Service Documents

JV400-LX Series

JV400-130LX/160LX

MAINTENANCE MANUAL

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

D500710-23

Maintenance Manual Change Tracking

Date	2014.06.30	Manual Ver.	2.3	Remark	
Status	**Index**	**Rev.**	**Changes**		
Added	4.3.3-P.2	1.0	Page was added.		
Added	7.2.10	1.0	Page was added.		

Date	2014.4.30	Manual Ver.	2.2	Remark	
Status	**Index**	**Rev.**	**Changes**		
Revised	1.3.1	2.2	6 color was added.		
Revised	1.3.3	2.2	6 color was added.		
Revised	1.3.9	2.2	6 color was added.		
Revised	1.3.11	2.2	6 color was added.		
Revised	3.1.1-p.6,p.7	2.2	Procedure for replacement head reassembling was added.		
Revised	4.2.1	1.3	6 color was added.		
Revised	4.2.2	1.5	6 color was added.		
Revised	4.2.19	1.3	6 color was added.		
Added	4.2.26	1.1	Page was added.		
Revised	4.3.3	1.1	Numerical value was changed.		
Revised	4.3.4	1.1	Procedure was changed.		
Added	4.3.8	1.1	Page was added.		
Revised	5.1.1	1.4	6 color was added.		
Revised	6.2.1	2.2	6 color was added, procedure in case of W ink used was added.		
Revised	6.2.3	2.2	Head type was added.		
Revised	6.2.7	1.1	Correspondence to a new cap.		
Revised	6.2.8	1.1	Correspondence to a new cap.		
Revised	7.1.2-P.4	1.2	Message was added.		
Revised	7.1.4-P.3	1.1	Corrective measures was revised.		
Revised	7.2.1	1.1	Flow was changed.		
Revised	7.2.2	1.1	Procedure and illustration was changed.		
Revised	8.1.1	1.2	Flow chart was changed.		
Revised	8.2.2	1.3	Flow chart was changed.		

Date	2014.03.20	Manual Ver.	2.1A	Remark	
Status	**Index**	**Rev.**	**Changes**		
Revised	3.1.1	2.2	Procedure for head return was added.		

Date	2013.05.10	Manual Ver.	2.1	Remark	
Status	**Index**	**Rev.**	**Changes**		
Added	1.3.1	2.1	6 color + W was added.		
Added	1.3.3	2.1	6 color + W was added.		
Added	1.3.6	2.1	6 color + W was added.		
Added	1.3.9	2.1	6 color + W was added.		
Added	1.3.11	2.1	6 color + W was added.		
Added	2.3.3-P.2	1.1	LED light-on was added.		
Added	2.3.5-P.2	1.1	LED light-on was added.		
Added	2.3.7-P.2	1.2	LED light-on was added.		
Added	2.3.10	1.1	LED light-on was added.		

Maintenance Manual Change Tracking

Date	2013.05.10	Manual Ver.	2.1	Remark	
Status	**Index**	**Rev.**	**Changes**		
Revised	3.1.1	2.1	Illustration of head unit was changed.		
Revised	3.1.2	2.1	Illustration of damper was changed.		
Added	3.1.3	2.1	W ink was added.		
Added	3.1.4	2.1	W ink was added.		
Added	3.2.1	1.1	Drying heater was changed.		
Added	4.2.1-P.2 -P.6	1.2	6 color + W was added.		
Added	4.2.2	1.4	6 color + W was added.		
Revised	4.2.3	1.1	Item was changed.		
Revised	4.2.6	1.3	Numerical value was changed.		
Revised	4.2.19	1.2	Ink type was changed.		
Revised	4.2.20	2.1	Work procedure was changed.		
Revised	4.2.21	2.1	Work procedure was changed.		
Added	5.1.1	1.3	6 color + W was added.		
Revised	6.1.1	1.4	Illustration of drying heater was changed.		
Added	6.2.1	2.1	6 color + W was added.		
Revised	6.2.3	2.1	Ver2 type head unit was deleted.		
Revised	6.3.1	1.1	Illustration of drying heater was changed.		
Revised	6.3.2	1.1	Illustration of drying heater was changed.		
Revised	6.3.3	1.1	Illustration of drying heater was changed.		
Revised	6.3.4	1.1	Illustration of drying heater was changed.		
Revised	6.3.5	1.1	Illustration of drying heater was changed.		
Revised	6.4.12	1.2	Illustration of drying heater was changed.		
Revised	7.1.2-P.5	1.2	Illustration of drying heater was changed.		
Revised	8.2.3	1.3	Flow diagram was changed.		
Revised	8.2.4	1.3	Flow diagram was changed.		
Revised	8.3.1-P.1	1.3	Flow diagram was changed.		

Date	2013.04.22	Manual Ver.	2.0B	Remark	
Status	**Index**	**Rev.**	**Changes**		
Revised	4.2.6	1.2	Numerical value was changed.		

Date	2013.03.05	Manual Ver.	2.0A	Remark	
Status	**Index**	**Rev.**	**Changes**		
Revised	4.3.1	1.1	Numerical value was changed.		

Date	2013.02.15	Manual Ver.	2.0	Remark	
Status	**Index**	**Rev.**	**Changes**		
Released	1.3.1-1.3.7	2.0	Sub-tank type was changed to damper type.		
Released	1.3.9-1.3.11	2.0	Sub-tank type was changed to damper type.		
Revised	2.1.1	1.2	Diagram was changed.		
Revised	2.3.6-P.1	1.1	Connector(CN24) was changed, (CN23) was deleted.		
Revised	2.3.7-P.1	1.1	Connector(CN21) was changed, (CN14) was deleted.		
Deletion	2.3.11	1.1	Page was deleted.		
Deletion	2.3.12	1.1	Page was deleted.		

Maintenance Manual Change Tracking

Date	2013.02.15	Manual Ver.	2.0	Remark	
Status	**Index**	**Rev.**	**Changes**		
Released	2.3.15	1.0	Page was added.		
Released	3.1.1-3.1.4	2.0	Sub-tank type was changed to damper type.		
Released	3.1.5	1.0	Page was added.		
Revised	4.2.2-P.1	1.3	Operation flow was changed.		
Added	4.2.2-P.4	1.1	Procedure was added.		
Revised	4.2.6	1.1	Procedure was changed and added.		
Deletion	4.2.7	1.1	Page was deleted.		
Deletion	4.2.8	1.1	Page was deleted.		
Deletion	4.2.18	1.1	Page was deleted.		
Revised	4.2.19	1.1	Operation flow was revised.		
Released	4.2.20	2.0	Sub-tank type was changed to damper type.		
Released	4.2.21	2.0	Sub-tank type was changed to damper type.		
Added	4.2.22	1.1	Remarks of “caution” was changed.		
Added	4.3.5	1.1	Numerical value was added.		
Revised	5.1.1	1.2	Contents of Items was changed.		
Deletion	5.1.11-P.1	1.1	Item was deleted		
Released	6.2.1-6.2.3	2.0	Sub-tank type was changed to damper type.		
Deletion	6.2.4	1.1	Page was deleted.		
Deletion	6.2.5	1.1	Page was deleted.		
Deletion	6.2.6	1.1	Page was deleted.		
Revised	6.2.9	1.1	Illustration was changed.		
Deletion	6.4.1-P.1	1.1	Remarks of “important” was deleted.		
Revised	6.4.2-6.4.3 6.4.6-6.4.10	1.1	Remarks of “warning” was changed.		
Deletion	6.4.11	1.1	Remarks of “important” was deleted.		
Revised	6.4.12-6.4.13 6.4.16 6.5.2	1.1	Remarks of “warning” was changed.		
Revised	7.1.2-P.4 7.1.2-P.5	1.1	Error message was changed or deleted.		
Revised	7.1.3-P.2	1.1	Warning message was changed or deleted.		
Revised	7.1.4-P.2 7.1.4-P.5	1.1	“System halt” message was changed or deleted.		
Released	7.2.1-P.1	2.0	Sub-tank type was changed to damper type.		
Added	7.2.2	1.1	Procedure was added.		
Released	7.2.4-7.2.5	2.0	Sub-tank type was changed to damper type.		
Deletion	7.2.7	1.1	Remarks of “important” was deleted.		
Released	7.2.8	2.0	Sub-tank type was changed to damper type.		
Added	7.2.9	1.0	Page was added.		
Revised	8.2.1-8.2.4	1.2	Operation flow was changed.		
Revised	8.3.1-8.3.2	1.2	Operation flow was changed.		

Date	2012.11.01	Manual Ver.	1.3	Remark	
Status	**Index**	**Rev.**	**Changes**		
Revised	1.3.1-P.1	1.1	Contents for 6-colors was deleted.Illustration was changed.		
Deletion	1.3.1-P.2	1.1	Contents for 6-colors was deleted.		

Maintenance Manual Change Tracking

Date	2012.11.01	Manual Ver.	1.3	Remark	
Status	**Index**	**Rev.**	**Changes**		
Deletion	1.3.3-P.1	1.1	Contents for 6-colors was deleted.		
Deletion	1.3.9-P.1	1.1	Contents for 6-colors was deleted.		
Deletion	1.3.11-P.1	1.1	Contents for 6-colors was deleted.		
Revised	4.2.1-P.2	1.1	Contents for 6-colors was deleted.Illustration was changed.		
Revised	4.2.8-P.1	1.1	Step5 was changed.		
Revised	4.2.15-P.1	1.2	Numerical value was changed.		
Revised	4.2.20-P.1	1.2	LCD figure was changed.		
Revised	4.2.21-P.1	1.2	LCD figure was changed.		
Revised	5.1.1-P.1	1.1	List was changed.		
Deletion	5.1.10-P.1	1.1	Lise3 was deleted		
Revised	5.1.15-P.1	1.1	List was changed.		
Released	5.1.23-P.1	1.0	Page was added.		
Released	5.1.24-P.1	1.0	Page was added.		
Revised	6.2.1-P.1	1.1	Contents for 6-colors was deleted.Illustration was changed.		

Date	2012.05.23	Manual Ver.	1.2	Remark	
Status	**Index**	**Rev.**	**Changes**		
Released	4.2.7-P.11	1.2	Step3 Photo was added.		

Date	2012.03.30	Manual Ver.	1.1	Remark	
Status	**Index**	**Rev.**	**Changes**		
Added	1.3.1 to 1.3.11	1.0	Item was added.		
Revised	2.1.1	1.1	Block diagram was changed.		
Revised	4.2.2	1.1	Operation was revised.		
Revised	4.2.4	1.1	List was revised.		
Revised	4.2.7	1.1	Work procedures was changed.		
Revised	4.2.8	1.1	Work procedures was revised.		
Deletion	4.2.10	1.1	An item was deleted.		
Revised	4.2.15	1.1	Numerical value was revised.		
Revised	4.2.19	1.1	Work procedures was changed.		
Added	4.2.23 to 4.2.26	1.0	Item was added.		
Revised	5.1.2	1.1	List was revised.		
Revised	5.1.3	1.1	List was revised.		
Revised	5.1.16	1.1	List was changed.		
Added	6.4.5 to 6.4.16	1.0	Item was added.		
Added	6.5.1 6.5.2	1.0	Item was added.		
Added	7.1.1 to 7.1.4	1.0	Item was added.		
Added	7.2.4	1.0	Item was added.		
Revised	8.1.1	1.1	Operation flow was changed.		

Maintenance Manual Change Tracking

Date	2012.03.30	Manual Ver.	1.1	Remark	
Status	**Index**	**Rev.**	**Changes**		
Revised	8.2.1 to 8.2.4	1.1	Operation flow was changed.		
Revised	8.3.1 8.3.2	1.1	Operation flow was changed.		

Date	2012.02.29	Manual Ver.	1.0	Remark	
Status	**Index**	**Rev.**	**Changes**		
Released			New issued		

Maintenance Manual Contents

Maintenance Manual Contents

Operating Principle

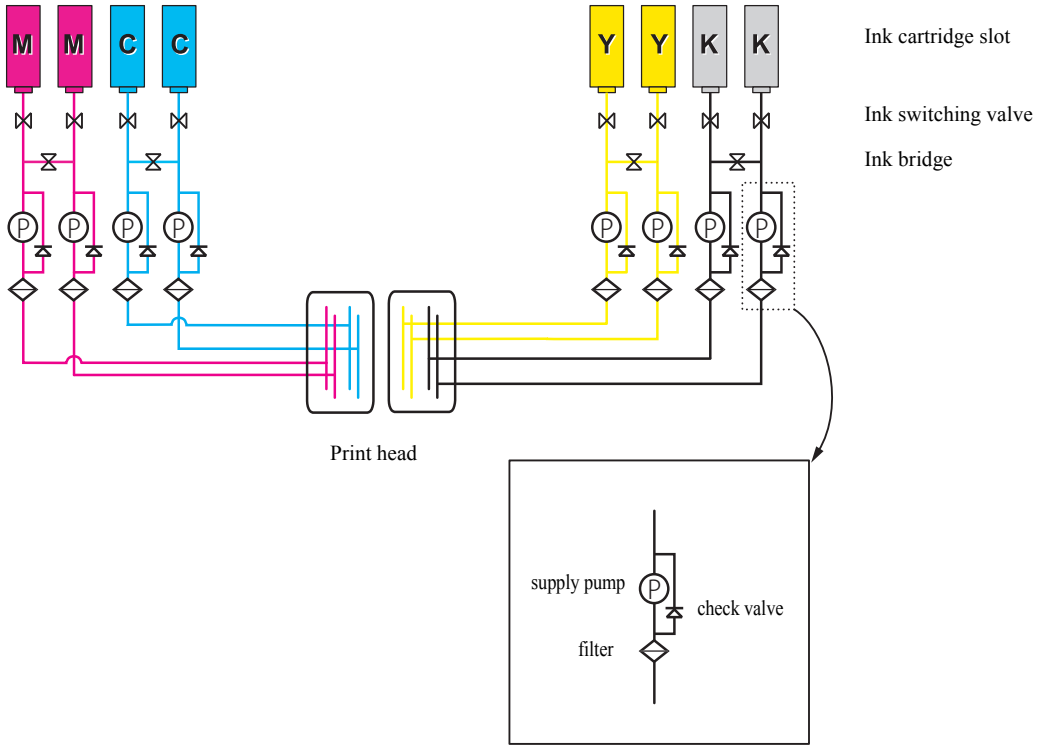
Operating Principle

Operating Principle

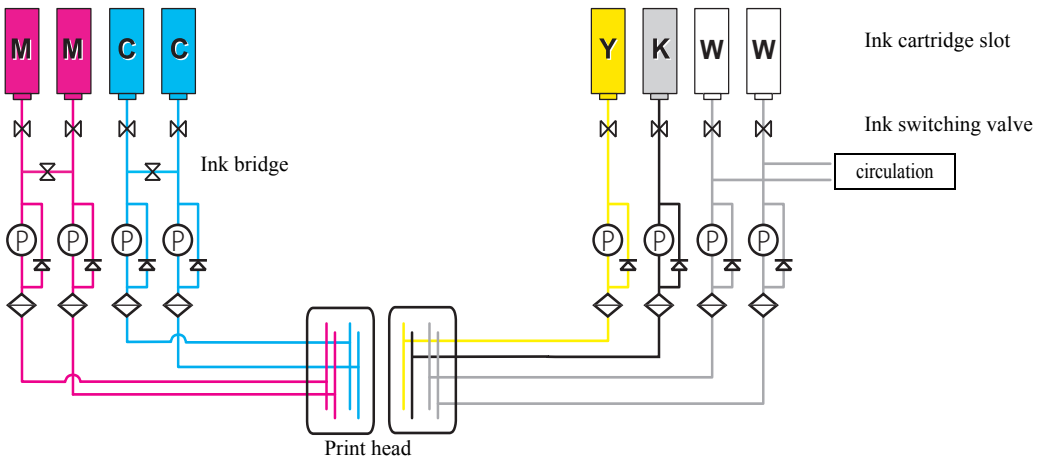
1.3.1 Configuration

■ Ink Supply Path Diagrammatic Illustration

☐ When filling 4-color ink set

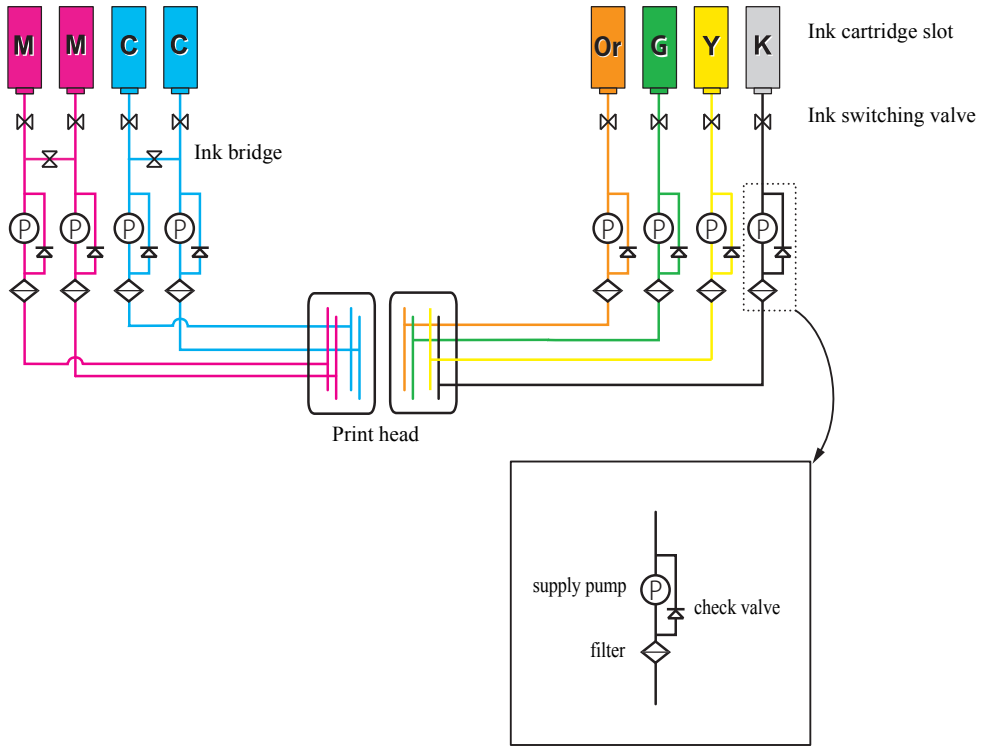


☐ When filling 4-color + White ink

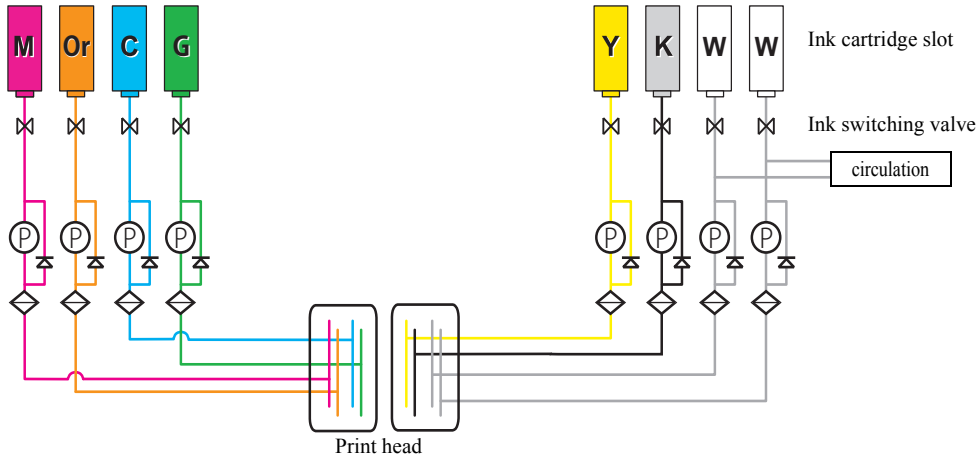


1.3.1 Configuration

☐ When filling 6-color ink set

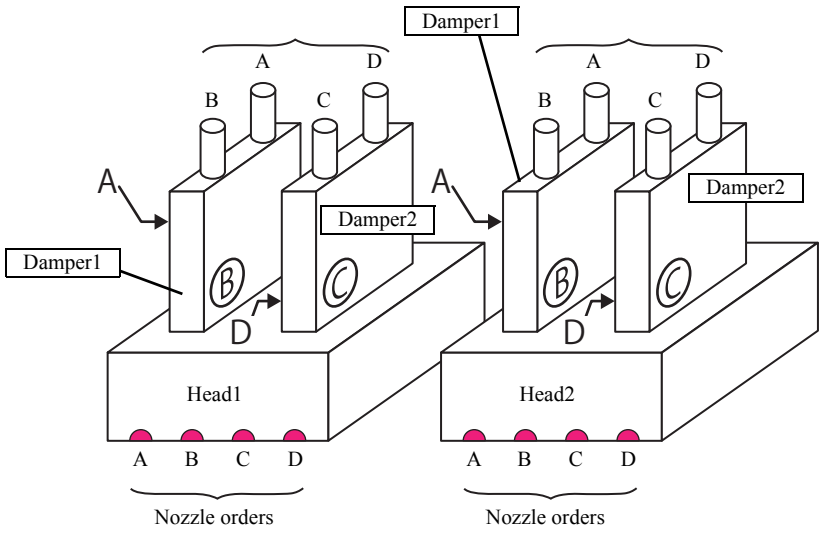


☐ When filling 4-color + White ink



1.3.1 Configuration

■ Relationship between piping and nozzle orders



■ 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	All colors of 4-Color ink set “M,C” of 4-Color +W “Y,K,Or,G” of 6-Color	◆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	When filling other than 4-Color (“K,Y,W” of 4-Color +W) “Y,K,Or,G” of 6-Color All colors of 6-Color +W ink set	◆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	◆During drawing etc., ink is supplied via the ink supply pump.
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.

1.3.1 Configuration

No.	Item	Description
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, two LEDs (green: control LED; red: error LED) are used to allow the user to visually check the cartridge state.
7	Ink supply pump	◆Ink is supplied from the cartridge to the damper. ◆There is one ink supply pump for one damper.

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 50 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 green LED lights up to indicate that the supply cartridge is now being controlled. ◆The red LED 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 green LED 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.

■ Monitoring of ink system error

The ink system are checked for any error periodically (every 50 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*1		Description of the error
		CL/ filling	Printing	
1	Initial filling is not executed	X	X	Initial filling has not been executed.
2	Damper error*2	X	X	Errors occurred in the damper sensor and in supplying.
3	INK END error	X	X	Errors occurred in both cartridges and no ink in the damper.
4	!WASTE TANK	X	X	Ink is full in the waste ink tank.
5	INK NEAR END error	△	O	◆Errors occurred in both cartridges and supply ink operation can not be executed. ◆Machine returns to LOCAL mode every completion of printing one file.
6	NO CARTRIDGE	O	O	No cartridge has been installed.
7	Ink IC*3	O	O	◆An error related to the cartridge IC has occurred. ◆Ink supply is impossible.
8	Cartridge ink end	X	X	Ink supply is impossible for the amount of remaining ink in the cartridge is 10% and less.
9	Cartridge near end	O	O	The amount of remaining ink in the cartridge is 10% and less.
10	Check ink pack	X	X	Ink supply is impossible, even if there is 20% and over amount of ink.
11	Ink supply	X	X	Ink supply is impossible, even if there is 20% and over amount of ink.After occurs “Check ink pack”.
12	Expiration:2 MONTH	X	X	Two months have passed since the expiration date of the ink.
13	Expiration:1 MONTH	O	O	◆One month has passed since the expiration date of the ink. ◆Machine returns to LOCAL mode every completion of printing one file.
14	!Replace a WIPER	O	O	The wiper operation count has exceeded the number which requires the replacement of the wiper.
15	Expiration	O	O	Ink expiration has been reached.

*1.O: Executable X: Inexecutable △:Executable (restricted)

*2.

*3.Ink IC:INK IC CAN'T READ, WRONG INK IC, Kind of INK, Color of INK, WRONG CARTRIDGE.

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	Detected that the amount of remaining ink in the cartridge is 10% and less.	
2	Cartridge ink end	This occurs when ink filling cannot be performed after detecting ink near end.	
3	WRONG CARTRIDGE	Occurs when the amount of consumed ink exceeds nearly double the ink cartridge capacity but the ink end is not displayed yet.	
4	Damper High	Even if a certain amount of ink has been consumed in the damper, the Hi sensor remains “ON”.	
5	Near end	Ink supply is impossible, though there is ink.	Filling, damper maintenance, air purge and cleaning cannot be performed.
6	Ink end	Ink supply is impossible for ink empty in the damper.	Filling, damper maintenance, air purge, cleaning and drawing cannot be performed.

1.3.3 Supply Cartridge Control and Selection

■ Supply cartridge control

No.	Item	Description
1	4-Color ink set [**M M C C Y Y K K**]	◆The machine uses two ink cartridges for 1 supply system and can mount 8 cartridges in total. ◆Switching between cartridges for ink supply occurs under any of the following conditions: • Ink end during supplying • Ink IC warning • Expiration date of ink • When the cartridge is removed • Check the ink pack
2	4-Color +W ink set [M M C C Y K W W]	◆M ink and C ink use two ink cartridges for 1 supply system. Switching between cartridges for ink supply occurs same as above 1. ◆Y ink and K ink use one ink cartridge for 1 supply system (For W ink, toggle switching of the supply cartridge is not performed.)
3	6-Color ink set [**M M C C Or G Y K**]	◆M ink and C ink use two ink cartridges for 1 supply system. Switching between cartridges for ink supply occurs same as above 1. ◆Y ink, K ink, Or ink and G ink use one ink cartridge for 1 supply system
4	6-Color +W ink set [**M Or C G Y K W W**]	◆The machine uses one ink cartridges for 1 supply system. (For M and C ink, toggle switching of the supply cartridge is not performed.)

■ Cartridge status indicated by LEDs

LED	Status	Explanation
Green	Lit	Supply cartridge
Red	Blink	Expiration:1MONTH, CARTRIDGE NEAR END
	Lit	◆NO CARTRIDGE ◆CARTRIDGE END ◆CHECK INK PACK ◆INK SUPPLY ◆WRONG INK IC INK IC CAN'T READ Errors related to ink IC, namely, NON-ORIGINAL INK, WRONG INK IC, Kind of INK, Color of INK, WRONG CARTRIDGE and Expiration:2MONTH

■ When using selection and determination of the supply cartridge for the UISS

☐ 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

1.3.3 Supply Cartridge Control and Selection

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

Priority	Cartridge status
1	The cartridge having the 10% and less amount of remaining ink is selected.
2	If there is no distinction at “1”, the cartridge within one month passed to the expiration date is selected.
3	If there is no distinction at “1” and “2”, the selected cartridge is selected.When selected cartridge is nothing, the cartridge having smaller amount is selected.
4	If there is no distinction at “1”,“2” and “3”, the cartridge in the smaller slot number is selected.

☐ Availability of ink supply

Cartridge 2 \ Cartridge 1	Normal cartridge	Cartridge near end	Cartridge ink end	No cartridge Ink IC*1
Normal cartridge	○	○	○	○
Cartridge near end	○	○	○	○
Cartridge ink end	○	○	X	X
No cartridge	○	○	X	X
Ink IC*1	○	○	X	X

*1.Ink IC:INK IC CAN'T READ, WRONG INK IC, Kind of INK, Color of INK, WRONG CAR-TRIDGE,Expiration:2MONTH.

○: Ink supply is allowed. X: Ink supply is impossible.

☐ List of supply cartridge switching condition

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

*1 Ink IC: INK IC CAN'T READ, 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 two LEDs light up or blink to indicate the condition of the cartridge and help the user determine the time for replacing the cartridge.

LED		Cartridge status
Control LED (Green)	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.)
Error LED (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 ◆One month has passed since the expiration date of the ink
	Fast blinking	Two 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 ◆Cartridge end ◆CHECK INK PACK ◆INK SUPPLY ◆WRONG INK IC INK IC CAN'T READ, Errors related to ink IC, namely, NON-ORIGINAL INK, WRONG INK IC, Kind of INK, Color of INK, WRONG CARTRIDGE and Expiration:2MONTH

■ LED operation pattern

Event	For the 4-color ink set				Except for the 4-color ink set	
	Cartridge 1		Cartridge 2		Cartridge 1	
	Control LED	Error LED	Control LED	Error LED	Control LED	Error LED
Online supply start ◆Both cartridges free from problems ◆Cartridge 1 is the control cartridge.	Lit	–	–	–	Lit	–
Cartridge 1 ◆Cartridge near end	Lit	Blink	–	–	Lit	Blink
Cartridge 1 ◆Cartridge end ◆Cartridge 2 is the control cartridge.	–	Lit	Lit	–	–	Lit
Cartridge 2 ◆Cartridge near end	–	Lit	Lit	Blink		
Cartridge 1 ◆Removed for replacement	–	Lit	–	–	–	Lit
Cartridge 1 ◆A normal cartridge has been set	–	–	Lit	–	Lit	–
Cartridge 2 ◆Cartridge end ◆Cartridge 1 is the control cartridge.	Lit	–	–	Lit		
Online printing has been completed ◆All valves closed	Lit	–	–	Lit	Lit	–

1.3.5 Supply Valve Control

■ **Timing to open/close the supply valve**

The supply valves are usually closed and opened only when ink supply is required.

1.3.6 Supply Pump Control

■ Out line

1 Use the roller pump.

2 Normally, it is in the released status (tube is not squashed).

3 After ink has been supplied, be sure to perform the operation to make it be in the released status.

■ Operation status

Operation	Contents
Ink supply	When rotating the pump, ink can be sent.
Make it be in the released status.	By reversing the pump, release the lock of the roller. Caracole the pump.
Released status	Status that the lock in the pump has been released
Locked status	Status when stopping the pump rotating for ink supply As the tube is squashed, ink does not leak. For 4-Color and M.C of 4-color + W ink you can make it be in this status meaningly to prevent ink from flowing into the damper by mistake.

1.3.7 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
  - • Consumption of the ink 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 ink set)

Motion	Ink consumption through one supply path [cc]
SOFT cleaning	0.057
NORMAL cleaning	0.388
HARD cleaning	0.634

■ 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	When more than the specified amount of ink was discharged	◆When ink was consumed by drawing and cleaning, writing is performed with the specified amount.
3	When any of the following errors has occurred during printing: ◆Cartridge near end ◆Cartridge ink end ◆Wrong Cartridge	◆Updated just after occurrence of the error, not waiting for writing at the capping pre-operation. ◆Updated before replacing the cartridge during printing.

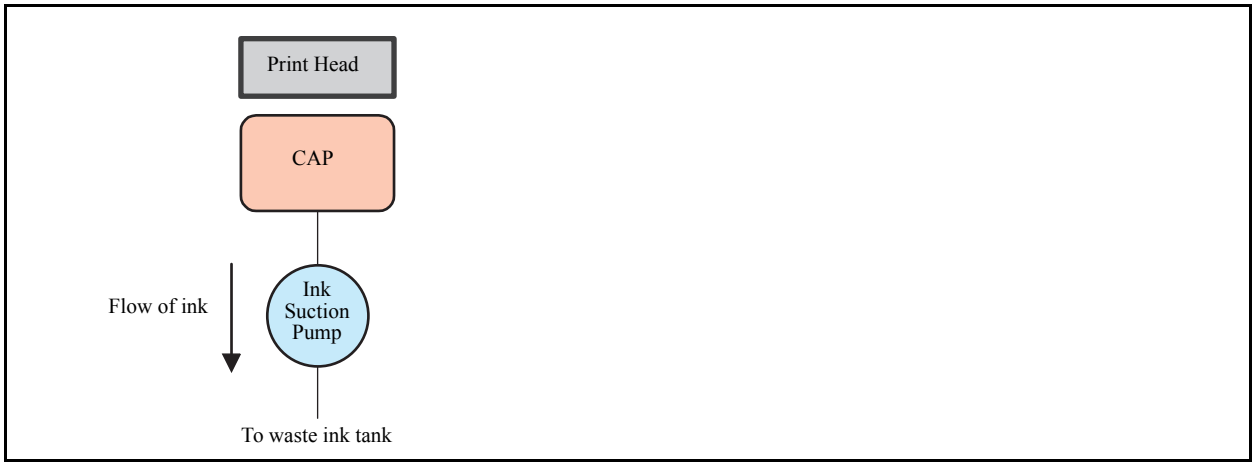
1.3.8 Ink Suction and Discharge Control

■ 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.



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: LX100, LX101
2	Selection of number of colors (ink set)	Select a set value shown below. Setting value:4-Color (M M C C Y Y K K), 4-Color + W (M M C C Y K W W), 6-Color (M M C C Or G Y K), 6-Color + W (M Or C G Y K W W)
3	Ink filling	Insert the ink cartridges into all the slots • Insert the ink cartridges into all the slots Open the damper air purge valve. • Turn the valve at top of the damper 90 degree. • Press [ENTER] key after rotation, ink filling is starting. Fill up ink 1. Perform filling from the cartridge to the filter. • Absorb ink until the damper is crushed. • With the cartridge valve open, absorb ink up to the filter for a certain time. 2. Perform filling at the UISS connection part. a) OPEN the cartridge valve whose connected path has a smaller number. b) Perform the suction operation for a certain amount of time. 3. Fill into the circulation path. • This is performed when you selected 4-Color +W or 6-Color +W. a) Lock the supply pump with rotating to the direction for filling. b) OPEN the No.7 and No.8 cartridge valve and circulation valve. c) Perform the suction operation for a certain amount of time. 4. Fill into the path. a) Perform filling to the full position of the damper with the supply pump. b) Perform the suction operation to the “Lo” position. c) Perform filling to the “Hi” position of the damper. d) Repeat b) and c) 10 times for purging air in the path. e) Perform wiping 5. Perform air purge of the printer head. • Use the air purge jig (including package). • Refer to the Installation guide for details. 6. Close the air purge valve of the damper • Turn the valve at top of the damper 90 degree. • Press [ENTER] key after rotation, cleaning is starting. • 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. • When a warning/ an error occurred in the cartridge during filling, terminate filling.

IMPORTANT

● If filling any other than the 4-color +W or 6-color +W ink set when this unit is installed, you have to change the coupler before initial filling.

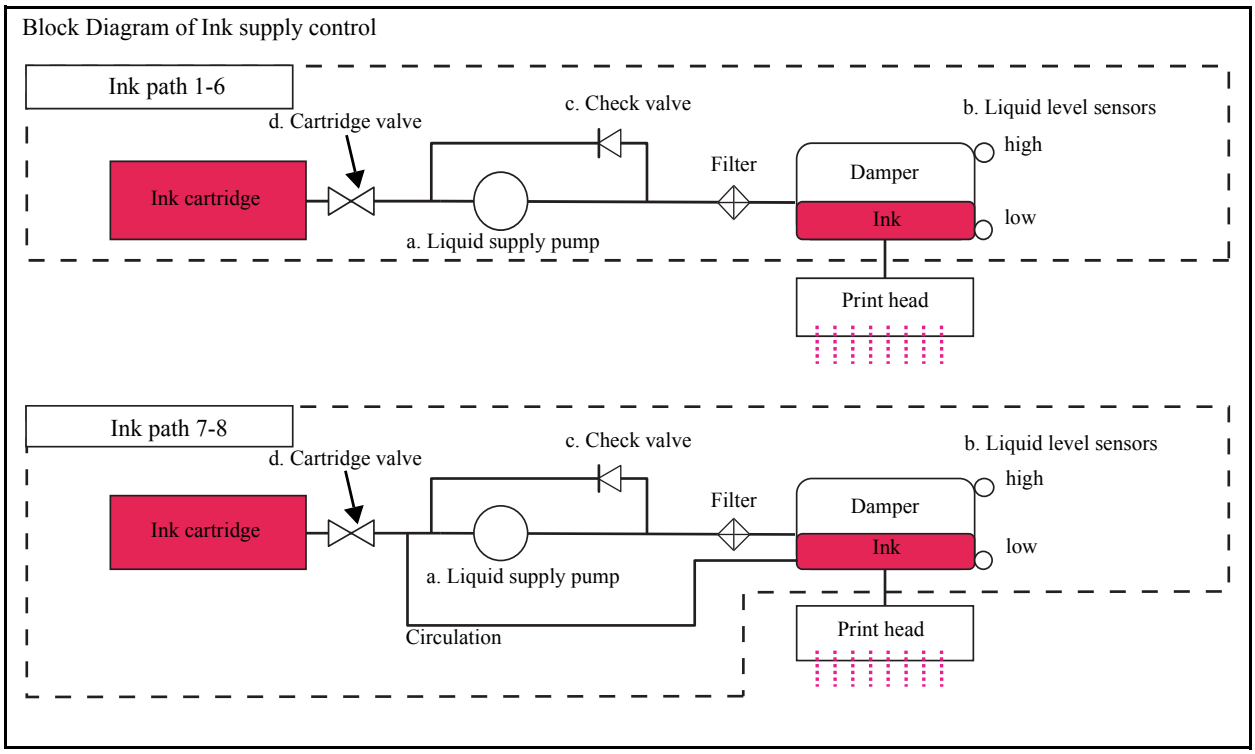
For details, refer to the Installation guide.

1.3.10 Ink System

■ Outline

Ink supply of the JV400 is carried out through a method of feeding ink from an ink cartridge by a pump.

Ink supply control:To charge the print head with ink and fill the damper with a certain amount of ink so as to prevent the damper from becoming empty.



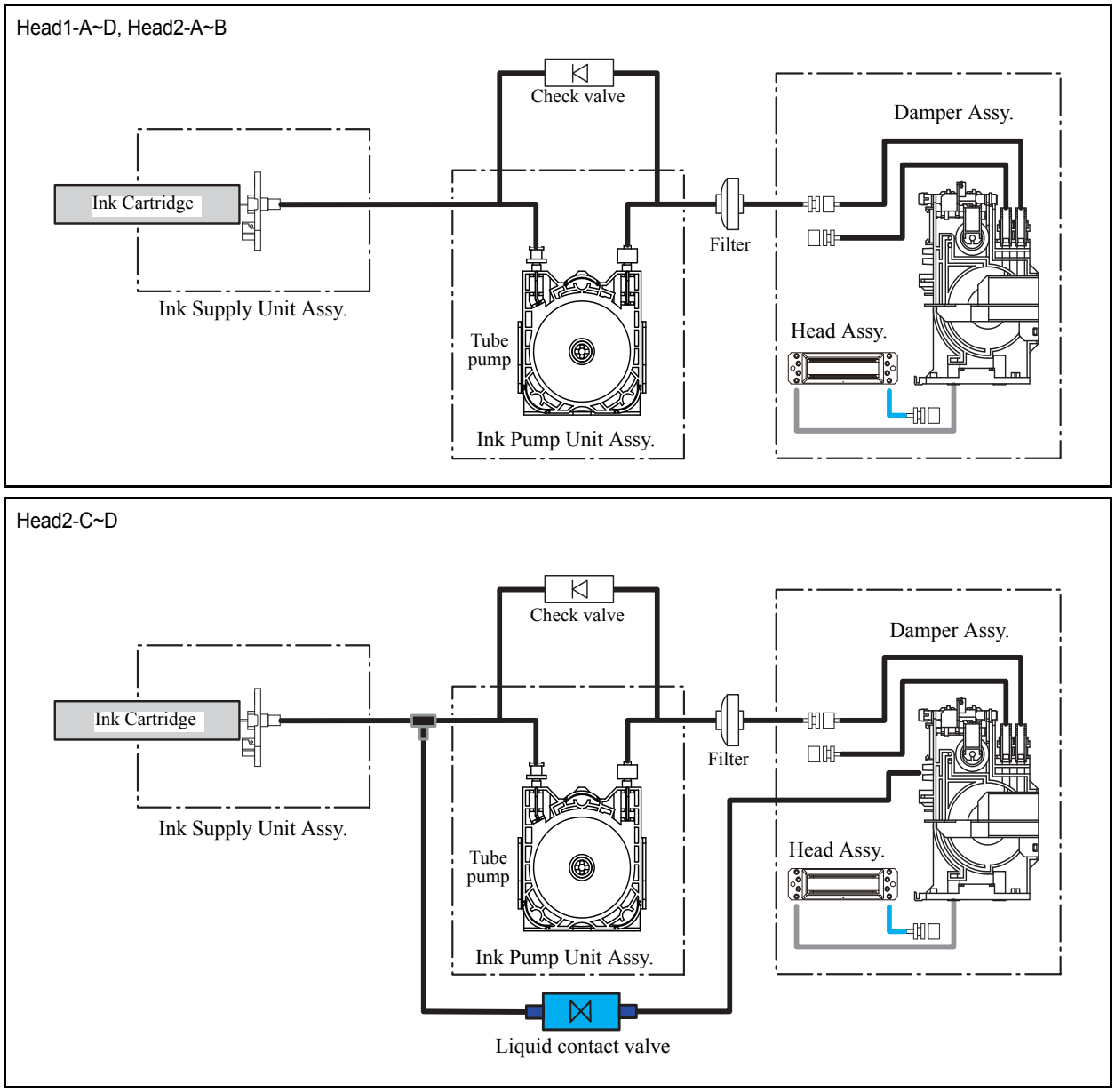
The following list shows the control components:

	Components	Descriptions
a.	Liquid supply pump	Feeds ink from the cartridge to the damper. When the liquid level is detected to be at the high level in the damper, no liquid is fed.
b.	Liquid level sensors	Two sensors for detecting the “high and low” levels to watch the ink volume in the damper.
c.	Check valve	Protect the parts from positive pressure over.
d.	Cartridge valve	OPEN this at ink supply.

1.3.10 Ink System

■ Ink Route Diagram

Ink Route Diagram is described below.

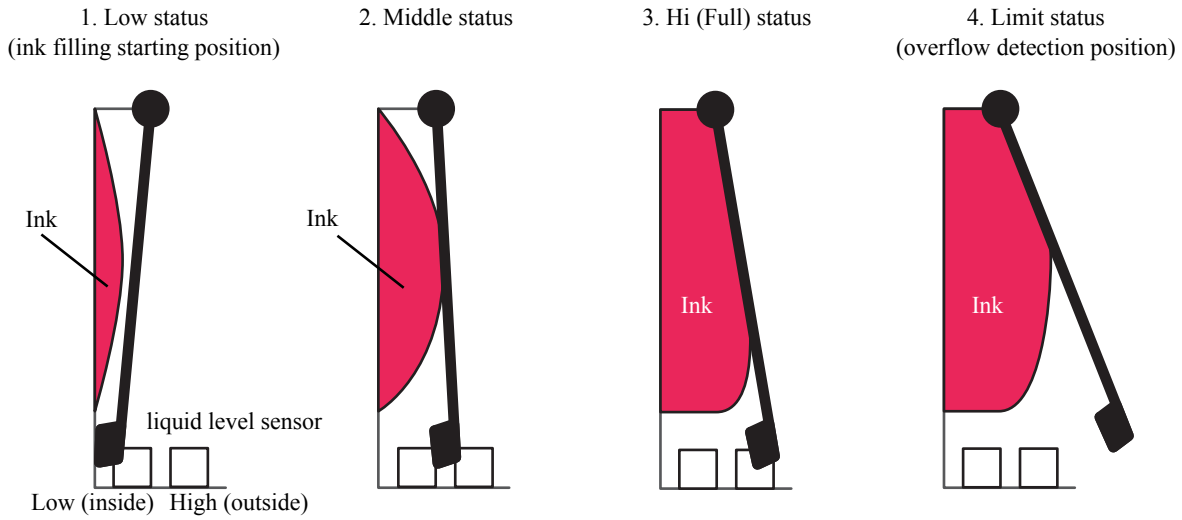


1.3.10 Ink System

■ Ink Supply Control

Control this for each damper (four systems x 2) separately.
The liquid level sensors among the control components are operated as described below:

Status of the liquid level sensors



No.	Liquid detection sensor		Descriptions	Operation
	Low	High		
1	ON	OFF	Ink filling is required.	Filling starts automatically during printing or cleaning.
2	ON	ON	Ink filling is required.	Filling starts automatically during printing or cleaning.
3	OFF	ON	Ink is full.(normal.)	Filling stops after uniformity time.
4	OFF	OFF	Over flow	Filling stops immediately and an error occurs.

■ Ink System Controls Except Pressure-Feed Ink Supply

☐ Wiping

- No wiper lifting/lowering mechanism is used.
- Wiper back-and-forth motion

☐ Ink cartridge

- As usual

☐ Periodical flashing

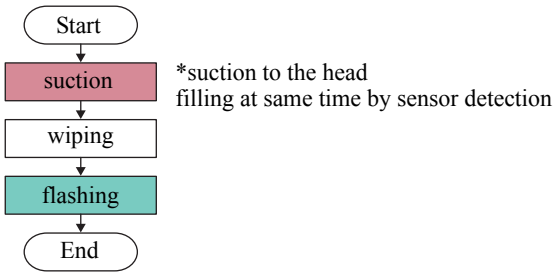
- As usual

☐ Periodical cleaning

- Cleaning depending on a level by user setting.

1.3.10 Ink System

Sequence of cleaning



Sequence for normal/soft/hard are same as above, they are difference from suction time.

1.3.11 Ink Cartridge

Supports a large volumetric ink pack of 600cc and a 600cc cartridge using reusable eco- case.

■ Consists of:

1. Eco-case : Case of the cartridge to be inserted in the printer
2. Ink pack : Pack with ink. Set this in the eco-case.
3. IC chip : Ink information has been written in and this is put in the eco-case.

■ Main point of difference from the conventional ink cartridge

1. Ink capacity has increased to 600cc.
2. There is no ink near end detection board.
   (For ink consumption, count the amount of discharged ink with FW.)
3. For ink replacing work, replace the ink pack and the IC chip inside the eco-case.

■ Ink corresponding table

The corresponding table of ink type and cartridge is indicated below:

Capacity	Kind of the ink: **LX-100**		**LX-101**
	4 colors	white	6 color
220cc	Nothing	Available	Nothing
600cc	Available	Nothing	Available

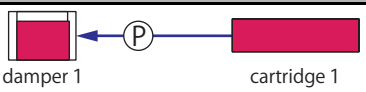
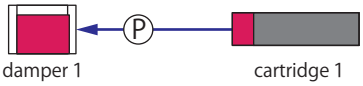
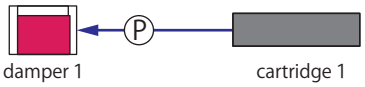
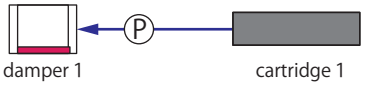
■ Usage

Only you have to do is to insert the 600cc cartridge. There is no item to be set before using. In addition, you do not have to measure and enter the cartridge weight.

■ Ink consumption flow

The flow from start using new ink to replacing ink at ink end, including consuming ink.

☐ "Y", "K" and "W" of "4-Color +W"
"Or", "G", "Y" and "K" of "6-Color"
"M","C","Or","G","Y","K" and "W" of "6-Color +W"

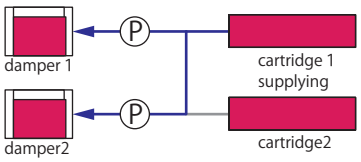
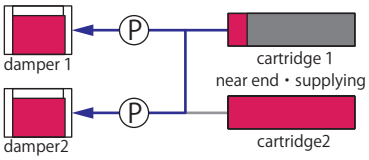
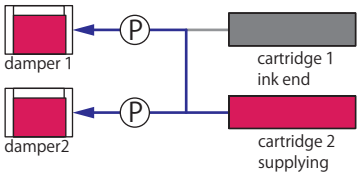
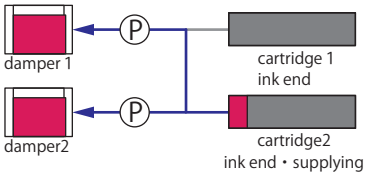
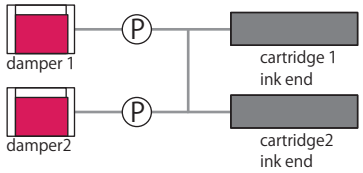
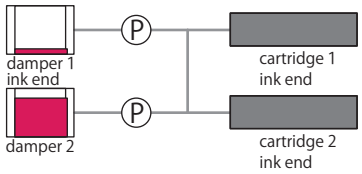
Order up to con-sump-tion	State	IMAGE	Error indication	Explanation
1	Beginning to use			Normal status Ink is supplied from the cartridge to the damper.
2	Ink near end (Supply systemnear end) **Cartridge near end**		<LOCAL> INK NEAR END [ENT]	Ink in the cartridge becomes less. Printing/ cleaning can be per-formed.
3	Ink near end (Supply systemnear end) **Cartridge ink end**		<LOCAL> INK NEAR END [ENT]	As ink in the damper, printing can be performed for a while. Replace the cartridge as soon as possible.
4	Ink end (Supply system ink end) **Cartridge ink end**		<LOCAL> Can' tPRINT/CART. [ENT]	Ink has been run out both in the cartridge and the damper. Replace the cartridge.

1.3.11 Ink Cartridge

☐ All colors of 4-color UISS

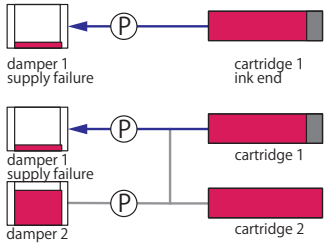
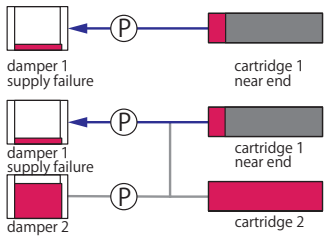
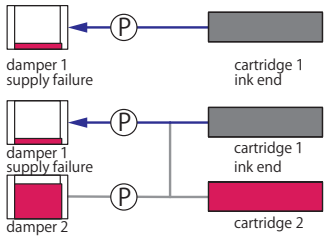
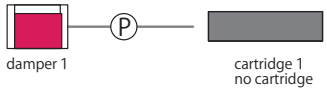
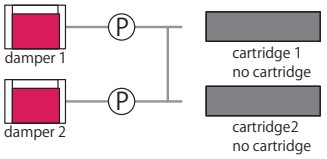
"M" and "C" of "6-Color +W"

"M" and "C" of "6-Color"

Order up to consumption	State	IMAGE	Error indication	Explanation
1	Beginning to use			Normal status Ink is supplied from either cartridge to both dampers.
2	Cartridge near end			Ink in one cartridge becomes less. Printing/ cleaning can be performed.
3	Cartridge ink end			Ink in one cartridge has been run out. As there is ink in the other cartridge, you can use it continuously.
4	Ink near end (Supply system near end) Cartridge near end Cartridge ink end Simultaneous occurrence		<LOCAL> INK NEAR END [ENT]	Inks in both cartridges become less. Though you can use continuously, replace the cartridge as soon as possible.
5	Ink near end (Supply systemnear end) Cartridge ink end Cartridge ink end Simultaneous occurrence		<LOCAL> INK NEAR END [ENT]	Inks in both cartridges have been run out. The cartridge ink end warning is also displayed. As there is ink in the damper, printing can be performed for a while. Replace the cartridge as soon as possible
6	ink end (Supply system ink end) Cartridge ink end Cartridge ink end Simultaneous occurrence		<LOCAL> Can' tPRINT/CART. [ENT]	Inks in both cartridges have been run out. Ink in the damper has also been run out. As printing cannot be performed, replace the cartridge.

1.3.11 Ink Cartridge

■ Errors that occur in ink supply

	State	IMAGE	Error indication	Error contents	Coping
1	Ink supply error		ERROR 61b SUPPLY INK : 1------- The damper number is displayed.	Ink was not sent to the damper to the specified amount. An error may occur in the damper.	Perform damper maintenance. After damper maintenance, this error is canceled.
2	Ink pack check		CHECK INK PACK 1------- The cartridge number is displayed.	Ink was not sent to the damper to the specified amount. It is possible that ink has been run out in the cartridge of the source.	Pull out the slot of the displayed cartridge, and visually check the pack status in the cartridge. When ink remains, you can use it continuously by inserting the cartridge again. When the pack became empty, replace it with new one. If ink remains but the pack has been squashed, ink cannot be sent due to that part. At this time, shake the pack lightly to resolve squash.
3	Cartridge ink end		CARTRIDGE END 1------- The cartridge number is displayed.	Ink was not sent to the damper to the specified amount. Ink has been run out in the cartridge of the source.	Replace the cartridge.
4	NO CARTRIDGE		NO CARTRIDGE 1-------	The cartridge is not inserted.	Insert the cartridge. As ink on the cartridge needle dries, insert the cartridge as soon as possible.
			NO CARTRIDGE 12------	Both cartridges to be used have not been inserted.	Insert the cartridge. When you insert even one, it becomes usable.

■ Process when filling has failed

Even if you send ink, when the sensor detection is no change and filling has failed, JV400-LX can detect that there is no ink in the cartridge of ink source with the liquid amount control of the damper.

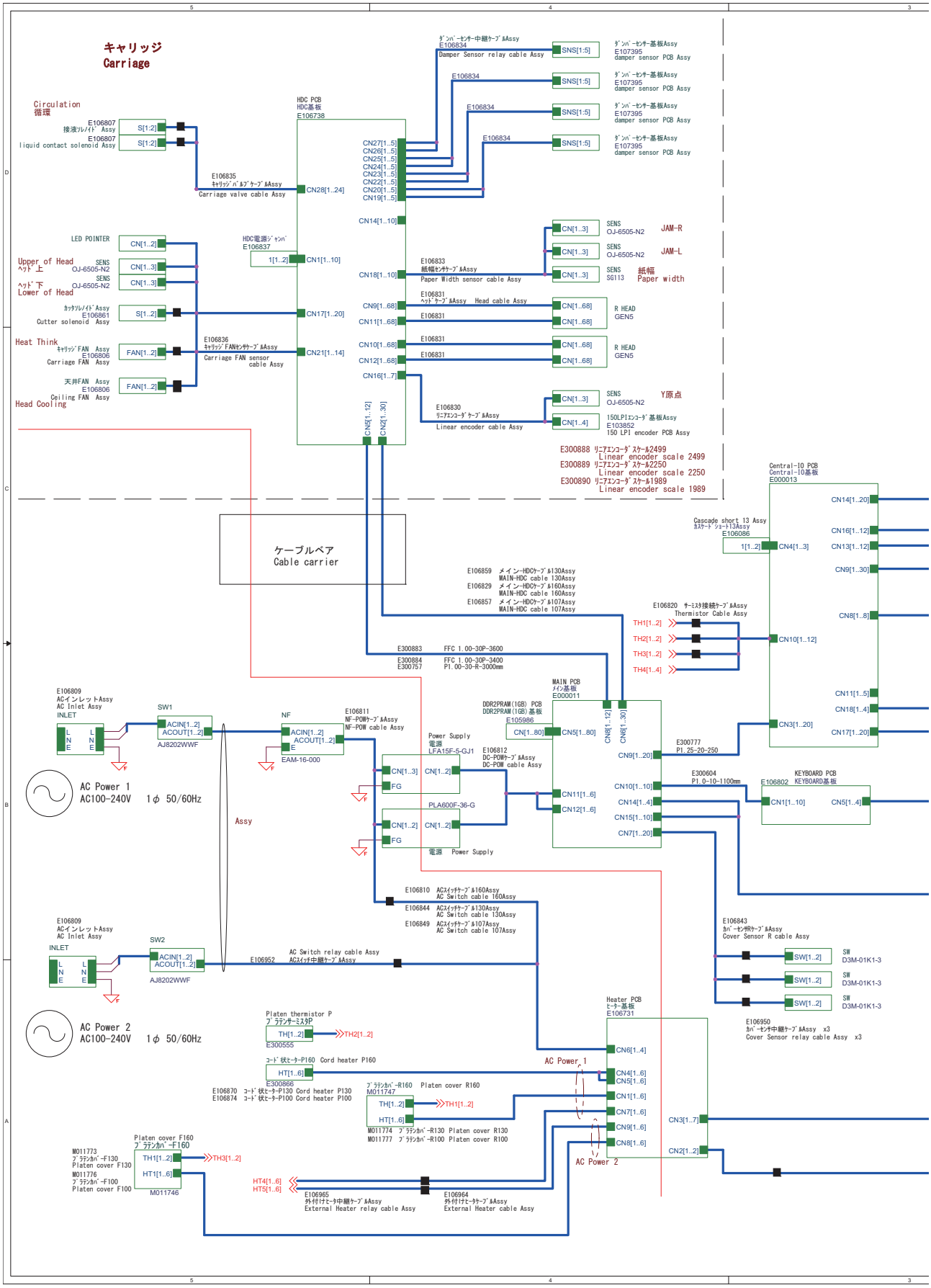
If filling has failed, “Cartridge end” is displayed and the cartridge becomes unusable.

However, when the amount of remaining ink in the cartridge is more than the specified amount, “Ink pack check” warning is displayed, and the machine prompts you to check that there is no problem in the ink pack.

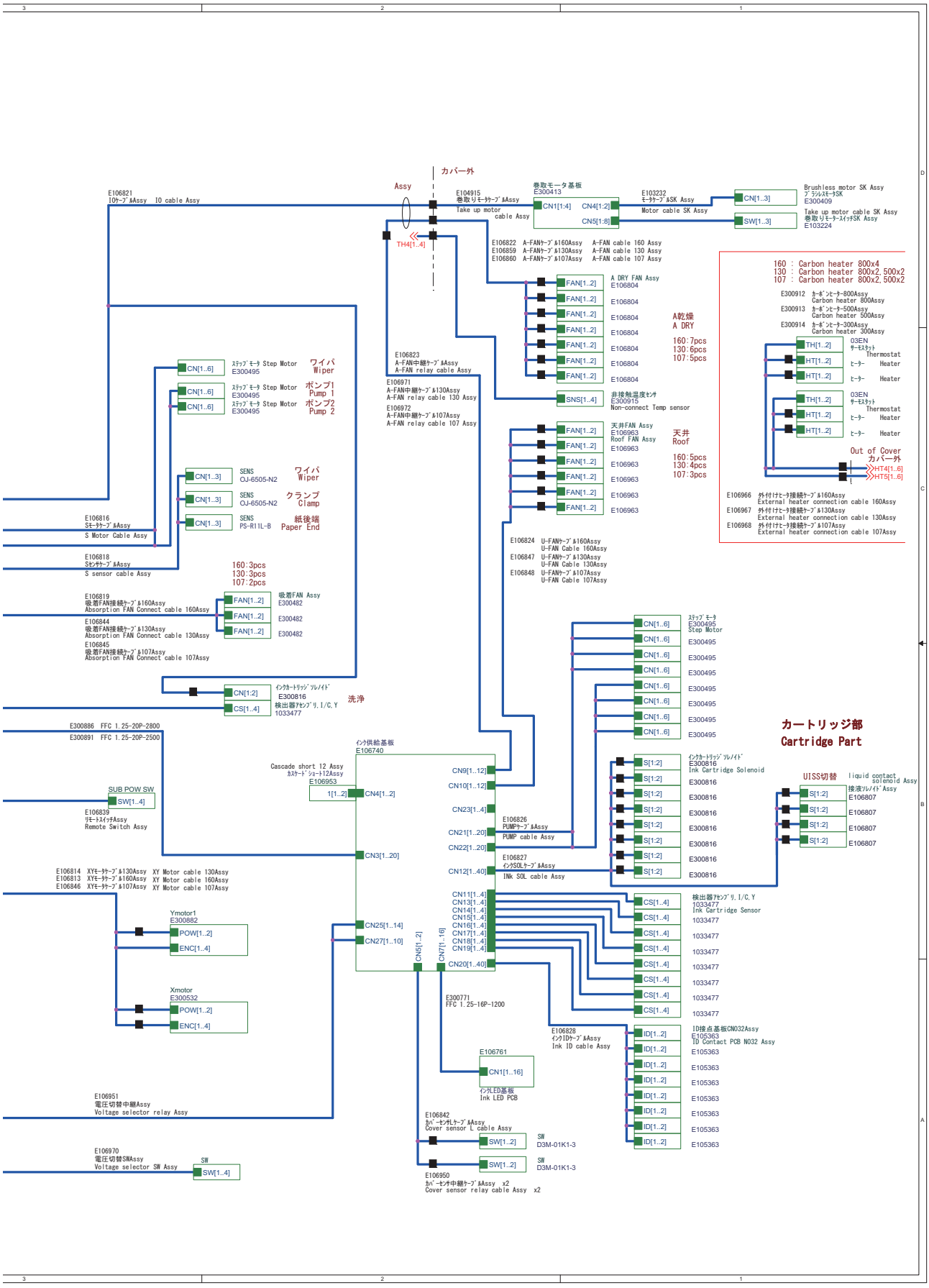
After checking the ink pack, insert it again and send ink again. If sending ink has failed again, “ERROR 616 Ink supply” error is displayed, and the machine prompts you to check the ink path.

Electrical Parts

2.1.1 Connection Diagram



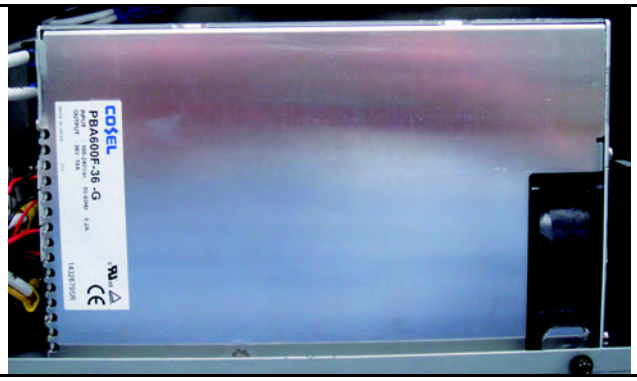
2.1.1 Connection Diagram



Electrical Parts

Electrical Parts

2.3.1 DC Power Supply (DC36V)



■ Outline

Unit name: Switching power supply (PBA600F-36-G)

Mounted position: Electrical box

☐ Main specifications

Power supply for internal circuit (DC36V).

■List of Connectors

☐ Terminal block

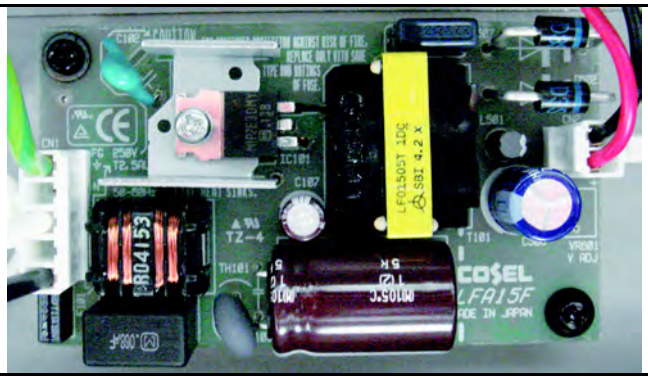
Terminal block Pin No.	Terminal name	Function	Connected to:*	Remarks
1	L	AC(Line) input	Noise Filter	
2	N	AC(Nutral) input	Noise Filter	
3	FG	FG		
4	V-	0V	EPL Main PCB Assy.	CN11
5	V-	0V		
6	V+	DC36V	EPL Main PCB Assy.	CN11
7	V+	DC36V		

☐ Connector

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	10	EPL Main PCB Assy.	CN12	
CN2	10	EPL Main PCB Assy.	CN12	
CN3	8	EPL Main PCB Assy.	CN12	

*For the details of connecting destinations, refer to the block diagram.

2.3.2 DC Power Supply (DC5V)



■ Outline

Unit name: Switching power supply (LFA15F-5-J1)

Mounted position: Electrical box

☐ Main specifications

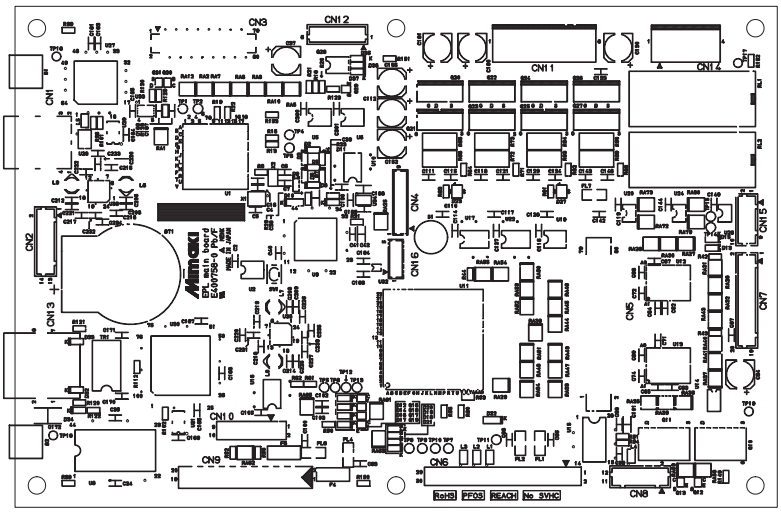
Power supply for backup circuit (DC5V).

■List of Connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	10	Noise Filter		AC input
CN2	10	EPL Main PCB Assy.	CN11	DC output

*For the details of connecting destinations, refer to the block diagram.

2.3.3 Main PCB Assy.



■ Outline

Unit name: EPL MAIN PCB Assy.

Mounted position: Electrical box

☐ Main specifications

XY motor, HDC PCB and Central IO PCB are connected.

■ List of Connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	4	Host PC		USB2.0 I/F
CN2	14	Not use		UART (x 2CH)
CN3	80	Debug board		For Debug
CN4	9	Not use		JTAG I/F(For CPLD writing or FPGA JTAG TEST)
CN5	80	DDRII PRAM PCB Assy		For Memory PCB
CN6	30	HDC PCB Assy	CN1	Head IO signal
CN7	20	Cover Switch		
CN8	12	HDC PCB Assy	CN5	Serializer I/F
CN9	20	Central IO PCB Assy	CN3	
CN10	10	Keyboad PCB	CN1	
CN11	6	Power supply		
CN12	6	Power supply (DC36V)	CN1~3	For remote control
CN13	10	LAN I/F		Ethernet (100BASE-TX)
CN14	4	XY Motor		XY Motor drive
CN15	10	XY Motor		XY Motor encorder
CN16	5	Not use		

*For the details of connecting destinations, refer to the block diagram.

■ Test point

Parts No.	Signal	Remarks
TP16-19	GND	

2.3.3 Main PCB Assy.

■ Fuse Specification

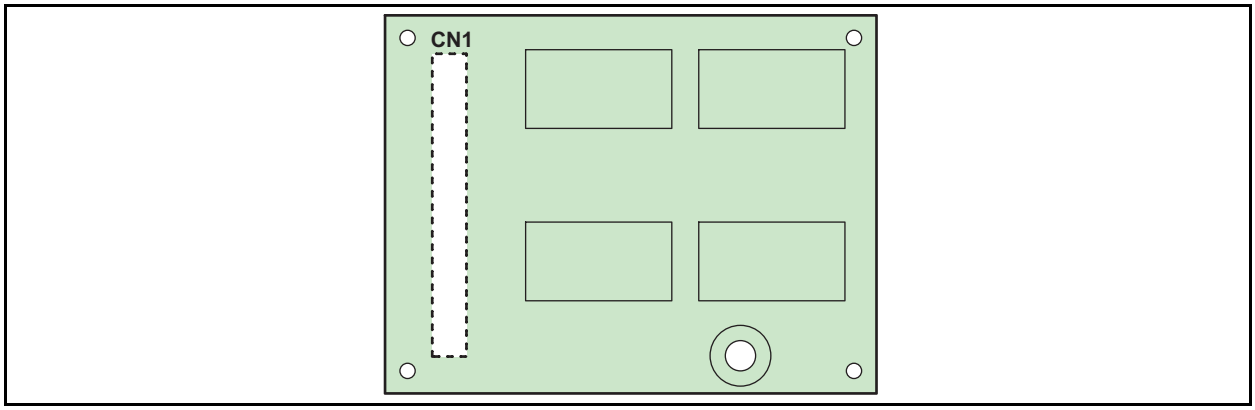
Parts No.,	Rate	Using Voltage	Remark
F1	6.3A AC125V, DC60V	36V	36V(CN6 First system)
F2	6.3A AC125V, DC60V	36V	36V(CN6 Second system)
F3	6.3A AC125V, DC60V	36V	36V(CN8 Second system)
F4	6.3A AC125V, DC60V	36V	36V(CN9)
F5	6.3A AC125V, DC60V	36V	36V(CN8 Second system)
F6	3.15A AC125V, DC60V	+5V	36V(CN9)

■ LED light on

Parts No.	Check points	Condition for lighting
D2	3.3V, F/W, CPU	It is used many purpose by F/W.
D3	3.3V, F/W, CPU	It is used many purpose by F/W.
D4	3.3V, F/W, CPU	It is used many purpose by F/W.
D5	3.3V, F/W, CPU	It is used many purpose by F/W.
D6	3.3V, F/W, CPU	It is used many purpose by F/W.
D7	3.3V, F/W, CPU	It is used many purpose by F/W.
D8	3.3V, F/W, CPU	It is used many purpose by F/W.
D9	3.3V, FW, CPU	It is used many purpose by F/W.
D11	3.3V, FPGA	It is light on when FPGA is completed to write down.*1
D12	37V, F1 check, CN6	Huse1 is normal and 37V current is on.
D13	5V, CN7 sensor check	Not used. Not light on.
D14	37V, F2 check, CN6	Huse2 is normal and 37V current is on.
D15	5V, CN7 sensor check	Not used. Not light on.
D16	37V, F4 check, CN9	Huse3 is normal and 37V current is on.
D17	5V,F6 check, CN9	Huse6 is normal and 5V current is on.
D18	3.3V, FPGA	It is used many purpose by F/W and FPGA.
D19	3.3V, FPGA	It is used many purpose by F/W and FPGA.
D20	3.3V, FPGA	It is used many purpose by F/W and FPGA.
D21	3.3V, FPGA	It is used many purpose by F/W and FPGA.
D32	3.3V, Ethernet connect	It is blinking, when it is connected yellow-LED and LAN cable, and it is sending and receiving the data.
D33	3.3V, Ethernet connect	It is light on, when it is connected green-LED and LAN cable.
D34	3.3V, Ethernet connect	It is light on, when it is connected to the network devices which is full duplex.
D35	5V, Power supply check	5V(CN11-5pins) current is on.*1
D36	37V, Power supply check	37V(CN11-2pins) current is on.
D37	37V, Power supply check	37V(CN11-1pins) current is on.

*1.Only D11 and D35 light on, when main power turn on and power turn off.Another LED light on, when power turn on.

2.3.4 DDRII PRAM(1GB) PCB Assy.



■ Outline

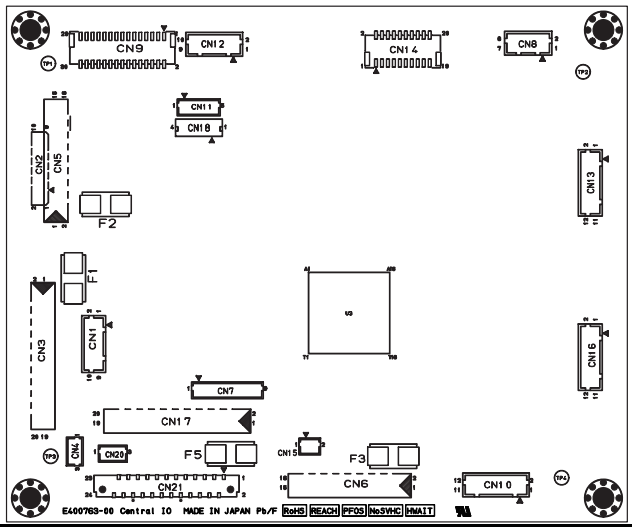
Unit name: DDRII PRAM(1GB) PCB Assy.

■ List of Connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	80	EPL Main PCB Assy	CN5	

*For the details of connecting destinations, refer to the block diagram.

2.3.5 Central IO PCB Assy.



■ Outline

Unit name: Central IO PCB Assy.

Mounted position: Electrical box

☐ Main specifications

Pump motor, Wiper motor, Sensor, Suction fan, Heater thermistor (etc.) are connected.

■ List of Connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	10	Not use		Spare
CN2	10	Not use		Connector is not mounted.
CN3	20	EPL Main PCB Assy	CN9	
CN4	3	Cascade short 13 Assy		
CN5	16	Not use		Spare
CN6	16	Not use		Spare
CN7	9	Not use		For Debug
CN8	8	Suction fan		
CN9	30	Clump sensor, Wiper sensor Media sensor		
CN10	12	Heater thermistor Non-contact temperature sensor		
CN11	5	Not use		Spare
CN12	10	Not use		Spare
CN13	12	Pump Motor		
CN14	20	Cleaning Solenoid Take up Motor		
CN16	12	Wiper Motor		
CN17	20	Ink system PCB Assy	CN3	
CN18	4	Cleaning cartridge		
CN20	3	Not use		Spare

*For the details of connecting destinations, refer to the block diagram.

2.3.5 Central IO PCB Assy.

■ Test point

Parts No.	Signal	Remarks
TP1-4	GND	

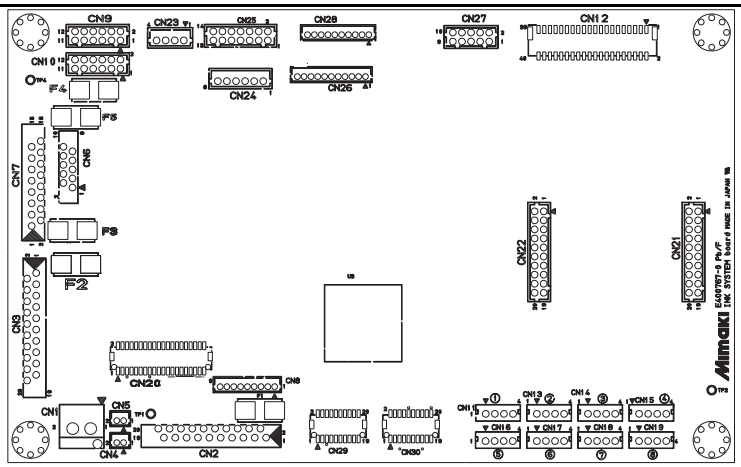
■ Fuse Specification

Parts No.,	Rate	Using Voltage	Remark
F1	7A	36V	
F2	3A	36V	Spare
F3	3A	36V	Spare
F5	3A	36V	

■ LED light on

Parts No.	Check points	Condition for lighting
D1	37V, CN1, CN3, F1 check	HuseF1 is normal and 37V current from CN3 is on.
D2	37V, CN5, F2 check	HuseF2 is normal and 37V current from CN3 is on.
D3	37V, CN6, F3 check	HuseF3 is normal and 37V current from CN3 is on.
D4	3.3V, FPGA	It is light on faintly when FPGA is completed to write down.
D11	5V, CN9 sensor check	Not used. Not light on.
D12	5V, CN9 sensor check	Not used. Not light on.
D13	5V, CN9 sensor check	Wiper sensor; light on when sensor is on, light off when sensor is off.
D14	5V, Keyboard check	Not used. Not light on.
D15	5V, CN9 sensor check	Not used. Not light on.
D21	5V, CN9 sensor check	Y origin sensor; light on darkly when sensor is on, light on brightly when sensor is off.
D22	5V, CN9 sensor check	Not used.It is always light on darkly。
D23	5V, CN9 sensor check	Feeding slack sensor; light on darkly when sensor is on, light on brightly when sensor is off.
D24	5V, CN9 sensor check	X origin sensor; light on darkly when sensor is on, light on brightly when sensor is off.
D29	37V, CN17, F5 check	HuseF5 is normal and current from CN3 is on.

2.3.6 Ink System PCB Assy.



■ Outline

Unit name: Ink System PCB Assy.

Mounted position: Ink system

☐ Main specifications

The items below are connected:

Ink Cartridge Solenoid (x8), Ink end sensor, Cartridge sensor, Ink LED PCB Assy, Ink supply pump, Diaphragm Pump, Roof Fan and Drying Fan.

■ List of Connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	2	Not use		Spare
CN2	20	Not use		Spare
CN3	20	Central IO PCB Assy	CN17	
CN4	2	Cascade short 12Assy		
CN5	2	Cover sensor		
CN6	10	Not use		Connector is not mounted.
CN7	16	Ink LED PCB Assy	CN1	
CN8	9	Not use		For Debug
CN9	12	Drying Fan		
CN10	12	Roof Fan		
CN11	4	Cartridge 1		
CN12	40	Ink Cartridge Solenoid(1-8) Liquid contact valve		
CN13	4	Cartridge 2		
CN14	4	Cartridge 3		
CN15	4	Cartridge 4		
CN16	4	Cartridge 5		
CN17	4	Cartridge 6		
CN18	4	Cartridge 7		
CN19	4	Cartridge 8		
CN20	40	Ink ID(1-8)		
CN21	20	Ink supply pump (1-5)		
CN22	20	Ink supply pump(6-8?		
CN23	4			
CN24	6	Cooling fan for Heater PCB		Spare

2.3.6 Ink System PCB Assy.

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN25	14	Voltage selector		
CN26	11	Not use		Spare
CN27	10	Heater PCB Assy	CN3	
CN28	10	Not use		Spare
CN29	20	Not use		Spare
CN30	20	Not use		Spare

*For the details of connecting destinations, refer to the block diagram.

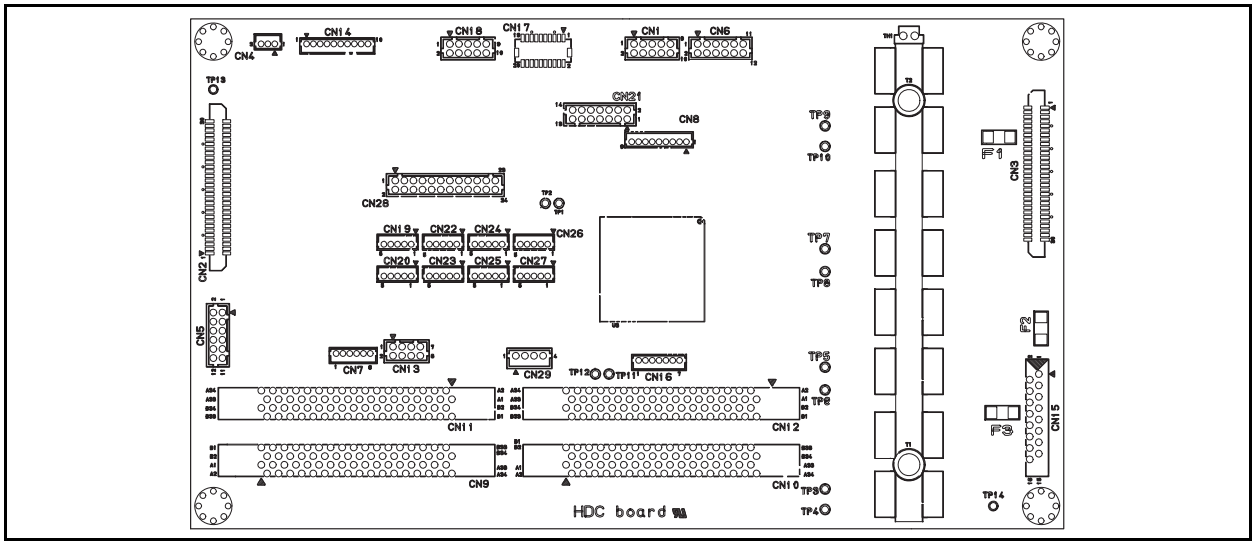
■ Test point

Parts No.	Signal	Remarks
TP1-4	GND	

■ Fuse Specification

Parts No.,	Rate	Using Voltage	Remark
F1	3A	36V	
F2	7A	36V	
F3	3A	36V	
F4	3A	Drying Fan	
F5	3A	Roof Fan	

2.3.7 HDC PCB Assy.



■ Outline

Unit name: HDC PCB Assy.

Mounted position: Mounted on the slider of printing part.

☐ Main specifications

Generates COM wave shape for driving head and transfers it to the head. In addition, monitors damper.

■ List of Connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	10	HDC power supply junper Assy		
CN2	30	EPL Main PCB Assy	CN6	
CN3	30	Not use		
CN4	3	Not use		
CN5	12	EPL Main PCB Assy	CN8	
CN6	12	Not use		
CN7	6	Not use		
CN8	9	Not use		For Debug
CN9	68	Head 1		
CN10	68	Head 2		
CN11	68	Head 1		
CN12	68	Head 2		
CN13	8	Not use		Spare
CN14				Nothing
CN15	16	Not use		Spare
CN16	7	Y origin sensor 150LPI encorder PCB Assy	CN1	
CN17	20	LED pointer Head height sensor Cutter		
CN18	10	Paper width sensor Jam sensor		
CN19	5	Damper sensor 1		
CN20	5	Damper sensor 2		
CN21	14	HDC fan, head cooling fan		
CN22	5	Damper sensor 3		

2.3.7 HDC PCB Assy.

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN23	5	Damper sensor 4		
CN24	5	Damper sensor 5		
CN25	5	Damper sensor 6		
CN26	5	Damper sensor 7		
CN27	5	Damper sensor 8		
CN28	24	Circulation valve		
CN29	4	Not use		

*For the details of connecting destinations, refer to the block diagram.

■ Test point

Parts No.	Signal	Remarks
TP3	COM1	
TP4	COM2	
TP5	COM3	
TP6	COM4	
TP7	COM5	
TP8	COM6	
TP9	COM7	
TP10	COM8	
TP13	GND	
TP14	GND	

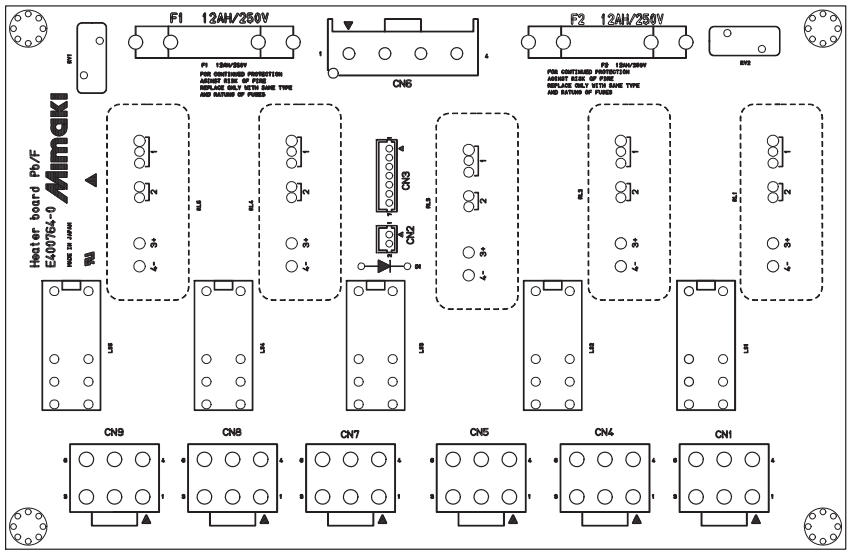
■ Fuse Specification

Parts No.,	Rate	Using Voltage	Remark
F1	5A	36V	CN3
F2	3.15A	36V	CN15(Spare)
F3	3.15A	5V	CN15(Spare)

■ LED light on

Parts No.	Check points	Condition for lighting
LED1	37V, F1 check, CN3	Huse1,37V and FPGA is normal.
LED2	3.3V, CPL	It is light on when CPLD is completed to write down.
LED3	37V, F2 check, CN15	Huse2,37V and FPGA is normal.
LED4	3.3V, FPGA	It is light off when FPGA is FIFO under.
LED5	5V, CN16 sensor check	Not used. Not light on.
LED6	3.3V, FPGA	It is light off when FPGA is over-through rate of wave shape.
LED7	3.3V, FPGA	It is light off when FPGA is command error.
LED8	3.3V, FPGA	It is light off when FPGA is COM voltage over.
LED9	5V, CN17 sensor check	Not used. Not light on.
LED10	5V, CN17 sensor check	Not used. Not light on.
LED11	CN28 (valve check)	Not used. Not light on.
LED12	CN28 (valve check)	Not used. Not light on.
LED13	CN28 (valve check)	Not used. Not light on.
LED14	CN28 (valve check)	Not used. Not light on.

2.3.8 Heater PCB Assy.



■ Outline

Unit name: Heater PCB Assy.

Mounted position: Mounted in the left cover.

☐ Main specifications

Performs ON/ OFF control of each heater of Pre/ Print/ After/ Drying.

■ List of Connectors

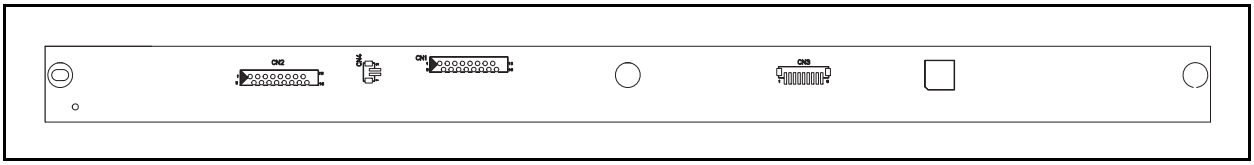
Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	6	Pre Heater		
CN2	2	Voltage Selector		
CN3	7	Ink system PCB Assy	CN27	
CN4	6	Print Heater		
CN5	6	Print Heater		
CN6	4	AC Switch Cable Assy		
CN7	6	Drying Heater		
CN8	6	After Heater		
CN9	6	Drying Heater		

*For the details of connecting destinations, refer to the block diagram.

■ Fuse Specification

Parts No.,	Rate	Using Voltage	Remark
F1	12A	AC100-240V	Heater
F2	12A	AC100-240V	Heater

2.3.9 INK LED PCB Assy.



■ Outline

Unit name: INK LED PCB Assy.

Mounted position: Front of the ink cartridge unit.

☐ Main specifications

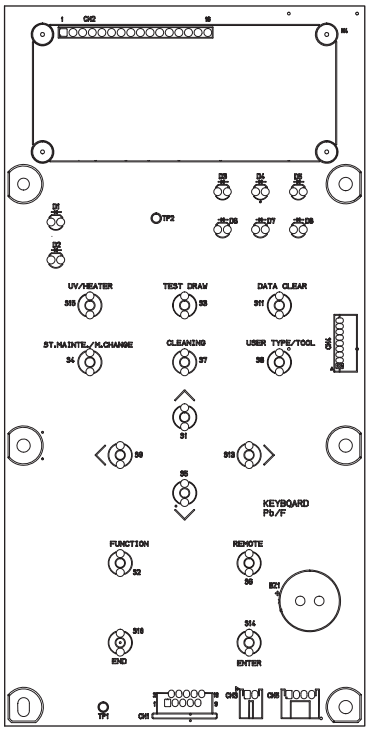
The FFC from the Ink System PCB assy is connected to this PCB. The LEDs (green, red) corresponding to each slot of the cartridge is displayed on the LED PCB assy.

■ List of Connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	16	Ink System PCB Assy	CN7	
CN2	16	Not use		Spare
CN3	9	Not use		For Debug
CN4	2	Not use		Spare

*For the details of connecting destinations, refer to the block diagram.

2.3.10 Key Board PCB Assy.



■ Outline

Unit name: Key Board PCB Assy.

☐ Main specifications

Has LCD with 2 lines of 20 characters and key switches.

■ List of Connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	10	EPL Main PCB Assy.	CN10	
CN2	16	LCD		
CN3	2	Not use		
CN4	9	Not use		
CN5	4	Remote switch Assy		

*For the details of connecting destinations, refer to the block diagram.

■ Test point

Parts No.	Signal	Remarks
TP1	GND	

■ LED light on

Parts No.	Check points	Condition for lighting
D17	5V Power switch,CN1,CN5	5V current is on.*1

*1.Main power on and off, D17 light on.

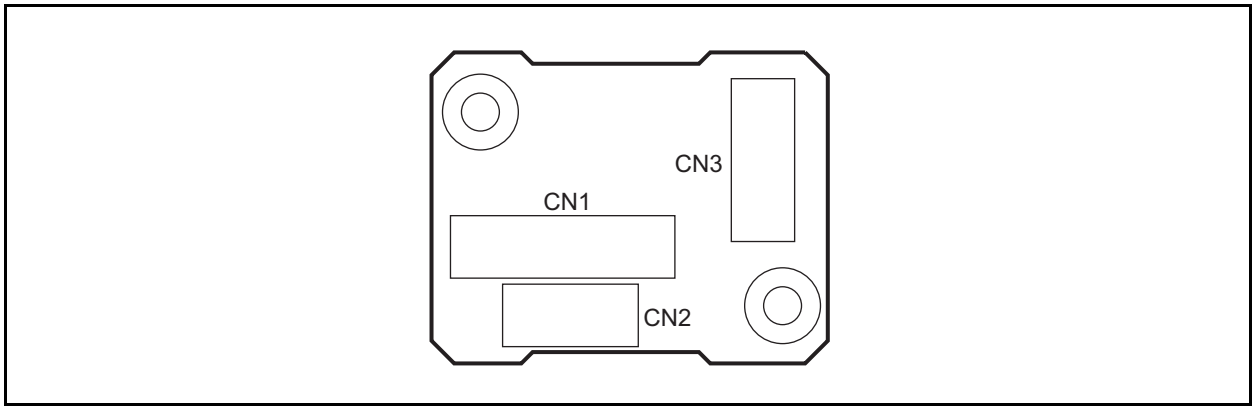
2.3.11 Positive Pressure sensor PCB Assy.(DELETED)

This item was deleted.

2.3.12 Negative Pressure sensor PCB Assy.(DELETED)

This item was deleted.

2.3.13 Take-up PCB Assy



■ Outline

Board name: Take-up PCB SK Assy

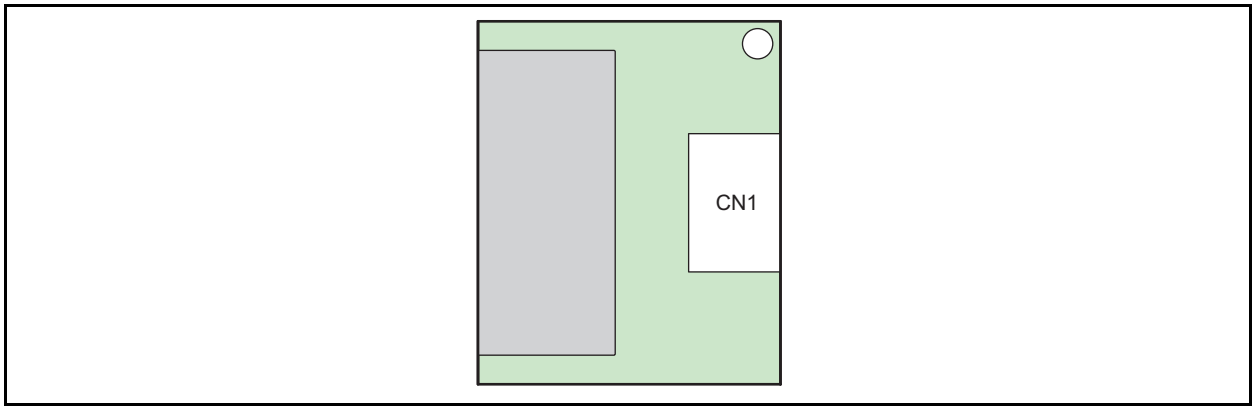
This PCB is connected to the station PCB assy via external connector, which can be attached or removed by users. It is used inside the take-up motor unit, as a junction between the Central IO PCB Assy and take-up motor.

■ List of connectors

CN No	Pin	Connected to:	Remarks
CN1	9	External Connector Cable	
CN2	5	Start, direction changing switch	
CN3	6	Take-up Motor	

*For the details of connecting destinations, refer to the block diagram.

2.3.14 Encoder PCB Assy



■ Outline

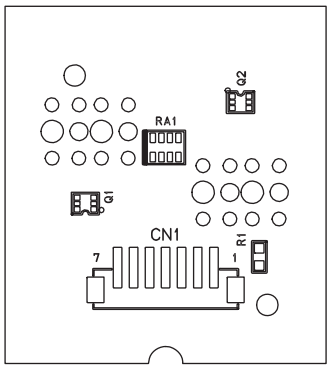
Board name: 150 LPI Encoder PCB Assy

■ List of connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	4	HDC PCB Assy	CN16	

*For the details of connecting destinations, refer to the block diagram.

2.3.15 Damper sensor PCB Assy



■ Outline

Board name: Damper sensor PCB Assy

☐ Main specifications

Monitors ink amount sensor of damper.

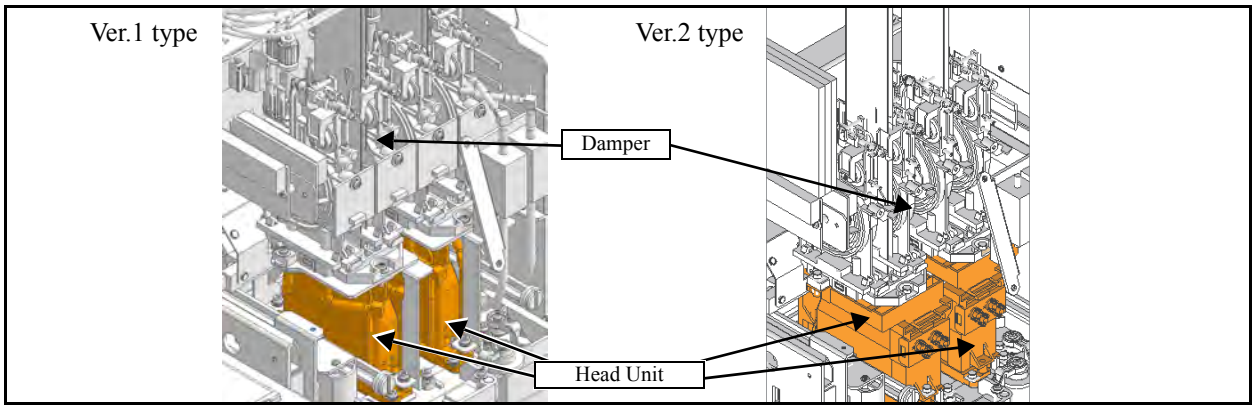
■ List of connectors

Parts No.	Pin	Connected to:*	Connecting destination CN	Remarks
CN1	7	HDC PCB Assy.		

*For the details of connecting destinations, refer to the block diagram.

Workflow

3.1.1 Replacement of the Head Unit



■ **List of replacement procedures**

1)When Head unit is Ver.1 type.

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the following covers. Right maintenance cover C, Right maintenance cover U, Y cover RR, Head cover	6.1.1
Cooling fan	2. ☐	Removal of cooling fan	Remove the cooling fan (screws x 2.)	6.2.3
Damper	3. ☐	Removing tube before the damper	Remove the fittings (x 8) at the top of damper. Remove the circulation tube of only W-ink damper.	
Ink	4. ☐	Ink discharge	Check the groove of damper valve opening shaft is vertical position. Discharge ink of the damper and the head.	6.2.3
Fluid Level Sensor	5. ☐	Disconnecting of the damper sensor PCB connector	Disconnect the sensor connector of the Fluid Level Sensor from damper sensor PCB.	6.2.3
Printing Head Unit Assy	6. ☐	Removing of the Head	Remove the target head with the damper.	
	7. ☐		Remove the damper and the damper adapter Assy.	
	8. ☐	Mounting of the head.	Mount the New Head.	
	9. ☐		Mount the damper and the damper adapter Assy.	
	10. ☐		Mount the head on the main body.	
Fluid Level Sensor	11. ☐	Connecting of the sensor connector	Connect the connector of the Fluid Level Sensor to damper sensor PCB.	
Damper	12. ☐	Connecting tube to the damper	Attach the fittings (x 8) at the top of damper. Connect the circulation tube of only W-ink damper.	
Ink	13. ☐	Ink filling in the head	Perform ink filling into the head and the damper.	
Cooling fan	14. ☐	Removal of cooling fan	Attach the cooling fan (screws x 2.)	6.2.3
Adjust	15. ☐	Check of the head ID	Manual entry is not necessary. As it has been stored in the head memory, it can be registered automatically.	
	16. ☐	Head Adjust	Perform tilt adjustment and back/ forth adjustment.	4.2.1
	17. ☐	Correction of dot position	Perform dot position correction.	4.2.2
Covers	18. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

3.1.1 Replacement of the Head Unit

2)When Head unit is Ver.2 type.

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the following covers. Right maintenance cover C, Right maintenance cover U, Y cover RR, Head cover	6.1.1
Cooling fan	2. ☐	Removal of cooling fan	Remove the cooling fan (screws x 2.)	6.2.3
Damper	3. ☐	Removing tube before the damper	Remove the fittings (x 8) at the top of damper. Remove the circulation tube of only W-ink damper.	
Ink	4. ☐	Ink discharge	Check the groove of damper valve opening shaft is vertical position. Discharge ink of the damper and the head.	6.2.3
Fluid Level Sensor	5. ☐	Disconnecting of the damper sensor PCB connector	Disconnect the sensor connector of the Fluid Level Sensor from damper sensor PCB.	
Printing Head Unit Assy	6. ☐	Removing of the Head	Remove the target head with the damper.	
	7. ☐		Remove the damper.	
	8. ☐		Remove the adapter maintenance Assy.	
	9. ☐	Mounting of the head.	Mount the New Head.	
	10. ☐		Reassemble the head Assy. (In case that only head 1 (left head) is replaced.)	
	11. ☐		Mount the damper.	
	12. ☐		Mount the head on the main body.	
Fluid Level Sensor	13. ☐	Connecting of the sensor connector	Connect the connector of the Fluid Level Sensor to damper sensor PCB.	
Damper	14. ☐	Connecting tube to the damper	Attach the fittings (x 8) at the top of damper. Connect the circulation tube of only W-ink damper.	
Ink	15. ☐	Ink filling in the head	Perform ink filling into the head and the damper.	4.2.21
Cooling fan	16. ☐	Removal of cooling fan	Attach the cooling fan (screws x 2.)	6.2.3
Adjust	17. ☐	Check of the head ID	Manual entry is not necessary. As it has been stored in the head memory, it can be registered automatically.	
	18. ☐	Head Adjust	Perform tilt adjustment and back/ forth adjustment.	4.2.1
	19. ☐	Correction of dot position	Perform dot position correction.	4.2.2
Covers	20.☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1

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.

3.1.1 Replacement of the Head Unit

■ Head return method

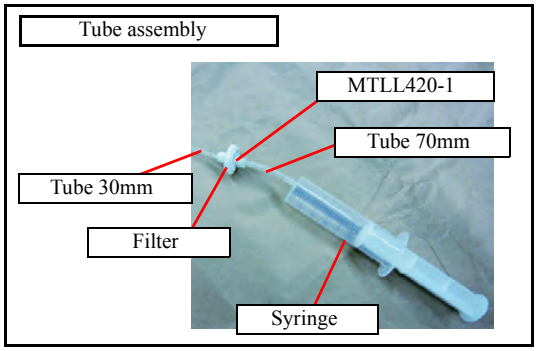
In case of replacement GEN5 head with malfunction, clean the head in accordance with the following and return it.

☐ Applicable model

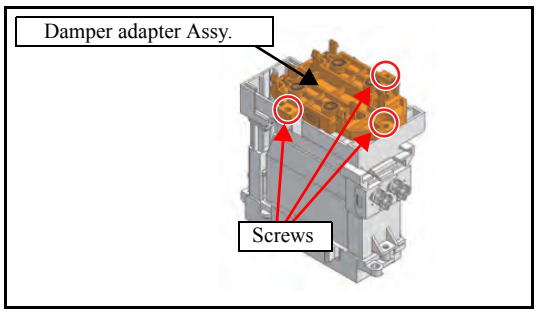
No.	Model	Head type	Cleaning liquid (parts code / parts name / contents)			Remarks
1	JV400-LX	Tube (Ver.1)	MP-M014428	Maintenance liquid 04	200ml	
		Molded type (Ver.2)				

☐ Necessary material

No.	Parts code	Parts name	Quantity	Remarks
1	MP-TP-SX 2*4	Elastomer tube	About 300mm	For jointing to the supply path of JV400-LX
2	MP-2-4031-04	Disposable syringe	1pcs	Syringe Assy. (JV400 cleaning kit Ⅱ) is available
3	-	Filter (10μm)	1pcs	Use at the time of cleaning
4	MP-M014428	Cleaning liquid 04 (200ml bottled)	About 200ml	
5	Fitting	MTLL420-1	2pcs	
6	Cleaning paper		Several sheets	



☐ Work Procedure for Head Cleaning



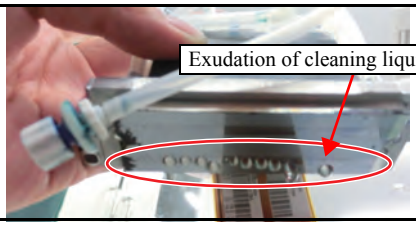
1. In case of Ver.2 type, remove the damper adapter Assy.
2. Discharge remained ink inside the head with syringe.
3. Clean the air purge path and nozzle until a color becomes clear.
   As a rough guide, each path use 50ml cleaning liquid.

3.1.1 Replacement of the Head Unit

IMPORTANT

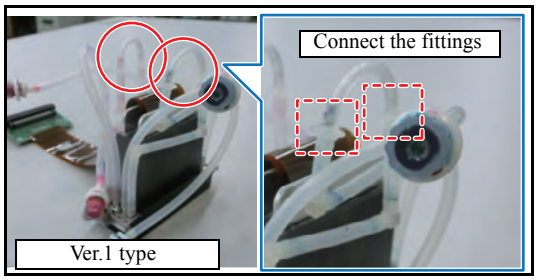
- Be careful of injection: Spout out the cleaning liquid slowly from nozzle, do not spout out like shower. Liquid feeding speed is 0.5ml/s.
- Do not attach the filter, when fill the cleaning liquid to the syringe from bottle.

4. Wipe the nozzle surface with cleaning paper dipped with maintenance liquid 04.
   Perform cleaning it that no ink attachments on the nozzle surface.
5. Fill the cleaning liquid from ink supply pump.



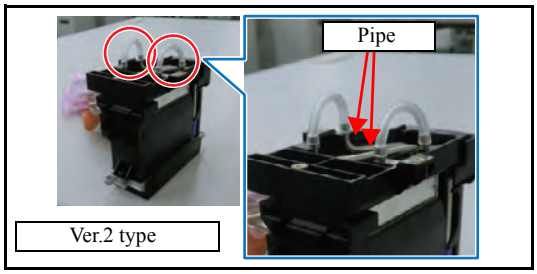
In case of above, exudate the cleaning liquid from nozzle.

6. Cap the ink supply port.
   ●Cut elastomer tube to about 50mm.
   - Ver.1 type: Connect the each fitting.

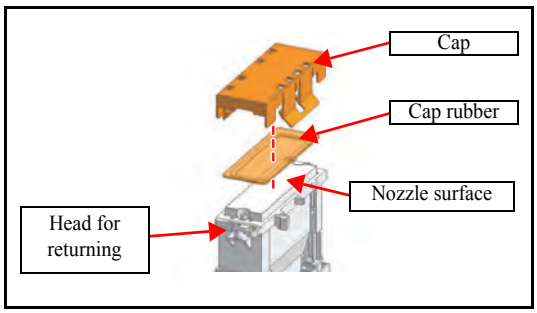


   - Ver.2: Remove the Head adopter, connect the each SUS pipe with the tubes.

   Removed Head adopter is combined by blister pack.



7. Protect the nozzle surface of the return head by attaching the cap and cap rubber that are attached to new head Assy.
8. Head for returning is packed by blister pack and packing box.
   Packing box (empty) which used for sending the new head is reused for returning.



3.1.1 Replacement of the Head Unit

☐ Requirement information

List the following information as much as possible.

Defective Head Information

Damaged date		
Reported date		Reported by :
Dealer		
Head info.	Head name	
	Head serial No.	
	Position No. of a defective head	
Machine info.	Model	JV400-LX JV400-SUV JFX500 UJV500 TS500 TX500 YG500 SWJ-320
	Machine No. / FW version	/ FW Ver.
	Changed ink kind and ink color set	No / Yes (->)
	RIP.	RLP. Ver. / Other RIP
	Resolution	
Ink info	Kind of ink	LX100, LX101, SU100, LUS150, LUS200, Ac300 LH100 , Rc300 , Sb300 , CS100 , PR100, ( )
	Defective ink color	K ,Ma ,Cy ,Ye ,Or ,G ,W , Bl ,Lb ,Lm ,Lc,Re ,Lk , Cl, Pr
	Ink Lot No.	
Media Info.	Kind of media	
	Emboss	Yes / No
	The print exceeding the media edge	Yes / No
Environment	Head gap	
	Temperature and humidity	℃ %
	Dust (Yes : its kind)	No / Yes (
	Ambient light to machine (Yes : its situation)	No / Yes (
	Fixing Jig (Yes :Color ・Shine)	No / Yes (Color : Shine : Yes / No)
	Used specific chemicals around the machine (Yes :Kind)	No / Yes (Kind :)
	Remarks (Another information)	
The states of problem detections	Did a media jam occur?	Yes / No
	Did the problem occur after changing a media?	Yes / No
	The date of the previous head replacement (Head of the same position)	
	An unused period was more than a week.	No / Yes (days)
	Did the machine is used without covers?	Yes / No
	User adjusted the head individually. (Head voltage / Change of waveform)	No / Yes (Contents of adjustment :)
	The states of nozzle drop out	Random / Specified / Plenty
Restorative work info.	Did you perform the following works before head replacement?	(Please check to the below.)
	Leak check	☐
	Cleaning	☐
	Wiping nozzles directly	☐
	Ink filling	☐
	Pressure feeding of cleaning solution	☐
	Air pressure adjustment	☐
Request and suggestion (Operation or procedure)	Warranty ☐ (Please fill in a check mark if you require a warranty.)	
Check for accessories	☐ Defective head ☐ Test print ☐ Sample of defective print ☐ The data of problem detections (Backup data)	

3.1.1 Replacement of the Head Unit

☐ Attachment article at the time of the return

If no articles are attached at present, forward them at an early date. Otherwise the investigation will be delayed.

1:Used head (with trouble)
2:Test prints (from which the nozzle status can be determined)
3:Samples (outcomes) from which the trouble can be determined *If the user is able to provide them
4:Data from the time when the trouble occurred *If the user is able to provide them
5:Check sheet

■ Reassemble of the Head unit (Refer to "Manual for Maintenance Head".)

Head unit Assy. (kit) for maintenance is assembled for Head 2 at the time of shipment.

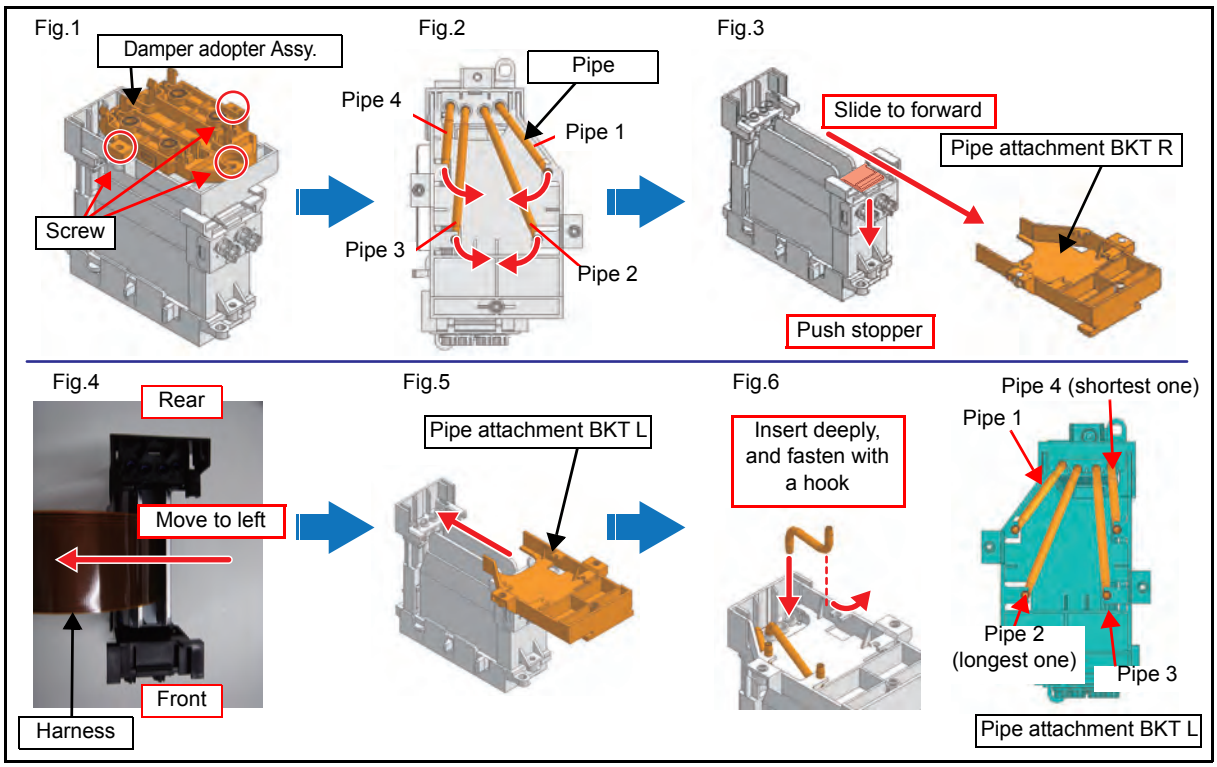
IMPORTANT
1 : When Head 2 is replaced, the head unit for replacement is just used.
2 : When Head 1 is replaced, reassembly of the head and leak check is necessary in accordance with the following.Refer to "4.3.8 Head Leakage Check".

○ Reassembly from for Head2 to for head1

1.) Remove the **Damper adopter Assy.** (3 screws, refer to Fig.1.)
2.) Remove the four **pipes**. (Release from hook, and pull out to above slowly. Refer to Fig.2.)

IMPORTANT
In case of reassembling, do not replace top and bottom of pipe in principle, though the pipe becomes the top and bottom symmetric shape.

3.) Remove the **Pipe attachment BKT R**. (Push the stopper and slide the BKT to forward. Refer to Fig.3.)
4.) Move the harness of the Head from right to left. (Refer to Fig.4.)



3.1.1 Replacement of the Head Unit

5.) Attach the **Pipe attachment BKT L**.(Refer to Fig.5.)

6.) Attach the **Pipes**. (Refer to Fig.6.)

Insert straight the pipe from the top, without damaging the rubber with edge of the SUS pipe.

Be careful that position of the pipe is different with head 1 or head 2 (left and right are reversed).

7.) Attach the **Damper adopter Assy.**(Refer to Fig.1.)

Insert straight the pipe from the top, without damaging the rubber with edge of the SUS pipe, and fix with screws

■ 3. Replacement to the Air purge base BKT

When both heads are used with Ver.1 type (Tube type) Head unit and when head is replacing to Ver.2 type (molding type) Head unit, remove the **Lure lock BKT and** replace to the **Air purge base BKT** in accordance with the following.

☐ Outline of the Air purge base BKT

- When Ver.2 type (molding type) Head unit is only used・・・Attach the **Air purge BKT** to left position of the Air purge base BKT, and keep it. (1 screw, refer to Fig 7.)
- When both Ver.1 type (tube type) and Ver.2 type (molding type) Head unit are used・・・Attach the **Air purge BKT** to the position of Ver.1 type (tube type) Head unit. (1 screw, refer to Fig.8.)

Fig.7 In case of both heads are Ver.2

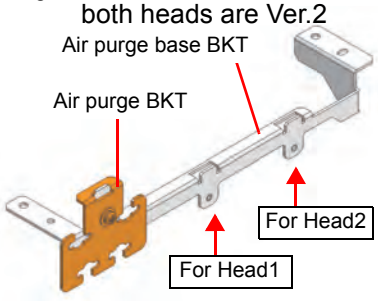
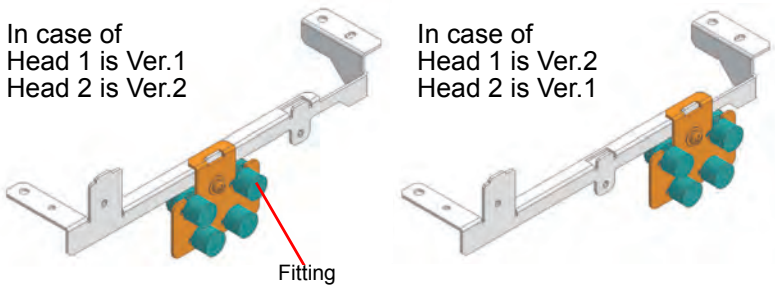


Fig.8



☐ Replacement from the Lure lock BKT to the Air purge base BKT

1.)Remove the **Fitting** from the **Lure lock BKT**. (8x, refer to Fig.9.)

2.)Remove the **Lure lock BKT**.

3.)Attach the fittings to the **Air purge BKT**. (When one head isVer.1 type one only. In case of Fig.7. attachment of the fittings is not necessary.)

4.)Attach the **Air purge BKT** to the **Air purge base BKT**. (Refer to Fig.7, 8.)

5.)Attach the **Air purge base BKT**. (2 screws, refer to Fig.10.)

IMPORTANT

Pass two **Circulation tubes** through between the **Air purge base BKT** and the **Head unit** when the Air purge base BKT is attached. (Refer to Fig.11.)

Fig.9

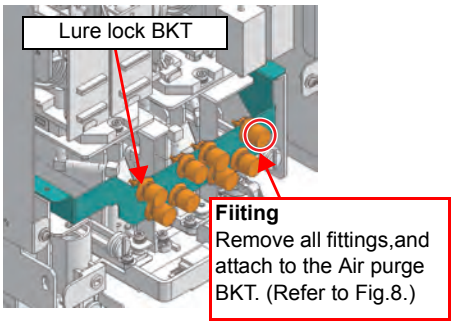
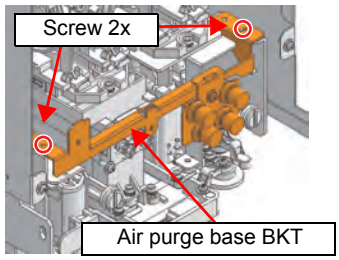
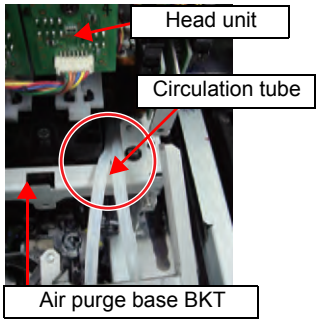


Fig.10

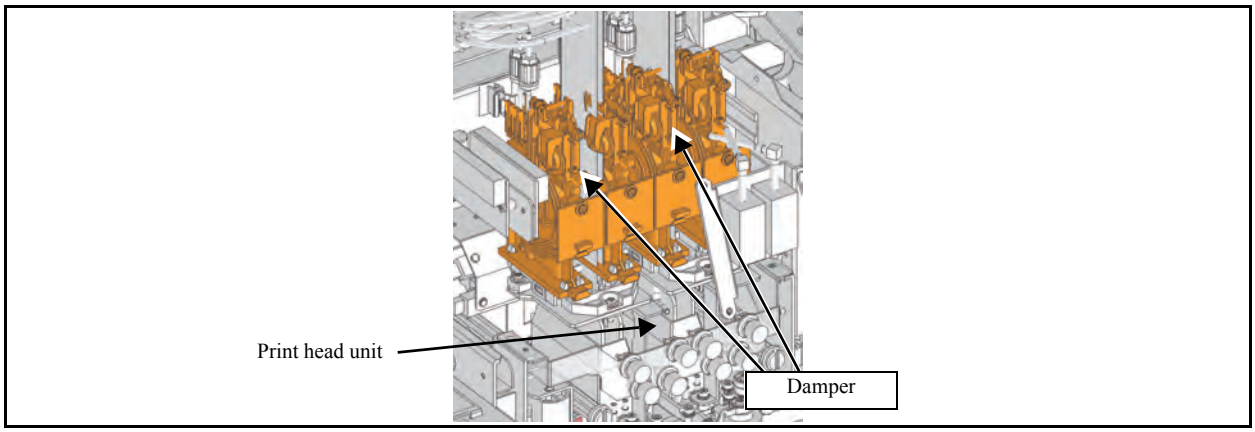


Above figure indicate when the head2 is Ver.1 type. Other case is same way.

Fig.11



3.1.2 Replacement of the Damper



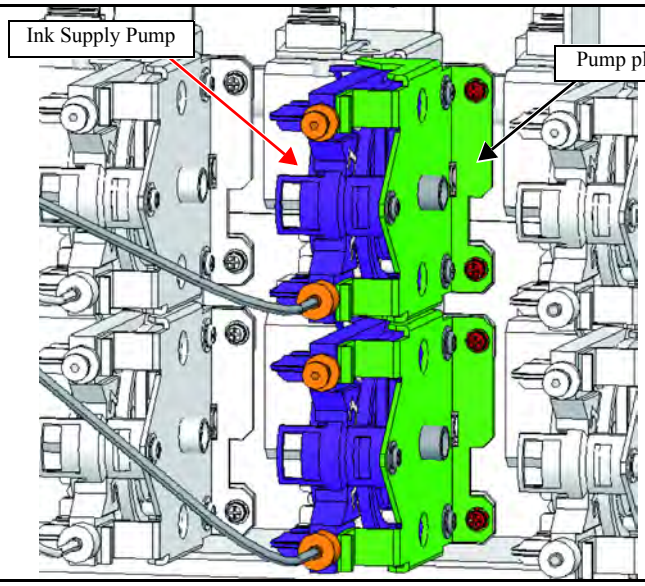
■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the following covers. Right maintenance cover C, Right maintenance cover U Head cover	6.1.1
Cooling fan	2. ☐	Removal of cooling fan	Remove the cooling fan (screws x 2.)	6.2.2
Damper	3. ☐	Removing tube before the damper	Remove the fittings (x 8) at the top of damper.	
Ink	4. ☐	Ink discharge	Check the groove of damper valve opening shaft is vertical position. Discharge ink of the damper and the head.	4.2.20
Fluid Level Sensor	5. ☐	Remove the damper sensor PCB	Remove the damper sensor PCB from damper (screw x1).	6.2.2
Damper	6. ☐	Removing of the damper	Remove the target damper from damper adapter Assy. Remove the circulation tube of only W-ink damper.	
	7. ☐	Mounting of the damper	Mount the new damper to damper adapter Assy.	
Fluid Level Sensor	8. ☐	Attach the damper sensor PCB	Attach the damper sensor PCB to damper (screw x 1).	
Damper	9. ☐	Connecting tube to the damper	Attach the fittings (x 8) at the top of damper. Connect the circulation tube of only W-ink damper.	
Ink	10. ☐	Ink filling in the head	Perform ink filling into the head and the damper.	4.2.21
Cooling fan	11. ☐	Removal of cooling fan	Attach the cooling fan (screws x 2.)	6.2.2
Covers	12. ☐	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 Ink Supply Pump



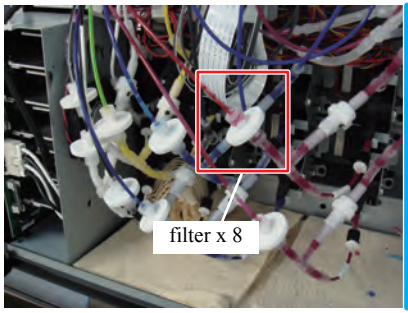
■ **List of replacement procedures**

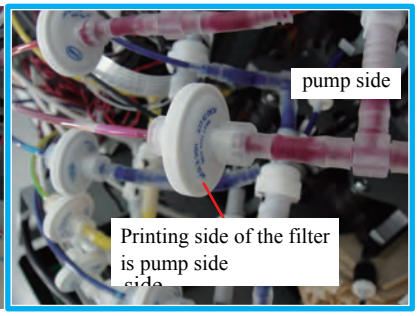
Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the “Rear cover - LU”.	6.1.1
Cartridge Assy	2. ☐	Removal of the joint.	Remove the joint of the pump.	6.2.9
	3. ☐	Protect ink leak	Attach the fitting to the tube of the damper side so that ink dose not leak it.	
	4. ☐	Removal of the pump.	Remove two screws of the pump sheet metal and the pump.	
	5. ☐	Mounting of the pump.	Mount the New pump.	
	6. ☐	Mounting of the joint.	Mount the joint which has been removed.	
Ink	7. ☐	Ink filling	Perform ink filling into the head and the damper.	4.2.21
Covers	8. ☐	Mounting of the covers.	Mount the covers that have been removed.	6.1.1
Ink	9. ☐	Air purge of the ink path	Perform air purge of the subject ink path with “FILL UP INK” in MAINTANCE menu. Refer to OPERATION MANUAL “Filling the white ink”(P.4-37 - P.4-39).	

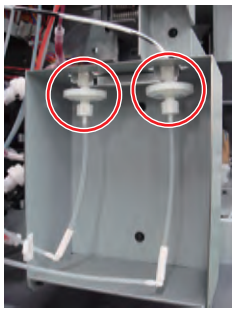
Caution

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.

3.1.4 Replacement of the filter







■ **List of replacement procedures**

Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of cover	Remove the Rear cover LU.	6.1.1
Filter	2. ☐	Replacement of the Filter.	Remove the Filter.	
	3. ☐		Mount the new Filter.(Printing side of the filter is pump side.)	
Covers	4. ☐	Mounting of the cover	Mount the cover that have been removed.	6.1.1
Ink	5. ☐	Air purge of the ink path	Perform air purge of the subject ink path with “FILL UP INK” in MAINTANCE menu. Refer to OPERATION MANUAL “Filling the white ink”(P.4-37 - P.4-39).	

Caution

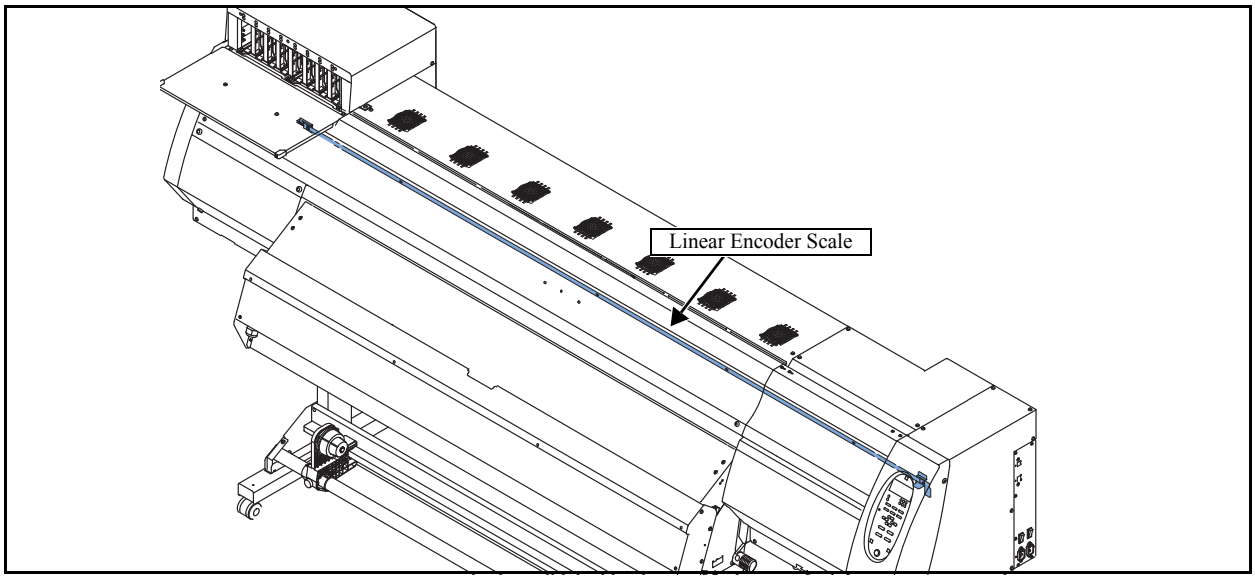
Be sure to wear protective glasses and working gloves during the operation.
Ink may get into your eyes depending on the working condition, or hand skin may get rough if you touch the ink.

Caution

Do not raise up the tube end to the damper side, when filter is removed.
(It protect from damper expansion by ink back flow from tube.)

Workflow

3.2.1 Replacement of the Linear Encoder Scale



■ **List of replacement procedures**

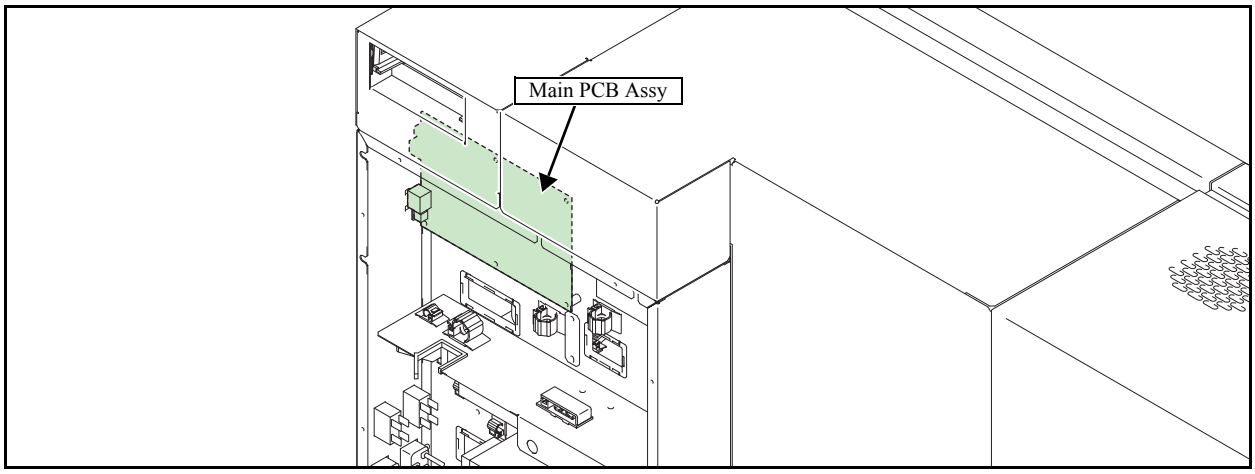
Item	Work operation		Description	Ref.
Covers	1. ☐	Removal of covers, etc.	Remove the following covers. Front cover 200L, Right maintenance cover U, Right maintenance cover C, Left maintenance cover	6.1.1
Linear Encoder Scale	2. ☐	Removal of the linear encoder scale.	Remove the linear encoder scale.	6.3.5
	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.	4.3.5 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.

Workflow

3.3.1 Replacement of the 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 200.	6.1.1
Main PCB Assy	3. ☐	Removal of the main PCB assy.	Remove the main PCB assy.	6.4.2
	4. ☐	Mounting of the main PCB assy.	Mount the 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

Adjustment

Adjustment

4.2.1 HEAD ADJUST

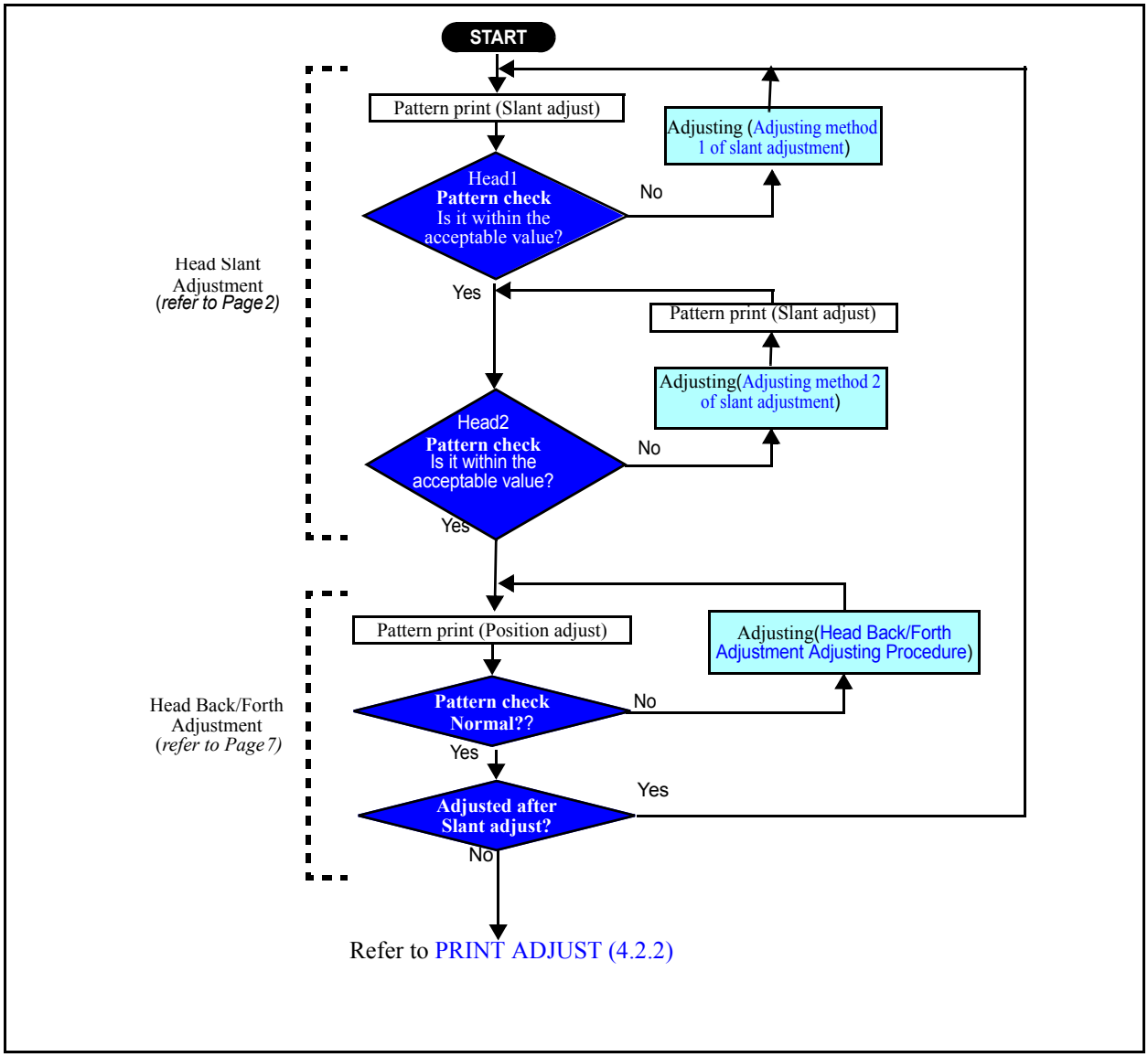
■ Outline

On the drawing with the built-in patterns, the slant and the back and forth positions of each head are checked and mechanically adjusted.

IMPORTANT

- [HEAD ADJUST] consists of the slant adjustment and back/forth adjustment. When either one of the above is adjusted, be sure to check the other. If any adjustment is required, repeat both of the adjustments alternately until any adjustment is not required on both.
- When the head adjustment is incorrect, be sure to execute the adjustment since it affects other parameter adjustments.

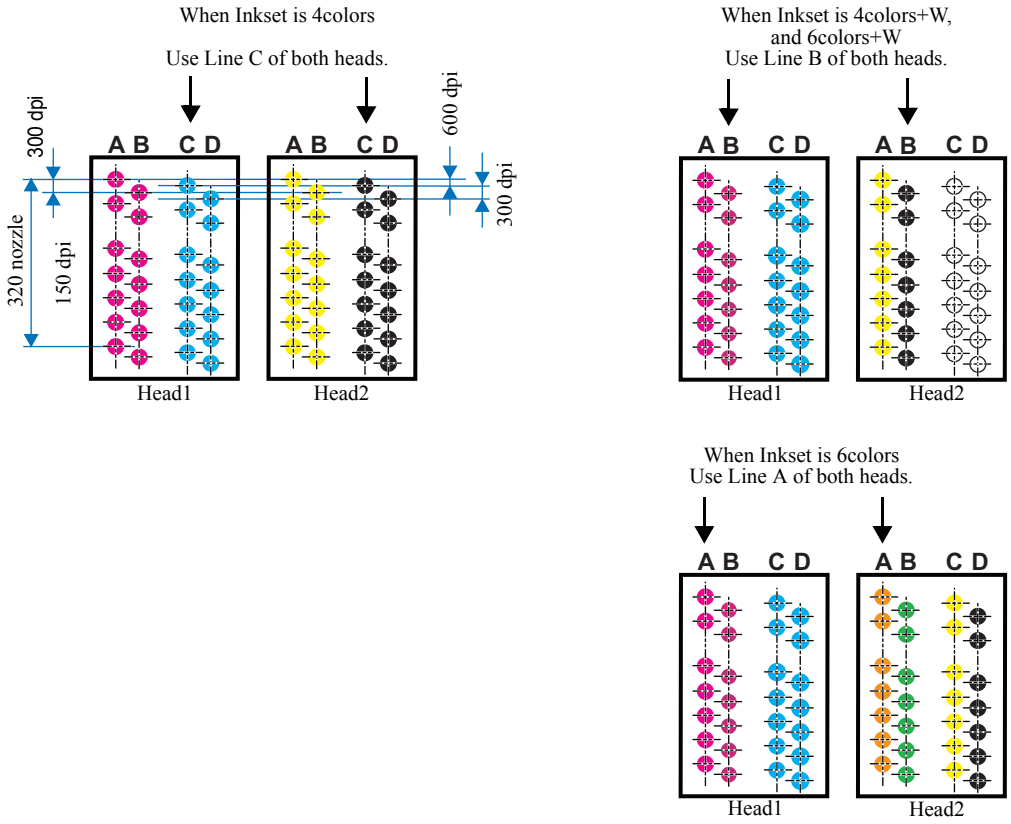
■ Head Adjusting Flow



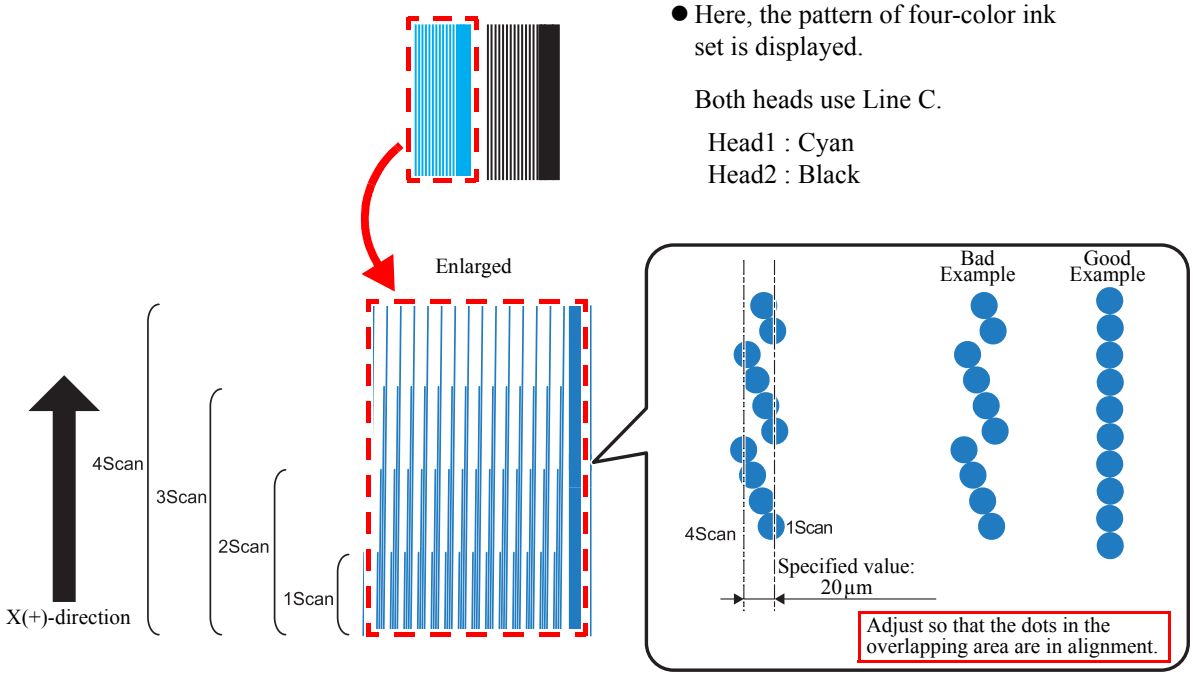
4.2.1 HEAD ADJUST

■ Outline of Head Slant Adjustment

☐ Using nozzle



☐ Patern of Slant adjust



● Here, the pattern of four-color ink set is displayed.

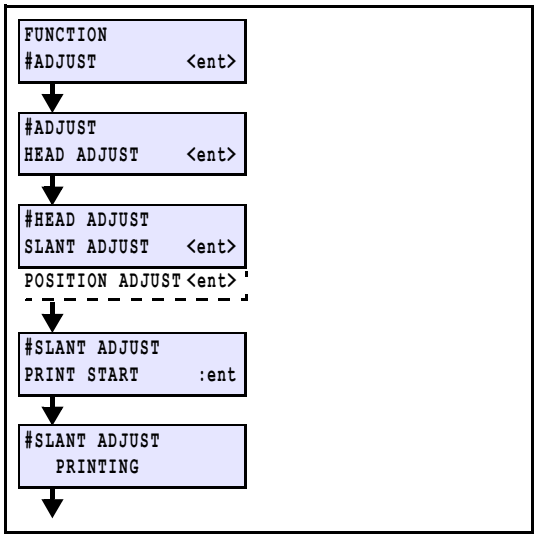
Both heads use Line C.

Head1 : Cyan
Head2 : Black

1 2 3 4 5 6 7 8

4.2.1 HEAD ADJUST

■ Procedures of Head Slant Adjustment

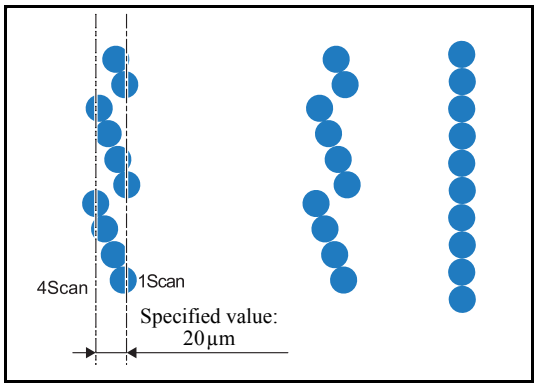


1. Set Media at X-origin.

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

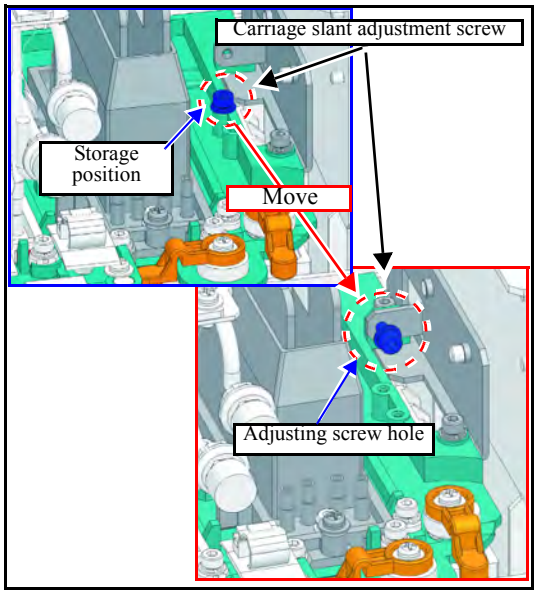
2. Display [#ADJUST] -> [HEAD ADJUST] -> [SLANTadjust].

3. Press the [ENTER] key to draw the pattern.
   [ENTER]:To start Pattern drawing
   [◀][▶][▲][▼] :Jog mode starts (drawing origin moving)



4. Confirm whether quantity of biggest gap by each scan is settled within 20µm.
   1) Confirm a pattern of head 1.
      If quantity of gap is beyond the tolerance level, perform "Adjusting method 1 of slant adjustment".
   2) If head 1 is the tolerance level, Confirm a pattern of head 2.
      If quantity of gap is beyond the tolerance level, perform "Adjusting method 2 of slant adjustment".

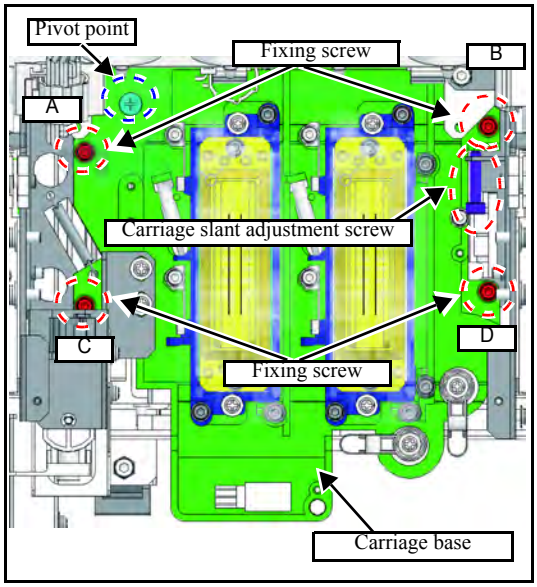
■ Adjusting method 1 of slant adjustment



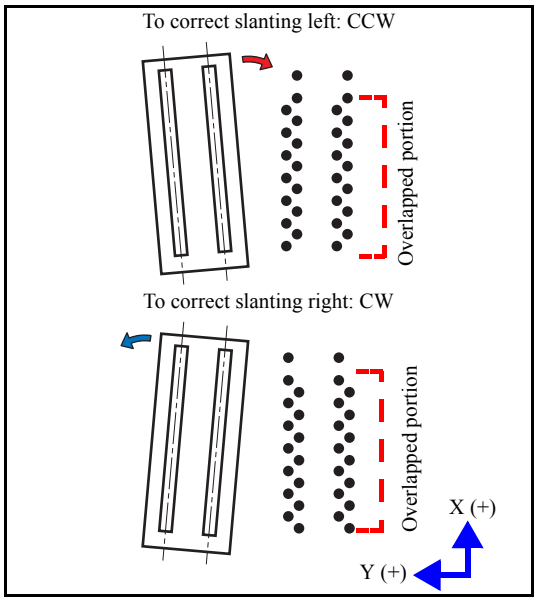
1. Move the carriage slant adjustment screw from the storage position to the adjusting screw hole.

> IMPORTANT
> ● Attach the slant adjustment screw on the storage position as indicated in the upper left photo except when performing adjustment.
> ● Be sure to return it after adjustment has been completed.

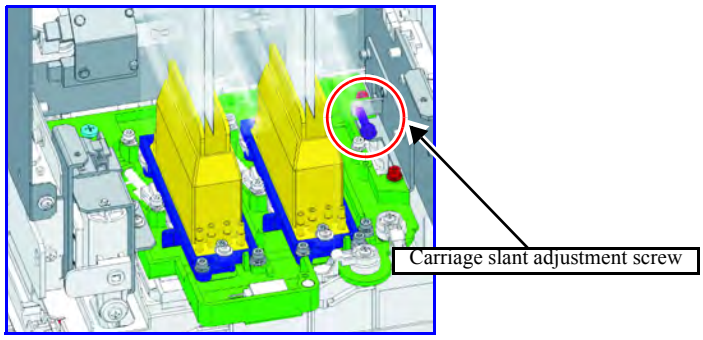
4.2.1 HEAD ADJUST



2. Loosen the fixing screws(x4) of the carriage base.



3. Rotate the Carriage slant adjustment screw according to the amount of displacement to adjust the slant.



Direction of turning the Micro Adjuster
To correct slanting left: Turn counterclockwise (CCW).
To correct slanting right: Turn clockwise (CW).

4. Tighten the loosened fixing screws(x4) of the carriage base.

Tighten the fixing screws in the following order:
[A] -> [C] -> [B] -> [D]

IMPORTANT
Tighten the screws with care that the head is not shifted from the correct position.

5. Re-draw the pattern and check that slant is 20µm and less.

IMPORTANT
Repeat “Adjusting” -> “Patterns Drawing” until no more displacement is available.

6. When adjustment has been completed, return the carriage slant adjustment screw to the storage position.

4.2.1 HEAD ADJUST

■ Adjusting method 2 of slant adjustment

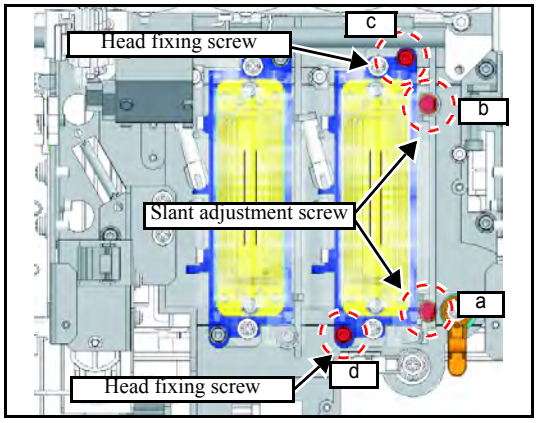
This is the method for adjusting slant of the head 2 only.

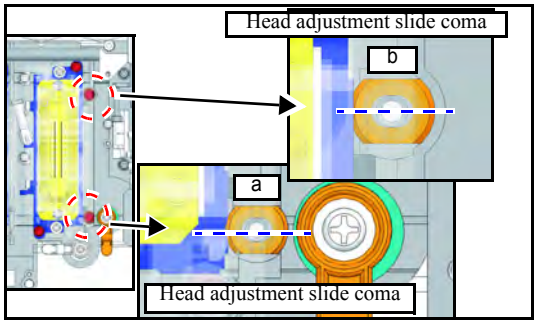
- For checking slant, refer to the Outline of Head Slant Adjustment *(p. 2)*.

IMPORTANT

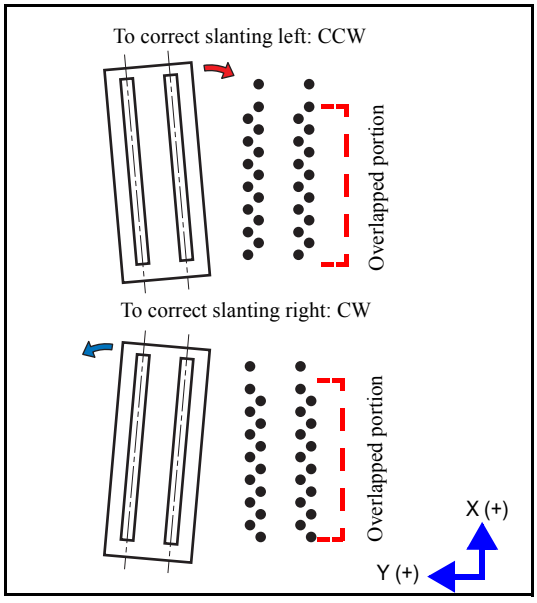
- Before performing slant adjustment for the head 2 only, be sure to check/ adjust the head 1. As slant adjustment of the head 1 is adjustment to move entire carriage, slant of the head 2 changes accordingly.

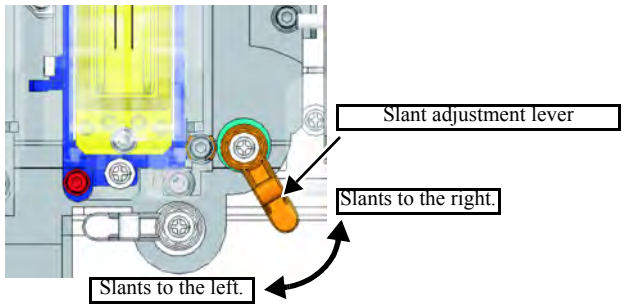
1. Adjust slant of the head 1 with the Adjusting method 1 of slant adjustment *(p. 3)*.
2. Loosen the Head fixing screw ”c” and “d”.





3. Remove the slant adjustment screw “a”and “b”
4. Rotate the head adjustment slide coma by 90 degrees and turn it to a side.
   Use a standard screwdriver.
5. Tighten the slant adjustment screw “b”.
6. Temporarily tighten the slant adjustment screw “a” (not so strong that the coma cannot slide).
7. Rotate the slant adjustment lever depending on the slanting amount, and adjust the amount.





8. Fully tighten the slant adjustment screw “a” temporarily tightened.
9. Tighten the loosened Head fixing screw ”c” and “d”.

IMPORTANT

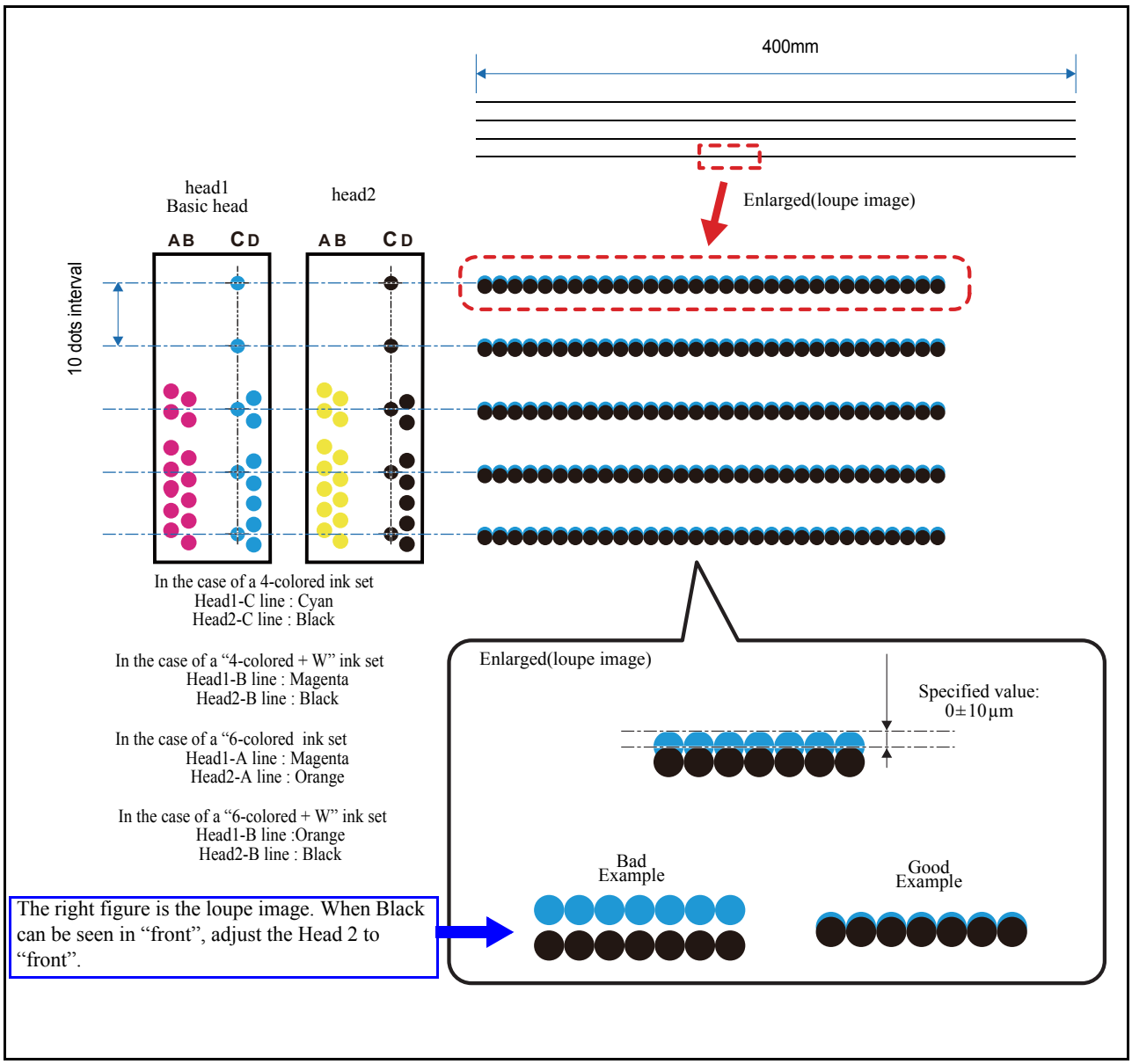
Tighten the screws with care that the head is not shifted from the correct position.

4.2.1 HEAD ADJUST

10. Re-draw the pattern and check that there is no slant.

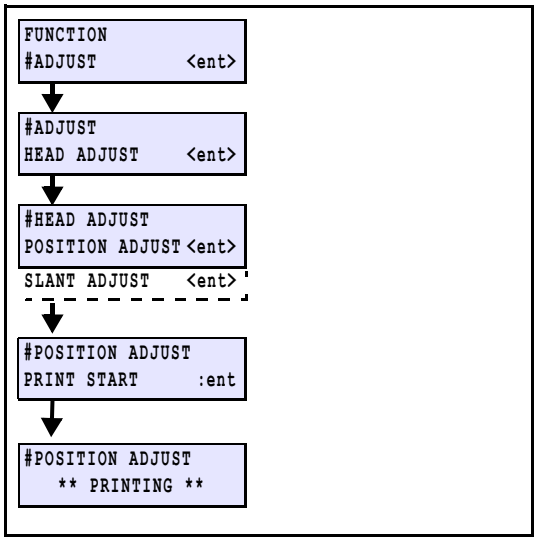
IMPORTANT: Repeat “Adjusting” -> “Patterns Drawing” until no more displacement is available.

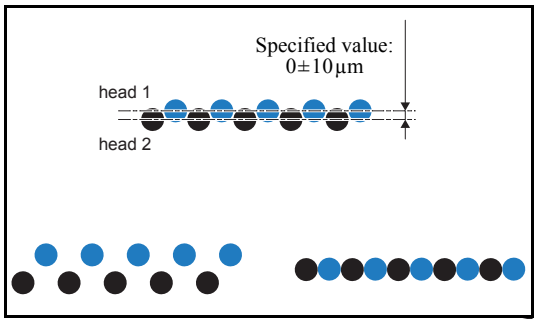
■ **Head Back/Forth Adjusting Patterns**



4.2.1 HEAD ADJUST

■ Procedures of Head Back/Forth Adjustment





1. Set Media at X-origin.

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

2. Display [#ADJUST] -> [HEAD ADJUST] -> [POSITION ADJUST].

3. Press the [ENTER] key to draw the pattern.
   [ENTER]: To start Pattern drawing
   [◀][▶][▲][▼] :Jog mode starts (drawing origin moving)

4. Check if the space of pattern 1 is in compliance with the specification.

> ● Be careful that back and forth positions of dots seen with a loupe is opposite from the actual position.

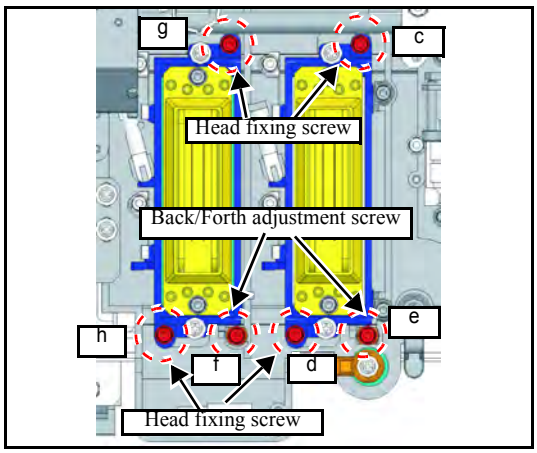
Specified value: 0 ± 10 µm

*If the pattern is out of the specification, execute the Head Back/Forth Adjustment Adjusting Procedure *(p. 7)*.

> IMPORTANT
> If the adjustment with [SLANT ADJUST] or [POSITION ADJUST] is executed, check them again from the beginning then repeat this process until any adjustment is not required on both.

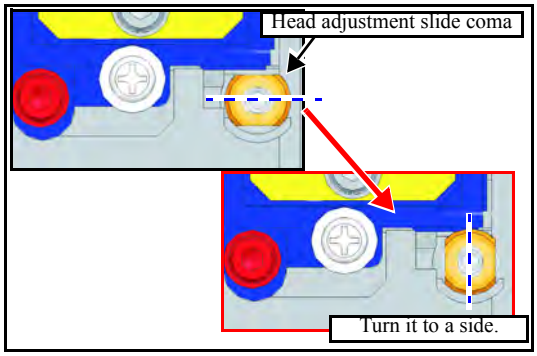
■ Head Back/Forth Adjustment Adjusting Procedure

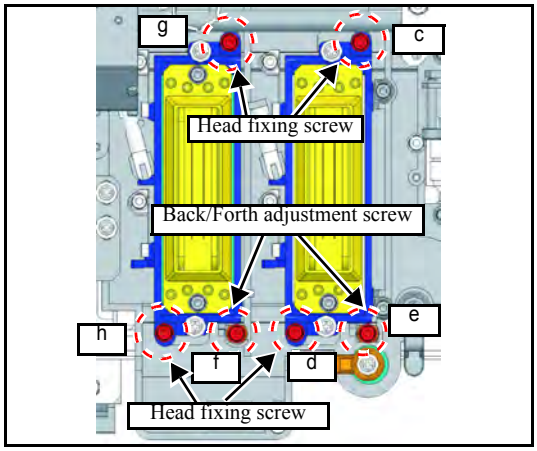
Based on the head 1, move the head 2 and adjust.

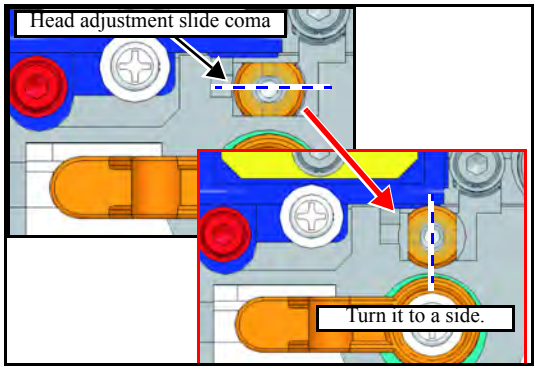


1. Loosen the Head fixing screw ”g” and “h”.

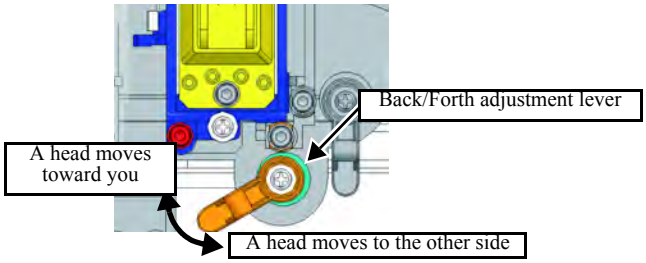
4.2.1 HEAD ADJUST







2. Remove the Back/Forth adjustment screw “f”.
3. Rotate the head adjustment slide coma (below Back/ Forth adjustment screw “f”) by 90 degrees and turn it to a side.
   Use a standard screwdriver.
4. Tighten the Back/Forth adjustment screw “f”.
   (Fix the coma.)
5. Tighten the Head fixing screw ”g” and “h”.
6. Loosen the Head fixing screw ”c” and “d”.
7. Remove the Back/Forth adjustment screw “e”.
8. Rotate the head adjustment slide coma (below Back/ Forth adjustment screw “e”) by 90 degrees and turn it to a side.
   Use a standard screwdriver.
9. Temporarily tighten the slant adjustment screw “e” (not so strong that the coma cannot slide).
10. Rotate the Back/Forth adjustment lever depending on the Back/ Forth amount, and adjust the amount.



Direction of turning the Back/Forth adjustment lever.
Dot position down: Turn clockwise (CW).
Dot position up: Turn counterclockwise (CCW).

11. Fully tighten the slant adjustment screw “e” temporarily tightened.
12. Tighten the loosened Head fixing screw ”c” and “d”.

4.2.1 HEAD ADJUST

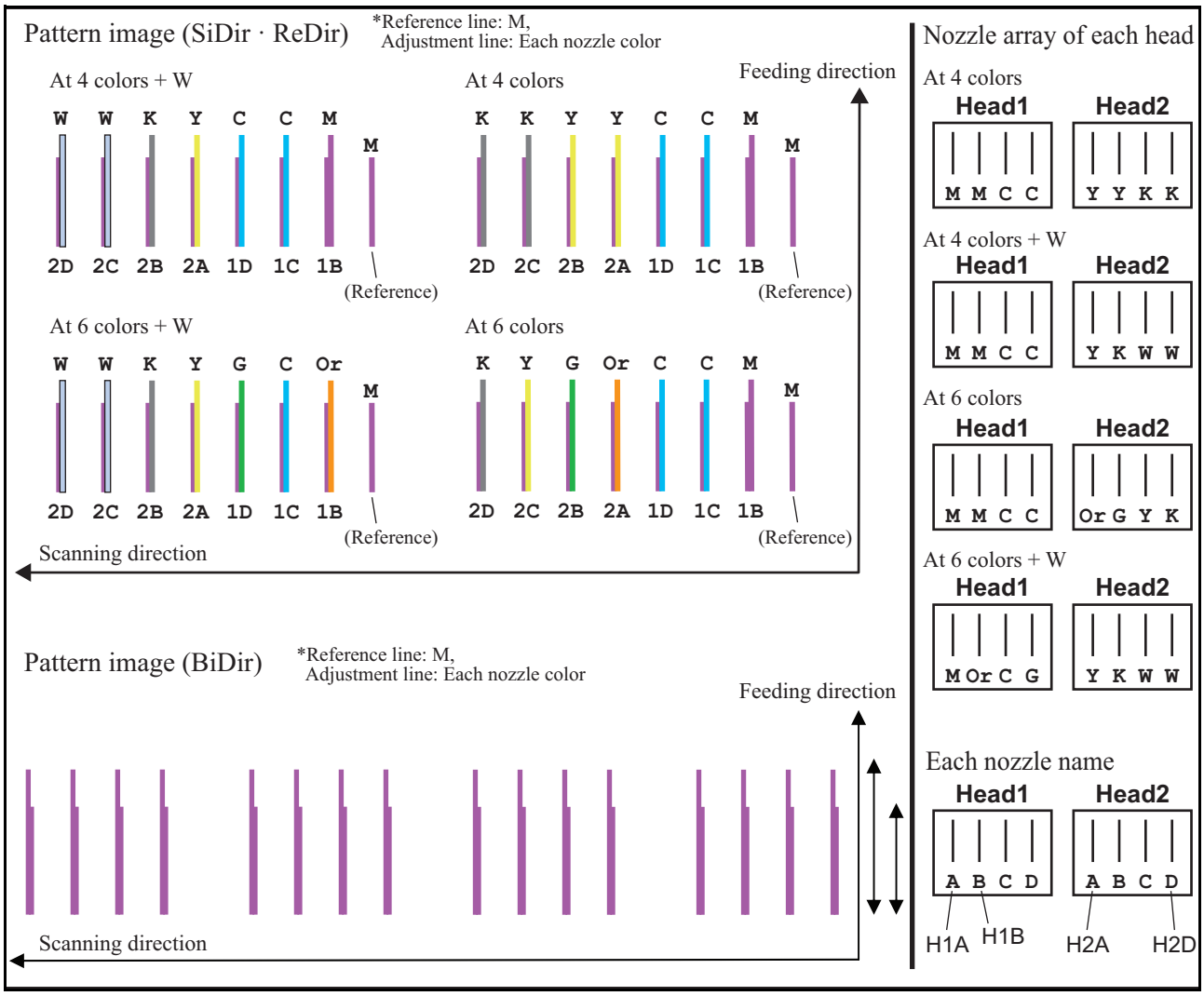
> **IMPORTANT** Tighten the screws with care that the head is not shifted from the correct position.

13. Draw the pattern again and check if no displacement occurs.

> **IMPORTANT** Repeat “Adjusting” -> “Patterns Drawing” until no more displacement is available.

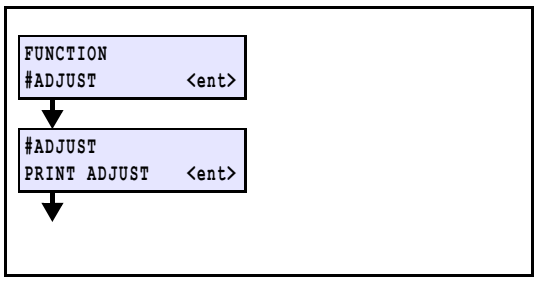
4.2.2 PRINT ADJUST

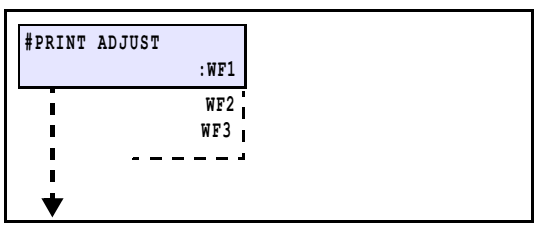
■ Outline



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 1) in the Y-direction. To each of the discharged waveforms, execute [SiDir], [ReDir] and [BiDir] in each resolution.

■ Work Procedures





1. Set Media at X-origin.

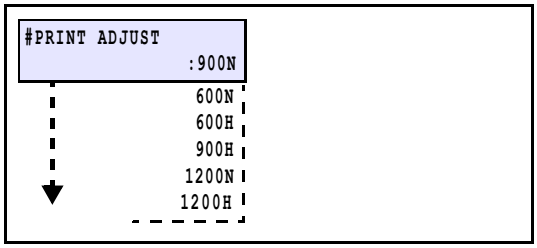
> IMPORTANT
> Set the drawing origin as follows;
> (Set in [LOCAL] -> [ORIGIN])
> X ≥ 0, Y > 0

2. Display [#ADJUST] -> [PRINT ADJUST].

3. Select the waveform.

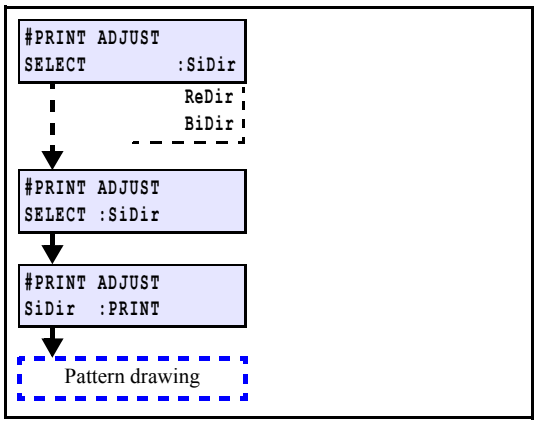
[▲]/[▼] : Switches
[ENTER] : Confirms (Next)

4.2.2 PRINT ADJUST



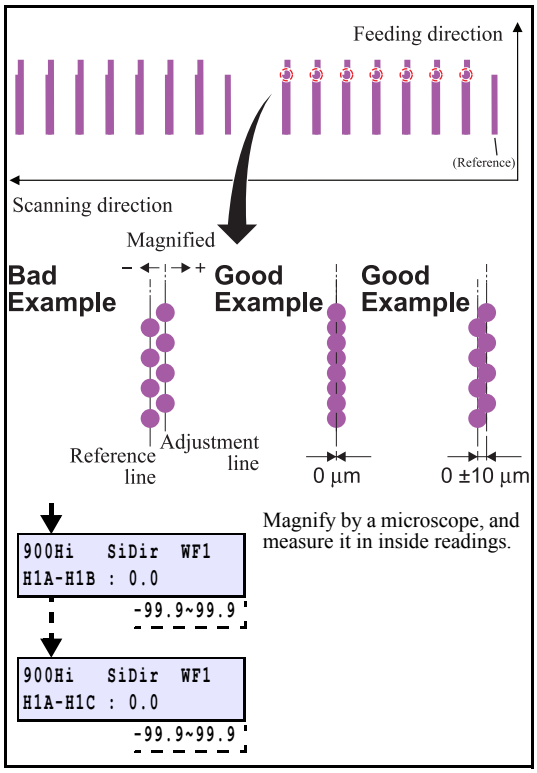
4. Select the Y-resolution and scanning speed.
   [▲]/[▼] : Y-resolution & Scanning speed change
   [ENTER] : Confirms (Next)

■ **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)



7. Check and compensate the patterns.

   Input the adjustment value (the measured value: µm) so that the impact dots of other nozzle lines (7 lines) are at the same position in the Y-direction, referring to the reference nozzle H1A line.

   Check and execute the compensation for H1A-H1B ~ H2D.

   [▲]/[▼] : Compensating value input (Input unit: 20 µm)
   [ENTER] : Confirms (Next)

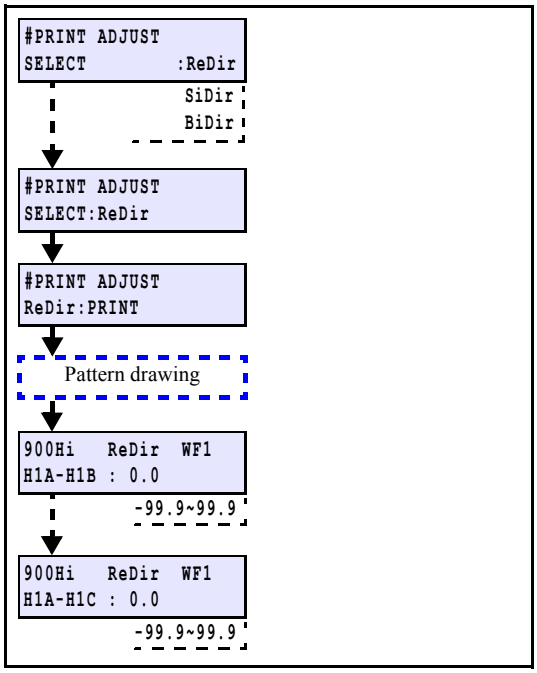
> **IMPORTANT**
> Input the compensating value, referring to the left figure, if the displacement on the drop position of head applied for the compensation occurs either right or left against the reference head.

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

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

4.2.2 PRINT ADJUST

■ Return adjustment



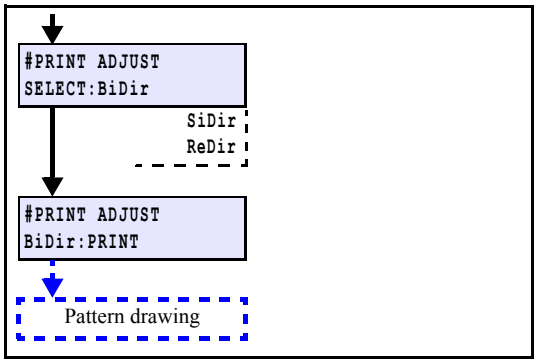
9. On the [SELECT] display, select “ReDir”, and adjust it in the same way as “SiDir”.
   [▲]/[▼] : Switches
   [ENTER] : Confirms (Next)

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.

■ Going and returning adjustment



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

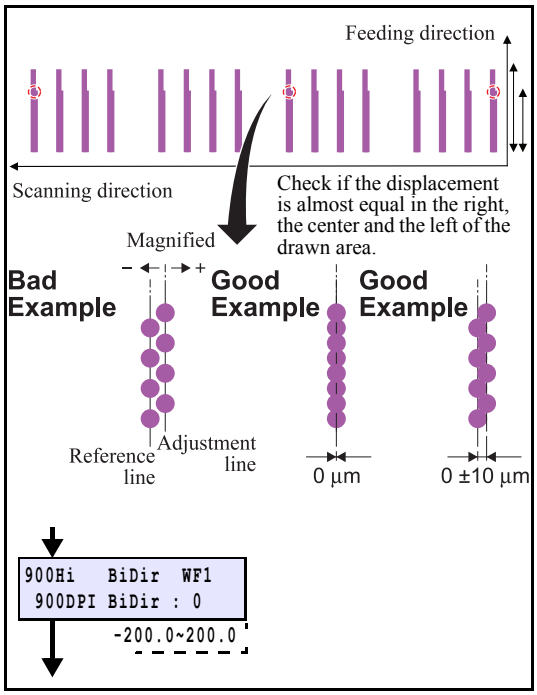
13. Press the [ENTER] key to draw the pattern.
    [ENTER] : To start Pattern drawing
    [▶] : To the compensation display (Without drawing)

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

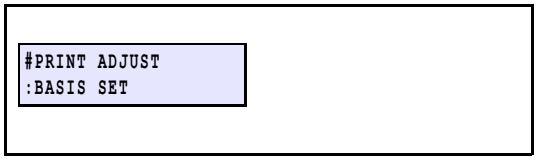


> If the displacement is significantly different in the right and left, other reasons are considered.

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

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

4.2.2 PRINT ADJUST



16. Select [BASIS SET] and press [ENTER] key. The values adjusted in WF1 1200std are set as the correction value of other modes.

IMPORTANT

The value set using [BASIS SET] are values calculated as a guideline for correction values.Thus, the actual ink landing position may be misaligned. Be sure to adjust the landing position for each mode that will be sure.

4.2.3 REPLACE COUNT

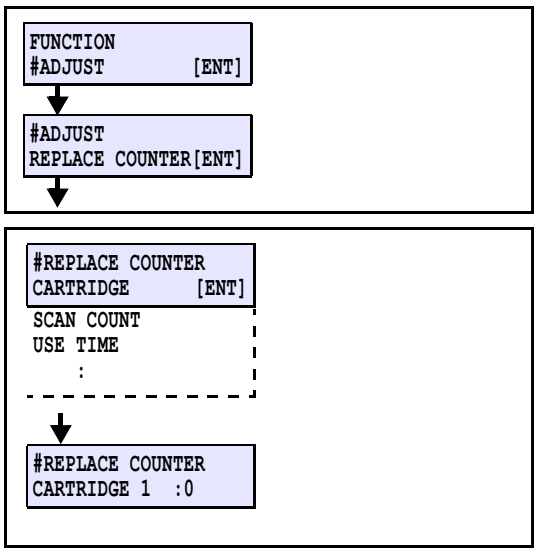
■ Outline

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]
11	FILTER(W)	Used days of filter in white ink path Unit:[Day]
12	WIPER CLEANING	Elapsed time after wiper cleaning 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

4.2.4 DEFAULT SET

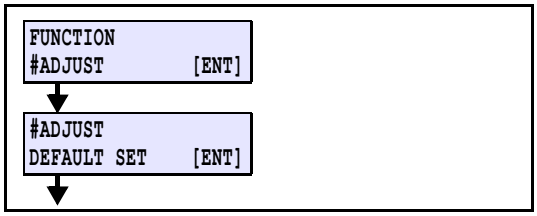
■ Outline

Returning each parameter to the initial value.

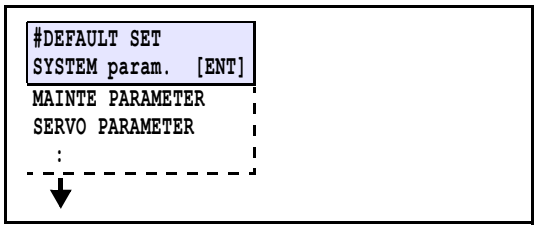
☐ DEFAULT SET List of Items

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	NOZLE RECOCVERY PARAM	Initialize the parameter in question.	
12	SHIPPING set	Initializing parameters of others than the adjustments.	

■ Work Procedures

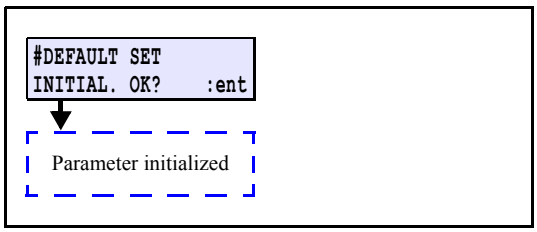


1. Select [#ADJUST] -> [DEFAULT SET].



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].

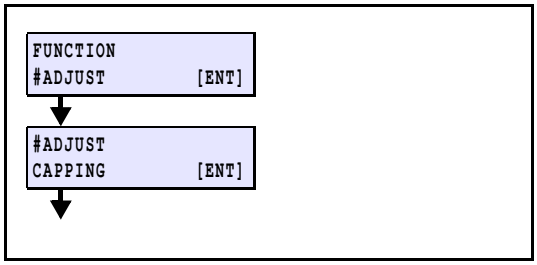
[ENTER]: Execute
[END]: Return

4.2.5 CAPPING

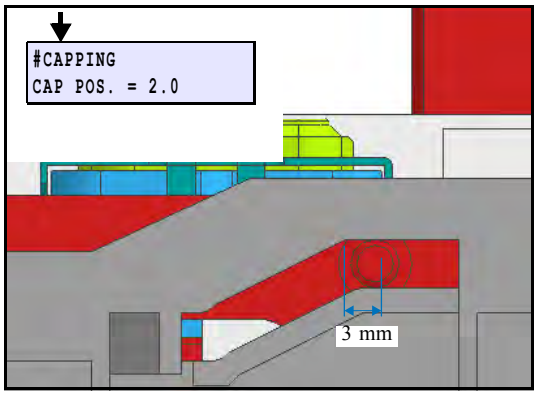
■ Outline

Adjusts the location for capping and wiper. 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

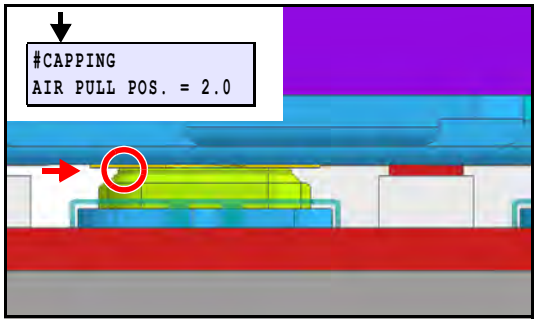


1. Select [#ADJUST] -> [DEFAULT SET].



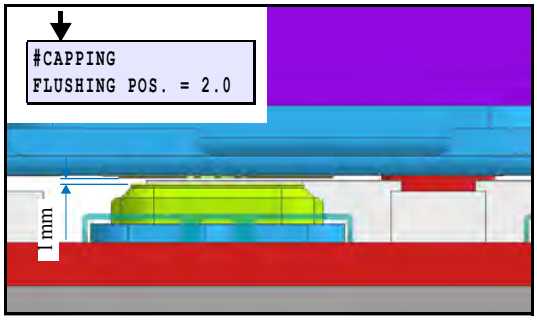
2. Make adjustment so that the cap slider is located at 3 mm to the right from the uppermost point it has reached on the cap base.

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



3. Make adjustment so that the head is located exactly at the point where the head is in contact with rubber portion (left end) of the cap head.

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



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

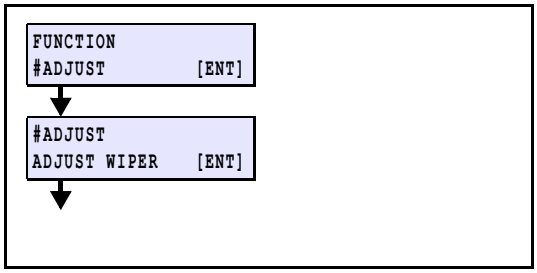
[◀]/[▶]: Shifts the cap.
[ENTER]: Finalizes (To Next)

4.2.6 ADJUST WIPER

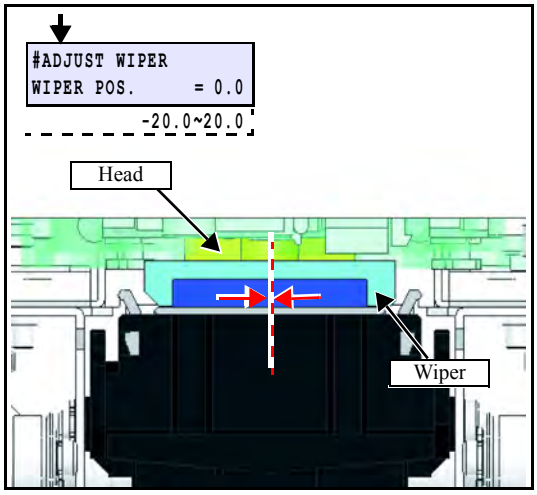
■ Outline

Adjusts the wiper position.
The adjusted value is stored in the system parameter.

■ Adjustment procedure

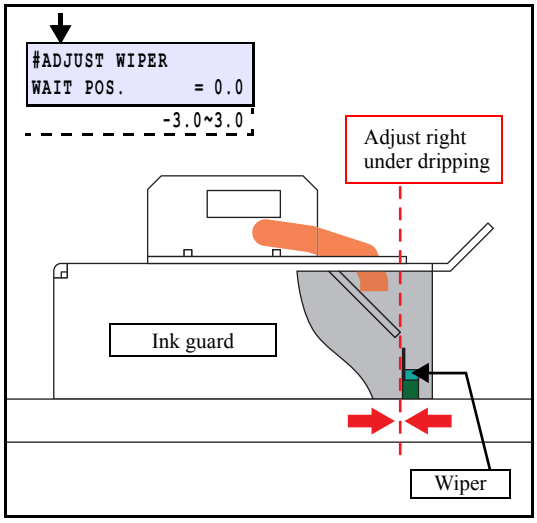


1. Select [#ADJUST] -> [ADJUST WIPER].



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



3. Confirm and adjust the dropping position of Cleaning liquid (F/W Ver.2.20 or later).

[▲]/[▼]:Horizontally shifts in front and rear of the wiper.
[ENTER]: Finalizes
[END]: Return
[FUNCTION]: Drop the Cleaning liquid

4.2.7 HEAD WASH(DELETED)

This item was deleted.

4.2.8 MAINT.WASH(DELETED)

This item was deleted.

4.2.9 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.

4.2.10 RESET SHOT COUNTS(DELETED)

This item was deleted.

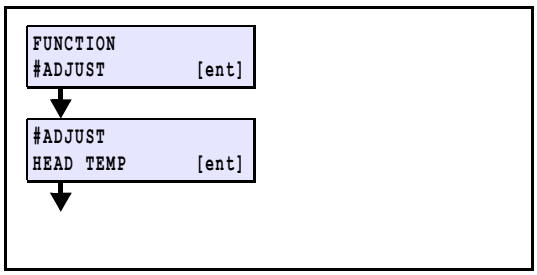
4.2.11 Head Temperature

■ Function

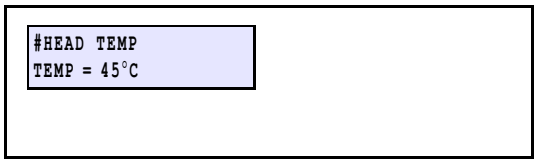
Confirms/sets the head temperature.

> IMPORTANT
> Under normal conditions, do not change this.

■ Procedure



1. Select [#ADJUST] -> [HEAD TEMP].



2. Enter (confirm) the head temperature.
   [▲]/[▼]: Changes values.
   [ENTER]: Confirms
   [END]: Return

4.2.12 Serial No.

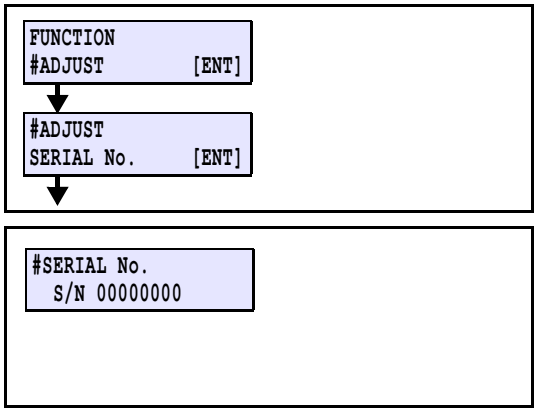
■ Outline

Confirming and changing of the serial No. of JV400-LX

IMPORTANT

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.

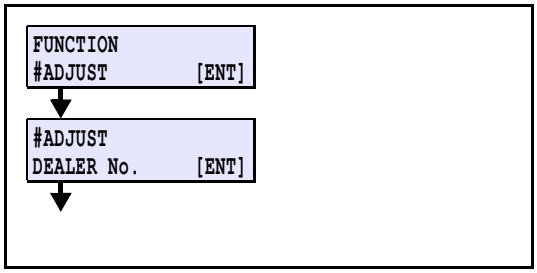
[◀]/[▶]: To move Cursor
[▲]/[▼]: To change Value
[ENTER]: Confirms
[END]: Return

4.2.13 DEALER No.

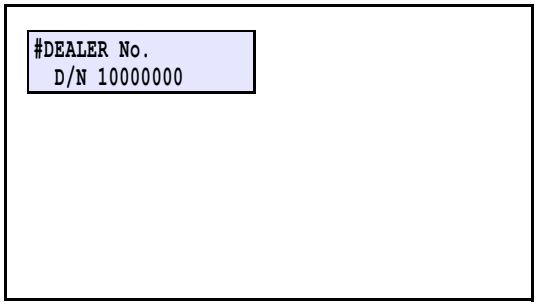
■ Outline

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

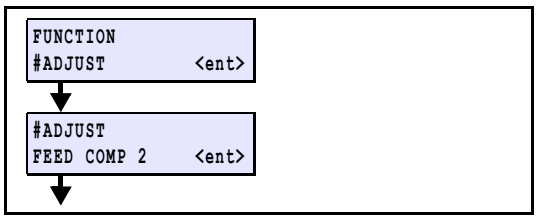
4.2.14 FEED COMP.2

■ Function

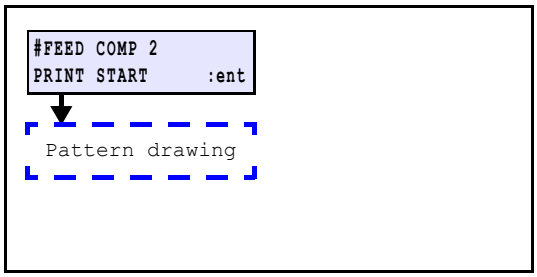
Compensates basic feeding amount of media. (Provides a baseline value for user compensation value.)
Adjust this when the parameter is initialized or the head is replaced.

● By this adjustment, the user compensation value is cleared.

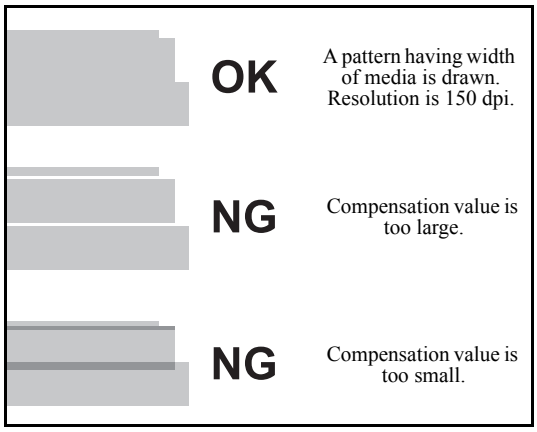
■ Procedure



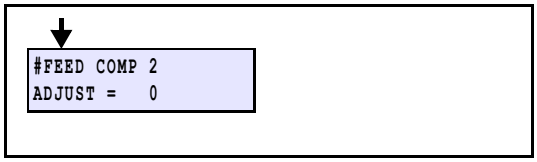
1. Select [#ADJUST] -> [FEED COMP 2].



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



3. Check the adjustment pattern.



4. Enter the compensation value.

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

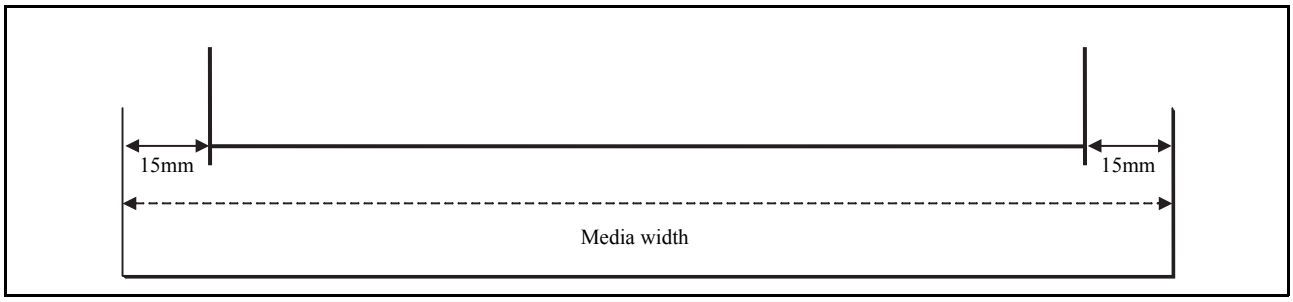
IMPORTANT

● n actual feeding amount compensation, compensation value for each feed set in the SETUP function are added to this compensation value.

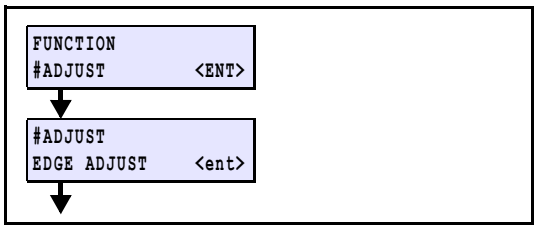
4.2.15 EDGE ADJUST

■ Function

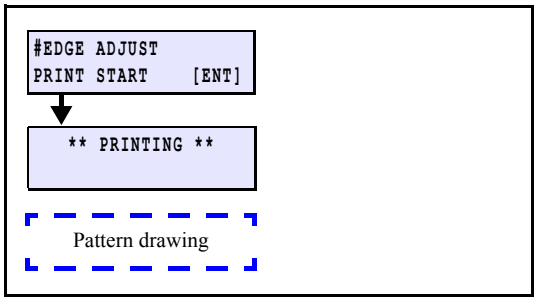
Adjust the width of the each dead space of the right and left ends of the media.
Is used when the system parameter has been initialized or the (plot areas at both ends) are not in the right place.



■ Procedure

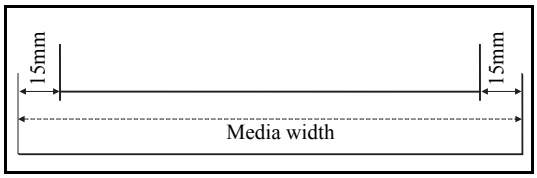


1. Select [EDGE ADJUST] from the operation menu.

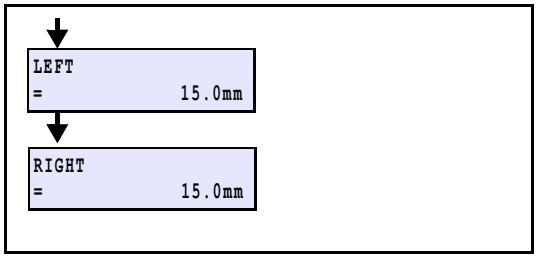


2. Draw an adjustment pattern.

[▸] : To adjusting screen (without drawing)
[<8pt Bold>ENTER] :Print adjusting pattern.



3. Check the adjustment pattern.



4. Enter the adjustment value.

For adjustment, input actual values obtained by measuring from the media edge 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

[ENTER]:After decision, media detection movement is carried out.
(A revision level is registered)

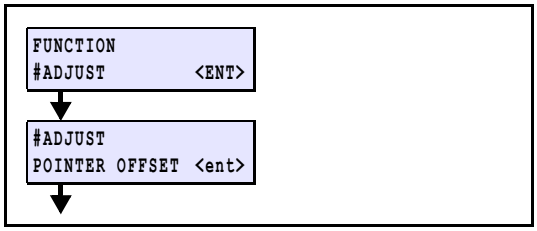
● The set value is saved in the system parameter No.0 R GRIP and No.1 L GRIP as "current parameter value + (25 mm - input value)".

4.2.16 POINTER OFFSET

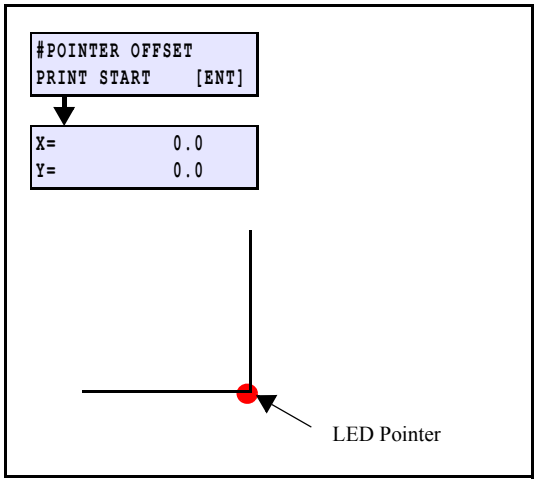
■ Function

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

■ Procedure



1. Select [POINTER OFFSET] from the operation menu.



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

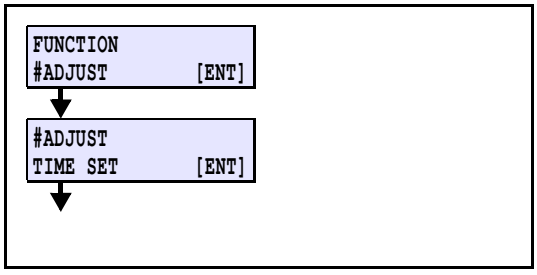
[END]: Cancellation of input

4.2.17 Time Set

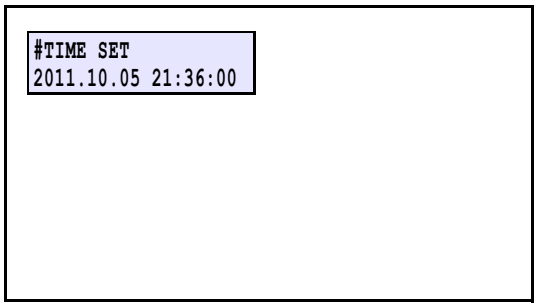
■ Outline

Setting the time.

■ Procedures



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



2. Set the time.

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

4.2.18 INK FILLUP(DELETED)

This item was deleted.

4.2.19 INK SET

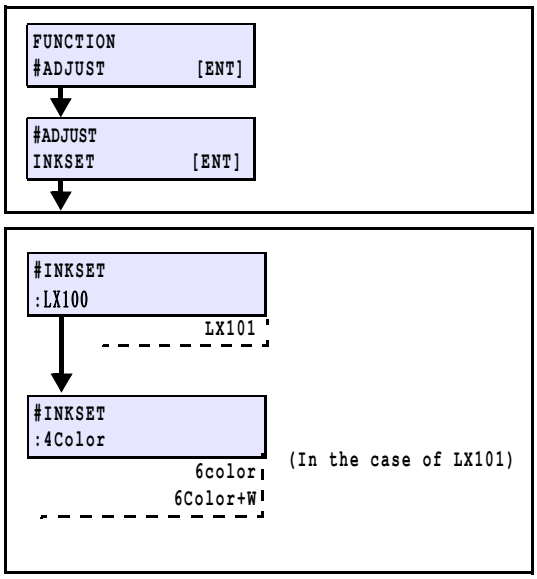
■ Outline

Change ink set information set in the machine.

Use this when ink filling has been completed and when you reset ink set because you performed parameter initialization etc.

You can select all ink sets usable in the machine.

■ Procedures



1. Select [#ADJUST] -> [INKSET].

2. Select the kind of the ink.

   [▲]/[▼] :select

   [ENTER] :Register

   [END] :cancel

3. Select the INKSET.

   [▲]/[▼] :select

   [ENTER] :Register

   [END] :cancel

4.2.20 DAMPER DISCHARGE

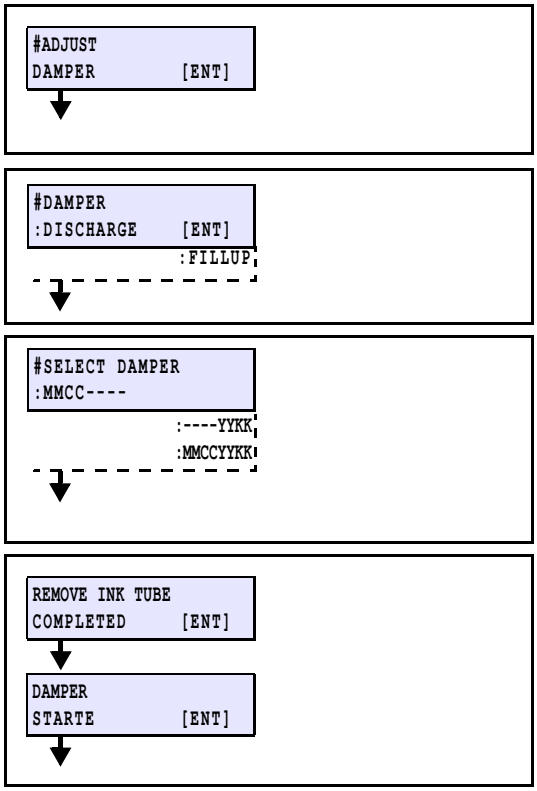
■ Outline

Perform this at head replacement and damper replacement. Includes ink discharging of air purge port.

1.Remove the tubes from the damper.

2.Discharge ink in the damper by sucking.

■ Procedures



1. Turn Power supply off. Remove the cartridge cover in advance.
2. Select [#ADJUST] -> [DAMPER].
3. Select [DISCHARGE] and press [ENTER].

   [▲]/[▼] : Select

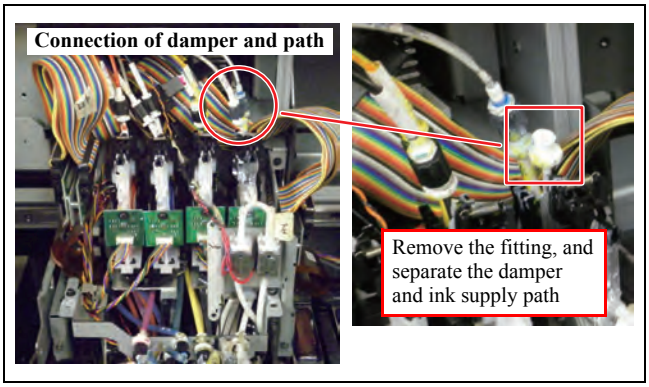
   [ENTER] : Execute
4. Select the damper on which you perform discharge with [◀]/[▶]key.

   [◀]/ [▶] : Select

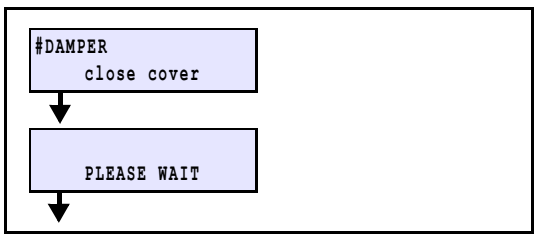
   [ENTER] : Register
5. Separate the damper which is selected and its ink supply path.

   After separating, press [ENTER] key.

   Press [ENTER] key again at next screen.



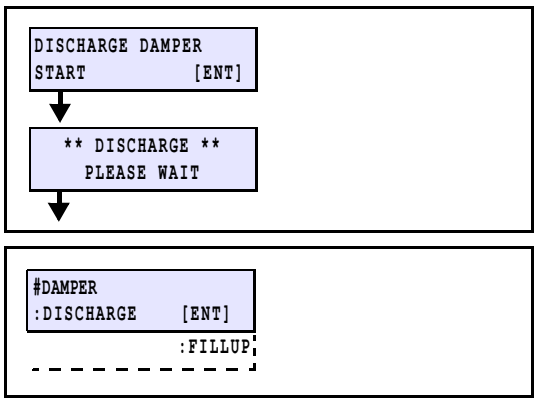
IMPORTANT Protect the ink leak from tube top by covering it with cleaning paper during working.



6. Close the cover.

   After operating for detecting origin point, go to next step.

4.2.20 DAMPER DISCHARGE



7. Start to discharge with [ENTER] key.

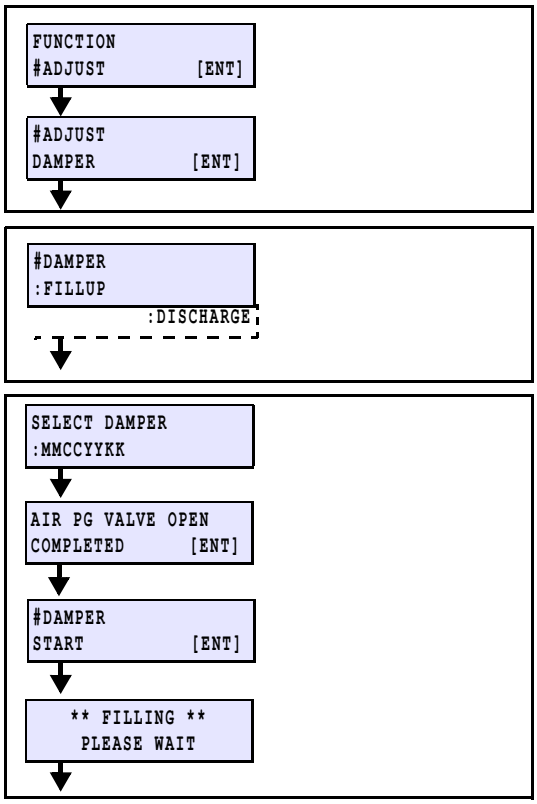
8. Select [DISCHARGE] and press [ENTER].

4.2.21 DAMPER FILLUP

■ Outline

Perform ink filling from the damper to the head.

■ Procedures



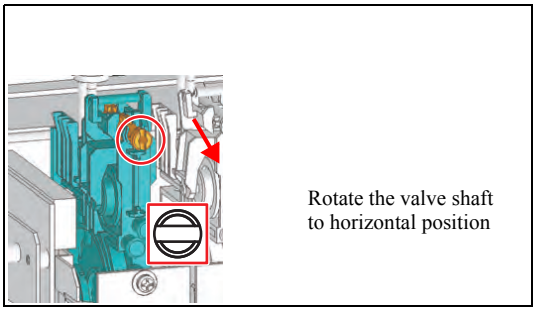
1. Insert the ink cartridge corresponding to the nozzle number for which ink filling is performed.
2. Select [#ADJUST] -> [DAMPER].
3. Select [FILLUP] .

   [▲]/[▼] : Select

   [ENTER] : Execute
4. Select the damper.

   [▲]/[▼] : Select
   Select it among two of “MMCC----” or “----YYKK”.

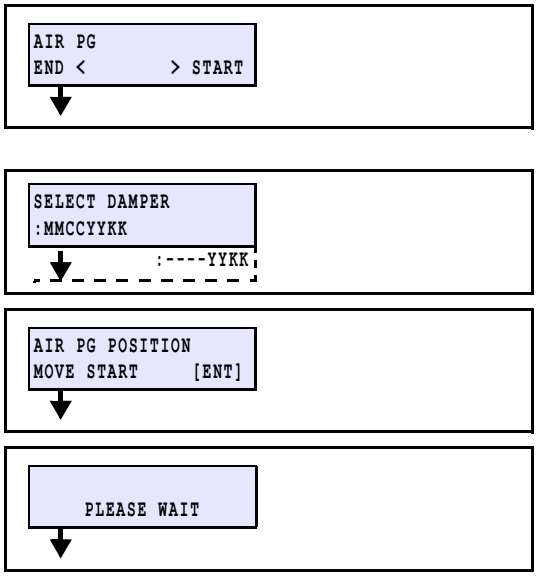
   [ENTER] : Execute
5. Open the air purge valve and press [ENTER] key.



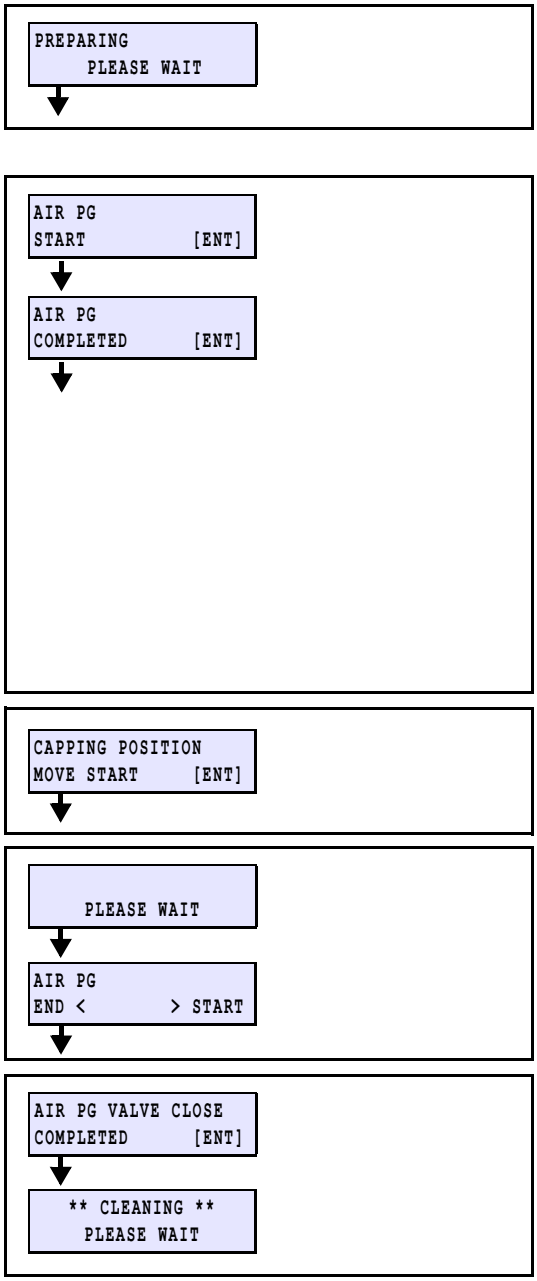
   Press [ENTER] key to start fill up.
6. Perform air purge.

   With [▶] key, transfer to the air purge sequence.

   (When you press [◀] key, air purge work is not performed and the machine moves to the cleaning operation.)
7. Select damper with [◀] [▶]key, and press [ENTER] to decide.
8. Move the machine on the wiper by pressing [ENTER] key, and it prepare the operation for performing air purge.
9. Screen is changed after moving of the machine is completed.



4.2.21 DAMPER FILLUP



10. Screen is changed after preparation is completed.

> IMPORTANT
> Do not insert the ink filling jig to the air purge port during the machine is moving or in preparation.

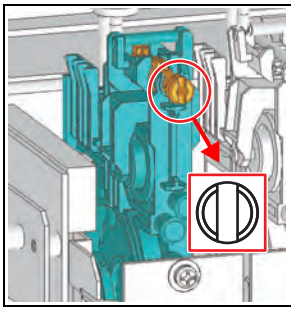
11. Remove the air purge port cap, and connect the ink filling jig.

    Press [ENTER] to start filling ink.

    Remove the ink filling jig from the air purge port after ink flowed into the jig and air purged, and connect the jig to the next port.

> IMPORTANT
> - Protect the ink leak or splash from tube top or port by covering with cleaning paper when jig or cap is removed.
> - Do not remove/ loosen caps of port which is not selected.Air is absorbed into the damper.

12. Press [ENTER] key, after completed air purging of all ports that is selected. Then ink filling is stopped.
13. Press [ENTER] key, then the machine moves on the capping position and caps to the head, and ink amount in the damper is returned to normal state.
14. Procedure return to step5. after ink amount is normal state.
15. When you finish the operation for air purge, press [◀] key.
16. Close the air purge valve and press [ENTER] key, then cleaning start.

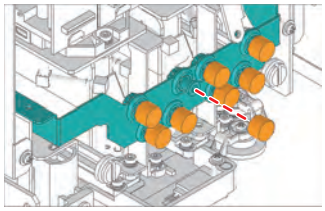


Rotate the valve shaft to vertical position

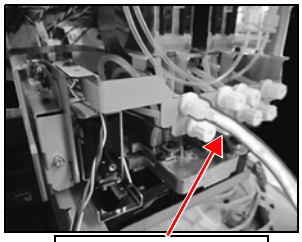
4.2.21 DAMPER FILLUP

Use the ink filling jig.

Connect the top edge of the ink filling jig with the “Fitting” on the carriage front surface.



Remove the cap



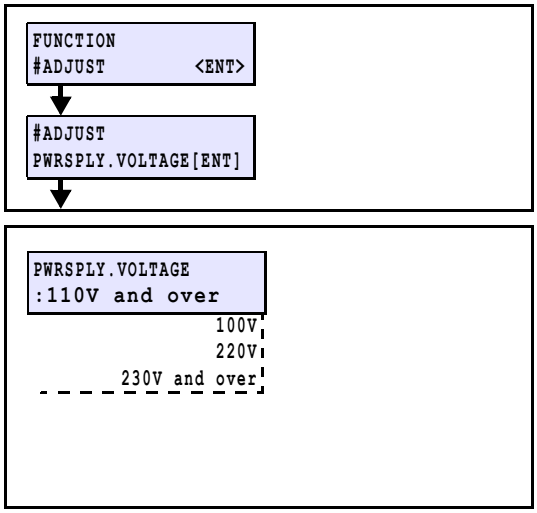
Ink filling jig
(connect the top edge)

4.2.22 Power Supply Voltage

■ Outline

Select depending on the power supply voltage used for the machine.
Switch heater control depending on the power supply voltage.

■ Procedures



1. Select [#ADJUST] -> [PWRSPLY.VOLTAGE].

2. Set(Check) the power supply voltage.
   [▲] [▼] :Select
   [ENTER] :Register

   The setting value is as below:
   Area of 100V : ” 100V ”
   Area of 110~120V : “ 110V and over ”
   Area of 220V : “ 220V “
   Area of 230~240V : “ 230V and over “

IMPORTANT: If you do not set the proper voltage, it may cause damage.

Caution: When the power supply voltage was changed, adjust the voltage selector at lower of the main body. False setting may disturb the machine.

4.2.23 Nozzle Recovery

■ **Outline**

Set the nozzle recovery.

This is the same function as “MAINTENANCE / NOZZLE RECOVERY”, however, the destination to which the registered nozzle will be saved differs.
You can register 16 per nozzle line.

4.2.24 チョッカクチョウセイ

For only production. (Indication is only Japanese.)

4.2.25 LAN CONFIG

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

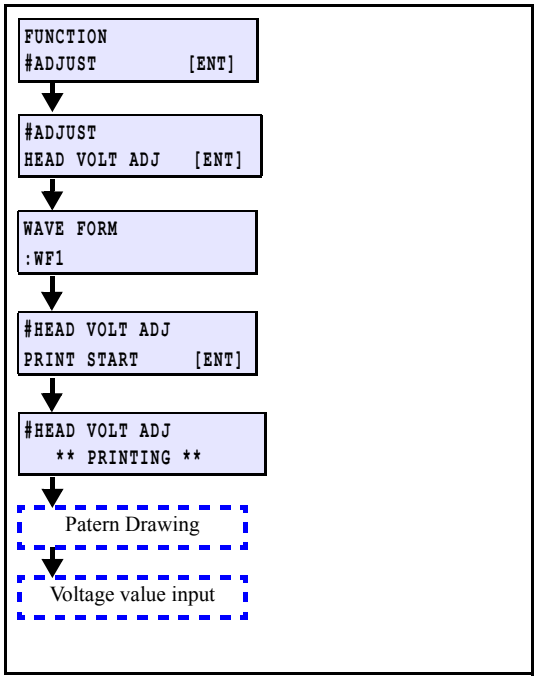
4.2.26 HEAD VOLT ADJ

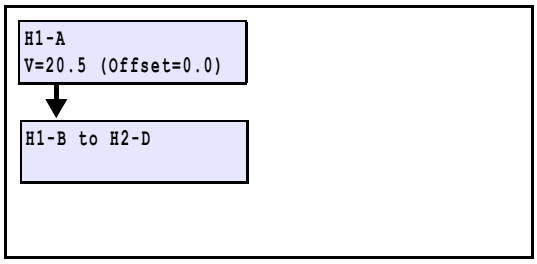
■ Outline

Check the density difference and the difference of the dot volume for each head line.

- If the difference of the density and the dot volume is big, as the density stripe may occur at printing, visually judge the density difference.
- For the dot volume, observe the dot shape with a microscope and adjust the voltage.

■ Procedures





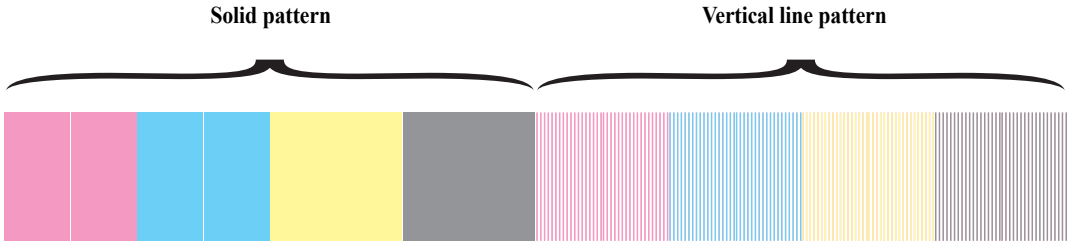
1. Set the media in the table.
2. Select [SET UP]->[WAVE FORM]->[WF1].
3. Select [#ADJUST] -> [HEAD VOLT ADJ].
4. Select the wave form for adjustment.
5. Press [ENTER] and print a pattern.
   [ENTER]: Starts printing a pattern.
6. Check the pattern.
   Magnify the one-shot straight line in the nozzle lines of each color to check there is no crinkle on the vertical line.
   Input the voltage value to equalize the concentration of each color for the solid pattern.
7. Input the voltage adjustment value of each head and nozzle line.
   [▲]/[▼] : Input the offset voltage
   [ENTER] : Confirm (next)

IMPORTANT

- The entered values are reflected to the reference voltage of the head.
- Changing the voltage value may cause a satellite. Check the shape of landed droplets and adjust the voltage value so that satellite becomes obscure.

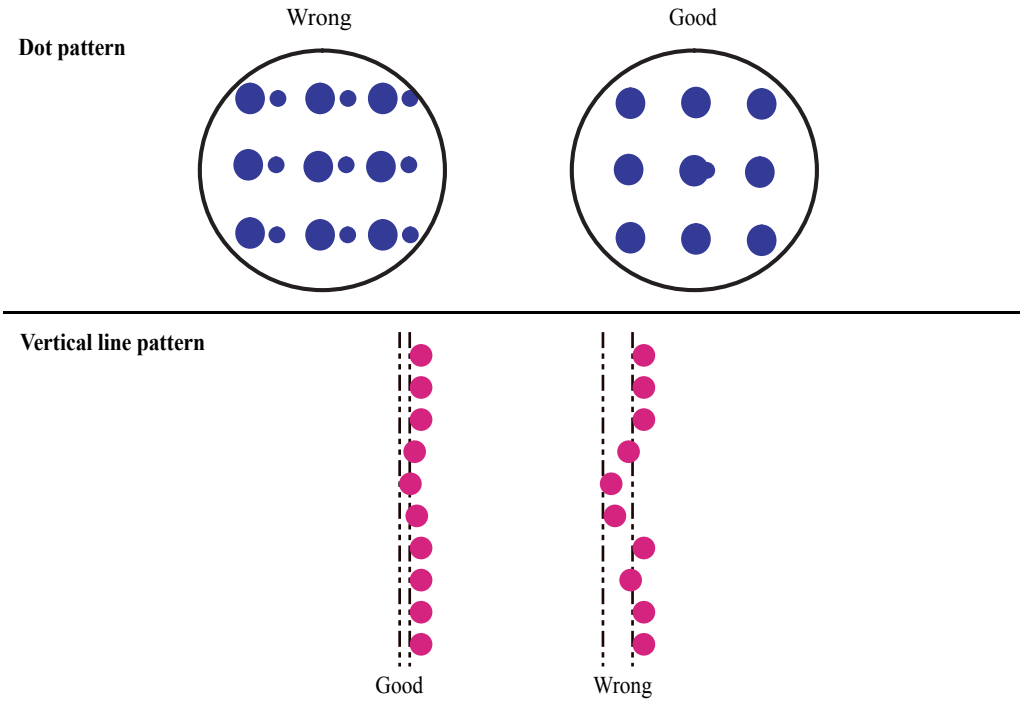
4.2.26 HEAD VOLT ADJ

■ Method to adjust



1 Adjust the voltage value so that the dot is not divided into two dots and there is no crinkle in the vertical line patterns, when the printing pattern is magnified with a loupe.

When enlarging printing pattern dot with a magnifying glass



2 Observe the solid pattern and change the voltage value so that the concentration difference of each nozzle line is nothing.

When each nozzle line has concentration difference, Change the voltage value so that the difference is nothing or small. (All colors)

IMPORTANT

- When increase the voltage, satellite drops may occur. Observe the dot shape and adjust the voltage value so that satellite drops is not off main drops.
- When decrease the voltage, satellite drop is nothing, but crinkle in the vertical line patterns occur and concentration decrease.Be careful as above.

Adjustment

4.3.1 Carriage slant adjust

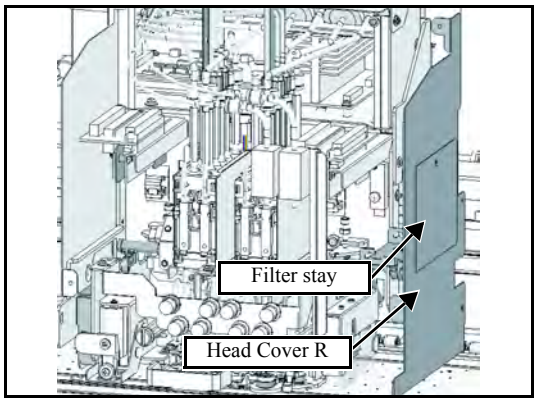
■ Outline

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

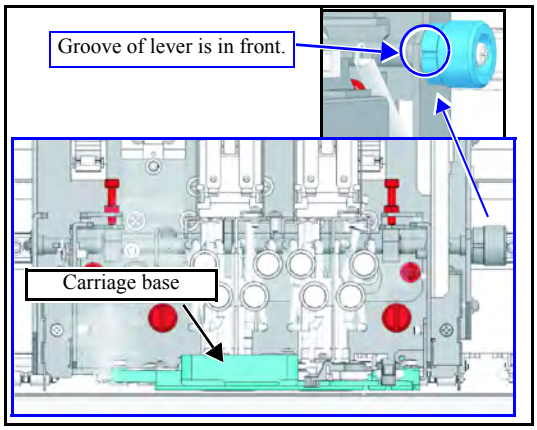
■ Procedures

☐ Preparations

1. Remove the following covers.
   1) Right maintenance cover U
   2) Right maintenance cover C
   3) Front cover 200L
   4) Head cover



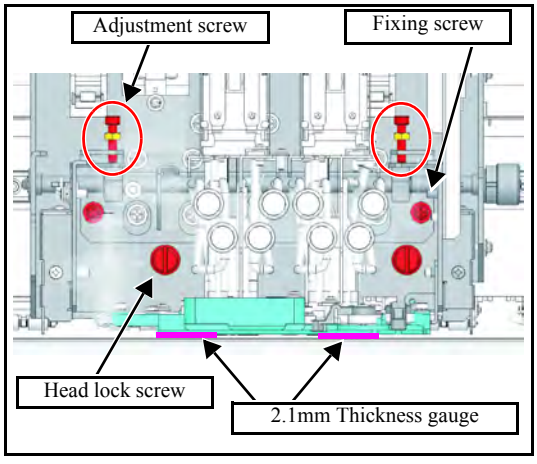
2. Move the carriage on platen.
3. Remove the “Filter stay” and “Head Cover R”.



4. Move the Head UP/ DOWN Lever to the lowest position.
5. 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.

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



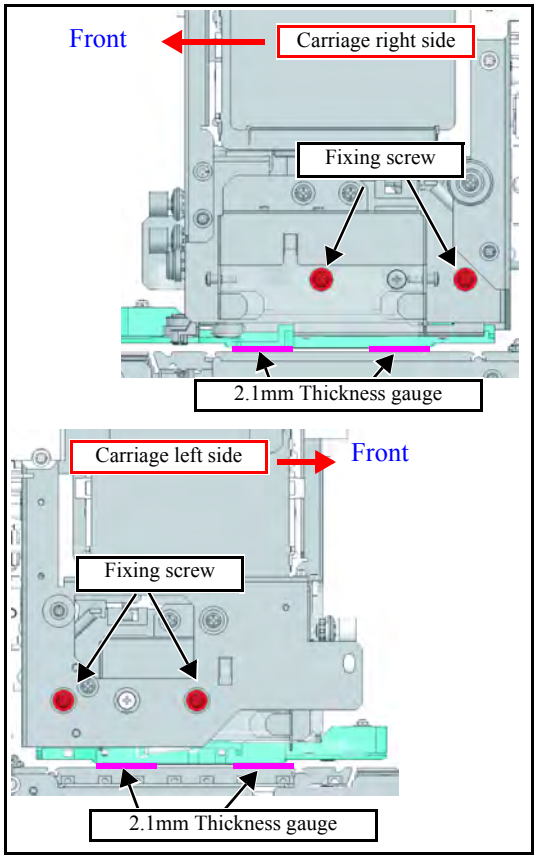
6. Put thickness gauge of 2.1mm between the carriage base and the platen.
7. Loosen the lock nut of the adjustment screw.
8. Loosen the fixing screw (x2) and the head lock screw (x2) by one revolution.
9. Perform “height adjustment for right and left” by rotating the adjustment screws for right and left so that the distance between the carriage base front side bottom surface and the platen shall be 2.1mm.

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

10. When adjustment has been completed, fully tighten the fixing screw and the head lock screw.

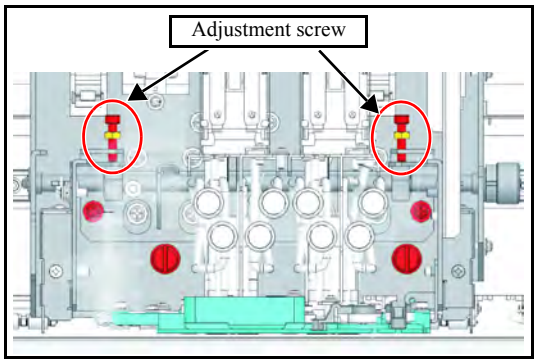
4.3.1 Carriage slant adjust

☐ Back and forth slant (Vertical-tilt) adjustment



11. Loosen the fixing screw (x4) on the carriage both sides by one revolution.

12. Align the front and the rear of the carriage base with 2.1mm height and fully tighten the fixing screw.



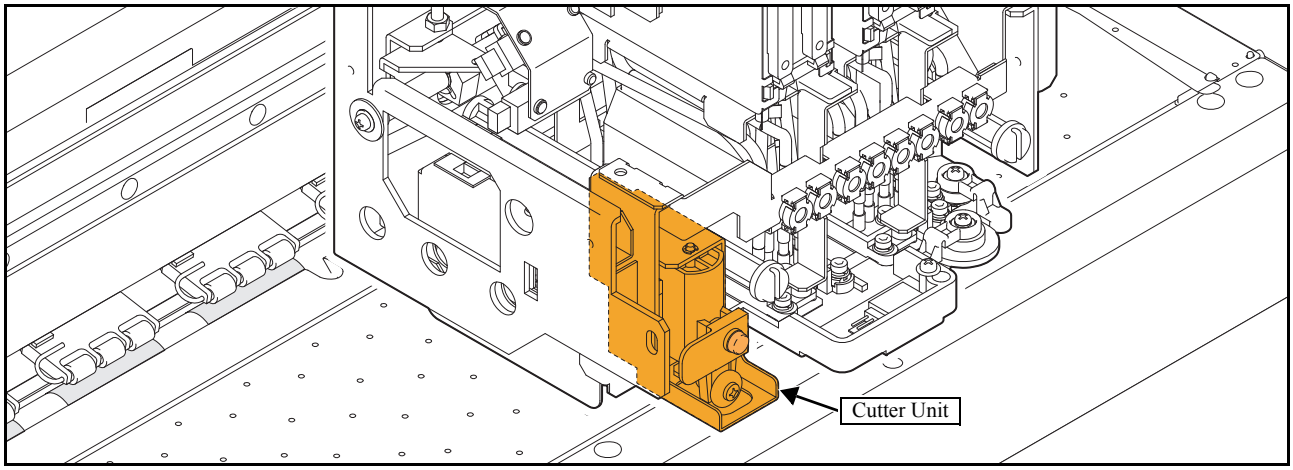
13. Recheck the height for right and left and back/ forth slant.
    1) If the height for right and left has changed, perform the procedures in the Step 8 to 10.
    2) If the back/ forth slant are found, perform the procedures in the Step 11 and 12.

14. Tighten the lock nut of the Adjustment screw.

IMPORTANT

In adjusting the length between carriage base and platen to 2.1mm by above procedure, the length between nozzle surface and platen becomes 1.8mm.

4.3.2 Adjustment of the Mounting Location for the Cutter

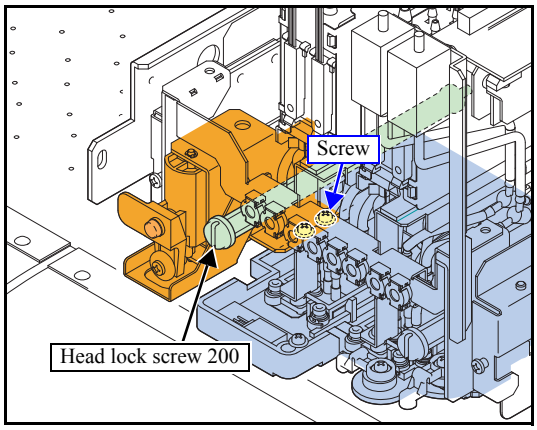


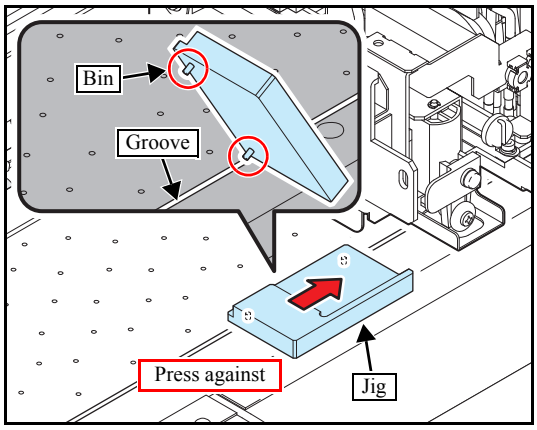
■ Function

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

If the jig is not available, it is possible to use an alternative with a cutter unit height of 7.0 mm.

■ Procedure



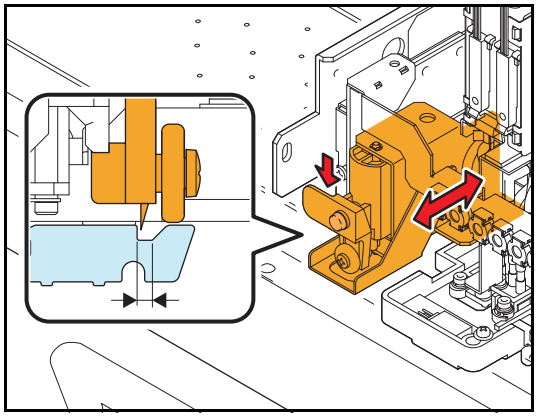


1. Remove the **Head lock screw 200**.
2. Use the cutter unit screws (x2) to temporarily fix the unit. Tighten the screws just enough to support the unit.
3. Push down the clamp lever.

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

4. Set the jig on the platen. Set the bin (x2) on the bottom of the jig to the platen media plate front and back fitting.
5. Attach the jig to the head. Slide the jig toward the head until it attaches (stopping position).

4.3.2 Adjustment of the Mounting Location for the Cutter



6. Align the front and back of the cutter unit. Lower the cutter blade until it fits into the fitting, and then determine the front and back position of the unit and fix it using the screws.

> IMPORTANT
> The fitting area is wider than the actual cutter blade. Therefore, alignment should be made within that area.

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

7. 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.

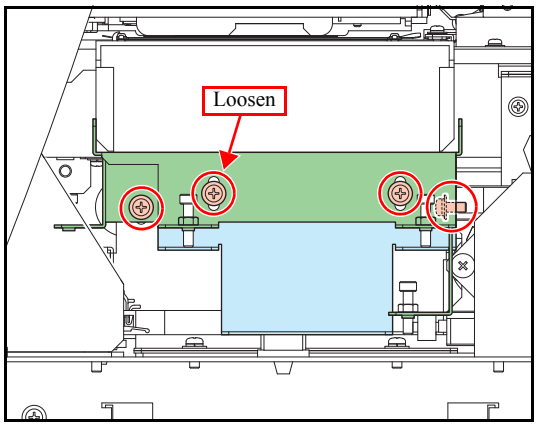
> On rare occasions, the blade comes out of the slot because of assembly errors or fluctuation in part accuracies. In such a case, adjust again to the back-front optimum position where the blade is always in whole slot on the platen.

4.3.3 Adjustment of the Station Height

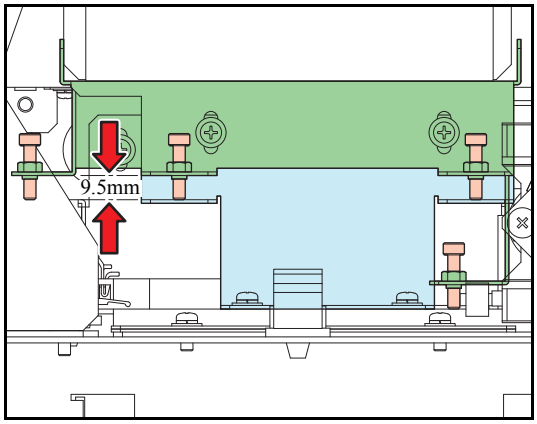
■ Outline

Adjust the height of the station.

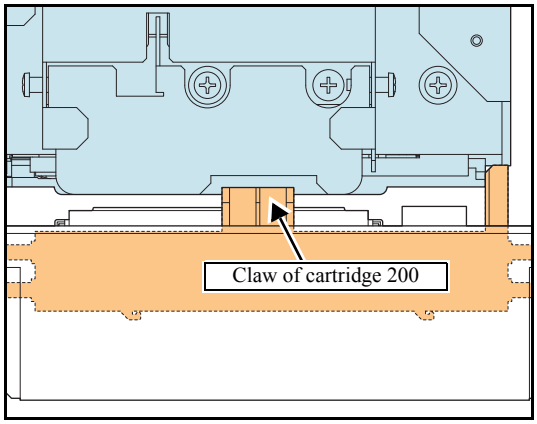
■ Procedure



1. Remove the following covers.
   - **Right cover 200**
2. Loosen the four screws used for station-base adjustment.



3. Loosen the hexagon socket head screws and make an adjustment to set their thickness gauge at 9.5 mm, then tighten the nuts.
4. Tighten up four loosened screws used for station-base adjustment and fix them at 8 mm in thickness gauge.



5. Confirm to be caught in the claw of cartridge 200 when the cartridge is positioned at “H” ‘the highest position). If not, lift the station base to the position caught.

Adjust the height of the station.

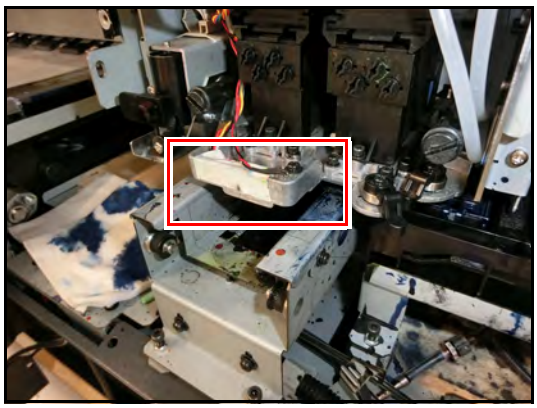
4.3.3 Adjustment of the Station Height

■ Check procedure

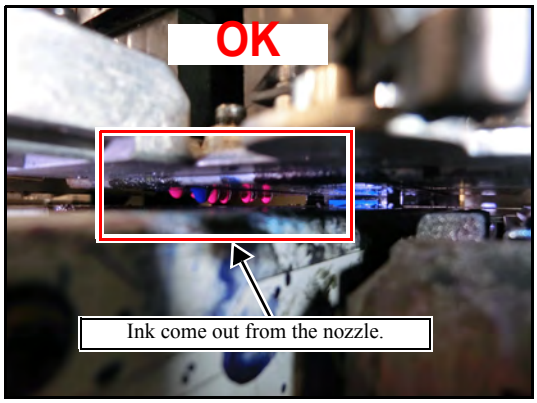
Implement the cleaning and check visually whether the ink is sucked normally. 。

● Be sure to wear the goggle during the following work.

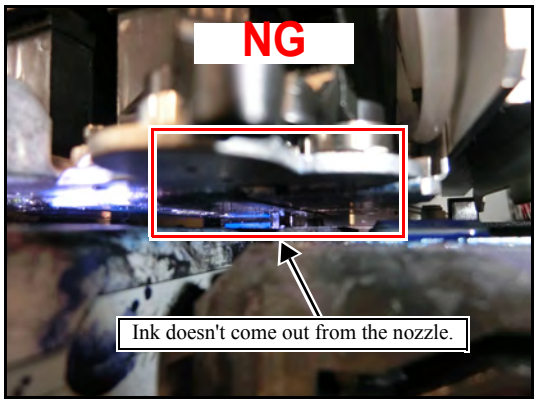
1. Perform cleaning : [CLEANING] -> [TYPE: SOFT]



2. After ink suction, check the nozzle surface after the carriage moves to the wiping position.



3. Check the nozzle surface visually whether the ink get sucked normally.



4. If both of No.1 head side and No.2 head side works normally, the operation is completed.

If the ink was not sucked normally, please implement the following procedure (1) and (2).

(1) Make wet the lip of the cap rubber with the following cleaning solution.
[using 03 cleaning solution(FL003-Z-22)]

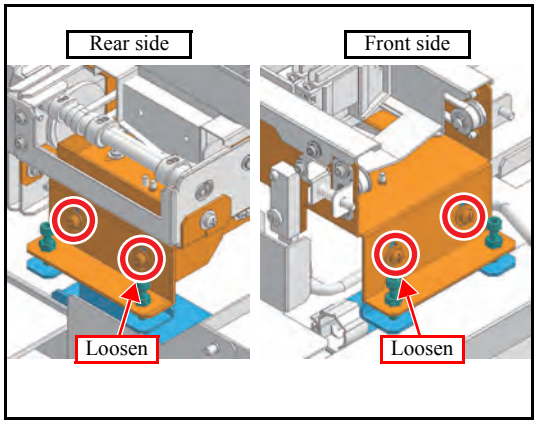
(2) Confirm adjustment of the station height.
Refer to [4.3.3 Adjustment of the Station Height].

4.3.4 Adjustment of the Wiper Height

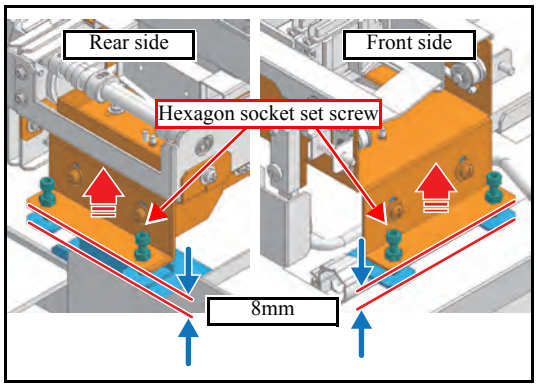
■ Outline

Adjust the height of the wiper.

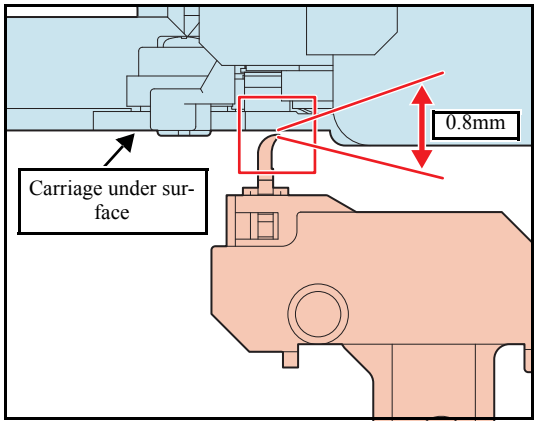
■ Procedure



1. Remove the following covers.
   - **Right maintenance cover C**
   - **Rear cover R**
2. Loosen the wiper height adjusting screws (x4).
3. Make the head gap “Low”

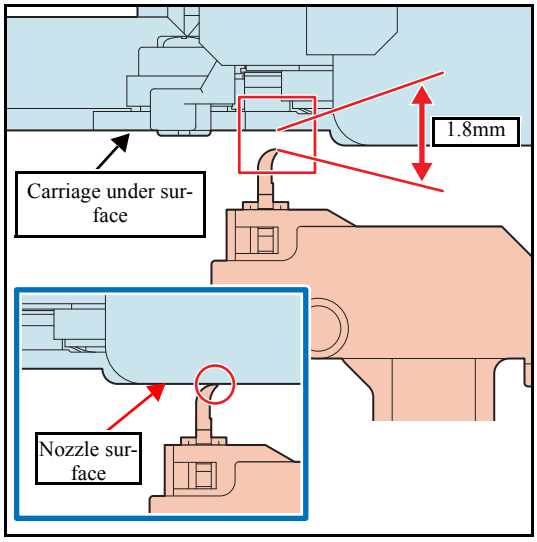


4. Loosen the hexagon socket set screws, and then adjust temporarily so that the reading of thickness gauge is 8 mm.



5. Make the 0.8mm space between carriage base and wiper edge with using the hexagon socket set screws for adjusting.

4.3.4 Adjustment of the Wiper Height

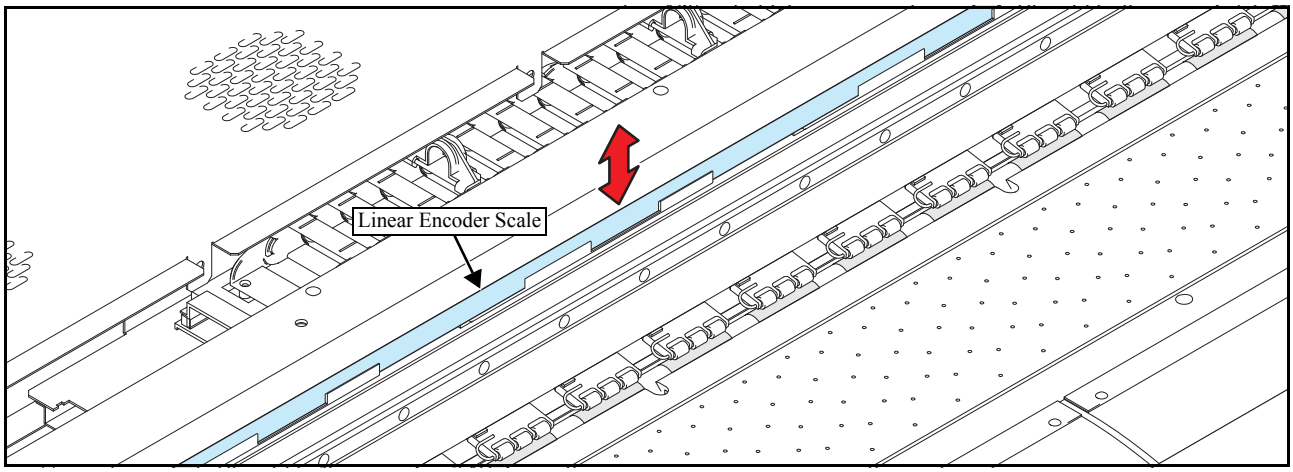


6. Make the head gap “High” and confirm whether the wiper touches nozzle surface.

   And at that time, confirm the space between the carriage base and the wiper edge is 1.8mm.

7. Push into the unit for downwards, and make 4 wiper height adjusting screws tightening. Then tighten the nut of the hexagon socket set screw.

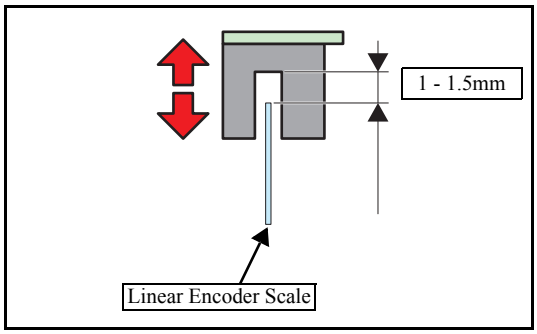
4.3.5 Positioning of the Encoder Sensor



■ Outline

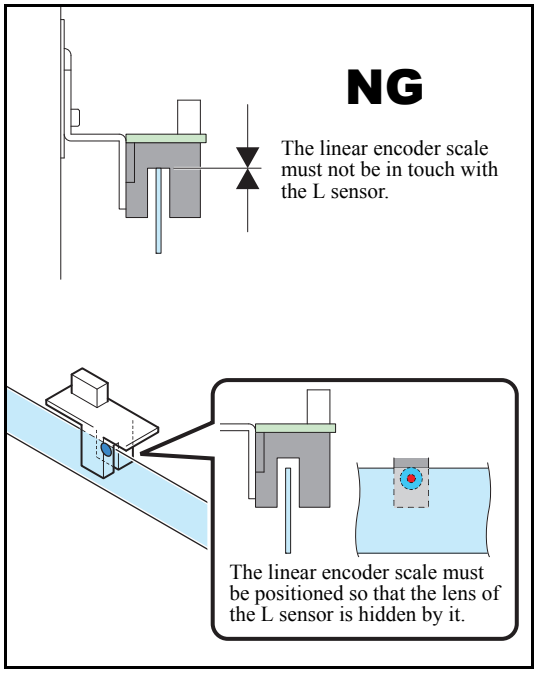
Adjust the position of the encoder sensor.

■ Procedure



1. Loosen the screws on the L sensor BKT.

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

4.3.6 Adjustment of the Jam Sensor Height

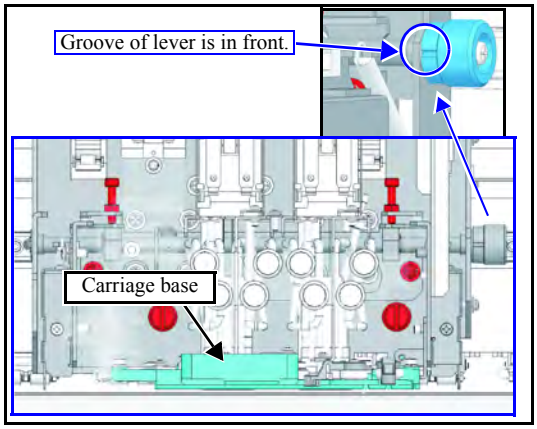
■ Outline

Perform jam sensor height adjustment for right and left.

■ Procedure

☐ Preparations

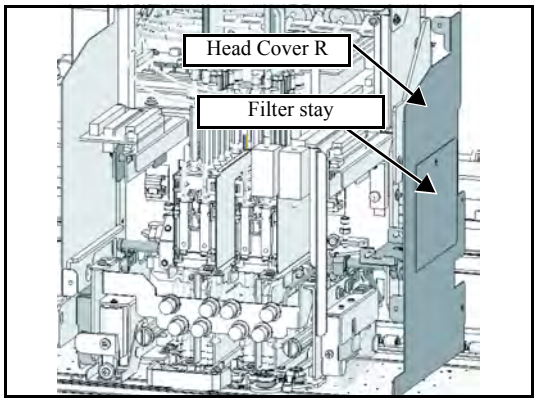
1. Remove the following covers.
   1) Right maintenance cover U
   2) Right maintenance cover C
   3) Front cover 200L
   4) Head cover
2. Move the carriage onto the platen.
3. Move the Head UP/ DOWN Lever to the lowest position.
4. Move the clamp lever downward.

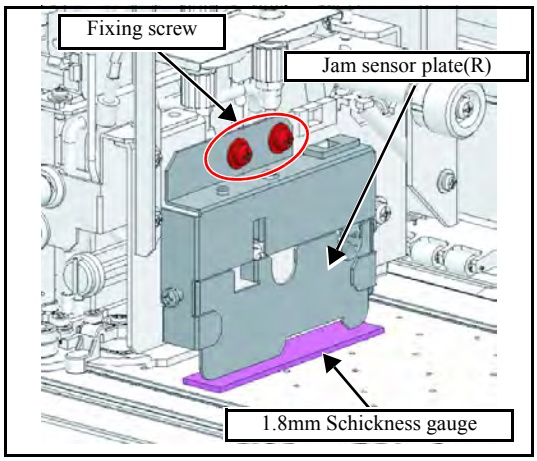


IMPORTANT: Be sure to perform adjustment with the clamp lever down. In addition, the head initialization height shall be L range setting.

☐ Jam sensor Assy (right) height adjustment

5. Remome the “Filter stay” and “Head Cover R”.

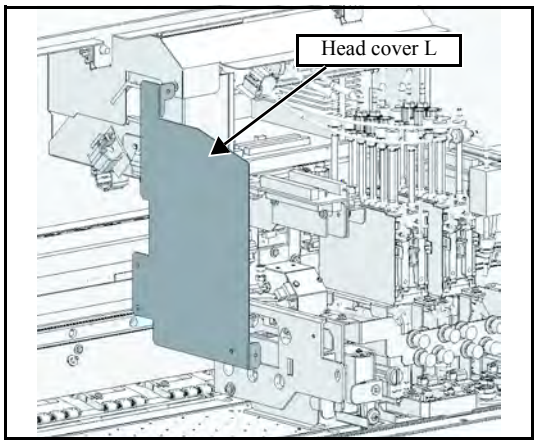




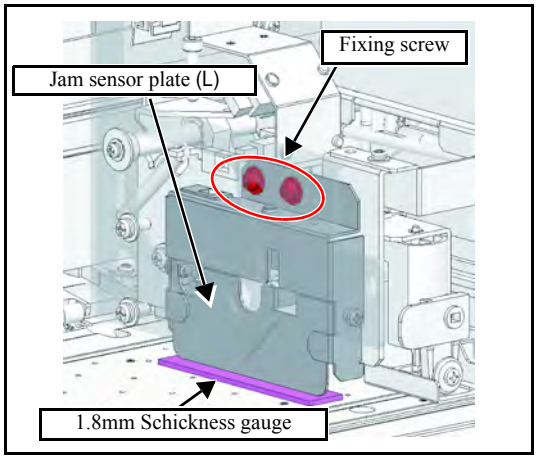
6. Loosen the fixing screw (x2) by one revolution.
7. Put thickness gauze of 1.8mm between the jam sensor plate (R) and the platen, and align the height.
8. Tighten the Fixing screw.

4.3.6 Adjustment of the Jam Sensor Height

☐ Jam sensor Assy (left) height adjustment



9. Remove the Head Cover L.

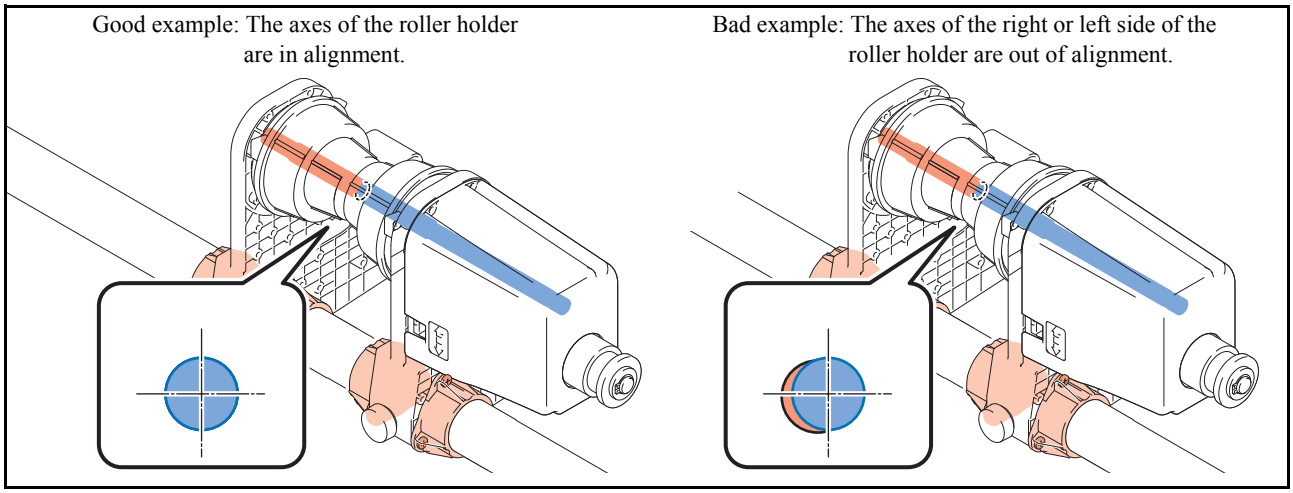


10. Loosen the fixing screw (x2) by one revolution.
11. Put thickness gauze of 1.8mm between the jam sensor plate (R) and the platen, and align the height.
12. Tighten the Fixing screw.

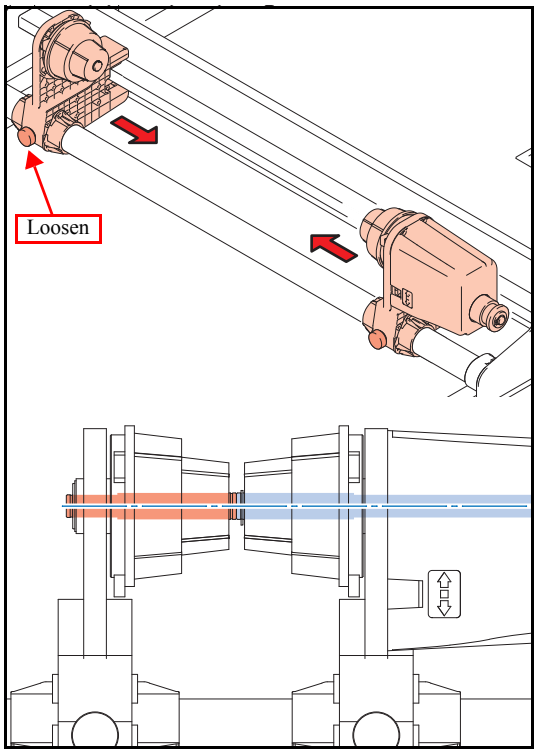
4.3.7 Centering of the Roll Holder

■ Outline

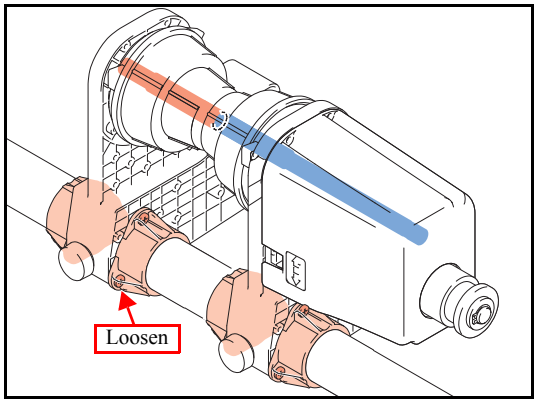
Carry out centering so that the axes of roller holder (axis of both feeding side and take-up side) are aligned, by positioning them face-to-face.



■ 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 Head Leakage Check

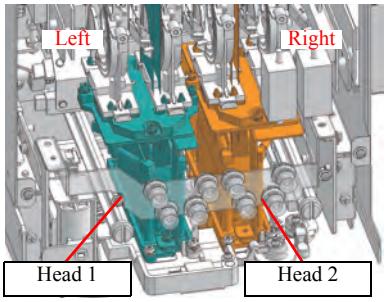
■ Outline

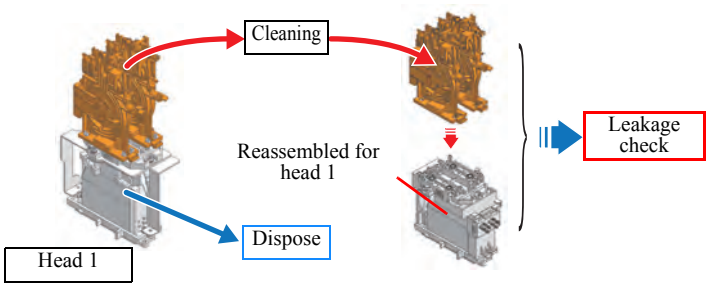
When head unit Assy. for maintenance is reassembled for head1, leakage check is necessary.

Refer to **"Manual for Maintenance Head "** or "3.1.1 Replacement of the Head Unit" for replacement.

Caution

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





■ Necessary tools

No.	Parts code	Parts name	Quantity	Remarks
1	A101838	Leakage check jig	1 pcs	It is used after assembled
	MP-M015099		1 pcs	
2	MP-MTLLP-1	Mail plug	4 pcs	Use only 3 plugs when No.1 jig is used
3	C-ML003-Z-K-1-KW C-ML003-Z-K-1-KW (for EU)	Cleaning liquid 03 (200ml bottled)	2 bottles (About 400ml)	It is not necessary in case of new damper
4	MP-2-4031-04	Disposable syringe	1 pcs	
5	MP-LCF-12100	Filter (10μm)	1 pcs	Use for cleaning
6	MP-M700765	Pipe seal rubber L	8 pcs	for replacement

Caution

Do not use the jig of No.1 at the position where liquid contact. Pressure gauge may be damaged.

4.3.8 Head Leakage Check

■ Preparation (Cleaning of Damper)

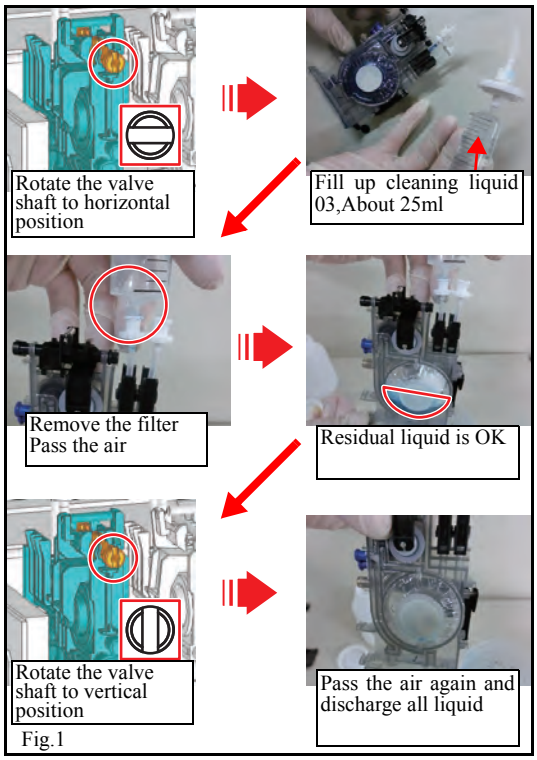


Fig.1

1.)Perform Ink discharge of head 1.
Select [#ADJUST]->[#DAMPER]-> “DISCHARGE”.
Refer to “4.2.20 DAMPER DISCHARGE”.

2.)Perform cleaning of cap. (Because leakage may occur for ink dirt.)

3.)Turn off power supply, and remove the head1 with damper.

4.)Remove the damper from head1, and perform cleaning it.
Use cleaning liquid?Cleaning liquid 03

(1) Release the damper valve by rotating the valve shaft to horizontal position?

(2) Fill up the damper with cleaning liquid 03 with the syringe (with filter).

(3) Remove the syringe filter, and pass air through the damper by using the syringe with the damper valve released.

(4) Close the damper valve, and pass air through the damper again by using the syringe to completely discharge the cleaning solution.

(5) Repeat the above procedures until clean.

■ Work procedures for Leakage check

a: Official method; In case that Leakage check jig (pressure gauge) is used

☐ Tools

1; JIG used to check leakage on the path (A101838_OPT-J0094) 1pcs.

2; Attachment to support the leakage checking JIG for 400 (MP-M015099-00) 1pcs.

3; Female cap (MP-FTLLP-1) 3pcs.

☐ Preparation

1.Connect the jigs for leakage checking. (See fig.2)

2.Confirm whether the JIG in itself does not leak out. (-50[kPa] for 1[min] leaving, variation less than 2[kPa].)

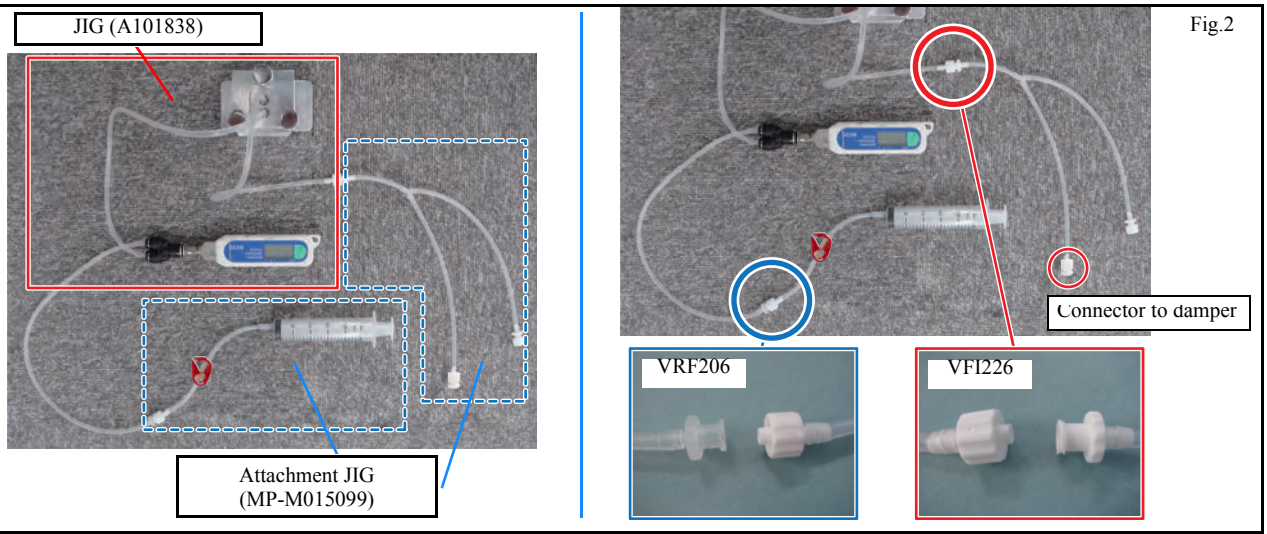


Fig.2

4.3.8 Head Leakage Check

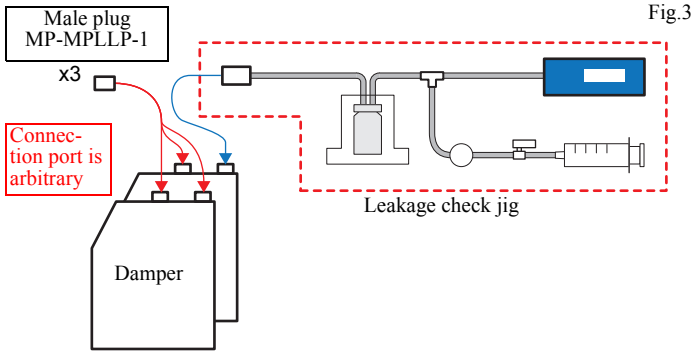
1.) Attach the new head to the damper after cleaning, and attach it to the carriage.

2.)Attach the head connector cable. (Do not connect the damper sensor cable and supply tube.)

3.)Turn on power supply.

4.) Connect the tube for leakage check. (See fig.3)

Fig.3



5.)Select [#TEST]->[#AGING]->[#PUMP MOTOR], and set as below.

[CAP]: “ON”

[PUMP]: “1”

[Dir.]: “normal”

[SPEED]: 600rpm

[ACC]: 500rpm/s

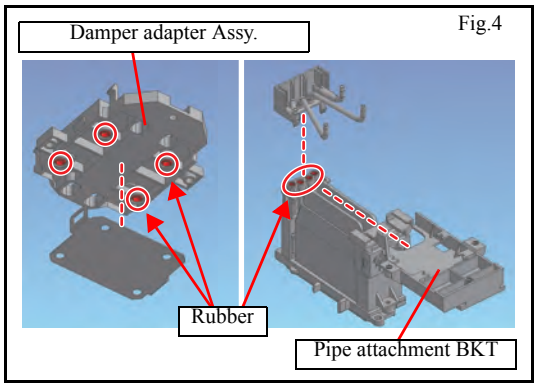
[EXEC TIME]: 3m

6.)Execute with [ENTER] key with screen of [PUMP START].

7.)Stop when the pressure meter reaches -50 [kPa] and wait for one minute after the pressure meter has stabilized.

- It is acceptable if the pressure meter variation is less than 2 [kPa].
- If the variation is 2 [kPa] or more (if a slow leak has occurred), perform procedures by referring to the next section 5. “Determining the Cause of a Leak”.

Fig.4



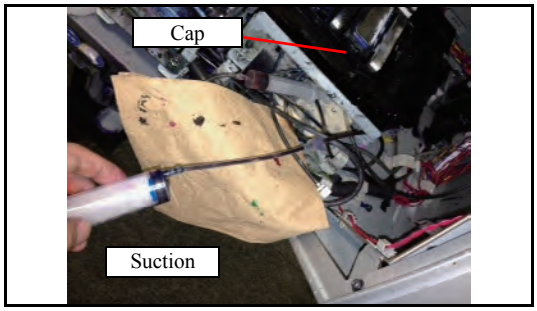
8.)Remove the male plug, and release the negative pressure.

9.)Connect the tube to return.

4.3.8 Head Leakage Check

b: Temporary method; In case that Leakage check jig (pressure gauge) is not used

> IMPORTANT
> Check by using the temporary method and reassemble. If there is any discharge fault, such as the nozzle clogging, always check again according to the formal method.

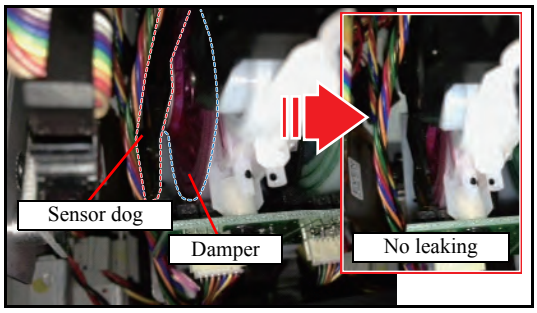


1.)Attach the new head to the damper after cleaning, and attach it to the carriage.

2.)Attach the male plug (4x) to the upper of the damper.

3.)In capping condition, remove the tube under the cap connected to the pump and suction from that tube by using the syringe.

> IMPORTANT
> It is recommended that confirm whether the JIG in itself does not leak out with suitable iron plate, etc.



4.)If there are no leaks, smash the damper and close the sensor dog. Wait for one minute and check that none of the sensor dogs of any of the four routes has expanded.

If a sensor dog has expanded, perform procedures by referring to the next section 5. “Determining the Cause of a Leak”.

> IMPORTANT
> **Releasing Negative Pressure:**
> - Always release the top part of the damper to release the negative pressure.
> - Releasing negative pressure from the cap side or air purge port results in ink being suctioned from the nozzle. Be careful as this can be cause for replacing the damper and head.

■ Determining the Cause of a Leak

① It is highly probable that there is a leak in the capping part if the sensor dogs of both Nos. 1 and 2 dampers cannot be closed.

- In case of cap leakage → Replace the cap and perform cap cleaning.
- If there is a station height fault → Adjust the station height.

② It is highly probable that there is a leak in the head part, if a sensor dog of one damper cannot be closed.

• 1)Leakage at the joint between the damper and the damper adopter

- If there is suction when pressing the damper against the adapter → Replace the damper seal rubber (MP-M700711).
- The damper part has a leak → Replace the damper.

• 2)Leakage between the SUS pipe and pipe seal rubber

- SUS pipe insertion fault (rises up) → Reinsert the SUS pipe correctly. (Be careful to insert at an angle because a leak could be caused if the rubber is damaged.)
- Deformation and damage of pipe seal rubber → Replace the pipe seal rubber.

③ It is highly probable that there is a leak in the damper part if the damper on one side of a sensor dog cannot be closed.

- Work procedure is same way as ② .

Test Items

5.1.1 CHECK PATTERN

■ Outline

Following 12 “CHECK PATTERN” types are printable.

100%	50%	25%	6.25%
NOZZLE	V-LINE	H-LINE	SLANT
GRADATE	V-1B1W	H-1B1W	DROP CHECK*

■ 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	600, 900, 1200 dpi
3	Select Y resolution	450, 600, 900, 1200 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 ~ 9990 mm Y: 10mm ~ Paper detect size
8	Select drawing color	MCYK(4 color), MMCCYKWW(4color+W) MMCCOrGYK(6color), MOCGYKWW(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.

* Pattern of the [DROP CHECK] dose not heve menu of the [Y resolution]-[Drawing color].

5.1.2 SENSOR TEST

■ **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
INK CARTRIDGE	Displaying the status of the Ink Cartridge Sensor.	1 to 8/_
INK END	Displaying the status of the Ink Near End Sensor.	1 to 8/_
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
DAMPER 1 to 8	Displaying the status of the Damper.	A sensor name of "ON" is displayed /---

5.1.3 MEMORY CHECK

■ Outline

Checks each memory of the machine.

■ Content

Item	Content
S-RAM check	Executes Read/Write check of S-RAM. ◆When a DATA error occurs, “S-RAM D:xxxxxxxx” is displayed. ◆When a Address error occurs, “S-RAM 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.

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.

5.1.5 LCD

■ **Outline**

The characters are displayed on the LCD.

■ **Content**

After LCD test starts, each character will be displayed repeatedly on the LCD.

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
ROOM AIR	Room temperature
HEAD1	Head temperature of head 1 EVEN side
HEAD2	Head temperature of head 1 ODD side
HDC	Temperature of HDC PCB

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**

Cartridge sensor and Ink end sensor, it is checked operating conditions.

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
INK SUPPLY	Operation of Ink-supplying Pump Motor.
CIRCURATION	Operation of Circuration Pump Motor.

*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 TEST HARDWARE

■ **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.	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
WASH CART. VALVE	Description: Operation test of wash cartridge valve. Set value: ON, OFF
TAKE-UP MOTOR	Description: Operation test of take-up motor. Set value: ON, OFF
HDC FAN	Description: Operation test of HDC fan. Set value: ON, OFF
COOLING FAN	Description: Operation test of Carriage cooling fan. Set value: ON, OFF
CEILING FAN	Description: Operation test of ceiling fan. Set value: ON, OFF
OPTION HEATER FAN	Description: Operation test of fan heater. (option) Set value: ON, OFF
LED POINTER	Description: Operation test of LED pointer. Set value: ON, OFF
CIRCULATION VALVE	Description: Operation test of circuration valve. Set value: 1, 2
UISS VALVE	Description: Operation test of UISS valve. Set value: 1, 2, 3, 4

5.1.17 LED

■ Function

ON/OFF test of the keyboard LEDs is executed.
The LEDs are controlled according to the ON/OFF designation.

■ List of LEDs

LED	Kinds
HEAT LED	Pre, Print, and Post heat LEDs, Constant LED
ACTIVE LED	ACTIVE LED
Cartridge LED	RED x8 , GREEN x8

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

5.1.20 VACUUM FAN

■ **Outline**

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

5.1.21 EXTERNAL HEATER

■ Outline

Check the operation of the Drying Heater Assy “Heater” and “Fan”.

■ Content

When it is ON, the heater temperature moves up, and FAN operates.

Step	item	Description	Remarks
1	Heater SSR ON/ OFF setting	Specify ON/ OFF of the Drying Heater Assy “Heater”. The ON heater temperature is raised. If it is left, it may exceed the upper limit of the setting value. Be careful about it.	Temperature control is not performed.
2	FAN ON/ OFF setting	Specify ON/ OFF of the Drying Heater Assy “FAN”.	

5.1.22 VOLTAGE SELECTOR

■ **Function**

Check the voltage selector status.

Either of “110V” and “220V” is displayed.

5.1.23 EVENT LOG

■ **Function**

Saved Event Logs are displayed.

■ **Content**

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

5.1.24 CHECK MESSAGE

■ **Function**

Checks the display of error and warning message.

■ **Content**

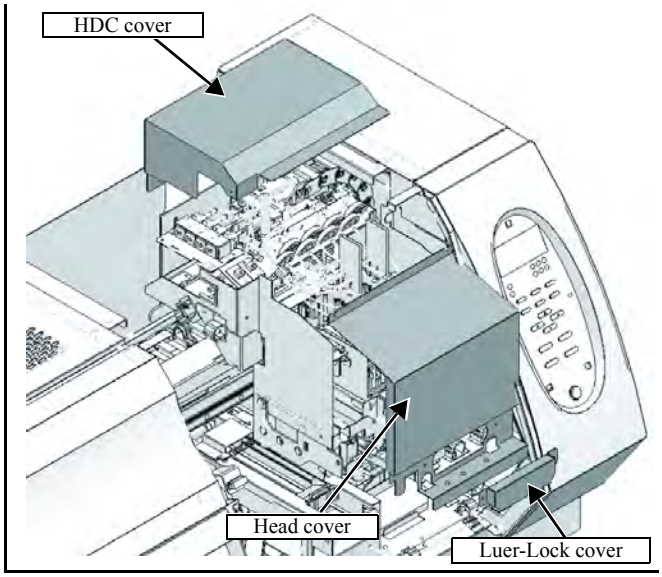
Change the display of error / warning message with [▲] / [▼] key.

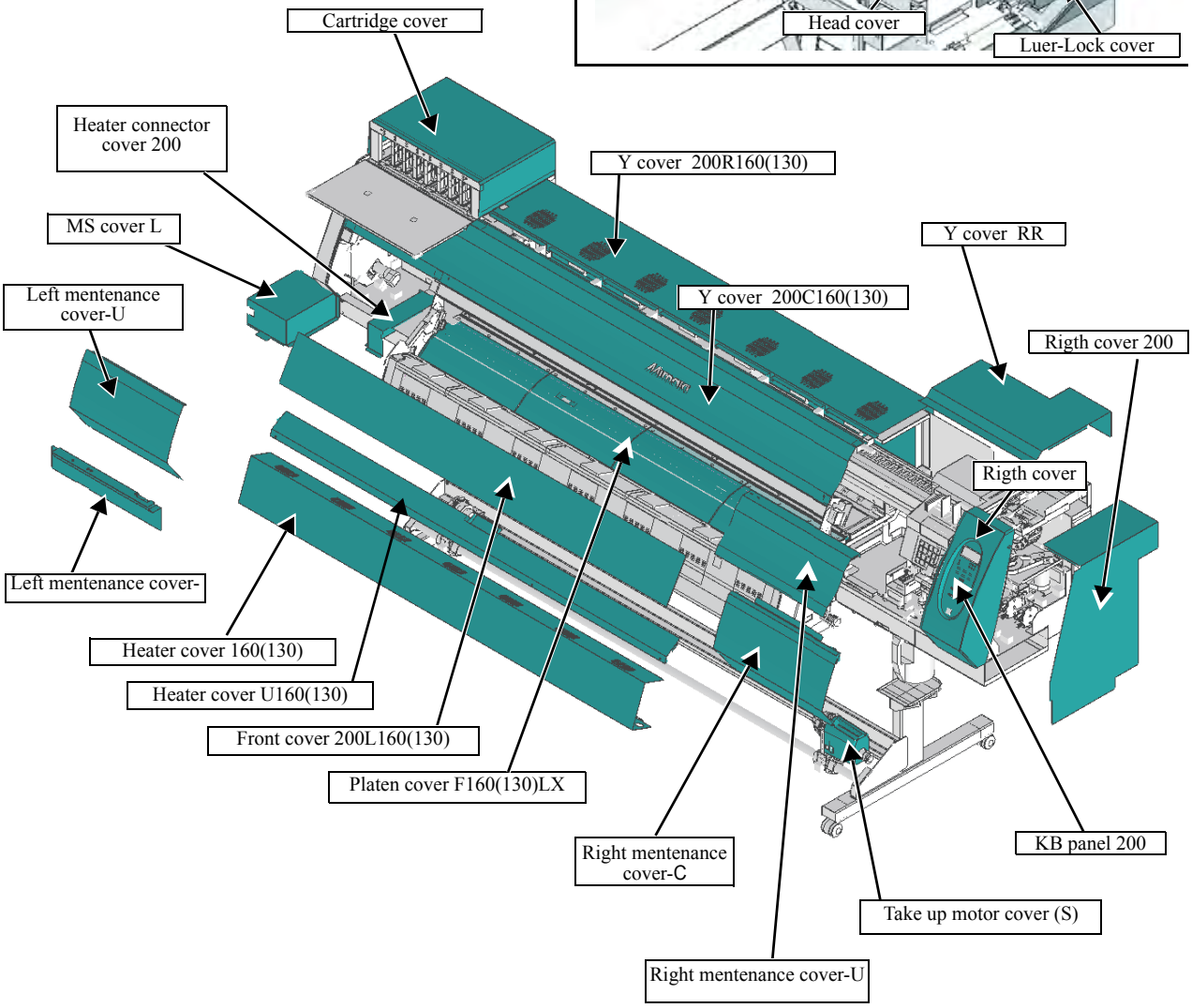
Test Items

Disassembly and Reassembly

6.1.1 Cover Layout

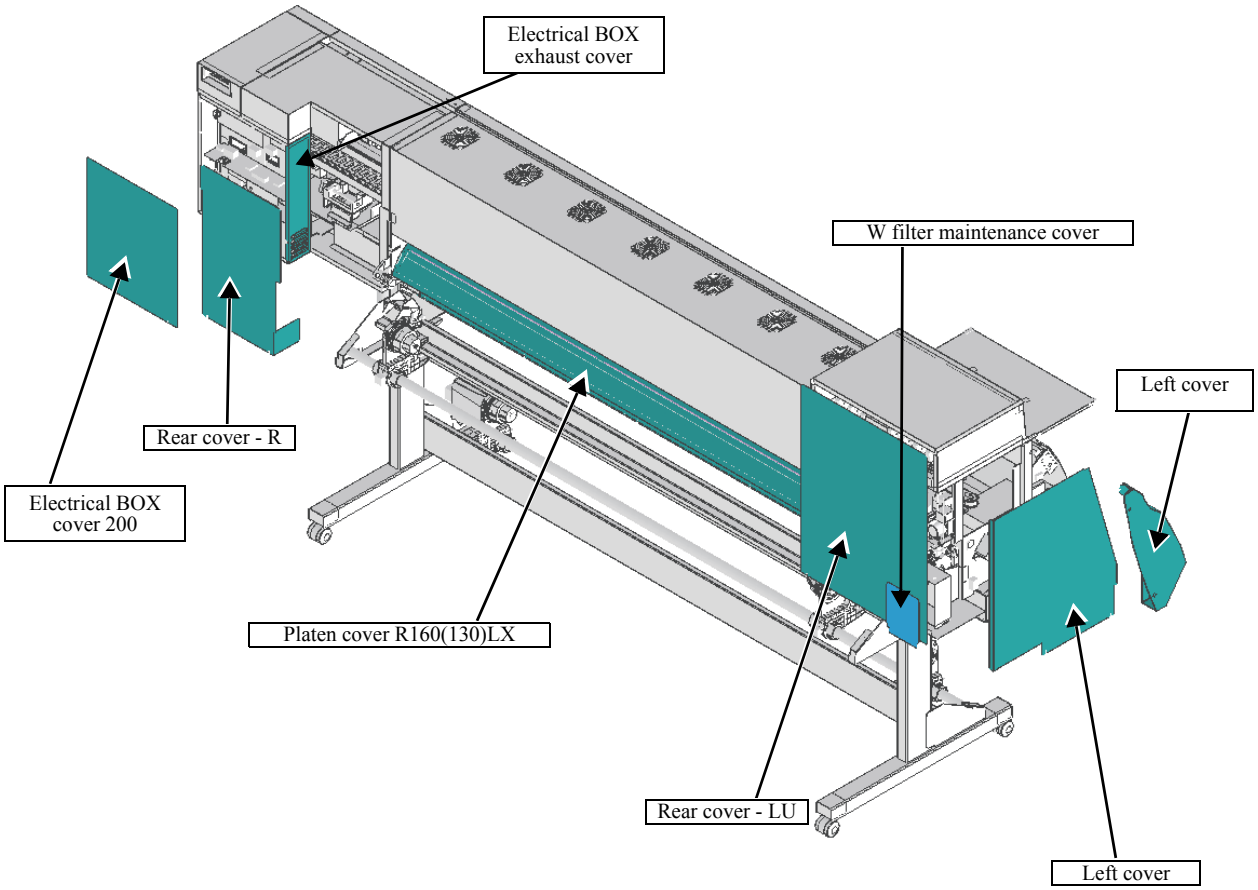
■ **Machine Front**





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:

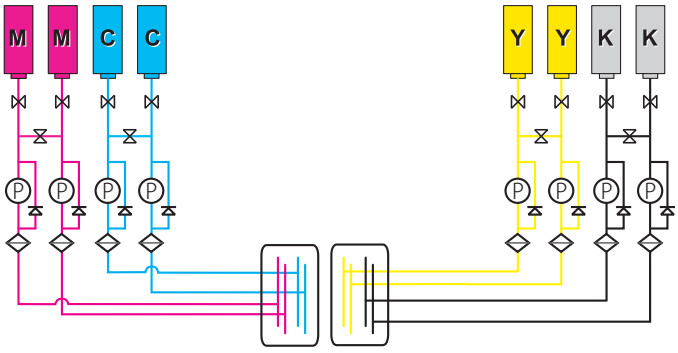
The washer of the screw is outside of the cover.

Bad example:

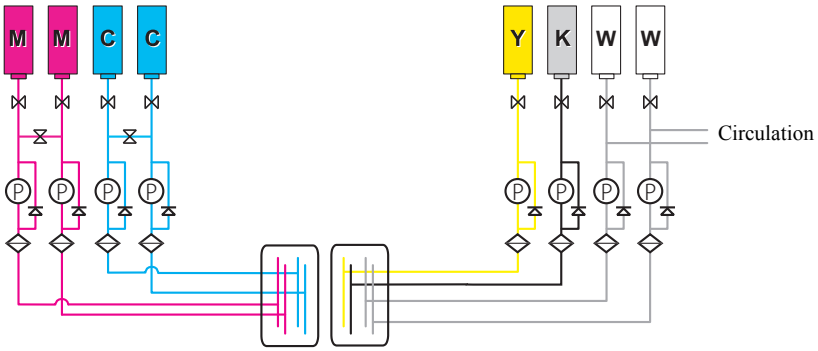
The washer of the screw is inside of the cover.

Disassembly and Reassembly

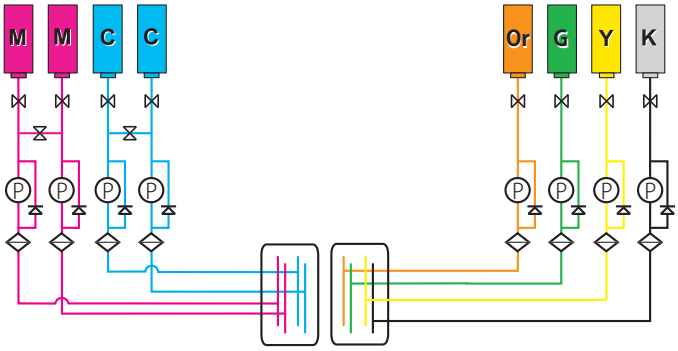
6.2.1 Changing Joint



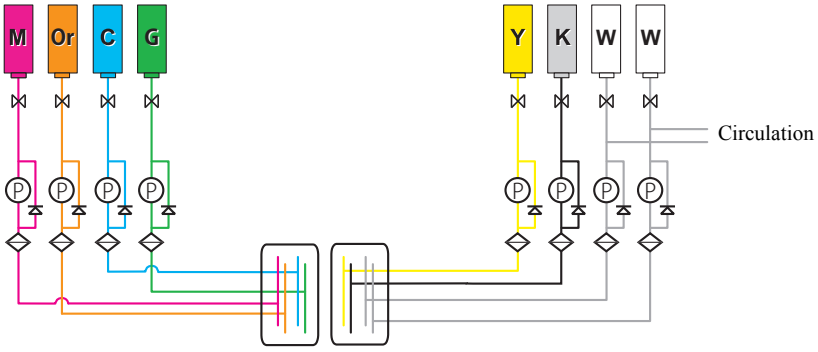
Ink supply path (4-color fill: at factory shipment)



Ink supply path (4-color + W fill)



Ink supply path (6-color fill)



Ink supply path (6-color + W fill)

6.2.1 Changing Joint

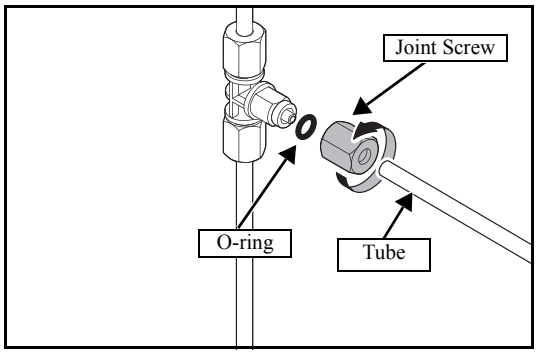
■ Outline

It is possible to set the above four ink supply paths for JV400-LX.
Four colors are set at factory shipment, but it is possible to change to other colors by coupler opening and closing.
This section describes the procedures to change to 4 colors + white.

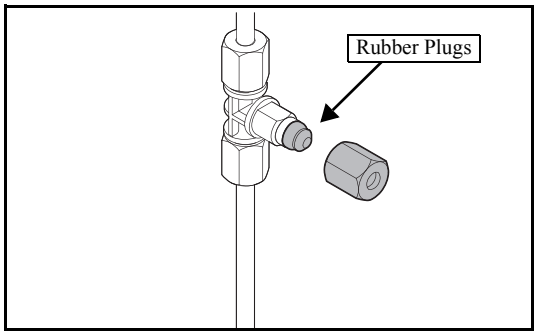
■ Work procedures

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.



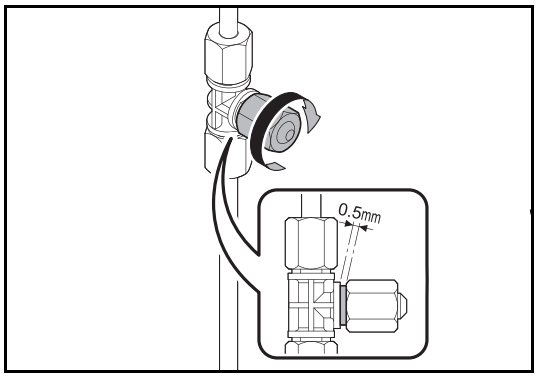
1. Execute [#ADJUST] — [HEAD WASH] to discharge the ink. (Refer to 4.2.7)
2. Remove the **Rear cover LU**.
3. Loosen the **joint screws** and remove the **tube** and **O-rings**.



4. Put on the **rubber plugs** on the coupler.

IMPORTANT

Make sure that O-ring is not remaining in the joint screws.



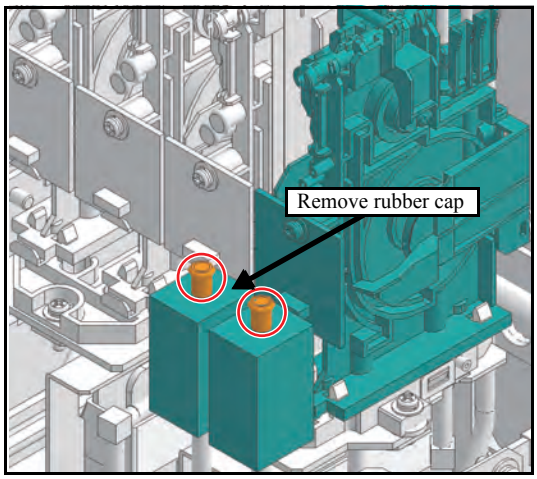
5. Tighten the joint screws.
   Leave a space of around 0.5 mm between the coupler and screw.

IMPORTANT

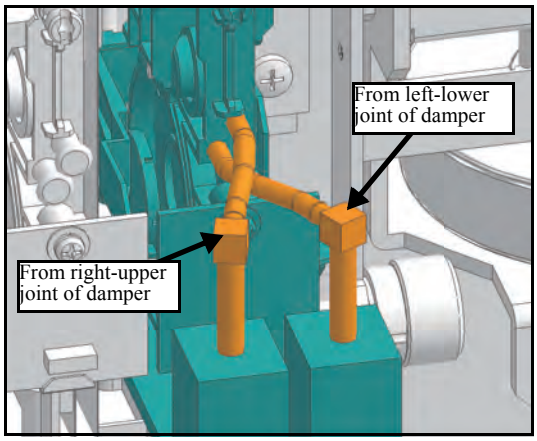
When clamping the joint screws, do not clamp them too much.

6.2.1 Changing Joint

☐ When white ink is used, connect the ink tube of circulation path (circulation tube) in accordance with the following.



1. Remove the Damper rubber cap (x2).



2. Connect two Circulation tubes as shown in the left figure.

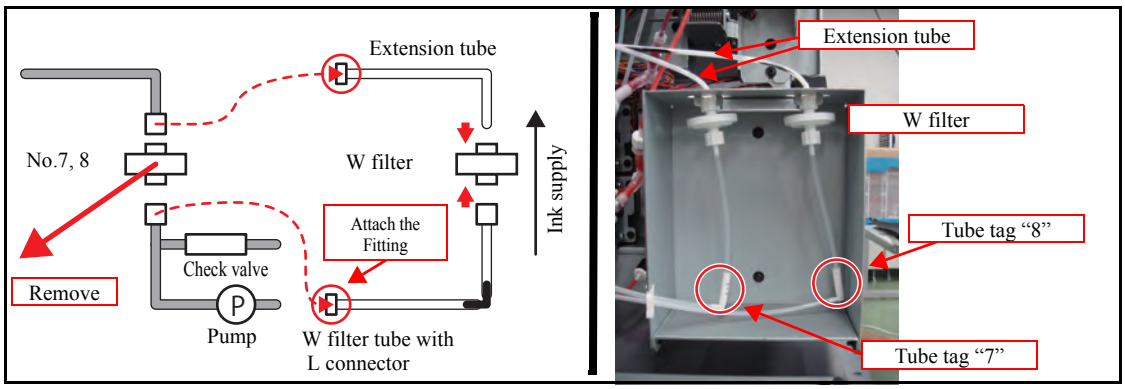
   Connect the left Liquid contact valve to the right-upper joint of the damper.

   Connect the right Liquid contact valve to the left-lower joint of the damper.

   (When you look down the tubes, tubes are crossed.)

☐ When white ink is used, connect the tube for white ink filter in accordance with the following.

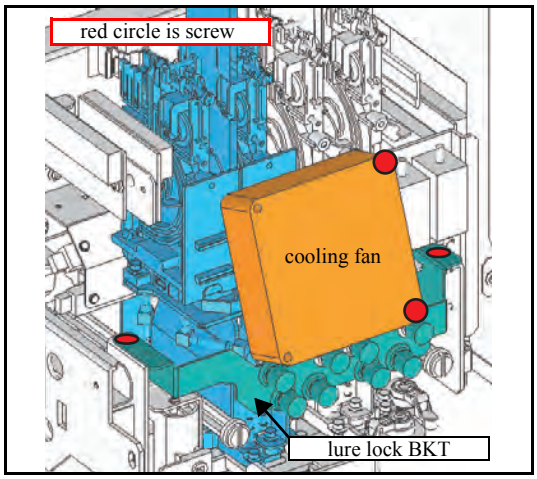
1. Remove **Rear cover - LU LX** from the back panel of the main unit.
2. Connect the part of the red dotted line of the figure below. (Remove the No.7 and No.8 filter.)



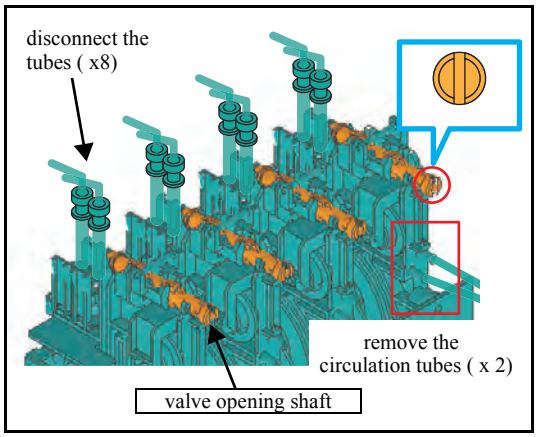
3. Return the **Rear cover - LU** to the original location, and affix using the screws.

6.2.2 Damper

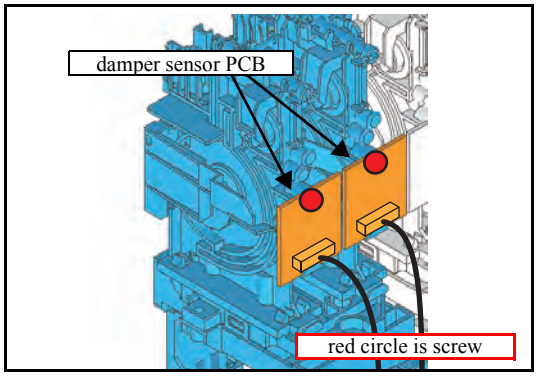
■ Work Procedures



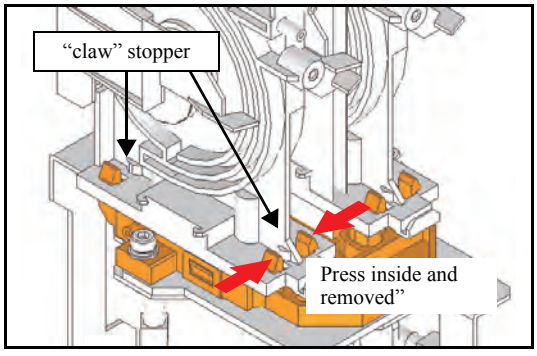
1. Remove the cooling fan (screw x 2).
2. Remove the **Lure Lock BKT** (screw x 2).
3. Cover the paper towel around the printing head to protect for leak ink.



4. Disconnect the tubes from fittings (x 8) at top of the dampers.
   Disconnect the circulation tube of only W ink (x 2 each damper).
5. Check the groove of damper valve opening shaft is vertical position. When it is not vertical, adjust it with flat head driver.
6. Select [DAMPER / DISCHARGE] from the operation menu. Refer to ["4.2.20 DAMPER DISCHARGE"].
7. Turning the power off, after completed discharge.
   Disconnect the tube.
8. Move the Print Head Carriage to make your work easy.



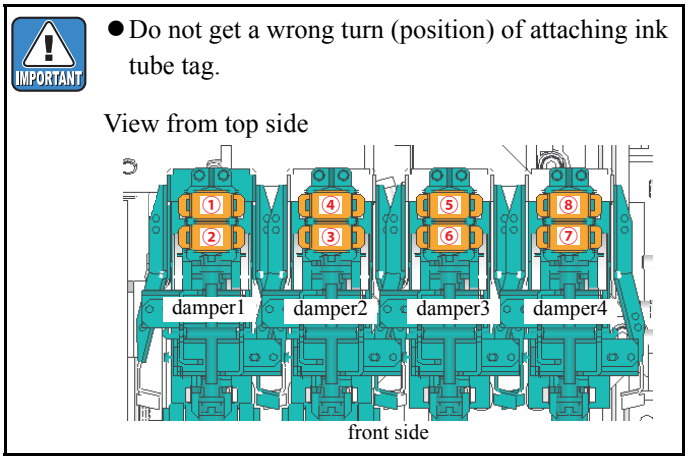
9. Remove the damper sensor PCB (x4) from each damper (screw x 1).It is no problem the sensor cable with being connected.



10. Remove the damper from the damper adapter Assy. by pressing to inside the “claw” stopper at lower the damper.
    (Stoppers are front and rear of the damper, remove each stoppers.)

6.2.2 Damper

11. Perform the assembly by reversing the disassembly procedure.

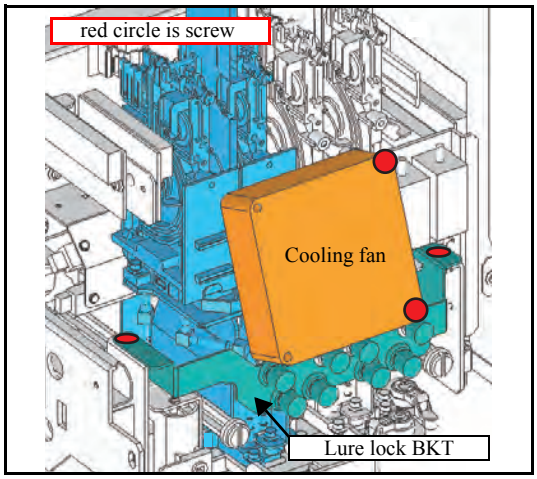


12. Perform [DAMPER / FILLUP] and fill ink in the damper.
Refer to ["4.2.21 DAMPER FILLUP"].

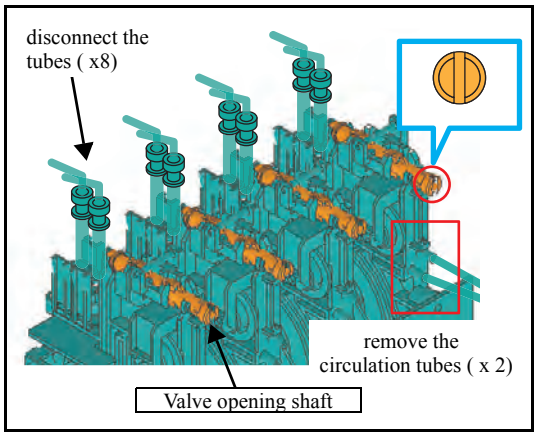
6.2.3 Head Unit

■ Work Procedures

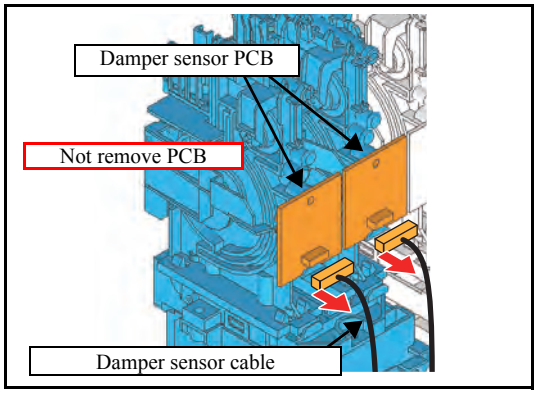
There are 2 type of the Head Unit. When the Head Unit isVer.1 type, carry out the procedure from 11. to 14. below.
When the Head Unit isVer.2 type, carry out the procedure from 15. to 21. below.



1. Remove the **Cooling fan** (screw x 2).
2. Remove the **Lure Lock BKT** (screw x 2) for only Ver.1 type.
3. Cover the paper towel around the printing head to protect for leak ink.



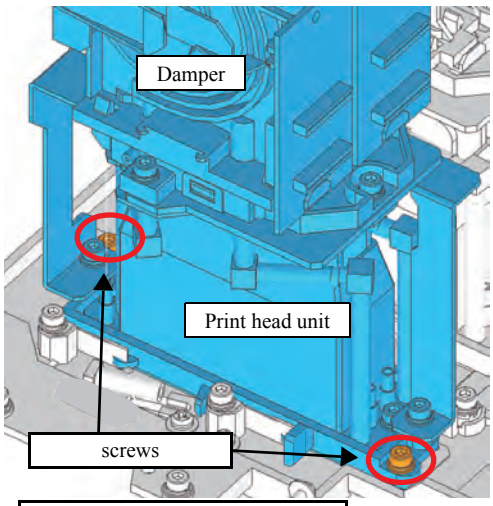
4. Disconnect the tubes from fittings at top of the dampers.
   (Each damper has 2 tubes.)
   Disconnect the circulation tubes (x2) of only W ink.
5. Check the groove of **Damper valve opening shaft** is vertical position. When it is not vertical, adjust it with flat head driver.
6. Select [DAMPER / DISCHARGE] from the operation menu. Refer to ["4.2.20 DAMPER DISCHARGE"].
7. Turning the power off, after completed discharge.
8. Move the Print Head Carriage to make your work easy.

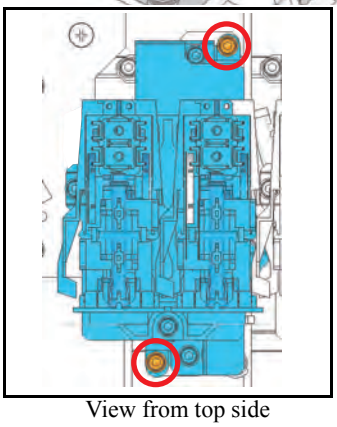


9. Disconnect the **Damper sensor cable** (each damper has 1 cable) from the damper sensor PCB.

6.2.3 Head Unit

Figure shows Ver.1 type, Ver.2 type is same as working.

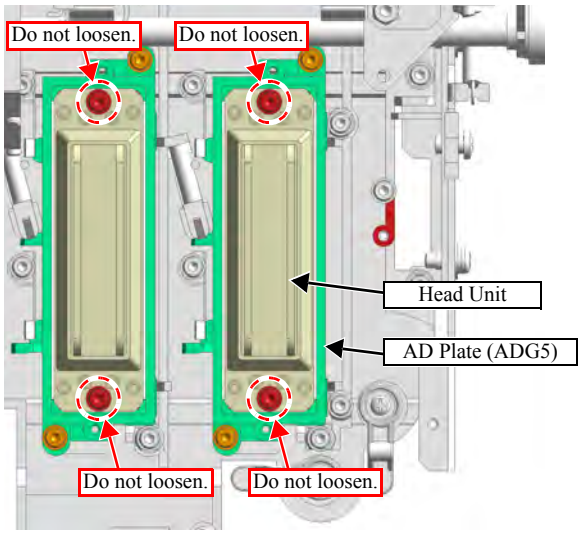




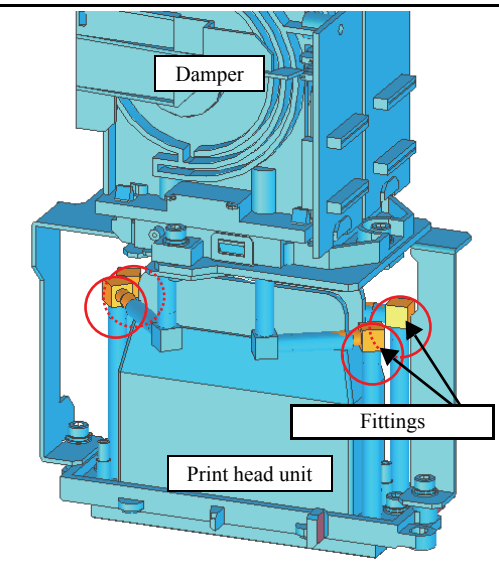
View from top side

10. Remove the screws (CS3x8SMW x2) at front and rear of the head unit. Remove **the Damper and head unit** from the carriage.

Make sure not to loosen any other screws than the Head Fixing Screws.
The AD plate (ADG5) and the Head Unit have been united in one assembly after matching the precision. Do not loosen the following screws to prevent the displacement of precision. (Re-adjustment unable)

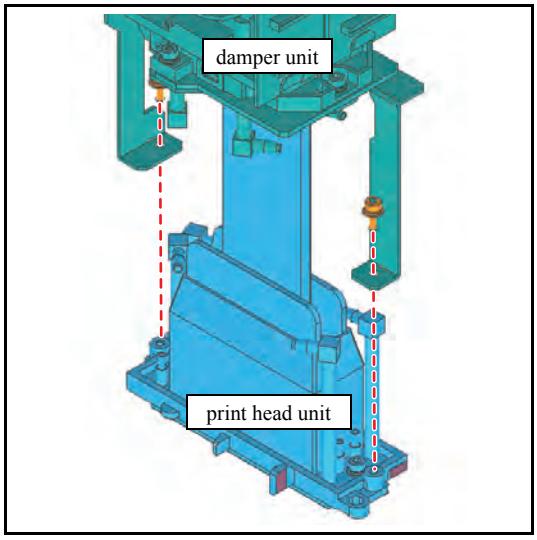


☐ When the Head Unit is **Ver.1 type** (, carry out the procedure from 11.to 14. below).

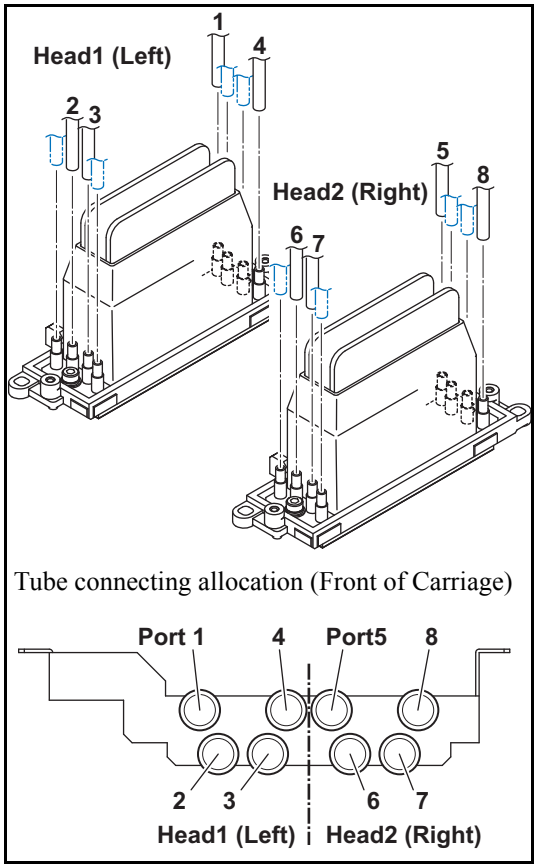


11. Remove **the Fittings** from the tube between the damper and head unit. (Each damper has 2 fittings at front and rear, i.e., One head has 4 fittings.)

6.2.3 Head Unit



12. Remove **the damper unit** from the print head unit (screw x 2).

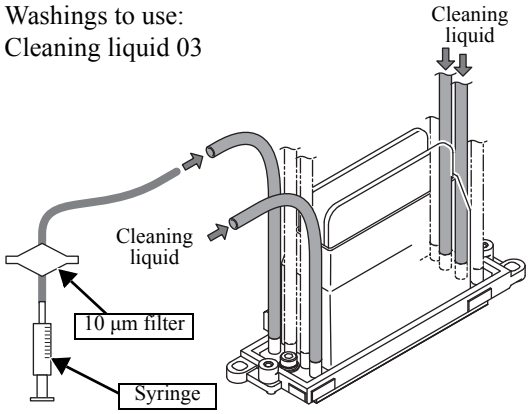


13. Perform the assembly by reversing the disassembly procedure.

IMPORTANT

When the head is replaced with new one, wet the inside of each nozzle with the cleaning liquid 03 (approx. 10cc) before assembling.
At supplying the liquid, supply the liquid slowly not to apply force, using a syringe and 10 µm filter.

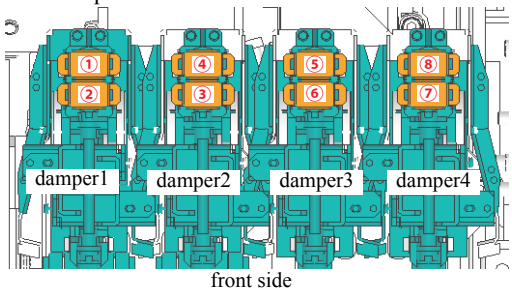
Washings to use:
Cleaning liquid 03



IMPORTANT

- The tube connections of Lure lock on the front of Carriage are shown in the left figure. Connect the tubes as shown in the figure.
- iDo not get a wrong turn (position) of attaching ink tube tag.

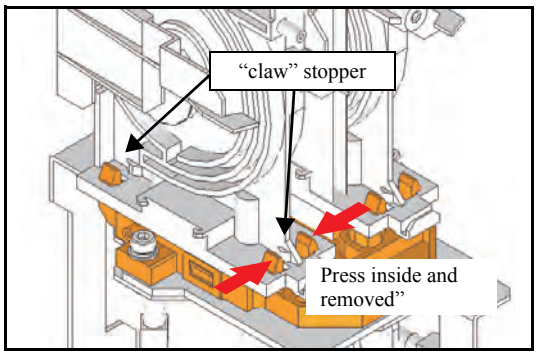
View from top side



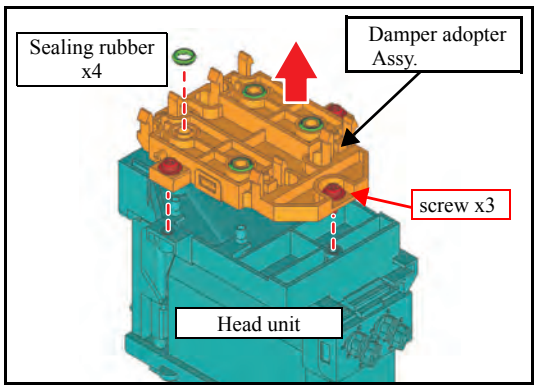
14. Perform [DAMPER / FILLUP] and fill ink in the damper.
Refer to ["4.2.21 DAMPER FILLUP"].

6.2.3 Head Unit

☐ When the Head Unit is **Ver.2 type** (, carry out the procedure from 15.to 21. below).

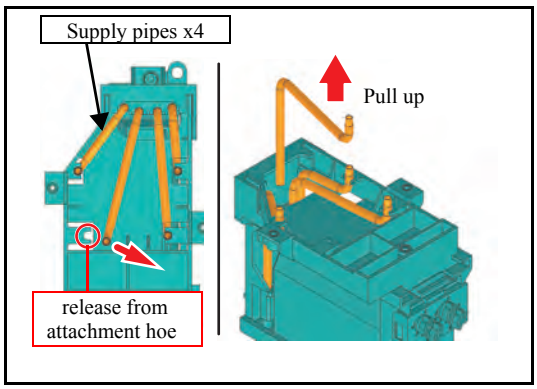


15. Remove **the Dampers** (x2) from the head unit.



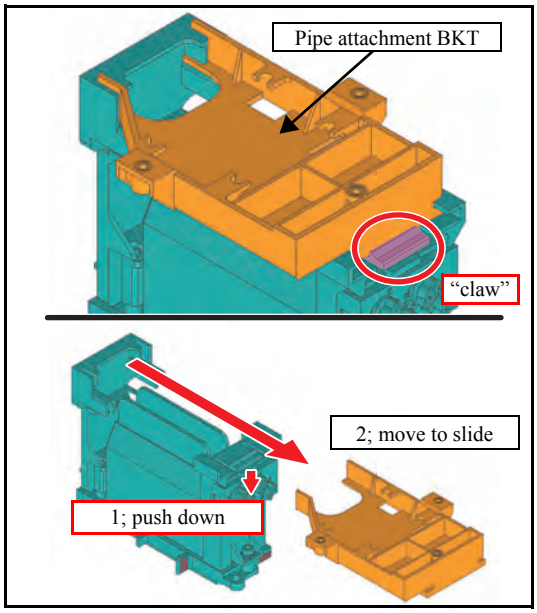
16. Remove **the Damper adopter Assy.** from the head unit. (x3 screws.)

    Remove **the Damper sealing rubber** (x4).



17. Remove **the Supply pipes** (x4).

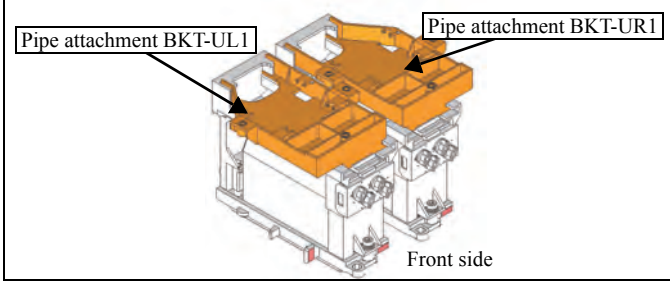
    Release it from attachment hole, and remove it as if pulling up.



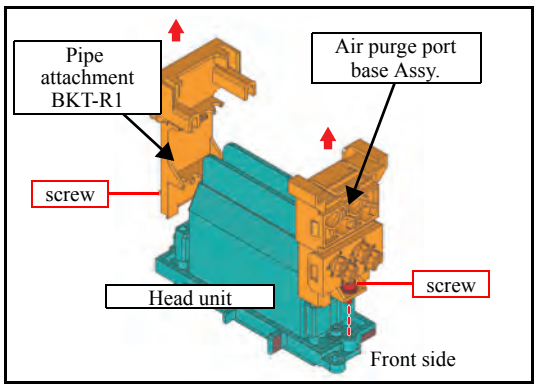
18. Remove **the Pipe attachment BKT** from the head unit.

    Push down the "claw" at the front side, and move (to slide) the pipe attachment BKT toward.

Pipe attachment BKT has 2 kinds of UL1 and UR1 of the symmetry form, each is attached the head of left and right.



6.2.3 Head Unit

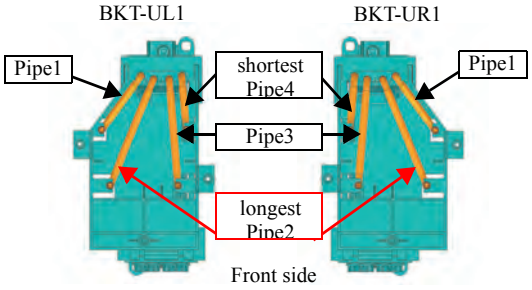


19. Remove **the pipe attachment BKT-R1** (at rear side, with one screw) and the **Air purge port base Assy.** (at front side, with one screw) from the Head unit.

20. Perform the assembly by reversing the disassembly procedure.

IMPORTANT

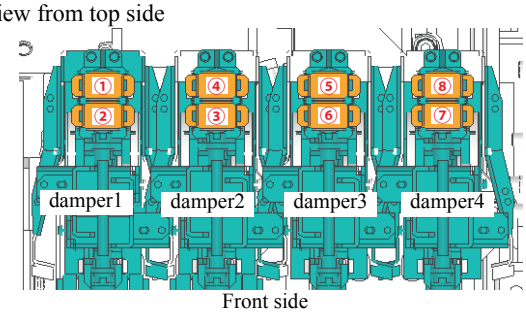
● iDo not get a wrong position of attaching the supply pipe.



IMPORTANT

● iDo not get a wrong turn (position) of attaching ink tube tag.

View from top side



21. Perform [DAMPER / FILLUP] and fill ink in the damper.
Refer to ["4.2.21 DAMPER FILLUP"].

6.2.4 INK FILTER(DELETED)

This item was deleted.

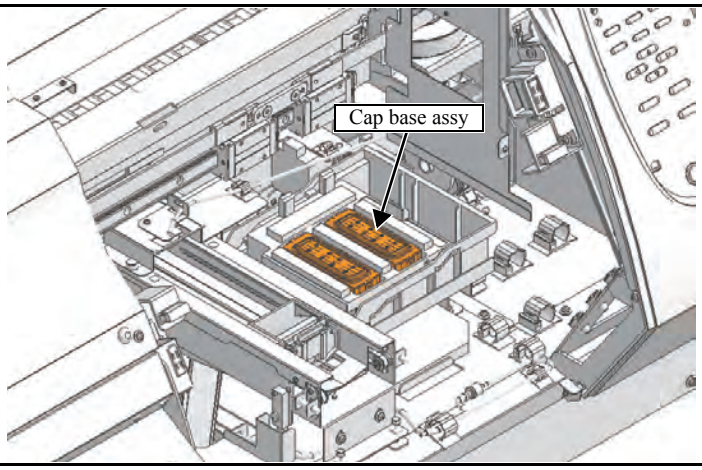
6.2.5 Air Route (DELETED)

This item was deleted.

6.2.6 Tube Connections of Air Route (DELETED)

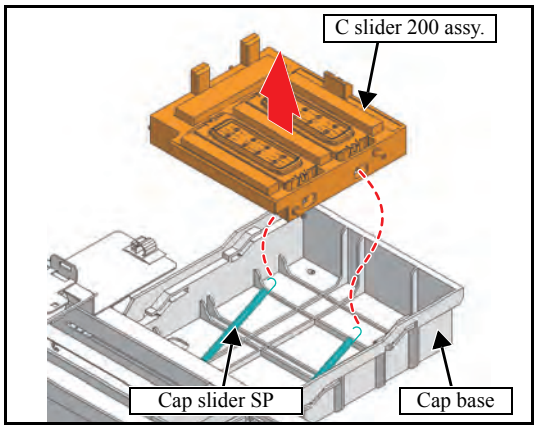
This item was deleted.

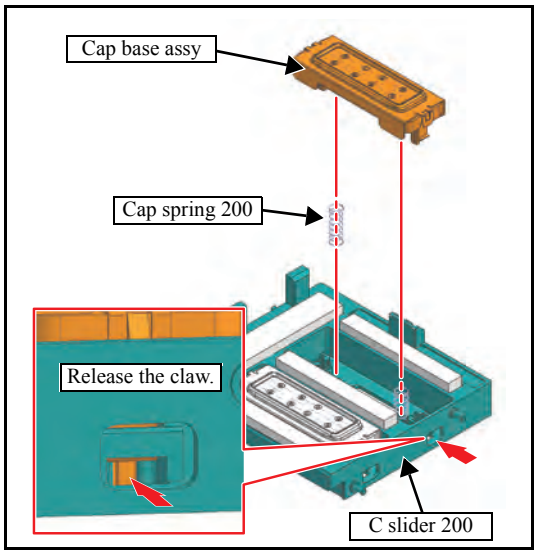
6.2.7 Cap Head Assy



■ **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.



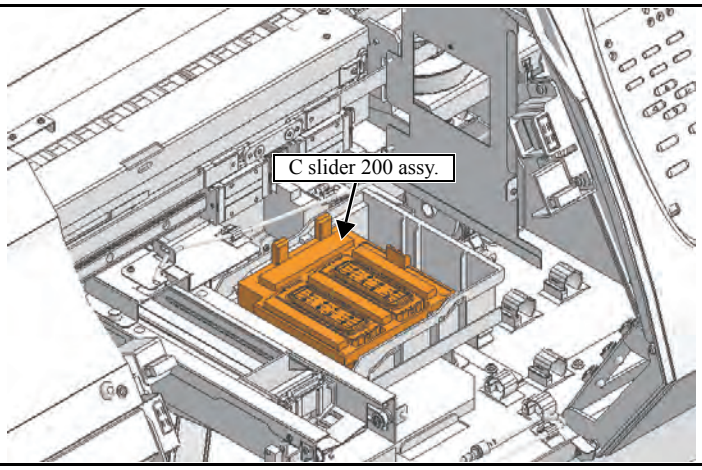


1. Turn off the main power supply of the machine.
2. Manually move the head unit over the platen.
3. Remove the **C slider 200 assy.**
   (1) Remove the **C slider 200 assy** from the guide flute by extending the side surface of the **Cap base**.
   (2) Remove the **Cap slider SP** (x2).
4. Release the claw and pull out the **cap base assy** from the **C slider 200**.

> **IMPORTANT** Take care not to lose the **Cap SP-20**.

5. Reverse the disassembly procedure for reassembly.

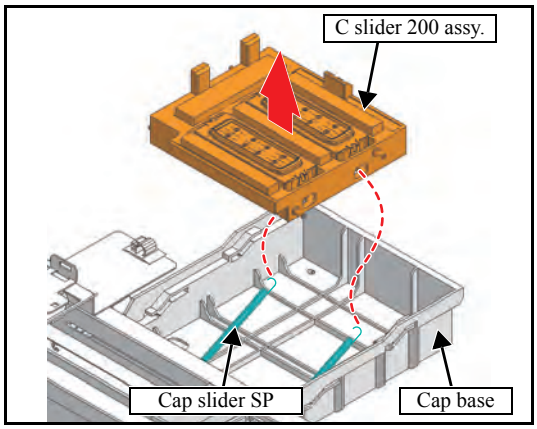
6.2.8 Capping



■ Work procedures

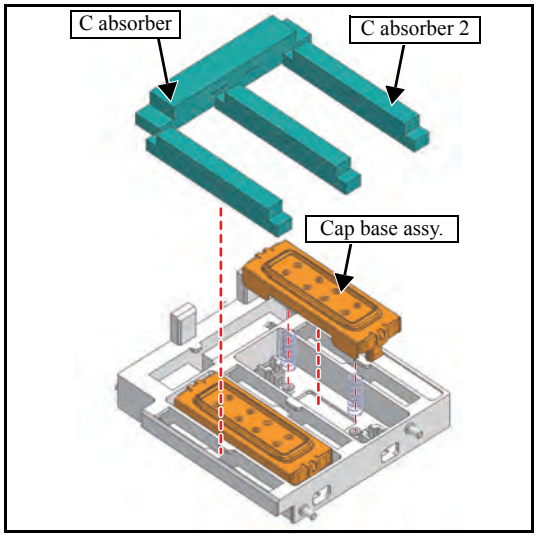
Caution

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



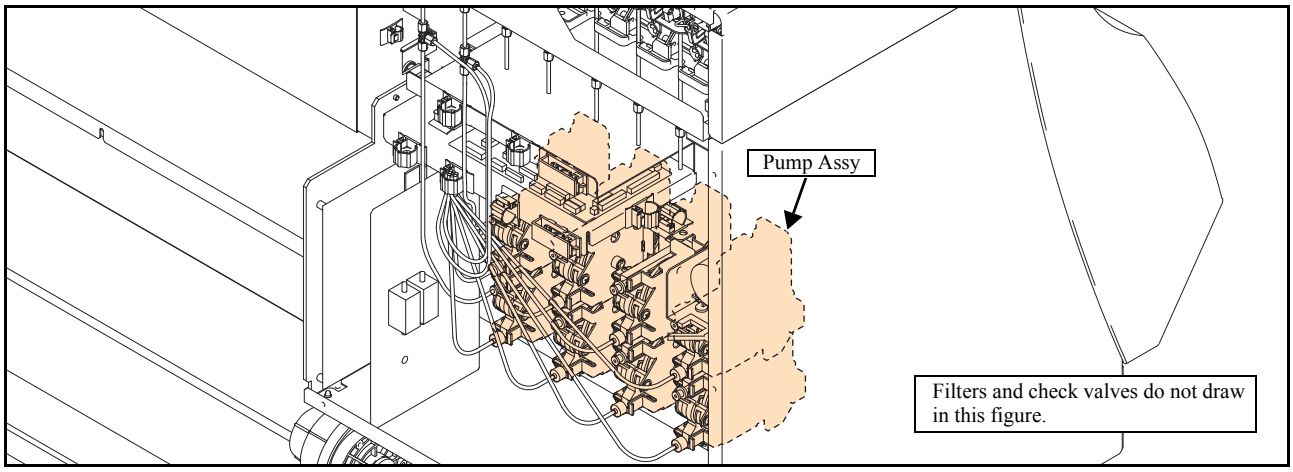
1. Turn off the main power supply of the machine.
2. Manually move the head unit over the platen.
3. Remove the **C slider 200 assy.**
   (1) Remove the **C slider 200 assy** from the guide flute by extending the side surface of the **Cap base**.
   (2) Remove the **Cap slider SP** (x2).
4. Reverse the disassembly procedure for reassembly.

☐ Disassembling per part

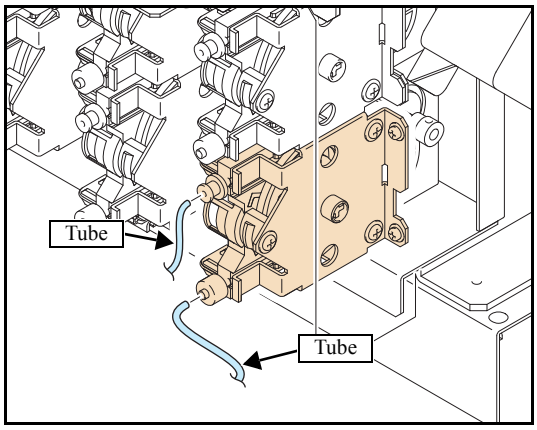


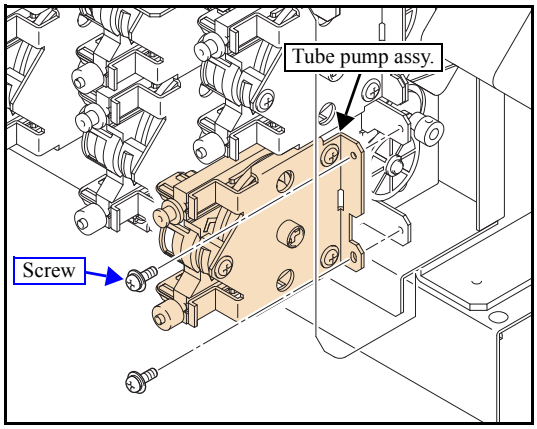
1. Remove the **C absorber** and **C absorber 2.**
2. Remove the **Cap base assy**.
   • "6.2.7 Cap Head Assy"
3. Reverse the disassembly procedure for reassembly.

6.2.9 Pump Assy (for Pressure-Feed)



■ **Work procedures**





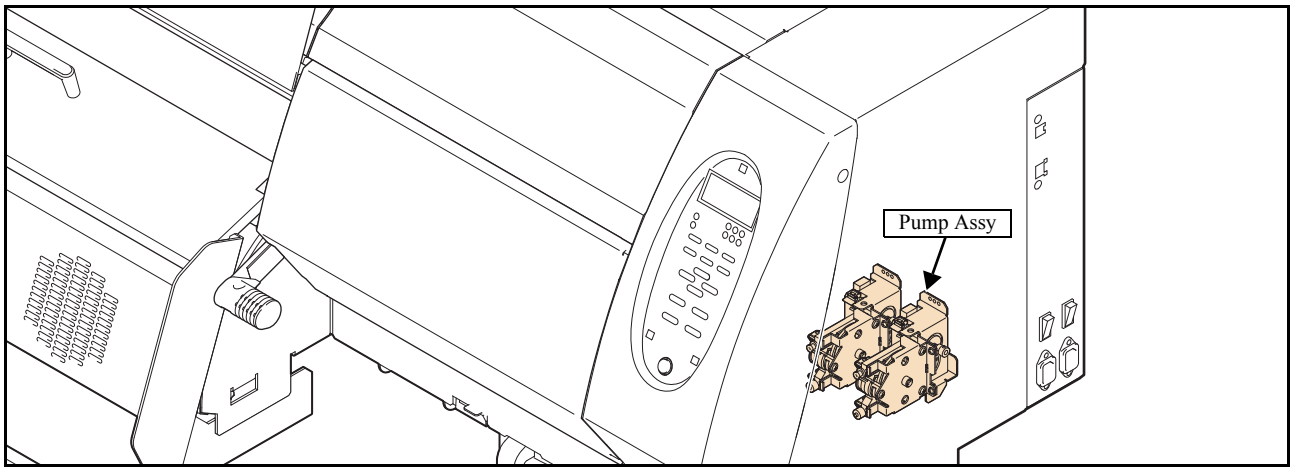
1. Remove the **Rear cover LU**.
2. Remove the pump tube.
3. Put a cap (fitting) on the tube (within the bear) of the damper side not to leak.

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

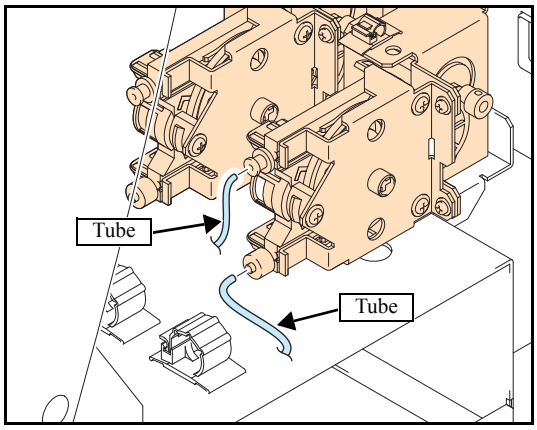
4. Remove the screws (x2), and remove the **Tube pump assy**.
5. Reverse the disassembly procedure for reassembly.

   Protrude the pump tube of the discharge side from tube end by 5 to 9 mm.

6.2.10 Pump Assy (for Suction)



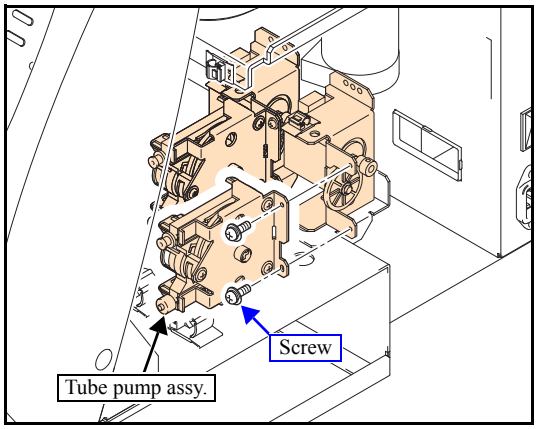
■ **Work procedures**



1. Remove the following covers.
   - **Right maintenance cover C**
   - **Right maintenance cover U**
   - **Right cover 200**

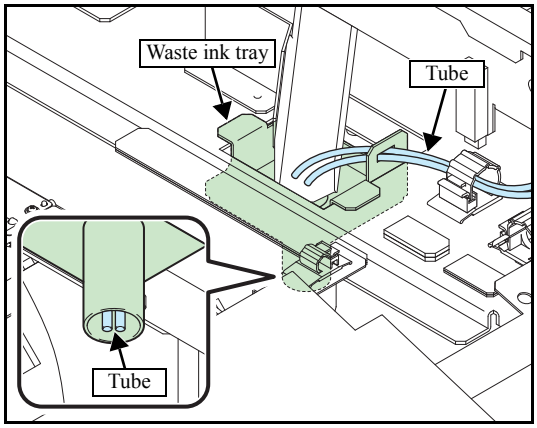
2. Remove the pump tube.

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



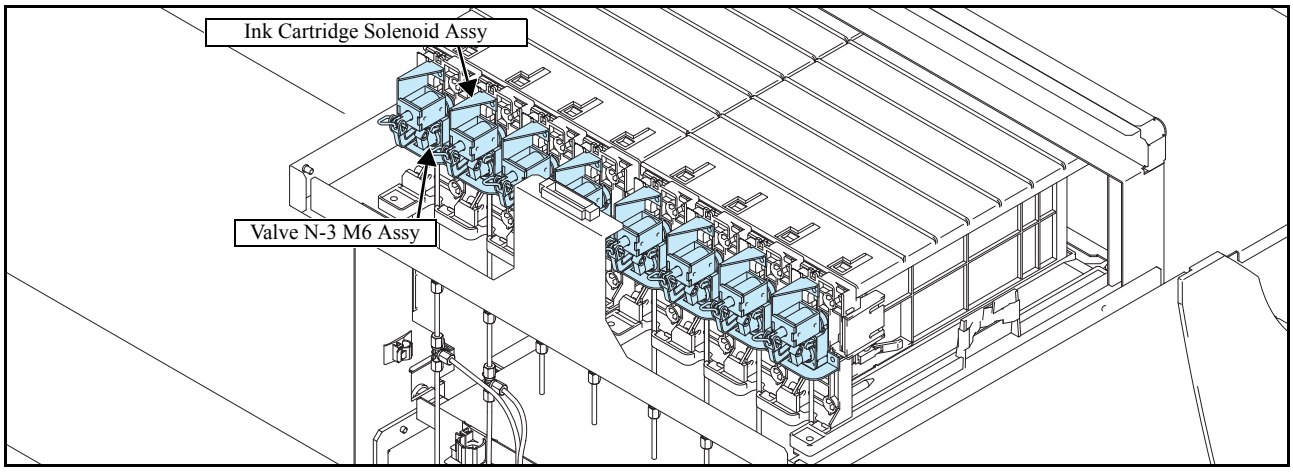
3. Remove the screws (x2), and remove the **Tube pump assy**.

4. Reverse the disassembly procedure for reassembly.



> IMPORTANT
> - Confirm that the pump tube of the discharging side is stored within the pipe of waste ink tray.
> - Make sure not to project the tube from the pipe of waste ink tray.

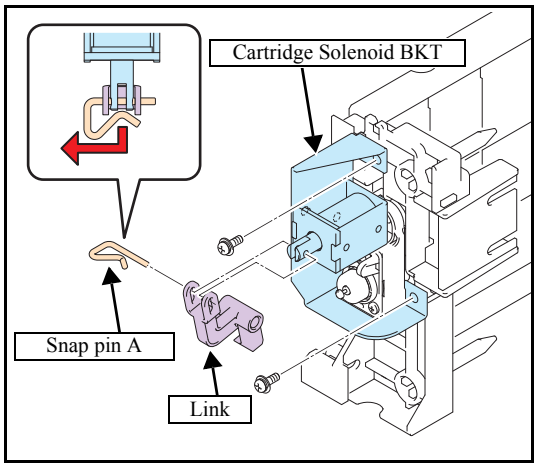
6.2.11 Valve Assy

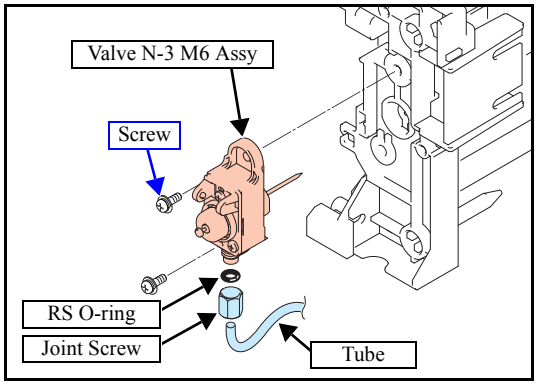


■ Work procedures

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 4.2.7)
2. Remove the following covers.
   - **Cartridge Cover**
   - **Rear Cover LU**
3. Remove **snap pin A** and then the **link**.
4. Removes screws to take off the **cartridge solenoid BKT** together with the solenoid.
5. Remove the **valve N-3 M6 assy** and loosen the joint screws to remove the tube.

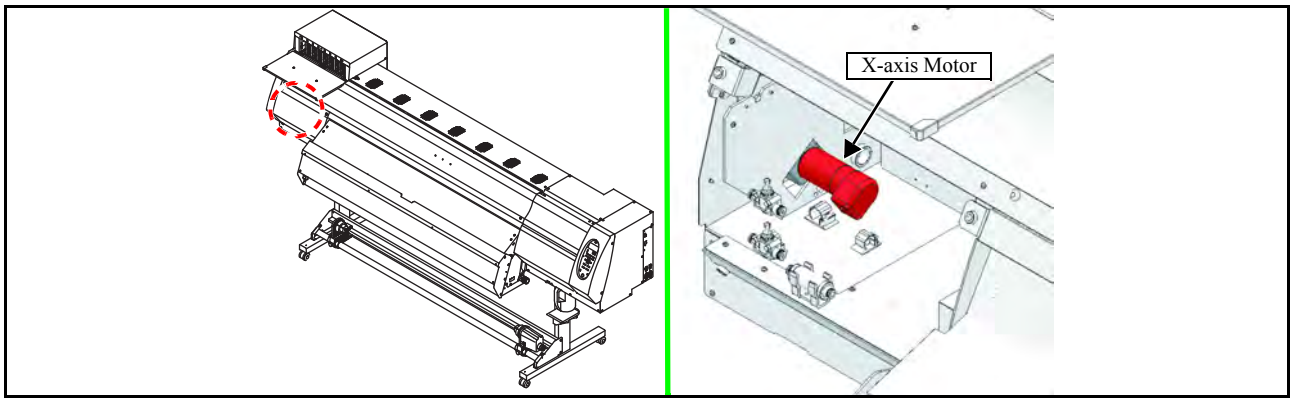
IMPORTANT

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

6. Reverse the disassembly procedure for reassembly.

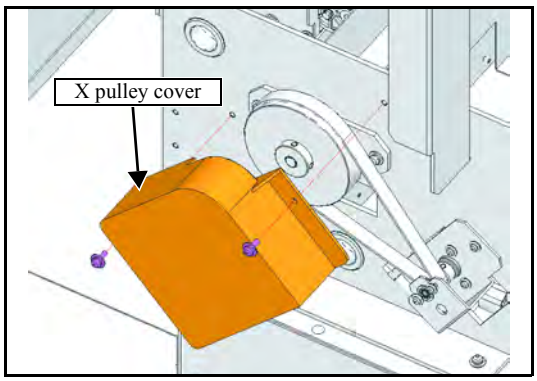
Disassembly and Reassembly

6.3.1 X-axis Motor Assy

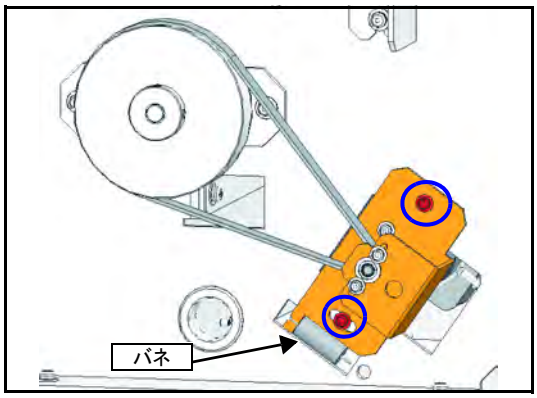


■ **Work procedures**

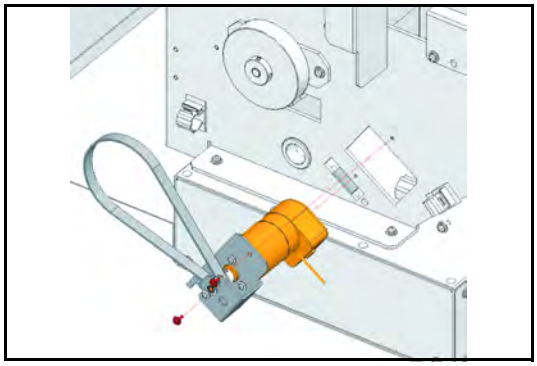
> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.



1. Remove the following covers.
   - •Left cover 200
   - •Left maintenance cover L
   - •Left maintenance cover U
   - •MS cover L
2. Remove the X pulley cover.

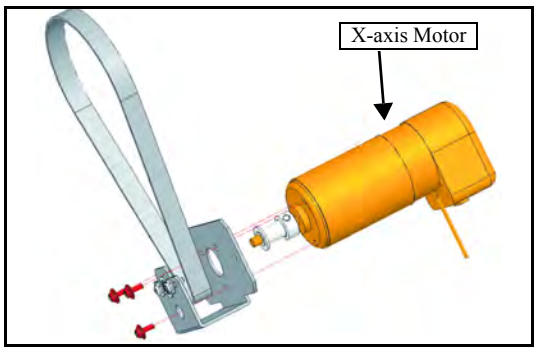


3. Remove the connector of the X-axis Motor.
4. Loosen the fixing screw of XMBKT, and remove the spring.



5. Remove XMBKT and the X-axis motor from the main body.

6.3.1 X-axis Motor Assy

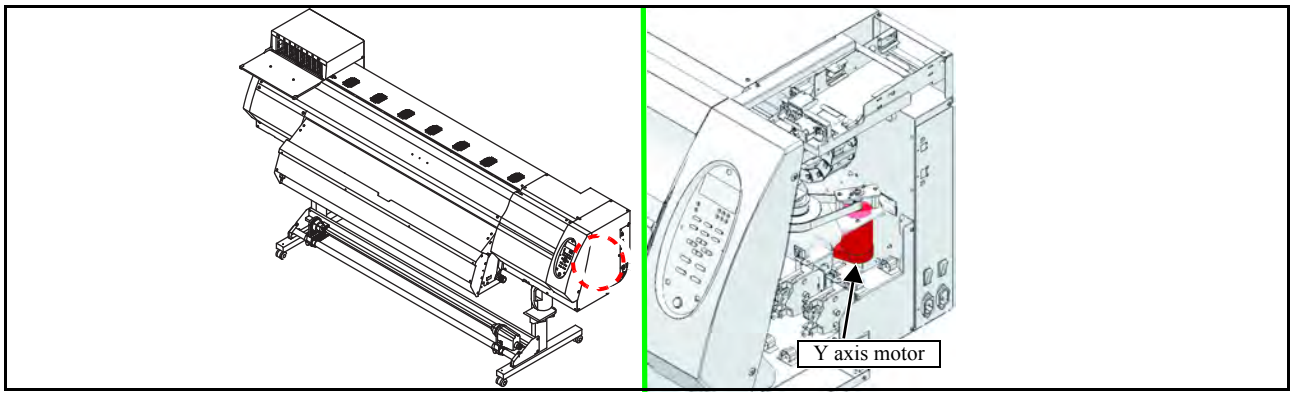


6. Remove the screw (x3) of XMBKT and remove the X-axis motor Assy.

7. Reverse the disassembly procedure for reassembly.

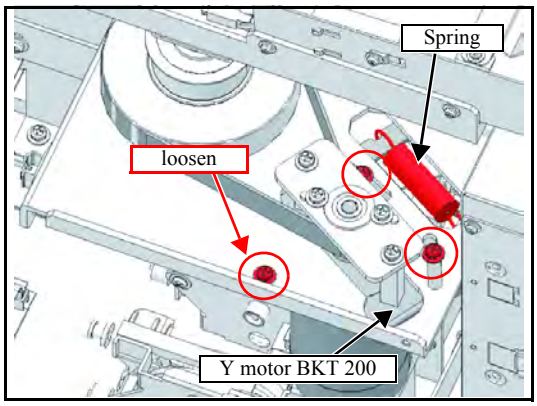
The belt tension does not need to be adjusted.

6.3.2 Y-axis Motor

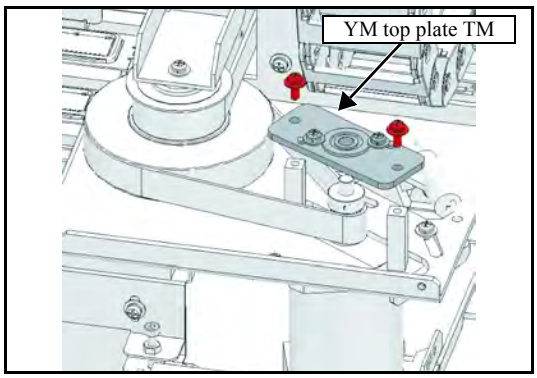


■ **Work procedures**

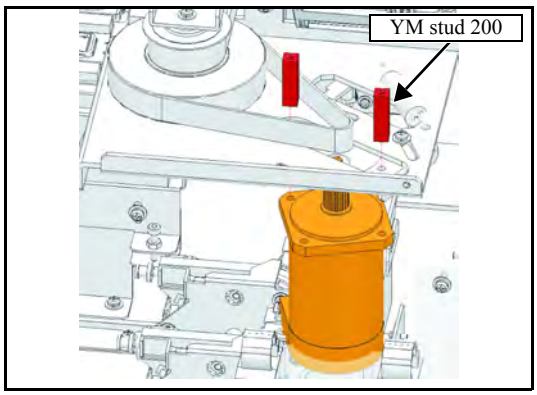
> **Caution** Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.



1. Remove the following covers.
   - **Right Cover**200
2. Move the Print Head Carriage to the left.
3. Loosen the screws fixing the Y motor BKT 200, and remove the spring.
   Loosen the tension of the belt.

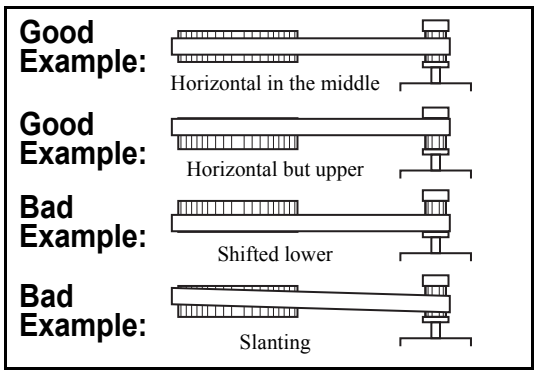


4. Remove the YM top plateTM.



5. Remove YM stud 200 (x2) and take out the Y-axis motor.
6. Release the clamps and the cable (directly connected to main PCB assy).

6.3.2 Y-axis Motor

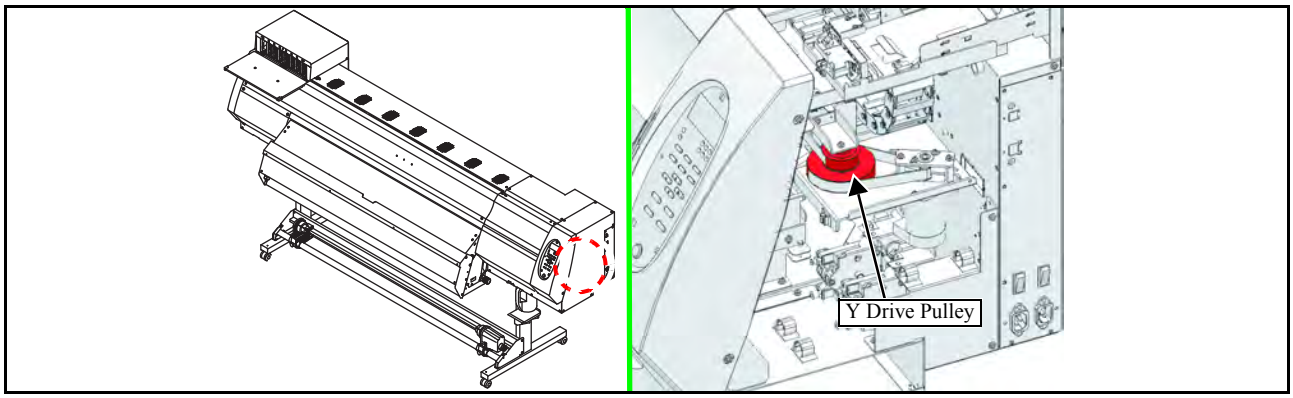


7. Reverse the disassembly procedure for reassembly.

IMPORTANT

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

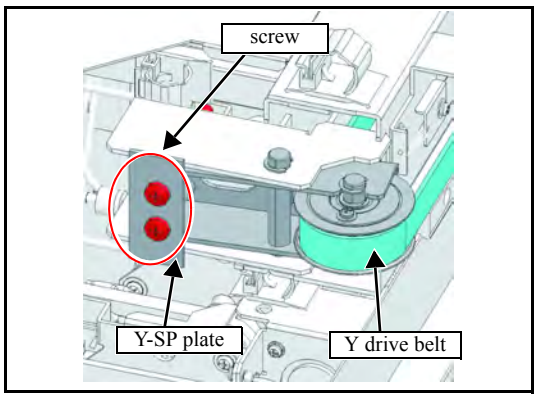
6.3.3 Y Drive Pulley



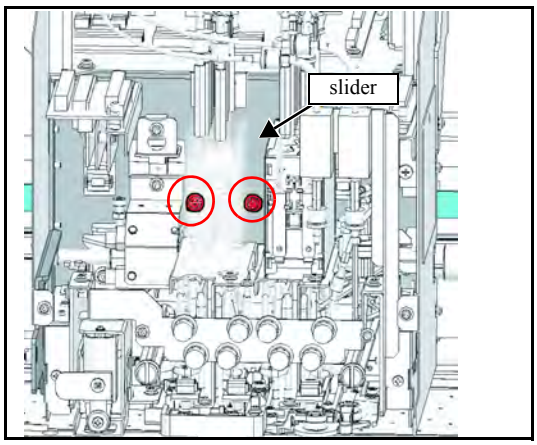
■ **Work procedures**

> **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 following covers.
   - •Right Cover 200
   - •Left Cover 200
   - •Right maintenance cover L
   - •Right maintenance cover U
   - •Head cover



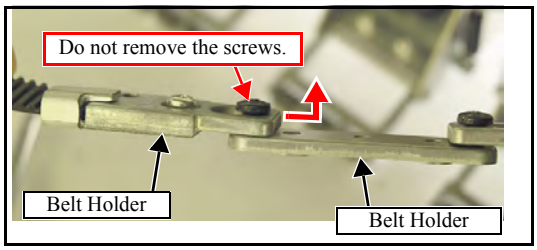
2. Loosen the screws from the Y-SP plate on the left side of the main body, and release the tension of the Y drive belt.



3. Remove the belt holder from the slider.

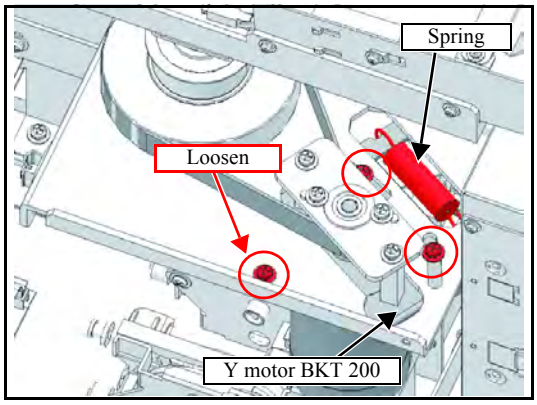
   Remove the screws in the left figure, and move the carriage.

6.3.3 Y Drive Pulley



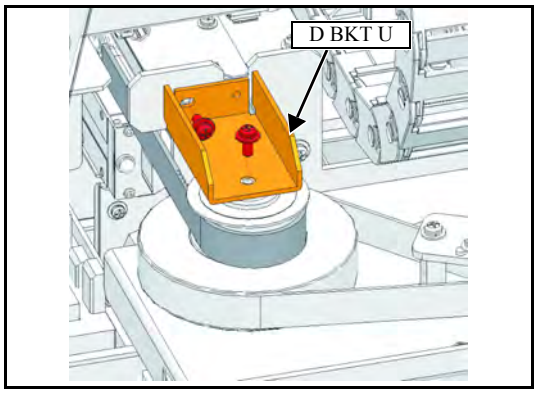
4. Slide out the connection point of the Y drive belt, and remove either the left or right **belt holder** from the **belt holder**.

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

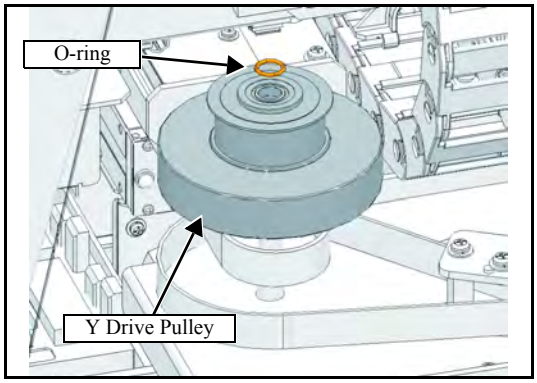


5. Loosen the screws fixing the Y motor BKT 200, and remove the spring.

   Loosen the tension of the belt.

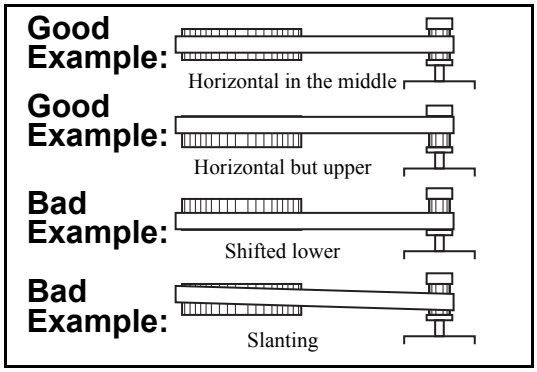


6. Remove the screw, and detach the **D BKT U** from the Y drive pulley.



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.

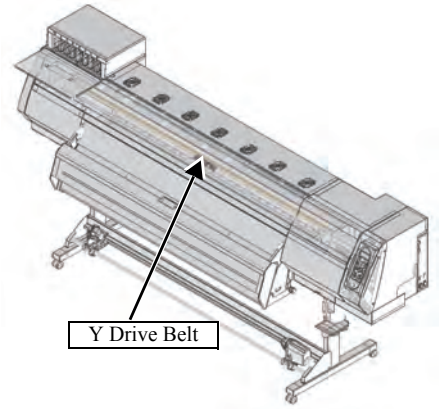
> IMPORTANT
> Take care not to lose the O-ring.



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).

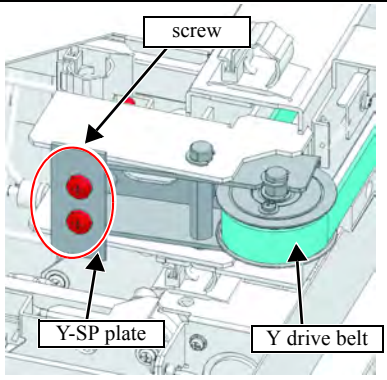
6.3.4 Y Drive Belt



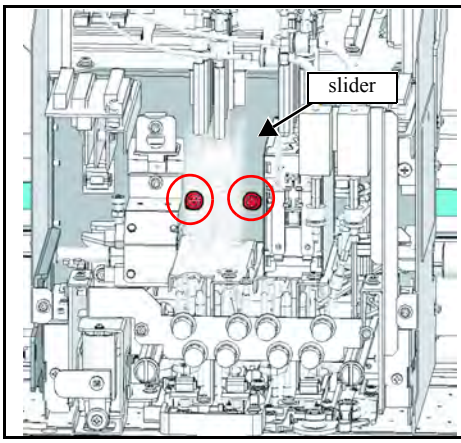
■ **Work procedures**

> **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.
   - •Right Cover 200
   - •Left Cover 200
   - •Right maintenance cover L
   - •Right maintenance cover U
   - •Head cover



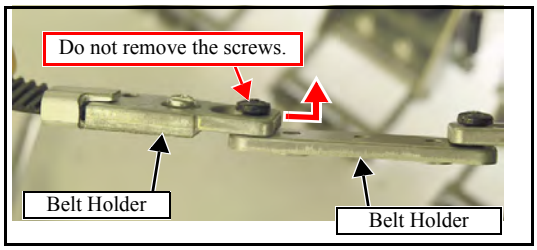
2. Loosen the screws from the Y-SP plate on the left side of the main body, and release the tension of the Y drive belt.



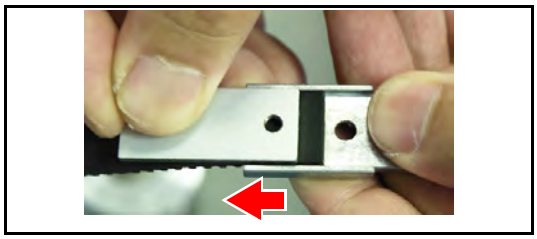
3. Remove the belt holder from the slider.

   Remove the screws in the left figure, and move the carriage.

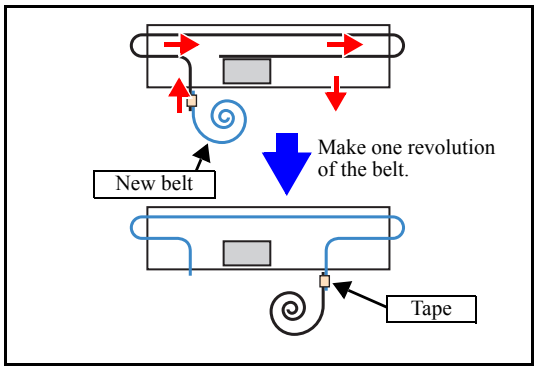
6.3.4 Y Drive Belt



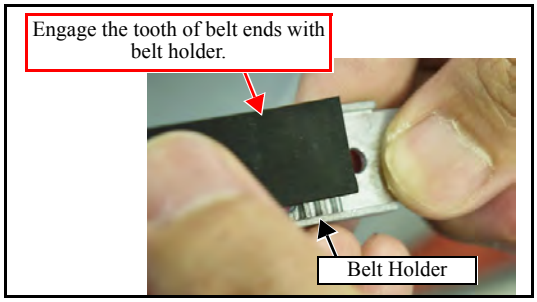
4. Slide out the connection point of the Y drive belt, and remove either the left or right **belt holder** from the **belt holder**.



5. Remove the belt holder screws.
6. Pry open the belt holder with a slotted screwdriver or the like, then slide the **belt holder** to detach from the belt.

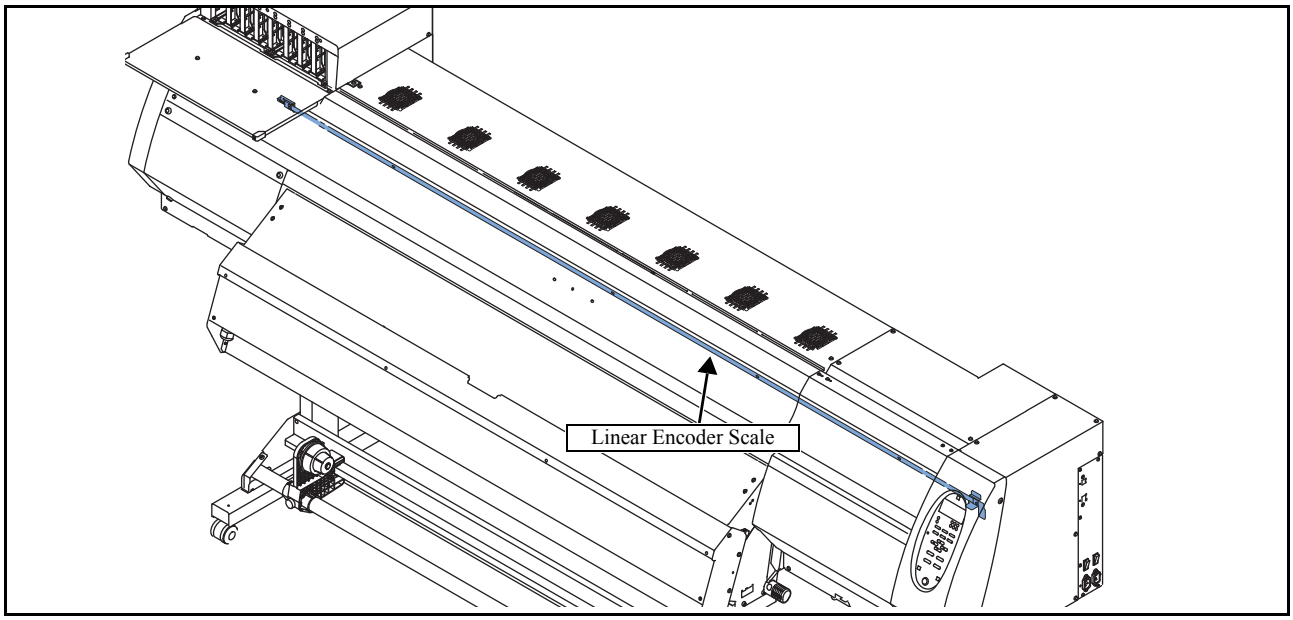


7. Stick together the ends of the old belt and the new belt using rubber tape or the like, and make one revolution of the belt.
8. Once the belt has made one revolution, remove the joining tape and pass the belt through the rear side of the slider.



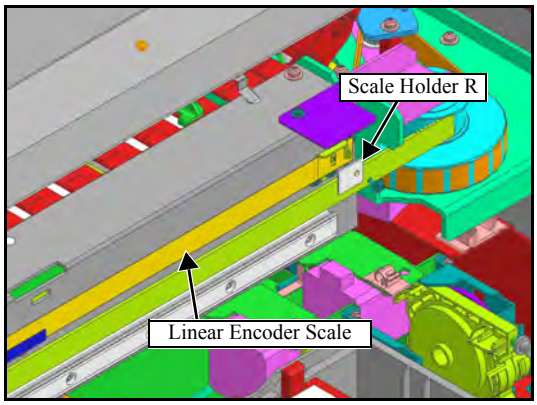
9. Align the belt holder and the teeth on the left and right belt ends, and attach the belt holder while engaging the teeth. Then tighten the screw.
10. Connect the left and right belt holders with the belt holder.
11. Attach the belt holder and slider using a screw.
12. Loosen the screws on the Y-SP plate on the left side of the main body, and increase the Y drive belt tension.
13. Reverse the disassembly procedure for the subsequent reassemblies

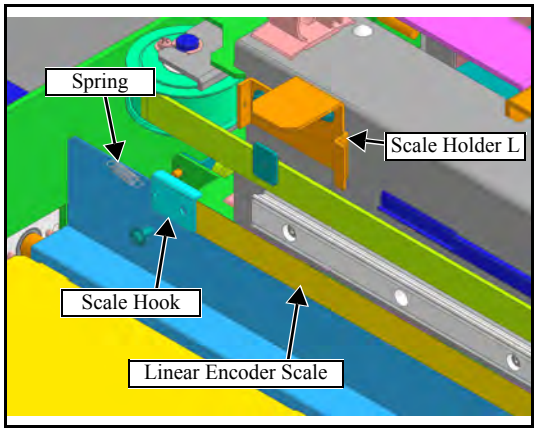
6.3.5 Linear Encoder Scale



■ **Work procedures**

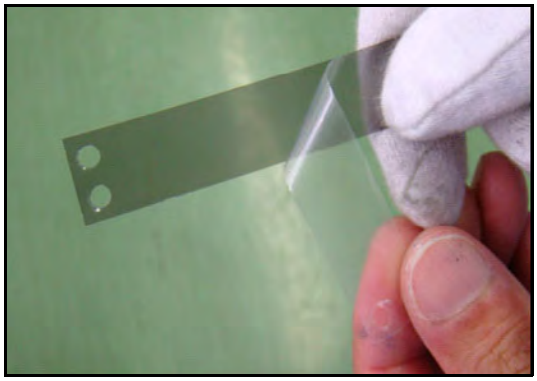
> **Caution**
> Turn the main power OFF when turning the power OFF. It is very dangerous if sleep mode functions mistakenly during the operation.
> While at work, be sure not to attach fingerprints or oil to the linear encoder scale. Also, pay attention not to break or scratch it. (If contaminated, clean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





1. Remove the following covers.
   - Front cover 200L
   - Right mainte cover U
   - Right mainte cover C
   - Left mainte cover U
2. Remove the **Encoder PCB Assy**.
3. Remove the screws from the right end of the linear encoder scale, and detach the **linear encoder scale**.
4. Remove the screw from the left end of the linear encoder scale, and detach the **linear encoder scale** together with the springs.
5. Remove the **scale hook** and **scale holder L** from the linear encoder scale.

6.3.5 Linear Encoder Scale



6. Peel off the left end of the protection film on the new linear encoder scale.

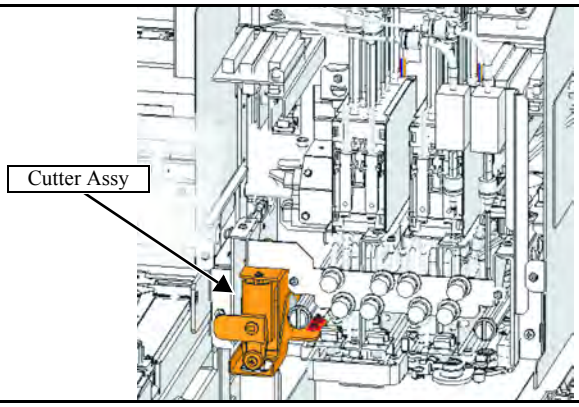
> IMPORTANT
> While at work, be sure not to attach fingerprints or oil to the linear encoder scale. Also, pay attention not to break or scratch it. (If contaminated, clean the scale with a neutral detergent.)

7. Mount the scale hook on the linear encoder scale so that the surface where the protection film is stuck faces to the Y bar side.

8. Engage the **scale hook** with the **scale base L** through a spring, and mount the **linear encoder scale** while peeling off the protection film.

9. Reverse the disassembly procedure for the subsequent reassemblies.

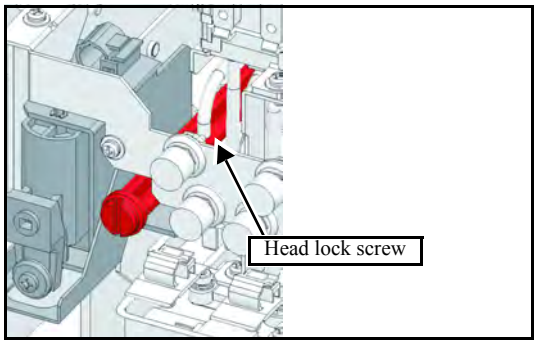
6.3.6 Cutter Assy



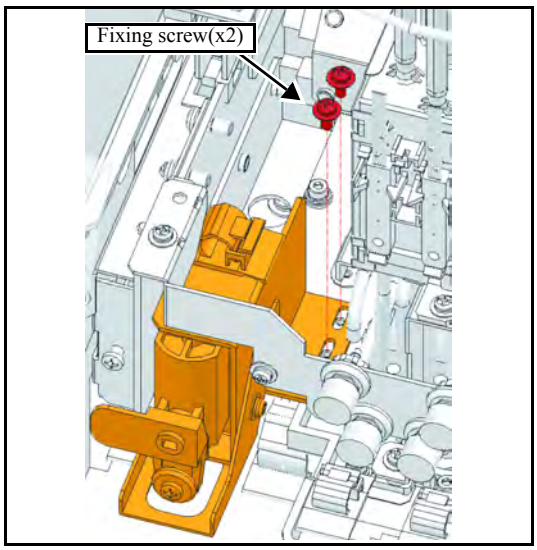
■ **Work procedures**

> **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.
   - •Right maintenance cover L
   - •Right maintenance cover U
   - •Head cover



2. Remove the Head lock screw(left side) .



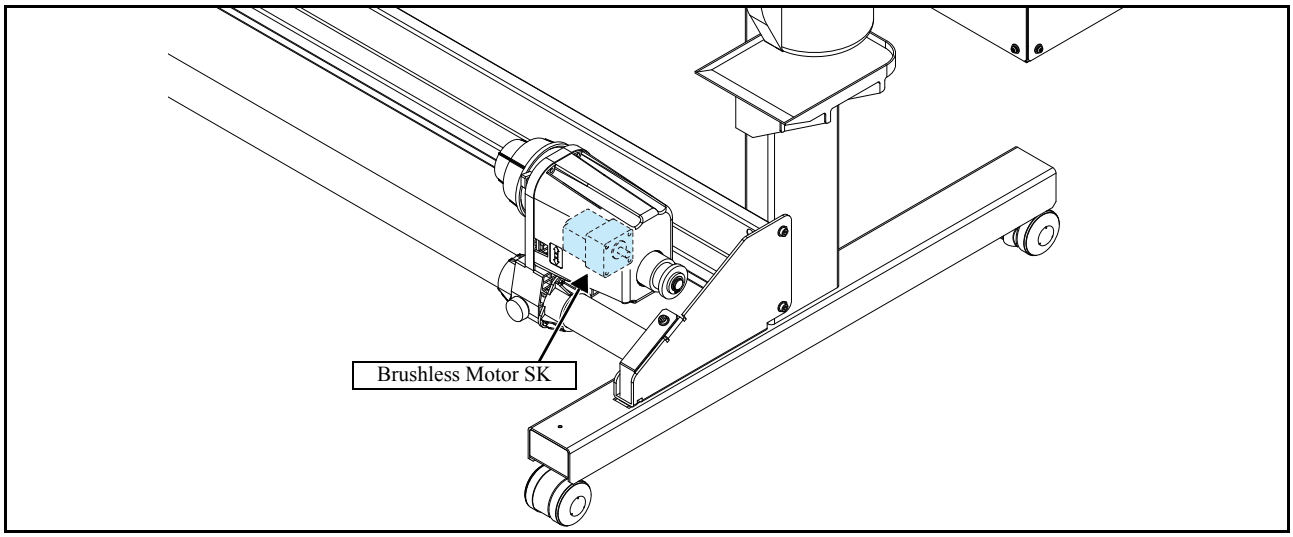
3. Remove the fixing screw (x2), and take out the cutter Assy.

4. Remove the cable connector coming from the solenoid.

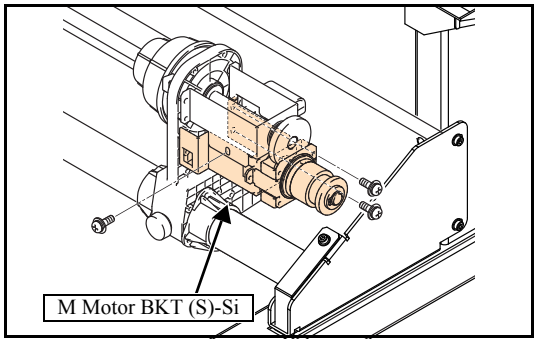
5. Reverse the disassembly procedure for reassembly.

> **IMPORTANT** Be sure to perform attaching position adjustment. Refer to "4.3.2 Adjustment of the Mounting Location for the Cutter".

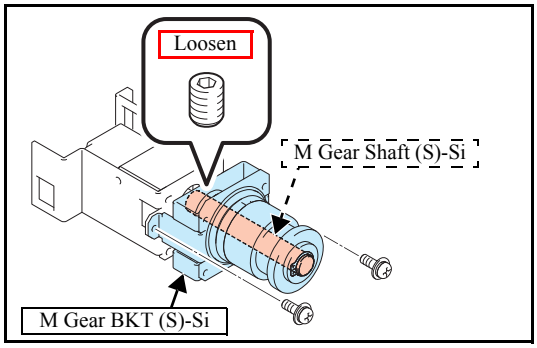
6.3.7 Take-up Motor



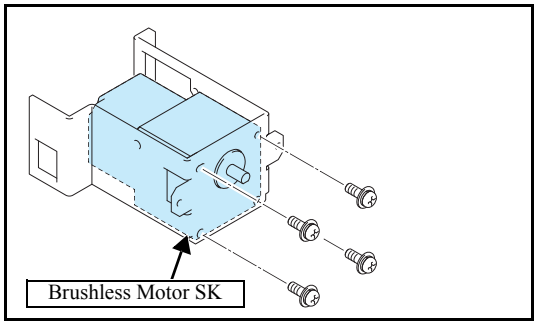
■ **Work procedures**



1. Remove the **take-up cover (S)**.
2. Disconnect all connectors on the take-up motor PCB assy.
3. Remove the **M motor BKT (S)-Si** from the **Roll base 2(BR)**.



4. Loosen the fixing screws that connect the motor shaft and M gear shaft (S)-Si and then remove the **M gear BKT (S)-Si**.

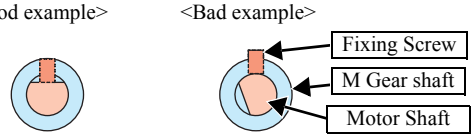


5. Remove the screws and then remove the **brushless motor SK**.
6. Reverse the disassembly procedure for reassembly.

IMPORTANT

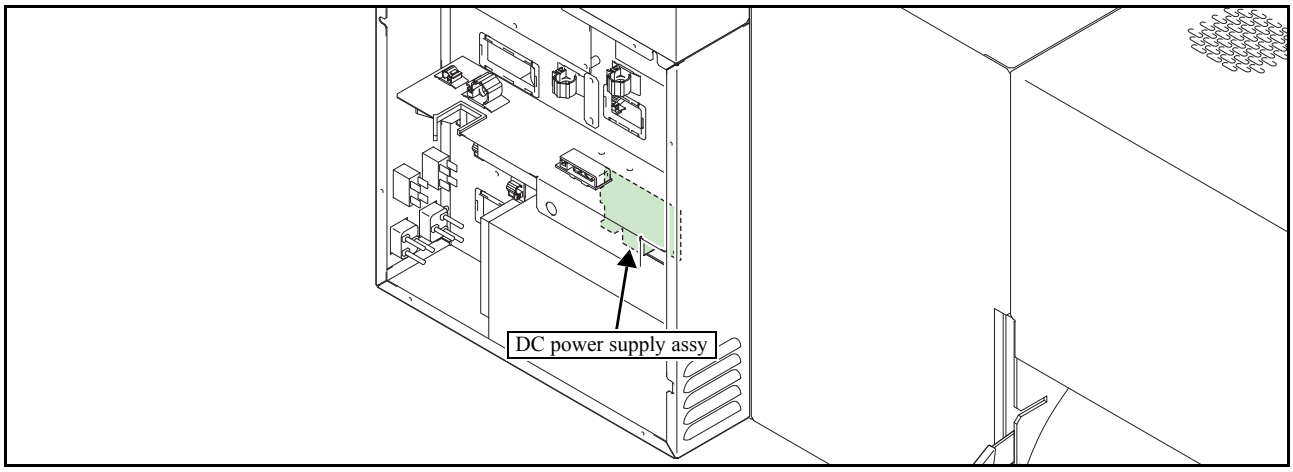
When fixing the motor shaft and M gear shaft (S)-Si with fixing screws, be sure to tighten the screws at the plane port of the motor shaft D cut point.

<Good example> <Bad example>



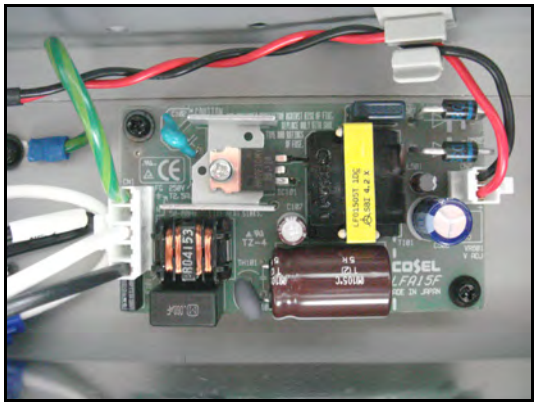
Disassembly and Reassembly

6.4.1 DC power supply assy (5V)

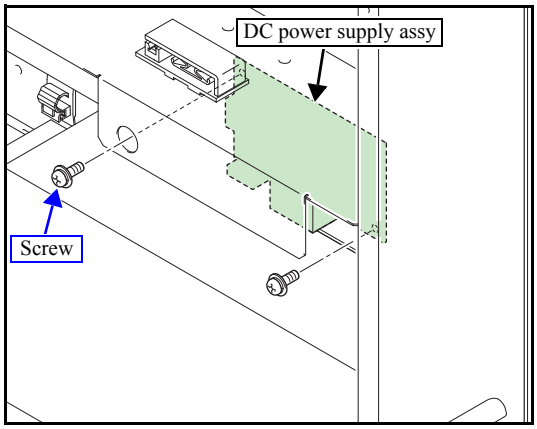


■ Work procedures

> **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 voltage applied to the high-power part of the DC power supply assy. Take care to avoid contact with it.



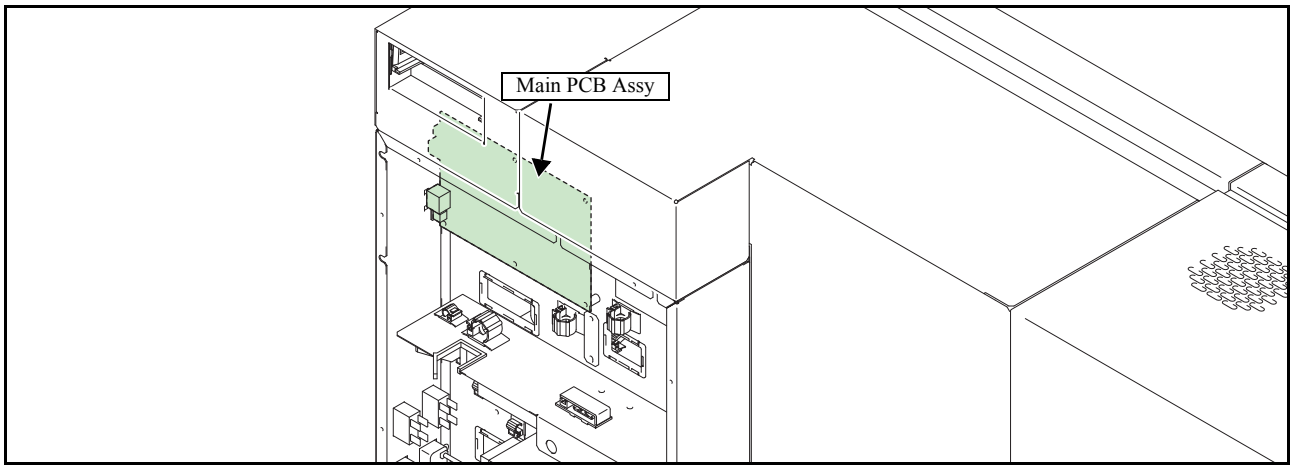
1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the **power unit box cover 200**.
3. Disconnect all connectors on PCB.



4. Remove the screws and then remove the **DC power supply assy.**
5. Reverse the disassembly procedure for reassembly.

> **IMPORTANT**
> Before mounting the power unit box cover 200, adjust the voltage of the DC power supply assy.

6.4.2 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 in order, unplug the power code.
It is very dangerous if sleep mode functions mistakenly during the operation.

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.

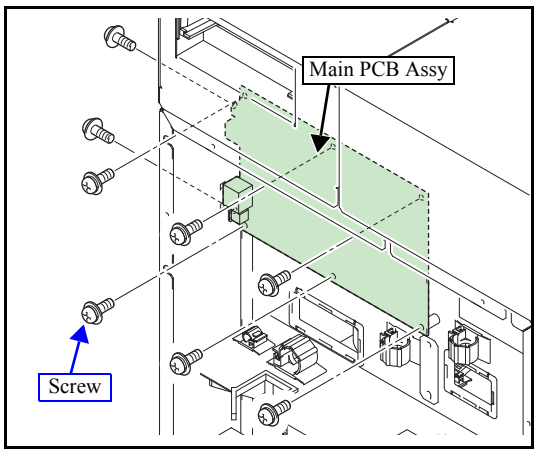
Recommended type : [CR2032]

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 Electric BOX cover 200.
3. Disconnect all connectors on PCB.

6.4.2 Main PCB Assy

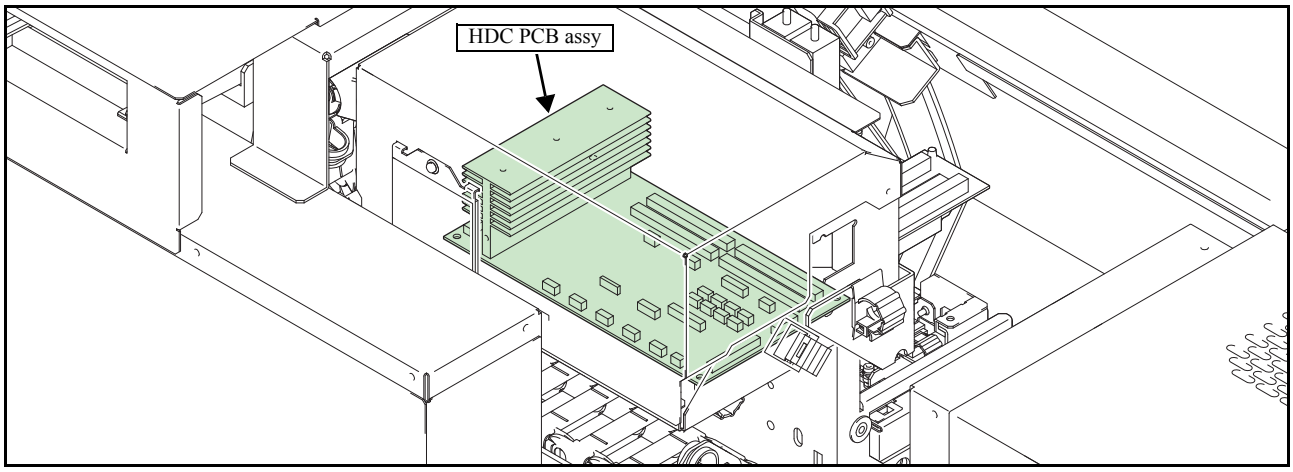


4. Remove the screws and then remove the **main PCB assy**.

5. Reverse the disassembly procedure for reassembly.

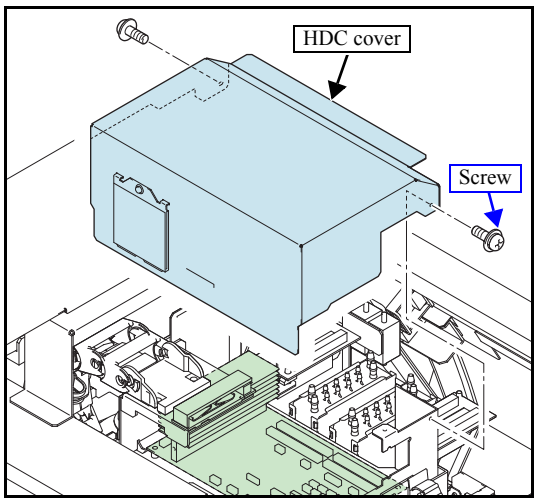
> **Caution**
> When a used Main PCB is to be discarded, remove the installed battery (CR2032).
> Disposal of the used battery according to manufacturer's instructions

6.4.3 HDC PCB Assy



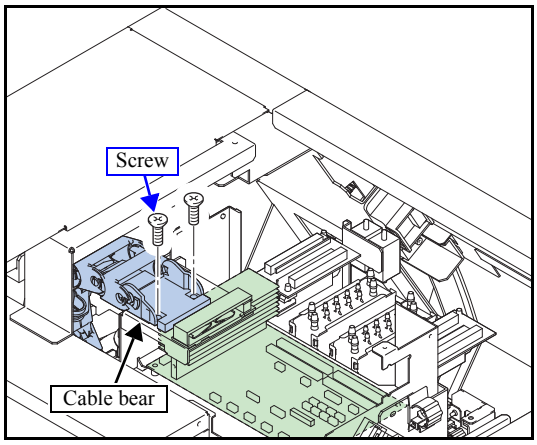
■ **Work procedures**

> **Warning** After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.



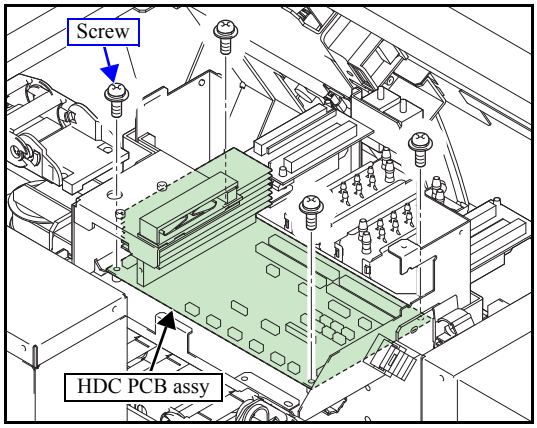
1. Remove the following covers.
   - Y Cover 200 C 160/(130)
   - Y Cover 200 R 160/(130)
   - HDC cover

2. Disconnect all cables from PCB.



3. Remove the screws and then remove the **cable bear**.

6.4.3 HDC PCB Assy



4. Remove the screws and then remove the **HDC PCB assy**.

5. Reverse the disassembly procedure for reassembly.

6.4.4 Replacement fuse of the PCB

■ Outline

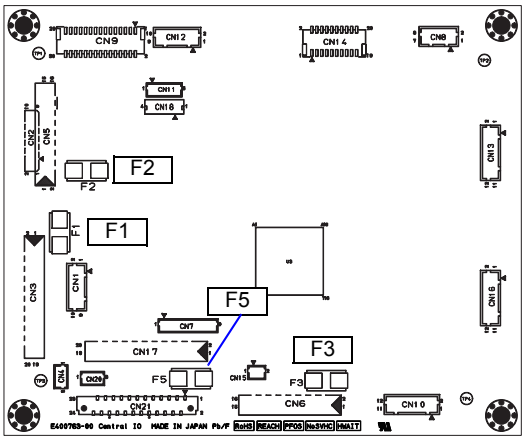
The PCB below has the fuse that can be replaced in the field.
This chapter explains the position/ the role of that fuse, the failure example and the error to be recovered by replacement.

Central IO PCB
Ink system PCB
Heater PCB

> **Warning**
> After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.

■ List of FUSE

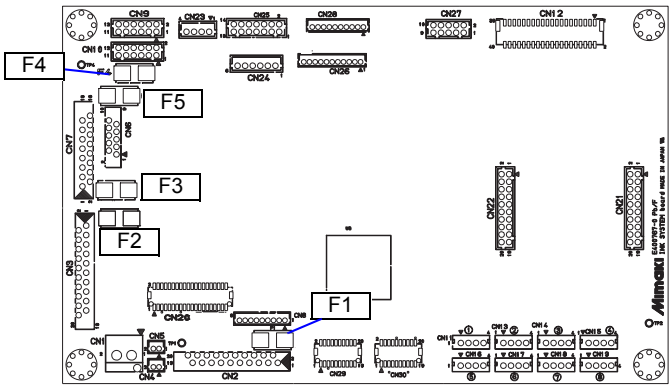
☐ Central IO PCB



Parts No.	Rating	Connect to	Cause of blowout/ error display
F1	7A	CN3 DC36V power supply from Main PCB (Power supply of the whole Central IO PCB)	Failure in circuit within PCB Driving circuit damage due to overload because of troubles of the step motor or the fan motor
F2	3A	CN5(unconnected)	Not-targeted due to being unconnected
F3	3A	CN6(unconnected)	Not-targeted due to being unconnected
F5	3A	CN17 DC36V power supply to Ink System PCB	Failure of FFC between Central IO PCB – Ink System PCB (blowout due to scratches, tilted inserted into the connector, etc.)

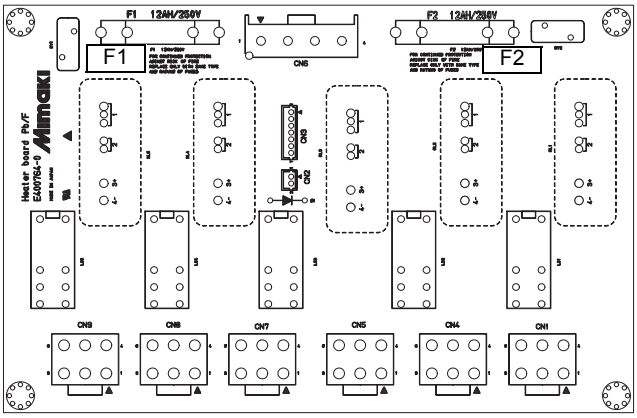
6.4.4 Replacement fuse of the PCB

☐ Ink System PCB



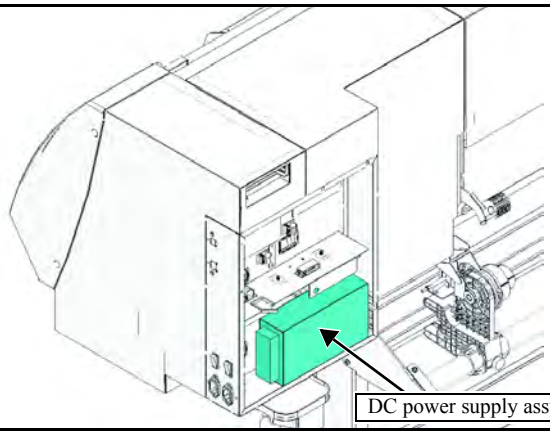
Parts No.	Rating	Connect to	Cause of blowout/ error display
F1	3A	CN2(unconnected)	Not-targeted due to being unconnected
F2	7A	CN3 DC36V power supply from Central IO PCB (Power supply of the whole Ink System PCB)	Failure in circuit within PCB Driving circuit damage due to overload because of troubles of the step motor or the fan motor
F3	3A	CN7 To Ink LED PCB.	INK LED PCB damage Ink System PCB - INK LED PCB??FFC???? (blowout due to scratches, tilted inserted into the connector, etc.)
F4	3A	CN9 DC Fan of the Drying heater x7 (160LX) x6 (130LX)	Fan motor failure Cable is wedged between sheet metal, locked status, etc.
F5	3A	CN17 Roof FAN x 7 (160LX) 6 (130LX)	Fan motor failure Cable is wedged between sheet metal, locked status, etc.

☐ Heater PCB



Parts No.	Rating	Connect to	Cause of blowout/ error display
F1	12A(AC)	Pre-heater Print heater Drying Heater (No.1, No.2)	Incorrect setting of voltage selector. Cable is wedged between sheet metal. Error display: “Heater disconnection”
F2	12A(AC)	After heater Drying Heater (No.2, No.3)	

6.4.5 DC power supply assy (36V)

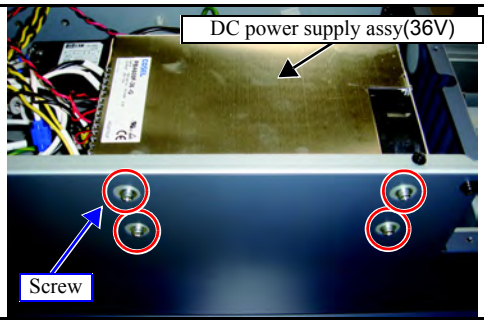


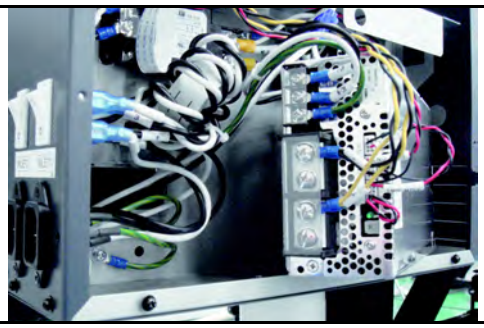
■ Work procedures

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 voltage applied to the high-power part of the DC power supply 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 200**.
3. Remove the fixing screw (x 4) of the DC power supply.

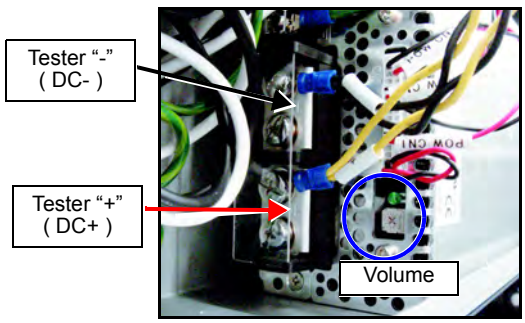




4. Remove all cables from the terminal blocks and the connectors.
5. Reverse the disassembly procedure for reassembly.

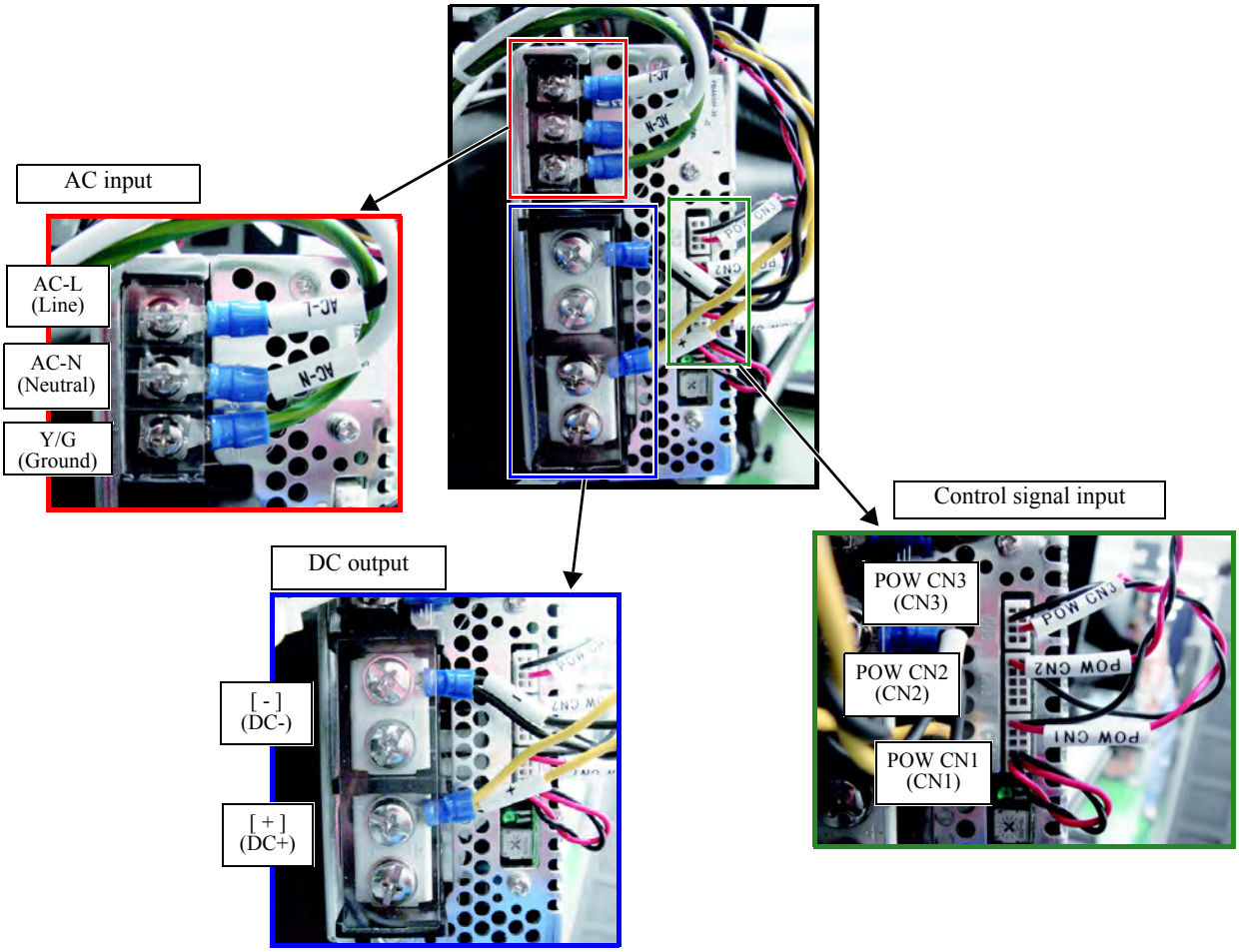
IMPORTANT

Before mounting the power unit box cover 200, adjust the voltage of the DC power supply assy.

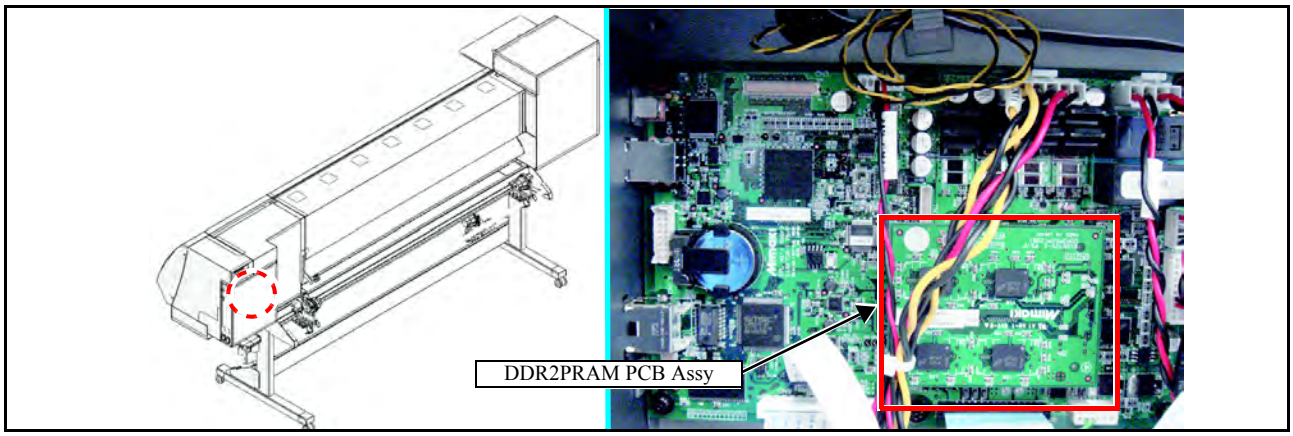


6.4.5 DC power supply assy (36V)

■ **Relationship of terminal block, connector and harness**

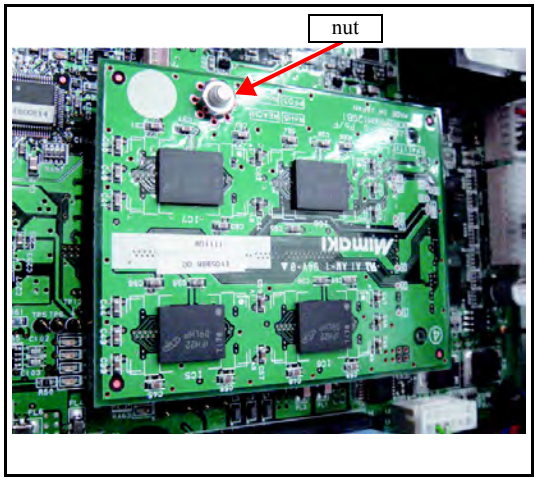


6.4.6 DDR2PRAM(1GB) Assy



■ **Work procedures**

> **Warning** After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.

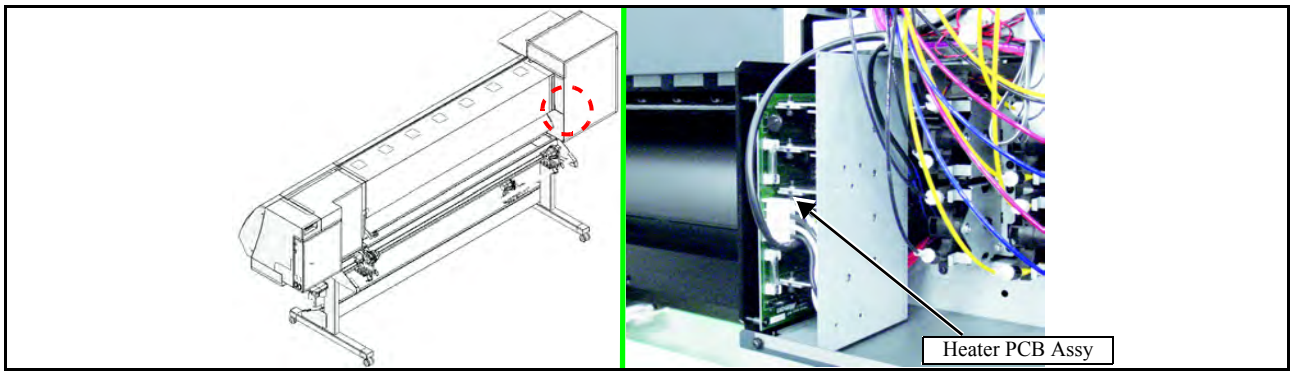


1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the **power unit box cover 200**.
3. Remove **DDR2PRAM PCB assy** from the main PCB assy. (Remove a nut.)

> An inter-PCB connector is used to connect the PRAM PCB assy to the main PCB assy.

4. Reverse the disassembly procedure for reassembly.

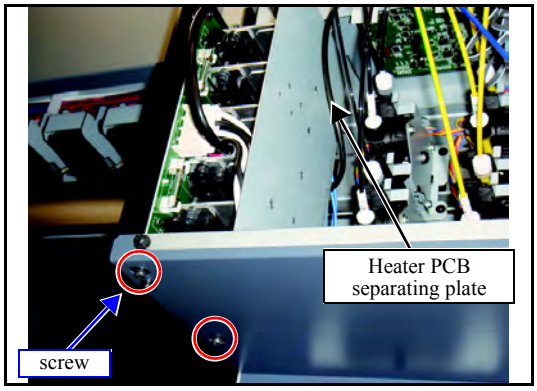
6.4.7 HEATER PCB Assy



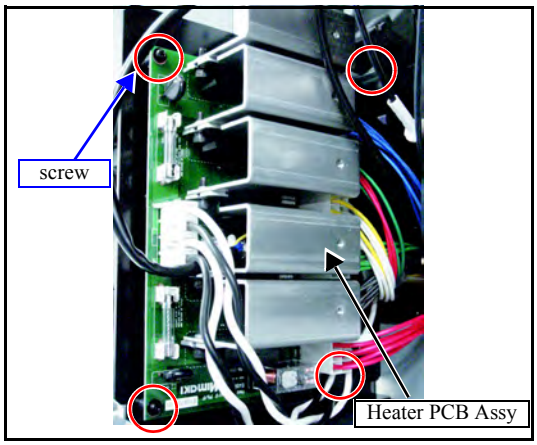
■ Work procedures

> **Warning** After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.

1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the **Rear cover LU**.
3. Remove the heater PCB separating plate.



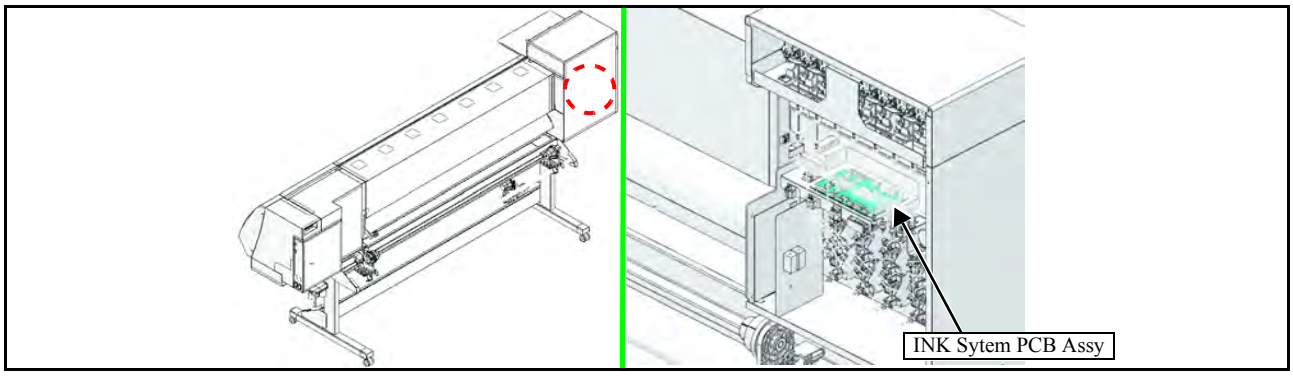
4. Disconnect all connectors on PCB.
5. Remove the **Heater PCB assy.** (screw x4)



> An inter-PCB connector is used to connect the PRAM PCB assy to the main PCB assy.

6. Reverse the disassembly procedure for reassembly.

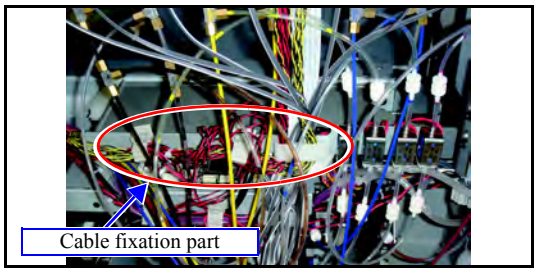
6.4.8 INK SYSTEM PCB Assy



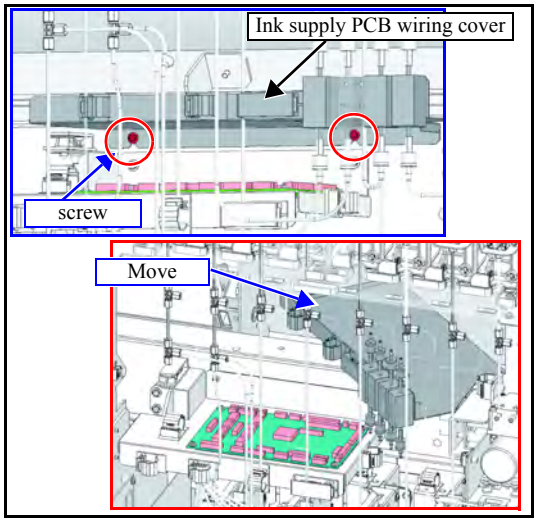
■ **Work procedures**

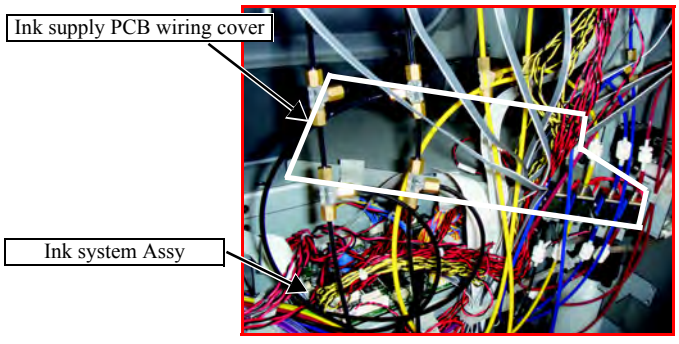
> **Warning** After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.

1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the Rear cover - LU.
3. Release cable fixing.

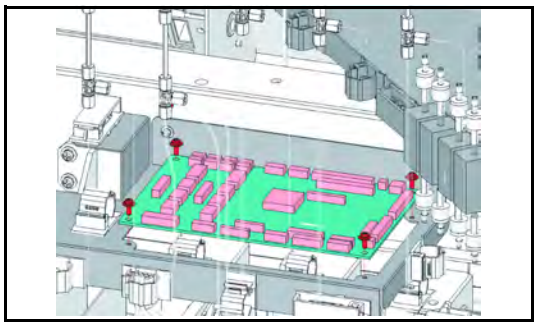


4. Move the ink supply PCB wiring cover.
   (1) Loosen screws (x2).
   (2) Move the ink supply PCB wiring cover above the Y bar.





6.4.8 INK SYSTEM PCB Assy

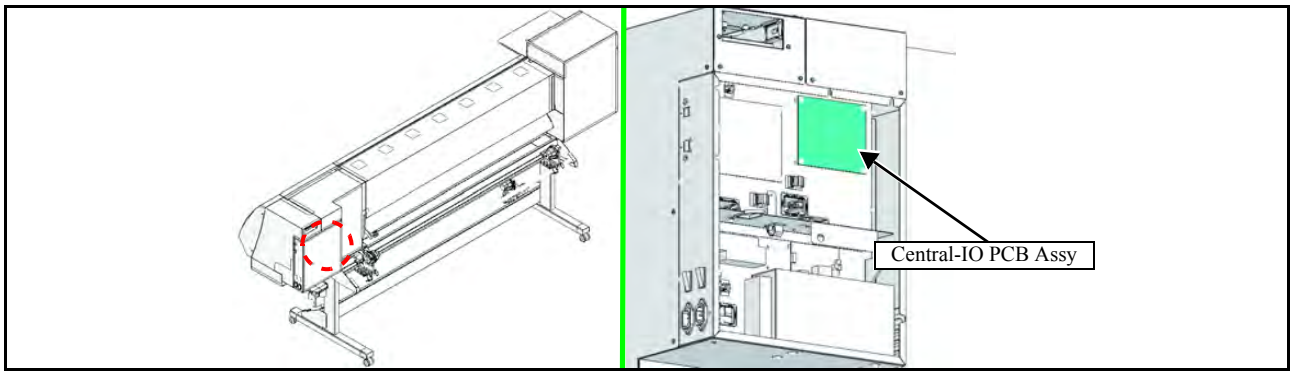


5. Disconnect all connectors on PCB.

6. Remove the INK System PCB Assy. (screw x4)

7. Reverse the disassembly procedure for reassembly.

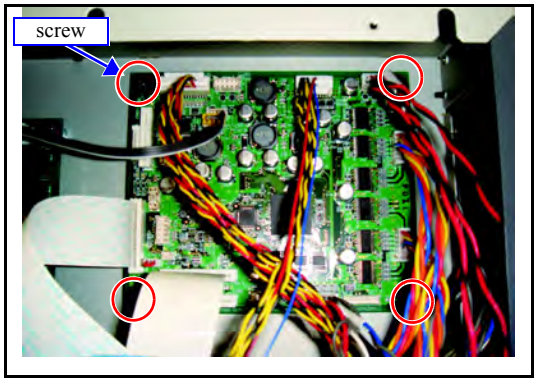
6.4.9 Central-IO PCB Assy



■ **Work procedures**

> **Warning** After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.

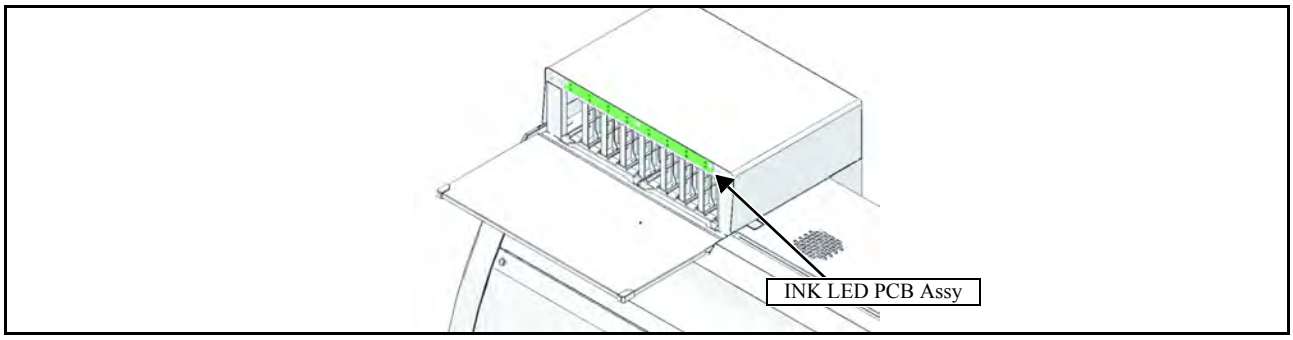
1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the **power unit box cover 200**.
3. Disconnect all connectors on PCB.
4. Remove the **Central-IO PCB assy.** (screw x4)



5. Reverse the disassembly procedure for reassembly.

> **IMPORTANT** When replacing the PCB, overwrite the parameter.
> Change the system parameter No.107 from “0” to “10”.

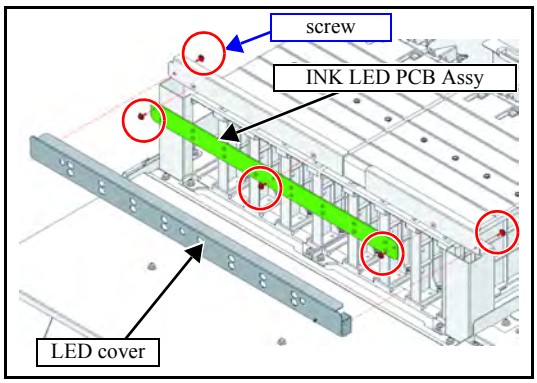
6.4.10 INK LED PCB Assy



■ **Work procedures**

After turning off the sub and main power switches in order, unplug the power code.
It is very dangerous if sleep mode functions mistakenly during the operation.

1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the Cartridge cover.

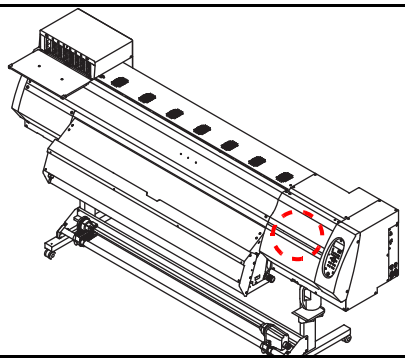


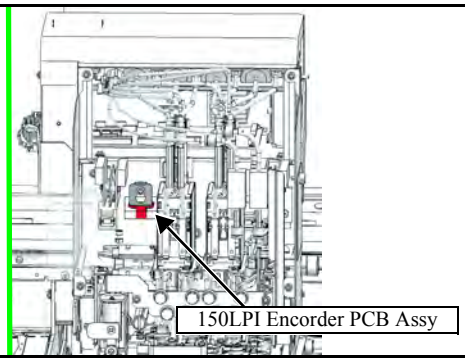
3. Remove the LED cover.
4. Remove the Ink LED PCB Assy.
5. Reverse the disassembly procedure for reassembly.

6.4.11 Negative / Positive pressure sensor PCB Assy(DELETED)

This item was deleted.

6.4.12 150LPI Encorder PCB Assy

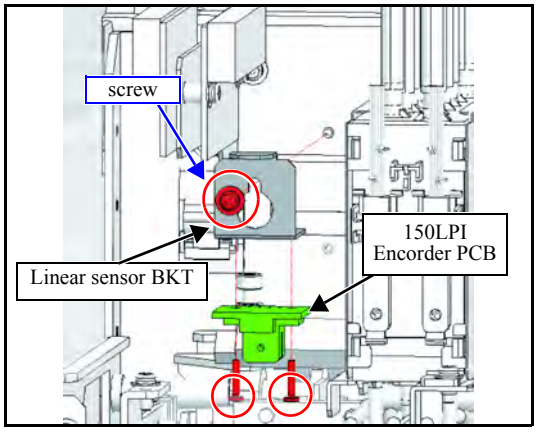




■ **Work procedures**

> **Warning** After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.

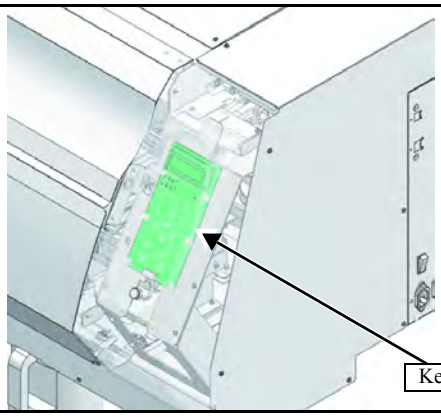
1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the following covers.
   - Right mentenance cover-C
   - Right mentenance cover-U
   - Head cover



3. Remove the Linear sensor BKT from the carriage.
4. Disconnect a connector on PCB.
5. Remove the 150LPI Encorder PCB Assy.
6. Reverse the disassembly procedure for reassembly.

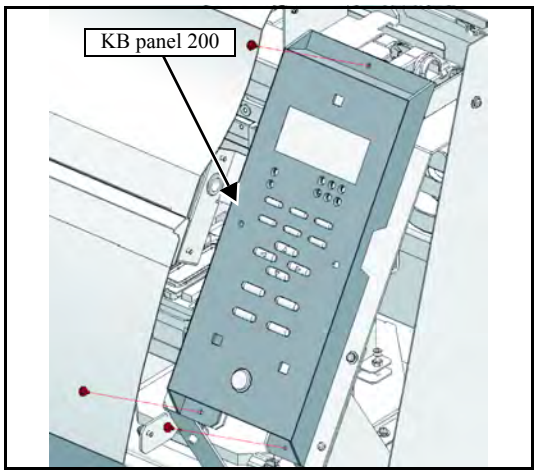
> **IMPORTANT** After attachment has been completed, perform "4.3.5 Positioning of the Encoder Sensor"

6.4.13 Key Board PCB Assy

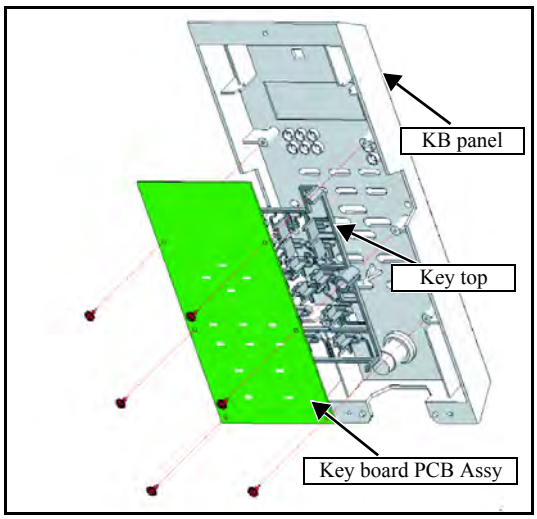


■ Work procedures

> **Warning** After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.

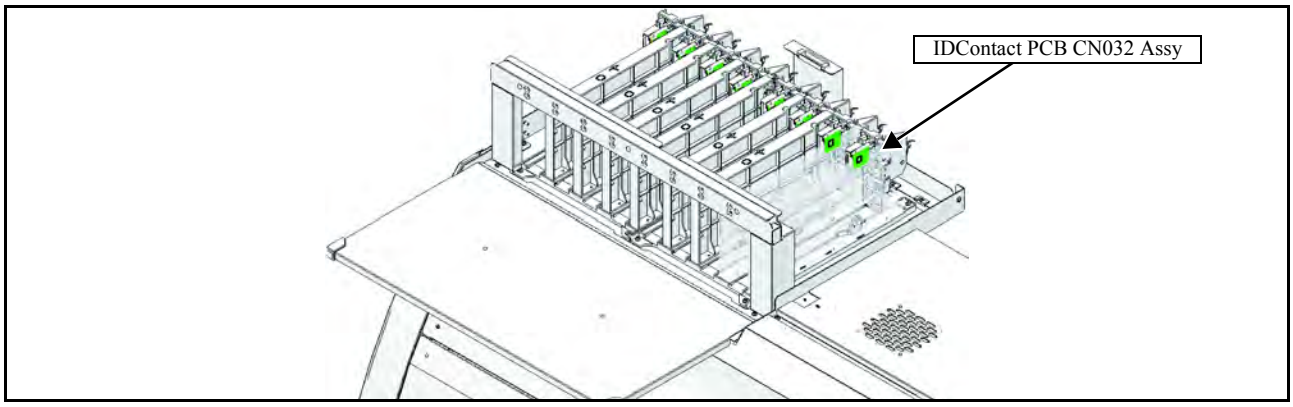


1. Renove the Rigth cover.
2. Remove cable from the PCB and KB Panel 200.



3. Remove the Key Board PCB Assy.
4. Reverse the disassembly procedure for reassembly.

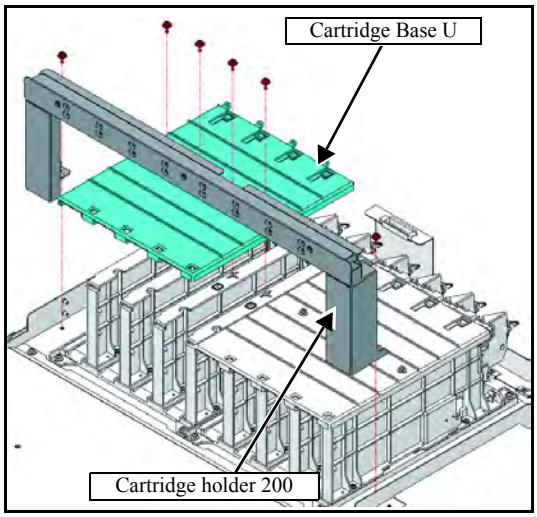
6.4.14 ID Contact PCB CN032 Assy



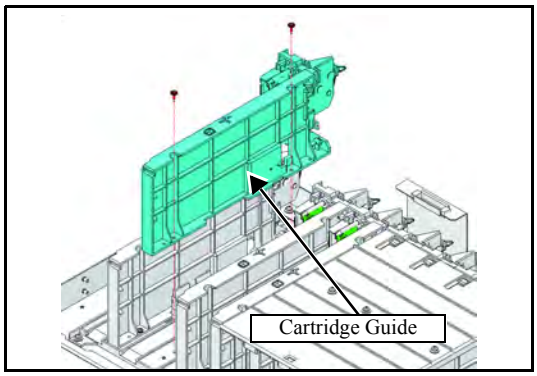
■ **Work procedures**

1. Remove the Cartridge cover and Rear cover - LU.
2. Remove the Cartridge holder 200.

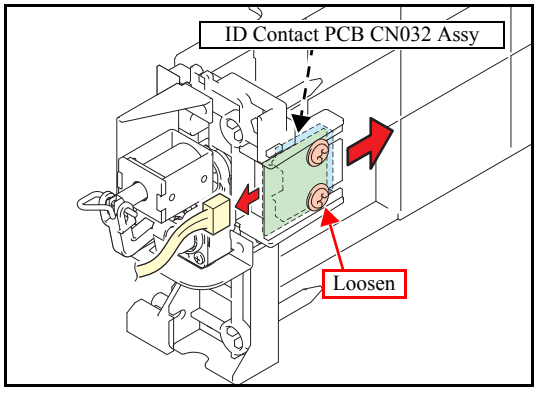
IMPORTANT: LED PCB FFC is connected. Pay attention to handling.



3. Remove **cartridge base U** related to the right or left side.

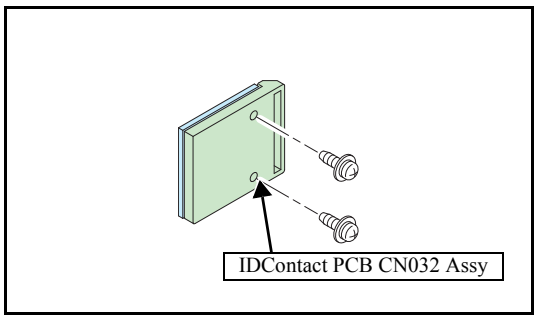


4. Remove the relevant **cartridge guide**.



5. Remove the connector and loosen the screws to take off the **ID contact PCB CN032 assy**.

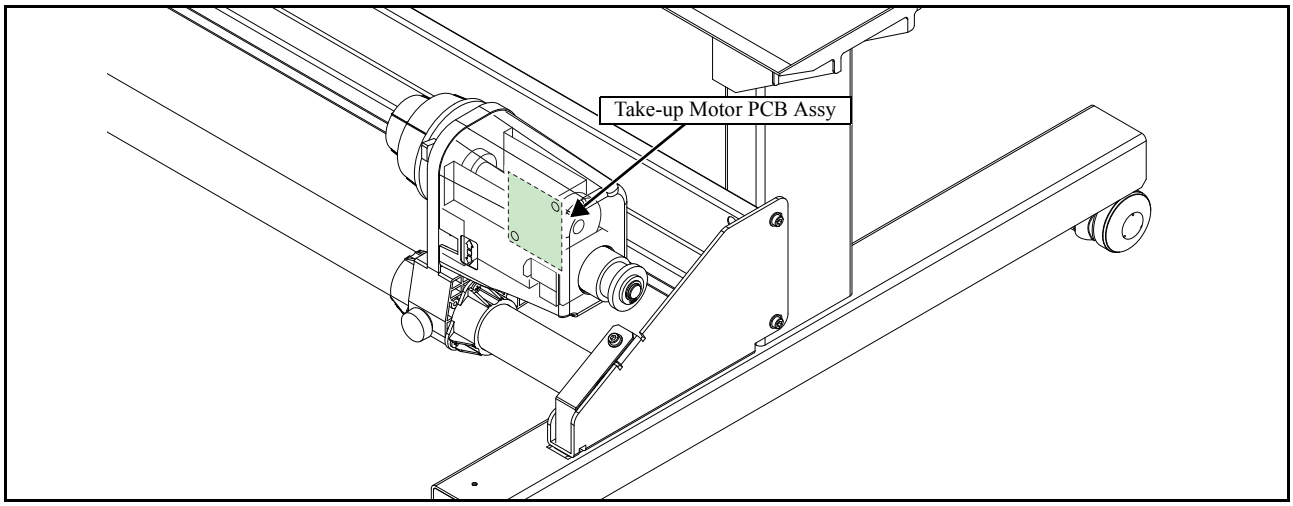
6.4.14 ID Contact PCB CN032 Assy



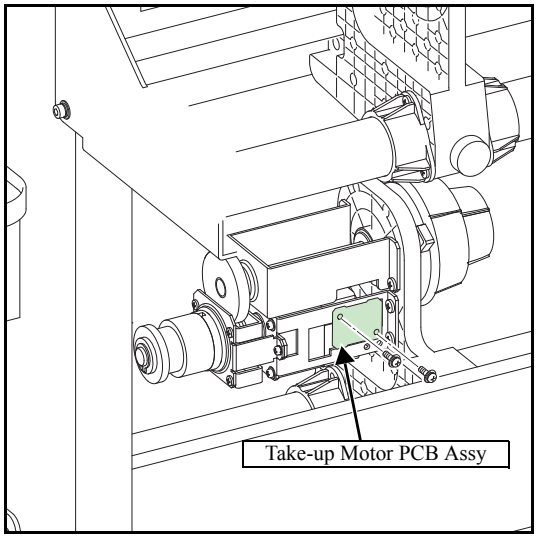
6. Remove the screws and then remove the **ID contact PCB CN032 assy**.

7. Reverse the disassembly procedure for reassembly.

6.4.15 Take-up Motor PCB Assy

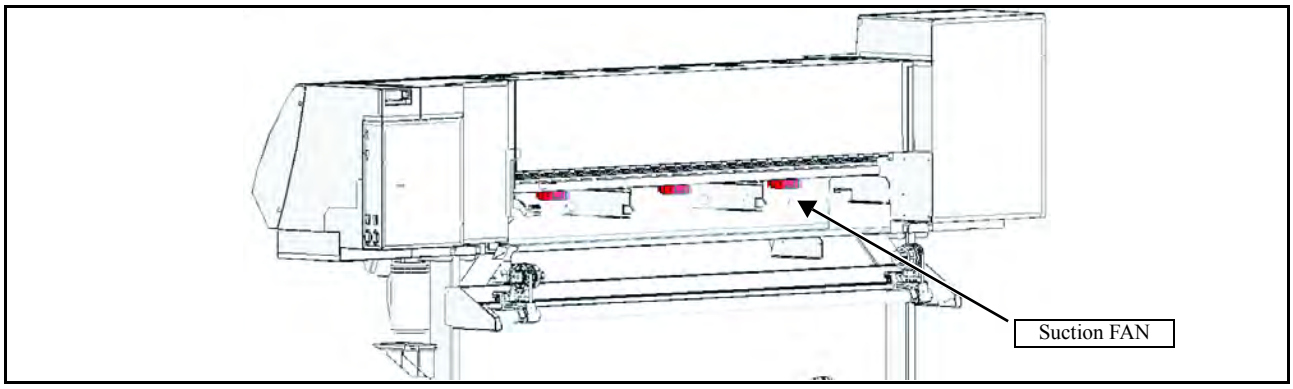


■ **Work procedures**



1. Remove the **take-up cover (S)**.
2. Disconnect all connectors and then remove the **take-up motor PCB assy**.
3. Reverse the disassembly procedure for reassembly.

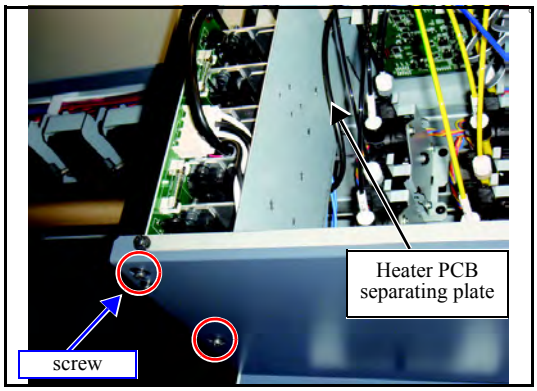
6.4.16 Suction FAN



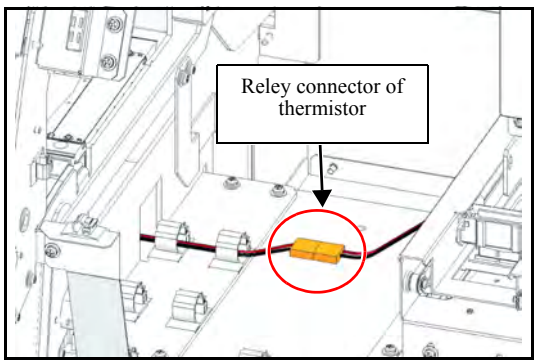
■ Work procedures

> **Warning** After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.

1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the following covers.
   - Right mentenance cover-U
   - Right mentenance cover-C
   - Rear cover - LU
   - Front cover 200L160(130)

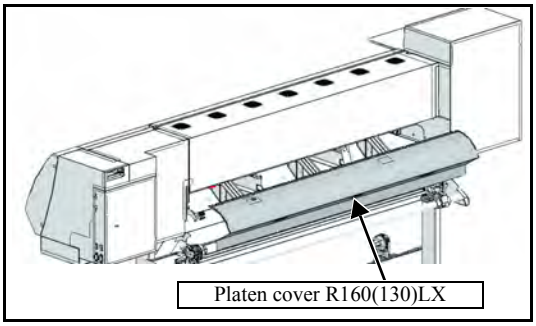


3. Remove the heater PCB separating plate.
4. Disconnect the connecter “CN1” on the Heater PCB.

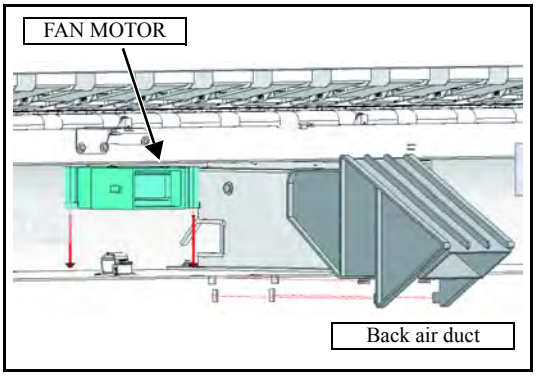


5. Disconnect the reley connector of thermistor.
   (Around wiper unit)

6.4.16 Suction FAN



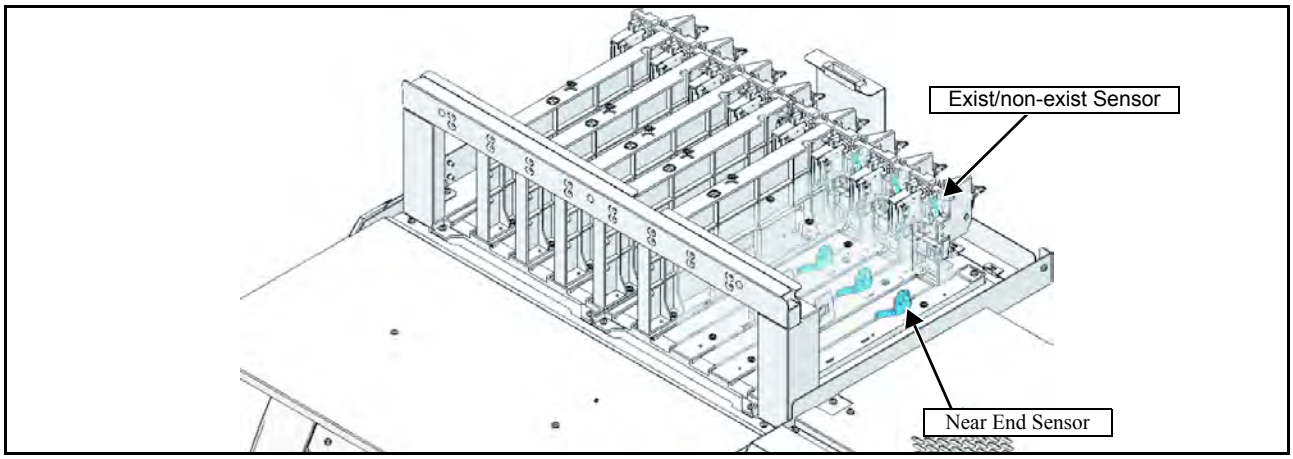
6. Remove the Platen cover R160(130)LX.



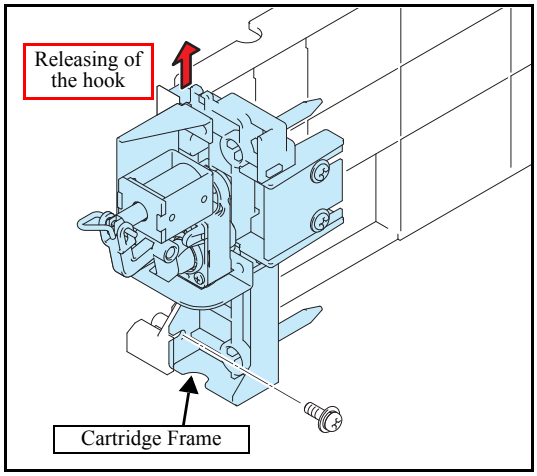
7. Remove the Back air duct.
8. Disconnect the relay connector of the FAN MOTOR.
9. Remove the FAN MOTOR.
10. Reverse the disassembly procedure for reassembly.

Disassembly and Reassembly

6.5.1 Detector Assy, I/C, Y

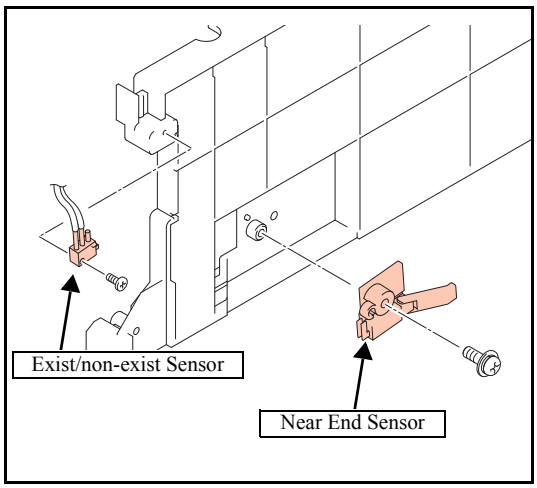


■ **Work procedures**



1. Remove the relevant **cartridge guide**.
   • See "6.4.14 ID Contact PCB CN032 Assy".

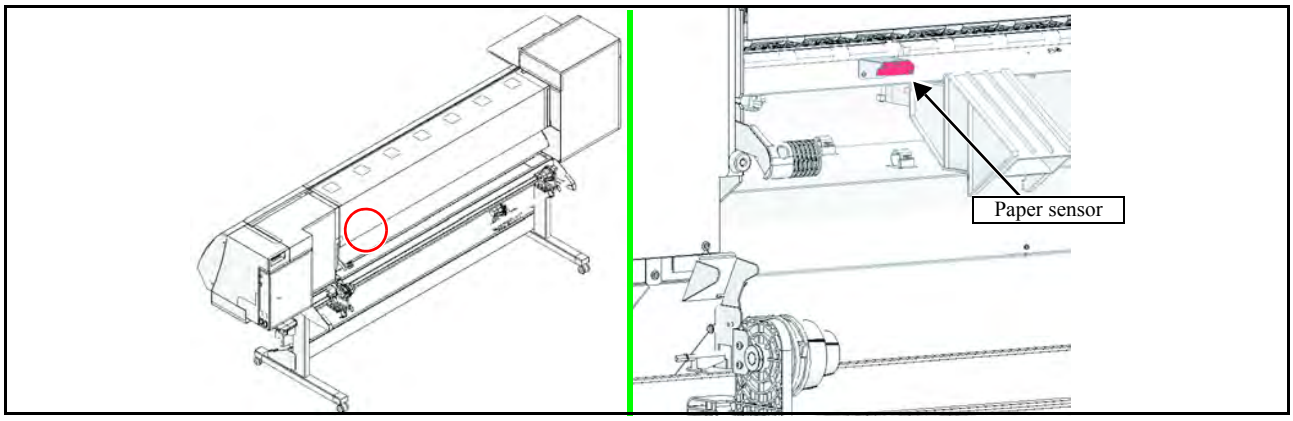
2. Remove the screw, release the hook and then remove **cartridge frame**.



3. Remove the **detector assy**, **I/C**, **Y** from the cartridge guide.

4. Reverse the disassembly procedure for reassembly.

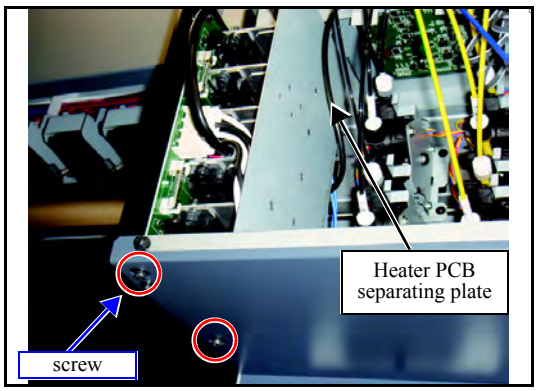
6.5.2 Paper Sensor



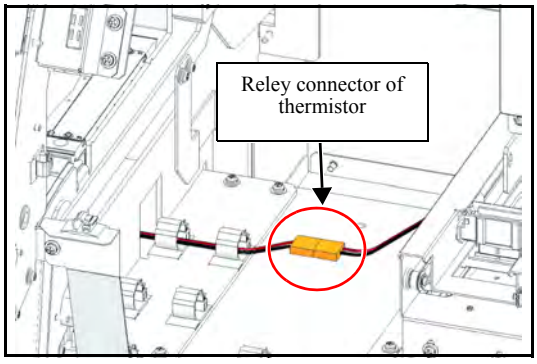
■ **Work procedures**

> **Warning** After turning off the sub and main power switches in order, unplug the power code.
> It is very dangerous if sleep mode functions mistakenly during the operation.

1. Turn off the main power supply and remove the power plug from the main body.
2. Remove the following covers.
   - Right mentenance cover-U
   - Right mentenance cover-C
   - Rear cover - LU
   - Front cover 200L160(130)

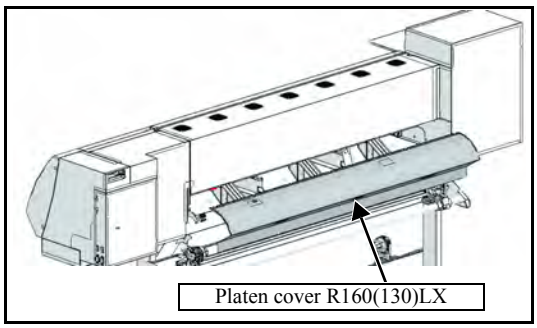


3. Remove the heater PCB separating plate.
4. Disconnect the connecter “CN1” on the Heater PCB.

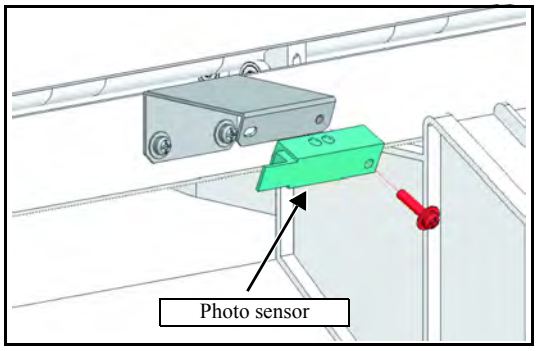


5. Disconnect the reley connector of thermistor.
   (Around wiper unit)

6.5.2 Paper Sensor



6. Remove the Platen cover R160(130)LX.



7. Remove the Photo sensor.

8. Reverse the disassembly procedure for reassembly.

Troubleshooting

7.1.1 Concerning Errors and Malfunctions

■ Outline

This chapter describes the troubleshooting for JV33-260.

■ Rough Identification of the Source of the Trouble

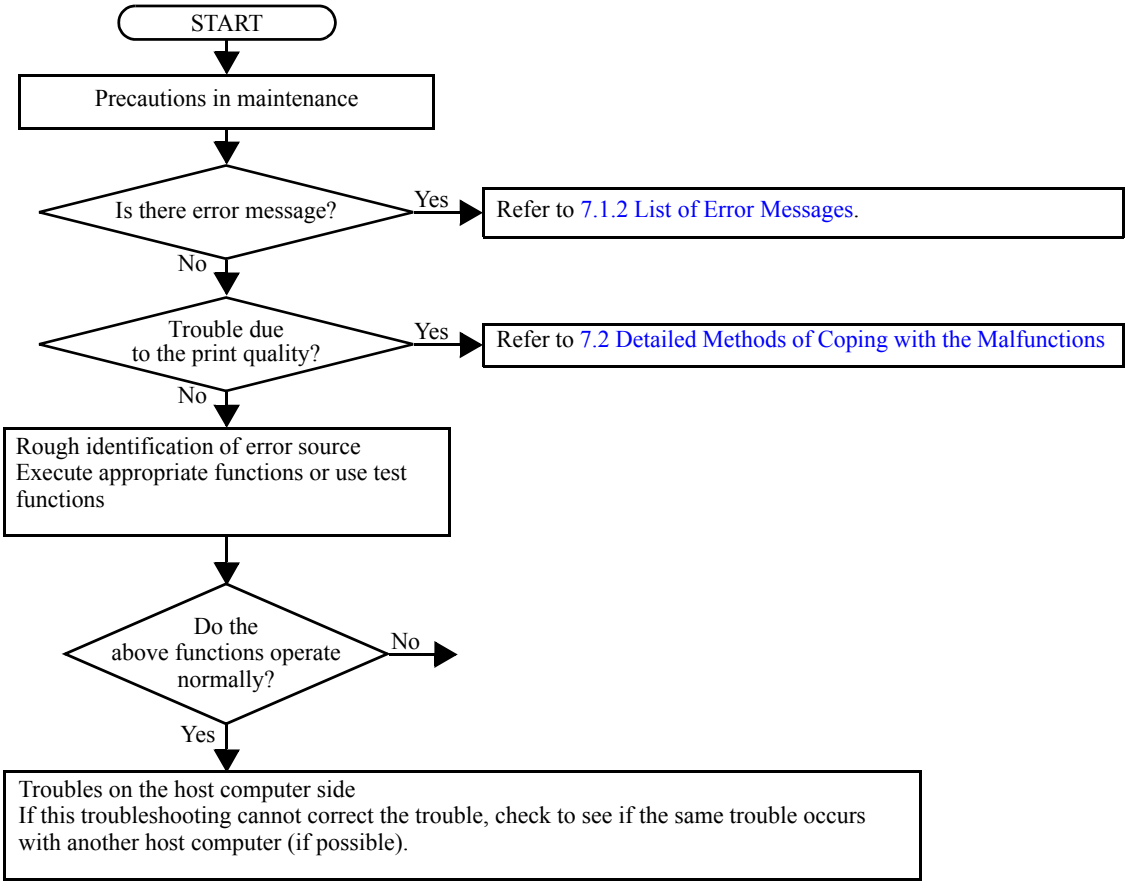
At the beginning of troubleshooting, it is necessary to identify roughly which functions the trouble relates to.

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

☐ Problems with the printer itself
The cause of the trouble can be identified by executing appropriate functions or using test functions.

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

> In the standard setting of JV400-LX, priority is given to the host computer.
> 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
   - ☐ Printer handling error
   - ☐ Printer mechanical trouble
   - ☐ Printer hardware trouble
   - ☐ Printer 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, communication conditions, 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 printer to the factory of MIMAKI for repair.

7.1.2 List of Error Messages

■ **List of Error Messages (1/5)**

No.	LCD	Cause	List of Countermeasures
1	ERROR 108 HD CONNECT[12345678]	Head connection error (Head connection can not be confirmed)	1. Check the setting of loading number of the head in the parameter. (System parameter No.41 HEAD NO=3) 2. Check connection between the HDC PCB from the Print Head 3. Replace the HDC PCB with a new one. (*Refer to 6.4.3)* 4. Replace the Print Head with a new one. (*Refer to 3.1.1)*
2	ERROR 108 HD THERMIS[12345678]	Head thermistor (Head temperature can not be measured)	
3	ERROR 108 HD TYPE[12345678]	Head kinds error	1. There are not the movement restrictions, but early replace the Print Head.
4	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)* 3. Replace the PRAM PCB with a new one.(*Refer to 6.4.6)*
5	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 HDC PCB. 6. Replace the FFC and cable located between the MAIN PCB and the HDC PCB. 7. Replace the HDC PCB with a new one. (*Refer to 6.4.3)* 8. Replace the MAIN PCB with a new one. (*Refer to 3.3.1)*
6	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)	
7	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. (CR2032) * The new battery should be the same product or the equivalent. * Discard the old battery according to the instruction from the maker.
8	ERROR 12e Head Faild[xxxx] (The details of [xxxx] are explained below this list.)	Abnormality of the Print head. Abnormality of the Driver of the Print head. COM overcurrent (HDC STAT4 bit2) (We did not see the current status.)	1. Update F/W. 2. Initialize a parameter. 3. Replace the Print Head with a new one. (*Refer to 3.1.1)* 4. Replace the HDC PCB with a new one.(*Refer to 6.4.3)*
9	ERROR 130 HD DATA SEQ	Head data transferring sequence error	1. Disconnect and connect the FFC located between the HDC PCB and the MAIN PCB. 2. Replace the FFC located between the HDC PCB and the MAIN PCB. 3. Replace the HDC PCB with a new one. (*Refer to 6.4.3)* 4. Replace the MAIN PCB with a new one. (*Refer to 3.3.1)*
10	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)*
11	ERROR 151 MAIN PCB V1R2	Main board 1.2V power supply is abnormal.	1. Replace the MAIN PCB with a new one. (*Refer to 3.3.1)*
12	ERROR 152 MAIN PCB V2R5	Main board 2.5V power supply is abnormal.	1. Replace the MAIN PCB with a new one. (*Refer to 3.3.1)*

7.1.2 List of Error Messages

■ **List of Error Messages (2/5)**

No.	LCD	Cause	List of Countermeasures
13	ERROR 153 MAIN PCB V3R3	Main board 3.3V power supply is abnormal.	1. Check the output pressure of the DC power supply (36V) 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)*
14	ERROR 154 MAIN PCB V05	Main board 5V power supply is abnormal.	
15	ERROR 155 MAIN PCB V35-1	Main board 35-1V power supply is abnormal.	
16	ERROR 156 MAIN PCB V5B	Main board 5VB power supply is abnormal.	
17	ERROR 157 MAIN PCB VTT	Main board VTT power supply is abnormal.	
18	ERROR 158 MAIN PCB V352	Main board 35-2V power supply is abnormal.	1. Check the output pressure of the DC power supply (36V) 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)*
19	ERROR 16e MAIN PCB V3R3B	Main board 3.3VÇa power supply is abnormal.	
20	ERROR 15f HEAD DRIVE HOT	COM driver becomes the high temperature.	1. Check the operation of the HDC PCB cooling fan. 2. Disconnect and connect the FFC located between the HDC PCB and the MAIN PCB. 3. Replace the HDC PCB with a new one. *(Refer to 6.4.3)* 4. Replace the Print Head with a new one. *(Refer to 3.1.1)*
21	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 HDC PCB from the Print Head 2. Replace the HDC PCB with a new one. *(Refer to 6.4.3)* 3. Replace the Print Head with a new one. *(Refer to 3.1.1)*
22	ERROR 172 MAIN PCB Q6 Check	The MAIN PCB Q6 is disabled (short mode). (Displayed only at startup in the maintenance open mode or other than SUPPORT=0.)	1. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
23	ERROR 186 HDC OVERFLOW	Wave shape overflow Wave shape data is abnormal.	
24	ERROR 186 HDC UNDERFLOW	Wave shape underflow Wave shape data is abnormal.	
25	ERROR 187 HDC SLEW RATE	Wave shape slew rate error Wave shape data is abnormal.	
26	ERROR 188 HDC MEMORY	Wave shape memory error At wave shape memory writing, it cannot be written due to address conflict.	
27	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)*
28	ERROR 202 PARAMETER	Parameter error Parameter out of the numeral value range is received	
29	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.)

7.1.2 List of Error Messages

■ **List of Error Messages (3/5)**

No.	LCD	Cause	List of Countermeasures
30	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)*
31	ERROR 305 USB TIME OUT	USB time-out (Occurrence of time-out error on USB device)	
32	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 6.3.1)*
33	ERROR 403 X CURRENT	X-motor current (Over current error of X-motor is detected.)	
34	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 6.3.2)*
35	ERROR 404 Y CURRENT	Y-motor current (Over current error of Y-motor is detected.)	
36	ERROR 509 HDC POSCNT	HDC position counter error	1. Execute and confirm [#TEST SENSOR TEST]-> [Y-ORG].(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.
37	ERROR 50a Y ORIGIN	Y-origin error (Origin of Y-axis can not be detected)	1. Execute and confirm [#TEST SENSOR TEST]-> [Y-ORG].(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 6.3.2)* 8. Replace the HDC PCB with a new one. *(Refer to 6.4.3)* 9. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*

7.1.2 List of Error Messages

■ **List of Error Messages (4/5)**

No.	LCD	Cause	List of Countermeasures
38	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 6.4.12)*
39	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].
40	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].
41	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].
42	ERROR 617 DAMPER SENSOR:12345678	An error of the liquid level detection sensor of the damper has been detected.	1. Check the connection of the liquid level detection sensor. 2. From [#TEST SENSOR] -> [DAMPER], check the detection status of the liquid level detection sensor. 3. Replace the Liquid level detection sensor.
43	ERROR 618 DAMPER/HIGH:12345678	Even though a certain amount of ink has been consumed, there is no change in the liquid level detection sensor “High”.	1. Check the nozzle status. (If nozzle clogging is terrible, consumption difference may be generated.) 2. From [#TEST SENSOR], check the detection status of the liquid level detection sensor. If there is an error, replace the liquid level detection sensor. 3. Perform [MAINTENANCE DAMPER]. 4. Replace the damper.
44	ERROR 61a INK OVER FLOW:12345678	Overflow from the damper has been detected.(Sensor detect the damper is distend.)	1. Perform [MAINTENANCE DAMPER]. Check that it has been discharged to the middle status. 2. With [#TEST SENSOR], check the detection status of the target sensor. 3. Replace the Liquid level detection sensor. 4. Replace the damper. 5. Check that the cartridge valve is not open. (Because ink flows into the damper due to head difference.)
45	ERROR 61b SUPPLY INK:12345678	Ink filling into the damper has failed.	1. With [#TEST SENSOR], check the detection status of the target liquid level detection sensor. (Also, visually check the sensor position of the damper.) 2. From [#TEST AGEING] -> [PUMP MOTOR], discharge ink in the damper to collapse the damper. From [#TEST AGEING] -> [INK SUPPLY], check that sending ink is performed. *If sending ink cannot be performed: The supply pump, the cartridge valve and the UISS valve shall be replaced.
46	ERROR 627 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 Cartridgesensor].
47	ERROR 702 THERMI CONNECT	Defective of the thermistor connection (disconnection or short)	1. Check each thermistor connection. 2. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
48	ERROR 703 !EX HEATER BRKR	Temperature can not be taken normally by the error of thermister.	1. Check the connect of external heater.
49	ERROR 707 !HD HEATER BRK	Is the heater of the head disconnected? (The temperature does not rise after heating for over a certain period of time.)	1. Check the room temperature is not too low. 2. Replace the Print Head with a new one. *(Refer to 3.1.1)* 3. Replace the HDC PCB with a new one. *(Refer to 6.4.3)*

7.1.2 List of Error Messages

■ **List of Error Messages (5/5)**

No.	LCD	Cause	List of Countermeasures
50	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)*
51	ERROR 90d NO HEAD SELECT	Loaded number of the head is assumed zero.	Check the setting of loading number of the head in the parameter. (System parameter No.41 HEAD NO=3)
52	ERROR 90f	Lacking printing area in printing the built-in pattern.	1. Move the Y origin. 2. Replace the media.
53	ERROR 910 ENVIRONMENT TEMP(LO)	The room temperature is low. It is possible that normal discharging cannot be performed.	Adjust the room temperature to the specified range (20 degrees C to 25 degrees C).
54	ERROR 911 ENVIRONMENT TEMP(HI)	The room temperature is high. It is possible that normal discharging cannot be performed.	Adjust the room temperature to the specified range (20 degrees C to 25 degrees C).
55	ERROR 04 PARAM ROM	Access Error of the PARAMETER ROM 1.The state that cannot access "FROM" on the MAIN PCB. 2.The state that cannot access "EEPROM" on the Central-IO PCB. 3.Parameter data is abnormal.	1. Replace the FFC and cable located between the HDC PCB and the MAIN PCB. 2. Replace the FFC and cable located between the HDC PCB and the MAIN PCB. 3. Initialize parameter data. 4. Replace the Central-IO PCB with a new one.*(Refer to 6.4.9)* 5. Replace the MAIN PCB with a new one.*(Refer to 3.3.1)*
56	ERROR 909 PARAMETER VERSION	Parameter version which is downloaded is different from FW version.	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	<LOCAL> INK IC CAN'T READ	IC chip of Ink Cartridge unreadable properly	1. Check the attached status of the chip. 2. Perform #TEST/ Check the IC. 3. Replace the ID Contact PCB Assy. with a new one. *(Refer to 6.4.14)*
2	<LOCAL> WRONG INK IC	IC chip of Ink Cartridge unreadable properly	
3	<LOCAL> INK TYPE	Type of inserted Ink Cartridge is different.	1. Check the type of the ink cartridge.
4	<LOCAL> INK COLOR	The color of Ink Cartridge inserted is different from the color to be set.	1. Check the color of the ink cartridge.
5	<LOCAL> 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.
6	<LOCAL> 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]->[INK CARTRIDGE](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 Presence/Near End Sensor with a new one. 6. Replace the Ink System PCB with a new one. *(Refer to 6.4.8)* 7. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
7	<LOCAL> 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]->[INK END](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 Presence/Near End Sensor with a new one. 6. Replace the Ink System PCB with a new one. *(Refer to 6.4.8)* 7. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
8	<LOCAL> INK NEAREND	Ink near end (A small amount of 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]->[INK END](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 Presence/Near End Sensor with a new one. 6. Replace the Ink System PCB with a new one. *(Refer to 6.4.8)* 7. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
9	<LOCAL> CHECK INK PACK	Even if there is enough amount of ink, ink end was detected.	Check the ink pack setting status in the eco case.

7.1.3 List of Warning Messages

■ **List of Warning Messages (2/3)**

No.	Message	Cause	Corrective Measures
10	<LOCAL> EXPIRATION	Some ink cartridges are expired.	1. 1. Check the expiration date of the ink. (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. *(Refer to 6.4.14)* 6. Replace the Ink System PCB with a new one. *(Refer to 6.4.8)*
11	<LOCAL> 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. *(Refer to 6.4.14)* 6. Replace the Ink System PCB with a new one. *(Refer to 6.4.8)*
12	<LOCAL> EXPIRATION(2MONTH)	Some ink cartridges are expired. (Two months have passed after the expiration date.)	Replace the cartridge with the warning.
Warning Messages (LOCAL)			
13	<LOCAL> 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.
14	<LOCAL> Check waste ink[MNT]	The count of the waste ink tank exceeded the specified amount.	Check the waste ink tank. Press the [MAINT] key, and correct the counter or reset it.
15	<LOCAL> Replace WIPER [MNT]	The count of the wiper exceeded the specified amount.	Press the [MAINT] key, and replace the wiper.
16	<LOCAL> ** 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.
17	<LOCAL> DATA REMAIN	Data has already been received.	Press the REMOTE key and perform printing. Or, perform data clear.
18	<LOCAL> INK NEAR END [ENT]	Ink near end (A small amount of ink left)	Press the [ENTER] key and check the relevant cartridge. (Be careful that ink end is coming soon.)
19	<LOCAL> SUPPLY INK :MMCCYYKK	Ink filling into the damper has failed.	1. Perform [MAINTENANCE DAMPER]. 2. Also check the amount of remaining ink in the cartridge.
20	<LOCAL> Damper Sens:MMCCYYKK	The liquid surface sensor abnormality of the damper has been detected.	1. Turn OFF the power supply once, and wait for a while. And then turn ON the power supply again (when it is displayed again). Same as ERROR617.
21	<LOCAL> InkOverflow:MMCCYYKK	Overflow from the damper has been detected.	1. Perform [MAINTENANCE DAMPER] (when it is displayed again). Same as ERROR61a.
22	<LOCAL> Damper HIGH:MMCCYYKK	Even though a certain amount of ink has been consumed, there is no change in the liquid level detection sensor "High".	Perform [MAINTENANCE DAMPER] (when it is displayed again). Same as ERROR618,619.

7.1.3 List of Warning Messages

■ **List of Warning Messages (3/3)**

No.	Message	Cause	Corrective Measures
Warning Messages (Operation)			
23	CAN'T OPERATE :MEDIA UNDETECTED	The media has not been detected.	
24	CAN'T OPERATE :MOTOR POWER OFF	The motor is OFF after the cover was opened etc.	
25	CAN'T OPERATE :INK ERROR	An ink error occurred.	
26	CAN'T OPERATE :COVER OPEN	The cover is opened.	
27	CAN'T OPERATE :DATA REMAIN	The data has been received.	
28	WIPER CLEANING [ENT]	Wiper cleaning is required.	Perform [STATION MAINTENANCE/CARRIAGE OUT].

7.1.4 List of SYSTEM HALT

■ **List of SYSTEM HALT (1/5)**

No.	LCD	Cause	Corrective Measures
1	SYSTEM HALT (*) 104 : +35V RECVR	35 V Power recovery error	1. Replace the DC Power Supply(36V) PCB with a new one. *(Refer to 6.4.5)* 2. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
2	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. *(Refer to 3.3.1)*
3	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. *(Refer to 3.3.1)*
4	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. *(Refer to 3.3.1)*
5	SYSTEM HALT (*) 11f : PCB SLIDER	No Slider PCB.	
6	SYSTEM HALT (*) 120 : LCD THERM.	LCD thermistor IC RW error	1. Check the connections between the Keyboard PCB and the MAIN PCB, and then disconnect and connect the FFCs. 2. Replace the FFCs and the cabeles of the above routes. 3. Replace the Keyboard PCB with a new one. 4. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)* 5. Replace the DC Power Supply(5V) with a new one. *(Refer to 6.4.1)*
7	SYSTEM HALT (*) 122 : PRAM NONE	No PRAM	1. Update F/W. 2. Replace the PRAM PCB with a new one. *(Refer to 6.4.6)* 3. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
8	SYSTEM HALT (*) 123 : PRAM DATA	PRAM data error	
9	SYSTEM HALT (*) 124 : PRAM ADDR	PRAM address error	
10	SYSTEM HALT (*) 125 : EEPROM READ	EEPROM read trouble CIO Register (EER:Address 74) bit6	1. Update F/W. 2. Upload the parameter and initialize parameter with #PARAMETER. 3. Check the connection state between MAIN PCB - Central-IO PCB. 4. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)* 5. Replace the Central-IO PCB with a new one. *(Refer to 6.4.9)*
11	SYSTEM HALT (*) 126 : EEPROM WR	EEPROM write trouble CIO Register (EER:Address 74) bit7	

7.1.4 List of SYSTEM HALT

■ **List of SYSTEM HALT (2/5)**

No.	LCD	Cause	Corrective Measures
12	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 connection state between sub-power SW and Keyboard PCB. 2. Check the connections between the Keyboard PCB and the MAIN PCB, and then disconnect and connect the FFCs. 3. Check the connector connection of DC Power Supply (36V). 4. Check if there is no error on the power path from the AC Inlet. 5. Replace the DC Power Supply(36V) with a new one. (*(Refer to 6.4.5)*) 6. Replace the Keyboard PCB with a new one. 7. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
13	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. *(Refer to 6.4.14)* 4. Replace the INK SYSYTEM PCB with a new one. *(Refer to 6.4.8)*
14	SYSTEM HALT (*) 15d : MAIN FPC-1	30pinFPC 1 of MAIN PCB connect error	1. Check the connections between the HDC PCB and the MAIN PCB, and then disconnect and connect the FFCs. 2. Replace the FFCs of the above routes. 3. Replace the HDC PCB with a new one. *(Refer to 6.4.3)* 4. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
15	SYSTEM HALT (*) 160 : PCB MAIN-F5	MAIN PCB fuse (F5) disconnected. PDC IPORT Register bit20 : ON	Replace the MAIN PCB with a new one. *(Refer to 3.3.1)* Before MAIN PCB replace, do the following checks. 1. Check the connections between the Central-IO PCB and the MAIN PCB, and then disconnect and connect the FFC and cable. 2. Check short between 1 pin and 4 pin of CN1, and between 1 pin and 9 pin of CN11 of the Central-IO PCB. (If shorted out, replace also the Central-IO PCB.)
16	SYSTEM HALT (*) 161 : PCB MAIN-F6	MAIN PCB fuse (F6) disconnected. PDC IPORT Register bit21 : ON	
17	SYSTEM HALT (*) 17e : PCB IIO1	No INK SYSTEM PCB An error occurred at serial communication check after configuration.	1. Check the connections between the INK SYSTEM PCB and the Central-IO PCB and then disconnect and connect the FFC. 2. Replace the FFC of the above routes. 3. Replace the INK SYSTEM PCB with a new one. *(Refer to 6.4.8)* 4. Replace the Central-IO PCB with a new one. *(Refer to 6.4.9)*
18	SYSTEM HALT (*) 181 : PCB H21	No HDC PCB An error occurred at serial communication check after configuration.	1. Check the connections between the HDC PCB and the MAIN PCB and then disconnect and connect the FFC. 2. Replace the FFC and cable of the above routes. 3. Replace the HDC PCB with a new one. *(Refer to 6.4.3)* 4. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*

7.1.4 List of SYSTEM HALT

■ **List of SYSTEM HALT (3/5)**

No.	LCD	Cause	Corrective Measures
19	SYSTEM HALT (*) 185 : PCB LED	No INK LED PCB	1. Check the connections between the INK LED PCB and the INK SYSTEM PCB and then disconnect and connect the FFC. 2. Replace the FFC of the above routes. 3. Replace the INK LED PCB with a new one. *(Refer to 6.4.10)* 4. Replace the INK SYSTEM PCB with a new one. *(Refer to 6.4.8)*
20	SYSTEM HALT (*) 189 : COM VOLT	COM Voltage is abnormal	1. Replace the HDC PCB with a new one. *(Refer to 6.4.3)* 2. Check the connections between the HDC PCB and the Print head.
21	SYSTEM HALT (*) 303 : PCB MAIN ET	MAIN PCB Ethernet IC trouble	1. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
22	SYSTEM HALT (*) 406 : WIPER ORG	Wiper origin undetectable	1. Execute and confirm [#TEST SENSOR TEST] -> [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 Central-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. *(Refer to 6.4.9)*
23	SYSTEM HALT (*) 40b : UN MAGNETIC	DC motor is driving without excited	1. Update F/W. 2. Upload the parameter and initialize parameter with #PARAMETER. 3. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
24	SYSTEM HALT (*) 502 : Y ORGIN	Y Origin Sensor error	1. Execute and confirm [#TEST SENSOR TEST] -> [Y-ORG]. (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. *(Refer to 6.3.2)* 7. Replace the HDC PCB with a new one. *(Refer to 6.4.3)* 8. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*

7.1.4 List of SYSTEM HALT

■ **List of SYSTEM HALT (4/5)**

No.	LCD	Cause	Corrective Measures
25	SYSTEM HALT (*) 509 : HDC POSCNT	HDC position counter error	1. [Execute and confirm [#TEST SENSOR TEST]-> [Y-ORG].(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. *(Refer to 6.3.4)* 9. Replace the HDC PCB with a new one. *(Refer to 6.4.3)* 10. Replace the MAIN PCB with a new one. *(Refer to 3.3.1)*
26	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. *(Refer to 3.3.1)* 14. Replace the DC Power Supply(5V) with a new one. *(Refer to 6.4.1)*
27	SYSTEM HALT (*) 802 : (C)SLOT	System error (CPU exception: Slot instruction error)	
28	SYSTEM HALT (*) 803 : (C)CPU ADDR	System error (CPU exception: CPU address error)	
29	SYSTEM HALT (*) 804 : (C)DMA ADDR	System error (CPU exception: DMA address error)	
30	SYSTEM HALT (*) 805 : (C)ZERO DIV	System error (CPU exception: Division by 0)	
31	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. *(Refer to 3.3.1)*
32	SYSTEM HALT (*) 807 : FW/SIO wbsy	FW error (Serial control F/W error (WR BUSY))	
33	SYSTEM HALT (*) 808 : FW/STP-MTR	FW error (Step Motor stop waiting)	
34	SYSTEM HALT (*) 809 : FW/XY param	FW error (XY-axis Motor resolution conversion parameter error)	
35	SYSTEM HALT (*) 80a : FW/Y RANGE	FW error (Y movable range error)	
36	SYSTEM HALT (*) 80b : FW/ctrltsk	FW error (Motor control task error)	
37	SYSTEM HALT (*) 80c : FW/PUMP W	FW error (Suction Pump stop waiting time over at capping)	
38	SYSTEM HALT (*) 80d : FW/SERVO IT	FW error (Servo interruption error)	
39	SYSTEM HALT (*) 80e : FW/FROM prm	FW error (FROM PARAM error (F/W BUG))	
40	SYSTEM HALT (*) 80f : FW/SIO vch	FW error (Virtual serial CH setting error)	

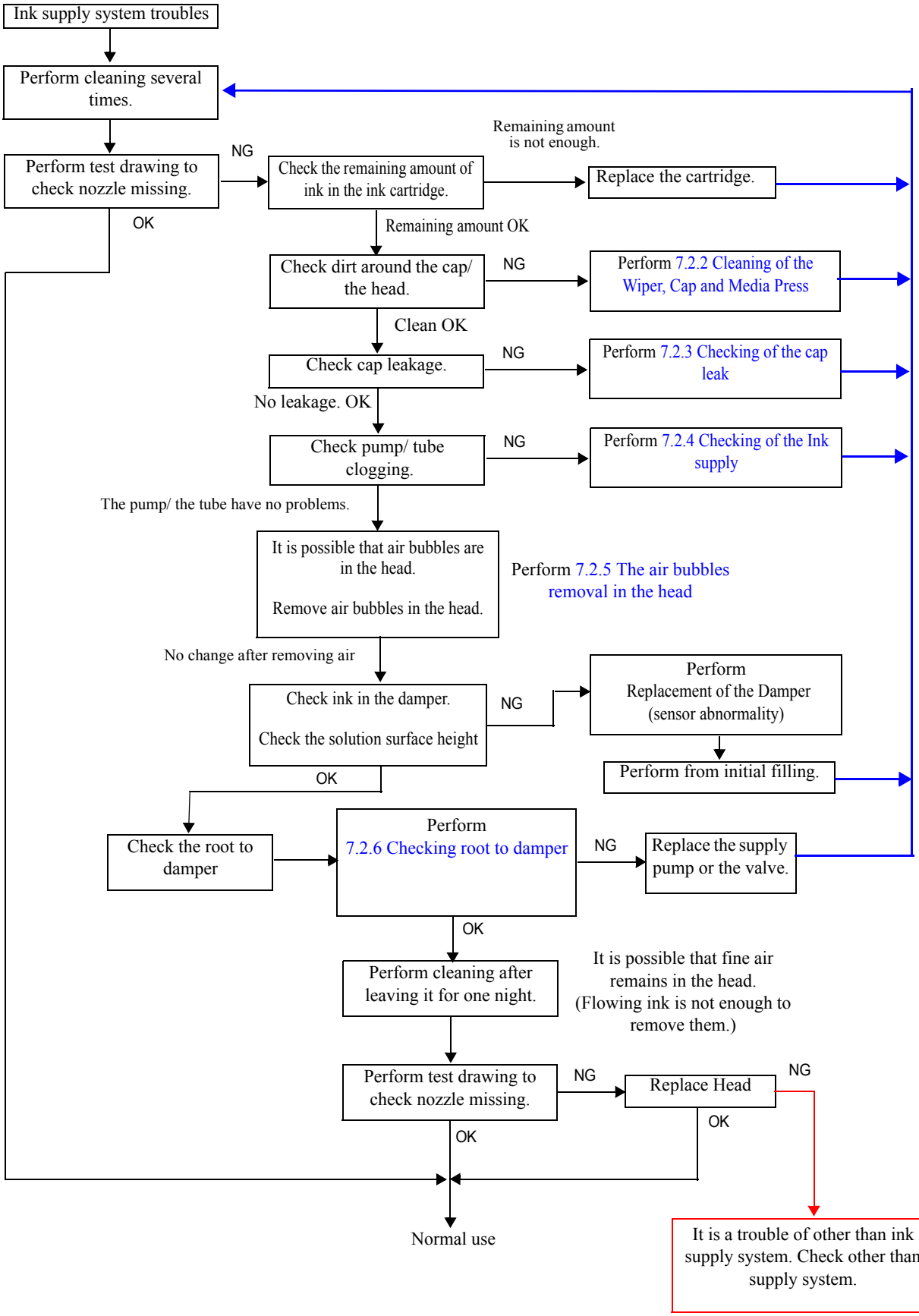
7.1.4 List of SYSTEM HALT

■ **List of SYSTEM HALT (5/5)**

No.	LCD	Cause	Corrective Measures
41	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. *(Refer to 3.3.1)*
42	SYSTEM HALT (*) 811 : FW/SIO read	FW error (Serial control F/W error (RD BUSY))	
43	SYSTEM HALT (*) 812 : FW/CRTRG NO	FW error (Cartridge number error)	
44	SYSTEM HALT (*) 813 : FW/WIPER RN	FW error (Wiper operation range error)	
45	SYSTEM HALT (*) 814 : FW/drivinfm	FW error (drivinfm() information obtaining error	
46	SYSTEM HALT (*) 815 : FW/SIO rsrc	FW error (Serial control F/W error (material control))	
47	SYSTEM HALT (*) 816 : FW/FROM WRC	FW error (FROM write control error)	
48	SYSTEM HALT (*) 817 : FW/SaveArea	FW error (Save area error (size over))	
49	SYSTEM HALT (*) 818 : FW/EEP SIZE	FW error (EEPROM size over)	
50	SYSTEM HALT (*) 819 : FW/HROM SIZ	FW error (HDROM size over)	
51	SYSTEM HALT (*) 81a : FW/FROM SIZ	FW error (FROM size over)	
52	SYSTEM HALT (*) 81b : FW/STACK OV	FW error (STACK OVER)	
53	SYSTEM HALT (*) 829 : FW/ERASE TIMEOV	FW error (Time over of erasing FROM sector.)	
54	SYSTEM HALT (*) 000 : UNNOWN ERR	Unnown error	
55	SYSTEM HALT (*) 910 : DEVICE CONST	Device configuration is wrong.	1. Check whether or not FW is correct for using device.

Troubleshooting

7.2.1 Sorting process sheet of ink supply system's troubles



7.2.2 Cleaning of the Wiper, Cap and Media Press

■ Outline

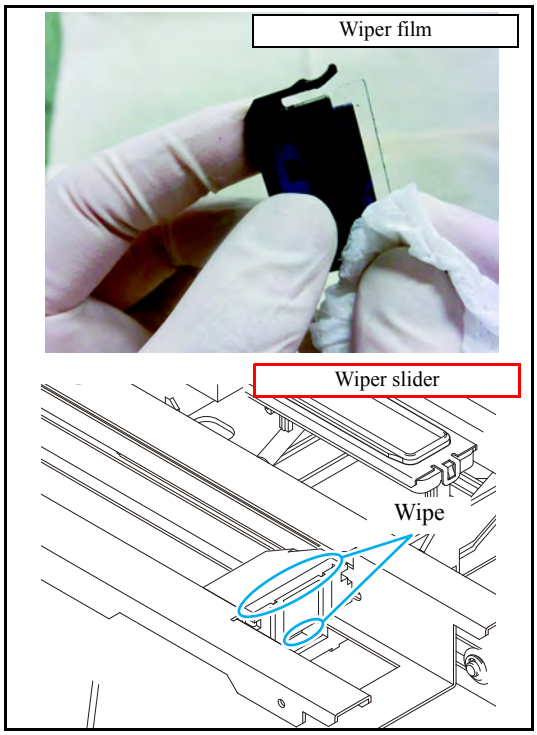
If nozzle missing occurs, the nozzle surface may be dirty.
Dirt on the wiper, the cap or the media press may affect, therefore, cleaning method of each part is explained here.

1) If ink adheres to the wiper, it may damage the head.
2) If lip part of the cap has dirt, it may cause cap leakage.
3) If there are pieces of media adhering to the media press, the head may be stained.

■ Work procedures

> IMPORTANT
> Do not wipe the nozzle surface with “Maintenance washing liquid LX” used here.

☐ Cleaning of the wiper

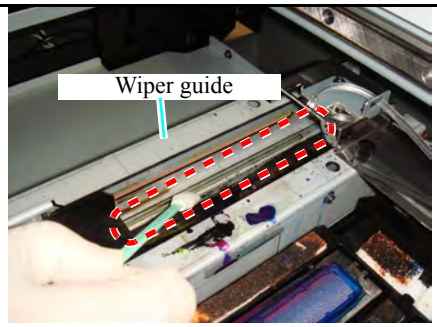


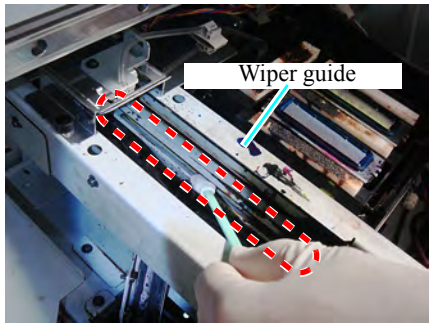
1. Remove the wiper, and clean the wiper completely until the stained ink on the top edge of the wiper film is washed away after soaking the wiper in the maintenance washing liquid LX for 1-24 hours.
2. Wipe off the ink sticking to the wiper slider with a clean stick dipped in maintenance washing liquid LX.
3. Wipe cleaning solution with a dry cloth.

> IMPORTANT
> Fully wipe cleaning solution so that it may not adhere to the head.

7.2.2 Cleaning of the Wiper, Cap and Media Press

☐ Cleaning of the around wiper



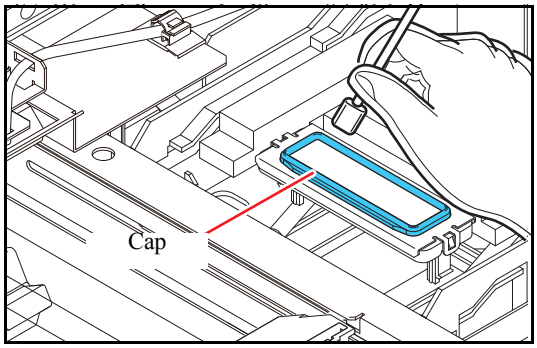


Space below the wiper guide

4. Dip the clean stick in the maintenance washing liquid LX, and wipe the around wiper.
5. Wipe cleaning solution with a dry cloth.

> IMPORTANT
> Fully wipe cleaning solution so that it may not adhere to the head.

☐ Cleaning of the cap

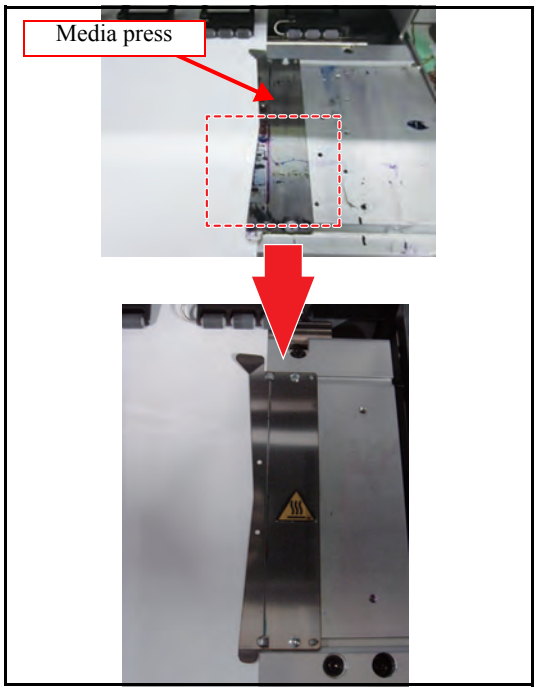


1. Dip the clean stick in the maintenance washing liquid LX, and wipe the cap rubber and cap cover.
   - Wipe off so that you can see original color (black) of the cap rubber.
2. Wipe cleaning solution with a dry cloth.

> IMPORTANT
> Fully wipe cleaning solution so that it may not adhere to the head.

7.2.2 Cleaning of the Wiper, Cap and Media Press

☐ Cleaning of Media press



1. Clean the media press with an unwoven cloth etc.
   Remove pieces of media and ink dirt.

7.2.3 Checking of the cap leak

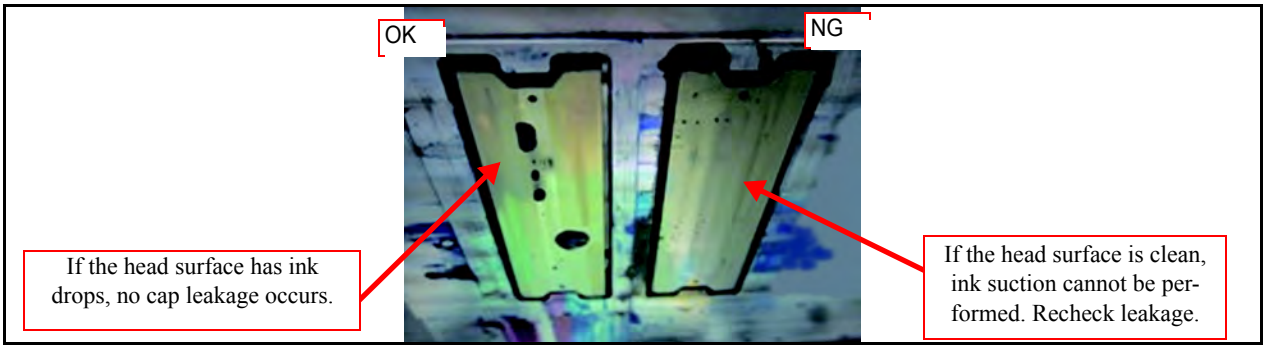
■ Outline

Check whether airtightness of the cap is enough when nozzle missing occurs due to ink suction defect.

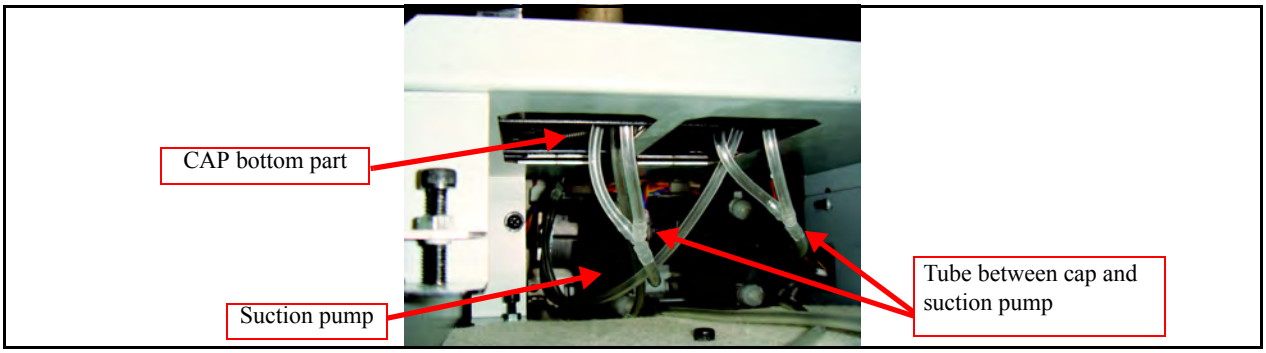
■ Work procedures

☐ How to see if suction defect occurs

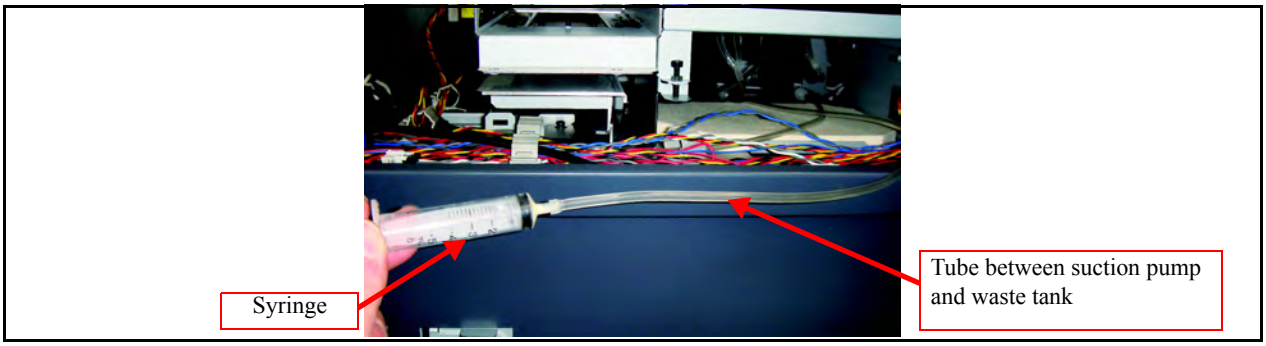
1 Perform cleaning by cap suction, and observe the head surface before wiping.



2 Check that piping between the cap and the suction pump is surely connected.



3 Turn ON the power supply, and make the status capped.
4 Remove the top edge of the tube between the suction pump and the waste tank, and connect the syringe.



5. Pull out the connected syringe slowly. As a reference, pull out about one scale per one second.
(If you pull out it swiftly, you cannot check leakage.)

IMPORTANT

● Do not push the syringe. It may push foreign object into the nozzle, and it may cause nozzle defect.

If ink in the damper becomes less, fill ink into the damper with the solution sending pump.

☐ Criteria for judgment

OK: If you feel a good response when pulling the syringe (You can feel that you are pulled back.)
The cap is OK. Check other supply system.
Perform the work by following the “Sorting process sheet of ink supply system’s troubles”.

NG: If you do not feel a good response when pulling the syringe (You can pull easily.)
Cap leakage occurs. Check the cap and the cap position.

7.2.4 Checking of the Ink supply

■ Outline

The items to be checked when nozzle missing occurs due to ink supply abnormality (lack of ink supply) are described below.

Especially, you should check the abnormality of the ink supply pump.

■ Items to be checked

☐ Check that there is no abnormality on the ink supply pump.

Even if ink remains in the cartridge, when the liquid surface sensor of the damper indicates “Low”, ink supply has not been performed normally.

In such a case, it is considered that the ink supply pump has an abnormality.

(However, it is assumed that there is no abnormality in the liquid surface sensor of the damper.)

☐ Measures

Change Ink supply pump.

Refer to “ 3.1.3 Replacement of the Ink Supply Pump **“.**

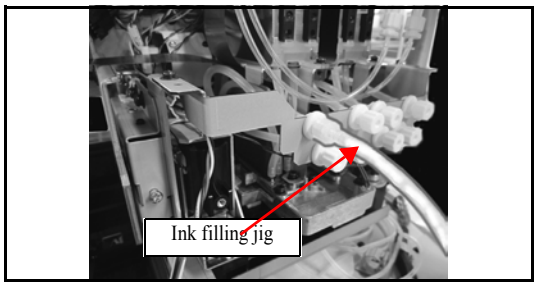
7.2.5 The air bubbles removal in the head

■ Outline

If there are air bubbles in the head, it cannot recover by the normal cleaning in some cases.
Perform air purge with the procedures below:

■ Work procedures

1. Remove the following covers.
   1) Right maintenance cover U
   2) Right maintenance cover C
   3) Head cover
   4) Tank film cover



2. Perform [#MAINTENANCE -> AIR PG].
3. According to a screen, connect the ink filling jig to the air purge port of printing head.
4. Perform air purge operation, and check that air comes into the ink filling jig.
5. Visually check that there is no air bubble in the path, and stop air purge operation.
6. Cleaning is carried out.

7.2.6 Checking root to damper

■ Outline

Check that the valve and the pump operate normally in the path between the cartridge and the damper.

■ Work procedures

1. Open the cartridge valve to release the pump.
   If the cartridge is not inserted, or, the cartridge is empty, air bubbles occur in the path. Therefore, open the valve of the cartridge currently used.
2. From the tube before the damper, pull with the syringe.
   If you can pull it, the valve is normal.
3. From the tube before the damper, perform pump solution sending.
   If you can do it, the pump is normal.

7.2.7 Checking negative pressure abnormality (DELETED)

This item was deleted.

7.2.8 Maintenance check

■ Outline

Because of dirt on the maintenance structure, maintenance of the head and the carriage may be not enough. It may cause ink drops in some cases.

The Items to be checked are as below:

■ Checking items

1. First, check that wiping has been surely performed, and check that the head surface after cleaning has no dirt.

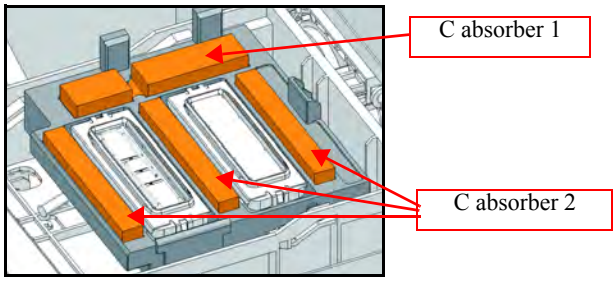
   If wiping has not been performed properly, clean the wiper, the head and the cap, and check the capping position.

   For details, refer to " 7.2.2 Cleaning of the Wiper, Cap and Media Press ".

☐ Large ink drops of mixed colors occur.

2. It is possible that blowing spatter of the wiper adheres to the carriage rear surface. Clean the carriage rear surface.

3.Replace the C absorber1 and the C absorber 2.



☐ Small ink drops of the specified color occur at the dark printing part.

4.Dust may adhere to the nozzle surface, the wiper and the cap. Clean them. (They may be invisible.)

5.Clean the media press.

☐ Large ink drops of the specified color occur.

6.Check the damper. Replace the damper.

7.2.9 Root Cause Analysis of Ink Discharging Defect

■ Outline

Perform Root Cause Analysis of ink discharging defect (mainly, nozzle missing).

The Items to be checked are as below:

■ Checking items

Perform Root Cause Analysis of ink discharging defect by referring to the table below..

Timing of nozzle missing occurred		Checking points
During drawing	Under printing	1. Non-detected jam
		2. Ink remaining amount
		3.Nozzle surface
		4.Damper
	After periodical cleaning	5.Maintenance
After leaving	Remote power OFF	6.Reflesh
	Main power OFF	7.Main power supply OFF

1. **Non-detected jam**

The jam sensor can not detect contact to the media and media retainer in some case.

☐ Countermeasure

Check whether there is contact to the media and media retainer.

2. **Ink remaining amount**

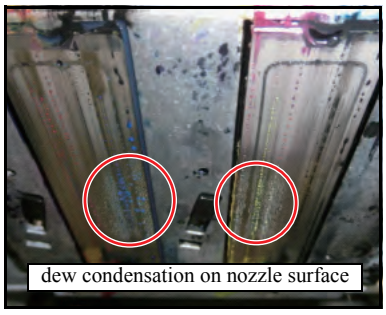
Ink remaining amount may have not been detected correctly.

☐ Countermeasure

Check the ink remaining amount of the relevant color cartridge by which nozzle missing occurs.

3.**Nozzle surface**

It is possible dew condensation formed on nozzle surface (like white mist, refer to next picture) or that it is dried.



dew condensation on nozzle surface

☐ Countermeasure

- **Dew condensation**: Lower the platen heater temperature.
- **Nozzle surface Dryness**: Depending on the ambient environment, even if the nozzle surface is dry, periodical wiping 2 is not performed. Set [PERIO.WIPE2] to MANUAL from [SETTING]-[PERIO.WIP]. As the rough guide, it shall be 40min.

7.2.9 Root Cause Analysis of Ink Discharging Defect

☐ Additional Information

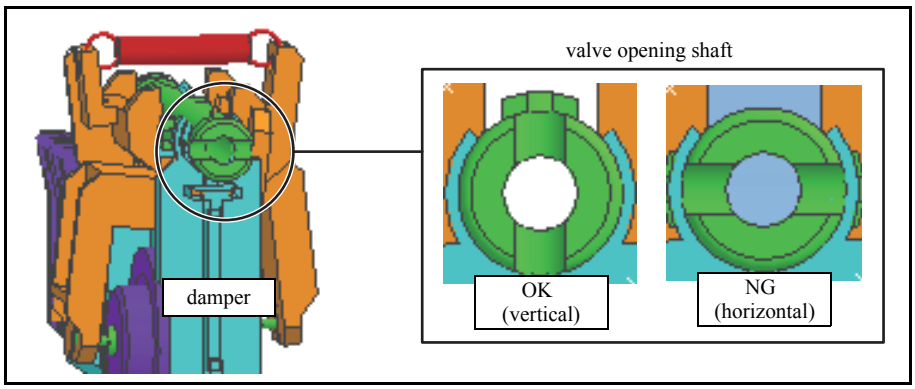
- Platen temperature only affects blur of image, not dryness of deliverables.It is not recommended to raise the platen temperature for the purpose other than improvement of blur.
- Dew condensation tends to be increased if the difference between the platen temperature and the head during drawing exceed 15 degrees.You can check the head temperature during drawing by pressing the [MAINT] key in the remote status (possible when it is not in the printing operation).

4.**Damper**

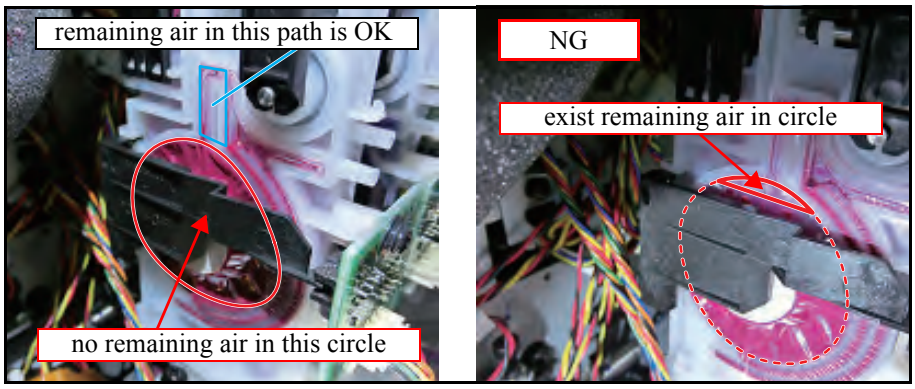
It is possible that ink supplying amount may decrease due to damper defect.

☐ Countermeasure

1)**Air purge valve**: Check that the valve opening shaft vertical (refer to next figure).If it is horizontal, ink supply can not be in time in some cases. You do not have to make the valve opening shaft is horizontal unless you purge air inside the damper.



2)**Ink remaining amount inside damper**: Check that there is enough ink in the damper. If there is air inside the circle of the damper, it is NG (refer to next figure). Perform [#ADJ] ->[DAMPER]->[FILLING].



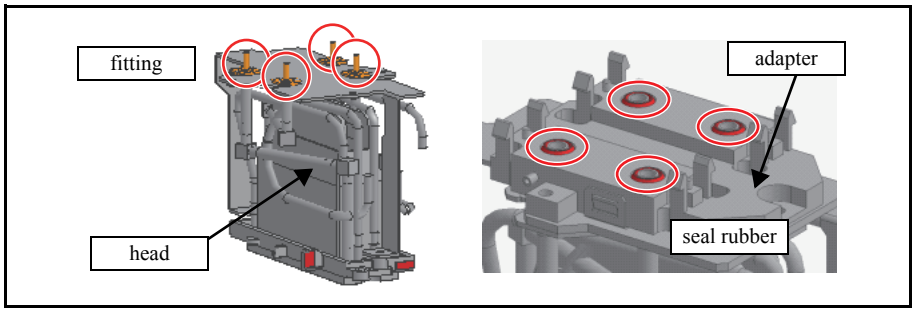
3)**FCO9 work defect (connection defect between the adapter and the head)**, (neither of 1) nor 2) above)

It is possible that connection defect between the adapter and the head may occur at the FCO9 work.

- Fully discharge the relevant color with check pattern 100% and check that nozzle missing recurs.If nozzle missing increases when you continue drawing, there is possibility of connection defect.

7.2.9 Root Cause Analysis of Ink Discharging Defect

- Assembling defect tends to appear at the fitting connecting part under the adapter and seal rubber part between the adapter and the damper (refer to next figure).



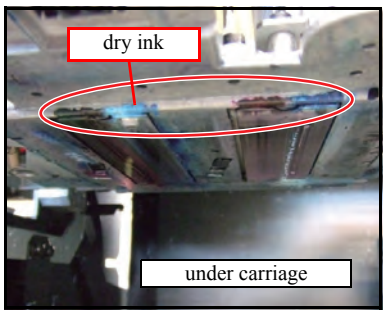
- For both, it is recommended to replace parts.

5.**Maintenance**

If nozzle missing occurs after periodical CL, maintenance defect may occur.

☐ Countermeasure

- Wiper: Check the status of transparent film. If wear, fuzz, etc. occur, replace it.
- Under carriage: Remove dry ink under the carriage (refer to next picture).



- Cap: Check that you can perform cap absorption. Recheck capping adjustment.

6.**Reflesh**

The automatic maintenance setting may not match the environment where you left it.

☐ Countermeasure

See how it works if you raise the refresh Lv and cleaning.

7.Main power supply OFF

When you left this with the main power OFF, we do not guarantee the nozzle discharging status.

☐ Countermeasure

It is possible that colors are mixed etc., perform cleaning (several times) and air purge.

7.2.10 Trouble at Ink Filling

■ Outline

This section explains how to distinguish the cause of trouble and the measures related to ink while installing or recharging.

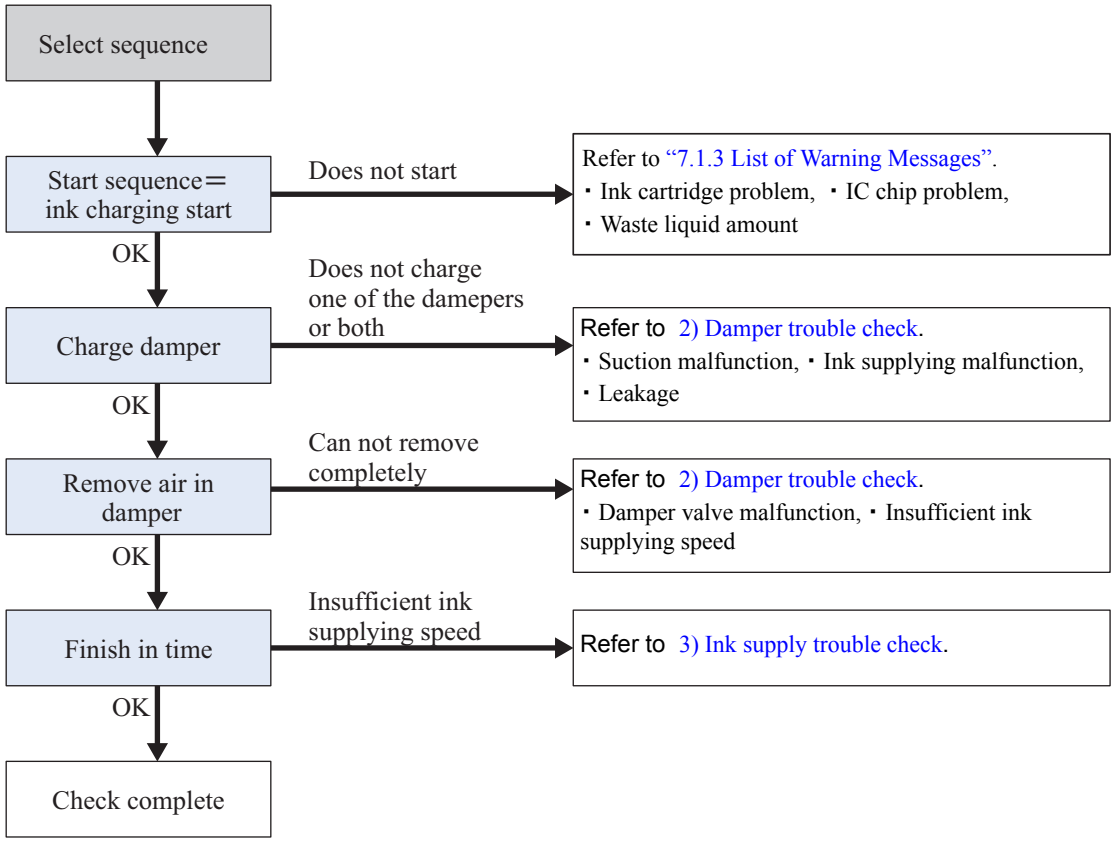
1 Ink discharging malfunction → Refer to **"7.2.1 Sorting process sheet of ink supply system's troubles"** or **"7.2.9 Root Cause Analysis of Ink Discharging Defect"**.

2 Ink charging malfunction → Follow the steps below and solve the problem.

■ Troubleshooting for ink charging malfunctions

1) Follow the ink charging flow and distinguish the cause of the trouble.

Working flow of ink filling



■ "Ink charging does not start" (cause/measures)

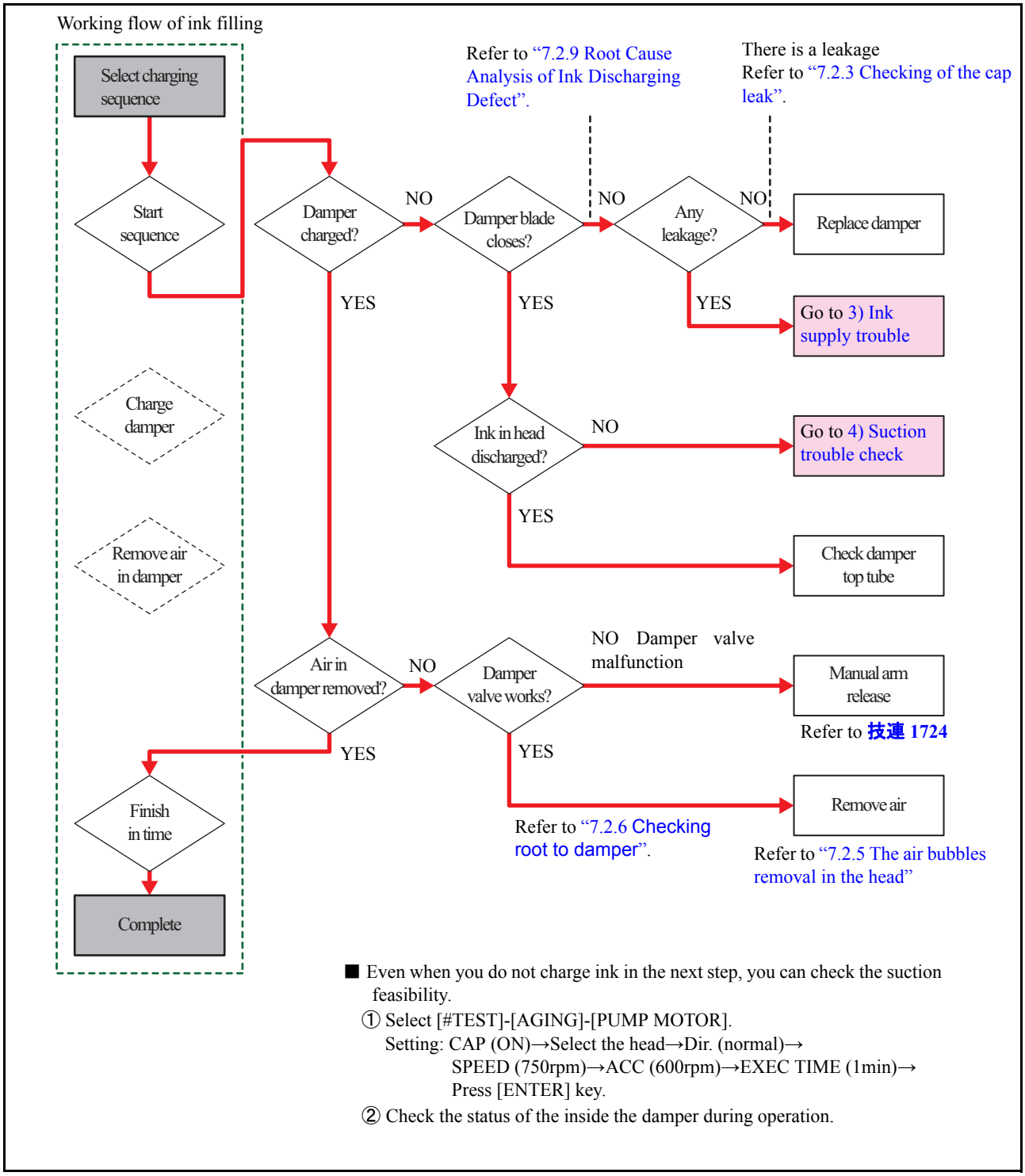
① Ink cartridges are not completely inserted. → Insert the ink cartridges and make sure that the green LED turns on.

② IC chip type is wrong. / There is no IC chip. → Install genuine IC chips. If you forgot to attach the IC chip, there is a change that the contact substrate may be damaged; be careful when you remove the ink cartridge.

③ There is too much waste liquid. (When charging ink after replacing the print head) → Clear the waste liquid amount on the local screen.

7.2.10 Trouble at Ink Filling

2) Damper trouble check



■ Even when you do not charge ink in the next step, you can check the suction feasibility.

① Select [#TEST]-[AGING]-[PUMP MOTOR].
Setting: CAP (ON)→Select the head→Dir. (normal)→
SPEED (750rpm)→ACC (600rpm)→EXEC TIME (1min)→
Press [ENTER] key.

② Check the status of the inside the damper during operation.

□ "Air inside the damper cannot be removed completely" (cause/measures)

① Damper valve malfunction

The damper valve may not be open enough. Open the top of the damper valve release arm (spring mounting position) toward left and right so that you can charge ink.

7.2.10 Trouble at Ink Filling

② Ink supplying speed is slow

When the ink supplying speed is slow, the air inside may not be removed completely. If this happens, complete ink charging, and then use a different air removal sequence to remove the air completely.

3) Ink supply trouble check

■ Check the following areas to see if ink is supplied properly.

When ink is not supplied because the path is clogged, pay extra attention as if you repeat supplying ink, the clogged part may explode.

① Ink supply pump

- The pump does not work
- The tube inside the ink supply pump is squashed
- Ink supply pump is clogged
  *This happens if you turn off the power and leave the printer without using the remote power.

→ Replace the pump

- Connection mistake for the inflow and outflow when replacing the non-return valve

② Cartridge valve

See "5.1.8 CARTRIDGE VALVE" to check the operation

- Cartridge valve malfunction → Change the valve

*Be careful as even when the solenoid works, the valve itself is not open/closed.

③ Other

When the pump and valve are working properly

- If air and ink/cleaning liquid are mixed inside the ink supply path -> Direct suction from the top of the damper (see *3-1)

*3-1: While replacing the ink cartridges or charging ink, air and ink (or cleaning liquid) may be mixed inside the ink supply path. If this happens, do the following as you may not be able to supply ink otherwise.

- ●Remove the fitting from the top of the damper. Use a syringe, and so on to suck directly, and manually fill the path with ink until just before the damper. Doing this may allow you to charge ink.
- ●If this does not work, replace the filter.

7.2.10 Trouble at Ink Filling

4) Suction trouble check

■ There may be a suction trouble in one of the following locations because air tightness is not maintained.

Between the cap and head	Dampen the cap	・When the cap rubber is dry, suction may not work properly. ・Suction may work by using the maintenance cleaning liquid to dampen around the cap.
	Adjust capping position	・Go to "4.2.5 CAPPING".
	Adjust cap height	・Go to "4.3.3 Adjustment of the Station Height".
Between the damper and head	Damper adapter connection section	・Go to "7.2.3 Checking of the cap leak". Refer to *4-1,*4-2.
	Between the adapter and head tube	
Between the path and damper	Between the damper top and path tube	・Check that fittings are not loose.
	Between the non-return valve and filter	・Check that fittings for the check valve and filter are not loose.
Cap Assy. *For older models	Between the rubber and base	・The cap rubber may have come off the cap base (black resin part). ・Remove the mesh and check. If it has come off, attach it properly again. If this does not clear the problem, replace the component. *For new cap Assy., if the mesh has come off, then replace the cap.

☐ Even when you do not charge ink in the next step, you can check the suction feasibility.

1Remove the head cover.

2 Select [#TEST]→[AGING]→[PUMP MOTOR].

Setting: CAO (ON)→Select head→Dir. (normal)→SPEED (750rpm)→ACC (600rpm)→EXEC TIME (1min)→Press [ENTER] key.

3Check whether or not you can close the damper wings during operation.

- Closes: This is not a suction malfunction. This is probably due to an ink supply malfunction.
- Closes but opens soon: There is a leakage in the path. Check the connection between the damper and the supply tube. Also check the seal rubber between the damper and the head.
- Does not close:
  - You can discharge the cleaning liquid (ink) inside the head: There may be a leakage in the path above the damper.
  - You cannot discharge the cleaning liquid (ink):This is a suction malfunction. Check whether the cap is dirty, as well as the position when the cap is on.

*On the premise that the suction pump is working properly.

To check this, in the pump aging step above, set the value to Cap (OFF), and then supply cleaning liquid, and so on in the cap during operation.

7.2.10 Trouble at Ink Filling

Precautions when performing suction operations by the method 2 on the previous page:

- Once you have checked whether or not the suction is working properly, we recommend stopping the operation by pressing the [END] key, even during the operation.
- When the ink is fully charged, ink is supplied even after suction; therefore, checking may be difficult.
- If you perform this checking operation while the ink is not charged, such as before ink charge, the negative pressure inside the cap may become too high. If you remove the cap under such a condition, the ink may be sucked from the nozzles; therefore, open the cartridge valve and then release the pressure.
- If the damper is closed too tightly, use the cartridge valve to release the pressure.

*4-1:Between the cap and head

- Adjusting the capping position or the cap height;
  *When adjusting, check the head gap.

*4-2:Between the damper and head

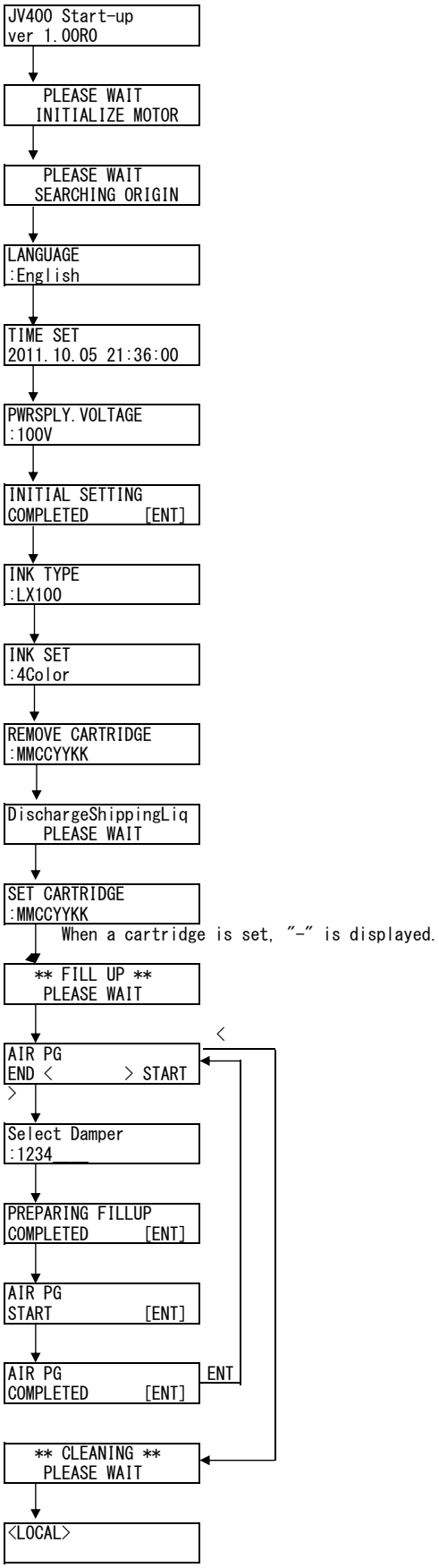
- Connection part between the damper and adapter;
  The damper and adapter may not be connected properly. Remove them once, and then connect them again. If this does not clear the problem, try replacing the constant pressure damper seal rubber.
- Between the adapter and head tube;

  The position of the fitting inserted under the adapter may be wrong. In this case, you have to assemble it again.

  *This may happen when replacing the print head.

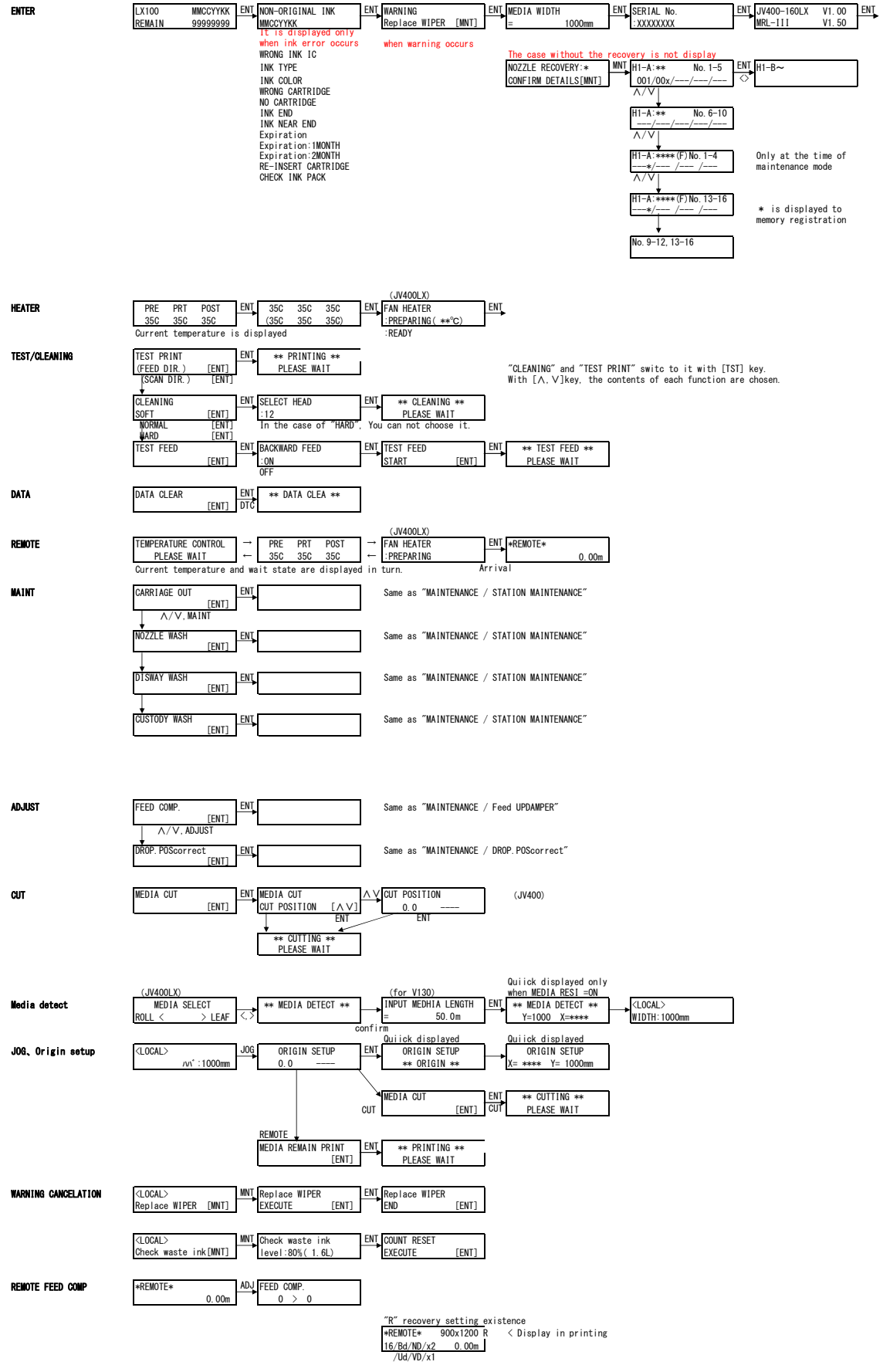
Operation Flow

8.1.1 Start Up

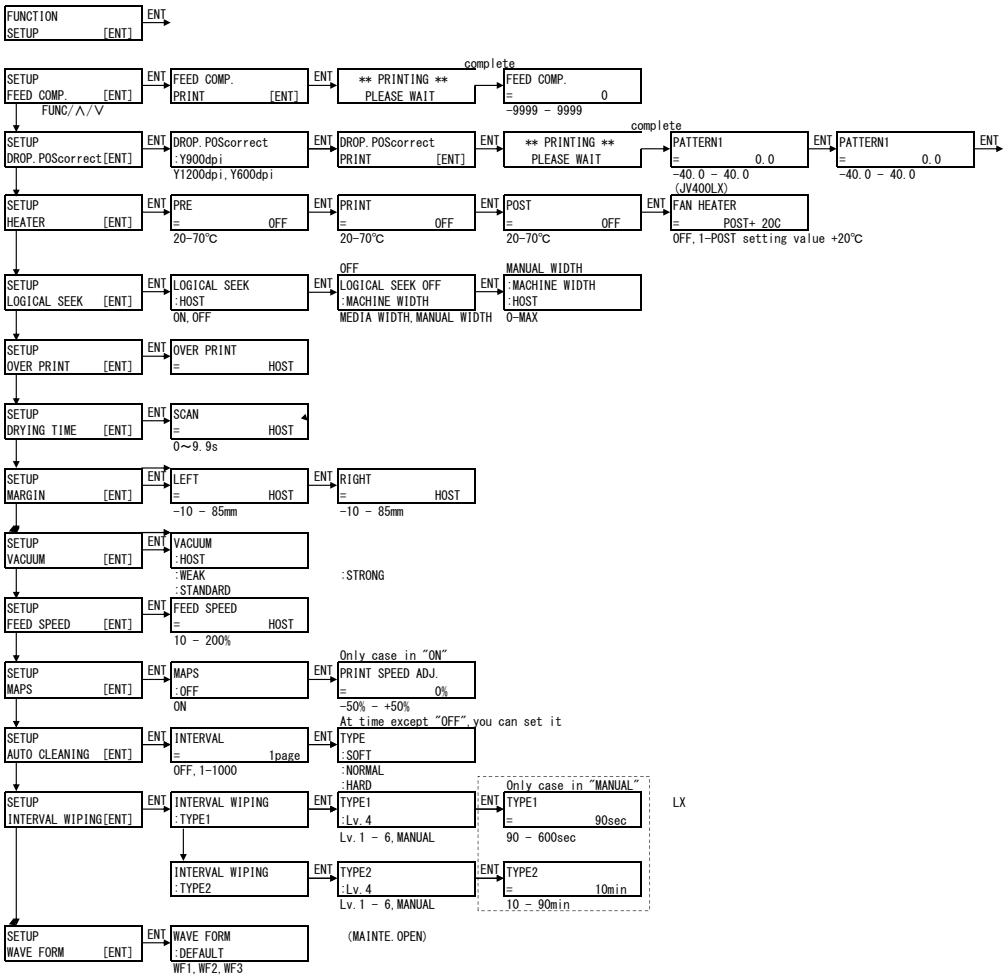


Operation Flow

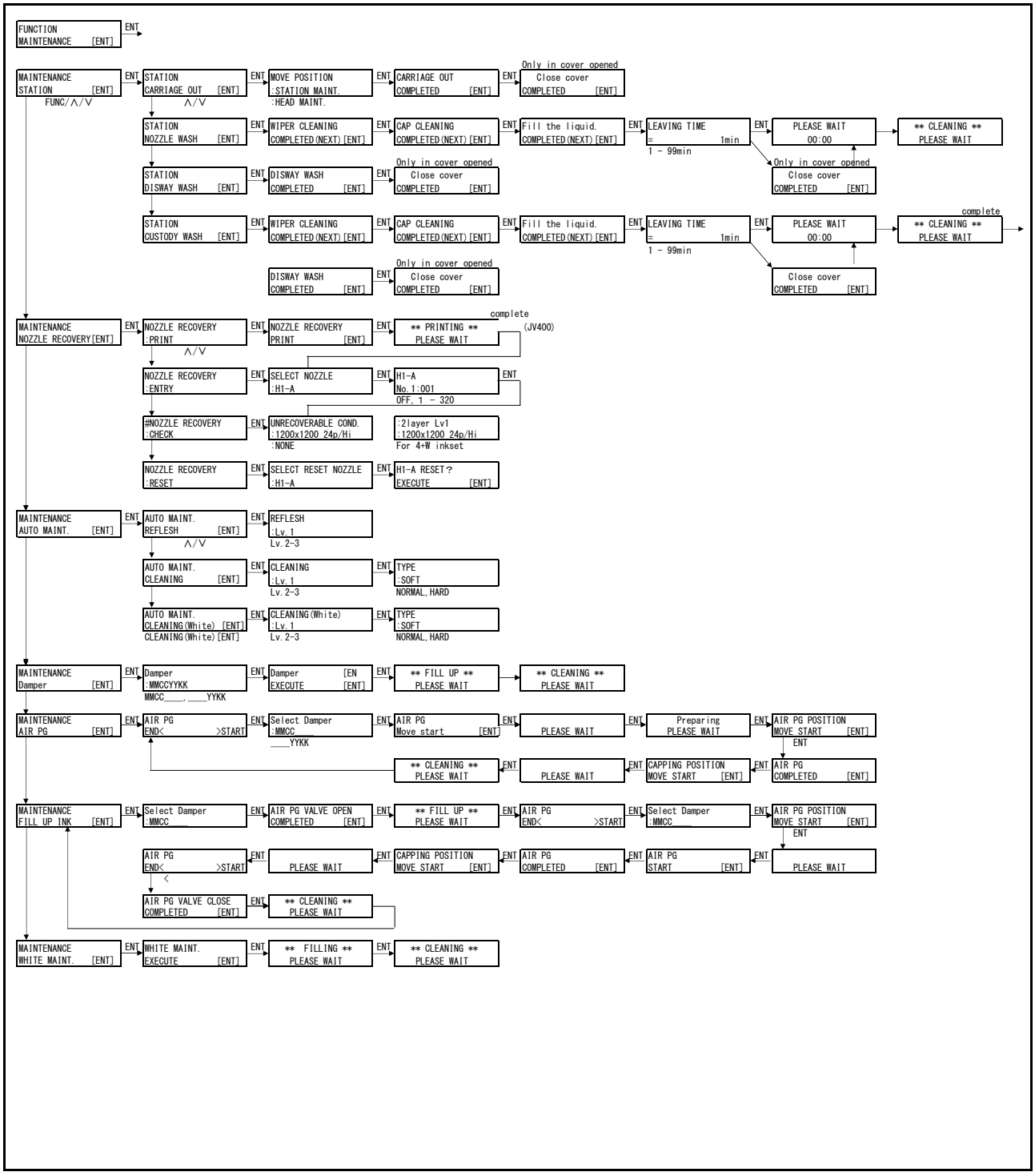
8.2.1 LOCAL



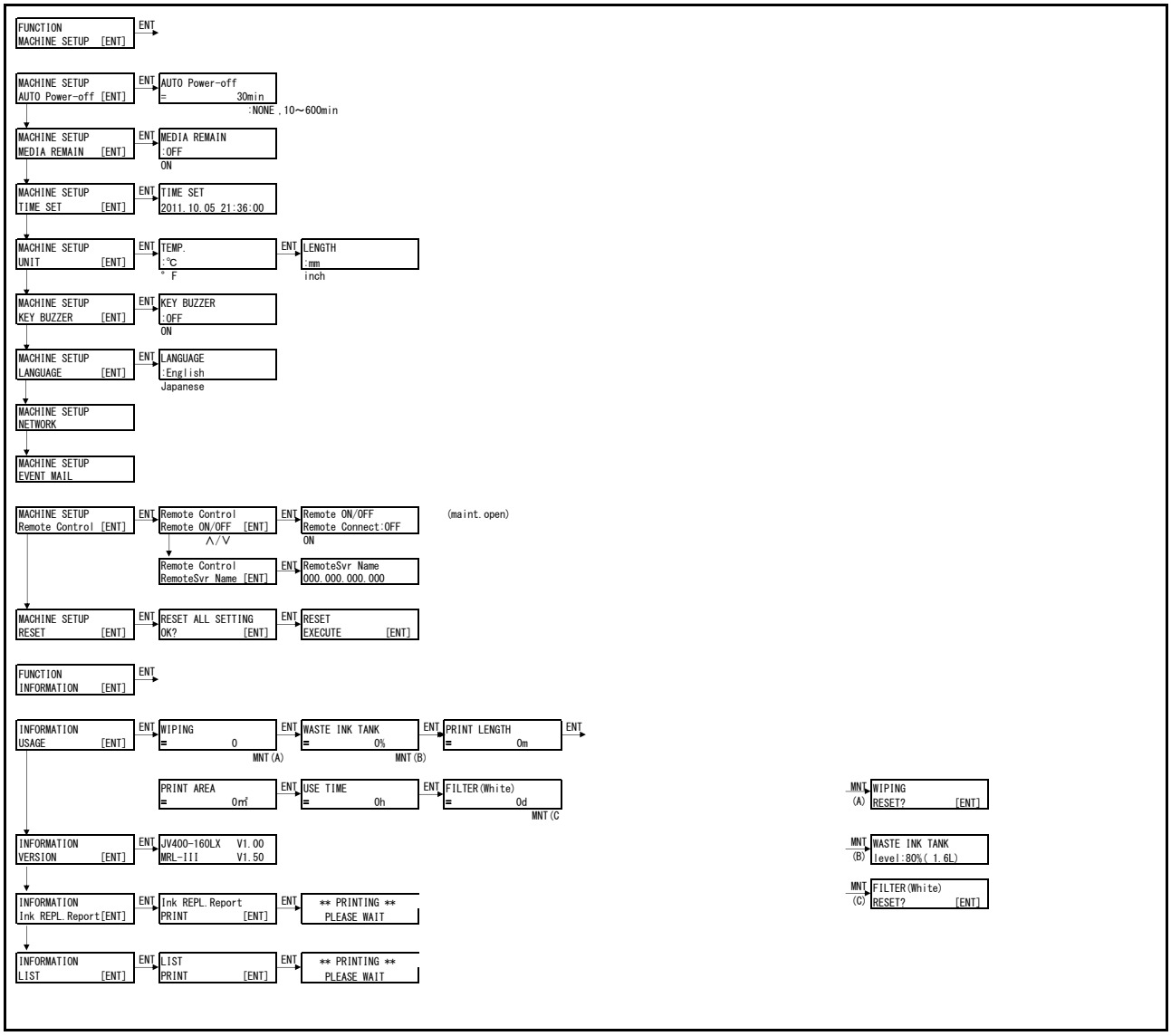
8.2.2 SETUP



8.2.3 MAINTENANCE

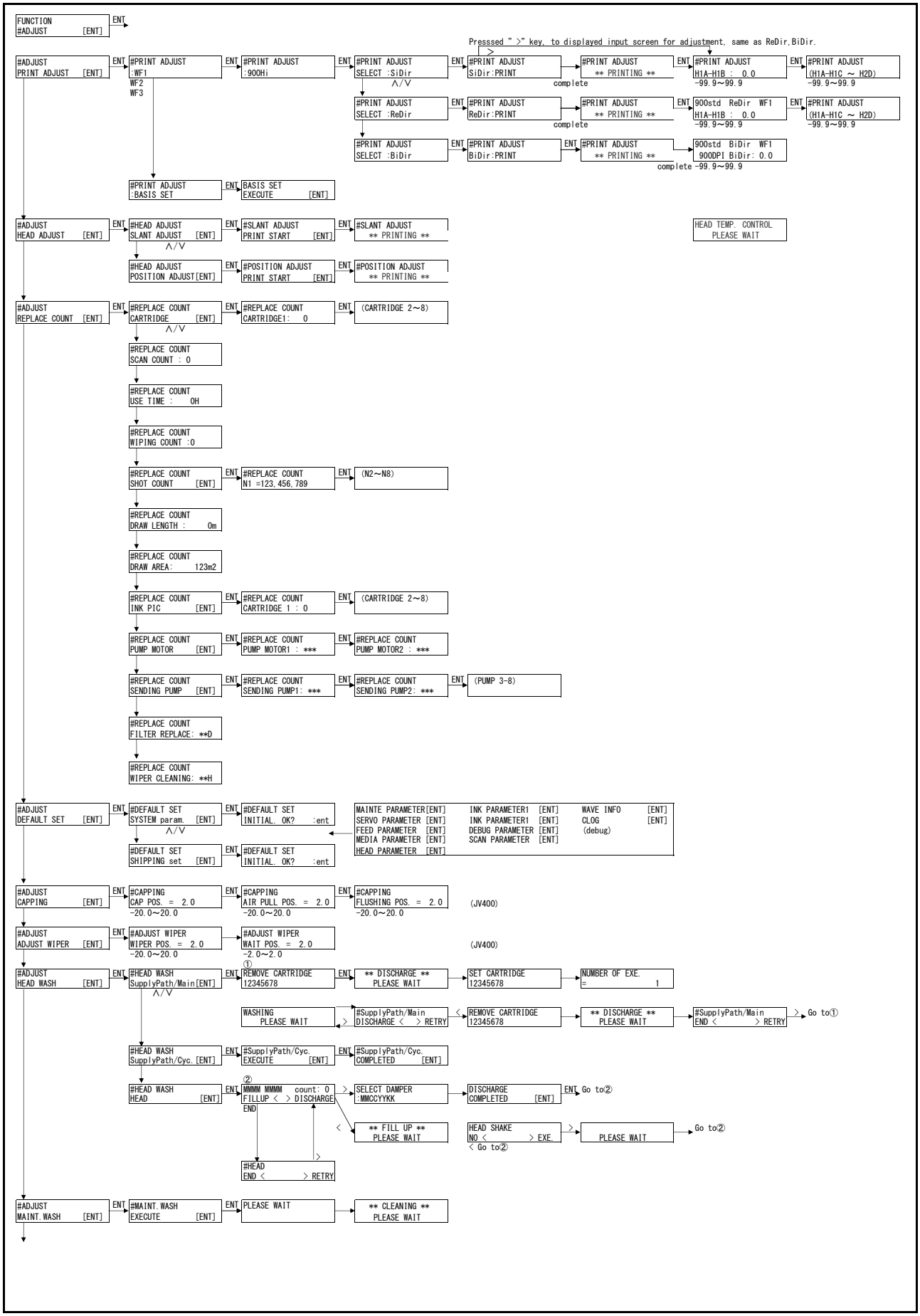


8.2.4 MACHINE SETUP

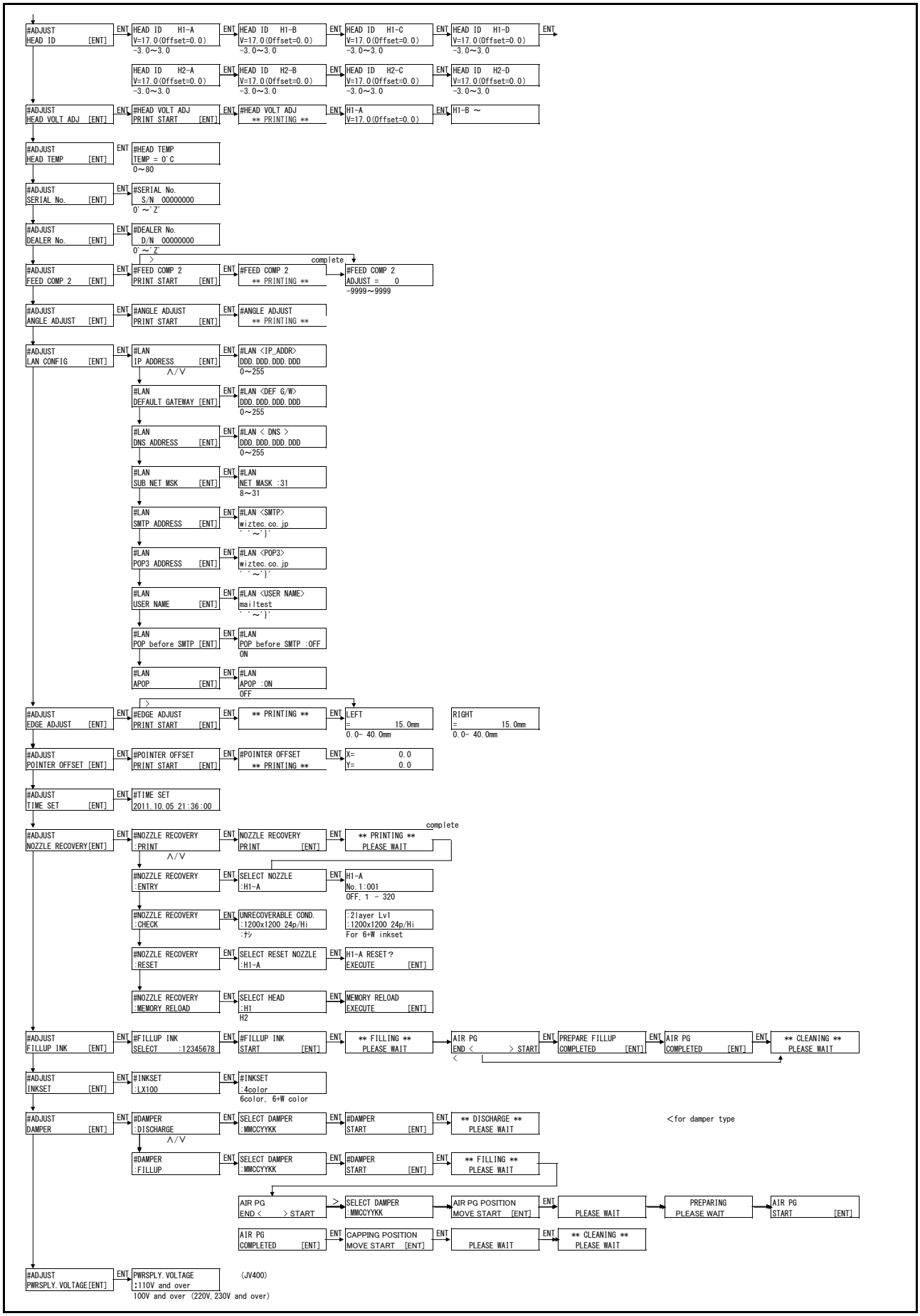


Operation Flow

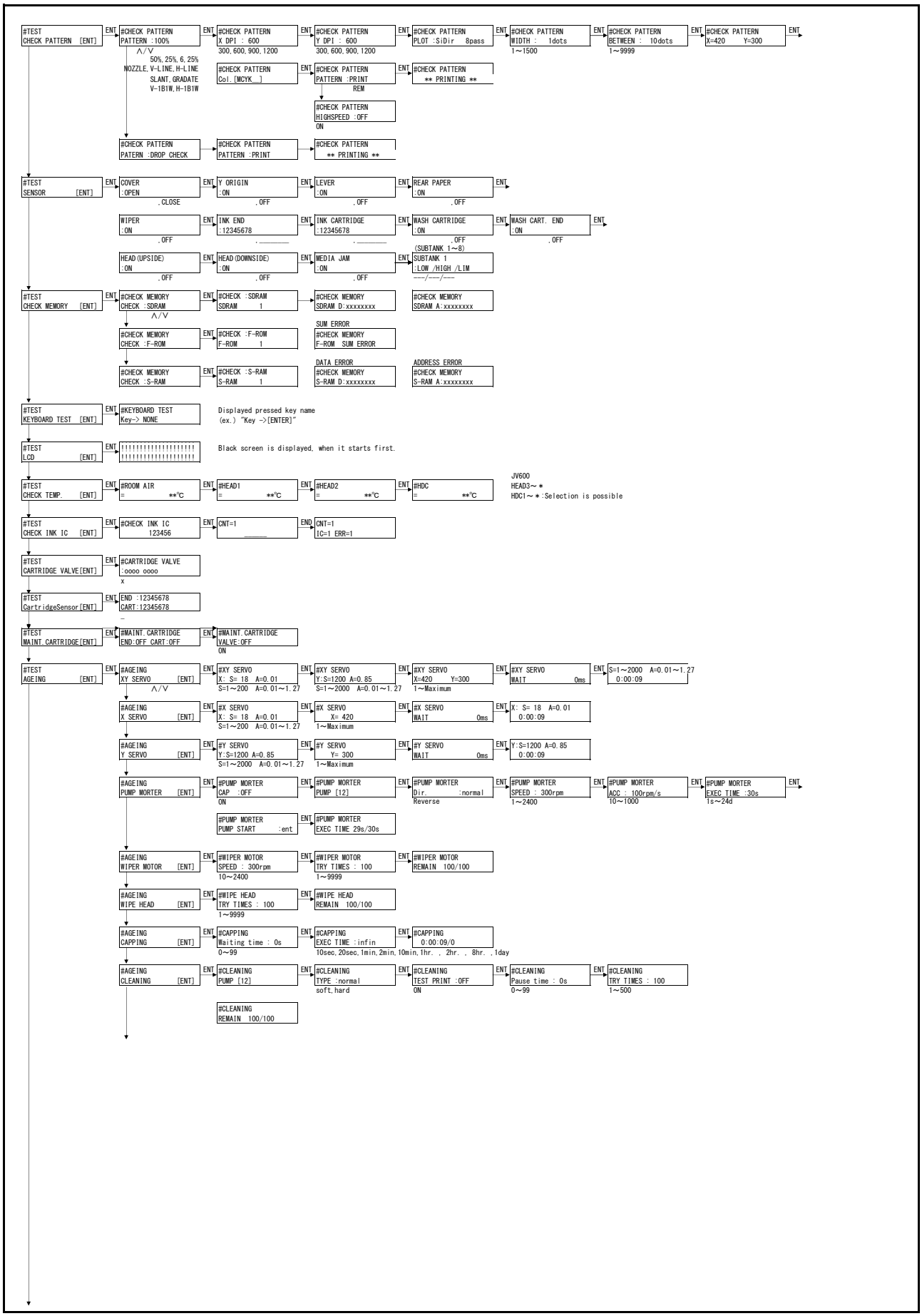
8.3.1 #ADJUST



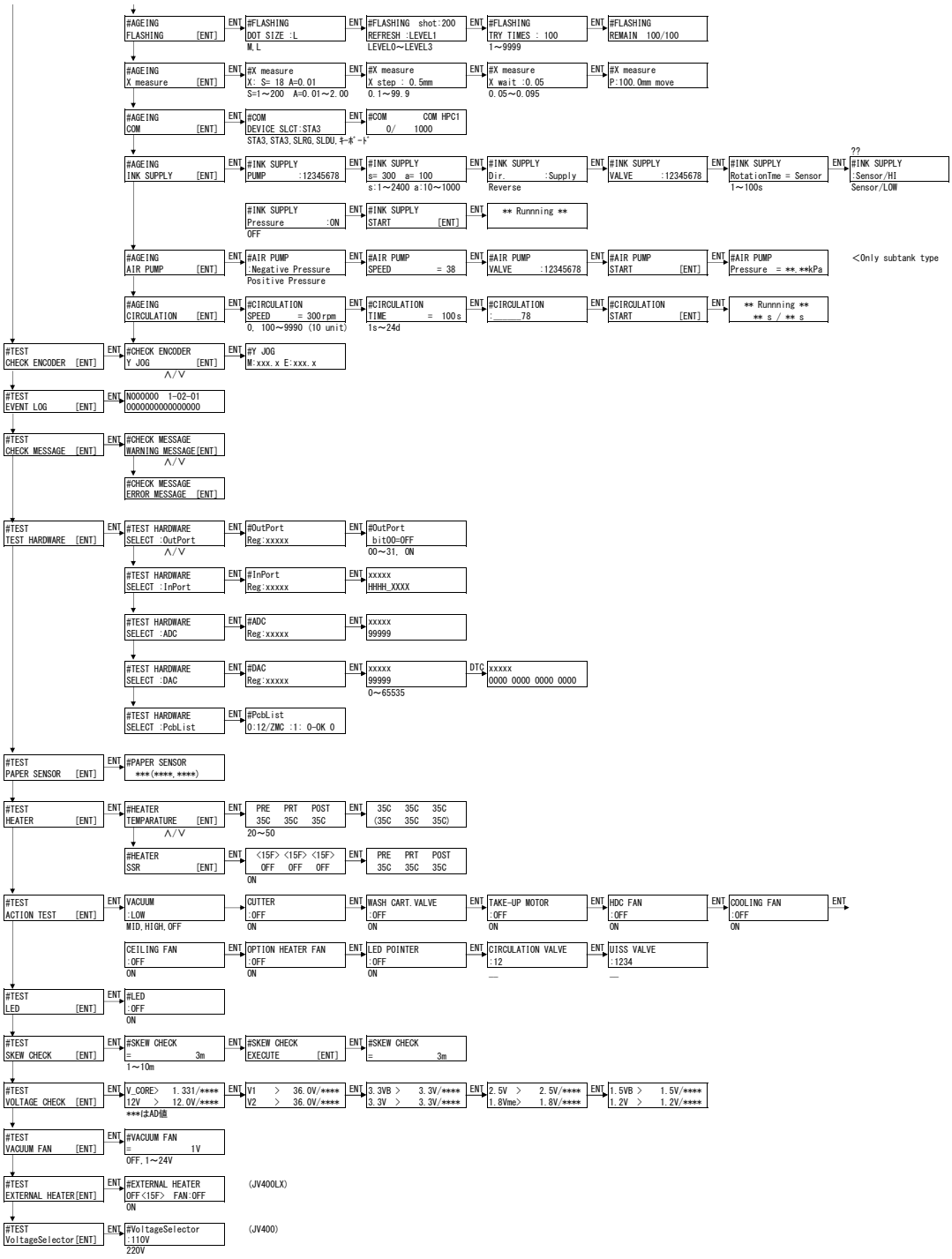
8.3.1 #ADJUST



8.3.2 #TEST



8.3.2 #TEST



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