Maintenance Manual for Embroidery Machine

HCR3 SERIES
Version 1.2

HappyJapan

HappyJapan Inc.

For safe adjustment and repair

In order to conduct adjustment and repair safely and surely,
please be sure to abide by what is mentioned in this manual to prevent trouble.

1. When you conduct adjustment and repair of this embroidery machine or handle electric related parts, you are required to take technical lesson in advance.

2. When you conduct adjustment and repair using this manual, please be sure to use together with instruction with it in hand.

Please conduct in accordance with work process in this manual.
In case there are no specific instructions or explanations in work process.
please be sure to unplug cord from receptacle.
When you exchange parts, please be sure to use genuine parts designated by us.
Please never remodel the embroidery machine.

When you handle circuit boards:
In order to prevent troubles from static electricity, please remove earth from human body.
Please don't touch metal part of circuit board with bare hand as it will short-circuit and threaten to break circuit boards.
When you removed circuits boards from the machine or you store or transport them, please wrap them in static electricity preventive bag and avoid to give shock.

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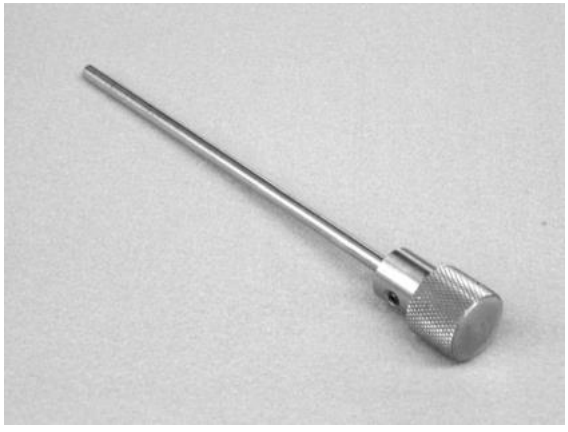

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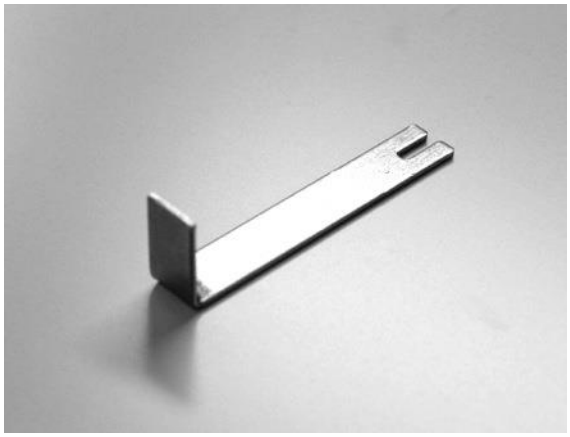

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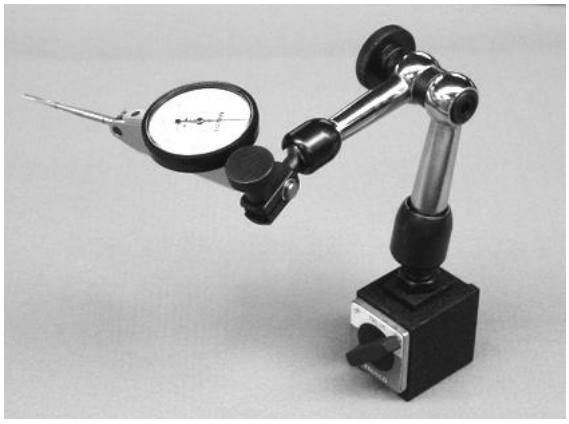

Special tool, Measuring equipment, Other

HSA90270

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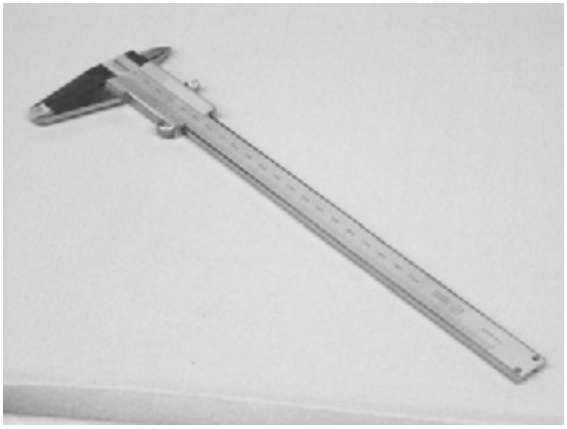

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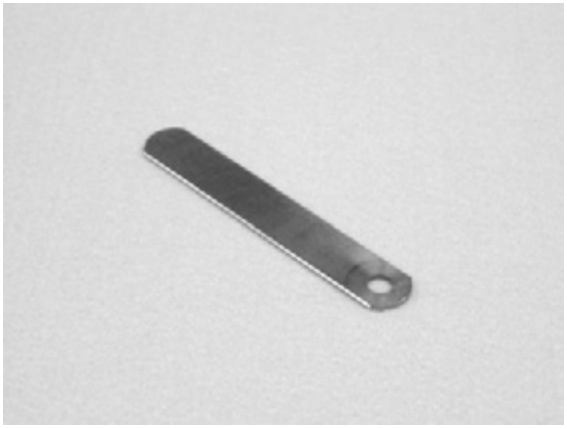

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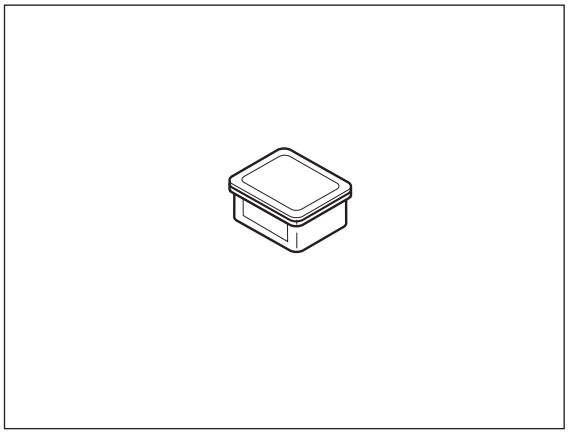

HSA90340

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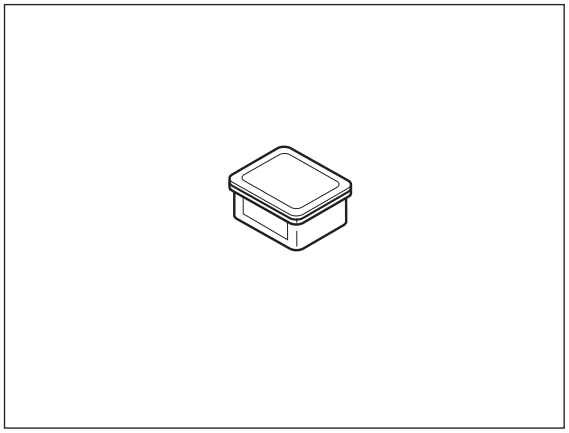

M0404342

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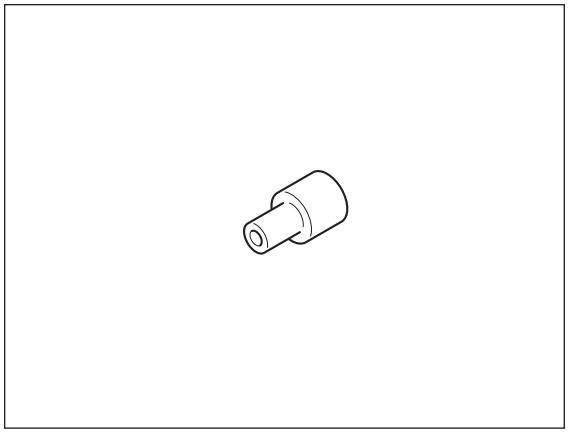
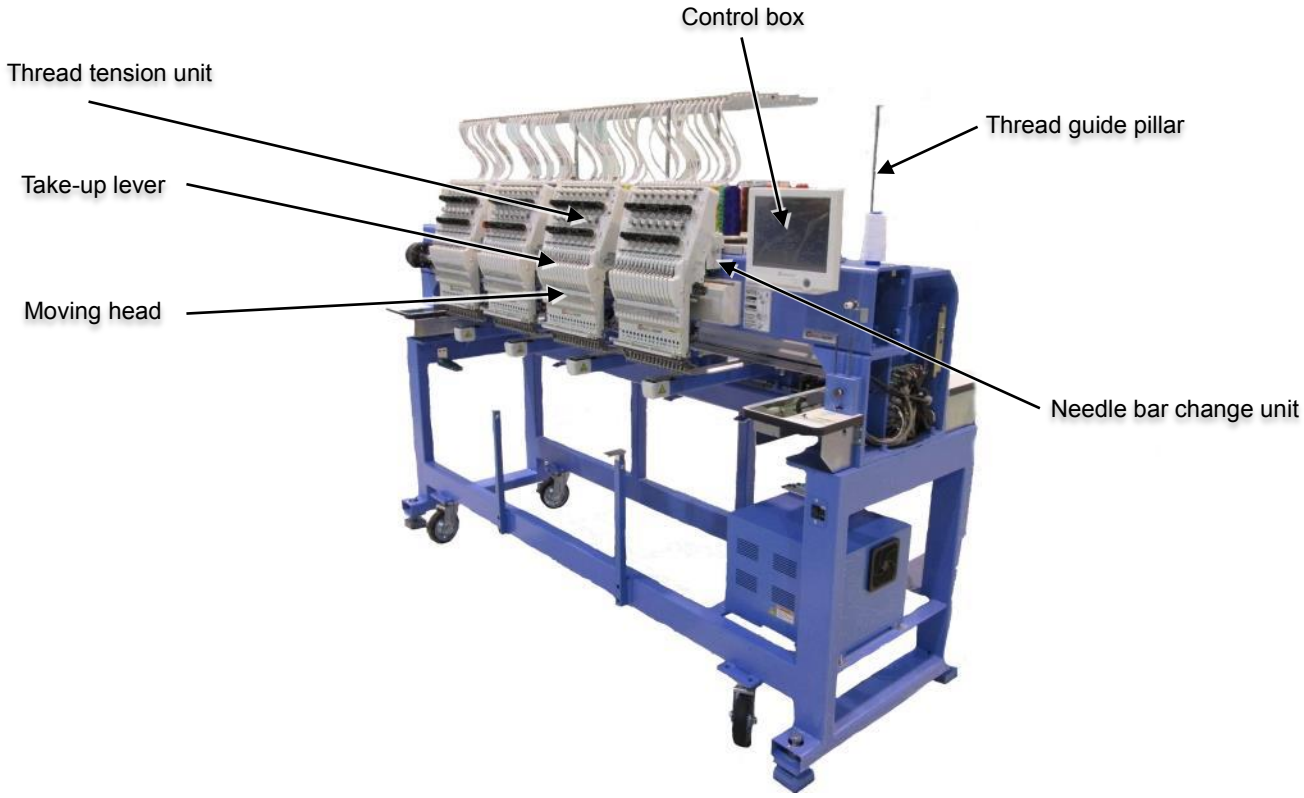
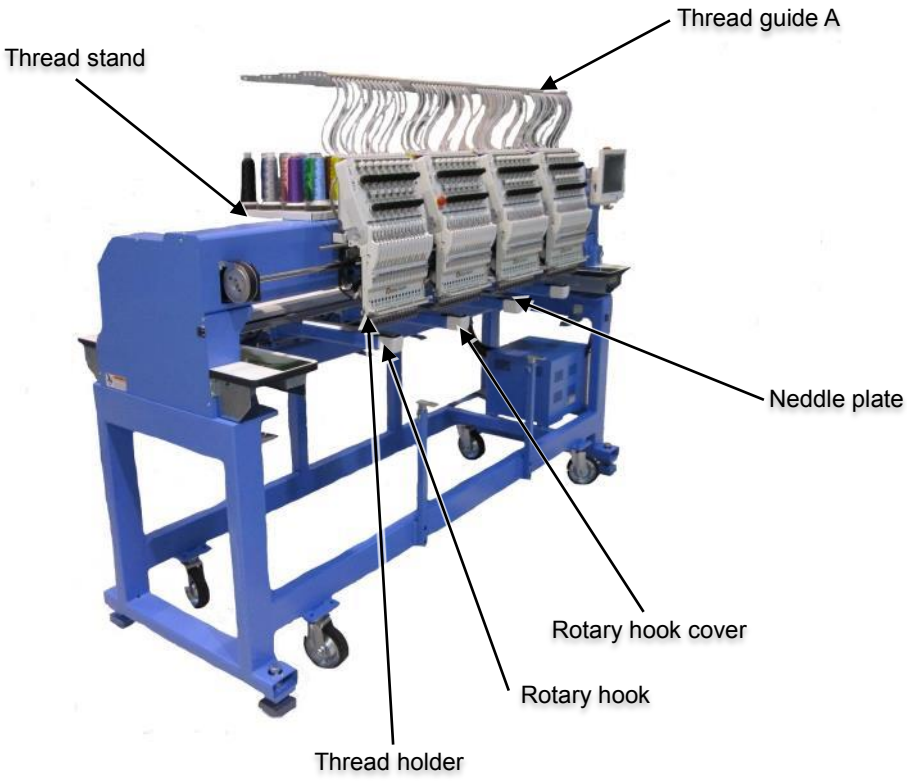
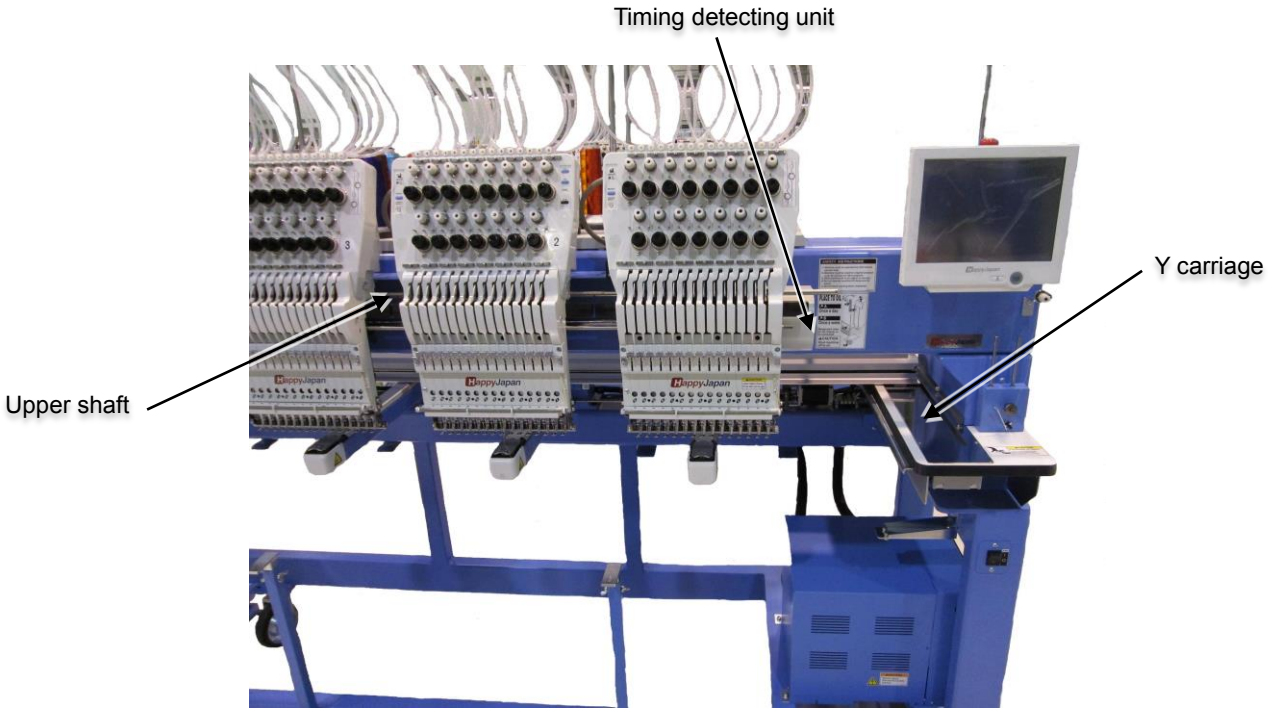


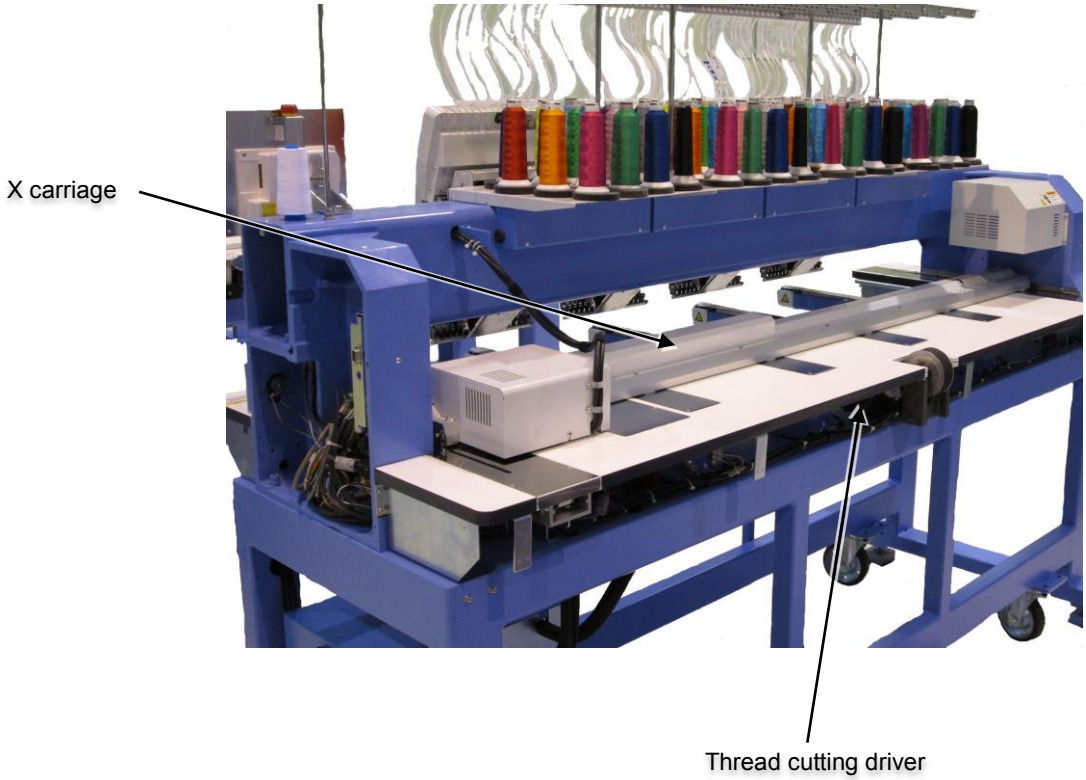
1 Placement of key mechanical parts





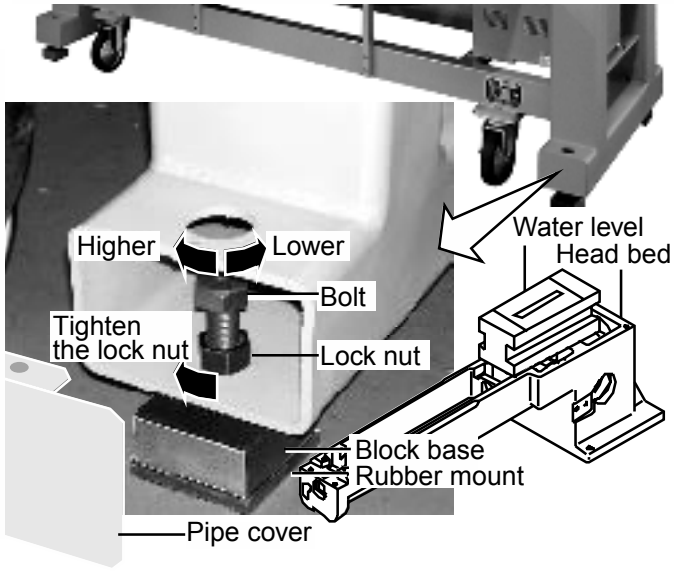
1 Placement of key mechanical parts





2-1, 2-2 Setting up the machine

2-1 Machine installation

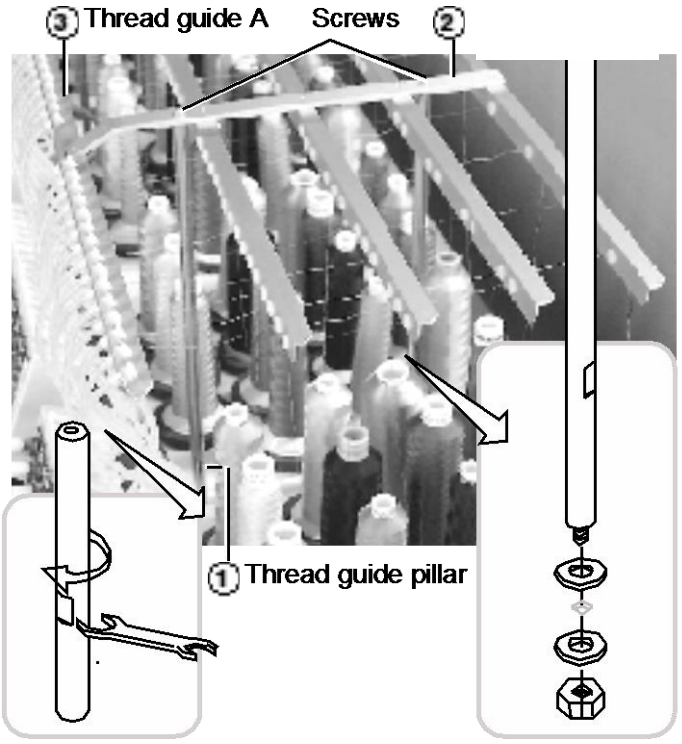


(1) place block base and rubber mount under bolts and adjust bolts so that the machine becomes level.
Block bases and rubber mounts are included in accessories.
At this moment, get caster slightly risen from the floor.
As shown in Fig., levelers should be placed on both sides of head bed with upper cover removed.

(2) Fix the lock nut.

(3) Fix the pipe cover.

2-2 Assemble the thread guide



(1) Turn the thread guide pillar (front [long], rear [short]) clockwise with a spanner until tight.
Fix rear thread guide pillar with a washer and a nut (M8).
<Spanner> 10mm, 13mm

(2) Install the thread guide ass'y with supplied screws (M4x8).

(3) Fix thread guide A (with spiral tube) on thread guide ass'y with screws (M3x8) from lower side.

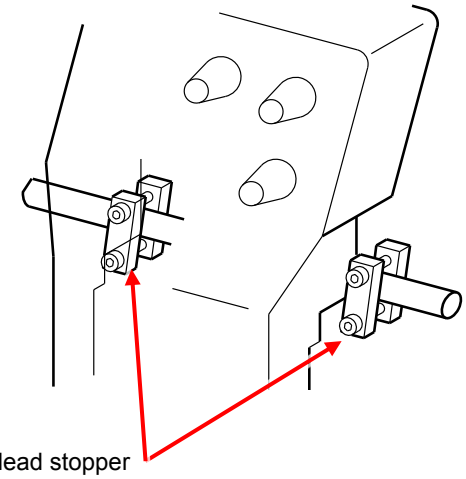
2-3, 2-4 Setting up the machine

2-3 Removal of stopper

(1) Loosen the screw and remove the red shipping collars that are equipped on the both side of the guide bar.

(2) Remove head stopper.

< Note > Number of head stopper is depending on model.



Head stopper

2-4 Check of needle position

(1). Turn power switch ON, and enter user maintenance mode.

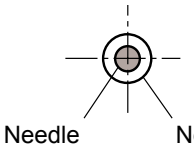
Refer to [5 User maintenance mode]

(2) Remove bobbin case.

(3) With help of user maintenance mode, please move needle bar down and confirm needle position is center of needle hole on needle plate.

< Note > Please move needle bar slowly

< Note > Please check position of 8th needle, then check 1st and 15th needle.



Needle Needle hole of needle plate

2-5 Setting up the machine

2-5 Check of needle height.

(1) Move moving head to the position which 8th needle is active.

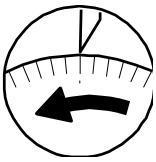
Remove bobbin case.

(2) Bring needle bar down.

Refer to [5 User maintenance mode]

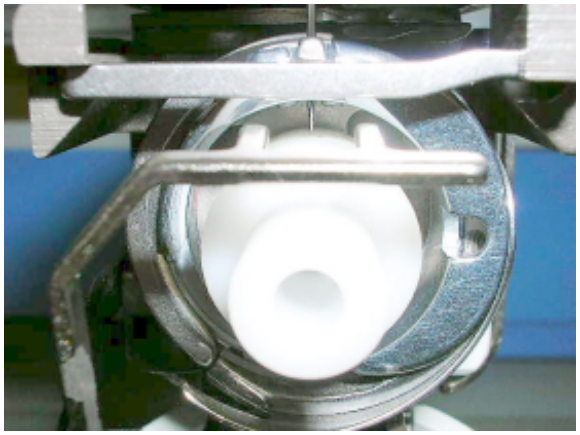
(3) Turn upper shaft anti-clockwise and set dial disc to [L + 10 degrees].

Turn brake switch ON.



(4) Put needle height gauge in rotary hook.

(5) Check if the needle tip touches to the gauge slightly.



(6) Take “Needle height gauge” out from hook.

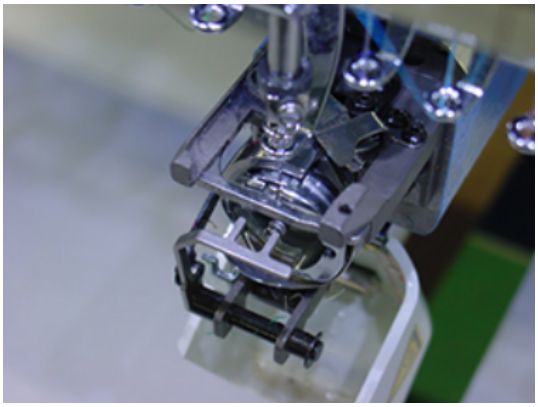
2-6, 2-7 Setting up the machine

2-6 Check of rotary hook timing

(1) Remove needle plate, Move moving head to the position which 8th needle.

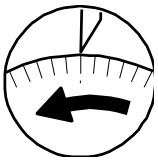
Turn upper shaft and set to lowest needle position [L]

Refer to [5 User maintenance mode]

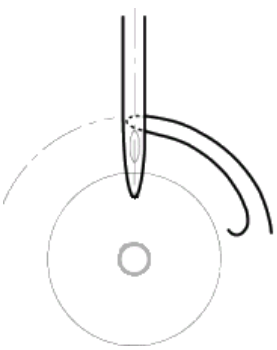


(2) Turn upper shaft anti-clockwise and set dial disc to [25 degrees].

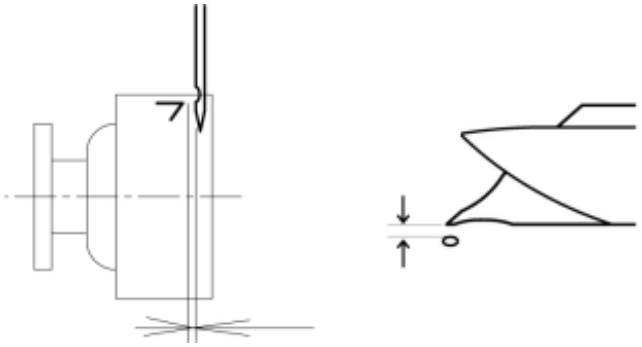
Turn brake switch ON.



(3) Check the position of needle and tip of hook as below.



(4) Check the clearance between needle and rotary hook should be [0.1 ~ 0.2mm].

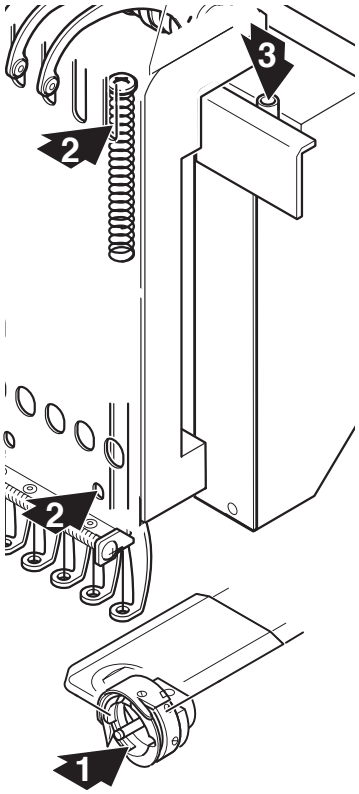


(5) Fix the needle plate.

2-7. Oiling

Lubricate the specified oil locations.

Oil : #10 Sewing machine oil



1) Rotary hook Between the outer and inner rotary hook

2) Needle bar

3) Head shaft

2-8 Setting up the machine

2-8 Check of thread path

To keep stable and high quality stitches, please keep places where thread contacts in the best condition.

<Note> Pleas confirm that there is no burr and crack at the position which thread is passing.

(1) Thread tension, Thread guide, Rectifier

a) Revolution must be smooth

b) No sticking of lint or dust

(2) Thread Adjusting Spring

a) No burr and crack

b) Spring move smoothly

(3) Ceramic and rim of take-up lever

a) No burr and crack

(4) Thread path in lower side and needle holder

a) No burr and crack

2-8 Setting up the machine

(5) Needle

a) Needle tip shouldn't be warped or bent.

When you slide needle tip on surface of nail and

if the nail gets scratched.

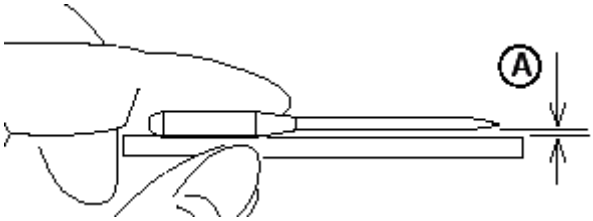
needle tip is warped. Please exchange it with new one.

Please place needle on flat surface and check

clearance (A) from side.

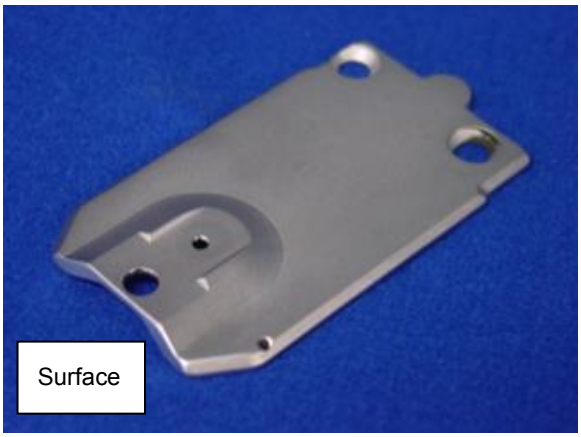
If clearance is not equal, needle is bent.

Please replace it with new one.



(6) Needle plate

a) No burr and crack in needle hole and around it.



(7) Pressure foot

a) No burr and crack inside hole

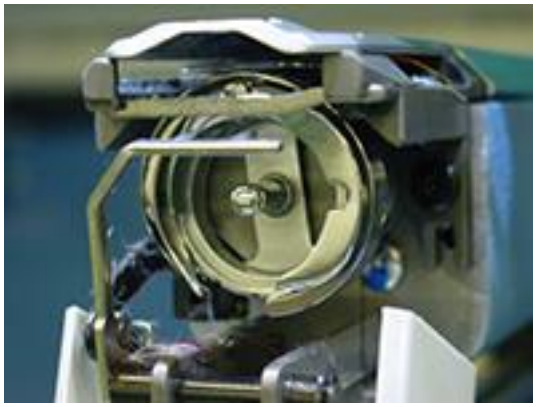
b) Not bent

(8) Rotary hook

a) No burr and crack.

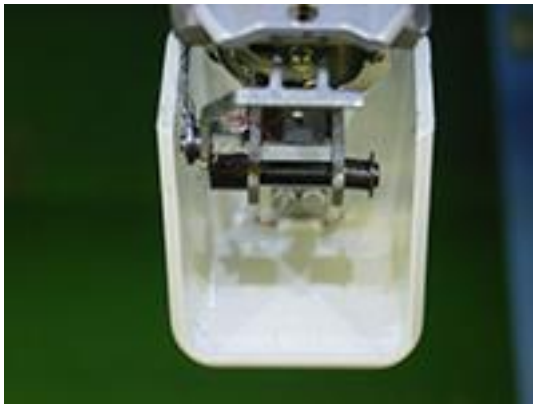
b) Hook point not warped.

c) Backlash between bobbin case holder and outer hook should be less.



(9) Keeper

a) No burr and crack in needle hole and around it.

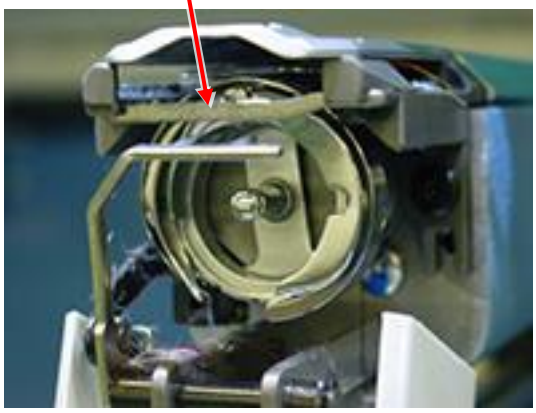


2-8 Setting up the machine

(10) Rotary hook retainer

a) There is No burr and crack at the position which thread pass through.

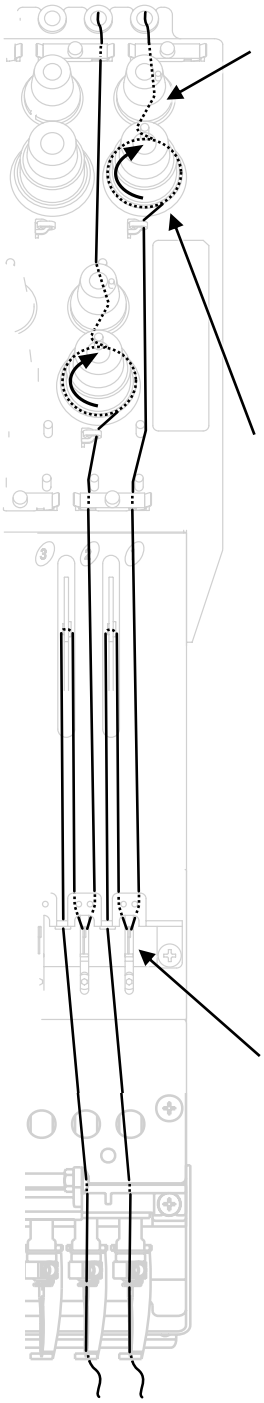
Rotary hook retainer



2-9 Setting up the machine

2-9 Threading

- Upper thread



Please adjust minor thread tension unit that detection rotary is not slipping and turn smoothly.

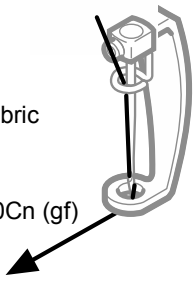
< Note > If tension of minor thread tension unit is too low, detecting rotary does not turn smoothly and thread slip on rotary.

Detecting rotary

Please check thread is not disturbed by spring.

Upper thread tension should be adjusted depending on type of thread, needle and fabric etc.

< Standard > 100 ~ 150Cn (gf)

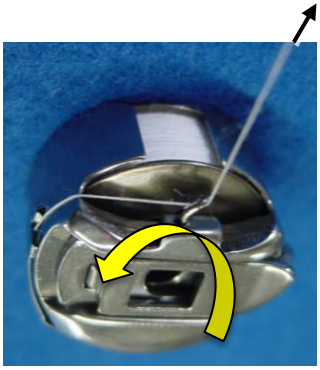


- Bobbin thread

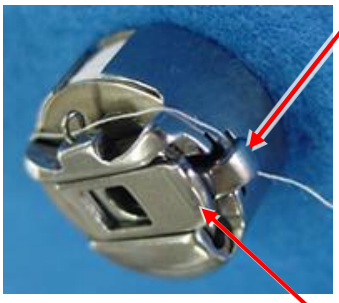
Bobbin thread tension is depending on adjustment of upper thead.

Please note that bobbin will turn to arrow-marked direction when you pull bobbin thread.

<Standard> 25 ~ 35cN(gf)



< Note > Please check thread is not disturbed by finger or latch.



2 Setting up the machine

2-10 Trial sewing

(1) Turn thread break detecting switch ON.

(2) Please confirm that thread trimming, thread catcher, jumping is functioning.

< Important > For a month, please use machine with 70% of maximum speed.

3-1 Fixing of needle

1. In order of (1) - (4), please remove and fix needle.

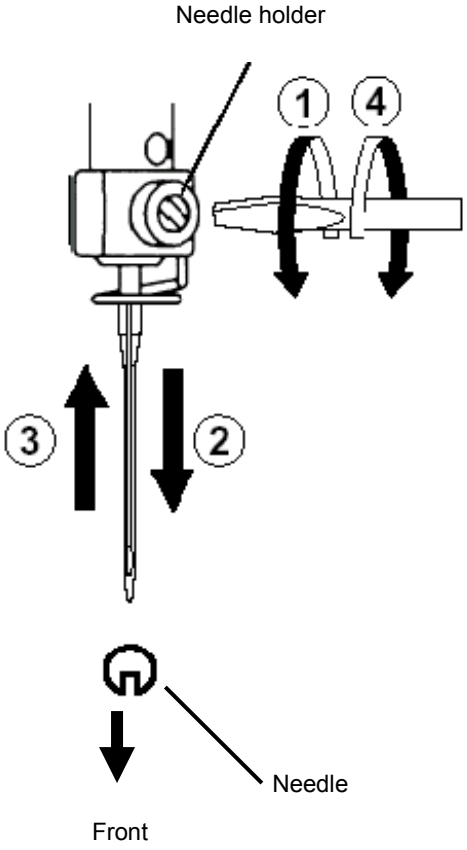
(1) Loosen screw holding needle.

(2) Remove needle.

(3) Insert needle till it goes to the end.

(4) Tighten screw holding needle.

Fix needle so that needle groove faces front.



3-2 Selection of thread

1. Selection of upper thread.

<Description>

Please select considering cloth, design of pattern and flavor etc.

<Thickness>

Please refer to [Relation between needle and upper thread 3-3].

<Twist>

Z twisted thread is to be used.

(As rotary hook turns left- wise, Z twisted thread can prevent loosening of twist)

Z-twisted (Left - twisted)

S-twisted (Right - twisted)

2. Selection of lower thread.

Basically please use cotton thread (#80-120), #120 is recommendable.

Pay attention to the following in selection.

Thickness should be equal.

When it is lightly stretched, it doesn't break easily.

In process of time, it doesn't get inferior.

Commercially available paper bobbin can be used, but please select thread with thickness corresponding to cotton thread (#80-120).

3-3 Relation between needle and upper thread

1. Description of needle

Basically please use [DB X K5] in standard accessory.

If description or thickness of cloth doesn't suit needle size, poor sewing finish / thread break / skipping will occur.

Therefore careful attention is required in selecting needle.

2. Relation between needle and upper thread will be found below. (Representative example is shown.)

Needle - Size is [German 75] in standard accessory.

If necessary, please select in accordance with description of thread and cloth.

Thread - In case needle size is [German 75], if thread is rayon, [#120] is recommendable.

Relation between needle and upper thread

Needle Size		Description of upper thread and thickness			
Organ	German	Cotton	Silk	Polyster	Rayon
8	60	100-130	140-160	150-200	50-70
9	65	70-80	100-120	130-150	70-100
10	70				
11	75	50-60	80-100	100-130	100-130
12	80				
13	85	36-40	60-70	80-100	130-150
14	90				
16	100	30-36	50-60	60-80	150-160
18	110	24-30	40-50	50-60	180-230

Scope to be used for general embroidery

Denier (d)

If needle size and thickness of thread don't match, following problem will be likely to occur.

- Thread break
- Skipping
- Poor sewing finish

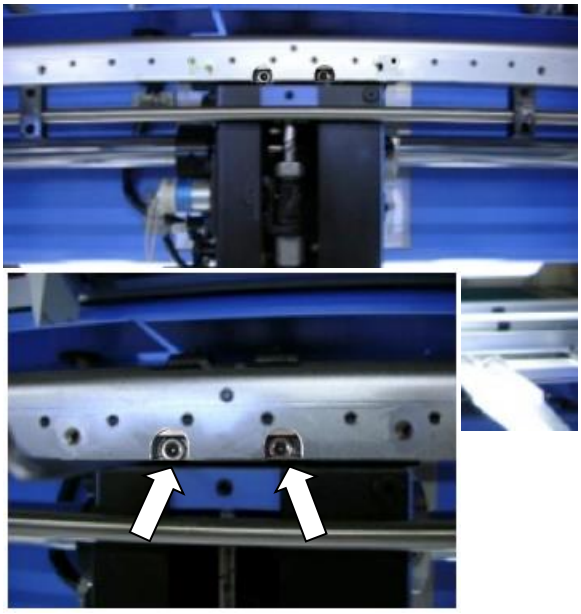
4-1-1 Exchange of needle bar driver

1. Remove moving head.

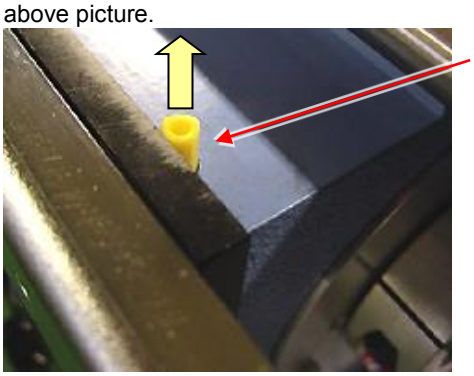
Please refer to [4-2-1, 4-2-2 Assemble and remove moving head].

2. Remove needle bar driver.

2-1. Slide moving head to 8 th needle. And remove the Slide unit. (Hexagon socket set screw : M4-10 2 pcs)



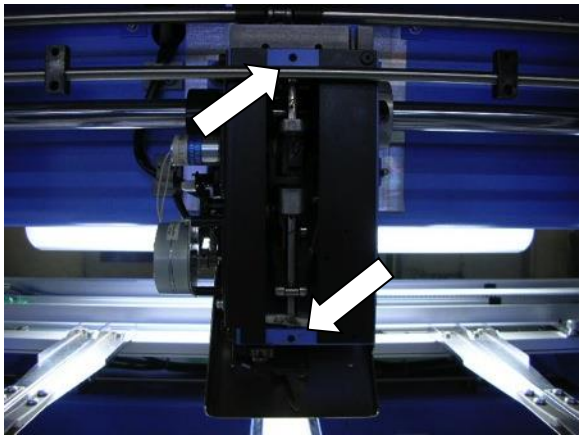
2 screws are inside of the position with arrow mark on above picture.



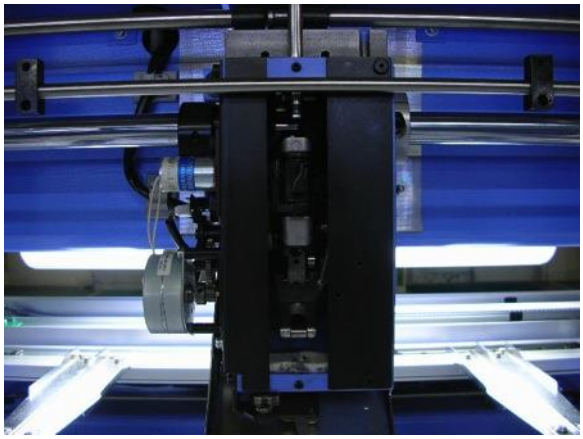
Remove Oiling pipe

2-2. Loose screws for head shaft.

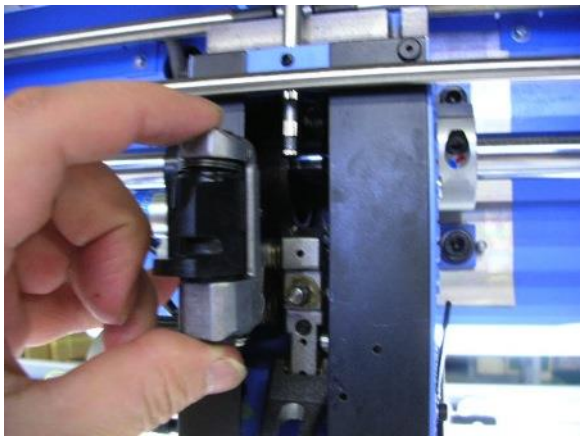
(Hexagon socket set screw : M4-4 2 pcs)



2-3. Slide up the Head shaft.



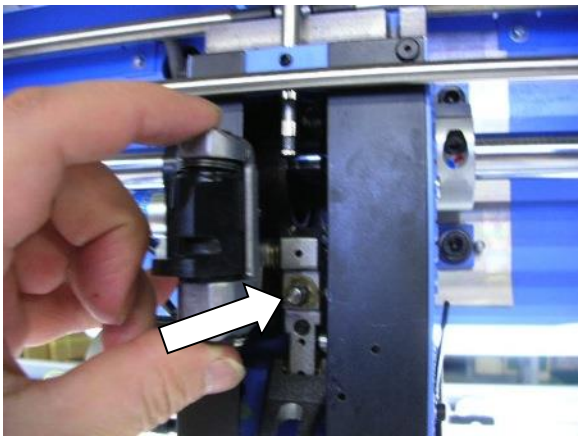
Take off the broken needle driver.



3. Set the new needle bar driver.

Assemble reverse step with step no.2

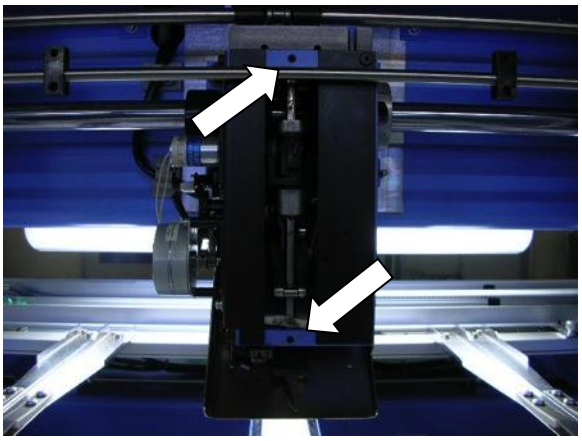
3-1. Set needle bar driver to block pin.



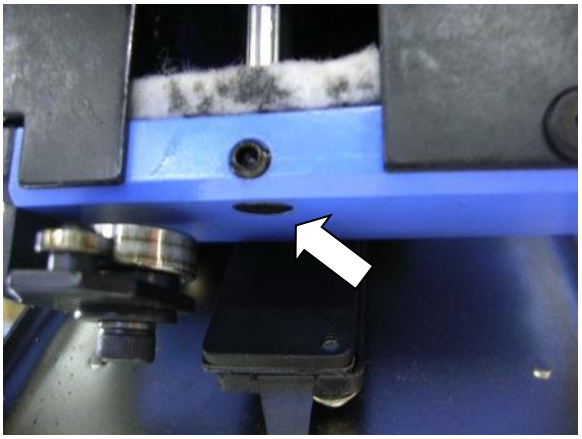
4-1-1 Exchange of needle bar driver

3-2. Set head shaft into the needle driver and tight screws.

(Hexagon socket set screw : M4-4 2 pcs)

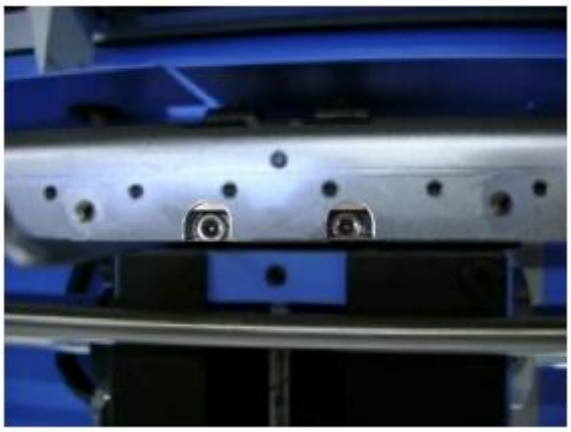


Set bottom head shaft face flat with head face.

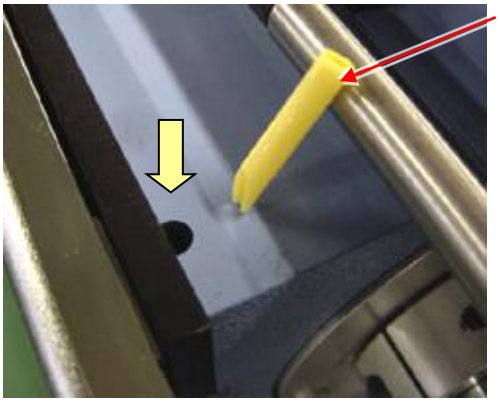


3-3. Set slide unit.

(Hexagon socket button head screw : M4-10)



< Note > No clearance between head and slide unit.



Keeping cut face front and insert oiling pipe into hole.

4. Install moving head.

Please refer to [4-2-1, 4-2-2 Assemble and remove moving head].

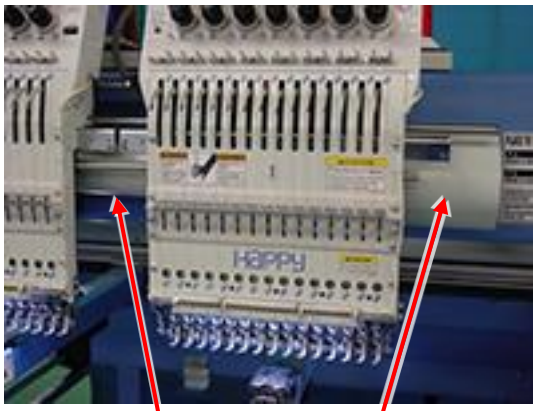
5. Check needle height.

Please refer to [2-5 Check of needle height].

4-1-2 Adjustment of take-up lever timing

1. Move moving-head to the position which 8st needle is active.

2. Remove the Upper shaft cover and Detecting cover.



Upper shaft cover

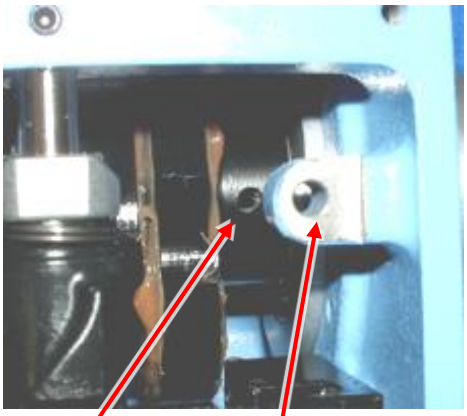
Detecting cover

3. Move moving-head to the position which 1st needle is active.

Remove the Face plate (right) and Head cover bracket.

Face plate (right)

4. Turn upper shaft and insert positioning pin into the hole of cam through the positioning hole on machine body.

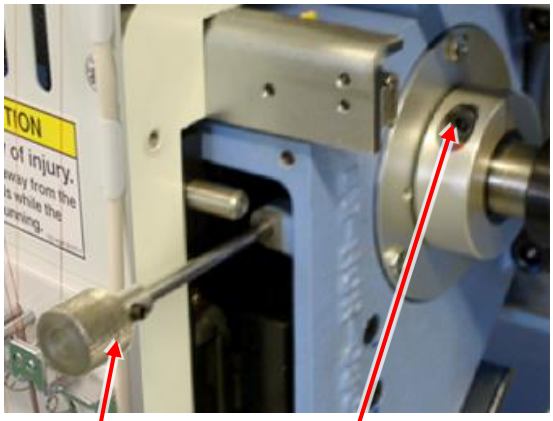


The hole of cam

The positioning hole on machine body

- Please note that moving head is removed on the picture below just for taking photograph.

5. Loosen screw on take up lever cam.



Screw on take up lever cam

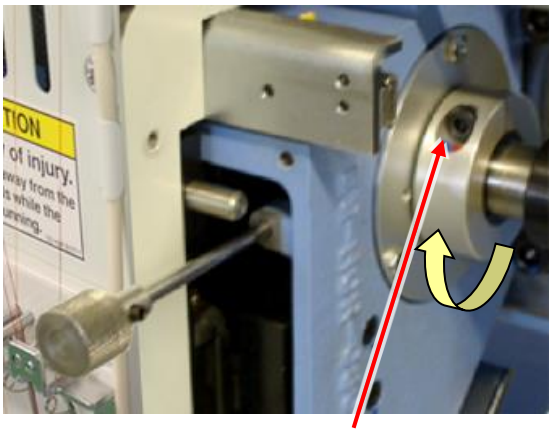
The positioning pin

6. Turn upper shaft to the forward direction and set angle [326 degrees].

Turn brake switch ON.

4-1-2 Adjustment of take-up lever timing

7. Fix screw.



Screw on take up lever cam

8. Pull positioning pin out.

9. Turn brake switch OFF.

Turn upper shaft and set angle at [270 degrees (C point)].

10. Set all covers.

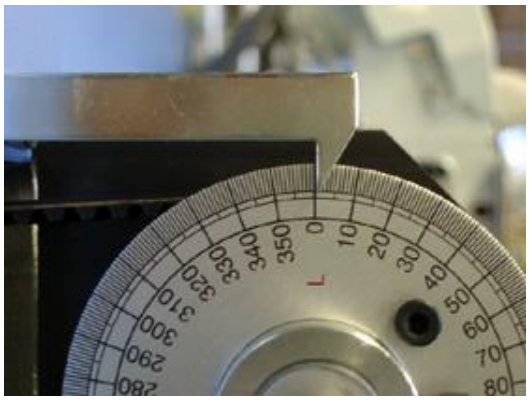
4-1-3 Check of height of pressure foot

1. Bring needle bar down.

   Please refer to [5 User maintenance mode]

2. Turn upper shaft and set dial disc to [0 degree].

   Turn brake switch ON



3. Insert [Gauge I.2mm] between needle plate and pressure foot.

   Please confirm that there is no gap between gauge and pressure foot and needle plate.

4. If wrong space (not 1.2mm), please adjust height of pressure foot guide bar.

   Please refer to [4-1-4 Adjustment of height of pressure foot].

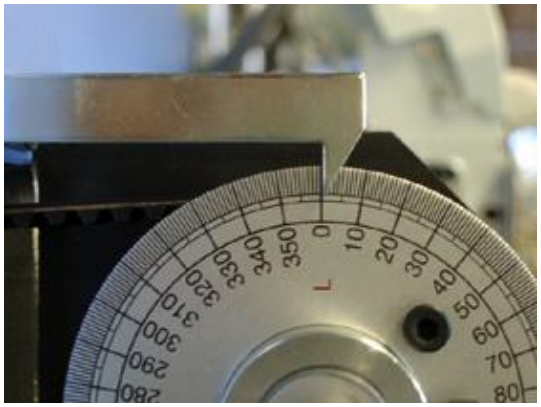
4-1-4 Adjustment of height of pressure foot

1. Bring needle bar down.

   Please refer to [5 User maintenance mode]

2. Turn upper shaft and set dial disc to [0 degree].

   Turn brake switch ON.



3. Loosen fixing screw of pressure foot (Fixing screw 1 pcs)

4. Insert [Gauge I.2mm] between needle plate and pressure foot.

   1.2 mm is standard, But please adjust depends on thickness of material.

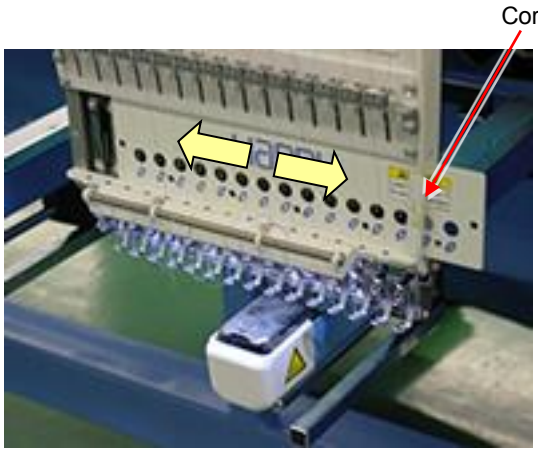
5. Tighten fixing screw for pressure foot.

   (Fixing screw 1 pcs)

   At this moment, no gap between gauge and pressure foot or needle plate.

4-1-5 Exchange of pressure foot

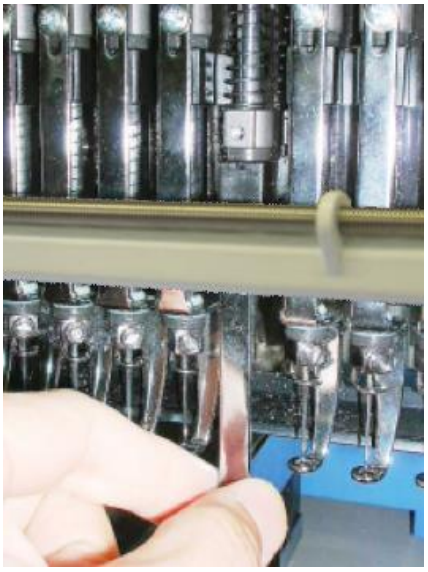
1. Loosen fixing screws of front panel (lower) and cord clip.
   (Fixing screw 2 pcs)
   Slide front panel (lower) to left or right direction up to the position of pressure foot to be replaced.
   In case you need to slide front panel (lower) further, please slide front panel (lower) on neighbor head



2. Remove needle, needle holder and cushion.
   < Note > When needle holder is removed, pressure foot move down quickly.

3. Remove pressure foot. (Fixing screw 1 pcs)

4. Install good parts.



5. Please set needle and needle clamp.
   For set needle, please reference [3-1 Fixing of Needle].

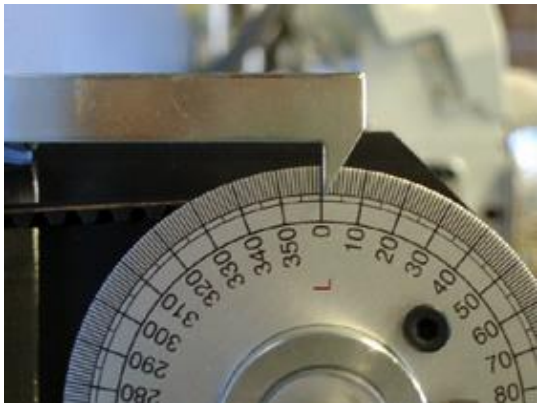
6. Adjust needle height.
   Please refer to [4-2-6 Adjustment of needle height].

7. Bring needle bar down.
   Please refer to [5 User maintenance mode].

4-1-5 Exchange of pressure foot

8. Turn upper shaft and set dial disc to [0 degree].

   Turn brake switch ON.



9. Insert [Gauge I.2mm] between needle plate and pressure foot.

   Please confirm that there is no gap betwen gauge and pressure foot and needle plate.

10. Tighten fixing screw for pressure foot.

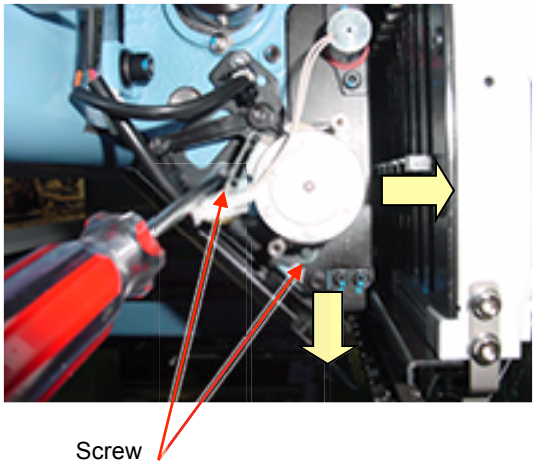
    (Fixing screw 1 pcs)

    At this moment, no gap between gauge and pressure foot or needle plate.

11. Return front panel (lower) and cord clip to previous places to finish.

4-1-6 Adjustment of thread catcher

1. Loosen screw of thread catcher, and push thread catcher to direction as below, and temporary fix screw.



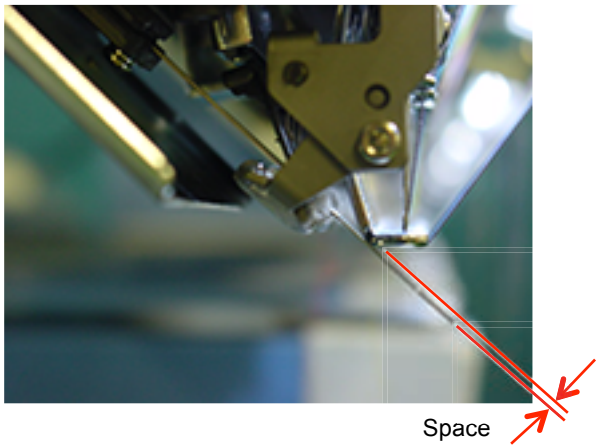
2. Check position of thread catcher

Move hook in and out by hand and confirm that hook is moving smoothly.

<Note> Please check at 1st needled and 15th needle

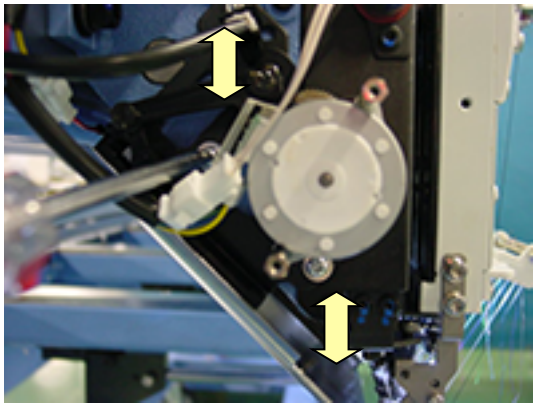
Space between hook and pressure foot

Space between back side of pressure foot and hook is 0.5 ~ 1mm.



If space is OK, fix thread catcher

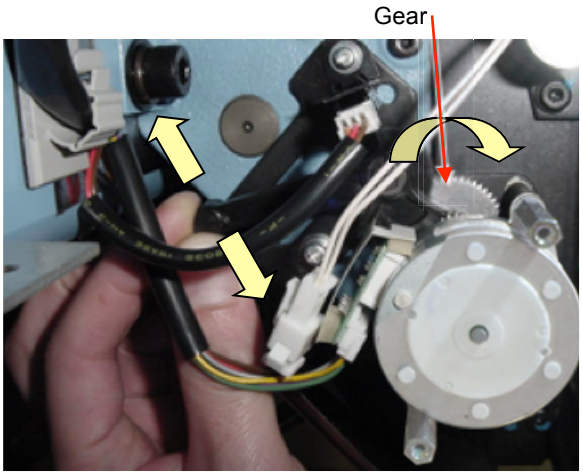
3. In case space is not within allowance, re-adjust position of thread catcher



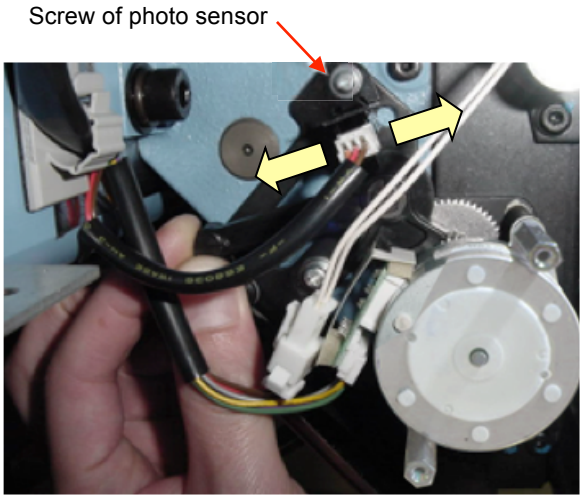
4. Turn thread break detecting switch ON

4-1-6 Adjustment of thread catcher

5. Pull hook completely and return to front for movement of 3 pitches of gear.



6. Loosen screw of photo sensor, and move photo sensor to the position that thread break lamp becomes RED and fix photo sensor.



7. Pull hook completely and return to front for movement of 3 pitches of gear, and confirm that thread break lamp becomes RED.

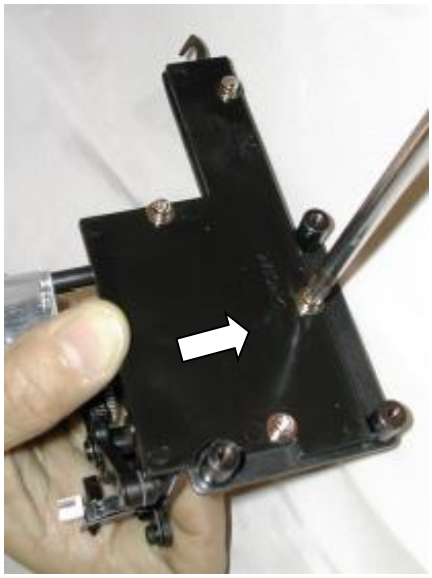
4-1-7 Exchange of thread catcher guide

1. Remove guard plate.

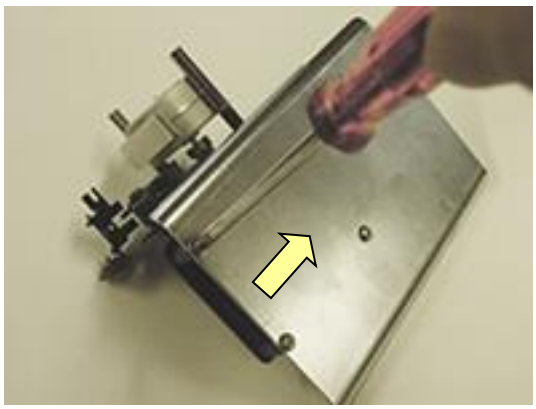
   Use the #1 (+) Screw driver.

2. Exchange guide.

   Fix the guide after moving it to the right.



3. Install the guard plate.



4. Please refer to [4-1-6 Fixing of thread catcher],

   install thread catcher to finish.

4-1-8 Exchange of pressure foot cam

1. Please refer to [4-2-1, 4-2-2 Assemble and remove moving head], remove moving head and face plate (right).

Moving head

Face plate (right)

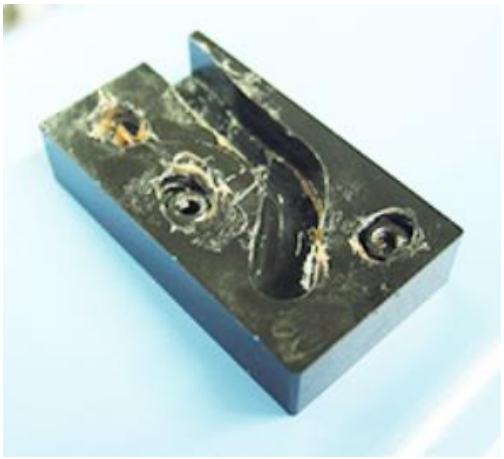
2. Remove pressure foot cam. (Fixing screw 3 pcs)

3. Put on grease to new presser foot cam.

Also, put on grease to fixing nuts, then insert nuts into hole of pressure foot cam to prevent drop of the nut.

<Grease>Shell alvania EP Grease

(Shell Gudas S2 V220 2)



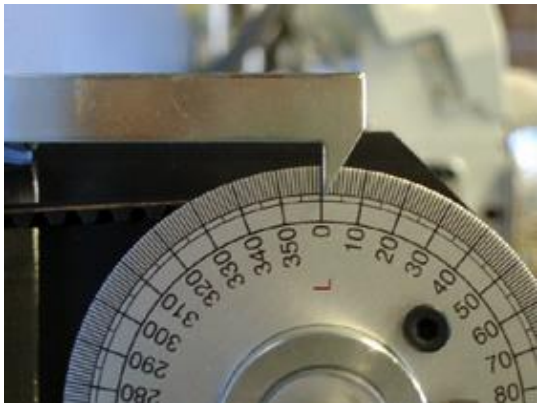
4. Fix good part as temporally by fixing screw and nut.

Make sure to cover fixing hole with finger to prevent drop of the nut.

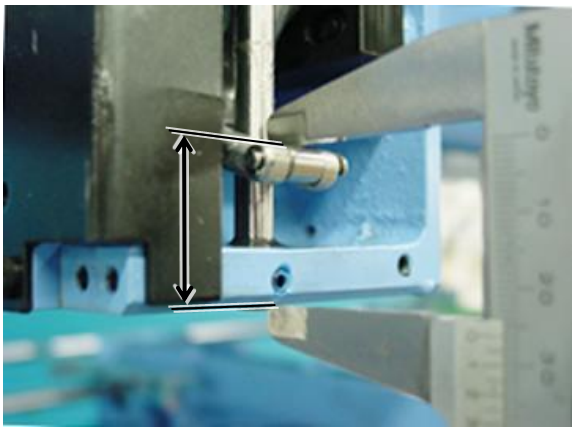
Please check bump 2mm between front of presser foot cam and front face of fixed head.

4-1-8 Exchange of pressure foot cam

5. Set dial disc to [L + 0 degrees].

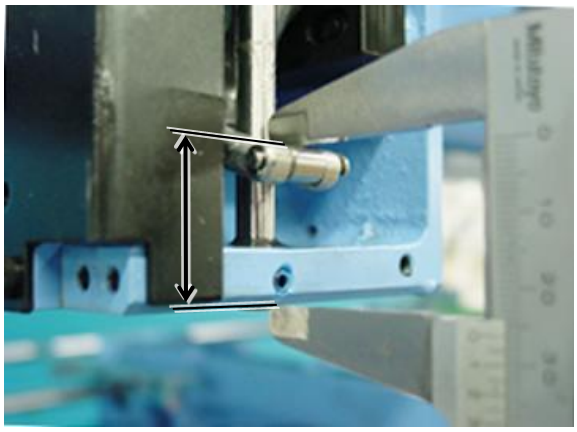


In this time, please check distance between upper face of presser foot and bottom face of fixed head to [25.5+/-0.2mm].



6. Set dial disc to [L + 60 degrees].

In this time, please check distance between upper face of presser foot and bottom face of fixed head to [26.1+/-0.2mm].



7. After check item 5 and 6 then tight screw completely for fix take-up lever cam.

8. Put each unit back to where it was according to manual.

4-1-9 Adjustment of fixing of jump solenoid

1. Please refer to [4-2-1, 4-2-2 Assemble and remove moving head], remove moving head and face plate (right).

Moving head

2. Remove jump solenoid ass'y. (Fixing screw 2 pcs)

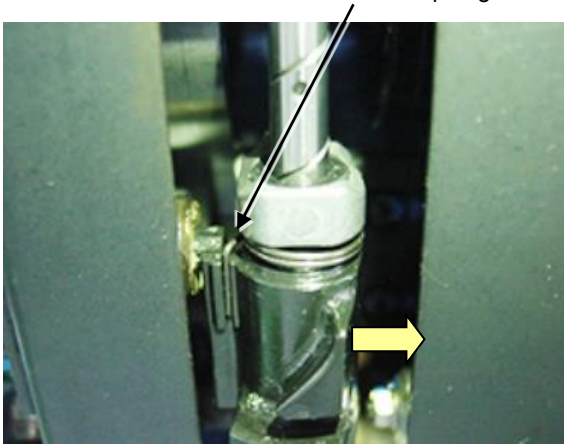
3. Install good parts.

Please check Jump solenoid position.

Turn main shaft till touch plunger of jump solenoid and needle bar driver and check main shaft indicator.

Should be between 83 to 87 degrees.

Just touched to plunger



<Dubble check> Please double check Jump solenoid position by following test.

Continually fillip needle bar driver to arrow direction while main shaft turning and hearing plunger touch ing noise.

Should change noise between 83 to 87 degrees shaft position.

4. Please put parts back in reverse order to finish.

For adjustment of fixing of each unit, please refer to process to adjust fixing of each unit.

4-1-10 Disassembling and Cleaning of jump solenoid

1. Disassemble the solenoid nut.

Use rubber sheet as safeguard.

2.Clean up the each part of the solenoid.

3. Put the designated grease on plunger part.

<Grease> Shell Grease7 MIL-G-23827B

Equivalent brand

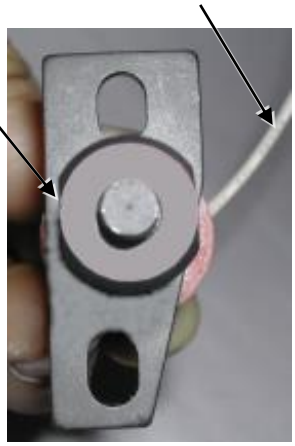
4. Assemble the solenoid to the original position.

The flat surface of the solenoid nut

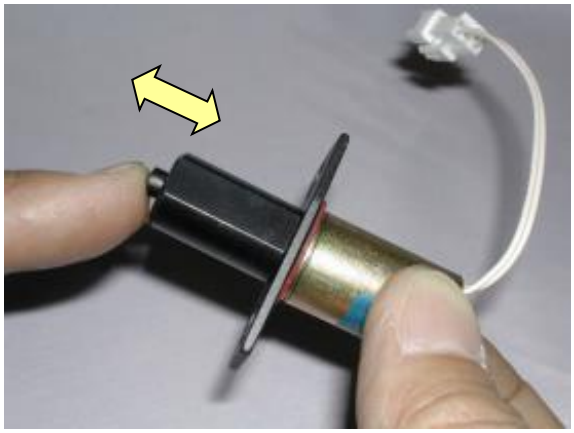
should come to the front.

Solenoid cable should come to the back side.

Front face



5.Confirm the movement of the plunger is smooth enough.



6.Procedure is done after assembling the Jump solenoid.

Referring to [4-1-9 Adjustment of fixing of jump solenoid].

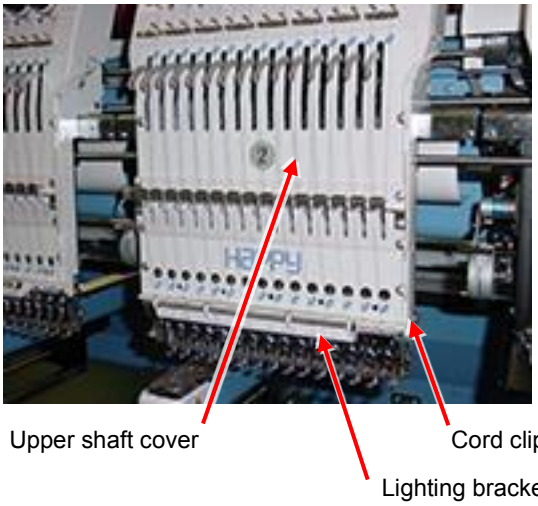
4-2-1 Assemble and remove moving head (except for 1st head)

1. Remove moving head.

1-1. Set moving head at position that 15th needle is active.

Remove the front panel (upper), cord clip and lighting bracket.

(Truss head screw : M4-6 4 pcs)



1-2. Loosen screw on thread tension bracket

(Pan head screw : M4-10 4 pcs)

1-3. Remove the thread tension bracket.

(Pull thread tension bracket to front)

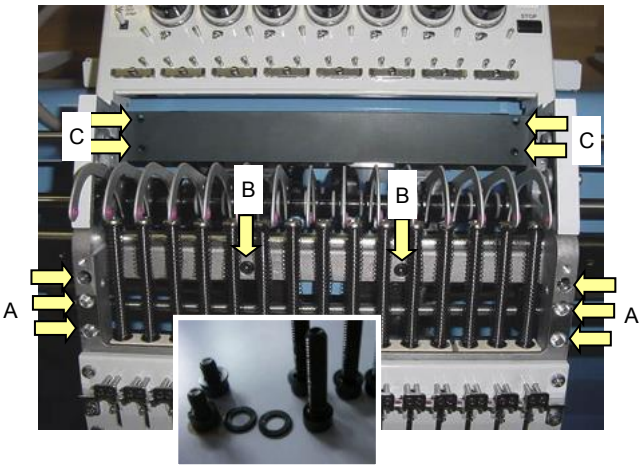
Put thread tension bracket and lighting bracket on head upper cover.

1-4. Remove the set screw.

A (Hexagon socket head cap screw : M4-20 6 pcs)

B (Hexagon socket head cap screw : M4-6 2 pcs)

C (Hexagon socket head cap screw : M4-18 4 pcs)



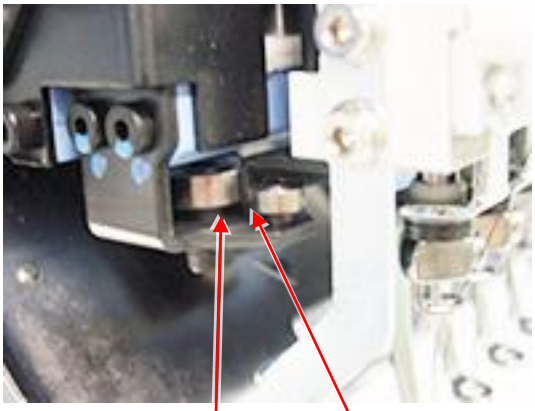
Hexagon socket head cap screw is a set with plain washer.

Please keep as a set.

4-2-1 Assemble and remove moving head (except for 1st head)

1-5. Slide moving head to right direction

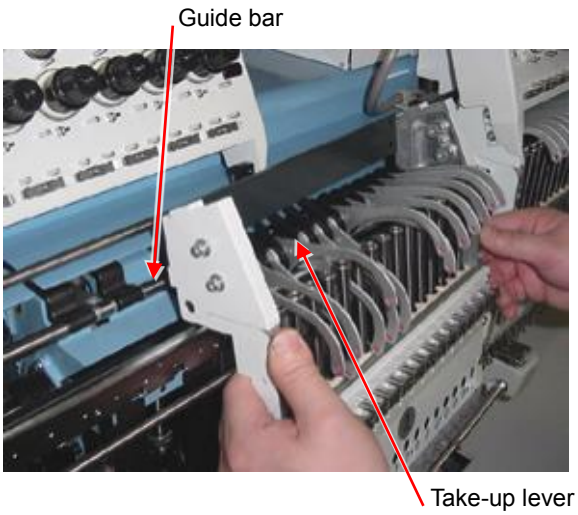
After rail goes out from positioning roller, take moving head out.



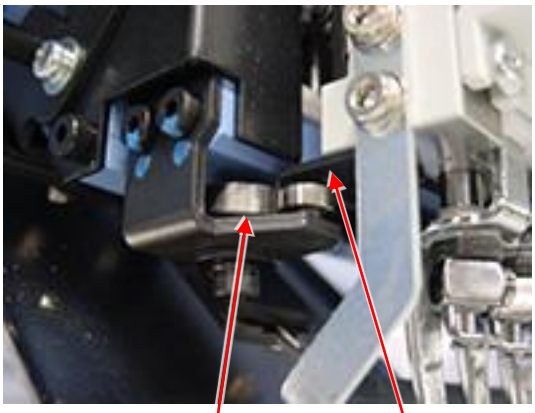
2. Install moving head.

2-1. Set moving head at position that 15th needle is active.

Set all take-up lever to guide bar starting from 1st needle



Insert rail into positioning roller.

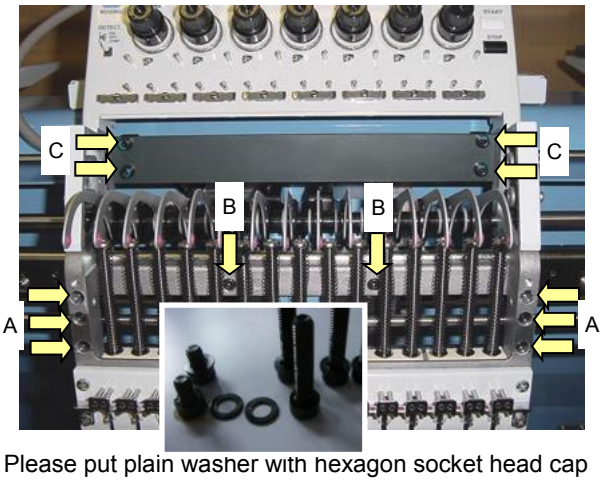


2-2. Temporally tighten screws.

A (Hexagon socket head cap screw : M4-20 6 pcs)

B (Hexagon socket head cap screw : M4-6 2 pcs)

C (Hexagon socket head cap screw : M4-18 4 pcs)



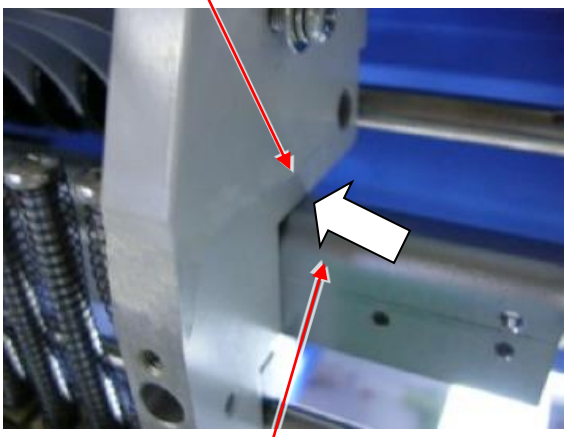
Please put plain washer with hexagon socket head cap screw.

4-2-1 Assemble and remove moving head (except for 1st head)

2-3. Move moving head to the position that 8th needle is active.

Tighten 4 screws on moving head. (see photo below)

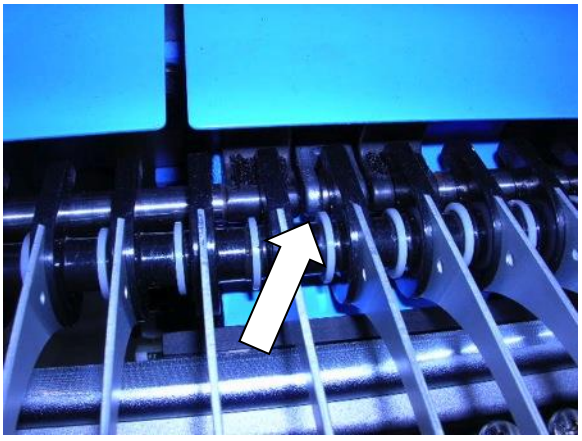
Moving head



Rail support

Please confirm that there is no space at the arrow point on above picture.

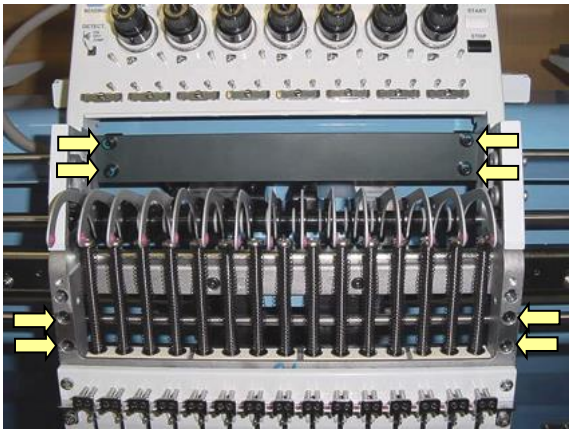
2-4. Set take-up lever to lever crank



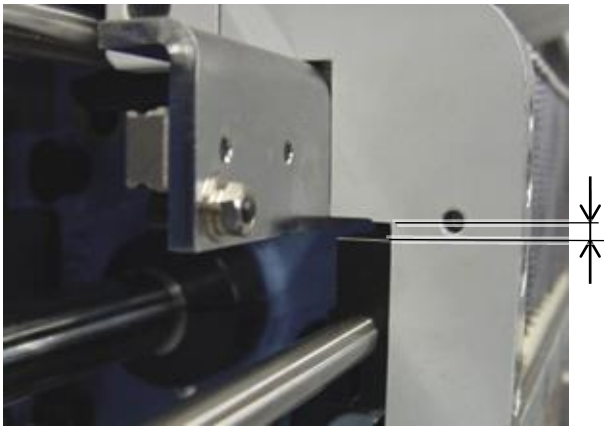
2-5. Please needle bar of 8th needle down until needle driver catches needle bar boss. Then turn upper shaft to needle down and check that needle is center of needle hole on needle plate. If needle position is not center of needle hole, please move moving head right or left to fit needle position.

Please refer to [4-2-5 Adjustment of needle position (left and right)].

2-6. Tighten 8 screws on moving head. (See photo below)



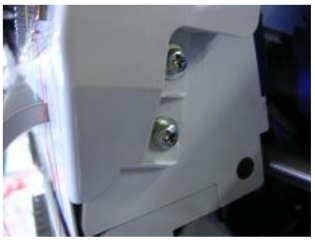
< Note > Gap between Moving head and Fasten Block should be 2.5mm.



4-2-1 Assemble and remove moving head (except for 1st head)

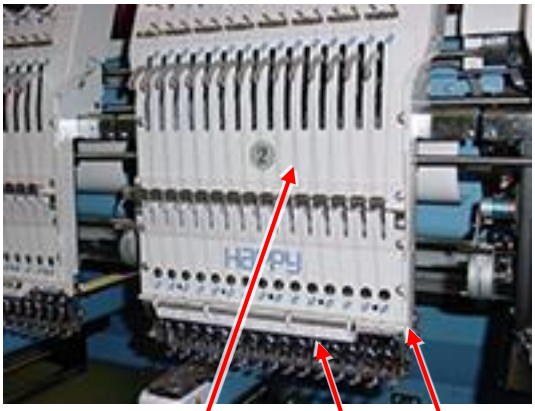
2-7. Install Thread tension bracket.

(Pan head screw : M4-10 4 pcs)



2-8. Set Front panel (Upper), cord clip and lighting bracket.

(Truss head screw : M4-6 4 pcs)



3. After installation of moving head, please check following points;

3-1. Check needle height, please check needle height at 1st , 8th and 15th needle.

Please refer to [2-5 Check of needle height].

In case needle height is not same for each needle, installation of moving head was wrong,

Please check step 2-3 again.

3-2. Check of rotary hook timing, please check hook timing by 8th needle.

Please refer to [2-6 Check of rotary hook timing]

In case hook timing is not correct, installation of moving head was wrong,

Please check step 2-5 again.

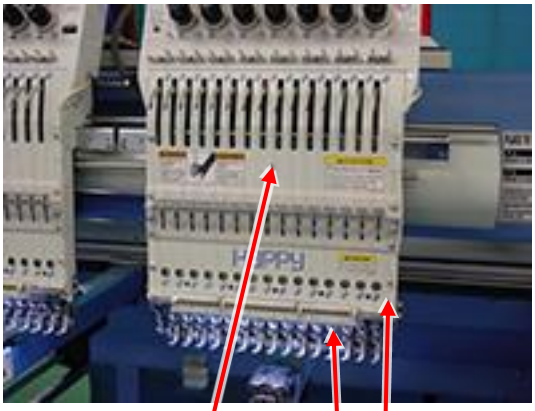
4-2-2 Assemble and remove moving head (1st Head)

< Note > When you need to take all moving head out, please take 1st head at last.

1. Remove moving head.

1-1. Remove the front panel (upper), cord clip and lighting bracket.

(Truss head screw : M4-6 6 pcs)



Upper shaft cover

Cord clip

Lighting bracket

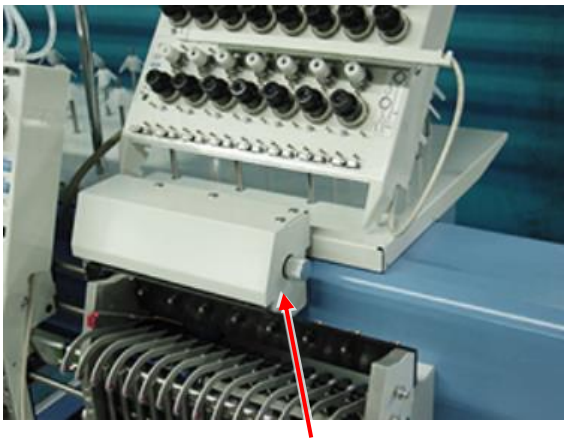
1-2. Loosen screw on Thread tension bracket

(Pan head screw : M4-8 4 pcs)

1-3. Remove the thread tension bracket.

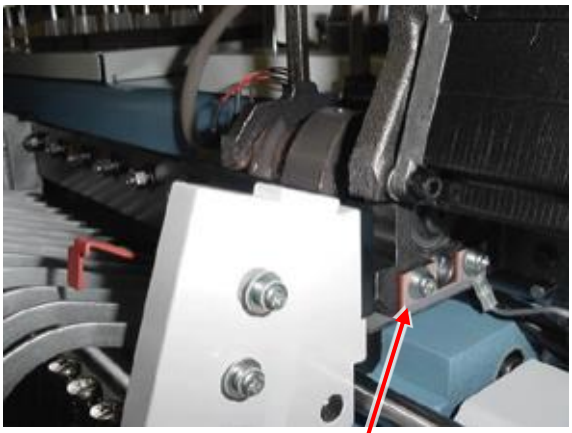
(Pull thread tension bracket to front)

Put thread tension bracket and lighting bracket on head upper cover.



Needle bar change cover

1-4. Remove the Needle bar change cover and needle position plate.



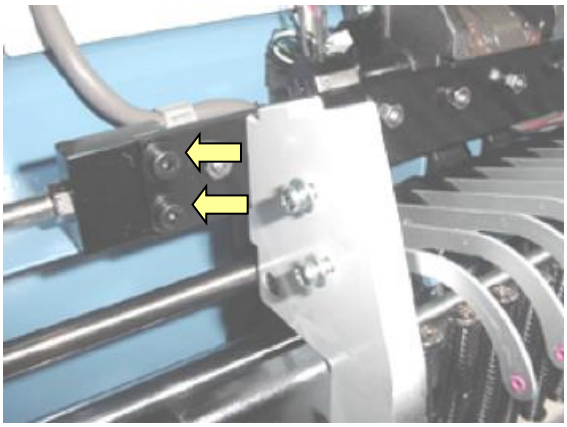
Needle position plate

4-2-2 Assemble and remove moving head (1st Head)

1-5. Move moving head to the position which 8th needle is active, by knob.

Loosen screw on moving head support.

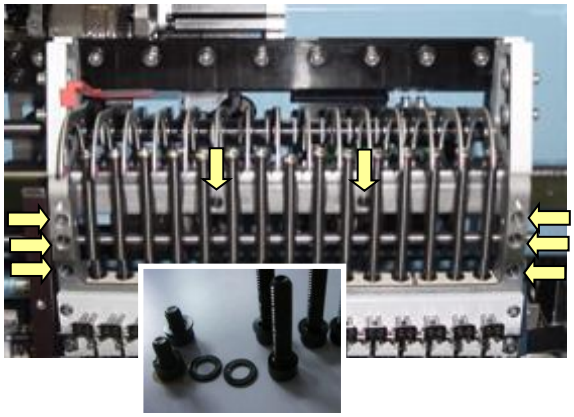
(Hexagon socket head cap screw : M5-15 2pcs)



1-6. Remove set screw.

(Hexagon socket head cap screw : M4-20 6 pcs)

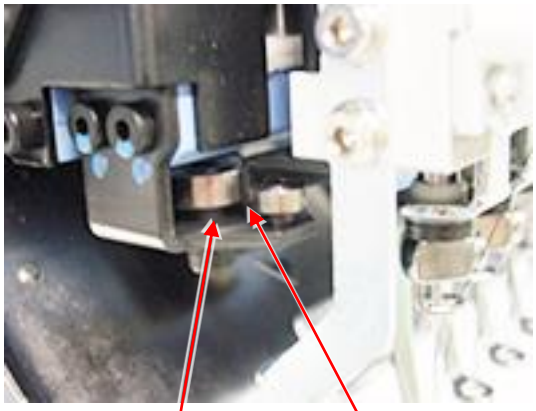
(Hexagon socket head cap screw : M4-6 2 pcs)

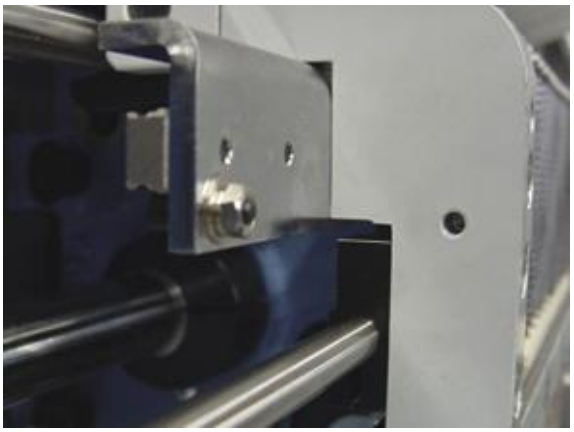


Hexagon socket head cap screw is a set with plain washer.

Please keep as a set.

1-7. Slide moving head to the right direction by knob, and take moving head out after the rail going out from roller.





4-2-2 Assemble and remove moving head (1st Head)

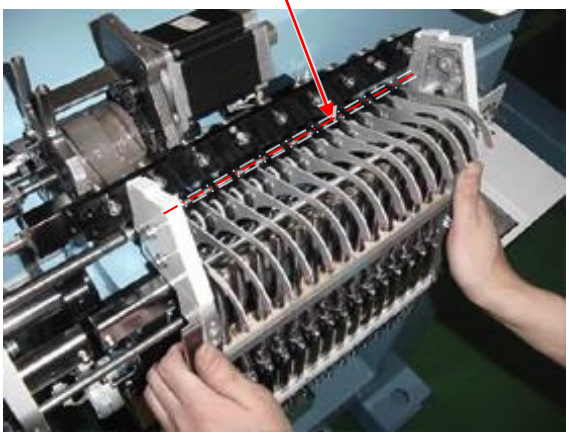
2. Install moving head.

2-1. When you install moving head, please set the same position of Needle bar change unit as the position which you took Moving head out. (slightly moved to the right position then 15th needle)

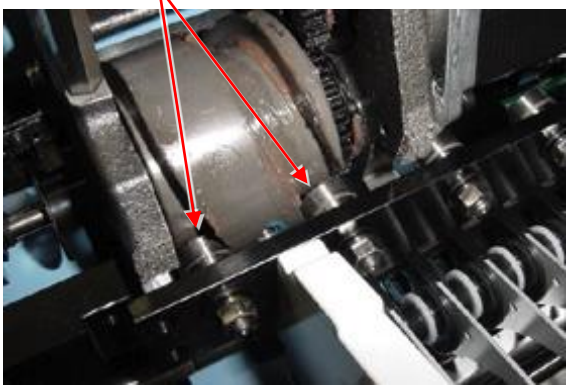
< Note > In case you lost the position mentioned above: Please turn power on and move moving head to 14th needle by Needle change button, then move to 15th needle.

After setting to 15th needle, please move slightly to the right by knob of Needle bar change unit.

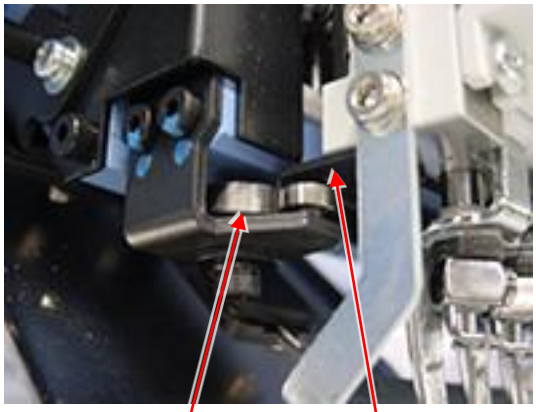
Guide bar



Cam follower



With turning knob, set the rail into Positioning Rollers.

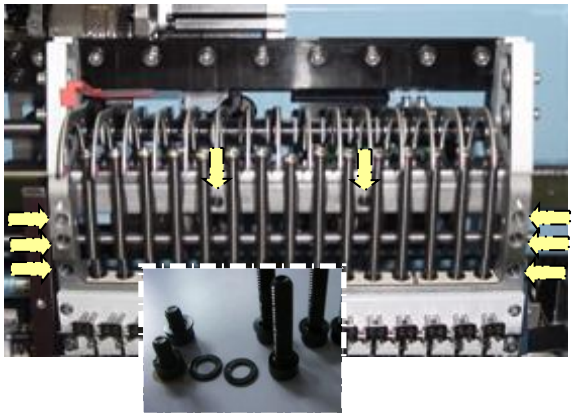


Positioning roller Rail

2-2. Set moveing head to 15th needle position and temporally tighten screws.

(Hexagon socket head cap screw : M4-20 6 pcs)

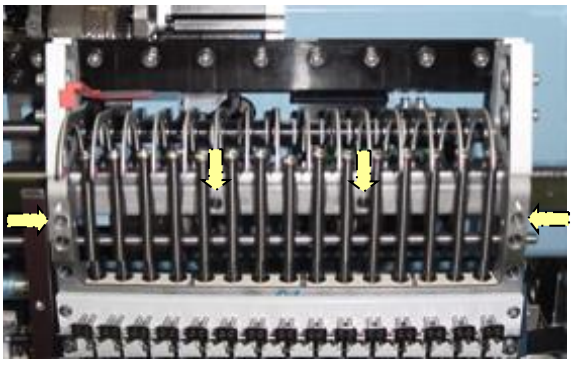
(Hexagon socket head cap screw : M4-6 2 pcs)



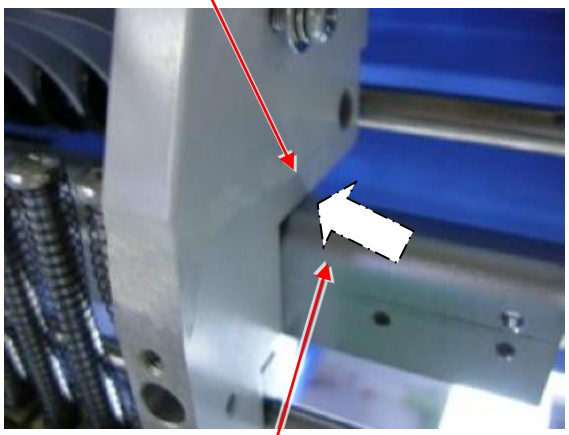
Please put plain washer with hexagon socket head cap screw.

2-3. Move moving head to the position that 8th needle is active.

Tighten 4 screws on moving head. (see photo below)



Moving head



Rail support

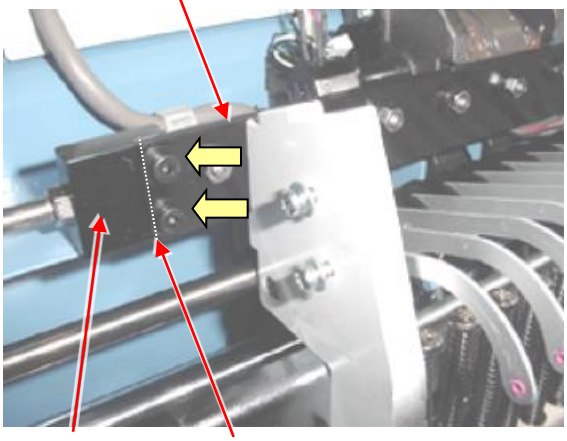
Please confirm that there is no space at the arrow point on above picture.

4-2-2 Assemble and remove moving head (1st Head)

2-4. Fix Moving head support to Slide Bar by screws.

(Hexagon socket head cap screw : M5-15 2 pcs)

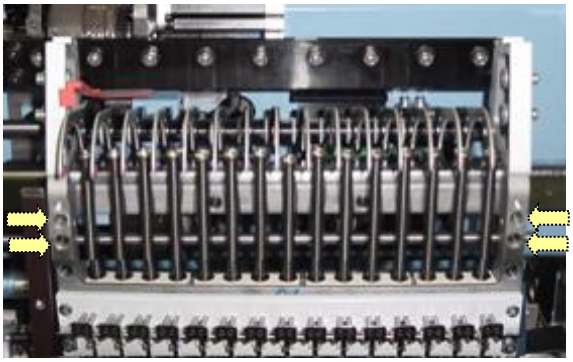
Slide bar



Moving head support Joint point

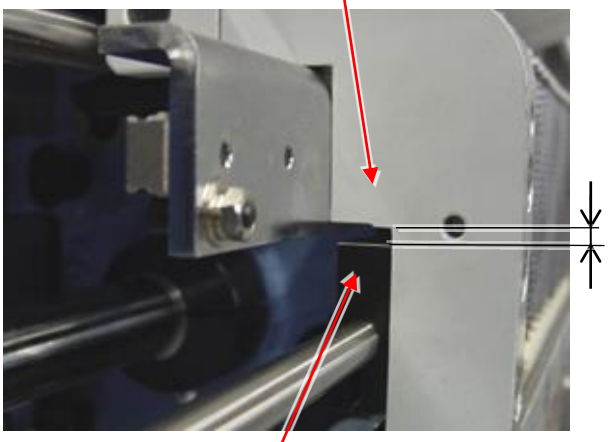
Please confirm that there is no space at joint point.

2-5. Tighten screw on moving shaft.



< Note > Please confirm "Fasten block" position to make clearance about [2.5mm] against "Moving head".

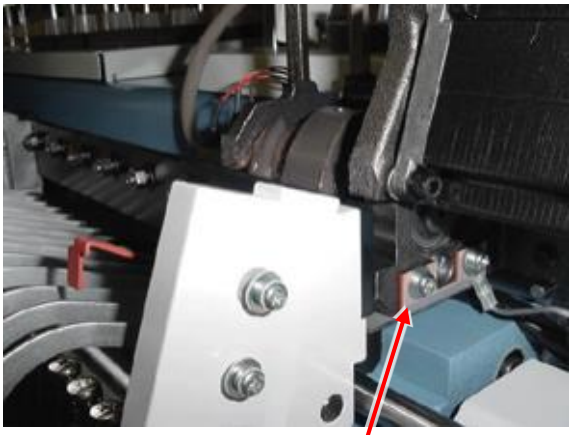
Moving head



Fasten block

2-6. Move moving head to the position that 1th needle is active.

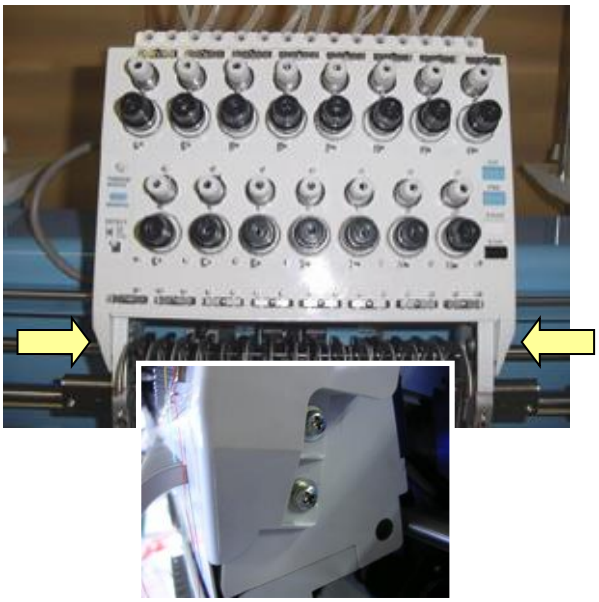
Install the needle position plate.



Needle position plate

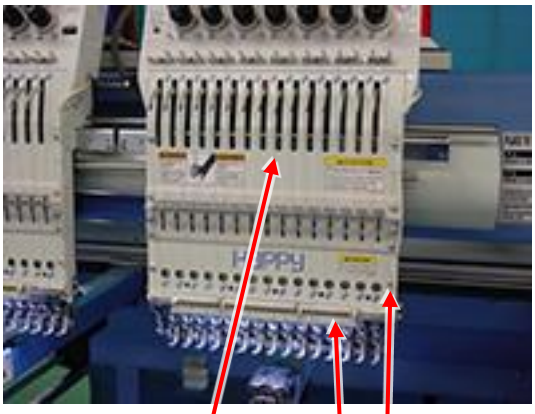
2-7. Install Thread tension bracket.

(Pan head screw : M4-10 4pcs)



2-8. Set the front panel (upper), cord clip and lighting bracket.

(Truss head screw : M4-6 4 pcs)



Upper shaft cover Cord clip

Lighting bracket

4-2-2 Assemble and remove moving head (1st Head)

2-9. Please adjust Adjustment of needle position (left and right) Adjust for 1st head].

Referring to [4-2-4 Adjustment of needle position (left and right) Adjust for 1st head].

< Note > When you take 1st Moving Head out and re-install, please check needle positon for all other head too.

3. After installation of moving head, please check followindg points;

3-1. Check needle height, please check needle hight at 1st , 8th and 15th needle.

Please refer to [2-5 Check of needle height].

In case needle height is not same for each needle, installation of moving head was wrong,

Please check step 2-3 again.

3-2. Check of rotary hook timing, please check hook timing by 8th needle.

Please refer to [2-6 Check of rotary hook timing]

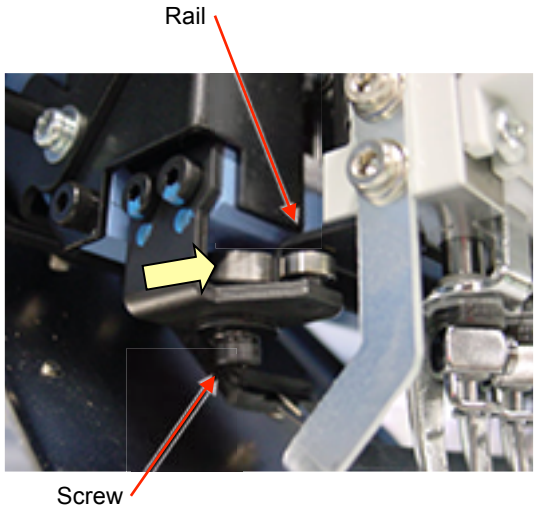
4-2-3 Adjustment of needle position (back and front)

1. Please set Thread break detecting switch to ON for adjusting head. Other head, please set to JUMP.

2. Push and pull the Moving head and check playing the moving head.

In case of you find play the moving head

Loose screw of positioning roller and re-tight the screw with jyointing the Rail.

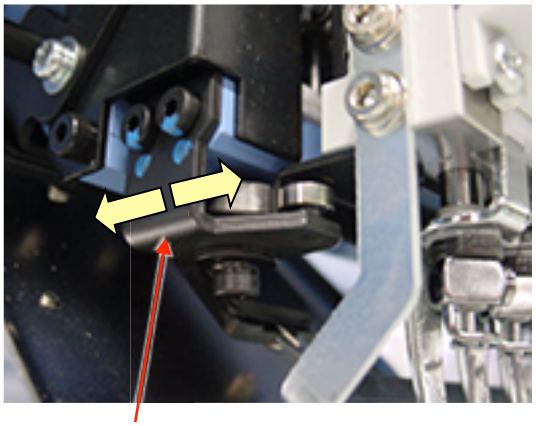


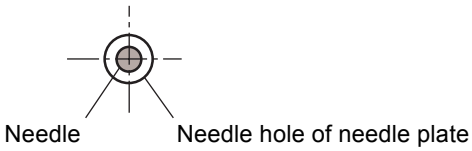
3. Move the Moving head to 8th needle, then down needle till needle point to face of needle plate.

Please refer to [5 User maintenance mode].

4. Move the Positioning plate to front and back for adjust needle position against needle hole to center and tight the screw.

< Note > Insert Lower rail to between the two bearing deeply.





5. After adjustment, confirm the position by 1st and 15th needle also.

If you have big different the needle position 8th and 1st and 15th needle, please confirm again after you replate bland new needle.

6. After adjustment, please be sure to check and adjust clearance between needle and shuttle hook.

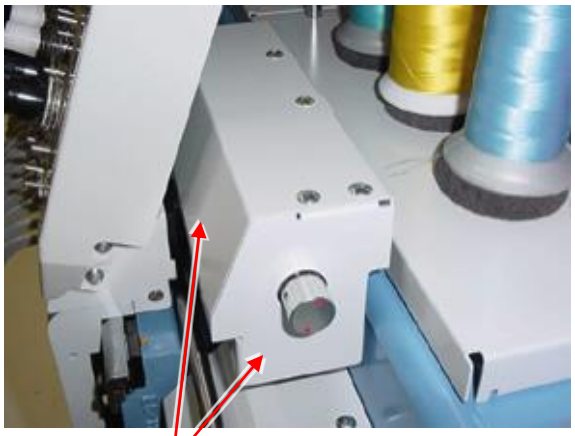
Please refer to [4-4-1 Adjustment of rotary hook timing].

4-2-4 Adjustment of needle position (Left and Right)

Adjust for 1st head

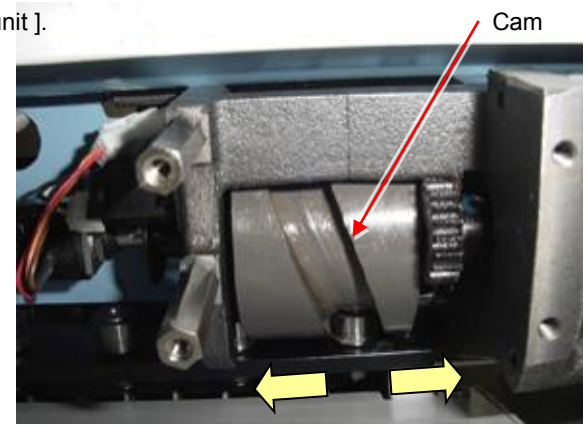
If you change 1st head position, you need to confirm head position other all head.

1. Remove the cover of Needle bar change unit.



Cover

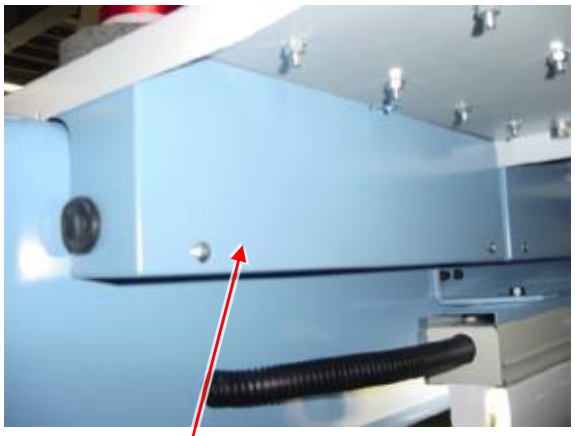
2. Push the Moving head right and left for confirm should not have a play the Cam. If you have a play the cam, please refare [4-3-1 Check / Adjustment of needle bar change unit].



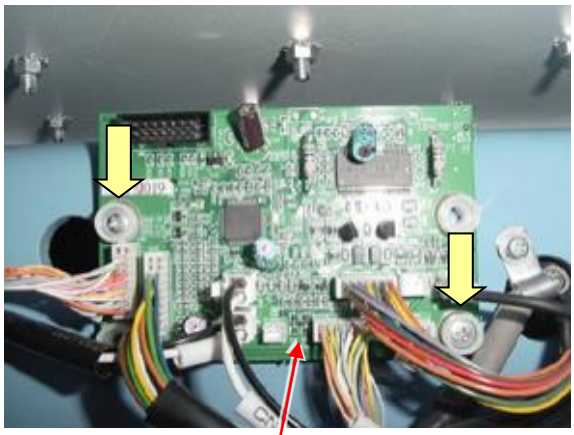
Cam

3. Move the head to 8th needle and remove Detecting Cover and Thread Detecting Board of 1st head and loose screw for needle bar change unit.

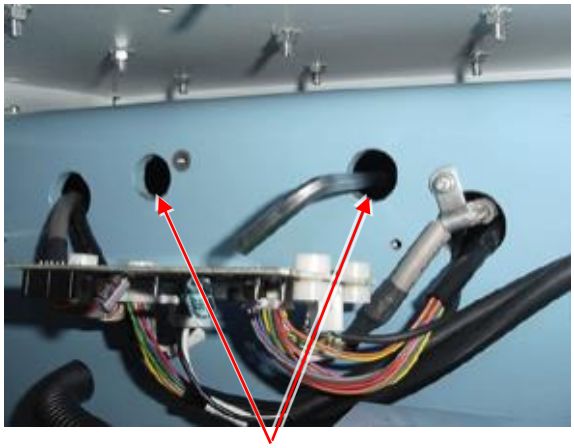
< Note > Please turn off machine power.



Detecting cover

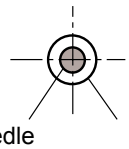


Thread detecting board



Screw for needle bar change unit inside the beem.

4. Turn the knob and stop at a needle stop position. Then down needle till needle point to needle plate face. You can move the Moving head with Needle bar change unit right and left for adjust needle position to cemter to needle plate hole.



Needle Needle hole of needle plate

4-2-4 Adjustment of needle position (left and right)

5. Please confirm needle position after tight the screw for needle bar change unit inside the beem.

6. Return Thread Detecting Board, detecting cover and needle bar change cover to previous places.

7. Turn on the machine and confirm the position at 8th needle position.
   If the needle position is not at center of needle hole, please refer to [4-3-1 Check / Adjustment of needle bar change unit].

8. Please confirm 1st and 15th needle also.

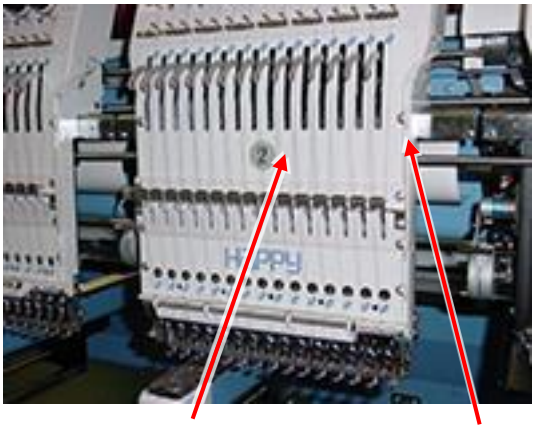
9. After adjustment the positon for 1st head, please adjust 2nd head to last head.
   Please refer to [4-2-5 Adjustment of needle position (left and right) Adjust for 2nd to last each head].

4-2-5 Adjustment of needle position (left and right)

Adjust for 2nd to last each head

Please set Thread break detecting switch to ON for adjusting head. Other head, please set to JUMP.

1. Move the Moving head to 8th needle and remove the Front panel (Upper) and cord clip.



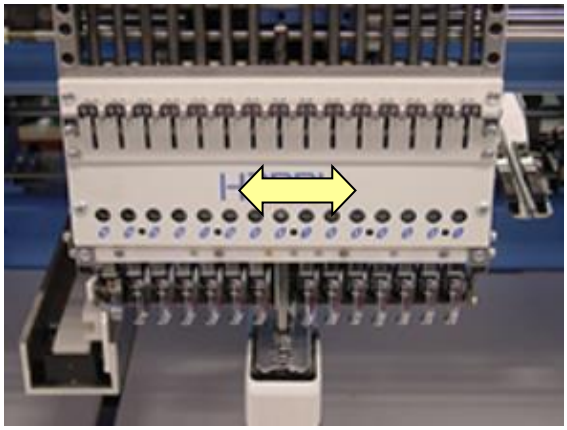
Upper shaft cover　　Cord clip

2. Just loose 4 screws showing picture below.

3. Down needle till point of neeld with face of the needle plate.

Please refer to [5 User maintenance mode].

4. You can move Moving head right and left for position adjustment by hand. Then tight 4 screws.



5. Please confirm 1st and 15th needle also after 8th needle. If the needle position is not at center of needle hole, please replace.

6. After adjustment,Please confirm needle height and rotary hook timing.

Please refer to [4-2-6 Adjustment of needle height]

[4-4-1 Adjustment of rotary hook timing].

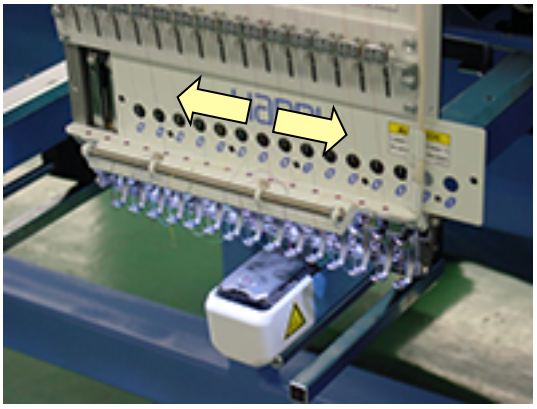
7. Set the front panel (upper) and cord clip.

4-2-6 Adjustment of needle height

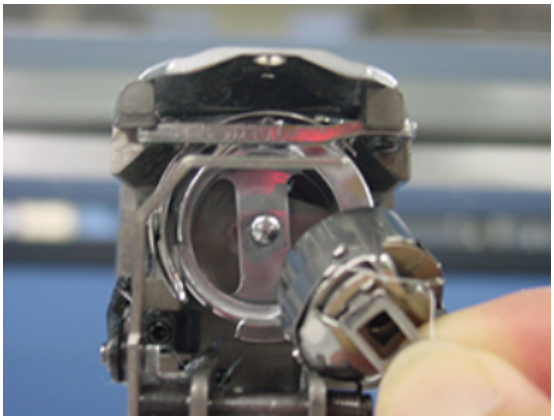
1. Remove the front panel (upper) and cord clip.

   Slide front panel (lower) to left or right direction up to the position that you can see needle bar to be adjusted.

   In case you need to slide front panel (lower) further, please slide front panel (lower) on neighbor head.

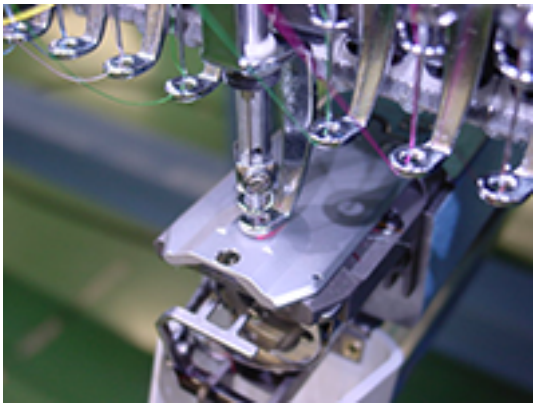


2. Remove bobbin case.

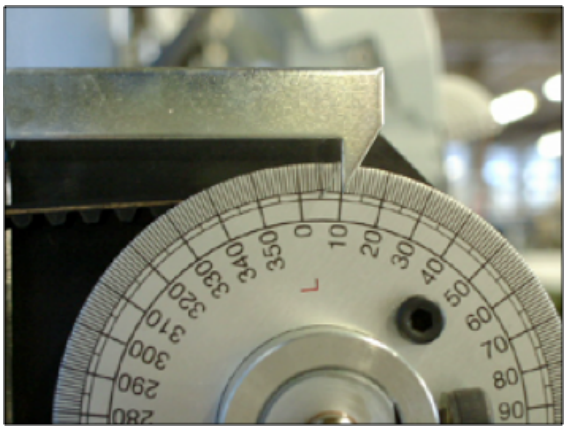


3. Bring needle bar down.

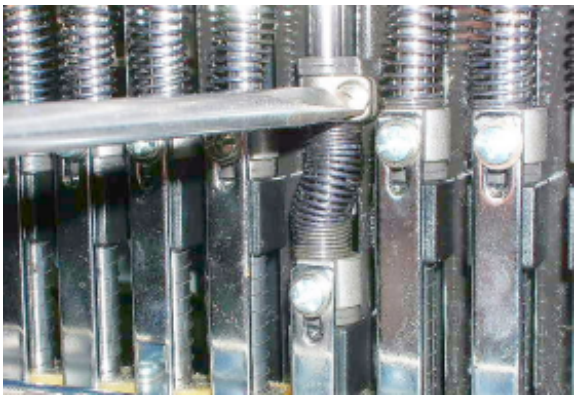
   Please refer to [5 User maintenance mode].



4. Turn upper shaft to set dial disc to [10 degrees].



5. Loosen screw on needle bar boss.

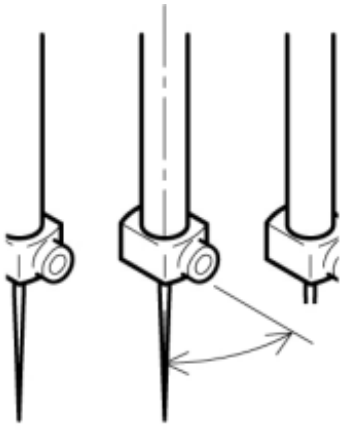


6. Put needle height gauge in rotary hook.

4-2-6 Adjustment of needle height

7. Adjust the needle bar height up and down till the needle tip touches to the gauge slightly.

8. Set direction of needle stop as illustrated below.



About 30 degrees

9. Tighten the screw of needle bar boss.

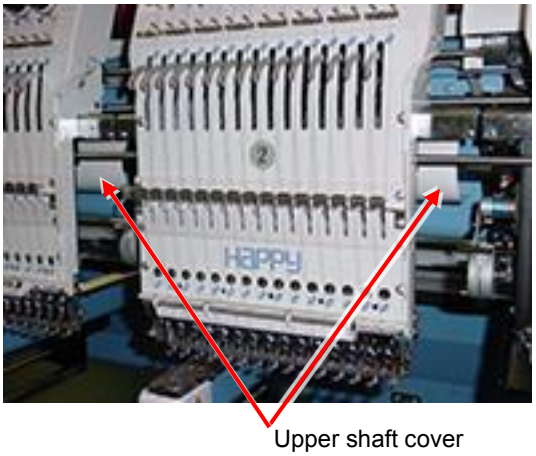
10. Take Needle height gauge out from Hook.

11. Back main shaft to [270 degrees (C point)] position.

12. Set “front panel (lower)” and cord clip, set “bobbin case” then end of process.

4-2-7 Adjustment of needle bar lowest point

1. Take Upper shaft cover.



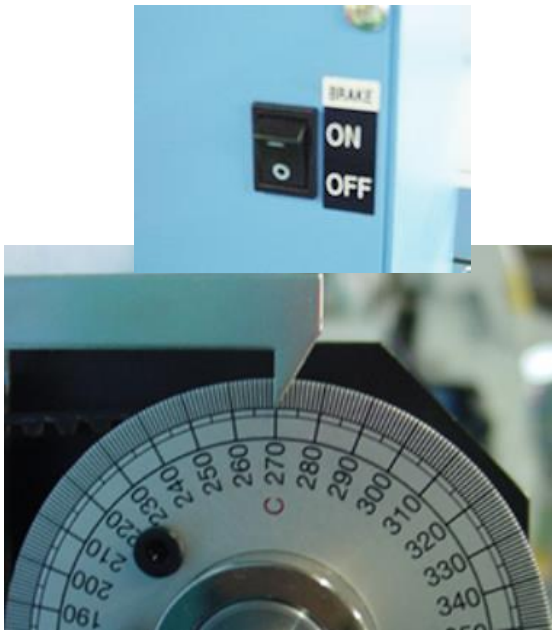
Upper shaft cover

2. Move moving head to the position that 14th needle is active.

   Take Thread catcher cover.

3. Turn off the brake switch.

   Turn upper shaft to set dial disc to [C point (270 degrees)].

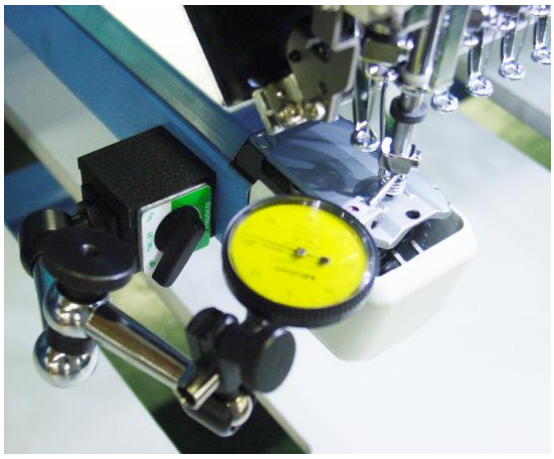


4. Bring needle bar down.

5. Turn upper shaft to set dial disc to [355 degrees].

6. Turn on the brake switch.

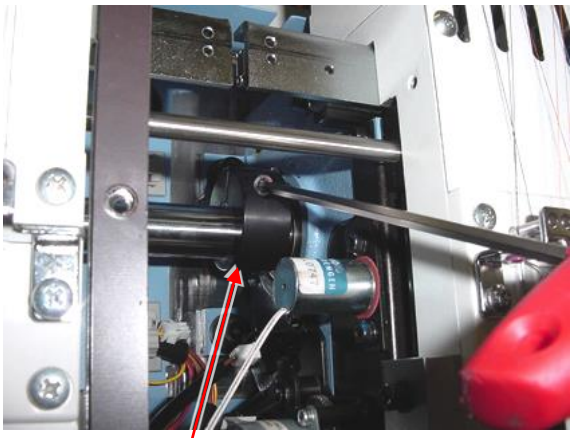
7. Fix Dial-gauge set on left side of bed.



8. Set lever of the Dial-gauge at lower surface of needle holder then, adjust position of the Dial-gauge so as to move pointer of the Dial-gauge around 1mm.

4-2-7 Adjustment of needle bar lowest point

9. Loosen a fixing screw of fasten collar.

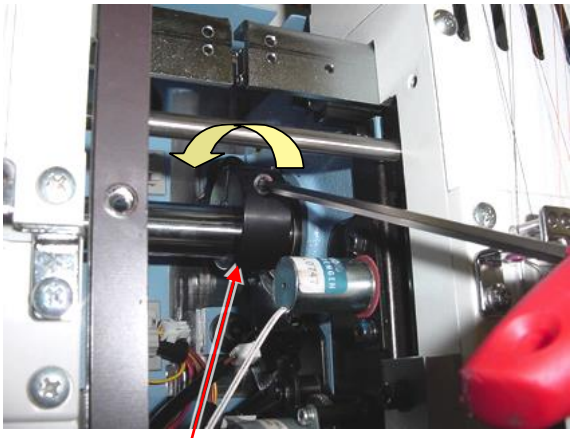


Fasten collar

10. Turn Fasten collar to the forward direction and move needle bar.

< Note > Please do not turn the fasten collar so much, because the measuring range of the Dial-gauge is limited.

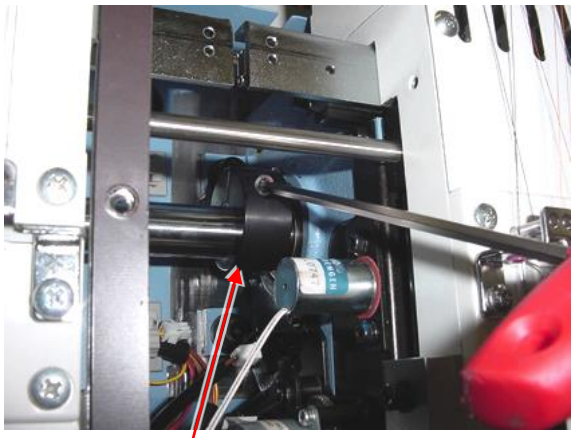
In case needle bar can not be moved,
Fixing screw for Fasten collar is loosen too much.
Tight fixing screw for Fasten collar gradually up to the position that needle bar can be moved.
< Note > If loosen too much, fasten collar will start slipping against needle bar cam.
If tight too much, needle bar can not be moved again.



Fasten collar

11. Check movement of the Dial-gauge with turning fasten collar forward and back ward then, find needle bar lowest point that the movement of the dial-gauge stops.

12. Tighten fixing screw of fasten collar.



Fasten collar

13. Turn brake switch off.

14. Turn upper shaft to set dial disc to [355 degrees], Turn main shaft forward and back ward with checking the Dial-gauge movement then, stop the main shaft at needle bar lowest point.
Confirm that the dial disk is located at 355 degrees.
If the angle is not correct, repeat steps from 9 to 14.

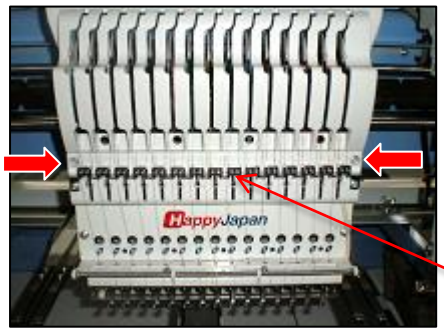
15. Put removed all parts back to finish.

16. After adjustment, confirm the needle height and rotary hook timing also.
Please refer to [4-2-6 Adjustment of needle height]
[4-4-1 Adjustment of rotary hook timing].

4-2-8 Adjustment of needle bar stopper

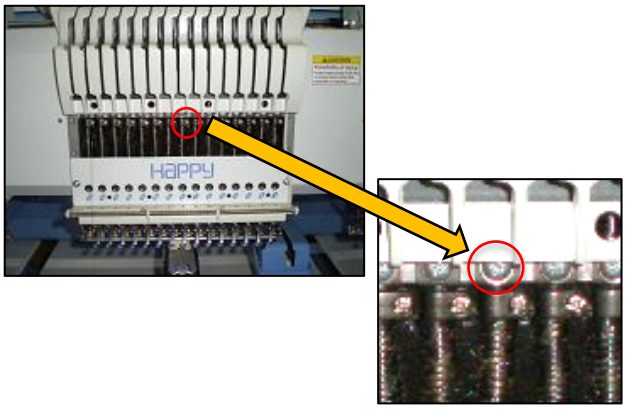
1. Turn the machine power on.

2. Remove thread adjusting unit assembly from a head which requires adjustment. Then, remove two(2) pieces of screws indicated with red arrows.

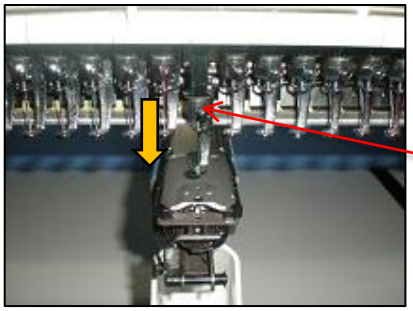


Thread Adjusting Unit Assembly

3. Loosen a screw of a needle which requires adjustment.



4. Put down needle bar assembly of a neelde manually which requires adjustment down.

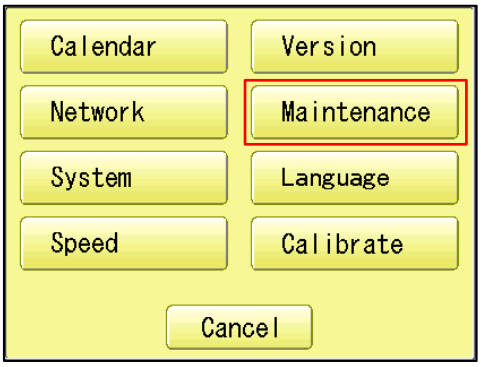


Needle Bar Assembly

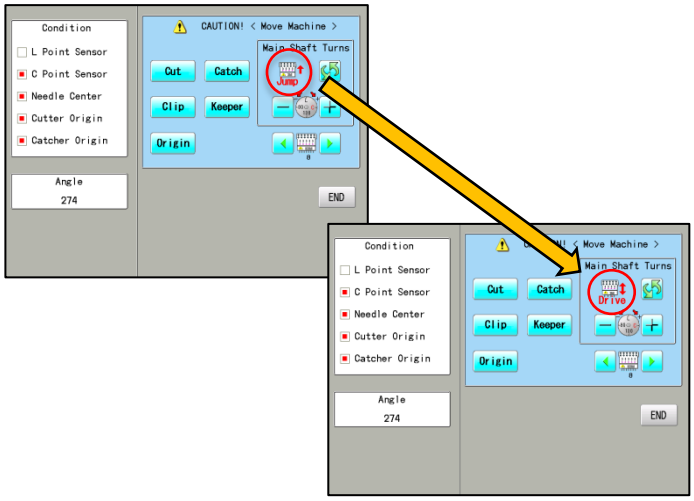
5.Push "MENU"  , and then push "OTHER" 

.

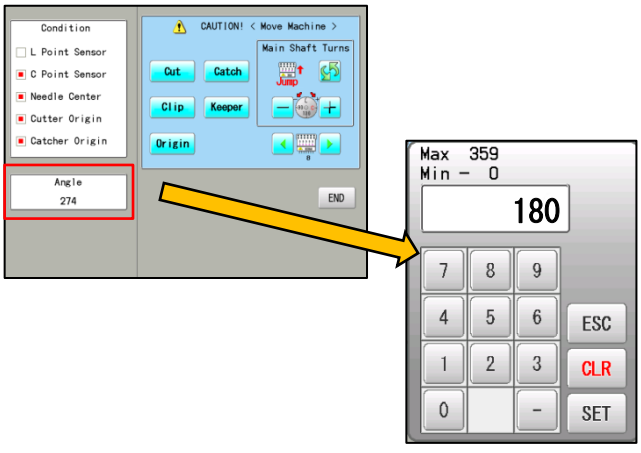
6.Push Maintenance.



7.Push  , and then change to "Drive" from "Jump" at "Main Shaft Turns".



8. Push "Angle", and then rotate a main shaft by 180 degrees.



9. Check an angel on a disk visually, and then loosen a screw of a needle which requires adjustment. If an angel on the disk deviates from a required angle, try to adjust an angle on the disk and tighten the screw when an required angle is secured.

10. After completion of the above step No. 9, deactivate thread detection, and then check if a needle bar works correctly with a machine activated.

Note: If a needle bar does not work correctly, go back to the above step No. 8 and lower an angle by every two(2) degrees as appeared at Example below. Tighten a screw of a needle which requires adjustment when an appropriate angle is secured. Then, go back to the above step No. 10.

Example: 180 ⇒ 178 ⇒ 176・・・・・・

11. Put thread adjusting unit assembly back on.

Steps complete.

4-2-9 Exchange of needle bar, needle bar spring, cushion and pressure foot block

1. Refering to [4-1-5 Exchange of pressure foot], remove pressure foot.

2. Loosen screw on needle bar boss.

3. Take off “Needle bar boss”.

At this time, remove pressure foot spring (lower), pressure foot block, cushion, pressure foot boss and needle bar boss.

4. Set good parts to needle bar.

At this time, if insert extra needle bar from under, you can work more easily.

< Note > Care to insert direction for “Pressure foot” and “Pressure foot boss”.

Pressure foot block

Check shape of direction.

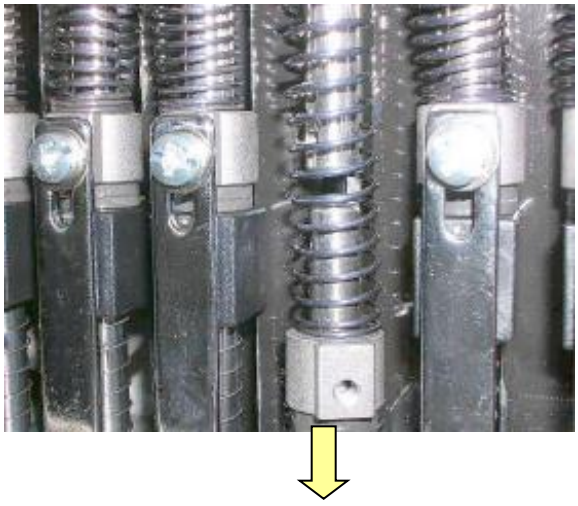
Pressure foot boss

Should hole to under side

5. Fix needle bar spring.

Finally, push upper needle bar and string all parts then pull out lower extra needle bar.

Slide needle bar to lower.



6. Fix pressure foot.

7. Fix needle, needle holder and cushion.

8. Adjust needle height.

Please refer to [4-2-6 Adjustment of needle height].

9. Adjust pressure foot height.

Please refer to [4-1-4 Adjustment of height of pressure foot].

10. Put removed parts back to finish.

4-2-10 Fixing of needle bar boss check plate

1. Remove moving head.

   Please refer to [4-2-1, 4-2-2 Assemble and remove moving head].

2. Exchange of needle bar boss check plate.

3. Temporarily, use the pan head screw to center the needle bar boss check plate then fix the screw

4. Fix positioning needle bar boss check plate.

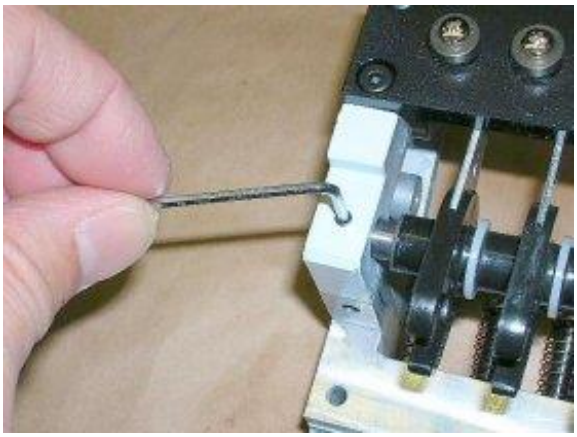
5. Put moving head and other removed parts back to finish.

4-2-11 Exchange of take-up lever

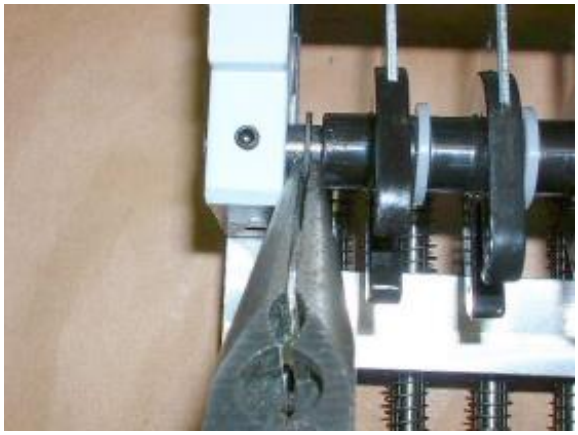
1. Remove moving head.

   Please refer to [4-2-1, 4-2-2 Assemble and remove moving Head].

2. Loosen screw on take-up lever shaft. (Fixing screw 2 pcs)

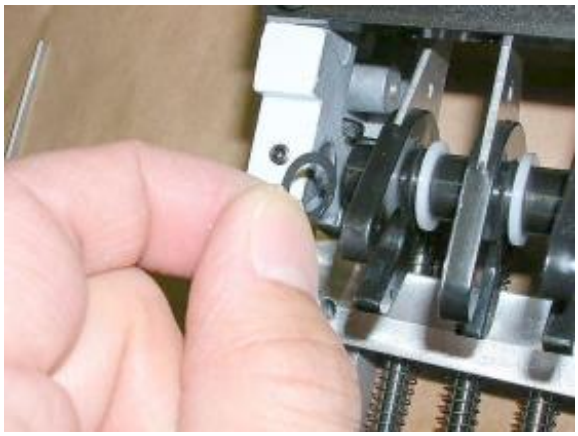


3. Remove the E-ring.

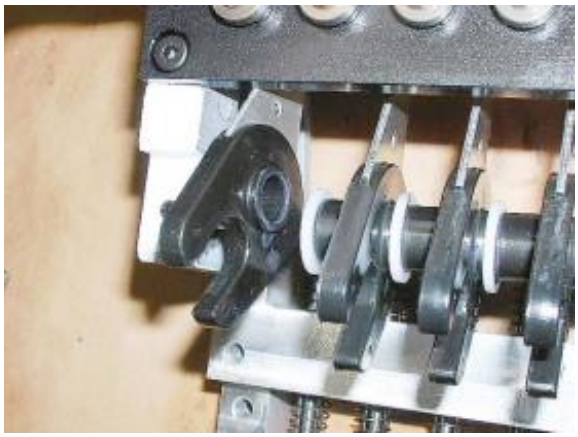


4. Please do not miss “Plastic thrust washer” between E-ring and Take up lever.

   Remove plastic thrust washer. (1 pcs)



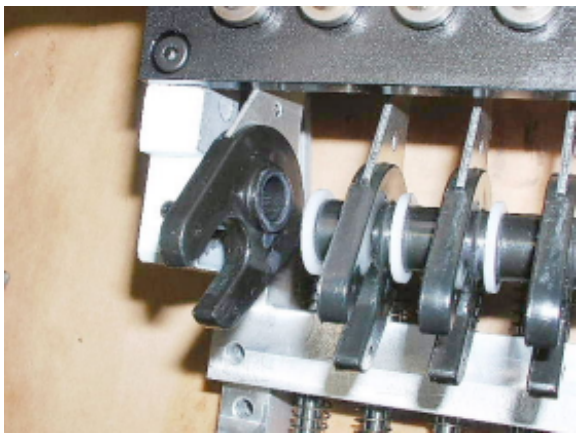
5. Remove the take up lever shaft first then remove the take-up lever.



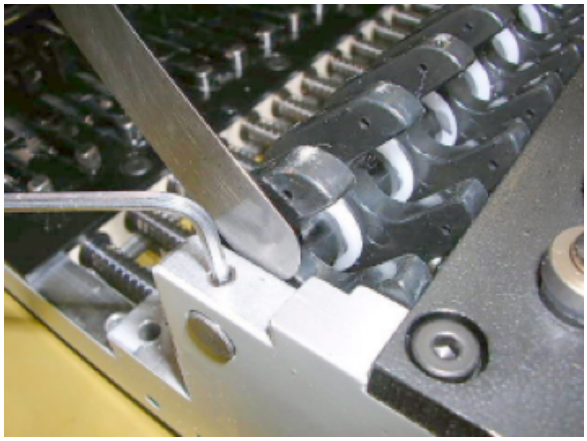
6. Remove plastic washer.

4-2-11 Exchange of take-up lever

7. Install good take-up lever assembly with plastic thrust washer, plastic washer, E-ring.



8. Leave space of [0.2mm] between take-up lever and moving head .
Tight screw for “Take up lever shaft”



9. Put moving head in previous position to finish.

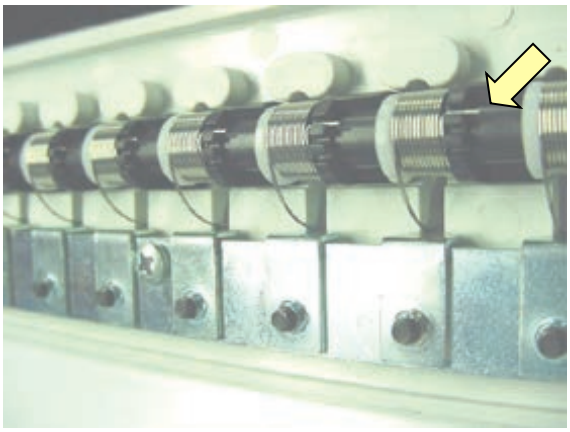
4-2-12 Adjustment of tension of thread adjusting spring

1. Remove thread adjusting unit ass'y. (Fixing screw 4 pcs)

2. Block has spring groove to be able to adjust in three steps.

   Put tip of spring in upper groove.

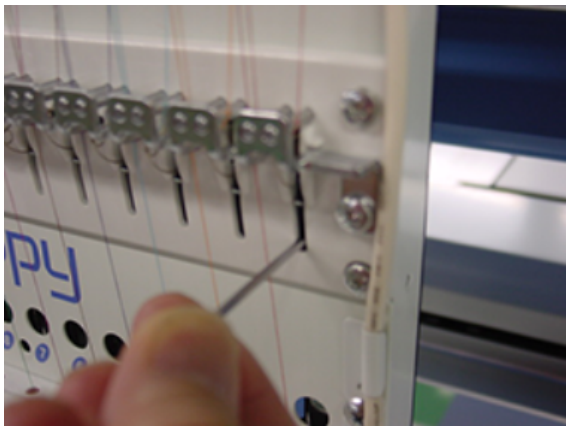
   Strongest tension will be obtained in upper groove.



3. Fix thread adjusting unit ass'y to finish.

4-2-13 Adjustment of stroke of thread adjusting spring

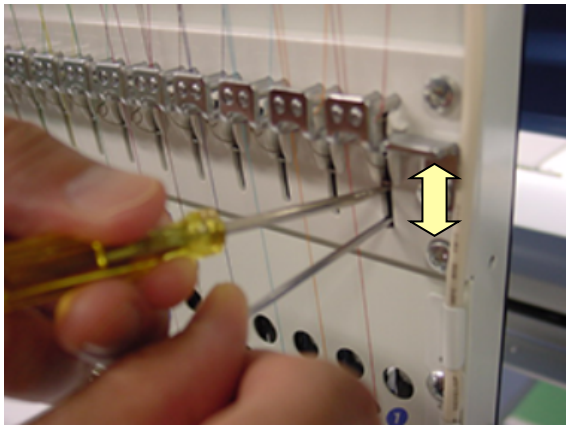
1. Loosen screw on adjuster.



2. Move adjuster lower position with small flat-head driver.

When you move adjuster upward, stroke will get small.

When you move it down, stroke will get large.



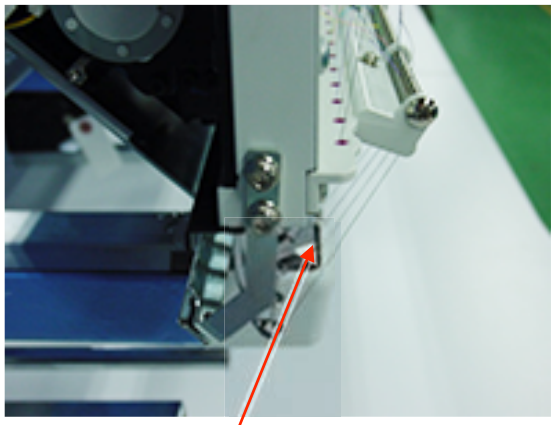
* The lower position is default setting.

3. After adjustment, tighten screw to finish.

4-2-14 Adjustment of thread holder

1. Loosen screw to the extent that thread holder moves.

(Fixing screw 4 pcs)



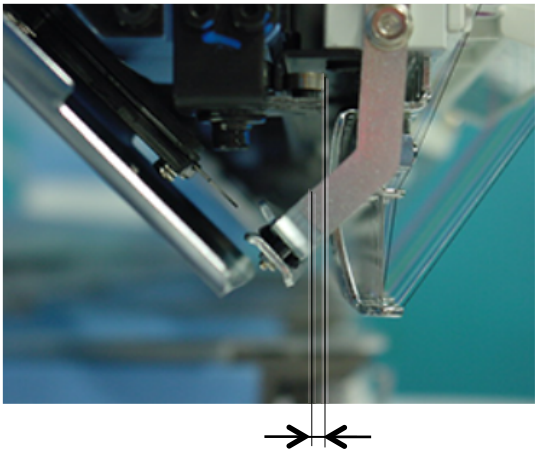
Screw

2. Please putout and withdraw thread catcher by your finger and fix holder position at smoothly moving position.

<Note> Please check smoothly moving at 1st and 15th needle.

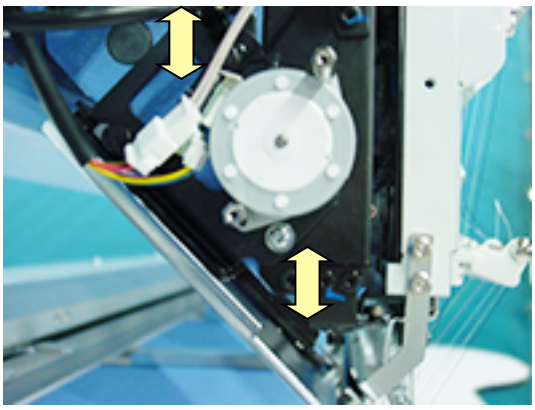
Positional relationship between pressure foot and holder (lower)

When downing the needle, should have gap more than 1 mm between holder and presser foot.



Gap

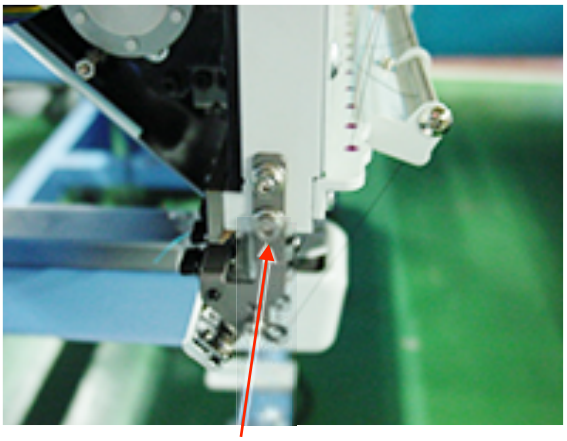
3. Thread catcher device should be adjusted if above clearance is not keepable.



4. Press thread trim key and confirm whole thread trim revolution.

4-2-16 Adjustment of clip-type thread holder

1. Loosen screw to the extent that clip-type thread holder moves. (Fixing screw 4 pcs)

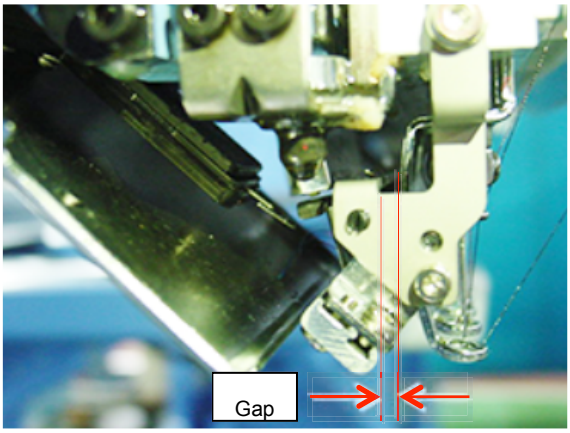


Screw

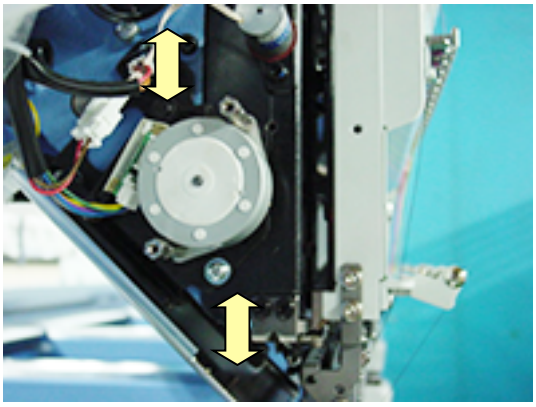
2. Please put out and withdraw thread catcher by your finger and fix holder position at smoothly moving position.
Hook has to touch surface of clip holder (lower).
< Note > Please check smooth moving at 1st and 15th needle.

~~Positional relationship between pressure foot and holder (lower)~~

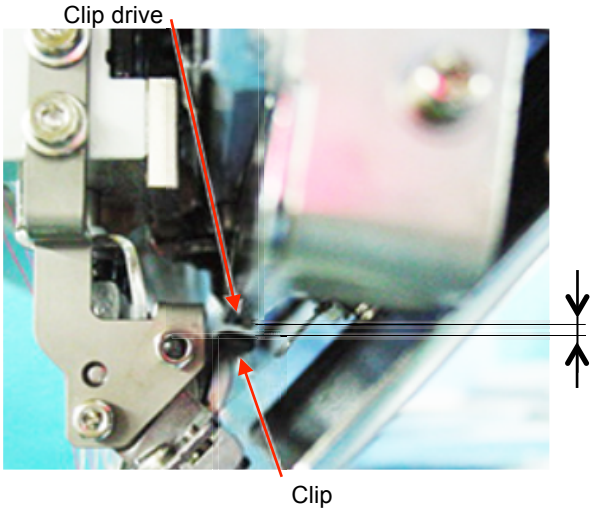
When downing the needle, should have gap more than 1 mm between holder and presser foot.
When is hook pull out, space between hook and bottom of pressure foot should be more than 1mm.



3. Thread catcher device should be adjusted if above clearance is not keepable.



4. Space between Clip drive and clip should be 1-2mm.
< Note > Please check at 1st and 15th needle.

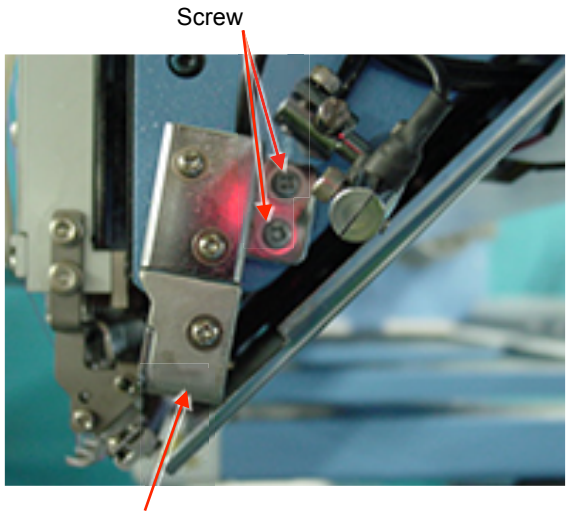


5. Press thread trim key and confirm whole thread trim revolution.

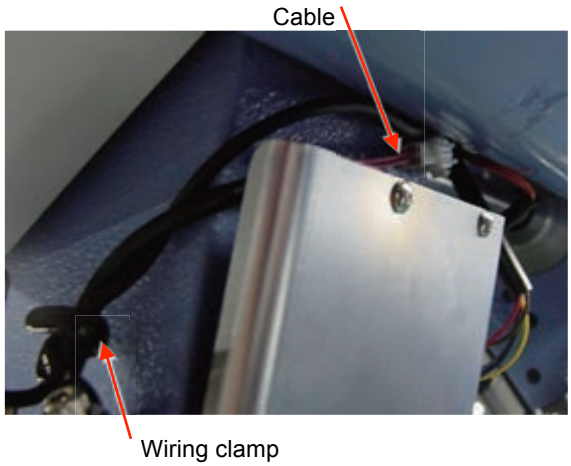
4-2-17 Adjustment of clip drive unit

1. Move moving head to the position that 1st needle is active.

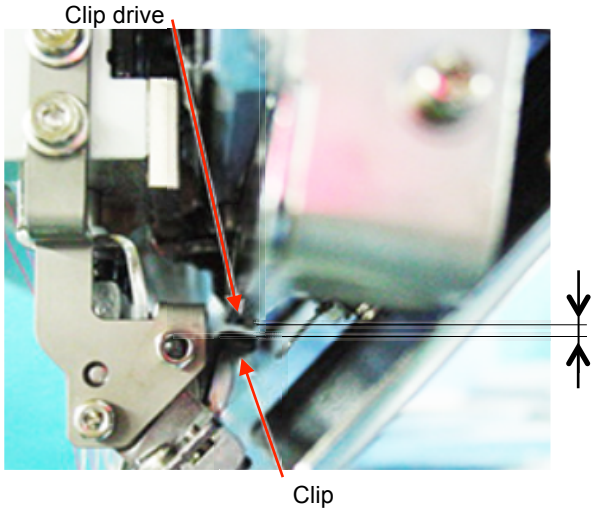
2. Temporary fix Clip drive unit.



3. Connect cables and bundle by wiring clamp.



4. Space between Clip drive and Clip should be 1-2mm and push point of Clip Drive should be center of clip(right and left). Fix Clip drive unit at the position that unit is not touching to holder.

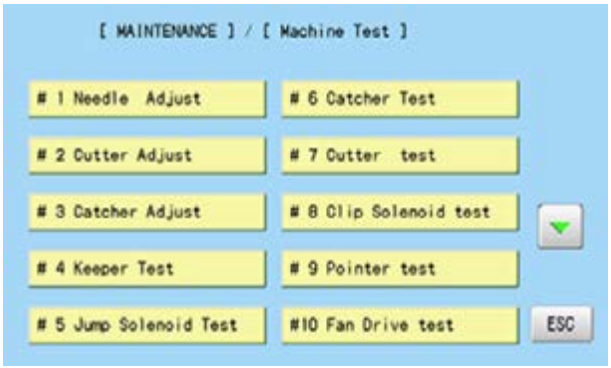


5. Turn power switch ON, and move moving head to 15th needle. Please confirm space between Clip drive and clip is same as space at 1st needle.

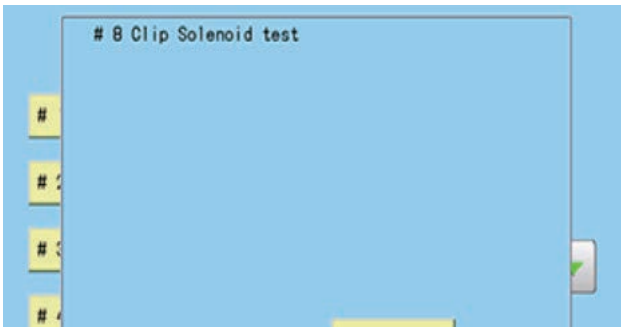
6. If case above space at 1st needle and at 15th needle is not same, position of clip holder may be incorrect.
Please check position of Clip holder and Clip drive unit.

7. Refer to [E5-1 How to enter maintenance mode] and enter maintenance mdoe.

8. Press Machine Test.

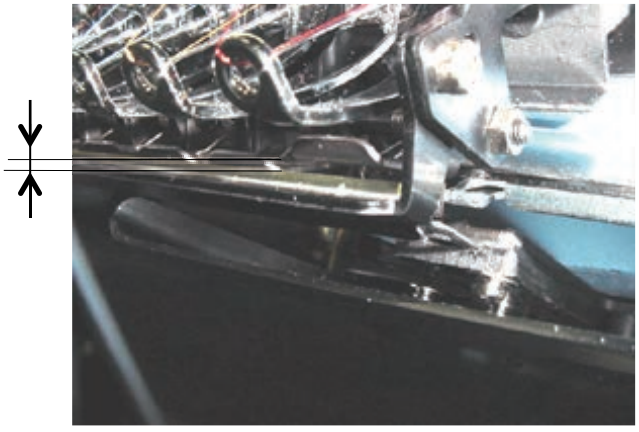


9. Press #8 Clip Solenoid Test.



Please confirm that clip opens more than 2mm.

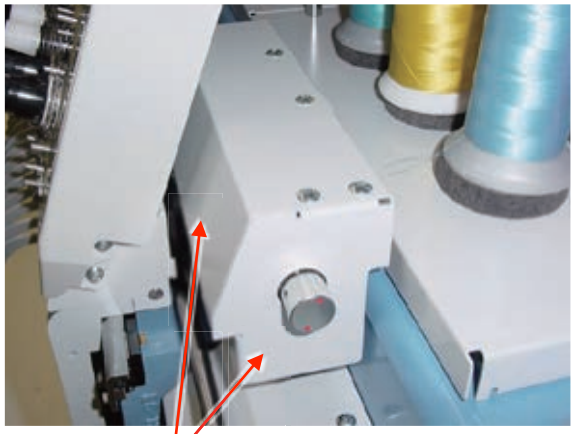
< Note > Please check at 1st and 15th needle



10. Press thread trim key and confirm whole thread trim revolution

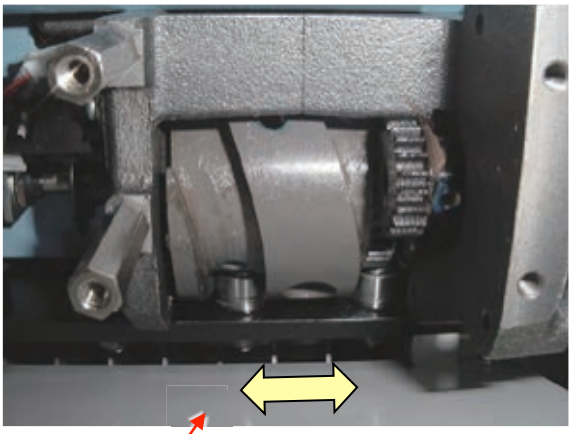
4-3-1 Check / Adjustment of needle bar change unit

1. Remove cover for needle bar change unit.



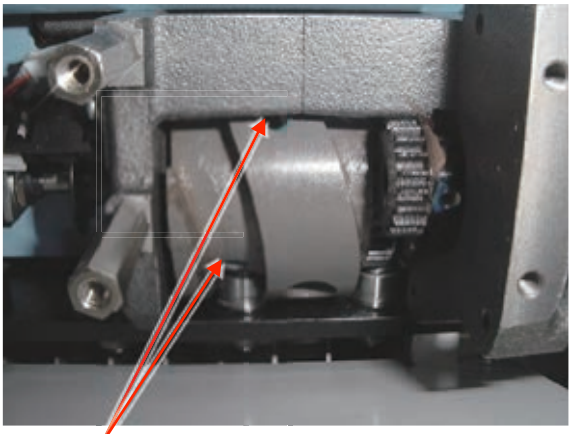
Cover

2. Turn the knob to flat position of the cam and push moving head right and left side for confirm should not have a play the Cam.



Moving head

2-1. If you had feel a play the cam, please loose the set screw on cam.

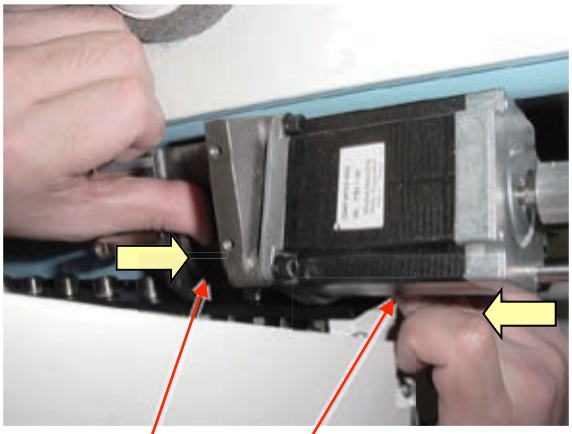


Set screw

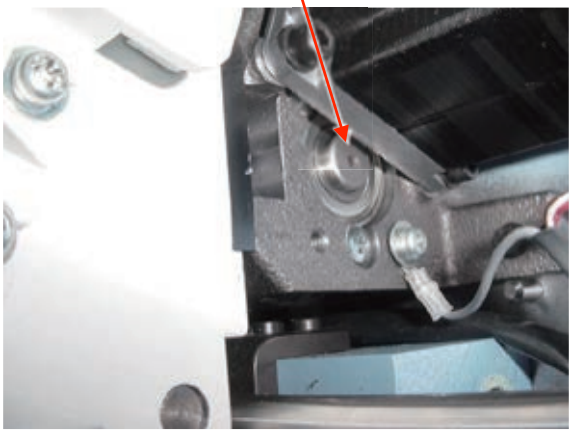
Both hole has 2 pcs of set screw.

Inner set screw is "Cup Point" type and outer set screw is "Flat Point" type.

2-2. Push the Cam to right and push drive shaft to left side and tight Cam screws.



Cam Drive shaft

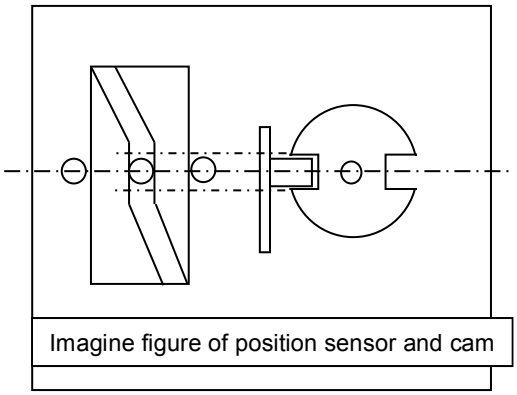


2-3. Check the cam should not have play.

After this adjustment, please check and adjust the needle position.

Please refer to [4-2-4 Adjustment of needle position (left and right)].

3. Turn the knob and stop at needle stopping point and confirm Senser and slit position reference following image.



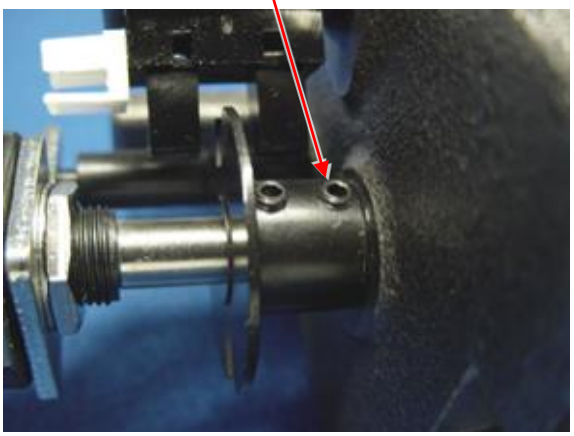
Imagine figure of position sensor and cam

4-3-1 Check / Adjustment of needle bar change unit

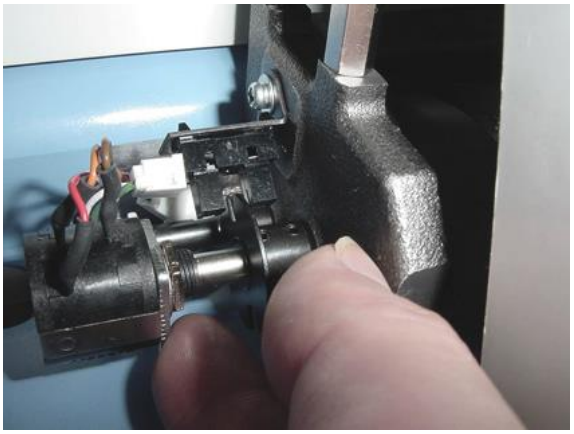
3-1. For adjustment the sensor and slit position, pleaseloose a screw on the slit.

< Note > Please do NOT loose LEFT side screw.

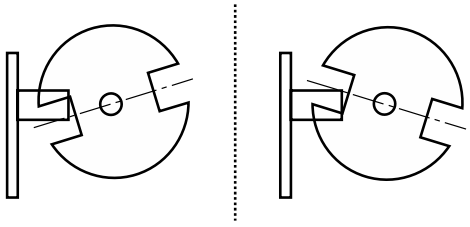
Set screw



3-2. Please adjust slit position to center of slit gap against sensor when needle selection cam is middle position on flat.Then tight screw of slit.



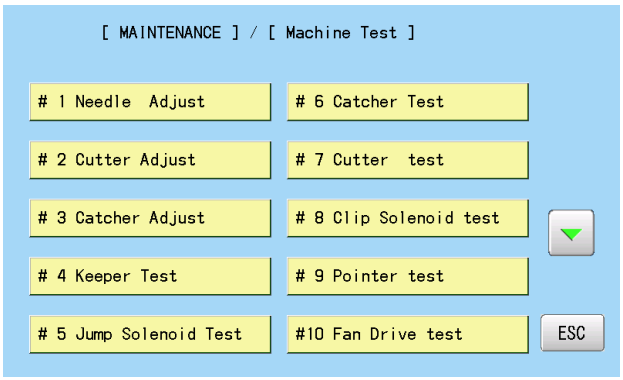
3-3. Turn the knob and confirm position of sensor and slit. When needle selection cam is position on flat, angle of slit against sensor should be even like below drawing.



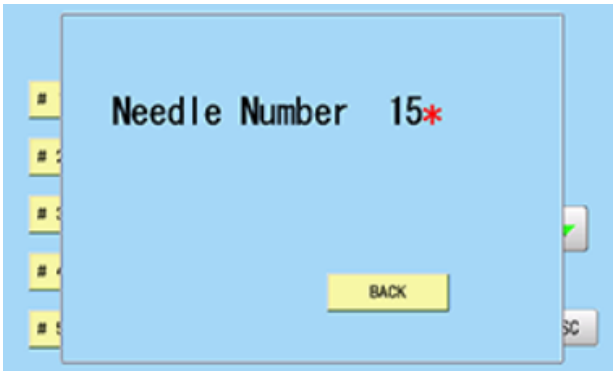
4. Turn the knob and move moving head to 15th needle.

5. Enter maintenance mode, referring to [E5-1 How to enter maintenance mode]

6. Press Machine Test.



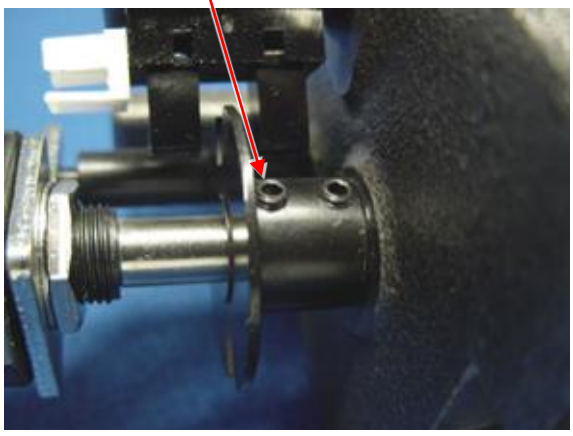
7. Press #1 Needle Adjust and press Position. Should showing [Needle Number 15*] and has beep sound.



7-1. If your machine showing different (wrong needle number or non * mark) message, potentiometer position is not correct. Please loose left side screw of slit.

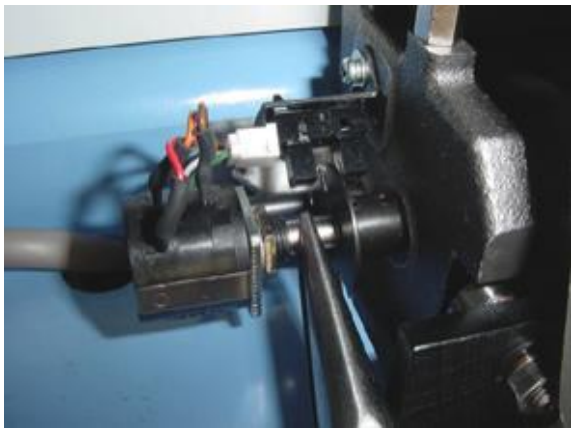
< Note > Please do NOT loose right side screw.

Set screw



4-3-1 Check / Adjustment of needle bar change unit

7-2. Turn shaft of Potentiometer and tight screw at middle position on showing [*] mark.



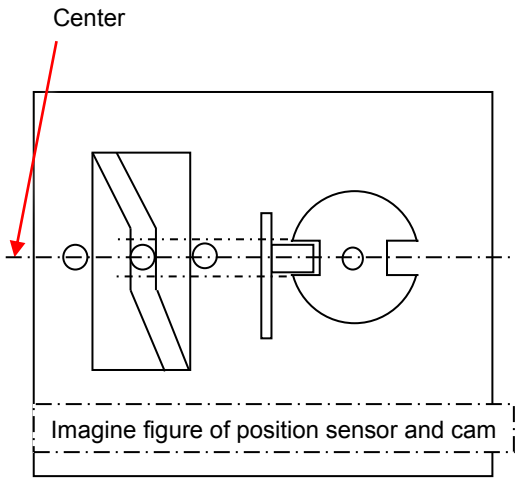
7-3. Move Moving head to 1st head and press Position.
Confirm indication to [Needle Number 1*].

7-3. Move Moving head to 1st head and press Position.

7-4. Press BACK to complete settings.

8. Please check needle position to needle plate and back on cover.

< Note > Piositioning image for needle selection Cam, Slit, Sensor.



4-4-1 Adjustment of rotary hook timing

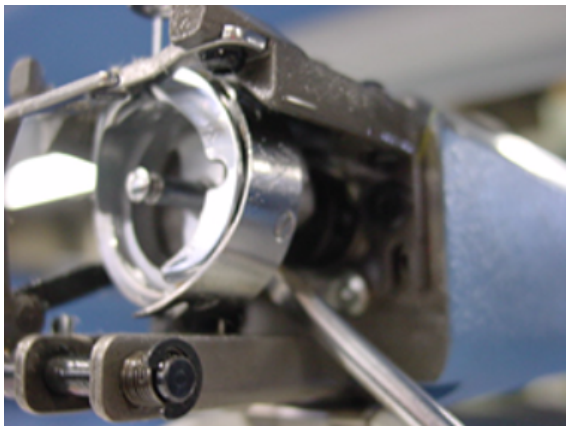
1. Move moving head to the position which 8th needle is active.

   Remove bobbin case and needle plate.

   (Fixing screw 2 pcs)

2. Loosen screw on rotary hook. (3 places)

   <Note> Please do not loose screws too much.



3. Bring needle down up to the needle lowest position.

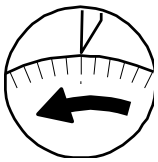
   Refer to [5 User maintenance mode].

   <Note> Please do not loose screws too much.

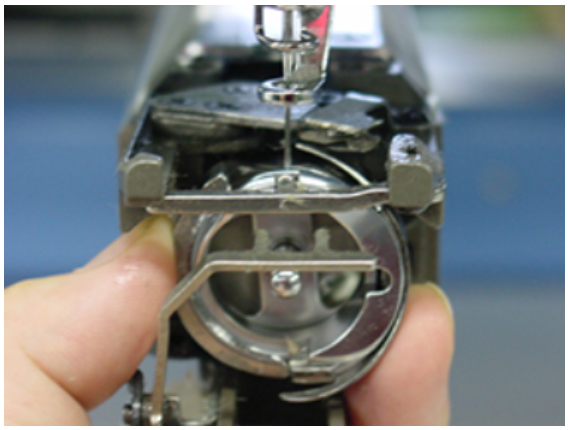
4. Turn upper shaft and set dial disc to [25 degrees].

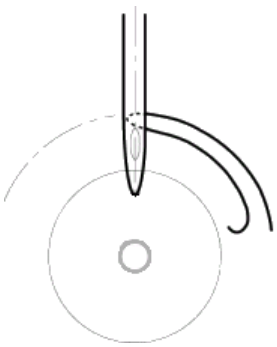
   < Note > Turn upper shaft anti-clockwise

   Turn brake switch ON.



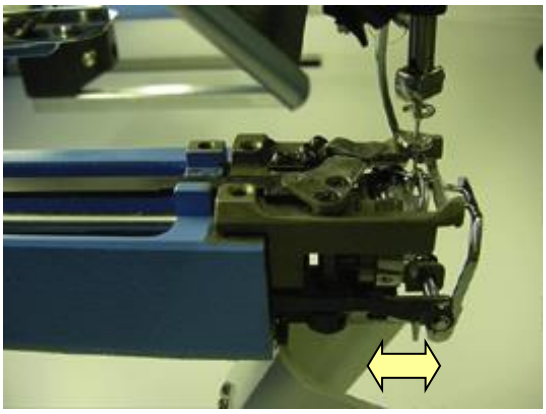
5. Set the position of needle and tip of hook as below.

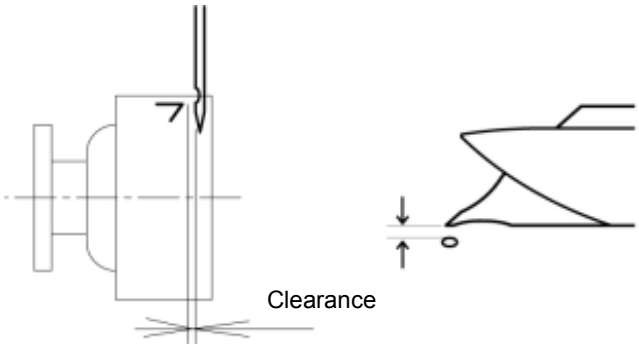




4-4-1 Adjustment of rotary hook timing

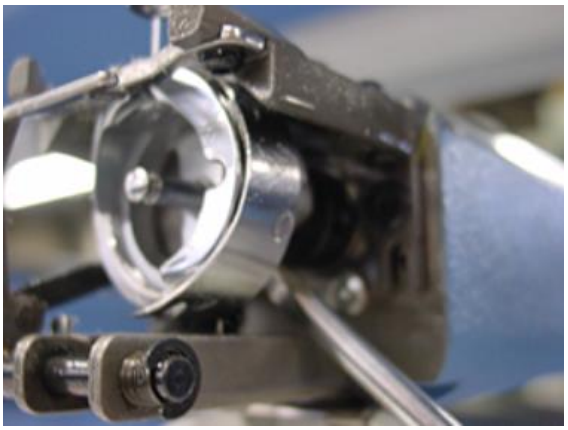
6. Clearance between needle and rotary hook should be [0.1 ~ 0.2mm]





7. Check and adjust with 1st, 8th and 15th needle.

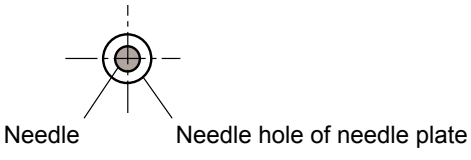
8. Tighten screws on rotary hook



9. For making sure, check position of retainer on bobbin case holder.

Please refer to [4-4-2 Adjustment of retainer on rotary hook]

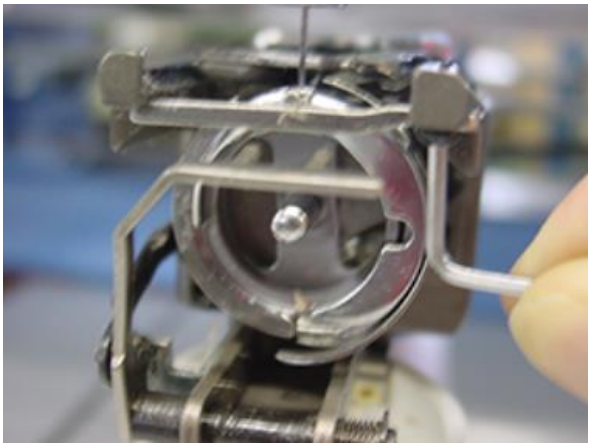
10. Set needle plate keeping needle position is center of needle hole on needle plate



11. Adjustment has finished.

4-4-2 Adjustment of retainer on rotary hook

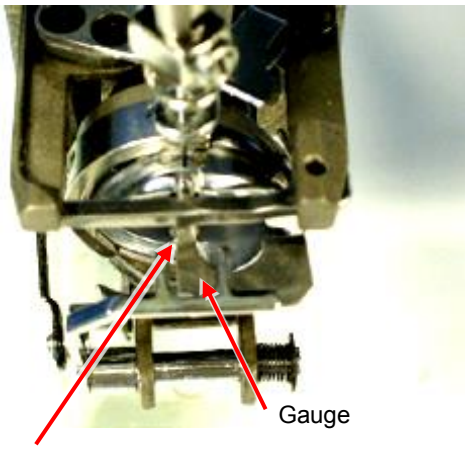
Loosen screw to the extent that retainer moves. (1 pcs)



2. Adjust position back and forth, left and right.

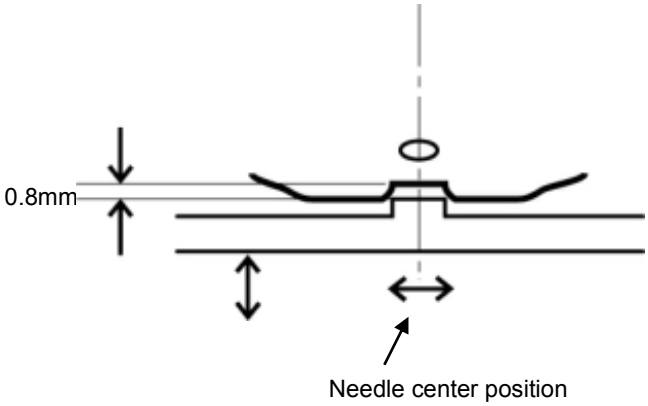
Using adjustment gauge and adjust space to be [0.8mm] for back and forth. (insert gauge between retainer and inner hook)

The position for right and left is center of the needle.



Center of needle and center of retainer to be adjusted

Gauge



4. Adjustment has finished.

4-4-3 Exchange of rotary hook shaft

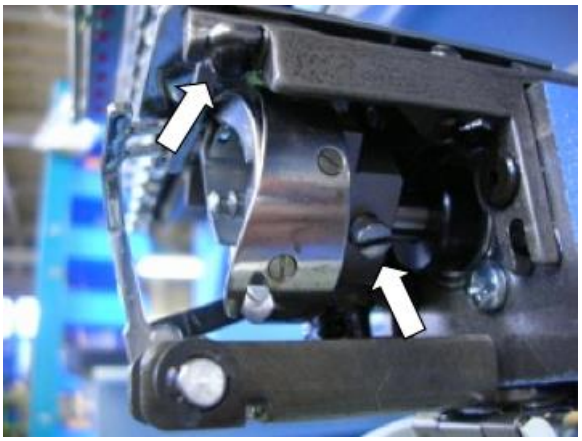
1. Take hook shaft out

1-1. Take hook retainer out.

(Hexagon socket button head screw : M3-5)

(Plain washer : M3)

1-2. Loosen screw and take hook out.



1-3. Loosen screw of collar.

(Hexagon socket set screw : M4-4 2 pcs)

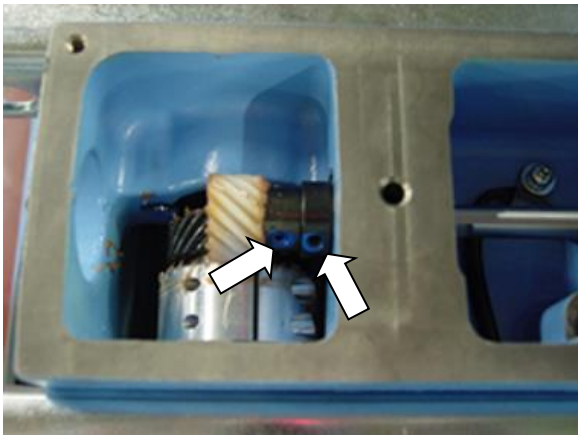
Please loose screw enough, because shaft has flat face.

1-4. Take cover of bed.

(Screw for needle plate : 2 pcs)

1-5. Lossen screws (see below picture) total 4 pcs.

(Hexagon socket set screw : M4-4 4 pcs)



1-6. Take gear out.

1-7. Pull shaft out.

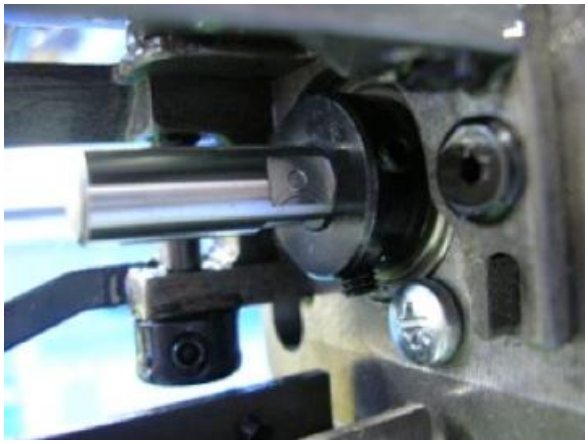
Take hook shaft out has finished.

4-4-3 Exchange of rotary hook shaft

2. Install new shaft.

The parts which has one flat face is for hook side.

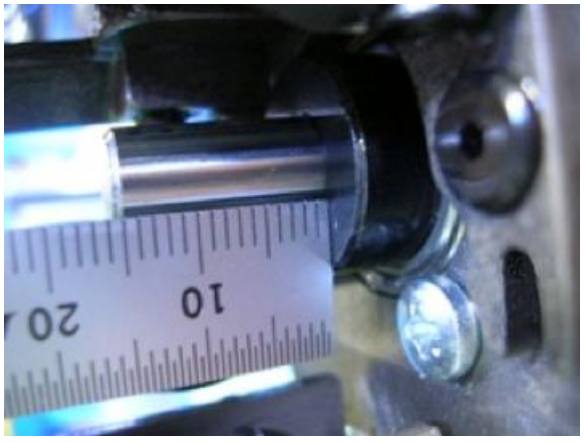
2-1. Insert shaft and adjust position of flat face and screw position.



2-2. Shaft is 15mm out from collar.

Please fix screw

(Hexagon socket set screw : M4-4 2 pcs)



2-3. Put gear and fix.

Set screw position to flat face of shaft, and tighten screw.

(Hexagon socket set screw : M4-4 2 pcs)

Center of gear should be center of shaft.

(please adjust position of gear)

2-4. Please put grease on gear.

<Grease>Shell alvania EP Grease

< Note > Put grease equally.

3-5. Put cover of bed.

(Screw for needle plate : 2 pcs)

.

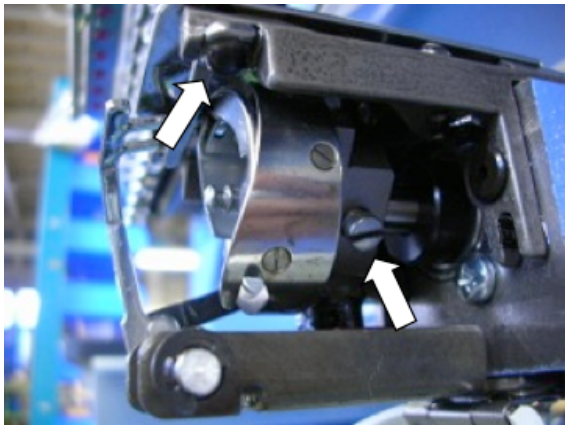
4-4-3 Exchange of rotary hook shaft

3. Install hook

3-1. Temporary fix hook and hook retainer.

(Hexagon socket button head screw : M3-5)

(Plain washer : M3)



3-2. Adjust rotary hook timing.

Please refer to [4-4-1 Adjustment of rotary hook timing].

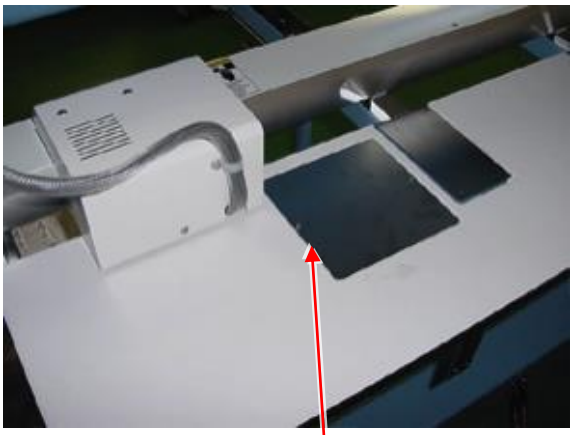
3-3. Adjust retainer on rotary hook.

Please refer to [4-4-2 Adjustment of retainer on rotary hook].

Exchange has finished.

4-5-1 Check of thread cutting driver

1. remove table support cover, cover for thread cutting driver.



Cover for thread cutting driver

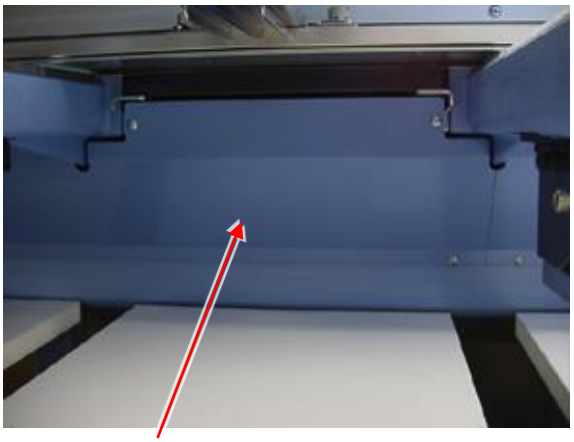
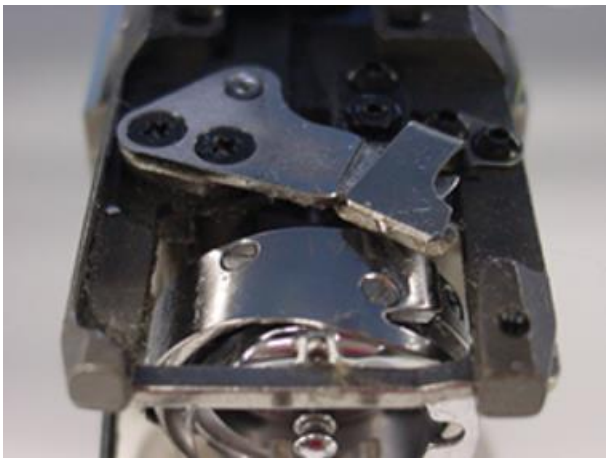


Table support cover

2. Keep Moving knife to closing.

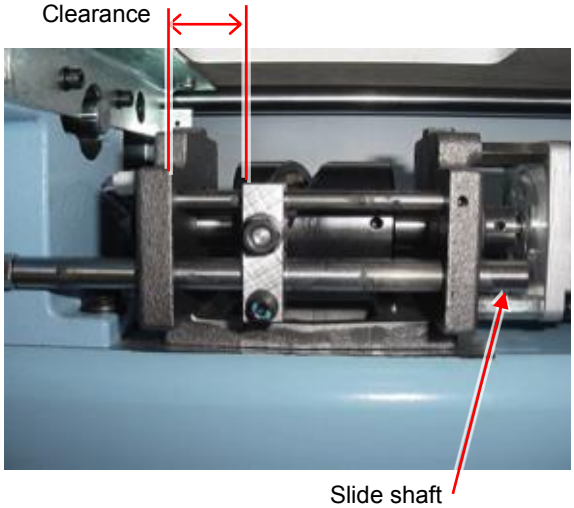
Please refer to [5 User maintenance mode]



3. Check clearance between Driver base and Fasten block for guide [18 ~ 19mm].

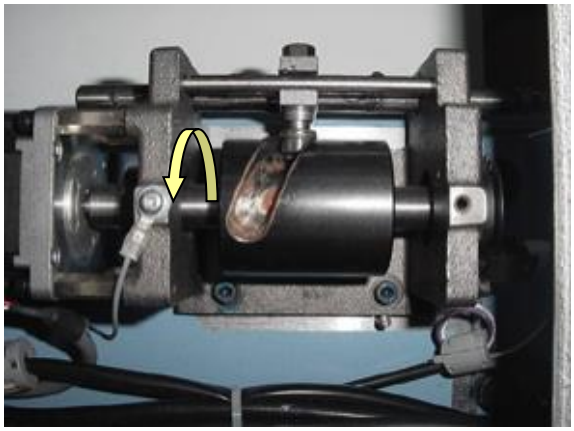
Please confirm bulge right side point of "Slide shaft" position likefollowing picture.

Clearance



Slide shaft

4. Turn the Cam till stop end. And confirm a ditch of Cam has allowance.



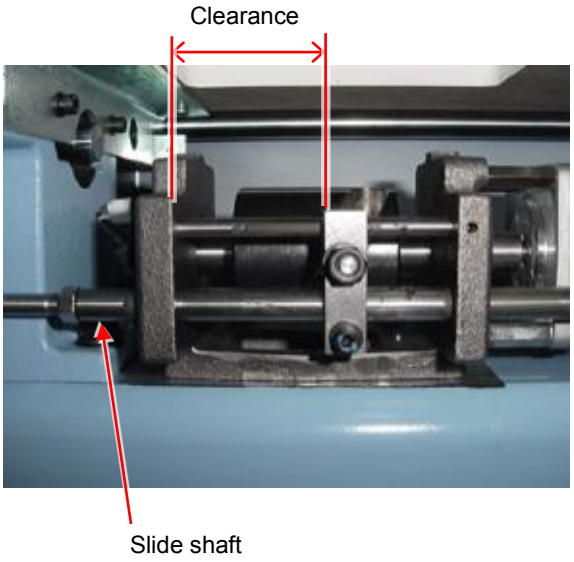
5. Keep Moving knife to opening.

Please refer to [5 User maintenance mode]

4-5-1 Check of thread cutting driver

6. Check clearance between “Driver base” and “Fasten block for guide” [40 ~ 41mm].

Please confirm bulge left side point of "Slide shaft" position likefollowing picture.



- If you have some error in the step 3. ~ 6, please adjust [4-5-2 Adjustment of thread cutting driver].

7. Please keep Moving knife to closing.

Please refer to [5 User maintenance mode].

Return cover to previous places to finish.

4-5-2 Adjustment of thread cutting driver

1. Remove “Table support cover”, and “Cover for thread cutting driver”.

Cover for thread cutting driver

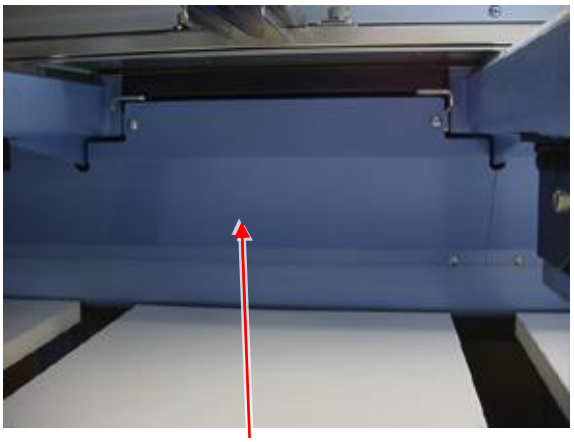
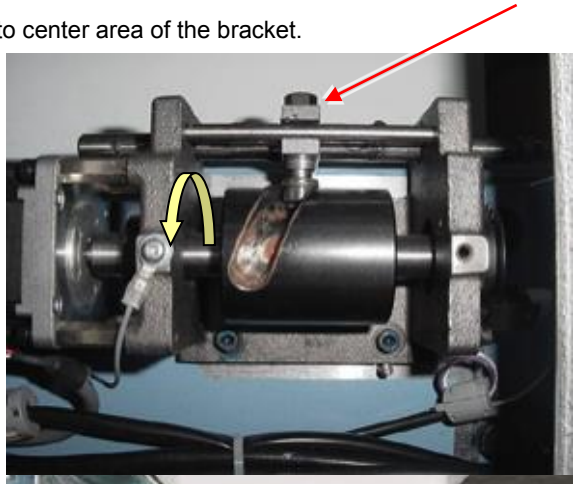
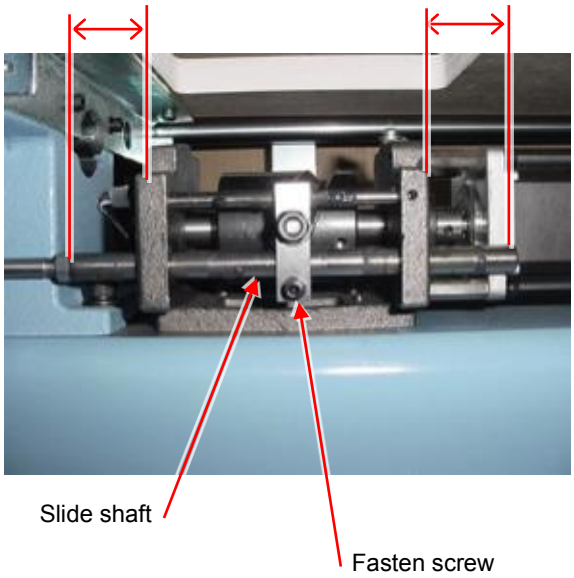


Table support cover

2. Turn the Thread cutting cam and move Fasten block guide to center area of the bracket.



3. Loose Fasten screw and adjust slide shaft position to even protuberance against face of driver base and tight the screw.

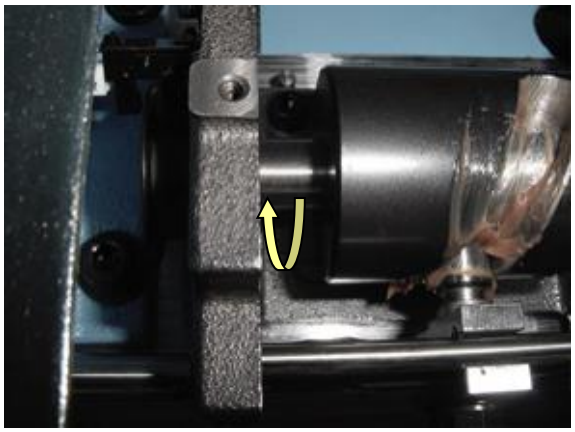


Slide shaft

Fasten screw

4. Turn the Thread cutting cam till end position.

(Please see picture bellow)

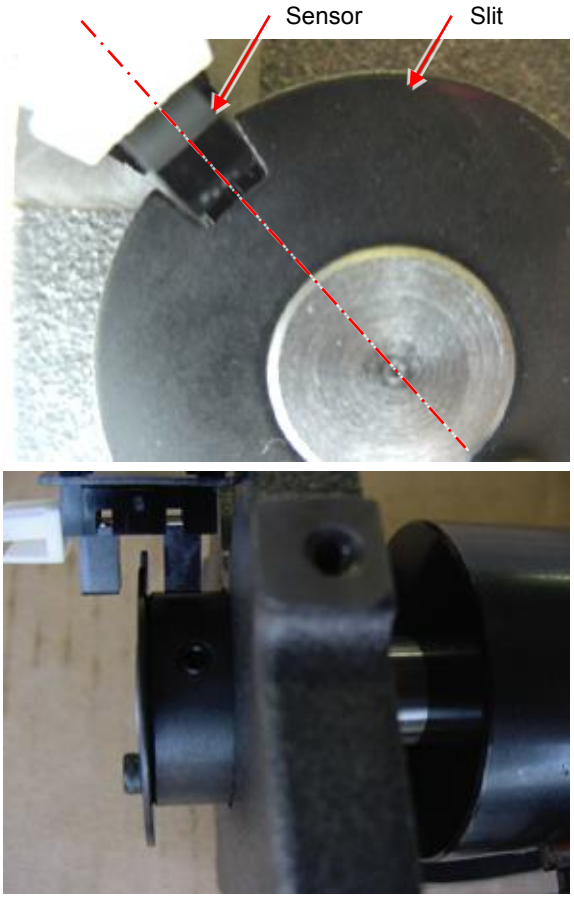


Please keep this position for next adjustment.

4-5-2 Adjustment of thread cutting driver

5. Adjust Slit right position against sensor.

If you off the position, please adjust sensor position by screw on sensor bracket.



6. After it, please adjust [4-5-5 Check / Adjustment of position of moving knife].

7. Confirm Moving knife position to CLOSE.

Please refer to [5 User maintenance mode].

Back on covers to previous position.

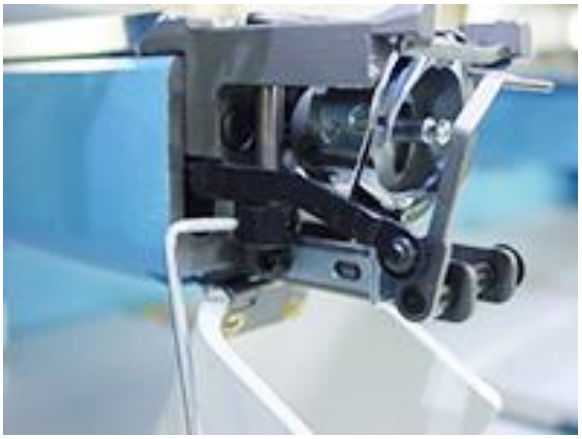
4-5-3 Exchange of moving knife

1. Remove needle plate. (Fixing screw 2 pcs)

2. Open moving knife.

Please refer to [5 User maintenance mode].

3. Remove knife drive shaft retainer.



4. Pull out knife drive shaft ass'y.

5. Exchange moving knife.

6. Setting drive link hole to moving knife, insert knife drive shaft assembly.

7. Pushing down moving knife and knife drive shaft retainer like putting them together, fix knife drive shaft retainer.

Fix so that there is no backlash in upward and downward direction.

8. Close moving knife.

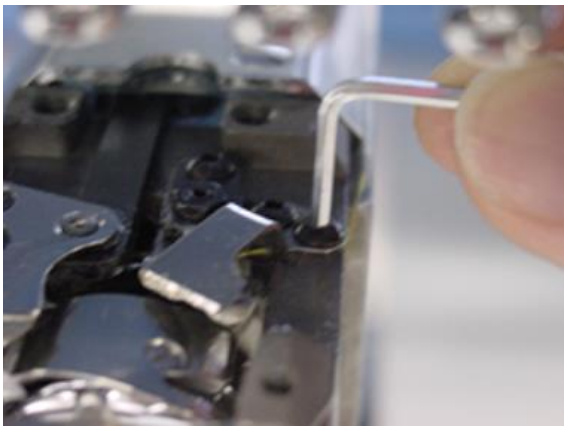
Please refer to [5 User maintenance mode].

9. Referring to [4-5-6 Adjustment of moving knife and fixed knife], check how well thread is cut and adjust, then finish this process.

4-5-4 Exchange of fixed knife

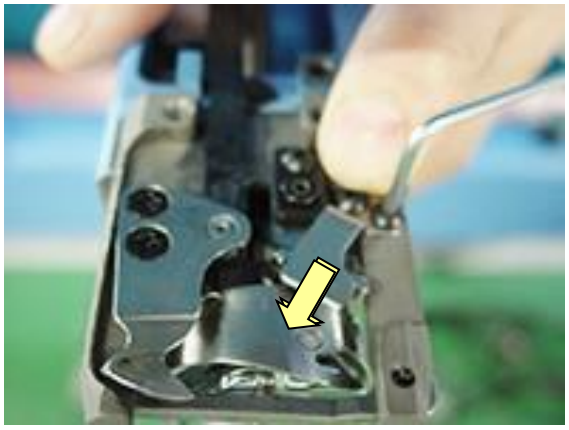
1. Remove needle plate.

2. Remove fixed knife.



3. Exchange fixed knife.

4. Tighten fixed knife pushing to forward as full as possible.



< Note > In case moving knife and the left side of fixed knife overlaps excessively when closing, adjust the position of fixed knife slightly to the right direction.

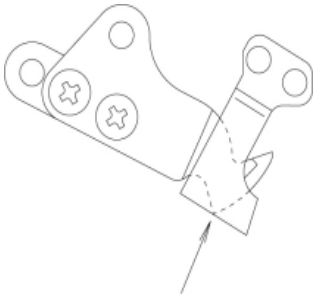
5. Referring to [4-5-6 Adjustment of moving knife and fixed knife], check how well thread is cut and adjust, then finish this process.

4-5-5 Check / Adjustment for position of moving knife

1. Remove the Needle plate

2. Please check knife closing position to following drawing. (Point of moving knife same face with fixed knife cutting line)

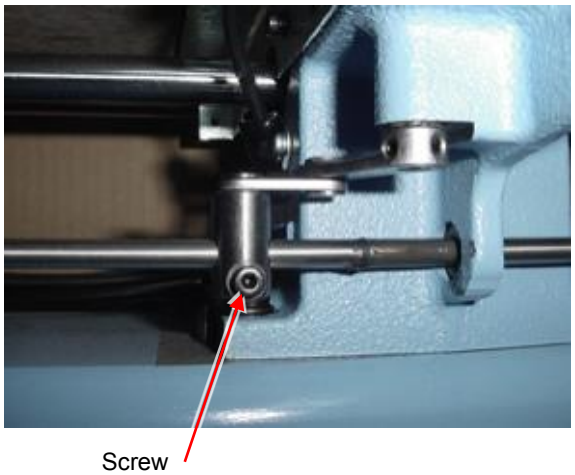
Please refer to [5 User maintenance mode] for easy adjustment for this progress. You can open and close the knife manually.



"Same face"

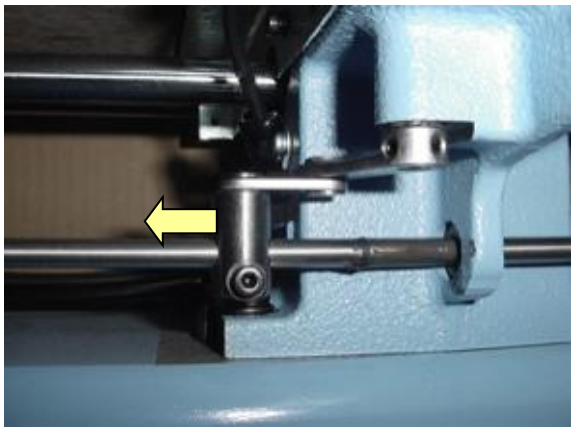
3. For this adjustment, remove Table support cover on front and go to next step.

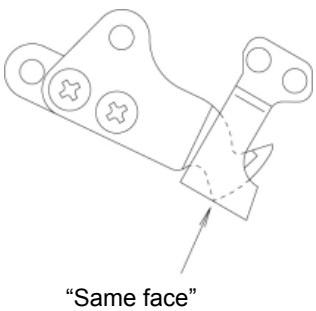
4. Loosen screw on Thread cutting link and slide the link to right side for open the moving knife.



Screw

5. Slide the Thread cutting link to left side for close Moving knife and stop at right position of knife-closed point like bellow.





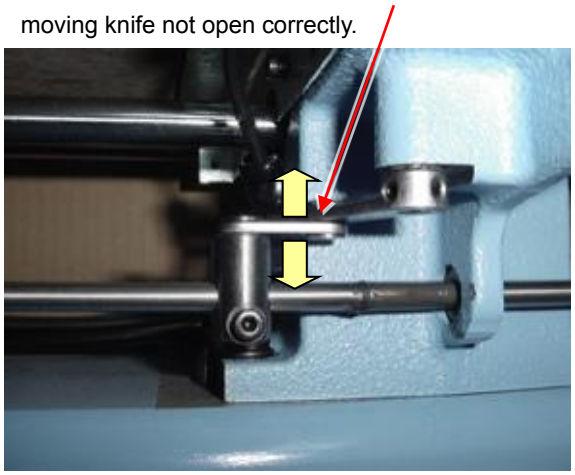
"Same face"

4-5-5 Check / Adjustment of position of moving knife

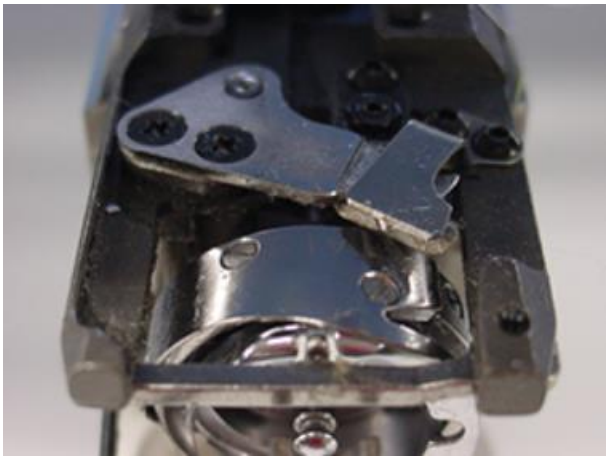
6. Keep the Thread cutting link position on “Step 5” and tight screw.

Please confirm play the Link plate.

If you have not playing the plate, possible moving knife not open correctly.



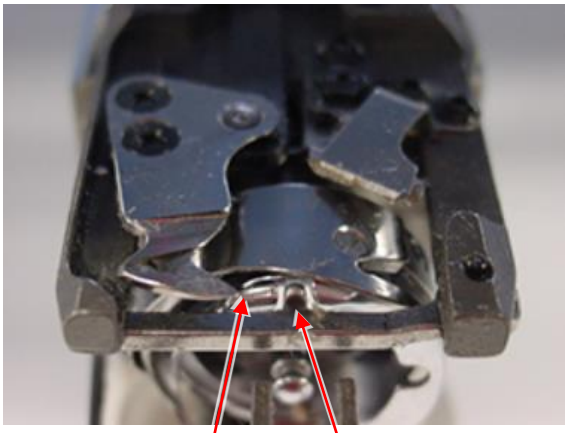
7. Check Moving knife closing point.



- If the closing position is not right, please back Set 5. and 6.

Please check opening point.

Should open the "Moving knife" to left till "point of Moving knife" overfrom "Rotary hook retainer".



Point of Moving knife

Rotary hook retainer

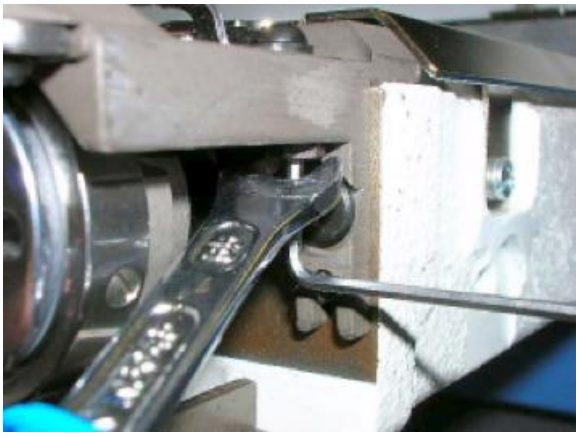
- If the position is not right, please check “Thread cutting driver”.

Referring to [4-5-1 Check of thread cutting driver].

8. After confirm, please back cover and needle plate.

4-5-6 Adjustment of moving knife and fixed knife

1. Remove needle plate

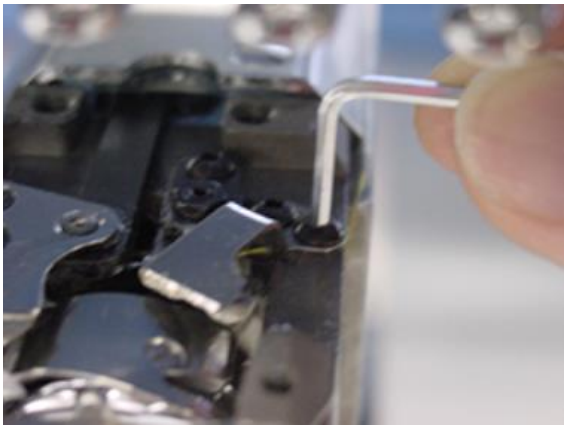


2. Check if knife drive shaft has no backlash in up and down direction.

If backlash is found, adjust it referring to [4-5-3 Exchange of moving knife].

3. Adjust slant of fixed knife with [upper adjustment screw] and [lower adjustment screw] that fix fixed knife.

< Note> Rub these screws together to the extent that you don't feel resistance.



4. Cut thread and check how well it is cut.

Use two polyester threads for checking.

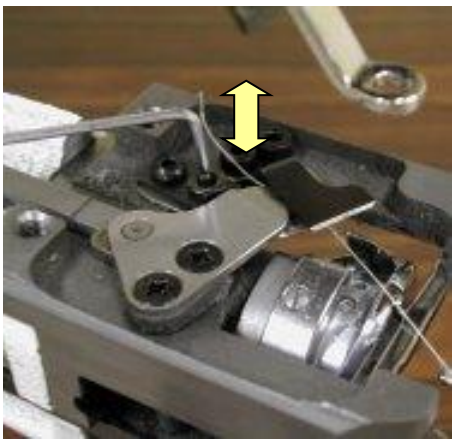
5. Check several times and if no mistakes are found, finish this process.

4-5-7 Adjustment of bobbin thread holder

1. Remove needle plate. (Fixing screw 2 pcs)

2. Close moving knife like putting bobbin thread between moving knife and bobbin thread holder.

3. Adjust height of bobbin thread holder with adjusting screw.



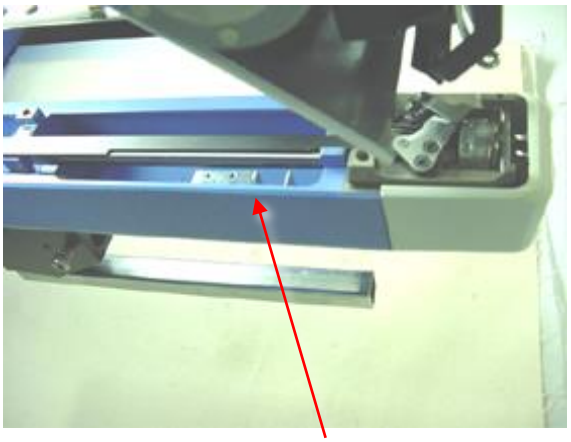
4. Pull bobbin thread toward arrow mark and see that bobbin thread comes off with tensile gauge [20 ~ 25g].

5. Tighten lock nut. (Don't move adjusting screw.)

6. Check several times and if OK, finish this process.

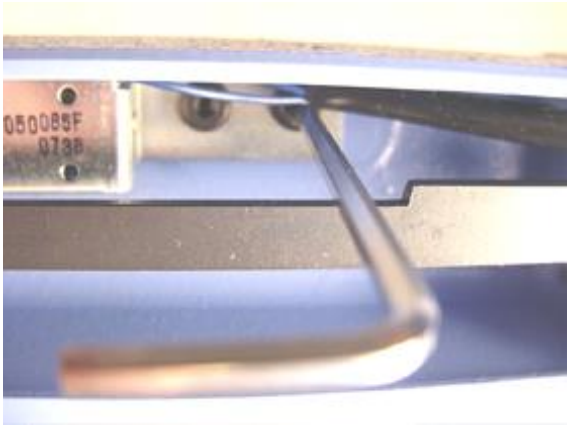
4-5-8 Adjustment of position of keeper

1. Remove needle plate and bed cover.



Solenoid base

2. Loosen screw on solenoid base. (Fixing screw 2 pcs)

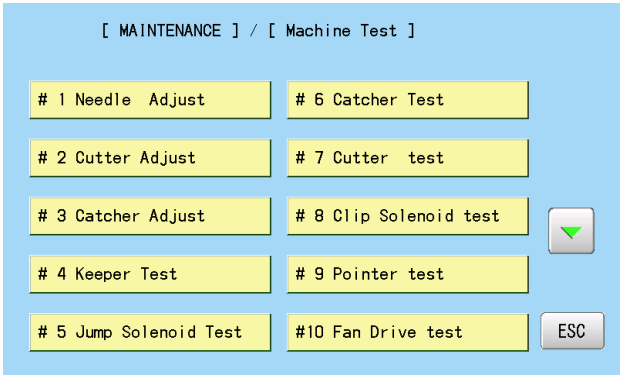


3. Loosen screw for stopper. (1 pcs)

4. Insert keeper positioning gauge (Bobbin) into rotary hook.

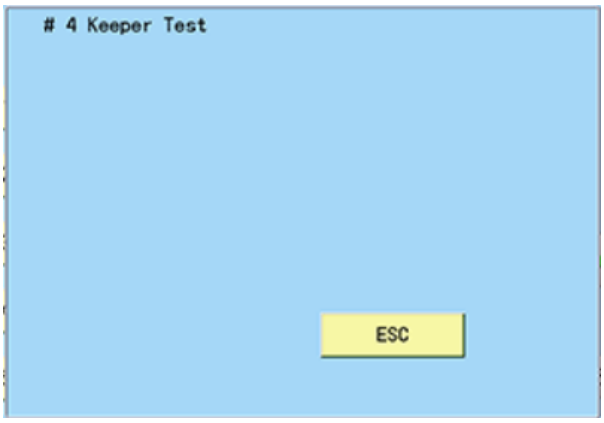
5. Refer to [E5-1 How to enter maintenance mode] and enter maintenance mode.

6. Press Machine Test.



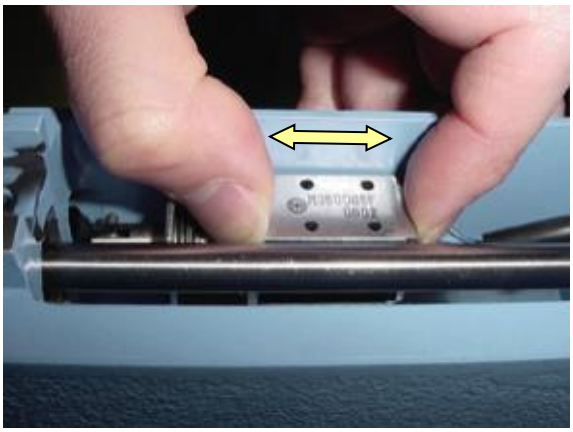
4-5-8 Adjustment of position of keeper

7. Press #4 Keeper Test.

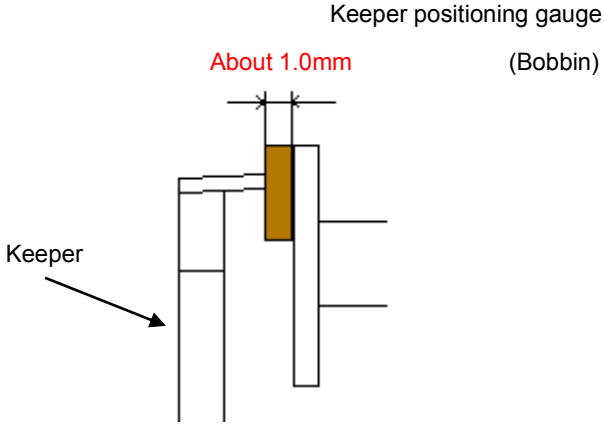


Adjust solenoid base where tip of keeper contacts slightly to the gauge then tighten bracket screw.

Clearance between bobbin and keepr is [about 1.0mm].



< View from right>



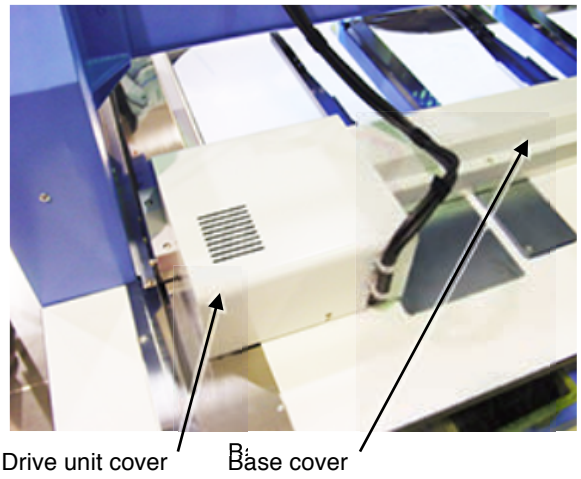
8. Adjust position of stopper.

This is the position where tip of keeper contacts to gauge.

9. Adjustment has finished.

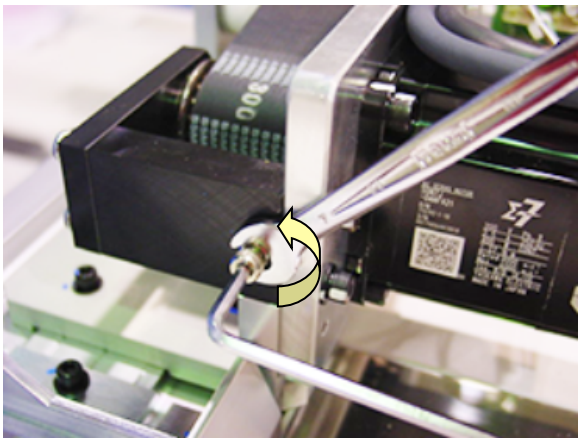
4-6-1 Adjustment of X carriage drive belt tension

1. Remove base cover and drive unit cover.



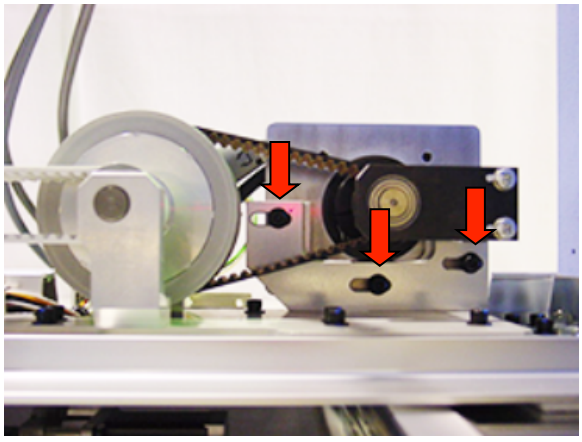
2. Loosen the adjusting lock nut.

<Spanner> 7mm



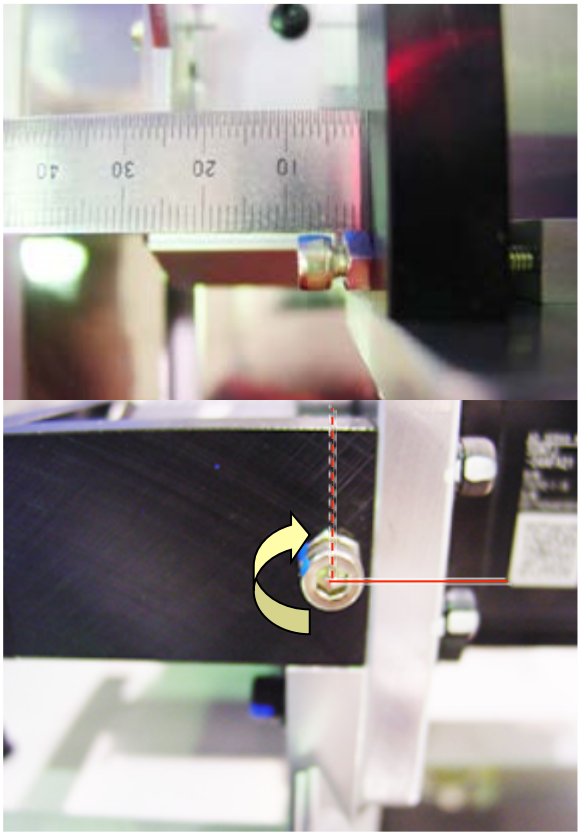
3. Loosen screw of Pulse motor bracket half turn

(3 pcs)



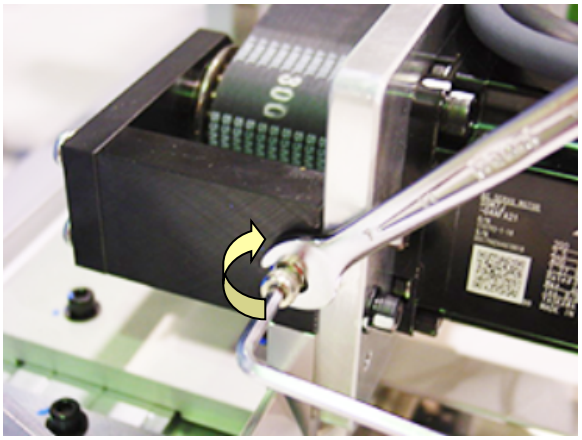
4. Set tension adjustment screw position 8.5mm from face of bracket of shaft support.

Tighten screw by 1/4 turn.



5. Tighten screw for the pulse motor bracket.

6. Tighten the adjusting lock nut.



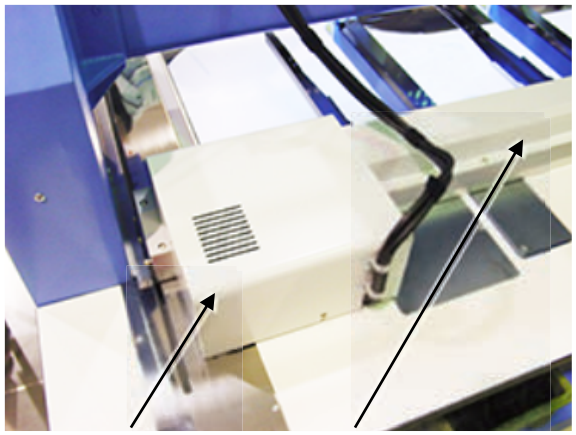
4-6-1 Adjustment of X carriage drive belt tension

7. Return base cover and drive unit cover to previous places.

8. Please refer to [E5-6 Position- Registration of coordinates for positioning sensor], register embroidery area and finish this adjustment.

4-6-2 Adjustment of X carriage timing belt tension

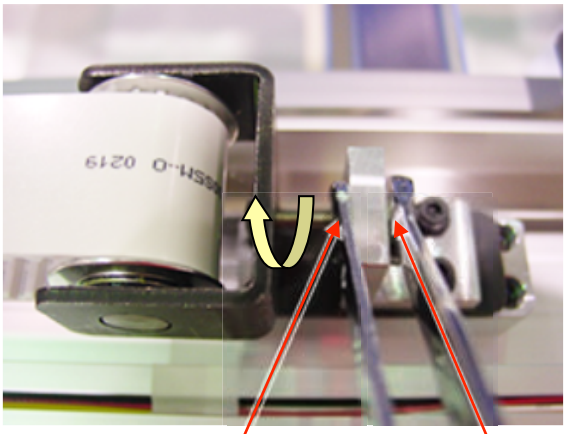
1. Take drive unit cover and X carriage base cover out.



Drive unit cover X carriage base cover

2. Loosen lock nut for tension adjusting nut.

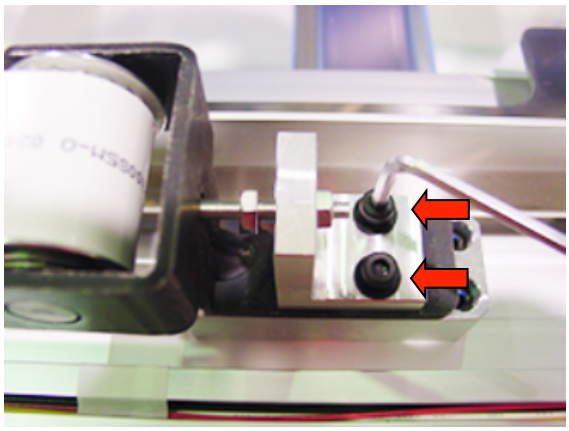
<Spanner> 7mm



Lock nut Adjusting nut

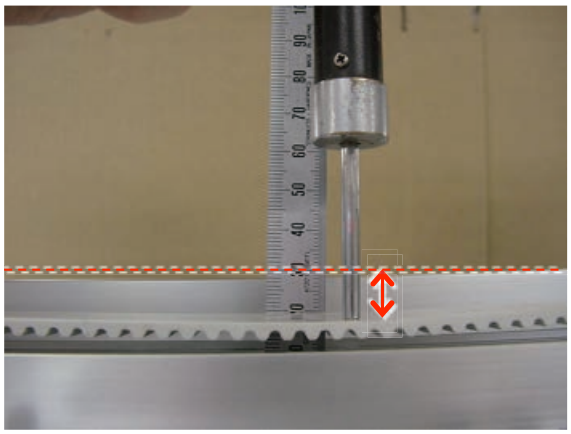
3. Loosen screws of tension plate half turn.

(2 screws)



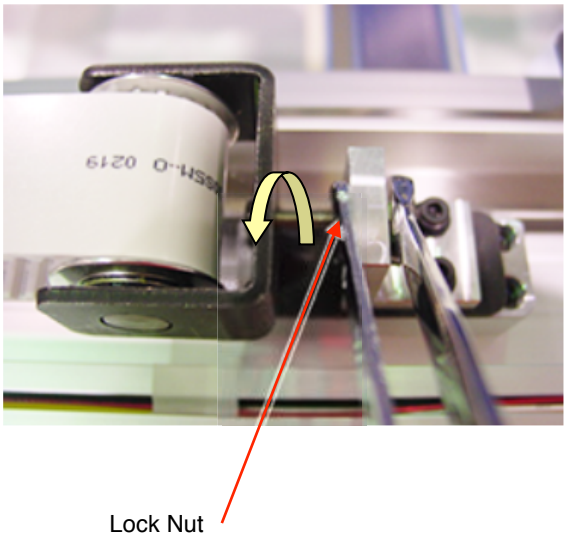
4. Push belt at center of belt by push gauge with 500gf.

Please adjust tension of belt by adjusting nut that belt moves 3-4mm.



5. Tighten the screws of tension plate.

6. Tighten the lock nut for tension adjusting nut.



Lock Nut

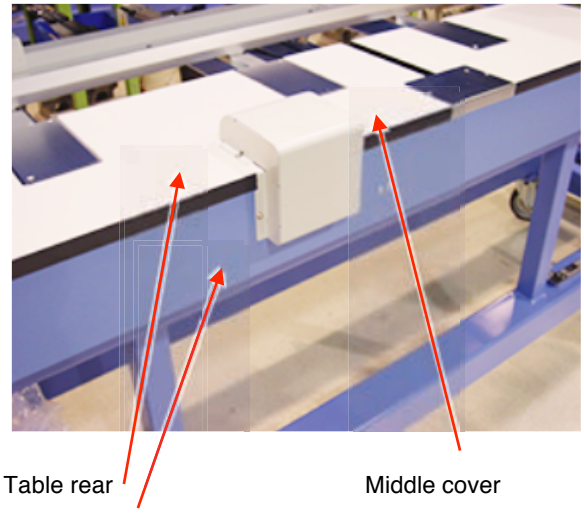
4-6-2 Adjustment of X carriage timing belt tension

7. Return base cover and drive unit cover to previous places.

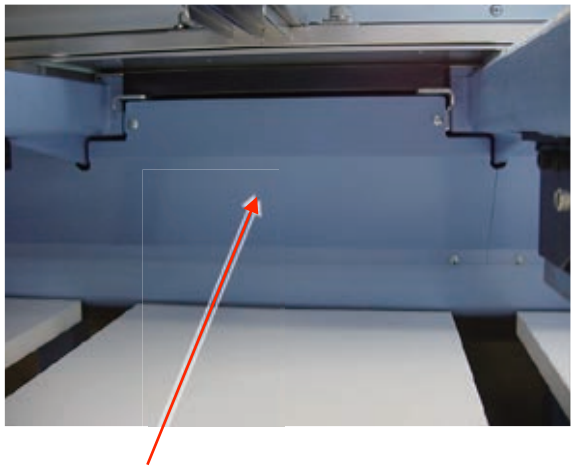
8. Please refer to [E5-6 Position- Registration of coordinates for positioning sensor], register embroidery area and finish this adjustment.

4-6-3 Adjustment of Y carriage drive belt tension

1. Take table rear, middle cover and rear cover out.



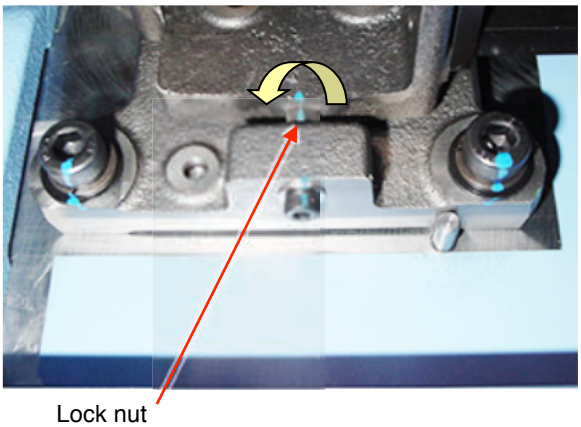
2. Take out table support cover located front of middle cover.



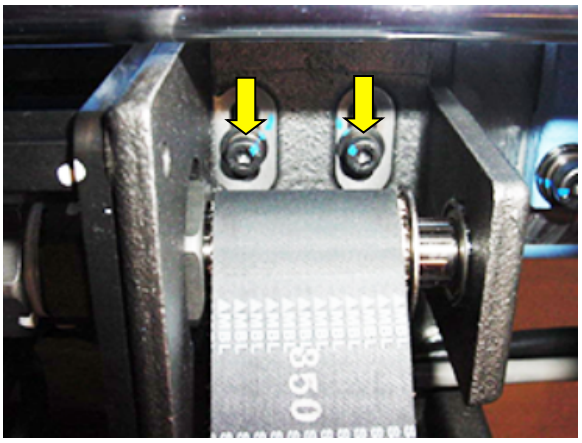
3. Loosen lock nut of tension adjusting screw.

(you can find this screw under table)

<Spanner> 7mm



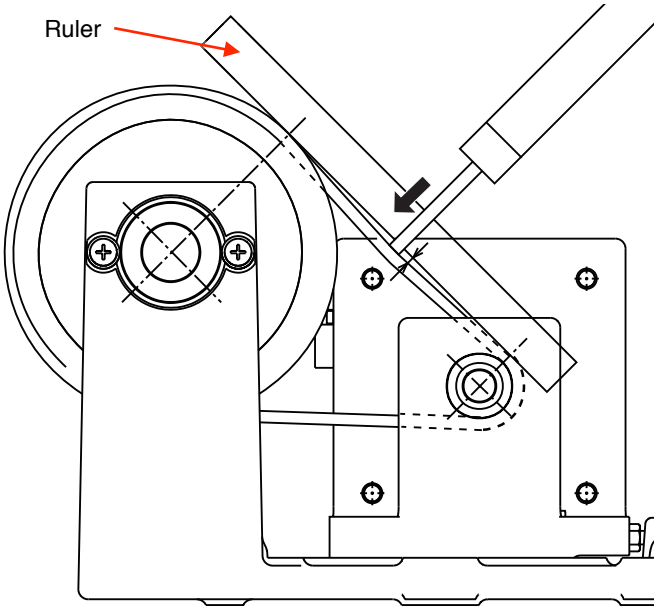
4. Loosen screws of Y motor base by half turn.

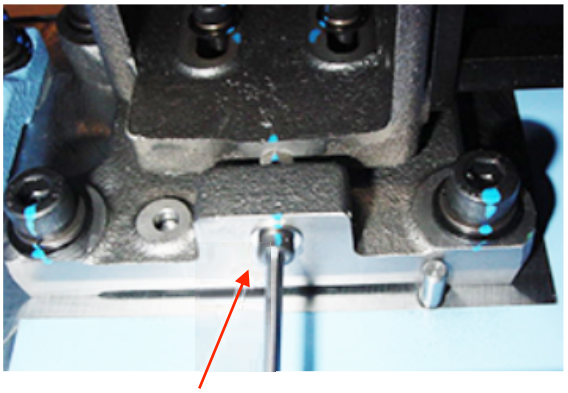


5. Put ruler on belt, push belt at center of belt by push gauge with 500gf.

Please adjust tension of belt by tension adjusting screw moves 1mm.

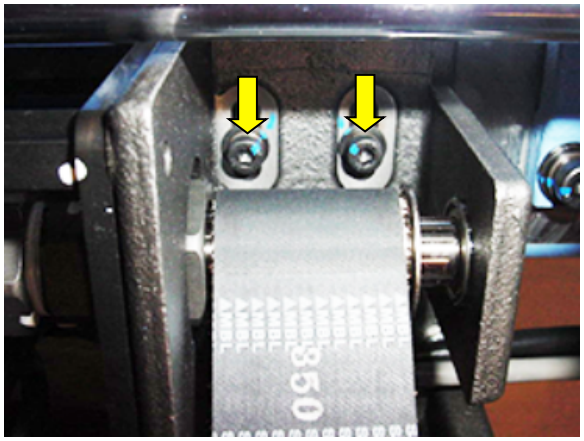
< Note > Push gauge should touch belt with 90 degrees.



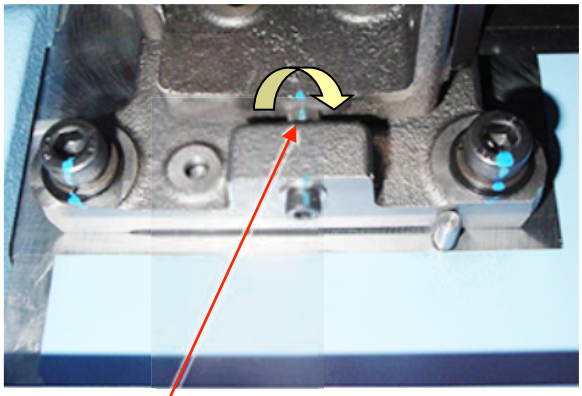


4-6-3 Adjustment of Y carriage drive belt tension

6. Tighten screws of Y motor base



7. Tighten lock nut of tension adjusting screw



8. Set table support cover

9. Set rear cover and middle cover

10. Please register frame position

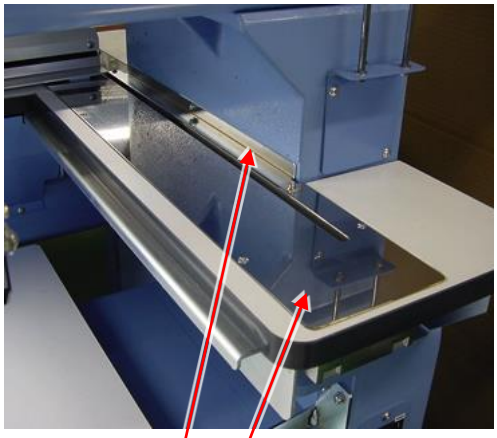
Please refer to [E5-6 Position- Registration of coordinates for positioning sensor].

4-6-4 Adjustment of Y drive timing belt tension

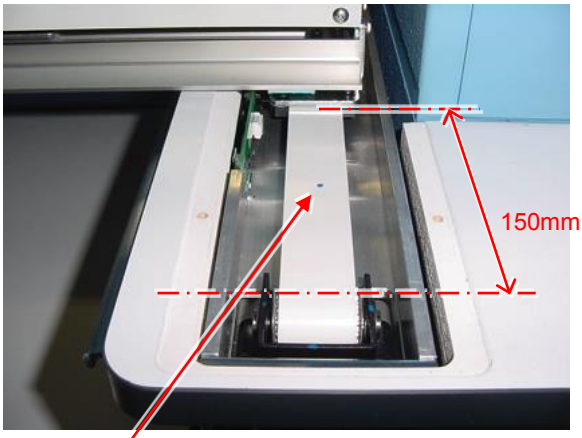
The way of adjustment of Y drive timing belt is same right side and left side.

Below explantion is for right side.

1. Take Y cover bracket and Y cover out.

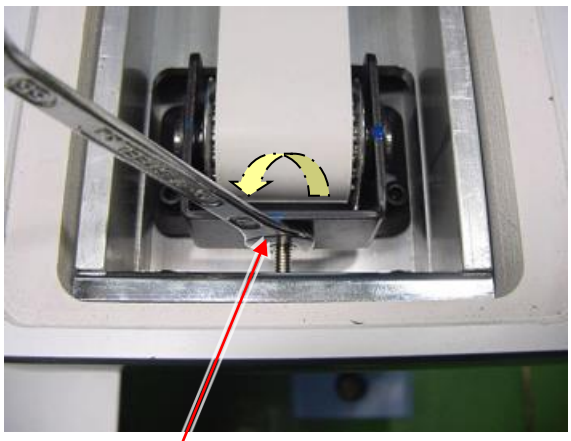


2. Move X carriage 150mm from center of idler pulley, and put a mark at 75mm.

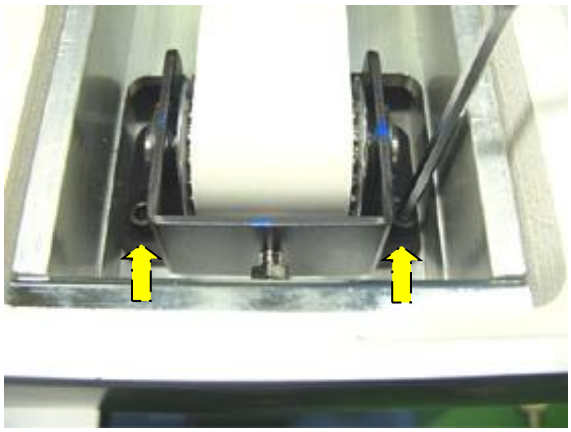


3. Loosen lock nut for tension adjusting screw.

<Spanner> 7mm



4. Loosen screw for idlerpulley bracketby half turn.

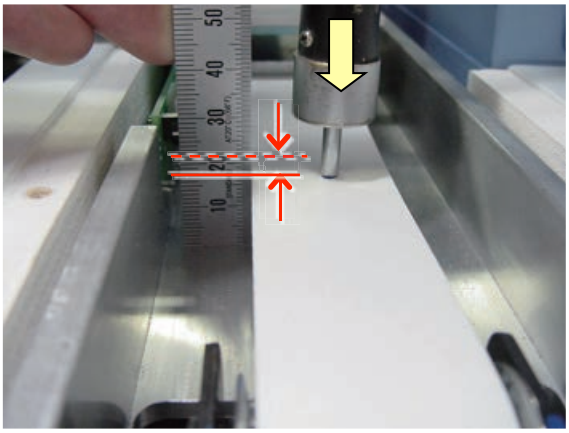


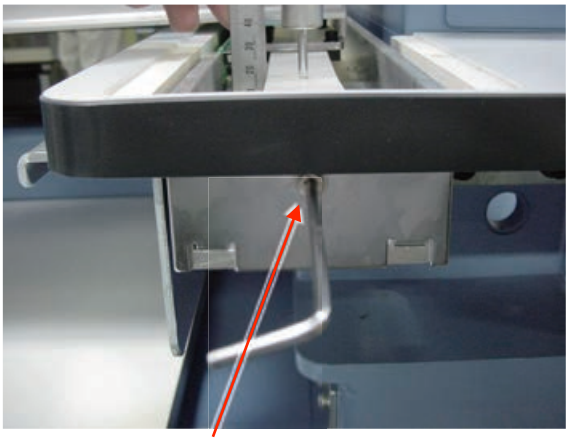
4-6-4 Adjustment of Y drive timing belt tension

5. Push belt by push gauge at a mark position.

   Belt should move 1.5 ~ 2.0mm by 1kgf of push gauge.

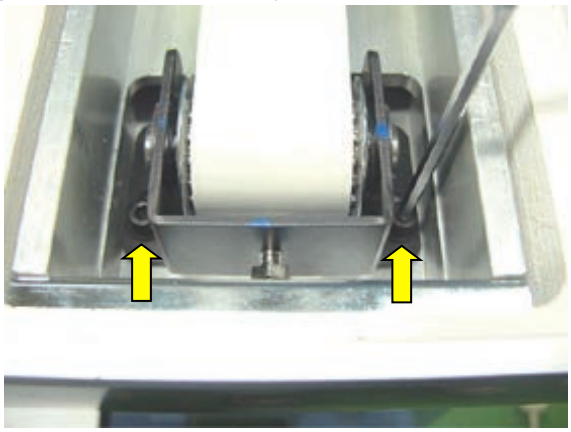
   Please adjust tension by tension adjusting screw



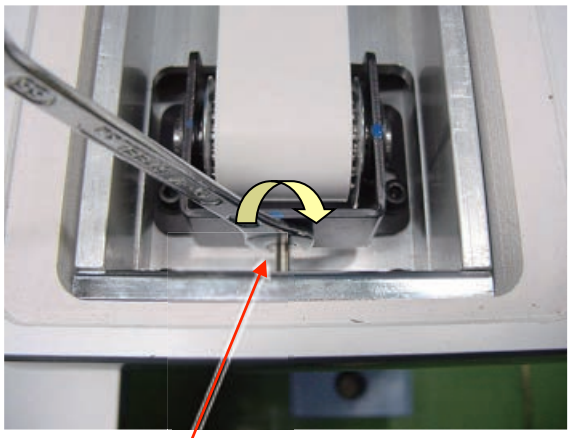


Tension adjusting screw

6. Tighten screws of idler pulley bracket



7. Tighten lock nut of tension adjusting screw



Lock nut

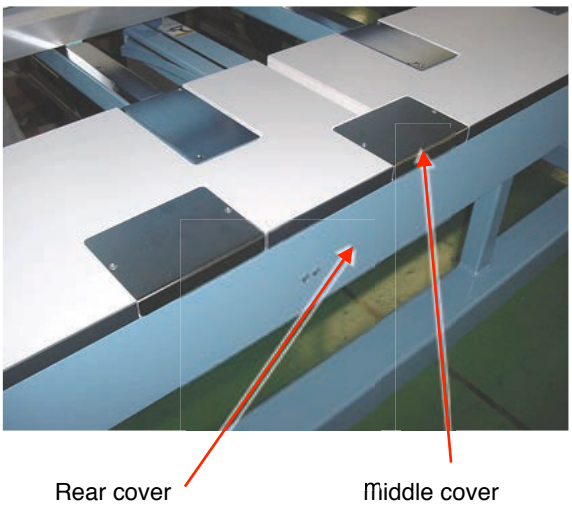
8. Set Y cover and Y cover bracket

9. Please register frame position.

   Please refer to [E5-6 Position- Registration of coordinates for positioning sensor].

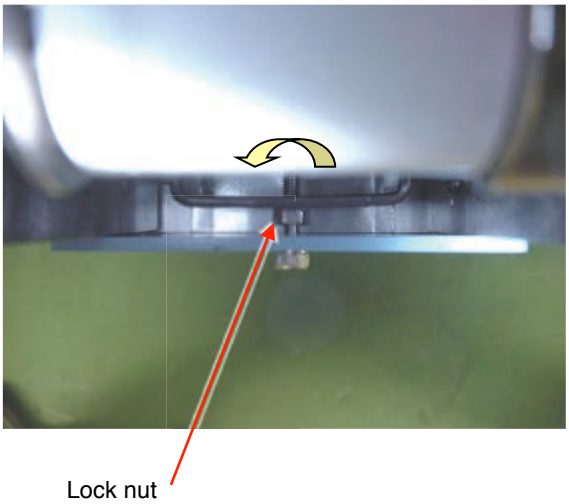
4-6-5 Adjustment of center carriage timing belt tension

1. Take middle cover and rear cover out.



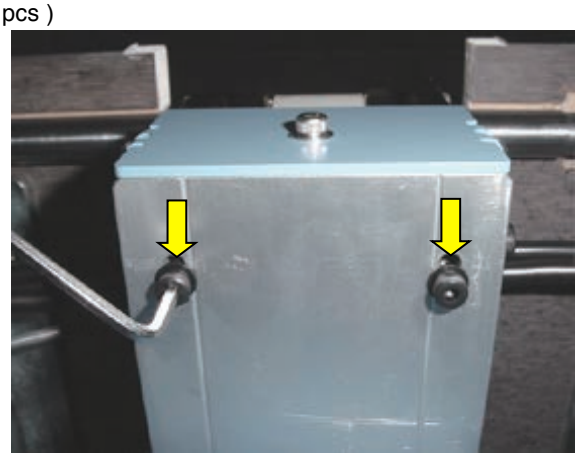
2. Loosen lock nut for tension adjusting screw.

<Spanner> 7mm

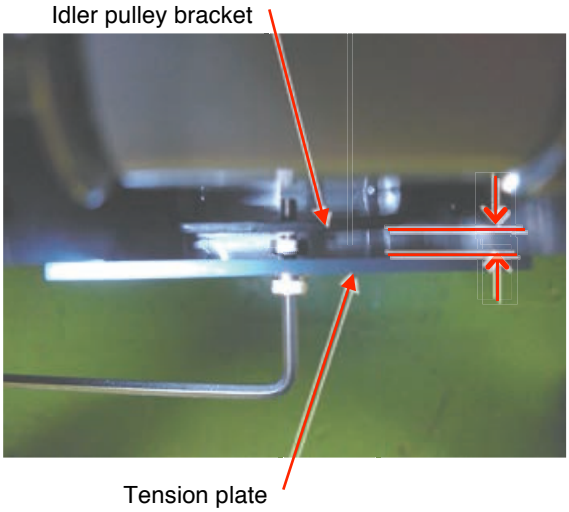


3. Loosen screws for idler bracket by half turn.

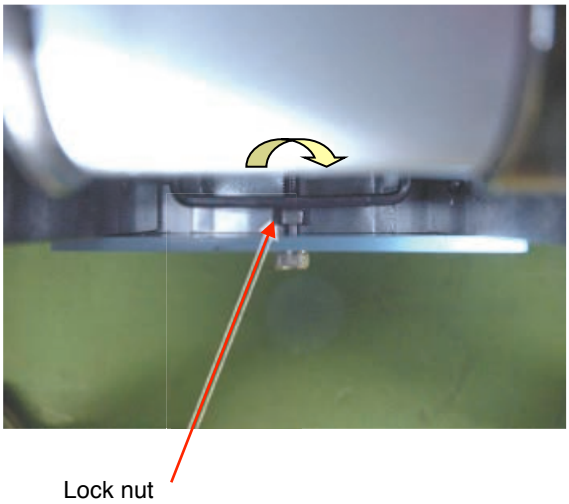
(2 pcs)



5. Adjust space between tension plate and idler pulley bracket 4mm by tension adjusting screw.



6. Tighten lock nut for tension adjusting screw.



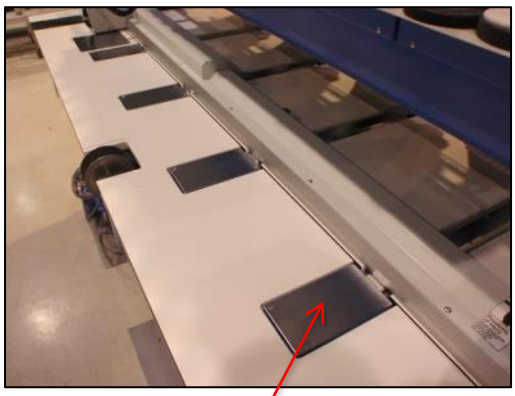
7. Set middle cover and rear cover.

8. Please register frame position.

Please refer to [E5-6 Position- Registration of coordinates for positioning sensor].

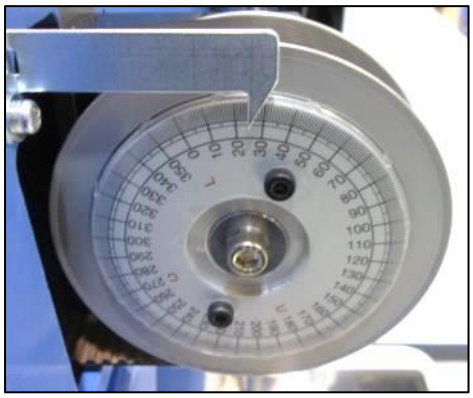
4-7-1 Exchange of main shaft timing belt

1. Remove bed cover B.

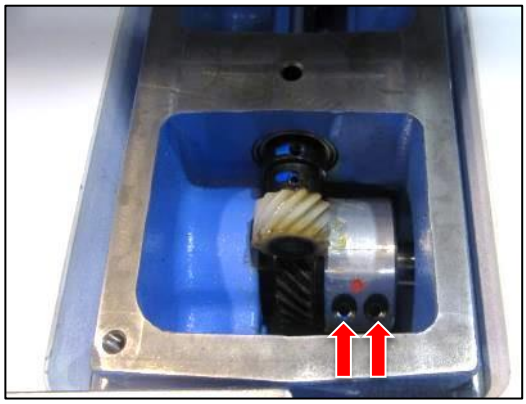


Bed Cover B

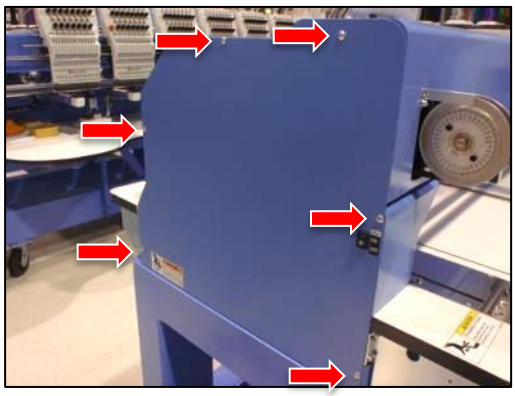
2. Let a disk reach 25 degrees.



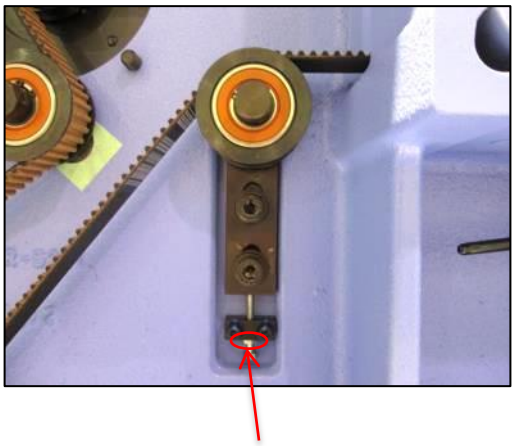
3. Loosen two(2) pieces of screws indicated with red arrows.



4. Remove six (6) pieces of screws, anf then remove a left cover.

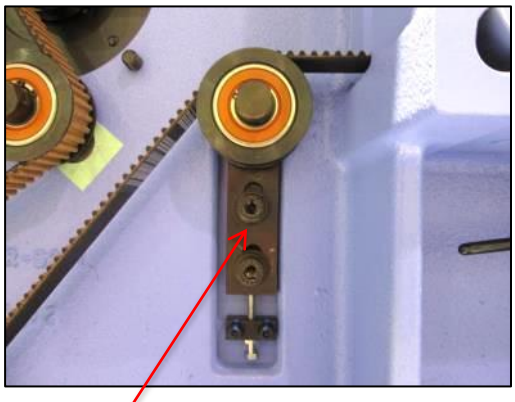


5. Loosen a nut indicated with a red arrow by using a 7mm spanner.



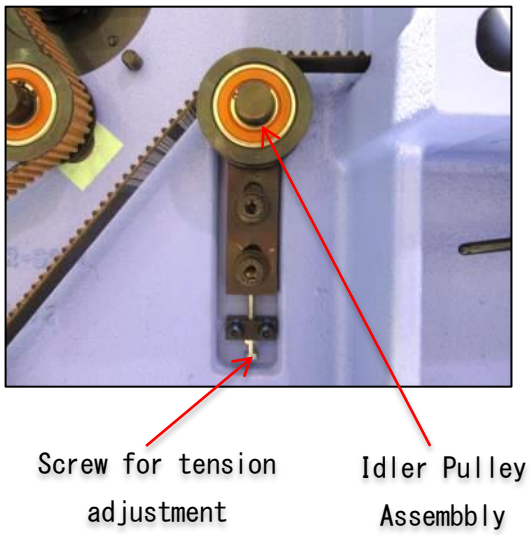
Nut for tension adjustment

6. Rotate two (2) pieces of screws mounted on a tension plate by approximate 180 degrees to loosen them.

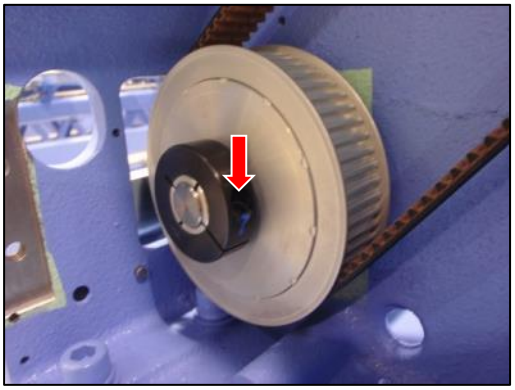


Tension Plate

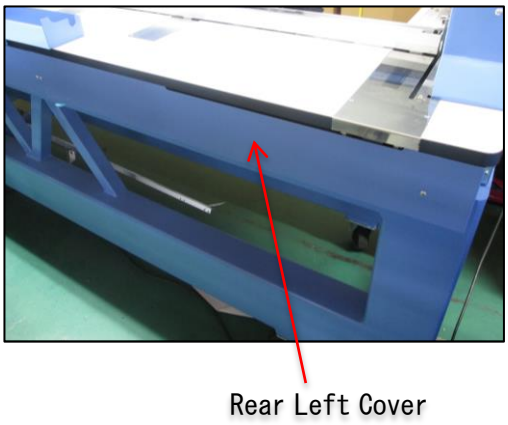
7. Loosen a screw indicated with a red arrow, and then remove an idler pulley assembly.



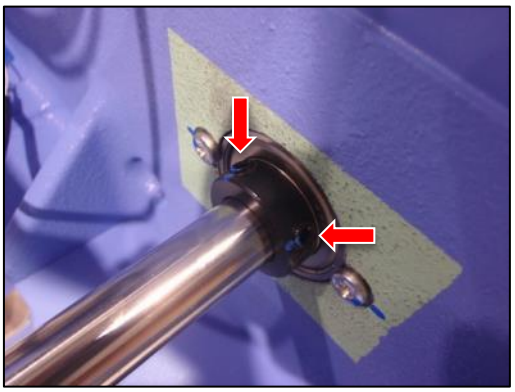
8. Loosen a screw mounted on fasten collar A.



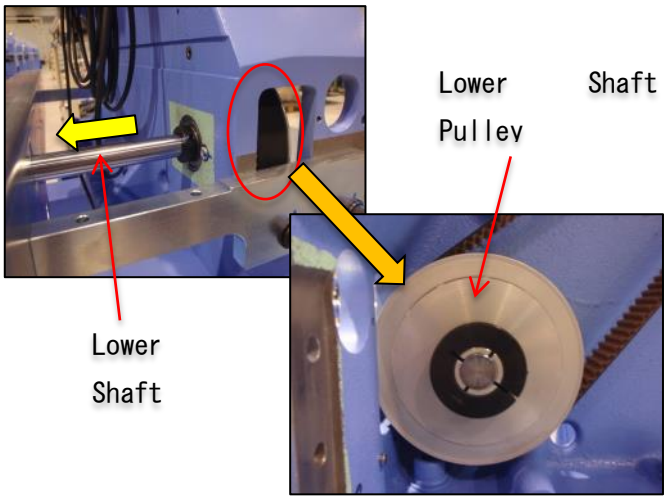
9. Remove rear left cover.



10. Tighten two (2) pieces of screws mounted on an upper shaft collar assembly.



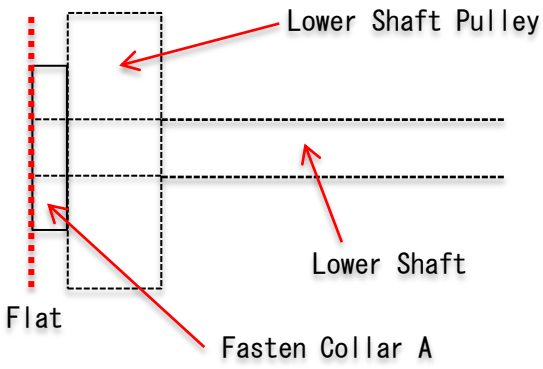
11. Slide a lower shaft, and then remove a lower shaft pulley.



12. Remove a timing belt.

13. Put a timing belt on a lower shaft pulley, and then put a lower shaft back in. After this, loosen screws on an upper shaft collar assembly, and then fix a lower shaft pulley.

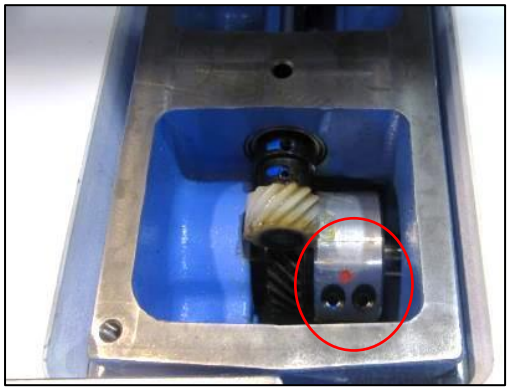
14. Put a lower shaft and a faten collar A together to make their surfaces flat, and then tighen a screw on the fasten collar A.



15. Put an idler pulley assembly back on.

16. Let a disk reach 25 degrees, and then tighten screws.

Note: As appeared in the picture below, screws should be tightened so that they will come face up.



17. Go to “4-7-2 Adjustment of upper shaft timing belt tension” for more information on timing belt adjustment.

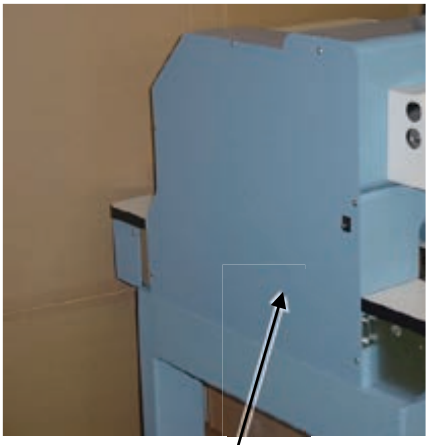
18. Put rear left cover, left cover and bed cover B back on.

19. Adjust a rotary hook referring to “4-4-1 Adjustment of rotary hook timing”.

Steps complete.

4-7-2 Adjustment of upper shaft timimg belt tension

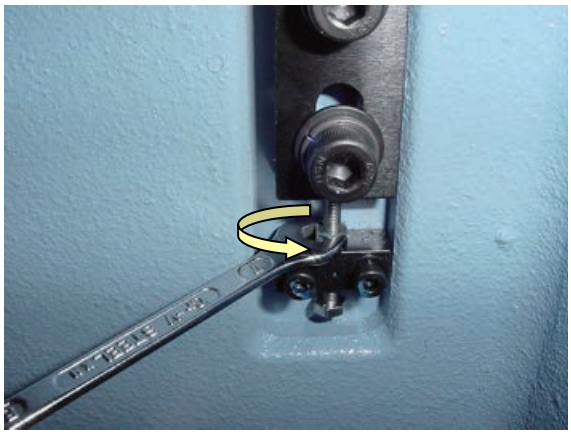
1. Take mission cover (left) out



Mission cover(left)

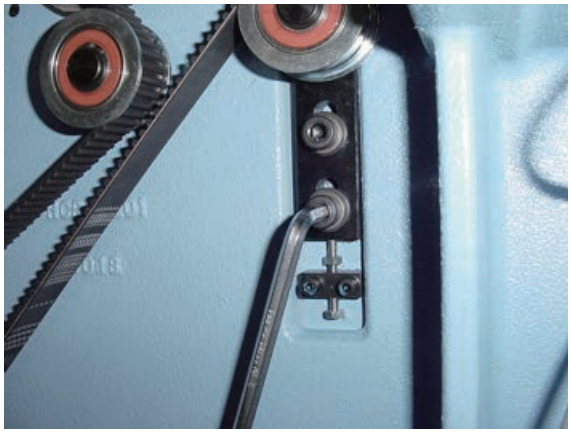
2. Loosen lock nut of tension adjusting screw

<Spanner> 7mm



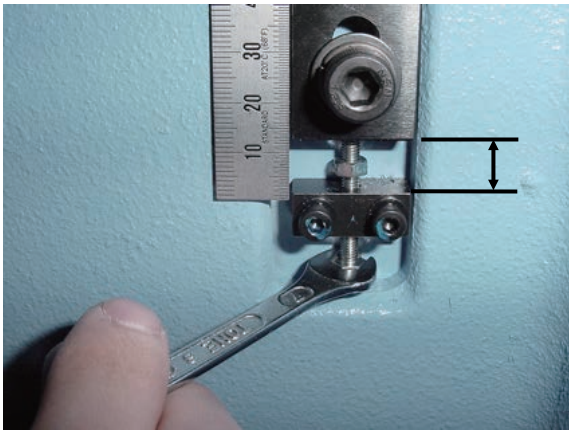
3. Loosen screws for tension plate by half turn

< Note > Please do not turn main shaft, when screws for tension plate is loosen. Timing may be changed

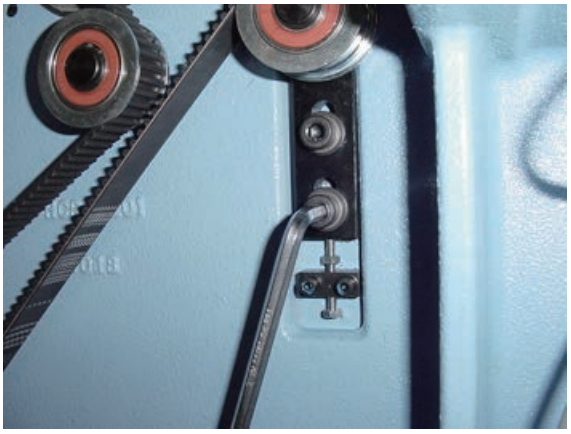


4. Adjust space between tension plate and lower tension plate 11 ~ 11.5mm (12 heads model is 12 ~ 12.5mm) by tension adjustingscrew

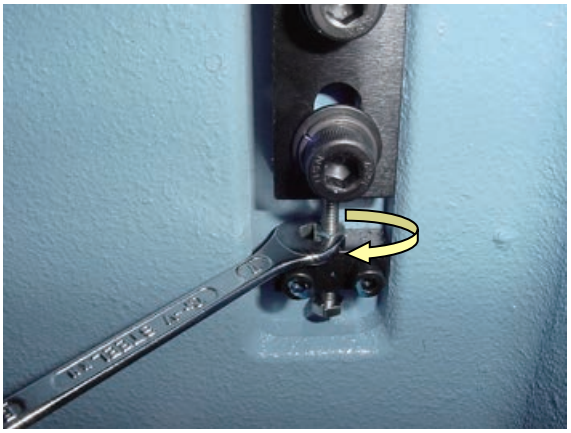
< Note > Please Keep tension plate straight.



5. Tighten screws for tension plate.



6. Tighten lock nut of tension adjusting screw.



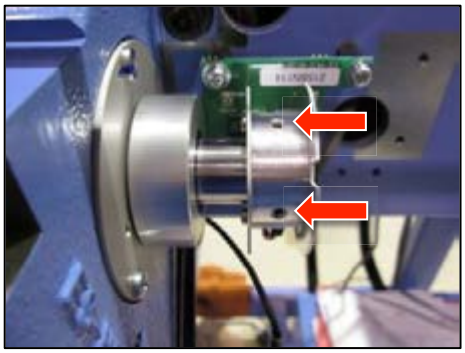
7. Set mission cover (left).

4-7-3 Adjustment of timing detecting unit

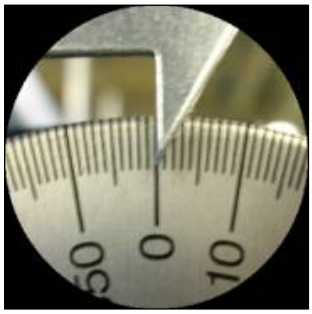
1. Remove the Head cover and Detecting cover.

Detecting cover

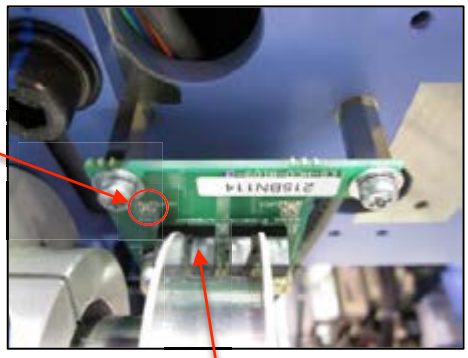
2. Loosen two(2) pieces of screws mounted on the timing slit in order to let the slit itself rotate manually.



3. Move the disk 0 degree (L Point).



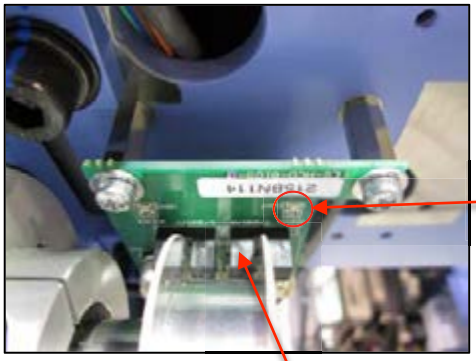
4. Rotate the timing slit clockwise at the view from the disk. Then, tighten the screws when LED4 goes off. (LED4 will go off if the timing slit blocks L point sensor.)



L POINT SENSOR

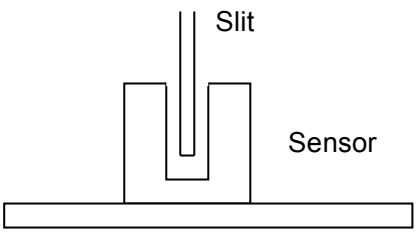
5. After tightening the screws, rotate the upper shaft to reach 0 degree (L Point) at the disk and confirm that LED4 goes off.

6. Rotate the main shaft in the right direction and confirm that LED3 goes on in the range between 270 through 284 degrees (C Point).



C POINT SENSOR

7. Make sure that the timing slit does not collide with the sensor on the timing detecting board.



4-7-3 Adjustment of timing detecting unit

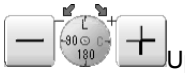
8. Finally, put the cover back on.

5 User maintenance mode

User maintenance mode has the items as below.

 Change jump————Change the needle bar's movement.

"JUMP" : Needle Jump, "DRIVE" : Needle Drive

 Upper shaft turns—Upper shaft turns clockwise and counterclockwise.

When release button, upper shaft stops.

 Needle change——Move the sewing head to the adjustment needle in the direction of the arrows.

[Cut] Cutter Open/Close————Open and close knife of thread trimming

[Catch] Cathcer Open/Close———Open and close thread catcher

[Clip] Clip-type thread holder (option) ————Open and close clip-type thread holder

[Keeper] Keeper Open/Close———Open and close keeperr

[Origin] Standby position————In case, each equipment position without standby position, as example "Upper shaft is not at C point, Thread cut blade is not at stop position, Thread Catcher is open position", this key work for back to standby position automatically.

Indicates point which sensors are active.

L point sensor————————The point that indicator becomes RED is L-point, when main shaft is turned.

C point sensor————————The point that indicator becomes RED is C-point, when main shaft is turned.

Needle sensor————————The point that indicator becomes RED is needle position, when moving head is moved

Origin point of cutter————————The point that indicator becomes RED is origin point of cutter

Origin point of thread catcher ——The point that indicator becomes RED is origin point of thread cacther

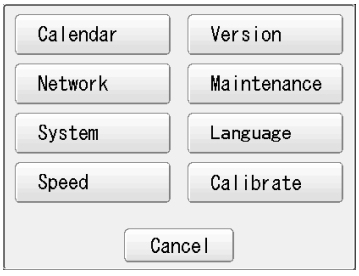
Angle ————————————Indicate angle of main shaft.

Please use "Dial" on upper shaft, when you need to know precise angle.

5-1 How to enter "User Maintenance Mode"

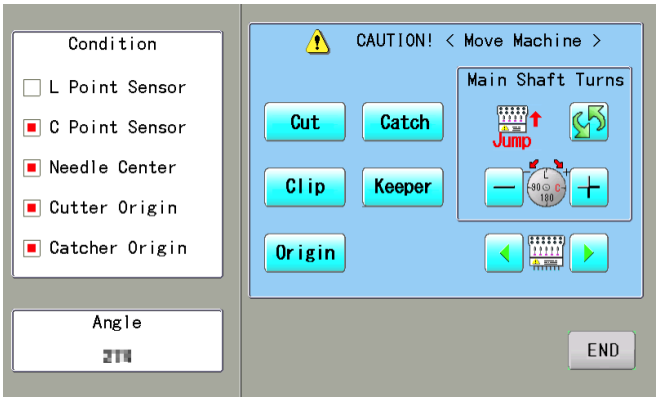
1. When the machine is stopped, press  and

2. Press "OTHER".



3. Press "Maintenance".

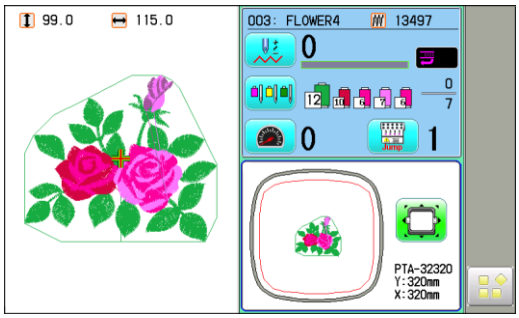
The display shows as below.



4. Please follow instruction of “5-2 Machine Movement”.

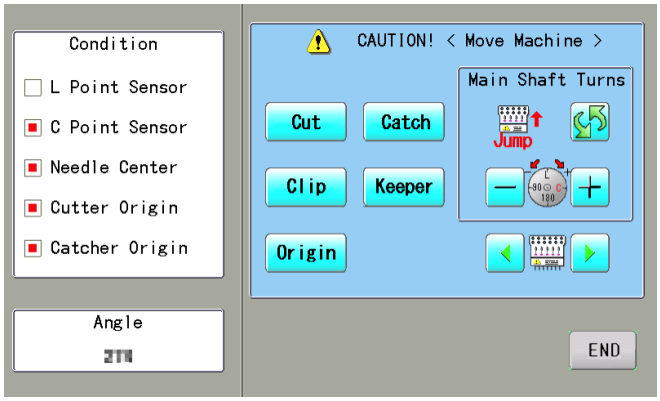
5. In case you press END at above display, return to Menu display.

If you press  button once more, return to drive mode.



5-2 Machine Movement

1. Refer to [5-1 How to enter “User Maintenance Mode”] and enter to User Maintenance Mode.



2. Press oen of button on control panel and check machine movement.

< Note > The machine moves quickly.

please be carefull that all head move at once.

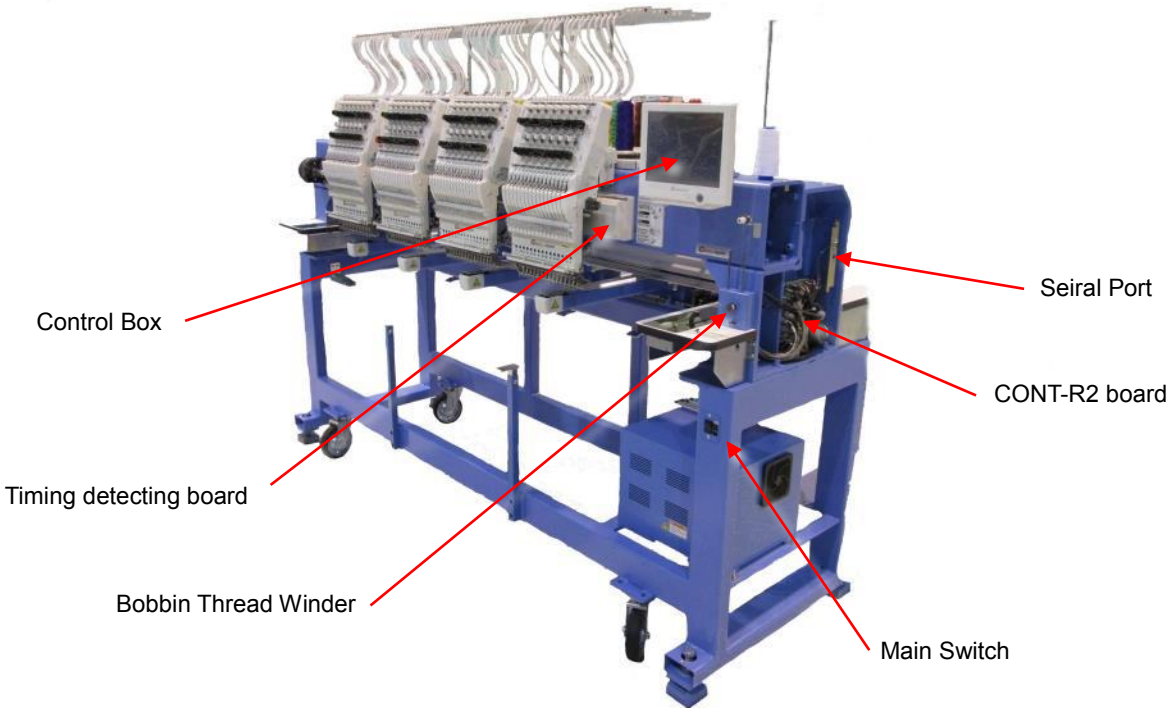
machine show following message when you press key.

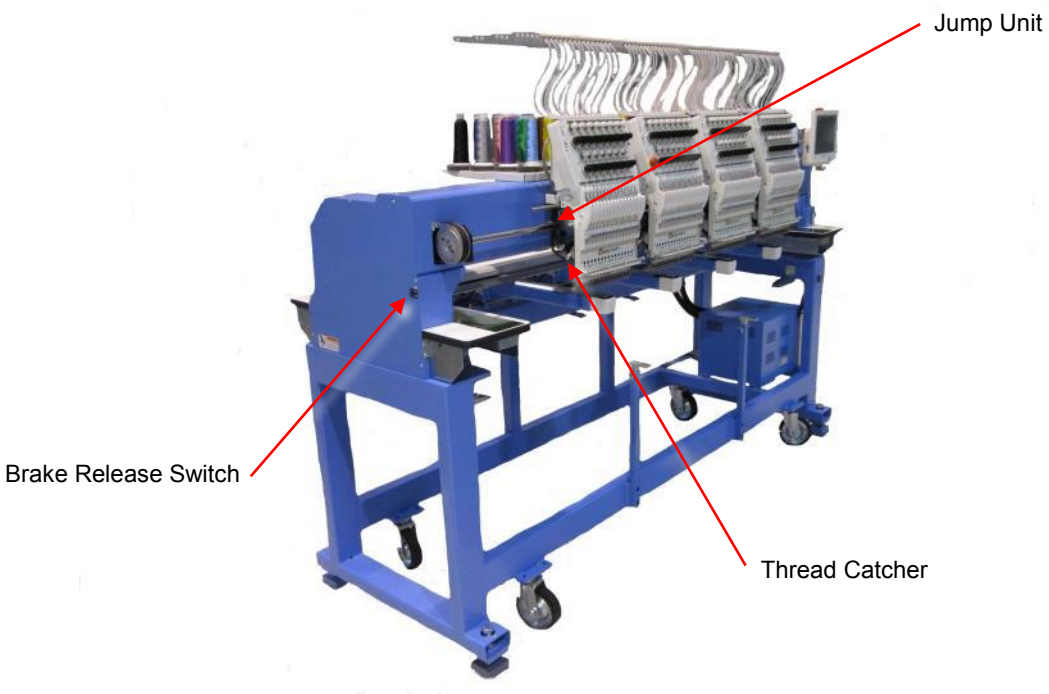
C point	: Upper shaft is not at C point.
Cut blade	: Thread cut blade is not at standby position.
Thread Catcher	: Thread Catcher is open position.

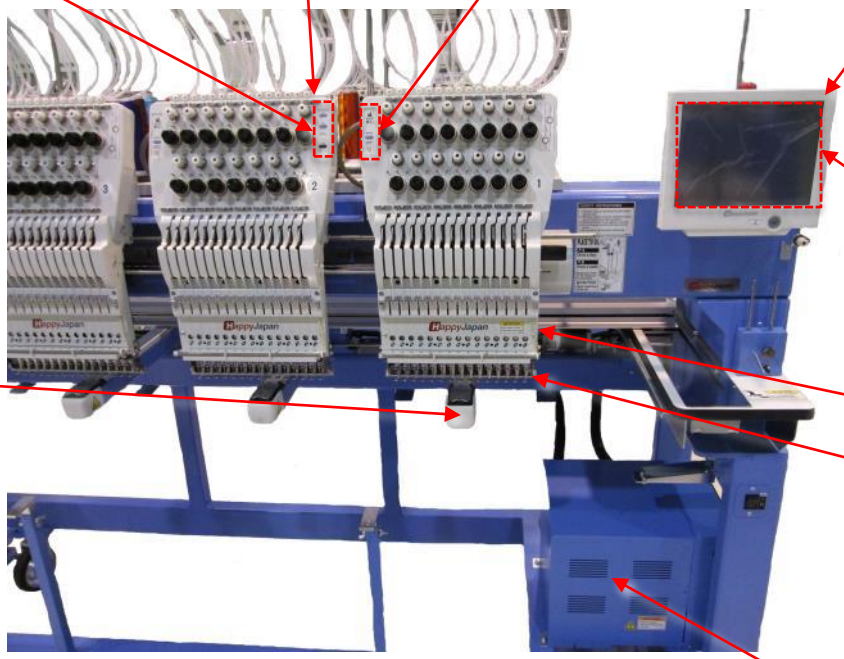
Please press Origin for back to standby potion and repeat step 2 again.

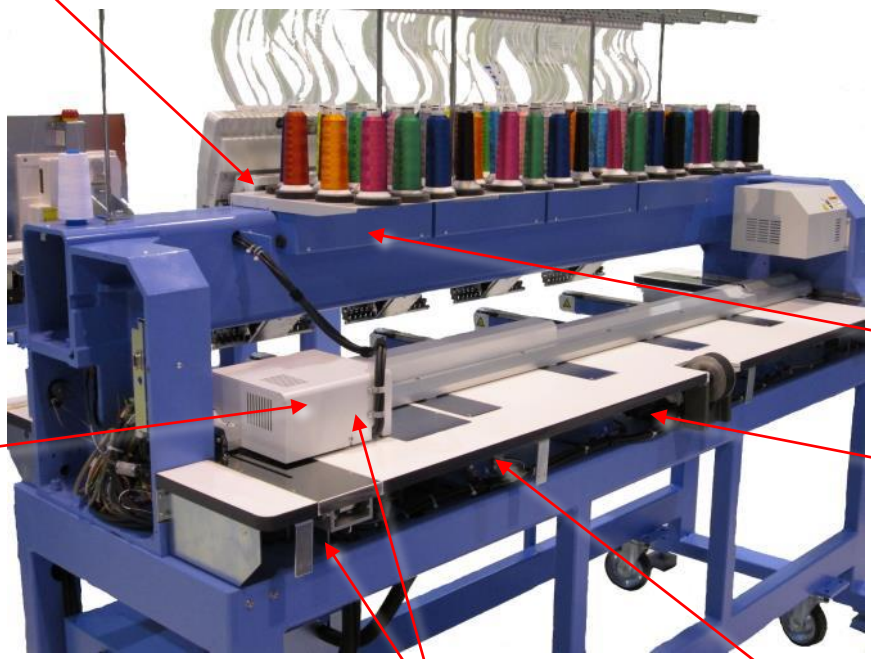
3. When you press END, close user maintenance mode and return to Menu mode.

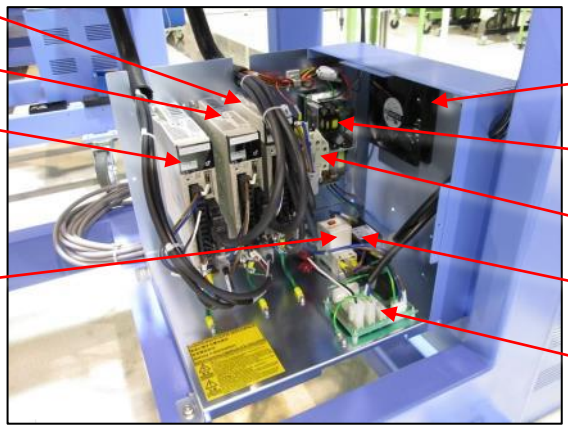
E1 Placement of key electronic parts






Head SW Circuit Board
TC8-7 board
Jump SW board
Core module
LCD-CE-U board
LCD unit
Keeper Unit
Laser Position Marker
Clip Unit
Power Supply Box


Needle Bar Changing Unit
Thread detecting board
X Motor
Y Motor
Sensor Relay Board
Keeper Relay Board


Servo amp(X)
Servo amp(Y)
Servo amp(Main shaft)
Noise filter
DC fan unit
Switching power supply
Magnetic contactor
No fuse breaker
Power relay circuit board

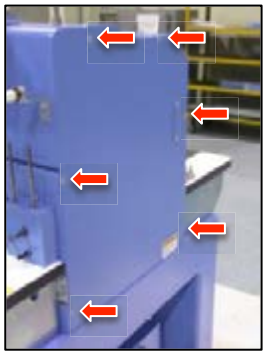
E2 Exchange and Setting of electric related component

<note> Please take electric plug, when you exchange electric component.

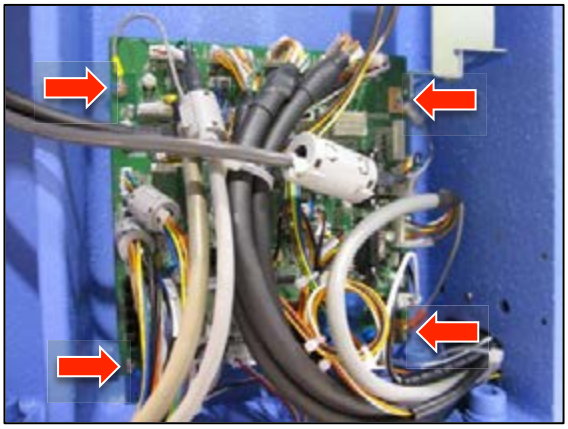
E2-1 Exchange and Setting of CONT-R2 Board

1. Take mission cover out.

Remove the screws at the six places below.



2. Remove all the Harness and 4screws and exchange to a new CONT-R2 board.



3. Connect all the harness back to the board.

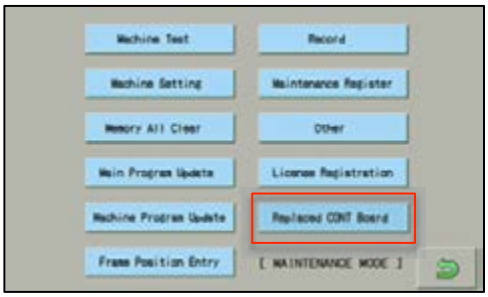
4.Refer to 「E4-1 Preparation for program update」 and prepare update program.

5.Inser USB Memory stick to the machinee that contain update program.

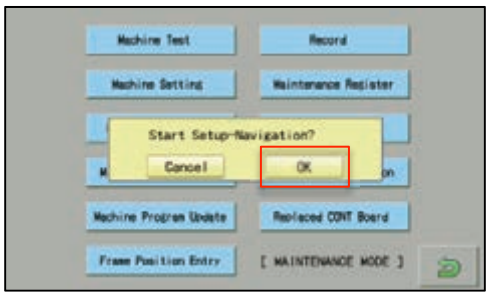
6. Turn machine power on

7. After showing below scree, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

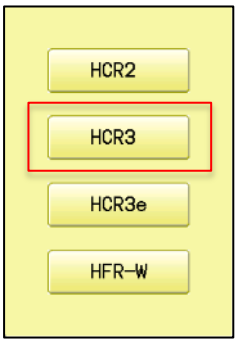
8.Press Replaced CONT Board



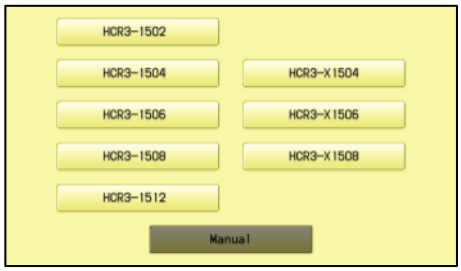
9. Press OK



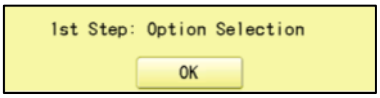
10.Select(press) HCR3



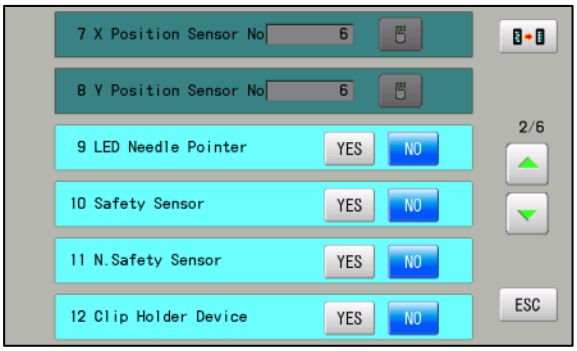
11. Select your machine model and press



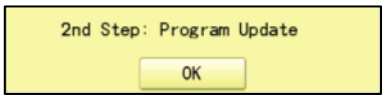
12. Press OK



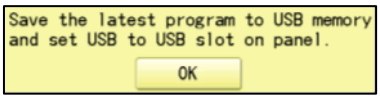
13. Needed Machine setting items will be displayed brigther. Please set according to your machine specification/options then press ESC after setting is done



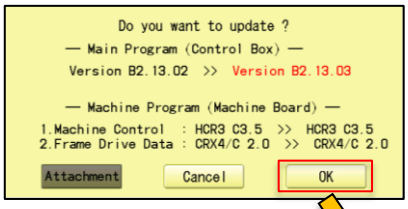
14. Press OK

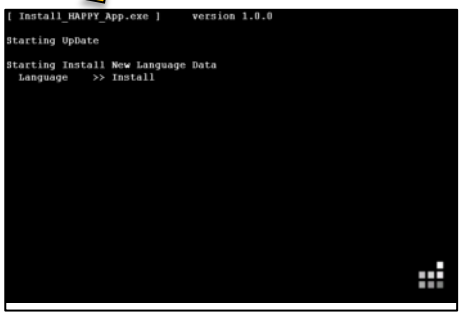


15. Press OK



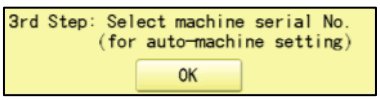
16. Press OK if you have new program version than current version in the machine. Installation starts after press OK



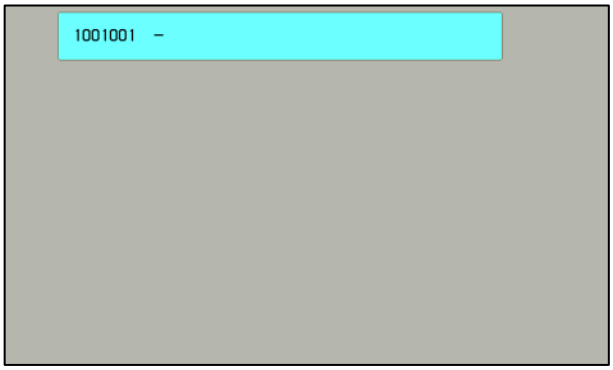


※Press Cancel in case current program version is latest.

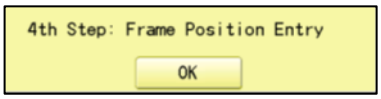
17. Press OK



18. Press 1001001-



19.Press OK



20. Operate following below instructions

(1). Fix carriage cover

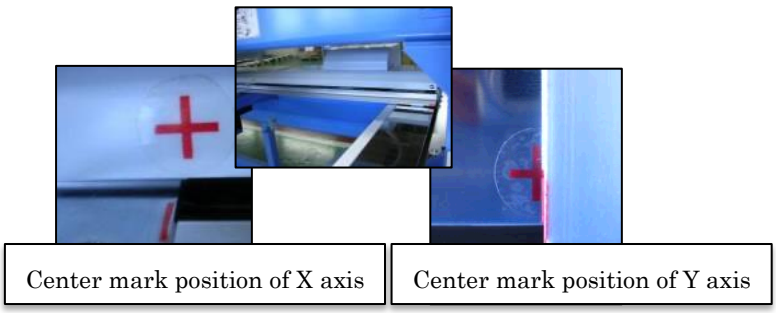
(2). Remove cap frame

(3). Move carriage to center mark position by

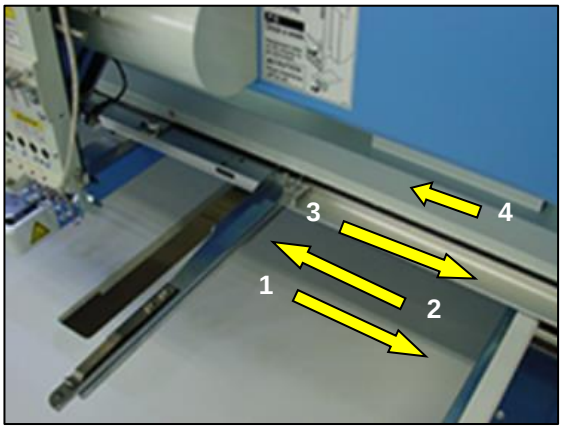
. (Refer to below display)

(4). Press START button

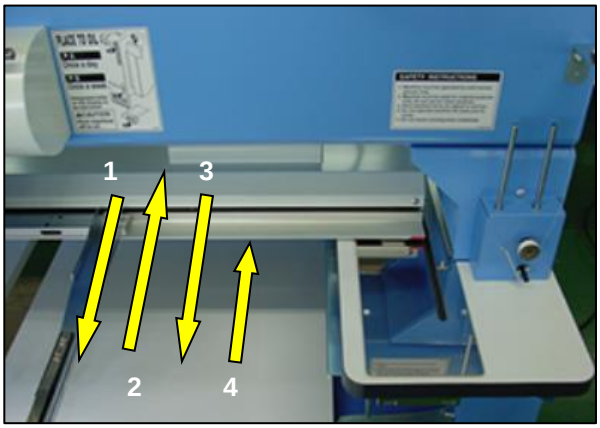
(Press ESC button in case of cancellation)



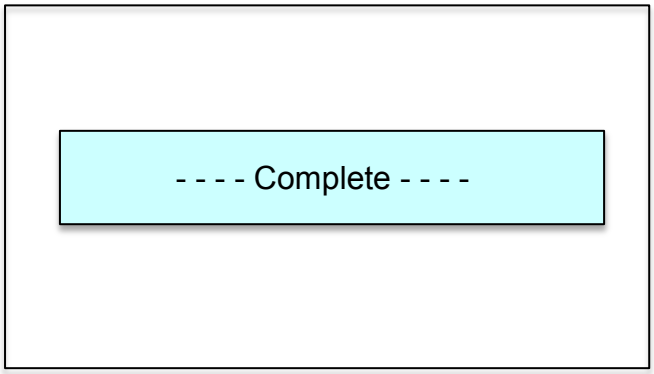
21. When you press START button, registation of X axis direction will start. Frame moves as below.



22. Then registration of Y axis direction will starat. Frame moves as below.



23. Below message will be displayed with successful conpletion.



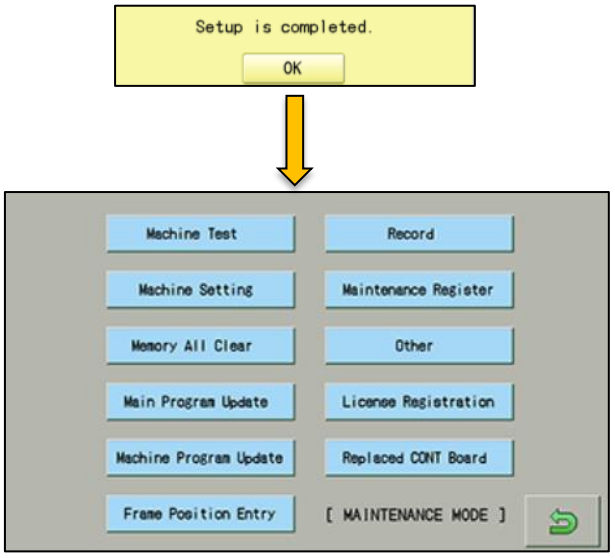
Retry from step 20, if [Error] occurs.

24. Press OK 「Auto Speed setting」 will starts

Main shaft will start rotation automatically and adjust speed setting.

25. Press OK

Back to Maitenance mode menu window

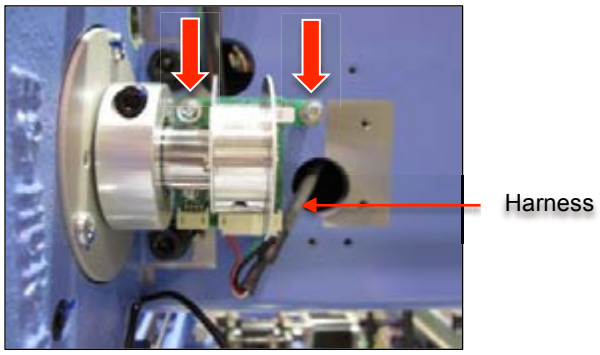


End of process.

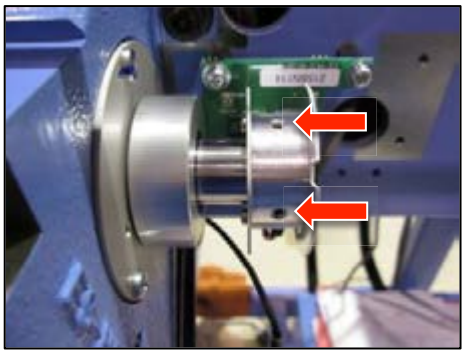
E2-2 Exchange Timing Circuit Board

1. Remove Timing Circuit Board

Disconeect Harnes and remove 2 screws

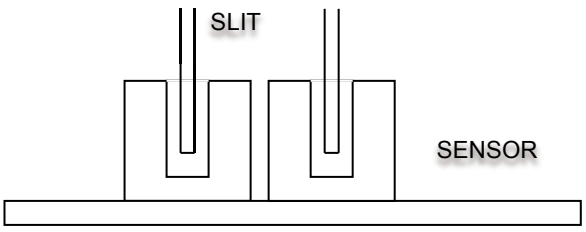


2. Loosen 2screws of detecting slit disk. Make it freely until Slit disk can rotate by hand

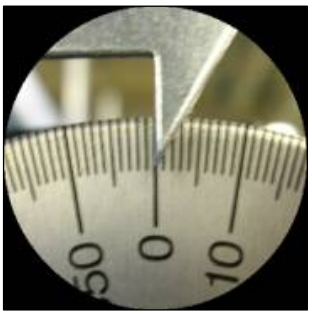


3. Install Timing circuit board

＜note＞ Be careful with handling, Timing Slit is very thin make the Timing slit in the sensor with care.

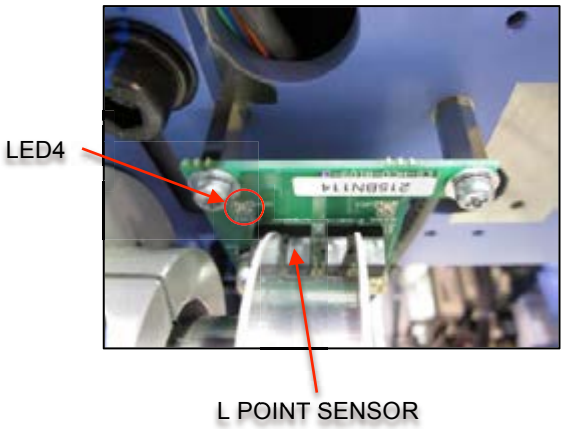


4. Adjust Angle disck with 0 [0 degreese(L point)].



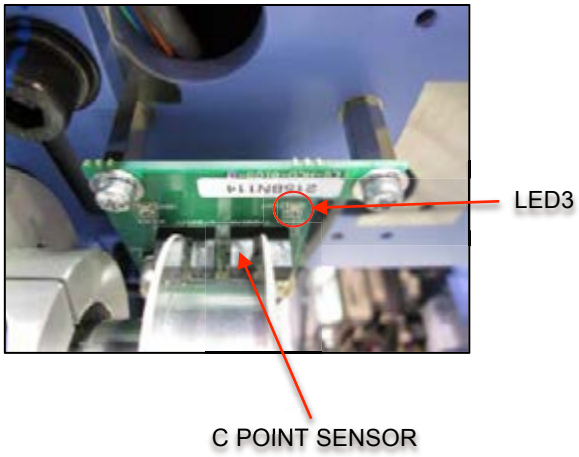
5. Rotate the Timing slit(clockwise from the Angle disk side) then fix screw when LED4 turns off point.

(LED4 will turns off when Timing slit covers L point sensor)

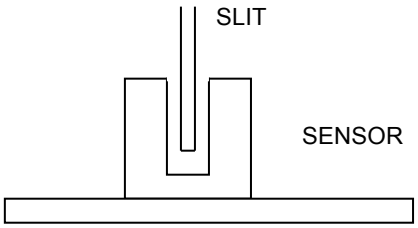


6. After installation is finish, please rotate upper shaft and confirm LED4 will turns off at 0 degrees(Lpoint)

7. Rotate Main shaft and confirm LED3 will turns off in a range of 270～284 degrees(C point)



8. Check Timing sensor and Timing slit are not interfering during shaft rotation.

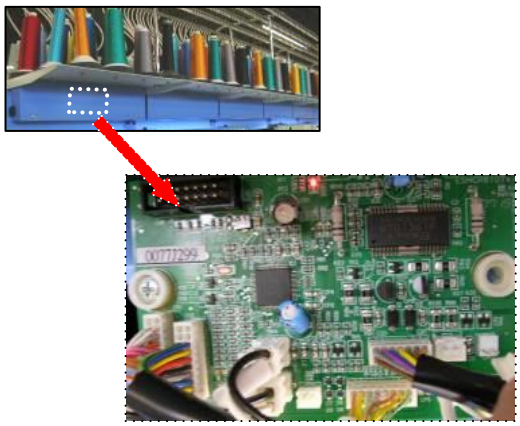


These steps are all you have to do.

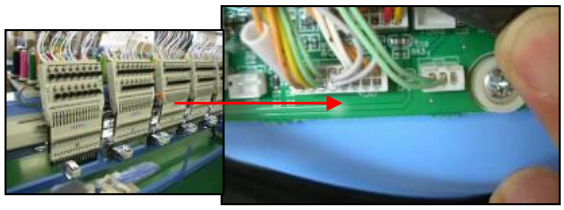
E2-3 Connection of Detection Circuit Board

CN6 on Detection Circuit Board has different way of connection for each head.

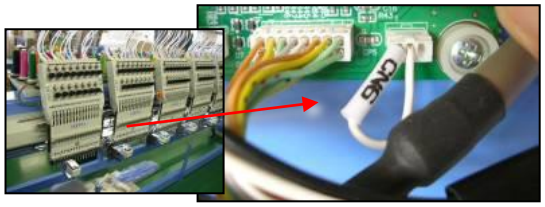
Please attention to following information.



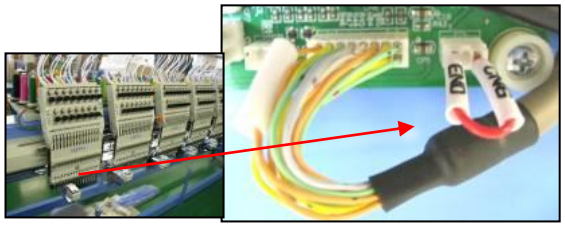
1. For Head with emergency stop SW->TC-EMG harness



2. For Head without emergency SW->white loop harness



3. For last Head->Red loop harness



After connect all, please check if emergency SW works correctly.

E2-4 Exchange TC7-8 Circuit Board

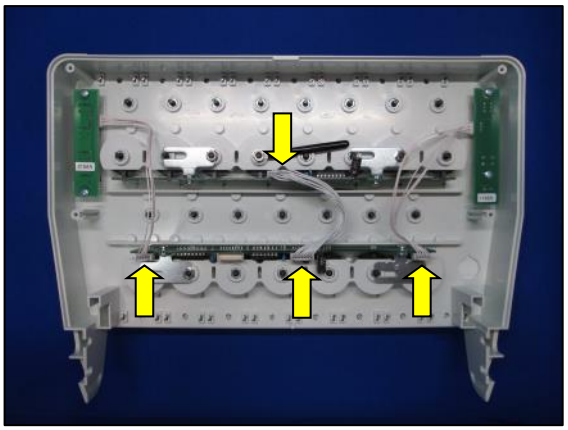
1. Remove the thread tension bracket.

Please refer to [4-2-1, 4-2-2 Assemble and remove moving head].

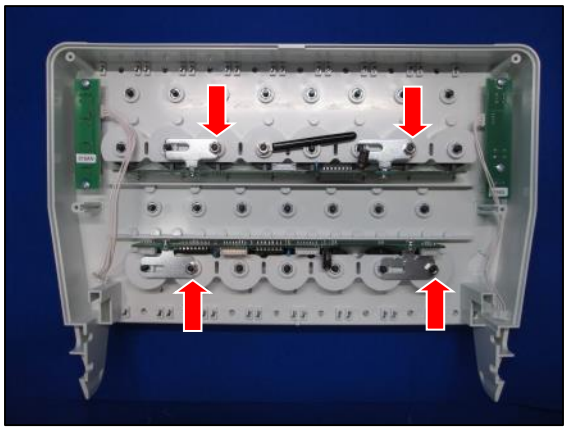
2. Remove thread tension rear cover.

Remove the screws at the tow places below.

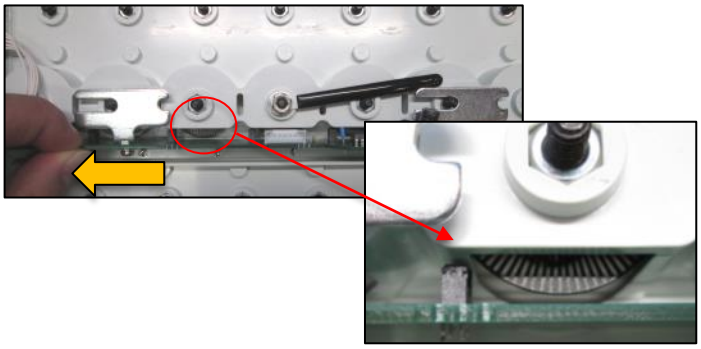
3. Disconeect connectors of Yellow alow part below.



4. Remove the nuts at the bottom four places.

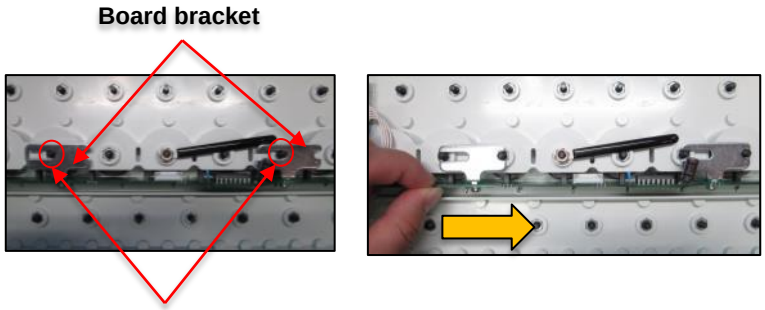


5. Remove board by sliding to the left

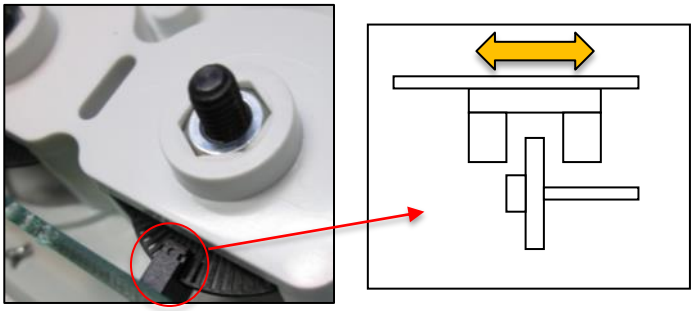


＜Note＞Confirm Slit is not in the Sensor groove befor removing the Board. Sensor might get damaged if you pull it by force.

6. Adust the position of Board bracket and Shaft of Detecting thread tension ass'y then slide the board to fix the position.



7. Make sure Sensor and Slit are not interfering.



8. Put Thread tension cover back and install Thread tension unit.

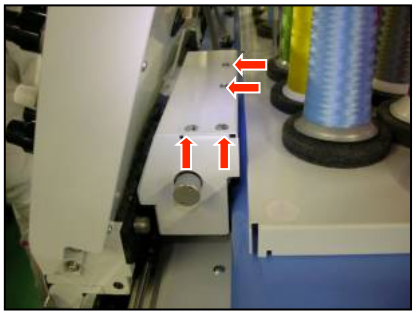
End of process.

E2-5 Exchange needle stop sensor and potentiometer

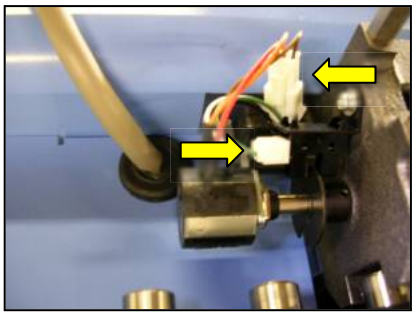
1. Move head position to needle no.15 by head moving knob

2. Remove cover.

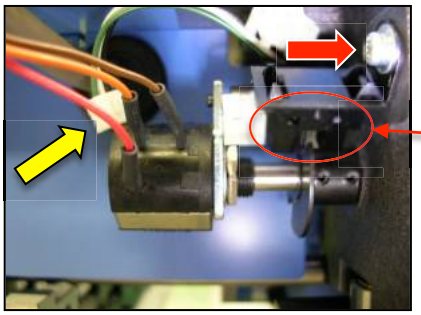
Remove the screws at the four places below.



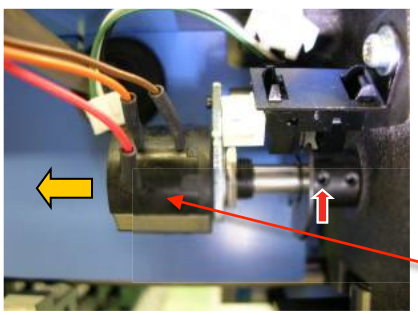
3. Disconnect a Conector (Yellow arrow part)



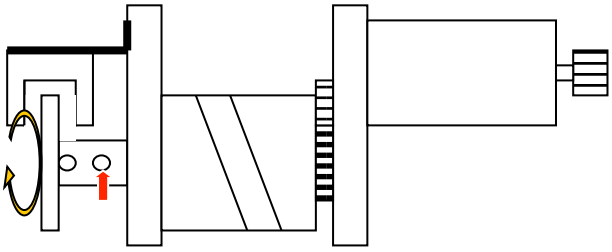
4. Remove screw and exchange Sensor board then connect to a connector back.



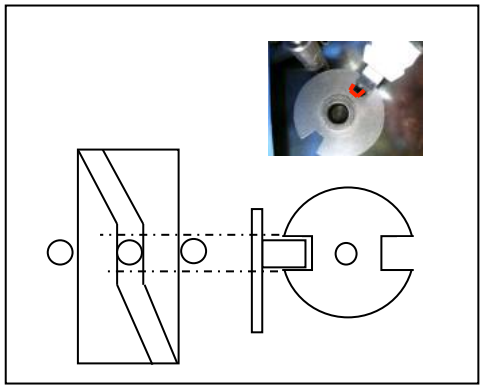
5. Loosen screw and pull potentiometer out



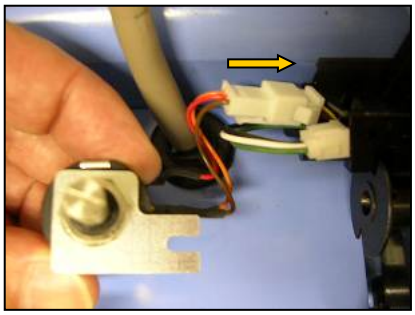
6. Loosen slit collar fixing screw and make slit collar free to turn



7. Adjust notch position of slit collar to be sensor, and cam position where moving head does not move



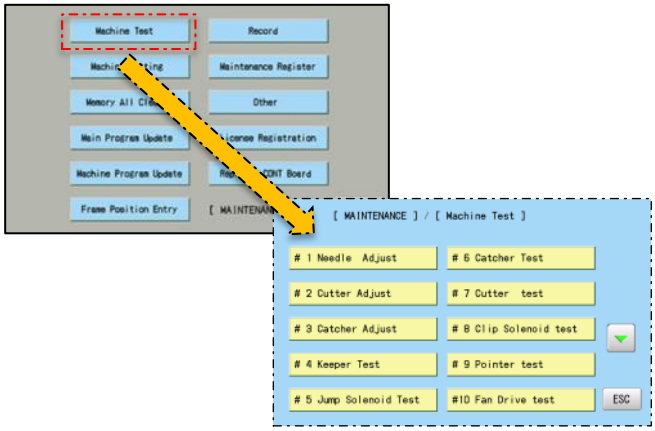
8.Connect harness of potentiometer



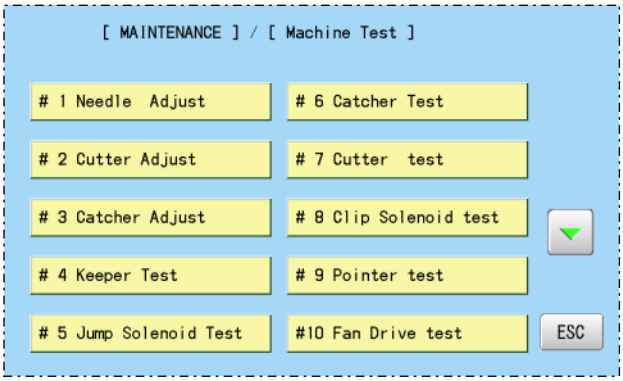
9. Turn on machine power

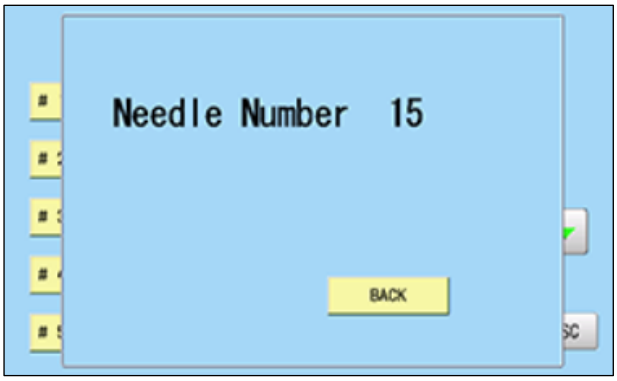
10. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

11. Press Machine Test

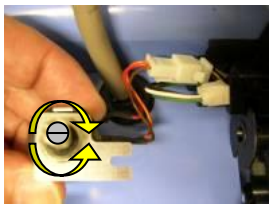


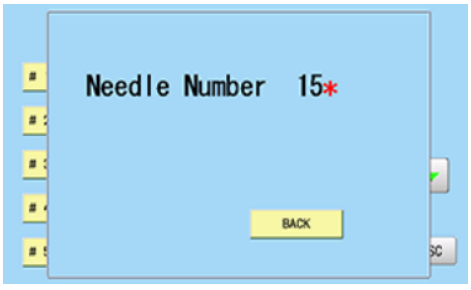
11. Press #1 Needle Adjust and press Position



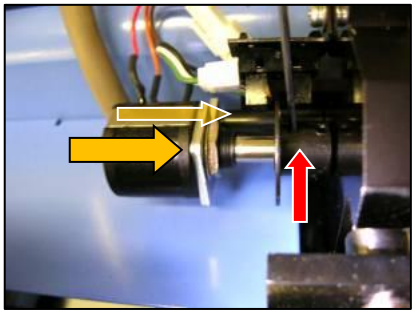


13. Turn shaft of potentiometer and set position where * mark and needle number (15) appear on screeen with sound.





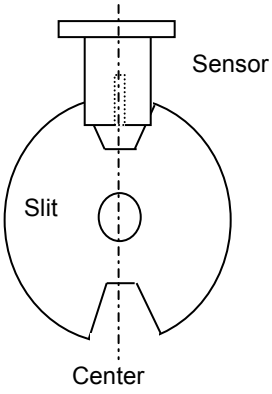
14. Set potentiometer and fix



<check>

Sensor is located at notch center of slit collar and * mark is shown on creen

The position of sensor is not lacated at notch of slit collar, re-adjust again



15. Turn knob and move head to 1st needle position

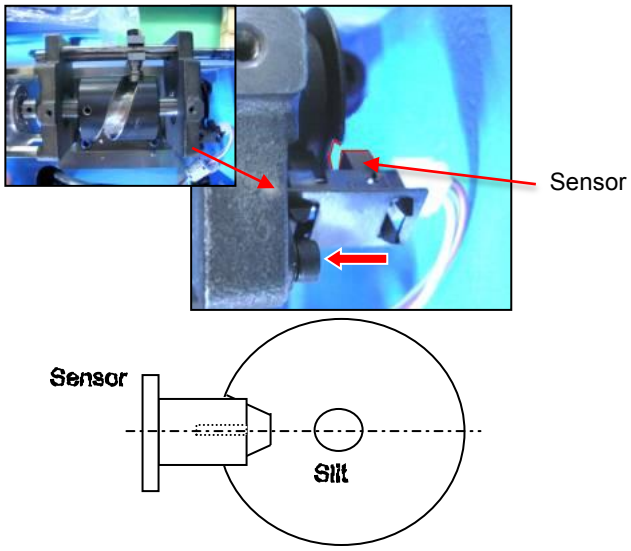
<check>

* mark appears, when notch center of slit collar comes sensor position. If position is not matching, please re-adjust again

E2-6 Exchange Thread trimming sensor

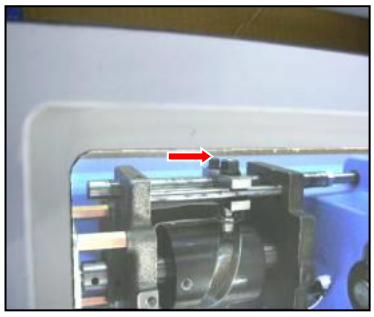
1. Take table cover out

2. Exchange sensor and connect haeness

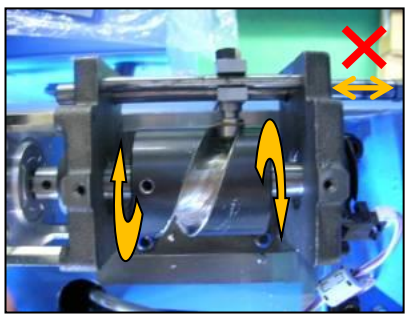


<note> Sensor should place at center of slit

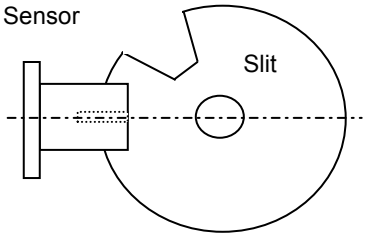
3. Loosen Cap screw (1pc)



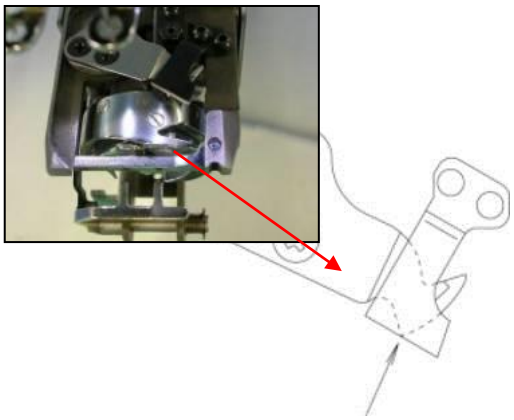
4. Turn CAM and confirm that shaft is not moving



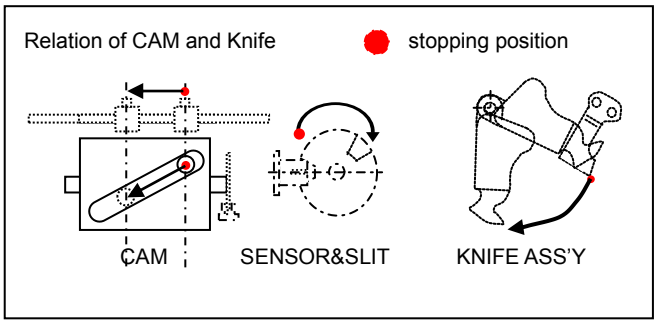
5. Turn CAM and set sensor position is out from slit. Power on and press NEXT on control box



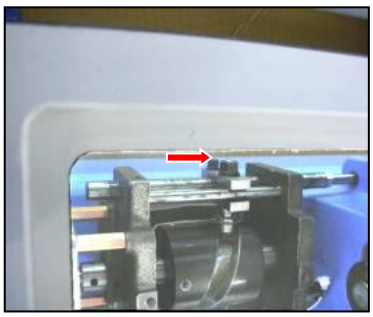
6. CAM turns and stops at stopping position automatically. Check postion of moving knife



Position of Moving knife and fixed knife



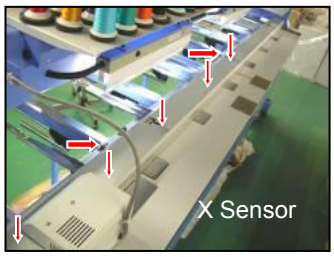
7. Fix Cap screw

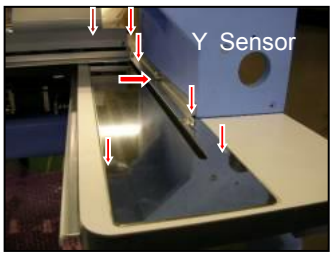


Set cover

E2-7 Exchange X-Y Position Sensor

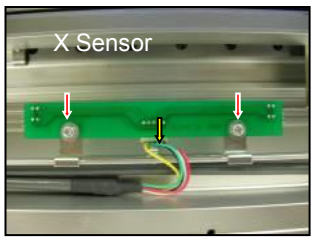
1. Unscrew and take cover out

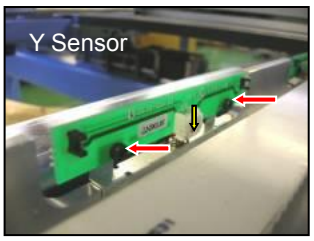




2. Unscrew and take Position Sensor Circuit Board.

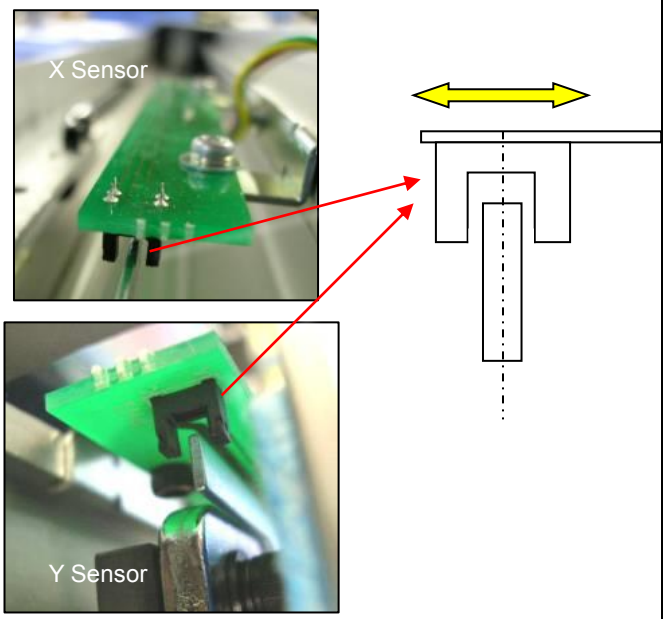
Then take harness out





3. Replace Board and set harness, and fix by screw

<note> Adjust postion of detecting plate to be center of sensor



4. Set cover

5. Set coordintes

Refer [E5-6 Position- Registration of coordinates for positioning sensor]

E2-8 Exchange of Servo amplifier

In case of replacing parts was purchase as spare parts, Parameters are already pre-set at factory.

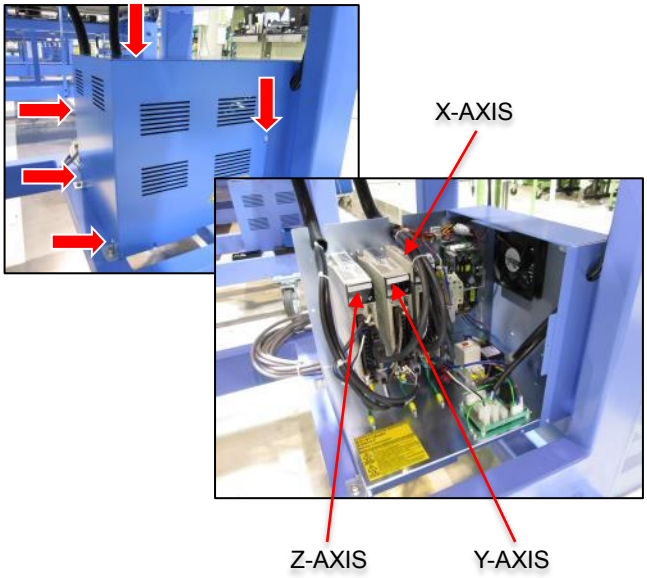
ID number of Servo amplifier is different by model, please refer to 「E7-2 List of electrical connection diagra」

Please contact us if you will use Servo amplifier of other model.

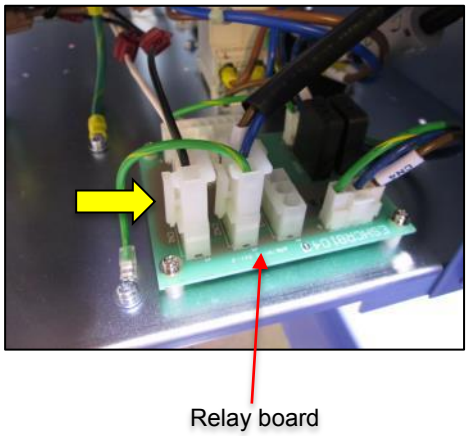
<note>Make sure power plug is disconnected during the process

1. Remove power supply box.

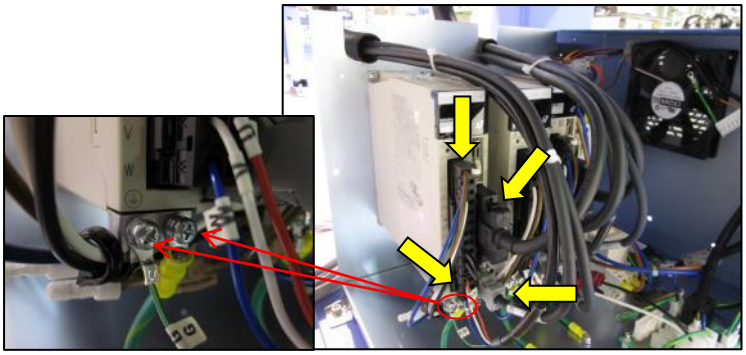
Remove the screws at the five places below.



2. Disconnect a connector(Yellow arrow part) from Power relay circuit board.

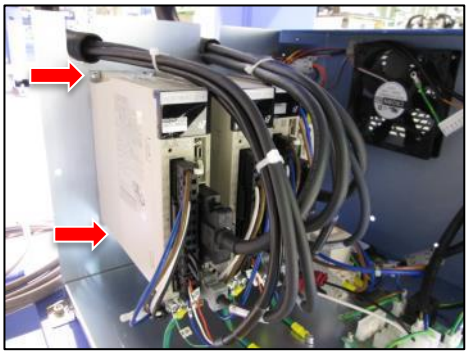


3. Dissconnect a connector(Yellow arrow part) and remove 2 screw of Earth terminal(Yellow arrow part) which need exchange.



4. Remove the servo amplifier you want to replace.

Remove the screws at the tow places below.



5. After exchange of Servo amplifier, proceed in reverse order and put the cover back on.

End of process.

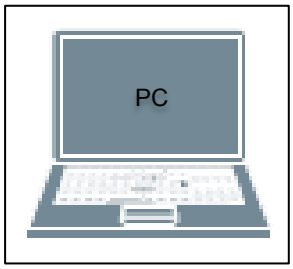
E2-9 Servo amplifier setting

In case of replacing parts was purchase as spare parts, Parameters are already pre-set at factory.

Please refer this manual only when you need to use Servo amplifier that is set with different numbers of head.

Prepare PC and USB cable.

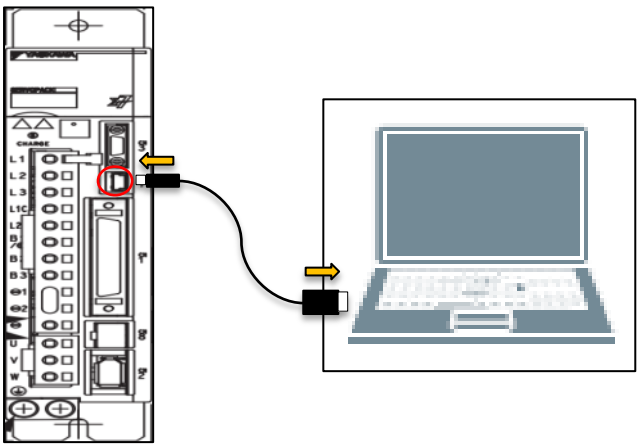
Please ask us for Setting data file of needed model.



USB Cable(mini-B type)

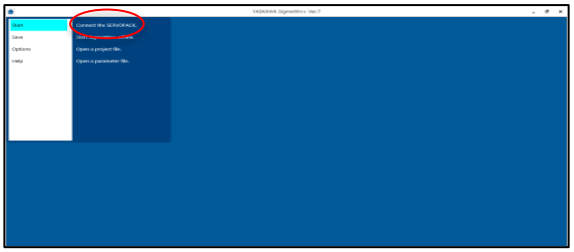
1. As appeared below, please go Yaskawa web link.
Then, please download Sigma Win and install it to a personal computer.
For more information on installation of Sigma Win, 'please refer to Yaskawa web link.

2. Connect PC(USB connector) and Servo amplifier(CN7) by USB cable.

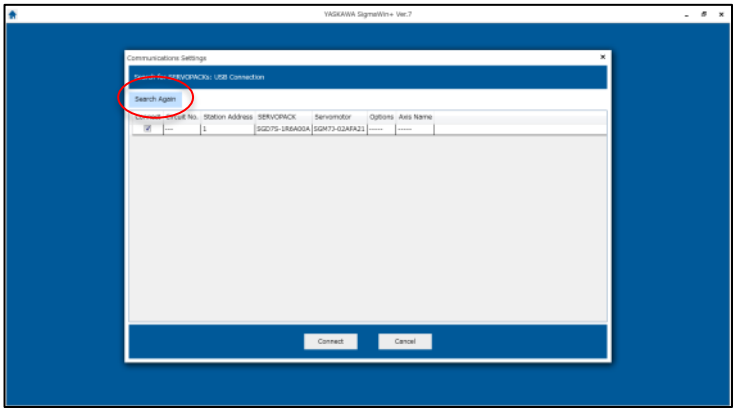


3. Start up by double-click after installation is done.

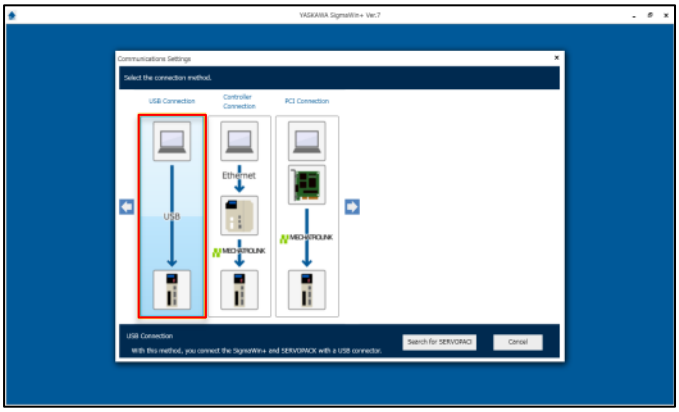
4. Please click "SERVOPACK".



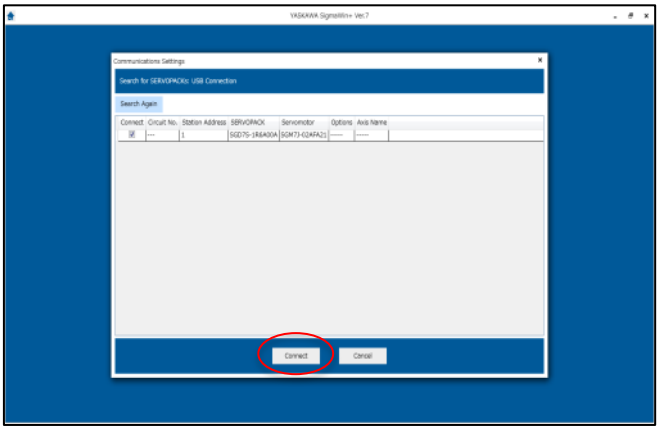
5. Please click "Search Again" to search currenlty 'hooked-up servo pack.



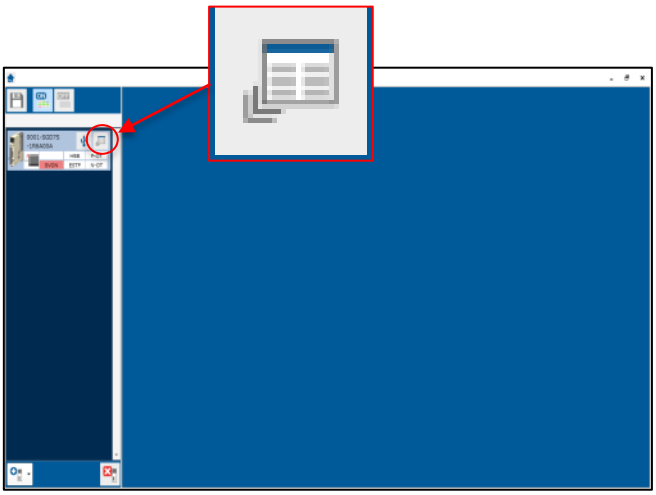
6. Please click "USB".



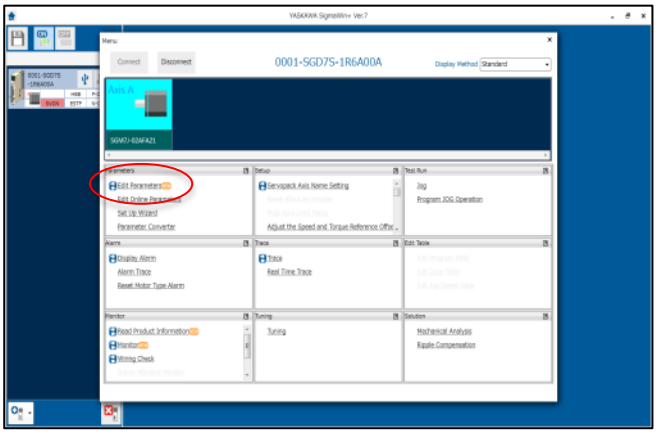
7. Search result will appear. Then, please click "Connect" 'to hook up to servo pack.



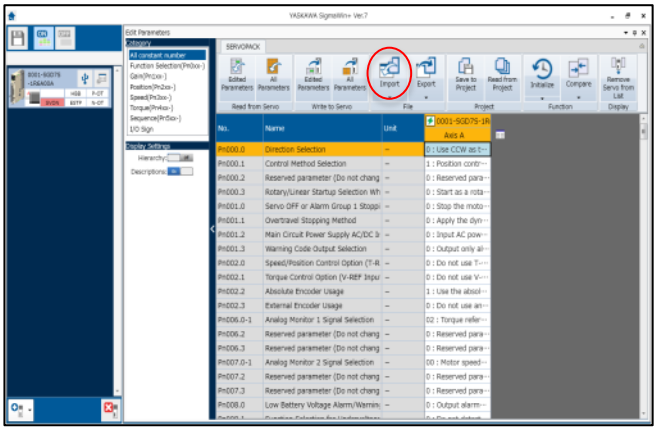
8. Please click the ioon to reach menu.



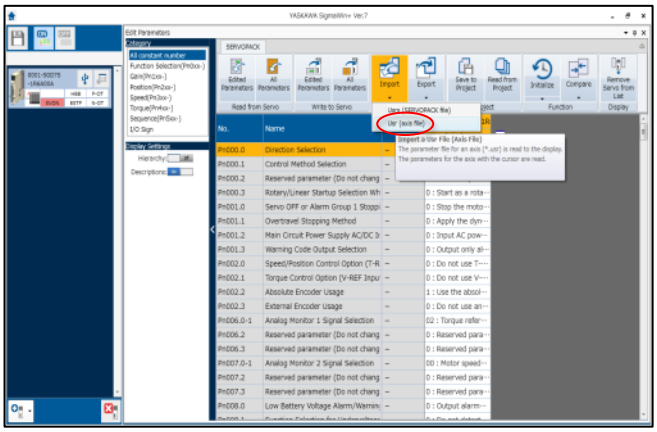
9. Please click “Edit Parameter” in menu.



10. Please click “Import” to read setting parameter.

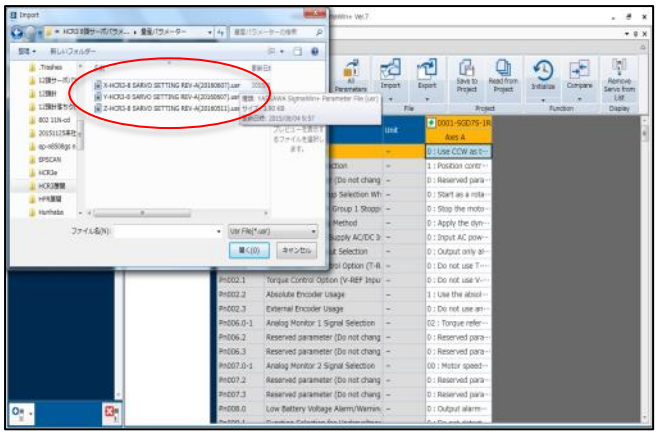


11. Please click “Uar(axis file) to select filename(extension).

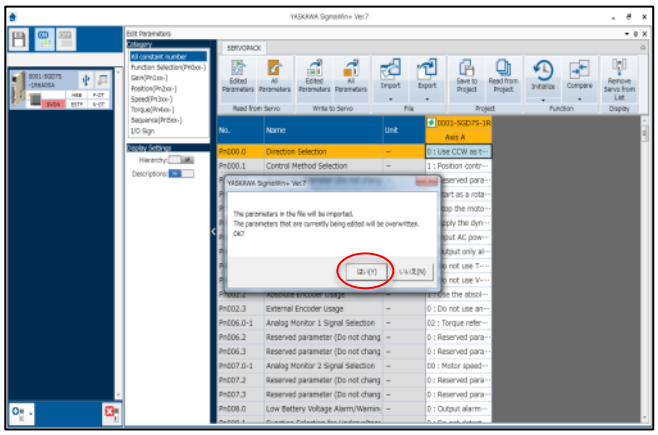


12. Select setting data file by model.

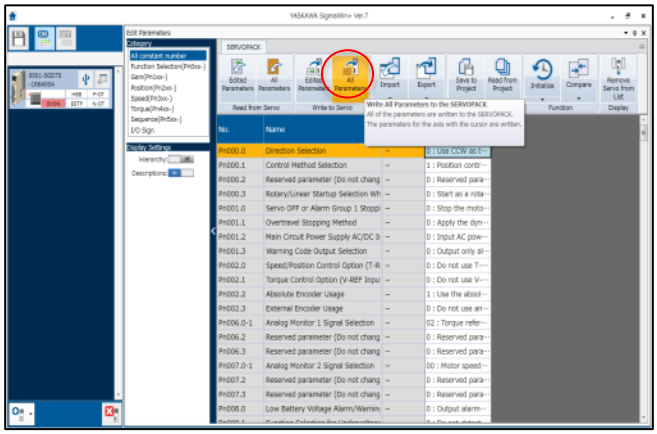
Please contact us for Setting data file by model.



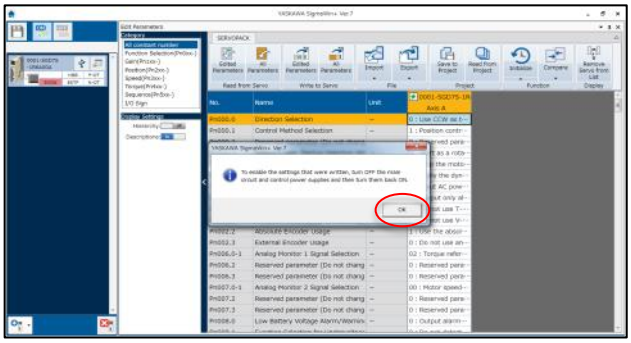
13. You will be asked if setting information of a file to have been read is acceptable to be stored. Then, please click “YES”.



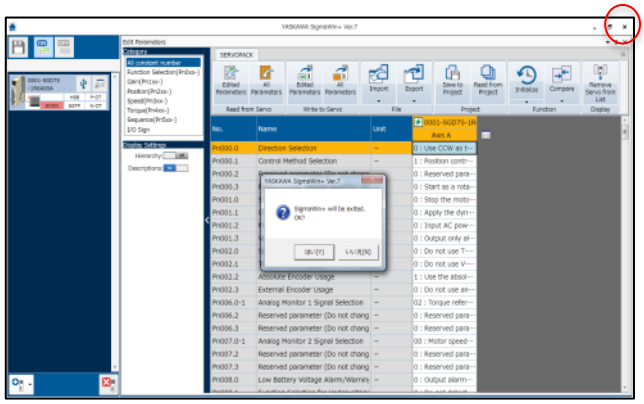
14. Setting information of a file to have been read will appear.
Then, please cilck “All Parameter” to store into servo pack.



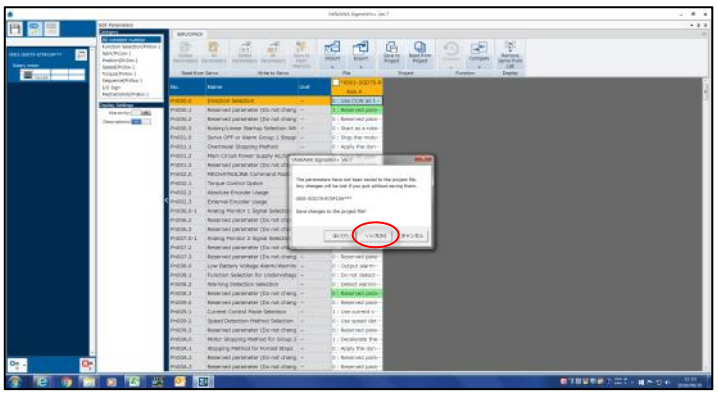
15. After completion of storing into servo pack, a message appearing below will appear.
Then, please click “OK”.



16. Stoeing is completed. Please click “×”.



・When a message appearing below, please click “No”.



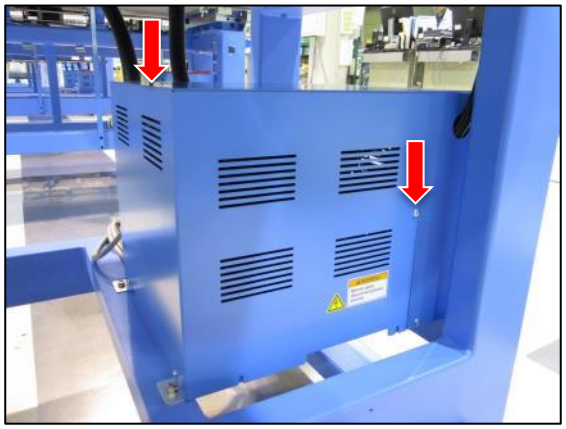
End of process.

E2-10 Exchange of switching power supply and adjustment of output voltage

<note>Make sure power plug is disconnected during the process

1. Remove power suplly box cover.

Remove the screws at the five places below,



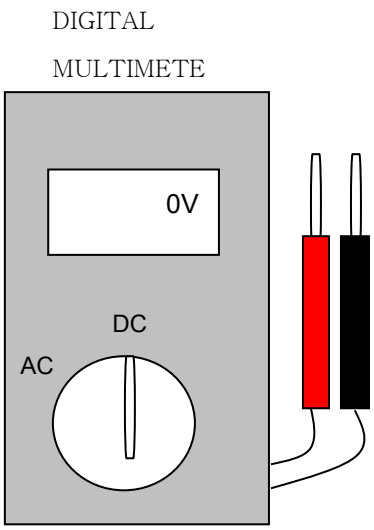
2. Disconnect a connector(Yewllow arrow part) and remove 4 screws that are fixed Switching power supply.

3. Proceed in reverse order of process2 and install the board.

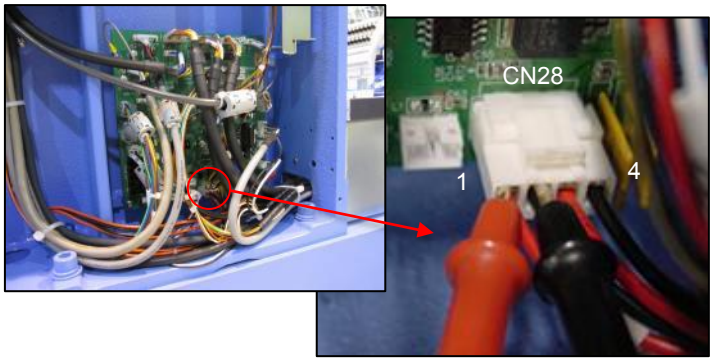
4. Remove cover right.

Remove the screws at the six places below.

5. Set Digital Tester as 「DC」range.



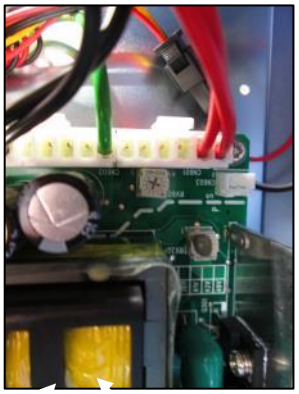
6. Insert Digital tester probes into the CN28 socket of CONT-R2 board.



<note>

※Insert Red probe into the 1st Pin of CN28 and Black probe into the 2nd Pin of CN28

7. Turn the machine power on and rotate the VR(volumn)of Switching power supply and adjust to 「24V±0.1V」



End of process.

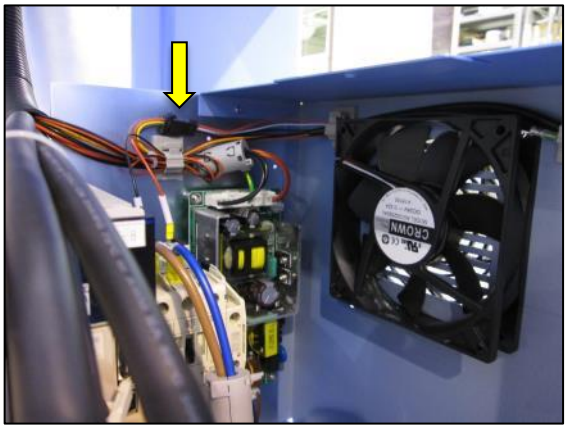
E2-11 Exchange Cooling Fan

＜note＞Make sure power plug is disconnected during the process

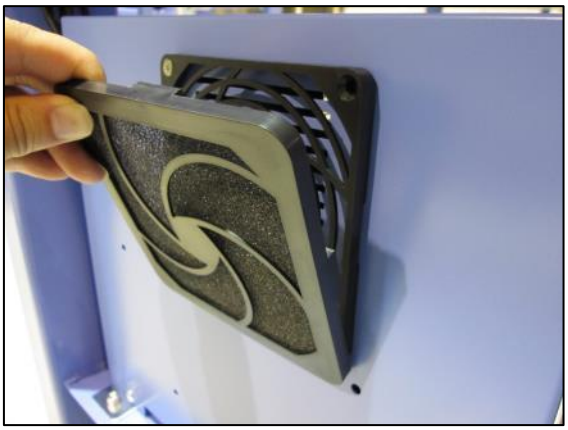
1. Remove power supply box cover.

   Remove the screws at the five places below.

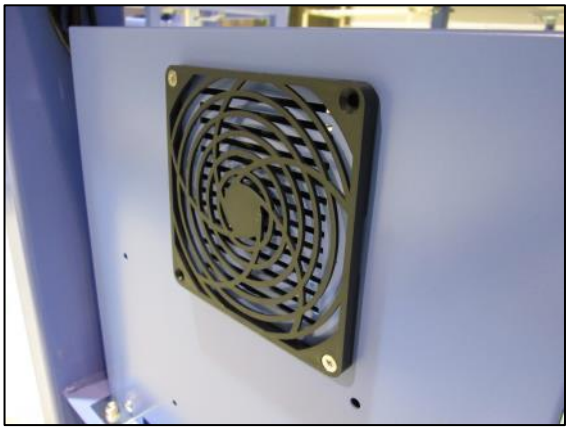
2. Disconnect a connector(Yellow arrow part)



3. Remove the filter on the right sude of the power supply box.

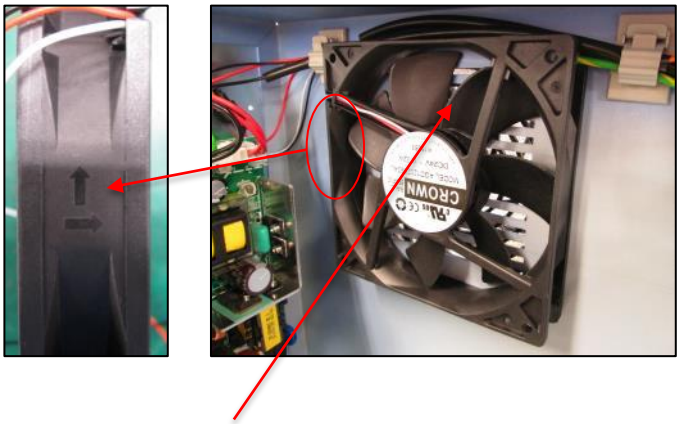


4. Unscrews fan cover (note : nut is reverse side).



5. Proceed in revese order and exchange to a new Fan.

   ＜note1＞Arrow mark side should come to a left side



＜note2＞Make sure fan is not interfering harness

End of process.

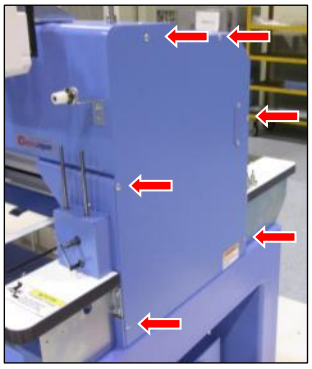
E3 Open and remove control box

E3-1 Remove control box

<note>Make sure power plug is disconnected during the proces

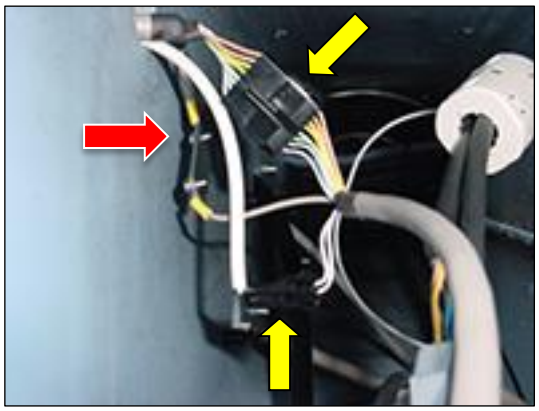
1. Remove cover right .

Remove the screws at the six places below.



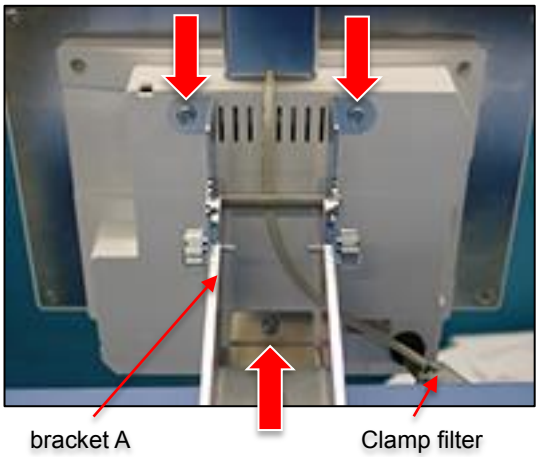
2. Disconnect a connector(Yellow arrow part).

Remove scerws that fix harness

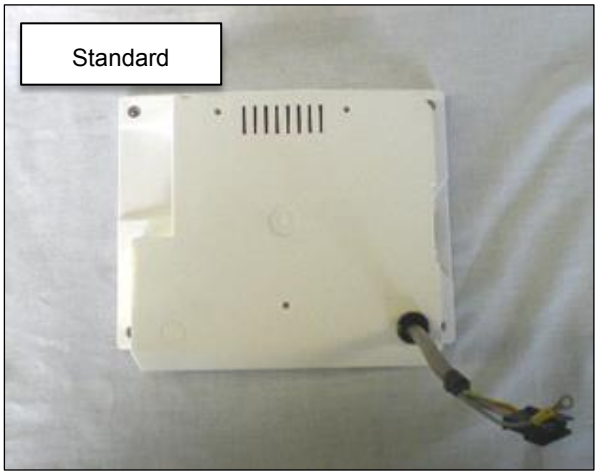


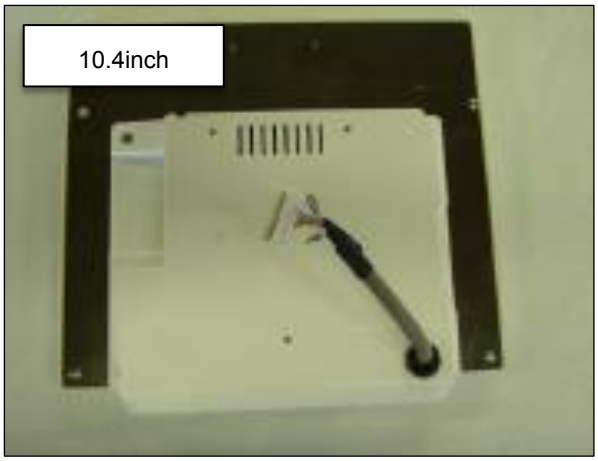
3. Remove Clamp filter.

Remove three sets screws on bracket A as shown in the figure below.



4. Remove control box.

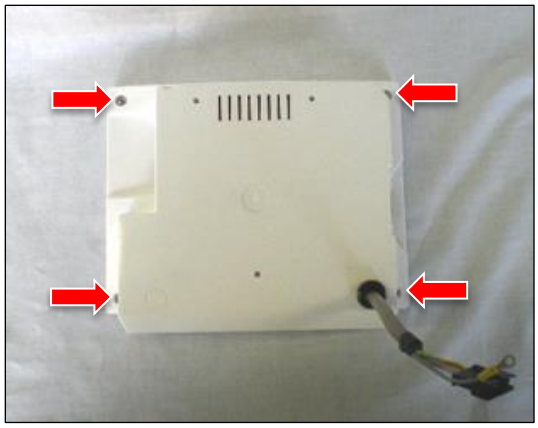




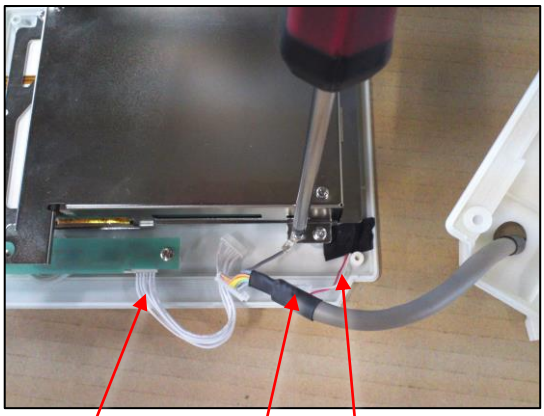
Please reverse procedure when installing control box.

E3-2 Remove LCD-CE board

1. Remove four setscrews as shown in the figure below and remove rear cover.



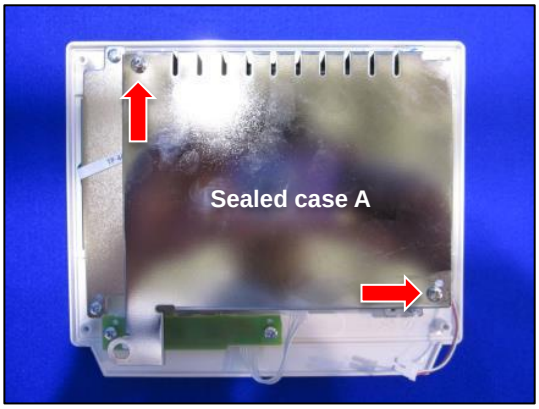
2. Remove connectors for SW cable, Box cable, cable for LCD inverter (red/white).



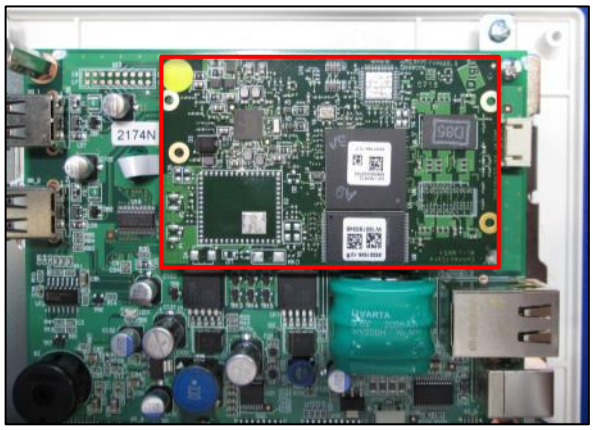
SW cable **Box cable**

Cable for LCD inverter (red/white)

3. Remove sealed case A.

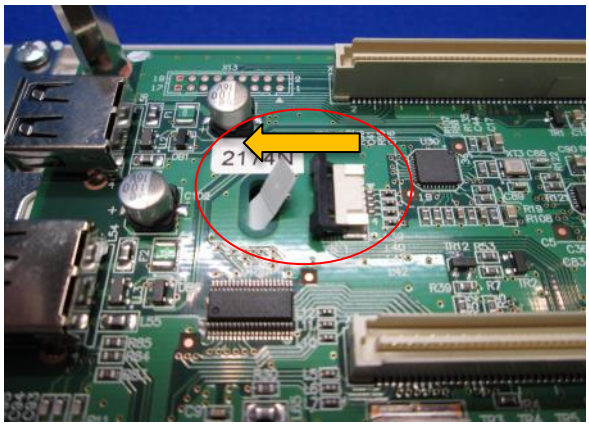


4. Remove core module.

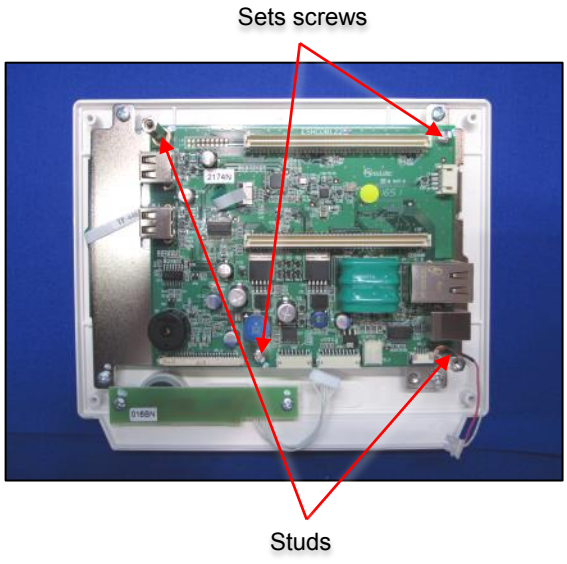


5. Remove narrow flat cable for LCD unit.

Make slight slide and remove the cable



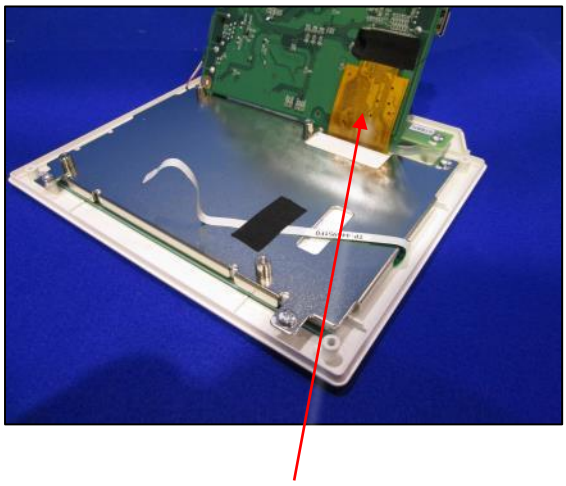
6. Remove two sets screws and two studs.



7. Lift LCD-CE board as shown in the figure below.

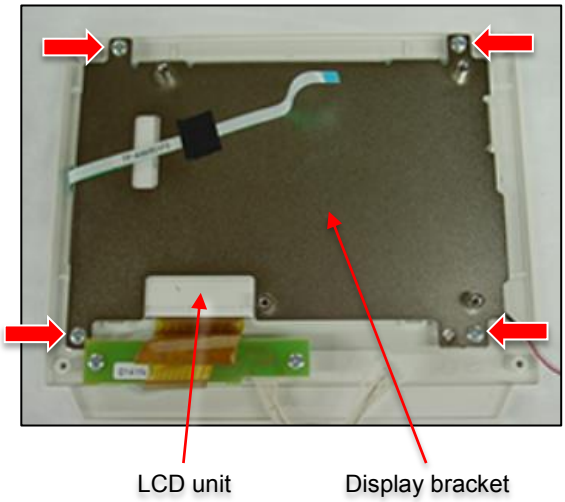
   Remove wide flat cable for LCD unit.

   Slightly slide to the side and remove cable

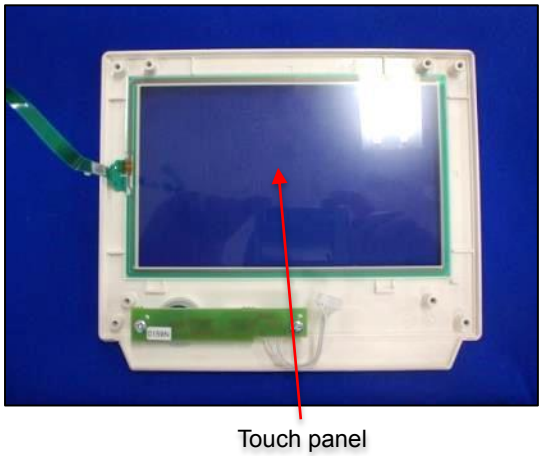


8. Remove display bracket and LCD unit.

   Remove 4 screws (Red arrow part)



9. Remove touch panel.



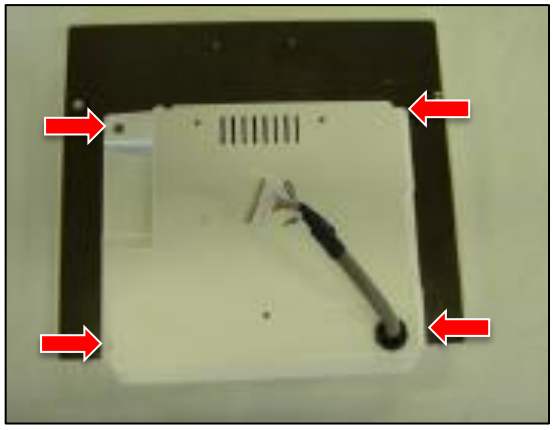
Please reverse procedure when installing LCD-CE board.

Adjust clock function by refering to instruction book After power back on.

E3-2a 10.4" Remove LCD-CE board

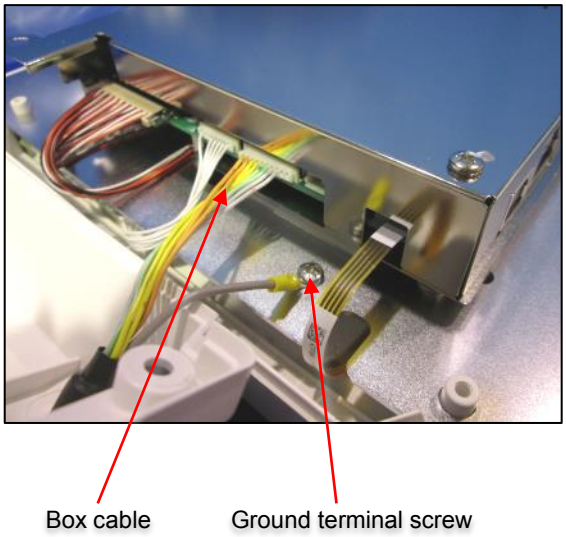
1. Remove emergency stop blacket.

Remove four setscrews as shown in the figure below and remove rear cover.



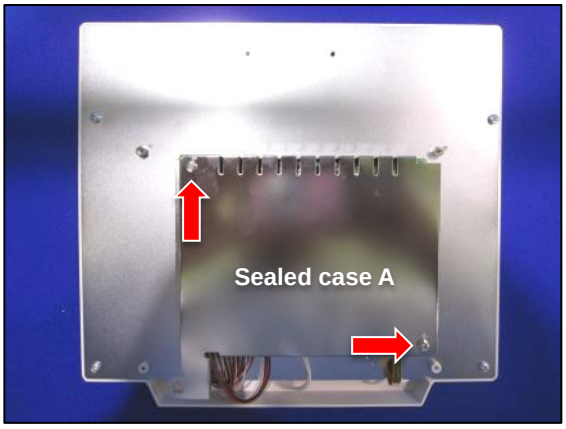
2. Remove the screw of the grounding terminal.

Remove connectors for Box cable.

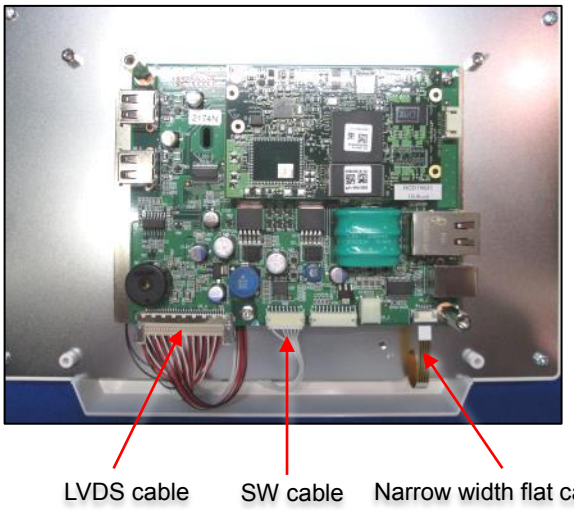


3. Remove sealed case A.

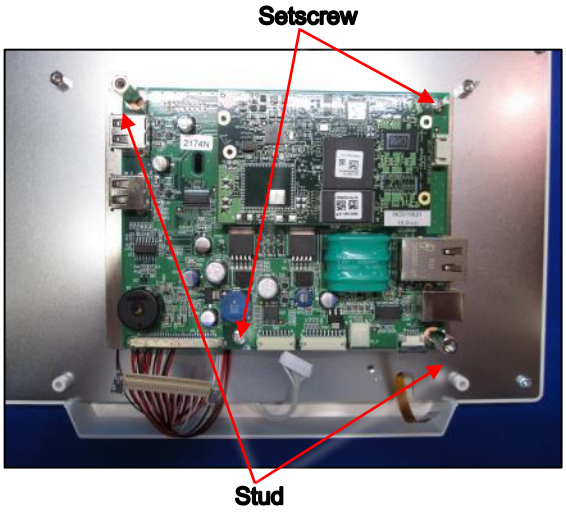
Remove the screws at the tow places below.



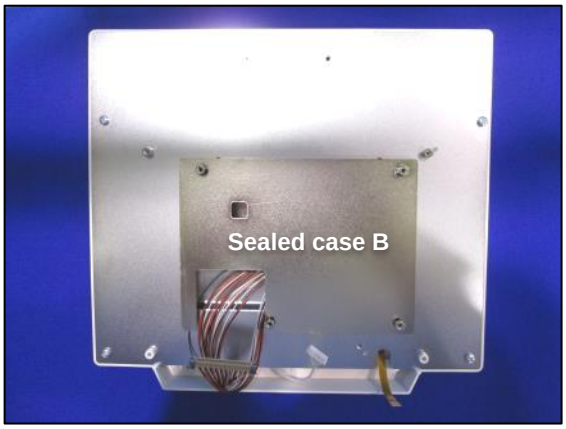
4. Remove connectors.



5. Remove two setsscrews and two studs.

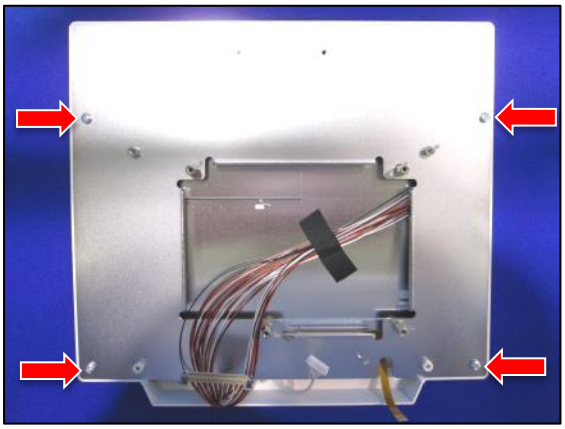


6. Remove sealed case B.



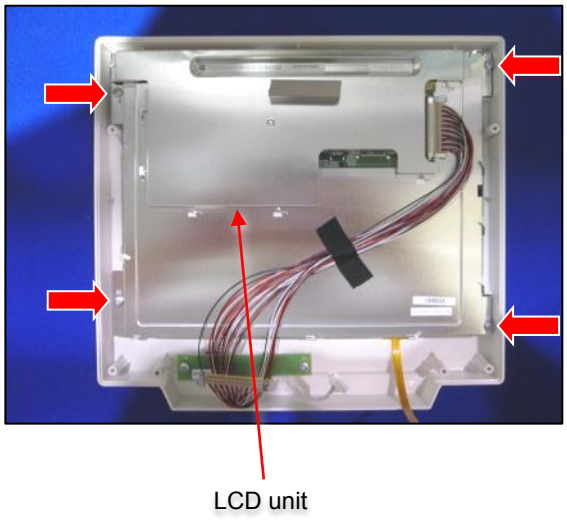
7. Remove rear cover.

Remove thescrews at the four places below.



8. Remove LCD unit.

Remove the screws at the four places below.



Please reverse procedure when installing LCD-CE board.

Adjust clock function by refering to instruction book After power back on.

E3-3 Setting LCD-CE board

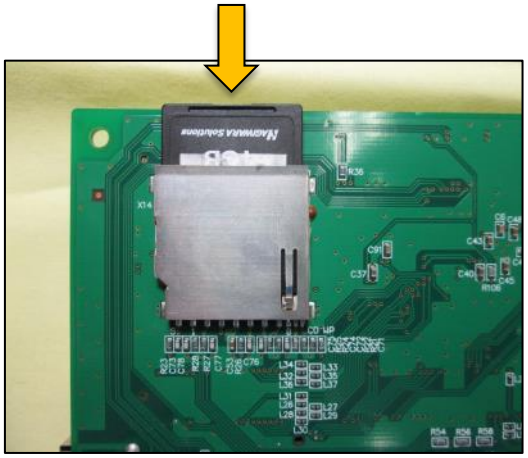
Memory card

Insert our official memory (EPZ012220).

Refer to the latest parts list for the parts number.

This memory card contains programs and data fo on Enbroidery machine.

<note>In case you use SD card in the market, Make sure to use more than 16GB SD card capacity and please ask us for needed data file.



E4 Program update procedure

* The sequence of procedures of program update is described below.

If you need more details,please refer to each manual.

1. Prepare USB memory that has updating program.
Proceed whole program update by selecting [MENU]>>[OTHER]>>[Version]

2. Proceed Main program update by Menu of Maintenance mode

3. Proceed Machine program update by Menu of Maintenance mode

4. [Replacement of CONT-R2 board]
Register frmae position in Maintenance Mode.

5. Press [MENU] button and select [System] in menu of [OTHER] for initialization of system.

6. Press[MENU] button and select [speed] in menu of [OTHER] for automatic speed setting.

7. [Replacement of LCD-CE board]
Calender setting.

8. End of process.

E4-2-1 Update the main program and the machine program

E4-2-2 Update the main profram

E4-2-3 Update the machine progra

E5-6 Position Registration of coordinates for prositioning seso

E4-4 Setting of revolution

E4-1 Preparation for program update

1. Download latest program file from our Web-page and extracxt it.

- Program version ***** for model HCH /HCS2 /HCD2 /HCR2 /HCR3 /HFR series with **7 inch touch panel**
- Program version ***** for model HCH /HCS2 /HCD2 /HCR2 /HCR3 /HFR series with **10.4 inch touch panel**

2. Copy the extracted file into the USB Memory,

You will find program file folder as below image in the PC after extraction.

<note>Program folder should be copied to the root directory of USB memory

End of process.

E4-2 Update the program

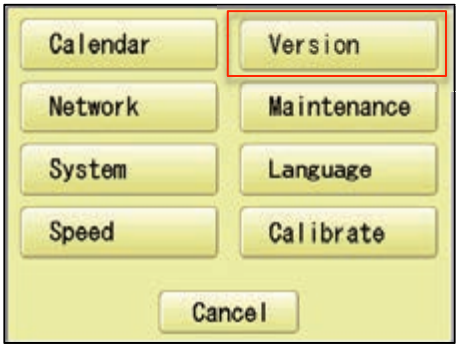
E4-2-1 Update the main program and the machine program

1. Insert USB memory to the machine panel which has Version up program.

2. Press  (menu) and Press 

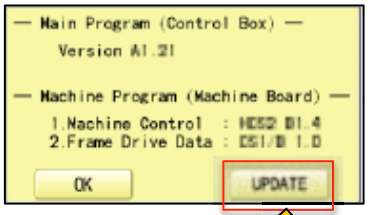
(Other)

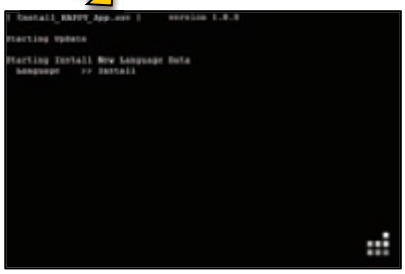
3. Press [Version]



4. Press [UPDATE]

Installation will be started.





＜note＞

※Do not remove USB memory during installation

※Instllation will take sometime and do not turn off the machine power during Installation

In case of writing error and displays「Error」please try to install again

Monitor will be reboot automatically when updates is finished

5. Press [NEXT]

6.Refer to manual「E4-4 Revolution setting」and proceed 「System initialize」and「Auto speed setting」

That is end of program updates process.

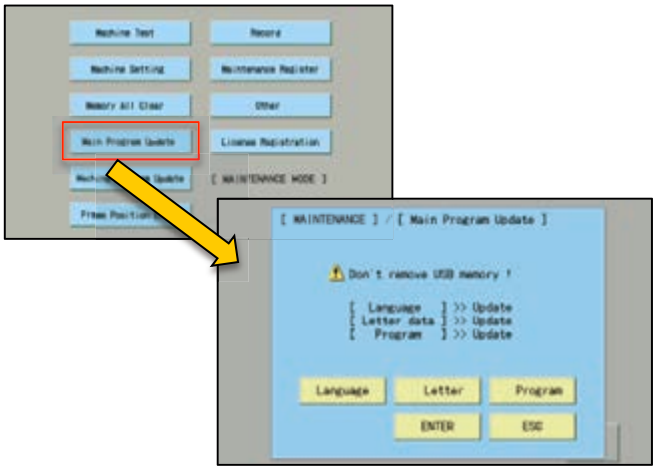
E4-2-2 Update main program

1. Insert USB memory to the machine panel which has Version up program.

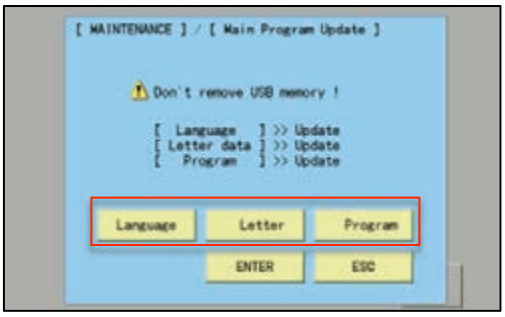
2. Turn on machine power

3. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

4. Press Main Program Update

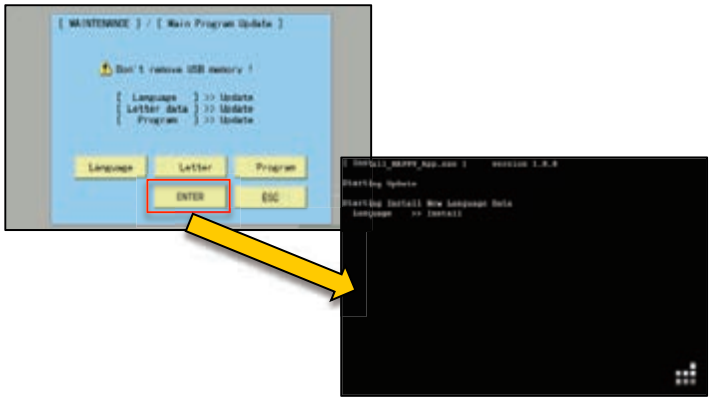


5. Select following 3items Language 、 Letter 、 Program then confirm 3 items are dispayed as ”Update”



6. Press ENTER

Installation will be started



＜note＞

※Do not remove USB memory during installation

※Instllation will take sometime and do not turn off the machine power during Installation

In case of writing error and displays「Error」please try to install again

Monitor will be reboot automatically when updates is finished

7. Press NEXT

8. Refer to manual「E4-4 Revolution setting」and proceed 「System initialize」and「Auto speed setting」

That is end of program updates process.

E4-2-3 Update machine program

1. Insert USB memory to the machine panel which has Version up program.

2. Turn on machine power

3. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

4. Press Machine Program Update

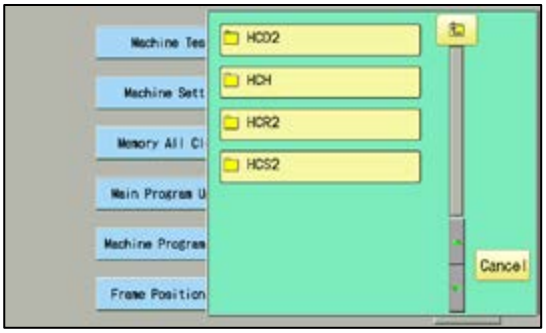
Contents in the USB memory will be displayed

5. Select [UpdateFile]

6. Select [MachineInstallDate]

7. Select your machin model

Installation will be started and back to Maintenance mode menu screen once installation is completed properly.



＜Note＞

※Do not remove USB memory during installation

※Instllation will take sometime and do not turn off the machine power during Installation

8. Shut down machine power and Turn on power again.

9. Press NEXT

10. Refer to manual「E4-4 Revolution setting」and proceed 「System initialize」and「Auto speed setting」

That is end of Machine program updates process.

E4-3 Setting of revolution

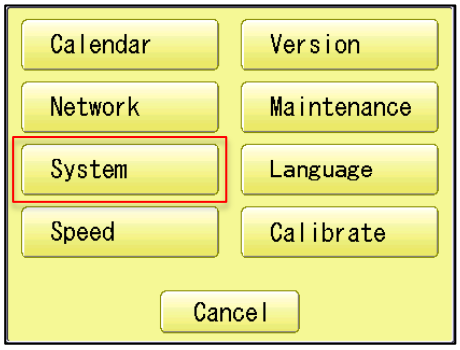
Re-Initialization of machine system

Perform this function only to fix problems with the machine. When performed, all settings in the “OPTION” menu are lost. Be sure to reset the “OPTION” menu after performing this function.

1. Turn on the power. After the program start up, press  (MENU) and press 

(OTHER).

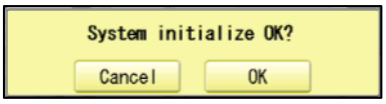
2. Press System



3. Press OK.

Formatting of the machines systems are carried out.

Indicate HAPPY logo in screen.



End of process.

Initializing of machine speed

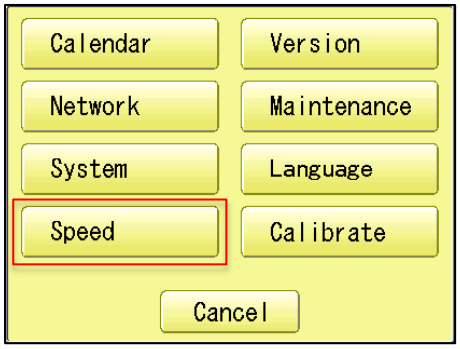
Setting of revolution of main shaft, which is suitable to the machine is required.

If setting is not done, the revolution may not speed up.

1. Turn on the power. After the program start up, press  (MENU) and press 

(OTHER).

2. Press Speed.



3. Press OK.

Main shaft adjusts its revolution speed automatically.

Message complete will be displayed when setting is finished and it goes back to drive mode.

End of process.

E5 Maintenance mode

Maintenance mode consists of items as shown below.

Machine Test————————Movement test, maintenance, and adjustment

Machine Setting————————Machine control setting

Memory All Clear————————Initialization of design memory.

Main Program Update————Update of operation program and language data

Machine Program Update——Update of control program and frame move data

Frame Position Entry————Registration of coordinates for positioning sensor

Record————————————Total number of stitches, Error occurrence record, Occurrence record by error type.

Maintenance Register————Registration of machine maintenance date(Normally not used at maintenance)

Other————————————Other (This item is neither configured nor used.)

License Registration————Limited usable period

Replaced CONT Board————Machine Setting Navigation after exchanging CONT board (Main program Ver.*1.34~)

E5-1 How to enter maintenance mode

1. Turn on machine power

2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

3. Press  .

You can enter maintenance mode again by long key press of  (Menu) at the Drive screen after maintenance mode is finished.

However, you cannot use the reentry method above once the machine is turned off and rebooted.

E5-2 Machine Test—Machine movement

Below operation will be moved solely. In some operations, actuator of motor will be moved, Keep hands and face away during movement for your own safety.

#1 Needle Adjust : Input of Needle bar detect Potentiometer
At section of [Setting to detect needle position], this function can be used to set position of Potentiometer.

#2 Cutter Adjust : Action test of moving knife Open-Close
Use this function to adjust stop position of Moving knife.

#3 Catcher Adjust : Action test of Thread catch hook
This test is used to adjust stop position of Thread catch hook.

#4 Keeper Test : Action test of Keeper solenoid ON-OFF
This test is used to check action of Keeper.

#5 Jump Solenoid Test : Movement test of jump device ON-OFF.
This test is used to check movement of Jump device.

#6 Catcher Test : Movement test of thread catch hook IN-OUT
Use this test to check movement of Thread catch hook.

#7 Cutter Test : Action test of moving knife Open-Close
Use this function to check opening-closing action of Moving knife.

#8 Clip Solenoid : Action test of clip type thread holder (Option)
This test is used to check movement of clip type thread holder.

#9 Pointer Test : Action test of laser pointer (Option)
This test is used to check action of Laser pointer.

#10 Fan Drive Test : Action test of cooling fan ON-OFF
Use this function to check movement of cooling fan.

#11 Encoder Check : Input test of L point / C point timing
With turning main shaft, you can use this function to check if L point signal, C point signal, and timing signal are correct or not.

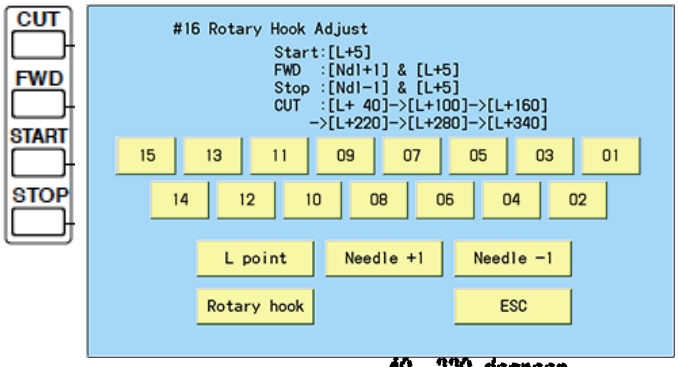
#12 Position Data Entry : Position Data Entry Confirm frame moving sensor
This test is used to check action of Frame moving sensor.
From Main program Ver.*1.34~, the Pulse motor will be un-locked when you activate the test, then you can move the embroidery frame to your desire position.

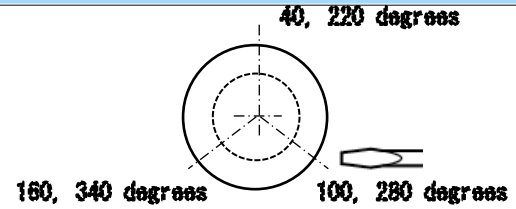
#13 Position Data Entry : Confirm registration of frame position data
You can use this function to check if Frame position data are entered correctly.

#14 Shaft Drive Test : Main shaft control test
You can turn main shaft with pushing "Start" or "Jump" key of Needle bar section.
This function can be used for test run after maintenance work.

#15 Sequin test (Option)
This test is used to check or adjust of Sequin device.

#16 Rotary Hook Adjust
This function can be used for [Adjustment of needle height] or [Adjustment of rotary hook timing].
You can also use the function through operation panel as well.





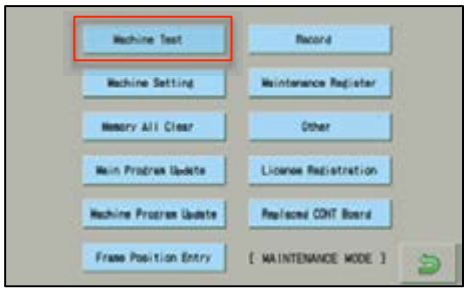
[01]-[15]: Needle change (Main program Ver.*1.37~)
[START]or[L point]: Main shaft will turn and set Needle bar position for [Adjustment of needle height] (L+10 degree).
[CUT]or[Rotary hook]: Rotary hook will turn and stop every 120 degrees to access 3 fixing screws easier.
[FWD]or[Ndl +1],
[STOP]or[Ndl -1]: Needle bar moves to the left or right, then sets Needle bar position for [Adjustment of needle height] (L+10 degree).

#17 Needle Posi. Adjust (for factory production)

1. Turn on machine power

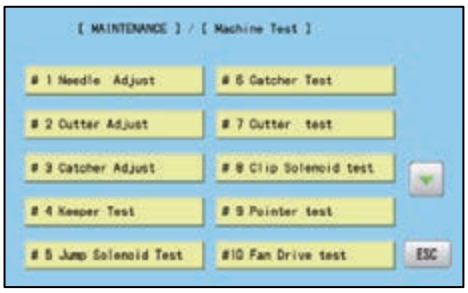
2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

3. Press Machine Test.

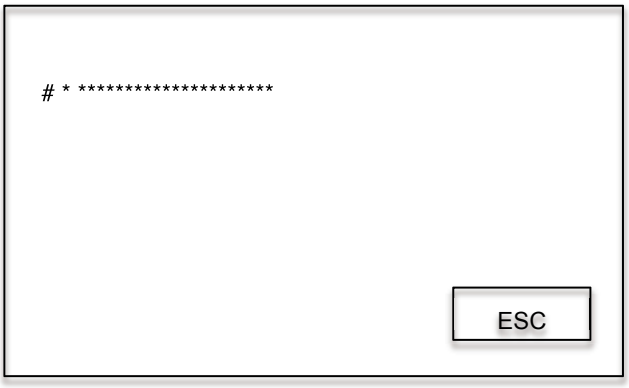


4. Select desired number to be confirmed.

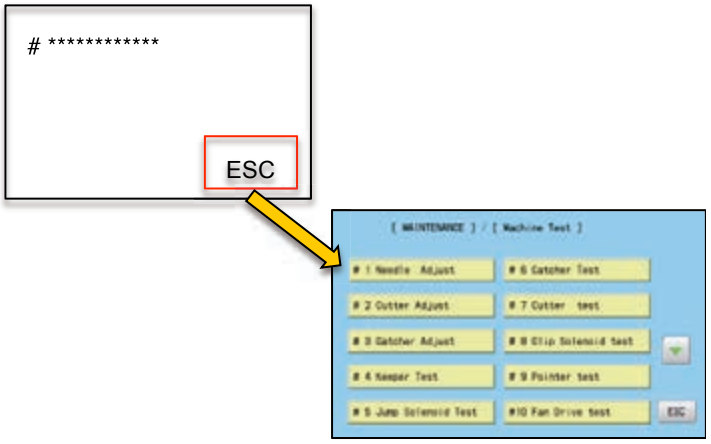
Page is switching by pressing  



Selected item will be executed.



5. Go back to [MAINTENANCE] screen if press ESC
(Not necessary if it backs automatically)



6. Press ESC and  then back to Drive mode screen

E5-3 Memory All Clear—Initialization of design memory

Delete all the design memory.

Execute this function when occurring design breakage or impossibility of design input.

If abnormality is found after deleting all the data, replace LCD-CE board (or Core module) since the board might be broken.

<NOTE>

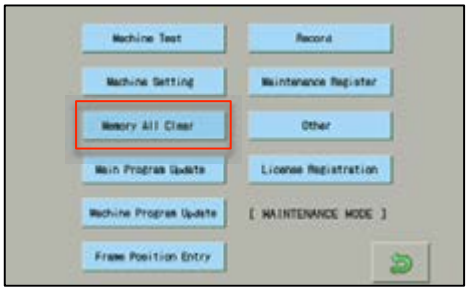
All the internal design memory will be deleted by initialization of design memory.

You have to be careful when initializing design memory.

1. Turn on machine power

2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

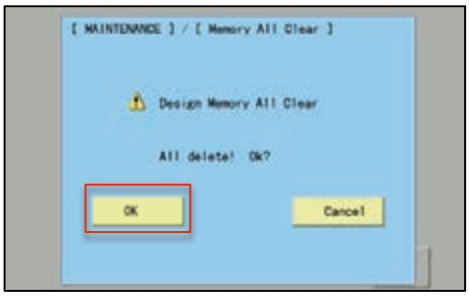
3. Press Memory All Clear.



4. Return to drive mode by pressing ESC and  .

4. Memory activation check and Memory all clear will be started after press OK

Back to[MAINTENANCE MODE] screen once completed



5. Return to drive mode by pressing ESC and 

E5-4 Record—Operation data display

You can confirm history of operation.

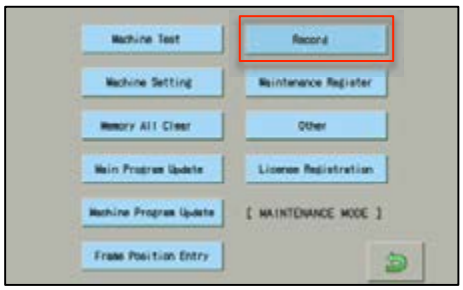
Total number of stitch	: Total number of stitch used for embroidery so far
Error occurrence record	: Type of errors and its occurrence date
Occurrence record by error type	: Accumulated number of each error occurrence
Thread break history	: The number of thread break by needle bar

E5-4-1 Total number of stitch

1. Turn on machine power

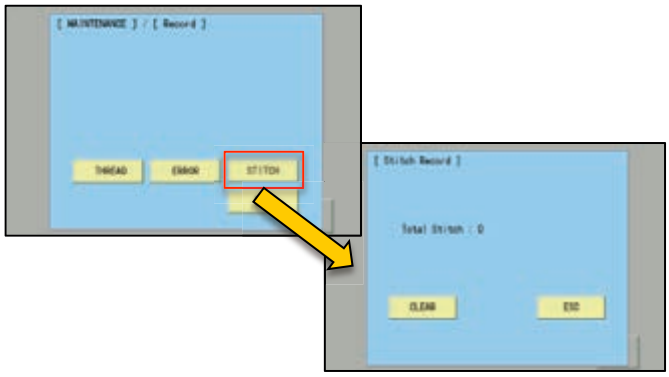
2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

3. Press Record.

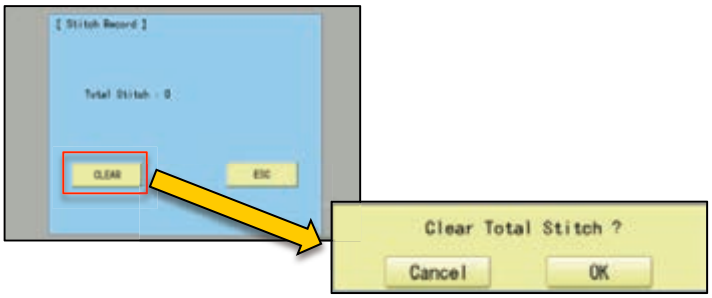


4. Press STITCH.

The screen shows total stitches used for embroidery so far.



5. Total Stitch clear selection screen will be appear by press CLEAR



6. Total number of stitch is cleard after pressing OK and the screen shows one in the procedure 5. Total number of stitch is [0]

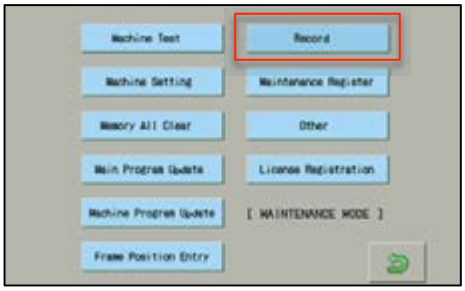
if you do not prefer to clear it, press ESC and the screen shows of the [Stitch Record] is displayed.

E5-4-2 Record of Error occurrence

1. Turn on machine power

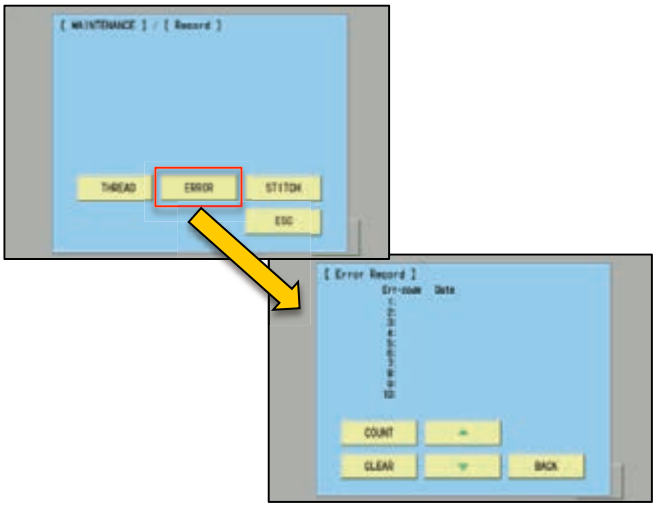
2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

3. Press Record.



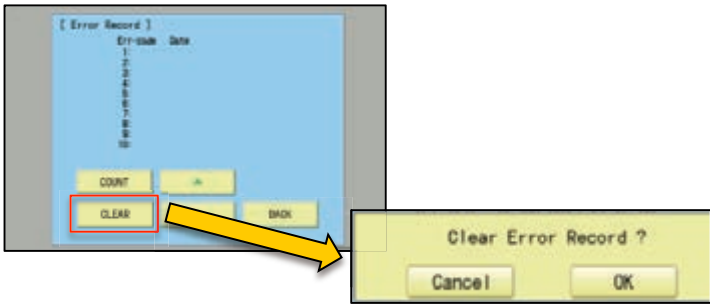
4. Press ERROR.

Enable to confirm Record of error occurrence.



* Enable to confirm Occurrence date and error number with ▲ ▼ button.

* Selection menu of Clear Error Record will be opened when pressing CLEAR.



5. Error record is cleared by pressing OK and the screen of the [Error Record] is displayed.

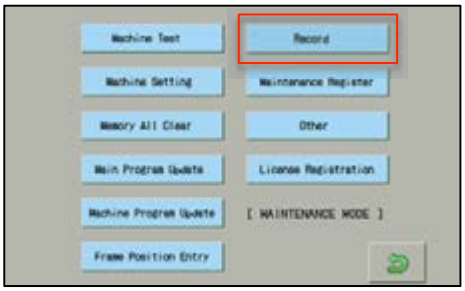
If you do not prefer to clear it, press CANCEL and the screen of the [Error Record] is displayed..

E5-4-3 Number of occurrence in each error display

1. Turn on machine power

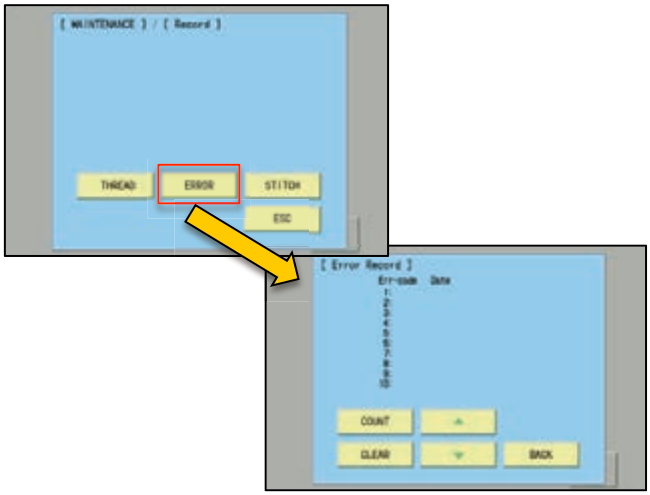
2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

3. Press Record.



4. Press ERROR.

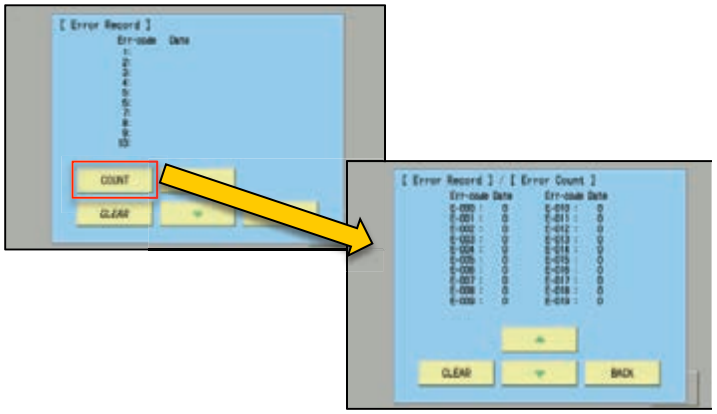
You can confirm record of error occurrence.



5. Press COUNT .

You can confirm total number of occurrence in each error.

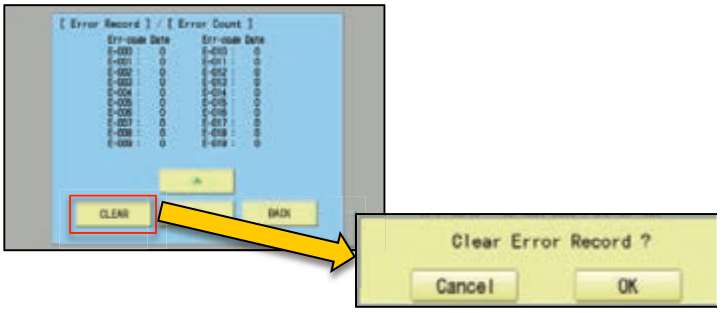
(E-000 to E-255 will be displayed)



* You can confirm accumulated number for E-000 to E-255 with ▲ ▼.

* The screen returns to the previous screen by pressing BACK.

6. Error Record Clear select screen will appear by press CLEAR



7. Error record is cleared by pressing OK and the screen of the [Error Record] is displayed.

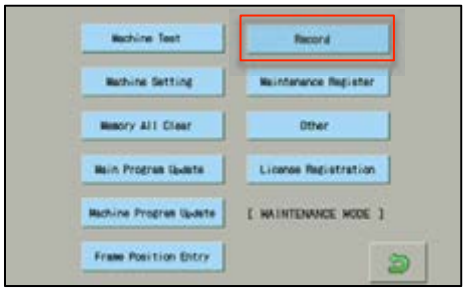
If you do not prefer to clear it, press Cansel and the screen of the [Error Record] is diaplayed.

E5-4-4 Thread break history

1. Turn on machine power

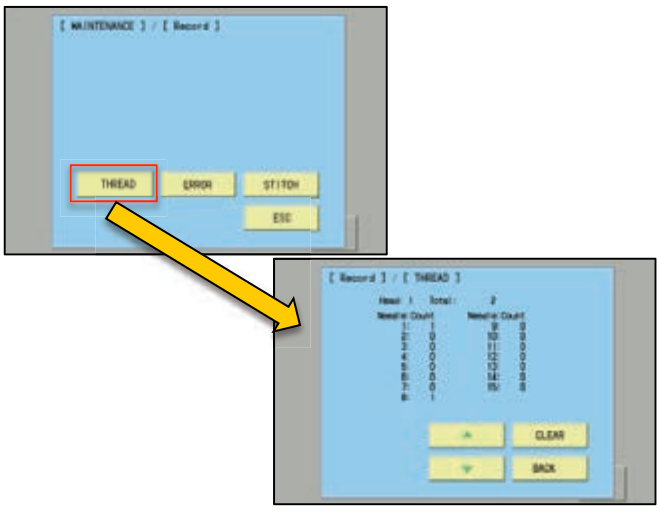
2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

3. Press Record.

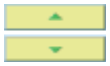


4. Press THREAD.

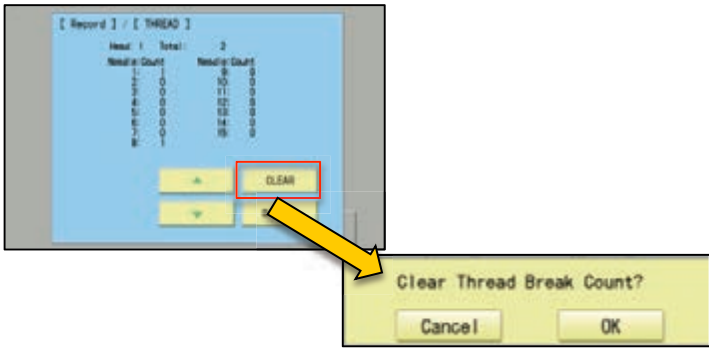
You can confirm thread break history by needle bar.



*The screen returns to the previous screen by pressing BACK.

*Head is switched by pressing  .

5. Thread break count Clear select screen will appear by press CLEAR



6. Thread break history is cleared by pressing OK and the screen of the [Record]/[THREAD] is displayed.

* If you do not prefer to clear it, press Cancel and the screen of the [Record]/[THREAD] is displayed.

E5-5 Setup—Machine setting

<NOTE> (*: Setting is for each indivisual machine, so prohibit to change setting. When you need to chage it, please contact us in advance)

($: Setting is different for each model type. Please check before changing data)

(# : Setting is depending on options installed. Please check before changing data)

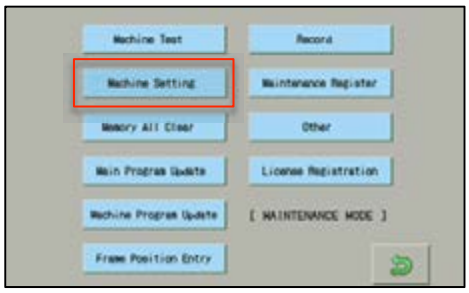
Contents

＊1	Machine Type	: HCR3		
＊2	Max Needle Number	: 15	(1-15)	: Number of Needle
$ 3	Max Head Number	: □	(1-30)	: Number of Head
$ 4	Machine Max Speed	: □□□	(500-2000)	: Maximum rotation
$ 5	Machine Max Area X	: □□□	(0-15000)	: Maximum embroidery area at X axis
＊6	Machine Max Area Y	: 4500	(0-15000)	: Maximum embroidery area at Y axis
$ 7	X Position Sensor	: □	(0-12)	: Number of position sensor at X axis
＊ 8	Y Position Sensor	: 6	(0-12)	: Number of position sensor at Y axis
# 9	LED Needle Pointer	: No		: Use of LED Pointer Yes or No
#10	Safety Sensor	: No.		: Use of safety sensor (rear)Yes or No (To be determined)
#11	N.Safety Sensor	: No.		: Use of safety sensor (front) Yes or No
#12	Clip Holder Device	: No		: Use of Clip holder device YES or NO
＊13	Borer Device	: No.		: Use of Borer device Yes or No
＊14	Cutter Unit Type	: PulseMtr		: Thread cutting unit type
＊15	X Start Base Angle	: 60	(20-90)	: Starting angle of frame movement on X axis
＊16	Y Start Base Angle	: 60	(20-90)	: Starting angle of frame movement on Y axis
＊17	X Start Angle(CAP)	: 40	(20-90)	Starting angle of frame movement on X axis for cap frame
＊18	Y Start Angle(CAP)	: 40	(20-90)	Starting angle of frame movement on Y axis for cap frame
$19	Color Change Speed	: Slow1	(Normal / Slow1 ~ Slow4)	Speed of needle bar change
＊20	Brush Data [*0.1mm]	: 200	(0-250)	Distance of thread brush (mm) after thread cut (1:0.1mm , 200:20.0mm ⋯ 250:25.0mm)
# 21	Clip Close Timing	: 250 (0-1000)		Close timing of Clip when Thread trim (ms) Set to 250 when the Clip holder device is Yes.
＊22	Border Overlap	: 8	(0-8)	Overlap of between heads for border frame
＊23	Trace Needle No.	: 1	(1-15)	Needle Number for Trace
＊24	Device Com. Speed	: 19200bps	(2400-115200)	Communication speed for Sequin device and Cording device
# 25	Sequin Dev. Left	: No		Use of left side Sequin device Yes or No
# 26	Sequin Dev. Right	: No		Use of right side Sequin device Yes or No
# 27	Sequin Dev. Type	: Other	(Happy)	Type of Sequin device
# 28	Number of 3-Needle	: 0	(0-15)	Needle number of 3-Needle device

1. Turn on machine power

2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

3. Press Machine Setting.



4. Select desired number and modify setting.

・Setting values become default by pressing  .

・Page is switched by pressing  .

5. Press ESC button after modifying of setting number.

6. The screen returns to drive mode by pressing  .

7. Turn off power and on again before use a machine.

E5-6 Position- Registration of coordinates for positioning sensor

This procedure is to memorize embroidery area into the machine.

*This procedure has to be done after exchange of CONT-R2 board position sensor board.

(Machine will display error [E-67 Position data] without the registration of coordinates of position sensor.

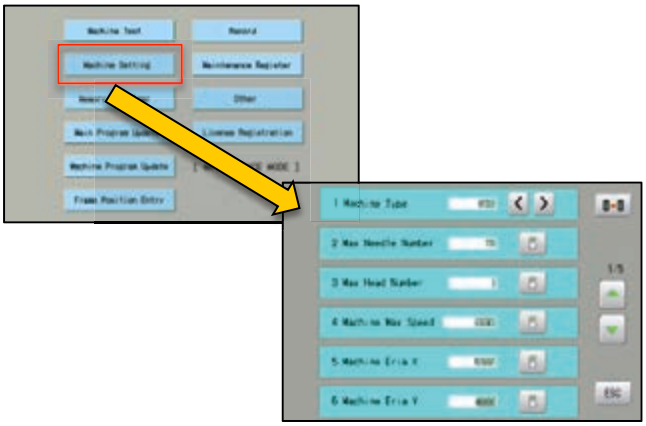
<note> Registeraion should be done with cover installed. Correct position may not be registered, if the registration is done with cover off.

As frame moves at maximum embroidery area, be surenot to have anything around the machine.

1. Turn on machine power

2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

3. Press Machine Setting.



4. Please check below items are correctly set by model

5. Machine Eria X

HCR3-1502 :	5000
HCR3-1504 :	3600
HCR3-X1504 :	5000
HCR3-1506 :	3600
HCR3-X1506 :	5000
HCR3-1508 :	3600
HCR3-X1508 :	5000
HCR3-1512 :	3600

6 . Machine Eria Y

HCR3-1502 :	4500
HCR3-1504 :	4500
HCR3-X1504 :	4500
HCR3-1506 :	4500
HCR3-X1506 :	4500
HCR3-1508 :	4500
HCR3-X1508 :	4500
HCR3-1512 :	4500

7. X Position Sensor

HCR3-1502 :	6
HCR3-1504 :	4
HCR3-X1504 :	6
HCR3-1506 :	4
HCR3-X1506 :	6
HCR3-1508 :	4
HCR3-X1508 :	6
HCR3-1512 :	4

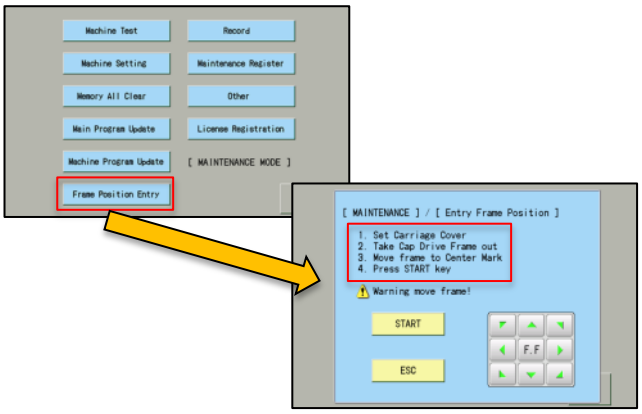
8. Y Position Sensor

HCR3-1502 :	6
HCR3-1504 :	6
HCR3-X1504 :	6
HCR3-1506 :	6
HCR3-X1506 :	6
HCR3-1508 :	6
HCR3-X1508 :	6
HCR3-1512 :	6

5. Press ESC.

6. Press Frame Position Entry.

Operate according to displayed below message.



(1). Fix carriage cover.

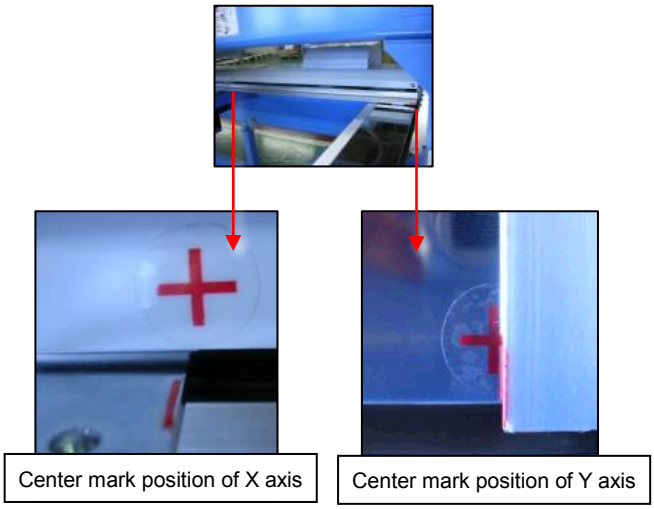
(2). Remove cap frame.

(3). Move carriage to center mark positon by

. (Refer to below display)

(4). Press START button.

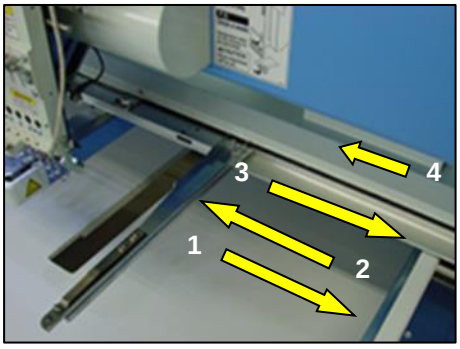
(Press ESC button in case of cancellation)



Center mark position of X axis

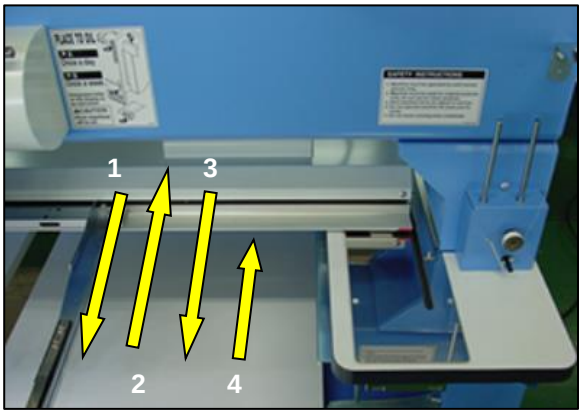
Center mark position of Y axis

7. When you press START button, registation of X axis ‘direxion will start. Frame moves as below.

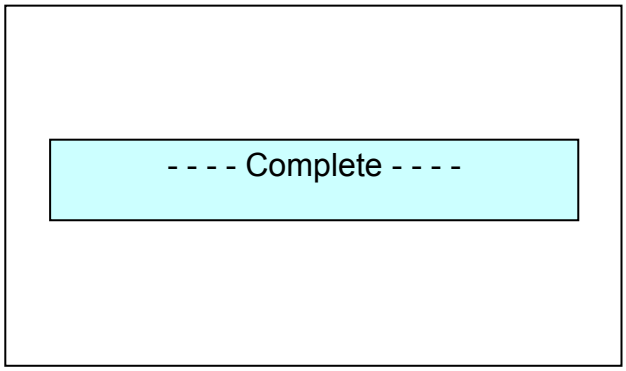


8. Then registration of Y axis direction will start.

Frame moves as below.



9. Below message will be displayed with successful completion.



Retry from step 6, if [Error] occurs.

Frame position registation is finshied.

10. Return to drive mode by pressing ESC and 

E5-7 Maintenance Register—Registration of machine maintenance date

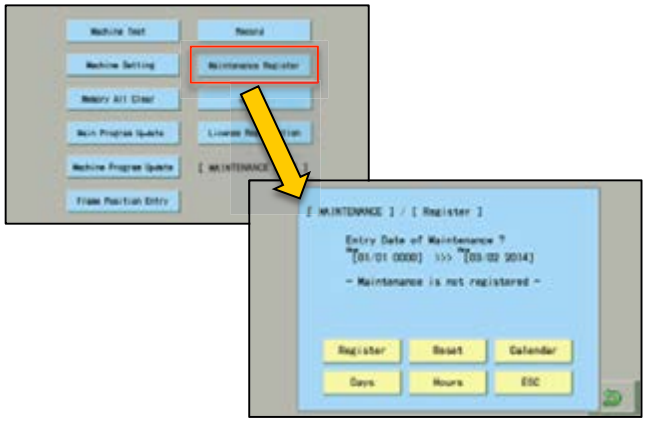
Registration of machine maintenance date

When last maintenance date is registered, next regular maintenance date will be set automatically.

1. Turn on machine power

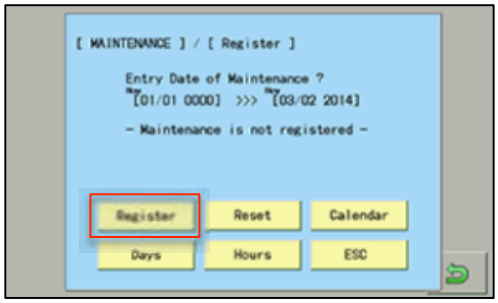
2. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

3. Press Maintenance Register.



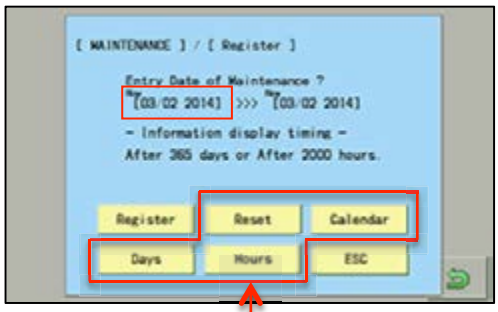
4. Press Register.

The current date will be registered as last maintenance date.



:

When the machine runs more than 2000 hours (default setting) or 365 days are passed after last maintenance, the machine will display the message to have regular maintenance.

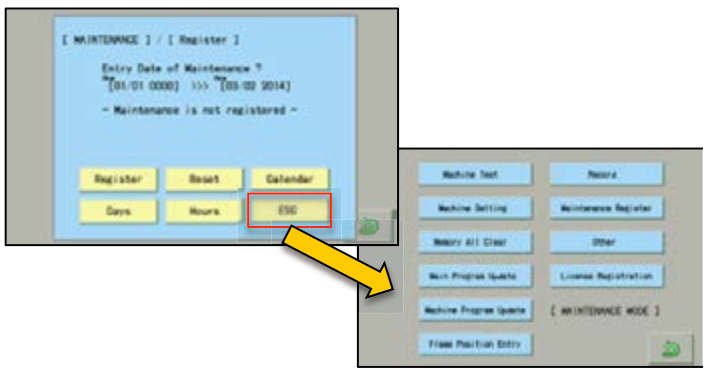


Main program Ver.*

- Pressing the RESET button delete the registered date.
- When the Calender button is pressed, you can set calendar of the machine.
- By pressing Days button, you can change the number of days for regular maintenance. (1 ~ 3,650 dsys)
- By pressing Hours button, you can change the number of running time for regular maintenance. (1 ~ 50,000 hours)

5. Press ESC.

Return to maintenance mode.

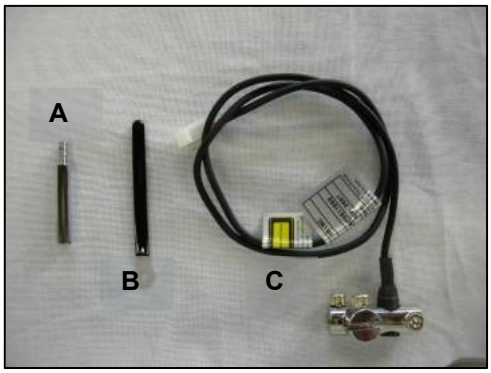


End of process.

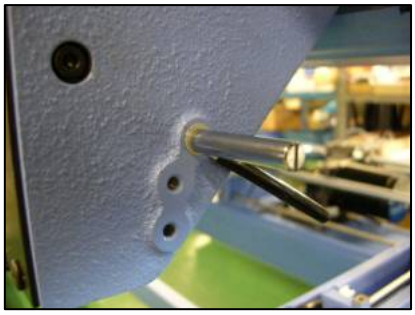
E6-1 Installation of laser position marker

<note> laser position marker is factory option and installed at factory. In case you need to install later at your side, trained engineer has to install

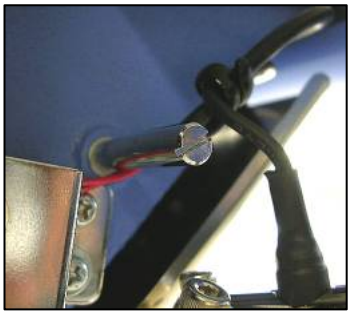
ESHCRU28010 Laser position marker set



1.Set bandage(B) with stud(A) on right side of moving head

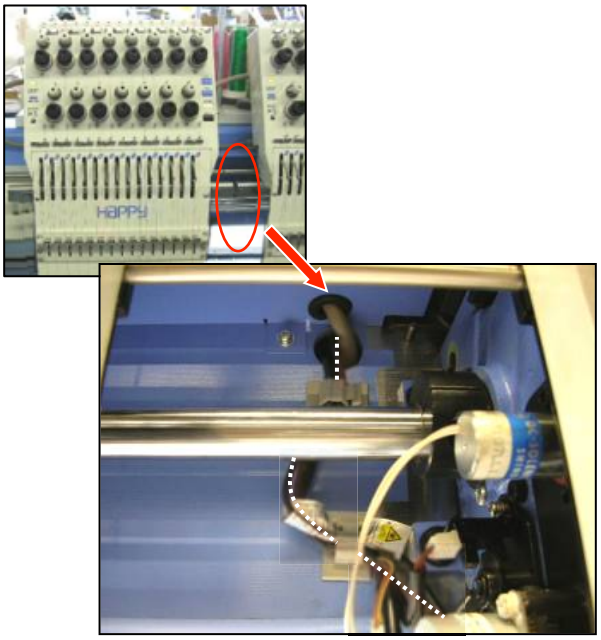


2.Bind harness of pointer unit (C) with bandage(B)

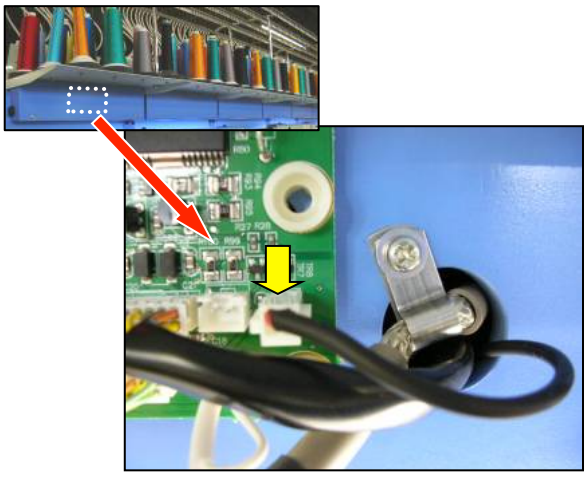


3.Set pointer unit (C) on stud (A)

4.Pass harness through hole at left side of moving head



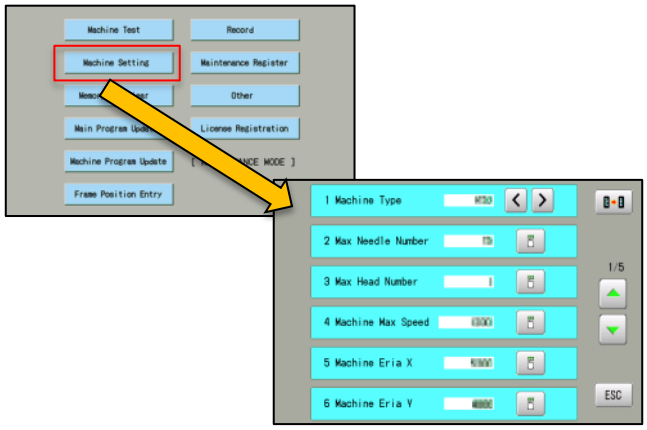
5.Put harness to CN11 on detection circuit board



6. Turn on machine power

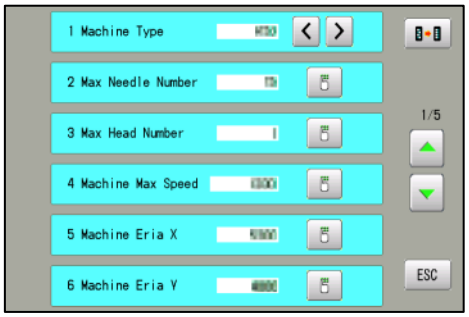
7. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

8. Press Machine Setting.

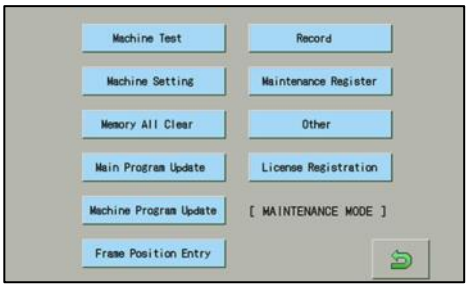


9. Change [9 LED Needle Pointer No] to
[9 LED Needle Pointer Yes]

10. Prss ESC button.

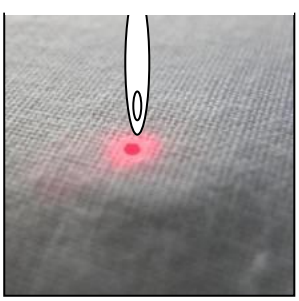


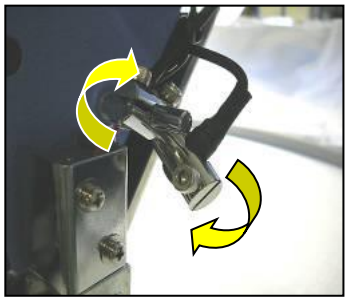
11. Press  , return to running menu.



11. Press  and  .

12.Adjust angle of pointer unit to point needle position





<note> Position may be changed depend on thickness of fabric

End of process.

E6-2 Installation of Safety sensor (front)

<note>Safety sensor (front) is factory option but sensois not set on machine. Please install sensor according to this instruction

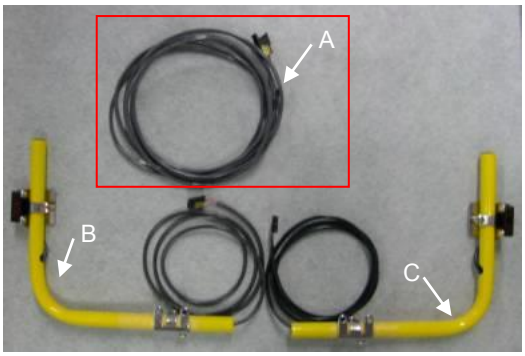
HCR2-FS2-4 Safety sensor (front)(for 2 and 4 haeds)

HCR2-FSX4-6 Safety sensor (front)(for X4 and 6 haeds)

HCR2-FSX6-8 Safety sensor (front)(for X6 and 8 haeds)

HCR3-FSX8-12 Safety sensor (front)(for X8 and 12 haeds)

HCRU28C1x Safety sensor (front) (without Harness A)



<note> Harness A is installed on machine, if sensor is ordered with machine

<Check>If you would like to order safety sensor separately, please check the machine if harness A is already installed or not. For some high-demand countries, harness A is installed beforehand at factory. In this case, you need to order only Safety sensor (front) (without Harness A).

B=Sensor(emission part)

C=Sencer(receiving part)

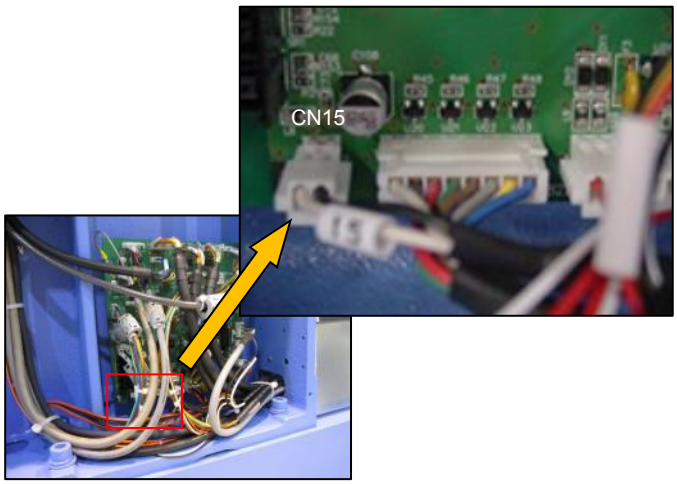
1. Take cover out at behind of machine

2. Take mission covers (right and left) out

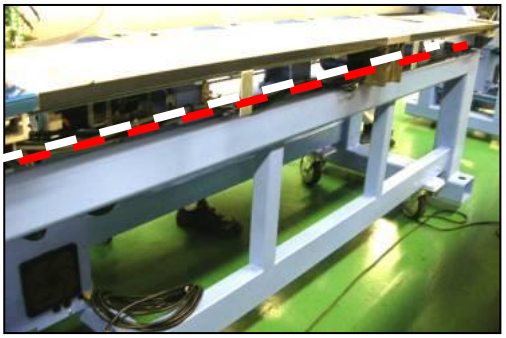
3. Connect harness

<note> Harness A is installed on machine, if sensor is ordered with machine or If harness A is already installed on the machine, you can skip this step.

Connect harness A into CN15 on CONT-R2 board in mission (right)

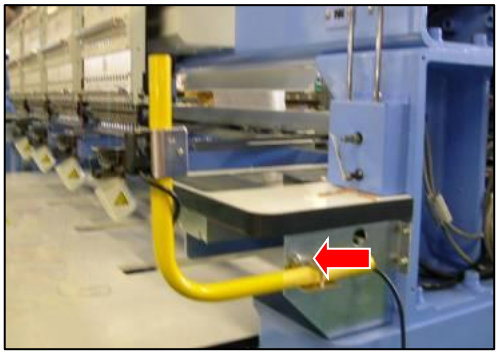


Extend harness to mission (left)



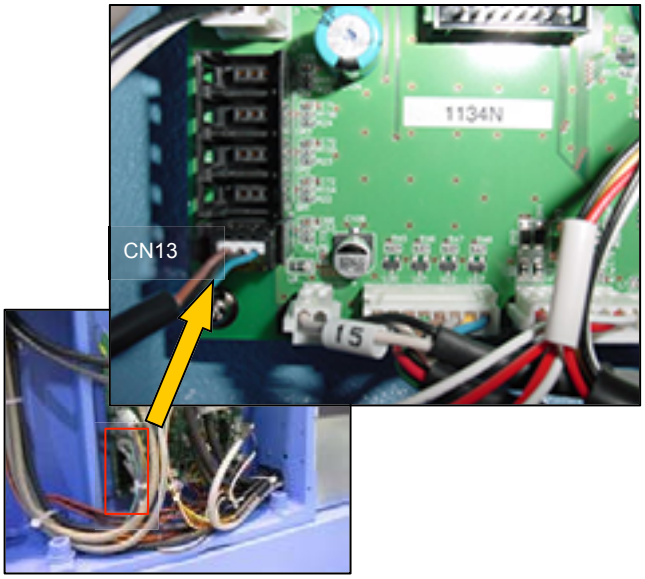
<note> harness should not touch to rotation parts and belts

4. Install sensor(C) at right side

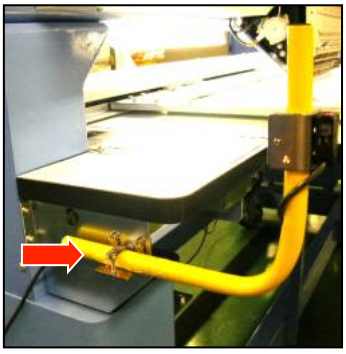


5. Cut center part of grommet and pass harness through grommet as photo below.

6. Connect harnessinto CN13 on Drive circuit board



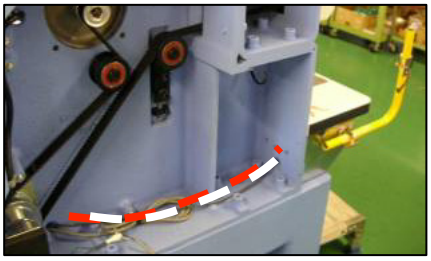
7. Install sensor(B) at left side



8. Cut center part of grommet and pass harness through grommet as photo below.

9. Pass harness through missin (left) and bring to front

<note> harness should not touch to belt



10. Connect harness to extension harness(LS5) at lower part of Y carriage

<note> put cable in order for avoiding to touch to shaft

11. Set cover

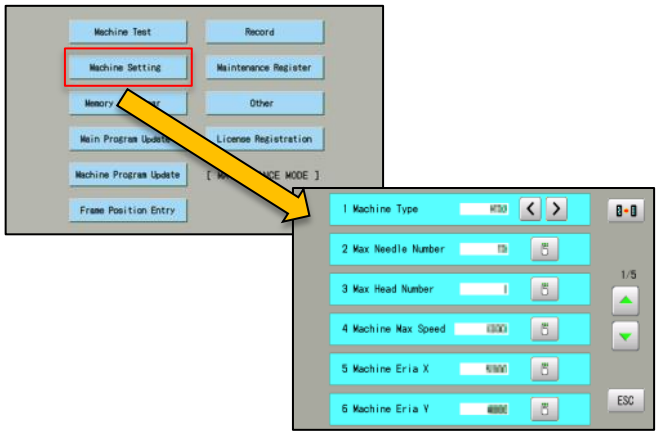
<note> harness should not get caught in the cover

12. Turn on machine power

13. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

<note>This setting is done already, if sensor is ordered with nachine. You can skip this step.

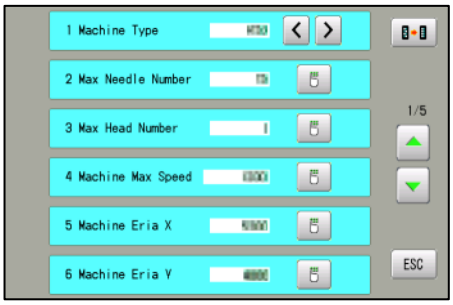
14. Press Machine Setting.



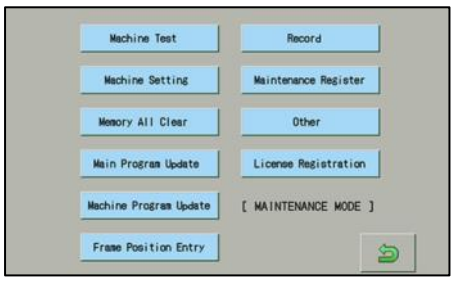
15. Change [11 N. Safety Sensor No]

[11 N. Safety Sensor Yes]

16. Press ESC button.

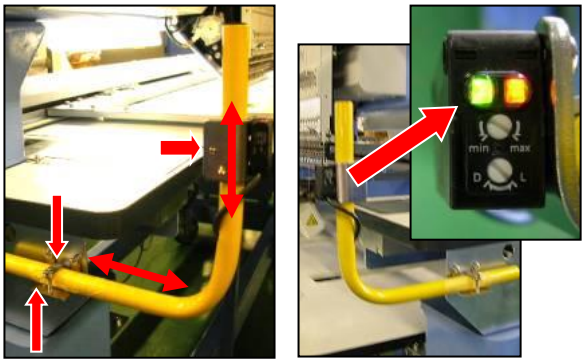


17. Press  , return to running menu.

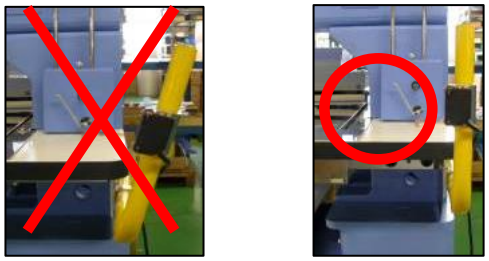


After these setting, Sencor becomes effective

18. Adjust position of sensors. Confirm both LED (green and Orange) is lighting



<note> Sencor should be finxed vertical



E6-3 Installation of Safety sensor (rear)

<note> Safety sensor (rear) is factory option but sensor is not set on machine. Please install sensor according to this instruction

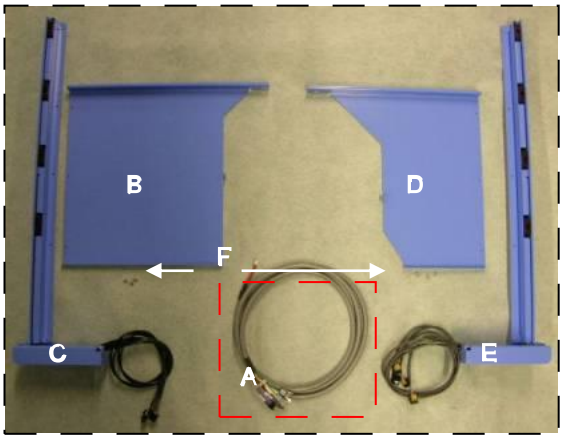
HCR2-RS2-4 Safety sensor (rear)(for 2 and 4 haeds)

HCR2-RSX4-6 Safety sensor (rear)(for X4 and 6 haeds)

HCR2-RSX6-8 Safety sensor (rear)(for X6 and 8 haeds)

HCR3-RSX8-12 Safety sensor (rear)(for X8 and 12 haeds)

HCRU28D10 Safety sensor (rear)(without Harness A)



<note> Harness A is installed on machine, if sensor is ordered with machine

<Check>If you would like to order safety sensor separately, please check the machine if harness A is already installed or not. For some high-demand countries, harness A is installed beforehand at factory. In this case, you need to order only Safety sensor (rear) (without Harness A).

B=Safety Guard (right)

C=Sensor (receiving part)

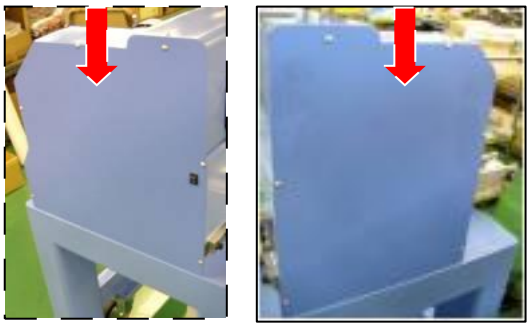
D=Safety Guard (left)

E=Sencer (emission part)

F=M3X6 screws (6 pcs)

1. Take cover out at behind of machine

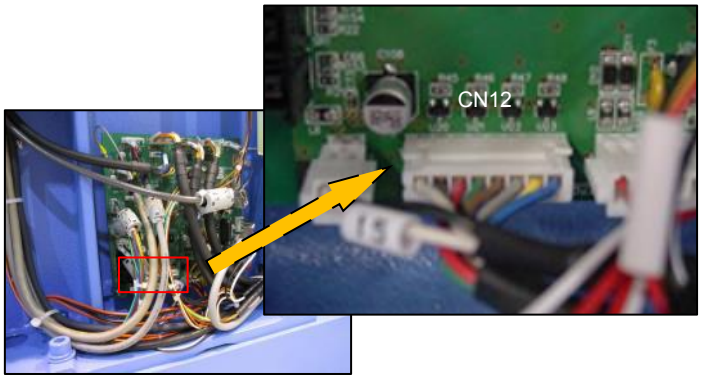
2. Take mission covers (right and left) out



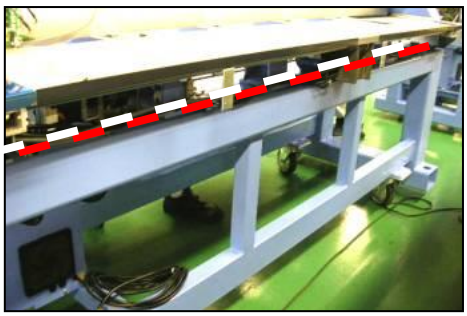
3. Connect harness

<note> Harness A is installed on machine, if sensor is ordered with machine or If harness A is already installed on the machine, you can skip this step.

Connect harness A into CN12 on CONT-R2 board in mission(right)

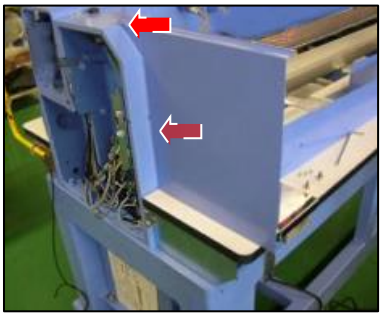


Extend harness to mission (left)

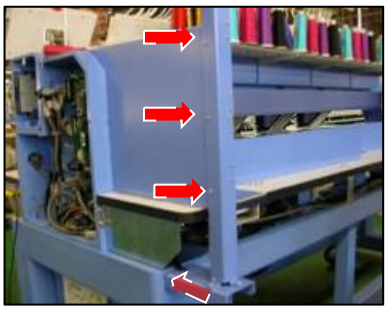


<note> harness should not touch to rotation parts and belts

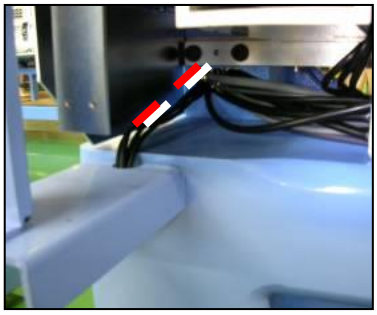
4. Remove screw of rmission (right), Install Safety Guard on missin (right)



5. Remove screw of body, Fix Sencor (C) on body and fix to Sefety Guard(B) by screws(F)

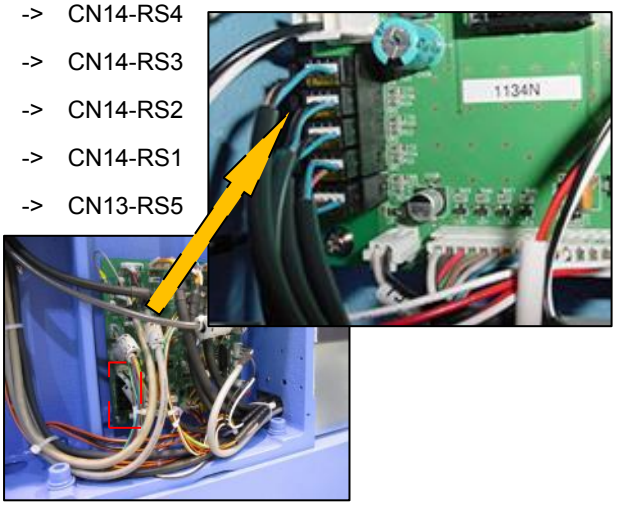


6.Pass harness into mission box

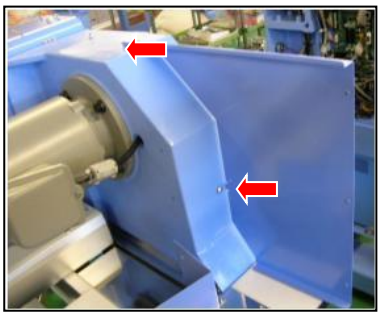


7. Connect harnessinto CN14 on Drive circuit board

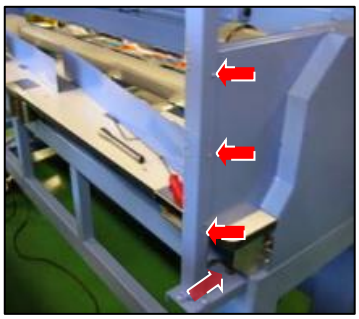
RS4 -> CN14-RS4
RS3 -> CN14-RS3
RS2 -> CN14-RS2
RS1 -> CN14-RS1
RS5 -> CN13-RS5



8. Remove screw of rmission (left), Set Safety Guard (D) on mission (left)



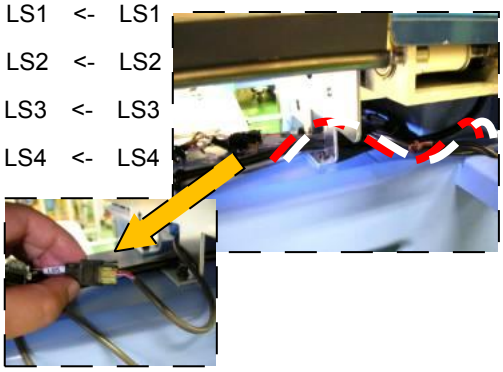
9. Remove screw of body, Fix Sencor (E) on body and fix to Sefety Guard(D) by screws(F)

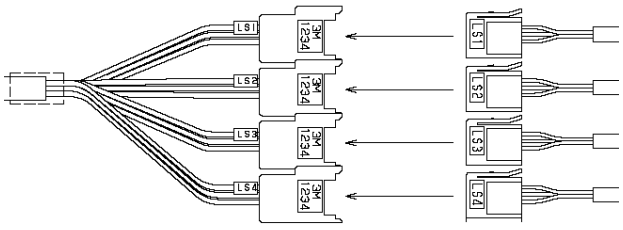


10. Connect harness to extension harness(LS*) at side of Y carriage

<note> put cable in order for avoiding to touch to shaft

LS1 <- LS1
LS2 <- LS2
LS3 <- LS3
LS4 <- LS4





11.Set cover

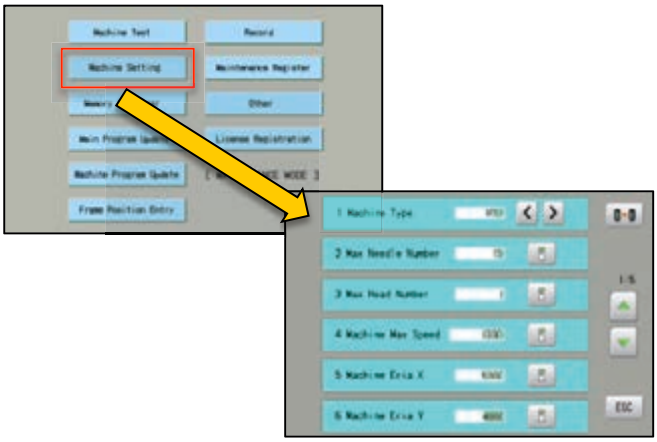
<note> harness should not get caught in the cover

12. Turn on machine power

13. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

<note> This setting is done already, if sensor is ordered with machine. You can skip this step

14. Press Machine Setting.



15. Change [10 Safety Sensor No] to [10 Safety Sensor Yes].

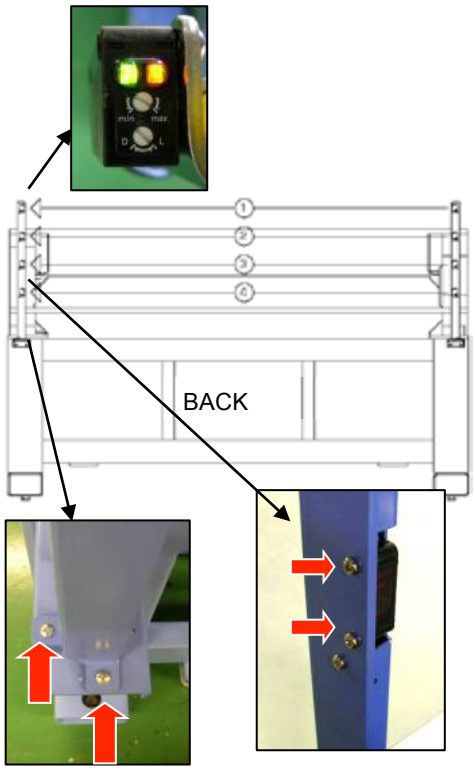
16. Press ESC button.

17. Press  , return to running menu.

After these setting, Sencor becomes effective

18. In case error occurs during operation:

Please adjust position of sensor where both LED (green and Orange) light stable by screws below.

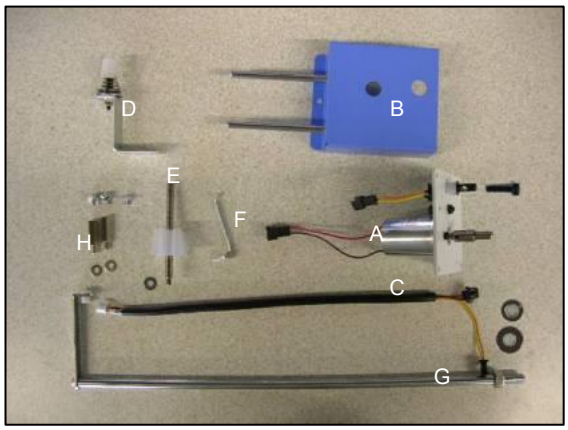


<note> Please do not press sensor, when you need to move machine. The position of sensor may be changed.

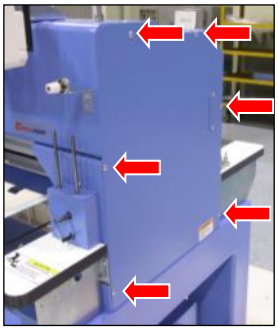
E6-4 Installation of bobbin thread winder

<note> Bobbin thread winder is factory option and installed at factory. In case you need to install later at your side, trained engineer has toinstall

ESHCRU36010 Bobbin thread winder set



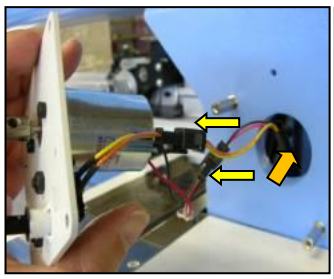
1. Take mission cover (right) out.

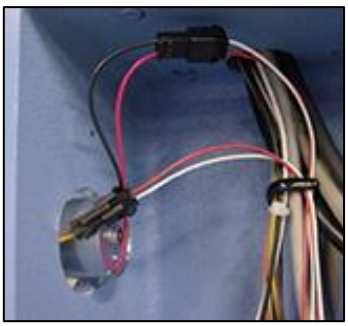


2. Set stud (H) with M4 washer.

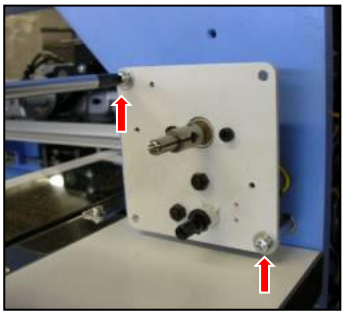
<Spanner> 7mm

3. Connect harness (C) to harness of motor (A) with limit switch, and put harness into mission.

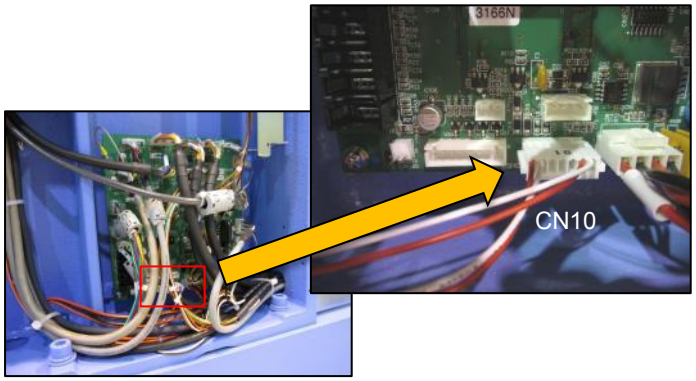




4. Fix winder(A). (Screw M4x8)

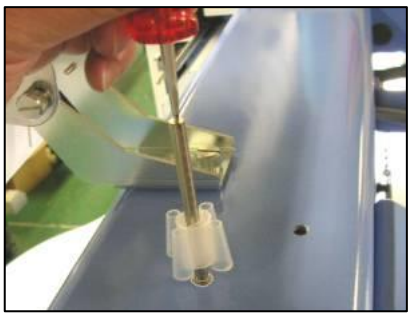


5. Connect harness (C) into CN10 on CONT-R2 board.

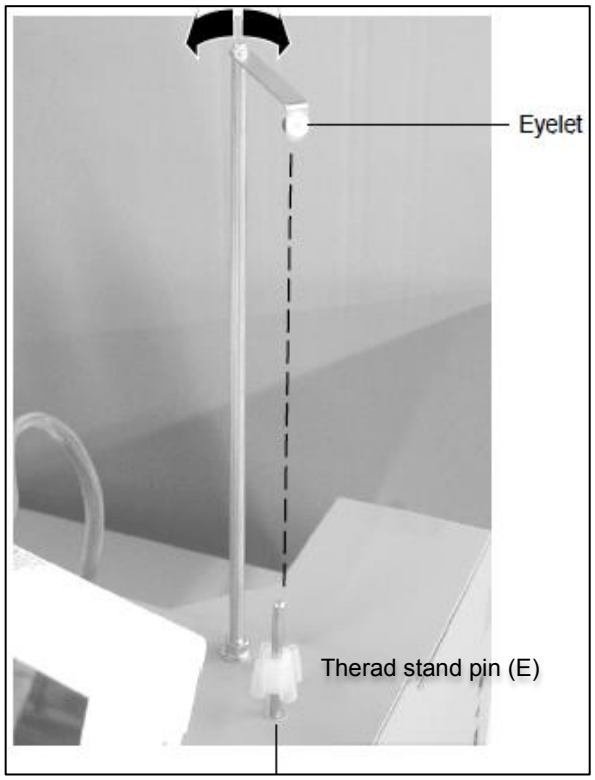


6. Set Thread tension device (D) on Body. (Screw M4x8)

7. Set thread stand (E) with M4 washer.



8. Set thread guide (G) with M8 washer and spring washer.
   Adjust a position of eyelet on bobbin thread guide to a position above of thread standpin (E), and fix nut.

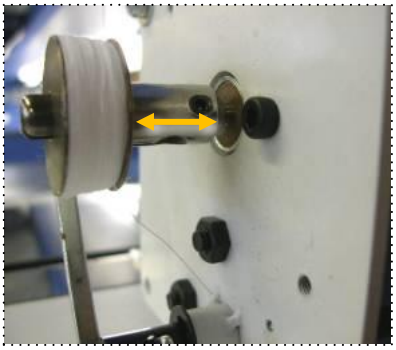


9. Set stop switch (F).

10. Set cover and power on.

11. Put thread and start to wind bobbin thread.
    Adjust position bobbin stand and thread tension (E) for winding thread equally.

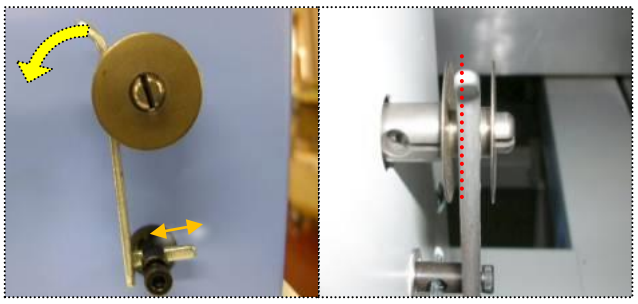
OK NG



Thread tension (D)

12. Take stop switch (F) out and put cover (B).

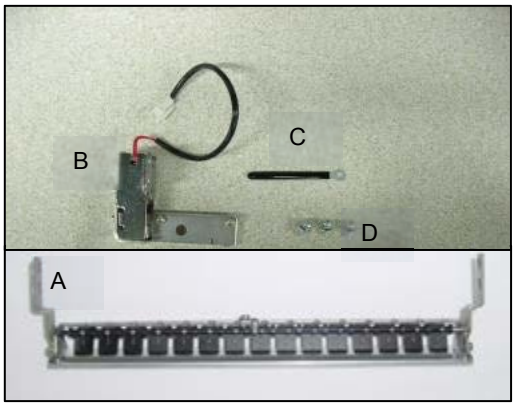
13. Set stop switch (F) and adjust position where stop switch (F) will open , when bobbin wilnd thread full.



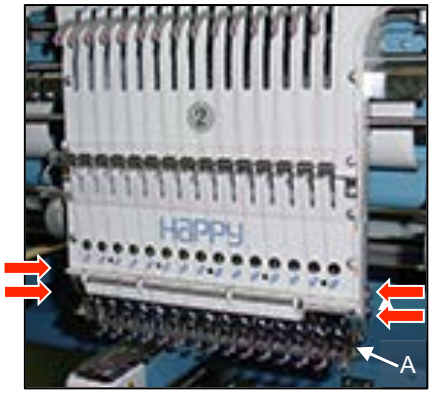
E6-5 Installation of Upper Thread Holder

<note> Upper Thread Holder is factory option and installed at factory. In case you need to install later at your side, trained engineer has to install

ESHCRU15010 Upper Thread Holder set

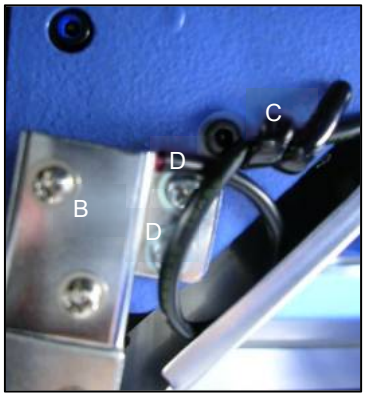


1. Set thread holder(A) under moving head



2. Check smooth movement of thread catcher at 1st and 15th needle

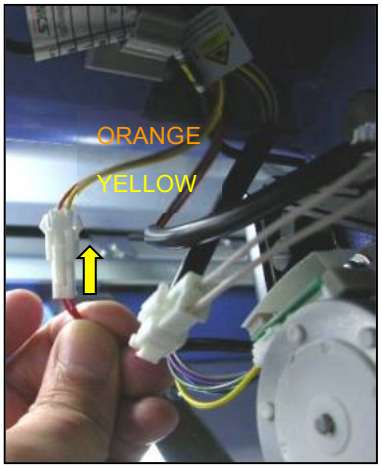
3. Set Clip drive unit (B) with bandage (C) by screw (D) at right side of moving head.



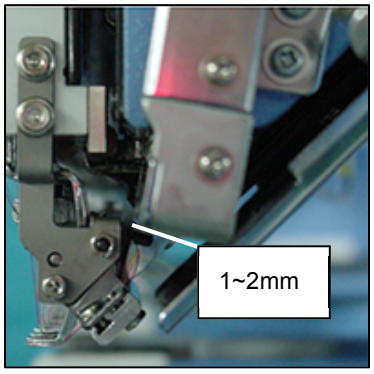
(bandage is common used for laser pointer and thread holder)

4. Connect harness to connector (2P) at left side of moving head, and bind cable with bandage.

<note> Cable should not touch to any moving part



5. Adjust space around 1~2mm between clip dirve unit (B) and thread holder

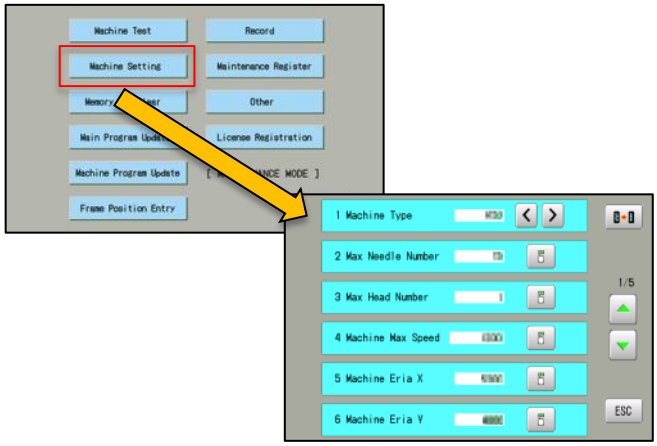


6. Turn on machine power

7. After showing below screen, Keep START/STOP button pressing then press NEXT to enter maintenance mode.

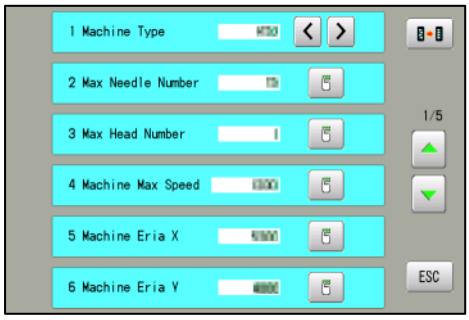
<note> This setting is done already, if Upper Thread Holder is ordered with machine. You can skip this step

8. Press Machine Setting.

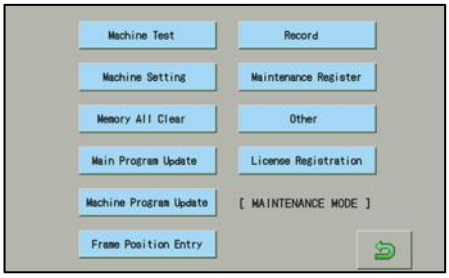


9. Change [12 Clip Holder Device No] to
[12 Clip Holder Device Yes].

10. Press ESC button.



11. Press  , return to running menu.



After these setting, Upper Thread Holder becomes effective.

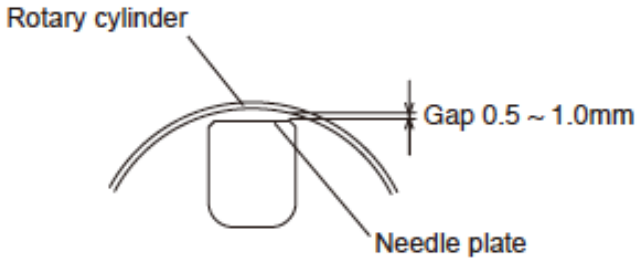
E6-6 Adjustment of Cap drive frame

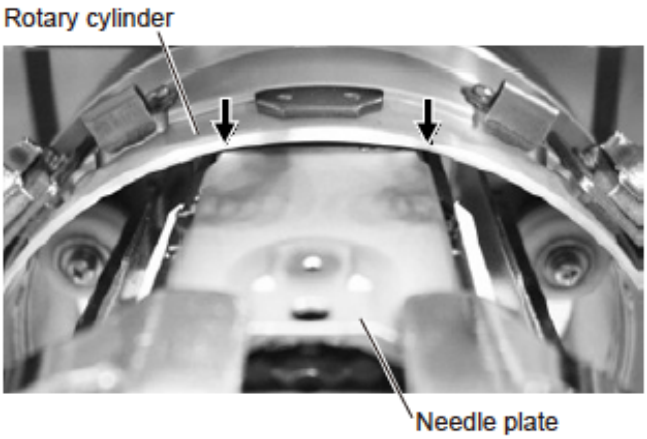
1. install cap drive frame.

   Please refer to [7-2　Installing and removing the cap drive frame].

2. Confirm that gap between rotary cylinder and needle plate comes to gap shown in fig. (The Drive frame is set exactly at the factory. Normally you do not need to adjust.)

   If it is not as shown in the figure, adjust it in next step.



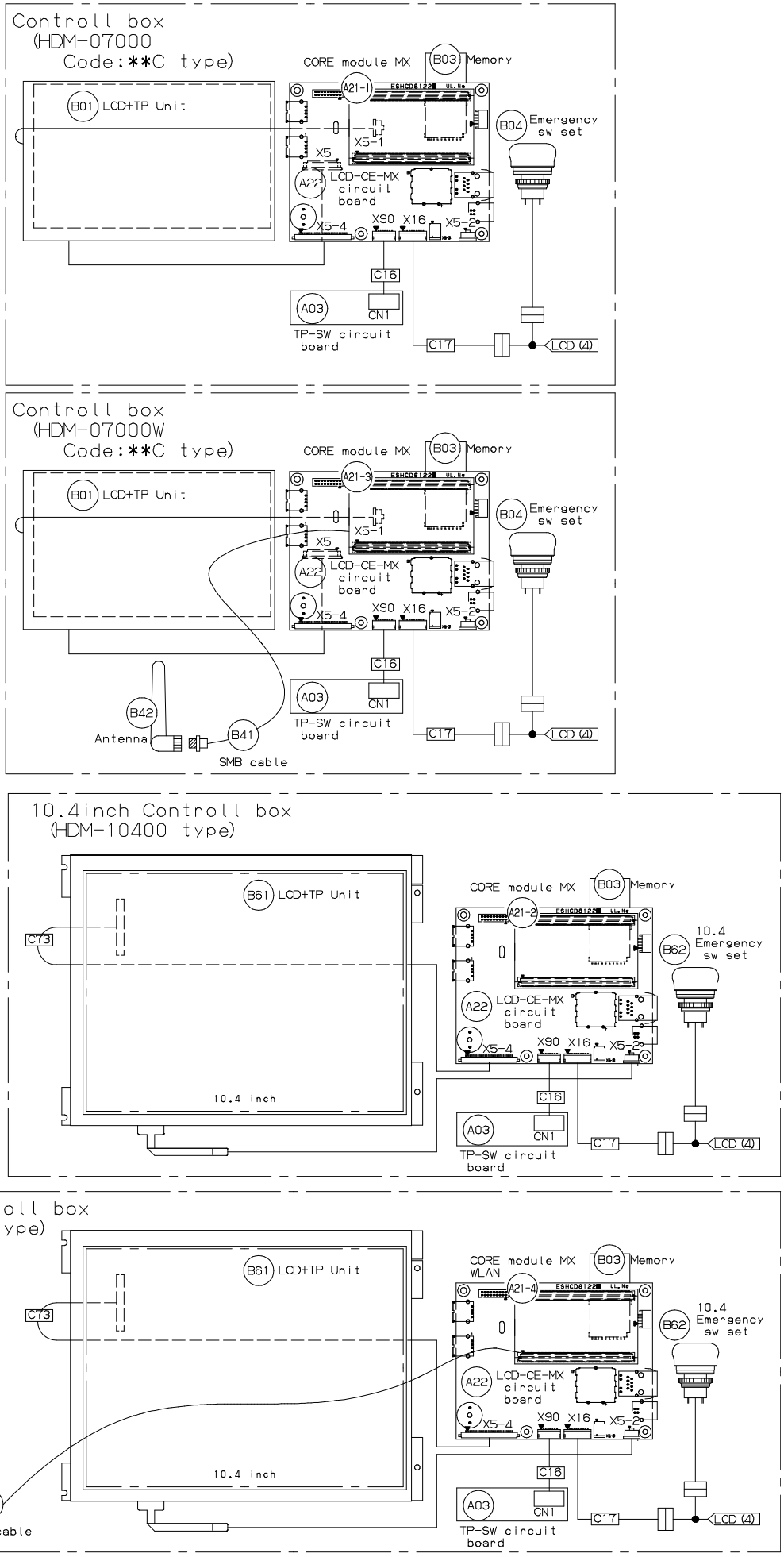


3. Loosen four screws slightly shown by the arrow mark, move the Rotary cylinder and adjust it so that it becomes the same gp as in step 2.

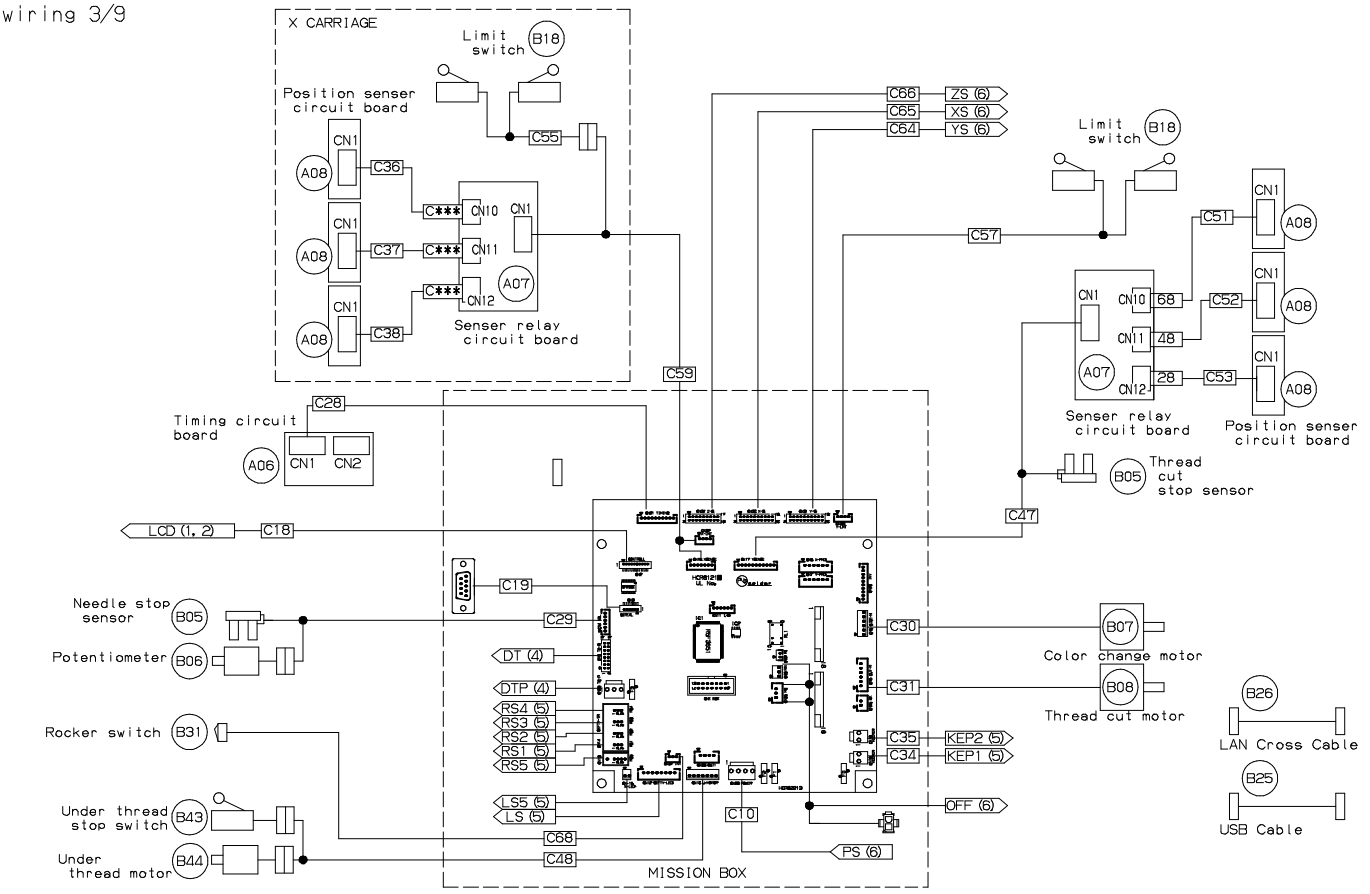
   Fix the four screws securely after adjustment.

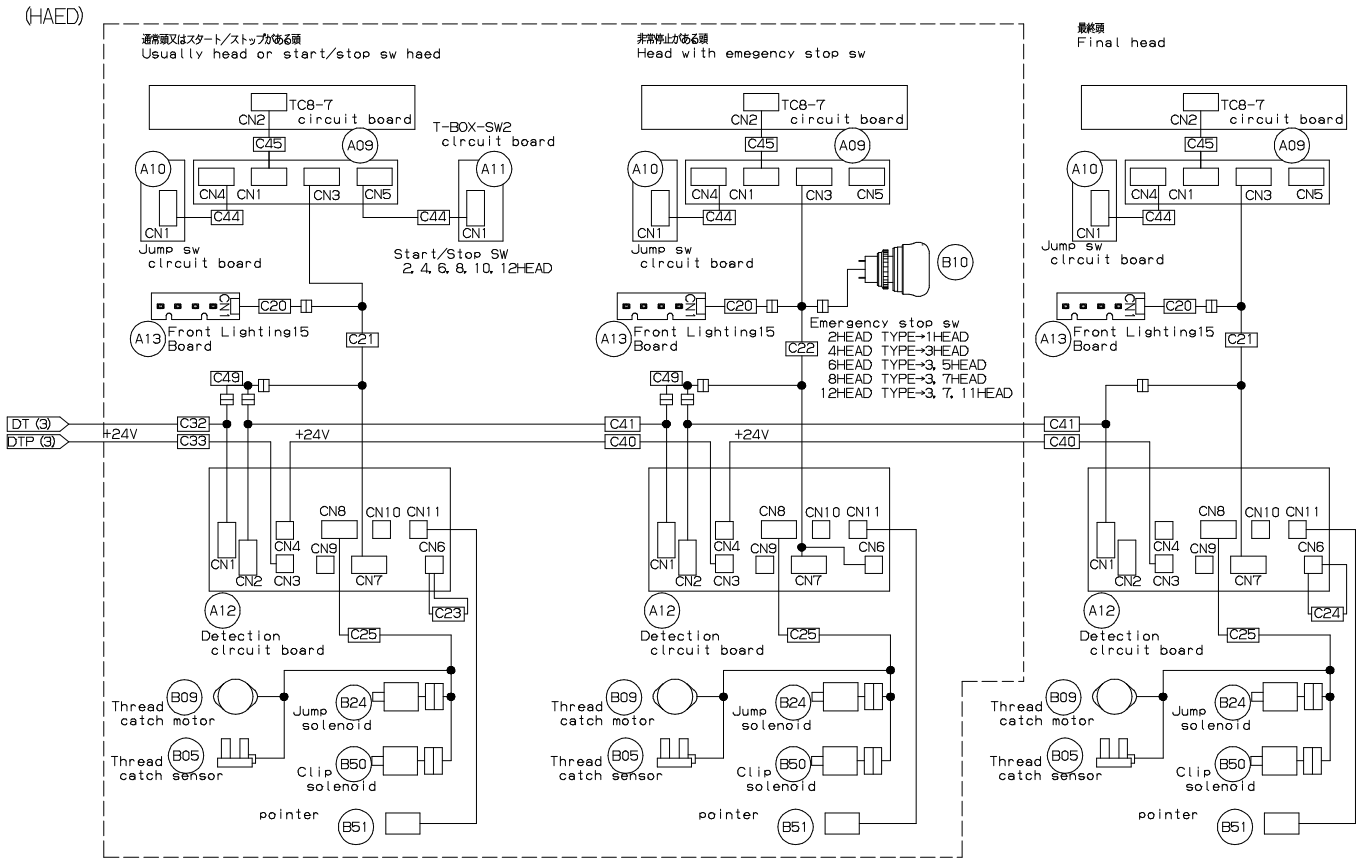
E7 Electric system diagram

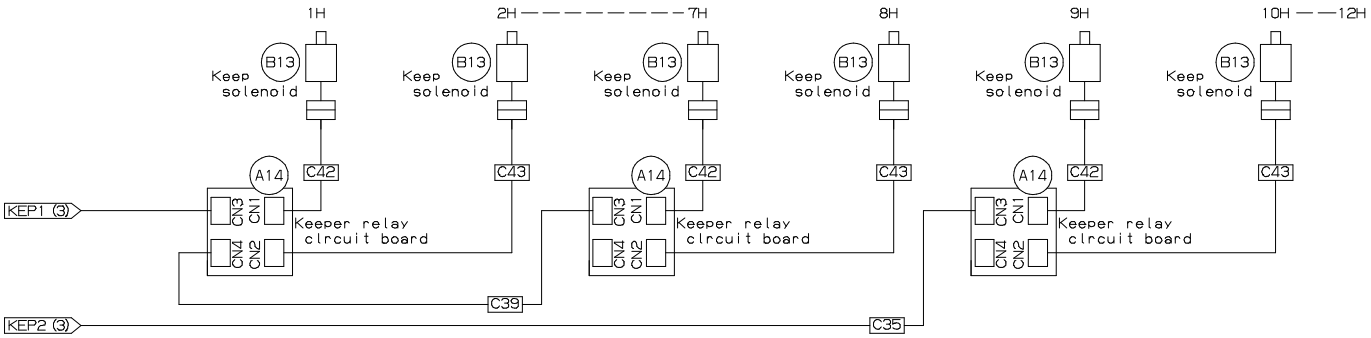
E7-1 Electrical connection diagram

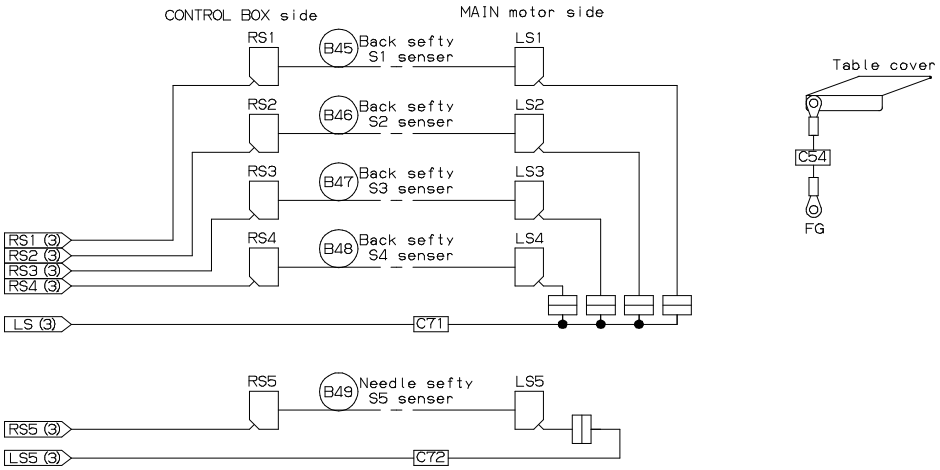


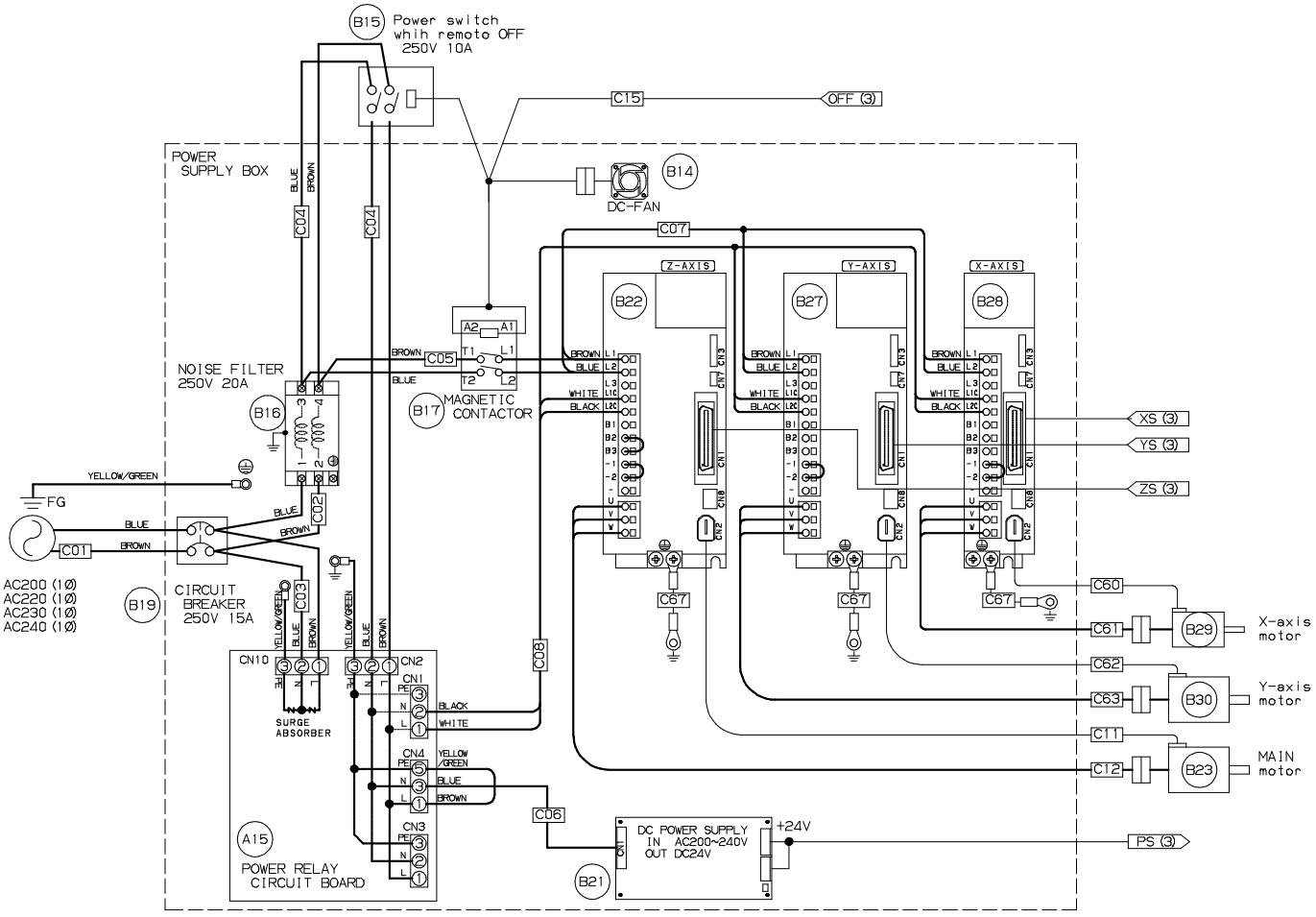
wiring 3/9


X CARRIAGE
Limit switch B18
Position senser circuit board
CN1
A08
C36
C37
C38
C***
CN10
CN11
CN12
A07
Senser relay circuit board
C55
C59
C66
C65
C64
ZS (6)
XS (6)
YS (6)
C57
C51
C52
C53
68
48
28
Position senser circuit board
Thread cut stop sensor
B05
C47
Timing circuit board
A06
CN2
C28
LCD (1, 2)
C18
C19
C29
DT (4)
DTP (4)
RS4 (5)
RS3 (5)
RS2 (5)
RS1 (5)
RS5 (5)
LS5 (5)
LS (5)
C68
C48
C10
PS (6)
OFF (6)
C30
C31
C35
C34
KEP2 (5)
KEP1 (5)
Needle stop sensor
Potentiometer
B06
Rocker switch
B31
Under thread stop switch
B43
Under thread motor
B44
MISSION BOX
Color change motor
B07
Thread cut motor
B08
B26
LAN Cross Cable
B25
USB Cable


(HAED)
通常頭又はスタート/ストップがある頭
Usually head or start/stop sw haed
非常停止がある頭
Head with emegency stop sw
最終頭
Final head
TC8-7 circuit board
CN2
C45
A09
T-BOX-SW2 circuit board
A10
A11
CN4
CN1
CN3
CN5
C44
Jump sw circuit board
Start/Stop SW 2, 4, 6, 8, 10, 12HEAD
C20
A13
Front Lighting15 Board
C21
B10
Emergency stop sw
2HEAD TYPE→1HEAD
4HEAD TYPE→3HEAD
6HEAD TYPE→3, 5HEAD
8HEAD TYPE→3, 7HEAD
12HEAD TYPE→3, 7, 11HEAD
C22
C49
DT (3)
DTP (3)
+24V
C32
C33
C41
C40
CN8
CN10
CN11
CN6
CN9
CN7
A12
Detection circuit board
C23
C24
C25
Thread catch motor
B09
Jump solenoid
B24
Thread catch sensor
B05
Clip solenoid
B50
pointer
B51


1H
2H
7H
8H
9H
10H
12H
B13
Keep solenoid
A14
C42
C43
CN3
CN1
CN4
CN2
Keeper relay circuit board
KEP1 (3)
KEP2 (3)
C39
C35


CONTROL BOX side
MAIN motor side
RS1
RS2
RS3
RS4
RS5
LS1
LS2
LS3
LS4
LS5
B45
B46
B47
B48
B49
Back sefty S1 senser
Back sefty S2 senser
Back sefty S3 senser
Back sefty S4 senser
Needle sefty S5 senser
RS1 (3)
RS2 (3)
RS3 (3)
RS4 (3)
RS5 (3)
LS (3)
LS5 (3)
C71
C72
Table cover
C54
FG


B15
Power switch whih remoto OFF 250V 10A
C15
OFF (3)
POWER SUPPLY BOX
B14
DC-FAN
C07
Z-AXIS
Y-AXIS
X-AXIS
B22
B27
B28
NOISE FILTER 250V 20A
B16
B17
MAGNETIC CONTACTOR
C05
C04
C02
C01
C03
C08
C06
C67
XS (3)
YS (3)
ZS (3)
C60
C61
C62
C63
C11
C12
B29
B30
B23
X-axis motor
Y-axis motor
MAIN motor
FG
AC200 (1Ø)
AC220 (1Ø)
AC230 (1Ø)
AC240 (1Ø)
B19
CIRCUIT BREAKER 250V 15A
SURGE ABSORBER
CN10
CN1
CN2
CN3
CN4
A15
POWER RELAY CIRCUIT BOARD
DC POWER SUPPLY IN AC200~240V OUT DC24V
+24V
B21
PS (3)
BROWN
BLUE
WHITE
BLACK
YELLOW/GREEN

E7-2 List of electrical connection diagram

Parts Names	Parts No.	Remark
A21-1 Core module MX	EPZ0140*	
A22 LCD-CE-MX circuit board	HCD8122*	
A03 TP-SW circuit board	HCD8116*	
A05 CONT-R2 circuit board	HCR8121*	*=3
A06 Timing (Main) circuit board	HCD8109*H	
A07 Senser Relay circuit board	HCD8111*	
A08 Position sensor circuit board	HCD8110*	
A09 TC8-7 circuit board	HCD8124*	
A10 Jump sw circuit board	HCR8126*	
A11 T-BOX SW circuit board	HCR8127*	
A12 Detection circuit board	HCR8107*	
A13 Front light15 circuit board	HCB8129*	
A14 Keeper relay circuit board	HCR8112*	
A15 Power relay circuit board	HCR8104*	
B01 LCD&TP	ESEPZ0149* ESEPZ0148*	
B03 Memory card	EPZ0122*	
B04 Emergency stop sw (DISP)	HCD7945*	
B05 Photo sensor	EPP0052*	
B06 Potentiometer	HCB7960*	
B07 Color change motor	HCB7921*	
B08 Thread cut motor	HCD7913*	
B09 Thread catch motor	EPM0059*	
B10 Emergency stop sw (HEAD)	HCR7962*	
B13 Keep solenoid	HCD7905*	
B14 DC fan unit	HCR7951*	
B15 Power switch whis remotoOff	EPS0089*	
B16 Noise filter	EPK0123*	
B17 MC	EPK0124*	
B18 Limit SW	EPS0118*	
B19 Circuit Protector	EPK01470	
B21 DC24V power supply	EPK01460	2~8H type machine
DC24V power supply	EPK0125*	12H type machine
B22 2H Z-Driver	HCR7966*	2H type machine
4H Z-Driver	HCR7969*	4, X4H type machine
6H Z-Driver	HCR7972*	6, X6H type machine
8H Z-Driver	HCR7975*	8, X8H type machine
12Z-Driver	HCR7961*	12H type machine
B23 Z-axis motor	EPM0080*	2, 4H type machine
Z-axis motor	EPM0070*	X4, 6, 8, X8H type machine
Z-axis motor	EPM0071*	12H type machine
B24 Jump solenoid	HCB7901*	
B25 USB cable	EPZ0075*	
B26 LAN cross cable	EPZ0126*	
B27 2H Y-Driver	HCR7965*	2H type machine
4H Y-Driver	HCR7968*	4, X4H type machine
6H Y-Driver	HCR7971*	6, X6H type machine
8H Y-Driver	HCR7974*	8, X8H type machine
12H Y-Driver	HCR7960*	12H type machine
B28 2H X-Driver	HCR7964*	2H type machine
4H X-Driver	HCR7967*	4, X4H type machine
6H X-Driver	HCR7970*	6, X6H type machine
8H X-Driver	HCR7973*	8, X8H type machine
12H X-Driver	HCR7959*	12H type machine
B29 X-axis motor	EPM0080*	2, 4H type machine
X-axis motor	EPM0070*	X4, 6, 8, X8, 12H type machine
B30 Y-axis motor	EPM0070*	2, 4H type machine
Y-axis motor	EPM0071*	X4, 6, 8, X8, 12H type machine
B31 Rocker switch	EPS0104*	

* :改訂番号 Mark is a revision number

Parts Names	Parts No.	Remark
C01 HCR3 POWER-P CORD	HCR7367*	2-8H type machine
HCR POWER-P CORD	HCR7333*	12H type machine
C02 NFB harnees	HCR7361*	
C03 SA harnees	HCR7365*	
C04 PSW harnees	HCR7363*	
C05 MC harnees	HCR7362*	
C06 PS harnees	HCR7364*	
C07 MC relay harnees	HCR7345*	
C08 Driver relay harnees	HCR7338*	
C10 DC power harnees	HCR7214*	
C11 Main motor Encoder harness	EPM0092*	2, 4, X4H type machine
Main motor Encoder harness	EPM0093*	X4, 6, 8H type machine
Main motor Encoder harness	EPM0079*	X8, 12H type machine
C12 Main motor harness	EPM0092*	2, 4, X4H type machine
Main motor harness	EPM0095*	6, X6, 8H type machine
Main motor harness	EPM0091*	X8H type machine
Main motor harness	EPM0076*	12H type machine
C15 EBOX-S harnees	HCR7366*	
C16 SW cable2	HCD7252*	
C17 BOX cable2	HCD7273*	
C18 CONT cable2	HCD7272*	
C19 RS232C cable2	HCD7271*	
C20 Front led cable2	HCD7225*	
C21 TC-S harnees2	HCR7311*	
C22 TC-E harnees2	HCR7312*	
C23 EMG short harnees2	HCR7227*	
C24 EMG end harnees2	HCR7228*	
C25 Jump & Thread catch harnees	HCR7029*	
C28 L-C harnees	HCR7332*	
C29 Potentiometer relay harnees2	HCR7241*	
C30 Color change motor harnees	HCR7042*	
Color change motor (X8) harnees	HCR7260*	X8H type machine
C31 Thread cut motor harnees2	HCR7243*	
Thread cut motor (X8) harnees	HCR7259*	X8H type machine
C32 Detection SG relay harnees2	HCR7307*	
C33 Detection P relay harnees2	HCR7306*	
C34 Keep relay harnees2	HCR7248*	
Keep relay (X8) harnees	HCR7246*	X8H type machine
C35 Keep relay12 harnees	HCR7249*	
C36 Limit cross (1500) harnees	HCR7115*	4, 6, 8, 12H type machine
Limit cross (1200) harnees	HCR7116*	2, X4, X6, X8H type machine
C37 Limit cross (1700) harnees	HCR7119*	4, 6, 8, 12H type machine
Limit cross (1400) harnees	HCR7117*	2, X4, X6, X8H type machine
C38 Limit cross (1600) harnees	HCR7118*	2, X4, X6, X8H type machine
C39 Keep (360type) harness2	HCR7265*	
C40 DetecP (360 type) harnees	HCR7071*	4, 6, 8, 12H type machine
DetecP (500 type) harnees	HCR7072*	2, X4, X6H type machine
C41 Detec SG (360) harnees2	HCR7309*	4, 6, 8, 12H type machine
Detec SG (500) harnees2	HCR7310*	2, X4, X6H type machine
C42 Keep 55 harnees2	HCR7277*	
C43 Keep 90 harnees2	HCR7278*	
C44 TC-SW harnees	HCR7329*	
C45 TC connecting harnees	HCB7215*	
C47 L Senser harnees2	HCR7233*	
L Senser (X-8) harnees	HCR7258*	X8H type machine
C48 UDC motor harnees2	HCD7269*	
C49 LED relay harnees2	HCR7308*	
C51 Limit relay (680) harnees2	HCD7243*	
C52 Limit relay (480) harnees2	HCD7242*	
C53 Limit relay (280) harnees2	HCD7241*	

* :改訂番号 Mark is a revision number

Parts Names	Parts No.	Remark
C54 Ground harnees	HCR7211*	
C55 X-LIMIT12 harnees	HCR7347*	
C57 Y-LIMIT harnees	HCR7348*	
C59 X-SENSER harnees	HCR7331*	
C60 X-motorEncoder harness	EPM0077*	
C61 X-motor harness	EPM0074*	
C62 Y-motorEncoder harness	EPM0086*	2、4、X4 type machine
Y-motorEncoder harness	EPM0087*	6、X6、8H type machine
Y-motorEncoder harness	EPM0078*	X8、12H type machine
C63 Y-motor harness	EPM0082*	2、4、X4 type machine
Y-motor harness	EPM0083*	6、X6、8H type machine
Y-motor harness	EPM0075*	X8、12H type machine
C64 X-S harness	HCR7341*	
C65 Y-S harness	HCR7342*	
C66 Z-S harness	HCR7343*	
C67 S-Ground harnees	HCR7211*	
C68 BRAKE-SW (2-4) harnees	HCR7360*	2、4H type machine
BRAKE-SW (X4-6) harnees	HCR7359*	X4、6H type machine
BRAKE-SW (X6-8) harnees	HCR7358*	X6、8H type machine
BRAKE-SW (12) harnees	HCR7357*	X8、12H type machine

(OPTION)		
A21-2 Core module MX 10inch	HCD7963*	
A21-3 Core module MX WLAN 7inch	HCD7962*	
A21-4 Core module MX WLAN 10inch	ECD7964*	
B41 SMA cable	EPZ0121*	
B42 Antenna	EPZ0120*	
B43 Under thread stop switch	HCD7922*	
B44 Under Thread DC-motor unit	HCD7921*	
B45 HCR2 Back sefty S1 senser	HCR7945*	
B46 HCR2 Back sefty S2 senser	HCR7946*	
B47 HCR2 Back sefty S3 senser	HCR7947*	
B48 HCR2 Back sefty S4 senser	HCR7948*	
B49 HCR2 Needle sefty S5 senser	HCR7949*	
B50 Clip solenoid	HCR7903*	
B51 pointer	HCR7941*	
B61 10.4LCD+TPunit	EPZ0141*	
B62 10.4Emergency stop sw (DISP)	HCD7955*	

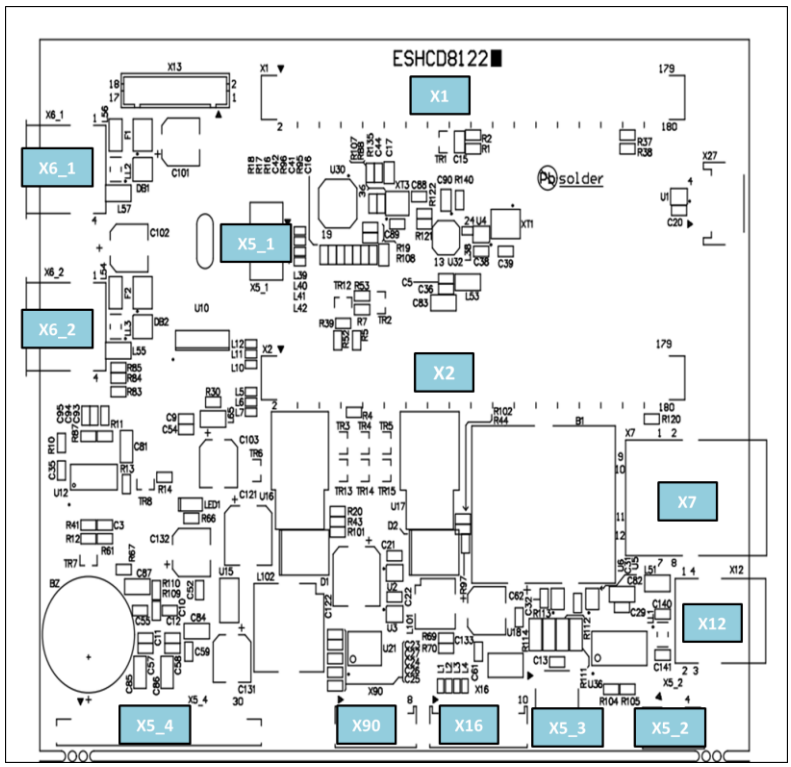
C71 Senser relay (2-4) harnees	HCR7295*	2、4H type machine
Senser relay (X4-6) harnees	HCR7296*	X4、6H type machine
Senser relay (X6-8) harnees	HCR7297*	X6、8H type machine
Senser relay (12) harnees	HCR7294*	X8、12H type machine
C72 Needle relay (2-4) harnees2	HCR7301*	2、4H type machine
Needle relay (X4-6) harnees2	HCR7302*	X4、6H type machine
Needle relay (X6-8) harnees2	HCR7303*	X6、8H type machine
Needle relay (12) harnees	HCR7300*	X8、12H type machine
C73 LVDS harnees	HCR7280*	

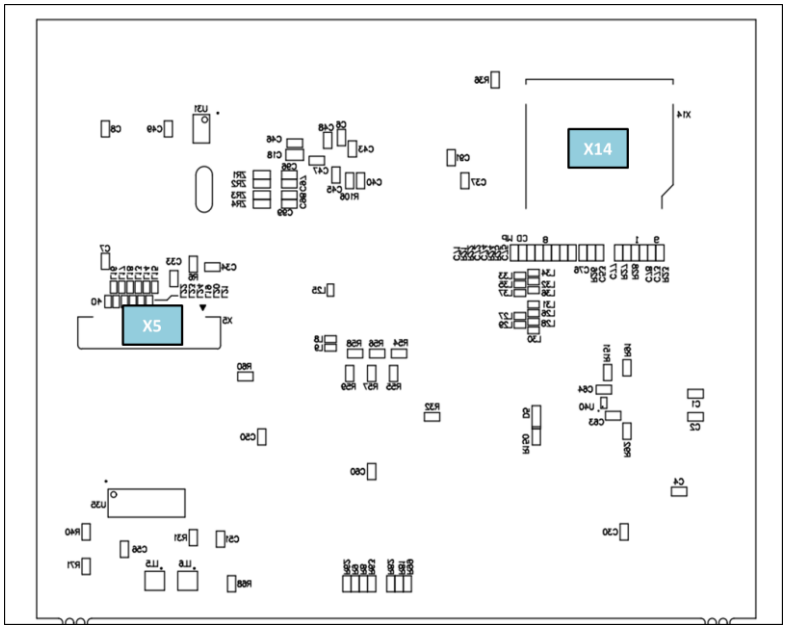
* :改訂番号 Mark is a revision number

E7-3 Explanation of function clrcuit board

HCD8122*

LCD-CE-MX Board Ass'y

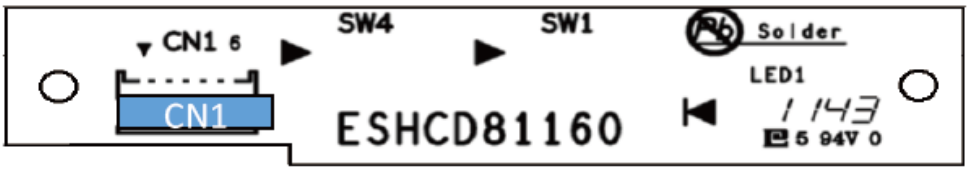




CN No.	Funtion
X1	Core module I/F
X2	Core module I/F
X5	7inch LCD I/F
X5_1	7inch touch panel input
X5_2	10.4inch touch panel input
X5_3	7inhc backlight output
X5_4	10.4inch LCD I/F
X6_1	USB-A connector 1
X6_2	USB-A connector 2
X7	LAN
X12	USB-B connector
X14	SD card
X16	TP-SW board I/F
X90	CONT-※※ board I/F

HCD8116*

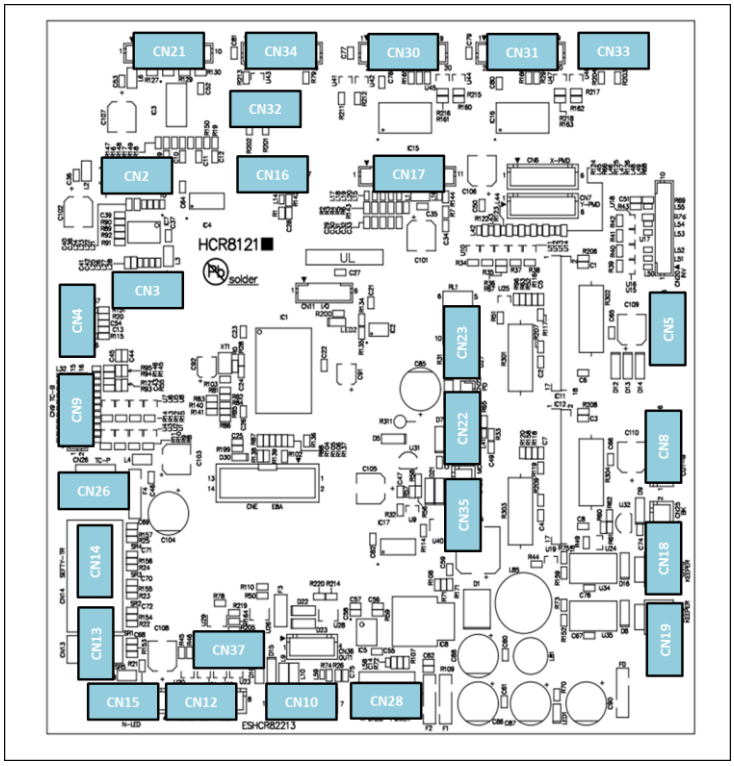
TP-SW Circuit Board Ass'y



CN No.	Function
CN1	Switch output, LED input

HCR8121*

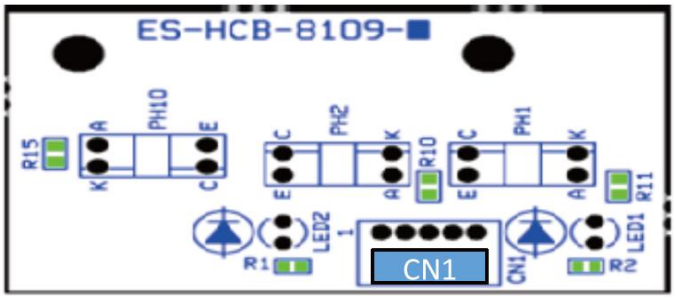
CONT-R2 Board Ass'y



CN No.	Function
CN2	Control box I/F
CN3	Option I/F
CN4	Needle bar change potensionmeter , Needle bar change origin point sensor input
CN5	Needle bar change motor output
CN8	Thread cutting motor output
CN9	Thread detecting board output Front LED I/F
CN10	Bobbin Winder motor output
CN12	Back safety sensor LED output
CN13	Needle safety sensor input
CN14	Back safety sensor input
CN15	Needle safety sensor LED output
CN16	X position sensor I/F
CN17	Y position sensor I/F
CN18	Keeper solenoid output 1
CN19	Keeper solenoid output 2
CN21	Timing detecting board I/F
CN22	Main seitch remote output
CN23	Power supply box fan output
CN26	24V power source for Thread detecting board
CN28	Input of 24V power source
CN30	X servo motor I/F
CN31	Y servo motor I/F
CN32	X limit switch I/F
CN33	Y limit switch I/F
CN34	Main servo motor I/F
CN35	Magnetic contactor output
CN37	Brake switch

HCD8109*

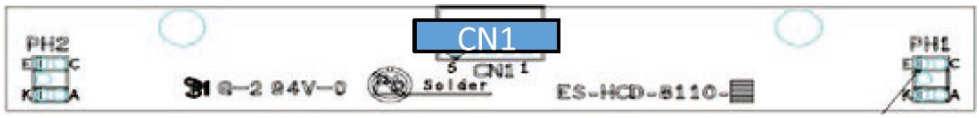
TIMING Circuit Board Ass'y



CN No.	Function
CN1	Out put of L point, C point,　angle sensor

HCD8110*

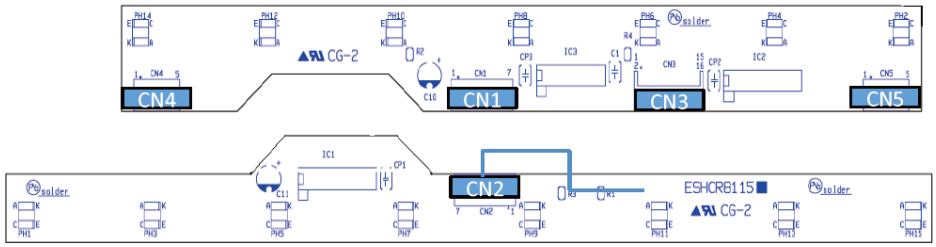
POSITION SENSER Circuit Board Ass'y



CN No.	Function
CN1	Sensor out put

HCR8115*

TC7-8 Circuit Board Ass'y



CN No.	Function
CN1	Out put to even number sensor
CN2	Input of even number sensor
CN3	Detecting board ass'y I/F
CN4	Jump SW board I/F
CN5	Start/Stop board I/F

HCR8108*

JUMP SW Circuit Board Ass'y

CN No.	Function
CN1	TC7-8 board I/F

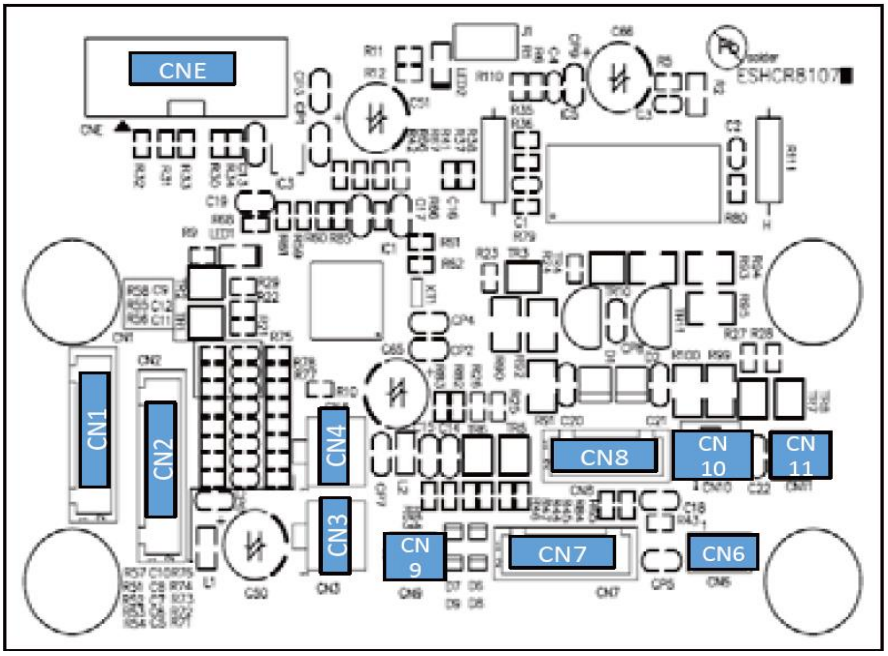
HCR8109*

START/STOP Circuit Board Ass'y

CN No.	Function
CN1	TC7-8 board I/F

HCR8107*

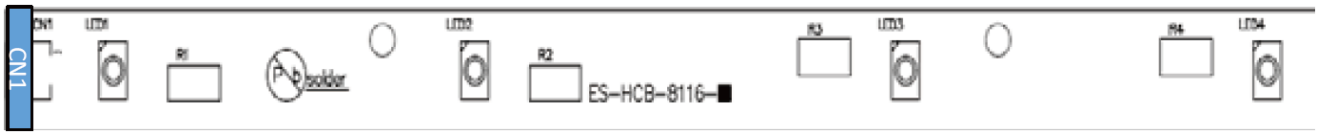
DETEC Circuit Board Ass'y



CN No.	Function
CN1	Input of relay control signal (to CONT-R2 board)
CN2	Output of relay control signal (to next detecting board)
CN3	24V power source for Thread detecting board
CN4	24V power source for Thread detecting board
CN6	Emergency stop I/F (Connect relay cable when the emergency button is not fixed with head)
CN7	TC7-8 board I/F
CN8	Output of Thread catch motor, Jump solenoid, Clip solenoid
CN9	Option I/F
CN10	Unused
CN11	Laser pointer output
CNE	Reserved for factory

HCB8116*

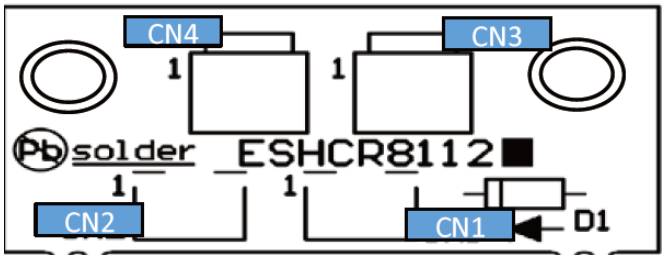
FRONT LED Circuit Board Ass'y



CN No.	Function
CN1	24V power source input

HCR8112*

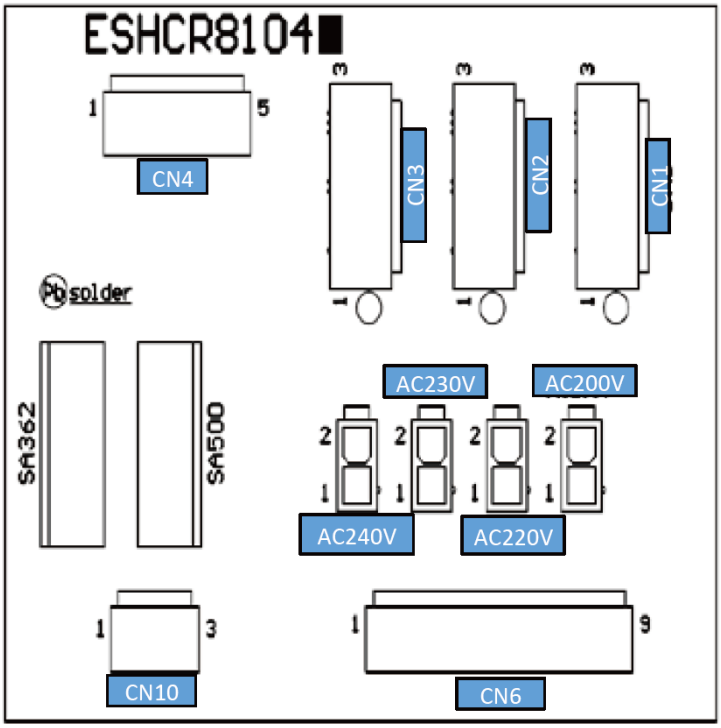
KEEPER RELAY Circuit Board Ass'y



CN No.	Function
CN1	Keeper 1
CN2	Keeper 2 (next head)
CN3	Input of keeper relay
CN4	Output of keeper relay

HCR8104*

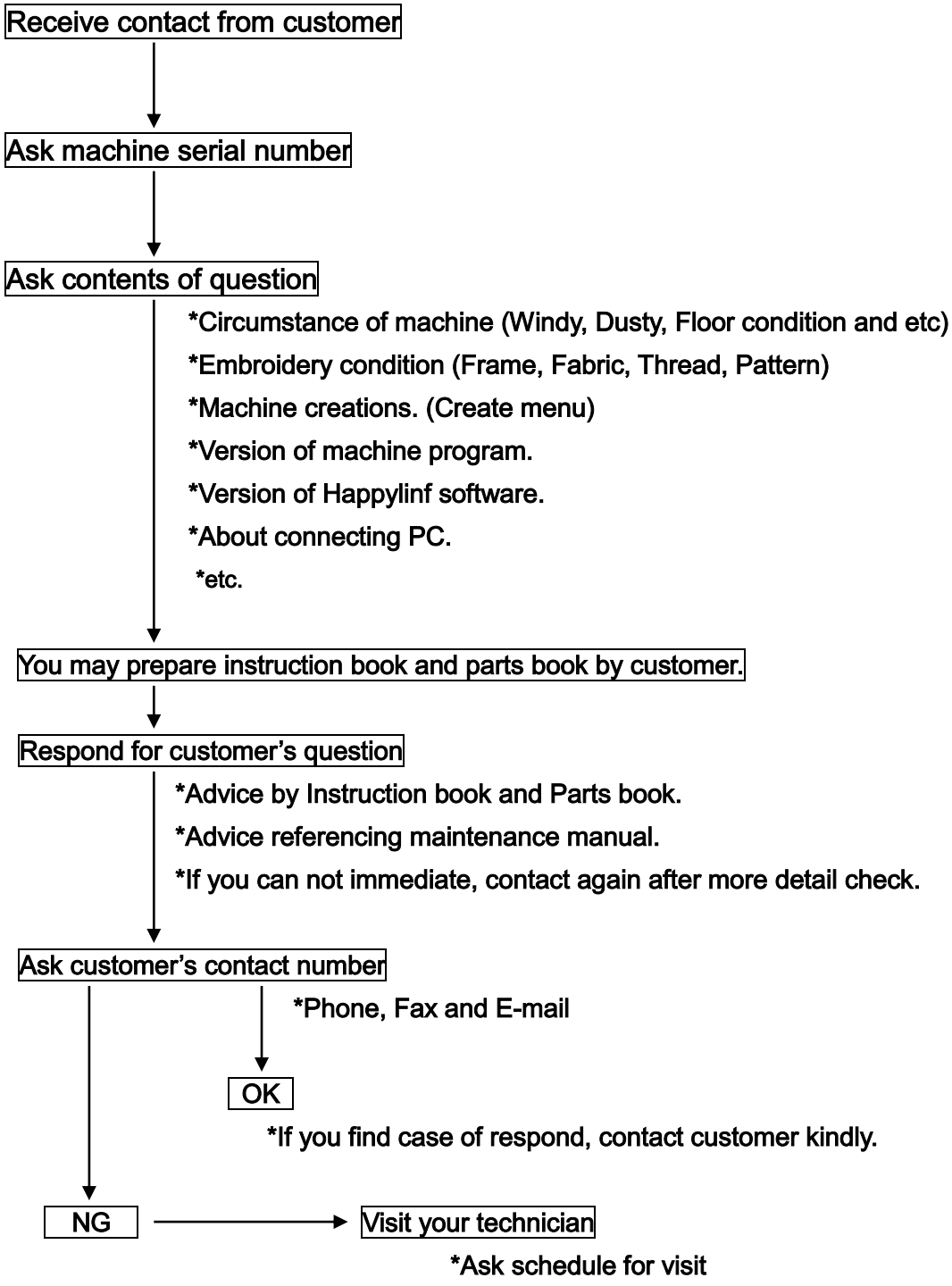
POWER RELAY Circuit Board Ass'y



CN No.	Function
CN1	AC power source input
CN2	AC power source relay (Inverter) (Rev. A XY-PM driver)
CN3	AC power source relay (for Optionr)
CN4	AC power source relay (Switching power supply)
CN6	Transformer input (Rev. A : Unconnected)
AC200V	Changing of tap for transformer
AC220V	
AC230V	
AC240V	

E8 How to respond for some question (As example step)

*When you receive some question from customer, please use this step for sold problem as sample.



E9 Trouble shooting

E9-1 Electricity doesn’ t turn on

Trouble	Factor	Cause of trouble and measure	Page
Electricity doesn't turn on	Mechanical	1. Did fuse blow? 1-1 If it did, replace it.	
		2. Check of defect on board. 2-1 Replace of LCD-CE board. 2-2 Replace of LCD unit. 2-3 Replace of CONT-R2 board	 E3-2 E3-2 E2-1
		3. No problem in power supply? 3-1 Check and adjust the correct voltage. 3-2 Try to replace power supply.	 E2-10
		4. Check of Cable catching causes short-circuit. 4-1 Please insulate the cable after removing outer cover. 4-2 Replace of cable.	
		5. Confirm not getting power supply from same outlet with other embroidery machine or other machines which contains motor. 5-1 Preferably only 1 embroidery machine should be connected with 1 outlet. (Maximum 2-3machines)	
	Operator	1. Didn't press emergency switch? 1-1 Release lock.	
	Environment	1. Is electricity in receptacle? 1-1 Supply power.	

( ) ----- Reference instruction book

E9-2 Thread break

Trouble	Factor	Cause of trouble and measure	Page
Thread break	Mechanical	1. Is needle drop unstable by vibration?	2-1
		1-1 Reconsider where to install the machine.	
		1-2 Move the machine to floor fully reinforced.	
		2. No burr or scratch in thread guide hole?	2-8
		2-1 Remove burr and scratch.	
		2-2 Replace of thread guide.	
		3. No problem in thread adjusting spring?	2-8
		3-1 Replace spring if it doesn't spring.	
		3-2 If weak or broken, replace it.	
		4. Does detecting roller make smooth turn?	
		4-1 Clean inside hole of bearing.	
		4-2 Correct so as for slit disc not to touch sensor.	E2-4
		4-3 Correct so as for cable not to touch slit disc.	
		4-4 Check cable of TC 12 Board is unconnected	
		5. No problem in thread guide unit and thread tension ass'y?	2-8
		5-1 Remove burr and scratch if appeared.	
		5-2 Remove lints and clean.	
		6. Does disc on thread tension ass'y. turn smoothly?	2-8
		6-1 Remove lints and clean.	
		6-2 Replace	
		7. Is backlash between take-up lever and take-up crank roller not bigger?	4-2-11
		7-1 Replace of take-up lever.	
		8. No problem in needle holder?	
		8-1 Remove burr and scratch.	
		8-2 Make proper fixing. (direction)	3-1
		8-3 Replace if thread guide is bent.	2-8
		9. No burr and scratch on needle plate?	2-8
		9-1 Remove burr and scratch in needle hole.	
		9-2 Remove burr and scratch around needle hole on back of needle plate.	
		9-3 Replace it if not furbished.	
		9-4 If furbishing made needle hole wider, replace it.	
		10. No problem in pressure foot?	
		10-1 Remove burr and scratch.	2-8
		10-2 Correct bent.	2-8
		10-3 Adjust height.	4-1-4
		10-4 Replace of pressure foot.	4-1-5
		10-5 Replace of pressure foot drive cam.	

( ) ----- Reference instruction book

Trouble	Factor	Cause of trouble and measure	Page
Thread break	Mechanical	11. No problem in rotary hook?	2-8
		11-1 Clean it to remove lints.	(23-2)
		11-2 Furbish scratch.	
		11-3 If backlash of bobbin case holder and outer hook grows bigger, replace them.	
		11-4 Replace.	
		12. No problem in rotary hook retainer?	
		12-1 Remove burr and scratch.	
		12-2 Adjust position.	4-4-2
		13. No problem in needle?	
		13-1 Fix it properly .	3-1
		13-2 Select proper size of needle to match thread thickness.	3-3
		13-3 If tip of needle is warped or bent, replace.	2-8
		13-4 Replace.	
		14. No problem in bobbin case?	
		14-1 Remove rust and scratch.	
		14-2 If thread guide spring is off, replace it.	
		15. No problem in bobbin?	
		15-1 Remove scratch (iron bobbin).	
		15-2 If distorted. replace it.	
		16. Is needle bar spring not broken?	
		16-1 Replace it.	4-2-9
		17. Does needle bar make smooth movement?	
		17-1 If bent, replace it.	4-2-9
		18. Needle doesn't drop in the center of needle hole.	
		18-1 Adjust positioning plate and adjust needle drop back and forth.	4-2-3
		18-2 Adjust position of needle selection unit, then adjust needle drop right and left.	4-2-4, -5
		19. Is the lowest needle position proper?	
		19-1 Adjust mechanical lowest needle position.	
		19-2 Adjust electric lowest needle position.	E2-2
		20. Is needle height proper?	
		20-1 Adjust as specified.	4-2-6
		21. Is rotary hook timing proper?	
		21-1 Adjust as specified.	4-4-1
		22. Is clearance between needle and rotary hook proper?	
		22-1 Adjust as specified.	4-4-1

( ) ----- Reference instruction book

Trouble	Factor	Cause of trouble and measure	Page
Thread break	Mechanical	23. Check tip of keeper hit the bobbin case.	
		23-1 Adjust it regularly.	4-5-8
		24. Is take-up lever timing proper ?	
		24-1 Adjust as specified.	4-1-2
		25. No problem in timing belt?	
		25-1 Adjust tension.	4-7-1
		25-2 If scratched or damaged, replace it.	
		26. Is revolution setting proper?	
		26-1 Make automatic speed setting.	E4-3
	Operator	1. Operation is wrong (no proper [Machine settings] setting for sewing?)	
		1-1 Tell how to operate.	(15-1)
		2.Is pattern dwindled too much by pattern adjustment?	
		2-1 Adjust size so as to produce less thread break.	
		2-2 Use pattern edited again (density_ change).	
		3. Is thread tension properly set?	
		3-1 <Upper thread> Considering sewing finish, set tension.	2-9
		3-2 <Bobbin thread> Considering upper thread tension, set tension.	2-9
		4. Is bobbin winding proper?	
		4-1 Adjusting bobbin winding tension, wind with proper strength.	E6-4
		5. Is bobbin put in bobbin case properly?	
		5-1 Viewing from front of bobbin case, set so that bobbin turns left-wise.	2-9
		6. Does thread cone stand properly?	(4-6)
		6-1 Keep thread from hitting felt.	
		6-2 Stand vertically.	
		7. Is passing of thread proper?	(4-6, 4-7)
		7-1 Pass thread properly.	2-9
		8. Is cloth properly stretched?	(6-2, 7-6)
		8-1 No loosening and no too much tightening. Even tension in depth and width.	
		8-2 Texture should be even in direction of X and Y.	
		9. Is frame properly set?	(6-3, 7-6)
		9-1 Frame should be put in positioning hole on tubular-frame.	
		9-2 No loosening of screw.	

( ) ----- Reference instruction book

Trouble	Factor	Cause of trouble and measure	Page
Thread break	Operator	10. Is frame used to suit pattern size? 10-1 Use frame to suit pattern size.	(13-1)
		11. When you dispose of thread (thread remains around rotary hook), didn't you damage rotary hook, needle plate with scissors? 11-1 Tell to dispose of thread carefully. 11-2 Open needle plate to dispose of thread.	(23-2)
		12. Didn't you neglect cleaning and oiling? 12-1 Tell to always clean and use cleanly. 12-2 Tell to oil regularly.	(23-2) (23-1b)2-7
	Thread & cloth	1. Is thread used to suit needle size? 1-1 Use thread to suit needle size.	3-3
		2. Is thread used to suit embroidery? (thread twist, tender thread). 2-1 Don't use too strongly twisted thread. 2-2 Twist of thread is to be left-wise. 2-3 Use tender thread. 2-4 Don't use thread with knot or uneven size.	3-2
		3. Is thread properly wound aginst cone? 3-1 Use thread to be wound smoothly.	
		4. Isn't tip of cone warped or isn't thread caught in scratch? 4-1 Remove warp and scratch.	
		5. Don't use thread left for a long period? (inferior thread). 5-1 Don't buy thread more than you use. 5-2 Tell not to store thread for a long period. 5-3 Tell how to store. (direct sunshine. humidity dust etc.)	
		6. Isn't poor unwoven cloth used? Is number of sheets used proper?	
	Environment	1. Is strength of table and floor enough? 1-1 Reconsider place to install the machine. 1-2 Move the machine to place where floor is strong enough.	2-1
		2 Are room temperature and humidity proper against thread? 2-1 It is desirable to install air conditioner to keep temperature and humidity in a certain level.	(23-1)
		3. Doesn't embroidery machine receive direct sunlight? (cause of inferior thread) 3-1 See not to expose to sunlight (spread curtain)	

( ) ----- Reference instruction book

Trouble	Factor	Cause of trouble and measure	Page
Thread break	Environment	4. Is there something that produce steam, wasted cotton, dust around. the embroidery machine? 4-1 Keep the embroidery machine off those things.	
		5. Does thread go out of control by taking wind from outside or heater etc.? 5-1 Keep the embroidery machine off such wind. 5-2 Move the embroidery machine to proper place.	
	Pattern	1. Does thread break occur repeatedly at same place in design? 1-1 Check pattern to modify punching.	
		2. Is it too narrow between stitches? 2-1 Check pattern to modify punching. 2-2 Setting of [Reading] menu. (Stitch sweeper)	(10-3)
		3. Too many empty stitches? 3-1 Make [Reading] setting. (Skip null stitches)	(10-3)
	Others	1. Using spray paste (adhesive material) 1-1 Clean around rotary hook. 1-2 Replace or clean needle. 1-3 Use this paste at a given place and never use in front or back of the embroidery machine.	(23-2) 3-1

( ) ----- Reference instruction book

E9-3 Erroneous thread cut

Trouble	Factor	Cause of trouble and measure	Page
Erroneous thread cut (E-190) (E-193)	Mechanical	1. Is thread cut timing proper?	
		1-1 Set timing to specified value.	4-5-2
		2. Isn't rubbing of fixed knife and moving knife weak?	
		2-1 Adjust to be able to rub properly.	4-5-6
		3. Does moving knife make smooth move?	
		3-1 Check if rubbing of moving knife and fixed knife is not too strong.	4-5-6
		3-2 Check no loosening of screw on moving knife.	4-5-3
		3-3 Check no damage or scratch on face of moving knife.	
		4. Check Displace of moving knife.	
		4-1 Adjust of moving knife position.	4-5-5
		5. Check defacement of moving knife or fixed knife.	
		5-1 If possible, furnish with file.	4-5-6
		5-2 Replace	4-5-3
		6. No backlash in up and down direction of knife drive shaft?	4-5-3
		6-1 Check no loosening of screw on moving knife.	
		6-2 Check no loosening of screw on knife drive shaft.	
		7. No backlash in fixed knife?	4-5-6
		7-1 Check no loosening of screw on fixed knife.	
		8. Does thread cut pulse motor work properly?	
		8-1 Check cable.	
		8-2 If trouble found in LCD-CE board or CONT-R2 board, replace.	E3-2, E2-1
		8-3 If trouble found in thread cut pulse motor, replace.	
		8-4 Adjust of thread cut sensor position.	E2-6
		9. Is number of revolution proper at time of thread cut?	
		9-1 Make automatic speed setting.	E4-3
		9-2 If trouble in LCD-CE board or CONT-R2 board, replace.	E3-2, E2-1
		10. Is there no skipped stitch?	
		10-1 Adjust needle depth.	4-2-6
		10-2 Adjust clearance between needle and rotary hook.	4-4-1
		10-3 Is height of pressure foot proper?	4-1-4
		10-4 Is rotary hook timing proper?	4-4-1
		10-5 Is relation between needle and thread proper?	3-3

( ) ----- Reference instruction book

Trouble	Factor	Cause of trouble and measure	Page
Erroneous thread cut (E-190) (E-193)	Mechanical	11. Check the needle bar moves up and down during thread cut.	
		11-1 Replace needle bar cushion.	4-2-9
		11-2 Replace needle bar driver.	4-1-1
		12. Is position of keeper proper?	
		12-1 Adjust the fixed position regularly.	4-5-8
		13. Check the movement of keeper goes smoothly.	
		13-1 Readjust if it is not smooth.	4-5-8
	Operator	1. No negligence in cleaning thread cut device?	(23-2)
		1-1 Tell to clean regularly.	
		# It's desirable to prepare brush with soft hair and air gun.	
		2. Is timing of thread tension proper?	2-9
		2-1 <Upper thread> Considering sewing finish, set tension.	*
		2-2 <Bobbin thread> Considering upper thread tension, set tension.	*
	Environment	1. Are power and voltage rated and stable?	
		1-1 Supply rated voltage.	(23-1)
	Thread & cloth	1. Is twist of thread too strong?	
		1-1 Use thread with proper twist.	3-2
		2. No skipping by use of lots of paste?	
		2-1 Use small amount of paste.	
		2-2 Remove paste stuck to needle.	

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E9-4 Off-registration of pattern

Trouble	Factor	Cause of trouble and measure	Page
Off-registration of pattern	Mechanical	1. Does frame move smoothly? 1-1 Avoid curling of thread and cloth. 1-2 Reinstall of outer cover in case of touch with outer cover.	
		2. Is carriage belt tension proper? 2-1 Adjust all belts as specified.	4-6-1 4-6-3
		3. No loosening of screws on carriage drive? 3-1 Check screw. If loosened, tighten firmly.	
		4. No lints or dust around idler pulley on carriage? 4-1 Clean	
		5. No damage in carriage belt? 5-1 If damaged, replace.	
		6. No backlash of back and forth in moving head? 6-1 Adjust positioning roller shaft to remove backlash back and forth.	 4-2-3
		7. Is height of pressure foot proper? 7-1 Adjust as specified.	 4-1-4
		8. No problem in motion of pulse motor? 8-1 Check wiring. If screw got loosened, tighten more. 8-2 After 9-1, still problem, then replace.	
		9. No problem in motion of servo amplifier ? 9-1 Check wiring. If screw got loosened, tighten more. 9-2 After 10-1, still problem, then replace.	 E2-8
		10. Does't other frame than Happy's genuine one used? 10-1 If frame is too heavy, don't use it. 10-2 If setting is not proper, set it so as not to move.	
		11. No problem in LCD-CE board or CONT-R2 boaer ? 11-1 Try to initialize. 11-2 Replace of CPU board.	 E4-3 E3-2,E2-1
		12. Is number of revolution proper? 12-1 Make automatic speed setting.	E4-3
		13. Not affected by noise? 13-1 Don't use the machine near where noise is generated.	

( ) ----- Reference instruction book

Trouble	Factor	Cause of trouble and measure	Page
Off-registration of pattern	Mechanical	14. No problem in timing sensor unit? 14-1 Test the Machine-Test Machine movement #11 (Test of timing sensor unit) of Maintenance mode, Check timing sensor unit. If trouble found, error number and messages will be displayed. If measure doesn't solve the trouble, replace of timing circuit board or cable.	E5-2
		E-18 Problem in detecting angle of main shaft. Check timing slit. Adjust timing slit. Turn main shaft once by hand. If LED4 (L point) lights two times or more, Adjust detecting slit.	4-7-3
		E-51 L point sensor doesn't detect. E-52 C point sensor doesn't detect. Clean dust attached to sensor. Check detecting slit. If trouble found, Adjust detecting slit.	4-7-3
	Operator	1. Is setting of frame correct? 1-1 Frame should be put in positioning hole on tubular frame. 1-2 Set so as for screw not to loosen.	(6-3, 7-6)

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Trouble	Factor	Cause of trouble and measure	Page
Off-registration of pattern	Operator	2. Is cloth properly stretched. 2-1 Stretch properly.	(6-3, 7-6)
		3. Is thread tension proper? 3-1 Observing sewing rhythm, set thread tension properly.	2-9
		4. Was the machine left for a long time in middle of sewing? 4-1 Try to finish sewing as soon as possible.	
	Environment	1. Is strength of table and floor enough? 1-1 Check where to place the machine again. 1-2 Move to where floor is strong enough.	2-1
		2. No problem in pulse motor driver by low power and voltage (variation)? 2-1 Supply rated voltage. 2-2 Use transformer. 2-3 Use stabilizer.	(23-1)
		3. Is there no place where noise is generated near the machine? 3-1 Don't use the machine near where noise is generated.	
		4. Doesn't drive frame hit obstacle? 4-1 Remove obstacle.	
	Thread & cloth	1. Not using shrinkable cloth? 1-1 Use backing paper (consider number of sheets to use).	(4-3)
		2. Isn't breakable cloth is used by thread tightening? 2-1 Use backing paper (consider number of sheets to use).	(4-3)
		3. Is proper backing paper used? 3-1 Use backing paper to match cloth.	(4-3)
		4. Isn't cloth (embroidery) too heavy? 4-1 Don't use extremely heavy cloth.	
	Pattern	1. Pattern data may be destroyed. 1-1 Read again. 1-2 Let new pattern read.	(5-5, 5-6)
		2. Memory pattern was destroyed. 2-1 Let new pattern read.	(5-5, 5-6)
		3. No problem in memory media ? 3-1 Initialize and read again. 3-2 Prepare new memory media.	(5-5)

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E9-5 Upper thread comes off from needle hole

Trouble	Factor	Cause of trouble and measure	Page
Upper thread comes off from needle hole	Mechanical	1. Is keeper in motion?	
		1-1 Check if cable was cut or there is something unusual.	
		1-2 In case solenoid is in trouble, replace.	
		1-3 In case LCD-CE board is in trouble, replace.	E3-2
		1-4 In case CONT-R2 board is in trouble, replace.	E2-1
		2. Is keeper put in right place?	
		2-1 Put it as specified.	4-5-8
		2-2 Modify bent of keeper.	
		2-3 Adjust it again if movement is not smooth.	4-5-8
		3. When thread trim action, please check upper thread wind keeper or not.	
		3-1 If dose not wind, please adjust keeper position again.	
		4. Is magic-tape on thread catch holder not worn?	
		4-1 Replace magic-tape.	
		5. Does bobbin thread holder hold bobbin thread?	
		5-1 Adjust pressure when contacting moving knife.	4-5-7
		5-2 In case bobbin thread holder is in trouble, replace.	
		5-3 Clean bobbin thread holder.	
		6. No error in thread cut (2 threads cut)?	
		6-1 Check and adjust thread cut timing.	4-5-2
		6-2 Position moving knife as specified.	4-5-5
		6-3 Check and polish burr or scratch on moving knife.	
		6-4 In case moving knife is in trouble, replace.	4-5-3
		7. Are clearance between needle and rotary point and needle height are proper?	
		7-1 Adjust clearance between needle and rotary hook as specified.	4-4-1
		7-2 Adjust needle depth.	4-2-6
		8. Doesn't thread catch hook cut upper thread?	
		8-1 Polish burr on hook.	
		8-2 In case hook is in trouble, replace.	
		9. Does thread catch hook hold upper thread?	
		9-1 Check if cable was cut or there is something unusual.	
		9-2 In case pulse motor is in trouble, replace.	
		9-3 Adjust fixing position.	4-1-6
		9-4 If hook is bent, modify.	
		9-5 In case hook is in trouble, replace.	
		9-6 In case LCD-CE board is in trouble, replace.	E3-2
		9-7 In case CONT-R2 board is in trouble, replace.	E2-1

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Trouble	Factor	Cause of trouble and measure	Page
Upper thread comes off from needle hole	Mechanical	10.Check the needle bar moves when start sewing. 12-1 Adjust position to fix jump solenoid. 12-2 Replace needle bar driver.	4-1-1
		11. Is number of revolution proper when sewing started? 13-1 Make automatic speed setting.	E4-3
		12.Is height of pressure foot proper? 14-1 Adjust as specified.	4-1-4
	Operator	1. Isn't thread tension too strong? 1-1 Weaken tension not to cause trouble in sewing rhythm.	2-9
		2. Keen in cleaning thread cut device? 2-1 Clean bobbin thread holder regularly.	(23-2)
		3. Is setting of bobbin thread proper? 3-1 Pass thread on bobbin thread guide surely.	* 2-9
		4. Is bobbin thread properly wound? 4-1 Adjust tensile strength of bobbin winder and check holding plate. 4-2 Pull out bobbin thread to check if it comes out smoothly.	* (4-4) 2-9
		5. Is upper thread properly passed? 5-1 Pass properly again.	(4-6, 4-7) 2-9
		6. Does thread cone stand properly? 6-1 Keep thread from hitting felt. 6-2 Stand vertically.	(4-6)
		7. Is [Machine settings] properly set? 7-1 Select setting of length of TRD. Cut [Long]. 7-2 Select setting of Quick start mode [No]. 7-3 Select setting of STR. Lock stitch [Yes].	(15-1)
	Thread & Cloth	1. Is thread used to suit embroidery? (thread twist, tender thread). 1-1 Don't use too strongly twisted thread. 1-2 Twist of thread is to be left-wise. 1-3 Use tender thread. 1-4 Don't use thread with knot or uneven size.	3-3
	Environment	1. Does wind let thread go beyond control? (outside wind, heater, and fan etc.) 1-1 Keep the embroidery machine off from wind.	
	Pattern	1. Is there stop sewing stitch for start sewing? 1-1 Modify pattern.	

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E9-6 Upper thread remains

Trouble	Factor	Cause of trouble and measure	Page
Upper thread remains	Mechanical	1. Upper thread is difficult to come out of keeper at time of thread cut (bent or warp etc.). 1-1 Modify bent or warp. 1-2 Replace keeper.	
		2. Keeper doesn't return properly at time of thread cut. 2-1 Modify bent of keeper. 2-2 Adjust position to fix. 2-3 Adjust it again if movement is not smooth.	4-5-8
		3. Upper thread does not come off from magic tape of thread holder. 3-1 Insert something(Thickness 0.1-0.2mm) into holder then move it right and left to put magic tape in order. 3-2 Replacement of magic tape.	
		4. Doesn't thread catch hook cut upper thread? 4-1 Polish burr on hook. 4-2 In case hook is in trouble, replace.	
	Operator	1. Setting of thread tension is weak. 1-1 Strengthen so as not to cause trouble in sewing rhythm.	2-9
		2. Is [Machine settings] properly set? 2-1 Select setting of length of TRD. cut [Normal].	(15-1)
	Thread & cloth	1. Using hard cloth make thread difficult to go through. 1-1 Select needle and thread.	3-3
		2. Using thick cloth make thread difficult to go through. 2-1 Select needle and thread.	3-3
		3. Is thread used to suit embroidery? (thread twist, tender thread). 3-1 Don't use too strongly twisted thread. 3-2 Twist of thread is to be left-wise. 3-3 Use tender thread. 3-4 Don't use thread with knot or uneven size.	3-2

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E9-7 Looping

Trouble	Factor	Cause of trouble measure	Page
Looping	Mechanical	1.Imcorrect Pressure foot height adjustment 1-1 Adjust with proper setting	4-1-4
		2. Imcorrect Rotary hook timing, Rotary hook clearance, Needle height 2-1 Adjust with proper setting	4-2-6 , 4-4-1
	Opetator	1. Improper Upper thread threading 1-1 Threading again correctly	(4-6 , 4-7) 2-9
		2. Dose thread cone stand properly? 2-1 Keep thread from hitting felt. 2-2 Stand vertically.	(4-6)
		3. Improper Bobbin thread winding 3-1 Adjust tension of bobbin thread winder 3-2 Check bobbin thread can be pulled out smoothly by hand	(4-4) 2-9
		4. Weak upper thread tension 4-1 Adjust tension slightly stronger	2-9
		5. Weak Bobbin thread tension 5-1 Adjust tension slightly stronger	
	Thread & cloth	1. Weak Bobbin thread tension 1-1 Try to use same kind of thread as cloth	
		2. Using thread might be not proper for the design(twist, smooth) 2-1 Check if your thread has too much twist 2-2 Use thread that is Z twisted 2-3 Use smoother theread 2-4 Don’t use thread has unstable thickness and/or knot	3-2
	Needle	1. Needle is not straight 1-1 Exchange to new needle	

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E9-8 Malfunction of thread break detection

Trouble	Factor	Cause of trouble and measure	Page
Malfunction of thread break detection (empty detection)	Mechanical	1. Trouble in turning detection roller. 1-1 Clean roller shaft holder. 1-2 Check if slit disc doesn't contacts sensor. 1-3 Clean sensor if dust gets stuck. 1-4 Check if cord doesn't contacts slit disc. 1-5 Check Disconnection of cable. 1-6 Check clog of thread detection roller. Roller shaft should haveclearance.	E2-4
		2. Check circuit board. 2-1 Replace of LCD-CE board. 2-2 Replace of TC 12 board. 2-3 Replace of Detection board 2-4 Replace of CONT-R2 board	E3-2 E2-4 E2-3 E2-1
		3. Sometimes needle bar doesn’t work when start sewing. 3-1 Replace of needle bar driver.	4-1-1
	Operator	1. No thread is passed through detecting roller. 1-1 Pass thread properly.	2-9
		2. Is thread tension proper? 2-1 Observing sewing rhythm, adjust thread tension properly.	2-9
		3. Is proper detection sensitivity of thread cut selected?	(15-1)
		3-1 Select detection sensitivity according to sewing condition of thread and cloth etc. 3-2 Please check [TRD. break detect] in setting menu to except [Off].	
		4. Is thread tension proper? 4-1 Observing sewing rhythm, adjust to proper thread tension. (Adjust it little bits stronger.)	2-9
	Environment	1. Is there any device to yield lints etc. around the embroidery. 1-1 Keep it off the embroidery machine. 1-2 Move the embroidery machine to other place.	
		2. Doesn't thread go beyond control by wind? (thread comes off from needle hole by loosing) 2-1 Keep thread off wind. 2-2 Move the embroidery machine to other place.	
	Thread & Cloth	1. Isn't silicone agent used on thread? (Thread slips at detecting roller part due to adhere of silicone.) 1-1 Clean silicone agent attached to detecting roller groove.	

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E9-9 Suspension of upper shaft

Trouble	Factor	Cause of trouble and measure	Page
Suspension of main shaft (E-18) (E-51) (E-52)	Mechanical	1. Upper thread twine round rotary hook or rotary hook retainer.	
		1-1 Get rid of it.	(23-2)
		2. Check return of keeper goes smooth. (when start sewing, thread cutting.	
		2-1Adjust it regularly.	4-5-8
		3. Check upper thread is sticking at thread guide part of bobbin case.	
		3-1 Get rid of it.	(23-2)
		3-2 Do not use of bobbin case in which thread guide is coiled type. (use standard type)	
		4. Effect by breakage of parts.	
		4-1 Repair broken place.	
		5. No damage in electric parts ?	
		5-1 Replace of LCD-CE board.	E3-2
		5-2 Replace of Timing Board.	E2-2
		5-3 Replace of servo amplifier.	E2-8
		5-4 Replace of CONT-R2 board.	E2-1
		6. Trouble of software in LCD-CE circuit board.	
		6-1 Initialize, then make automatic speed setting.	E4-3
		7. Trouble in control of number of revolution.	
		7-1 Make automatic speed setting.	E4-3
	Operator	1. Isn't foreign stuff such as thread or cloth caught in where revolution is driven.	
		1-1 Get rid of foreign stuff.	
		1-2 Stretch properly.	(6-3, 7-6)
		2. Isn't thread tension too strong (stop at time of action of thread cut)?	2-9
		2-1 Weaken tension so as not to cause trouble in sewing rhythm.	
		3. Check condition of lubrication.	2-7
		3-1 Lubricate (refer to message)	(23-1b)
	Environment	1. Check adequate level of voltage (refer to trip of inverter).	
		1-1 Supply rated voltage.	(23-1)
		200V:220V:230V:240V (It varies in the specifications.)	

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E9-10 Malfunction of needle bar change

Trouble	Factor	Cause of trouble and measure	Page
Head does not move (E-021) (E-022)	Mechanical	1. Check lint or cloth is seized between Lower Moving rail and Bearing. 1-1 Remove seized lint or cloth.	
		2. Check lint or waste is seized in gap of Moving Cam. 2-1 Remove seized lint or waste.	
		3. Effect by breakage of parts. 3-1 Repair broken place.	
		4. No problem in CONT-R2 board. 4-1 Replace of CONT-R2 board.	E2-1
	Operator	1. Check Stopper of Moving Head is removed. 1-1 Remove Stopper.	2-3
Uncontrollable Move (E-024) (E-025)	Mechanical	1. No problem in sensor circuit board ? 1-1 Clean dust attached to sensor. 1-2 Replace sensor circuit board.	E2-5
		2. Trouble in potentiometer. 2-1 Replace	E2-5
		3. Needle number is not exactly recognized. 3-1 Recognize needle number with maintenance mode.	E2-5
		4. Breakage of Pulse Motor. 4-1 Replace Pulse Motor.	

( ) ----- Reference instruction book

E9-11 Defect on Thread catcher

Trouble	Factor	Cause of trouble and measure	Page
does not catch thread	Mechanical	1. Thead catcher does not extend hook sufficiently.	
		1-1 Adjust position of Thread catcher	4-1-6
		1-2 Adjust position of Thread holder.	4-2-14
		2. Excessive distance between Hook and tip of Needle.	
		2-1 Adjust position of Thread catcher.	4-1-6
		2-2 Adjust position of Thread holder.	4-2-14
Hook of Thread catcher does not extend	Mechanical	1. Check Hook of Thread catcher bent or not.	
		1-1 Repair bent Hook.	
		1-2 Replace Hook.	
		2. Check position of Thread catcher is proper.	
		2-1 Adjust	4-1-6
		3. Check position of Thread holder is proper.	
		3-1 Adjust	4-2-14
		4. Check Thread catcher.	
		4-1 Check cable is securely connected.	
		4-2 Replace Pulse Motor with trouble.	
		5. No damage in electric parts?	
		5-1 Replace LCD-CE board.	E3-2
		5-2 Replace of CONT-R2 board.	E2-1
		5-3 Replace of Detection board	E2-3
Hook hits or catches Needle (E-193)	Mechanical	1. Check Hook is bent or not.	
		1-1 Repair bent Hook.	
		1-2 Replace Hook.	
		2. Check position of Thread catcher is proper.	
		2-1 Adjust	4-1-6
		3. Check position of Thread holder is proper.	
		3-1 Adjust	4-2-14
	Operator	1. Check if Needle is securely set.	
		1-1 Set Needle properly.	3-1
Constant display of E-193	Mechanical	1. Trouble of Photo sensor.	
		1-1 Replace Photo sensor.	4-1-6

( ) ----- Reference instruction book

E9-12 Others / Mechanical

Trouble	Factor	Cause of trouble and measure	Page
Needle Breakage	Mechanical	1. Check Needle is not bent.	2-8
		1-1 Replace bent Needle.	3-1
		2. Check Moving Head set securely.	
		2-1 Adjust Positioning Roller Shaft.	4-2-3
		3. Secure adequate distance between Needle and Rotary Hook.	
		3-1 Adjust distance properly.	4-4-1
	Operator	1. Is thread method in proper way?	
		1-1 Threading again in a proper way.	2-9
		2. Check upper thread comes in a smooth way.	
		(Thread stand, Thread tension point, double back etc)	
		2-1 Adjust place be caught in.	(4-7)
		3. Check whether fabric is fixed firmly or not.	
		3-1 Hooping fabric firmly again.	(6-3, 7-6)
Defect of pressure foot movement	Mechanical	1. Check whether pressure foot and thread catcher holder touch each other or not.	
		1-1 Adjust installment position of thread catch holder.	4-2-14
		1-2 In case pressure foot is fixed at an angle, fix it vertically again.	4-1-4
Abnormal noise	Mechanical	1. By defect of cover installation. (Pressure foot drive, Carriage etc)	
		1-1 Take care of insert condition, clearance etc and fix again.	
		2. By lack of oil inside rotary hook.	
		2-1 Refuel	2-7,(23-1b)
		2-2 Replace of rotary hook	4-4-1
Big noise	Mechanical	1. Bearing gap of take up crank ass'y.	
		1-1 Adjust roller shaft ass'y.	
		1-2 Replace of roller shaft ass'y.	
		2. Gap between take up lever ass'y and take up clank ass'y.	
		2-1 Replace of take up lever ass'y.	
		2-2 Replace of take up lever crank ass'y	
		3. Needle bar driver gap of needle bar driver ass'y.	
		3-1 Replace of needle bar driver ass'y.	4-1-1
		4. Big gap pressure foot cam	
		4-1 Replace of take-up lever cam.	4-1-8

( ) ----- Reference instruction book

E9-13 Others / Electric

Trouble	Factor	Cause of trouble and measure	Page
Frame overrun	Mechanical	1. Interference between censor circuit board and douser. 1-1 Position adjustment of douser. 1-2 Replace of censor circuit board.	E2-7
		2. Check whether cable has problem or not. 2-1 Replace in case damage exists. 2-2 Insert connector again.	E2-7
		3. No damage in electric parts? 3-1 Replace LCD-CE Board. 3-2 Replace of CONT-R2 board.	 E3-2 E2-1
Key on control box can not be pressed down and returned	Mechanical	1. When removing panel in replacing circuit board , due to poor cable bundling, circuit board being pushed from inside. 1-1 Bundle cable again	
Defect of LCD	Mechanical	1. Check LCD . 1-1 Replace of LCD	 E3-2
		2. Inadequate condition of cable insertion 2-1 Insert to the back firmly	
		3. Check whether LCD-CE board is out of order or not. 3-1 Replace of LCD-CE board	 E3-2
No response of Touch panel	Mechanical	1. Check if touch panel bites foreign object or any damage on the touch panel. 1-1 Exchange Touch panel E3-2	
Desing can't be read	Mechanical	1. Check if stock design is over 999 1-1 Try to delete stock design 1-2 Try to take off and put in SD card inside monitor or Exchange SD card	
Defect of data communication (E-90) (E-91)	Mechanical	1. Check whether PC has problem or not. 1-1 Affirm whether there is problem or not.	
		2. Check LCD-CE board is out of order or not. 2-1 Replace of LCD-CE board.	 E3-2
Watch doesn't indicate time	Mechanical	1. Trouble in back-up battery 1-1 Replace back-up battery.	 E3-3

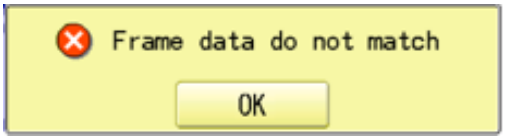
( ) ----- Reference instruction book

P**-P** --- Refer to Happy Link instruction book

E10-1 Startup error and measure

Error message will be displayed if error occurs during machine startup.

After confirming contents, press button [OK] on control box to release error, then restore in accordance with measure in this list.

Message	Error	Measure
	Exchanged control box or CONT board does not match for the installed data of [Machine setting].	When only control box has been exchanged, open the menu of [E5-5 Setup — Machine setting] and just close without any amendment. When CONT board has been exchanged, follow the procedure of [E5-8 Machine Setting Navigation after exchanging CONT board].
	Installed frame drive data in the machine does not match.	Check setting contents of [Machine setting] by referring [E5-5 Setup—Machine setting], then follow the procedure [E4-2 Machine program update].

E10-2 Error and measure

When trouble occurred while the machine is running, error number and error item will be displayed. After confirming contents, press button [OK] on control box to release error, then restore in accordance with measure in this list.

No.	Message	Error	Measure	Page
001	Circuit board	Trouble detected in control circuit board.	(1)Turn power off once and turn on again. (2)If recurred, replace LCD-CE board.	E3-2
002	Power source	Power failure or abnormal voltage		
004	System memory	Trouble in system memory.	Replace LCD-CE board.	E3-2
014	Fan Alarm	Cooling fan fault	(1)Clean dust attached to fan. (2)Replace fan.	E2-11
015	Abnormality of Z-axis Servo Driver	Trouble in driver unit on main shaft Overioad on main shaft motor, damage in driver unit on main shaft.	(1)Turn power off,turn main shaft by hand and if no trouble found, turn power on again. (2)If trouble found,repair where damaged. (3)If inverter in trouble, replace. (4)Check if voltage high or not. If high,check origin of power source of factory. Or use stabilizer, transformer to set to rated voltage.	E2-8, 9
016	Alarm X unit	X-motor-related trouble, i.e. x-motor overload, short circuit, problem with motor drive unit, voltage drop (momentary)	(1)Power off machine, test pantograph movement manually. Check for any abnormality throughout full range of motion. If none found, power on again. (2)Check related harnes. (3)Replace of servo amplifier.	E2-8, 9
017	Alarm X unit	Y-motor-related trouble, i.e. y-motor overload, short circuit, problem with motor drive unit, voltage drop (momentary)		
018	Main shaft	Suspension of main shaft in mid way.	(1)Check if trouble found between main shaft and drive. If trouble found, restore. (2)If recurred, find cause and fix. (3)Make automatic speed setting again. (4)If driver in trouble, replace.	E4-3 E2-8, 9
020	Needle detect	Needle position not detected. Trouble in stop position of needle selection unit.	(1)Turn needle selection cam by hand to set to regular position. (2)Fix needle selection related mechanical trouble. (3) Replace sensor circuit board or potentiometer.	E2-5
021 022	Needle move	Suspension of needle selection motor in mid way. Trouble in take-up lever hinders. Trouble in position detecting circuit board.	(1)Turn needle selection cam by hand to set to regular position. (2)Fix needle selection related and take up lever related troubles. (3)Replace sensor circuit board or potentiometer.	E2-5

( ) ----- Reference instruction book

No.	message	Error	measure	page
024	Needle center	Stop position of needle bar is off center	(1)Turn needle selection cam by hand to set to regular position. (2)If trouble occurs repeatedly, fix mechanical trouble in needle selection & its vicinity.	
025	Needle over	Specified needle number went beyond needle number of the machine.	Adjust position of needle selection cam (potentiometer) and needle number of moving head.	E2-5
026	Needle differ	As needle number differed from memory when power turned on, it was renewed.	(1)Turn power off once and turn on again. (2)Let the machine recognize needle number.	E2-5
030	Slow mismatch	Inadequate adjustment of number of low speed revolution. Low speed revolution doesn't come below 100rpm.	(1)Make automatic speed setting. (2)If not solved even after speed adjustment, replace LCD-CE board.	E4-3 E3-2
050	C point	Main shaft stops off its position.	(1)Turn main shaft to plus direction to set to C point.	(24-5)
051	L sensor	Poor lowest needle position sensor on timing detecting circuit board. Damage in timing detecting circuit board, stained photo sensor, poor adjustment of slit disc.	(1)If photo sensor is stained, clean. (2)Adjust timing. (3)Replace main shaft timing circuit board.	E2-2
052	C sensor	Damage in color change point sensor on timing circuit board. Damage in timing detecting circuit board, stained photo sensor, poor adjustment of slit disc.		
060	X limit	Drive frame went beyond limits in X direction.	(1) Move drive frame back to limits with move key. (2) Correct pattern size and setting contents.	
061	Y limit	Drive frame went beyond limits in Y direction.		
063	Drive Setup	During embroidery, preparation for frame movement did not complete within predetermined time.	(1) Malfunction of "Lowest needle position" sensor on detection circuit board, Improper adjustment. (2)Make automatic speed setting.	E2-2 E4-3
064	X Center sens.	Trouble in embroidery frame sensor	(1) Check if position sensor is dirty. Turn off power source, then turn on again.	E2-7
065	Y Center sens.		(2) Setup mistake of the machine parameter (3) Replace position sensor circuit board.	E5-5,-6 E2-7
066	Frame drive	Frame movement did not complete during origin point movement.	(1) Dirt L point sensor [PH1] or wrong position of slit. (2) Dirt timing slit, position adjustment (3) Replace timing circuit board.	E2-2 E2-2 E2-2
067	L sensor	Loss of embroidery frame coordinate data.	Adjust position sensor position on carriage. Then register frame position again.	E2-7

( ) ----- Reference instruction book

No.	message	Error	measure	page
068	Position set	Failure to read embroidery frame sensor signal. (Return)	(1) Check if position sensor is dirty. Turn off power source, then turn on again.	E2-7
069	Position Entry	Failure to read embroidery frame sensor signal. (Entry)	(2) Setup mistake of the machine parameter (3) Replace position sensor circuit board.	E5-5,-6 E2-7
070	Safety sensor	Safety sensor has been tripped.	(1)Clear area around safety sensor. (2)Check material dose not shut out safety sensor beam. (3) Adjust safety sensor position.	E6-3, E6-4
090	Miss reception	Error has occurred during data transfer (via cable) between machine and PC.	(1)Let the machine read pattern data from first.	(5-5)
091	No send	Data is not put in for over 10 seconds.	Let the machine read data from first.	(5-5)
103	Data format	Machine unable to determine format of pattern data.	(1)Check format of pattern data. (2)By setting reading of pattern data,	(5-6) (10-3)
104	Miss function	Timing to read pattern data doesn't conform.	Read pattern data again from the first.	(5-5)
105	Dual function	One stitch data has more than 2 functions.	(1)Read pattern data again from the first. (2)Check and modify the design data if there is wrong.	(5-5)
106	No function	Interval between start read time and time of reception of actual pattern data	Read pattern data again from the first	(5-5)
108	Improper read	While reading pattern data, there accrued error in internal processing.	Read pattern data again from the first.	(5-5)
110	Memory full	While reading pattern data, memory exceeded its capacity.	(1)Delete unnecessary patterns and read from the outset.	(5-B) (23-1)
111	Change over	While reading pattern data, the frequency of color change (color No.) exceeded 250 times.	(1)Modify pattern data and reduce frequency of color change of one pattern to less than 250 times. (2)Divide pattern data and reduce frequency of color change of one pattern to less than 250 times.	
112	Data error	Pattern data of pattern to be embroidered is damaged.	(1)Read pattern data again from the first. (2)Read pattern data again if you have a backup data.	(5-B)
114	Id over	The number of pattern in memory has reached maximum of 250.	Delete unnecessary patterns and read.	(5-B)
116	Not found Id	Specified pattern does not exist.	(1)Check setting. (2)Re-initialize machine system.	E4-3
118	Trace data over	The stitch number counts over 1024 stitches during preparing Trace data.	Set Embroidery area of pattern data within 2m(X) x 2m(Y).	

( ) ----- Reference instruction book

No.	message	Error	measure	page
120	Memory error	It became impossible to retain contents of memory.	(1) Turn power off once and turn on again. (2) If problem recurs frequently, replace LCD-CE board.	E3-2
130	Disk error	Unable to communicate continuously with memory media.	(1)Turn off power source once and turn it on again. (2)Memory media reading processor may defective. Replace the LCD-CE board.	E3-2
131	Device no ready	Memory media is not set.	Check if memory media is properly set.	(5-5)
133	Bad disk	Improper or faulty memory media.	(1)Memory media might be not eadable with the machine. Prepare readable memory media for the machine. (2)Memory media might be defective. Prepare another memory card or data disk which is not defective. (3)Initialize the memory media if it is not initialized.	(5-5)
141	Not found name	Designated pattern is not found.	Memory media might be not readable with the machine. Prepare readable memory media for the machine.	(5-5)
142	Disk full	Memory media is full to capacity.	Clear unnecessary patterns or use a different memory media.	
143	Multi name	Another pattern with same name has been detected while attempting to write to memory media.	Change name, use a different memory media, or overwrite existing pattern.	
190	Cut blade	Thread cut knife is not at stop position.	(1)Restore the moving knife to stop position. (2) Check dirt of trim sensor or position of slit. (3)Modify the adjustment if the problem repeats. (4) Adjust sensor position.	(24-6)
191	Cut Sensor	Thread cut knife is not at stop position. been detected while attempting to write to memory media.	Check if threads are jammed around the thread cutting knife. Press the thread cutting button 2~3 times. If error remains, contact your Dealer.	
193	Catcher	Thread catch hook is not in its stop position.	(1)Check if mistake is found in thread cut. If found, cut thread and move thread catch hook to proper position. (2)Adjust and correct trouble that hinders motion of thread catch hook.	(24-8)

( ) ----- Reference instruction book

No.	message	Error	measure	page
203	Install data	Error has occurred during update of program.	Check an update program.	E4-1
215	Frm. drive err	Frame movement did not complete. during normal movement. (Time over)	(1) Check timing sensor unit and slit. (2) Install updated program.	E2-2 E4-2
217	Frm.drive data	Frm.drive data	Install updated program.	E4-2
255	Default Error	During embroidery, frame movement did not complete until main shaft reach “Lowest needle position".	Re-initialize machine speed setting. Check adjustment of upper shaft timing. (C point / L point)	E4-3

( ) ----- Reference instruction book

E11 Tables for timing / adjustment value

		Tables for Timing / Adjustment value
Machine No.		1001001～
Take-up lever timing		326°
Rotary hook timing		25°
Needle bar lowest point		10°
Main shaft timing	L	LED4 light out at 0 degrees (Clockwise)
	C	LED3 light on at 270-284 degrees (Clockwise)
Jump solenoid		85°

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