Maintenance Manual for Embroidery Machine (Electronic)

HCR SERIES

Version 1.00

HAPPY Industrial Corporation

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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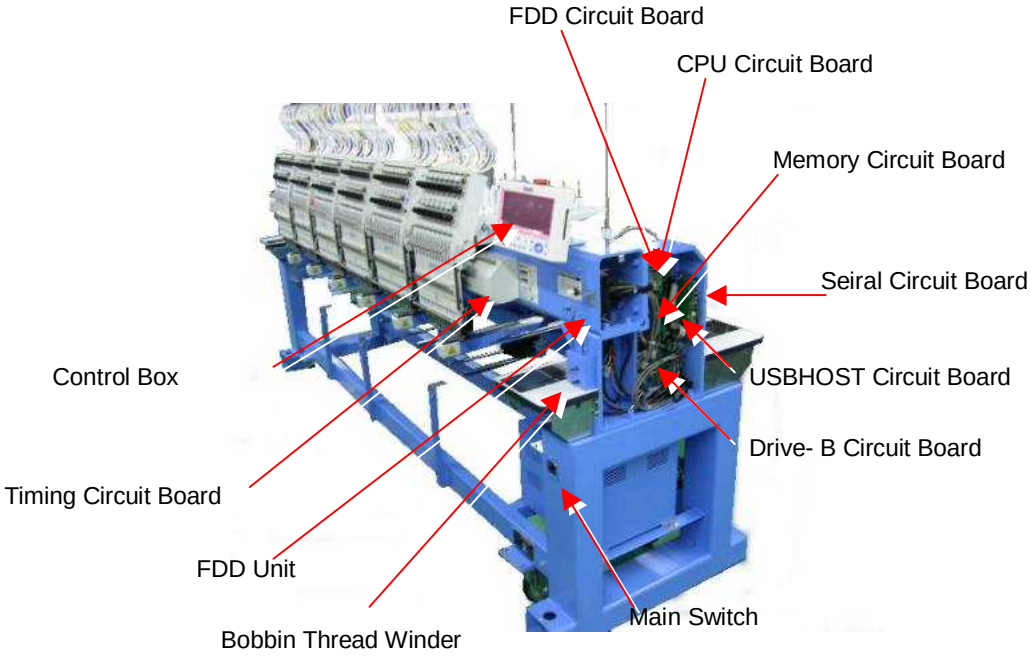
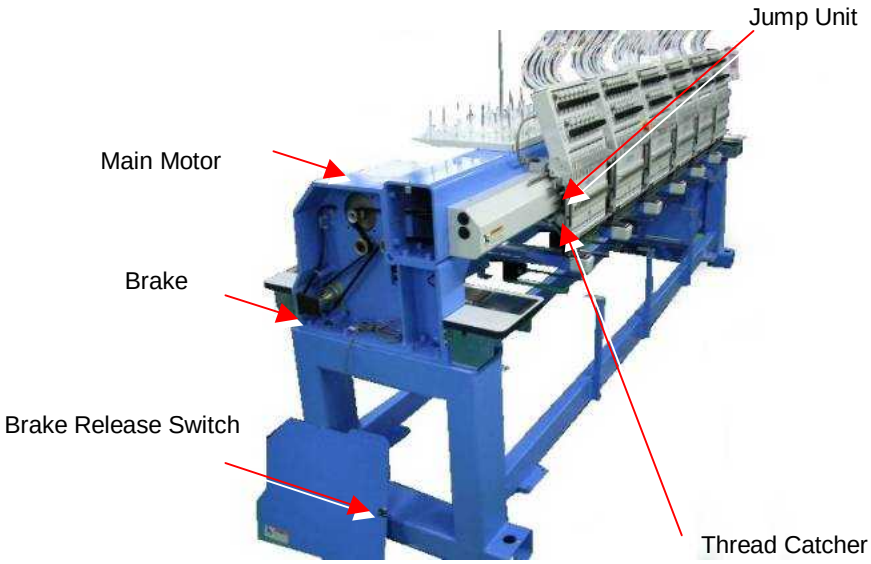
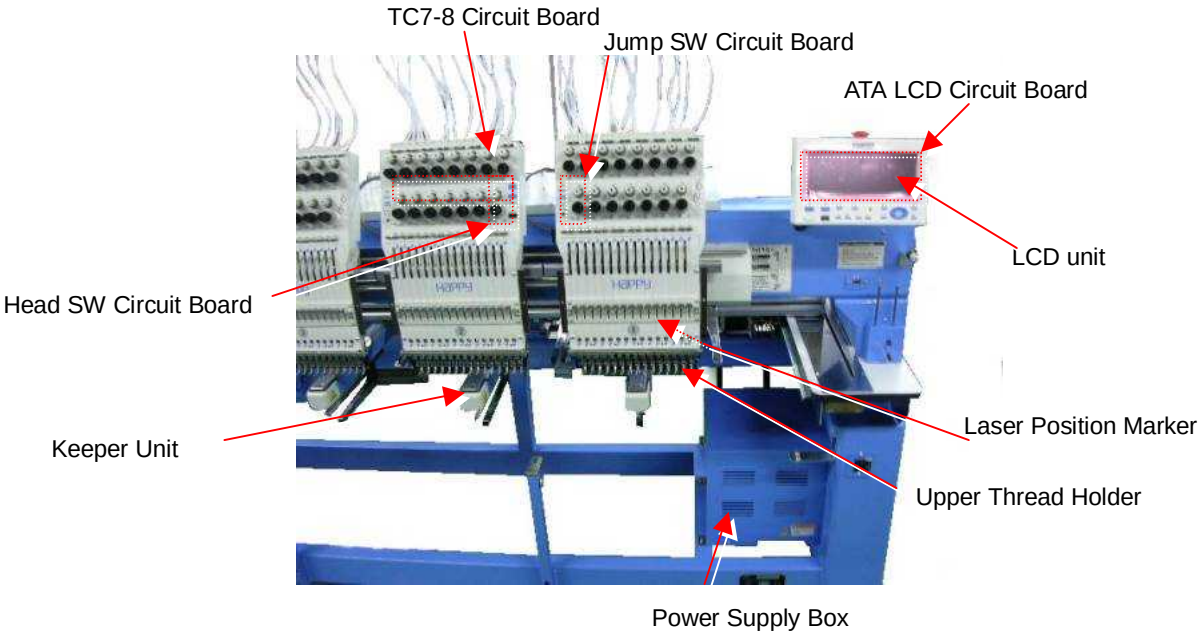
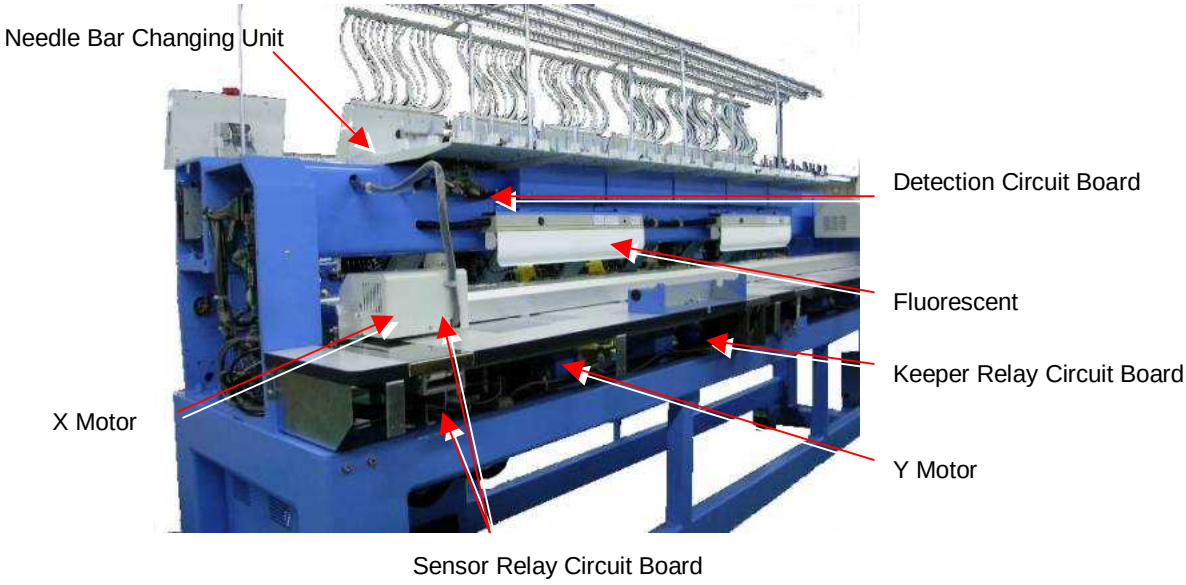
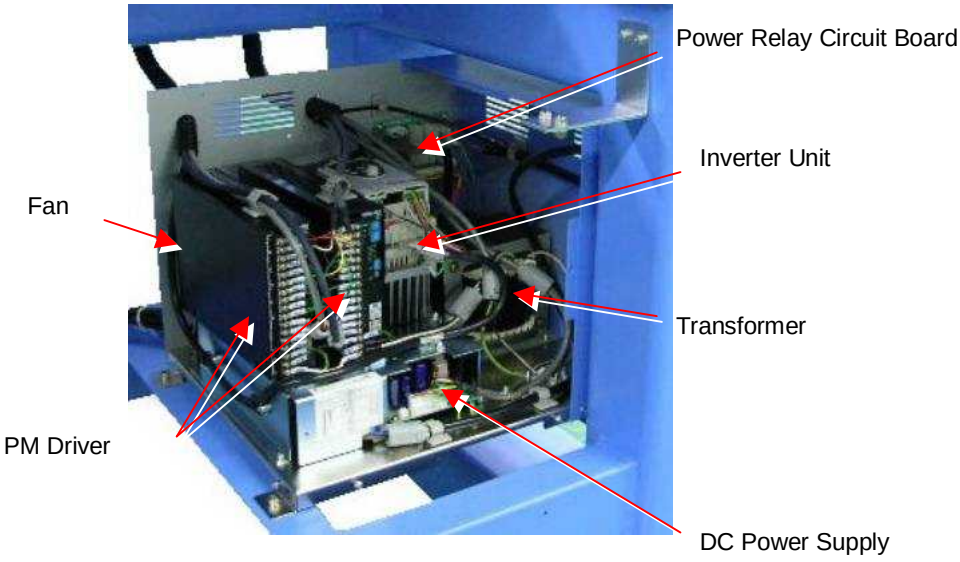
E1 Placement of key electronic parts






TC7-8 Circuit Board
Jump SW Circuit Board
ATA LCD Circuit Board
LCD unit
Head SW Circuit Board
Keeper Unit
Laser Position Marker
Upper Thread Holder
Power Supply Box


Needle Bar Changing Unit
Detection Circuit Board
Fluorescent
Keeper Relay Circuit Board
X Motor
Y Motor
Sensor Relay Circuit Board

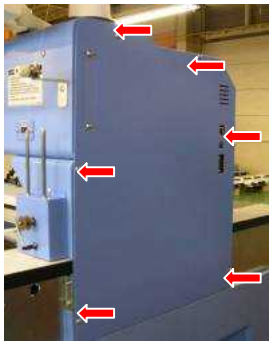

Power Relay Circuit Board
Inverter Unit
Fan
Transformer
PM Driver
DC Power Supply

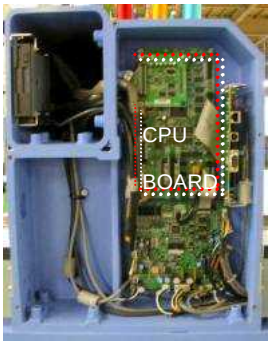
E2 Exchange and Setting of electric related component

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

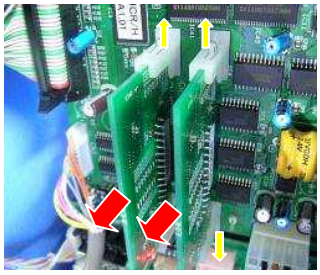
E2-1 Exchange of CPU board

1,Take mission cover out

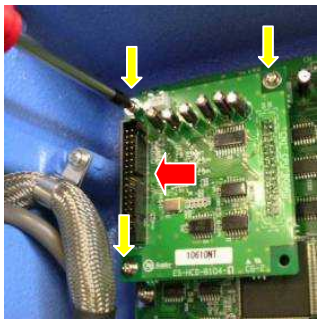




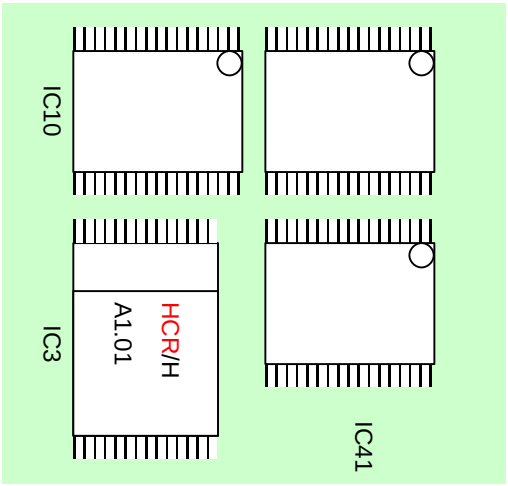
2,Open support and take memory board out



3.In case machine has FDD, take FDD circuit board out



4.Check program version of CPU board. It should mention HCR on IC.



5.Take all connector out and exchange CPU board

6.Check setting of DIP switch which should be same as previouse setting

7.Fix screws and connect all cable which are taken

8.Set following parameter

Refer pages for each setting:

E4-2-4 How to Update Data for Frame Driving

E5-5 Setup- Machine setting

E5-6 Position- Registration of coordinates for positioning sensor

<note> Without above setting, Machine may not work correctly

<note> CPU circuit board is supplied with machine control program. In case machine control progem is not the latest Version, update program version,([E4-3-3 Update CPUcircuit board machine control program]) before proceeding [8.setting following parameter].

9.Press MENU button and select [System] in the nemu [OTHER].

Proceed intialization of system.

10. Press MENU button and select [Speed] in the nemu [OTHER].

Proceed machine speed setting.

E2-2 Setting of dipswitch for CPU board

1 - - - ON : Initialization of backup date
OFF. : Do not initialize (Regular)

2 - - - ON : Maitenance mode
OFF. : Regular

3 - - - OFF. : Reguar
4 - - - OFF. : Reguar

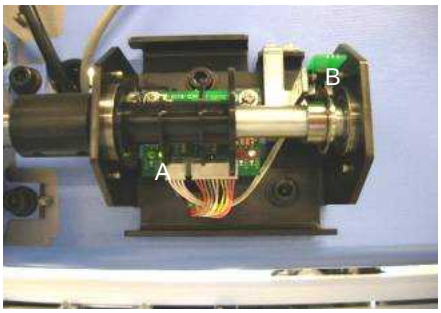
5 - - - OFF. : Reguar
6 - - - OFF. : Reguar
External

Detail of External switch (Normally, dose not use at maintenance)

5	6	
ON	ON	: Forbid
ON	OFF.	: Install mode by RS-232C (38400bbs)
OFF.	ON	: Forbid
OFF.	OFF.	: Normal machine work (Regular)

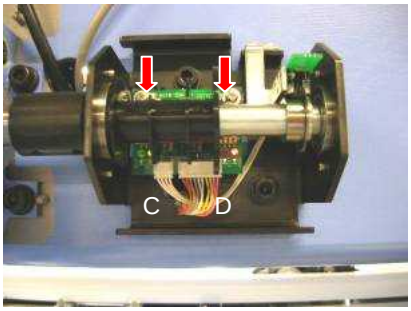
E2-3 Exchange Timing Circuit Board

1.Timing Circuit Board consist with two part(A and B).



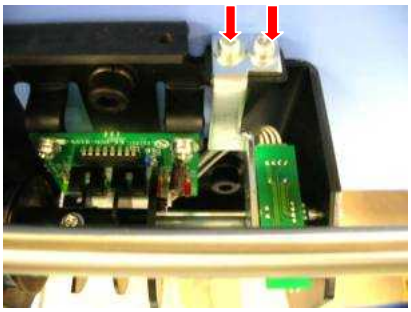
2.Take A part out

Unscrew 2 screws, then take C cable and D harness out



3.Take B part out

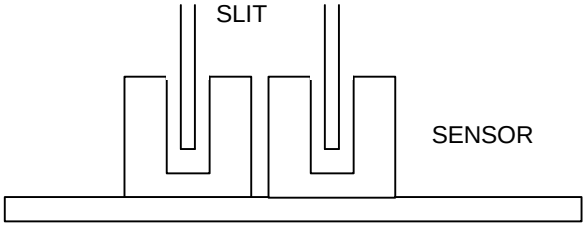
Unscrew 2 screws



4.Replace A part

Fix by screws, and set cable and haeness

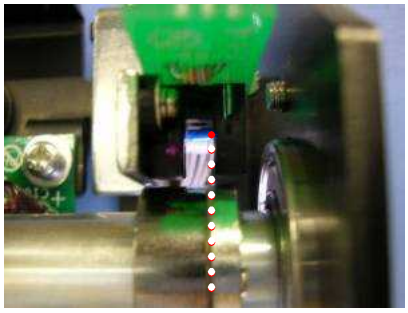
<note> Slit should be set between sensor



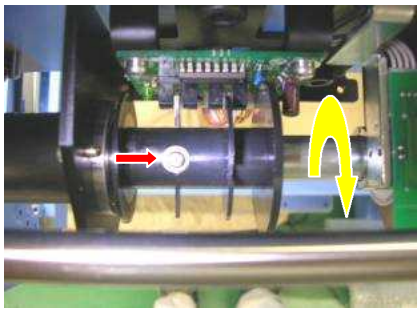
5.Replace B part

Fix by screws

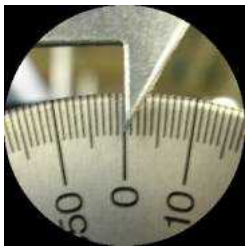
<note> Slit should be between sensor. Be careful for handling of slit, because slit is thin and soft.



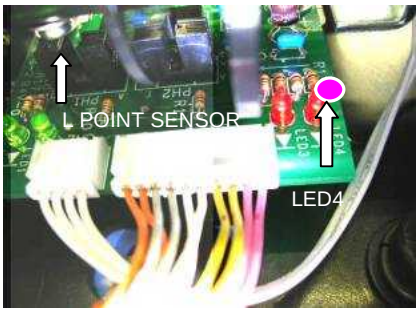
6.Loosen screw for Slit and make it free from shaft



7.Turn main shaft and set [0 degree(L point)]

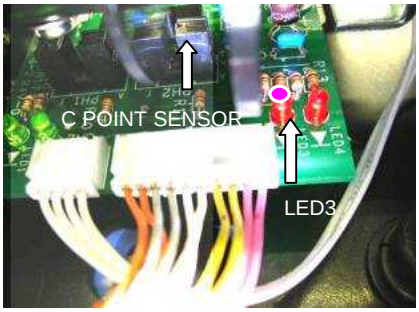


8.Turn Slit clock-wise(see from scale side) and fix by screw at the point which LED 4 is turned off.

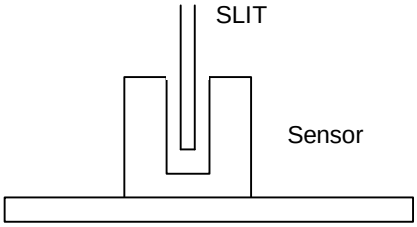


9.After fixing Timing Circuit Board, Turn Main shaft and check if LED 4 is turned off at 0 dgree of main shaft

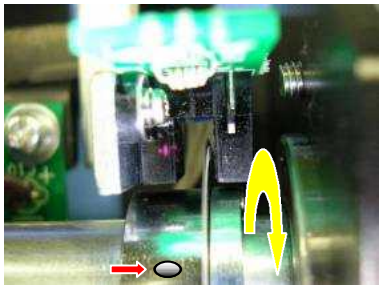
10.Turn main shaft counterclockclock wise(see from scale side), and confirm LED 3 is turned on at the C Point(270-284 degree)



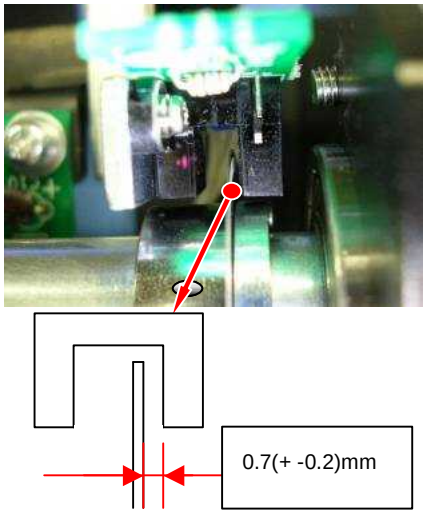
11.Control that slit does not touch sensor



12.Loosen screw and make Timing Slit free to turn



13.Keep space 0.7+ -0.2mm between Timing Slit and Sensor, and fix

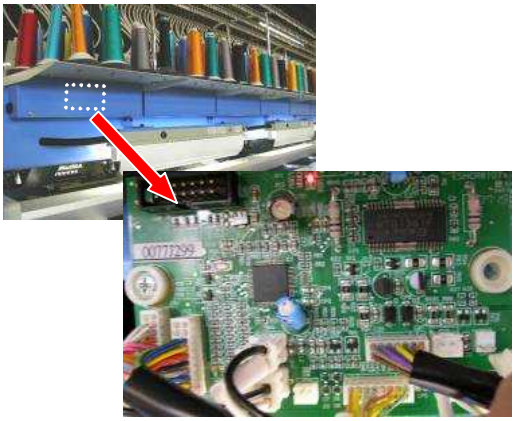


<note> Be careful for handling of slit, because slit is thin and soft.

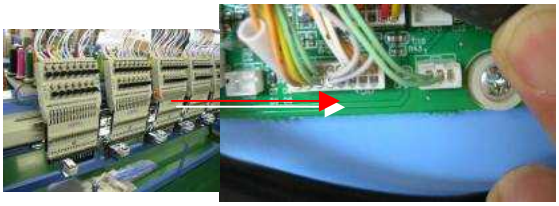
E2-4 Connection of Detection Circuit Board

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

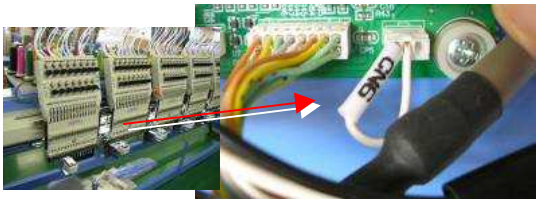
Please attention to following information.



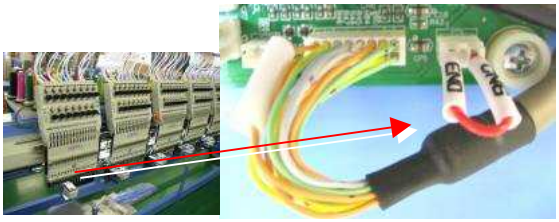
1.For Head with emergency stop SW->TC-EMG harness



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



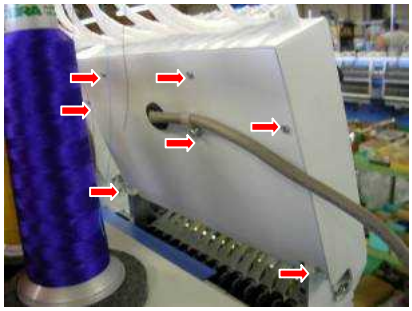
3.For last Head->Red loop harness



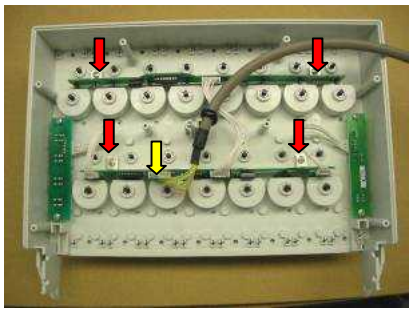
After connect all, please check if emergency SW works correctly.

E2-5 Exchange TC7-8 Circuit Board

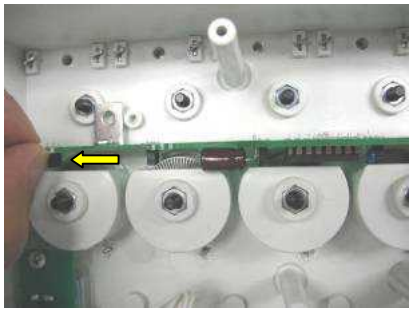
1.Take cover out from moving head by unscrew 7 screws



2. Take harness and screws out

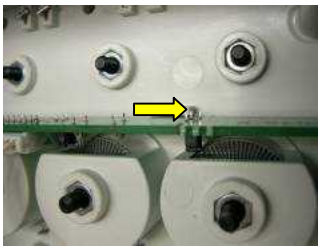


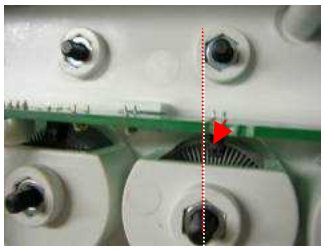
3.Slide board and take out



<note> Do not pull without sliding, Sensor may be broken.

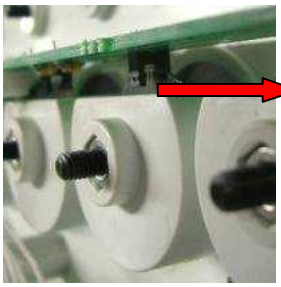
4.Insert Board into guide and slide and adjust sensor position to be center of slit.

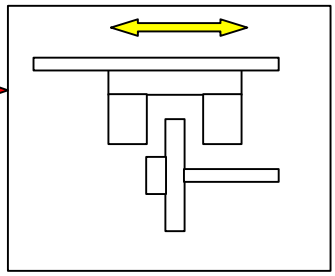




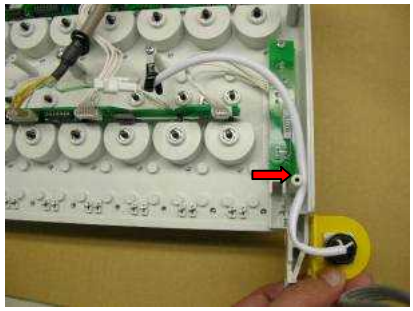
5.Check that sensor is not touching to slit.

Fix by screw and connect harness





<note> The cable for emergency sw has to pass as below photo

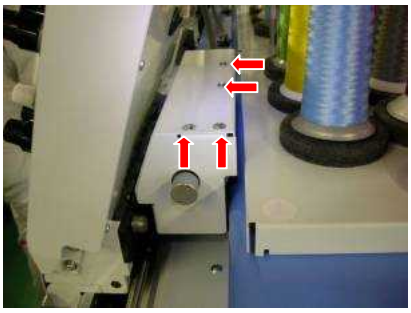


5.Set cover

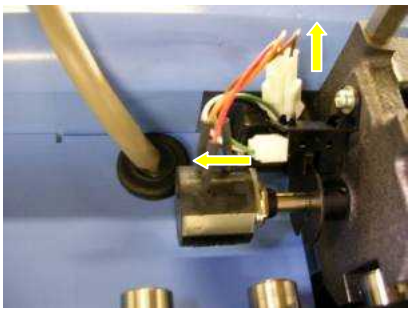
E2-6 Exchange needle stop sensor and potentiometer

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

2.Unscrew and take cover out

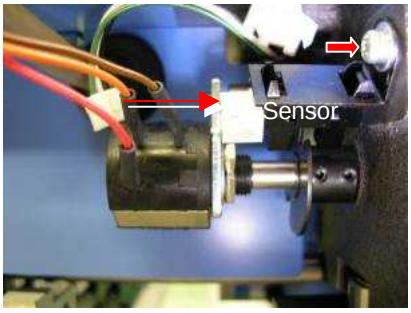


3. Take 2 connectors out

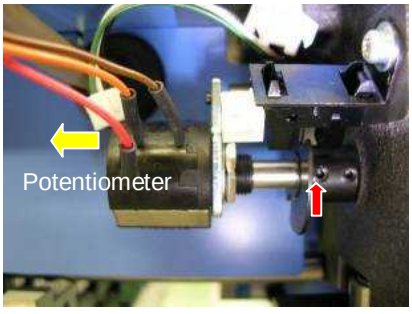


4. Unscrew and take Sensor

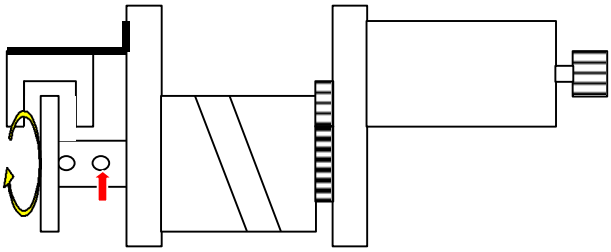
Set new sensor and fix by screw and connector



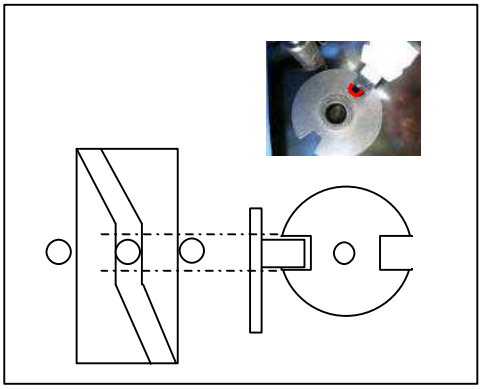
5.Loosen screw and pull potentiometer out



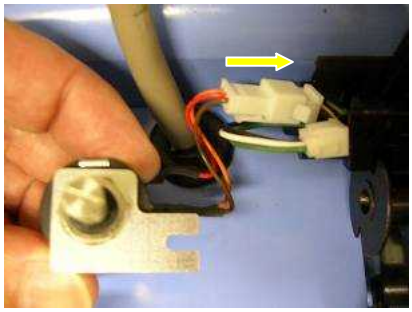
6.Loosen slit collar fixing screw and make slit collar free to turn



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



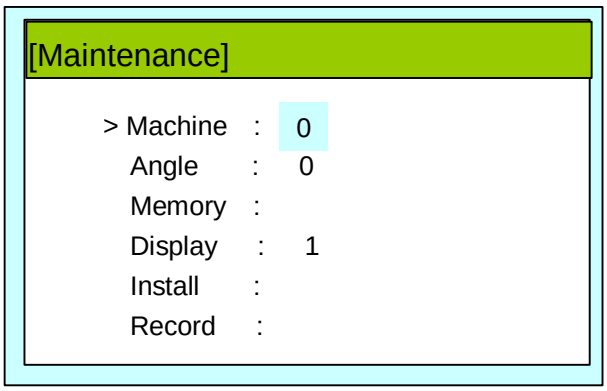
8.Connect harness of potentiometer



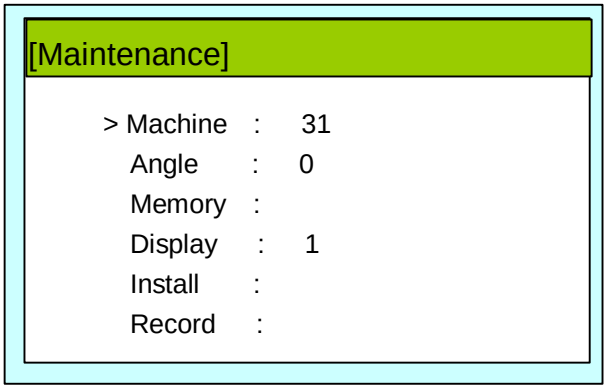
9. Enter to maintenance mode

(Refer to [E5-1 Maintenance Mode])

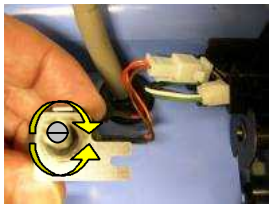
10.by butto, move to [Machine] and press SET button

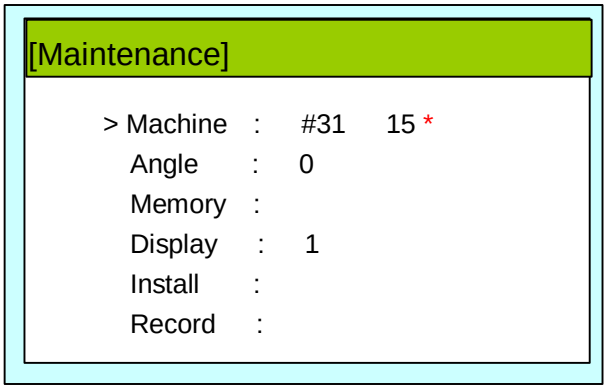


11.Set [Machine:31]and press SET button



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

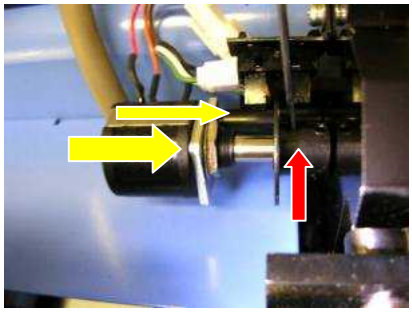




<note> [Machine : #31 15 *]

* mark appears with sound

13.Set potentiometer and fix

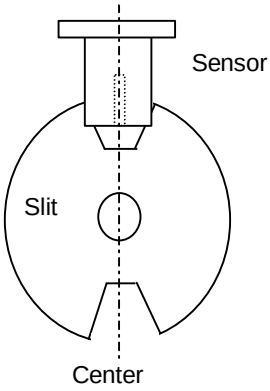


<check>

[Machine : #31 15*]

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



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

<check>

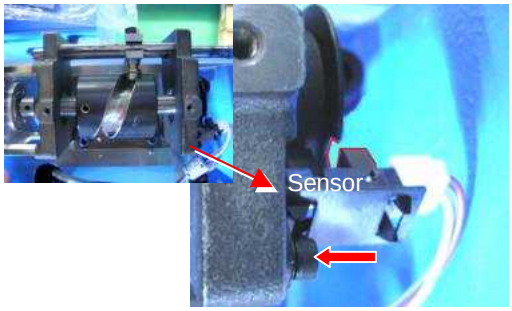
[Machine : #31 1*]

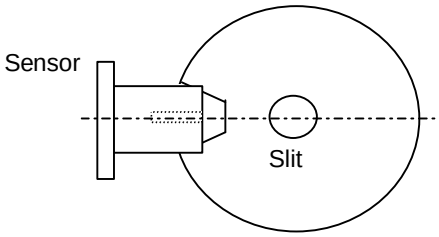
mark appears, when notch center of slit collar comes sensor position. If position is not matching, please re-adjust again

E2-7 Exchange Thread trimming sensor

1.Take table cover out

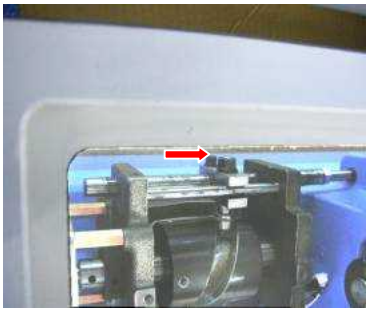
2.Exchange sensor and connect haeness



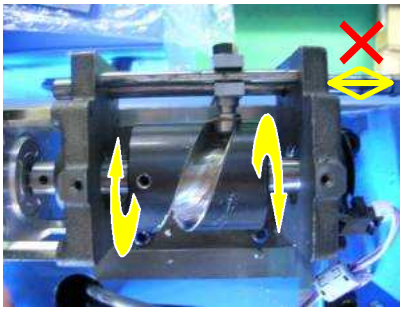


<note> Sensor should place at center of slit

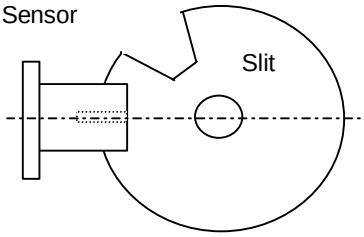
3.Loosen Cap screw (1pc)



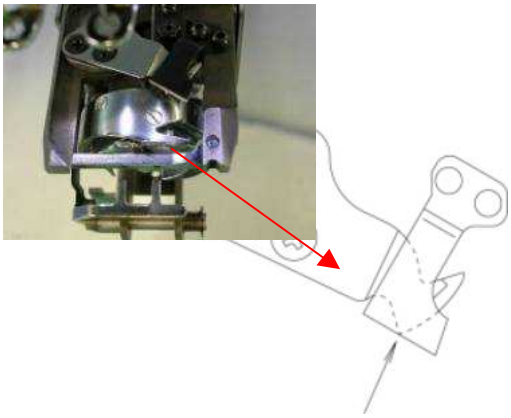
4.Turn CAM and confirm that shaft is not moving



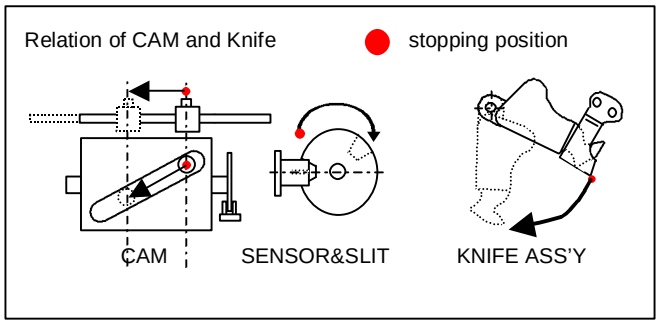
5.Turn CAM and set sensor position is out from slit. Power on and press SET on control box



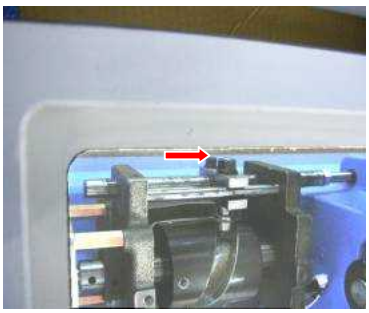
6.CAM turns and stops at stopping position automatically. Check postion of moving knife



Position of Moving knife and fixed knife



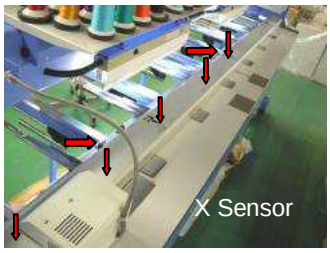
7. Fix Cap screw

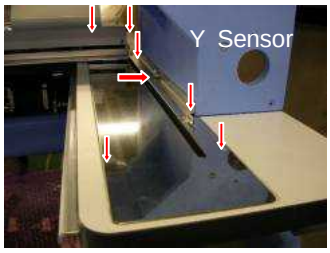


Set cover

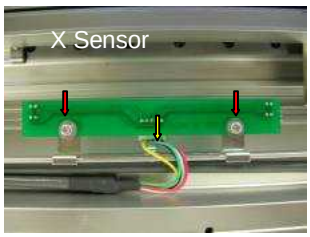
E2-8 Exchange X-Y Position Sensor

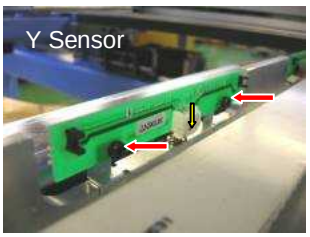
1.Unscrew and take cover out





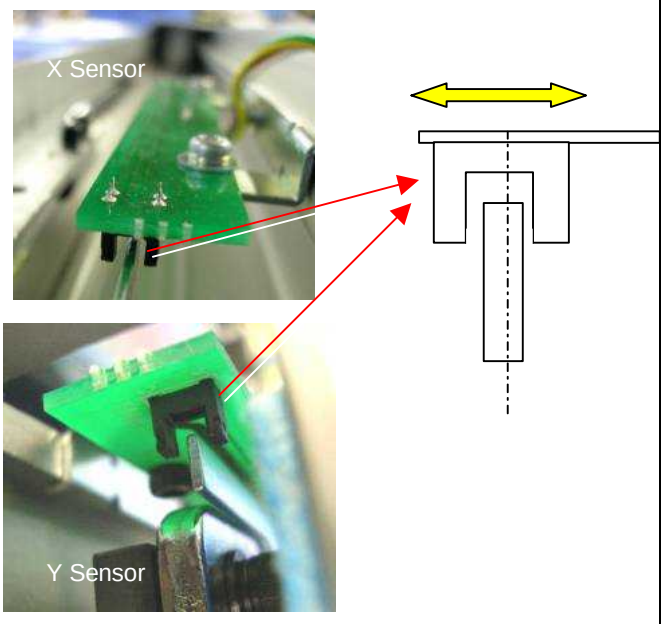
2.Unscrew and take Position Sensor Circuit Board. Then take harness out





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

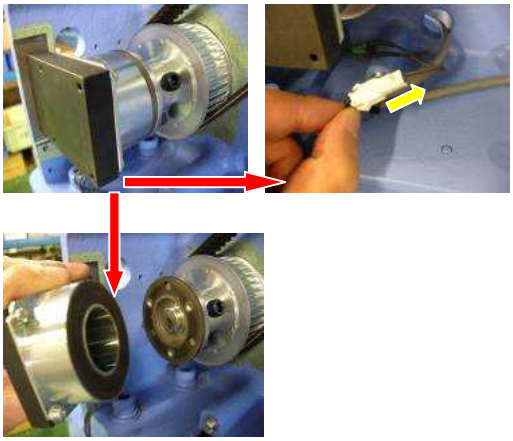
Refer [E5-6 Position- Registration of coordinates for positioning sensor]

E2-9 Exchange Brake Unit

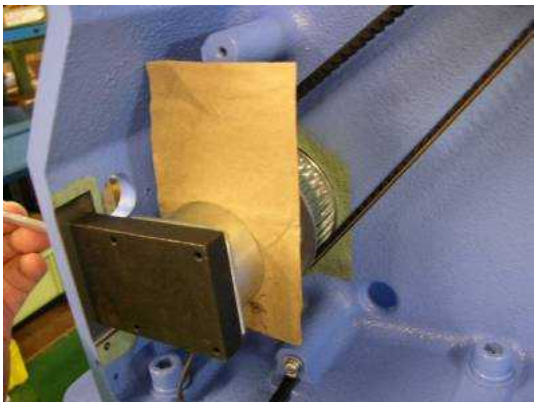
1.Take mission cover (left side) out

2.Take connector out

Unscrew and take brake solenoid



3. Put 0.1-0.15mm paper between brake solenoid and brake disk, and fix brake solenoid by screw



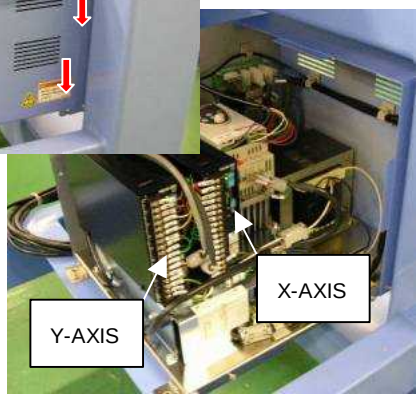
4.Take paper out and set cover

E2-10 Exchange Pulse Motor Driver

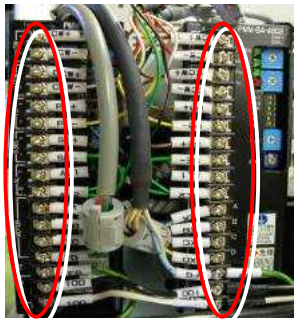
<note>

Before starting the following work, please take electric power cable out

1.Take box cover out

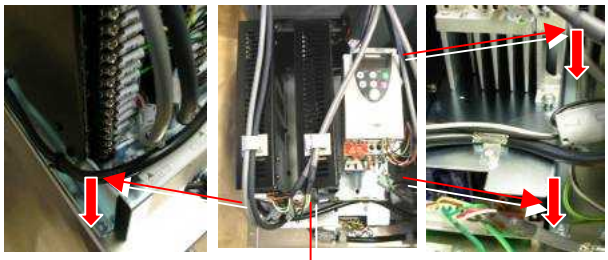


2.Take harnesses out from driver

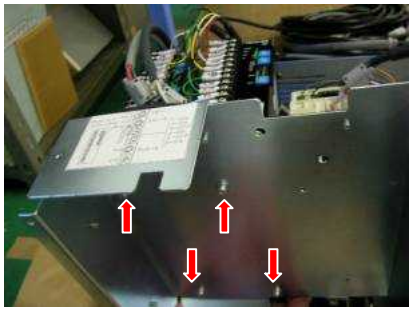


1. Take AC100V connector out

   Unscrew 4 screws on base plate

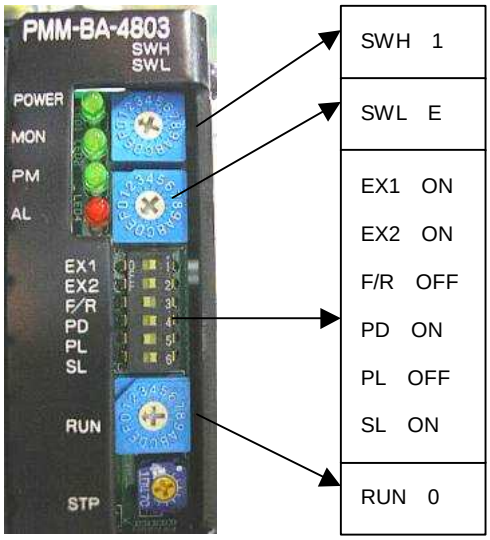


4.Unscrew from reverse side of base plate



5.Check setting of new driver(same setting for X and Y)

<note> Driver is same as one for HCG, but setting is different



6. Fix driver by screws and connect harnesses, and put cover. Detail information about harnesses conenction is mentioned in [E7-1 Pulse motor driver (PMD) wiring]

E2-11 Exchange Switching Power Supply

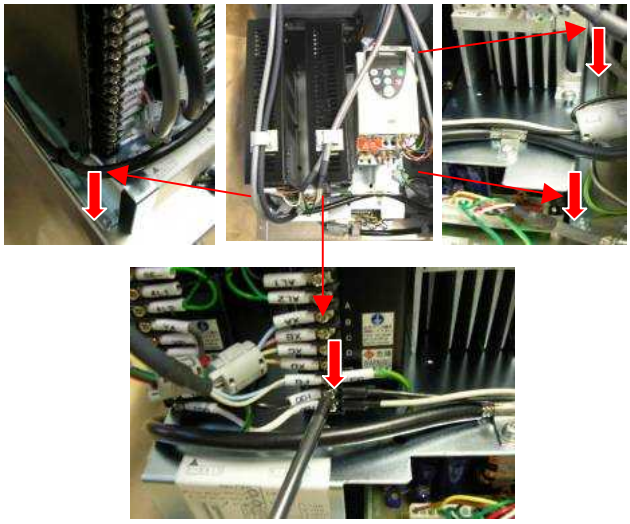
<note>

Before starting the following work, please take electric power cable out

1. Take box cover out

2. Take AC100V connector out

Unscrew 4 screws on base plate

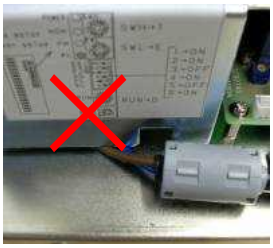


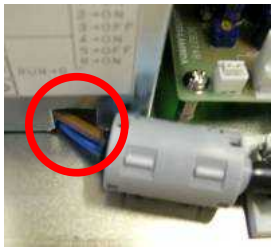
3.Switching Power Supply locates under base plate

Unscrew and teke connector out

4.Replace Swicthing Power Supply and fix screw and connector

<note> Harness should not get caught



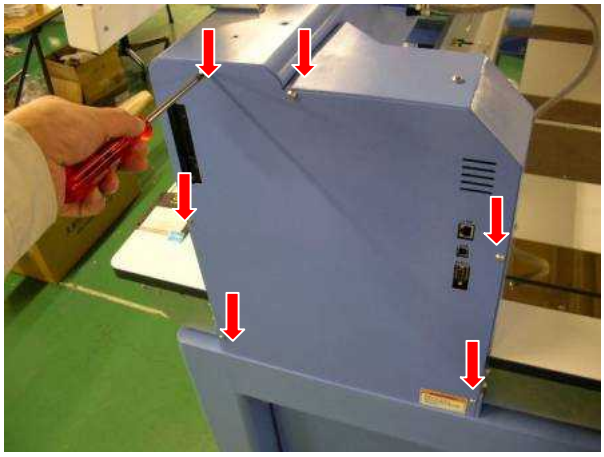


5.Refer [E2-12 Adjustment of Voltage for Switching Power Supply] and adjust voltage setting

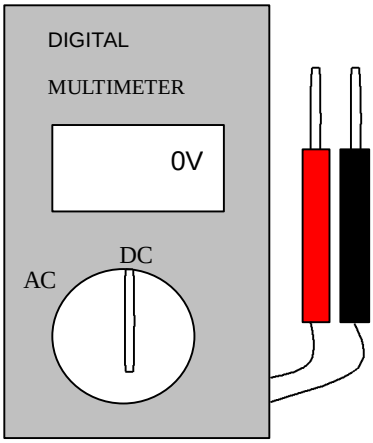
E2-12 Adjustment of Voltage for Switching Power Supply

1. Take box cover out

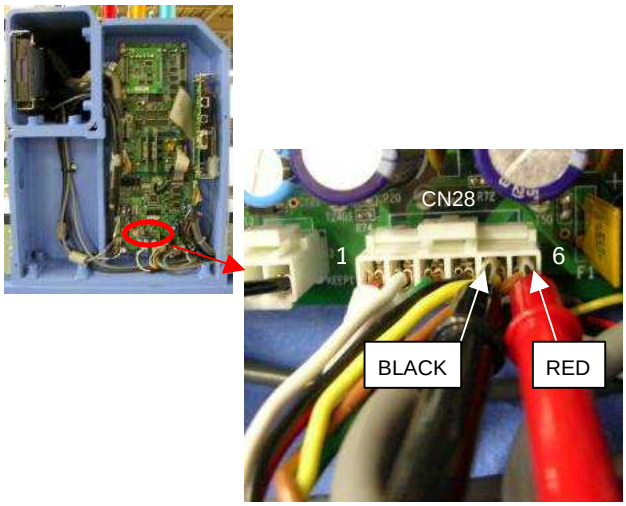
2.Take mission cover(right side) out



3.Set [DC] of degital tester



4.Put tester into CN28 of Drive B board

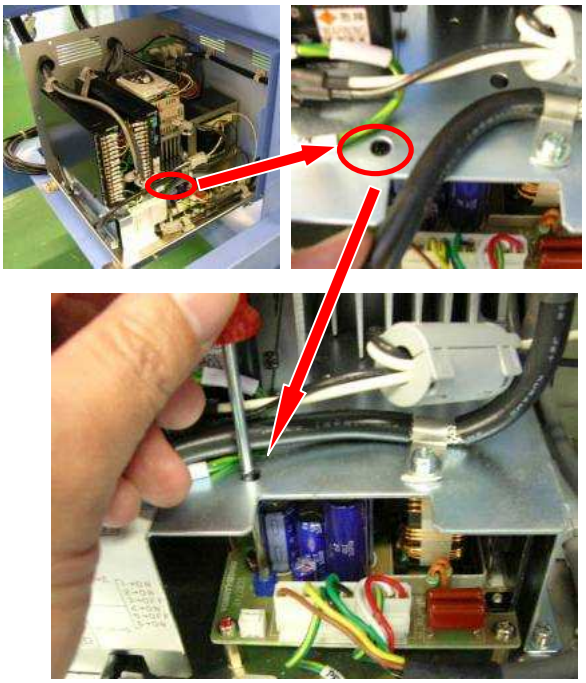


<note>

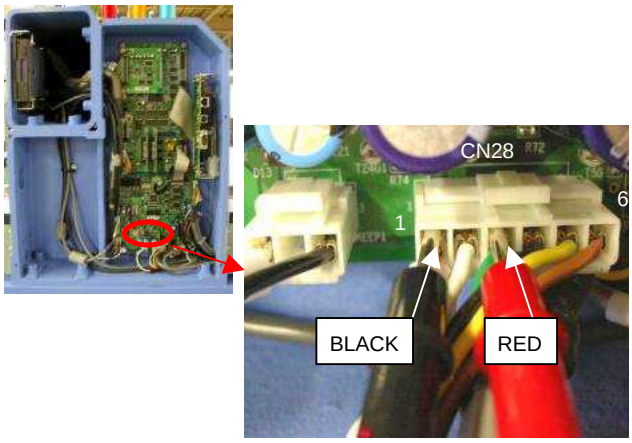
*Tester(red) to be put into no.6 of CN28

*Tester(black) to be put into no.5 of CN28

5.Power main switch on, and turn VR(volume) on Switching Power Supply and set [5.3V+-0.1V]



6. Put tester into CN28 of Drive B board

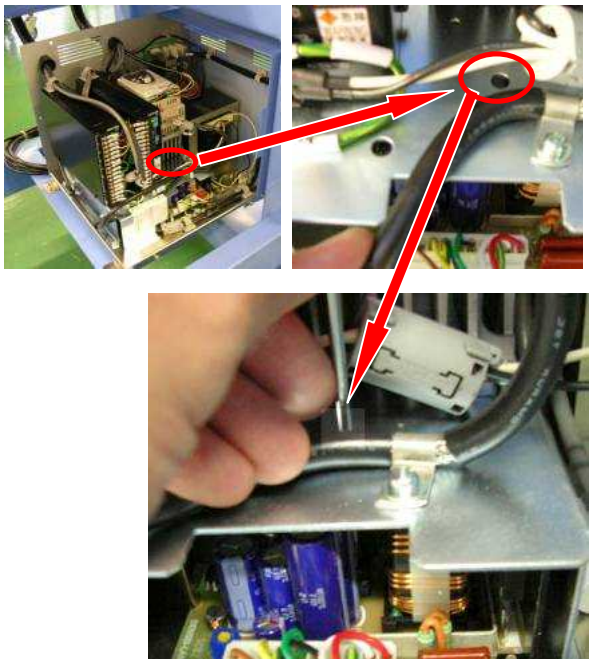


<note>

*Tester(red) to be put into no.3 of CN28

*Tester(black) to be put into no.1 of CN28

7.Turn VR(volume) on Switching Power Supply and set [24.0V+-0.1V]

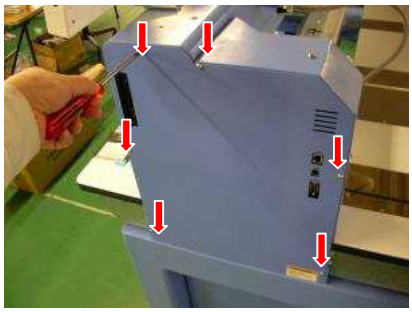


8.Set cover

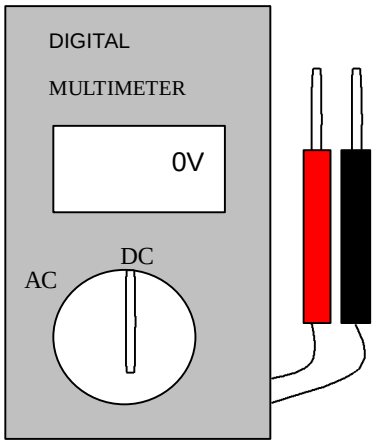
E2-13 Adjustment for detecting power off

<note> Using degital tester and confirm that Voltage is [5.3V+-0.1V] [24.0V+-0.1V] (Refer [E2-12 Adjustment of Voltage for Switching Power Supply])

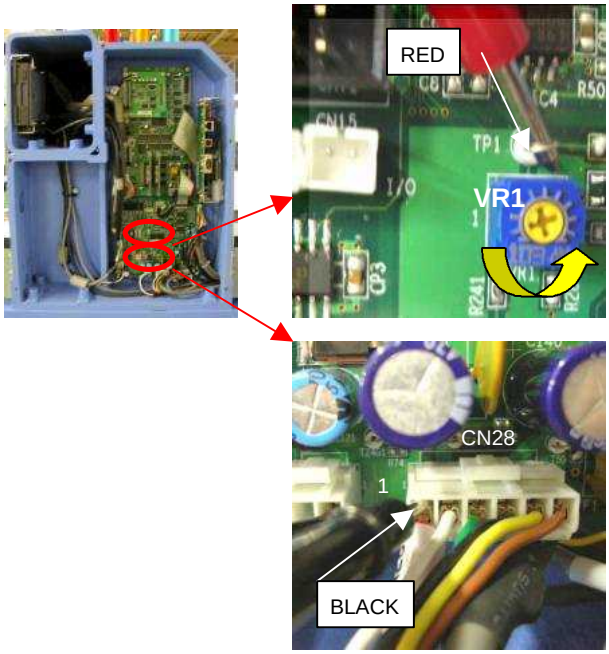
1.Take cover out



2. Set [DC] of degital tester



3.Turn VR1 on Drive B Circuit Board to the left up to the end and put tester



<note>

*Tester(red) to be put into TP1

*Tester(black) to be put into no.1(black) of CN28

4.Power SW on and turn VR1 to the right up to voltage [2.0V+-0.1V]

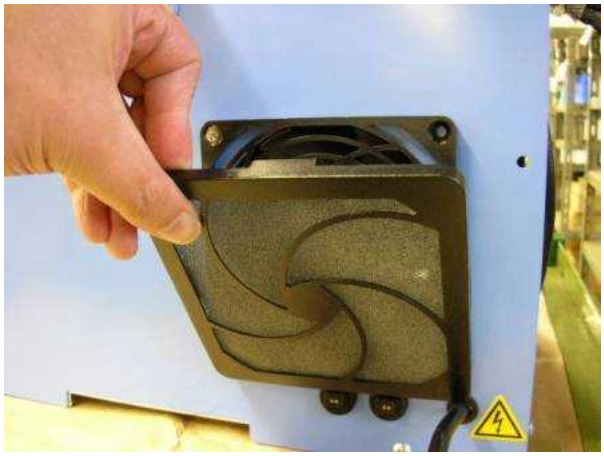
5.Put cover and fix

E2-14 Exchange Cooling Fan

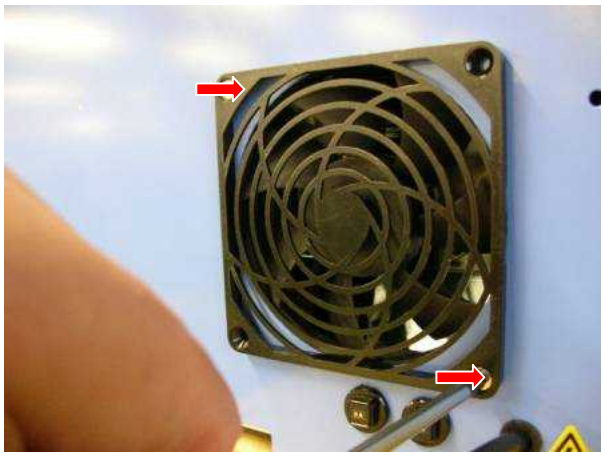
<note> Before starting the following work, please take electric power cable out

1.Take box cover out

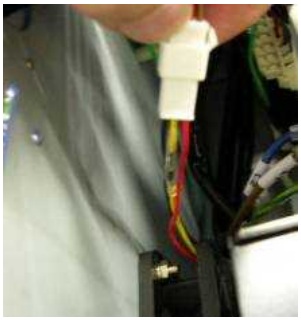
2.Take filter out



3.Unscrew fan cover (note: nut is on reverse side)



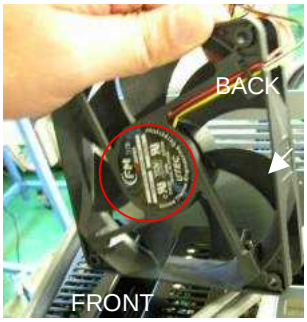
4.Take connector out, then take fan out from box

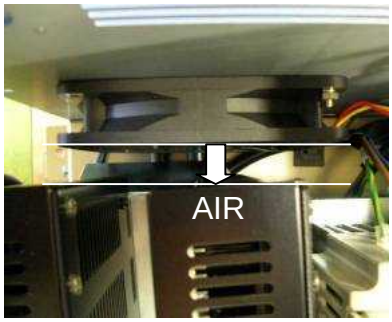


5.Replcae fan and connect all connector and fix

<note1> Direcetion of fan: Label side is front

<note2> Check that fan is not touching to any other part



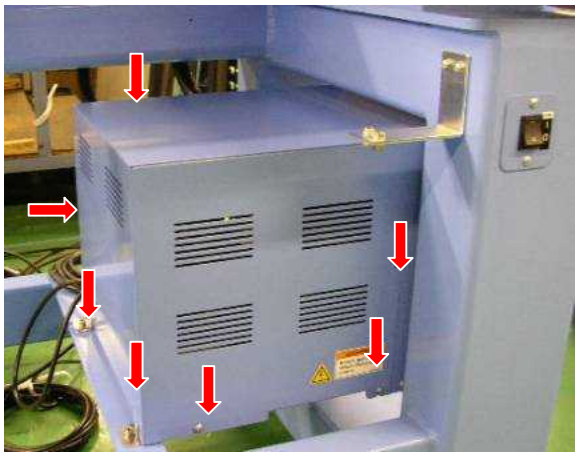


5.Put cover

E2-15 Exchange Inverter

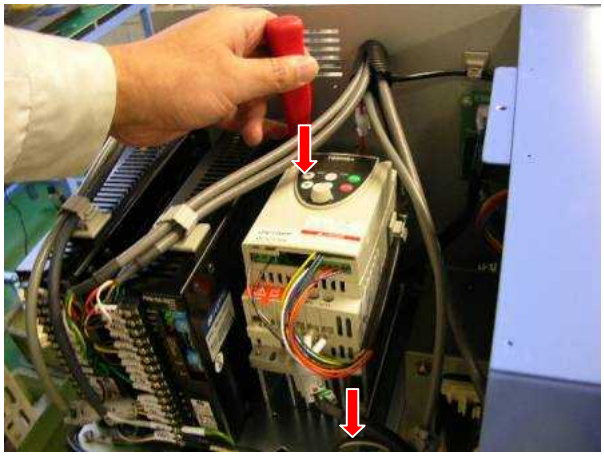
<note> Before starting the following work, please take electric power cable out

1.Take box cover out

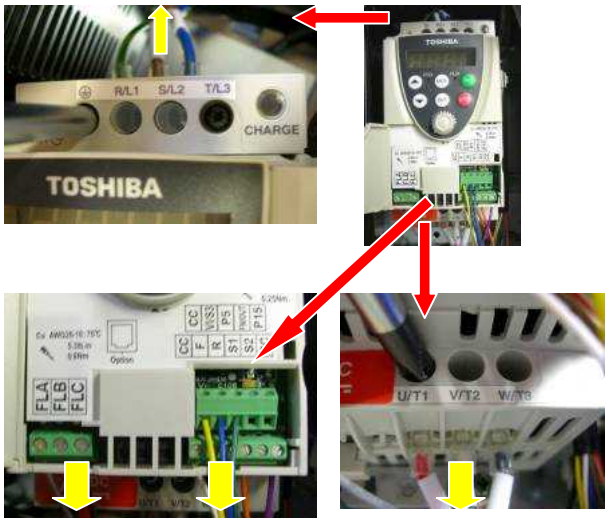


<check>Charge lamp is off

2.Take inverter out



3.Take all harness out



4.Set new inverter and connect harness, and fix

Pefer [E7-2 Inverter wiring] for detail information of harness connection

5.Put cover

E2-16 Setting Inverter

In case of spare parts supply, parameter is preset. Please contact HAPPY, when you need to change it.

Parameter cannot be set while machine is running . Pay attention to electric wires as setting is done with power is on.

E2-16-1 Parameters release the keep off setting

This is to release setting normally prohibited.

1. Press “MON” button to display AUH.

   (When you press three times, display will make one round)

2. Press “▲▼” button to set to display of [F- - -].

3. Press “ENT” button to check display of [F100].

4. Press “▲▼” button to set to display of [F700].

5. Press “ENT” button to read number [1].

6. Press “▲▼” button to set to [0] and press ENT.

7. Now you can set other parameters.

   Reference [E7-3 Inverter parameter setting]

   After all paramaters seted, please set data [1] to paramater number [F700] for prohibits setting.

E2-16-2 Setting parameters

Please note that you are unable to make this setting while the machine is running.

Please set with prohibition of parameter setting released (reference to E2-16-1).

Basic parameter is to be set by setting items without F***. Please refer to article E7-3 for setting value.

1. Press “MON” button to set to display of AUH.

   (When you press three times, display will make one round)

2. Press “▲▼” button to set to items you want to set.

3. Press “ENT” button to read setting value.

4. Press “▲▼” button to set to value you want to set.

5. Press “ENT” button to write setting value.

6. Press “▲▼” button to set to items you want to set.

   Repeat settings.

7. After setting, please set to prohibition of setting in accordance with [E2-16-1 Parameters release the keep off setting].

E2-16-3 Setting extension parameter

Please note that you are unable to make this setting while the machine is running.

Please set with prohibition of parameter setting released (reference to E2-16-1).

Expansion parameter is to be set by setting items with F***. Please refer to article E7-3 for setting value.

1. Press “MON” button to set to display of AUH.

   (When you press three times, display will make one round)

2. Press “▲▼” button to set to display of [F- - -].

3. Press “ENT” button to check display of [F100].

4. Press “▲▼” button to set to display of item you want to set.

5. Press “ENT” button to read setting value.

6. Press “▲▼” button to set to value you want to set.

7. Press “ENT” button to write setting value.

8. Press “▲▼” button to set to items you want to set and press “ENT” button to set other items.

9.After setting, please set to prohibition of setting in accordance with [E2-16-1 Parameters release the keep off setting].

E2-16-4 Initialize parameters

Please note that you are unable to make this setting while the machine is running.

Please set with prohibition of parameter setting released (reference to E2-16-1).

When setting is mistakenly made in mid way, the setting will return to parameter in normal standard in one action.

Thereafter please change to parameter you want to set.

1. Press “MON” button to set to display of AUH.

   (When you press three times, display will make one round)

2. Press “▲▼” button to set to display of  .

3. Press” ENT” button to check display of [3__0].

4. Press “▲▼” button to set to display of [3__3].

5. Press “ENT” button to display [InIL], then set it back to[0.0].

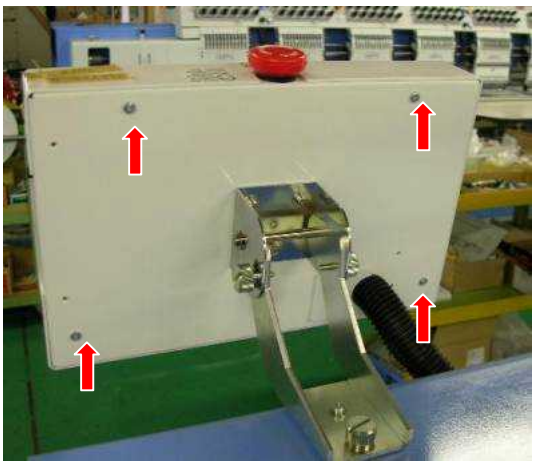
   You will get initialization finished.

6. Please set basic parameter and expansion parameter.

E3 Open and remove front panel from control box

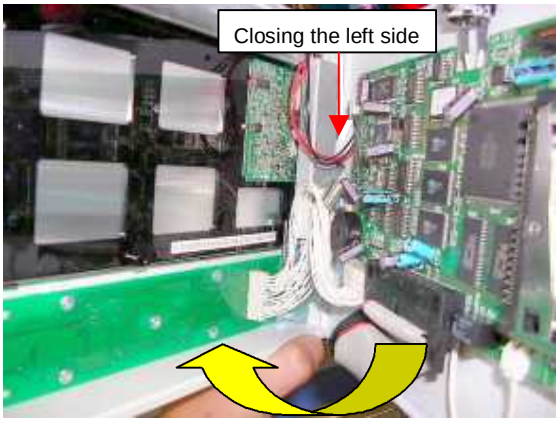
E3-1 Open the front panel on the control box

1. Remove four setscrews behind of control panel



2. Open control panel like following picture.

(Open the cover from right side)

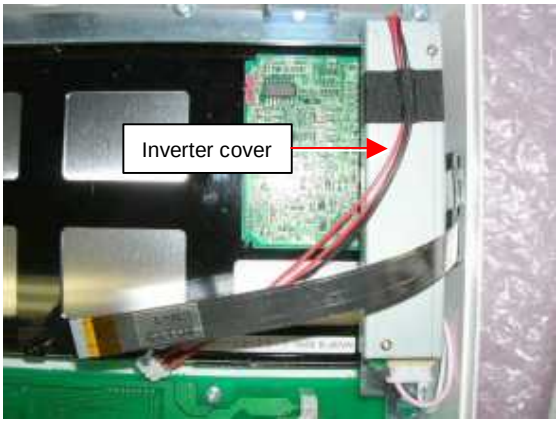


<note>

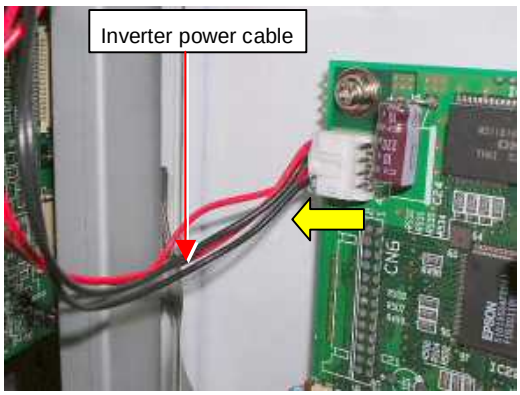
Please do not wide open on the left side.

(Possible, make damage to wiring cable and electric board)

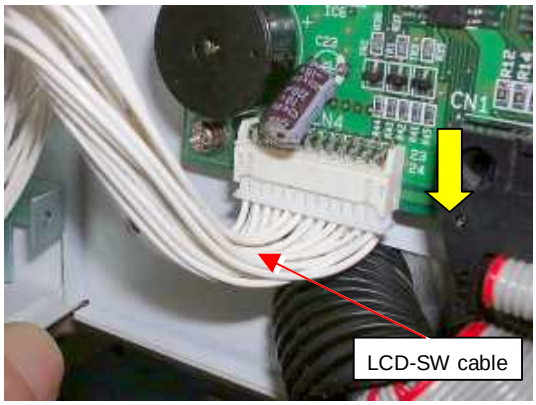
Please do not turn on power when inverter cover (refer to the bellow), otherwise the machine might be damaged.



3. Disconnect Inverter power cable.



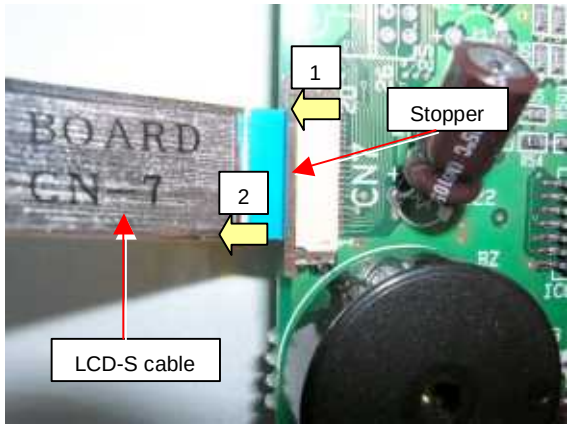
4. Disconnect for LCD-SW cable



5. Disconnect LCD-S cable.

1: Pull stopper on CN7(ATA/LCD board)

2: Pull out the LCD-S cable.

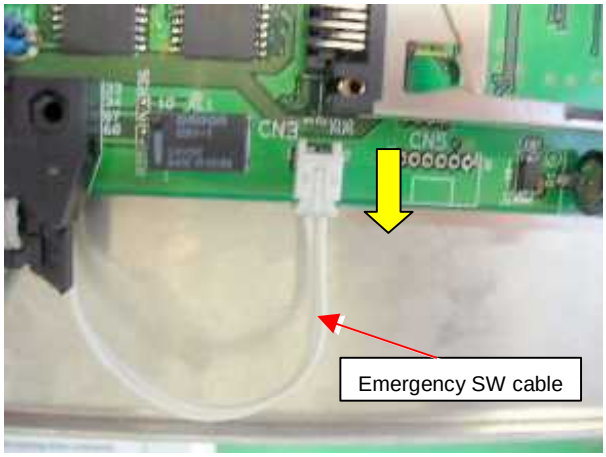


* Finish of procedures

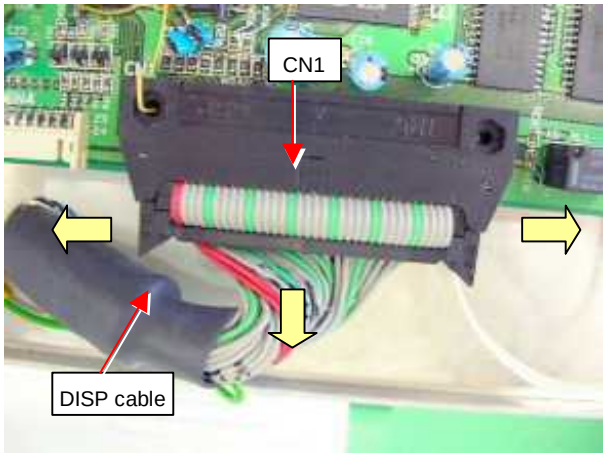
For assemble and close this panel: Please opposite steps of this procedur

E3-2 Remove ATA/LCD board

1. Disconnect emergency SW cable



2. Disconnect DISP cable. (Please off stopper first)



3. Replace to new ATA LCD Circuit Board

4. Set DS1 setting same as previous board

5. Conenct emergency SW cable and DISP cable

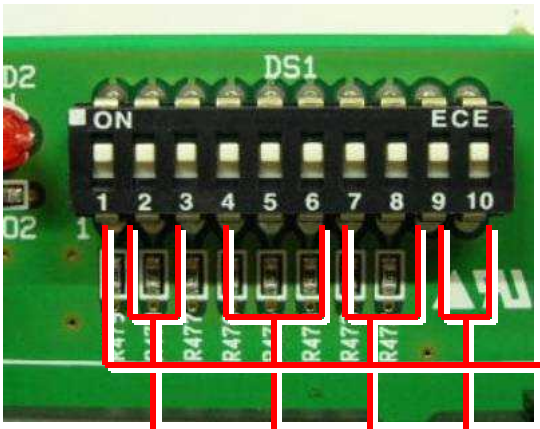
6. Refer to [E4-3-1 Memory Initialization of ATA LCD Circuit Board] , and intialize memory

7. Close cover and fix

8. .Refer to [E4-2-2 How to change language setting] and install language data.
   Without language setting, information may not show on display

<note> CPU circuit board supplied as spare parts has control program installed. In case program version is not the latest version, it should be updated referring to [E4-2-1 How to update program for control of ATA LCD board] . Then proceed to [E4-2-2 How to change language setting] and [E4-3-1 Initialization ATA LCD board memory]

E3-3 Dip switch setting for ATA/LCD board



1 ------ON : Initialize back up data
OFF : Non Initialize(Regular)

2 ------OFF : Regular
3 ------OFF : Regular

4 ------ON
5 ------ON : Regular — Color LCD Size
6 ------OFF

7 ------OFF
8 ------OFF : Regular — External

9 -----OFF : Regular
10 ---OFF : Regular

Detail of External switch (Normally, dose not use at maintenance)

7	8	
ON	ON	: Forbid
ON	OFF	: Erase of language data.
OFF	ON	: Forbid
OFF	OFF	: Normal machine work(Regular)

E4 Initialization of system

E4-1 Notice for update and initialize machine systems

* Rewriting of program is required for version up of control program and frame movement data, replacement of CPU board and ATA LCD boar, and change of language setting

* Contents of system program for HCR are as follows

CPU Board

OS:	HCRH****	(Program of control for CPU board)
Drive:	CR1****	(Data of frame driving for 2 heads machine)
	CR2****	(Data of frame driving for 4 heads machine)
	CR3****	(Data of frame driving for X4 heads and 6 heads machine)
	CR4****	(Data of frame driving for X6 heads and 8 heads machine)

LCD Board

Control:	LCDH****	(Program of control for LCD board)
Language:	H_ENG***	(English)
	H_JPN***	(Japanese)

* System program above will be shown as below on PC screen

Program of control for CPU board:	HCRH****	= HCRH****.upi	+	HCRH****.bin	: 2 files required
Data of frame driving:	CR*****	= CR*****.upi	+	CR*****.bin	: 2 files required
Program of control for LCD board:	LCDH****	= LCDH****.upi	+	LCDH****.bin	: 2 files required
Language(English and others):	H_ENG***	=H_ENG***.upi	+	H_ENG***.bin	: 2 files required

<note1>

*Please do not write system program in folder in CF card(FD), when you upgrade machine by writing system programin CF card(FD) by PC, as machine becomes unable to recognize version up program. (please write system program on route of subject media)

<note2>

*When you upgrade program by Floppy Disk, please proceed without CF card inserted.

Upgrading is not available when you upgrade program with CF card inserted, as priority is given to CF card.

*In case you need to upgrade several program at same time, please keep following order

1.Program of control for LCD board (LCDH****)

↓

2. Language (H_ENG*** or H_JPN*** or H_GER*** or H_DAN*** etc…)

↓

3. Program of control for CPU board (HCRH****)

↓

4. Data of frame driving (CR****)

E4-2 Update of Program

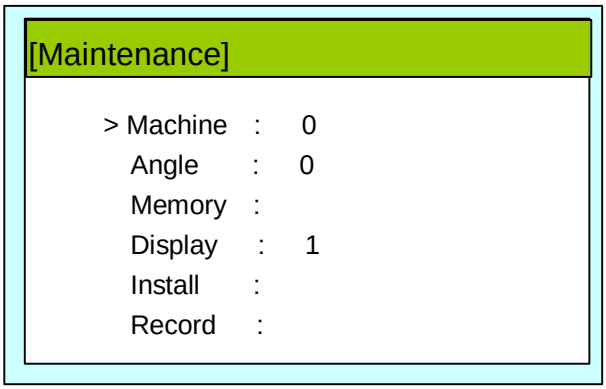
Please follow steps below, when you need to replace or upgrade for circuit board or program

E4-2-1 How to Update program for control of ATA LCD Board

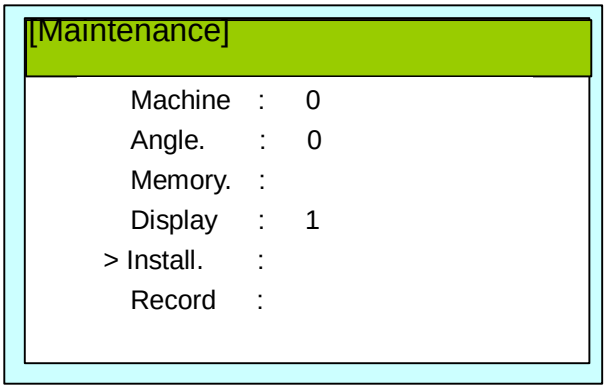
1.Update of ATA LCD board program

Insert CF card having version up data into CF card slot. (FD Drive is for use Floppy Disk)

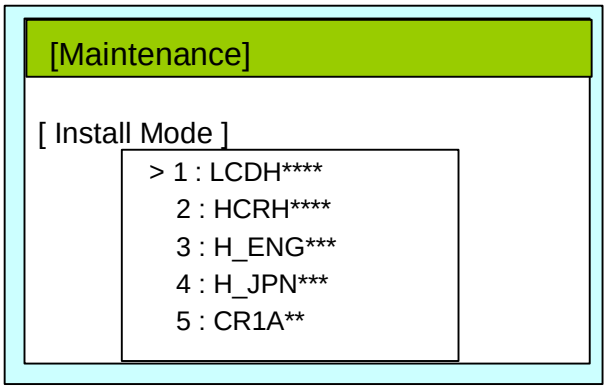
2.Enter to Maintenance Mode with referring to [E5-1 How to enter to maintenance mode]



3.By button set [Install] and press SET



4.Below munu will be shown



5.By Button set [LCDH****] and press SET

Program installation starts and the following message will be shown on display.

<note> Please do not take CF card (FD) out from slot or do not cut power supply during installation of program.

6.After finish installation, machine restart automatically

E4-2-2 How to Change Language Setting

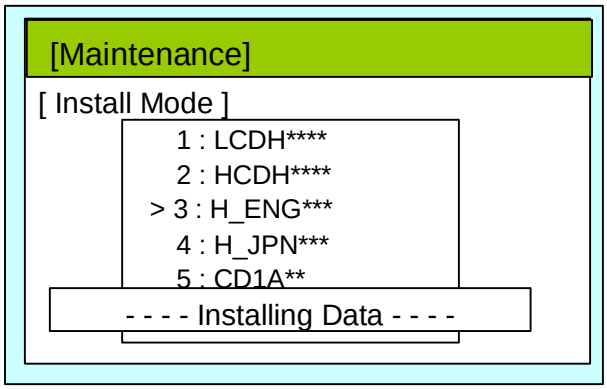
1. Change language of LCD panel

   Insert CF card contains data for version up into CF card insertion slot.(FD Drive is for use of Floppy Disk).

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

3. Place cursor at [Install] by button and press SET button.

4. Select language display program required for installation by button. Installation of language display starts by pressing SET button.



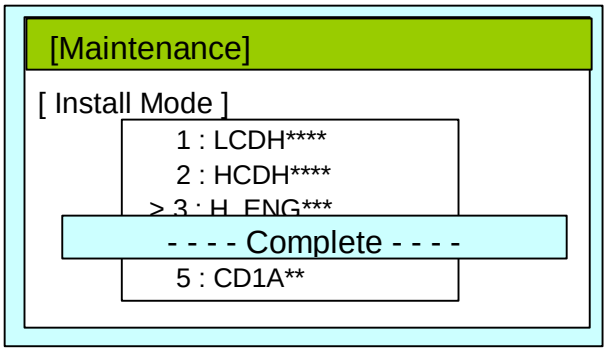
* Language data are as follows

English	H_ENG***
Japanese	H_JPN***
German.	H_GER***
Danish.	H_DAN***

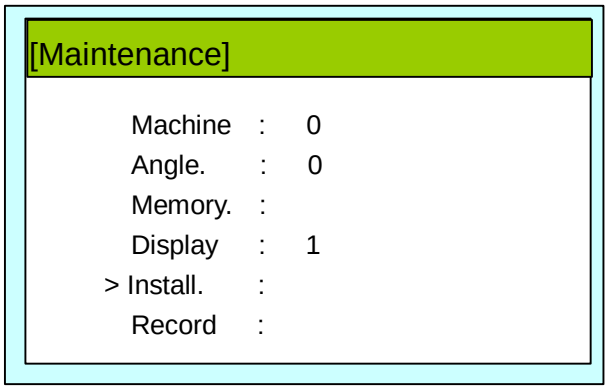
<note>

1. Please do not take out CF card (Floppy Disk) during nstallation.
2. Please do not turn off the power during installation (it will take for a while for completion of installation).

5. Message below will be shown after proper completion.



6. Only a short while later, maintenance mode is displayed.



* Please retry when you have display as “Error” by mistake of writing.

* End of process.

E4-2-3 How to Update CPU Board Program

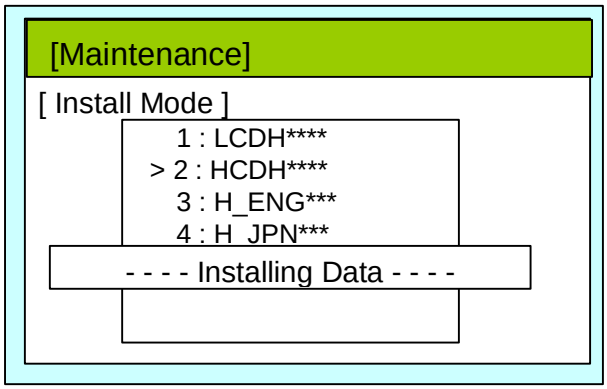
1. Update of CPU board program

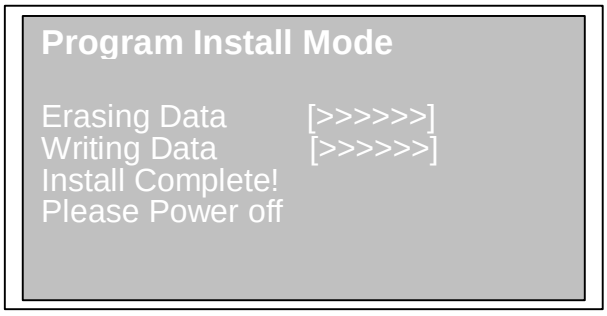
Insert CF card contains data for version up into CF card insertion slot.(FD Drive is for use of Floppy Disk).

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

3. Place cursor at [Install] by button and press SET button.

4. Place cursor at [HCDH****] by button and press SET button. Installation of program for control of CPU board begins. Display comes as below.





<note>

Please do not take out CF card (Floppy Disk) during installation.

* Please retry when you have display as “Error” by mistake of writing.

5. Once turn off power and turn on again.

* Press SET button.

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

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

* End of process.

E4-2-4 How to Update Data for Frame Driving

1.Update of Frame Driving

Insert CF card contains data for version up into CF card lot (FD Drive is for use of Floppy Disk)

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

3.Place cursor at [install] by button and press SET button

4.Set cursor at [CR****] by button and press SET button. Installation of data for frame driving starts.

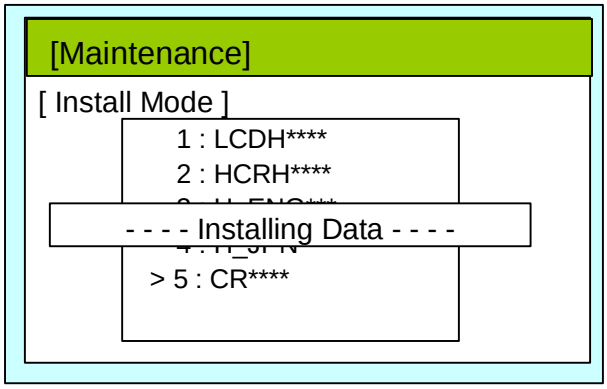
:CR1**** (for HCR 2HEAD TYPE)

:CR2**** (for HCR 4HEAD TYPE)

:CR3**** (for HCR X4,6HEAD TYPE)

:CR4**** (for HCR X6,8HEAD TYPE)

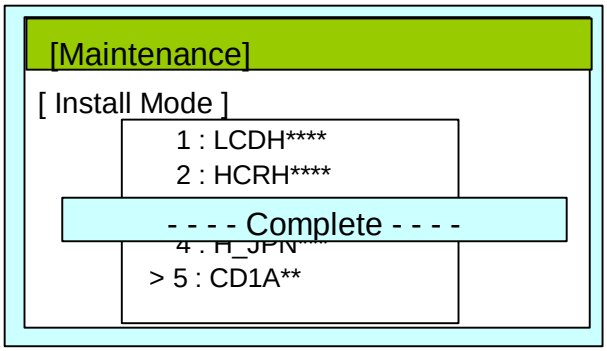
*Display is shown as below



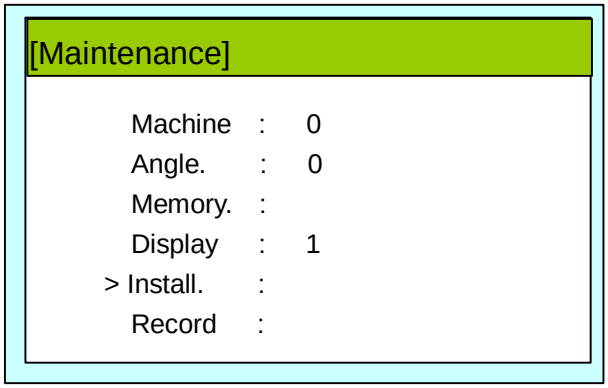
<note>

1. Please do not take out CF card (Floppy Disk) during installation
2. Please do not turn off the power during installation (it will take for a while for completion of installation)

5.Message below will be shown after proper completion



6.Only a short while later, maintenance mode is displayed



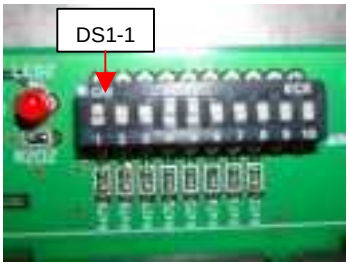
Please retry when you have display as “Error

E4-3 Initialization of memory

At time of start-up, this is to initialize work memory to specified value. Please initialize memory of ATA LCD board in case of update or change of program for LCD board control and when display is not shown normally. Please initialize memory of CPU board when you have a mechanical trouble. Resetting of revolution is required after initialization of CPU board.

E4-3-1 Initialization ATA LCD board memory

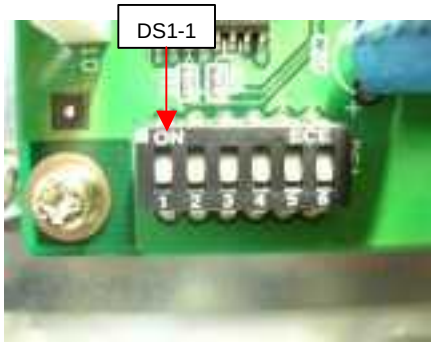
1. Please flip dipswitch DS1-1 on ATA LCD board. Then turn on the machine



2. End of initialize. Please turn off machine and flip back dipswitch DS1-1 to [OFF].

E4-3-2 Initialization CPU board memory

1. Set DS1-1 on CPU board to [ON] to turn power on.



2. You will have no problem in starting and finishing initialization. Please turn power off to set DS1-1 to [OFF] after initialization

3. Please proceed with Automatic Speed Setting with reference to “25-1.2 Initialization of machine” of separate volume.

<note> As memory area is not cleared, please refer to “E5-3 Memory- Initialization of design memory” when you like to clear it.

E5 Maintenance mode

Maintenance mode is divided into 10 items as below.

Machine————————Movement test, maintenance and Adjustment.

Angle————————Angle display(Normally not used at maintenance)[0 fixation.]

Memory————————Initialization of design memory.

Display————————Switch over the display mode of LCD(Normally not used at maintenance)[1 fixation.]

Install————————Update of Control program Frame driving.Installation of Displayed language data(By CF card FD.)

Record————————Total number of stitch.Record of error occurrence. Number of occurrence in each error display.

Setup————————Modification of machine control setup data.

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

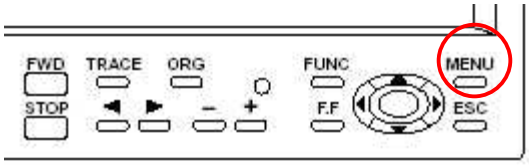
Position————————Registration of coordinates for positioning sensor

OS update(with PC)——Update and Installation through PC (Update software will be needed separately)

E5-1 How to enter maintenance mode

Enable to enter maintenance mode with below procedure, which is not displayed normally.

1. Turn on machine with keep MENU button pressed



<note>

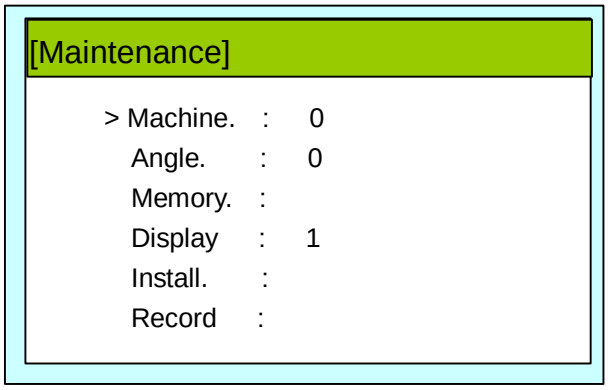
Keep MENU button pressing until below display will come.

2. press SET button

<note>

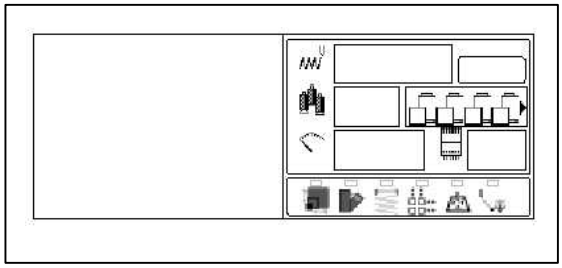
The frame has a sudden move. Keep hands away from the frame.

3. .Below display will come



* Turn of power again with procedure 1and 2 if above display won't come.

4. Change to Drive display if you press ESC button at display of procedure 3.

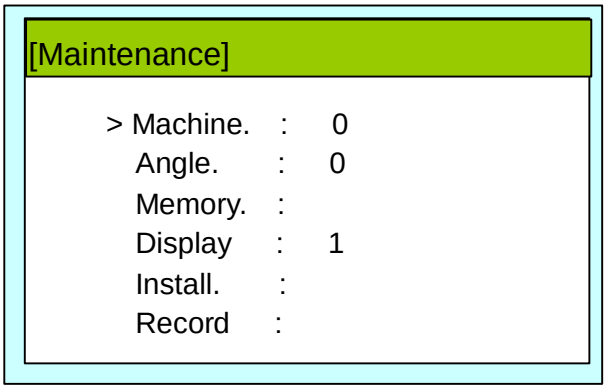


5. Once enter maintenance mode, you are enable to enter maintenance mode again at anytime by keep pressing menu button at stand by display until turn off power.

E5-2 Machine- Machine Movement

1.Refer to [E5-1 How to Enter Maintenance mode] and enter Maintenance Mode

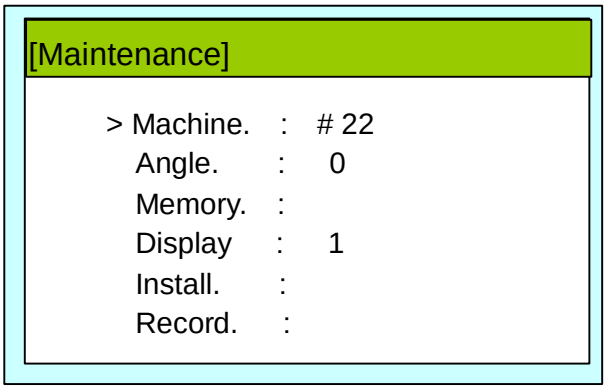
2. Place cursor at [Machine] by  button and press SET button



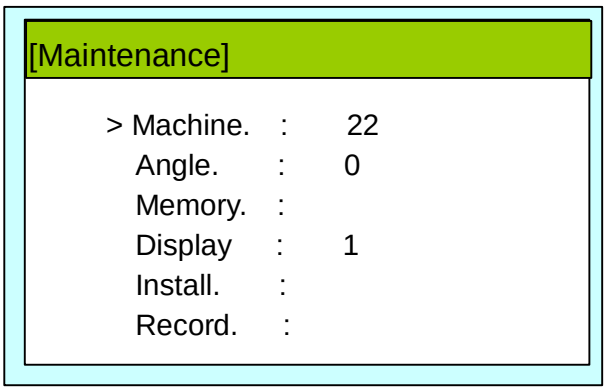
3.By  button, select number (refer to next page) and press SET button

[#] mark appears and setting starts

The below is display for [22. Main Shaft control test on speed designation]



4.After checking, press ESC button and [#]mark disappears (It will not finish automatically)



5. Press ESC button.

Finish Maintenance mod and return to running mode

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

Machine

0 : All actuator OFF

1 : Input test of L point C point

2 : Input test of Actuator origin point

3 : Input test of alrm

4 : Main shaft control test on low speed(80rpm) at start

5 : Main shaft control test on low speed(120rpm) at thread trimming

6 : Main shaft control test on jog speed(10rpm)

7 : Test of brake ON-OFF

8 : Test of jump solenoid ON-OFF

9 : Test of thread catch hook IN-OUT

10: Test of therad catch hook (Countinuous action, Include Jump)

11: Test of keeper solenoid ON-OFF (Countinuous action)

12: Test of knife movement OPEN-CLOSE(1 step action)

13: Test of cooling fan ON-OFF

14: Test of thread holder solenoid ON-OFF

15: Test of keeper solenoid ON-OFF (1 step action)

16:Test of knife movement OPEN-CLOSE (Continuous action)

17-19: (no use)

20: Main shaft control test on voltage designation[0-5V] (jump)

21: Automatic speed setting (needle bar drive is selectable)

22: Main shaft control test on speed designation (needle bar drive)

23: Main shaft control test on speed designation (needle bar is selectable)

24: Confirm of Minimum speed and Maximum speed(Jump)

25: Test of jump solenoid ON-OFF

26: (no use)

27: Main shaft control test on jog speed(10rpm)

28: Main shaft control test on low speed(80rpm) at start

29: Main shaft control test on low speed(120rpm) at thread trimming

30: Voltage control test of Needle bar change unit(Holding)

31: Input of needle bar detect potentiometer (for installation adjustment)

32: Test of needle bar change unit (every 1 needle to the right direction)

33: Test of needle bar change unit (every 1 needle to the left direction)

34-39: (no use)

40: Input test of button switch

41: Input test of limit switch

42: Input test of L point C point

43: Input test of Actuator origin point

44: Input test of alrm

45: Display of operational state for USB

46: Analysis of USB memory

47: Test of message

48-49: (no use)

50: Voltage control test of thread trimming motor(Holding)

51: 1 pulse drive movement of thread trimming motor(for adjustment)

52: Return performance from ditribution of thread trimming motor

53: Test of knife movement OPEN-CLOSE (1 step action)

54: Test of knife movement OPEN-CLOSE (continuous action)

55-59: (no use)

60: Voltage control test of thread catcher moptor (Holding)

61: 1 pulse drive movement of thread catcher motor (for adjustment)

62: Return performance from ditribution of thread catcher hook

63: Test of thread catch hook IN-OUT

64: Test of thread catch hook IN-OUT(continuous action)

65-69: (no use)

70-74: Disabled

75-79: (no use)

80: Deletion of frame drive data

81: Deletion of frame position data

82: Deletion of speed data

83: Deletion of machine setting data

84: Maxmum frame movement (-999.9mm-999.9mm)

85-88: (no use)

89: Deletion of all installation data

90: Hook adjustment mode

91-98: Disabled

99: Permission of full installation of Operationg system (Power cut off prohibition)

100-250:Direction designation of rotation control per 10rpm(0-1200rpm)

E5-3 Memory- Initialization of design memory

Delete all the design memory with checking movement of design memory area.

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

In case of defection, board exchange may be suggested and it is conceivable cause of defection.

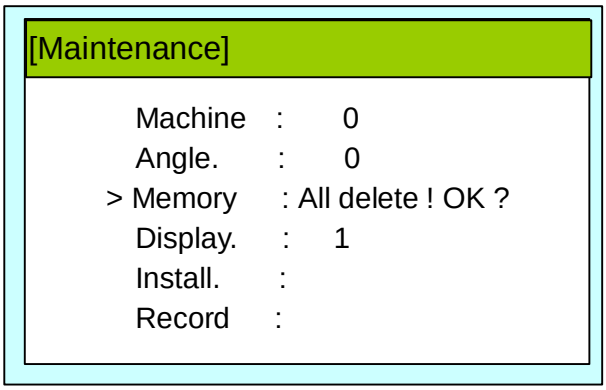
<note>

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

You have to be careful when initializing design memory.

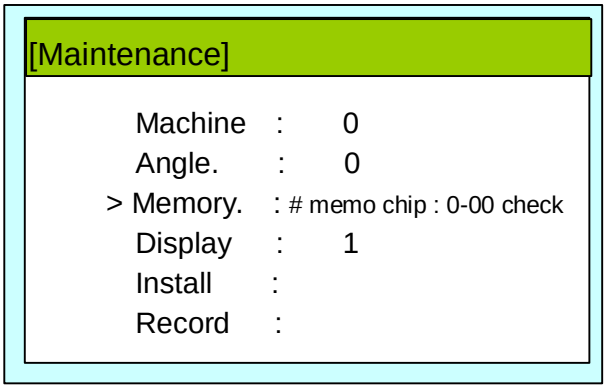
1. Enter maintenance mode in reference to [E5-1 How to Enter Maintenance mode]

2. Choose [Memory] with  and press SET button

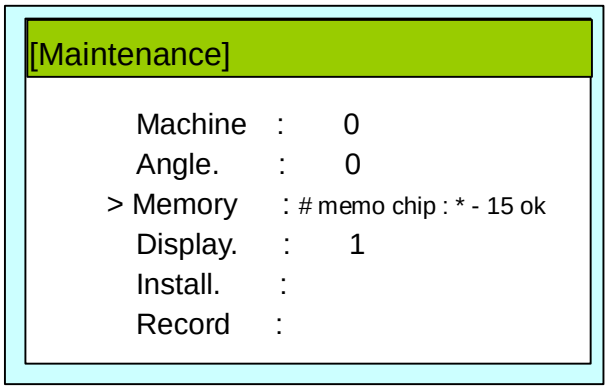


* Above will be displayed

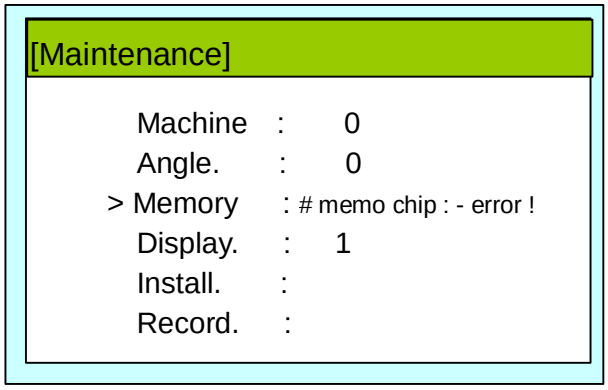
3. Confirm of free area and all delete will be started after pressing SET button



4. After display of [Chip:*-15], buzzer sounds and complete with below display.



5. Below will displayed when there is defect.



6. Return to number setting display by pressing SET button

7. Return to drive mode by pressing ESC button

E5-4 Record- Operation data display

Enable to confirm past record of operation

Record————Total number of stitch————: Total stitch number that are embroidered till now

SET button ↕ ESC button

Record of error occurrence——: Occurrence date and error number of last 32 case

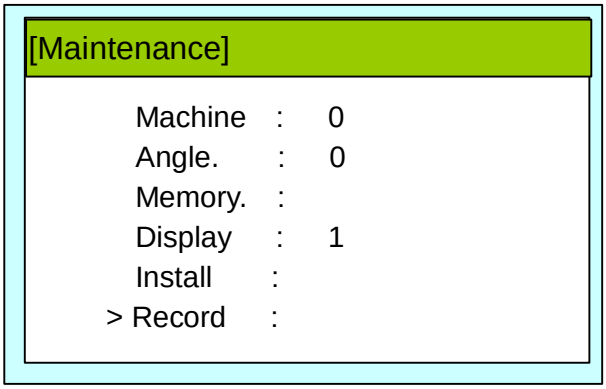
SET button ↕ ESC button

Total number of each error——: Integrated value for each error

E5-4-1 Total number of stitch

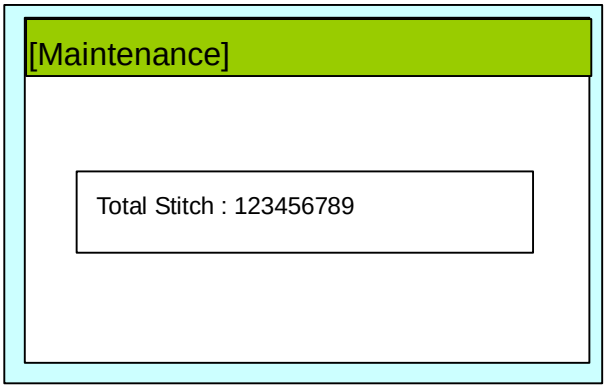
1. Enter maintenance mode in reference to [E5-1 How to enter maintenance mode]

2. Choose [Record] with ⊕ and press SET button.

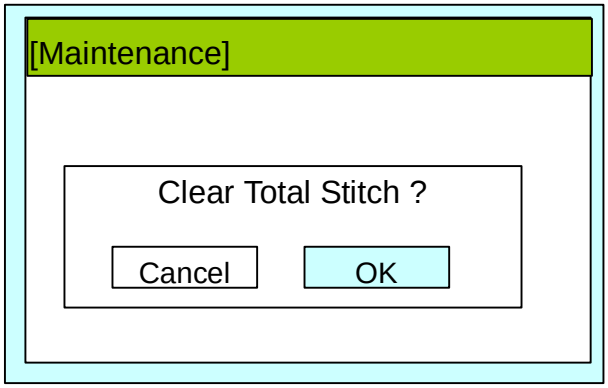


3. Below will displayed

Total number of stitch till now will be displayed.



4. Selection menu of Clear Total Stitch will be opened when pressing MENU button at Procedure 3.



* Enable to Clear Total Stitch by selecting OK and pressing SET button and return to display of procedure 3.

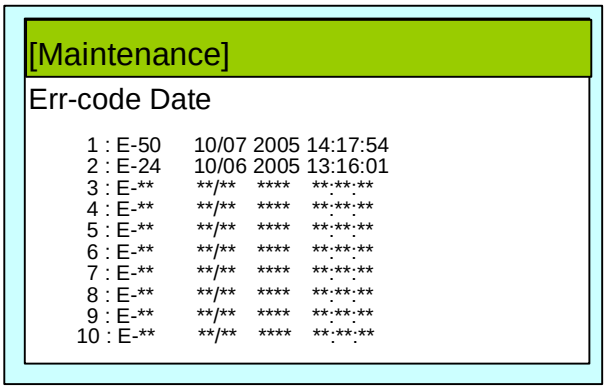
* If you prefer not to clear it, select CANCEL and press SET button and return to display of procedure 3.

E5-4-2 Record of Error occurrence

1. Enter maintenance mode in reference to [E5-1 How to enter maintenance mode]

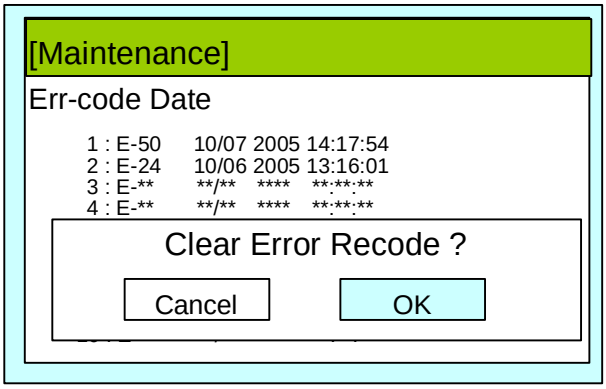
2. Choose [Record] with  and press SET button
   (Total number of stitch will be displayed)

3. Press SET button at displayed window of Total stitch.
   Enable to confirm Record of error occurrence
   (Date of occurrence and error number of last 32 cases)



* Enable to confirm Occurrence date and error number of last 32 cases with  button.

4. Selection menu of Clear Error Recode will be opened when press MENU button at display of procedure 3



* Enable to Clear Error Record by selecting OK and pressing SET button and return to display of Procedure 3.

* If you prefer not to clear it, Select CANCEL and press SET button and return to display of Procedure 3.

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

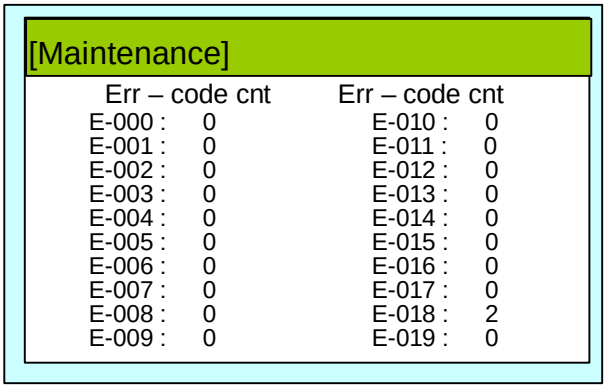
1. Enter maintenance mode in reference to [E5-1 How to enter maintenance mode]

2. Choose [Record] with  and press SET button (Total number of stitch will be displayed)

3. Press SET button at displayed window of Total stitch. Enable to confirm Record of error occurrence.

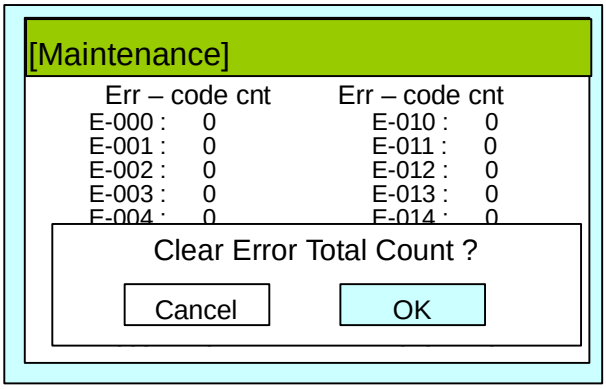
4. Press MENU button at displayed window of Error occurrence record. Enable to confirm total number of occurrence in each error.

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



* Enable to confirm integrated value for E-000 to E-255 with  button.

5. Selection menu of Clear Error Total Count will be opened when press MENU button at display of procedure 4.



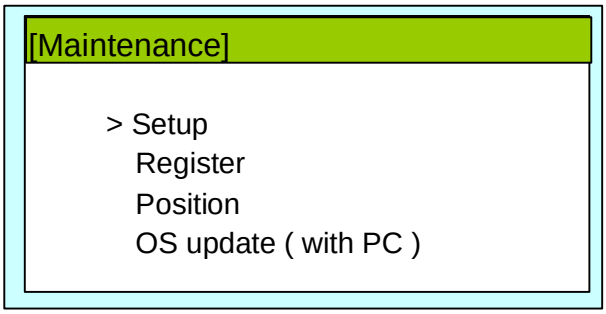
* Enable to Clear Error Record by selecting OK and pressing SET button and return to display of Procedure 4
* If you prefer not to clear it, Select CANCEL and press SET button and return to display of Procedure 4.

E5-5 Setup- Machine setting

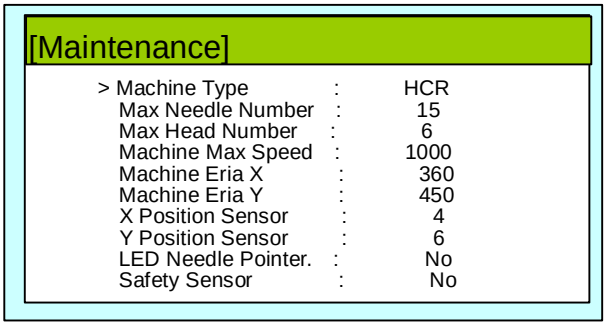
Basic machine setting will be done. All setting data will be written into buil-in Flash Memory card and setting contents will not be deleted even if you proceed all memory clear.

1. Refer to [E5-1 How to Enter Maintenance mode] and enter Maintenance Mode

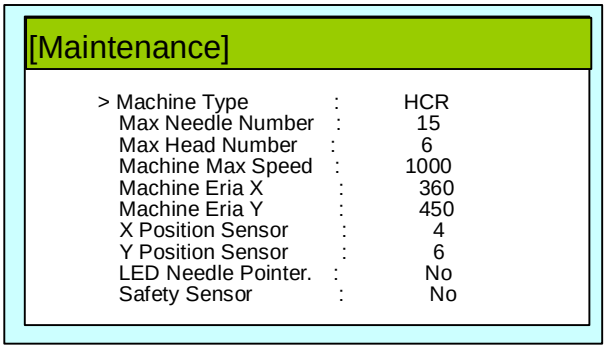
2.Place cursor at [Setup] by button and press SET button



3.By button, select subject (refer to next page) and press SET button

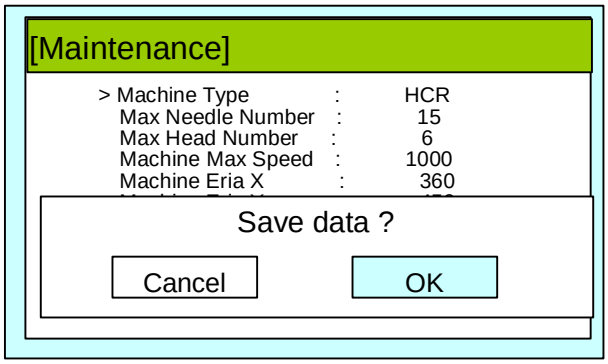


4.By button, select value required and press SET button

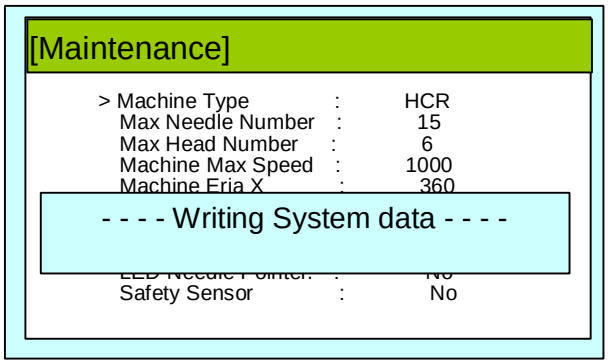


5.After setting, press ESC button

By button select [OK]and press SET button or cancel setting



6.Below message arrears and setting will be written into Flash Memory



7.After finishing, despay returns to [step 2]

8.Press ESC button and move to running mode

9.Power off and restart machine

<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:

$	Machine Type		(HCD/HCR/HCD(00H)/HCS-Mono /HCS-Color)
	HCR-1502:	HCR	
	HCR-1504:	HCR	
	HCR-X1504:	HCR	
	HCR-1506:	HCR	
	HCR-X1506:	HCR	
	HCR-1508:	HCR	
$	Max Needle Number :15		(1-15) Number of needle
$	Max Head Number		(1-30) Number of head
	HCR-1502:	2	
	HCR-1504:	4	
	HCR-X1504:	4	
	HCR-1506:	6	
	HCR-X1506:	6	
	HCR-1508:	8	
$	Machine Max Speed		(500-2000) Maximum speed
	HCR-1502 :	1000	
	HCR-1504 :	1000	
	HCR-X1504:	1000	
	HCR-1506:	1000	
	HCR-X1506:	1000	
	HCR-1508:	1000	
$	Machine Eria X		(1-1000) Maximum embroidery area at X axis
	HCR-1502 :	500	
	HCR-1504 :	360	
	HCR-X1504:	500	
	HCR-1506:	360	
	HCR-X1506:	500	
	HCR-1508:	360	
$	Machine Eria Y		(1-1000) Maximum embroidery area at Y axis
	HCR-1502:	450	
	HCR-1504:	450	
	HCR-X1504:	450	
	HCR-1506:	450	
	HCR-X1506:	450	
	HCR-1508:	450	

$	X Position Sensor		(0-12) Number of position sensor at X axis
	HCR-1502:	6	
	HCR-1504:	4	
	HCR-X1504:	6	
	HCR-1506:	4	
	HCR-X1506:	6	
	HCR-1508:	4	
$	Y Position Sensor		(0-12) Number of position sensor at Y axis
	HCR-1502:	6	
	HCR-1504:	6	
	HCR-X1504:	6	
	HCR-1506:	6	
	HCR-X1506:	6	
	HCR-1508:	6	
#	LED Needle Pointer:	No	Use of LED pointer YES or NO
#	Safety Sensor:	No	Use of Safety sensor(Rear) YES or NO
#	N.Safety Sensor:	No	Use of Safety sensor(Front) YES or NO
*	Front Cover Sensor:	No	Use of Front cover sensor YES or NO (no use)
*	Borrer device:	No	Use of Borrer device YES or NO
*	Cut device :	Yes	Automatic thread trimming YES or NO
*	Caution output:	No	Output for external contact
*	Needle Sensor type:	Potentio	(or photo S.) Needle position detect sensor type
*	Needle Motor type:	PulseMtr	(Rev.DCM) Needle motor type
*	Frame Sensor type	:Point S	(Center S / ABS.C / ABS.RF / Limit C / Limit RF) Carriage sensor type
*	Frame Motor Type:	Pulse Mtr	(Servo Mtr)Frame drive motor type
*	THD. Break Sensor:	Rotary S	(PinPin S.)Thread brake detect sensor type
*	Catcher unit:	0	(0-1) Thread catcher unit type
	X Start base angle:	50	(20-90) Starting angle of frame movement on X axis
	Y Start base angle:	50	(20-90) Starting angle of frame movement on Y axis
*	Brush Data [mm]:	20	(1-25) Distance of frame movement at thread brush(mm)
*	Keeper off N. tmg:	250	(180-250) Keeper OFF timing for thread trimming (normal)
*	Keeper off L. tmg:	250	(180-250) Keeper OFF timing for thread trimming (long)
*	Needle start time:	100	(100-1000) Constant 1 of needle bar change control
*	Needle drive time:	500	(100-2000) Constant 2 of needle bar change control
*	Needle brake time:	20	(10-100) Constant 3 of needle bar change control
*	Speed Calc. Angle:	15	(1-360) Constant of speed calculation
*	Start cycle speed:	120	(50-300) Start speed
*	Acceleration:	100	(50-300) Constant of acceleration
*	Cut cycle speed:	400	(100-1000) Speed of middle range drive at the time of thread trim
*	Stop cycle speed:	400	(180-600) Speed of middle range drive at the time of stoppage
*	Stop cycle speed E:	120	(50-300) Speed of low range drive at the time of stoppage

*	Change Point Angle:	275	(0-360) C point angle(Target angle of stoppage)
*	Normal Stop Angle:	270	(200-300) Normal stoppage angle
*	Cut Stop Angle:	270	(200-300) Thread trimming stoppage angle
*	N.Stop Auto Calc:	Yes	Automatic calculation of normal stoppage angle
*	C.Stop Auto Calc.:	Yes	Automatic calculation of thread trim stoppage angle
*	Jump ON1(*250us):	8	(2-100) Constant 1 of Jump control
*	Jump ON2(*250us):	40	(2-100) Constant 2 of Jump control
*	Current Voltage:	130	(0-230) Constant 1 of motor power control
*	Low Power Voltage:	160	(0-230) Constant 2 of motor power control
*	High Power Voltage:	220	(0-230) Constant 3 of motor power control
*	Drive Boad Number:	0	(0-2) Selection of drive board
*	Communicate Check:	10	(1-20) Signal control 1

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 CPU 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.Refer to [E5-5 Setup- Machine setting] and confirm the following setting

$ Machine Eria X

HCR-1502:	500
HCR-1504:	360
HCR-X1504:	500
HCR-1506:	360
HCR-X1506:	500
HCR-1508:	360

$ Machine Eria Y

HCR-1502:	450
HCR-1504:	450
HCR-X1504:	450
HCR-1506:	450
HCR-X1506:	450
HCR-1508:	450

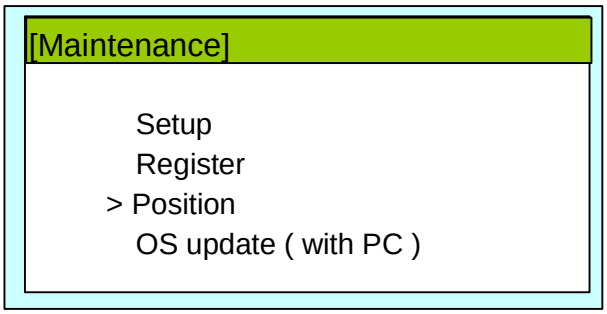
$ X Position Sensor

HCR-1502:	6
HCR-1504:	4
HCR-X1504:	6
HCR-1506:	4
HCR-X1506:	6
HCR-1508:	4

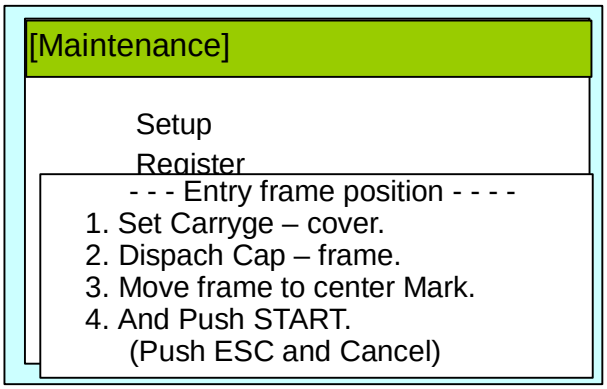
$ Y Position Sensor

HCR-1502:	6
HCR-1504:	6
HCR-X1504:	6
HCR-1506:	6
HCR-X1506:	6
HCR-1508:	6

2.Press ESC button for returning to the following screen. Choose [Position] by button and press SET button.



3.The following menu appears. Follow message and operate



1.Fix carriage cover

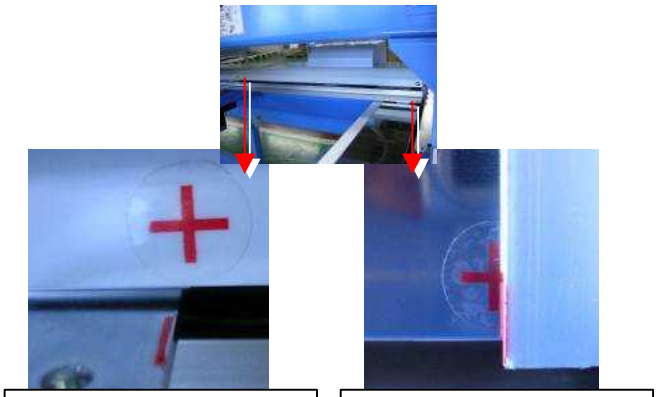
2.Remove cap frame

3.Move frame to center mark position

(Refer to below Photos)

4.Press START button

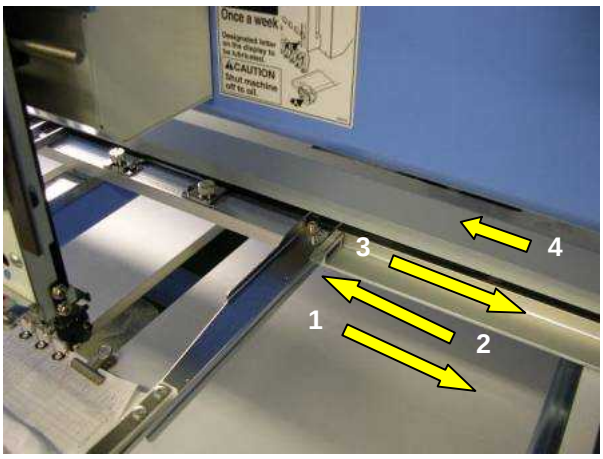
(Press ESC button for cancellation)



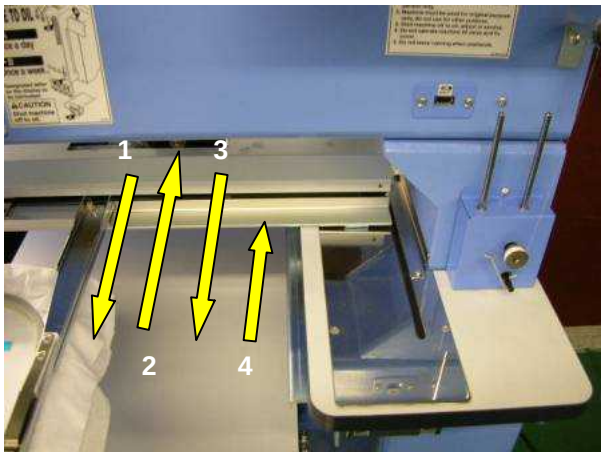
Center mark position of X axis

Center mark position of Y axis

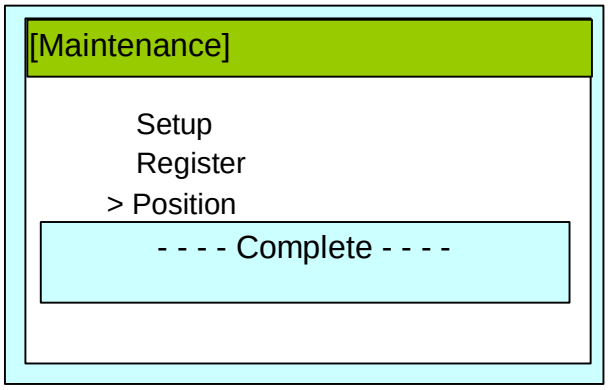
4.When you press START button, registration of X axis direction will start. Frame moves as below.



5.Then registration of Y axis direction will start. Frame moves as below.



6.Bellow message will be displayed with successful completion.



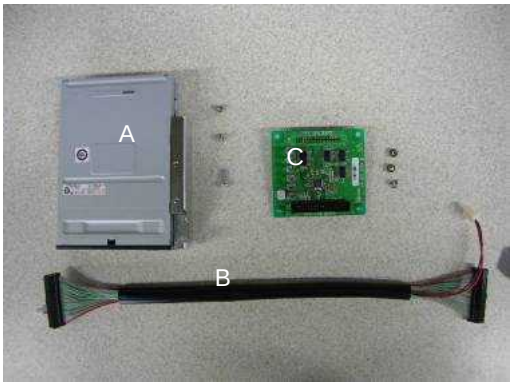
Retry from step 2, if [Error] occurs

E6 Installation and setting of option unit

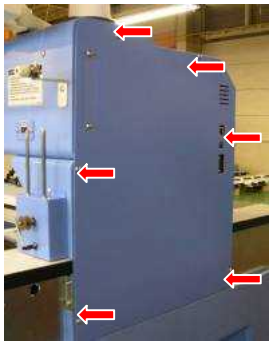
E6-2 Installation of floppy disk drive unit

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

ESHCRU29010 FDD set

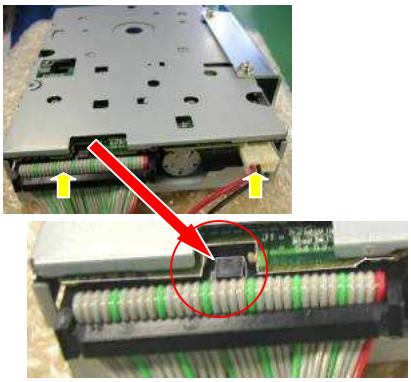


1.Take cover out

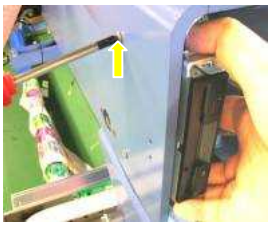


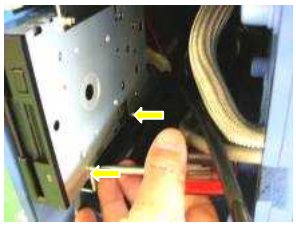
2.Insert harness (B) into FDD (A)

<note> attention for direction



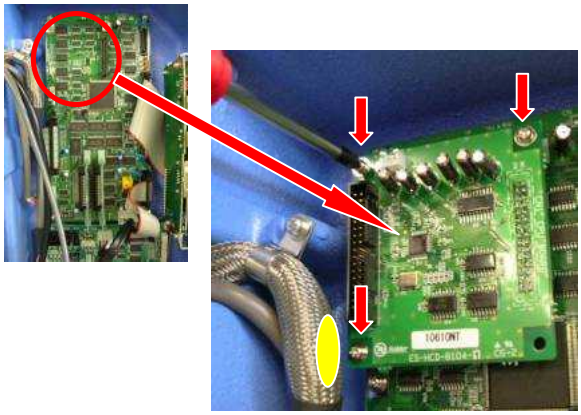
3.Insert FDD(A) into body frame and fix by screw



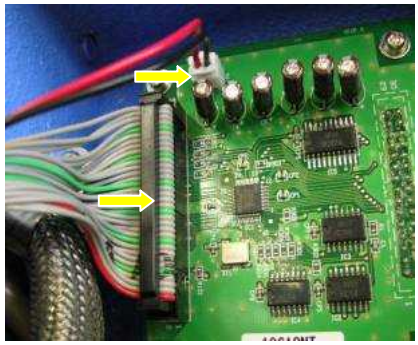


4.Install circuit board (C) on CPU Board

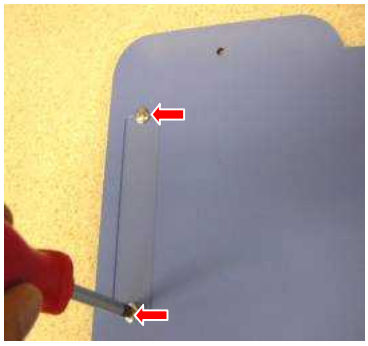
<note> Keep distance from yellow part(Below photo) to harness and board



5. Insert harness into circuit board (C)



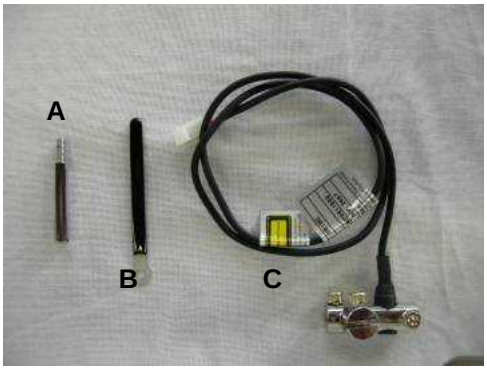
6.Take FDD cover out and set mission cover



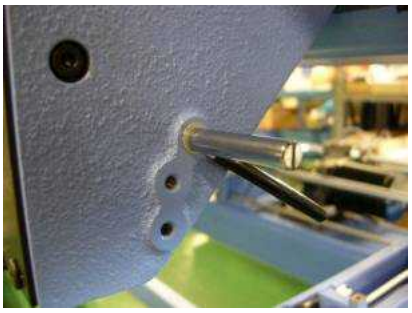
E6-2 Installation of laser position marker

<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

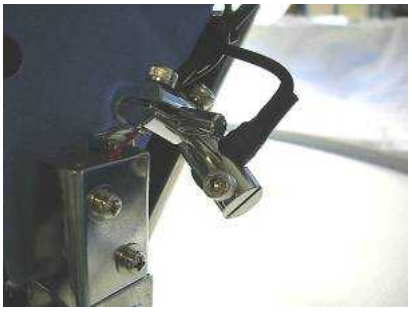


1.Set bandage(B) with stud(A) on right side of moving head

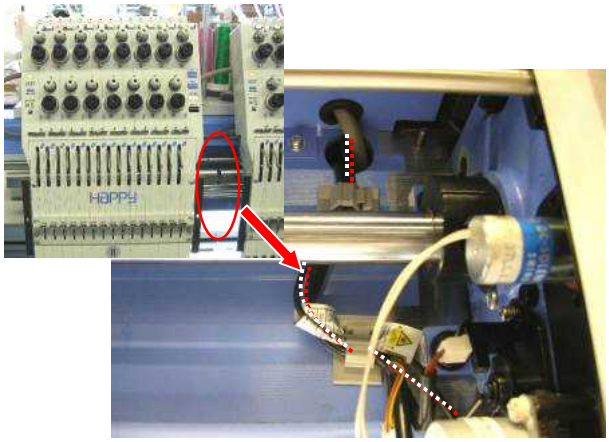


2.Bind harness of pointer unit (C) with bandage(B)

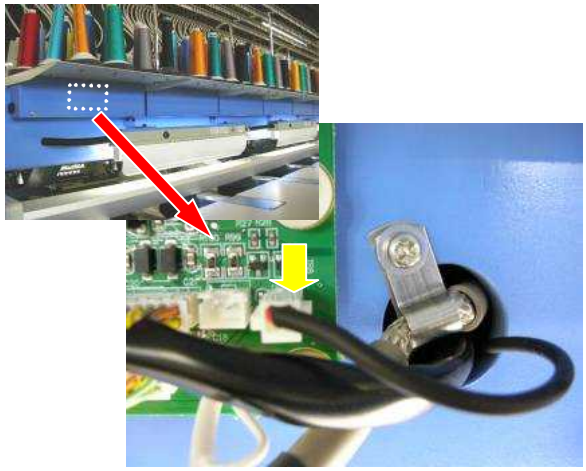
3.Set pointer unit (C) on stud (A)



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

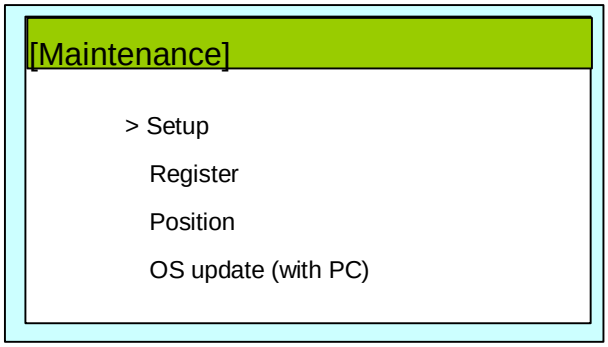


5.Put harness to CN11 on detection circuit board



6.Refer to [E5-1 How to Enter Maintenance mode] and enter to maintenance mode

7. Place cursor at [Setup] by button and press SET button



8.Below menu appears

[Maintenance]

> Machine Type : HCR
Max Needle Number : 15
Max Head Number : 8
Machine Max Speed : 1000
Machine Eria X : 360
Machine Eria Y : 450
X Position Senser : 4
X Position Senser : 6
LED Needle Pointer : No
Safety Sensor. : No

9.By button, change [LED Needle Pointer: No] to [LED Needle Pointer : Yes]

[Maintenance]

Machine Type : HCR
Max Needle Number : 15
Max Head Number : 8
Machine Max Speed : 1000
Machine Eria X : 360
Machine Eria Y : 450
X Position Senser : 4
X Position Senser : 6
> LED Needle Pointer : Yes
Safety Sensor. : No

10.Prss ESC button. Below screen appears

[Maintenance]

Machine Type : HCR
Max Needle Number : 15
Max Head Number : 8
Machine Max Speed : 1000
Machine Eria X : 360
Machine Eria Y : 450

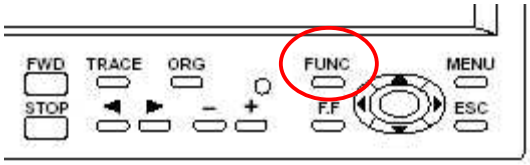
Save data ?
Cancel OK

11.By button, place cursor at [OK and press] SET button Below screen appears and start writing into RAM. After finish writing, return to Step 2

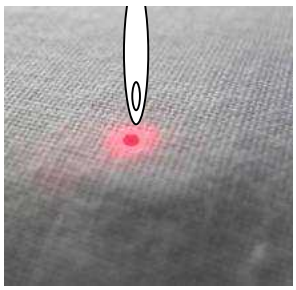
[Maintenance]

Machine Type : HCR
Max Needle Number : 15
Max Head Number : 8
Machine Max Speed : 1000
Machine Eria X : 360
Machine Eria Y : 450
X Position Senser : 4
- - - - Writing System data - - - -
Safety Sensor. : No

12.by ESC button, return to running menu. Press and keep FUNC button till lighting FUNC button



13.Adjust angle of pointer unit to point needle position



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

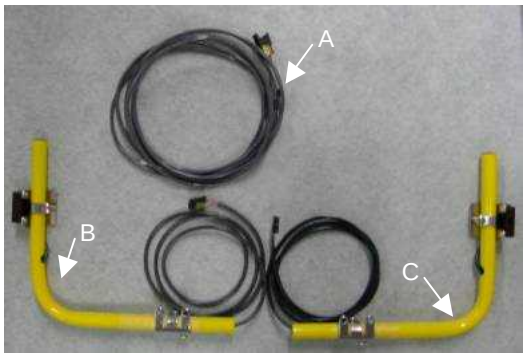
E6-3 Installation of Safety sensor (front)

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

ESHCR28A10 Safety sensor (front)(for 2 and 4 haeds)

ESHCR28A20 Safety sensor (front)(for X4 and 6 haeds)

ESHCR28A30 Safety sensor (front)(for X6 and 8 haeds)

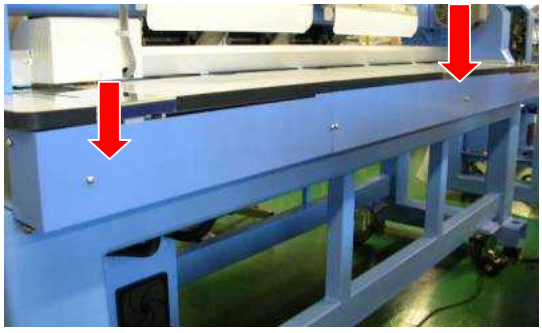


<note> Harness A is installed on machine, if sensor is ordered with machine

B=Sensor(emission part)

C=Sencer(receiving part)

1.Take cover out at behind of machine

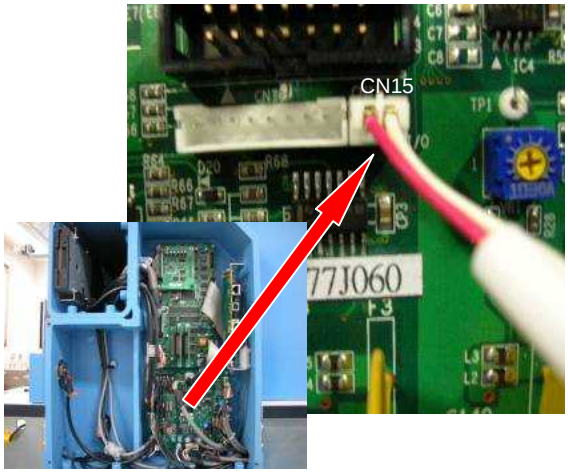


2.Take mission covers (right and left) out

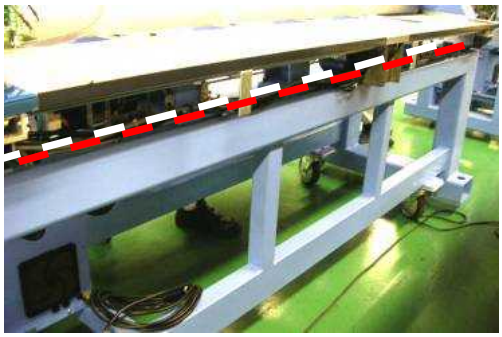
3.Connect harness

<note> Harness A is installed on machine, if sensor is ordered with machine. You can skip this step

Connect harness A into CN15 on drive circuit boardB in mission(right)

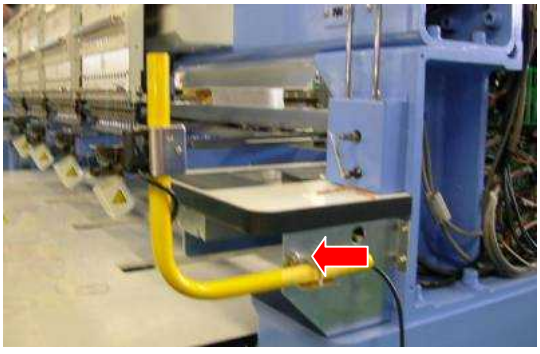


Extend harness to mission (left)



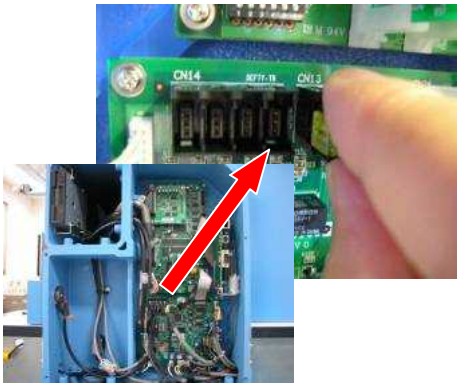
<note> harness should not touch to rotation parts and belts

4.Install sensor(C) at right side

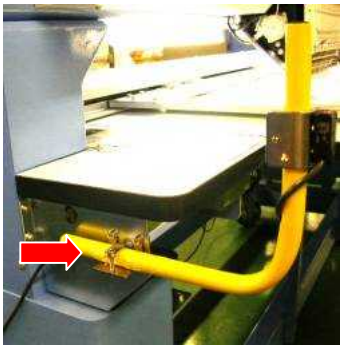


5.Pass harness through grommet as photo below

6.Connect harnessinto CN13 on Drive circuit board



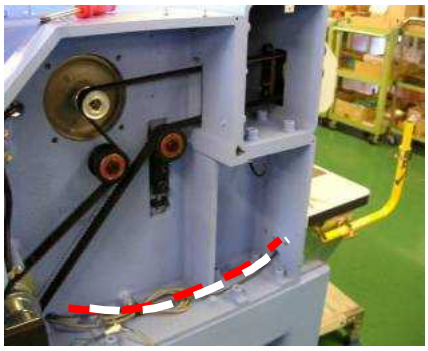
7. Install sensor(B) at left side



8. 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

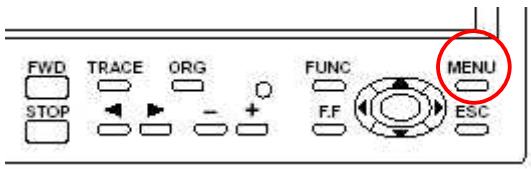
<note> put cable in order for avoiding to touch to shaft

11.Set cover

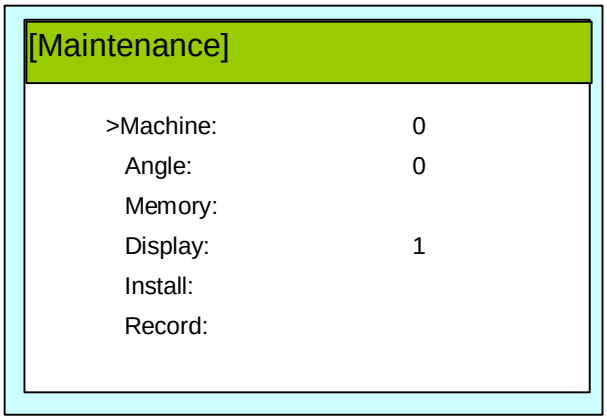
<note> harness should not get caught in the cover

12.Press MENU button and power on

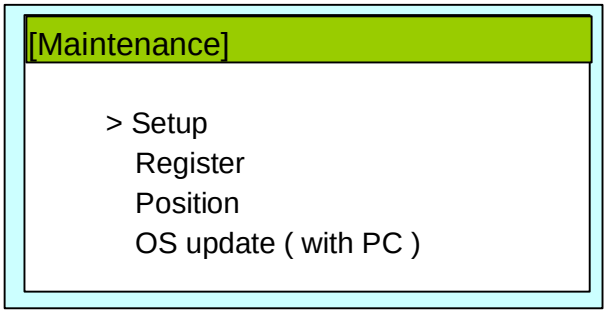
<note> This setting is done already, if sensor is ordered with machine. You can skip this step



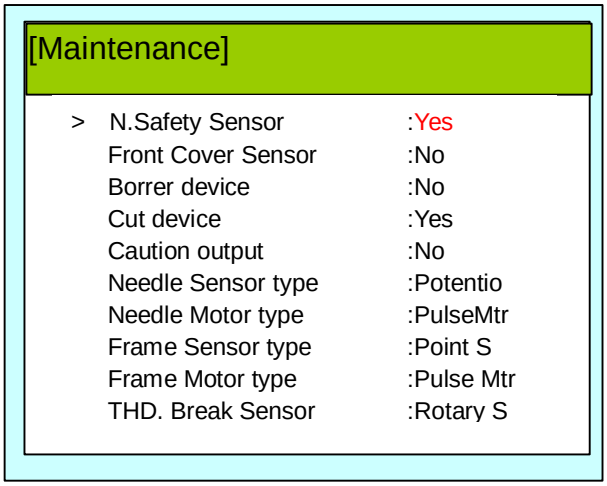
13.Press SET. After fame moving, below screen appears



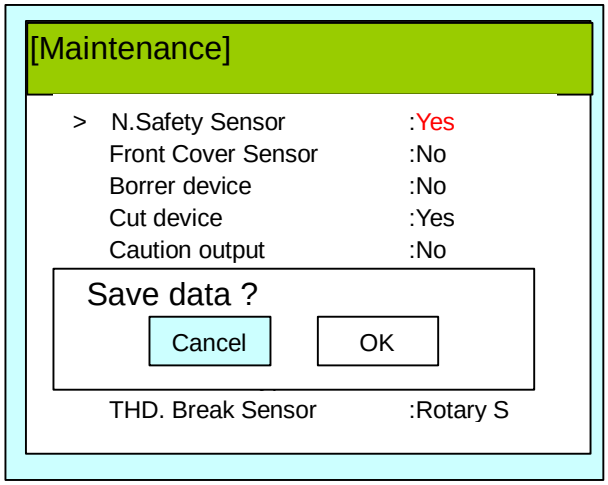
14.by button ▼, select Setup and press SET



15, by button ▼, select N.Safety Sensor and press SET. By ▲▼ change to Yes and press ESC

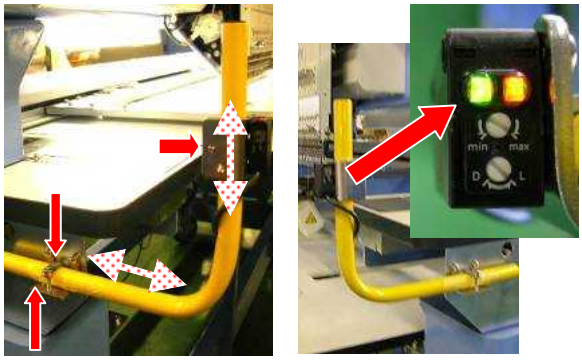


16,by button, select OK and press SET



After these setting, Sencor becomes effective

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



<note> Sencor should be finxed vertical

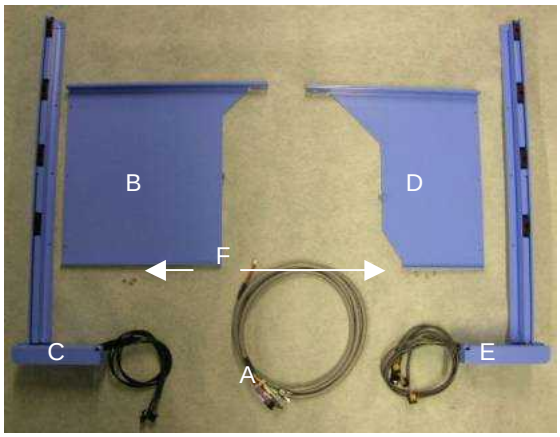
E6-4 Installation of Safety sensor (rear)

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

ESHCR28B10 Safety sensor (rear)(for 2 and 4 haeds)

ESHCR28B20 Safety sensor (rear)(for X4 and 6 haeds)

ESHCR28B30 Safety sensor (rear)(for X6 and 8 haeds)



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

B=Safety Guard (right)

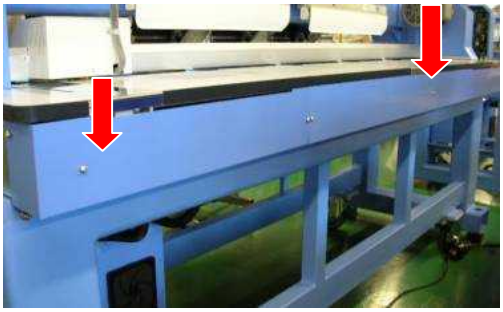
C=Sensor (receiving part)

D=Safety Guard (left)

E=Sencer (emission part)

F=M3X6 screws (6 pcs)

1. Take cover out at behind of machine

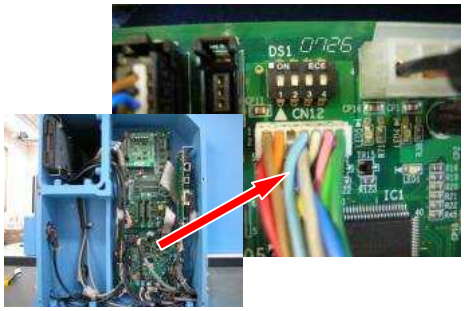


2. Take mission covers (right and left) out

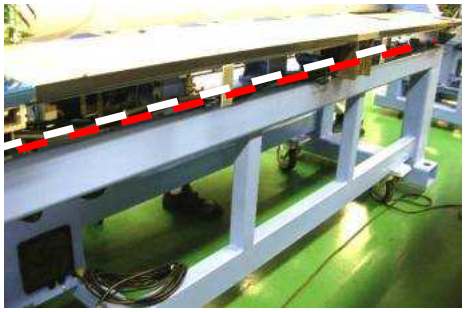
3.Connect harness

<note> Harness A is installed on machine, if sensor is ordered with machine. You can skip this step

Connect harness A into CN12 on drive circuit boardB in mission(right)

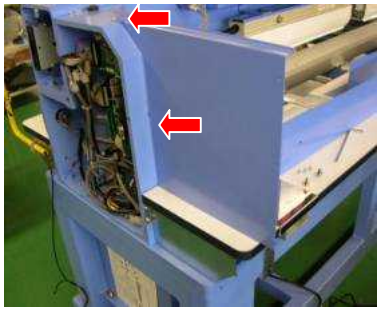


Extend harness to mission (left)

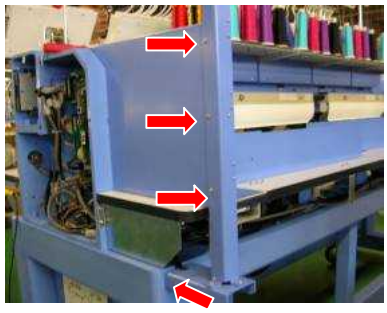


<note> harness should not touch to rotation parts and belts

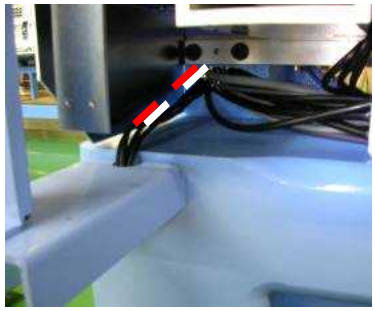
4.Install Safety Guard on missin (right)



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



6.Pass harness into mission box



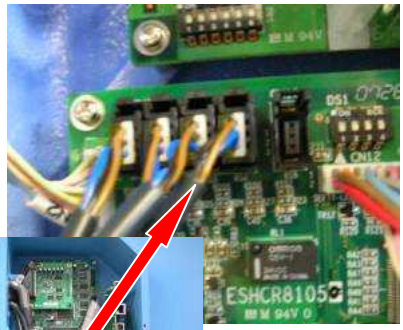
7. Connect harnessinto CN14 on Drive circuit board

RS1-> CN14-RS1

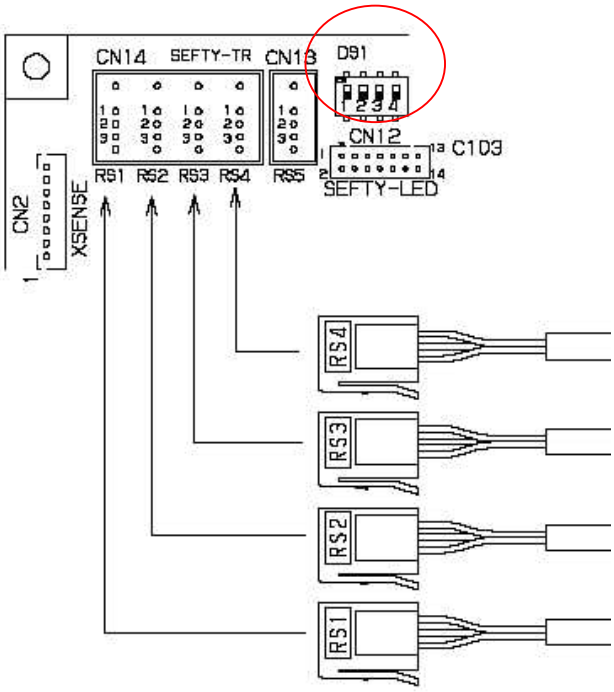
RS2-> CN14-RS2

RS3-> CN14-RS3

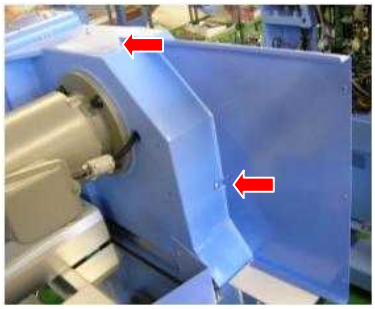
RS4-> CN14-RS4



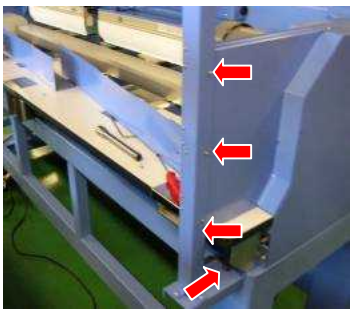
<note> all position of DS1should be OFF



8.Set Safety Guard (D) on mission (left)



9. 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

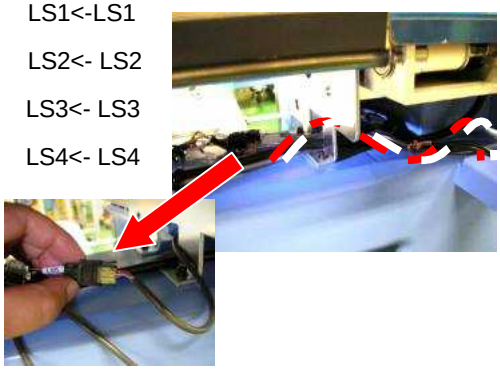
<note> put cable in order for avoiding to touch to shaft

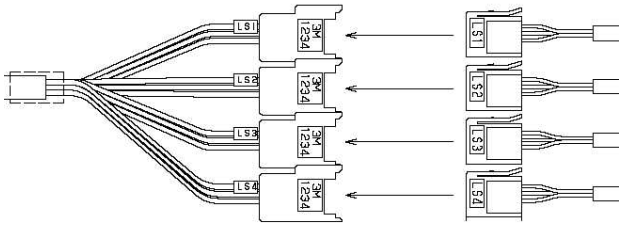
LS1<-LS1

LS2<- LS2

LS3<- LS3

LS4<- LS4



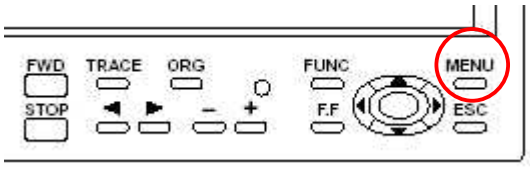


11.Set cover

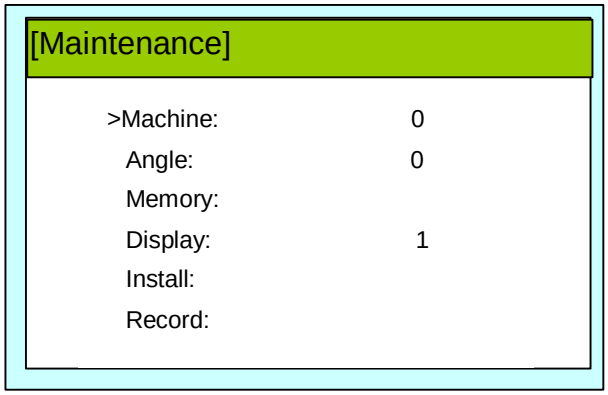
<note> harness should not get caught in the cover

12. Press MENU button and power on

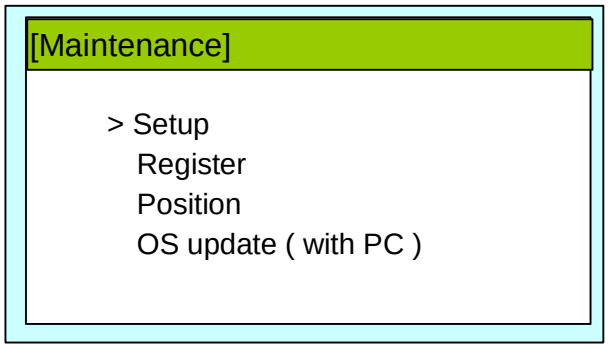
<note> This setting is done already, if sensor is ordered with machine. You can skip this step



13. Press SET. After fame moving, below screen appears

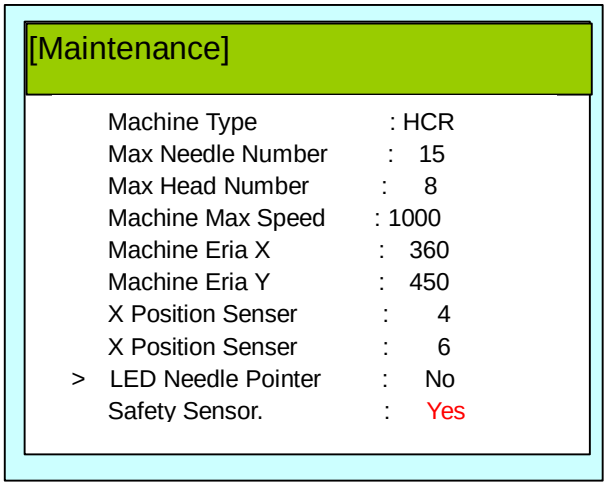


14. by button ▼, select Setup and press SET

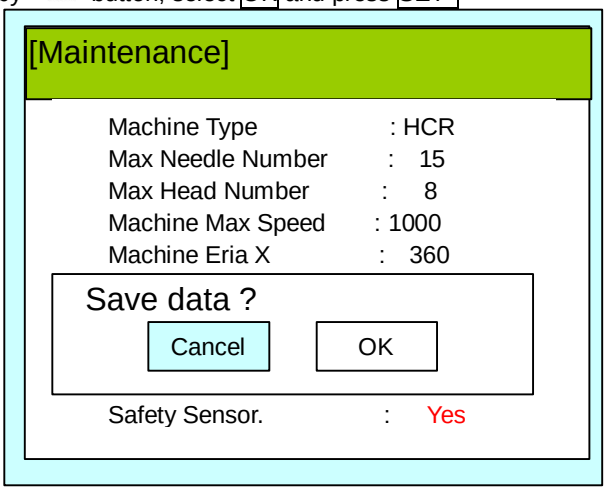


15. by button ▼, select Safety Sensor and press SET.

By ▼▲ change to Yes and press ESC



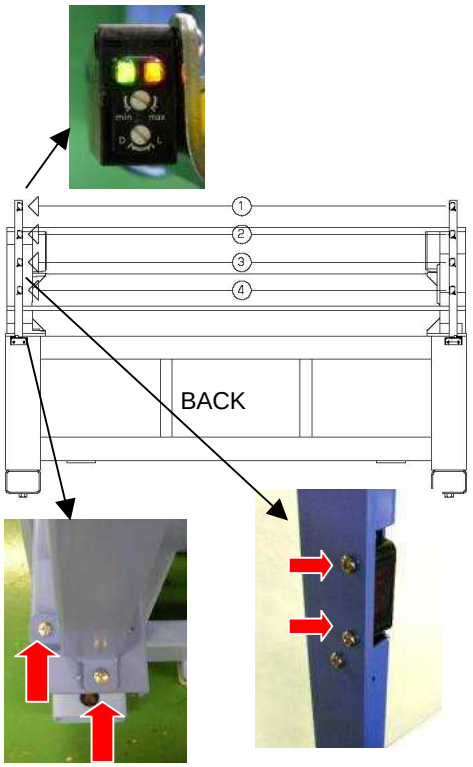
16. by  button, select OK and press SET



After these setting, Sencor becomes effective

17.In case error occurs during operation:

Sensor will work from 1 to 4 as below drawing. If position of sensor is not corrct, sensor will work slowly from 1 to 4. Please adjust position of sensor where both LED (green and Orange) light stable by screws below.

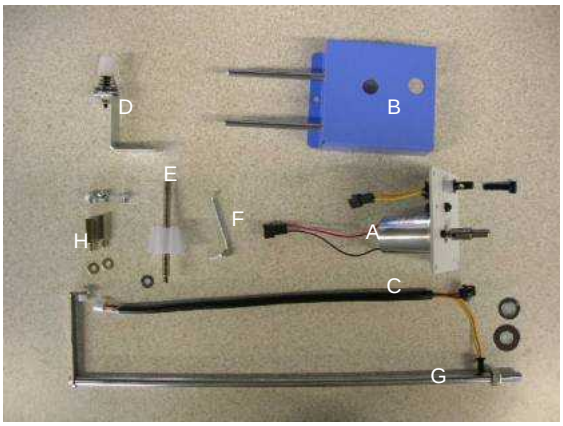


<note> Please do not press sensor, when you need to move machine. The position of sensor may be changed.

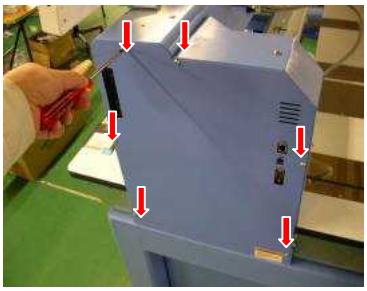
E6-5Installation of bobbin thread winder

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

ESHCRU36010 Bobbin thread winder set

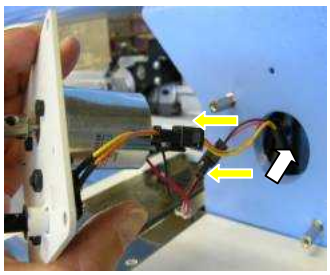


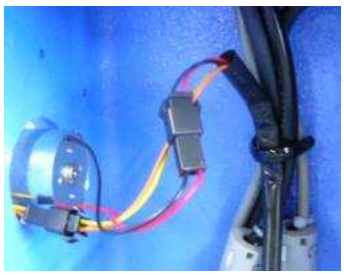
1.Take mission cover (right) out



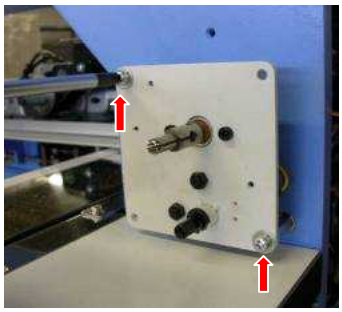
2.Set stud (H) with M4 washer

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

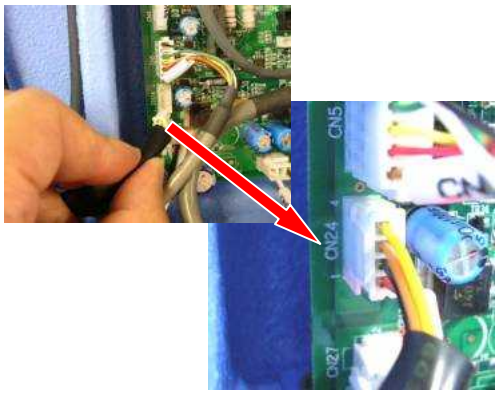




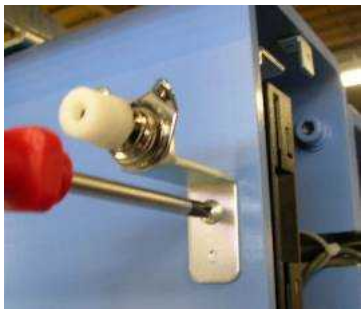
4.Fix winder(A)



5.Connect harness (C) into CN24 on Drive circuit board B

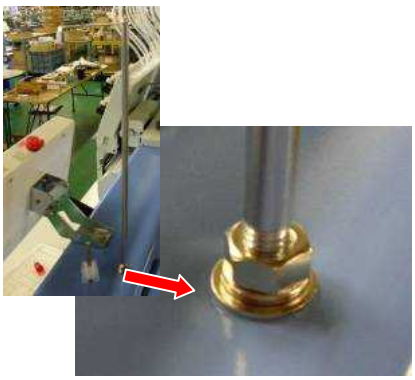


6.Set Thread tension device (D) on Body



7.Set thread stand (E) with washer

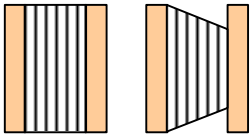
8.Set thread guide (G) with M8 washer and spring washer



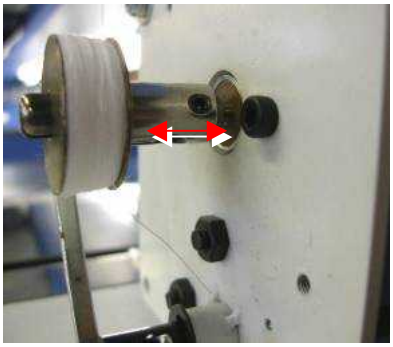
9.Set stop switch (F)

10.Set cover and power on

11.Put thread and start to wind bobbin thread. Adjust position bobbin stand for winding thread equally.

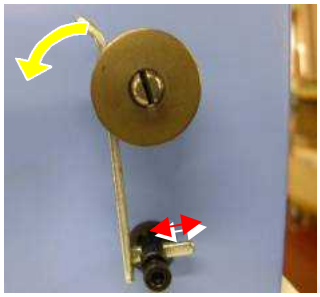


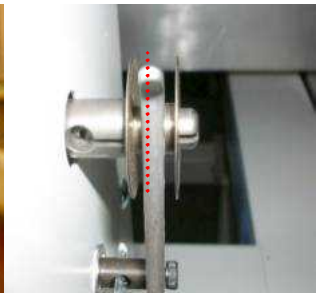
OK NG



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.

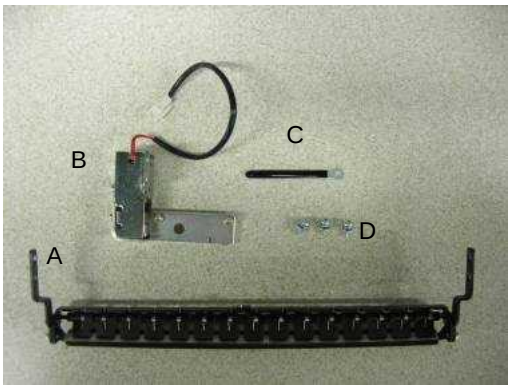




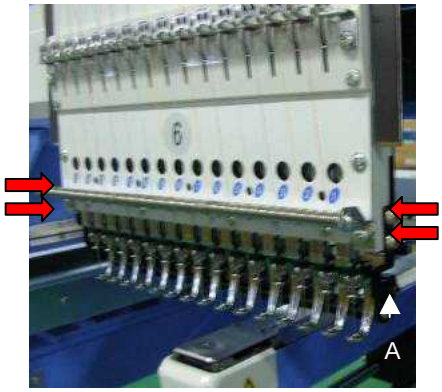
E6-6 Installation of Upper Thread Holder

<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

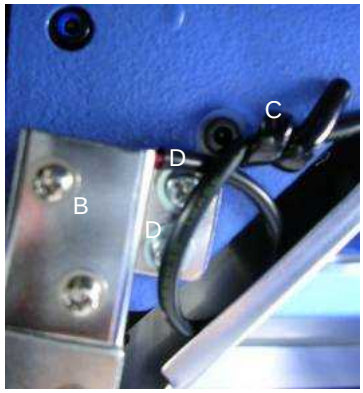


1.Set thread holder(A) under moving head



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

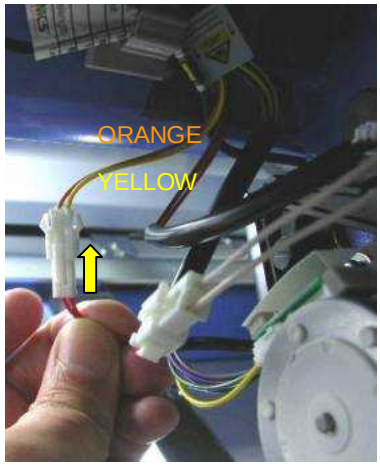
3.Set Clip drive unit (B) with bandage (C) by screw (D) at right side of moving head.



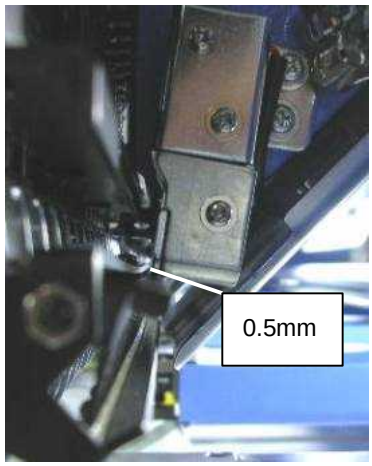
(bandage is common used for laser pointer and thread holder)

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

<note> Cable should not touch to any moving part

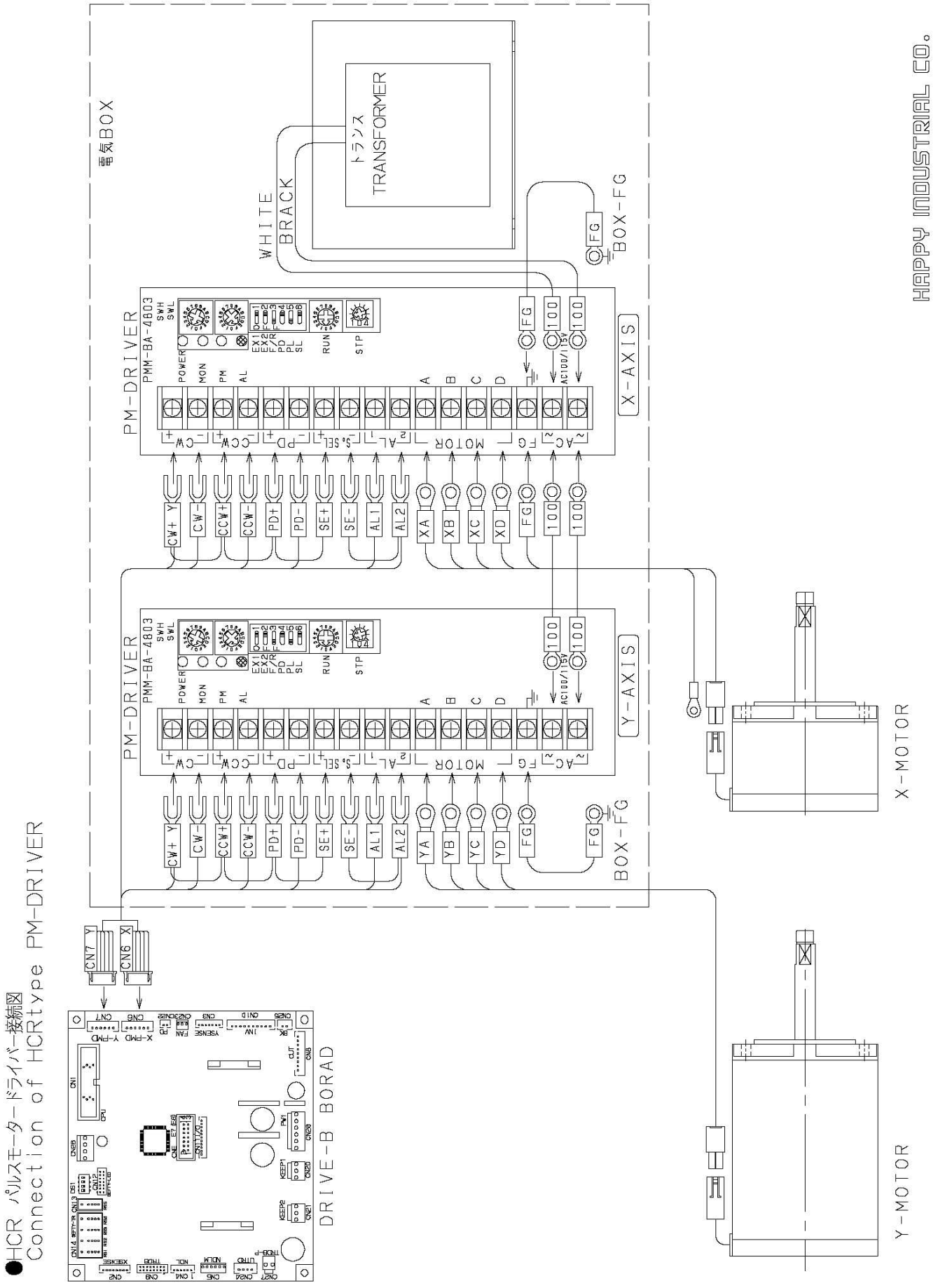


5.Adjust space around 5mm between clip dirve unit (B) and thread holder

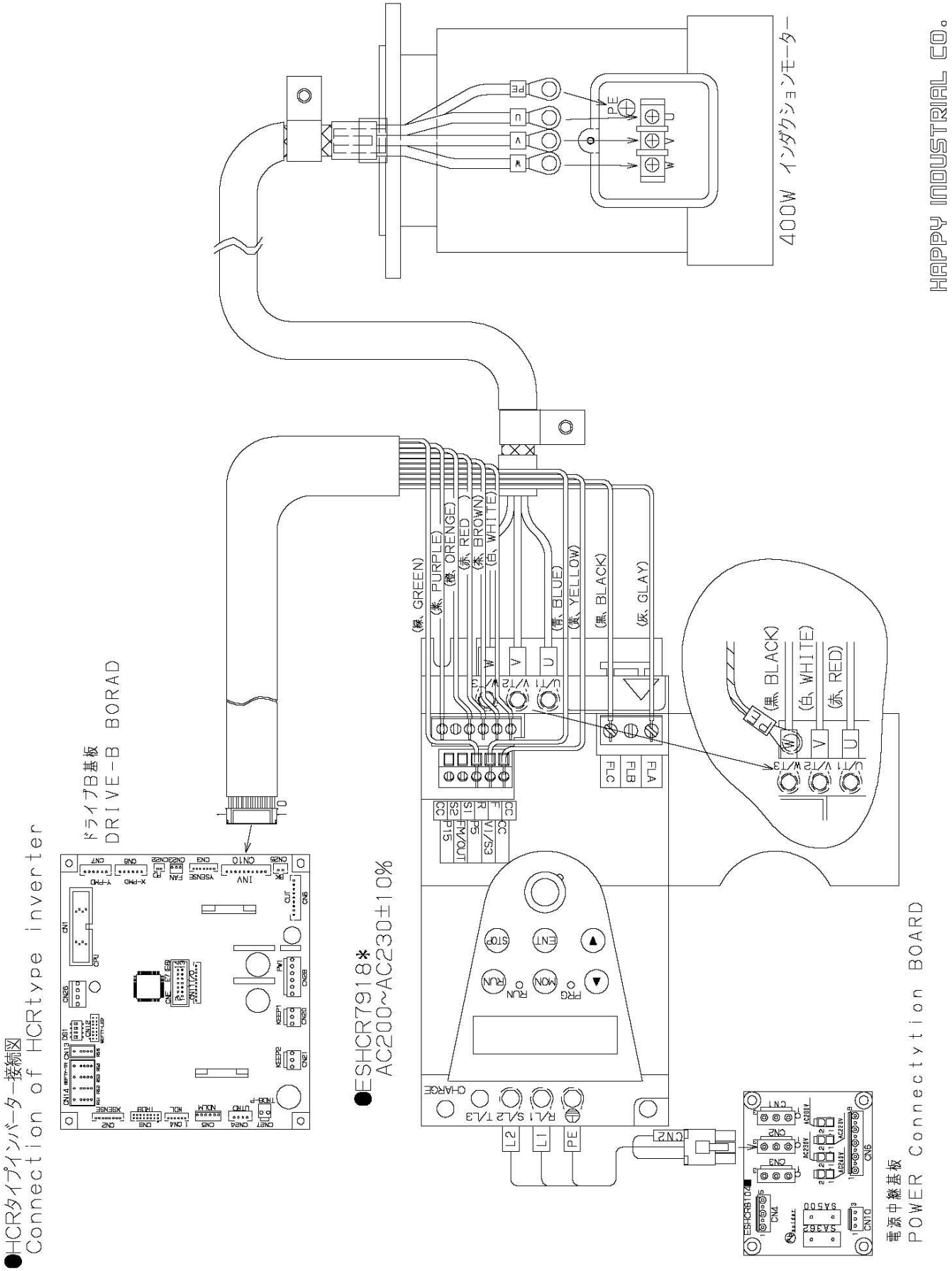


E7 Electric system diagram

E7-1 Pulse motor driver (PMD) wiring

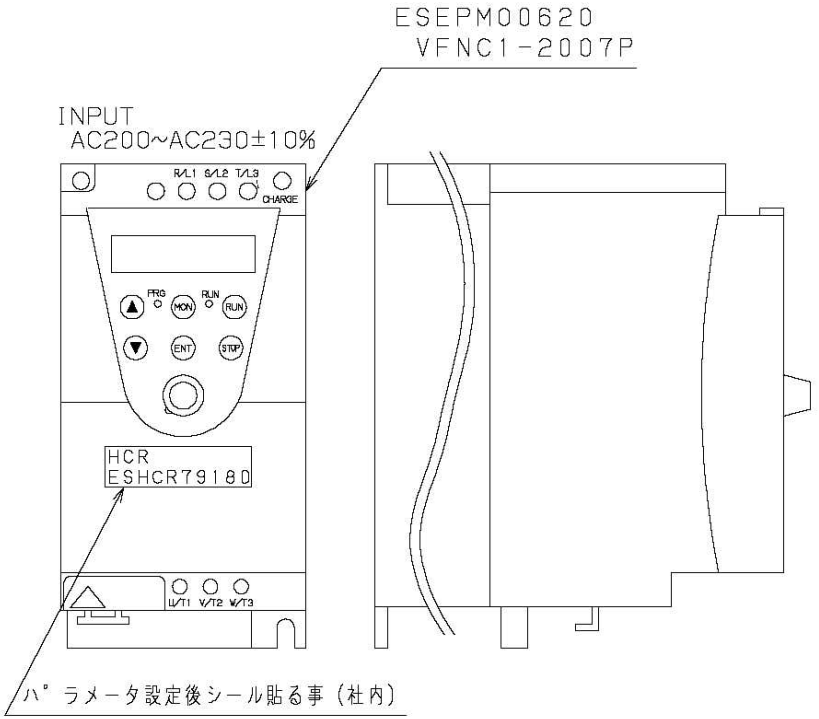


E7-2 Inverter wiring



HCR inverter seting

設定値（表記無いパラメーターは標準値）				Parametters(No indcation defaut setting)			
基本パラメータ				Basic Parameters			
表示	設定内容	→	設定値	Title	Function	→	Setting
CnOd	コマンド設定	→	0	CnOd	Command mode	→	0
FnOd	周波数設定	→	0	FnOd	Frequency set mode	→	0
ACC	加速時間1	→	2.0	ACC	Acceleration time1	→	2.0
dEC	減速時間1	→	0.7	dEC	Deceleration time1	→	0.7
FH	最高周波数	→	100.0	FH	Maximum frequency	→	100.0
UL	上限周波数	→	100.0	UL	Upper limit frequency	→	100.0
LL	下限周波数	→	0.0	LL	Lower limit frequency	→	0.0
uL	基底周波数	→	60.0	uL	Base frequency	→	60.0
PL	V/L制御	→	3	PL	V/L control mode	→	3
Ub	トルクブースト1	→	10.0	Ub	Torqus boost1	→	10.0
tHr	電子サーマル	→	80	tHr	Motor thermal protection level1	→	80
Sr1	多段運転周波数1	→	2.2	Sr1	Preset speed operation frequency1	→	2.2
拡張パラメータ				Extended parameters			
表示	設定内容	→	設定値	Title	Function	→	Setting
F109	VI3/3機能選択	→	0	F109	Analog input/logic input function selection	→	0
F113	S1入力選択	→	22	F113	input terminal selection3(S1)	→	22
F201	ポイント1設定	→	0	F201	VI/S3 reference point1	→	0
F202	ポイント1周波数	→	0.0	F202	VI/S3 point1 frequency	→	0.0
F203	ポイント2設定	→	20	F203	VI/S3 reference point12	→	20
F204	ポイント2周波数	→	100	F204	VI/S3 point1 frequency2	→	120
F250	直流制動開始	→	1.5	F250	DC braking starting frequency	→	1.5
F251	直流制動量	→	20	F251	DC breking current	→	20
F252	直流制動時間	→	1.0	F252	DC braking time	→	1.0
F300	PWMキャリア周波数	→	5	F300	PWM carrier frequency	→	5
F401	すべり周波数ゲイン	→	70	F401	Slip frequency gain	→	70
F409	基底周波数電圧	→	200	F409	Base frequency volteage1	→	200
F415	モータ定格電流	→	2.3	F415	Motor rated current	→	2.3
F416	無負荷電流	→	60	F416	Motor no-load current	→	60
F417	定格回転数	→	1410	F417	Motor rated speed	→	1410
F418	速度制御ゲイン	→	60	F418	Speed control gain	→	60
F419	速度制御安定係数	→	20	F419	Speed control stable coefficient	→	20
F500	加速時間2	→	2.0	F500	Acceleration time2	→	2.0
F501	減速時間2	→	0.7	F501	Deceleration time2	→	0.7
F505	加減速1，2切換え	→	20.0	F505	ACC/DCC 1and2 switching frequency	→	20.0
F601	ストール防止レベル	→	150	F601	Stall prevention level	→	150
F700	パラメーター変更禁止	→	1	F700	Prohibition of change parameter settings (0=Setting)	→	1
（他パラメータ設定後、0設定で設定可）							



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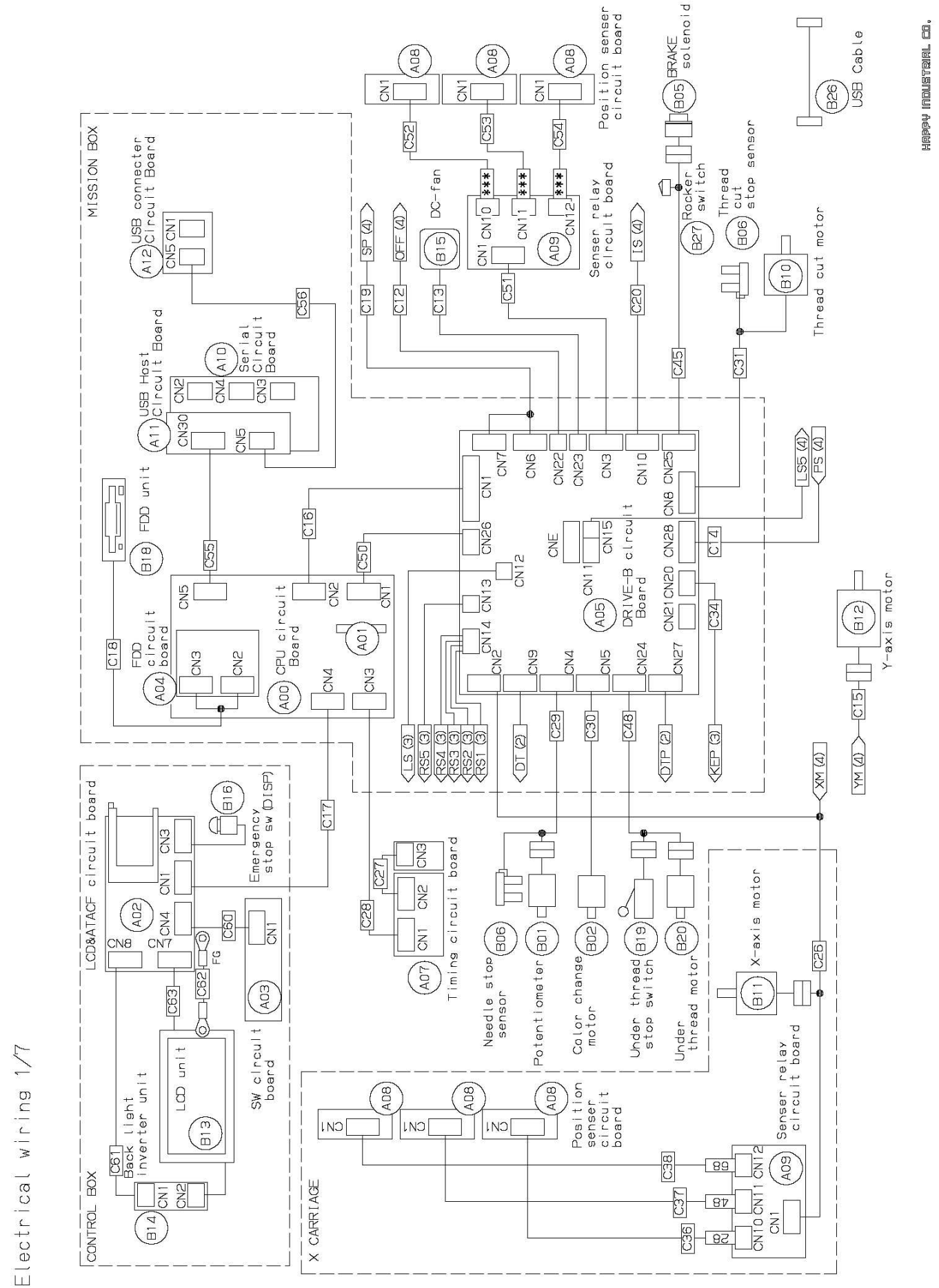
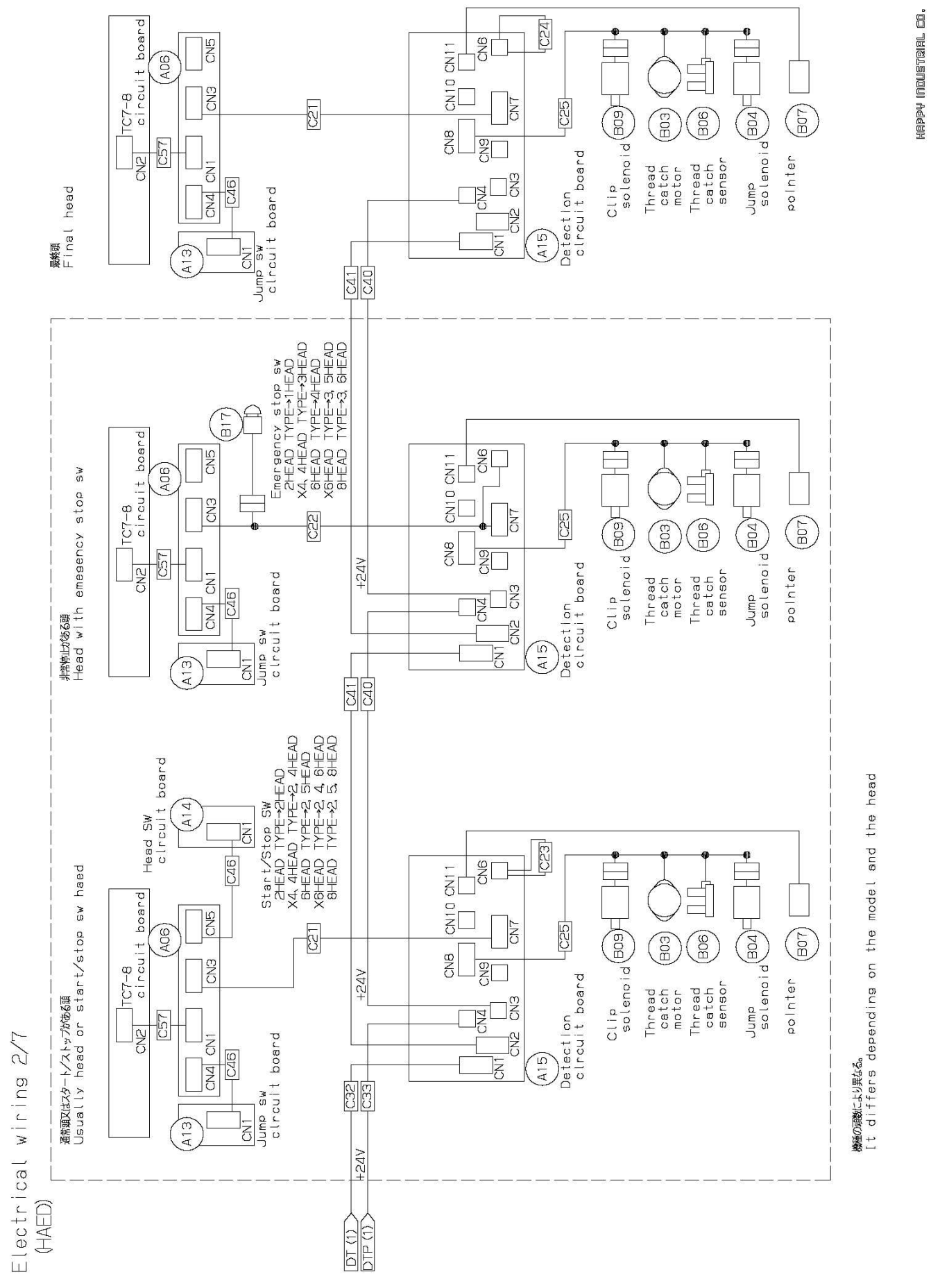
E7-4 Electrical connection diagram




Electrical wiring 2/7
(HAED)
通常頭又はスタート/ストップがある頭
Usually head or start/stop sw head
排除出がある頭
Head with emegency stop sw
最終頭
Final head
TC7-8 circuit board
Head SW circuit board
Jump sw circuit board
Start/Stop SW
2HEAD TYPE→2HEAD
X4, 4HEAD TYPE→2, 4HEAD
6HEAD TYPE→2, 5HEAD
X6HEAD TYPE→2, 4, 8HEAD
8HEAD TYPE→2, 5, 8HEAD
Emergency stop sw
2HEAD TYPE→1HEAD
X4, 4HEAD TYPE→3HEAD
6HEAD TYPE→4HEAD
X6HEAD TYPE→3, 5HEAD
8HEAD TYPE→3, 6HEAD
Detection circuit board
Clip solenoid
Thread catch motor
Thread catch sensor
Jump solenoid
pointer
+24V
DT (1)
DTP (1)
機種の頭数により異なる。
It differs depending on the model and the head
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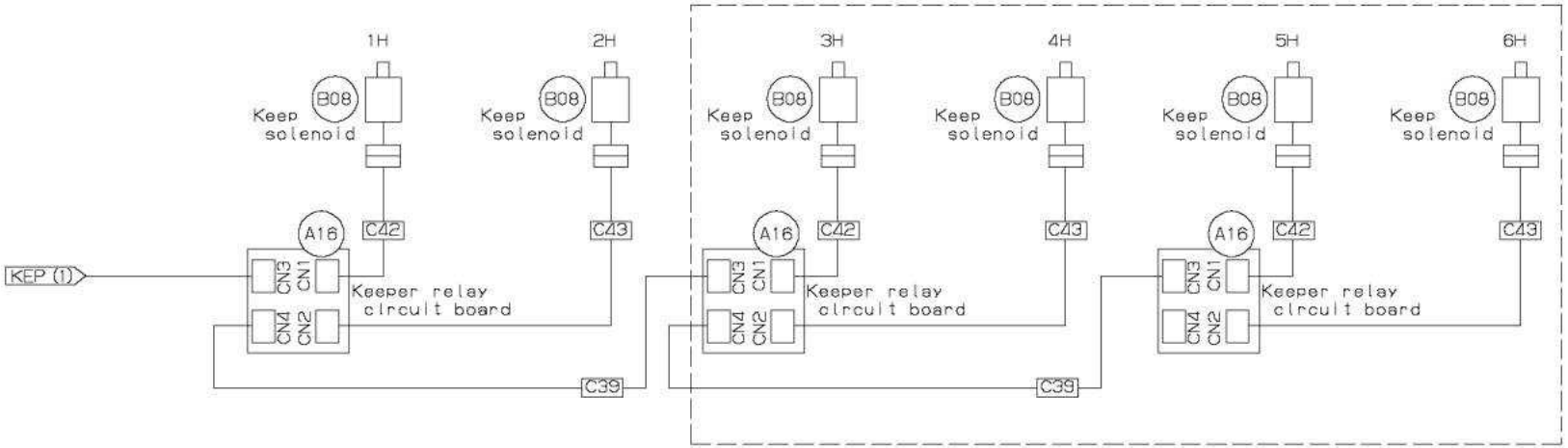
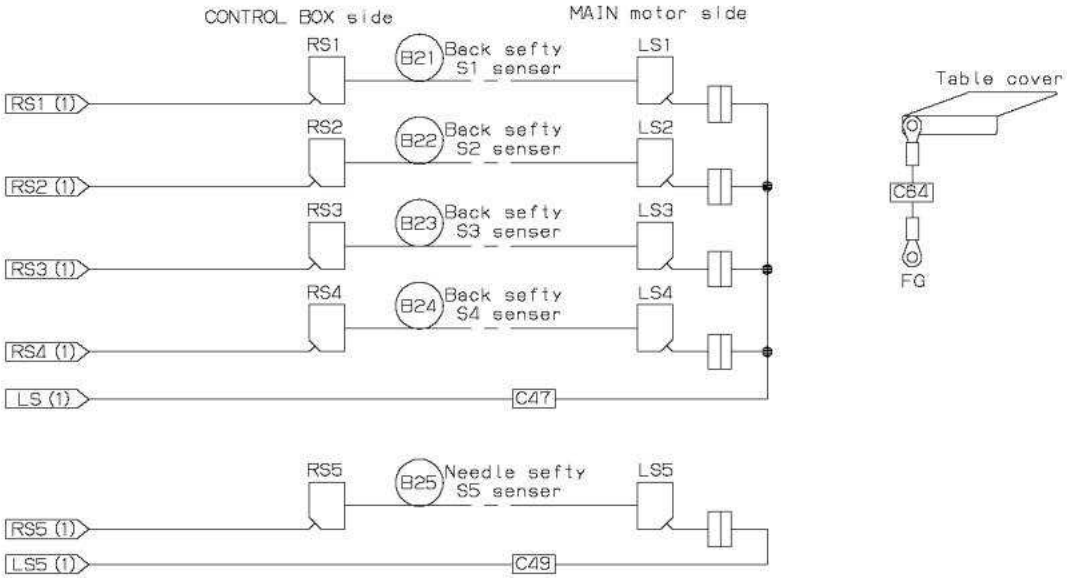
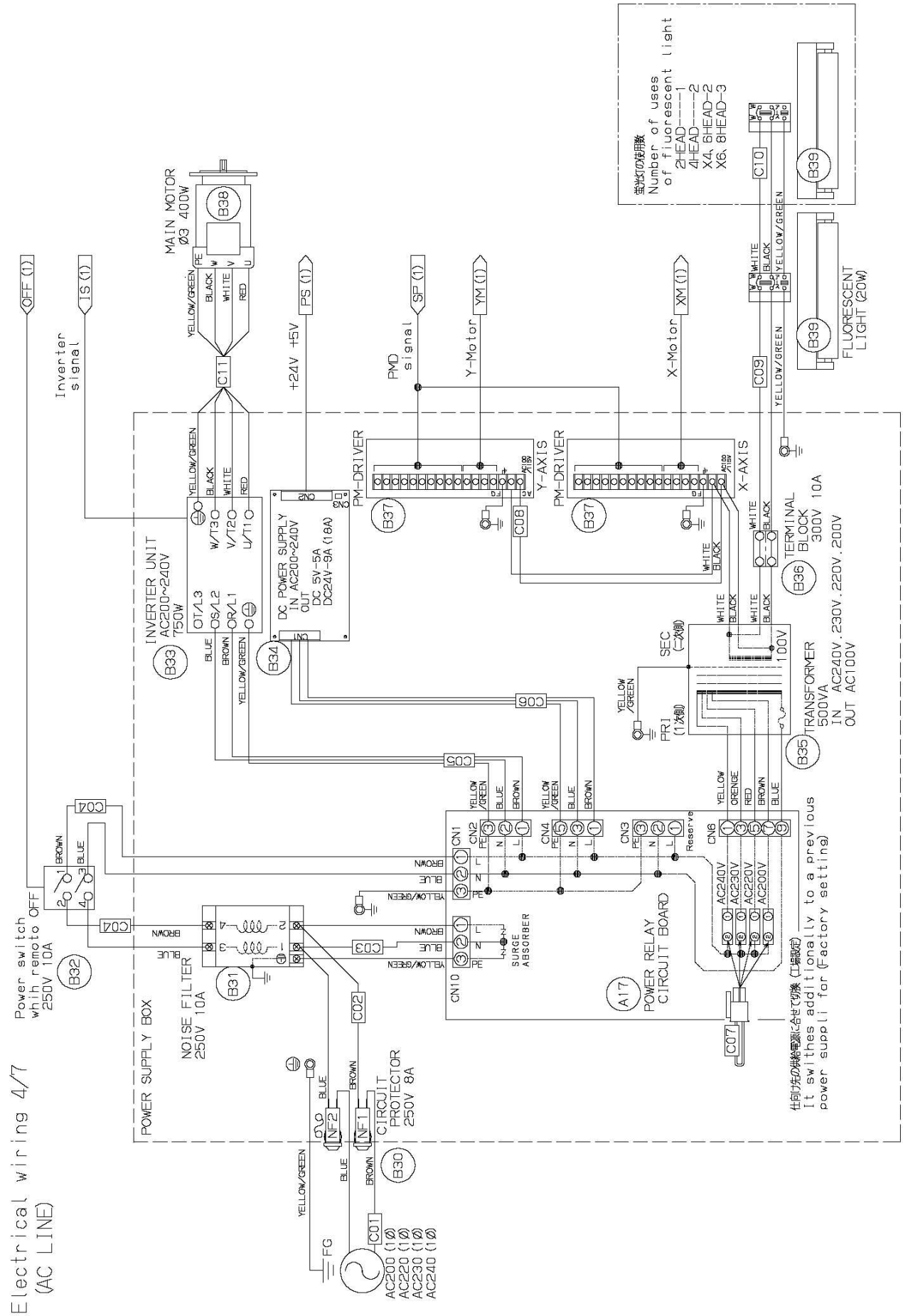
Electrical wiring 3/7
(BED)



頭数の場数により異なる。
It differs depending on the model and the head




Electrical wiring 4/7
(AC LINE)
POWER SUPPLY BOX
Power switch
whih remoto OFF
250V 10A
B32
NOISE FILTER
250V 10A
B31
CIRCUIT
PROTECTOR
250V 8A
B30
INVERTER UNIT
AC200~240V
750W
B33
DC POWER SUPPLY
IN AC200~240V
OUT
DC 5V-5A
DC24V-3A (18A)
B34
PM-DRIVER
B37
Y-AXIS
X-AXIS
MAIN MOTOR
Ø3 400W
B38
FLUORESCENT
LIGHT (20W)
B39
TERMINAL
BLOCK
300V 10A
B36
TRANSFORMER
500VA
IN AC240V.230V.220V.200V
OUT AC100V
B35
POWER RELAY
CIRCUIT BOARD
A17
SURGE
ABSORBER
Number of uses
of fluorescent light
2-HEAD----1
4-HEAD----2
X4, 6HEAD-2
X6, 8HEAD-3
Inverter
signal
PMD
signal
Y-Motor
X-Motor
+24V +5V
AC200 (1Ø)
AC220 (1Ø)
AC230 (1Ø)
AC240 (1Ø)
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Electrical wiring 5/7

Parts Names	Parts No.	Remark
A00 CPU circuit board	ESHCD8100*	
A01 Memory circuit board	ESHCD8101*	
A02 LCD&ATACF circuit board	ESHCD8102*	
A03 Switch circuit board	ESHCD8103*	
A04 FDD circuit board	ESHCD8104*	
A05 DRIVE-B circuit board	ESHCR8105*	
A06 TC7-8 circuit board	ESHCR8115*	15needle type machine
TC5-6 circuit board	ESHCR8116*	12needle type machine
A07 Timing circuit board	ESHCD8109*	
A08 Position sensor circuit board	ESHCD8110*	
A09 Senser Relay circuit board	ESHCD8111*	
A10 Serial circuit board	ESHCB8107*	
A11 USB Host circuit board	ESHCB8114*	
A12 USB Connector circuit board	ESHCB8113*	
A13 Jump sw circuit board	ESHCR8108*	
A14 Head SW circuit board	ESHCR8109*	
A15 Detection circuit board	ESHCR8107*	
A16 Keeper relay circuit board	ESHCR8112*	
A17 Power relay circuit board	ESHCR8104*	

Parts Names	Parts No.	Remark
B01 Potentiometer	ESHCB7940*	
B02 Color change motor	ESHCB7921*	
B03 Thread catch motor	ESEPM00590	
B04 Jump solenoid	ESHCB7901*	
B05 BRAKE solenoid	ESHCR7902*	
B06 Photo sensor	ESEPP0052*	
B07 pointer	ESHCD7941*	
B08 Keep solenoid	ESHCD7905*	
B09 Clip solenoid	ESHCR7903*	
B10 Thread cut motor	ESHCD7913*	
B11 X-axis motor	ESHCR7911*	2、4、X4、6H type machine
X-axis motor	ESHCR7912*	X6、8H type machine
B12 Y-axis motor	ESHCR7913*	
B13 LCD unit	ESEPZ0079*	
B14 Back light inverter unit	ESEPZ0080*	
B15 DC fan unit	ESHCR7907*	
B16 Emergency stop sw (DISP)	ESHCD7900*	
B17 Emergency stop sw (HEAD)	ESHCR7908*	
B18 FDD unit	ESEPZ0028*	
B19 Under thread stop switch	ESHCD7922*	

Parts Names	Parts No.	Remark
B20 Under Thread DC-motor unit	ESHCD7921*	
B21 Back sefty S1 senser	ESHCR7931*	
B22 Back sefty S2 senser	ESHCR7932*	
B23 Back sefty S3 senser	ESHCR7933*	
B24 Back sefty S4 senser	ESHCR7934*	
B25 Needle sefty S5 senser	ESHCR7935*	
B26 USB cable	ESEPZ0075*	
B27 Rocker switch	ESEPS0104*	
B30 Circuit Protector	ESEPF0030*	
B31 Noise filter	ESEPK0111*	
B32 Power switch whis remotoOff	ESEPS0089*	
B33 Inverter unit	ESHCR7918*	
B34 DC5V, 24V power supply	ESEPK0108*	
B35 Transformer	ESHCR7921*	
B36 Terminal block	ESEPF0049*	
B37 PM Driver	ESEPM0040*	
B38 Main motor	ESEPM0062*	
B39 Fluorescent light	ESEPP00481	

＊ :改訂番号 Mark is a revision number

Parts Names	Parts No.	Remark
C01 HCR POWER CORD	ESHCR7001*	
C02 C. protector harnees	ESHCR7005*	
C03 Surge absorber harnees	ESHCR7003*	
C04 Power switch harnees	ESHCR7006*	
C05 Inverter power harnees	ESHCR7009*	
C06 Power supply harnees	ESHCR7007*	
C07 Transformer tap harnees	ESHCR7004*	
C08 PMD Power harnees	ESHCR7010*	
C09 Fluorescrnt light harnees	ESHCR7050*	
C10 F. light relay harnees	ESHCR7052*	
C11 Main motor (2-4) harness	ESHCR7090*	2、4H type machine
Main motor (X4-6) harness	ESHCR7091*	X4、6H type machine
Main motor (X6-8) harness	ESHCR7092*	X6、8H type machine
C12 PD harnees	ESHCR7012*	
C13 FAN harnees	ESHCR7013*	
C14 DC power harnees	ESHCR7015*	
C15 Motor (2-6TYPE) harnees	ESHCR7081*	2、4、X4、6H type machine
Motor (X6-8TYPE) harnees	ESHCR7082*	X6、8H type machine
C16 DRIVE S12 harnees	ESHCR7016*	

C17 DISP harnees	ESHCR7017*	
C18 FD unit harnees	ESHCR7018*	
C19 PMS harnees	ESHCR7020*	
C20 Inverter harnees	ESHCR7022*	
C21 TC harnees	ESHCR7024*	
C22 TC-EMG harnees	ESHCR7025*	
C23 EMG short harnees	ESHCR7027*	
C24 EMG end harnees	ESHCR7028*	
C25 Jump & Thread catch harnees	ESHCR7029*	
C26 X motor harnees	ESHCR7030*	
C27 Encoder harnees	ESHCR7039*	
C28 Timing harnees	ESHCR7040*	
C29 Potentiometer relay harnees	ESHCR7041*	
C30 Color cheange motor harnees	ESHCR7042*	
C31 Thread cut motor harnees	ESHCR7043*	
C32 Detection relay harnees	ESHCR7044*	
C33 Detectionpower relay harnees	ESHCR7046*	
C34 Keep relay harnees	ESHCR7048*	
C36 Limit relay (1000) harnees	ESHCR7054*	2、4H type machine
Limit relay (1200) harnees	ESHCR7055*	6、X4、X6、8H type machine

C37 Limit relay (1200) harnees	ESHCR7055*	2、4H type machine
Limit relay (1400) harnees	ESHCR7056*	6、X4、X6、8H type machine
C38 Limit relay (1400) harnees	ESHCR7056*	2H type machine
Limit relay (1600) harnees	ESHCR7057*	X4、X6H type machine
C39 Keep (360type) harness	ESHCR7065*	4、6、8H type machine
Keep (500type) harness	ESHCR7066*	2、X4、X6H type machine
C40 DetecP (360 type) harnees	ESHCR7071*	4、6、8H type machine
DetecP (500 type) harnees	ESHCR7072*	2、X4、X6H type machine
C41 Detec (360type) harnees	ESHCR7074*	
Detec (500type) harnees	ESHCR7075*	
C42 Keep 55 harnees	ESHCR7077*	
C43 Keep 90 harnees	ESHCR7078*	4、6、8H type machine
Keep 105 harnees	ESHCR7079*	2、X4、X6H type machine
C45 Brake (2-4 type) harnees	ESHCR7085*	2、4H type machine
Brake (X4-6 type) harnees	ESHCR7086*	X4、6H type machine
Brake (X6-8 type) harnees	ESHCR7087*	X6、8H type machine

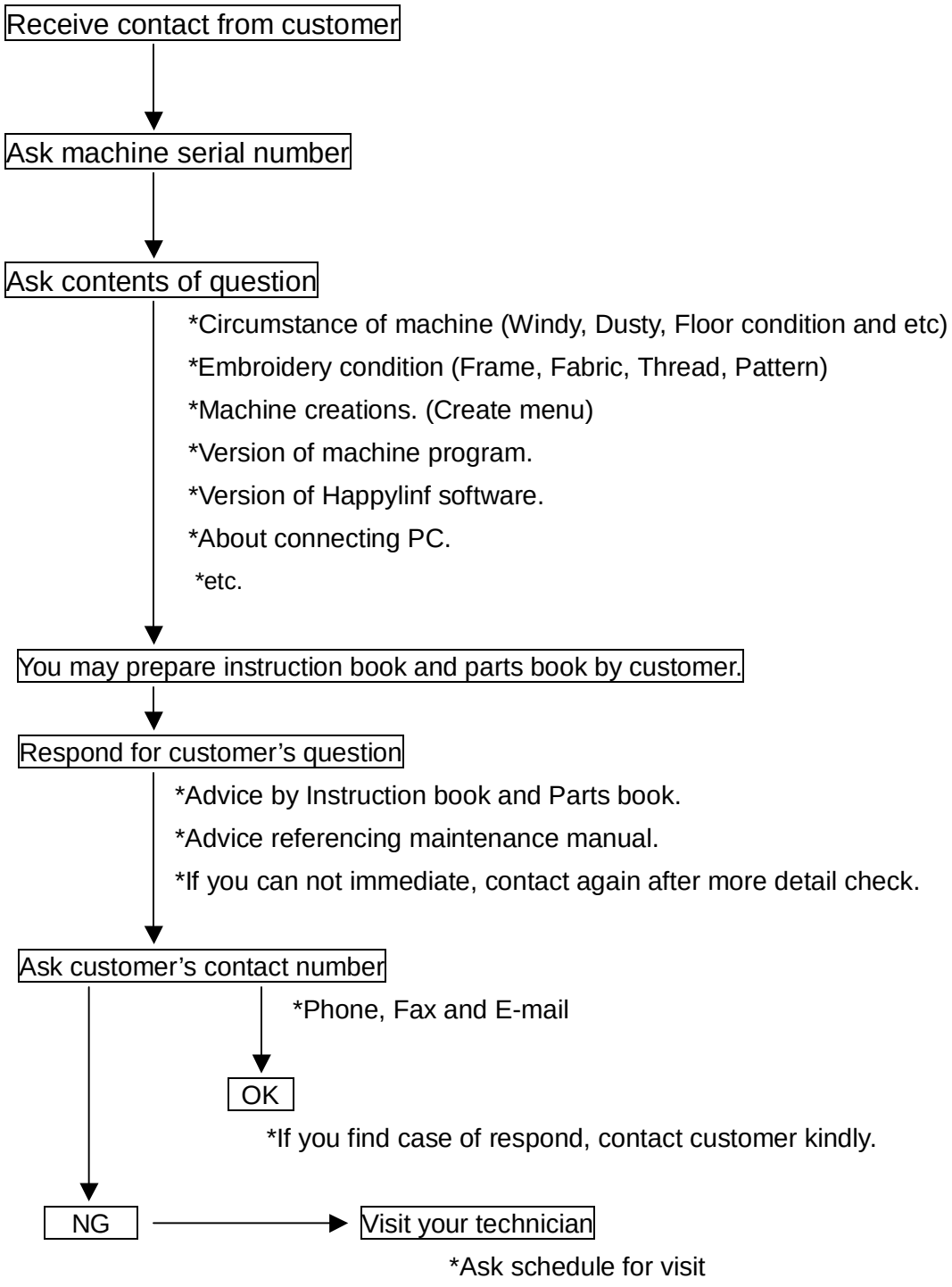
＊ :改訂番号 Mark is a revision number

Parts Names	Parts No.	Remark	Parts Names	Parts No.	Remark
C46 TC switch harnees	ESHCR7023*		C60 SW harnees	ESHCD7051*	
C47 Senser relay (2-4) harnees	ESHCR7095*	2、4H type machine	C61 BL-Inverter harnees	ESHCD7052*	
Senser relay (X4-6) harnees	ESHCR7096*	X4、6H type machine	C62 LCD Ground harnees	ESHCD7049*	
Senser relay (X6-8) harnees	ESHCR7097*	X6、8H type machine	C63 LCD-S (8.9inch) harnees	ESHCD7056*	
C48 DC motor relay harnees	ESHCR7099*		C64 Ground harnees	ESHCG7007*	
C49 Needle relay (2-4) harnees	ESHCR7101*	2、4H type machine			
Needle relay (X4-6) harnees	ESHCR7102*	X4、6H type machine			
Needle relay (X6-8) harnees	ESHCR7103*	X6、8H type machine			
C50 CPU power harnees	ESHCD7009*				
C51 Y-sensor relay harnees	ESHCD7024*				
C52 Limit relay (680) harnees	ESHCD7043*				
C53 Limit relay (480) harnees	ESHCD7042*				
C54 Limit relay (280) harnees	ESHCD7041*				
C55 Serial relay harnees	ESHCB7027*				
C56 USB relay harnees	ESHCB7048*				
C57 TC connecting harnees	ESHCB7019*				

＊ :改訂番号 Mark is a revision number

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 CPU board. 2-2 Replace of display board. 2-3 Replace of Drive B board	 E2-1 E-3
		3. No problem in power supply? 3-1 Check and adjust the correct voltage. 3-2 Try to replace power supply.	 E2-12 E2-11
		4. Check Volume of the power failure detection fit with Drive B board. 4-1 Adjust of power failure detection.	 E2-13
		5. Check of Cable catching causes short-circuit. 5-1 Please insulate the cable after removing outer cover. 5-2 Replace of cable.	 E2-4,-5
		6. Confirm not getting power supply from same outlet with other embroidery machine or other machines which contains motor. 6-1 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? 1-1 Reconsider where to install the machine. 1-2 Move the machine to floor fully reinforced. 1-3 Use strong table to be able to endure vibration.	*
		2. No burr or scratch in thread guide hole? 2-1 Remove burr and scratch. 2-2 Replace of thread guide.	
		3. No problem in thread adjusting spring? 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. 4-3 Correct so as for cable not to touch slit disc. 4-4 Check cable of TC 12 Board is unconnected	E2-5
		5. No problem in thread guide unit and thread tension ass'y? 5-1 Remove burr and scratch if appeared. 5-2 Remove lints and clean.	
		6. Does disc on thread tension ass'y. turn smoothly? 6-1 Remove lints and clean. 6-2 Replace	
		7. Is backlash between take-up lever and take-up crank roller not bigger? 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) 8-3 Replace if thread guide is bent.	
		9. No burr and scratch on needle plate? 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. 10-2 Correct bent. 10-3 Adjust height. 10-4 Replace of pressure foot. 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? 11-1 Clean it to remove lints. 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.	3-5-2
		13. No problem in needle? 13-1 Fix it properly . 13-2 Select proper size of needle to match thread thickness. 13-3 If tip of needle is warped or bent, replace. 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.	
		17. Does needle bar make smooth movement? 17-1 If bent, replace it.	
		18. No backlash in moving head? 18-1 Adjust positioning roller shaft.	
		19. Needle doesn't drop in the center of needle hole. 19-1 Adjust positioning plate and adjust needle drop back and forth. 19-2 Adjust position of needle selection unit, then adjust needle drop right and left.	
		20. Is the lowest needle position proper? 20-1 Adjust mechanical lowest needle position. 20-2 Adjust electric lowest needle position.	E2-3
		21. Is needle height proper? 21-1 Adjust as specified.	
		22. Is rotary hook timing proper? 22-1 Adjust as specified.	
		23. Is clearance between needle and rotary hook proper? 23-1 Adjust as specified.	

* ----- Reference instruction book

Trouble	Factor	Cause of trouble and measure	Page
Thread break	Mechanical	24. Check tip of keeper hit the bobbin case. 24-1 Adjust it regularly.	
		25. Is take-up lever timing proper ? 25-1 Adjust as specified.	
		26. No problem in timing belt? 26-1 Adjust tension. 26-2 If scratched or damaged, replace it.	
		27. Is revolution setting proper? 27-1 Make automatic speed setting.	*
		28. Is inverter setting proper ? 28-1 Make setting.	E2-16
	Operator	1. Operation is wrong (no proper [Machine settings] setting for sewing?) 1-1 Tell how to operate.	*
		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. 3-2 <Bobbin thread> Considering upper thread tension, set tension.	* *
		4. Is bobbin winding proper? 4-1 Adjusting bobbin winding tension, wind with proper strength.	*
		5. Is bobbin put in bobbin case properly? 5-1 Viewing from front of bobbin case, set so that bobbin turns left-wise.	*
		6. Does thread cone stand properly? 6-1 Keep thread from hitting felt. 6-2 Stand vertically.	*
		7. Is passing of thread proper? 7-1 Pass thread properly.	*
		8. Is cloth properly stretched? 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? 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.	*
		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.	*
		12. Didn't you neglect cleaning and oiling? 12-1 Tell to always clean and use cleanly. 12-2 Tell to oil regularly.	*
	Thread & cloth	1. Is thread used to suit needle size? 1-1 Use thread to suit needle size.	
		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. 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. 1-3 Use table with strength endurable against vibration.	*
		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.	*
		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? 5-1 Keep the embroidery machine off those things.	
		5. Does thread go out of control by taking wind from outside or heater etc.? 6-1 Keep the embroidery machine off such wind. 6-2 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)	*
		3. Too many empty stitches? 3-1 Make [Reading] setting. (Skip null stitches)	*
	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.	*

* ----- 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.	
		2. Isn't rubbing of fixed knife and moving knife weak? 2-1 Adjust to be able to rub properly.	
		3. Does moving knife make smooth move? 3-1 Check if rubbing of moving knife and fixed knife is not too strong. 3-2 Check no loosening of screw on moving knife. 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.	
		5. Check defacement of moving knife or fixed knife. 5-1 If possible, furnish with file. 5-2 Replace	
		6. No backlash in up and down direction of knife drive shaft? 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? 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 CPU board or Drive B board, replace. 8-3 If trouble found in thread cut pulse motor, replace. 8-4 Adjust of thread cut sensor position.	E2-7
		9. Is number of revolution proper at time of thread cut? 9-1 Make automatic speed setting. 9-2 If trouble in CPU board or Drive B board, replace.	E2-1
		10. Is there no skipped stitch? 10-1 Adjust needle depth. 10-2 Adjust clearance between needle and rotary hook. 10-3 Is height of pressure foot proper? 10-4 Is rotary hook timing proper? 10-5 Is relation between needle and thread proper?	

* ----- 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 Adjust position of jump solenoid. 11-2 Replace needle bar cushion. 11-3 Replace needle bar driver.	
		12. Is position of keeper proper? 12-1 Adjust the fixed position regularly.	
		13. Check the movement of keeper goes smoothly. 13-1 Readjust if it is not smooth.	
	Operator	1. No negligence in cleaning thread cut device? 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? 2-1 <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.	 *
	Thread & cloth	1. Is twist of thread too strong? 1-1 Use thread with proper twist.	
		2. No skipping by use of lots of paste? 2-1 Use small amount of paste. 2-2 Remove paste stuck to needle.	

* ----- Reference instruction book

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 bound of frame base too big? 2-1 Fix frame base between bearing and base without gap.	
		3. Is carriage belt tension proper? 3-1 Adjust all belts as specified.	
		4. No loosening of screws on carriage drive? 4-1 Check screw. If loosened, tighten firmly.	
		5. No lints or dust around idler pulley on carriage? 5-1 Clean	
		6. No damage in carriage belt? 6-1 If damaged, replace.	
		7. No backlash of back and forth in moving head? 7-1 Adjust positioning roller shaft to remove backlash back and forth.	
		8. Is height of pressure foot proper? 8-1 Adjust as specified.	
		9. No problem in motion of pulse motor? 9-1 Check wiring. If screw got loosened, tighten more. 9-2 After 9-1, still problem, then replace.	
		10. No problem in motion of PMD ? 10-1 Check wiring. If screw got loosened, tighten more. 10-2 After 10-1, still problem, then replace.	E2-10
		11. Does't other frame than Happy's genuine one used? 11-1 If frame is too heavy, don't use it. 11-2 If setting is not proper, set it so as not to move.	
		12. No problem in CPU board? 12-1 Try to initialize. 12-2 Replace of CPU board.	E4-3-2
		13. Is number of revolution proper? 13-1 Make automatic speed setting.	*
		14. Not affected by noise? 14-1 Don't use the machine near where noise is generated.	
	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.	

* ----- Reference instruction book

Trouble	Factor	Cause of trouble and measure	Page
Off-registration of pattern	Operator	2. Is cloth properly stretched. 2-1 Stretch properly.	*
		3. Is thread tension proper? 3-1 Observing sewing rhythm, set thread tension properly.	*
		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. 1-3 Use strong table to be able to endure vibration.	*
		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.	*
		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. 4-2 When useing cap frame, see not to hit table.	
	Thread & cloth	1. Not using shrinkable cloth? 1-1 Use backing paper (consider number of sheets to use).	*
		2. Isn't breakable cloth is used by thread tightening? 2-1 Use backing paper (consider number of sheets to use).	*
		3. Is proper backing paper used? 3-1 Use backing paper to match cloth.	*
		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.	*
		2. Memory pattern was destroyed. 2-1 Let new pattern read.	*
		3. No problem in floppy disc or memory card? 3-1 Initialize and read again. 3-2 Prepare new floppy disc or memory card.	 * *

* ----- Reference instruction book

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 CPU board is in trouble, replace. 1-4 In case Drive B board is in trouble, replace.	E2-1
		2. Is keeper put in right place? 2-1 Put it as specified. 2-2 Modify bent of keeper. 2-3 Adjust it again if movement is not smooth.	
		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. 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. 6-2 Position moving knife as specified. 6-3 Check and polish burr or scratch on moving knife. 6-4 In case moving knife is in trouble, replace.	
		7. Are clearance between needle and rotary point and needle height are proper? 7-1 Adjust clearance between needle and rotary hook as specified. 7-2 Adjust needle depth.	
		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. 9-4 If hook is bent, modify. 9-5 In case hook is in trouble, replace. 9-6 In case CPU board is in trouble, replace. 9-7 In case Drive B board is in trouble, replace.	E2-1

* ----- Reference instruction book

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.	
		11. Is number of revolution proper when sewing started? 13-1 Make automatic speed setting.	*
		12.Is height of pressure foot proper? 14-1 Adjust as specified.	
	Operator	1. Isn't thread tension too strong? 1-1 Weaken tension not to cause trouble in sewing rhythm.	*
		2. Keen in cleaning thread cut device? 2-1 Clean bobbin thread holder regularly.	*
		3. Is setting of bobbin thread proper? 3-1 Pass thread on bobbin thread guide surely.	*
		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.	*
		5. Is upper thread properly passed? 5-1 Pass properly again.	*
		6. Does thread cone stand properly? 6-1 Keep thread from hitting felt. 6-2 Stand vertically.	*
		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].	*
	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.	
	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.	

* ----- Reference instruction book

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.	
		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. Is [Machine settings] properly set? 2-1 Select setting of length of TRD. cut [Normal].	*
	Thread & cloth	1. Using hard cloth make thread difficult to go through. 1-1 Select needle and thread.	*
		2. Using thick cloth make thread difficult to go through. 2-1 Select needle and thread.	
		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.	

* ----- Reference instruction book

E9-7 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.	E1-2
		2. Check circuit board. 2-1 Replace of CPU board. 2-2 Replace of TC 12 board. 2-3 Replace of Detection board 2-4 Replace of Drive B board	E2-1 E2-5 E2-4
		3. Sometimes needle bar doesn't work when start sewing. 3-1 Replace of needle bar driver. 3-2 Adjust of jump solenoid position. 3-3 Clean and overhaul of Jump solenoid. 3-4 Replace of Jump solenoid.	
	Operator	1. No thread is passed through detecting roller. 1-1 Pass thread properly.	*
		2. Is thread tension proper? 2-1 Observing sewing rhythm, adjust thread tension properly.	*
		3. Is proper detection sensitivity of thread cut selected? 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.)	*
	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.	

* ----- Reference instruction book

E9-8 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.	*
		2. Check return of keeper goes smooth. (when start sewing, thread cutting. 2-1Adjust it regularly.	
		3. Check upper thread is sticking at thread guide part of bobbin case. 3-1 Get rid of it. 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 CPU board. 5-2 Replace of Timing Board. 5-3 Replace of inverter. 5-4 Replace of Drive B board.	 E2-1 E2-3 E2-15
		6. Trouble of software in CPU circuit board. 6-1 Initialize, then make automatic speed setting.	E4 *
		7. Trouble in control of number of revolution. 7-1 Make automatic speed setting.	*
	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.	*
		2. Isn't thread tension too strong (stop at time of action of thread cut)? 2-1 Weaken tension so as not to cause trouble in sewing rhythm. 3. Check condition of lubrication. 3-1 Lubricate (refer to message)	*
	Environment	1. Check adequate level of voltage (refer to trip of inverter). 1-1 Supply rated voltage. 200V:220V:230V:240V (It varies in the specifications.)	*

* ----- Reference instruction book

E9-9 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 Drive B board. 4-1 Replace of Drive B board.	
	Operator	1. Check Stopper of Moving Head is removed. 1-1 Remove Stopper.	
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.	E2-6
		2. Trouble in potentiometer. 2-1 Replace	E2-6
		3. Needle number is not exactly recognized. 3-1 Recognize needle number with maintenance mode.	E2-6
		4. Breakage of Pulse Motor . 4-1 Replace Pulse Motor.	

*----- Reference instruction book

E9-10 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	3-2-12.
		1-2 Adjust position of Thread holder.	3-3-10
		2. Excessive distance between Hook and tip of Needle.	
		2-1 Adjust position of Thread catcher.	3-2-12
		2-2 Adjust position of Thread holder.	3-3-10
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	3-2-12
		3. Check position of Thread holder is proper.	
		3-1 Adjust	3-3-12
		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 CPU Board.	E2-1
		5-2 Replace of Drive B board.	
		5-3 Replace of Detection board	E2-4
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	
		3. Check position of Thread holder is proper.	
		3-1 Adjust	
	Operator	1. Check if Needle is securely set.	
		1-1 Set Needle properly.	*
Constant display of E-193	Mechanical	1. Trouble of Photo sensor.	
		1-1 Replace Photo sensor.	

* ----- Reference instruction book

E9-11 Others / Mechanical

Trouble	Factor	Cause of trouble and measure	Page
Needle Breakage	Mechanical	1. Check Needle is not bent. 1-1 Replace bent Needle.	*
		2. Check Moving Head set securely. 2-1 Adjust Positioning Roller Shaft.	
		3. Secure adequate distance between Needle and Rotary Hook. 3-1 Adjust distance properly.	
	Operator	1. Is thread method in proper way? 1-1 Threading again in a proper way.	*
		2. Check upper thread comes in a smooth way. (Thread stand, Thread tension point, double back etc) 2-1 Adjust place be caught in.	*
		3. Check whether fabric is fixed firmly or not. 3-1 Hooping fabric firmly again.	*
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. 1-2 In case pressure foot is fixed at an angle, fix it vertically again.	
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 2-2 Replace of rotary hook	*
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. Gap between Crank ass'y and Rod ass'y. 4-1 Replace of crank ass'y. 4-2 Replace of rod ass'y	
		5. Big gap pressure foot cam 5-1 Replace of take-up lever cam.	

* ----- Reference instruction book

E9-12 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.	E2-8
		2. Check whether cable has problem or not. 2-1 Replace in case damage exists. 2-2 Insert connector again.	E2-8
		3. No damage in electric parts? 3-1 Replace CPU Board. 3-2 Replace of Drive B board.	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. Inadequate condition of cable insertion 2-1 Insert to the back firmly	
		3. Check whether CPU board is out of order or not. 3-1 Replace of CPU board	E2-1
Defect of data communication (E-90) (E-91)	Mechanical	1. Check whether cable is insert firmly between CPU Board and serial board or not. 1-1 Insert again	
		2. Check whether PC has problem or not. 2-1 Affirm whether there is problem or not.	
		3. Check serial circuit board is out of order or not. 3-1 Replace of serial circuit board.	
		4. Check whether CPU circuit board is out of order or not. 4-1 Replace of CPU board.	
	Operator	1. Baud rate does not fit between machine side and PC side. 1-1 Make setting of baud rate	* P19-P20
Pattern disappears / Watch doesn't indicate time	Mechanical	1. Trouble in back-up battery 1-1 Replace CPU board.	
		2. No trouble in memory tip on CPU board? 2-1 Conduct [memory all clear] in maintenance mode. 2-2 If above measure doesn't solve the trouble, replace CPU circuit board.	E5-3

*----- Reference instruction book

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

E10 Error and measure

When trouble occurred while the machine is running, error number and error item will be displayed. After confirming contents, press button [SET] 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 CPU circuit board.	
002	Power source	Power failure or abnormal voltage	Replace CPU circuit board.	
004	System memory	Trouble in system memory.	Replace CPU circuit board.	
014	Fan Alarm	Cooling fan fault	(1)Clean dust attached to fan. (2)Replace fan.	E2-14
015	Inverter trip	Trouble in drive unit on main shaft. Overload on main shaft motor, damage in drive 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.	E2-15
016	Alarm X unit	X-motor-related trouble, i.e. x-motor overload, short circuit, problem with motor drive unit	(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 PMD.	E2-10
017	Alarm X unit	Y-motor-related trouble, i.e. y-motor overload, short circuit, problem with		
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 inverter in trouble, replace.	* E2-15
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	E2-6
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.	E2-6

* ----- 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.	E2-6
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.	E2-6
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 CPU circuit board.	* E2-6
050	C point	Main shaft stops off its position.	(1)Turn main shaft to plus direction to set to C point.	*
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.	E2-3
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.		
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.	E2-3 E2-3 E2-3
067	L sensor	Consumption of embroidery frame coordinate data.	Adjust position sensor position on carriage. Then register frame position again.	E2-8
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.	E2-8
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 E2-8

* ----- Reference instruction book

No.	message	Error	measure	page
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,-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. (2)Set transmitting speed of the machine and personal computer.	* *
091	No send	Data is not put in for over 10 seconds.	Let the machine read data from first.	*
103	Data format	Machine unable to determine format of pattern data.	(1)Check format of pattern data. (2)By setting reading of pattern data,	*
104	Miss function	Timing to read pattern data doesn't conform.	Read pattern data again from the first.	*
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.	*
106	No function	Interval between start read time and time of reception of actual pattern data	Read pattern data again from the first	*
108	Improper read	While reading pattern data, there accrued error in internal processing.	Read pattern data again from the first.	*
110	Memory full	While reading pattern data, memory exceeded its capacity.	(1)Delete unnecessary patterns and read from the outset.	*
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.	*
114	Id over	The number of pattern in memory has reached maximum of 99.	Delete unnecessary patterns and read.	*
116	Not found Id	Specified pattern does not exist.	(1)Check setting. (2)Re-initialize machine system.	*
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).	
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 CPU board assembly.	E2-1

* ----- Reference instruction book

No.	message	Error	measure	page
130	Disk error	Unable to communicate continuously with memory card or data disk.	(1)Turn off power source once and turn it on again. (2)Memory card reading processor may defective. Replace the circuit board.	
131	Device no ready	Memory card or data disk is not set.	Check if memory card or data disk is properly set.	*
132	Write protect	Disk write protected	Disable write protect on disk.	*
133	Bad disk	Improper or faulty data disk or data disk.	(1)Memory card oor datadisk might be not readable with the machine. Prepare readable memory card or data disk for the machine. (2)Memory card or datadisk might be defective. Prepare another memory card or data disk which is not defective. (3)Initialize the memory card if it is not initialized.	*
134	Disk unit	Trouble in disk drive unit.	(1)Turn off power source once and turn it on again. (2)If error remains, there is a problem with the disk drive unit.	
140	Entry over	Maximum number of patterns has been exceeded.	Clear unnecessary patterns or use alternate disk.	*
141	Not found name	Designated pattern is not found.	Memory card might be not readable with the machine. Prepare readable memory card for the machine.	*
142	Disk full	Disk is full to capacity.	Clear unnecessary patterns or use a different data disk.	*
143	Multi name	Another pattern with same name has been detected while attempting to write to disk.	Change name, use a different disk, 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.	*
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.	*

* ----- Reference instruction book

No.	message	Error	measure	page
215	Frm. drive err	Frame movement did not complete. during normal movement. (Time over)	(1) Check timing sensor unit and slit. (2) Install Frame moving data.	
217	Frm.drive data	Frm.drive data	Install Frame moving data.	
220	Calendar Stop	Calendar has not been setup.	Set calendar data after re-starting machine. If problem recurs frequently, replace CPU board assembly.	* E2-1
221	Battery Low	Low voltage warning for CPU board battery.	If machine has not been powered on for an extended period, CPU board battery drains. Power on machine and if problem persists, replace CPU board assembly.	 E2-1
222	Calendar Data	Incorrect calendar data. been exceeded.	Please set calendar date and time. If you have same problem often, please replace CPU board assy'.	* E2-1

* ----- Reference instruction book

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HCR SERIES

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