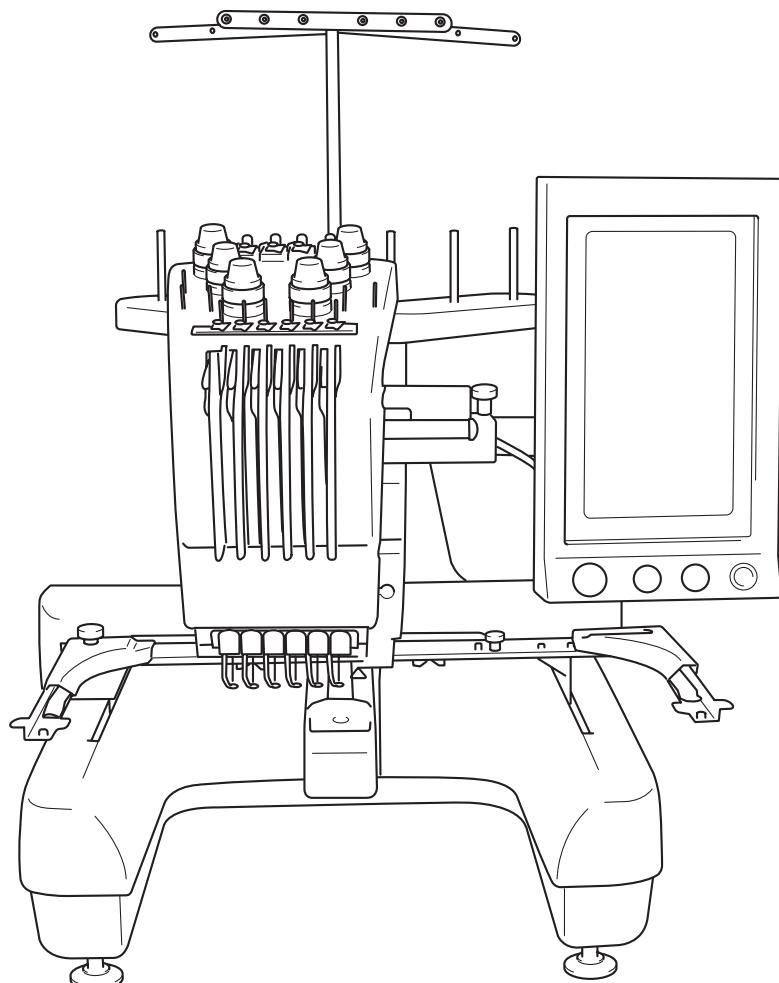


brother[®]

**SERVICE MANUAL FOR
PROFESSIONAL EMBROIDERY MACHINE**



PR650

CONFIDENTIAL

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8.2009
4.2010

Brother Industries, Ltd.
Nagoya, Japan

<To do the adjustment and the repair safely and surely, follow the instructions below. >

1.

..... 1 - 2
..... 1 - 3

..... 1 - 5 -

1 - 7

..... 1 - 8

2.

..... 2 - 1

..... 2 - 3

..... 2 - 4

L

R

L

.2 - 8

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..... 2 - 16

..... 2 - 17

Y

..... Y

..... 2 - 18

..... 2 - 18

Y

..... 2 - 19

..... 2 - 19

FFC

X-

Y-

.... 2 - 20

..... 2 - 20

X-

X-

B

..... 2 - 20

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..... A

X-

B

X-

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..... 2 - 21

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..... L

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..... Y-

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 2 - 27 2 - 28
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 - 47
 2 - 48 2 - 49 J-
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 ... 2 - 52
 2 - 52 2 - 53 2 - 55
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	USB	Y-
	2 - 60
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	2 - 62

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	2 - 68
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	(1)	2 - 72
	2 - 72
	(1)
	2 - 73	(2)
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	A	2 - 78
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	2 - 81
	2 - 82
	USB	2 - 82

	2 - 82
	2 - 83
	SS	2 - 83

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	3 - 1
	3.
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.....	3 - 3
.....	3 - 4
.....	3 - 4
.....	3 - 5
5	USB
.....	3 - 5
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.....	3 - 7
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.....	3 - 9
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.....	(..... 2).....
.....	3 - 15
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(..... 1).....	3 - 16
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.....	3 - 21
.....	(..... 1).....	3 - 21
.....	(..... 2).....
.....	3 - 22.....3 - 24
.....	3 - 25
.....	3 - 26
.....	3 - 28
.....	3 - 29
.....	3 - 30
USB	Y-
.....	3 - 31
.....	3 - 32
.....	3 - 33
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3 - 76
3 - 77
3 - 78
 R3 - 79

Y-
3 - 80
(X-)3 - 81
3 - 82X-3 - 833 - 84X-3 - 85X-
3 - 86X-AX-BY-X-X
3 - 873 - 88FFC3 - 90YY
3 - 893 - 913 - 913 - 923 - 933 - 94
(Y-3 - 963 - 973 - 973 - 973 - 973 - 97
3 - 983 - 993 - 993 - 1003 - 1013 -
1023 - 1023 - 1033 - 1043 - 104LRL
3 - 1043 - 1053 - 1063 - 1073 - 1084 - 23 - 1094 - 33 - 1104 - 43 -
4 - 54 - 124 - 204 - 224 - 224 - 234 - 24
4 - 25(...../)(...../)4 - 25

.....	4 - 26
.....	4 - 28
.....	4 - 29
.....	4 - 30
.....	4 - 31	(/)
.....	4 - 32	(/)
)	4 - 33
- 34	Y-
.....	4 - 35	X-
.....	4 - 36	..
.....	4 - 37
.....	4 - 38
.....	4 - 39	/
D).....	4 - 40	(A/
.....	4 - 41
2	X, Y.....	4 - 4
.....	4 - 43
.....	4 - 44

5.

.....	5 - 2
.....	5 - 3
.....	5 - 6
.....	5 - 7
.....	5 - 8
.....	5 - 9
.....	5 - 10
.....	5 - 12
- 13	5
.....	5 - 14
.....	5 - 15
.....	5 - 16
.....	5 - 17	USB
.....	5 - 18	USB-
.....	5 - 19
.....	5 - 20	..
.....	5 - 23
.....	5 - 24

6.

..... 6 - 2
..... 6 - 3
..... (1500) ...
..... 6 - 4
..... (500) 6 - 1
0) 6 - 11
7.)

..... 7 - 2
..... 7 - 3
..... 7 - 10
..... 7
- 17 7 - 19 Y-
..... 7 - 20 7 - 22 X- ..
..... 7 - 25
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1

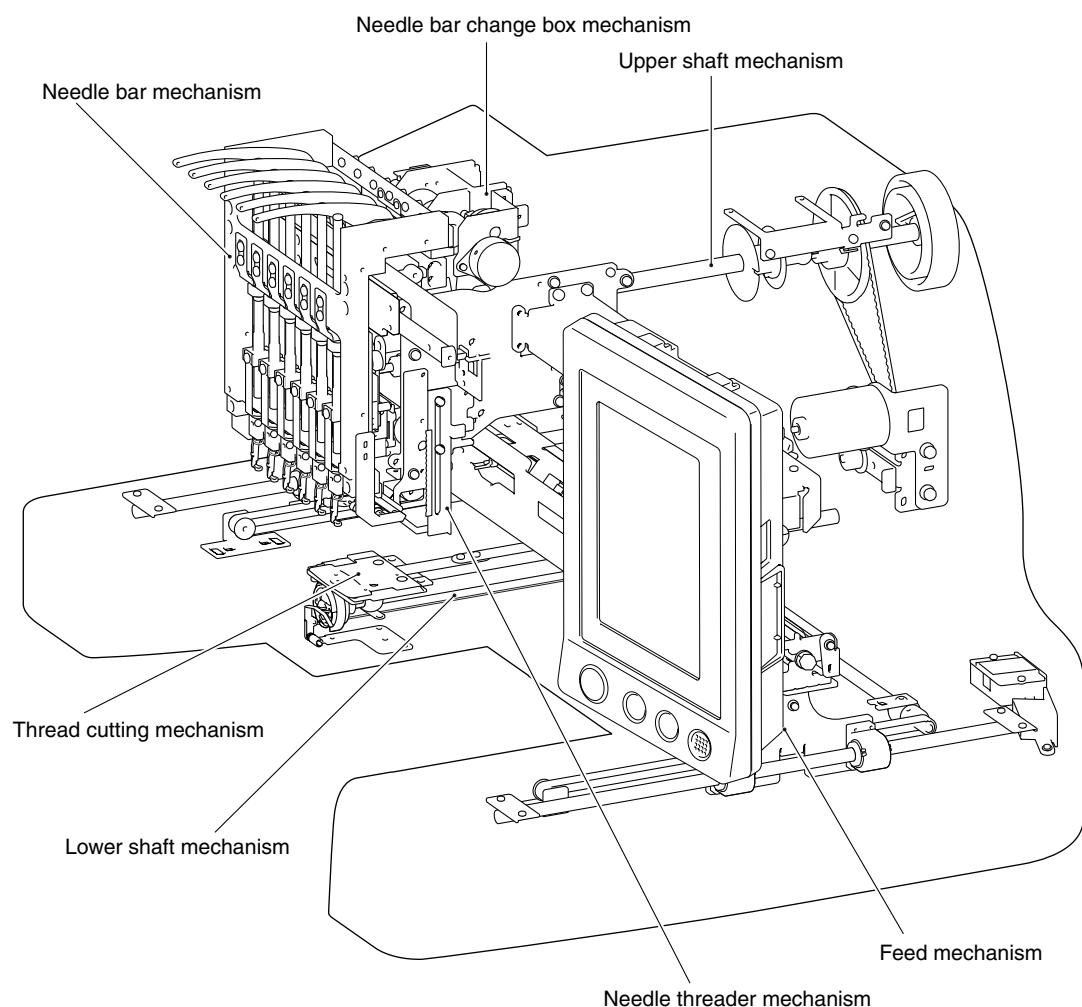
..... 1 - 2

..... 1 - 3

..... 1 - 5

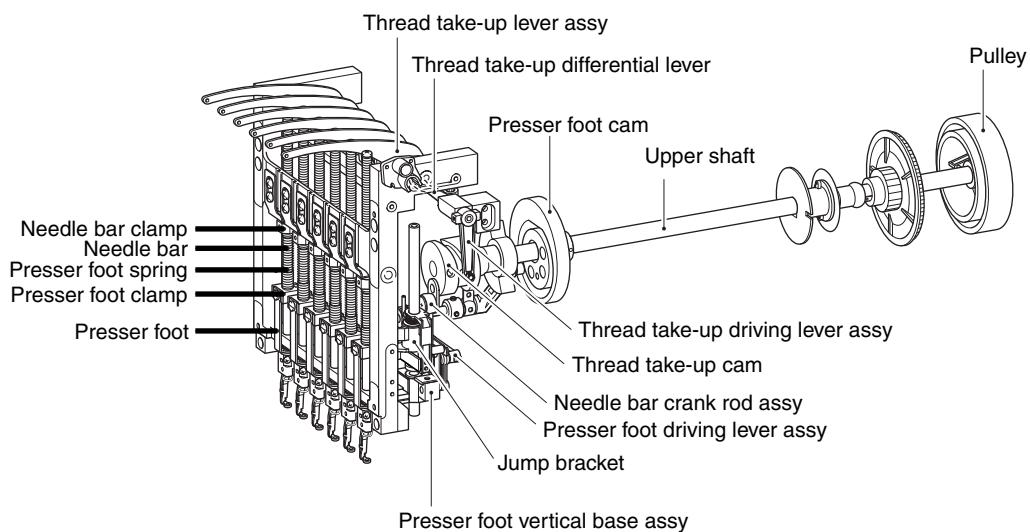
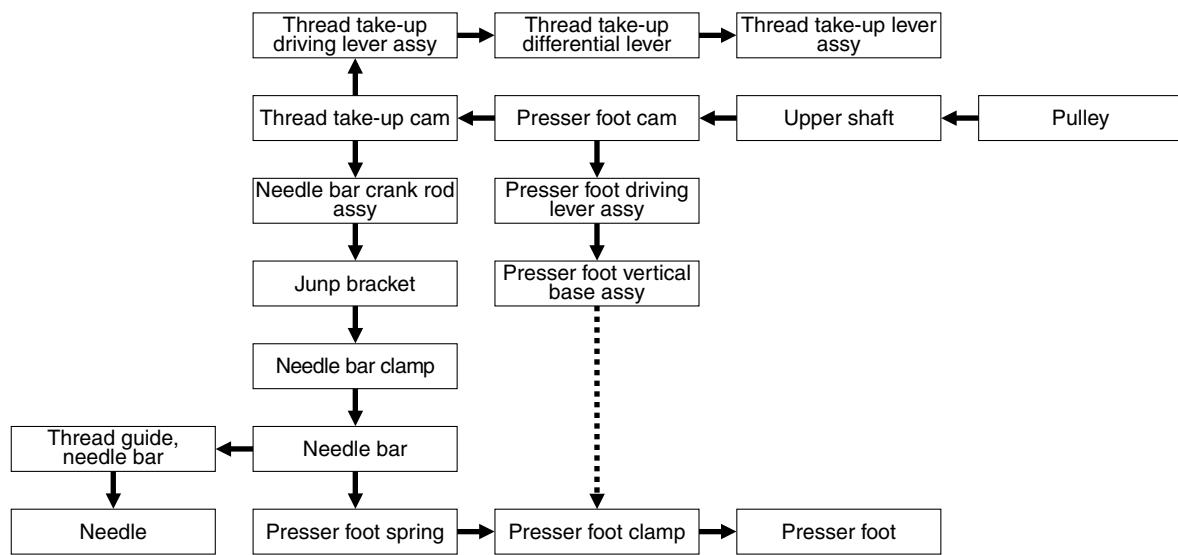
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... 1 - 8

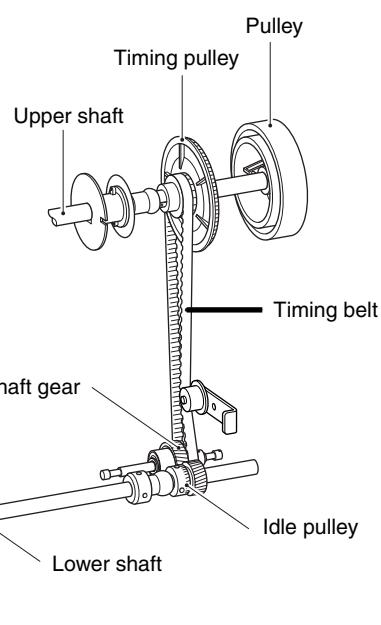
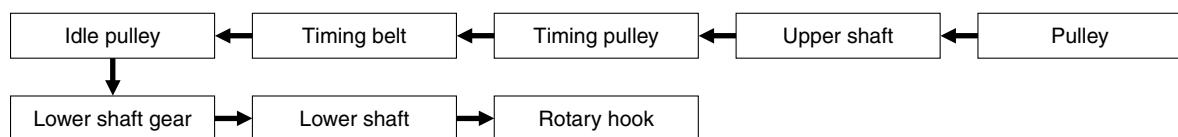


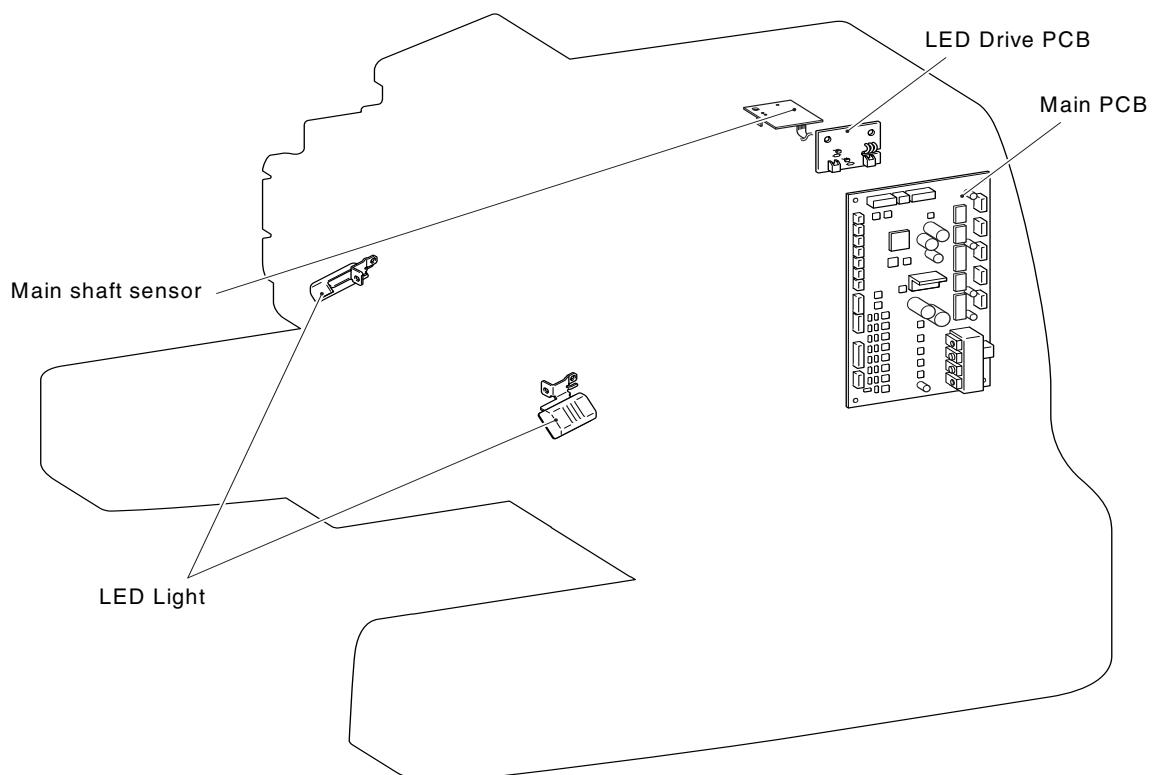
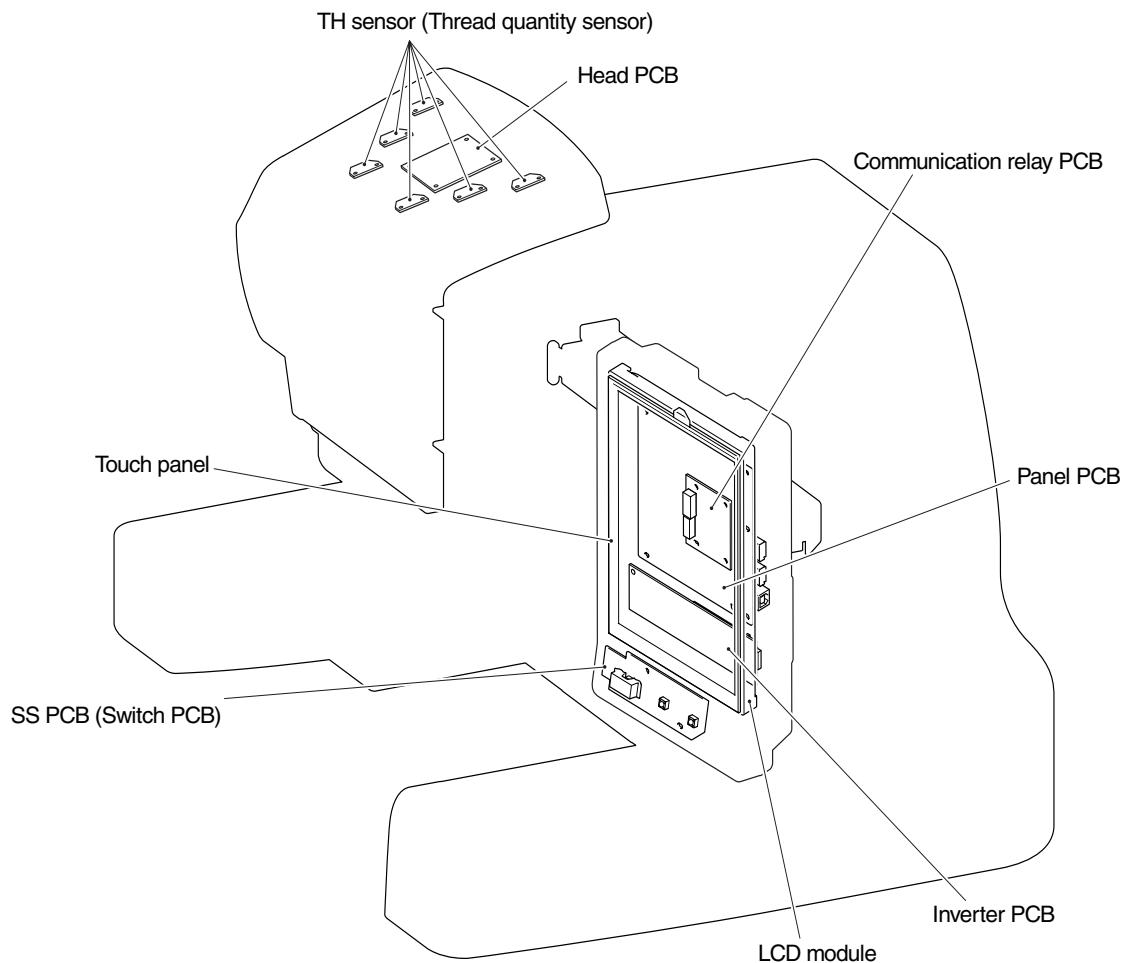
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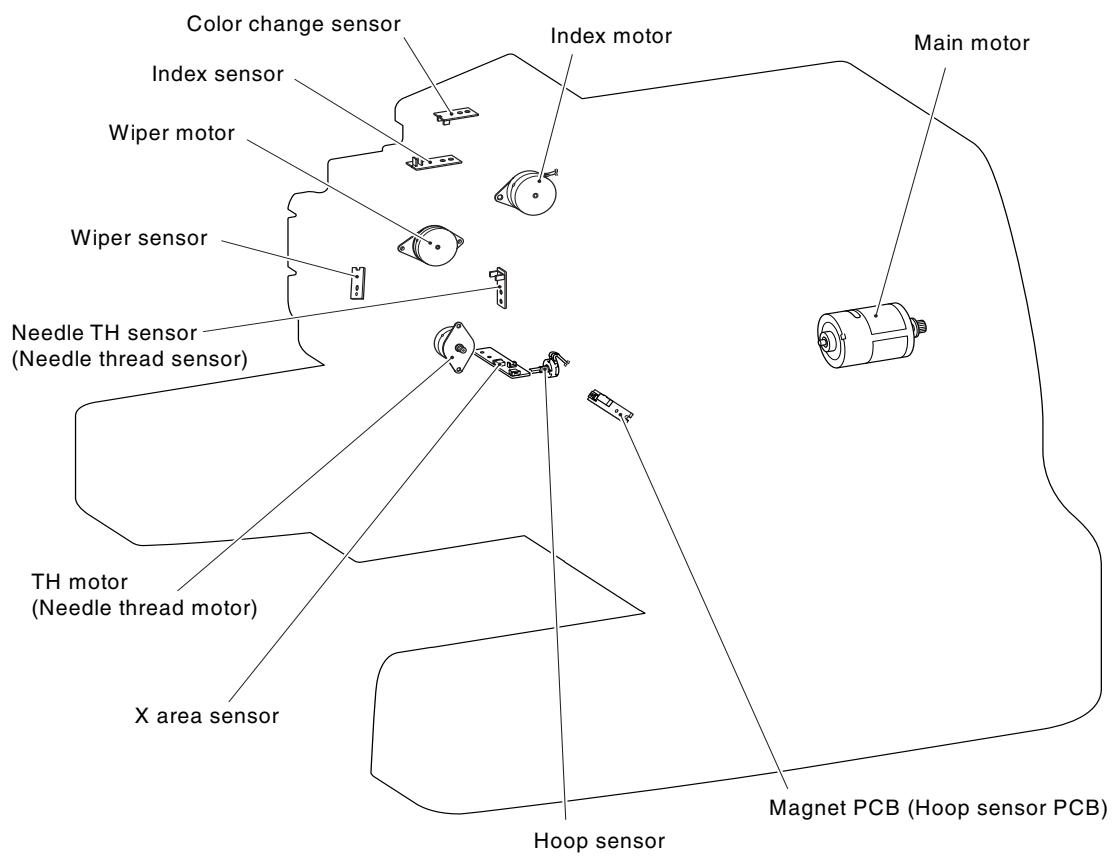
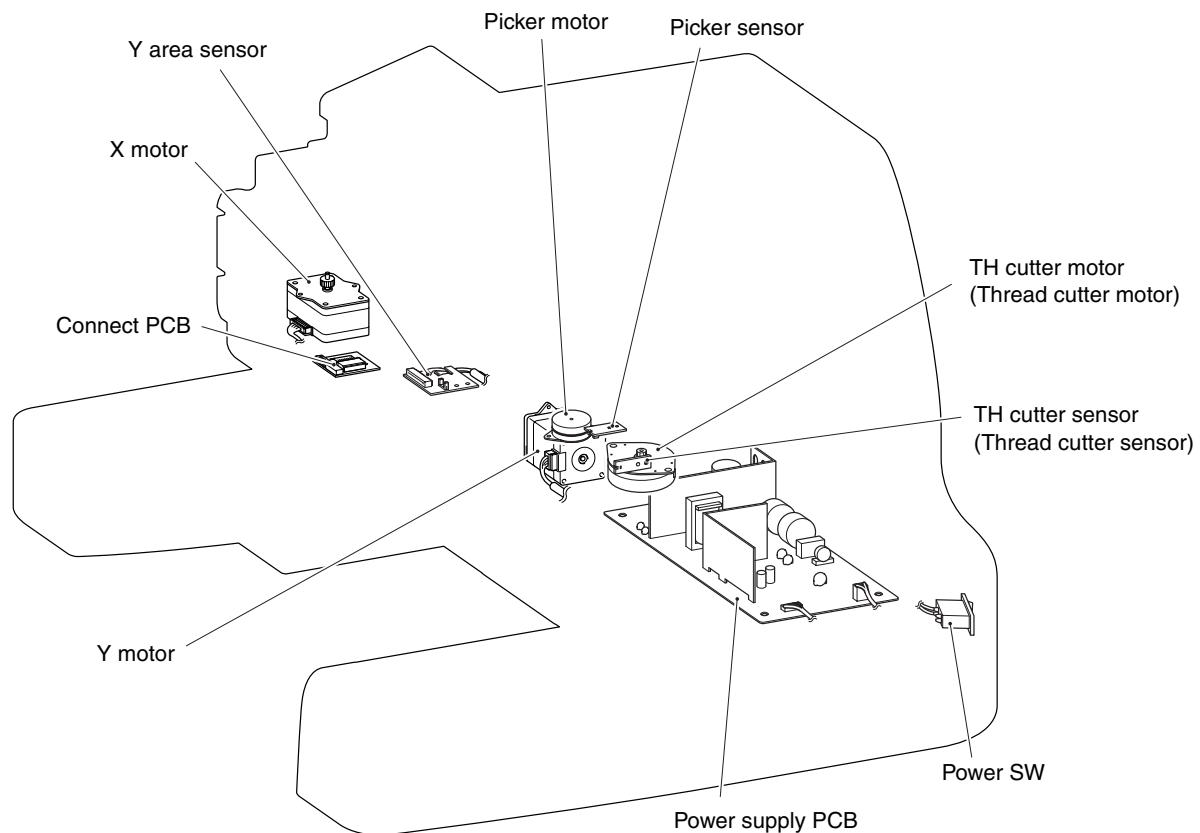
,

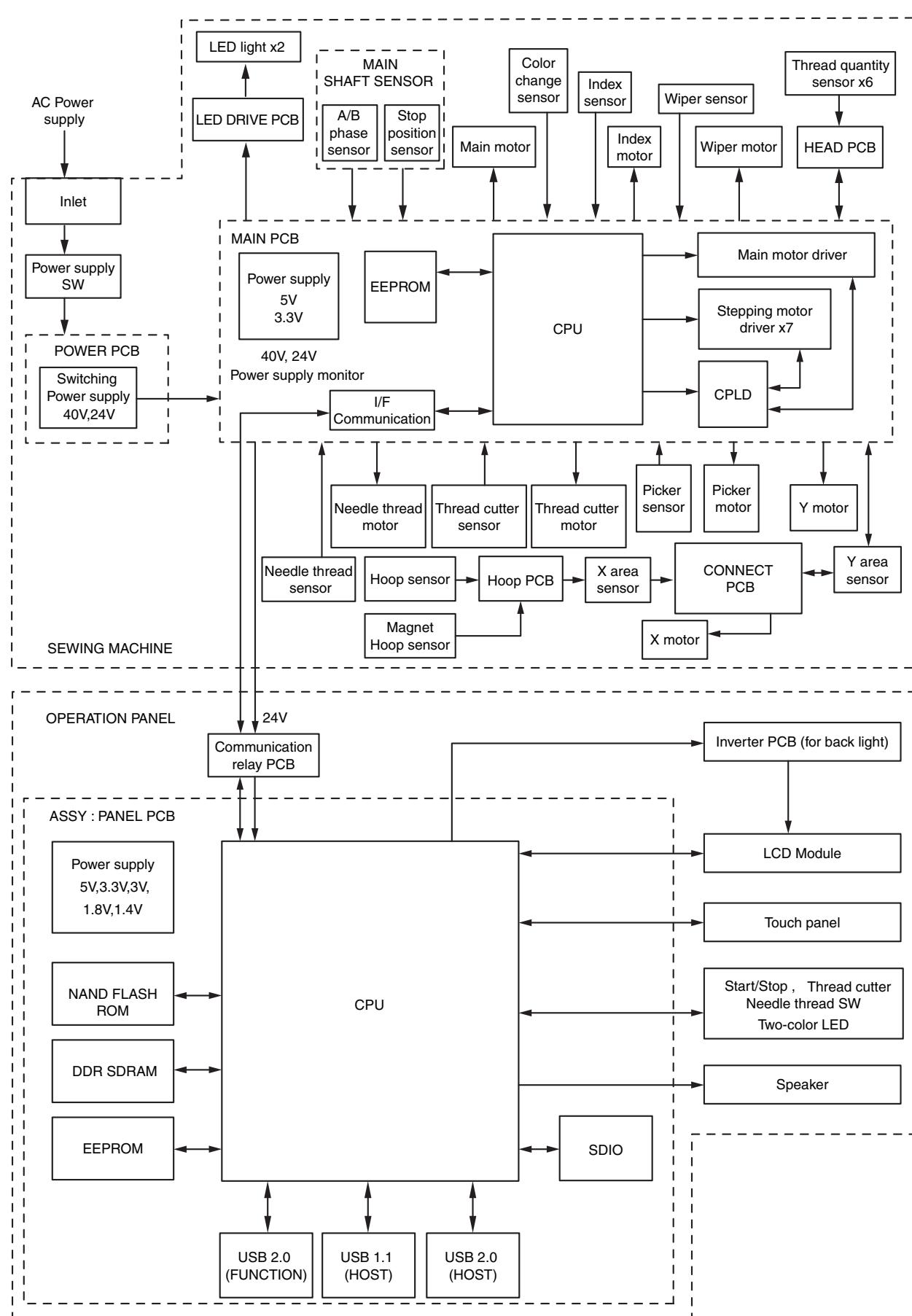


)









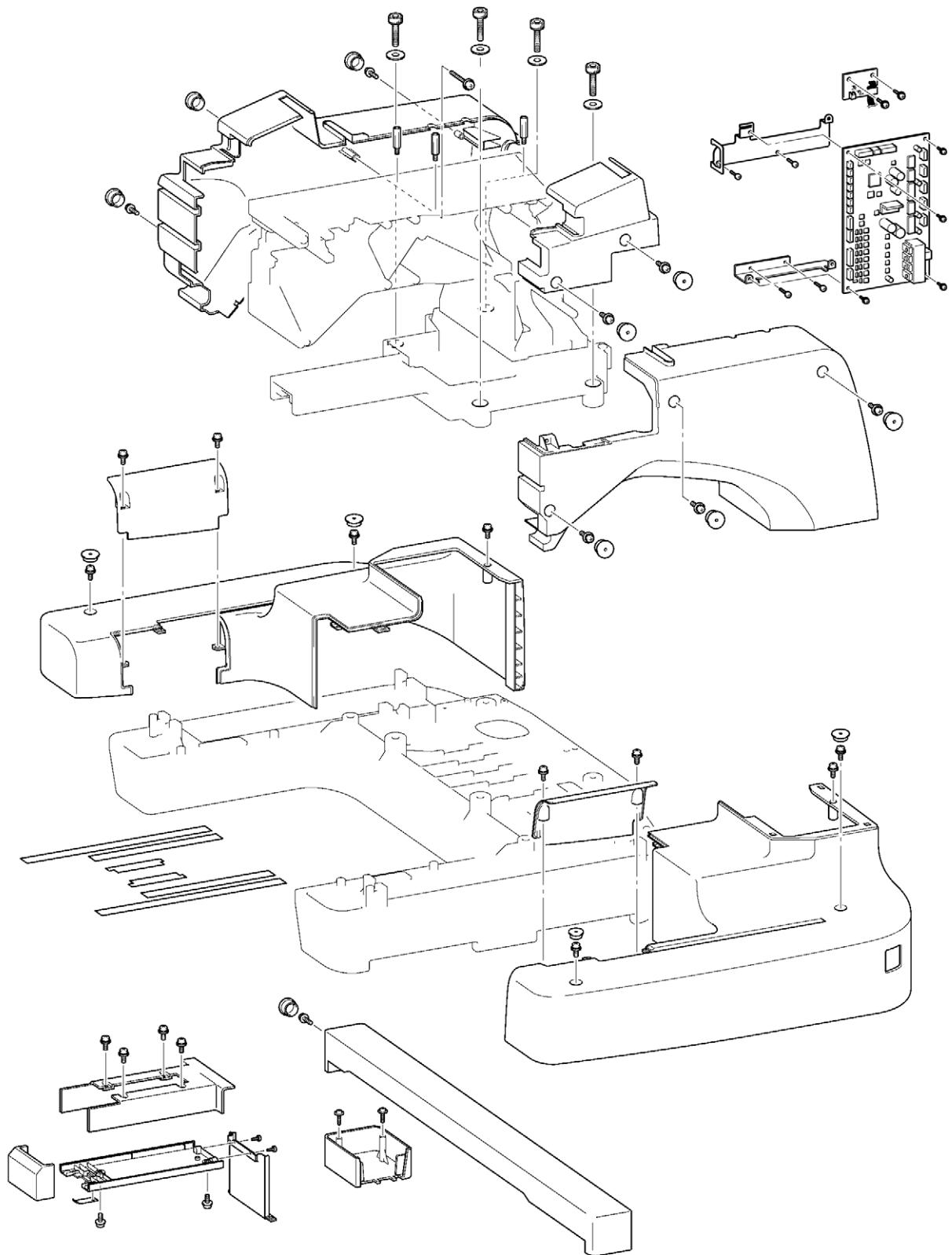
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- Start/stop switch This switch is used to start and stop the sewing machine.
- Thread cutter switch This switch is used to cut thread. Pressing this switch starts the sewing machine, cuts thread, and stops the machine at the position where the spindle stops.
- Needle thread switch This switch is used to thread a needle. Pressing this switch moves the needle bar to the thread guide position, and pressing it again threads the needle and then returns the needle bar to its original position.
- Hoop sensor This sensor detects the position of the arm when attaching the hoop, in order to identify the hoop.
- Stop position sensor, A/B phase sensor These sensors detect the angle of the main shaft and the rotational speed. Index sensor, color change sensor These sensors detect the color change position.
- Thread quantity sensor This sensor detects the consumption of upper thread. It also detects upper/lower thread breakage indicated by the consumption of upper thread.
- Wiper sensor..... This sensor detects the position of the wiper.
- Picker sensor This sensor detects the position of the picker.
- Thread cutter sensor This sensor detects the position of the movable knife that cuts the thread. Needle thread sensor This sensor detects the position of the thread guide.
- X sensor (Y sensor) This sensor detects the position of the X (Y) guide to move the hoop. LED light (L/R) White LED lights for illuminating the work space.
- Touch Panel Used to select and edit patterns and input test mode number by touching the display on the panel.

2 Disassembly

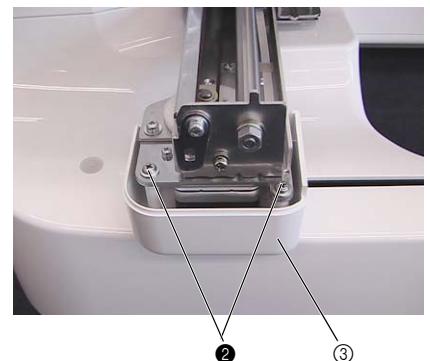
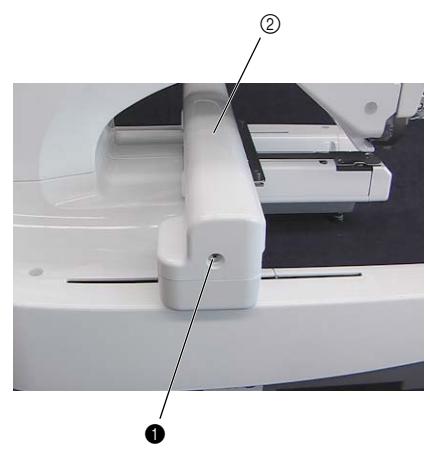
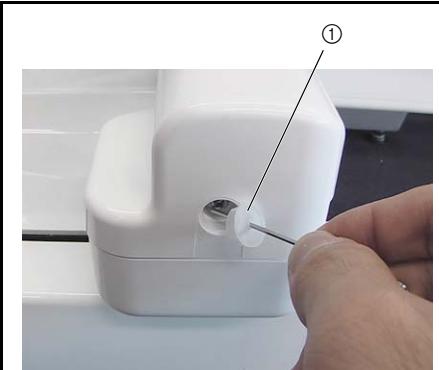
.....
..... 2 - 2
..... 2 - 15
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6	
.... 2 - 29	
..... 2 - 33	
.....
..... 2 - 37	
..... 2 - 45	
..... 2 - 55	
..... 2 - 58	
.....
..... 2 - 63	
..... 2 - 67	
..... 2 - 76	

Main unit



1 Motor cover and carriage cover removal

- 1.
- 1, 2.
2. 3.
- 2 2,
- 3.

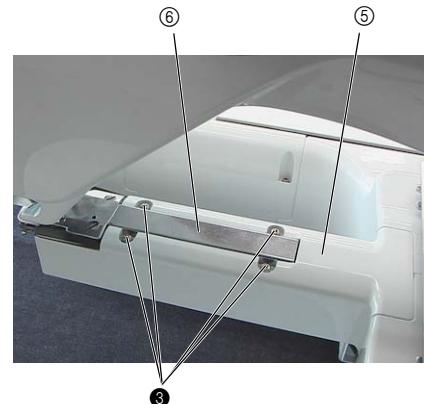
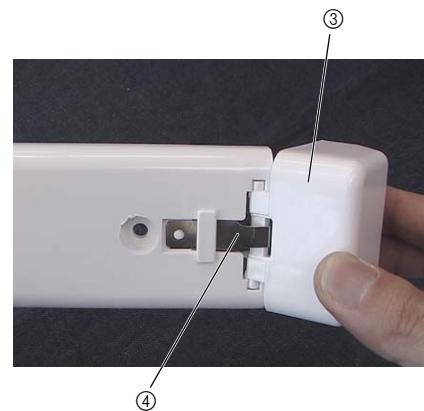
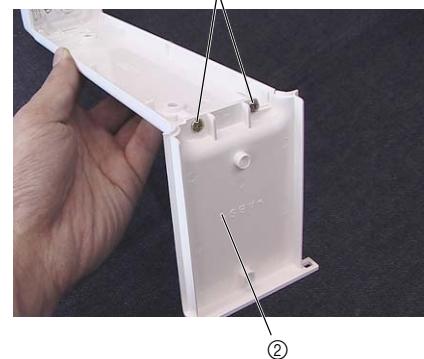


Main unit

Main parts

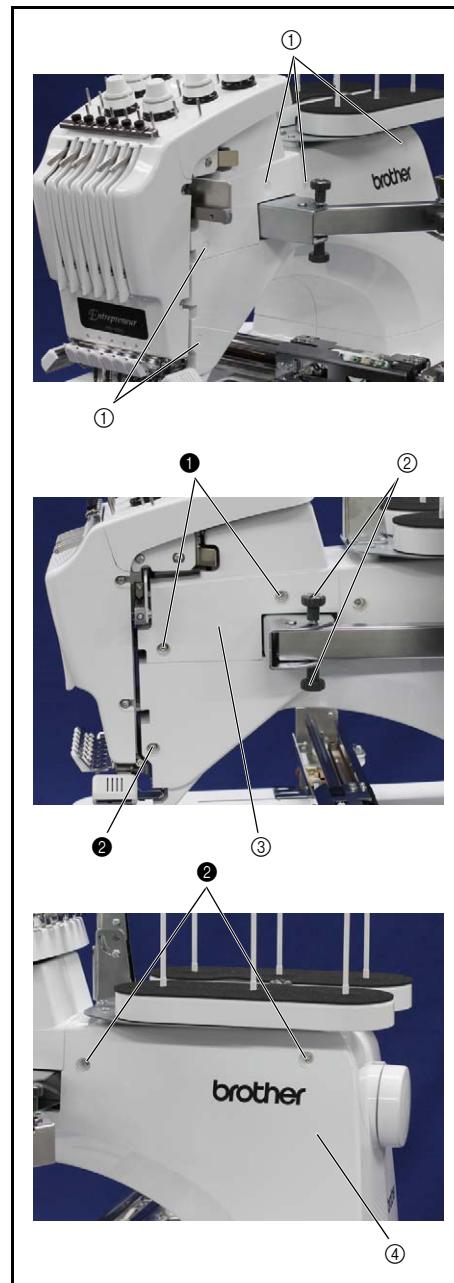
2 Bed cover removal

- 1.
- 2.
- 2,
- 3.
1. 2.
- 2
- 3.
- 4.
- 4
- 3,
- 5
- 6.



3 Arm cover R removal

1. 2 5 1. 2.
(2-4) 2 (M4S) 2, 2 (M4)
*
M4S)
(M4). 3. 2 (2-4), 1,
R 3. 4. 3
R 4.

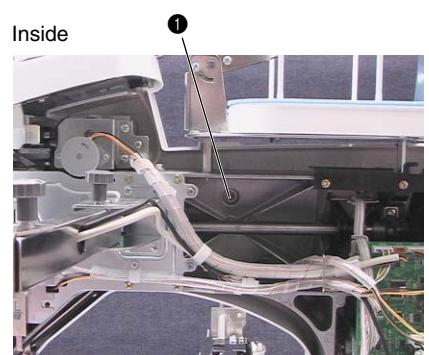
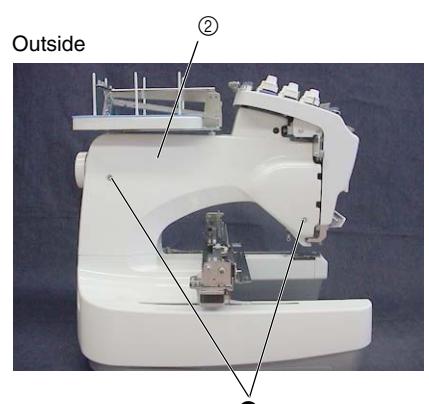
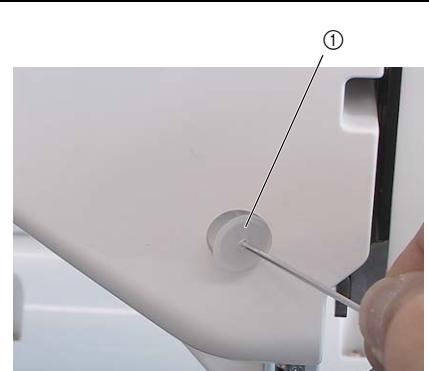


Main unit

Main parts

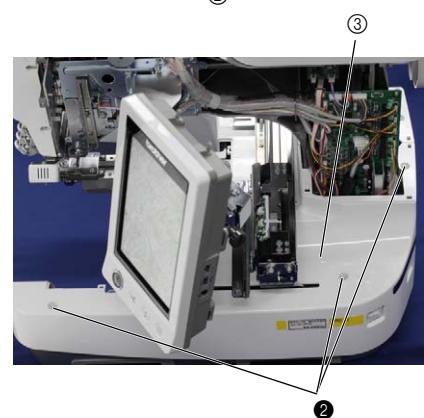
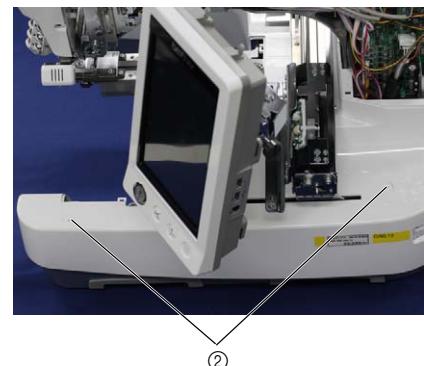
4 Arm cover L removal

- 1.
- 3
- 2,
- L 2.
- 1 2
1. 2.



5 Base cover R removal

1. 2 1,
2. 3. R 1. 2. 3 2
, * .
, R.

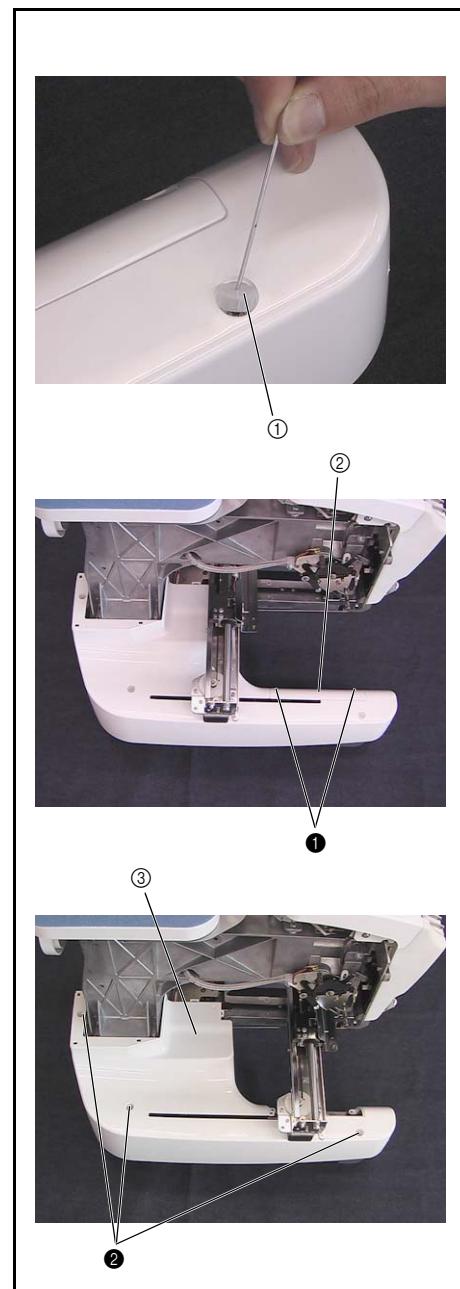


Main unit

Main parts

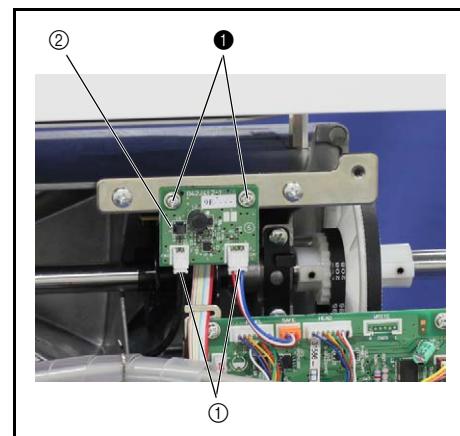
6 Base cover L removal

- | | | | | |
|----|---|----|------|-------|
| 1. | 2 | 2 | 1. | 1. 2. |
| | | | L 2. | 3. |
| 2, | 2 | 1, | L 2. | 3. |
| 3. | * | . | | |
| | | , | | |
| | | L. | | |



7 LED drive PCB removal

- | | | | | |
|----|---|----|---|---|
| 1. | 2 | 2. | 1 | 2 |
| | | | | |
| 1, | | 2. | | |

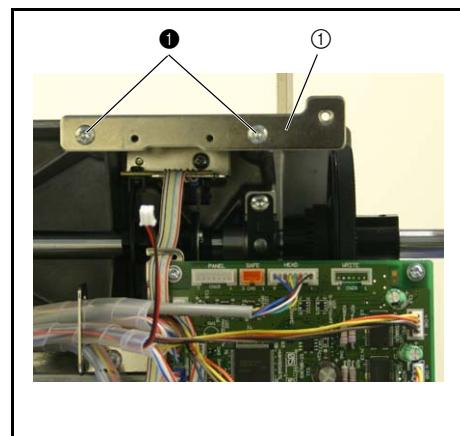


Main unit

Main parts

8 LED PCB plate removal

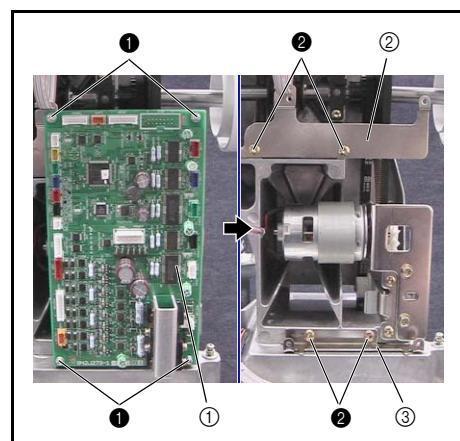
1. 2. 1,



1.

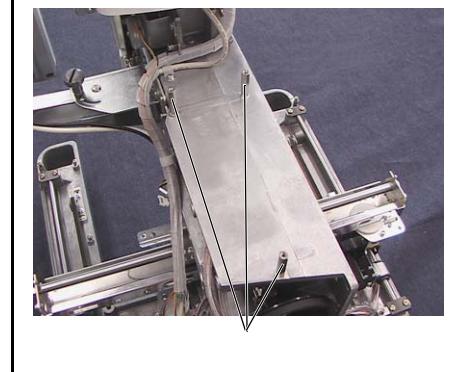
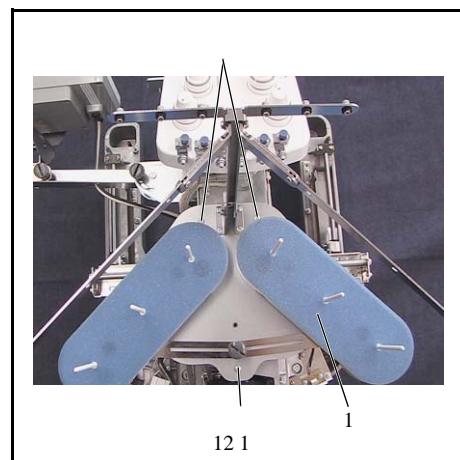
9 Main PCB assembly removal

1. . 2. 4 1,
4 2, U 2 D 3.



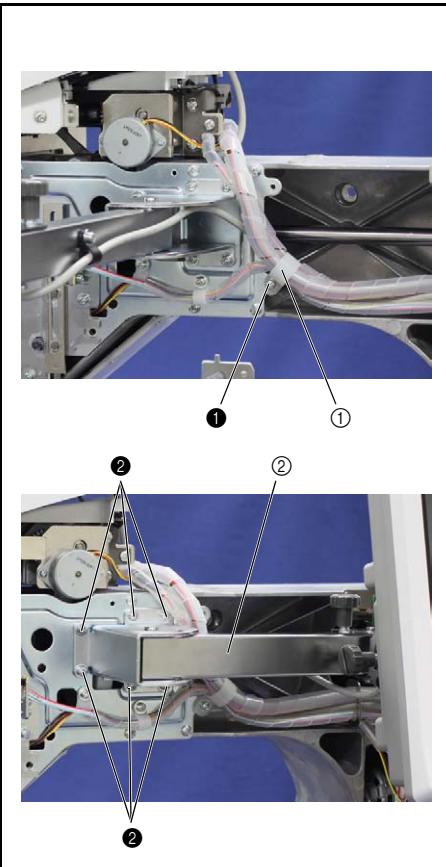
10 Spool stand frame final assembly removal

1. 3 1,
1. 2. 3 2.



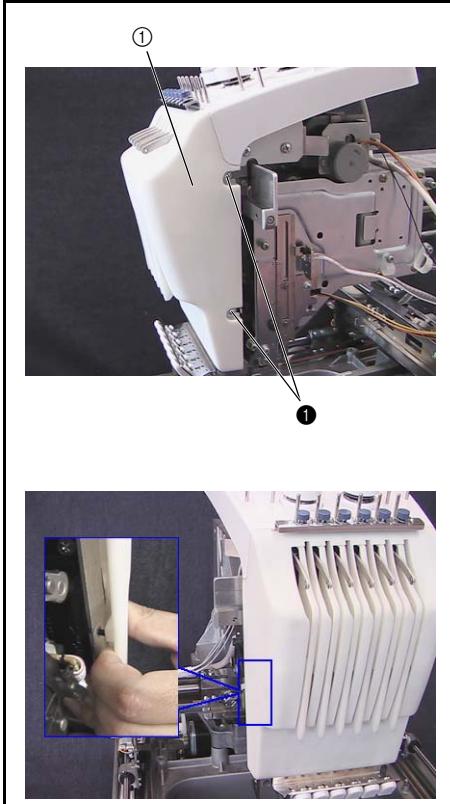
11 Operation panel assembly removal

1.
1. 2.
2.
- 1,
6
2,

**12 Thread take-up cover removal**

1.
2
1,

*
• ,
,

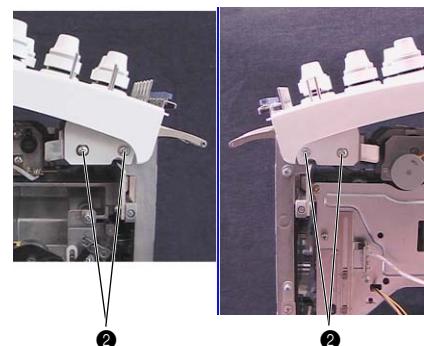
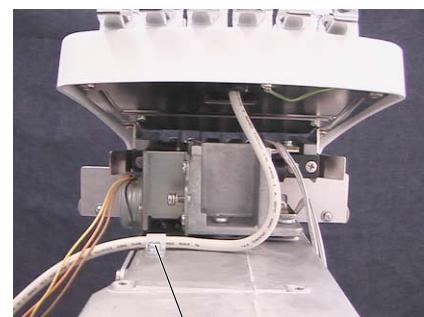


Main unit

Main parts

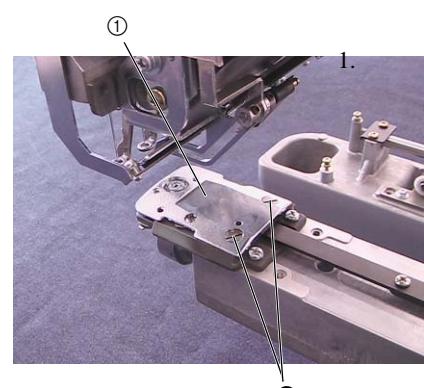
13 Tension base removal

- 1.
- . 2.
- . 3.
- 4
- 2,
- 1,
-4



14 Needle plate removal

- 1.
- 2
- 1,

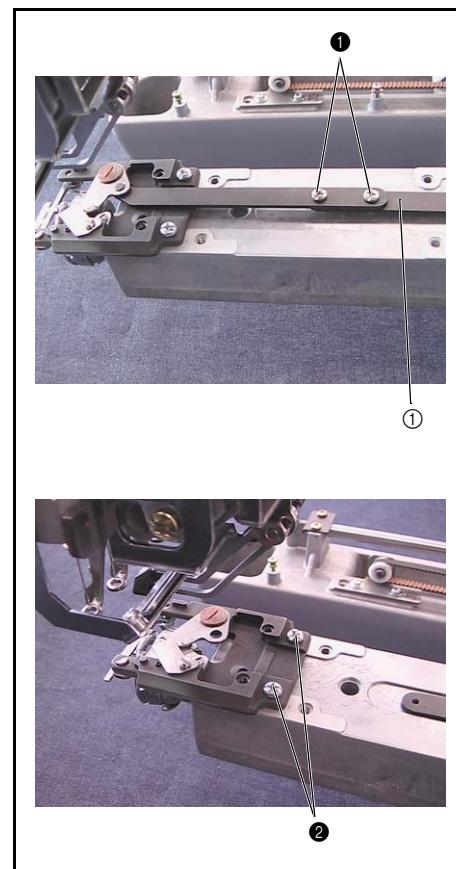


Main unit

Main parts

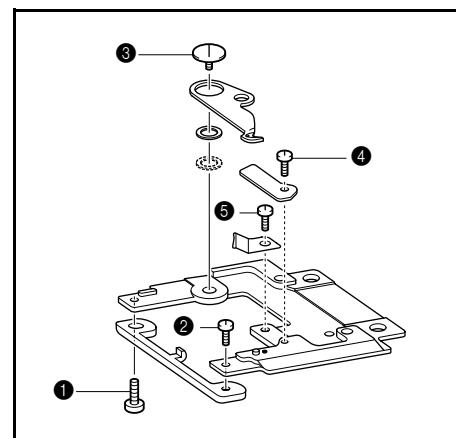
15 Needle plate base assembly removal

- | | | | |
|----|---|----|----|
| 1. | 2 | 1, | 1. |
| 2. | 2 | 2, | |



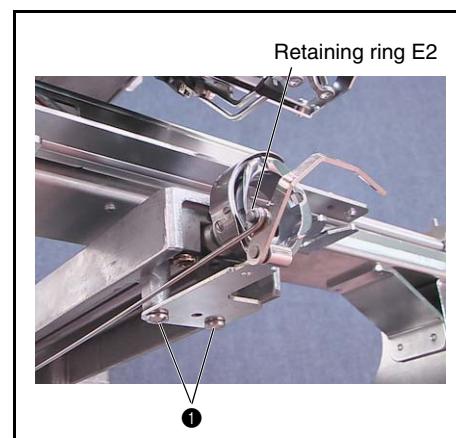
16 Needle plate base disassembly

- | | | |
|----|-------|----|
| 1. | 1, 2, | 2. |
| 3, | | |
| * | | |
| • | | |
| 3. | 4, | 2. |
| | | . |
| 4. | | |
| 5, | | |
| , | | |



17 Picker bracket removal

- | | | |
|----|-----|----|
| 1. | E2, | 2. |
| 2 | 1, | |



Main unit	Main parts
-----------	------------

18 Picker bracket disassembly

1.

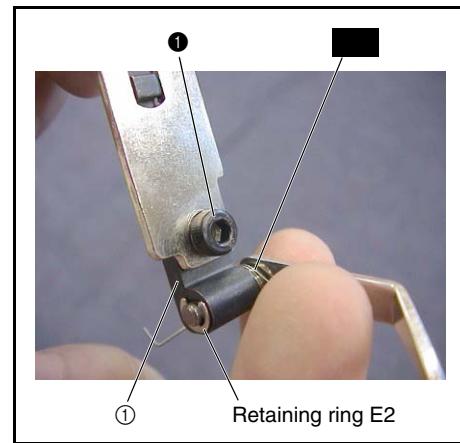


1,

1

E2,

2.



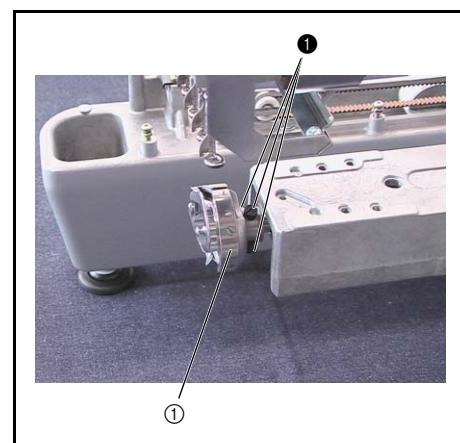
19 Rotary hook removal

1.

3

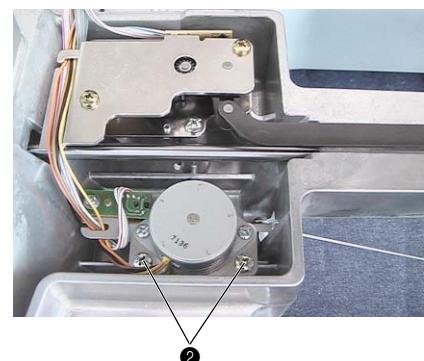
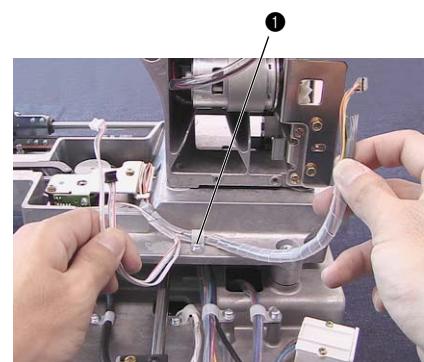
1,

1

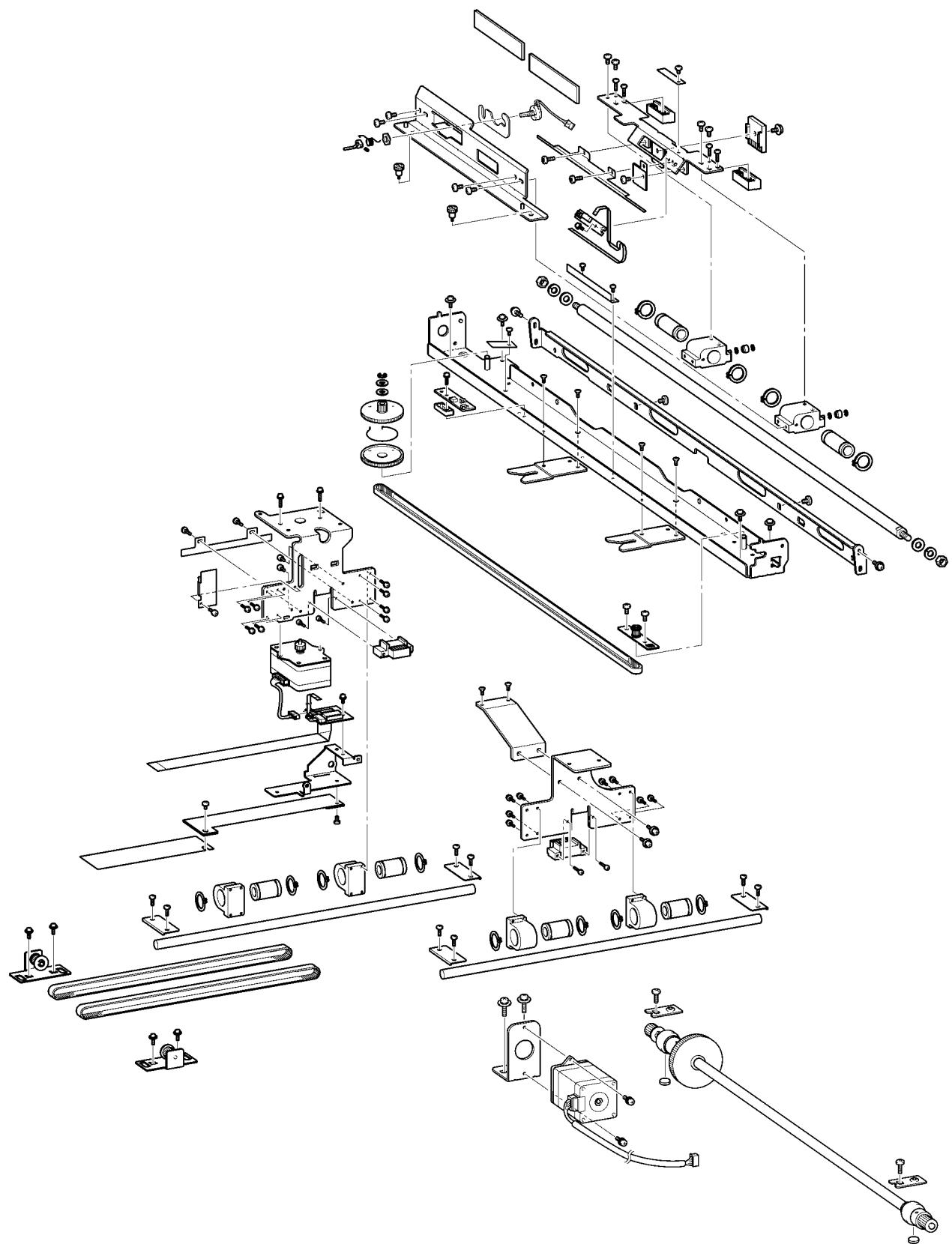


20 Cutter unit final assembly and picker final assembly removal

1. 1,
 -5
2. 2 2,
* •
3. 2 3,



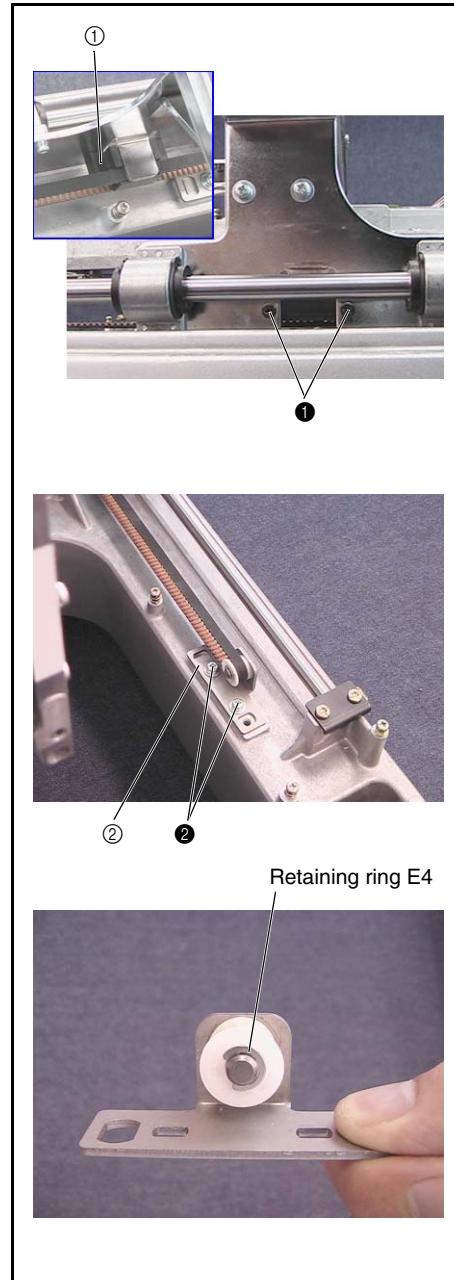
Main unit



Main unit	Feed unit
-----------	-----------

1 T-belt (Y-guide) removal

1. 2 1,
Y-
(2,) . 2. Y-
2 - . 3.
E4,
7 X 2 Y-
Y-



Main unit	Feed unit
2 Feed final assembly removal	
1.	
. 2. Y-	,
FFC SML2CD-Y 1	Y-
2CD-Y	1,
4	A
2,	Y-
).
5.	2 Y-
2.	

Main unit

Feed unit

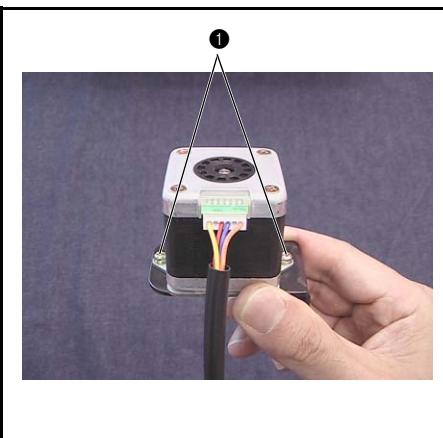
3 Y-motor final assembly removal

1. 1,
-4
Y
2.
2. 2,
Y.



4 Y-motor disassembly

1. 2
Y-
2. 1,
Y-



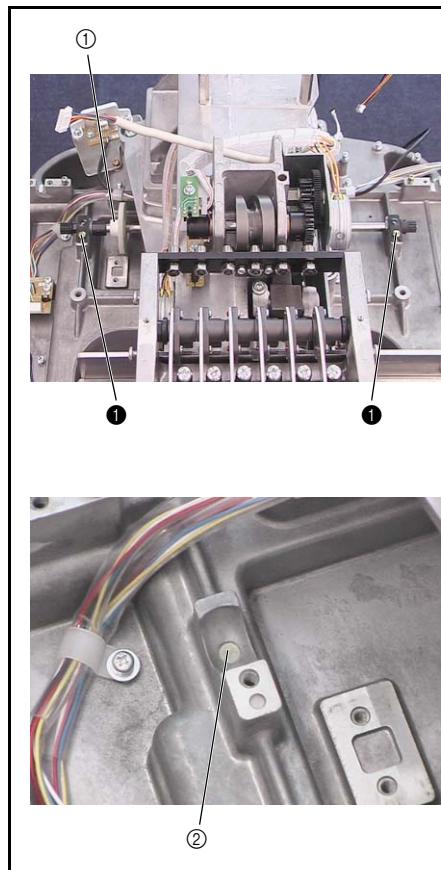
Main unit

Feed unit

5 Y-driving shaft assembly removal

1. 2
2. 1,
A. 2.
Y 1. 3.

2



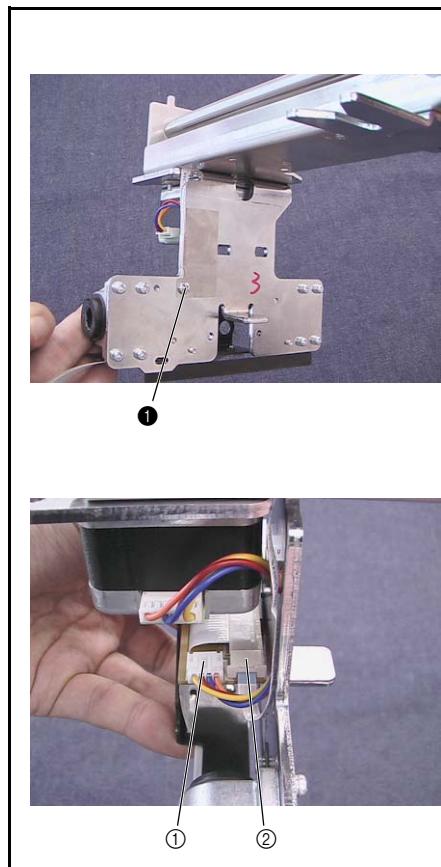
6 Cord grip removal

- 1.
2. 1,
X
1. 3.

2

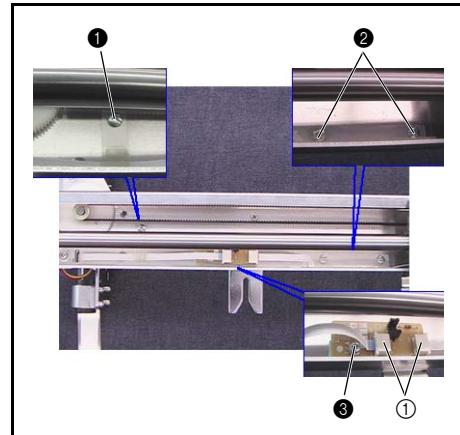
FFC

(SML2CD-C)



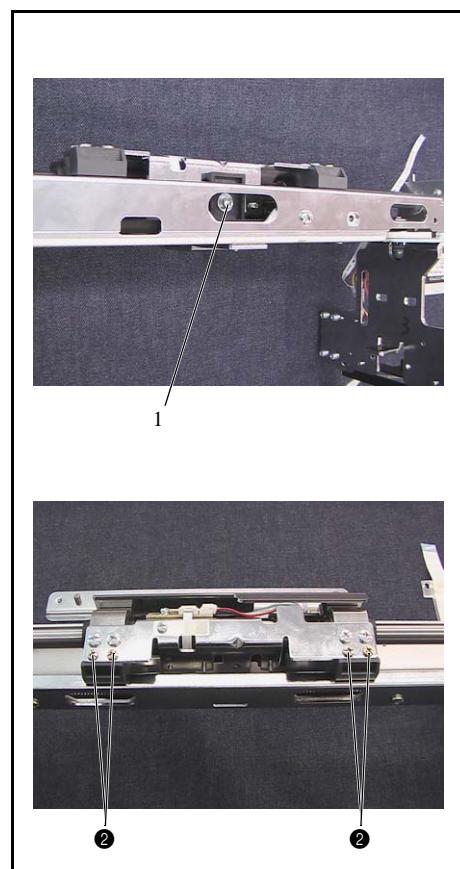
7 FFC and X-area sensor assembly removal

1. . 2. 1,
2. . 3. 2,
X- 3,
X- ,
X- 4.
-C) (SML2CD-X) 2 FFC (SML2CD-X)



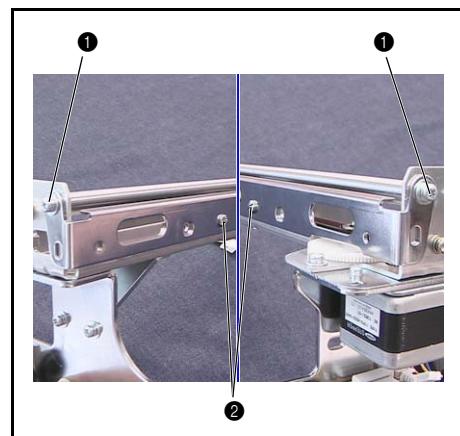
8 Y-frame spacer and X-belt presser removal

1. 1,
2. 4 2,
Y- 2,



9 X-feed frame B removal

1. 4 (2 12),
X B

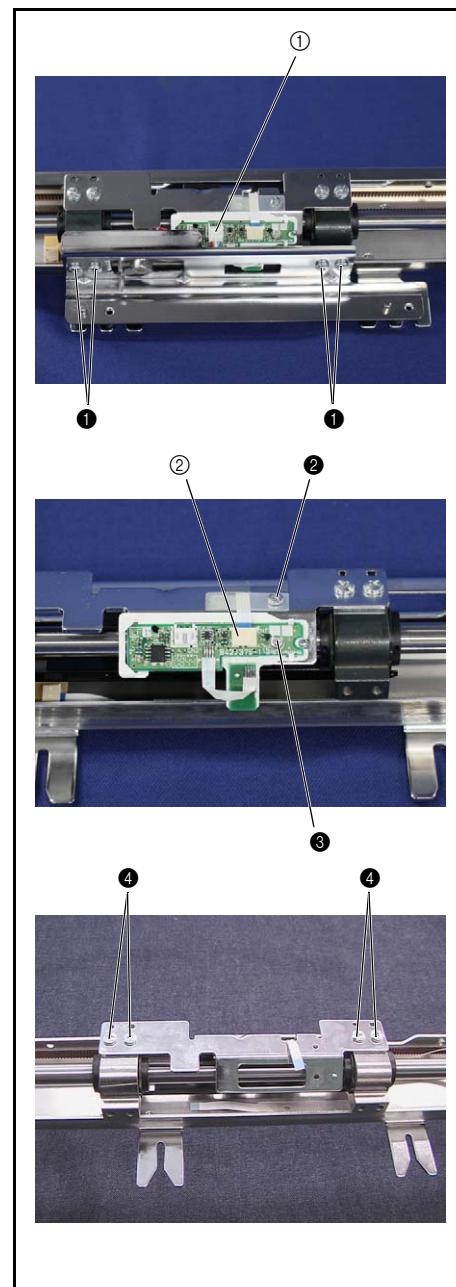


Main unit

Feed unit

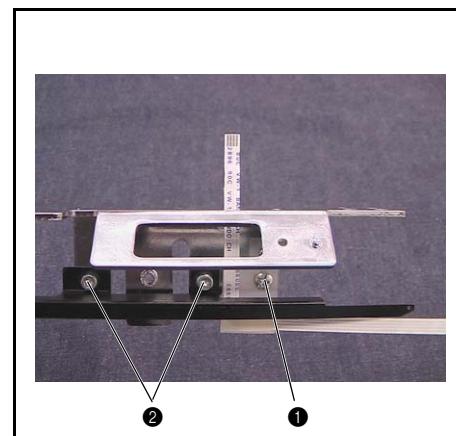
10 X-carriage A assembly and X-carriage B assembly removal

- | | | |
|------------------|------|----------------|
| 1. | 4 | 1, |
| 1 | | |
| X- | | . |
| 2 FFC (SML2CD-X) | | 2. |
| . 3. | | FFC (SML2CD-X) |
| 2 | . 4. | , |
| | | |
| 4 | 4, | 3, |
| X | | . |
| | | 5. |



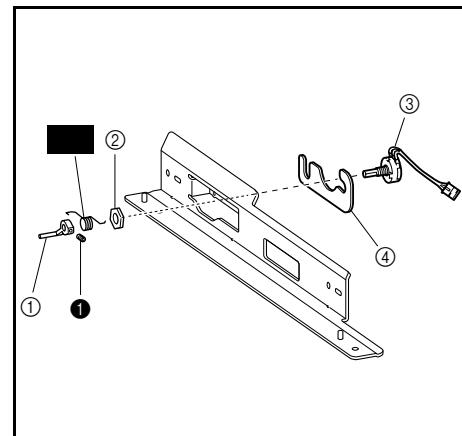
11 X-sensor dog removal

- | | |
|----|-----------------|
| 1. | 1, |
| | FFC (SML2CD-X). |
| 2 | 2, |
| X- | . |



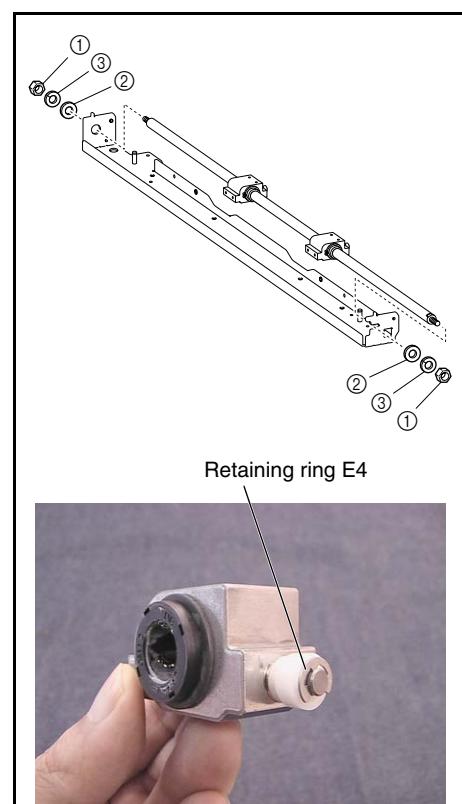
12 Hoop sensor removal

- 1.
 1. 2.
 - 1,
 - 2,
 - 3,
- PT 4



13 X-guide shaft removal

- 1.
- 2.
1. 2. 2. (2, M6) 1 , 2 (2-6) 3. 2
- X- X- X- X
- . 2. X X- (2) . 3. C21, (12)
- 2
-). X (2



Retaining ring E4



External retaining rings C21

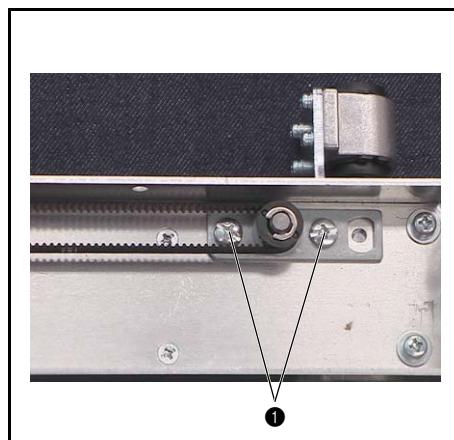


Main unit

Feed unit

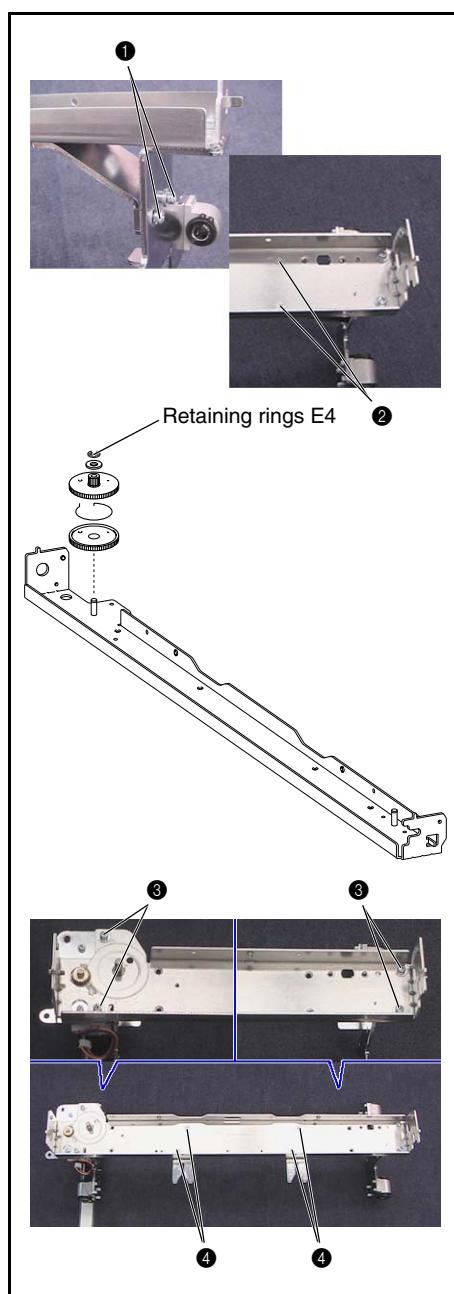
14 T-belt (Y-drive) removal

1. 2 1,



15 Feed frame disassembly

1. 4 (1, 2, 2), RB. 2.
Y-, Y- (M6), , A E4,
Y, Y. 3. 4 Y R 3,
Y L. 4. 4 4,
2 .



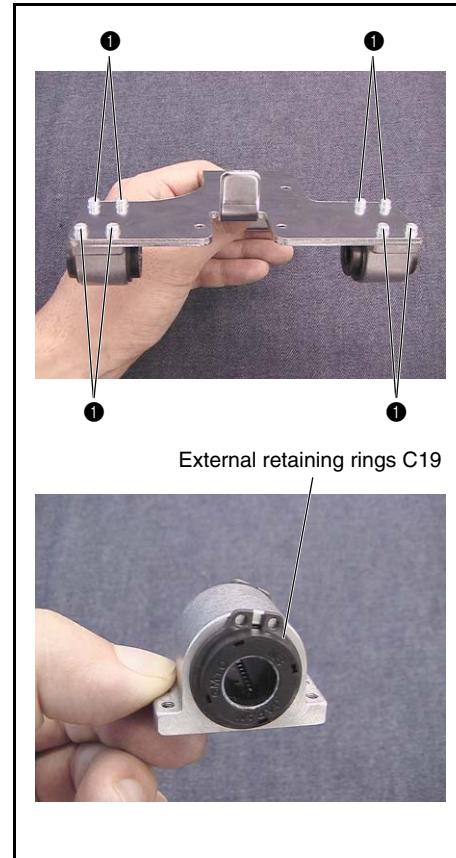
Main unit	Feed unit
16 Y-carriage L disassembly	
1.	2
. 2.	1,
2	Y-
. 4.	2
2	. 3,
. 4.	4
).	Y
5.	4,
C19,	Y
(10)	(2)
).
	Y
	X-
	(2)

External retaining rings C19

Main unit	Feed unit
-----------	-----------

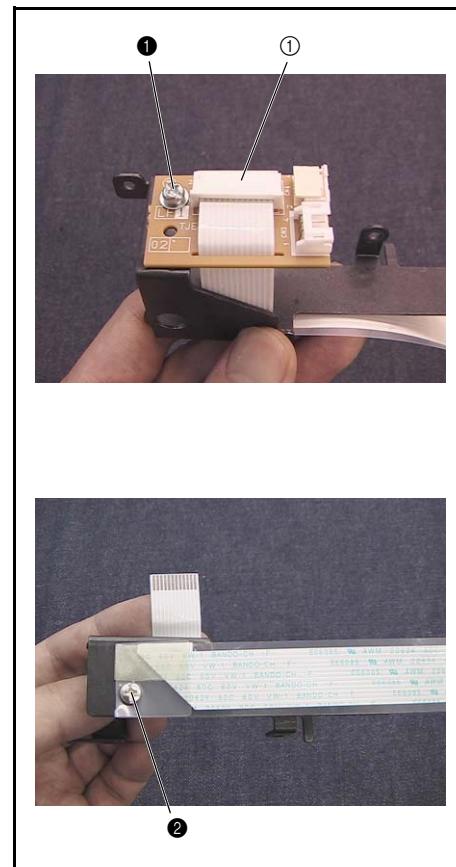
17 Y-carriage R disassembly

1. 4 1,
Y Y- R (2
). 2. 2
C19,
(10)
(2). Y

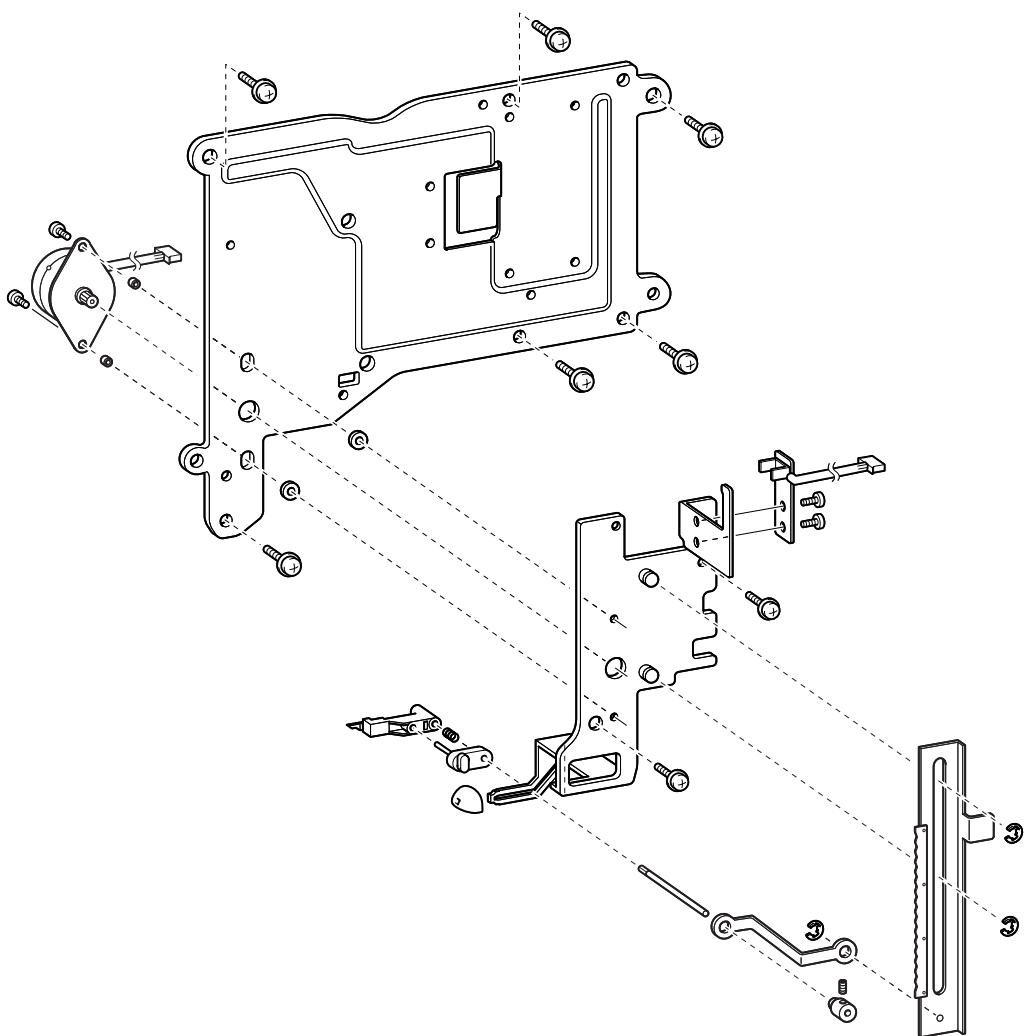


18 Connect PCB disassembly

1.
FC (SML2CD-Y) 1. 2.
, 1,
3.
FFC (SML2CD-Y) 2.



Main unit

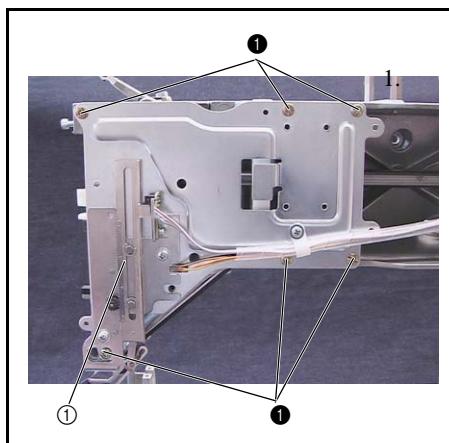


Main unit

Needle thread unit

1 Needle thread assembly removal

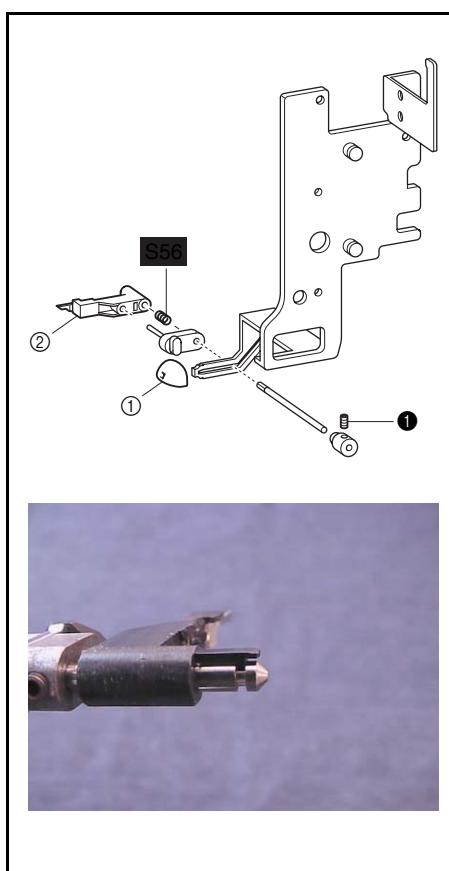
1. 6 1,



2 Hook holder assembly removal

1. 2,
B
•
3.
4.
B

1. 2.
B
•
3.
4.
1

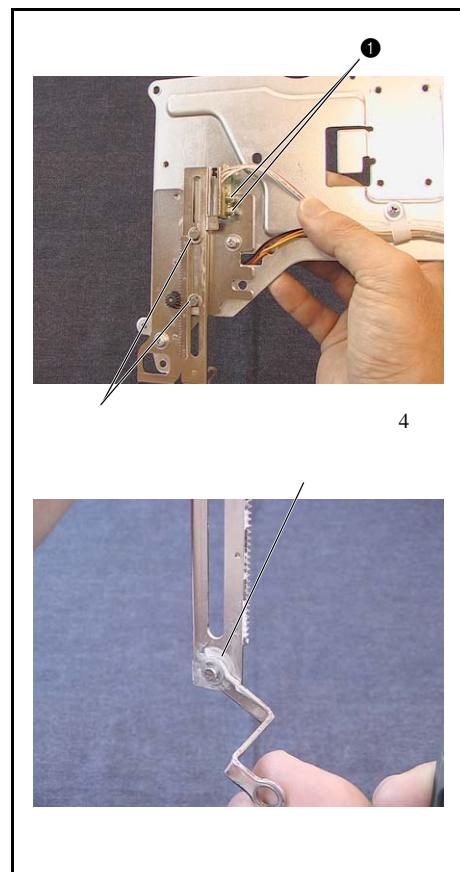


Main unit

Needle thread unit

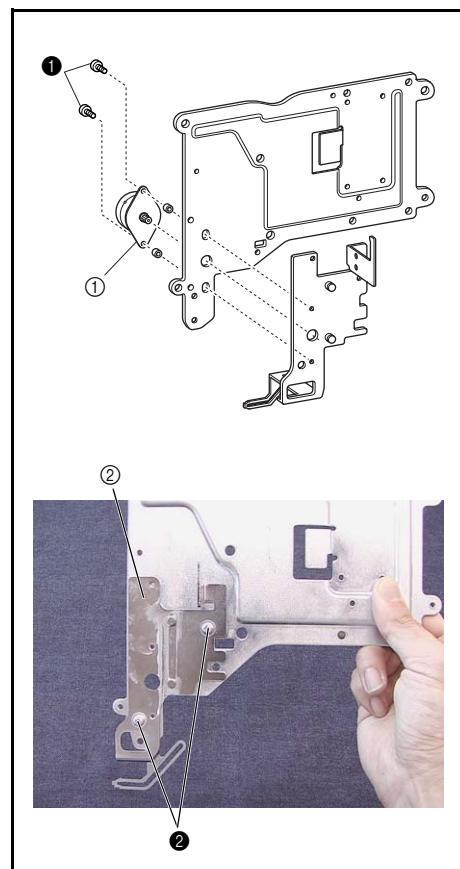
3 Rack and hook holder link removal

- 1.
- 2.
- 1,
- . 2.
- E4,
- . 3.
- E3,

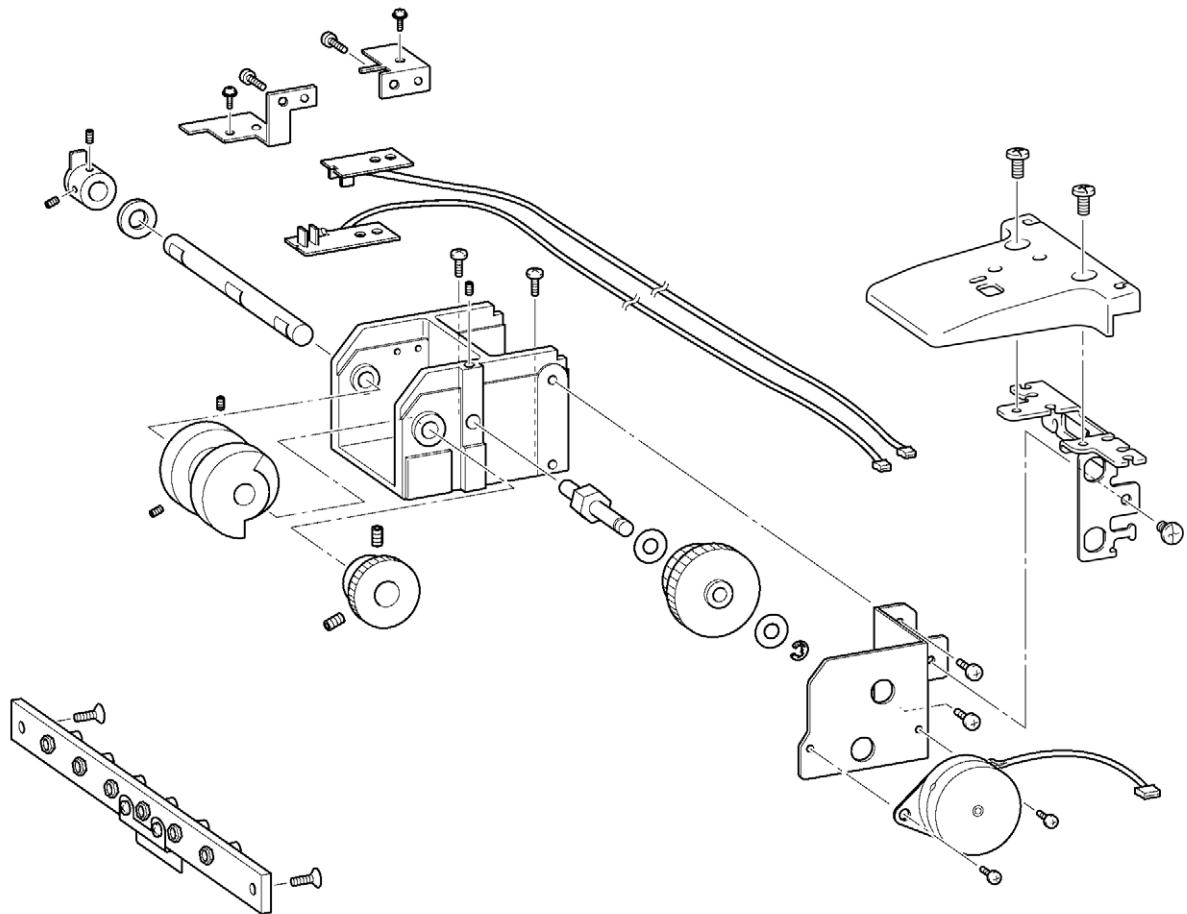


4 TH motor assembly and LED light assembly removal

- 1.
- 2
- 1,
- TH 1
- 2,
- 2
- 1,
- 2.
- 2.



Main unit

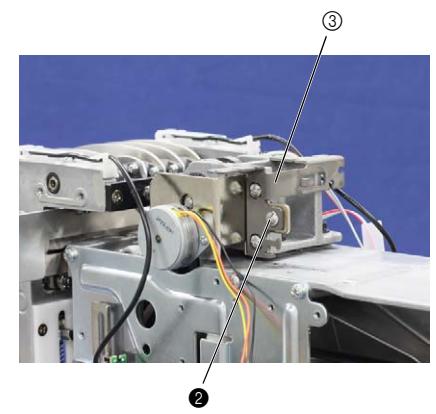
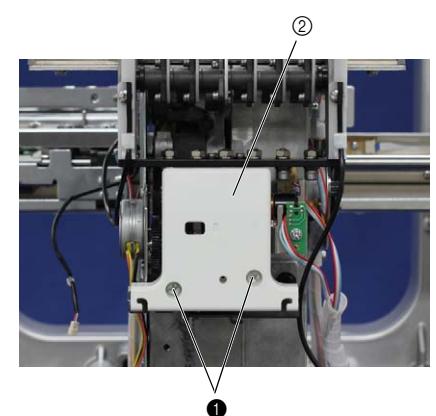
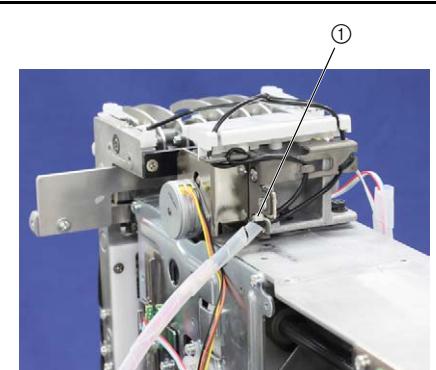


Main unit

Needle bar change unit

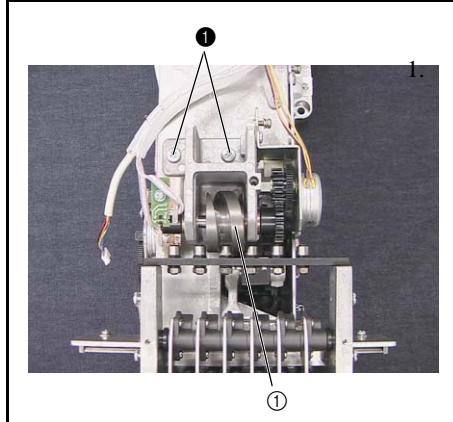
1 Change box center cover removal

- 1.
- . 2.
- 2
- 1,
2
. 4.
- 3.



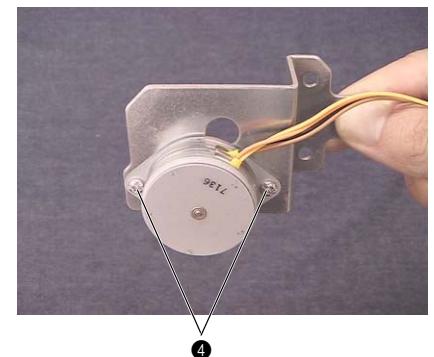
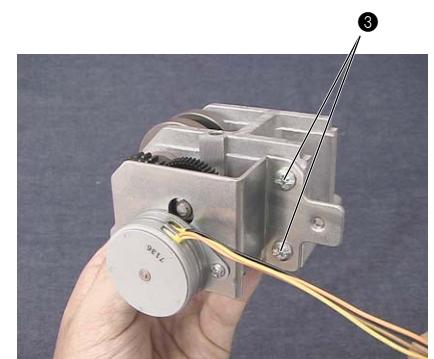
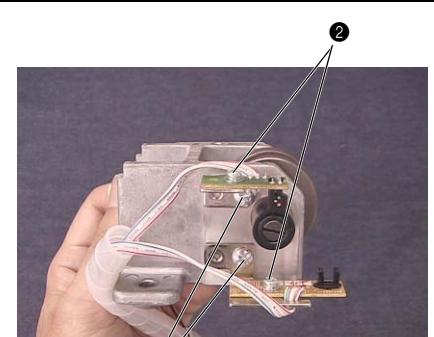
2 Change box removal

- 1.
- 2
- 1,



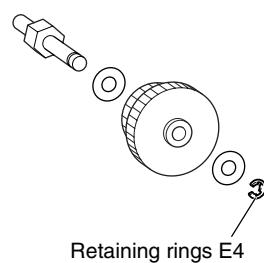
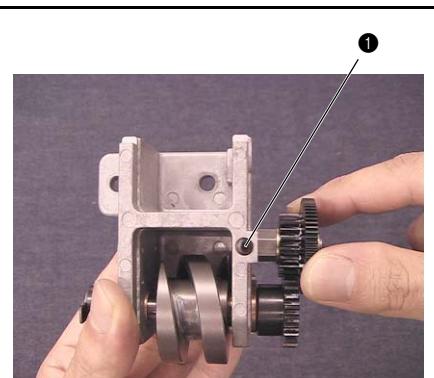
3 Change box disassembly (Step 1)

- | | | | | |
|-------|----|----|---|------|
| 1. | 2 | 1, | C | . 2. |
| 2 | 2, | | | |
| C | | | | |
| C. 3. | 2 | 3, | | |
| . 4. | 2 | 4, | | |

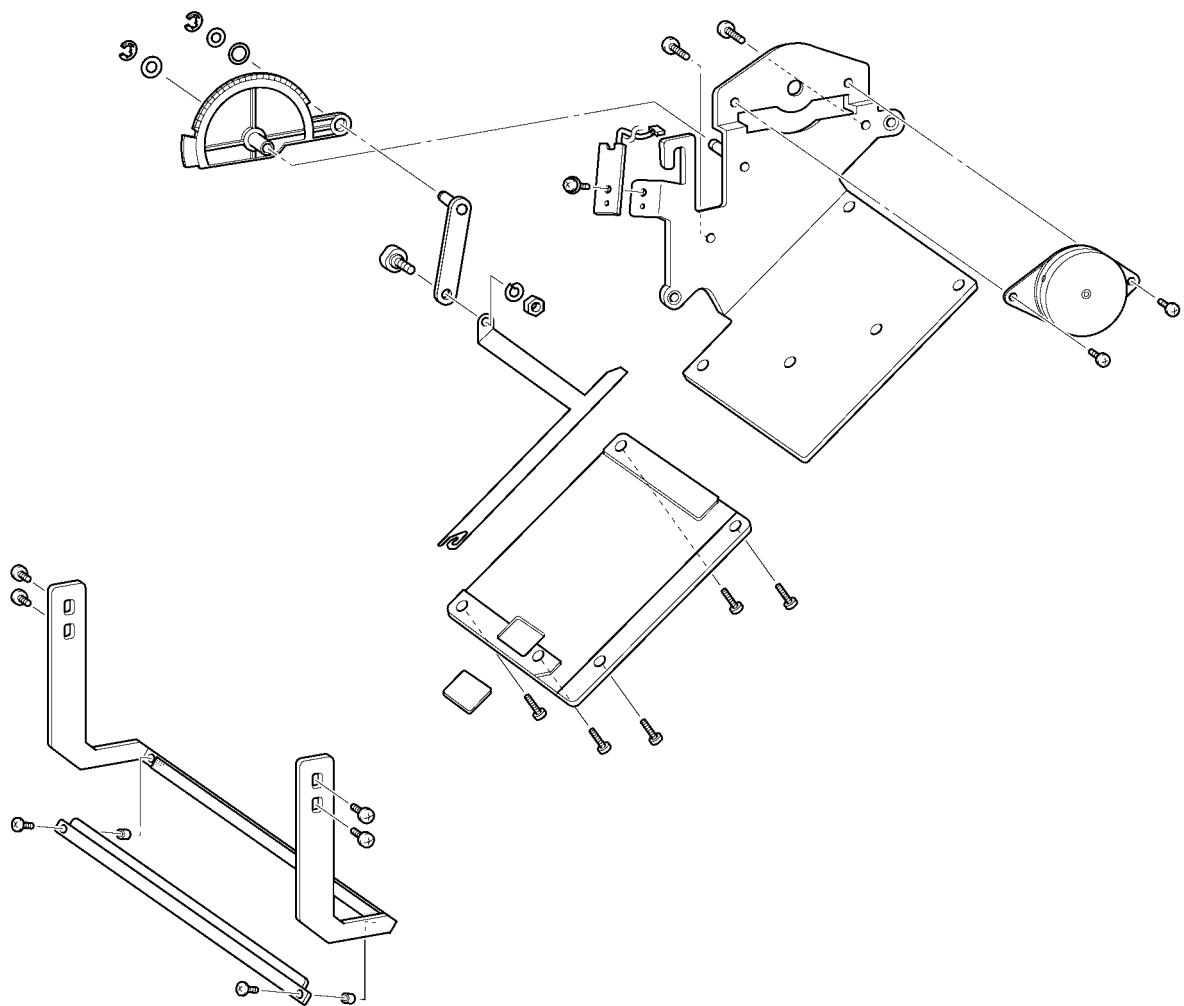


4 Change box disassembly (Step 2)

- 1.
- 1,
- .
- 2.
- E4,
(M6),
C
- .
- 3.
- 2
- 2,
- .
- 4.
- .
- 5.
- .
- C



Main unit

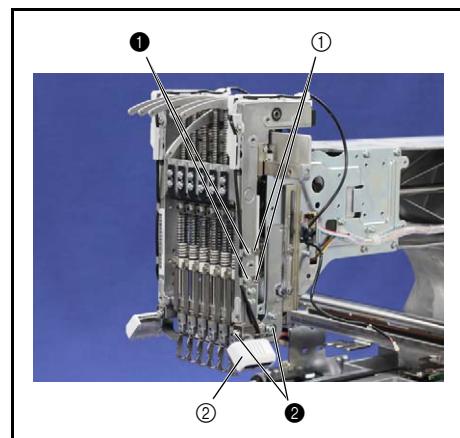


Main unit

Thread wiper unit

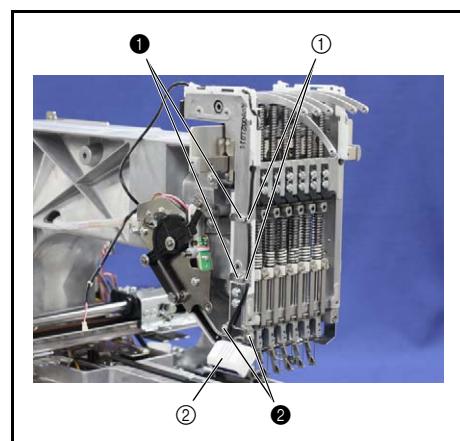
1 LED unit left assy removal

- 1.
- 2
- 2
- 1,
- . 3.
- 2
- 2,
- 2.



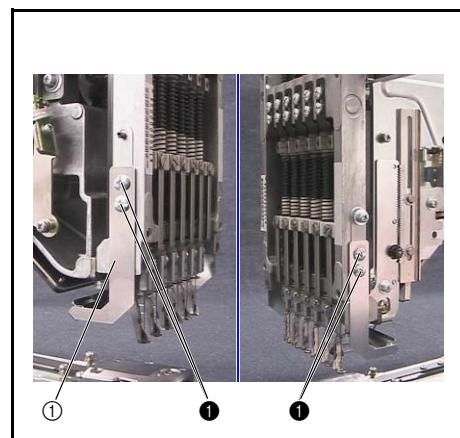
2 LED unit right assy removal

- 1.
- 2
- 2
- 1,
- . 3.
- 2
- 2,
- 2.



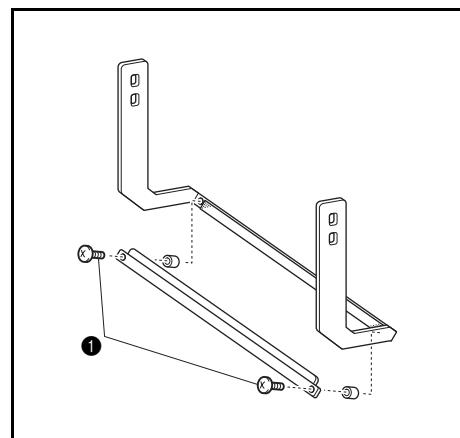
3 Thread presser base removal

- 1.
- 4
- 1,
- 1



4 Thread presser base disassembly

- 1.
- 2
- 1,
- 2

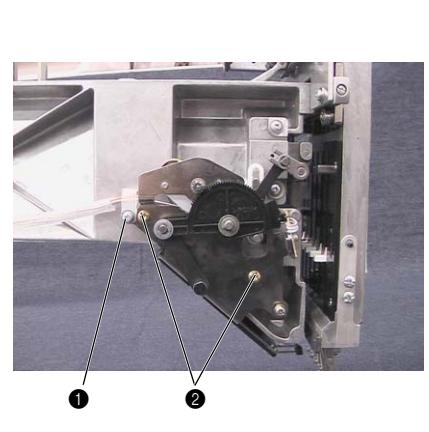


Main unit

Thread wiper unit

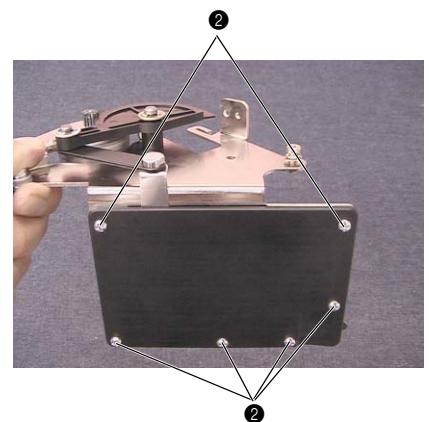
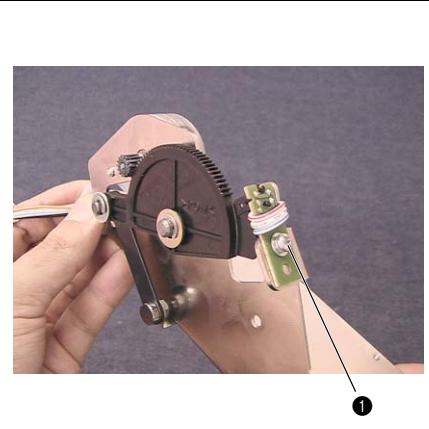
5 Wiper set assembly removal

- 1.
- 2.
- 1,
- 2,
- 5
- . 2.



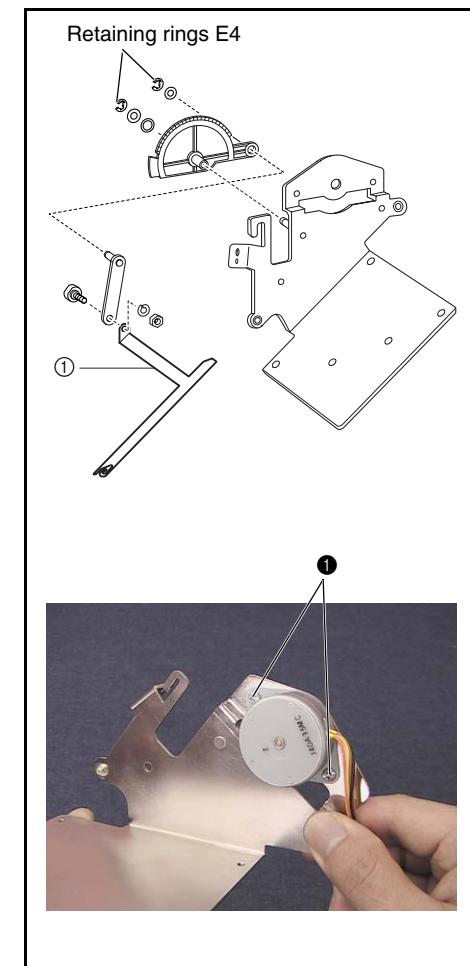
6 Wiper guide and wiper sensor removal

- 1.
- 6
- 2.
- . 3.
- 1
- .



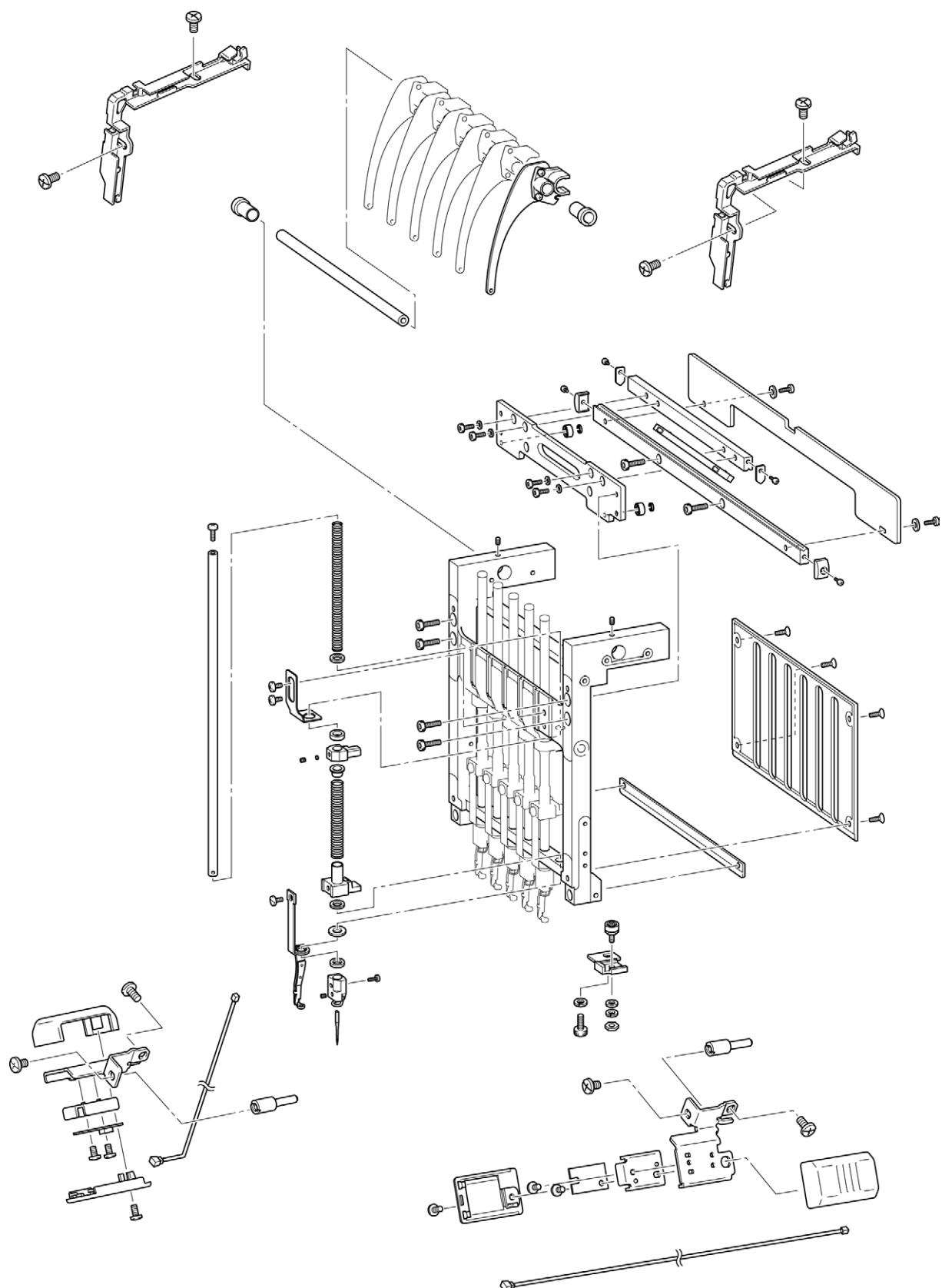
7 Wiper set disassembly

1. (3, M4),
(2-4)
1. 2. (M6), , E4,
3. (M5), E4
4. 2 1,



Main unit

edle bar unit

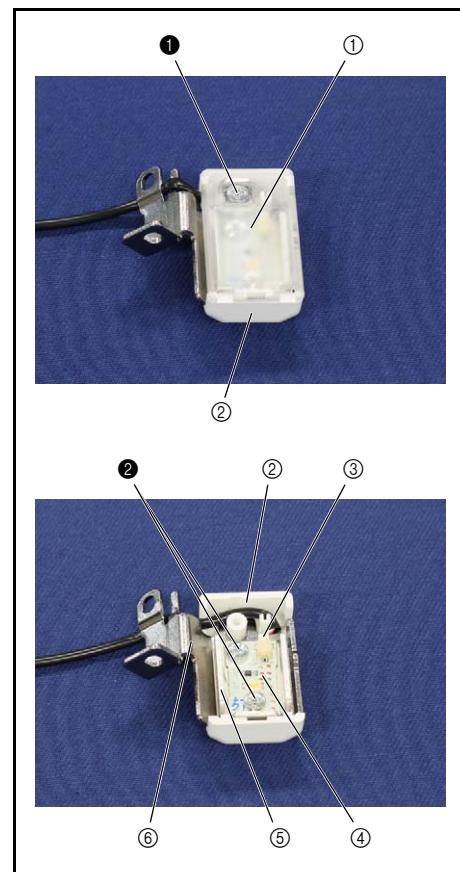


Main unit

Needle bar unit

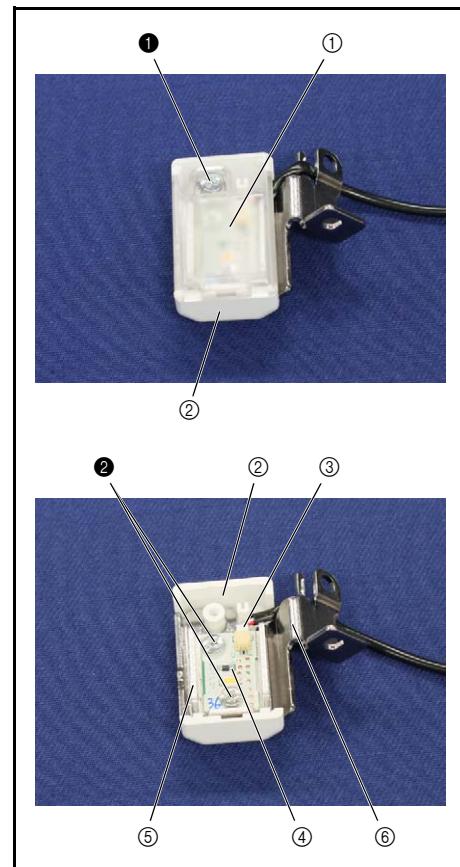
1 LED unit left assy disassembly

- 1.
- 1,
- 2.
- 2.
- LED2 3
4. 3.
- 2
- 2,
- 5
- 6
- 2.



2 LED unit right assy disassembly

- 1.
- 1,
- 2.
- 2.
- 1
- LED2 3
4. 3.
- 2
- 2,
- 5
- 6
- 2.

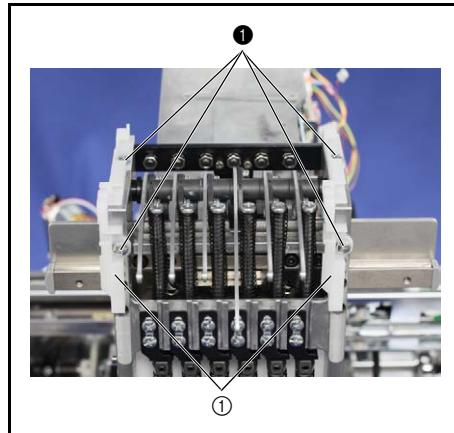


Main unit

Needle bar unit

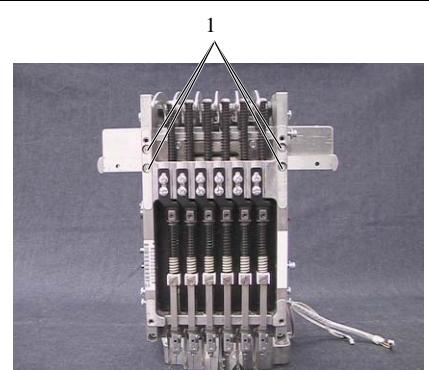
3 LED cord guide removal

1. Remove the 4 screws ①, and then remove the 2 LED cord guides ①.



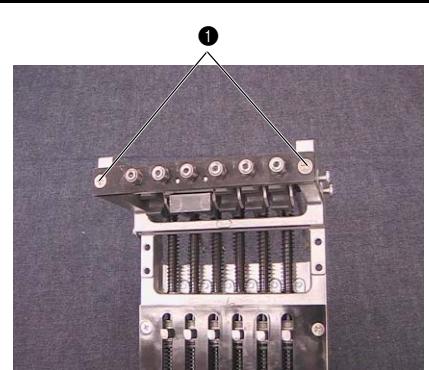
4 Needle bar case final assembly removal

1. Remove the 4 screws ①, and then remove the needle bar case assembly.



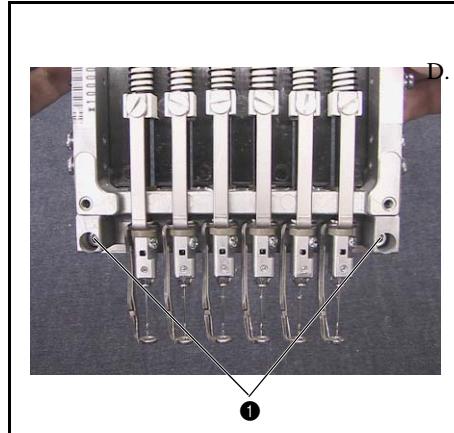
5 Change roller base assembly removal

- 1.
- 2
- 1,



6 Case guide D removal

- 1.
- 2
- 1,

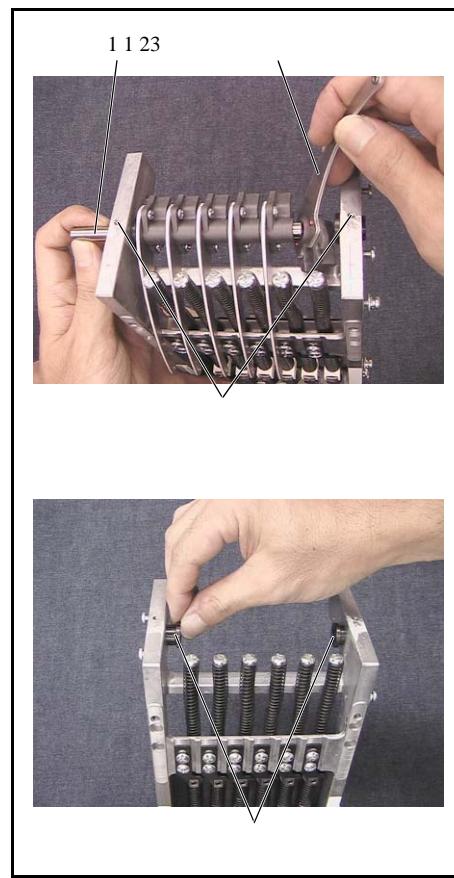


Main unit

Needle bar unit

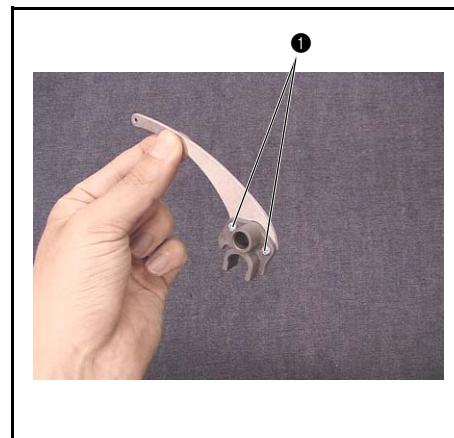
7 Thread take-up lever assembly removal

- 1.
- 2
- 1,
- 1 6
2. 2.
- 3.
- 2



8 Thread take-up lever disassembly

- 1.
- 2
- 1,
- . (6
-)

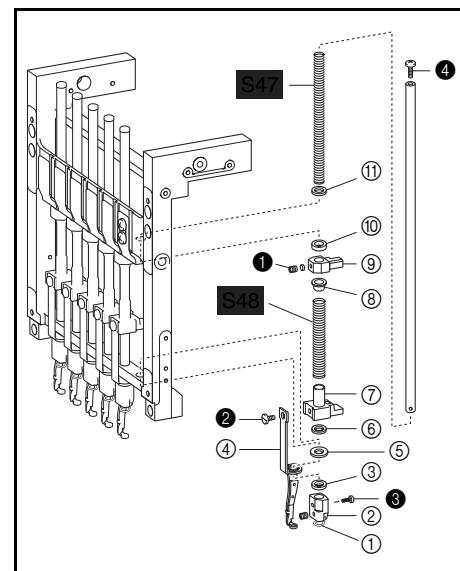


Main unit

Needle bar unit

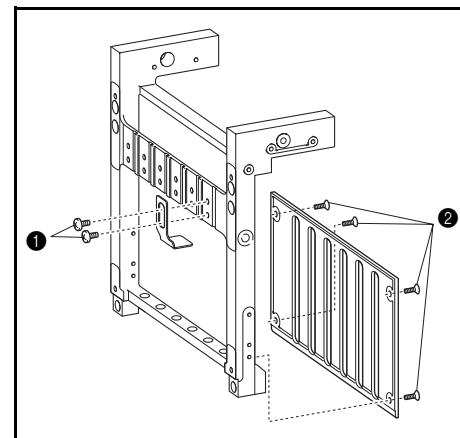
9 Needle bar removal

- 1.
2. (6 1) 3. . (6) 2.
3. 1,
4. 2,
5. 4. 3, [REDACTED] (S, [REDACTED],
6. 9,
7. . (6), . (6) 5.
8. , 4
9.)



10 Needle bar case disassembly

- 1.
- 2
- 1,
- . (6) 2.
- 4
- 2,

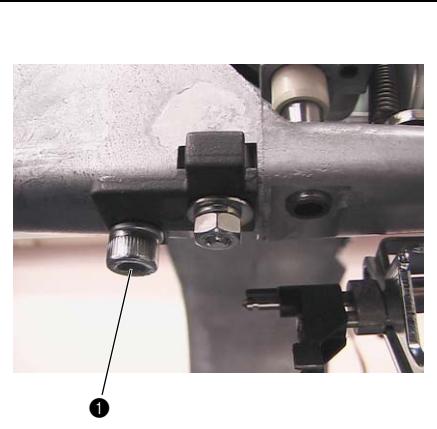


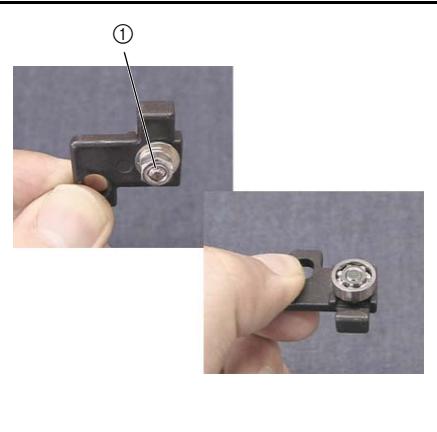
11 Case positioning plate assembly removal

1.

1

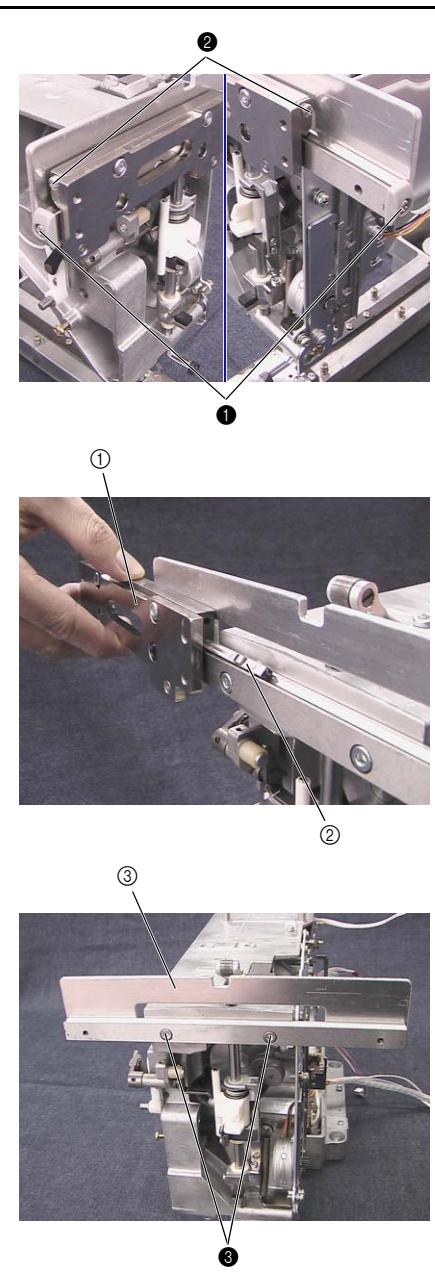
(2-5),



12 Case positioning plate disassembly1.
(2-4)(2, M4) 1,
(M4),
(694)

13 Case bracket assembly removal

- | | | |
|------|----|--------|
| 1. | 1, | UL. (2 |
|) 2. | 2, | . (2 |
|) 3. | 3, | 2. 4. |
| 1 | UL | 3. |
| 2 | | |

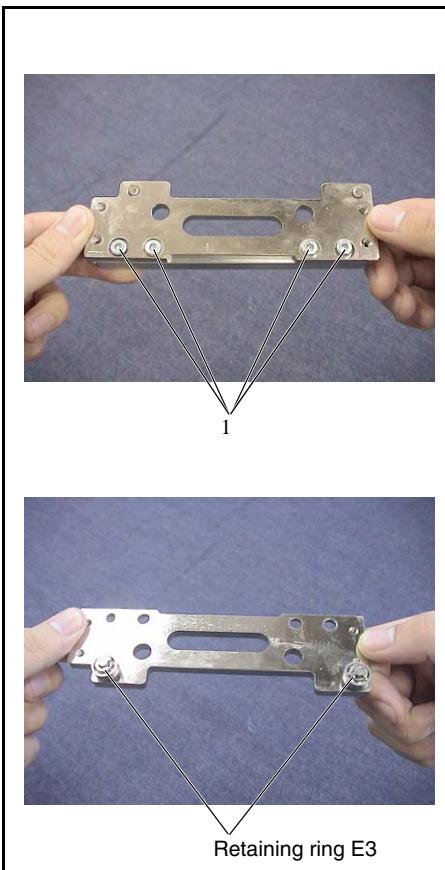


Main unit

Needle bar unit

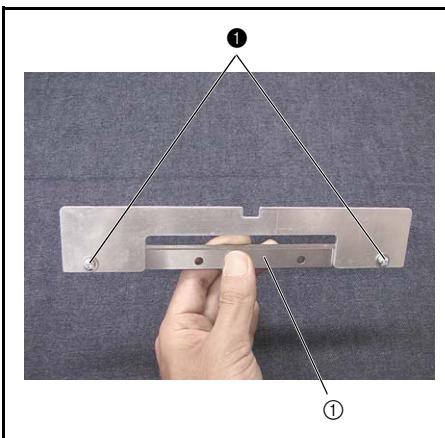
14 Case bracket disassembly

1. 4 1,
E3,
(694) . 2. 2
US 2

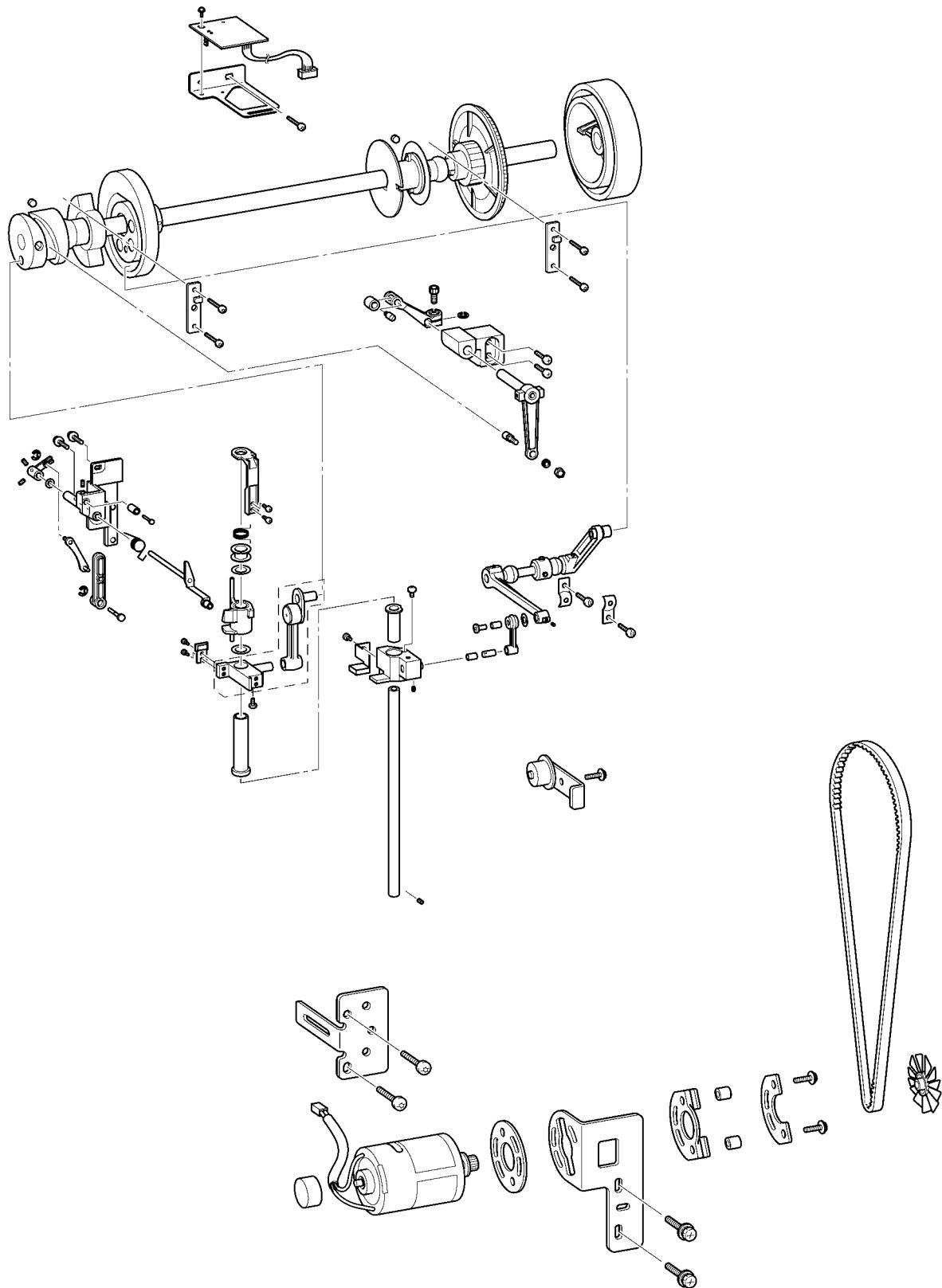


15 Case guide UL disassembly

1. 2 1,
UL 1

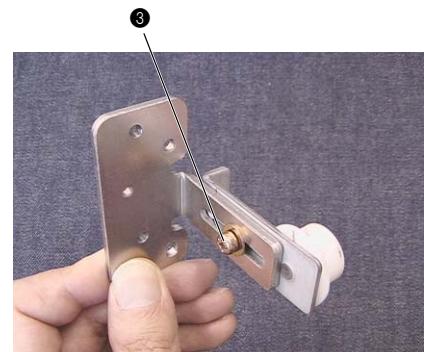


Main unit



1 Main motor final assembly removal

- 1.
- 2.
- 1,
- (XA9644-050).
- 2.
- 2,
- 3,
- 4.

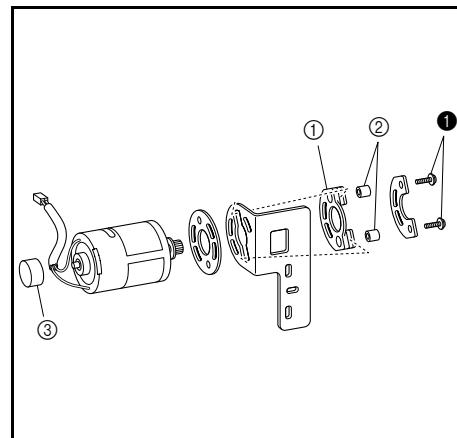


Main unit

Upper shaft unit

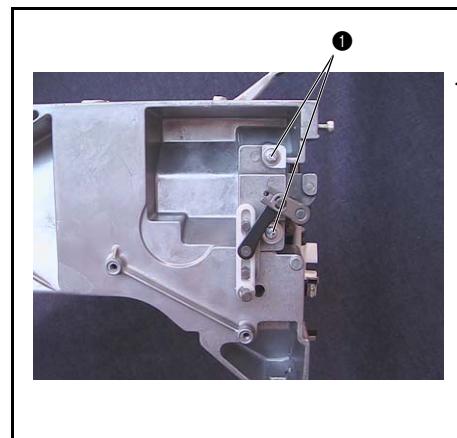
2 Main motor disassembly

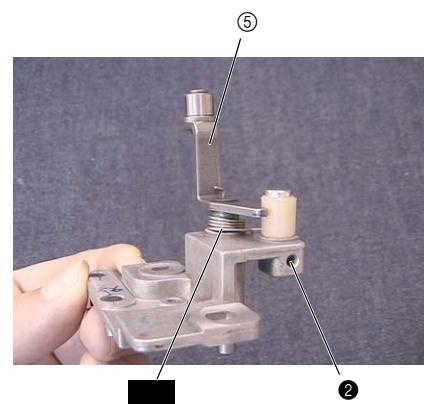
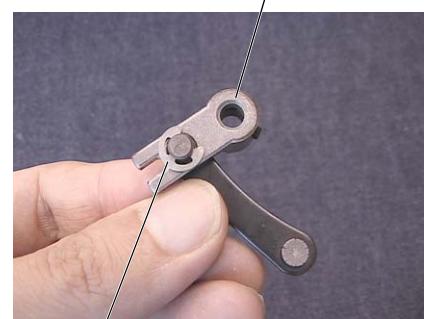
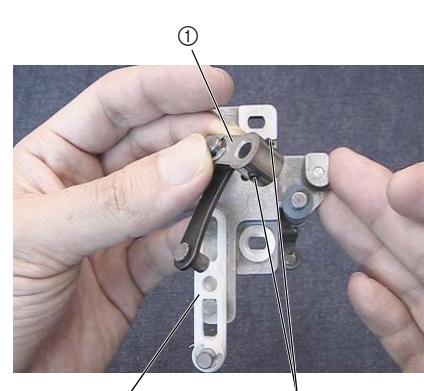
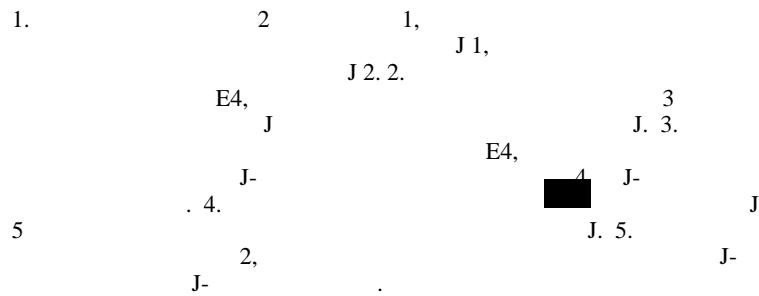
- 1.
- 2
- 1,
,
- .
- 2.
- .
- 3.
- .
- 4.
- 1
- 2
- 3
- (4 x 7) 2



3 Driving jump assembly removal

- 1.
- 2
- 1,



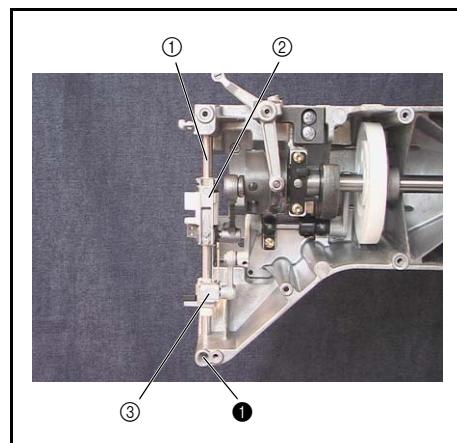
4 Driving jump disassembly

Main unit

Upper shaft unit

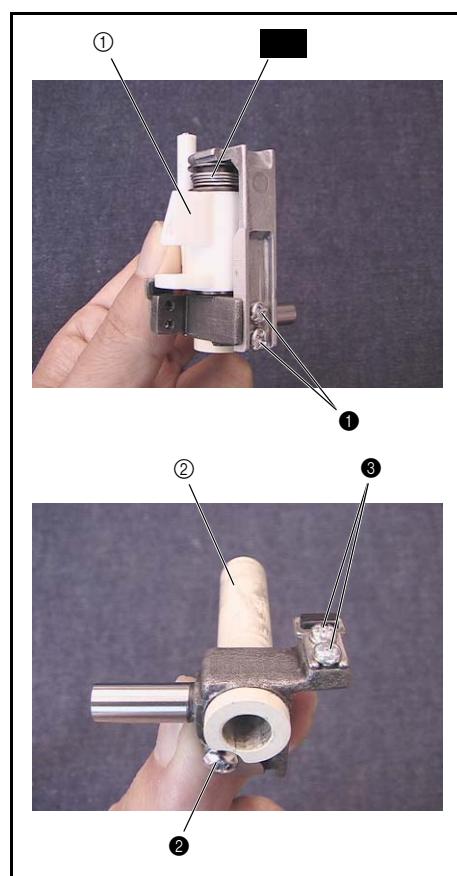
5 Base needle bar removal

1. 1,
J-
2. .
1
3. .



6 J-clamp disassembly

1. .
2. 1,
J-
2. .
1, [REDACTED]
3. .
J 2
J-
2
J-
4. .
3,
. 5.
2,

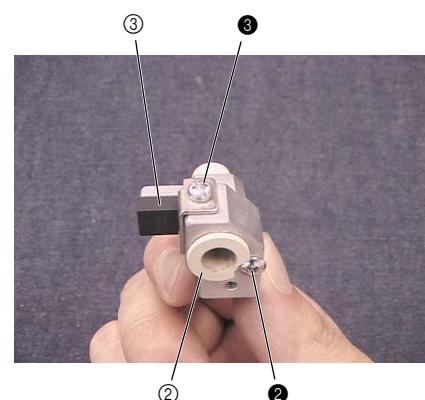
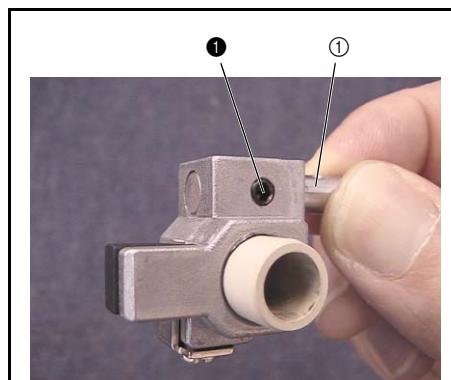


Main unit

Upper shaft unit

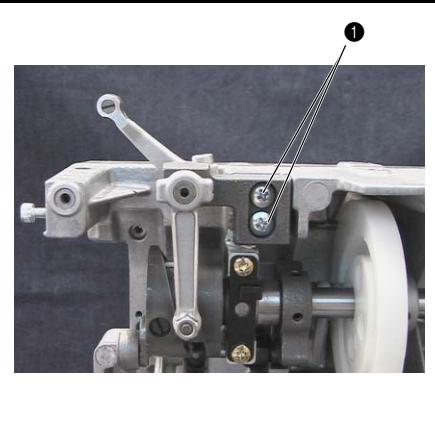
7 Presser foot vertical base disassembly

- 1.
 - 2.
 - 3.
- 1,
 - 2,
 - 3,



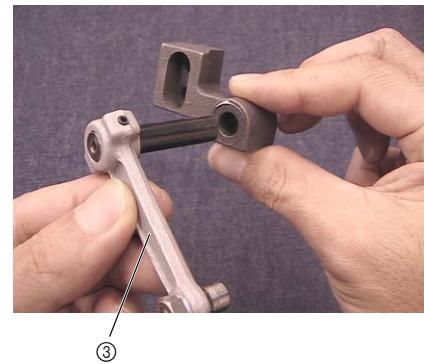
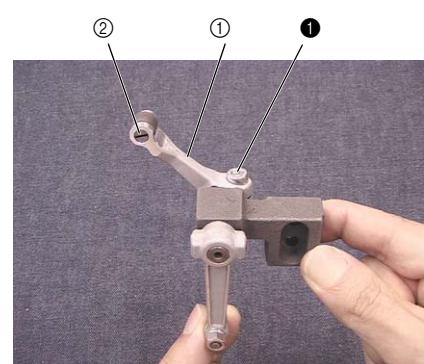
8 Thread take-up driving lever final assembly removal

- 1.
- 2
- 1,



9 Thread take-up driving lever disassembly

1. 1,
2. 2,
- ,
- 3.
4. 4
(1, M5)
(2-5),

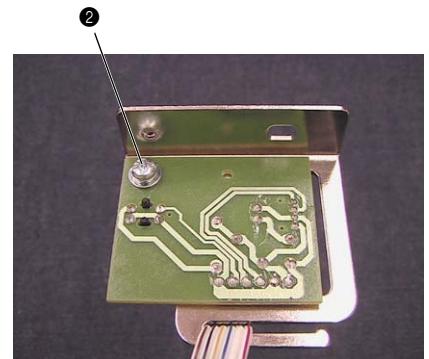
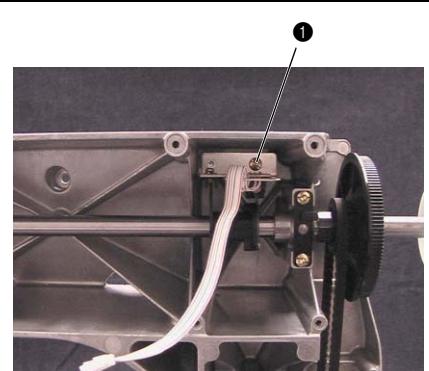


Main unit

Upper shaft unit

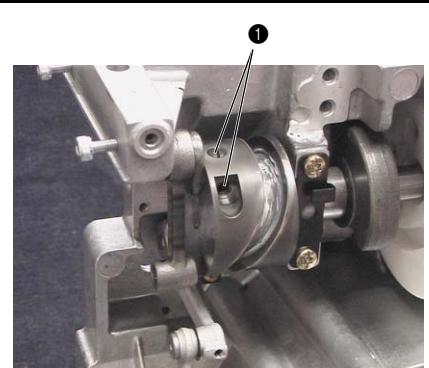
10 Main shaft sensor final assembly removal

- 1.
- 2.
- 1,
- 2,



11 Crank rod removal

- 1.
- 2
- 1,

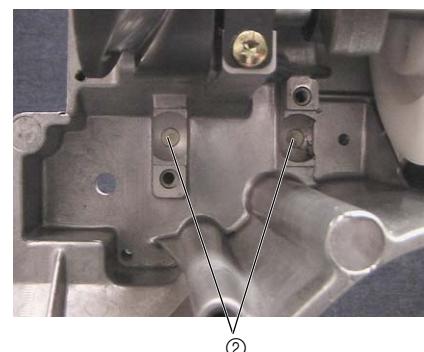
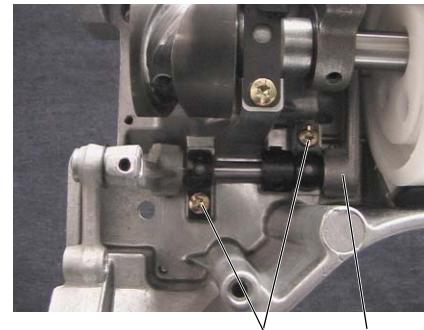


Main unit

Upper shaft unit

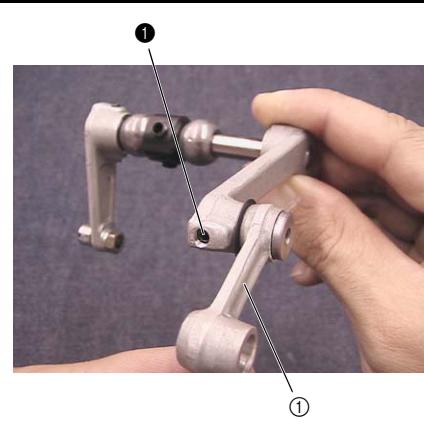
12 Pressure foot driving shaft assembly removal

- 1.
- 2
- 1,
- 2.
1. 3.
- 2
- 2



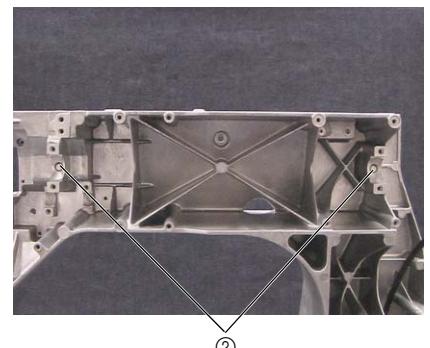
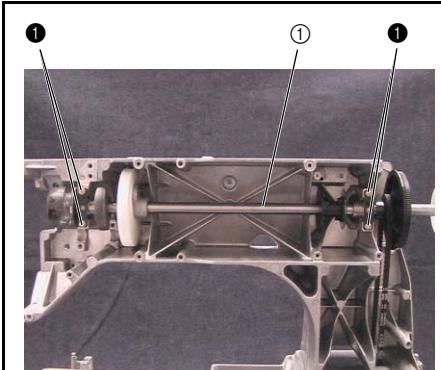
13 Presser foot driving shaft disassembly

- 1.
- 1,
- ,
- 1

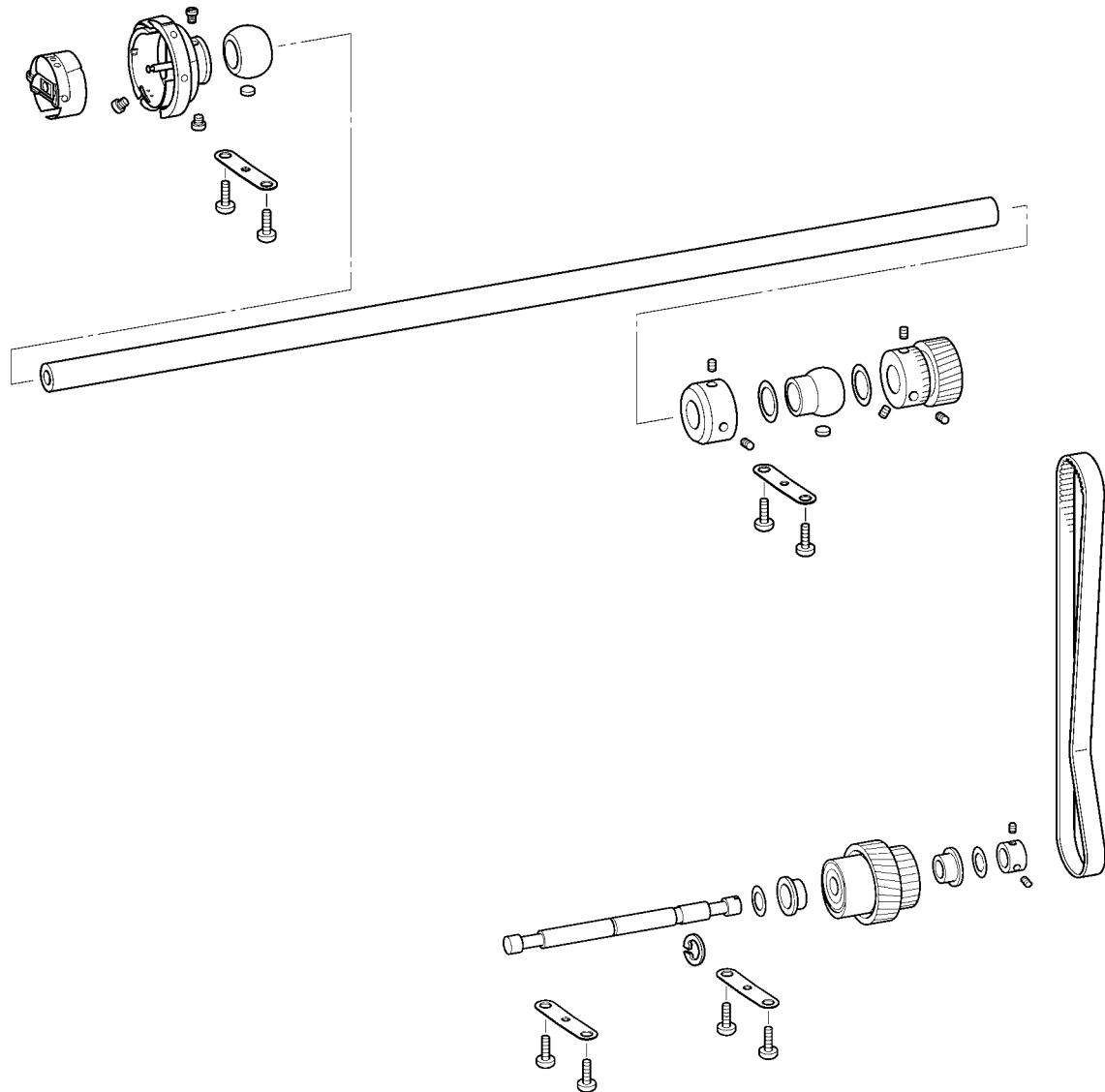


14 Upper shaft assembly removal

- 1.
- 2.
- *
- 3.
- 4.
- 1,
- 2.
- ,
- 1.
- 2
- 2
- .
- 4.



Main unit



Main unit

Lower shaft unit

1 Arm bed and base frame disconnection

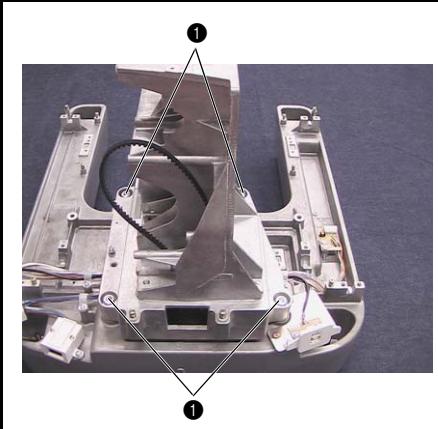
1.

*

2.
(M8),

4

1 4



2 Idle pulley assembly removal

1.

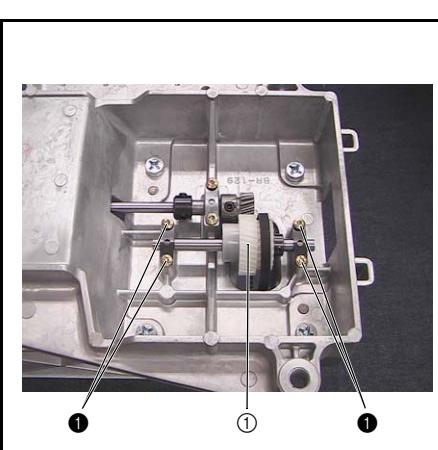
2

4

1,

. 2.

1.



3 Idle pulley disassembly

1.

2

1,

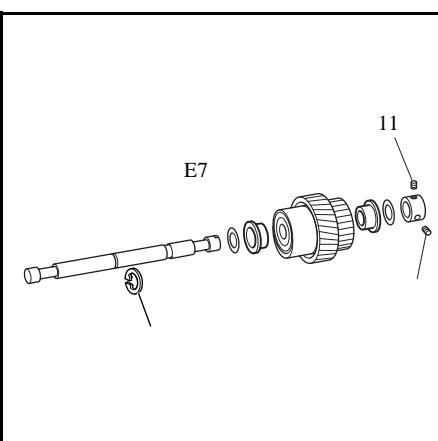
,

E7

2

. 2.

. 3.

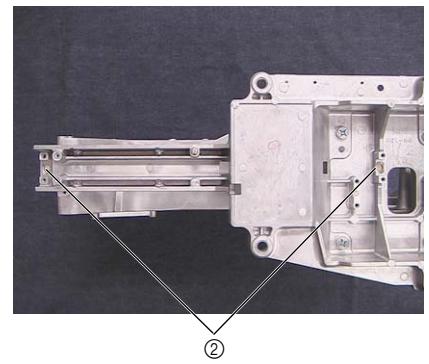
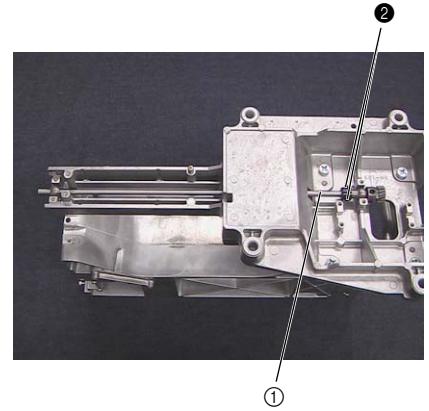
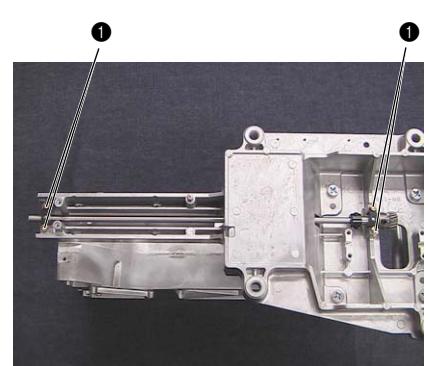


Main unit

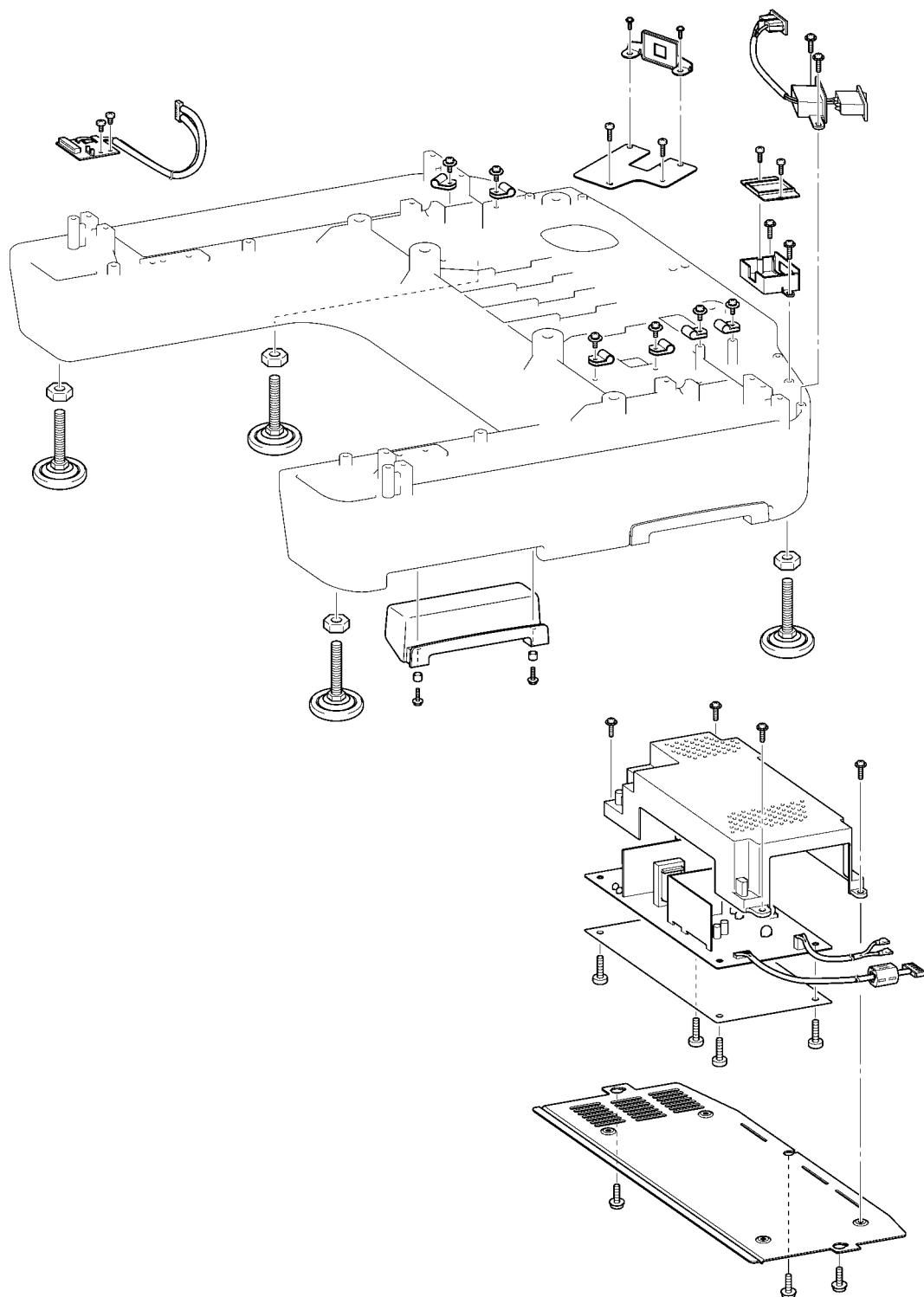
Lower shaft unit

4 Lower shaft removal

1. 4 1,
2,
1,
,
7.24,
R
7.24. 3. 3 3,
. 4. 2 2
- F



Main unit

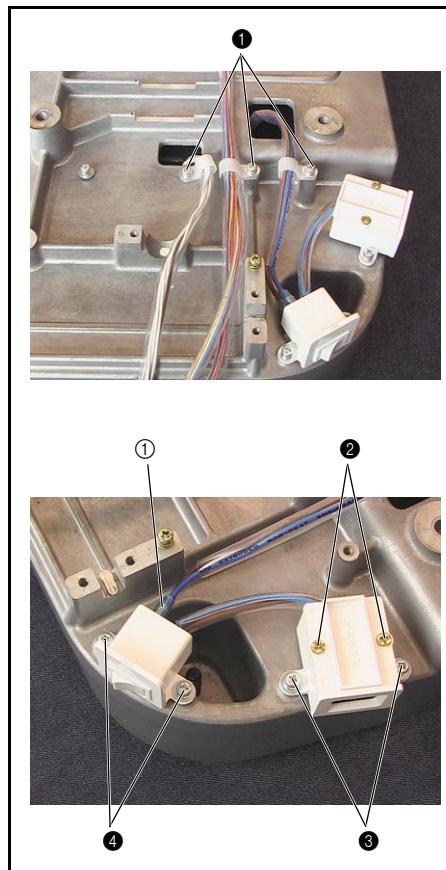


Main unit

Power unit

1 Power switch assembly and inlet removal

1. K-6N), 3 1 3 (N
2. , Y-
3. 2 3,
4. 2 4, . 5.
- 1 2

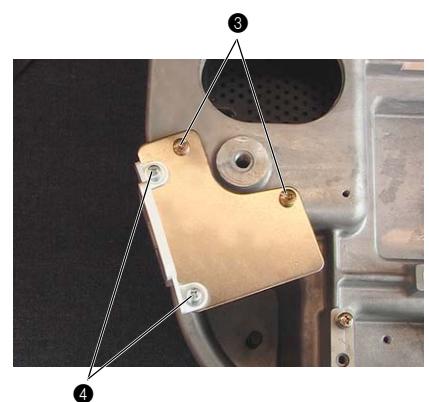
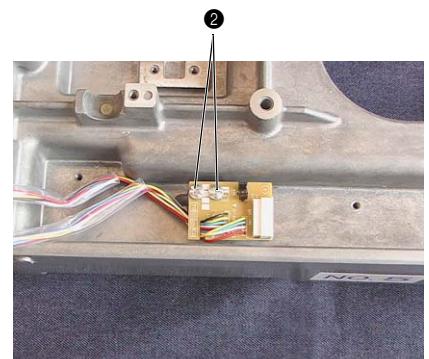
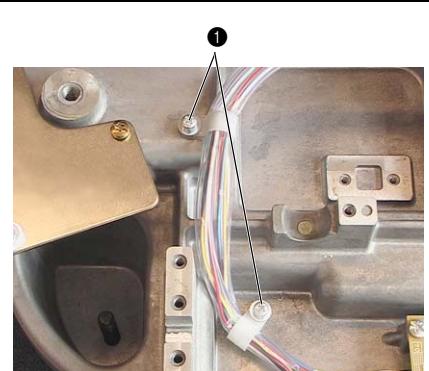


Main unit

Power unit

2 USB PCB assembly and Y-area sensor assembly removal

1. K-6N), 2 1 2 (N
Y . 2. 2 Y-
2, . 3. 3,
USB. 4. 2 4,
USB. 2
USB.



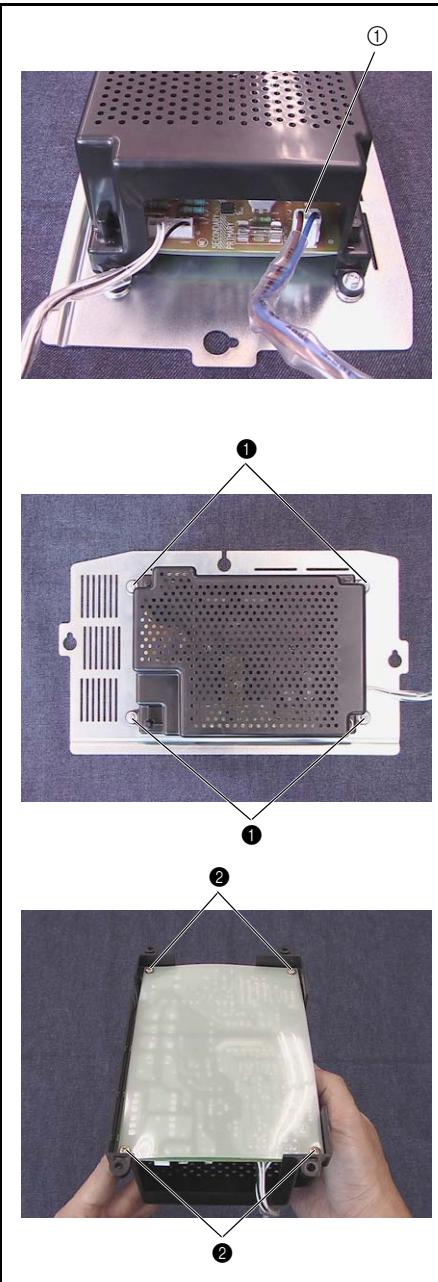
3 Power PCB assembly removal

1. 3 1,



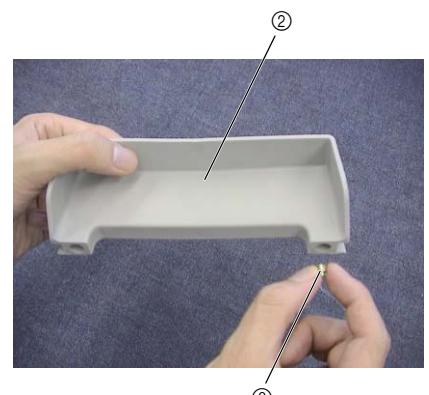
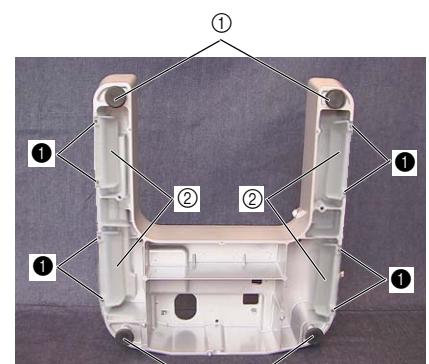
4 Power PCB disassembly

1.
4 100 (200). 2.
1,
. 3. 4 2,

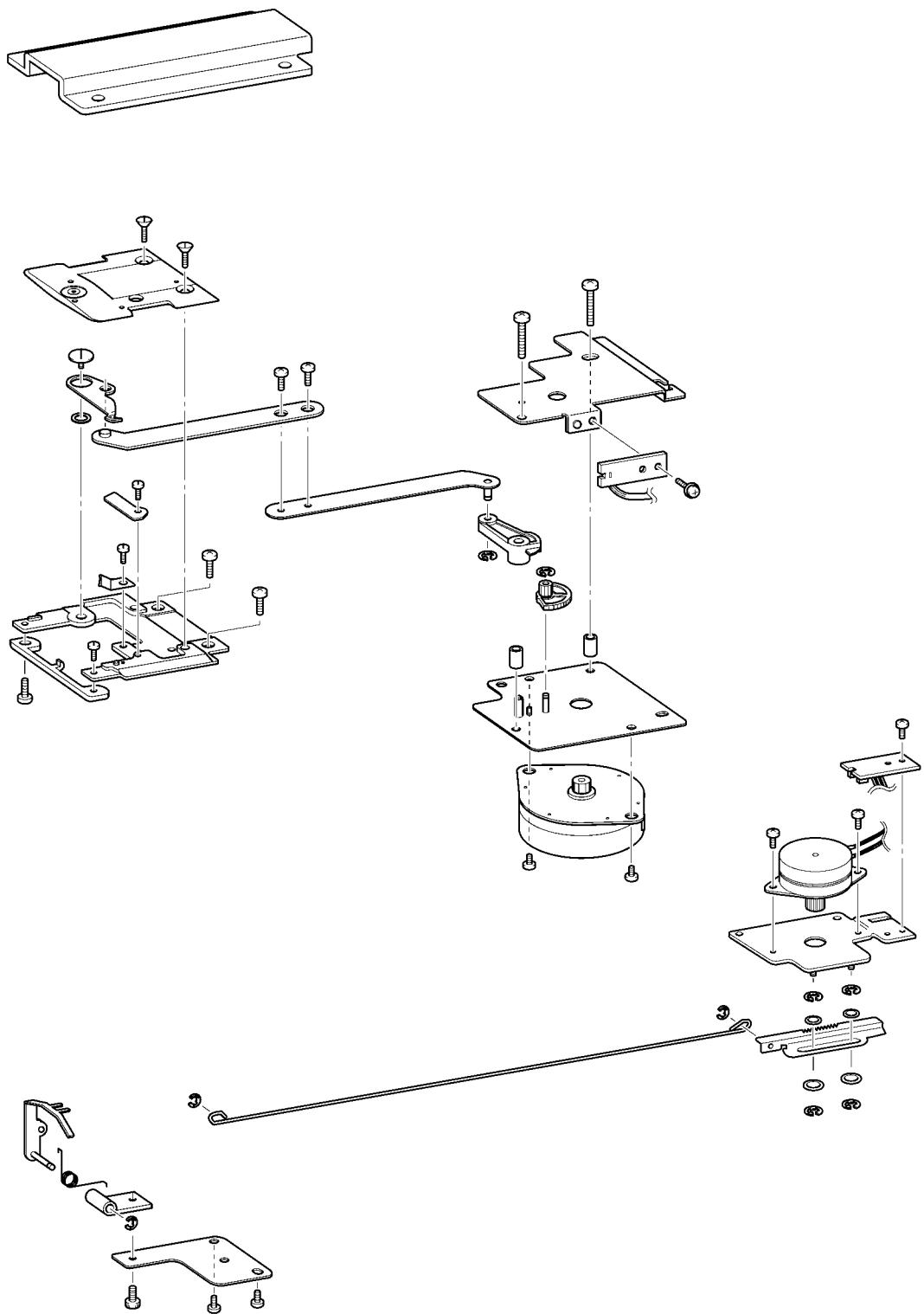


5 Adjust-bolt removal

- | | | | | |
|----|--------------|---|-------|-------|
| 1. | 1
(2, M8) | 4 | . 2. | 4 |
| | | | | |
| | 3. | | 2. | 2 |
| | | | 2. (4 |) 4. |
| | | | 2. (4 |).). |
| | 3 | | | |



Main unit

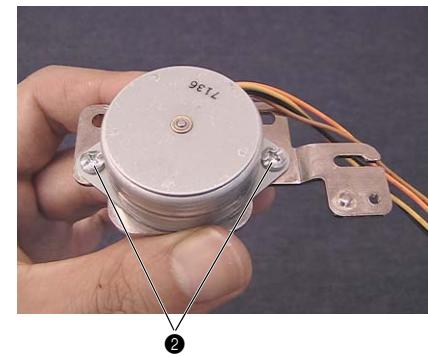
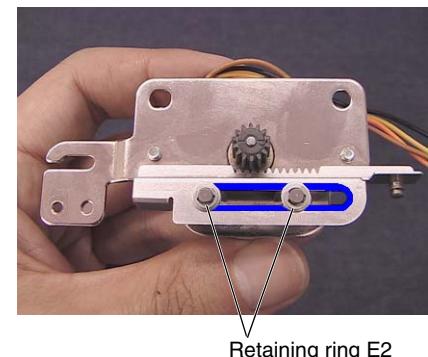
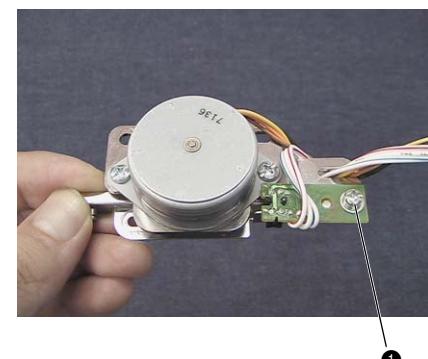
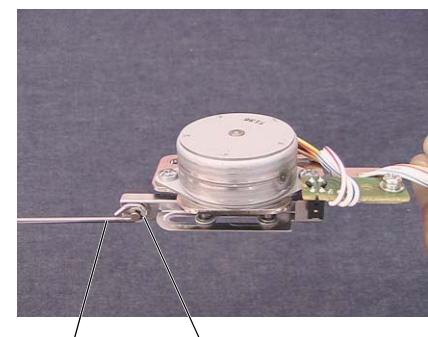


Main unit

Thread cut unit

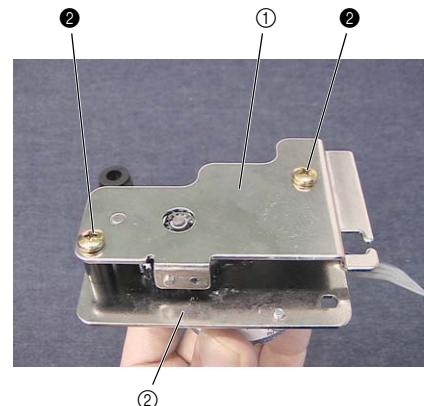
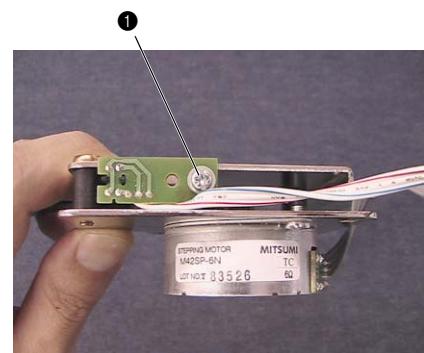
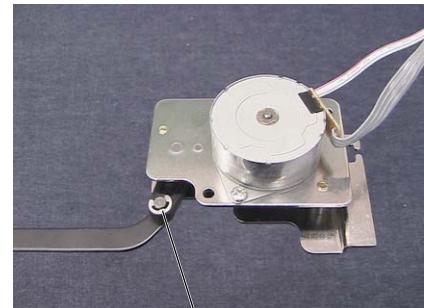
1 Picker disassembly

- 1.
- 1,
2 E2, 2
3.
E2, 5.
- 2
S3, 4.
- 2
1. 2.



2 Cutter unit disassembly (Step 1)

1.
1,
2
2,
1
2
2
.
- (
).
- E2,
2.
3.
CT 2,



3 Cutter unit disassembly (Step 2)

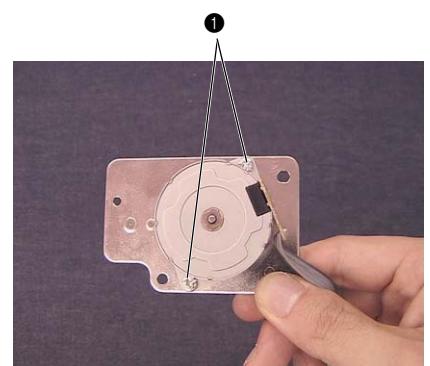
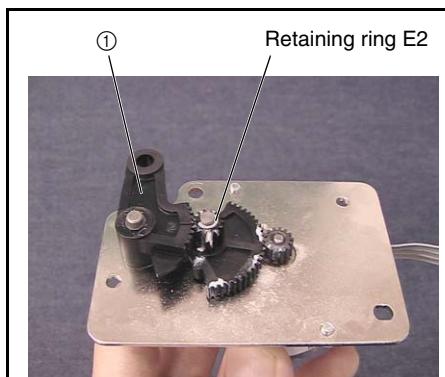
1.

2,
3.

1. 2.

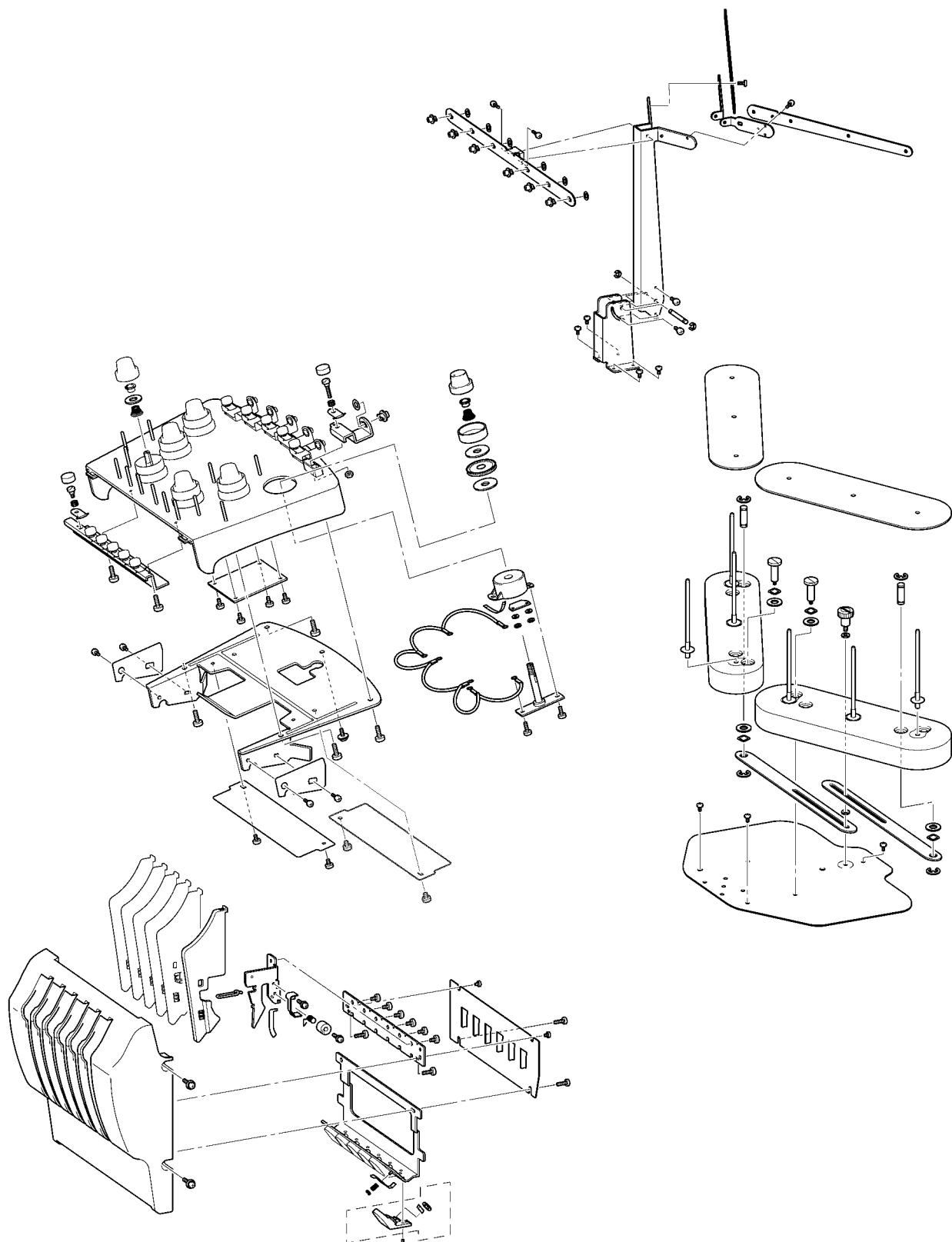
1,

2



Main unit

hread tension unit

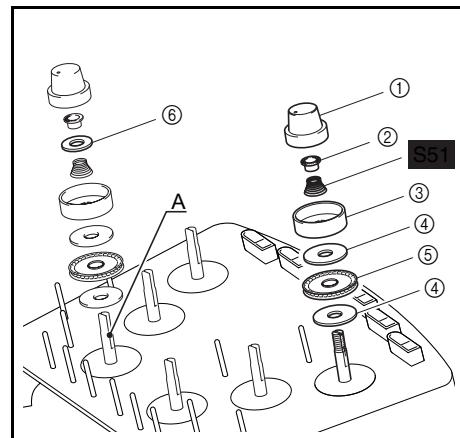


Main unit

Thread tension unit

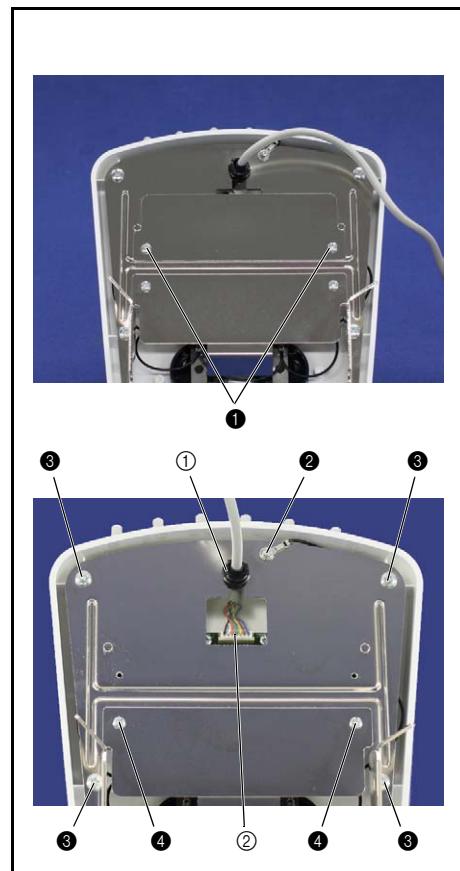
1 Loosen the tension nut removal

- 1.
- 2,
- ,
- 3,
- 1,
- 2.
- 4,
- 4
- .
- 5
- 6.
- (6).
- 5.
- 6.
-).



2 Tension base bracket removal

- 1.
- 2
- 1,
- .
- 2.
- (KR51) 1
- ,
- 2
- .
- 3.
- 2,
- .
- 4.
- 4
- 3,
- .
- 5.
- 2
- 4,

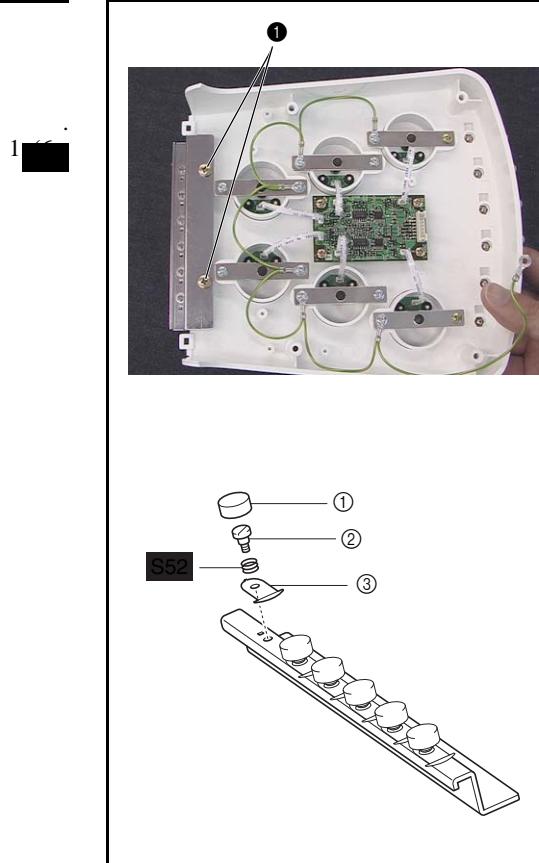


Main unit

Thread tension unit

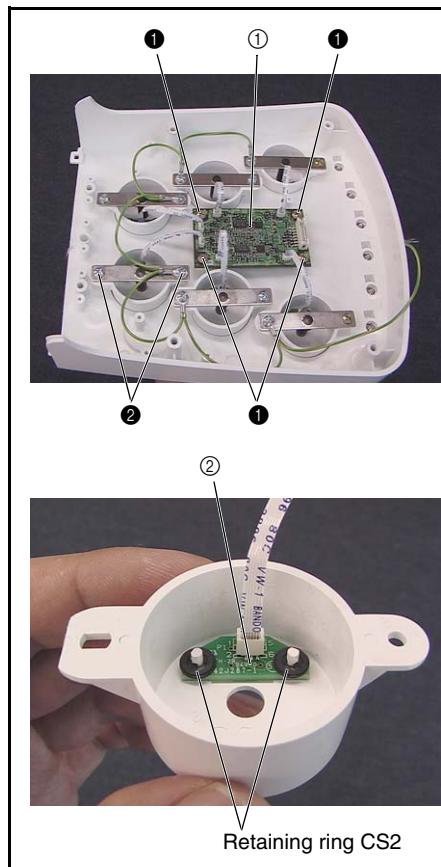
3 Inner thread eyelet base removal

- 1.
- 2.
3.
 - 1,
 - 2,
 - 3.
 - .(6)
 -).).



4 Thread sensor PCB assembly and head PCB assembly removal

- 1.
- FFC (SML2CD-H)
 1. (6)
 - 2.
- 1,
 - 3.
 - 2
 - 2
 - 2
 - .(6)
 -). 5.
- 4
- ,
- .(6) CS2,
- 4.
- FFC (SML2CD-H)

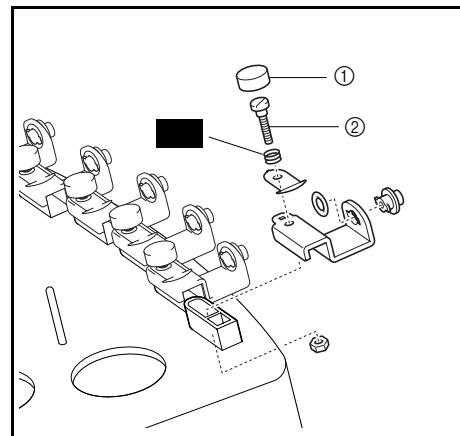


Main unit

Thread tension unit

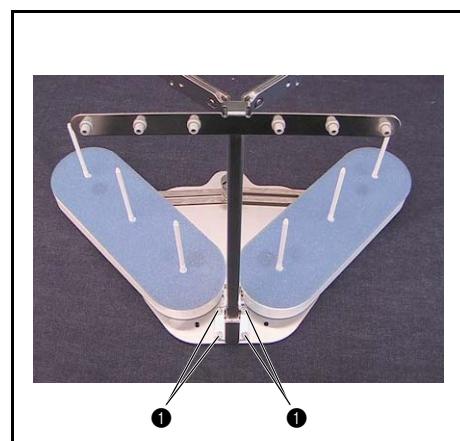
5 Upper thread eyelet base removal

- 1.
- 2.
- 2
- ,
- .
- (6
-)
1. (6
- M3).



6 Antenna assembly removal

- 1.
- 4
- 1,

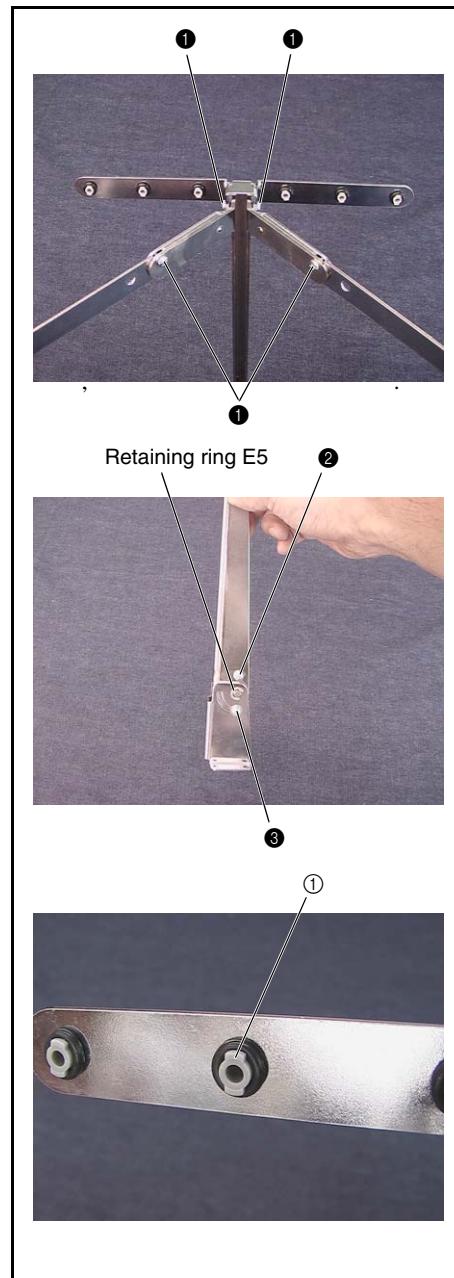


Main unit

Thread tension unit

7 Antenna disassembly

1. A, 2 4 1, B 2
C. 2. C. 3. E 23
E5,
D,
. 4.
5 . 5.
A 1,
E,* (P5) 6 6
• E. 90

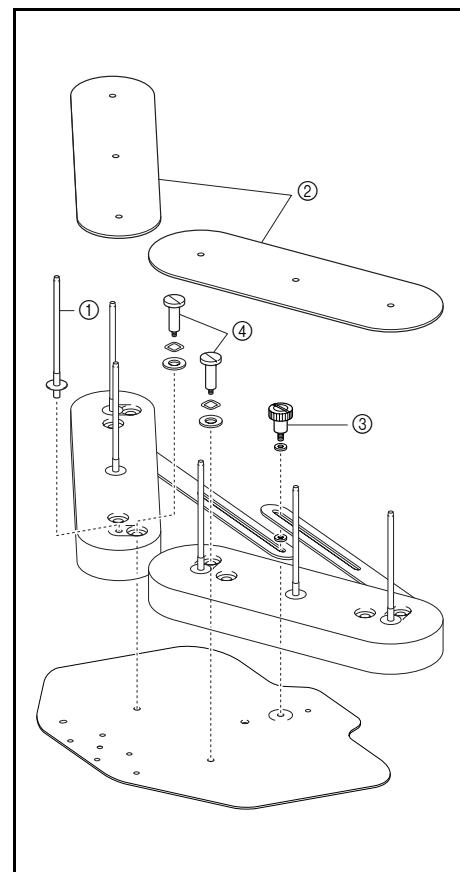


Main unit

Thread tension unit

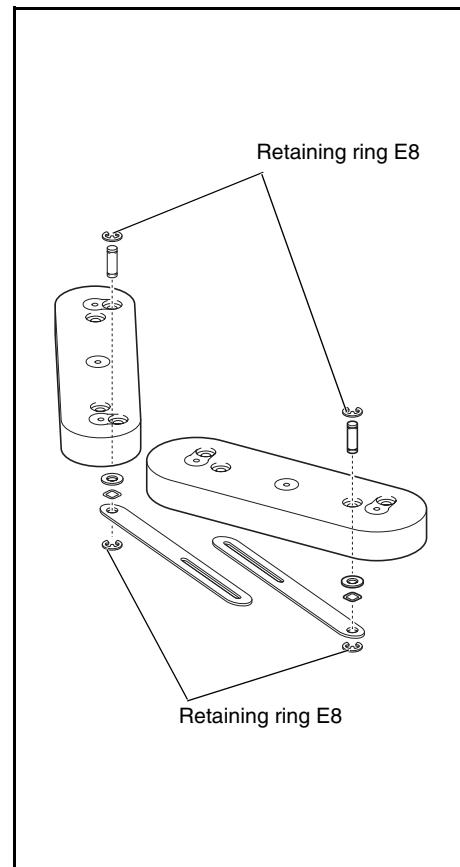
8 Spool stand frame disassembly (Step 1)

1. 2 6 R (M4L) 3 L. 2. , 1 2
R L. 3. 2 4, 2 (S10),
L.
R



9 Spool stand frame disassembly (Step 2)

1. E8,
,
(S10)
. 2. E8,
,
(S10)
R E8
. (2) 3.



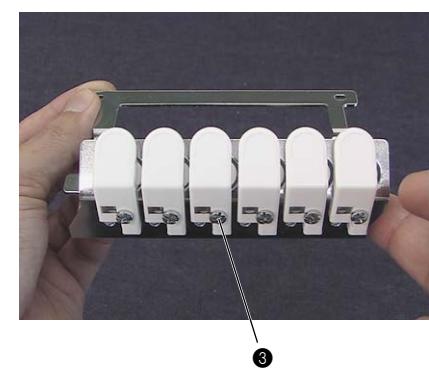
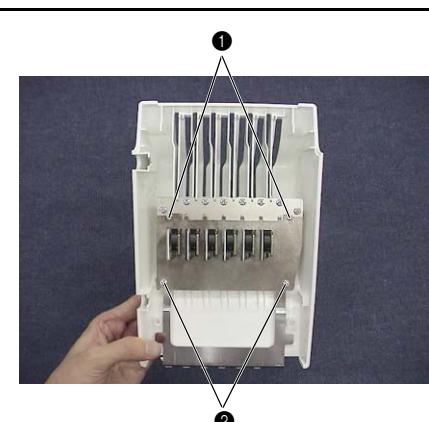
Main unit

Thread tension unit

10 Thread take-up lever cover disassembly (Step 1)

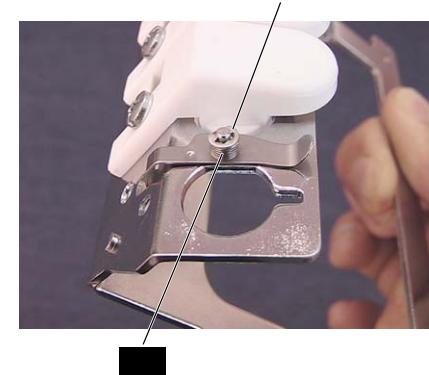
1. 4 (1, 2, 2),
- . 2. 3,
- . (6 CS5 6) 3.
- , NT. 4. [REDACTED] 6
- 5,
- .

E1.



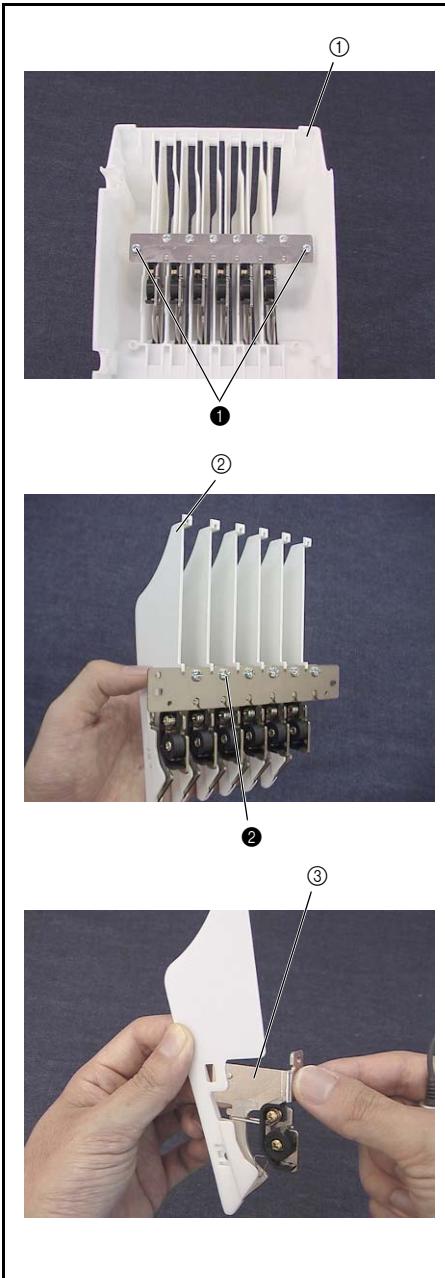
Retaining ring CS5

Retaining ring E1.5



11 Thread take-up lever cover disassembly (Step 2)

- 1.
- 2.
- . 2.
- 6
- 1,
- . 3.
- 2
- 6
- 2,
- . 1. 4.
- . (6
- 3
-)



12 Thread take-up bracket disassembly

* •

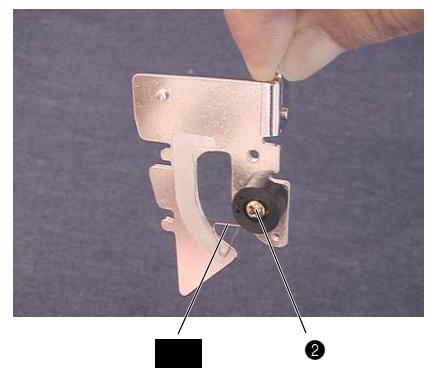
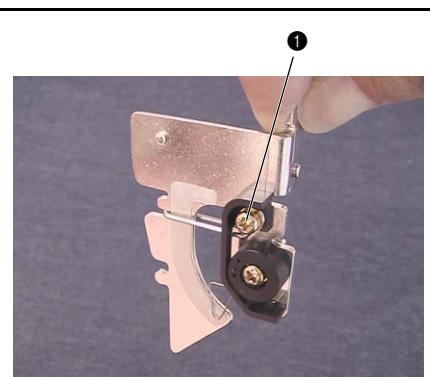
1,

1.

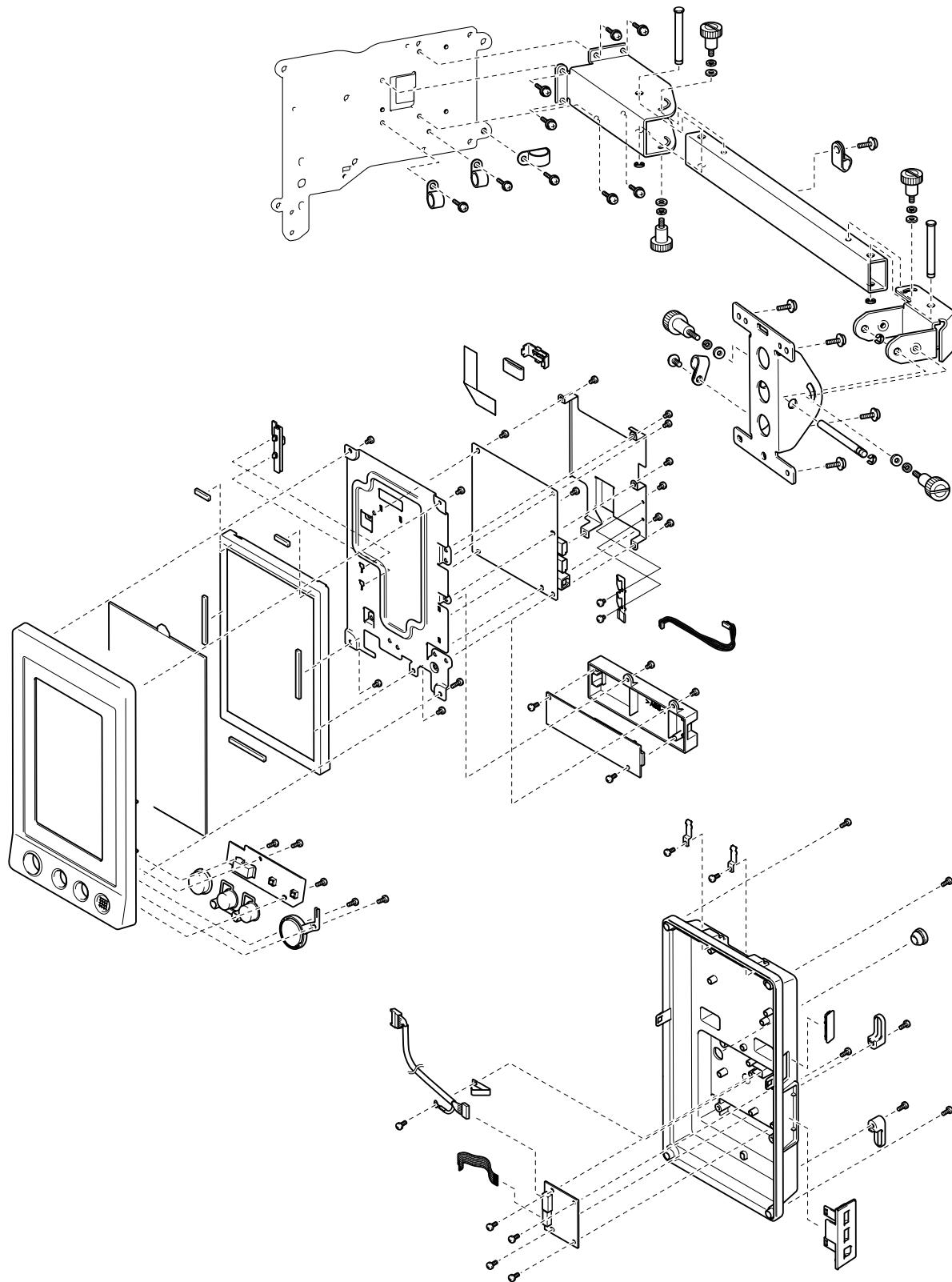
2,

2.

3.

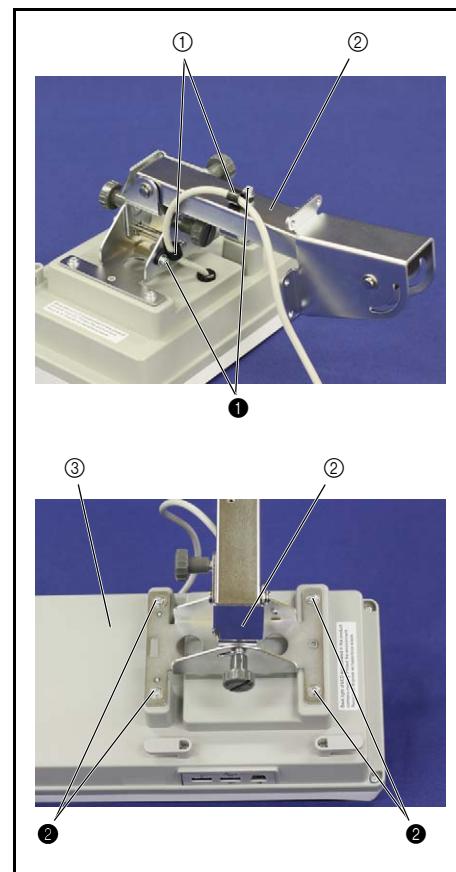


Main unit

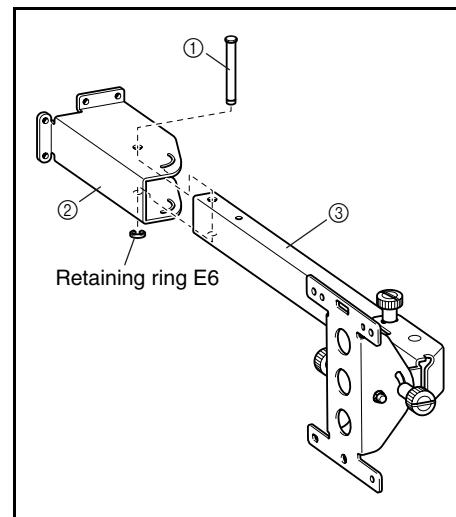


1 Operation panel lever assembly removal

- | | | | | |
|----|---|----|----|---|
| 1. | 2 | 1, | 1, | 2 |
| | | 2. | 2. | . |
| 2 | | | 4 | 3 |

**2 Operation panel lever C removal**

- | | | |
|-----|-----|-----|
| 1. | | E6, |
| 1 | C 2 | . |
| B 3 | | . |

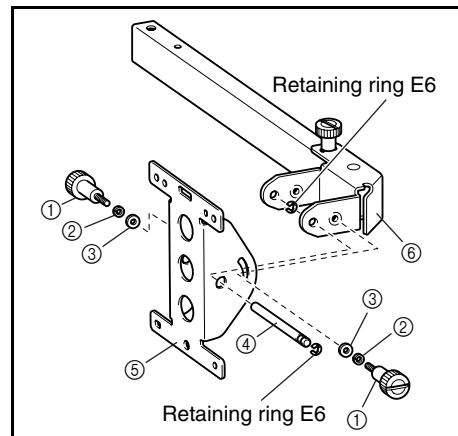


Main unit

Operation panel

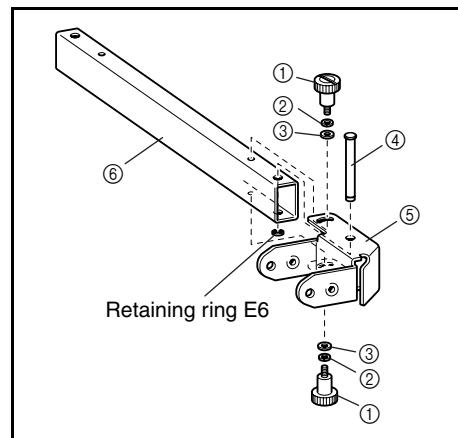
3 Panel holder removal

1. 2 (2-4) 2 2 (M4L) 1, 2 (M
4) 3. 2. 2 E6,
A 6 4 5



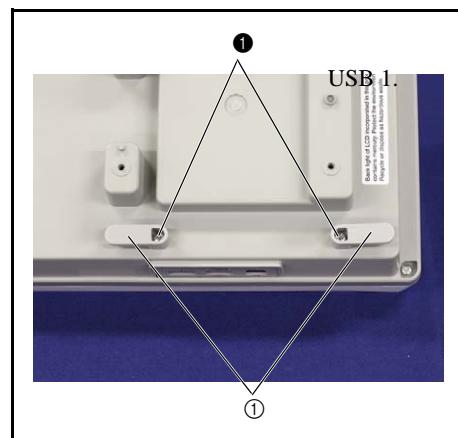
4 Operation panel lever A removal

1. 2 (2-4) 2 2 (M4L) 1, 2 (M
M4) 3. 2. 2 E6,
A 5
4 B 6



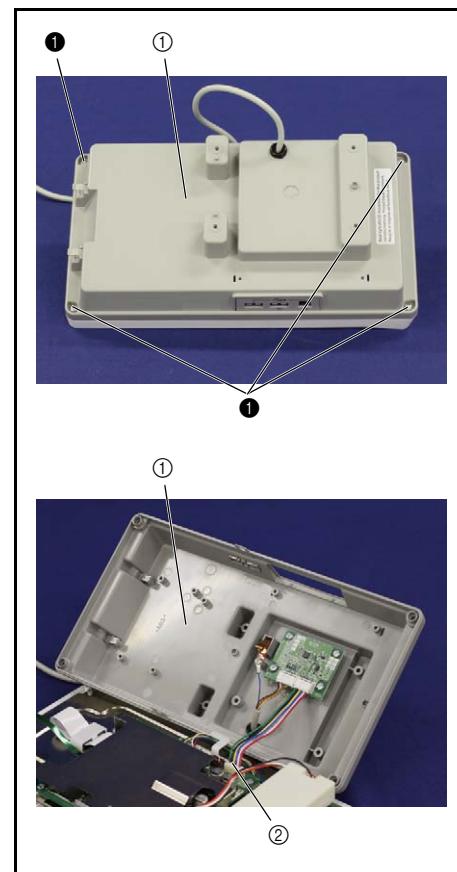
5 USB cord holder removal

1. 2 1, 2

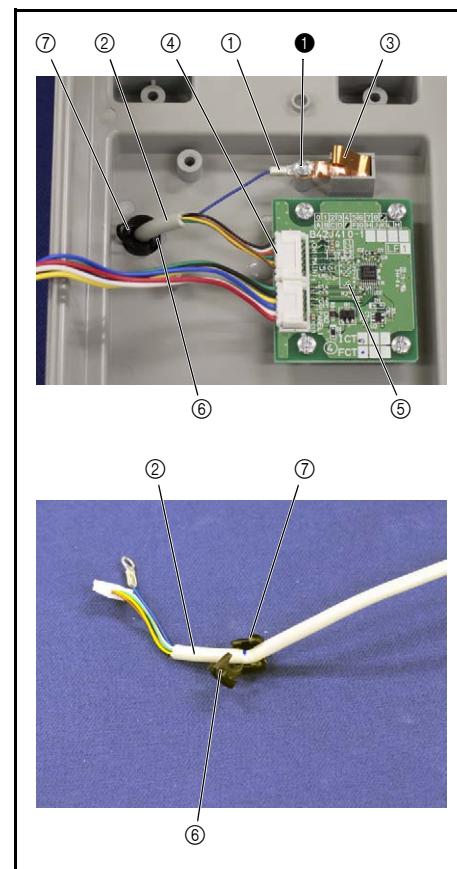


6 Panel rear cover removal

- 1.
- 4
- 1, 2.
- 2.

**7 Lead wire assy panel removal**

- 1.
- 1, 1
- 2
- 3
- 4
- 2
5. 3.
- 7,
- 6
- 2.
- 4.
- 2
- 6,
- 7
- 2.



8 Communication relay PCB assy removal

1.

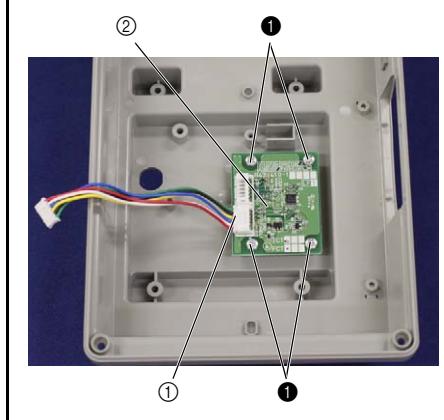
2. 2.

1

4

1,

2



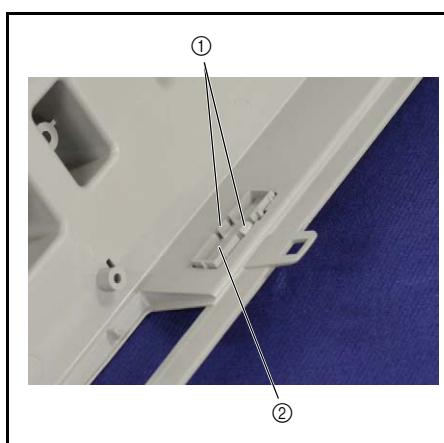
9 Card cover removal

1.

2

1,

2



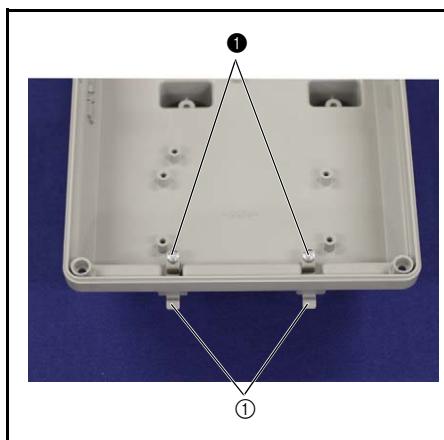
10 Pen holder removal

1.

2

1,
1

2

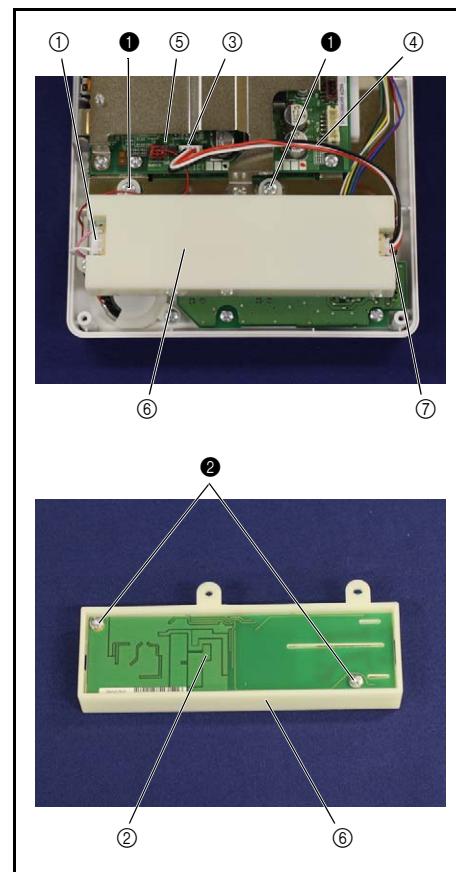


Main unit

Operation panel

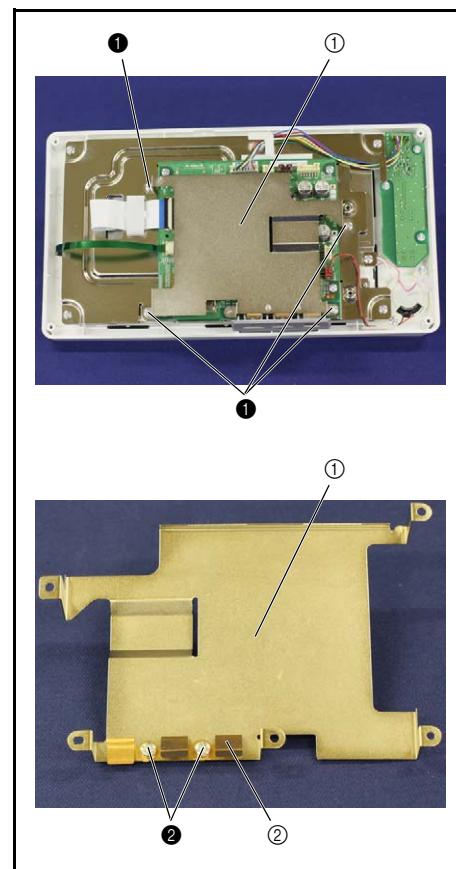
11 Inverter removal

- 1.
- 2.
- 3.
- 4.
5. 3.
6. 4.
- 7.
- 2.
- 2.
- 4.
- 2,
- 6.



12 Panel PCB case removal

- 1.
- 2.
- 4.
- 2,
- 1,
1. 2.
- USB 2
1.

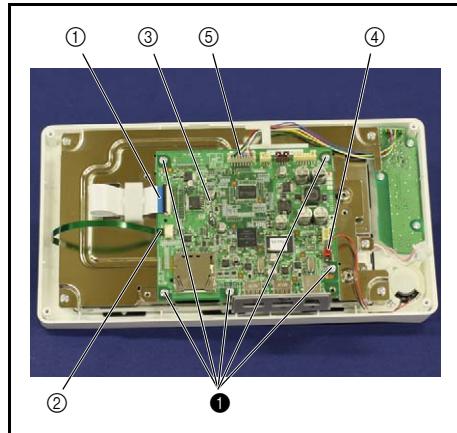


Main unit	Operation panel
-----------	-----------------

13 Panel PCB supply assy removal

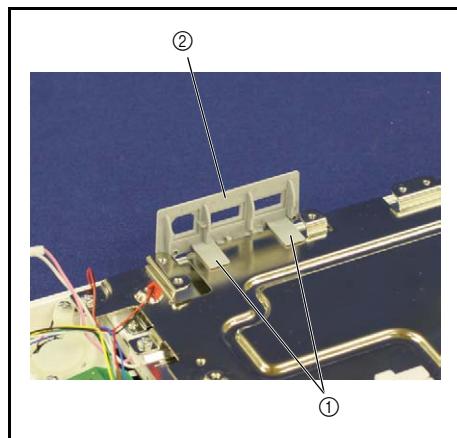
1. FFC 1 FFC 2
3. 2.
5

3.

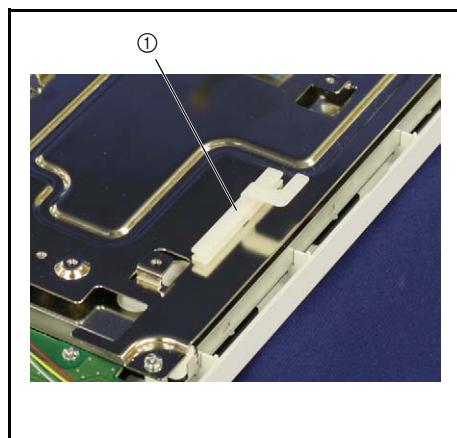


14 USB cover removal

1. **USB 2** 2 1,

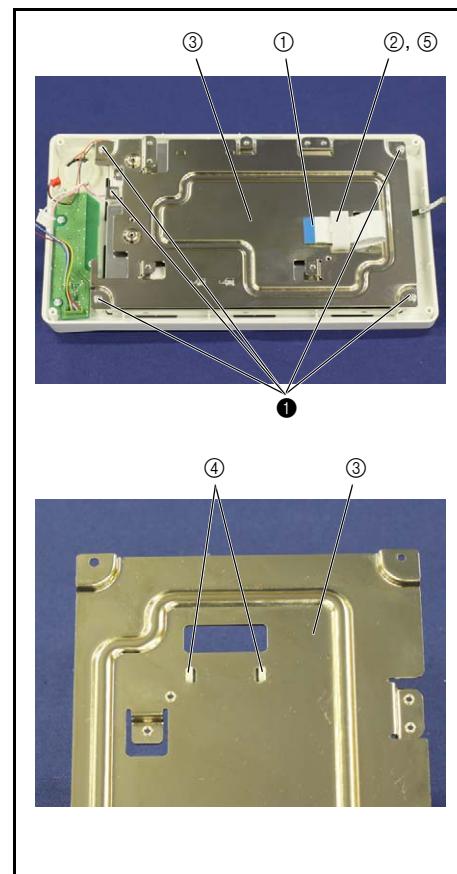


15Board supporter removal



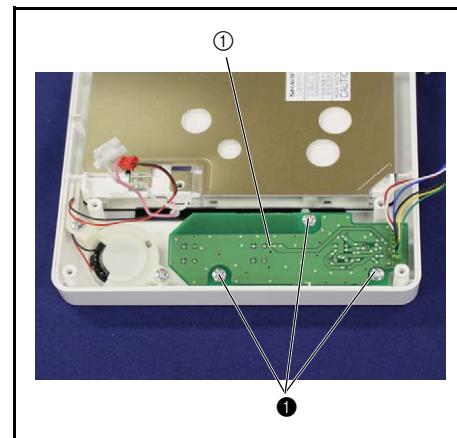
16 PCB base plate removal

1. FFC 1
2. 2.
3. 3.
5
1,
2
4,
5
3.



17 SS PCB assy removal

1.
3
1,
SS 1



18 Buttons removal

1.

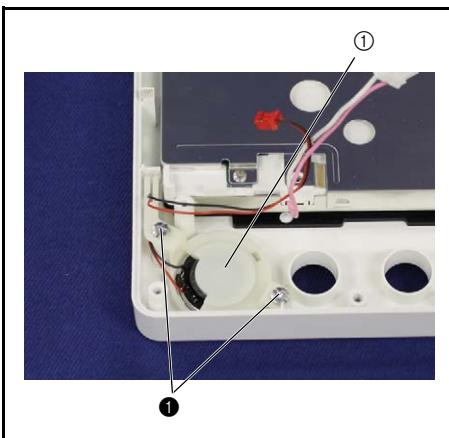
2

SS 1

**19 Speaker set removal**

1.

2

1,
1

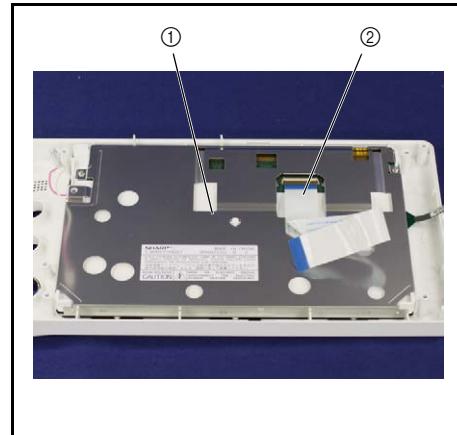
20 LCD assy removal

1.
1

2

1.

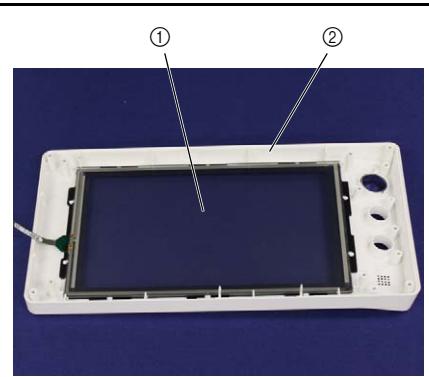
. 2.



21 Touch panel assy removal

1.

1

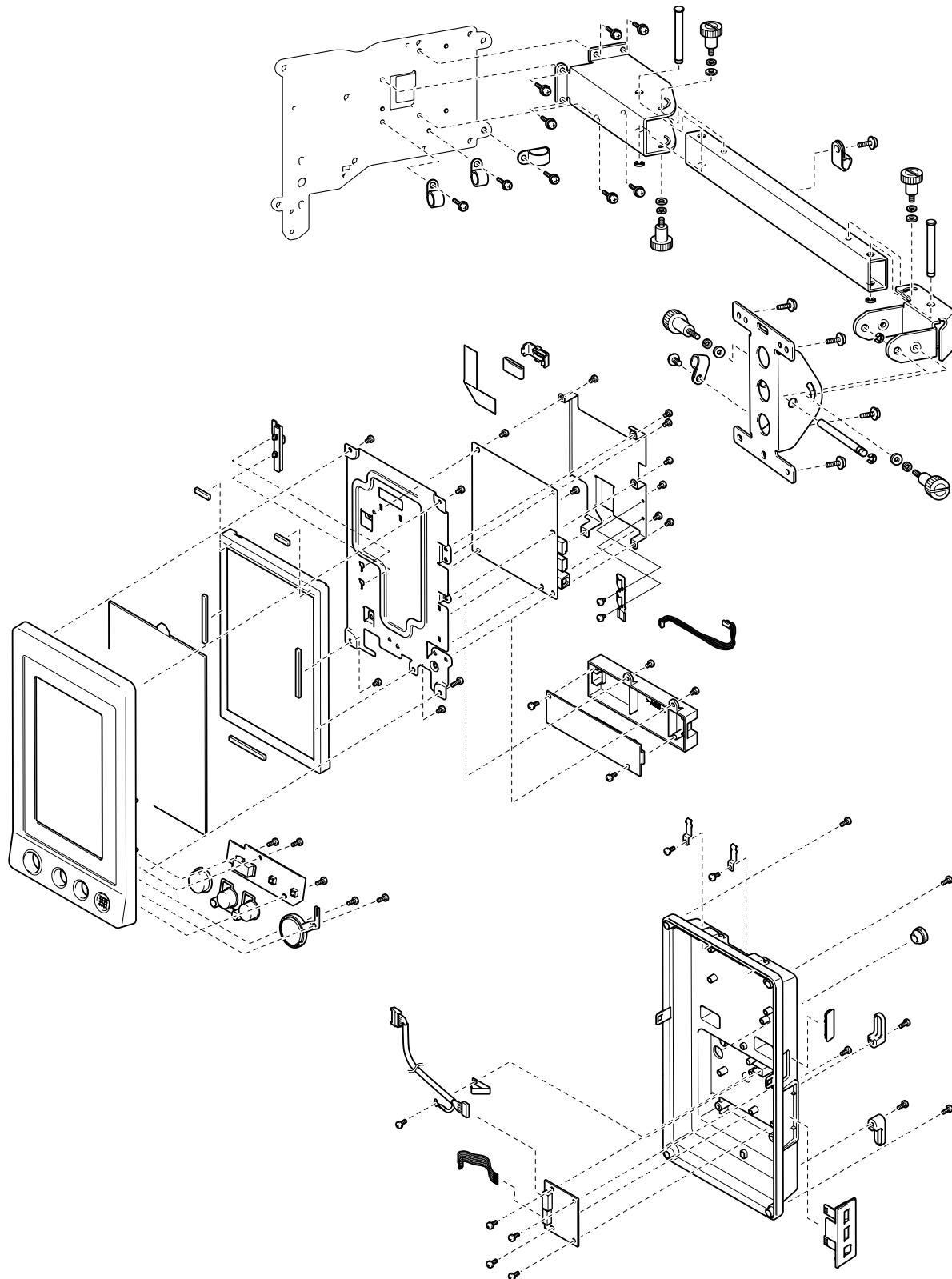


2.

3 Assembly

.....	
.....	3 - 2
.....	3 - 12
.....	3 - 23
.....	3 -
27
.....	3 - 33
.....	3 - 37
.....	3
- 52	
.....	3 - 64
.....	3 - 69
.....
.....	3 - 74
.....	3 - 77
.....	3 - 95

Main unit

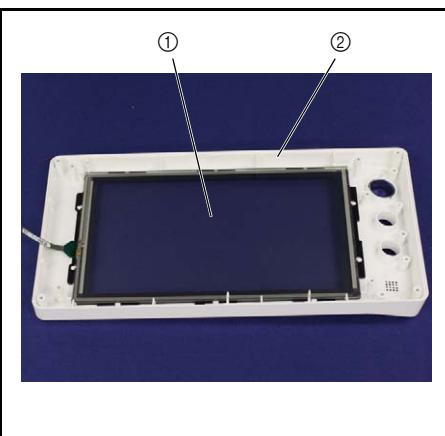


1 Touch panel assy attachment

1. Attach the touch panel assy ① to the panel front cover ②.

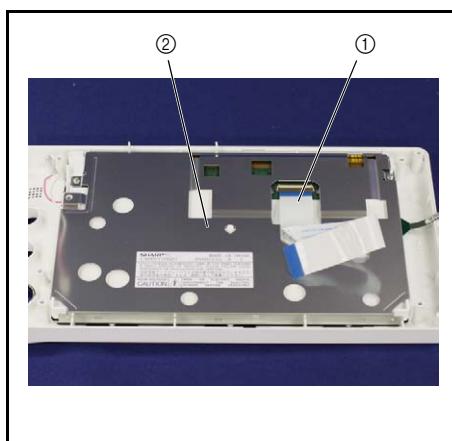
***Key point**

- Attach the touch panel so that the face with the flat cable connected is on the front side.



2 LCD assy attachment

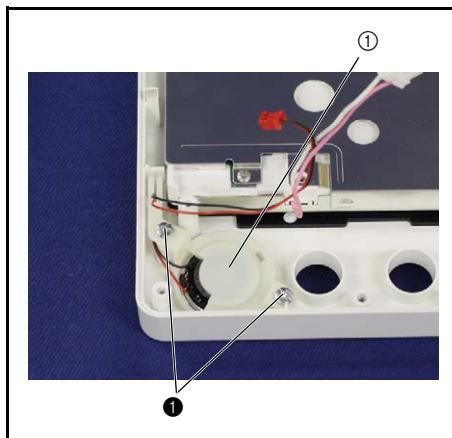
1. Attach the flexible flat cable ① to the LCD assy ②.
2. Attach the LCD assy ③ to the panel front cover.



3 Speaker set attachment

1. Attach the speaker set ① to the panel front cover with the 2 screws ③.

①			Taptite, Bind B M3X8	Torque 0.59 – 0.78 N·m
---	--	--	-------------------------	---------------------------



Main unit

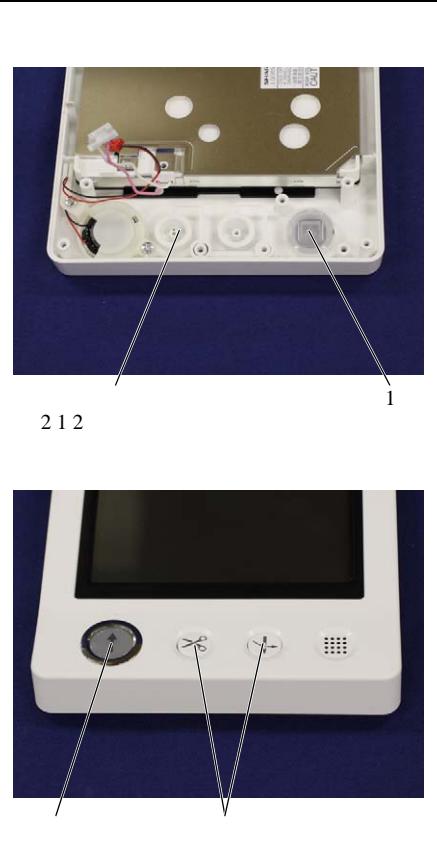
Operation panel

4 Buttons attachment

1.

2

SS 1

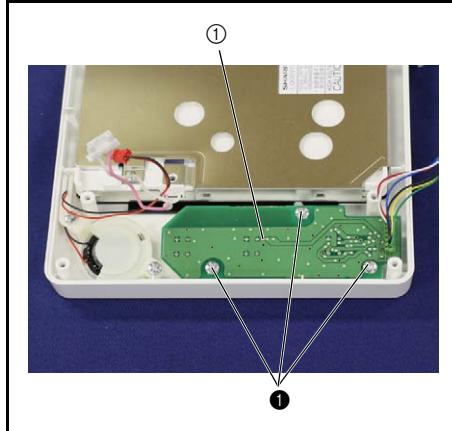


5 SS PCB assy attachment

1.

SS 1

			Taptite, Bind B M3X8	Torque 0.59 – 0.78 N·m
--	--	--	-------------------------	---------------------------



Main unit

Operation panel

6 PCB base plate attachment

1.

*

4

3. 2.

3

5

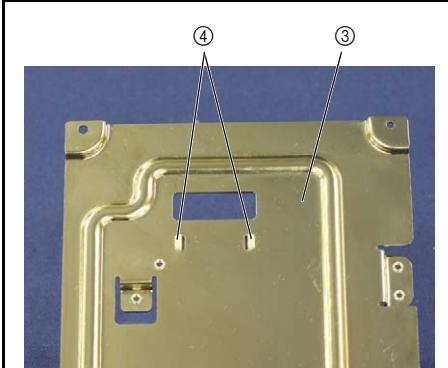
1. 3.

1.

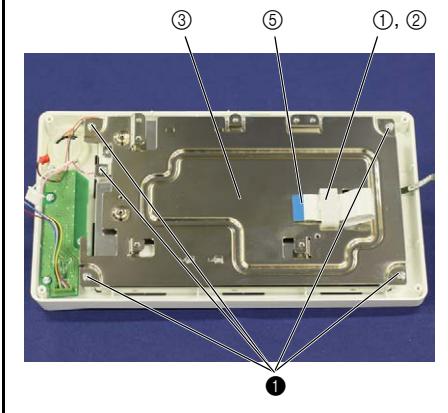
1

2

FFC 5



2

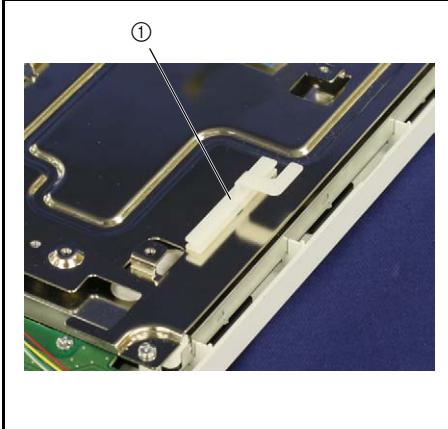


1			Taptite, Bind B M3X8	Torque 0.59 – 0.78 N·m
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7 Board supporter attachment

1.

1



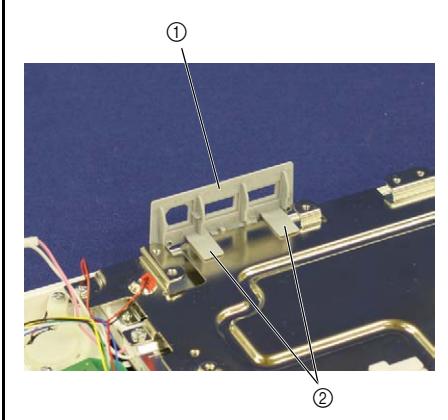
8 USB cover removal

1.

USB 1

,

2.



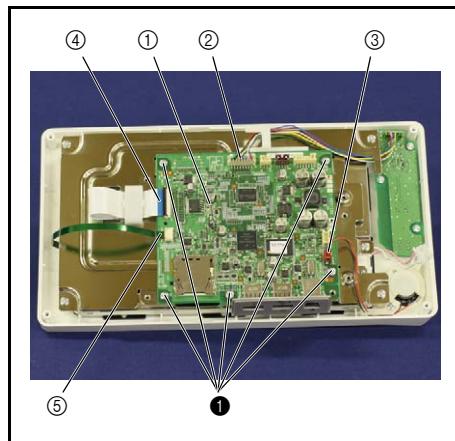
Main unit

Operation panel

9 Panel PCB supply assy attachment

1.
1
5
3
1. 2.
2
1. 3.
FFC 4 FFC 5
1.

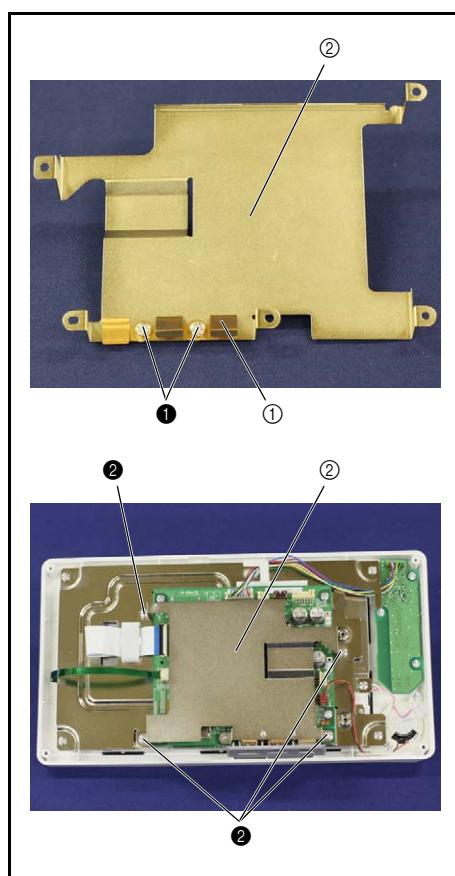
1			Screw, Bind M3X5	Torque 0.59 – 0.78 N·m
----------	--	--	---------------------	---------------------------



10 Panel PCB case attachment

1.
B 1
1. 2.
2
4
- 2.
- US
2

1			Screw, Bind M3X5	Torque 0.59 – 0.78 N·m
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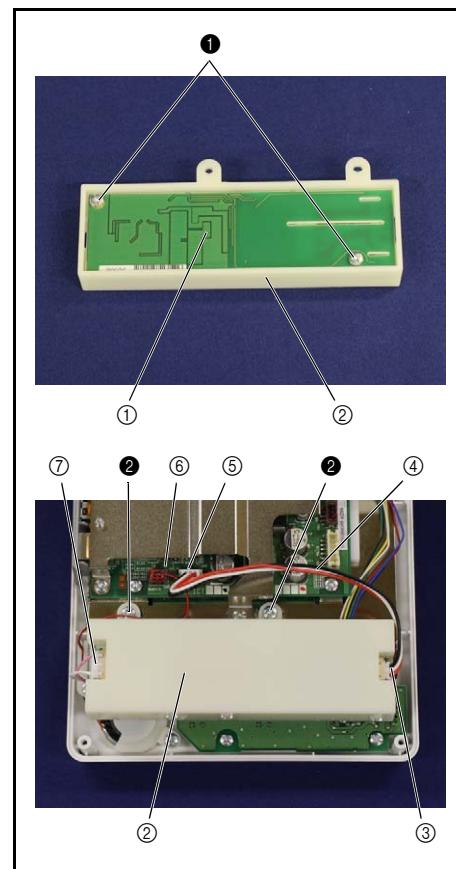
Main unit

Operation panel

11 Inverter attachment

- 1.
- 2
- 3
- 4
- 5.
- 2
- 1
- 2
1. 2.
1. 3.
- 2
- 5
- 7
- 6
2. 4.
- 1.

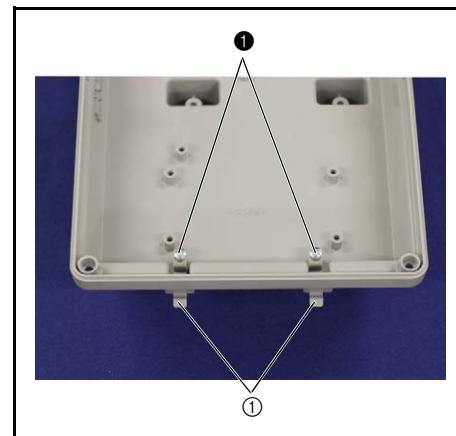
1			Taptite, Bind B M3X8	Torque 0.59 – 0.78 N·m
2			Screw, Bind M3X5	Torque 0.59 – 0.78 N·m



12 Pen holder attachment

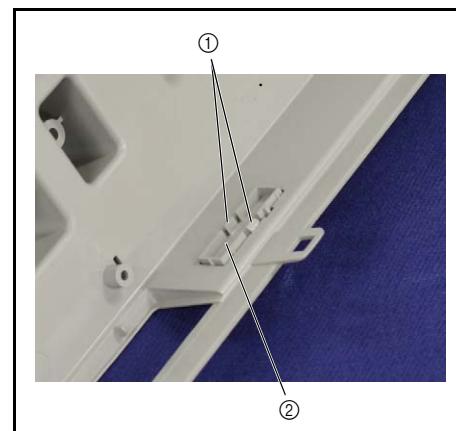
- 1.
- 2
- 1

1			Taptite, Bind B M3X8	Torque 0.59 – 0.78 N·m
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13 Card cover attachment

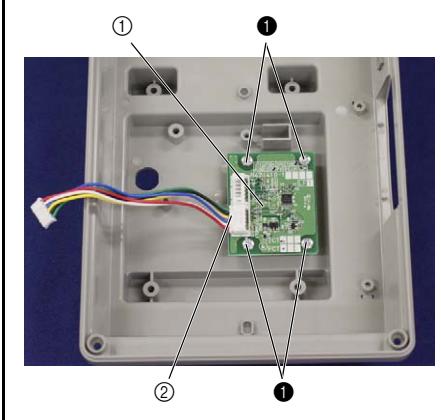
- 1.
- *
-
- ,
- 2
- 2
- 1
- 1



14 Communication relay PCB assy attachment

1. 1
1. 2.
- 2.
- 4
- 2

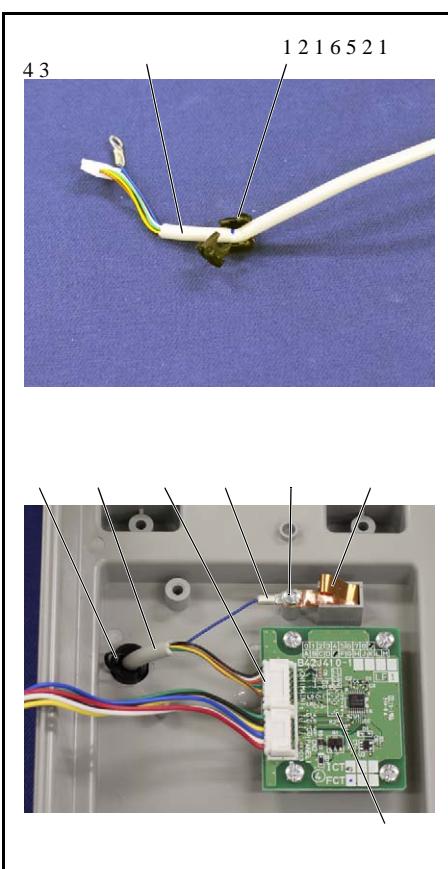
		Taptite, Bind B M3X8	Torque 0.59 – 0.78 N·m
--	--	-------------------------	---------------------------



15 Lead wire assy panel attachment

- 1.
- 1,
- 2.
- 2,
- 3.
- 3
- 2
4. 4.
- 5
- 6
- 1.

		Taptite, Bind B M3X8	Torque 0.59 – 0.78 N·m
--	--	-------------------------	---------------------------



Main unit

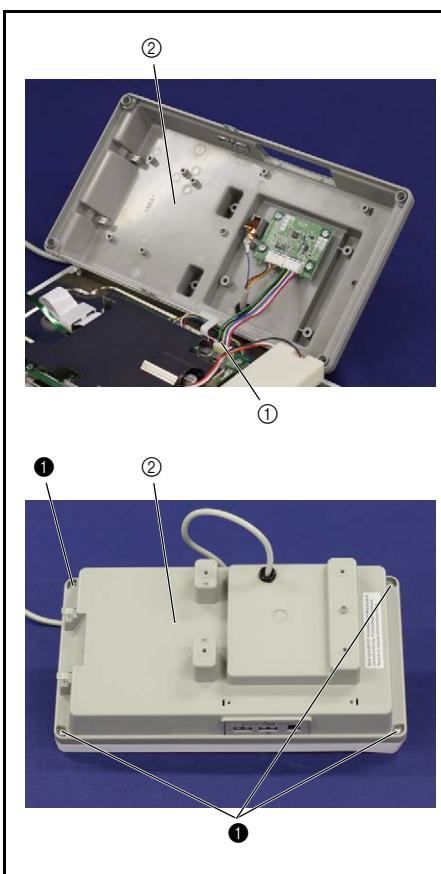
Operation panel

16 Panel rear cover attachment

1.

1
2.
2
4

1.



1			Taptite, Bind B M3X10	Torque 0.59 – 0.78 N·m
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17 USB cord holder attachment

1.

2

* 1.

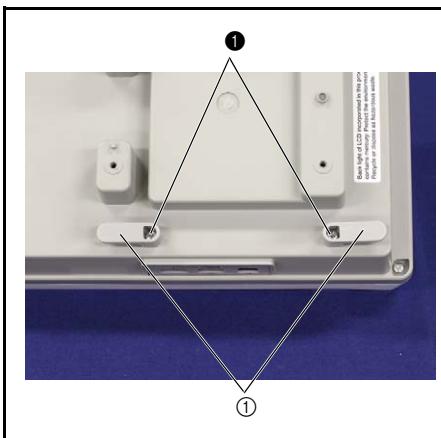
•

1

USB 1
2

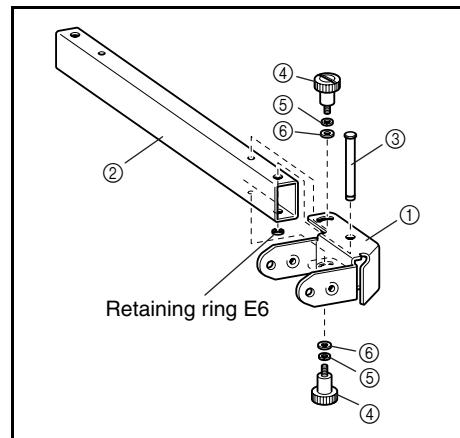
USB-

1			Taptite, Bind B M3X10	Torque 0.59 – 0.78 N·m
---	--	--	--------------------------	---------------------------



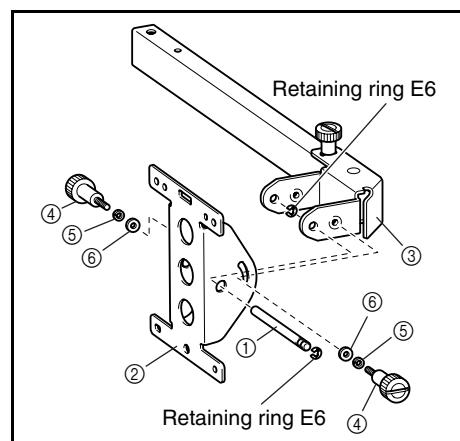
18 Operation panel lever A attachment

1. A 1 , B 2,
3 A 1 B 2,
. 2. (2-4) 5 E6
(M4 L) 4, (M4) 6.
(2).



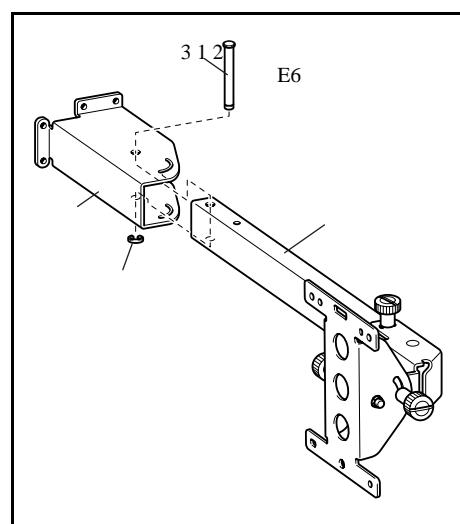
19 Panel holder attachment

1. E6 1. 2.
A 3 , 2
1 A 3, 2
E6. 3.
(M4 L) 4, (M4) 6. (2
(2-4) 5).



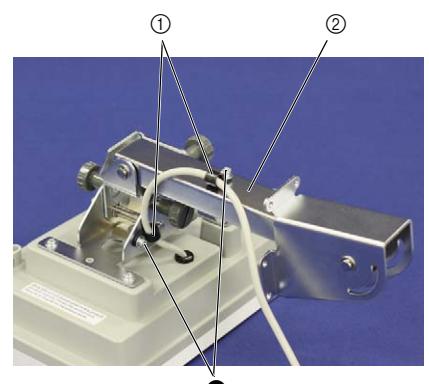
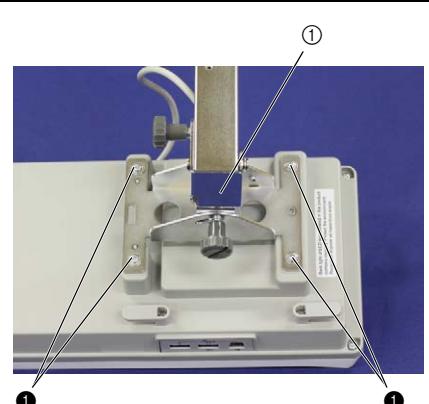
20 Operation panel lever C attachment

1. C 1
B 2 ,
3 C 1 B 2,
E6.



2.1 Operation panel lever assembly attachment

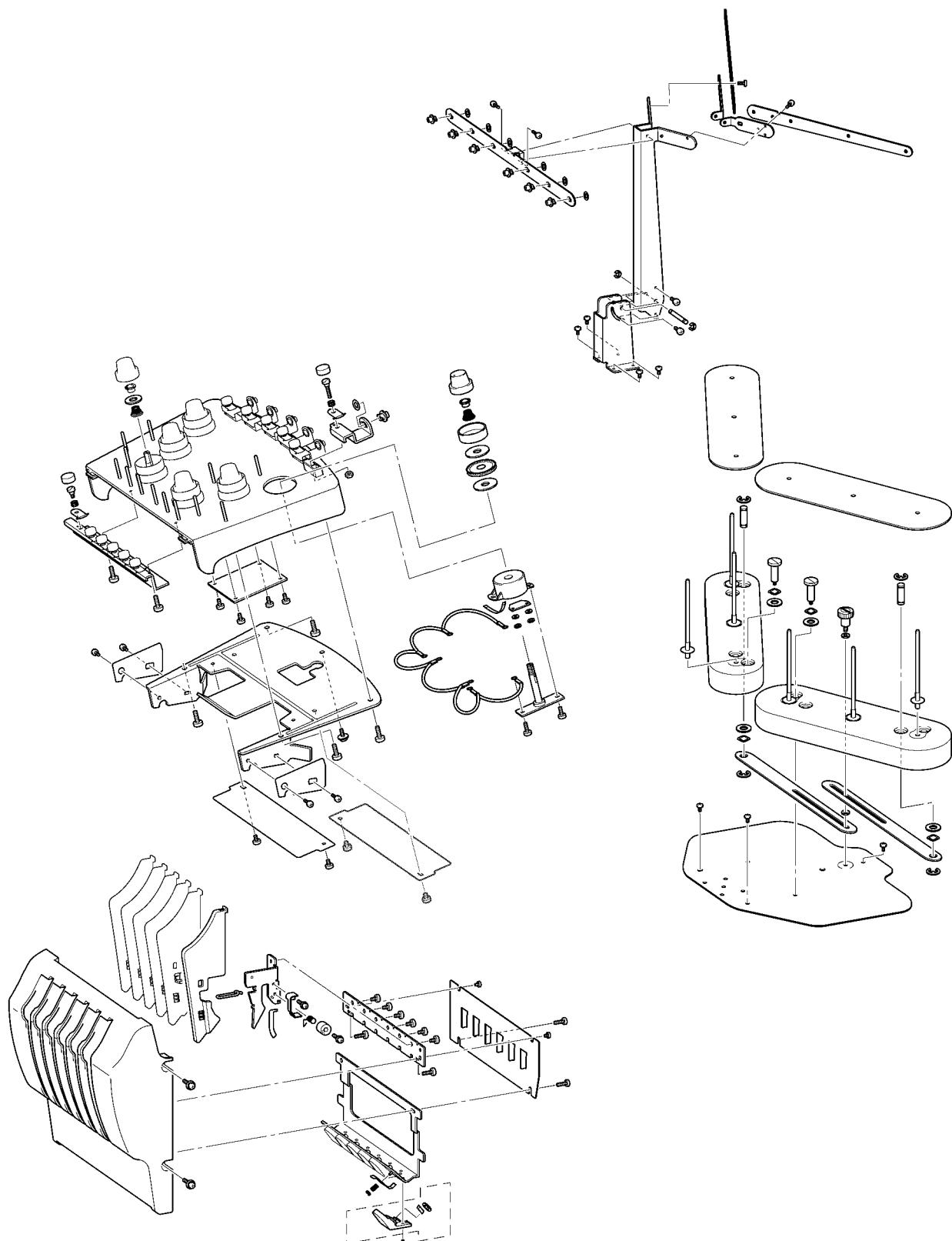
1. Attach the operation panel lever assembly ① to the panel rear cover with the 4 screws ①.
2. Set the 2 cord clamp ② to the cord, and then attach the 2 cord clamp ② to the operation panel lever assembly ① with the 2 screws ②.



①		Taptite, Cup B M4X14	Torque 0.78 – 1.18 N·m
②		Screw Pan (SP) washer M4X12	Torque 0.78 – 1.18 N·m

Main unit

hread tension unit



1 Thread take-up bracket assembly

*Key point

- Make 6 thread take-up bracket assemblies.

1. Attach the spring [■] to the thread catching spring case ①.

*Key point

- There are 4 holes on the spring case. Insert the tip of the spring [■] into the hole indicated by the arrow in the figure.

2. Attach the thread catching spring case assembly to the thread take-up bracket with the screw ①.

*Key point

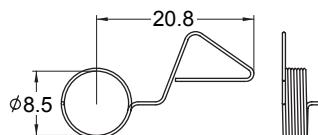
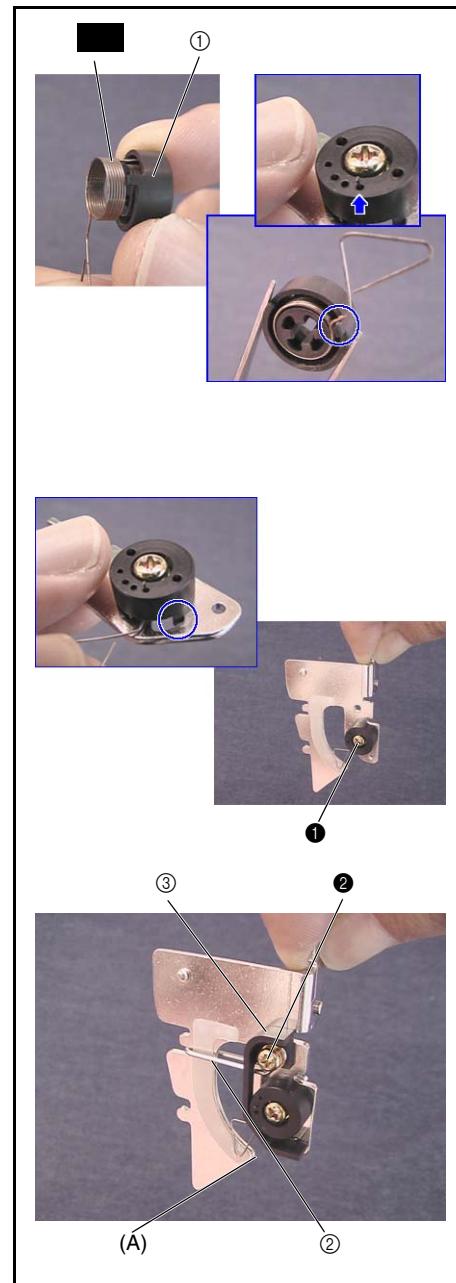
- Align the protrusion on the thread catching spring case assembly with the hole on the thread take-up bracket, and turn them counterclockwise until they stop. Then tighten the screw ①.

3. Attach the thread guide wire ② and the thread guard ③ to the thread take-up bracket with the screw ②.

*Key point

- Check that the spring [■] does not extend beyond line A.

①			Screw Pan(SPwasher) M3X6	Torque 0.59 – 0.78 N·m
②			THREADTAKEUPRING XC5926***	

Main unit**Thread tension unit****2 Thread take-up lever cover assembly (Step 1)**

1.

1. (6

2

) 2.

6

3

4

*

• 5

6

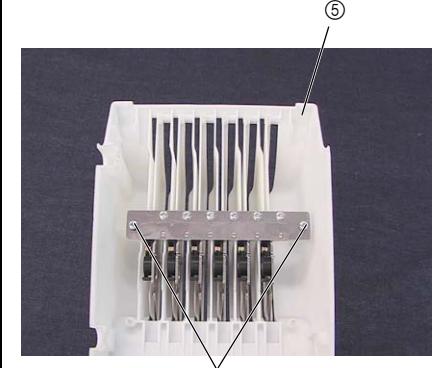
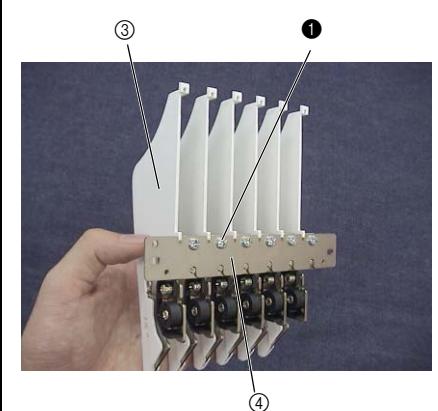
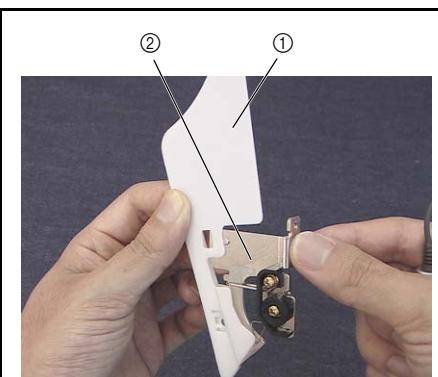
1. 3.

2

2.

,

,

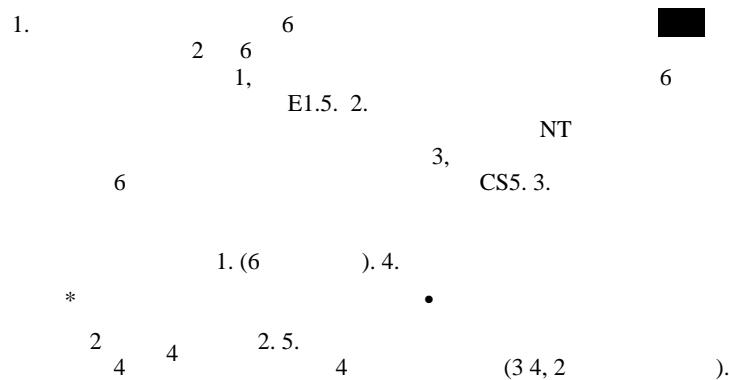


①		Screw, Bind M3x4	Torque 0.78 – 1.18 N·m
②		Taptite, Bind B M3x10	Torque 0.59 – 0.78 N·m

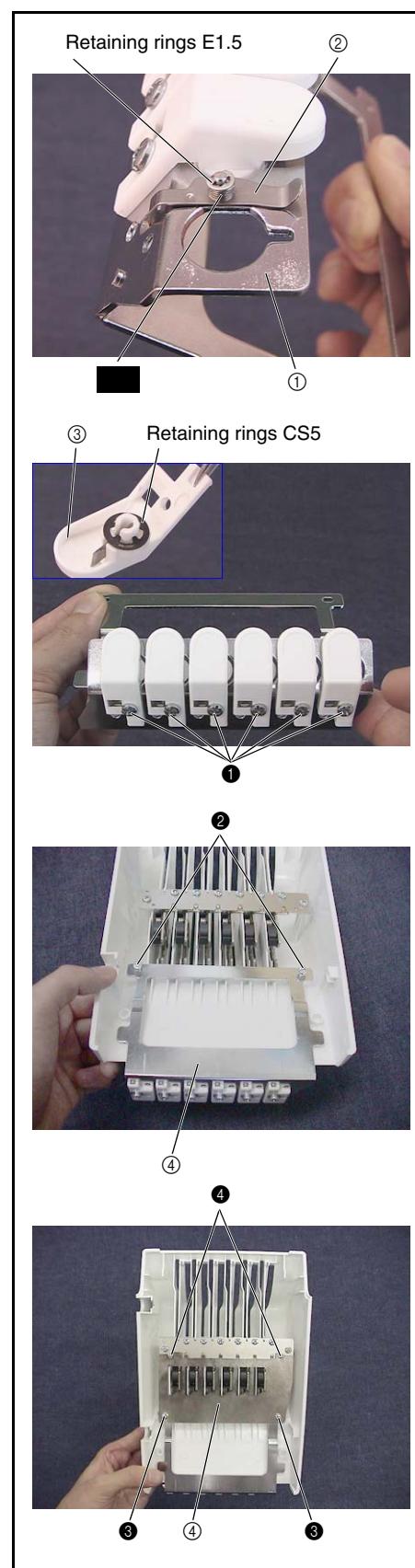
Main unit

Thread tension unit

3 Thread take-up lever cover assembly (Step 2)



1		Screw Pan (SP washer) M3X6	Torque 0.59 – 0.78 N·m
2		Taptite, Bind B M3X10	Torque 0.59 – 0.78 N·m
3		Screw, Bind M2.6X3	Torque 0.39 – 0.78 N·m
4	 5.5 $\phi 3.4$ SPRING XC5962***		



Main unit

Thread tension unit

4 Spool stand frame assembly (Step 1)

1.

) 2.

E8
1. (2)

5

4

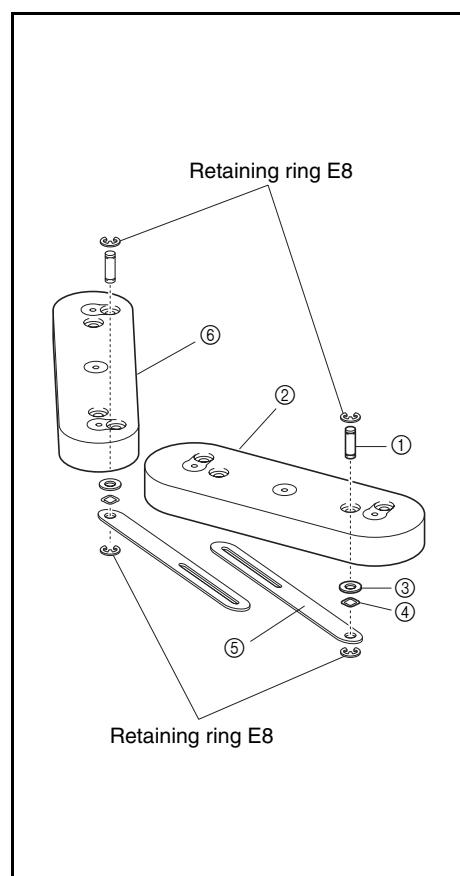
R 2,

(S10) 3,

L 6,

5

E8.



5 Spool stand frame assembly (Step 2)

1.

L R

2

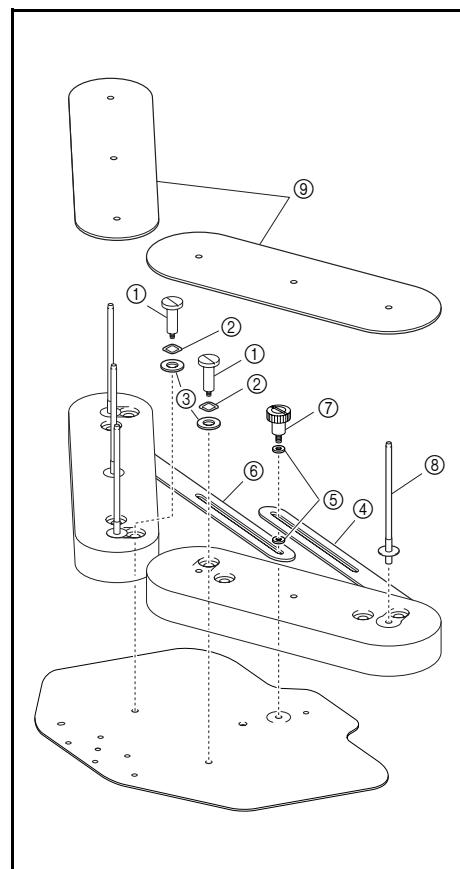
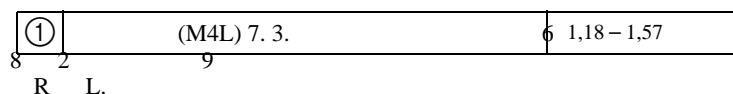
1, 2
(S10) 3. 2.

R 4,

5,

5

1

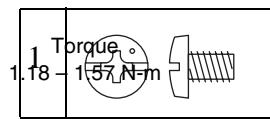


Main unit

Thread tension unit

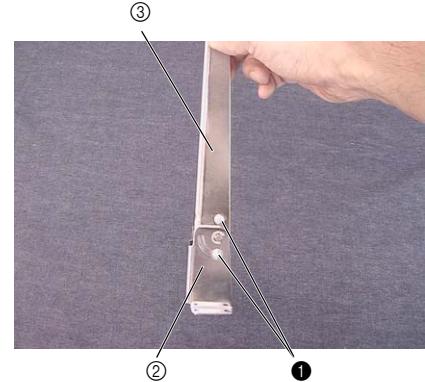
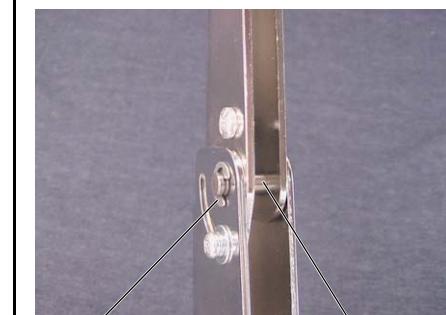
6 Antenna assembly (Step 1)

1. C 3
1. 2. D 2,
- C , E5.
- E5. 3. 1.



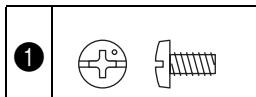
4X6

M



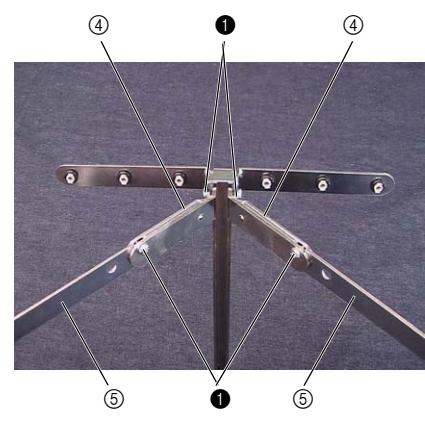
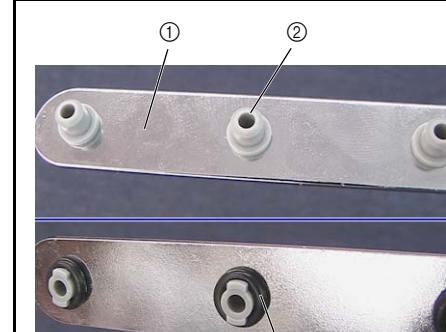
7 Antenna assembly (Step 2)

1. E 1,
* A. (6) (P5) 3 A 2
2. 2E. A 4, 2 C 5
* 4 1. E A.



Screw, Bind M3X6

Torque
0.78 – 1.18 N·m

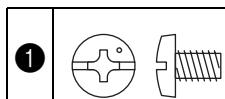


8 Antenna assembly attachment

1.

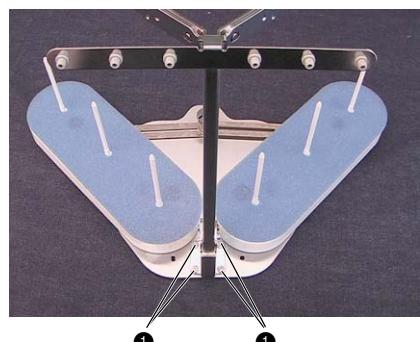
4

1.



Screw, Bind
M4X6

Torque
1.18 – 1.57 N·m



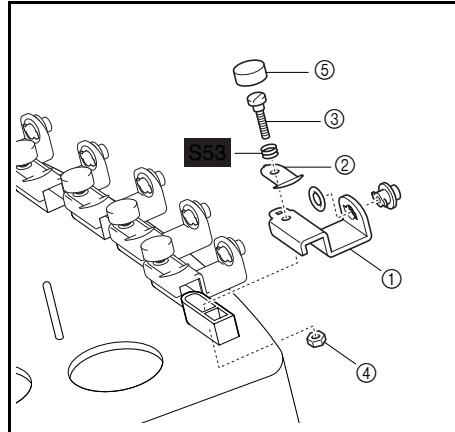
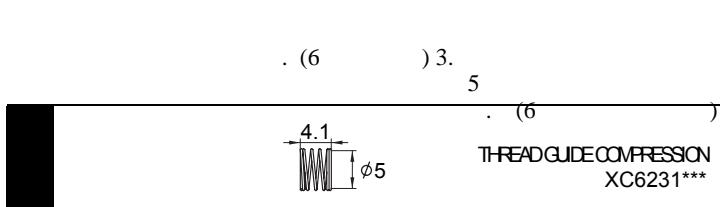
9 Upper thread eyelet base attachment

1.

1

. (6) 2.

3
(2, M3) 4



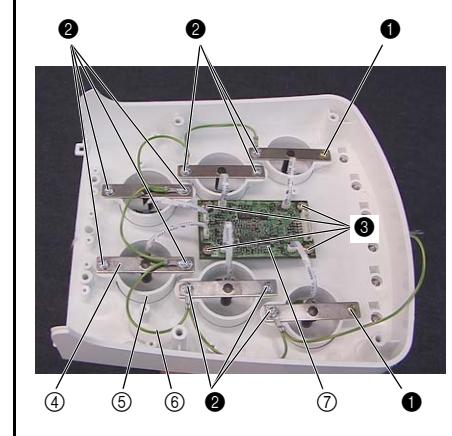
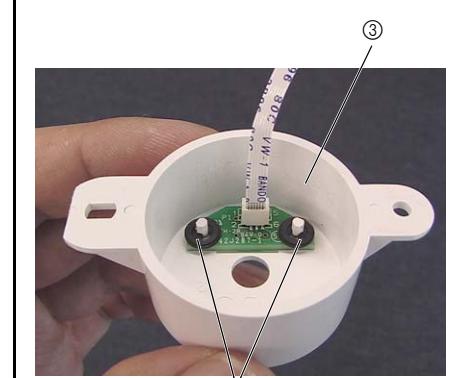
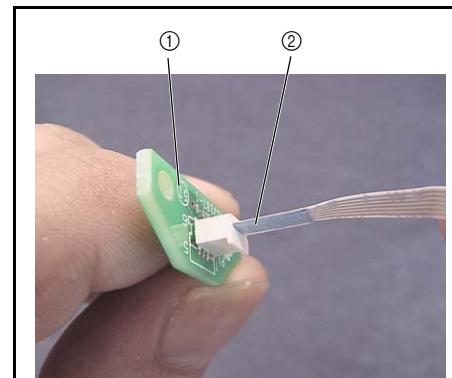
Main unit

Thread tension unit

10 Thread sensor PCB assembly and head PCB assembly attachment

1. 1. (6) FFC (SML2CD-H) 2.
- * • FFC (SML2CD-H) ,
2. 2.
3. 3. CS2. (6) 2.
- * 4. 4. 5. 6. 2. 1. 10. 2. (6)
- 4.). 4.). 7. 4. 3. FFC (SML2CD-H)
- * 6. FFC (SML2CD-H) ,
- * •

| | | | | |
|----------|--|--|--------------------------|---------------------------|
| 1 | | | Taptite, Bind B
M3X8 | Torque
0.59 – 0.78 N·m |
| 2 | | | Taptite, Bind B
M3X10 | Torque
0.59 – 0.78 N·m |
| 3 | | | Taptite, Bind B
M3X8 | Torque
0.59 – 0.78 N·m |

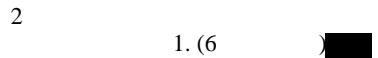


Main unit

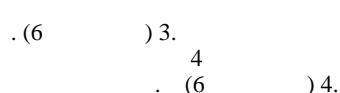
Thread tension unit

11 Inner thread eyelet base attachment

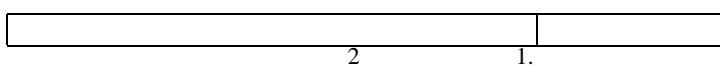
1.



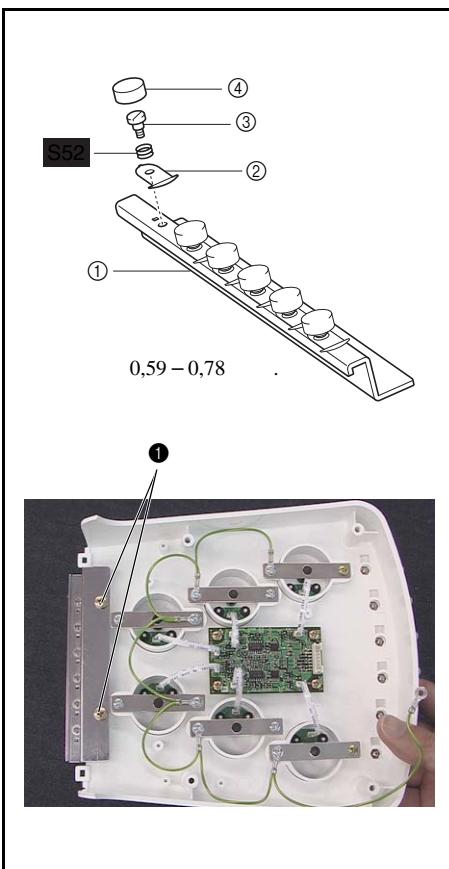
3



2 1.



| | | | |
|----------|--|---|---------------------------|
| 1 | | Taptite, Bind B
M4X8 | Torque
0.39 – 0.78 N·m |
| | | BOBBIN WIPER GUIDE COMPRESSION
$4.3 \times \phi 5$ | X56456*** |



12 Tension base bracket attachment

1.

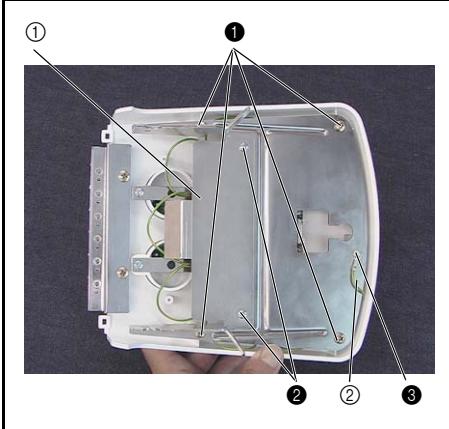
2. 4 1.

3.

2 2.

3.

| | | | |
|----------|--|-------------------------------|---------------------------|
| 1 | | Taptite, Bind B
M4X14 | Torque
0.78 – 1.18 N·m |
| 2 | | Screw, Bind
M3X4 | Torque
0.78 – 1.18 N·m |
| 3 | | Screw Pan (SP washer)
M3X6 | Torque
0.78 – 1.18 N·m |

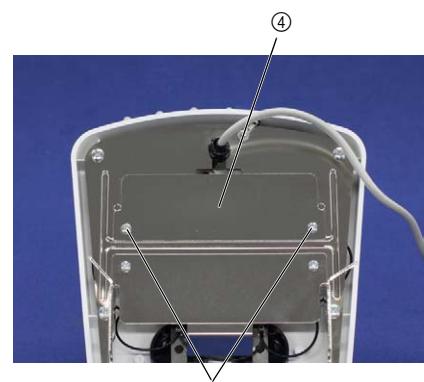
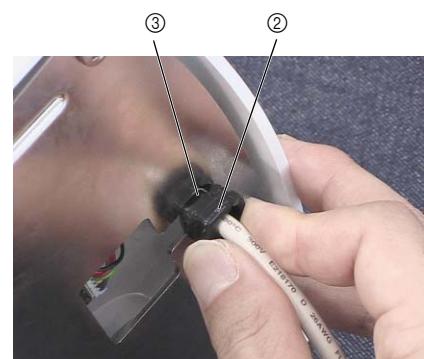
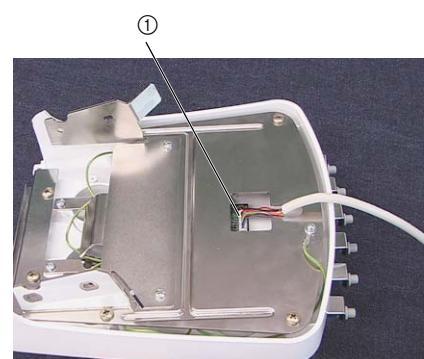


Main unit

Thread tension unit

13 Tension base lead wire assembly attachment

- 1.
2.
(KR51) 2 ,
- 3.
- 4.
- 1.
- 2.
- 3.
- 4.

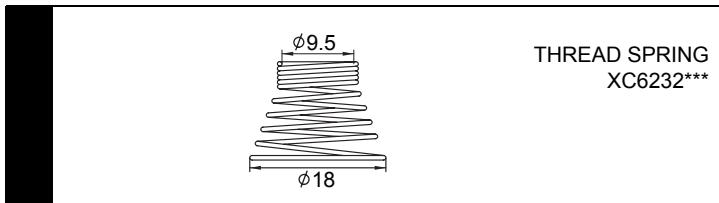
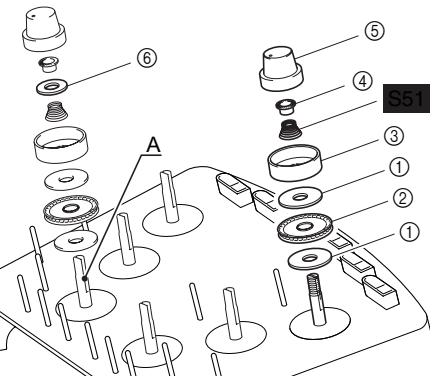


| | | | |
|------|--------------------|---|--|
| 0.78 | Torque
1.75 N·m | | |
| 3X4 | | M | |

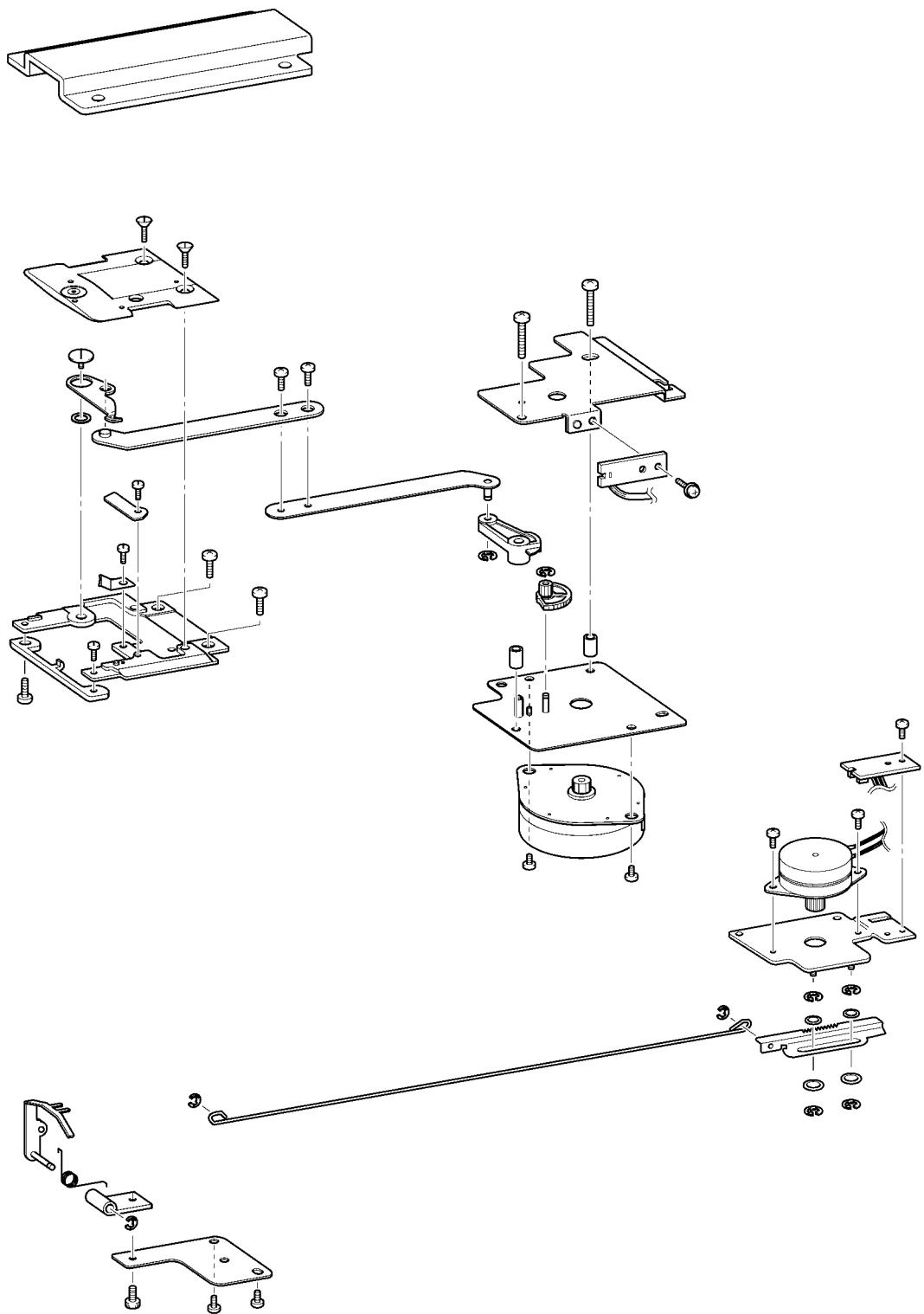
| | |
|-----------|---------------------|
| Main unit | Thread tension unit |
|-----------|---------------------|

14 Tension nut attachment

1. 1, [REDACTED] 2,
1, 3,
5. (6). , 4
• 6 4
*
• 2 , [REDACTED]
• ,
• 5



Main unit



Main unit

Thread cut unit

1 Cutter unit assembly (Step 1)

1. MOLYKOTE EM-30L
CT 1. 2.

1. 3.
3

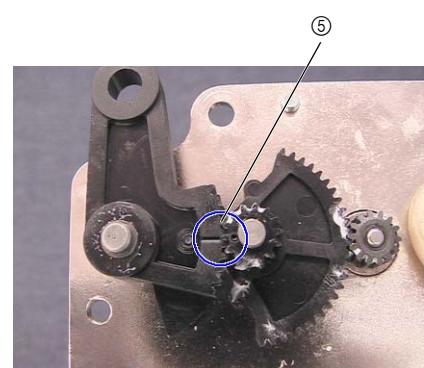
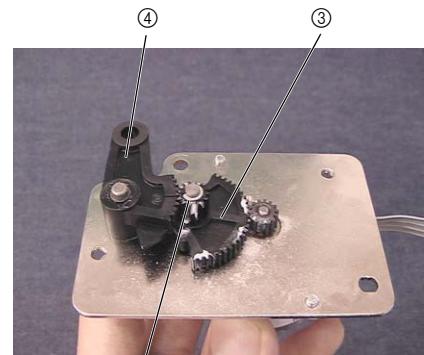
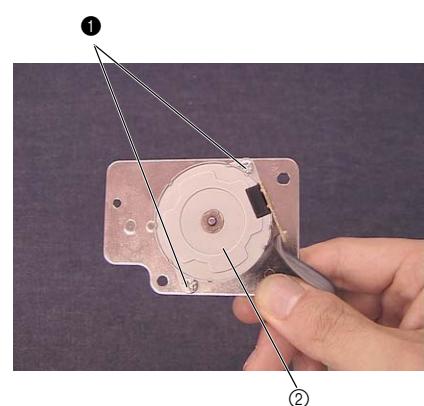
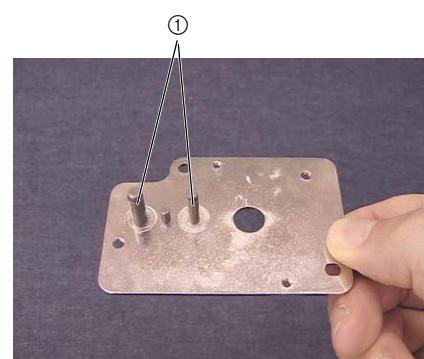
,
E2. 4.
* 4

,
OTE EM-30L.

2
CT

5
MOLYK

| | |
|---|-------------------------|
| Apply MOLYKOTE EM-30L to the CT motor bracket assembly's shaft. | Size of a grain of rice |
| Apply MOLYKOTE EM-30L to the lever gear. | Size of a grain of rice |

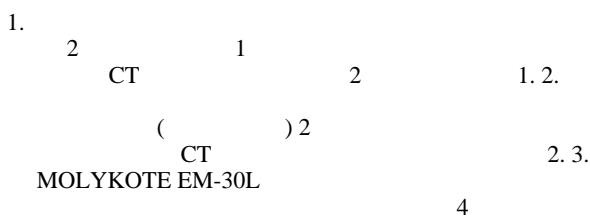


| | | | |
|---|--|------------------|---------------------------|
| 1 | | Screw, Bind M3X4 | Torque
0.78 – 1.18 N·m |
|---|--|------------------|---------------------------|

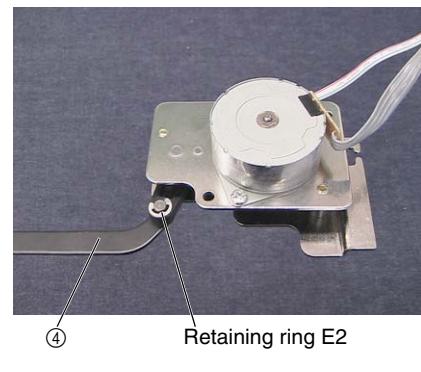
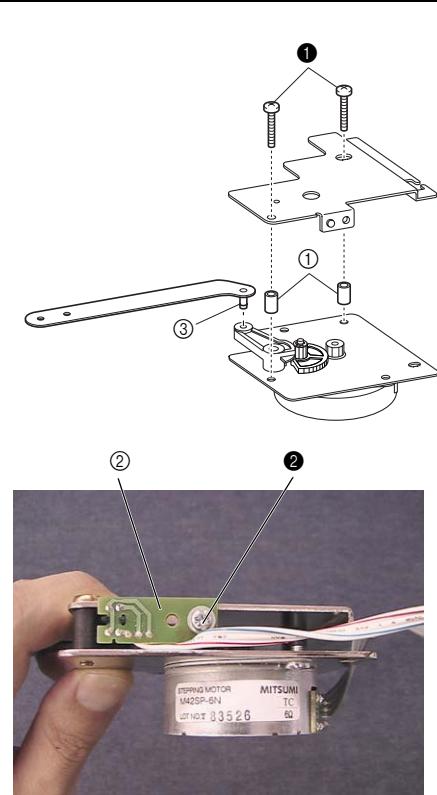
Main unit

Thread cut unit

2 Cutter unit assembly (Step 2)



Size of a grain of rice



| | | | |
|----------|--|-----------------------------|---------------------------|
| 1 | | Screw, Bind
M4X16 | Torque
1.18 – 1.57 N·m |
| 2 | | Screw Pan(SPwasher)
M3X6 | Torque
0.57 – 0.78 N·m |

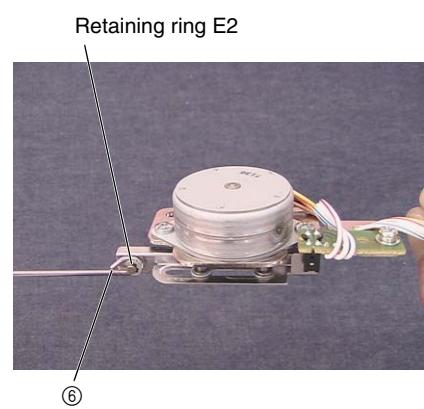
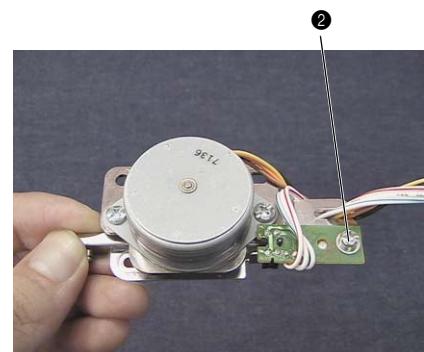
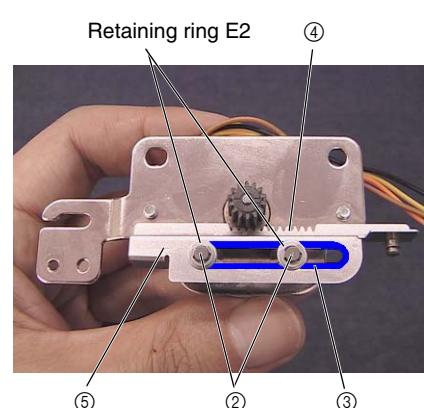
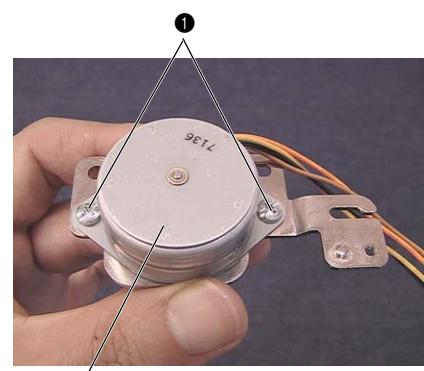
Main unit

Thread cut unit

3 Picker assembly

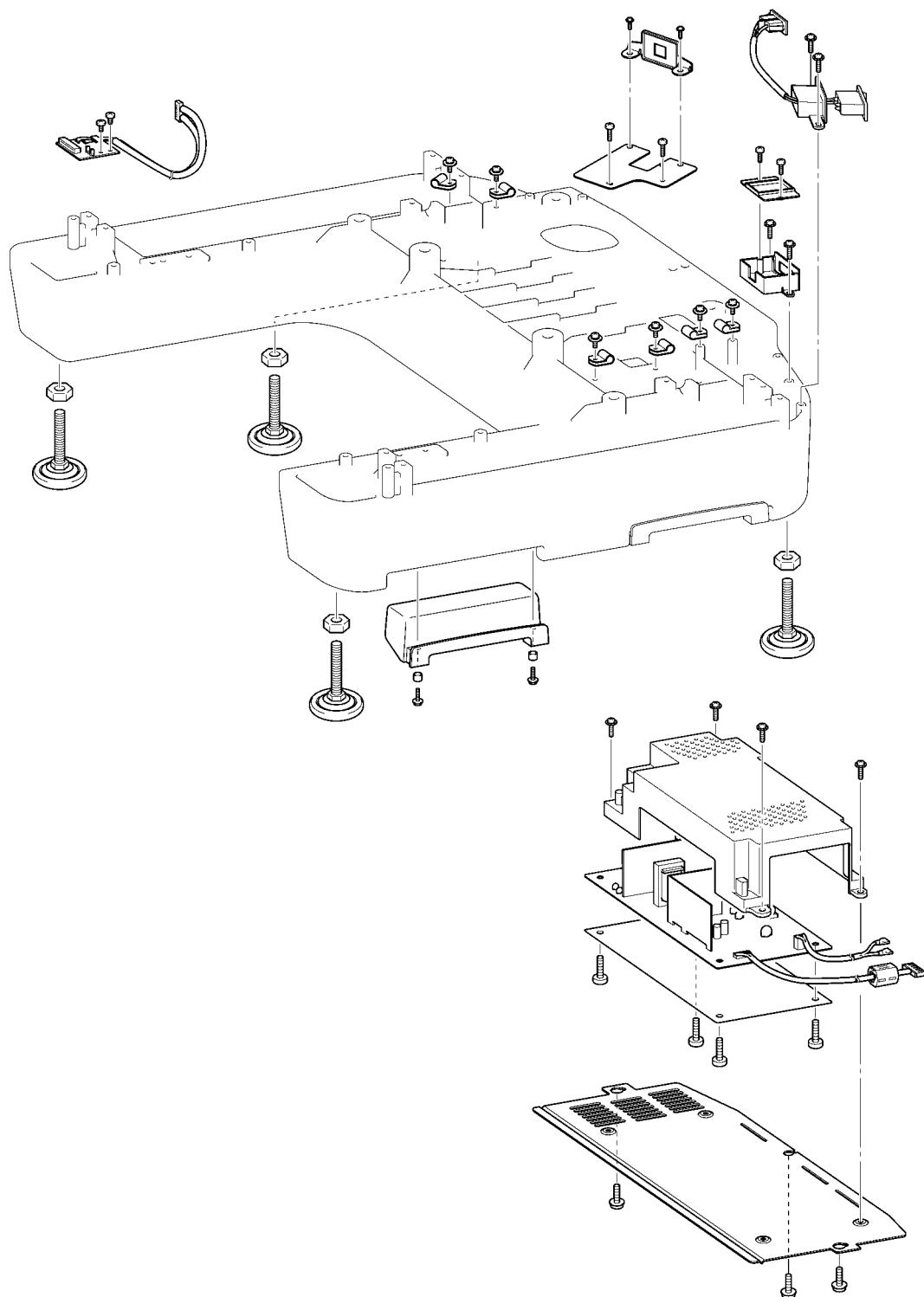
1. 1
2. 2
EM-30L PK 2 (2) E2 1. 2.
3. (S3), 3. 2.
(S3)
PK (2)), 4. 4.
PK 5. 2.
, E2. 5.
E2. 6.
, 6.
E2. 7.

| | |
|---|-------------------------|
| Apply MOLYKOTE EM-30L to the rack assembly's moving surface and the gear. | Size of a grain of rice |
|---|-------------------------|



| | | | |
|---|--|--------------------------|------------------------|
| ① | | Screw, Bind M3X4 | Torque 0.78 – 1.18 N·m |
| ② | | Screw Pan(SPwasher) M3X6 | Torque 0.59 – 0.78 N·m |

Main unit

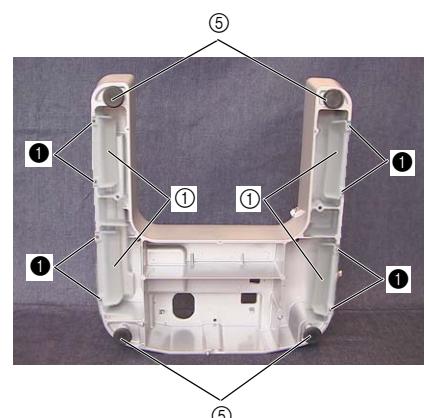
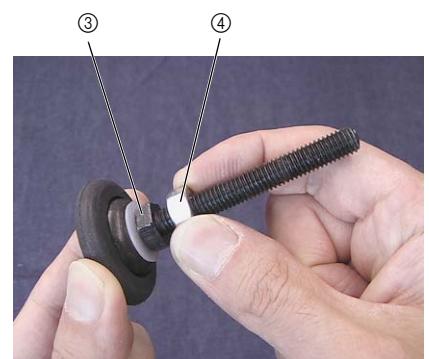
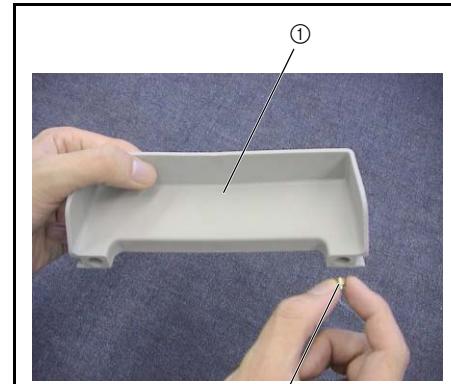


Main unit

Power unit

1 Adjust bolt attachment

- | | | | |
|------|---|-----------|-------|
| 1. | 2 | 2 | 1. (4 |
|) 2. | 4 | (2, M8) 4 |) 3. |
| * | | (M8) 3. | |
| • | | 4 | |
| * | | | |
| • | | | |
| | 5 | | |
| | | | |



| | | | |
|---|--|--------------------------------|---------------------------|
| ① | | Screw Pan (SP washer)
M3X10 | Torque
0.59 – 0.78 N·m |
|---|--|--------------------------------|---------------------------|

2 Power PCB assembly

1.

1 2

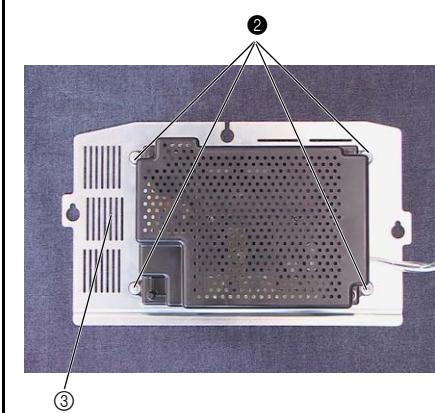
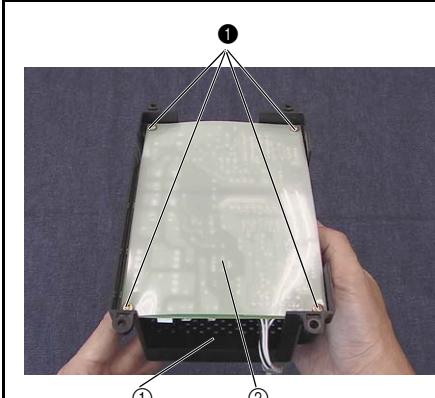
1. 2.

3

4

2. 3.

4



| | | | |
|----------|--|--------------------------|---------------------------|
| 1 | | Taptite, Bind B
M3X14 | Torque
0.49 – 0.78 N·m |
| 2 | | Screw Pan(SPan)
M4X12 | Torque
0.78 – 1.18 N·m |

3 Power PCB assembly attachment

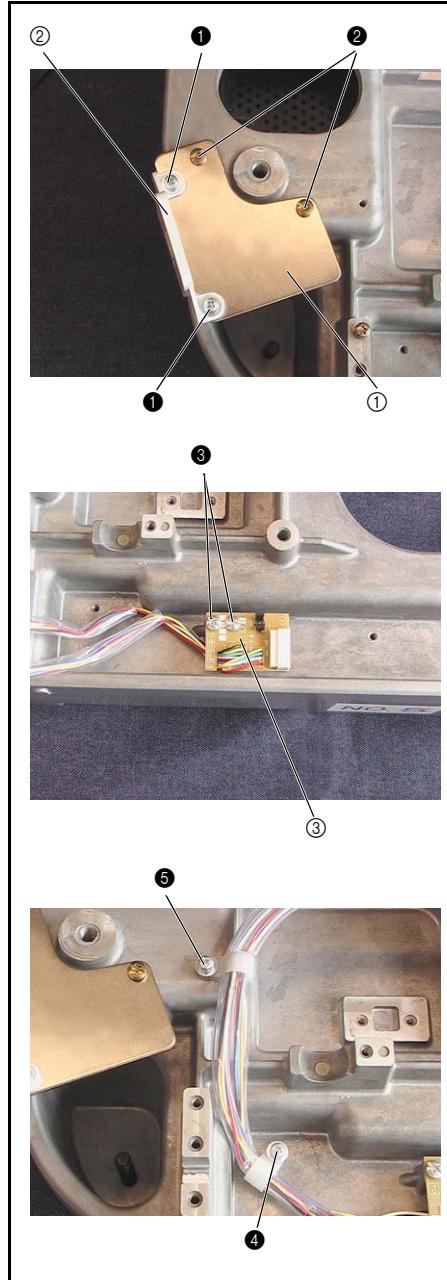
- 1.
- 3
- 1
- .
- 2.
- 1
- ,
- 3
- 1,
- . 3.
- 3
- 1.



| | | | |
|----------|--|------------------------------|---------------------------|
| ① | | Screw Pan(SPwasher)
M4X10 | Torque
1.18 – 1.57 N·m |
|----------|--|------------------------------|---------------------------|

4 USB PCB holder assembly and Y-area sensor assembly attachment

1. Attach the USB PCB cover ② to the USB PCB holder ① with the 2 screws ①.
2. Attach the USB PCB holder assembly to the base frame with the 2 screws ②.
3. Attach the Y-area sensor assembly ③ to the base frame with the 2 screws ③.
4. Attach the Y-area sensor's lead wire to the base frame with the screw ④ and the cord clamp (NK-6N).
5. Attach the Y-area sensor assembly's lead wire to the base frame with the screw ⑤ and the cord clamp (NK-6N).

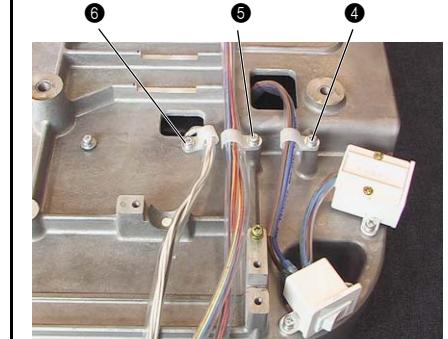
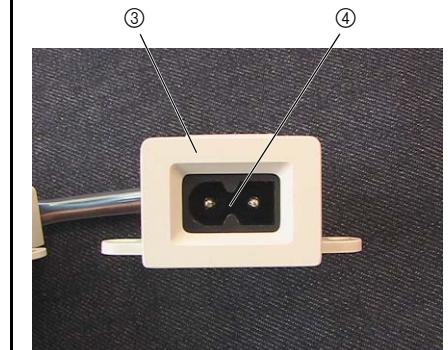
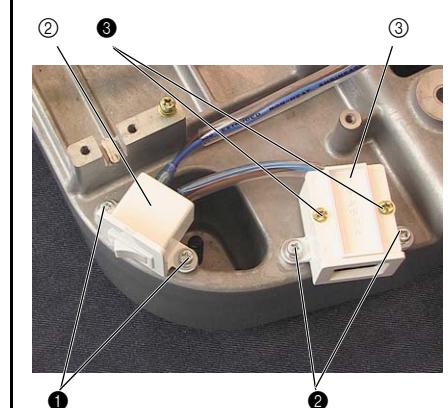
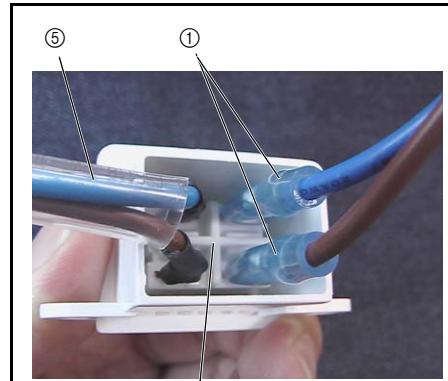


| | | | |
|--------|--|------------------------------|---------------------------|
| ① | | Screw Pan(SP washer)
M4X8 | Torque
0.78 – 1.18 N·m |
| ② | | Taptite, Bind S
M4X10 | Torque
1.47 – 1.96 N·m |
| ③ | | Screw, Bind
M4X6 | Torque
1.18 – 1.57 N·m |
| ④
⑤ | | Screw Pan(SP washer)
M4X8 | Torque
0.78 – 1.18 N·m |

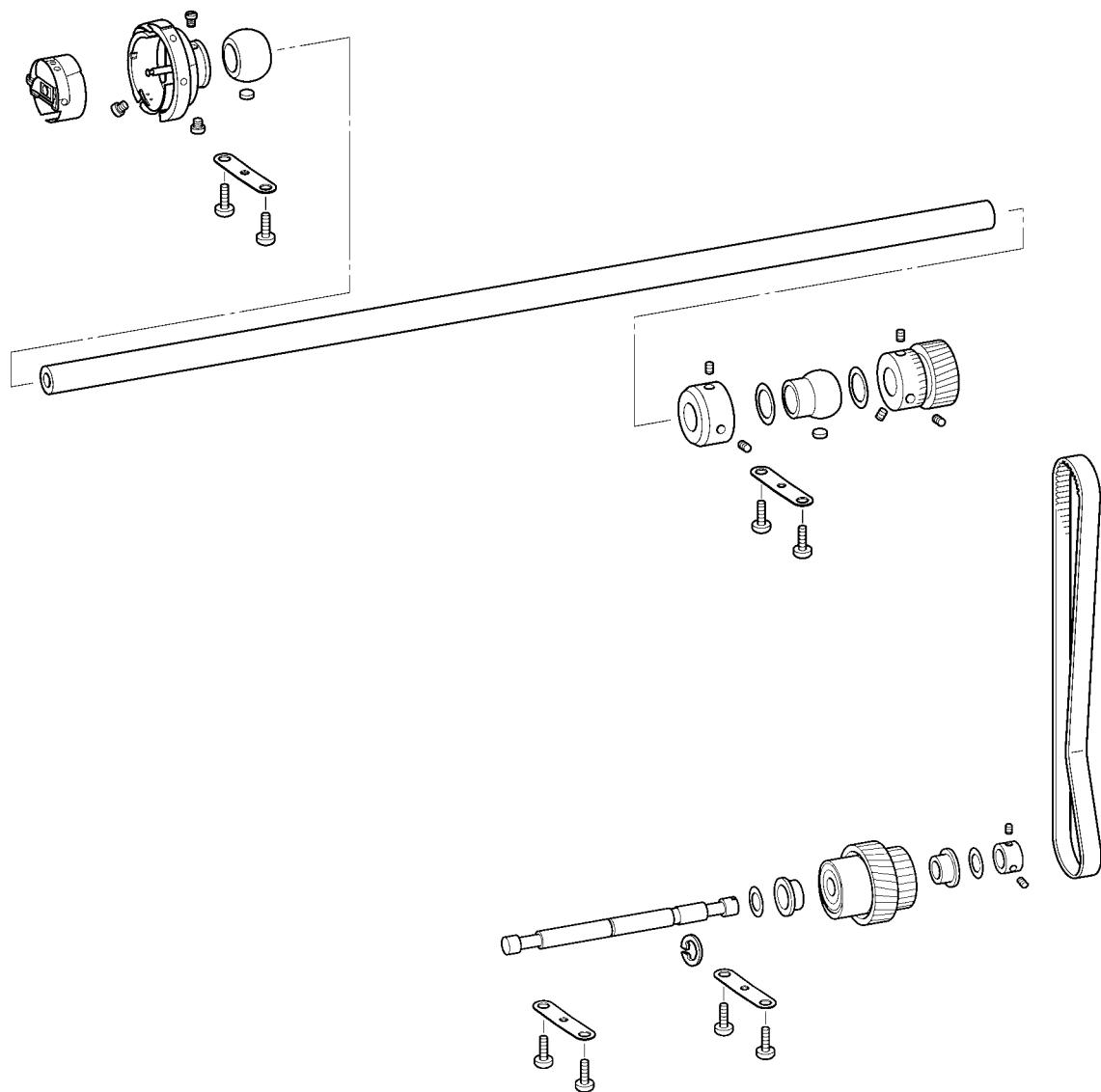
5 Power switch assembly and inlet attachment

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
 - 6.
 - 7.
- * .
- . 2. 2
- 2 2. 4. 3
- 3 (), 2
- (NK-6N). 6. Y- 5
- (NK-6N). 7. (-6 -).
3. 5. 6

| | | | |
|----------|--|------------------------------|---------------------------|
| 1 | | Screw Pan(SP)washer)
M4X8 | Torque
0.78 – 1.18 N·m |
| 3 | | Taptite, Bind B
M3X10 | Torque
0.39 – 0.78 N·m |
| 4 | | Screw Pan(SP)washer)
M4X8 | Torque
0.78 – 1.18 N·m |
| 5 | | | |
| 6 | | | |



Main unit

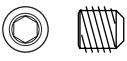


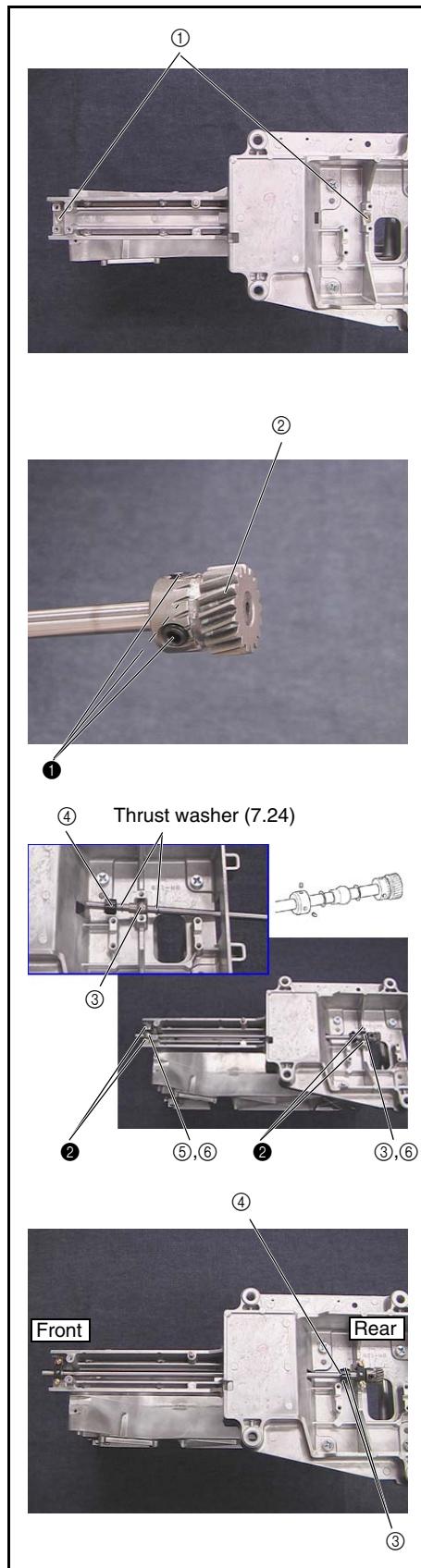
Main unit

Lower shaft unit

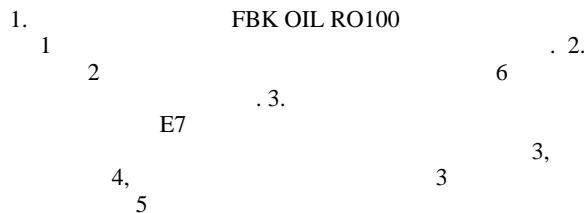
1 Lower shaft attachment

- | | | | |
|------|---------------|-------------------------------------|--------------|
| 1. | FBK OIL RO100 | 2 | 1. 2. |
| (2 |) 3. | 2 | |
| | | | , |
| | | 3 | 1. 4. |
| | | | R |
| 3, | (7.24), | (7.24) | 4 |
| . 5. | | | , |
| | | | F 5 |
| 6. | 2 | | |
| 4 | 2. 7. | Soak the felts in
FBK OIL RO100. | |
| | 4 | | 1 to 2 drops |
| | | 2 | |
| 3. | | | |

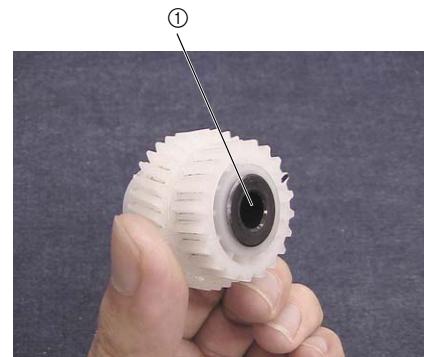
| | | | |
|----------|---|-------------------------------|---------------------------|
| 1 |  | Set Screw Socket (CP)
M6X6 | Torque
1.18 – 1.57 N·m |
| 2 |  | Taptite, Bind S
M4X10 | Torque
1.47 – 1.96 N·m |



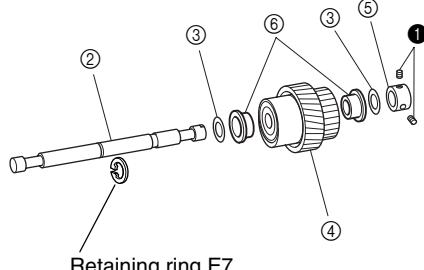
2 Idle pulley assembly



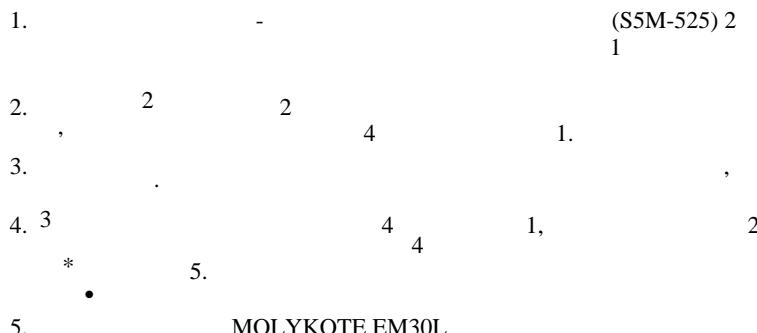
| | |
|---|---------|
| Apply FBK OIL RO100 to the shaft hole on the idle pulley. | 1 drops |
|---|---------|



| | | | |
|----------|--|-------------------------------|---------------------------|
| 1 | | Set Screw Socket (CP)
M4X4 | Torque
0.78 – 1.18 N·m |
|----------|--|-------------------------------|---------------------------|



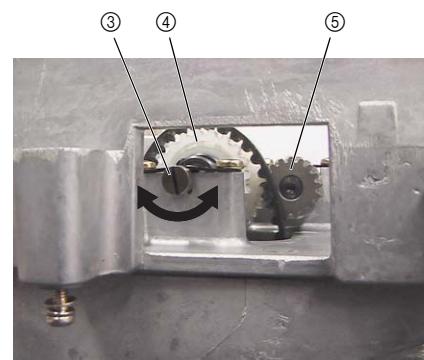
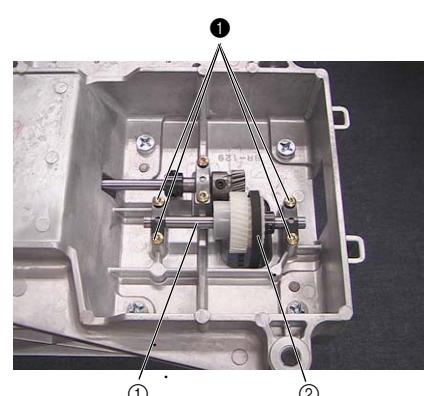
3 Idle pulley assembly attachment



MOLYKOTE EM30L

| | |
|--|--------------------|
| Backlash between lower shaft gear and idle pulley: | 0.03 mm |
| Apply MOLYKOTE EM30L to the lower shaft gear. | Gear circumference |

| | | | |
|----------|--|--------------------------|---------------------------|
| 1 | | Taptite, Bind S
M4X10 | Torque
1.47 – 1.96 N·m |
|----------|--|--------------------------|---------------------------|



4 Connection of arm bed and base frame

1.

1
4

1 4

M8.

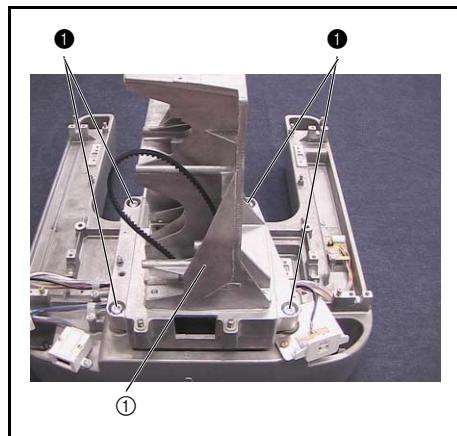
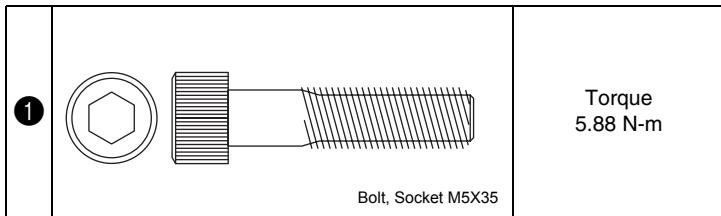
4

1.

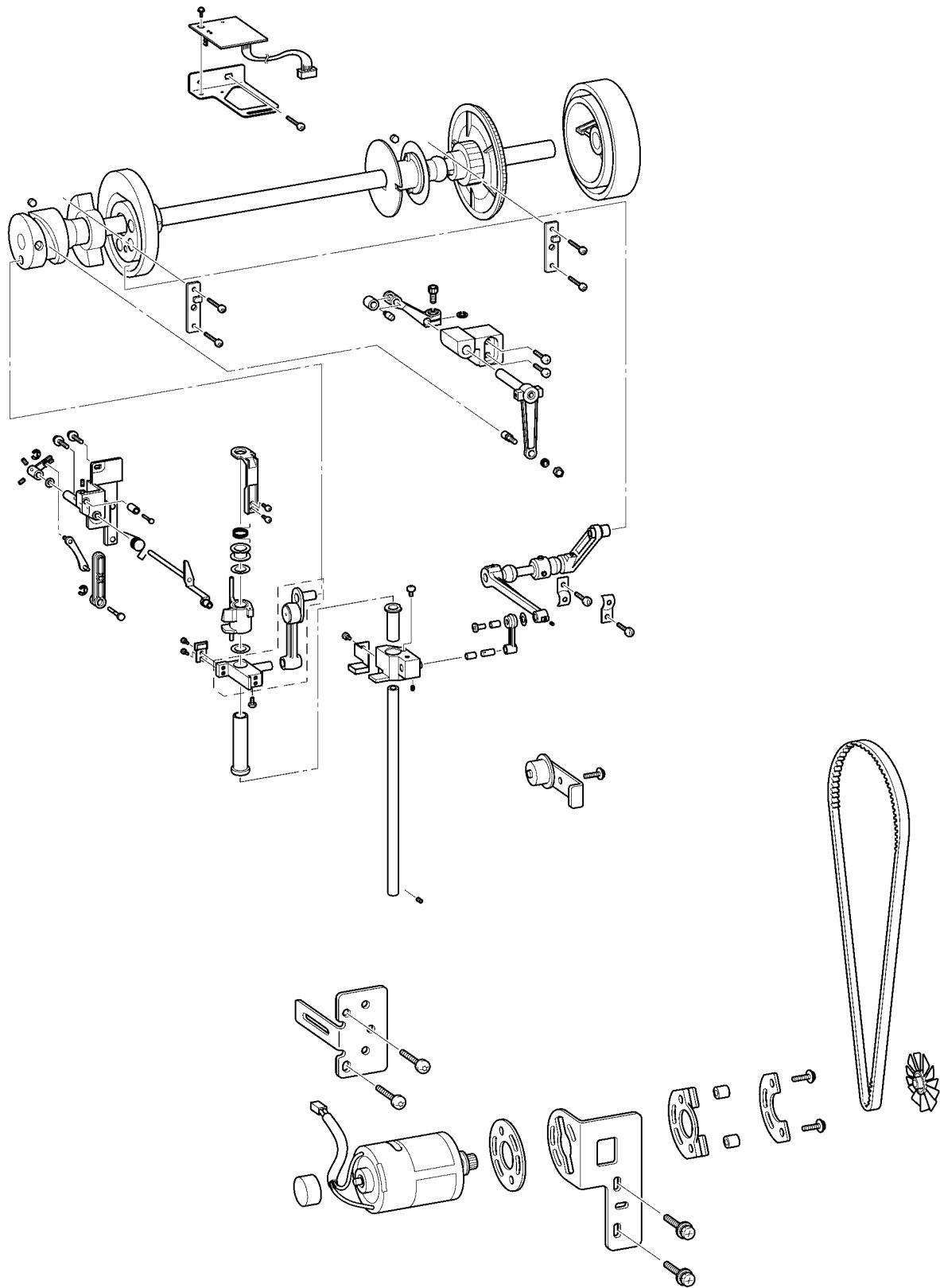
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Main unit



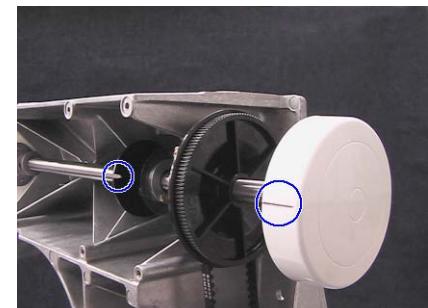
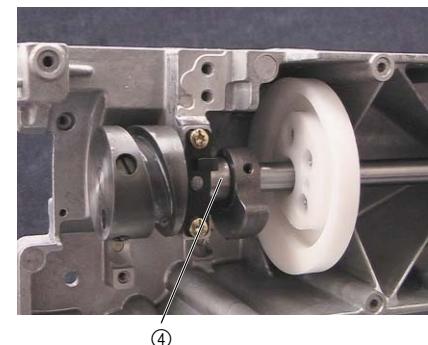
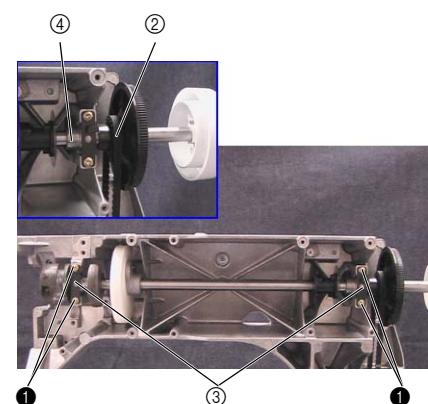
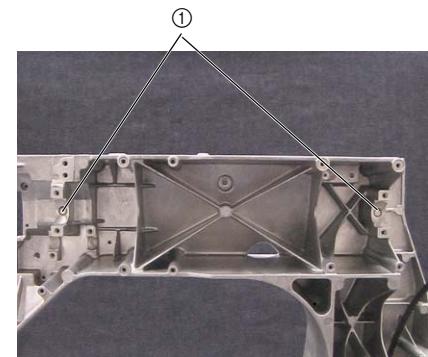
Main unit

Upper shaft unit

1 Upper shaft assembly attachment

- | | | | |
|----------------------|---------------------|---|-----------------|
| 1. | FBK OIL RO100 | 2 | 1. 2. |
| (2
*
4.
3 4 |) 3.
●
2
2 | , | , |
| | | | 2. |
| | | | 4. |
| | | | 5. |
| | | | MOLYKOTE EM-30L |
| | | | 6. |
| | | | 7. |

| | |
|---|--------------------------|
| Apply MOLYKOTE EM-30L to the groove on the presser foot cam and thread take-up cam. | Cam groove circumference |
| Apply oiler to the upper shaft metal. | 1 to 2 drops |



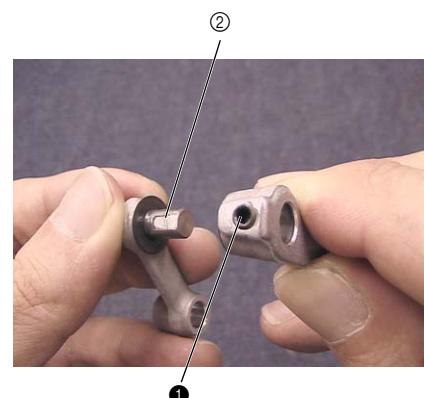
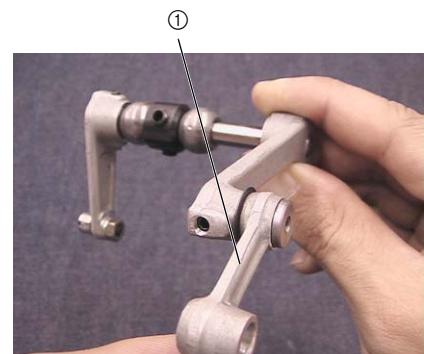
| | | | | |
|---|--|--|--------------------------|---------------------------|
| 1 | | | Taptite, Bind S
M4X10 | Torque
1.47 – 1.96 N·m |
|---|--|--|--------------------------|---------------------------|

Main unit

Upper shaft unit

2 Presser foot driving shaft assembly

1. Attach the thrust washer and the presser foot lever shaft to the presser foot connecting rod ①.
2. Align the screw hole on the presser foot driving shaft assembly with the presser foot lever shaft's D-cut face ②, and secure the presser foot driving shaft assembly with the screw ①.



| | | | | |
|---|---|----|-------------------------------|---------------------------|
| ① | ◎ | 弾簧 | Set Screw Socket (CP)
M4X4 | Torque
0.78 – 1.18 N·m |
|---|---|----|-------------------------------|---------------------------|

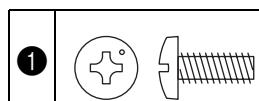
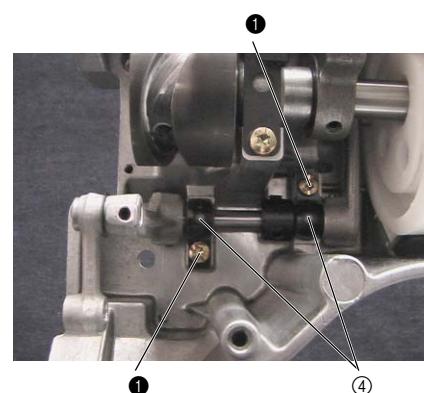
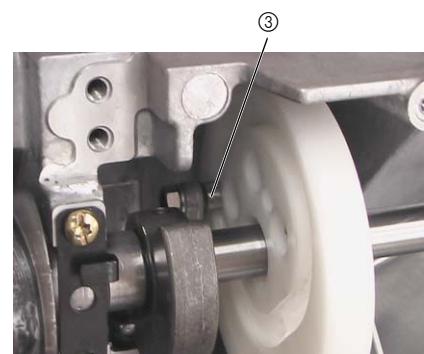
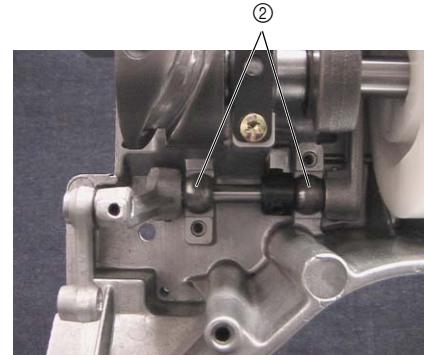
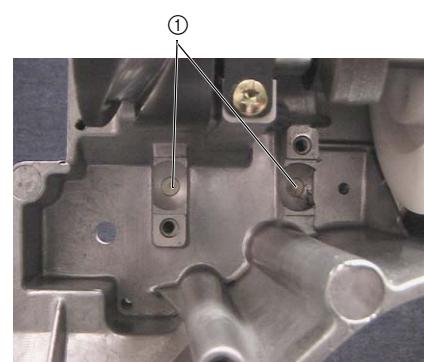
Main unit

Upper shaft unit

3 Presser foot driving shaft assembly attachment

1. FBK OIL RO100 2
1. 2.
- (2) 3.
2 2
- * , 3
4. 2 1. 5.

4
Apply oiler to the presser foot driving shaft assembly's metal. **1 to 2 drops**

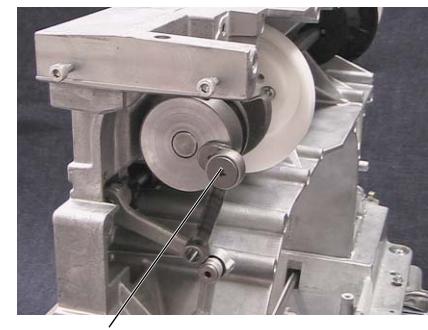
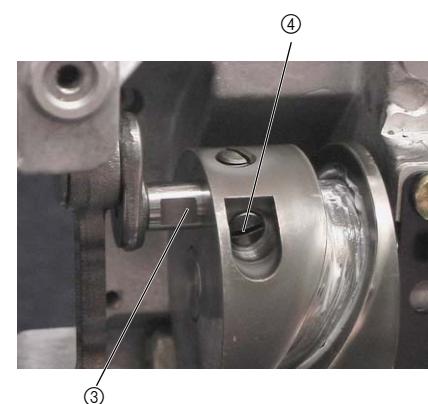
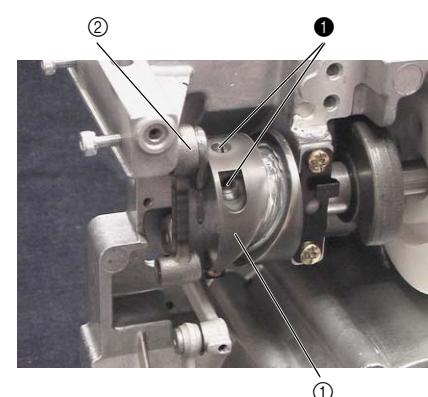


Taptite, Bind S
M4X10

Torque
1.47 – 1.96 N·m

Main unit**Upper shaft unit****4 Crank rod assembly attachment**

- 1.
- 1.
- 2.
- 2.
- *
- D
- 2.
- 2.*
- 1.
- 2.
- 3.
- 4.



| | | | |
|---|--|--------------------------|---------------------------|
| ① | | Set Screw (CP)
SM6.35 | Torque
1.57 – 1.96 N·m |
| ② | | Screw
SM3.57-40X6 L | Torque
1.18 – 1.57 N·m |

5 Main shaft sensor final assembly attachment

1.

1
1. 2.

2

2.
3

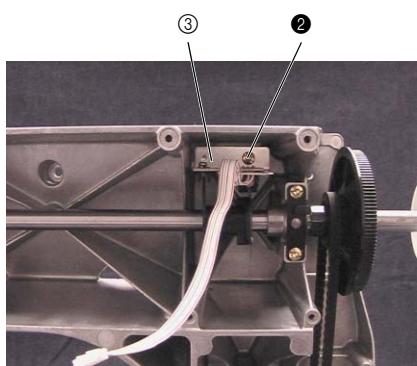
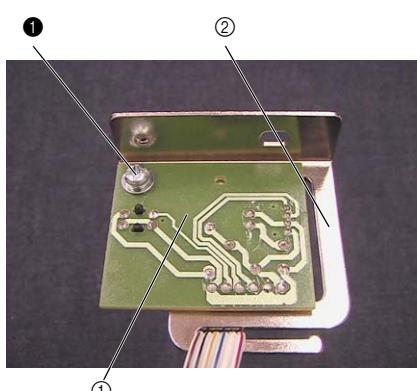
360

, 150DPI (

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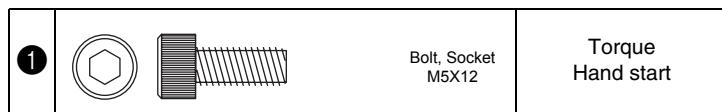
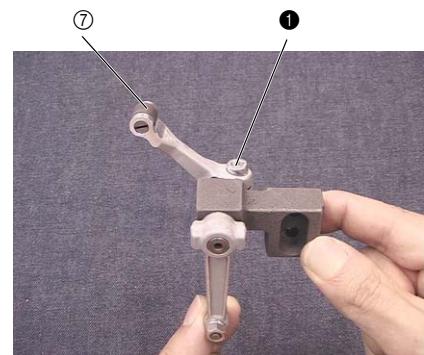
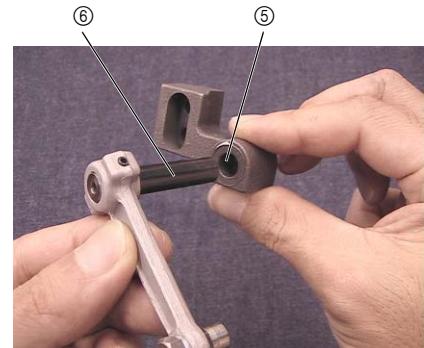
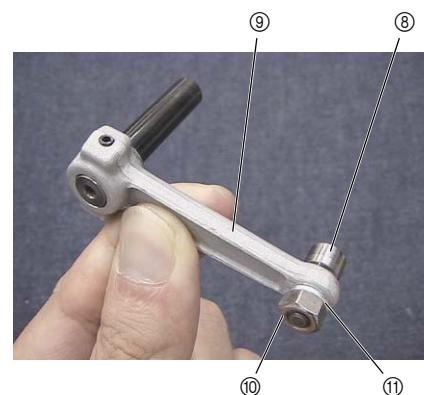
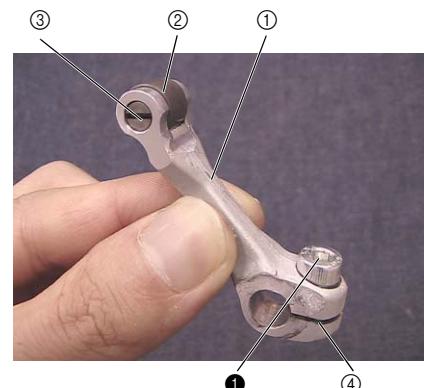
| | | | |
|---|--|--------------------------------|---------------------------|
| 1 | | Screw Pan (SP washer)
M3X6 | Torque
0.59 – 0.78 N·m |
| 2 | | Screw Pan (SP washer)
M4X10 | Torque
1.47 – 1.96 N·m |

Main unit

Upper shaft unit

6 Thread take-up driving lever final assembly

- 1.
 - 2.
 3. 2.
 - 4.
 - 5.
 6. 1. MOLYKOTE EM-30L
3 - 61 <
 - 7.
- (2-5) A. 4.
. 5.
1. 3.
- 8
- 9
- (1, M5) 0
MOLYKOTE EM-30L
- 6
- *, •
1.
- 7.
- | | |
|--|-------------------------|
| Apply MOLYKOTE EM-30L to the shaft hole on the thread take-up bearing. | Size of a grain of rice |
| Apply MOLYKOTE EM-30L to the thread take-up differential lever's roller. | Size of a grain of rice |
| Tightening torque of thread take-up roller pin: | 0.78 - 1.18 N·m |



7 Thread take-up driving lever final assembly attachment

1.

1. *

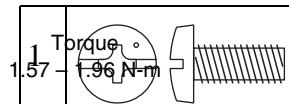
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2

1

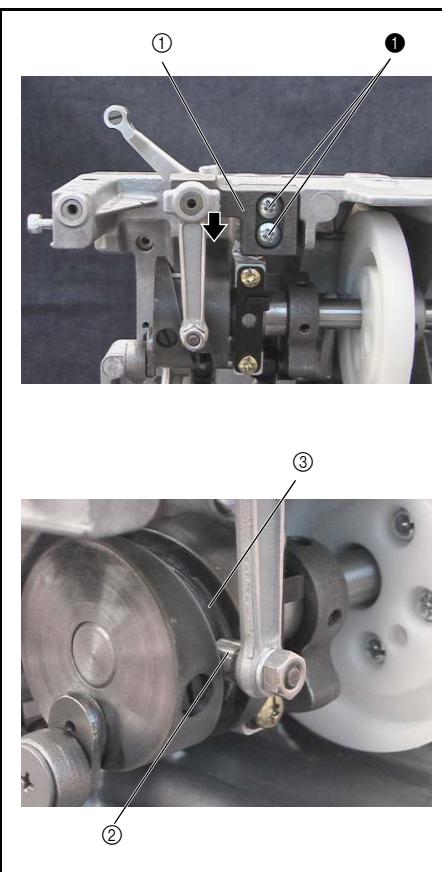
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1.



5X12

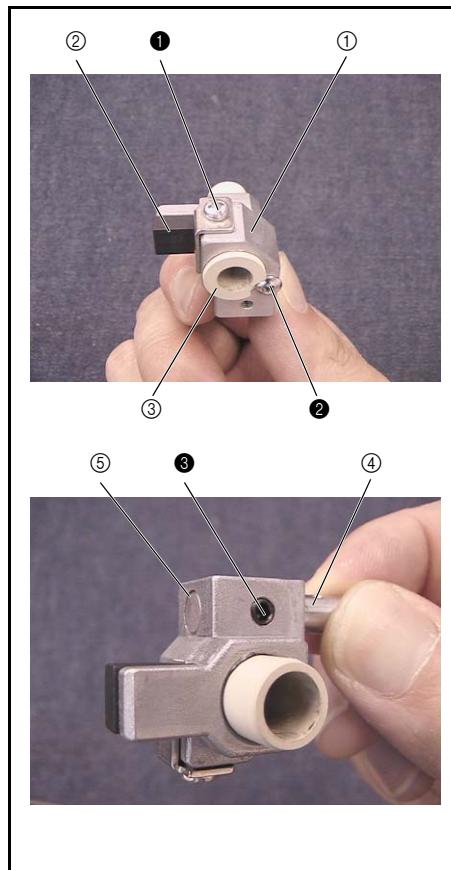
M



8 Presser foot vertical base final assembly

- 1.
- 2.
- 3.
- ,
- *
- .
2. 3.
- 4.
- 5.
- 3.

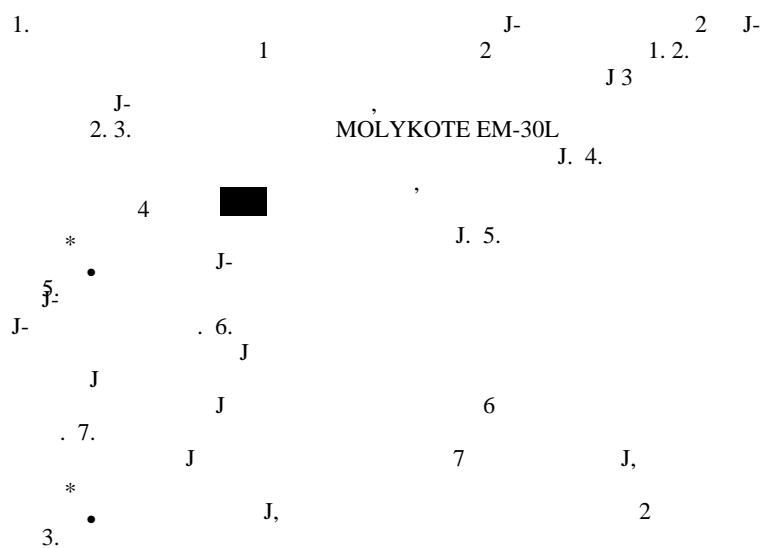
| | | | |
|---|---|----------------------------|---------------------------|
| 1 |   | Screw, Pan M3X5 | Torque
0.78 – 1.18 N·m |
| 2 |   | Screw, Truss M2.6X3 | Torque
0.59 – 0.78 N·m |
| 3 |   | Set Screw Socket (CP) M4X4 | Torque
1.37 – 1.57 N·m |



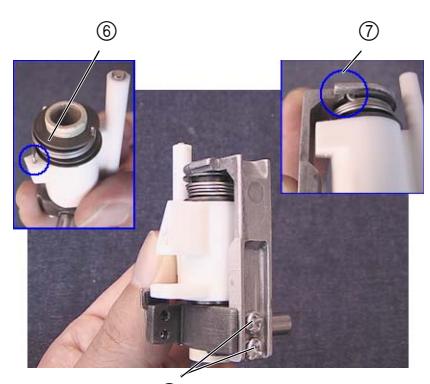
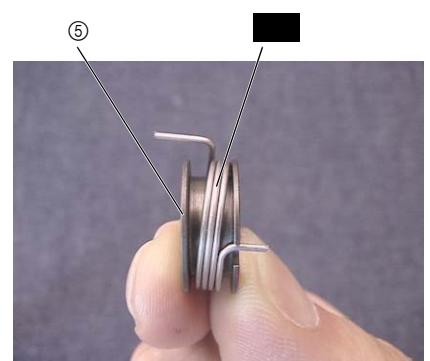
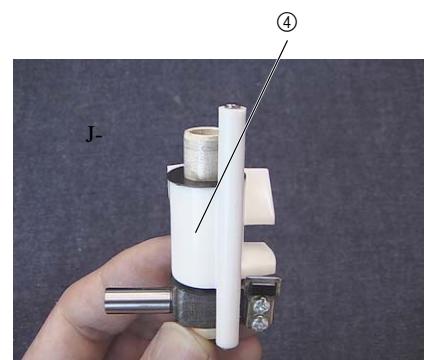
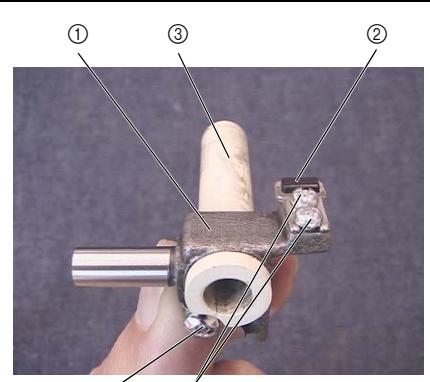
Main unit

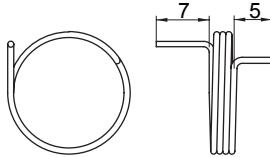
Upper shaft unit

9 Vertical set assembly



| | |
|--|-------------------------|
| Apply MOLYKOTE EM-30L to the circumference of the J vertical bush. | Size of a grain of rice |
|--|-------------------------|

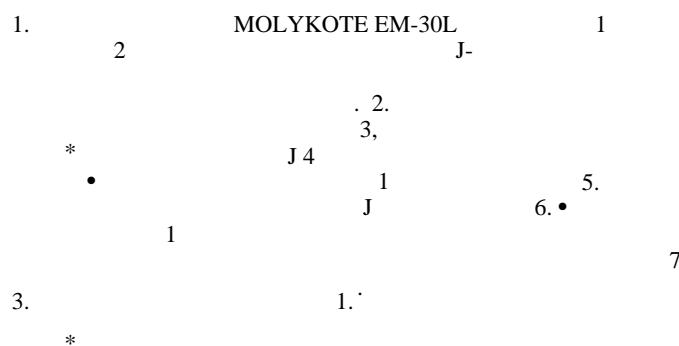


| | | | |
|---------------------------|--|---|------------------------|
| ① | | Screw, Pan M2.6X3 | Torque 0.59– 0.78 N·m |
| ② | | Screw, Truss M2.6X3 | Torque 0.59 – 0.78 N·m |
| ③ | | Screw, Pan M3X4 | Torque 0.78 – 1.18 N·m |
| J SPRING XC5617*** | |  | |

Main unit

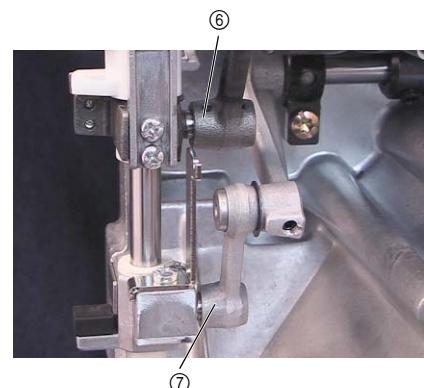
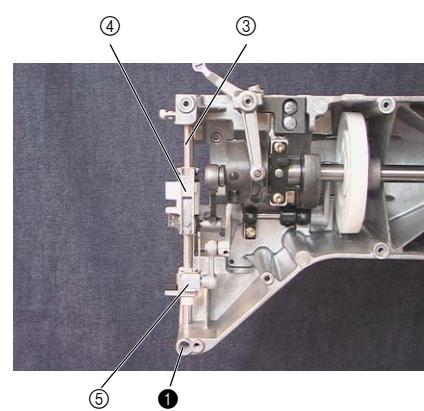
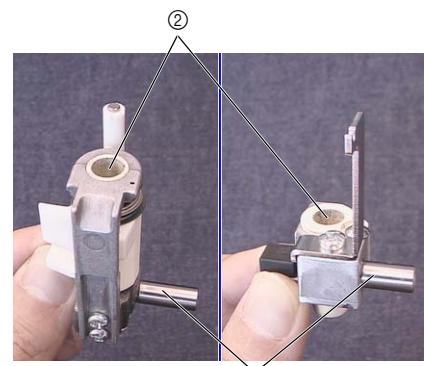
Upper shaft unit

10 Base needle bar attachment



Apply MOLYKOTE EM-30L to the shaft and the hole of the J vertical set assembly and the presser foot vertical base assembly.

Size of a grain of rice



Set Screw Socket (CP)
M5X8

Torque
1.18 – 1.57 N·m

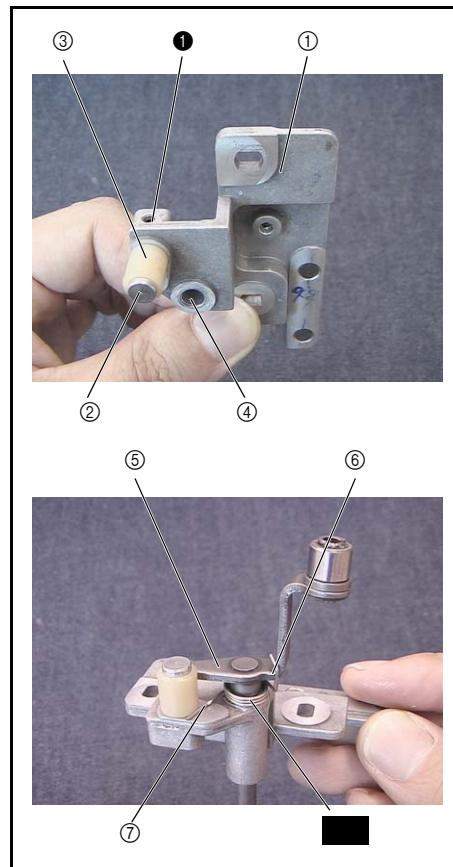
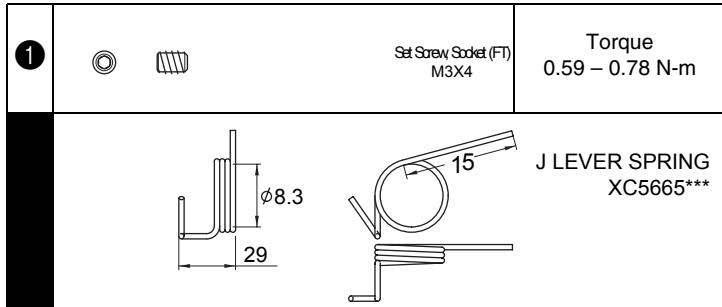
11 Driving jump assembly (1)

1. Attach the J cushion pin ② and the J cushion ③ to the J base assembly ①, and then tighten the screw ①.
2. Apply MOLYKOTE EM-30L to the shaft hole ④ on the J base assembly.
3. Thread the spring ⑥ through the shaft of the J driving level assembly ⑤, and insert the J driving lever assembly to the J base assembly.

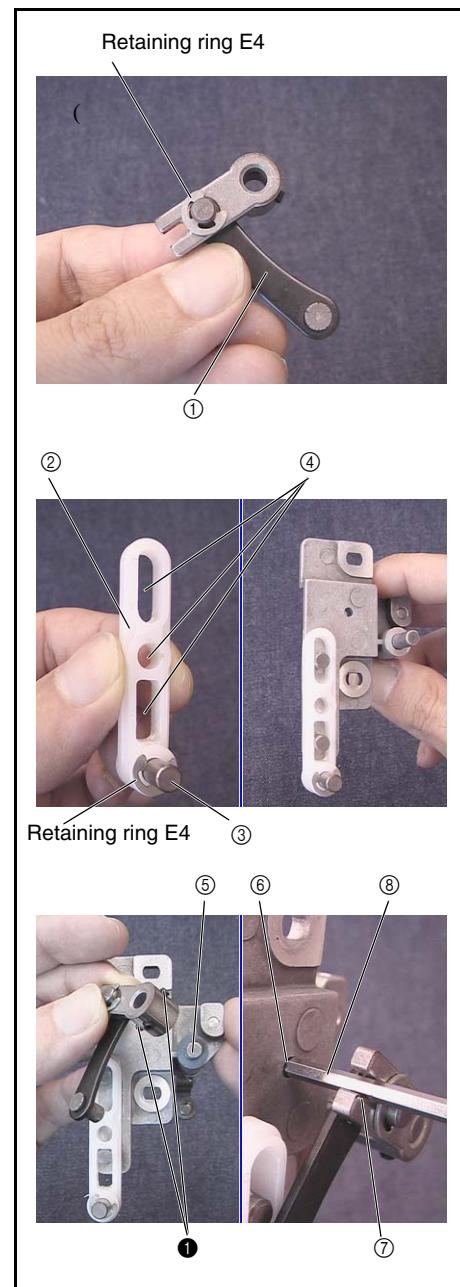
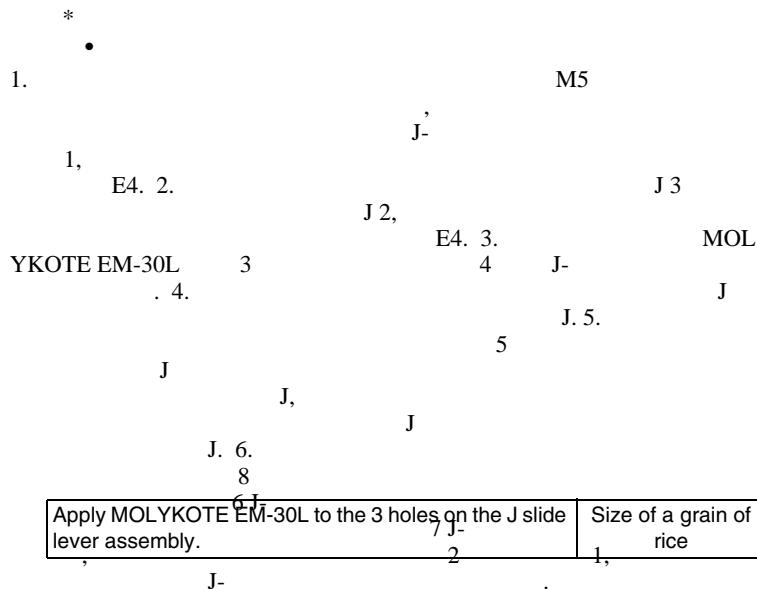
***Key point**

- Hang the U-shaped hook ⑥ of the spring ⑥ over the J driving lever assembly, and then the other hook ⑦ over the J cushion.

| | |
|---|-------------------------|
| Apply MOLYKOTE EM-30L to the shaft hole on the J base assembly. | Size of a grain of rice |
|---|-------------------------|



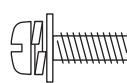
12 Driving jump assembly (2)

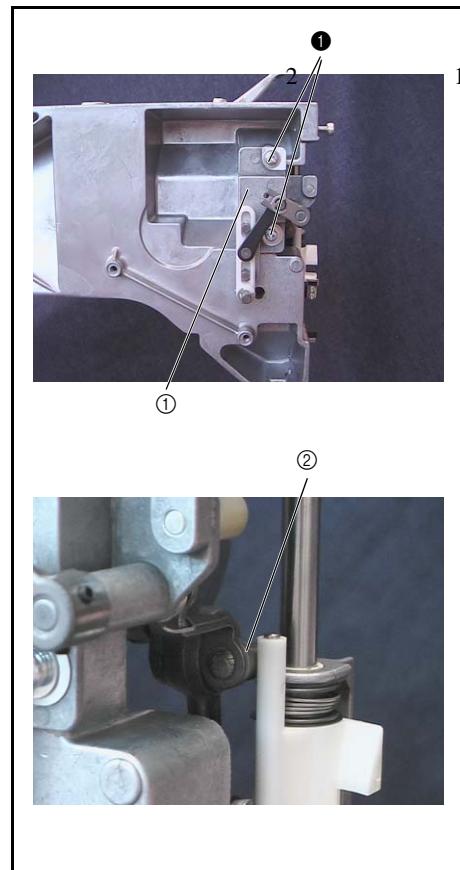


| | | |
|----|--------------------|---------|
| 1 | Torque
0.59 N-m | |
| X4 | | (CP) M3 |

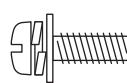
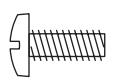
Main unit**Upper shaft unit****13 Driving jump assembly attachment**

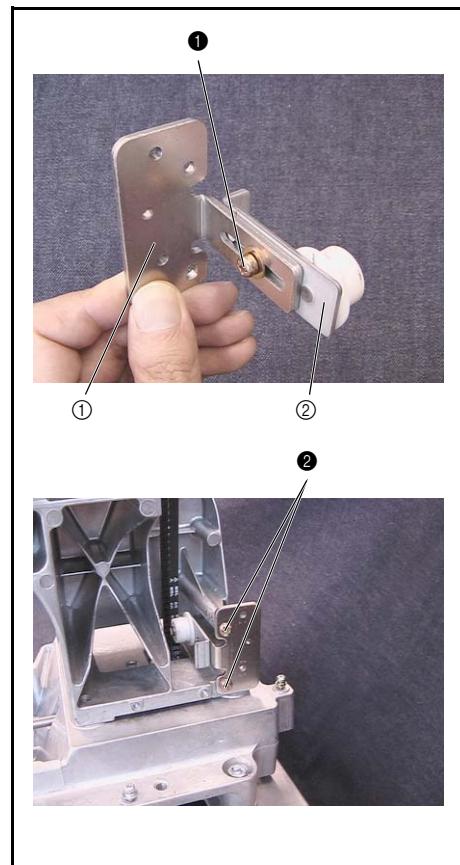
1. * .
2. J
J- 0 0,2 .

| | | | |
|---|---|----------------------------|---------------------------|
| 1 |   | Screw Pan (SPWasher) M4X10 | Torque
1.18 – 1.57 N·m |
|---|---|----------------------------|---------------------------|

**14 Tension pulley assembly attachment**

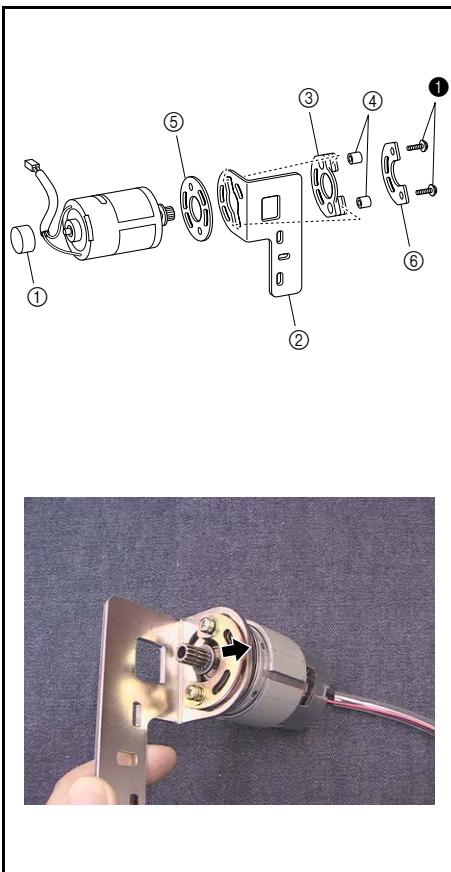
1. * .
2. 1.
1. 4 – 23 « ».
2.

| | | | |
|---|---|----------------------------|---------------------------|
| 1 |   | Screw Pan (SPWasher) M4X10 | Torque
Hand start |
| 2 |   | Taptite, Bind S M4X10 | Torque
1.47 – 1.96 N·m |



15 Main motor final assembly

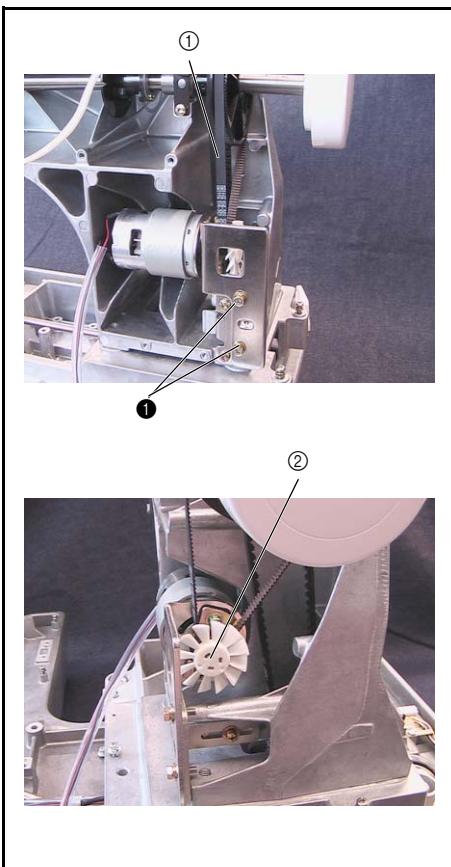
1.
2. 3.
3
2.
4.
5,
*
•
6 1,
2
1.
- 1
(4 x 7) 4



| | | | | |
|----------|--|--|--------------------------------|---------------------------|
| 1 | | | Screw Pan (SP washer)
M4X16 | Torque
1.18 – 1.57 N·m |
|----------|--|--|--------------------------------|---------------------------|

16 Main motor final assembly attachment

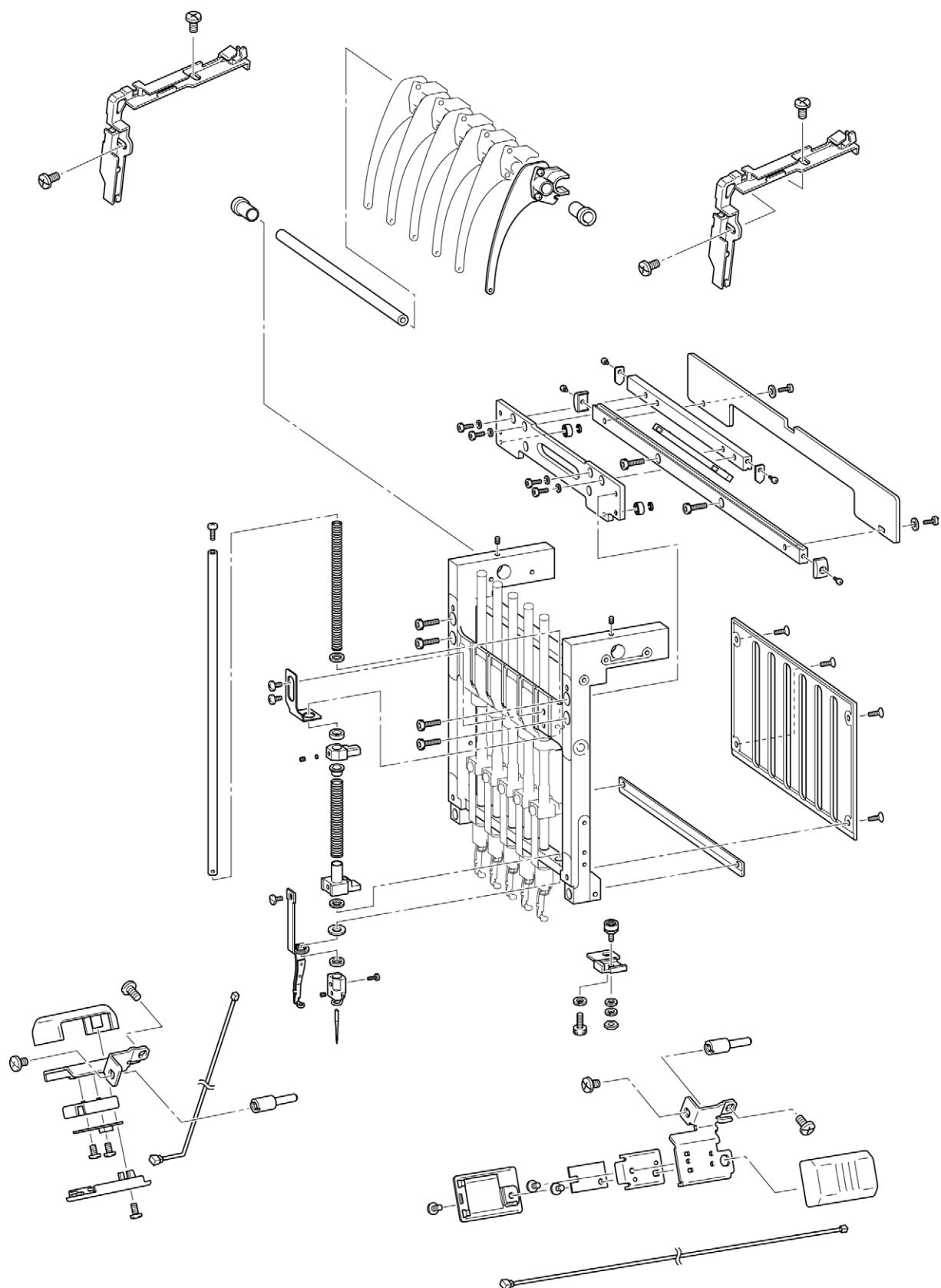
1.
1
*
2 •
1.
2.
1.
4 – 22 «
».
2
- (XA9644-050)



| | | | | |
|----------|--|--|-----------------|----------------------|
| 1 | | | Upset
4X14DB | Torque
Hand Start |
|----------|--|--|-----------------|----------------------|

Main unit

edle bar unit

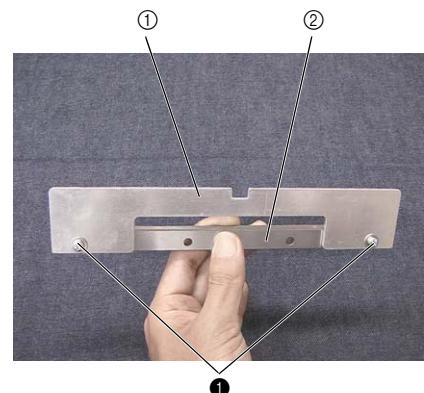


1 Case guide UL assembly

1. Attach the thread take-up guide ① to the case guide UL ② with the 2 screws ①.

*Key point

- Check that these are attached in the direction shown in the photo.



| | | | |
|---|---|--------------------|---------------------------|
| ① |   | Screw, Pan
M4X8 | Torque
1.18 – 1.57 N·m |
|---|---|--------------------|---------------------------|

2 Case bracket assembly

1. 2 694
2 1,
4 (S, 4)
* 1,
1. US 2 4
1. 1.
3 - 55 « ».

Bolt, Socket
M4X8Torque
Hand start

Retaining ring E3

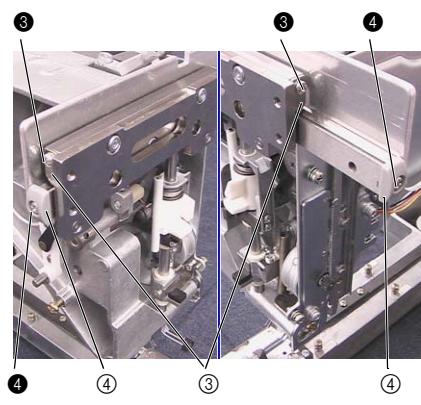
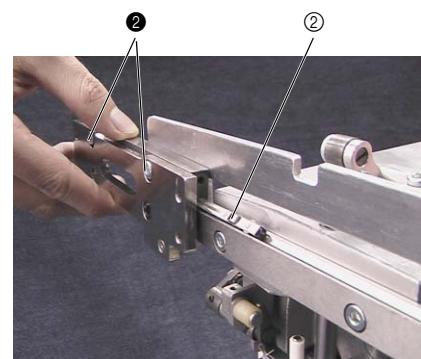
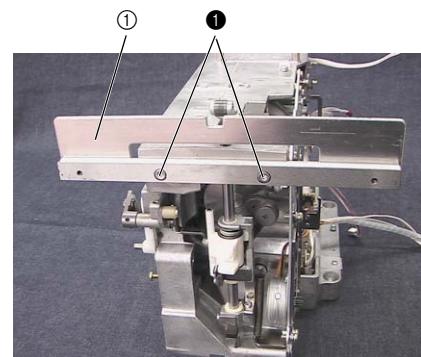


Main unit

Needle bar unit

3 Case bracket assembly attachment

| | | | | |
|---|--------|---|---|----|
| 1.
L | 1
2 | 1. 2.
2 (4
2
;
*,
2
; | MOLYKOTE EM - 30L
). 3.
2 V-
, | U |
| 2 | UL | 1,
2 | | |
| UL | | . 4. | 3
2 | US |
| Apply MOLYKOTE EM-30L to the 4 slide rollers. | | | Size of a grain of rice | |
| 2 | 4. | UL | 2 | |



| | | | |
|--------|--|--------------------|------------------------|
| 1
2 | | Bolt, Socket M4X12 | Torque 1.18 – 1.57 N·m |
| 3
4 | | Screw, Pan M3X4 | Torque 0.59 – 0.78 N·m |

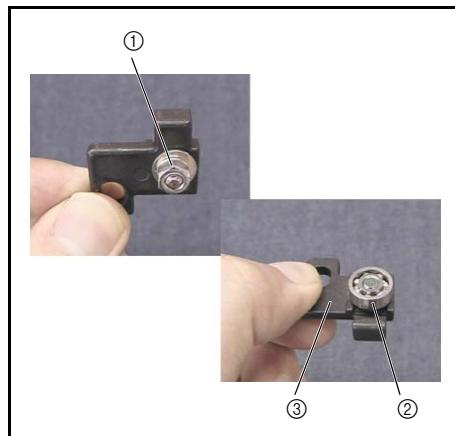
4 Case positioning plate assembly

1.
694 2
* 3
• 2 - 4
2, M4 1.
2, M4 1.
3 - 61 «
».

Tightening torque of nut (2, M4):
Temporary tightening:

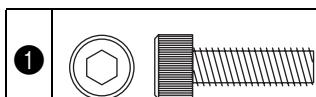
2, M4 1,
M4.

Torque
Hand start



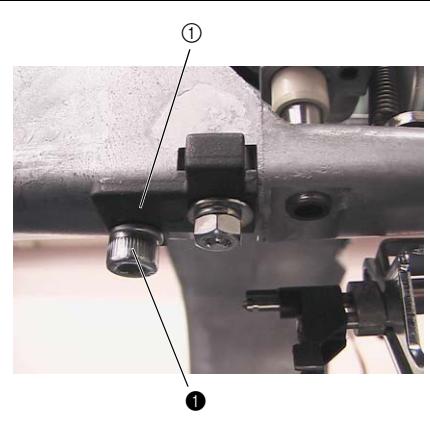
5 Case positioning plate assembly attachment

1.
*
•
1.
1
2-5
4 - 24 «
(/) ».



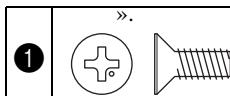
Bolt, Socket
M5X16

Torque
1.18 – 1.57 N·m



6 Needle bar case final assembly

1.
2.
4 1
* 2 2
• 2.
1.
2. (6).
2.
4 - 31 «



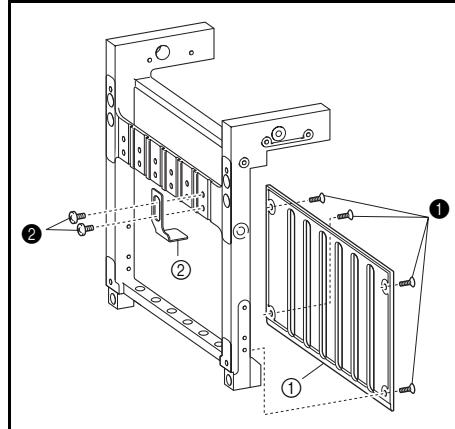
Screw, Flat
M4X10

Torque
1.18 – 1.57 N·m



Screw, Bind
M4X6

Torque
Hand start



Main unit

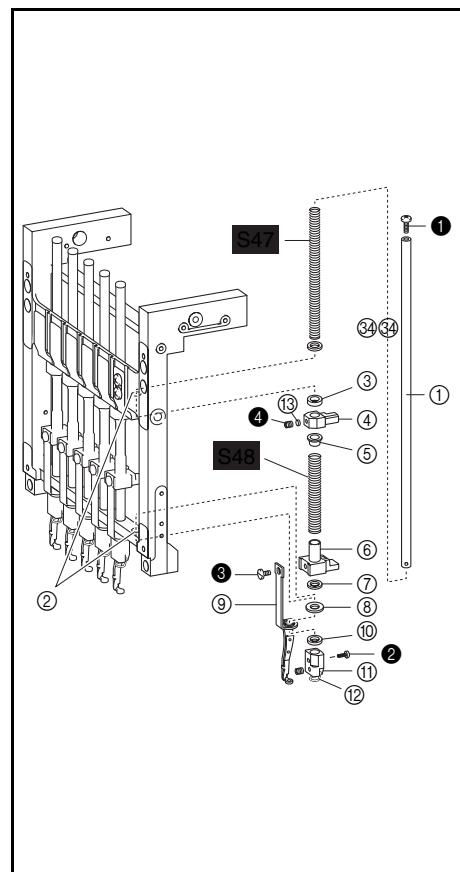
Needle bar unit

7 Needle bar attachment

1. 12. 1. 2. 1. 6. MOLYKOTE EM-30L
 2. 3. , . (6
 3.) 4. 4, 5, 6
 [S48], (S, 7 ,
 . ((S) 8, 6) 5.
 9, *) ; (A,
 • 3. B 2. (6
 7.) 6. 4 - 30 « 2. (6
 * 4. (6 3. (6). ».
 • 4.
 4 - 28 «

Apply MOLYKOTE EM-30L to the insertion holes on the needle bar case.

Size of a grain of size



| | | | |
|----------|--|-------------------------------|-------------------------------|
| ① | | Screw, Pan M5X8 | Torque 1.18 – 1.57 N·m |
| ② | | Screw SM2.38 | Torque 0.29 – 0.49 N·m |
| ③ | | Screw, PF | Torque Hand start |
| ④ | | Set Screw, Socket SM4.37-40X4 | Torque Hand start |
| | | | SPRING NEEDLEBAR XC5680*** |
| | | | PRESSER FOOT SPRING XC5683*** |

8 Thread take-up lever assembly

1.

1
*
nd 1401

2

1.

(6)

2
ThreeBo

Apply ThreeBond 1401.

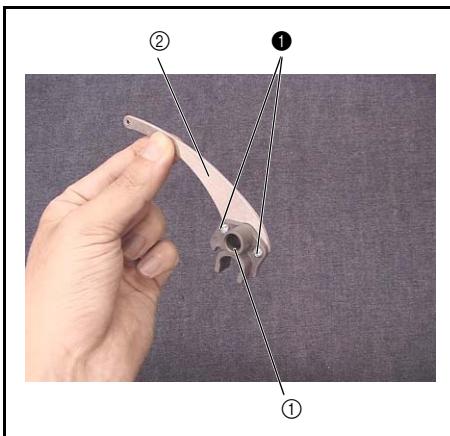
Size of a grain of
rice

①



Screw, Pan
M3X6

Torque
0.59 – 0.78 N·m



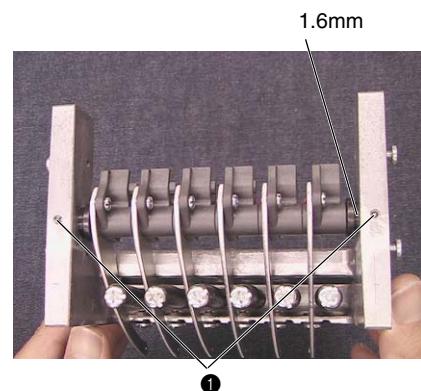
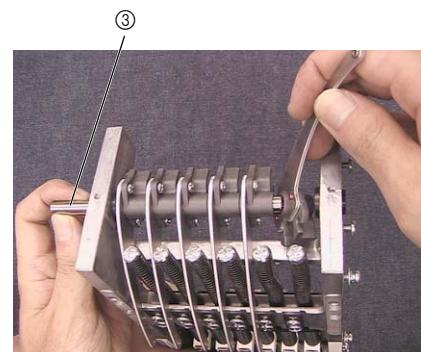
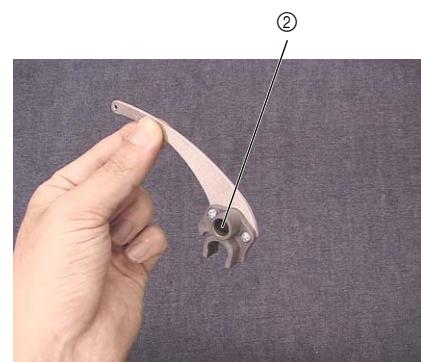
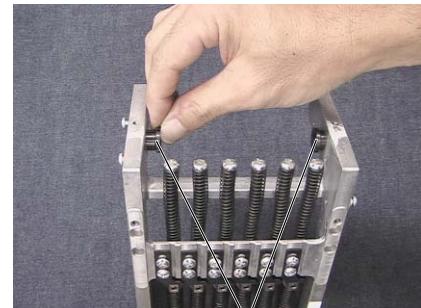
Main unit

Needle bar unit

9 Thread take-up lever assembly attachment

1. 1 MOLYKOTE EM-30L
- 2.
- . 2.
- . 3.
- ,
6. 4.
- 1,6 ,
- 1.5.

| | |
|--|----------------------------|
| Apply MOLYKOTE EM-30L to the shaft holes on the thread take-up lever assembly. | Size of a grain of rice 1. |
|--|----------------------------|



| | | | |
|----------|---|-------------------------------|---------------------------|
| 1 |   | Set Screw Socket (FT)
M4X4 | Torque
0.78 – 1.18 N·m |
|----------|---|-------------------------------|---------------------------|

Main unit

Needle bar unit

10 Case guide D attachment

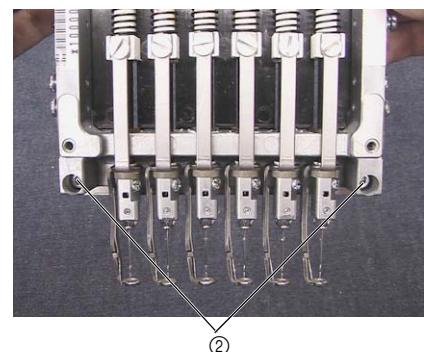
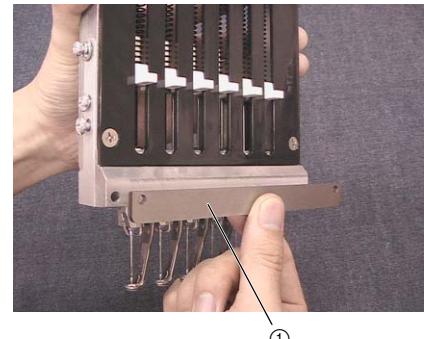
1.

D 1
2

M4

2.

| | |
|-------------------------------------|-----------------|
| Tightening torque of stud bolt M4 ② | 1.18 - 1.57 N·m |
|-------------------------------------|-----------------|



11 Change roller base assembly attachment

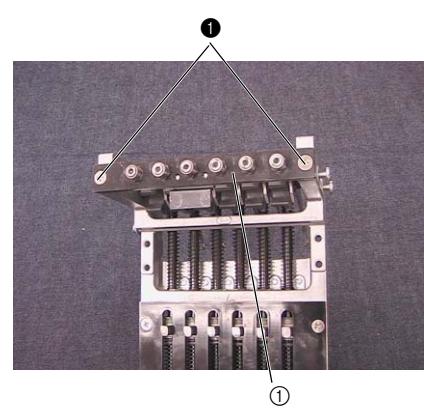
1.

1

2

1.

| | | | |
|---|---|----------------------|---------------------------|
| ① |   | Screw, Flat
M4X10 | Torque
0.78 – 1.18 N·m |
|---|---|----------------------|---------------------------|



Main unit

Needle bar unit

12 Needle bar case final assembly attachment

1.

. 2. MOLYKOTE EM-30L

1

. 3.

*

• 1.



UL



4

4.

694 2

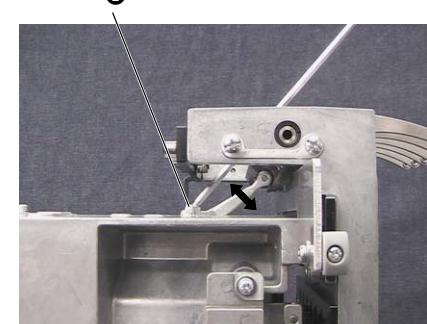
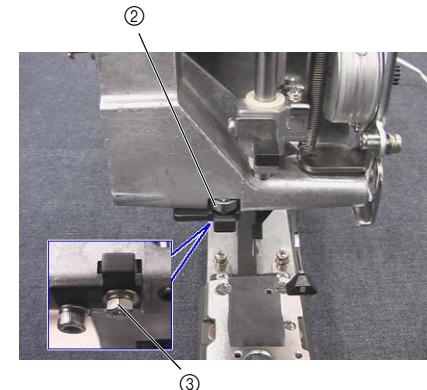
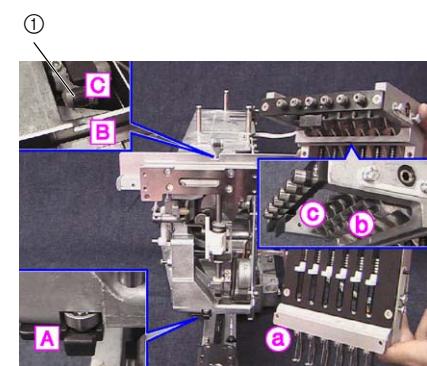
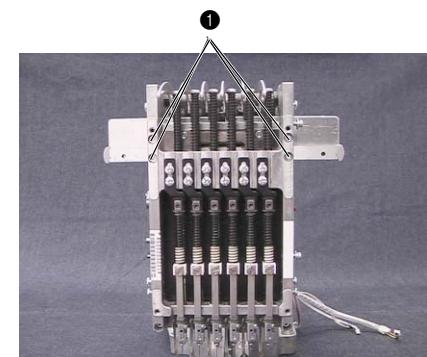
D a

5.

2, M4 3.

.

| | |
|--|-------------------------|
| Apply MOLYKOTE EM-30L to the roller on the thread-take-up differential lever. ² | Size of a grain of rice |
| Tightening torque of nut (2, M4): | 1.18 - 1.57 N·m |



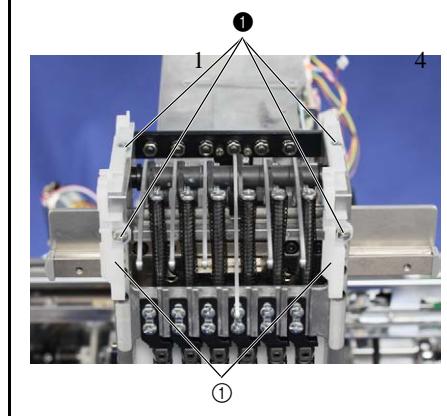
| | | | |
|---|--|--------------------|------------------------|
| ① | | Bolt, Socket M4X16 | Torque 1.18 – 1.57 N·m |
| ② | | Bolt, Socket M5X12 | Torque 2.94 – 3.43 N·m |

13 LED cord guide attachment

1.

2.

| | | | |
|---|---|---------------------|---------------------------|
|  |  | Screw, Bind
M4X8 | Torque
0.78 – 1.18 N·m |
|---|---|---------------------|---------------------------|



14 LED unit right assy assembly

1.

1,

2

2.

4,

3

LED2 5

2

3.

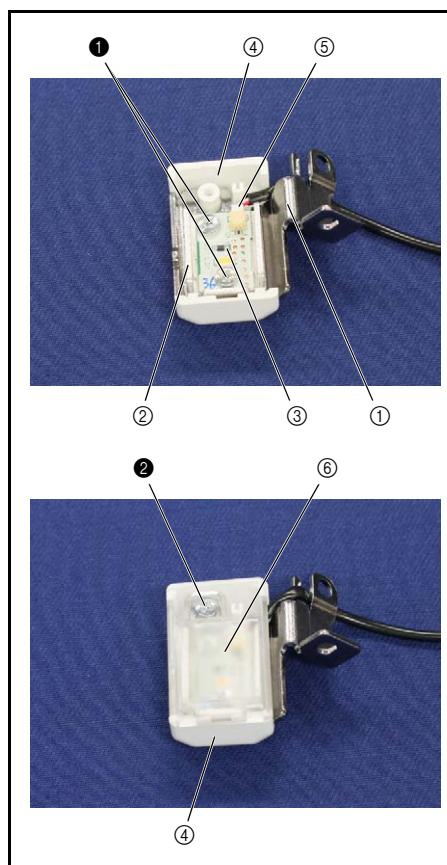
6

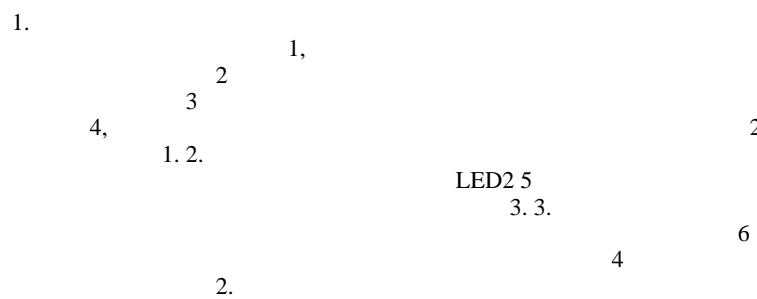
4

2.

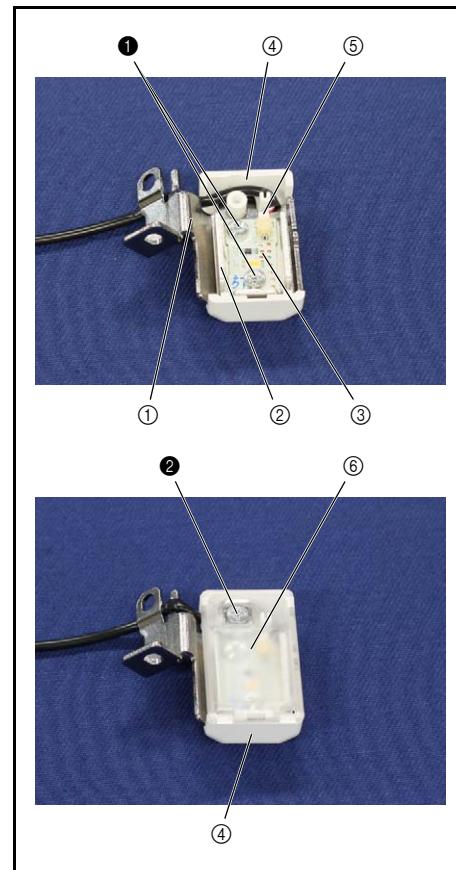
1.

| | | | |
|---|---|--------------------------|---------------------------|
|  |  | Taptite, Bind B
M3X5 | Torque
0.59 – 0.78 N·m |
|  |  | Taptite, Bind B
M3X10 | Torque
0.59 – 0.78 N·m |

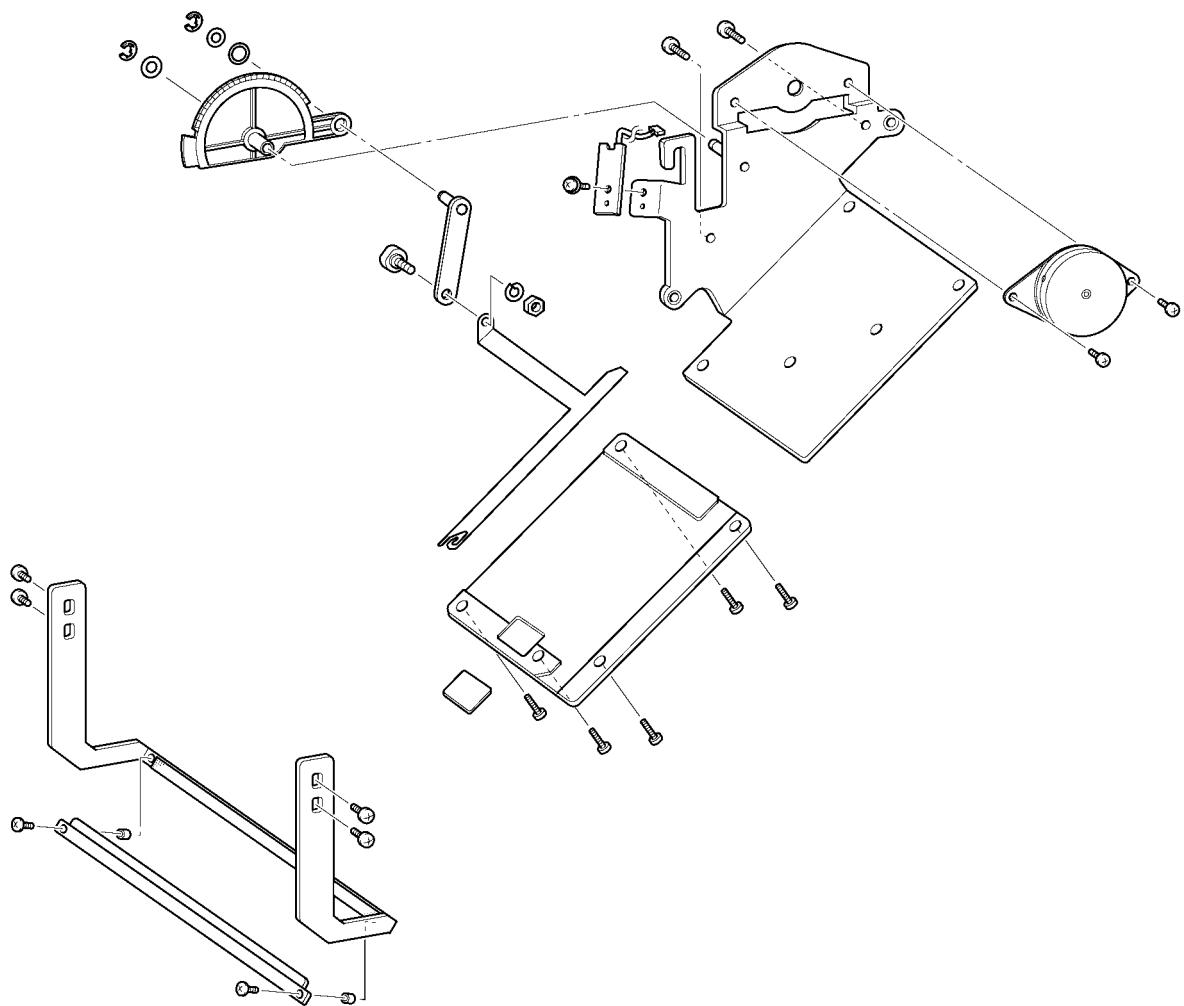


15 LED unit left assy assembly

| | | | |
|----------|--|--------------------------|---------------------------|
| 1 | | Taptite, Bind B
M3X5 | Torque
0.59 – 0.78 N·m |
| 2 | | Taptite, Bind B
M3X10 | Torque
0.59 – 0.78 N·m |



Main unit

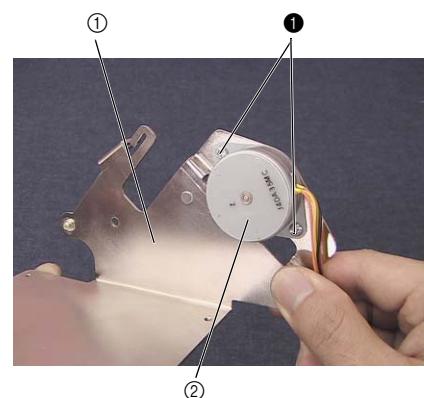


Main unit

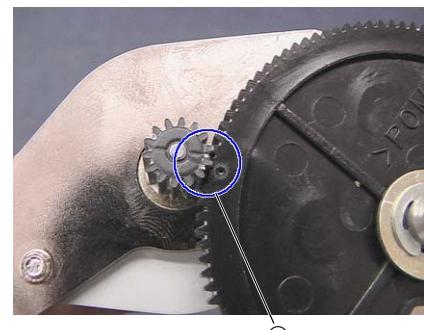
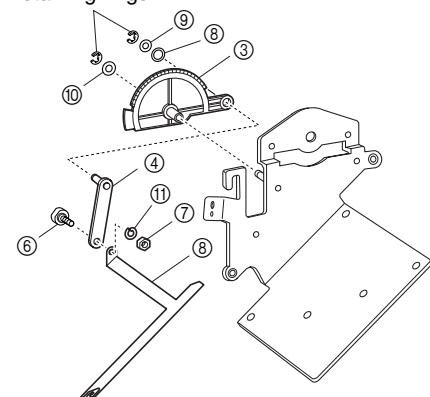
Thread wiper unit

1 Wiper set assembly

- 1.
- 2
1. 2.
- 4, 8
- (M5) 9
- 3, E4. 3.
- *
- (M6) 0 5
- ,
- E4.
- 4.
- 8
- (2-4) A
- (3, M4) 7. 5.
- 6,
- (3, M4): 1,18 + 1,57



Retaining rings E4



| | | | | |
|----------|--|--|--------------------|---------------------------|
| 1 | | | Screw, Pan
M3X4 | Torque
0.78 – 1.18 N·m |
|----------|--|--|--------------------|---------------------------|

Main unit

Thread wiper unit

2 Wiper guide and wiper sensor attachment

1.

2

1. 2.

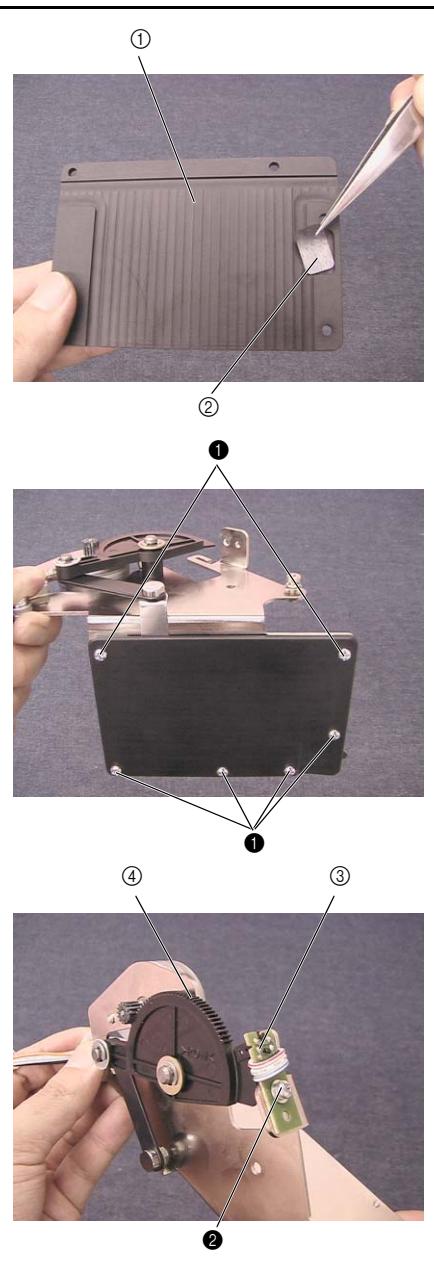
6

1. 3.

3

MOLYKOTE EM-30L
Apply MOLYKOTE EM-30L to the wiper lever gear.
4.

2. 4.
Size of a grain of rice



| | | | |
|---|---|-----------------------------|---------------------------|
| ① |   | Screw, Pan
M3X6 | Torque
0.59 – 0.78 N·m |
| ② |   | Screw Pan(SPwasher)
M3X6 | Torque
0.59 – 0.78 N·m |

Main unit

Thread wiper unit

3 Wiper set assembly attachment

1.

* •

J 1. 2.
2
J-

2

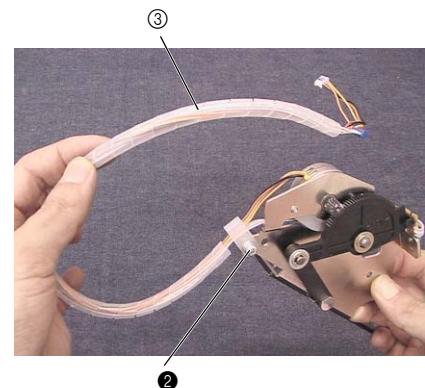
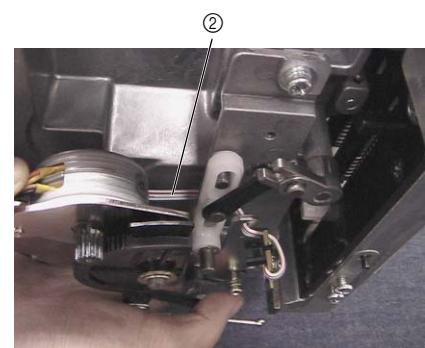
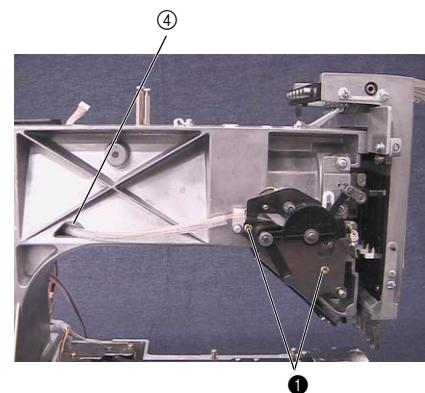
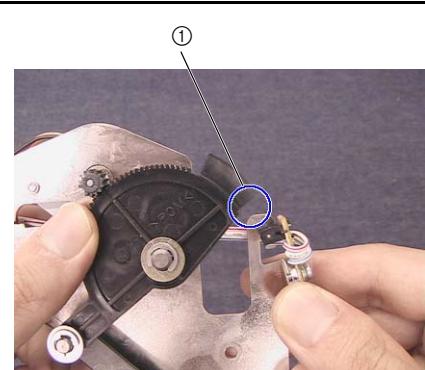
1.
J. 3.

B 3,

2

NK-5N. 4.

4

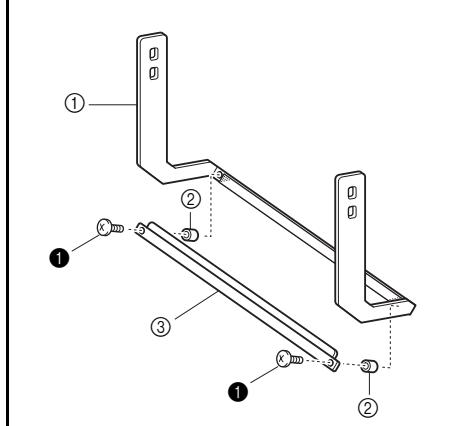


| | | | |
|----------|--|-------------------------------|---------------------------|
| 1 | | Taptite, Bind S
M4X10 | Torque
1.47 – 1.96 N·m |
| 2 | | Screw Pan(SPwasher)
M4X10A | Torque
0.78 – 1.18 N·m |

4 Thread presser base assembly

- 1.
- 2
- 2
- 1.
- 1
- 3
- 2

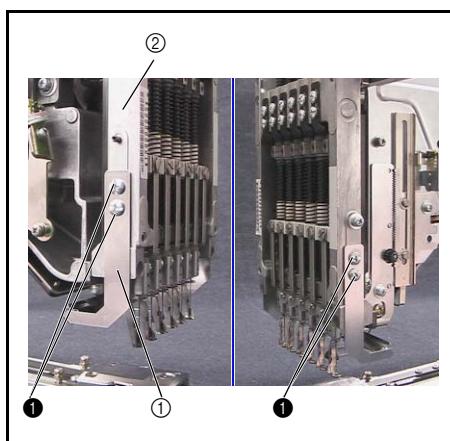
| | | | | |
|----------|--|--|-----------------|------------------------|
| 1 | | | Screw, Pan M3X7 | Torque 0.78 – 1.18 N·m |
|----------|--|--|-----------------|------------------------|



5 Thread presser base attachment

- 1.
- 1
- 4
- 1.
- 2
- *
-
- 1.
- 4 – 39 «
- /
- ».

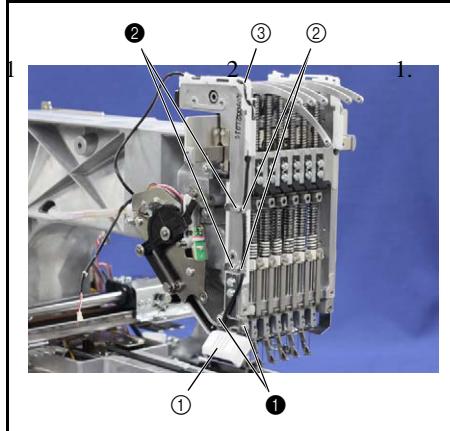
| | | | | |
|----------|--|--|------------------|-------------------|
| 1 | | | Screw, Bind M4X6 | Torque Hand start |
|----------|--|--|------------------|-------------------|



6 LED unit right assy removal

- 1.
- 2.
- 2.
- *
-
- 2
- ,
- 3.

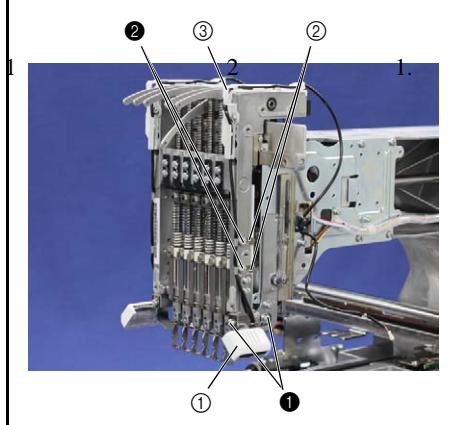
| | | | | |
|----------|--|--|------------------|------------------------|
| 1 | | | Screw, Bind M4X8 | Torque 0.78 – 1.18 N·m |
|----------|--|--|------------------|------------------------|



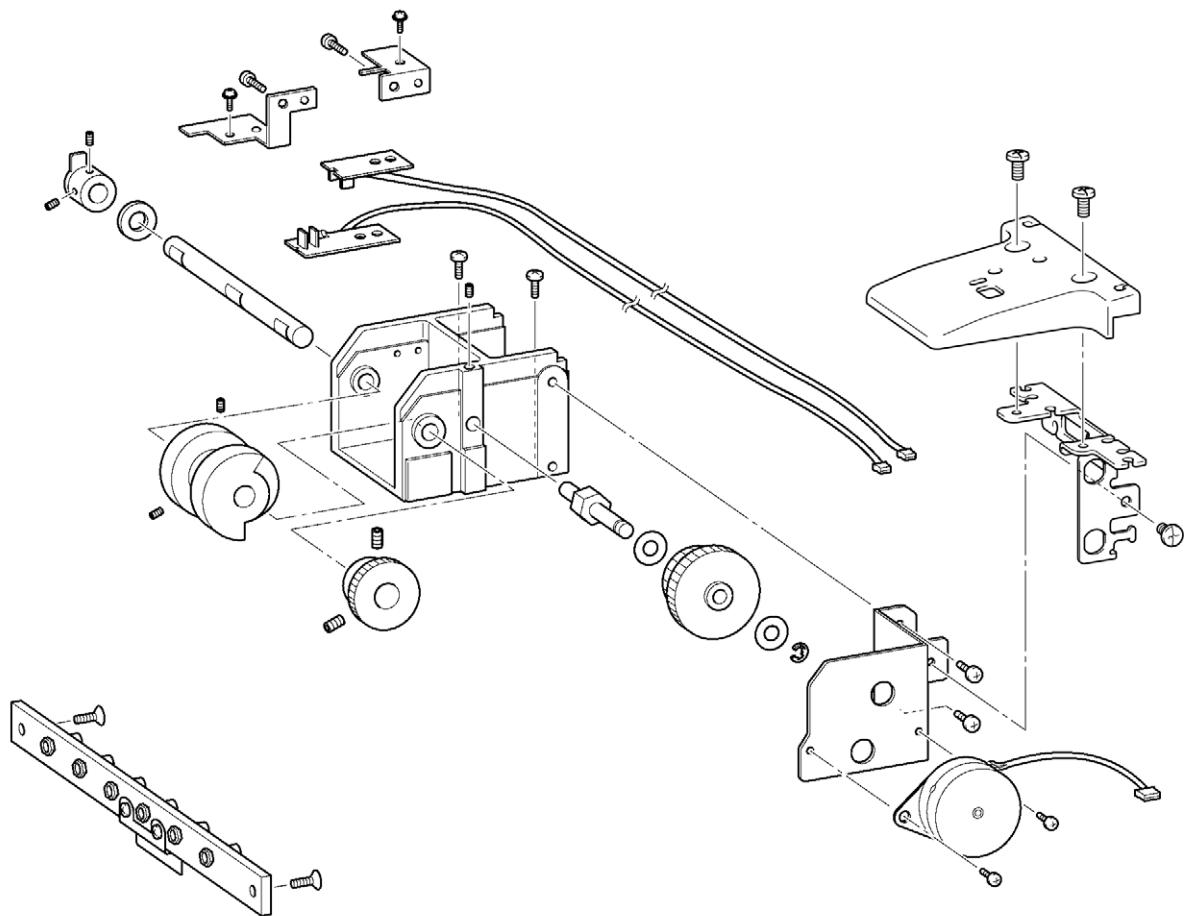
7 LED unit left assy removal

- 1.
- 2.
- 2.
- *
-
- 2
- ,
- 3.

| | | | | |
|----------|--|--|------------------|------------------------|
| 1 | | | Screw, Bind M4X8 | Torque 0.78 – 1.18 N·m |
|----------|--|--|------------------|------------------------|



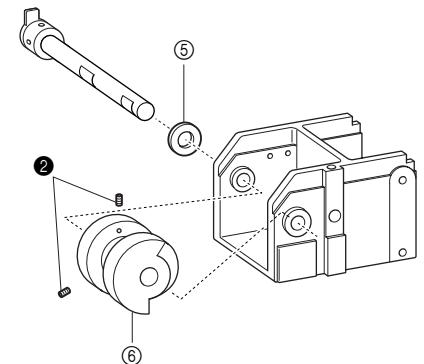
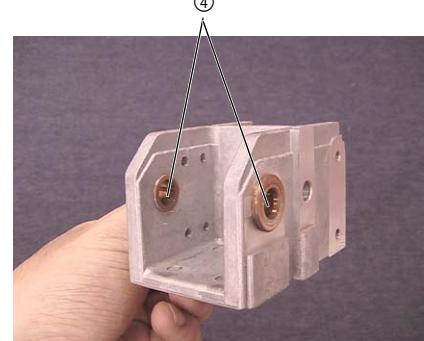
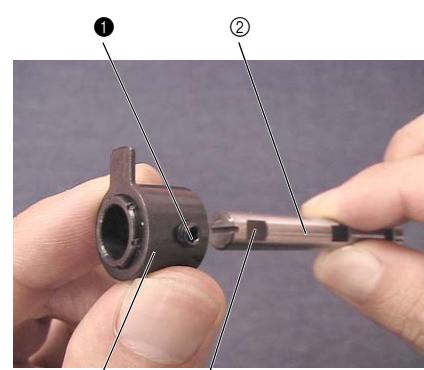
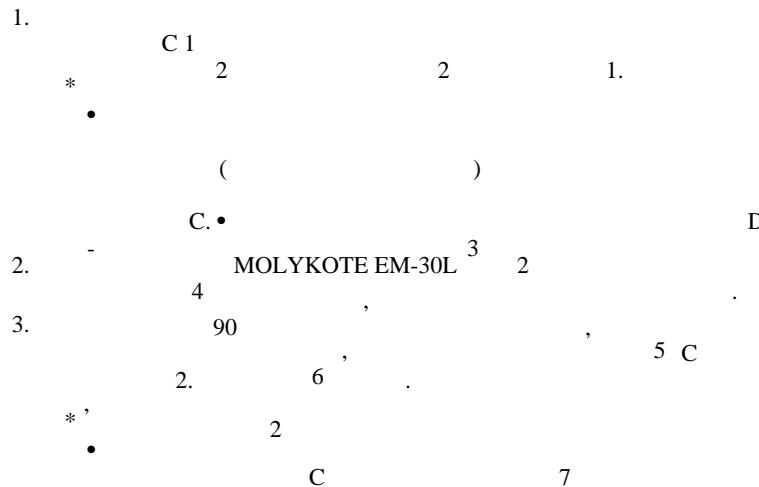
Main unit



Main unit

Needle bar change unit

1 Change box assembly (Step 1)



| | | | | |
|---|--|--|-------------------------------|---------------------------|
| ① | | | Set Screw Socket (CP)
M4X4 | Torque
0.78 – 1.18 N·m |
| ② | | | Set Screw Socket (CP)
M5X6 | Torque
1.18 – 1.57 N·m |



Main unit

Needle bar change unit

2 Change box assembly (Step 2)

1.

*

•

1.

1

.2.

D-

.3.

C 3

2,

E4. 4.

*

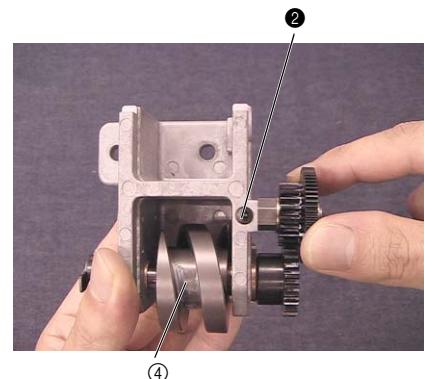
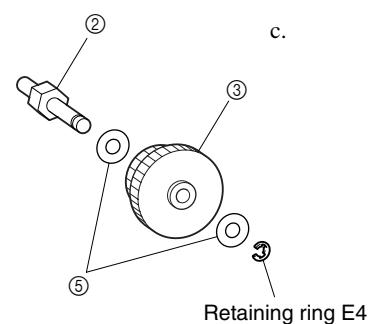
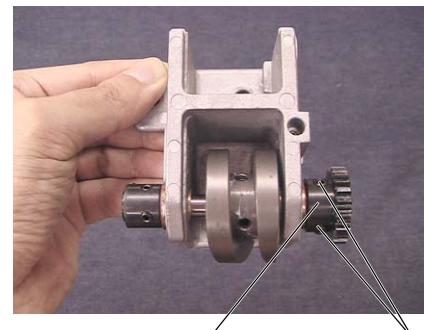
•

(M6) 5,
(M6) 5

, MOLYKOTE EM-30L C.

4

| | |
|---|----------------|
| Apply MOLYKOTE EM-30L to the groove on the
change cam. | Size of a bean |
|---|----------------|



| | | | |
|---|--|-------------------------------|---------------------------|
| ① | | Set Screw Socket (CP)
M5X6 | Torque
1.18 – 1.57 N·m |
| ② | | Set Screw Socket (FT)
M4X4 | Torque
0.78 – 1.18 N·m |

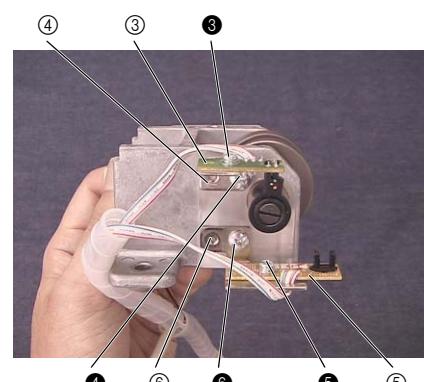
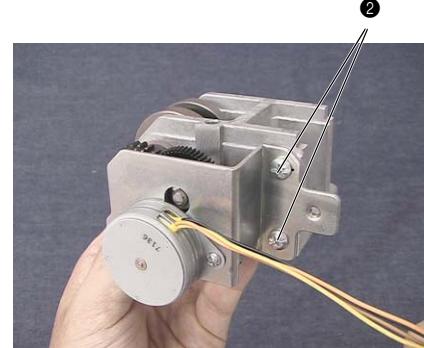
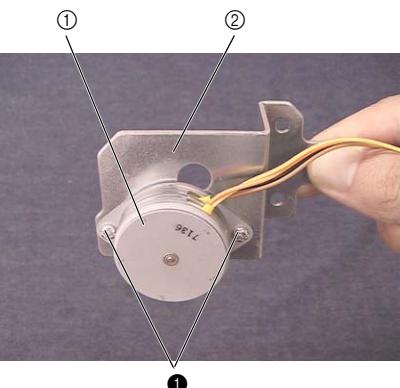
Main unit

Needle bar change unit

3 Change box assembly (Step 3)

- 1.
- 1
2
2.
•
1. 2.
- ,
3. MOLYKOTE EM-30L C.
4.
3
5. C
6. 4.
5
7. C 6
C
8. 5.
6.

| | |
|--|-----------------------|
| Apply MOLYKOTE EM-30L to the index motor gear and the C differential gear. | Size of grain of rice |
|--|-----------------------|

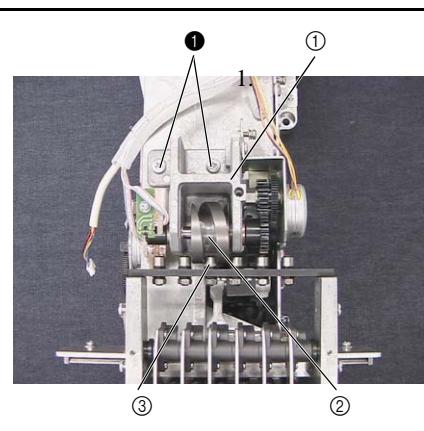


| | | | |
|----------------------------------|--|--------------------------|------------------------|
| 1 | | Screw, Pan M3X4 | Torque 0.78 – 1.18 N·m |
| 2
4
6 | | Screw, Bind M4X8 | Torque 1.18 – 1.57 N·m |
| 3
5 | | Screw Pan(SPwasher) M3X6 | Torque 0.59 – 0.78 N·m |

4 Change box assembly attachment

- 1.
- *
-
- 2
3.
•
- 1.
- 4 – 25 «
(/)».

| | | | |
|----------|--|-----------------------|-------------------|
| 1 | | BOLT (SPWasher) M5X16 | Torque Hand start |
|----------|--|-----------------------|-------------------|



Main unit

Needle bar change unit

5 Change box center cover attachment

1.

1

1. 2.

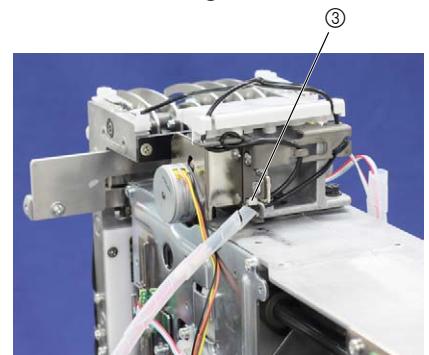
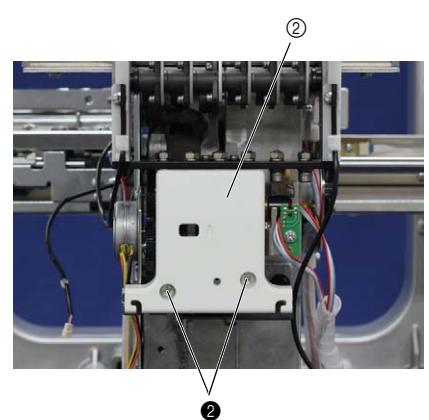
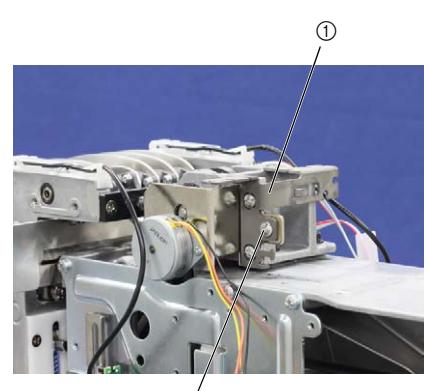
2

2

2. 3.

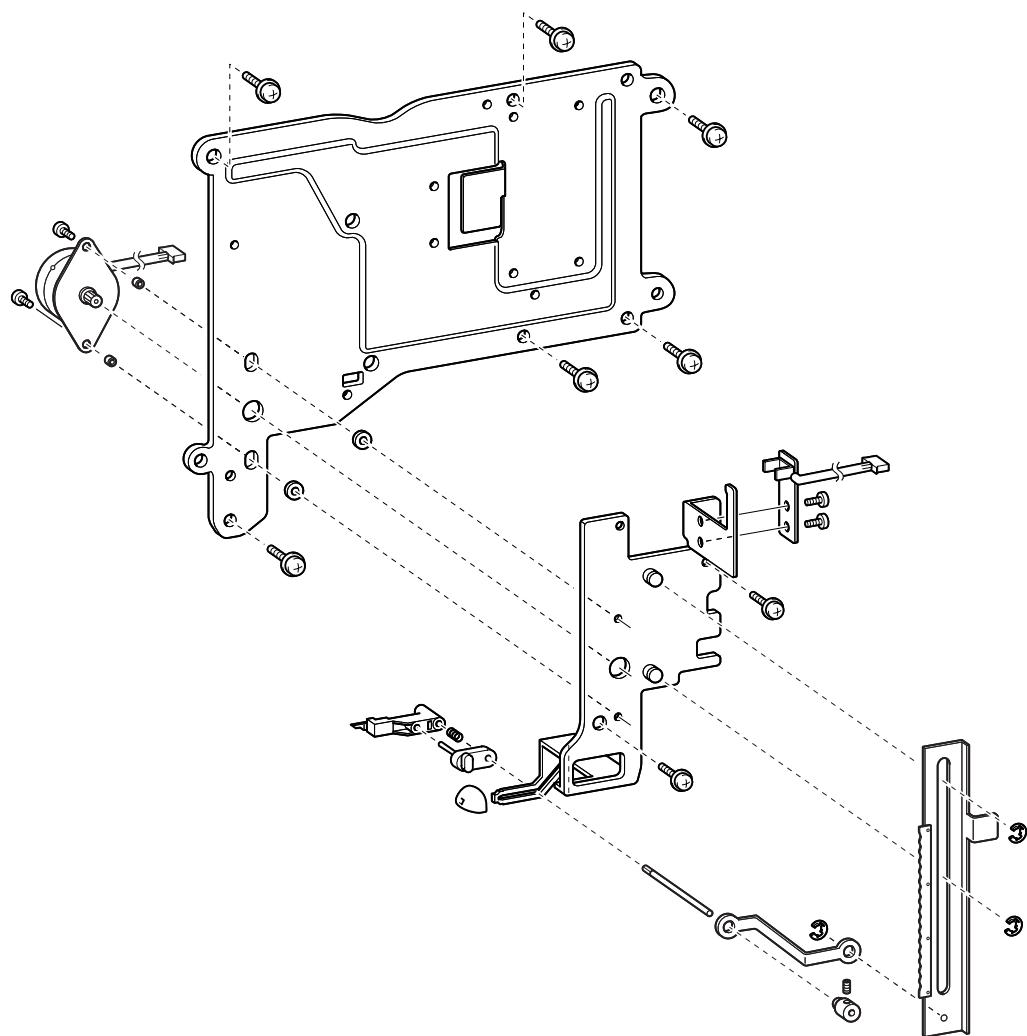
1

3. 4.



| | | | |
|---|--|------------------|---------------------------|
| 1 | | Screw, Bind M4X8 | Torque
1.18 – 1.57 N·m |
| 2 | | Screw, Bind M4X8 | Torque
0.78 – 1.18 N·m |

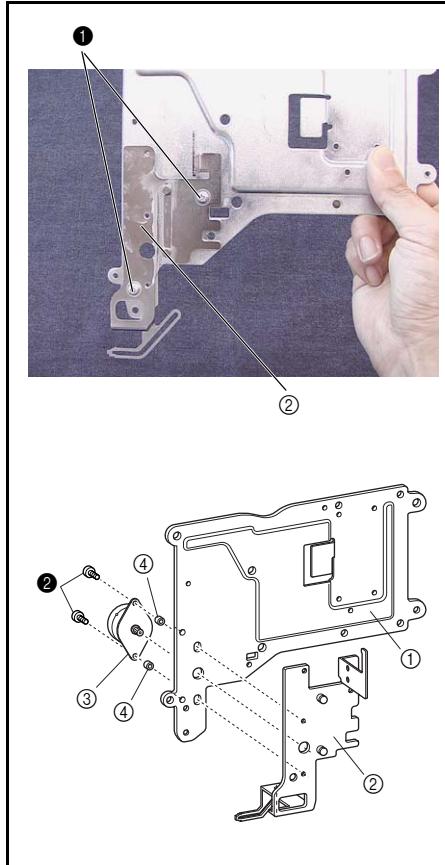
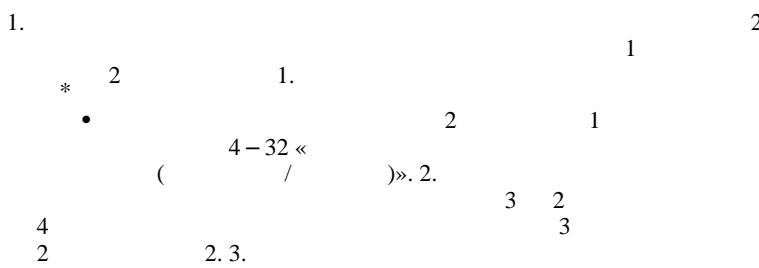
Main unit



Main unit

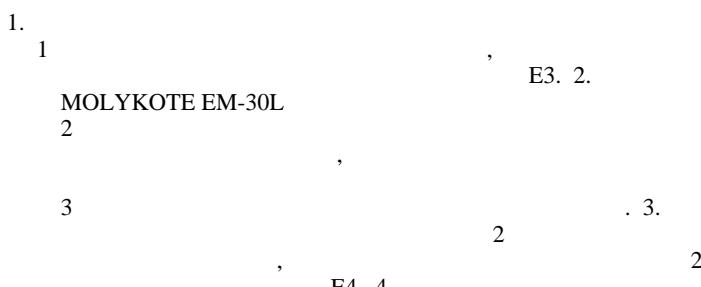
Needle thread unit

1 Thread motor assembly attachment



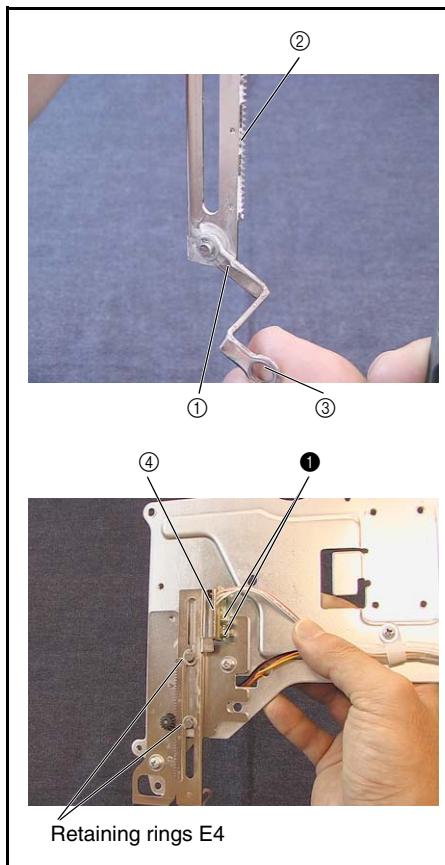
| | | | |
|----------|--|--------------------------|------------------------|
| 1 | | Screw Pan(SPwasher) M4X8 | Torque Hand start |
| 2 | | Screw, Pan M3X6 | Torque 0.78 – 1.18 N·m |

2 Rack assembly and hook holder link attachment



| | |
|---|-------------------------|
| Apply MOLYKOTE EM-30L to the gear face and the connecting face on the rack assembly, and the hook holder shaft attachment hole on the hook holder link. | Size of a grain of rice |
|---|-------------------------|

| | | | |
|----------|--|--------------------------|------------------------|
| 1 | | Screw Pan(SPwasher) M3X6 | Torque 0.59 – 0.78 N·m |
|----------|--|--------------------------|------------------------|



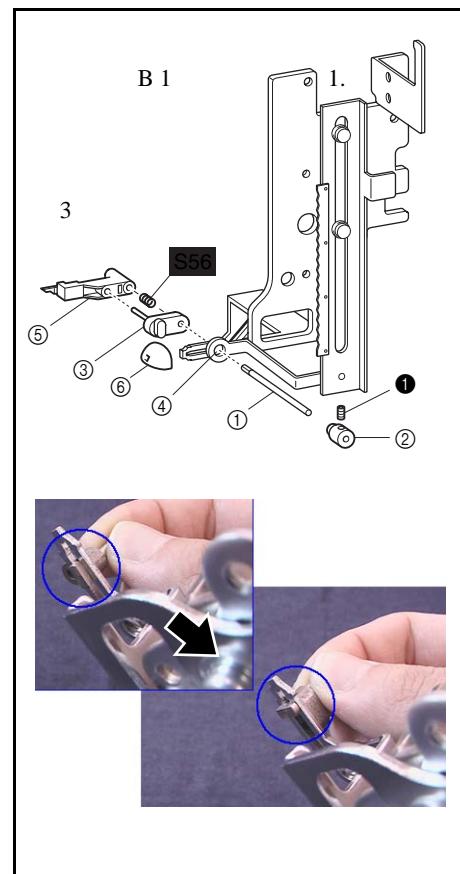
Main unit

Needle thread unit

3 Hook assembly

- 1.
 - 2.
 3. B
 - 4.
 - 5
 - 6 B
- 2
*
1.
4 - 33 « (/) ».
90
B
■ ,
,

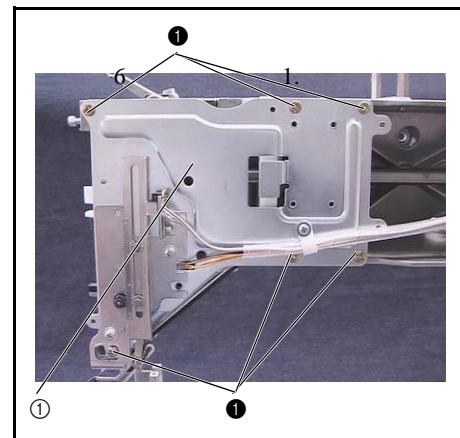
| | | | | |
|----------|---|---|-------------------------------|-------------------------------|
| 1 | ◎ | Ⓐ | Set Screw Socket (CP)
M3X3 | Torque
Hand start |
| | | | 5.5
∅3.5 | HOOKHOLDERSPRING
XC7375*** |



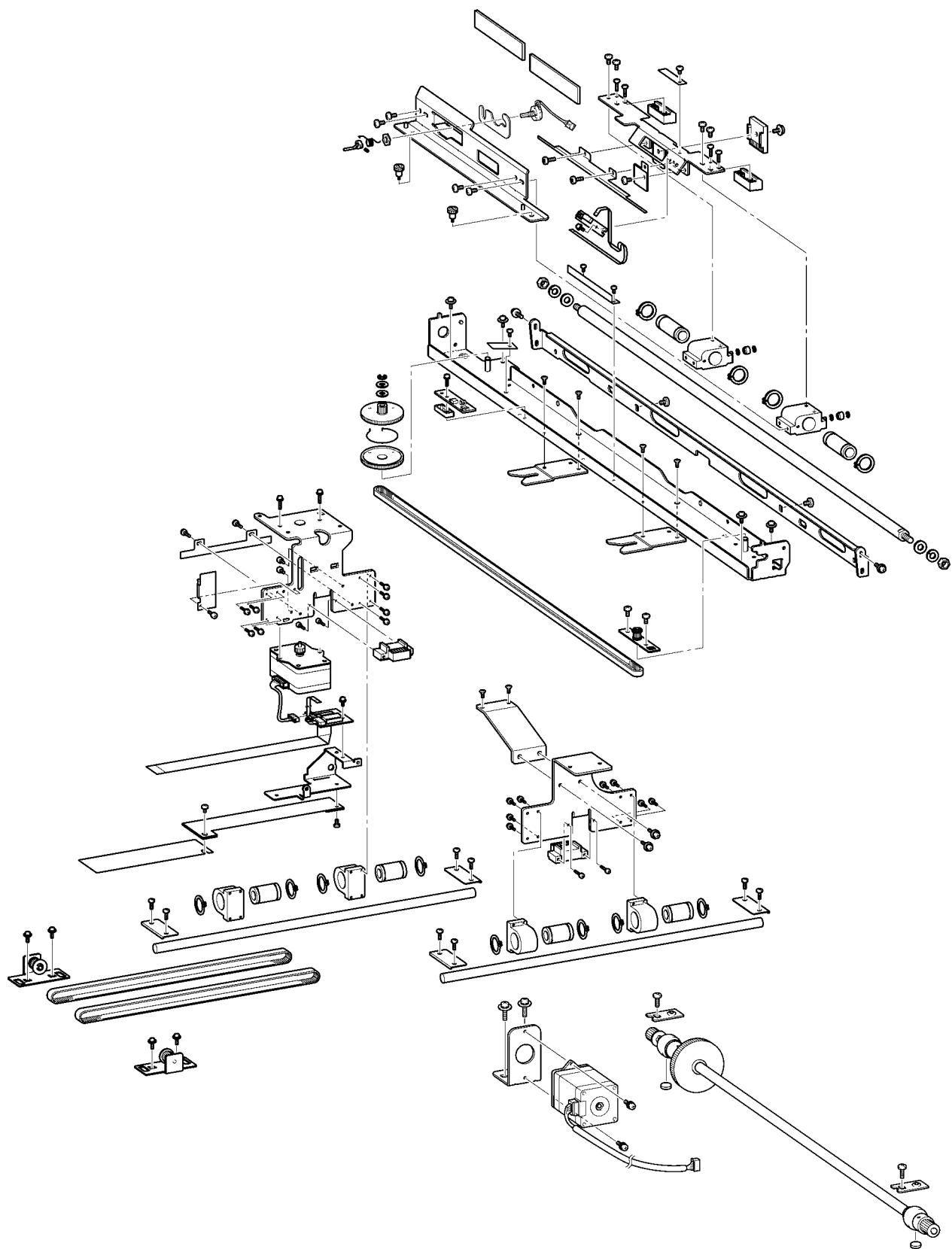
4 Needle thread assembly attachment

- 1.
- 1

| | | | | |
|----------|---|---|--------------------------|---------------------------|
| 1 | ⊕ | Ⓐ | Taptite, Bind S
M4X10 | Torque
1.47 – 1.96 N·m |
|----------|---|---|--------------------------|---------------------------|



Main unit

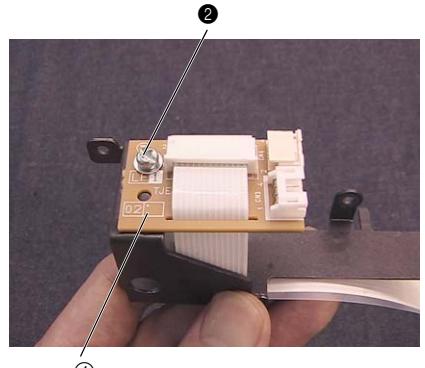
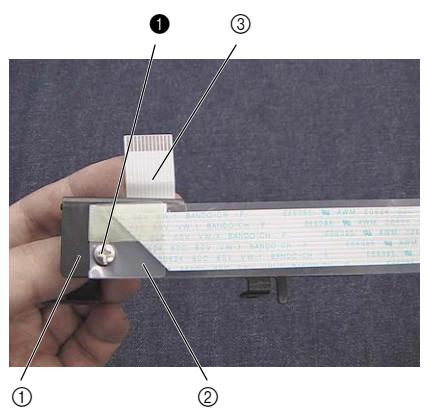
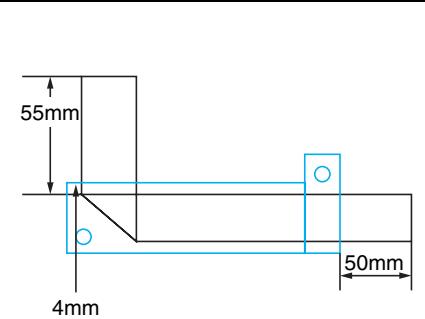


Main unit

Feed unit

1 Connect PCB final assembly

1. FFC (SML2CD-Y) 90
55
2. FFC (SML2CD-Y) 3
1
1. 3.
- 4
2. 4.
- FFC (,
SML2CD-Y)

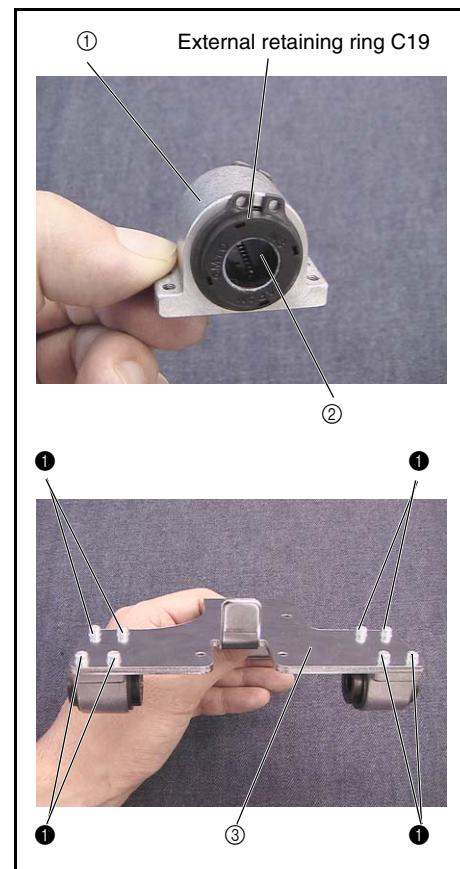


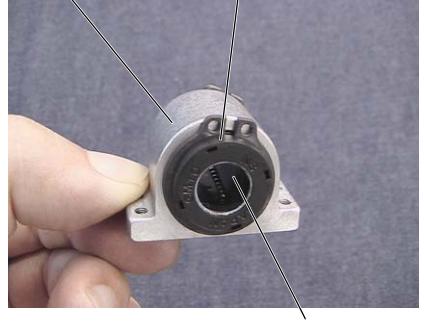
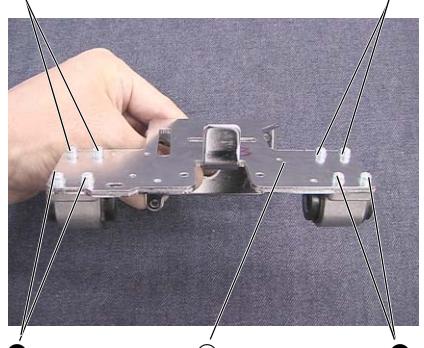
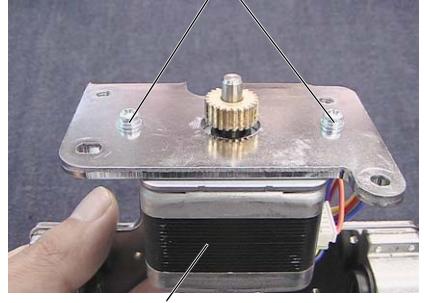
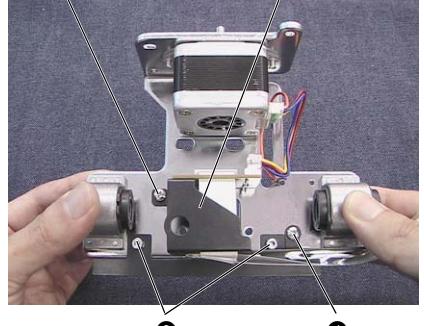
| | | | |
|----------|--|-----------------------------|---------------------------|
| 1 | | Screw, Bind
M3X4 | Torque
0.59 – 0.78 N·m |
| 2 | | Screw Pan(SP)washer
M3X6 | Torque
0.59 – 0.78 N·m |

2 Y-carriage R assembly

1. Attach the linear bearing 10 ② to bearing case Y ①, and then attach the 2 external retaining rings C19.
2. Attach the 2 bearing case Y assemblies to Y-carriage R ③ with the 8 screws ①.

| | | | |
|---|---|--------------------------------|---------------------------|
| ① |  | Screw Pan (SP) washer
M3X10 | Torque
0.78 – 1.18 N·m |
|---|---|--------------------------------|---------------------------|

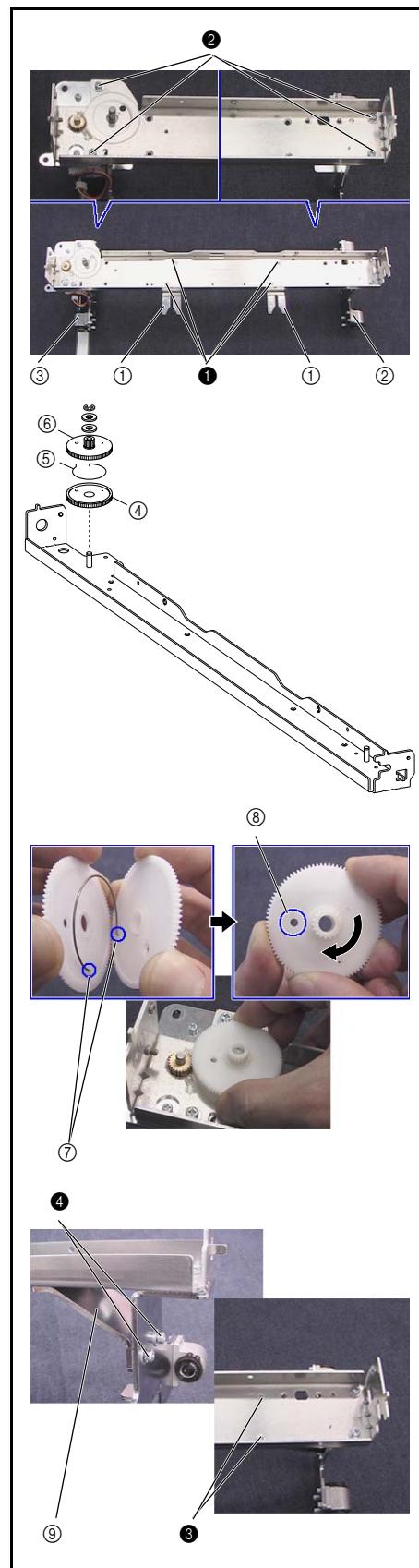
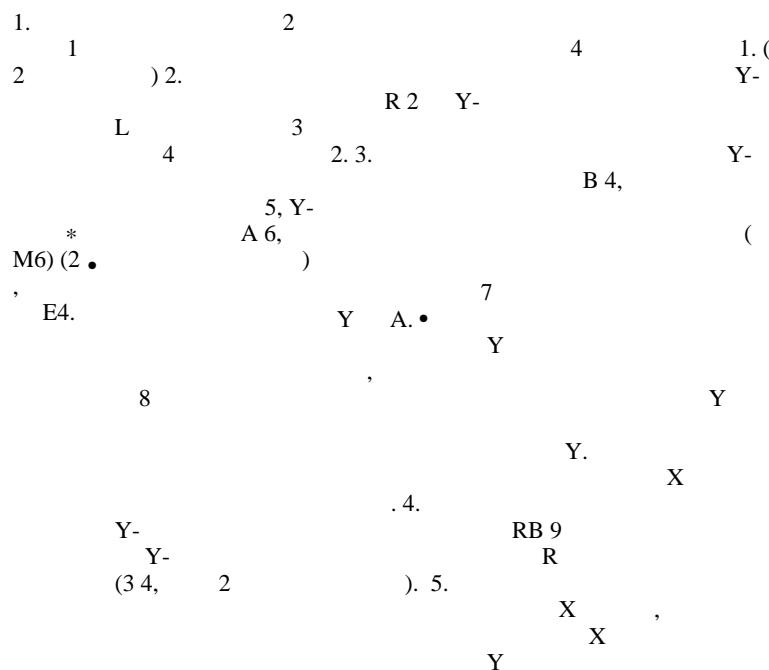


| Main unit | Feed unit | | | | | | | | | | | | |
|---|--|---|--------------------------------|---------------------------|---|---|----------------------|---------------------------|---|---|---------------------|---------------------------|--|
| 3 Y-carriage L assembly | | | | | | | | | | | | | |
| 1. | Y 1,
C19 | | | | | | | | | | | | |
| 2.
. (2
8
X 4
•)
2
5
2 | Y
1. 3.
Y 2
Y
4.
L | | | | | | | | | | | | |
| 2.
Y 3
2. 4.
(
3.
. 5. | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | |
| <table border="1"> <tbody> <tr> <td>1</td><td></td><td>Screw Pan (SP washer)
M3X10</td><td>Torque
0.78 – 1.18 N·m</td></tr> <tr> <td>2</td><td></td><td>Bolt, Socket
M3X5</td><td>Torque
0.59 – 0.78 N·m</td></tr> <tr> <td>3</td><td></td><td>Screw, Bind
M3X4</td><td>Torque
0.59 – 0.78 N·m</td></tr> </tbody> </table> | 1 |  | Screw Pan (SP washer)
M3X10 | Torque
0.78 – 1.18 N·m | 2 |  | Bolt, Socket
M3X5 | Torque
0.59 – 0.78 N·m | 3 |  | Screw, Bind
M3X4 | Torque
0.59 – 0.78 N·m | |
| 1 |  | Screw Pan (SP washer)
M3X10 | Torque
0.78 – 1.18 N·m | | | | | | | | | | |
| 2 |  | Bolt, Socket
M3X5 | Torque
0.59 – 0.78 N·m | | | | | | | | | | |
| 3 |  | Screw, Bind
M3X4 | Torque
0.59 – 0.78 N·m | | | | | | | | | | |

Main unit

Feed unit

4 Feed frame assembly attachment



| | | | |
|----------|--|----------------------------|------------------------|
| 1 | | Screw, Flat M3X6 | Torque 0.78 – 1.18 N·m |
| 2 | | Screw Pan (SP) washer M4X8 | Torque 1.18 – 1.57 N·m |

5 T-belt (X-drive) attachment

1. T-

B60S796 3
Y

1.
1. 2,

*

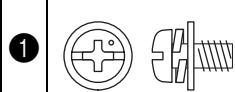
•

1.

4 – 36 «

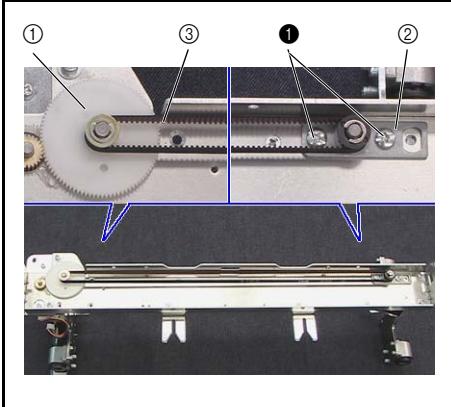
2

».



Screw Pan(SPwasher)
M4X8

Torque
Hand start



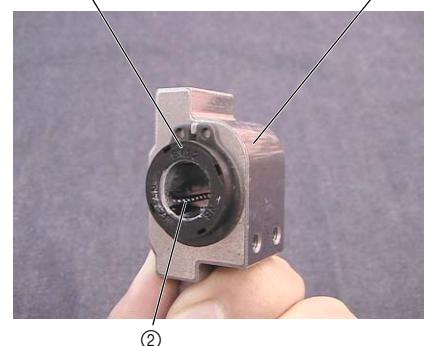
Main unit

Feed unit

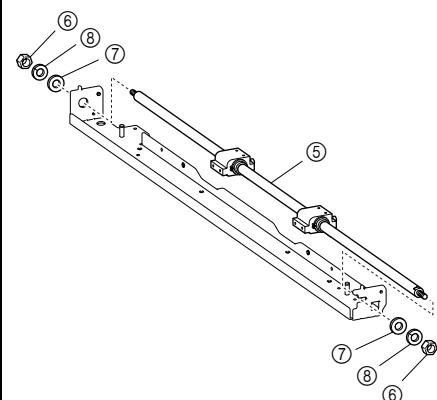
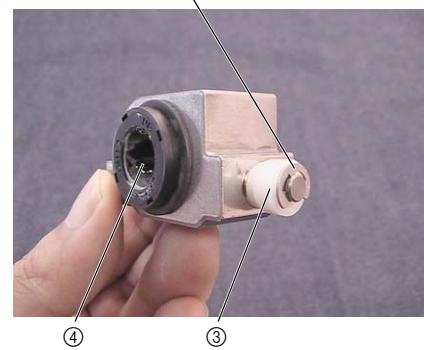
6 X-guide shaft attachment

1. (12) 2
X 1,
C21
 2. (2)
X-
3
E4. (2)
 3. (2)
X-
X-
MOLYKOTE EM-30L
 4. (2)
X-
X-
7 2
X-
(
• (2, M6) 6, 2
(2-6) 8
- Apply MOLYKOTE EM-30L to the shaft hole on the bearing case
- | | |
|-----------------|-----------------------------------|
| Size of a bean | R0. |
| 4.41 - 4.90 N·m | Tightening torque of nut (2, M6): |

External retaining rings C21 ①



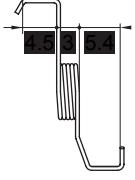
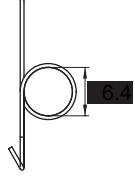
Retaining ring E4

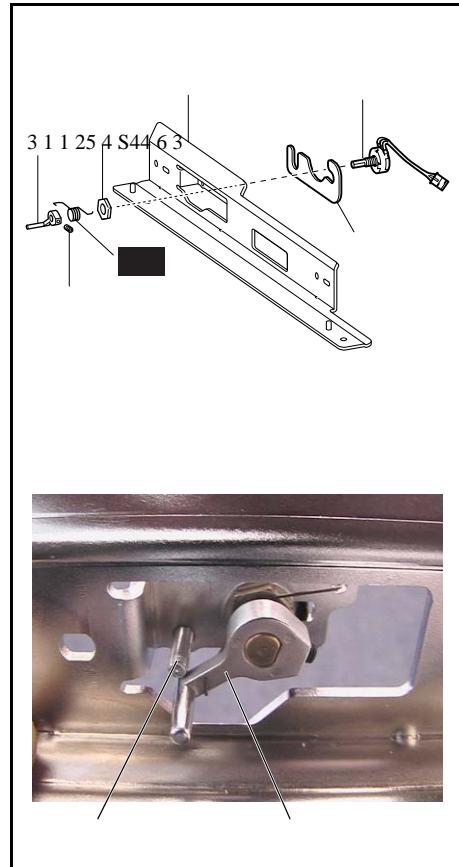


7 Hoop sensor attachment

1. X- 4,
■ PT 544
1. 2.
1. 3.
2. 2. 4.
3. *
4. 1,
5. ,
6. 1. •

Tightening torque of nut: 0.78 - 0.98 N·m

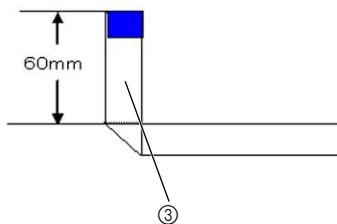
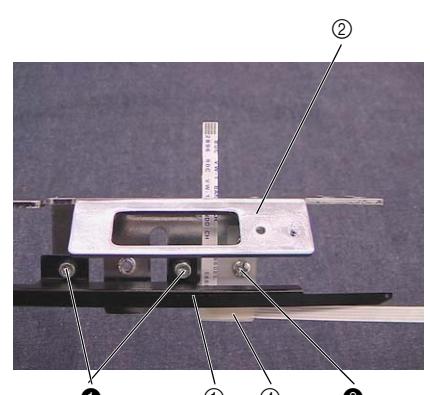
| | | | |
|---|--|--|---------------------------|
| 1 | ◎ | Set Screw Socket (F1)
M3X6 | Torque
0.59 – 0.78 N·m |
| |  |  | SPRING
XC5802*** |



| | |
|-----------|-----------|
| Main unit | Feed unit |
|-----------|-----------|

8 X-sensor dog attachment

1. X 2 2 X 1.
 • FFC (SML2CD-X) 3 90 . 2.
 60 . 3.
 FFC (SML2CD-X) 4 X B
 2.



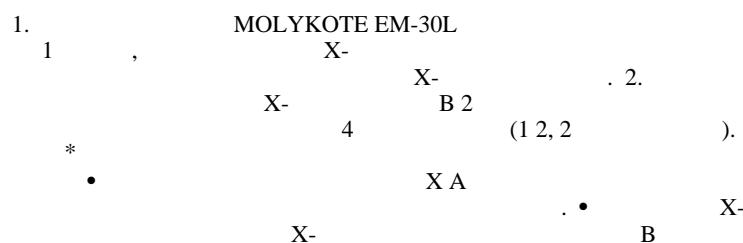
| | | | |
|----------|---|----------------------|---------------------------|
| 1 |   | Bolt, Socket
M3x5 | Torque
0.59 – 0.78 N·m |
| 2 |   | Screw, Bind
M3x4 | Torque
0.59 – 0.78 N·m |

| Main unit | Feed unit |
|---|---------------------------|
| 9 X-carriage A assembly and X-carriage B assembly attachment | |
| 1. | X B 1 2 |
| 1. 2. | X 2, |
| 3 | X |
| 2. 3. | X B |
| X) * | FFC (SML2CD-X) 4 |
| C, | 3, |
| 4. | FFC (SML2CD-X) |
| (2) | 4 |
| 8 | 5 |
| , | 4. 5. |
| 7 | 3. 6. |
| . | 6 |
| | |
| ① | |
| ② | |
| ③ | |
| ④ | Screw, Bind M4X6 |
| ⑤ | Screw Pan (SPWasher) M3X8 |
| ⑥ | Screw, Bind M3X4 |
| ⑦ | Torque
1.18 – 1.57 N·m |
| ⑧ | Torque
0.59 – 0.79 N·m |
| ⑨ | Torque
0.59 – 0.78 N·m |
| | |

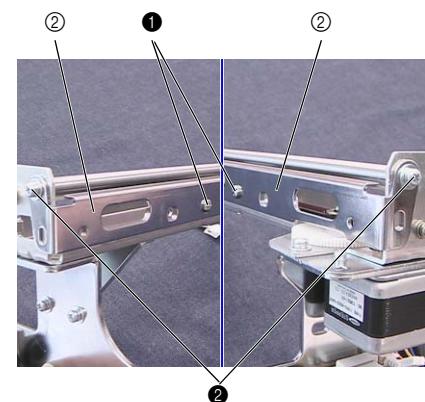
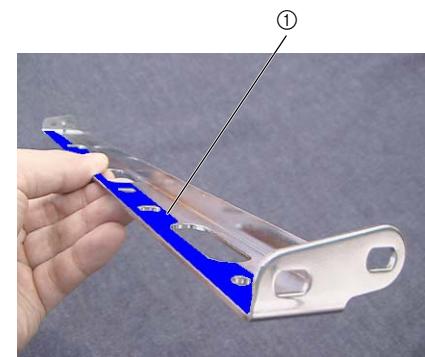
Main unit

Feed unit

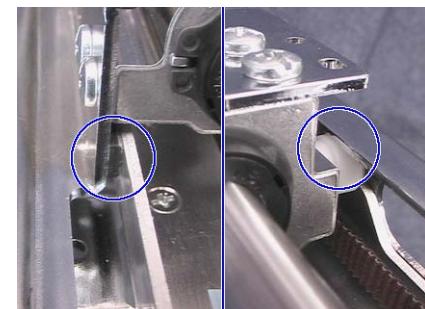
10 X-feed frame B attachment

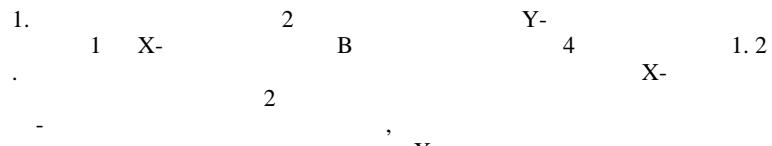


| | |
|--|----------------|
| Apply MOLYKOTE EM-30L to the surface where the X-feed frame contacts the X-roller. | Size of a bean |
|--|----------------|

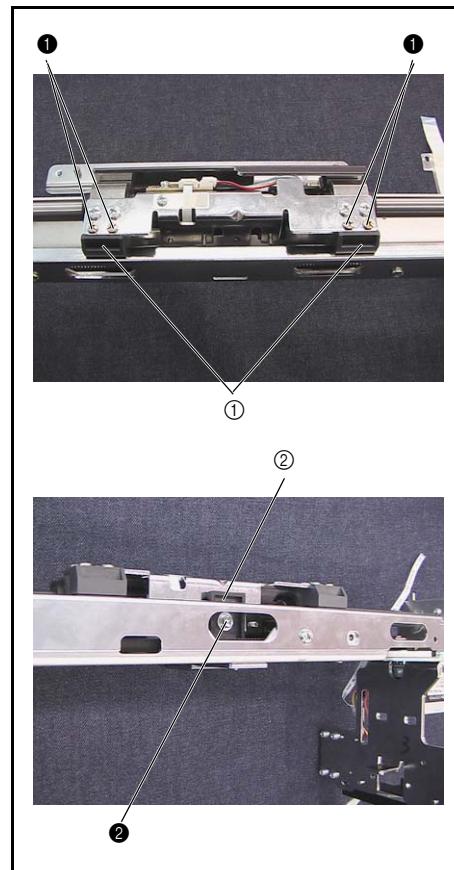


| | | | |
|---|--|-----------------------------|---------------------------|
| ① | | Screw, Bind
M4X6 | Torque
1.18 – 1.57 N·m |
| ② | | Screw Pan(SP)washer
M4X8 | Torque
1.18 – 1.57 N·m |

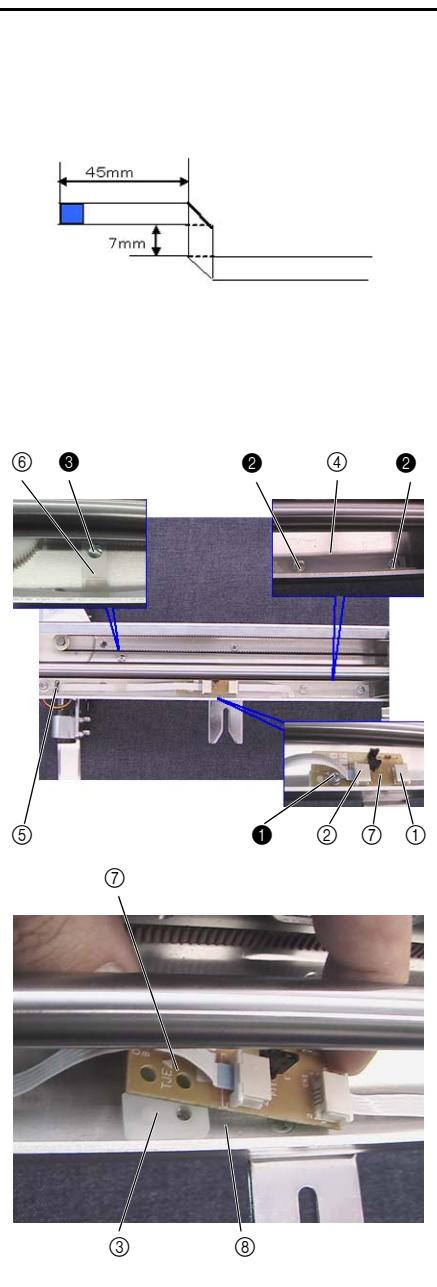
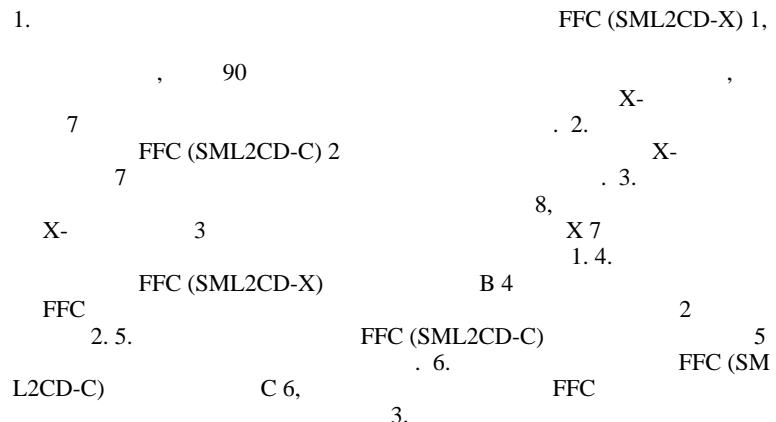


11 Y-frame spacer and X-belt presser attachment

| | | | |
|---|--|-----------------------------|---------------------------|
| 1 | | Taptite, Bind B
M3X10 | Torque
0.39 – 0.78 N·m |
| 2 | | Screw Pan(S) washer
M4X8 | Torque
0.78 – 1.18 N·m |



12 FFC and X-area sensor assembly attachment



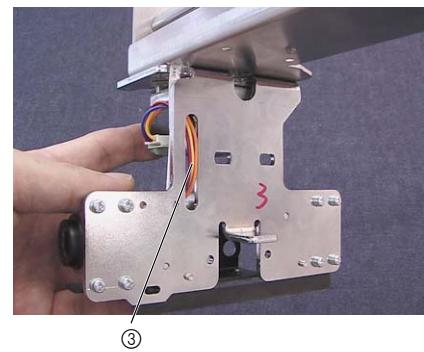
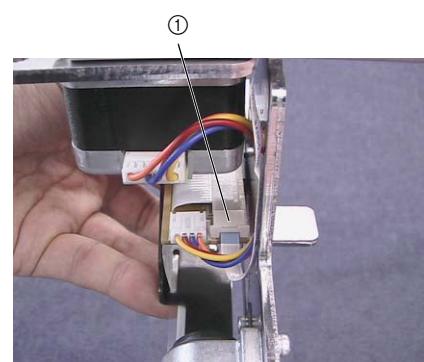
| | | | |
|--------|--|--------------------------------|---------------------------|
| ① | | Screw Pan (SP washer)
M3X10 | Torque
0.59 – 0.78 N·m |
| ②
③ | | Screw, Bind
M3X4 | Torque
0.59 – 0.78 N·m |

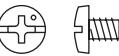
Main unit

Feed unit

13 Cord grip attachment

1. FFC (SML2CD-C) 1
2. X-
3. X FFC (SML2CD-C)
2,
* 1.
X 3 Y- L.

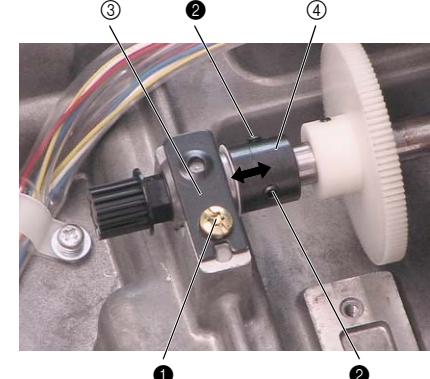
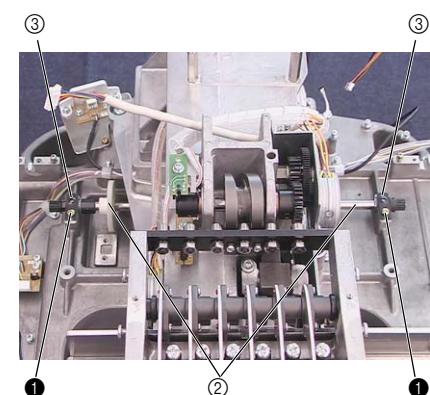
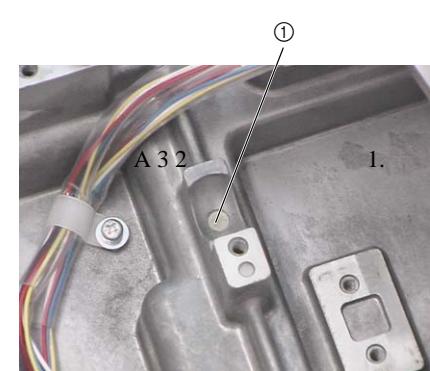


| | | | |
|---|---|---------------------|---------------------------|
| 1 |  | Screw, Bind
M3x4 | Torque
0.59 – 0.78 N·m |
|---|---|---------------------|---------------------------|

14 Y driving shaft assembly attachment

1. FBK OIL RO100 2 1. 2.
 1 . (2) 3
 4 2 2 .
 5. /), ,
 2. 6.

| | | | |
|---|--|---|----------------------------------|
| 2 | Apply FBK OIL RO100 to the felts. | Y | Soak the felts in FBK OIL RO100. |
| | Apply oiler to the Y driving shaft's metals. | | 1 to 2 drops |

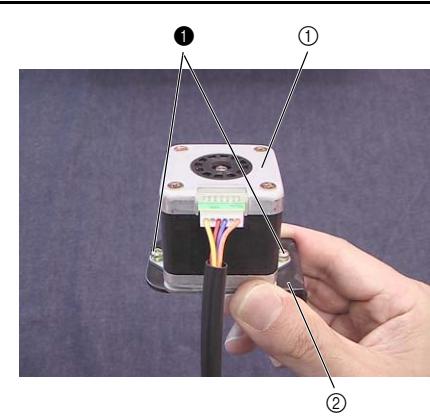


| | | | |
|---|--|----------------------------|------------------------|
| 1 | | Taptite, Bind S M4X10 | Torque 1.47 – 1.96 N·m |
| 2 | | Set Screw Socket (CP) M4X4 | Torque 0.78 – 1.18 N·m |

15 Y-motor final assembly

1. Y 1 2. 1. Y 2

| | | | |
|---|--|--------------------------|------------------------|
| 1 | | Screw Pan(SPwasher) M3X6 | Torque 0.59 – 0.78 N·m |
|---|--|--------------------------|------------------------|



16 Y motor final assembly attachment

1.

Y 1

2. *

Y
Y

2.

MOLYKOTE EM-30L

3.

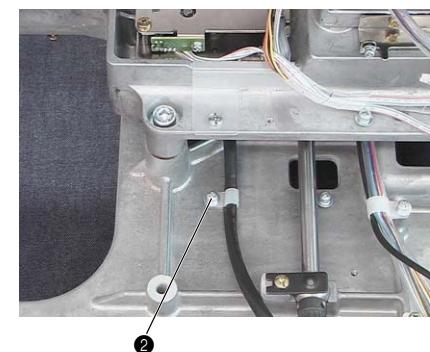
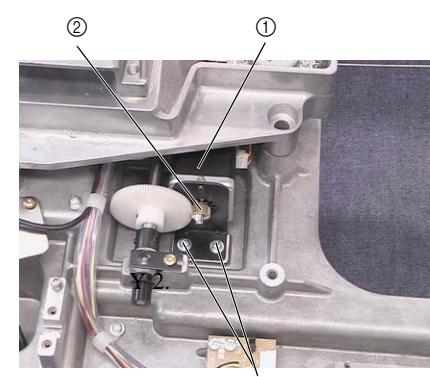
Y
Y

Y

NK-4N

| | |
|--|-------------------------|
| Apply MOLYKOTE EM-30L to the Y motor gear. | Size of a grain of rice |
|--|-------------------------|

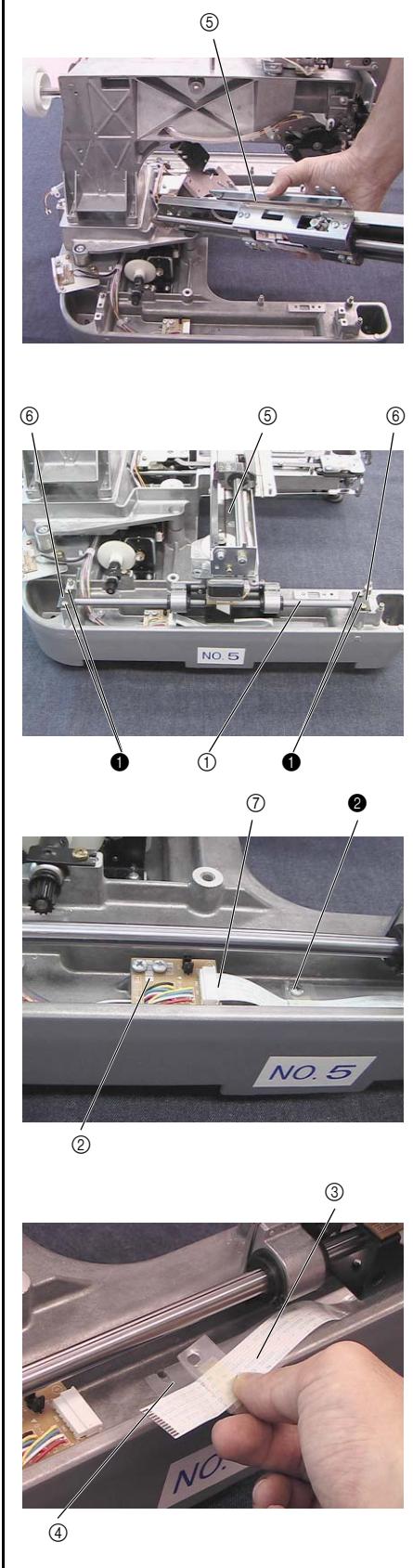
| | | | |
|---|---|--------------------------------|---------------------------|
| ① |   | Screw Pan (SP) washer
M4X10 | Torque
1.18 – 1.67 N·m |
| ② |   | Screw Pan (SP) washer
M4X8 | Torque
1.18 – 1.57 N·m |



| Main unit | Feed unit |
|-----------|-----------|
|-----------|-----------|

17 Feed final assembly attachment

1. 1 2 Y-
 5 . 2.
 . 4. Y-
 . 3. 1 (2.
 . 4. FFC (SML2CD-Y) 7,
 , . 5.
 2 3, FFC (SML2CD-Y) 7 B 4
 2.

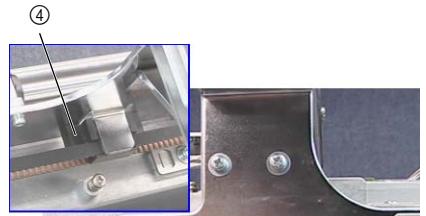
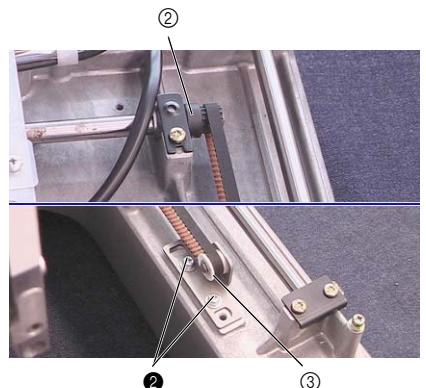
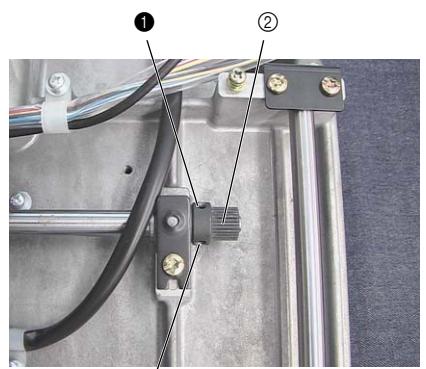
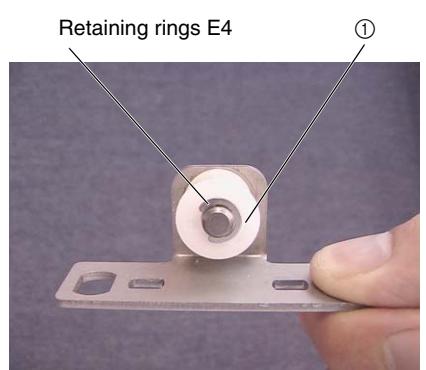


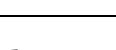
| | | | |
|---|--|--------------------------|---------------------------|
| ① | | Taptite, Bind S
M4X10 | Torque
1.47 – 1.96 N·m |
| ② | | Screw, Bind
M4X6 | Torque
1.18 – 1.57 N·m |

| | |
|-----------|-----------|
| Main unit | Feed unit |
|-----------|-----------|

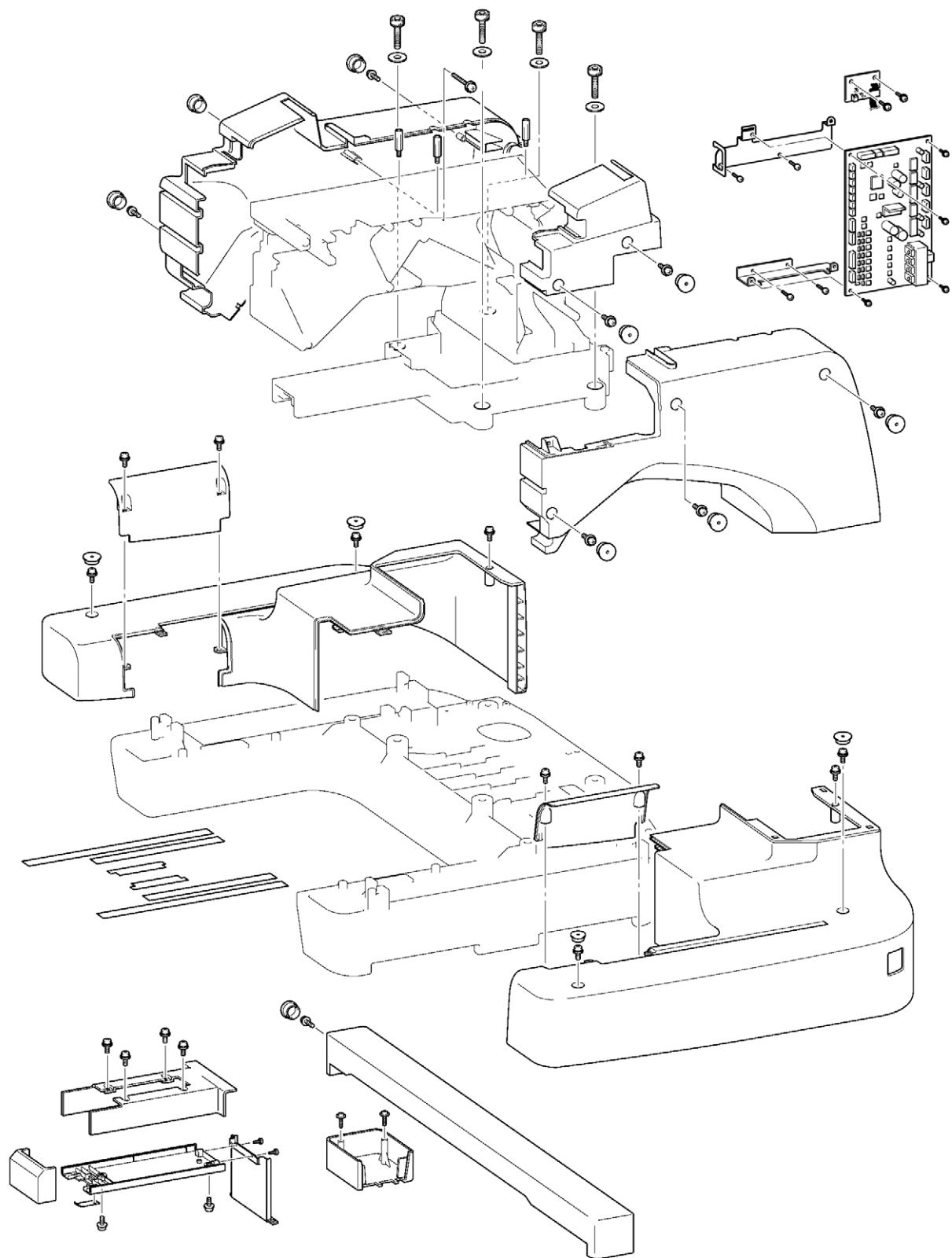
18 T-belt (Y-guide) attachment

| | | | |
|----|-----------------------------|-------------|-----------------------------|
| 1. | | 7 X 2 | Y 1 |
| | Y, | | |
| | E4. 2. | 2 | |
| | | 2 | 1, |
| | | Y 2. 3. | |
| | T- | B60S3M579 | |
| | Y | | |
| | 2 | Y, | |
| | 3 Y | | |
| | * | | Y |
| | • | | |
| | 2. | 2 | 2 (|
| | |). | |
| 4. | Y- | 4 - 35 « | Y |
| | | 4 | ». |
| | - | | |
| | | Y-, | |
| | | | |
| | Tightening torque of screw: | Y-
3. 5. | 0.78 - 1.18 N-m
<u>2</u> |
| | , | | |
| | Y. | | |



| | | | |
|----------|---|--------------------------------|---------------------------|
| 1 |   | Set Screw Socket (CP)
M3X3 | Torque
0.78 – 1.18 N·m |
| 2 |   | Screw Pan (SP washer)
M4X10 | Torque
Hand start |
| 3 |   | Taptite, Bind P
M3X14 | Torque
0.59 – 0.78 N·m |

Main unit



Main unit

Main unit

1 Cutter unit final assembly and picker final assembly attachment

1.

2 1
1. 2.

2 2
2. *

,

,

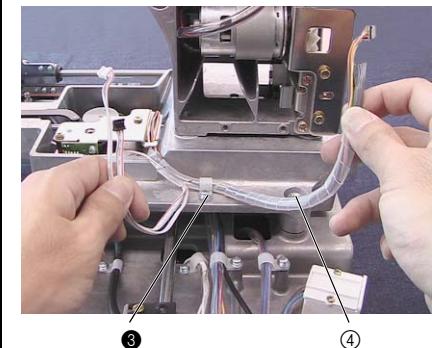
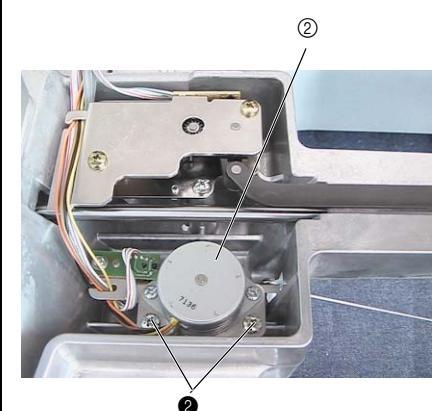
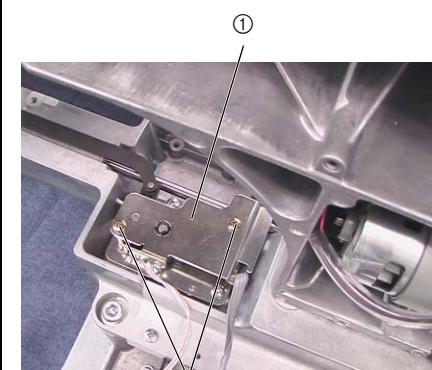
3,

. 3.

D 4,

3

-5 .



| | | | |
|---|--|-----------------------------|------------------------|
| 1 | | Screw, Bind M4X6 | Torque 1.18 – 1.57 N·m |
| 2 | | Screw Pan (SP) washer M4X10 | Torque 0.78 – 1.18 N·m |



2 Rotary hook attachment

1.

*

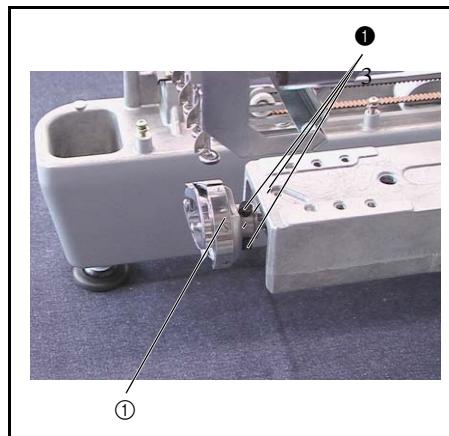
.

1.

4 – 27 «

».

| | | | |
|----------|--|------------------------|----------------------|
| 1 | | Hook set screw
4.46 | Torque
Hand start |
|----------|--|------------------------|----------------------|



1.

3 Picker bracket final assembly

1.

MOLYKOTE EM-30L

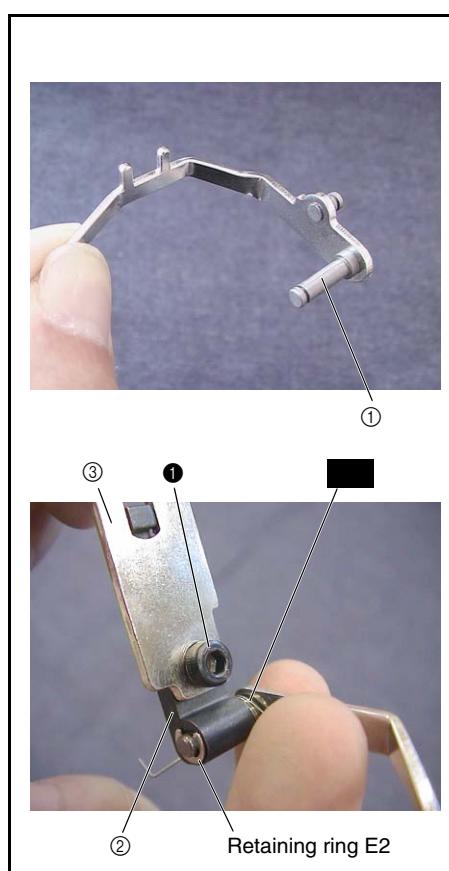
2.

, 3,
E2.

1.
. 3. 2

| | |
|---|-------------------------|
| Apply MOLYKOTE EM-30L to the picker assembly's shaft. | Size of a grain of rice |
|---|-------------------------|

| | | |
|----------|--|---|
| | | PICKER SPRING
XC5853*** |
| 1 | | Bolt, Socket
M3X5 Torque
0.59 – 0.78 N·m |



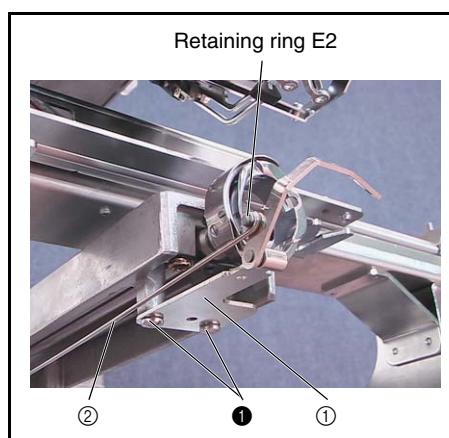
4 Picker bracket final assembly attachment

1.

2 1
2 1. 2.
,

E2.

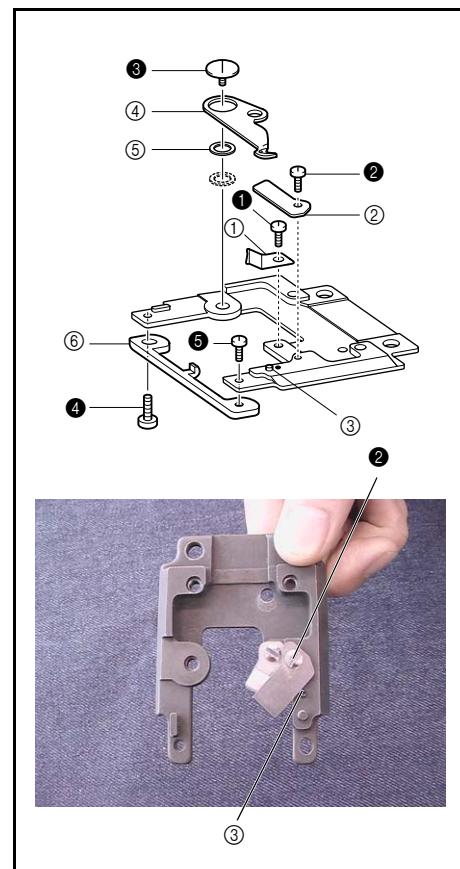
| | | | |
|----------|--|---------------------|---------------------------|
| 1 | | Screw, Bind
M4X6 | Torque
1.18 – 1.57 N·m |
|----------|--|---------------------|---------------------------|



5 Needle plate base assembly

- 43 «
 » . 1. , 1
 *
 2.
 2,
 3
 3.
 4.
 5.
 6
 (4 5).
 4 – 29 «
 ».

| | | | |
|----------|--|-------------------|---------------------------|
| 1 | | Screw | Torque
0.78 – 1.18 N·m |
| 3 | | Screw M4 | Torque
0.78 – 1.18 N·m |
| 4 | | Bolt, Socket M3X6 | Torque
Hand start |

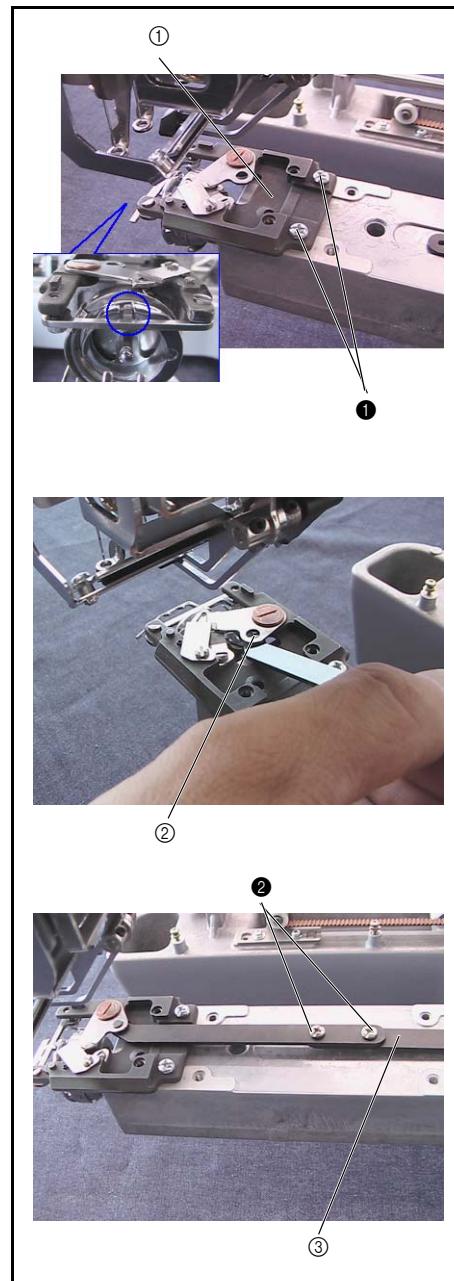


Main unit

Main unit

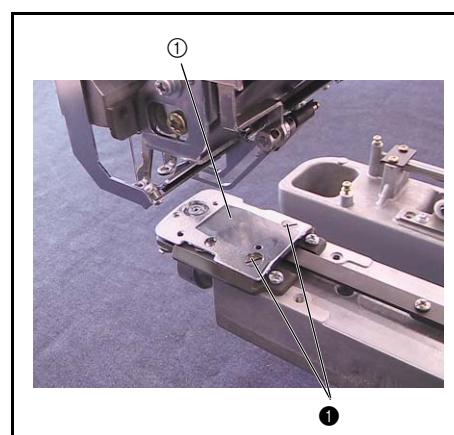
6 Needle plate base assembly attachment

| | | | |
|----------|---|---------------------|---------------------------|
| 1 |   | Screw, Pan
M4X8 | Torque
1.18 – 1.57 N·m |
| 2 |   | Screw, Bind
M3X4 | Torque
Hand start |



7 Needle plate attachment

| | | | |
|---|---|------------------|---------------------------|
| 1 |  | Screw Flat
M4 | Torque
0.78 – 1.18 N·m |
|---|---|------------------|---------------------------|



8 Tension base attachment

1.

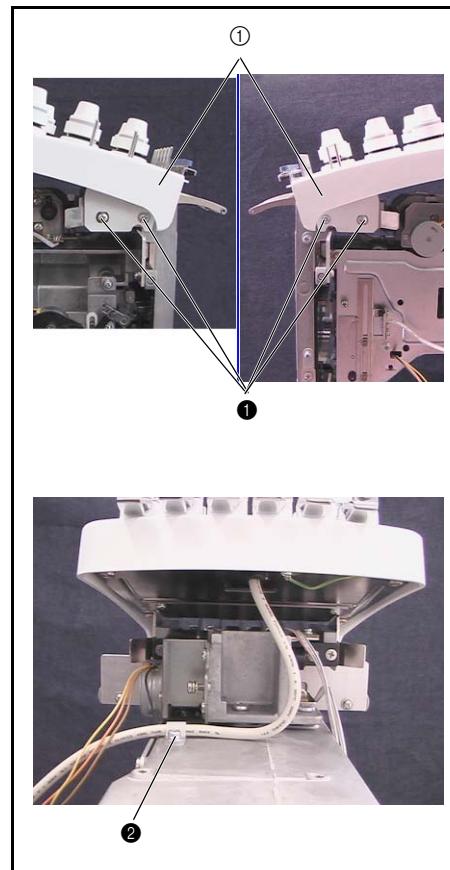
1

4
(-4 -)

1. 2.

125

2.

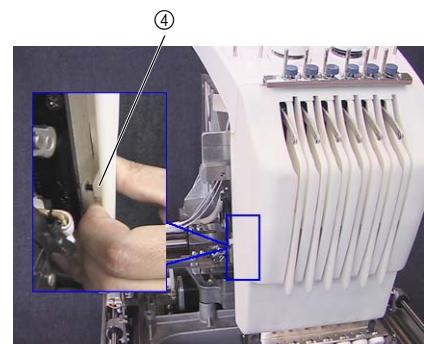
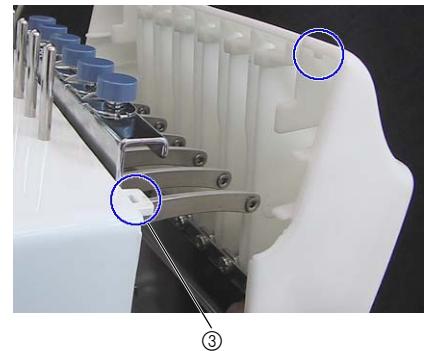
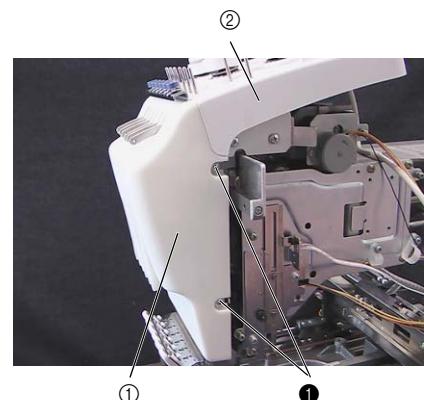


Main unit

Main unit

9 Thread take-up lever cover attachment

- 1.
- 2
- 2
- 1.
- 2
- 2
- ,
- 3
- 4
- .

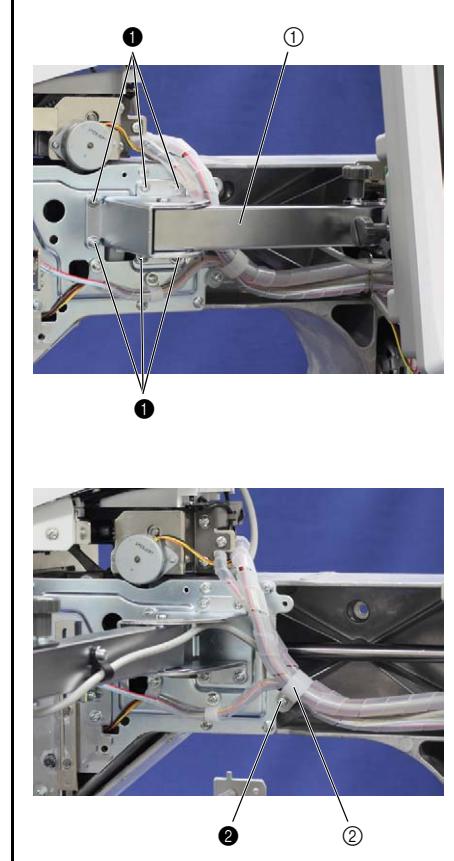


| | | | | |
|---|--|--|-----------------------|---------------------------|
| 1 | | | Screw Pan(SPan) M4X10 | Torque
1.18 – 1.57 N·m |
|---|--|--|-----------------------|---------------------------|

10 Operation panel assembly attachment

1. 1 6 1. 2.
2. 2.
- 2.
- 2.

| | | | |
|---|--|--------------------------------|---------------------------|
| 1 |  | Screw Pan (SP) washer
M4X8 | Torque
1.18 – 1.57 N·m |
| 2 |  | Screw Pan (SP) washer
M4X10 | Torque
0.78 – 1.18 N·m |

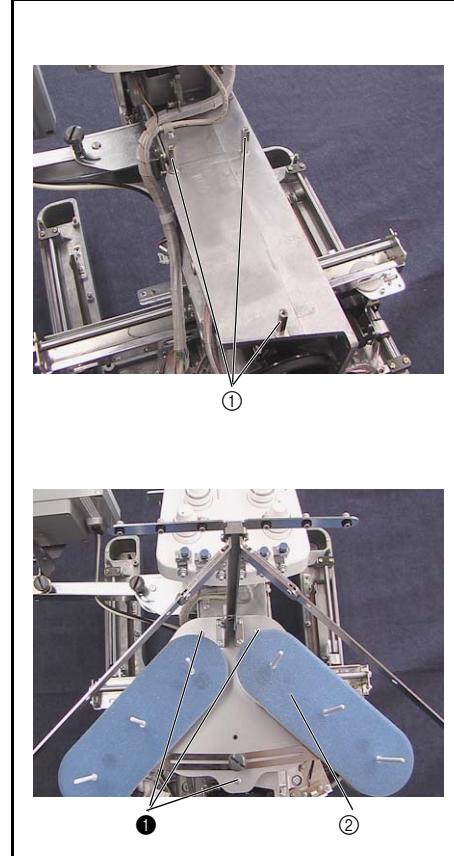


11 Spool stand frame final assembly attachment

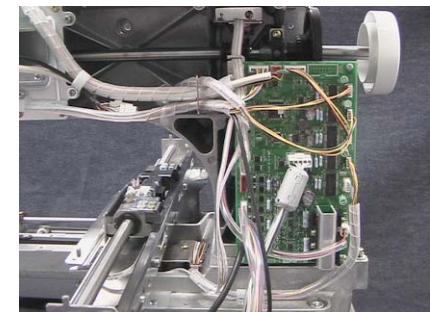
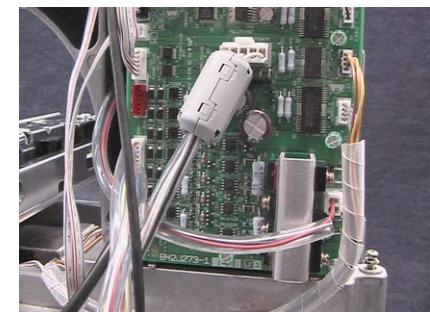
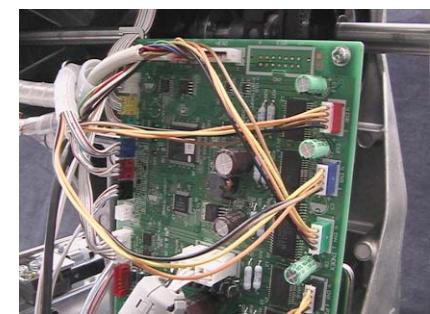
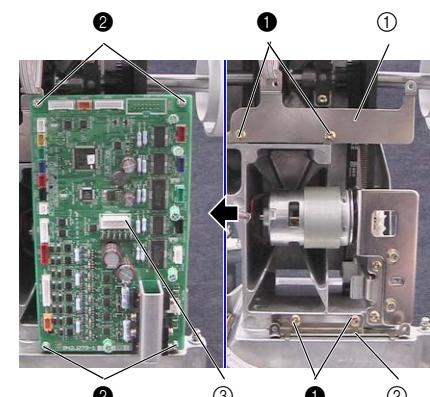
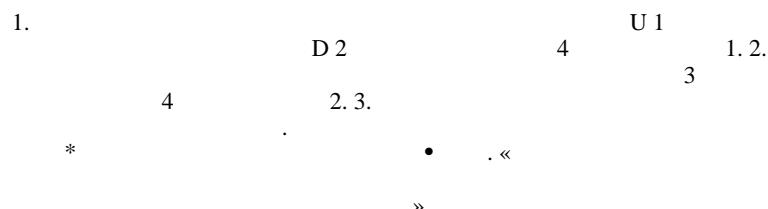
1. 3 1
2. 3
3. 1.
2. 3

Tightening torque of stud: 1.18 - 1.57 N·m

| | | | |
|---|---|---------------------|---------------------------|
| 1 |  | Screw, Bind
M4X8 | Torque
1.18 – 1.57 N·m |
|---|---|---------------------|---------------------------|



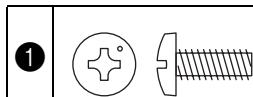
12 Main PCB assembly attachment



| | | |
|----------|--------------------------|---------------------------|
| 1 | Taptite, Bind S M4X10 | Torque
1.47 – 1.96 N·m |
| 2 | Screw Pan(SPwasher) M3X6 | Torque
0.59 – 0.78 N·m |

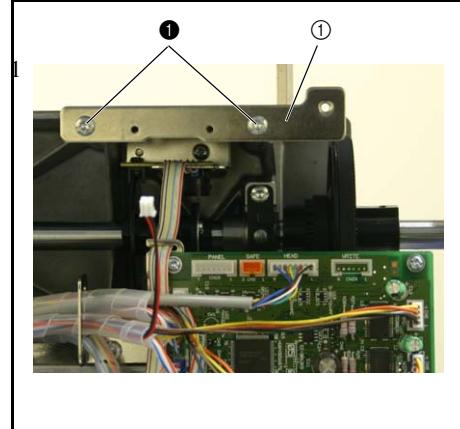
13 LED PCB plate attachment

1.



Taptite, Bind S
M4X10

Torque
1.47 – 1.96 N·m



14 LED drive PCB assembly attachment

1.

1

2

3

1. 2.

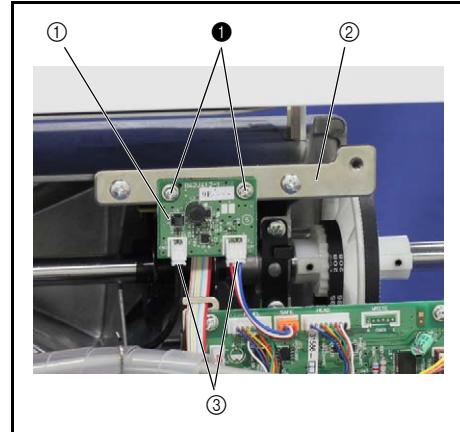
2

1.



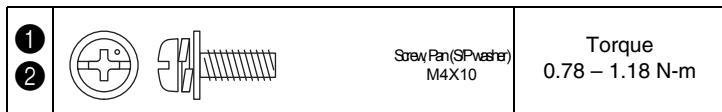
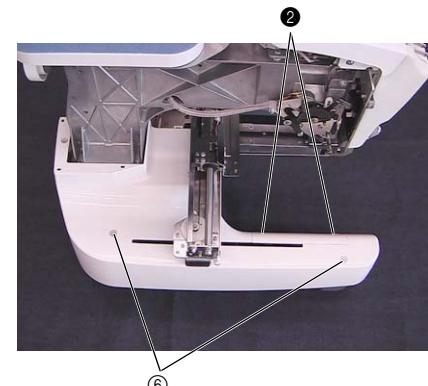
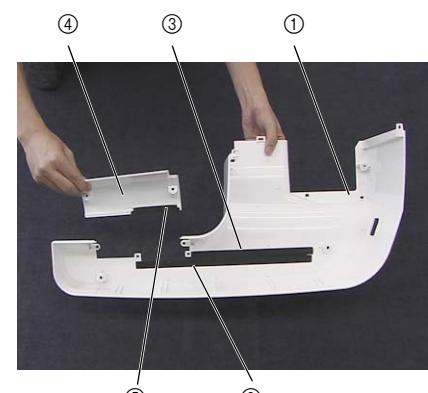
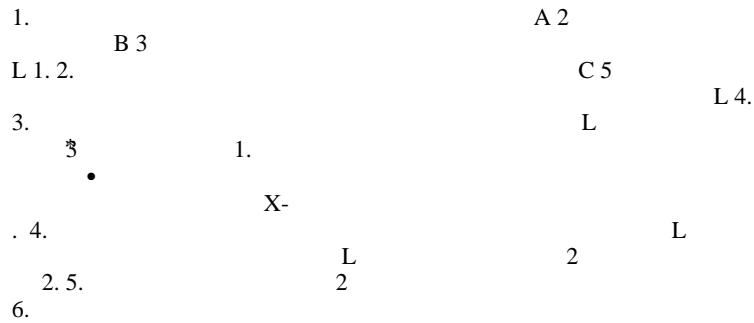
Screw Pan(S)Pwasher
M3X6

Torque
0.59 – 0.78 N·m



| | |
|-----------|-----------|
| Main unit | Main unit |
|-----------|-----------|

15 Base cover L attachment

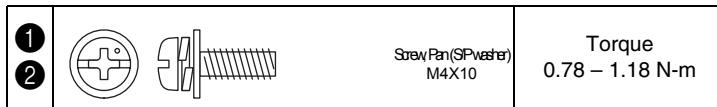


Main unit

Main unit

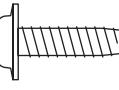
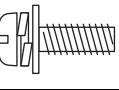
16 Base cover R attachment

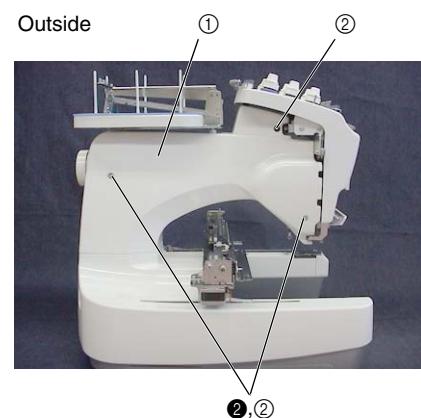
- | | | | |
|---------|----|------|-----|
| 1. | 3 | 1. * | R 1 |
| . | . | . | |
| X- | . | 2. | 2 |
| . | 2. | 3. | |
| R lib 3 | | 2 | 2. |



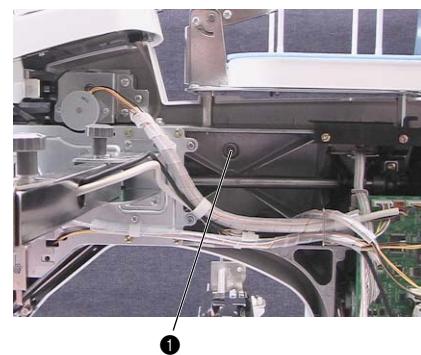
17 Arm cover L attachment

1. Attach the arm cover L ① with the 3 screws ① and ②.
2. Attach the 3 screw covers ②.

| | | | |
|---|---|-------------------------------|---------------------------|
| ① |   | Taptite, Cup B
M4X14 | Torque
0.78 – 1.18 N·m |
| ② |   | Screw Pan (SPwasher)
M4X10 | Torque
0.78 – 1.18 N·m |



Inside

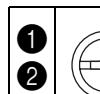
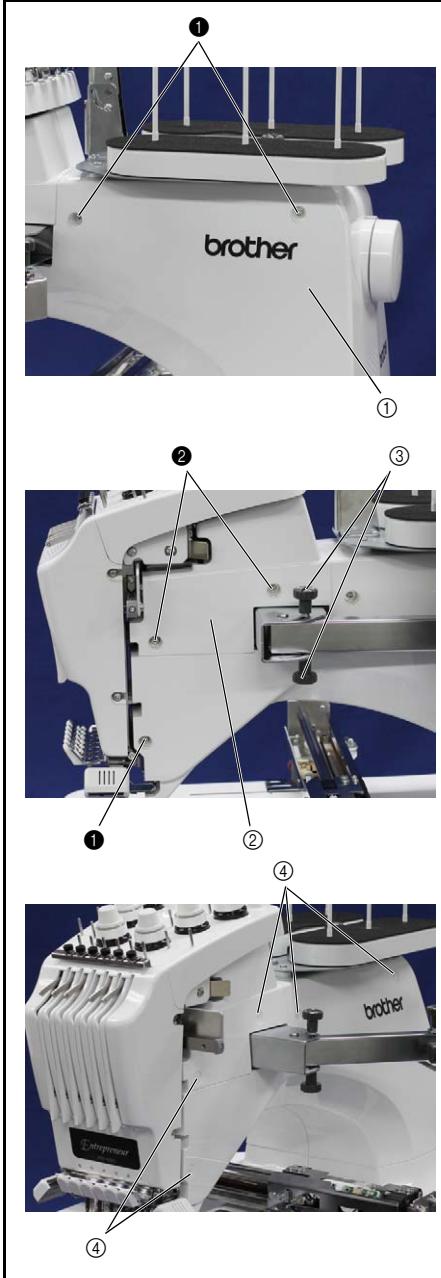


Main unit

Main unit

18 Arm cover R attachment

- | | | | | | |
|-------|--------------|----------------|---|--------------------------|-----|
| 1. | 3
R lib 2 | 1. 2.
(2-4) | 2 | 2. 3.
(M4 L),
(M4) | R 1 |
| 3. (2 |) 4. | | 5 | | |
| 4. | | | | | |

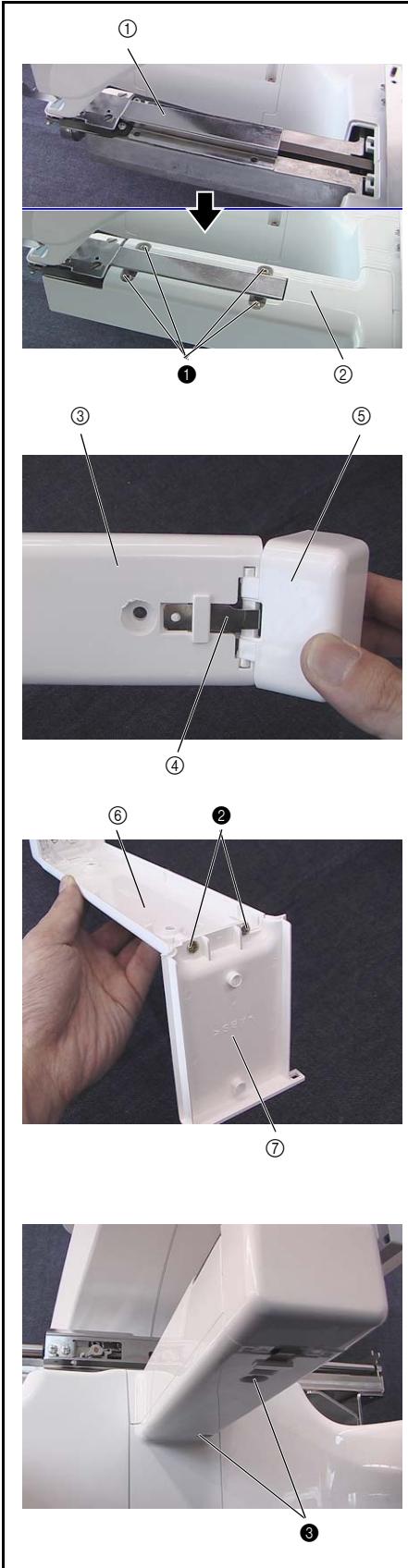


Screw Pan(SPan) M4X10

Torque
0.78 – 1.18 N·m

19 Bed cover attachment

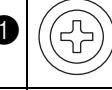
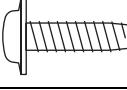
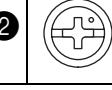
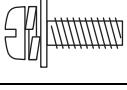
- 1.
- 2.
- 3.
1. 2.
- 5
- 6
- 2
2. 4.
3. 3.
- 1
- 4
- 7

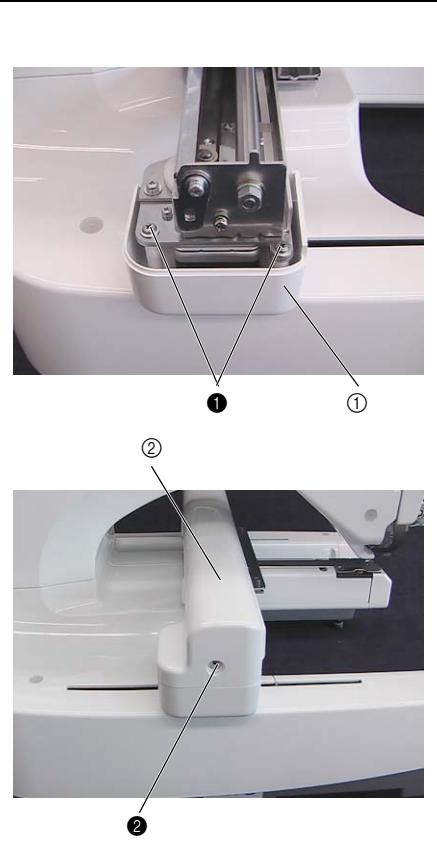


| | | | |
|----------|--|-----------------------|---------------------------|
| 1 | | Screw Pan(SPan) M4X10 | Torque
0.78 – 1.18 N·m |
| 2 | | Taptite, Bind B M3X10 | Torque
0.39 – 0.78 N·m |

20 Motor cover / carriage cover attachment

1.
1 2 1. 2.
 2 X- 2. 3.
 .

| | | | |
|----------|---|--------------------------------|---------------------------|
| 1 |   | Taptite, Cup B
M4X14 | Torque
0.78 – 1.18 N·m |
| 2 |   | Screw Pan (SP) washer
M4X10 | Torque
0.78 – 1.18 N·m |



4 Adjustment

..... 4 - 4

..... 4 - 5

..... 4 - 12

.... 4 - 22

..... 4 - 20

4 - 24

()..... 4 - 25

/ 4 - 25

4-26

.... 4 - 26

4-29

4 - 30

... 4 - 31

(..... /) 4 - 32

/) 4 - 33

.. 4 - 34

Y-
..... 4 - 35

X-

..... 4 - 36

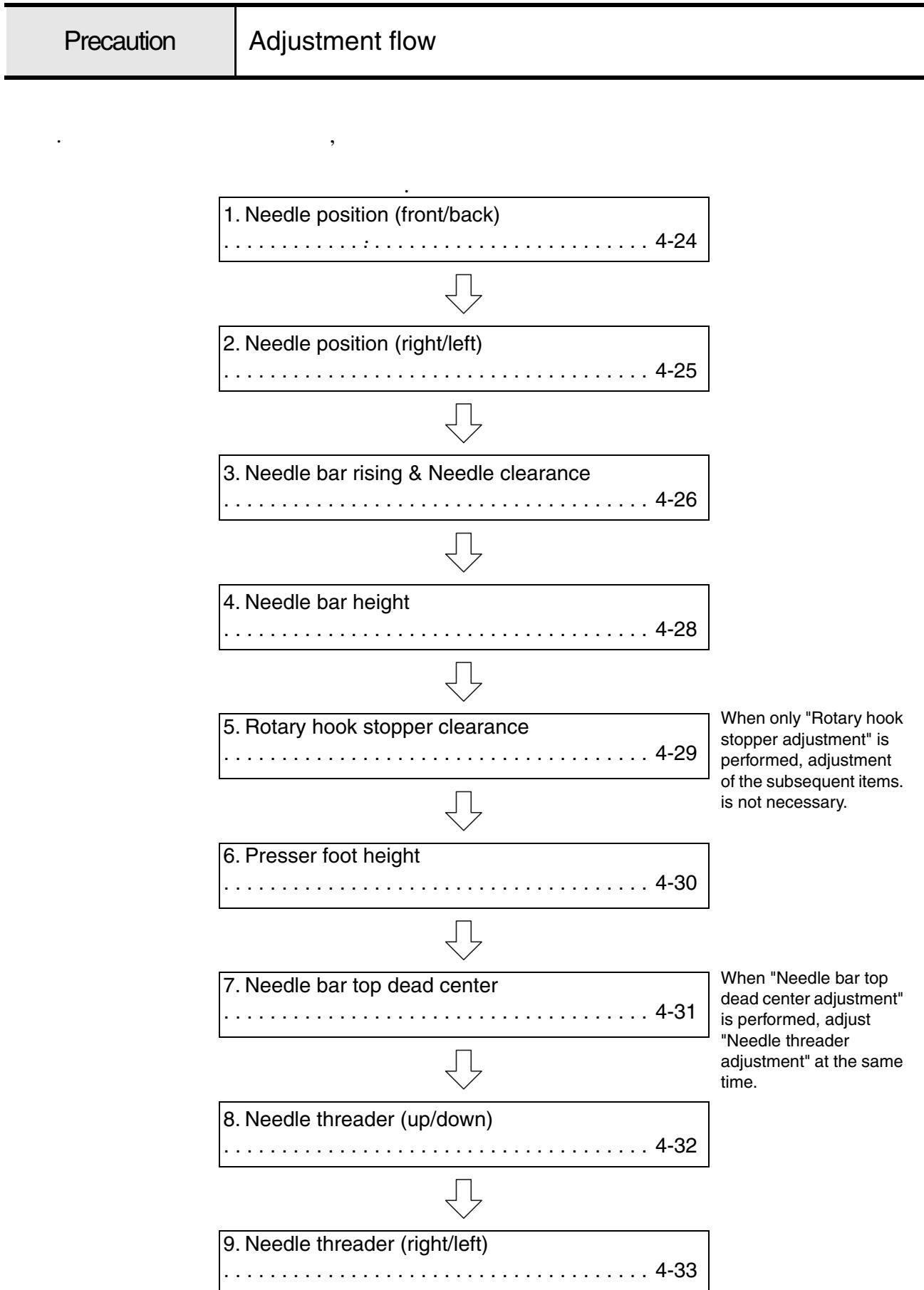
..... 4 - 37

.... 4 - 38

/ 4 - 1

.... 4 - 39

(A/D) 4 - 40



1.

*

.

The gap with the block should be even.

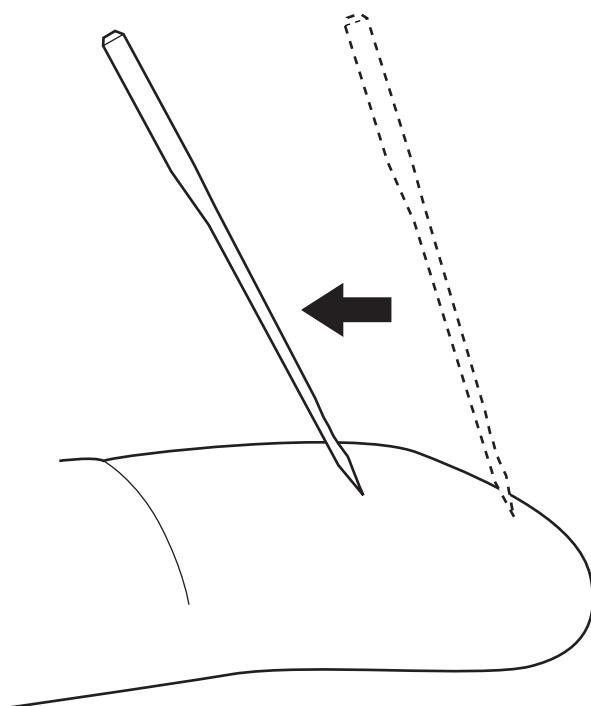


2.

). *

(

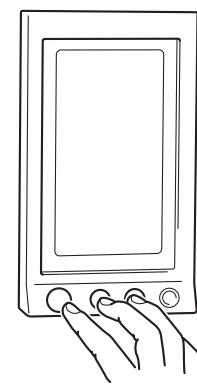
.



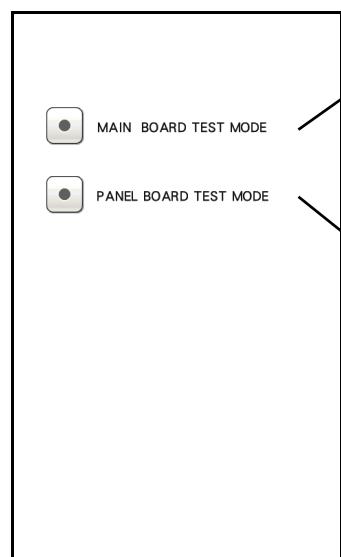
Test mode

Starting test mode

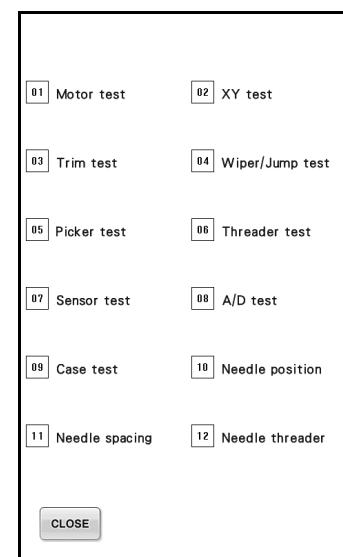
[], / [], [],



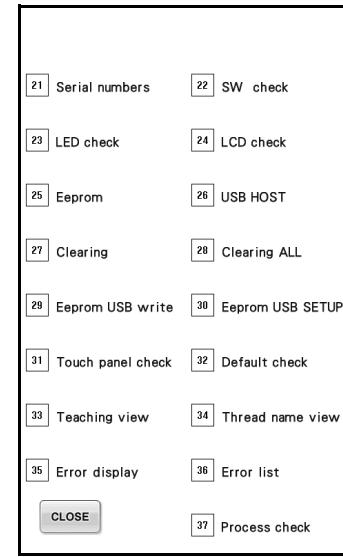
<< / >>



AIN / PANEL TEST MODE SELECTION SCREEN



MAIN BOARD TEST MODE



PANEL BOARD TEST MODE

Test mode

Main board test mode

[01]. : [02]. XY:

X/Y [03].

: [04].

/

[05].

[06]. :

[07]. :

[08]. :

[09].

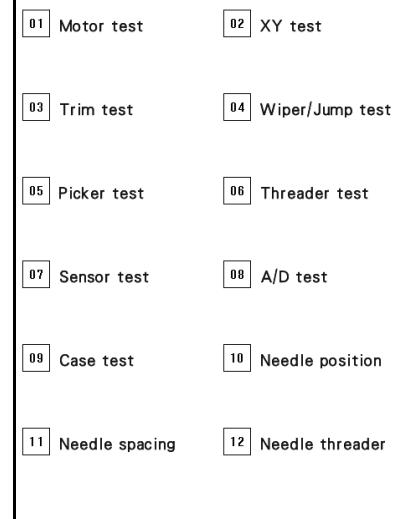
[10].

[11]. :

[12].

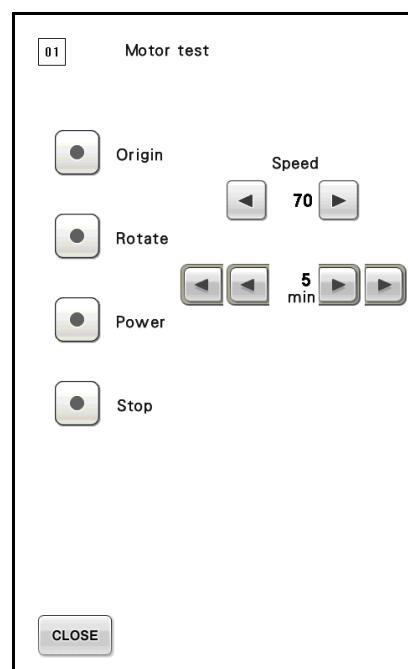
<

[: >.



01.

[]:
]: . [. []:
000 / , XY: 1,2) [. []:
>: . (70 1000 /) [<] * [>] :
. ([-] 100) []:



Test mode

Main board test mode

02.

X/Y

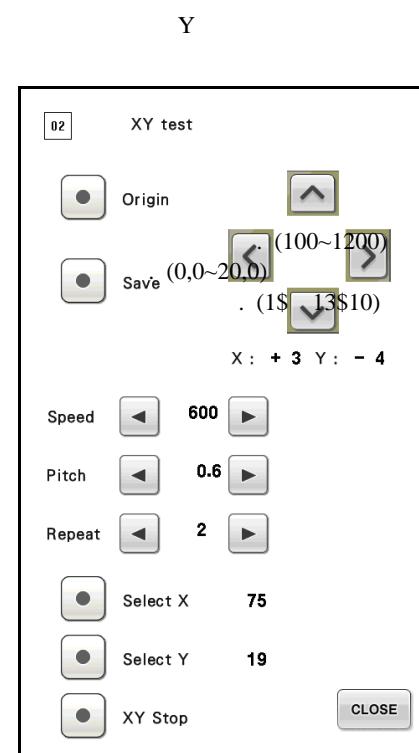
[[X] [X] Y]

[X Y]:

M. [\uparrow][\leftarrow][\rightarrow][\downarrow]: [\leq]₉₉^{*} [$>$]: 99 :
 X Y. (X, Y:
 [\leq] * [$>$]:
 [X]:
 ,
 . [Y]:
 ,
 . [XY STOP]:
 X Y. [] :
 .

X Y

EEPROM

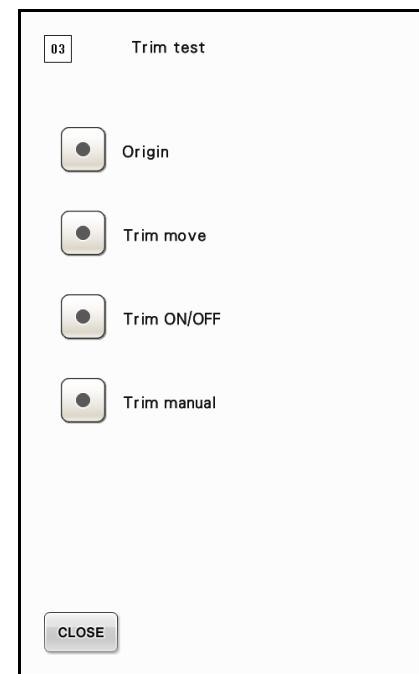


03.

[Origin]: . []:
 . [Trim O

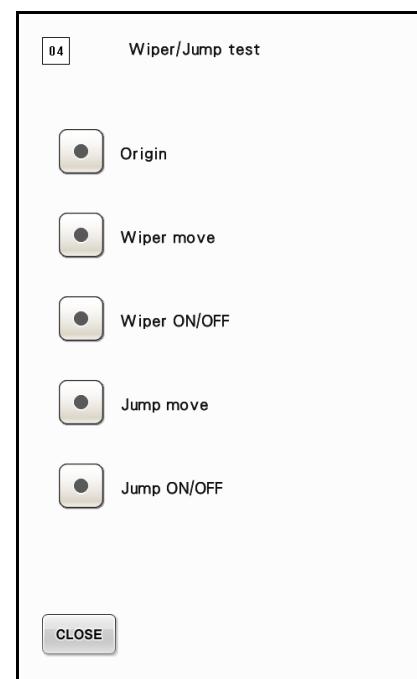
N/OFF]:

[. [] :
 . [] :
 .] :



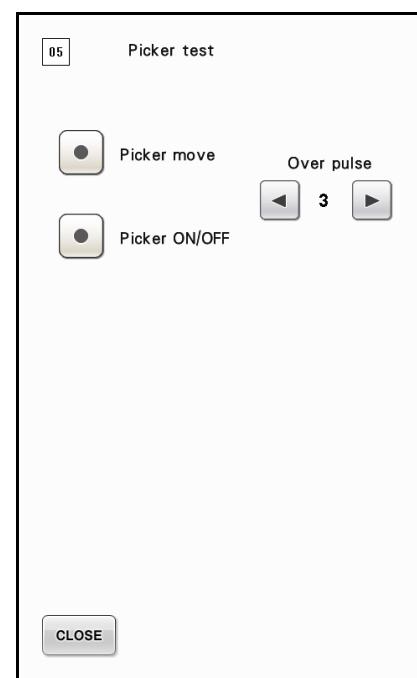
04.

[]:
[]:
[]:
Jump ON/OFF]: [Wiper ON/
OFF]
[]:
[]:



05.

[]:
[]:
[]:
[Picker ON/OFF]:
Overpulse[<] * [>]: *
•
. (1 8)
[]:

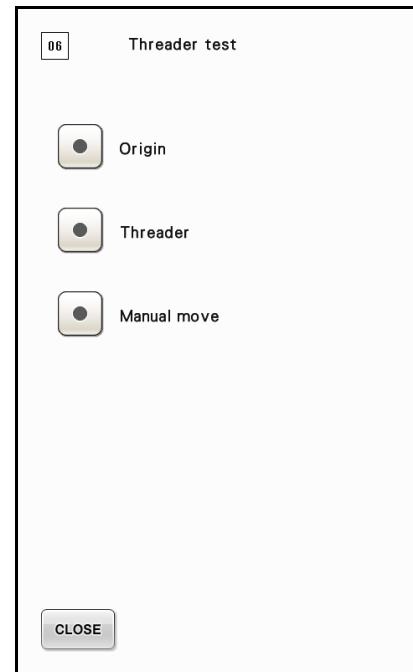


Test mode

Main board test mode

06.

[]:
[]:
]: * . []:
. []:]



07.

) («H» «L». A,
A »,'?« B). B
[].350). .

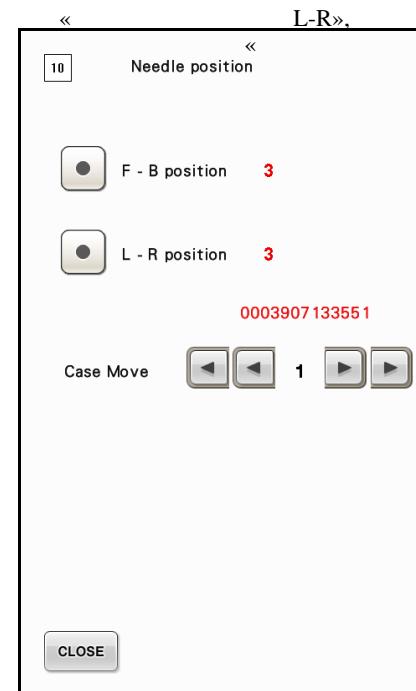
[OK] :

| | | | |
|-------------|---|---------------|-----------------------------------|
| Needle up | H | Picker | H |
| Encoder A | H | Threader | H |
| Encoder B | L | Case origin | H |
| Test SW | L | Case position | H |
| Trim | H | X origin | H |
| Wiper | H | Y origin | H |
| Motor angle | ? | Adjust angle | <input type="button" value="OK"/> |

10.

USB,

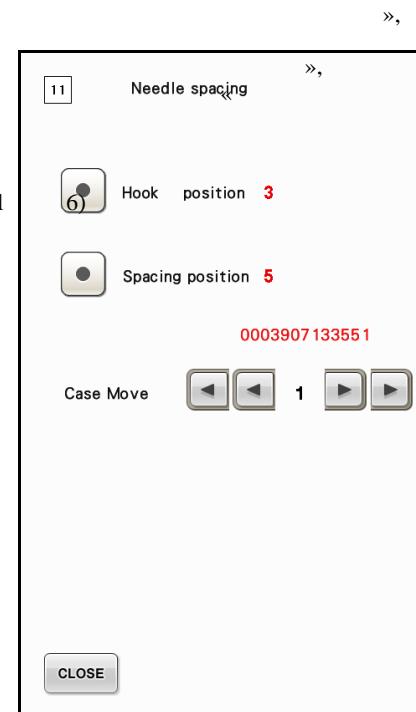
« / F-B»,
 [L-R». (13 F-B]:)
 / . [F-B]:
 / . Case Move [<][<] * [>][>] :
 . (1 6) :
 [] :



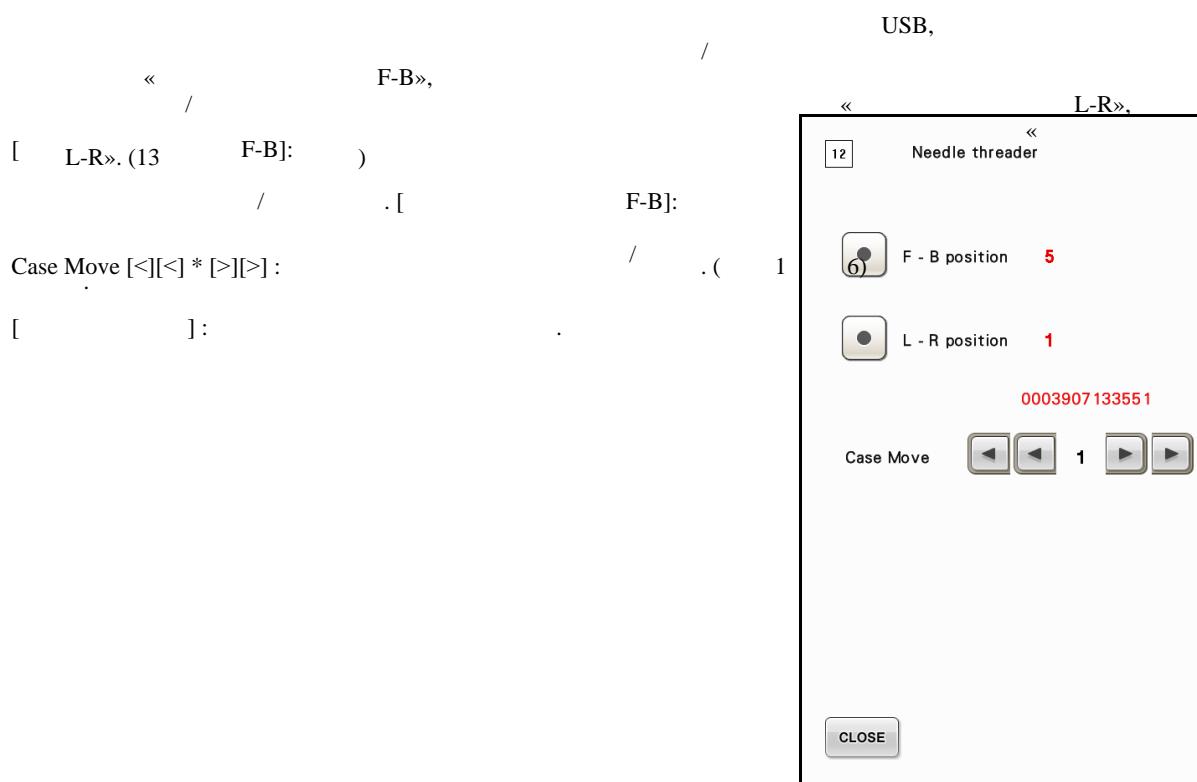
11.

USB,

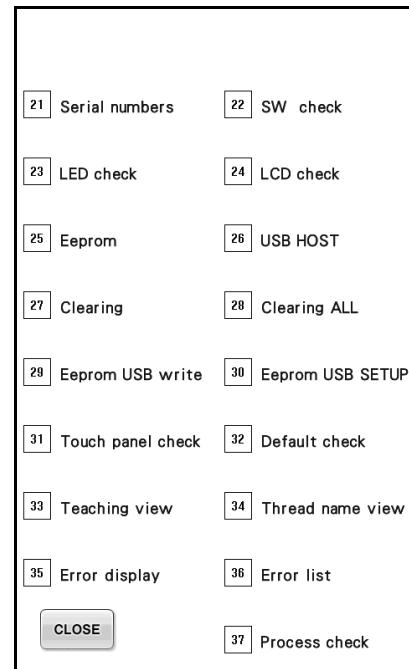
« »,
 []:
 ». (13)
 . [Case Move [<][<] * [>][>] :
 . (1) :
 [] :



12.



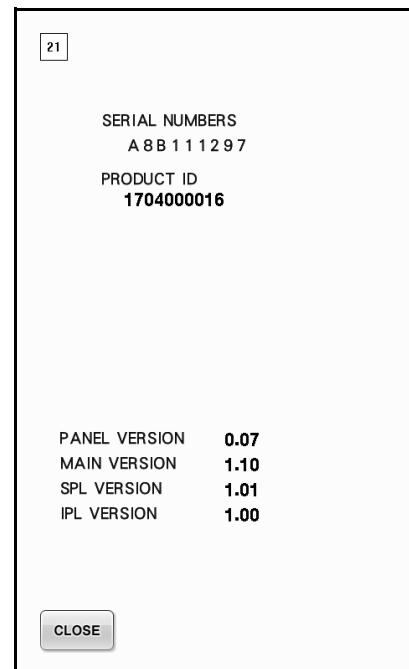
[21].
 [22].
 :
 [23].
 :
 S/S [24].
 ,
 25]. EEPROM: ([26]. USB HOST:
 USB HOST [27].
 /
) [29]. EEPROM USB: Eeprom USB: ([28].
 USB- [30].
) [31].
 :
 [32].
 :
 [33].
 :
 [34].
 :
 [35].
 :
 [36].
 :
 [37].
 : () [CLOSE]
 <PANEL BOARD TEST MODE>
]:



21.

EEPROM

[]:



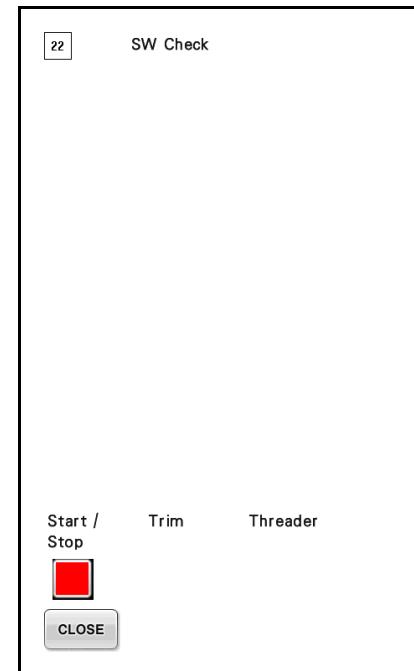
Test mode

Panel board test mode

22.

[] / [], [].
e [] (red)

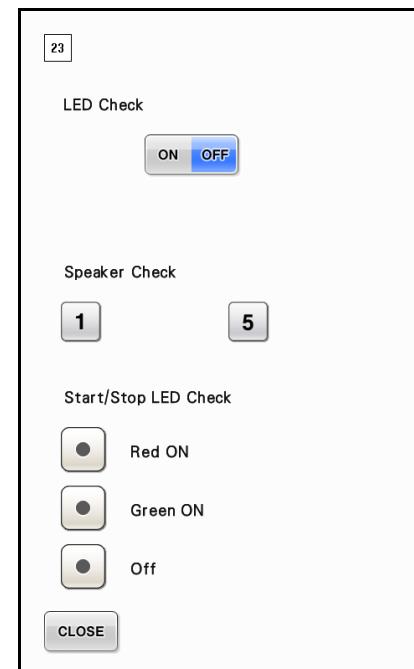
[] : .



23.

S/S.

,
[ON] : . []:
. [1]:
. [5] :
/ []:
[] [S/S] : []:
. [Green ON] : S/S
. [] S/S.
. []:
S/S.

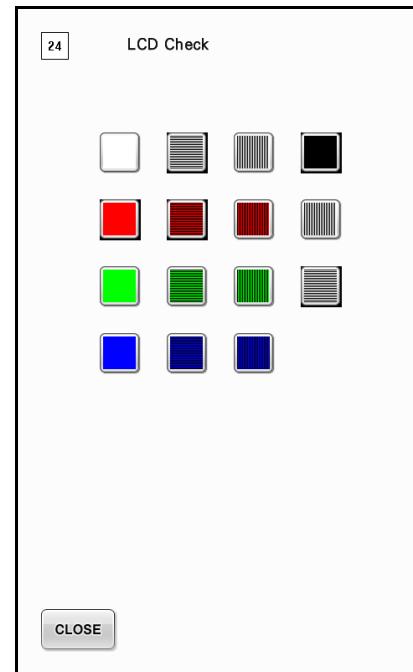


Test mode

Panel board test mode

24.

[] :



26.

USB HOST.

USB HOST.

USB HOST 1: USB-

T 2: USB-

USB-

« ». USB-

USB HOS

USB-

, USB

-

,

*

•

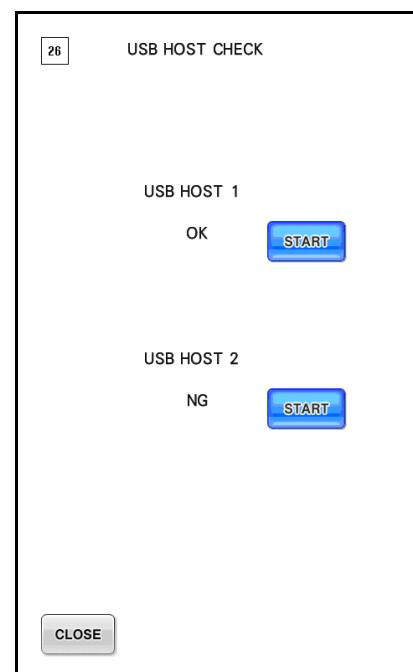
B-

«NG».

USB-

US

[] :



Test mode

Panel board test mode

27.

[OK]

*

•

[OK]

*

•

/

[] : [] :

27

Clearing Memory

OK

Clearing Counter

OK

Emb Service Stitch Count

0

Emb Total Stitch Count

0

Service Stitch Time

0

Total Stitch Time

0

CLOSE

29.

EEPROM/USB-

EEPROM

USB.

EEP [OK]:
EEPROM

USB-

EEP [OK]:
(*.eep),

USB-
EEPROM
[>] :
USB/USB.

[] : [] :

29

EEPROM USB HOST WRITE

OK

EEP DATA TO FILE

OK

EEP DATA WRITE

OK

HOST FUNC CHANGE

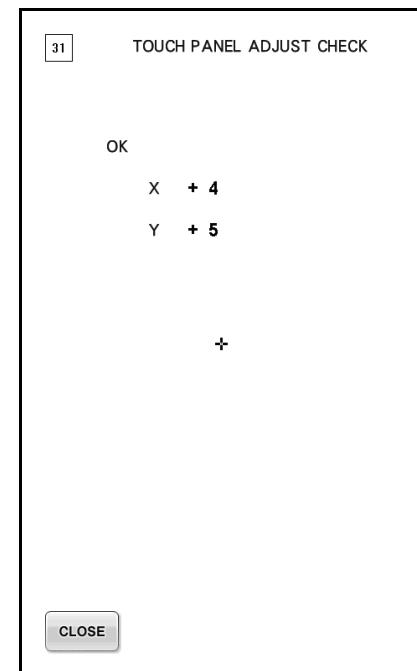
>

CLOSE

31.

[+]
 .
 () X
 Y.
 ,
 ,
 * « .
 • X — ±5dots
 Y — ±5dots

[] :
 *
 •
 »,
 ,

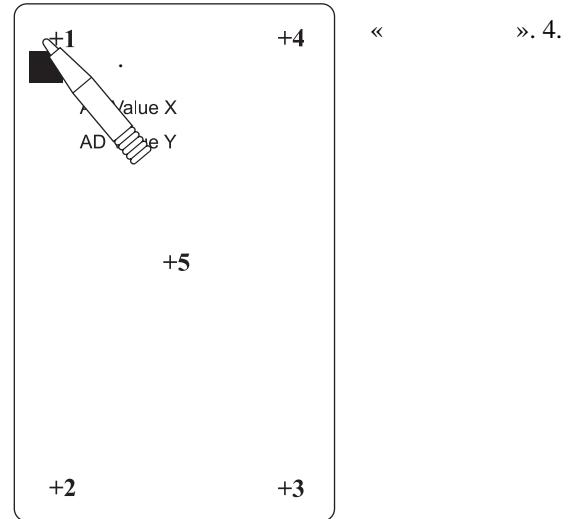
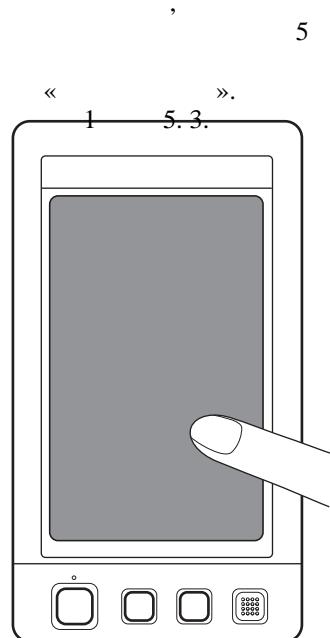


1.

,
 . - / ,

2.

1 5. - AD Value X AD Value Y



Test mode

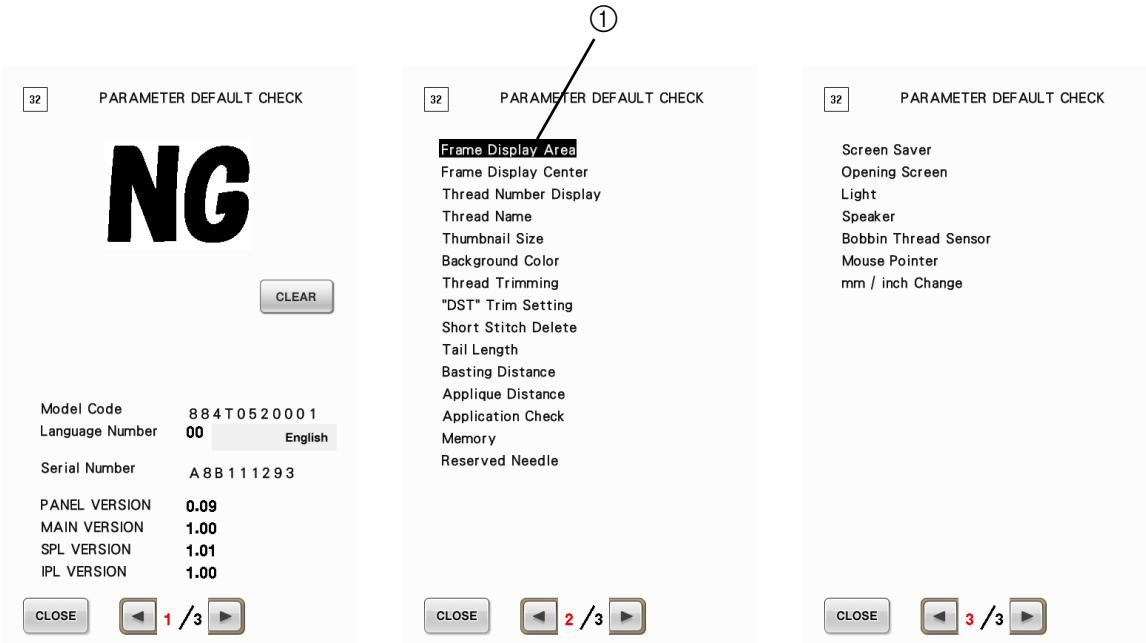
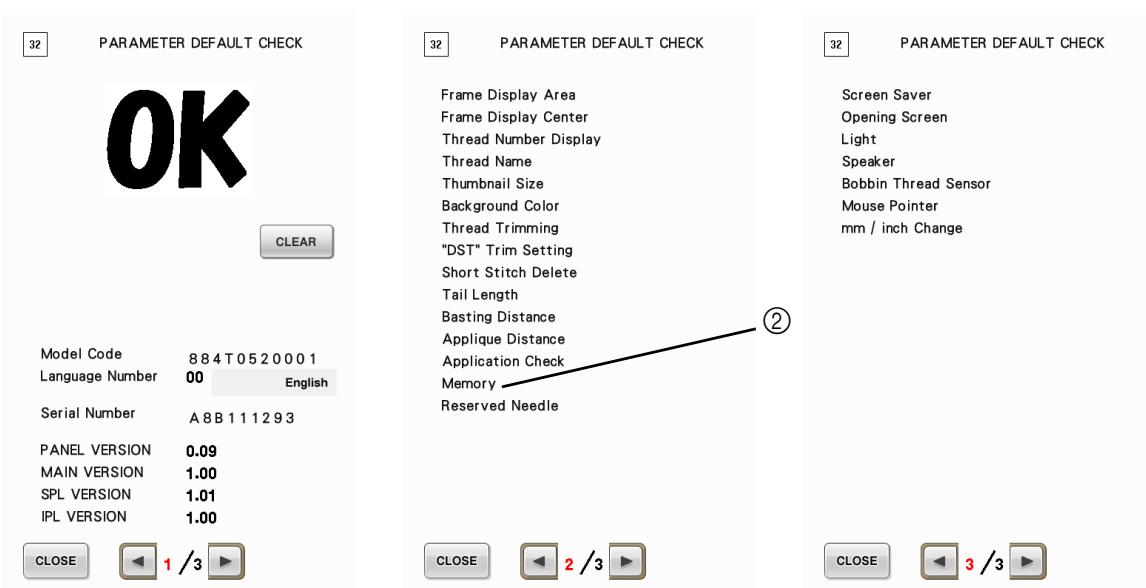
Panel board test mode

32.

```

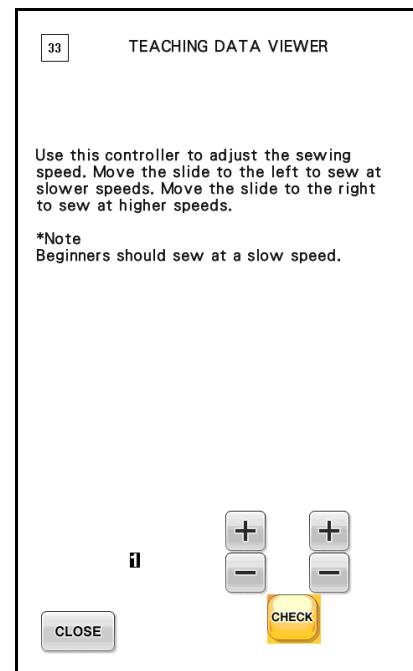
*          <>      ».
*          ,
*          «NG».
[CLEAR]:
*
*          • «           » 2
],           [
[<]* / 3 [>] :
[           ] :

```



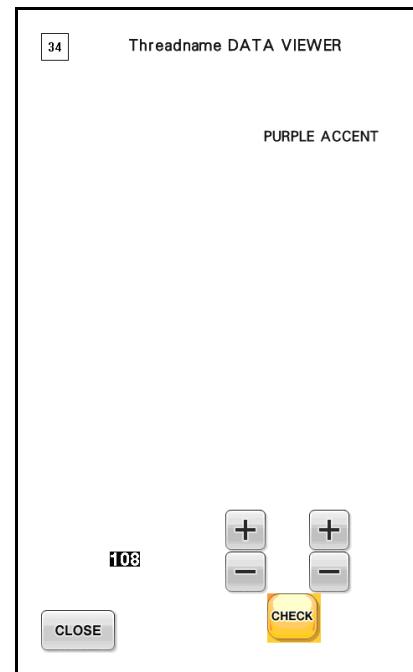
33.

[+] [-] :
[] :
[] :



34.

[+] [-] :
[] :
[] :
[] :



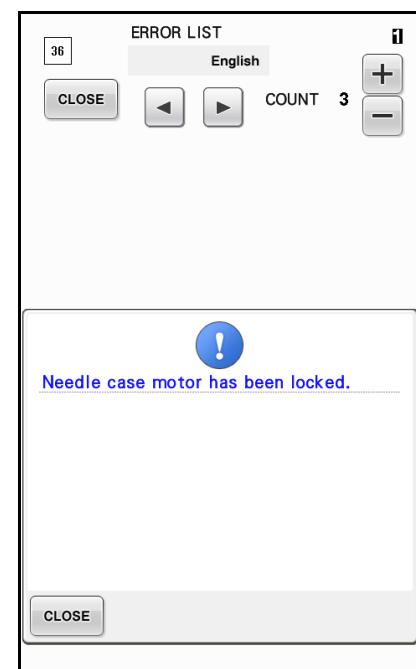
35.

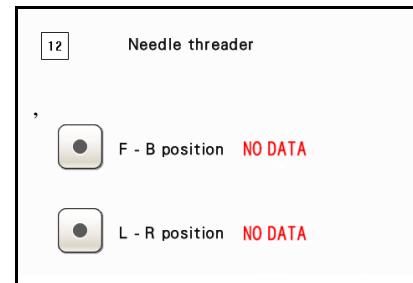
[+] [-] : . [
[<] [>] :] :



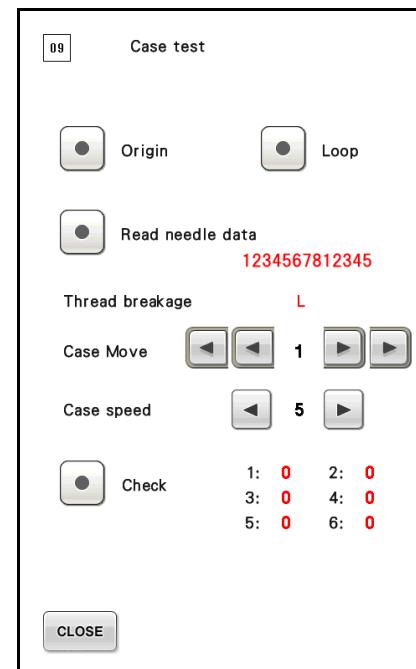
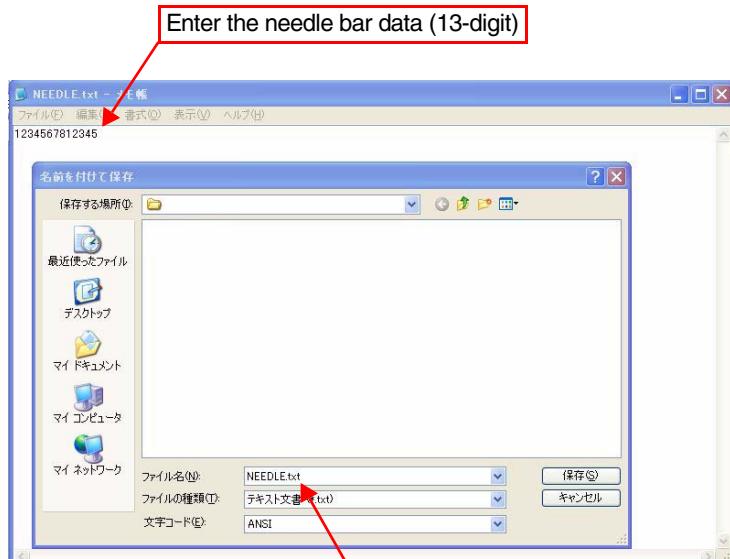
36.

[+] : . [-] : ,
• * — 1. [<] [>] :
. COUNT * : []:
(), «1».) []
:
:





1. ,
2. USB-
3. . 4. «NEEDLE.txt»
09 ([) . 5. ,
,



• , , <



* 1 2 3 4 5 6 7 8 1 2 3 4 5 *

Production NO. (8-digit)

④ Needle threader adjustment(right/left)

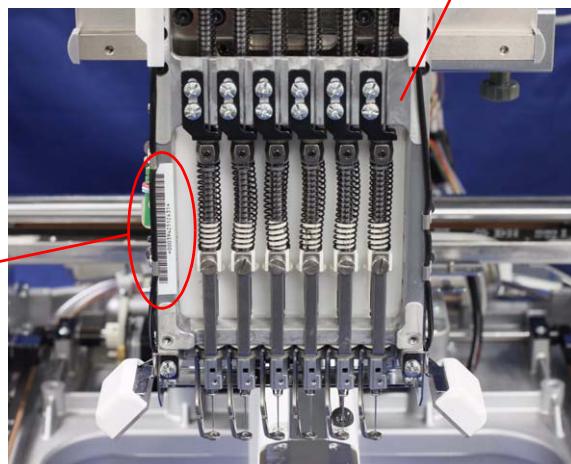
③ Needle bar rising length and
③ Needle space adjustment

② Needle position adjustment (right/left)

① Needle position adjustment (front/back)

Needle bar case assy.

Bar code





[]

1,5 3,5

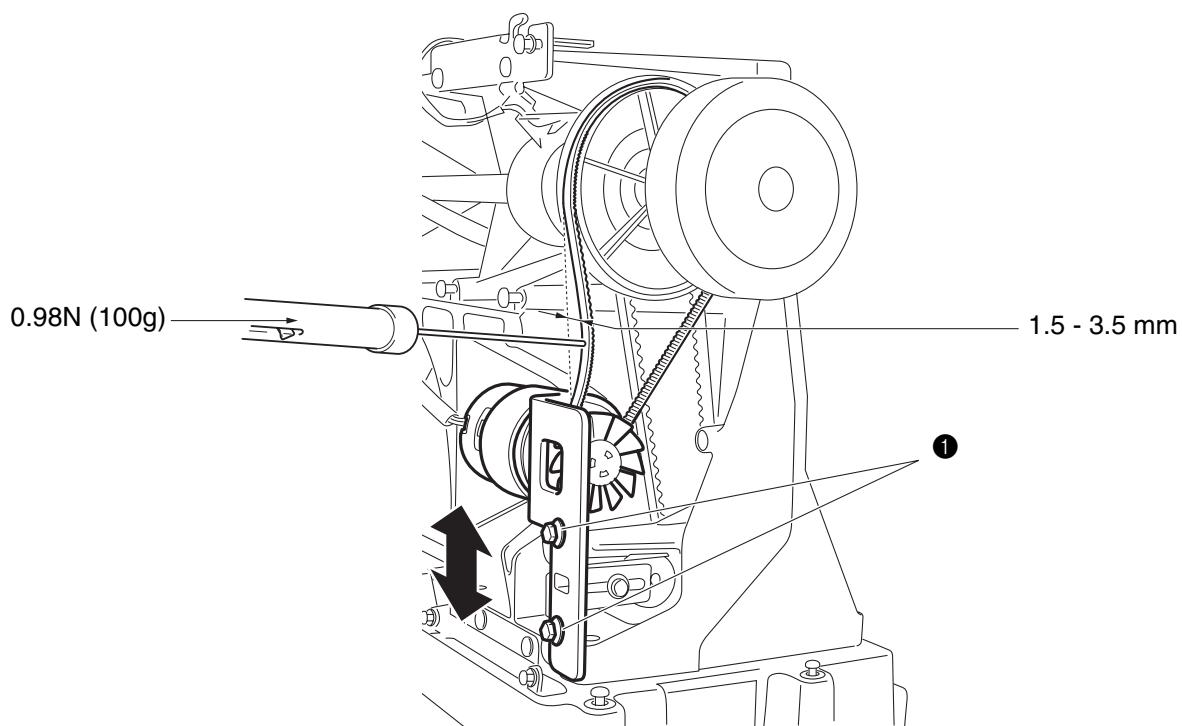
[]

1. 2 1. 2.

, . 3. 2

1.

| | | | |
|----------------|--|-----------------|---------------------------|
| ① | | Upset
4X14DB | Torque
1.18 - 1.57 N·m |
| XC2277001 (5N) | | | |





[]

3,5 4,0

[]

1.

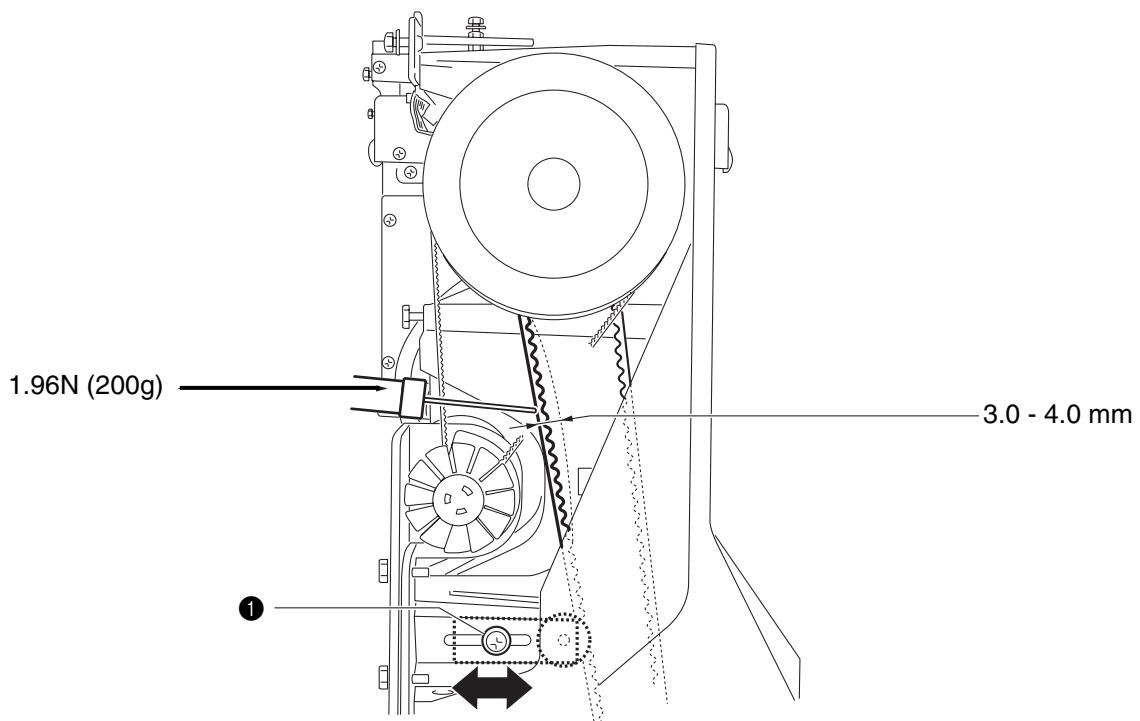
1. 2.

,

. 3.

1.

| | | | |
|----------------|--|--------------------------------|---------------------------|
| ① | A diagram showing a flat head screw and a lock washer. | Screw Pan (SF) washer
M4X10 | Torque
1.18 - 1.57 N·m |
| XC2277001 (5N) | | | |



Adjustment

Needle position (front/back)

[]

[]

1.

[

,

[#10:

F-B].

1. 2.

[

, . 3.

,

,

. 4.

1

. 5.

,

/

.

6.

1.

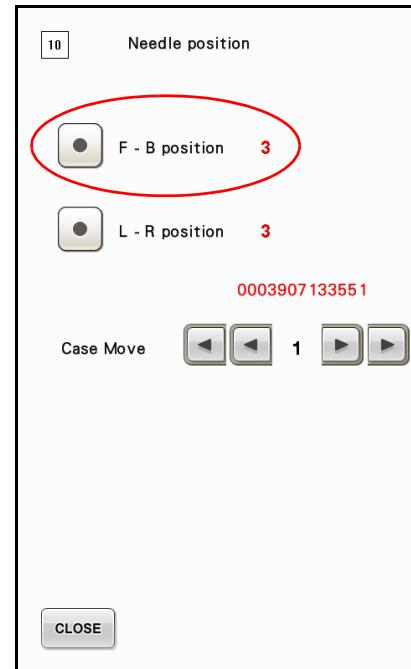
7.

5

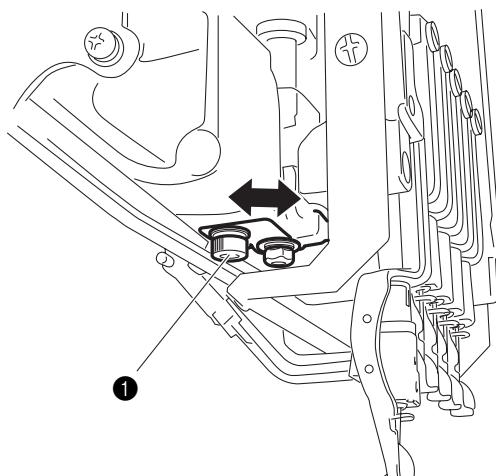
•

. *

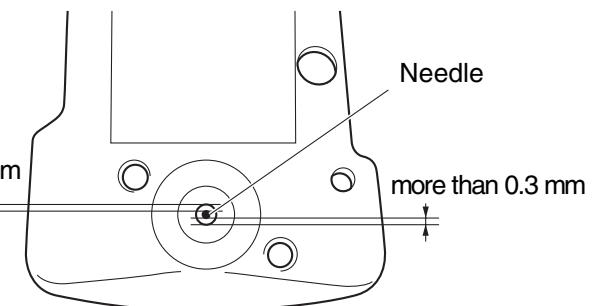
[<] [>]



| | | |
|---|--------------------|---------------------------|
| ① | Bolt, Socket M5X16 | Torque
2.94 - 3.43 N·m |
|---|--------------------|---------------------------|



more than 0.3 mm



0,3

Adjustment

Needle position (right/left)

[]

/

0,3

[]

1. [], [#10:].
1. 2. [,].

, . 3.

, .

. 4. 2

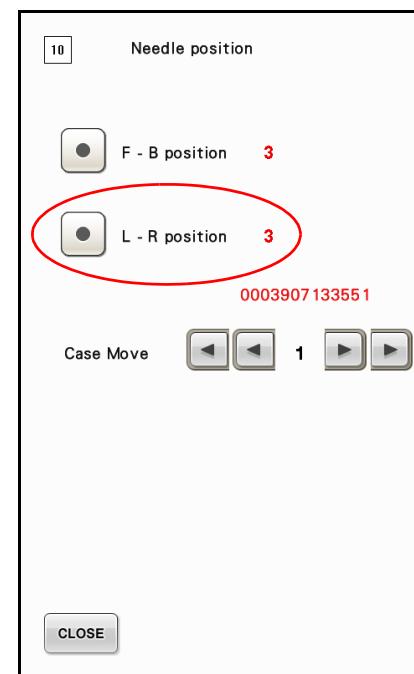
1. 5.

, /

. 6. • 2 1. 7. 5

8. ,

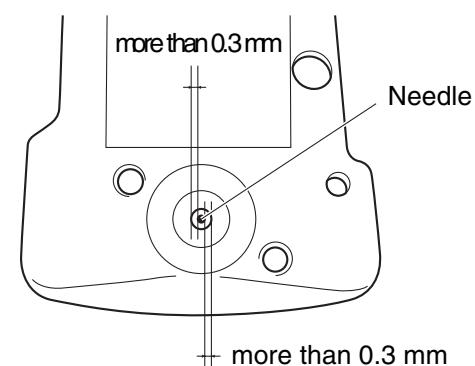
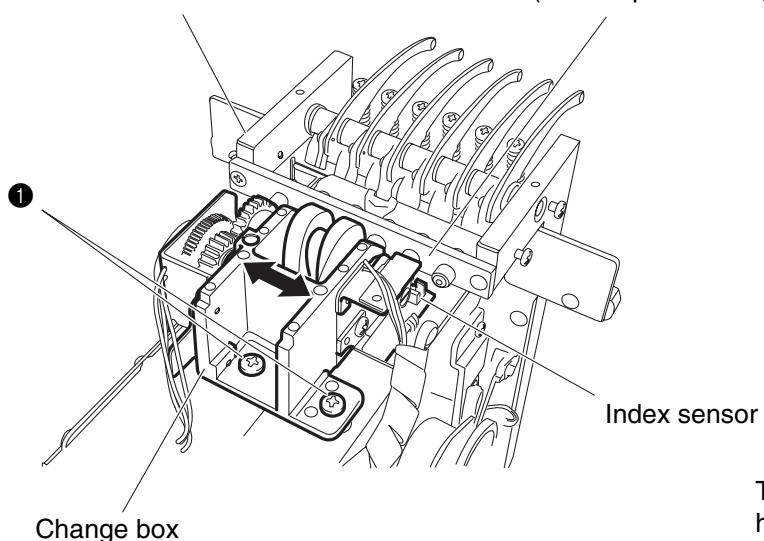
/



| | | | |
|---|--|--------------------------|---------------------------|
| ① | | BOLT (SPWASHER)
M5X16 | Torque
2.94 - 3.49 N·m |
|---|--|--------------------------|---------------------------|

Needle bar case unit

Change roller base
(Needle position dog)



The clearance between the needle plate hole and the needle in the right/left

[]

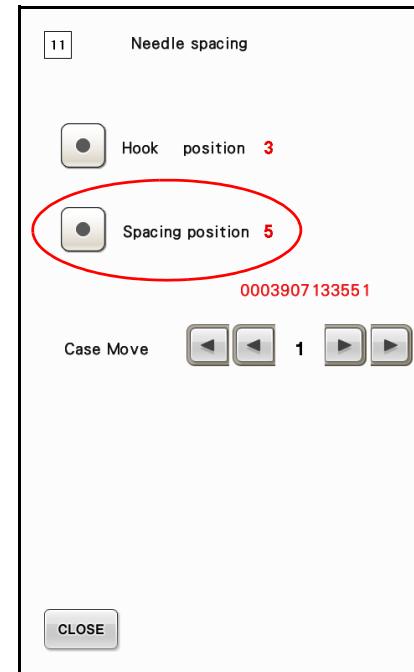
, 1,8 2,2 .

[]

1. [], [].
2. [].

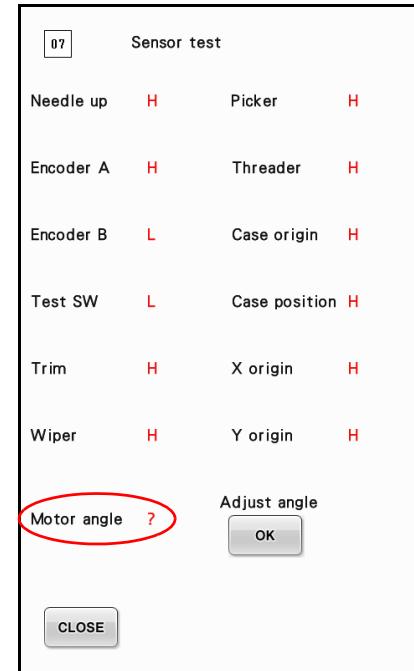
,

.



3. [], [].
-
-

[#07:
], «199». [



4.

3

1,

5.

3

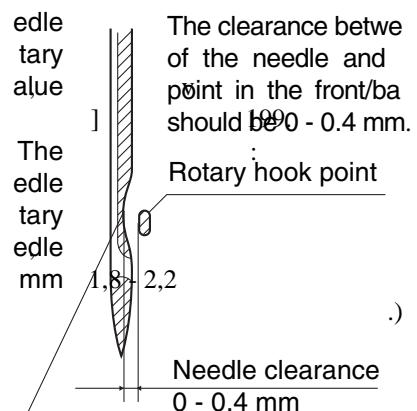
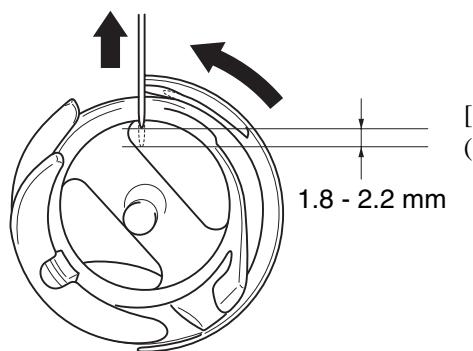
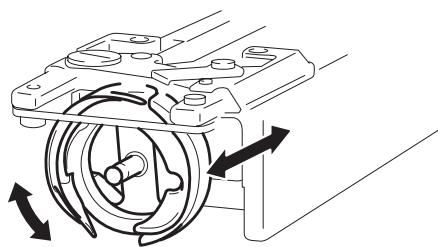
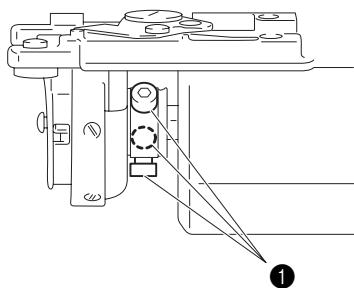
1.

*

[<] [>]

11

| | | | |
|---|---|------------------------|---------------------------|
| ① |   | Hook set screw
4.46 | Torque
0.78 - 1.18 N·m |
|---|---|------------------------|---------------------------|





[]

0 2°

[()].

1. ,

2. 1.

3.

4. 1.

5. ,

*

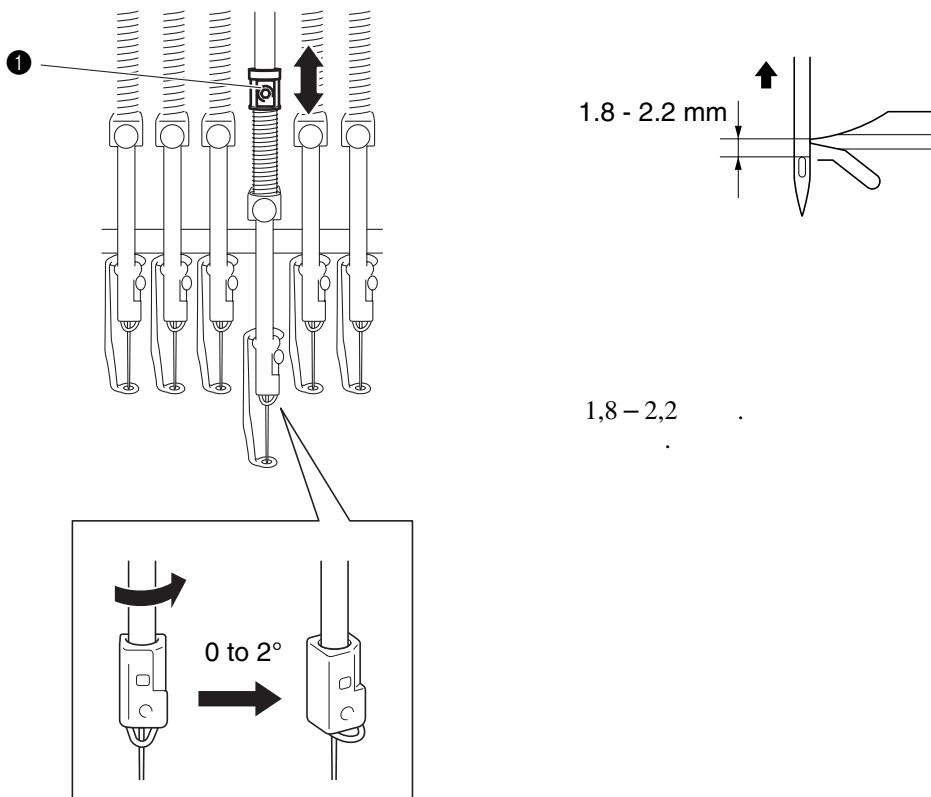
•

10

[<] [>]

,

| | | | | |
|---|---|---|----------------------------------|---------------------------|
| ① | ◎ | ● | Set Screw, Socket
SM4.37-40X4 | Torque
0.78 - 1.18 N·m |
|---|---|---|----------------------------------|---------------------------|

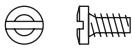


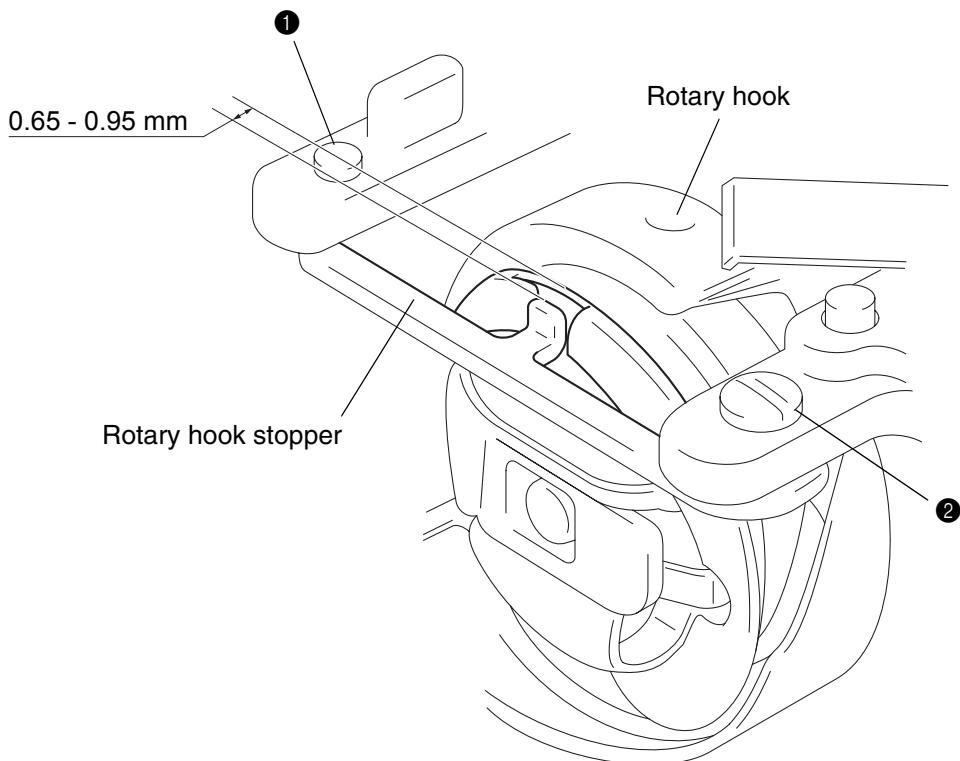


[]

[]

- 1.
 - 2.
 - 3.
- 1 2.
 - 1 2.

| | | | |
|---|---|----------------------|---------------------------|
| ① |  | Bolt, Socket
M3X6 | Torque
0.59 - 0.78 N·m |
| ② |  | Screw | Torque
0.59 - 0.78 N·m |





[]

[0,8 1,4] .

1.

,

2.

1. 3.

4.

1. 5.

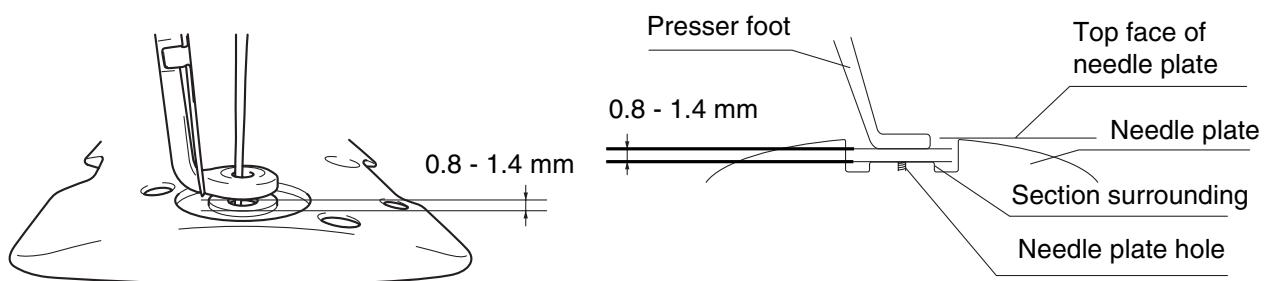
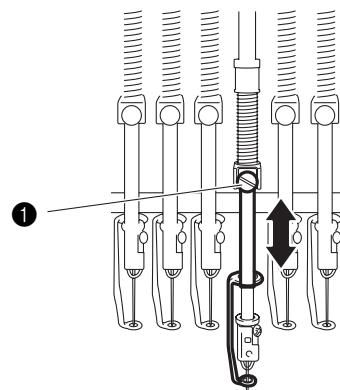
5

*

[<] [>] ,

10

| | | | |
|---|--|-----------|---------------------------|
| ① | | Screw, PF | Torque
0.78 - 1.18 N·m |
|---|--|-----------|---------------------------|



0,8 - 1,4 . (

.)

Adjustment

Needle bar top dead center

[]

, (., 0,3).

[]

1. [], [#12: -].
2. *

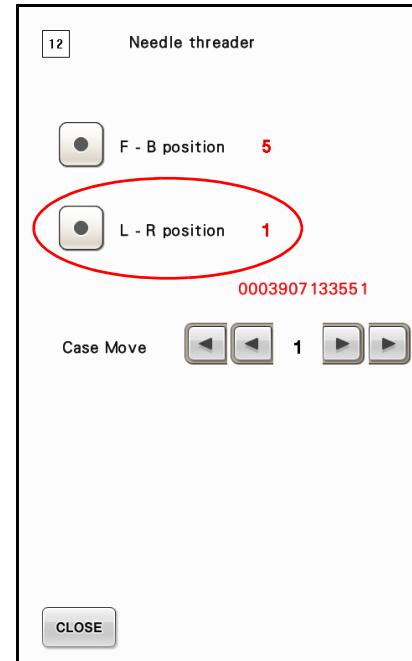
3. , , .
* • 360 ,

4. . 1.

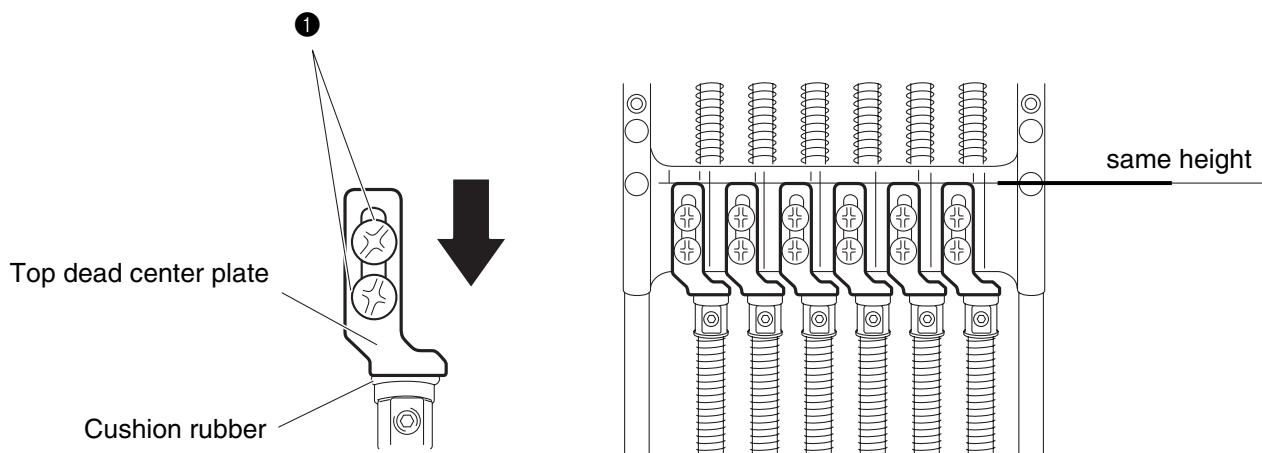
5.

6. () , (.
7. 0,3), 1.

5 ,
().



| | | | |
|----------|--|---------------------|---------------------------|
| 1 | | Screw, Bind
M4X6 | Torque
1.18 - 1.57 N·m |
|----------|--|---------------------|---------------------------|



Adjustment

Needle threader (up/down)

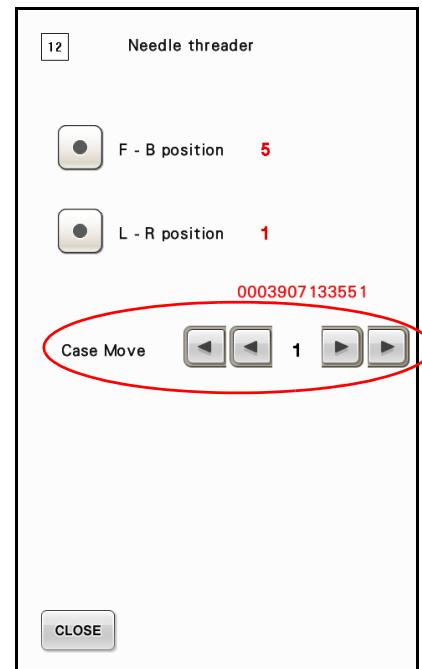
[]

[]

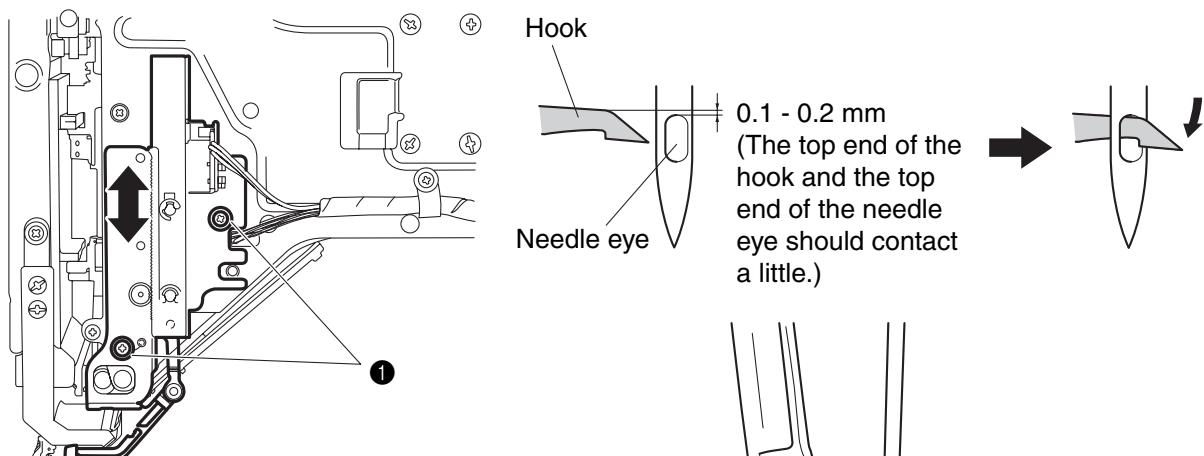
1. [], [<] [#12], [>], 1,
- 2.
- 3.

4. * (. 2 6).
- [<] [>]

5. 1.
6. / (
7.) 2 1.,
2-4



| | | | |
|----------|---|-----------------------------|---------------------------|
| ① |   | Screw Pan(SPwasher)
M4X8 | Torque
1.18 - 1.57 N·m |
|----------|---|-----------------------------|---------------------------|



Adjustment

Needle threader (right/left)

[]

[]

1.

[]

], [#12:

]. 2.

[].

,

. 3.

1. 4.

5.

,

,

. 6.

1. 7.

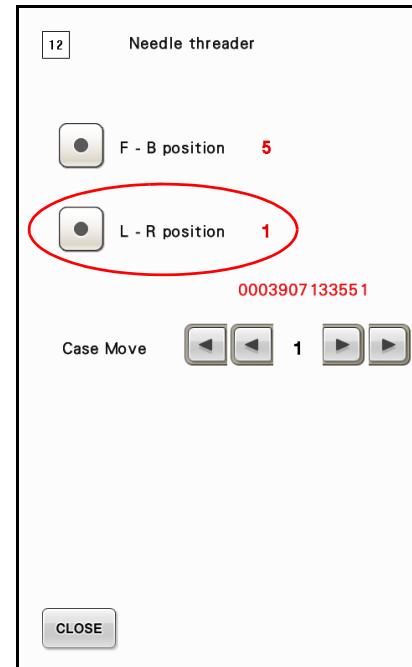
*

•

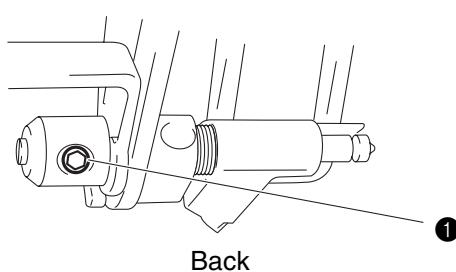
,

[<] [>]

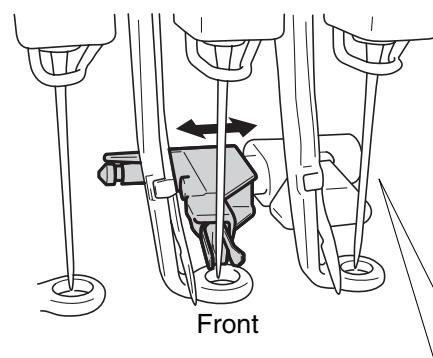
5



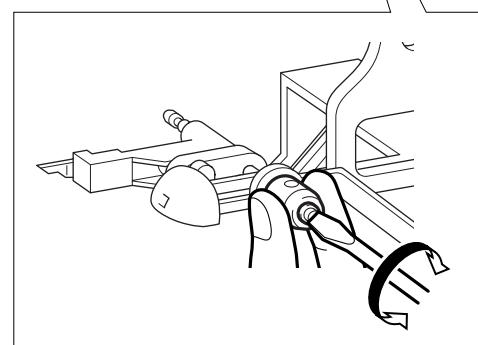
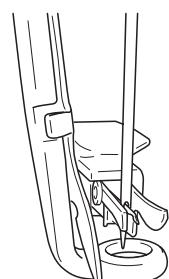
| | | | | |
|----------|---|---|-------------------------------|---------------------------|
| ① | ◎ | ■ | Set Screw Socket (CP)
M3X3 | Torque
0.59 - 0.78 N·m |
|----------|---|---|-------------------------------|---------------------------|



Back



Front



Check

Needle threading check

[]

[]

1.

[

],

[#06:

]. 2.

[Orig

in],

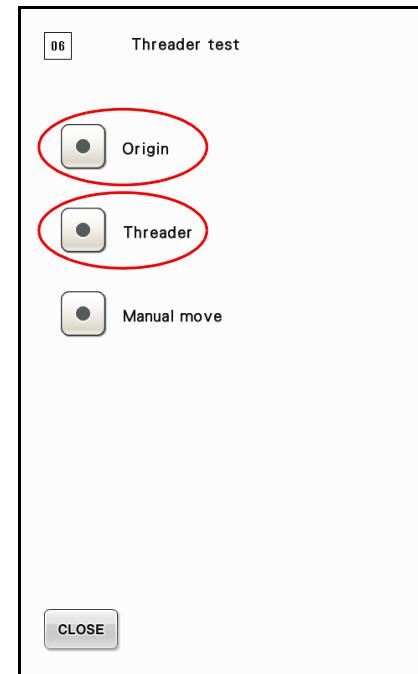
. 3.

[

. 4.

12

* ,
• [<] [>]



Adjustment

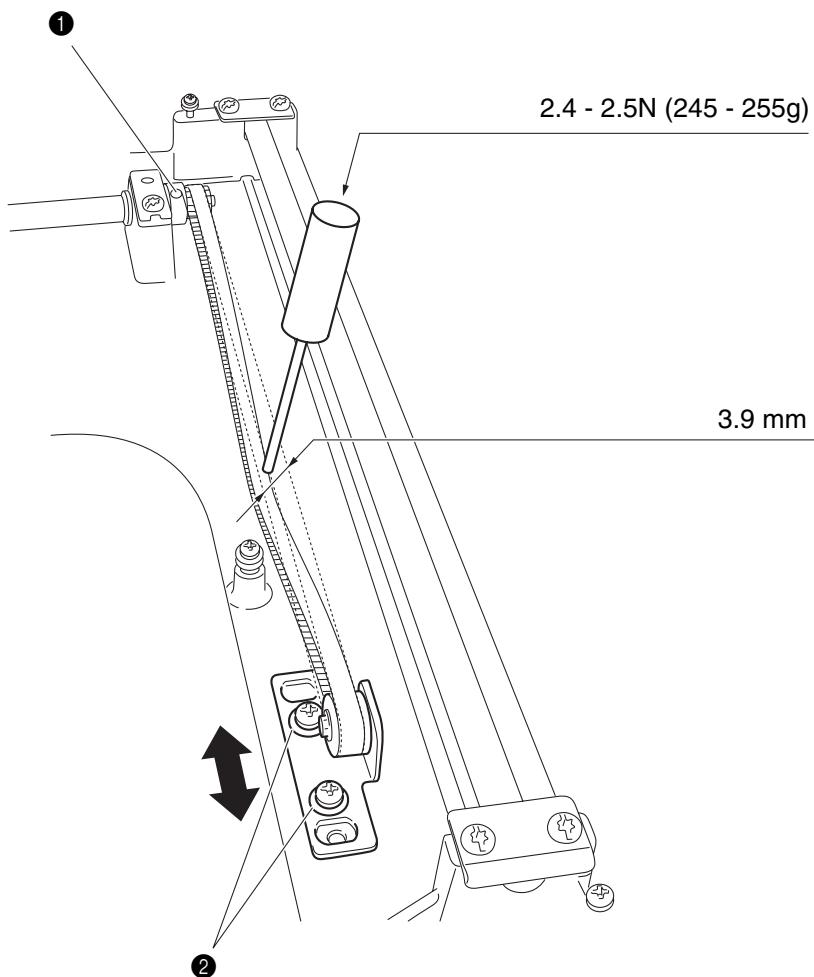
Y-belt tension

| | | | |
|----|----|-------|------|
| [|] | | 3,9 |
| [|] | | |
| 1. | 2 | 1. 2. | 2 |
| . | . | , | 2. 3 |
| Y | Y- | , | . |
| 2 | 2 | 2. 5. | . 4. |
| , | , | , | Y- |
| 6. | 2 | 1. | . |

| | | | |
|---|---|--------------------------------|---------------------------|
| ① | ◎ | Set Screw Socket (OP)
M3X3 | Torque
0.78 - 1.18 N·m |
| ② | | Screw Pan (SP) washer
M4X10 | Torque
1.18 - 1.57 N·m |

XC2277001

Push-pull gauge (5N)



Adjustment

X-belt tension

[]

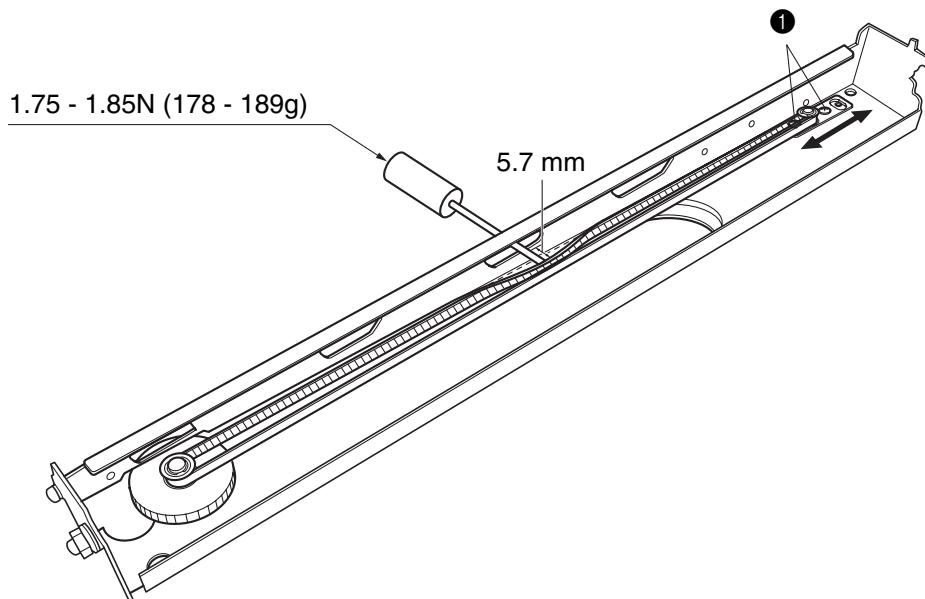
5,7

[]

- 1.
- 2.
- 1.
- .
- 3.

| | | | | |
|---|---|-----------------------------|---|---------------------------------|
| 2 | 1. | X- | , | . |
| ① |  | Screw Pan(SP)washer
M4X8 | | 3.
Torque
1.18 - 1.57 N·m |

XC2277001 (5N)



Adjustment

Picker activation

[]

0,5 1,5

[]

1.

2.

[], [#05:
]. 3. [Picker move],

, 4.

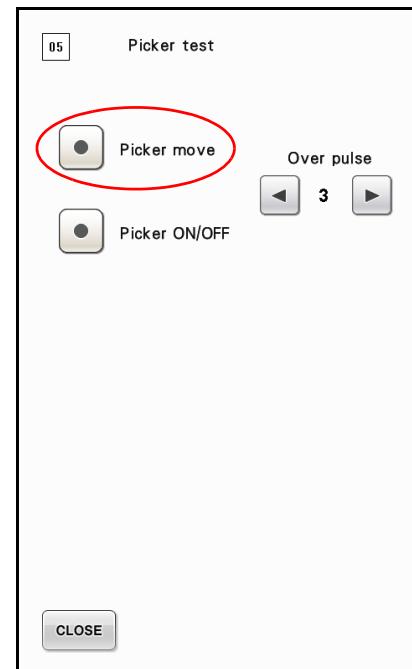
[]. 5.], [
[>] (),

0,5 , 1,5 . 6.

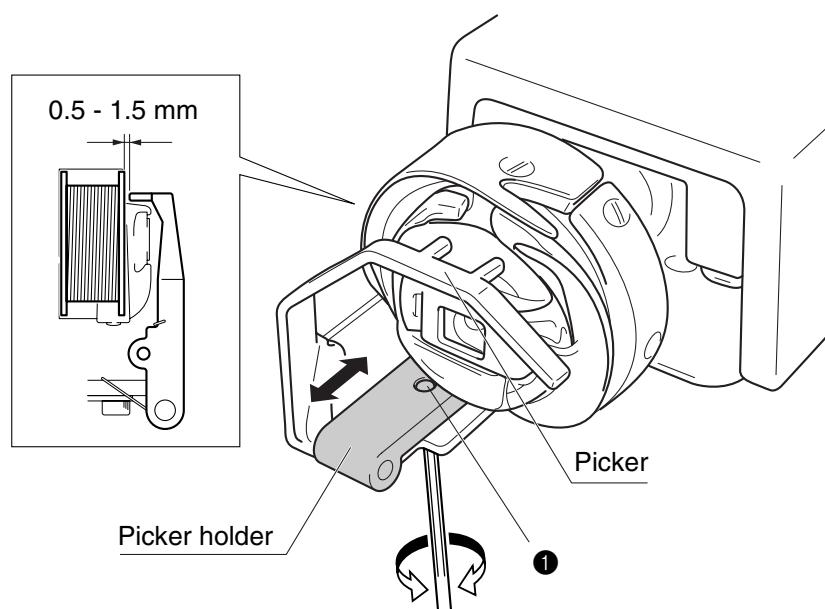
,

, 1

,



| | | | |
|---|--|----------------------|---------------------------|
| ① | | Bolt, Socket
M3X5 | Torque
0.59 - 0.78 N·m |
|---|--|----------------------|---------------------------|



Adjustment

Movable knife initial position

[]

[]

1.

[]

,
]. 2.

[#03:
[Origin],

. 3.

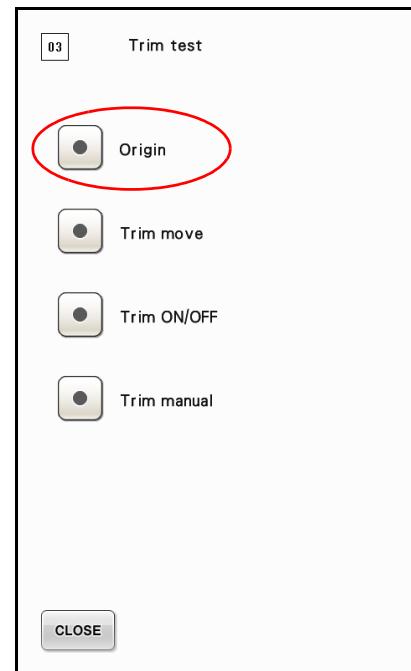
2

1. 4.

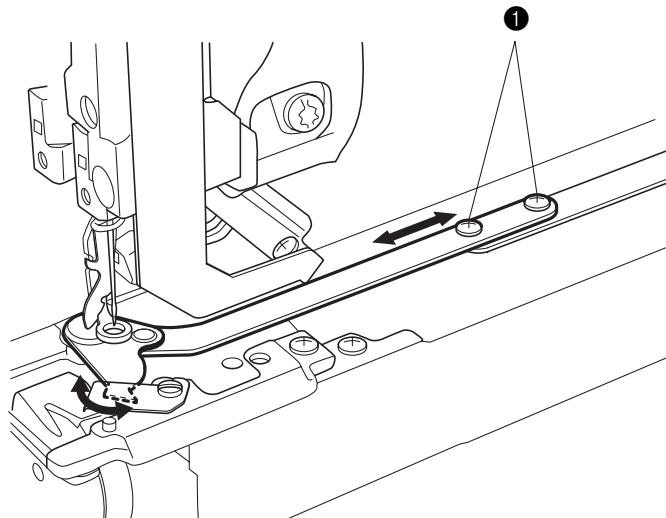
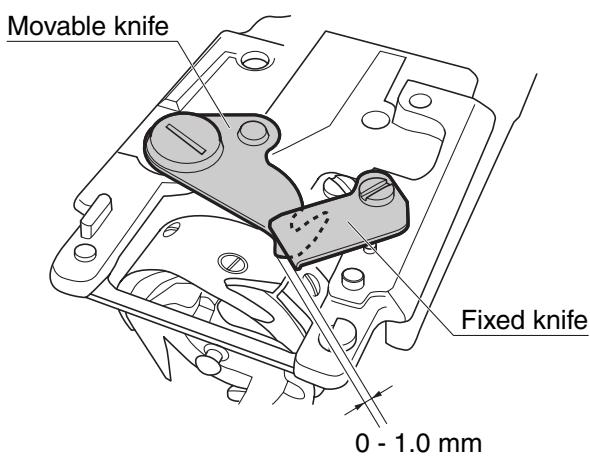
. 5.

2

1.



| | | | |
|---|--|---------------------|---------------------------|
| 1 | | Screw, Bind
M3X4 | Torque
0.59 - 0.78 N·m |
|---|--|---------------------|---------------------------|





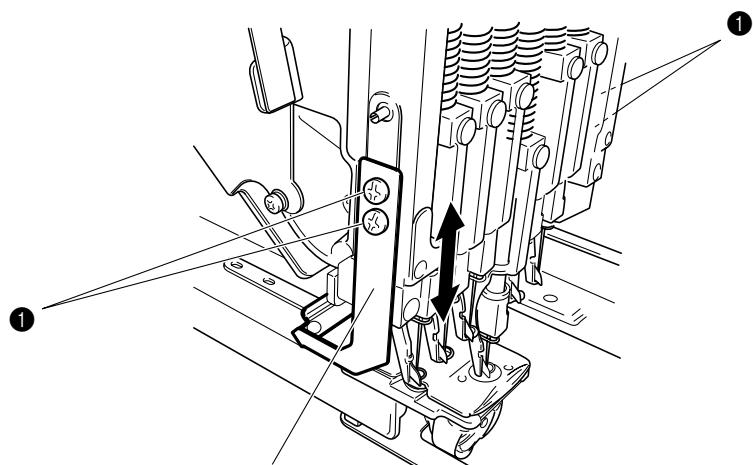
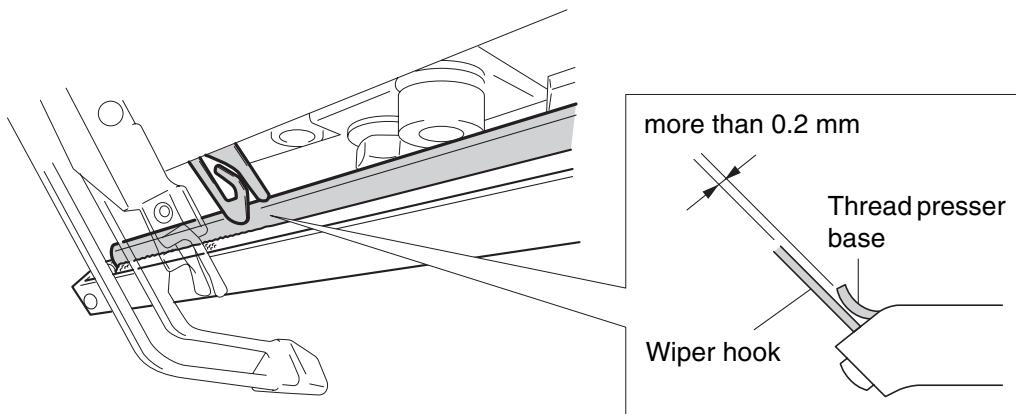
[]

[]

1. 4 1. 2.

3. . 4 1.

| | | | |
|---|---|---------------------|---------------------------|
| ① |  | Screw, Bind
M4X6 | Torque
1.18 - 1.57 N·m |
|---|---|---------------------|---------------------------|

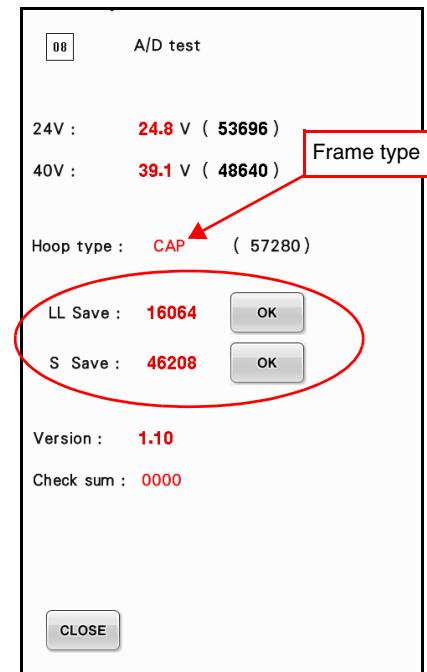


Adjustment

Hoop sensor (A/D value)

| | | | | |
|-----|-----|----|-----|----|
| [] | A/D | LL | A/D | S. |
|-----|-----|----|-----|----|

- []
 - A/D
 - LL
 - A/D
 - S.
- 1.
- 2.
3. [OK] (LL Save),
A/D. 4. [OK] (S Save),
A/D. 5.





[]

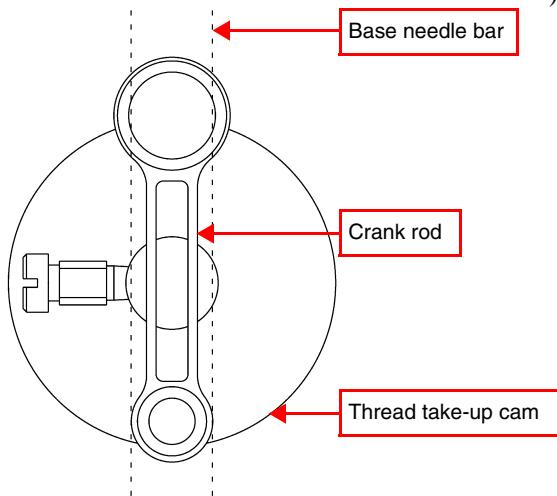
19,5 – 20,0

[] [H] [L].

1.

2.

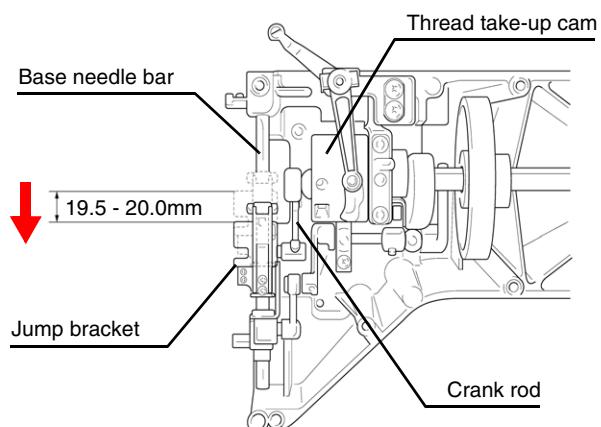
Top dead center position



).
[

19,5 – 20,0

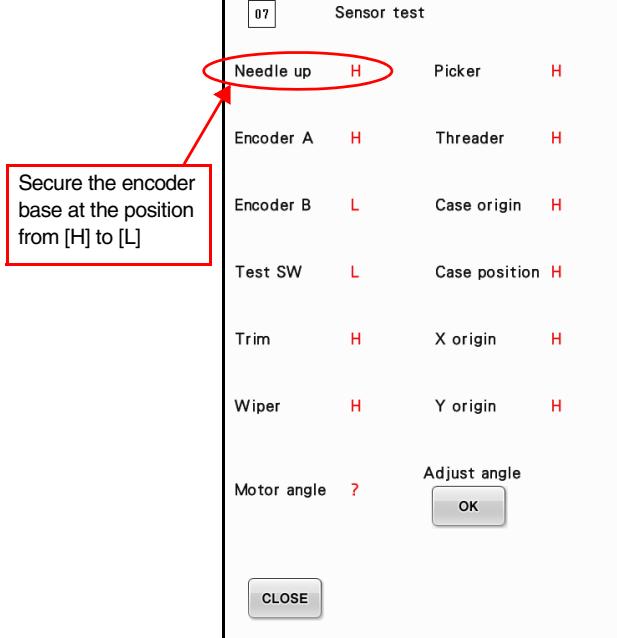
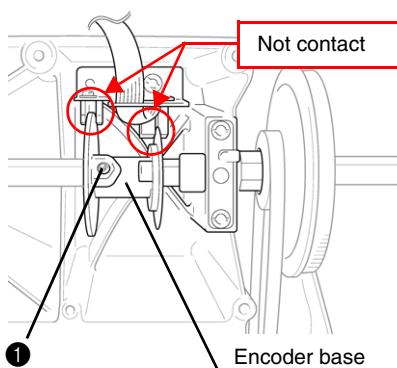
(=



3. Loosen the screw ①.

Rotate the encoder base counterclockwise until [Needle up] signal display changes from [H] to [L], and then tighten the screw ①.

NOTE • Check that the 2 encoders do not contact with the 2 sensors.



①



Set Screw Socket (CP)
M4X6

Torque
0.20 - 0.39 N·m



Set Screw Socket (CP)
M4X6

Torque
0.20 - 0.39 N·m

[]

[]

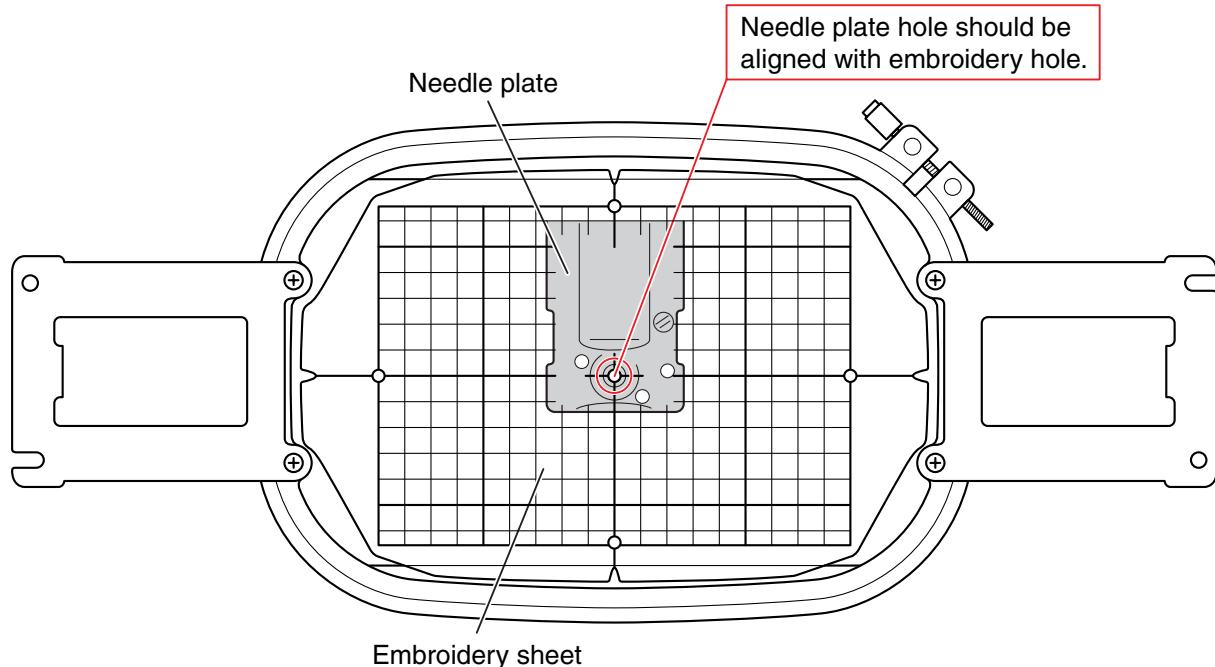
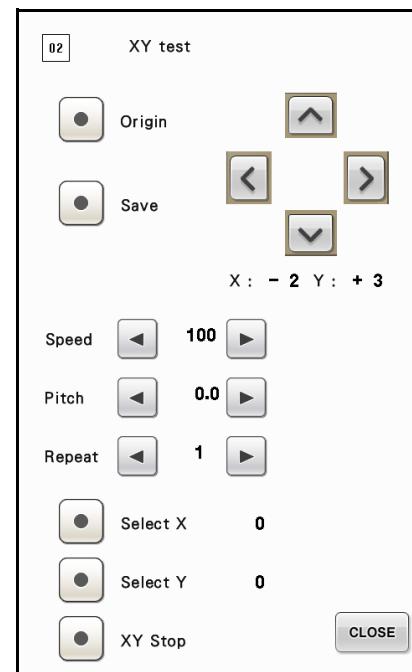
- 1.
2. LL

3. LL.

- 4.
5. [Origin], [#02: XY].
6. [↑], [↓], [←] [→]

].

7. [Origin]
8. [

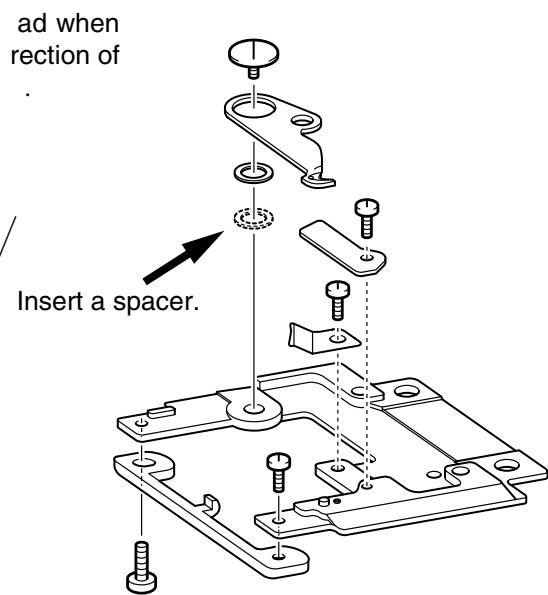
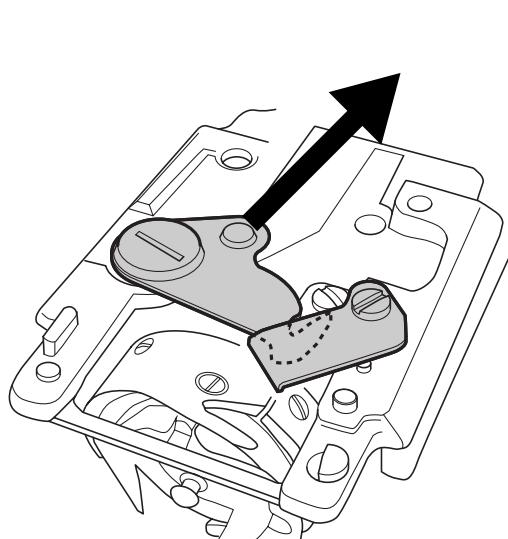


[]

[]

1.
,1. 2.
,2. 3.
. 4.

2 3,



.1

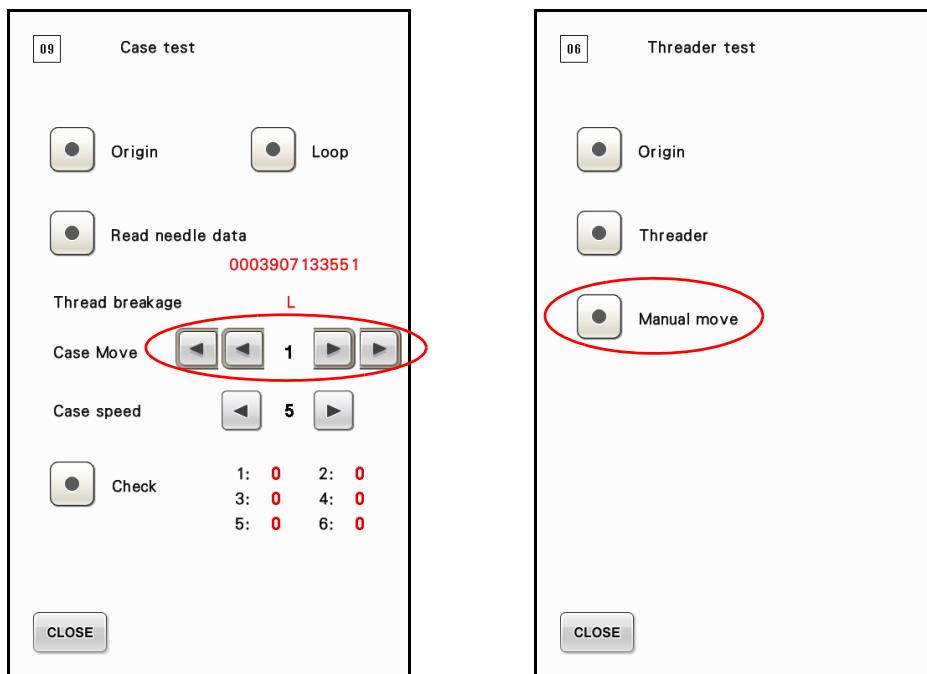
.2

1.

[

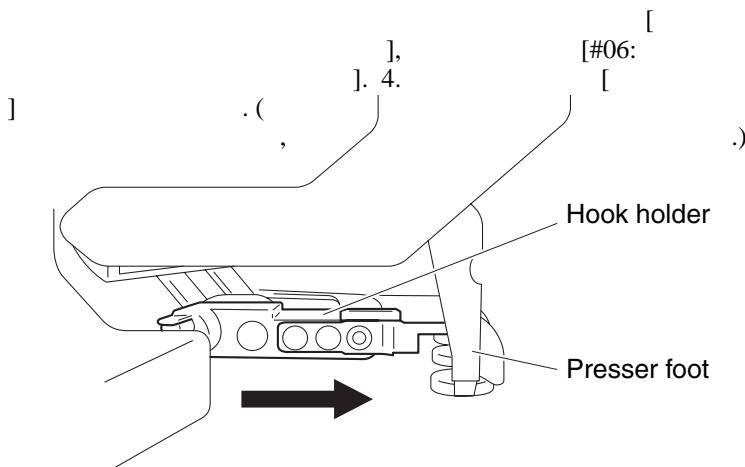
2.

[<] [>],

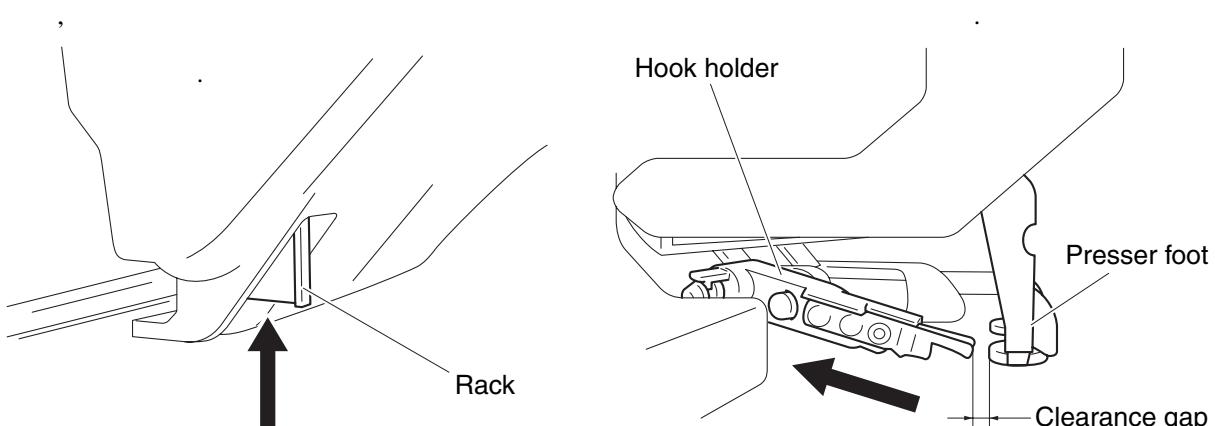


3.

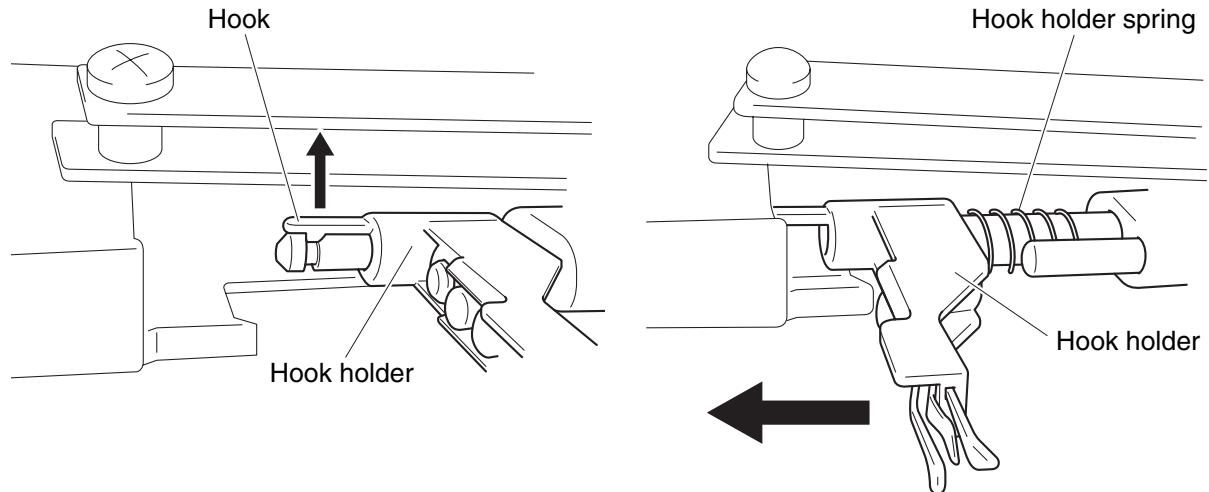
[



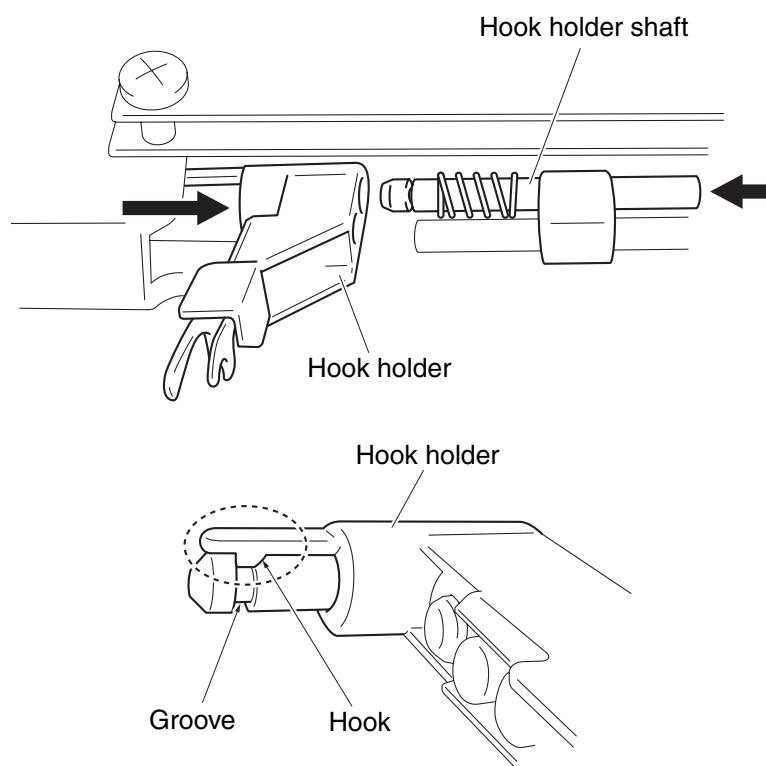
5.



6.



7.



5

Failure Investigation

for Electronic Parts

..... 5 - 2

..... 5 - 6

..... 5 - 7

... 5 - 8

.. 5 - 9

. 5

- 10

.. 5 - 1

2

..... 5 - 13

... 5

- 14

.. 5 -

15

.. 5 - 16

..... 5 - 17

USB USB-

... 5

- 19

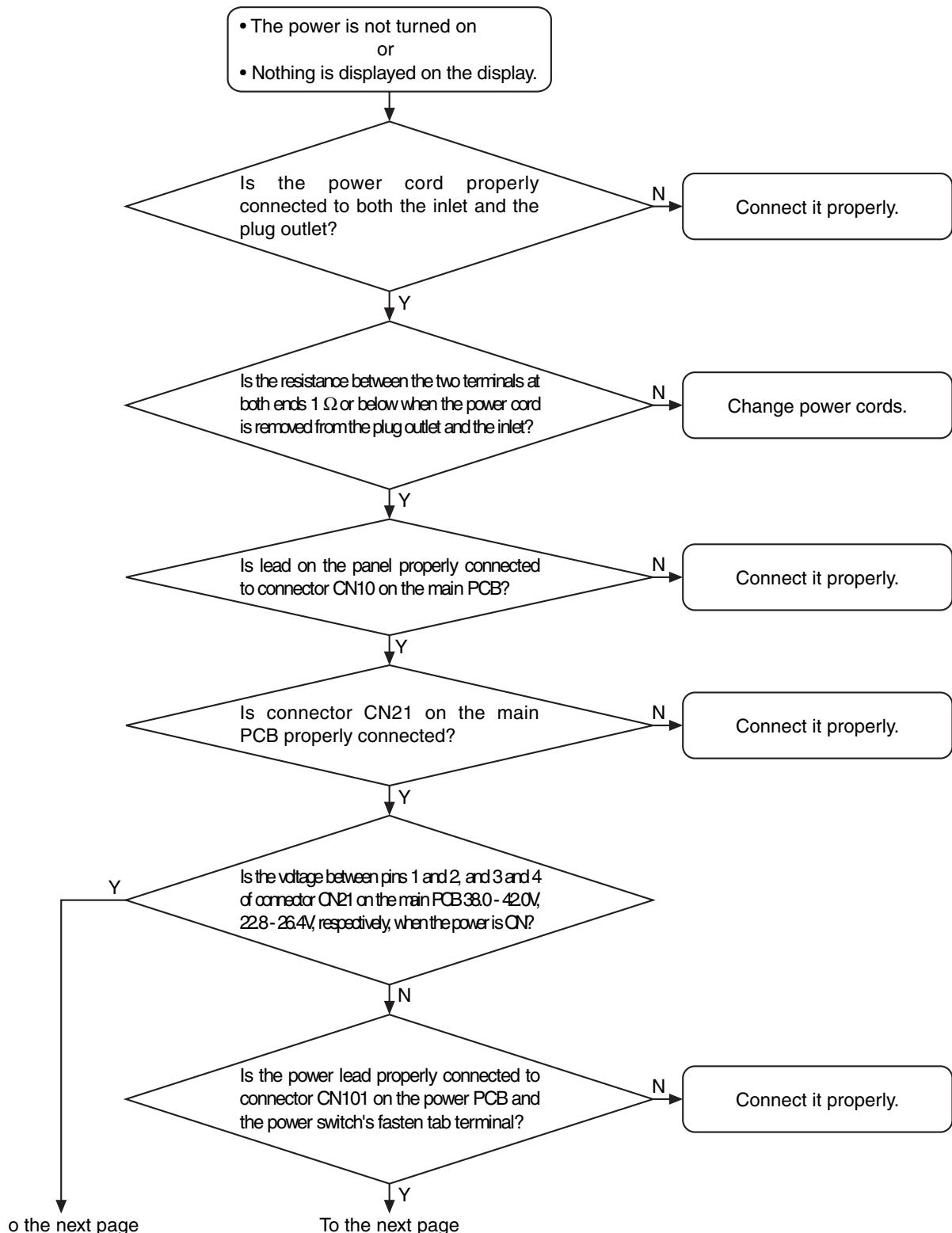
.. 5 - 1

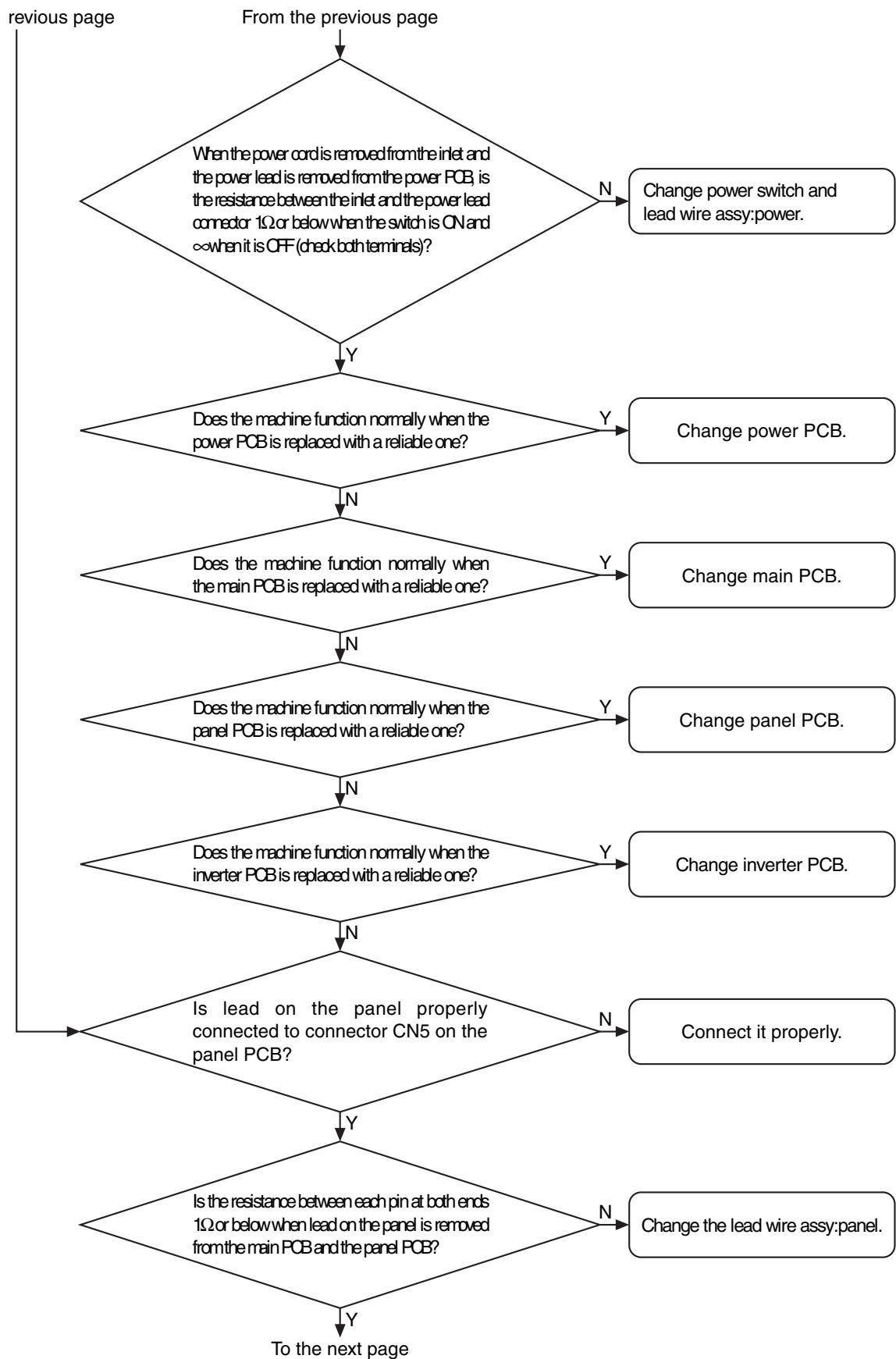
0

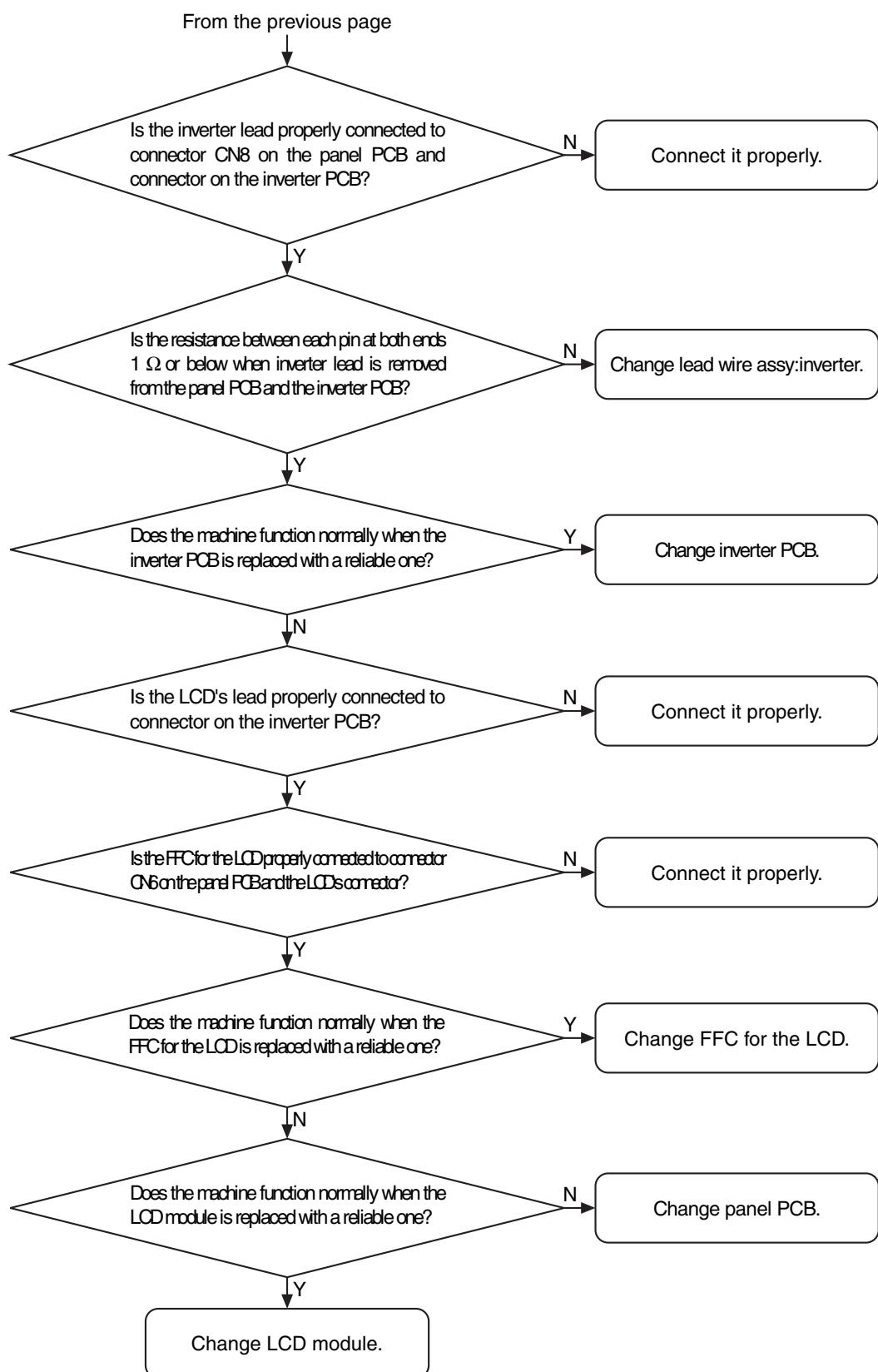
..... 5 - 23

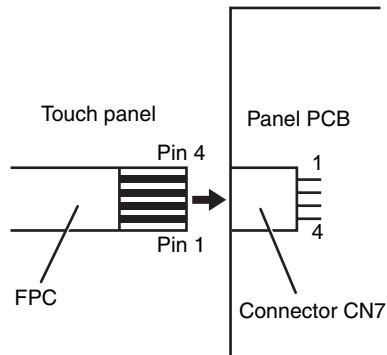
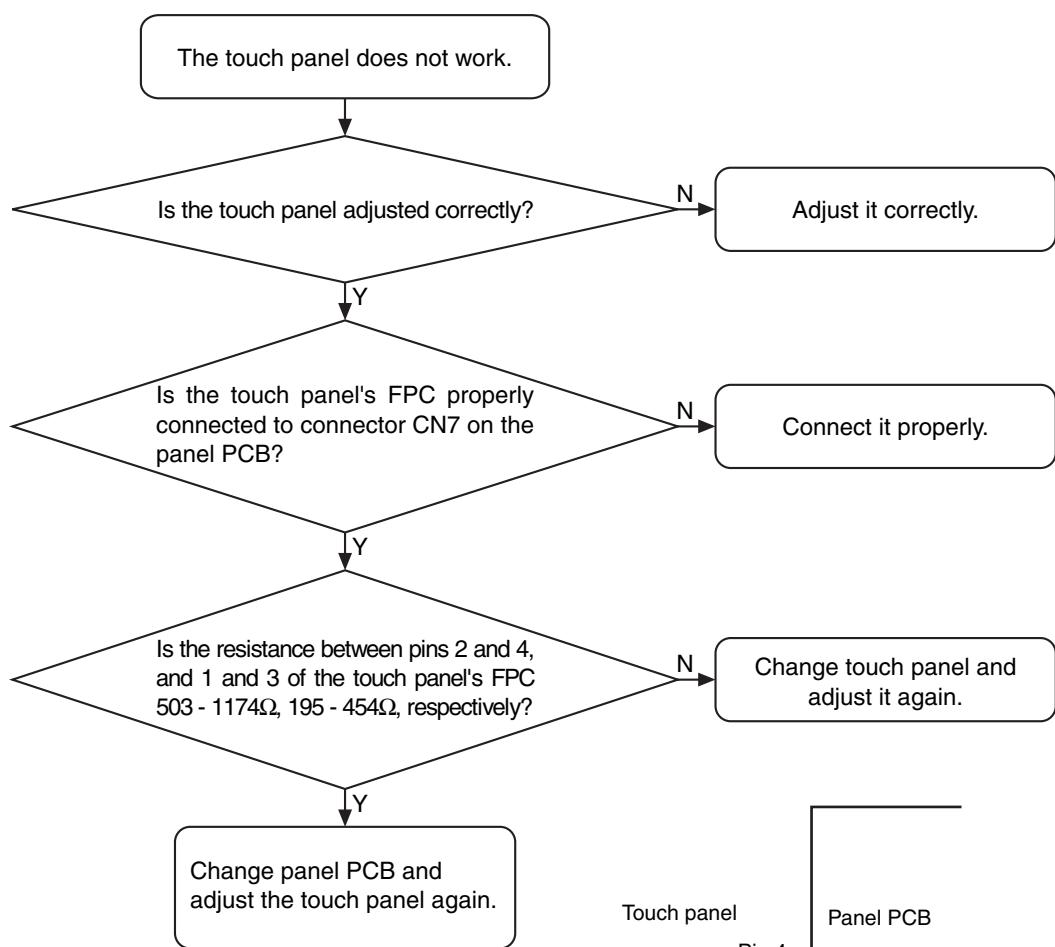
.....

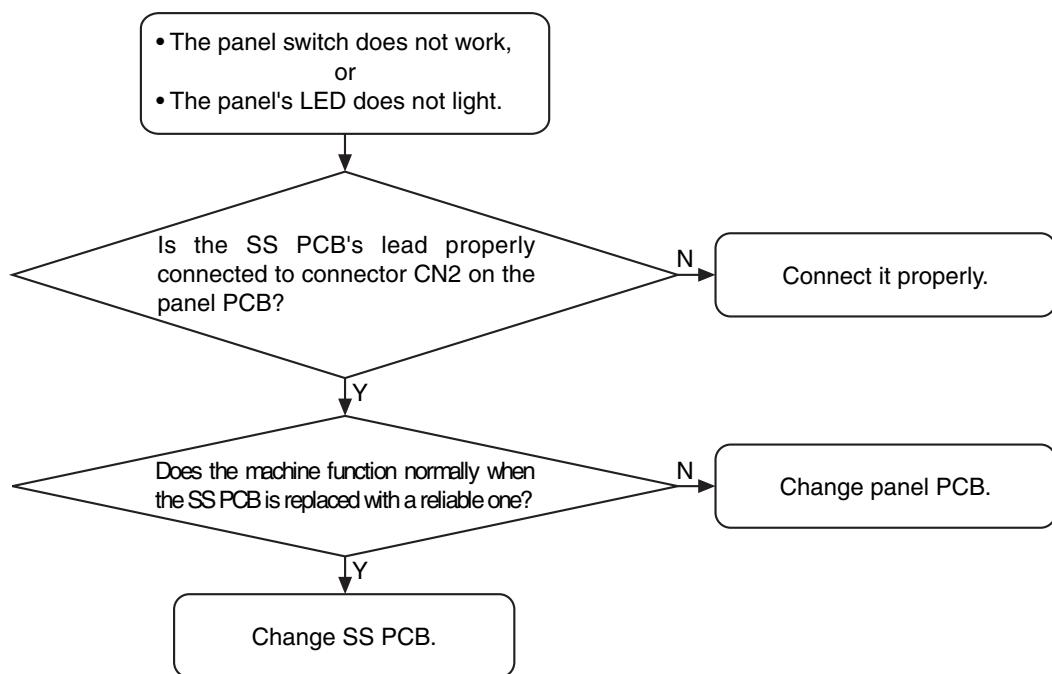
| Error message list | See page | Error message list | See page |
|---|----------------|--|----------------|
| The pattern is too large for the extra large embroidery frame. | 5 - 21 | Main motor encoder signal error. | 5 - 25 |
| Change to a larger embroidery frame. | 5 - 21 | Main motor encoder connect error. | 5 - 25 |
| USB media is not loaded. Load USB media. | 5 - 19 | Main motor current error. | 5 - 26 |
| This USB media cannot be used. | 5 - 19 | Trimming sensor error. | 5 - 13 |
| Not enough space. Delete some patterns or use a different USB media. | 5 - 19 | Machine PCB power off. | Check Main PCB |
| The USB media was changed. Do not change the USB media while it is being read. | 5 - 19 | Wiper error. | 5 - 14 |
| The USB media is write-protected so the data cannot be saved. Cancel the write-protection before trying to save the data. | 5 - 19 | Needle threader error. | 5 - 15 |
| The USB media is write-protected so the data cannot be deleted. Cancel the write-protection before trying to delete the data. | 5 - 19 | Picker error. | 5 - 16 |
| USB media error. | 5 - 19 | Main motor speed error. | 5 - 12 |
| Preventive maintenance is recommended. | Chapter 6 | Power supply voltage error.
(24V high) | 5 - 29 |
| Machine PCB reset. | Check Main PCB | Power supply voltage error.
(24V low) | 5 - 29 |
| Inappropriate needle stop position. | 5 - 12 | Power supply voltage error.
(40V high) | 5 - 29 |
| Needle bar case position error. | 5 - 8 | Power supply voltage error.
(40V low) | 5 - 29 |
| Needle case motor has been locked. | 5 - 8 | Panel communication error. | 5 - 27 |
| Needle bar case home position error. | 5 - 8 | Communication time out error. | 5 - 27 |
| X-axis home position error. | 5 - 10 | Data receiving command error. | 5 - 27 |
| Y-axis home position error. | 5 - 24 | Communication error. | 5 - 27 |
| XY moving error. | 5 - 12 | Check upper and bobbin thread. | 5 - 9 |
| EEPROM read/write error. | Check Main PCB | Preventive maintenance is recommended.
2000 hours exceeded. | Chapter 6 |
| Main motor rotate error. | 5 - 12 | | |

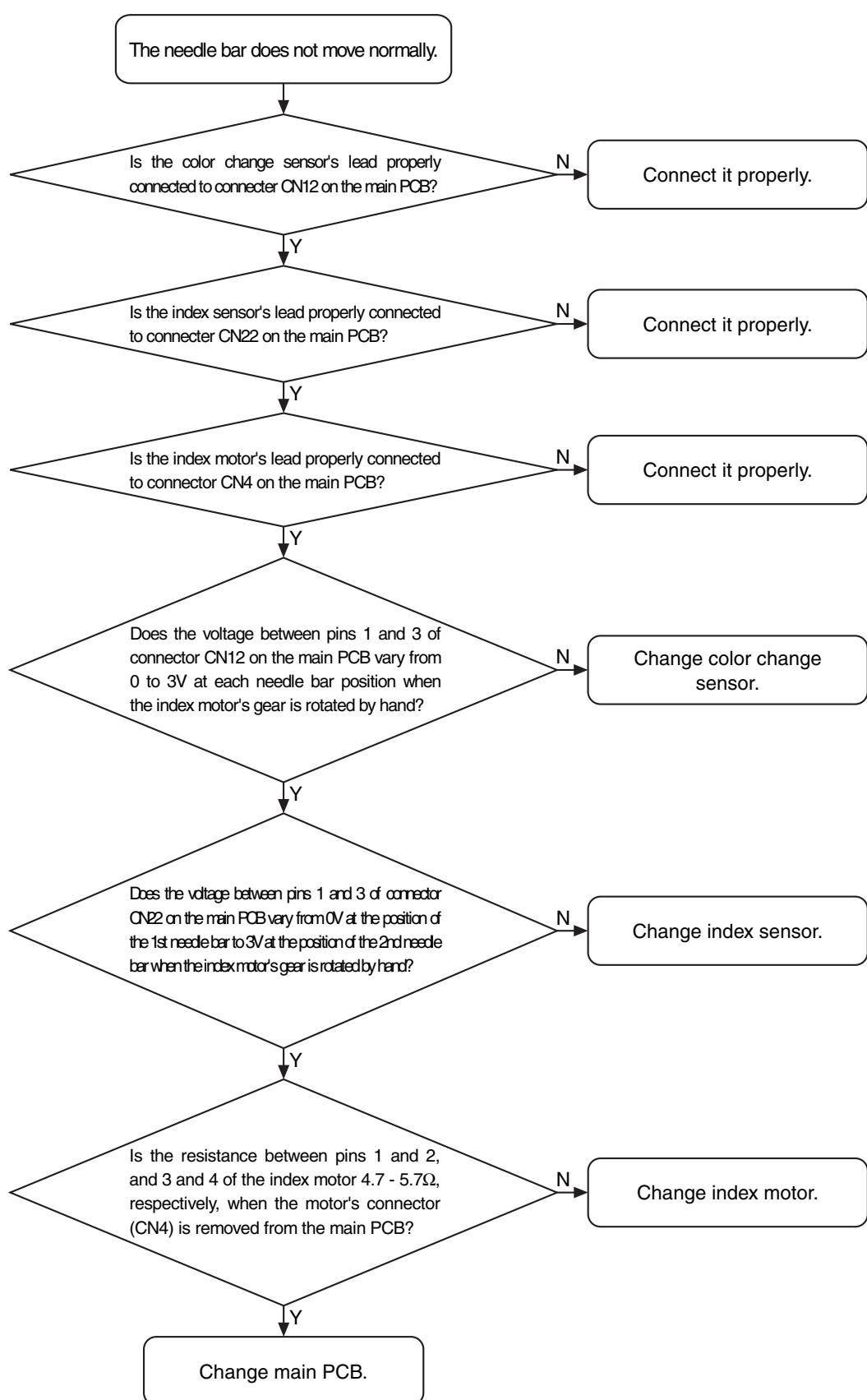


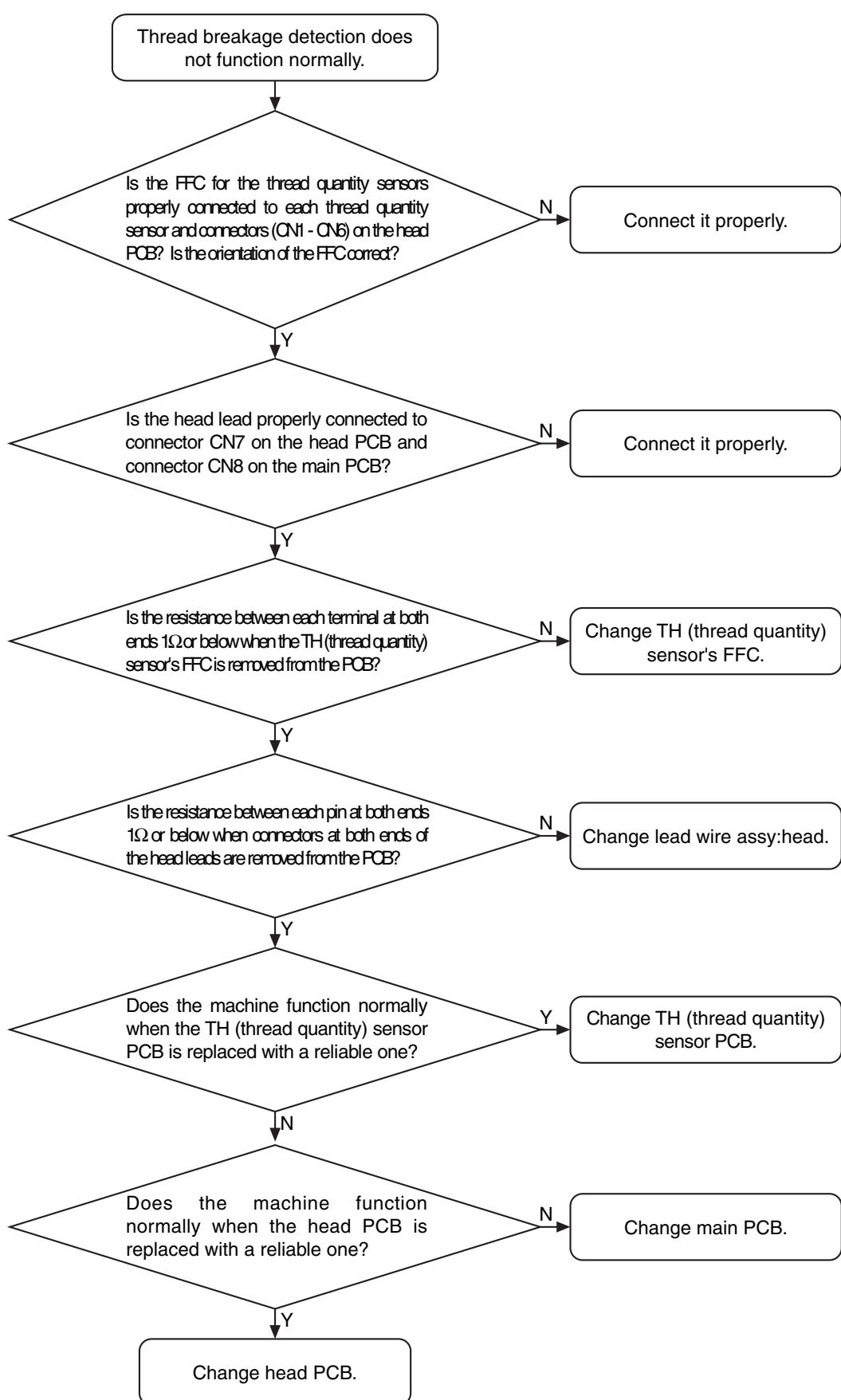


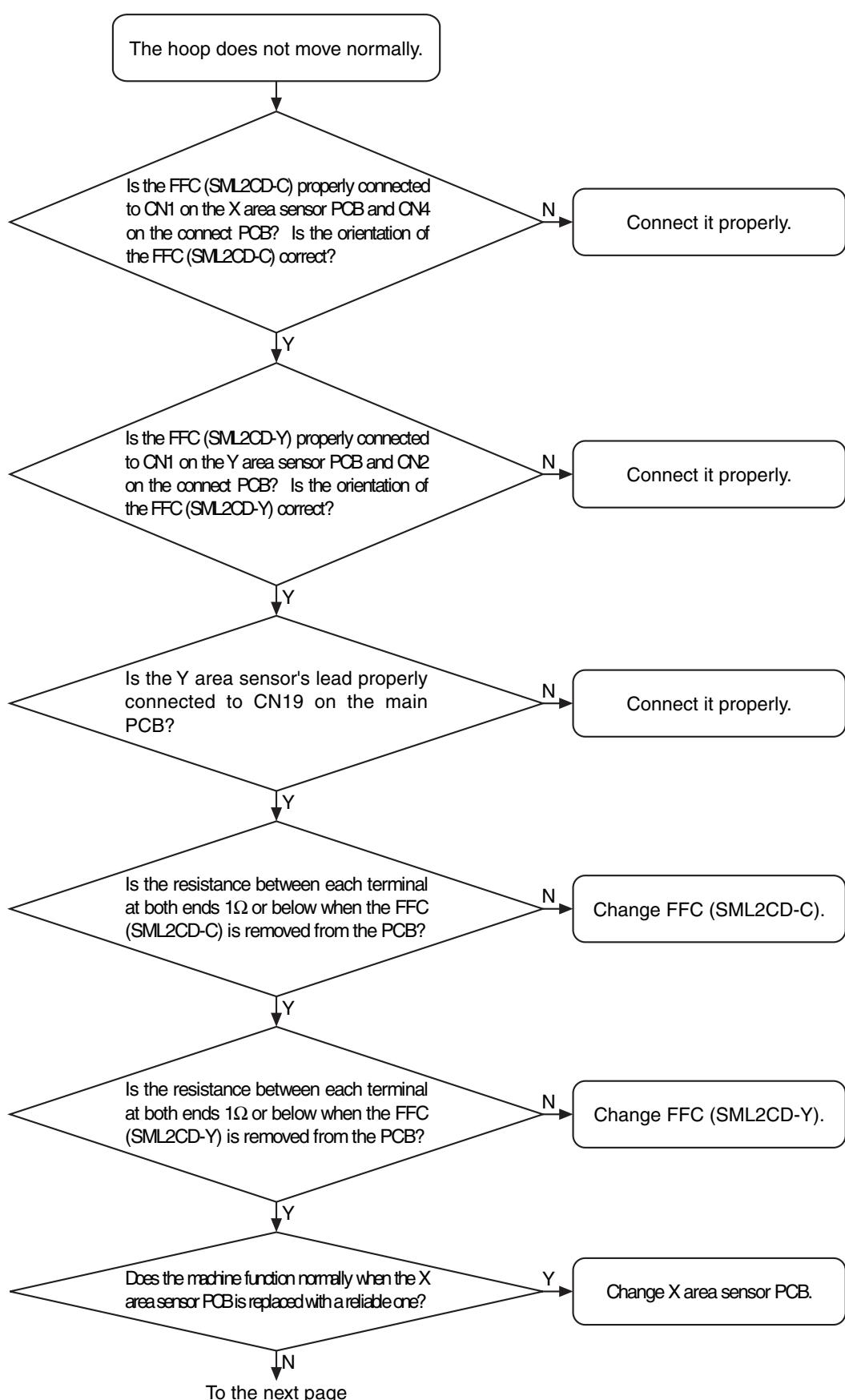


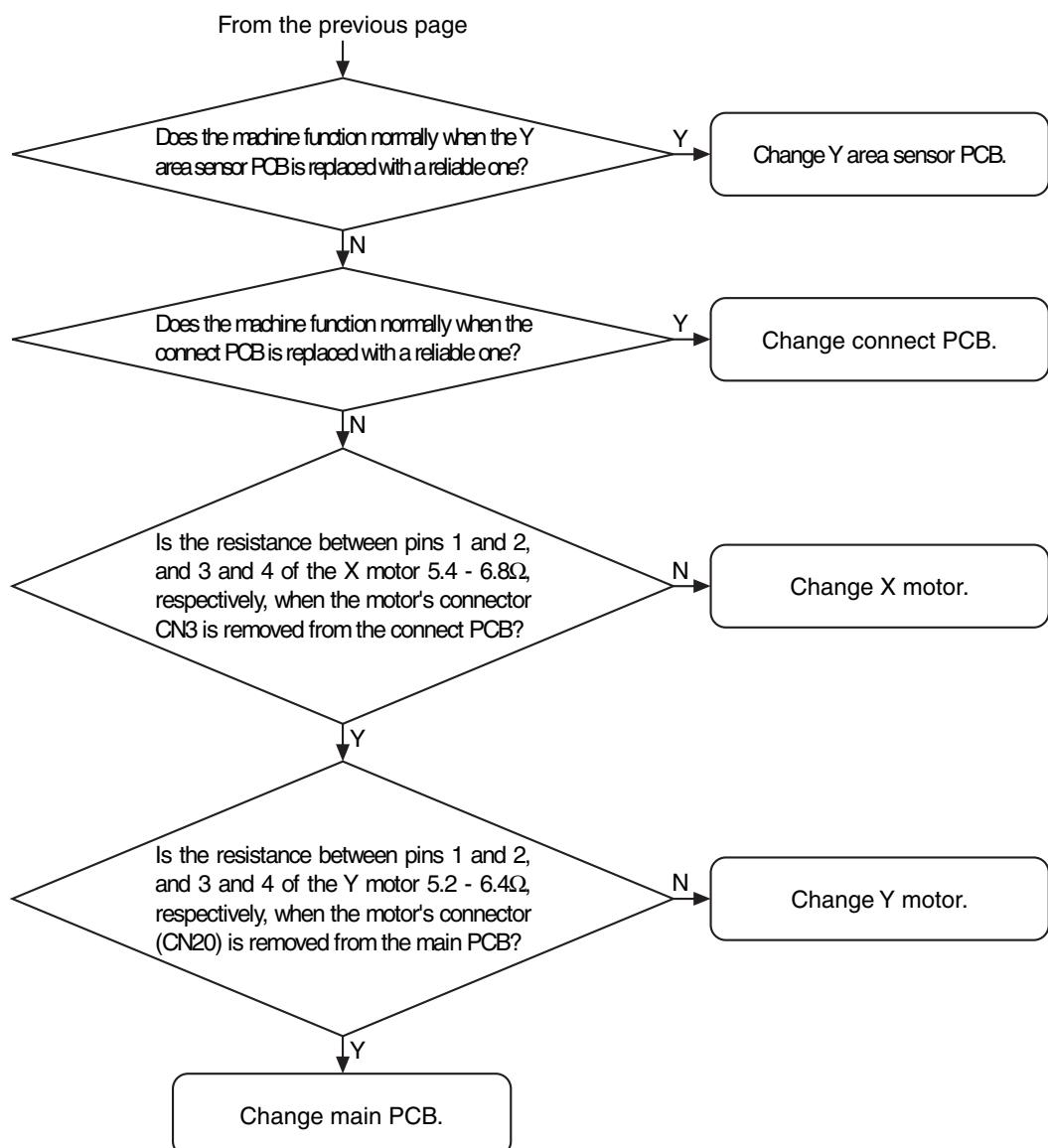


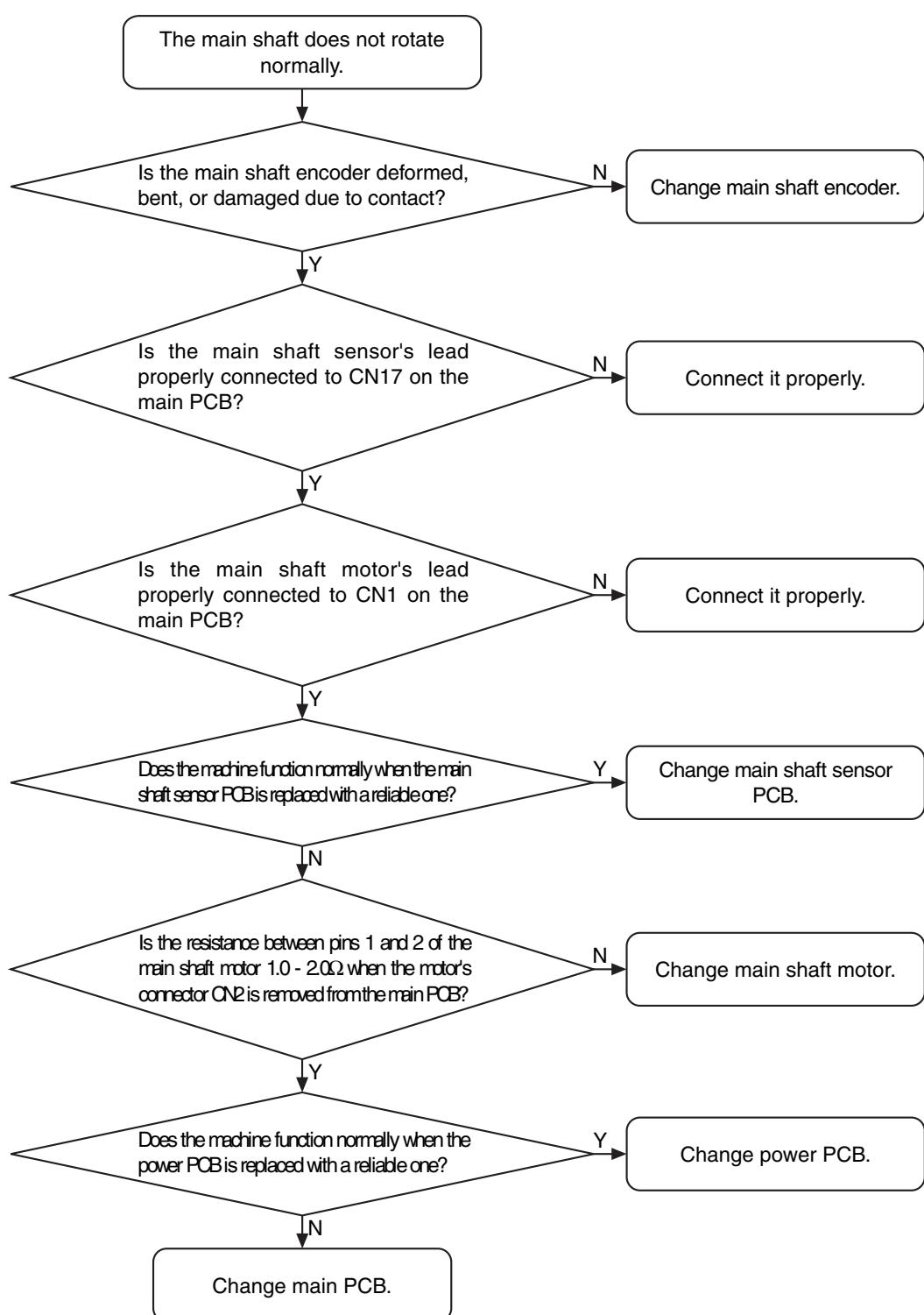


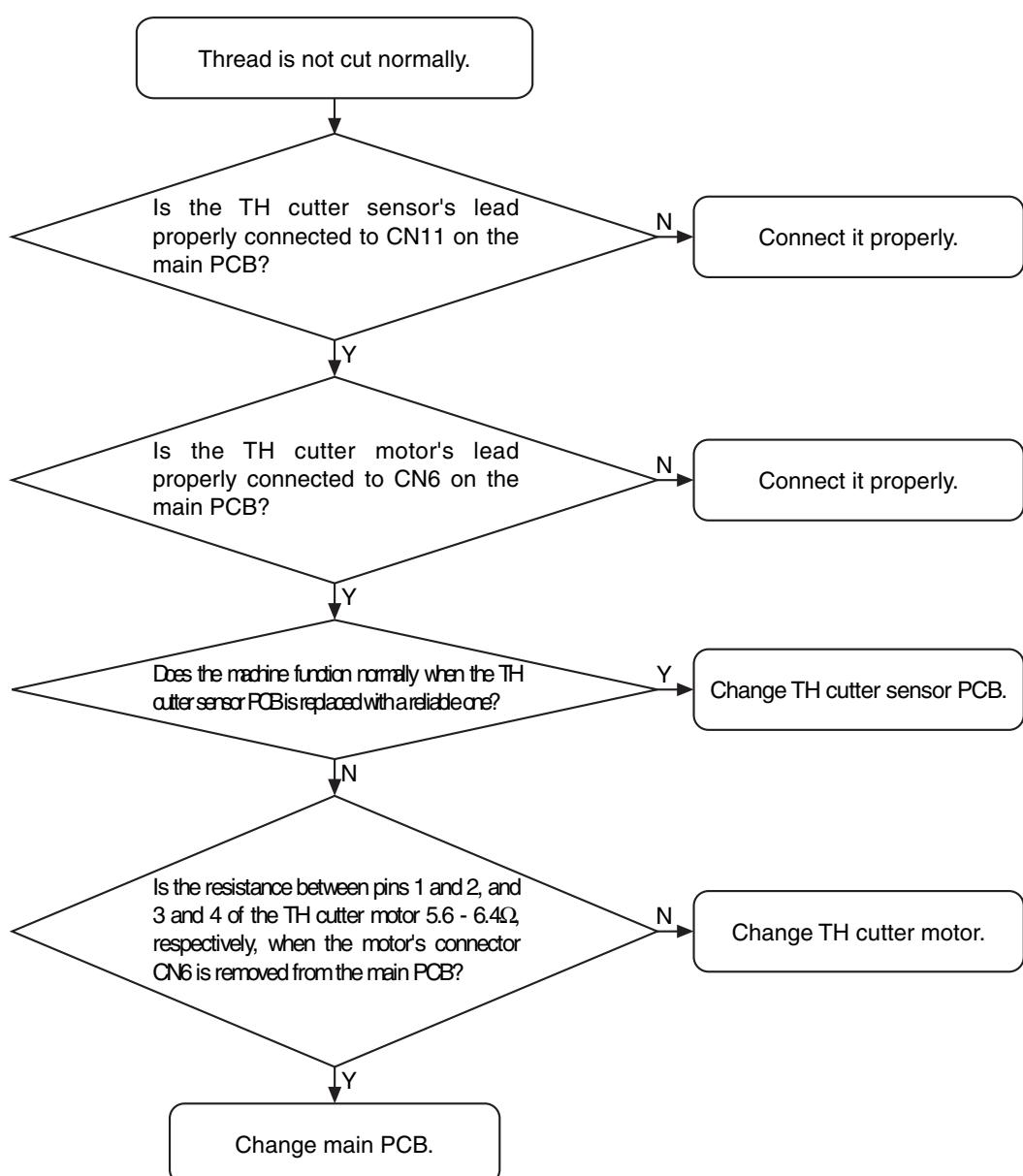


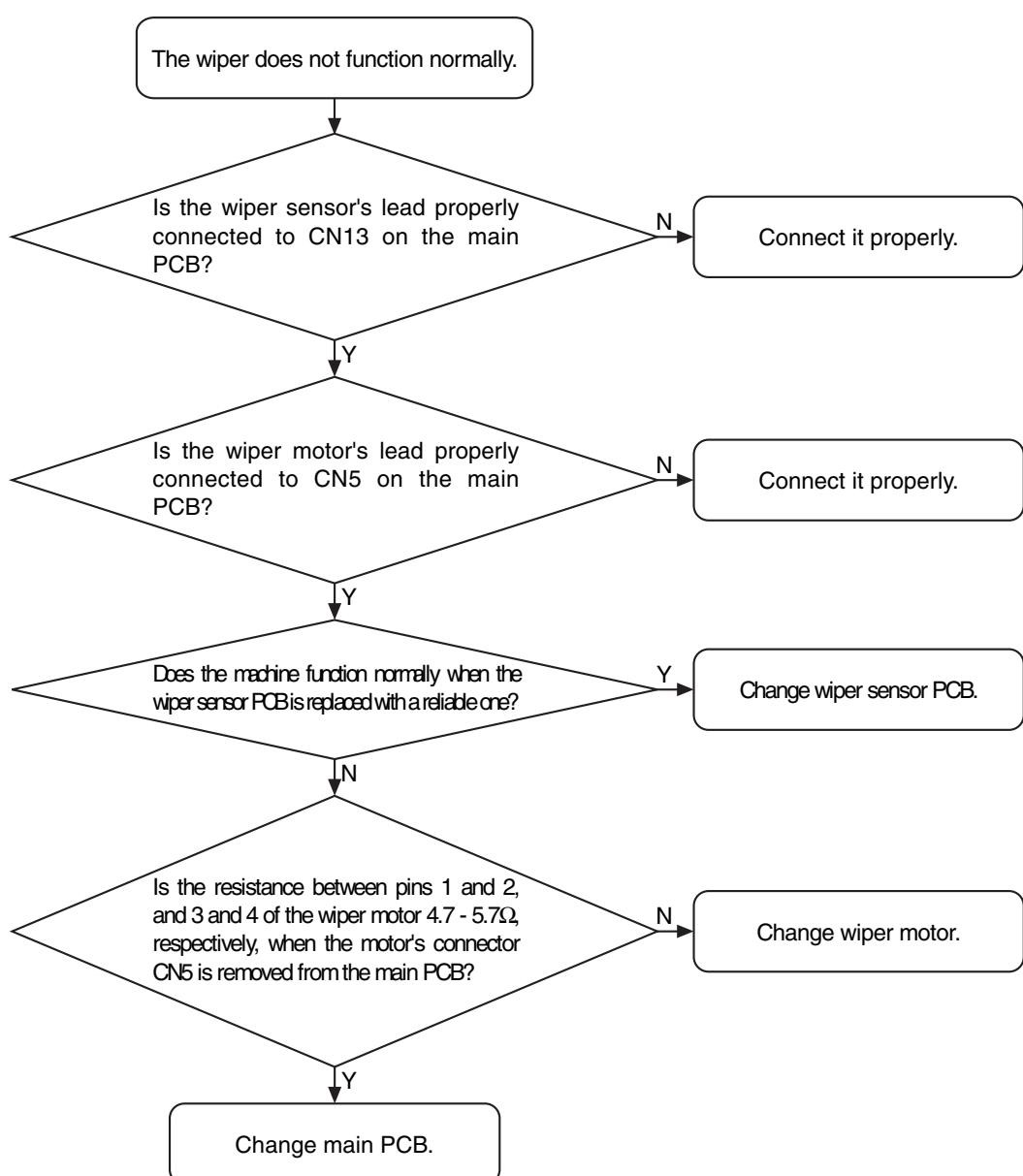


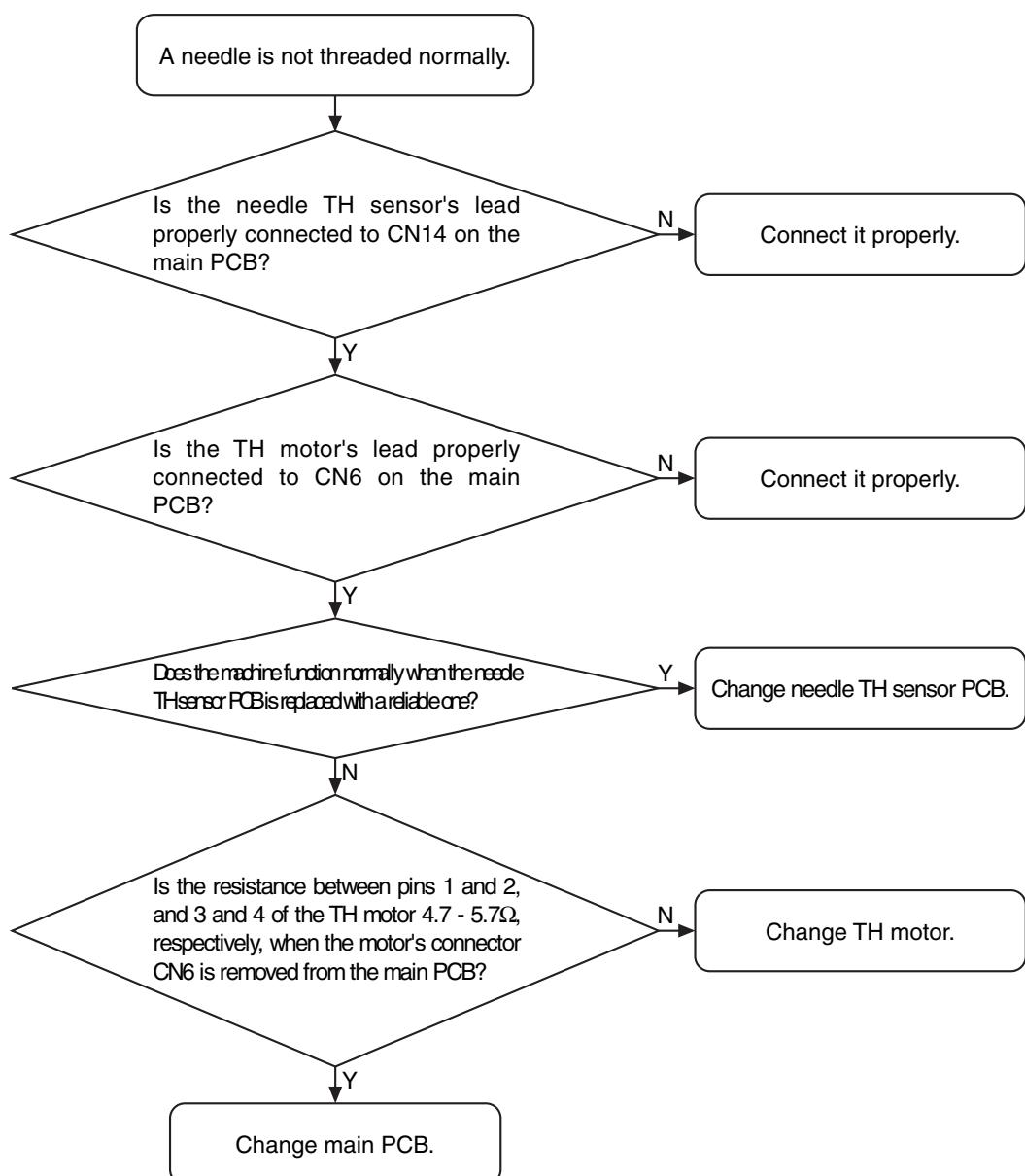


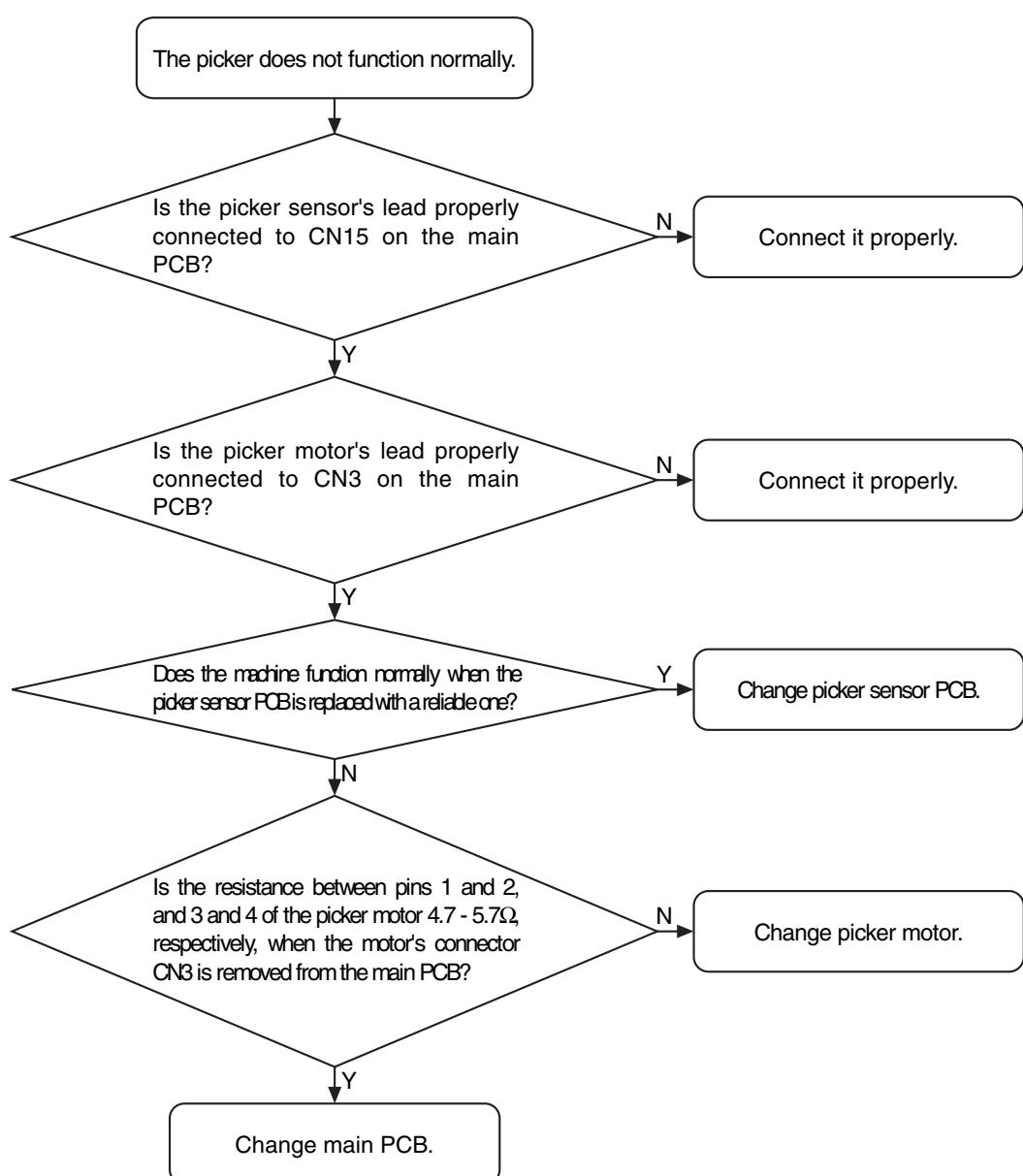


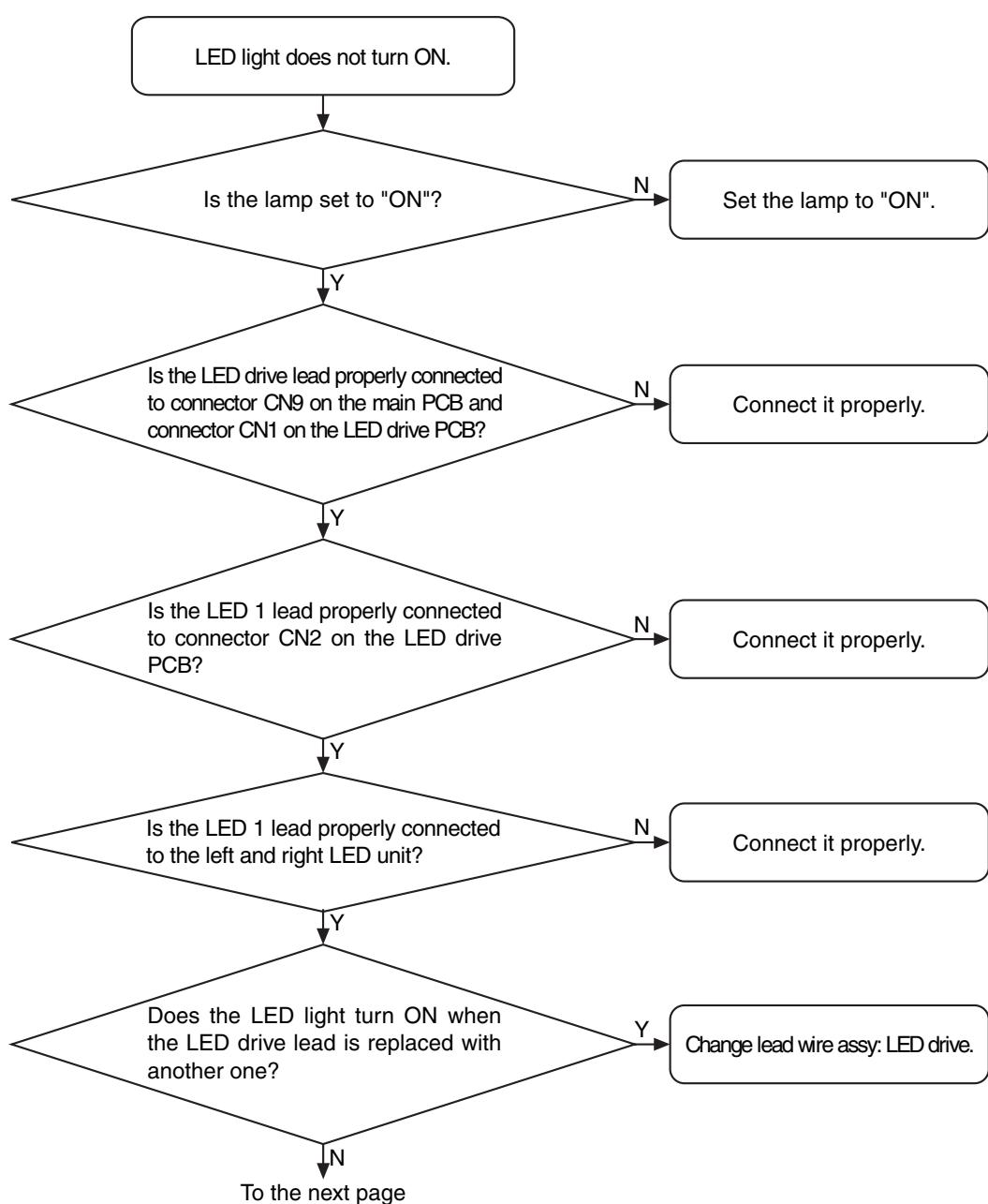


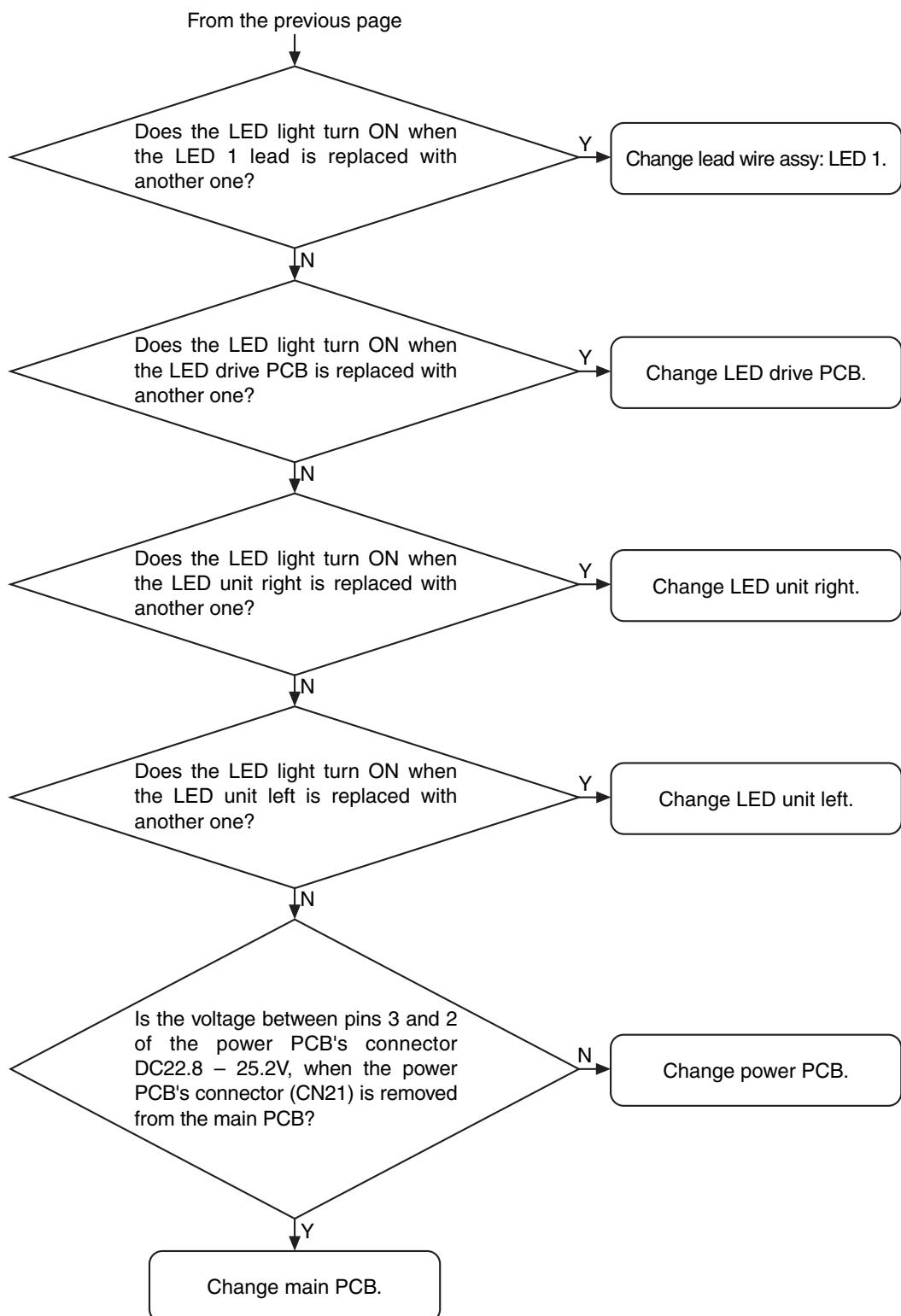


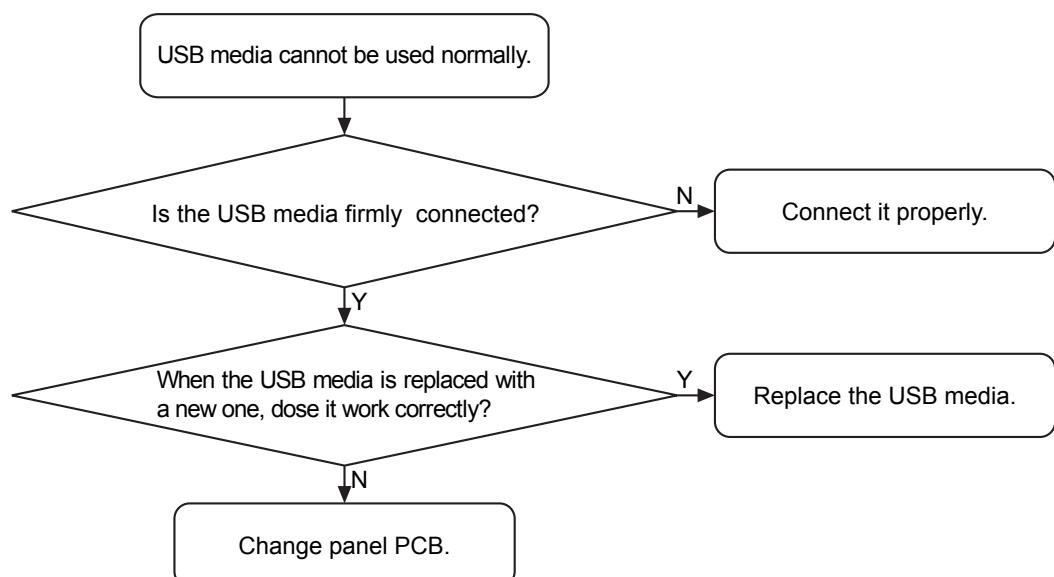
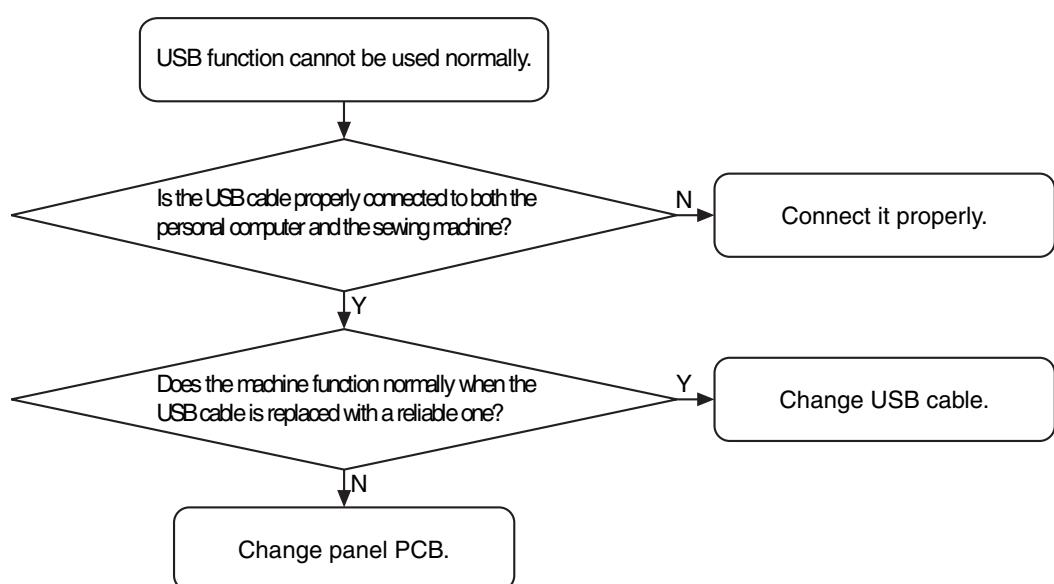


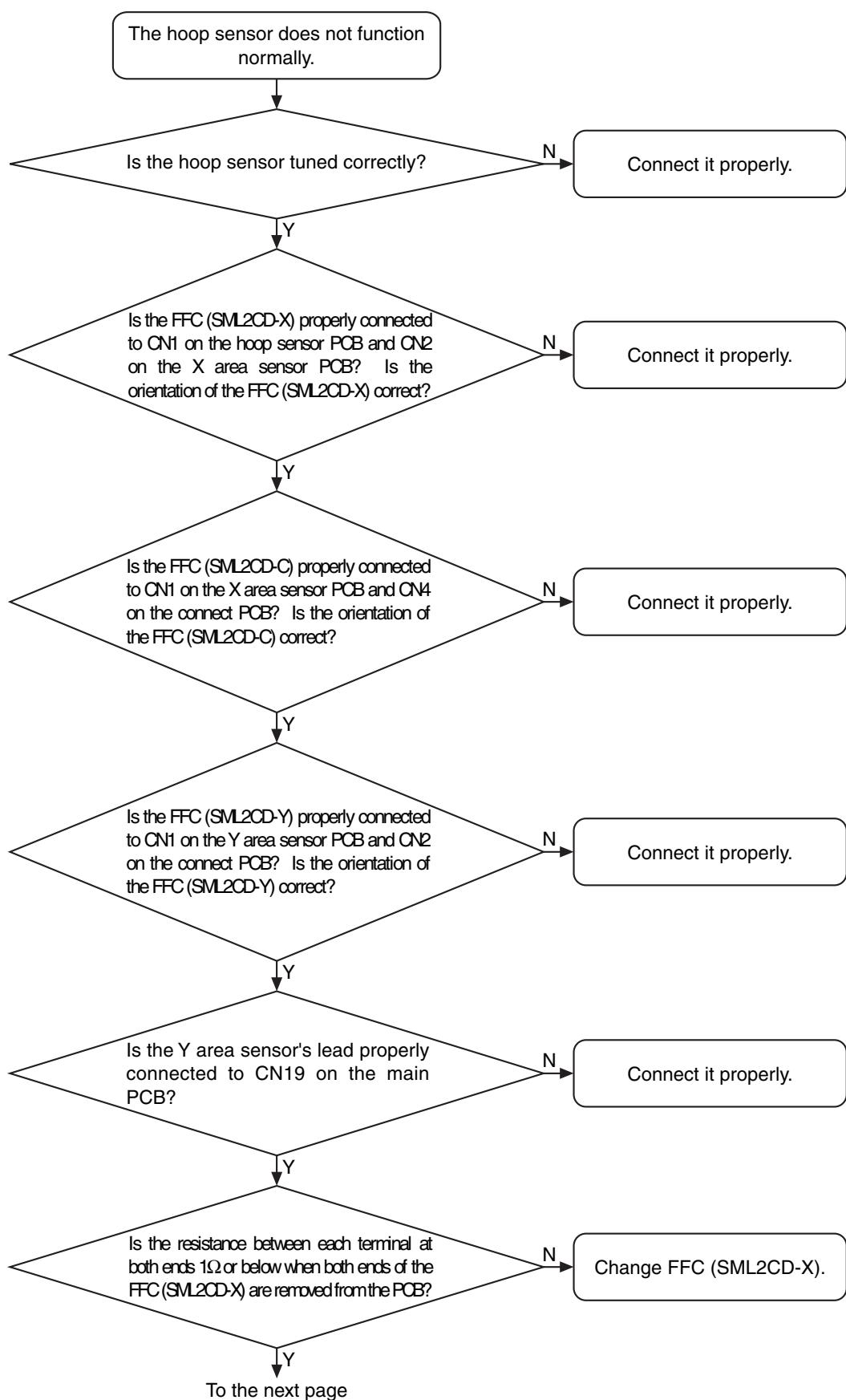


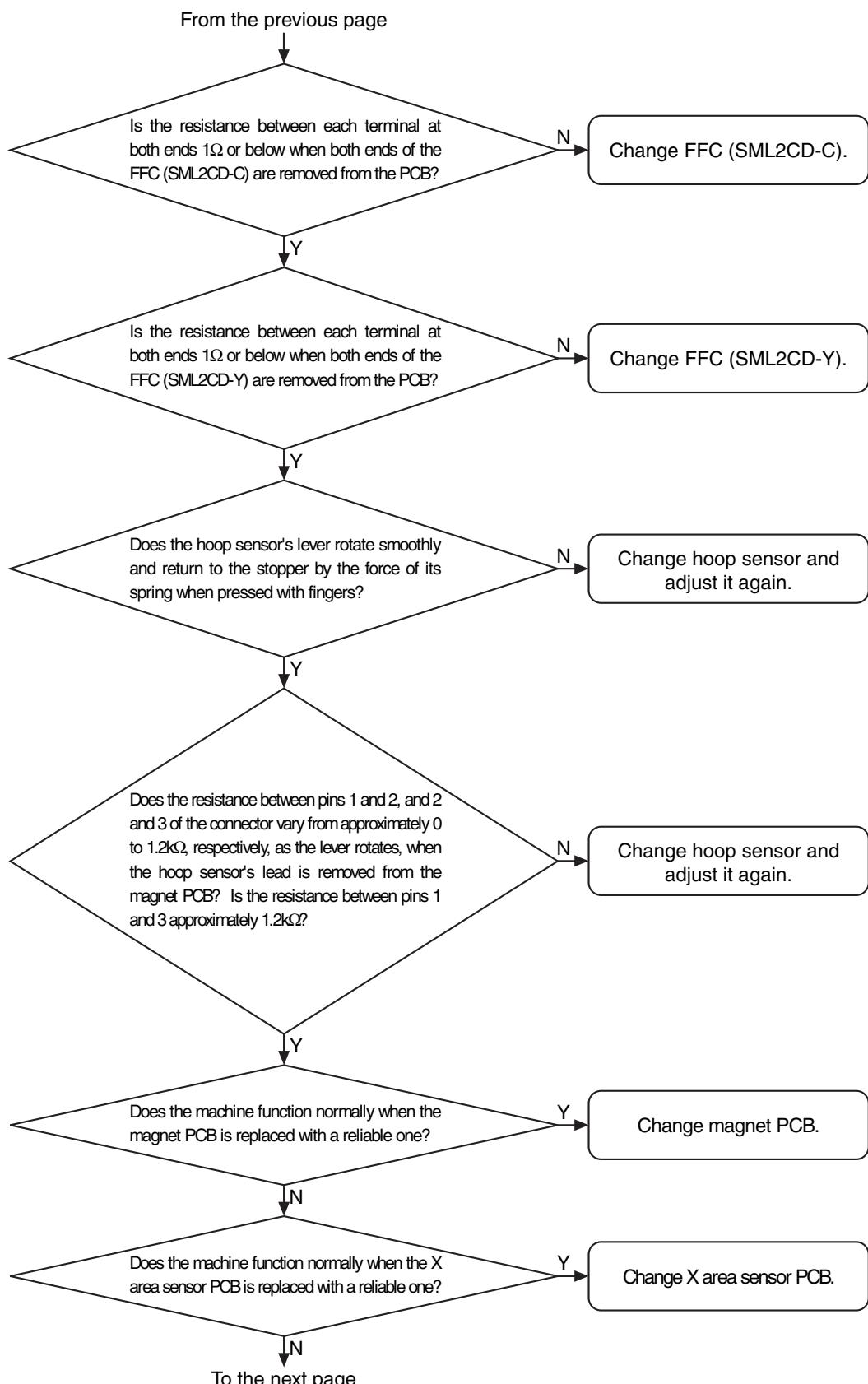


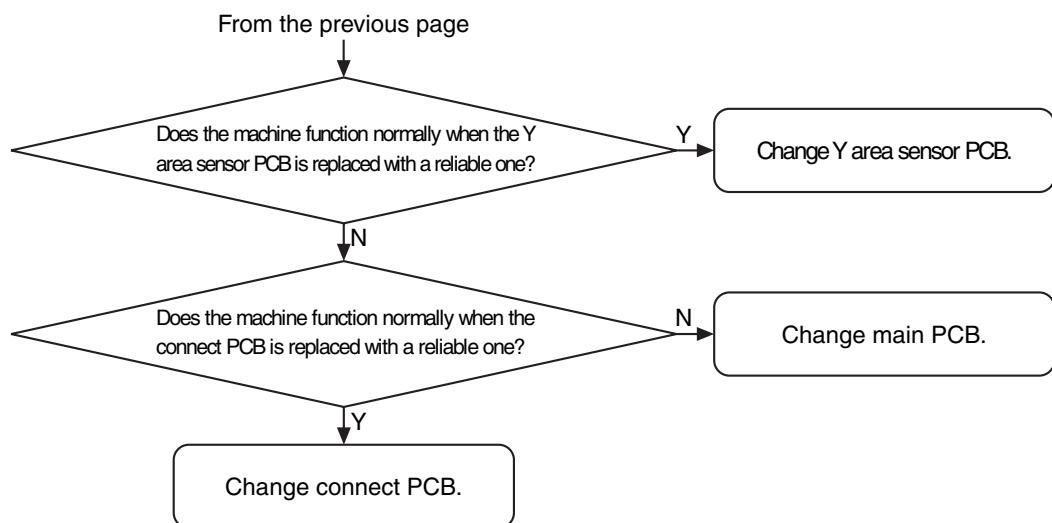


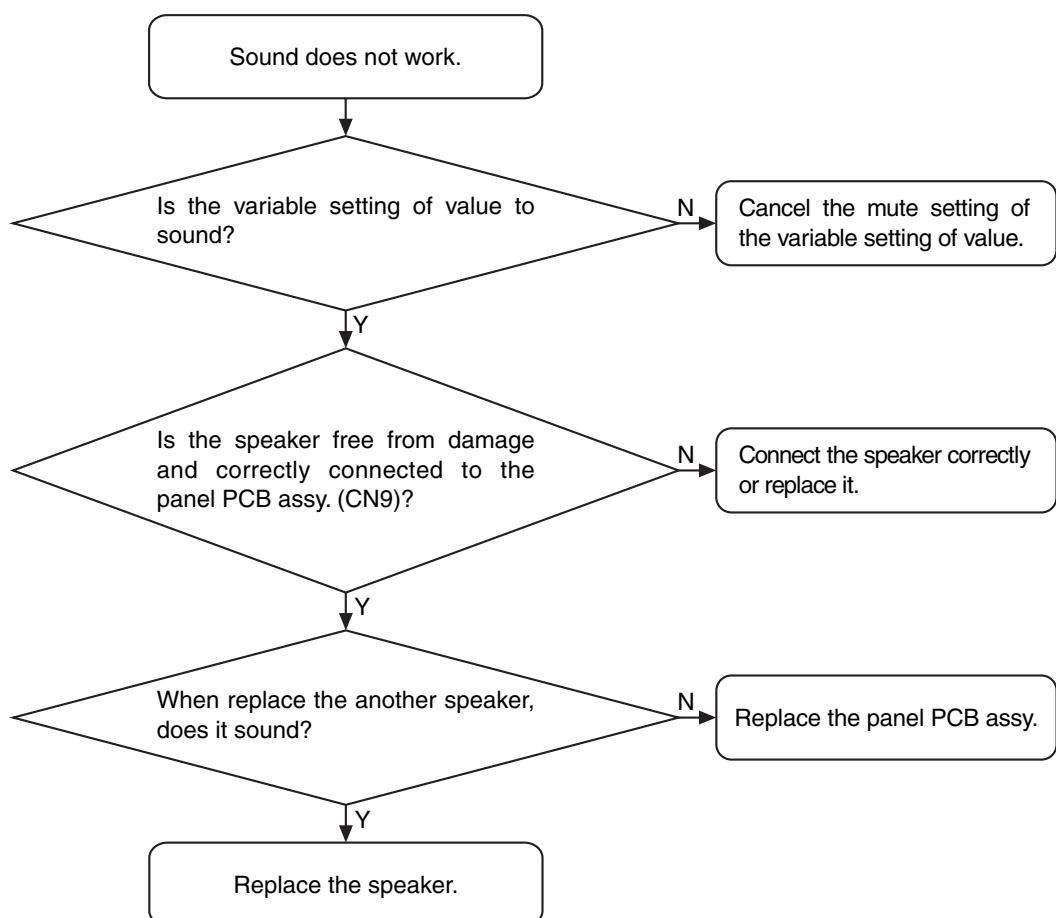


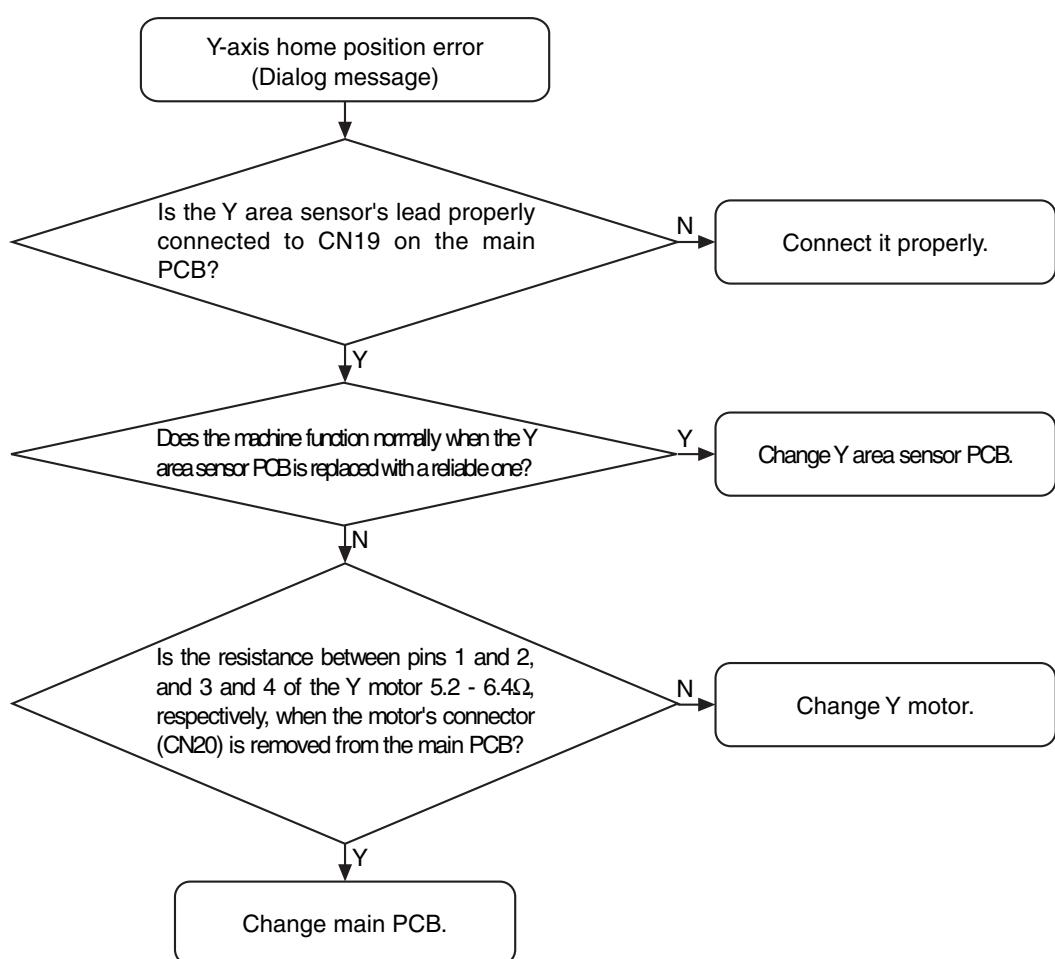


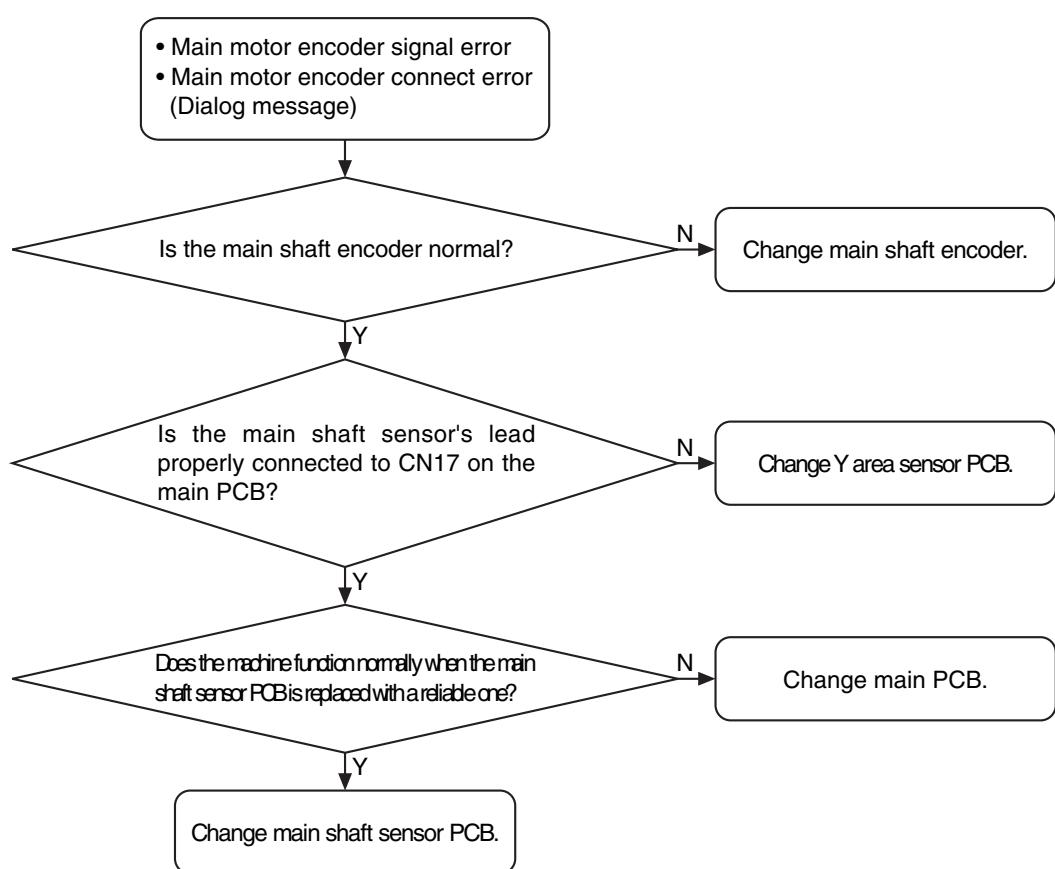


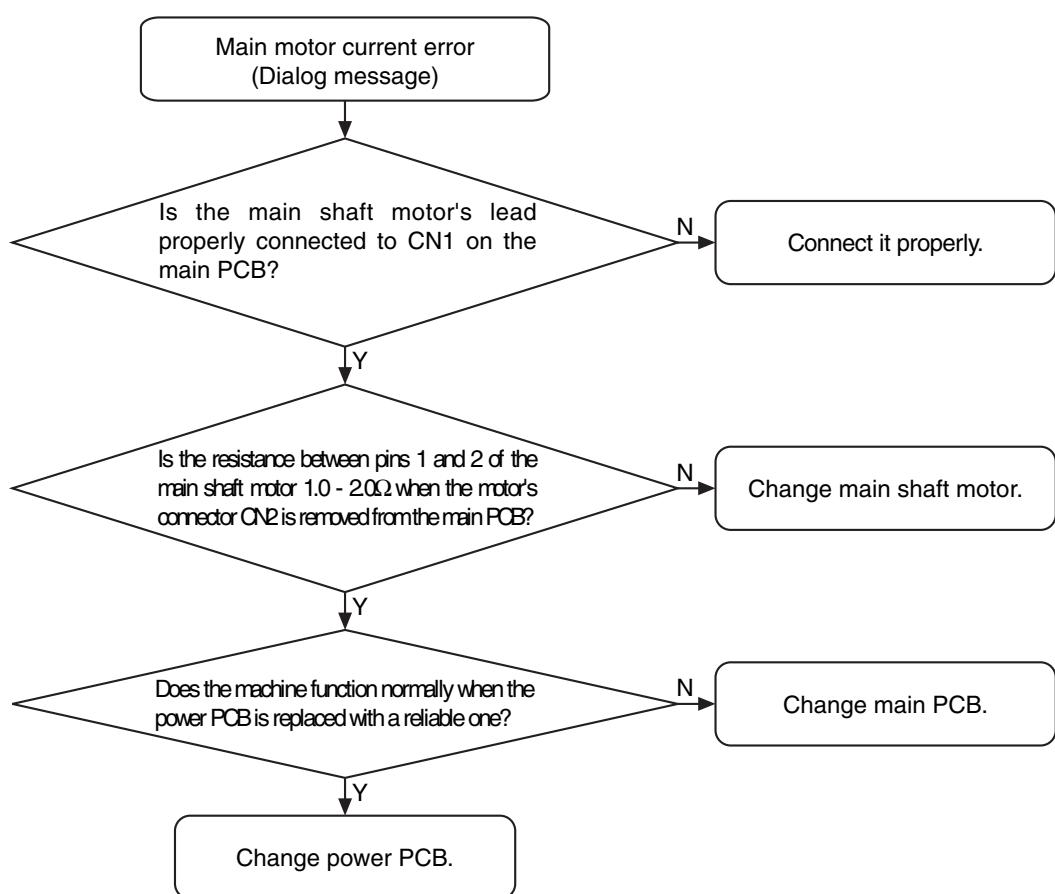


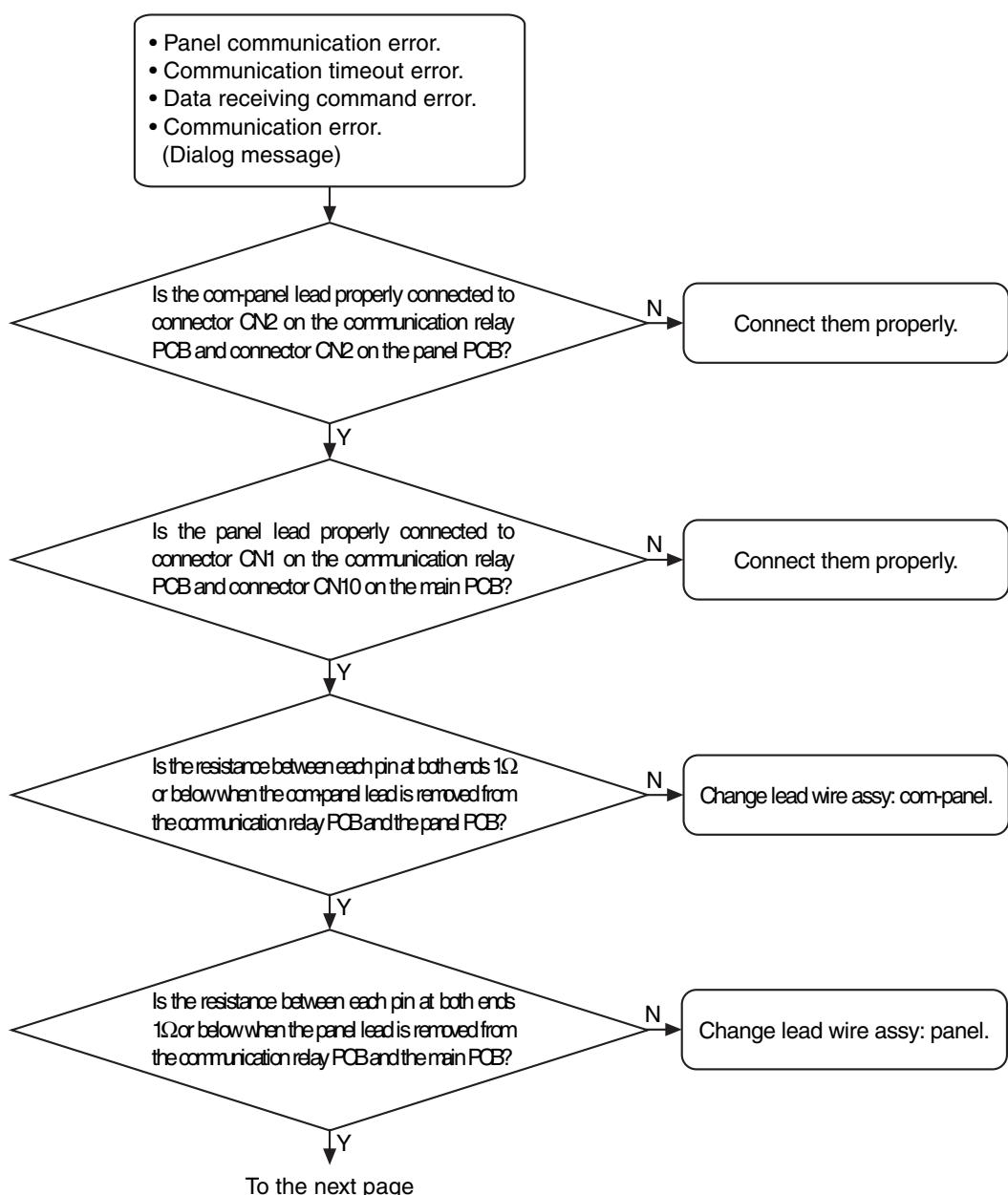


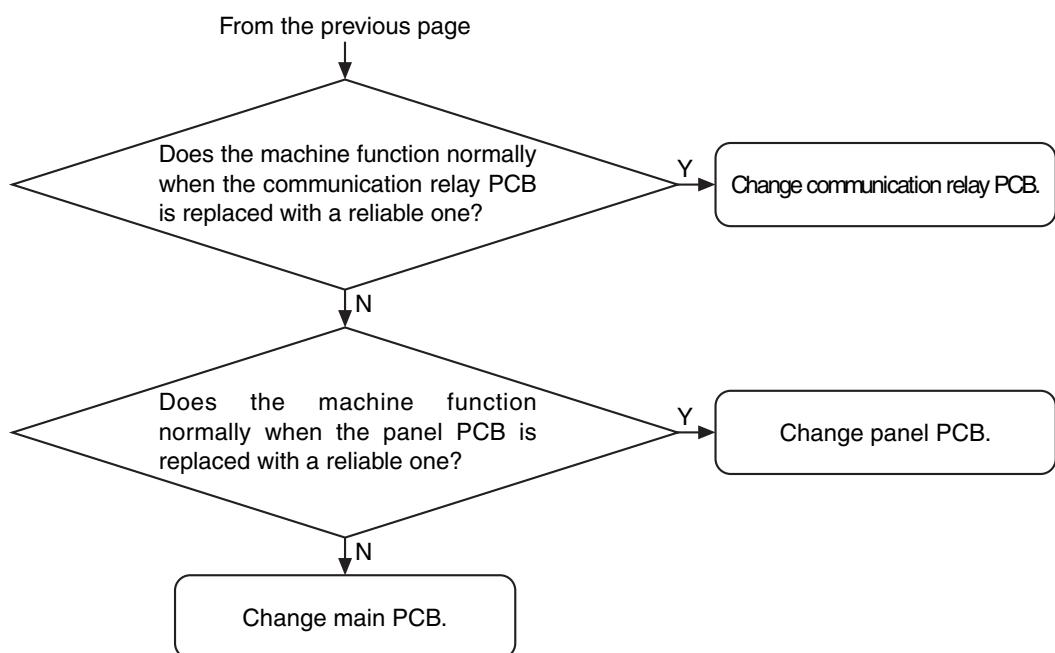


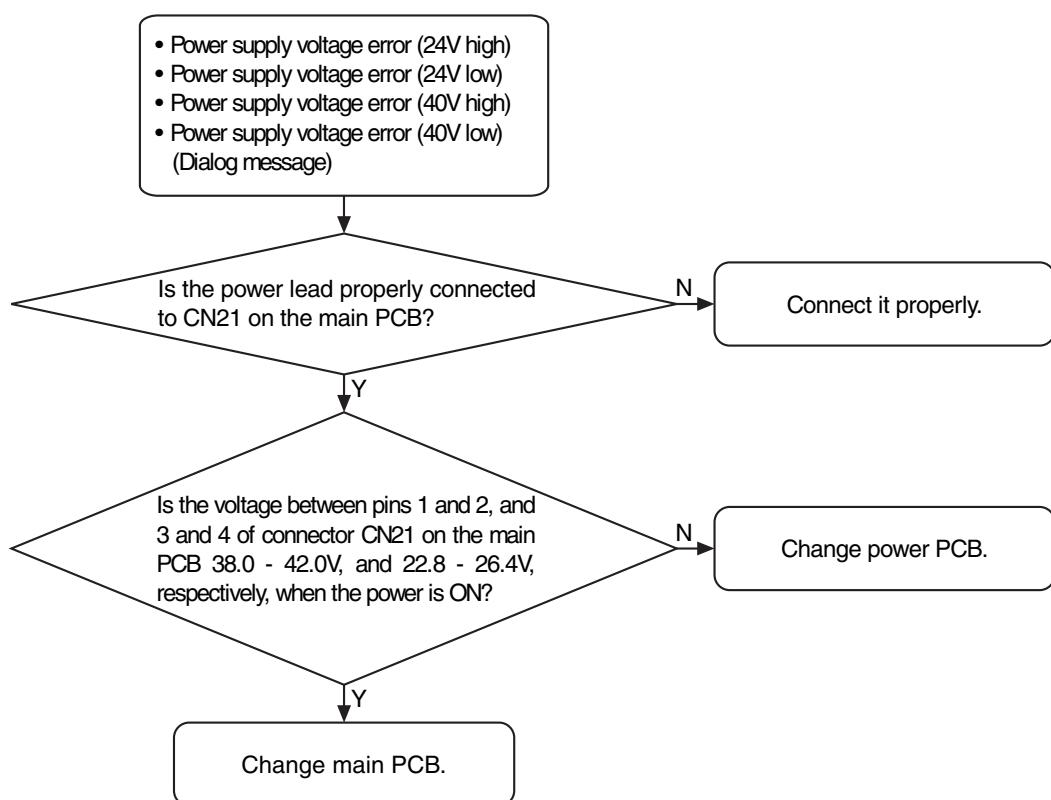




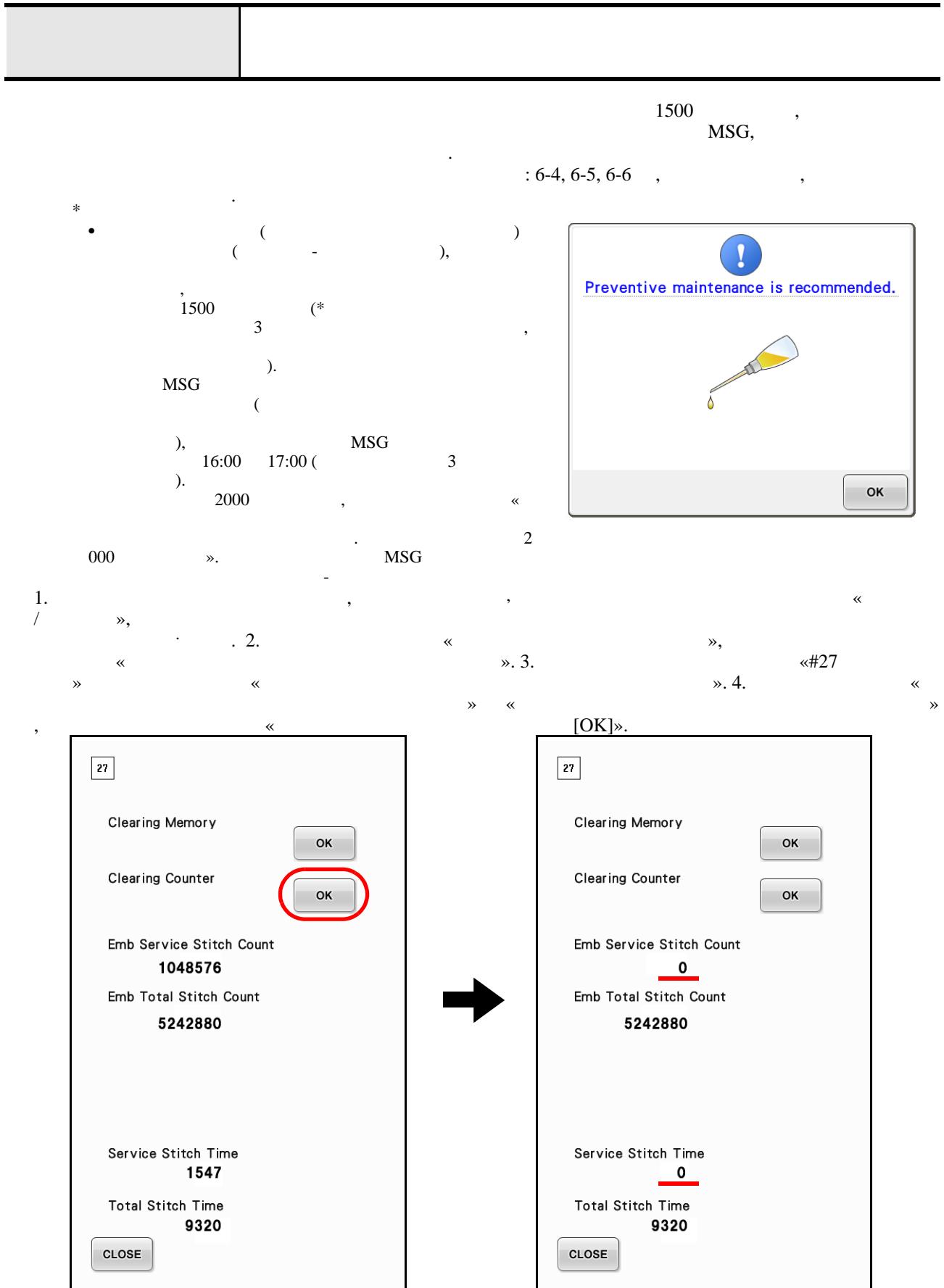








6 Maintenance





1) : MOLY
KOTE EM30L
: XC8385001

2) : EP
NOC AP(N) 0
: XC838700
1

3) : MOLYKOTE M
: XC8386001

MOLYKOTE M DISPERSION
OILER (: XZ0206051).
MOLYKOT
E M DISPERSION : OILER = 1 : 10.

Oil



4) : FB
K OIL RO 100
: XC8388001

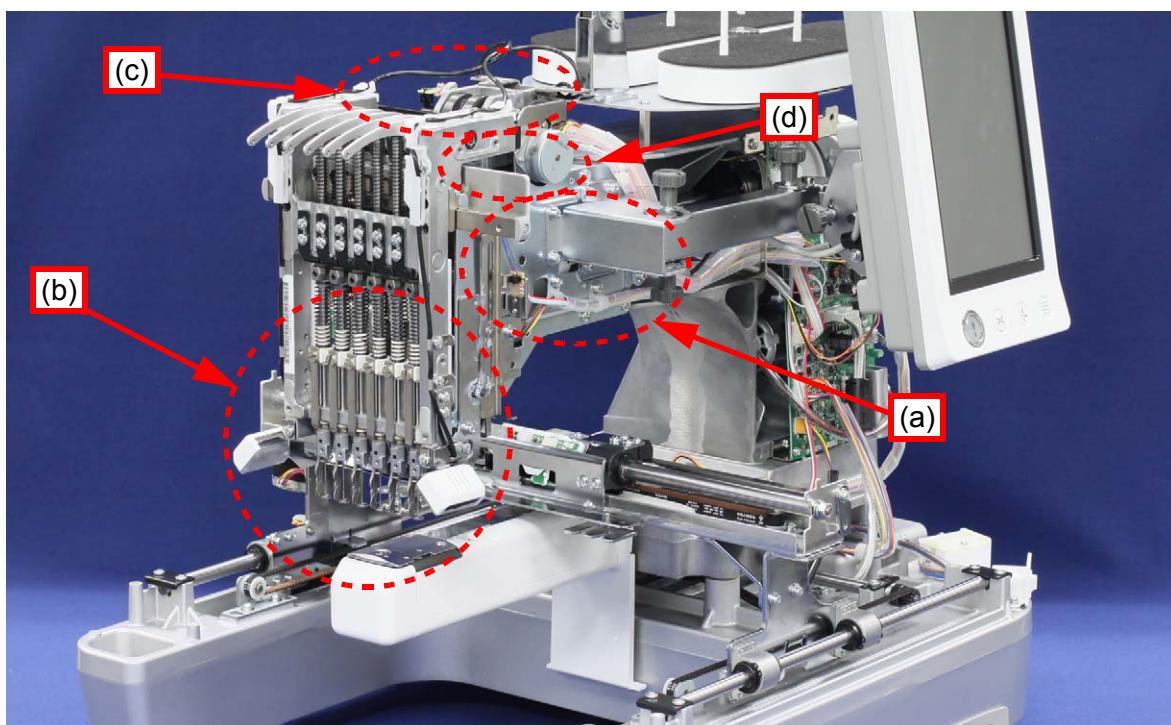
5) :
: XZ020605
1.

Maintenance

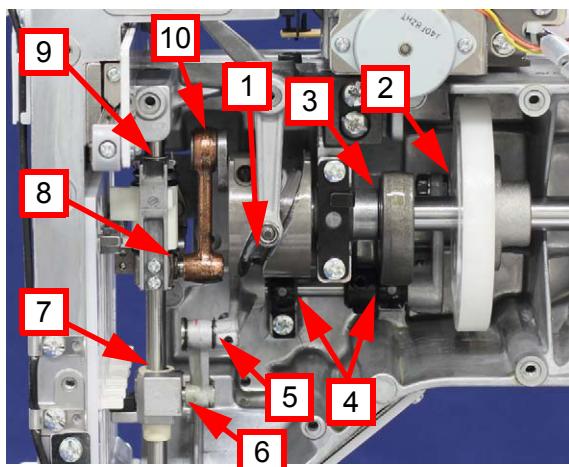
Maintenance point (Every 1,500 hours)

1.

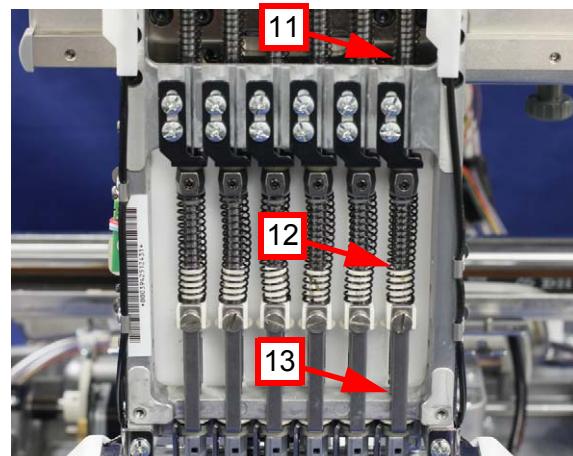
(



(a) Thread take-up lever and Presser foot driving cam



(b) Needle bar case



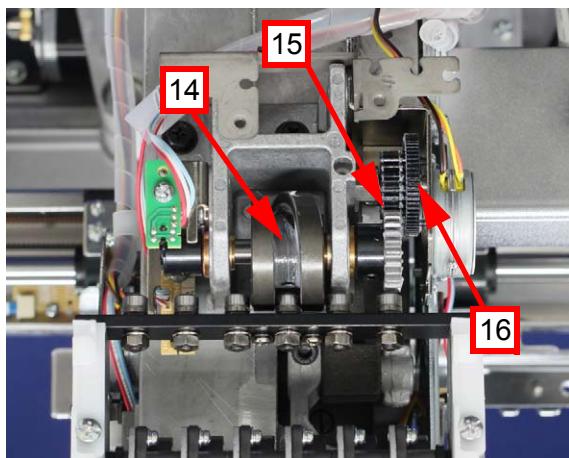
| Name of grease/oil | Quantity | Check point |
|--------------------------|--------------------|-------------|
| 1 MOLYKOTE EM-30L | 0.3cm ³ | |
| 2 MOLYKOTE EM-30L | 0.3cm ³ | |
| 3 FBK OIL RO 100 | three drops | |
| 4 FBK OIL RO 100 | one drop | |
| 5 MOLYKOTE M DISPERSION* | one drop | |
| 6 MOLYKOTE M DISPERSION* | one drop | |
| 7 MOLYKOTE EM-30L | 0.3cm ³ | |
| 8 MOLYKOTE M DISPERSION* | one drop | |
| 9 MOLYKOTE EM-30L | 0.3cm ³ | |
| 10 MOLYKOTE EM-30L | 0.3cm ³ | |
| 11 OILER | one drop | |
| 12 OILER | three drops | |
| 13 OILER | one drop | |

* Please mix MOLYKOTE M DISPERSION and oiler in following proportion, MOLYKOTE M DISPERSION : oiler = 1:10

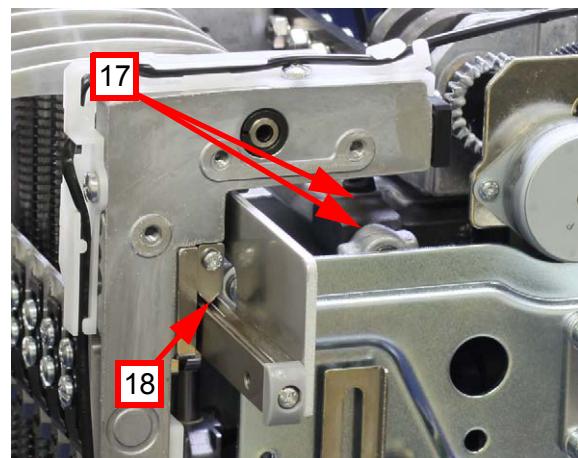
Maintenance

Maintenance point (Every 1,500 hours)

(c) Change cam



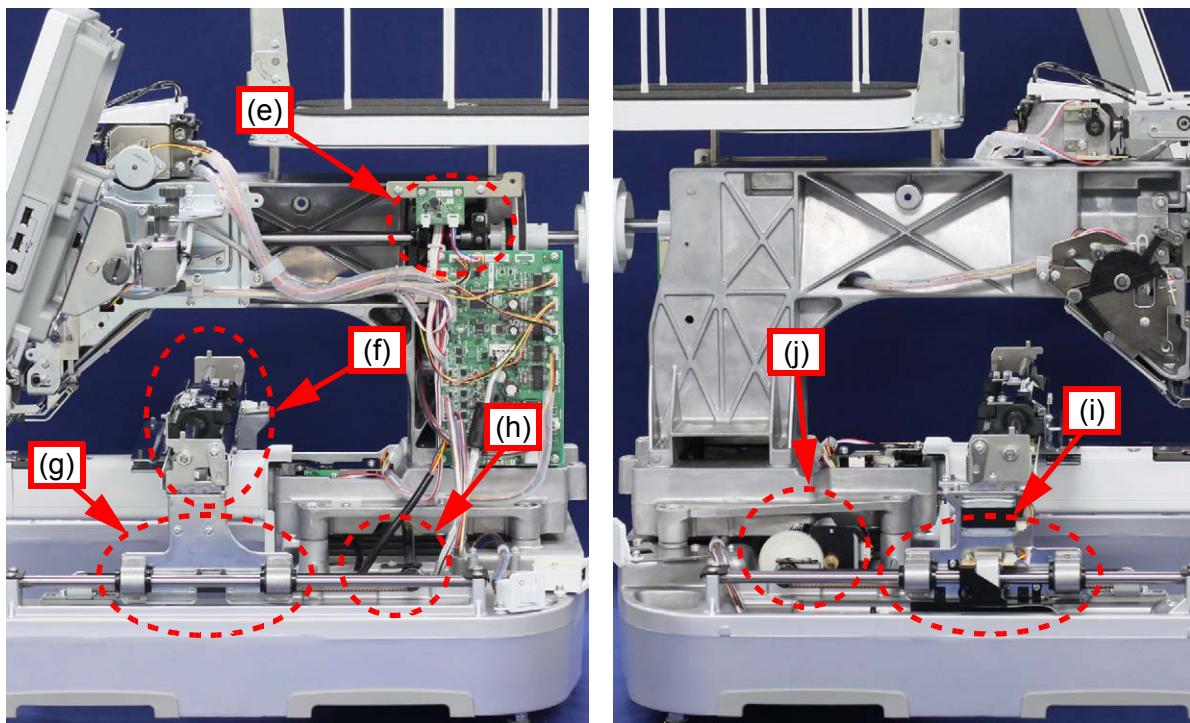
(d) Thread take-up driving lever



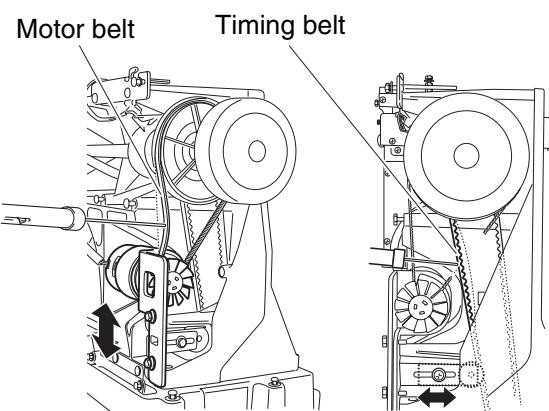
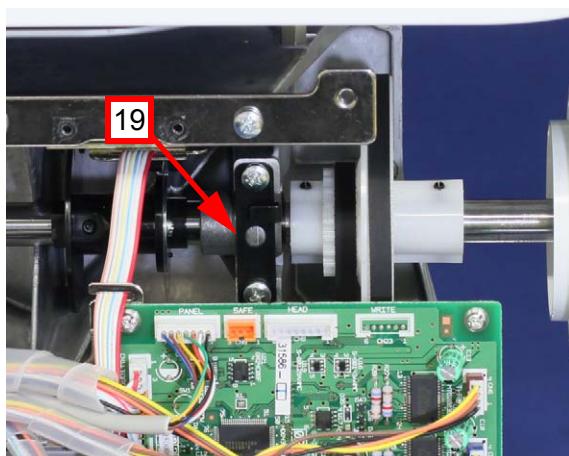
| | Name of grease/oil | Quantity | Check point |
|----|--------------------|--------------------|---------------------------|
| 14 | MOLYKOTE EM-30L | 0.3cm ³ | Check presser foot height |
| 15 | MOLYKOTE EM-30L | 0.3cm ³ | |
| 16 | MOLYKOTE EM-30L | 0.3cm ³ | |
| 17 | MOLYKOTE EM-30L | 0.3cm ³ | |
| 18 | MOLYKOTE EM-30L | 0.3cm ³ | |

Maintenance

Maintenance point (Every 1,500 hours)



(e) Upper shaft bushing (R)



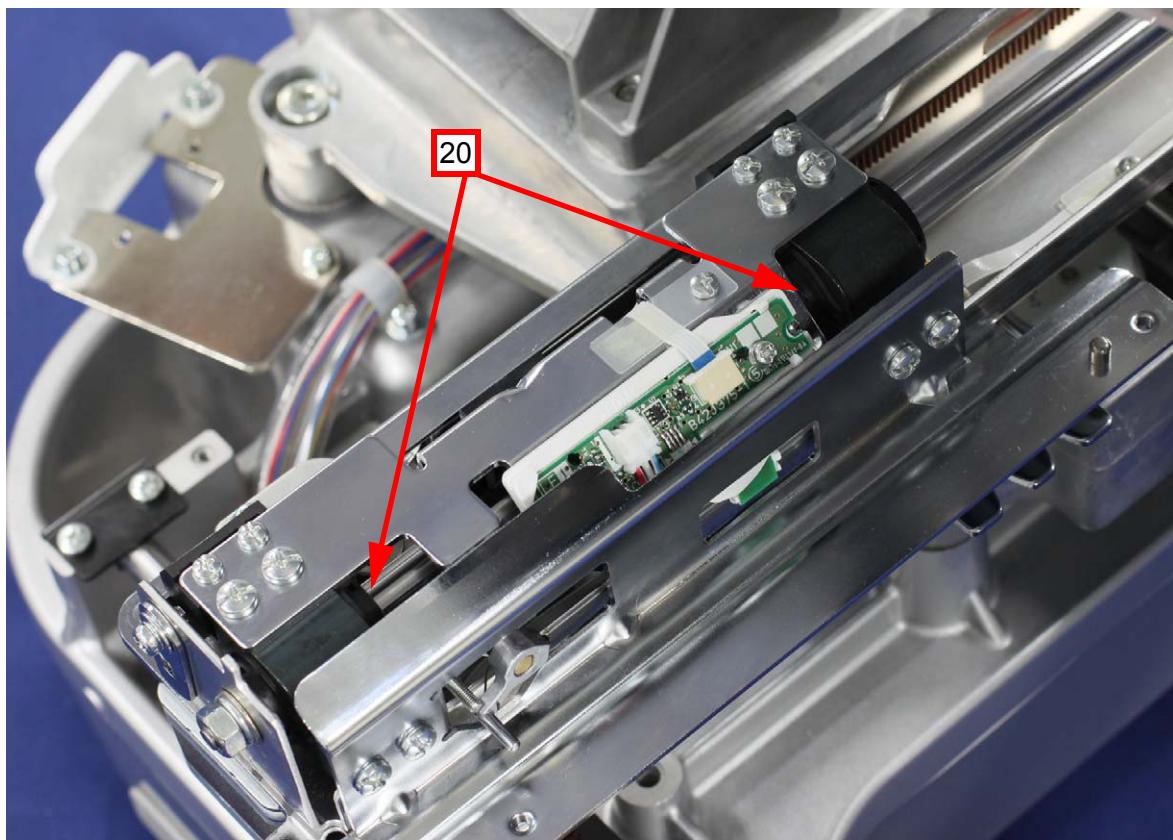
| | Name of grease/oil | Quantity | Check point |
|----|--------------------|-------------|---|
| 19 | FBK OIL RO 100 | three drops | Check motor belt tension
Check timing belt tension |

Maintenance

Maintenance point (Every 1,500 hours)

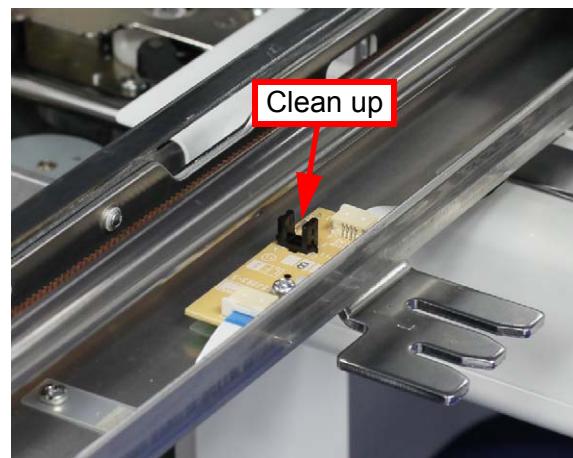
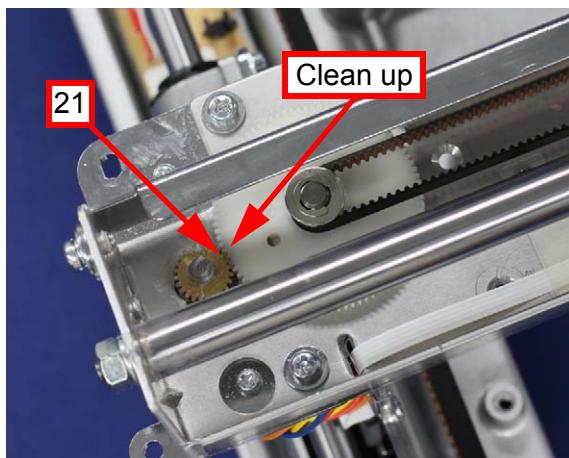
(f)

X



X driving gear

X sensor



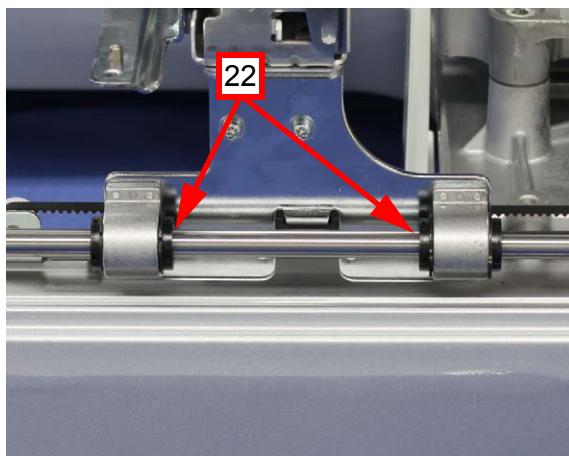
| | Name of grease/oil | Quantity | Check point |
|----|--------------------|--------------------|----------------------|
| 20 | MOLYKOTE EM-30L | 0.3cm ³ | Check X belt tension |
| 21 | MOLYKOTE EM-30L | 0.3cm ³ | Check X belt presser |

Maintenance

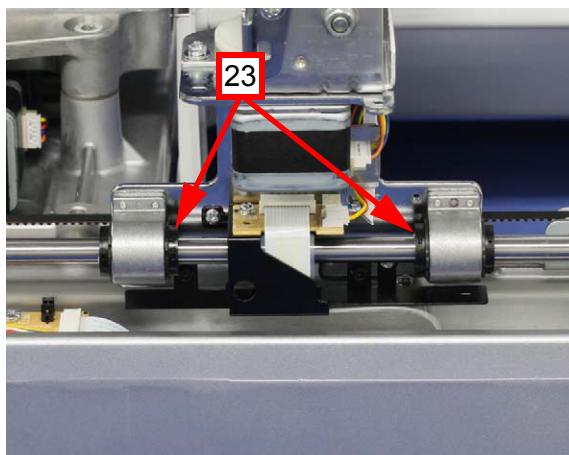
Maintenance point (Every 1,500 hours)

(g)

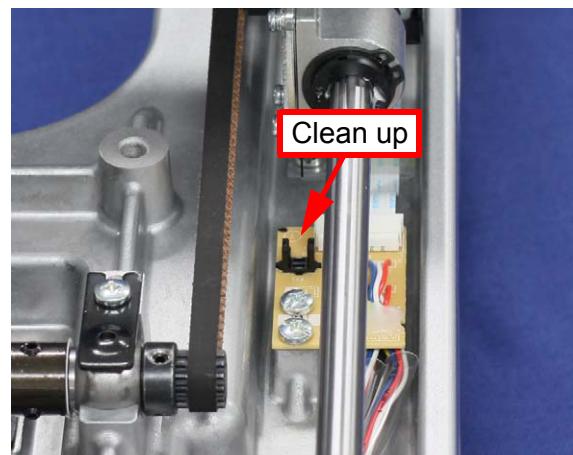
Y (R)



(h) Y carriage (L)



Y sensor



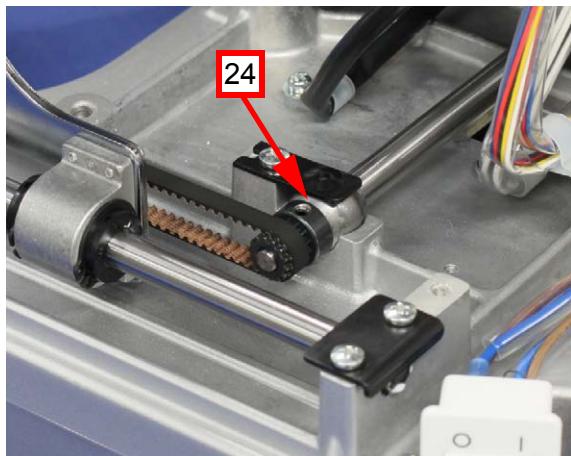
| | Name of grease/oil | Quantity | Check point |
|----|--------------------|--------------------|----------------------|
| 22 | MOLYKOTE EM-30L | 0.3cm ³ | Check Y belt tension |
| 23 | MOLYKOTE EM-30L | 0.3cm ³ | Check Y belt presser |

Maintenance

Maintenance point (Every 1,500 hours)

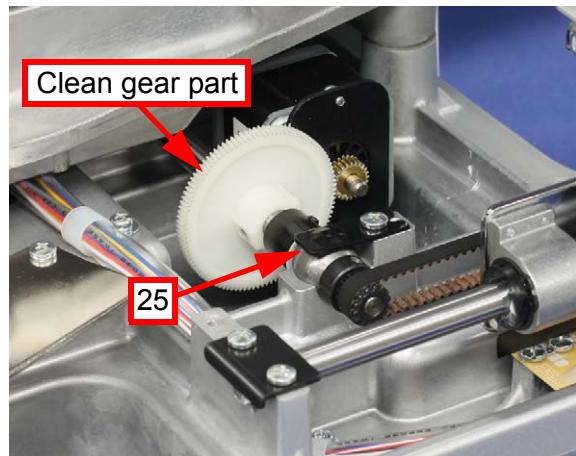
(i)

Y (R)

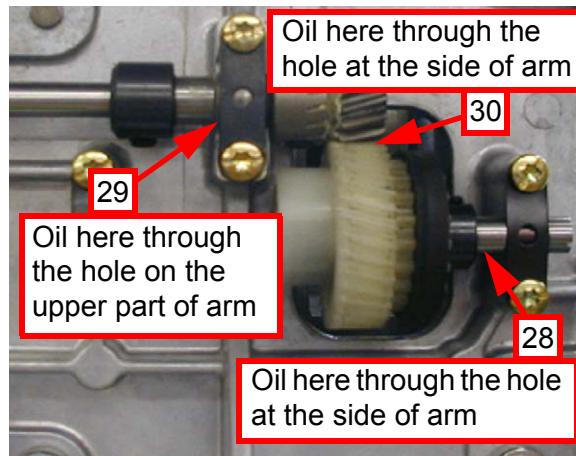
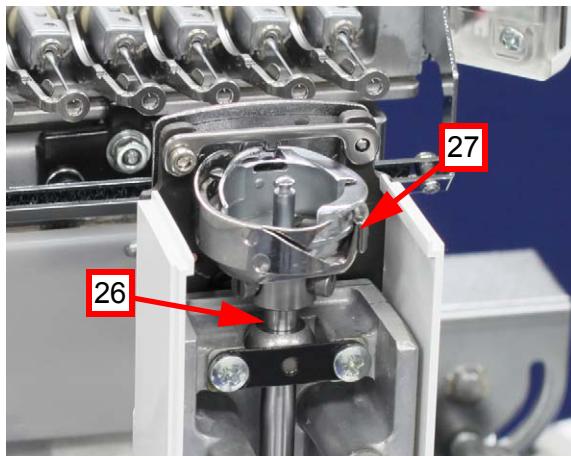


(j)

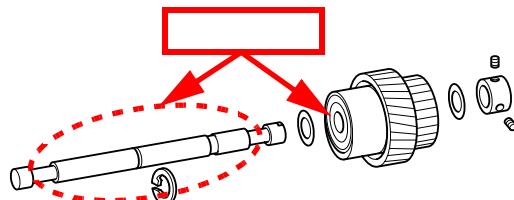
Y (L)



| | Name of grease/oil | Quantity | Check point |
|----|--------------------|----------|-------------|
| 24 | FBK OIL RO 100 | one drop | |
| 25 | FBK OIL RO 100 | one drop | |



| | Name of grease/oil | Quantity | Check point |
|----|--------------------|--------------------|--|
| 26 | FBK OIL RO 100 | one drop | Check thrust play of lower shaft. |
| 27 | OILER | one drop | Remove dust around rotary hook and bushing. |
| 28 | FBK OIL RO 100 | one drop | |
| 29 | FBK OIL RO 100 | one drop | |
| 30 | MOLYKOTE EM-30L | 0.3cm ³ | * There should be no dust between lower shaft and bushing. |

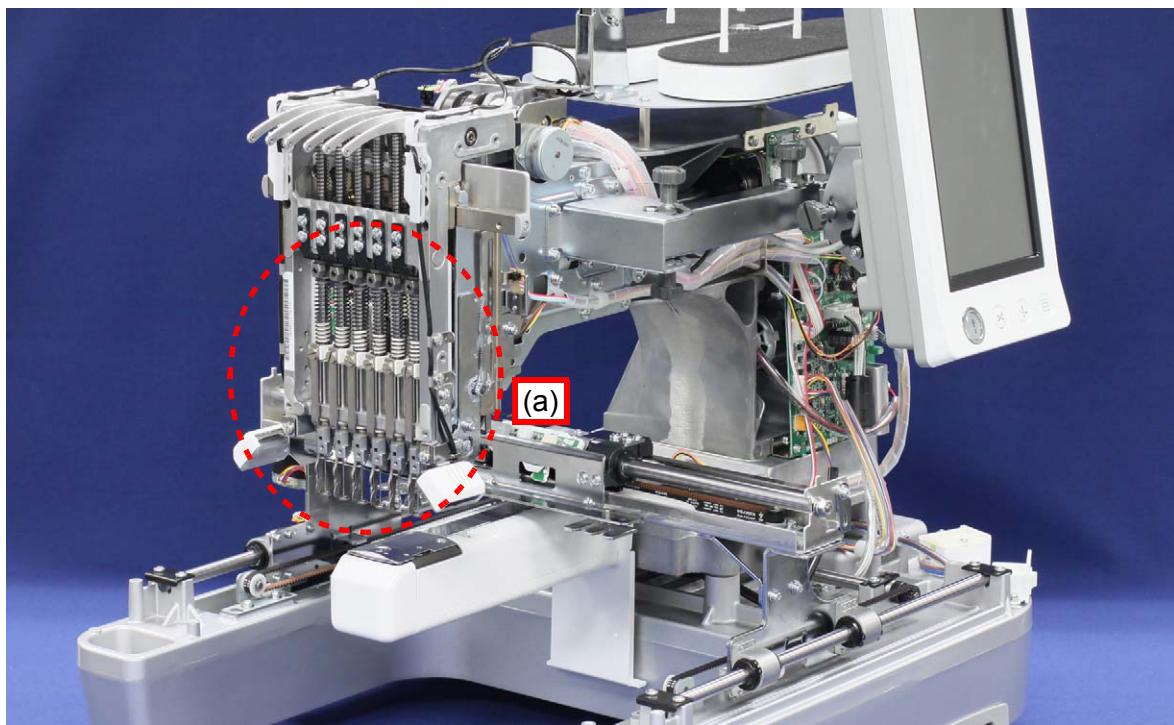


Maintenance

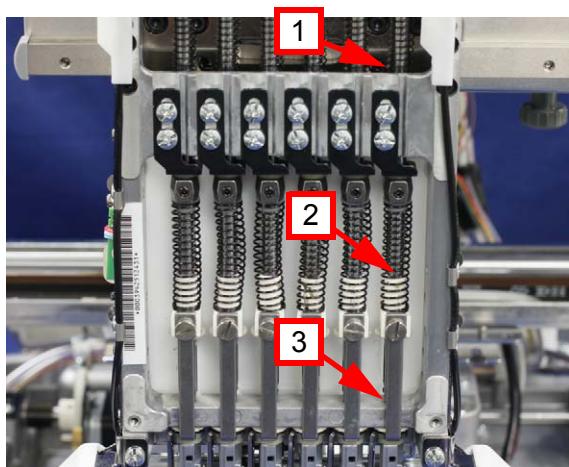
Maintenance point (Every 500 hours)

2.

(



(a)

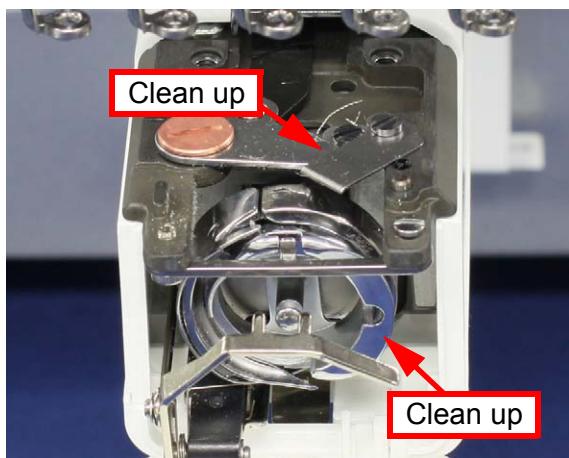


| Name of grease/oil | | Quantity | Check point |
|--------------------|-------|-------------|-------------|
| 1 | OILER | one drop | |
| 2 | OILER | three drops | |
| 3 | OILER | one drop | |

Maintenance**Maintenance point (Every day)**

3.

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| Maintenance |
| Remove any lint and dust between tension-adjusting spring and bobbin case, whenever one prewound bobbin (coats) is used. |

7

..... 7 - 2

.... 7 - 3

..... 7 - 1

0

..... 7 - 17

..... 7 - 19

Y-

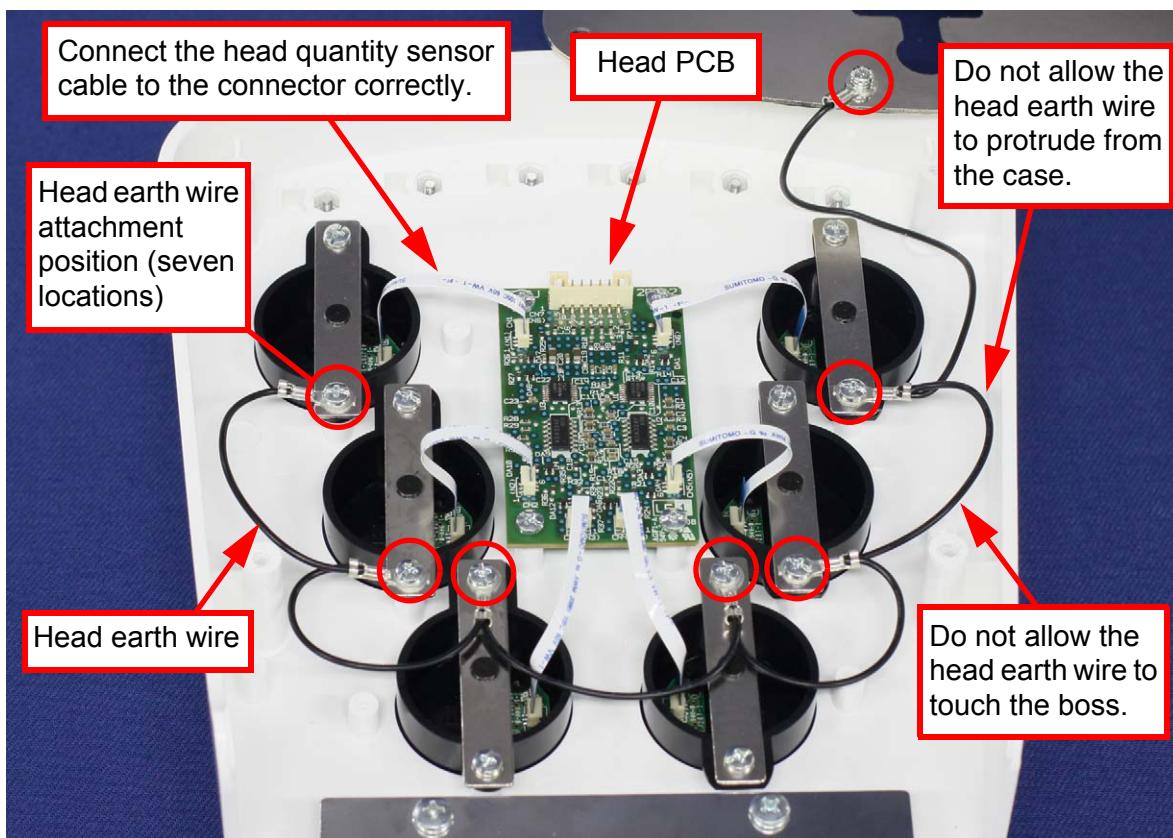
..... 7 - 20

X-

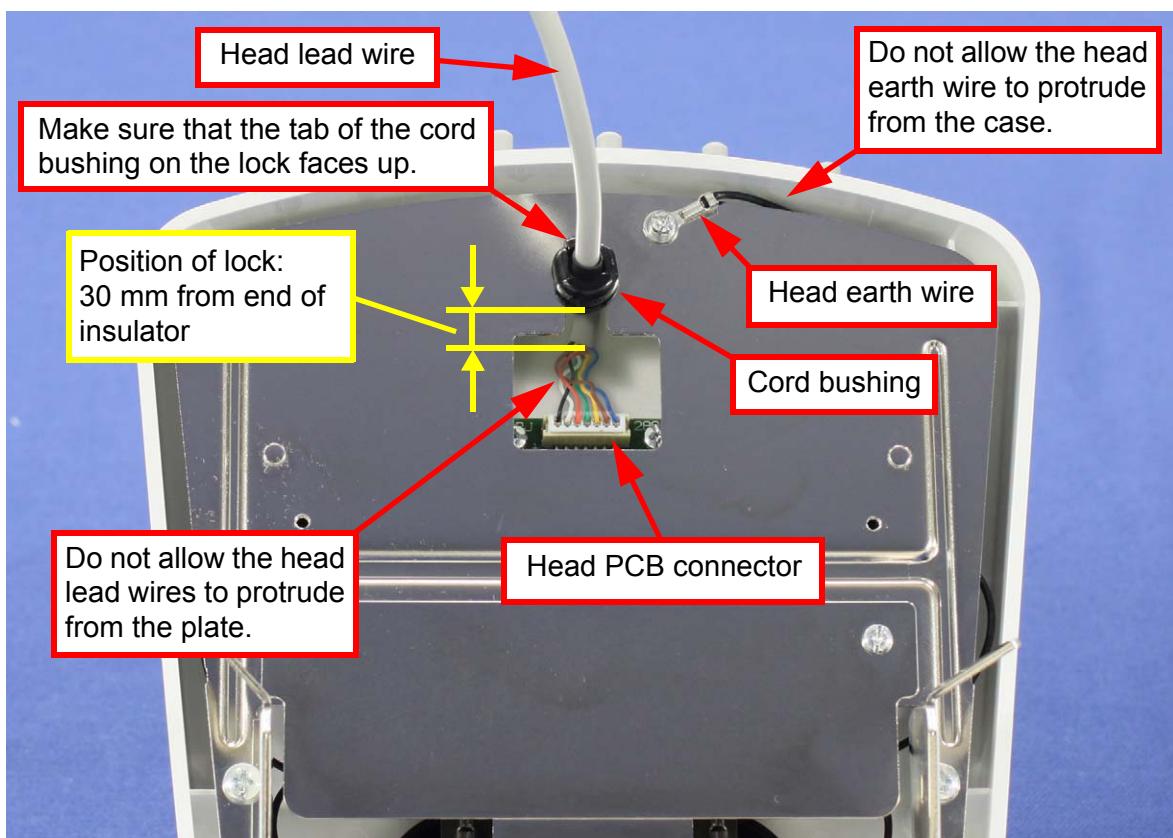
..... 7 - 22

..... 7 - 25

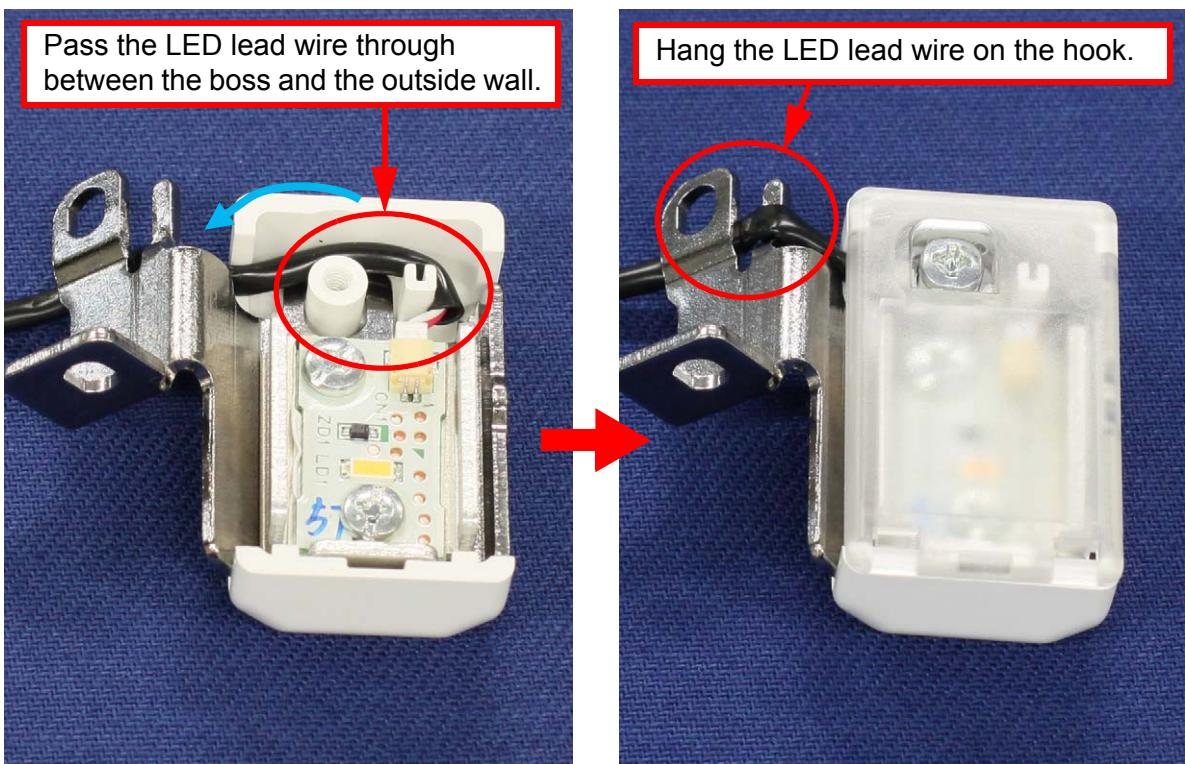
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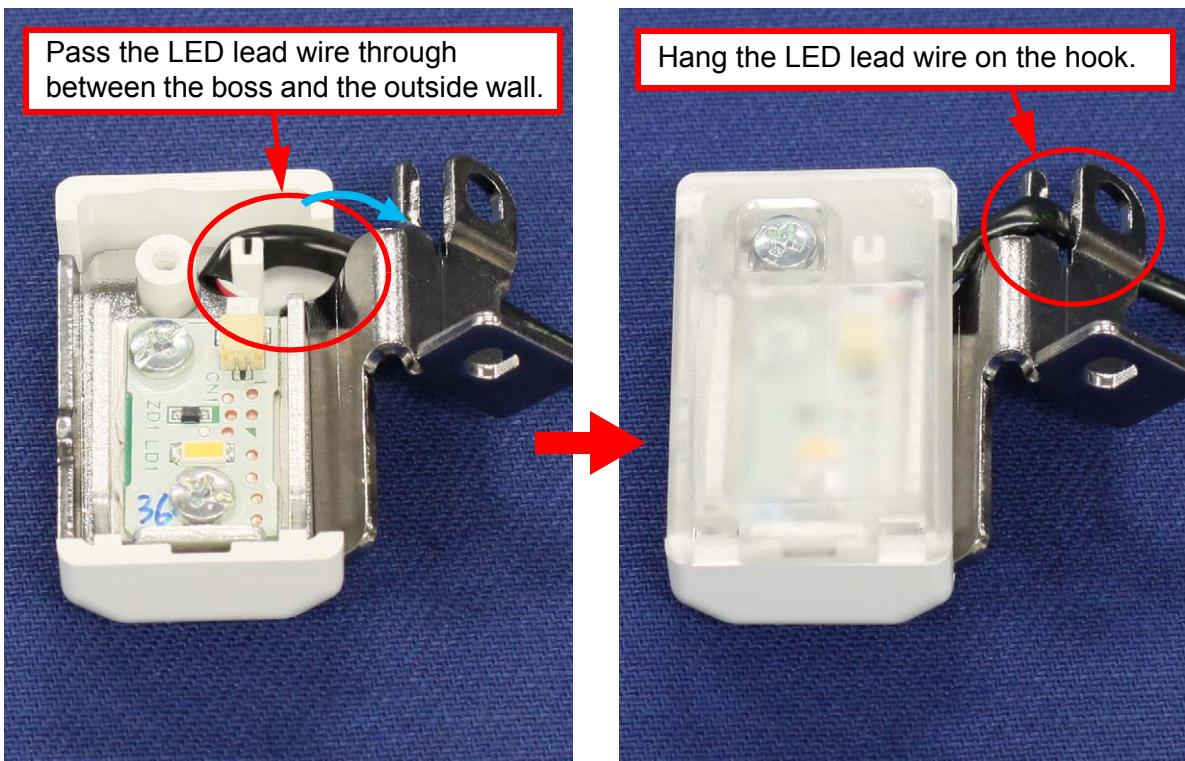
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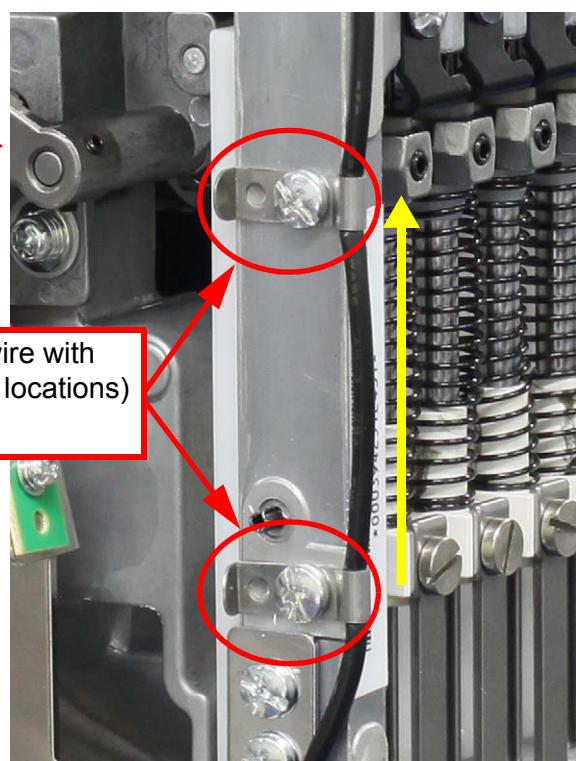
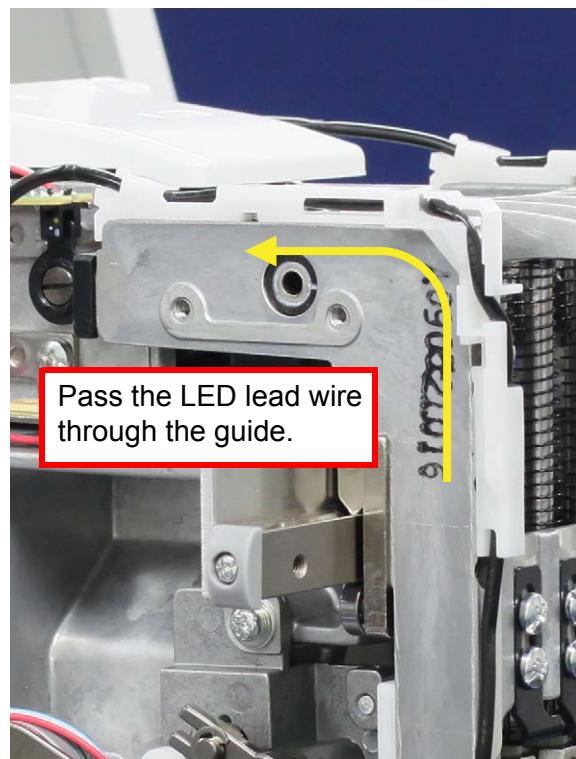
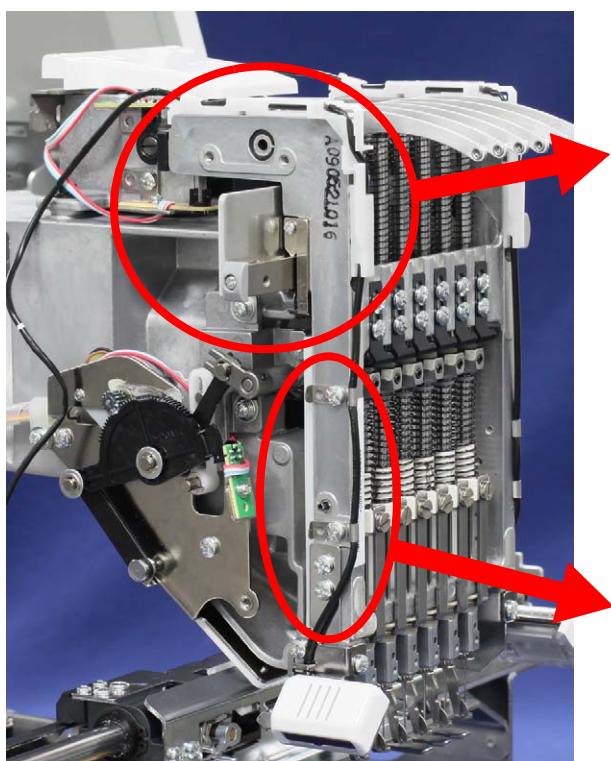
1. LED PCB (Left)



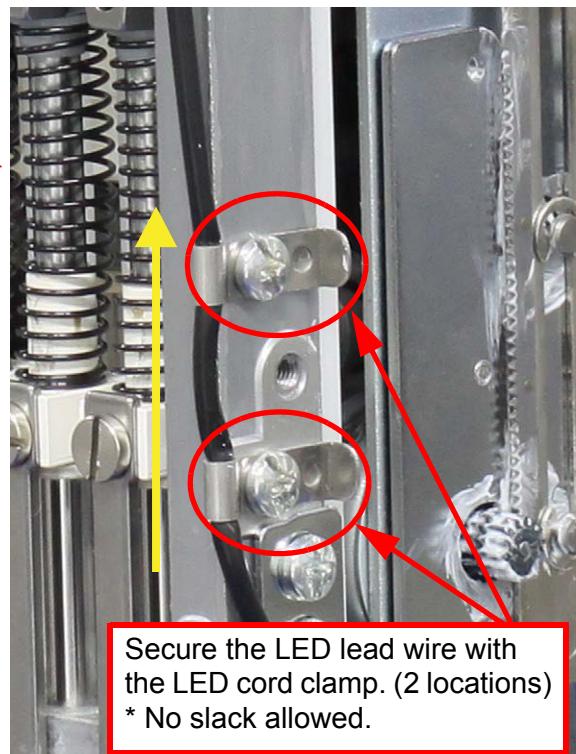
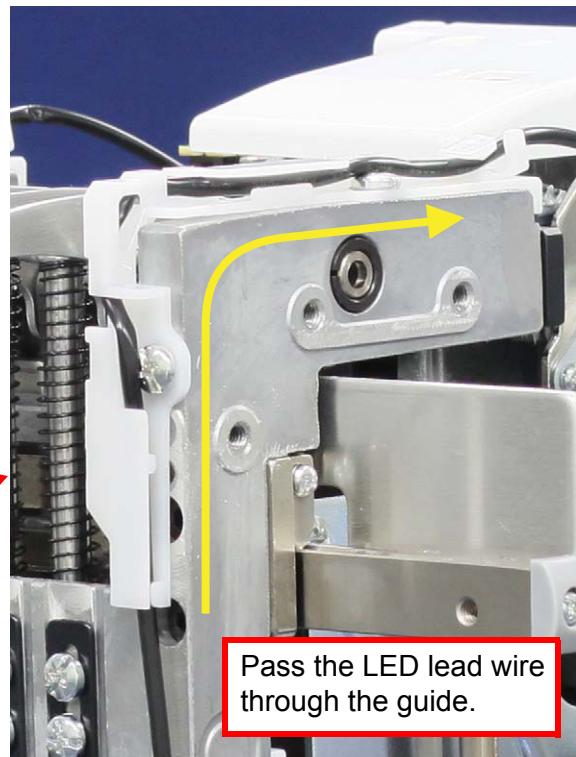
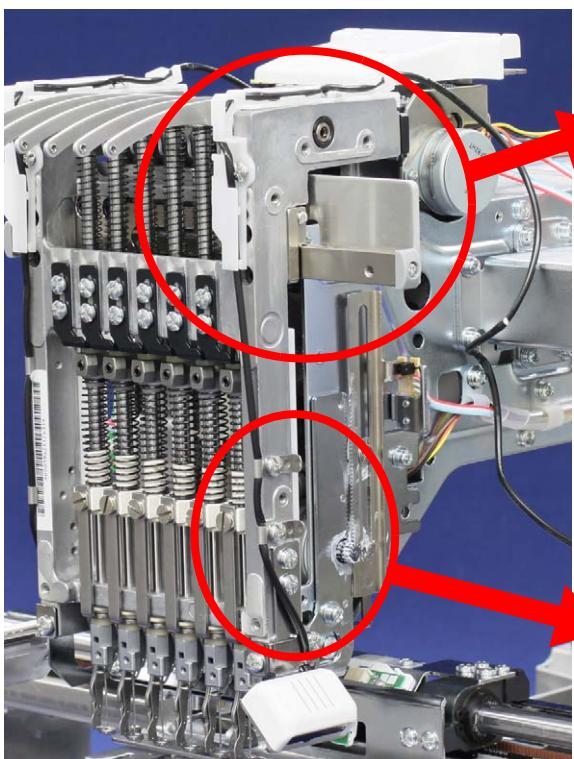
2. LED PCB (Right)



3.

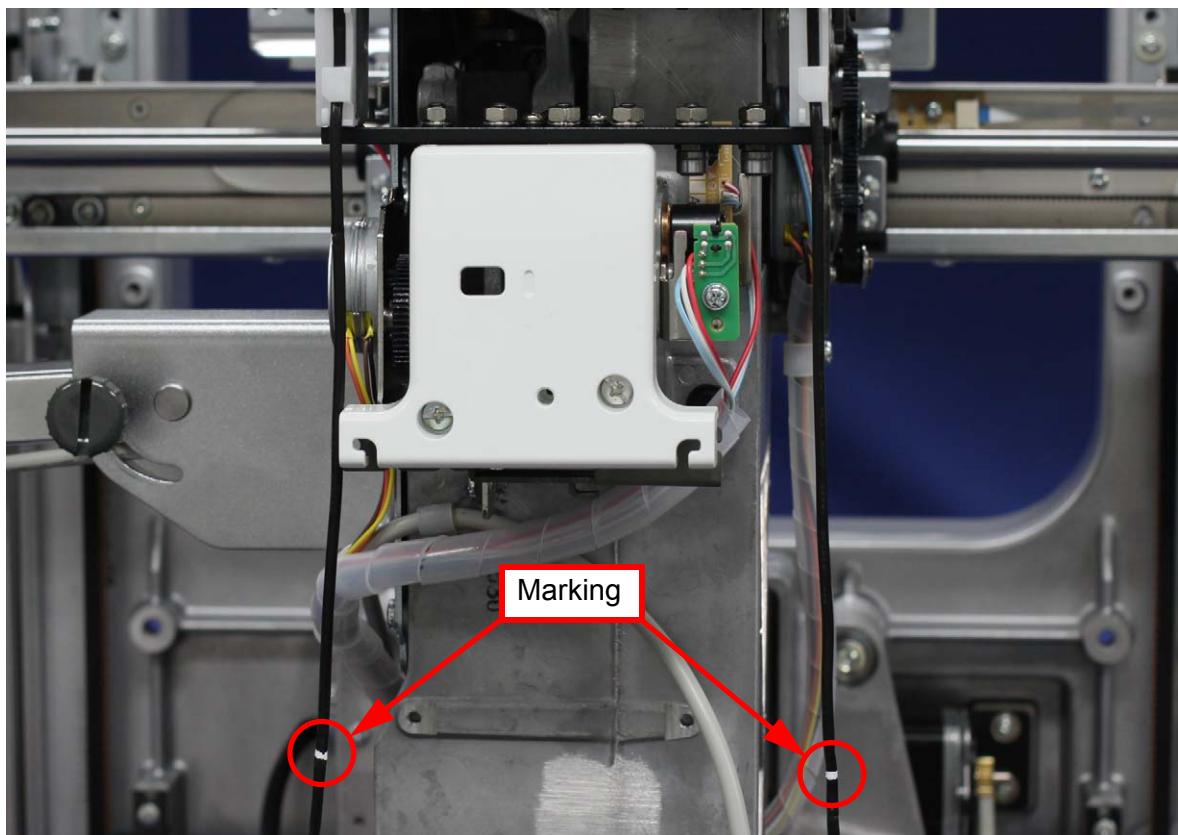
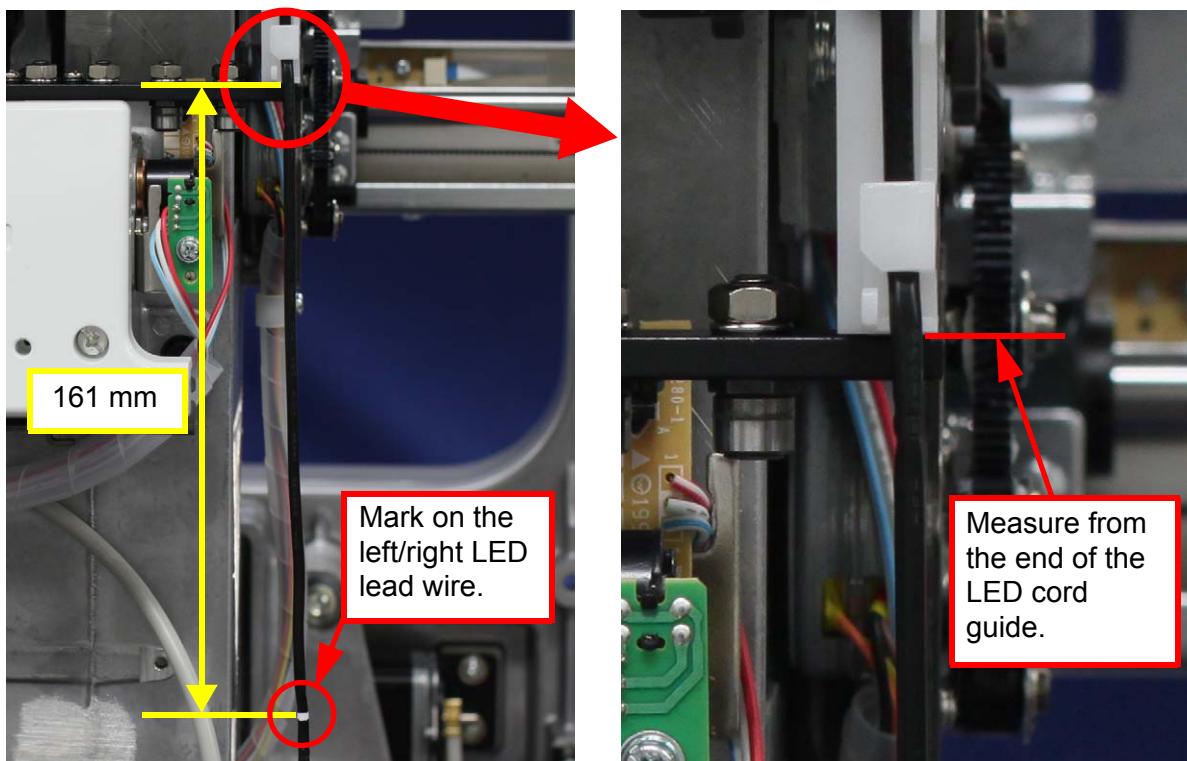


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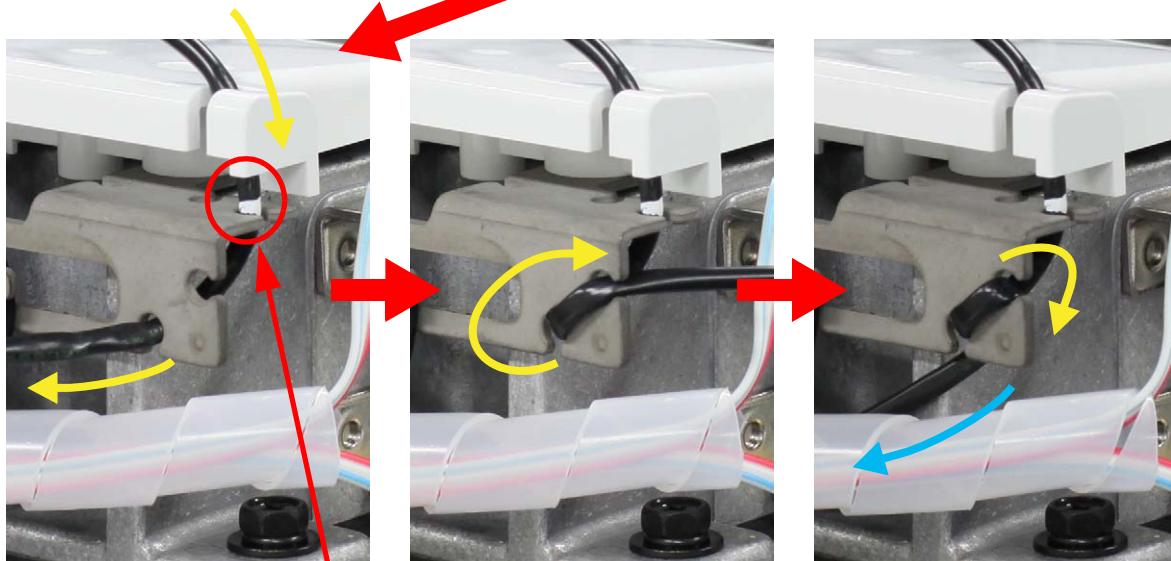
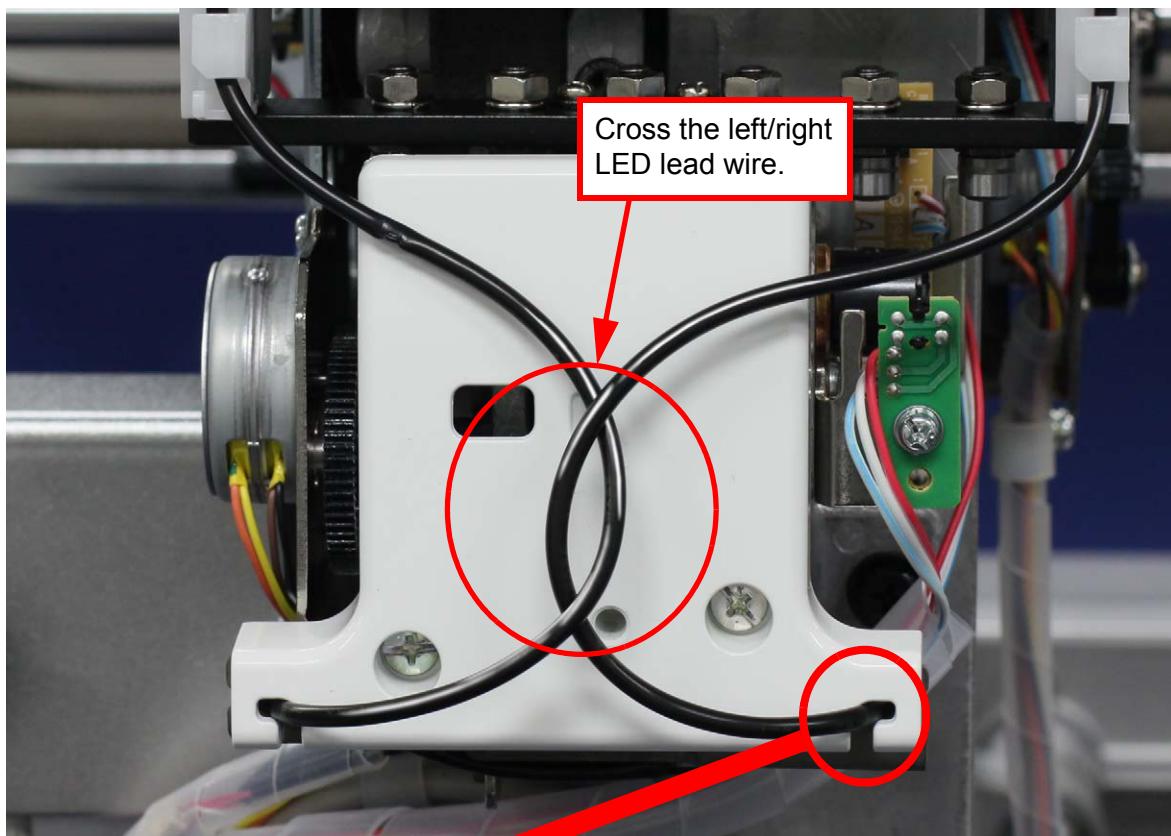
5.

(1):



6.

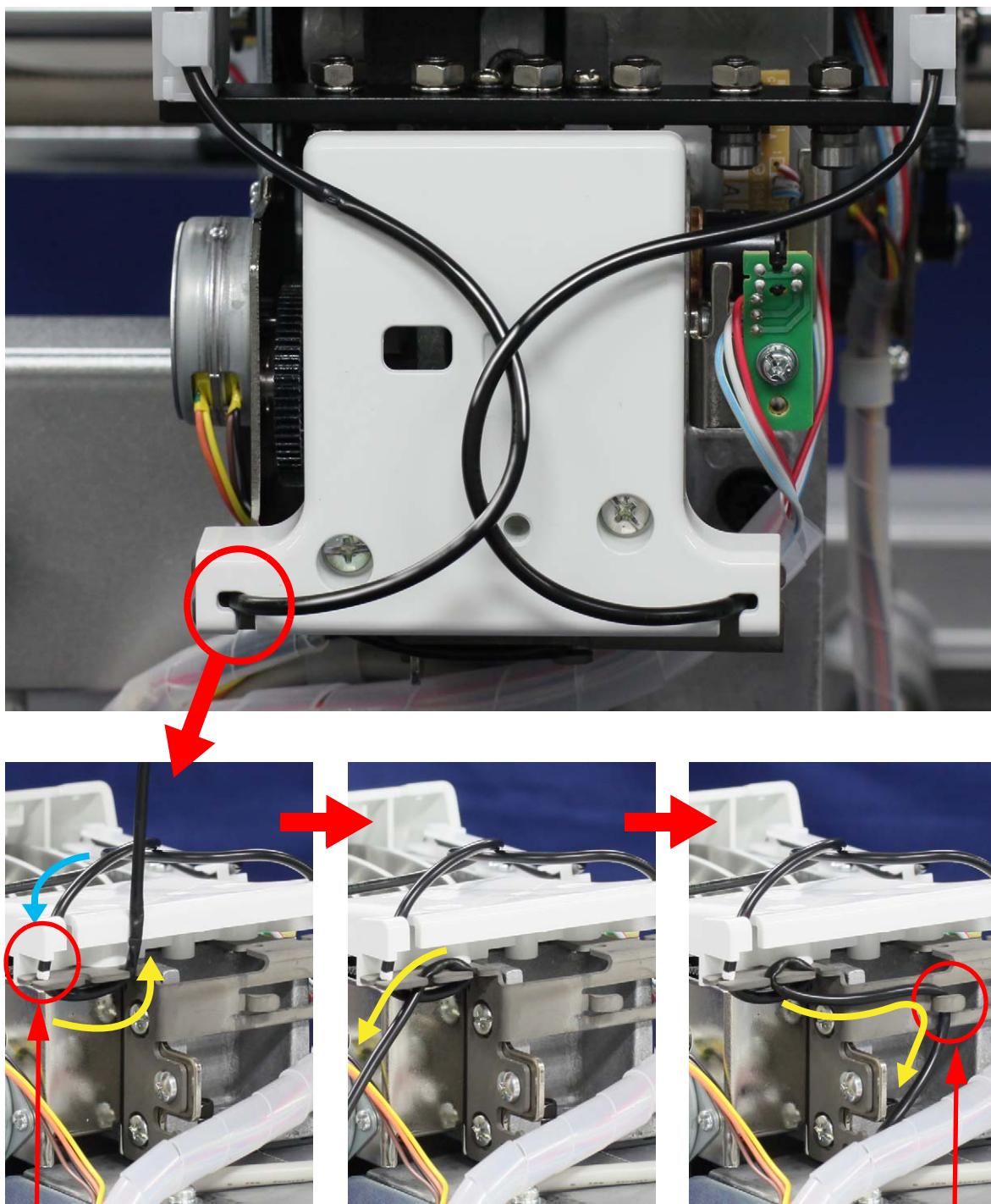
(2):



Align the marking with
the upper surface of
the LED cord holder.

7.

(3):

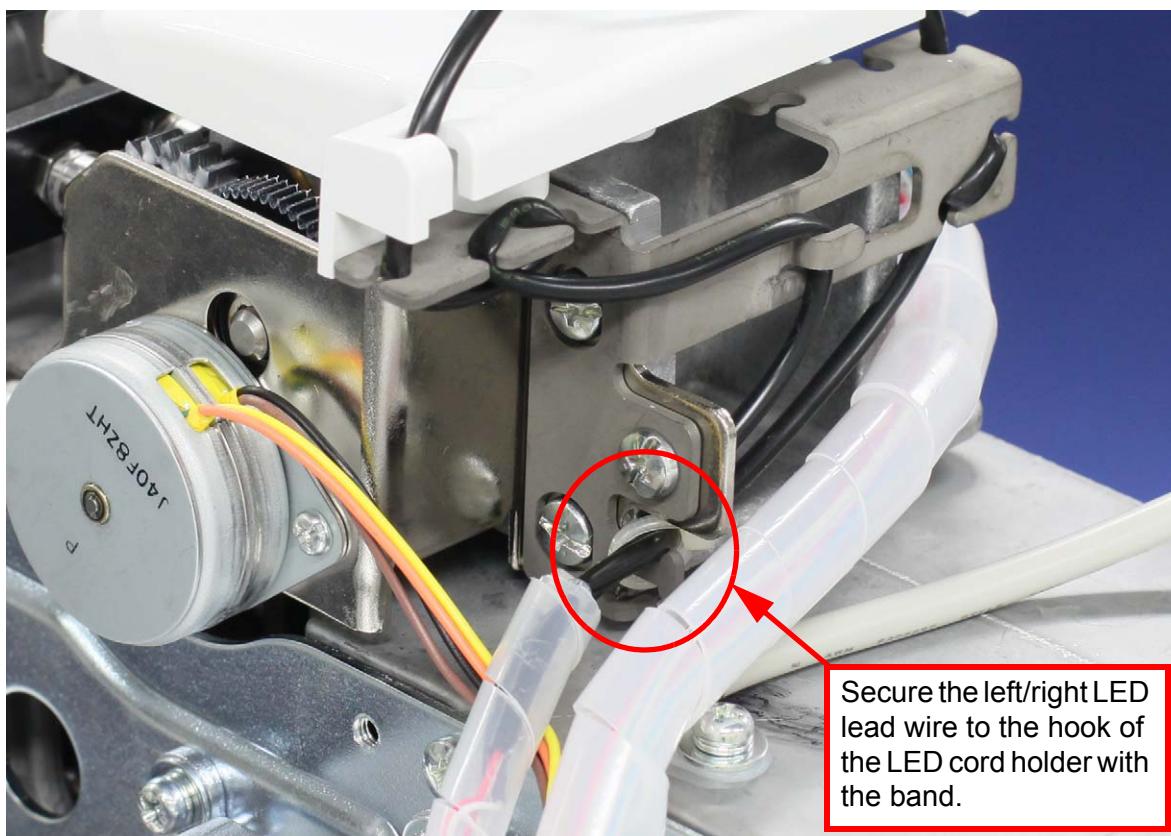


Align the marking with
the upper surface of
the LED cord holder.

Hang the LED lead
wire on the hook.

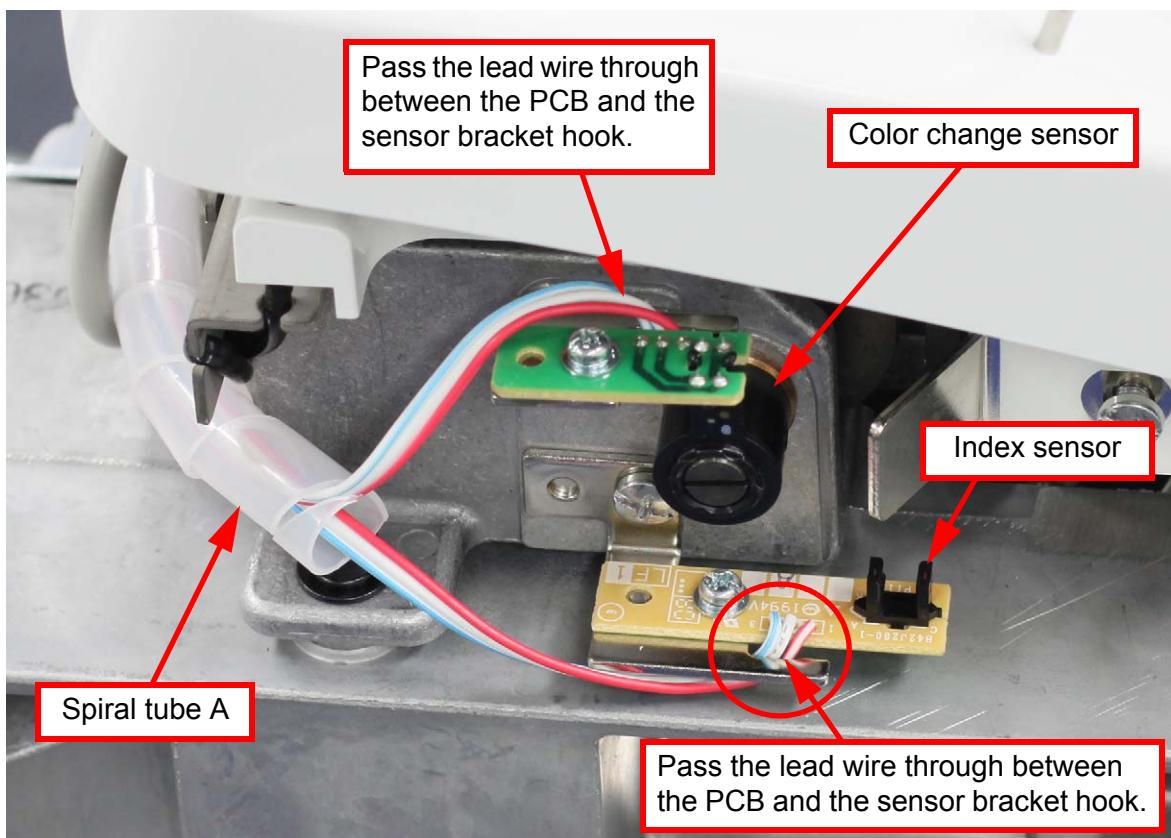
8.

(4)



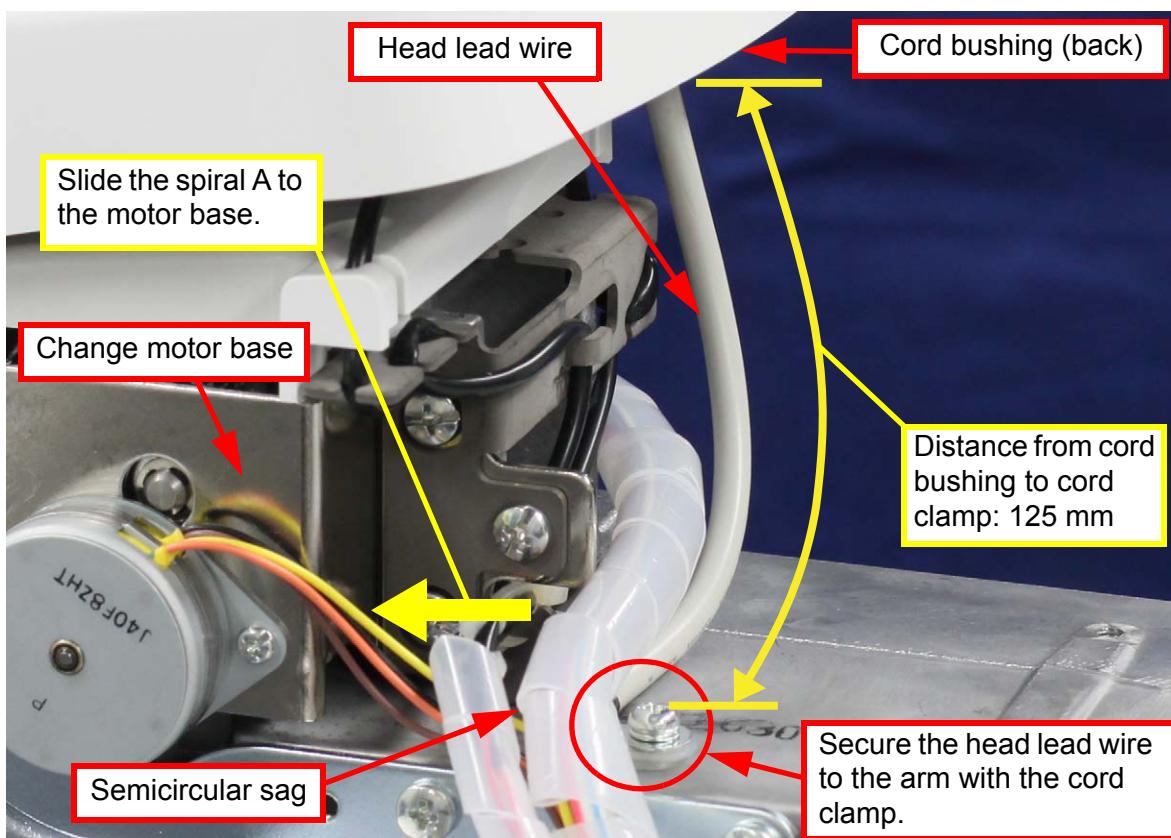
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(1)



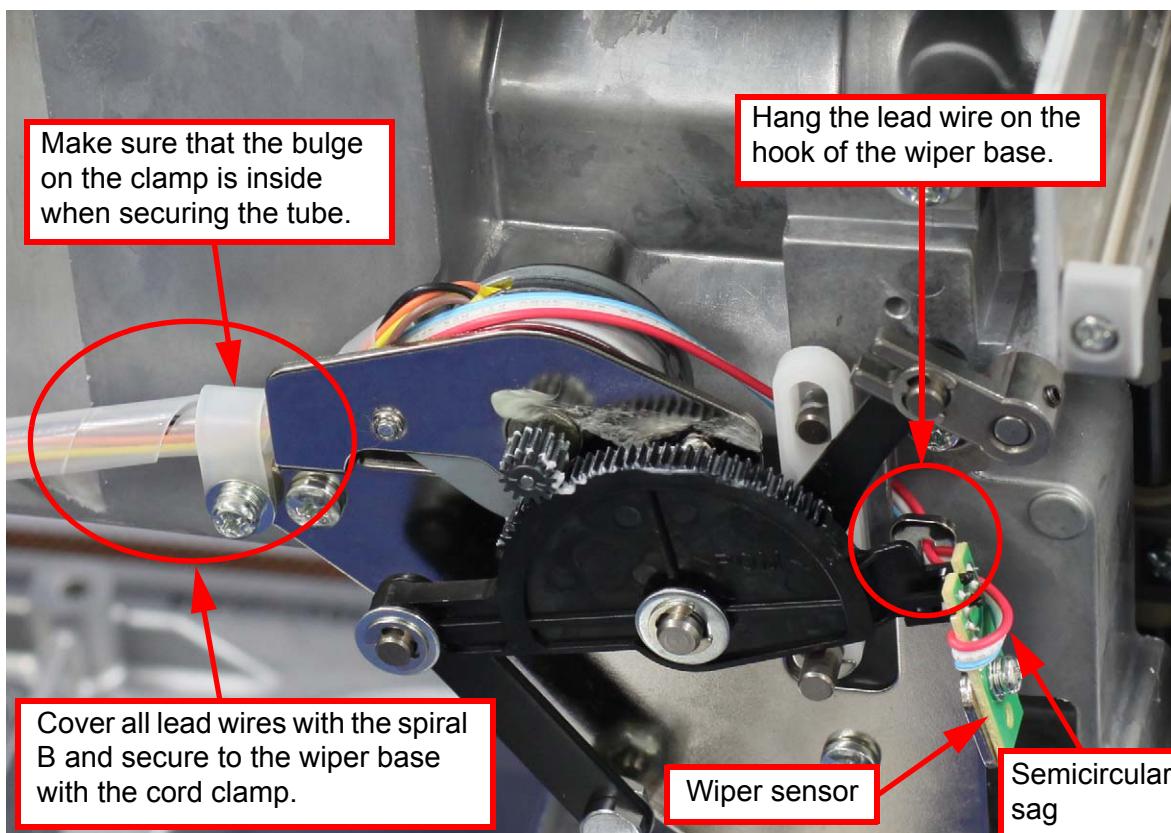
2.

(2)

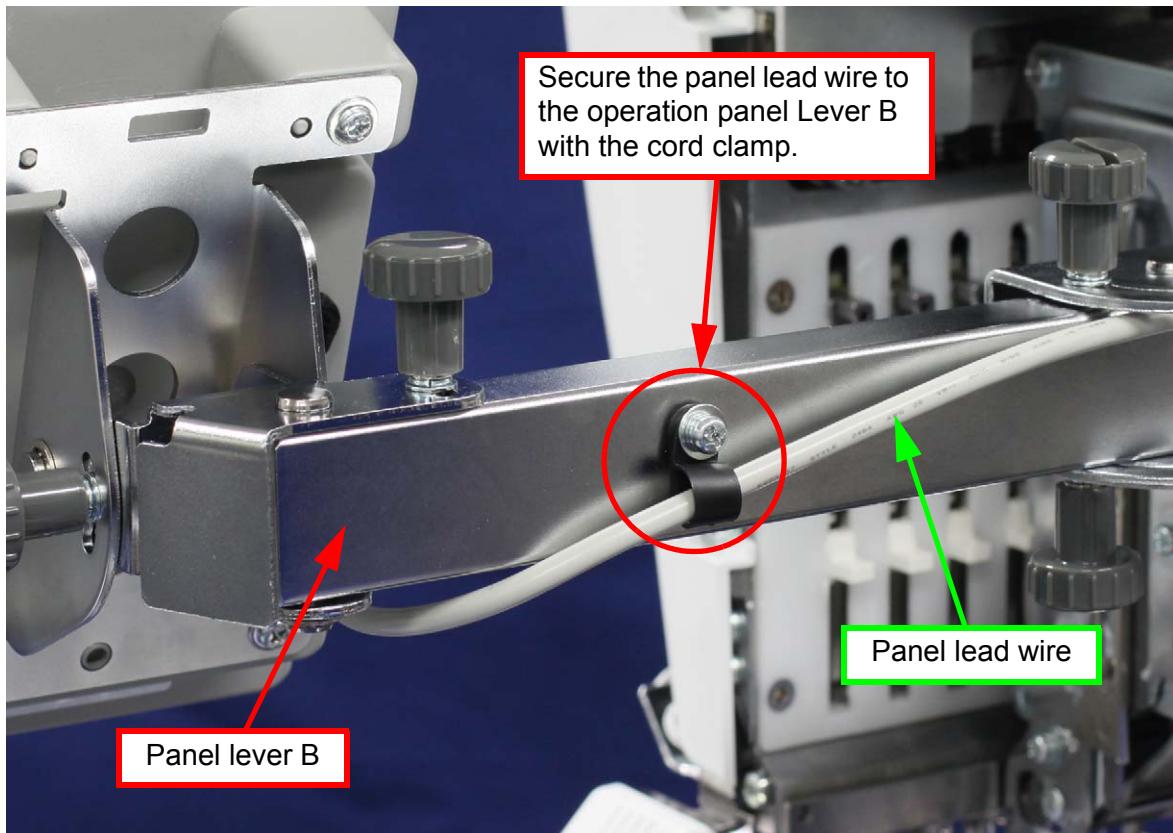
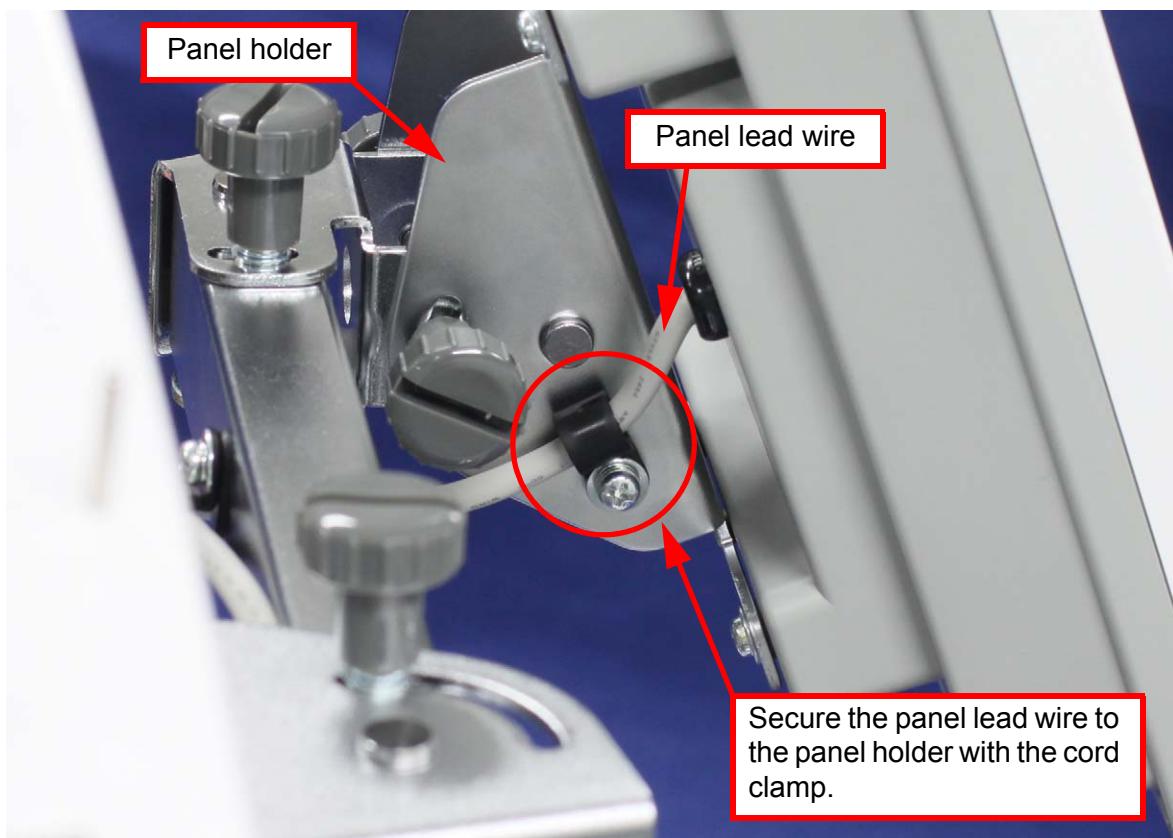


3.

(3)



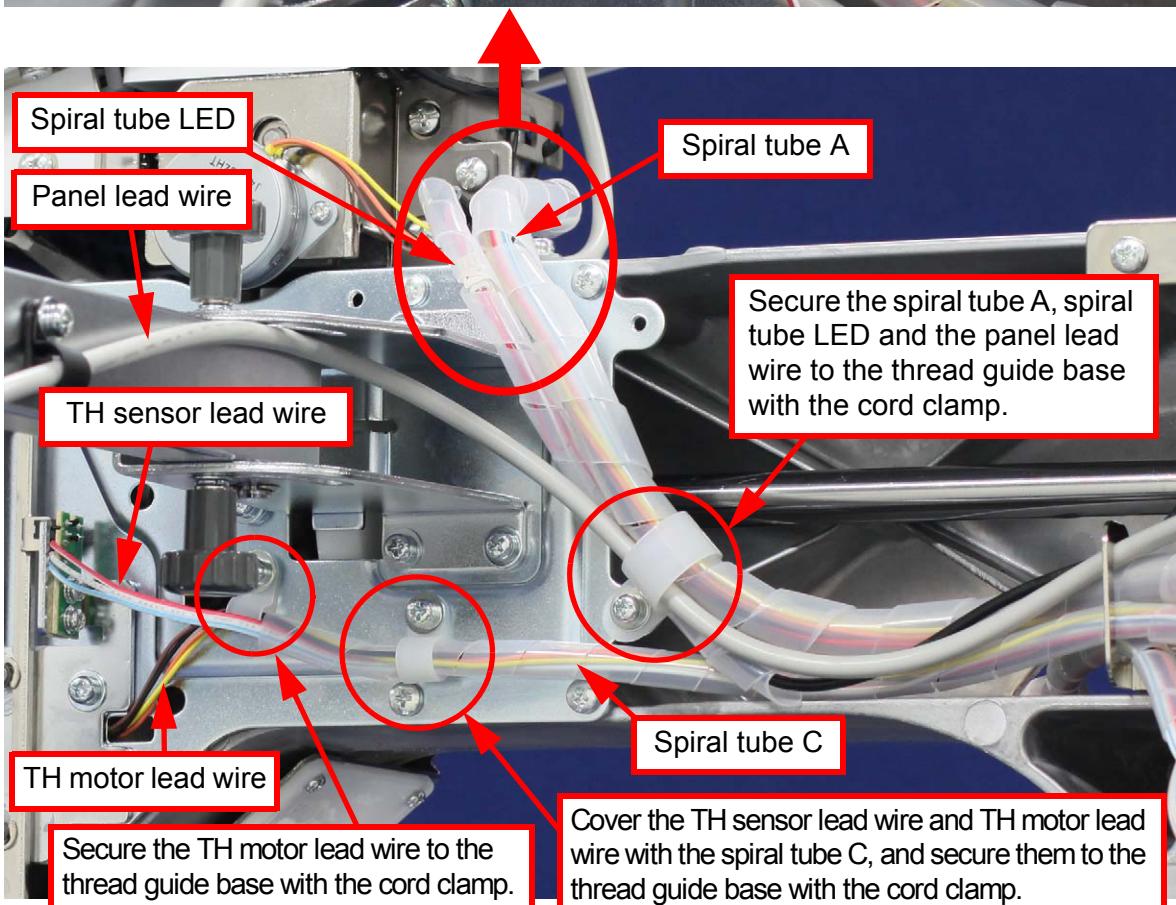
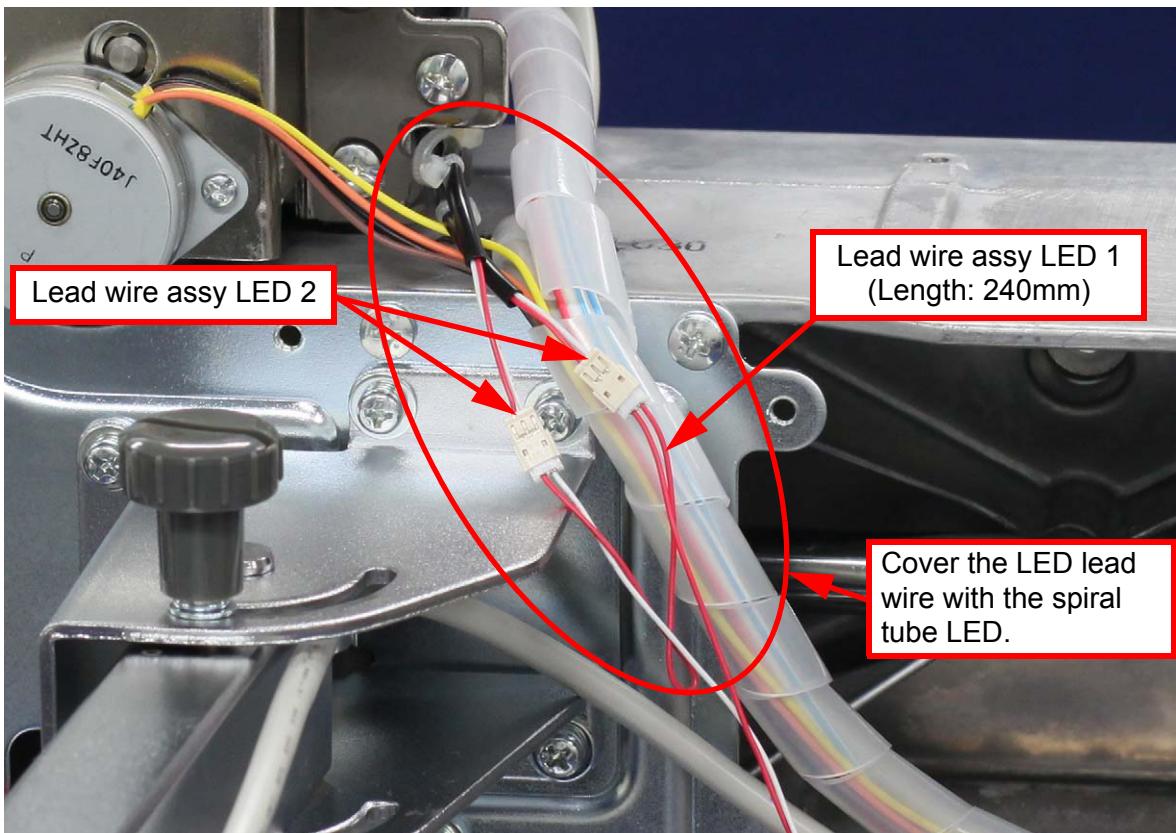
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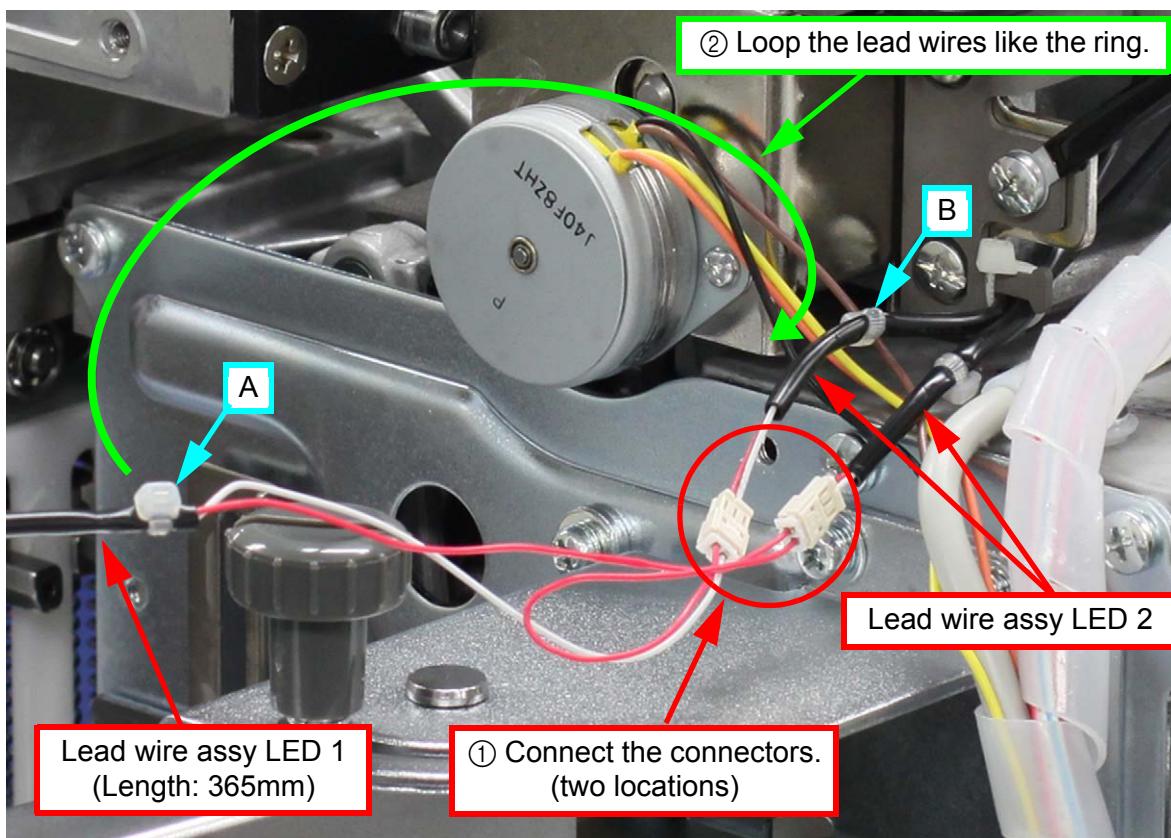
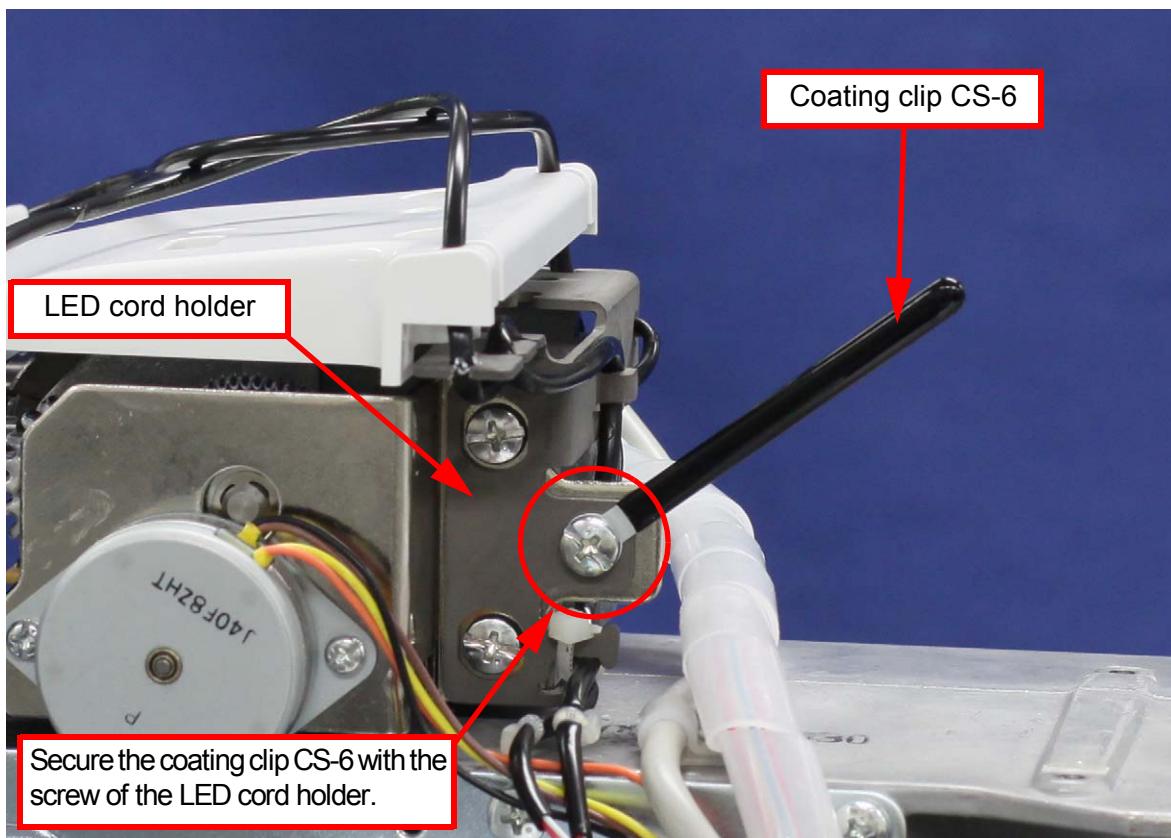


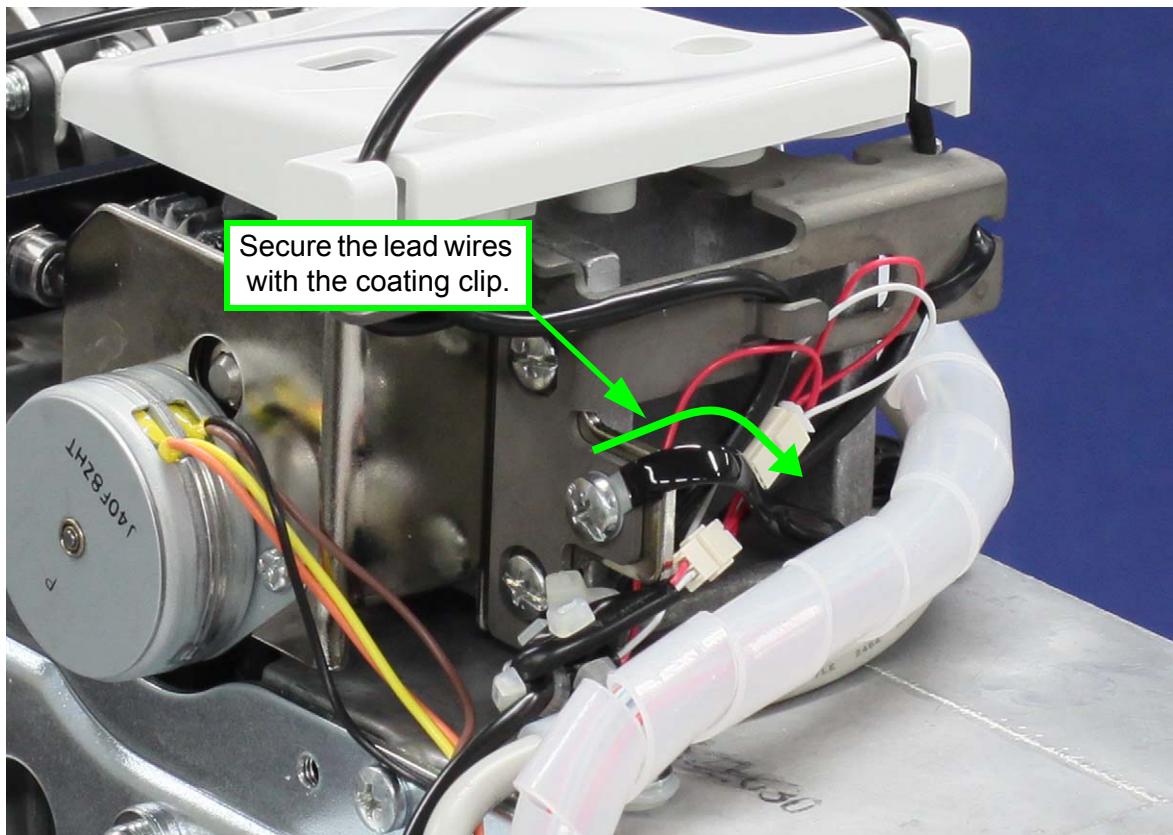
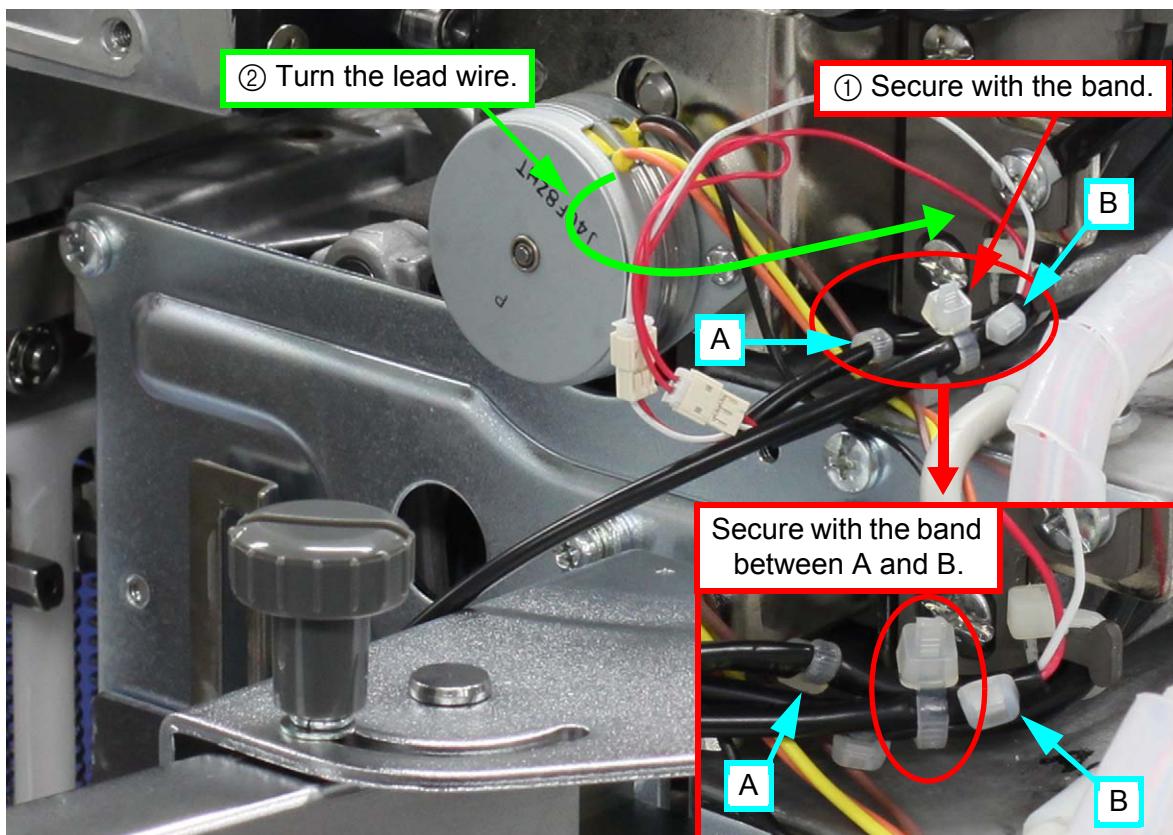
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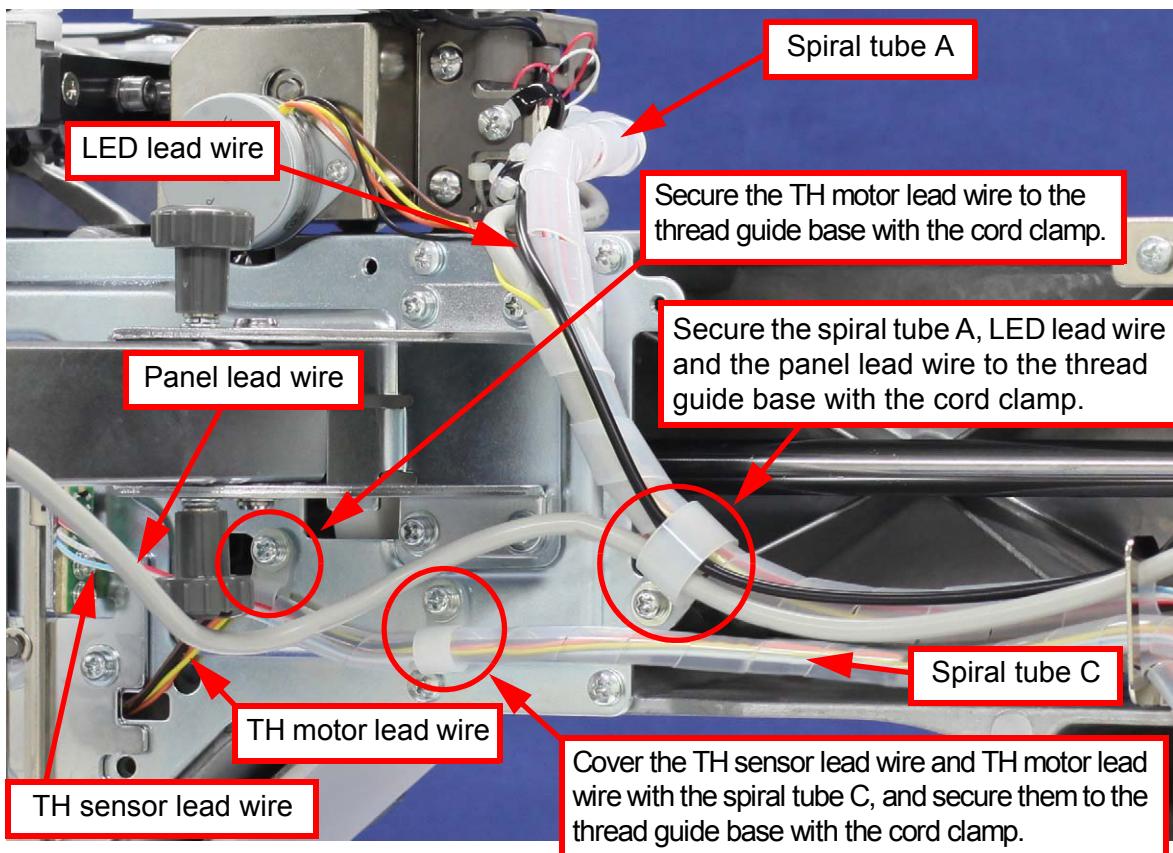
1

240

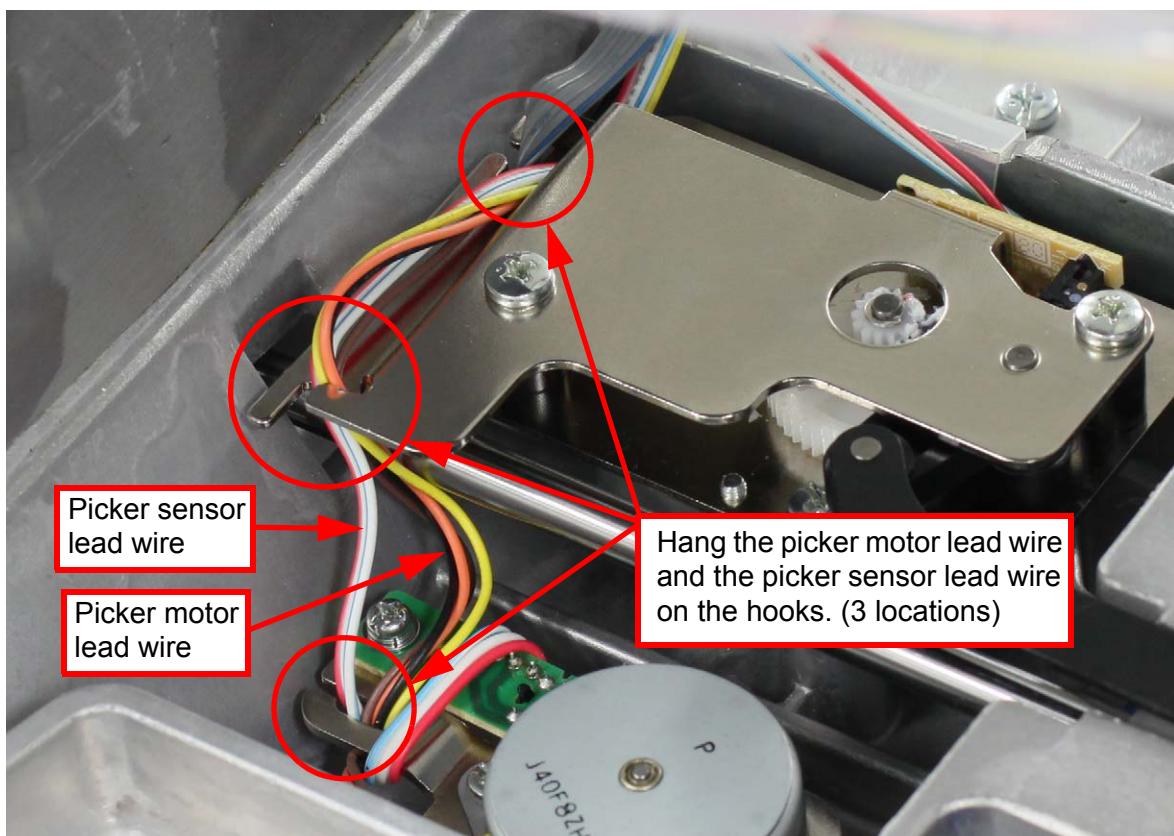




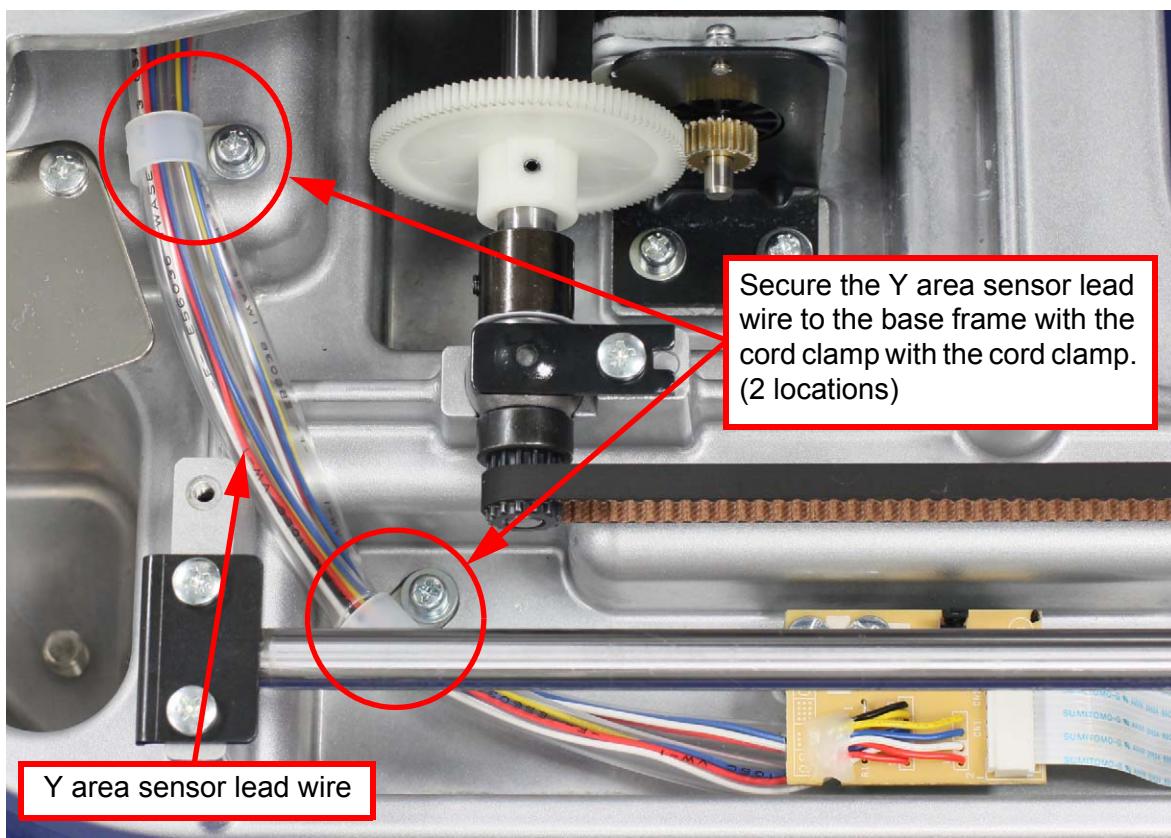




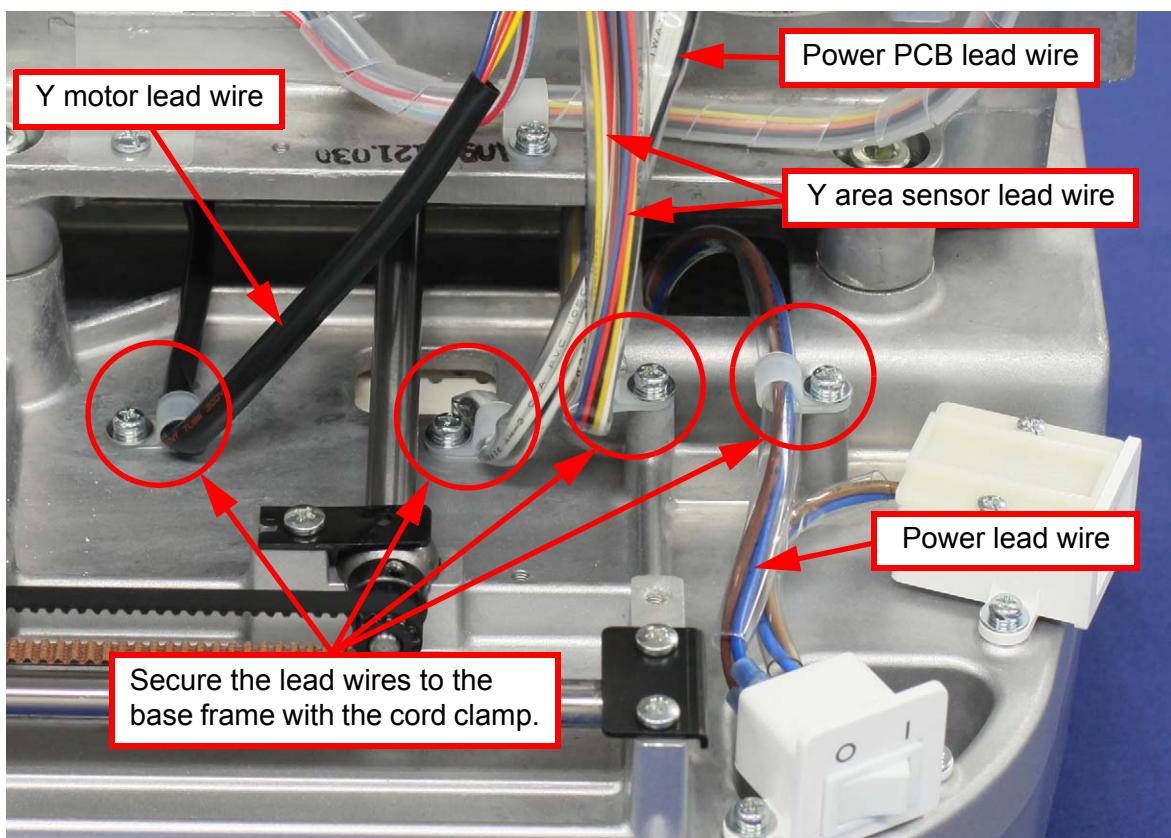
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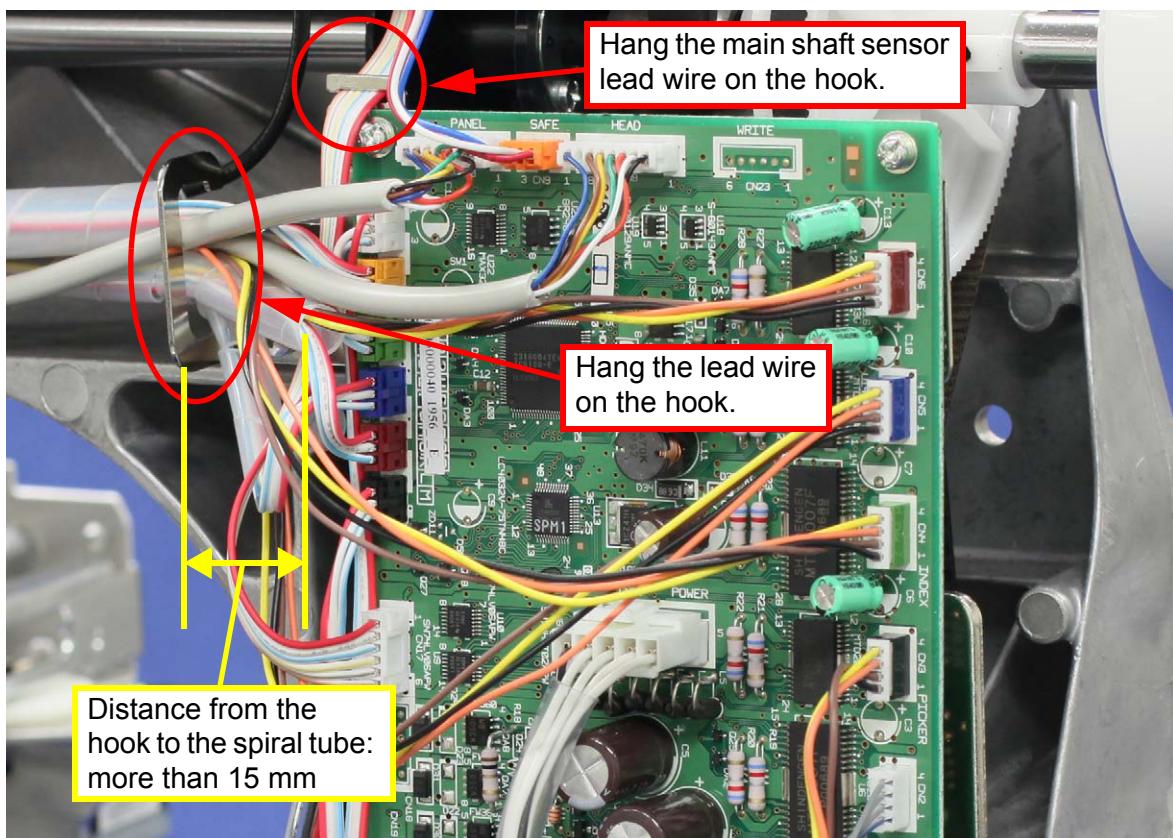
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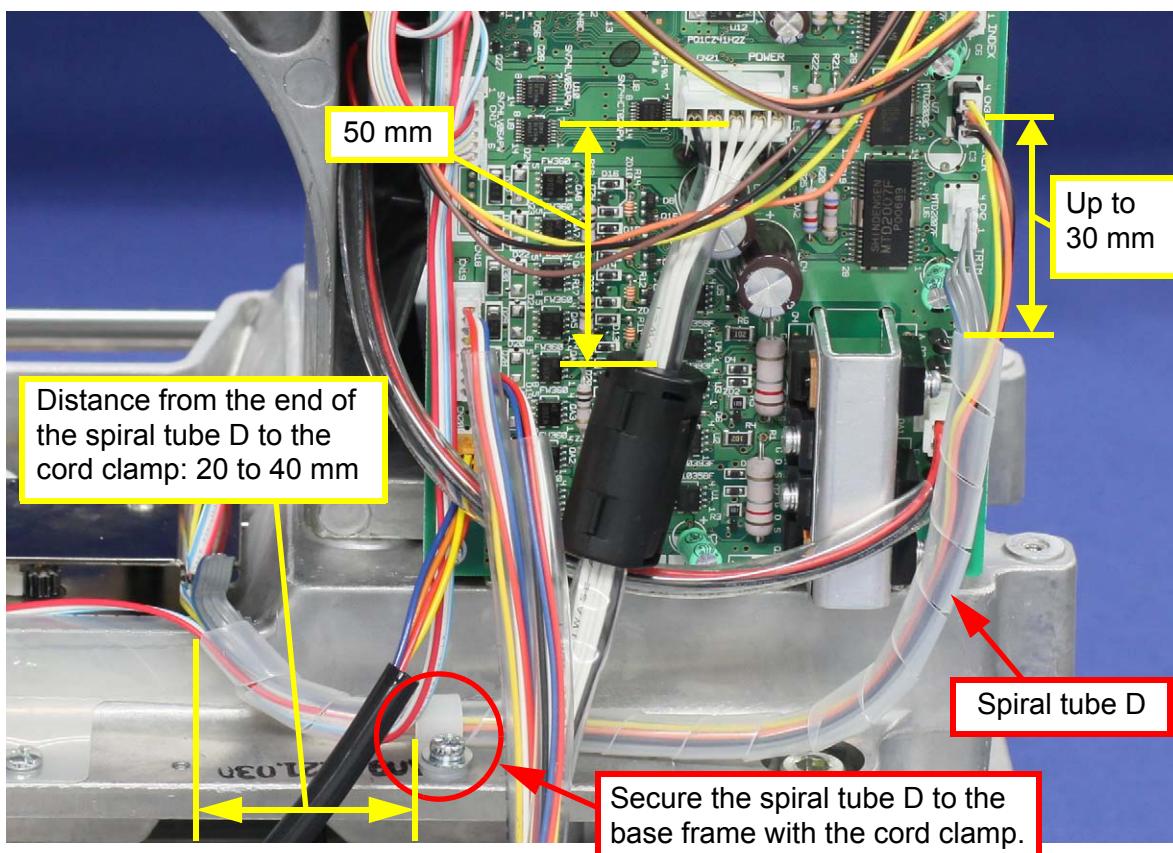
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1.

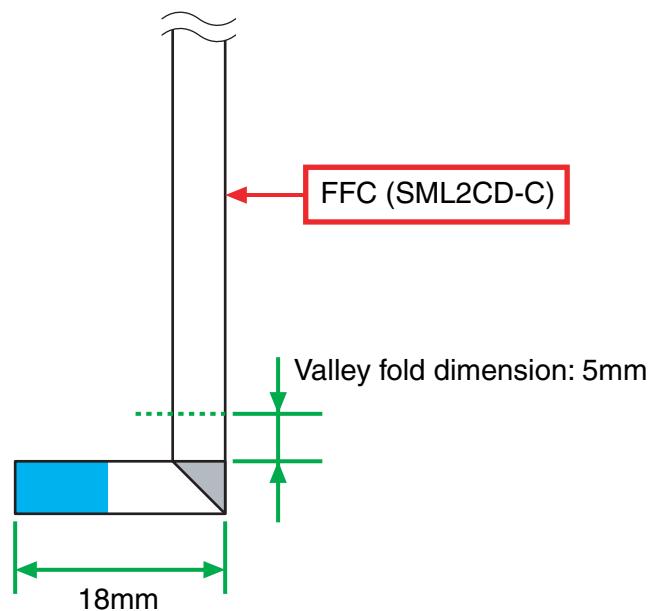
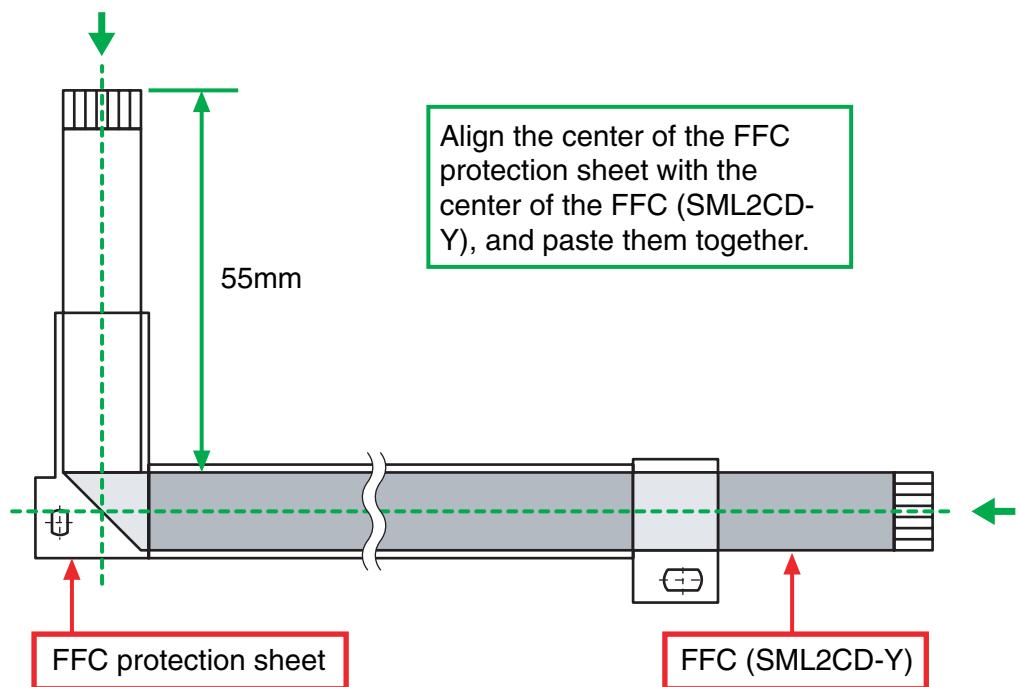


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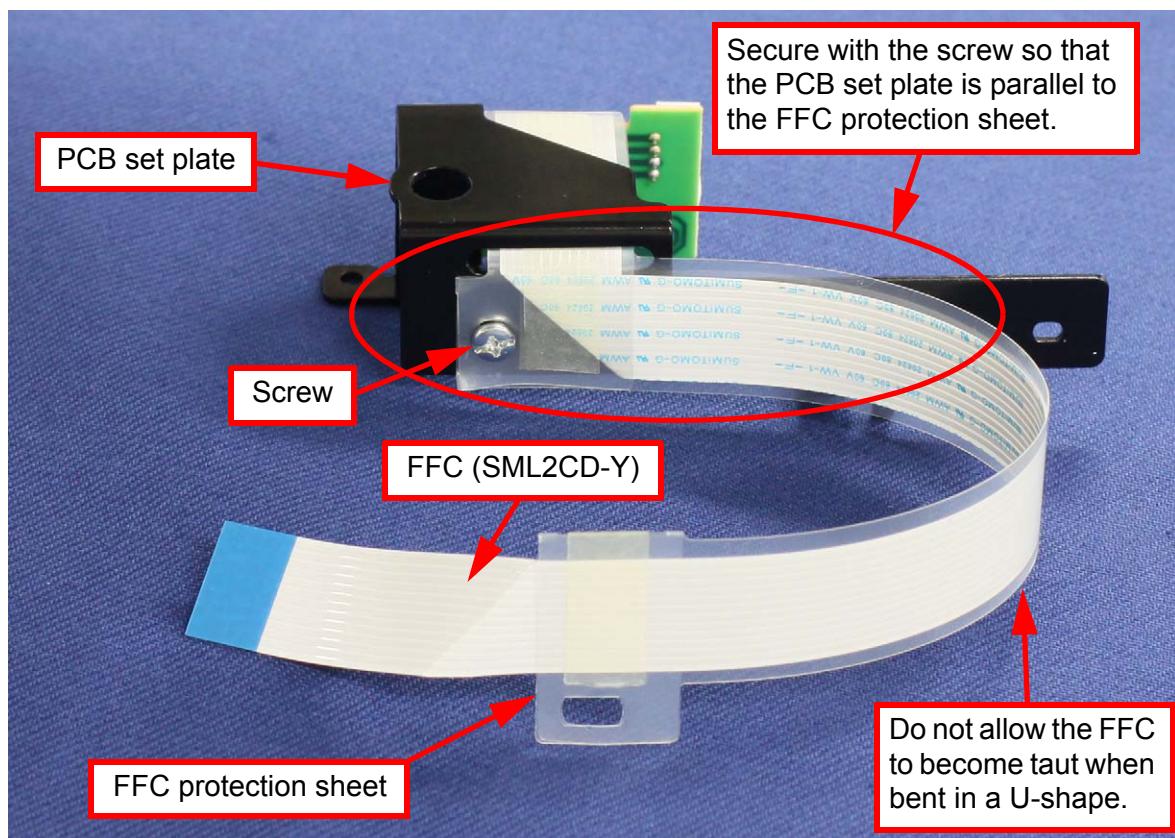
1. Y-

(1)



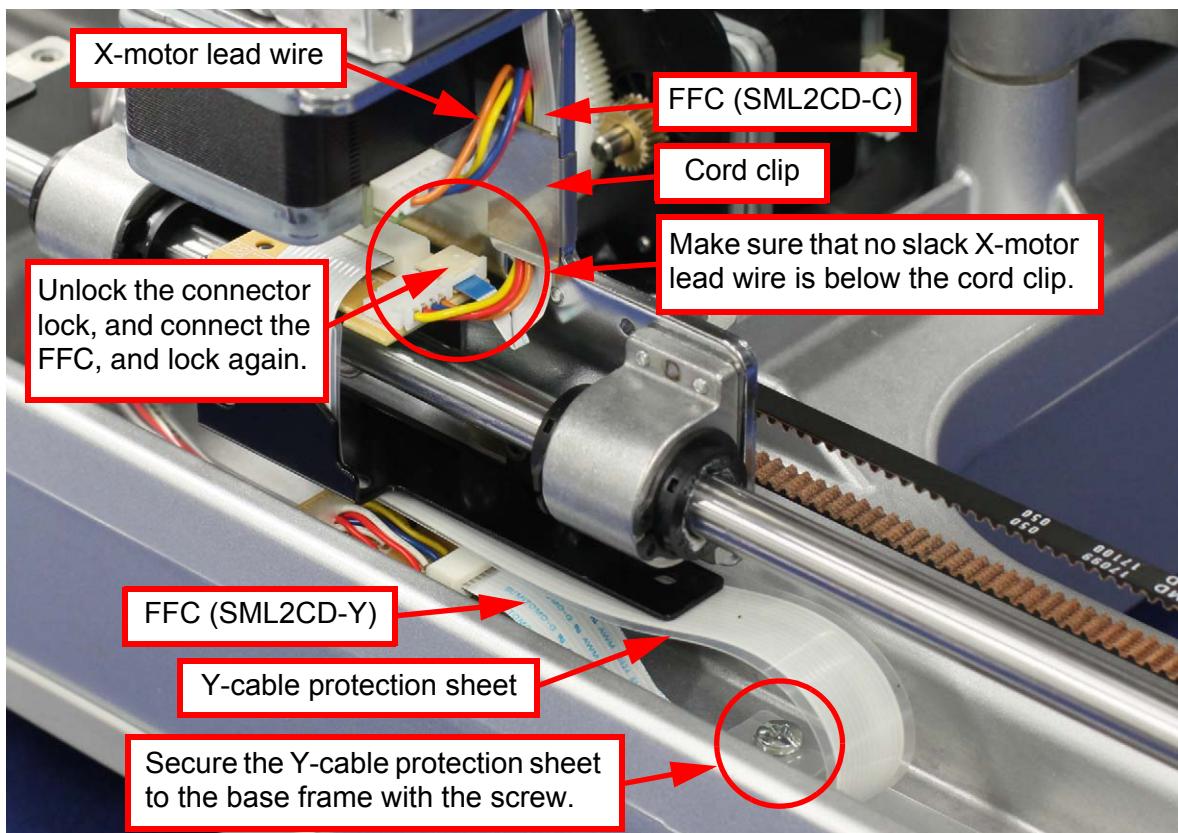
2. Y-

(2)



3. Y-

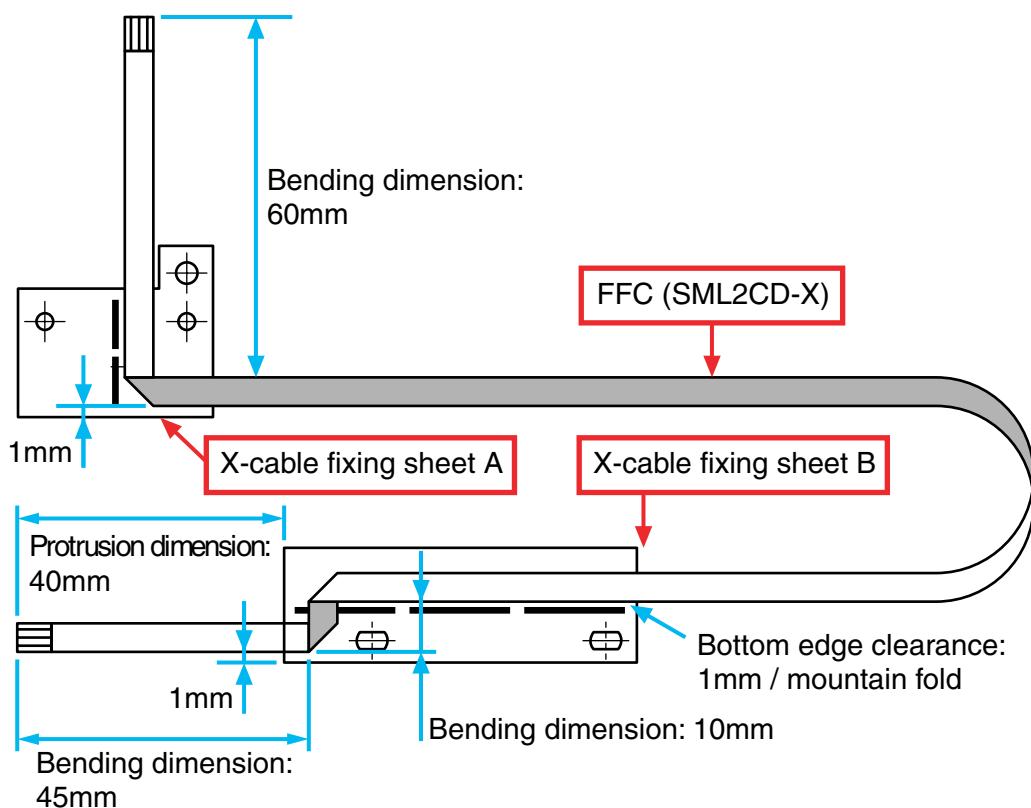
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1.

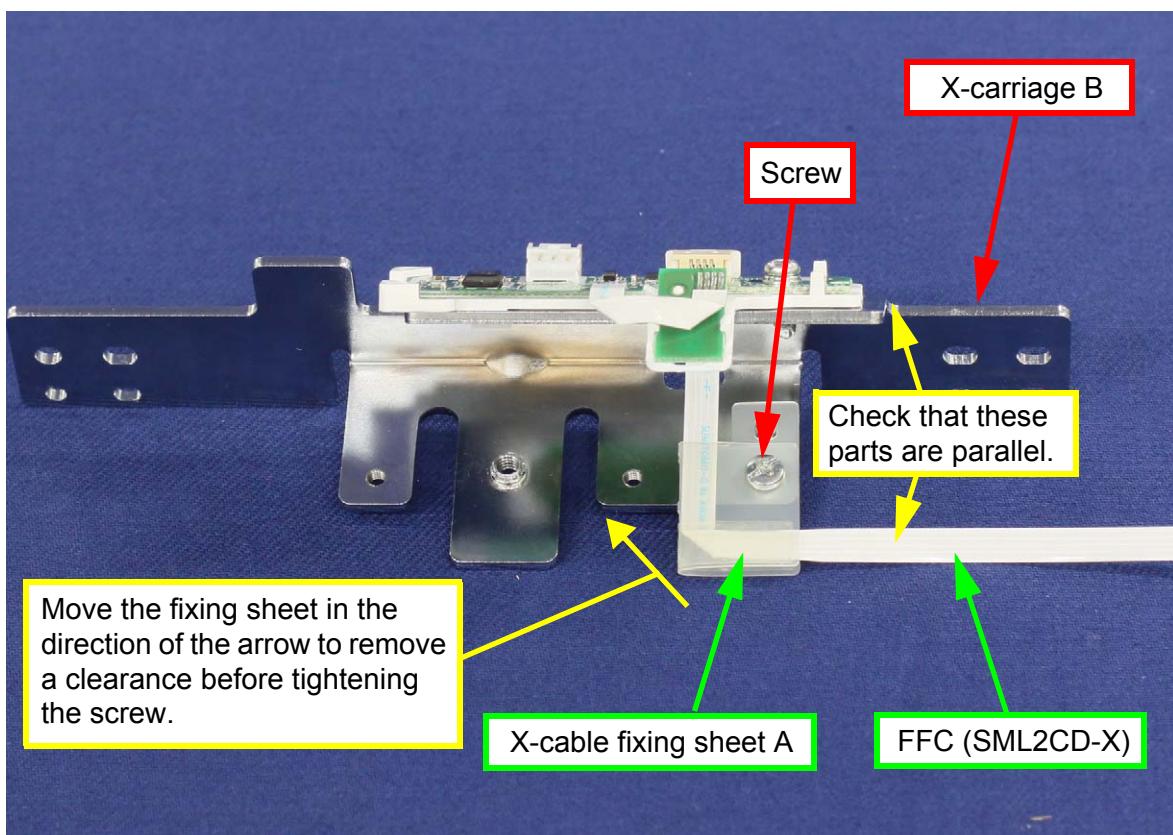
X-

(1)



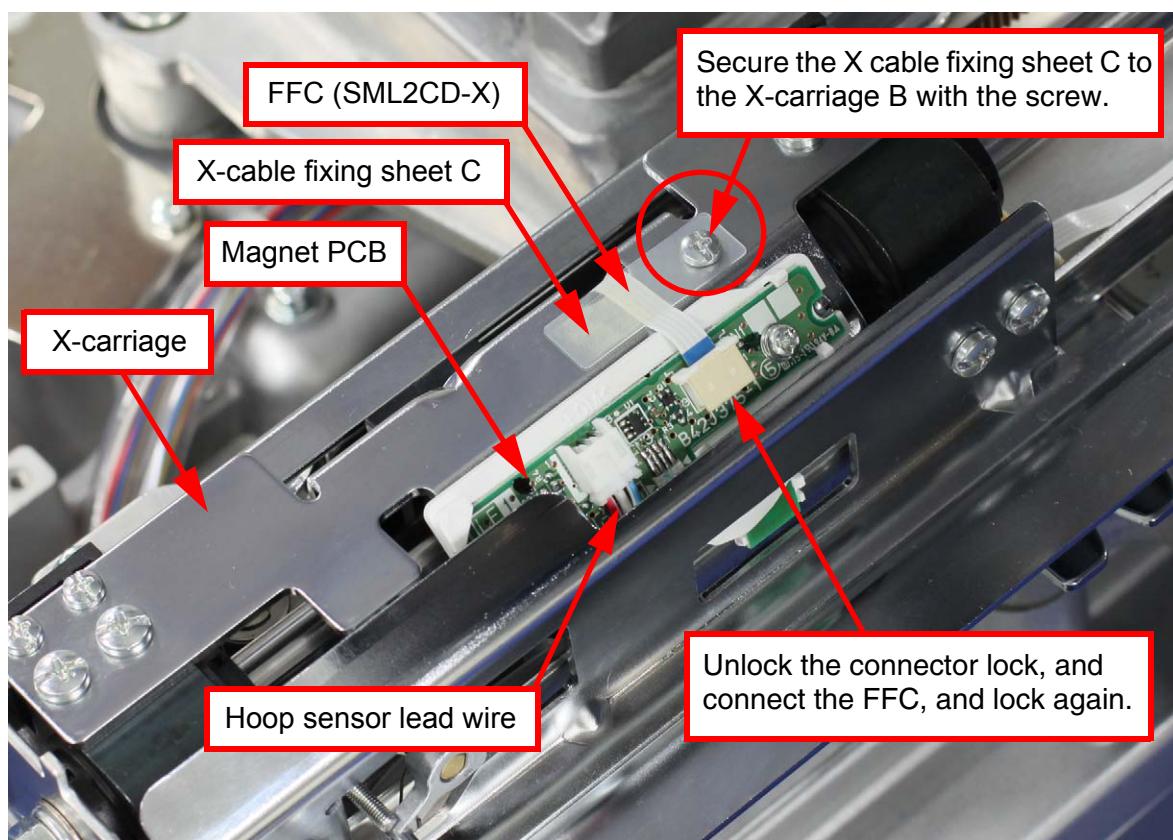
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(2)



3. X-

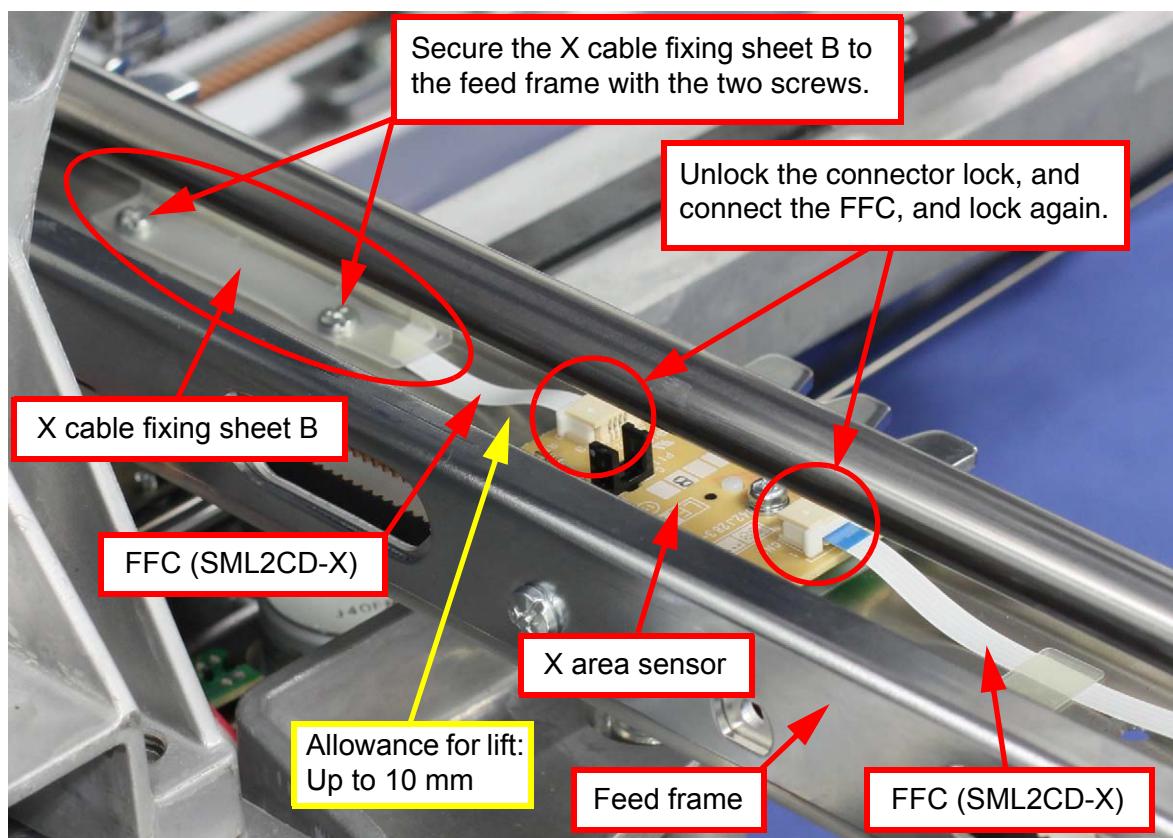
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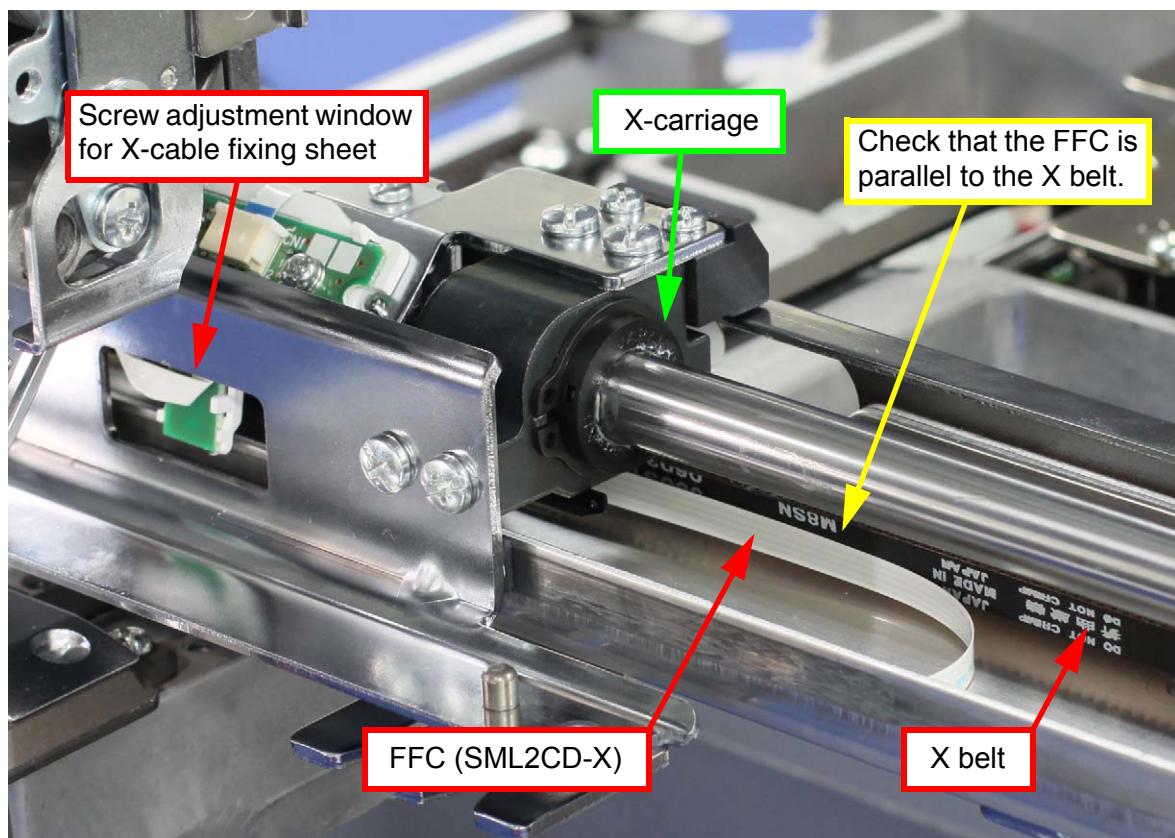
X-

(4)



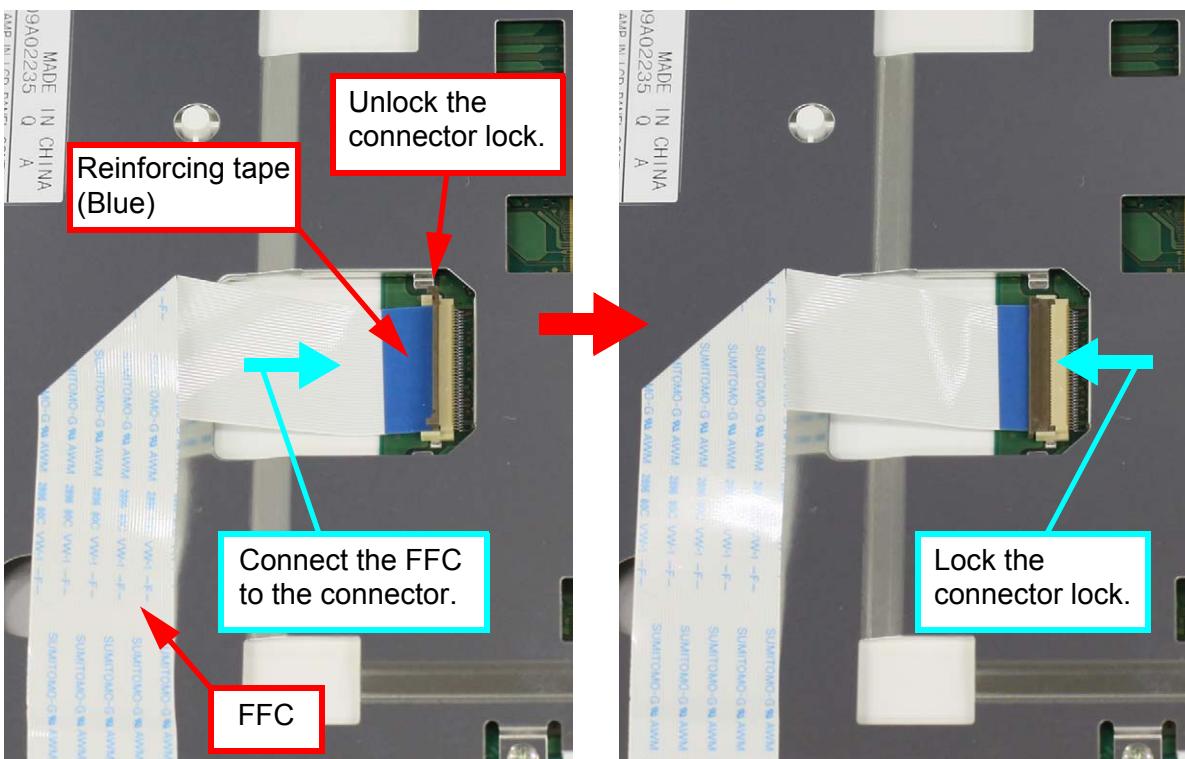
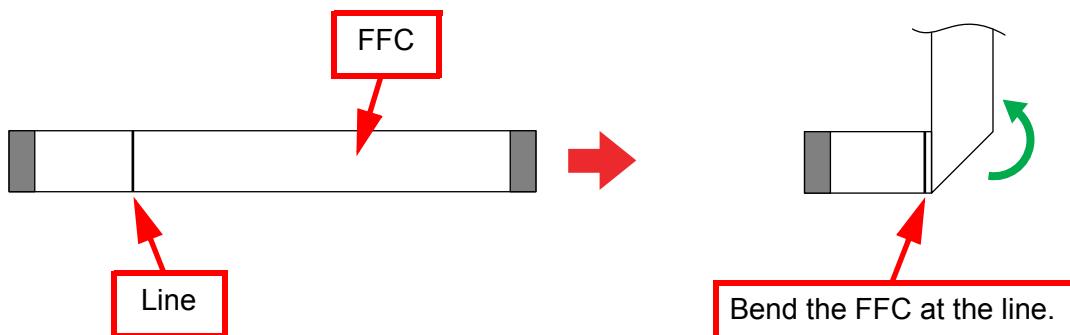
5. X-

(5)

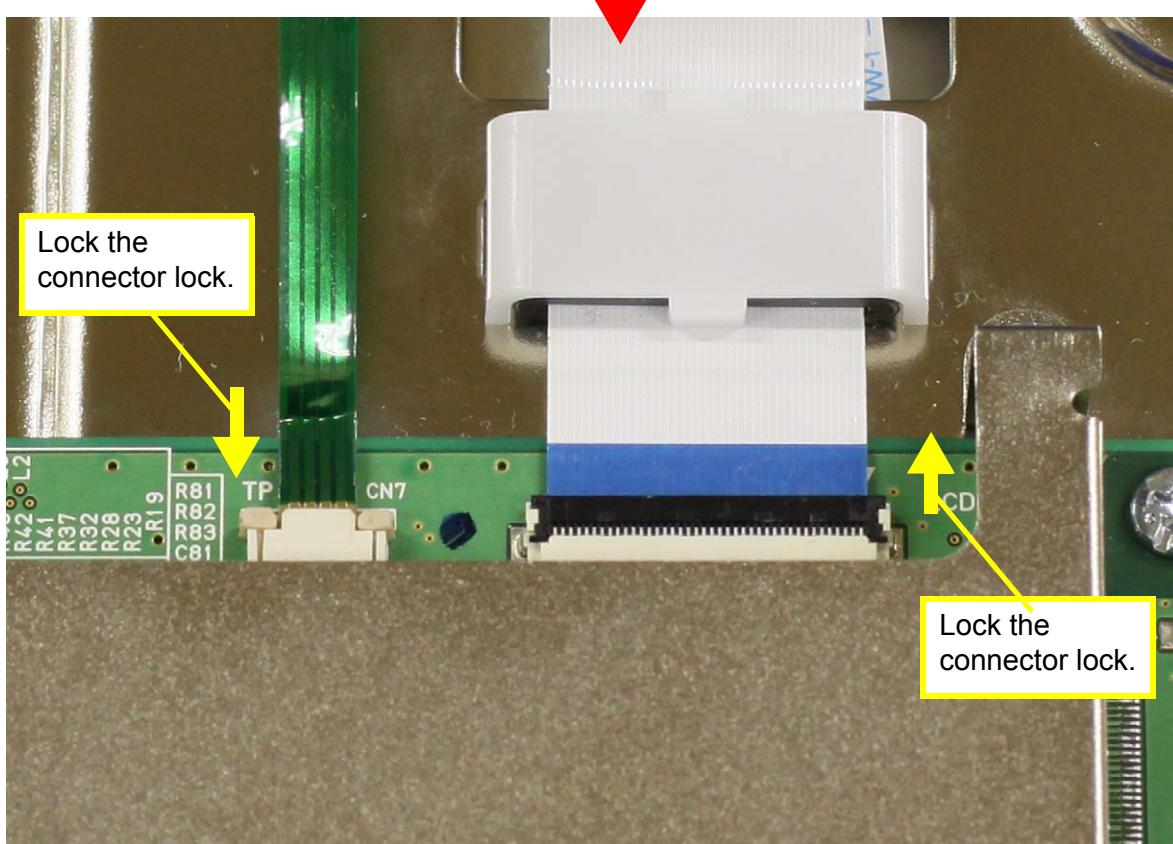
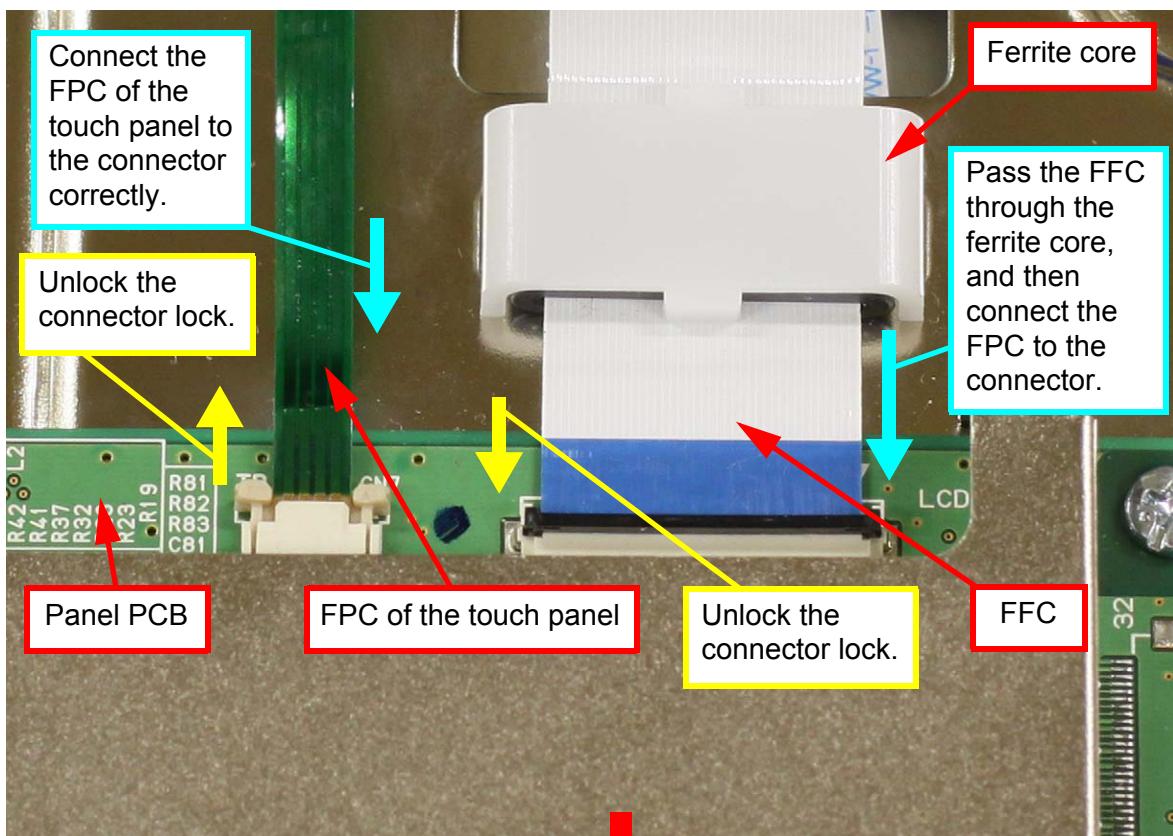


1.

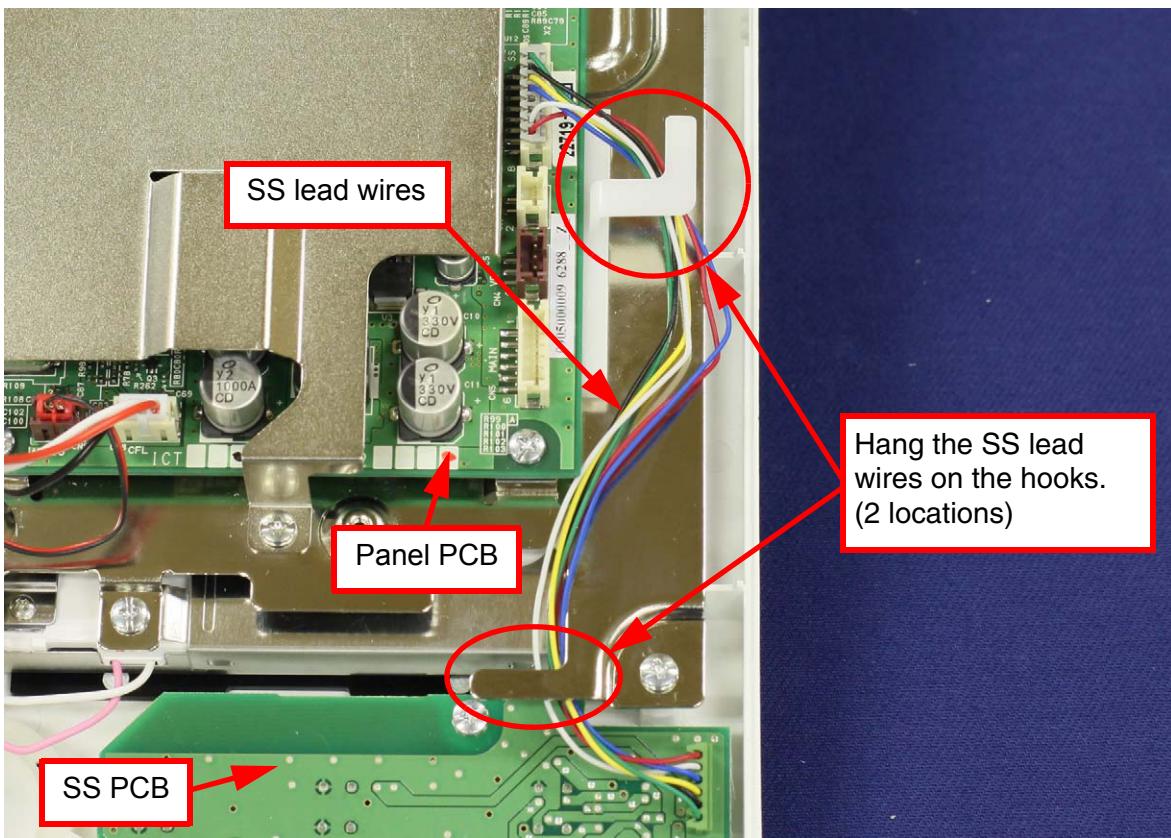
FFC



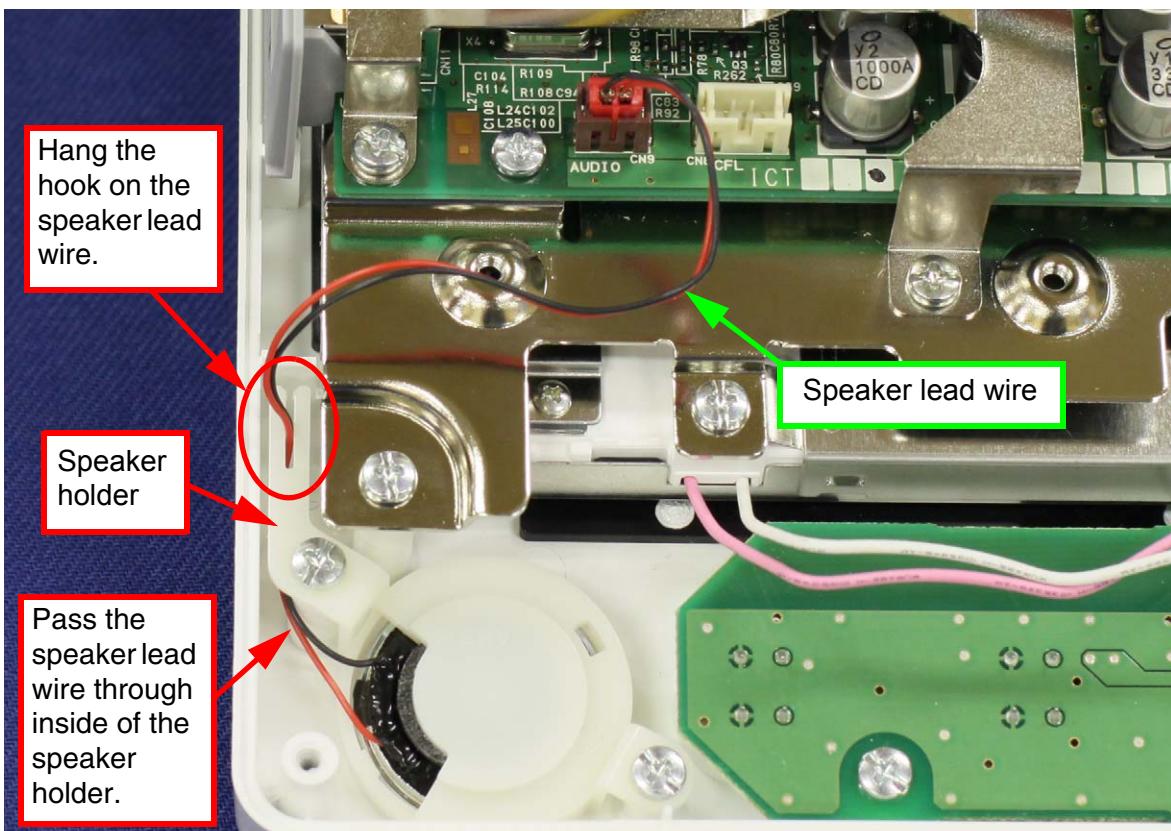
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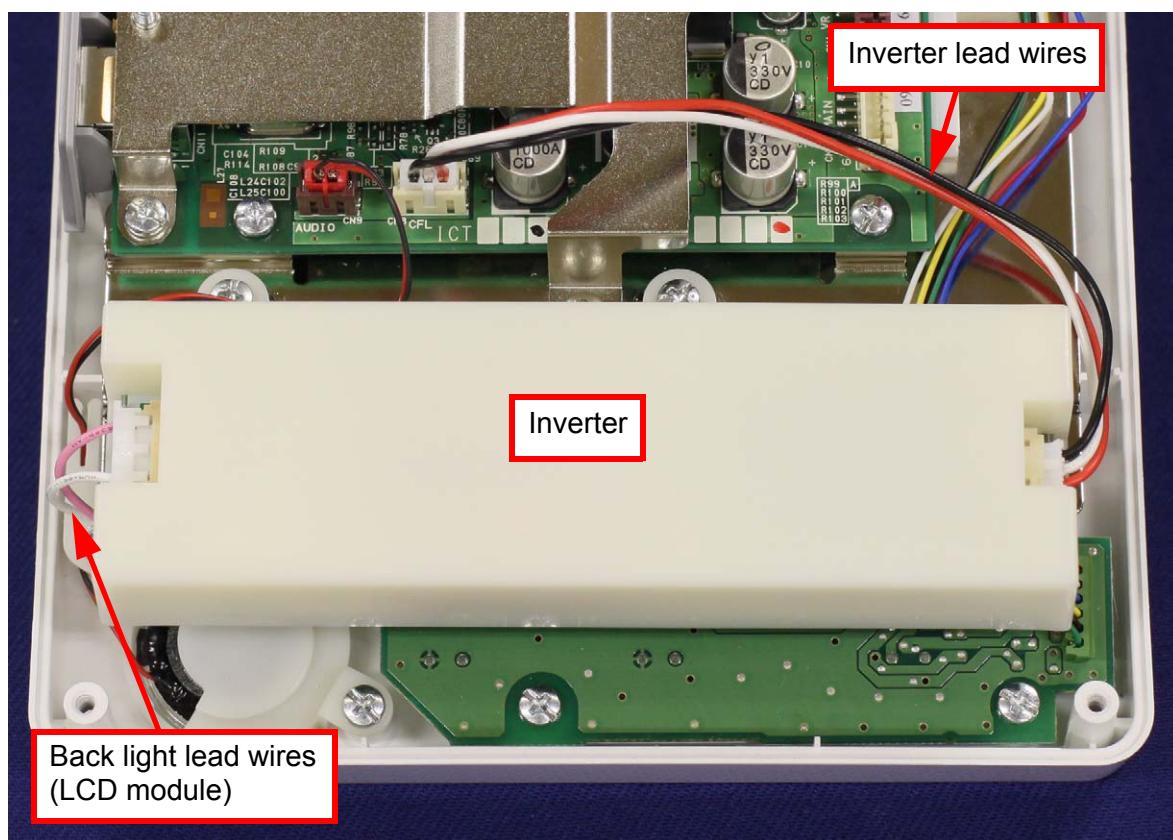
3.



4.

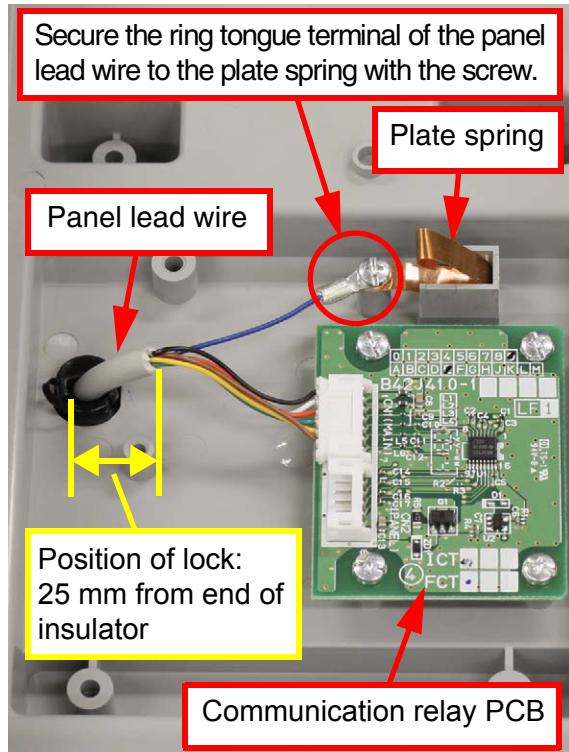


5.

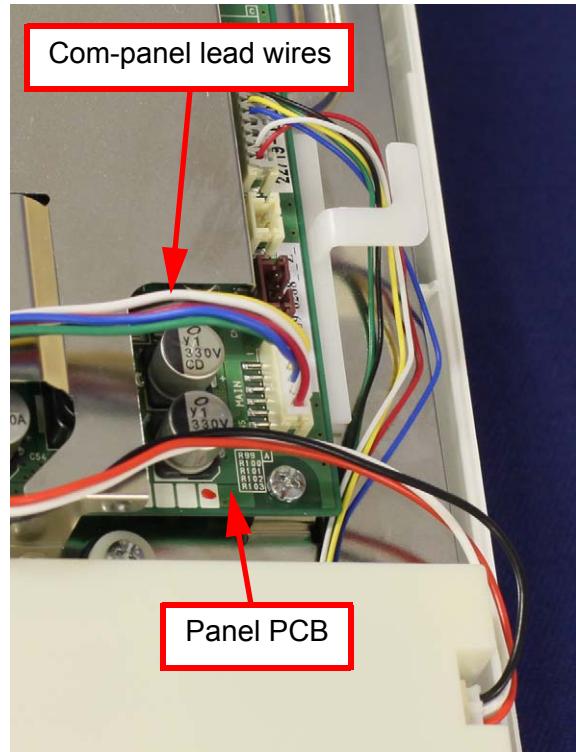


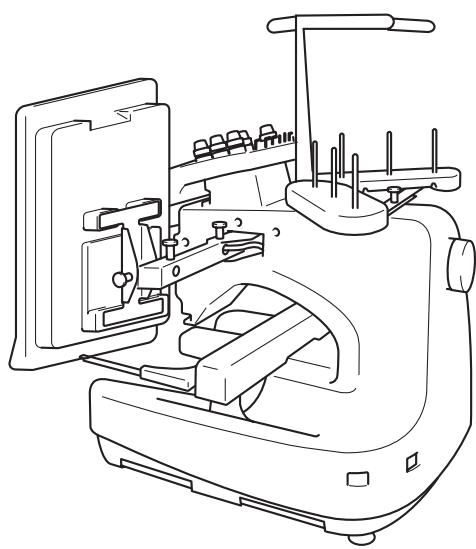
6. Wiring of communication relay PCB

Secure the ring tongue terminal of the panel lead wire to the plate spring with the screw.



Com-panel lead wires





PR650

11H09HF884T05