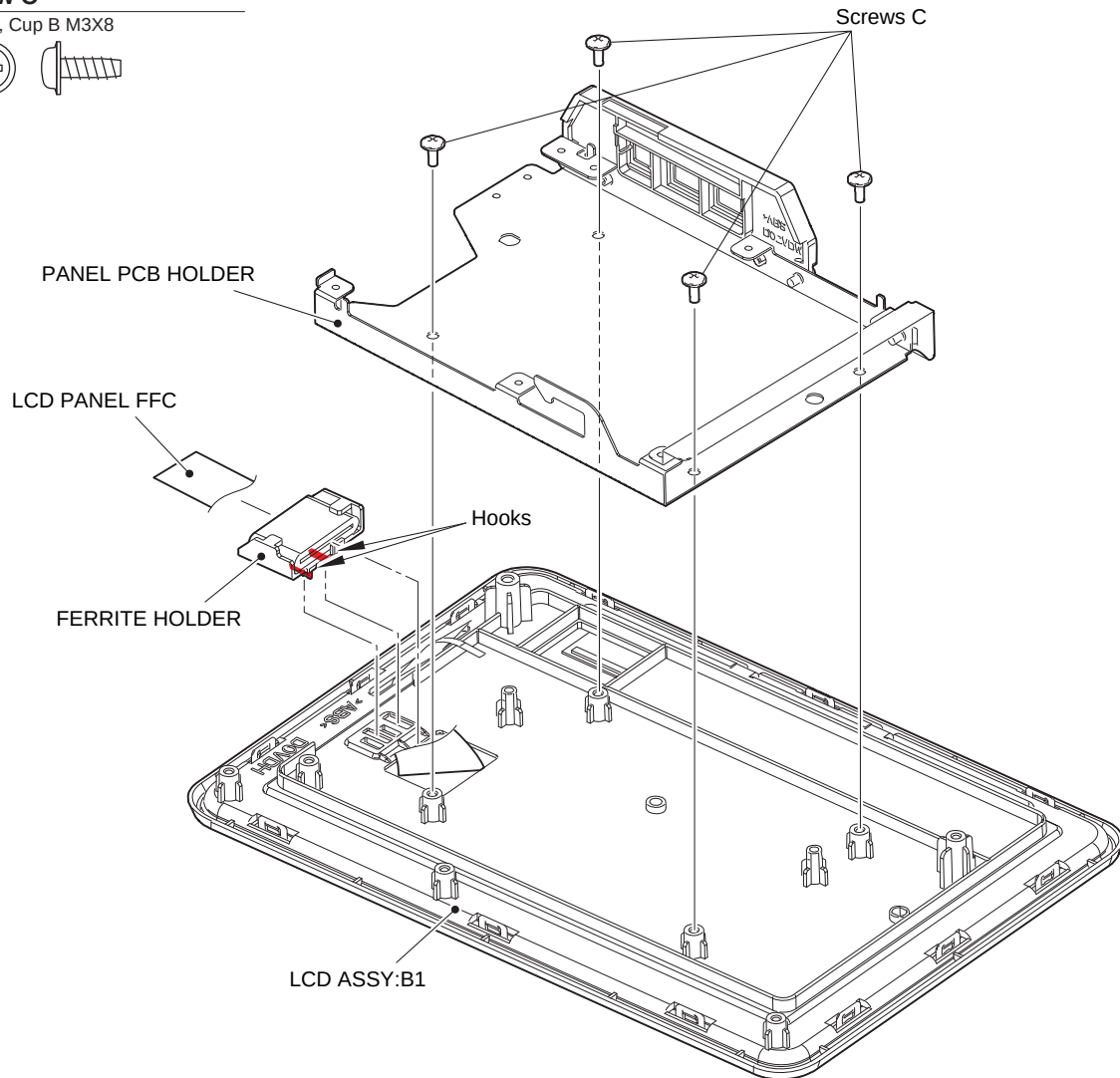
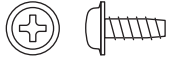
1. Remove the screw A to remove the PANEL REAR HOLDER.
2. Remove the four screws B to remove the PANEL REAR COVER.



3. Remove the four screws C to remove the PANEL PCB HOLDER.
4. Pull out the LCD PANEL FFC through the FERRITE HOLDER
5. Release the two hooks to remove the FERRITE HOLDER.

Screw C

Taprite, Cup B M3X8



8 FRONT COVER SUB ASSY

1. Remove the screw A from the FRONT COVER HOLDER A (1). Remove the screw B from the FRONT COVER SUB ASSY (2).
2. Push the part A of FRONT COVER SUB ASSY (2) in the direction of the arrow to release the hook A, and push the part B in the direction of the arrow to release the hook B.

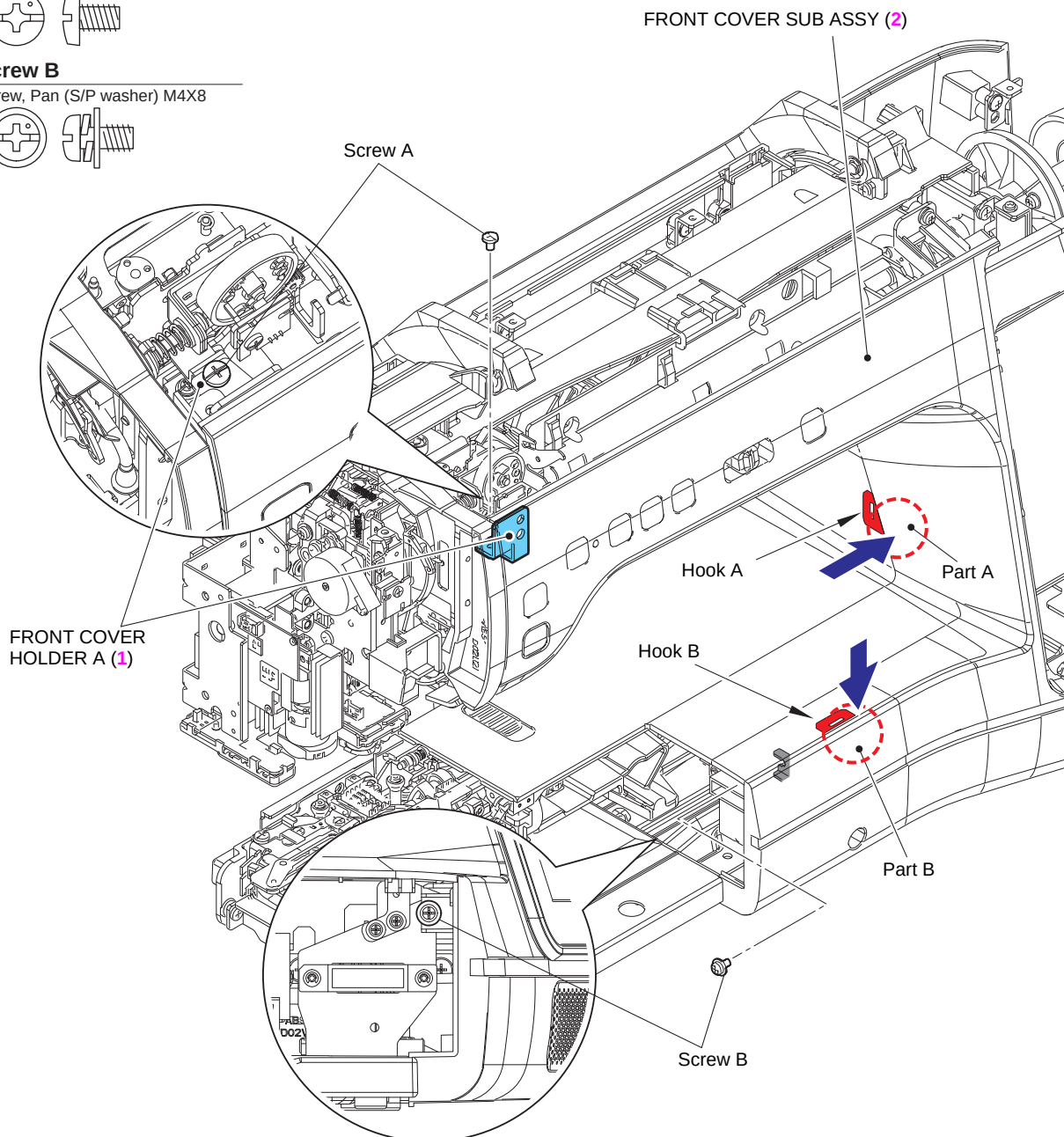
Screw A

Screw, Bind M4X6

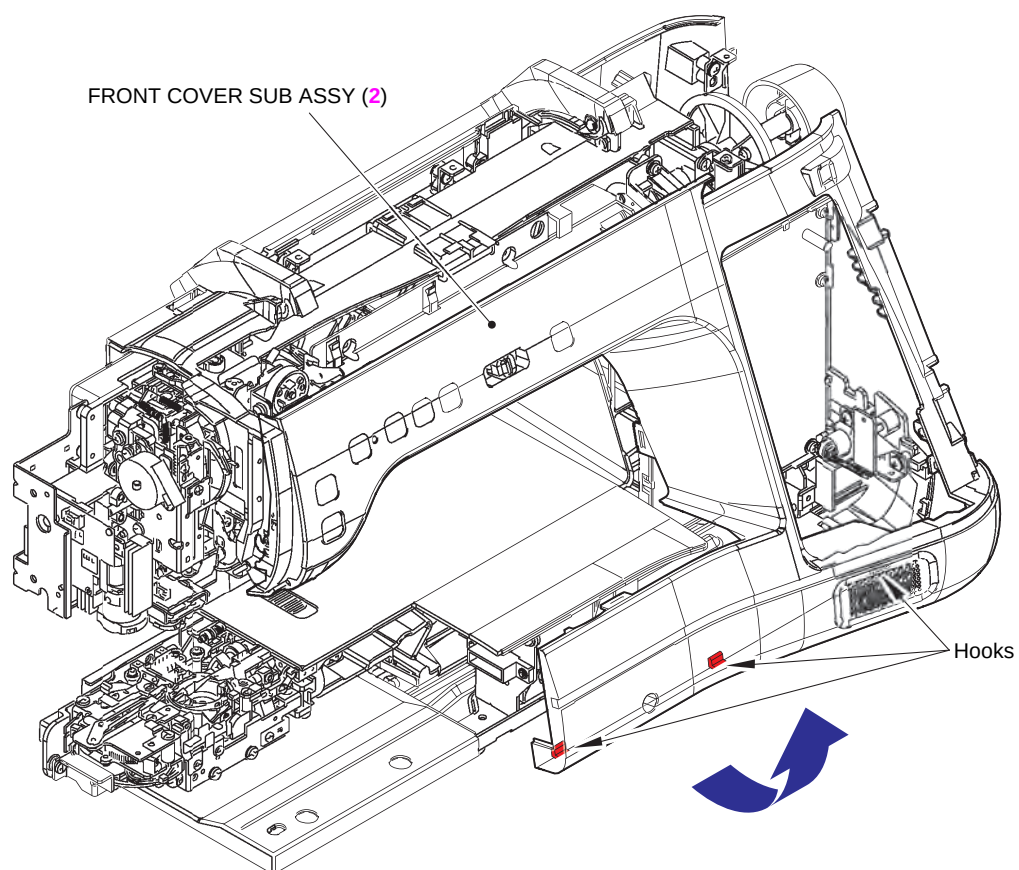


Screw B

Screw, Pan (S/P washer) M4X8



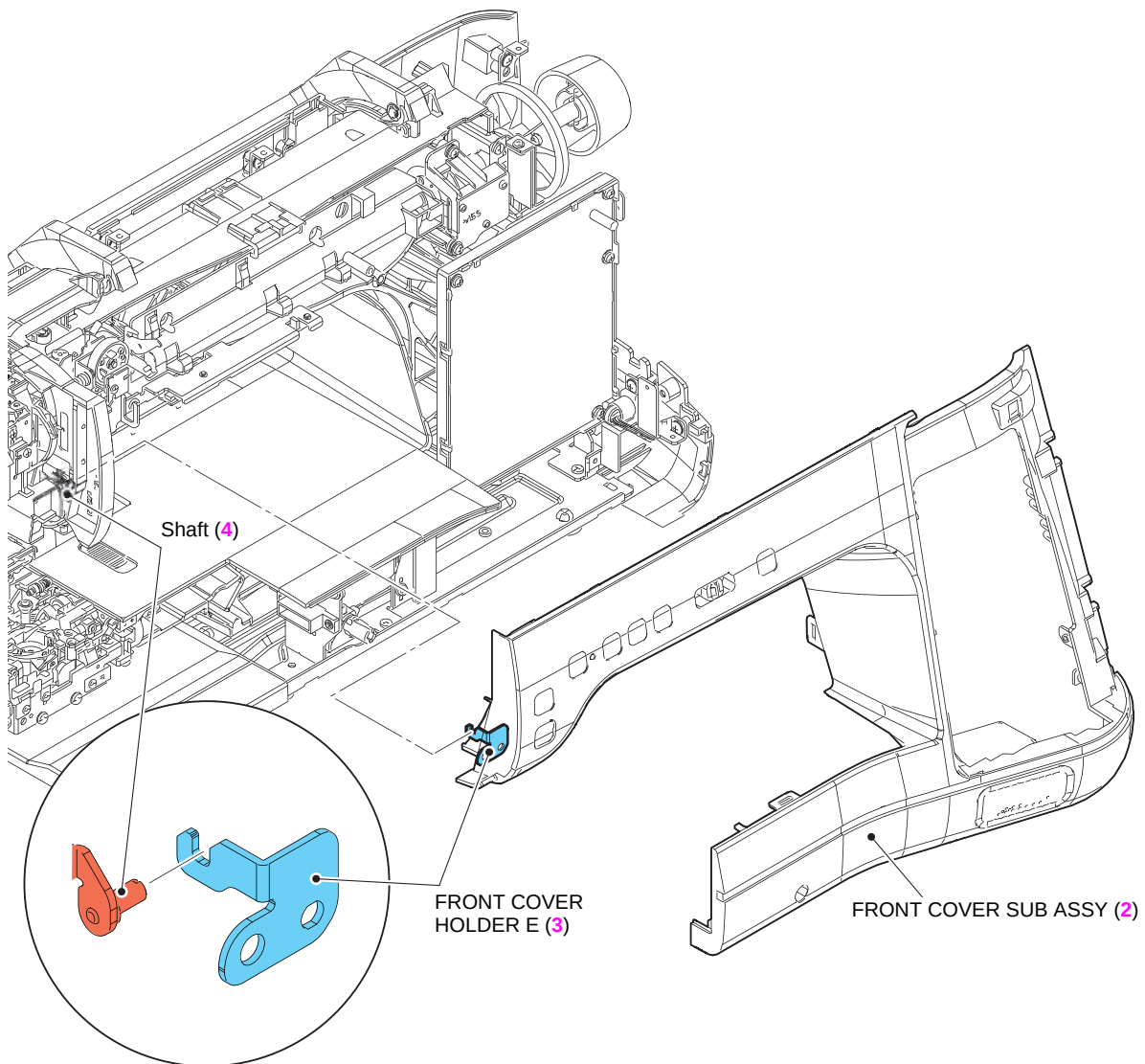
3. Release each hook on the lower side of FRONT COVER SUB ASSY (2) to open the FRONT COVER SUB ASSY (2) in the direction of the arrow.



4. Remove the FRONT COVER HOLDER E (3) of the FRONT COVER SUB ASSY (2) from the shaft (4) of the machine, and remove the FRONT COVER SUB ASSY (2).

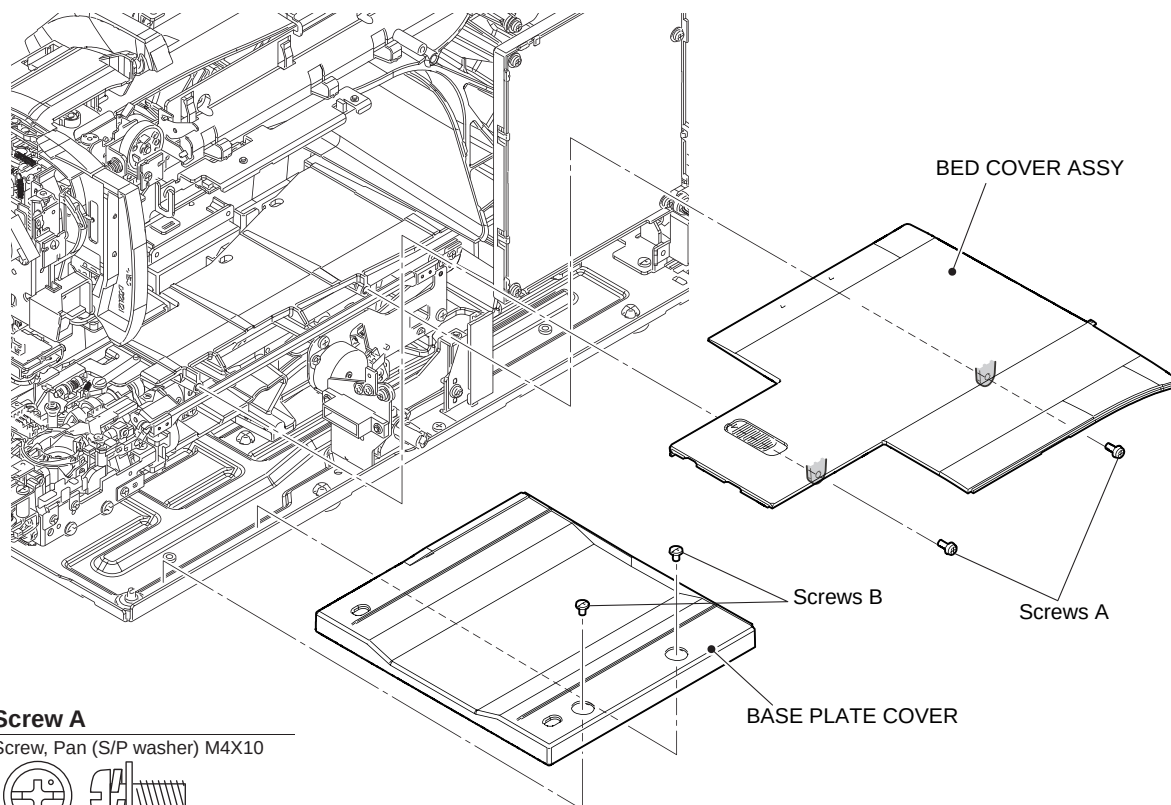
**Assembling note**

- Hang the FRONT COVER HOLDER E (3) on the shaft (4).



9 BED COVER ASSY and BASE PLATE COVER

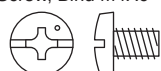
1. Remove the two screws A to remove the BED COVER ASSY.
2. Remove the two screws B to remove the BASE PLATE COVER.

**Screw A**

Screw, Pan (S/P washer) M4X10

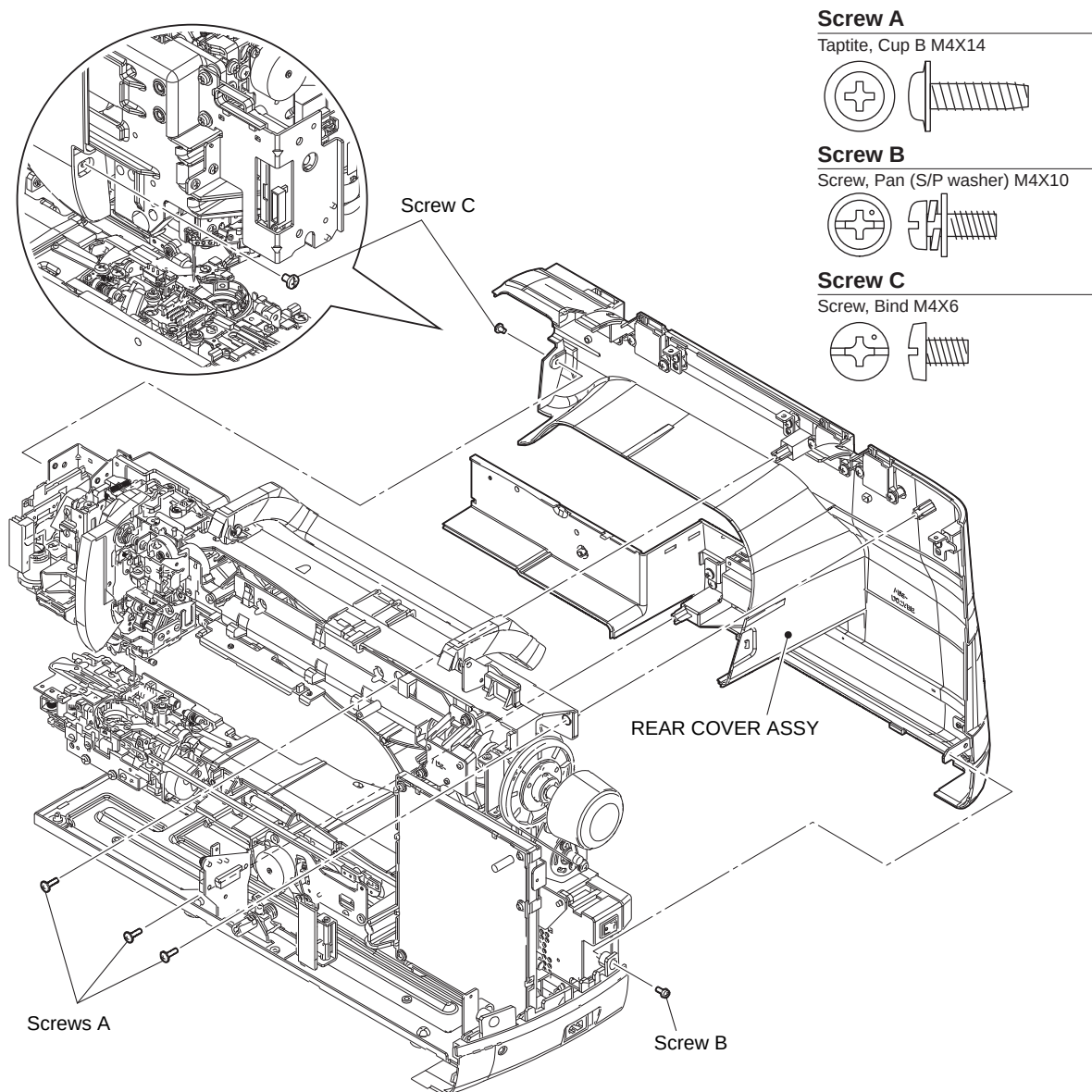
**Screw B**

Screw, Bind M4X6



10 REAR COVER ASSY

1. Remove the three screws A, the screw B and the screw C to remove the REAR COVER ASSY.



11 INLET COVER

1. Remove the IV INLET COVER DECO PLATE (1).

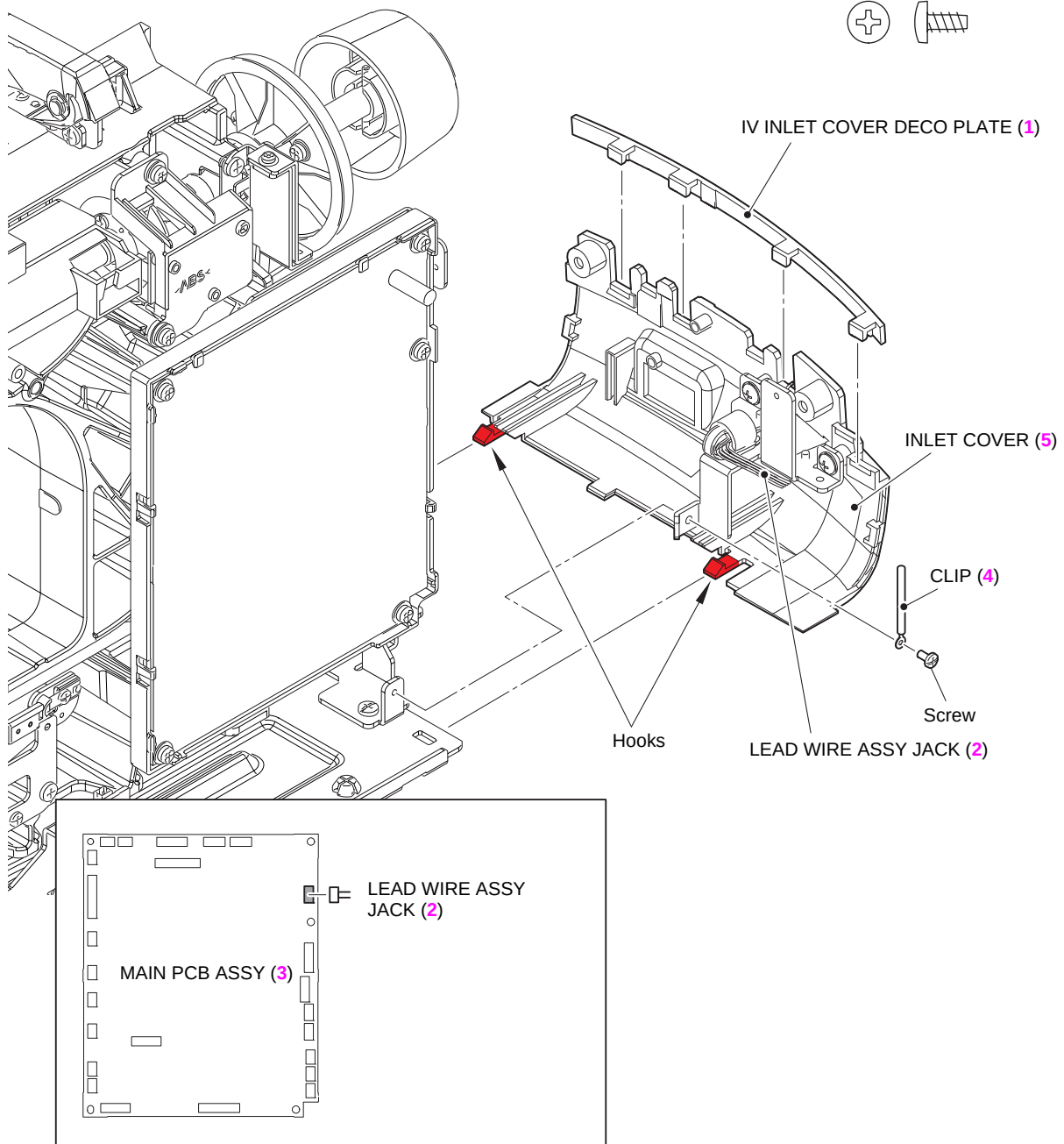
**Note**

- The IV INLET COVER DECO PLATE (1) is not secured, so be careful not to drop or lose it.

2. Disconnect the LEAD WIRE ASSY JACK (2) from the MAIN PCB ASSY (3).
3. Remove the screw to remove the CLIP (4).
4. Release the two hooks to remove the INLET COVER (5).

Screw

Taptite, Bind B M3X6



3 ES MAIN COVER

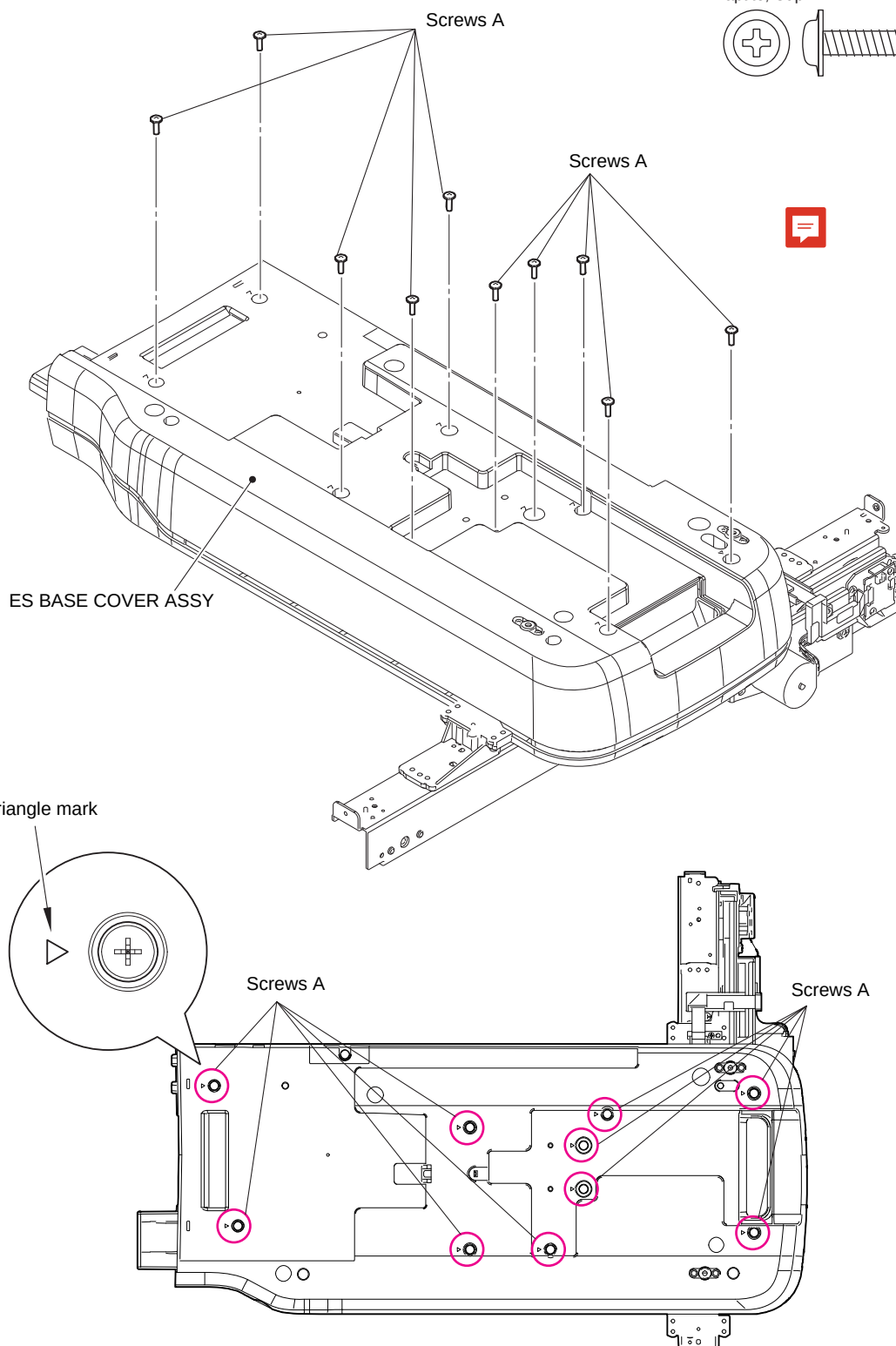
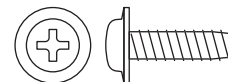
1. Remove the ten screws A from the ES BASE COVER ASSY.

**Note**

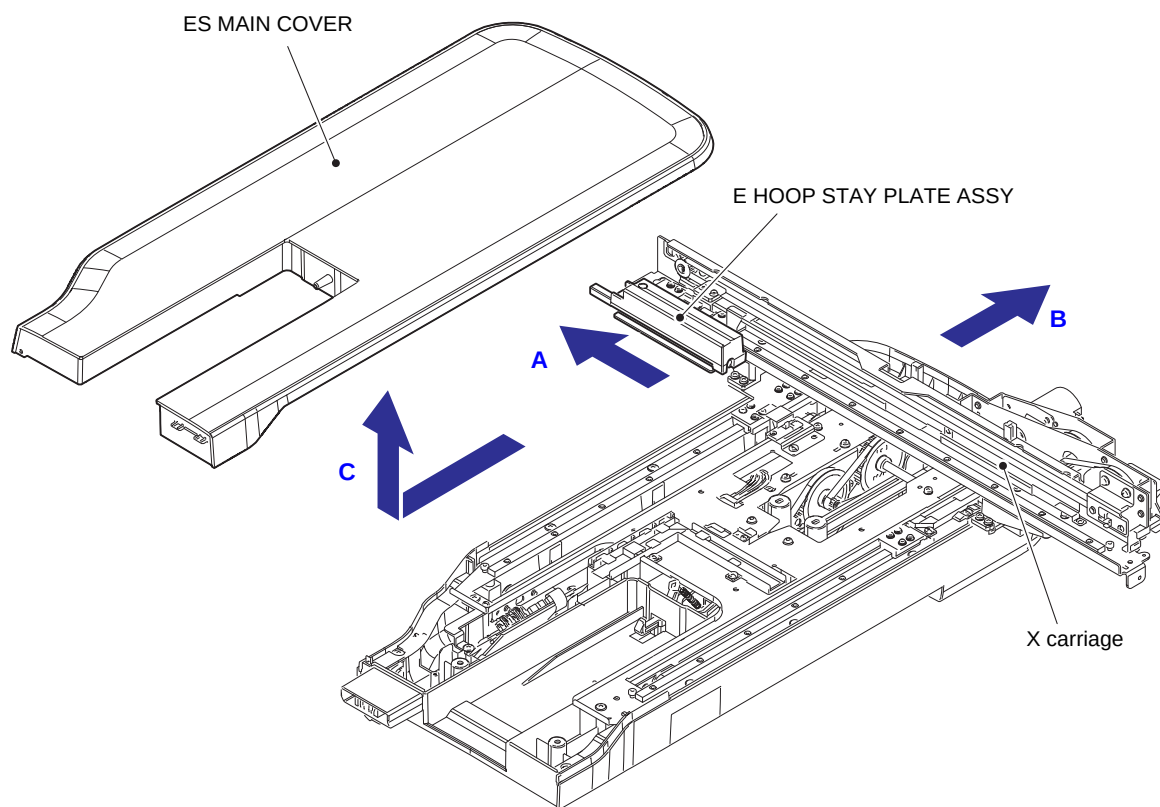
- The screws marked with a triangle on the ES BASE COVER ASSY are for removing the ES MAIN COVER.

Screw A

Taptite, Cup B M4X14

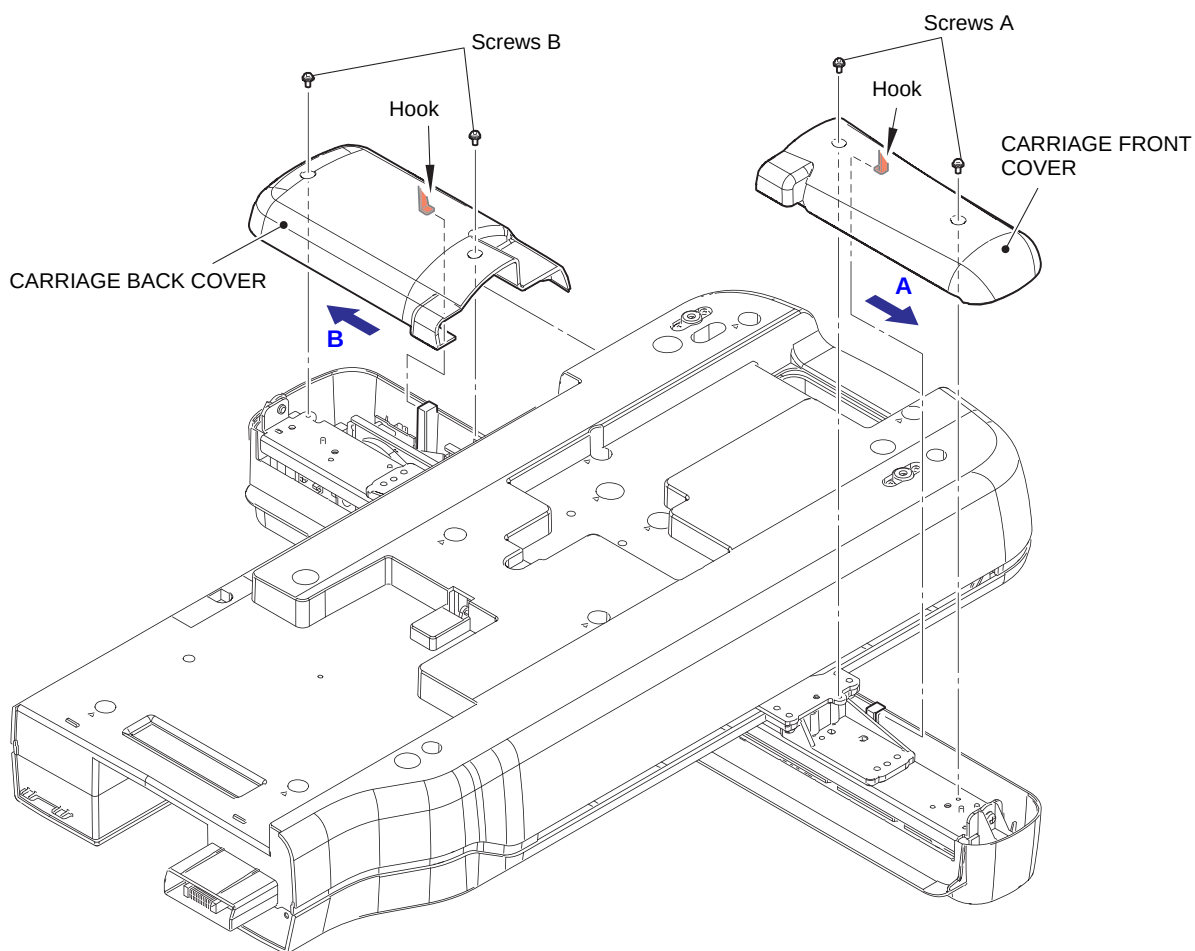


2. Slide the E HOOP STAY PLATE ASSY in the direction of the arrow A to the position shown in the figure.
3. Slide the X carriage in the direction of the arrow B.
4. Remove the ES MAIN COVER in the direction of the arrow C.



1 CARRIAGE FRONT COVER and CARRIAGE BACK COVER

1. Remove the two screws A.
2. Slide the CARRIAGE FRONT COVER in the direction of the arrow A to release the hook, and remove the CARRIAGE FRONT COVER.
3. Remove the two screws B.
4. Slide the CARRIAGE BACK COVER in the direction of the arrow B to release the hook, and remove the CARRIAGE BACK COVER.

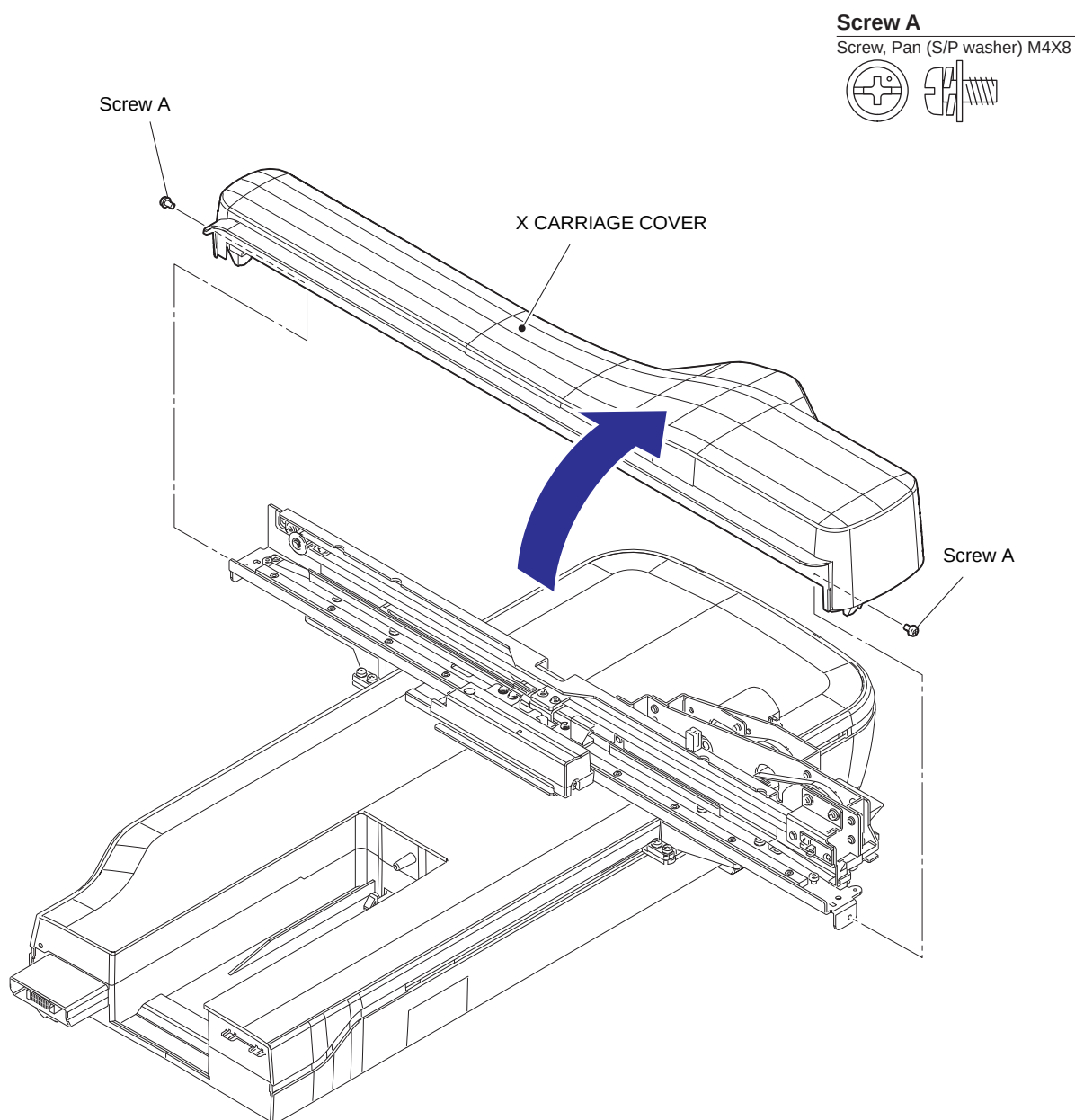
**Screw A, B**

XA8390021 SCREW
(Screw, Pan (P washer) M3X7)



2 X CARRIAGE COVER

1. Remove the two screws A to remove the X CARRIAGE COVER.

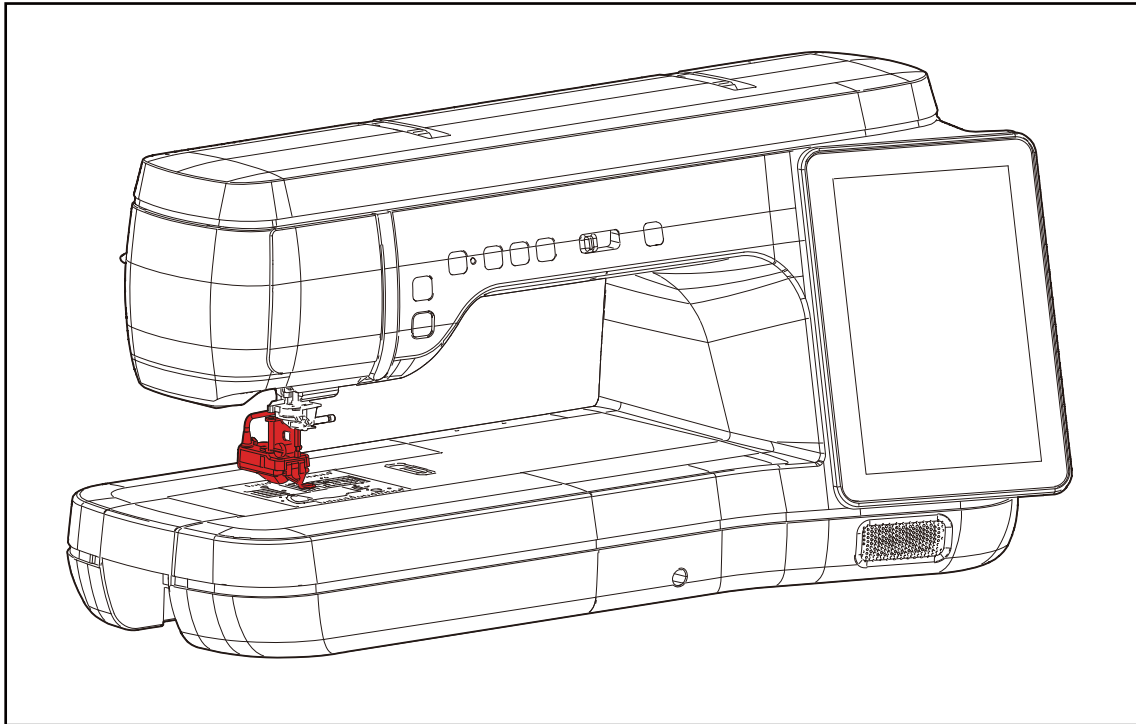


SAFETY INFORMATION

■ CAUTION FOR LASER PRODUCT

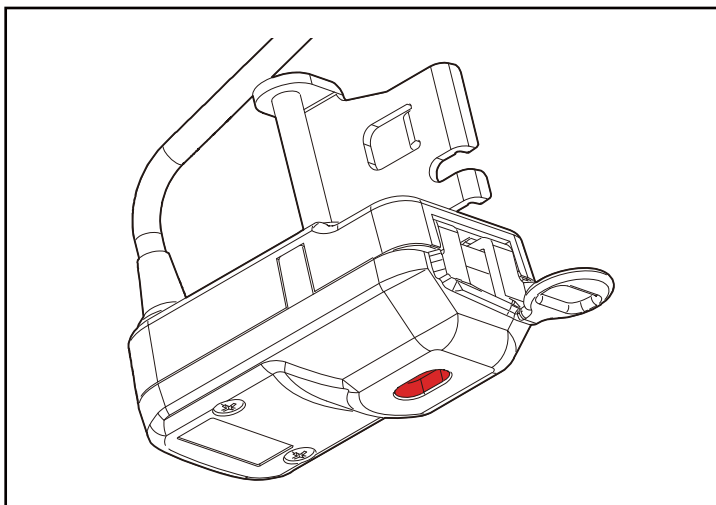
CAUTION: In case of any trouble with the stitch regulator, replace the stitch regulator itself.
To prevent direct exposure to the laser beam, do not try to disassemble the stitch regulator.

<Location of the Laser module>



CAUTION: Be sure to turn off the power when replacing the stitch regulator.
If you replace the stitch regulator while the power is on, the laser light emitted from the stitch regulator opening may enter your eyes, which is extremely dangerous.

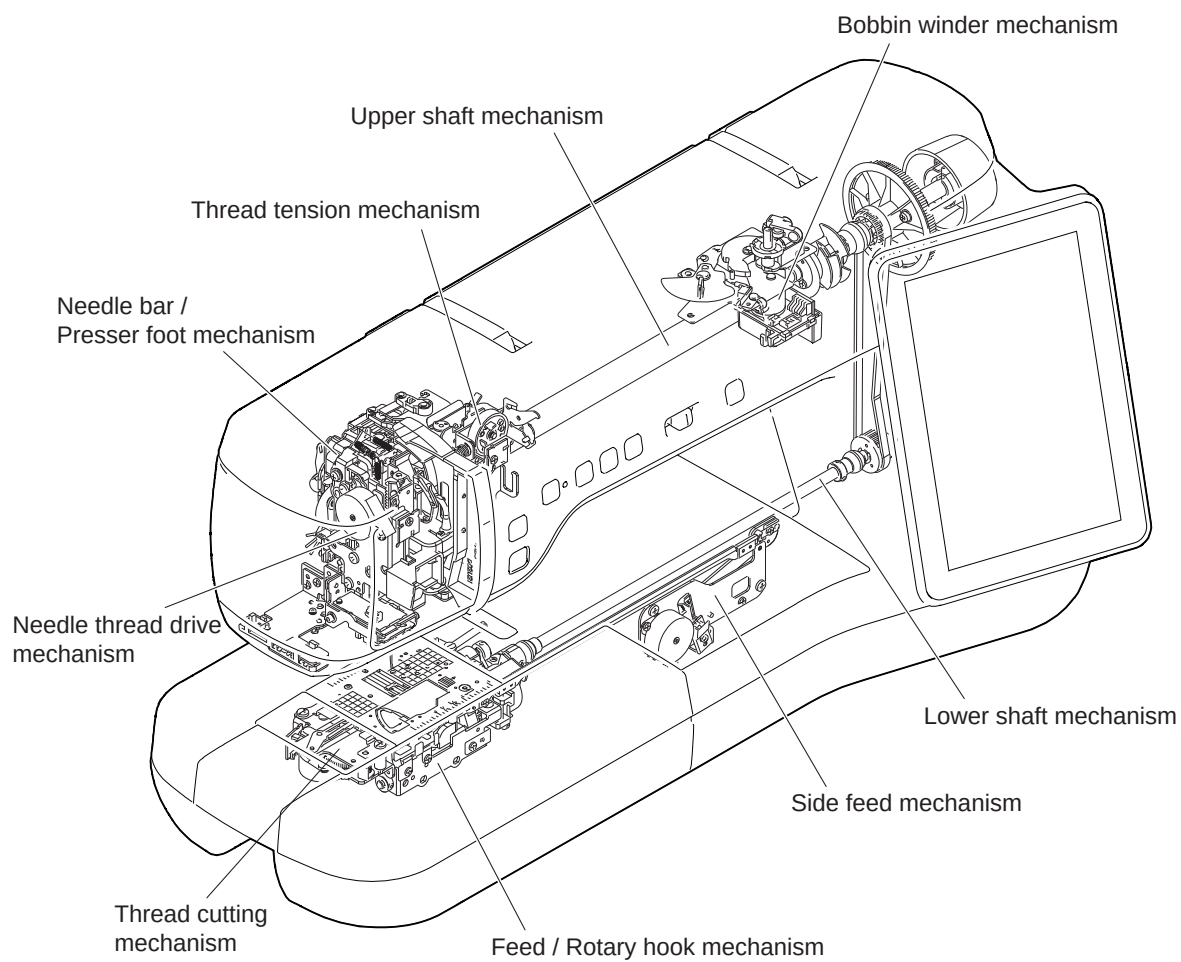
<Location of the stitch regulator opening>



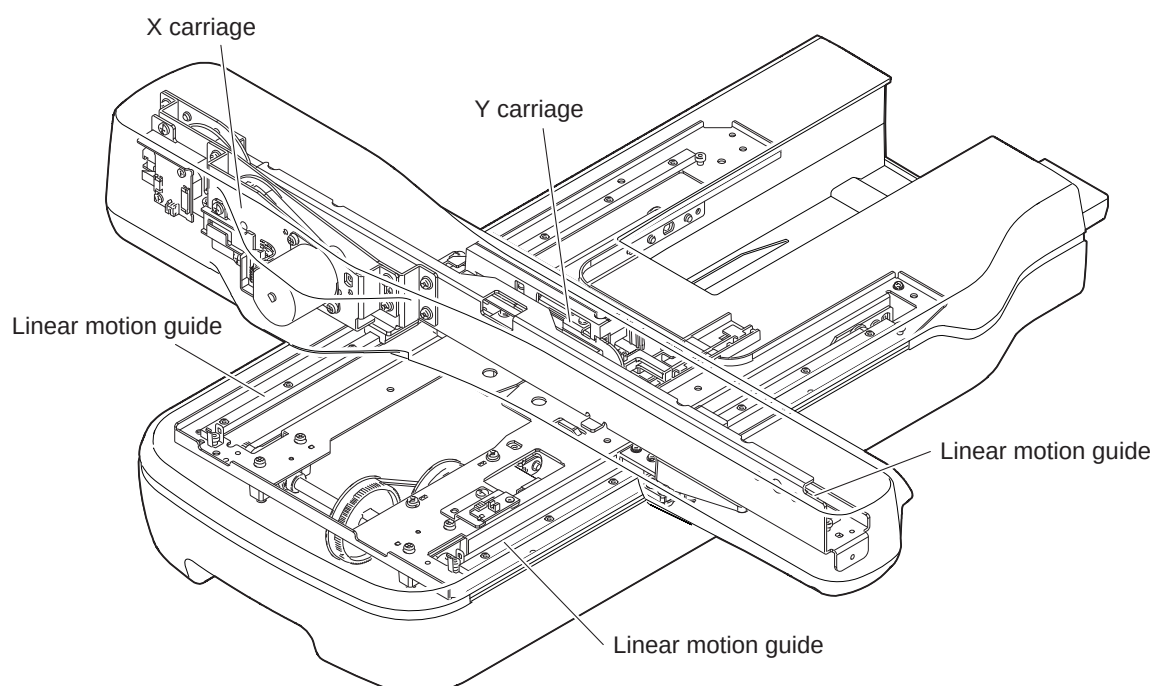
1 Outline of Mechanism

Main mechanisms	1 - 2
Driveline	1 - 3
Positions of electronic components.....	1 - 5
Control system block diagram.....	1 - 7
Layout for PCB connectors	1 - 8
Operation of other electronic components	1 - 11

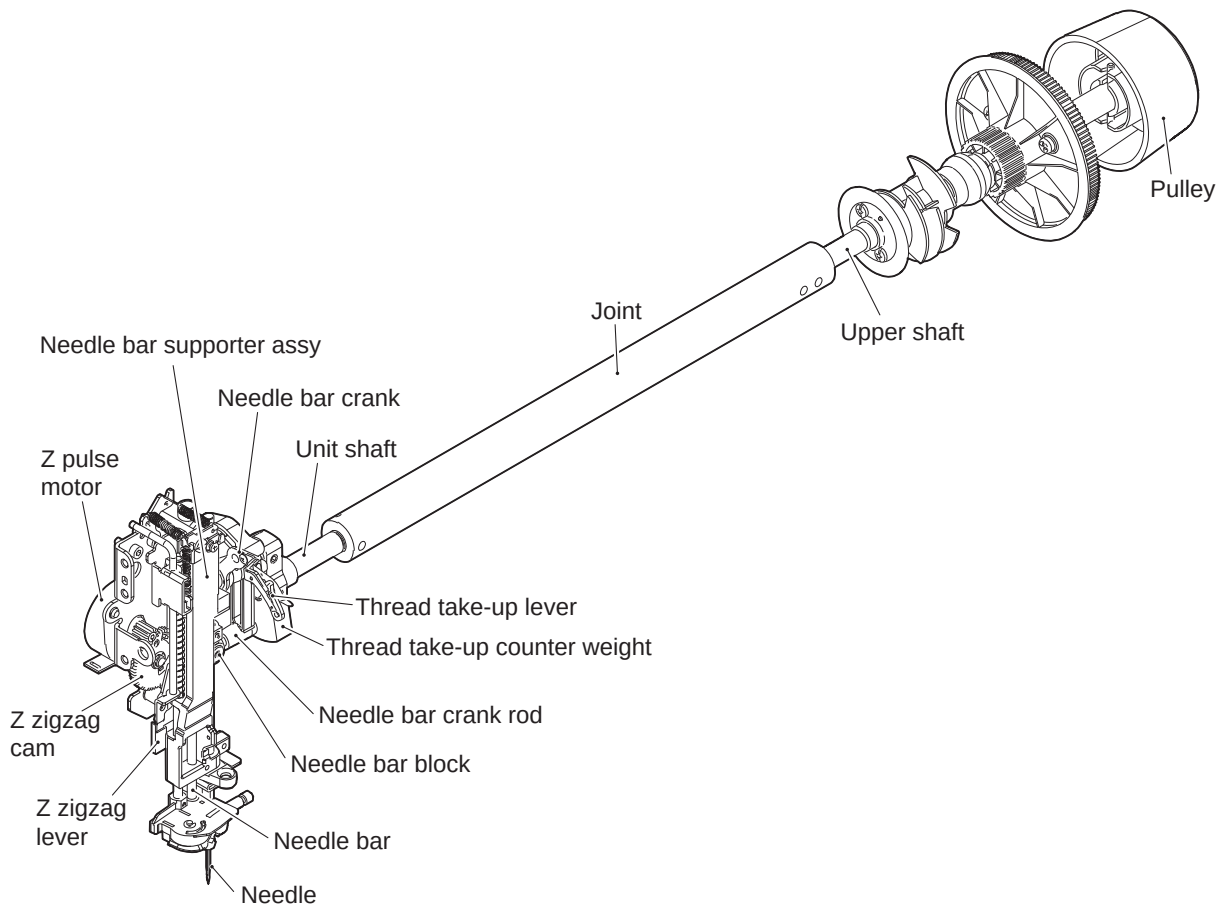
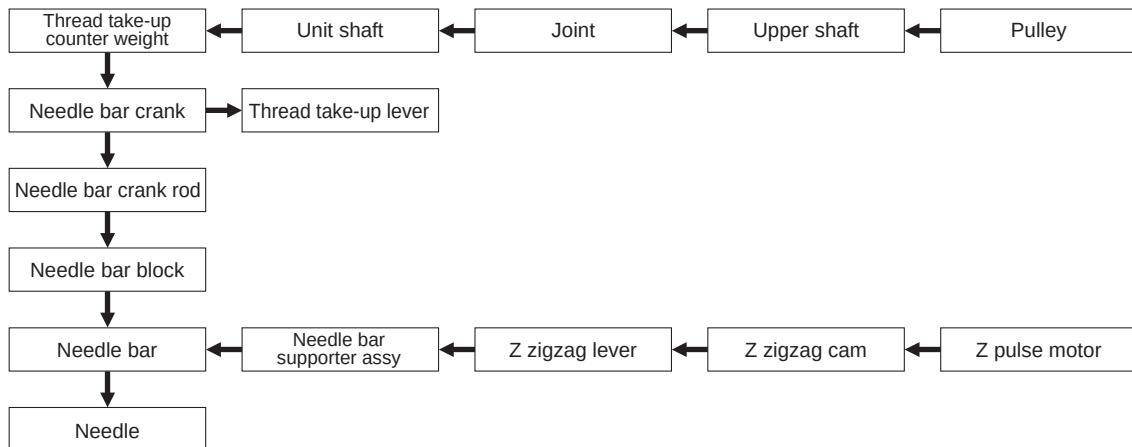
Main body



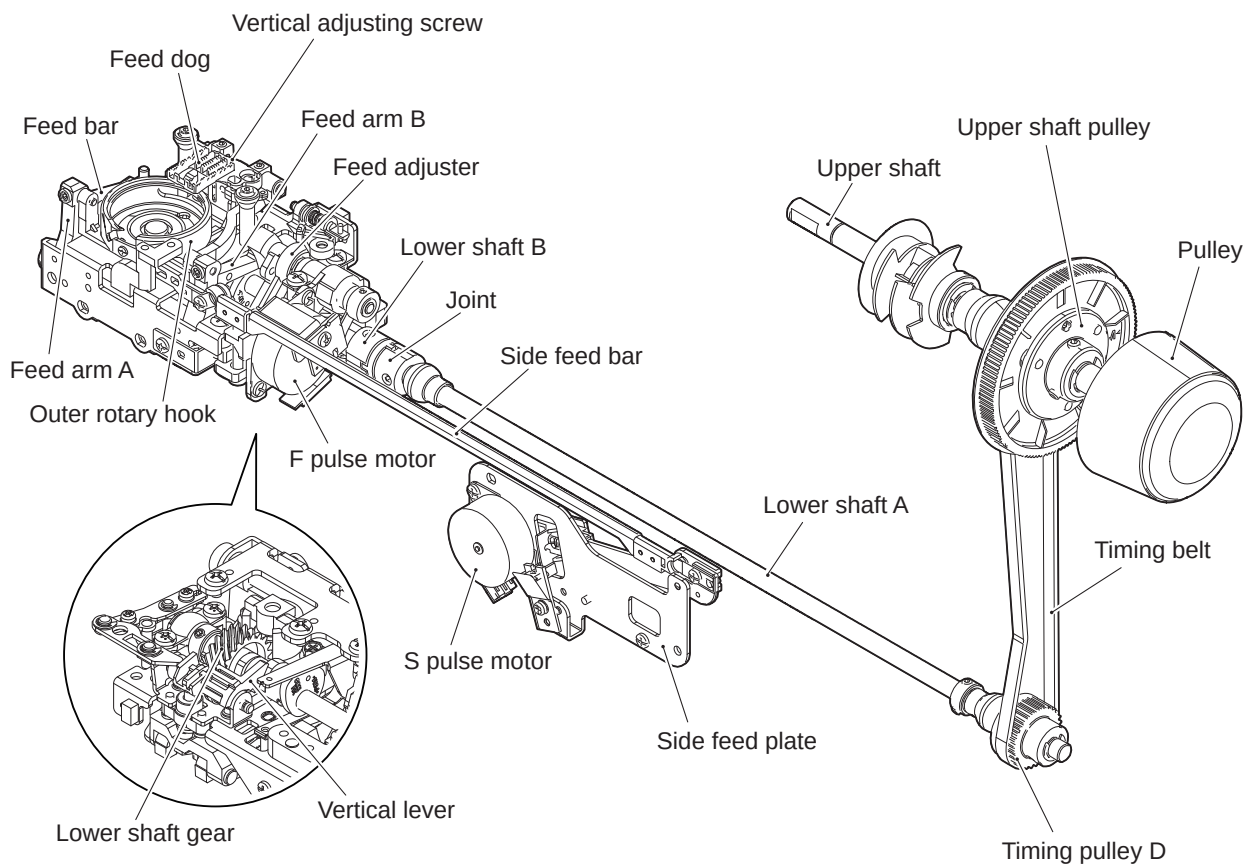
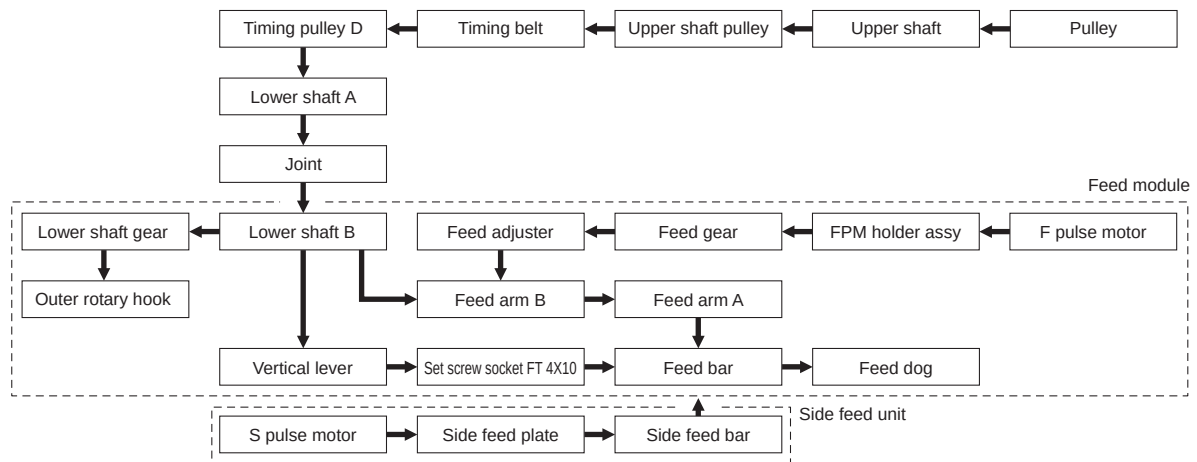
Embroidery unit



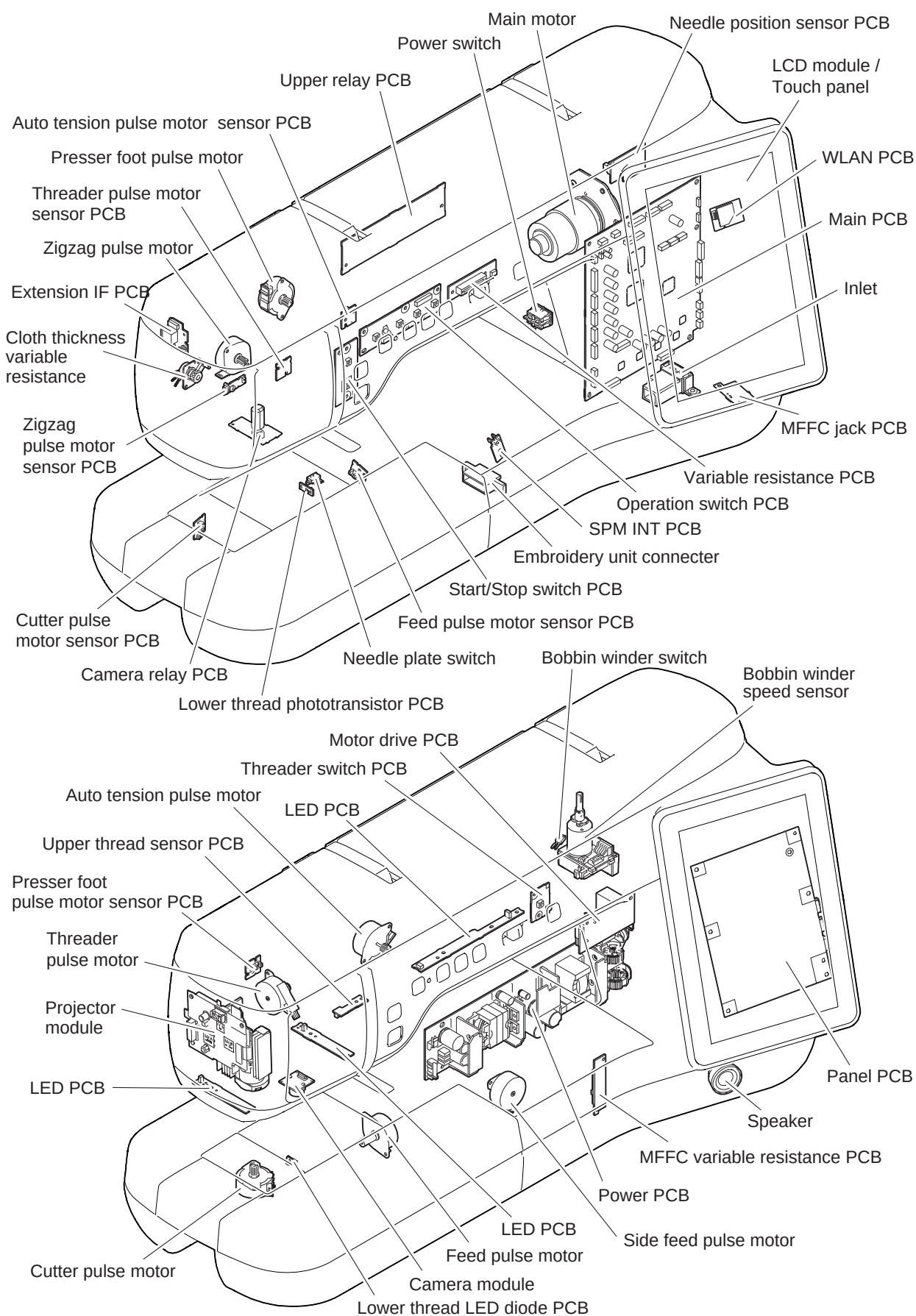
(A) Up and down movement of needle bar, movement of thread take-up lever and zigzag movement of needle bar mechanism



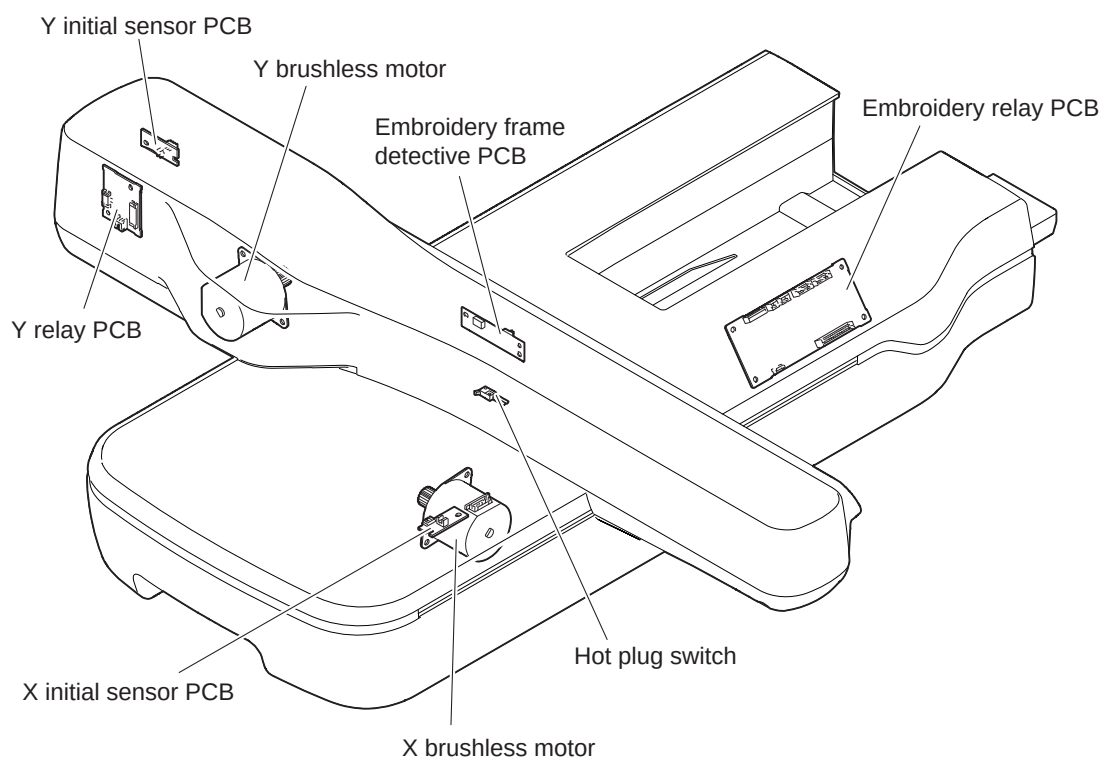
(B) Movement of feed dog and rotary hook



Main body



Embroidery unit

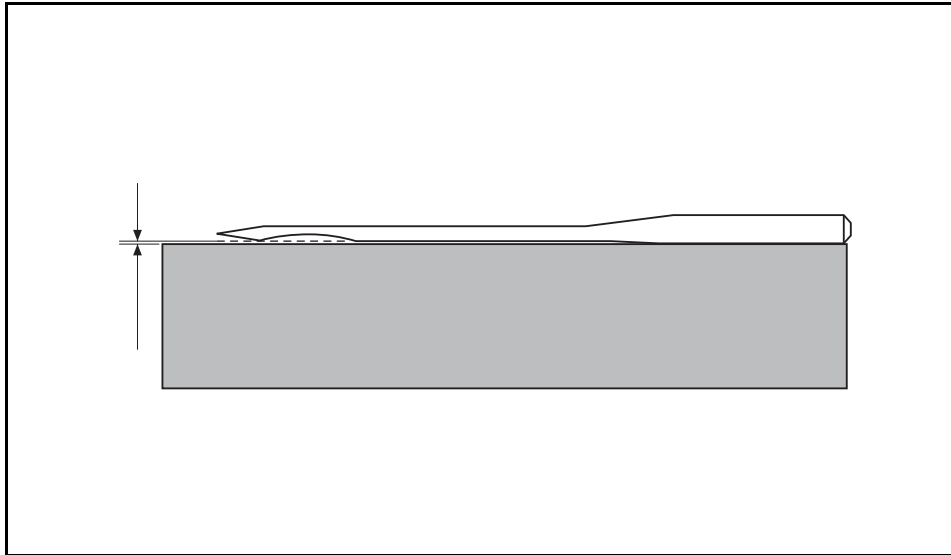


4 Adjustment

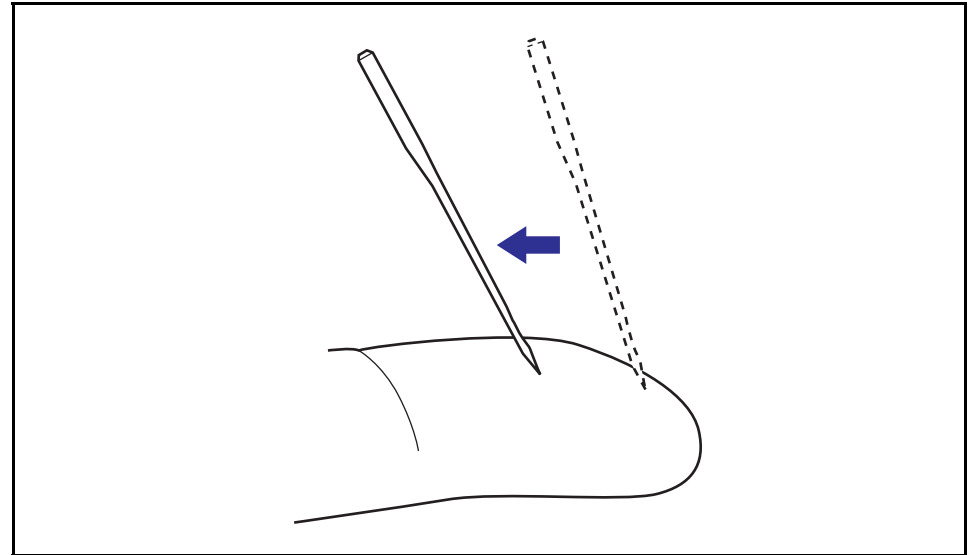
Maintenance	Bent needle or crashed needle point.....	4 - 2
Test Mode	How to start test mode.....	4 - 3
Adjustment	Timing belt tension	4 - 4
	Timing belt and belt support upper/lower clearance	4 - 5
	Motor belt tension	4 - 6
	Fine tension	4 - 7
	Upper thread tension	4 - 8
	Upper shaft rotation shutter angle	4 - 9
	NP PCB assy position	4 - 10
	Front/Back position of needle and presser foot	4 - 11
	Left baseline needle drop	4 - 12
	Left/right needle clearance deviation	4 - 13
	Needle bar rising	4 - 14
	Needle bar height	4 - 15
	Needle clearance.....	4 - 16
	Needle threader.....	4 - 17
	Presser bar height	4 - 18
	Fabric thickness setting	4 - 19
	Knee lifter position	4 - 20
	Feed dog height and parallelism	4 - 21
	Front/back and left/right position of the feed dog	4 - 22
	Feed forward/backward	4 - 23
	Number of BH satin part stitches.....	4 - 24
	Side feed straight stitch	4 - 26
	One-point stitch pattern	4 - 28
	Inner rotary hook bracket position	4 - 30
	Lower thread tension (Standard inner rotary hook assy) ...	4 - 31
	Feed length of dual feed (Dual feed foot)	4 - 32
	LED pointer position (Embroidery foot "W+")	4 - 33
	X motor belt tension (Embroidery unit)	4 - 34
	X reducer belt tension (Embroidery unit)	4 - 35
	Y motor belt tension (Embroidery unit)	4 - 36
	Y reducer belt tension (Embroidery unit)	4 - 37
	Y timing belt tension (Embroidery unit).....	4 - 38
	X timing belt tension (Embroidery unit).....	4 - 39
	Embroidery center position (Embroidery unit)	4 - 42
	X carriage height (Embroidery unit).....	4 - 43
	X motor offset value (Embroidery unit)	4 - 44
	Y motor offset value (Embroidery unit)	4 - 46
	Z/F pulse motor initial phase	4 - 48
	Thread take up spring tension	4 - 50
	Camera angle	4 - 52
	Projector angle	4 - 56
	Camera calibration	4 - 58
	Projector calibration	4 - 63

1. Put the needle on the level bloc and check that the needle is not bent.
2. Touch the tip of the needle to check that there is nothing to be caught.

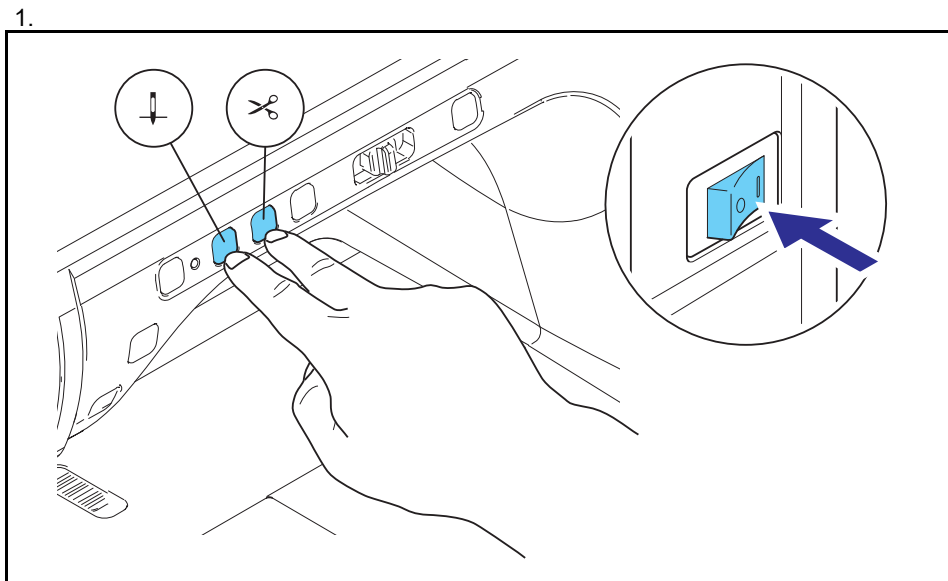
1.



2.



1. Turn the machine ON while pressing the needle position button and thread cutter button.
→ Test mode selection screen appears.



Test Mode Descriptions

#01. Serial numbers

This mode displays serial number, product ID, and program version stored in the machine.

#02. Fabric thickness setting (Used in Adjustment “4-25” / “4-26”)

This mode is used for:

storing A/D value of potentiometer when the fabric thickness is 0 mm / 3 mm.

storing A/D value of potentiometer when the knee lifter is moved at maximum or minimum.

#03. Pattern adjustment (Used in Adjustment “4-33”)

This mode operates test pattern stitching. Correction value for the feeding is set based on the stitching result.

#04. 3-point needle drop (Used in some adjustments.)

This mode changes needle position to left / center / right.

#05. Needle clearance

This mode operates side feeding by 0.5 mm.

#06. Feed dog position (Used in Adjustment “4-27” / “4-29”)

This mode moves the feed dog to center, front, left, right, and drop position.

#07. Presser foot height

This mode displays presser foot height. Use this mode to check the highest / lowest position of the pivot presser foot.

#08 and #09. Not used.

#10. Lower thread display

This mode is used for checking operation of the lower thread detection sensor. (+.+: lower thread remained, 0.0: lower thread empty)

*Key point

- Turn the pulley by hand until the machine shows 0.0 (lower thread empty) when checking operation of the sensor.

Test Mode Explanation

#11. Upper thread display

This mode is used for checking operation of the upper thread detection sensor. (+: upper thread remained, 0.0: upper thread empty)

*Key point

- Check if the machine displays +. + when the set upper thread is pulled up by hand.

#12. Thread sensor cancel

This mode disables detection of upper / lower thread and needle plate A / B.

* Effective only once when the machine is turned on again after selecting test mode #12.

#13. Forward and reverse feed (Used in Adjustment “4-30”)

This mode operates 100 forward stitches (left base line) and 100 backward stitches (right base line).

#14. Speed

This mode displays target and actual rotation speed of the upper shaft.

#15. Power

This mode operates the machine with the maximum electric power.

#16. Switch monitoring (Used in Adjustment “4-34”)

This mode makes buzzer sound when particular switches* go on / off.

* Presser foot switch, button hole lever up/down switch, button hole lever back/forth switch, bobbin winder switch, and embroidery frame detection switch.

Test Mode Explanation

#17 and #18. Not used.

#19. Clear flash (Used in Maintenance “6-2”)

This mode is used for:

displaying total / service stitch count for embroidery pattern sewing and utility stitch sewing.

displaying total / service stitch time.

clearing memory area.

resetting service stitch count for embroidery pattern sewing and utility stitch sewing.

resetting service stitch time.

displaying number of needle threading operated.

#20. Lower thread buzzer

This mode is used for checking operation of the lower thread detection sensor. (Buzzer sounds when lower thread is not detected.)

***Key point**

- Set the angle of the upper shaft to 60 degrees to 70 degrees in test mode 22 and then check.

#21. Upper thread buzzer

This mode is used for checking operation of the upper thread detection sensor. (Buzzer sounds when upper thread is detected.)

#22. NP sensor (Used in Adjustment “4-15”)

This mode displays upper shaft angle with value and buzzer.

#23. Embroidery max position (Used in Adjustment “4-43”)

This mode is used for:

tracing the maximum embroidery range for set embroidery frame.

moving embroidery carriage to embroidery frame evacuation position.

#24. LCD check

This mode is used for checking LCD.

Test Mode Explanation

#25. Tension adjustment

This mode is used for setting thread tension for stitches*.

* For straight line utility stitch sewing, other stitches, and embroidery pattern sewing.

#26. Not used.

#27. Line marker position check (Used in Adjustment “4-37”)

This mode is used for:

checking the line marker brightness.

setting the correction value for the line marker position.

#28. Threading check (Used in Adjustment “4-23”)

This mode is used for checking the needle threading operation.

Test Mode Explanation

#29. Input check

This mode displays status of switches and sensors.

[State]: displays current status of switch / sensor.

[Record]: displays switch / sensor status history.

[Clear] button: clears record.

Item:

Panel PCB assy

Foot Jack	Foot controller jack
-----------	----------------------

Main PCB assy

BWD	Bobbin winder switch
PFT	Presser foot switch
BH Lever	Button hole lever switch
BH Front	Button hole front switch
BH Back	Button hole back switch
PLATE 1	Needle plate A switch
PLATE 2	Needle plate B switch
F Initial Sensor	F-pulse motor initial sensor
Z Initial Sensor	Z-pulse motor initial sensor
PF Initial Sensor	Presser foot-pulse motor initial sensor
TH Initial Sensor	Threader-pulse motor initial sensor
TC Initial Sensor	Thread cut-pulse motor initial sensor
AT Initial Sensor	Auto tension-pulse motor initial sensor
LM Initial Sensor	Line marker-pulse motor initial sensor

X Initial Sensor	X carriage initial sensor
Y Initial Sensor	Y carriage initial sensor
Emb Machine	Embroidery unit connector
Frame Sw 1	Embroidery frame PCB assy. switch 1
Frame Sw 2	Embroidery frame PCB assy. switch 2
Frame Sw 3	Embroidery frame PCB assy. switch 3
Frame Sw 4	Embroidery frame PCB assy. switch 4
Frame Sw 5	Embroidery frame PCB assy. switch 5
Frame Lock Lever	Embroidery frame lock lever switch

29 Input check		
Item	State	Record
Panel		
FootJack	+1	+1
Main		
BWD	00	00
PFT	00	00
BH Lever	+1	+1
BH Front	00	00
BH Back	00	00
PLATE 1	00	00
PLATE 2	00	00
F Initial Sensor	00	+1
Z Initial Sensor	00	+1
PF Initial Sensor	00	+1
TH Initial Sensor	00	+1
TC Initial Sensor	00	+1
AT Initial Sensor	00	+1
LM Initial Sensor	00	+1

Close

< 1 / 2 >



Clear

Test Mode Explanation

#30 and #31. Not used.

#32. AD

This mode displays:
speed volume and A/D value of the foot controller.
target and actual rotation speed of the main motor.

#33 to #35. Not used.

#36. Side feed adjustment (Used in Adjustment “4-32”)

This mode operates test pattern stitching. Correction value for the feeding is set based on the stitching result.

#37. LED pointer adjustment (Used in Adjustment “4-39”)

This mode is used for setting correction value for height of the embroidery foot with LED pointer .

#38. Not used.

#39. Dual feed check (Used in Adjustment “4-40”)

This mode is used for:
operating 100 forward stitches and 100 backward stitches.
setting correction value for dual feeding volume.

#40 and #41. Not used.

#42. Embroidery position adjust (Used in Adjustment “4-43”)

This mode is used for setting correction value for initial position of embroidery.

#43. Touch panel check

This mode displays distance between the center of four "+" symbols and the position you touched with stylus on the screen.

- When the distance of both X and Y or either of them is shorter than ± 10 dots, "OK" appears on the screen.
- When the distance of both X and Y or either of them is longer than ± 10 dots, "NG" appears on the screen.

Test Mode Explanation

#44. Parameter default check

When all the displayed parameter is default, "OK" is displayed.

When there is any parameter that is not default, "NG" will be displayed and the parameter will be highlighted.

[CLEAR]: All the displayed parameter will be changed to default value.

At the same time, all the stored sewing pattern in flash memory of the machine will be cleared.

#45. Not used.

#46. Error list display

This mode stores up to 30 latest error messages displayed during the machine was in operation.

When the  button is pressed, the previous error message appears.

When the  button is pressed, the latest error message appears.

*Key point

- The list number of the latest error message is "1".

  : You can change the language of the error message by pressing the  button or  button.

*Key point

- The function to change the language will be effective until the machine is turned off.

[COUNT]: Counts number of times an error found in stored 10 errors if applicable.

*Key point

- When the error was found only once, "1" is displayed.

[Maintenance Stitch Count]: Displays the total stitch count at the time of previous maintenance.

[Error Stitch Count]: Displays the total stitch count at the time of current error appeared.



Test Mode Explanation

#52. LED / Speaker check

This mode checks the operation of LED and internal speaker.

[LED 1 Check]: Turns the LED light on the wiring route 1 ON.

[LED 2 Check]: Turns the LED light on the wiring route 2 ON.

[Speaker Check]: Emits test sound from the internal speaker at the front of the machine.

[Sound Number]: Selects and plays the internal sound.

[Volume]: Changes the volume of the internal sound.

* It is effective until the power is turned OFF.

[Tension Default Check]: Returns the thread tension to the default setting.

* Used only in production line.

#53 and #54. Not used.

52

Led / Speaker Check

LED 1 Check

1

5

LED 2 Check

1

5

Speaker Check

1

5

Sound Test

Sound Number

0

Volume

3

-

+

Tension Default Check

Set

Close

Test Mode Explanation

#55. USB host check

This mode checks the transmission status between the machine and other external medias through USB host port.

[USB HOST 1]: Insert the USB flash memory to the upper USB port on the right side of the machine and press .

- When it succeeds to access USB flash memory ? "OK" appears.
- When it fails to access USB flash memory ? "NG" appears.

[USB HOST 2]: Insert the USB flash memory to the lower USB port on the right side of the machine and press .

- When it succeeds to access USB flash memory ? "OK" appears.
- When it fails to access USB flash memory ? "NG" appears.

#56. BWD check

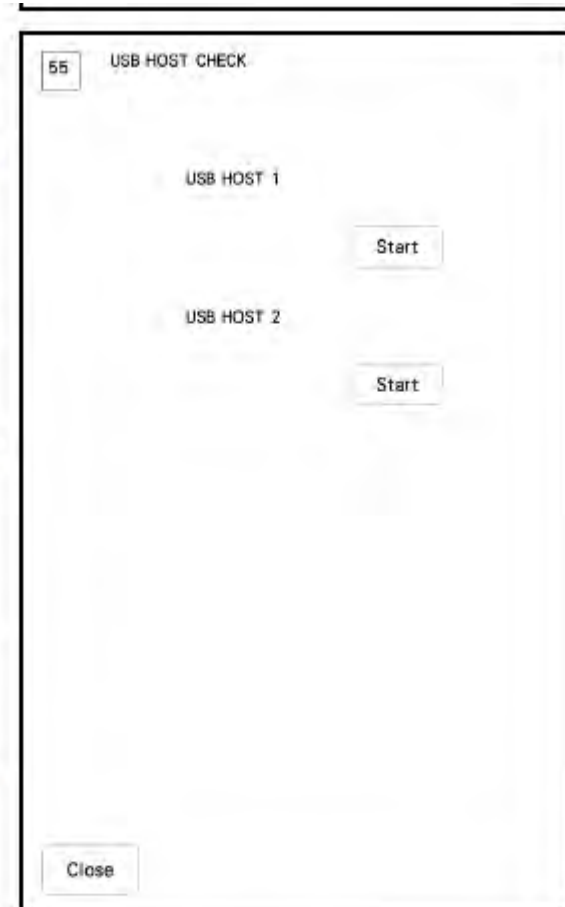
This mode is used for checking operation of the bobbin winder.

#57 to #59. Not used.

#60. EEPROM USB write

Read or write data between EEPROM and USB flash drive.

#61 to #72. Not used.



When the operating time of the machine reaches 500 hours, the maintenance message (MSG) will be displayed on the LCD. And then do the maintenance according to the instructions of 6-4 to 6-7, and finally reset the hour counter according to the following instructions.

***Key point**

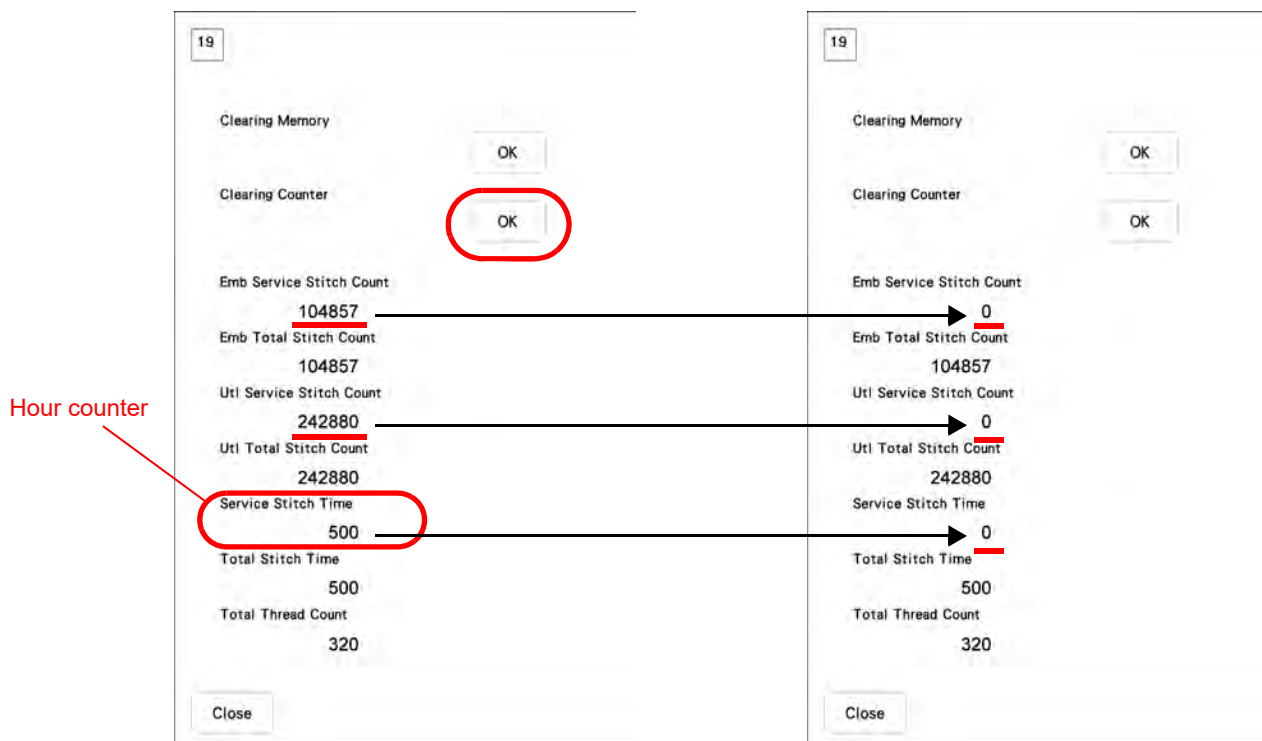
- The MSG (shown right) will appear on the LCD when the machine is turned on after an hour counter reaches 500 hours.
- The MSG appears up to 3 times, and will not come up when the machine is turned on from the 4th time.
- If an hour counter is still not reset (any maintenance has not been done) at 500 hours, the MSG will come up again at 600 hours and 700 hours (also up to 3 times each).
- If an hour counter reaches 1000 hours, the MSG will appear on the LCD every time when the machine is turned on until the hour counter is reset.



How to reset counter

1. Start the test mode, and then select the #19 (Clearing memory/Clearing counter mode).
2. Reset the “Emb Service Stitch Count”, “Utl Service Stitch Count” and “Service Stitch Time” by pressing the

button next to the “Clearing Counter” on the screen.



[Standard]

Timing belt slacks by 2 ± 0.5 mm (1.5 to 2.5 mm) when pushing it at the middle of the timing pulley and tension pulley with a force of 1.96N (200gf).

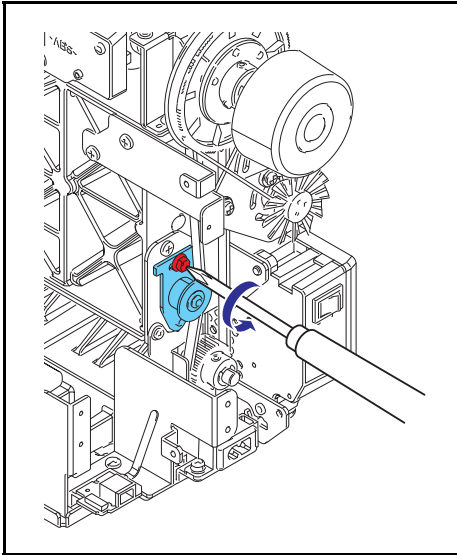
[Adjustment procedures]

1. Remove the front cover assy and belt cover assy.
2. Remove the main PCB assy.
3. Loosen the screw on the tension pulley assy.
4. Move the tension pulley assy to adjust the belt tension.
5. Tighten the screw on the tension pulley assy.

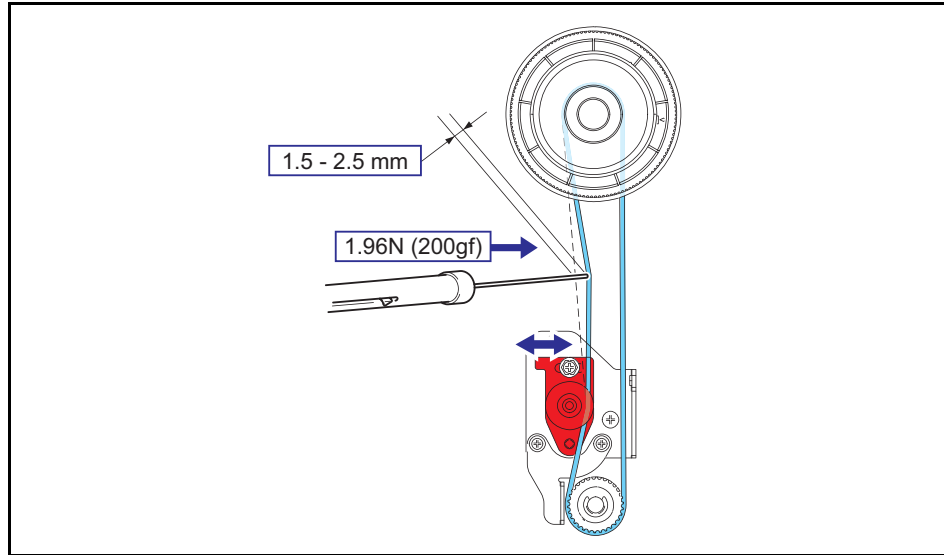
XC2277001

Push pull gauge (5N)

3.



4.

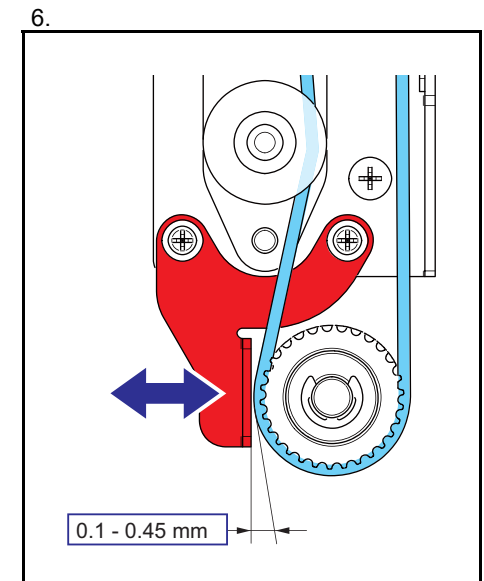
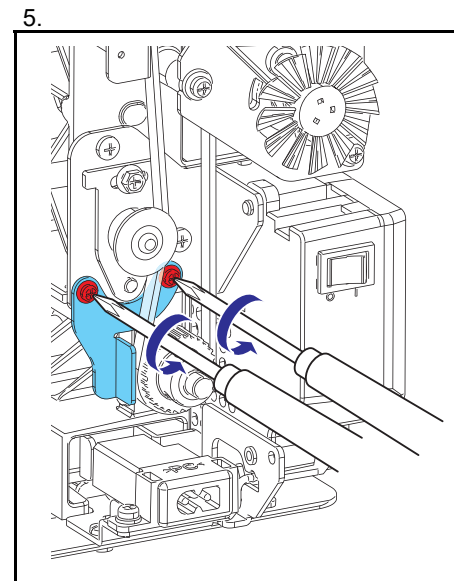
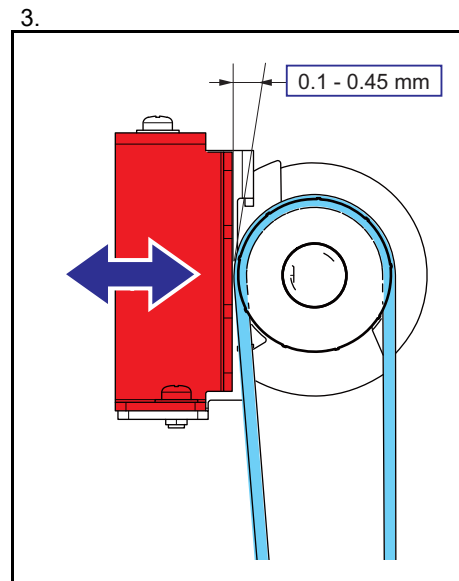
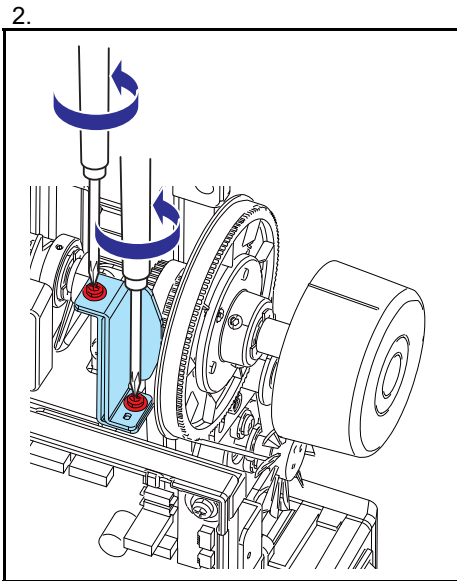


[Standard]

Clearance between the timing belt and the adjusting plate of the belt support upper assy or belt support lower is 0.1 to 0.45 mm.

[Adjustment procedures]

1. Remove the front cover assy and belt cover assy.
2. Loosen the two screws on the belt support upper assy.
3. Move the adjusting plate of the belt support upper assy to adjust the clearance between the belt and adjusting plate.
4. Tighten the two screws on the belt support upper assy.
5. Loosen the two screws on the belt support lower.
6. Move the belt support upper lower to adjust the clearance between the belt and belt support lower.
7. Tighten the two screws on the belt support lower.



[Standard]

Motor belt slacks by 2.5 ± 1 mm (1.5 to 3.5 mm) when pushing it at the middle of the timing pulley and motor T-pulley with a force of 0.98N (100gf).

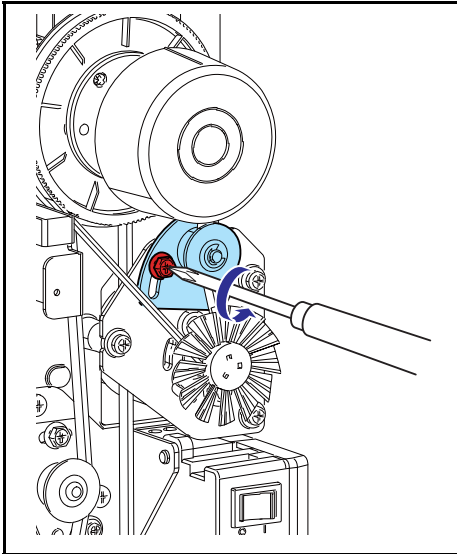
[Adjustment procedures]

1. Remove the front cover assy and belt cover assy.
2. Replace the main PCB assy.
3. Loosen the screw on the belt tension holder assy.
4. Move the belt tension holder assy to adjust the belt tension.
5. Tighten the screw on the belt tension holder assy.

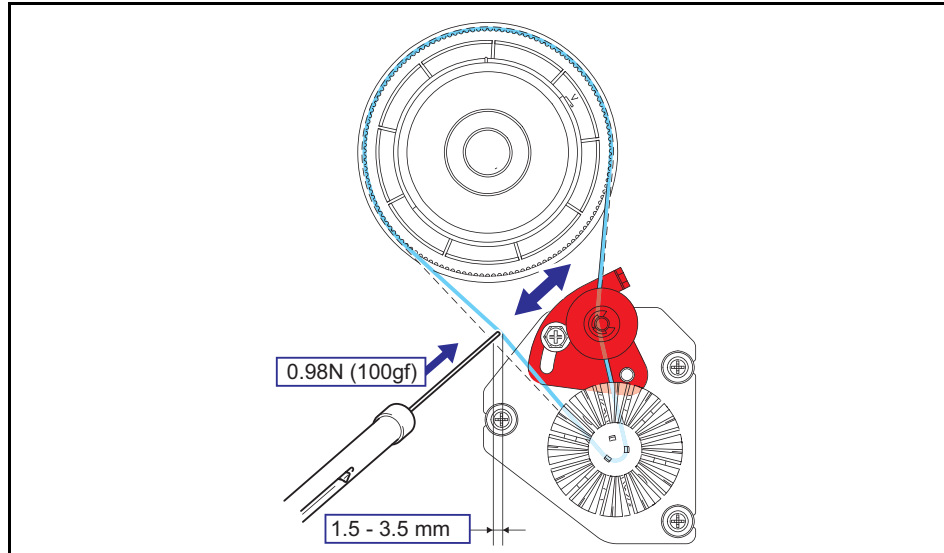
XC2277001

Push pull gauge (5N)

3.



4.



[Standard]

Thread tension is 0.1 to 0.12N (10 to 12gf) when the schappe spun thread #60 is slowly pulled through the standard inner rotary hook assy*.

* Standard inner rotary hook assy : Inner rotary hook assy for utility stitching with the green paint on the tension adjusting screw head.

[Adjustment procedures]

1. Remove the needle plate assy and inner rotary hook assy.
2. Set the bobbin wound up with schappe spun thread #60 on the inner rotary hook assy and put the thread through the thread tension plate groove.

***Key point**

- Push the thread into the back of the inner rotary hook assy groove.

3. Pull the thread slowly with the tension gauge and check the tension.
4. Turn the thread tension screw on the inner rotary hook assy to adjust the thread tension.

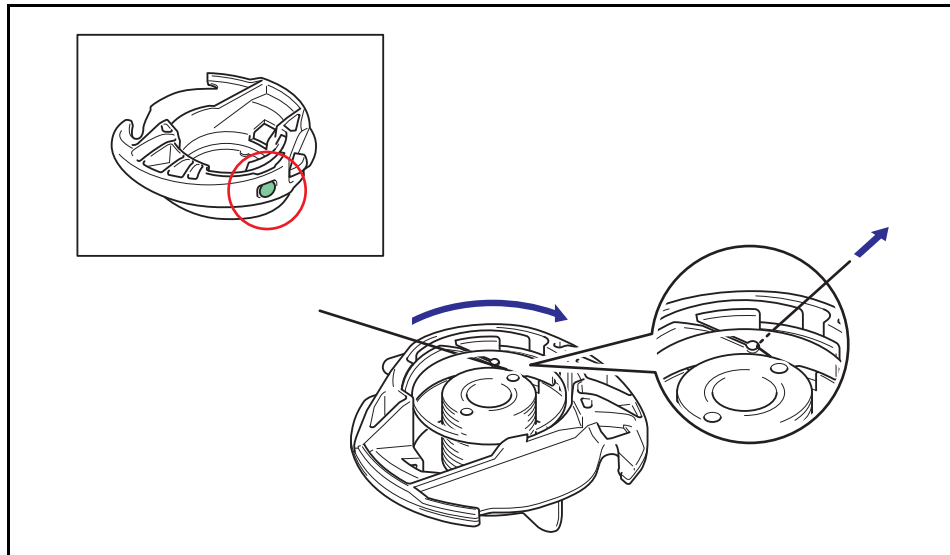
***Key point**

- Apply a small amount of thread locker on the thread tension screw head after the adjustment.

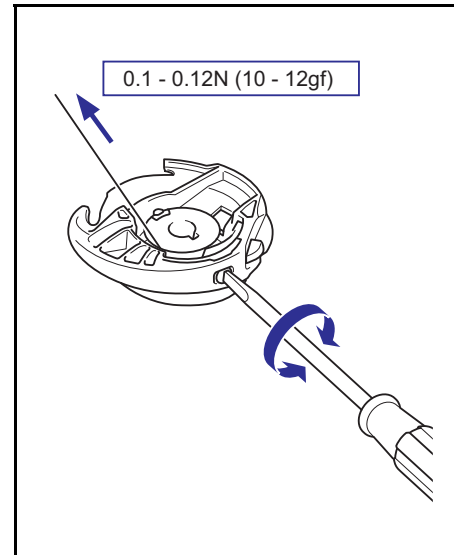
XA9153001

Tension gauge 30 (0.3N)

2.



4.



[Standard]

Thread tension is 0.06 to 0.09N (6 to 9gf) when the schappe spun thread #60 is put through under the tension plate and pulled slowly.

[Adjustment procedures]

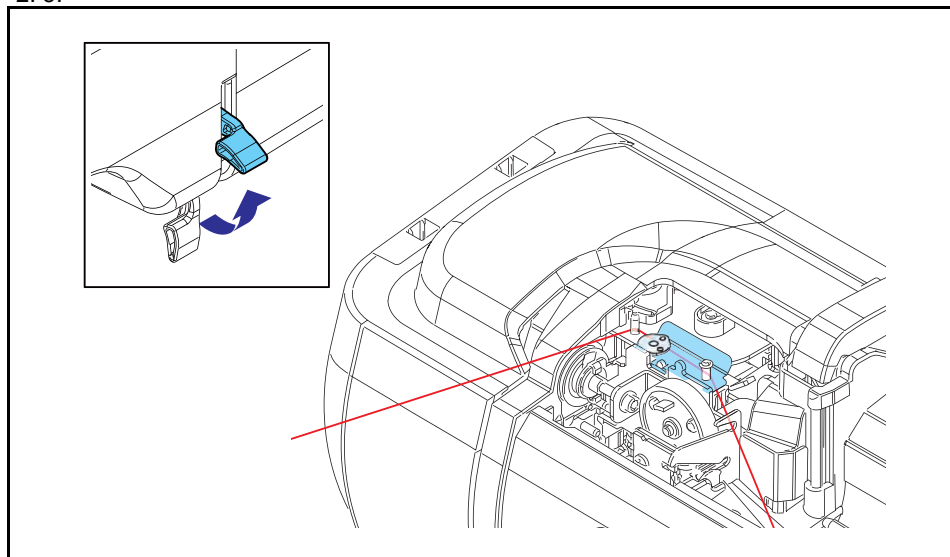
1. Remove the front thread guard cover.
2. Lift the presser foot lever.
3. Put the schappe spun thread #60 through under the tension plate.
4. Lower the presser foot lever.
5. Pull the thread slowly with the tension gauge and check the tension.
6. Adjust the thread tension by turning the screw on the tension presser plate assy.

XA9153001

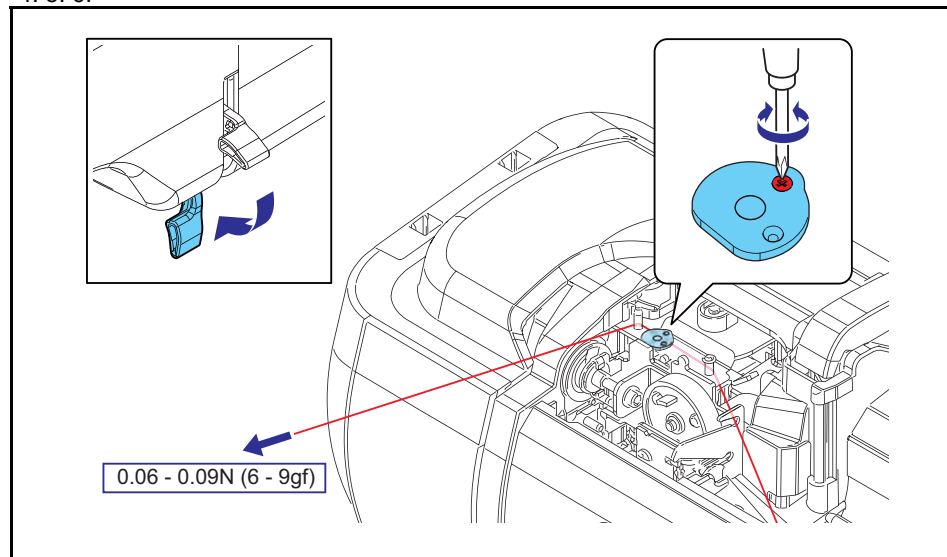
Tension gauge 30 (0.3N)



2. 3.



4. 5. 6.



[Standard]

Thread tension is 0.34 to 0.44N (35 to 45gf) when the schappe spun thread #60 is put through the upper thread guide and pulled slowly.

[Adjustment procedures]

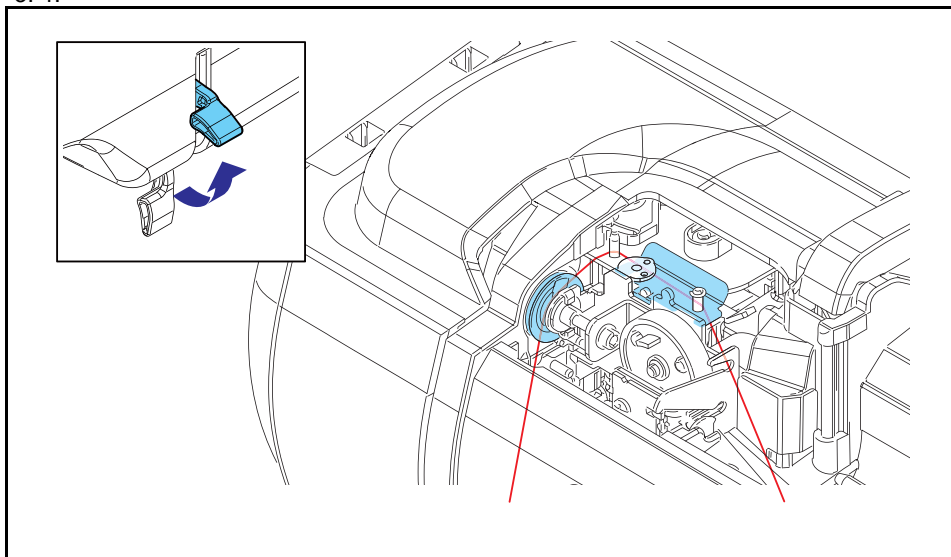
1. Remove the front thread guard cover.
2. Start the test mode.
3. Lift the presser foot lever.
4. Put the schappe spun thread #60 through the upper thread guide.
5. Lower the presser foot lever.
6. Pull the thread slowly with the tension gauge and check the tension.
7. Adjust the thread tension by turning the tension adjusting screw.

XA9154001

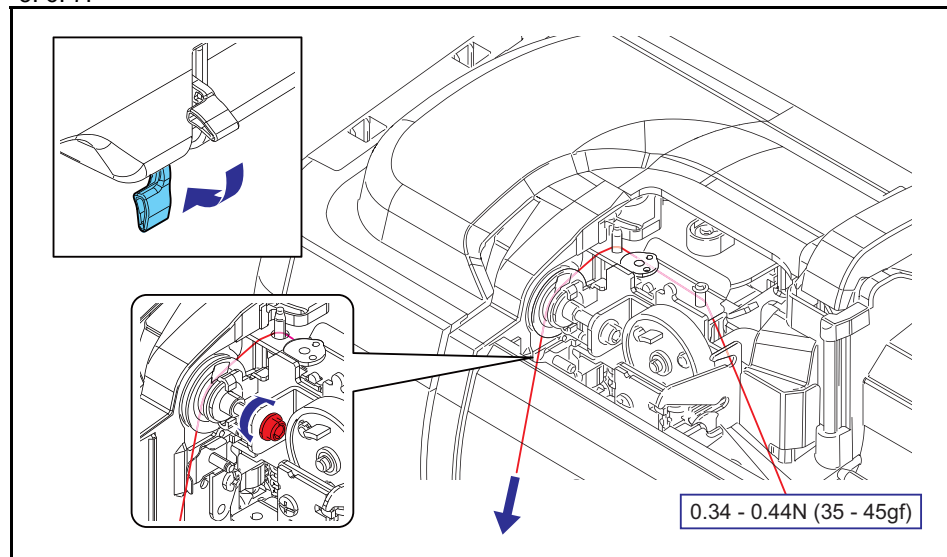
Tension gauge 50 (0.5N)



3. 4.



5. 6. 7.



This adjustment must be operated when:

- Thread take up spring is replaced or reassembled.

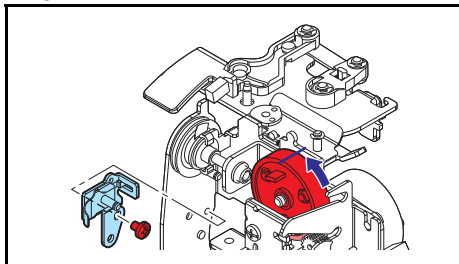
[Standard]

Thread tension is 0.15 to 0.19N (15 to 19gf) when the thread take up spring is lifted to the thread guide wire position.

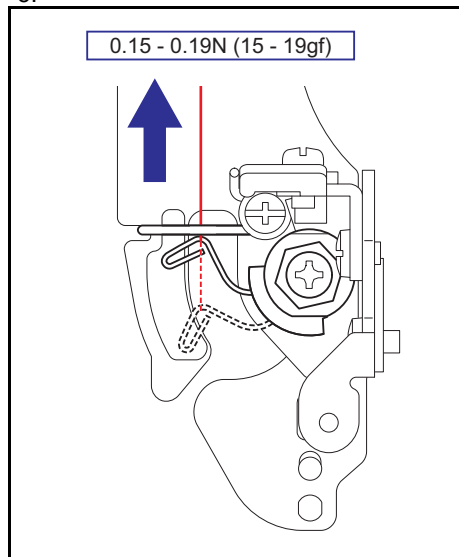
[Adjustment procedures]

1. Remove the thread unit.
2. Remove the plate assembly from the thread unit.
3. Turn the thread tension gear cover anti-clockwise until it stops. (This makes a clearance between tension disc A and B.)
4. Tie the thread onto the thread take up spring and put it through the thread guide wire.
5. Lift the thread take up spring to the thread guide wire position and check the thread tension.

2. 3.



5.



<To next page>

<From previous page>

6. Loosen the screw on the thread catching case B.
7. Turn the thread catching case A clockwise until it stops.
8. While holding the thread catching case A, turn the thread catching case B with the hex wrench anti-clockwise until it stops.
9. While holding the thread catching case A, turn the thread catching case B with the hex wrench clockwise to adjust the thread tension.

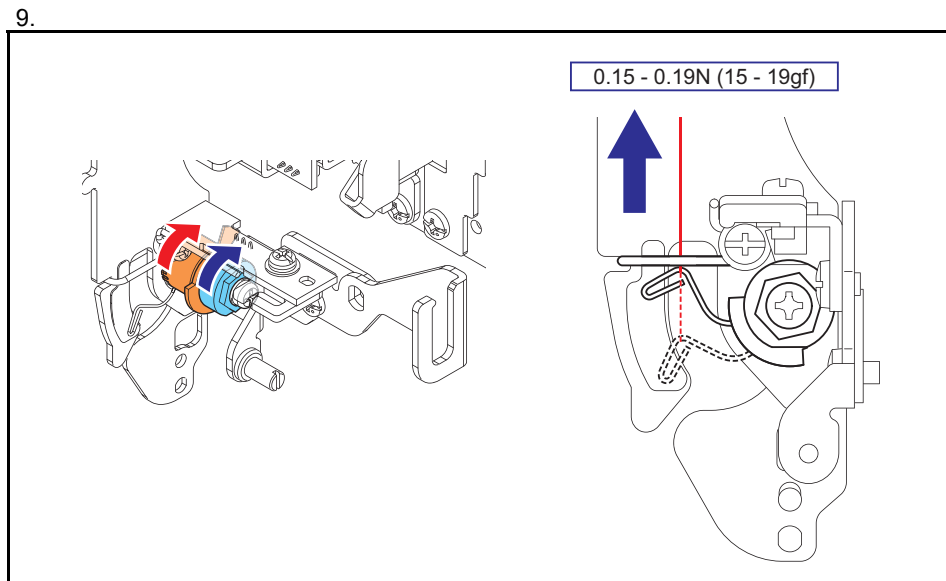
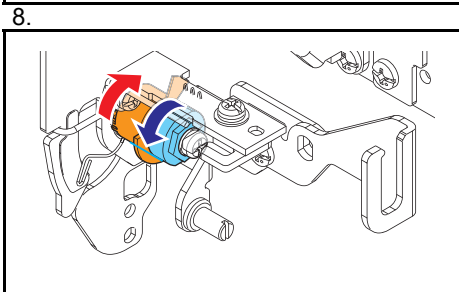
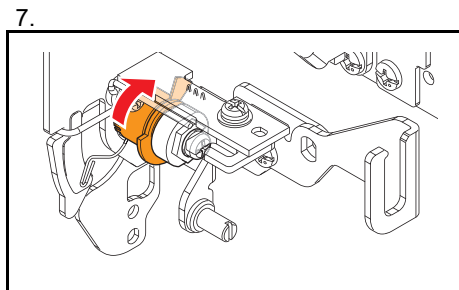
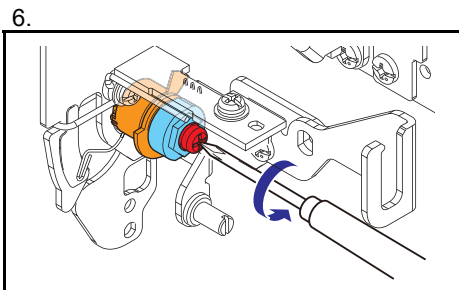
***Key point**

- If the thread tension is smaller than the standard, try again from the procedure 7.

10. Tighten the screw on the thread catching case B.

XA9153001

Tension gauge 30 (0.3N)



[Standard]

Buzzing sound stops when the pulley base line comes on the top in test mode #22.

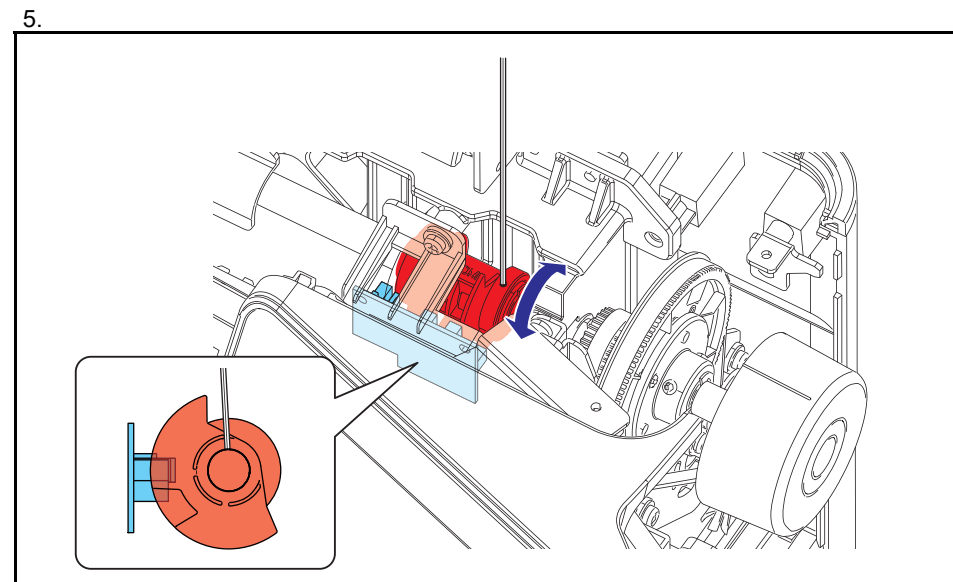
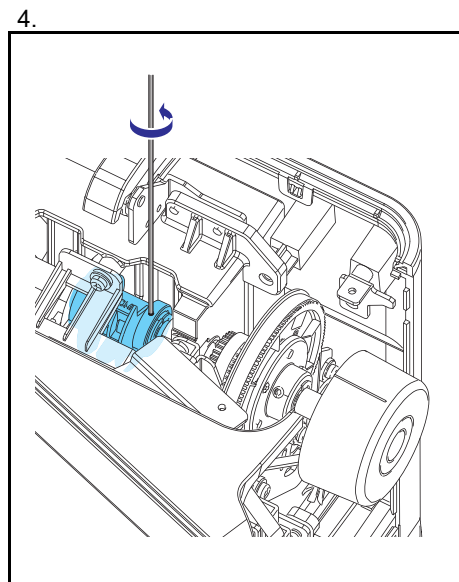
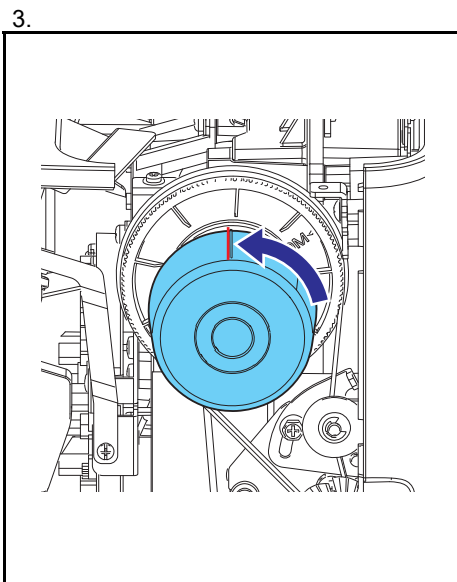
[Adjustment procedures]

1. Remove the bobbin winder unit cover assy.
2. Start the test mode and select #22 (NP sensor).
3. Turn the pulley so that the pulley base line comes on the top.

***Key point**

- Turn the pulley anti-clockwise.

4. Loosen the screw on the rotation shutter.
5. Move the rotation shutter to adjust the angle of the rotation shutter.
6. Tighten the screw on the rotation shutter.



This adjustment must be operated when:

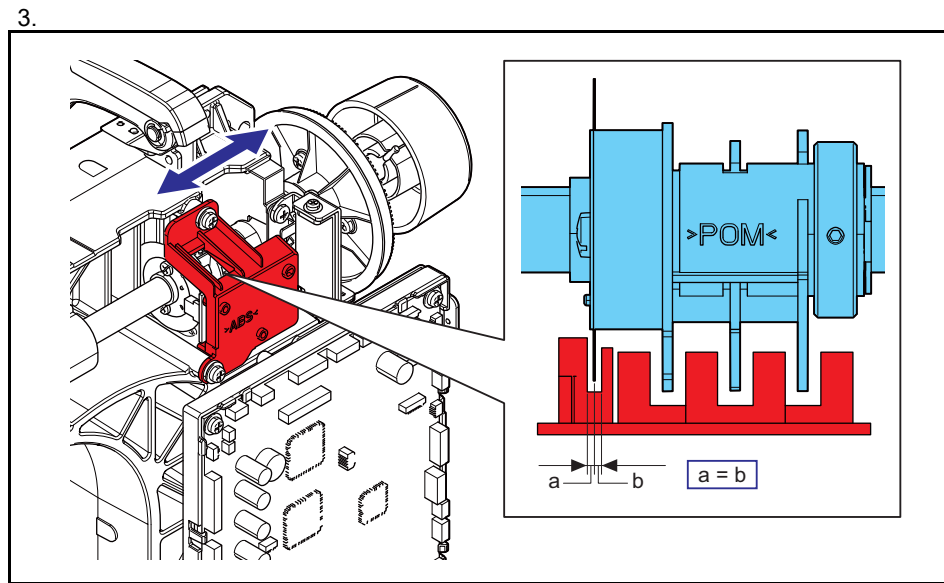
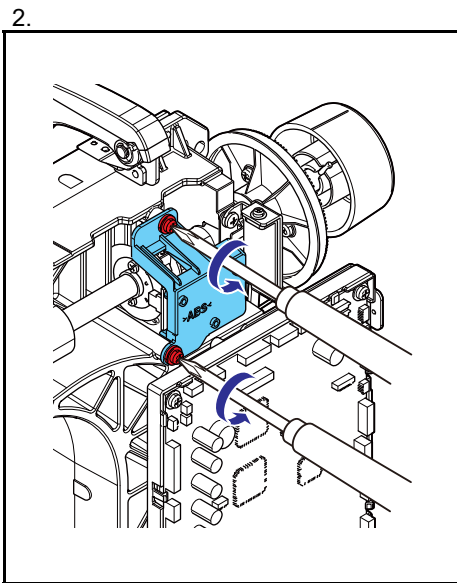
- NP PCB holder is replaced or reassembled.

[Standard]

The sensor of the NP PCB assy is not contacted by the speed shutter of the upper shaft assy.

[Adjustment procedures]

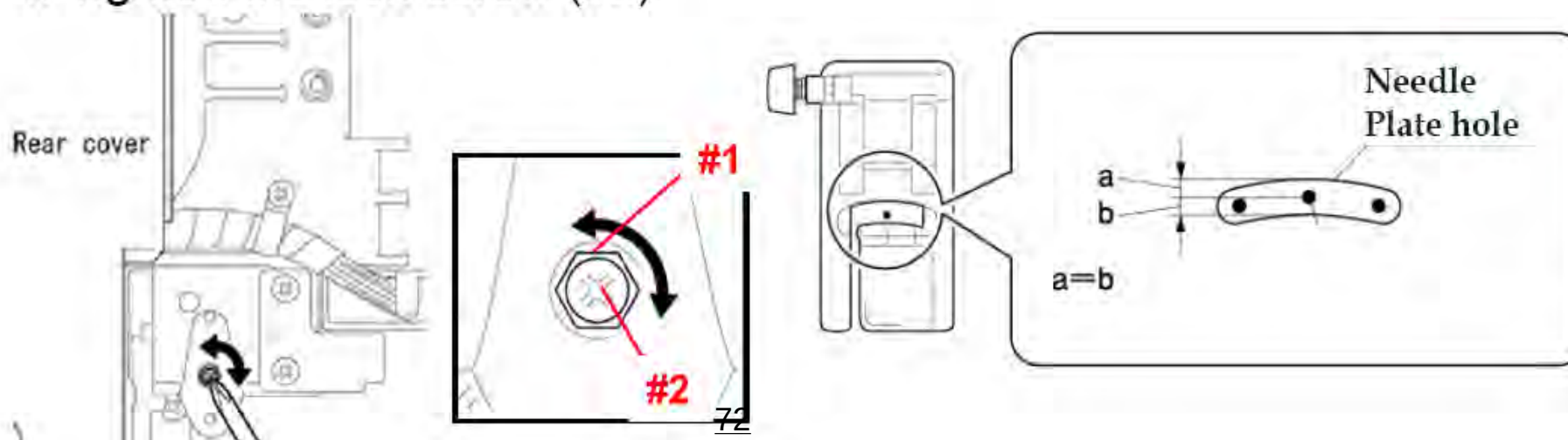
1. Remove the front cover assy and bobbin winder unit cover assy.
2. Loosen the two screws on the NP PCB holder.
3. Move the NP PCB holder to adjust the NP PCB assy position.
4. Tighten the two screws on the NP PCB holder.



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. Make sure the hole in the Presser Foot aligns with the hole in the Needle Plate.
3. Turn the nut (#1) little by little to adjust the Front/ Back presser foot position.
4. Tighten the lock screw (#2).



[Standard]

Needle point is dropped in the right half range of the V-groove on the needle plate assy hole when the needle bar is at the left baseline.

[Adjustment procedures]

1. Remove the face plate assy and presser foot.
 2. Attach the needle (size 75/11).
 3. Start the test mode and select #04 (3-point needle drop).
 4. Press the key on the screen to move the needle bar to the left baseline.
 5. Turn the pulley to put the needle point into the needle plate assy hole.
 6. Loosen the screw on the zigzag adjusting nut.
 7. Turn the zigzag adjusting nut to adjust the needle point position.
- *Key point**
- Adjust it so that the side of the zigzag adjusting nut with more eccentricity comes to the top.
8. Tighten the screw on the zigzag adjusting nut.

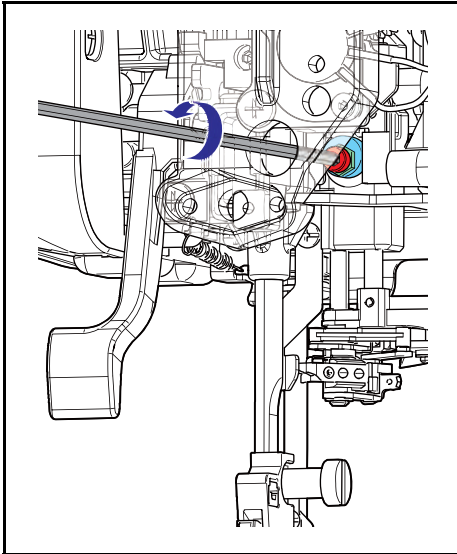
***Key point**

- Hold the zigzag adjusting nut firmly when tightening the screw on it.

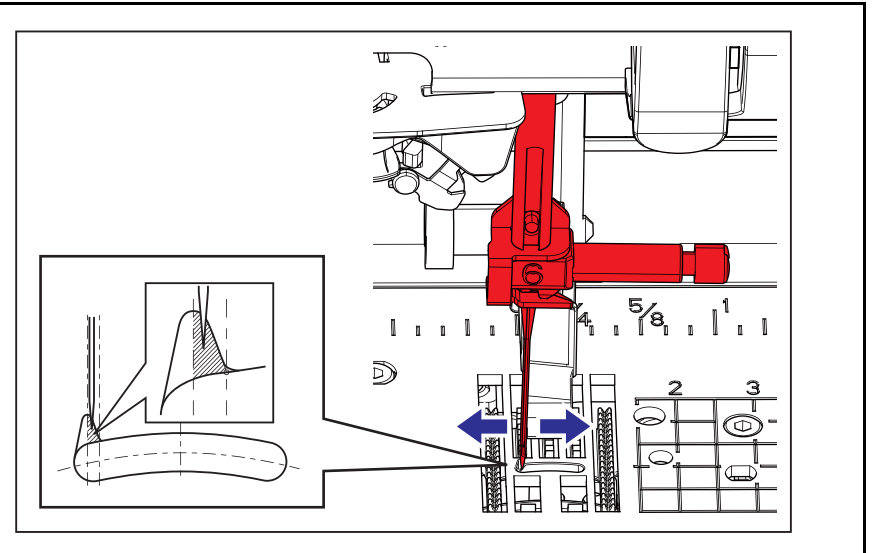
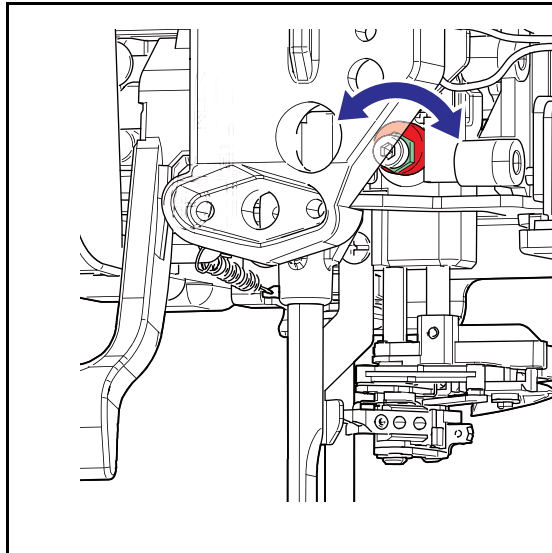
XE2395001

Box screw driver 6

6.



7.



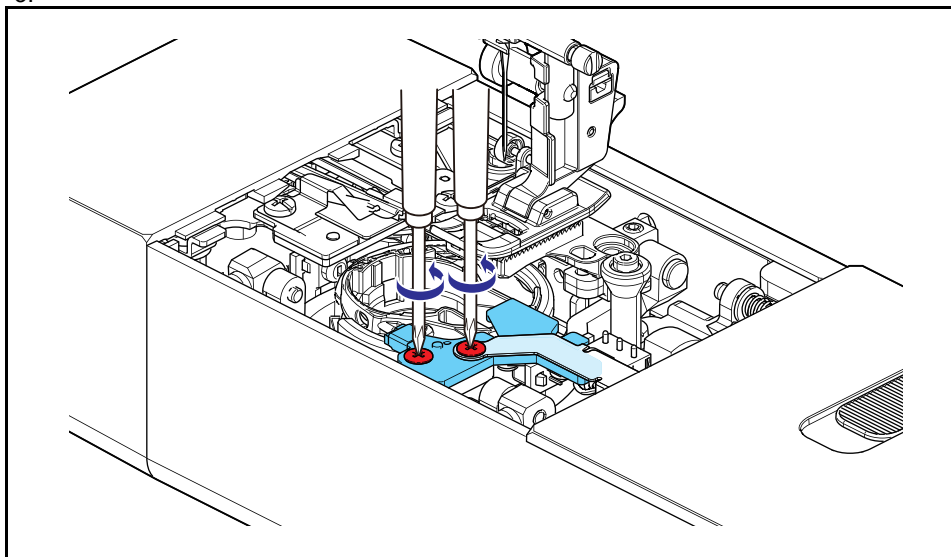
[Standard]

Spring plate on the inner rotary hook bracket assy and projection part of the inner rotary hook assy are overlapped for 1.7 ± 0.1 mm (1.6 to 1.8 mm).

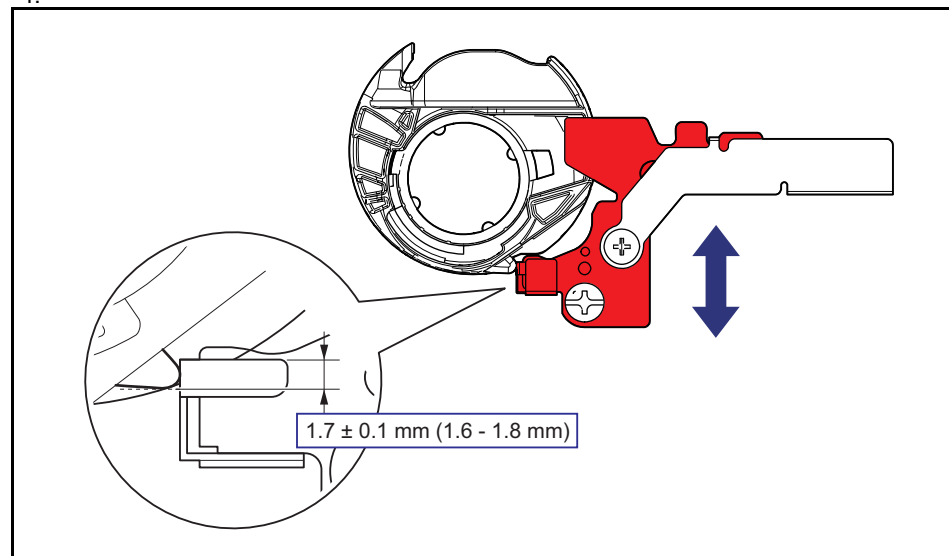
[Adjustment procedures]

1. Remove the needle plate assy.
2. Attach the inner rotary hook assy.
3. Loosen the two screws on the inner rotary hook bracket assy.
4. Move the inner rotary hook bracket assy to adjust the position of the spring plate.
5. Tighten the two screws on the inner rotary hook bracket assy.

3.

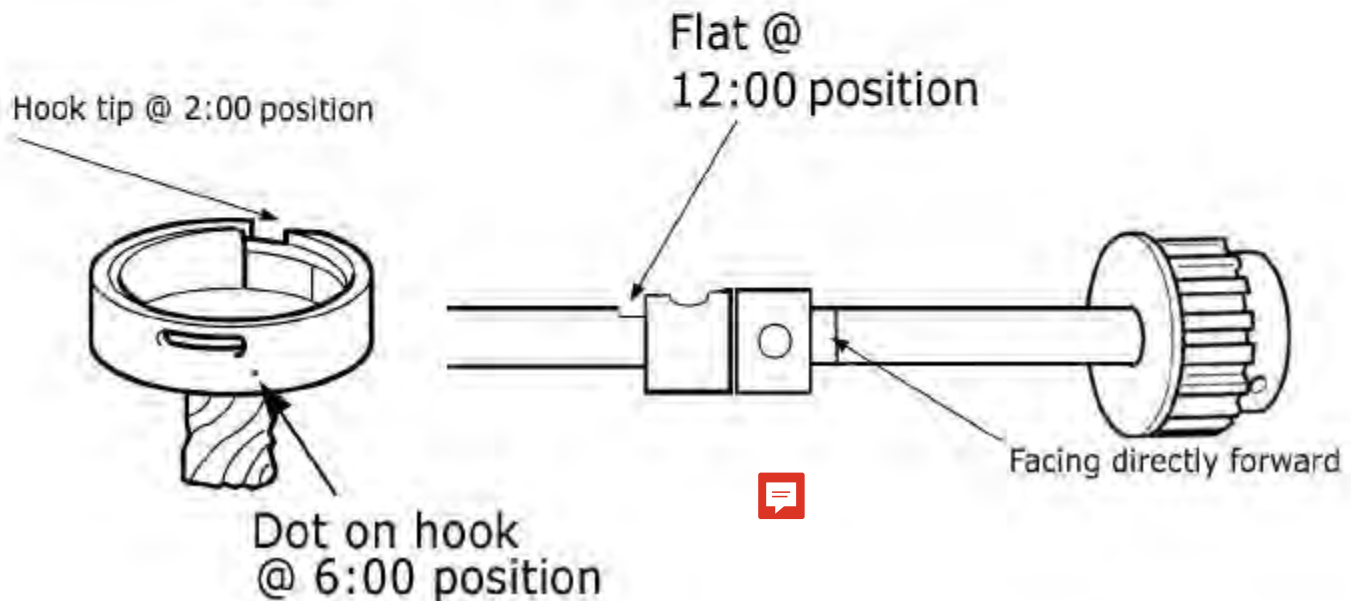
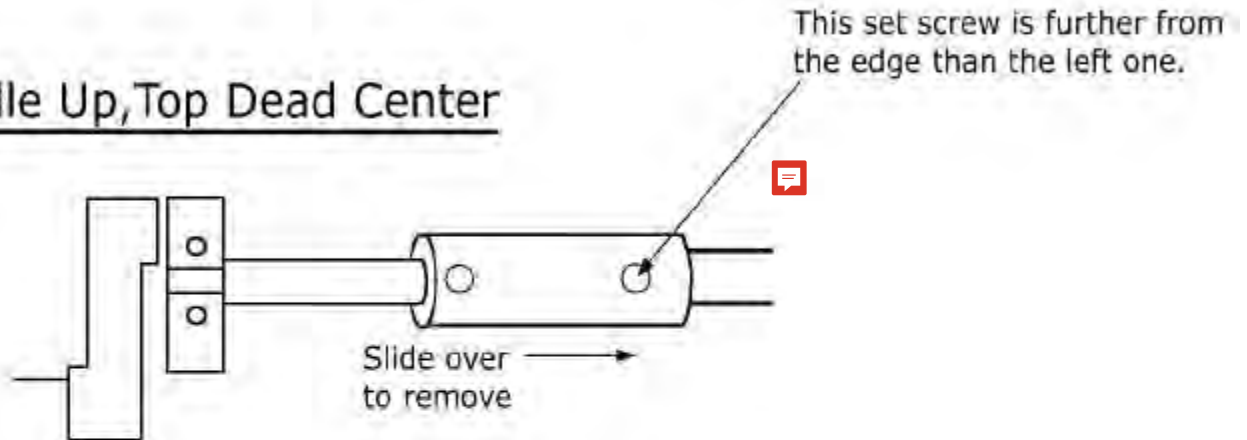


4.



Timing Marks

Needle Up, Top Dead Center



[Standard]

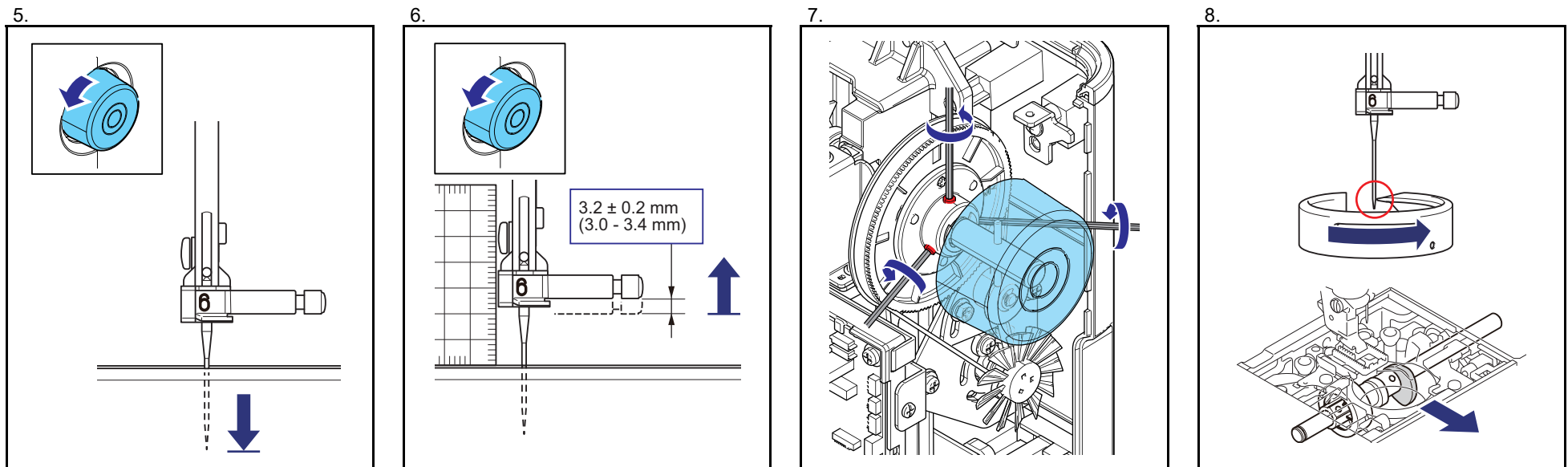
Tip of the outer rotary hook point is aligned with right end of the needle blade when the needle bar is at the left baseline and lifted by 3.2 ± 0.2 mm (3.0 to 3.4 mm) from the bottom.

[Adjustment procedures]

1. Remove the exterior covers, presser foot, needle plate assy, and inner rotary hook assy.
2. Attach the needle (size 75/11).
3. Start the test mode and select #04 (3-point needle drop).
4. Press the key on the screen to move the needle bar to the left baseline.
5. Turn the pulley to lower the needle bar to the bottom.
6. Turn the pulley anti-clockwise to lift the needle bar by 3.2 mm from the bottom.
7. Loosen the three screws on the timing pulley.
8. Turn the outer rotary hook assy by hand to align the tip of the outer rotary hook point with the right end of the needle blade.

***Key point**

- Turn the outer rotary hook assy anti-clockwise.
 - Adjust it so that the feed cam of the lower shaft B assy with more eccentricity is at the front side.
9. Tighten the three screws on the timing pulley.



[Standard]

Upper end of the needle eye is at 1.2 ± 0.2 mm (1 to 1.4 mm) above the bottom of the outer rotary hook point when the needle bar is at the left baseline and tip of the outer rotary hook point is aligned with the right end of the needle blade.

[Adjustment procedures]

1. Remove the face plate assy, presser foot, needle plate assy, and inner rotary hook assy.
2. Attach the needle (size 75/11).
3. Start the test mode and select #04 (3-point needle drop).
4. Press the key on the screen to move the needle bar to the left baseline.
5. Turn the pulley to align the tip of the outer rotary hook point with the right end of the needle blade.

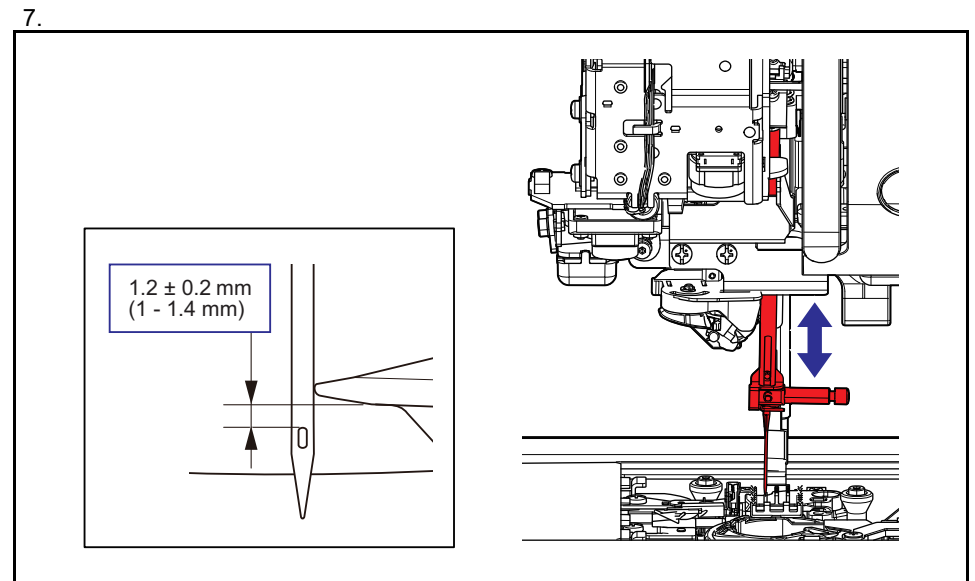
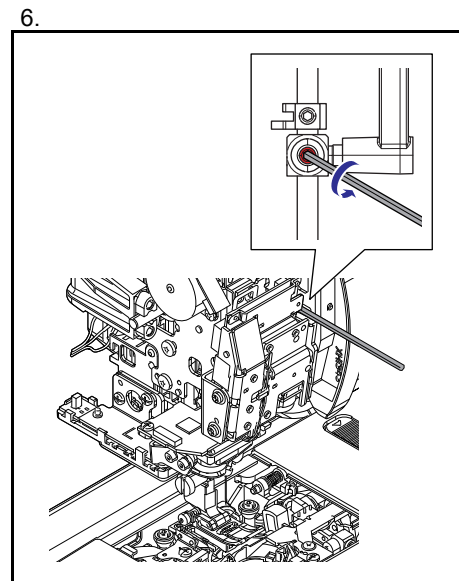
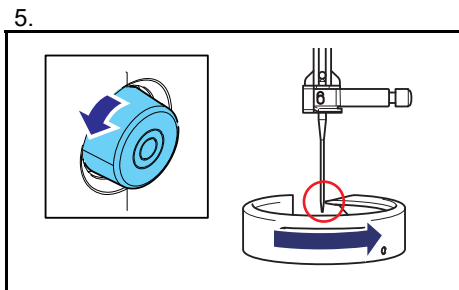
***Key point**

- Turn the pulley anti-clockwise.

6. Loosen the screw on the needle bar block.
7. Move the Needle bar to adjust the upper end position of the needle eye.
8. Tighten the screw on the needle bar block.

Adjust the item below after operating this adjustment:

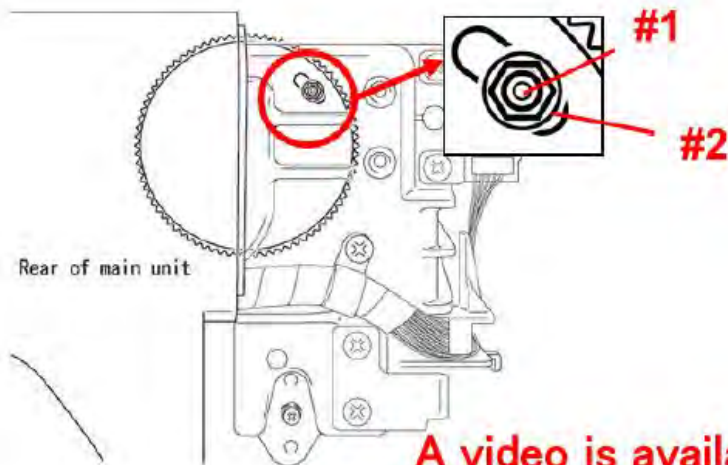
[4-17 Needle threader](#)



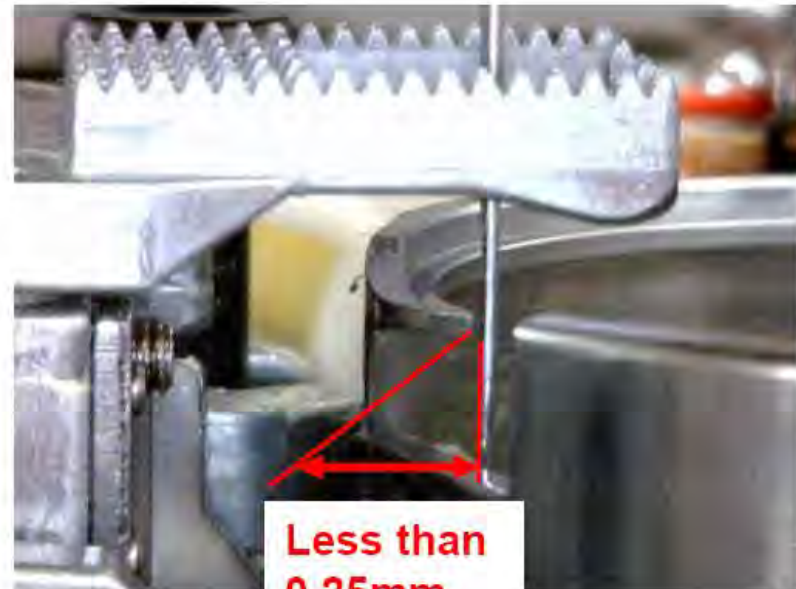
Clearance between Needle & Rotary Hook Point

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.



**A video is available on the
dealer web-site**

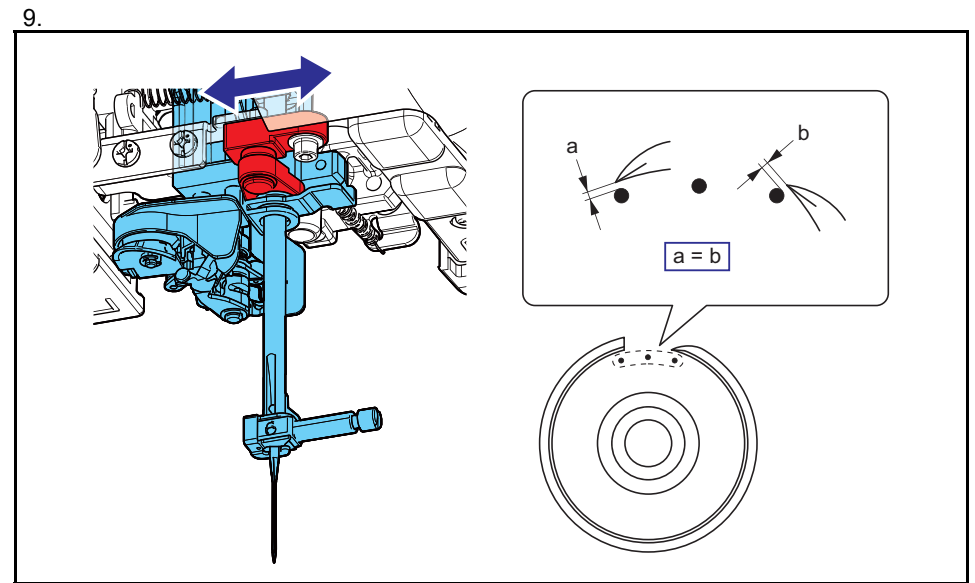
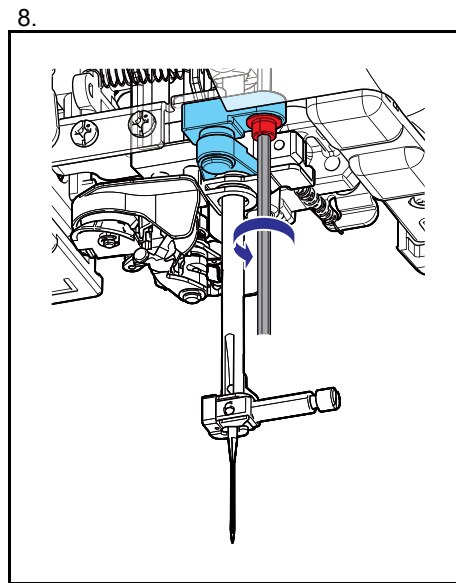
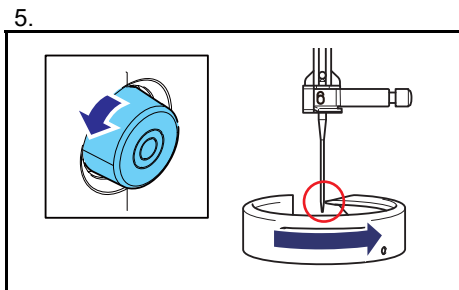


[Standard]

Clearance between the outer rotary hook point and needle blade is same when the needle bar is at the left or right baseline.

[Adjustment procedures]

1. Remove the face plate assy, presser foot, needle plate assy, and inner rotary hook assy.
2. Attach the needle (size 75/11).
3. Start the test mode and select #04 (3-point needle drop).
4. Press the key on the screen to move the needle bar to the left baseline.
5. Turn the pulley to align the outer rotary hook point with the back of the needle.
6. Check the clearance between the outer rotary hook point and needle blade.
7. Move the needle bar to the right baseline and repeat the procedure 6.
8. Loosen the screw on the needle holder block assy.
9. Move the needle holder block assy to Adjust the clearance between the outer rotary hook point and needle blade.
10. Tighten the screw on the needle holder block assy.

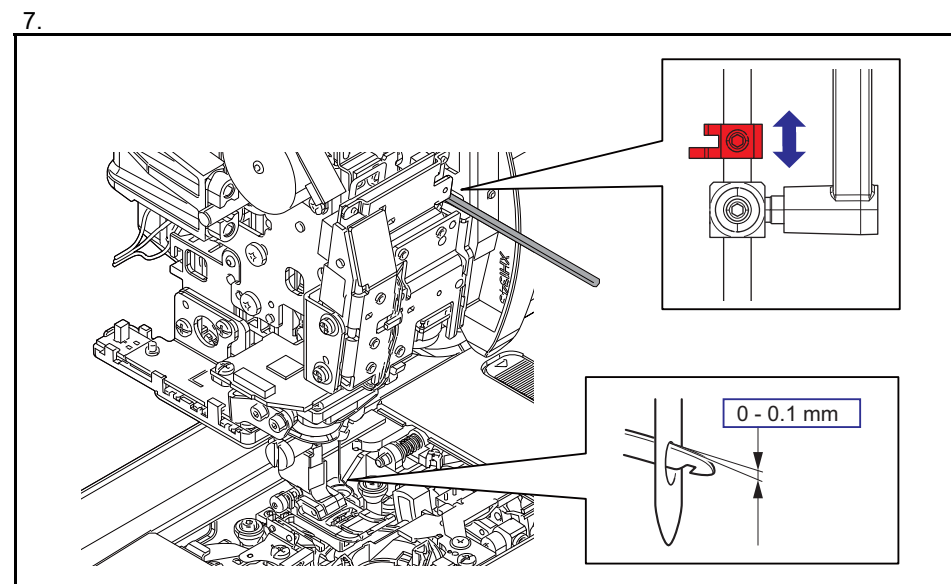
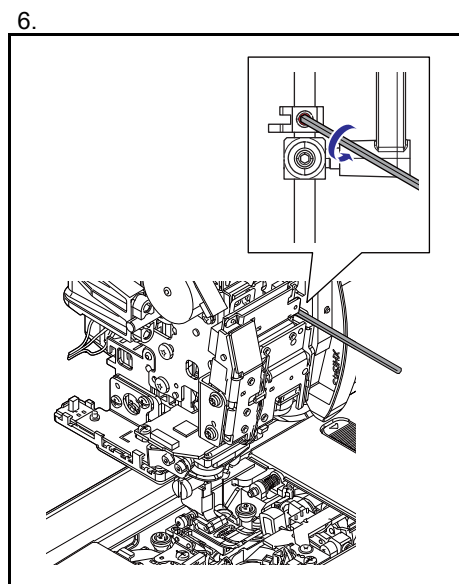
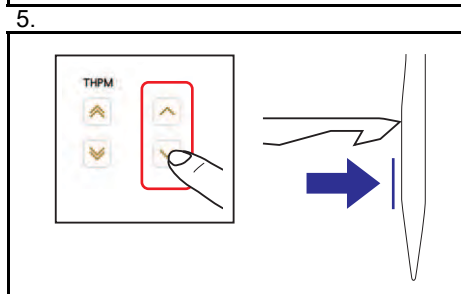
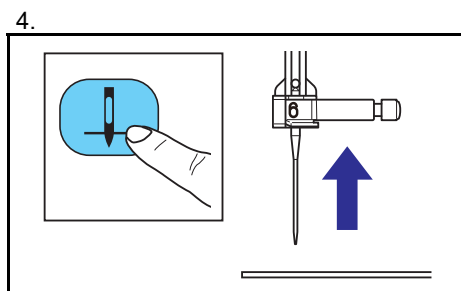


[Standard]

Clearance between the upper ends of the threader hook and needle eye is 0 to 0.1 mm when the threader hook is through the needle eye.

[Adjustment procedures]

1. Remove the face plate assy.
2. Attach the needle (size 75/11).
3. Start the test mode and select #28 (Threading check).
4. Lift the needle bar by pressing the needle position button.
5. Move the threader hook to the front of the needle eye by pressing the [THPM] key.
6. Loosen the screw on the needle thread block.
7. Move the needle thread block to adjust the clearance between the upper ends of the threader hook and needle eye.
8. Tighten the screw on the needle thread block.
9. Return the threader hook to the original position by pressing the [THPM] key.

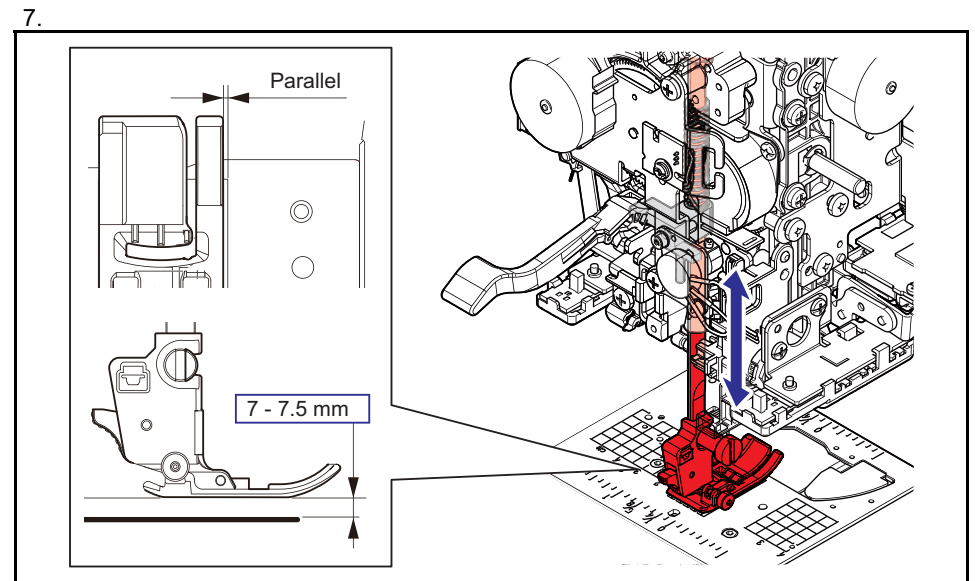
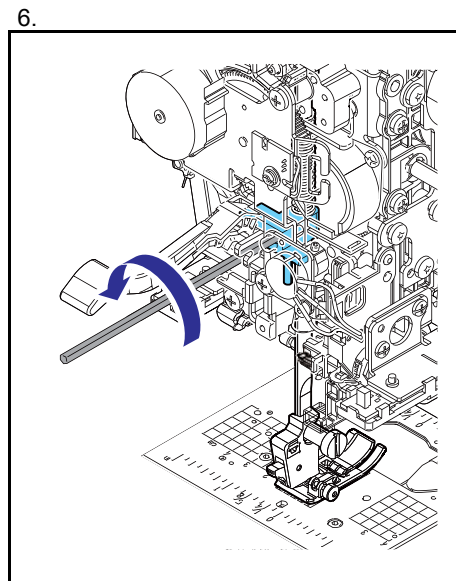
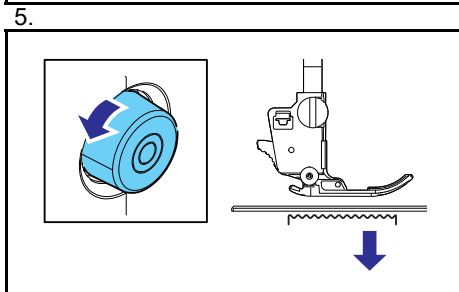
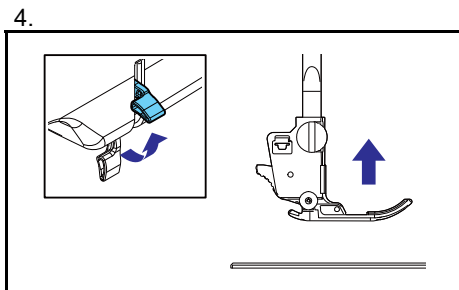


[Standard]

- Clearance between the bottom surface of the presser foot and top surface of the needle plate assy is 7 to 7.5 mm when the presser foot is lifted.
- Make sure that the presser foot is in parallel with the feed dog hole on the needle plate assy.

[Adjustment procedures]

1. Remove the face plate assy.
2. Attach the zigzag foot "J".
3. Start the test mode.
4. Lift the presser foot lever.
5. Turn the pulley to move the feed dog below the top surface of the needle plate assy.
6. Loosen the screw on the presser bar clamp.
7. Move the presser bar to adjust the clearance between the bottom surface of the presser foot and top surface of the needle plate assy.
8. Tighten the screw on the presser bar clamp.



[Standard]

Height of the presser foot is set to 0 mm and 3 mm in the test mode #02.

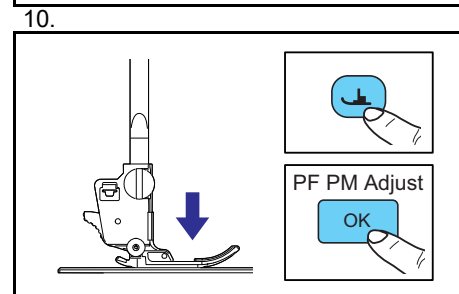
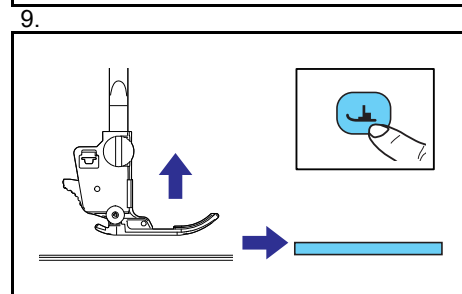
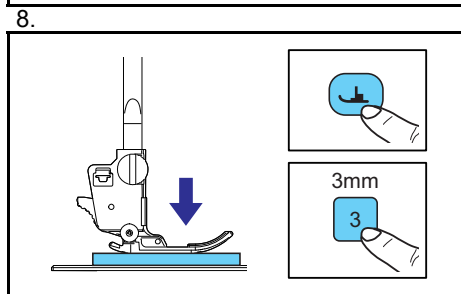
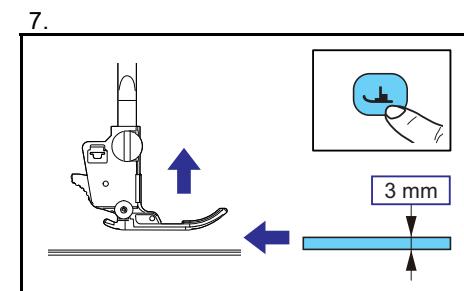
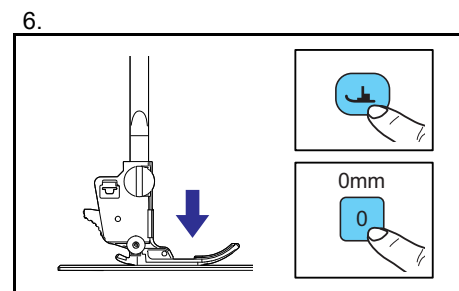
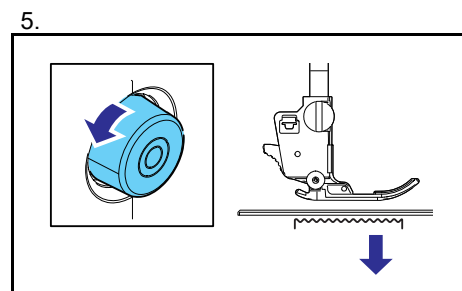
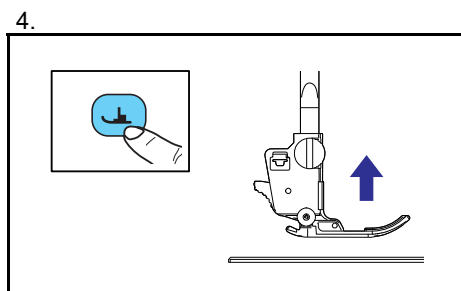
[Adjustment procedures]

1. Remove the needle.
2. Attach the zigzag foot "J".
3. Start the test mode and select #02 (Fabric thickness setting).
4. Lift the presser foot by pressing the needle position button.

***Key point**

- Use the presser foot lifter button to lift or lower the presser foot in the subsequent procedures.

5. Turn the pulley to move the feed dog below the top surface of the needle plate assy.
6. Lower the presser foot and press the [0] key below "0 mm".
7. Lift the presser foot and insert the 3 mm gauge between the needle plate assy and presser foot.
8. Lower the presser foot and press the [3] key below "3 mm".
9. Lift the presser foot and remove the gauge.
10. Lower the presser foot and press the [OK] key next to "PF PM Adjust".

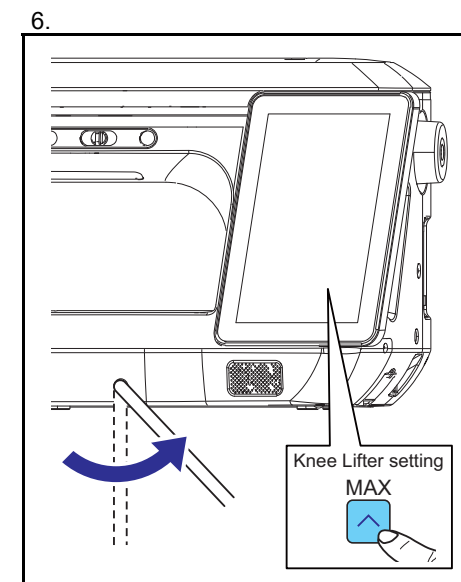
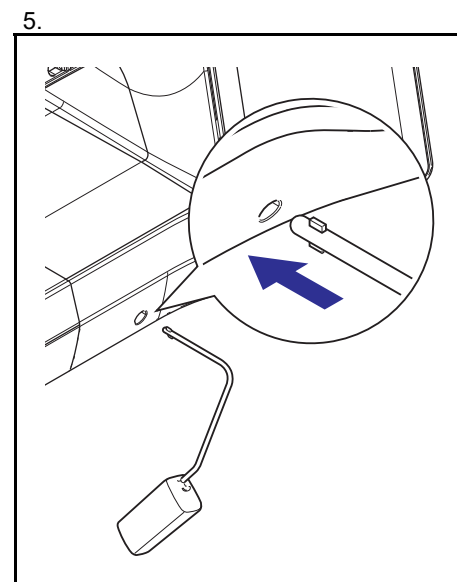
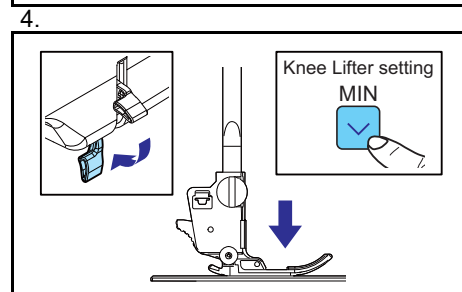
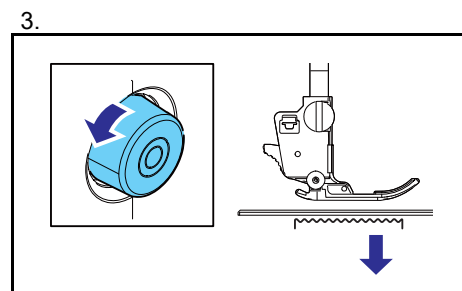
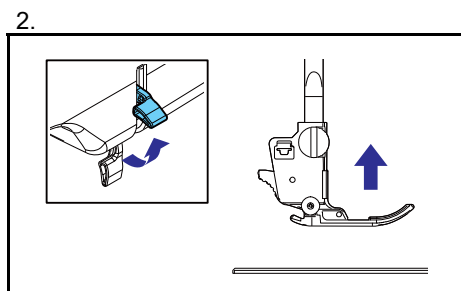


[Standard]

Operation range of the knee lifter lever is set to the maximum and minimum position in the test mode #02.

[Adjustment procedures]

1. Start the test mode and select #02 (Fabric thickness setting).
2. Lift the presser foot lever.
3. Turn the pulley to move the feed dog below the top surface of the needle plate assy.
4. Lower the presser foot and press the [MIN] key below "Knee Lifter setting".
5. Attach the knee lifter lever.
6. Turn the knee lifter lever right until it stops and press the [MAX] key below "Knee Lifter setting".

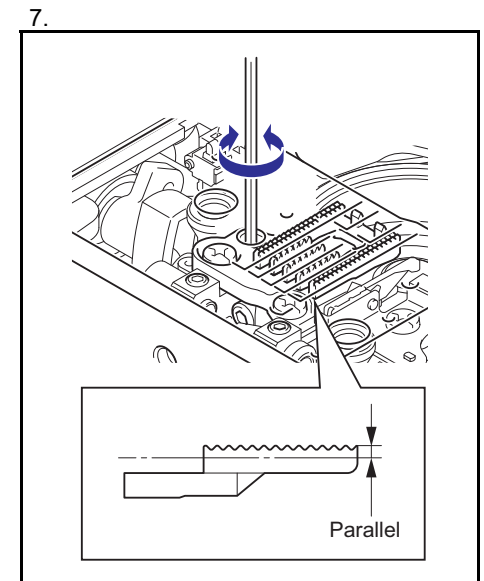
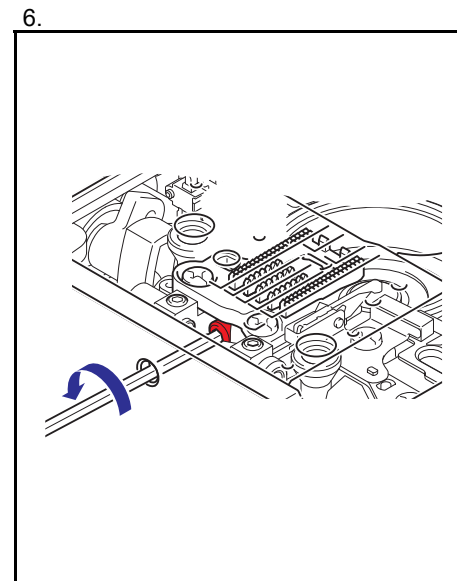
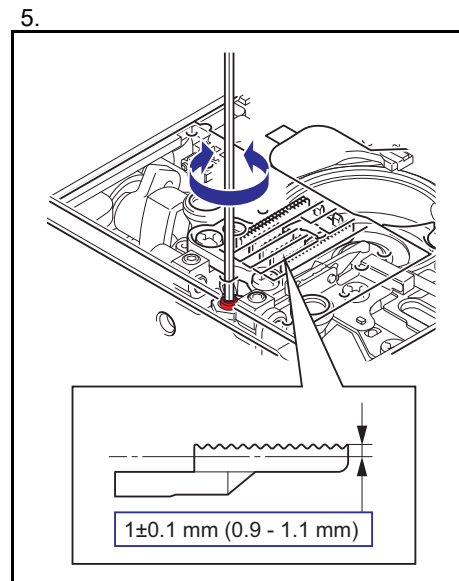
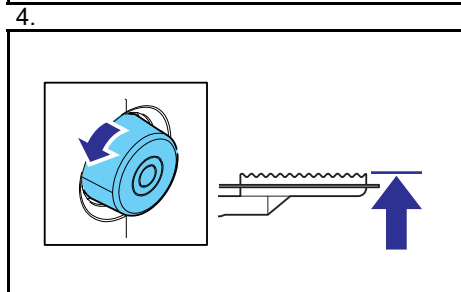
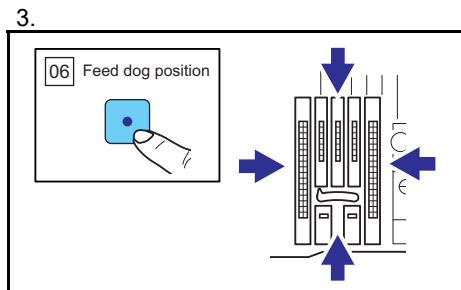
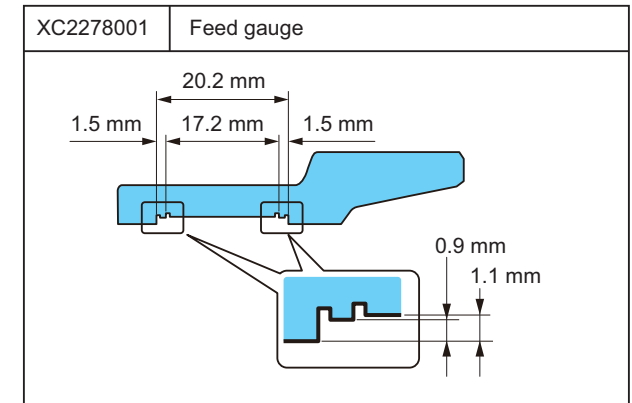


[Standard]

- Feed dog end is at 1 ± 0.1 mm (0.9 to 1.1 mm) above the top surface of the needle plate assy when the feed dog is at the highest position.
- Feed dog end is at more than 0.3 mm below the top surface of the needle plate assy when the feed dog is at the lowest position.
- Feed dog end is in parallel with the top surface of the needle plate assy.

[Adjustment procedures]

1. Remove the needle, presser foot, and presser foot holder.
2. Start the test mode and select #06 (Feed dog position).
3. Move the feed dog to the center by pressing the key on the screen.
4. Turn the pulley to move the feed dog to the highest position.
5. Turn the screw on the feed dog base assy to adjust the feed dog height.
6. Loosen the screw on the feed dog correction plate.
7. Turn the screw on the feed dog base assy to adjust the parallelism of the feed dog.
8. Tighten the screw on the feed dog correction plate.



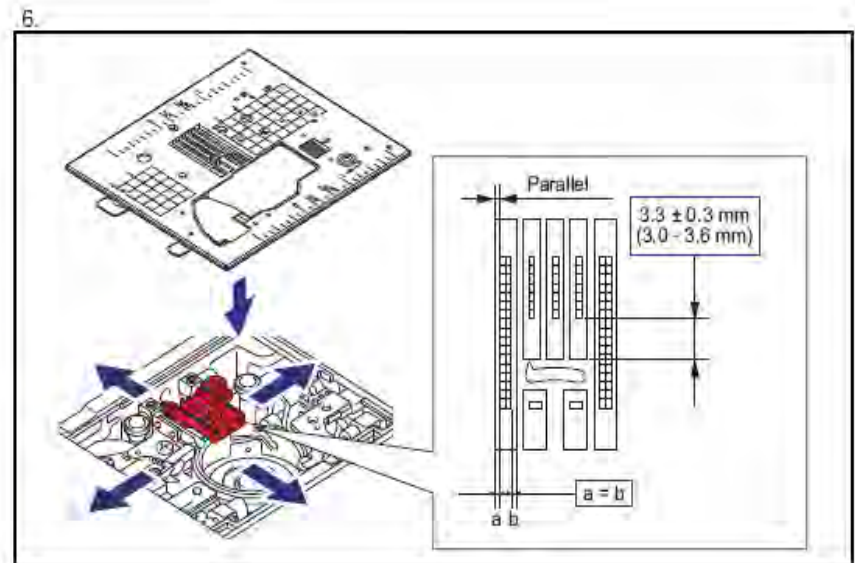
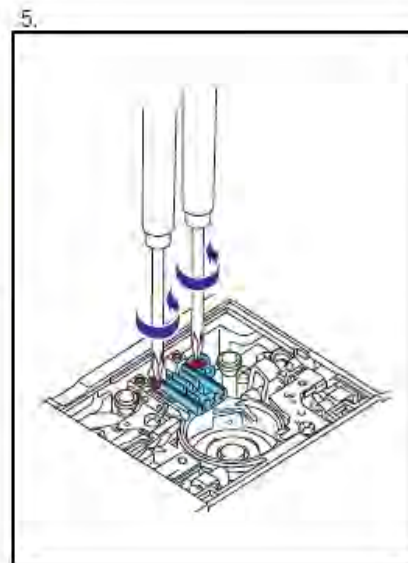
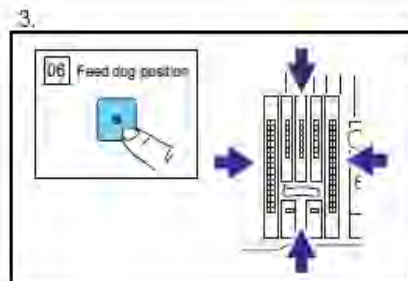
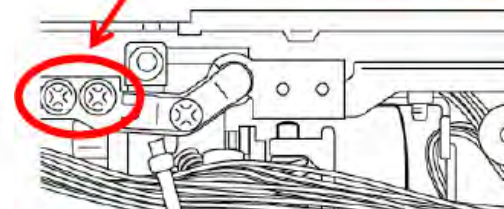
[Standard]

- Clearance between the front end of the middle feed dog and needle plate assy is at 3.3 ± 0.3 mm (3.0 to 3.6 mm) when the feed dog is at the center.
- Clearance between the feed dog and needle plate assy hole is same on both sides.

[Adjustment procedures]

1. Remove the needle, presser foot, and presser foot holder.
2. Start the test mode and select #06 (Feed dog position).
3. Move the feed dog to the center by pressing the key on the screen.
4. Remove the needle plate assy.
5. Loosen the two screws on the feed dog.
6. Loosely attach the needle plate assy to adjust the feed dog position.
7. Tighten the two screws on the feed dog.
8. Attach the needle plate assy to check the clearance between the feed dog and needle plate assy.

Loosen these two screws to move feed dog L/R only



[Standard]

Straight stitch pattern meets the standards below in the test mode #13.

- (1) Difference in length of 100 forward stitches and 100 reverse stitches must be within ± 5 mm.
- (2) Length of 100 forward stitches and 100 reverse stitches must be more than 150 mm.

[Adjustment procedures]

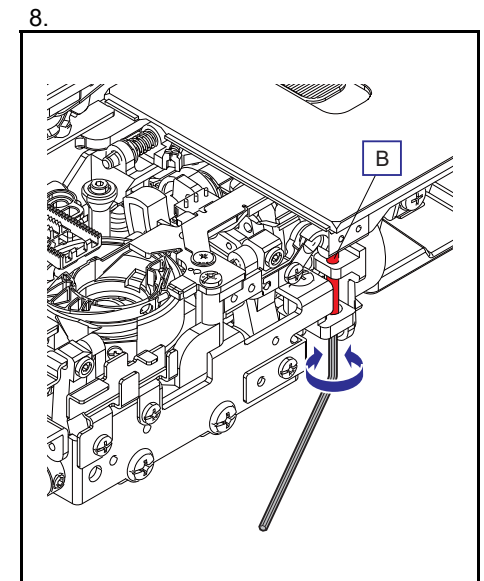
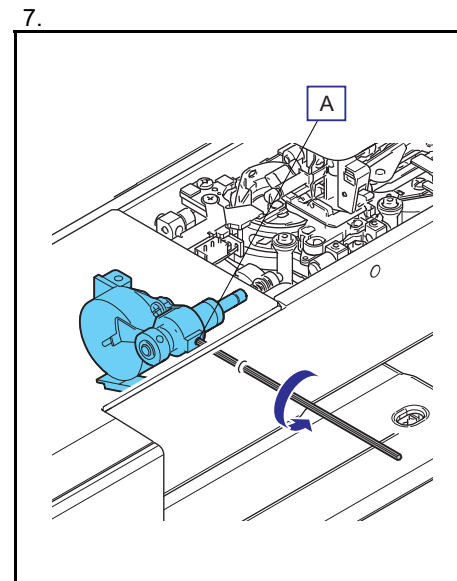
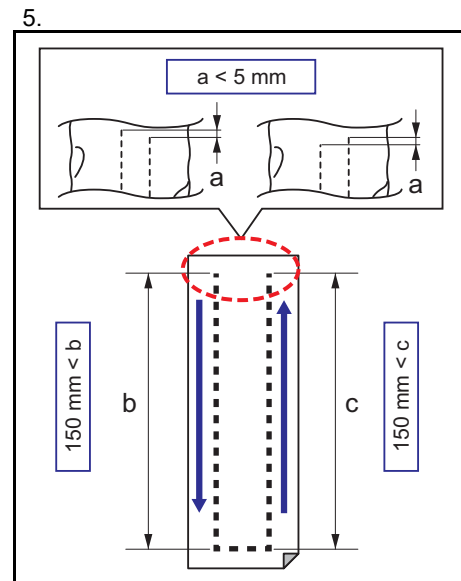
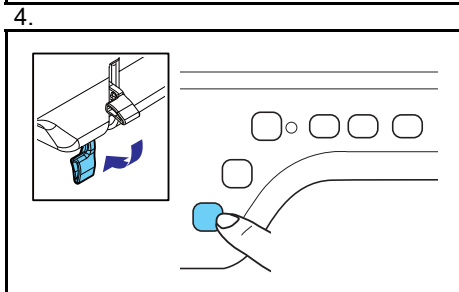
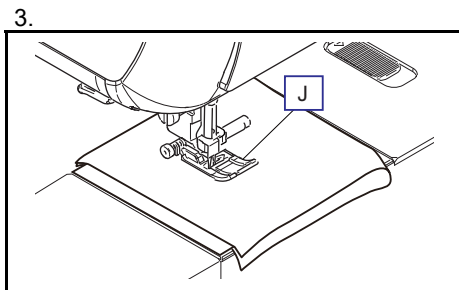
1. Attach the zigzag foot "J" and needle (size 75/11).
2. Start the test mode and select #13 (Forward and reverse feeding).
3. Put the folded broadcloth with a piece of a paper in between on the needle plate assy.
4. Lower the presser foot lever and press the [Start/Stop] button. (Straight stitch pattern is sewn automatically.)
5. Check the length of 100 forward stitches and 100 reverse stitches.
6. Remove the free arm front cover assy.
7. Insert the hex wrench (2 mm) from the rear cover hole to loosen the screw (A) on the FPM holder assy.
8. Adjust the length of 100 reverse stitches by turning the screw (B) on the FPM holder assy.
9. Tighten the screw (A) on the FPM holder assy.
10. Sew the straight stitch pattern again to check the length of 100 forward stitches and 100 reverse stitches.

***Key point**

- Apply a small amount of thread locker on the edge of the FPM holder assy screw (B) after the adjustment.

Adjust the items below after operating this adjustment:

- 1) 4-24 Number of BH satin part stitches
- 2) 4-28 One-point stitch pattern



[Standard]

Straight stitch pattern meets the standards below in the test mode #13.

- (1) Difference in length of 100 forward stitches and 100 reverse stitches must be within ± 5 mm.
- (2) Length of 100 forward stitches and 100 reverse stitches must be more than 150 mm.

[Adjustment procedures]

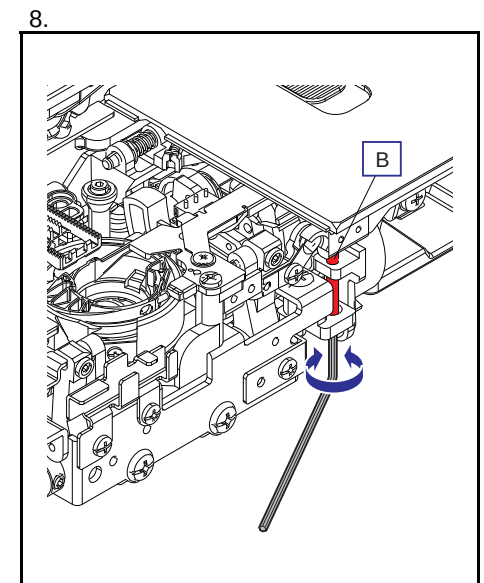
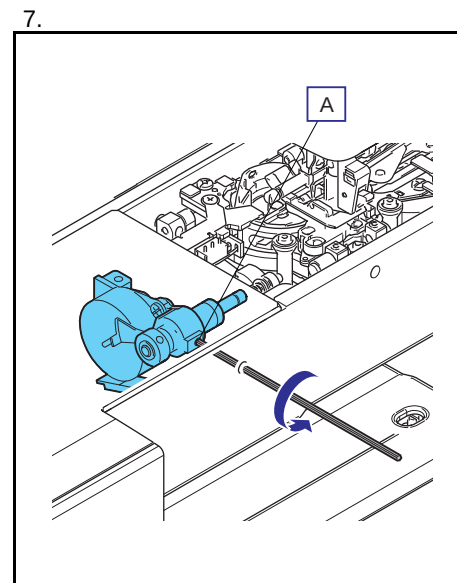
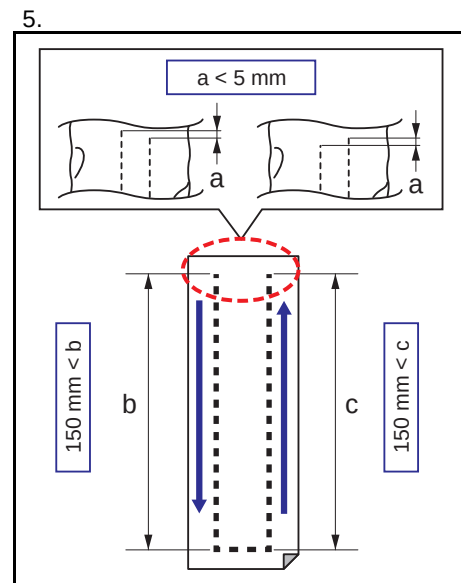
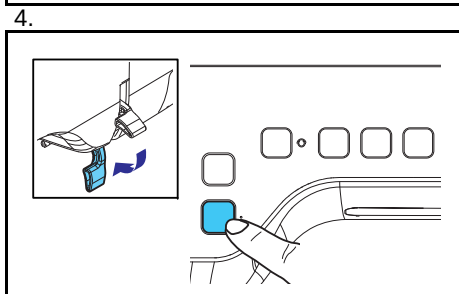
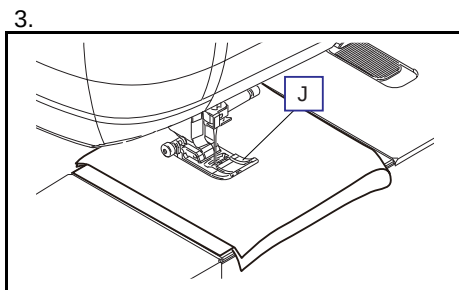
1. Attach the zigzag foot "J" and needle (size 75/11).
2. Start the test mode and select #13 (Forward and reverse feeding).
3. Put the folded broadcloth with a piece of a paper in between on the needle plate assy.
4. Lower the presser foot lever and press the [Start/Stop] button. (Straight stitch pattern is sewn automatically.)
5. Check the length of 100 forward stitches and 100 reverse stitches.
6. Remove the free arm front cover assy.
7. Insert the hex wrench (2 mm) from the rear cover hole to loosen the screw (A) on the FPM holder assy.
8. Adjust the length of 100 reverse stitches by turning the screw (B) on the FPM holder assy.
9. Tighten the screw (A) on the FPM holder assy.
10. Sew the straight stitch pattern again to check the length of 100 forward stitches and 100 reverse stitches.

***Key point**

- Apply a small amount of thread locker on the edge of the FPM holder assy screw (B) after the adjustment.

Adjust the items below after operating this adjustment:

- 1) 4-24 Number of BH satin part stitches
- 2) 4-26 Side feed straight stitch



Adjust items below before operating this adjustment:

- 4-58 Camera calibration
- 4-23 Feed forward/backward

[Standard]

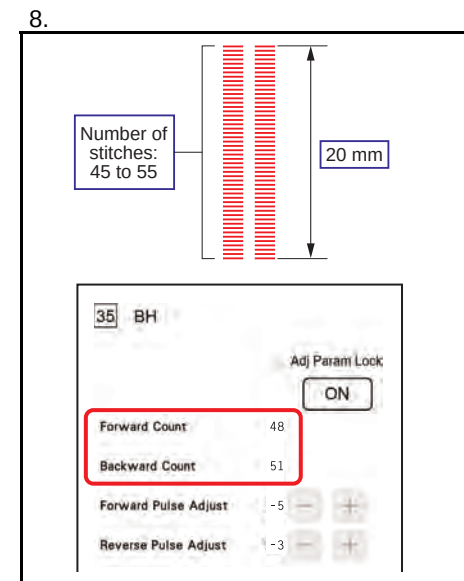
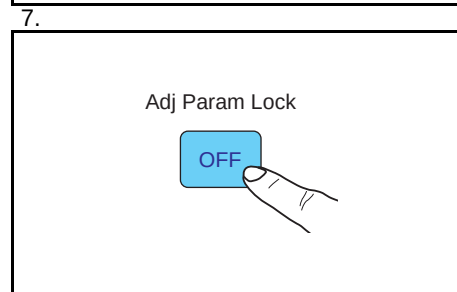
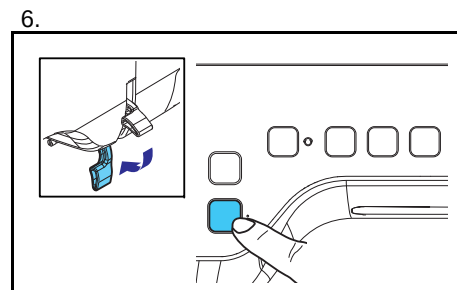
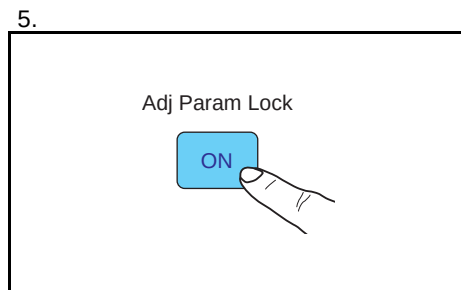
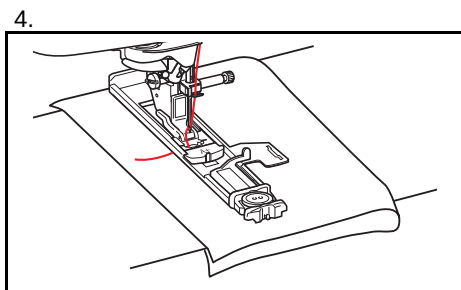
- When sewing a button hole stitch in the test mode #35, the number of stitches on the satin part is 45 to 55 stitches per 20 mm on both right and left side.

[Adjustment procedures]

1. Attach the buttonhole foot "A+" and needle (size 75/11).

*Key point

- It is unnecessary to set a button to the buttonhole foot "A+".
2. Set upper and lower thread (schappe spun thread #60) on the sewing machine.
 3. Start the test mode and select #35 (BH stitch count).
 4. Put the folded broadcloth on the needle plate assy.
 5. Press and hold the [ON] key below "Adj Param Lock". (Adjusted value will be released from the lock.)
 6. Lower the presser foot lever and press the [Start/Stop] button. (Button hole stitch is operated automatically.)
→ After the stitching, appropriate adjusted value will be set automatically.
 7. Press the [OFF] key below "Adj Param Lock". (Adjusted value will be locked.)
 8. Operate the button hole stitch again to check the number of stitches on the satin part.
 - 8-1. When the number of stitches is within the standard, the adjustment is completed.
 - 8-2. When the number of stitches is out of the standard, proceed to the next procedure.



<To next page>

<From previous page>

9. Press and hold the [ON] key below "Adj Param Lock". (Adjusted value will be released from the lock.)

10. Press the [-] or [+] key to change the adjusted value.

***Key point**

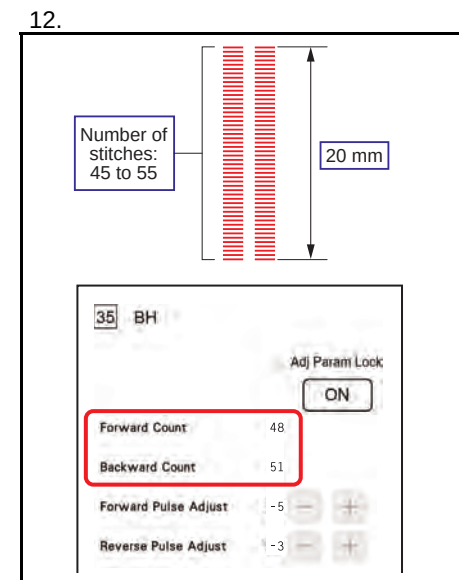
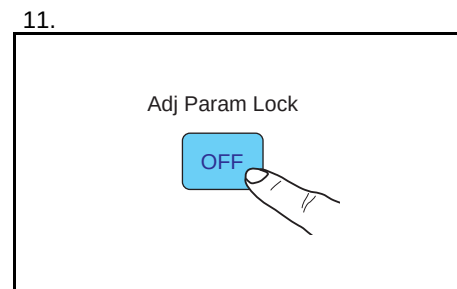
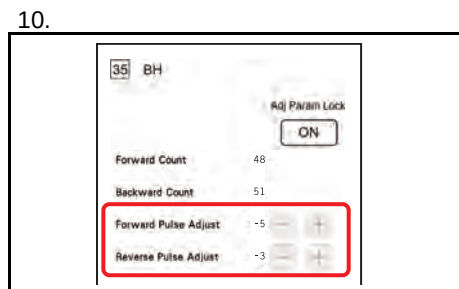
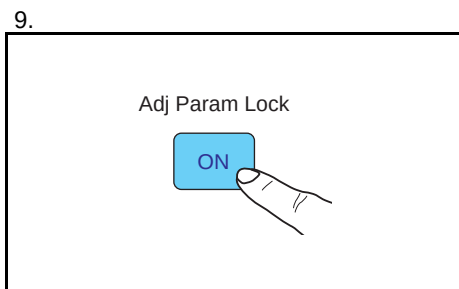
- If pressing the [-] key decreases the adjusted value, the feed pitch becomes narrower and the number of stitches increases.
- If pressing the [+] key increases the adjusted value, the feed pitch becomes wider and the number of stitches decreases.

11. Press the [OFF] key below "Adj Param Lock". (Adjusted value will be locked.)

12. Operate the button hole stitch again to check the number of stitches on the satin part.

12-1. When the number of stitches is within the standard, the adjustment is completed.

12-2. When the number of stitches is out of the standard, return to procedure 9.



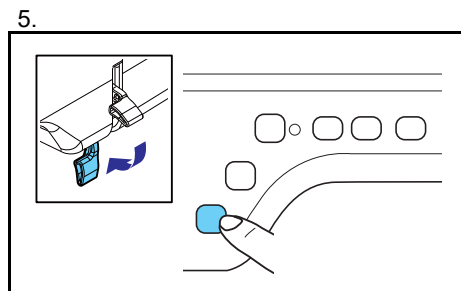
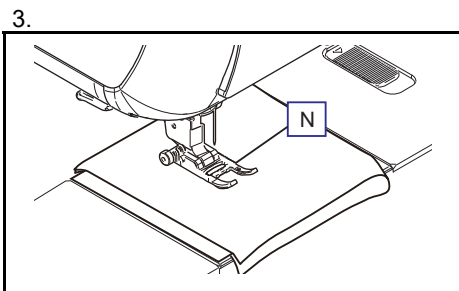
[Standard]

Straight stitch pattern meets the standards below in the test mode #36.

- (1) Length of the upper and lower line are 30.5 to 31.5 mm.
- (2) Top margin of the pattern is 4 to 6 mm.

[Adjustment procedures]

1. Attach the monogramming foot "N" and needle (size 75/11).
2. Set the upper and lower thread (schappe spun thread #60) on the machine.
3. Put the folded broadcloth on the needle plate assy.
4. Start the test mode and select #36 (Side feed adjustment).
5. Lower the presser foot lever and press the [Start/Stop] button. (Straight stitch pattern is sewn automatically.)
6. Check the shape of the pattern.
7. Press and hold the [ON] key below "Adj Pattern Lock". (Adjusted value will be released from the lock.)



<To next page>

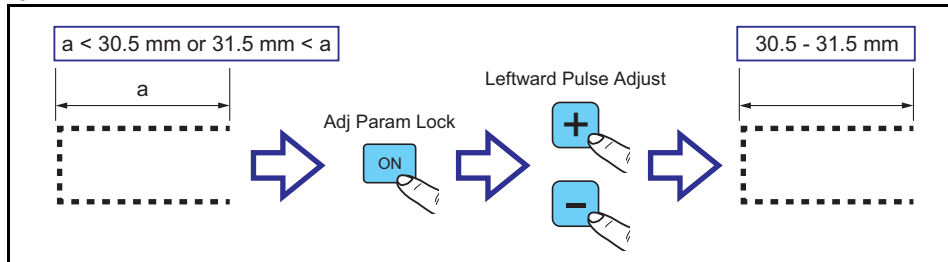
<From previous page>

8. Press the key on the screen to change the adjusted value.
 - 8-1. If the upper line does not meet the standard (1)
 - Press the [-] or [+] key under "Leftward Pulse Adjust" to change the adjusted value.
 - 8-2. If the lower line does not meet the standard (1)
 - Press the [-] or [+] key under "Rightward Pulse Adjust" to change the adjusted value.
 - 8-3. If the standard (2) is not met
 - Press the [-] or [+] key under "FineAdjust Verti." to change the adjusted value.
9. Sew the straight stitch pattern again and check the shape of it.

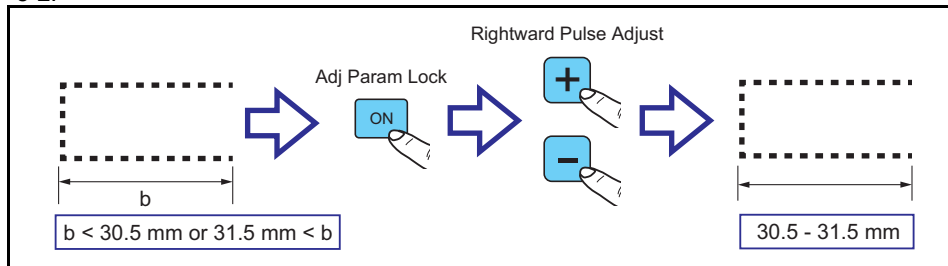
Adjust the item below after operating this adjustment:

- [4-28 One-point stitch pattern](#)

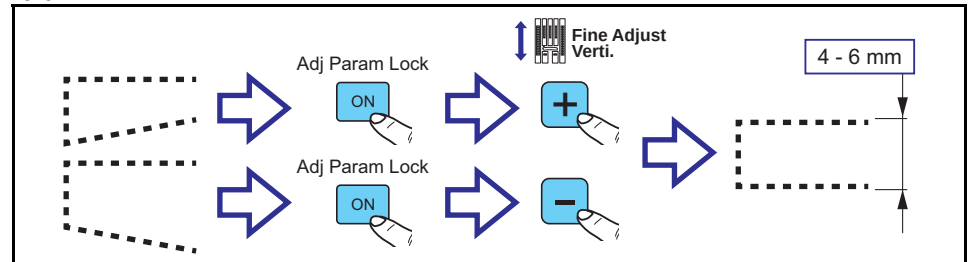
8-1.



8-2.



8-3.



Adjust items below before operating this adjustment:

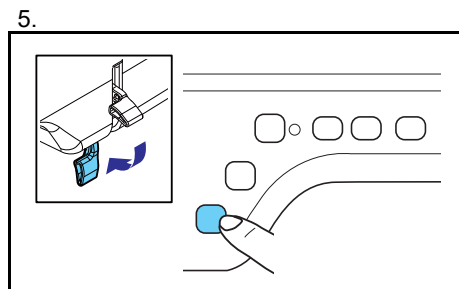
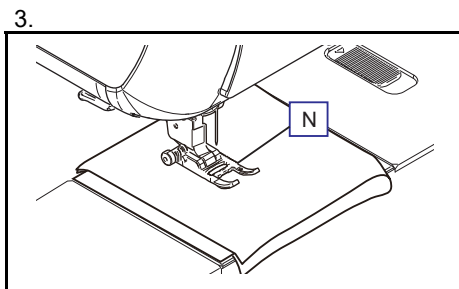
- 4-23 Feed forward/backward
- 4-26 Side feed straight stitch

[Standard]

Upper half end and lower half end of the one-point stitch pattern meet at a single point in the test mode #03.

[Adjustment procedures]

1. Attach the monogramming foot "N" and needle (size 75/11).
2. Set the upper and lower thread (schappe spun thread #60) on the machine.
3. Put the folded broadcloth on the needle plate assy.
4. Start the test mode and select #03 (Pattern adjustment).
5. Lower the presser foot lever and press the [Start/Stop] button. (One-point stitch pattern is sewn automatically.)
6. Check the shape of the pattern.

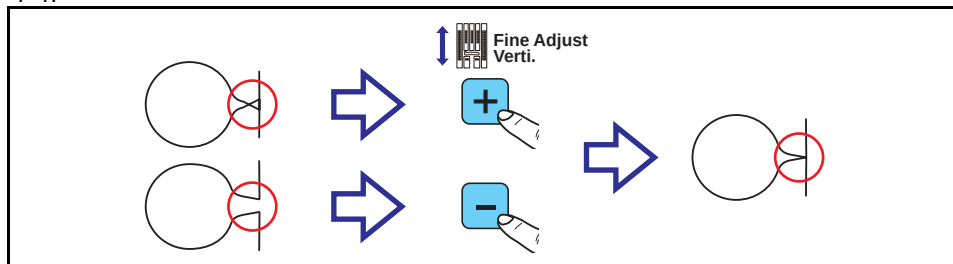


<To next page>

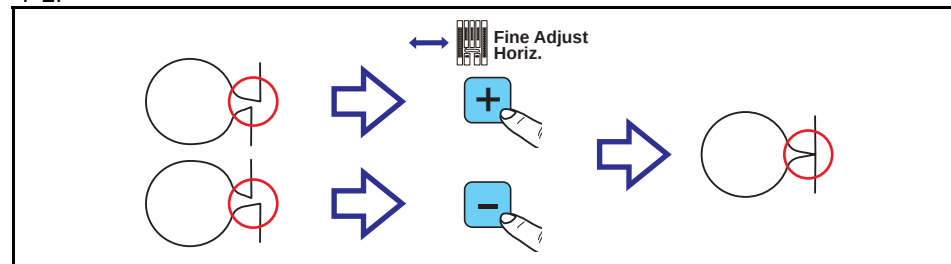
<From previous page>

7. Press the key on the screen to change the adjusted value.
 - 7-1. If the upper half end and lower half end is misaligned in vertical directions
 - Press the [-] or [+] key under "FineAdjust Verti." to change the adjusted value.
 - 7-2. If the upper half end and lower half end is misaligned in horizontal directions
 - Press the [-] or [+] key under "FineAdjust Horiz." to change the adjusted value.
8. Sew the one-point stitch pattern again and check the shape of it.

7-1.



7-2.



[Standard]

Straight stitch pattern sewn with the dual feed foot meets the standards below in the test mode #39.

- (1) Length of 100 forward stitches is 130 to 150 mm.
- (2) Difference in length of 100 forward stitches and 100 reverse stitches is within 2 to 5 mm.

[Adjustment procedures]

1. Attach the dual feed foot and needle (size 75/11).
2. Start the test mode and select #39 (DF check).
3. Remove the dual feed foot toe and lower the feed position lever. (Roller belt drops.)
4. Put the paper on the needle plate assy.
5. Lower the presser foot lever and press the [Start/Stop] button. (Straight stitch pattern is sewn automatically.)

***Key point**

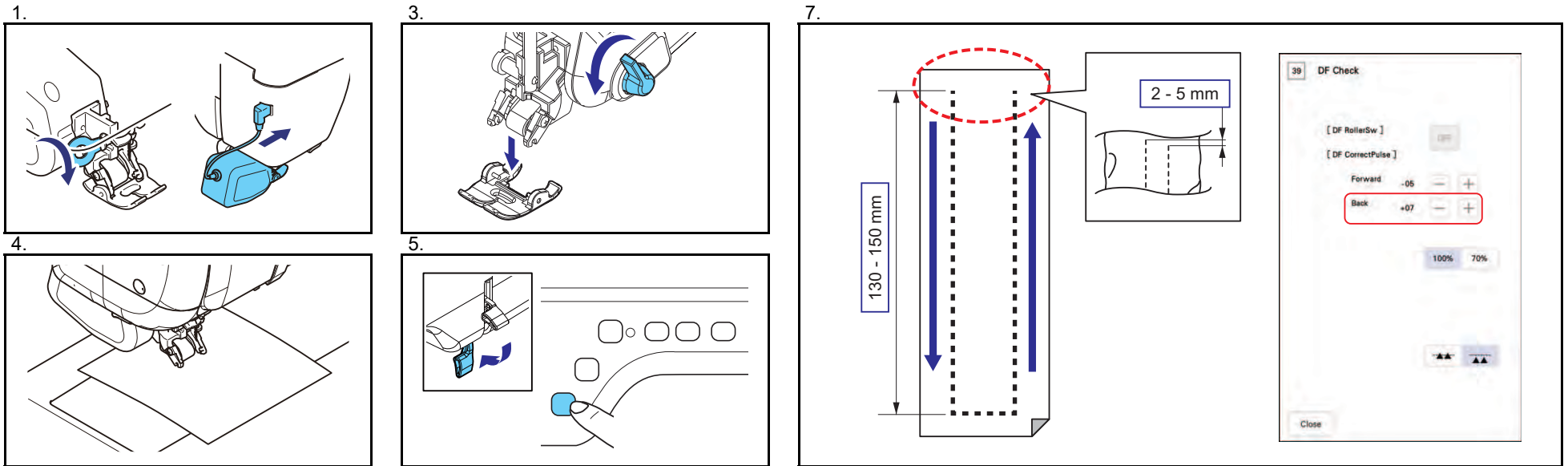
- Do not move the feed dog from the lowered position.

6. Check the length of 100 forward stitches and 100 reverse stitches.
7. Press the [-] or [+] key next to "Back" to change the adjusted value.

***Key point**

- Do not change the adjusted value of "Forward" from "-05".

8. Sew the straight stitch pattern again to check the length difference of the 100 forward stitches and 100 reverse stitches.



[Standard]

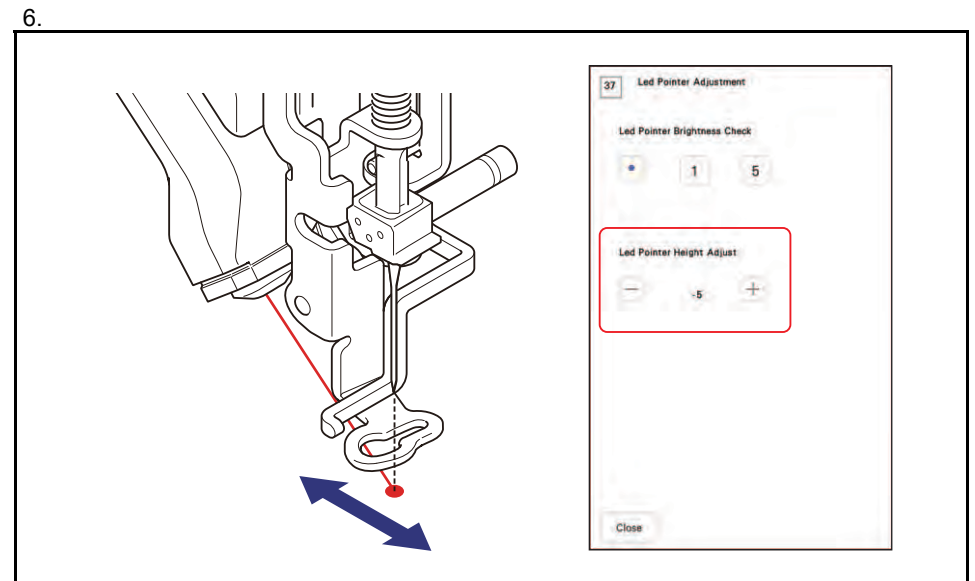
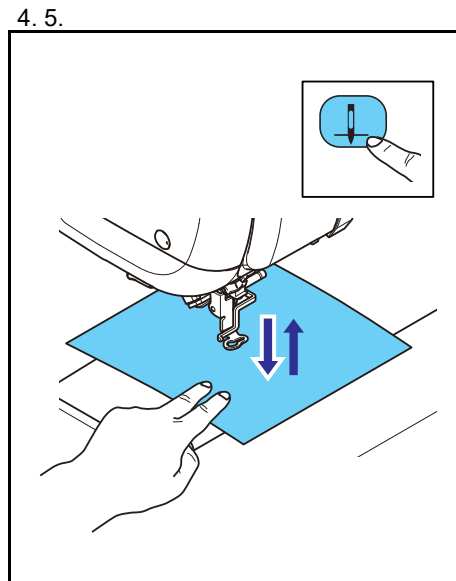
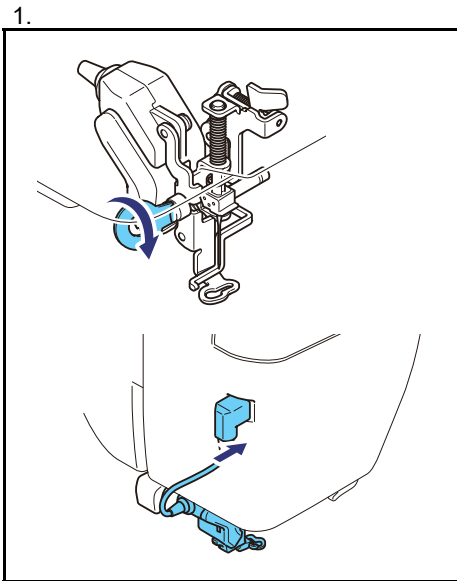
Needle point is dropped within a radius of the pointer beam in the test mode #37.

[Adjustment procedures]

1. Attach the embroidery foot "W+" and needle (size 75/11).
2. Put the paper on the needle plate assy.
3. Start the test mode and select #37 (LED pointer adjustment).
4. Lower the needle bar by pressing the needle position button. (Push the needle through the paper.)
5. Lift the needle bar by pressing the needle position button while holding the paper by hand.
6. Press the [-] or [+] key under "Led Pointer Height Adjust" to change the adjusted value.

***Key point**

- Adjust the value within ± 10 mm.



[Standard]

Reaction force is 0.95 to 1.05N (100 to 110gf) when pushing the motor belt at the middle of the motor pulley and X idle pulley by 2 mm.

[Adjustment procedures]

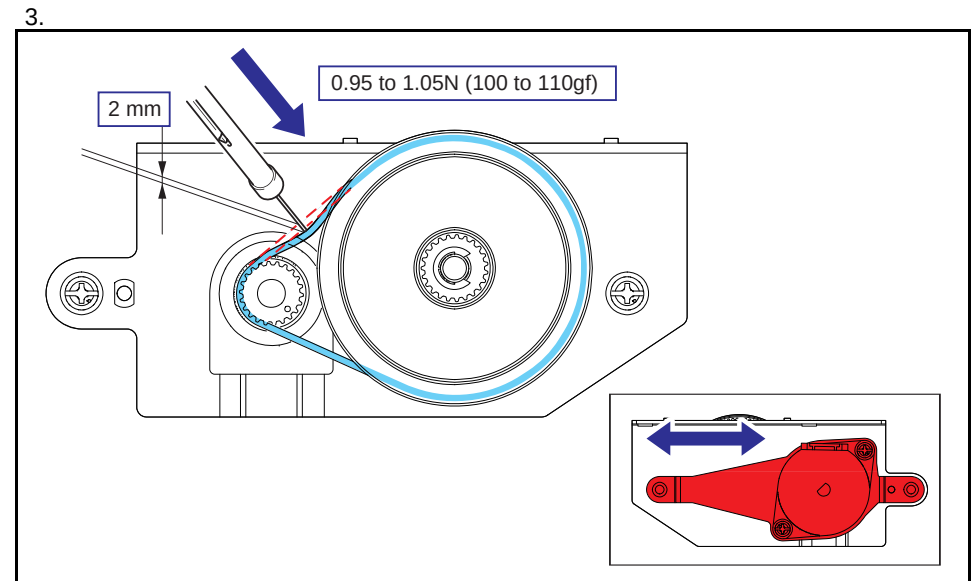
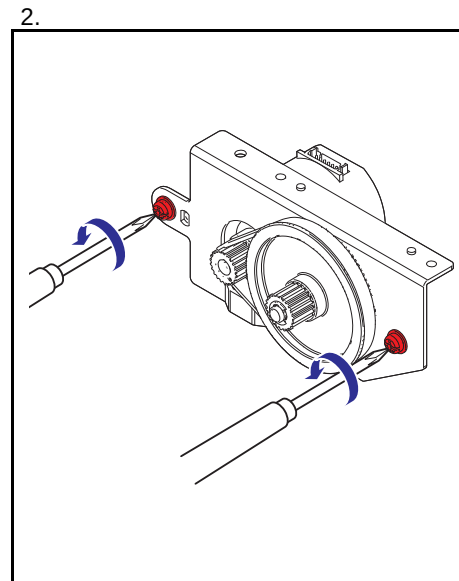
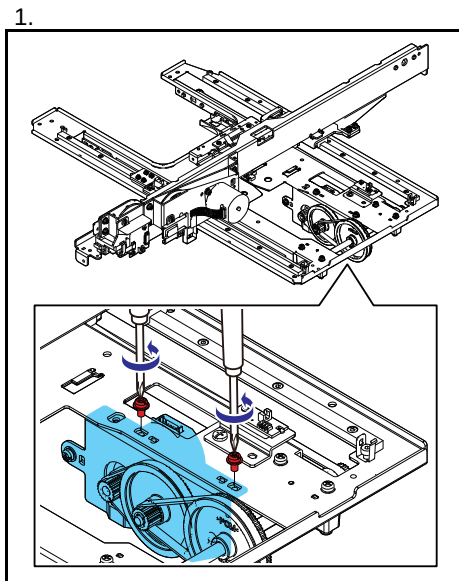
1. Remove the X idle pulley holder Assy.
2. Loosen the two screws on the motor tension plate.
3. Move the motor tension plate to adjust the belt tension.
4. Tighten the two screws on the motor tension plate.
5. Attach the X idle pulley holder Assy.

XC2277001

Push pull gauge (5N)

Adjust the item below after operating this adjustment:

- 4-35 X reducer belt tension (Embroidery unit)



Adjustment

X reducer belt tension (Embroidery unit)

Adjust items below before operating this adjustment:

- 4-34 X motor belt tension (Embroidery unit)

[Standard]

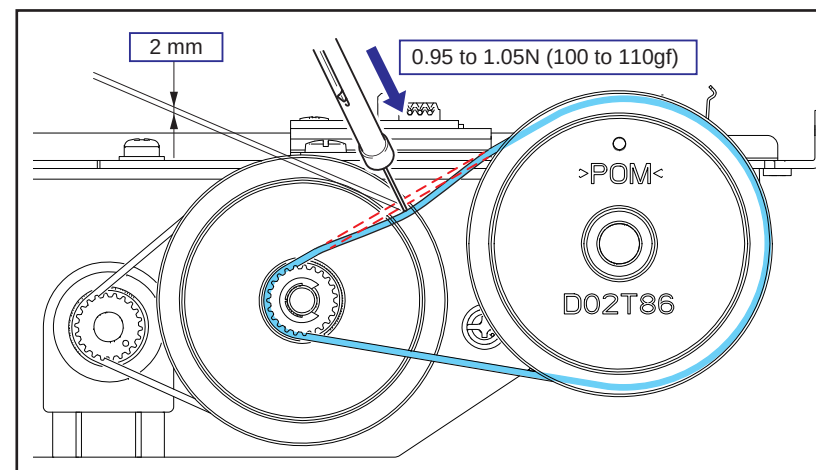
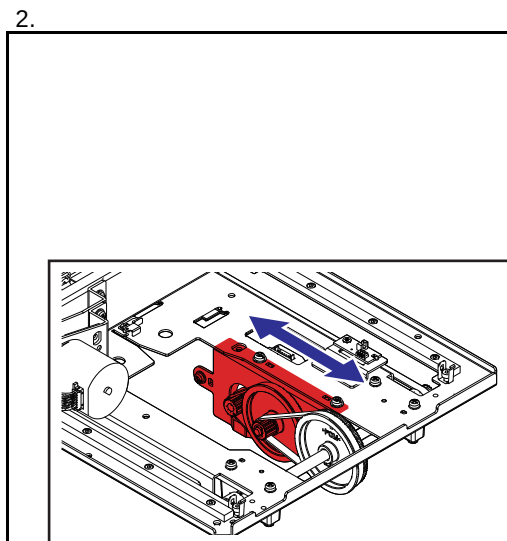
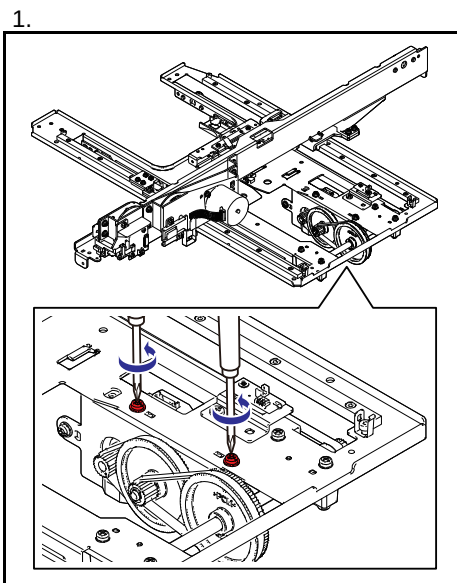
Reaction force is 0.95 to 1.05N (100 to 110gf) when pushing the reducer belt at the middle of the X idle pulley and X driving pulley by 2 mm.

[Adjustment procedures]

1. Loosen the two screws on the X idle pulley holder assy.
2. Move the X idle pulley holder assy to adjust the belt tension.
3. Tighten the two screws on the X idle pulley holder assy.

XC2277001

Push pull gauge (5N)



[Standard]

Reaction force is 0.49 to 0.69N (50 to 70gf) when pushing the motor belt at the middle of the motor pulley and Y idle pulley by 4 mm.

[Adjustment procedures]

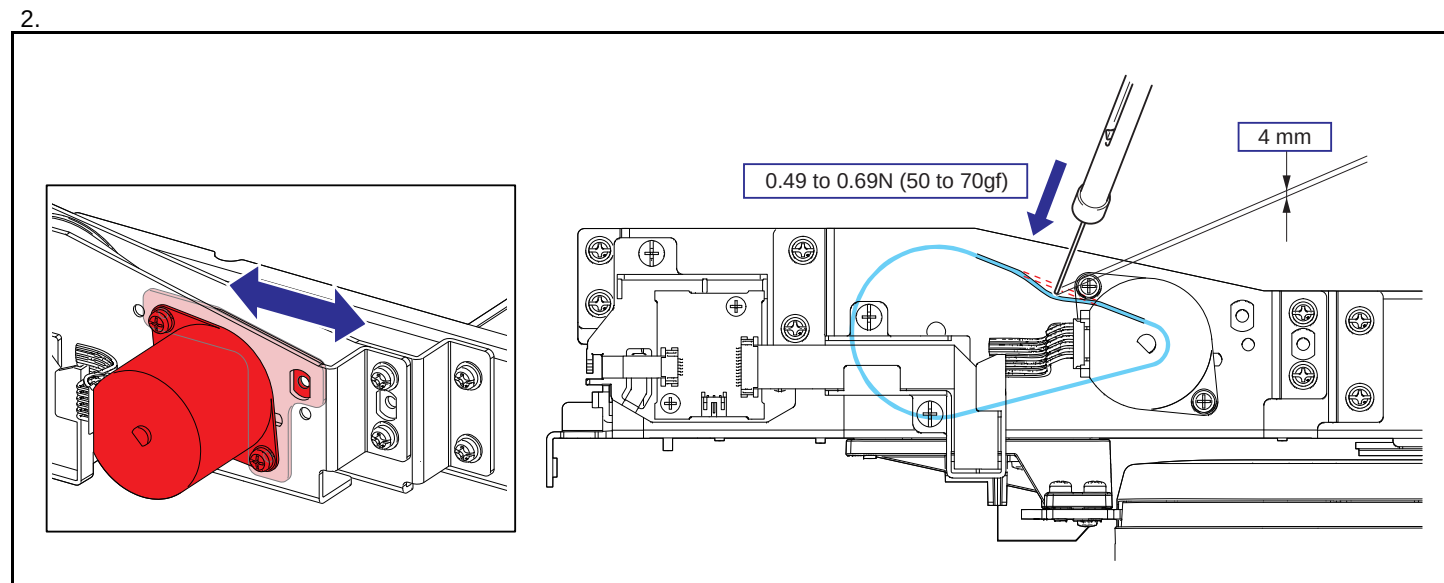
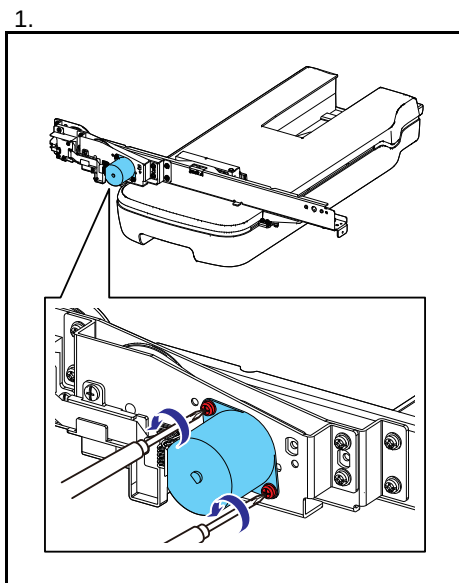
1. Loosen the two screws on the Y motor assy.
2. Move the motor tension plate to adjust the belt tension.
3. Tighten the two screws on the Y motor assy.

XC2277001

Push pull gauge (5N)

Adjust the item below after operating this adjustment:

- 4-37 Y reducer belt tension (Embroidery unit)



Adjust items below before operating this adjustment:

- 4-36 Y motor belt tension (Embroidery unit)

[Standard]

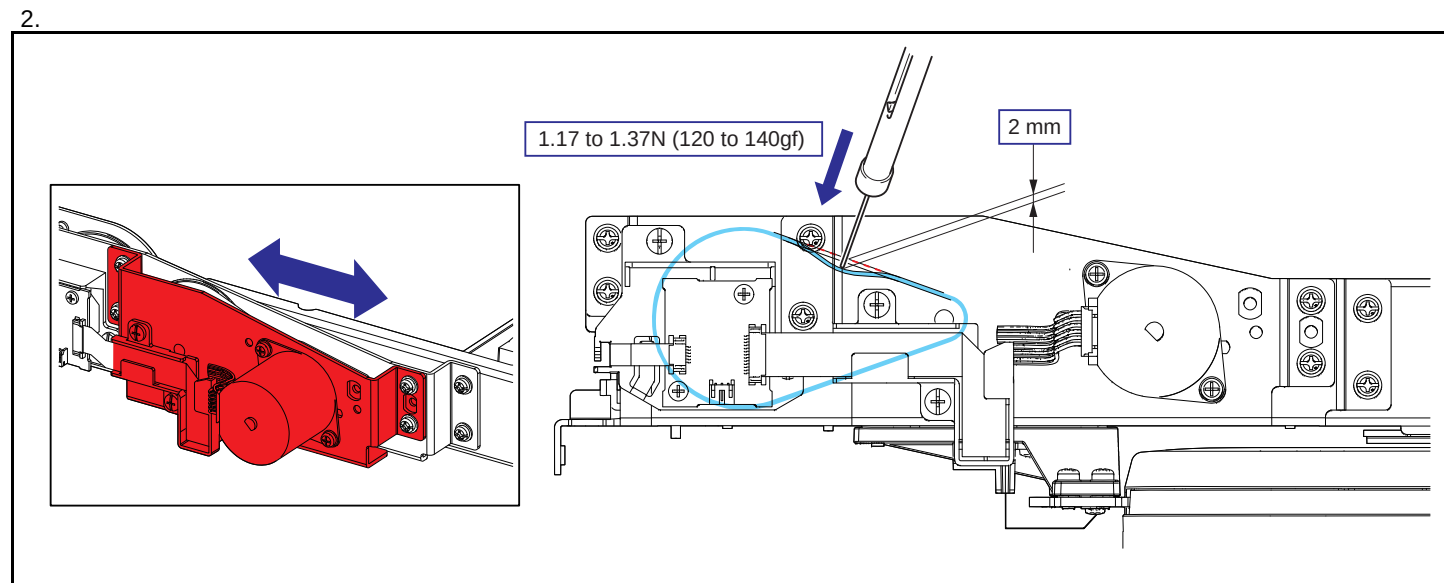
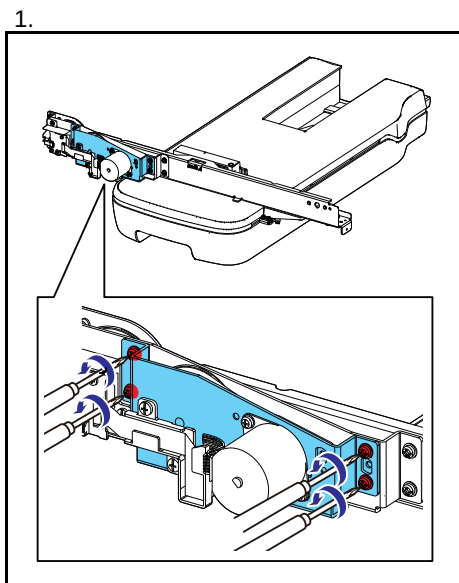
Reaction force is 1.17 to 1.37N (120 to 140gf) when pushing the reducer belt at the middle of the Y idle pulley and Y driving pulley by 2 mm.

[Adjustment procedures]

1. Loosen the four screws on the Y driving pulley plate assy.
2. Move the Y driving pulley plate assy to adjust the belt tension.
3. Tighten the four screws on the Y driving pulley plate assy.

XC2277001

Push pull gauge (5N)



Adjust items below before operating this adjustment:

- 4-37 Y reducer belt tension (Embroidery unit)

[Standard]

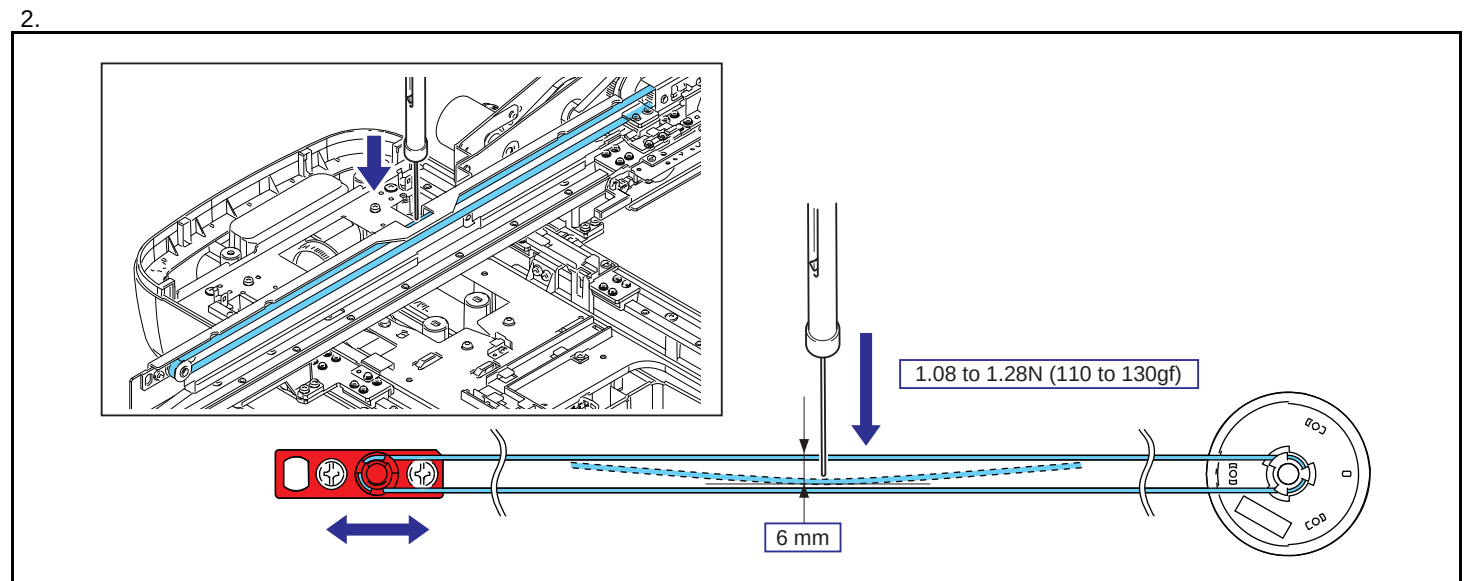
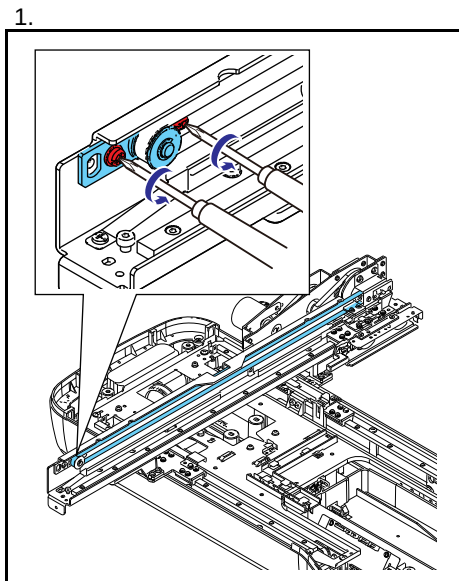
Reaction force is 1.08 to 1.28N (110 to 130gf) when pushing the timing belt at the middle of the driving pulley and tension pulley by 6 mm.

[Adjustment procedures]

1. Loosen the two screws on the tension pulley assy.
2. Move the tension pulley assy to adjust the belt tension.
3. Tighten the two screws on the tension pulley assy.

XC2277001

Push pull gauge (5N)



[Standard]

Reaction force is 1.27 to 1.47N (130 to 150gf) when pushing the timing belt at the middle of the X pulley and tension pulley by 6 mm.

[Adjustment procedures]

1. Remove the two screws on the XT belt presser.

***Key point**

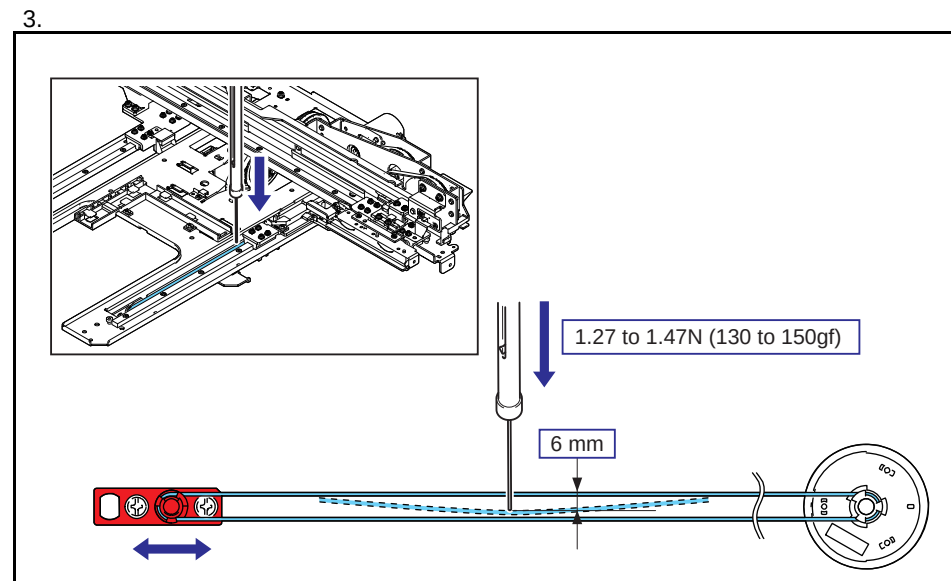
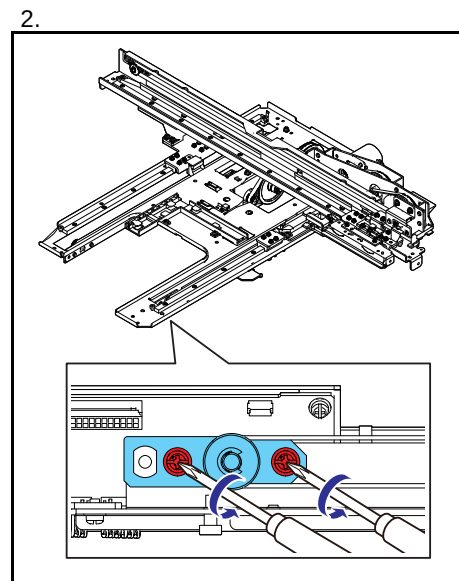
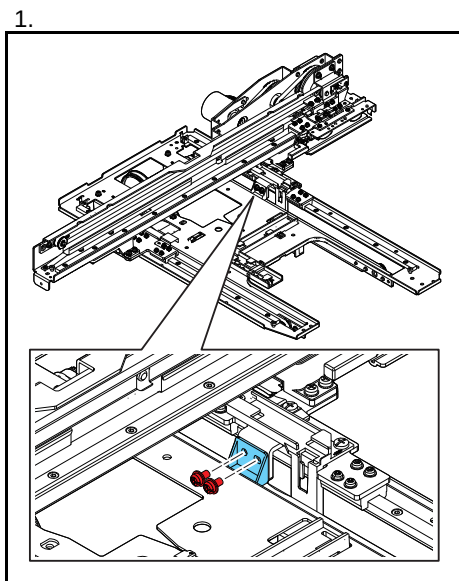
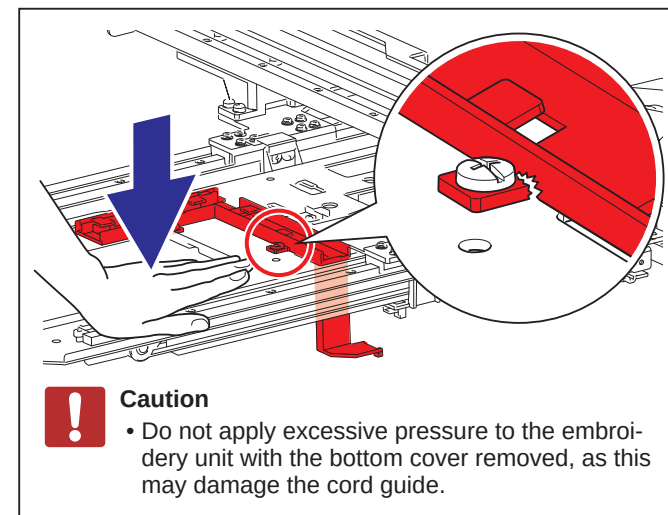
- Recommended tool : SCREW DRIVER 2X100 (Parts code : XC6543051)
- *This tool is included with the PR series embroidery machines.



2. Loosen the two screws on the tension pulley assy.
3. Move the tension pulley assy to adjust the belt tension.
4. Tighten the two screws on the tension pulley assy.
5. Attach the two screws on the XT belt presser.

XC2277001

Push pull gauge (5N)



<To next page>

<From previous page>

6. Remove the X sensor dog.
7. Remove the two screws on the XT belt presser.

***Key point**

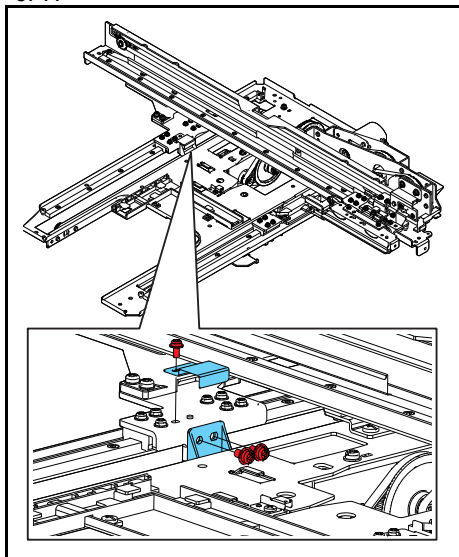
- Recommended tool : SCREW DRIVER 2X100 (Parts code : XC6543051)

8. Loosen the two screws on the tension pulley assy.
9. Move the tension pulley assy to adjust the belt tension.
10. Tighten the two screws on the tension pulley assy.
11. Attach the two screws on the XT belt presser.
12. Attach the X sensor dog.

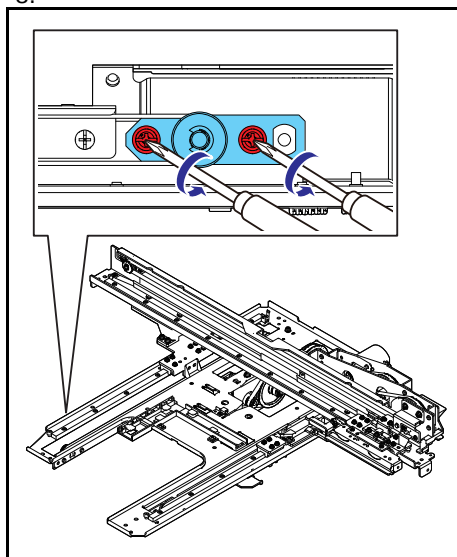
XC2277001

Push pull gauge (5N)

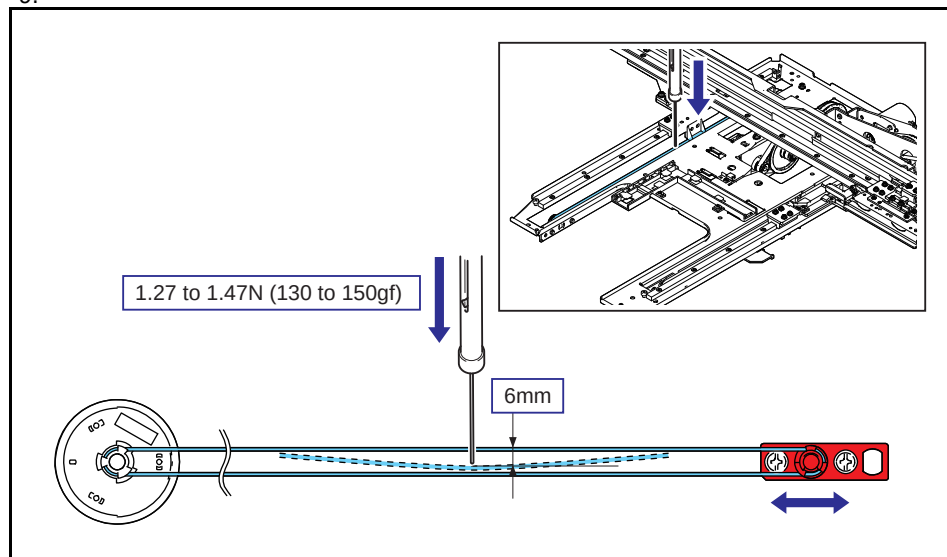
6. 7.



8.



9.



<To next page>

<From previous page>

13. Loosen the two screws on the X pulley.

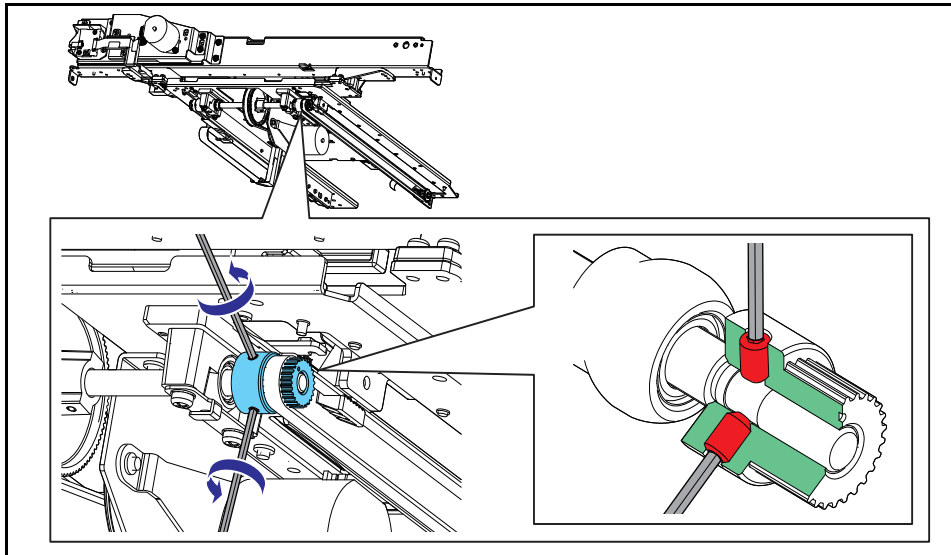
14. Move the X carriage unit back and forth through its full range of motion to align the phase of the left and right X pulleys.

15. Tighten the two screws on the X pulley.

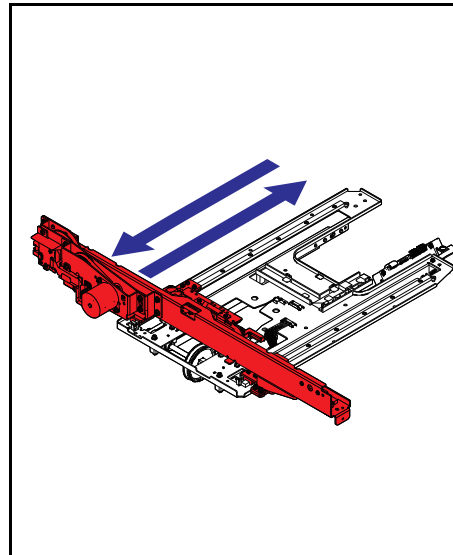
***Key point**

- Tighten the screws while pressing the X pulley inwards.

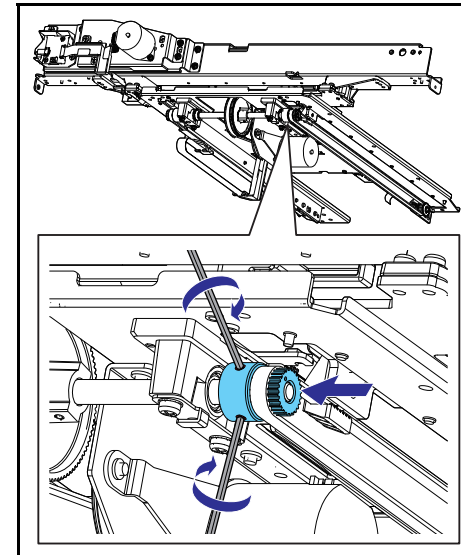
13.



14.



15.



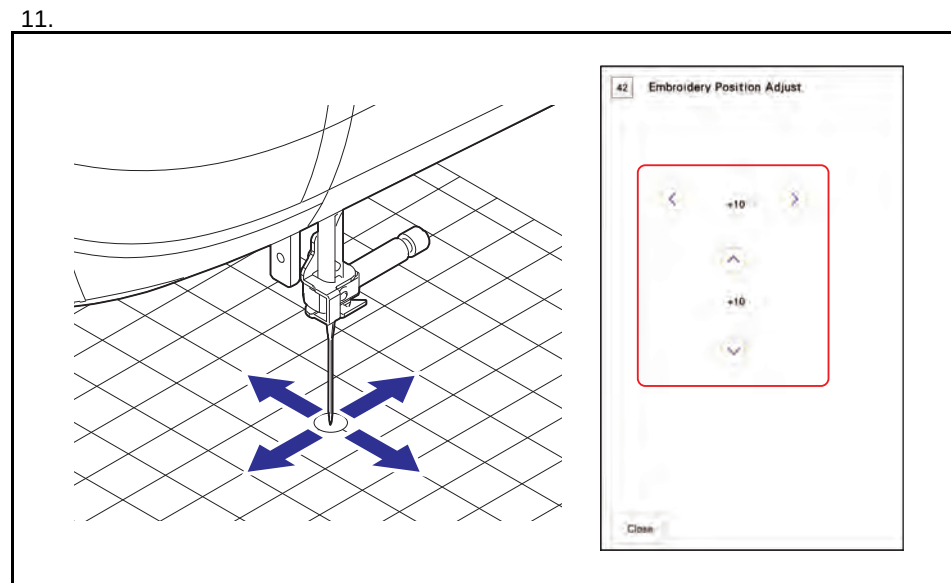
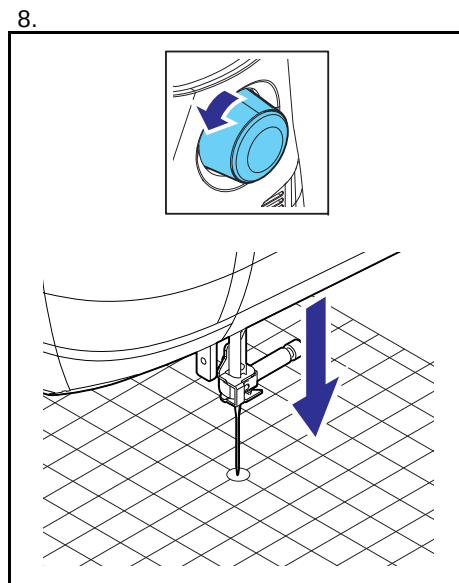
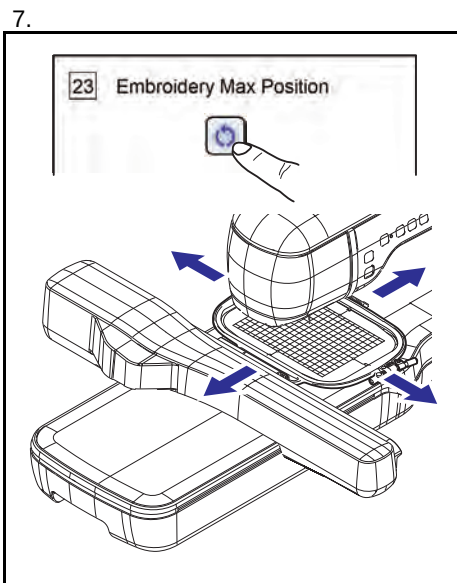
This adjustment requires the optional embroidery sheet (not included with this model).
For details on the optional parts, please refer to the parts list for this model.

[Standard]

Needle point is dropped in the center of the embroidery sheet in the test mode #23.

[Adjustment procedures]

1. Remove the presser foot.
2. Attach the needle (size 75/11).
3. Turn OFF the machine and attach the embroidery unit to the machine.
- *Key point**
 - Be sure to remove the embroidery frame from the embroidery unit.
4. Start the test mode and select #23 (Embroidery max position).
5. Attach the large size embroidery frame (100×100 mm/4inch×4inch) on the embroidery unit.
6. Set the embroidery sheet on the embroidery frame.
7. Press the key on the upper screen. (Carriage moves.)
8. Turn the pulley to lower the needle point to an area near the embroidery sheet.
9. Check the position of the needle point.
10. Select the test mode #42 (Embroidery position adjust).
11. Press the button on the screen to adjust the needle point position.



Adjustment

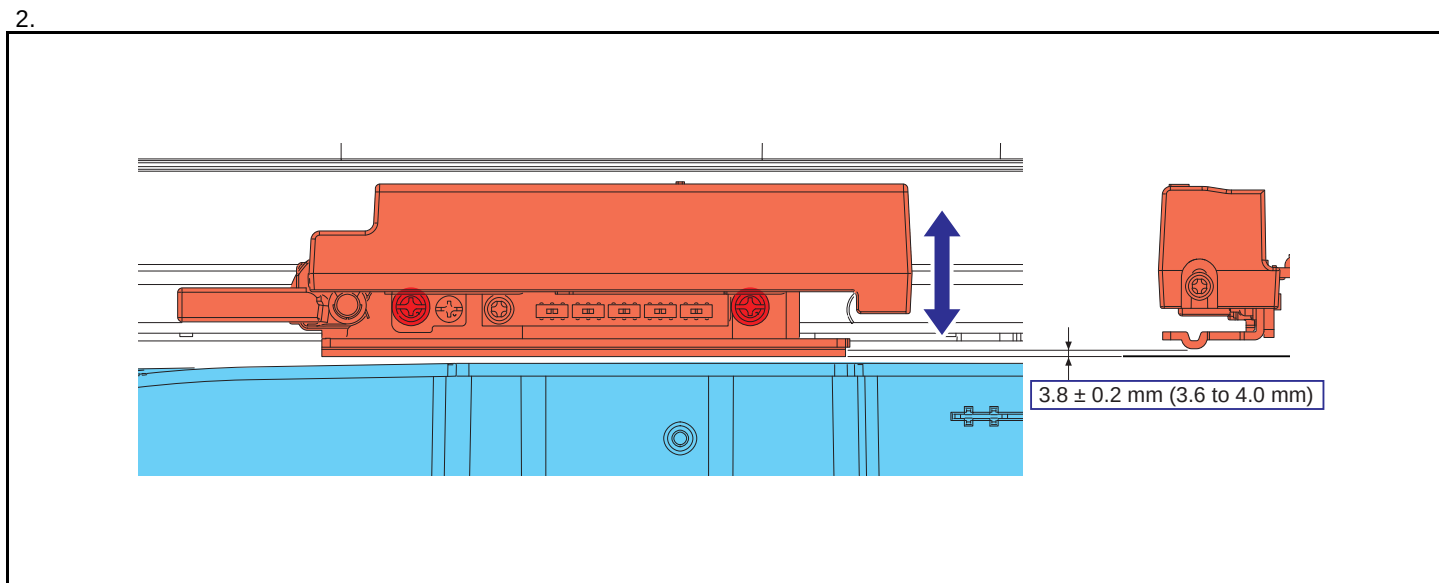
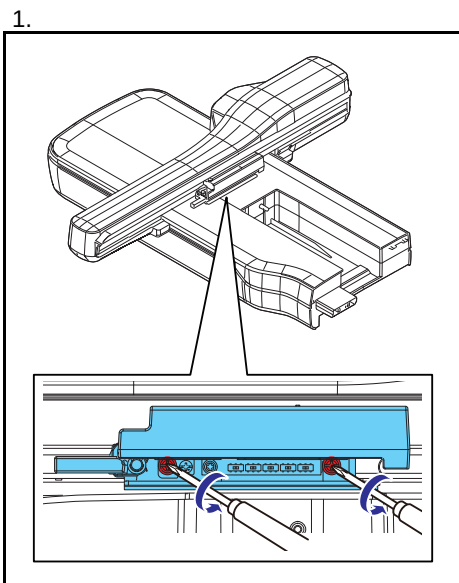
X carriage height (Embroidery unit)

[Standard]

Clearance between the E hoop stay plate assy and ES main cover is 3.8 ± 0.2 mm (3.6 to 4.0 mm).

[Adjustment procedures]

1. Loosen the two screws on the E hoop stay plate assy.
2. Move the E hoop stay plate assy to adjust the clearance between the E hoop stay plate assy and ES main cover.
3. Tighten the two screws on the E hoop stay plate assy.



This adjustment must be operated when:

- EMB relay PCB assy is replaced. (Set the Y pulse motor offset value at the same time.)
- XY motor assy in X carriage is replaced.

[Standard]

X motor offset value is set in the test mode #62.

[Adjustment procedures]

1. Remove the motor belt from the X motor pulley.

*Key point

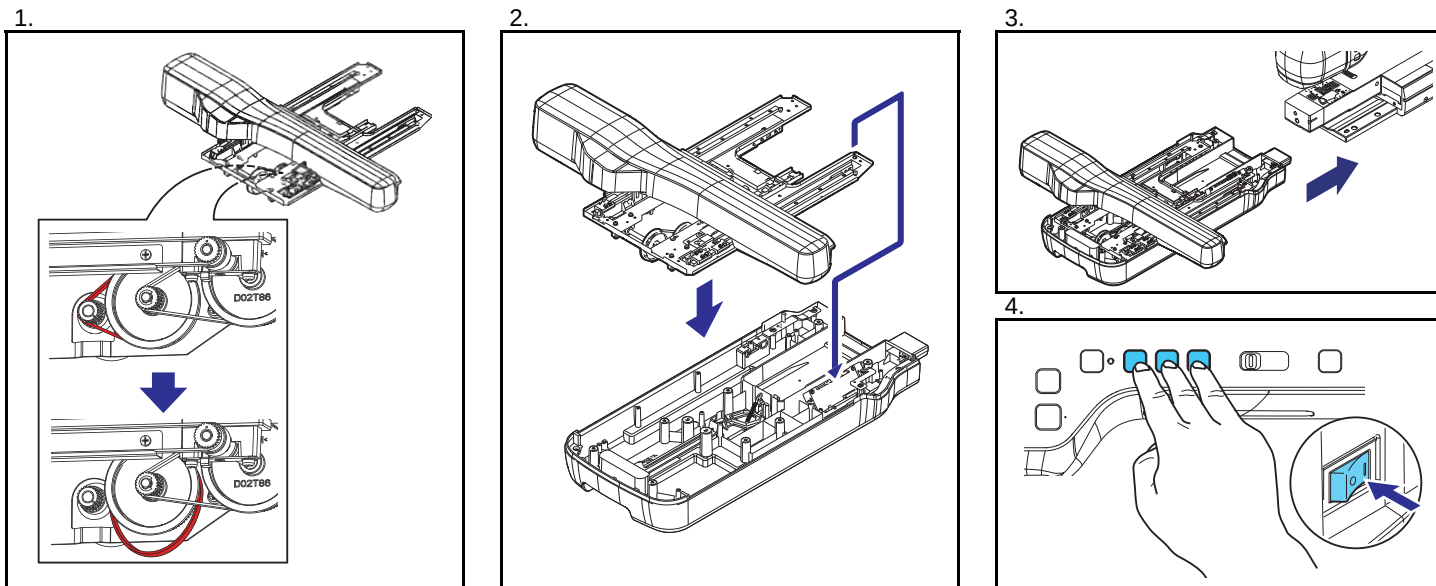
- Do not allow the removed belt to come in contact with the pulley.

2. Temporary attach the base cover unit on the main frame assy and connect the connector to the EMB relay PCB assy.
3. Turn OFF the machine and attach the embroidery unit to the machine.
4. Turn the machine ON while pressing the needle position button, thread cutter button, and presser foot lifter button.

→ Test mode starts without initial operation and #62 (Encoder offset check) appears.

*CAUTION

- If the machine is turned on with the procedure other than one described above, an error occurs during the initial operation.
- Be careful not to get your fingers caught in the carriage by the carriage motion due to mis operation.



<To next page>

<From previous page>

5. Press the [Eeprom Save] key under "X motor".

***Key point**

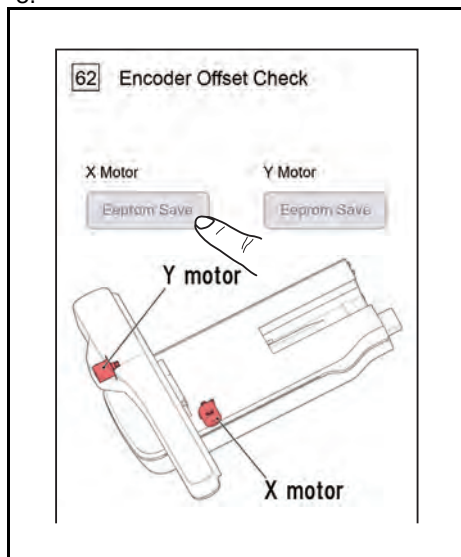
- "OK" appears upon completing the setting.
- If the screen does not change in a minute, turn the machine OFF and try again from the procedure 4.
- If an error message appears, turn the machine OFF and start again from the procedure 4.

6. Turn OFF the machine and remove the embroidery unit.

Adjust the item below after operating this adjustment:

- [4-34 X motor belt tension \(Embroidery unit\)](#)
- [4-35 X reducer belt tension \(Embroidery unit\)](#)

5.



This adjustment must be operated when:

- EMB relay PCB assy is replaced. (Set the X pulse motor offset value at the same time.)
- XY motor assy in Y carriage is replaced.

[Standard]

Y motor offset value is set in the test mode #62.

[Adjustment procedures]

1. Remove the reducer belt from the Y idle pulley.

***Key point**

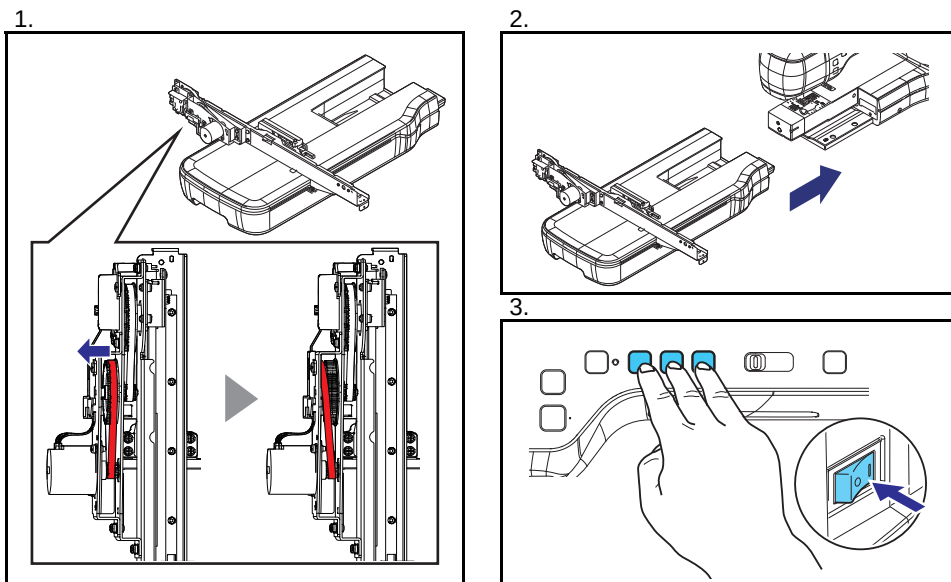
- Do not allow the removed belt to come in contact with the pulley.

2. Turn OFF the machine and attach the embroidery unit to the machine.
3. Turn the machine ON while pressing the needle position button, thread cutter button, and presser foot lifter button.

→ Test mode starts without initial operation and #62 (Encoder offset check) appears.

***CAUTION**

- If the machine is turned on with the procedure other than one described above, an error occurs during the initial operation.
- Be careful not to get your fingers caught in the carriage by the carriage motion due to mis operation.



<To next page>

<From previous page>

4. Press the [Eeprom Save] key under "Y motor".

***Key point**

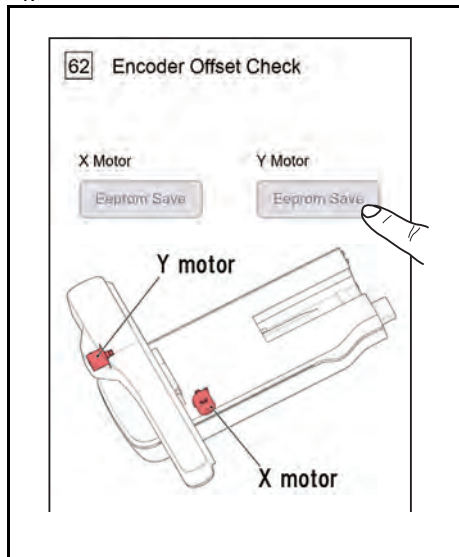
- "OK" appears upon completing the setting.
- If the screen does not change in a minute, turn the machine OFF and try again from the procedure 4.
- If an error message appears, turn the machine OFF and start again from the procedure 4.

5. Turn OFF the machine and remove the embroidery unit.

Adjust the item below after operating this adjustment:

- [4-36 Y motor belt tension \(Embroidery unit\)](#)
- [4-37 Y reducer belt tension \(Embroidery unit\)](#)

4.



This adjustment must be operated when:

- Feed module or needle-presser module is replaced.
- Z pulse motor or F pulse motor is replaced or reassembled.
- Z initial sensor PCB assy or F initial sensor PCB assy is replaced or reassembled.

[Standard]

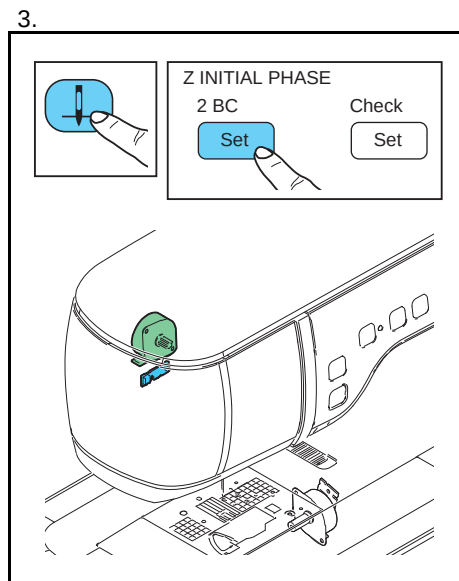
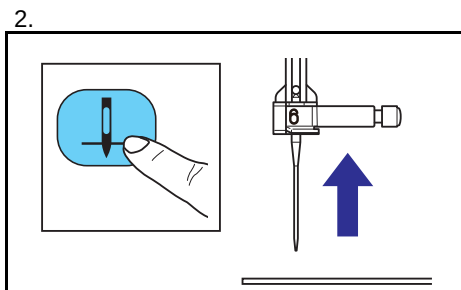
Initial phase of the Z pulse motor and F pulse motor are set in test mode #47.

[Adjustment procedures]

1. Start the test mode and select #47 (PM Initial phase check).
2. Lift the needle bar by pressing the needle position button.
3. Press the [Set] key to the left of "Z INITIAL PHASE". (Initial phase will be set.)

***Key point**

- If the [Set] key is grayed out, press the [Set] key while holding the presser foot lifter button down.



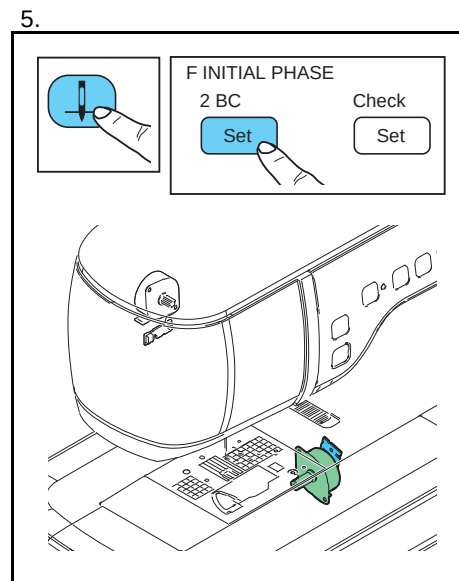
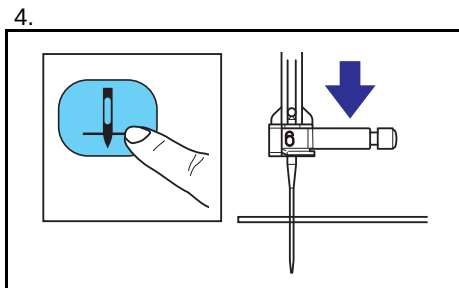
<To next page>

<From previous page>

4. Lower the needle bar by pressing the needle position button.
5. Press the [Set] key to the left of "F INITIAL PHASE". (Initial phase will be set.)

***Key point**

- If the [Set] key is grayed out, press the [Set] key while holding the presser foot lifter button down.



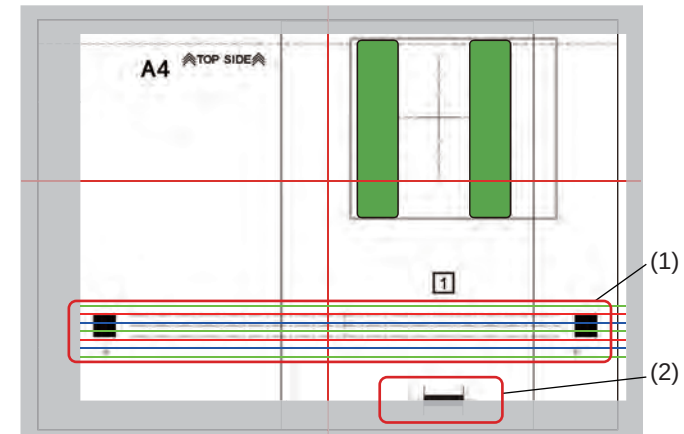
This adjustment must be operated when:

- Camera module is replaced/reattached.

[Standard]

Images displayed on the screen meets the standards below in the test mode #31.

- (1) Both ends of straight lines are on both left and right squares.
- (2) Bottom of the photographing range is on the rectangle.



[Preparation]

1. Jig sheet 1

- 1-1. Print the page at end of this chapter on A4 or Letter size standard blank paper.

*Key point

- Do not enlarge or shrink the page (Page Scaling: None).
- Do not use gloss paper.
- Make sure that there is no dirt, tear, nor wrinkle on the paper surface.

- 1-2. Check the length of the specified area.

*Key point

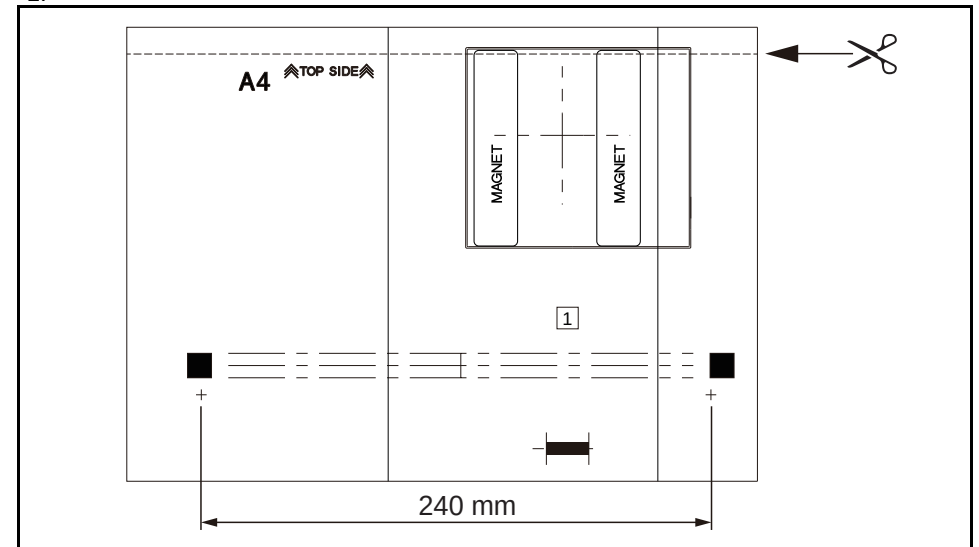
- When it's printed with no scaling, length of the specified area is 240mm.

- 1-3. Cut along the broken lines.

2. Two magnets

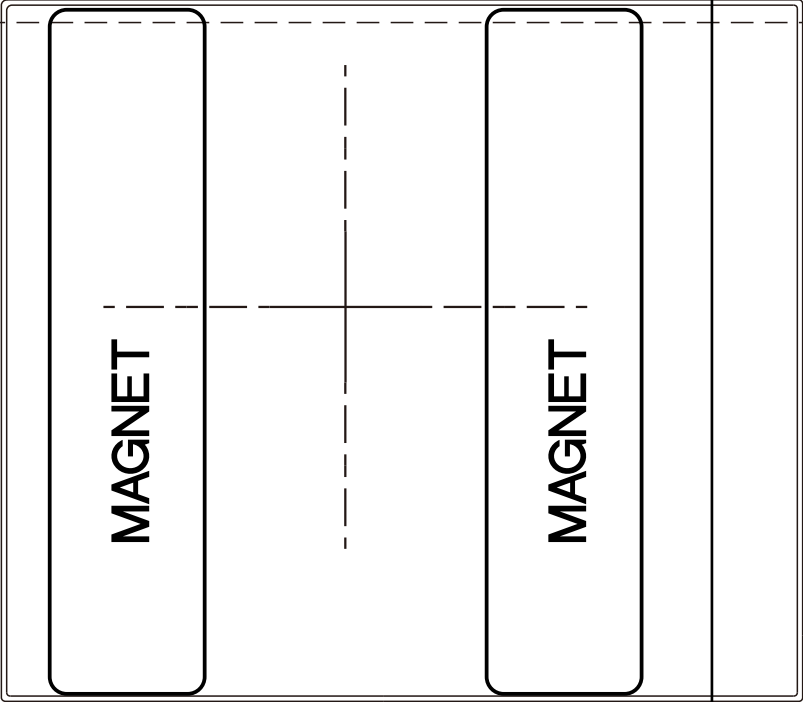
- Bundled with the machine.

1.



<To next page>

LTR ⤴⤴ TOP SIDE ⤴⤴



1



<From previous page>

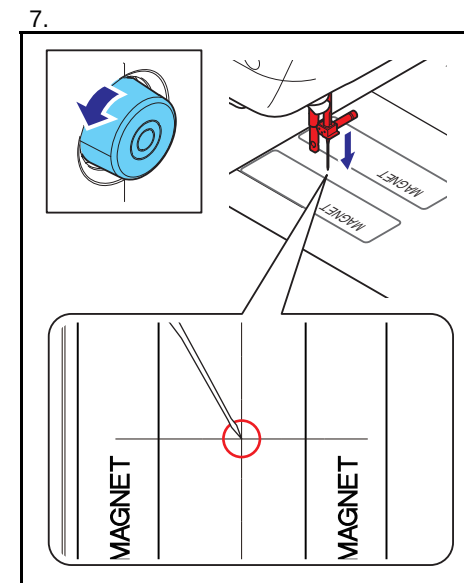
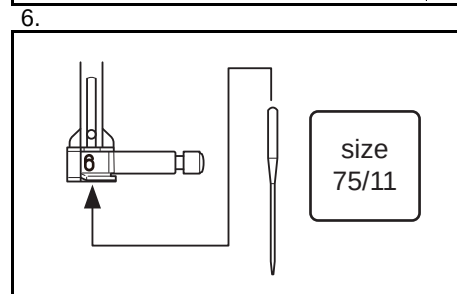
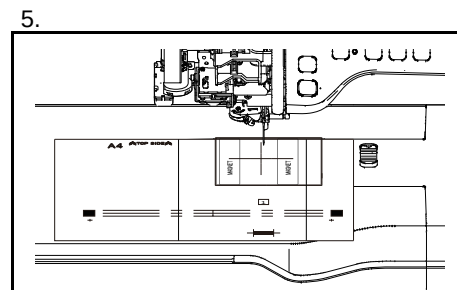
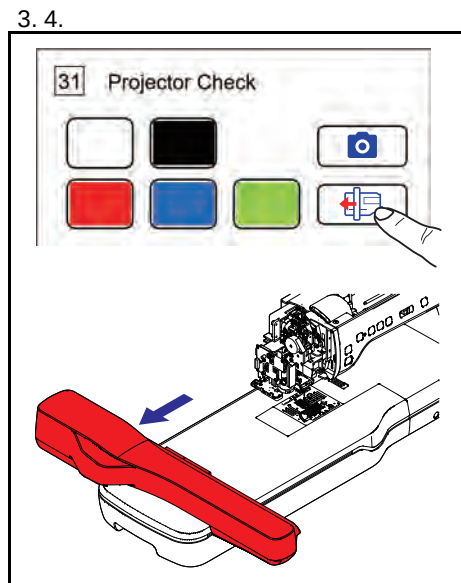
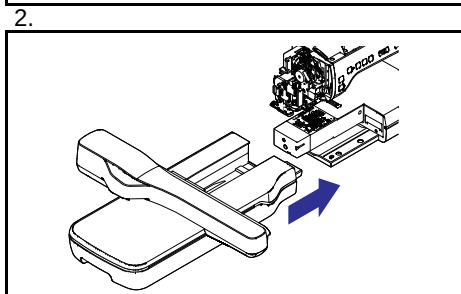
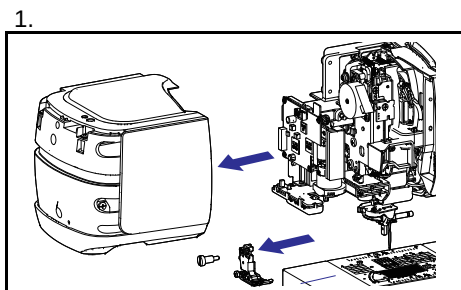
[Adjustment procedures]

1. Remove the presser foot, presser foot holder, and face plate assy.
2. Turn OFF the machine and attach the embroidery unit to the machine.
3. Start the test mode and select #31 (Projector Check).
4. Press the [Carriage Move] key on the screen. (Carriage moves to the left.)

***Key point**

- If pressing the [Carriage Move] key does not work, press the needle position button to raise the needle bar.

5. Put the jig sheet 1 on the needle plate assy.
6. Attach the needle (size 75/11).
7. Turn the pulley to drop the tip of the needle point into the center of the cross on the sheet.



<To next page>

<From previous page>

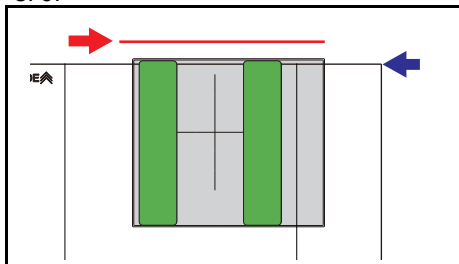
8. Place the sheet so as to be parallel with the needle plate assy.
9. Place the two magnets on the specified position of the sheet. (Secure the sheet on the needle plate assy.)
10. Press the needle position button to lift the needle bar.
11. Press the [Camera] key on the screen. (Images shot by camera appears.)
12. Check that the straight lines are on the left and right squares.
13. Loosen the screw on the camera plate B.
14. Move the camera plate B to adjust the camera module angle.

***CAUTION**

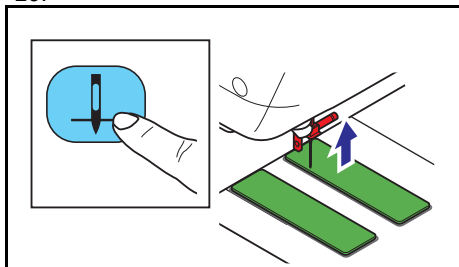
- Do not touch the camera module lens.

15. Tighten the screw on the camera plate B.

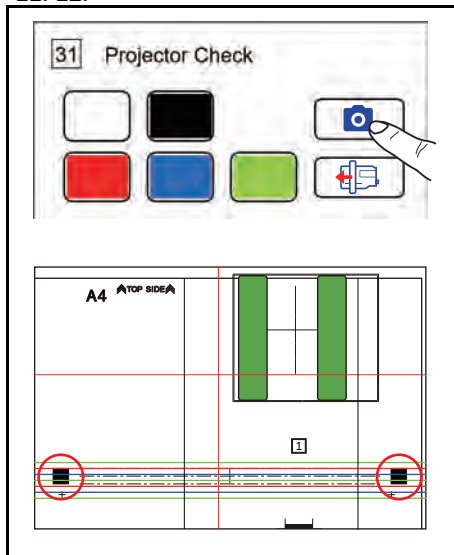
8. 9.



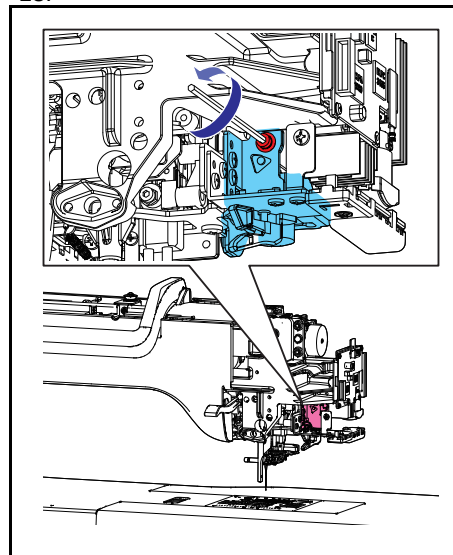
10.



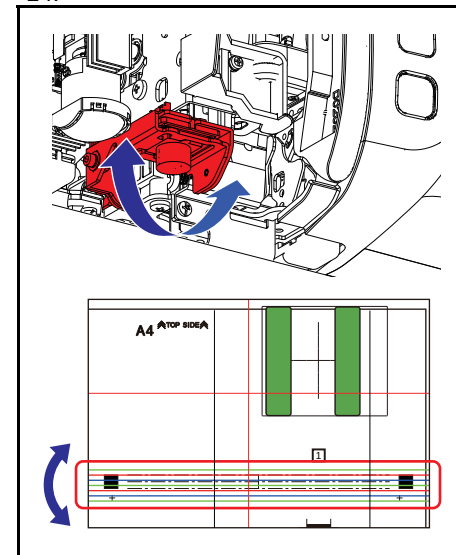
11. 12.



13.



14.



<To next page>

<From previous page>

16. Check that the bottom of the photographing range is on the rectangle.

17. Loosen the screw on the camera plate A.

18. Move the camera plate A to adjust the camera module angle.

***CAUTION**

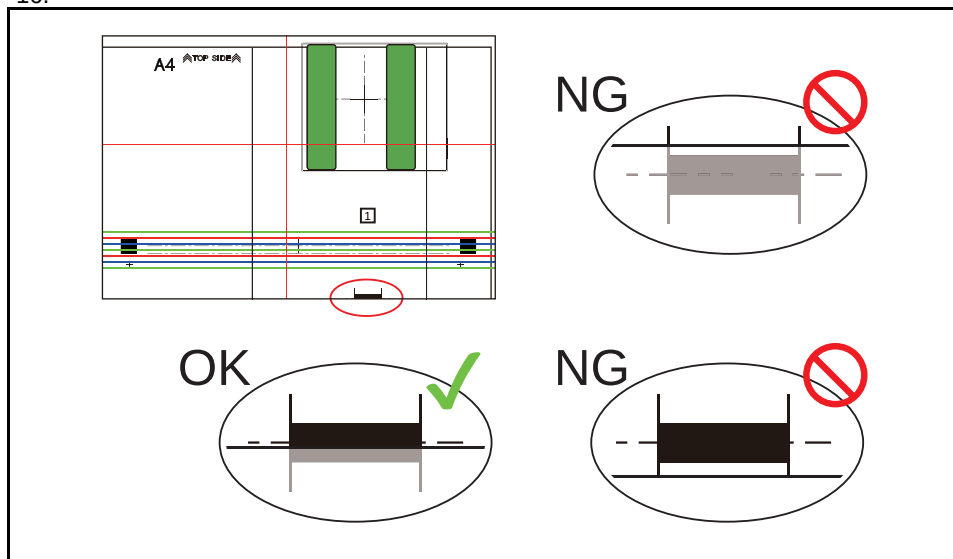
- Do not touch the camera module lens.

19. Tighten the two screws on the camera plate A.

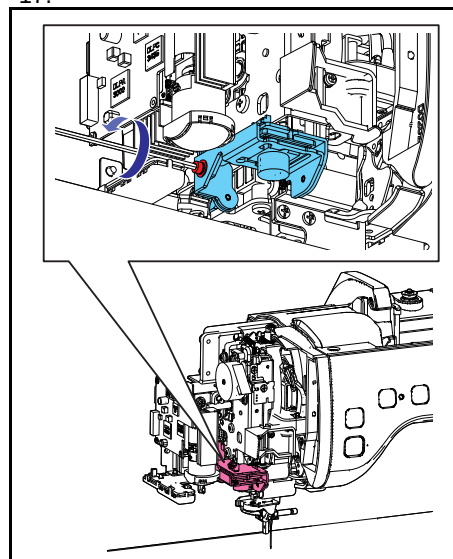
Adjust the item below after operating this adjustment:

- [4-58 Camera calibration](#)
- [4-63 Projector calibration](#)

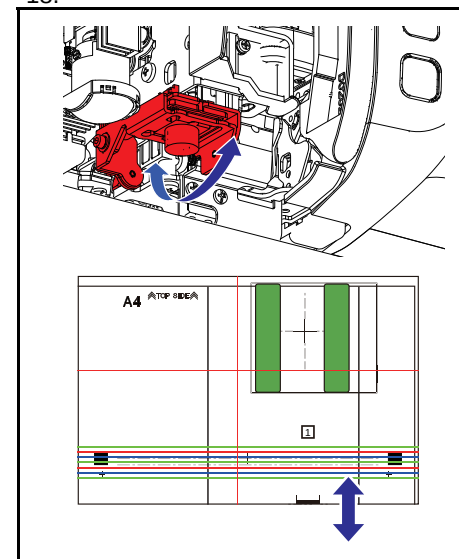
16.



17.



18.



This adjustment must be operated when:

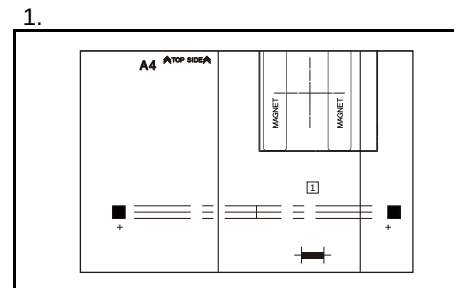
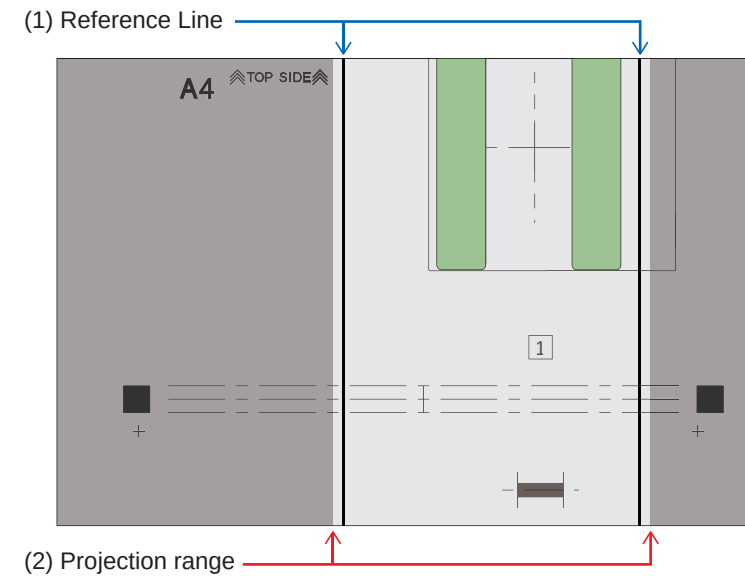
- Projector module is replaced/reattached.

[Standard]

The reference lines (2 lines) on jig sheet 1 are inside the projection range in the test mode #31.

[Preparation]

1. Jig sheet 1
 - Use the same jig sheet 1 used in "[4-52 Camera angle](#)".
2. Two magnets
 - Bundled with the machine.



<To next page>

<From previous page>

[Adjustment procedures]

1. Remove the presser foot, presser foot holder, and face plate assy.
2. Turn OFF the machine and attach the embroidery unit to the machine.
3. Secure the jig sheet 1 on the needle plate assy.

***Key point**

- Refer to the procedure 1 to 8 in "[4-52 Camera angle](#)" for the securing method.

4. Select the test mode #31 (Projector Check).
5. Press the white key on the screen. (White light is projected.)
6. Check the position of the projected white light.
7. Loosen the two screws on the PRJ holder.
8. Adjust the angle of the projector module.

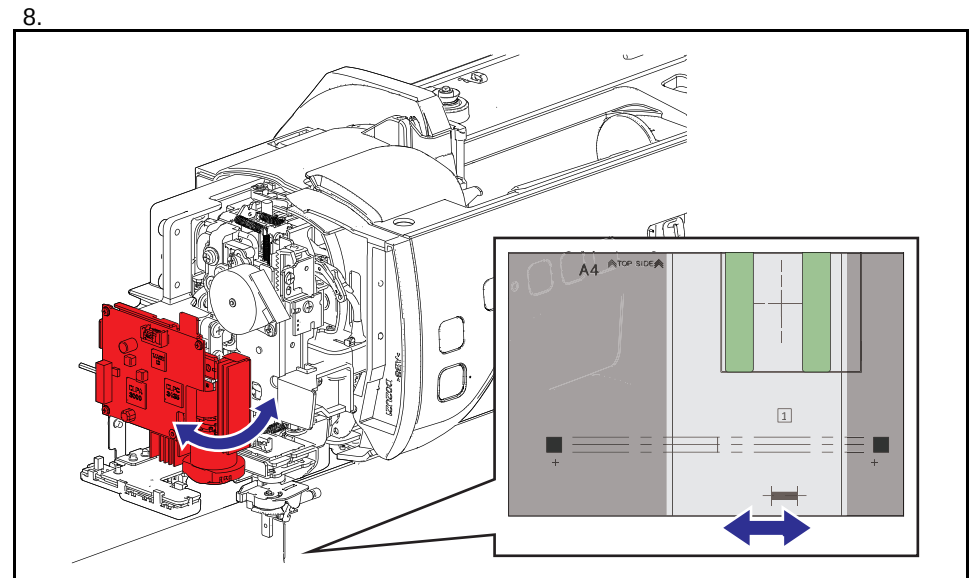
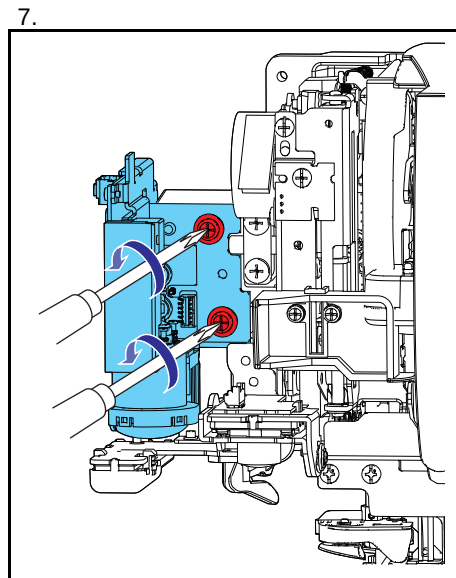
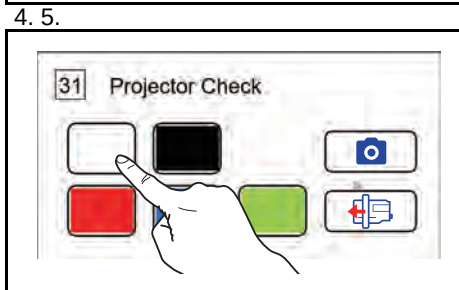
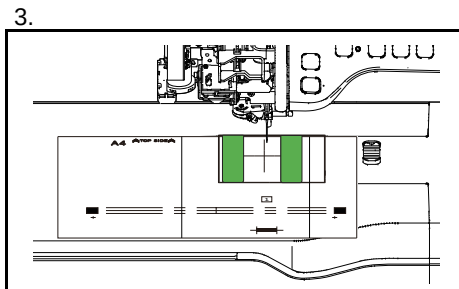
***CAUTION**

- Be careful when you touch the project module as it heats up by lighting for a long time.
- Do not touch the projector module lens.

9. Tighten the two screws on the PRJ holder.

Adjust the item below after operating this adjustment:

- [4-63 Projector calibration](#)



This adjustment must be operated when:

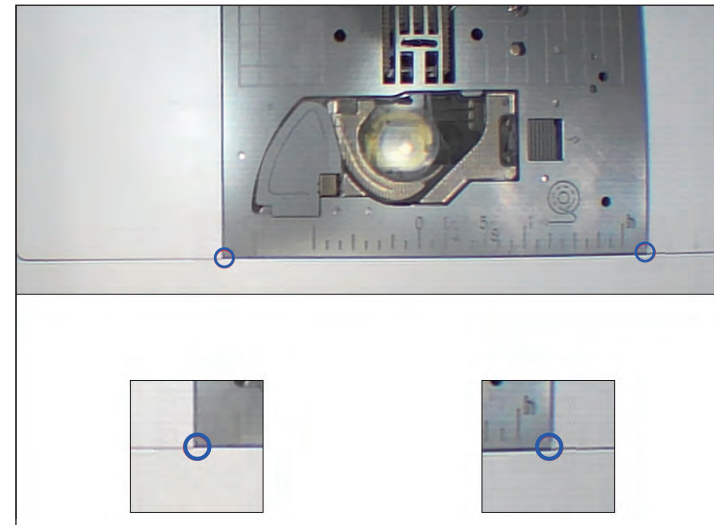
- Camera module is replaced/reattached.
- Panel PCB ASSY is replaced.

Adjust items below before operating this adjustment:

- [4-52 Camera angle](#)

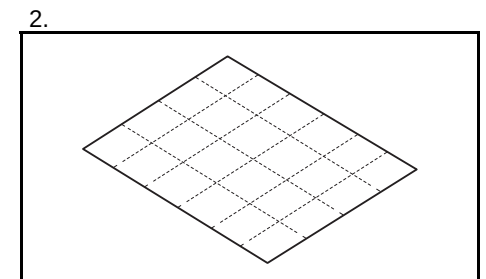
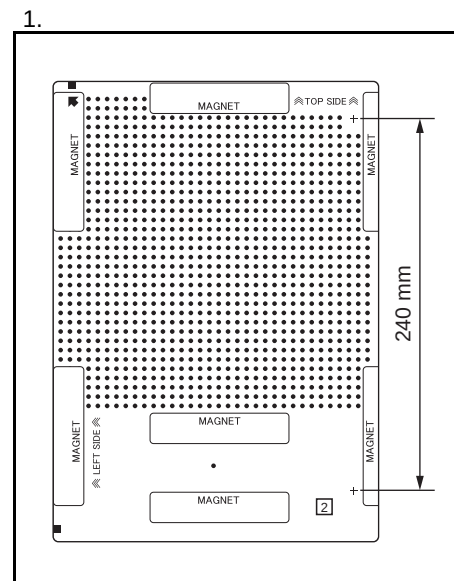
[Standard]

- "OK" appears on the screen when operating the calibration in the test mode #54.
- The two corners of the needle plate are inside each blue circle on the screen in the test mode #54.



[Preparation]

1. Jig sheet 2
 - Supplemental part (part code: XH3650-001)
2. Needle position detection sticker
 - Supplemental part (part code: XE7916-001)
3. Seven magnets
 - Six magnets are bundled with the machine.
 - One magnet is bundled with the Jig sheet 2.
4. Scanning frame
 - Bundled with the machine.



<To next page>

<From previous page>

[Adjustment procedures]

1. Remove the presser foot, presser foot holder, and face plate assy.
2. Turn OFF the machine and attach the embroidery unit to the machine.

***Key point**

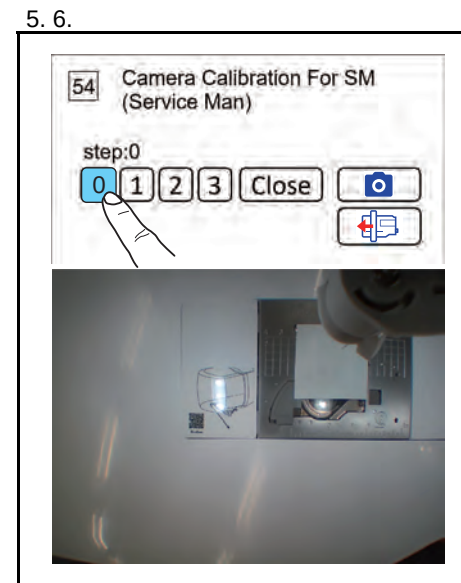
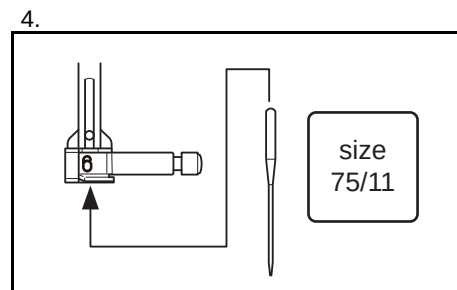
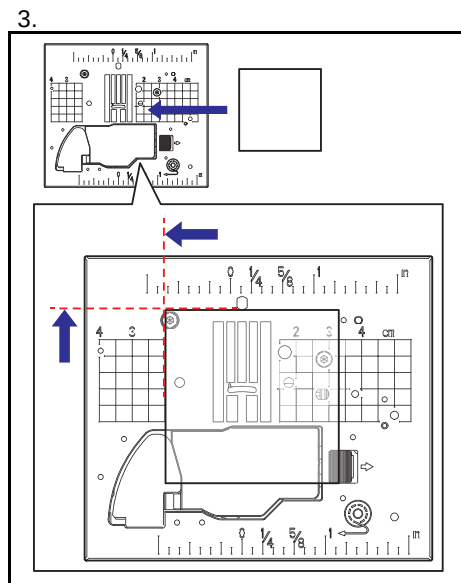
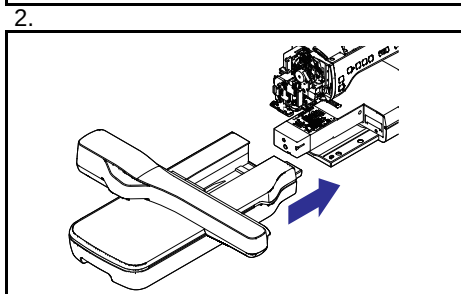
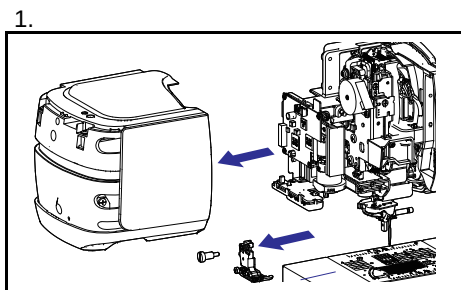
- Be sure to remove the embroidery frame from the embroidery unit.

3. Attach the needle position detection sticker on the needle plate assy.

***Key point**

- Attach the sticker on the surface of the needle plate assy without getting air bubbles.
- Make sure that there is no dirt, tear, nor wrinkle on the sticker surface.

4. Attach the needle (size 75/11).
5. Start the test mode and select #54 (Camera calibration SM).
6. Press the [0] key on the screen. (Images shot by camera appears.)

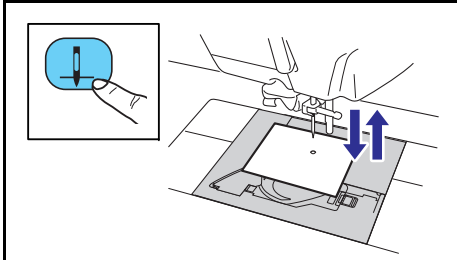


<To next page>

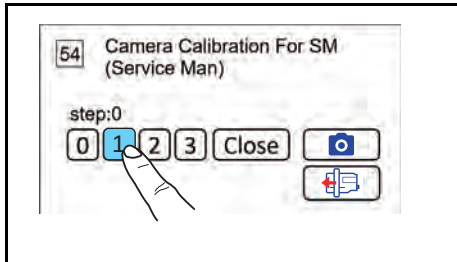
<From previous page>

7. Lower the needle bar by pressing the needle position button. (Push the needle through the sticker.)
8. Lift the needle bar by pressing the needle position button.
9. Press the [1] key on the screen. (Needle drop point recognition result appears.)
 - 9-1. When "OK" appears on the screen:
 - Proceed to the next step.
 - 9-2. When "NG" appears on the screen:
 - (1) If the needle drop point is not within the yellow frame, adjust the frame position by pressing the arrow key on the bottom right of the screen and perform the procedure 9 again.
 - (2) If the part on the top right of the screen is within the yellow frame, adjust the frame position by pressing the arrow key on the bottom right of the screen and perform the procedure 9 again.

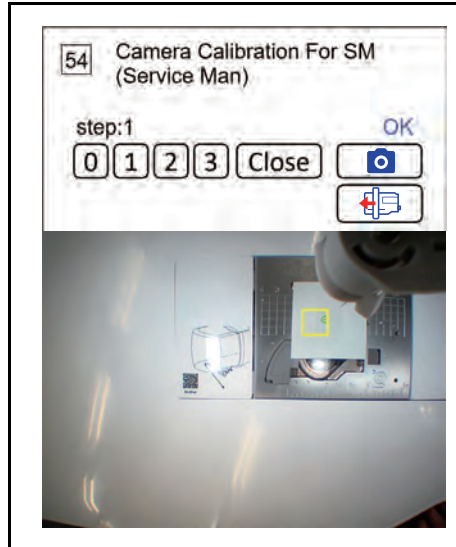
7. 8.



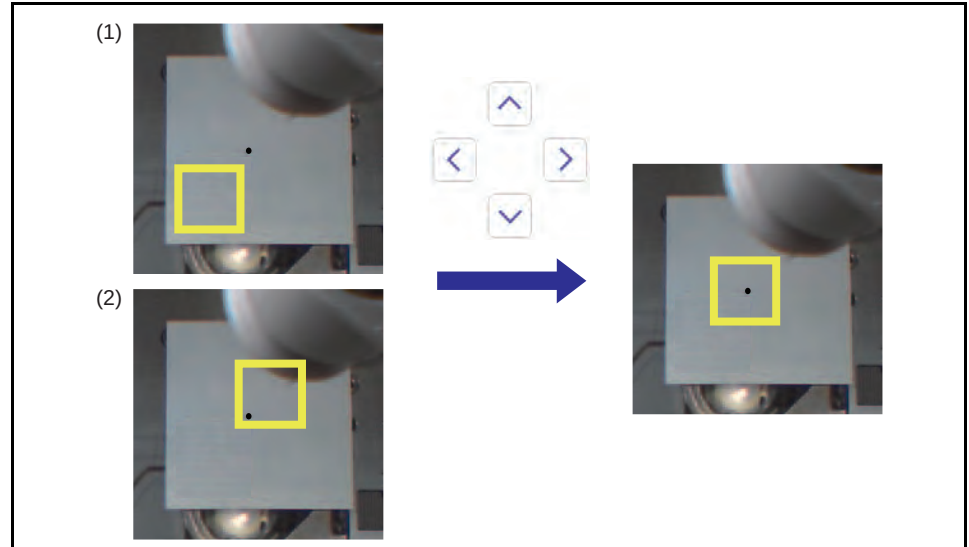
9.



9-1.



9-2.



<To next page>

<From previous page>

10. Remove the needle.
11. Remove the sticker.
12. Put the jig sheet 2 on the scanning frame.

***Key point**

- Align the upper left corner of the sheet with the upper left corner of the white plate of the scanning frame.

13. Put magnets on the specified positions of the sheet. (Secure the sheet on the scanning frame.)

***Key point**

- If the number of magnets is not enough, secure the position A with the adhesive tape.

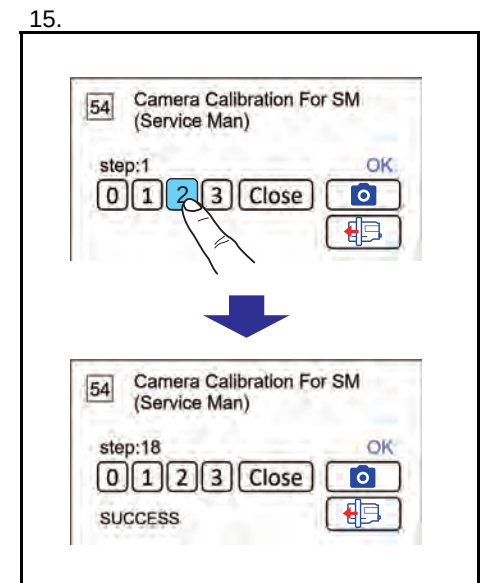
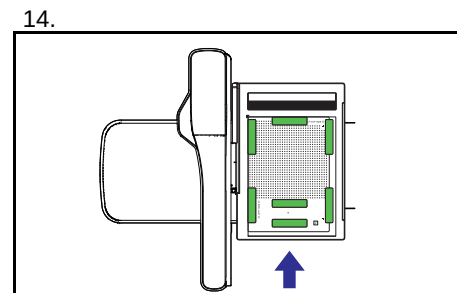
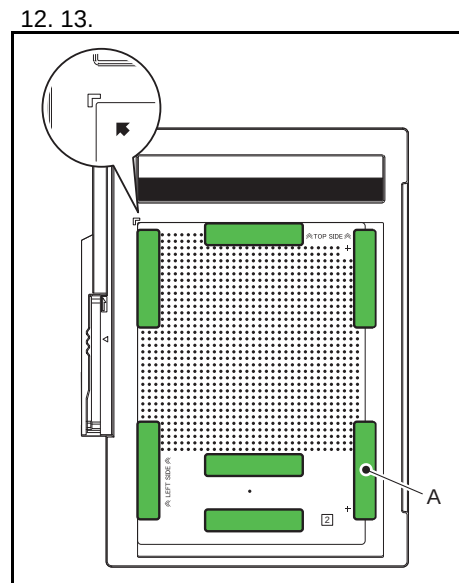
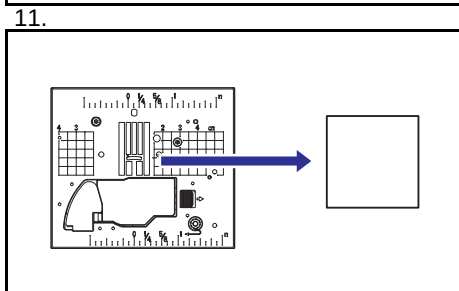
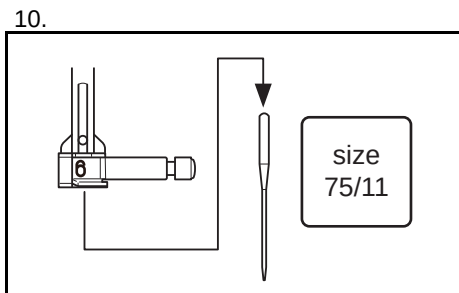
14. Attach the scanning frame to the embroidery unit.
15. Press the [2] key on the screen. (Calibration starts automatically.)
→ Process result appears on the screen a few tens of seconds later.

15-1. When "OK" appears on the screen:

- Proceed to the next step.

15-2. When an error message appears on the screen:

- (1) Check that the sheet is set correctly on the scanning frame and try again from the procedure 15.
- (2) If the error message appears again, replace or reattach the camera module.



<To next page>

<From previous page>

16. Remove the scanning frame from the embroidery unit.
17. Press the [3] key on the screen. (Images shot by camera appears.)
18. Check the positions of the two blue circles on the screen.

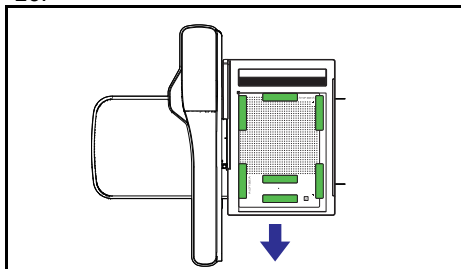
***Key point**

- If the positions of the red circles do not meet the standard:
 - (1) Scanning frame may be deformed. Replace the scanning frame with another one and try again from the procedure 14.
 - (2) Perform the "4-52 Camera angle" again.

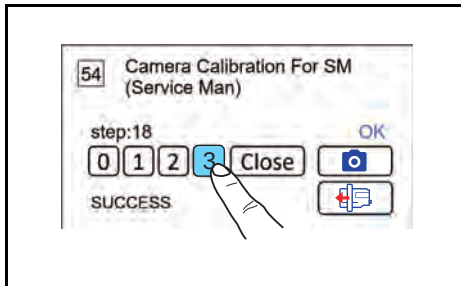
Adjust the item below after operating this adjustment:

- 4-63 Projector calibration

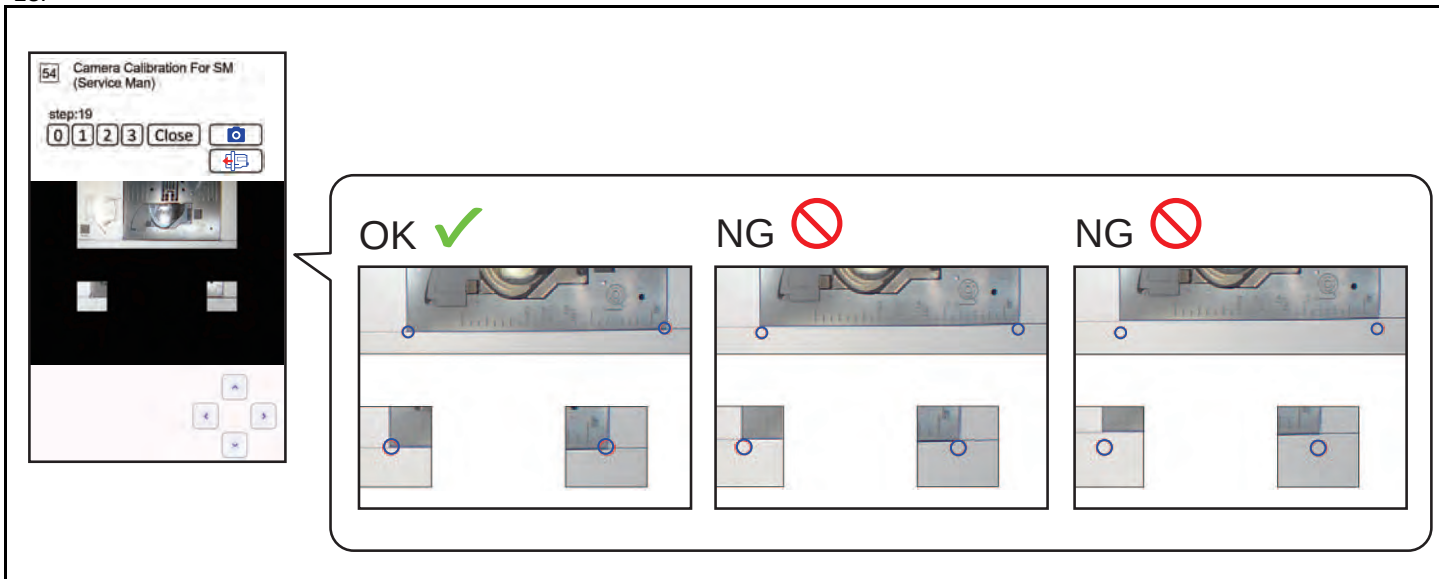
16.



17.



18.



This adjustment must be operated when:

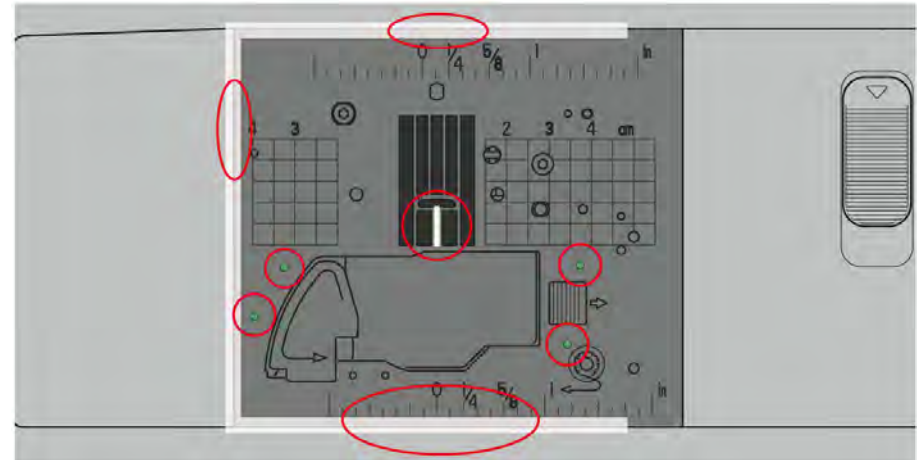
- Projector module is replaced/reattached.
- Camera module is replaced/reattached.

Adjust items below before operating this adjustment:

- [4-56 Projector angle](#)

[Standard]

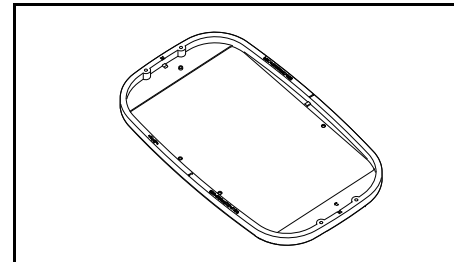
- "SUCCESS" appears on the screen when operating the calibration in the test mode #63.
- All reference patterns projected in test mode #63 are in the specified positions on the needle plate Assy.



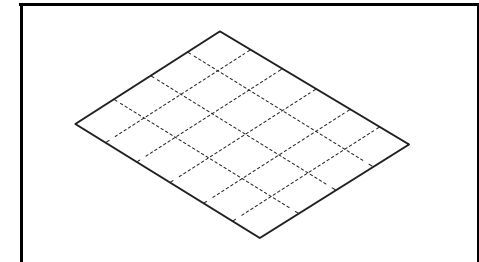
[Preparation]

1. Jig frame
 - Supplemental part (part code: D039WU-001)
2. Needle position detection sticker
 - Supplemental part (part code: XE7916-001)

1.



2.



<To next page>

<From previous page>

[Adjustment procedures]

1. Remove the presser foot, presser foot holder, needle, and face plate assy.
2. Turn OFF the machine and attach the embroidery unit to the machine.
3. Start the test mode and select #63 (Projector calibration for SM).
4. Press the [Carriage Move] key on the screen. (Carriage moves to the left.)

***Key point**

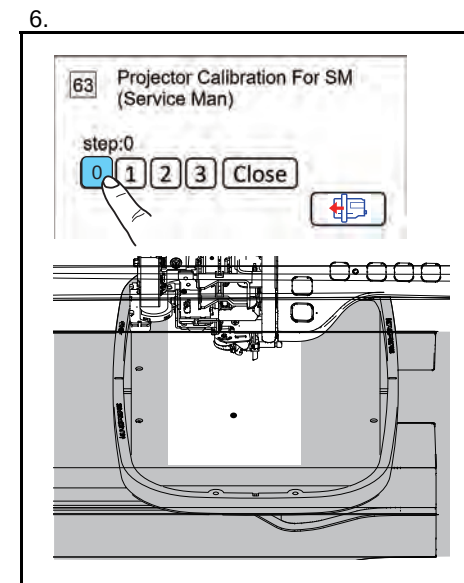
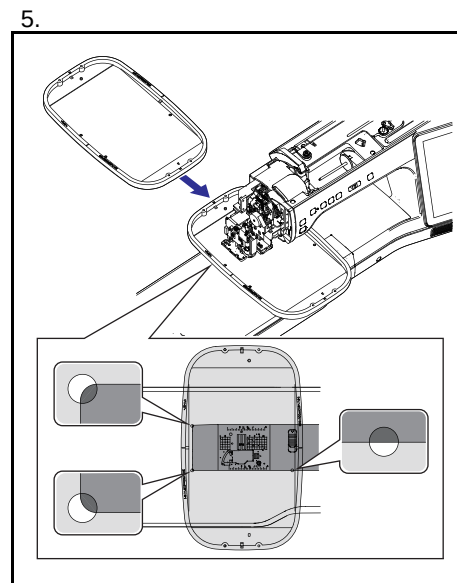
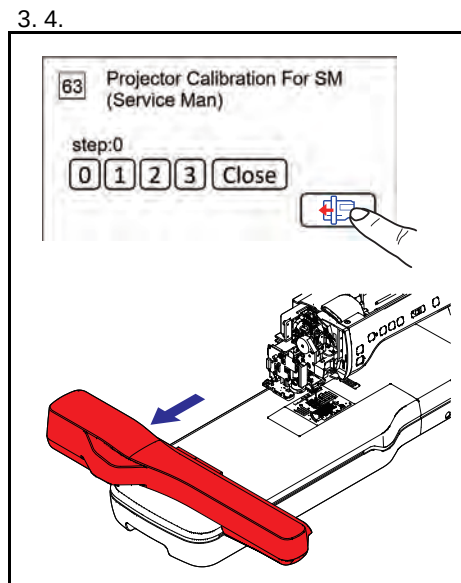
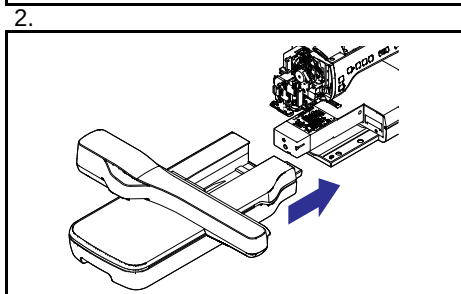
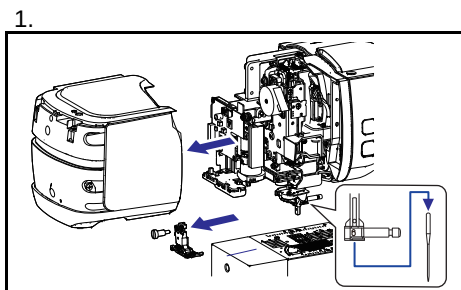
- If pressing the [Carriage Move] key does not work, press the needle position button to raise the needle bar.

5. Put the jig frame on the needle plate assy.

***Key point**

- Check the 3 holes on the surface of the whiteboard and place the jig frame in the designated position.
- If there is a sticker on the surface of the needle plate assy, remove it.

6. Press the [0] key on the screen. (A single dot is projected.)



<To next page>

<From previous page>

[Adjustment procedures]

7. Press the [1] key on the screen. (Dot pattern is projected, and then calibration starts automatically.)

***Key point**

- It takes approx. 30 seconds to complete the calibration. Do not touch the machine during the calibration.

7-1. When "OK" appears on the screen:

- Proceed to the next step.

7-2. When an error message appears on the screen:

(1) Check the jig frame is in the correct position and repeat step 8.

(2) If the error message appears again, press the minus key at the bottom right of the screen to reduce the projector brightness, then repeat step 8.

8. Remove the jig frame.

9. Attach the needle position detection sticker on the needle plate assy.

***Key point**

- Attach the sticker on the surface of the needle plate assy without getting air bubbles.
- Make sure that there is no dirt, tear, nor wrinkle on the sticker surface.

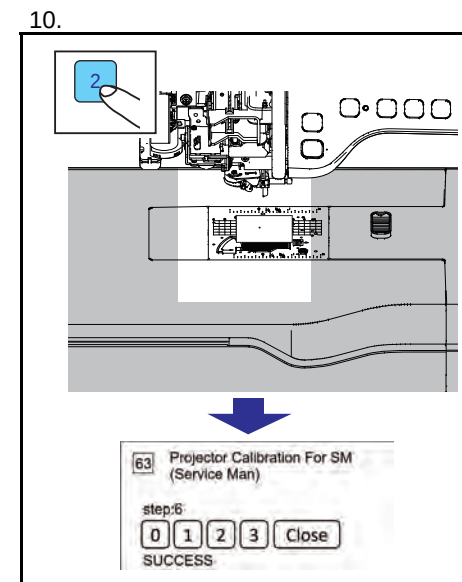
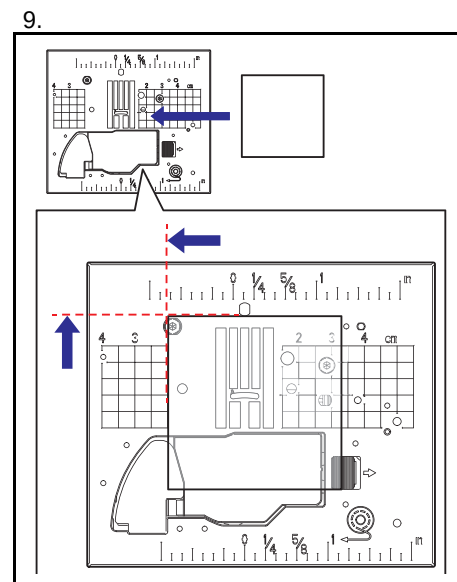
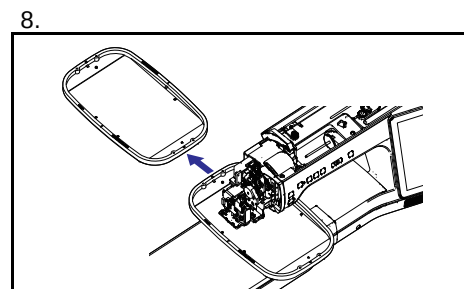
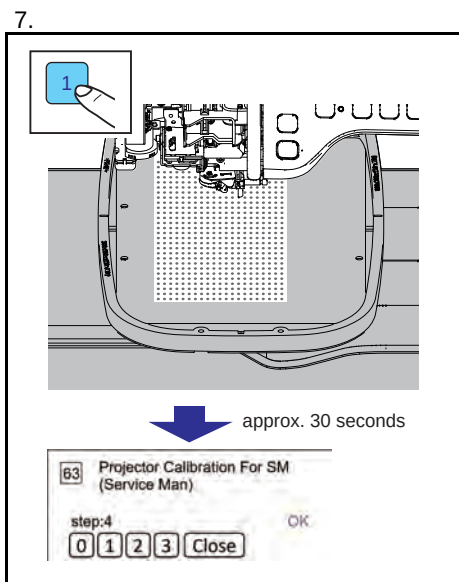
10. Press the [2] key on the screen. (A single dot is projected.)

10-1. When "SUCCESS" appears on the screen:

- Proceed to the next step.

10-2. When an error message appears on the screen:

- Replace with a new sticker and repeat step 11.



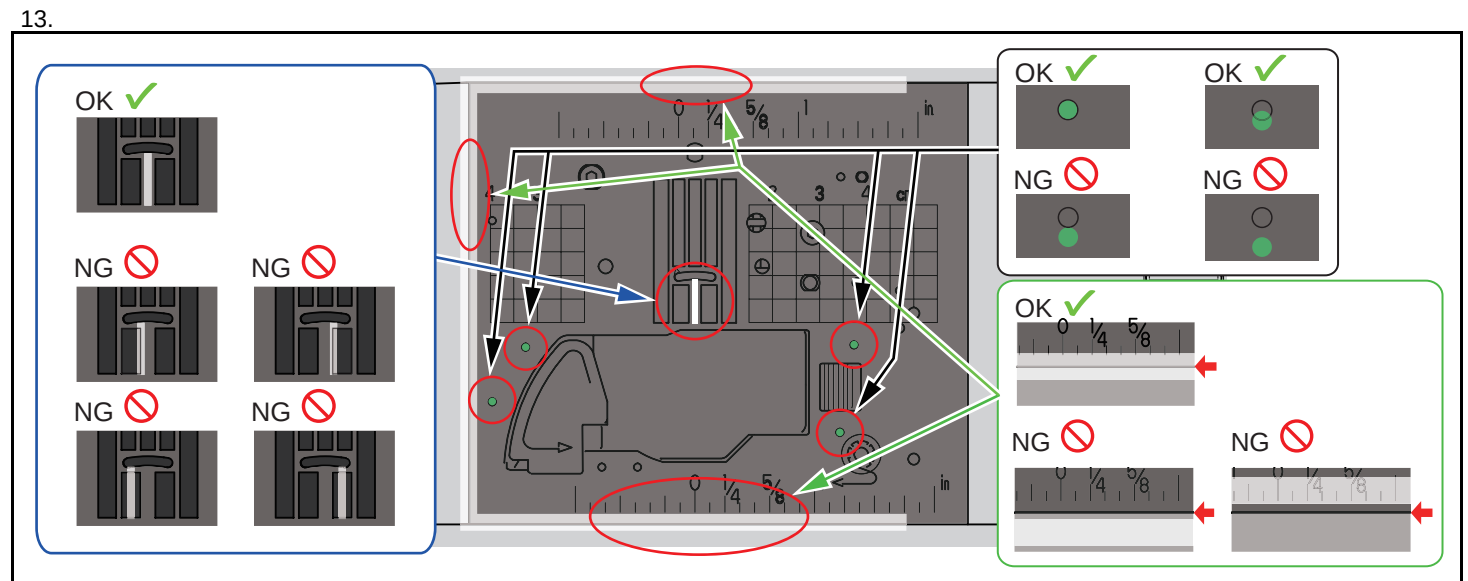
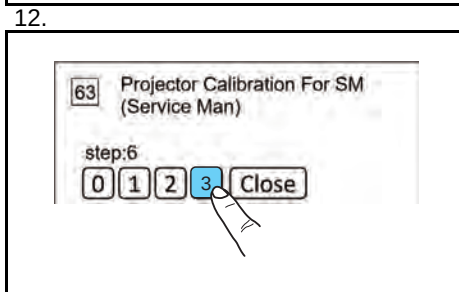
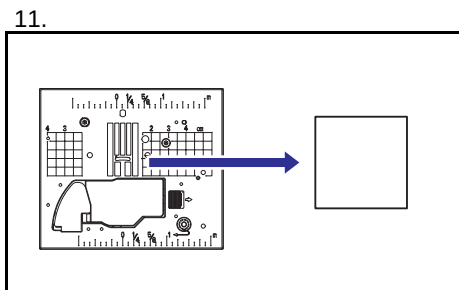
<To next page>

<From previous page>

11. Remove the sticker.
12. Press the [3] key on the screen. (Reference patterns are projected.)
13. Check the positions of the projected reference patterns.

***Key point**

- If the reference pattern position does not meet the standard, perform the following adjustment again:
 - (1) 4-52 Camera angle
 - (2) 4-56 Projector angle
 - (3) 4-58 Camera calibration



5 Troubleshooting

Error messages	5 - 2
Symptoms	5 - 34

■ List of Error Messages

#	Error message
1001	F01 MAIN MOTOR SPEED
1002	F02 ** SW ON
1004	F04 FOOT CONTROLLER BREAK
1005	F05 SPEED SENSOR
1006	F06 NP SENSOR BREAK
1007	F07 SPEED VR BREAK
1008	F08 CAMERA MODULE BREAK
1009	F09 MALFUNCTION - AD CONVERTER
1010	F10 MALFUNCTION - AD CONVERTER
1011	F11 MALFUNCTION - AD CONVERTER
1012	F12 MALFUNCTION - AD CONVERTER
1013	F13 MALFUNCTION - AD CONVERTER
1014	Machine PCB Power OFF
1101	The safety device has been activated. Is the thread tangled? Is the needle bent?
12**	A malfunction occurred.Turn the machine off, then on again. [Error message (A)]



#	Error message (A)
1201	*PM_ERROR
1202	*-MOVE FAIL_RPM_* ERR_CTRL_SPEED_* ERR_CTRL_THETA_* ERR_OS_SPEED_*
1203	*-MOT CURRENT ERR_OV_VDC_* ERR_ZPHASE_CTRL_* ERR_OC_IU_* ERR_OC_IV_* ERR_OC_IW_* ERR_HW_OC_* ERR_OC_IQ_*
1204	ERR_ENC_OFFSET_REV_* XY_CPU_EEP_OFS XY_CPU_ZDIF_* XY_CPU_ZDIF_EEP_* XY_CPU_Z_OFS_* ERR_ENC_OFFSET_EEP_*
1205	XY INI *-MOT HEAT ERR_OH_MOT_*
1206	XY_CPU_EEP_DIF
1207	ERR_UV_VDC_*
1208	OVC_PJ
1209	IIC_EXP_DF_UNIT
1210	IIC_EXP_LEDPT_UNIT
1211	IIC_EXP_SR_UNIT

© Tacony Corp 7/2025 all rights reserved