Service Documents

JV300-130/160

MAINTENANCE MANUAL

MIMAKI ENGINEERING CO., LTD
URL:http://eng.mimaki.co.jp

D500946-10

Maintenance Manual Change Tracking

Date	2014.05.30	Manual Ver.	1.00	Remark	
Status	**Index**	**Rev.**	**Changes**		
Released			New issued		

Maintenance Manual Contents

Maintenance Manual Contents

Operating Principle

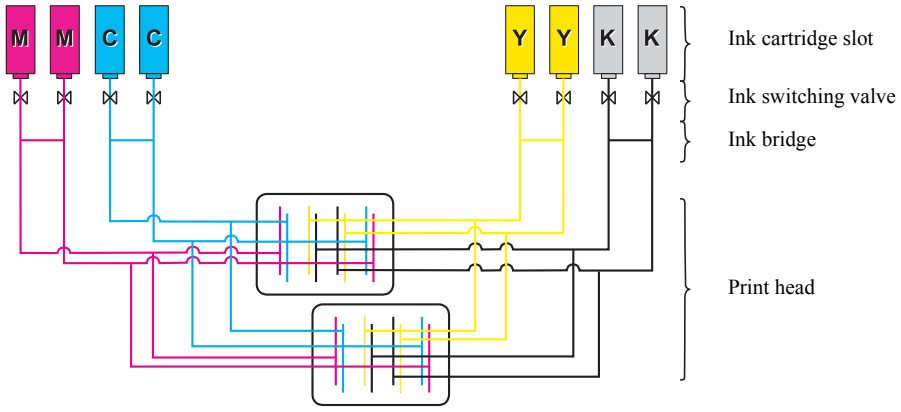
Operating Principle

Operating Principle

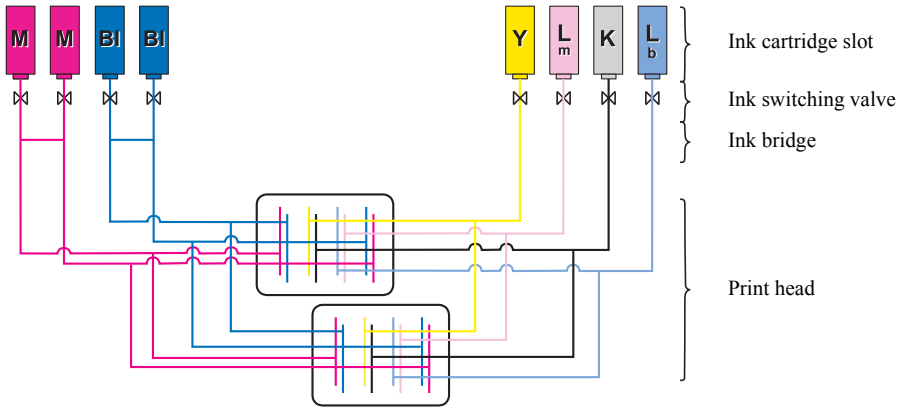
1.3.1 Configuration

■ Ink Supply Path Diagrammatic Illustration

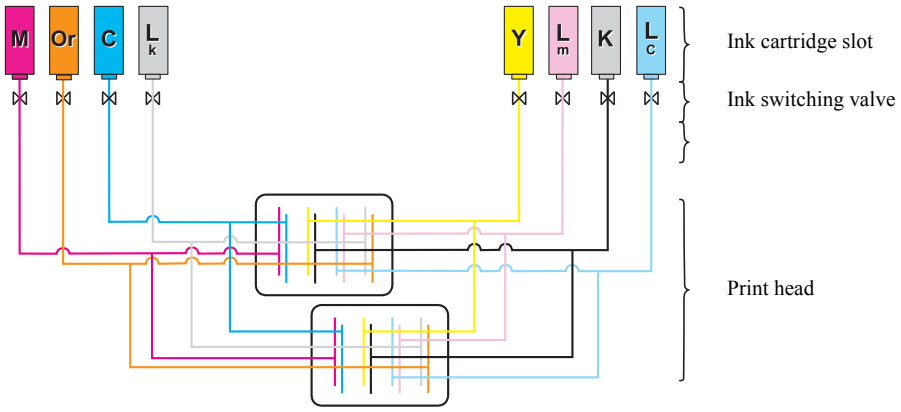
☐ When filling 4-color ink set *When Sb53 ink is used, put Bl on C.



☐ When filling 6-color ink set (for Sb53 ink)

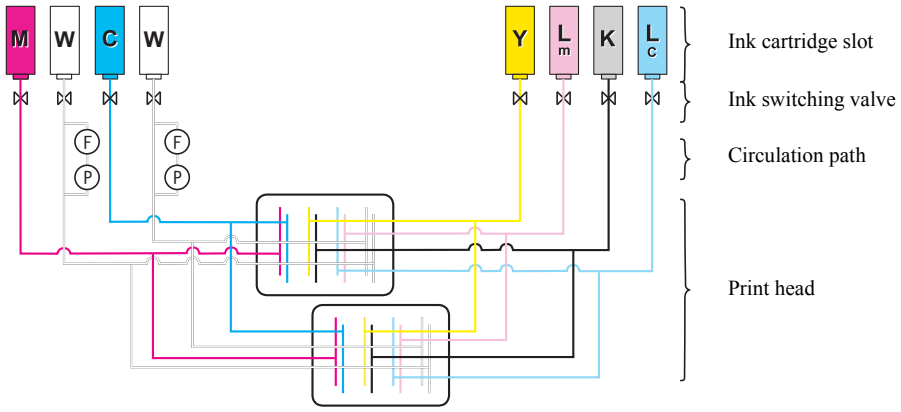


☐ When filling 8-color ink set (for SS21 ink)



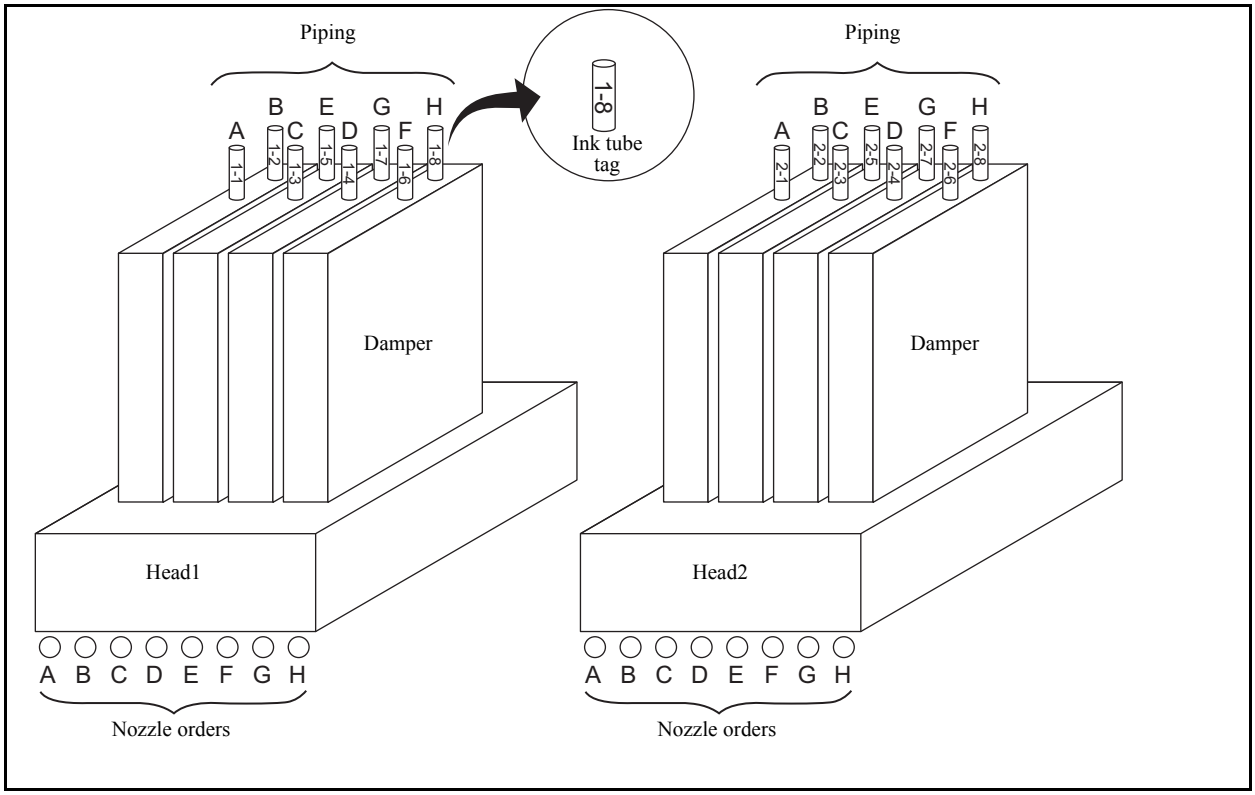
1.3.1 Configuration

☐ When filling 6-color +W ink set (for SS21 ink)



1.3.1 Configuration

■ **Relationship between piping and nozzle orders**



1.3.1 Configuration

■ Flow of the ink supply control

No.	Item	Description
1	Monitoring of cartridge error	Monitors a cartridge error when ink is supplied. For details, see "1.3.2 Ink System Error Monitoring".
2	Control and selection of supply cartridge	Checks the status of the ink cartridge and selects the cartridge (for the 4-color ink set). For details, see "1.3.3 Supply Cartridge Control and Selection".
3	Updating of cartridge LED status	Updates the LED status depending on the status of ink supply and errors. For details, see "1.3.4 Cartridge LED Control".
4	Open/close supply valves	Open/close the ink supply valves depending on the control and selection of the ink supply cartridge. For details, see "1.3.5 Supply Valve Control".

■ Ink system configuration

No.	Item	Description
1	When filling 4-color ink set M and Bl ink when filling 6-color ink set	◆Two paths of the same color are linked shortly after the cartridge valves. ◆Normally the valve of 1 cartridge per color is opened by toggle switching, supplying ink to a 2-nozzle row. ◆Thereafter, the cartridge on the side with the open valve is referred to as the control cartridge, while the other is referred to as the sub cartridge. ◆Longer consecutive drawing time than conventional products and replacement of cartridges during the drawing are allowed by toggle switching of 2 cartridges for 1 supply path.
2	Except M and Bl ink when filling6-color ink set When filing 8-color or 6-color+W	◆1 cartridge is connected to a 1-nozzle row. No toggle is switched and all cartridges are control cartridges. ◆Since 1 cartridge is assigned to 1 path, it cannot be replaced during printing.
3	Ink supply system	◆The ink filling method uses a suction system with a roller pump, and a pressure damper with a self-sealing valve. ◆Ink is supplied with a siphon during printing. ◆The damper sealing valve opens to supply ink when the discharge pressure drops, and the sealing valve closes when the damper ink chamber is filled. ◆The sealing valve reduces the ink path pressure that reaches the head meniscus during the carriage motion.
4	Replacing ink cartridge	◆The warning message is displayed if the cartridge is not installed even after a lapse of 10 minutes to prevent the supply system from getting dry.
5	Ink supply valve	◆For each cartridge, a supply valve is provided to supply ink by opening it. ◆The supply valve is normally closed and is opened only when ink supply is required. ◆Ink supply is executed during discharge operation (for printing or flushing) and suction operation (for cleaning or filling). The supply valve for any cartridge that has developed an error does not open, thus does not allow ink supply.
6	Ink cartridge LED	◆For each cartridge, LED is used to allow the user to visually check the cartridge state. Green color lights in control. Red color lights in error. ◆Since all 8 cartridges are control cartridges except when 4-color ink set is used or except M and Bl ink when 6-color ink set is used, Green color lights on for cartridges where there is no error.
7	Ink use-up cleaning (Only for the 4-color ink set)	◆For cleaning, the machine switches the supply valve to the cartridge that has displayed [INK NEAR END] or [INK END] to use the cartridge with the smaller amount of residual ink first. For details, see "1.3.7 Use-up Cleaning".

1.3.2 Ink System Error Monitoring

■ Monitoring of cartridge error

No.	Item	Description
1	Cartridge error check	◆A cartridge error is periodically checked (every 30 ms). ◆Select the supply cartridge in taking into account the error status and the amount of remaining ink.
2	LED control when an error occurs	◆The LED (blue) lights up to indicate that the supply cartridge is now being controlled. ◆The LED (red) lights up or blinks to indicate that the cartridge must or should be replaced.
3	Supply valve control when an error occurs	◆The valve for the cartridge where the LED (blue) is lit opens when the instruction to open the valve is issued. ◆When an error occurs in a supply cartridge while the valve is open (during printing or cleaning), the valve switches to the other cartridge which can supply ink, if any, to continue machine operation. If a supply cartridge is removed, printing or cleaning will be stopped and the machine will return to LOCAL mode.

IMPORTANT

Since all 8 cartridges are control cartridges except when the 4-color ink set is used or except M and Bl ink when 6-color ink set is used, printing or cleaning is stopped when an error occurs and the machine returns to LOCAL mode.

■ Monitoring of ink system error

The ink system are checked for any error periodically (every 30 ms), and machine operation is limited according to the error, if detected. The table below shows the possible errors and the limitations on machine operation.

Priority	Ink system error	Execution status when an error occurs*2			Description of the error
		CL/ filling	Printing	Head wash	
1	Initial filling is not executed	X	X	X	Initial filling has not been executed.
2	INK END error	X	X	○	Errors occurred in both cartridges and printing & suction operation can not be executed.
3	INK NEAR END error	X	○	○	◆Errors occurred in both cartridges and suction operation can not be executed. ◆Machine returns to LOCAL mode every completion of printing one file.
4	Waste Ink Tank	X	X	X	When the amount of waste ink counted by the firmware increases to a certain amount after it displays near full.
5	NO CARTRIDGE	X	X	X	No cartridge has been installed.
6	Ink IC*1	X	X	X	◆An error related to the cartridge IC has occurred. ◆Ink supply is impossible.
7	INK REMAIN ZERO (Only for the 4-color ink set)	X	X	X	◆Ink in the cartridge is used up. ◆Ink supply is impossible.
8	Cartridge ink end	X	X	○	◆Ink in the cartridge has been used to the end level, with a predetermined small amount of ink remaining. ◆Ink supply is impossible. (CL can be used)
9	Cartridge near end	○	○	○	◆The Near End sensor has detected the nearly ink end status. ◆The cartridge can be used for printing or cleaning.
10	Expiration:2 MONTH	X	X	X	Two months have passed since the expiration date of the ink.
11	Expiration:1 MONTH	○	○	○	◆One month has passed since the expiration date of the ink. ◆Machine returns to LOCAL mode every completion of printing one file.
12	COMPLETELY EXPIRED	X	X	X	For the ink extended the expiry month, six months have passed since the expiry month shown on the cartridge.
13	!Replace a WIPER	○	○	○	The wiper operation count has exceeded the number which requires the replacement of the wiper.
14	Expiration	○	○	○	Ink expiration has been reached.

*1 Ink IC: NON-ORIGINAL INK, WRONG INK IC, Kind of INK, Color of INK, WRONG CARTRIDGE, Expiration:2MONTH

*2 ○: Executable X: Inexecutable

1.3.2 Ink System Error Monitoring

■ **Errors related to the amount of remaining ink**

- Calculate the number of ink shots by printing and flushing or the amount of ink sucked by cleaning and filling, and then the amount of consumed ink by subtraction of remaining ink.
- When the amount of remaining ink is updated, it is written into the ink IC chip.
- A cartridge error is issued according to the amount of remaining ink.

No.	Item	Description	
		Error detect timing	Limitations after error detection
1	Cartridge near end	The amount of remaining ink is detected on the near end detect PCB assy. The specified value of each cartridge is as follows: ◆220 cc cartridge: 20 cc ◆440 cc cartridge: 40 cc	Initial filling is not allowed Printing is allowed. Cleaning is not allowed (only use-up cleaning is allowed).
2	Cartridge ink end	Displayed when use of a certain amount of ink is detected after the near end detection.	Neither printing nor initial filling is allowed, but cleaning is allowed.
3	INK REMAIN ZERO (Only for the 4-color ink set)	◆Displayed when the amount of remaining ink is detected to be 0 cc after the ink end detection. ◆This error may be displayed only after completion of ink use-up cleaning.	None of printing, initial filling and cleaning is allowed.
4	WRONG CARTRIDGE	Occurs when the amount of consumed ink exceeds nearly double (220 cc cartridge: 400 cc, 440 cartridge: 800 cc or more) the ink cartridge capacity but the ink end is not displayed yet.	None of printing, initial filling and cleaning is allowed.

1.3.3 Supply Cartridge Control and Selection

■ Supply cartridge control

No.	Item	Description
1	For the 4-color ink set M and Bl ink for the 6-color ink set	◆ The machine uses two ink cartridges for 1 supply system and can mount 8 cartridges in total. ◆ 1 supply cartridge is assigned to 1 supply system. The cartridge with less amount of remaining ink is used first by toggle switching. ◆ Switching between cartridges for ink supply occurs under any of the following conditions: • "INK END" during printing • "INK NEAR END" during filling • Ink IC warning • When the cartridge is removed • When executing Ink use-up cleaning
2	Except M and Bl ink for the 6-color ink set For the 8-color ink set For the 6-color +W ink set	◆ Since there is 1 ink cartridge per supply system, all 8 cartridges are supply cartridges.

■ Cartridge status indicated by LEDs

LED	Status	Explanation
Blue	Lit	Supply cartridge
Red	Blink	INK END, INK NEAR END, Expiration:1MONTH
	Lit	◆ NO CARTRIDGE ◆ WRONG INK IC Errors related to PIC, namely, NON-ORIGINAL INK, WRONG INK IC, Kind of INK, Color of INK, WRONG CARTRIDGE and Expiration:2MONTH ◆ INK REMAIN ZERO A cartridge having no remaining ink after execution of ink use-up cleaning (only in 4-color use).

■ Selection and determination of the supply cartridge for the 4-color ink set

☐ supply cartridge switching selection timing

- ● At power-on
- ● When an error occurs in the currently selected cartridge
- ● When a cartridge with higher priority than the currently selected cartridge is inserted
- ● Switching is not executed during printing or cleaning but executed when the machine has returned to LOCAL mode.

☐ When there is more than one effective cartridge for 1-ink supply path

Priority	Cartridge status
1	The cartridge having the smaller amount of remaining ink is selected.
2	If there is no distinction at "1", the cartridge closer to the expiration date is selected.
3	If there is no distinction at "1" and "2", the cartridge in the smaller slot number is selected.

1.3.3 Supply Cartridge Control and Selection

☐ When one cartridge for 1-supply path has an error

- The machine selects the other cartridge if available.
- The conditions for cartridge selection vary depending on the error type and ink supply timing. The table below shows the conditions for cartridge selection.

No.	Cartridge status	Discharge operation*2	Suction operation*2
1	Normal cartridge	○	○
2	Cartridge near end	○	△
3	Cartridge ink end	X	△
4	Residual quantity 0 cartridge	X	X
5	No cartridge	X	X
6	Ink IC*1	X	X

*1 Ink IC: NON-ORIGINAL INK, WRONG INK IC, Kind of INK, Color of INK, WRONG CARTRIDGE, Expiration:2MONTH

*2 ○: Available for ink supply. X: Not available for ink supply.
△: Available for ink supply when the other cartridge is normal.

☐ Availability of ink supply

Cartridge 2 \ Cartridge 1	Normal cartridge	Cartridge near end	Cartridge ink end	Residual quantity 0 cartridge	No cartridge Ink IC*1
Normal cartridge	○	○	○	○	○
Cartridge near end	○	△	△	△	△
Cartridge ink end	○	△	X	X	X
Residual quantity 0 cartridge	○	△	X	X	X
No cartridge	○	△	X	X	X
Ink IC*1	○	△	X	X	X

*1 Ink IC:NON-ORIGINAL INK, WRONG INK IC, Kind of INK, Color of INK, WRONG CARTRIDGE, Expiration:2MONTH.

○: Both discharge and suction are allowed. X: Neither discharge nor suction is allowed (Ink end error).
△: Discharge is allowed but suction not allowed (Ink near end error).

1.3.3 Supply Cartridge Control and Selection

☐ Conditions for changing the supply cartridge

Sub cartridge \ Control cartridge	Normal cartridge	Cartridge near end	Cartridge ink end	Residual quantity 0 cartridge	No cartridge Ink IC*1
Normal cartridge	△	○	–	–	–
Cartridge near end	–	△	–	–	–
Cartridge ink end	○	○	–	–	–
Residual quantity 0 cartridge	○	○	–	–	–
No cartridge	○	○	–	–	–
Ink IC*1	○	○	–	–	–

*1 Ink IC: NON-ORIGINAL INK, WRONG INK IC, Kind of INK, Color of INK, WRONG CARTRIDGE, Expiration:2MONTH

○: Switched. –: Not switched.
△: Switched according to priority (No operation by the condition as above during cleaning).

1.3.4 Cartridge LED Control

■ Condition of each cartridge LED indicated by its lighting and blinking

The LED light up or blink to indicate the condition of the cartridge and help the user determine the time for replacing the cartridge.

LED color		Cartridge status
Blue	Not lit	No cartridge has been selected as the supply cartridge
	Blinking	–
	Lit	◆A cartridge has been selected as the supply cartridge (All cartridge LEDs are Lit for any other than the 4-color ink set except when an error occurs.) ◆Ink use-up cleaning is now being performed For details, see "1.3.7 Use-up Cleaning".
Red	Not lit	The cartridge is normal
	Blinking	An error has occurred (Blinking signifies that one of the following errors has occurred) ◆Cartridge near end ◆Cartridge ink end ◆One month has passed since the expiration date of the ink
	Lit	An error has occurred (Lighting signifies that one of the following errors has occurred) ◆Residual quantity 0 cartridge ◆No cartridge ◆Ink IC*1

*1 Ink IC: NON-ORIGINAL INK, WRONG INK IC, Kind of INK, Color of INK, WRONG CARTRIDGE, Expiration:2MONTH

■ LED operation pattern

Event	For the 4-color ink set M and Bl ink for the 6-color ink set		Except for left case
	Cartridge 1	Cartridge 2	Cartridge 1
	LED condition	LED condition	LED condition
Online supply start ◆Both cartridges free from problems ◆Cartridge 1 is the control cartridge.	Blue light	–	Blue Lit
Cartridge 1 ◆Cartridge near end	Blue and Orange alternately light	–	Blue and Orange alternately light
Cartridge 1 ◆Cartridge ink end ◆Cartridge 2 is the control cartridge.	Orange light	Blue light	Orange Lit
Cartridge 2 ◆Cartridge near end	Orange light	Blue and Orange alternately light	
Cartridge 1 ◆Removed for replacement	Red light	Blue and Orange alternately light	Red Lit
Cartridge 1 ◆A normal cartridge has been set	—	Blue and Orange alternately light	Blue Lit
Cartridge 2 ◆Cartridge ink end ◆Cartridge 1 is the control cartridge.	Blue light	Orange Lit	
Online printing has been completed ◆All valves closed	Blue light	Orange Lit	Blue Lit

1.3.5 Supply Valve Control

■ Cartridge switching operation

Event		For the 4-color ink set		Except for the 4-color ink set
		Cartridge 1 valve	Cartridge 2 valve	Cartridge 1 valve
1	Online supply start ◆Both cartridges free from problems ◆Cartridge 1 is the control cartridge.	OPEN	CLOSE	OPEN
2	Cartridge 1 ◆Cartridge near end	No change	No change	No change
3	Cartridge 1 ◆Cartridge ink end ◆Cartridge 2 is the control cartridge.	CLOSE	OPEN	CLOSE
4	Cartridge 2 ◆Cartridge near end	No change	No change	
5	Cartridge 1 ◆Removed for replacement	No change	No change	CLOSE
6	Cartridge 1 ◆A normal cartridge has been set	CLOSE	OPEN	OPEN
7	Cartridge 2 Cartridge ink end Cartridge 1 is the control cartridge.	OPEN	CLOSE	
8	Online printing has been completed ◆All valves closed	CLOSE	CLOSE	CLOSE

■ Timing to open/close the supply valve

The supply valves are usually closed and opened only when ink supply is required.
Timing to open/close the supply valves is shown below:

Timing to open/close the supply valves		Instruction to open/close the supply valve
Flushing	Before execution	OPEN
	After execution	CLOSE
Cleaning or filling	Before execution	OPEN
	After execution	CLOSE
Head wash	Before execution	OPEN
	After execution	CLOSE
Before printing operation		OPEN
Before capping operation		CLOSE
When changing the supply cartridge during ink supply		OPEN/CLOSE
At the occurrence of an system error		CLOSE
At power-off		CLOSE

1.3.6 Monitoring of the Amount of Remaining Ink

■ Outline

- The amount of remaining cartridge ink is calculated in such a way that the amount of ink consumed for the following operations is calculated by subtraction of remaining ink.
  - • Number of ink shots by printing and flushing
  - • Amount of ink suction by cleaning and filling
- When the amount of remaining ink is updated, it is written into the ink IC chip.
- A cartridge error is issued according to the amount of remaining ink.

■ Calculation of the amount of consumed ink

- Ink discharging during printing and flushing
  - • The amount of ink consumed by ink discharging is calculated by counting the number of ink shots.
  - • This machine counts ink shots for each row of nozzles and performs calculation by taking account of dot sizes (small, middle and large).
- Ink suction during cleaning and filling

The table below shows the amount of ink consumed for various ink suction operations. (For the 4-color SS21 ink set)

Motion		Ink consumption through one supply path [ml]
SOFT cleaning		0.72
NORMAL cleaning		3.20
HARD cleaning		6.28
Maintenance Filling up		17.8 / 28.0 / 38.0
Initial Filling (No replacement)	Main suction	60
	Cobble filling	35

■ Updating of the amount of remaining ink

The amount of remaining ink will be updated and written onto the ink IC chip at the timing shown below.

No.	Timing for updating	Execution conditions
1	At pre-capping operation	◆Ink has been used for printing or flushing. ◆At capping chiefly after completion of printing.
2	At completion of cleaning and filling operation	◆Ink has been used for cleaning and filling. ◆The amount of ink remaining in the cartridge used for the suction will be updated.
3	When any of the following events has occurred during printing, cleaning or filling: ◆Cover OPEN ◆Lever UP ◆Media end	◆Updated by the amount of ink consumed before the occurrence of any of the events shown at left.
4	When any of the following errors has occurred during printing: ◆Cartridge near end ◆Cartridge ink end ◆Cartridge error	◆Updated just after occurrence of the error, not waiting for writing at the capping pre-operation. ◆Updated before replacing the cartridge during printing.

1.3.7 Use-up Cleaning

■ **As for Use-up cleaning**

- This function is available only for the 4-color ink set.
- This function is intended to use the remaining ink in the cartridge where “cartridge near end” or “cartridge ink end” occurs during cleaning with higher priority and prevent the ink of the normal cartridge from being consumed.
- When one cartridge is a normal one at the start of cleaning, ink is sucked from the cartridge with residual ink first and then switching to the normal cartridge takes place to continue cleaning.
- When the residual ink is used up (software counter), “INK REMAIN ZERO” error is displayed, disabling the cartridge.

Ink use-up cleaning control is only effective in NORMAL cleaning mode. It cannot be executed in any other cleaning mode or at initial filling.

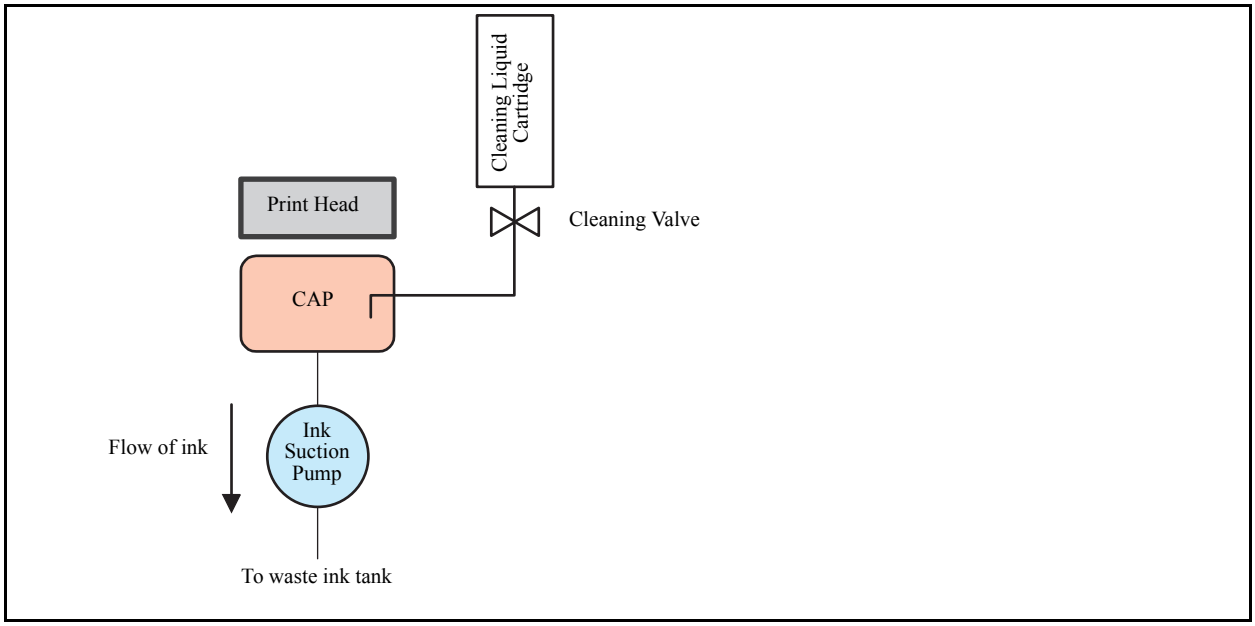
1.3.8 Ink Suction and Discharge Control

■ Outline of Control

1. The ink suction and discharge mechanism is driven by roller pumps (ink suction pumps).
2. The amount of ink discharged to the waste ink tank is counted by the firmware, and warnings are issued depending on the level. They are displayed in sequences involving ink suction and discharge, or locally.

■ System configuration

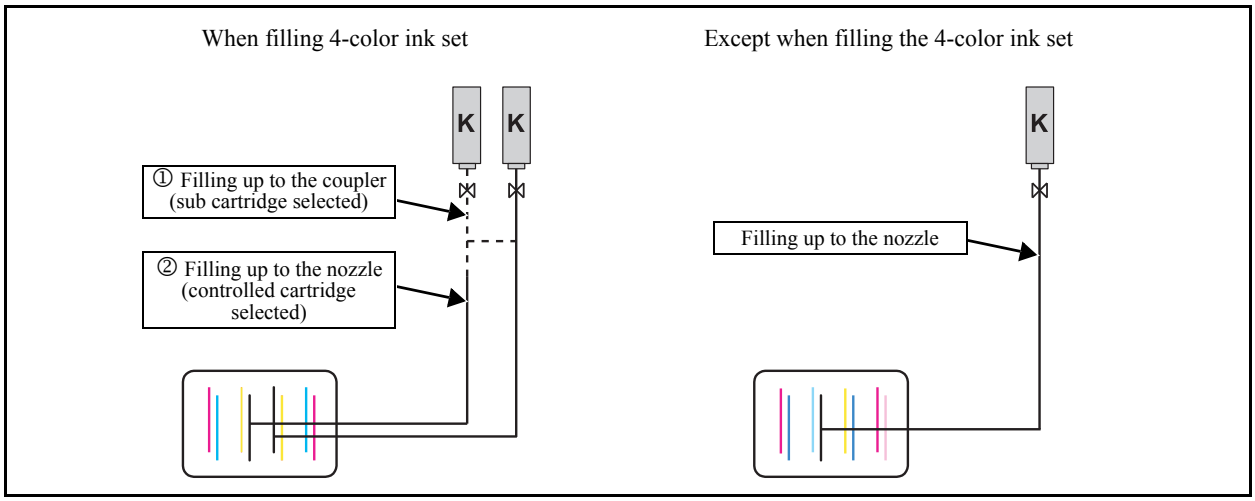
The system configuration of the ink suction and discharge mechanism is as shown below.



■ Outline flow

IMPORTANT

In initial filling for the 4-color ink set, to eject air completely from the ink paths, the suction is divided into 2 stages, (①) filling up to the coupler, and (②) filling up to the nozzle. Each uses the sub cartridge and control cartridge.



1.3.9 Initial Filling

■ Operation sequence for initial filling

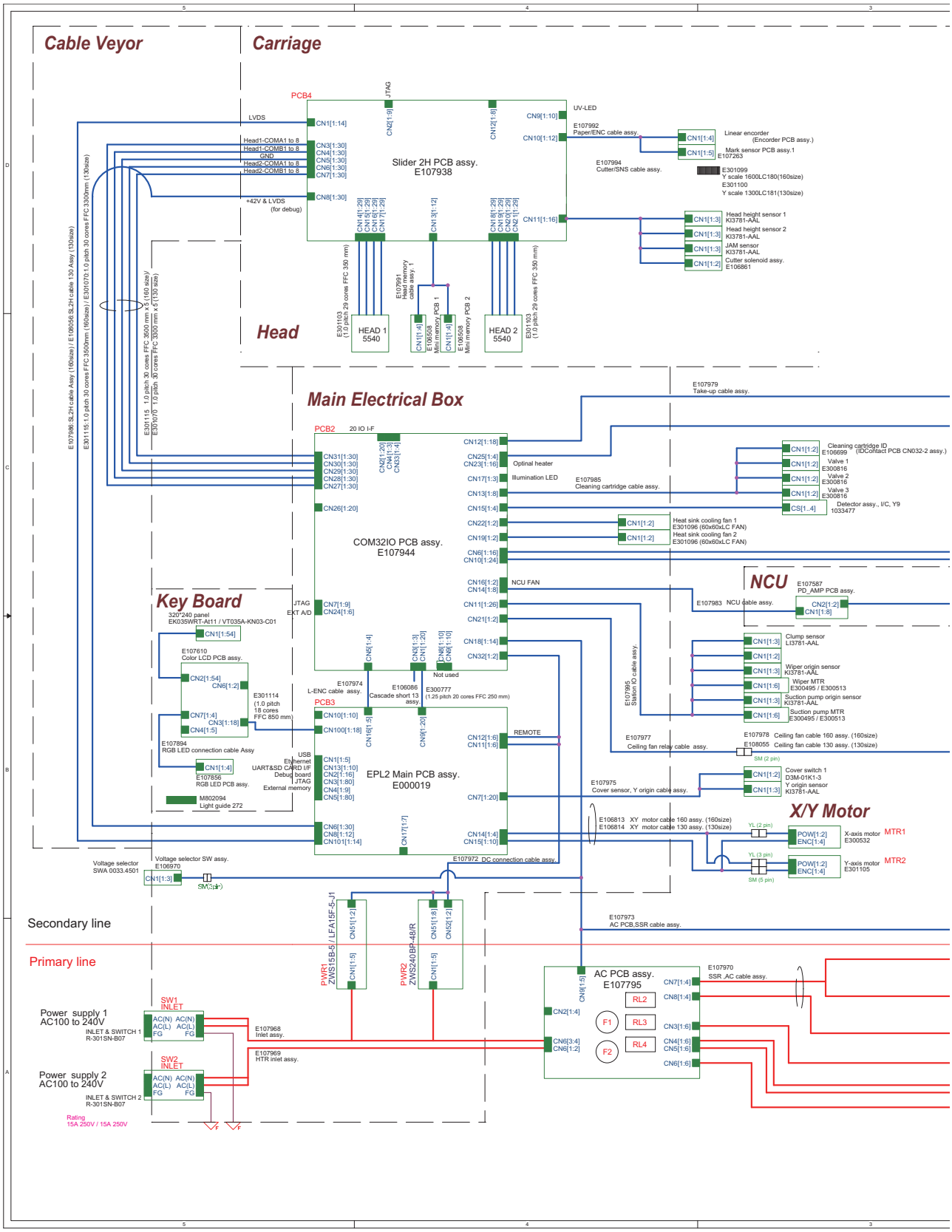
The sequence of initial ink filling is shown below:

No.	Item	Description
1	Selection of ink type (ink type)	Select a set value shown below. Setting value: SS21, Sb53, BS3
2	Selection of number of colors (ink set)	Select a set value shown below. Setting value: 4-Color (MMCCYYKK), 6-Color (MMBlBlYLmKLc), 8-Color (MOrCLkYLmKLc), 6-Color+W (MWCWYLmKLc)
3	Ink filling	Insert the ink cartridges into all the slots and start ink filling. When filling the 4-color ink set or M and Bl ink of the 6-color ink set: 1. Fill ink up to the coupler. Within the same supply system, open the carriage valves in the order of even columns → odd columns, and fill the ink up to the coupler. 2. Fill ink up to the damper (head) Except when filling the 4-color ink set: 1. Open all of the cartridge valves and fill the ink up to the damper (head). • Filling will not be executed if a warning about the ink cartridge is displayed. • When a waste ink tank warning occurs, the warning message is displayed. • If a cartridge warning is displayed after completion of filling ink up to the coupler and before completion of filling ink up to the damper (head), switching between the cartridges will take place and filling will be continued. (Only for filling the 4-color ink set) Filling will be discontinued if one supply system becomes unable to supply ink. 2. When the 6-color +w ink set is used, • Filling of the color inks is performed earlier, afterward filling of the W ink is performed.

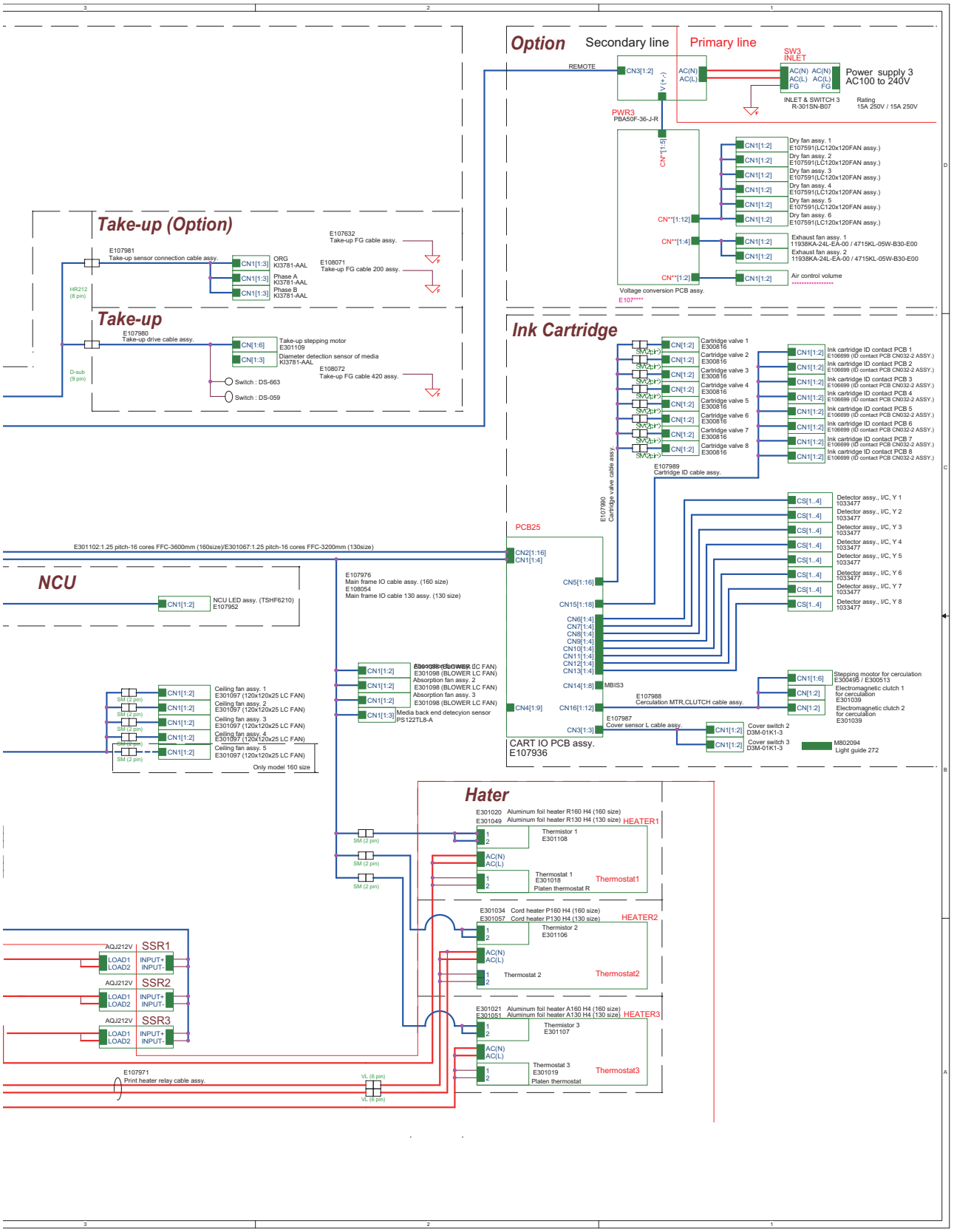
If filling any other than the 4-color ink set when this unit is installed, you have to change the coupler before initial filling.

Electrical Parts

2.1.1 Connection Diagram Inside the Main Body



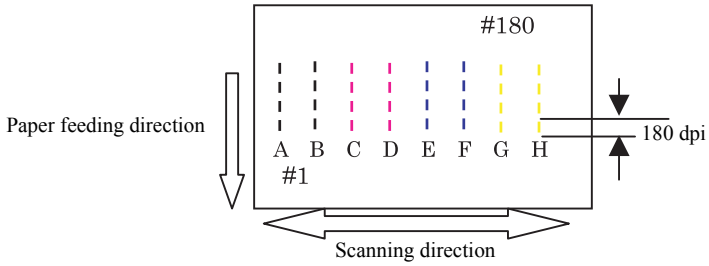
2.1.1 Connection Diagram Inside the Main Body



Electrical Parts

2.2.1 Operation Explanation

Nozzle Arrangement of Head (Rear View)

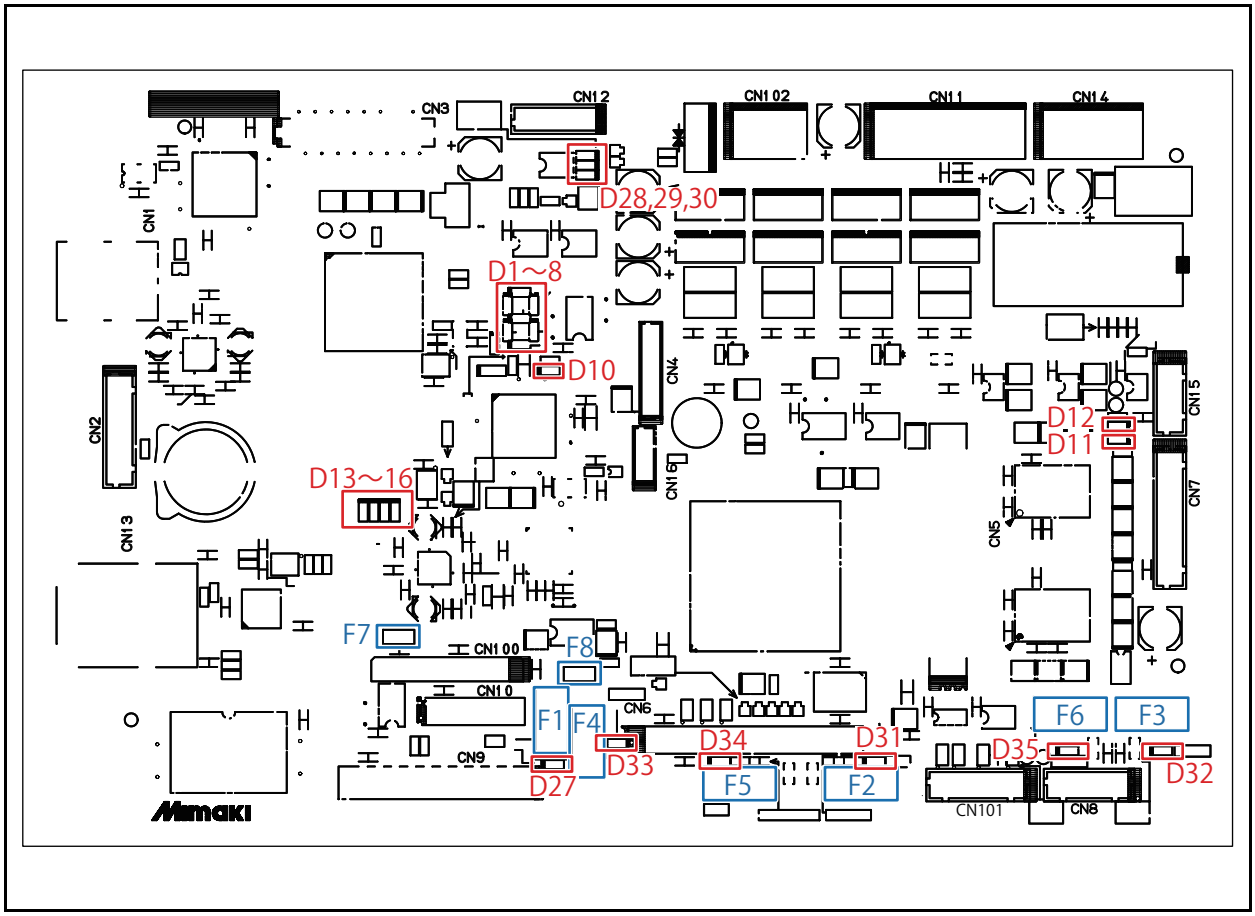


■ Outline

- The print head carriage of 300 series has two head with 180 nozzles (180 dpi) x 8 rows.
- Ink is ejected from the ink chamber by vibrating the piezoelectric elements of the heads.
  For this vibration waveform, the machine uses variable waveform which can permit 4-step expressions (L, M, S and none).
- The head1 is connected to the COM32 IO PCB assy. in the electrical box, and it is driven by a drive signal (COM waveform) applied to the piezo of one nozzle row for each of the eight rows of nozzles.
  The head2 is connected to the SL2H PCB assy.
  FPGA (HDC) is mounted on the COM32 IO PCB assy. and SL2H PCB. The FPGA (HDC) applies the COM waveform in synchronization with the scale interval of the linear encoder scale and simultaneously sends the nozzle data to the head.
  In addition, the COM waveform is automatically corrected based on the registered head ID. It is also corrected based on the ID registered in the head memory, other information, and the ambient air temperature detected. (In case the head ID is not registered correctly, no ink may be ejected.)
- The main PCB assy has FPGA (PDC), which takes charge of image processing and controls the SDRAM picture memory (PRAM).
  PRAM is mounted on PRAM PCB assy and the PRAM PCB assy has a capacity of 256 MB. Of the data output from the host PC, the command part is analyzed by the CPU and the image part is transferred to the memory. The PRAM is a ring memory and when data for one scanning session has been accumulated, the heads start scanning. One scanning session creates images only in 360 dpi (4-colors) in the X direction. Therefore, the machine completes the image in the targeted resolution while feeding the media by a required distance.
- This model is equipped with many I/Os such as step motors and sensors. If all of them were connected directly to the main PCB assy, routing the wiring and replacing the PCB would be difficult. To avoid this, COM32 IO PCB assy., SL2H assy. and CART IO PCB assy. are connected with the main PCB assy. in series, reducing the number of signals exchanged. The signals are processed by the FPGA (PDC) mounted on the main PCB assy.

Electrical Parts

2.3.1 EPL2 Main PCB Assy



■ Outline

Board name: EPL2 Main PCB Assy.(E000019)

Equipped with a CPU and supports data transmission from a computer via USB and a mail function using Ethernet. Also controls the X and Y motors, processes image data, and controls the IO board.

■ List of connectors

No.	Pin	Type	Intended use	AC/DC	Remarks
CN1	4	UBB-4R-D14T	USB	DC	
CN2	16	B16B-PHDSS	Power supply, UART, SD memory control	DC	
CN3	80	80R-JMDSS	For debug	DC	
CN4	9	B9B-ZR	For debug	DC	
CN5	80	FX6-80S-0.8SV	For extended memory PCB	DC	Not used
CN6	30	30MFZ-BT	Slider IF	DC	
CN7	20	B20B-PHDSS	Y origin sensor, cover switch, etc.	DC	
CN8	12	B12B-PHDSS	Slider IF	DC	Not used
CN9	20	5597-20CPB7F	IO PCB IF	DC	
CN10	10	10MFZ-BT	LCD keyboard IF	DC	Not used
CN11	6	B6P-VH	Input power supply	DC	
CN12	6	B6B-PH-K-S	Power supply control	DC	
CN13	12	HFJ11-2450	Ethernet	DC	
CN14	4	B4P-VH	Motor drive	DC	
CN15	10	B10B-PHDSS	Motor encoder	DC	
CN16	5	B5B-ZR	For debug	DC	
CN100	18	52030-1829	Color LCD IF	DC	
CN101	14	B14B-PHDSS	Slider IF	DC	

2.3.1 EPL2 Main PCB Assy

No.	Pin	Type	Intended use	AC/DC	Remarks
CN102	3	B3P-VH	For connection to regenerative voltage canceling PCB	DC	Not used

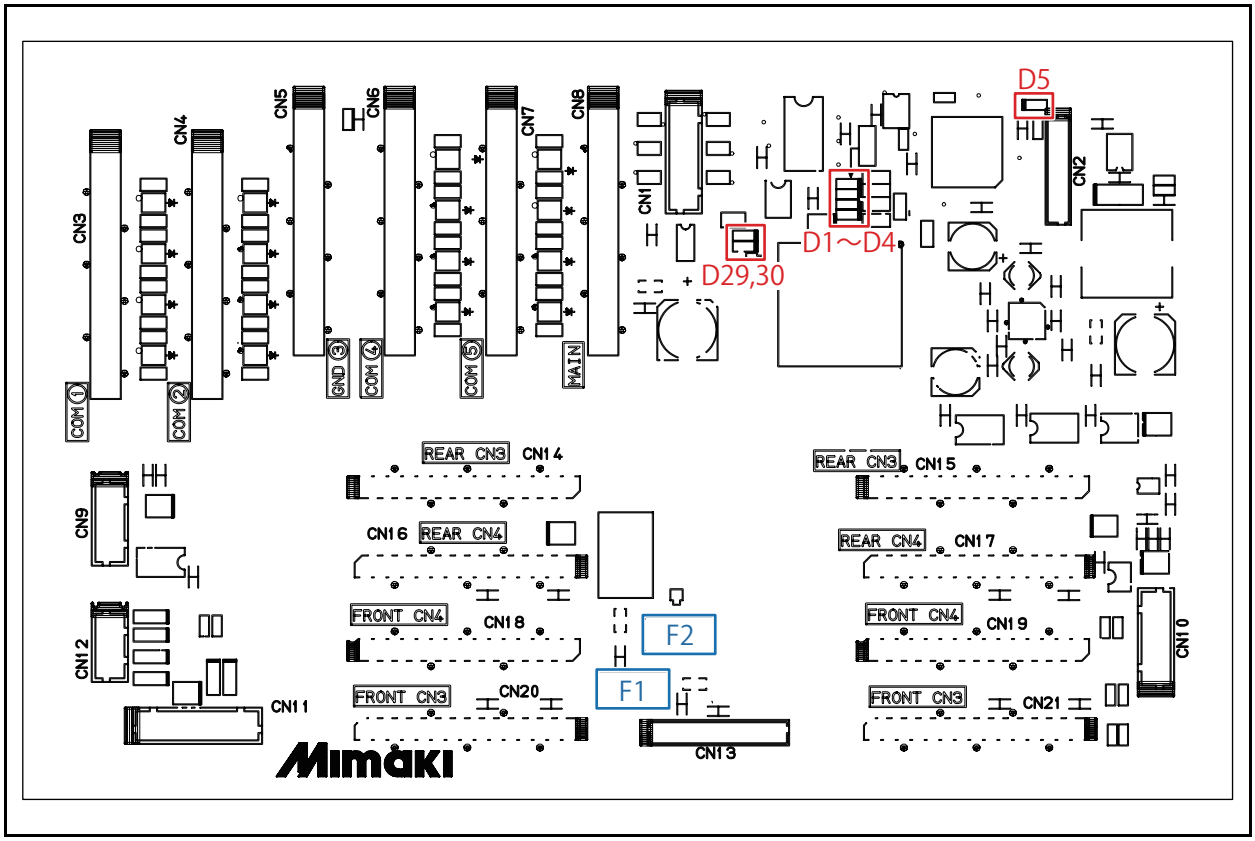
■ **Fuse rating**

No	Type	Intended use	Rate	Check LED/Remarks
F1	01543.15	IO5V	3.15A	D27
F2	015406.3	Slider 1	6.3A	D31
F3	015406.3	Slider 1	6.3A	D32
F4	015406.3	Slider 1	6.3A	D33
F5	015406.3	Slider 1	6.3A	D34
F6	015406.3	Slider 1	6.3A	D35
F7	nanoSMDC016F	Color LCD	0.45A	PTC fuse
F8	nanoSMDC016F	For character	0.45A	PTC fuse

■ **LED**

No	Type	Intended use	Remarks
D1 - D8	SML-D12V8W / SML-310VT	CPU status	
D10	SML-D12V8W / SML-310VT	CPU writing	
D11	SML-D12V8W / SML-310VT	Y origin sensor	
D12	SML-D12V8W / SML-310VT	Spear sensor	
D13 - D16	SML-D12V8W / SML-310VT	FPGA debug	
D27	SML-D12V8W / SML-310VT	IO PCB power supply(5V) check	+IO5V
D28	SML-D12V8W / SML-310VT	+5V power supply input + F188	+5VB
D29		+42V power supply input 2 check	+V2
D30	SML-D12V8W / SML-310VT	+42V power supply input 1 check	+V1
D31	SML-D12V8W / SML-310VT	Slider power supply 1 check	+SLDPOW1_F
D32	SML-D12V8W / SML-310VT	Slider power supply 2 check	+SLDPOW1_C
D33	SML-D12V8W / SML-310VT	IO PCB power supply(42V) check	+IO POW
D34	SML-D12V8W / SML-310VT	Slider power supply 1 check	+SLDPOW2_F
D35	SML-D12V8W / SML-310VT	Slider power supply 2 check	+SLDPOW2_C

2.3.2 SL2H PCB Assy.



■ Outline

Board name: SL2H PCB Assy.(E107938)

Located on the top of the print part slider.
Controlling the Head and IO of the carriage.

■ List of connectors

No	Pin	Type	Intended use	AC/DC	Remarks
CN1	14	B14B-PHDSS	Slider IF	DC	
CN2	9	B9B-ZR	For debug	DC	
CN3	30	620B-100-136-001+	COM WF1	DC	
CN4	30	620B-100-136-001+	COM WF2	DC	
CN5	30	620B-100-136-001+	GND	DC	
CN6	30	620B-100-136-001+	COM WF3	DC	
CN7	30	620B-100-136-001+	COM WF4	DC	
CN8	30	620B-100-136-001+	Slider IF	DC	
CN9	10	B10B-PHDSS	AUX.	DC	Not used
CN10	12	B12B-PHDSS	Paper width sensor, LED pointer, Linear encoder input	DC	
CN11	16	B16B-PHDSS	HEAD height sensor, JAM sensor, Cutter	DC	
CN12	8	B8B-PHDSS	AUX.	DC	Not used
CN13	12	B12B-ZR	HEAD memory PCB	DC	
CN14	29	29FMN-BTL-A	HEAD1(RearCN3)	DC	
CN15	29	29FMN-BTL-A	HEAD2(RearCN3)	DC	
CN16	29	29FMN-BTL-A	HEAD1(RearCN4)	DC	
CN17	29	29FMN-BTL-A	HEAD2(RearCN4)	DC	
CN18	29	29FMN-BTL-A	HEAD1(FrontCN4)	DC	

2.3.2 SL2H PCB Assy.

No	Pin	Type	Intended use	AC/DC	Remarks
CN19	29	29FMN-BTL-A	HEAD2(FrontCN4)	DC	
CN20	29	29FMN-BTL-A	HEAD1(FrontCN3)	DC	
CN21	29	29FMN-BTL-A	HEAD2(FrontCN3)	DC	

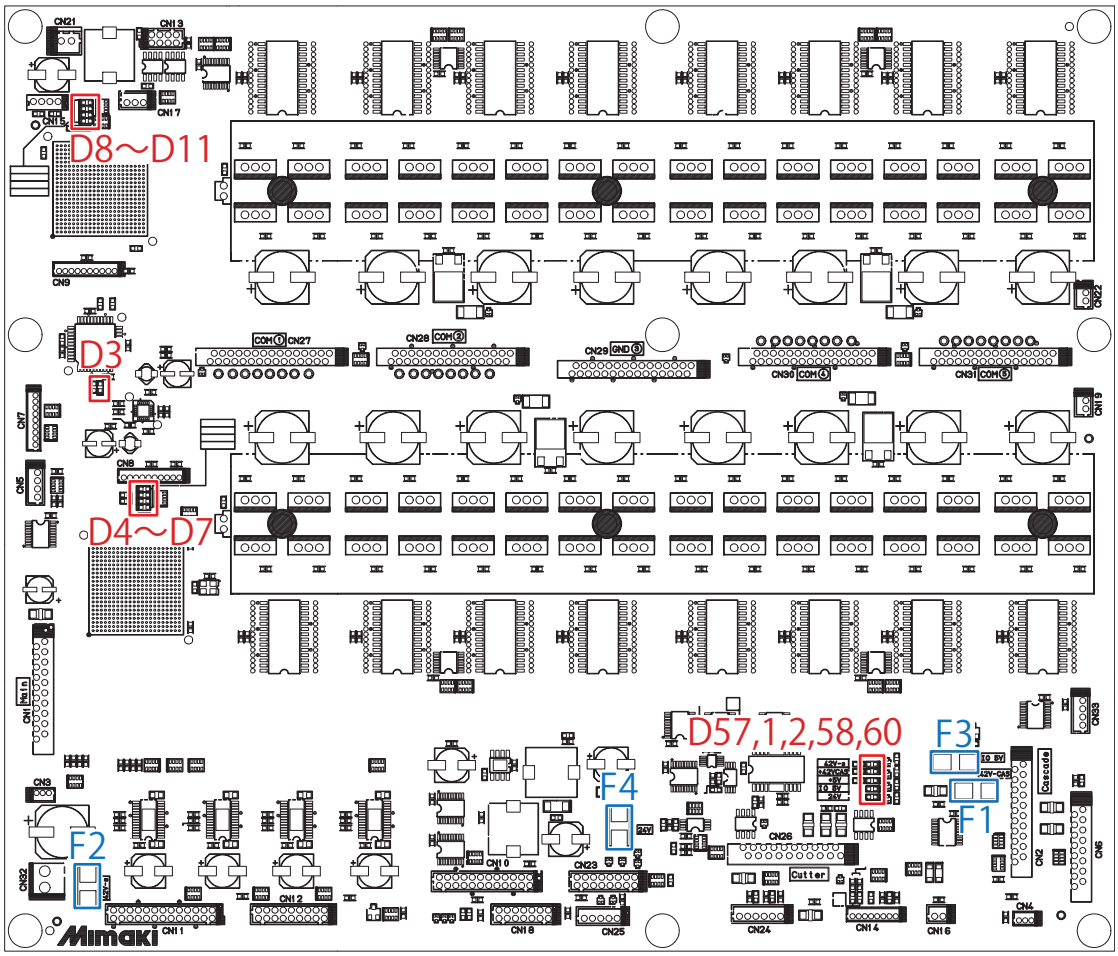
■ Fuse rating

No	Type	Intended use	Rate	Check LED/Remarks
F1	01541.25	For head 3.3V	1.25A	
F2	0154.35	For head 42V	0.375A	D30

■ LED

No	Type	Intended use	Remarks
D1?D4	SML-310VT	FPGA debug	
D5	SML-310VT	Finished writing CPLD data display	
D29	SML-310VT	+5V check	+5V
D30	SML-310VT	For head 42V check	+42VF

2.3.3 COM32 IO PCB Assy.



■ Outline

Board name: COM32 IO PCB Assy. (E108075)

This controls wave form of the head and IO (e.g. the station, except cartridge).

■ List of connectors

No	Pin	Type	Intended use	AC/DC	Remarks
CN1	20	5597-20CPB7F	IO PCB IF (connect to Main PCB)	DC	
CN2	20	5597-20CPB7F	IO PCB IF (connect to lower PCB)	DC	Not used
CN3	3	B3B-ZR	Cover senor (jumper)	DC	E106086 connect
CN4	3	B3B-ZR	Cover sensor	DC	Not used
CN5	4	B4P-PH-K-S	Encoder input	DC	
CN6	16	5597-16CPB7F	CART IO PCB	DC	
CN7	9	B9B-ZR	For debug	DC	
CN8	10	B10B-ZR	For debug	DC	
CN9	10	B10B-ZR	For debug	DC	
CN10	24	B24B-PHDSS	CART IO sub-power supply, absorption FAN, media sensor, heater thermistor	DC	
CN11	26	B26B-PHDSS	Clamp sensor, wiper origin, pump origin, wiper motor, suction pump	DC	
CN12	18	B18B-PHDSS	Take-up motor, tension bar control	DC	
CN13	8	B8B-PHDSS	Washing ink IC, switching valve	DC	

2.3.3 COM32 IO PCB Assy.

No	Pin	Type	Intended use	AC/DC	Remarks
CN14	8	B8B-ZR	NCU control	DC	
CN15	4	00-8283-0412-00-000	Washing cartridge sensor, near-end	DC	
CN16	2	B2B-PH-K-S	AUX.(Fan)	DC	Not used
CN17	3	B3B-PH-K-S	AUX.(Light)	DC	Not used
CN18	14	B14B-PHDSS	AC PCB control	DC	
CN19	2	B2B-PH-K-S	Heat sink cooling fan1	DC	
CN20			Not installed		
CN21	2	B2B-XH-2	Ceiling fan	DC	
CN22	2	B2B-PH-K-S	Heat sink cooling fan2	DC	
CN23	16	B16B-PHDSS	AUX.(Option heater)	DC	Not used
CN24	6	B6B-PH-K-S	AUX.(AD input)	DC	Not used
CN25	5	B5B-PH-K-S	Option fan control	DC	Not used
CN26	20	5597-20CPB7F	Cutter head control	DC	Not used
CN27	30	30FMZ-BT	Head1 COM A	DC	
CN28	30	30FMZ-BT	Head1 COM B	DC	
CN29	30	30FMZ-BT	GND	DC	
CN30	30	30FMZ-BT	Head2 COM A	DC	
CN31	30	30FMZ-BT	Head2 COM B	DC	
CN32	2	B2P-VH	Power supply input (42V)	DC	
CN33	3	B3B-ZR	Encoder output	DC	Not used

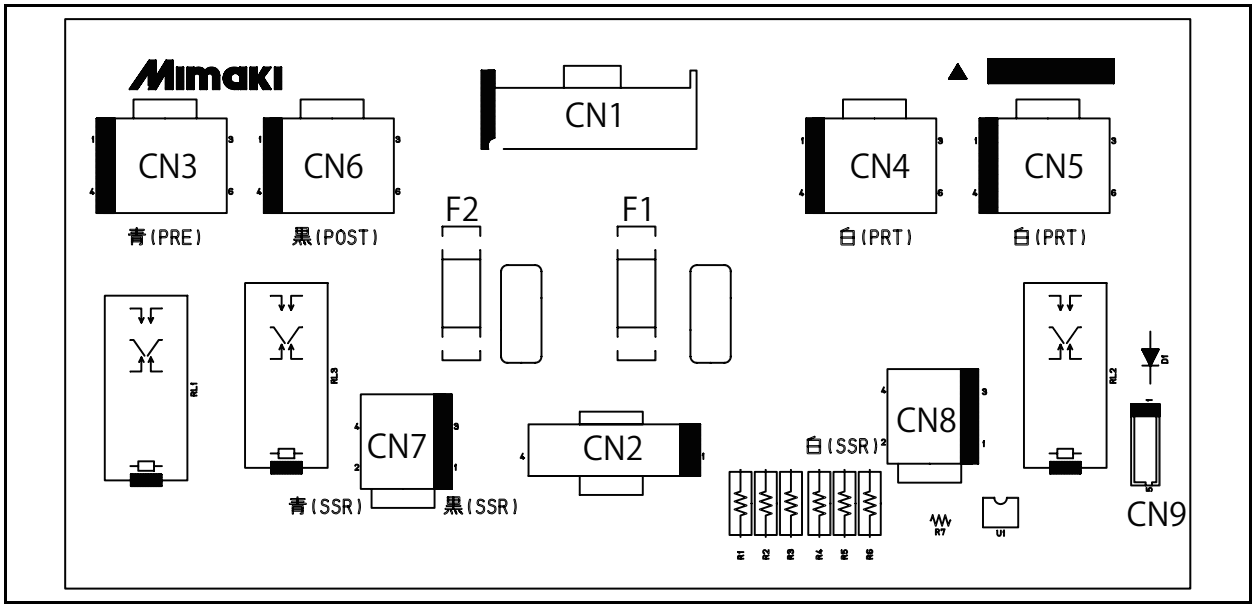
■ Fuse rating

No	Type	Intended use	Rate	Check LED/Remarks
F1	1543.15	Cascade PCB 42V	3.15A	D1
F2	154008.	+42V power supply input	8A	D57
F3	1541.25	+IO5V	1.25A	D58
F4	1543.15	+24V	3.15A	D60

■ LED

No	Type	Intended use	Remarks
D1	SML-310VT	Cascade PCB 42V check	+42V-CAS
D2	SML-310VT	+5V power supply input check	+5V
D3	SML-310VT	Finished writing CPLD data display	
D4?D7	SML-310VT	FPGA1 debug	
D8?D11	SML-310VT	FPGA2debug	
D57	SML-310VT	+42V power supply check	+42V-s
D58	SML-310VT	+IO power supply(5V) check	+IO 5V
D60	SML-310VT	+24V check	+24V

2.3.4 AC PCB Assy



■ Outline

Board name: AC PCB Assy.(E107795)

This PCB control the heaters. 100V/200V is switched with this PCB.

■ Input and output of the power source

Input	AC100-120V, AC220-240, 50/60Hz
Output	+5V

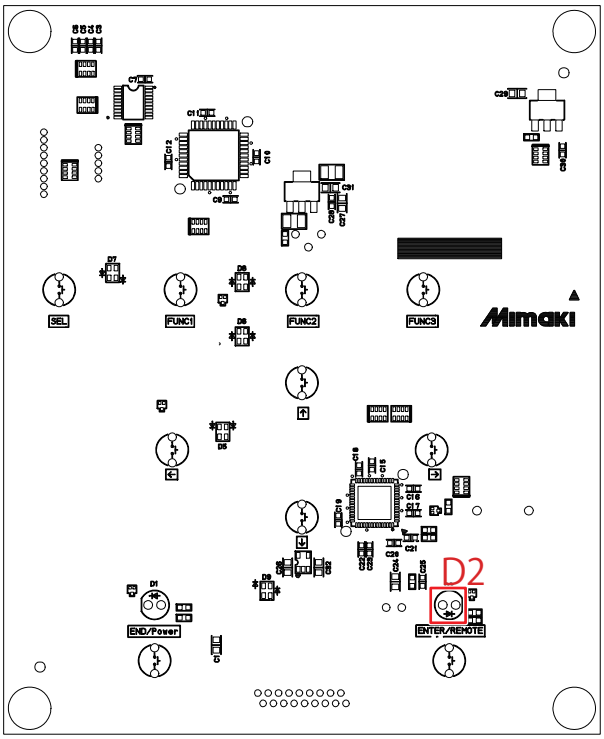
■ Connector specification

No.	Pin	Type	Intended use	AC/DC	Remarks
CN1	4	DF22-4P-7.92DSA(05)	AC input	AC	
CN2	4	B04P-VL-VN-1.8	Jumper (For 150/300 switching)	AC	
CN3	6	B06P-VL	Pre-Heater	AC	
CN4	6	B06P-VL	Print-Heater	AC	
CN5	6	B06P-VL	Print-Heater	AC	
CN6	4	B04P-VL	After-Heater	AC	
CN7	4	B04P-VL	SSR(Pre, After)	AC	
CN8	4	B04P-VL	SSR(Print)	AC	
CN9	5	B5B-PH-K-S(LF)(SN)	Voltage change SW input Zero cross point output	DC	

■ Fuse rating

F1	50T-125H	ϕ5x20 mm	For 12.5A, AC protect
F3	50T-125H	ϕ5x20 mm	For 12.5A, AC protect

2.3.5 Color LCD PCB Assy.



■ Outline

Board name: Color LCD PCB Assy

Has LCD with 2 lines of 20 characters and key switches. It is connected to the station PCB assy with a keyboard cable.

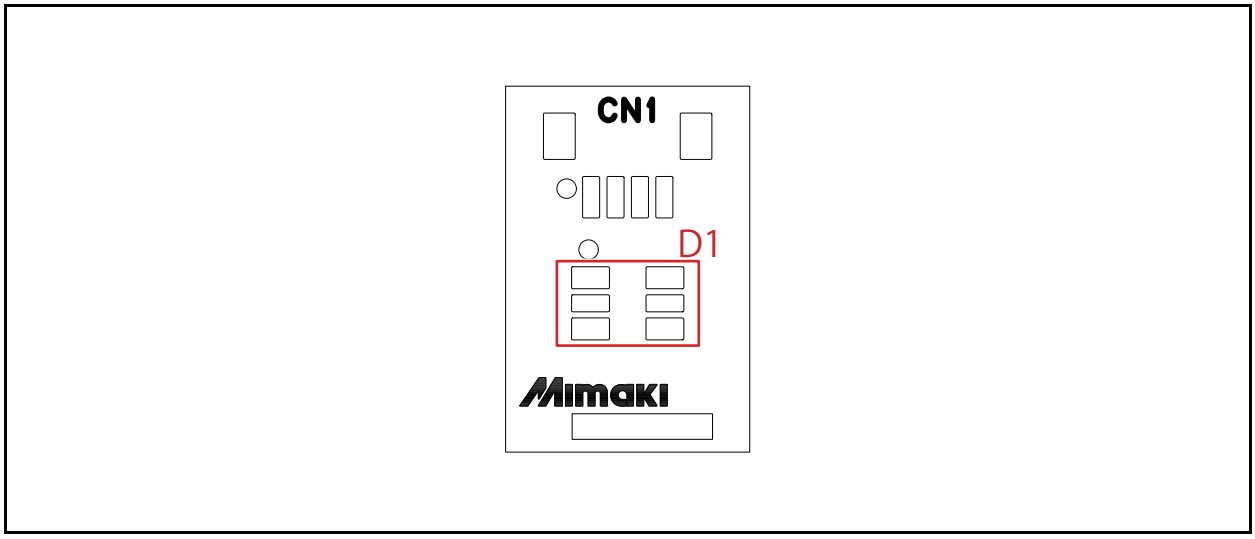
■ List of connectors

CN No	Pin	Type	Intended use	AC/DC	Remarks
CN1		B9B-ZR	For debug	DC	
CN2		51296-5494	Color LCD	DC	
CN3		52807-1810	Color LCD IF (connect to Main PCB)	DC	
CN4		B5B-ZR	For debug	DC	
CN5			Not installed		
CN6		B2B-PH-SM4-TB	Cover sensor	DC	
CN7		BM04B-SRSS-TB	RGB LED PCB	DC	

■ List of connectors

No.	Type	Intended use	Remarks
D2	SLA580BC4T	ENTER key LED	Blue

2.3.6 RGB LED PCB Assy



■ Outline

Board name: RGB LED PCB Assy

Has LED which display the status under the keyboard.

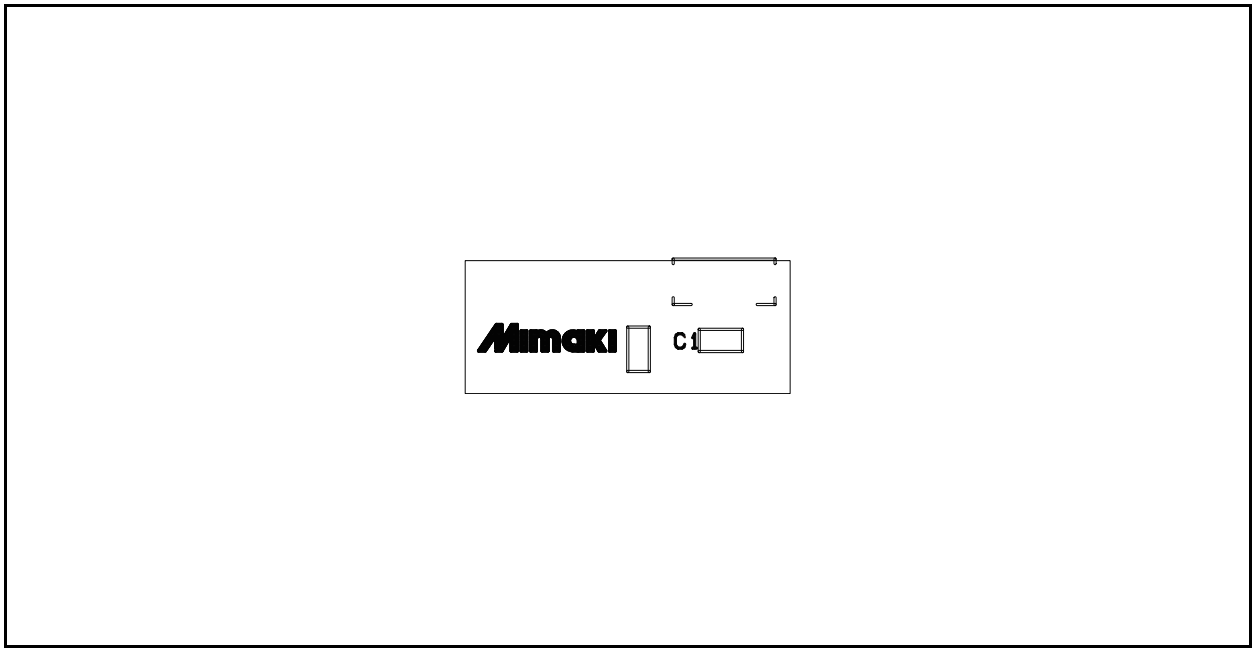
■ List of connectors

CN No	Pin	Type	Intended use	AC/DC	Remarks
CN1	4	BM04B-SRSS-TB	Color LCD PCB	DC	

■ LED

No.	Type	Intended use	Remarks
D1	SMLV56RGB1W	Display status of printer	

2.3.7 Encoder PCB Assy



■ Outline

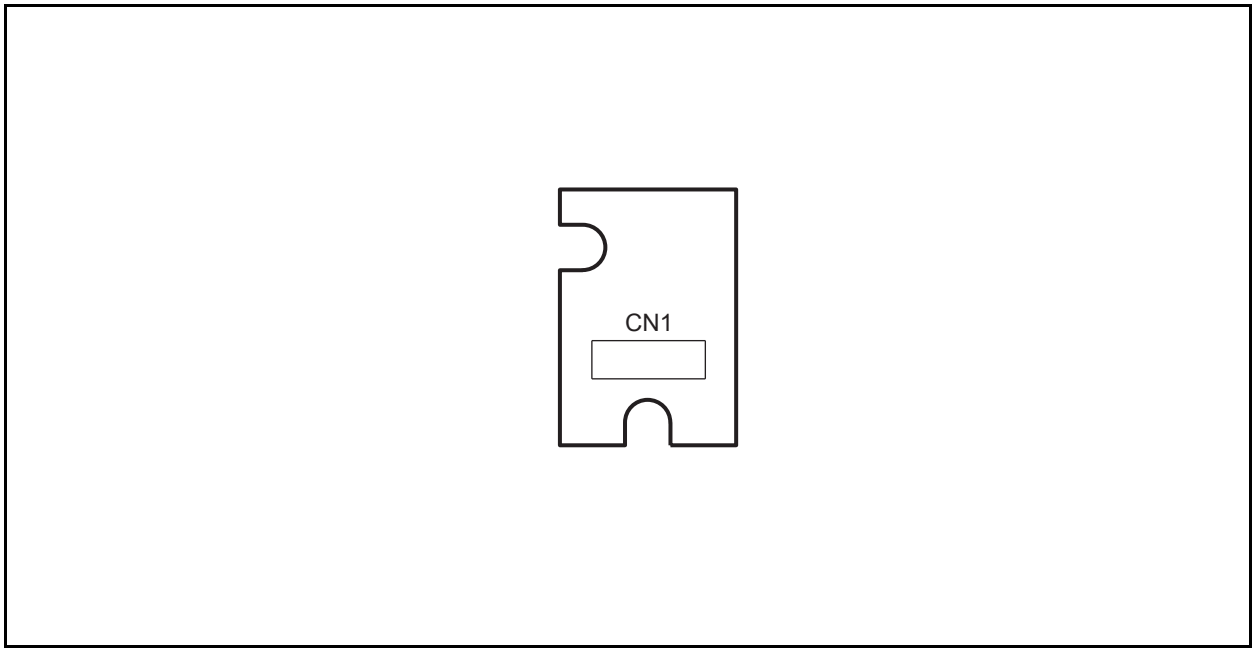
Board name: Encoder PCB Assy.(E106614)

One is used on the back side of the slider for the linear scale.

■ List of connectors

CN No	Pin	Type	Intended use	AC/DC	Remarks
CN1	4	B4B-ZR-SM4-TF	SL2H PCB	DC	

2.3.8 Mini Memory PCB Assy



■ **Outline**

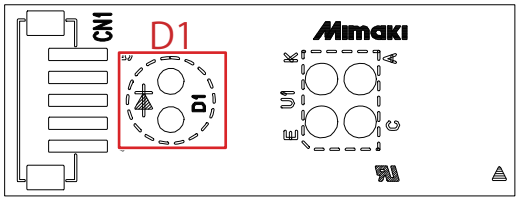
Board name: Mini Memory PCB Assy.(E106508)

Stores Head ID information. (Head memory)

■ **List of connectors**

CN No	Pin	Type	Intended use	AC/DC	Remarks
CN1	6	B6B-ZR-SM4-TF	Head ID stored	DC	

2.3.9 Mark Sensor PCB



■ Outline

Board name: Mark Sensor PCB Assy.(E107263)

Paper width sensor and LED pointer are mounted.

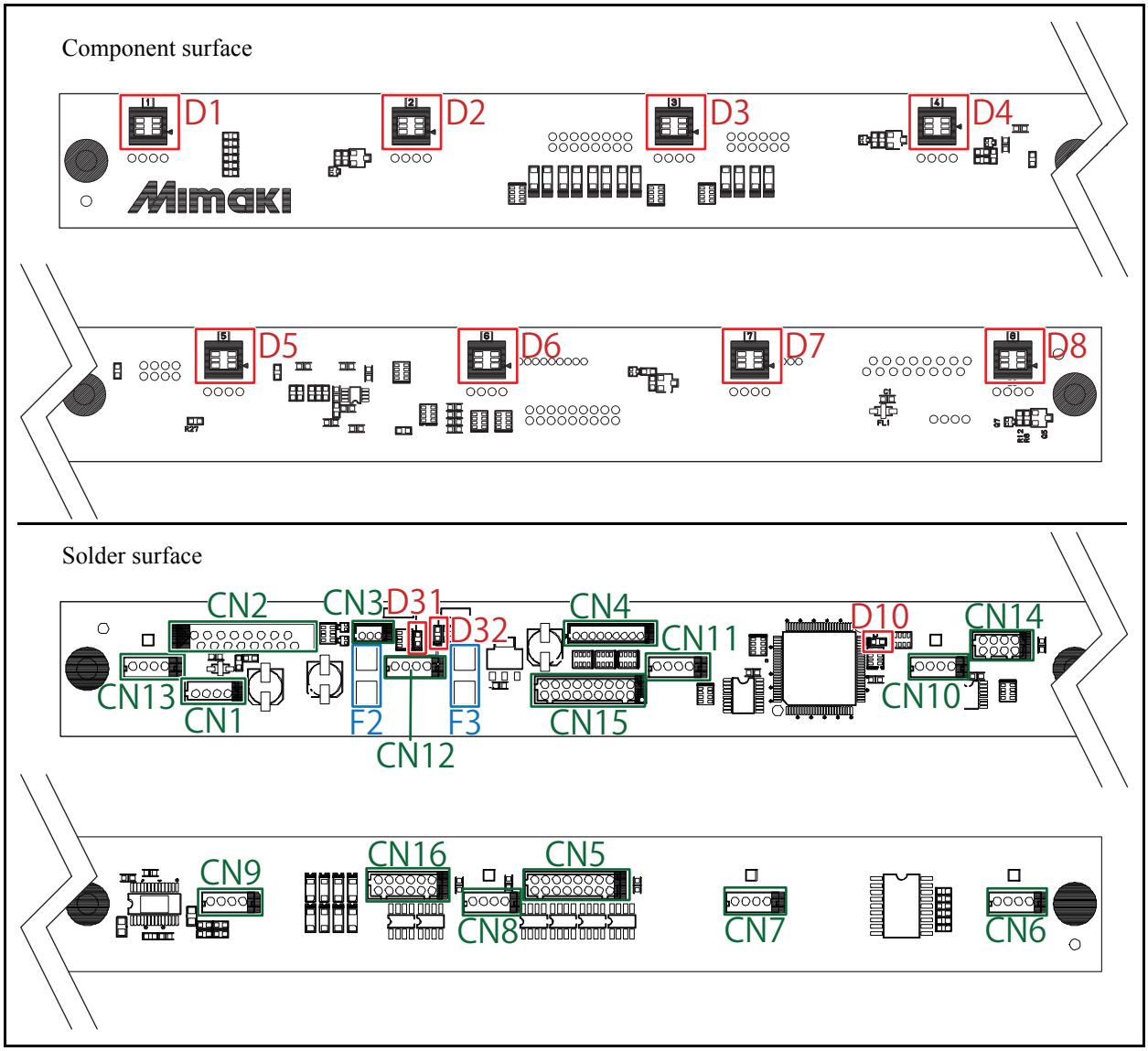
■ List of connectors

CN No	Pin	Type	Intended use	AC/DC	Remarks
CN1	5	B5B-ZR-SM4-TF	Paper width sensor, SL2H PCB	DC	

■ LED

No.	Type	Intended use	Remarks
D1	SLI-580UT	LED pointer	

2.3.10 CART IO PCB Assy.



■ Outline

Board name: CART IO PCB Assy.(E107936)

This is mounted at front of the cartridge unit.
This control the Ink cartridge solenoid, circulation motor and electro-magnetic clutch, and display LED corresponding each ink slot.

■ List of connectors

No.	Pin	Type	Intended use	AC/DC	Remarks
CN1	4	B4B-PH-K-S	For Power supply	DC	
CN2	16	5597-16CPB7F	IO PCB IF (connect to COM32 IO PCB)	DC	
CN3	3	B3B-ZR	Cover sensor	DC	
CN4	9	B9B-ZR	For debug	DC	
CN5	16	B16B-PHDSS	Ink cartridge valve control	DC	
CN6	4	00-8283-0412-00-000	Cartridge near-end sensor	DC	Cartridge 1
CN7	4	00-8283-0412-00-000	Cartridge near-end sensor	DC	Cartridge 2
CN8	4	00-8283-0412-00-000	Cartridge near-end sensor	DC	Cartridge 3
CN9	4	00-8283-0412-00-000	Cartridge near-end sensor	DC	Cartridge 4
CN10	4	00-8283-0412-00-000	Cartridge near-end sensor	DC	Cartridge 5

2.3.10 CART IO PCB Assy.

No.	Pin	Type	Intended use	AC/DC	Remarks
CN11	4	00-8283-0412-00-000	Cartridge near-end sensor	DC	Cartridge 6
CN12	4	00-8283-0412-00-000	Cartridge near-end sensor	DC	Cartridge 7
CN13	4	00-8283-0412-00-000	Cartridge near-end sensor	DC	Cartridge 8
CN14	8	B8B-PHDSS	For Option	DC	
CN15	18	B18B-PHDSS	Ink IC control	DC	
CN16	12	B12B-PHDSS	Circulation motor and electro-magnetic clutches control	DC	

■ **Fuse rating**

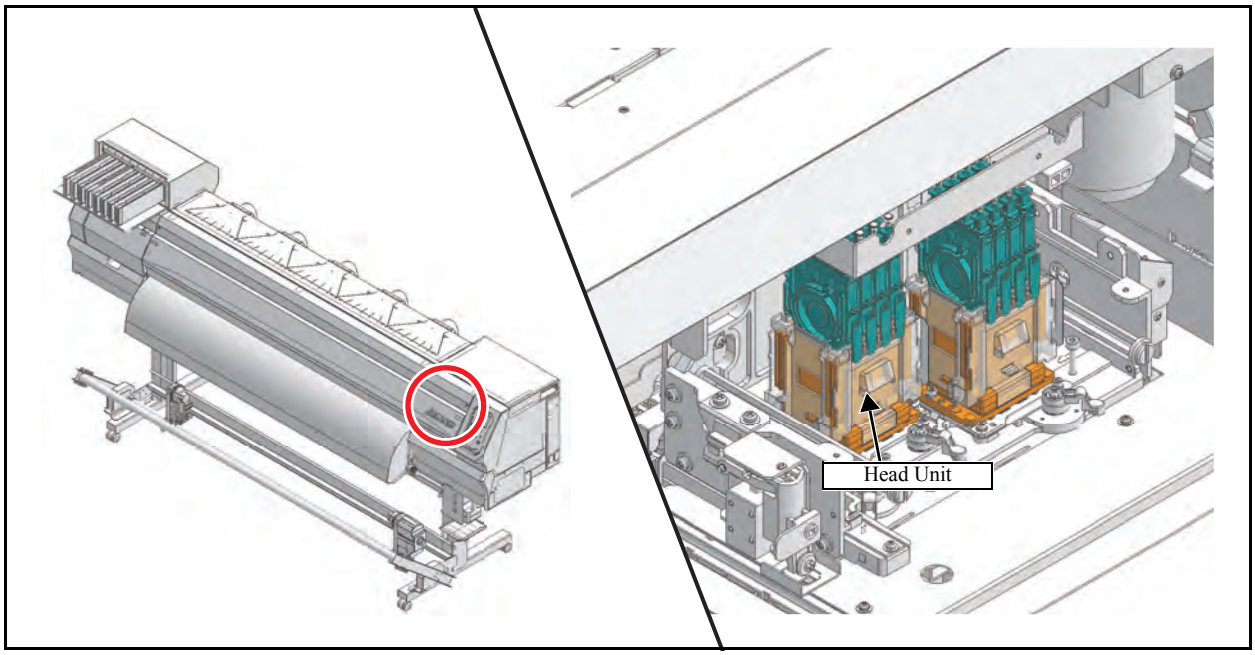
No.	Type	Intended use	Rate	Check LED / Remarks
F2	154002.	IO Output 1	2A	D31
F3	154002.	IO Output 2	2A	D32

■ **LED**

No.	Type	Intended use	Remarks
D1?D8	SMLV56RGB1W	Ink cartridge status display	
D10	SML-310VT	Finished writing CPLD data display	
D31	SML-310VT	IO output1 check	
D32	SML-310VT	IO output2 check	

Workflow

3.1.1 Replacement of the Head Unit



■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Power supply	1. ☐	Turn the main power off	Turn the main power off.	
Covers	2. ☐	Removal of covers, etc.	Remove the front cover L, M and carriage cover.	6.1.1
Printing Head Unit Assy	3. ☐	Removal of the head.	Remove the damper before removing the disused head.	6.2.2
	4. ☐	Mounting of the head.	Mount the new head. * In case of solvent ink machine: mount the new head after cleaning inside of the head unit with MS cleaning liquid (SPC-0294).	
	5. ☐	Check of the head ID	Check the head ID and enter it manually when necessary. (Normally, manual entry is not necessary because writing is carried out automatically.)	4.2.10
Power supply	6. ☐	Turn the main power on	Turn the main power on.	
Ink	7. ☐	Ink charge into the head	Fill the head with ink with [Maintenance] [InkFilling] [Hard]. Carry out test plotting, and then check for any nozzle outs or flight deflection of ink droplets.	
Check	8. ☐	Head slant adjustment	Mechanically adjust the replaced head.	4.2.1
	9. ☐	Correction of dot position (Press the key [#ADJUST])	Adjust dot locations.	4.2.3
	10. ☐	Correction of dot position (Press the key [MAINTENANCE])	Make adjustment by (pressing the key) [DROP.POScorrect] of “user mode”.	
Covers	11. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

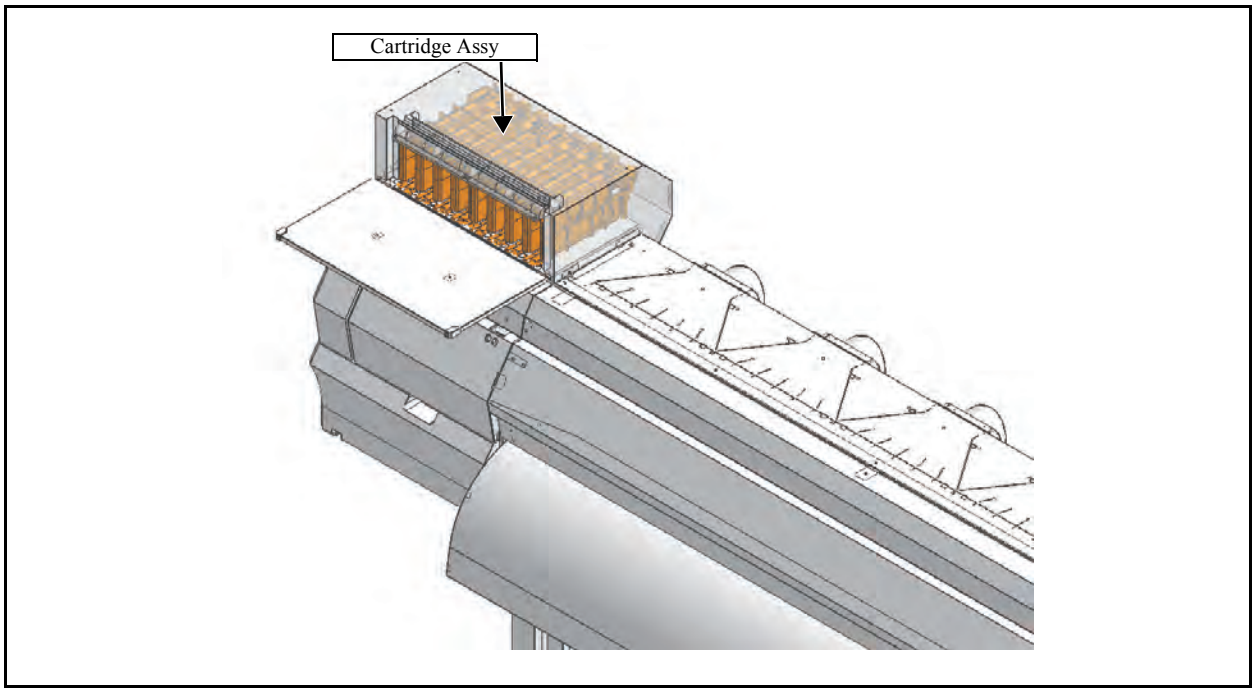
Caution

Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

3.1.2 Replacement of the Cartridge Assy



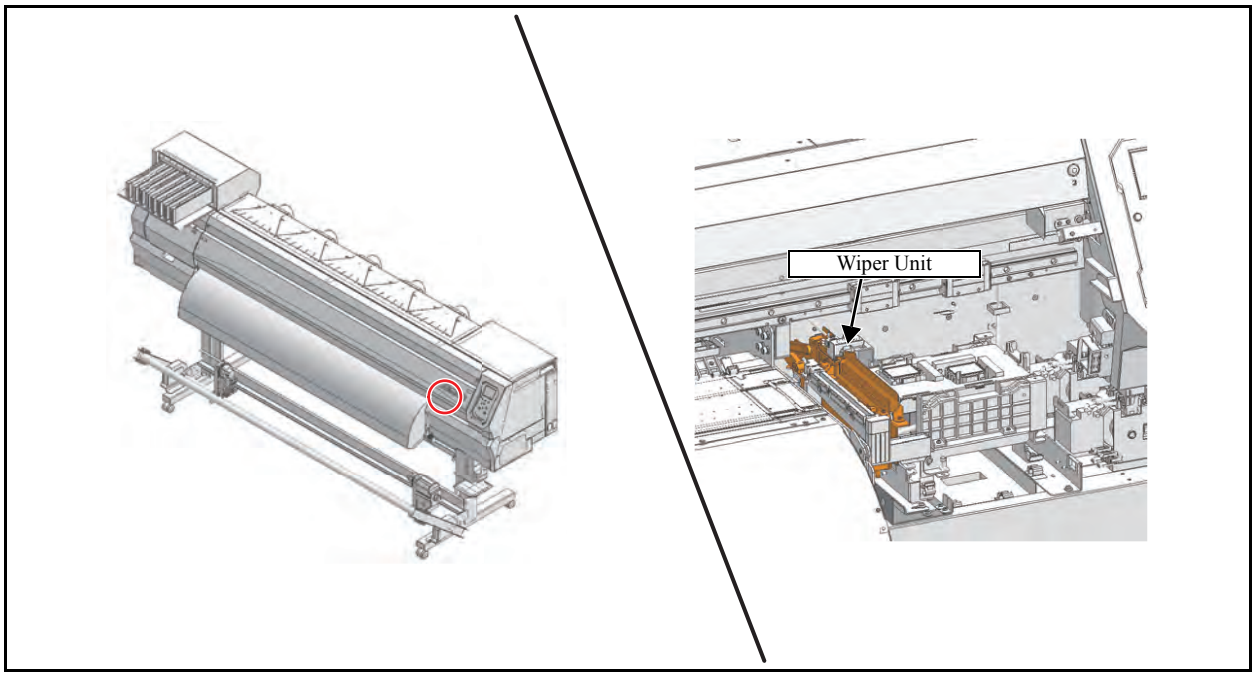
■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Cartridge cover and Cartridge rear cover.	6.1.1
Ink	2. ☐	Ink discharge	Discharge ink by executing [#ADJUST] – [HEAD WASH].	4.2.8
Cartridge Assy	3. ☐	Removal of the joint.	Remove the joint from corresponding cartridge. Take care not to spill ink.	
	4. ☐	Removal of the cartridge.	Disconnect the cables of corresponding cartridges from the connector to remove the cartridges.	
	5. ☐	Mounting of the cartridge.	Mount the cartridge.	
	6. ☐	Mounting of the joint.	Mount the joint which has been removed.	
Check	7. ☐	Check on the sensors	Check whether the Detector Assy. I/C, Y and ID Contact PCB CN032 Assy. of corresponding cartridges function normally, by conducting ink cartridge test. It is preferable to conduct a check by actually using cartridges.	5.1.2
Ink	8. ☐	Ink filling	Fill up the ink channels with ink. Check for any nozzle outs by conducting a test plotting.	
Covers	9. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

Caution

Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

3.1.3 Replacement of the Wiper Unit



■ List of replacement procedures

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Front cover L, M.	6.1.1
Wiper Unit	2. ☐	Removal of the wiper unit.	Remove the wiper unit.	6.3.6
	3. ☐	Mounting of the wiper unit	Mount the wiper unit. Check whether the wiper moves smoothly while the clearance between the motor pedestal and the wiper drive link is set at 0.5 mm. ◆ For replacment : SPA-0134 Wiper kit 33S	6.3.6 4.3.8
	4. ☐	Adjustment of wiper height	Make adjustment so that, while head height is set low, wiper units are kept parallel and wiper is in contact with the tip of the nozzle by 1.5 mm. Confirm that wiping operation is possible even when the head height is set high.	4.3.4
Adjustment	5. ☐	Capping adjustment	Carry out [CAPPING] adjustment to confirm that each center of the wiper and the head is aligned.	4.2.6
Check	6. ☐	Cleaning operation	Check whether each assembly and adjustment has been carried out properly by wiper cleaning operation.	
Covers	7. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

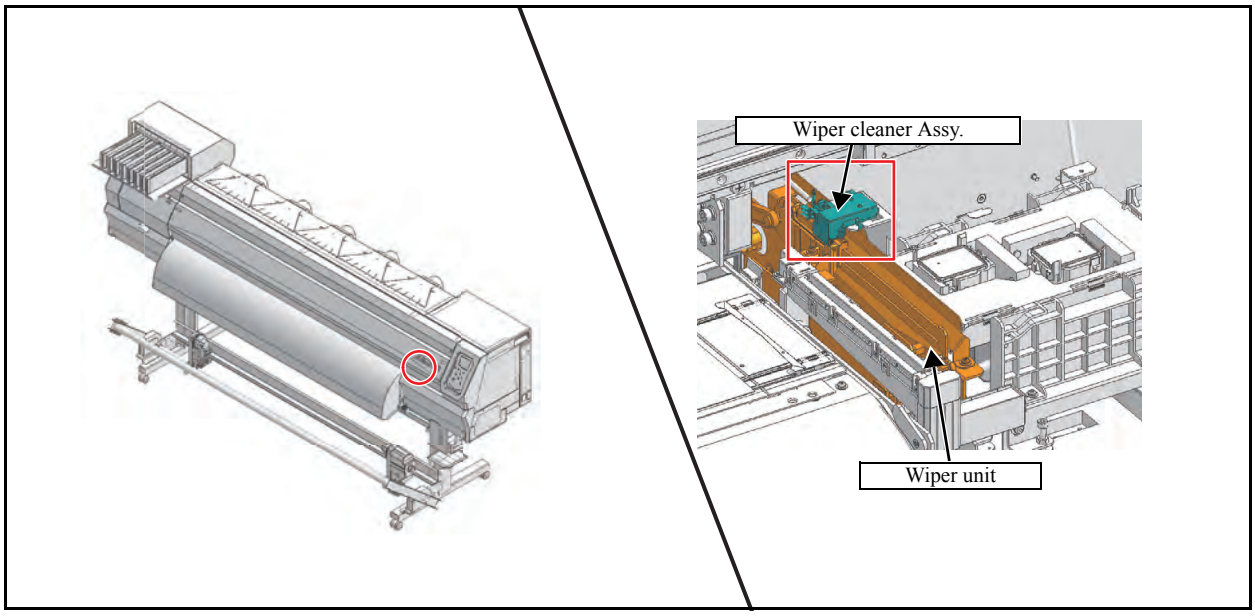
Caution

Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

3.1.4 Replacement of the Wiper Cleaner Assy.



■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Front cover L, M.	6.1.1
Wiper Cleaner Assy.	2. ☐	Removal of the wiper cleaner assy.	Remove the Wiper cleaner assy.	
	3. ☐	Mounting of the wiper cleaner assy.	Mount the Wiper cleaner assy. For replacement : SPA-0243 Wiper cleaner	
Check	4. ☐	Cleaning operation	Check whether each assembly and adjustment has been carried out properly by wiper cleaning operation.	
Covers	5. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

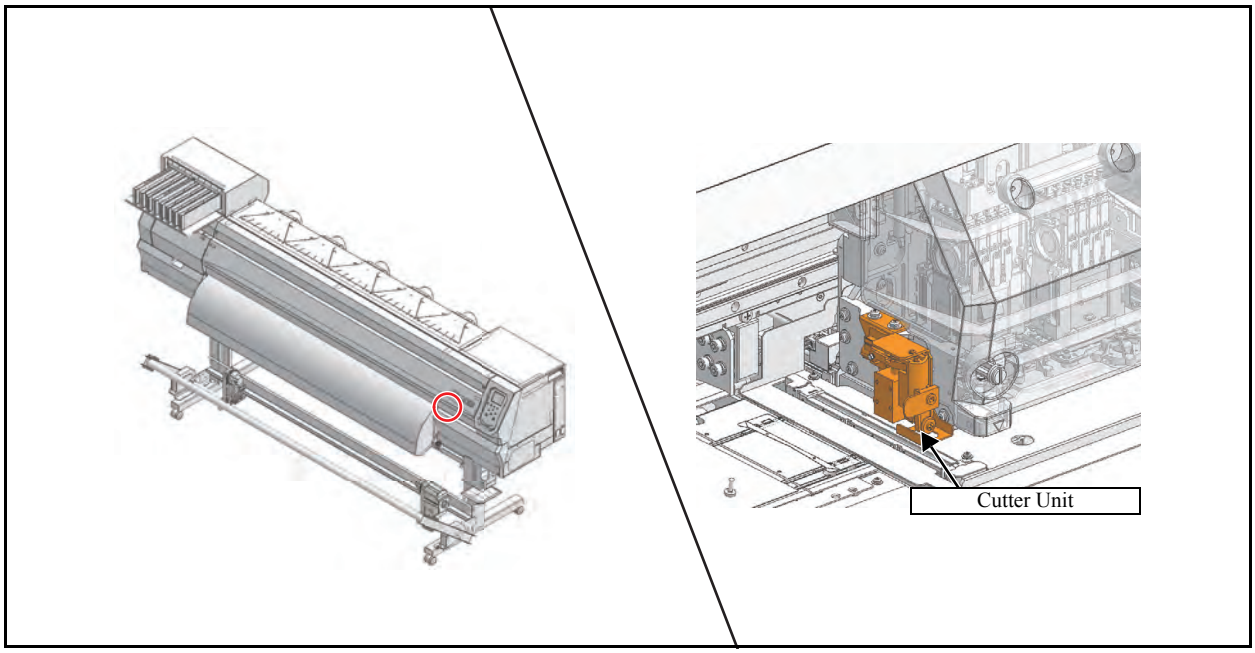
Caution

Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

3.1.5 Replacement of the Cutter Assy



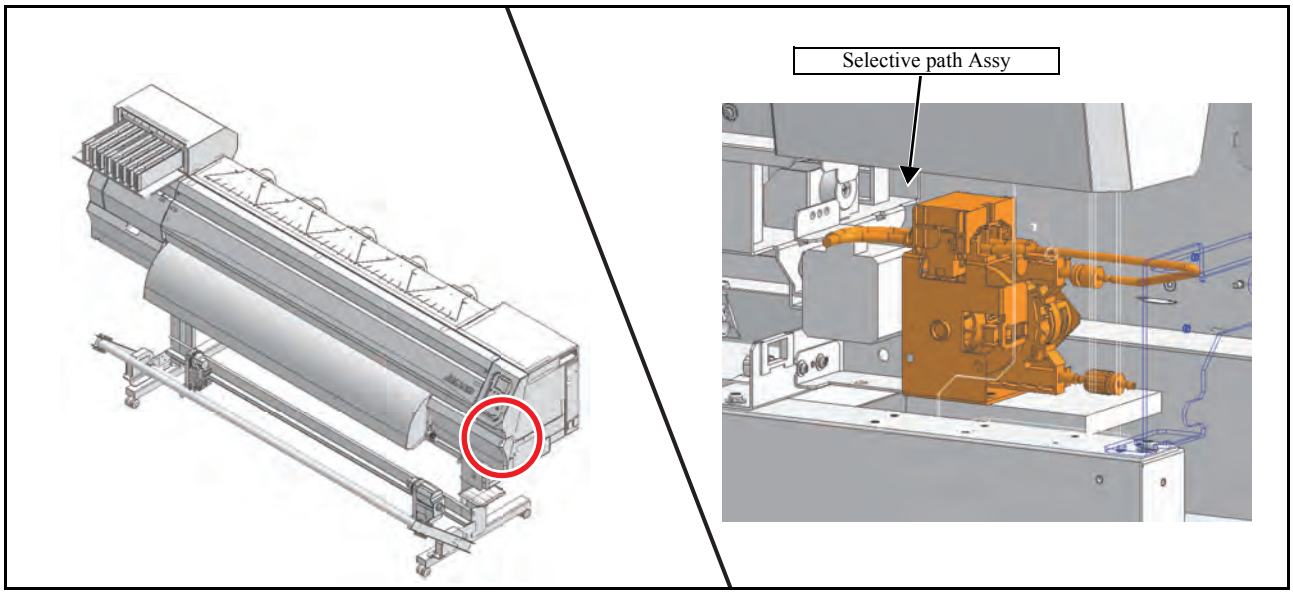
■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Front cover M, L.	6.1.1
Cutter Unit	2. ☐	Remove the cutter unit.	Remove the cutter unit.	6.2.11
	3. ☐	Mounting of the cutter unit.	Mount the cutter unit. For replacement cutter blade : SPA-107 Cutter blade Assy.	
Adjustment	4. ☐	Adjustment of cutter position	Adjust the back and forth position of the cutter Assy.	6.1.1
Covers	5. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

3.1.6 Replacement of the Selective path Assy.



■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Under cover R, cover R and cover R2.	6.1.1
Pass select pump Assy.	2. ☐	Removal of the Selective path Assy.	Remove the Selective path Assy.	6.3.6
	3. ☐	Mounting of the Selective path Assy.	Mount the Selective path Assy.	
Covers	4. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

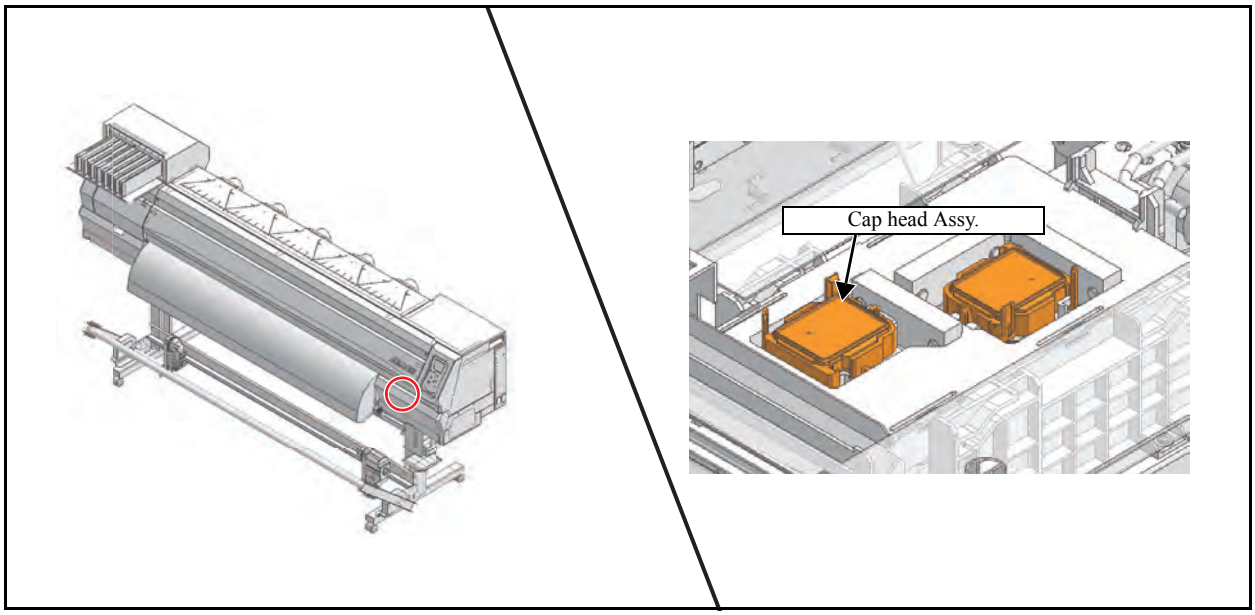
Caution

Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

3.1.7 Replacement of the Cap Head Assy.



■ **List of replacement procedures**

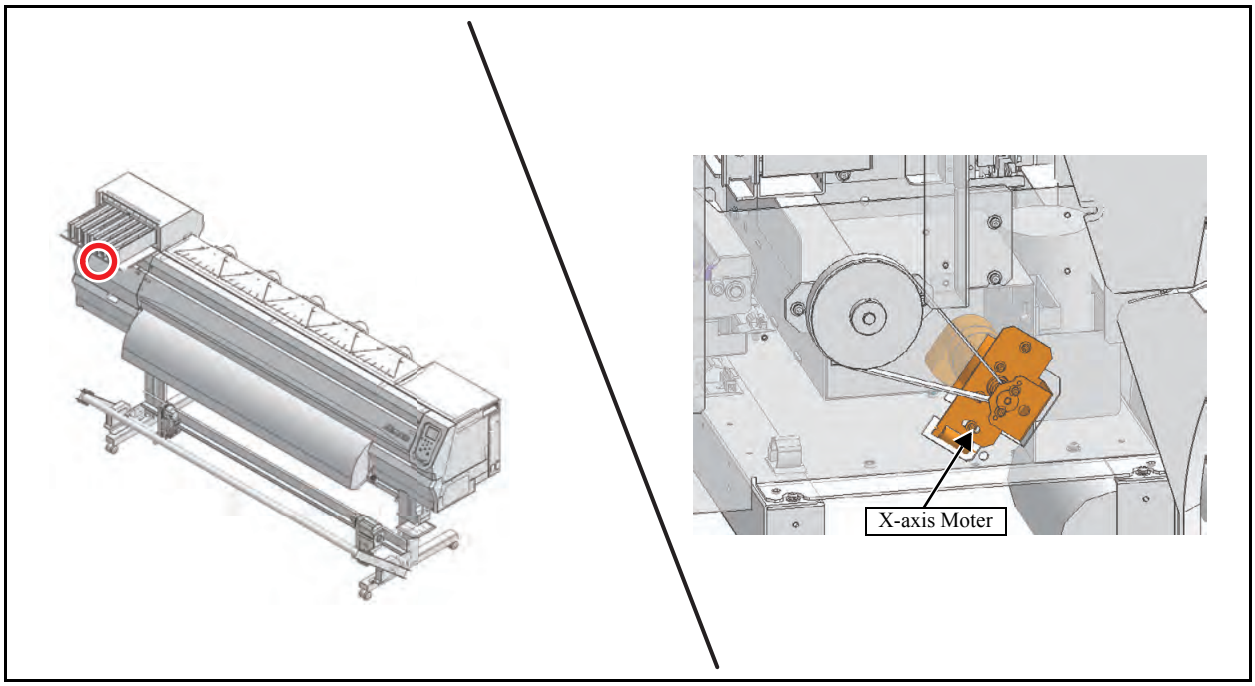
Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Front cover M, L and under cover R.	6.1.1
Cap Assy	2. ☐	Removal of the Cap Assy.	Remove the Cap Assy.	6.2.6
	3. ☐	Mounting of the Cap Assy.	Attach the Cap Assy while pushing it toward you.	6.2.6
	4. ☐	Adjustment of Capping	Carry out “CAPPING” (by using the key) [# ADJUST]. CAPPING POS: the cap slider is located at 3 mm to the right from the uppermost point it has reached on the cap base3 mm to the right from the uppermost position of the cap slider. AirPullPOS.: the clearance between the head and uppermost point of the cap is set at 0.5 mm. FlushingPOS: the clearance between the head and uppermost point of the cap is set at 1 mm.	4.2.6
Check	5. ☐	Cleaning operation	Check whether each assembly and adjustment has been carried out properly.	
Covers	6. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

Caution
Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

Caution
Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

Workflow

3.2.1 Replacement of the X-axis Motor

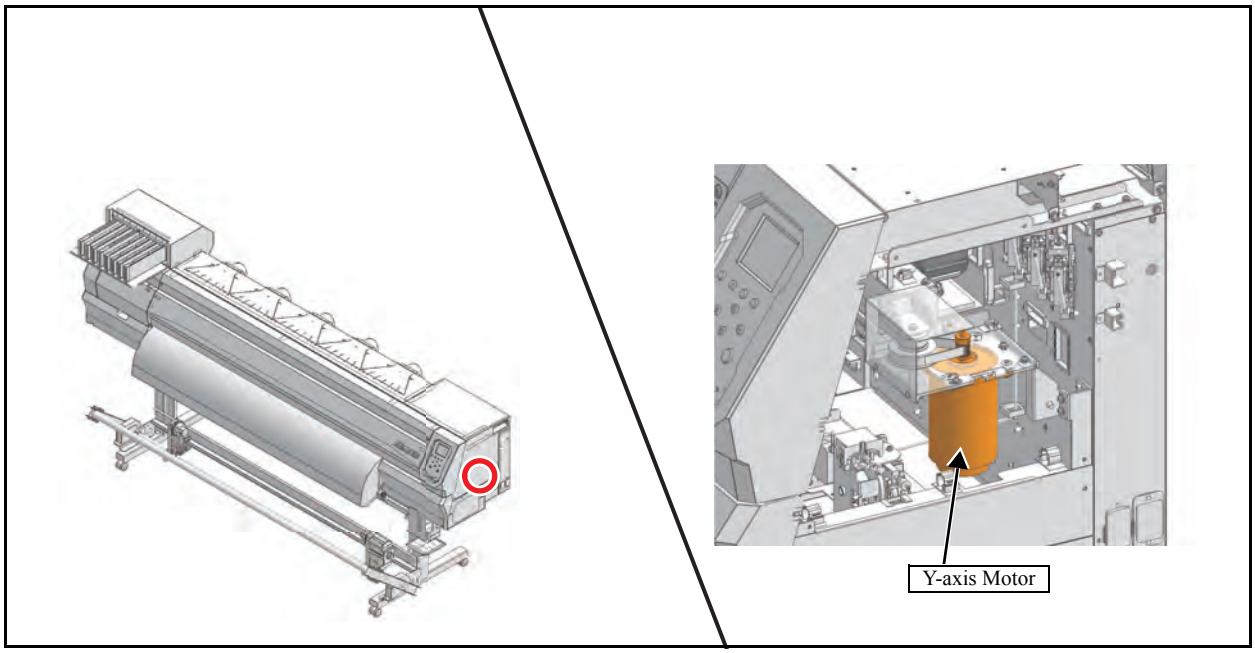


■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Cover L.	6.1.1
X-axis Motor	2. ☐	Removal of the X-axis motor.	Remove the X-axis motor.	6.3.1
	3. ☐	Mounting of the X-axis motor.	Mount the X-axis motor.	
Covers	4. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

Caution Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

3.2.2 Replacement of the Y-axis Motor



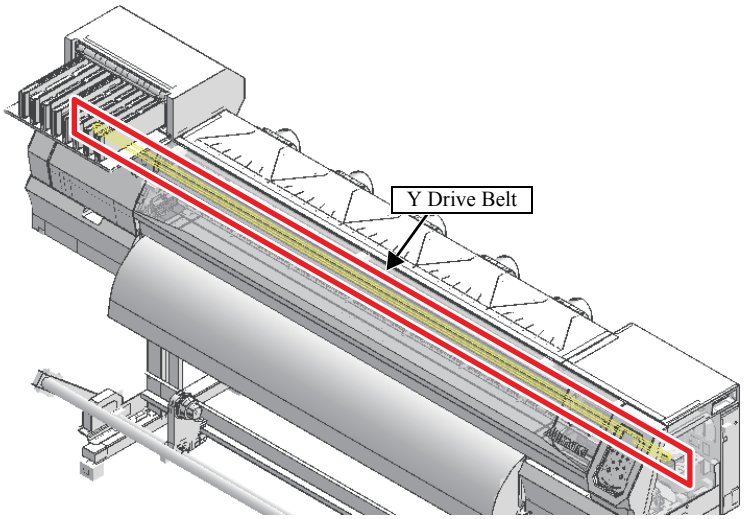
■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Cover R.	6.1.1
Y-axis Motor	2. ☐	Removal of the Y-axis motor	Remove the Y-axis motor.	6.3.2
	3. ☐	Mounting of the Y-axis motor.	Mount the Y-axis motor.	
Covers	4. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

3.2.3 Replacement of the Y Drive Belt



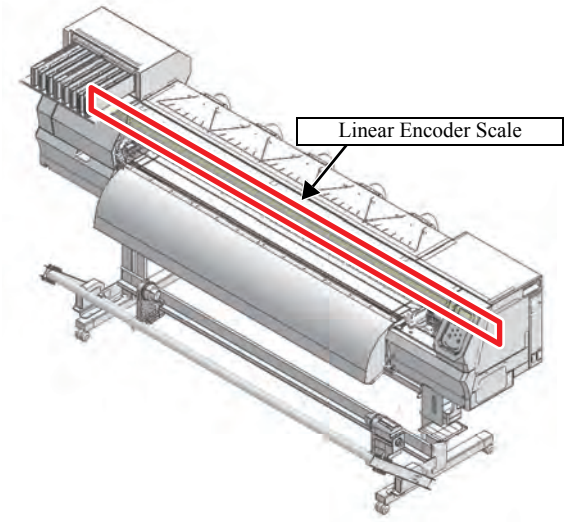
■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Front cover M, L and carriage cover.	6.1.1
Y Drive Belt	2. ☐	Removal of the Y drive belt.	Remove the Y drive belt.	6.3.4
	3. ☐	Mounting of the Y drive belt.	Mount the Y drive belt.	
Covers	4. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

3.2.4 Replacement of the Linear Encoder Scale



■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the Front cover M, L, Front undercover and carriage cover.	6.1.1
Linear Encoder Scale	2. ☐	Removal of the linear encoder scale.	Remove the linear encoder scale.	6.3.5
	3. ☐	Removal of the protective film	Peel off the protective film from the encoder.	
	4. ☐	Mounting of the linear encoder scale.	Mount the linear encoder scale. Pay attention to the location of the encoder PCB assy.	
Check	5. ☐	Encoder check	Carry out the encoder check to confirm it functions normally.	4.3.6 5.1.12
Covers	6. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

Caution

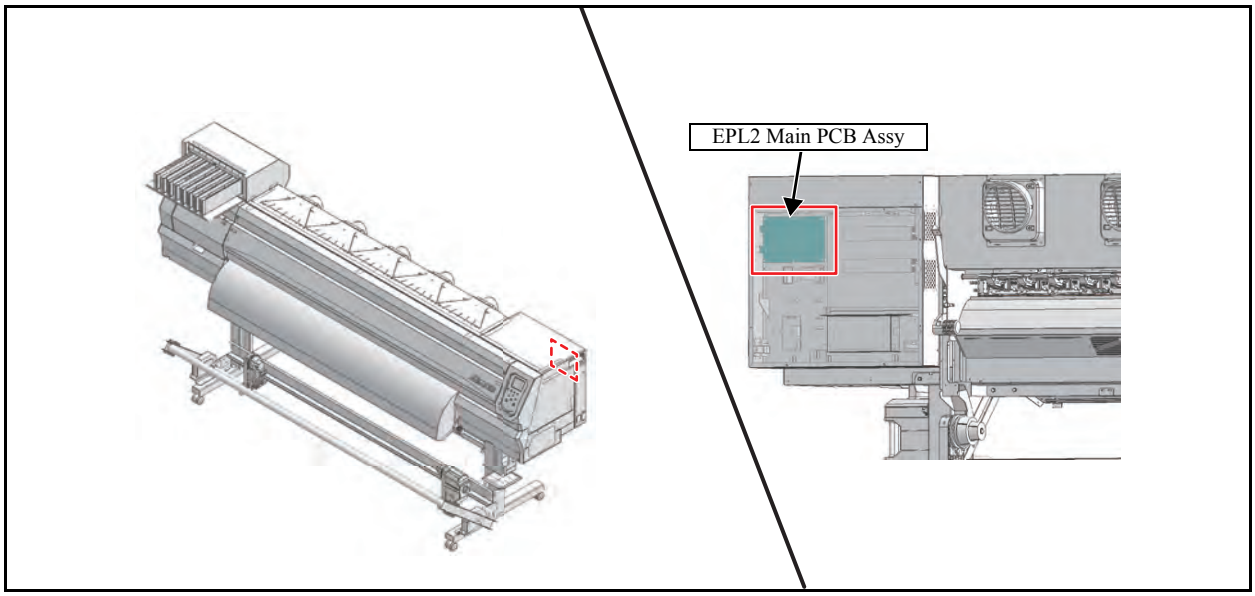
Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

Workflow

3.3.1 Replacement of the EPL2 Main PCB Assy



■ List of replacement procedures

Item	Work operation		Description	Ref.
Advance preparation	1. ☐	Parameter upload	Before the printed-circuit board is replaced, upload its parameter to the PC.	
Covers	2. ☐	Removal of covers, etc.	Remove the Electrical box cover.	6.1.1
EPL2 Main PCB Assy	3. ☐	Removal of the EPL2 main PCB assy.	Remove the EPL2 main PCB assy.	6.4.1
	4. ☐	Mounting of the EPL2 main PCB assy.	Mount the EPL2 main PCB assy.	
Check	5. ☐	Parameter download	Download the parameters which were uploaded in operation “1”.	
Covers	6. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

Caution Turn the main power OFF when turning the power OFF.

Adjustment Items

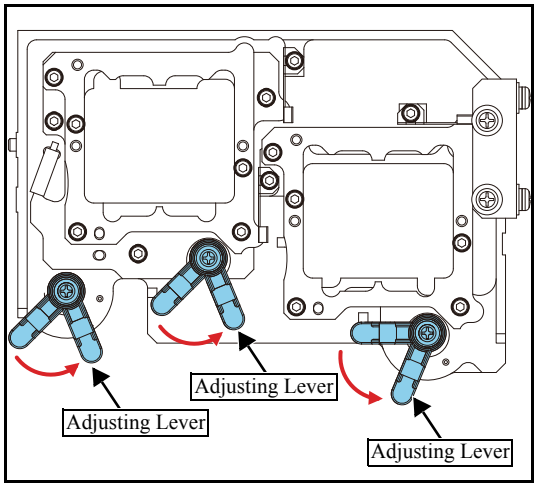
Adjustment Items

4.2.1 AVERAGING 34 ADJUST

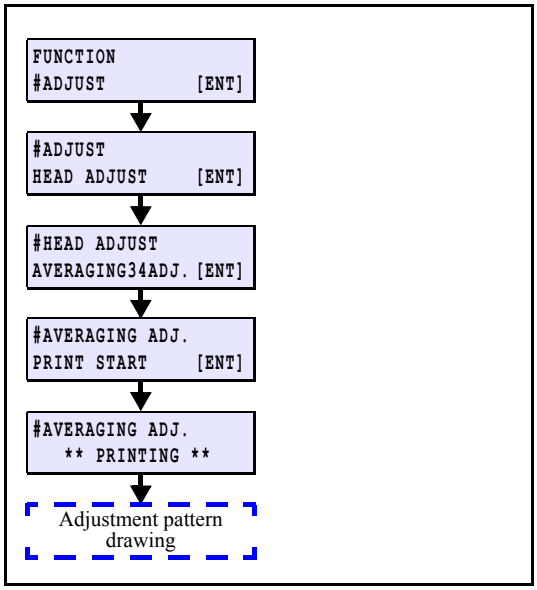
■ Outline

You can perform SLANT adjustment and STAGGER adjustment at the same time.

■ Common Procedure



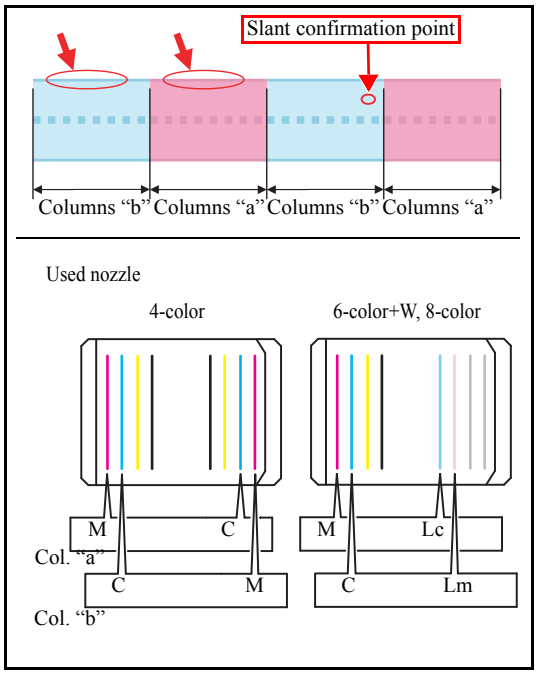
1. Move the adjusting lever to the right until the adjusting cam hits it.



2. Select [#ADJUST] - [AVERAGING 34 ADJ.] to execute adjustment pattern drawing.
3. Move the head over the platen.

4.2.1 AVERAGING 34 ADJUST

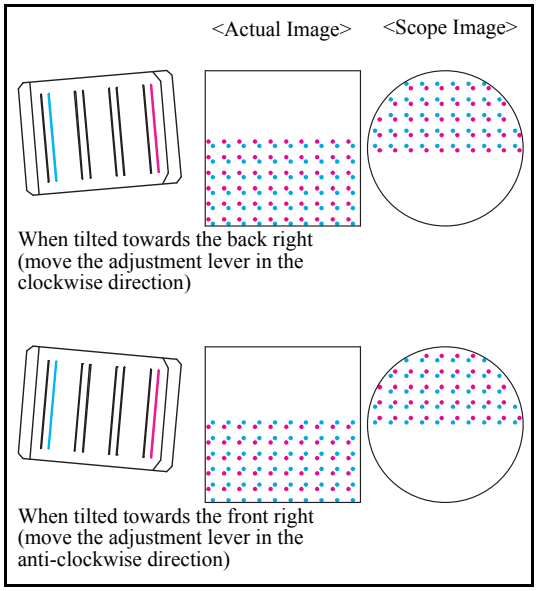
■ Slant Adjustment



1. Carry out the slant adjustment through the following procedures.

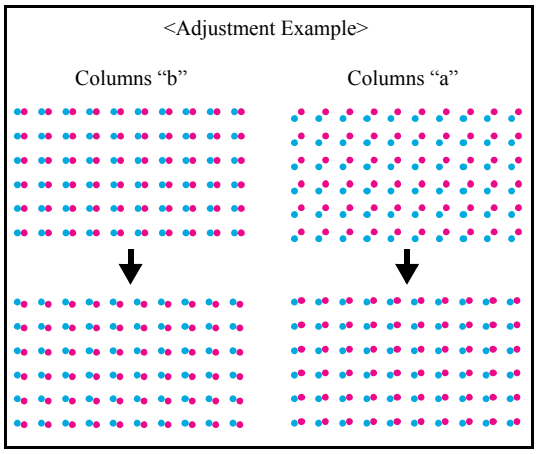
   Patterns of columns "a" and columns "b" are printed alternately (Refer to the left figure).

   The magenta and cyan strips (indicated by the thick red arrows in the diagram on the left) printed over the respective patterns at the top. These strips indicate that magenta is column "a" and cyan is column "b".



① Check the slant of each column.

For the columns “b”, the relationship between the points of impact and the slant of the head is as shown in the diagram on the left.
For the columns “a”, the pattern is reversed.

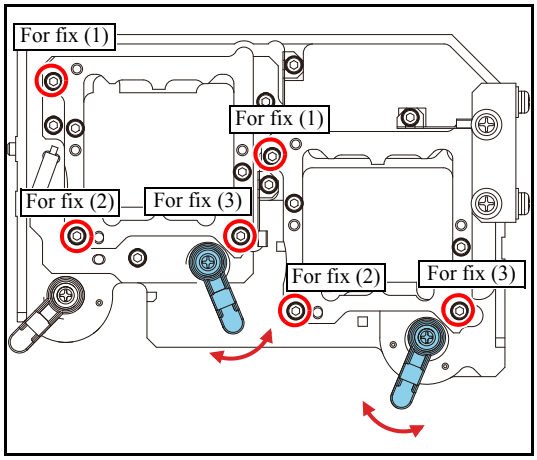


② Perform an averaging adjustment.

The standard color for each column is M for columns “a” and C for columns “b”.
Move the adjustment lever and adjust the slant.

In the diagram on the left, the columns “b” are aligned while the columns “a” are misaligned. In this case, move “b” columns slightly so that the degrees of scattering of “a” and “b” columns are equal. (=Intermediate adjustment)

4.2.1 AVERAGING 34 ADJUST



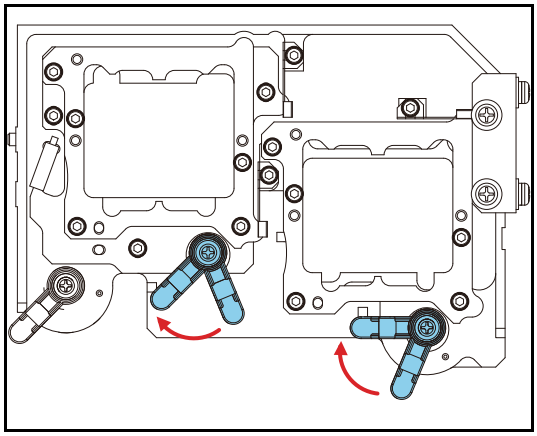
2. Loosen the screws (x3) for fixing.

3. Referring to the Step 1, move the adjusting lever to adjust the slant of the head.

4. Fix the screws (x3)

> Fix the screws after adjustment in the order of (1), (2) and (3).

5. Repeat the common procedure 2 and the slant adjustment procedures 1 to 4 until you can adjust.



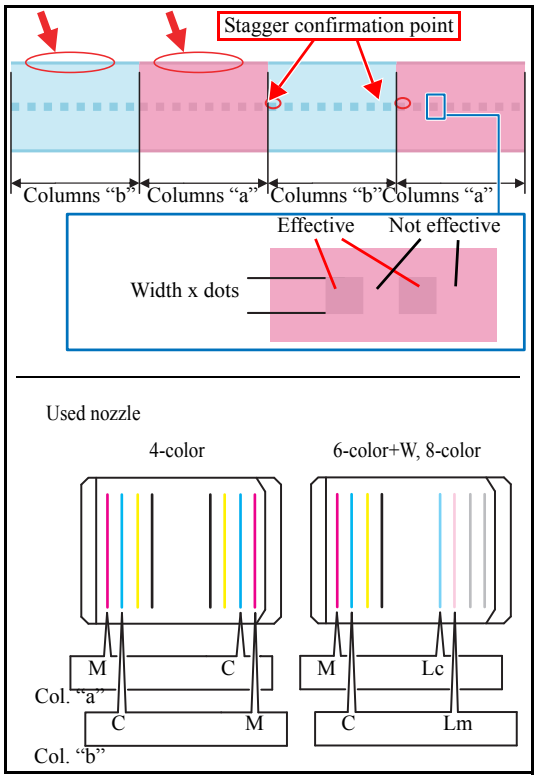
6. Move the adjusting lever to the left edge.

4.2.1 AVERAGING 34 ADJUST

■ Stagger Adjustment

IMPORTANT

- It is necessary to perform SLANT adjustment before STAGGER adjustment.
- After adjusting the stagger, adjust the slant.



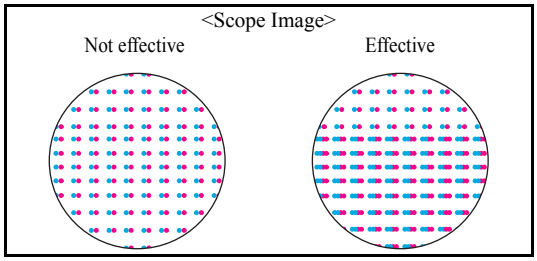
1. Carry out the slant adjustment through the following procedures.

   Patterns of columns "a" and columns "b" are printed alternately (Refer to the left figure).

   The magenta and cyan strips (indicated by the thick red arrows in the diagram on the left) printed over the respective patterns at the top. These strips indicate that magenta is column "a" and cyan is column "b".

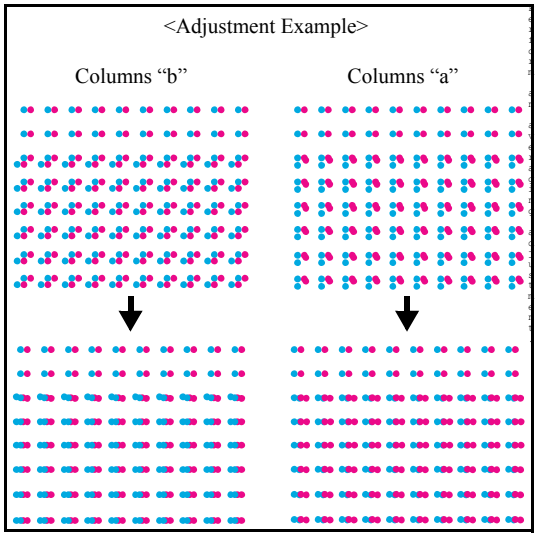
   Patterns of effective overlapping and not effective are printed alternately (They are dotted line-form part on the middle of the pattern).

Overlap of dots between the heads is 16 dots.



① Check the stagger of each column.

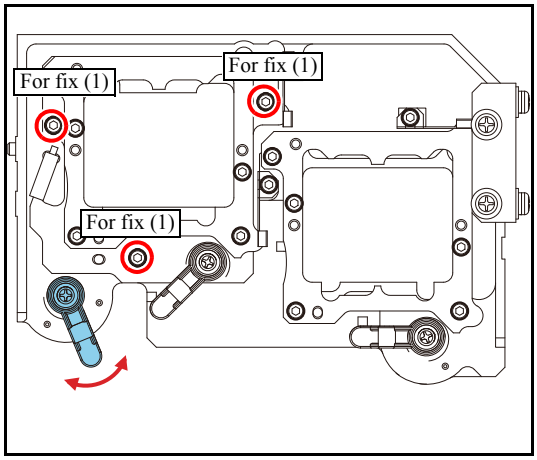
Adjust it so that 8 nozzles each for both edges of the head to be adjusted may be overlapped in alignment in the X direction.



② Perform an averaging adjustment.

Adjust it so that 8 nozzles each for both edges of column “a” and column “b” may be overlapped on average in the X direction.

4.2.1 AVERAGING 34 ADJUST



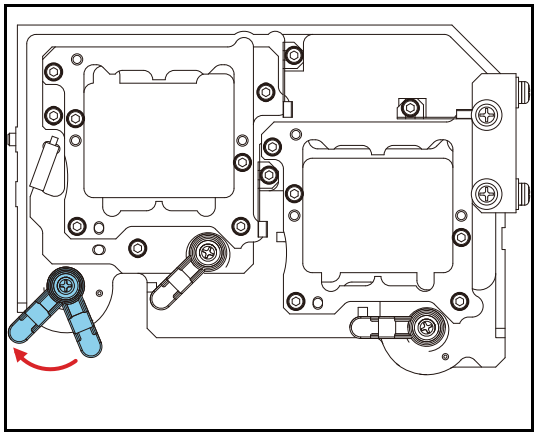
2. Loosen the screws (x3) for fixing.

3. Referring to the Step 1, move the adjusting lever to adjust the stagger of the head.

4. Fix the screws (x3)

> Fix the screws after adjustment in the order of (1), (2) and (3).

5. Repeat the common procedure 2 and the stagger adjustment procedures 1 to 4 until you can adjust.



6. Move the adjusting lever to the left edge.

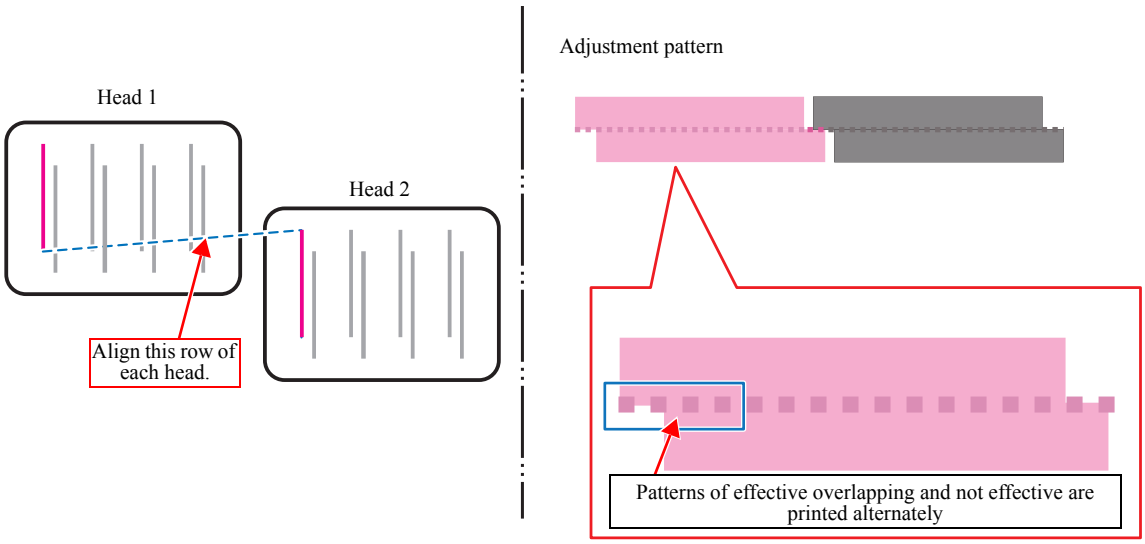
4.2.2 STAGGER ADJUST

■ Outline

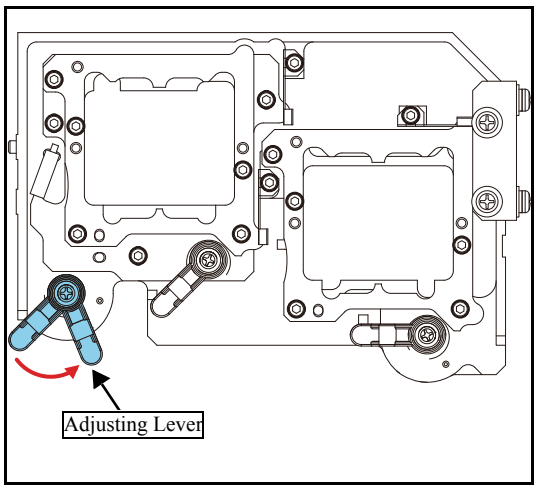
IMPORTANT

- It is necessary to perform SLANT adjustment before STAGGER adjustment.
- After adjusting the stagger, adjust the slant.

A pattern for mechanical adjustment of positional deviation of each head is drawn.
Move the head height to the position of 2.0 mm print gap, and select a head to draw the adjusting pattern.
The pattern is drawn in only A (Magenta) raw of each head.

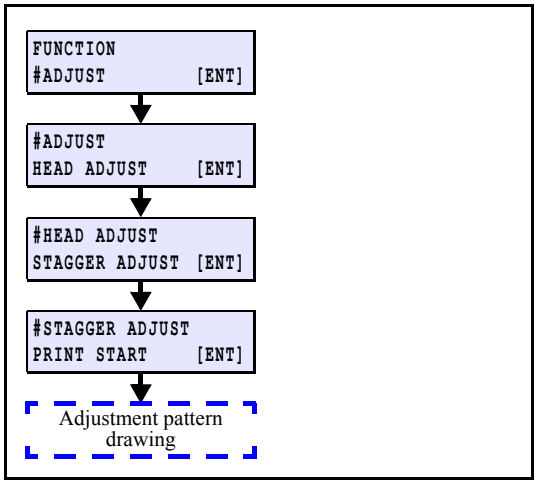


■ Procedure

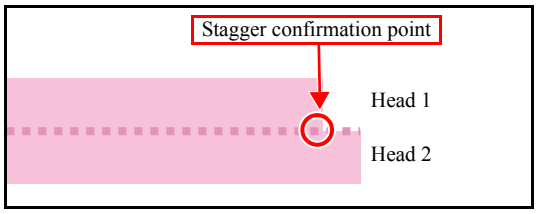


1. Move the adjusting lever to the right until the adjusting cam hits it.

4.2.2 STAGGER ADJUST

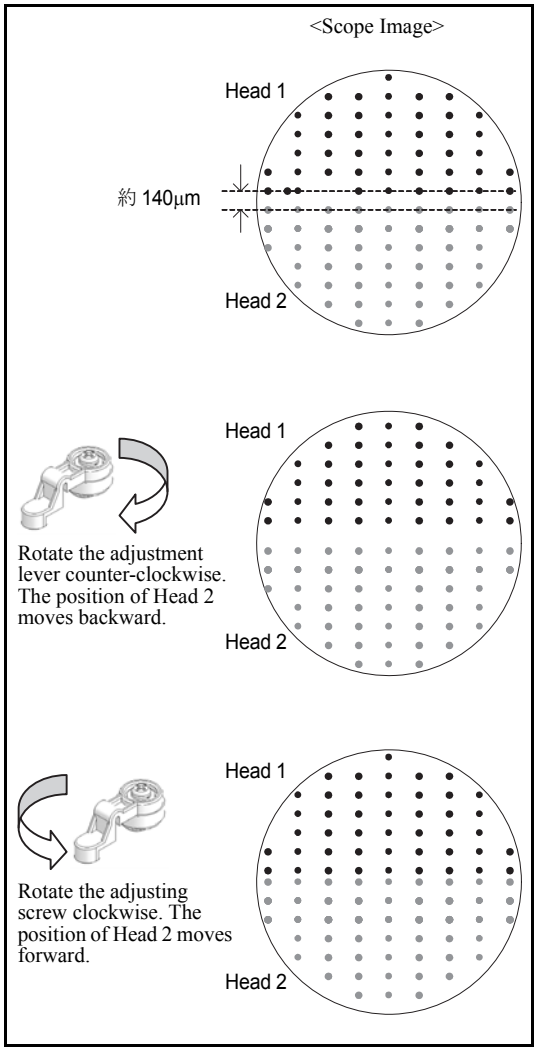


2. Select [#ADJUST] - [STAGGER ADJUST] to execute adjustment pattern drawing.



3. Carry out the stagger adjustment through the following procedures.

   There is a gap at the right end of pattern on the joint of each head. Adjust it using this gap.

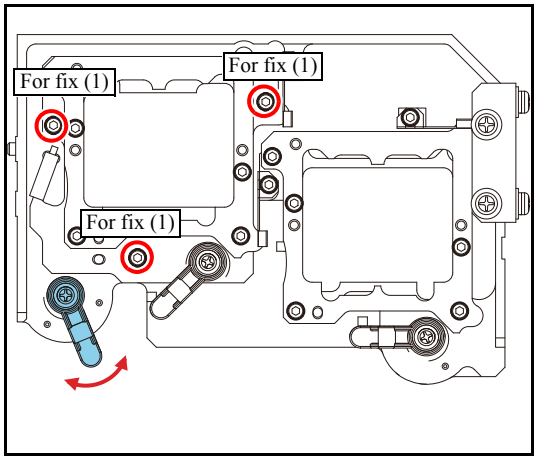


Check the stagger of each column.

Check that the distance between the Head 1 and 2 is about 140µm.

> Patterns of effective overlapping and not effective are printed alternately (They are dotted line-form part on the middle of the pattern).

4.2.2 STAGGER ADJUST



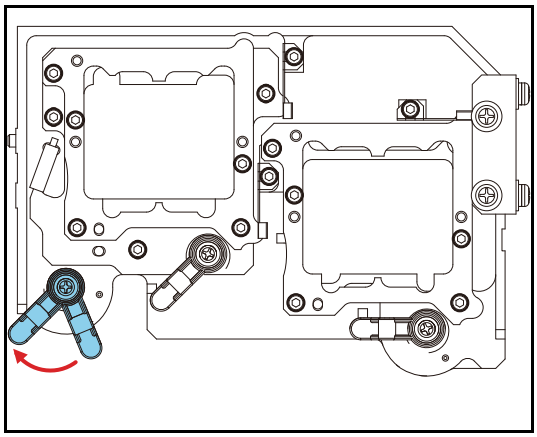
4. Loosen the screws (x3) for fixing.

5. Referring to the Step 3, move the adjusting lever to adjust the stagger of the head.

6. Fix the screws (x3)

> Fix the screws after adjustment in the order of (1), (2) and (3).

7. Repeat the procedures in the Step 2 to 6 until you can adjust.



8. Move the adjusting lever to the left edge.

4.2.3 DROP.POS

■ Outline

Draw the built-in patterns, and compensate the parameter so that the drop positions of other heads are on the same line as the drop position of reference head (Head 1A) in the Y-direction. To each of the discharged waveforms, execute [SiDir], [ReDir] and [BiDir] in each resolution.Perform adjustment in accordance with the following chart.

WF4(Large droplet waveform)

	Y-resolution									
	360	540			720			1440		
	BiDir	SiDir	ReDir	BiDir	SiDir	ReDir	BiDir	SiDir	ReDir	BiDir
Std	O*1	△	△	△	X	X	X	X	X	X
Hi	X	O	O	O	O	O	X	X	X	X

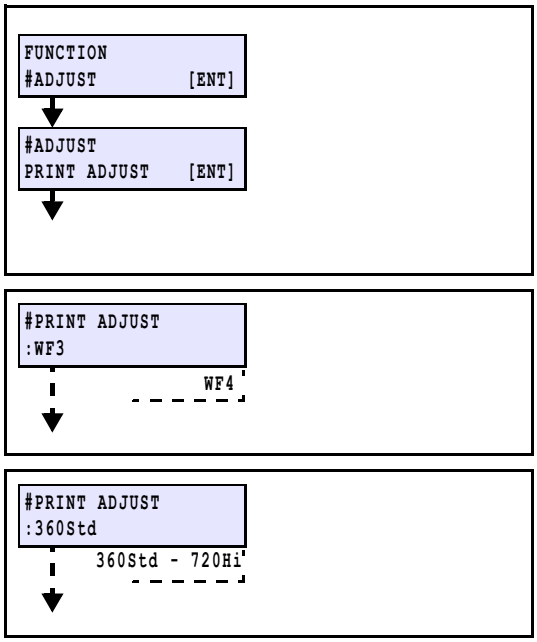
*1: The adjustment value for WF4/720dpi Hi is reflected in the WF4/360dpi Std single and reverse direction adjustment values (excluding bidirectional).

WF3(Small droplet waveform)

	Y-resolution									
	360	540			720			1440		
	BiDir	SiDir	ReDir	BiDir	SiDir	ReDir	BiDir	SiDir	ReDir	BiDir
Std	O	△	△	△	O	O	△	△	△	△
Hi	X	O	O	O	O	O	O	X*2	X*2	O

*2: The adjustment value for WF3/720dpi Std is reflected in the WF3/1440dpi Hi single and reverse direction adjustment values (excluding bidirectional).

■ Work Procedures



1. Set Media at X-origin.

> IMPORTANT
> Set the drawing origin as follows;
> (Set in [LOCAL] -> [ORIGIN SET])
> X ≥ 0, Y > 0

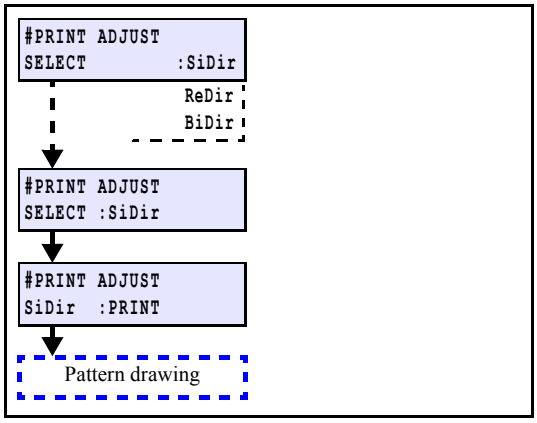
2. Select [#ADJUST] - [PRINT ADJUST].

3. Select the waveform.
   [▲]/[▼] : Switches
   [ENTER] : Confirms (Next)

4. Select the Y-resolution and scanning speed.
   [▲]/[▼] : Y-resolution & Scanning speed change
   [ENTER] : Confirms (Next)

4.2.3 DROP.POS

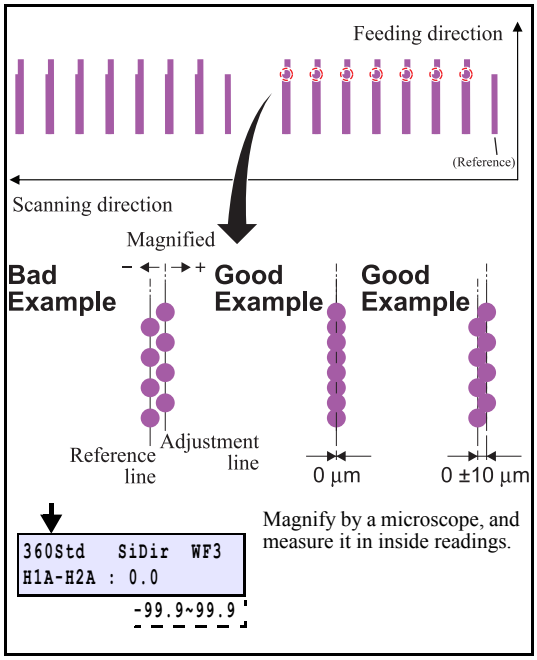
■ Forward adjustment



5. Select “SiDir” on the [SELECT] display.
   [▲]/[▼] : Switches
   [ENTER] : Confirms (Next)

6. Press the [ENTER] key to draw the pattern.
   [ENTER] : To start Pattern drawing
   [▶] : To the compensation display (Without drawing)

> IMPORTANT
> Adjust the followings for all.
> • WF3 : 540, 720, 1440 dpi
> • WF4 : 360, 540 dpi



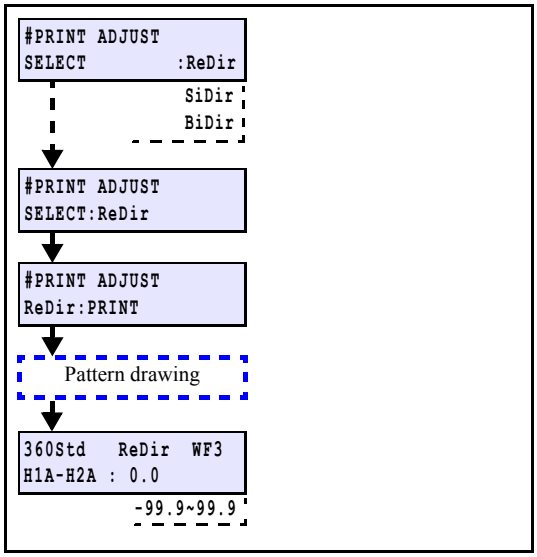
7. Check and compensate the patterns.
   Input the adjustment value (the measured value: µm) so that the impact dots of the H2A line is at the same position in the Y-direction, referring to the reference nozzle H1A line.
   [▲]/[▼] : Compensating value input (Input unit: 20 µm)
   [ENTER] : Confirms (Next)

> IMPORTANT
> Input the compensating value, referring to the left figure, if the displacement on the drop position of head applied for the compensation occurs either right or left against the reference head.

8. When compensated, draw and check the patterns again.

> IMPORTANT
> Repeat “Drawing -> Checking (Compensating)” until any compensation is not required.

■ Return adjustment



9. On the [SELECT] display, select “ReDir”, and adjust it in the same way as “SiDir”.
   [▲]/[▼] : Switches
   [ENTER] : Confirms (Next)

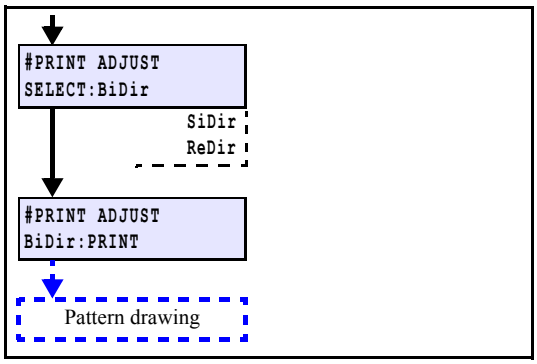
10. Press the [ENTER] key to draw the pattern.
    [ENTER] : To start Pattern drawing
    [▶] : To the compensation display (Without drawing)

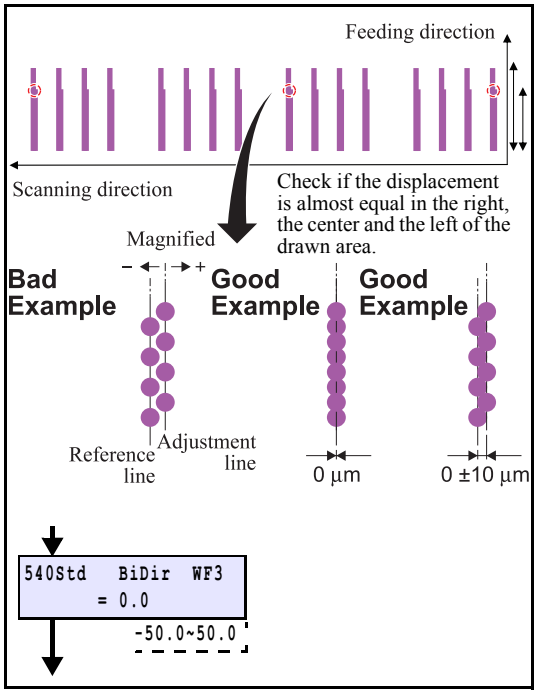
11. When compensated, draw and check the patterns again.

> IMPORTANT
> Repeat “Drawing -> Checking (Compensating)” until any compensation is not required.

4.2.3 DROP.POS

■ **Going and returning adjustment**





12. Select “BiDir” on the [SELECT] display.
    - [▲]/[▼] : Switches
    - [ENTER] : Confirms (Next)

13. Press the [ENTER] key to draw the pattern.
    - [ENTER] : To start Pattern drawing
    - [▶] : To the compensation display (Without drawing)

14. Check and compensate the patterns.

    The reference lines are drawn in going, and then the adjustment lines are drawn at the same Y-coordinate positions in returning. The position where the lines above are overlapped on one vertical line is specified as the correct dot position (H1A: M-color fixed)
    Confirm that the dots are on the same line.

    * The adjusting procedure is the same although the drawing pattern is different depending on mode.
    - [▲]/[▼] : Compensating value input (Measured value)
    - [ENTER] : Confirms

    If the displacement is significantly different in the right and left, other reasons are considered.

15. When compensated, draw and check the patterns again.

    Repeat “Drawing -> Checking (Compensating)” until any compensation is not required.

4.2.4 REPLACE COUNT

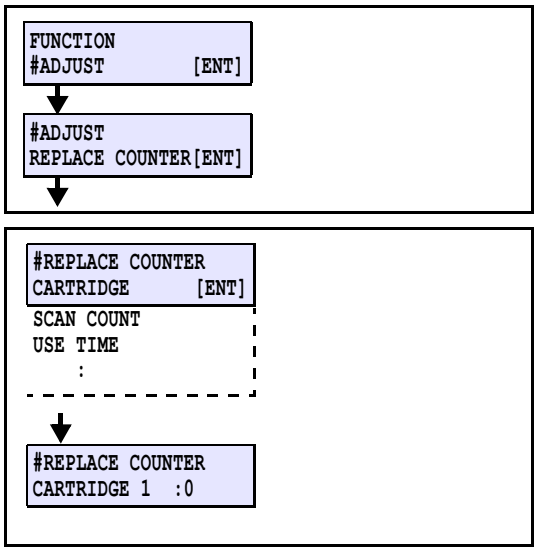
■ Outline

Indicating the following items of machine on the LCD.

☐ REPLACE COUNTER List of Items

No	Item	Remarks
1	CARTRIDGE	Number of replacements of Cartridge 1~8
2	SCAN COUNT	Number of scans
3	USE TIME	Time of Power ON Unit: [H]
4	WIPING COUNT	Number of wiping
5	SHOT COUNT	Number of discharging of Head 1~8 Unit: [1,000 times]
6	DRAW LENGTH	Drawing length [m]
7	DRAW AREA	Drawing area [m^2]
8	INK PIC	Number of IC chip error detections of Cartridge 1~8
9	PUMP MOTOR	Rotation time of each pump motor Unit: [H]
10	SENDING PUMP	Rotation time of each pump motor Unit: [H]

■ Procedures



1. Select [#ADJUST] - [REPLACE COUNTER].

2. Select the item to be indicated, and then fix it by [ENTER] to indicate it.
   [▲]/[▼]: Switch
   [ENTER]: Finalizes (to Information indicating display)
   [END]: Return

4.2.5 DEFAULT SET

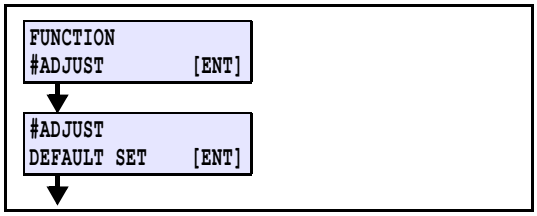
■ Function

Returning each parameter to the initial value.

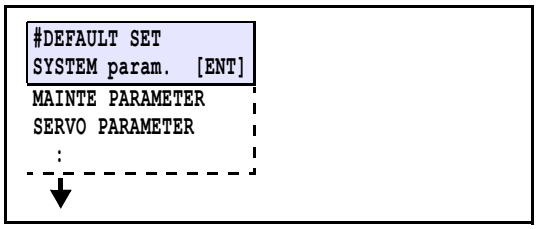
☐ DEFAULT SET List of Items

No	Item	Operation	Remarks
1	SYSTEM PARAMETER	Initialize the parameter in question.	
2	MAINTE PARAMETER	Initialize the parameter in question.	
3	SERVO PARAMETER	Initialize the parameter in question.	
4	FEED PARAMETER	Initialize the parameter in question.	
5	HEAD PARAMETER	Initialize the parameter in question.	
6	OPE PARAMETER	Initialize the parameter in question.	
7	INK PARAMETER 1	Initialize the parameter in question.	
8	INK PARAMETER 2	Initialize the parameter in question.	
9	DEBUG PARAM	Initialize the parameter in question.	
10	SCAN PARAMETER	Initialize the parameter in question.	
11	NOZZLE RECOCVERY PARAM	Initialize the parameter in question.	
12	SHIPPING set	Initializing parameters of others than the adjustments.	

■ Work Procedures

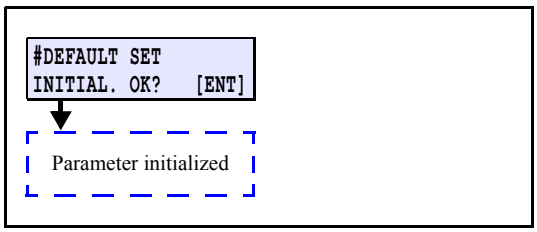


1. Select [#ADJUST] - [DEFAULT SET].



2. Select the parameter to be initialized, and then fix it by [ENTER].

[▲]/[▼]: Switch
[ENTER]: Confirms (to Confirmation display)
[END]: Return



3. Initialize by [ENTER].

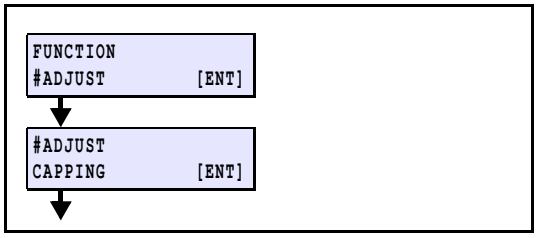
[ENTER]: Execute
[END]: Return

4.2.6 CAPPING

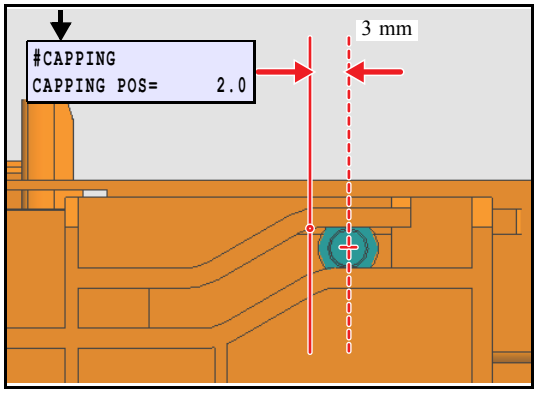
■ Outline

Adjusts the location for capping. Adjusted value is saved in the system parameter.
Basically, it is not necessary to make adjustment even when cap (and the like) has been replaced.

■ Adjustment procedure

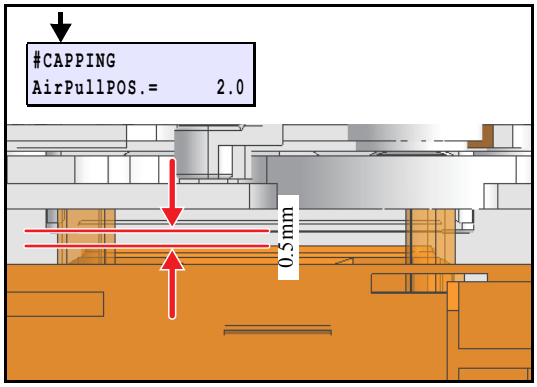


1. Select [#ADJUST] - [CAPPING].



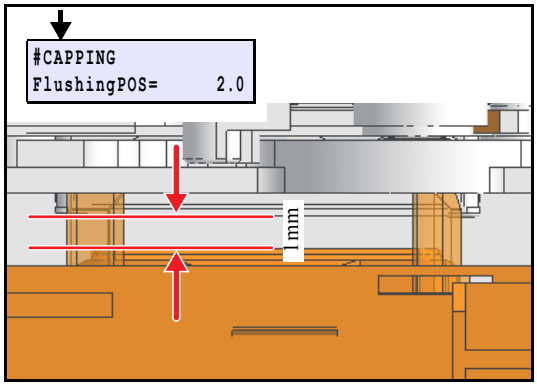
2. Make adjustment so that the cap slider is located at 3 mm to the right from the uppermost point it has reached on the cap base.

[◀]/[▶]: Horizontally shifts the cap.
[ENTER]: Finalizes (To Next)



3. Make adjustment so that the clearance between the head and uppermost point of the cap is set at 0.5 mm.

[▲]/[▼]: Shifts the cap.
[ENTER]: Finalizes (To Next)



4. Make adjustment so that the clearance between the head and uppermost point of the cap is set at 1 mm.

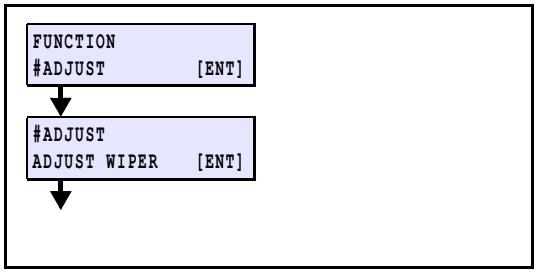
[◀]/[▶]: Shifts the cap.
[ENTER]: Finalizes (To Next)

4.2.7 ADJUST WIPER

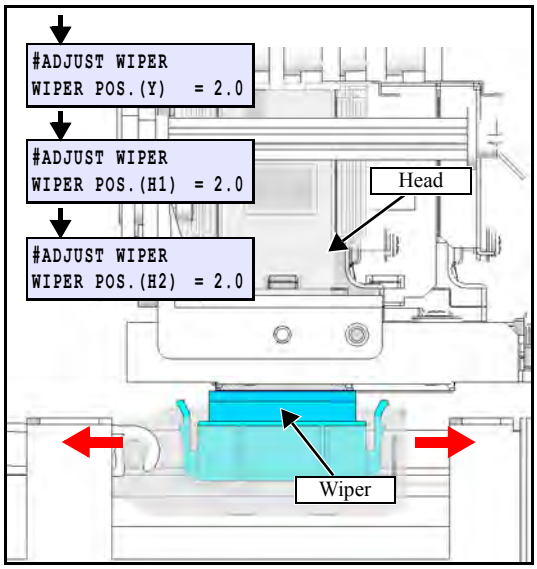
■ Outline

Adjusts the location for the wiper. Adjusted value is saved in the system parameter.

■ Adjustment procedure



1. Select [#ADJUST] - [ADJUST WIPER].



2. Confirm and adjust the center position of the head and the wiper nozzle.

[◀]/[▶]: Horizontally shifts the head.
[ENTER]: Finalizes (To Next)
[END]: End
[FUNCTION]: Wiping

4.2.8 HEAD WASH

■ Outline

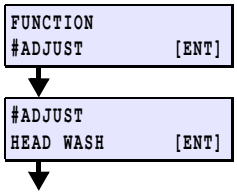
Cleans the ink channels inside the head, damper and tube.
When modifying ink type or ink set, empties the ink out of the channel and cleans the inside using the washing liquid.

☐ Available cleaning liquid SPC-0294 Solvent washing liquid cartridge (220ml, for solvent ink)
SPC-0259 Washing liquid cartridge (220ml, for aqueous ink)

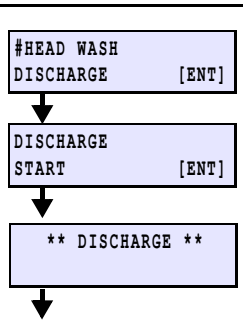
☐ Available maintenance liquid SPC-0369 Maintenance washing liquid kit for solvent ink (200ml)
SPC-0137 Cleaning liquid bottle kit A29 for sublimation dye ink (100ml)

As non-filling state remains after the completion of cleaning, the Initial Filling or filling of corresponding head is required.

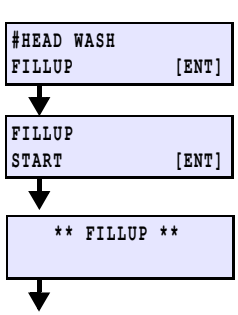
■ Procedure



1. Select [#ADJUST] - [HEAD WASH].

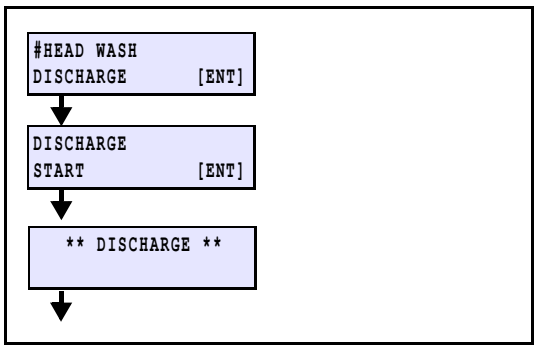


2. Remove all the ink cartridges and then discharge the ink inside.
   Carry out the discharge after the confirmation of display when a waste ink tank warning occurs.



3. Insert the washing-liquid cartridges into all the slots, fill up and clean the inside of the tube and head.

4.2.8 HEAD WASH



4. Remove all the washing-liquid cartridges and then discharge the liquid inside.

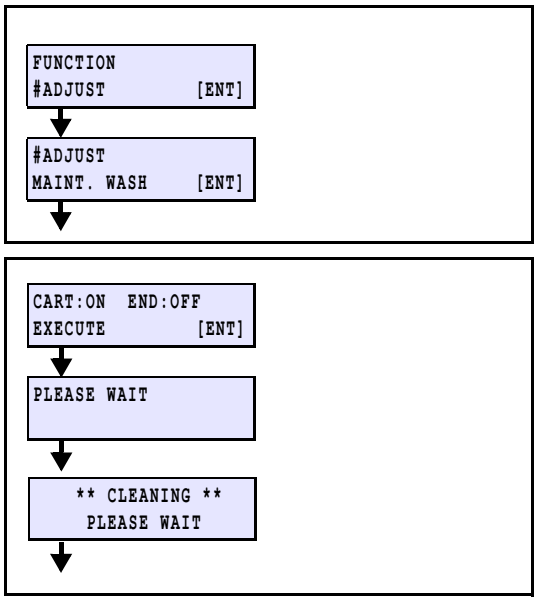
5. Repeat step 3. and 4. again. (total 2 times)

4.2.9 MAINT. WASH

■ Outline

Fill up washing liquid for the sequence to apply it at station maintenance.

■ Procedure



1. When you perform filling, insert the washing liquid cartridge into the washing liquid slot.
2. When you discharge, remove it.
3. Select [#ADJUST][MAINT. WASH] from the operation menu.
4. Press the [ENTER] key, and then the valve is released and the pump rotates.
5. Perform cleaning operation and terminate with [END] key.

4.2.10 HEAD ID

■ Outline

HEAD ID represents each head characteristic written at shipping. The variation between heads is unified by inputting the value to printer.

As this machine reads the head ID from the mounted memory (ROM) on the print head at each startup, it is not necessary to set the head ID.

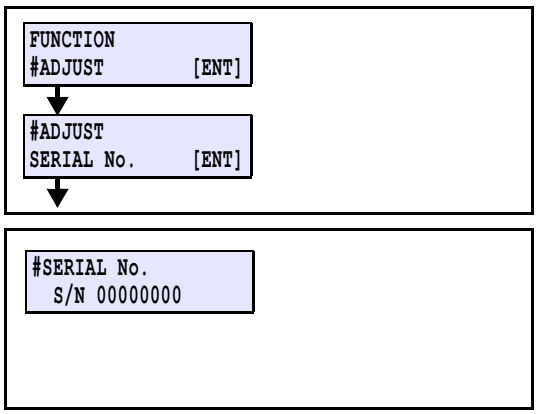
4.2.11 SERIAL No.

■ Outline

Confirming and changing of the serial No. of JV300-130/160.

Normally, don't change the serial No., which has been registered.

■ Work Procedures



1. Select [#ADJUST] - [SERIAL No.].

2. Confirm the serial No., or change it.

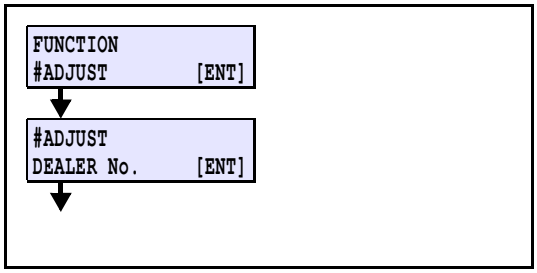
[◀]/[▶]: To move Cursor
[▲]/[▼]: To change Value
[ENTER]: Confirms
[END]: Return

4.2.12 DEALER No.

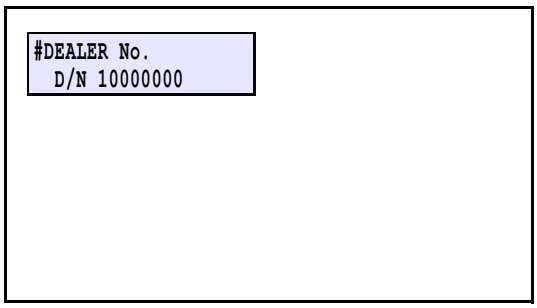
■ Outline

Check and set the dealer No.
For dealer No., 8-digit alphameric characters (0 to 9, A to Z) can be input.

■ Procedures



1. Select [#ADJUST] - [DEALER No.].

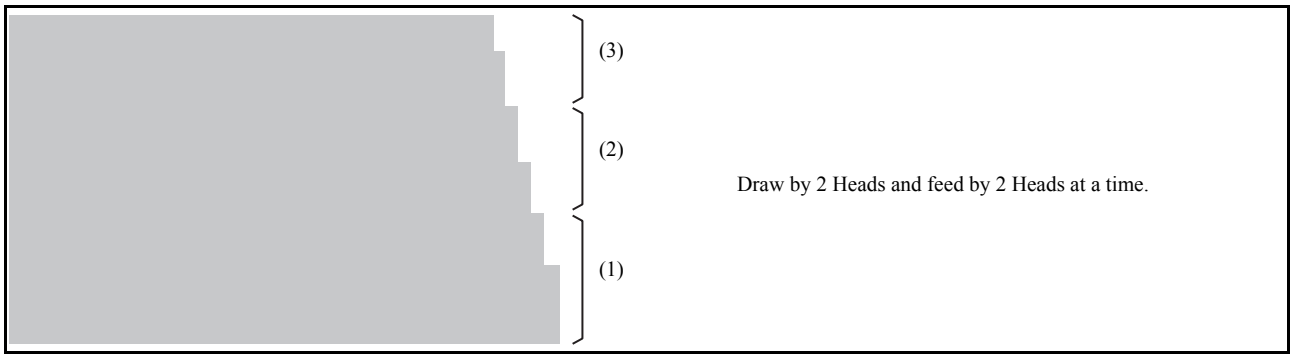


2. Input (check) the dealer No.
   - [▲]/[▼] : Changing value
   - [◀]/[▶] : Moving cursor
     (When the cursor is at the right end or the left end, even if the key is pressed, it does not move.)
   - [ENTER] : Confirmation
   - [END] : Cancel

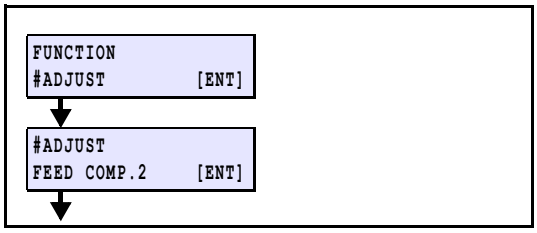
4.2.13FEED COMP.2

■ Function

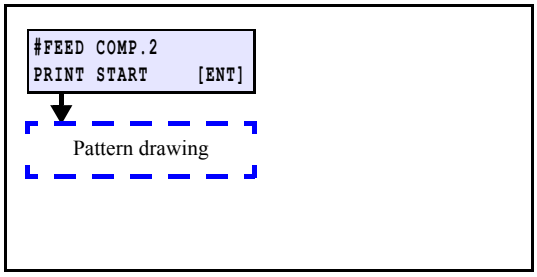
Compensates basic feeding amount of media. (Provides a baseline value for user compensation value.)
Is used to adjust the media feed amount when the parameter has been initialized or user compensation value is too large.



■ Procedure

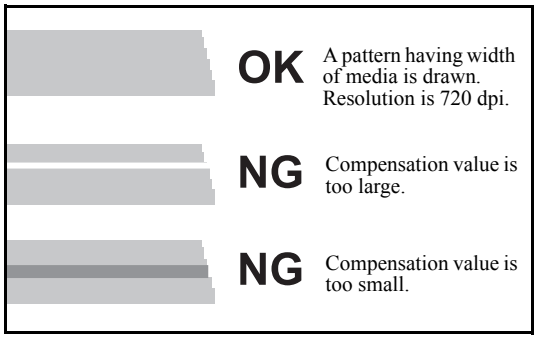


1. Select [#ADJUST] - [FEED COMP.2].

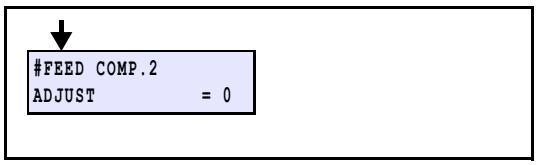


2. Draw an adjustment pattern.
   - [ENTER]: Executes drawing.
   - [▸]: To the screen for adjustment (Without drawing)
   - [END]: Completes drawing and inputs compensation value.

> Patterns are plotted repeatedly.
> (Click [END] to end plotting.)



3. Check the adjustment pattern.



4. Enter the compensation value.

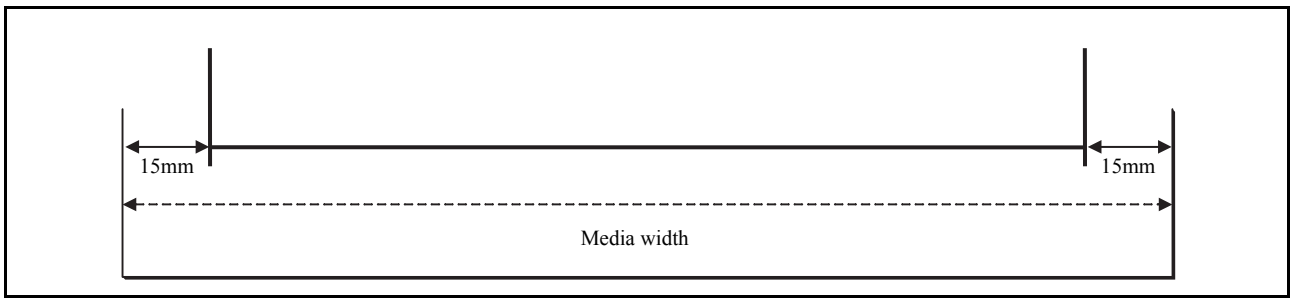
   Compensation value: -9999 to 9999
   - [▲]/[▼]: Changes adjustment values.
   - [END]: Cancellation of input

> In actual feeding amount compensation, compensation value for each media set in the SETUP function are added to this compensation value.

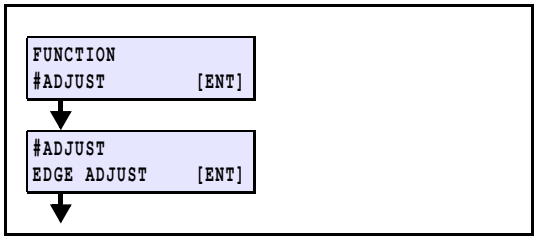
4.2.14 EDGE ADJUST

■ Function

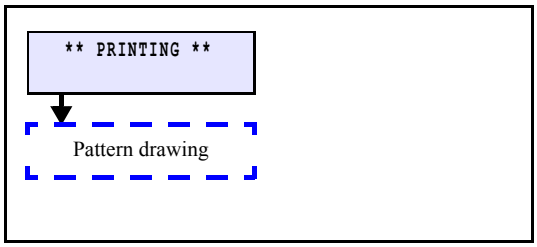
Adjust the width of the each dead space of the right and left ends of the media.
Enter the actual measurement from the media edge to the pattern to the adjustment value. If the unit was changed to inch, adjust by converting it to inch.
Is used when the system parameter has been initialized or the (plot areas at both ends) are not in the right place.



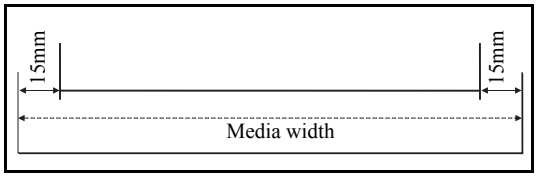
■ Procedure



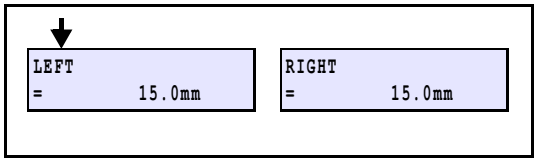
1. Select [#ADJUST] - [EDGE ADJUST].



2. Draw an adjustment pattern.
   - [◀]: Set adjust values of L and R to default (25.0 mm).
   - [▶]: Execute media width detection to draw an adjustment pattern.
   - [▲]: To the screen for adjustment (Without drawing)



3. Check the adjustment pattern.



4. Enter the adjustment value.

   For adjustment, input actual values obtained by measuring from the edge of the media to the pattern.

   Adjusting value: 0.0 to 40.0 mm (unit: 0.1 mm)
   (Use the inside of pinch roller as a positive (+). The backlash of the pinch roller may produce an error of approx. ± 0.5 mm.)

   - [▲]/[▼]: Changes adjustment values.
   - [END]: Cancellation of input

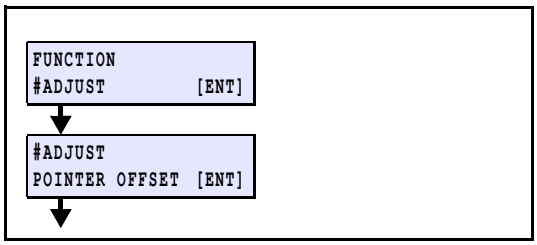
- The set value is saved in the system parameter No.2 R GRIP and No.3 L GRIP as "current parameter value + (25 mm - input value)".

4.2.15 POINTER OFFSET

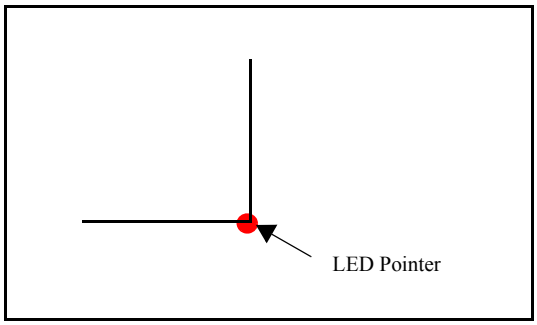
■ Function

Print the adjustment pattern and adjust the location of the LED pointer and print origin (Nozzle A Column).

■ Procedure



1. Select [#ADJUST] - [POINTER OFFSET].



2. Make necessary adjustments.

[ENTER]: Starts drawing.

After drawing is completed

[▲], [▼], [◀], [▶] : LED pointer movement

Align the LED pointer to the pattern position shown on the left (intersection of the straight lines).

[ENTER]: Settings

[END]: Cancellation of input

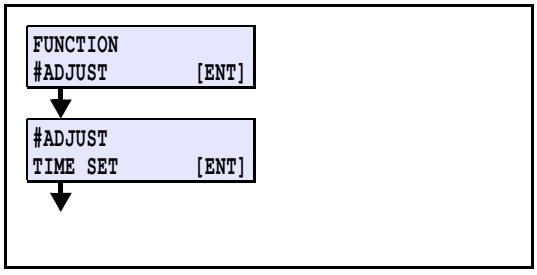
This function perform adjusting only once.
When drawing is performed, readjustment is necessary because adjustment value is reset.

4.2.16 TIME SET

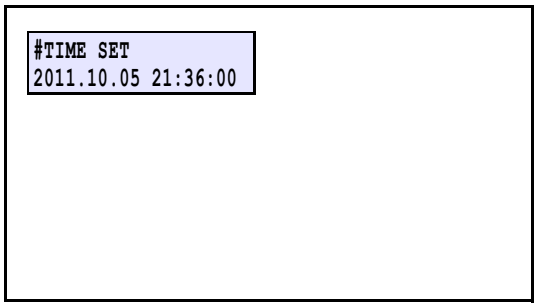
■ Outline

Setting the time.

■ Procedures



1. Select [#ADJUST] - [TIME SET].



2. Set the time.

[◀]/[▶] : Changing item
[▲]/[▼] : Changing value
[ENTER] : Confirmation
[END] : Cancel

4.2.17 ANGLE ADJUST

This section is used for only production.

4.2.18 LAN CONFIG

As this is a function for development, the details are not disclosed.

Adjustment Items

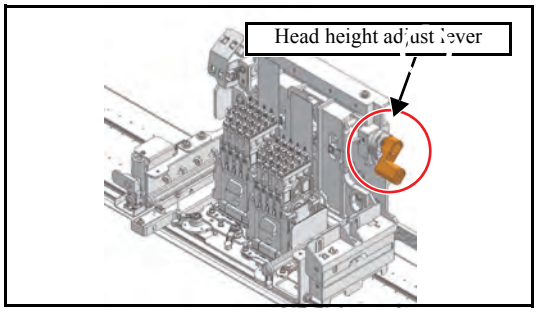
4.3.1 Adjustment of the Carriage Slant

■ Outline

Perform carriage vertical-tilt and slant adjustment for right and left directions.

■ Procedures

☐ Preparations

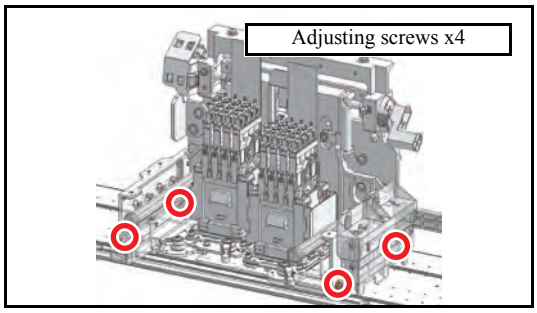


1. Move the carriage onto the platen.(The position of the second clamp from the right is recommended.)
2. Move the Head height adjust lever to the lowest position.
3. Move the clamp lever downward.

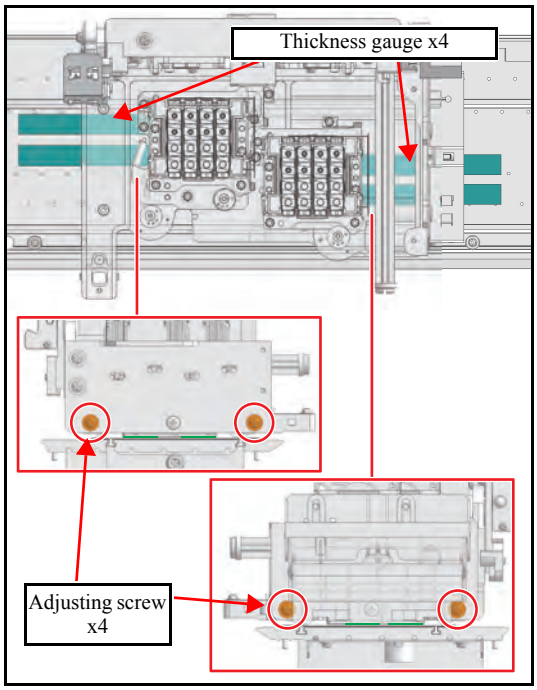
> IMPORTANT: Be sure to perform adjustment with the clamp lever down. In addition, the head initialization height shall be L range setting.

4. Remove the cutter unit. (Refer to 6.2.11 Cutter Unit)

☐ Height for right and left (slant for right and left) adjustment



5. Loosen the adjusting screws (4 places of both sides).

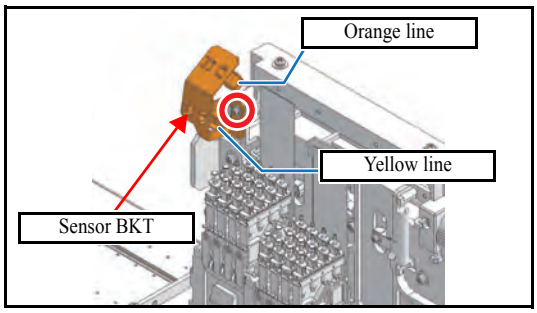


6. Put the thickness gauge between the head mask plate and the platen.(Refer to left figure.)

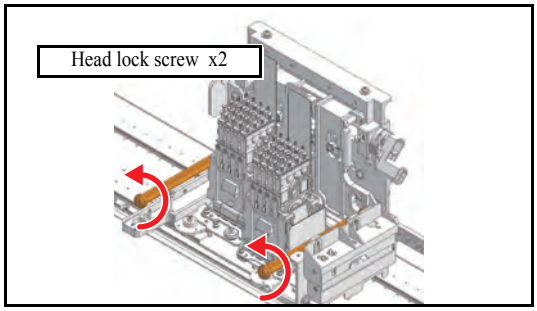
   Fix the carriage by pushing it down and tightening adjusting screws (x4).

4.3.1 Adjustment of the Carriage Slant

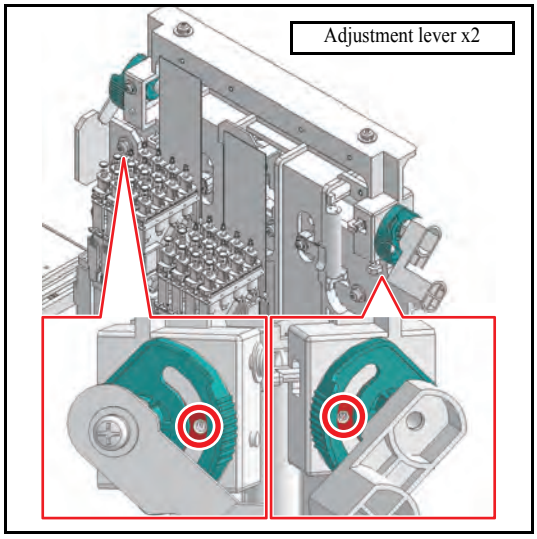
☐ Back and forth slant (Vertical-tilt) adjustment



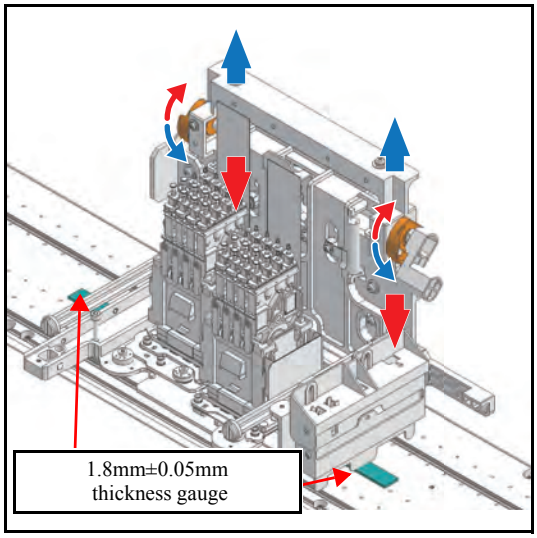
7. Remove the Sensor BKT. (screw x1.)



8. Loosen the head lock screw (x2) by half revolution.



9. Loosen the screws of the Adjustment lever (2 screws of both sides).



10. Put the thickness gauge between the head mask plate and the platen, and then adjust by rotating the adjust lever so that the height of right and left is 1.8mm±0.05mm.(Refer to left figure.)

    Rotate to downward, carriage is risen.

    Rotate to upward, carriage is lowered.

> IMPORTANT
> Adjust this while checking all range height so that there is no difference between the carriage base for right and left.

4.3.1 Adjustment of the Carriage Slant

11. When adjustment has been completed, fully tighten the head lock screws (x2).

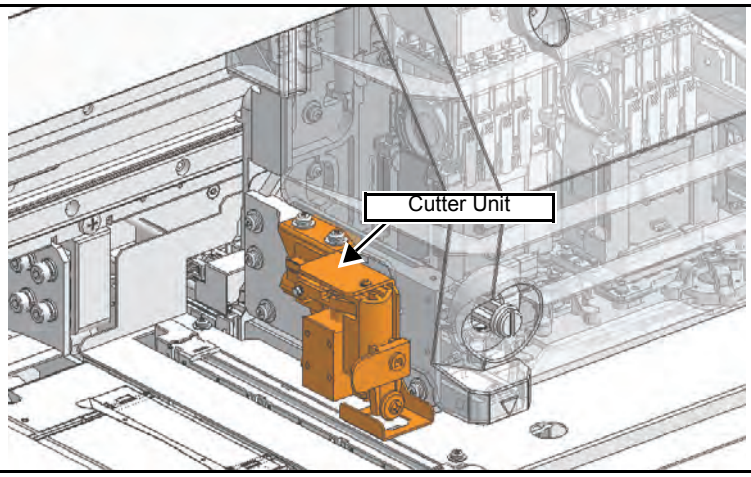
12. Tighten the screw of the adjustment lever (x2).

13. Recheck the height for right and left and back/ forth slant.
    1) If the height for right and left has changed, perform the procedures in the Step 8 to 10.
    2) If the back/ forth slant are found, perform the procedures in the Step 11 and 12.

14. Attach the Sensor BKT and Cutter Assy.

    Lower cable of the Sensor BKT is yellow.

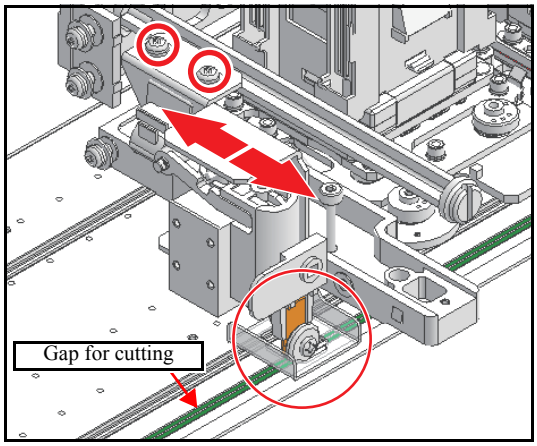
4.3.2 Adjustment of the Mounting Location for the Cutter



■ Function

Adjust the cutter location in the back-and-forth direction by moving the cutter unit back and forth while visually checking the location.

■ Procedure



1. Use the cutter unit screws (x2) to temporarily fix the unit. Tighten the screws just enough to support the unit.
2. Push down the clamp lever.

> IMPORTANT: Be sure to make the adjustment while the clamp lever is lowered. The head initial height should be set in the L range.

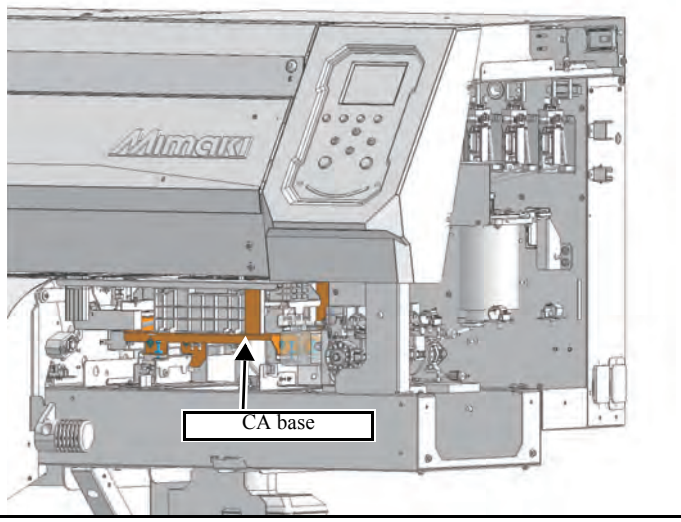
3. Align the front and back of the cutter unit. press the cutter blade assy down to the platen surface gap for cutting and adjust it until it fits, and then determine the front and back position of the unit and fix it using the screws.

> If the jig is not available, press the cutter blade assy down to the platen surface and adjust it until it fits the platen.

4. Move the head unit manually and push down the cutter blade assy at each right, center and left end on the platen, to check back-front positioning.

> On rare occasions, the blade comes out of the slot because of assembly errors or fluctuation in part accuracies. In such a case, adjust again to the back-front optimum position where the blade is always in whole slot on the platen.

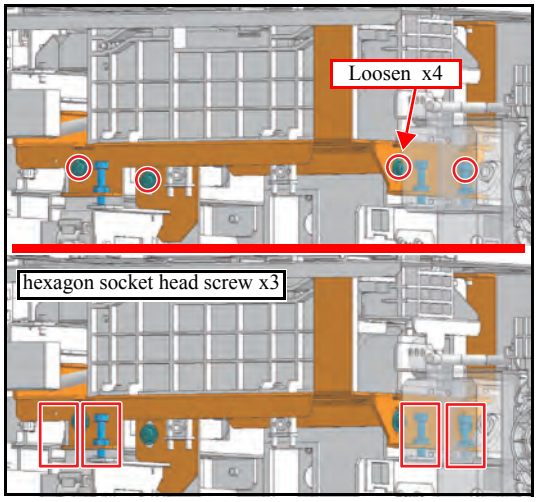
4.3.3 Adjustment of the Station Height



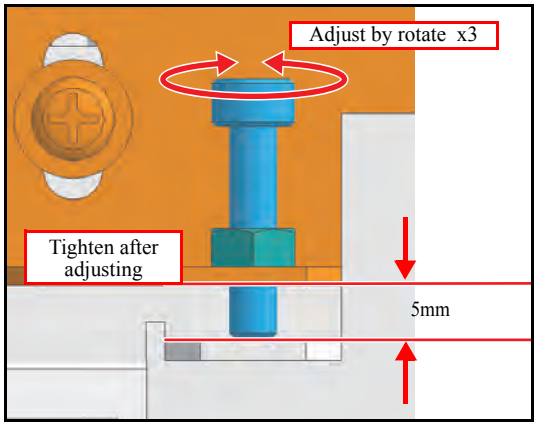
■ Outline

Adjust the height of the station.

■ Procedure



1. Remove the **Cover R**, **Cover R2** and **Undercover R**.
2. Loosen the 4 screws used for **CA base** adjustment.



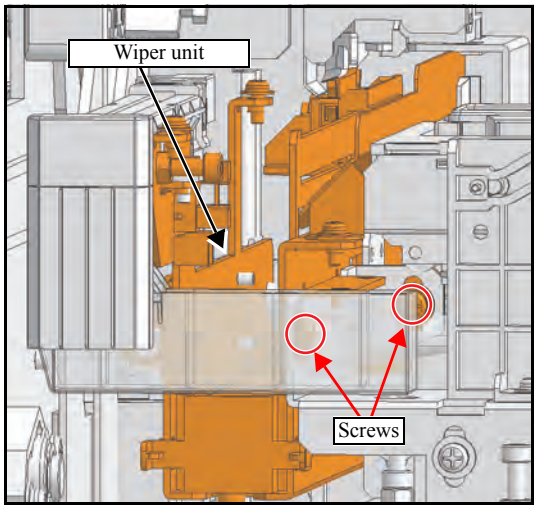
3. Loosen the hexagon socket head screws (x3) and make an adjustment to set their thickness gauge at 5 mm, then tighten the nuts.
4. Tighten up 4 loosened screws used for CA base adjustment

4.3.4 Adjustment of the Wiper Height

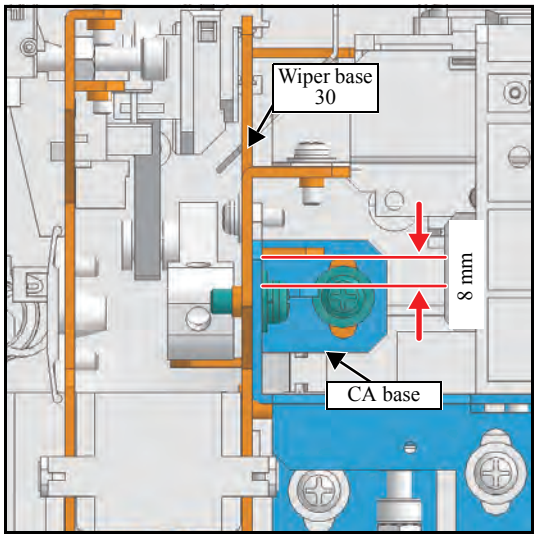
■ Outline

Adjust the height of the wiper.

■ Procedure

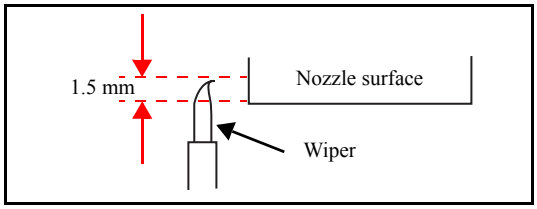


1. Loosen the wiper height adjusting screws (x2)



2. Adjust the distance in the left figure until the thickness gauge is 8 mm.

3. Loosen the screw and the miniature clamp lever on the P cover U front, and then tighten the screws while holding the height adjustment lever in the lowest position to fix the head in place.



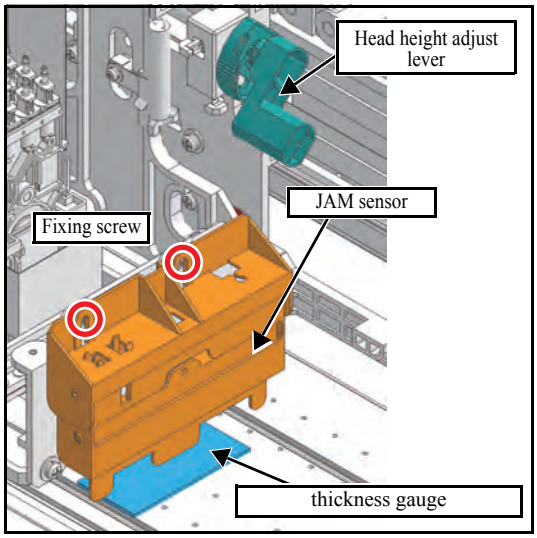
4. Move the wiper base 30, and adjust the wiper so that there is approximately 1.5 mm from the nozzle surface.

4.3.5 Adjustment of the JAM Sensor Height

■ Outline

Adjust the height of the JAM sensor.

■ Procedure



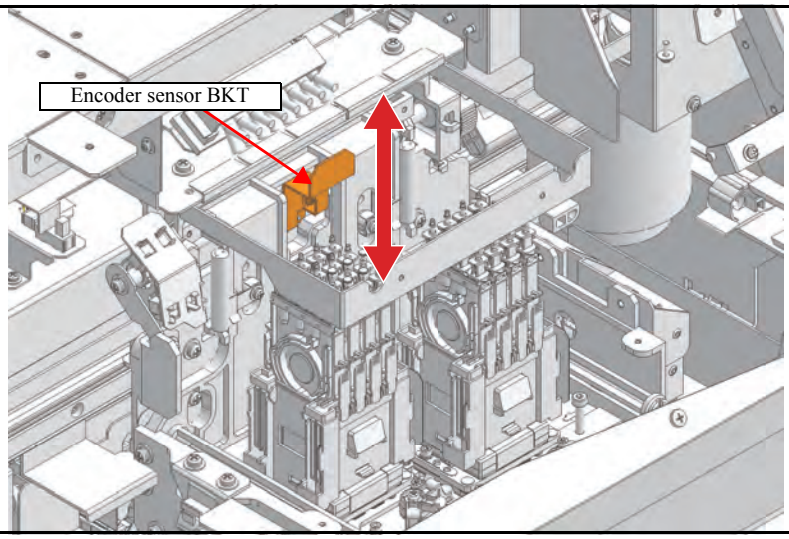
1. Move the carriage onto the platen.
2. Move the Head height adjust lever to the lowest position.
3. Move the clamp lever downward.

> IMPORTANT: Be sure to perform adjustment with the clamp lever down. In addition, the head initialization height shall be L range setting.

4. Loosen the fixing screw (x2) by one revolution.
5. Put thickness gauge between the jam sensor and the platen, and align the height.

   Height adjusting range: 1.7 -1.8mm
6. Tighten the fixing screw.

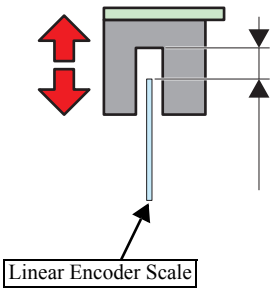
4.3.6 Positioning of the Encoder Sensor



■ Outline

Adjust the position of the encoder sensor.

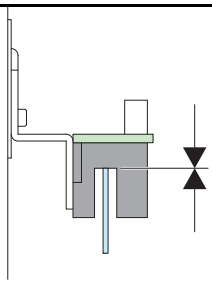
■ Procedure

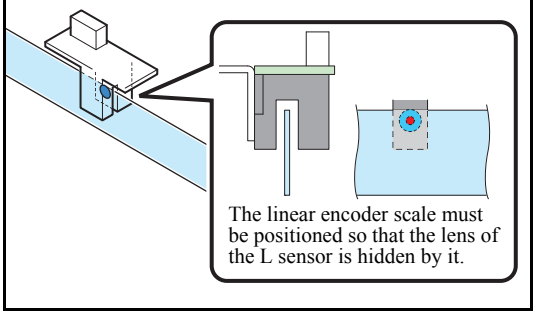


1. Loosen the screws on the L sensor BKT.

   Refer to "6.4.8 Encoder PCB Assy" for details concerning its assembly and disassembly.

2. Adjust the height of the encoder PCB assy and fix it with screws.





3. Check the following two items when moving the print head carriage manually from the right end to the left end on the main body.

   · The upper part of the linear encoder scale is not in touch with the L sensor.

   · The exposed lens of the L sensor is not over the height of the linear encoder scale.

IMPORTANT

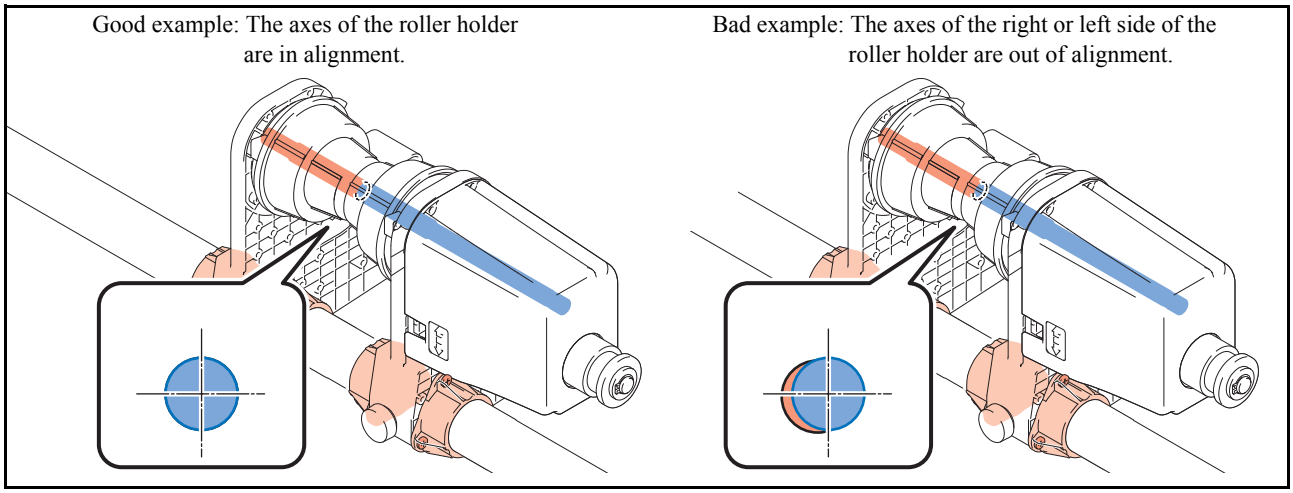
After fixing the L sensor BKT, check whether no abnormality is found by conducting the following [#TEST].

• 5.1.12 CHECK ENCODER

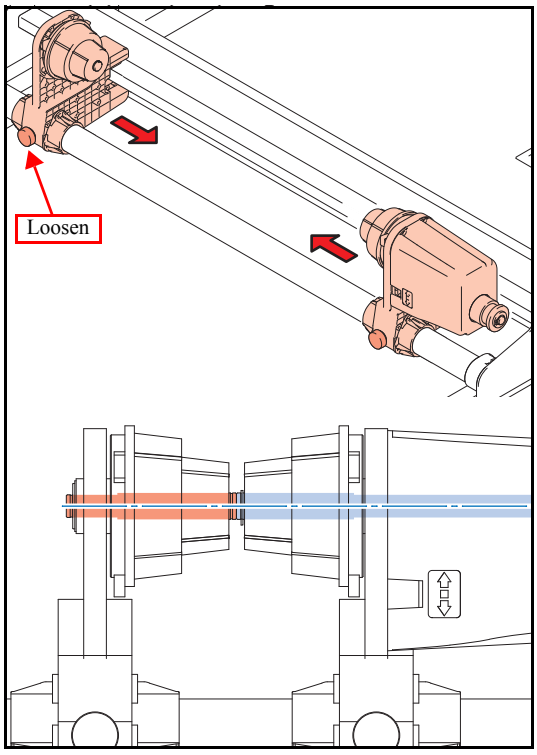
4.3.7 Centering of the Roll Holder

■ Outline

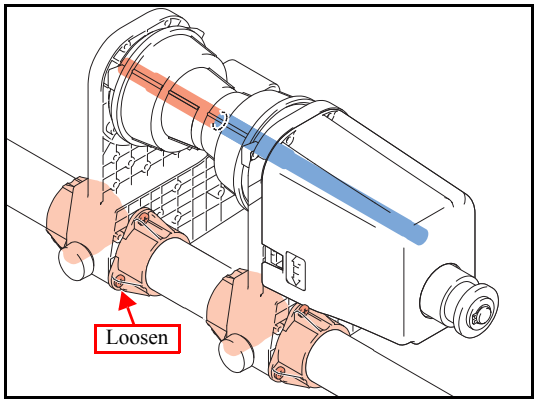
Carry out centering so that the axes of roller holder (axis of both feeding side and take-up side) are aligned, by positioning them face-to-face.



■ Adjustment procedure



1. Carry out centering so that the axes of roll holder are aligned by positioning the feeding side and the take-up side face-to-face.



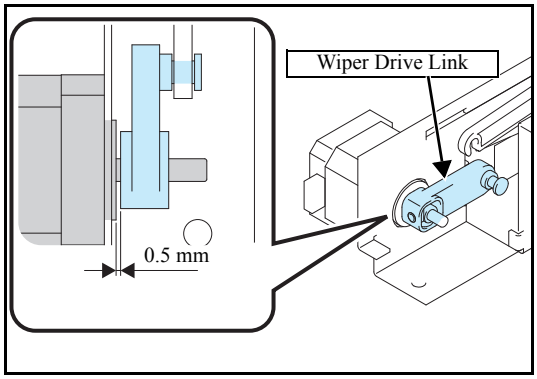
2. In case their axes are not aligned, make adjustment after loosening the screws of the bushing.
3. After the both axes have been aligned, tighten up screws and check for any misalignment of axis at the right, left and central part of the main body.

4.3.8 Positioning of the Wiper Drive Link

■ Outline

Adjust the position of the wiper drive link.

■ Procedure



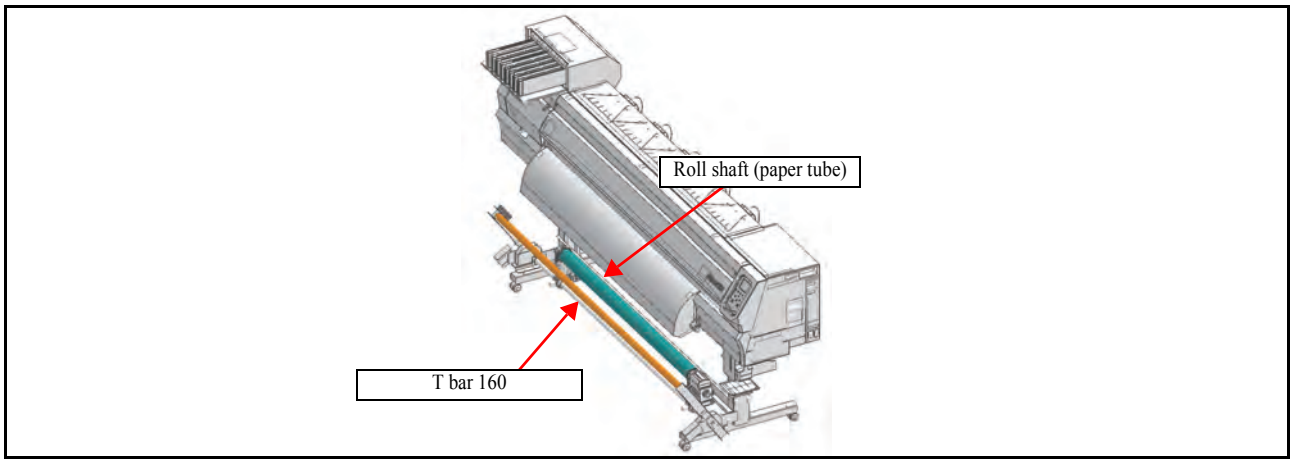
1. After setting the clearance between the motor base and the wiper drive link at 0.5 mm, check whether the wiper moves smoothly.

4.3.9 Parallelism adjustment of the Tension Bar

■ Outline

This device is an option product.

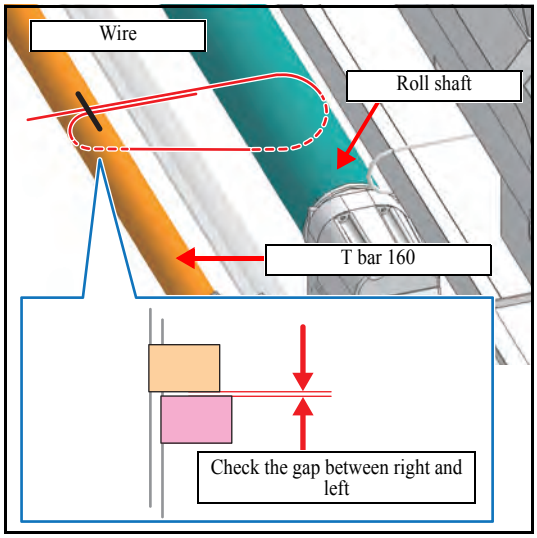
Perform parallelism adjustment between the T bar of the Tension-bar take-up unit and the Roll shaft.



After the parallelism adjustment between the T bar and the Roll shaft, measure the distance between the PR shaft and the Roll shaft at the printer's both edges by using anelastic wire. Based on the distance measured at one side, if the other side is misaligned with the standard, adjust it as the Roll shaft is not parallel.

■ Work procedure

☐ T bar parallelism adjustment: Confirm the parallelism of the T bar 160 and the Roll shaft by measuring the distance of both.



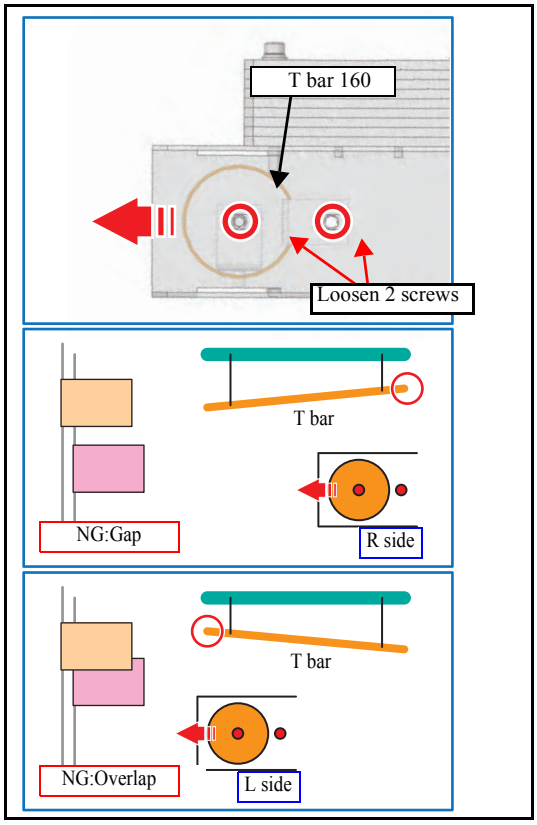
1. Fix the level foot.
2. Lower the T bar 160.
3. Wrap a wire with a mark (tape) around the T bar 160 and the roll shaft, and measure the distance between the T bar 160 and roll shaft.

   Measure both the left and right sides. If there is a difference, perform the following adjustment.

IMPORTANT Apply tension appropriately to the wire.

IMPORTANT Be careful not to raise the T bar due to the tension of the wire.

4.3.9 Parallelism adjustment of the Tension Bar



4. Loosen the two screws affixing the T bar and move the T bar to adjust it.

   If you measured the right side then the left side,

   1)There is a gap in the tape. (Within 1 mm is permissible.)

   Adjustment method: Loosen the screw on the right side and pull the T bar towards you.

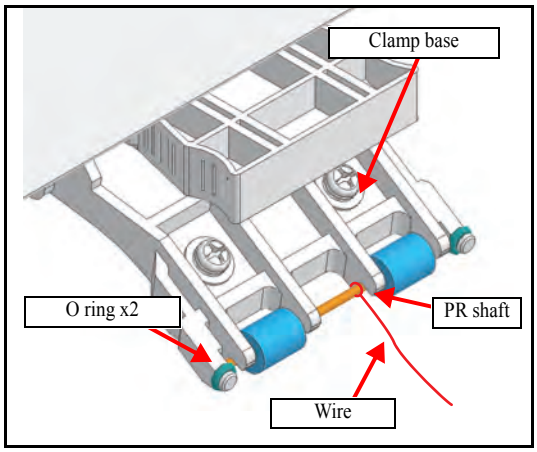
   2)The tape is overlapping. (Within 1 mm is permissible.)

   Adjustment method: Loosen the screw on the left side and pull the T bar towards you.

> IMPORTANT The T bar is installed pressed against the machine side. Move it towards you during adjustment.

5. Repeat Steps 3 and 4 above and tighten the two screws when parallelism is achieved.

☐ Roll shaft parallelism adjustment:

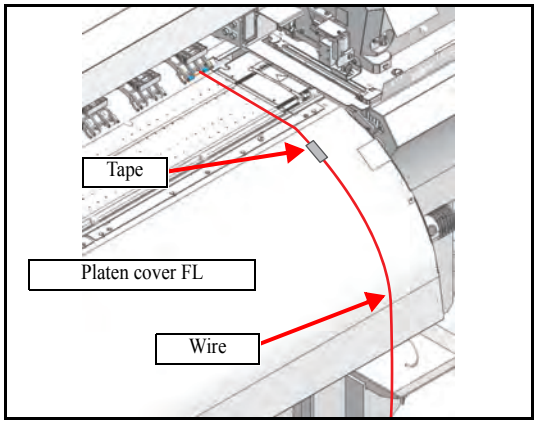


1. Lower the Clamp lever.
2. Remove the two O rings on the clamp base on the right side of the printer, and remove the pinch roller.
3. Tie a wire to the PR shaft on the removed pinch roller.

> IMPORTANT Tie the wire at the base of the PR shaft.

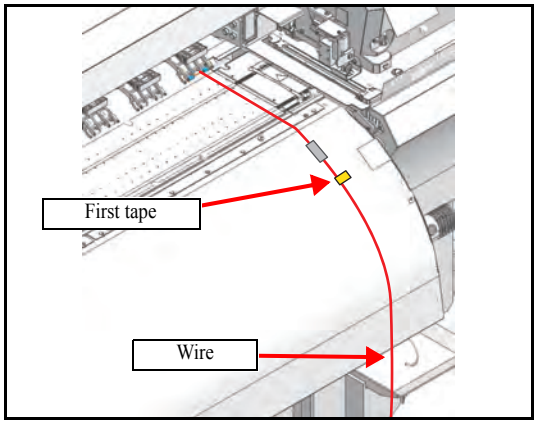
4. Install the pinch roller, with the wire on it, on the clamp base.

4.3.9 Parallelism adjustment of the Tension Bar



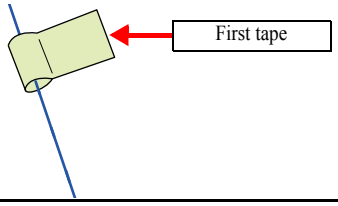
5. Drape the wire vertically and affix it to the platen cover FL using tape.

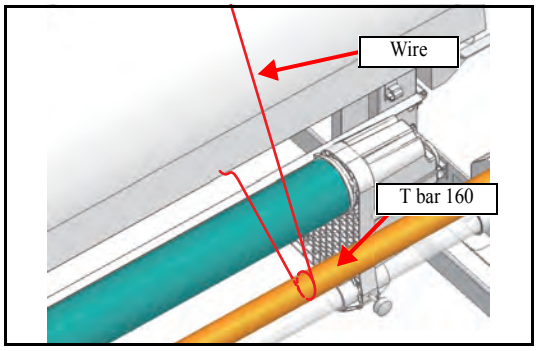
> IMPORTANT
> Apply tension appropriately to the wire.



6. Attach a piece of tape (the first tape) to the wire.

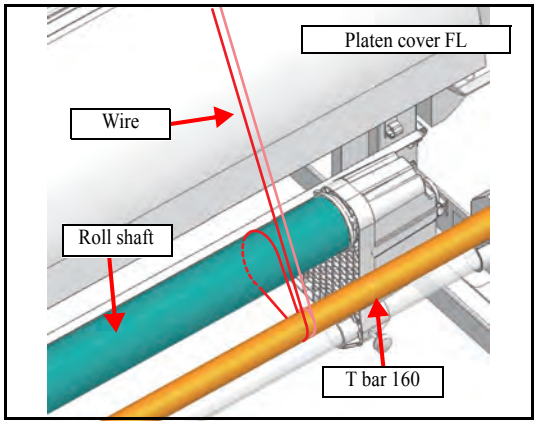
> IMPORTANT





7. With the wire tense, wrap the wire around the T bar 160 once.

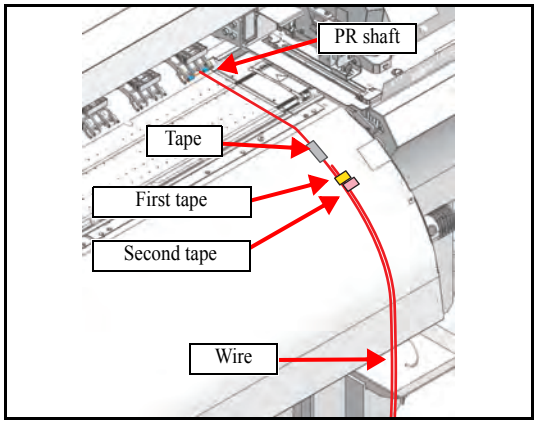
> IMPORTANT
> Be careful not to raise the T bar due to the tension of the wire.

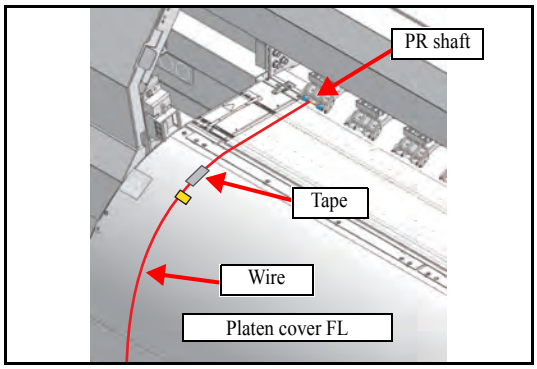


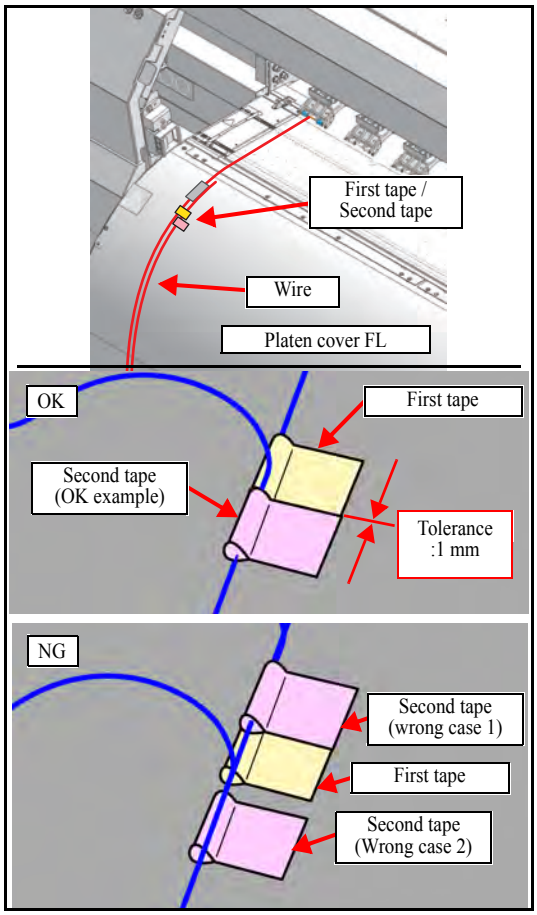
8. Pull the wire around the roll shaft.

9. Pull the wire to the platen cover FL, going around the T bar 160.

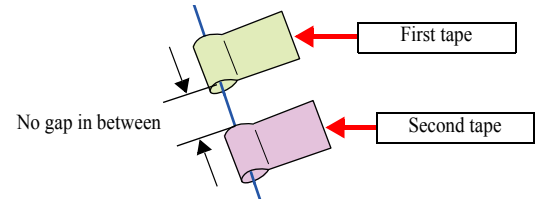
4.3.9 Parallelism adjustment of the Tension Bar







10. Apply a second piece of tape, touching the first one.

> **IMPORTANT**
> Attach the second tape without any gap to the first tape.
>
> 
>

11. Remove the tape affixing the wire to the platen cover FL.

12. Loosen the screws of the clamp base and remove the wire from the PR shaft.

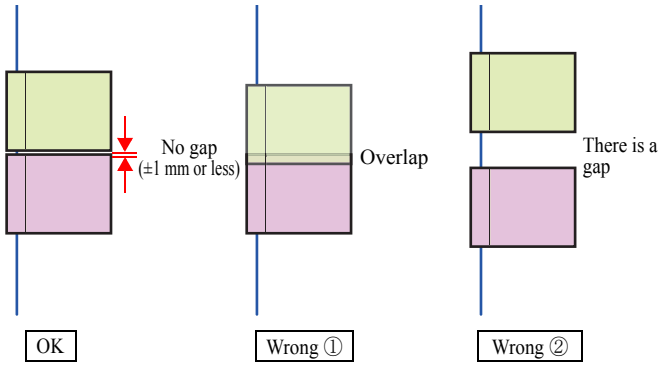
13. Feed the wire through the PR shaft on the clamp base on the left side of the printer in the same way as Steps 1 to 4.

14. With the wire vertical, affix it to the platen cover FL using tape.

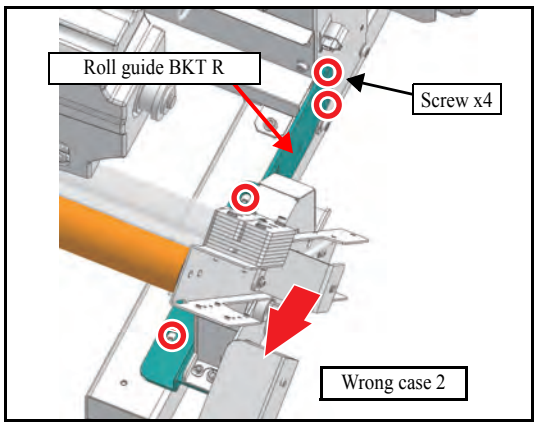
> **IMPORTANT**
> Apply tension appropriately to the wire.

15. With the wire tense, pull the wire to the platen cover FL.

16. Confirm the position of the second piece of tape compared to the first one.
    - If the edge of the tape touches the first piece:
      Complete adjustment.
    - Anything else:
      Perform the following adjustment.



4.3.9 Parallelism adjustment of the Tension Bar



17. If the parallelism is wrong, loosen the four screws affixing the roll guide BKT L or the roll guide BKT R.

18. Slide the roll guide BKT towards you while checking the position of the tape, and tighten the four screws when parallelism is achieved.

- If the second piece of tape surpasses the first (Wrong (1)):
  Slide the roll guide BKT L towards you to adjust it.
- If the second piece of tape does not reach the first (Wrong (2)):
  Slide the roll guide BKT R towards you to adjust it.

IMPORTANT

The T bar is installed pressed against the machine side. Move it towards you during adjustment.

Test Items

5.1.1 CHECK PATTERN

■ Outline

Following 9 “CHECK PATTERN” types are printable.

100%	50%	25%	6.25%
NOZZLE	V-LINE	H-LINE	SLANT
GRADATE			

■ List of CHECK PATTERN

No	Operation	Selectable Values / Description
1	Select a pattern	Select a desired one among the check patterns listed above.
2	Select X resolution	180 ～ 1440 dpi
3	Select Y resolution	180 ～ 1440 dpi
4	Select scan direction and the number of divisions.	Direction : SiDir ,BiDir Divisions : 4,8,16,32,64 passes,6,12,24,48 passes
5	Select the Linewidth	1~1500dots
6	Select the interval of the line.	1~9999dots
7	Select drawing size	X: 10 ~ 99990 mm Y: 10mm ~ Paper detect size
8	Select drawing color	MCYK(4 color), (4color+W) MLmCMLcCKY(6color), (6color+W)
9	Start drawing.	[ENTER]: Starts drawing. [REMOTE]: Selects nozzles and Switches between high speed scanning ON and OFF.
10	During drawing.	[END]: Stop the drawing.

5.1.2 SENSOR

■ Outline

Each sensor is tested.

■ List of SENSOR TEST

Name of Test	Function	LCD display
COVER	Displaying the status of the Cover Sensor. (The identification by the cover name is not possible. Because each cover sensor for series connection.)	OPEN/CLOSE
Y ORIGIN	Displaying the status of the Y-origin Sensor.	ON/OFF
LEVER	Displaying the status of the Clamp Lever.	ON/OFF
REAR PAPER	Displaying the status of the Rear Paper Sensor.	ON/OFF
WIPER	Displaying the status of the Wiper Origin Sensor.	ON/OFF
WASH CARTRIDGE	Displaying the status of the Wash Cartridge Sensor.	ON/OFF
WASH CART. END	Displaying the status of the Wash Cartridge Near End Sensor.	ON/OFF
HEAD(UPSIDE)	Displaying the status of the Ink Head.	ON/OFF
HEAD(DOWNSIDE)	Displaying the status of the Ink Head.	ON/OFF
MEDIA JAM	Displaying the status of the Media Jam Sensor.	ON/OFF
CLEANER	Displaying the status of the Cleaner.	ON/OFF
PUMP MOTOR	Displaying the status of the Pass Select Sensor.	ON/OFF
TAKE-UP	Displaying the status of the Take-Up Motor.	ON/OFF (For 300 series only)
TENSION BAR	Displaying the origin status of the Angle Sensor.	ON/OFF
SLIT COUNT A	Displaying the slit count status of the Angle Sensor.	ON/OFF
SLIT COUNT B	Displaying the slit count status of the Angle Sensor.	ON/OFF
TORQUE LIMITTER	Torque limit sensor condition of the take-up motor.	ON/OFF

5.1.3 MEMORY CHECK

■ Outline

Checks each memory of the machine.

■ Content

Item	Content
SDRAM check	Executes Read/Write check of SDRAM (PRAM). ◆When a DATA error occurs, “SDRAM D:xxxxxxxx” is displayed. ◆When a Address error occurs, “SDRAM A:xxxxxxxx” is displayed.
F-ROM check	Executes hash check of F-ROM. ◆When a check sum error occurs, “F-ROM SUM ERROR” is displayed.
SDRAM check	Executes Read/Write check of SDRAM. ◆When a DATA error occurs, “SDRAM D:xxxxxxxx” is displayed. ◆When a Address error occurs, “SDRAM A:xxxxxxxx” is displayed.
HEAD check	Executes Read/Write check of Head memory.

5.1.4 KEYBOARD TEST

■ Outline

Tests the panel switch.

■ Content

When the panel switch is pressed, the name of the switch is displayed on the LCD.

・If none is pressed, “NONE” is displayed on the LCD.

・When you press the [END] key, “Test end” is displayed and the keyboard test is completed.

・When you press the [▲] / [▼] key, check the buzzer sound of keyboard.

5.1.5 LCD

■ Outline

Checks the display of LCD.

■ Content

When you press the [ENTER] key, display color of the LCD is changed.

When you press the [END] key, the LCD is completed.

5.1.6 CHECK TEMP.

■ Outline

Temperature check of each part that monitors temperature is available.

■ Content

The temperature in the table below is displayed.

Display	Content
IO HEATSINK 1	COM IO PCB Heat sink 1
IO HEATSINK 2	COM IO PCB Heat sink 2
SL2H THERMISTOR	Temperature of Slider 2H PCB
HEAD1	Head temperature of head 1
HEAD2	Head temperature of head 2
ROOM AIR	Room temperature

5.1.7 CHECK INK IC

■ **Outline**

Check the ink cartridge IC.

■ **Content**

Check is performed by reading the IC chip data, and then displays the number of errors for each cartridge.

When an error occurs, “IC=1 ERR=1” is displayed.

5.1.8 CARTRIDGE VALVE

■ **Function**

Open/close of cartridge valve is checked.
Executes all OPEN/all CLOSE of valves by pressing [FUNCTION] key.

5.1.9 CARTRIDGE SENSOR

■ **Function**

Check attachment or not of the cartridge IC and operating conditions of the Ink end sensor.

5.1.10 Maintenance Cartridge

■ Function

Perform various operation checks of slot of the maintenance cartridge.

1, Checking cartridge sensor and ink near end sensor
2, Valve operation test

5.1.11 AGING

■ Outline

For the durability testing, continuous reciprocating operation is executed.

■ List of AGING items

Name of Test	Function
XY SERVO*	Continuous reciprocating operation in X-axis and Y-axis
X SERVO	Continuous reciprocating operation in X-axis
Y SERVO*	Continuous reciprocating operation in Y-axis
PUMP MOTOR	Continuous operation of Ink-supplying Pump Motor (Max.24Days)
WIPER MOTER	Continuous reciprocating operation of Wiper Motor (Max.9999Times)
WIPE HEAD	Continuous reciprocating operation of Wiping. (Max.9999Times)
CAPPING	Continuous reciprocating operation of Capping.
CLEANING	Execution of cleaning operation by the designated times (Max.500Times)
FLASHING	Continuous reciprocating operation of Flashing.
X measure	Continuous operation of the X measure.
COM	For developmental debugging
CIRCURATION	Operation of Circuration Pump Motor.
CARTRIDGE VALVE	Operation of Cartridge valve.
ノズルケン	Continuous reciprocating operation of Nozzle detecting unit.
TEST FEED	Continuous reciprocating operation of quantity of designated field.

*It may cause ink leakage from the Head when executed in keeping the ink charged.

For the work, put down unused media or the like in advance since it may cause ink leakage when [Y SERVO] or [XY SERVO] is executed.

5.1.12 CHECK ENCODER

■ Outline

Checks the operation of the linear encoder and the motor encoder by moving the slider.

■ Content

“M: xxx E: xxx” is displayed on the lower row of the LCD. The coordinate value of the motor encoder is displayed in M, and that of the linear encoder is displayed in E in units of mm.

With [◀] [▶] key, you can move the slider to right and left.

5.1.13 H/W

■ Outline

Port test of the hardware

■ Content

As this is a function for development, the details are not disclosed.

5.1.14 Paper Sensor

■ **Function**

The paper sensor is tested.
Remove the cap(move the station to its lowest point), and then display the paper sensor read value.

*** (@@@,$$$) @@@: Sensor read value during SLOP-ON

$$$: Sensor read value during SLOP-OFF

*** : Difference between @@@ and $$$

The sensor read value is updated regularly (every 150 msec).

[◀], [▶] : Moves the head

[END] : After the cap is put back on, the paper sensor test is completed.

5.1.15 HEATER

■ Function

Temperature tests of the media heater, ON/OFF test of heater are executed.

- Temperature is displayed with a unit selected in the [UNIT SETUP] of the [MACHINE SETUP] function.
- A/D conversion value is also displayed.

■ Operation Procedures of "TEMP."

Purpose: Check that heater temperature control can operate normally.
Contents: The operation is same when the HEATER key is pressed in LOCAL. However, the changed value is not saved.

Step	Item	Description	Remarks
1	Temperature setting	Sets temperature of Pre, Print, and Post Heater to control the heater. Set value (Celsius): OFF, 20 – 70 °C (unit: 1°C) Set value (Fahrenheit): OFF, 68 – 122°F (Because conversion is used, the unit is not 1 °F)	
2	Temperature display	[END]: Returns to temperature setting.	

■ Operation Procedures of "SSR"

Purpose: Check the heater operation and the A/D value.
Contents: The ON heater temperature moves up. If it is left, it may exceed the upper limit of the setting value. Be careful about it.

Step	Item	Description	Remarks
1	ON/OFF setting	Designates ON/OFF of Pre, Print and Post Heater. The temperature of the heater you turned on will rise. Be aware that if left alone, it may exceed the set upper limit.	Temperature is not controlled.
2	ON/OFF display	[END]: Returns to setting screen.	

5.1.16 ACTION TEST

■ Function

Checks the operation of movable parts alone of the machine.

■ List of test items

Item	Description
VACUUM	Description: Operation test of vacuum fan motor. Set value: LOW, MID, HIGH, OFF
CUTTER	Description: Operation test of media cutter. Set value: ON, OFF
TAKE-UP MOTOR	Description: Operation test of take-up motor. Set value: ON, OFF
CEILING FAN	Description: Operation test of ceiling fan. Set value: ON, OFF
LED POINTER	Description: Operation test of LED pointer. Set value: ON, OFF
CIRCULATION PUMP	Description: Operation test of Circulation pump. Set value: 1, 2

5.1.17 LED

■ Function

ON/OFF test of LEDs is executed.

■ List of LEDs

LED	Kinds
POWER LED	ON/OFF
CARTRIDGE LED	RED, GREEN, BLUE, R/G, R/B, G/B, RGB

5.1.18 SKEW CHECK

■ **Function**

Skewing of media is checked.

Feed distance is designated to execute feeding.
Feed distance: 1–10 m (unit: 1 m)

[END]: Finish feeding, [ENTER]: Aborts/Restarts feeding.

5.1.19 VOLTAGE CHECK

■ Outline

You can check the internal DC power supply voltage with LCD display.
The displayed value is the read value of AD conversion circuit.

■ Content

For each DC power supply voltage setting value (design value), actual voltage value is displayed.

DC power supply name	Setting value (design value) [V]	Main use
V CORE	1.3310	CPU core voltage
12V	12.0	Internal circuit
V1	36.0	Motor drive Head drive etc.
V2	36.0	
3.3VB	3.3	Circuit for sleep functions
3.3V	3.3	Internal circuit
2.5V	2.5	Internal circuit
1.8Vme	1.8	Internal circuit
1.5VB	1.5	Low voltage circuit
1.2V	1.2	Low voltage circuit
IO 1.2V	1.2	Low voltage circuit
IO 2.5V	2.5	Internal circuit
IO 3.3V	3.3	Internal circuit
IO 24V	24	Internal circuit
SL 1.2V	1.2	Low voltage circuit
SL 2.5V	2.5	Internal circuit
SL 3.3V	3.3	Internal circuit
SL 5V	5	Internal circuit
SL 42V	42	Internal circuit

5.1.20 EVENT LOG

■ **Function**

Saved Event Logs are displayed.

■ **Content**

As this is a function for development, the details are not disclosed.

5.1.21 CHECK MESSAGE

■ **Function**

Checks the display of error and warning message.

■ **Content**

Change the display of error / warning message with [▲] / [▼] key.

Test Items

5.2.1 Determining short circuit of COM32 IO PCB

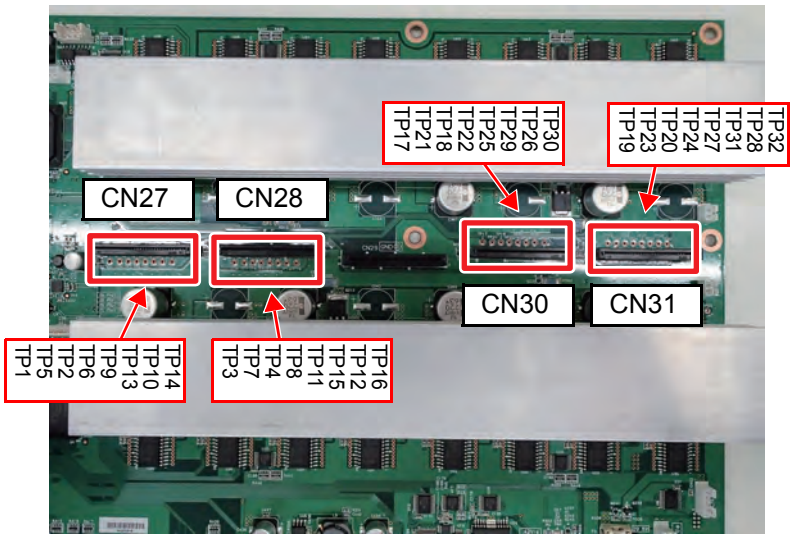
■ Outline

Check whether the COM circuit generating part of the COM32 IO PCB has electrical trouble or not.

Warning

After turning off the sub and main power switches in order, unplug the power code.
Check if no electric charge is remaining in the PCB.
It is very dangerous if sleep mode functions mistakenly during the operation.
Moreover, the PCB may be damaged in case electric charge still remains inside.
Also there is a possibility of electric shock because of high power voltage applied the high-pressure part of PCB. Take care to avoid contact with it.

■ Procedure



1. Release the top and bottom lock of the connector under the N27, CN28, CN29, CN30, and CN31 of the COM32 IO PCB, and disconnect the FFC.

2. Measure a resistance between the test pin (TP) and GND on the COM32 IO PCB ASSY to determine the COM circuit condition.

   Connect the negative terminal of the tester to the GND test pin and measure the resistance by getting the positive terminal touch to TP with the following.

   On the COM32 IO PCB,
   TP under CN27 (TP1, 5, 2, 6, 9, 13, 10, 14),
   TP under CN28 (TP3, 7, 4, 8, 11, 15, 12, 16),
   TP under CN30 (TP17, 21, 18, 22, 25, 29, 26, 30),
   TP under CN31 (TP19, 23, 20, 24, 27, 31, 28, 32),

   Measured value of each test pin should be in the range of 16K ohms to 18K ohms.

5.2.1 Determining short circuit of COM32 IO PCB

IMPORTANT

If all the measured value of the TP is shown in the abnormal range, compare with the measured value of the normal circuit board since it may be variation of the tester.

5.2.2 Checking Damage of the Print Heads

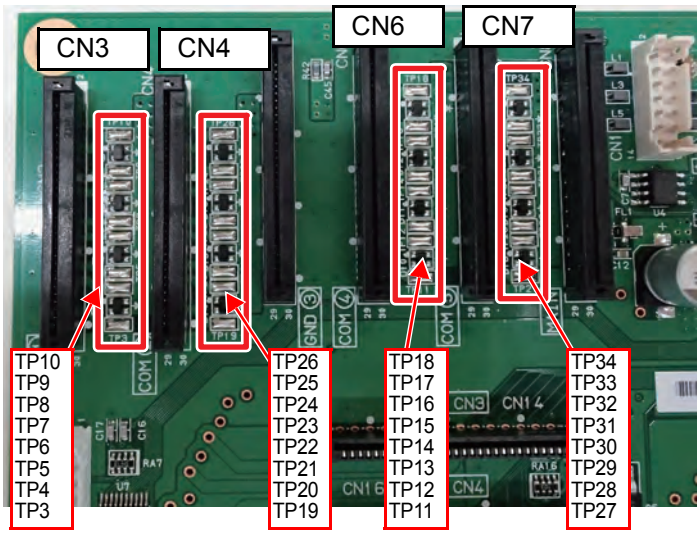
■ Outline

Check whether the COM line between the print head and the SL2H PCB has trouble or not.

Warning

After turning off the sub and main power switches in order, unplug the power code.
Check if no electric charge is remaining in the PCB.
It is very dangerous if sleep mode functions mistakenly during the operation.
Moreover, the PCB may be damaged in case electric charge still remains inside.
Also there is a possibility of electric shock because of high power voltage applied the high-pressure part of PCB. Take care to avoid contact with it.

■ Procedure



1. Release the top and bottom lock of the connector under CN3, CN4, CN5, CN6 and CN7 of the SL2H PCB, and disconnect the FFC.

2. Measure a resistance between the test pin (TP) and GND on the Slider 2H PCB ASSY to determine the COM circuit condition.

   Connect the negative terminal of the tester to the GND test pin and measure the resistance by getting the positive terminal touch to TP with the following.

   On the Slider 2H,
   TP under CN3 (TP3, 4, 5, 6, 7, 8, 9, 10),
   TP under CN4 (TP19, 20, 21, 22, 23, 24, 25, 26),
   TP under CN6 (TP11, 12, 13, 14, 15, 16, 17, 18),
   TP under CN7 (TP27, 28, 29, 30, 31, 32, 33, 34),

   Measured value of each test pin should be more than 7K ohms.

   If the results for the TP group besides CN3 or the TP group besides CN4 are not good, there is a fault in head 1.

   If the results for the TP group besides CN6 or the TP group besides CN7 are not good, there is a fault in head 1.

5.2.2 Checking Damage of the Print Heads

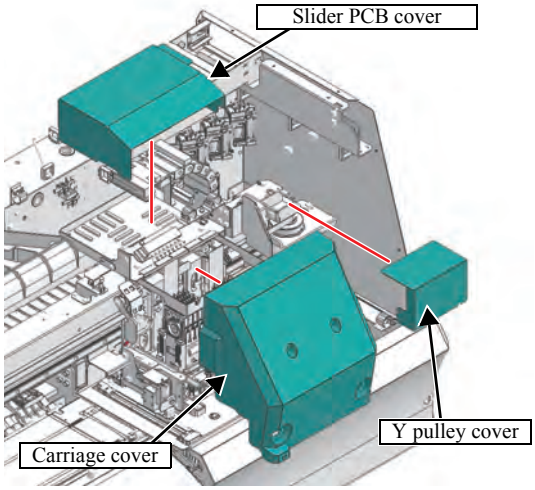
If any of the head COM line defect is found, the print head may be broken. Replace the print heads first. Connecting the normal main PCB without replacing the broken head will break the PCB continuously.

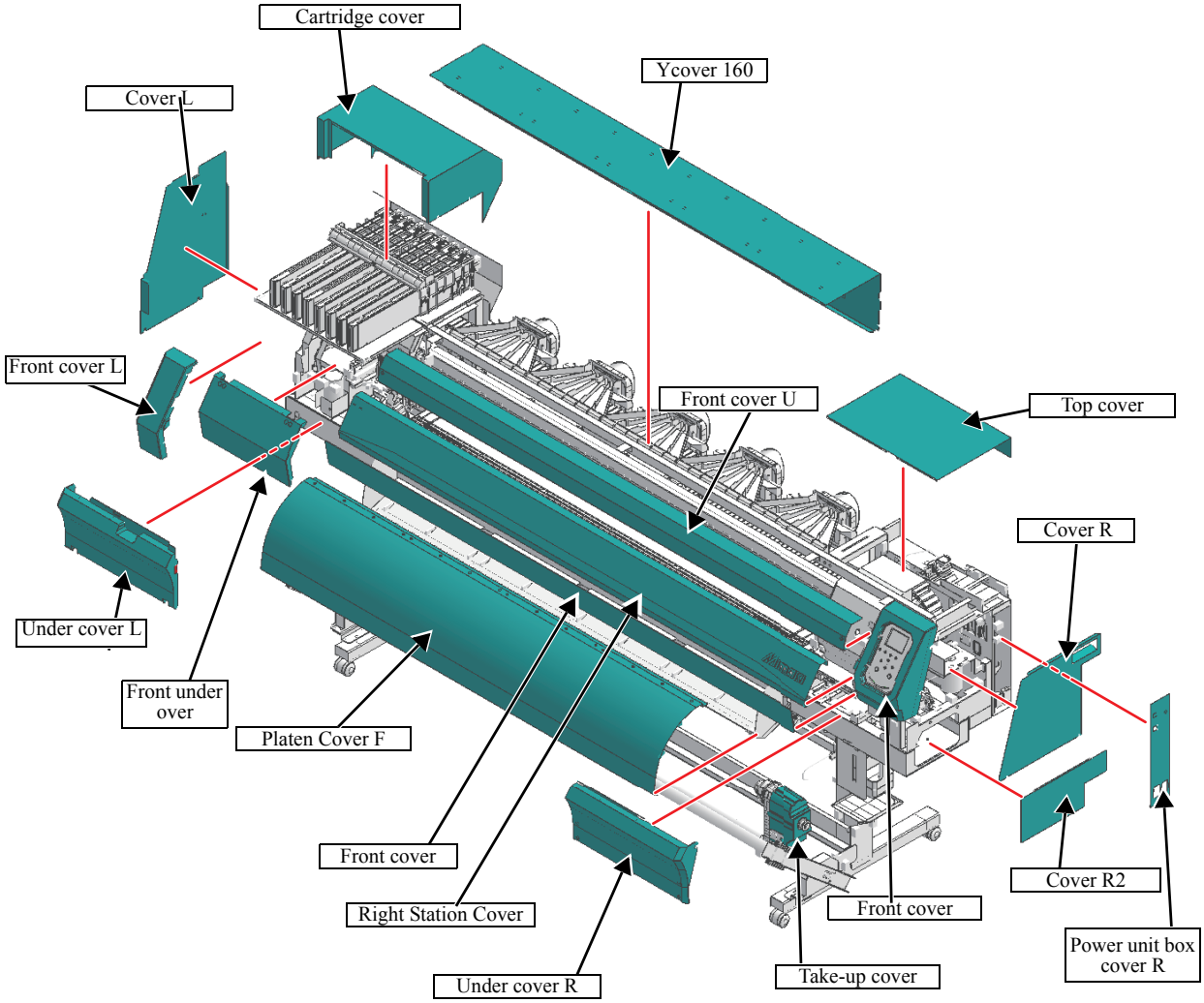
Disassembly and Reassembly

6.1.1 Cover Layout

■ Machine Front

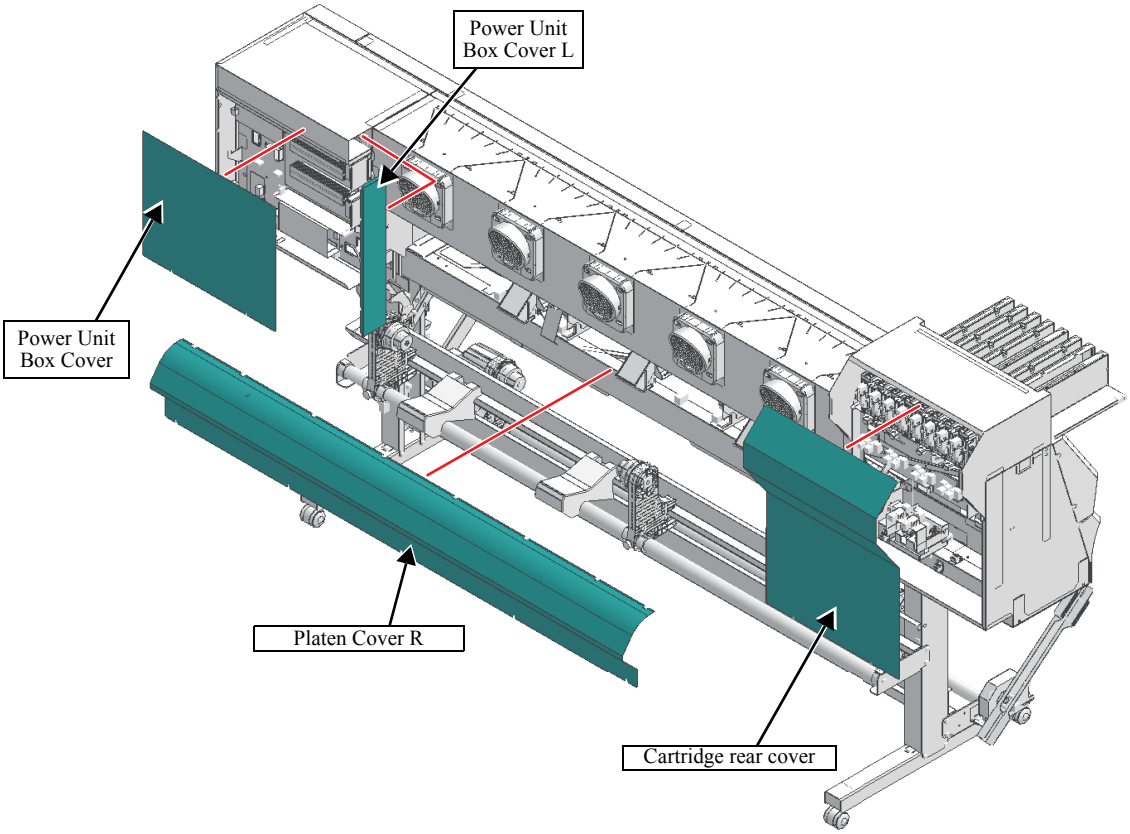
☐ Around carriage





6.1.1 Cover Layout

■ **Machine Rear**



IMPORTANT

When fixing the cover, put it inside of the washer of loosened screw and tighten the screw.

Good example:

The washer of the screw is outside of the cover.

Bad example:

The washer of the screw is inside of the cover.

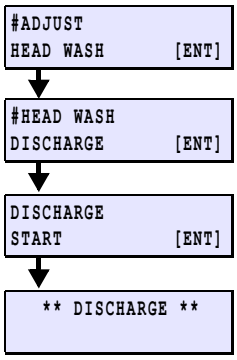
Disassembly and Reassembly

6.2.1 Damper

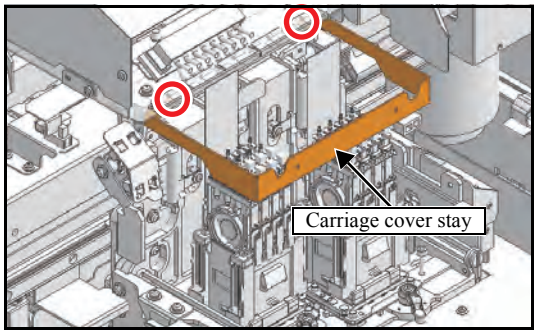
■ Work procedures

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

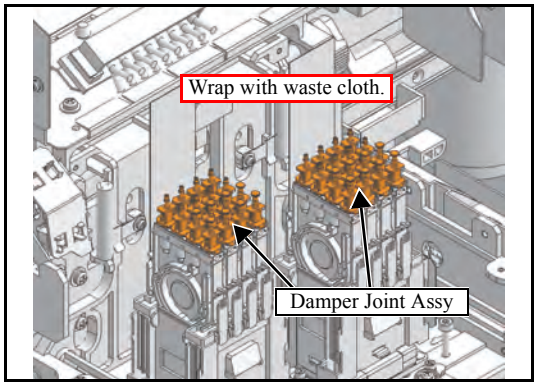
> **Caution** Be sure to wear protective glasses and working gloves during the operation.
> Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.



1. Select [HEAD WASH / DISCHARGE] from the operation menu.
2. Check discharging of ink in the damper visually and then press the [END] key.
3. Turning the power off.
4. Move the print head carriage onto the platen to make your work easy.



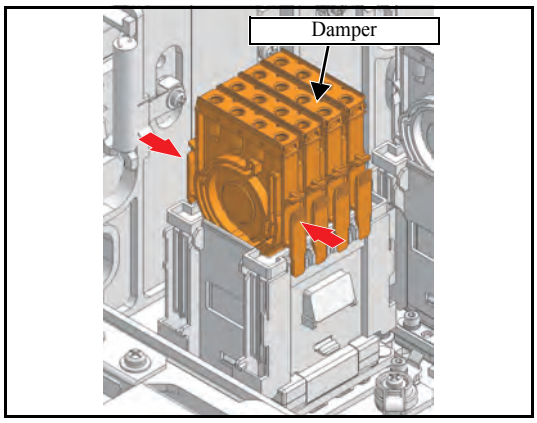
5. Loosen the screws at two locations on the right and left to remove the **Carriage cover stay**.



6. Remove the **damper joint Assy**. and wrap with waste cloth.

> **IMPORTANT** Place the waste cloth around the head unit so as not to contaminate the platen.

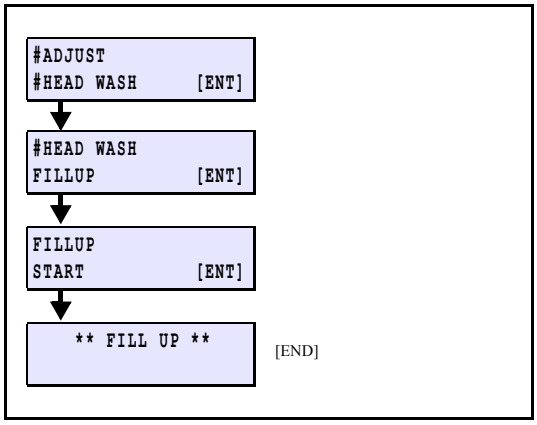
6.2.1 Damper



7. Remove the damper.

8. Perform the assembly by reversing the disassembly procedure.

> IMPORTANT
> Do not mess up the orders of ink tube tag.
> (Confirm "1.3.1 Configuration")



9. Perform [HEAD WASH / FILLUP] and fill ink in the damper.

   Perform vacuum absorption -> valve release -> normal cleaning automatically.

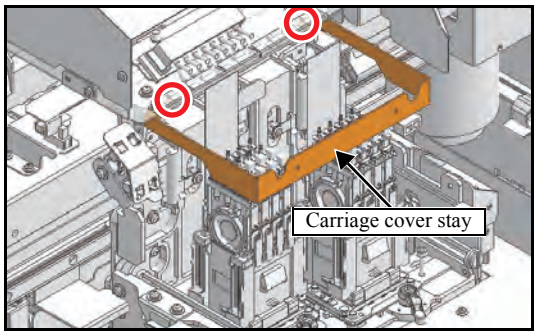
6.2.2 Head Unit

■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

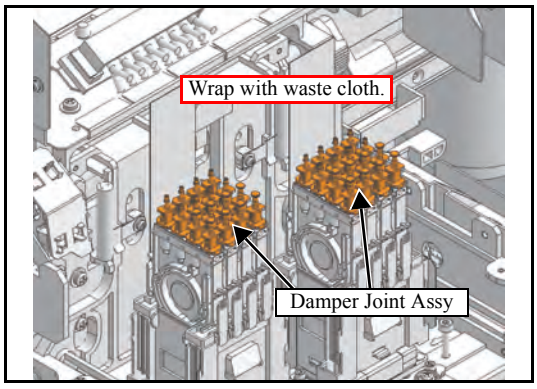
> **Caution** Be sure to wear protective glasses and working gloves during the operation.
> Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

1. Turning the power off.
2. Move the print head carriage onto the platen to make your work easy.
3. Loosen the screws at two locations on the right and left to remove the **Carriage cover stay**.

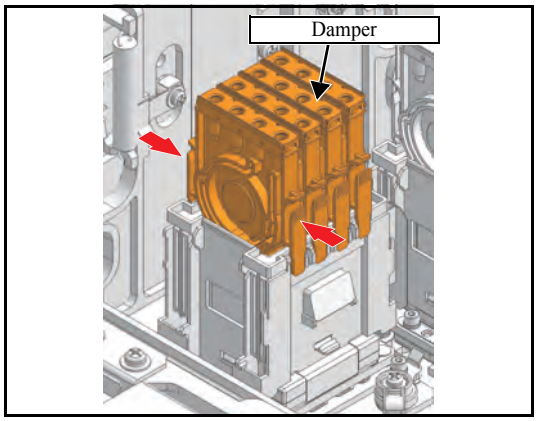


4. Remove the FFC from SL2H PCB Assy. and disconnect the connector of the mini memory PCB.
5. Remove the **Damper joint Assy.** and wrap with waste cloth.

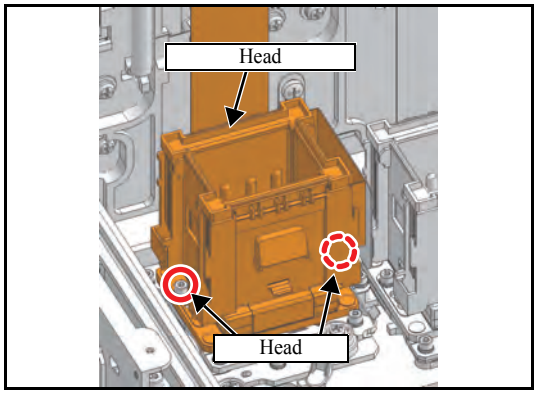
> **IMPORTANT** Place the waste cloth around the head unit so as not to contaminate the platen.



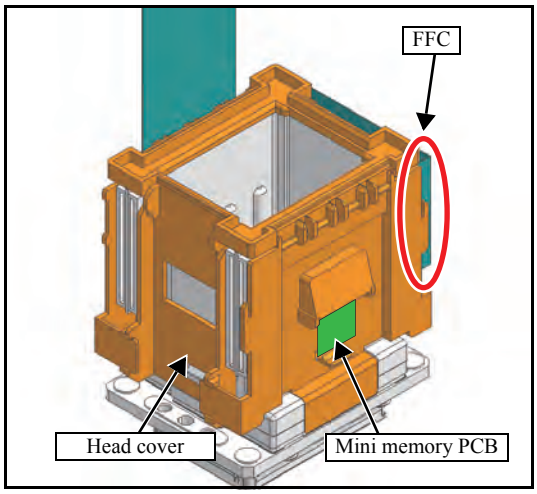
6. Remove the damper.



6.2.2 Head Unit



7. Remove the screws (x2) and the **Head unit**.



8. Remove the **Head cover**. (In case of head replacement, this step is not necessary.)
9. Remove the **Mini memory PCB**. (In case of head replacement, this step is not necessary.)
10. Remove the **FFC**. (In case of head replacement, this step is not necessary.)
11. Perform the assembly by reversing the disassembly procedure.

> IMPORTANT
> Do not mess up the orders of ink tube tag.
> (Confirm "1.3.1 Configuration")

12. Perform [MAINTENANCE][INK FILLING][HARD] and fill ink in the damper.

■ Head unit internal cleaning when using solvent ink

If replacing the head unit of a solvent ink printer, clean the inside of the new head before installing it.

☐ Work procedures

1. Use a syringe to fill the damper with MS cleaning liquid.
2. Install the damper filled with cleaning liquid to the new head.
3. Slowly press the syringe so cleaning liquid seeps from the nozzle.

   Standard pumping speed: 3-4 ml per 30 seconds per nozzle

> IMPORTANT
> Use a waste cloth for curing, so as not to stain the surroundings with cleaning liquid.

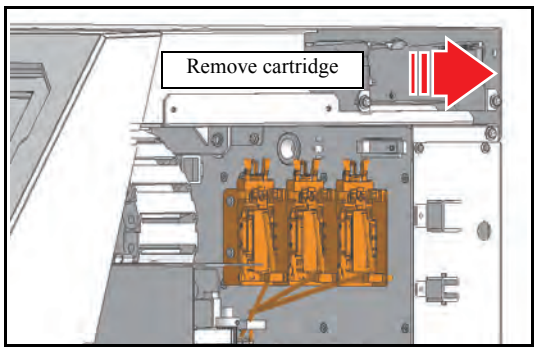
6.2.3 Cleaning Liquid Valve

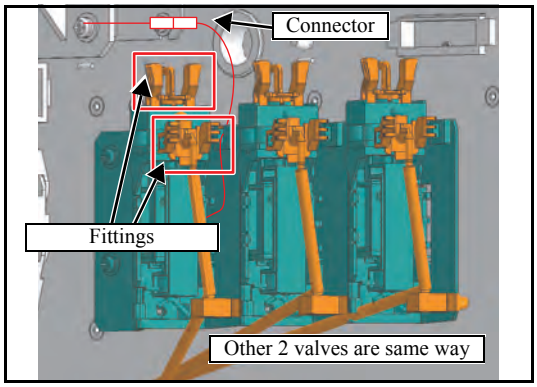
■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

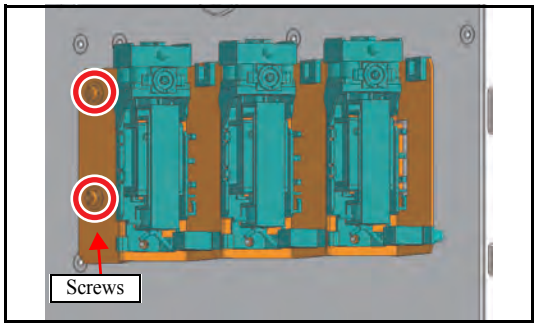
> **Caution** Be sure to wear protective glasses and working gloves during the operation.
> Cleaning liquid may get into your eyes depending on the working condition, or hand skin may get rough if you touch the liquid.

1. Remove the **Front cover M and L**.
2. Remove the **Ink cartridge**.
3. Discharge the cleaning liquid in the tube.
4. Turning the power off.





5. Remove the **Fittings** (x2).
   Remove the **Connector**.

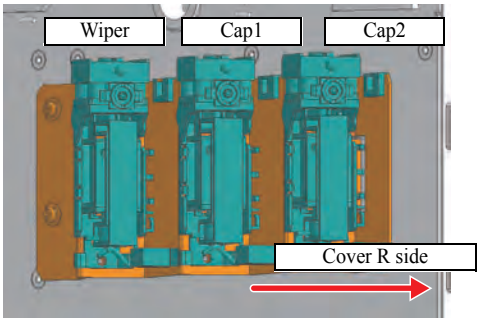


6. Remove the **Valve BKT** (Screw x2).
7. Remove the **Valve** from the Valve BKT.
8. Reverse the disassembly procedure for reassembly.

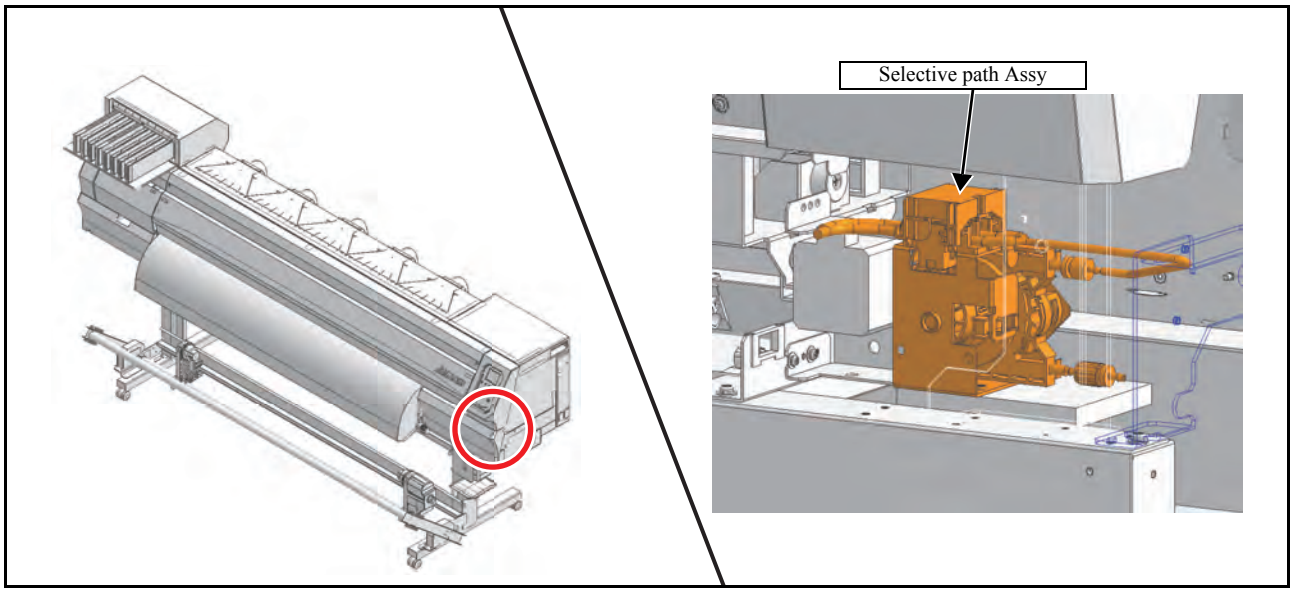
6.2.3 Cleaning Liquid Valve

IMPORTANT

- If reinserting the tube, cut about 5 mm from the tube tip before reusing it.
- Do not install the ink tube in the wrong position.



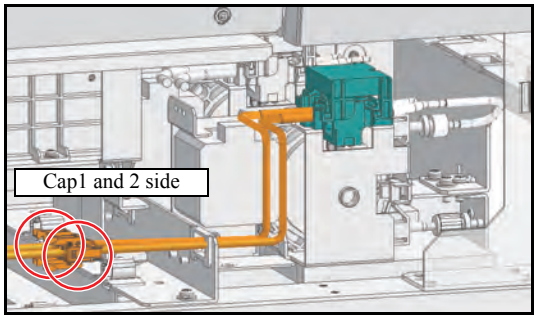
6.2.4 Selective Path Pump Assy



■ **Work procedures**

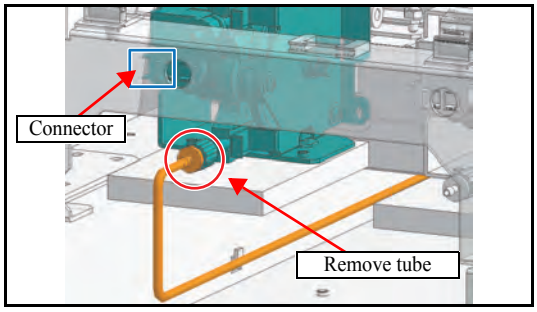
> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

> **Caution** Be sure to wear protective glasses and working gloves during the operation.
> Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.



1. Remove the **Under cover R, Cover R** and **Cover R2**.
2. Remove the **tubes** from the **Cap1** and **Cap2**, remove the **Fitting** connected to the pump tube.

> **IMPORTANT** Take care not to pollute the surroundings with waste ink or washing liquid.

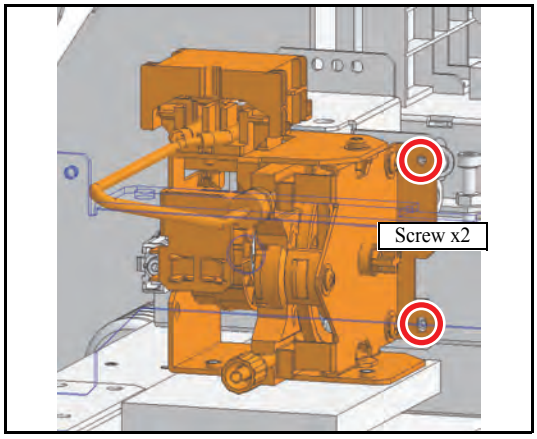


3. Remove the pump **tube** connected to the waste ink tank.

> **IMPORTANT** Take care not to pollute the surroundings with waste ink or washing liquid.

4. Remove the **connector**.

6.2.4 Selective Path Pump Assy

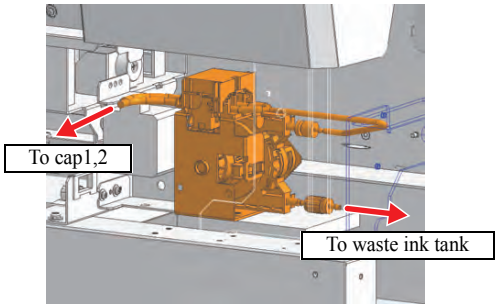


5. Remove the **Selective path pump Assy**. (screw x2.)

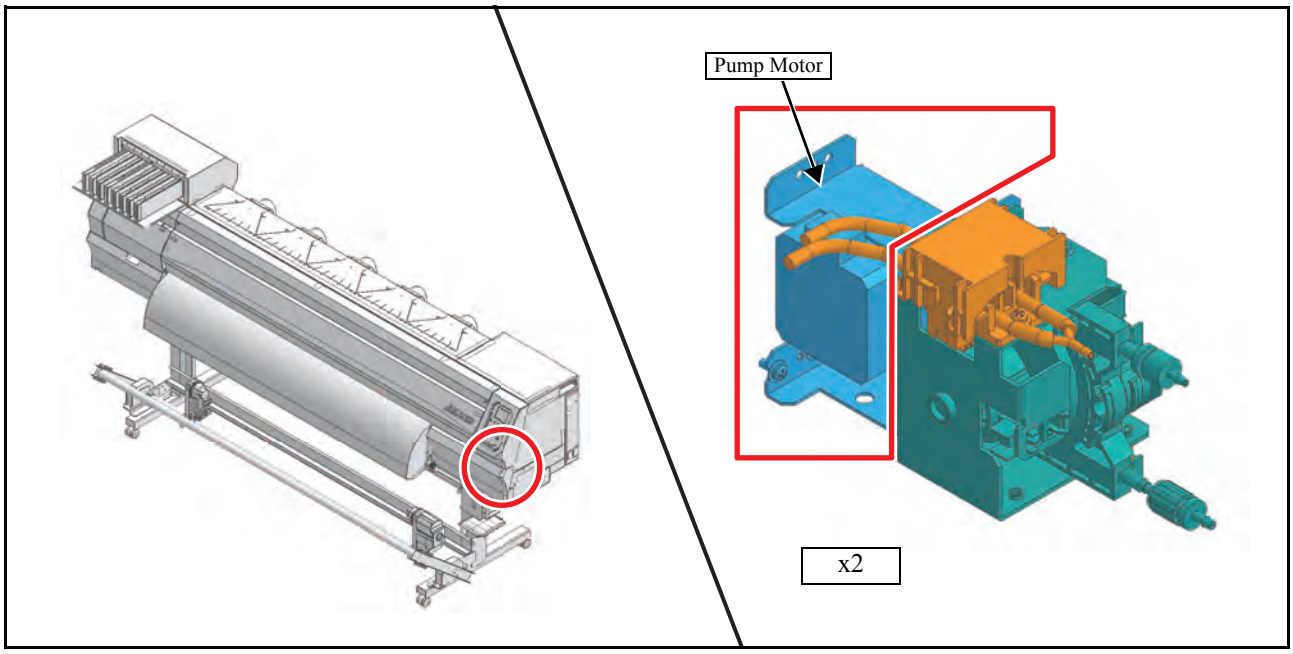
6. Reverse the disassembly procedure for reassembly.
   Protrude the pump tube of the discharge side from tube end by 5 to 9 mm.

IMPORTANT

- If reinserting the tube, cut about 5 mm from the tube tip before reusing it.
- Do not install the ink tube in the wrong position.



6.2.5 Pump Motor



■ **Work procedures**

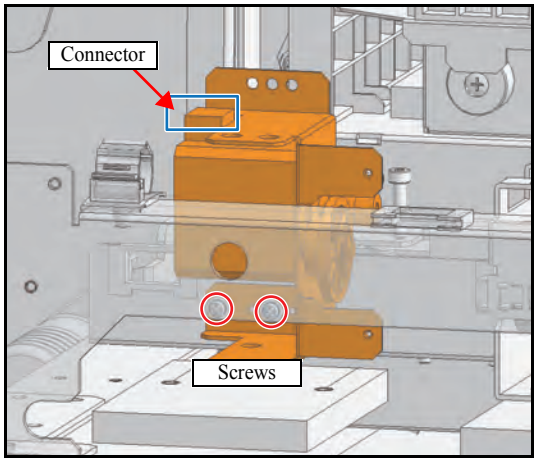
> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

> **Caution** Be sure to wear protective glasses and working gloves during the operation.
> Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

1. Remove the **Under cover R, Cover R** and **Cover R2**.
2. Remove the **Selective path Assy**. (Refer to 6.2.5)
3. Remove the **Pump Assy**. (Refer to 6.2.5)

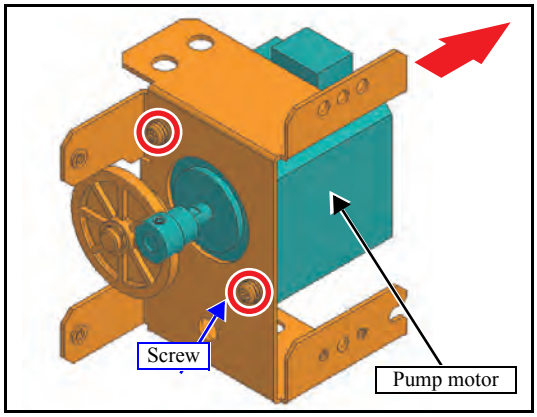
> **IMPORTANT** Take care not to pollute the surroundings with waste ink or washing liquid.

6.2.5 Pump Motor



4. Remove the Pump motor Assy **connector**.

5. Remove the two screws and remove the **Pump motor Assy**.

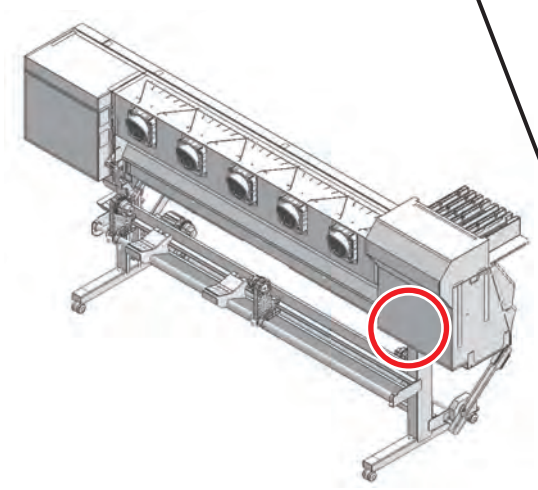


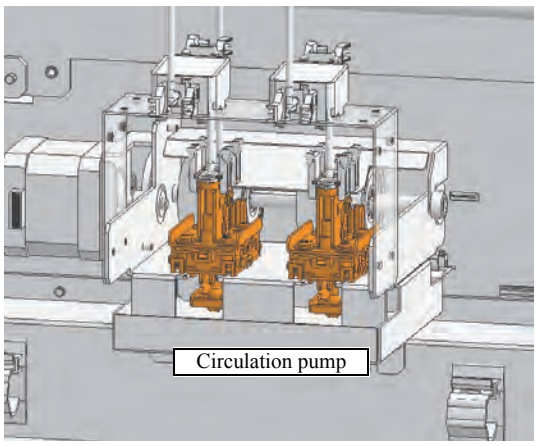
6. Remove the **Stepping motor**.

7. Reverse the disassembly procedure for reassembly.

IMPORTANT Do not install the ink tube in the wrong position.

6.2.6 Circulation Pump





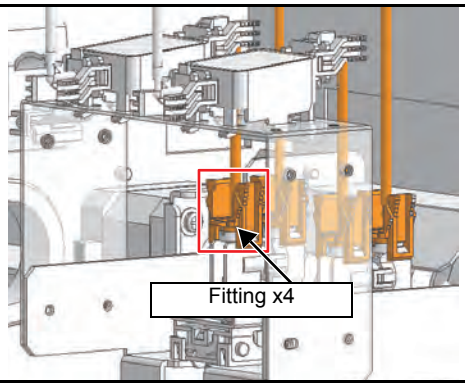
■ **Outline**

Circulation filter is used for white ink.

■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

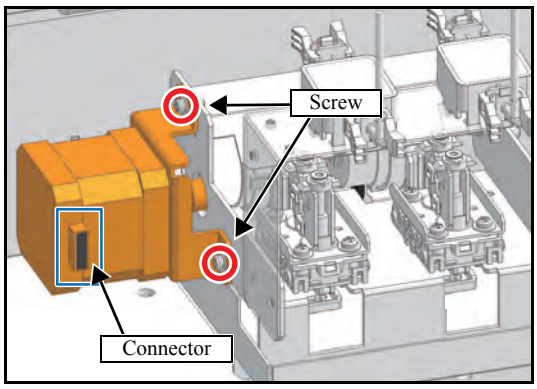
> **Caution** Be sure to wear protective glasses and working gloves during the operation.
> Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.



1. Remove the **Cartridge rear cover**.
2. Remove the **tubes** (x4).

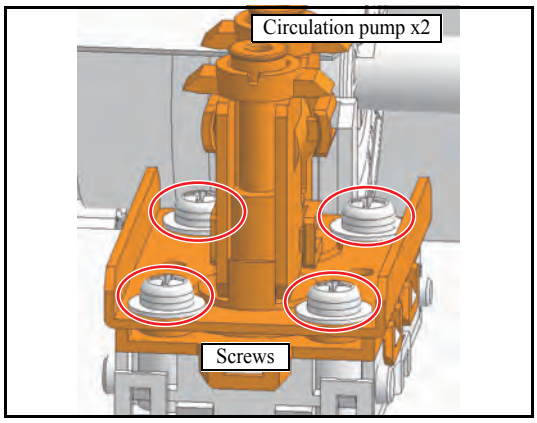
> **IMPORTANT** Take care not to pollute the surroundings with waste ink or washing liquid.

6.2.6 Circulation Pump



3. Remove the **Motor connector**.

4. Remove the **Stepping motor** (screw x2).

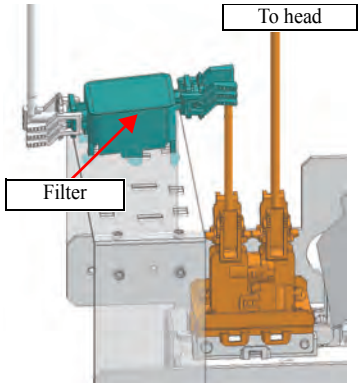


5. Remove the **Circulation pump** (screw x4).

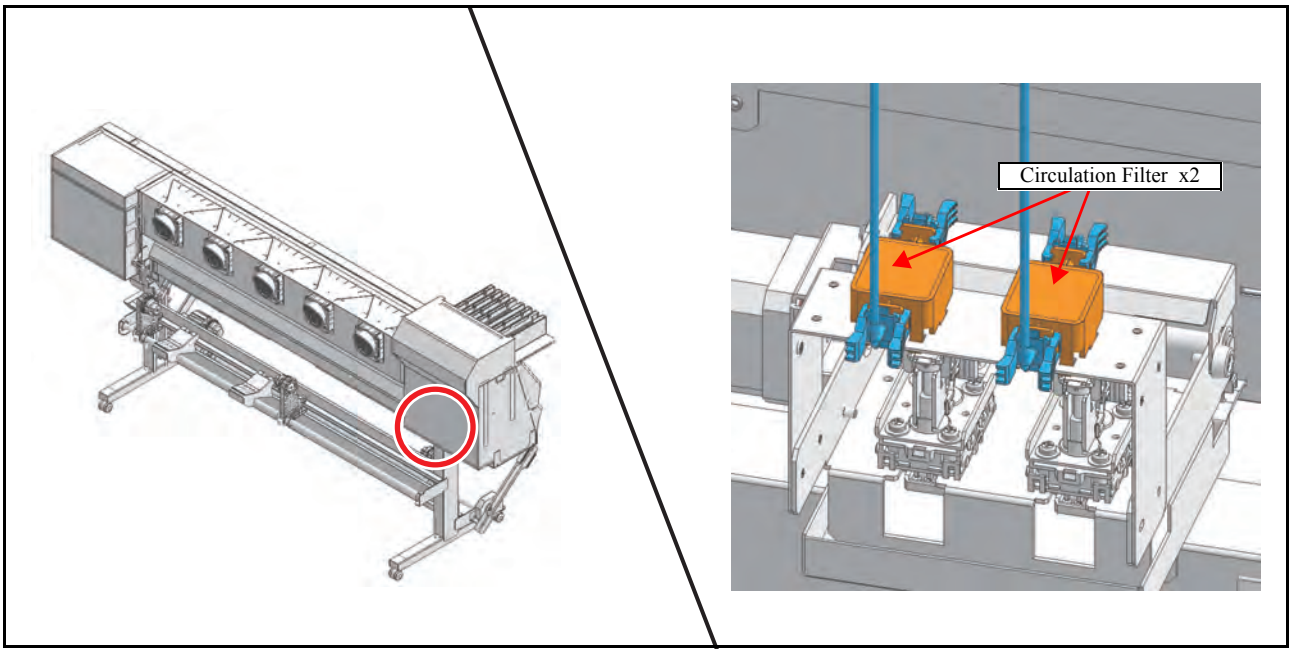
6. Reverse the disassembly procedure for reassembly.

IMPORTANT

- If reinserting the tube, cut about 5 mm from the tube tip before reusing it.
- Do not install the ink tube in the wrong position.



6.2.7 Circulation Filter



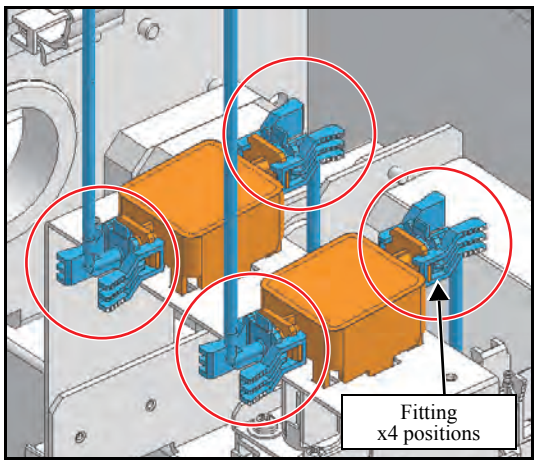
■ Outline

Circulation filter is used for white ink.

■ Work procedures

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

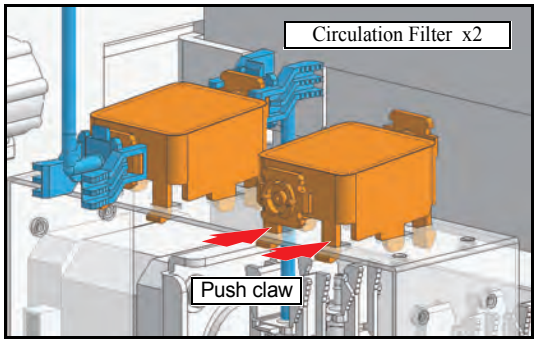
> **Caution** Be sure to wear protective glasses and working gloves during the operation.
> Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.



1. Remove the **Cartridge rear cover**.
2. Remove the **tubes** with fittings (x4).

> **IMPORTANT** Take care not to pollute the surroundings with ink or washing liquid.

6.2.7 Circulation Filter

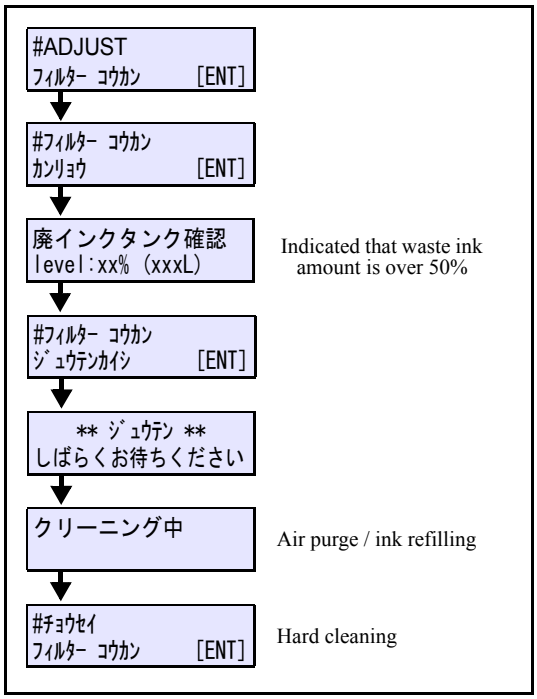


3. Remove the Circulation filter **by** releasing the stopper.

4. Reverse the disassembly procedure for reassembly.

> IMPORTANT
> If reinserting the tube, cut about 5 mm from the tube tip before reusing it.

■ **Work procedure of air purge in the filter after replacement.**

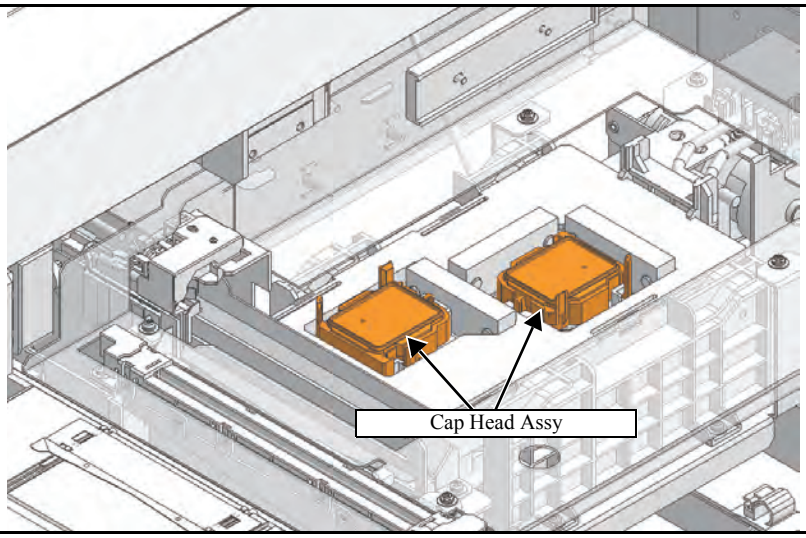


1. Select [#ADJUST]-[FILTER REPLACE]
   Press [ENTER] key.

2. Check the amount of the waste ink, and discard as required it appropriately.

3. Perform ink refilling after air discharging.
   After that, perform cleaning automatically, and then operation is finished.

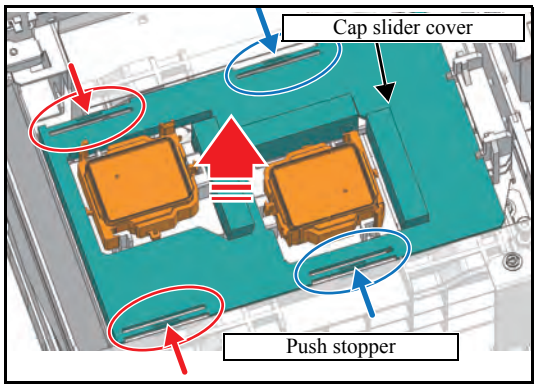
6.2.8 Cap Head Assy



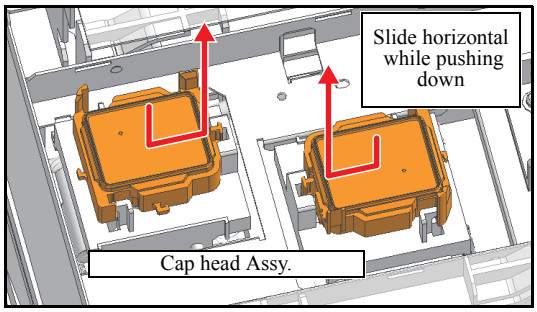
■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

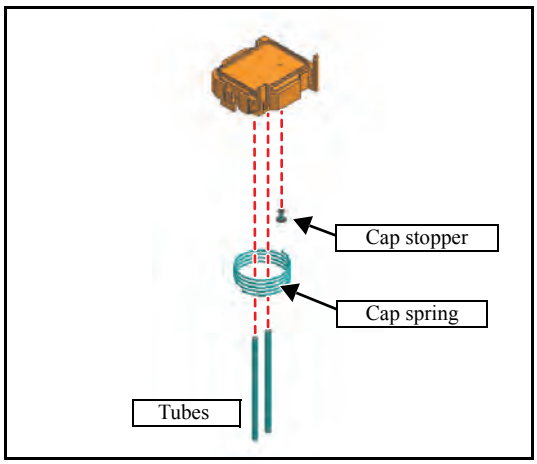
1. Turn off the main power supply of the machine.
2. Manually move the head unit over the platen.
3. Remove the **Cap slider cover** and the **CP absorber** by pushing the stopper.



4. While pushing down the **Cap head Assy**, slide it to the left or right, and remove it.



6.2.8 Cap Head Assy



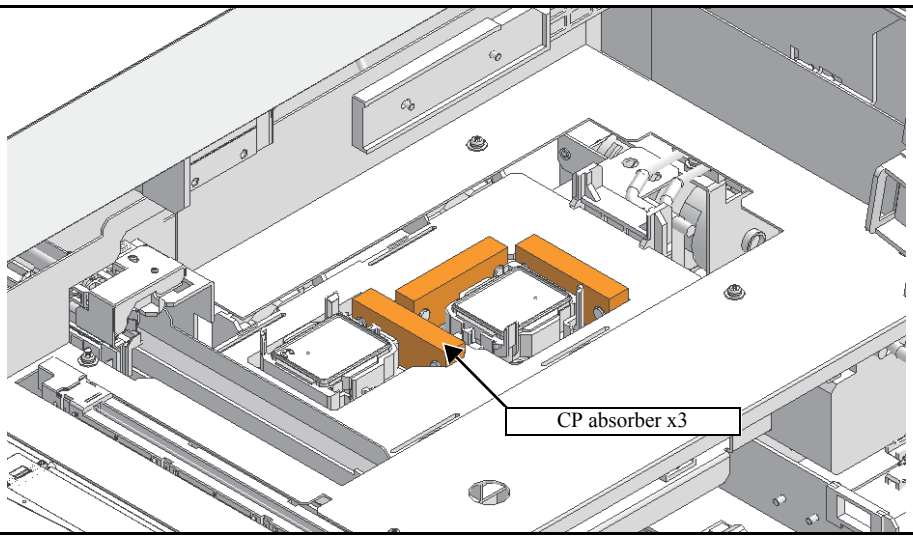
5. Remove the **tubes**, **Cap spring, Cap** and **Cap stopper** from the Cap head assy.

> IMPORTANT
> Take care not to pollute the surroundings with waste ink or washing liquid.

6. Reverse the disassembly procedure for reassembly.

> IMPORTANT
> Do not install the ink tube in the wrong position.

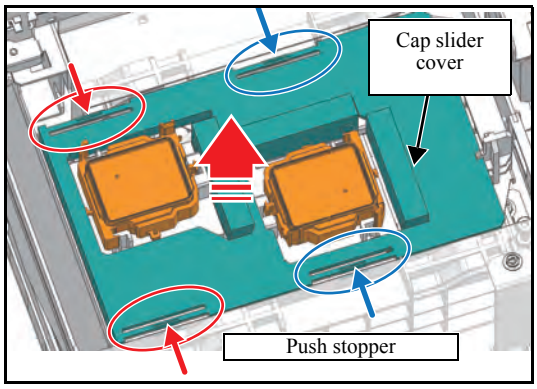
6.2.9 CP Absorber



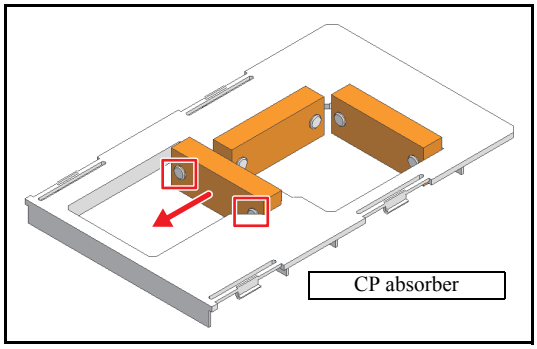
■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

1. Turn off the main power supply of the machine.
2. Manually move the head unit over the platen.
3. Remove the **Cap slider cover** and the **CP absorber** by pushing the stopper.



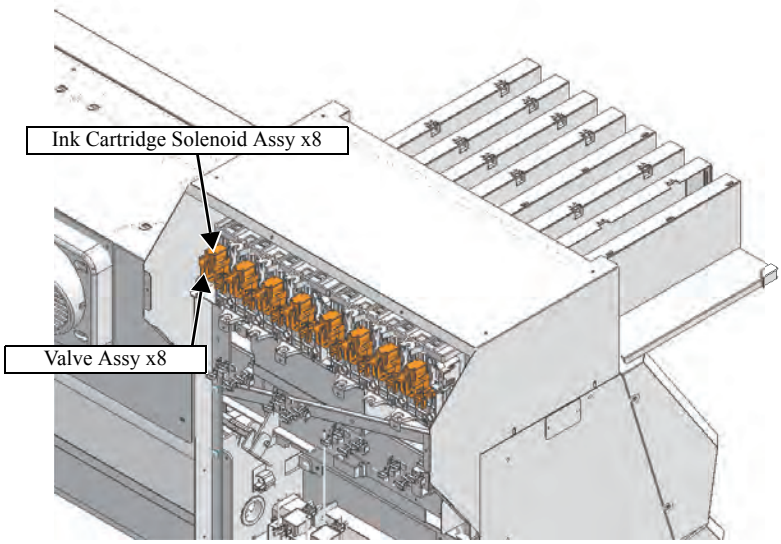
4. Remove the **CP absorber**.



> **IMPORTANT** Take care not to pollute the surroundings with waste ink or washing liquid.

5. Reverse the disassembly procedure for reassembly.

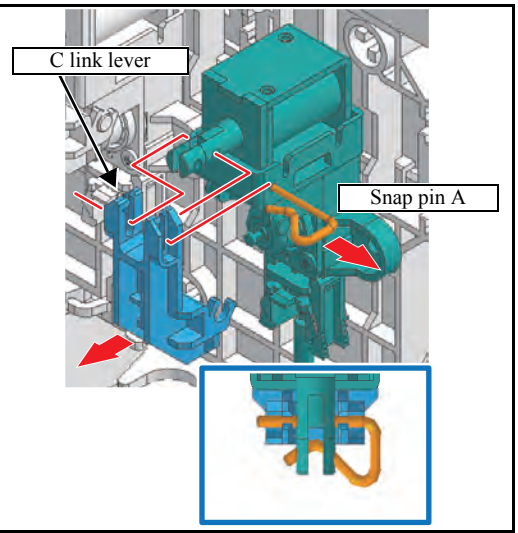
6.2.10 Valve Assy



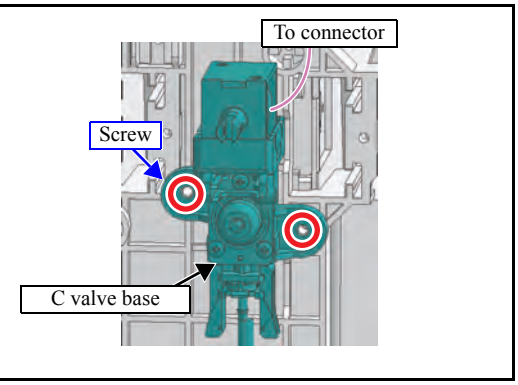
■ Work procedures

Caution

Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

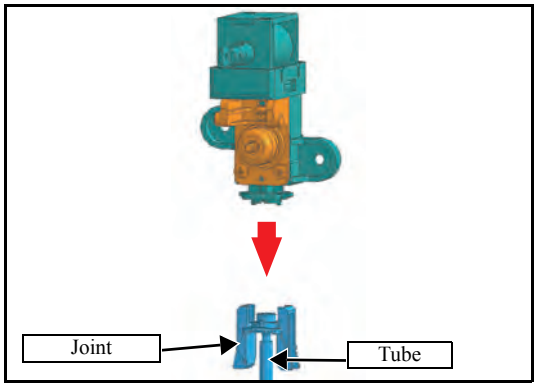


1. Execute [#ADJUST] — [HEAD WASH] to discharge the ink. (Refer to 4.2.8)
2. Remove the **Cartridge rear cover**.
3. Remove **snap pin A** and then the **C link lever**.



4. Removes two screws to take off the **C valve base** together with the solenoid.
5. Remove the cable connector.

6.2.10 Valve Assy



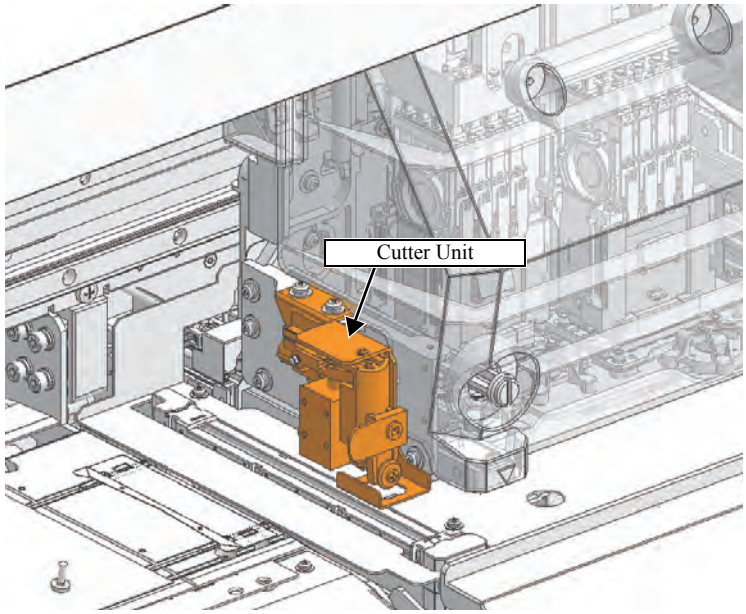
6. Remove the tube with joint.

> IMPORTANT
> Take care not to contaminate the surroundings with ink. Also, take care not to lose the O-ring.

7. Reverse the disassembly procedure for reassembly.

> IMPORTANT
> Do not install the ink tube in the wrong position.

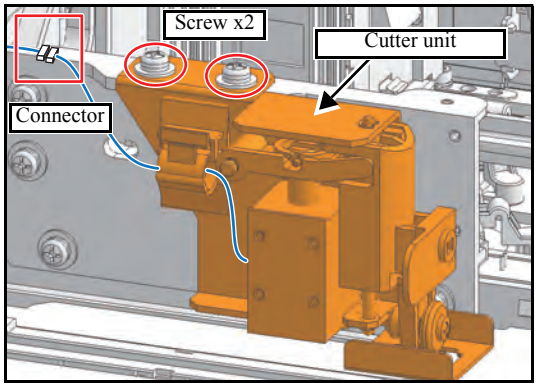
6.2.11 Cutter Unit



■ **Work procedures**

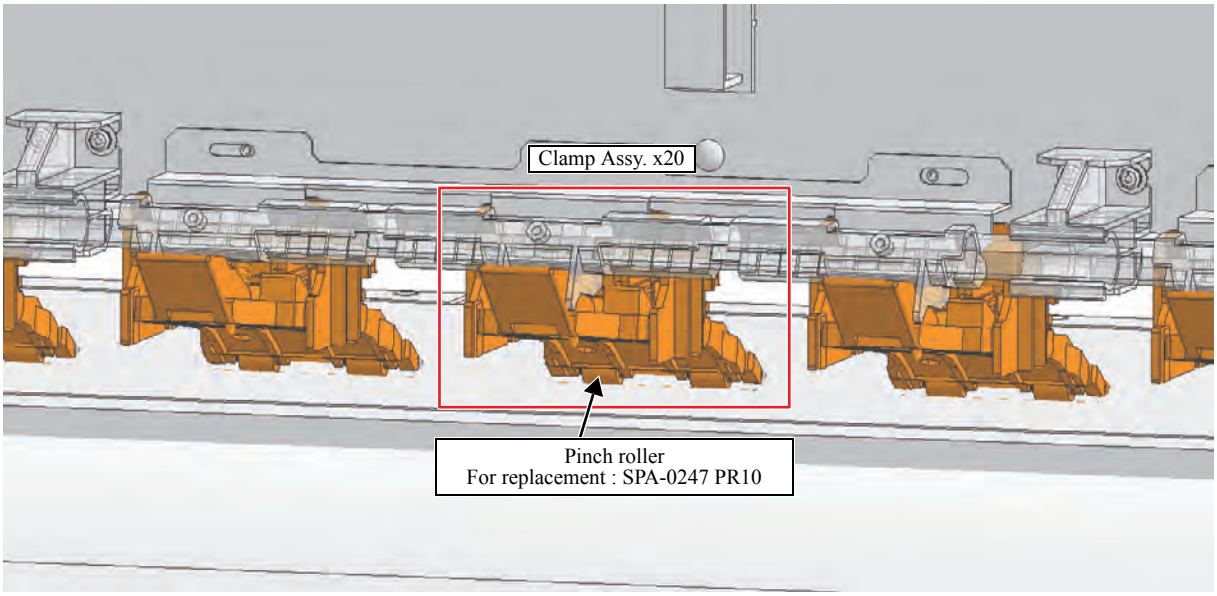
> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

1. Turn the main power OFF.
2. Remove the Front cover M and L.
3. Move slowly the carriage onto the platen by hand.
4. Loosen the screws (x2) and remove the **Cutter unit**.



5. Remove the **connector**.
6. Install using the reverse of the disassembly procedure.
7. Refer to 4.3.2 for more information on installation position adjustments.

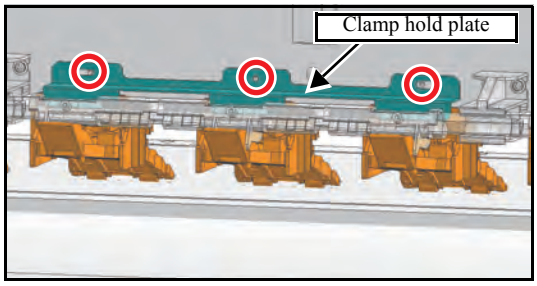
6.2.12 Clamp Assy.



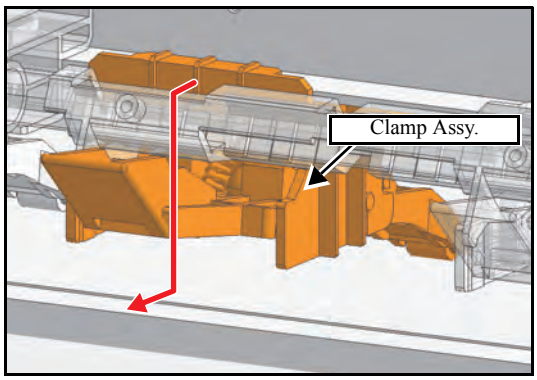
■ Work procedures

Caution Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

1. Turn off the main power supply of the machine.
2. Remove the **Y cover 160**.
3. Remove the **Clamp hold plate A** (2 range, screw x2) or **Clamp hold plate** (3 range, screw x3).



4. Remove the **Clamp Assy**.

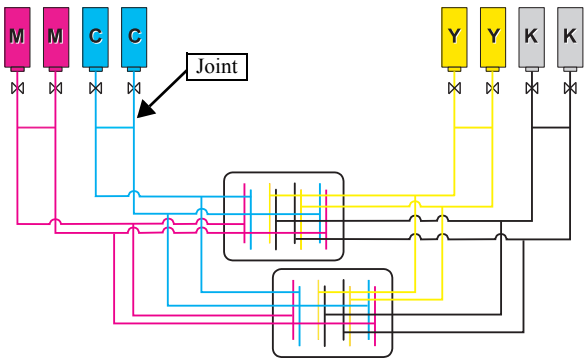


5. Reverse the disassembly procedure for reassembly.

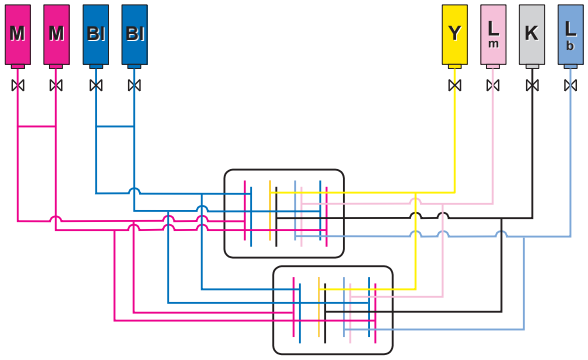
6.2.13 Changing Joint

■ Outline

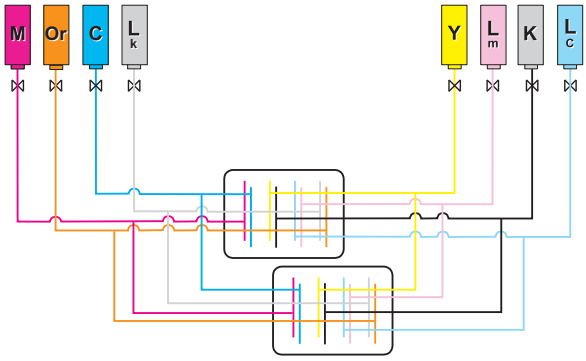
It is possible to set the following two ink supply paths for JV300-130/160.
Four colors are set at factory shipment, but it is possible to change to other colors by coupler opening and closing.



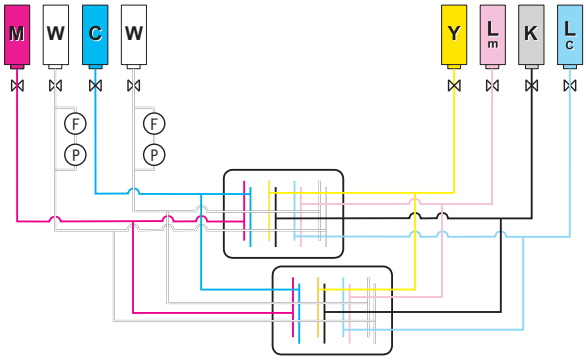
Ink supply path (4-color fill: at factory shipment)
*When Sb53 ink is used, put Bl on C.)



Ink supply path (6-color fill)
(for Sb53 ink)



Ink supply path (8-color fill)
(for SS21ink)

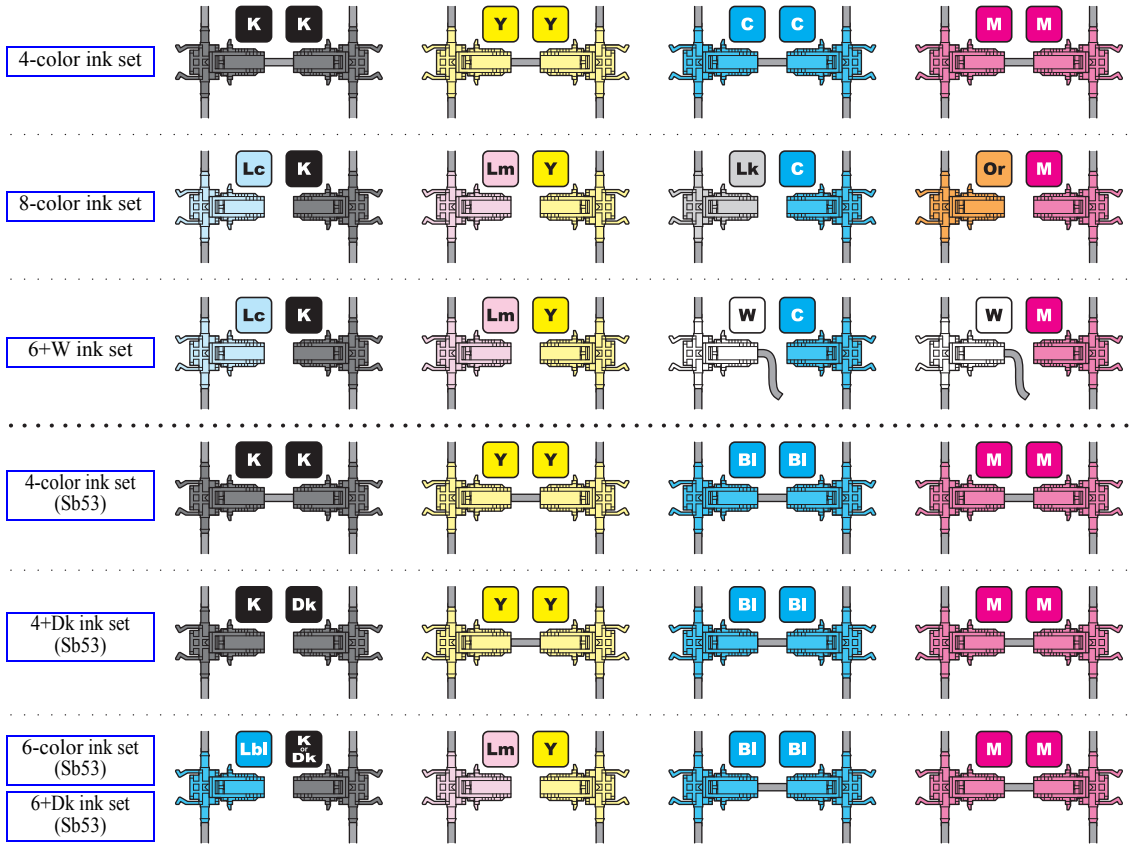


Ink supply path (6-color +W fill)
(for SS21ink)

6.2.13 Changing Joint

IMPORTANT

■ For the tube route, refer to the following. (The figure viewing from the rear of machine)



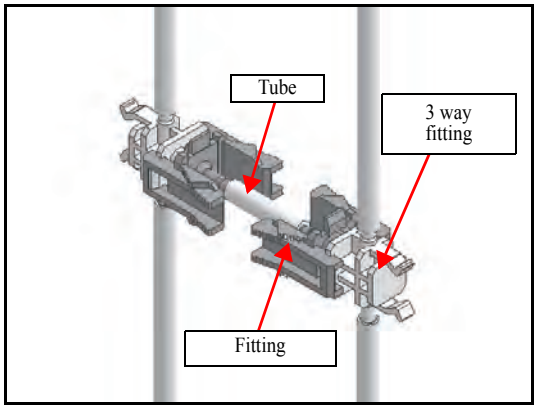
6.2.13 Changing Joint

■ Work procedures

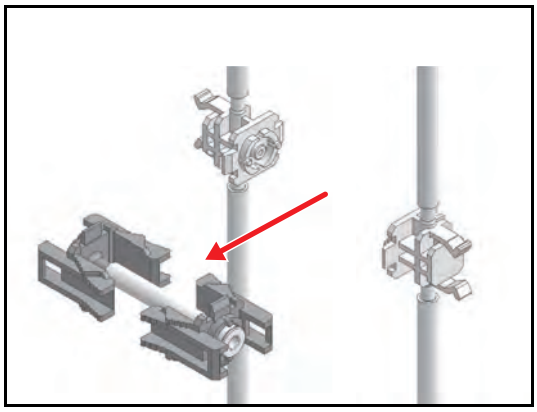
Caution

Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

☐ Removing the joints:



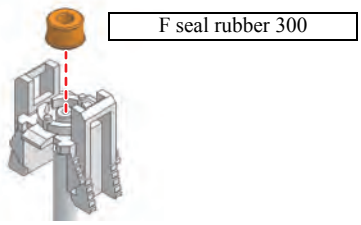
1. Execute [#ADJUST] — [HEAD WASH / DISCHARGE] to discharge the ink. (Refer to 4.2.8)
2. Remove the **Cartridge rear cover**.



3. Remove the **Tube and Fiitings Assy.**

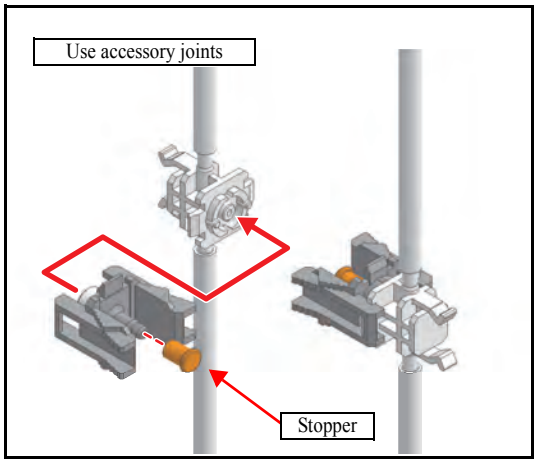
IMPORTANT

Make sure that O-ring (F seal rubber 300) is not remaining in the joint screws.



IMPORTANT

Take care not to contaminate the surroundings with ink.



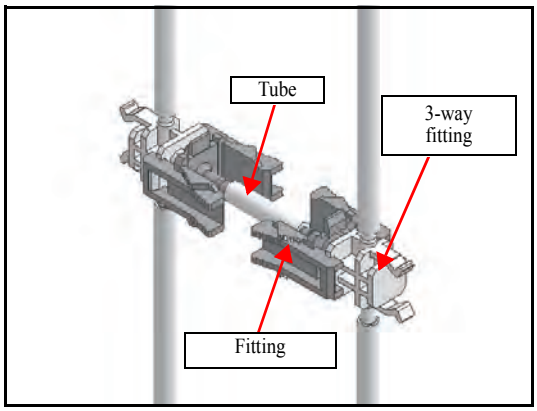
4. Attach the **Stopper** (M700865) to the **Joint** (Fitting Φ2: M603013-07, accessory parts), and attach it to the 3-way fitting.

IMPORTANT

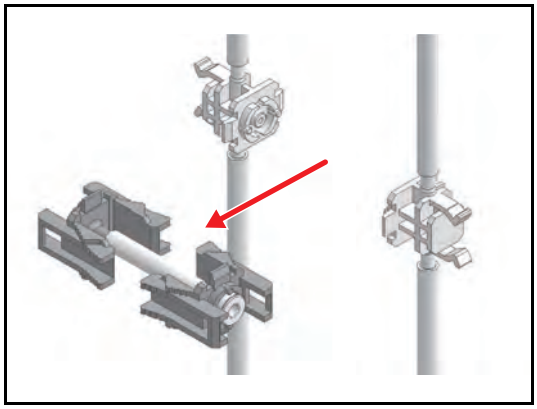
Do not install the ink tube in the wrong position.

6.2.13 Changing Joint

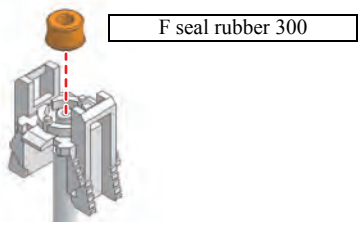
☐ In case of W or Si ink is used :



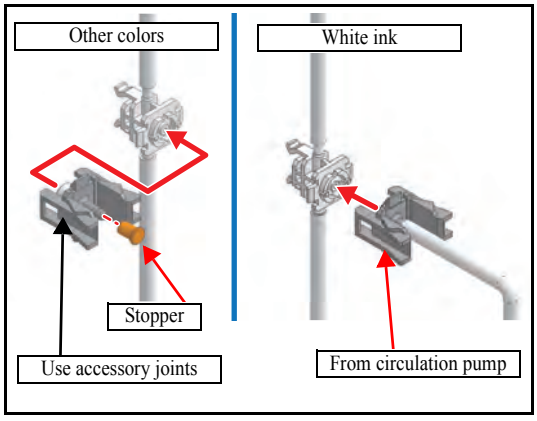
1. [Execute [#ADJUST] — [HEAD WASH / DISCHARGE] to discharge the ink. (Refer to 4.2.8)
2. Remove the **Cartridge rear cover**.



3. Remove the **Tube and Fiitings Assy.**

> **IMPORTANT**
> Make sure that O-ring (F seal rubber 300) is not remaining in the joint screws.
>
> 
>

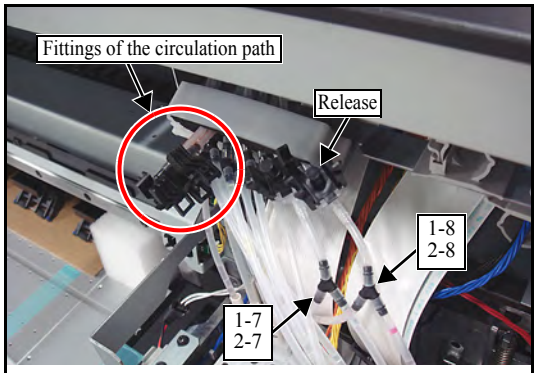
> **重要**
> Take care not to contaminate the surroundings with ink.

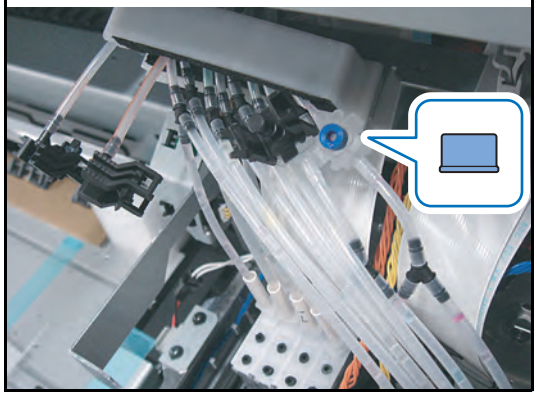


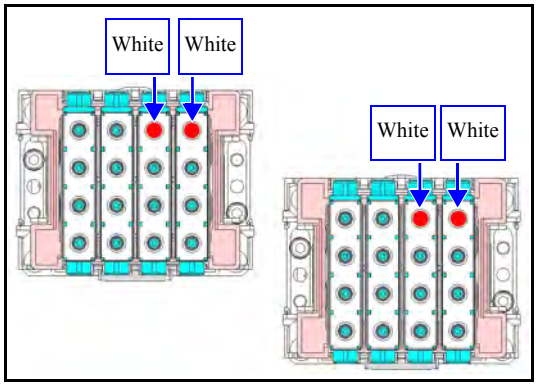
4. White ink tube: Attach the tube and fitting which is from filter over the circulation pump to the 3way fitting.
5. Other colors tube: Attach the **Stopper** (M700865) to the **Joint** (FittingΦ2: M603013-07, accessory parts), and attach it to the 3-way fitting.

> **IMPORTANT**
> Do not install the ink tube in the wrong position.

6.2.13 Changing Joint







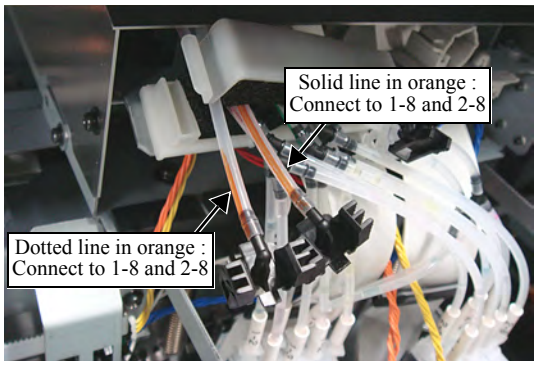
6. Connect the circulation path of the white ink of the carriage side.

IMPORTANT

■ For the connection of the circulation route, refer to the following.

・Dotted line in orange: Connect to 1-7 and 2-7,

・Solid line in orange: Connect to 1-8 and 2-8



[300 model]

IMPORTANT

■ For the tube tag, refer to the following.

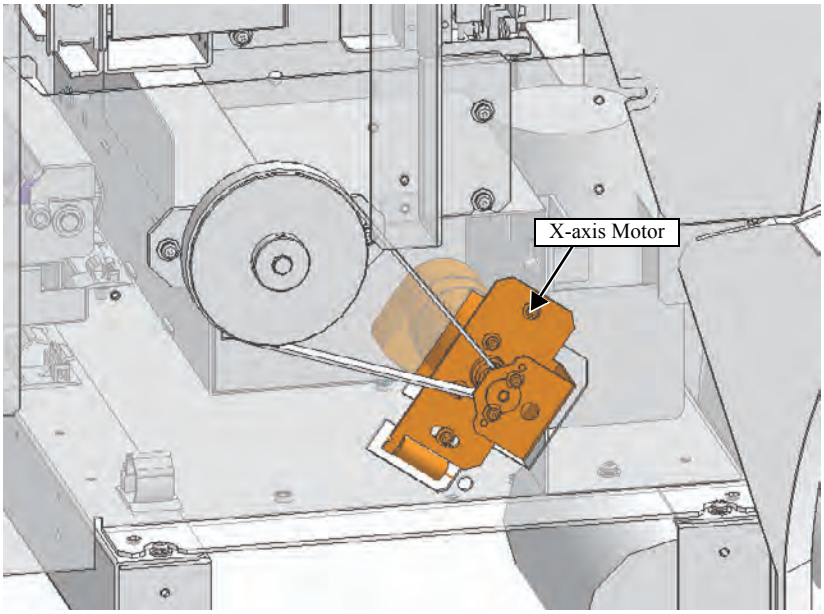
1-2	1-5	1-7	1-8
1-1	1-3	1-4	1-6
×	×	×	×
×	×	×	×

× : Not inserted

2-2	2-5	2-7	2-8
2-1	2-3	2-4	2-6
×	×	×	×
×	×	×	×

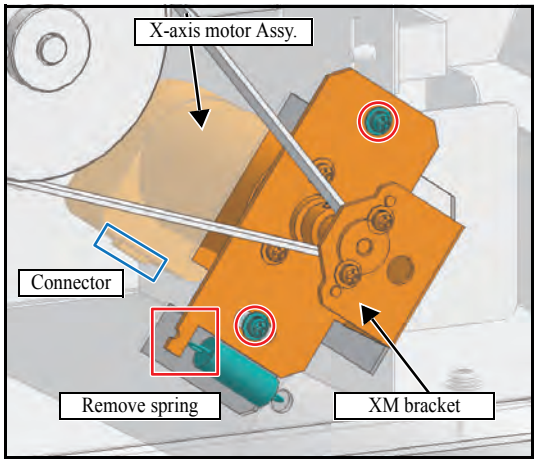
Disassembly and Reassembly

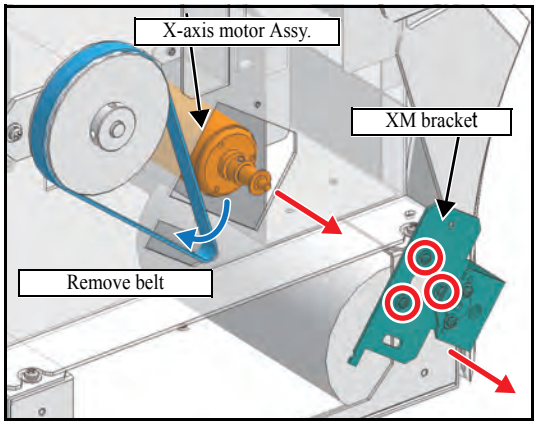
6.3.1 X-axis Motor Assy



■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

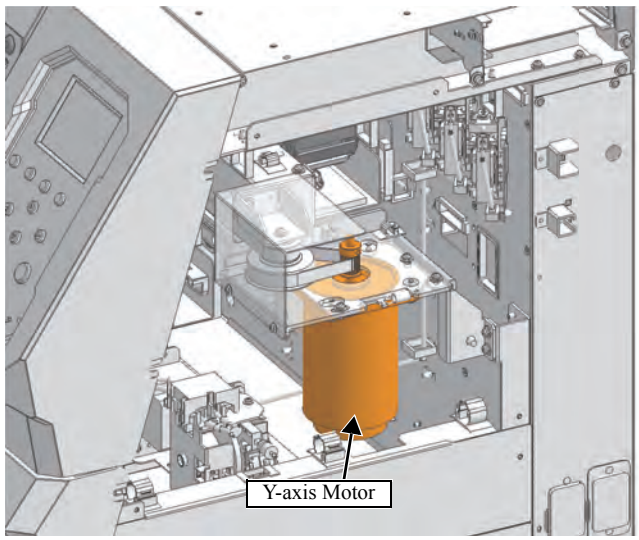




1. Remove the **Cover L**.
2. Remove the screws (x2) attached to the XM bracket.
3. Remove the X-axis motor **connector**.
4. Remove the **Spring**, and remove the **XM bracket** and **X-axis motor** from the main unit.
5. Remove the screws (x3) attached to the **XM bracket**, and remove the **Belt** and the **X-axis motor Assy**.
6. Reverse the disassembly procedure for reassembly.

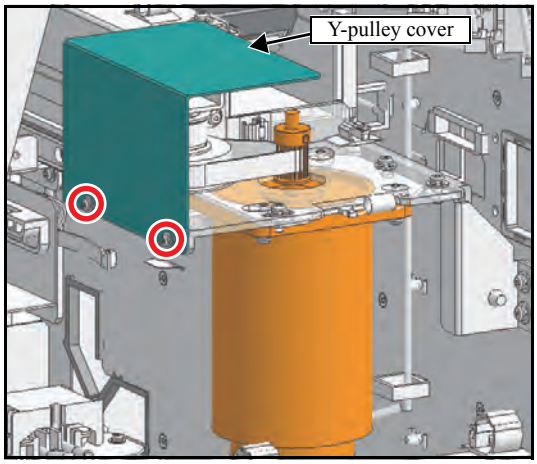
> The belt tension does not need to be adjusted.

6.3.2 Y-axis Motor



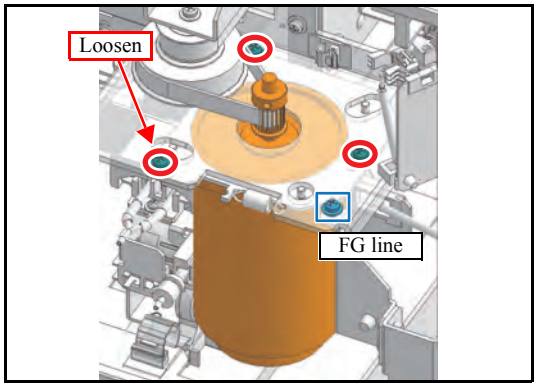
■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.



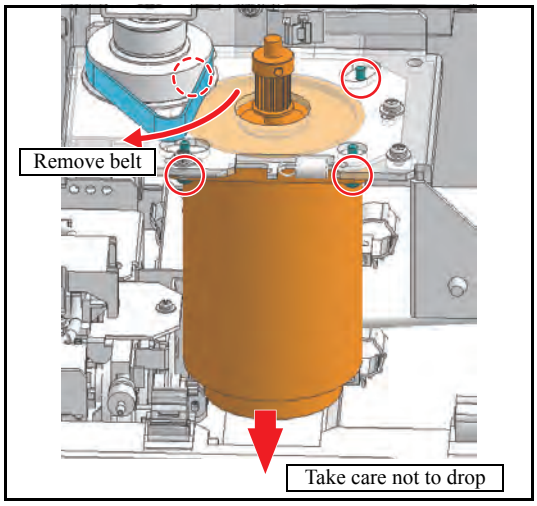
1. Remove the **Cover R**.
2. Manually move the print head carriage on the platen and remove the **Y-pulley cover** (screw x2).

6.3.2 Y-axis Motor

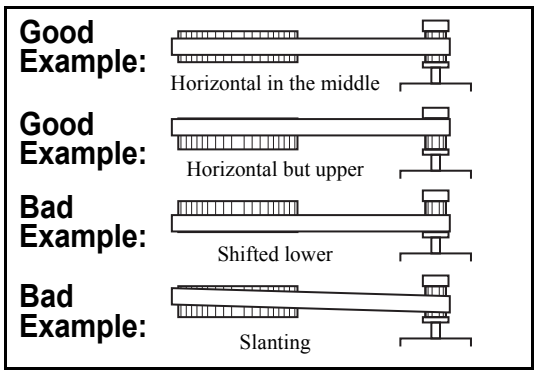


3. Loosen the screws for fixing the Y-axis motor belt tension, and reduce the tension of the belt.

4. Remove the **FG line** and two **connectors**.



5. Remove the **Y-axis motor belt**, and then remove the **Y-axis motor** while taking care not to drop it.

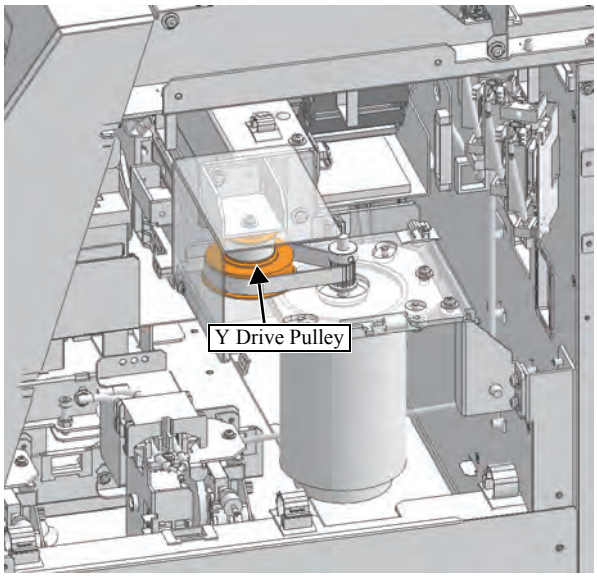


6. Reverse the disassembly procedure for reassembly.

> **IMPORTANT** Mount the Y-axis motor so that the belt is horizontal and centered on the Y drive pulley (upper side is also acceptable).

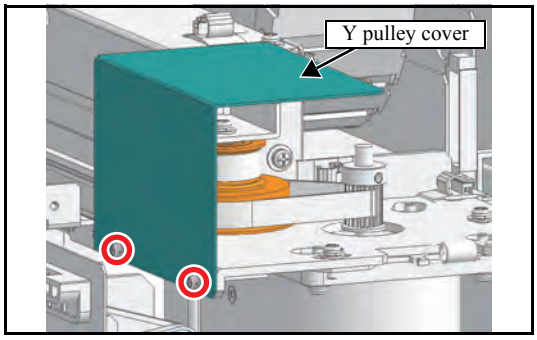
> **IMPORTANT** After attachment, rotate the pulley several times to adapt the belt.

6.3.3 Y Drive Pulley

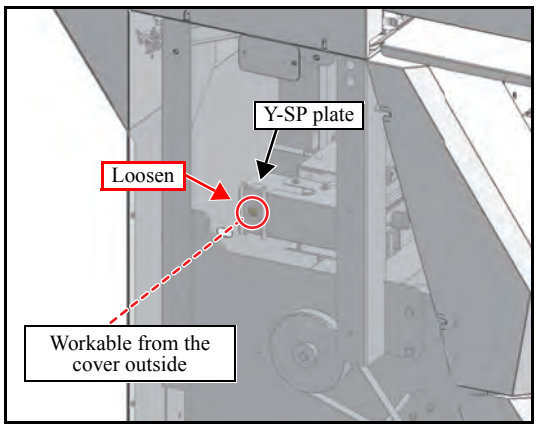


■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.



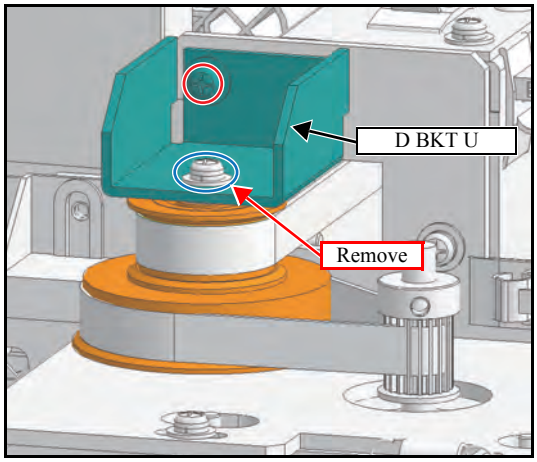
1. Remove the **Cover R**.
2. Manually move the print head carriage on the platen and remove the **Y-pulley cover**.

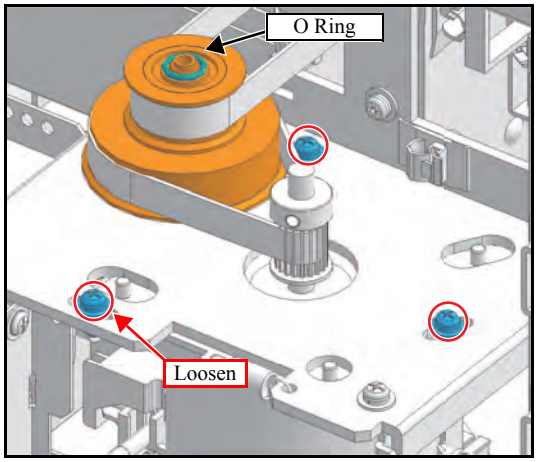


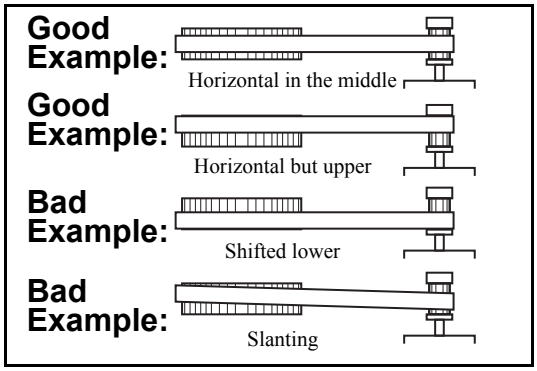
3. Loosen the screws from the Y-SP plate on the left side of the main body, and release the tension of the Y drive belt.

> **IMPORTANT** You can access a screw from hole of the cover L.

6.3.3 Y Drive Pulley







4. Remove the screw from the top of the Y drive pulley.

> IMPORTANT Do not remove the Y drive belt from the slider.

5. Remove the screw, and detach the **D BKT U** from the Y drive pulley.

6. Loosen the screws (x3) for fixing the Y-axis motor belt tension, and reduce the tension of the belt.

7. Remove the O-ring from the top of the Y drive pulley, and then remove the two belts to detach the Y drive pulley.

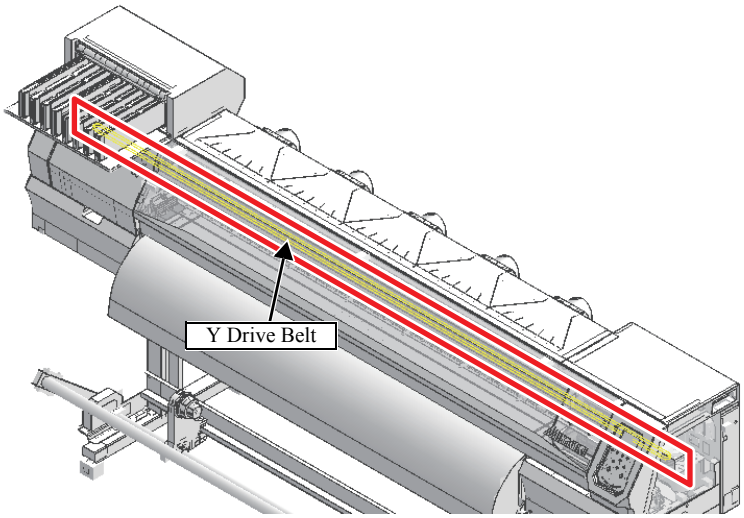
> IMPORTANT Take care not to lose the O-ring.

8. Reverse the disassembly procedure for reassembly.

> IMPORTANT Mount the Y-axis motor so that the belt is horizontal and centered on the Y drive pulley (upper side is also acceptable).

> IMPORTANT After attachment, rotate the pulley several times to adapt the belt.

6.3.4 Y Drive Belt

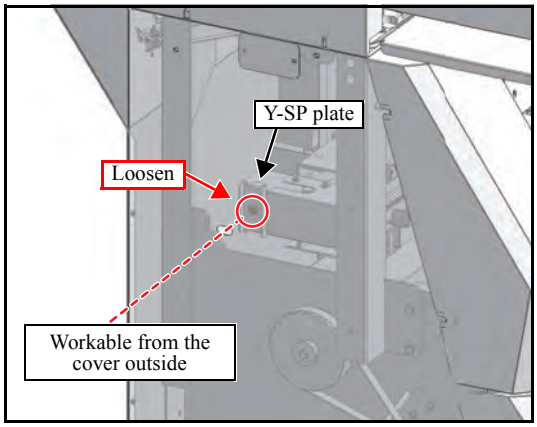


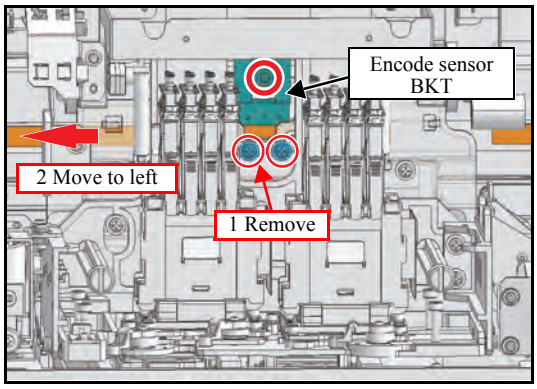
■ Work procedures

Caution Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

1. Remove the following covers.
   - **Front cover L, M**
   - **Carriage cover**
2. Loosen the screws from the Y-SP plate on the left side of the main body, and release the tension of the Y drive belt.

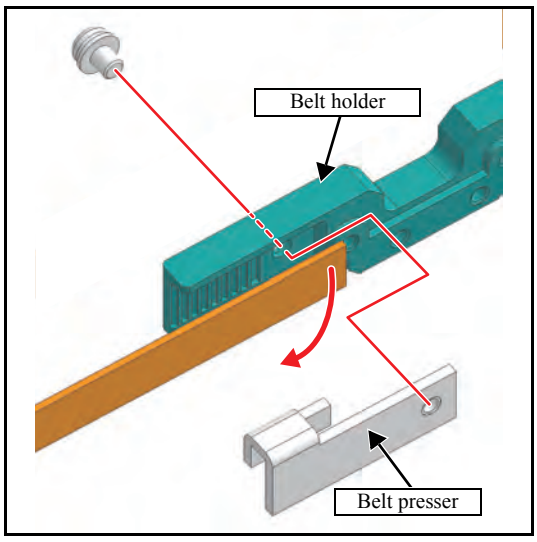
IMPORTANT You can access a screw from hole of the cover L.



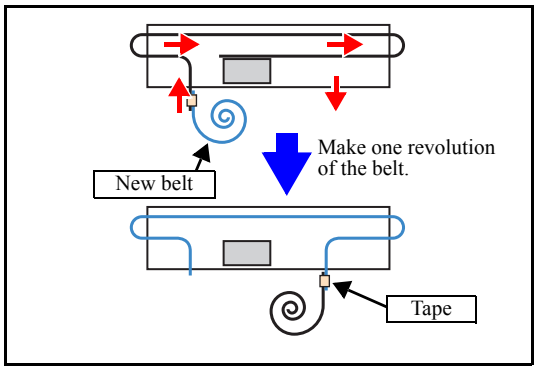


3. Remove the **Encode sensor BKT** (screw x1).
4. Remove the two screws, and move the **Y-drive belt** to left side.

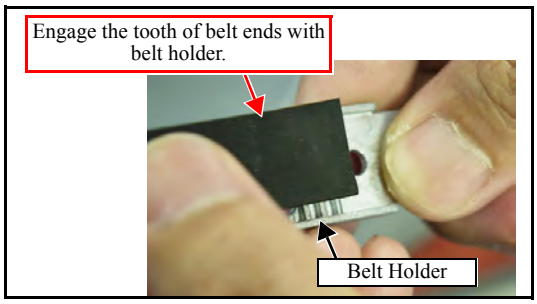
6.3.4 Y Drive Belt



5. Slide out the connection point of the Y drive belt, and remove either the left or right **Belt presser** (screw x1) from the **belt holder,** and remove the **Y drive belt**.

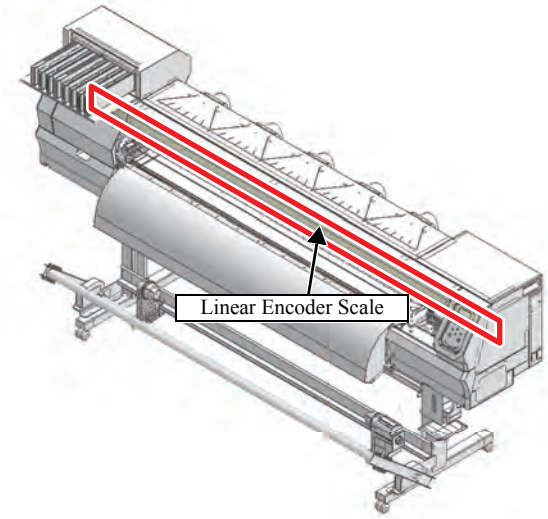


6. Stick together the ends of the old belt and the new belt using rubber tape or the like, and make one revolution of the belt.
7. Once the belt has made one revolution, remove the joining tape and pass the belt through the rear side of the slider.



8. Align the Belt holder and the teeth on the left and right belt ends, and attach the belt presser to the Belt holder while engaging the teeth. Then tighten the screw.
9. Attach the belt holder and slider using a screw.
10. Tighten the screws on the Y-SP plate on the left side of the main body, and increase the Y drive belt tension.
11. Reverse the disassembly procedure for the subsequent reassemblies

6.3.5 Linear Encoder Scale

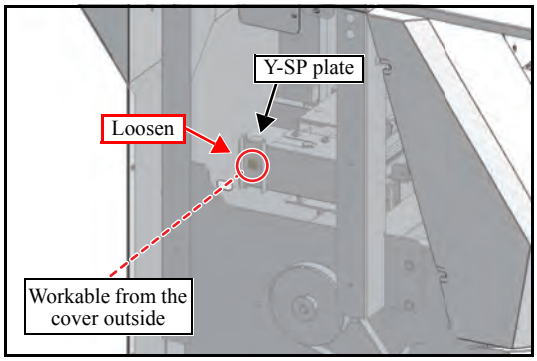


■ Work procedures

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.
While at work, be sure not to attach fingerprints or oil to the linear encoder scale. Also, pay attention not to break or scratch it. (If contaminated, clean the scale with a neutral detergent.)

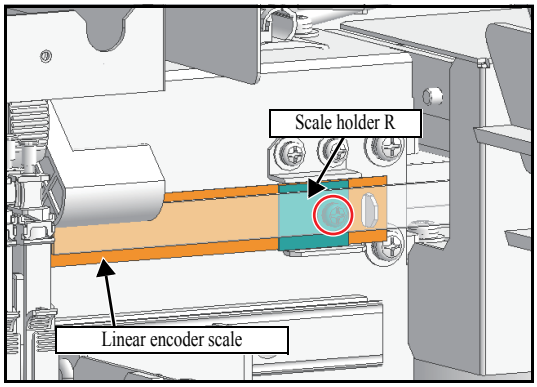
1. Remove the following covers.
   - **Front cover M, L**
   - **Carriage cover**
   - **Front under cover**
2. Remove the **Encoder PCB Assy**.
   - "6.4.8 Encoder PCB Assy"
3. Loosen the screws from the Y-SP plate on the left side of the main body, and release the tension of the Y drive belt.



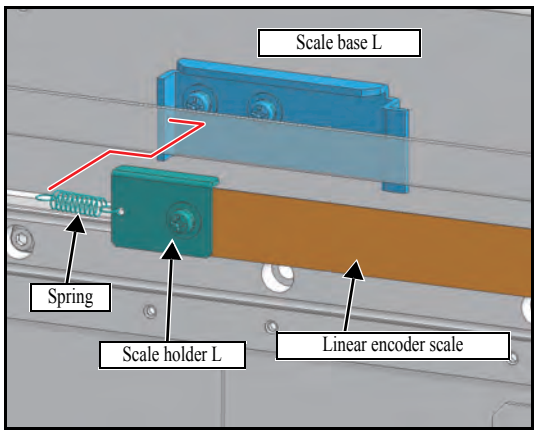
IMPORTANT

You can access a screw from hole of the cover L.

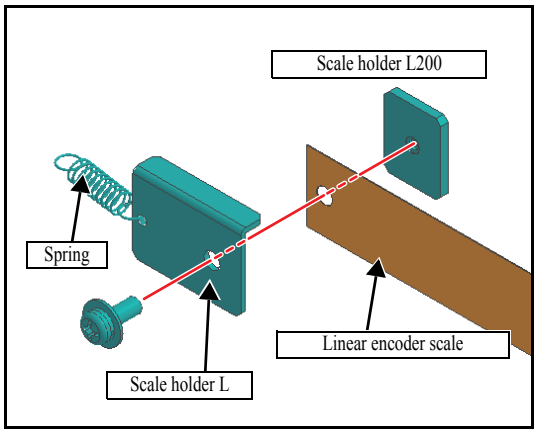
4. Remove the screws from the right end of the linear encoder scale, and detach the **Scale holder R** and **Linear encoder scale**.



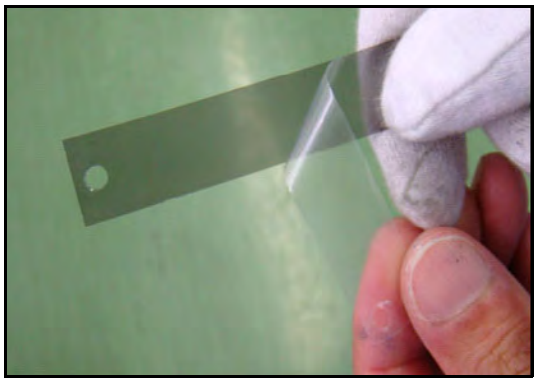
6.3.5 Linear Encoder Scale



5. Remove the screw from the left end of the linear encoder scale, and detach the **Scale holder L** and **Linear encoder scale** together with the springs.



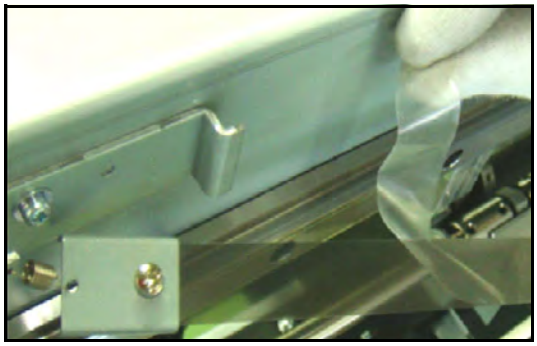
6. Remove the **Linear encoder scale** (screw x1).



7. Peel off the left end (the side with short shape hole) of the protection film on the new **Linear encoder scale**.

> IMPORTANT
> While at work, be sure not to attach fingerprints or oil to the linear encoder scale. Also, pay attention not to break or scratch it. (If contaminated, clean the scale with a neutral detergent.)

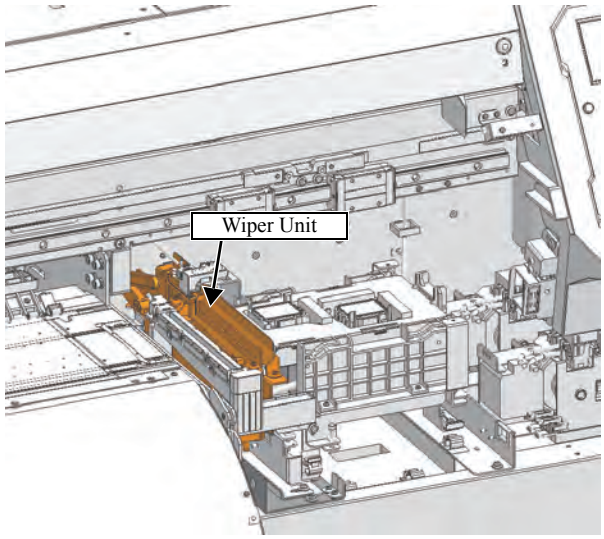
8. Mount the **Scale holder L** on the **Linear encoder scale** so that the surface where the protection film is stuck faces to the Y bar side.



9. Engage the **Scale holder L** with the **scale base L** through a spring, and mount the **Linear encoder scale** while peeling off the protection film.

10. Reverse the disassembly procedure for the subsequent reassemblies.

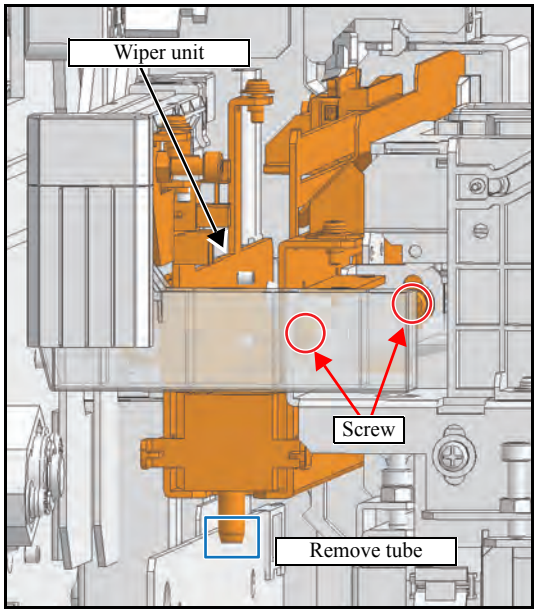
6.3.6 Wiper Unit



■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

> **Caution** Be sure to wear protective glasses and working gloves during the operation.
> Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

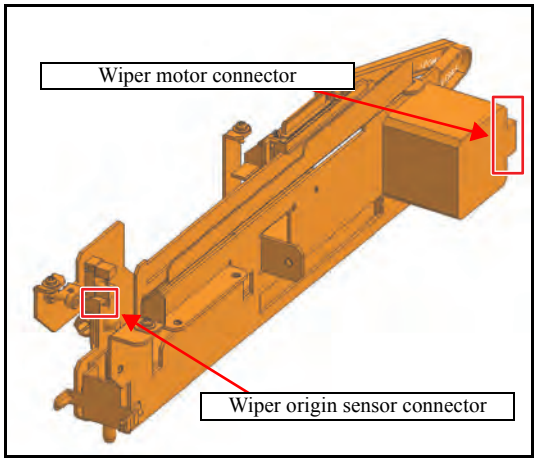


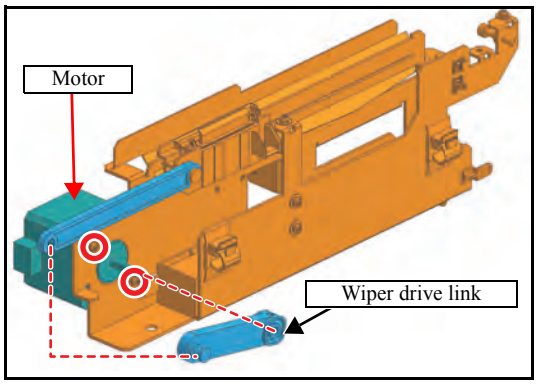
1. Remove the following covers.
   - **Front cover M, L**
2. Remove the screws, and remove the wiper unit from the base.

> **IMPORTANT** Take care not to contaminate the surroundings with ink.

3. Remove two screws, and remove the **Wiper unit** from the base.

6.3.6 Wiper Unit



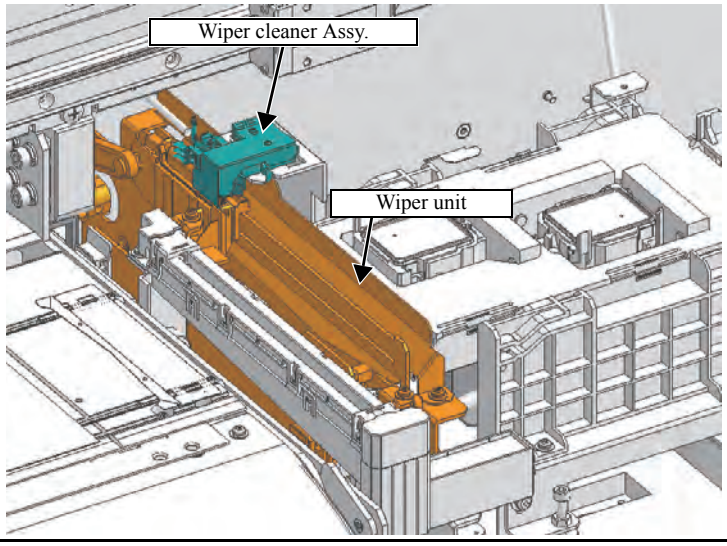


4. Release the clamp under the station and disconnect the wiper motor connector.
5. Disconnect the wiper origin sensor connector.
6. When replacing only the motor, remove the wiper drive link and the screws to detach the motor.

> IMPORTANT
> The clearance between the motor and base should be 0.5 mm when the motor is replaced.

7. Reverse the disassembly procedure for reassembly.

6.3.7 Wiper Cleaner Assy.



■ **Work procedures**

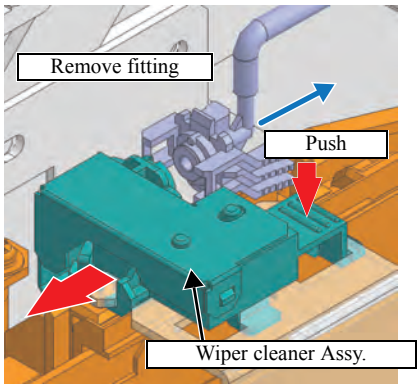
Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

Caution

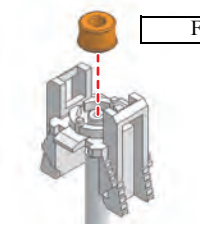
Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

1. Remove the following covers.
   - **Front cover M, L**
2. Remove the fitting.



IMPORTANT

Make sure that O-ring (F seal rubber 300) is not remaining in the joint screws.

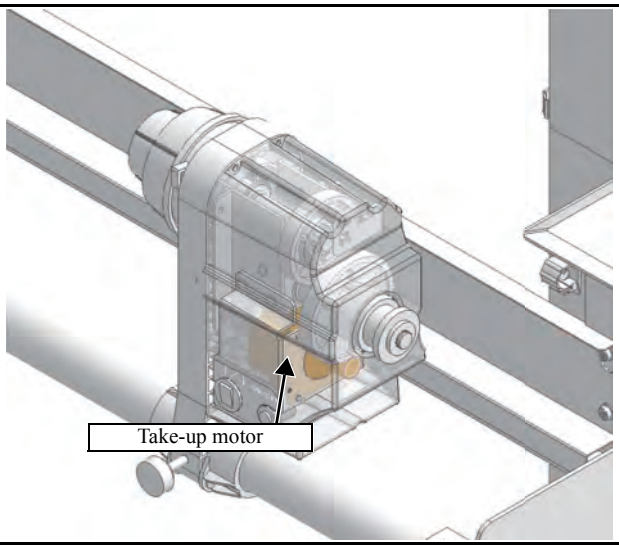


IMPORTANT

Take care not to contaminate the surroundings with ink.

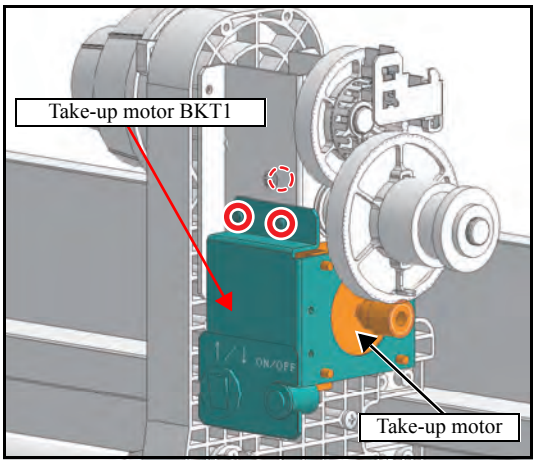
3. Remove the **Wiper cleaner Assy.** by pushing the stopper and slide it.
4. Reverse the disassembly procedure for reassembly.

6.3.8 Take-up Motor

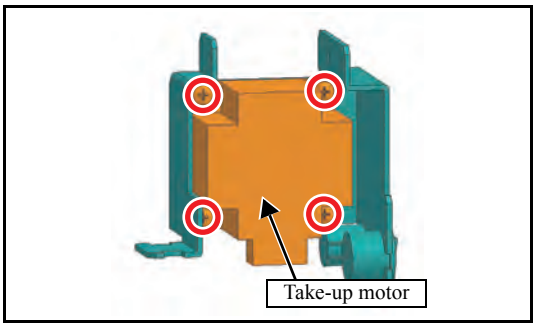


■ **Work procedures**

1. Remove the **Take-up cover**.
2. Disconnect all connectors. (for sensor x2, for motor x1)
3. Remove the **Take-up motor** together with the **Take-up motor BKT** (screw x3).



4. Remove the screws (x4) and then remove the **Take-up motor**.

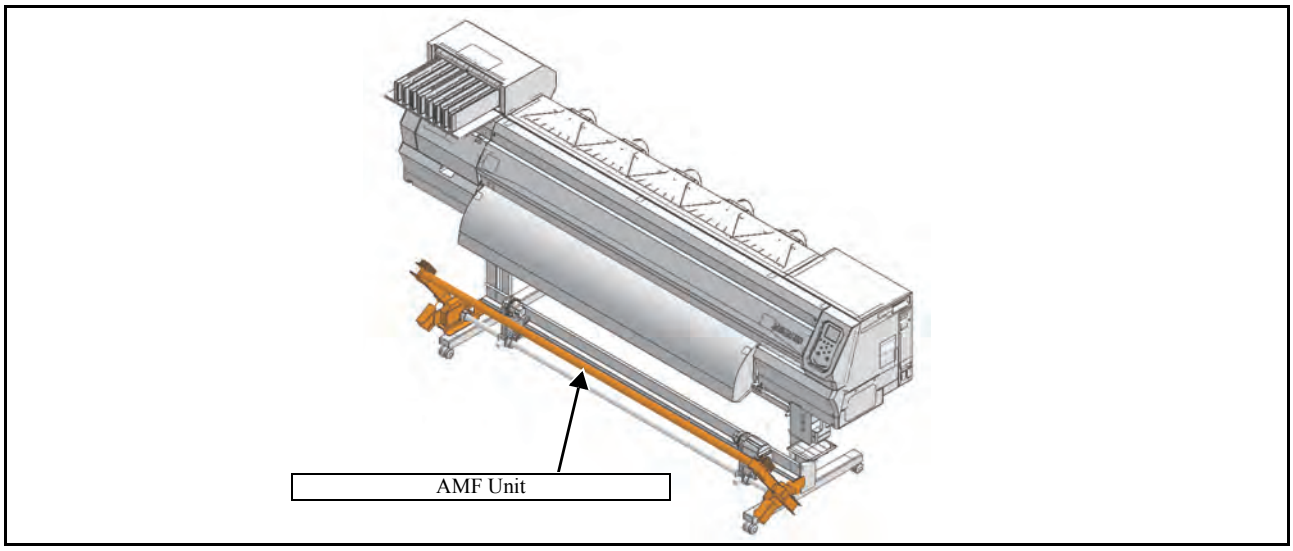


5. Reverse the disassembly procedure for reassembly.

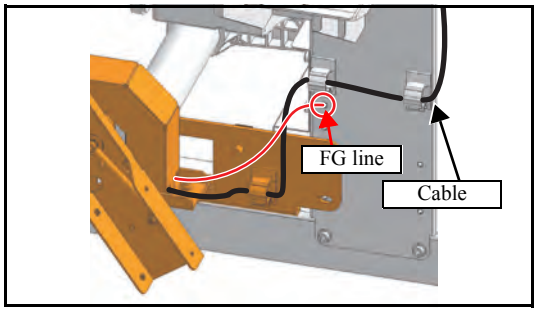
6.3.9 AMF Unit (OPTION)

■ Outline

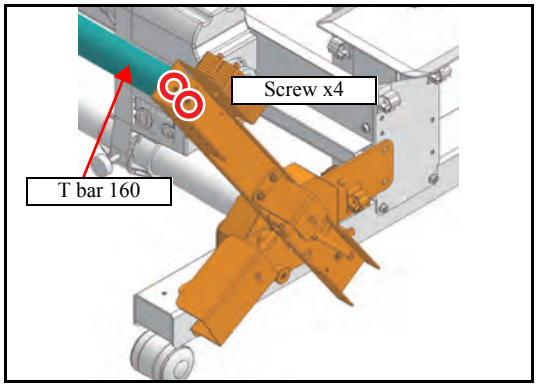
This device is option product.



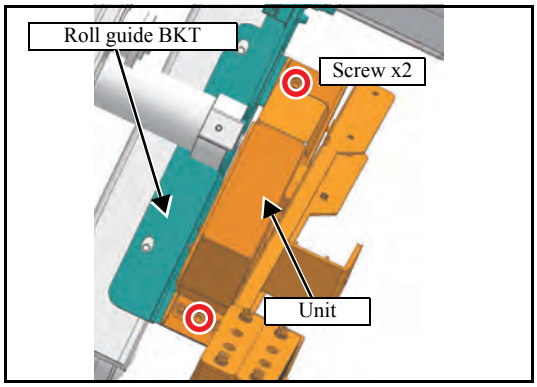
■ Work procedures



1. Disconnect the connector and FG line at right side of the unit.



2. Remove the T bar 160. (screw x2 each side, total x4)



3. Remove screws (x2 each side, total x4), and then remove the unit from roll guide BKT.

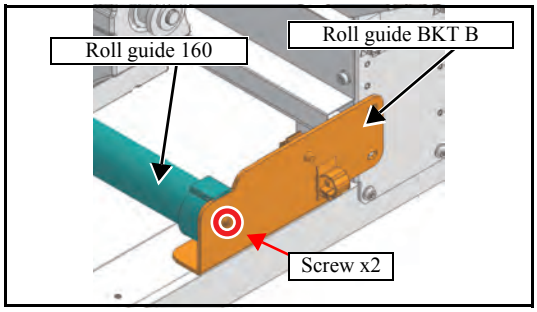
6.3.9 AMF Unit (OPTION)

4. Reverse the disassembly procedure for reassembly.

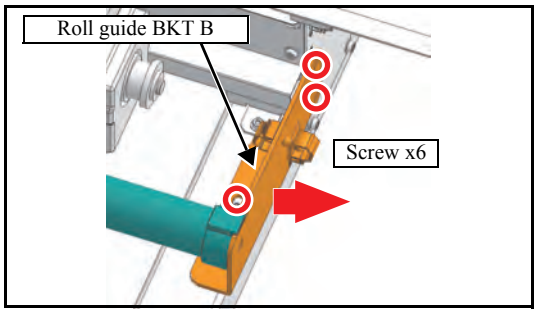
> IMPORTANT
> Install that with the connector cable sticking out to the right side.

■ **If installing as an option:**

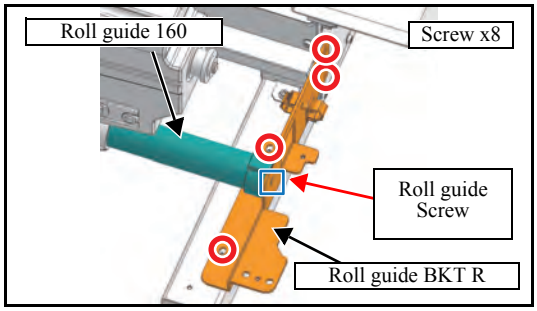
If installing the AMF unit as an option, you need to replace the roll guide BKT B, which is installed by default, with the accompanying roll guide BKT.



1. Remove the screws of the roll guide 160 (screw x1 each side, total x2).



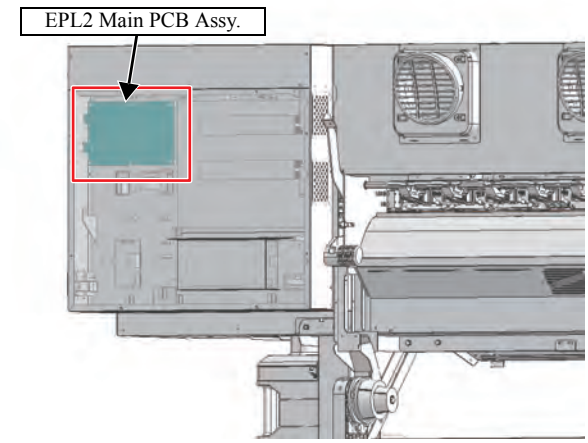
2. Remove the roll guide BKT B (screw x3 each side, total x6).



3. Attach the roll guide BKT L and R (screw x4 each side, total x8).
4. Attach screws of the roll guide 160 (screw x1 each side, total x2).
5. For the following steps, perform installation using the reverse steps of disassembly.

Disassembly and Reassembly

6.4.1 EPL2 Main PCB Assy



■ Outline

If main PCB assy has replaced, various parameters must be registered to main PCB assy ROM after the replacement. Considerable time is required to readjust and reconfigure these settings. Therefore, for ease of use and better printing quality, copy (upload) the setting value to a PC before replacement, and write (download) the copied settings onto the main PCB assy from the PC after replacement.

If it is impossible to upload the parameters, conduct Parameter Draw to note the setting values.
Then manually register the values after replacing the main PCB assy.

■ Work procedures

Warning

After turning off the sub and main power switches, unplug the power cord. Make sure to take 15 minutes before restarting the operation. It is very dangerous if sleep mode functions mistakenly during the operation.
Moreover, the PCB may be damaged in case electric charge still remains inside.
Also, there is a possibility of electric shock because of high power voltage applied to the high-pressure part of the power supply PCB assy. Take care to avoid contact with it.

Caution

● A button type lithium battery is used for this board. Warn following 1)~4).

1), Danger of explosion if battery is incorrectly replaced.

2), Replace only with the same or equivalent type recommended by the manufacture.

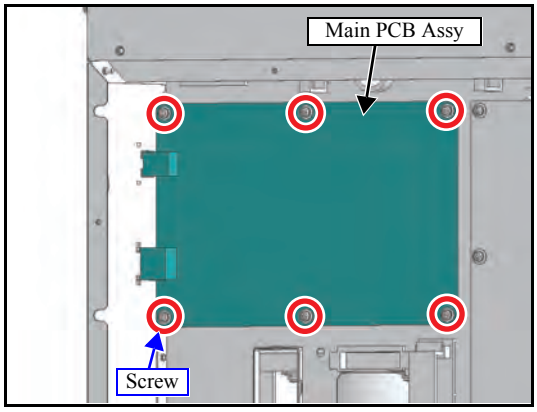
Recommended type : [CR1220]

3), Dispose of used batteries according to the manufacturer's instructions.

4),When the battery is replaced with a new one, pay attention to the polarity at replacing.

1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the **power unit box cover**.
3. Disconnect all connectors on PCB.

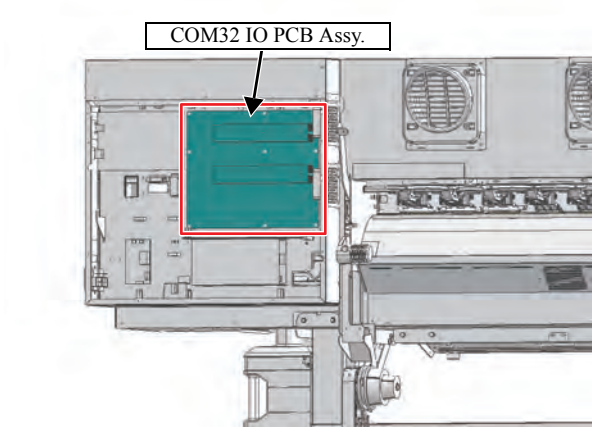
6.4.1 EPL2 Main PCB Assy



4. Remove the screws (x6) and then remove the **main PCB assy**.

5. Reverse the disassembly procedure for reassembly.

6.4.2 COM32 IO PCB Assy

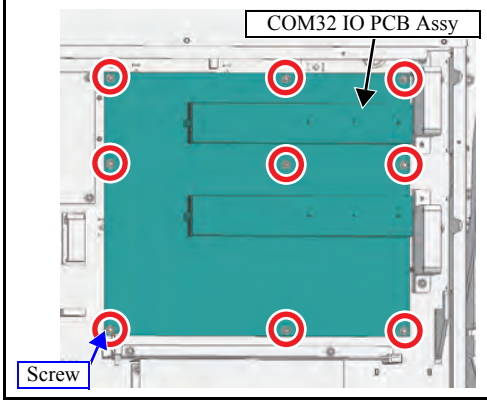


■ **Work procedures**

Warning

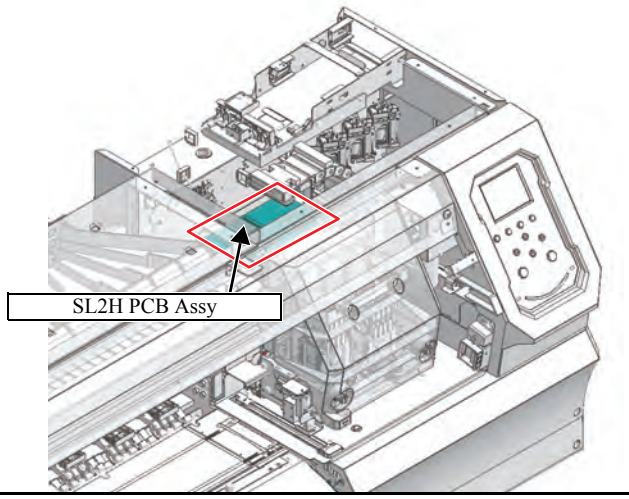
After turning off the sub and main power switches, unplug the power cord. Make sure to take 15 minutes before restarting the operation. It is very dangerous if sleep mode functions mistakenly during the operation.
Moreover, the PCB may be damaged in case electric charge still remains inside.
Also, there is a possibility of electric shock because of high power voltage applied to the high-pressure part of the power supply PCB assy. Take care to avoid contact with it.

1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the **power unit box cover**.
3. Disconnect all connectors on PCB.
4. Remove the screws (x9) and then remove the **COM32 IO PCB assy**.



5. Reverse the disassembly procedure for reassembly.

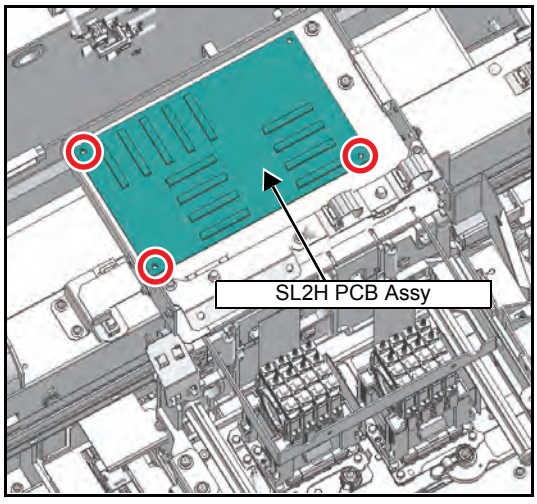
6.4.3 SL2H PCB Assy



■ **Work procedures**

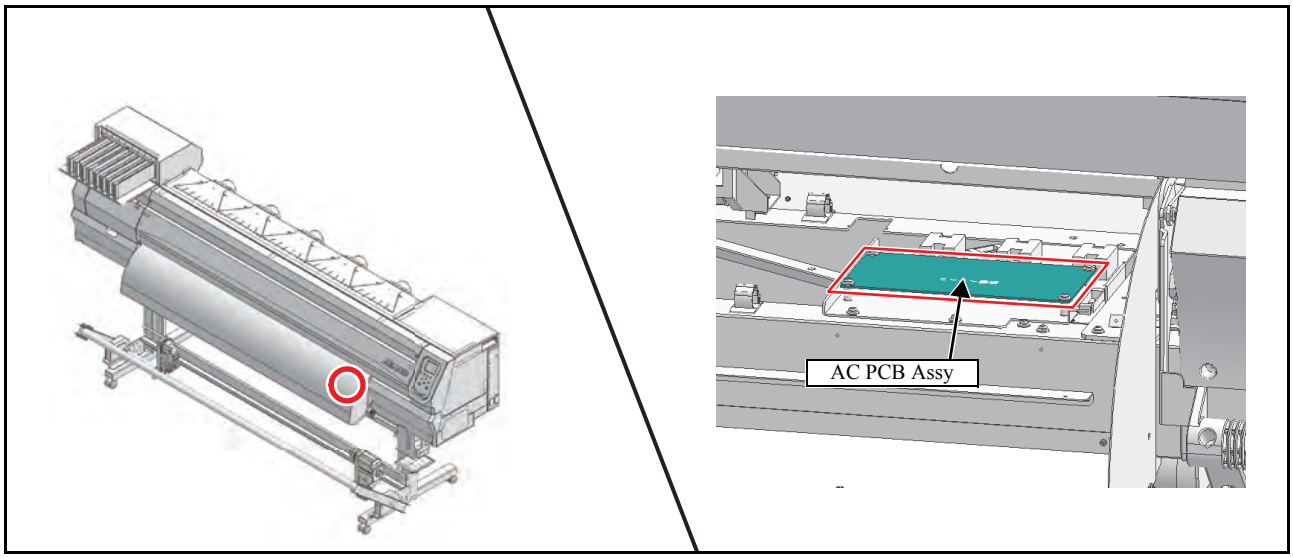
> **Warning**
> After turning off the sub and main power switches, unplug the power cord. Make sure to take 15 minutes before restarting the operation. It is very dangerous if sleep mode functions mistakenly during the operation.
> Moreover, the PCB may be damaged in case electric charge still remains inside.
> Also, there is a possibility of electric shock because of high power voltage applied to the high-pressure part of PCBs. Take care to avoid contact with it.

1. Remove the following covers.
   - **Top cover R**
   - **Slider PCB Cover**
2. Move the ink carriage onto the station and disconnect all cables from PCB.
3. Remove the screws (x3) and then remove the **SL2H PCB Assy**.



4. Reverse the disassembly procedure for reassembly.

6.4.4 AC PCB Assy

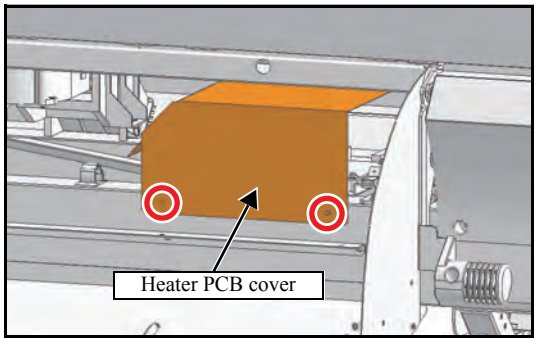


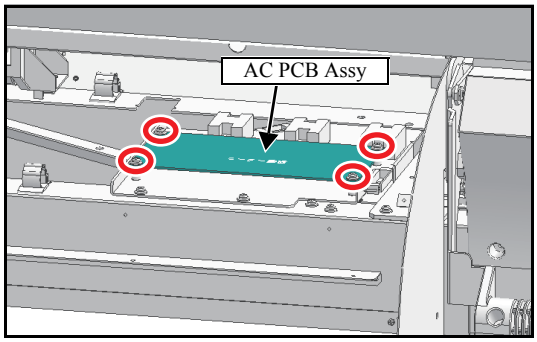
■ Work procedures

Warning

After turning off the sub and main power switches, unplug the power cord. Make sure to take 15 minutes before restarting the operation. It is very dangerous if sleep mode functions mistakenly during the operation.
Moreover, the PCB may be damaged in case electric charge still remains inside.
Also, there is a possibility of electric shock because of high power voltage applied to the high-pressure part of PCBs. Take care to avoid contact with it.

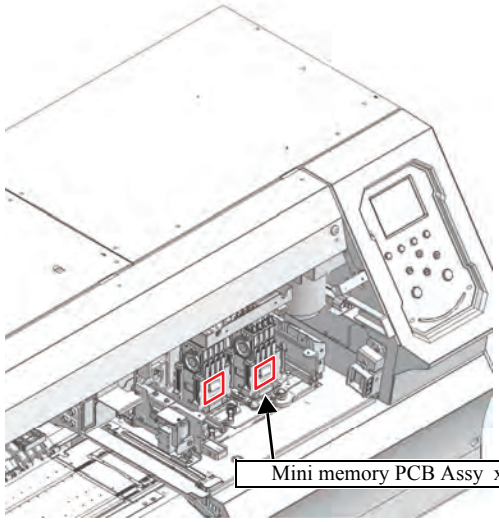
1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the **Platen cover F**.
3. Remove the **Heater PCB cover** (screw x2).
4. Disconnect all **connectors** on PCB.





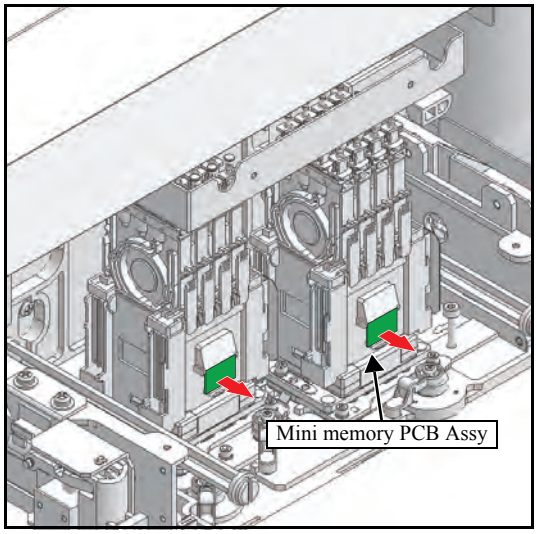
5. Remove the screws (x4) and then remove the **AC PCB Assy**.
6. Reverse the disassembly procedure for reassembly.

6.4.5 Mini Memory PCB Assy



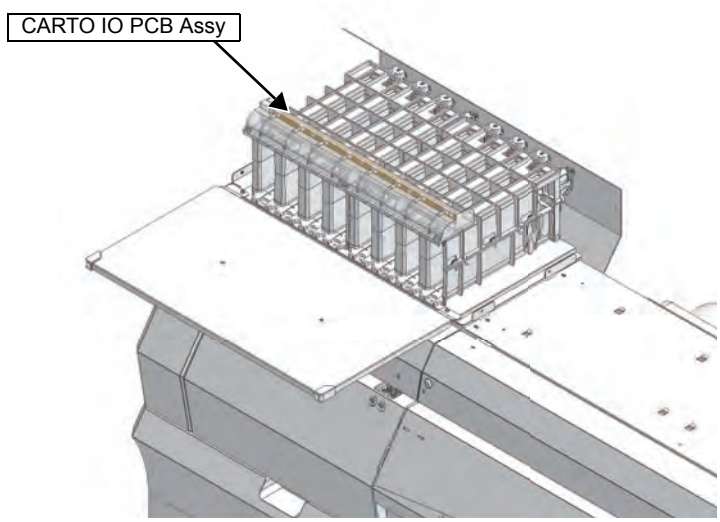
■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.



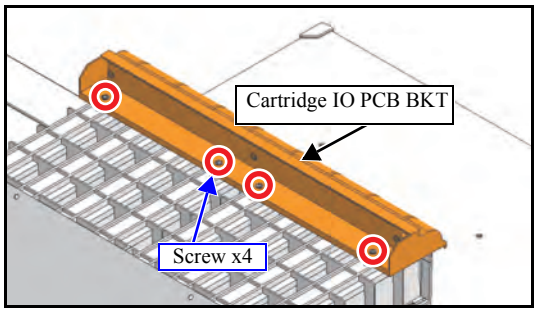
1. Remove the following covers.
   - **Front Cover M, L**
   - **Carriage cover**
2. Move the head unit on the platen.
3. Remove **Mini memory PCB Assy**. from the connector.
4. Reverse the disassembly procedure for reassembly.

6.4.6 CART IO PCB Assy

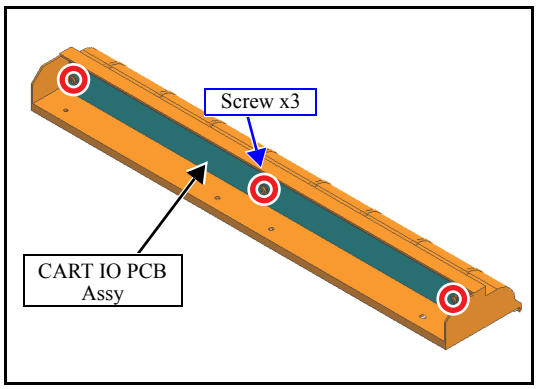


■ **Work procedures**

> **Caution**
> Turn the main power OFF when turning the power OFF.
> It is very dangerous if sleep mode functions mistakenly during the operation.



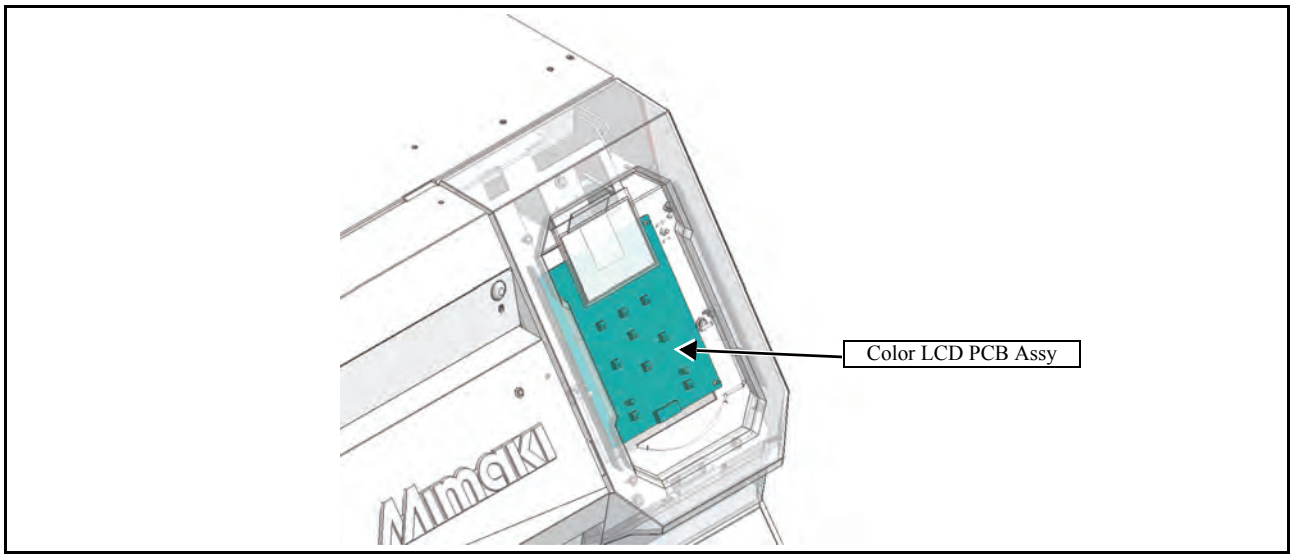
1. Remove the **Cartridge cover**.
2. Remove the **Cartridge IO PCB BKT** (screw x4).



3. Remove the **CART IO PCB Assy** (screw x3).

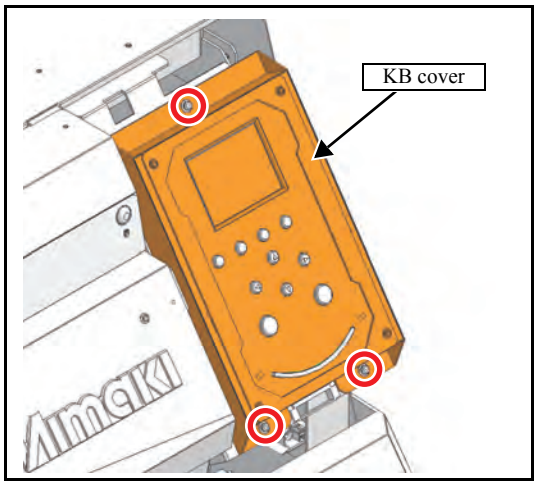
4. Reverse the disassembly procedure for reassembly.

6.4.7 Color LCD PCB Assy.

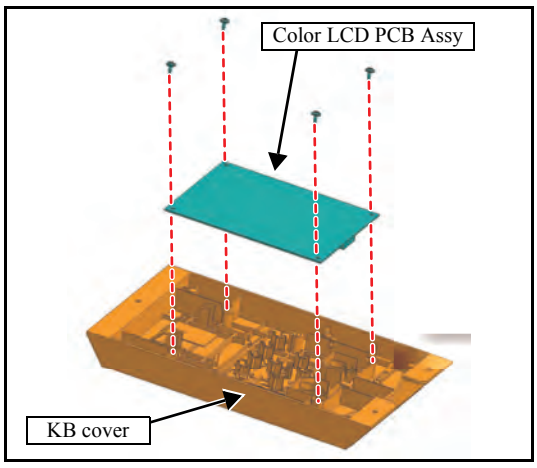


■ **Work procedures**

> **Caution**
> Turn the main power OFF when turning the power OFF.
> It is very dangerous if sleep mode functions mistakenly during the operation.

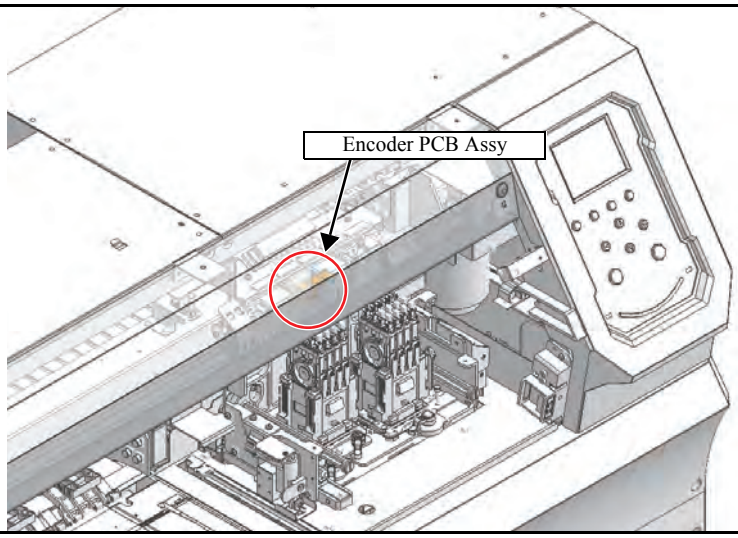


1. Remove the **Front cover R**.
2. Disconnect the cable from PCB, and then remove the KB cover (screw x3).



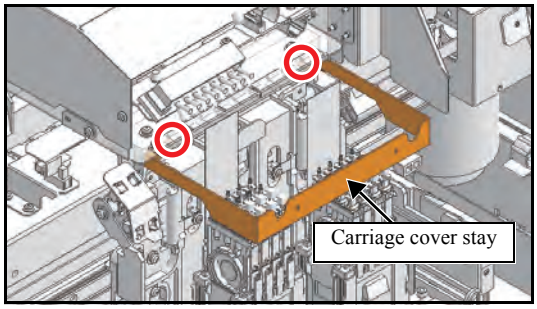
3. Remove the screws (x4) and then remove the **Color LCD PCB Assy**.
4. Reverse the disassembly procedure for reassembly.

6.4.8 Encoder PCB Assy

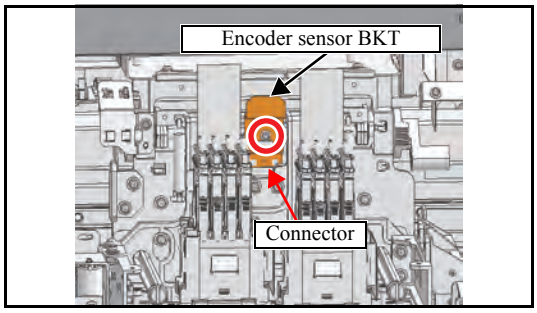


■ **Work procedures**

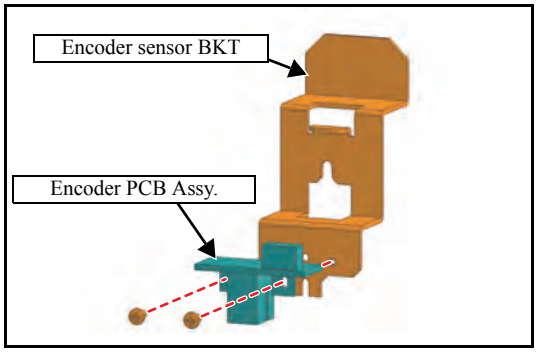
> **Caution**
> Turn the main power OFF when turning the power OFF.
> It is very dangerous if sleep mode functions mistakenly during the operation.



1. Remove the **Front cover M**, **L** and **Carriage cover**.
2. Loosen the screws at two locations on the right and left to remove the **Carriage cover stay**.

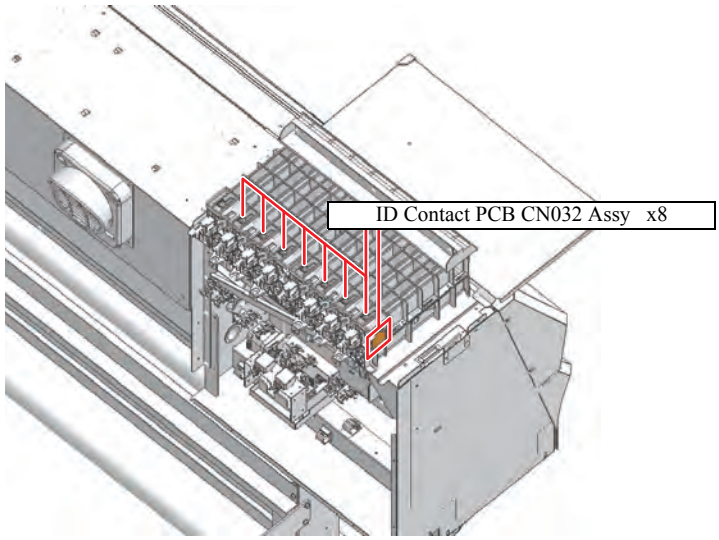


3. Remove the **connector**.
4. Remove the **Encoder sensor BKT** (screw x1).



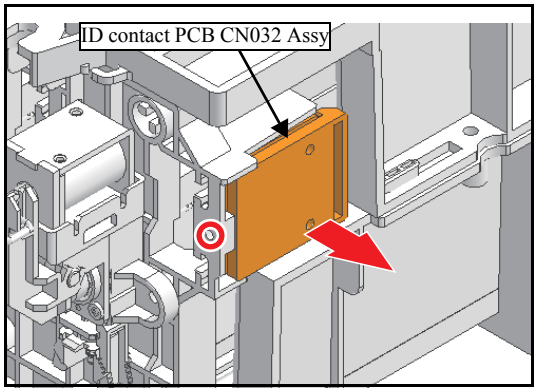
5. Remove the two screws and then remove the **Encoder PCB Assy**.
6. Reverse the disassembly procedure for reassembly.

6.4.9 ID Contact PCB CN032 Assy



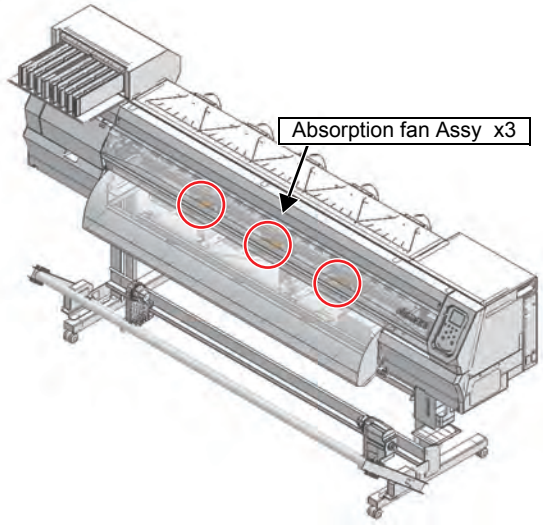
■ **Work procedures**

1. Remove the **Cartridges**.
2. Remove the **Cartridge cover** and **Cartridge rear cover**.
3. Remove the **CART IO PCB Assy** (screw x4).
4. Remove the connector and loosen the screws to take off the **ID contact PCB CN032 assy**.



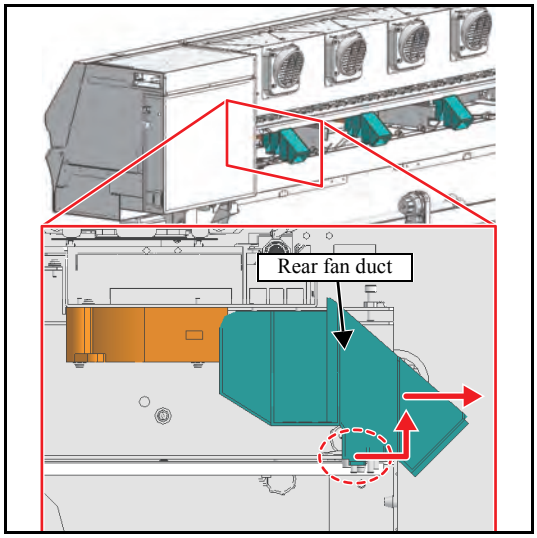
5. Reverse the disassembly procedure for reassembly.

6.4.10 Absorption Fan Assy.

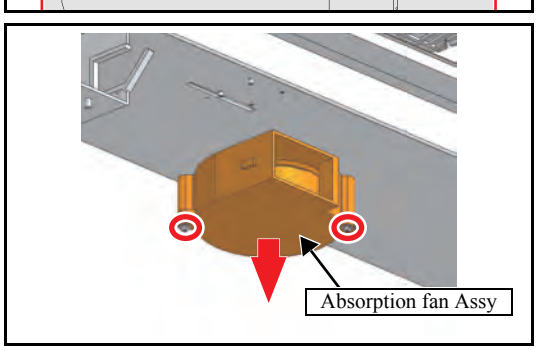


■ **Work procedures**

> **Caution**
> Turn the main power OFF when turning the power OFF.
> It is very dangerous if sleep mode functions mistakenly during the operation.

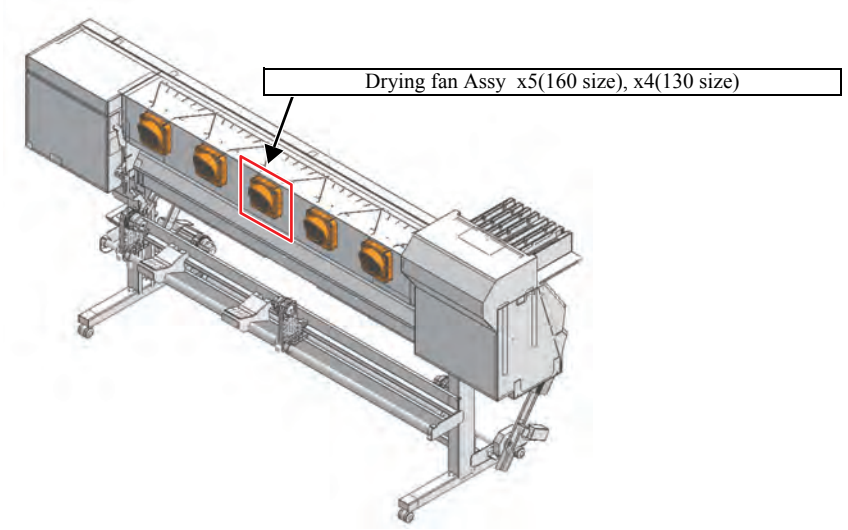


1. Remove the **Front cover M**, **L**.
2. Remove the **Platen cover F**, **R**.
3. Remove the **Rear fan duct** by lifting it obliquely.



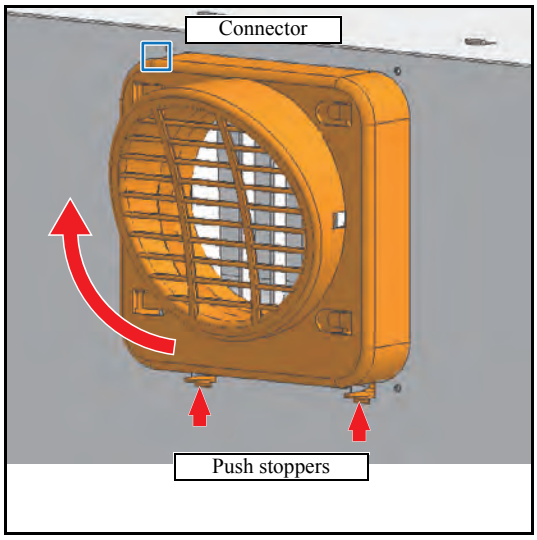
4. Remove the screws with a ratchet or stubby screwdriver, disconnect the connector and remove the **Absorption fan assy**.
5. Reverse the disassembly procedure for reassembly.

6.4.11 Drying Fan Assy.



■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF.
> It is very dangerous if sleep mode functions mistakenly during the operation.

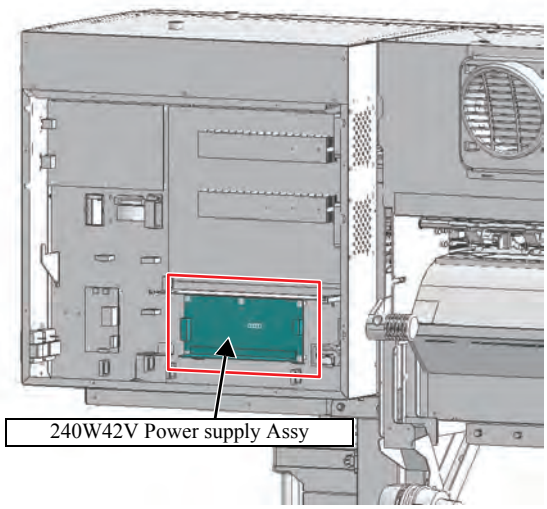


1. Remove the connector.
2. Push up the stoppers at bottom of the cover, and then remove the Assy. together with cover.

3. Reverse the disassembly procedure for reassembly.

> **IMPORTANT** When attaching, push down the stopper and fix the Assy. It is not fixed only by having fitted it.

6.4.12 240W42V Power Supply Assy.

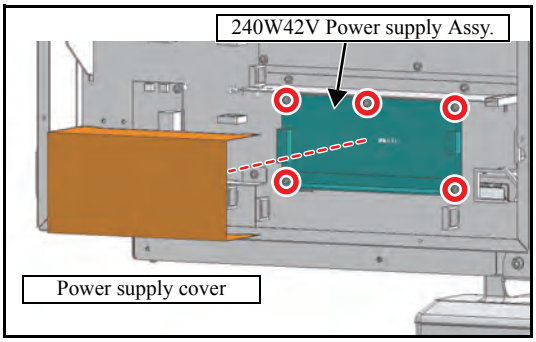


■ Work procedures

Warning

After turning off the sub and main power switches, unplug the power cord. Make sure to take 15 minutes before restarting the operation. It is very dangerous if sleep mode functions mistakenly during the operation.
Moreover, the PCB may be damaged in case electric charge still remains inside.
Also, there is a possibility of electric shock because of high power voltage applied to the high-pressure part of PCBs. Take care to avoid contact with it.

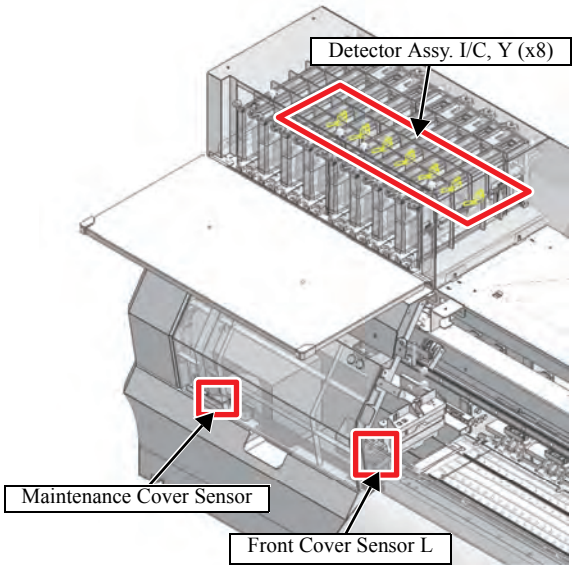
1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the **Electrical box cover** and **Power supply cover**.
3. Disconnect all **connectors** on PCB.
4. Remove the screws and then remove the **240W42V power supply Assy**.

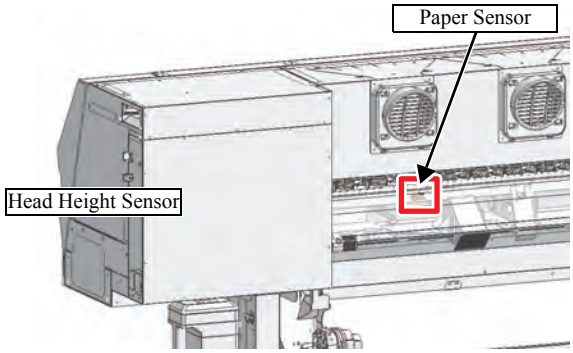


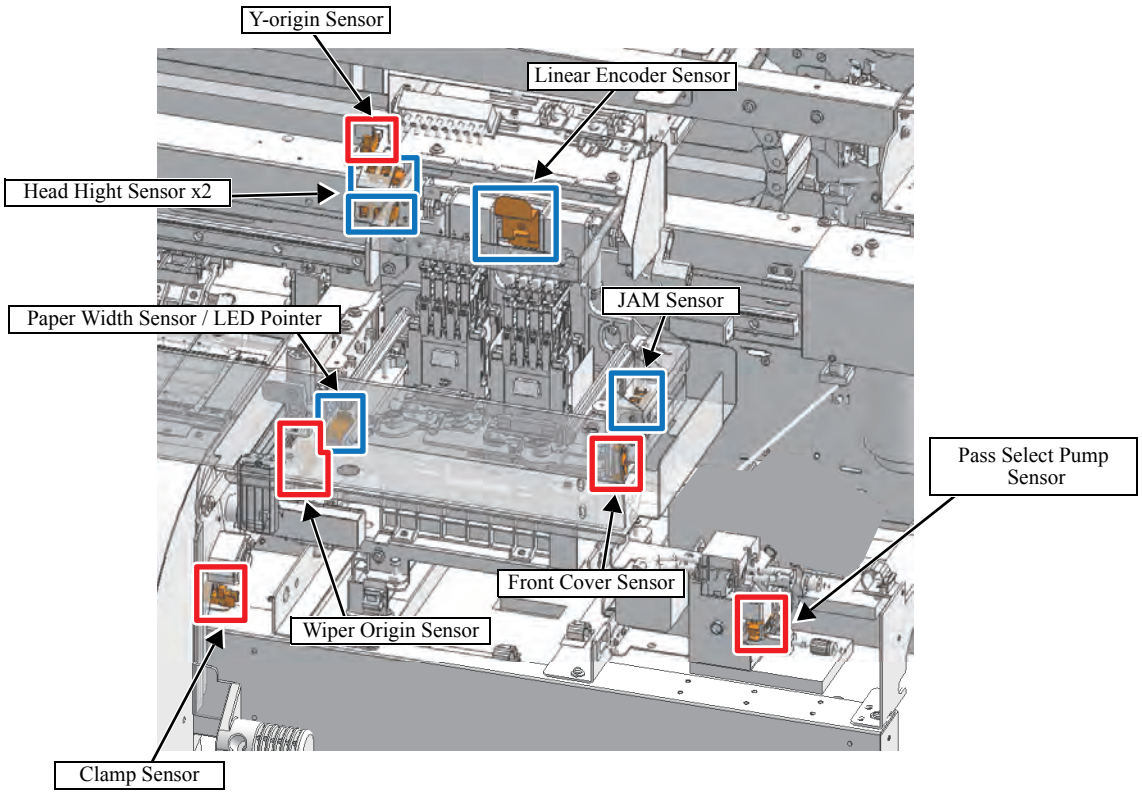
5. Reverse the disassembly procedure for reassembly.

Disassembly and Reassembly

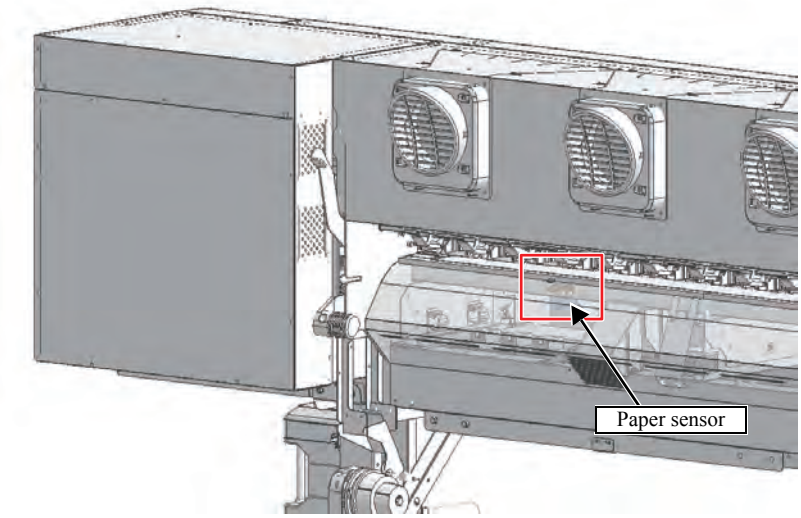
6.5.1 Sensor Layout





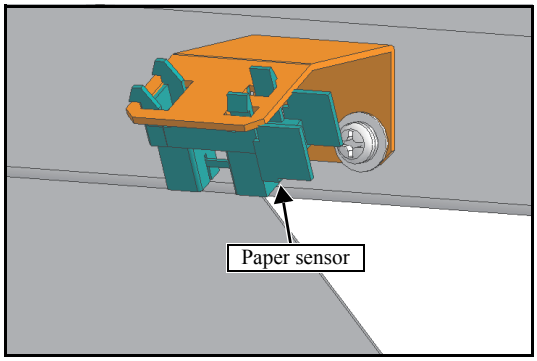


6.5.2 Paper Sensor



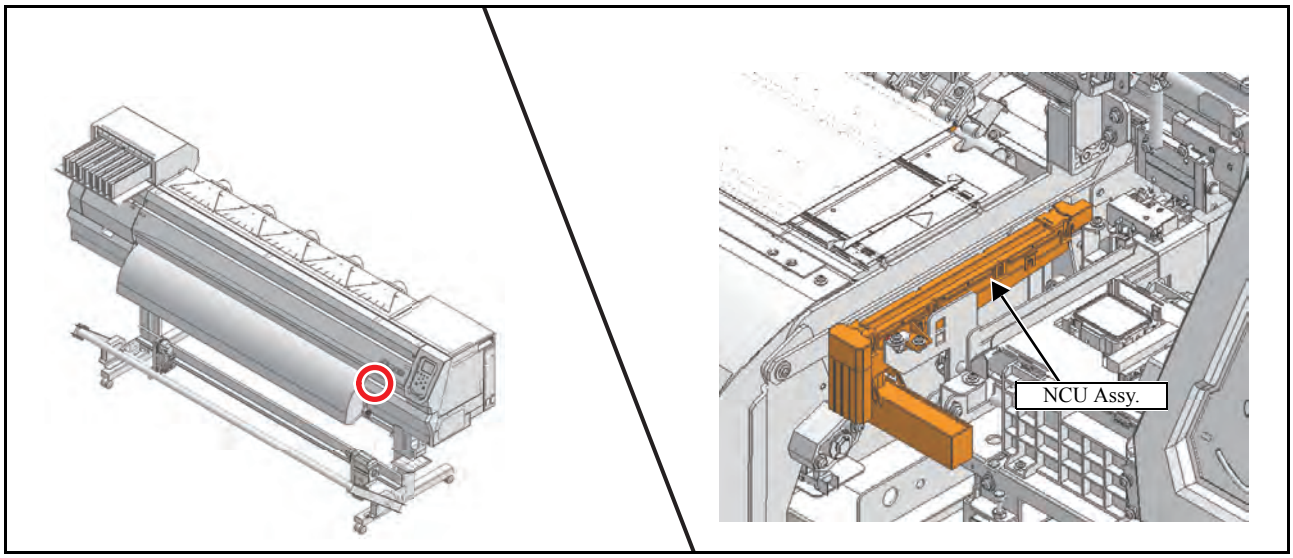
■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.



1. Remove the **Platen cover R160**.
2. Remove the **Paper sensors** from the Paper sensor BKT and then disconnect the connector.
3. Reverse the disassembly procedure for reassembly.

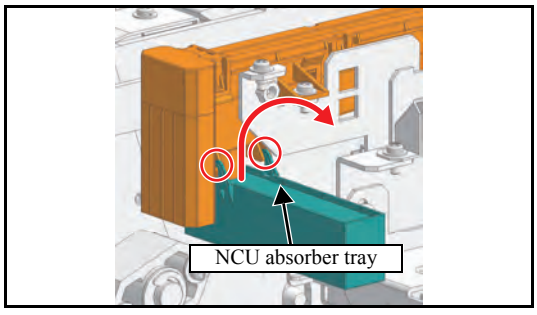
6.5.3 NCU Assy. (Nozzle Missing Detector)



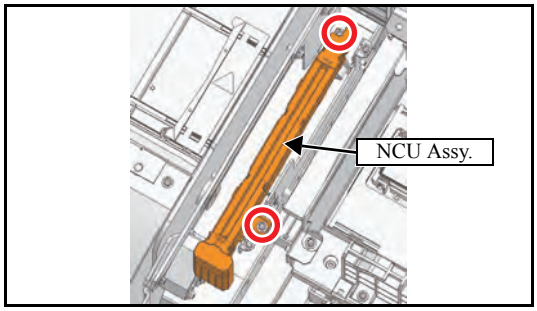
■ **Work procedures**

> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

1. Turn the main power OFF.
2. Remove the Front cover M and L.
3. Move slowly the carriage onto the platen by hand.
4. Remove the NCU absorber tray. (take off a hook).

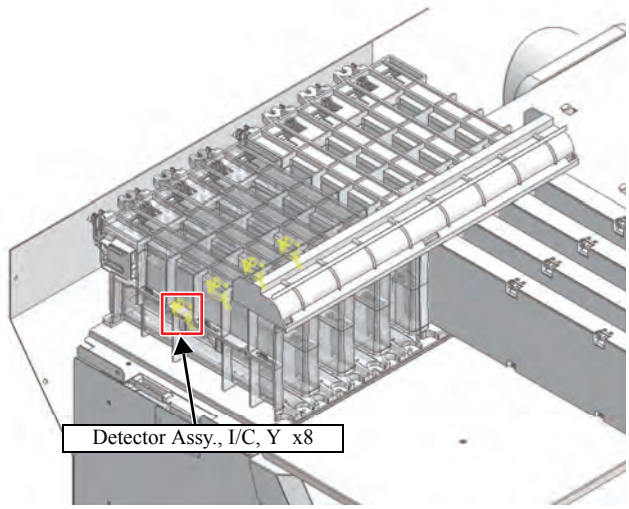


5. Disconnect the all connectors.
6. Remove screws (x2) on the NCU frame, and then remove the NCU Assy.



7. Reverse the disassembly procedure for reassembly.

6.5.4 Detector Assy, I/C, Y

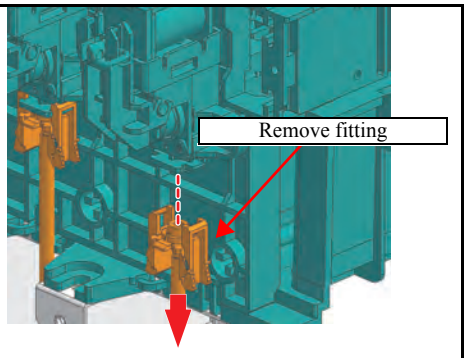


■ Work procedures

Caution

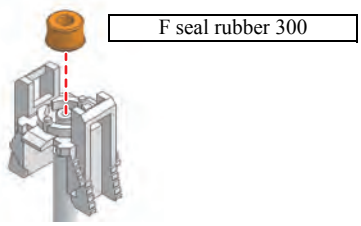
Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

1. Remove the **Cartridges**.
2. Remove the **Cartridge cover** and **Cartridge rear cover**.
3. Remove the **CART IO PCB Assy** (screw x4).
   (Refer to 6.4.6.)
4. Remove the **Fitting**.

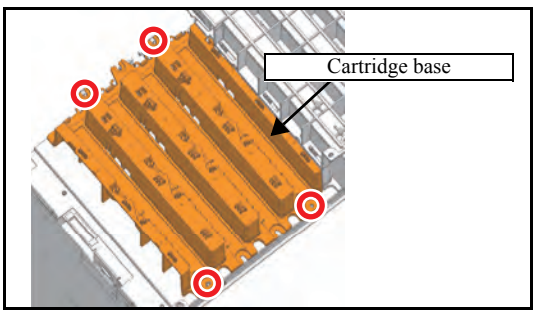


IMPORTANT

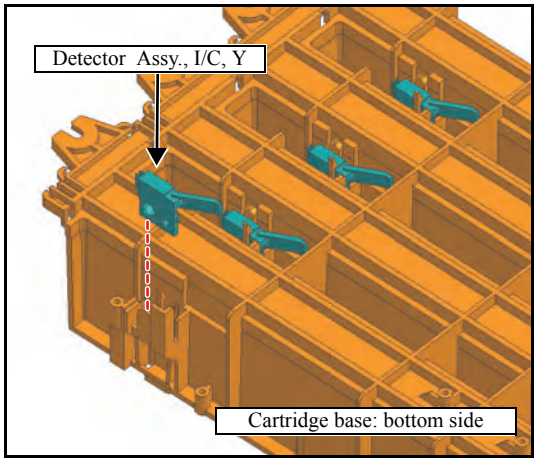
Make sure that O-ring (F seal rubber 300) is not remaining in the joint screws.



5. Remove the **Cartridge base** (screw x4).



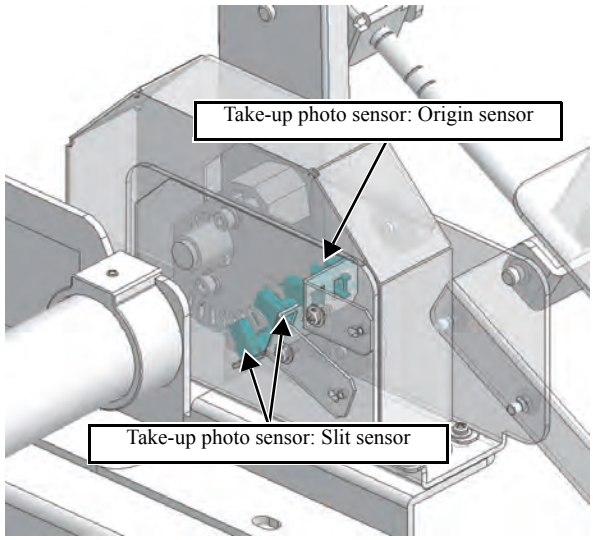
6.5.4 Detector Assy, I/C, Y



6. Turn the **Cartridge base** upside down, and then remove the **Detector Assy**, **I/C**, **Y**.

7. Reverse the disassembly procedure for reassembly.

6.5.5 Take-up Photo Sensor (T bar angle detect sensor)



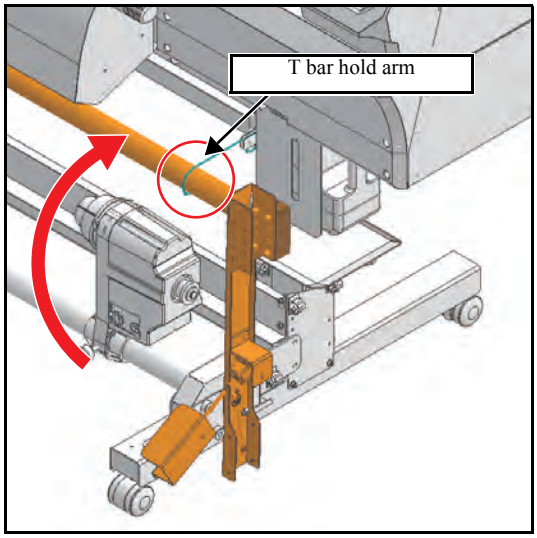
■ Outline

This device is option product.

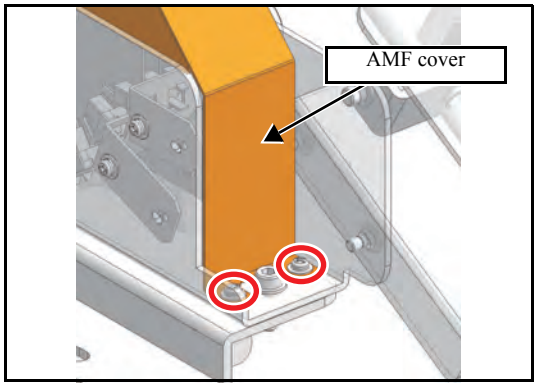
■ Work procedures

Caution

Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.

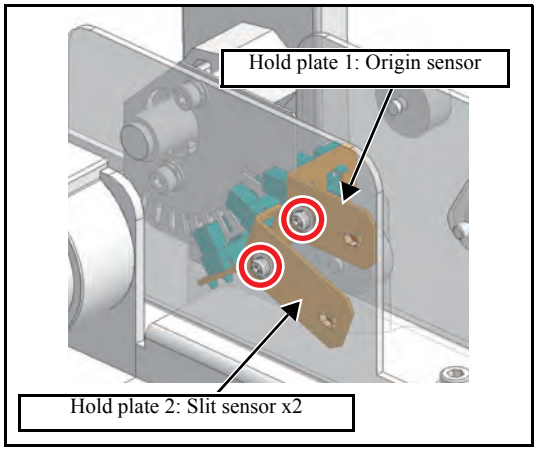


1. Move up the T bar to holding position, and hold it with hook.
   Be sure to hold it with hook for improving workability.



2. Remove the **AMF cover** (screw x2).

6.5.5 Take-up Photo Sensor (T bar angle detect sensor)



3. Remove the Hold plate 1 and 2 from each sensor (by 1 screw each).

   Remove the harness from the sensor, and remove the each sensor from the hold plate.

4. Reverse the disassembly procedure for reassembly.

Troubleshooting

7.1.1 Concerning Errors and Malfunctions

■ Outline

This chapter describes the troubleshooting for this machine.

■ Rough identification of the source of the trouble

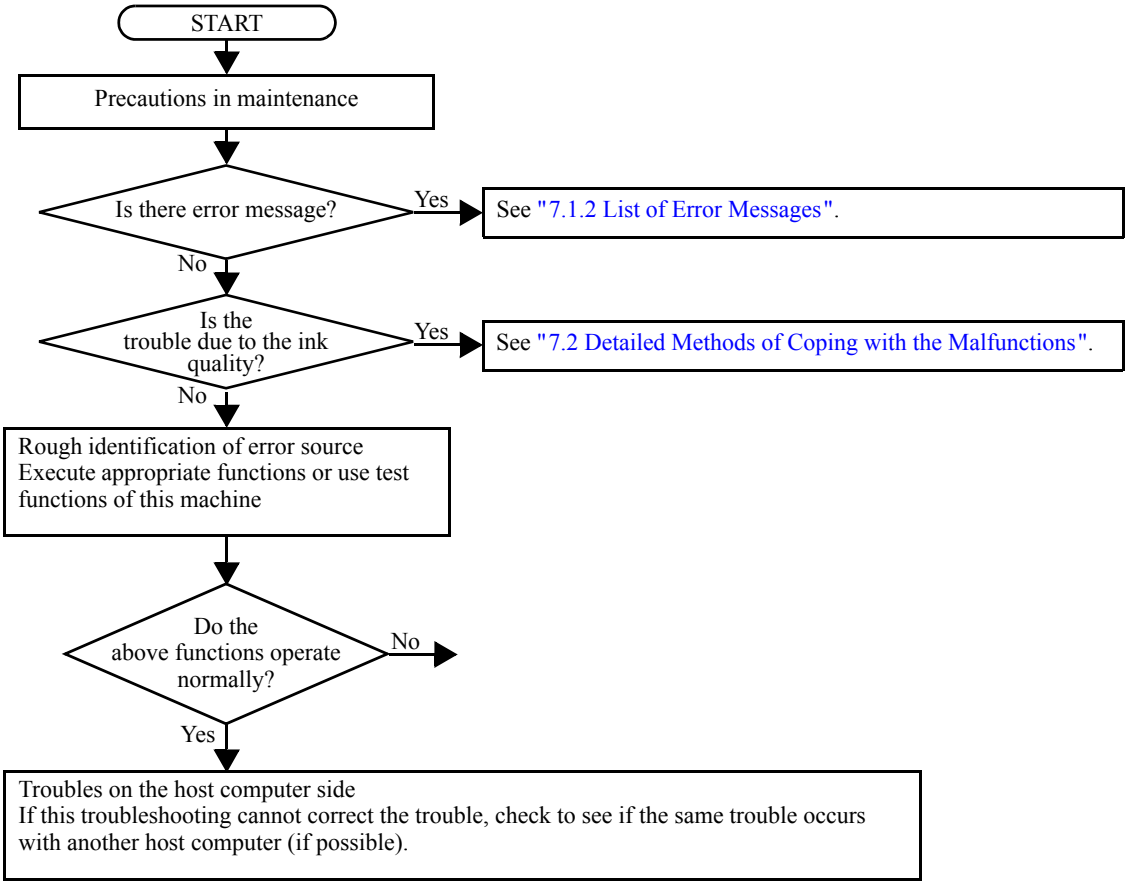
At the beginning of troubleshooting, it is necessary to identify roughly which functions the trouble relates to.

Problems can be roughly classified into those that relate to the machine itself and those that involve the connection between the machine and the host computer.

☐ Problems related to the machine
The cause of the trouble can be identified by executing appropriate functions or using test functions.

☐ Problems related to the connection with the host computer
Hardware: Broken wire or faulty contact of cables
Software: Transmission by improper application setting

> The standard priority of this machine is the "Host".
> Check the settings on the host computer to see if there is any improper parameter setting.



7.1.1 Concerning Errors and Malfunctions

■ Checking procedure

This section describes troubleshooting procedures for the problems for which error messages are displayed.

1. Identifying the error category

   The causes of errors can be classified into the following categories:

   - ☐ Handling error on the host computer side
   - ☐ Trouble on the host computer side
   - ☐ Trouble with the interface cable
   - ☐ Machine handling error
   - ☐ Machine mechanical trouble
   - ☐ Machine hardware trouble
   - ☐ Machine firmware trouble

2. Initial action

   Refer to the error message, and judge whether the trouble lies on the host computer side or on the printer side.

   - ☐ Has any of the interface conditions (printer model setting, command, etc.) been changed?
   - ☐ Does the trouble occur under specific conditions?
   - ☐ Does the same trouble occur repeatedly?

3. Failure on the printer side

   Take the following steps to repair the printer.

   - ☐ Uploading and checking of parameters
   - ☐ Reinstalling of firmware
   - ☐ Checking of FFC and cable connections
   - ☐ Replace the defective part (sensor, etc.) or make the necessary adjustment.
   - ☐ Replace the PCBs.

4. Repair at the factory

   If the error recurs even after the corrective measures specified here are taken, return the machine to the factory of MIMAKI for repair.

7.1.2 List of Error Messages

■ **List of Error Messages (1/7)**

No.	LCD	Cause	List of Countermeasures
1	ERROR 122 CHECK:SDRAM	PRAM size is not sufficient at FW upgrading (fw_updmsg).	1. Update F/W. 2. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
2	ERROR 128 HDC FIFO OVER	HDC FIFO OVER error (Data transmission speed is too fast Control PCB trouble) HDC FIFO OVERRUN is detected at the scan slider process (ScanSlider)	1. Check the parameter. (Is the scan parameter the default value?) 2. Update F/W. 3. Check if there is no data error from RIP. 4. To make sure, repeat RIP. 5. Disconnect and connect the FFC located between the MAIN PCB and the SL2H PCB. 6. Replace the FFC and cable located between the MAIN PCB and the SL2H PCB. 7. Replace the SL2H PCB with a new one. (Refer to 6.4.3) 8. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
3	ERROR 128 HDC FIFO UNDER	HDC FIFO UNDER error (Data transmission speed is too slow Control PCB trouble) HDC FIFO UNDERRUN is detected at the scan slider process (ScanSlider)	
4	ERROR 129 BATTERY EXCHANGE	Battery dead (RTC battery dead is detected.) Proper information of Printer or Time (Dedicated IC) unusable on Printer initializing process (opinit).	1. Replace a battery equipped on the MAIN PCB with new one. (CR1220) * The new battery should be the same product or the equivalent. * Discard the old battery according to the instruction from the maker.
5	ERROR 130 HD DATA SEQ	Head data transferring sequence error	1. Disconnect and connect the FFC located between the SL2H PCB and the MAIN PCB. 2. Replace the FFC located between the SL2H PCB and the MAIN PCB. 3. Replace the SL2H PCB with a new one. (Refer to 6.4.3) 4. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
6	ERROR 146 E-LOG SEQ	Sequential number abnormality of the event log	1. Initialize a Event log. 2. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
7	ERROR 151 MAIN PCB V1R2	Main board 1.2V power supply is abnormal.	1. Check the output pressure of the DC power supply (42V) and the DC power supply (5V). 2. Replace the power supply above. 3. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
8	ERROR 152 MAIN PCB V2R5	Main board 2.5V power supply is abnormal.	
9	ERROR 153 MAIN PCB V3R3	Main board 3.3V power supply is abnormal.	
10	ERROR 154 MAIN PCB V05	Main board 5V power supply is abnormal.	
11	ERROR 157 MAIN PCB VTT	Main board VTT power supply is abnormal.	
12	ERROR 16e MAIN PCB V3R3B	Main board 3.3VB power supply is abnormal.	
13	ERROR 18a MAIN PCB V_CORE	Main board V_CORE power supply is abnormal.	
14	ERROR 18c MAIN PCB V12	Main board 12V power supply is abnormal.	
15	ERROR 190 MAIN PCB V42-1	Main board 42V-1 power supply is abnormal.	
16	ERROR 190 COMIO PCB V1R2	COM32IO board 1.2V power supply is abnormal.	1. Check the output pressure of the DC power supply (42V) and the DC power supply (5V). 2. Replace the power supply above. 3. Replace the COM32IO PCB with a new one.(Refer to 6.4.2)
17	ERROR 190 COMIO PCB V2R5	COM32IO board 2.5V power supply is abnormal.	
18	ERROR 190 COMIO PCB V3R3	COM32IO board 3.3V power supply is abnormal.	
19	ERROR 190 COMIO PCB V24	COM32IO board 24V power supply is abnormal.	

7.1.2 List of Error Messages

■ **List of Error Messages (2/7)**

No.	LCD	Cause	List of Countermeasures
20	ERROR 1a0 SLDR2H PCB V1R2	SL2H board 1.2V power supply is abnormal.	1. Check the output pressure of the DC power supply (42V) and the DC power supply (5V). 2. Replace the power supply above. 3. Replace the SL2H PCB with a new one.(Refer to 6.4.3)
21	ERROR 1a6 SLDR2H PCB V2R5	SL2H board 2.5V power supply is abnormal.	
22	ERROR 1a7 SLDR2H PCB V3R3	SL2H board 3.3V power supply is abnormal.	
23	ERROR 1a8 SLDR2H PCB V5	SL2H board 5V power supply is abnormal.	
24	ERROR 1a9 SLDR2H PCB V42	SL2H board 42V power supply is abnormal.	
25	ERROR 15f HEAD DRIVE HOT	COM driver becomes the high temperature.	1. Check the operation of the COM32 IO PCB cooling fan. 2. Disconnect and connect the FFC located between the COM32 IO PCB and the MAIN PCB. 3. Replace the COM32 IO PCB with a new one. (Refer to 6.4.2) 4. Replace the Print Head with a new one. (Refer to 3.1.1)
26	ERROR 171 NEW HEAD CONNECT	New Print Head was recognized. Compare S/N written in the head memory with S/N stored in the machine.	It is normal that an error occurs only at the time of the first start after having connected a new head. It is abnormal that an error occurs at the time of start every time.. 1. Check connection between the SL2H PCB from the Print Head 2. Replace the SL2H PCB with a new one. (Refer to 6.4.3) 3. Replace the Head memory PCB with a new one.
27	ERROR 186 HDC OVERFLOW	Wave shape overflow Wave shape data is abnormal.	
28	ERROR 186 HDC UNDERFLOW	Wave shape underflow Wave shape data is abnormal.	
29	ERROR 187 HDC SLEW RATE	Wave shape slew rate error Wave shape data is abnormal.	
30	ERROR 188 HDC MEMORY	Wave shape memory error At wave shape memory writing, it cannot be written due to address conflict.	
31	ERROR 201 COMMAND	Command error Other data than commands is received	1. Check if the output set of the PC matches the set of the machine side? 2. Change the profile. 3. Check if there is no parameter error? 4. Check if there is no trouble on the USB Cable? 5. Replace the USB Cable. 6. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
32	ERROR 202 PARAMETER	Parameter error Parameter out of the numeral value range is received	
33	ERROR 203 Ment Command	Maintenance command Operation of a maintenance command fails * Non-disclosed command Parameter Up/Download and time setting (LcAeMent [M0xfe])	1. Check the PRM file. 2. Check the number of each parameter. (if PRM matches up to the machine.)
34	ERROR 304 USB INIT ERR	USB initialization error (Failures in initializing USB device)	1. Check if there is no parameter error? 2. Replace the USB Cable. 3. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
35	ERROR 305 USB TIME OUT	USB time-out (Occurrence of time-out error on USB device)	

7.1.2 List of Error Messages

■ **List of Error Messages (3/7)**

No.	LCD	Cause	List of Countermeasures
36	ERROR 401 MOTOR X	X Servo error (Excessive load to the X-motor)	1. Check if there is no error on the print data. (Check if the same error occurs on other data?) 2. Check if there is no trouble on the Timing Belt. 3. Check if there is no trouble on the Motor Cable. (disconnecting, burnout, or the like) 4. Check the FFC between each PCB and Short-connectors connected on the PCB. 5. Replace the X-axis Motor with a new one.(Refer to 3.2.1)
37	ERROR 403 X CURRENT	X-motor current (Over current error of X-motor is detected.)	
38	ERROR 402 MOTOR Y	Y Servo error (Excessive load to the Y-motor)	1. Check if there is no error on the print data. (Check if the same error occurs on other data?) 2. Check if it moves to the Y-direction smoothly in the power-off condition. 3. Check if there is no trouble on the Timing Belt. 4. Check if there is no trouble on the Motor Cable. (disconnecting, burnout, or the like) 5. Check the FFC between each PCB and Short-connectors connected on the PCB. 6. Replace the Y-axis motor with a new one. (Refer to 3.2.2)
39	ERROR 404 Y CURRENT	Y-motor current (Over current error of Y-motor is detected.)	
40	ERROR 423 TAKE-UP TENSION-BAR	Take-up tension bar error (Origin of tension bar can not be detected) (Angle change of tension bar can not be detected) It occurs under conditions of follows; ・When initializing operation of the tension bar fails after detecting the media. ・When initializing operation of the tension bar during printing (only without torque limiter). ・When retry operation fails two times after abnormal control of the tension bar (only without torque limiter). Tension bar control is not performed after error outbreak. → In case that torque limiter is available, control the take-up unit. → In case that torque limiter is not available, take up operation is not performed.	1. Check the setting status of the media. 2. Execute and confirm [#TEST][SENSOR][TAKE-UP TENSION-BAR].(Confirm that the ON/OFF display is switched by moving the tension bar up and down.) 3. Check the connector connection of Take-up tension bar origin sensor and cable. 4. Replace the Take-up tension bar origin sensor.
41	ERROR 425 Take-up WRONG	An error occurred in the take-up status of the take-up unit. (A tension bar deviated from the lowest control position for a certain time.) When the lower limit of control range exceeds for a certain time, the error occurs. The operations after the error outbreak are as follows. → In case that torque limiter is available, control the take-up unit. → In case that torque limiter is not available, slow acceleration and retry (twice).	1. Check the setting status of the media. 2. Confirm that tension bar is lowered by taking up the media with manual SW. (If it is not lowered, adjust the weights.) 3. Execute and confirm [#TEST][SENSOR][TAKE-UP SLIT-A], [TAKE-UP SLIT-B].(Confirm that the ON/OFF display is switched by moving the tension bar up and down.) 4. Check the connector connection of Take-up tension bar origin sensor and cable. 5. Replace the Take-up tension bar origin sensor.

7.1.2 List of Error Messages

■ **List of Error Messages (4/7)**

No.	LCD	Cause	List of Countermeasures
42	ERROR 429 Take-up Limit DETECT	Limit position of tension bar (A tension bar deviated from the highest control position for a certain time.) When the upper limit of control range exceeds for a certain time, the error occurs. The operations after the error outbreak are as follows. → In case that torque limiter is available, control the take-up unit. → In case that torque limiter is not available, slow acceleration and retry (twice).	1. Check the setting status of the media. 2. Confirm that tension bar is risen by taking up the media with manual SW. (If it is not risen, adjust the weights.) 3. Execute and confirm [#TEST][SENSOR][TAKE-UP SLIT-A], [TAKE-UP SLIT-B].(Confirm that the ON/OFF display is switched by moving the tension bar up and down.) 4. Check the connector connection of Take-up tension bar origin sensor and cable. 5. Replace the Take-up tension bar origin sensor.
43	ERROR 44f Take-UP Roll Sns Err	Take-up shaft sensor is abnormal (Take-up shaft sensor can not be read exactly.) It occurs under conditions of follows; ・When take-up shaft sensor does not work ・When detection of take up diameter fails Update of the take up diameter is not performed after error occurs.	1. Execute and confirm [#TEST][SENSOR] [Torque Limiter].(Confirm that the ON/OFF display is switched by moving the tension bar up and down.) 2. Check the connector connection of Take-up tension bar origin sensor and cable. 3. Replace the Take-up tension bar origin sensor.
44	ERROR 505 MEDIA JAM	The media jam sensor reacted.	1. Remove the media that hit it, and reset the media. 2. Execute [#TEST SENSOR] ->[MEDIA JAM].
45	ERROR 509 HDC POSCNT	HDC position counter error	1. Execute and confirm [#TEST][SENSOR] [Y-ORIGIN].(Confirm that the ON/OFF display is switched by moving the carriage left and right.) 2. Execute [#TEST][CHECK ENCODER]. 3. Check the assembly of Y-scale, and confirm that there is neither dirt nor scratch. 4. Check in manual if the Head Assy. (carriage) moves left and right smoothly. 5. Check the connector connection of Y-origin Sensor and Linear Encoder. 6. Replace the Y-origin Sensor or Linear Encoder with a new one. 7. Check the assembly and connector connection of Y-axis Motor.
46	ERROR 50a Y ORIGIN	Y-origin error (Origin of Y-axis can not be detected)	1. Execute and confirm [#TEST][SENSOR] [Y-ORIGIN].(Confirm that the ON/OFF display is switched by moving the carriage left and right.) 2. Execute [#TEST][CHECK ENCODER]. 3. Check in manual if the Head Assy. (carriage) moves left and right smoothly. 4. Check the connector connection of Y-origin Sensor and Linear Encoder. 5. Replace the Y-origin Sensor or Linear Encoder with a new one. 6. Check the assembly and connector connection of Y-axis Motor. 7. Replace the Y-axis Motor with a new one. (Refer to 3.2.2) 8. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
47	ERROR 50c MEDIA WIDTH SENSOR	The media width could not be read correctly.	1. Check the media setting position. 2. Perform cleaning of the media width sensor. 3. Execute [#TEST][PAPER SENSOR].

7.1.2 List of Error Messages

■ **List of Error Messages (5/7)**

No.	LCD	Cause	List of Countermeasures
48	ERROR 50f L-SCALE BLACK	Liner Scale error	1. Check the assembly position of Linear Scale and Encoder PCB Assy.. 2. Check Linear Scale (scratches or dirtiness or so.) 3. Replace the Linear Scale with a new one. 4. Replace the Encoder PCB Assy. with a new one. (Refer to 6.4.8)
49	ERROR 529 LEnc.Count HPC[____]	Difference of linear scale value (HPC1 and HPC2)	
50	ERROR 52a LEnc.Count HDC[____]	Difference of linear scale value (HDC and HPC2)	
51	ERROR 516 MEDIA SET POSITION L ERROR 516 MEDIA SET POSITION R	The media is set outside the range.	1. Check the media setting position. 2. Perform cleaning of the media width sensor. 3. Execute [#TEST PAPER SENSOR].
52	ERROR 528 PUMP MOTOR SENSOR	Detecting error of pump sensor	1. Perform [#TEST][SENSOR][PUMP MOTOR], and confirm pump operation and sensor reaction by pressing [FUNC] key. 2. Replace the sensor. 3. Replace the suction pump.
53	ERROR 602 CARTRIDGE END	Ink end (Non of printing, ink use-up cleaning is only allowed.)	(When the message is still displayed even after a new Ink Cartridge or an empty Ink Cartridge is charged;) 1. Perform and confirm [#TEST][SENSOR][CartridgeSensor]. (The number correspond to the cartridge number.) 2. Check the peripheral and the assembly of near end sensor. 3. Check the connection of theD contact PCB Assy. and near end sensor. 4. Replace the cartridge. 5. Replace the ID contact PCB Assy. and near end sensor with new one. 6. Replace the CART IO PCB with a new one. 7. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
54	ERROR 608 WRONG INK IC	IC chip of Ink cartridge unreadable property.	1. Check the attached status of the chip. 2. Perform and confirm [#TEST][CHECK INK IC]. 3. Replace the ID contact PCB Assy. with new one.
55	ERROR 612 INK LVL LOW	When 600ml cartridge is used, ink amount of the cartridge is less than 60ml.	1. Register weight of the cartridge. 2. Replace the cartridge and ink IC with a new one. 3. Perform and confirm [#TEST][CHECK INK IC]. 4. Check the connection of theD contact PCB Assy. 5. Replace the ID contact PCB Assy. with new one. 6. Replace the CART IO PCB with a new one.
56	ERROR 613 INK LVL END	When 600ml cartridge is used, ink amount of the cartridge is less than 25ml.	
57	ERROR 614 Preservation Failure	When 600ml cartridge is used, writing to the IC chip is failed at the time of weight registration.	1. Replace the cartridge. 2. Perform and confirm [#TEST][CHECK INK IC]. 3. Check the connection of theD contact PCB Assy. 4. Replace the ID contact PCB Assy. with new one. 5. Replace the CART IO PCB with a new one.
58	ERROR 627 RE-INSERT CARTRIDGE	The cartridge has not been set for a certain amount of time.	Set the cartridge. 1. Check that the cartridge has been inserted correctly. 2. Check the sensor operation with [#TEST][SENSOR][CartridgeSensor].
59	ERROR 628 WRONG INK CARTRIDGE	An error occurred in the IC chip information of the ink cartridge.	The chip was used too much (exceeding the specified times). 1. Check whether the chip was also replaced when the pack was replaced. 2. Check the W ink nozzle clogging and resolve it. 3. Replace the IC chip with new one.

7.1.2 List of Error Messages

■ **List of Error Messages (6/7)**

No.	LCD	Cause	List of Countermeasures
60	ERROR 63c INK REMAIN ZERO	Ink amount of the cartridge is empty. (Non of printing, after execution of ink use-up cleaning.)	(When the message is still displayed even after a new Ink Cartridge or an empty Ink Cartridge is charged;) 1. Perform and confirm [#TEST][SENSOR][CartridgeSensor]. (The number correspond to the cartridge number.) Check the peripheral and the assembly of near end sensor. 2. Check the connection of theD contact PCB Assy. and near end sensor. 3. Replace the cartridge. 4. Replace the ID contact PCB Assy. and near end sensor with new one. 5. Replace the CART IO PCB with a new one. 6. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
61	ERROR 650 NCU CONECT	NCU cable Assy. (E107983) is not connected to the NCU unit.	1. Connect the NCU cable Assy. (E107983) to the NCU unit.
62	ERROR 651 NCU SENCER LEVEL	Light quantity decreases because deterioration of the source of light LED, dirt and wound.	1. Replace the NCU unit.
63	ERROR 652 NCU NZK CHK (HW)	H/W can not sample the Ink ejection pattern of the NCU unit. Many nozzle missing or trajectories have occurred.	1. Check the nozzle condition, and when there is much nozzle missing and trajectory, perform cleaning and revive it.
64	ERROR 653 NCU NZK CHK (MARK)	Ink ejection pattern of the NCU unit is analyzed, and then recognized abnormal ink ejection which not reach criteria of the pattern. The normal determination can not be made by Many nozzle missing or trajectories.	
65	ERROR 654 NCU CENTER POS	Detection of central position of the NCU unit fails. The normal determination can not be made by Many nozzle missing or trajectories.	
66	ERROR 655 NCU FLUSH POS	Detection of optimum position for the sensor of the NCU unit fails. The normal determination can not be made by Many nozzle missing or trajectories.	
67	ERROR 656 NCU SN ADJUST	Light quantity adjustment to get optimum sensitivity fails. ① The normal determination can not be made by Many nozzle missing or trajectories. ② Light quantity decreases because deterioration of the source of light LED, dirt and wound.	1. Check the nozzle condition, and when there is much nozzle missing and trajectory, perform cleaning and revive it. 2. Replace the NCU unit, when error occur even if nozzle is recovered.
68	ERROR 657 Check NCU waste ink	Waste ink tray of NCU is full.	1. Replace the waste ink tray of NCU unit.
69	ERROR 702 THERMI CONNECT	Defective of the thermistor connection (disconnection or short)	1. Check each thermistor connection. 2. Replace the COM32 IO PCB with a new one. (Refer to 3.3.1)
70	ERROR 710 HEATER TEMP ERROR	Heater dose not turn off. Error is displayed in 80 degrees Celsius or more.	1. Check the heater temperature. 2. Check the connection of the heater (PRE, PRT, POST). 3. Replace the cooling fan. 4. Replace the AC PCB. 5. Replace the COM32IO PCB.(Refer to 6.4.2)
71	ERROR 901 INVALID OPERATION	Function cannot carry out by some errors.	1. Return to a local screen and confirm the error situation.

7.1.2 List of Error Messages

■ **List of Error Messages (7/7)**

No.	LCD	Cause	List of Countermeasures
72	ERROR 902 DATA REMAIN	Drawing data is remaining.	(Carry out the followings if the error still occurs when data is cleared.) 1. Check errors in the parameter. 2. Remove USB cable from the printer and execute data clear. -> If solved, it is a problem on USB cable or PC. 3. Replace the USB Cable with a new one. 4. Replace the MAIN PCB with a new one. (Refer to 3.3.1)
73	ERROR 909 PARAMETER VERSION	Parameter version which is downloaded is different from FW version.	1. Check the FW version of the parameter which is downloaded.
74	ERROR 90d NO HEAD SELECT	Loaded number of the head is assumed zero.	1. Check the setting of loading number of the head in the parameter. (System parameter No.41 “HEAD NO”=2)
75	ERROR 90f PRINT AREA SHORT	Lacking printing area in printing the built-in pattern.	1. Move the Y origin. 2. Replace the media.
76	ERROR 04 PARAM ROM	Access Error of the PARAMETER ROM 1.The state that cannot access “FROM” on the MAIN PCB. 2.Parameter data is abnormal.	1. Initialize parameter data. 2. Replace the MAIN PCB with a new one.(Refer to 3.3.1)

7.1.3 List of Warning Messages

■ **List of Warning Messages (1/3)**

No.	Message	Cause	Corrective Measures
List of Ink Error (Checking by guidance)			
1	WRONG INK IC	IC chip of Ink Cartridge unreadable properly	1. Check the attached status of the chip. 2. Perform [#TEST][CHECK INK IC]. 3. Replace the ID Contact PCB Assy. with a new one. *(See 6.4.14)*
2	INK TYPE	Type of inserted Ink Cartridge is different.	1. Check the type of the ink cartridge.
3	INK COLOR	The color of Ink Cartridge inserted is different from the color to be set.	1. Check the color of the ink cartridge.
4	WRONG CARTRIDGE	An error occurred in the IC chip information of the ink cartridge.	The chip was used too much (exceeding the specified times). 1. Check whether the chip was also replaced when the pack was replaced. 2. Check the W ink nozzle clogging and resolve it. 3. Replace the chip.
5	NO CARTRDG	No cartridge (Cartridge is not installed)	(When the message is still displayed even after a Ink Cartridge is charged;) 1. Execute and confirm [#TEST][SENSOR][CartridgeSensor](The number meets the cartridge No.). 2. Check the peripheral and the assembly of the Presence Sensor. 3. Check the connection of the Presence Sensor and the End Sensor 4. .Replace the Cartridge with a new one 5. Replace the MAIN PCB with a new one. *(See 3.3.1)*
6	INK END	Ink end (No ink left)	(When the message is still displayed even after a new Ink Cartridge or an empty Ink Cartridge is charged;) 1. Execute and confirm [#TEST][SENSOR][CartridgeSensor](The number meets the cartridge No.). 2. Check the peripheral and the assembly of the End Sensor. 3. Check the connection of the Presence Sensor and the Near End Sensor. 4. Replace the Cartridge with a new one 5. Replace the MAIN PCB with a new one. *(See 3.3.1)*
7	INK NEAR END	Ink near end (A small amount of ink left)	
8	EXPIRATION	Some ink cartridges are expired.	1. Be careful that the expiration date is coming soon. You can use up to the two month later. (If this message appears when a correct cartridge is set) 2. Check the clock time of the machine. 3. Check the assembly of the ID Contact PCB and the shape of the contact plate, and execute the cleaning. 4. Check the connection of the ID Contact PCB. 5. Replace the Cartridge with a new one. 6. Replace the ID Contact PCB Assy. with a new one. 7. Replace the CART IO PCB with a new one.
9	EXPIRATION(1MONTH)	Some ink cartridges are expired. (One month has passed after the expiration date.)	1. Be careful that the expiration date is coming soon. You can use up to the next month. The red LED blinks. (If this message appears when a correct cartridge is set) 2. Check the assembly of the ID Contact PCB and the shape of the contact plate, and execute the cleaning. 3. Check the connection of the ID Contact PCB. 4. Replace the Cartridge with a new one. 5. Replace the ID Contact PCB Assy. with a new one. *(See 6.4.14)*
10	EXPIRATION(2MONTH)	Some ink cartridges are expired. (Two months have passed after the expiration date.)	Replace the cartridge with the warning.

7.1.3 List of Warning Messages

■ **List of Warning Messages (2/3)**

No.	Message	Cause	Corrective Measures
Warning Messages (LOCAL)			
11	Can'tPRINT/ CART.[ENT]	Multiple ink errors (unusable inks) occurred. Ink supply (printing, cleaning, etc.) cannot be performed.	Press the [ENTER] key, and check the relevant cartridge and the error contents. Then replace it with a usable one.
12	Check waste ink[MNT]	The count of the waste ink tank exceeded the specified amount.	Check the waste ink tank. Press the [FUNC2] key, and correct the counter or reset it.
13	Replace WIPER [MNT]	The count of the wiper exceeded the specified amount.	Press the [FUNC2] key, and replace the wiper.
14	HEATER TEMP ERROR POWER OFF [ENT]	After "error 710 HEATER TEMP ERROR" has occurred, the power is forcibly turned off, and when you restart it, this is displayed.	If the ERROR 710 appears again, contact your local distributor to call for service.
15	** NO MEDIA **	The media is not set. Or, the sensor has been broken.	1. Set the media. 2. Check the media sensor operation/ replace it.
16	DATA REMAIN	Data has already been received.	Press the [FUNC3] key and perform printing. Or, perform data clear.
17	MachineTEMP/Hi ***℃	The machine temperature is high.	Adjust the ambient temperature of the installation place within the specifications (20 - 35 ℃).
18	MachineTEMP/Lo ***℃	The machine temperature is low.	
19	Shake WHITE INK cartridge	This urge user to perform the operate at the elapse of a fixed time.	1. Shake white ink cartridge. (No display by pressing [FUNC2] key.)
20	Replace the spout rubber of ECO-CARTRIDGE		1. Replace the spout rubber. (Clear the use count by pressing [FUNC2] key.)
21	Wash liqid cartridge non	No maintenance washing liquid cartridge (cartridge not insert)	(If this message appears when a cartridge is set) 1. Execute and confirm [# TEST][SENSOR] [MAINT.CARTRIDGE]. 2. Check the assembly of the ID Contact PCB and the shape of the contact plate, and execute the cleaning. 3. Check the connection of the Near end sensor. 4. Replace the Cartridge with a new one. 5. Replace the ID Contact PCB Assy. / Near end sensor with a new one. 6. Replace the COM32IO PCB with a new one.
22	Wash liqid end	Maintenance washing liquid is end (No washing liquid left)	(When the message is still displayed even after a new Ink Cartridge or an empty Ink Cartridge is charged;) 1. Execute and confirm[# TEST][SENSOR][WASH CART. END] 2. Check the peripheral and the assembly of near end sensor. 3. Check the connection of the Near end sensor and the ID Contact PCB Assy. 4. Replace the Cartridge with a new one. 5. Replace the ID Contact PCB Assy. / Near end sensor with a new one. 6. Replace the COM32IO PCB with a new one.
23	NCU SENCER LEVEL LOW	Light quantity decreases because deterioration of the source of light LED, dirt and wound.	1. Replace the NUC unit.

7.1.3 List of Warning Messages

■ **List of Warning Messages (3/3)**

No.	Message	Cause	Corrective Measures
Warning Messages (Operation)			
24	CAN'T OPERATE :MEDIA UNDETECTED	The media has not been detected.	
25	CAN'T OPERATE :MOTOR POWER OFF	The motor is OFF after the cover was opened etc.	
26	CAN'T OPERATE :INK ERROR	An ink error occurred.	
27	CAN'T OPERATE :COVER OPEN	The cover is opened.	
28	CAN'T OPERATE :DATA REMAIN	The data has been received.	

7.1.4 List of SYSTEM HALT

■ **List of SYSTEM HALT (1/5)**

No.	LCD	Cause	Corrective Measures
1	SYSTEM HALT (*) 10e :FROM CLEAR	F-ROM CLEAR error (F-ROM clear unable) F-ROM is not clearable on Parameter writing, FW down loading and Log clearing. (fls_secclr)	1. Execute the memory check (F-ROM) of [#TEST]. 2. Upload the parameter and initialize all parameters with [#PARAMETER]. 3. Replace the MAIN PCB with a new one. *(See 3.3.1)*
2	SYSTEM HALT (*) 10f : FROM WRITE	FROM WRITE error (F-ROM writing unable) F-ROM is not clearable on Parameter writing, FW down loading and Log clearing. (fls_secclr)	1. Execute the memory check (F-ROM) of [#TEST]. 2. Upload the parameter and initialize all parameters with [#PARAMETER]. 3. Replace the MAIN PCB with a new one. *(See 3.3.1)*
3	SYSTEM HALT (*) 110 : PCB KEY	No Keyboard PCB	1. Check the connections between the Keyboard PCB and the MAIN PCB and then disconnect and connect the FFCs. 2. Replace the FFCs of the above routes. 3. Replace the Keyboard PCB with a new one. 4. Replace the MAIN PCB with a new one. *(See 3.3.1)*
4	SYSTEM HALT (*) 112 :	No CART IO PCB	1. Check the connections between the COM32IO PCB and the CART IO PCB, and then disconnect and connect the FFCs. 2. Replace the FFCs and the cabeles of the above routes. 3. Replace the CART IO PCB with a new one. 4. Replace the COM32IO PCB with a new one.
5	SYSTEM HALT (*) 122 : PRAM NONE	No PRAM	1. Update F/W. 2. Replace the PRAM PCB with a new one. 3. Replace the MAIN PCB with a new one. *(See 3.3.1)*
6	SYSTEM HALT (*) 123 : PRAM DATA	PRAM data error	
7	SYSTEM HALT (*) 124 : PRAM ADDR	PRAM address error	
8	SYSTEM HALT (*) 125 : EEPROM READ	EEPROM read trouble CIO Register (EER:Address 74) bit6	1. Update F/W. 2. Check the connection state between SL2H PCB - Head memory PCB. 3. Replace the Head memory PCB with a new one. 4. Check the connection state between SL2H PCB - MAIN PCB. 5. Replace the SL2H PCB with a new one. 6. Replace the MAIN PCB with a new one. *(See 3.3.1)*
9	SYSTEM HALT (*) 126 : EEPROM WR	EEPROM write trouble CIO Register (EER:Address 74) bit7	
10	SYSTEM HALT (*) 127 : POWER OFF	Power OFF detection error (Not to OFF) Power OFF process is conducted in the Power ON/OFF control without pushing down the sub-power SW.	1. Check the connections between the Keyboard PCB and the MAIN PCB. 2. Check the connector connection of DC Power Supply (42V). 3. Check if there is no error on the power path from the AC Inlet. 4. Replace the DC Power Supply(42V) with a new one. 5. Replace the Keyboard PCB with a new one. 6. Replace the MAIN PCB with a new one. *(See 3.3.1)*
11	SYSTEM HALT (*) 147 : DS-IC BUSY	DALLAS IC BUSY error	1. Check connection of the ID Contact PCB connection cable and damage of the cable. 2. Try to use a different cartridge. 3. Replace the ID Contact PCB Assy. with a new one. *(See 6.4.14)* 4. Replace the CART IO PCB with a new one.
12	SYSTEM HALT (*) 189 : COM VOLT	COM Voltage is abnormal	1. Replace the HDC PCB with a new one. 2. Check the connections between the HDC PCB and the Print head.

7.1.4 List of SYSTEM HALT

■ **List of SYSTEM HALT (2/5)**

No.	LCD	Cause	Corrective Measures
13	SYSTEM HALT (*) 115 : PCB MAIN-F1	MAIN PCB fuse (F1) disconnected (+IO5V)	Replace the MAIN PCB with a new one. *(See 3.3.1)* Confirm the below before replacement. 1. 2.
14	SYSTEM HALT (*) 12d : PCB MAIN-F4	MAIN PCB fuse (F4) disconnected (+IOPOW)	
15	SYSTEM HALT (*) 1bf : PCB MAIN-F2/F3	MAIN PCB fuse (F2 or F3) disconnected (+SLD POW1 FFC or Cable)	Replace the MAIN PCB with a new one. *(See 3.3.1)* Confirm the below before replacement. 1. 2.
16	SYSTEM HALT (*) 1c0 : PCB MAIN-F5/F6	MAIN PCB fuse (F5 or F6) disconnected (+SLD POW2 FFC or Cable)	
17	SYSTEM HALT (*) 1af : PCB COMIO-F1	COM32 IO PCB fuse (F1) disconnected (+42VCAS)	Replace the COM32 IO PCB with a new one. Confirm the below before replacement. 1. 2.
18	SYSTEM HALT (*) 1b0 : PCB COMIO-F2	COM32 IO PCB fuse (F2) disconnected (+42V-s-FUSE)	
19	SYSTEM HALT (*) 1b1 : PCB COMIO-F3	COM32 IO PCB fuse (F3) disconnected (+IO5V-FUSE)	
20	SYSTEM HALT (*) 1b2 : PCB COMIO-F4	COM32 IO PCB fuse (F4) disconnected (+24V-FUSE)	
21	SYSTEM HALT (*) 1b3 : PCB SLDR2H-F1	SL2H PCB fuse (F1) disconnected (+3.3V-FUSE)	Replace the SL2H PCB with a new one. Confirm the below before replacement. 1. 2.
22	SYSTEM HALT (*) 1b4 : PCB SLDR2H-F2	SL2H PCB fuse (F2) disconnected (+4.2V-FUSE)	
23	SYSTEM HALT (*) 1b5 : MAIN CN6		1. Check the connections between the SL2H PCB and the MAIN PCB, and then disconnect and connect the FFC. 2. Replace the above FFC. 3. Replace the SL2H PCB with a new one. 4. Replace the MAIN PCB with a new one. *(See 3.3.1)*
24	SYSTEM HALT (*) 1b6 : COMIO CN26		1. Remove the FFC connected to CN26 on the COM32 IO PCB.
25	SYSTEM HALT (*) 1b7 : COMIO CN27		1. Check the connections between the COM32 IO PCB and the Sl2H PCB, and then disconnect and connect the FFC. 2. Replace the above FFC. 3. Replace the COM32 IO PCB with a new one. 4. Replace the Sl2H PCB with a new one.
26	SYSTEM HALT (*) 1b8 : COMIO CN28		
27	SYSTEM HALT (*) 1b9 : COMIO CN30		
28	SYSTEM HALT (*) 1ba : COMIO CN31		
29	SYSTEM HALT (*) 1bb : COMIO VHV1 OC		1. Replace the COM32 IO PCB with new one.
30	SYSTEM HALT (*) 1bc : COMIO VHV2 OC		
31	SYSTEM HALT (*) 1bd : COMIO VHV3 OC		
32	SYSTEM HALT (*) 1be : COMIO VHV4 OC		
33	SYSTEM HALT (*) 1c1 : PCB COMIO	No COM32 IO PCB An error occurred at serial communication check after configuration.	1. Check the connections between the COM32 IO PCB and the MAIN PCB, and then disconnect and connect the FFC. 2. Replace the above FFC. 3. Replace the COM32 IO PCB with a new one. 4. Replace the MAIN PCB with a new one. *(See 3.3.1)*
34	SYSTEM HALT (*) 1c3 : PCB SLDR2H	No SL2H PCB An error occurred at serial communication check after configuration.	1. Check the connections between the SL2H PCB and the MAIN PCB, and then disconnect and connect the FFC. 2. Replace the above FFC. 3. Replace the SL2H PCB with a new one. 4. Replace the MAIN PCB with a new one. *(See 3.3.1)*

7.1.4 List of SYSTEM HALT

■ **List of SYSTEM HALT (3/5)**

No.	LCD	Cause	Corrective Measures
35	SYSTEM HALT (*) 303 : PCB MAIN ET	MAIN PCB Ethernet IC trouble	1. Replace the MAIN PCB with a new one. *(See 3.3.1)*
36	SYSTEM HALT (*) 406 : WIPER ORG	Wiper origin undetectable	1. Execute and confirm [#TEST][SENSOR] [WIPER-ORG]. (Confirm that the ON/OFF display is switched by moving the wiper back and forth.) 2. Check that the wiper moves back and forth smoothly in manual. 3. Check the assembly and connector connection of Wiper Origin Sensor. 4. Check the connector connection of Y-origin Sensor 5. Check the connections between the COM32 IO PCB and the MAIN PCB, and then disconnect and connect the FFC. 6. Replace the Wiper Back/Forth Origin Sensor with a new one. 7. Replace the Wiper Motor with a new one. 8. Replace the FFC located between the Central-IO PCB and the MAIN PCB. 9. Replace the Central-IO PCB with a new one. *(See 6.4.9)*
37	SYSTEM HALT (*) 42c : TAKEUNIT VOLT	An error occurred in the take-up unit voltage.	1. Check the connection of the heavy weight media winding unit. 2. If the abnormality occurs again after checking the connection, replace the circuit board of the heavy weight media winding unit.
38	SYSTEM HALT (*) 42d : FEEDUNIT VOLT	An error occurred in the feeding unit voltage.	1. Check the connection of the heavy weight media feeding unit. 2. If the abnormality occurs again after checking the connection, replace the circuit board of the heavy weight media feeding unit.
39	SYSTEM HALT (*) 430 : TAKEUNIT SENS	An error occurred in the take-up unit sensor.	1. Check the status of the sensor of the heavy weight media winding unit and the fixing position of the sensor. 2. If the error occurs again after checking, replace the heavy weight media winding board.
40	SYSTEM HALT (*) 431 : FEEDUNIT SENS	An error occurred in the feeding unit sensor.	1. Check the status of the sensor of the heavy weight media feeding unit and position of sensor fixing. 2. If the error occurs again after checking, replace the heavy weight media winding board.
41	SYSTEM HALT (*) 502 : Y ORGIN	Y Origin Sensor error	1. Execute and confirm [#TEST][SENSOR] -> [Y-ORIGIN]. (Confirm that the ON/OFF display is switched by moving the carriage left and right.) 2. Check in manual if the carriage moves left and right smoothly. 3. Check the connector connection of Y-origin Sensor and then disconnect and connect the cabel. 4. Replace the Y Origin Sensor with a new one. 5. Check if there is no trouble on theY Motor Cable. (disconnecting, burnout, or the like) 6. Replace the Y-axis motor with a new one. *(See 6.3.2)* 7. Replace the HDC PCB with a new one. 8. Replace the MAIN PCB with a new one. *(See 3.3.1)*

7.1.4 List of SYSTEM HALT

■ **List of SYSTEM HALT (4/5)**

No.	LCD	Cause	Corrective Measures
42	SYSTEM HALT (*) 509 : HDC POSCNT	HDC position counter error	1. [Execute and confirm [#TEST][SENSOR] [Y-ORIGIN].(Confirm that the ON/OFF display is switched by moving the carriage left and right.) 2. Execute [#TEST][CHECK ENCODER]. 3. Check the assembly of Y-scale, and confirm that there is neither dirt nor scratch. 4. Check in manual if the Head Assy. (carriage) moves left and right smoothly. 5. Check the connector connection of Y-origin Sensor and Linear Encoder. 6. Replace the Y-origin Sensor or Linear Encoder with a new one. 7. Check the assembly and connector connection of Y-axis Motor. 8. Replace the Y-axis Motor with a new one. *(See 6.3.2)* 9. Replace the HDC PCB with a new one. 10. Replace the MAIN PCB with a new one. *(See 3.3.1)*
43	SYSTEM HALT (*) 801 : (C)OPCODE	System error (CPU exception: OP code error)	11. Check the peripheral temperature of MAIN PCB, and then check if the error is caused by the thermo runaway of CPU. 12. Make sure that there is no device generating strong radio wave in the vicinity. 13. Replace the MAIN PCB with a new one. *(See 3.3.1)* 14. Replace the DC Power Supply(5V) with a new one. *(See 6.4.1)*
44	SYSTEM HALT (*) 802 : (C)SLOT	System error (CPU exception: Slot instruction error)	
45	SYSTEM HALT (*) 803 : (C)CPU ADDR	System error (CPU exception: CPU address error)	
46	SYSTEM HALT (*) 804 : (C)DMA ADDR	System error (CPU exception: DMA address error)	
47	SYSTEM HALT (*) 806 : FW/SIO bit	FW error (Serial control F/W error (bit control)) The area where the registration data shall be cashed cannot be found. (It is not registered.) The errors of 800s below are “FW error”.	1. Update F/W. 2. Check and clear the parameter. 3. Replace the MAIN PCB with a new one. *(See 3.3.1)*
48	SYSTEM HALT (*) 807 : FW/SIO wbsy	FW error (Serial control F/W error (WR BUSY))	
49	SYSTEM HALT (*) 808 : FW/STP-MTR	FW error (Step Motor stop waiting)	
50	SYSTEM HALT (*) 809 : FW/XY param	FW error (XY-axis Motor resolution conversion parameter error)	
51	SYSTEM HALT (*) 80a : FW/Y RANGE	FW error (Y movable range error)	
52	SYSTEM HALT (*) 80b : FW/ctrltsk	FW error (Motor control task error)	
53	SYSTEM HALT (*) 80c : FW/PUMP W	FW error (Suction Pump stop waiting time over at capping)	
54	SYSTEM HALT (*) 80d : FW/SERVO IT	FW error (Servo interruption error)	
55	SYSTEM HALT (*) 80e : FW/FROM prm	FW error (FROM PARAM error (F/W BUG))	
56	SYSTEM HALT (*) 80f : FW/SIO vch	FW error (Virtual serial CH setting error)	

7.1.4 List of SYSTEM HALT

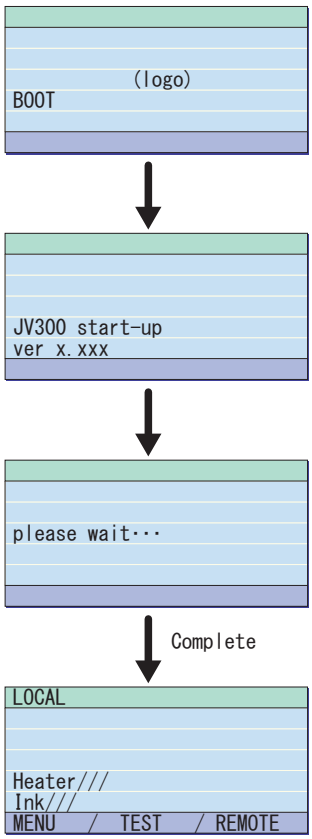
■ **List of SYSTEM HALT (5/5)**

No.	LCD	Cause	Corrective Measures
57	SYSTEM HALT (*) 810 : FW/KEY RDI	FW error (No keyboard RDI)	1. Update F/W. 2. Check and clear the parameter. 3. Replace the MAIN PCB with a new one. *(See 3.3.1)*
58	SYSTEM HALT (*) 811 : FW/SIO read	FW error (Serial control F/W error (RD BUSY))	
59	SYSTEM HALT (*) 812 : FW/CRTRG NO	FW error (Cartridge number error)	
60	SYSTEM HALT (*) 813 : FW/WIPER RN	FW error (Wiper operation range error)	
61	SYSTEM HALT (*) 814 : FW/drivinfm	FW error (drivinfm() information obtaining error	
62	SYSTEM HALT (*) 815 : FW/SIO rsrc	FW error (Serial control F/W error (material control))	
63	SYSTEM HALT (*) 816 : FW/FROM WRC	FW error (FROM write control error)	
64	SYSTEM HALT (*) 817 : FW/SaveArea	FW error (Save area error (size over))	
65	SYSTEM HALT (*) 818 : FW/EEP SIZE	FW error (EEPROM size over)	
66	SYSTEM HALT (*) 819 : FW/HROM SIZ	FW error (HDROM size over)	
67	SYSTEM HALT (*) 81a : FW/FROM SIZ	FW error (FROM size over)	
68	SYSTEM HALT (*) 81b : FW/STACK OV	FW error (STACK OVER)	
69	SYSTEM HALT (*) 829 : FW/ERASE TIMEOV	FW error (Time over of erasing FROM sector.)	
70	SYSTEM HALT (*) 000 : UNNOWN ERR	Unknown error	
71	SYSTEM HALT (*) 910 : DEVICE CONST	Device configuration is wrong.	1. Check whether or not FW is correct for using device.

Troubleshooting

Operation Flow

8.1.1 Start

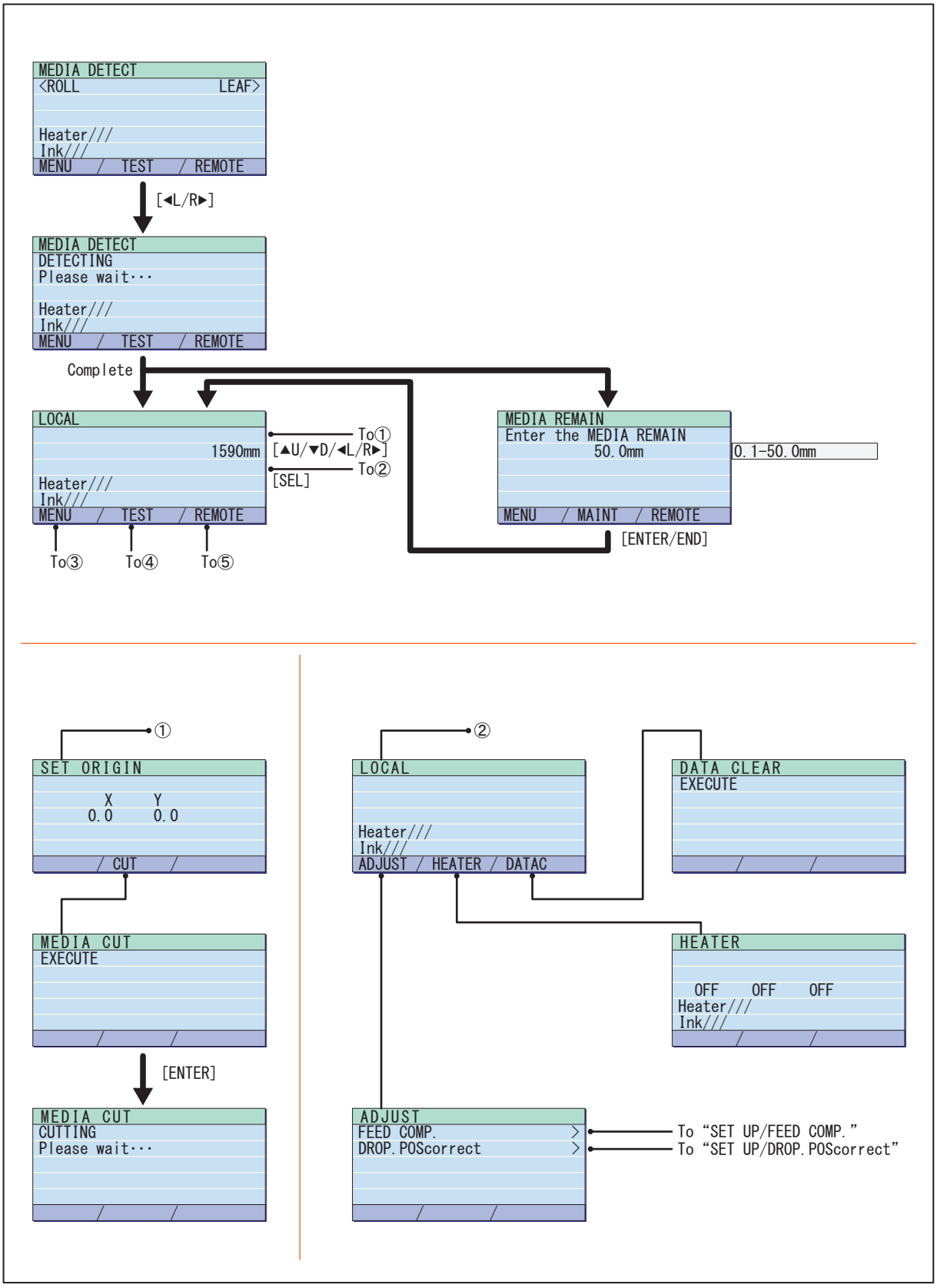


motor excitation,origin detection and etc.,state of waiting startup

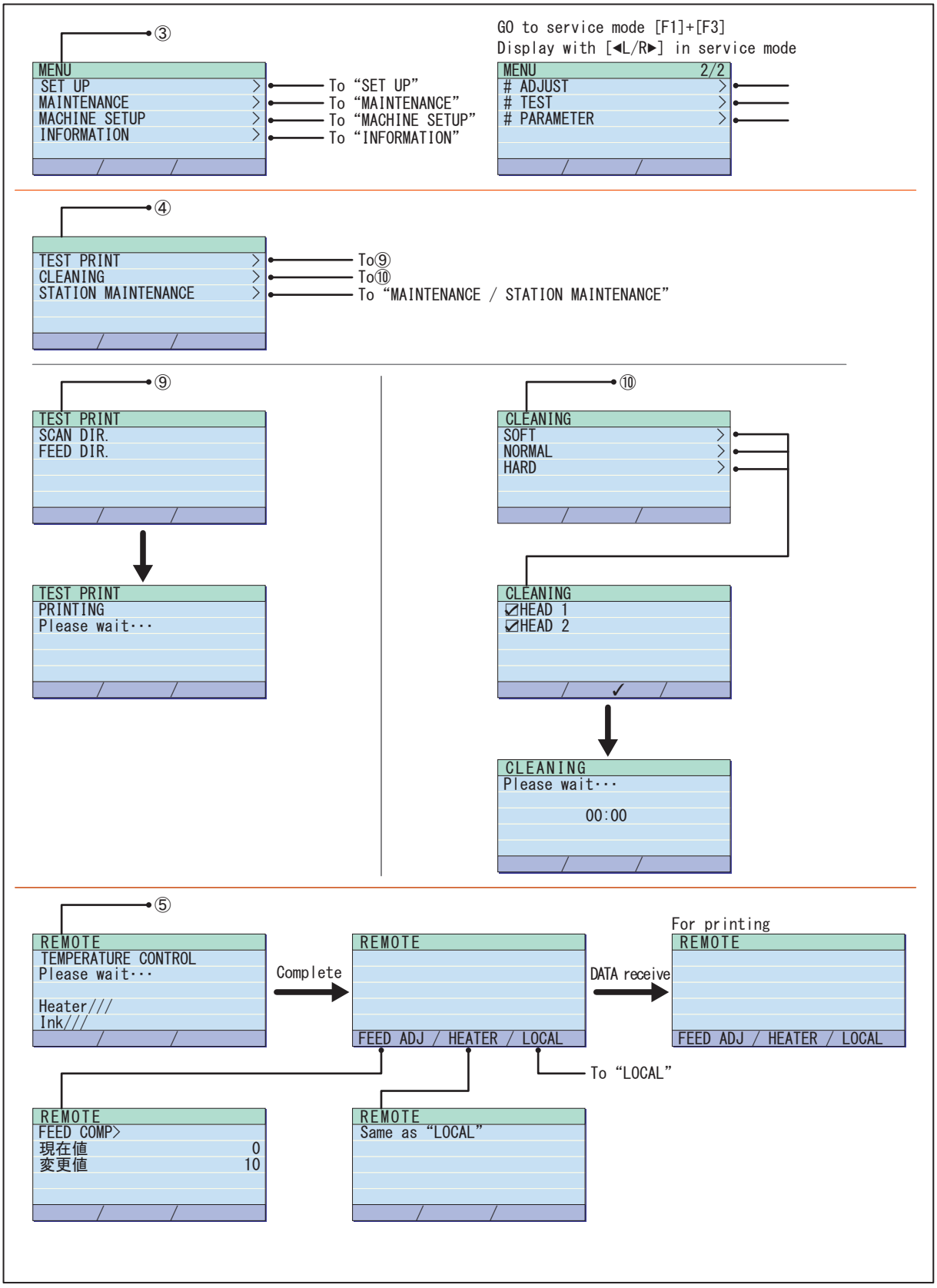
Operation Flow

8.2.1 LOCAL / REMOTE

■ Media detect / Local

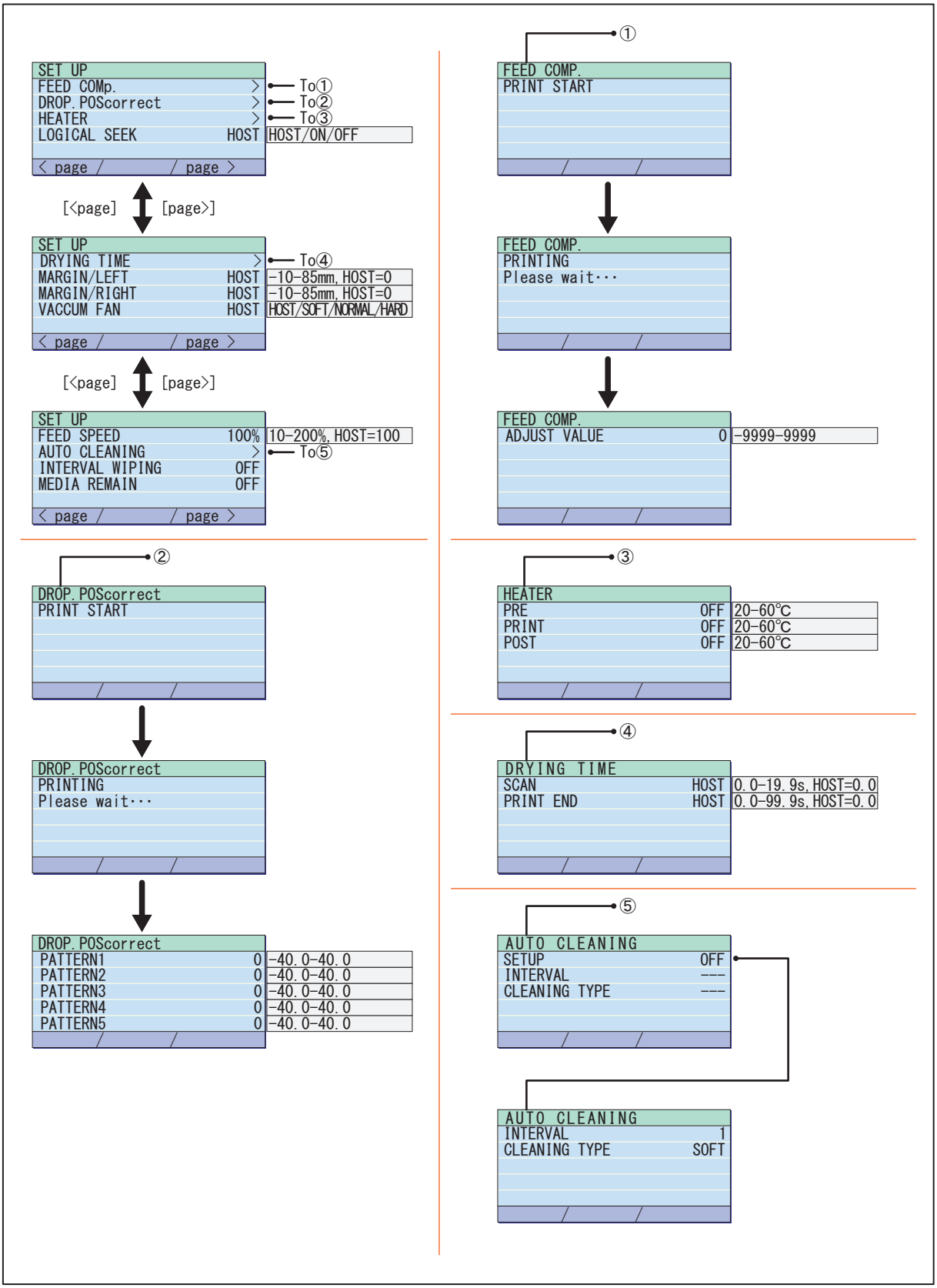


8.2.1 LOCAL / REMOTE



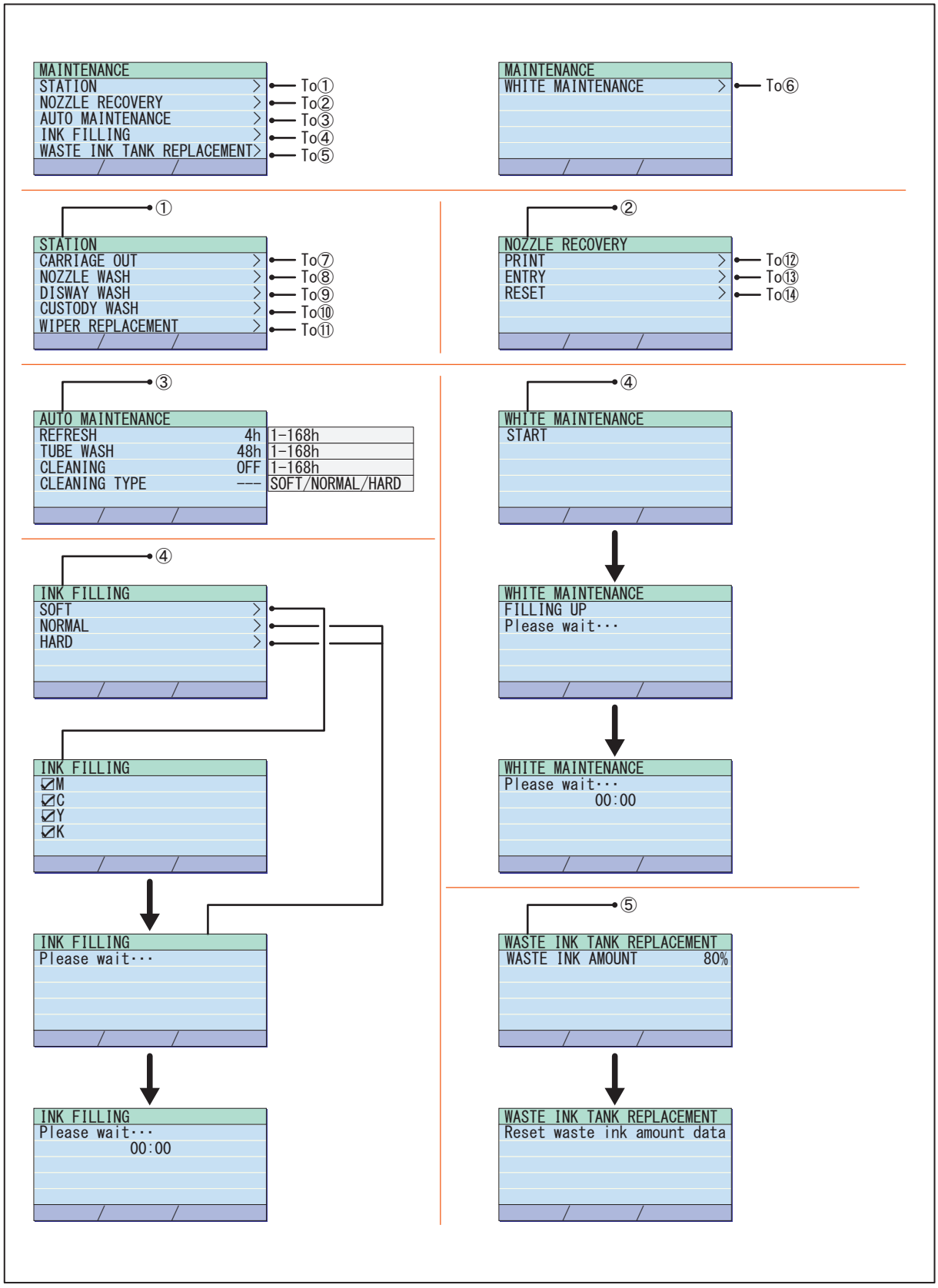
8.2.2 SETUP

■ Set up

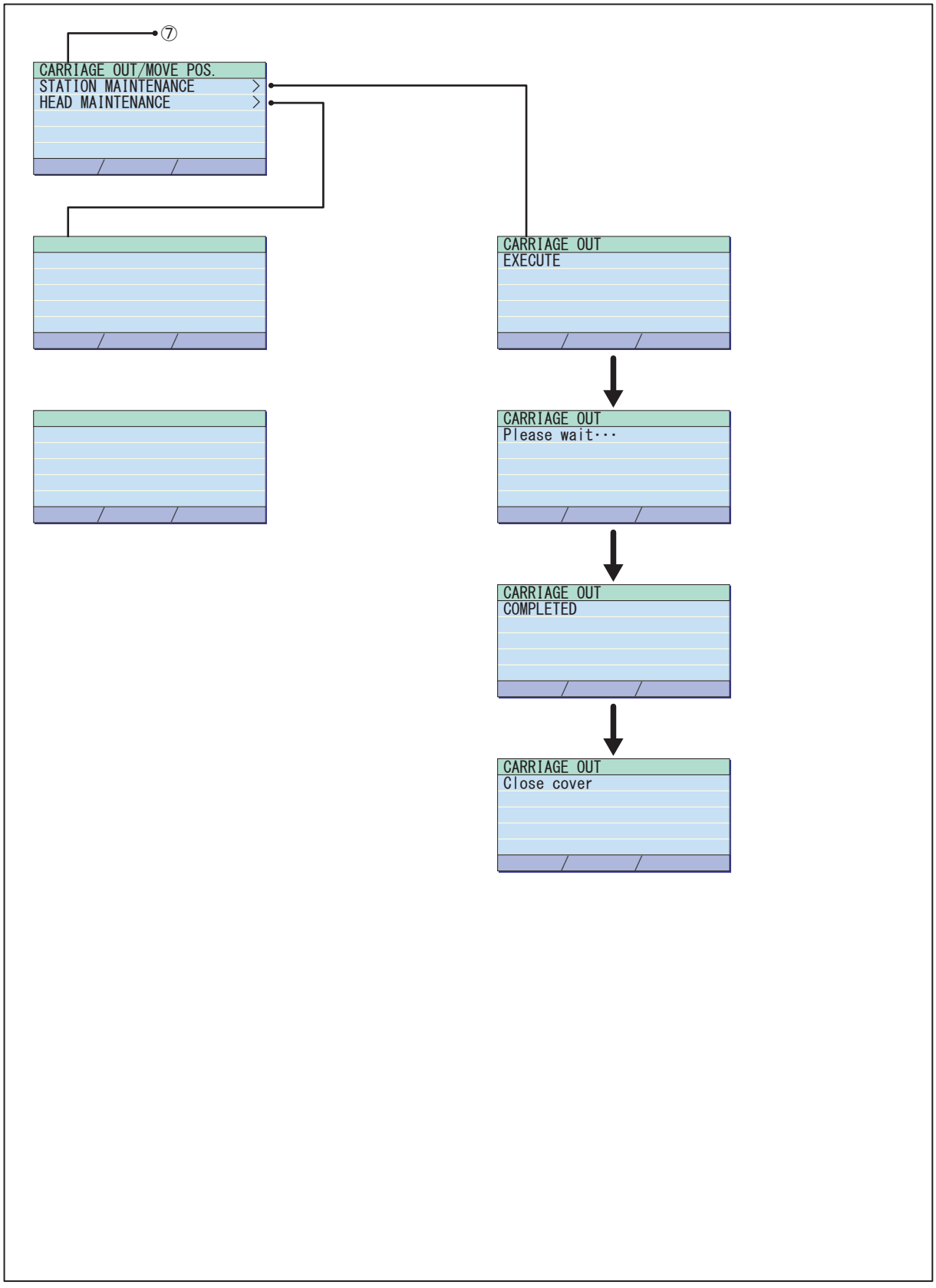


8.2.3 MAINTENANCE

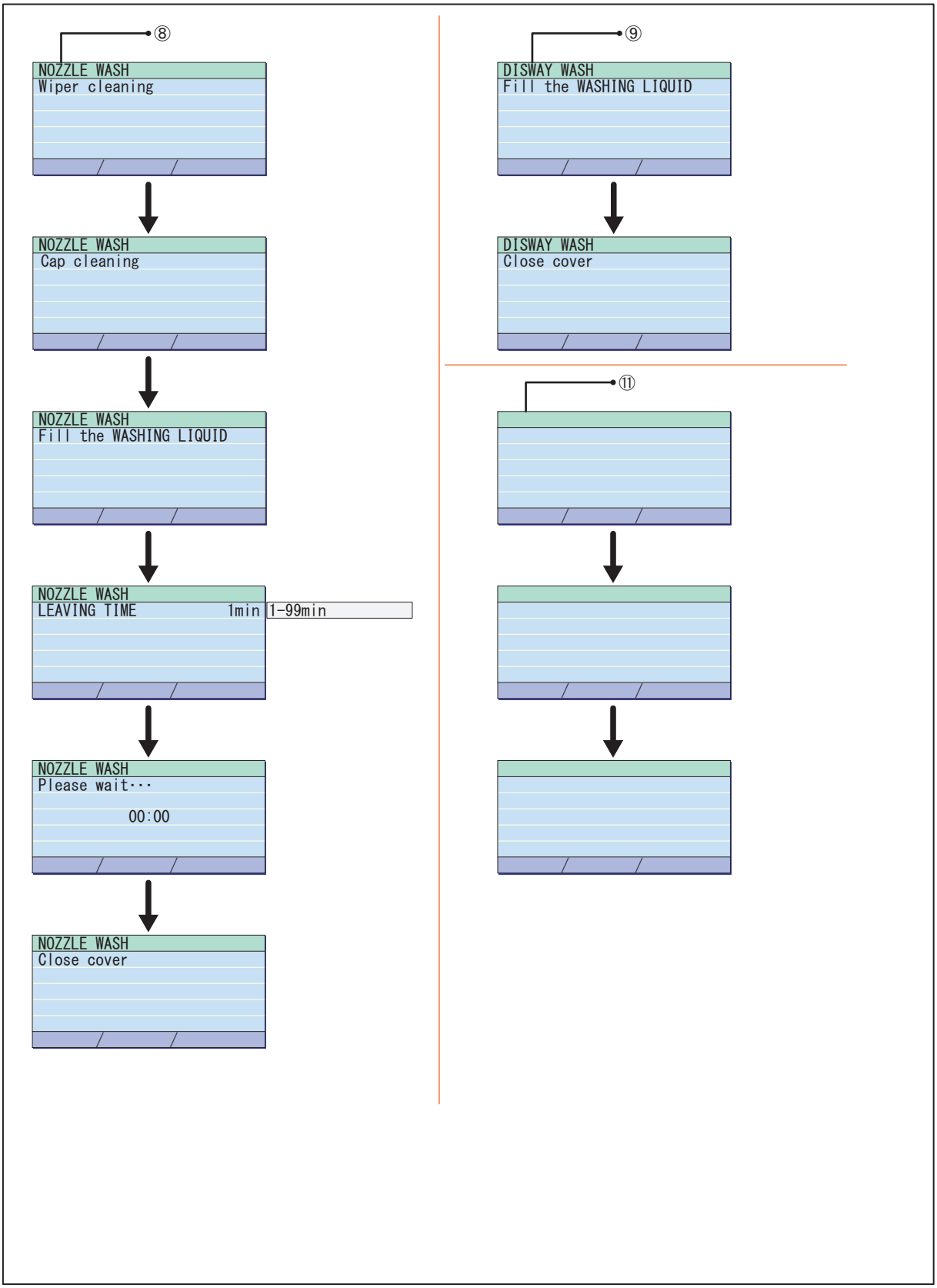
■ Maintenance



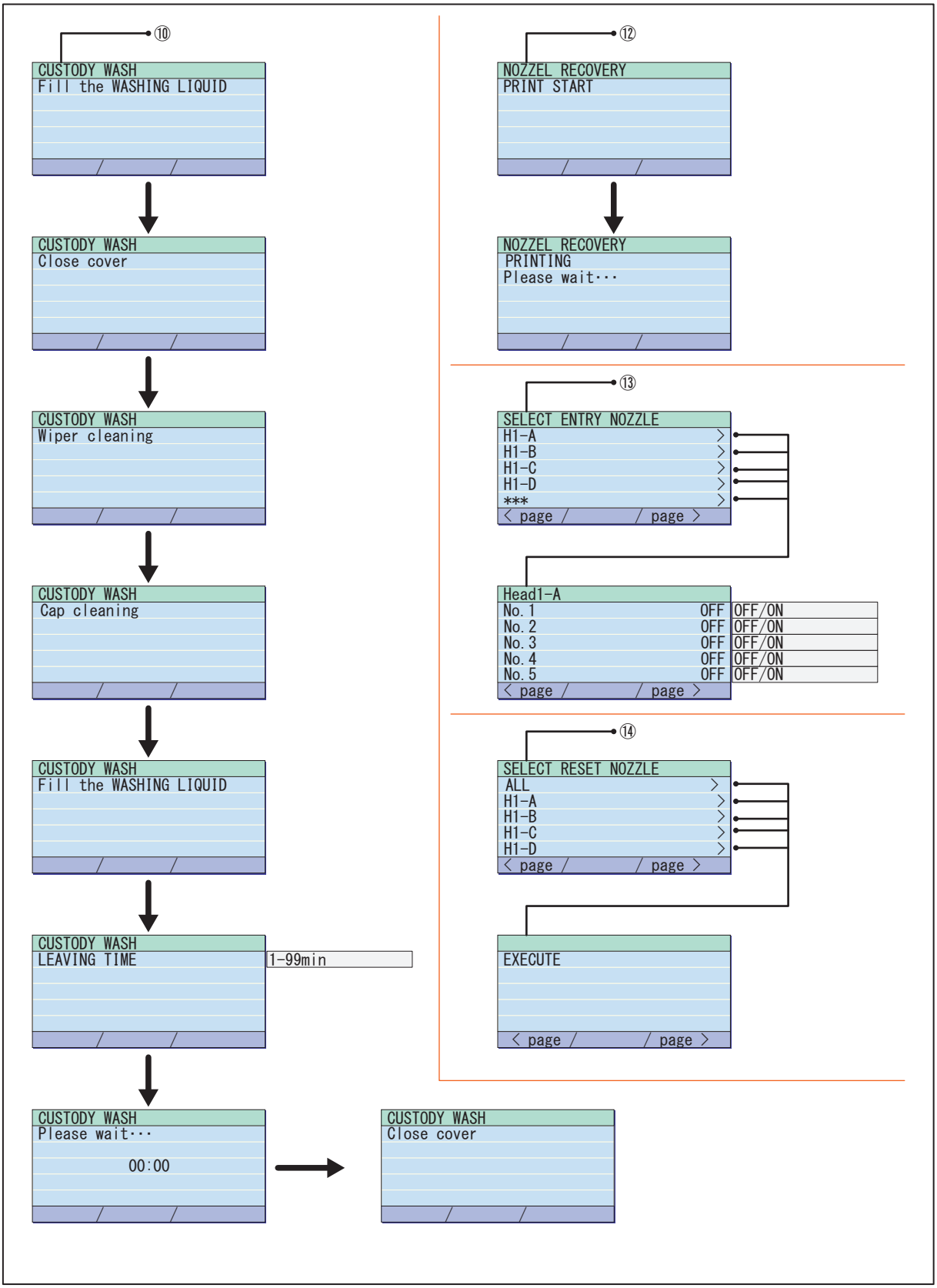
8.2.3 MAINTENANCE



8.2.3 MAINTENANCE

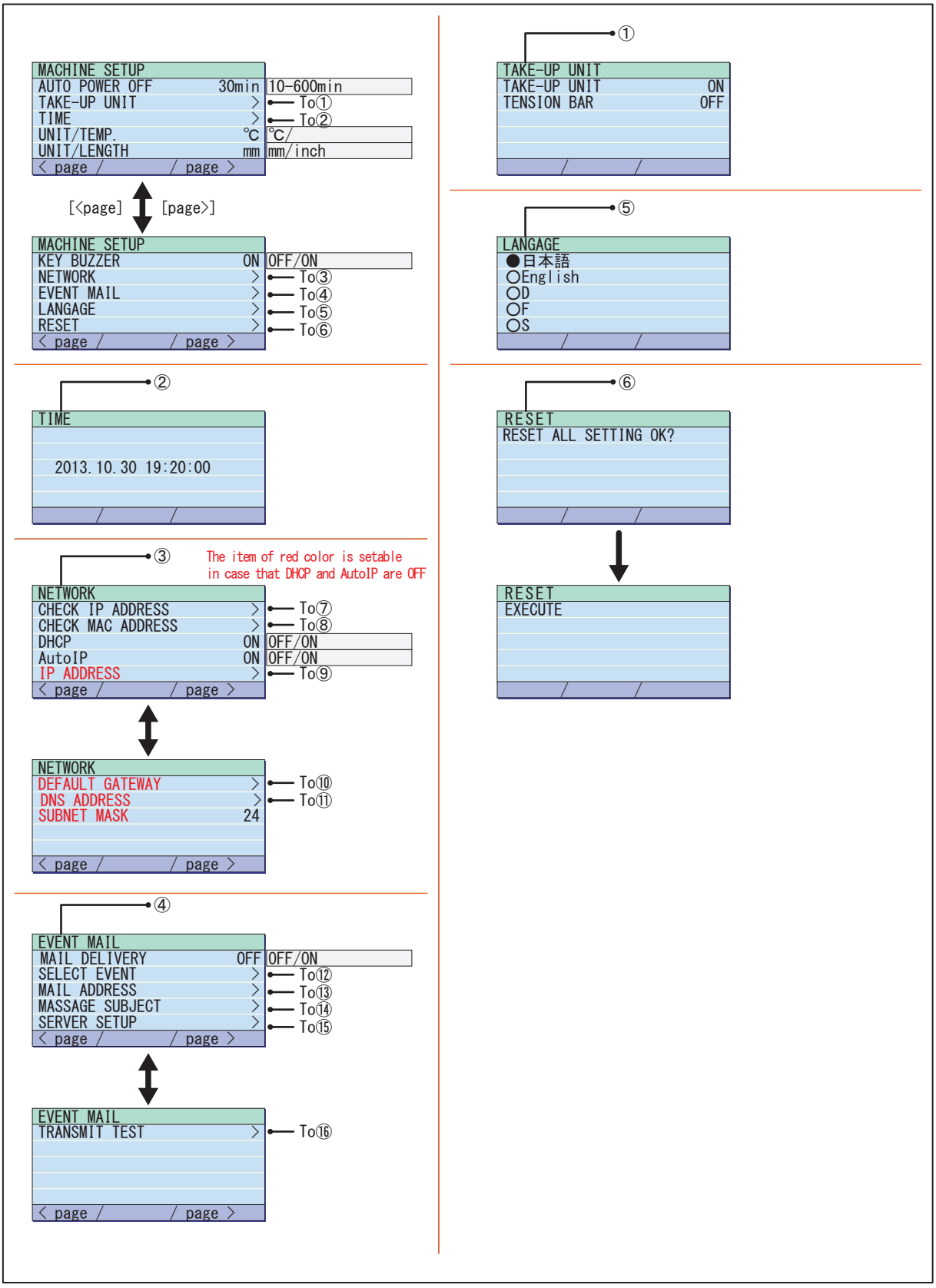


8.2.3 MAINTENANCE

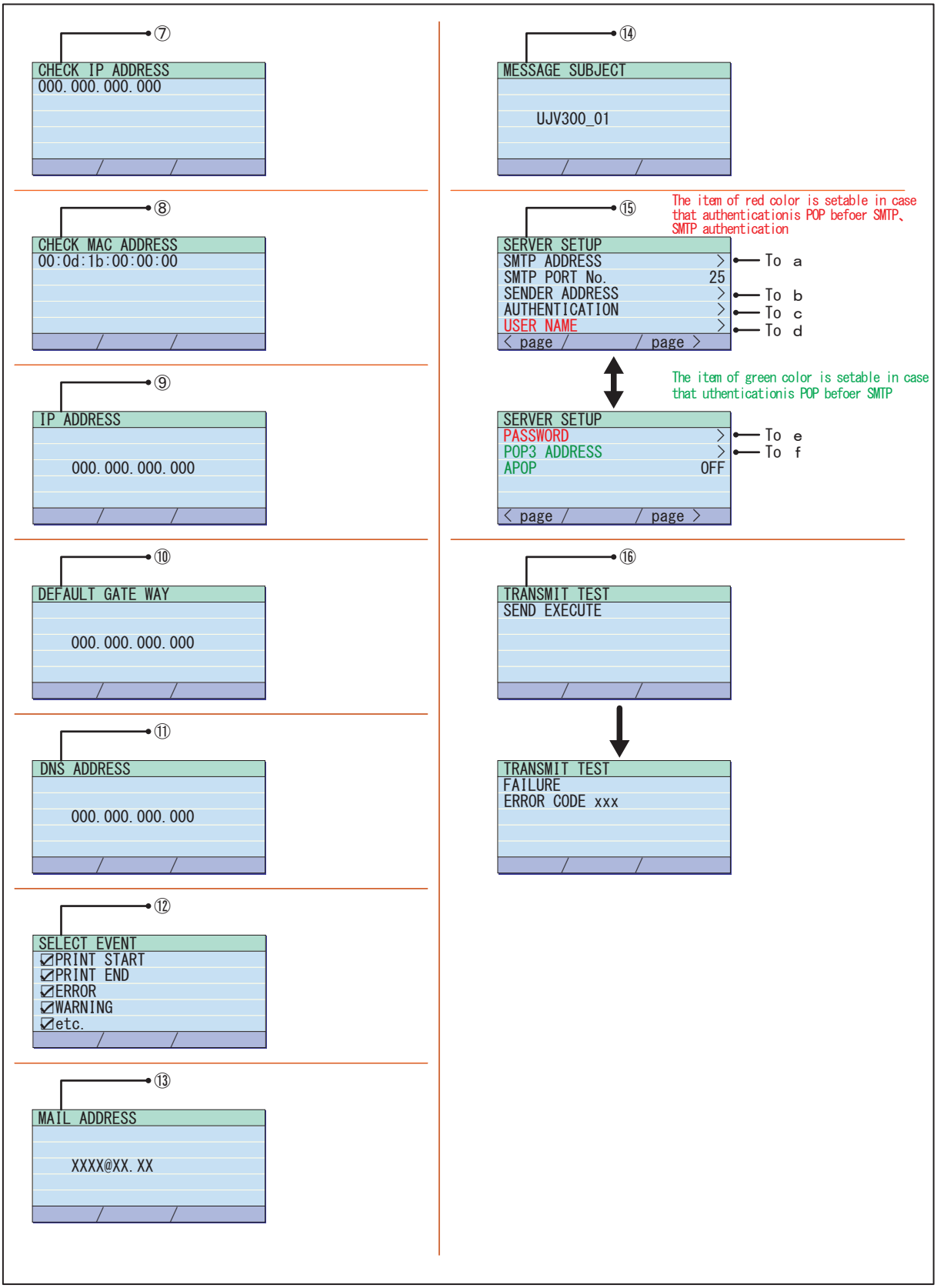


8.2.4 MACHINE SETUP

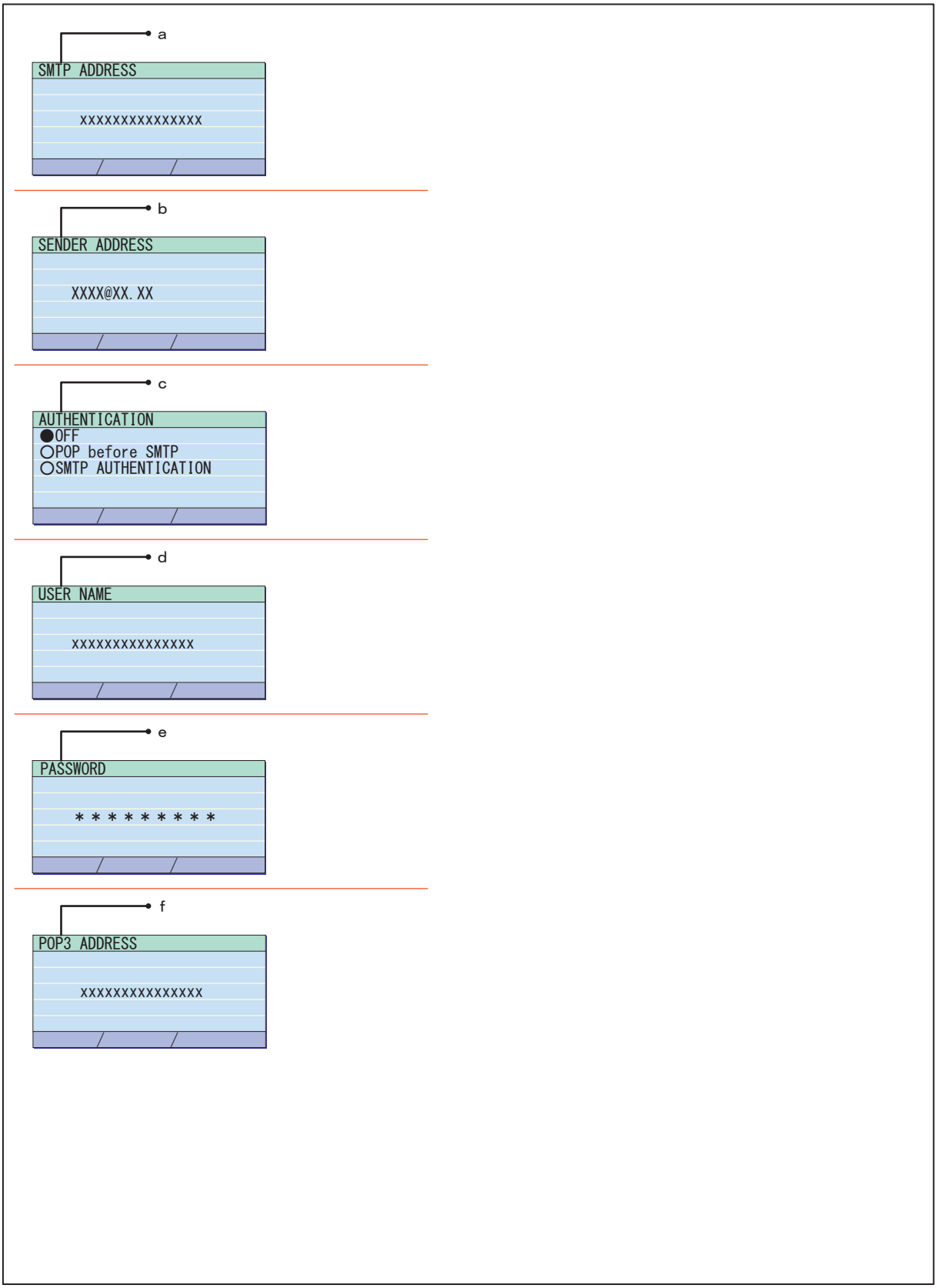
■ Machine setup



8.2.4 MACHINE SETUP



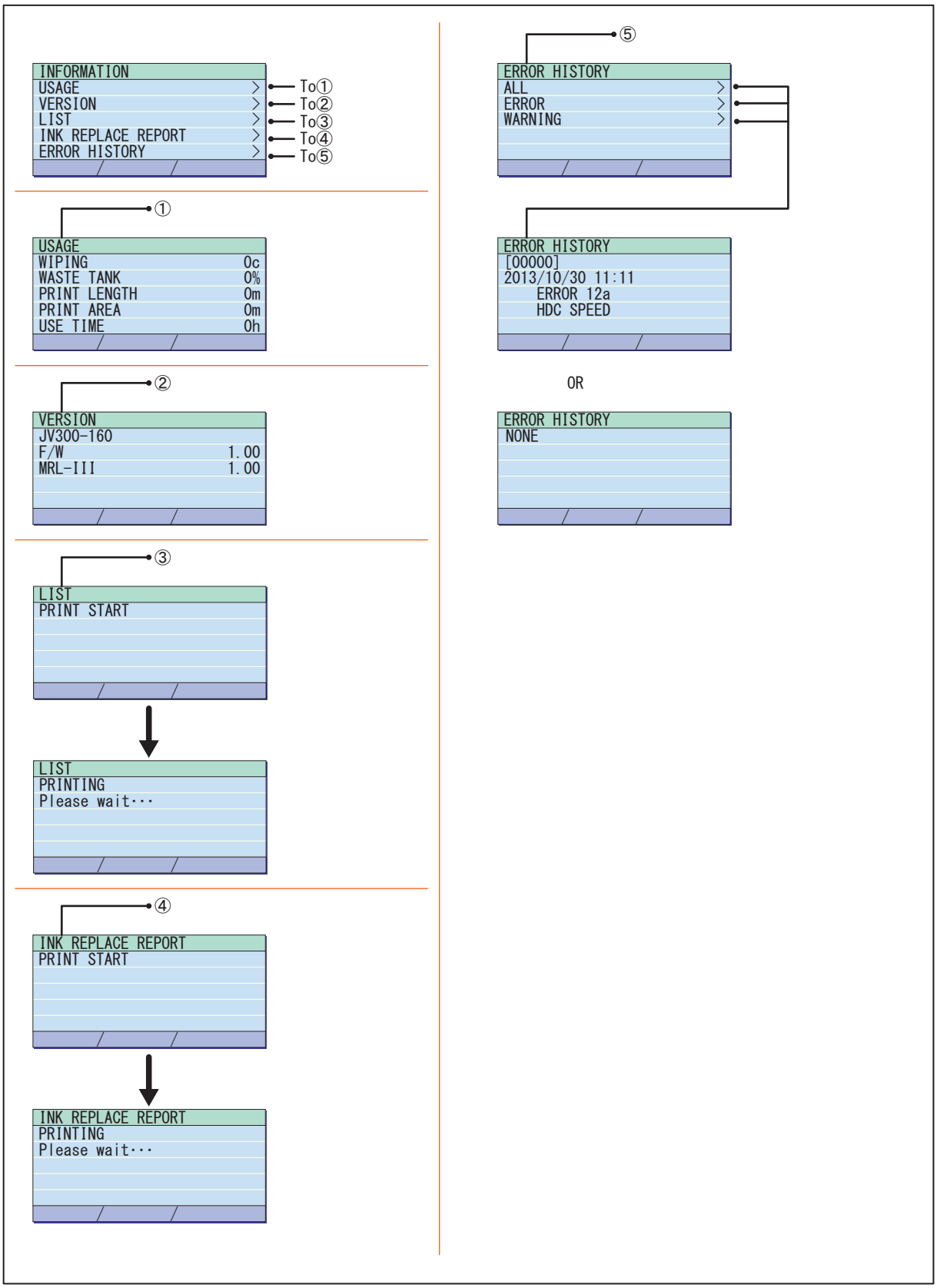
8.2.4 MACHINE SETUP



Operation Flow

8.3.1 INFORMATION

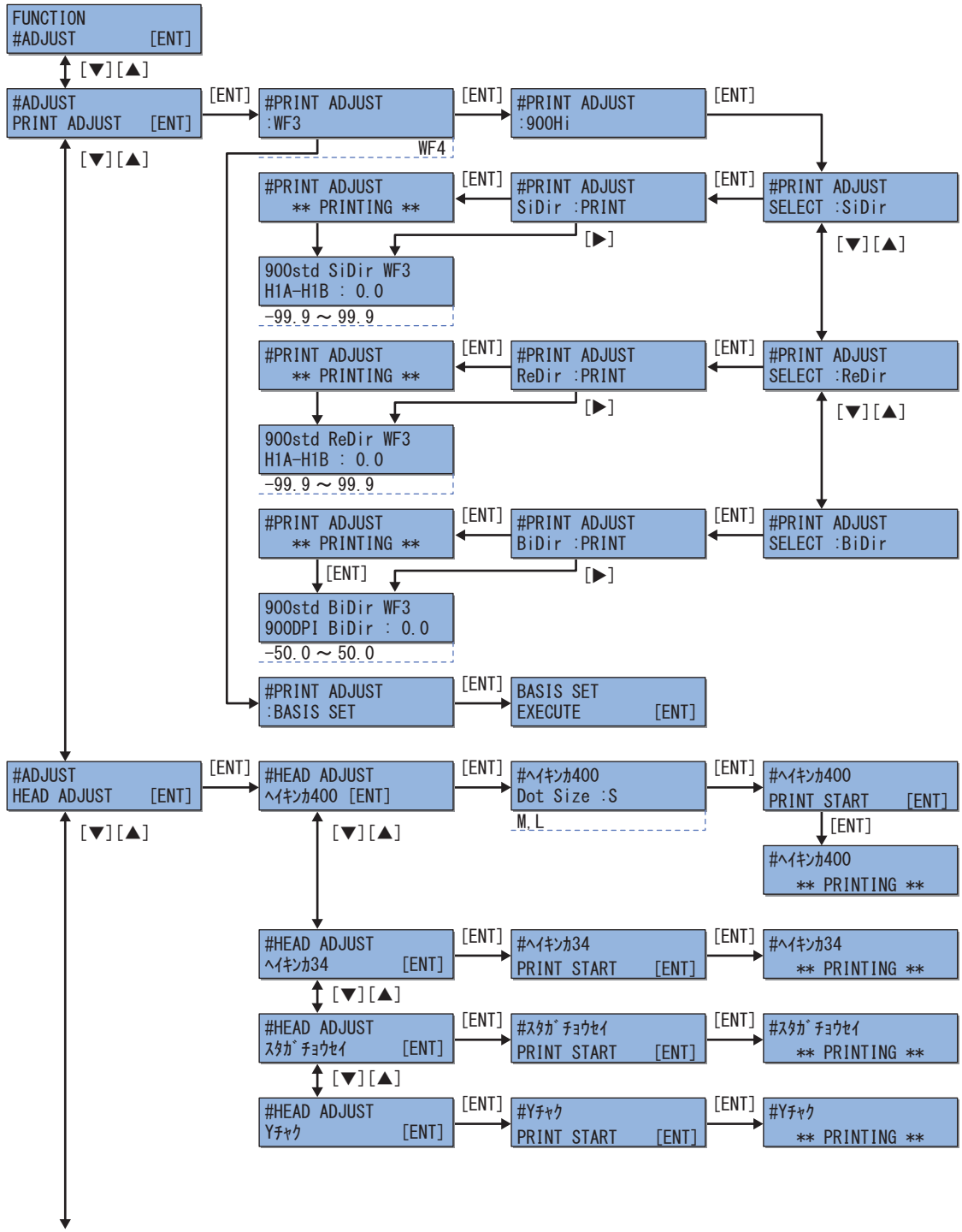
■ Information



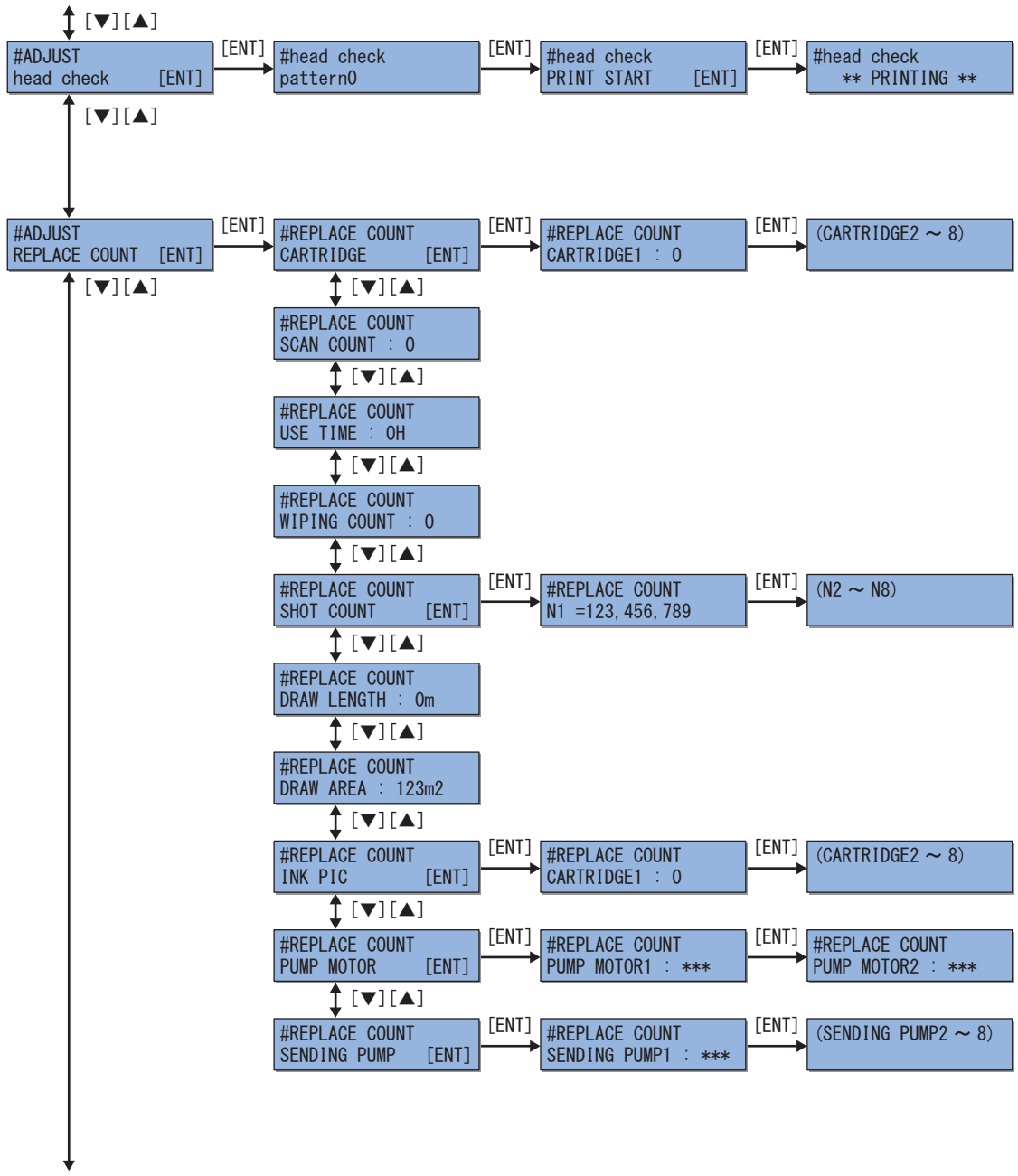
Operation Flow

8.4.1 #ADJUST

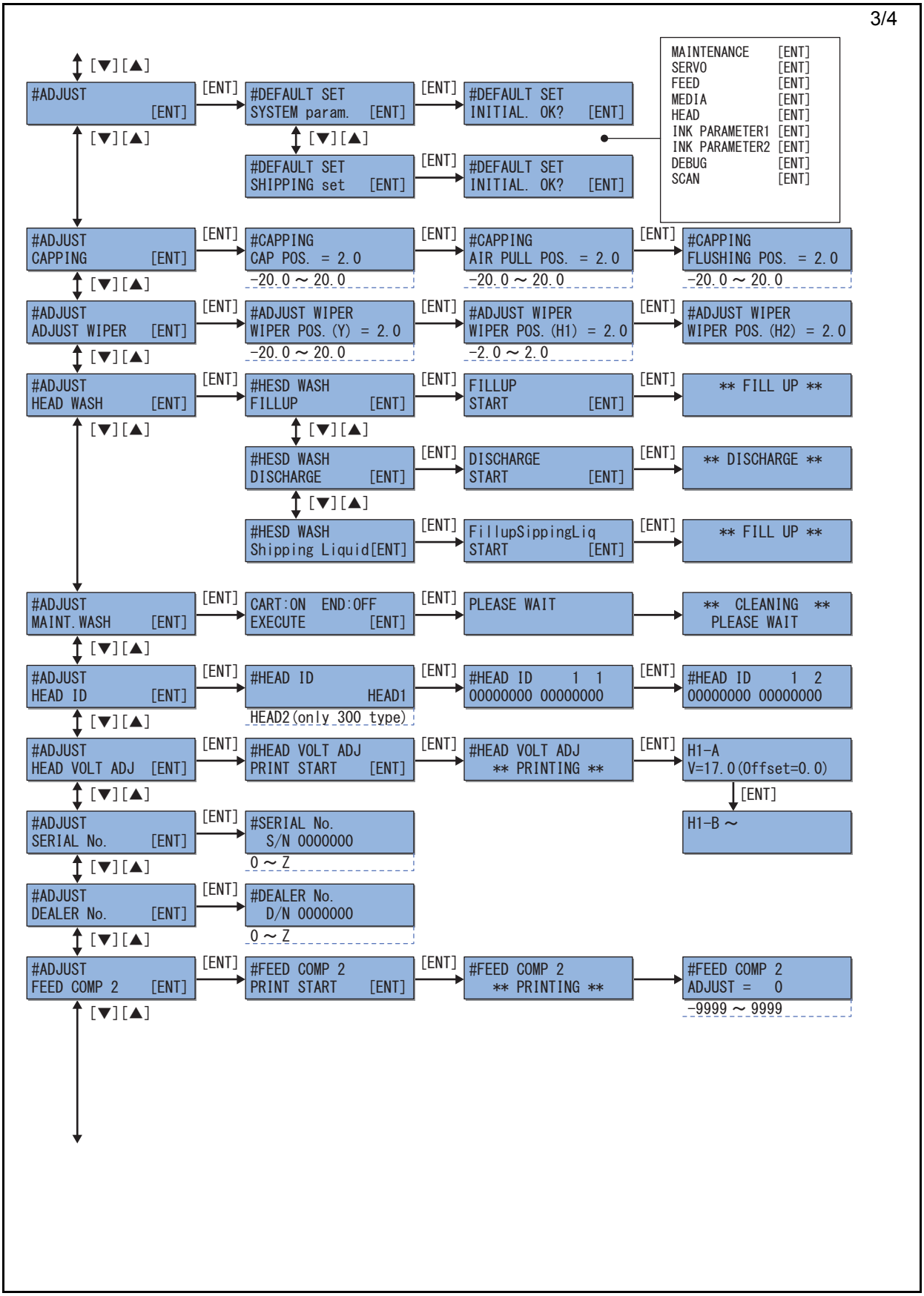
1/4



8.4.1 #ADJUST

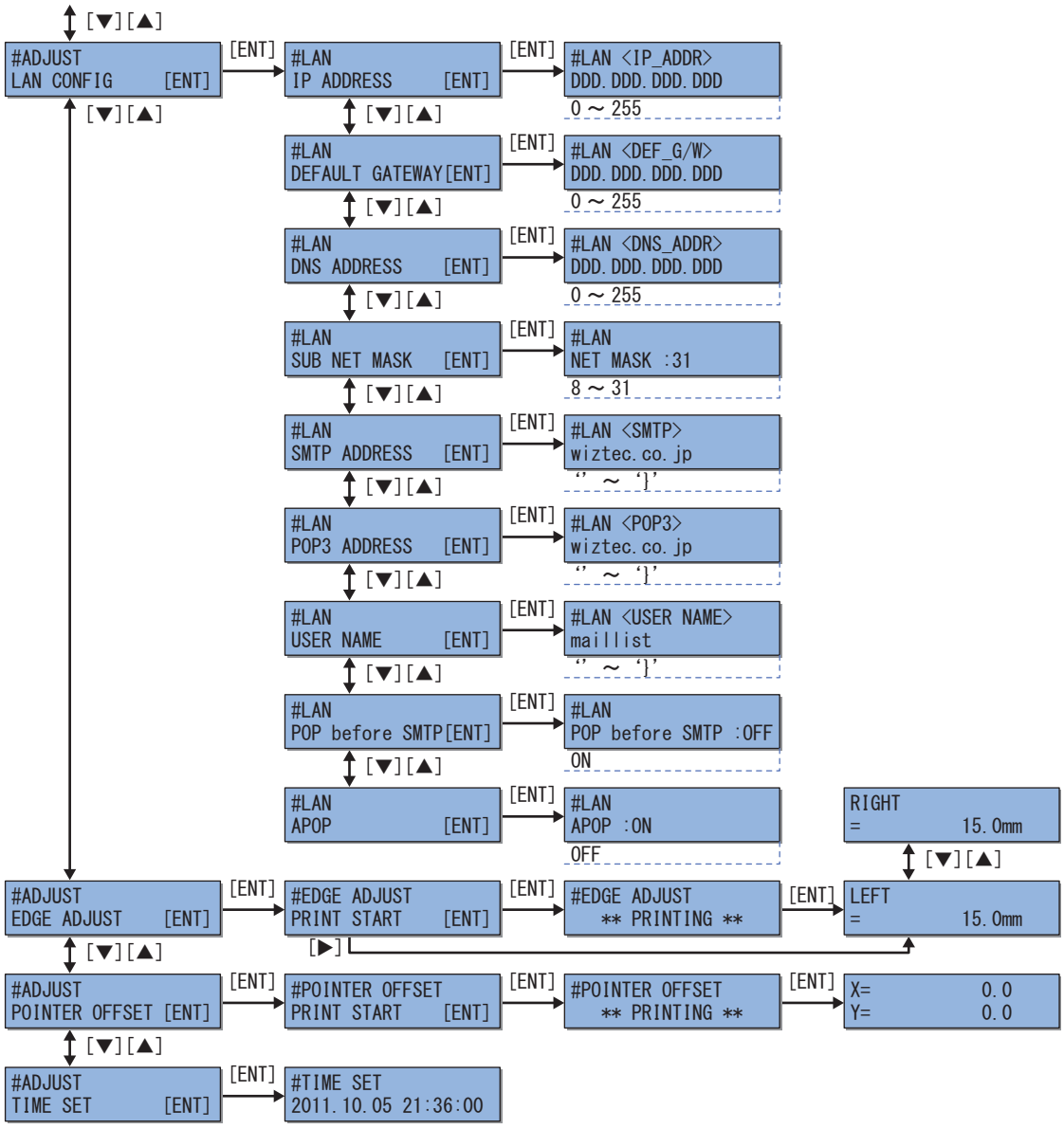


8.4.1 #ADJUST

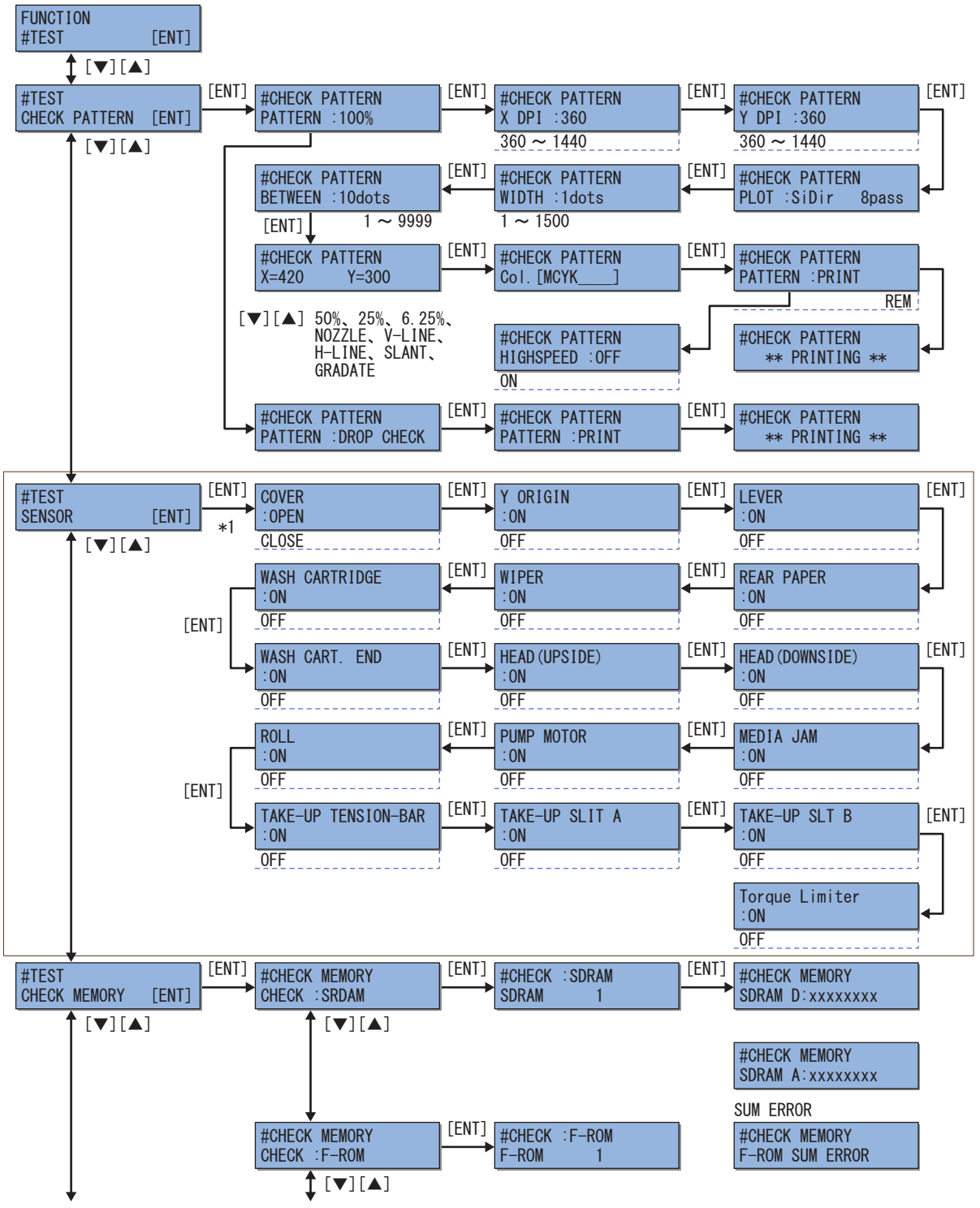


8.4.1 #ADJUST

4/4

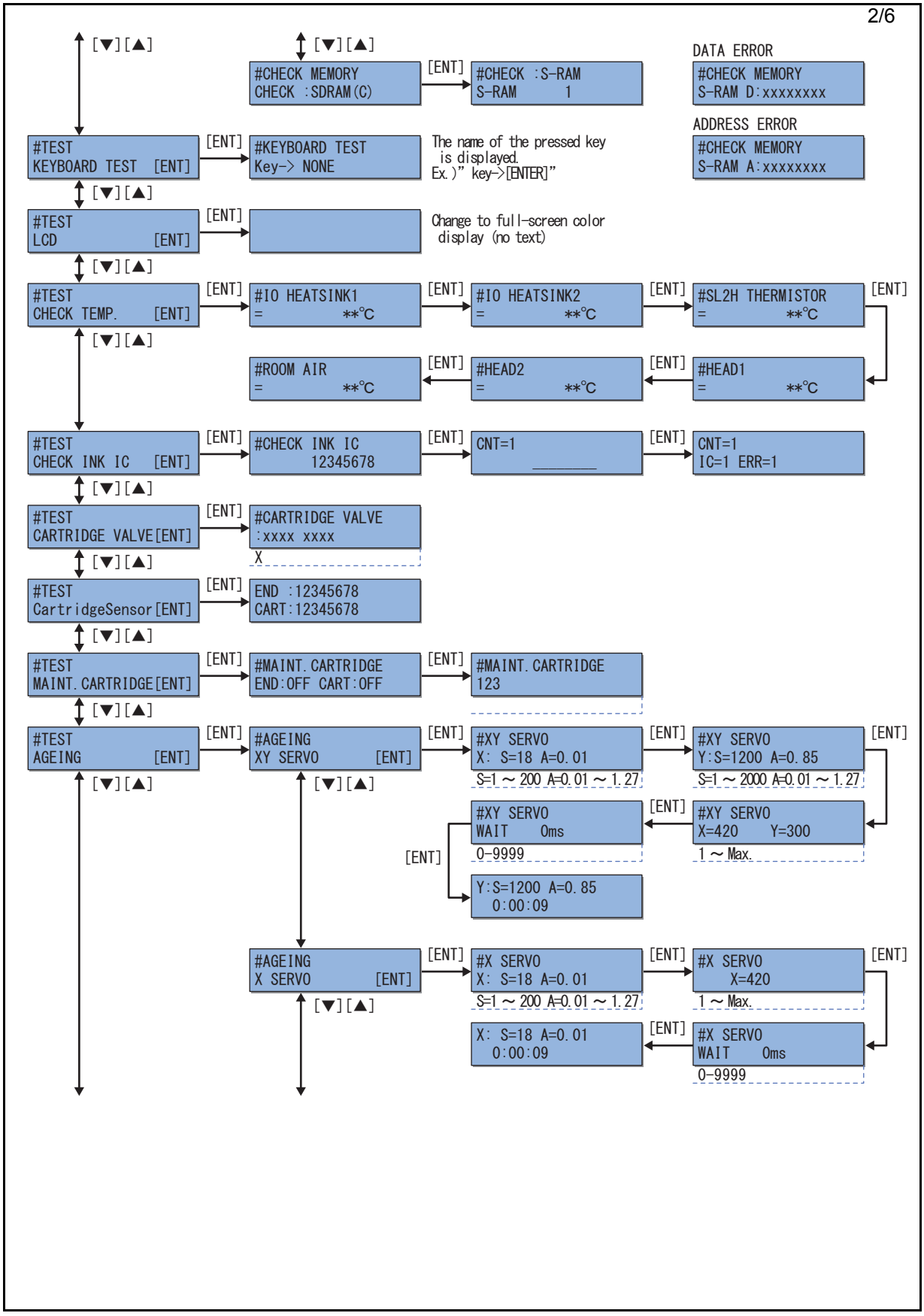


8.4.2 #TEST

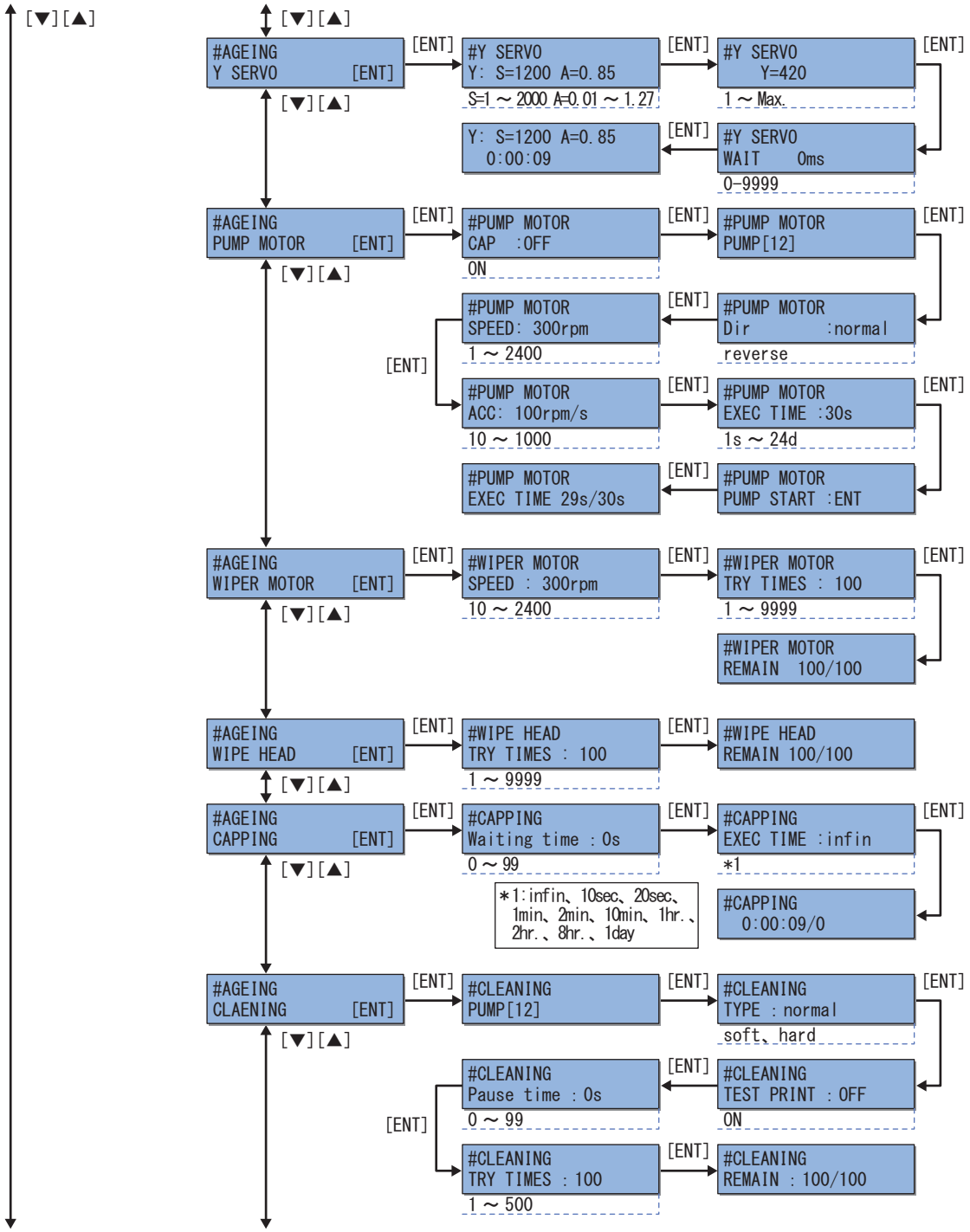


*1[#TEST SENSOR]:In addition to transition by the [ENT] key, automatically moves to the screen for the sensor whose status changed.

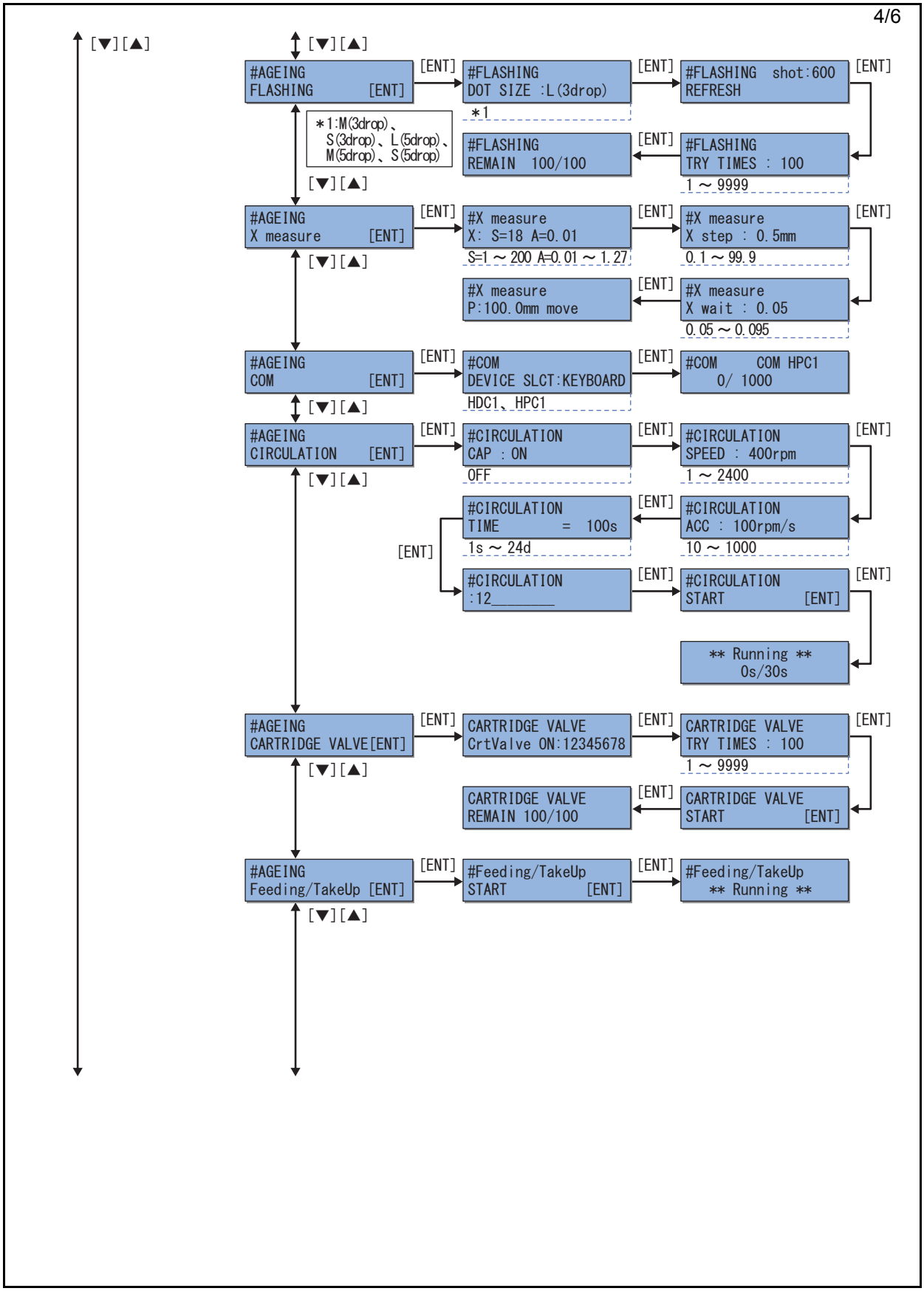
8.4.2 #TEST



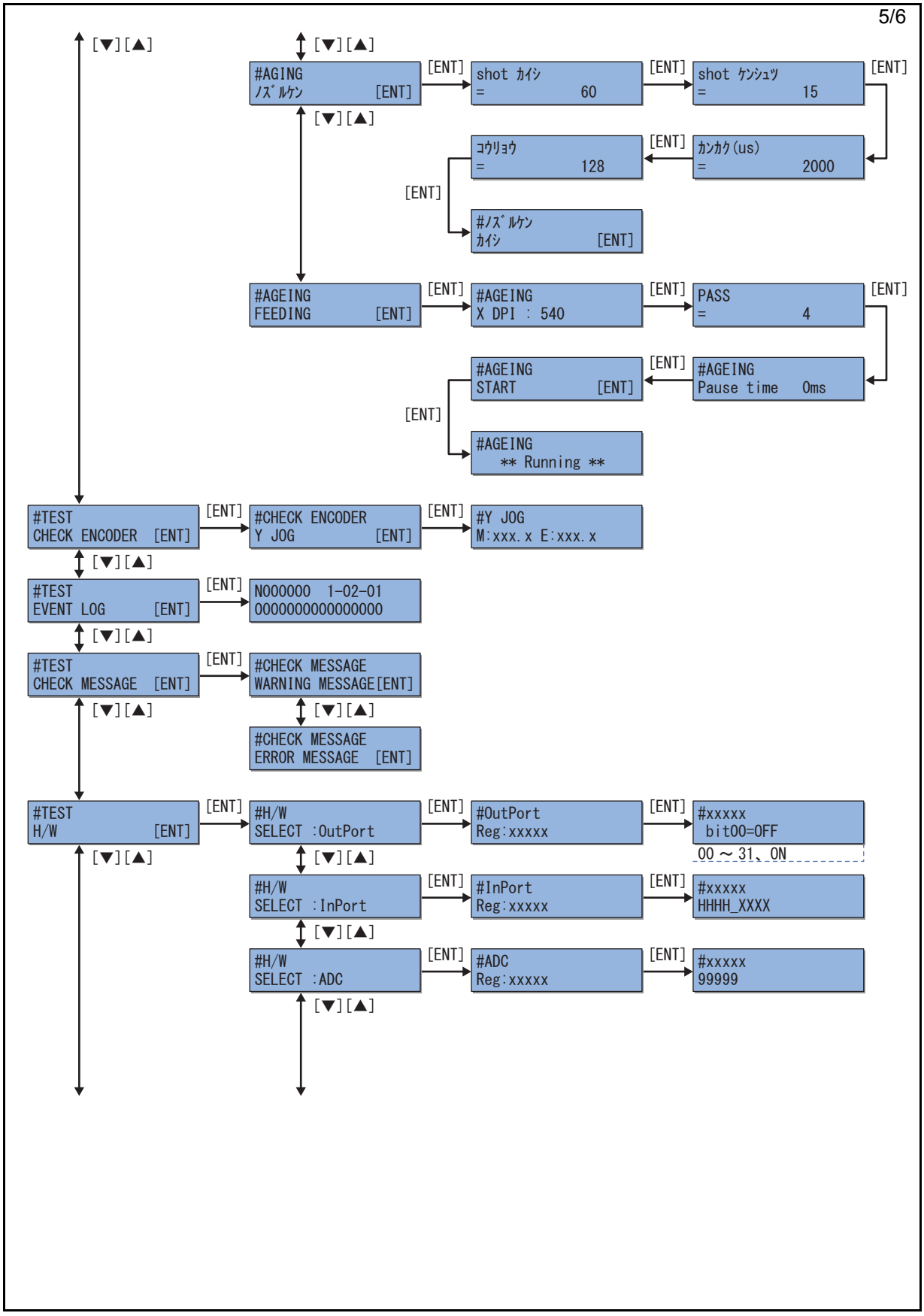
8.4.2 #TEST



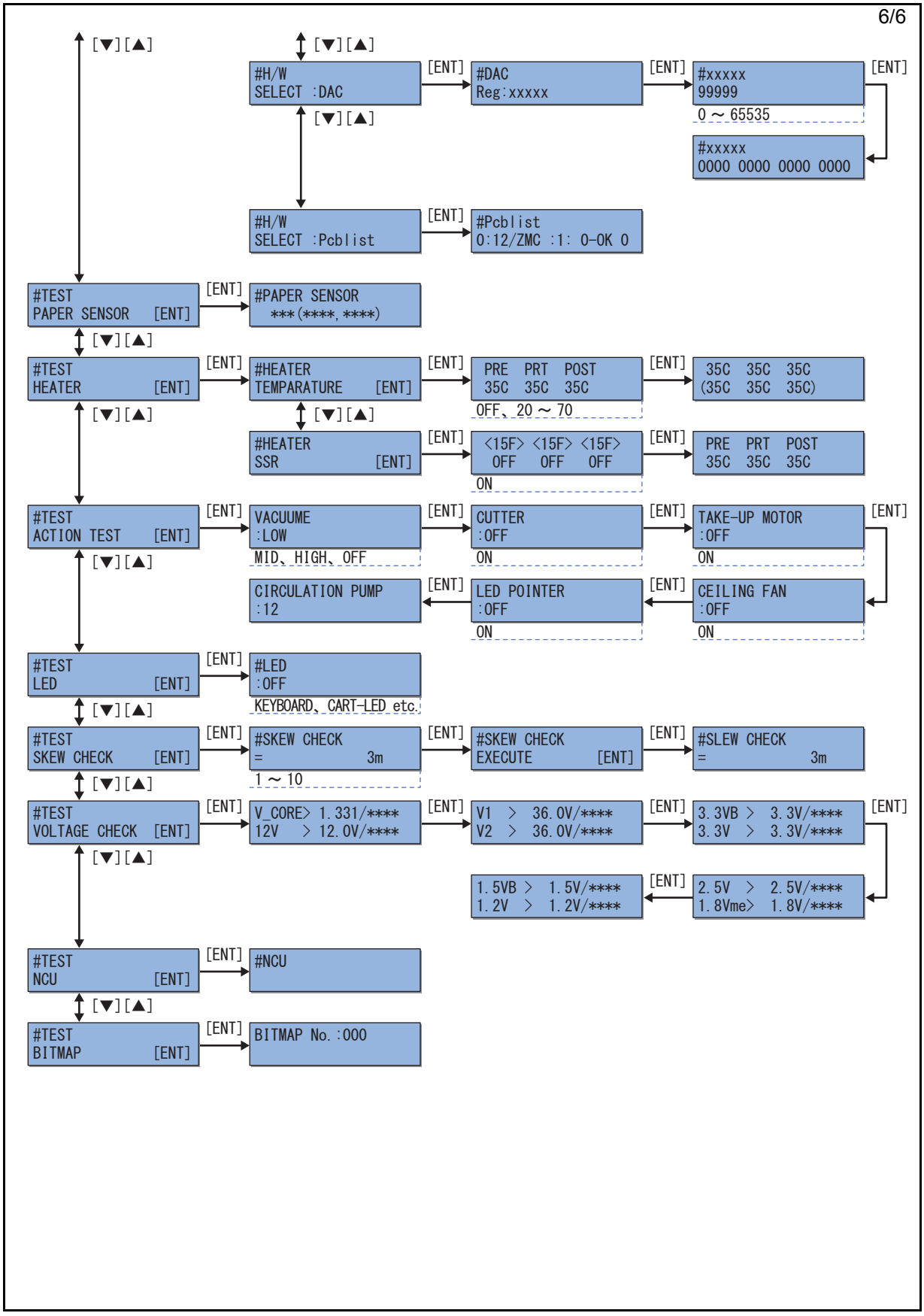
8.4.2 #TEST


4/6
[▼][▲]
#AGEING FLASHING [ENT]
#FLASHING DOT SIZE :L(3drop)
*1
#FLASHING shot:600 REFRESH
#FLASHING REMAIN 100/100
#FLASHING TRY TIMES : 100
1 ～ 9999
*1:M(3drop)、S(3drop)、L(5drop)、M(5drop)、S(5drop)
#AGEING X measure [ENT]
#X measure X: S=18 A=0.01
S=1 ～ 200 A=0.01 ～ 1.27
#X measure X step : 0.5mm
0.1 ～ 99.9
#X measure P:100.0mm move
#X measure X wait : 0.05
0.05 ～ 0.095
#AGEING COM [ENT]
#COM DEVICE SLCT:KEYBOARD
HDC1、HPC1
#COM COM HPC1 0/ 1000
#AGEING CIRCULATION [ENT]
#CIRCULATION CAP : ON
OFF
#CIRCULATION SPEED : 400rpm
1 ～ 2400
#CIRCULATION TIME = 100s
1s ～ 24d
#CIRCULATION ACC : 100rpm/s
10 ～ 1000
#CIRCULATION :12_____
#CIRCULATION START [ENT]
** Running ** 0s/30s
#AGEING CARTRIDGE VALVE[ENT]
CARTRIDGE VALVE CrtValve ON:12345678
CARTRIDGE VALVE TRY TIMES : 100
CARTRIDGE VALVE REMAIN 100/100
CARTRIDGE VALVE START [ENT]
#AGEING Feeding/TakeUp [ENT]
#Feeding/TakeUp START [ENT]
#Feeding/TakeUp ** Running **

8.4.2 #TEST



8.4.2 #TEST



D500946-10-30052014

KF
FW:1.1