



COLOR INKJET PLOTTER

JV22-130/160

MAINTENANCE MANUAL

Ver. 1.00

MIMAKI ENGINEERING CO., LTD.

TKB Gotenyama Building, 5-9-41, Kitashinagawa, Shinagawa-ku, Tokyo 141-0001, Japan

Phone: +81-3-5420-8671 Fax: +81-3-5420-8687

URL: <http://www.mimaki.co.jp>

E-mail: traiding@mimaki.co.jp

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FOREWORD

This maintenance manual covers items required to be remembered to conduct maintenance works for the JV22 of color ink jet plotter in the field.

Maintenance works have to be carried out by servicemen who have learned disassembly, assembly and adjustment techniques with required tools and measuring apparatus.

This manual covers existing maintenance parts. For any failure other than those described in this manual, factory-repairs will be necessary.

Before reading this maintenance manual, read the following manual to learn basic operations of this device.

- **Setup Guide for JV22 (D201034).**
- **Operation Manual for JV22 (D201031).**

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CHAPTER 1

OVERVIEW OF MAINTENANCE

1-1. Cautions in maintenance



WARNING

- Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacture.
Dispose of used batteries according to the manufacturer's instructions.
- Do not get ink drops on the FPC or connectors when connecting or disconnecting the damper. Doing so may cause short-circuit or inferior contact resulting in abnormal ink discharge. Be careful when handling ink.
- Properly and carefully connect the FPC cable of the slider PCB from the main PCB according to the connector number. Failure to do so may cause short-circuit of the power supply.
- Properly and carefully connect each two cables between the head and the slider PCB. In case switching the position by mistake, it may cause short-circuit of the power supply.
- Do not turn the power off during firmware upgrading. Doing so may disable restarting.

Following cautions have to be taken when conducting maintenance works.

- Be sure to fully understand precautions given in “For safe operation” in the Operation Manual for the JV22 series.
- Be sure to accurately grasp problems since miss operation can be the cause of the problem.
- Be sure to secure a sufficient space for maintenance.
- Be sure to turn off the power switch and disconnect the power plug from the receptacle.
- In the case where it is necessary to conduct test with the electrical box cover opened, caution should be taken to avoid electric shock hazards in the electrical box.
- In the case where it is necessary to conduct maintenance works with the power on, carefully observe the movement of the head. (Keep any part of your body away from the moving parts.)
- Shift the paper (in the X-direction) and the head (in the Y-direction) using the jog keys. If it is necessary to shift the paper and the head by hand with the power turned off, exercise care to shift them slowly.
- Do not tilt the plotter with the ink cartridges filled with ink. Doing so can give rise to leakage of ink. (In particular, do not position the plotter in such a way, when ascending/descending the stairs, that the maintenance station is lower than the ink station.)

In principle, the following procedure should be taken in prior to the transportation.

- 1) Discharge ink from the tube in accordance with the description given under “WASH” in the maintenance.
 - 2) Detach the waste ink tank.
 - 3) Fix the head with the head stopper.
- If the main unit is removed from the legs and placed directly on the floor, be careful of the following points.
 - Unplug the take-up unit power cord.
 - Remove the waste ink tank. (Plug the tube up with a cloth to prevent ink from spilling over.)
 - Set up the roll holder and take-up device to the upper position.

1-2. How to use this maintenance manual

Use the maintenance manual in the following manner.

- Check first a phenomenon that is arising to grasp the trouble.
- Secondly, grasp the outline of the trouble while referring to error messages given in Chapter 3.

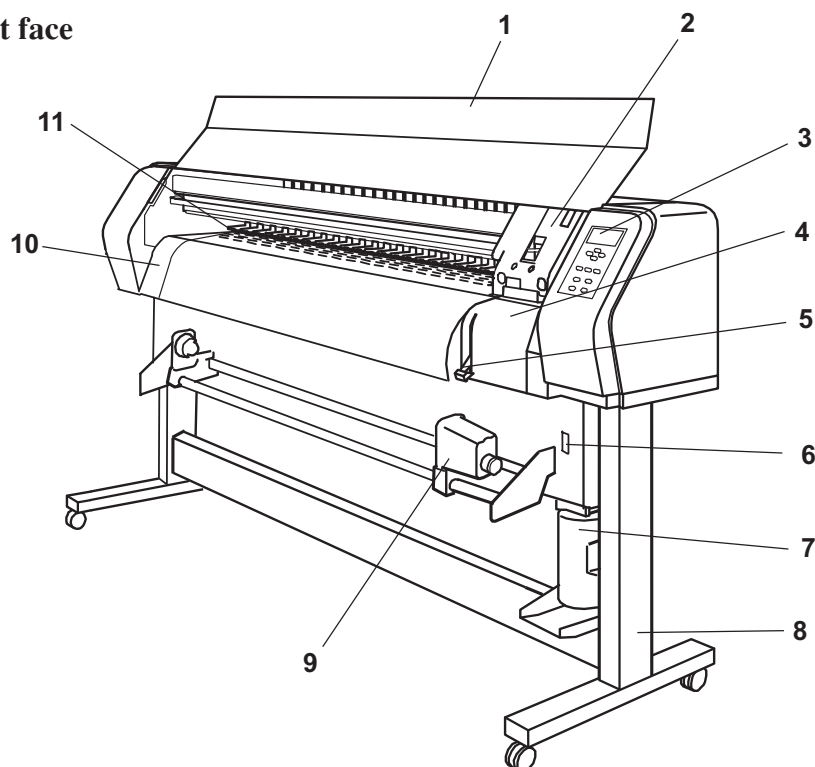
1-3. Tools required for maintenance works

Tools and measuring apparatus required for maintenance works are given below.

Name	Q'ty	Remarks
Phillips screwdriver, type 1	1	For M2
Phillips screwdriver, type 2	1	For M3 to M5 (L=260 or more)
Phillips screwdriver, type 2	1	For M3 to M5
Slotted screwdriver	1	Log side 2.5 mm for drawing out E-rings
Hexagon wrench key	1	1.5 mm for M3 SSWP
	1	2.0 mm for M4 SSWP
	1	2.5 mm for M3 cap bolts (L=170)
	1	5.5 mm for hexagon stud
	1	6.0 mm for M8 cap bolts
Wrench	1	Opposite side 5 mm
	1	Opposite side 5.5 mm for M3 nuts
	1	Opposite side 7 mm for M4 nuts
Tweezers	1	To prevent the cable from being pulled when disconnecting the connector
Long-nose pliers	1	
Nippers	1	
Soldering iron	1	
Scale	1	500 mm, 150 mm
Bar-type tension gauge	1	For 500 gf
Tester	1	If necessary
Magnifier	1	Magnification of approx. 50 to 60
Adhesive agent	1	LOCKTITE242 (for locking screws)
Gloves	1	In prevention of stains and safeguarding
Insulation lock	As required	L=150 or less (UL-approved product)
Nitroflon tape or acetate fabric tape	As required	UL-approved product
Solder	As required	

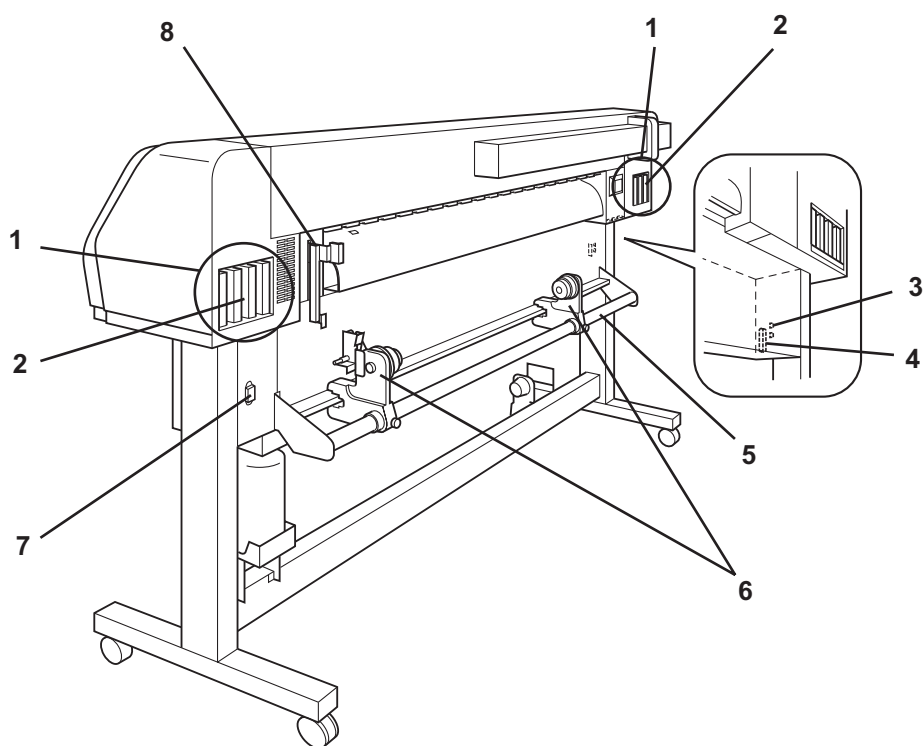
1-4. Names of parts

1-4-1. Front face



	Name	Function
1	Front cover	It is opened when setting medium or taking a corrective measure against a medium jam. Even if the power switch is off, keep the front cover closed to perform the ink clogging preventive operation.
2	Carriage	Moves the print head from side to side.
3	Operation panel	This panel has the operation keys required for operating the device and the LCD for displaying set items, etc.
4	Capping station	Incorporates the ink cap to be capped on the head and the wiper, etc.
5	Clamp lever	It is made to go up-down the pinch roller for holding medium.
6	Power switch	It turns on/off the power to the device. When the power switch is turned on, the POWER indicator lights in green. While the main power switch is on, the ink clogging preventive operation is performed periodically even if the power switch is off. (Flashing)
7	Waste ink tank	Waste ink gathers in this tank.
8	Stand	It supports the main unit. It is provided with casters that are used to move the device.
9	Platen	It puts out the medium as it is plotted on.
10	Maintenance cover	It is opened when performing maintenance.
11	Take-up device	It supports to wind up the roll medium printed.

1-4-2. Rear face



	Name	Function
1	Ink station	Set the ink cartridges specified.
2	Ink cartridge	Each cartridge contains ink of a specific color.
3	IEEE-1394 connector	A 400M bps interface connector compatible with IEEE-1394.
4	Parallel connector	Bi-directional parallel interface connector (complies with IEEE1284)
5	Paper roll setting bar	This bar facilitates a paper roll to be set in position.
6	Roll holder	Roll holder is inserted in the right and left core of roll medium to hold the roll medium. The roll holder is applicable to diameter of medium cores with 2 and 3 inches. The attachment position (height) of the roll holder can be set in three steps.
7	AC inlet	The power cable is connected to the AC inlet.
8	Clamp lever	Works together with the clamp lever on the front face of the device.

1-5. Specifications

Item		JV22-130	JV22-160
Printing head	Method	Piezo-electric drop-on demand	
	Specification	4-heads Inlines	
	Nozzle	360 nozzles / color (4 color set) : 180 nozzles / color (6 color set)	
	Resolution	360, 540, 720, 1440 dpi	
Drawing mode		360 x 360 dpi : 2 / 4 / 8 passes, Unidirection / bidirection 360 x 540 dpi : 3 / 6 / 12 passes, Unidirection / bidirection 360 x 720 dpi : 4 / 8 / 16 passes, Unidirection / bidirection 720 x 720 dpi : 4 / 8 / 16 passes, Unidirection / bidirection 720 x 1440 dpi : 8 / 16 / 32 passes, Unidirection / bidirection 1440 x 1440 dpi : 16 / 32 passes, Unidirection / bidirection	
Available ink type		Exclusive water-based pigment ink 4 colors (B,C,M,Y) / 6 colors (B,C,M,Y,Lc,Lm) or (B,C,M,Y,G,O)	
Delivery system of ink		Supplies ink through a tube from ink cartridge Remaining ink display function (No IC chip) Ink end detecting function Ink cartridge replacement system	
Capacity of ink cartridge		220 cc \pm 5 cc per cartridge About 200 cc for each cartridge variable	
Media type		Photopaper, Artificial paper, Mechanical film	
Max. printing width		1440 x 1440 dpi : 1000 mm	
	Normal Scan	1361 mm	1610 mm
	High-speed Scan	1321 mm	1570 mm
Roll Media size	Maximum	1371 mm	1620 mm
	Minimum	210 mm	
	Thickness	1.0 mm or less	
	Roll outside diameter	\varnothing 180 mm or less	
	Roll weight	25 kg or less	
	Roll inside diameter	2 Inch, 3 Inch	
	Plotting surface	Faces OUT	
	Roll end treatment	Light-adhesive tape is used to allow the paper to be removed from the core with ease.	
Leaf medium size	Maximum	1371 mm	1620 mm
	Minimum	210 mm	
Margin	Leaf medium	Left end and right end : 5 mm	
		Front : 65 mm	
		Rear : 110 mm	
Margin	Roll medium	Left end and right end : 5 mm	
		Front : 25 mm	
		Rear : 0 mm	
Distance accuracy	Absolute accuracy	Whichever the larger one of ± 0.3 mm or ± 0.3 % of the designated	
	Reproducibility	Whichever the larger one of ± 0.2 mm or ± 0.1 % of the designated	
Perpendicularity		± 0.5 mm / 1000 mm	

Item		JV22-130	JV22-160
Medium skew		5 mm or less / 10 m variable	
Head height adjustment		Lo range(1.5 mm / 2.5 mm) : Hi range(3.5 mm / 4.5 mm)	
Cutting of medium		Cutting of Y direction by the head cutter, Cutting accuracy(steps) : 0.5mm or less.	
Medium delivery Waste ink tank		Take-up device as standard (inside winding / outside winding selectable) Bottle type (2,000 cc [1pcs.]) Replacement timing is judged visually.	
Interface		IEEE1394 compliant, IEEE1284 compliant	
Command		MRL-II (ESC/PV.2 base, MIMAKI original command)	
Noise		during standby : Less than 58 dB (FAST-A, Front & Rear & Left & Right 1 m) during continuous printing : Less than 65 dB during discontinuous printing : Less than 70 dB	
Safety Standard		UL, VCCI-classA, FCC-classA, CEmarking, CBreport	
Power		AC 100 — 120 V± 10%, AC 220 — 240 V± 10%, 50/60 Hz ± 1 Hz	
Power consumption		300 VA or less	
Recommended Environment	Available temp.	20 °C to 35 °C	
	Humidity	35 to 65 % Rh (No condensation)	
	Guaranteed temp.	20 °C to 25 °C	
	Temperature change	± 10 °C / h or less	
	Dust	Equivalent to normal office level	
Weight	Main unit	130 kg	140 kg
	Packing box	Less than 148 kg	Less than 158 kg
Outside dimensions	Width	2400 mm	2660 mm
	Depth	Less than 640 mm	
	Height	Less than 1240 mm	

Plotting speed

Normal print mode

(Measurement on 1m²: 1590 x 629 mm printing)

Resolution Y x X dpi	4 color ink set			6 color ink set		
	Drawing mode		Bi-direction print	Drawing mode		Bi-direction print
	Setting	pass		Setting	pass	
360 x 360	Speed	1	1 minutes 51 seconds	Speed	2	3 minutes 58 seconds
	Standard	2	2 minutes 51 seconds	Standard	4	4 minutes 30 seconds
	Fine	4	4 minutes 34 seconds	Fine	8	7 minutes 51 seconds
360 x 540	Speed	3	5 minutes 28 seconds	Speed	3	5 minutes 31 seconds
	Standard	6	6 minutes 14 seconds	Standard	6	6 minutes 30 seconds
	Fine	12	11 minutes 28 seconds	Fine	12	11 minutes 45 seconds
360 x 720	Speed	2	4 minutes 00 seconds	Speed	4	7 minutes 17 seconds
	Standard	4	4 minutes 35 seconds	Standard	8	8 minutes 33 seconds
	Fine	8	7 minutes 52 seconds	Fine	16	14 minutes 38 seconds
720 x 720	Speed	2	5 minutes 29 seconds	Speed	4	10 minutes 30 seconds
	Standard	4	5 minutes 57 seconds	Standard	8	11 minutes 34 seconds
	Fine	8	10 minutes 42 seconds	Fine	16	20 minutes 01 seconds
720 x 1440	Speed	4	9 minutes 56 seconds	Speed	8	20 minutes 27 seconds
	Standard	8	10 minutes 41 seconds	Standard	16	22 minutes 08 seconds
	Fine	16	20 minutes 17 seconds	Fine	32	42 minutes 45 seconds
1440 x 1440	Speed	8	18 minutes 40 seconds	Speed	16	43 minutes 16 seconds
	Standard	8	18 minutes 40 seconds	Standard	16	43 minutes 16 seconds
	Fine	16	36 minutes 27 seconds	Fine	32	85 minutes 19 seconds

High speed print mode at 360 x 540

The following print mode operates according to the RIP command. (The used RIP required according the following print mode.)

	4 color ink set		
Resolution Y x X dpi	Drawing mode	Bi-direction print	Data resolution Y x X dpi
360 x 540	Hi-Speed 3pass / 2Layer	6 minutes 31 seconds	360 x 1080

JV22 series specified ink

No.	Ink Type	The number of color
1	Exclusive Water-based Pigment ink (SPC-0180*)	8
2	Exclusive Sublimation Dye ink (SPC-0370*)	6

(* is indicates color code.)

JV22 series image quality standard media

PET(gloss) recommended by MIMAKI is used as a image quality standard media to maintenance, and adjustment.

Print Resolution of JV22 series and Notes on specified media.

Resolution	Notes / Limitations	Media
360 x 360	<ul style="list-style-type: none">Basically, 360 x 360 dpi is not recommended.In the 360 dpi mode, the dot diameter is small and therefore the density is low and banding is remarkable.	
360 x 540	<ul style="list-style-type: none">Use for high-speed output applications is recommended.6-pass specification or higher is recommended. In the 6-pass specification or higher mode, the amount of feed is small and the accuracy improved, allowing banding to be reduced by software processing.In addition, good fixing and drying characteristics can reduce banding caused by beading.Jetcol4000 is recommended in using the Sublimation dye ink. It enables to reduce cockring phenomena.	<p>When use the Water-based pigment ink :</p> <ul style="list-style-type: none">Mat synthetic paperPET (gloss) <p>When use the Sublimation dye ink :</p> <ul style="list-style-type: none">Jetcol4000
720 x 720	<ul style="list-style-type: none">Basically, 720 dpi is recommended.8-pass specification or higher is recommended. In the 8-pass specification or higher mode, the amount of feed is small and the accuracy improved, allowing banding to be reduced by software processing.In addition, good fixing and drying characteristics can reduce banding caused by beading.If the desired density cannot be obtained, "2 layers" is recommended.	

CHAPTER 2

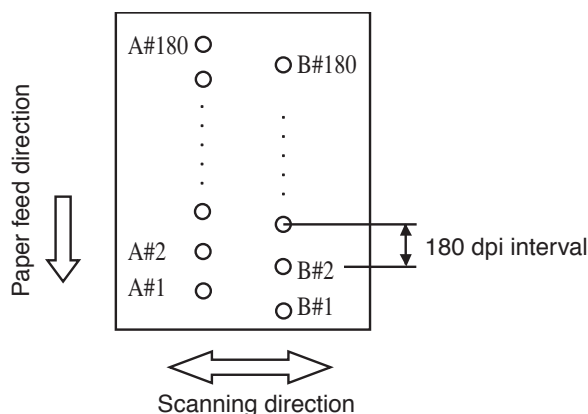
EXPLANATION OF OPERATION

2-1. Explanation of electrical components

2-1-1. Operations

- * The slider of the JV22 is provided with four heads with inline arrangement, with 180 nozzles (at 180dpi intervals) x 2 rows (2 colors) for each head.
- * The ink in the ink chamber is discharged by vibrating the piezo-electric element of the head. This device uses four different vibration waveform modes: the V1 (Variable1) mode which enables four gradations (L, M, S, and NONE) with 360 dpi resolution, the V2 (Variable2) mode which enables four gradations with smaller dots with 720 dpi resolution, the N1 (Normal1) mode which enables high-speed two gradations (1.0) with 360 dpi resolution, and the N2 (Normal2) mode which enables high-speed two gradations with 720 dpi resolution.
However, note that the Normal waveform modes are not used when normal data is received from the host PC. (Some Variable waveforms are represented in two gradations.)
Since the driving frequency (or the scanning speed of the head) depends on each waveform, Y-directional position adjustment is required for each waveform.
- * The main PCB is provided with two FPGAs (HDCs) which generate the driving signal (COM waveform) to be applied to the piezo-electric element of one nozzle row for two heads. The COM waveform is applied in synchronization with the scale interval of each linear scale and, at the same time, the nozzle data is transferred to the head. Y-directional position adjustment can be made in units of one dot or less by adjusting the timing of the COM waveform for each nozzle row.
Since the ink discharge performance depends on each head, the COM waveform is corrected automatically based on the head ID registered and the ambient temperature detected. (If the head ID is not registered correctly, no ink may be discharged.)
- * The main PCB is provided with the FPGA (PDC) in charge of image processing to which the 128MB DSRAM picture memory (PRAM) is connected. As for the data output from the host PC, the command is analyzed by the CPU and the image is transferred to the memory through high-speed DMA. Since the PRAM has the ring memory configuration, head scanning is started when data for each scanning has been stored. Since only an image with 180 dpi resolution can be formed into the X direction in each scanning, the image with the target resolution is completed while making required amount of paper feed.
- * Stepping motors, sensors, and many other IO devices are connected to the JV22. Therefore, if all of them are connected directly to the main PCB, it becomes difficult to handle wires and replace the PCB. To avoid this problem, the number of signals has been reduced through serial signal transmission with the main PCB using IO PCBs. This signal processing is performed by the FPGA (PDC) mounted on the main PCB.

Head nozzle arrangement
(viewed from rear side)



2-1-2. Power supply

Input/output of the power supply are as follows:

Input: 100 VAC to 240 VAC, 50/60 Hz

Output: +3.3 V, 3.5 A

+5 V, 3.5 A

+35 V, 6 A

+5 VSB, 0.7A

Connector pins layout table and variable resistor numbers

Connector	Pin No.	Name of signal	Variable resistor
CN1	1	NC	
	2	NC	
	3	AC IN (L)	
	4	NC	
	5	AC IN (N)	
CN2	1	+35V	RV1 (CN2 proximity)
	2	+35V	
	3	GND	
	4	GND	
	5	+5V	RV2 (CN2 proximity)
	6	+5V	
	7	GND	
	8	GND	
	9	+3.3V	RV3 (CN2 proximity)
	10	+3.3V	
CN3	1	+5VSB	
	2	GND	
	3	P/S ON	

2-1-3. Main PCB

The SH-3 (RISC, 133MHz) from HITACHI is used as the CPU.

The program of the CPU is stored in the flash memory. This program can easily be upgraded on site through the interface.

During upgrading, the program is downloaded to the PRAM by the CPU and then stored in the flash memory of the CPU.

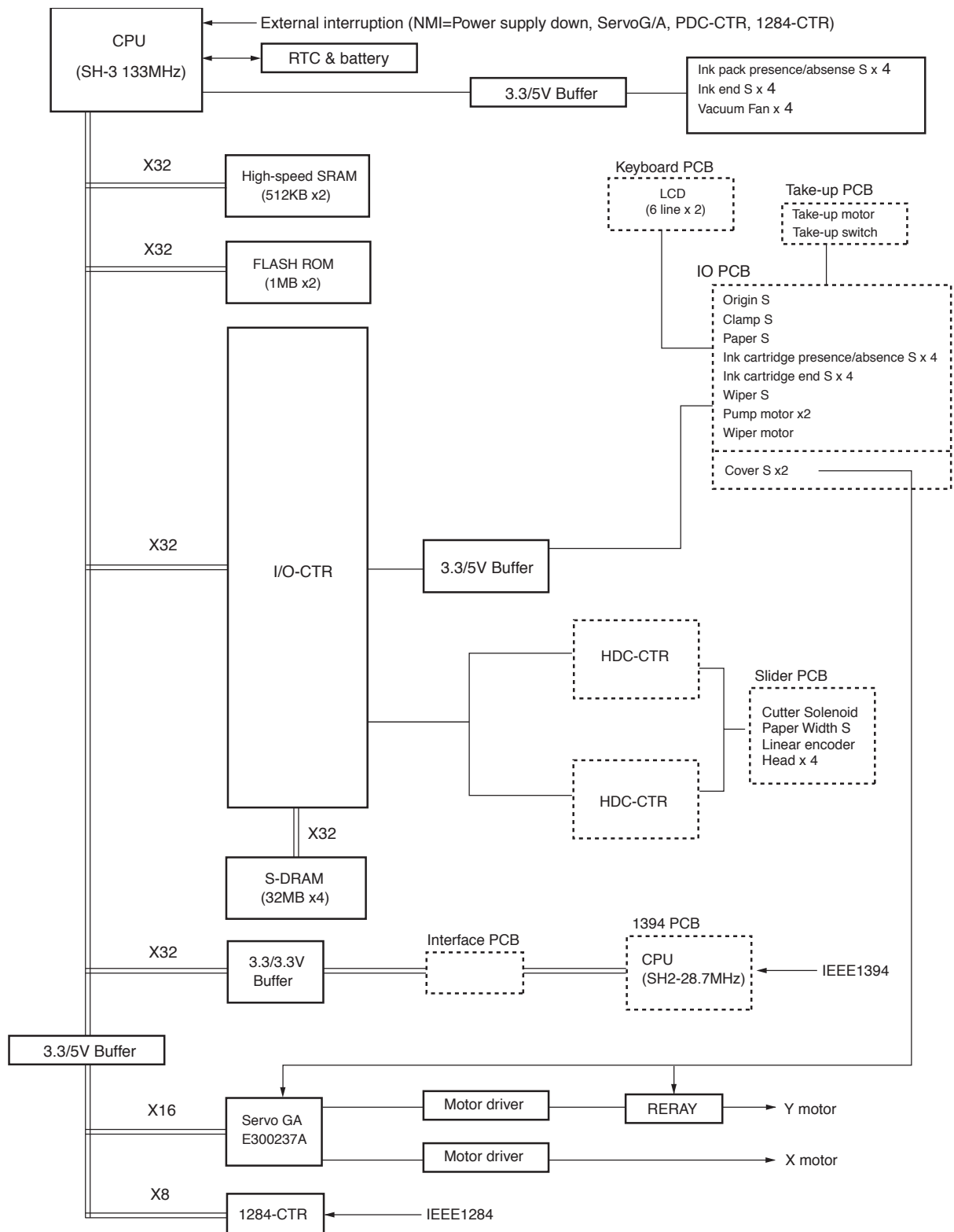
When the receive data is read from the interface, the CPU loads the data in the picture memory through the PDC-CTR. The picture memory consists of a 128 MB.

The PDC-CTR performs necessary mask processing, performs X-Y conversion, then transfers it to the HDC-CTR PCB with 8-bit width.

Upon reception of data transmission, the HDC-CRT generates the COM signal for driving Head1 to Head 4, creates nozzle data, then transfers data to the Slider PCB through the HDCFPC cable.

It is provided with an vacuum fan and cutter drive circuit, Paper width sensor, temperature sensor, Ink cartridge 1-4 presence/absence sensor, Ink cartridge 1-4 end sensor read circuit.

Main PCB block diagram



Main PCB Connector signals

Connector	Pin No.	Signal name	Remarks
CN1 to 4	1	+FAN	Vacuum Fan
	2	+FAN	
CN6	1 to 40	GND	Attach FPC with the terminal side up (reinforcing plate down) .
CN7	1	GND	
	2	+42V	
	3	+42V	
	4	+42V	
	5	+42V	
	6	H1-COMB	
	7	H1-COMB	
	8	H1-COMB	
	9	GND	
	10	H1-COMA	
	11	H1-COMA	
	12	H1-COMA	
	13	GND	
	14	H2-COMB	
	15	H2-COMB	
	16	H2-COMB	
	17	GND	
	18	H2-COMA	
	19	H2-COMA	
	20	H2-COMA	
	21	GND	
	22	H3-COMB	
	23	H3-COMB	
	24	H3-COMB	
	25	GND	
	26	H3-COMA	
	27	H3-COMA	
	28	H3-COMA	
	29	GND	
	30	H4-COMB	
	31	H4-COMB	
	32	H4-COMB	
	33	GND	
	34	H4-COMA	
	35	H4-COMA	
	36	H4-COMA	
	37	+5V	
	38	+5V	
	39	+5V	
	40	GND	
CN8	1	GND	
	2	ASCK+	
	3	/ACS+	
	4 to 37	GND	
	38	SOLCOM	
	39	PAPER-CUT	
CN9	40	GND	
	1	GND	
	2	LEB+	
	3	LEA+	
	4	GND	
	5	SLOP+	
	6	ADI+	
	7	GND	
	8	A4INH3+	
	9	A4INH2+	
	10	A4INH1+	
	11	GND	
	12	A4C+	
	13	A4B+	
	14	A4A+	
	15	GND	

Connector	Pin No.	Signal name	Remarks
CN9	16	H1-NCHGB+	Attach FPC with the terminal side up (reinforcing plate down) .
	17	GND	
	18	H1-SCKB-	
	19	H1-SCKB+	
	20	GND	
	21	GND	
	22	H1-SIB-	
	23	H1-SIB+	
	24	GND	
	25	GND	
	26	H1-SCKA+	
	27	H1-SCKA-	
	28	GND	
	29	GND	
	30	H1-S1A+	
	31	H1-S1A-	
	32	GND	
	33	GND	
	34	H3-SCKA+	
	35	H3-SCKA-	
	36	GND	
	37	GND	
	38	H3-S1A+	
	39	H3-S1A-	
	40	GND	
CN10	1	GND	
	2	H1-LATB+	
	3	H1-CHB+	
	4	GND	
	5	H1-NCHGB+	
	6	H1-LATA+	
	7	GND	
	8	H1-CHA+	
	9	H2-NCHGB+	
	10	GND	
	11	H2-LATB+	
	12	H2-CHB+	
	13	GND	
	14	H2-NCHGB+	
	15	H2-LATA+	
	16	GND	
	17	H2-CHA+	
	18	GND	
	19	GND	
	20	H2-SCKB-	
	21	H2-SCKB+	
	22	GND	
	23	GND	
	24	H2-SIB-	
	25	H2-SIB+	
	26	GND	
	27	GND	
	28	H2-SCKA+	
	29	H2-SCKA-	
	30	GND	
	31	GND	
	32	H2-SIA+	
	33	H2-SIA-	
	34	GND	
	35	GND	
	36	H2-SIB-	
	37	H2-SIB+	
	38	GND	
	39	GND	
	40	GND	

Connector	Pin No.	Signal name	Remarks
CN11	1	GND	Attach FPC with the terminal side up (reinforcing plate down) .
	2	H3-NCHGB+	
	3	GND	
	4	H3-LATB+	
	5	H3-CHB+	
	6	GND	
	7	H3-NCHGA+	
	8	H3-LATA+	
	9	GND	
	10	H3-CHA+	
	11	GND	
	12	H4-NCHGB+	
	13	H4-LATB+	
	14	GND	
	15	H4-CHB+	
	16	H4-NCHGA+	
	17	GND	
	18	H4-LATA+	
	19	H4-CHA+	
	20	GND	
	21	GND	
	22	H4-SCKB-	
	23	H4-SCKB+	
	24	GND	
	25	GND	
	26	H4-SIB-	
	27	H4-SIB+	
	28	GND	
	29	GND	
	30	H4-SCKA+	
	31	H4-SCKA-	
	32	GND	
	33	GND	
	34	H4-SIA+	
	35	H4-SIA-	
	36	GND	
	37	GND	
	38	H3-SCKB-	
	39	H3-SCKB+	
	40	GND	
CN14	1	+5V	
	2	X-ENCA	
	3	X-ENCB	
	4	N.C	
	5	GND	
	6	GND	
CN15	1	+5V	
	2	Y-ENCA	
	3	Y-ENCB	
	4	GND	
	5	GND	
CN16	1	+X-MV	
	2	N.C	
	3	-X-MV	
CN17	1	+Y-MV	
	2	-Y-MV	
CN18	1	+35V	
	2	+35V	
	3	+35V	
	4	ID-R2	
	5	+35V	
	6	ID-W2	
	7	+5V	
	8	+5V	
	9	PWM	
	10	PCK1	

Connector	Pin No.	Signal name	Remarks
CN18	11	PCK2	
	12	PCK3	
	13	GND	
	14	SPCK-01	
	15	GND	
	16	SPDA-01	
	17	GND	
	18	SPLD-01	
	19	GATE	
	20	RESET	
	21	BZ	
	22	GND	
	23	SPCK-I1	
	24	GND	
	25	SPDA-I1	
	26	GND	
	27	SPLD-I1	
	28	GND	
	29	LCD-E	
	30	RS1	
	31	LCD-RW	
	32	LCD-D0	
	33	LCD-D1	
	34	LCD-D2	
	35	LCD-D3	
	36	/KEY-E	
	37	RS2	
	38	GND	
	39	GND	
	40	COVER	
CN19	1	PACK1	Ink sensor 1
	2	GND	
	3	END1	
	4	GND	
CN20	1	PACK2	Ink sensor 2
	2	GND	
	3	END2	
	4	GND	
CN21	1	PACK3	Ink sensor 3
	2	GND	
	3	END3	
	4	GND	
CN22	1	PACK4	Ink sensor 4
	2	GND	
	3	END4	
	4	GND	
CN25	1	+35V	Attach FPC with the terminal side down (reinforcing plate up) .
	2	SPCK-02	
	3	+35V	
	4	SPLD-02	
	5	+35V	
	6	Q2	
	7	GATE	
	8	+35V	
	9	SPLD-02	
	10	+35V	
	11	SPCK-I2	
	12	+35V	
	13	SPDA-I2	
	14	GND	
	15	/ACS2	
	16	GND	
	17	ASCK2	
	18	GND	
	19	ADI2+	

Connector	Pin No.	Signal name	Remarks
	20	+5V	
	21	A4A2	
	22	A4B2	
	23	A4C2	
	24	+5V	
CN26	1	ID1	
	2	GND	
CN27	1	ID2	
	2	GND	
CN28	1	ID3	
	2	GND	
CN29	1	ID4	
	2	GND	
CN36	A1	+35V	
	A2	+35V	
	A3	+35V	
	A4	N.C	
	A5	N.C	
	A6	IFRESET	
	A7	IF-RDnWR	
	A8	PWDWN	
	A9	WUPRQ	
	A10	IF-nRREQ	
	A11	IF-DRQ0	
	A12	IF-DRQ1	
	A13	INNDREQ3	
	A14	INNDREQ4	
	A15	IFA0	
	A16	IFA1	
	A17	IF-RWCLK	
	A18	IF-CKIO	
	A19	IF-IDOUT	
	A20	IFD0	
	A21	IFD2	
	A22	IFD3	
	A23	IFD5	
	A24	IFD6	
	A25	IFD8	
	A26	IFD9	
	A27	IFD11	
	A28	IFD12	
	A29	IFD14	
	A30	IFD15	
	A31	IFD17	
	A32	IFD18	
	A33	IFD20	
	A34	IFD21	
	A35	IFD23	
	A36	IFD24	
	A37	IFD26	
	A38	IFD27	
	A39	IFD29	
	A40	IFD30	

2-1-4. 1394 PCB

The 1394 (IEEE1394) PCB uses the SH2 (RISC, 28.7MHz) from HITACHI as the CPU and the program stored in the flash memory in the CPU. Therefore, the 1394 CPU is upgraded by downloading the program from the host computer. This PCB supports bi-directional printing.

2-1-5. I/F Connection PCB

This board connects the signals of the main PCB and 1394 PCB.

2-1-6. IO PCB

This board is located on the back of the right frame. It receives the signal of each sensor, transfers each data to the main PCB, and controls various stepping motors and take-up motors.

IO PCB Connector signals

Connector	Pin No.	Signal name	Remarks
CN1	1	+35V	
	2	+35V	
	3	+35V	
	4	ID-R2	
	5	+35V	
	6	ID-W2	
	7	+5V	
	8	+5V	
	9	PWM	
	10	PCK1	
	11	PCK2	
	12	PCK3	
	13	GND	
	14	SPCK-01	
	15	GND	
	16	SPDA-01	
	17	GND	
	18	SPLD-01	
	19	GATE	
	20	RESET	
	21	BZ	
	22	GND	
	23	SPCK-I1	
	24	GND	
	25	SPDA-I1	
	26	GND	
	27	SPLD-I1	
	28	GND	
	29	LCD-E	
	30	RS1	
	31	LCD-RW	
	32	LCD-D0	
	33	LCD-D1	
	34	LCD-D2	
	35	LCD-D3	
	36	/KEY-E	
	37	RS2	
	38	GND	
	39	GND	
	40	COVER	
CN2	1	+5V	Keyboard PCB
	2	GND	
	3	LCD-E	
	4	RS1	
	5	LCD-RW	
	6	LCD-D0	
	7	LCD-D1	
	8	LCD-D2	
	9	LCD-D3	
	10	/KEY-E	
	11	RS2	
	12	N.C.	
CN3	1	+COVER	Cover sensor
	2	N.C.	
	3	-COVER	
CN4	1	MA-P1	Pump motor 1
	2	N.C.	
	3	/MA-P1	
	4	MB-P1	
	5	N.C.	
	6	/MB-P1	

Connector	Pin No.	Signal name	Remarks
CN5	1	MA-P2	Pump motor 2
	2	N.C.	
	3	/MA-P2	
	4	MB-P2	
	5	N.C.	
	6	/MB-P2	
CN6	1	MA-P3	Wiper motor
	2	N.C.	
	3	/MA-P3	
	4	MB-P3	
	5	N.C.	
	6	/MB-P3	
CN7	1	+WM	Take-up motor
	2		
	3	+WM	
	4		
CN8	1	+5V	Origin sensor
	2	O-SIG	
	3	GND	
CN9	1	+5V	Clamp sensor
	2	C-SIG	
	3	GND	
CN10	1	+5V	Paper sensor1
	2	P-SIG	
	3	GND	
CN11	1	+5V	Wiper sensor
	2	W-SIG	
	3	GND	
CN12	1	PACK5	Ink sensor 4
	2	GND	
	3	END5	
	4	GND	
CN13	1	PACK6	Ink sensor 5
	2	GND	
	3	END6	
	4	GND	
CN14	1	PACK7	Ink sensor 6
	2	GND	
	3	END7	
	4	GND	
CN15	1	PACK8	Ink sensor 8
	2	GND	
	3	END8	
	4	GND	
CN17	1	ID5	
	2	GND	
CN18	1	ID6	
	2	GND	
CN19	1	ID7	
	2	GND	
CN20	1	ID8	
	2	GND	
CN22	1	+35V	
	2	OUT1	
	3	OUT2	
	4	OUT3	
	5	GND	
	6	+5V	
	7	IN1	
	8	IN2	
CNX1	1	+FAN	Not used
	2	-FAN	

2-1-7. Slider PCB

The slider PCB is located on the inner side of the head cover. It relays the head control signal and head driving signal from the main PCB to the print heads. It contains the sensor circuit which detects the signal from the thermistor on each head and the signal from the paper-width sensor.

The slider PCB is connected to the HDC PCB with 5 main FPC cables and connected to the heads with 6 head FPC cables. In addition, the slider PCB is connected respectively to the linear encoder that detects the ink discharging position with the linear scale, to the paper width sensor PCB, to the cutter solenoid, and to the head height sensor.

Slider PCB Connector signals

Connector	Pin No.	Signal name	Remarks
CN1	Refer to Main PCB- CN7		Attach FPC with the terminal side up (reinforcing plate down) .
CN2	Refer to Main PCB- CN8		
CN3	Refer to Main PCB- CN9		
CN4	Refer to Main PCB- CN10		
CN5	Refer to Main PCB- CN11		
CN6	1	+24V	Cutter actueter
	2	CUTTER-ON	
CN18	1	+24	Solenoid (spare)
	2	SOL-ON	
CN7	1	GND	Rinearencoder
	2		
	3	LENCA1	
	4	+5V	
	5	LENCB1	
CN8 CN10 CN12 CN14	1	SIO02A	Attach FPC with the terminal side down (reinforcing plate up) .
	2	SIO01A	
	3	SCK02A	
	4	SCK01A	
	5	H1anodeA	
	6	H1CHA	
	7	GND	
	8	H1LATA	
	9	GND	
	10	H1NCHGA	
	11	GND	
	12	+5V	
	13	H1-TH	
	14	GND	
	15	GND	
	16	H1COMA	
	17	GND	
	18	H1COMA	
	19	GND	
	20	H1COMA	
	21	GND	

Connector	Pin No.	Signal name	Remarks
CN9 CN11 CN13 CN15	1	SIO01B	Attach FPC with the terminal side down (reinforcing plate up) .
	2	SIO02B	
	3	SCK01B	
	4	SCK02B	
	5	H1anodeA	
	6	GND	
	7	H1CHB	
	8	GND	
	9	H1LATB	
	10	GND	
	11	H1NCHGB	
	12	+5V	
	13	GND	
	14	GND	
	15	H1COMB	
	16	GND	
	17	H1COMB	
	18	GND	
	19	H1COMB	
	20	GND	
	21	+42V	
CN16	1	+5V	Paper-width sensor
	2	LED	
	3	+5V	
	4	PAPER	
CN17	1	+50	Head height sensor
	2	H-High	
	3	GND	

2-1-8. Linear encoder PCB

This board, located on the back of the slider, reads the linear scale.

2-1-9. The Keyboard PCB

A 16 character x 2 line LCD, an LED that indicates +5V supply and 11 tact switches are mounted on the K/B PCB. It is connected to the IO PCB via the K/B cable.

2-1-10. Take-up motor PCB

Located in the Take-up device, and rotates a motor as receiving power from the IO PCB. Normal and reverse rotation of take-up device is performed by take-up device switch.

2-2. Ink system

2-2-1. Definitions

Ink system

Ink system is the general term of a mechanism specific to ink-jet printing system for protecting a nozzle against troubles such as clogging and recovering it if it should be in trouble.

Head capping

Head capping is a mechanism for automatically capping the nozzle so as to prevent it from drying. As long as the head is on the station in the right-hand side cover, it is capped.

Clogged nozzle

In such an event that a specific nozzle fails to discharge any ink because the ink in the head has thickened or the nozzle itself has dried up, the nozzle called the “clogged nozzle.”

Deflection

A finished state of a drawing on which lines are not plotted straight since a specific nozzle has failed to discharge ink straight on the paper because of the dust-accumulated or damaged nozzle surface.

Satellite

Discharged ink is shot as main drops or satellite drops.

If satellite drops are contained in main drops, the ink shot may shift.

Head cleaning

Recovers normal ink discharge by removing bubbles in the head and foreign objects on the head surface.

Wiping

Wipes the nozzle surface with wiper rubber surface to fix the condition of nozzle holes in order to remove foreign objects or ink leakage on the nozzle surface.

Flashing

Make idling discharges of ink which may thicken at the point of the nozzle, for refreshment.

Ink suction

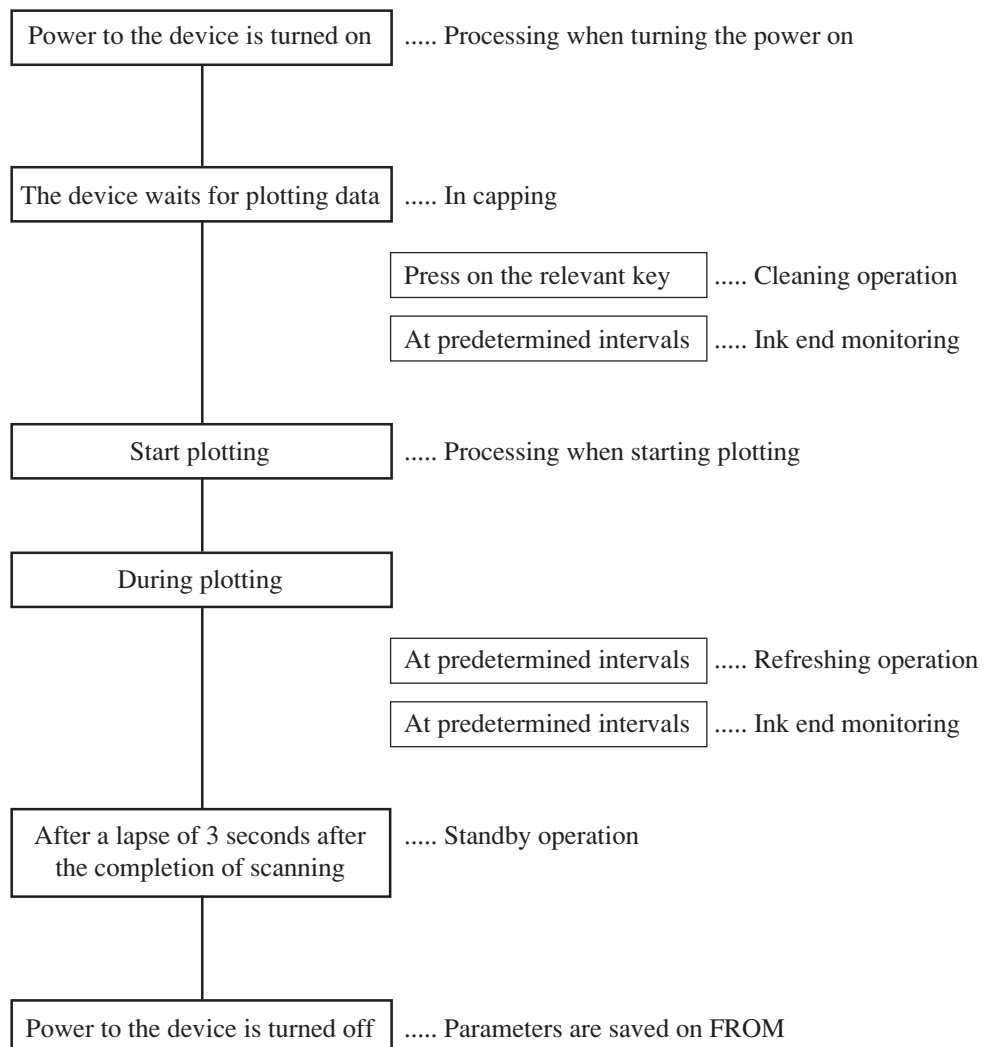
Absorbs ink from nozzle by means of the ink suction pump.

2-2-2. Brief explanation of the ink system

The ink system control mainly contains the following functions.

- Processing when turning the power on
- Processing when starting plotting
- Refreshing operation
- Standby operation
- Ink end monitoring
- Head cleaning operation
- Replacement of ink cartridge

Brief flow chart of the ink system control processing



Processing when power is turned ON

If it is anticipated that the ink will have thickened while the power was OFF, and if there is expected to be danger that the uncapped nozzle will be dry when the power is turned ON, then cleaning action is executed to restore the ink ejection condition to what it was originally.

While the power is OFF, the timer incorporated into the main unit is backed up by a battery. After about 7 years this battery discharges to a voltage at which the timer can no longer operate. Accordingly, the maximum measurable time during which the power is OFF is 7 years.

Processing when plotting starts

Even if the nozzle has been capped, since the ink gradually thickens it is necessary to measure the time during which the unit is on standby with the nozzle capped. When plotting starts, either ink is ejected from all nozzles or all of the nozzles are cleaned, by an amount corresponding to the measured standby time, to avoid defective ink ejection on account of increased ink viscosity.

Refreshing operation

During plotting, only some of the nozzles discharge ink. To prevent nozzles that are at rest from drying and ink from thickening, the head is moved onto the cap inside of the station, at fixed intervals, and ink is ejected from all nozzles to maintain stable ink ejection. On machines with the refresh station attached to the left end of the platen, the refreshing operation occurs at the left end depending on the plotting conditions and other settings. The “REFRESH” and the number of times that ink is ejected can be varied by varying the “REFRESH” on a menu that is open to the user.

Standby state

To prevent the nozzle from drying, the head is automatically carried back to the station unless the next scanning starts after three seconds have passed after the completion of the last scanning.

Ink end monitoring

At fixed intervals a sensor monitors the ink level, and detects the following.

- Ink remains: Plotting is possible.
- Ink near end: Plotting is possible (ink cartridge replacement is recommended).
- Ink end: Plotting is not possible (plotting is suspended, and the system waits for ink cartridge replacement).
- No ink cartridge: Plotting is not possible.

Head cleaning operation

A function that works to remove thickened ink or dust accumulated on the nozzle faces to recover normal ink-discharge.

There are the following 3 methods.

Cleaning method	Cleaning time	Ink consumption	Cleaning effect	Remarks
Soft	Short	Small	Small	Can deal with minor problems such as failure of ink jet.
Normal	Normal	Normal	Normal	Action is taken to clear a clogged nozzle.
Strong	Long	Large	Large	Action is taken to deal with major trouble that cannot be taken care of by normal cleaning.

Ink cartridge replacement

When an error occurs because ink has run out or an ink cartridge has not been installed, the user should replace the ink cartridge, or if there is none, install one. In particular, when ink has not yet passed through the head at all (when the plotter is shipped from the factory), initial filling of ink is carried out so that ink will pass from the ink cartridge through the tube to the head.

Miscellaneous

- The cap inside the station must be kept at the proper humidity to prevent the nozzle from drying out. For this reason, whenever the head is put into or taken out of the station, ink is ejected to keep the nozzle moist. Conversely, if so much ink has been ejected that the nozzle is too moist, ink is ejected from inside the cap to the waste ink tank with the pump mechanism to keep the humidity at its optimum level.
- This unit has a paper width sensor mechanism and a cutter mechanism in the head; the paper width detection action and the paper cutting action make it necessary for the head to move in and out of the station. The actions described in a) are necessary in this case also.

2-2-3. Parameters related to the ink system

To control the ink system, the following two items of parameter groups are stored on the Flash memory.

- Ink parameters 1 → Any change of ink parameters 1 is prohibited since they are used to control the ink system.
- Ink parameters 2 → Any change of ink parameters 2 is prohibited since they are used for experiments and evaluations in MIMAKI Development Division.
- Ink parameters 3 → Any change of ink parameters 3 is prohibited since they are used for experiments and evaluations in MIMAKI Development Division.
- Ink parameters 4 → Any change of ink parameters 4 is prohibited since they are used for experiments and evaluations in MIMAKI Development Division.
- Ink parameters 5 → Any change of ink parameters 5 is prohibited since they are used to control the ink system.

Ink parameters 1, Ink parameters 5

Parameters to be used to control the ink system such as the parameters for the humidity control inside the cap, etc. are saved on . Parameter values are updated and managed by the firmware. They are saved when turning the power off.

If any of these parameter values should be changed, the ink system would be out of control. They must not be changed from the factory-designated initial settings.

Ink parameters 2, Ink parameters 3, Ink parameters 4

Control constants used for the ink system processing are saved on. They must not be changed since they are used by MIMAKI Development Division for experiments and evaluations.



- When the main PCB has been replaced (meaning that the Flash memory has been initialized), the following procedure must be followed to match ink parameters 1, which control the ink system, to the actual situation.

1. All heads are cleaned once (soft cleaning is sufficient) → the indication of ink amount inside the cap must be matched to the actual situation.
2. The number of times that wiping has taken place is set to the value before the replacement. → ink parameters 1 No. 8,9
3. The running meter parameter is set to its value before the replacement.
→ #ADJUST -REPLACE COUNTER (page 5.15).



- The ink system is controlled so that MIMAKI-brand ink be discharged in stable condition. Operation with non-MIMAKI brand ink is not guaranteed.

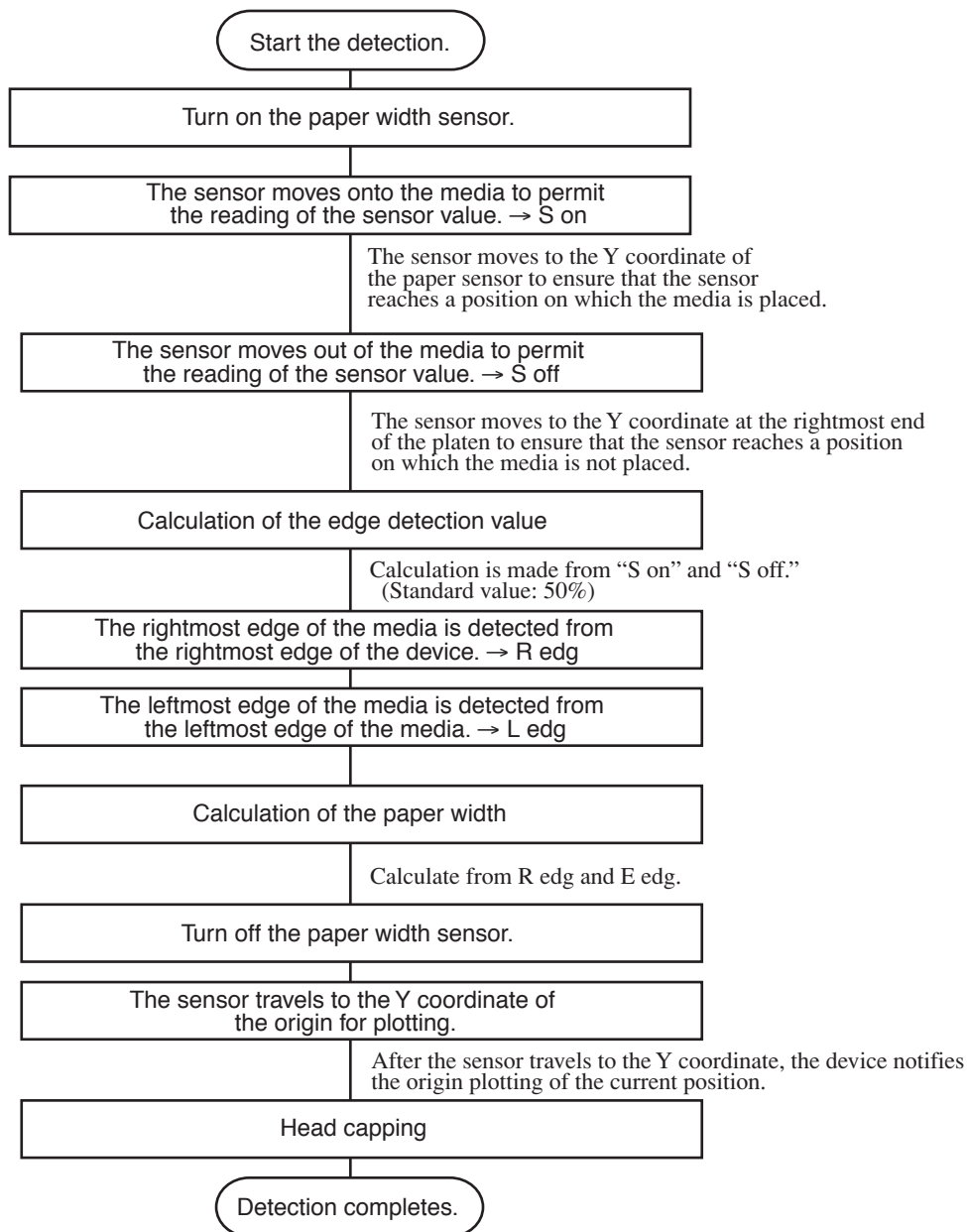
2-3. Brief explanation of media size detection control

Detection of the front ends of a media → Detection by the paper sensor

Detection of the right- and left-side edges of a media → Detection by paper width sensor

Brief flow chart of the media width detection processing

Edges of the media are detected through the use of the difference in lightness between the media and the platen (cutter slit), based on which the paper width is calculated.



CHAPTER 3

TROUBLESHOOTING

It is necessary to isolate, to some extent, the function that is in trouble in prior to troubleshooting.

Troubles can be roughly classified into the following two groups.

- 1) Troubles only relating to the device
 - The function in trouble can be determined through various tests.
- 2) Trouble relating to the connection with the host computer
 - Disconnection of failed contact of the cables in terms of hardware
 - In terms of software, the case where the user has changed computer parameters or has sent wrong data by mistake.

Recovering procedures for troubles in general that are likely to arise independently on the device will appear from the next page.

3-1. Troubles for which error messages are given on the LCD

General recovering procedures for troubles for which error messages are given on LCD are as follows:

1) Segregation of causes of errors

Causes of errors are roughly classified into the following groups.

- 1) Handling errors on the system side
- 2) Defective conditions on the system side
- 3) Defective conditions on the interface cable
- 4) Plotter handling errors
- 5) Mechanical malfunctions in the plotter
- 6) Malfunctions in hardware of the plotter
- 7) Malfunctions in firmware of the plotter

2) Initial remedies

Track down the cause of a trouble to the system side or the plotter side referring to the error message shown on the LCD.

- 1) Check whether you have changed connection conditions (time-out setting on the host PC, etc.).
- 2) Check whether or not the trouble arises under specific circumstances.
- 3) Check whether or not the trouble is reproducible.

3) Failures on the plotter side

Take the following recovering procedure.

- 1) Replace the faulty component (sensor, etc.) with a new one or properly adjust it.
- 2) Update the firmware.
- 3) Replace PCBs.

4) If the error recurs even after correcting it in accordance with the specified recovering procedures, return the device to the factory for repairs.

3-2. Error messages and corrective measures

3-2-1. Error messages for troubles for which error numbers are given on the LCD

Message	Description	Corrective measures and recovering procedures
ERROR01 MAIN ROM	<ul style="list-style-type: none"> The control ROM is in abnormal conditions. 	1) Replace the main PCB with a new one.
ERROR02 MAIN RAM	<ul style="list-style-type: none"> The control RAM is in abnormal conditions. 	
ERROR03 POWER +5V POWER +35V	<ul style="list-style-type: none"> The +5V (+35V) voltage is in abnormal conditions. 	1) Replace the power supply or the main PCB with a new one.
ERROR04 FLASH ROM	<ul style="list-style-type: none"> The Flash memory is in abnormal conditions. 	1) Replace the main PCB with a new one.
ERROR06 D-RAM	<ul style="list-style-type: none"> An error has occurred in the D-RAM. 	
ERROR07 HEAD ---*****	<ul style="list-style-type: none"> Head parts of the assembling is in abnormal conditions. 	1) Has ink in the damper run out? 2) Check the FPC cable connection. 3) Replace the Slider PCB with a new one. 4) Replace the head with a new one. 5) Replace the main PCB with a new one.
ERROR08 ENCODER	<ul style="list-style-type: none"> The Linear encoder is in abnormal conditions. 	1) Replace the Linear encoder with a new one. 2) Replace the main PCB with a new one.
ERROR09 HDC	<ul style="list-style-type: none"> Configuration of PDC/IOC has not been successfully carried out. Configuration of HDC has not been successfully carried out. 	1) Replace the main PCB with a new one.
ERROR10 COMMAND	<ul style="list-style-type: none"> Command code other than MRL has been received. 	1) Check the data received through HEX dump. 2) If error occurs at 1394 <ol style="list-style-type: none"> Check Time out of the transfer tool (RIP). Replace the I/F connection board with [E102154A] or later. Replace the 1394 board with a new one. Replace the main PCB with a new one. Supply power to the 1394 PCI board in the PC through the power cable.
ERROR11 PARAMETER	<ul style="list-style-type: none"> Parameter that has not defined in MRL has been received. 	

Message	Description	Corrective measures and recovering procedures
ERROR12 Ment Command	<ul style="list-style-type: none"> A command error for manufacture of has occurred. 	1) It is not used in the field.
ERROR20 I/F BOARD	<ul style="list-style-type: none"> A error occurred in communication between the main PCB and the interface board. 	1) Replace the I/F PCB with a new one. 2) Replace the main PCB with a new one. 3) Replace the I/F connection board with [E102154A] or later. 4) Supply power to the 1394 PCI board in the PC through the power cable.
ERROR21 I/F NONE	<ul style="list-style-type: none"> The I/F board could not be recognized. 	1) Is the I/F board mounted correctly ?
ERROR23 HOST I/F	<ul style="list-style-type: none"> A time limit exceeded error occurred in communication between the host computer and the interface board. 	1) Is the cable loose? 2) Has an error occurred on the host computer? 3) Is the application being used running normally?
ERROR24 I/F INITIAL	<ul style="list-style-type: none"> The I/F board is in abnormal conditions. 	1) Replace the I/F PCBwith a new one. 2) Replace the main PCB with a new one. 3) Replace the I/F connection board with a new one.
ERROR30 OPERATION	<ul style="list-style-type: none"> Improper operation has been performed. 	1) Indicate the improper operation. 2) Replace a key board. 3) Replace a main PCB.
ERROR34 DATA REMAIN	<ul style="list-style-type: none"> Operating condition is tried to be changed when data that has not yet been plotted remains. 	1) Explain that any of the operating conditions cannot be changed if data that have not been plotted remains.
ERROR37 HEAD POSITION	<ul style="list-style-type: none"> Tried to perform operation in the [THICK] head height. 	1) Set the head height to [THIN].
ERROR40 MOTOR X	<ul style="list-style-type: none"> The X-axis motor has been overloaded. 	1) Replace X axis motor. 2) Replace a main PCB.
ERROR41 MOTOR Y	<ul style="list-style-type: none"> The Y-axis motor has been overloaded. The brush of motor is in abnormal conditions. 	1) Clean the main guide axis. 2) Replace Y axis motor. 3) Replace a main PCB.
ERROR42 X CURRENT	<ul style="list-style-type: none"> Overcurrent error has arisen on the X-axis motor 	1) Replace X axis motor. 2) Replace a main PCB.
ERROR43 Y CURRENT	<ul style="list-style-type: none"> Overcurrent error has arisen on the Y-axis motor 	1) Replace Y axis motor. 2) Replace a main PCB.

Error message	Cause	Corrective measure
ERROR46 WIPER	<ul style="list-style-type: none"> The wiper-control is in abnormal conditions. 	<ol style="list-style-type: none"> 1) Turn on the power. 2) Replace a wiper assy. 3) Replace IO PCB. 4) Replace a wiper sensor. 5) Replace a wiper motor.
ERROR50 MEDIA SENSE	<ul style="list-style-type: none"> Media detection has not been successfully carried out. 	<ol style="list-style-type: none"> 1) Confirm no foreign substances, such as dust remains around the sensor detection area. 2) Confirm platen F2 (forming cover) is securely fixed with screws. 3) Check if the media right edge is set at a position 15mm or more from the rightmost edge of the rightmost feed roller:R1 toward the station side or not. 4) Cleaning or replace a paper width sensor. 5) Replace a HDC FPC cable. 6) Replace a slider PCB. 7) Replace a main PCB.
ERROR51 Y ORIGIN	<ul style="list-style-type: none"> Y-axis origin detection has not been successfully carried out. 	<ol style="list-style-type: none"> 1) Replace a Y axis motor. 2) Replace a Y origin sensor. 3) Replace a IO PCB. 4) Replace a main PCB.
ERROR57 HEAD HEIGHT	<ul style="list-style-type: none"> Head height has not been detected. 	<ol style="list-style-type: none"> 1) Confirm a connecter contact of the head height sensor. 2) Replace a head height sensor. 3) Replace a slider PCB. 4) Replace a HDC FPC cable.

3-2-2. Ink-related components and other components

Message	Description	Corrective measures and recovering procedures
<div>< LOCAL > CARTRIDGE K - - - - -</div>	<ul style="list-style-type: none"> The color of absent ink cartridge is shown. 	<ol style="list-style-type: none"> 1) Install the ink cartridge. 2) If the error recurs after the ink cartridge has been installed, conduct sensor tests to find out the cause of trouble. Possible causes of the troubles are as follows. <ol style="list-style-type: none"> a) The cartridge presence/absence sensor has failed. b) Defective contact or disconnection of relay cables. c) Main PCB or IO PCB has failed.
<div>< LOCAL > NEAR END K - - - - -</div>	<ul style="list-style-type: none"> The amount of ink remaining in the ink cartridge is insufficient. 	<ol style="list-style-type: none"> 1) Replace the ink cartridge with a new one. 2) If the error recurs after the ink cartridge has been replaced, conduct sensor tests to find out a possible cause of the trouble. Possible causes of the troubles are as follows: <ol style="list-style-type: none"> a) The ink end sensor has failed. b) Defective contact or disconnection of relay cables. c) Ink sensor PCB has failed. d) Main PCB or IO PCB has failed.
<div>< LOCAL > INK END K - - - - -</div>	<ul style="list-style-type: none"> Ink has run out 	<ol style="list-style-type: none"> 1) Replace the ink cartridge with a new one.
<div>< LOCAL > REPLACE WIPER</div>	<ul style="list-style-type: none"> The number of times of use of the wiper has been exceeded. 	<ol style="list-style-type: none"> 1) Replace the wiper.
<div>< LOCAL > HEAD ID Un - input</div>	<ul style="list-style-type: none"> The ID numbers of heads have not been inputted. 	<ol style="list-style-type: none"> 1) Input the ID numbers of heads.
<div>< LOCAL > ** NO MEDIA **</div>	<ul style="list-style-type: none"> The clamp lever has been lowered without media placed. If roll paper is being used, it indicates that the media has run out. 	<ol style="list-style-type: none"> 1) Set media first, then lower the clamp lever. 2) If the error occurs with media loaded on the machine, conduct sensor tests to find out a possible cause of the trouble. Possible causes of the trouble are as follows: <ol style="list-style-type: none"> a) The paper sensor has failed. b) The IO PCB has failed. c) The main PCB has failed.

Message	Description	Corrective measures and recovering procedures
* REMOTE *	<ul style="list-style-type: none"> If the entire LCD display flashes in REMOTE mode, it indicates that data have not been received for 30 seconds or more. 	<ol style="list-style-type: none"> 1) Confirm that the computer is sending data. 2) Replace the I/F cable with a new one. 3) Replace the 1394 PCB. 4) Replace the main PCB.
BATTERY EXCHANGE	<ul style="list-style-type: none"> Battery has run out. 	<ol style="list-style-type: none"> 1) Replace the battery with a same type. (CR2032)

3-3. Troubles for which error messages are not given on the LCD

3-3-1. The device will not be energized.

Problems	The POWER indicator lamp on the operation panel will not light up even if turning the power switch on.
Causes	<ol style="list-style-type: none">1) The power cord has come off the receptacle. An outlet is not available for the power supply.2) The power unit has broken.3) The main PCB has short-circuited to GND in +35V or +5V.4) The key panel has broken, or the K/B cable has disconnected.
Checking procedure	<ol style="list-style-type: none">1) Check the voltage at the receptacle using a tester.2) Remove the DC cable and check the output voltage of the power supply using a tester.3) Check a resistance at +35V and +5V on the main PCB using a tester. Remove all the cables to be connected to the main PCB and then turn on the power. (Refer to [6-2. Electrical component block diagram])4) Check whether or not the LED on the main PCB is in the ON state.
Remedies	<ol style="list-style-type: none">1) Securely insert the power cord into the receptacle.2) Replace the power unit with a new one.3) Replace the main PCB with a new one. Replace the slider PCB with a new one. Replace the IO PCB with a new one.4) Replace the key panel or the K/B cable with a new one.

3-3-2. The device fails to perform plotting

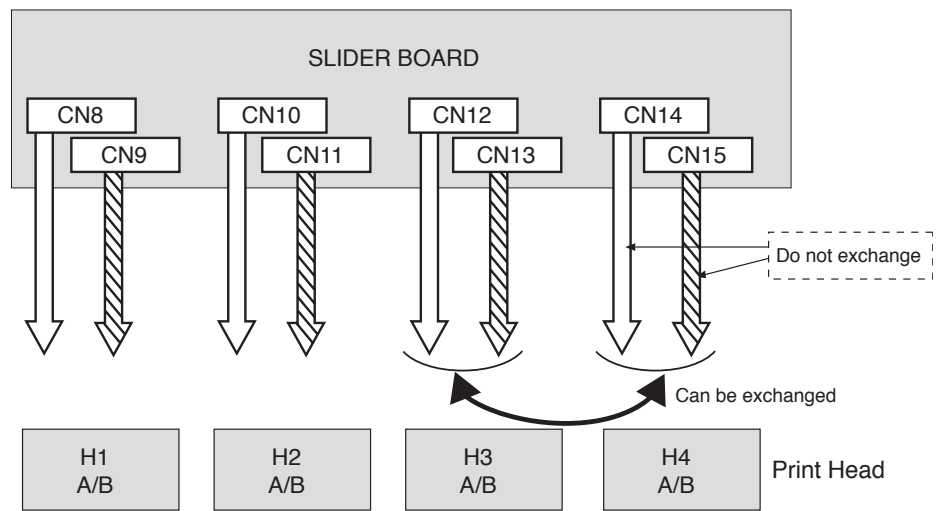
Problems	The head operates, but the device fails to perform printing.
Causes	<ol style="list-style-type: none">1) Nozzles on the head are clogged.2) Ink has run out in damper.3) The HDC FPC cable is in poor contact or has disconnected. The head FPC cable is in poor contact or has disconnected.4) The slider PCB has broken.5) The main PCB has broken, or the head ID has not been properly specified.6) Ink have not been filled up.7) The cap is in abnormal condition.8) The pump assembly has broken.9) The linear encoder sensor has broken.10) The head has broken.
Checking procedure	<ol style="list-style-type: none">1) Conduct cleaning to check whether or not ink is fed from the vinyl tube.2) Check if ink is inside the damper.3) Check the connector or replace the cable with a new one.4) Perform the precautions in next page.5) Perform the precautions in next page.6) Refer to [3-3-8. Ink-filling cannot be performed].7) Check the cap assembly.8) Check the pump assembly.9) Perform the encoder check test.
Remedies	<ol style="list-style-type: none">1) Conduct cleaning of the head, and fill up the ink.2) Fill up the ink.3) If the FPC cable has disconnected, replace it with a new one. If the FPC cable is in poor contact, securely insert the cable into the connector.4) Replace the slider PCB with a new one.5) Replace the main PCB with a new one, or properly specify the head ID.6) Refer to [3-3-8. Ink-filling cannot be performed].7) Replace the cap assembly with a new one.8) Replace the pump assembly with a new one.9) Replace the linear encoder sensor with a new one. or adjust the sensor position.

If none of the heads or nozzle rows discharges ink, check the following:

1. Check that the head ID is entered correctly.
2. If either nozzle row of the same head does not shot ink, check the defective section by exchanging the 21-wire FPC (connected to the head) within the same nozzle row.



• Do not exchange the FPC between rows A and B because of power short-circuit.



3-3-3. Cutting failure

Problems	The cutter goes up during media cutting.
Causes	1) Main FPC has disconnected.
Checking procedure	1) Check whether or not the phenomenon occurs at a specific position in terms of the Y-direction.
Remedies	1) Replace the main FPC cable with a new one.

3-3-4. Faulty cutter

Problems	The cutter remains in the lower position. The cutter will not come down.
Causes	1) The cutter fails to go up/come down smoothly. (The cutter moves jerkily.) 2) The cutter height is not correct. 3) There is a short in the cutter drive circuit.
Checking procedure	1) Remove the head cover and check whether or not the cutter can be smoothly lifted/lowered by hand. 2) Remove the head cover and fully lower the cutter by hand to check whether or not the cutter comes in contact with any other component. 3) Check whether or not the cutter goes up (abnormal state) when turning the power off or detaching the connector from the slider PCB in the solenoid with the cutter held lowered.
Remedies	1) Replace the cutter unit with a new one. 2) Adjust the height of the cutter assy. 3) Replace the main FPC, the main PCB, the slider PCB with a new one.

3-3-5. Abnormal vacuum fan

Problems	The vacuum fan fails to turn. The fan motor cannot be stopped running.
Causes	1) A part of motor assy has disconnected. 2) Clip the fan motor assy cable in the platen cover to short-circuit the fan motor. 3) The main PCB has broken.
Checking procedures	1-3) Visually confirm the fan motor status. ([ACTION TEST - FAN MOTOR])
Remedies	1-2) Replace the fan motor assy with a new one. 3) Replace the main PCB.

3-3-6. Abnormal nozzle discharge

Problems	When checking the nozzle, the nozzle at the enter of the head does not print. The edge of the nozzle does not print.
Causes	1) The amount of wiper contact is larger or smaller. 2) The capping position with respect to the head is not normal.
Checking procedure	1) Make visual check of the amount of wiper contact. 2) Perform the check test / the capping position. (Refer to [4-2-7. Adjustment of the station height] page 4.14)
Remedies	1) Adjust the amount of wiper contact. 2) Perform the adjustment of the station position.

3-3-7. Abnormal ink shot

Problems	Vertical lines during plotting, square spots, or plotting out of range.
Causes	<ol style="list-style-type: none">1) The head FPC cable is in poor contact.2) The connector of head has broken. (Metal corrosion)3) The linear scale is not dirty or damaged.4) The linear scale position is appropriate.
Checking procedure	<ol style="list-style-type: none">1-2) Disconnect the FPC cable and then check the contact surface visually.3-4) Visually confirm the Linear scale.
Remedies	<ol style="list-style-type: none">1) Replace the head FPC cable with a new one.2) Replace the head with a new one.3) Replace the linear scale if very damaged.4) Adjust the position of the Linear scale.

3-3-8. Ink-filling cannot be performed

Problems	Ink-filling cannot be performed. Abnormal ink cleaning.
Causes	<ol style="list-style-type: none">1) There are some gaps for capping.2) The pump motor has broken.3) The IO PCB has broken.4) The main PCB has broken.5) The cap slider defect.6) The pump defect.
Checking procedure	<ol style="list-style-type: none">1) Visually confirm the ink-filling status.2-4) Check whether or not the pump motor is running.5-6) Visually confirm the cap and pump.
Remedies	<ol style="list-style-type: none">1) Height adjustment for the station and position adjustment for capping.2) Replace the pump motor with a new one.3) Replace the IO PCB with a new one.4) Replace the main PCB with a new one.5) Replace the cap with a new one.6) Replace the pump with a new one.

3-3-9. Abnormal wiper operation

Problems	The wiper does not work.
Causes	<ol style="list-style-type: none">1) Loose screw. (Tighten a gear.)2) The shaft is stained.3) Motor and other parts defect.
Checking procedure	1-3) Visually confirm the wiper status.
Remedies	<ol style="list-style-type: none">1) Fasten the screw.2) Clean the wiper assy and shaft.3) Replace the defective parts.

3-4. Plotting failure

3-4-1. Print is not sharp

Problems	A line has been omitted from the print. (Specified color) A stripe in the scanning direction is partially printed with widened. Characters printed by a specific nozzle are displaced.
Causes	1) Nozzles on the head have clogged. Failure of ink jet is generated. 2) The pump fails to turn. 3) The head ID is not set correctly. 4) The wiper is not cleaned. The amount of wiper contact is large/small. 5) The cap position is not set correctly. 6) Paper fragment or other dust is present on the head path above the media holder.
Checking procedure	1) Print the nozzle check to check the printed result. 2) Perform cleaning to confirm that the pump is rotating and that ink is being ejected. 3) Check the head ID. 4-6) Visually confirm the wiper and cap.
Remedies	1) Clean the head. If cleaning is executed several times and the system still is not restored to correct operating condition, fill with ink for up to a maximum of 3 times. If the system is still not restored to correct operating condition, replace the head. 2) Replace the pump motor and pump unit, or adjust capping 3) Set the head ID. 4) Adjust the wiper. Refer to [4-2-7. Adjustment of the station height] page 4-14. 5) Adjust the capping position. 6) Remove the dust.

3-4-2. Abnormal print

Problems	Abnormal print is produced outside the paper.
Causes	<ol style="list-style-type: none">1) The main FPC cable is in poor contact or has disconnected. The head FPC cable is in poor contact or has disconnected.2) The linear encoder has not read correctly.3) Paper width sensor PCB assembly has broken.4) The slider PCB has broken, or the HDC PCB has broken.5) The main PCB has broken.6) The head has broken.
Checking procedure	<ol style="list-style-type: none">1) Check the connector or replace the cable with a new one.2) Perform the encoder check.3) Check, through the paper sensor test, whether or not any abnormal value has been specified. Refer to [5-4-10. PAPER SENSOR], page 5.184) Try to replace the slider PCB with a new one. Try to replace the HDC PCB with a new one.5) Try to replace the main PCB with a new one.6) If the phenomenon recurs even after taking procedures (2) through (5), replace the head with a new one.
Remedies	<ol style="list-style-type: none">1) If the FPC cable has disconnected, replace it with a new one. If the FPC cable is in poor contact, securely insert the cable into the connector.2) Replace the linear encoder sensor with a new one, or adjust the position.3) Replace the paper width sensor PCB assembly with a new one.4) Replace the slider PCB with a new one.5) Replace the main PCB with a new one.6) Replace the head with a new one.

3-4-3. Color of print is pale

Problems	Color of print is pale.
Causes	1) The head ID has not been properly specified. 2) The temperature sensor is not read correctly.
Checking procedure Remedies	1) Check the head ID stuck on the head and the ID within [#ADJUSTMENT]. 2) In [TEMP CHECK] for #TEST, check that the Ta display (**) can be read out with stabilized room temperature.
Remedies	1) If the head ID is not correct, enter a correct value. If the head ID has been changed, check the Y deviation again. 2) Replace the slider PCB or the main PCB with a new one.

3-4-4. Plotted drawing is out of position

Problems	The plotted drawing is out of position.
Causes	1) Dust has gathered or scratches are made on the linear scale, causing the linear encoder to make a detecting error.
Checking procedures	1) Check the linear scale for dust, stains and scratches. Is the linear encoder mounted on the correct position ? Perform [ENCODER CHECK] for #TEST.
Remedies	1) Lightly wipe the surface of the linear scale (excepting the rear face) with a cloth dampened with alcohol. Wipe the linear encoder with a cotton dampened with alcohol. Replace the linear scale with a new one. Adjust the linear encoder PCB assy position, or replace the linear encoder PCB assy with a new one.

3-4-5. Plotted dots or lines are dirty

Problems	Plotted dots or lines are dirty.
Causes	<ol style="list-style-type: none">1) The head height is not adjusted correctly.2) The head ID is not set correctly.3) Head/cap positional relations get shifted.4) Wiper is not cleaned.5) Head (nozzle) failure.
Checking procedures	<ol style="list-style-type: none">1) <ol style="list-style-type: none">a. Isn't a satellite being generated?b. Isn't a deflection being generated?2) Check the head ID stuck on the head and the ID within #ADJUSTMENT.3) Is the ink securely being drained out when executing the CLEANING?4) Visually confirm the ink-filling condition.5) Check that there are no blots or whiskers attributable to paper fibers.
Remedies	<ol style="list-style-type: none">1) Adjust the height of the head.2) Enter the correct head ID.3) Adjust the capping.4) Clean the interior of capping station and the end face of wiper.5) Use the dedicated media and ink.6) Conduct the cleaning actuation.<ul style="list-style-type: none">• Perform the intensive cleaning. ([CLEANING-STRONG])• Perform the ink-filling with the [FILL UP INK] inside the user maintenance mode.• Perform the nozzle washing with the [STATION-MENT] inside the user maintenance mode. <p>Replace the head if the failure can not be restored with the said remedies.</p>

3-4-6. Stripes are always drawn at the time of scanning

Problems	Black or white stripes are always drawn at the time of scanning.
Causes	<ol style="list-style-type: none">1) The value of [MEDIA COMP.] is not correct. When the media is changed, perform SETUP - [MEDIA COMP.] to set values which suit the media.2) A media that is heavier than the specification is placed. (For the case where black stripes appear)3) Thicker media is used. However, the setting values for light-weight media remain.
Checking procedures	<ol style="list-style-type: none">1) Execute SETUP - [MEDIA COMP.] , check the printed patterns for black or white streaks.2) Media weight measurement (medium of which weight is 25 kg or less is recommended)3) Check whether or not the distance compensation matches the media used.
Remedies	<ol style="list-style-type: none">1) Same as Checking procedure 1). Note that it may be necessary to specify a media correction value for same host system. (See the table below)2) Use a media of which weight is 25 kg or less.3) Set the correction value.

Priority setting	Media correction value used
Panel	Media correction value set by the user at the time of media correction.
Host	Correction value specified by command.

3-4-7. Black and White Stripes appear from side to side

Problems	Black and white stripes appear from side to side. Different amount of paper feed between sides. Distinctive gradation or Banding along the scan direction.
Causes	1) Unbalance media setting. 2) Media set with slacks. 3) The print setting (Resolution, Pass) is not correct. 4) [MEDIA COMP] has not executed.
Checking procedures	1) Visually confirm the media setting. 2) Check whether the difference between the left and right sides feed amounts when using the roll stopper. (Check the print pass and resolution and optimize them as needed.) 3) Check the media type and print mode. 4) Check the [MEDIA COMP].
Remedies	1) Reset the media setting. 2) Set the media using the roll stopper to avoid the slacking. 3) Change the print mode which suits the media. 4) Check [MEDIA COMP] to set a correct values.

3-4-8. Dark and Light Images Occur at Each Scan

Problems	Dark and light images occur at each scan.
Causes	<ol style="list-style-type: none">1) Head Slant is not adjusted perfectly.2) Check whether the ink dot gain on the paper is obtained according to the resolution.
Checking procedures	<ol style="list-style-type: none">1) Adjust the dot slant with [SLANT ADJUST] to 10μm or less for each color.2) In case of plotting with 720 dpi, perform test using MIMAKI-recommended media, PET (gloss).
Remedies	<ol style="list-style-type: none">1) Adjust the head slant, R/F head adjust.2) If Banding is solved, the accuracy of the device is assumed to be normal.<ul style="list-style-type: none">• Change the plot mode to [STANDARD] or [FINE].• Change the pass. Four colors model: 720 x 720dpi, change the 4pass to the 8pass 360 x 540dpi, change the 6pass to the 12pass

3-4-9. Unstable heater temperature

Problems	The image quality is especially bad at the right end of a print.
Causes	1) The media temperature is low. 2) The platen temperature is lower at the right end than at the center.
Checking procedures	1-2) Place a thermal tape on the platen to check the temperature.
Remedies	1) Raise the heater temperature high within the allowable range. 2) Set the media at the center wherever possible.

3-4-10. Ink drop or mist

Problems	The ink drops in or outside a plot.
Causes	1) Threads from the edges of the media scrub the nozzle face and cause a discharge fault. 2) Dust is sticking to the nozzle face. 3) Threads are sticking to the media holder.
Checking procedures	1) Observe the head path carefully. 2) Check the nozzle face visually. 3) Check media holder visually.
Remedies	1) Remove threads. 2) Do not use media having many threads at the edges. Treat media in advance by cutting off threads with scissors. 3) Remove threads and other.

CHAPTER 4

ADJUSTMENT



Head arrangement for JV22 is in-lined 4 heads comparing with the JV4 staggered 6 heads. (The head structure is almost same as the JV3-160SP/250SP, except the JV22 is for the solvent use.)

The structures based on the JV3, and the parts materials are based on the JV4.

Note, the ASSY parts use JV22 exclusive / JV3 common / JV4 common, separately.



CAUTION

- Refer to the "MECHANICAL DRAWING" for disassembly drawings.
- The following parts are dedicated for water-based ink supply.
Do not use the solvent ink. Using solvent ink may result in dissolution or distortion.

1. Print head ASSY (M004372)
 - The HEAD ID is provided with alpha-numeral characters.
(The HEAD ID provided with "•••••" display is for a solvent use.)
2. Dumper ASSY (1035836)
 - The O ring inside the Dumper is black. (Common use for JV4)
3. Cap slider 4H 22ASSY (M005792)
Cap head ASSY (M005799)
 - The Connection tube to the pump is black.
4. Pump ASSY (M004868)
 - The Pump tube is white.
5. Cleaner head, ASP(Wiper) (1033209)
 - The Wiper is black. (Common use for JV4)
6. Cartridge flame ASSY
 - The O ring of the wire is black.
(Judgement from appearance is not possible.)
7. O ring at the ink supply joint
 - For Ø2 tube -Black (Common use for JV4)
 - For Ø3 tube -Black (Common use for JV4)

4-1. Maintenance Flow by Replacement Parts

When an important part is replaced, perform adjustment according to the Maintenance flow.

Important maintenance item for JV22

Replacement Item	Print head	Print Head	Cap slider ASSY	Dumper ASSY	Pump ASSY	Main PCB	X motor
Periodical replacement			O	O	O		
Pump ASSY					Replace		
Dumper ASSY				Replace			
X motor							Replace
Coupling							Adjust
Parameter :U-LODE						Execute	
Main PCB						Replace	
F/ W						Ver.up	
Parameter :D-LODE						Execute	
Cap slider			Replace				
Head BKT height							
Head unit	Replace						
Head		Replace					
Head unit base							
Station ASSY							
Capping position			Check				
Head ID	DL	Enter					
Fill up ink	Execute	Execute		Execute	Execute		
Nozzle check	Perform	Perform		Perform	Perform		
Head slant adjustment		Perform		Check			
PRINT ADJUST2	DL	Execute		Check			
Check method	Check with image	Check with image	Perform Cleaning or Filling for confirmation	Check discharge condition	Check discharge condition	Check operation of failed locations	Check with image

4-2. Maintenance item

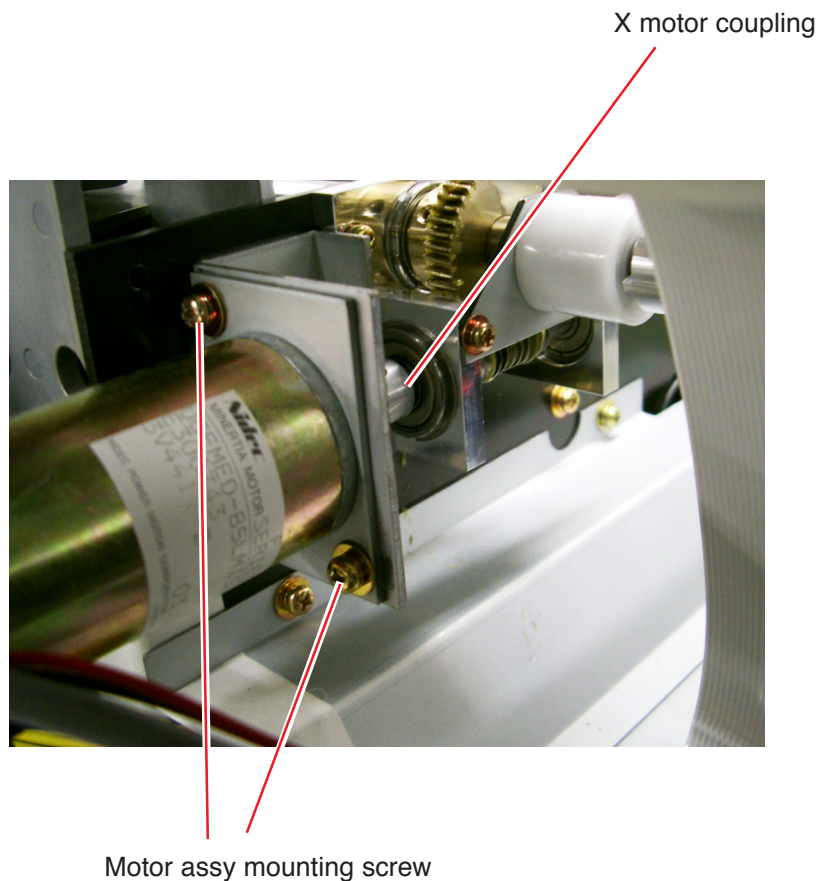
4-2-1. Adjustment of the X-motor coupling

[The case that needs adjustment]

- In the case where the X-motor is replaced.
- If abnormal sound is perceived from the X driving system.

[Adjusting procedure]

- 1) Loosen four mounting screws on the X-motor coupling.
- 2) Loosen two motor assy mounting screws so that the motor assy moves slightly.
- 3) Adjust the motor assy to the position where the coupling moves smoothly in the thrust direction and then fasten screws.



4-2-2. Replacement Print head unit

[Disassembling procedure]

1) Remove the front cover.

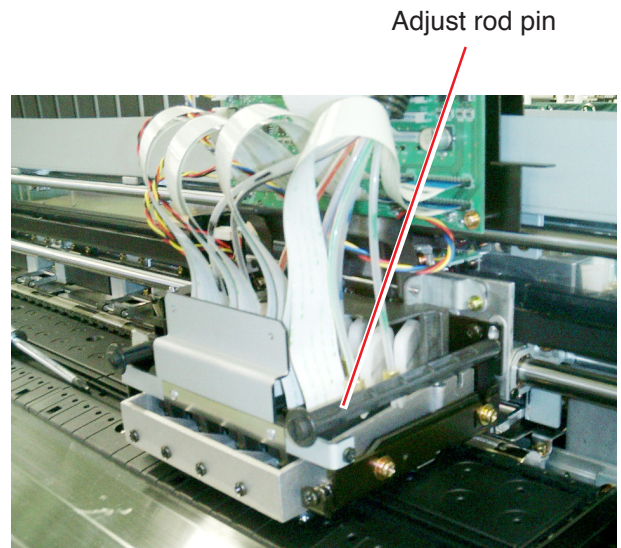


- Use a discarded media to put on between the platen and the head to prevent the device from stain.

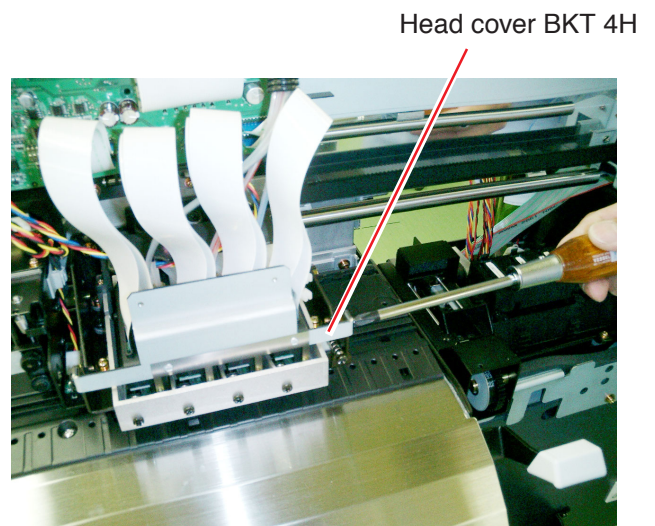
2) Move the head to the center of the platen.

3) Remove the head cover.

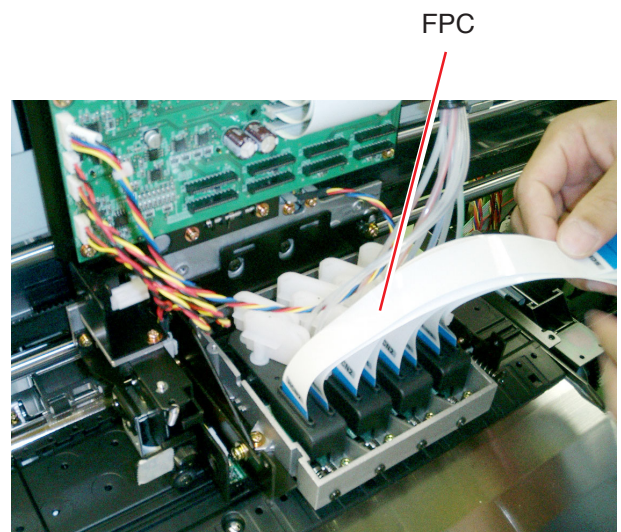
4) Pull out the adjust-rod-pin to remove.



5) Remove the head cover BKT 4H.



6) Remove the FPC from PCB.

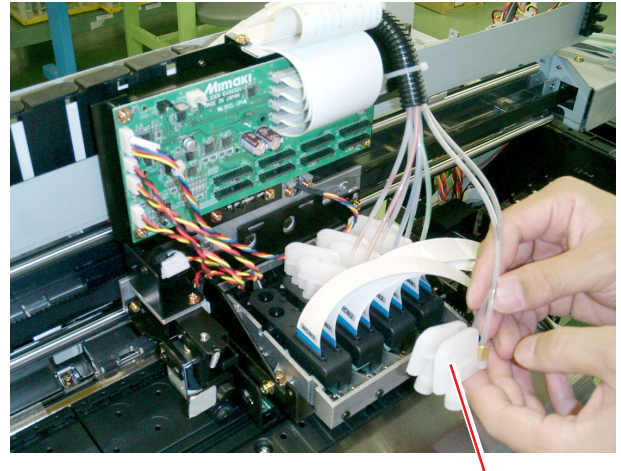


- 7) Pull the damper stopper to remove.
- 8) Remove the damper holder including the damper using the tool.



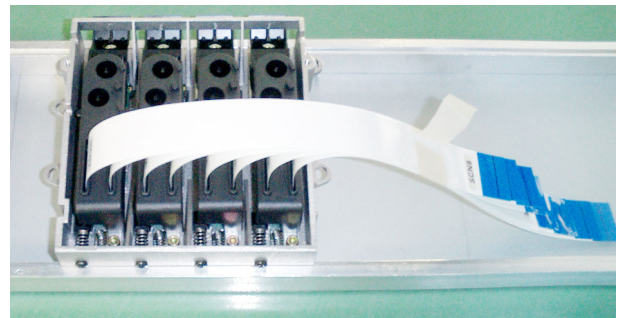
CAUTION

- Make sure to set the damper to the same position after performing an adjustment. (We recommend putting number on the removed damper to prevent from inserting a wrong damper.)
In case inserting a wrong damper, it results in inferior color quality.



Damper

- 9) Remove four mounting screws and a supporting point screw on the head unit base.
(Refer to page 4.11)
- 10) Remove the head unit.



- 11) Put the new head unit on the head unit adjust plate.
- 12) Fasten the removed screws temporally. (Fasten tightly the screw at the supporting point.)
- 13) Attach the head cover BKT 4H.
- 14) Insert an adjusting shim in-between the head BKT22 and the head unit base (adjustment point) to fasten tightly the unit fixing screws.
- 15) Attach the damper.



CAUTION

- Note to insert the correct damper.

- 16) Attach the damper stopper.
- 17) Insert the FPC into the base coupler.



CAUTION

- Note to insert the correct FPC.

- 18) Download parameters from the attached CD-ROM.
Refer to [5-6-2. DOWNLOAD] page 5.66.
- 19) Fill up the ink. Perform [FILL UP INK] in maintenance modo.
- 20) Check the normal discharge.
- 21) Set the media.
- 22) Select [#ADJUSTMENT - #HEAD ADJUST - #UNIT ADJUST] to print the adjustment pattern.
- 23) Compare the printed adjustment pattern and the supplied adjustment pattern (included with the unit). If there is more than 0.04 mm difference between the two patterns, loosen the mounting screws to adjust the unit tilt within 0.04 mm.
Refer to [4-2-5. Adjustment of the head unit] page 4.11.
- 24) Retighten the head adjust rod.
- 25) Attach the head cover.
- 26) Reposition the head to the station side.

4-2-3. Replacement Print head assy

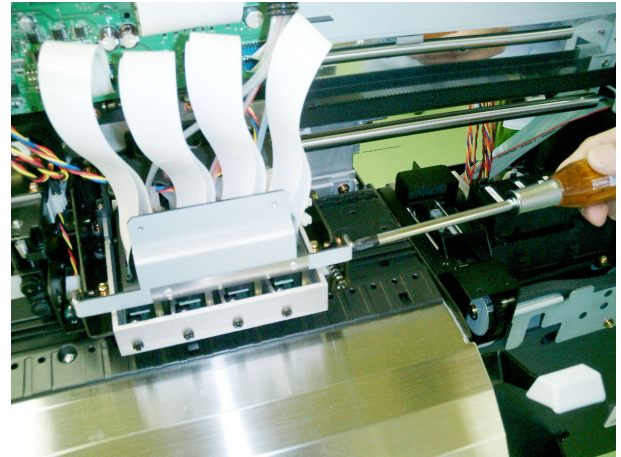
[Adjusting procedure]



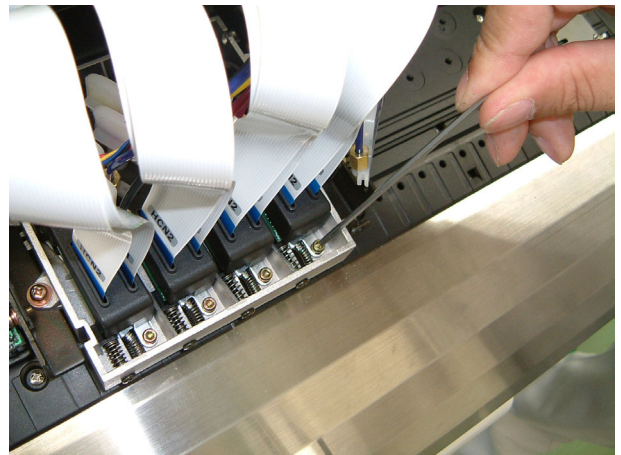
- At the time of disassembling and assembling, do not loosen four head unit base mounting screws unless the X position correction value exceeds ± 8 .

[Disassembling procedure]

- 1) Turn ON the power of the device and then enter the ID of the head in advance.
- 2) Turn OFF the power supply switch, move the slider to the center of the platen.
- 3) Remove the front cover, the head cover and the head cover BKT.
- 4) Remove the head lever assy and the damper holder.
- 5) Remove the damper assy of the print head assy to replace.



- 6) Remove the angle spring. Watch out for protrusion of springs.
- 7) Remove the screw (CS4 x 8SMW) from the print head assy to replace.
- 8) Pull out the print head assy together with the damper holder to remove the FPC.
- 9) Replace the print head assy.



- 10) Fill up the ink. Perform [FILL UP INK] in maintenance mode.
- 11) Check the normal discharge.
- 12) Perform [4-2-4. Adjustment of the head angle] and [PRINT ADJUST2].

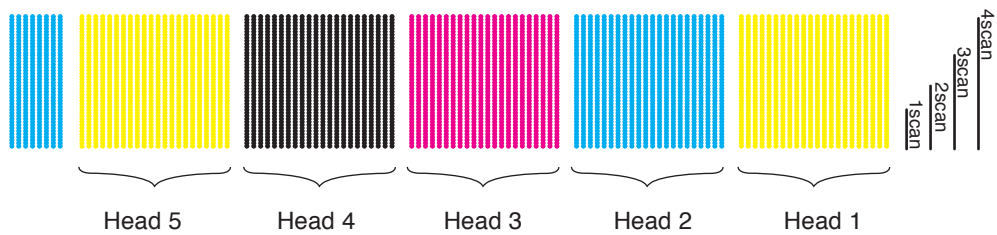
4-2-4. Adjustment of the head angle

[Adjusting procedure]



- Make adjustment with the head lowered to the bottom position.
- Adjustment with glossy media is recommended.
- Be sure to perform adjustment with the Head cover BKT attached.

- 1) Select [#ADJUSTMENT - HEAD ADJUST - SLANT adjust - 720 4PASS] and then print the adjustment pattern.

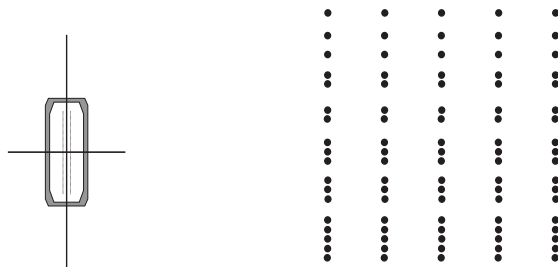


- 2) Check the head tilt with a magnifying glass.
- 3) Loosen two tilt mounting screws, and then turn the tilt adjustment screw according to the tilt direction. As a rough standard, the head tilts 50μm for each screw rotation.

The direction of turn the adjustment screw

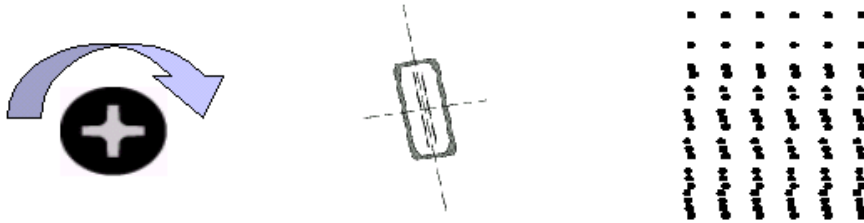
**Care is required when using a magnifying glass
because of horizontal and vertical inversion.**

- 1) Good result

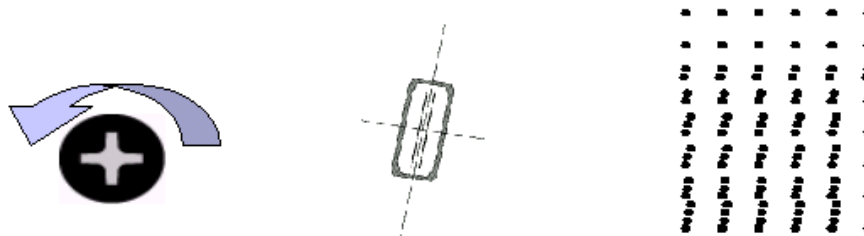


All dots are lined.

2) Bad result (Turn the screw clockwise.)



3) Bad result (Turn the screw counterclockwise.)



4-2-5. Adjustment of the head unit

[The case that needs adjustment]

- Perform this adjustment after replacement of each head and inclination adjustment, if the X dot position correction value exceeds ± 8 dot (rough standard). The purpose of this adjustment is to improve the 3/4 pass plotting quality.



- Make adjustment with the head lowered to the bottom position.
- Be sure to perform adjustment with the Head cover BKT attached.

[Adjusting procedure]

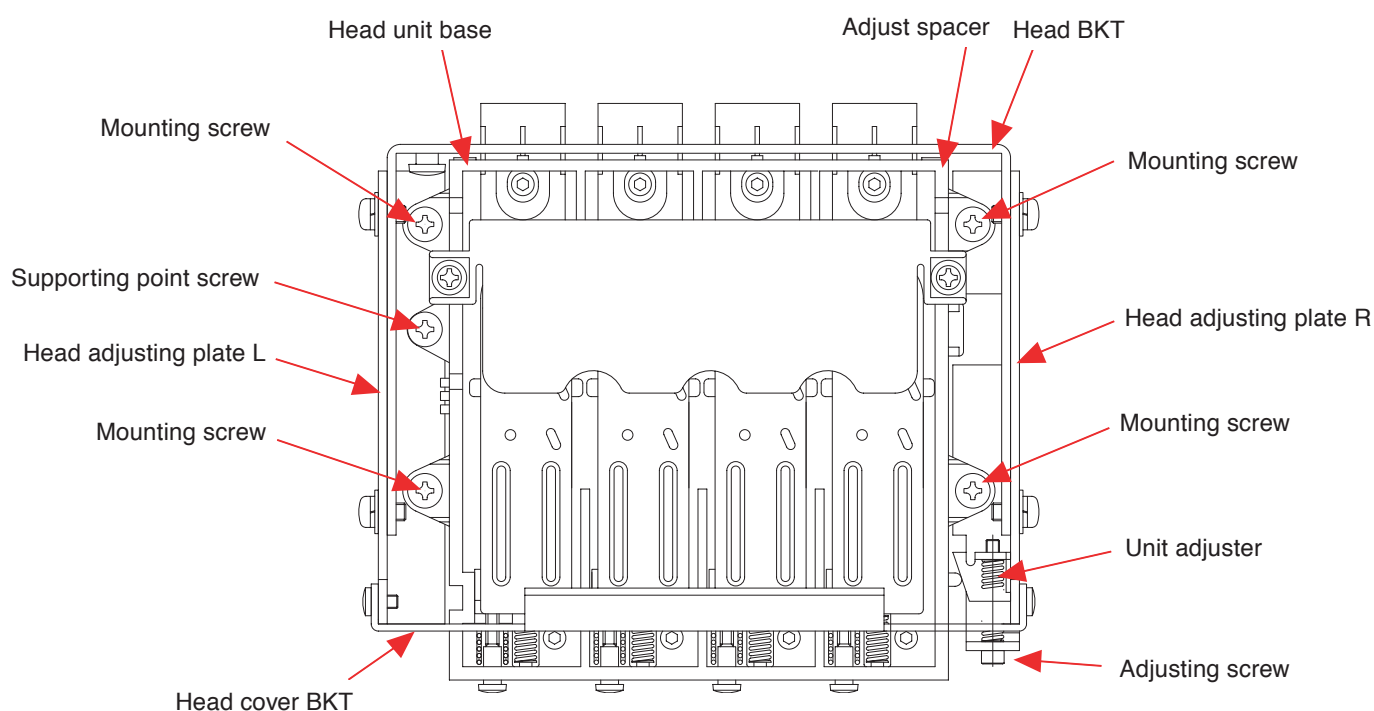
- 1) Remove two adjust-rod pins.
- 2) Loosen four head unit base mounting screws. Do not loosen the supporting point screws.
- 3) Insert a 1.2mm spacer between the unit base and the Head BKT and then, while lightly pressing it, fasten the mounting screws.

< If there is no spacer >

Use a unit adjuster instead of clamping the spacer. Since the unit adjuster is not used at the time of shipment, when using it, lightly apply the unit base adjuster before step 2).

If M (Lm) positions at the front, turn the adjustment screw counterclockwise; if M (Lm) positions at the back, turn it clockwise.)

- 4) Select [#ADJUSTMENT - #HEAD ADJUST - #UNIT] and then print the adjustment pattern.
- 5) Check the dot position of M (Lm) for Bk dots and then determine the rotational direction of the unit. If M (Lm) positions at the front, make the spacer thinner; if M (Lm) positions at the back, make it thicker.
- 6) Repeat steps 3) to 5) above so that the X dot position correction value is set to 0.28mm or less on M (Lm) in reference to Bk.



4-2-6. Replacement of pump assy and cap slider assy



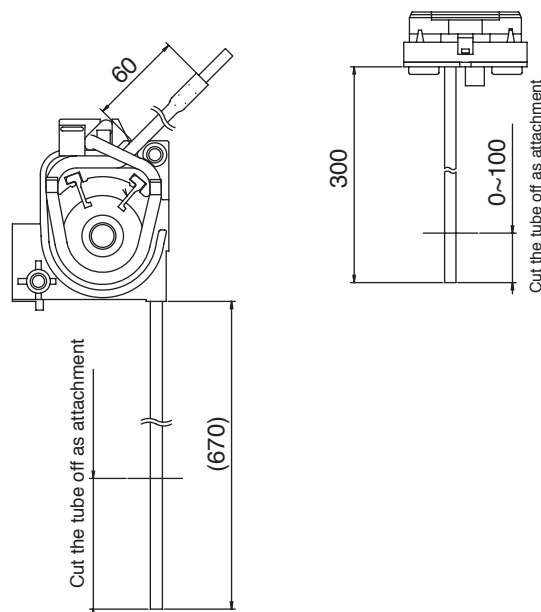
- Both parts are strongly recommended to replace at a time.

[Parts to be used]

- Cap head assy (JV22) (M005792) 4pcs
- Pump assy (M005145) 2pcs

[Adjusting procedure]

- 1) Remove electrical box cover CR at the back of the main unit.
- 2) Remove the station cover F22 160.
- 3) Remove the Pump guard fixing screws (3pcs) in the electrical box, and then pull it off.
- 4) Remove the connecting part of vacuum side tube of the pump.
- 5) Remove the Pump assy.
- 6) Attach the new Pump assy. (confirm the exhaust side is longer.)
- 7) Connect a tube to the connecting part.
- 8) Connect a tube to the exhaust side.
 - If a connecting tube is heavily bent, cut the tube off at the exhaust ink tank side.
Make sure to cut the tube with no effect on exhausting.
- 9) Remove the cap slider assy.
- 10) Remove the cap slider U from the Cap slider assy.
 - Be careful with the popping up of the cap SP from the device.
- 11) Attach the Cap assy to the Cap slider of Replacement Kit, and then attach the cap slider U.
 - Make sure to set the Cap SP on the level.
- 12) Attach the Cap slider to the main device.
- 13) Put the tube of cap slider assy into the electrical box.
- 14) Connect the cap for Bk/M to the upper pump. Connect the cap for C/Y to the lower pump.
 - Cut the cap side tube for Bk/M according to the each connection parts.



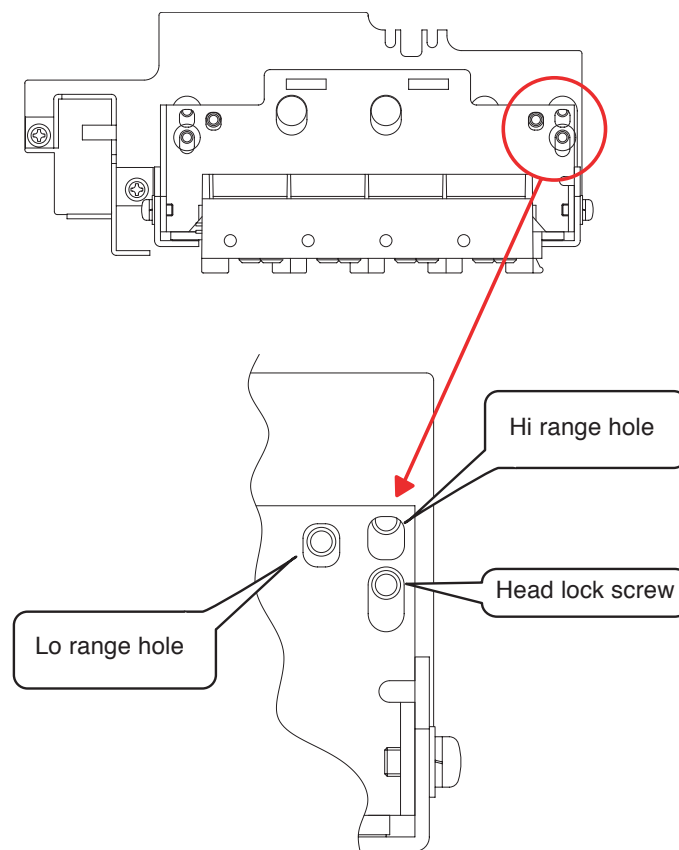
4-2-7. Changing the head height (High/Low range)

[The case that needs adjustment]

- When performing transfer print in the device installation.
 - When switching a print mode from normal print to transfer print (or the opposite).
- ! • Make sure to perform the following adjustments when adjusting the head height (Hi/Lo range).
- [Adjustment of the station height] P.4-14
 - [Adjustment of the head sensor height] P.4-19
- After adjusting head height, station height, and the head sensor height, make sure to set the [HEAD HEIGHT] to Hi or Lo range on the operation panel.
- [HEAD HEIGHT] P.5-19

[Adjusting procedure]

- 1) Loosen the cap screw fixing the head sensor on cutter BKT.
 - 2) Remove two set screws.
 - 3) Loosen the head lock screw.
 - 4) Screw the removed two set screws into Hi range holes (or Lo range holes).
 - 5) Attach the head rock screw as pushing the head upward with the head adjust lever.
 - 6) Attach the head sensor.
- Perform [Adjustment of head sensor height]. P.4-19
- 7) Perform [Adjustment of the station height]. P.4-14



4-2-8. Adjustment of the station height

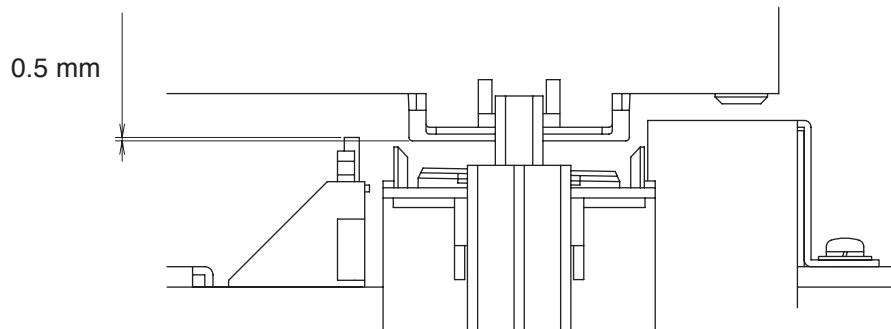
[The case that needs adjustment]

- If the amount of application of Wiper and Cap is not appropriate.
- When in need of repositioning the wiper or cap to the appropriate position.

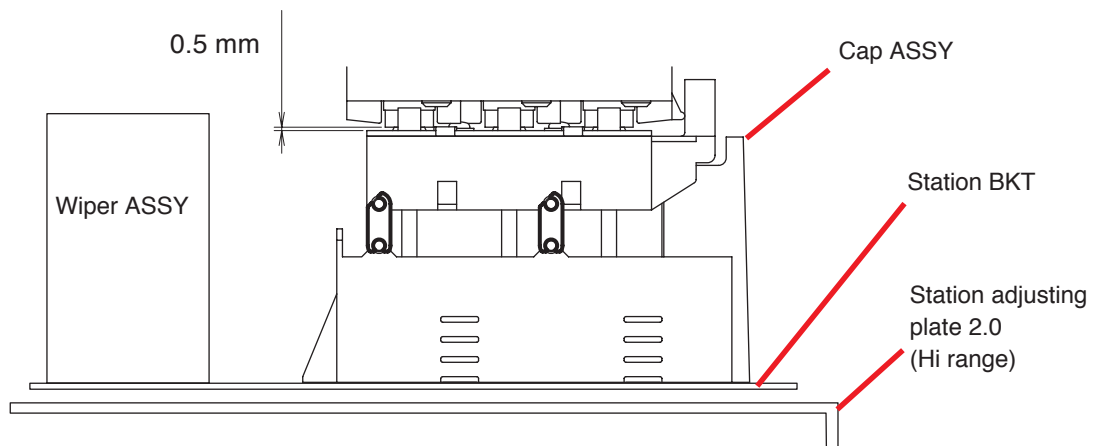
When adjusting the head height (Hi/Lo range), adjust the whole station height using the station height adjustment plate 2.0.



- No need for adjusting the station position back and forth and around. The fixed screws determine the position by itself.



Pertinent Wiper height
(measured and adjusted with the upper Head height)



Pertinent Cap height
(measured and adjusted with the upper Head height)



- Do not remove screws fixing Wiper ASSY and Cap ASSY on station BKT. Refer to the next page for the screws to be removed.

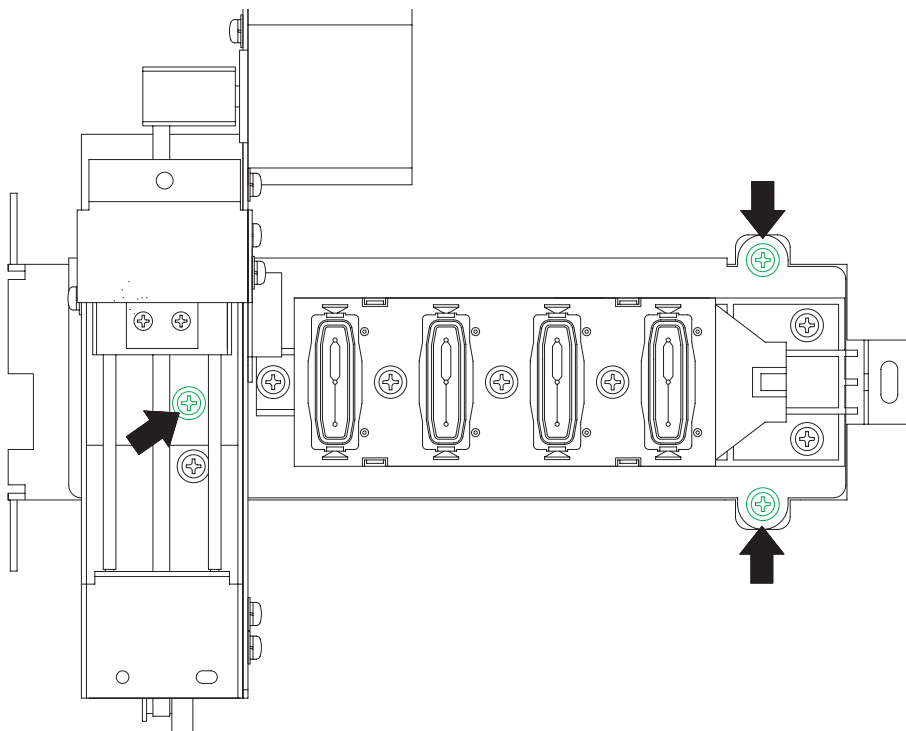
[Parts to be used]

- Station adjusting plate 2.0 (M505699)
- Cap adjusting plate 0.5 (M503950)
- Wiper adjusting plate 0.5 (M504051)

[Adjusting procedure]

- 1) Remove three screws pointed with arrows. (See a picture below.)
- 2) Set the Station adjusting plate 2.0.
- 3) Refix the removed three screws.

No need for adjusting the wiper and cap positions for the fixed screws determine the position by itself.



Screws to be removed when setting a spacer on the station

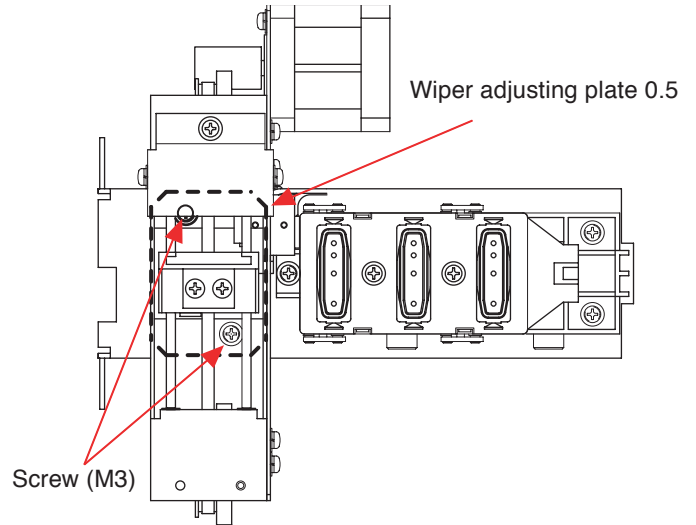
When the device is ready to ship, no need for the adjustment described on this page.
However, when it need of adjusting the wiper of cap unit for some reason, refer to the procedure below.

[Adjusting procedure]

Wiper height

- 1) Select the Upper Head height.
- 2) Remove two M3 screws to remove the wiper assy.
- 3) Adjust the number of wiper adjusting plate 0.5 ($t=0.5$) under the wiper assy.
- 4) Attach the wiper assy and then make sure that the gap between the head and the wiper is about 0.5 mm.

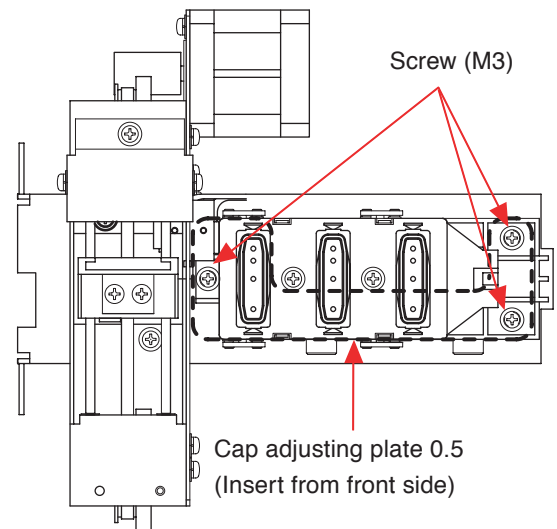
- * At the time of shipment, one Wiper adjusting plate 0.5 is attached.
- * Use the station height adjustment plate 2.0 when the head height is set to Hi range.



Cap height

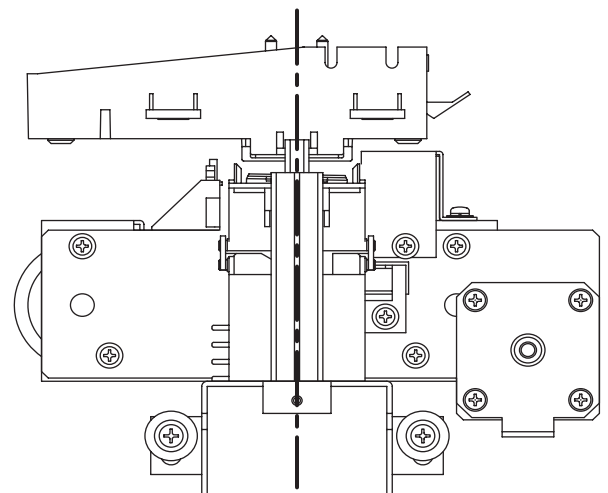
- 1) Select the Lower Head height.
- 2) Remove three M3 screws to remove the cap base assy.
- 3) Adjust the number of cap adjusting plate 0.5 ($t=0.5$) under the cap base assy.
- 4) Attach the cap base assy and then make sure that the gap between the head and the cap housing is about 0.5 mm.

- * At the time of shipment, one Wiper adjusting plate 0.5 is attached.
- * Use the station height adjustment plate 2.0 when the head height is set to Hi range.



Cap side position

- 1) Remove the right cover (molded products only).
- 2) Loosen three M3 screws which secure the cap base.
- 3) While visually checking from the right side, secure the cap base at the position where the head is stored between cap guide notches.



When the device is ready to ship, no need for the adjustment described on this page.
However, when it need of adjusting the wiper of cap unit for some reason, refer to the procedure below.

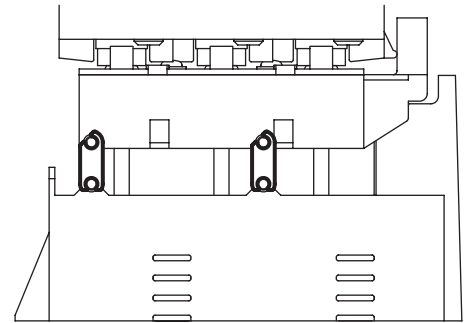
[Disassembling procedure]

Refer to [5-3-6. CAPPING] (P.5-18).

- 1) Select the Lower Head height.

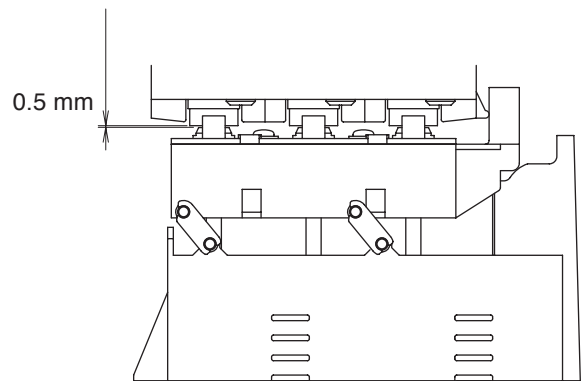
- 2) Adjust the cap position.

Press the ◀ or ▶ key to move the position so that the Cap lever becomes vertical.



- 3) Adjust the absorb position.

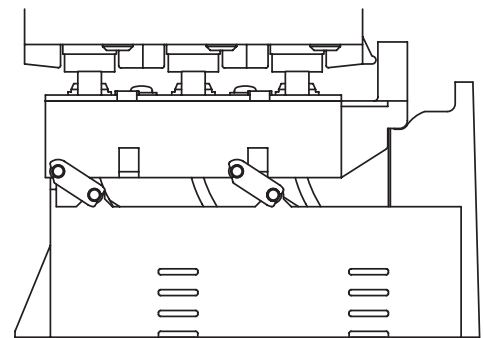
Press the ◀ or ▶ key to move the position so that the gap between the head and the cap becomes 0.5 mm.



- Adjust the position so that the gap on the front side of the cap becomes 0.5 mm.
- The cap is designed so that it is inclined. (The back side is about 0.5 mm lower than the front side.)

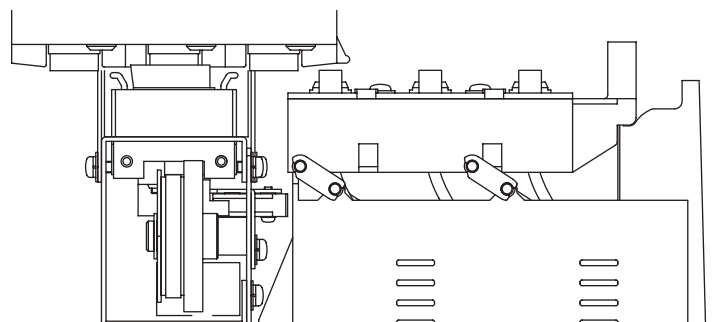
- 4) Adjust the Flashing position.

Move the flashing so that the center of the cap agrees with the center of the head, using the ◀ or ▶ key.



- 5) Adjust the Wiper position.

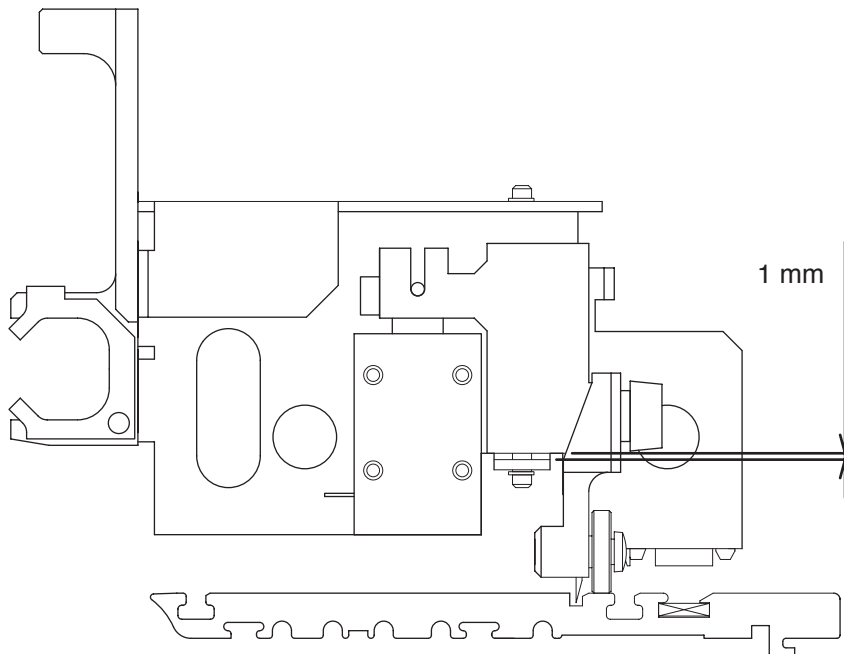
Move the wiper so that the center of the wiper agrees with the center of the head, using the ◀ or ▶ key.



4-2-9. Adjustment of the cutter height

[Adjusting procedure]

- 1) Turn off the power of the device.
- 2) Move the head on the platen, remove the head cover.
- 3) Remove the head sensor on the cutter BKT.
- 4) Loosen two cutter BKT mounting screws until they are temporarily fastened.
- 5) When putting a cutter edge on to a platen, fix the cutter BKT until the gap in-between the BKT and the cutter holder is 1 mm.
- 6) Attach the head sensor. (Refer to page 4.16)



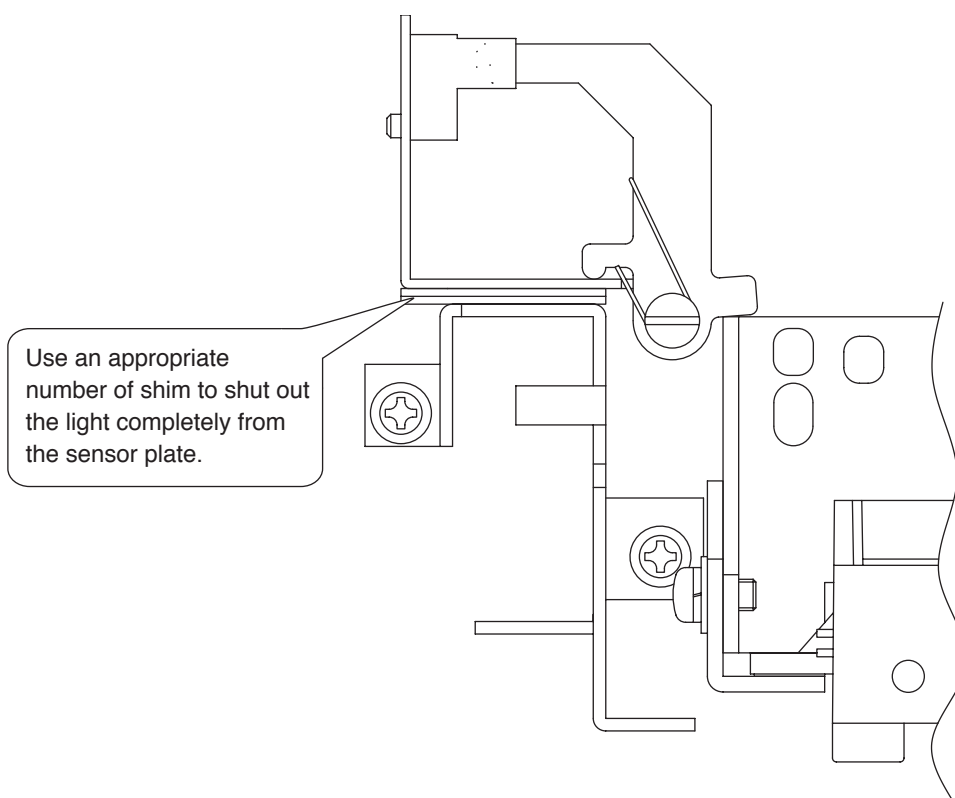
4-2-10. Adjustment of the Head sensor height

[The case that needs adjustment]

- When changing the head height between Hi and Lo range
 - When adjusting the cutter height
- !
- Make sure to adjust the head sensor height as pushing the head upward with the head adjust lever.
 - Before adjust the head sensor height, first complete the head height adjustment (Hi / Lo range) and the station adjustment.

[Adjusting procedure]

- 1) Loosen the screws fixing the head sensor.
- 2) Use an appropriate number of head sensor adjusting shin as the picture below.
- 3) Fix a head sensor.
- 4) Up and down the head to confirm the sensor plate operates securely.



- !
- After adjusting head height, station height, and the head sensor height, make sure to set the [HEAD HEIGHT] to Hi or Lo range on the operation panel.
[HEAD HEIGHT] P.5-19

4-2-11. Adjustment of the Linear sensor PCB assy height

[The case that needs adjustment]

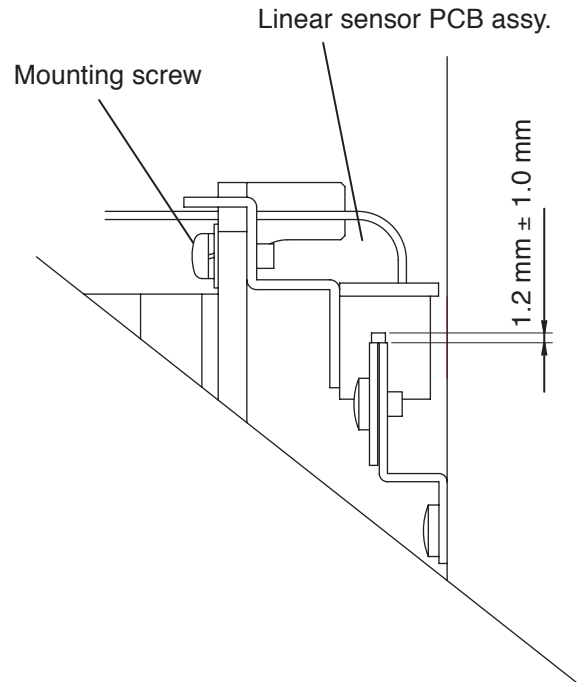
- In the case where the Linear sensor PCB assy has been replaced.
- In the case where the Linear encoder scale has been replaced.

[Tools to be used]

- Phillips screwdriver
(No.2 for M3 to M5)

[Adjusting procedure]

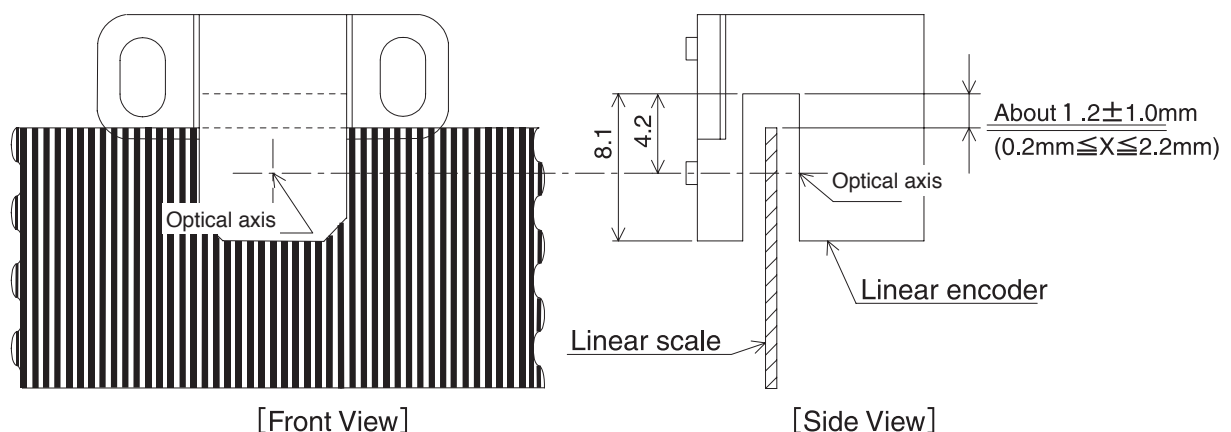
- 1) Loosen the screws in the Linear sensor PCB assy on the slider.
- 2) Within the movable range of the slider, move the assy up and down so that the gap between the linear encoder scale and linear sensor PCB is about $1.2 \text{ mm} \pm 1.0 \text{ mm}$.



< Mounting position of the linear encoder PCB >

Attach the linear encoder PCB assy so that the mounting position (overlapping condition to the linear scale) satisfies the following rough standard over the entire scale. Also check 1) and 2) below.

- 1) The following overlapping condition is met at the right, center, and left of the device.
- 2) The linear scale is positioned approximately at the center of the sensor's recessed section but does not contact the wall.



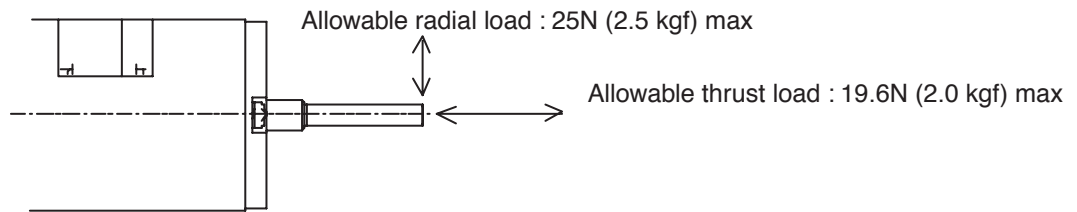
4-2-12. Adjustment of the Y-motor belt tension



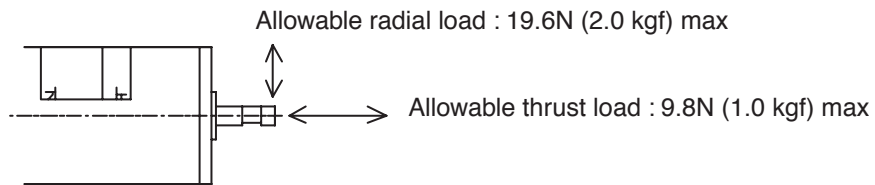
- Notes on Handling the Motor

1. When handling the motor, set the load on the motor shaft as shown below.

Do not give a shock to the motor by hitting.



Y axis motor (UGFMED—C9M * * *)



X axis motor (UGFMED—B5L * * *)

2. When replacing the motor, the bearing may happen to stick to the motor shaft. If this occurs, extract the bearing with the pulley as a fulcrum.

If the motor itself is used as a fulcrum for extracting the bearing, an excess thrust load may damage the motor.

[The case that needs adjustment]

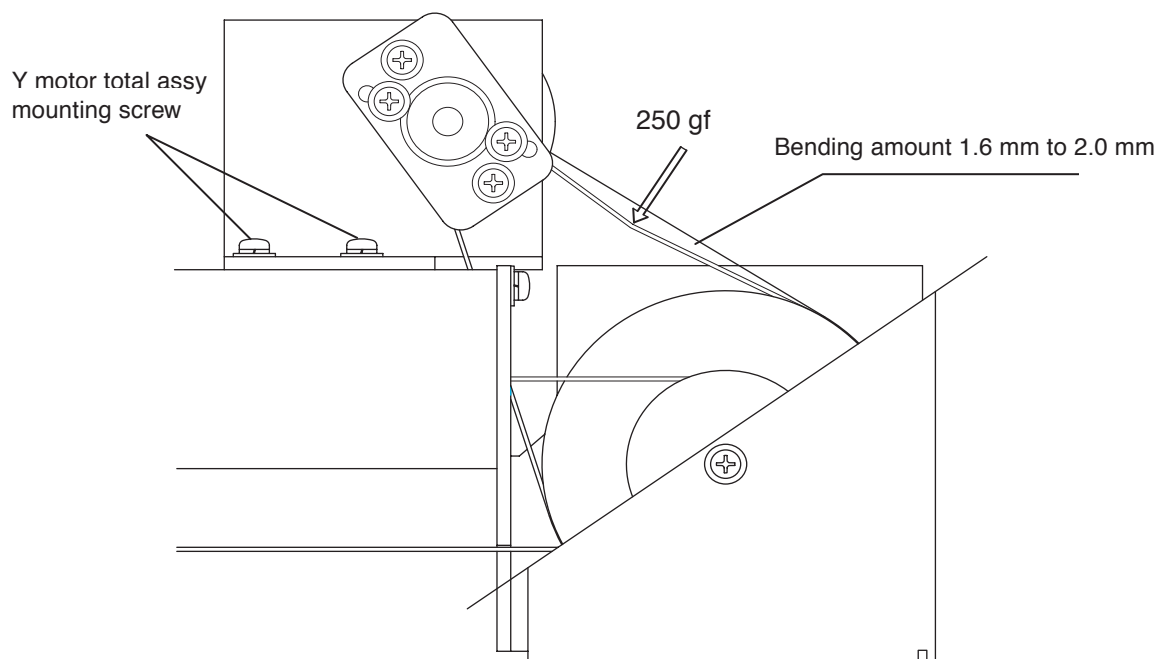
- In the case where the Y-motor total assy is removed.

[Tools to be used]

- Phillips screwdriver (No.2 for M3 to M5)
- Tension gauge (Max. 300 gf or more)
- Scale (L=150)

[Adjusting procedure]

- 1) Loosen the screw in the Y-motor total assy.
- 2) Adjust the Y motor total assy position so that when the middle of the timing belt is pressed down with 250 gf, it bends between 1.6 mm and 2.0 mm, then fix in the place.



CHAPTER 5

MAINTENANCE MODE

5-1. Maintenance items

The maintenance mode has been prepared for the operations to be conducted for adjustment at the time of delivery of product and for adjustment in maintenance works. This mode is not released to general users.

Under the maintenance mode, “#ADJUST” items, “#TEST” items and “#PARAMETER” items are included in functions.

#ADJUST

PRINTadjust2	Correct the dot shot timing of each head.
HEAD ADJUST	Adjust the position displacement mechanically for each head.
WASH	Clean the head.
REPLACE COUNTER	The number of times of replacing ink cartridges is confirmed.
DEFAULT SET	Various parameters are reset to the value at the time of delivery from the factory.
CAPPING	Adjust the capping position.
INK SETUP	Change the mounted ink type.
HEAD HEIGHT	Adjust the head height.
HEAD ID	Enter the ID for each head.
MTR. Current	Correct the read-out current value for each X and Y motor.
SERIAL No.....	Enter a serial number.
Dealer No	Enter a dealer number.
WORM WHEEL	Perform eccentric correction of worm gears.
ADJUST EDGE	Adjust the dead space sizes (Right and Left).
500mm SQUARE	Adjust the distance accuracy.
SET QUALITY	Set the operation mode for plot quality.
MEDIA COMP2	Correct the amount of media feed.

#TEST

CHECK PATTERN	Plot the nozzle check/density pattern.
PARAMETER DRAW	Plot the contents of the flash memory.
ALL PATTERN	Collectively plot the adjustment condition check pattern for head or dot position.
X SERVO	X-motor aging is carried out.
Y SERVO	Y-motor aging is carried out.
XY SERVO	XY-motor aging is carried out.
ACTION TEST	Performance of the wiper, cutter and winding motor is checked.
SENSOR TEST	Performance of various sensors is checked.
PAPER SENSOR	Read-out value of the paper width sensor is checked.
KEYBOARD	Check the state of the keyboard.
LCD TEST	Check the LCD display condition.
PUMP MOTOR	Check the performance of the pump motor.
TIMER CHECK	Check the performance of the timer under the power-off state.
MEMORY CHECK	Memory check is carried out.
SKEW CHECK	Check the amount of paper shift.
ENCODER CHECK	Check the Linear Scale and Linear Sensor if they perform correctly.

#PARAMETER

SYSTEM PRM	Specifies a system parameter.
INK PARAMETER1	This is not used in the field.
INK PARAMETER2	This is not used in the field.
INK PARAMETER3	This is not used in the field.
INK PARAMETER4	This is not used in the field.
INK PARAMETER5	This is not used in the field.
MENT PARAMETER	This is not used in the field.
SERVO PARAMETER	This is not used in the field.
CUSTOM PARAMETER	This is not used in the field.
ADJUST PARAMETER	This is not used in the field.

5-2. Entering into the maintenance mode

The maintenance mode is entitled in two different methods.

5-2-1. Entering into the maintenance mode when actuating the plotter

This section explains how to enter into the maintenance mode when turning on the power to the plotter. The maintenance mode is closed by re-turning the power on.

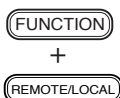
< Method 1 >

1)

BOOT

↓

V * . * *



Turn the power on. When the firmware version number is shown on the LCD, press the (REMOTE/LOCAL) key while pressing the (FUNCTION) key.



CAUTION

- If simultaneously pressing the (FUNCTION) key and (REMOTE/LOCAL) key, the plotter may enter into the firmware updating mode, then returning the power in this case.



CAUTION

- Do not turn off the main power during displaying Firmware version number, or It may cause crashing of the program in the Flash memory.

2)

MEDIA SELECT

ROLL < > LEAF

Select the detection of media using the < key, > key or (END) key.

3)

< LOCAL >

width : * * * * mm

FUNCTION

SET UP < ENT >

FUNCTION

MAINTENANCE < ENT >

After the detection of media, the plotter will enter the LOCAL mode.

4)

FUNCTION

DISPLAY < ENT >

↓

FUNCTION

ADJUST < ENT >

FUNCTION

TEST < ENT >

Press the (FUNCTION) key in repetition, and the maintenance items will appear on the LCD.

The item name attached with a number sign (#) are the maintenance items.

5-2-2. Entering into the maintenance mode by system parameters

It is possible to keep the maintenance mode held released at all times by changing the value for the system parameter No. 62 (SUPPORT).



- Upon completion of maintenance works, set the value for the system parameter No. 62 (SUPPORT) to “0(zero)” or “1” to close the maintenance mode.

< Method 1 >

- 1)

BOOT

↓

V * . * *

↓

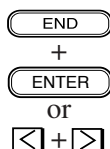
#SYSTEM PARAMETER
0 = 0 COMP. X
- 2)



#SYSTEM PARAMETER
62 = 0 SUPPORT
- 3)



#SYSTEM PARAMETER
62 = 0 0
- 4)



#SYSTEM PARAMETER
62 = 0 2
- 5)

#SYSTEM PARAMETER
62 = 2 SUPPORT



Turn the power on. When the firmware version number is shown on the LCD, simultaneously press the  key and the  key.

Or, simultaneously press the  key and  key.

Press the  key or  key to call up “No. 62 SUPPORT” on the screen.

Press the  key to enter the input mode.

Press the  key or  key to input “2” or “3”.

0, 1: Maintenance mode is disabled.

2: Maintenance mode is enabled.

3: Maintenance mode is enabled and the indications on the LCD are all given in English.

Press the  key to store the entered value.

After completion of the initial operation, this releases the maintenance mode.

5-3. Menu of #ADJUST

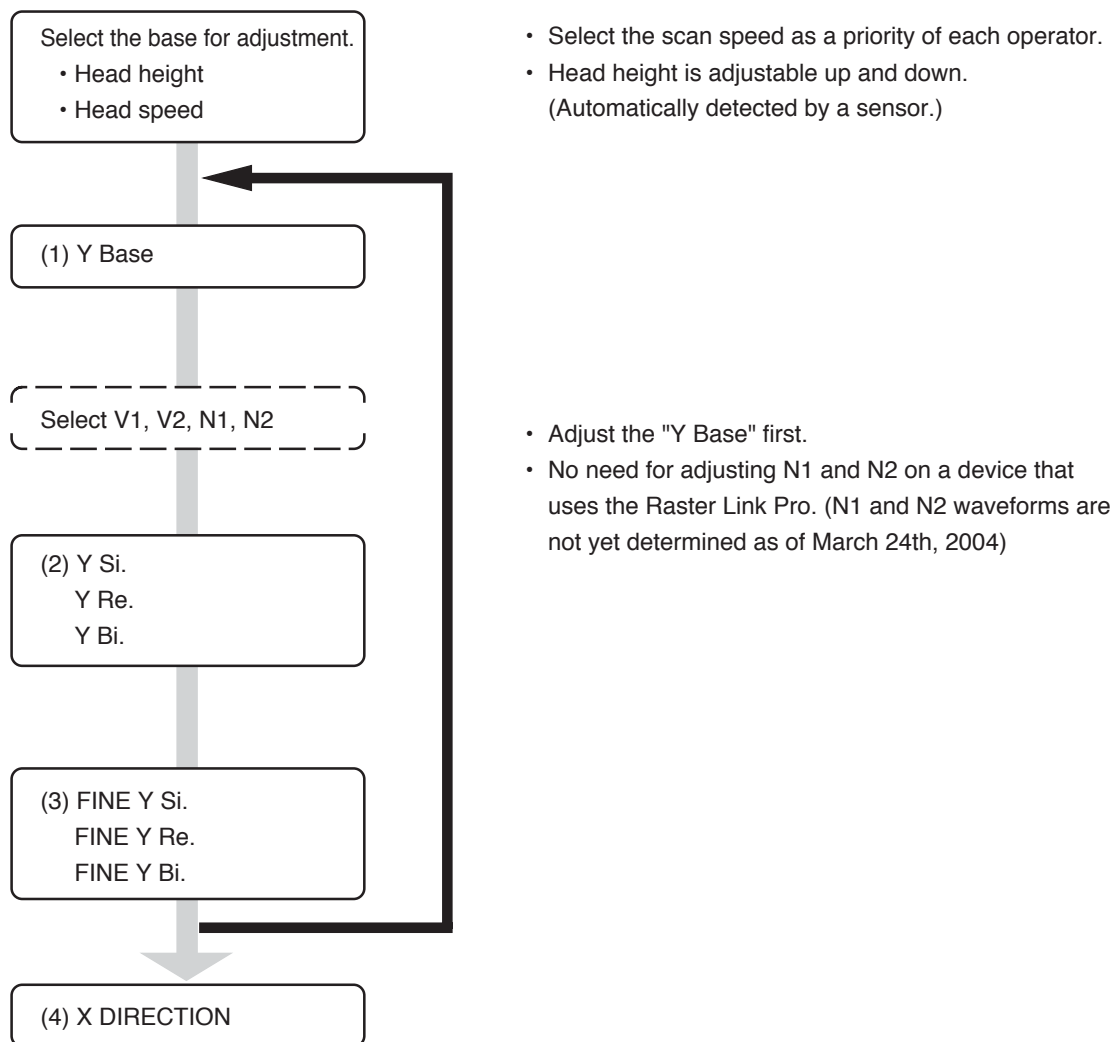
5-3-1. PRINTadjust2

This function is used for PRINT adjust for each nozzle.

In case of adjust is required, refer to the followings.

- In case of changing print heads
- In case installation of heads are changing for paper jammed

[Adjusting Flow]



FUNCTION
#ADJUST <ENT>

#ADJUST
PRN.adjust2 <ent>

#PRN.adjust2 MODE
SEL : Thin / HiSPD

4

#PRN.adjust2 LH
SEL : X DIRECTION

Adjustment
Pattern Print

#PRN.adjust2 LH
X DIR H1-2 : 0.0

[H1-2, H1-3, H1-4
Input value : -50 to 50 (1 dot unit)]

1

#PRN.adjust2 LH
SEL : Y Base

Adjustment
Pattern Print

#PRN.adjust2 LH
Y Base C1-2 : 0.0

[C1-2, C1-3, C1-4, C1-5, C1-6, (C1-7), (C1-8)
Input value : -50 to 50 (0.1 dot unit)]

2

#PRN.adjust2 LH
SEL : Variable-1

[Variable-2, Normal-1, Normal-2]

#PRN.adjust2 LHV1
Adjust : Y Si.

Adjustment
Pattern Print

#PRN.adjust2 LHV1
Y Si H1-2 : 0.0

[H1-2, H1-3, (H1-4)
Input value : -50 to 50 (1 dot unit)]

2

#PRN.adjust2 LHV1
Adjust : Y Re.

Adjustment
Pattern Print

#PRN.adjust2 LHV1
Y Re H1-2 : 0.0

[H1-2, H1-3, (H1-4)
Input value : -50 to 50 (1 dot unit)]

2

#PRN.adjust2 LHV1
Adjust : Y Bi.

Adjustment
Pattern Print

#PRN.adjust2 LHV1
Y Bi H1-1 : 0.0

[Input value : -50 to 50 (0.1 dot unit)]

3

#PRN.adjust2 LHV1
Adjust : FINE Y Si.

Adjustment
Pattern Print

#PRN.adjust2 LHV1
Y Si C1-2 : 0.0

[C1-2, C1-3, C1-4, C1-5, C1-6, (C1-7), (C1-8)
Input value : -50 to 50 (0.1 dot unit)]

3

#PRN.adjust2 LHV1
Adjust : FINE Y Re.

Adjustment
Pattern Print

#PRN.adjust2 LHV1
Y Re C1-2 : 0.0

[C1-2, C1-3, C1-4, C1-5, C1-6, (C1-7), (C1-8)
Input value : -50 to 50 (0.1 dot unit)]

3

#PRN.adjust2 LH
Adjust : FINE Y Bi.

Adjustment
Pattern Print

#PRN.adjust2 LHV1
Y Bi C1-1 : 0.0

[Input value : -50 to 50 (0.1 dot unit)]

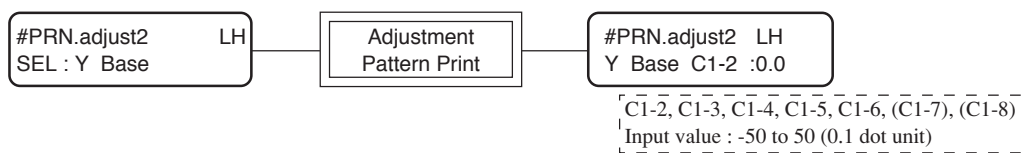
The mark LS, LH, HS, HH mean
each status of Head height position
ane Head speed.

LS : Thin / Standard
LH : Thin / Highspeed
HS : Thick / Standard
HH : Thick /Highspeed

Caution

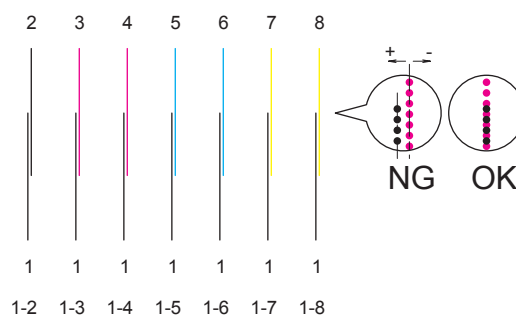
- Select the base for adjustment of the scan speed as a priority of each operator.
- There is no selection during operation for the Head height is automatically detected. Normally, adjust the head height in a [THIN] mode.
- In case LH (Thin/High speed) changes to others and execute PRINT ADJUST2, adjustment values (Parameter) will be saved into main board instead of previous values.
- Adjust the "Y Base" first.
In case "FINE" adjustment (Y Single, Y Repeat, Y Bi) is done before Y Base adjustment, result of Y Base is not applied and calculation will be missed inside of program. Therefore as a result of the case, PRINT ADJUST2 will be missed and result of print position must be wrong.
That means "Y Base" should be done before FINE adjustment.
- Execute "FINE" adjustment each Y Single, Y Repeat, Y Bi manually for Variable1, Variable2, Normal1, Normal2, that means "BASIS SET" is not available for above adjustment. In case "BASIS SET" is used, PRINT ADJUST2 will not be completed perfectly.
However, no need for adjusting N1 and N2 on a device that uses the Raster Link Pro. (N1 and N2 waveforms are not yet determined as of March 24th, 2004.)
- Print adjust value of "MAINTENANCE" is zero-cleared.
In case of printing Bi-directional, implement adjusts again.

1. Y Base

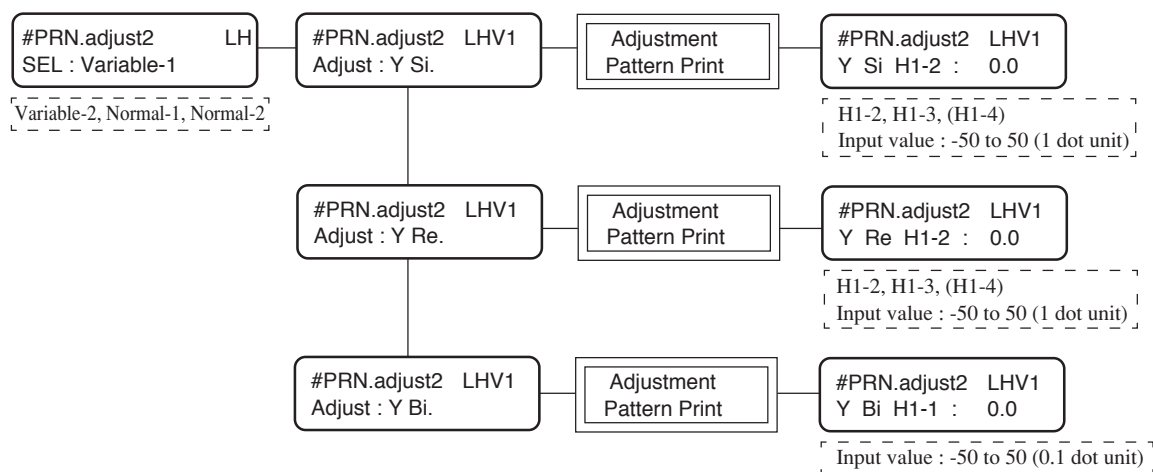


- Input the value with key, and set it with key.
All colors (not including black) are adjusted to overlap straight on Head No.1 (Black) as standard.
Set all adjustment value from between 1-2 and 1-8.
- Print adjustment pattern again, and confirm each colors are overlapped straight on black as standard.
In case not overlapped, return to step1, and implement adjust again.

Print sample



2. Y Single (Y Repeat, Y Bi-Directional)



1. Input the value with key, and set it with key.

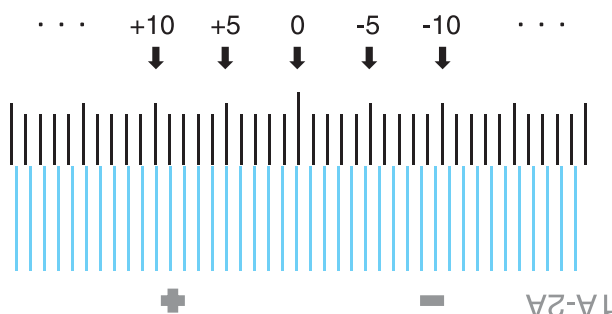
Input the value matched the end of the upper section and the lower section of plotted drawing.

Set all adjustment value from between 1-2 and 1-4.

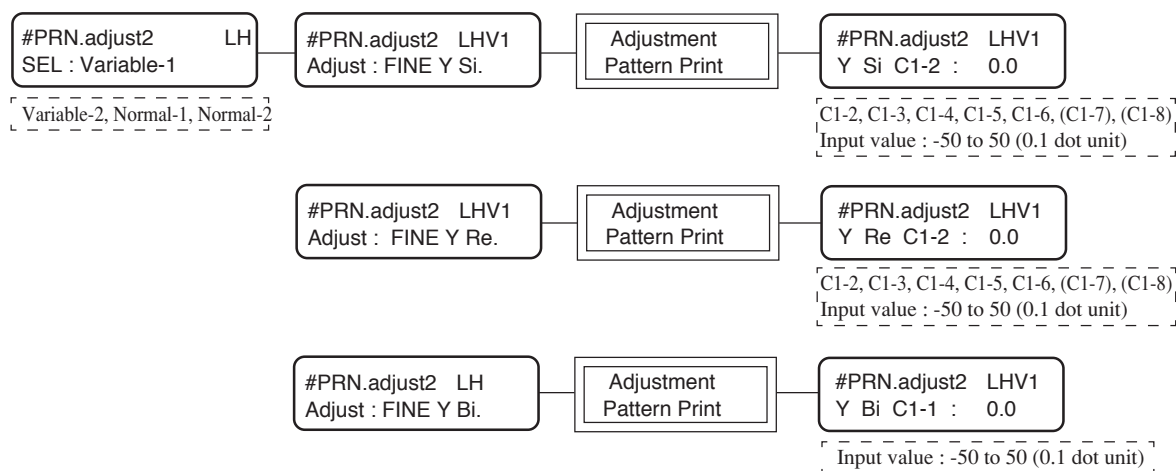
- * Only adjust each head of "a" line (left nozzle line) for "Y Single" and "Y Bi".
- * This adjust is only for "a" line. "b" line (right nozzle line) is also added for new adjust.
- * The fine adjust for all the nozzles is implemented with "FINE Y Si.", "FINE Y Re.", and "FINE Y Bi.".

2. Set the adjust value same as Step1 for "Y Re" and "Y Bi".
(Adjust only black for "Y Bi.")

Print sample

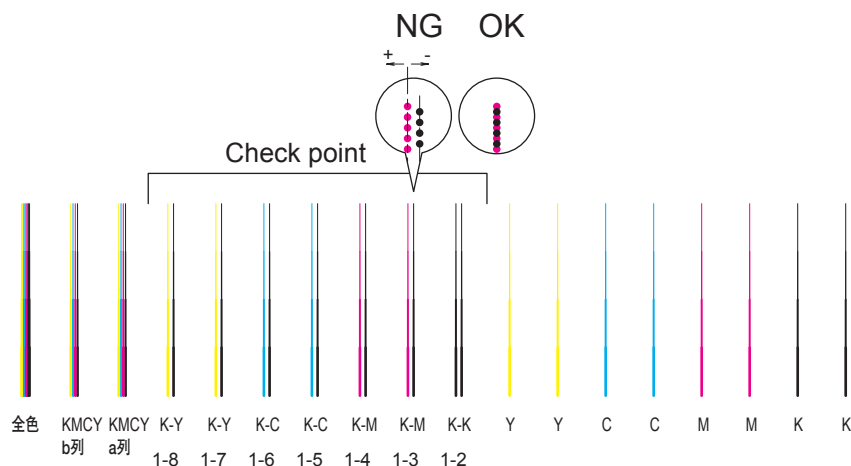


3. FINE Y Si. (FINE Y Re., FINE Y Bi.)

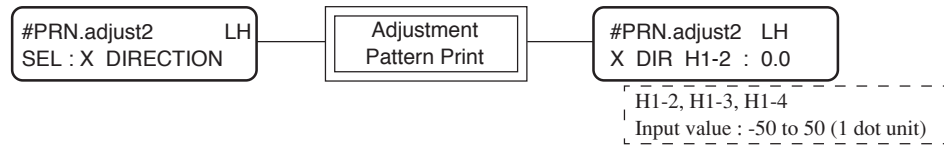


- Input the value with key, and set it with key.
All colors (not including black) are adjusted to overlap straight on Head No.1 (Black) as standard.
Set all adjustment value from between 1-2 and 1-8.
- Print adjustment pattern again, and confirm each colors are overlapped straight on black as standard.
In case not overlapped, return to step1, and implement adjust again.
- Set adjustment value same as above-mentioned for "FINE Y Re." and "FINE Y Bi.".
(Adjust only black for "FINE Y Bi.")
- Adjust at all each printing mode V1, V2, N1, N2.
* In case "BASIS SET" is used, [PRINT ADJUST2] will not be completed perfectly.
* No need for adjusting N1 and N2 on a device that uses the Raster Link Pro.

Print sample (4 color set)



4. X DIRECTION



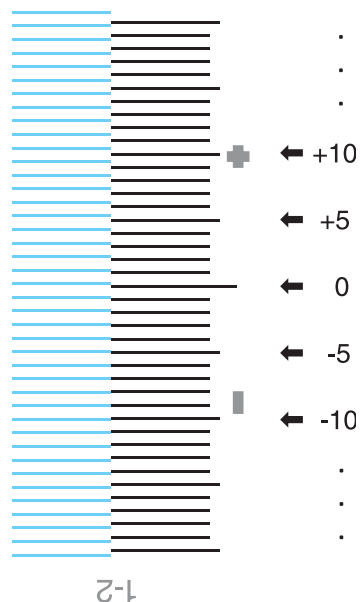
1. Input the value with key, and set it with key.

Input the value matched the end of the upper section and the lower section of plotted drawing.

Set all adjustment value of head from between 1-2 and 1-4.

- * In case the adjustment value is more than 5 dots, confirm the below and implement this adjustment again.
 - Media adjust
 - Head unit adjust
- * Adjust only head of "a" line (left nozzle line) for "X DIRECTION".

Print sample



5-3-2. HEAD ADJUST

[Function]

Plots a pattern for mechanical adjustment of position shift of each head.

[Operation]

1)

FUNCTION
ADJUST < ENT >

Select the ADJUSTMENT.

Press the **ENTER** key.

2)

ADJUST
HEAD ADJUST < ent >

Press the **FUNCTION** key to select the “HEAD ADJUST”.

Press the **ENTER** key.

3)

#ADJUST
SLANT adjust < ent >

Select the adjustment item using the **△** or **▽** key.

#HEAD ADJUST
UNIT ADJUST < ent >

If “SLANT adjust” has been selected)

1)

#ADJUST
TYPE : 720 4pass

Select the print-type (720, 4pass / 360, 2pass) using the **△** or **▽** key.

Press the **△** or **▽** key to change the position (only X position) to plot.

2)

#ADJUST
PRINT START : ent

Press the **ENTER** key to start drawing.

If “UNIT ADJUST” has been selected)

#ADJUST
PRINT START : ent

Press the **ENTER** key to start drawing.

5-3-3. WASH

[Function]

The ink that has been filled is ejected, and the tube, damper and head are cleaned with a washing fluid. This process is normally carried out prior to shipment from the factory

[Operation]

1)

FUNCTION
ADJUST < ENT >

Select the ADJUSTMENT.

Press the

ENTER

 key.

2)

ADJUST
WASH < ent >

**Press the

FUNCTION

 key to select the “WASH.”**

**Press the

ENTER

 key.**

3)

WASH
REMOVE CARTRIDGE

Detach the ink cartridge.

The ink that has been filled is ejected to the waste ink tank.

4)

WASH
SET CLEAN TOOL

When the display shown at left appears, set the cleaning tool.

Cleaning fluid is suctioned up.

5)

WASH
REMOVE TOOL

When the display shown at left appears, remove the cleaning tool.

Suck in air.

6)

WASH
SET CLEAN TOOL

When the display shown at left appears, set the cleaning tool.

Cleaning fluid is suctioned up.

7)

WASH
REMOVE CARTRIDGE

When the display shown at left appears, remove the cleaning tool.

The waste ink tank discharges the cleaning fluid sucked.

8)

WIPER CLEANING
COMPLETED : ent

**When the display shown at left appears, cleaning the wiper and click the

ENTER

 key.**

9)

WASH
END < > CONTINUE

Select whether cleaning is to be continued.

To end cleaning, press the

◀

 key.

10)

WASH
SET TRANS TOOL

When the display shown at left appears, set the cleaning tool.

Suck in the transportation fluid.

11)

WASH
REMOVE TOOL

When the display shown at left appears, remove the cleaning tool.

The waste ink tank discharges the transportation fluid sucked.

12)

ADJUST
WASH < ent >

When all steps have been completed, the display shown at left returns.

5-3-4. REPLACE COUNTER

[Function]

Number of ink cartridge replacements, number of scanning, draw area and using time are confirmed.

The number of times the ink cartridge has been replaced is incremented whenever the ink cartridge is removed.

[Operation]

1)

FUNCTION
ADJUST < ENT >

Select the **ADJUSTMENT**.

Press the

ENTER

 key.

2)

ADJUST
REPLACE CNT < ent >

Select the “**REPLACE COUNTER**” pressing the

FUNCTION

 key.

Press the

ENTER

 key.

3)

REPLACE CNT
CARTRIDGE < ent >

Use the

▲

 and

▼

 keys to select an item.

Press the

ENTER

 key.

REPLACE CNT
SCAN COUNT < ent >

REPLACE CNT
USE TIME < ent >

REPLACE CNT
WIPING CNT < ent >

REPLACE CNT
SHOT COUNT < ent >

REPLACE CNT
DRAW LENGTH < ent >

REPLACE CNT
DRAW AREA < ent >



CAUTION

- The display value is the value accumulated since the power is turned on for the first time. Select [INK PARAMETER1] in [5-3-5. Default set] to perform initialization.

Replace count

Selecting item	DISPLAY	Description
[CARTRIDGE]	<div># REPLACE CNT color n : 5</div>	Display the number of replacement for each ink cartridge. Color "n" means the number of the slot number.
[SCAN COUNT]	<div># REPLACE CNT SCAN : 150</div>	Display the number of scans. (Per 1000 times)
[USE TIME]	<div># REPLACE CNT TIME : 0 h</div>	Display the power ON time. (Per 1 hour)
[WIPING CNT]	<div># REPLACE CNT W = * * * * R = * * * *</div>	Display the number of wiping. W : Number of wiping R : Number of rubbing
[SHOT COUNT]	<div># REPLACE CNT H1A = * * * * * * * *</div>	Display the number of shots for each nozzle. (Per 1000 times)
[DRAW LENGTH]	<div># REPLACE CNT LENGTH : 0 m</div>	Display the plotting length.
[DRAW AREA]	<div># REPLACE CNT AREA : 0 m²</div>	Display the plotting area.

5-3-5. DEFAULT SET

[Function]

Parameter settings are reset to initial values.

When the “SETUP PRM” is under execution, the following situation takes place.

- The setting items (the drawing method, the number of ink layers etc.) are reset to the initial values.
- “PRINTadjust2” that is released to the users is reset to the initial value.
- System parameter No.62 Adjusting function extension =0 (Adjusting function: CLOSE)
- The display is initialized (English display).

[Operation]

1) FUNCTION
ADJUST < ENT >

Select the ADJUSTMENT.

Press the ENTER key.

2) # ADJUST
DEFAULT SET < ent >

Select the “DEFAULT SET” pressing the FUNCTION key.

Press the ENTER key.

3) # DEFAULT SET
SETUP PRM < ent >

DEFAULT SET
INK PRM. 1 < ent >

DEFAULT SET
INK PRM. 2 < ent >

Select the parameter using the △ or ▽ key.

SETUP PRM
INK PRM. 1
INK PRM. 2
INK PRM. 3
INK PRM. 4
INK PRM. 5
MAINTEN PRM
CUSTOM PRM
SERVO PRM
ADJUST PRM
SHIPPINGset (Not used in the field.)

•
•
•

DEFAULT SET
SHIPPINGset < ent >

----- Not used in the field.

4) SETUP PARAMETER
INITIAL. OK? : ent

Press the ENTER key, display the check message.

5) # DEFAULT SET
SETUP PRM < ent >

Press the ENTER key, and the parameter settings are reset to the initial values.

5-3-6. CAPPING

[Function]

Capping position is adjusted. (Refer to [4-2-7. Adjustment of the station position] P.4.11)

The adjustment value is stored under the system parameter No. 4 to No.7.

[Operation]

- 1)

FUNCTION
ADJUST < ENT >

Select the ADJUSTMENT.
Press the ENTER key.
- 2)

ADJUST
CAPPING < ent >

Select the “CAPPING” pressing the
FUNCTION **key.**
Press the ENTER key.
- 3)

CAPPING
CAP POS. = * . *

Adjust the Cap position using the ^ or v key.
Press the ENTER key.
- 4)

CAPPING
ABSORB POS. = * . *

Adjust the Absorb position using the < or > key.
Press the ENTER key.
- 5)

CAPPING
FLASH POS. = * . *

Adjust the Flashing position using the < or > key.
Press the ENTER key.
- 6)

CAPPING
WIPER POS. = * . *

Adjust the Wiper position using the < or > key.
When you press the ENTER key, the setting is registered and Capping executed.
- 7)

Press the END key to exit from the function.

5-3-7. HEAD HEIGHT

[Function]

Adjust the head height.



- When changing the head height (page 4.16), make sure to reset the head height (Hi/Lo) by the function. In case the set head height differs from the actual height, it may result in an inferior printing.

[Operation]

1)

FUNCTION
ADJUST < ENT >

Select the ADJUSTMENT.

Press the

ENTER

 key.

2)

ADJUST
HEAD HIGHT < ent >

**Select the “HEAD HIGHT” pressing the

FUNCTION

 key.**

Press the

ENTER

 key.

3)

HEAD HIGHT
HIGHT : LOW RANGE

HEAD HIGHT
HIGHT : HIGH RANGE

**Select the head height using the

^

 or

v

 key.**

Press the

ENTER

 key.

4)

**Press the

END

 key to exit from the function.**

5-3-8. INK SETUP

[Function]

Change the mounted ink type.



- Use the function only when the ink type differs from the mounted ink type.
In case the using ink type differs from the mounted ink type, it may result in inferior printing.
- Make sure to restore the power after changing the ink type.

[Operation]

1)

FUNCTION
ADJUST < ENT >

Select the **ADJUSTMENT**.

Press the **ENTER** key.

2)

ADJUST
INK SETUP < ent >

Select the **“INK SETUP”** pressing the

FUNCTION key.

Press the **ENTER** key.

3)

#INK SETUP
Pig-4 (KKCCMMYY)

Select the ink type using the **▲** or **▼** key.

Press the **ENTER** key.

#INK SETUP
Pig-6 (KCCMYcm)

#INK SETUP
Pig-6 (KCMYGO)

#INK SETUP
Sub-4 (KKCCMMYY)

#INK SETUP
Sub-6 (KCMYcm)

4)

Press the **END** key to exit from the function.

5-3-9. HEAD ID

[Function]

The setting value is issued in the [MAINTENANCE- LIST] at the time of maintenance release.
Enter the ID numbers of heads 1 to 4. The input values are stored under system parameters No. 1 to 4.

The ID numbers are sealed and stuck on each print head.

[Operation]

- 1)

FUNCTION
ADJUST < ENT >
- 2)

ADJUST
HEAD ID < ent >
- 3)

INPUT HEAD * .1
* * * * *

INPUT HEAD * .2
*

INPUT HEAD * .3
* * . . *

Select the ADJUSTMENT, and then press the **ENTER** key.

Select the “HEAD ID” with the **FUNCTION** key, and then press the **ENTER** key.

Press the **ENTER** key again, and then the ID number can be entered.

Use the **<** and **>** keys to move left or right.
Use the **^** and **v** keys to enter the number.
Press the **ENTER** key to finalize the number.

When the **END** key is pressed, the value returns to what it was before the change.

4)

After the ID numbers of heads 1 to 4 have been entered, press the **END** key.

The values that were input are stored under system parameters, and this operation ends.



- Incorrect entry in step 3) results in an error when the **ENTER** key is pressed. Since the entry remains intact, modify the number and then normally terminate the entry.

5-3-10. MOTOR CURRENT

[Function]

Adjust the read-out current value of X and Y motors to reduce the vibration.

< This is not used in the field. >

[Operation]

1)

FUNCTION # ADJUST < ENT >

Select the ADJUSTMENT.

Press the

ENTER

 key.

2)

ADJUST MTR. Current < ent >

Select the “MOTOR CURRENT” pressing the

FUNCTION

key.

Press the

ENTER

 key.

3)

MTR. Current X = 0 Y = 0
--

Press the

END

key to exit from the function.

5-3-11. SERIAL NO.

[Function]

Enter a serial number for plotter using.

[Operation]

1)

FUNCTION # ADJUST < ENT >

2)

ADJUST SERIAL NO < ent >
--

3)

SERIAL NO *****

4)

Select the ADJUSTMENT, and then press the

ENTER

 key.

Select the “SERIAL NO” with the

FUNCTION

 key, and then press the

ENTER

 key.

Press the

ENTER

 key again, and then the ID number can be entered.

Use the

^

 and

v

 keys to enter the value.

Use the

<

 and

>

 keys to move the cursor left and right.

Press the

ENTER

 key to finalize the number.

5-3-12. DEALER NO.

[Function]

Enter a number which is unique to each dealer.

Each dealer uses the Series No. by entering a desired number.

No error or warning message is displayed by a desired number.

[Operation]

- 1)

FUNCTION
ADJUST < ENT >

Select the ADJUSTMENT, and then press the ENTER key.

- 2)

ADJUST
DEALER NO < ent >

Select the “DEALER NO” with the FUNCTION key, and then press the ENTER key.

- 3)

#DEALER NO

Press the ENTER key again, and then the ID number can be entered.

Use the ^ and v keys to enter the value.
Use the < and > keys to move the cursor left and right.

- 4) **Press the ENTER key to finalize the number.**

5-3-13. WORM WHEEL

[Function]

Perform eccentric correction of worm gears.

< This is not used in the field. >

[Operation]

1)

FUNCTION
ADJUST < ENT >

Select the ADJUSTMENT, and then press the

ENTER key.

2)

ADJUST
WORM WHEEL < ent >

Select the “WORM WHEEL” with the

FUNCTION key, and then press the **ENTER**

key.

3)

#WORM WHEEL
X: S= *. ** A= *. **

Press the **END** key.

5-3-14. ADJUST EDGE

[Function]

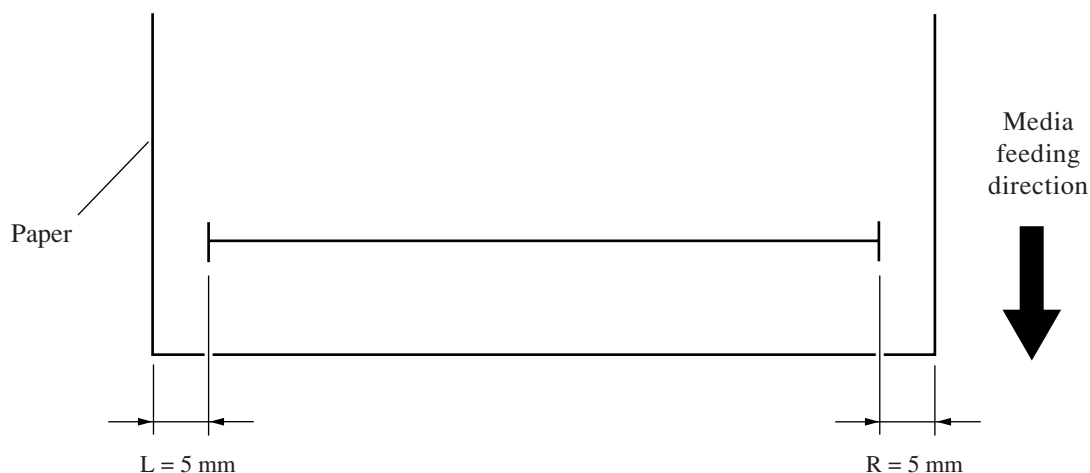
Size of the dead spaces on the left and right of the media is adjusted.

Adjustment should be done to be printed on each right and left position from the both edge of the media.

The adjustment value will be stored under system parameter No. 3 and 2. (Left edge of the paper = No.3, right edge of the paper = No.2)



- Because the adjustment pattern plots the drawing while detecting the media width, the media of no plotting should be used during the adjustment. If the media which has been plotted should be used, the correct adjustment becomes unavailable any longer.



- In this adjustment, the actual measured value is entered, but the value found from the following formula is stored under the system parameter.
Adjustment value of the left end = $5\text{mm} - \text{Actual measured value (mm)}$
(stored in increments of 0.1mm)
Adjustment value of the right end = $5\text{mm} - \text{Actual measured value (mm)}$
(stored in increments of 0.1mm)

[Operation]

1)

FUNCTION
ADJUST < ENT >

Select the ADJUSTMENT.

Press the **ENTER** key.

2)

ADJUST
ADJUST EDGE < ent >


Select the “ADJUST EDGE ” pressing the **FUNCTION** key.



Press the **ENTER** key.

3)

ADJUST EDGE
CLEAR < > DRAW

Plot the adjusting pattern using the  key.



Clear the adjustment value using the  key.

Press the  or  key to enter a correction value without performing plotting.

After the completion of plotting, enter a correction value.

4)

ADJUST EDGE
L = 15.0 R = 15.0


Enter the measured value of the dead space in units of 0.1 mm, using the  or  key.

Press the  key to store the entered value.

5)

ADJUST
CLEAR < > DRAW

The indication given in the step of procedure 3) will be restored on the LCD.

Press the  key to exit from the “EDGE ADJUST.”

To clear the adjustment value, press the  key.

To draw an adjusting pattern, press the  key.

5-3-15. 500mmSQUARE

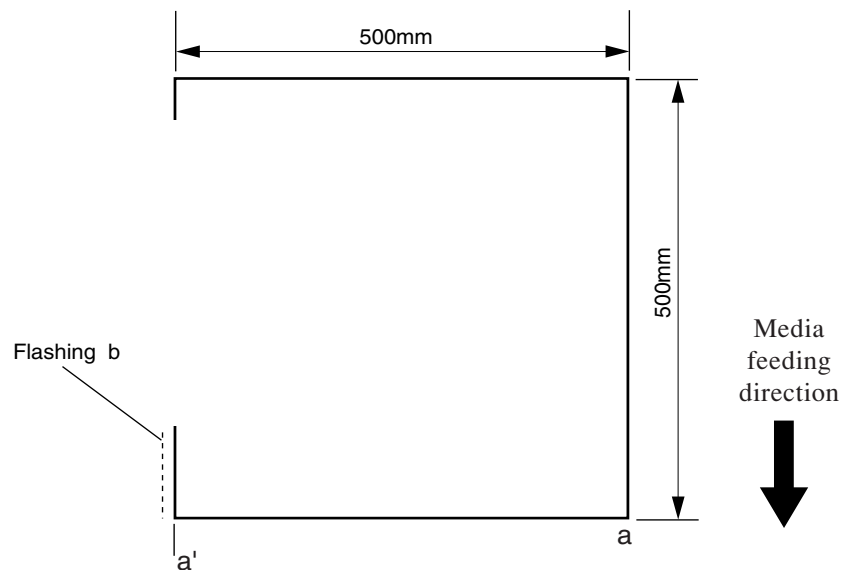
[Function]

Distance accuracy is adjusted.

The adjustment value in the Y-direction shall be applied to the detected media width.

The dimension of the Y-direction for the drawing itself will not be changed.

The adjustment values are stored under the system parameters No. 0 and 1. (X-direction = No. 0, Y-direction = No. 1)



CAUTION

- The measured value in the Y direction becomes the b position when the distance $a - a'$ in the above diagram is taken to be 500 mm.
- In this adjustment, the actual measurement is entered, but the value found from the following formula is stored under the system parameter.
Adjustment value = 500 mm – Actual measurement (mm) (stored in units of 0.1 mm)

[Operation]

- 1)

FUNCTION
ADJUST < ENT >

Select the **ADJUSTMENT**.

Press the

ENTER

 key.

- 2)

ADJUST
500mmSQUARE < ent >

Select the **“500mmSQUARE”** pressing the

FUNCTION

 key.

Press the

ENTER



 key.

3)

500mm SQUARE
CLEAR < > DRAW

Plot the adjusting pattern using the  key.



Clear the adjustment value using the  key.


Press the  or  key to enter a correction value without performing plotting.

After the completion of plotting, enter a correction value.

4)

500mm SQUARE
X= 500.0 Y= 500.0

Enter the measured value for the X and Y directions using the  or  key.

Press the  key to store the entered value.

5)

500mm SQUARE
CLEAR < > DRAW

The indication given in the step of procedure 3) will be restored on the LCD.

Press the  key to exit from the "500mm SQUARE."

To clear the adjustment value, press the  key.

To draw an adjusting pattern, press the  key.

5-3-16. SET QUALITY

[Function]

Sets the operation mode of the user-defined PRINT MODE-QUALITY.

The setting value is issued in the maintenance list at the time of maintenance release.

[Operation]

- 1)

FUNCTION
ADJUST < ENT >

Select the **ADJUSTMENT..**
Press the ENTER key.
- 2)

ADJUST
SET QUALITY < ent >

Select the **“SET QUALITY”** pressing the FUNCTION key.
Press the ENTER key.
- 3)

SET QUALITY
DPI : 360 X 360


Select the resolution using the ▲ or ▼ key, and then press the ENTER key.
DPI: 360 x 360, 360 x 540, 360 x 720, 720 x 720, 720 x 1440, 1440 x 1440
- 4)

SET QUALITY
QUALITY : STD

Select the quality using the ▲ or ▼ key, and then press the ENTER key.
QUALITY: Standard, Fine, Highspeed
- 5)

SET QUALITY
PASS : 2pass


Select the number of divisions using the ▲ or ▼ key, and then press the ENTER key.
PASS: 1pass, 2pass, 3pass, 4pass, 6pass, 8pass, 12pass, 16pass, 32pass


CAUTION

 - Some items cannot be selected and other combinations may apply depending on the ink set (4 colors, 6 colors) or the resolution.
- 6)

SET QUALITY
High SPEED : ON

Select the high-speed scan (on/off) using the ▲ or ▼ key, and then press the ENTER key.


CAUTION

 - Some items cannot be selected depending on the resolution and the number of divisions.
- 7)

Press the ENTER key to exit from the function.

5-3-17. MEDIA COMP2

[Function]

Corrects the amount of media feed at the time of plotting.

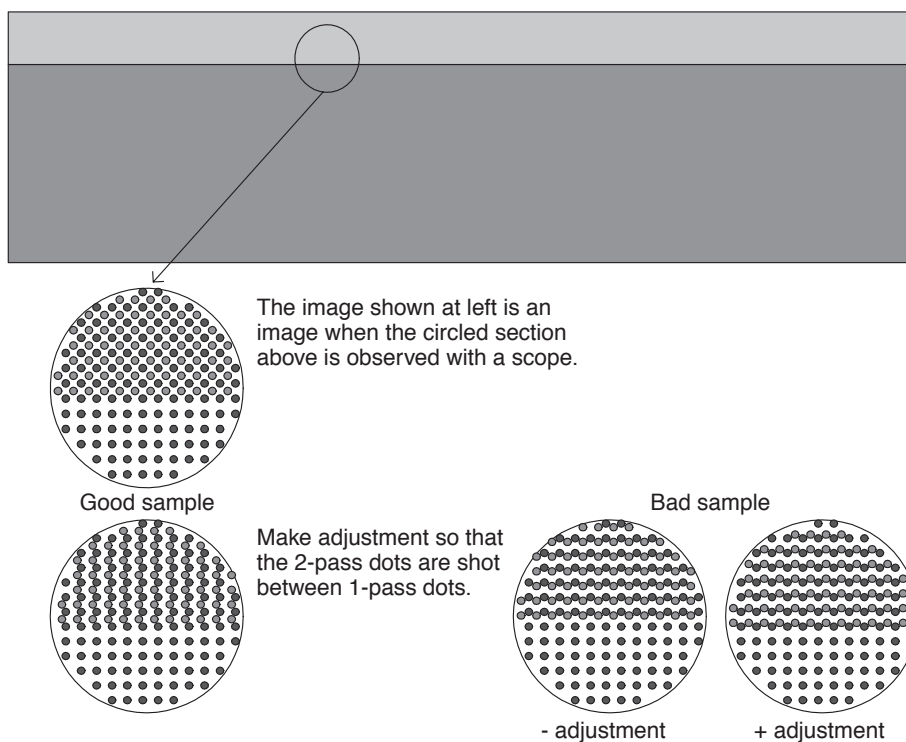
The correcting values are stored under the system parameters No. 20.



- Do not change this value in the field.
- Make this adjustment only if a problem occurs when the media is normally set and the following pattern is plotted using a combination of MIMAKI-brand PET (glossy) (SPC-0111) and MIMAKI-brand colorant ink.

Reason : This adjustment changes the reference value for media correction. With this change, the four types of [SET UP - MEDIA COMP] for the user are all changed and therefore the user needs re-adjustment.

[Adjustment method]



* Since only the feed direction (X direction) is adjusted, the hatched dot pattern may not result.

[Operation]

1)

FUNCTION
ADJUST < ENT >

Select the ADJUSTMENT.


Press the  key.

2)

ADJUST
MEDIA COMP2 < ent >

Select the “MEDIA COMP2” pressing the  key.

Press the  key.

Press the  key to enter correction value without performing plotting.

3)

MEDIA COMP2
PRINT START : ent

Press the  key to start plotting.

Press the  key to interrupt the

4)

MEDIA COMP2
Adj. = * * *

Input the correction value the  or  key.

Press the  key to store the entered value.

5-4. #TEST items

5-4-1. CHECK PATTERN

[Function]

Plots the following patterns with the selected plotting mode to check the machine status.

- a. Density pattern Patterns are drawn for the density of 100%, 50%, 25%, and 6.25%.
(Colors can be selected.)
- b. Nozzle check A nozzle checking pattern is drawn (Colors can be selected.)
- c. Color chart K, C, M and Y color patterns are drawn (four colors model).
K, C, M, Y, Lm and Lc color patterns are drawn (six colors model).
- d. Feed Checks the amount of feed with 1-head 1-nozzle configuration.
(Colors can be selected.)

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the **ENTER** key.

2)

TEST
CHK PATTERN < ent >

Select the “CHECK PATTERN” pressing the **FUNCTION** key.

Press the **ENTER** key.

3)

CHK PATTERN
PATTERN : 100%

Select a pattern using the **▲** and **▼** keys.




Pattern : 100%
50%
25%
6.25%
NOZZLE
COLOR
FEED

- If two or more colors are selected, a density pattern is drawn while mixing the selected colors. Note that, however, nozzle checking patterns are respectively plotted for the selected colors.
- When necessary items have been specified for each pattern and the device is ready for plotting, you can set the plot position, the head to be used, and the number of scans before pressing the **ENTER** key.

a. Plotting a density pattern

1)

CHK PATTERN
PATTERN : 100%

Select the density pattern using the  or  key and press the  key.

Pattern : 100%, 50%, 25%, 6.25%

2)




CHK PATTERN
DPI : 360X360-N1

Select the resolution using the  or  key and press the  key.

Resolution : 360 x 360- N1, 360 x 360- V1,
360 x 540- N1, 360 x 540- V1,
720 x 720- N2, 720 x 720- V2,
1440 x 1440 -V2, 180 x 180- N1,
180 x 180- V1, 360 x 720- V1,
360 x 720- N1, 720 x 1440- V2,
720 x 1440- N2

3)

CHK PATTERN
PLOT : UNI-D 2 pass

Select the drawing way using the  or  key and press the  key.

Drawing way : BI-D 1,2,3,4,6,8,12,16,32 pass
UNI-D 1,2,3,4,6,8,12,16,32 pass






CAUTION

- Some items cannot be selected and other combinations may apply depending on the ink set (4 colors, 6 colors) or the resolution.

4)

CHK PATTERN
X = 10 Y = * * * * *



Select the plotting length in the X and Y-direction using the  or  key and press the  key.



Length setting: 10 mm to the sheet length (in increments of 10 mm)

5)

CHK PATTERN
COLOR : KCMYcm

Select the color used for plotting.

Shift the cursor using the  or  key to select the color to be used.

Press the  or  key to select whether the color is drawn or not.

Press the  key to finalize the number.

6)

CHK PATTERN
PATTERN : PLOT

At this time it is now ready for the drawing.

Press the **ENTER** key to start drawing.

When the device is ready for plotting, the followings can be set.



: shift the origin.



: select the high-speed scan.

Plotting can be aborted by pressing the



key.

7)

After the completion of the plotting, press the



key in repetition to return the

layers of screens one by one to permit the conditions to be changed.

b. Plotting a nozzle checking pattern

1)

CHK PATTERN
PATTERN : NOZZLE

Select “NOZZLE” using the or key and press the **ENTER** key.

2)

CHK PATTERN
DPI : 360X360-N1

Select the resolution using the or key and press the **ENTER** key.

Resolution : 360 x 360- N1, 360 x 360- V1,
360 x 540- N1, 360 x 540- V1,
720 x 720- N2, 720 x 720- V2,
1440 x 1440 -V2, 180 x 180- N1,
180 x 180- V1, 360 x 720- V1,
360 x 720- N1, 720 x 1440- V2,
720 x 1440- N2

3)

CHK PATTERN
PLOT : UNI-D 2 pass

Select the print mode using the or key and press the **ENTER** key.

Drawing way : BI-D 1,2,3,4,6,8,12,16,32 pass




UNI-D 1,2,3,4,6,8,12,16,32 pass



CAUTION

- Some items cannot be selected and other combinations may apply depending on the ink set (4 colors, 6 colors) or the resolution.

4) # CHK PATTERN
X = 10 Y = * * * * *

Select the plotting length in the X and Y-direction using the  or  key and press the  key.

Length setting in X-direction



: 10 mm to the sheet length (in increments of 10 mm)



Length setting in Y-direction

: 40 mm to the sheet length (in increments of 40 mm)

5) # CHK PATTERN
COLOR : KCMYcm

Select the color used for plotting.

Shift the cursor using the  or  key to select the color to be used.

Press the  or  key to select whether the color is drawn or not.


Press the  key to finalize the number.

6) # CHK PATTERN
PATTERN : PLOT


At this time it is now ready for the drawing.

Press the  key to start drawing.


When the device is ready for plotting, the followings can be set.

 : shift the origin.

 : select the high-speed scan.

Plotting can be aborted by pressing the  key.

7)

After the completion of the plotting, press the  key in repetition to return the layers of screens one by one to permit the conditions to be changed.

c. Plotting a color chart pattern

1)

CHK PATTERN
PATTERN : COLOR

Select color chart using the  or  key and press the  key.

2)




CHK PATTERN
DPI : 360X360-N1

Select the resolution using the  or  key and press the  key.

Resolution : 360 x 360- N1, 360 x 360- V1,
360 x 540- N1, 360 x 540- V1,
720 x 720- N2, 720 x 720- V2,
1440 x 1440 -V2, 180 x 180- N1,
180 x 180- V1, 360 x 720- V1,
360 x 720- N1, 720 x 1440- V2,
720 x 1440- N2

3)

CHK PATTERN
PLOT : BI-D 1 pass

Select the print mode using the  or  key and press the  key.

Drawing way : BI-D 1,2,3,4,6,8,12,16,32 pass
UNI-D 1,2,3,4,6,8,12,16,32 pass






CAUTION

- Some items cannot be selected and other combinations may apply depending on the ink set (4 colors, 6 colors) or the resolution.

4)

CHK PATTERN
DENSITY : 100%

Select the density using the  or  key and press the  key.

Density : ALL, 100%, 50%, 25%

At this time it is now ready for the drawing.

5)

CHK PATTERN
PATTERN : PLOT

At this time it is now ready for the drawing.

Press the  key to start drawing.

When the device is ready for plotting, the followings can be set.

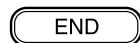


: shift the origin.



: select the high-speed scan.

Plotting can be aborted by pressing the



key.



6)

After the completion of the plotting, press the **END** key in repetition to return the layers of screens one by one to permit the conditions to be changed.

d. Plotting a feed pattern

1)

CHK PATTERN
PATTERN : FEED

Select “FEED” using the  or  key and press the **ENTER** key.

2)


CHK PATTERN
DPI : 360X360-N1

Select the resolution using the  or  key and press the **ENTER** key.

Resolution : 360 x 360- N1, 360 x 360- V1,
360 x 540- N1, 360 x 540- V1,
720 x 720- N2, 720 x 720- V2,
1440 x 1440 -V2, 180 x 180- N1,
180 x 180- V1, 360 x 720- V1,
360 x 720- N1, 720 x 1440- V2,
720 x 1440- N2

3)

CHK PATTERN
PLOT : UNI-D 1 pass

Select the print mode using the  or  key and press the **ENTER** key.

Drawing way : BI-D 1,2,3,4,6,8,12,16, 32 pass
UNI-D 1,2,3,4,6,8,12,16, 32 pass





CAUTION

- Some items cannot be selected depending on the resolution.




4)

CHK PATTERN
BETWEEN : * * * dot

Select the interval in the Y-direction using the  or  key and press the **ENTER** key.
Length setting: 16 dot to 512 dot

5)

CHK PATTERN
X = 10 Y = * * * *



Select the plotting length in the X and Y-direction using the  or  key and press the  key.



Length setting: 10 mm to the sheet width
(in increments of 10 mm steps)

6)

CHK PATTERN
COLOR : KCMYcm

Select the color to plot.


Shift the cursor using the  or  key to select the color to be used.

Press the  or  key to select whether the color is drowned or not.

Press the  key to finalize the color.

7)


CHK PATTERN
PATTERN : PLOT

At this time it is now ready for the drawing. Press the  key to start drawing.


When the device is ready for plotting, the followings can be set.

 : shift the origin.

 : select the high-speed scan.

Plotting can be aborted by pressing the  key.

8)

After the completion of the plotting, press the  key in repetition to return the layers of screens one by one to permit the conditions to be changed.

5-4-2. PARAMETER DRAW

[Function]

Setting state of parameters is plotted.

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the key.

2)

TEST
PARAM. DRAW< ent >

Select the "PARAMETER DRAW" pressing the key.

Press the key.

3)

PARAM. DRAW
DRAW : SYSTEM PRM

Select the plot parameter using the ☐ or ☐ key.

SYSTEM PARAMETER

INK PARAMETER 1

INK PARAMETER 2

INK PARAMETER 3

INK PARAMETER 4

INK PARAMETER 5

MENT PARAMETER

CUSTOM PARAMETER

SERVO PARAMETER

ADJUST PARAMETER

4)

Press the key to start plotting.



HEAD ID is issued in the maintenance list in case maintenance mode is released.

5-4-3. ALL PATTERN

[Function]

Collectively plots the following adjustment result.

- HEAD ADJUST , SLANT adjust , UNIT adjust
- PARAMETERadjust2 (FINE / Y-Single / Y-Repeat / Y-Bi Direction)

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the **ENTER** key.

2)

TEST
ALL PATTERN < ent >

Select the “ALL PATTERN” pressing the

FUNCTION key.

Press the **ENTER** key.

3)

ALL PATTERN
PRINT START : ent

Press the **ENTER key to start plotting.**

5-4-4. X SERVO

[Function]

Continuous forward/reverse travel is executed in terms of the X-direction for the purpose of durability test.

This test can be executed without placing a media on the plotter.



- Execute the test with speed, acceleration and traveling amount set to the initial values. If they are excessively increased, the plotter can break.
- Note that executing this function with ink filled may cause ink leakage from the head.

[Operation]

1)

FUNCTION # TEST < ENT >

Select the TEST.

Press the

ENTER

 key.

2)

TEST X SERVO < ent >
--

Select the “X SERVO” pressing the

FUNCTION

key.

Press the

ENTER

 key.

3)

X SERVO X : S = * * * A = * . * *

**Press the

ENTER

 key twice without changing the set value.**

Now, the screen changes over to permit the setting of a traveling amount in the X-direction.

4)

X SERVO X = * * *

**Press the

ENTER

 key without changing the set value.**

The aging in the X-direction starts.

5)

TEST X SERVO < ent >
--

**Press the

END

 key to interrupt the operation.**

5-4-5. Y SERVO

[Function]

Continuous forward/reverse travel is executed in terms of the Y-direction for the purpose of durability test.

This test can be executed without placing a media on the plotter.



- Execute the test with speed, acceleration and traveling amount set to the initial values. If they are excessively increased, the plotter can break..
- Note that executing this function with ink filled may cause ink leakage from the head.

[Operation]

1)

```
FUNCTION
# TEST      < ENT >
```

Select the TEST.

Press the **ENTER** key.

2)

```
# TEST
Y SERVO    < ent >
```

Select the “Y SERVO” pressing the **FUNCTION key.**

Press the **ENTER** key.

3)

```
# Y SERVO
Y:  S = * * *      A = * . * *
```

Press the **ENTER key twice without changing the set value.**

Now, the screen changes over to permit the setting of a traveling amount in the Y-direction.

4)

```
# Y SERVO
      Y = * * * *
```

Press the **ENTER key without changing the set value.**

The aging in the Y-direction starts.

5)

```
# TEST
Y SERVO    < ent >
```

Press the **END key to interrupt the operation.**

5-4-6. XY SERVO

[Function]

Continuous forward/reverse travel is executed in terms of the X- and Y-direction for the purpose of durability test.

This test can be executed without placing a media on the plotter.



- Execute the test with speed, acceleration and traveling amount set to the initial values. If they are excessively increased, the plotter can break.
- In this test, X-axis and Y-axis will not operate simultaneously. And, as for the X-axis, movement will be only in the paper feed direction rather than reciprocating..
- Note that executing this function with ink filled may cause ink leakage from the head.

[Operation]

1)

```
FUNCTION
# TEST          < ENT >
```

Select the TEST.

Press the **ENTER** key.

2)

```
# TEST
XY SERVO        < ent >
```

Select the “XY SERVO” pressing the **FUNCTION key.**

Press the **ENTER** key.

3)

```
# XY SERVO
X :  S = : * * *   A = * . * *
```

The screen changes over to permit the setting of speed and acceleration in the X-direction.

Press the **ENTER** key twice without changing the set value.

4)

```
# XY SERVO
Y :  S = * * *   A = * . * *
```

The screen changes over to permit the setting of speed and acceleration in the Y-direction.

Press the **ENTER** key twice without changing the set value.

5)

```
# XY SERVO
X = * * *   Y = * * * *
```

The screen changes over to permit the setting of a traveling amount in the X-direction.

Press the **ENTER** key without changing the set value.

The aging in the X- and Y-direction starts.

6)

Press the **END key to exit from the function.**

5-4-8. ACTION TEST

[Function]

Performance of the following units is checked.

- Rotation of fan motor (LOW/MID/HIGH/L.L./Poff)
- Up/down operation of Y-cutter (UP/DOWN)
- Rotation of take-up motor (HIGH/LOW/OFF)

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the **ENTER** key.

2)

TEST
ACTION TEST < ent >

Select the “ACTION TEST” pressing the **FUNCTION** key.

Press the **ENTER** key.

3)

ACTION TEST
FAN MOTOR : LOW

ACTION TEST
Y CUTTER : DOWN

ACTION TEST
ROLL MOTOR : OFF

Select the action item using the **ENTER** key.

4)

Execute the action using the **△** or **▽** key.

5)

Press the **END** key to exit from the function.

5-4-9. SENSOR TEST

[Function]

The state of the following sensors are checked.

- Media setting lever sensor
- Y-origin sensor
- Front cover sensor rear
- Ink end sensor
- Rear paper presence/absence sensor
- Wiper sensor
- Ink pack sensor
- Heater height sensor

[Operation]

1)

FUNCTION
TEST < ENT >

2)

TEST
SENSOR TEST < ent >

3)

SENSOR TEST
SET LEVER : OFF

4)

SENSOR TEST
REAR PAPER : OFF

5)

SENSOR TEST
Y ORIGIN : OFF

6)

SENSOR TEST
WIPER : OFF

Select the TEST.

Press the  key.

Select the “SENSOR TEST” pressing the

 key.

Press the  **key.**

The state of the media setting lever is shown on the LCD.

ON: Lever is in its lower position.

OFF: Lever is in its upper position.

Press the  **key.**

The state of the rear paper sensor on either side is displayed.

ON: With media

OFF: With no media

Press the  **key.**

The state of the station cover sensor is shown on the LCD.

ON: The station cover has been opened.

OFF: The station cover has not been closed.

Press the  **key.**

The state of the wiper sensor is shown on the LCD.

ON: Wiper FAR

OFF: Wiper NEAR

7)

# SENSOR TEST	
FRONT COVER	: OFF

Press the  key.

The state of the front cover sensor is shown on the LCD.

ON: The front cover has been opened.

OFF: The front cover has not been closed.

8)

# SENSOR TEST	
HEAD POS.	: THIN

Press the  key.

The state of the head height sensor.

THIN:

THICK:

ERROR:

9)

#SENSOR TEST	
INKpack	- - - - -

Press the  key.

Current status of ink pack sensor is displayed.

The color codes of the cartridges that have run out of ink are appear.

10)

# SENSOR TEST	
INK END	- - - - -

Press the  key.

Current status of ink end sensor is displayed.

The color codes of the cartridges that have run out of ink are appear.

11)

# TEST	
SENSOR TEST	< ent >

Press the  key to exit from the function.

Press the  key to start the initial operation.

5-4-10. PAPER SENSOR

[Function]

Reading by the paper width sensor is given on the LCD.

This test can be executed without placing a media on the plotter.

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the **ENTER** key.

2)

#TEST
PAPER sensor < ent >

Select the “PAPER SENSOR” pressing the

FUNCTION key.

Press the **ENTER** key.

3)

PAPER sensor
*** (*** , ***)

Reading by the paper sensor is given on the LCD.



- Regarding the use of the paper width sensor, refer to “2-3. Brief explanation of media size detection control.”

The head can be moved to a desired position using the **<** or **>** key.

The number at the left end indicates the readout value of the sensor.

- No media : About 600
- Clear film : About 400
- White media : 0 to 100

4)

Press the **END key to exit from the function.**

5-4-11. KEYBOARD TEST

[Function]

The key pressed is shown on the LCD.

[Operation]

1)

FUNCTION
TEST < ENT >

Select the **TEST**.

Press the **ENTER** key.

2)

TEST
KEYBOARD < ent >

Select the **“KEYBOARD”** pressing the

FUNCTION key.

Press the **ENTER** key.

3)

KEYBOARD TEST
Key -> NONE

KEYBOARD TEST
Key -> [REMOTE]

KEYBOARD TEST
Key -> [FUNCTION]

KEYBOARD TEST
Key -> [TEST&CLN]

KEYBOARD TEST
Key -> [ENTER]

KEYBOARD TEST
Key -> [CLEAR]

KEYBOARD TEST
Key -> [LEFT]

KEYBOARD TEST
Key -> [RIGHT]

KEYBOARD TEST
Key -> [UP]

KEYBOARD TEST
Key -> [DOWN]

Press the keys on the operation panel to check that the name of the key shown on the LCD matches the name of the key pressed.

4)

TEST
[END] -> TEST END

Press the **END** key to exit from the function.

5-4-12. LCD TEST

[Function]

Indication shown on the LCD is changed over at predetermined intervals.

[Operation]

- 1)

FUNCTION

TEST < ENT >
- 2)

TEST

LCD TEST < ent >
- 3)

!!!!!!!!!!!!!!!!!!!!

!!!!!!!!!!!!!!!!!!!!

oooooooooooooooooooo

oooooooooooooooooooo

Select the TEST.

Press the  key.


Select the “LCD TEST” pressing the

FUNCTION key.

Press the key.

This causes the device to start to indicate test patterns on the LCD.

Displays items at specific intervals.

- 4) Press the  key to exit from the function.

5-4-13. PUMP MOTOR

[Function]

Performance of the pump motor is checked.

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the **ENTER** key.

2)

TEST
PUMP MOTOR < ent >

Select the “PUMP MOTOR” pressing the **FUNCTION key.**

Press the **ENTER** key.

3)

PUMP MOTOR
PUMP : 1 2

Move the cursor using the **◀ or **▶** key, select the target pump**

Press the **▲** or **▼** key to set the selected pump to ON or OFF.

Press the **ENTER** key.

4)

PUMP MOTOR
Dir : FORWARD

PUMP MOTOR
Dir : REVERSE

Select the direction of drive steps using the **▲ or **▼** key.**

Press the **ENTER** key.

5)

PUMP MOTOR
STEP cnt : CONTINUE

PUMP MOTOR
STEP cnt : 16300

Select the number of drive steps (500-16300, CONTINUE) using the **▲ or **▼** key.**

Press the **ENTER** key.

6)

PUMP MOTOR
STEP. pps : 1017

Select the driving speed using the **▲ or **▼** key.**

Press the **ENTER** key.

7)

PUMP MOTOR
RUNNING

The pump motor starts running.

After the pump motor performance is checked, the head selection can be made.

If you select the “CONTINUE”, press the **END** key to exit from the function.

5-4-14. TIMER CHECK

[Function]

Checks the present date and time.

This test is used for the evaluation of the build-in battery.

The built-in timer is backed up by a lithium battery. This battery's life is about 7 years.

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the **ENTER** key.

2)

TEST
TIMMERcheck < ent >

Select the "TIMER CHECK" pressing the

FUNCTION key.

3)

#TIMMERcheck
DATE = * * * * . * * . * *

Press the ENTER key.

Displays the present date and time.

Press the **ENTER** key to shift to the date setup mode.

4)

#TIMMERcheck
TIME = * * * * . * * . * *

The present date and time is shown on the LCD

using the **▲** or **▼** key.

5)

Press the END key to exit from the function.

5-4-15. MEMORY CHECK

[Function]

Checking of the following memories is executed.

- a. SDRAM read/write check
- b. F-ROM hash check
- c. S-RAM read/write check
- d. I/F board S-RAM read/write check



- If an error occurs during any of the memory checks, it becomes impossible for the memory check action to continue. Turn the power OFF and then back ON.

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the **ENTER** key.

2)

TEST
MEMORY check < ent >

Select the “MEMORY CHECK” pressing the

FUNCTION key.

Press the **ENTER** key.

3)

MEMORY check
CHECK : SDRAM

MEMORY check
CHECK : F-ROM

MEMORY check
CHECK : S-RAM

MEMORY check
CHECK : I/F S-RAM

Select the item to be checked using the  or  key.

Press the **ENTER** key, and the check menu for memories will be invoked.

a. SDRAM check

1)

```
# MEMORY check
CHECK : SDRAM
```

2)

```
# MEMORY check
WAIT TIME      : OFF
```

3)

```
# MEMORY check
CNT : 1          SDRAM
```

```
# MEMORY check
E   h' ac 400000 (M)
```



```
# MEMORY check
E   R : ** h    W : ** h
```



4)

```
# MEMORY check
COUNT      =      * * *
```

The indication “SDRAM” is shown on the LCD.

Press the **ENTER** key.

Use the **△** and **▽** keys to set the waiting time after data have been written in until the read-in check is performed .

OFF : With WAIT time

ON : Without WAIT time

When the **ENTER** key is pressed, the check starts.

The number of checks are shown on the LCD.
(Single check takes about 10 minutes.)

When an error arises, the error address will appear on the LCD. At this time, if the **△** key or the **▽** key is pressed, read/write data and number of checks until error occurrence will be displayed.

Press the **END** key to terminate the SDRAM checking.

b. F-ROM check

1) # MEMORY check
CHECK : F-ROM

2) # MEMORY check
CNT : 1 F-ROM

MEMORY check
E h' ac 400000 (M)

3)

The indication “F-ROM” is shown on the LCD.

Press the **ENTER** key. The plotter starts checking.

The number of checks is shown on the LCD.

When an error arises, the error message will appear on the LCD and the checking will be aborted.

Press the **END** key to terminate the F-ROM checking.

c. S-RAM check

1) # MEMORY check
CHECK : S-RAM

2) # MEMORY check
CNT : 1 S-RAM

MEMORY check
E 0000000 ** : **

3)

The indication “S-RAM” is shown on the LCD.

Press the **ENTER** key. The plotter starts checking.

The number of checks is shown on the LCD.

When an error arises, the error address and read/write data will appear on the LCD and the checking will be aborted.

To terminate the S-RAM checking, turn the power off.

d. I/F S-RAM check

1)

MEMORY check
CHECK : I/F S-RAM

2)

MEMORY check
CNT : 1 I FRAM

MEMORY check
E 0 0 0 0 0 0 0 0 * * : * *

3)

The indication “I/F S-RAM” is shown on the LCD.

Press the **ENTER** key. The plotter starts checking.

(Single check takes about 2 minutes.)

When an error arises, the error address and read/write data will appear on the LCD and the checking will be aborted.

Press the **END** key to terminate the I/F S-RAM checking.

5-4-16. SKEW CHECK

[Function]

Checks the amount of paper shift caused by paper feed.

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the

ENTER

 key.

2)

TEST
SKEW CHECK < ent >

Select the “SKEW CHECK” pressing the

FUNCTION

 key.

Press the

ENTER

 key

3)

SKEW CHECK
FEED : * . * * m

Enter the value to feed the paper using the

△

 or

▽

 key.

4)

SKEW CHECK
** FEED * . * * m **

Press the

ENTER

 key.

Press the

END

 key to exit from the function.

5-4-17. TEMP CHECK

[Function]

Displays the temperature around the head.

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the

ENTER

 key.

2)

TEST
TEMP CHECK < ent >

Select the “TEMP CHECK” pressing the

FUNCTION

key.

Press the

ENTER

 key

3)

TEMP CHECK
Ta 1 = * * * * ° * * * *

Displays the temperature around the head.

Select the head using the

▲

 or

▼

 key to display the temperature around each head.

- Temperature around the head and the entered value to change AD : Ta
- Temperature of the nozzle and forward voltage drop of diodes : Tj1A, Tj1B to Tj3B

TEMP CHECK
T j 1A = * * * * ° * * * *

TEMP CHECK
T j 1B = * * * * ° * * * *

•
•
•

4)

Press the

END

key to exit from the function.

5-4-18. ENCODER CHECK

[Function]

Check linear sensor or linear encoder scale.

Based on capping position, indicate value of linear encoder and Y motor encoder when it's moved an optional position that was specified.

[Operation]

1)

FUNCTION
TEST < ENT >

Select the TEST.

Press the key.

2)

TEST
ENCODER < ent >

Select the "ENCODER CHECK" pressing the

key.

Press the key.

3)

#ENCODER
DIST . : * * * * . * mm

Indicate the max movement distance that carriage is moved.

4)

#ENCODER
DIST . : * * * * . * mm

Input the movement distance of carriage using

or key.

The value that is able to set up is decided 100 mm to max movement distance. (100 mm step)

5)

#ENCODER
M * * * * . * E * * * * . *

Press the key

The carriage shuttles the set distance 3 times and the linear encoder value and Y motor encoder value are read.

Indicate the following values when carriage was returned to capping position.

[value that is moved a specified distance]

– [value of capping position before movement]

M : value of Y motor encoder (μm)

E : value of linear encoder (mm)

6)

```
# TEST
Mc 0.0      Ec 0.0
```

```
#ENCODER
Ms ***** Es *****
```

```
#ENCODER
Mm ***** Em *****
```


```
#ENCODER
Mr ***** Er *****
```

Return to Process No. 3 when press the  key.

It is normal if value of Y motor encoder and value of linear encoder is indicated approximate.

There are appearance of dispersion of linear scale and 2 mm to 3 mm gaps by stretching, though it isn't unusual.

If [500mm SQUARE] is not adjusted, pattern shift becomes larger.

Press the  key. Indicate the calculation as follows.

[value of capping position after movement]

– [value of capping position before movement]

Mc : value of Y motor encoder (μm)

Ec : value of linear encoder (mm)


It is normal if a difference of capping position before and after that is moved is zero.

Press the  key to display the following values:

- Capping position value before movement (resolution)
Ms : value of Y motor encoder ($5\mu\text{m}$)
Es : value of linear encoder (720dpi)
- Capping position value after movement over the specified distance (resolution)
Mn : value of Y motor encoder ($5\mu\text{m}$)
En : value of linear encoder (720dpi)
- Capping position value after movement (resolution)
Mr : value of Y motor encoder ($5\mu\text{m}$)
Er : value of linear encoder (720dpi)

If the difference between the values before and after movement to the linear encoder exceeds ± 3 , an error results and check is completed.

Return to process 5) when press the  key.

Return to process 3) when press the  key.

When press the  key after the above operation, this test has ended.

5-5. #PARAMETER items

5-5-1. SYSTEM PARAMETER

[Function]

System parameter values are changed.

[System parameters list]

No.	Indication	Set value	Description	Remarks
0	COMP.X	0	Mechanical correction X (in increments of 0.1 mm 500 mm – actual measured value)	Adjustment of range accuracy If the system parameter value is increased: Length of a pattern plotted will be increased.
1	COMP.Y	0	Mechanical correction Y (in increments of 0.1 mm 500 mm – actual measured value)	
2	R GRIP	0	Adjustment of dead space on the right-hand side of the paper (in increments of 0.1 mm 25 mm - actual measured value)	
3	L GRIP	0	Adjustment of dead space on the left-hand side of the paper (in increments of 0.1 mm 5 mm - actual measured value)	Adjustment value for edge adjustment If the system parameter value is increased: Dead space will be reduced.
4	CAPpodY	20	Adjustment of capping Y position (in increments of 0.1 mm)	
5	PULLpos	25	Idle suction position (in increments of 0.1 mm)	
6	FLSposY	0	Adjustment of flashing Y position (in increments of 0.1 mm)	
7	WIPposY	0	Adjustment of wiping Y position (in increments of 0.1 mm)	
8	RESERVE	0	RESERVE	
9	CUTposi	0	Adjustment X of the medium cutting position (in increments of 0.1 mm)	Adjustment value in the X-direction when cutting If the system parameter value is increased: Remaining portion of the paper after cutting will become larger.
10	EDGE LV	50	Medium edge detection level (Unit: %)	Edge detection level when the medium width is detected
11	H12dist	264	Distance between head 1/nozzle row A and head 2/nozzle row A	
12	H13dist	528	Distance between head 1/nozzle row A and head 2/nozzle row A	
13	H14dist	792	Distance between head 1/nozzle row A and head 4/nozzle row A	
14	RESERVE ⋮	0	RESERVE	
19	RESERVE	0	RESERVE	
20	FEEDadj	0	X feed pulse correction (in increments of 1 dot)	
21	RESERVE ⋮	0	RESERVE	
29	RESERVE	0	RESERVE	

No.	Indication	Set value	Description	Remarks
30	WormORG	0	Worm origin	
31	RESERVE	0	RESERVE	
	⋮			
41	RESERVE	0	RESERVE	
42	CUT.OVL	0	Medium cut over run (Left)	
43	CUT.OVR	0	Medium cut over run (Right)	
44	CUT.spd	0	Cutting speed	
45	RESERVE	0	RESERVE	
	⋮			
52	RESERVE	0	RESERVE	
53	PMPsign	0	Switch	
54	ROLL.TM	0		
55	Ext.CND	0	Command extension	0: Disabled / 1: Enabled
56	FEEDlow	30	Long direction feed rate (1mm/s)	Medium feed speed when total feed is 9mm or more
57	PAGE	0	Page length clip 0: The page length command is activated, and clipping is done on the page. n: The page length command is inactivated, the plot is plotted and a margin is added at the rear end.	Indicates the action when the plot length exceeds the page length.
58	RESERVE		RESERVE	
59	RESERVE	0	RESERVE	
60	MECAsiz	0	Mechanical size	0: 54 inch 1: 63 inch 2: 100 inch
61	HASH	0	Hash check pass	0: check pass (forced startup) 1: check pass & servo motor OFF
62	SUPPORT	0	Adjusting function extension	2: Released 3: Released + English
63	INITIAL	0	Initialization	1: All parameters are initialized. 2: Only system parameter 3: All parameters are secret.



- When [1. All parameters are initialized] is selected for NO.63 INITIAL, note that the values of the Adjustment parameter and Head parameter are also cleared.

(REMOTE/LOCAL) + (FUNCTION) → Adjusting function extension
 (ENTER) + (END) or (◀) + (▶) → Enter the system parameter
 (REMOTE/LOCAL) → Version up mode
 (▲) + (▼) → Parameter UP&DOWN LOAD mode

[Operation]

1)

FUNCTION	
# PARAMETER	< ENT >

2)

# PARAMETER	
SYSTEM PRM	< ent >

3)

# SYSTEM PARAMETER	
0 = 0	COMP. X

# SYSTEM PARAMETER	
62 = 0	SUPPORT

⋮

4)

# SYSTEM PARAMETER	
62 = 0	0

5)

# SYSTEM PARAMETER	
62 = 0	2

6)

# SYSTEM PARAMETER	
62 = 2	SUPPORT

7)

Select the **PARAMETER**.

Press the **ENTER** key.

Select the “**SYSTEM PRM**” pressing the **FUNCTION** key.

Press the **ENTER** key.

Select a parameter item using the **△** or **▽** key.

Press the **ENTER** key to permit the value to be changed.

Change the value using the **△** or **▽** key.

Press the **ENTER** key to store the value.

Press the **END** key to exit from the function.

5-5-2. INK PARAMETER 1

This is not used in the field.
Never change the value.

5-5-3. INK PARAMETER 2

This is not used in the field.
Never change the value.

5-5-4. INK PARAMETER 3

This is not used in the field.
Never change the value.

5-5-5. INK PARAMETER 4

This is not used in the field.
Never change the value.

5-5-6. INK PARAMETER 5

This is not used in the field.
Never change the value.

5-5-7. MAINTENANCE PARAMETER

This is not used in the field.
Never change the value.

5-5-8. CUSTOM PARAMETER

This is not used in the field.
Never change the value.

5-5-9. SERVO PARAMETER

This is not used in the field.
Never change the value.

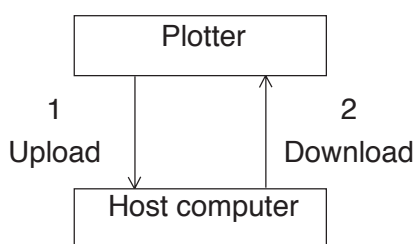
5-5-10. ADJUSTMENT PARAMETER

Parameters are present for each waveform plot. The value of each parameter can be changed and stored automatically through adjustment.

5-6. Uploading and Downloading Parameters

This host computer and the plotter can be connected through the IEEE1284 or IEEE1394 interface to allow parameter loading the plotter to the host computer and parameter registration from the host computer to the plotter.

1. The function to load parameters from the plotter to the host computer (referred to as Upload hereafter).
2. The function to transfer parameters from the host computer to the plotter (referred to as Download hereafter).



5-6-1. UPLOAD (Plotter >>> Computer)





- To realize this function, the following item is required.
OS : Windows2000 / WindowsNT4.0 / Windows98SE
Cable: IEEE1394 interface cable / IEEE1284 interface cable
Tool: F/W Update Tool software
(The IEEE1394 interface cable can be used only for Windows2000.)

[Operation]

- 1) **Connect the plotter and the host computer through the interface cable.**
- 2)


BOOT

Turn ON the power while holding down the  and  key.
- 3)

UP&DOWNLOAD
READY!

Upload is ready.
- 4)

*** UPLOADING **

Perform Upload using the F/W Update Tool software.
Transfer parameters to the host computer.
To cancel the operation, press the  key.
- 5)

UP&DOWNLOAD END
POWER OFF

If the operation is successfully completed, the message shown at left appears.
- 6) **Turn OFF the power of the plotter.**

5-6-2. DOWNLOAD (Computer >>> Plotter)





- To realize this function, the following item is required.
 OS : Windows2000 / WindowsNT4.0 / Windows98SE
 Cable: IEEE1394 interface cable / IEEE1284 interface cable
 Tool: F/W Update Tool software
 (The IEEE1394 interface cable can be used only for Windows2000.)

[Operation]

- 1) **Connect the plotter and the host computer through the interface cable.**
- 2)

BOOT

Turn ON the power while holding down the  and  key.
- 3)

UP&DOWNLOAD
READY!

Download is ready.
- 4)

* * DOWNLOADING * *

Perform Download using the F/W Update Tool software.
 Receive data from the host computer.
 To cancel the operation, press the

END

 key.
- 5)

UP&DOWNLOAD END
POWER OFF

If the operation is successfully completed, the message shown at left appears.
- 6) **Turn OFF the power of the plotter.**

5-6-3. Error messages

If an error occurs, quit F/W Update Tool software and then turn OFF the power of the plotter.

Error message	Cause	Remedy
ERROR COMMAND POWER OFF	Command error	Check whether interface connection is normal. Turn OFF the power and then turn it back ON.
ERROR PARAMETER POWER OFF	Parameter error	Check whether the file selected on the host computer is for this device. Turn OFF the power and then turn it back ON.
ERROR DATA POWER OFF	Data error	Check whether the contents of the file selected on the host computer are normal and not defective. Turn OFF the power and then turn it back ON.

5-7. Updating the firmware

This device permits updating of the firmware through the IEEE1394 interface or the IEEE1284 interface from the computer. Use a specialized F/W downloader.



- You may download F/W downloader from our Web site on the Internet.
(URL: <http://www.mimaki.co.jp/>)

5-7-1. The firmware in this unit

This unit consists of the following 2 firmware components; the versions of both can be updated through the interface.

Mechanical side firmware This firmware controls the machine main unit.

It is downloaded onto the main PCB.

Interface side firmware This firmware controls the interface with the host computer. It is downloaded onto the IEEE1394.

5-7-2. Main unit side firmware version updating file

You may download F/W version-up file through our Web site on the Internet
(URL: <http://www.mimaki.co.jp/>).

Download one of the following according to your use environment.

The “ *** ” in the file name indicates the version number of F/W.

1. JV22_***L.EXE Japanese version for WINDOWS
2. JV22_***Z.EXE English version for WINDOWS
3. JV22_***.sea .hqx Japanese/English shared version for MAC

Every file is a self-unarchiving compressed file.

When unarchived, the file is extracted to the following five files.

1. JV22.ROM This is the F/W version updating file.
2. README.TXT This is the version-updating manual in English.
3. READMEJ.TXT This is the version-updating manual in Japanese.

5-7-3. Interface side firmware version updating file

You may download F/W version-up file through our Web site on the Internet
(URL: <http://www.mimaki.co.jp/>).

Download one of the following according to your use environment.

The “ *** ” in the file name indicates the version number of F/W.

1. FWIF***L.EXE Japanese version for WINDOWS
2. FWIF***Z.EXE English version for WINDOWS
3. FWIF***.sea.hqx Japanese/English shared version for MAC

Every file is a self-unarchiving compressed file.

When unarchived, the file is extracted to the following three files.

1. FWIF***.ROM This is the F/W version updating file.
2. README.TXT This is the version-updating manual in English.
3. READMEJ.TXT This is the version-updating manual in Japanese.

5-7-4. Checking the version updating file

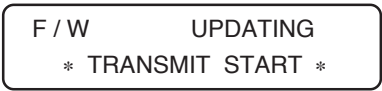
When the version-updated file is copied, check the version-updated file for faults using the file checking function provided by the F/W downloader. Refer to the instruction manual for the F/W downloader for operating procedures.

5-7-5. Updating procedure

The procedure is the same on both the mechanical side and the interface side.

[Operation]

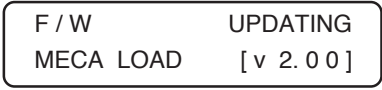
1) 

2) 

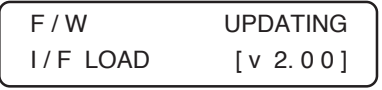
3) 

4) 

5) In the case of the mechanical side version updating



In the case of the interface side version updating



6)

Turn on the power to the plotter.

Press the  key while the firm-ware version is being shown on the LCD.

This device will then be placed in the data waiting state.

Send the version-updating file from the PC using the transmitting function of the F/W downloader.

The indication given on the left will appear on the LCD when the device received the data.

(In the case of the mechanical side version updating file, the *** at both ends flashes.)

When all the data are received, the data is written into the flash ROM.

Upon completion of the writing, the version of the firmware written into the ROM will be shown on the LCD.



CAUTION

- Do not turn the power OFF while the data is written into the flash ROM. There is a danger of damaging the PCB.

Error messages when updating the version on the mechanical side

Error message	Cause	Remedy
E80 ROM0 ERASE	Data stored in the ROM could not be erased.	Replace the main PCB with a new one.
E81 ROM1 ERASE	Data stored in the ROM could not be erased.	
E82 h'*****	Data could not be written into the ROM.	
E83 h'*****	Data could not be written into the ROM.	
E84 h'*****	Data written into the ROM are wrong.	
E85 ROM HASH	Data written into the ROM has errors.	

Error message when updating the version on the interface side

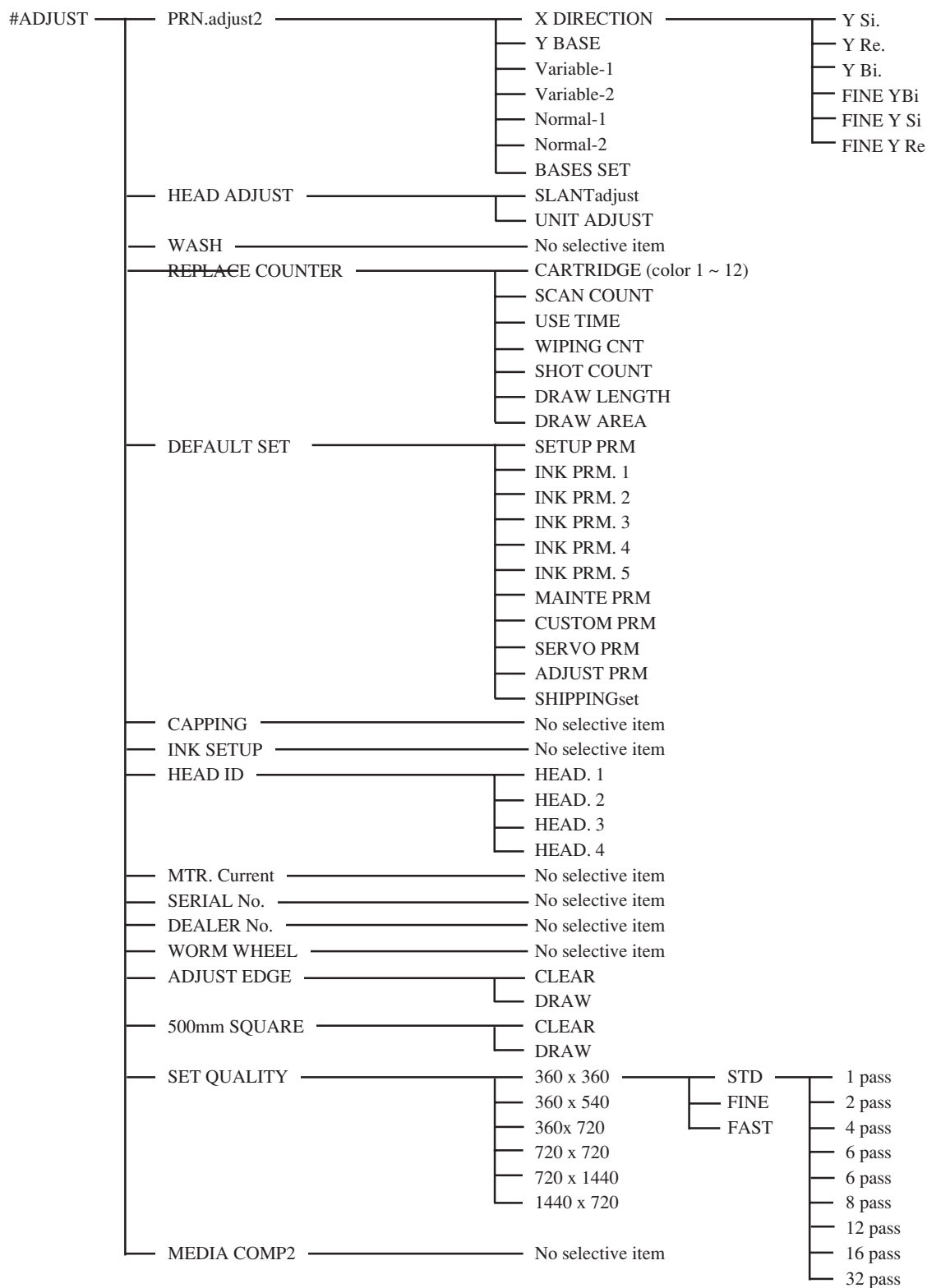
Error message	Cause	Remedy
E90 h'*****	Data stored in the ROM can not be erased.	Replace the interface PCB with a new one.
E91 < Skipped No. >		
E92 h'*****	Data cannot be written into the ROM.	Replace the interface PCB with a new one.
E93 < Skipped No. >		
E95 MODE	It is not possible to enter version updating mode.	Repeat the version updating from the beginning.
E97 < Skipped No. >		
E98 TRANSE **	The received data are not for the interface.	Check the version updating file.

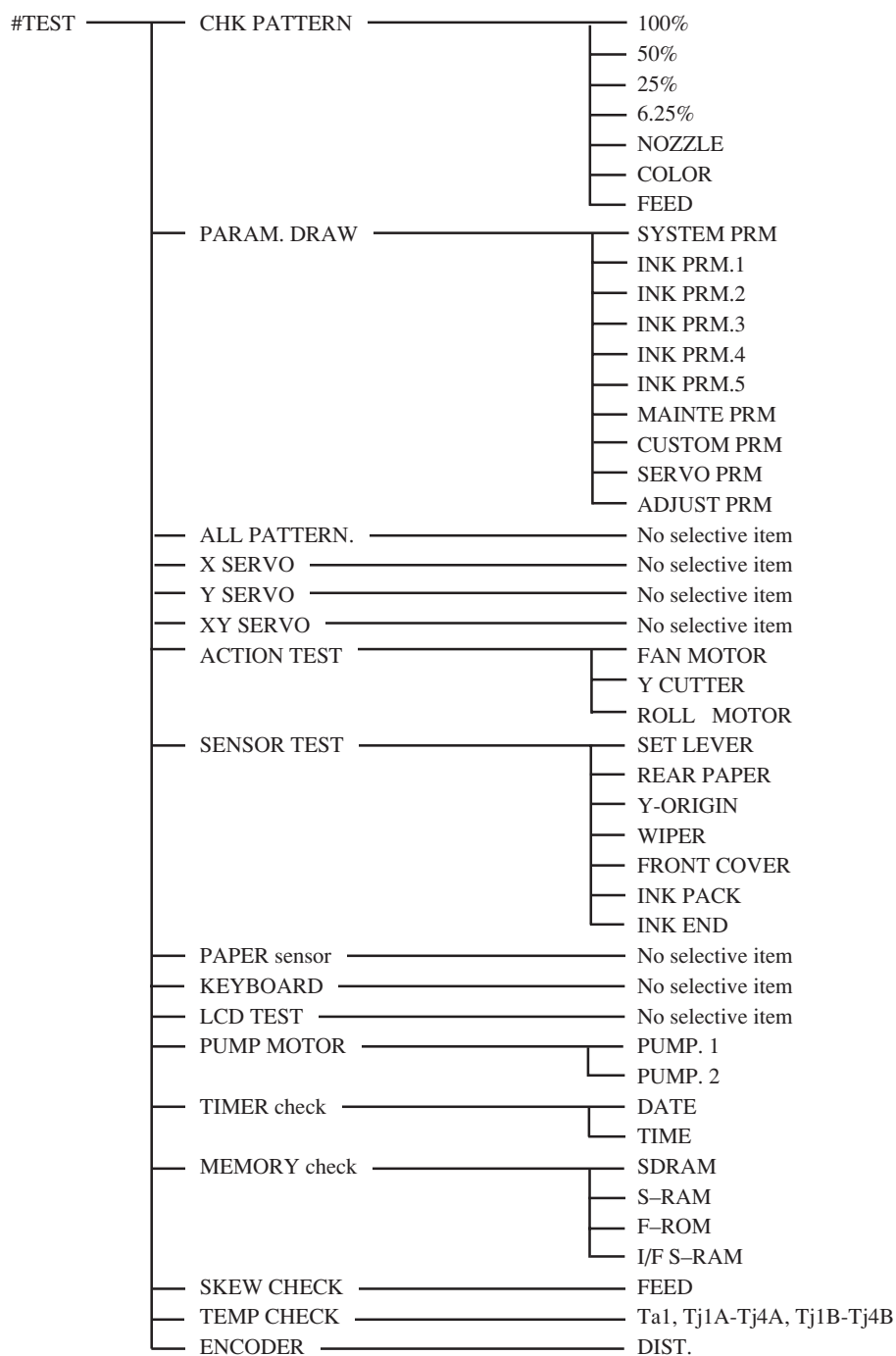
Error messages that apply to both the mechanical side and the interface side

Error message	Cause	Remedy
E70 FPGA	Data received are not the program file.	Replace the main PCB with a new one.
E71 SD-RAM	Abnormal conditions have arisen on the D-RAM.	
E73 < Skipped No. >		
E74 TRANS DATA	Data received are not the program file.	Check the version updating file.
E75 I/F NONE	The interface board has not been loaded on the device.	Load the interface board on the device.
E76 I/F INITIAL	Abnormal conditions have arisen on the interface board.	Replace the interface board with a new one.
E77 I/F BOARD	A error occurred in communication between the main PCB and the interface board.	
E78 HOST I/F	A time limit exceeded error occurred in communication between the host computer and the interface board.	Check the cable and the host computer.

APPENDIX

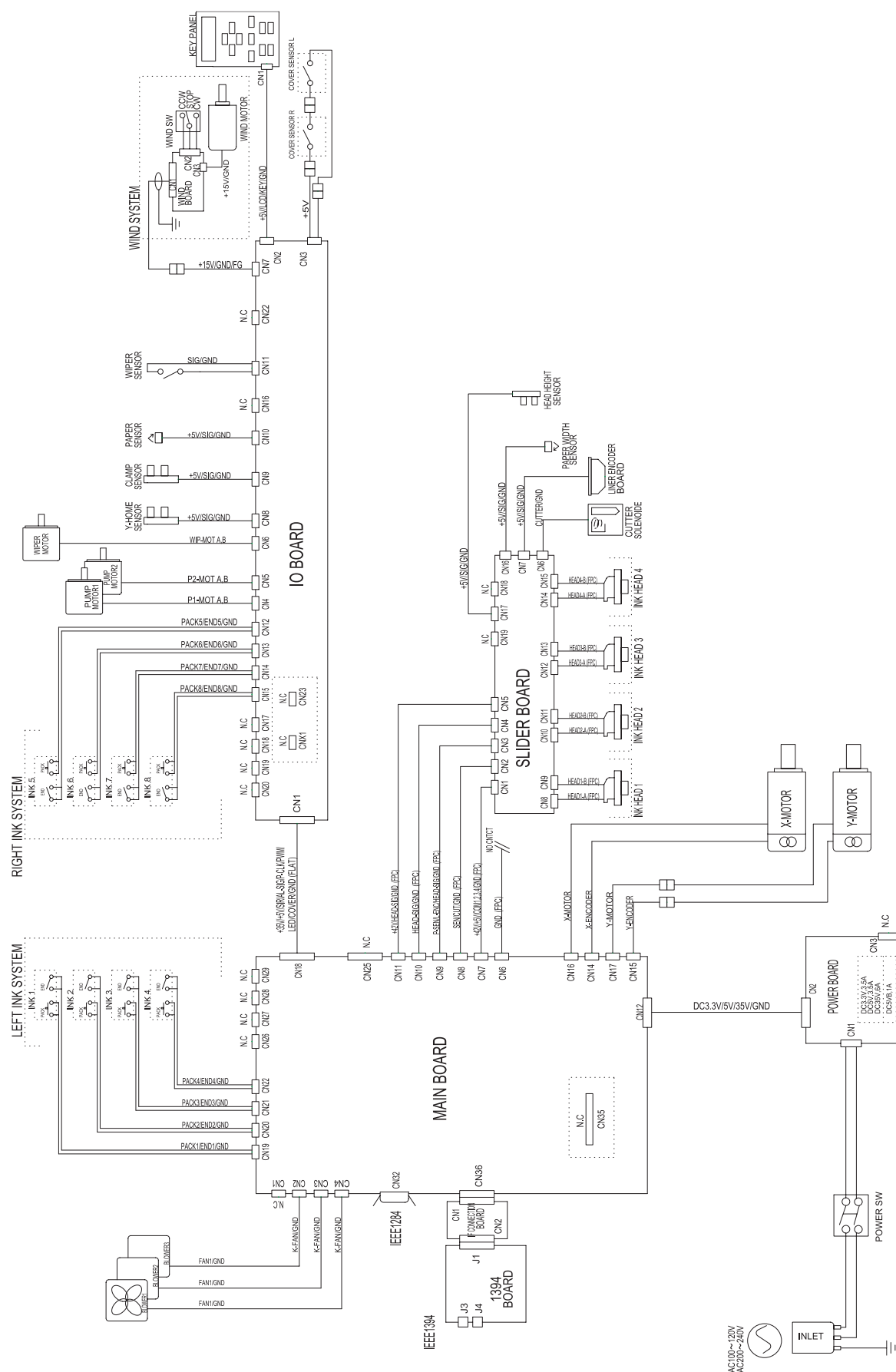
6-1. Maintenance menu tree





#PARAMETER	SYSTEM PRM	Total 64 items	Refer to “4-5-1. SYSTEM PRM”
	INK PARAMETER1	Total 80 items	This is not used in the field.
	INK PARAMETER2	Total 100 items	This is not used in the field.
	INK PARAMETER3	Total 100 items	This is not used in the field.
	INK PARAMETER4	Total 100 items	This is not used in the field.
	INK PARAMETER5	Total 100 items	This is not used in the field.
	MENT PARAMETER	Total 96 items	This is not used in the field.
	CUSTOM PARAMETER	Total 32 items	This is not used in the field.
	SERVO PARAMETER	Total 64 items	This is not used in the field.
	ADJ PARAMETER	Total 100 items	This is not used in the field.

6-2. Electrical component block diagram





D500238-1.00-1006004

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