

Service Manual

iPF600 series
iPF610

Canon

Application

This manual has been issued by Canon Inc. for qualified persons to learn technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, there may be information in this manual that does not apply to your locality.

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Printed in Japan

Caution

Use of this manual should be strictly supervised to avoid disclosure of confidential information.



Symbols Used

This documentation uses the following symbols to indicate special information:

Symbol	Description
	Indicates an item of a non-specific nature, possibly classified as Note, Caution, or Warning.
	Indicates an item requiring care to avoid electric shocks.
	Indicates an item requiring care to avoid combustion (fire).
	Indicates an item prohibiting disassembly to avoid electric shocks or problems.
	Indicates an item requiring disconnection of the power plug from the electric outlet.
 Memo	Indicates an item intended to provide notes assisting the understanding of the topic in question.
 REF.	Indicates an item of reference assisting the understanding of the topic in question.
	Provides a description of a service mode.
	Provides a description of the nature of an error indication.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.

In the diagrams,  represents the path of mechanical drive; where a signal name accompanies the symbol, the arrow  indicates the direction of the electric signal.

The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.

2. In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High", while '0' is used to indicate "Low". (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.

In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine."

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Chapter 1 PRODUCT DESCRIPTION

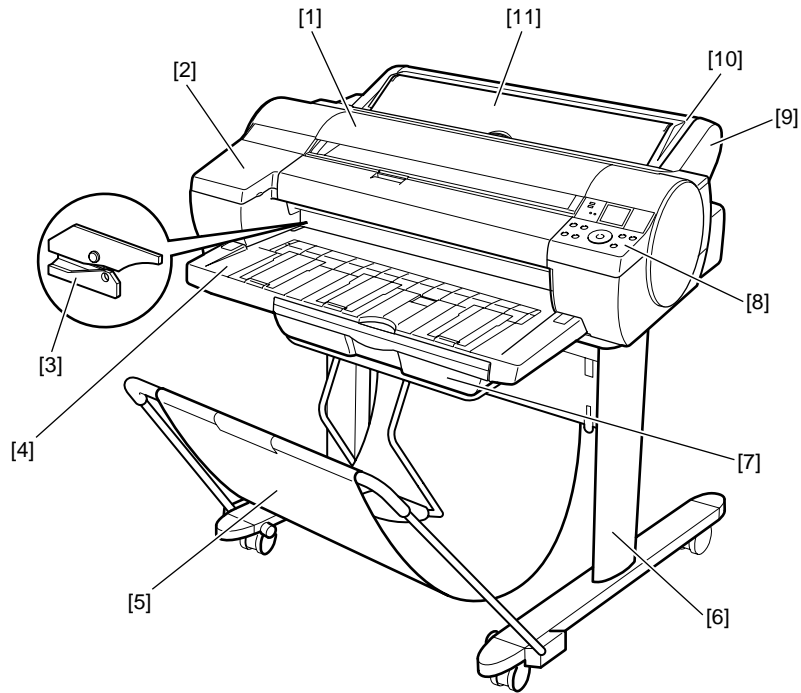
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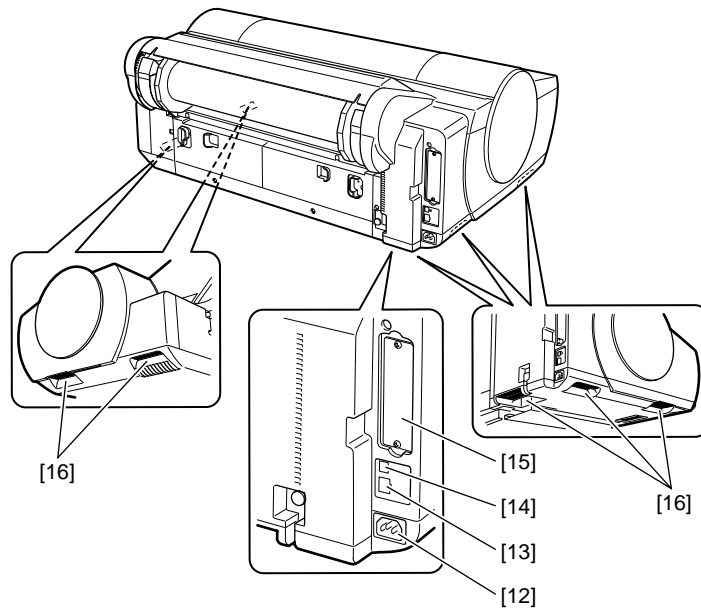
1.1 Product Overview

1.1.1 Product Overview

This printer is capable of printing on A4- to A1-size cut sheets and its maximum print width is 24 inches. This printer is a desktop large-format printer five-colors (dye- and pigment-based colors) printer that can be used to print office documents as well as handy POP and posters. An roll feed unit is equipped for printing on roll media.



F-1-1

F-1-2
T-1-1

- | | |
|---------------------|---------------------------|
| [1] Top Cover | [9] Roll Feed Unit |
| [2] Ink Tank Cover | [10] Roll Feed Unit Cover |
| [3] Cutter | [11] Manual Feed Cover |
| [4] Output Tray | [12] Power Connector |
| [5] Basket | [13] Ethernet Connector |
| [6] Stand | [14] USB Port |
| [7] Cassette | [15] Expansion Board Slot |
| [8] Operation Panel | [16] Carrying Handle |

1.2 Features

1.2.1 Features

- Black ink suitable for the selected media type is automatically selected from two types of black ink, "black ink" for vivid and glossy printing and "matte black ink" for matte and high-quality printing.
- One-inch wide printhead having 2,560 nozzles per color, which are as many as the those of the existing models. High-density printhead technology "FINE" that can satisfy both of beautiful and fast printing requirements of a high order is employed for accurate ejection of ultrasmall 4-pl drops of ink to the target positions. Prints with 2400 x 1200 dpi resolution can be made at a high speed.
- Imaging processor "L-COA" incorporated for high-speed image data processing. High-speed processing of 5-color, 12-bit large-size images and printer control for high-accuracy operation of high-density head can be performed with a single chip.
- Support for roll media, cassette paper pick-up, manual feed from front, and manual feed from top (4-way paper supply). A maximum of 1.5 mm thick of paper can be manually fed from the front.
- Borderless printing on and auto cutting of roll media.
- Standard support for 10Base-T/100Base-TX. Standard support for USB 2.0 Hi-Speed. Optional support for IEEE1394.
- Data scanned using CanoScan can be easily printed on large-size paper just like a dedicated copier. Just pressing the Start button allows you to blow up an original of up to A3 size in collaboration with Canon Image RUNNER.
- Support for remote notification utility which is used to send an E-mail when an alarm or error occurs.

Functional enhancements new to this model include:

- Enhanced ease of operation

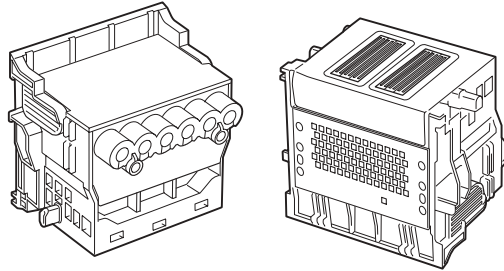
A 160-by-128-dot-large LCD, coupled with the new [Paper Load/Eject] button, offers drastically enhanced ease of operation.

1.2.2 Printhead

Printhead set on the carriage is a 6-color integral disposable type.

On the printhead, two rows of 1,280 nozzles (total 2,560 nozzles) are arranged in a staggered pattern. .

If print quality does not improve despite carrying out the specified cleaning, the printhead must be replaced with a new one. Generally, it is recommended that the printhead be replaced about 12 months after you have opened the package.



F-1-3

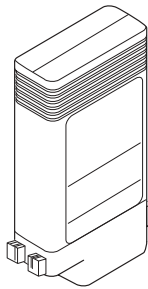
1.2.3 Ink Tank

The ink tank is disposable.

There are four dye-based ink colors (black, cyan, magenta, and yellow) and one pigment-based ink color (matte black).

This printer features a mechanism by which only the correct color ink tank will fit in the given slot.

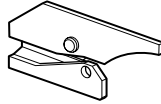
When the message No Ink is displayed, replace the ink tank with a new one. Also, each ink tank should generally be replaced six months after you have opened the package.



F-1-4

1.2.4 Cutter

A round-blade cutter comes with the cutter unit.

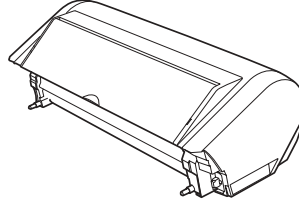


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1.2.5 Roll Feed Unit

Roll Feed Unit

The roll feed unit is optionally available to use roll media with this printer.

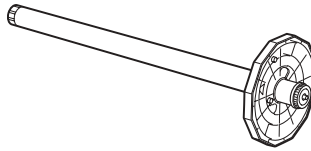


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Roll holder set

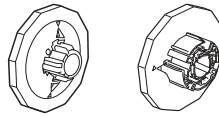
This set consists of roll holder, holder stopper, 3-inch paper tube attachment, and borderless printing spacer (commonly used for 2-inch paper tube and 3-inch paper tube).

[Roll holder]



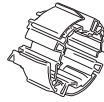
F-1-7

[Holder stopper](for 2-inch paper tube and 3-inch paper tube)



F-1-8

[3-inch paper tube attachment]



F-1-9

[Borderless printing spacer]



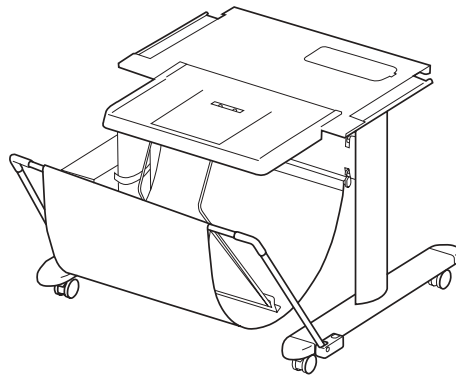
F-1-10

MEMO:

A borderless printing spacer is used to perform borderless printing on A2-size (420 mm) roll media. This printer is furnished with a number of borderless printing ink receiving channels on the platen to address multi-sized borderless printing needs. Borderless printing on A2-size roll media is made possible by using a spacer, without needing to produce a new borderless printing ink receiving channel.

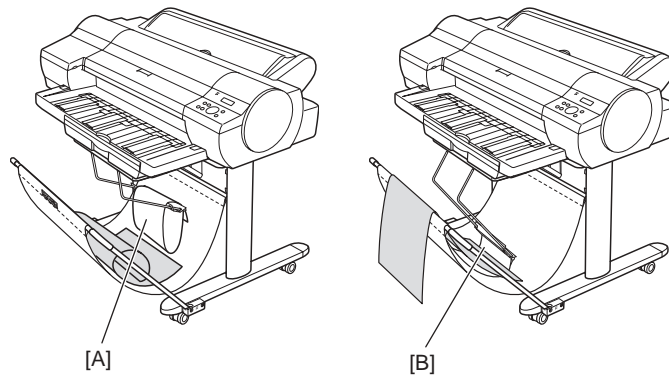
1.2.6 Stand

It is a stand that puts the printer. Equipped with casters so that the printer can be easily moved. The output stacker included with stand can use by the two ways of the regular position or extended position.



F-1-11

MEMO:
- Use the output stacker in the regular position [A]. However, for the specified media, it can also be used in the extended position [B]. The media can be removed more easily when the output stacker is in the extended position.
- The output stacker can accommodate one sheet. Remove each sheet before printing if you are printing a series of documents.

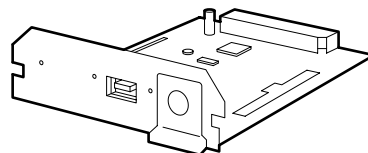


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1.2.7 IEEE1394 (FireWire) Board

IEEE1394 (FireWire) expansion board (option)

An interface board that provides an additional IEEE1394 (FireWire) port.

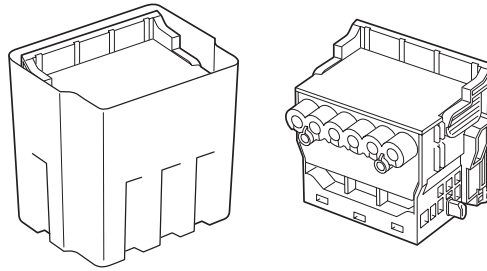


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1.2.8 Consumables

Printhead

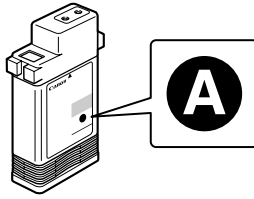
The consumable print head is the same as that supplied with the printer.



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Ink Tanks

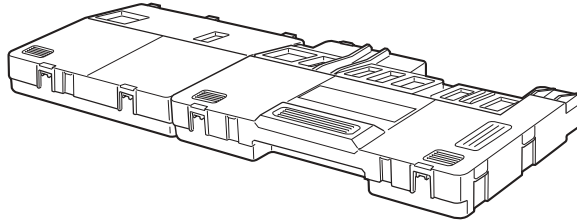
The consumable ink tanks are available in five colors (matte black, black, cyan, magenta, and yellow). They are the same as those supplied with the printer. Each ink tank must be replaced with a new one six month after you have opened the package. The ink tank that can be used with this printer is labeled "A".



F-1-15

Maintenance cartridge

The consumable maintenance cartridge is the same as that supplied with the printer.



F-1-16

1.3 Product Specifications

1.3.1 Product Specifications

Type	Bubble jet large-sized paper printer
Feeding system	Automatic feeding of one roll media/Cassette paper feeding/One cut sheet (manual feed from front)/One cut sheet (manual feed from top)
Feeding capacity	- Roll media One roll at the back/Outer diameter of roll: 150 mm or less/Inner diameter of paper tube: 2 or 3 inches - Cut sheet Cassette:250 sheets(A4), 100 sheets(A3), 50 sheets(A2), manual feed:1
Delivery method	Delivers the media with its printed side up in the forward direction.
Sheet delivery capability	- Roll media 1 sheet - Cut sheet 50 sheets (plain paper of A3 or smaller) or 20 sheets (plain paper of larger than A3)
Cutter	Automatically cuts paper laterally. Cartridge-type (with round blade)
Type of media	- Roll media Plain Paper, Plain Paper(High Quality), Plain Paper(High Grade), Coated Paper, Heavyweight Coated Paper, Premium Matte Paper, Glossy Photo Paper, Semi-Glossy Photo Paper, Economy Bond Paper, Universal Bond Paper, Premium Coated Paper, Matte Coated Paper 90gsm, Glossy Photographic Paper 190gsm, Glossy Photographic Paper 240gsm, Satin Photographic Paper 240gsm, HW Glossy Photo Paper(Heavyweight Glossy Photographic Paper 300gsm), HW Satin Photo Paper(Heavyweight Satin Photographic Paper 300gsm), Premium RC Photo Luster(Premium RC Photo Luster, 10 mil), Commercial Proofing Paper(Commercial Proofing Paper 200gsm), Commercial RC Proofing 210gsm, Commercial RC Proofing 270gsm - Cut sheet (cassette) Plain Paper, Plain Paper(High Quality), Plain Paper(High Grade), High Resolution Paper, Coated Paper, Premium Matte Paper, Matte Photo Paper, Glossy Paper, Photo Paper Pro, Photo Paper Plus, Photo Paper Plus Semi-Gloss -Cut sheet (manual feed from top) Plain Paper, Plain Paper(High Quality), Plain Paper(High Grade), High Resolution Paper, Coated Paper, Heavyweight Coated Paper, Premium Matte Paper, Matte Photo Paper, Glossy Photo Paper, Semi-Glossy Photo Paper, Glossy Paper, Photo Paper Pro, Photo Paper Plus, Photo Paper Plus Semi-Gloss, Economy Bond Paper, Universal Bond Paper, Premium Coated Paper, Matte Coated Paper 90gsm, Glossy Photographic Paper 190gsm, Glossy Photographic Paper 240gsm, Satin Photographic Paper 240gsm, HW Glossy Photo Paper(Heavyweight Glossy Photographic Paper 300gsm), HW Satin Photo Paper(Heavyweight Satin Photographic Paper 300gsm), Premium RC Photo Luster(Premium RC Photo Luster, 10 mil), Commercial Proofing Paper(Commercial Proofing Paper 200gsm), Commercial RC Proofing 210gsm, Commercial RC Proofing 270gsm - Cut sheet (manual feed from front) POP Board
Supported thickness	Roll media: 0.08 to 0.8 mm Cassette: 0.08 to 0.3 mm Manual feed from top: 0.08 to 0.8 mm Manual feed from front: 0.5 to 1.5 mm
Media size (Roll media)	Width:203mm(8inch) X 610mm(24inch) Length:203mm X 18m Maximum outside diameter: 150 mm
Media size (Cut sheet)	- Manual feed from top Width:203mm(8inch) to 610mm(24inch) Length:276mm to 1600mm - Manual feed from front Width:203mm(8inch) to 610mm(24inch) Length:520mm X 914mm - Cassette:only standard size Width:203mm(8inch) X 432mm(17inch) Length:279mm X 594mm

Printable area (Roll media)	Area excluding 3mm from the leading edge, 3 mm from the trailing edge, and 3 mm from the left and right edges. Borderless printing: 0 mm from the leading edge, trailing edge, and left and right edges. Width of media allowing borderless printing: 10"(254mm), B4(257mm), A3+(329mm), 14"(356mm), 16"(407mm), A2(420mm), A2+/17"(432mm), B2(515mm), A1(594mm), 24"(610mm) Media type allowing borderless printing: Heavyweight Coated Paper, Premium Matte Paper, Glossy Photo Paper, Semi-Glossy Photo Paper, Premium Coated Paper, Glossy Photographic Paper 190gsm, Glossy Photographic Paper 240gsm, Satin Photographic Paper 240gsm, HW Glossy Photo Paper, HW Satin Photo Paper, Premium RC Photo Luster
Printable area (Cut sheet)	Area excluding 3 mm from the leading edge, 3 mm from the trailing edge (23 mm when supplied from manual feed from top or selected fine art), and 3 mm from the left and right edges.
Printing recommendation area (Roll media)	Area excluding 20 mm from leading edge, 5 mm from the trailing edge and 5 mm from the left and right edges (standard size).
Printing recommendation area (Cut sheet)	Area excluding 20 mm from the leading edge, 27 mm from the trailing edge, and 5 mm from the left and right edges (standard size).
Memory	256MB Increase of memory: none
Firmware	Flash ROM (update from USB and Ethernet, IEEE1394) - Printer description language GARO (Graphic Arts language with Raster Operation), HP-GL/2, HP RTL
Interface	USB2.0, Ethernet, IEEE1394 (option)
Operation panel	LCD (160 X 128 dots), 12 keys, 5 LEDs - Panel language English - Message language English, German, French, Italian, Spanish, Chinese, Korean, Russian and Japanese
Printhead/Ink Tank type	Printhead and separate ink tanks
Printhead	[PF-03] Number nozzles: 2560 nozzles per color
Ink tank	[PFI-102]MBK, BK, C, M, Y Capacity: 130 ml per color (Ink tanks supplied with the printer contain 90 ml of each color.)
Detection functions (Cover system)	Detects opening/closing of the top cover and ink tank cover.
Detection functions (Ink passage system)	Detects presence/absence of ink tank, ink level (dot count and electrode), presence/absence of the maintenance cartridge, waste ink full level, presence/absence of the printhead, and opening/closing of the supply valve.
Detection functions (Carriage system)	Detects the ambient temperature, head temperature, presence/absence of the head, and no ink ejection.
Detection functions (Paper path system)	Detects presence/absence of paper, cutter position, presence/absence of the cassette, leading/trailing edge of paper, paper width, and skew.
Operating noise	During printing: Approx. 52 dB (A) or less During standby: Approx. 35 dB (A) or less
Operating environment	Temperature: 15 to 30 degrees centigrade Humidity: 10% to 80% without dew condensation
Print quality guaranteed environment	Temperature: 15 to 30 degrees centigrade Humidity: 10% to 80%RH
Power supply	100-120 VAC (50/60 Hz), 220-240 VAC (50/60 Hz)
Power consumption (Maximum)	During printing: Max. 100 W
Power consumption	In power save (sleep) mode: 5 W or less(220-240 VAC: 6W or less) (When IEEE1394 board installed, 10W or less[220-240 VAC: 11W or less]) During standby: 1 W or less
Printer unit dimensions (WxDxH)	997 x 810 x 344 mm
Weight	Approx. 55 kg

1.4 Detailed Specifications

1.4.1 Print Speed and Direction

Media Type		Print Priority	Print Quality	Print-Pass	Printing Direction	Print Resolution (dpi)	Used BK ink
Plain Paper/ Recycled Paper	Plain Paper	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK
		Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK
				1	Bi-directional	1200x1200	MBK
			Standard	1	Bi-directional	1200x1200	MBK
				2	Single-directional	1200x1200	MBK
			High	2	Single-directional	1200x1200	MBK
		Image	Draft	1	Bi-directional	1200x1200	MBK
			Standard	2	Bi-directional	1200x1200	MBK
			High	4	Bi-directional	1200x1200	MBK
		Plain Paper (High Quality)	Office Document	Standard	1/2	Bi-directional	1200x1200
	Line Document/ Text		Draft	1	Bi-directional	1200x1200	MBK
				1	Bi-directional	1200x1200	MBK
			Standard	1	Bi-directional	1200x1200	MBK
				2	Single-directional	1200x1200	MBK
			High	2	Single-directional	1200x1200	MBK
	Image		Draft	1	Bi-directional	1200x1200	MBK
			Standard	2	Bi-directional	1200x1200	MBK
			High	4	Bi-directional	1200x1200	MBK
	Plain Paper (High Grade)		Office Document	Standard	1/2	Bi-directional	1200x1200
		Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK
1				Bi-directional	1200x1200	MBK	
Standard			1	Bi-directional	1200x1200	MBK	
			2	Single-directional	1200x1200	MBK	
High			2	Single-directional	1200x1200	MBK	
Image		Draft	1	Bi-directional	1200x1200	MBK	
		Standard	2	Bi-directional	1200x1200	MBK	
		High	4	Bi-directional	1200x1200	MBK	
All Plain Paper_Conserve MBK		Office Document	Standard	1/2	Bi-directional	1200x1200	MBK
	Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK	
			1	Bi-directional	1200x1200	MBK	
		Standard	1	Bi-directional	1200x1200	MBK	
			2	Single-directional	1200x1200	MBK	
		High	2	Single-directional	1200x1200	MBK	
	Image	Draft	1	Bi-directional	1200x1200	MBK	
		Standard	2	Bi-directional	1200x1200	MBK	
		High	4	Bi-directional	1200x1200	MBK	
	Economy Bond Paper	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK
Line Document/ Text		Draft	1	Bi-directional	1200x1200	MBK	
			1	Bi-directional	1200x1200	MBK	
		Standard	1	Bi-directional	1200x1200	MBK	
			2	Single-directional	1200x1200	MBK	
		High	2	Single-directional	1200x1200	MBK	
Image		Draft	1	Bi-directional	1200x1200	MBK	
		Standard	2	Bi-directional	1200x1200	MBK	
		High	4	Bi-directional	1200x1200	MBK	
Universal Bond Paper		Office Document	Standard	1/2	Bi-directional	1200x1200	MBK
	Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK	
			1	Bi-directional	1200x1200	MBK	
		Standard	1	Bi-directional	1200x1200	MBK	
			2	Single-directional	1200x1200	MBK	
		High	2	Single-directional	1200x1200	MBK	
	Image	Draft	1	Bi-directional	1200x1200	MBK	
		Standard	2	Bi-directional	1200x1200	MBK	
		High	4	Bi-directional	1200x1200	MBK	
	Standard Paper 1569B 80g	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK
Line Document/ Text		Draft	1	Bi-directional	1200x1200	MBK	
			1	Bi-directional	1200x1200	MBK	
		Standard	1	Bi-directional	1200x1200	MBK	
			2	Single-directional	1200x1200	MBK	
		High	2	Single-directional	1200x1200	MBK	
Image		Draft	1	Bi-directional	1200x1200	MBK	
		Standard	2	Bi-directional	1200x1200	MBK	
		High	4	Bi-directional	1200x1200	MBK	
Standard Paper 1570B 90g		Office Document	Standard	1/2	Bi-directional	1200x1200	MBK
	Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK	
			1	Bi-directional	1200x1200	MBK	

Media Type		Print Priority	Print Quality	Print-Pass	Printing Direction	Print Resolution (dpi)	Used BK ink
Coated Paper	Coated Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK
				1	Bi-directional	1200x1200	BK
			Standard	2	Bi-directional	1200x1200	BK
			High	4	Bi-directional	1200x1200	BK
				4	Bi-directional	1200x1200	BK
		Image	Standard	4	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	12	Bi-directional	2400x1200	BK
		Heavyweight Coated Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200
	1				Bi-directional	1200x1200	BK
	Standard			2	Bi-directional	1200x1200	BK
	High			4	Bi-directional	1200x1200	BK
				4	Bi-directional	1200x1200	BK
	Image		Standard	4	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	12	Bi-directional	2400x1200	BK
	Extra Heavyweight Coated Paper		Line Document/Text	Draft	1	Bi-directional	1200x1200
		1			Bi-directional	1200x1200	BK
		Standard		2	Bi-directional	1200x1200	BK
		High		4	Bi-directional	1200x1200	BK
				4	Bi-directional	1200x1200	BK
		Image	Standard	4	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	12	Bi-directional	2400x1200	BK
Recycled Coated Paper		Line Document/Text	Draft	1	Bi-directional	1200x1200	BK
	1			Bi-directional	1200x1200	BK	
	Standard		2	Bi-directional	1200x1200	BK	
	High		4	Bi-directional	1200x1200	BK	
			4	Bi-directional	1200x1200	BK	
	Image	Standard	4	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	12	Bi-directional	2400x1200	BK	
	High Resolution Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK
1				Bi-directional	1200x1200	BK	
Standard			2	Bi-directional	1200x1200	BK	
High			4	Bi-directional	1200x1200	BK	
			4	Bi-directional	1200x1200	BK	
Image		Standard	4	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	12	Bi-directional	2400x1200	BK	
Premium Matte Paper		Line Document/Text	Draft	1	Bi-directional	1200x1200	BK
	1			Bi-directional	1200x1200	BK	
	Standard		2	Bi-directional	1200x1200	BK	
	High		4	Bi-directional	1200x1200	BK	
			4	Bi-directional	1200x1200	BK	
	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
	Matte Photo Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK
1				Bi-directional	1200x1200	BK	
Standard			2	Bi-directional	1200x1200	BK	
High			4	Bi-directional	1200x1200	BK	
			4	Bi-directional	1200x1200	BK	
Image		Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Colored Coated Paper		Image	Standard	4	Bi-directional	1200x1200	MBK
	High		8	Bi-directional	1200x1200	MBK	
Premium Coated Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK	
			1	Bi-directional	1200x1200	BK	
		Standard	2	Bi-directional	1200x1200	BK	
		High	4	Bi-directional	1200x1200	BK	
			4	Bi-directional	1200x1200	BK	
	Image	Standard	4	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	12	Bi-directional	2400x1200	BK	

Media Type		Print Priority	Print Quality	Print-Pass	Printing Direction	Print Resolution (dpi)	Used BK ink
Photo Paper	Glossy Photo Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Semi-Glossy Photo Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Photo Paper Plus	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Photo Paper Plus Semi-Gloss	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Photo Paper Pro	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Glossy Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Heavyweight Glossy Photo Paper 2	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Heavywght SemiGlos Photo Paper 2	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Satin Photographic Paper 190gsm	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Premium RC Photo Luster , 10 mil	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
Instant Dry Papers Glossy 200g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Instant Dry Papers Satin 200g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Photo Paper High Glossy 250g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Photo Paper Semi Matt 250g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Photo Paper Satin 240g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Photo Paper Pearl 260g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Proofing Paper	Proofing Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Professional Proof and Photo Glossy 195g	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Professional Proof and Photo Semiglossy 195g	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Professional Proof and Photo Semigloss 255g	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK

Media Type		Print Priority	Print Quality	Print-Pass	Printing Direction	Print Resolution (dpi)	Used BK ink
Synthetic Paper	Synthetic Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Adhesive Synthetic Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
Board	POP Board	Image	Standard	4	Bi-directional	1200x1200	MBK
			High	8	Bi-directional	1200x1200	MBK
Adhesive Matt Paper	High Resolution Graphic Paper Self ADH	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
CAD	CAD Tracing Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	MBK
				1	Bi-directional	1200x1200	MBK
			Standard	2	Bi-directional	1200x1200	MBK
			High	4	Bi-directional	1200x1200	MBK
				4	Bi-directional	1200x1200	MBK
	CAD Translucent Matte Film	Line Document/Text	Draft	1	Bi-directional	1200x1200	MBK
				1	Bi-directional	1200x1200	MBK
			Standard	2	Bi-directional	1200x1200	MBK
			High	4	Bi-directional	1200x1200	MBK
				4	Bi-directional	1200x1200	MBK
Special	Special 1	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Special 2	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Special 3	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Special 4	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Special 5	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK

1.4.2 Interface Specifications

a. USB (standard)

- (1) Interface type
USB 2.0 Hi-Speed (Full speed (12 Mbits/sec), High speed (480 Mbits/sec))
- (2) Data transfer system
Control transfer
Bulk transfer
- (3) Signal level
Compliant with the USB standard.
- (4) Interface cable
Twisted-pair shielded cable, 5.0 m max.
Compliant with the USB standard.
Wire materials: AWG No.28, data wire pair (AWF: American Wire Gauge)
AWG No.20 to No.28, power distribution wire pair
- (5) Interface connector
Printer side: Series B receptacle compliant with USB standard
Cable side: Series B plug compliant with USB standard

b. Network (standard)

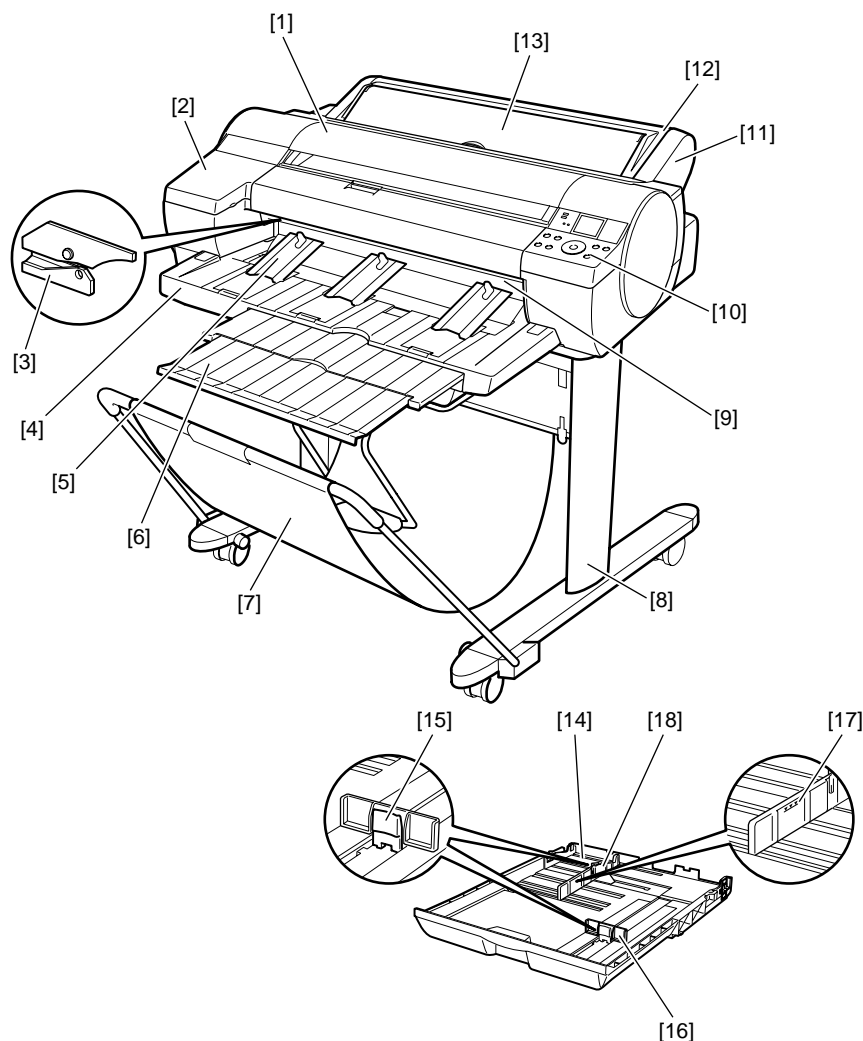
- (1) Interface type
Interface compliant with IEEE802.3
- (2) Data transfer system
10Base-T/100Base-TX
- (3) Signal level
Input: Threshold
10Base-T: Max. +585 mV, Min. +300 mV
100Base-TX: Turn-on +1000 mV diff pk-pk, Turn-off +200 mV diff pk-pk
Output:
10Base-T: +2.2 V to +2.8 V
100Base-TX: +0.95 to +1.05 V
- (4) Interface cable
Category 5 (UTP or FTP) cable, 100 m or shorter
Compliant with ANSI/EIA/TIA-568A or ANSI/EIA/TIA-568B
- (5) Interface connector
Printer side: Compliant with IEEE802.3, ANSI X3.263, ISO/IEC60603-7

c. IEEE1394 (option)

- (1) Interface type
Interface compliant with IEEE1394-1995, P1394a (Version 2.0)
- (2) Data transfer system
Asynchronous transfer
- (3) Signal level
Input:
Differential input voltage:
During S100 settlement: +173 mV to +260 mV
During data reception: +142 mV to +260 mV
During S200 settlement: +171 mV to +262 mV
During data reception: +132 mV to +260 mV
During S400 settlement: +168 mV to +265 mV
During data reception: +118 mV to +260 mV
Output:
Differential output voltage: +172 mV to +265 mV
- (4) Interface cable
Twisted-pair shielded cable, 4.5 m max.
Compliant with IEEE1394-1995 standard or P1394a (Version 2.0) standard
- (5) Interface connector
Printer side: 6-pin connector (socket) compliant with IEEE1394 standard
Cable side: 6-pin connector (plug) compliant with IEEE1394 standard
Cable side: RJ-45 type compliant with ANSI/EIA/TIA-568A or ANSI/EIA/TIA-568B

1.5 Names and Functions of Components

1.5.1 Front

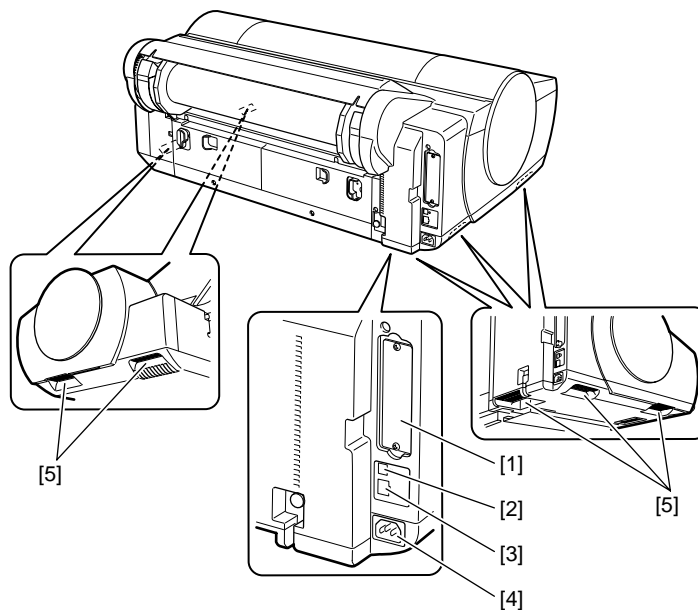


F-1-17

- [1] Top cover
Open this cover when installing the printhead or remove the media jammed inside the printer.
- [2] Ink tank cover
Open this cover when replacing ink tanks.
- [3] Cutter
A round-blade cutter cuts roll media automatically. It is stowed inside when it is out of use.
- [4] Output tray
Printed documents are ejected into the output tray.
- [5] Output guides
These guides support printed documents as they are ejected, preventing jams. Raise the guides before printing on rolls.
- [6] Output tray extension
An extension to prevent ejected paper from falling to the floor. Pull out the extension to match the paper size before printing on sheets.
- [7] Basket
Receives printed matter as it is ejected. Only one sheet can be housed in the basket.
- [8] Stand
The base on which the printer is mounted. The stand equipped with casters is easy to move.
- [9] Paper eject slot (paper tray front loading port)
All printed matter is ejected from this port. In loading thick paper, insert it into this port.
- [10] Operation panel
Contains the power button, online button display and so on.
- [11] Roll feed unit
Load roll media on this unit.
- [12] Roll feed unit cover
Load roll media with this cover open.
- [13] Paper tray cover
Load cut sheet at the paper tray top loading port with this cover open. This cover is opened, and the cut sheet is set at top manual feed slot.
- [14] Cassette
Load sheets in this tray.
- [15] Guide lever
Squeeze these levers to slide the guides.
- [16] Length guide
Adjust this guide to hold paper lengthwise.
- [17] Maximum capacity line
A guide line indicating how many sheets can be loaded. Do not load paper over this line.
- [18] Width guide

Adjust this guide to hold paper widthwise.

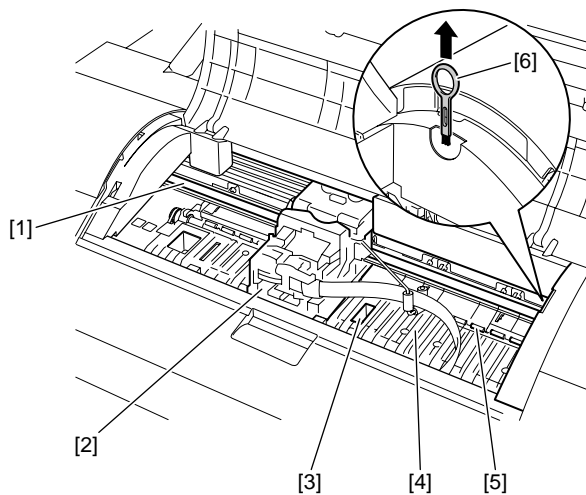
1.5.2 Rear



F-1-18

- [1] Expansion board slot
Insert the IEEE1394 (FireWire) expansion board (option) in this slot.
- [2] USB port
Connect the USB cable to this port.
- [3] Ethernet connector
Connect the Ethernet cable to this connector.
- [4] Power connector
Connect the power cord to this connector.
- [5] Carrying handle (5)
The printer is carried with this handles of a right and left bottom.

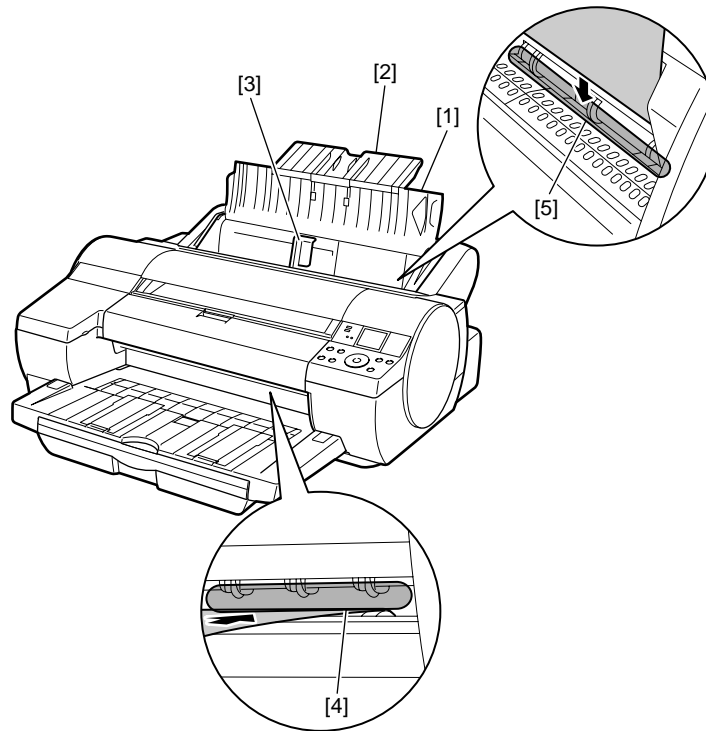
1.5.3 Top Cover (Inside)



F-1-19

- [1] Carriage shaft
The carriage travels in this area.
- [2] Carriage
Moves the printheads.
- [3] Borderless printing ink receiving channel
Receives inks overflowing the edges of the paper during borderless printing.
- [4] Platen
Paper and the printheads travel over the platen to execute printing. Suction holes on the surface prevent the paper from lifting.
- [5] Pinch roller
A vital part needed to feed paper.
- [6] Cleaner brush
Use this brush to wipe off chad over the plant when cleaning the inside of the top cover.

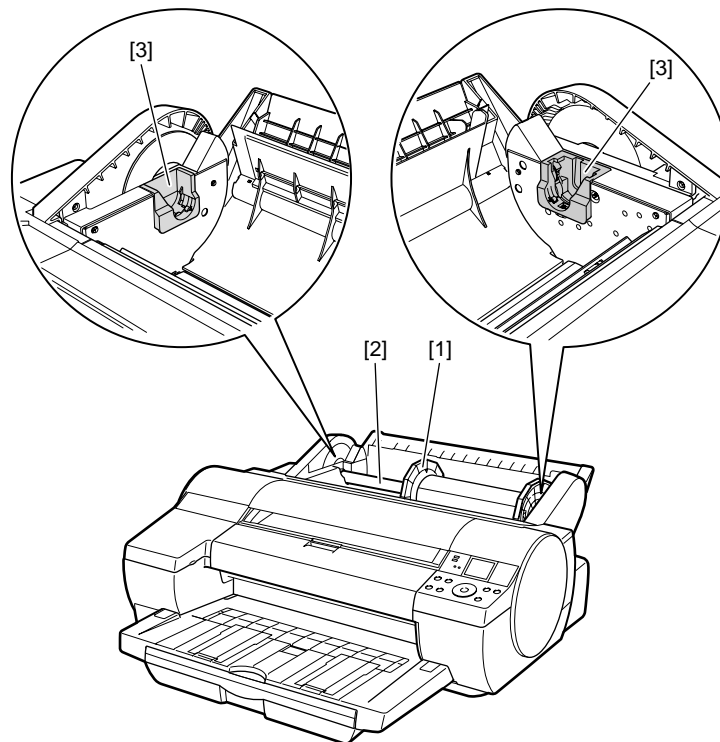
1.5.4 Manual Loading Area



F-1-20

- [1] Paper tray cover
In loading paper in a paper tray, open this cover.
- [2] Paper support
In loading paper in a paper tray, open the paper tray cover and then this tray.
- [3] Width guides
In loading cut sheet, move the guide to adjust to the paper size.
- [4] Paper tray front loading port (Paper eject slot)
In loading thick paper, insert it into this port. All printed matter is ejected from this port.
- [5] Paper tray top loading port
In loading cut sheet, insert them into this port.

1.5.5 Roll Feed Unit Cover (Inside)



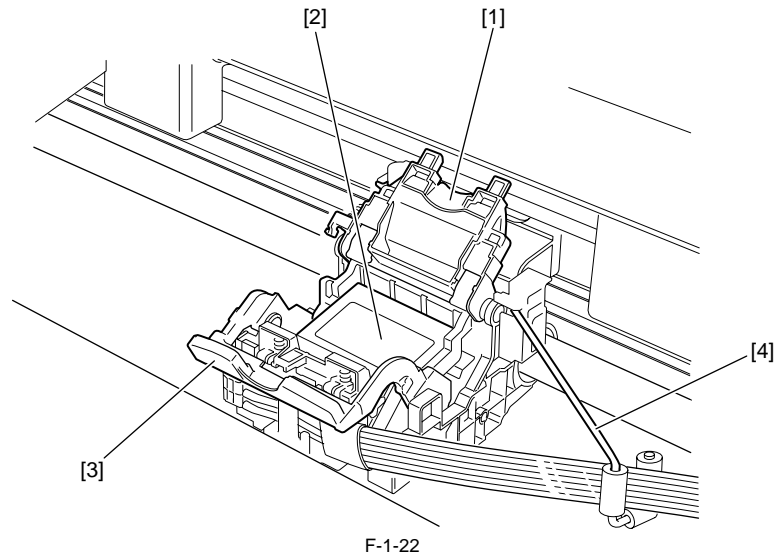
F-1-21

- [1] Roller holder
Set roll media on this holder.
- [2] Holder stopper

Use to secure roll media to the roller holder.

- [3] Roller holder slot
Set the roller holder in this guide groove.

1.5.6 Carriage



[1] Carriage

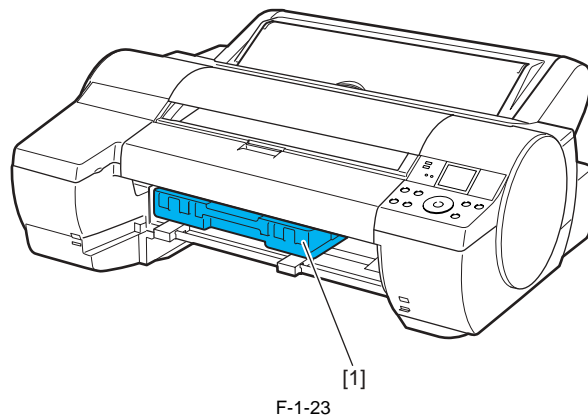
[2] Printhead lock cover
This cover is used to lock the printhead. Open this cover when installing the printhead.

[3] Printhead
The printhead incorporated nozzles. It is an important part for printing.

[4] Printhead lock lever
This lever is used to lock the printhead. Open this lever when installing the printhead.

[5] Ink tube guide
This stay is used as an ink tube guide.

1.5.7 Inside

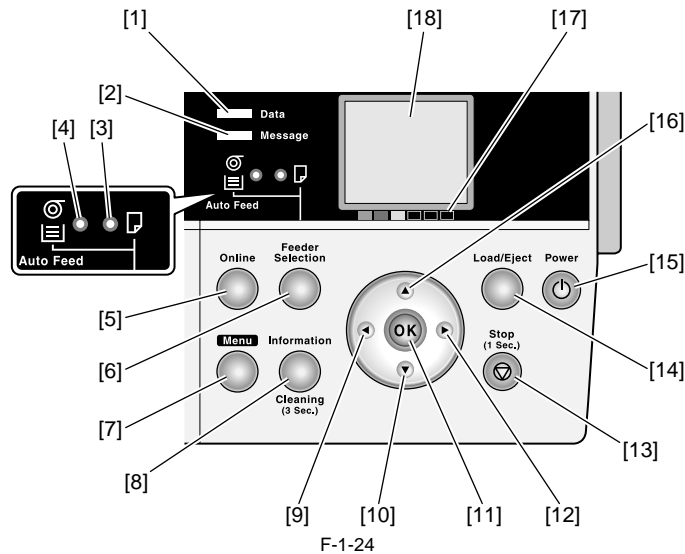


[1] Maintenance cartridge
Absorbs excess ink

1.6 Basic Operation

1.6.1 Operation Panel

This section explains the functions of the buttons and the meanings of the LEDs on the operation panel.



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[1] Data lamp

Blinking: Indicates that a print job is being received or processed if the printer is printing, or that a print job has paused or firmware data is being if the printer is not printing.

Off: No print job is available.

[2] Message lamp

On: Indicates that a warning message is on display.

Blinking: Indicates that an error message is on display.

Off: The printer is normal or is turned off.

[3] Cut sheet lamp (green)

On: Either the paper tray or paper tray front loading port is selected as a paper source.

Off: Roll media are selected as a paper source.

[4] Roll media lamp (green)

On: Roll media are selected as a paper source.

Off: Either the paper tray or paper tray front loading port is selected as a paper source.

[5] Online button

Toggles the printer mode between online and offline.

On: Online mode.

Blinking: Emerging from sleep mode.

Off: Offline mode.

[6] Paper source button

Selects a paper source. Each time this button is pressed, the paper source toggles between roll media (roll media source) and cut sheet (paper tray or paper tray front loading port), with the paper source selector lamp illuminating.

[7] Menu button

Displays the printer main menu.

[8] Information button

Displays the printer submenu. Each time this button is pressed, information about the inks and paper is displayed.

Hold this button depressed for 3 seconds to execute printhead cleaning ([Head Cleaning A]).

[9] ◀ button

Press this button when the printer is in menu mode to view the menu at the upper level.

The button is also used from one position to the next when entering a numeric value.

If [←- STOP] is on display, the guidance screen can be paused.

If [←- BACK] on display, the guidance screen can be moved backward.

[10] ▼ button

Press this button when the printer is in offline mode to manually feed roll media.

Press this button when the printer is in menu mode to view the next item or setting.

[11] OK button

Press to set or set or execute a menu choice when the printer is in menu mode.

Press this button in any other situation to transition to the next screen as directed by a message appearing in the display.

[12] ▶ button

Press this button when the printer is in menu mode to view the menu at the lower level.

If [NEXT →] on display, the guidance screen can be moved forward.

[13] Stop button

Press for longer than 1 second to cancel the job or ink drying process in progress.

If cut sheet loading guidance or the like is on display, hold this button for longer than 1 second to stop the guidance.

[14] Load/Eject button

Guidance offers a visual clue to loading (replacing)/removing paper. Press this button when no paper is loaded to view instructions on how to load (replace) paper in the display; press the button when paper is loaded to view instructions on how to remove the paper.

[15] Power button

Turns the printer on and off.

[16] ▲ button

Press this button when the printer is in offline mode to manually feed roll media in the direction opposite to that of ejection.

Press this button when the printer is in menu mode to view the last item or setting.

[17] Color labels

Represent ink tank colors in association with the remaining ink levels shown in the display.

[18] Display

Displays the printer menu, status or messages.

1.6.2 Main Menu

The printer has a Main menu which includes a menu related to maintenance such as adjustment of ink ejection position of each nozzle and head cleaning, a menu related to printing settings such as auto cutting and ink drying time, and a menu related to parameters such as a message language.

1. Main menu operations

a) How to enter the Main menu

To enter the Main menu, press the [Menu] button on the operation panel.

b) How to exit the Main menu

To exit the Main menu, press the [Online] button.

c) Buttons used with the Main menu

- Selecting menus and parameters: [◀] or [▶] button
- Going to the next lower-level menu: [▼] button
- Going to the next higher-level menu: [▲] button
- Determining a selected menu or parameter: [OK] button

2. Main Menu

The structure of the main menu is as follows. Values at right indicated by an asterisk "*" are the defaults.

T-1-3

First Level	Second Level	Third Level	Fourth Level	Fifth Level
[Paper Cut]	[No]*			
	[Yes]			
[Rep. Ink Tank]	[No]*			
	[Yes]			
[Head Cleaning]	[Head Cleaning A]			
	[Head Cleaning B]			
[Media Menu]	[Cas Paper Type]	[Plain Paper](*5)		
		[Plain Paper HQ](*5)		
		[Plain Paper HG](*5)		
		[All Plain Paper Conserve MBK](*5)		
		[Recycled Coated](*5)		
		[Coated Paper](*5)		
		[HW Coated](*5)		
		[Ex HW Coated](*5)		
		[Premium MatteP](*5)		
		[Glossy Photo](*5)		
		[Glossy Photo2](*5)		
		[Semi-GI Photo](*5)		
		[Semi-GI Photo2](*5)		
		[HW Glossy Photo](*5)		
		[HW SemiGI Photo](*5)		
		[Syn. Paper](*5)		
		[Adh. Syn. Paper](*5)		
		[Proofing Paper](*5)		
		[News Proof 1](*5)		
		[News Proof 2](*5)		
		[News Proof 3](*5)		
		[Colored Coated](*5)		
		[CAD Trace Paper](*5)		
		[CAD Matte Film](*5)		
		[CAD Clear Film](*5)		
		Special # Here, the number is 1 to 5(*5)		
		[Cas Paper Size]	[ISO A4]	
	[ISO B2]			
	[ISO B3]			
	[ISO B4]			
	[JIS B2]			
	[JIS B3]			
	[JIS B4]			
[22"X34"(ANSI D)]				
[17"X22"(ANSI C)]				
[13"X19"(Super B)]				
[11"X17"(Ledger)]				
[Letter (8.5"X11")]				

First Level	Second Level	Third Level	Fourth Level	Fifth Level	
[Media Menu]	[Cas Paper Size]	[Legal (8.5"X14")]			
		[24"X36"(ARCH D)]			
		[18"X24"(ARCH C)]			
		[12"X18"(ARCH B)]			
		[9"X12"(ARCH A)]			
		[DIN C2]			
		[DIN C3]			
		[DIN C4]			
		[20"x24"]			
		[18"x22"]			
		[14"x17"]			
		[12"x16"]			
		[10"X12"]			
		[10"X15"]			
		[8"X10"]			
		[16"x20"]			
		[20"X30"]			
		[13"X22"]			
		[300X900mm]			
		[ISO A1]			
	[ISO A2+]				
	[ISO A2]				
	[ISO A3+]				
	[ISO A3]				
		[Manual PaperType]	[Plain Paper>(*5)]		
			[Plain Paper HQ>(*5)]		
			[Plain Paper HG>(*5)]		
			[All Plain Paper Conserve MBK>(*5)]		
			[Recycled Coated>(*5)]		
			[Coated Paper>(*5)]		
			[HW Coated>(*5)]		
			[Ex HW Coated>(*5)]		
			[Premium MatteP>(*5)]		
			[Glossy Photo>(*5)]		
			[Glossy Photo2>(*5)]		
			[Semi-GI Photo>(*5)]		
			[Semi-GI Photo2>(*5)]		
			[HW Glossy Photo]		
			[HW SemiGI Photo>(*5)]		
			[Syn. Paper>(*5)]		
	[Adh. Syn. Paper>(*5)]				
	[Proofing Paper>(*5)]				
	[News Proof 1>(*5)]				
	[News Proof 2>(*5)]				
	[News Proof 3>(*5)]				
	[Colored Coated>(*5)]				

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First Level	Second Level	Third Level	Fourth Level	Fifth Level	
[Media Menu]	[Manual PaperType]	[CAD Trace Paper>(*5)			
		[CAD Matte Film>(*5)			
		[CAD Clear Film>(*5)			
		Special # Here, the number is 1 to 5 (*5)			
		[Manual PaperSize]	[ISO A4]		
			[ISO B2]		
			[ISO B3]		
			[ISO B4]		
			[JIS B2]		
			[JIS B3]		
			[JIS B4]		
			[22"x34"(ANSI D)]		
			[17"x22"(ANSI C)]		
			[13"x19"(Super B)]		
			[11"x17"(Ledger)]		
			[Letter(8.5"x11")]		
			[Legal(8.5"x14")]		
			[24"x36"(ARCH D)]		
			[18"x24"(ARCH C)]		
			[12"x18"(ARCH B)]		
			[9"x12"(ARCH A)]		
			[DIN C2]		
			[DIN C3]		
			[DIN C4]		
			[20"x24"]		
			[18"x22"]		
			[14"x17"]		
			[12"x16"]		
			[10"x12"]		
			[10"x15"]		
			[8"x10"]		
			[16"x20"]		
			[20"x30"]		
			[13"x22"]		
			[300x900mm]		
			[ISO A1]		
			[ISO A2+]		
			[ISO A2]		
			[ISO A3+]		
			[ISO A3]		

First Level	Second Level	Third Level	Fourth Level	Fifth Level
[Media Menu]	[Roll Media Type>(*1)	[Plain Paper>(*5)		
		[Plain Paper HQ>(*5)		
		[Plain Paper HG>(*5)		
		[All Plain Paper Conserve MBK>(*5)		
		[Recycled Coated>(*5)		
		[Coated Paper>(*5)		
		[HW Coated>(*5)		
		[Ex HW Coated>(*5)		
		[Premium MatteP>(*5)		
		[Glossy Photo>(*5)		
		[Glossy Photo2>(*5)		
		[Semi-GI Photo>(*5)		
		[Semi-GI Photo2>(*5)		
		[HW Glossy Photo>(*5)		
		[HW SemiGI Photo>(*5)		
		[Syn. Paper>(*5)		
		[Adh. Syn. Paper>(*5)		
		[Proofing Paper>(*5)		
		[News Proof 1>(*5)		
		[News Proof 2>(*5)		
	[News Proof 3>(*5)			
	[Colored Coated>(*5)			
	[CAD Trace Paper>(*5)			
	[CAD Matte Film>(*5)			
[CAD Clear Film>(*5)				
[Special # Here, the number is 1 to 5 (*5)				
[Chk Remain.Roll]	[Of]*			
	[On]			
[Roll Length Set>(*1, *2)	[### m]			
	[### feet>(*9)			
[Paper Details]	(The paper type is displayed here.) (*5)	[Roll DryingTime]	[Off]	
			[30 sec.]	
			[1 min.]	
			[3min.]	
			[5min.]	
			[10min.]	
			[30min.]	
			[60min.]	
		[Scan Wait Time]	[Off]	
			[1 sec.]	
			[3sec.]	
			[5sec.]	
			[7sec.]	
			[9sec.]	

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First Level	Second Level	Third Level	Fourth Level	Fifth Level
[Paper Details]	(The paper type is displayed here.) (*5)	[Feed Priority]	[Automatic]*	
			[Band Joint]	
			[Print Length]	
		[Adjust Length]	-0.70 to 0.70	
		[Head Height]	[Automatic]*	
			[Highest]	
			[High]	
			[Standard]	
			[LowLow]	
		[Skew Check Lv.]	[High Accuracy]	
			[Standard]*	
			[Loose]	
			[Off]	
		[VacuumStrngth]	[Automatic]*	
			[Strongest]	
			[Strong]	
			[Standard]	
			[Weak]	
		[NearEnd RollMrgn]	[3mm]	
			[20mm]	
		[Cut Speed]	[Fast]	
			[Standard]	
			[Slow]	
		[Trim Edge First]	[Automatic]	
			[Off]	
			[On]	
		[Cutting Mode]	[Automatic]	
			[Eject]	
			[Manual]	
		[Bordless Margin]	[Automatic]	
[Fixed]				
[CutDustReduct.]	[Off]			
	[On]			
[NearEnd Sht Mrgn]	[3mm]			
	[20mm]			
[Return Defaults]	[No]			
	[Yes]			
[GL2 Settings]	[GL2 Replot]	[No]		
		[Yes]		
	[GL2 BufferClear]	[No]		
		[Yes]		
[Color Mode]	[Color Mode]*			
	[Monochrome]			

First Level	Second Level	Third Level	Fourth Level	Fifth Level
[GL2 Settings]	[Print Quality]	[Draft]		
		[Standard]*		
		[High]		
	[Input Resolution]	[600dpi]*		
		[300dpi]		
	[Media Source]	[Roll Paper]*		
		[Cassette]		
		[Manual]		
	[Conserve Paper]	[Off]		
		[On]*		
	[End Point Shape]	[Software]*		
		[Rounded]		
	[Smoothing]	[Software]*		
		[Smooth]		
	[Line Width]	[1dot]		
[2dot]				
[3dot]				
[4dot]*				
[5dot]				
[6dot]				
[7dot]				
[Adjust Printer]	[Auto Head Adj.]	[Standard Adj.]	[No]	
			[Yes]	
		[Advanced Adj.]	[No]	
			[Yes]	
		[Auto Print]	[Off]	
			[On]*	
	[Manual Head Adj]	[No]		
		[Yes]		
	[Auto Band Adj.]	[Standard Adj.]	[No]	
			[Yes]	
		[Advanced Adj.]	[No]	
			[Yes]	
	[Manual Band Adj]	[No]		
		[Yes]		
	[Adj Far Ed Feed]	[No]		
[Yes]				
[Adjust Length>(*3)	[No]			
	[Yes]			
	[Return Defaults]	[No]		
		[Yes]		

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First Level	Second Level	Third Level	Fourth Level	Fifth Level	
[Interface Setup]	[EOP Timer]	[10 sec.]			
		[30 sec.]			
		[1 min.]			
		[2 min.]			
		[5 min.]			
		[10 min.]*			
		[30 min.]			
		[60 min.]			
	[TCP/IP]	[IP Mode]		[Automatic]	
				[Manual]*	
		[Protocol>(*4)]		[DHCP]	[On]
					[Off]*
				[BOOTP]	[On]
					[Off]*
			[RARP]	[On]	
				[Off]*	
		[IP Setting]		[IP Address]	0.0.0.0* to 255.255.255.255
				[Subnet Mask]	0.0.0.0* to 255.255.255.255
			[Default G/W]	0.0.0.0* to 255.255.255.255	
	[NetWare]	[NetWare]		[On]	
				[Off]*	
		[Frame Type>(*6)]		[Auto Detect]	
				[Ethernet 2]	
				[Ethernet 802.2]*	
				[Ethernet 802.3]	
			[Ethernet SNAP]		
		[Print Service>(*6)]		[BinderyPServer]	
				[RPrinter]	
				[NDSPServer]*	
			[NPrinter]		
	[AppleTalk]		[On]		
			[Off]*		
	[Ethernet Driver]	[Auto Detect]		[On*]	
				[Off]	
		[Comm.Mode>(*7)]		[Half Duplex]*	
				[Full Duplex]	
[Ethernet Type>(*7)]			[10 Base-T]*		
			[100 Base-TX]		
[Spanning Tree]			[Not Use]*		
		[Use]			
	[MAC Address]				
[Ext.Interface]		[No]			
		[IEEE1394]			
[Init. Settings]		[No]			
		[Yes]			

First Level	Second Level	Third Level	Fourth Level	Fifth Level
[Maintenance]	[Maint. cart.]	[No]		
		[Yes]		
	[Replace P.head]	[No]		
		[Yes]		
	[Move Printer]	[No]		
		[Yes]		
	[Clean Roller]	[No]		
		[Yes]		
	[Clean Platen]	[No]		
		[Yes]		
[System Setup]	[Warning]	[Buzzer]	[Off]	
			[On]*	
		[Detect Mismatch]	[Pause]	
			[Warning]	
	[None]*			
	[Keep Media Size]	[Off]*		
		[On]		
	[Paper Size Basis]	[Sht Selection]	[ISO A3+]*	
			[13"x19"(Super B)]	
		[Roll Selection 1]	[ISO A3 (297mm)]	
			[300mm Roll]	
	[Roll Selection 2]		[10INCH (254mm)]	
			[JIS B4 (257mm)]	
	[TrimEdge Reload]	[Automatic]		
		[Off]*		
		[On]		
	[Noz. Check Freq.]	[Off]		
		[1 page]		
		[10 pages]		
		[Automatic]*		
	[Sleep Timer]	[5 min.]*		
		[10 min.]		
		[15 min.]		
		[20 min.]		
		[30 min.]		
		[40 min.]		
		[50 min.]		
[60 min.]				
[240 min.]				
[Length Unit]		[meter]*		
	[feet/inch]			

T-1-11

First Level	Second Level	Third Level	Fourth Level	Fifth Level
[System Setup]	[Time Zone]	[0: London (GMT)]		
		[+1: Paris, Rome]		
		[+2: Athens, Cairo]		
		[+3: Moscow]		
		[+4: Eerenan, Baku]		
		[+5: Islamabad]		
		[+6: Dacca]		
		[+7: Bangkok]		
		[+8: Hong Kong]		
		[+9: Tokyo, Seoul]		
		[+10: Canberra]		
		[+11: NewCaledonia]		
		[+12: Wellington]		
		[-12: Eniwetok]		
		[-11: Midway is]		
		[-10: Hawaii (AHST)]		
		[-9: Alaska (AKST)]		
		[-8: Oregon (PST)]		
		[-7: Arizona (MST)]		
		[-6: Texas (CST)]		
		[-5: NewYork (EST)]		
	[-4: Santiago]			
	[-3: Buenos Aires]			
	[-2:]			
	[-1: Cape Verde]			
	[Date Format]	[yyyy/mm/dd]*		
		[dd/mm/yyyy]		
		[mm/dd/yyyy]		
	[Date & Time]	[Date]	[yyyy/mm/dd] (*8)	
		[Time]	[hh: mm]	
	[Language]	[Japanese]*		
		[Francais]		
		[Italiano]		
	[Deutsch]			
	[Espanol]			
	[Pyckcknn]			
	[Chinese]			
	[Korea]			
	[Engulish]			
[Contrast Adj.]	-4 to 4			
[Reset PaprSetngs]	[No]			
	[Yes]			

First Level	Second Level	Third Level	Fourth Level	Fifth Level
[Test Print]	[Status Print]	[No]		
		[Yes]		
	[Media Details]	[No]		
		[Yes]		
	[Print Job Log]	[No]		
		[Yes]		
	[Menu Map]	[No]		
		[Yes]		
	[Nozzle Check]	[No]		
		[Yes]		
[Information]	[System Info]			
	[Error Log]	[##### #####]		
	[Job Log]	(Choose from information about the latest three print jobs.)	[Document Name]	
			[User Name]	
			[Page Count]	
			[Job Status]	
			[Print Start Time]	
			[Print End Time]	
			[Print Time]	
			[Print Size]	
[Media Type]				
[Interface]				
[Ink Consumed]				

- *1: Displayed if a roll is loaded.
- *2: Displayed if Chk Remain.Roll is On.
- *3: Displayed if IP Mode is Automatic.
- *4: Displayed if IP Mode is Automatic.
- *5: For information on the types of paper the printer supports, refer to the Media Guide. The media type setting in the printer driver and related software (as well as on the Control Panel is updated when you install Media Configuration Tool from the User Software CD-ROM or if you change paper information by using Media Configuration Tool.
- *6: Available only if NetWare is On.
- *7: Available only if Auto Detect is Off.
- *8: Follows the setting in Date Format.
- *9: Not displayed if a roll or a sheet has been fed.

3. Main menu during printing

The structure of the main menu during printing is as follows.

T-1-13

First Level	Second Level	Third Level	Fourth Level	Fifth Level
[Menu Durng Prtng]	[Head Cleaning]	[Head Cleaning A]		
		[Head Cleaning B]		
	[Fine Band Adj.]	-5 to 5		
	[Information]	[System Info]		
		[Error Log]		
		[Job Log]	(Choose from information about the latest three print jobs.)	[Document Name]
				[User Name]
		[Page Count]		
		[Job Status]		
		[Print Start Time]		
	[Print End Time]			
	[Print Time]			
	[Print Size]			
	[Media Type]			
	[Interface]			
	[Ink Consumed]			

4. Main Menu Settings

Main menu items are described in the following tables.

T-1-14

Setting Item	Description, Instructions
[Paper Cut]	Displayed if a roll is loaded. Choose Yes to cut the roll at the current position. The paper will be fed, if necessary, so that the sheet is at least 10 cm (39.4 in.) long after the cut. The paper will not be cut if there is not enough paper left to feed the paper this much.
[Rep. Ink Tank]	When exchanging the ink tank, choose Yes and follow the instructions on the screen.
[Head Cleaning]	Specify Printhead cleaning options. Choose Head Cleaning A if printing is faint, oddly colored, or contains foreign substances. Choose Head Cleaning B if no ink is printed at all, or if printing is not improved by Head Cleaning A .
[Paper Settings]	Specify the type and size of paper.
[Paper Details]	Specify detailed paper-related settings, including the ink drying time and borderless printing options.
[GL2 Settings]	Make settings for making prints using GL2.
[Adjust Printer]	Adjust the Printhead alignment or amount of feed by printing a test pattern.
[Interface Setup]	Configure the network settings.
[Maintenance]	Replace the Printhead , prepare to transfer the printer, and clean the Pick Up Roller .
[System Setup]	Specify the printer system settings, including the date format and display language.
[Test Print]	Choose Status Print to print information about the printer. Choose Media Details to print the paper settings as specified in Med.Detail Set . Choose Print Job Log to print a record of print jobs, including the paper type and size, amount of ink used, and so on. Choose Menu Map to print a list of the main menu options. Choose Nozzle Check to print a test pattern for checking the nozzles. If you have selected a leading edge margin of 20 mm in Nr End Sht Mrgn in the printer menu, the test print sheet may not be printed completely.
[Information]	Displays the information about the printer and history of print jobs.

[Paper Settings]

T-1-15

Setting Item	Description, Instructions
[Cas Paper Type]	Choose the type of paper in the Cassette .
[Manual PaperType]	Chose the type of manual feed paper.
[Manual PaperSize]	Choose the size of manual feed paper.
[Roll Media Type]	Choose the type of roll.
[Chk Remain.Roll]	Choose On to print a barcode at the end of a roll before you remove it. The printed barcode can be used in managing the amount of roll paper left. Choose Off if you prefer not to print the barcode.
[Roll Length Set]	Displayed if Chk Remain.Roll is On . If a barcode is not printed on rolls, specify the roll length. The roll length is displayed in meters (1.0 - 91.0 m) or feet (1 - 300 ft.), depending on the setting in Length Unit .

[Paper Details]

T-1-16

Setting Item	Description, Instructions
(The paper type is displayed here.)	
[Roll DryingTime]	Specify the time to wait for the ink to dry for each sheet.
[Scan Wait Time]	Specify the time to wait for the ink to dry between each scan in bidirectional printing, in consideration of how quickly the paper absorbs ink. Note that printing will take longer if you specify a wait time.
[Feed Priority]	Specify exact paper feeding, if desired. Normally, select Automatic . Choose Print Length if you prefer to feed the paper an exact amount. However, note that choosing Print Length may result in slight banding in the direction of Carriage scanning.
[Adjust Length]	Displayed if Feed Priority is Print Length . Adjustment relative to the amount of stretching or shrinkage of the current paper. For paper that tends to stretch, increase the feed amount by setting the adjustment value toward +. For paper that tends to shrink, decrease the feed amount by setting the adjustment value toward -. The setting for the amount of paper stretching or shrinkage is relative. If you access it again later, it will be displayed as 0.00 %.
[Head Height]	Adjust the Printhead height.
[Skew Check Lv.]	If you print on Japanese Paper Washi or other handmade paper that has an irregular width, choose Loose for a higher skew detection threshold, or choose Off to disable skew detection. However, if paper is loaded askew when detection is Off , note that paper jams or Platen soiling may occur. If strict skew detection is required, choose High Accuracy.
[VacuumStrngth]	Specify the level of suction that holds paper against the Platen .
[NearEnd RollMrgn]	Specify a margin at the leading edge of roll paper to ensure better printing quality at the leading edge. Note that if you choose 3 mm , it may lower the printing quality at the leading edge and affect feeding accuracy. The printed surface may be scratched, and ink may adhere to the the leading edge.
[Cut Speed]	Choose the cutting speed. For media such as film that are more likely to generate debris when cut, choose Fast to reduce the amount of debris.
[Trim Edge First]	If a roll is loaded, the end of the paper will be cut. Choose Forced to have 40 mm (1.6 in) cut off the leading edge of the roll, ensuring a straight edge, after you load the roll. Scraps are then removed. When Automatic is selected, if the left and right side of the leading edge of the roll are uneven (by 3 mm [0.12 in] or more), the edge is cut an amount relative to the slant to ensure a straight edge after you load the roll. Scraps are then removed. If the unevenness is less than 3 mm or if No Cutting is selected, the edge is not cut and scraps are not removed.
[Cutting Mode]	Specify if the Cutter Unit is used for cutting. Choose Automatic to have roll paper cut automatically after printing. If you choose Eject , the paper will not be cut after printing. Instead, a line will be printed at the cut position.
[Bordless Margin]	Adjust the margin during borderless printing.
[CutDustReduct.]	Choose On to reduce the amount of debris generated when cutting film and similar media by printing a line at the cut position. This option reduces the amount of debris given off after cutting.
[Manual Feed]	Choose how the paper is supplied, Top for printing from the Tray or Front for printing from the Front Paper Feed Slot .
[NearEnd Sht Mrgn]	Specify a margin at the leading edge of sheets to ensure better printing quality at the leading edge. Note that if you choose 3 mm , it may lower the printing quality at the leading edge and affect feeding accuracy. The printed surface may be scratched, and ink may adhere to the the leading edge. If you have selected 20 mm , the test print sheet may not be printed completely.
[Return Defaults]	Choose Yes to restore Med.Detail Set. to the factory default values.

[GL2 Settings]

T-1-17

Setting Item	Description, Instructions
[GL2 Replot]	Reprint the last printed page stored in the printer.
[GL2 BufferClear]	Delete the last printed page stored in the printer.
[Color Mode]	Choose the color mode.
[Print Quality]	Choose the print quality.
[Input Resolution]	Select [600dpi] or [300dpi] as the print resolution.
[Media Source]	Select the method of feeding paper when using the HP-GL/2 for printing.
[Conserve Paper]	Print using paper sparingly.
[End Point Shape]	Select [Software] or [Round] as the shape of the line end.
[Smoothing]	Select whether to print an arc with a smooth curve or polygon.
[Line Width]	Select the printing line width for the data for which a line width is not specified.

[Adjust Printer]

T-1-18

Setting Item		Description, Instructions
[Auto Head Adj.]	[Standard Adj.]	Choose Yes to have the printer print and read a test pattern for the automatic adjustment of Printhead alignment relative to the printing direction.
	[Advanced Adj.]	Choose Yes to have the printer print and read a test pattern for the automatic adjustment of Printhead alignment relative to the nozzle, ink tank, and printing direction. Three sheets are required when printing on sheets.
	[Auto Print]	Choose On to have the printer automatically execute the Advanced Adj. operations after you replace the Printhead .
[Manual Head Adj]		Choose Yes to print a test pattern for adjustment of Printhead alignment relative to the printing direction. Enter the adjustment value manually based on the resulting pattern.
[Auto Band Adj.]	[Standard Adj.]	Choose Yes to have the printer print and read a test pattern for band adjustment, based on which the printer automatically adjusts the feed amount.
	[Advanced Adj.]	Choose this option when using paper other than genuine Canon paper, or paper for purposes other than checking output. Choose Yes to have the printer print and read a test pattern for band adjustment, based on which the printer automatically adjusts the feed amount. Note that this function takes more time and requires more ink than Standard Adj. Two sheets are required when printing on sheets.
[Manual Band Adj]		Choose Yes to print a test pattern for adjusting the feed amount based on the paper type. Two sheets are required when printing on sheets.
[Adj Far Ed Feed]		[Choose Yes to print a test pattern for adjusting the feed amount of the trailing edge of paper based on the paper type.
[Adjust Length]		Choose Yes to print a test pattern for adjustment relative to paper stretching or shrinkage, after which you can enter the amount of adjustment.
[Adjust Head Skew]		Selecting [Yes] will print the pattern for adjusting the print head inclination.

[Interface Setup]

T-1-19

Setting Item		Description, Instructions	
[EOP Timer]		Specify the timeout period for print jobs.	
[TCP/IP]	[TCP/IP]	Specify the TCP/IP protocol settings. To apply your changes, choose Store Setting .	
	[IP Mode]	Choose whether the printer IP address is configured automatically or a static IP address is entered manually.	
	[Protocol]	[DHCP]	Specify the protocol used to configure the IP address automatically.
		[BOOTP]	
[RARP]			
[IP Setting]	[IP Address]	Specify the printer network information when using a static IP address. Enter the IP address assigned to the printer, as well as the network subnet mask and default gateway.	
	[Subnet Mask]		
	[Default G/W]		
[NetWare]	[NetWare]	Specify the NetWare protocol. To apply your changes, choose Store Setting .	
	[Frame Type]	Specify the frame type to use.	
	[Print Service]	Choose the print service.	
[AppleTalk]		Specify whether to use the AppleTalk protocol. To apply your changes, choose Store Setting .	
[Ethernet Driver]	[Auto Detect]	Specify the communication method. To apply your changes, choose Store Setting . Choose On for automatic configuration of the LAN communication protocol. Choose Off to use settings values of Comm.Mode and Ethernet Type .	
	[Comm.Mode]	Choose the LAN communication method.	
	[Ethernet Type]	Choose the LAN transfer rate.	
	[Spanning Tree]	Choose whether spanning-tree packets are supported over the LAN.	
	[MAC Address]	Displays the MAC address.	
[Ext.Interface]		When installing the expansion interface board, choose whether the expansion interface board is used.	
[Init. Settings]		A confirmation message is displayed if you press the[▼] button. Choose [OK] to restore the network settings to the default values.	

[Maintenance]

T-1-20

Setting Item	Description, Instructions
[Maint. cart.]	When exchanging the maintenance cartridge, choose Yes and follow the instructions on the screen.
[Replace P.head]	Not displayed during a warning message that the remaining Maintenance Cartridge capacity is low. When replacing the Printhead, choose Yes and follow the instructions on the screen.
[Repl. S. Cleaner]	When replacing the shaft cleaner, select [Yes] and take appropriate actions according to the instructions shown on the screen.
[Change Cutter]	When replacing the cutter unit, select [Yes] and take appropriate actions according to the instructions shown on the screen. Replacing the cutter unit will reset the cut count.
[Move Printer]	Not displayed during a warning message that the remaining Maintenance Cartridge capacity is low. When transferring the printer to another location, choose Yes and follow the instructions on the screen.
[Clean Roller]	Use this function to clean inside the Top Cover. After you select Yes, the Carriage is moved in preparation for Feed Roller cleaning.
[Clean Platen]	Use this function to clean inside the Top Cover. After you select Yes, the Carriage is moved in preparation for Platen cleaning.

[System Setup]

T-1-21

Setting Item	Description, Instructions	
[Warning]	[Buzzer]	Set the buzzer. Choose On for the buzzer to sound in case of errors.
	[Detect Mismatch]	Choose Warning for notification (display of a warning message) during printing if the paper type specified in the printer menu does not match the paper type in the printer driver. Choose None to continue print without notification. Choose Pause to have printing paused under these circumstances. In this case, you can continue printing by pressing the Online button.
[Keep Media Size]	Choose On to use the paper size setting as the basis for printing instead of other settings. The margin setting of the printer menu will be used instead of the margin setting of the printer driver if the latter is smaller, which may prevent text or images in the margin from being printed. Choose Off to use the printer driver settings instead. Even if the margin setting of the printer driver is smaller than that of the printer driver, text or images will not be cut off. However, this requires longer paper because the actual margin will be equal to the margin setting of the printer driver plus the margin setting of the printer menu.	
[Paper Size Basis]	[Sht Selection]	If sheet size detection is activated, choose whether ISO A3+ or ANSI B Super is applied when an inbetween size is detected.
	[Roll Selection 1]	If roll size detection is activated, choose whether ISO A3 (297 mm) and 300 mm Roll is applied when an inbetween size is detected.
	[Roll Selection 2]	If roll size detection is activated, choose whether 10in. (254 mm) or JIS B4 (257 mm) is applied when an inbetween size is detected.
[TrimEdge Reload]	Keeping a roll in the printer for a long time without printing on it may leave a depression on the leading edge. When printing quality is most important, we recommend setting this option to On so that the paper edge is automatically cut before printing.	
[Noz. Check Freq.]	Specify the timing for automatic checks of nozzle clogging. Choose Off to disable checking. Choose 1 page to check after each page is printed. Choose 10 pages to check once after every ten pages are printed.	
[Sleep Timer]	Specify the period before the printer enters sleep mode.	
[Length Unit]	Choose the unit of measurement when roll length is displayed. You can switch the unit displayed for Roll Length Set and the remaining paper amount displayed in the submenu.	
[Time Zone]	Specify the time zone. Time zone options indicate a main city in this time zone and the difference from Greenwich Mean Time.	
[Date Format]	Specify the date format.	
[Date & Time]	[Date]	Set the current date.
	[Time]	Set the current time.
[Language]	Specify the language used on the Display Screen.	
[Contrast Adj.]	Adjust the contrast of the Display Screen.	
[Reset PaprSetngs]	Restores settings that you have changed with Media Configuration Tool to the factory default values.	

[Information]

Setting Item		Description, Instructions	
[System Info]	[Version]	[Firmware]	Displays the version of the printer and firmware.
		[Boot]	Displays the Boot ROM version of the printer.
		[MIT]	Displays the DB format version of the MIT.
	[s/n:]	Displays the printer serial number.	
	[MAC]	Displays the MAC address of the printer.	
	[IP:]	Displays the printer IP address.	
[Error Log]	[#####.#####]	Displays the most recent error messages (up to two).	
[Job Log]	(Choose from information about the latest three print jobs.)	[Document Name]	Displays the document name in the last print job.
		[User Name]	Displays the name of the user who sent the print job.
		[Page Count]	Displays the number of pages in the print job.
		[Job Status]	Displays the results of the print job processed.
		[Print Start Time]	Displays the time when the print job was started.
		[Print End Time]	Displays the time when the print job was finished.
		[Print Time]	Displays the time required to print the job.
		[Print Size]	Displays the paper size in the print job.
		[Media Type]	Displays the paper type in the print job.
		[Interface]	Displays the interface used for the print job.
		[Ink Consumed]	Displays the ink density of each color in the print job.

5. Main Menu Settings (During Printing)

Main menu items during printing are described in the following tables.

T-1-23

Setting Item	Description, Instructions
[Head Cleaning]	Specify Printhead cleaning options. Choose Head Cleaning A if printing is faint, oddly colored, or contains foreign substances. Choose Head Cleaning B if no ink is printed at all, or if printing is not improved by Head Cleaning A .
[Fine Band Adj.]	Displayed during print jobs. Fine-tune the feed amount manually.
[Information]	Displays the information about the printer and history of print jobs.

[Information]

T-1-24

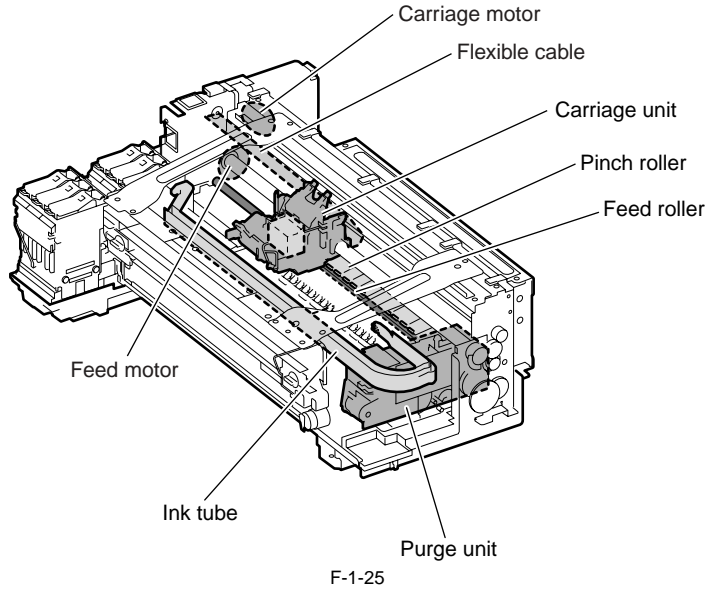
Setting Item		Description, Instructions	
[System Info]	[Version]	[Firmware]	Displays the version of the printer and firmware.
		[Boot]	Displays the Boot ROM version of the printer.
		[MIT]	Displays the DB format version of the MIT.
	[Ext.Interface]	Identifies boards in the expansion slot.	
	[s/n:]	Displays the printer serial number.	
	[MAC]	Displays the MAC address of the printer.	
	[IP:]	Displays the printer IP address.	
[Error Log]	[#####-####]	Displays the most recent error messages (up to two).	
[Job Log]	(Choose from information about the latest three print jobs.)	[Document Name]	Displays the document name in the last print job.
		[User Name]	Displays the name of the user who sent the print job.
		[Page Count]	Displays the number of pages in the print job.
		[Job Status]	Displays the results of the print job processed.
		[Print Start Time]	Displays the time when the print job was started.
		[Print End Time]	Displays the time when the print job was finished.
		[Print Time]	Displays the time required to print the job.
		[Print Size]	Displays the paper size in the print job.
		[Media Type]	Displays the paper type in the print job.
		[Interface]	Displays the interface used for the print job.
		[Ink Consumed]	Displays the ink density of each color in the print job.

1.7 Safety and Precautions

1.7.1 Safety Precautions

1.7.1.1 Moving Parts

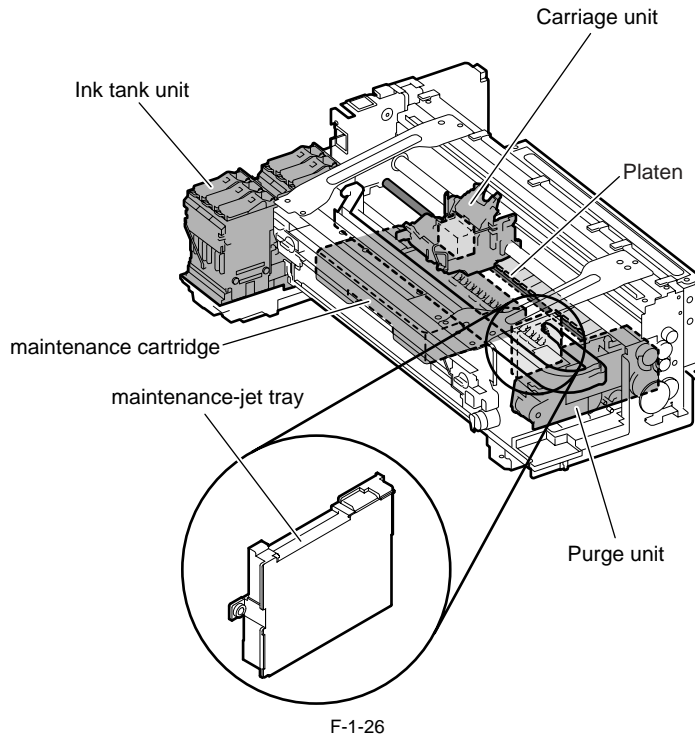
Moving parts of the printer include the carriage unit driven by the carriage motor, the carriage belt, the ink tube, the flexible cable, the feed roller drives the feed motor, the pinch roller, and the purge unit driven by the purge motor. To prevent accidents, the top cover of the printer is locked during printing. If the top cover is opened in the online/offline mode, the carriage motor, feed motor, and other driving power supplies are turned off.



1.7.1.2 Adhesion of Ink

(1) Ink passages

Be careful not to touch the ink passages of the printer to prevent the printer, workbench, and clothes from being stained with ink. The ink flows through the ink tank unit, carriage unit, purge unit, maintenance jet tray, maintenance cartridge, and the ink tubes that relay ink to individual units.

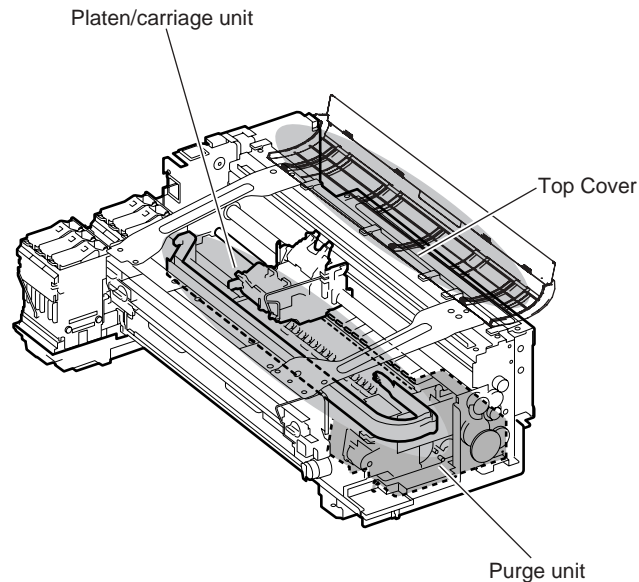




- Although the ink is not harmful to the human body, it contains organic solvents. Ink may contaminate the surrounding parts. Carry out the work with due caution. If your hands are stained with ink, wash them with a plenty of water. Be careful not to allow the ink to get into your mouth or eyes.
- If the ink gets into your eyes, flush them with water well and see a doctor.
- In case of accidental ingestion of a large quantity of ink, see a doctor immediately.
- It is also effective to use gloves to prevent ink from adhering when working.
- Since this ink contains pigment, stains will not come out of clothing.

(2) Ink Mist

Since the printhead prints by squirting ink onto the media, a minute amount of ink mist is generated in the printing unit during printing. The generated ink mist is collected in the printer by the airflow. However, uncollected ink mist may stain the platen, carriage unit, exterior, and purge unit. These stains may soil the print media or hands and clothes when servicing the printer. Wipe them off carefully with a soft, well-wrung cloth.



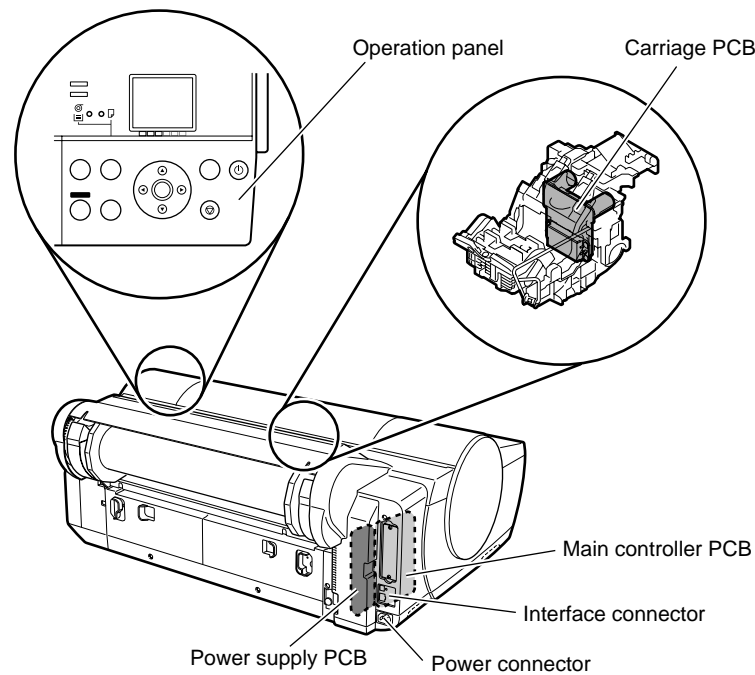
F-1-27

1.7.1.3 Electric Parts

The electric parts of the printer are activated when the printer is connected to the AC power supply.

At the left rear of the printer are the main controller, power supply, and interface connector. The carriage PCB is incorporated in the carriage unit, and the operation panel is on the upper right top cover.

When servicing the printer with the cover removed, be extremely careful to avoid electric shock and shorting electrical devices.



F-1-28

1.7.2 Other Precautions

1.7.2.1 Printhead

1. How to Handle the Printhead

Do not open the printhead package until you are ready to install the head.

When installing the printhead in the printer, hold the knob[1] and then remove the protective cap 1[2] and protective cap 2[3] in that order.

Do not reattach the protective cap 2[3] to the printhead because the cap may damage the nozzles[4].

To prevent the nozzles from getting clogged with foreign matter or dried ink, install the printhead immediately after you remove the protective caps.

Also make sure to press down the locking lever of the printhead until you feel a click.

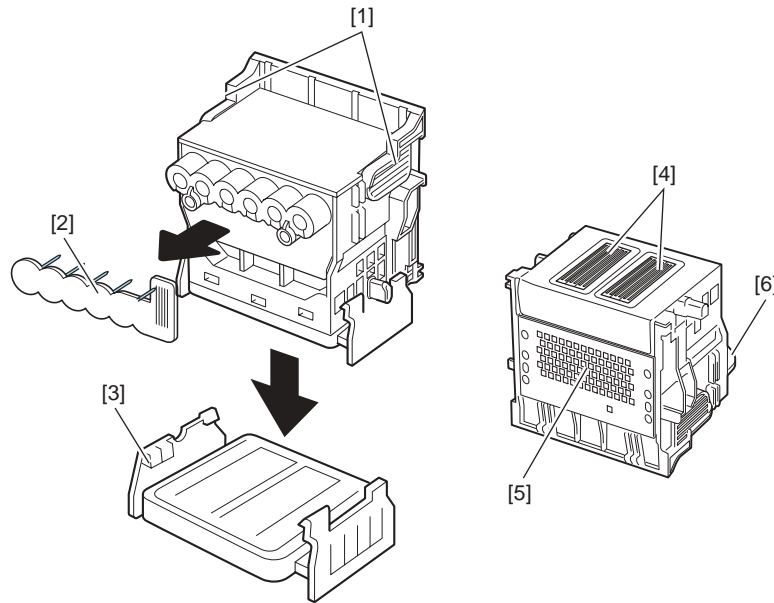
In addition, to prevent clogging of the nozzles with foreign matter and improper supply of ink, never touch the nozzles[4] or ink port[6], or wipe it with tissue paper or anything else.

Do not touch Electrical contact[5].

Also, never attempt to disassemble/reassemble the printhead or wash it with water.

MEMO:

If the nozzles are clogged or an ink suction problem occurs, white lines can appear on the printout a constant frequency or color dulling can occur. If this problem is not resolved by cleaning operations, replace the printhead with a new one.



F-1-29

T-1-25

- | | |
|----------------------|------------------------|
| [1] knob | [4] nozzles |
| [2] protective cap 1 | [5] Electrical contact |
| [3] protective cap 2 | [6] ink port |

2. Capping

The printer will perform the capping operation when printing has ended or during standby due to an error, in order to protect the printhead and avoid ink leakage. If the power cord is accidentally unplugged, turn off the Power button, reconnect the power cord, and then turn on the Power button. Confirm that the printer starts up properly and enters to the "Online" or "Offline" status, and then power off the printer using the Power button.



Improper "capping operation" may cause clogged nozzles due to dried ink or ink leakage from the printhead.

3. When the printer is not used for a long time

Keep the printhead installed in the printer even when it is not used for an extended period of time.



If the printhead is left uninstalled, a printing failure may arise from closed nozzles due to depositing of foreign matter or dried ink when it is reinstalled. Even if the head remains installed, the nozzle may dry out and cause a printing failure if the ink is drained for transport.

4. Conductivity of Ink

The ink used in this printer is electrically conductive. If ink leaks into the mechanical unit, wipe clean with a soft, well-wrung damp cloth. If ink leaks onto electrical units, wipe them completely using tissue paper. If you cannot remove ink completely, replace the electrical units with new ones.



If electrical units are powered with ink leaked onto them, the units may damage. Never connect the power cord when ink has leaked onto the electrical units.

1.7.2.2 Ink Tank

1. Unpacking the Ink Tank

Do not unpack the ink tank until you are ready to install it.

When installing the ink tank, be sure to shake it slowly 7 to 8 times before unpacking it. Otherwise, the ink ingredients may precipitate and degrade the print quality.

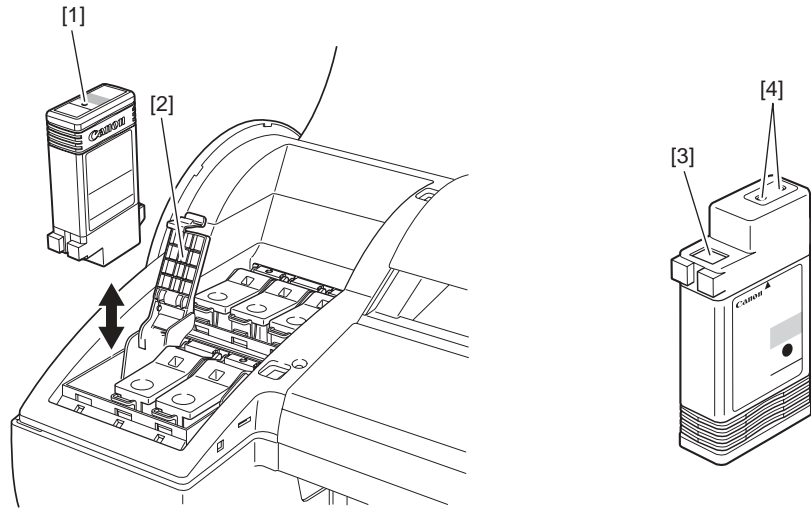
To prevent foreign matter from entering the ink port, installed the unpacked ink tank in the printer immediately.

2. Handling the Ink Tank

To prevent foreign matter from entering the ink flow path and causing ink suction and printing problems, never touch the ink port and contacts of the ink tank.

When you press down the ink tank lock lever, the needle enters the ink port, allowing ink to flow between the printer and ink tank.

Do not raise or lower the ink tank lock lever except when replacing the ink tank.



F-1-30

T-1-26

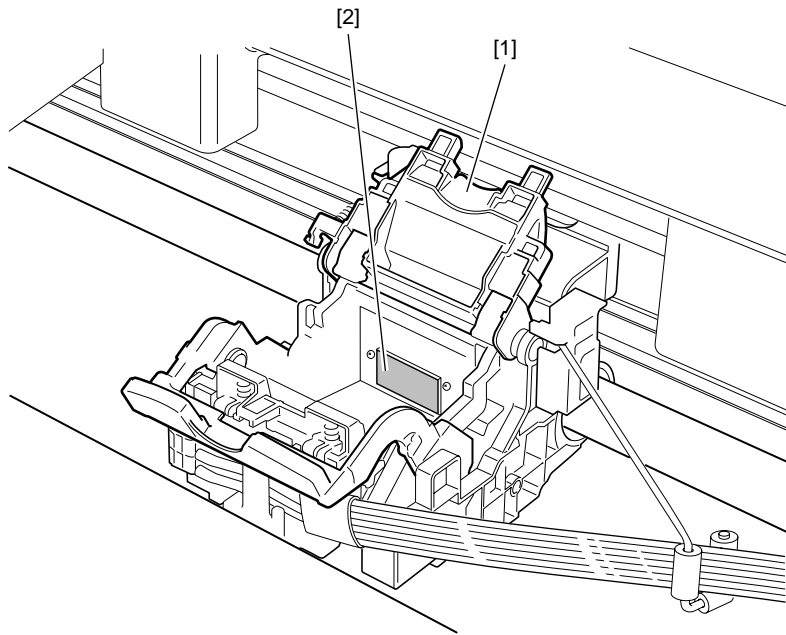
- [1] Ink tank
- [2] Ink tank lock lever
- [3] Ink port
- [4] Contacts

1.7.2.3 Handling the Printer

1. Precautions against Static Electricity

Certain clothing may generate static electricity, causing an electrical charge to build up on your body. Such a charge can damage electrical devices or change their electrical characteristics.

In particular, never touch the printhead contacts.

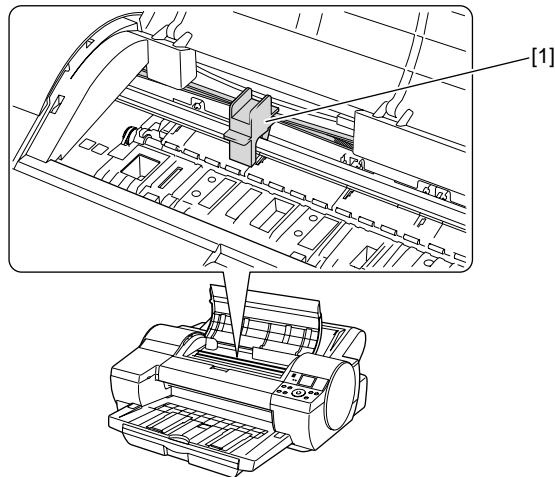


F-1-31

- [1] Carriage unit
- [2] Printhead contacts

2. Fixing the Carriage

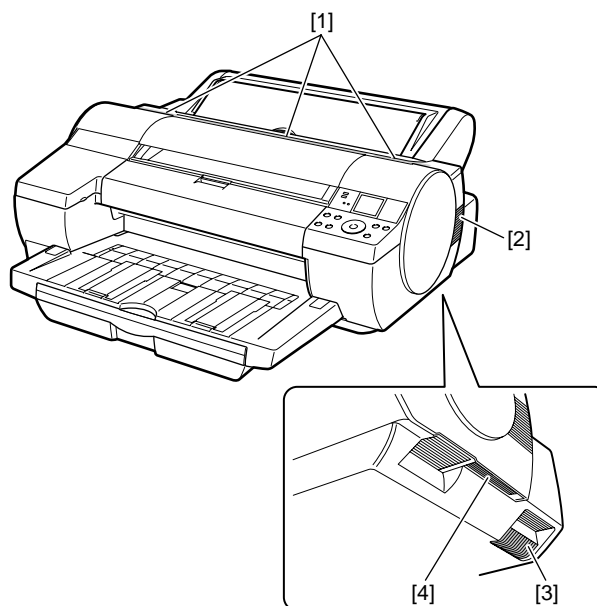
After completion of printing, the carriage is mechanically locked by the lock arm in the purge unit at the same moment the printhead is capped. Before transporting the printer, secure the carriage at its home position using belt stoppers [1] so that the carriage does not become separated from the lock arm and damage or ink does not leak.



F-1-32

3. Vent holes

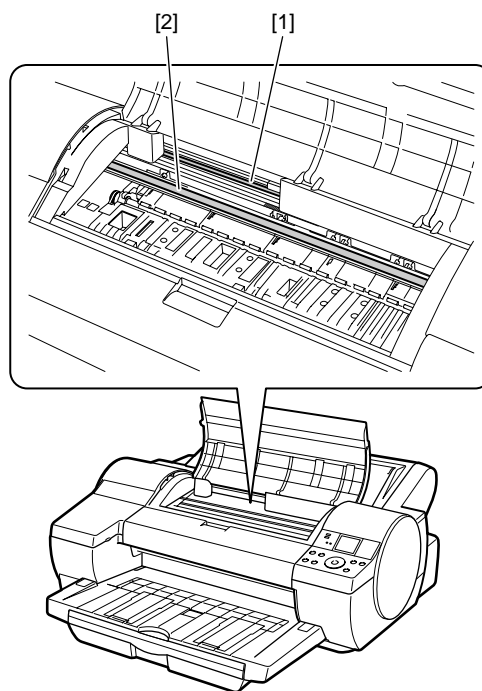
This printer has four vent holes, [1] to [4]. Do not block the vent holes when the printer is in service



F-1-33

4. Contact of Linear Scale/Carriage Shaft

Please do not touch a linear scale and the carriage shaft when the inside of the top cover is opened, and execute maintenance. When touching a linear scale and the carriage shaft, it might cause defective movement of the carriage and a defective print.



F-1-34

- [1] Linear Scale
- [2] Carriage Shaft

5. Handling the Maintenance Cartridge

When removing the maintenance cartridge from the printer, use caution so that waste ink does not spatter.

6. Refilling the Printer with Ink

After removing the ink from inside the printer using the automatic or manual ink draining procedure to disassemble/reassemble or transport the printer, refill the printer with ink as soon as possible upon completion of the work.

If the ink remaining in the printer dries up, mechanical parts may be seized and malfunction may result.

1.7.3 Precautions When Servicing Printer

1.7.3.1 Notes on the Data Stored in the Printer

This printer counts the print length, number of ink tank replacements, number of cleaning operations, number of cutter operations, and so on and stores them in the main controller's EEPROM as a service mode counter.

This counter provides important information about the printer usage status.

You can check this information by printing it in the service mode or displaying it on the display.

Following the precautions below when servicing the printer.

(1) Repairing/replacing the PCB

When replacing the main controller, follow the specified replacement procedure.

For the main controller replacement procedure, see "Disassembly/Reassembly" > "Points to Note on Disassembly and Reassembly" > "Boards".

(2) After replacing the purge unit

The information about the number of cleanings arises in the purge unit. After replacing the purge unit, select [INITIALIZE] > [PURGE] in the service mode to initialize (clear) the information about the number of cleanings.

(3) On replacement of supplies

After supplies have been replaced, execute [INITIALIZE] > [PARTS COUNTER] > [PARTS xx] in service mode to initialize (clear) the parts counter information. For the consumable parts, see "Maintenance" > "Consumable Parts".



You cannot check the counter information once it is initialized (cleared). Be careful not to initialize the counter information before checking it.
You cannot modify the counter information from the operation panel.

1.7.3.2 Confirming the Firmware Version

Firmware has been downloaded to the main controller.

When you have replaced the main controller, check that the firmware is the latest version. If not, update it to the latest version.

Reference:

For how to update the main controller, refer to "TROUBLESHOOTING" > "Update".

1.7.3.3 Precautions against Static Electricity

Certain clothing may generate static electricity, causing an electrical charge to build up on your body. Such a charge can damage electrical devices or change their electrical characteristics.

Before disassembling the printer for servicing, discharge any static buildup by touching a grounded metal fitting or the like.

1.7.3.4 Precautions for Disassembly/Reassembly

The precautions for disassembly/reassembly are described in "Disassembly/Reassembly".

1.7.3.5 Self-diagnostic Feature

The printer has a self-diagnostic feature to analyze hardware problems.

The self-diagnosis result is shown on the display and indicated by lamps.

For detailed information, see "Error Codes".

1.7.3.6 Disposing of the Lithium Battery

The main controller PCB of this printer is equipped with a lithium battery to back up various data.



Risk of explosion if battery is replaced by an incorrect type.
Dispose of used batteries according to the instructions.

"For CA, USA Only

Included battery contains Perchlorate Material-special handling may apply. See <http://www.dtsc.ca.gov/hazardouswaste/perchlorate/> for detail."

Achtung:

Die Lithiumbatterie darf nur durch das Originalersatzteil (Parts Katalog) ersetzt werden; ansonsten besteht Brand-/Explosionsgefahr.

Lithiumbatterien niemals aufladen, demontieren oder durch Verbrennen entsorgen;

bei der Entsorgung die örtlichen Entsorgungsvorschriften beachten (Schadstoffe; Sondermüll).

Chapter 2 TECHNICAL REFERENCE

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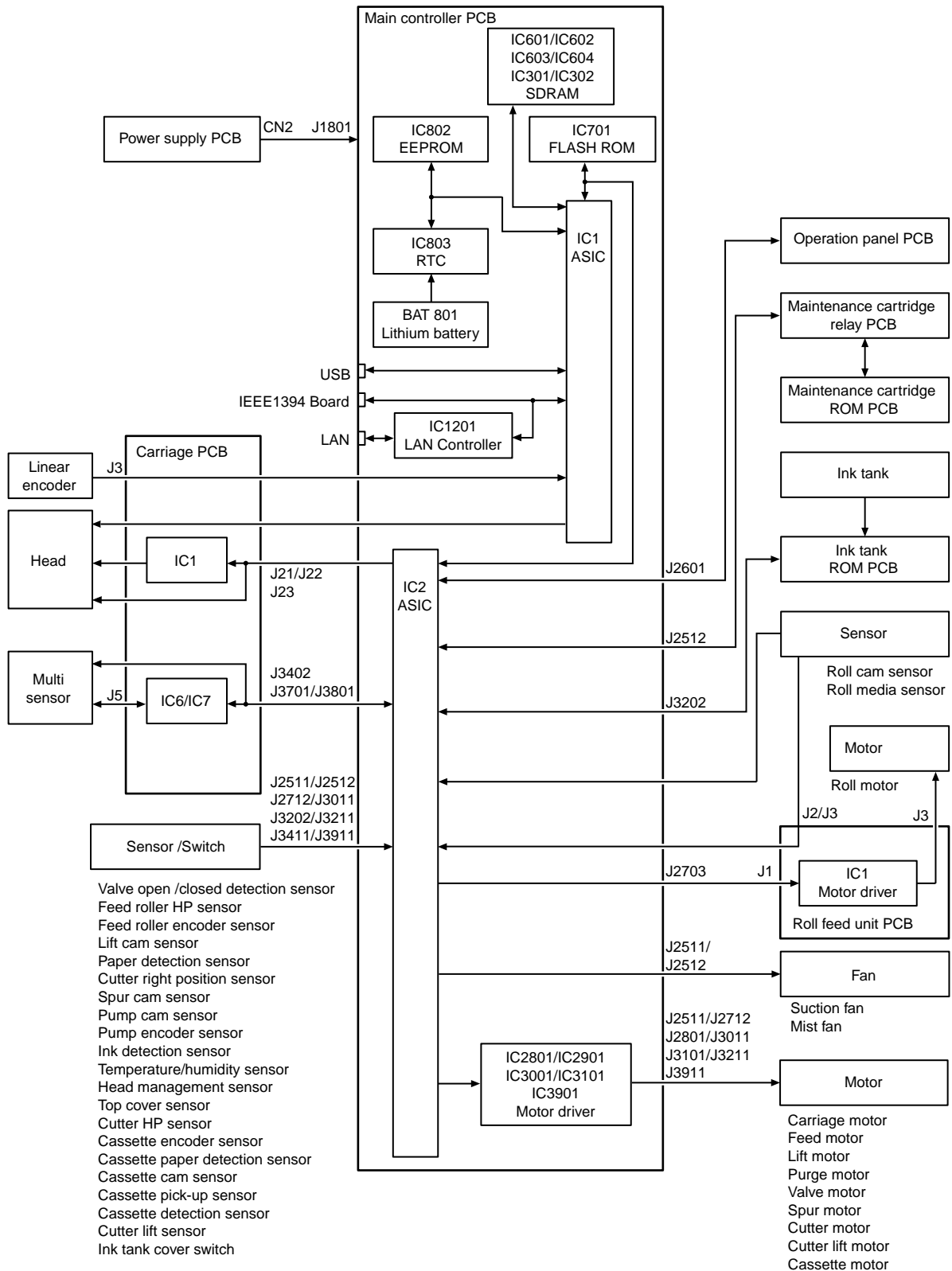
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2.1 Basic Operation Outline

2.1.1 Printer Diagram

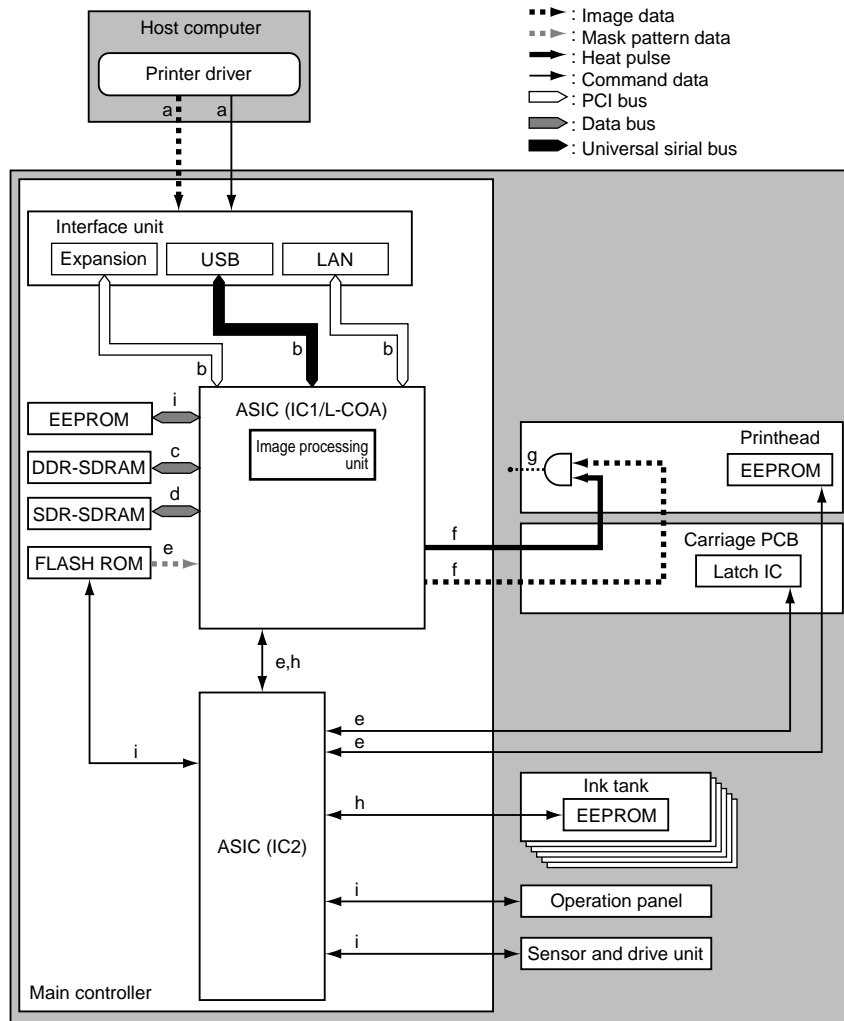
Shown below is a printer diagram.



F-2-1

2.1.2 Print Signal Sequence

The signal sequence from when the printer receives the print signals until printing starts is shown in Figure.



F-2-2

a) The printer driver on the host computer transmits print data, including command data, to the printer after compressing the image data, without resolution, color and 12-color binarization conversion.

To achieve high-quality image output, the image processing table data used for image data color conversion and binarization conversion are generated as command data to meet the Media Type and other specifications of the printer driver.

b) This printer receives print data from the individual interfaces on the main controller, transmitting the received print data to ASIC (IC1).

c) The main controller decompresses the print data transmitted to the ASIC and gets it through resolution, color and 5-color binarization conversion while loading the data into DDR-SDRAM from time to time.

It also converts the print data to 5-color binary equivalents of image and command data.

d) The ASIC (IC1) generates image data synthesized with mask data within the ASIC in sync with the discharge time while loading the data into DDR-SDRAM from time to time.

e) The ASIC (IC2) collects printhead information from EEPROM mounted on the printheads and the printer temperature from the latch IC on the carriage board and transmit them to the ASIC (IC1).

The ASIC (IC1) also receives mask pattern data from the firmware installed in flash ROM.

f) The ASIC (IC1) converts the image data synthesized with the mask pattern to data associated with the printhead information and the printer temperature, transmitting the data to the printheads as a print signal. It transmits heat pulses to the printheads at the same time to optimize head driving.

g) The printheads convert the received print signal from a serial signal to a parallel signal for each row of nozzles and ANDs it with the heat pulses for perform printing.

h) The ASIC (IC1) controls the general aspects of image processing and print drive control by detecting the status of the individual printer components with reference to the adjustment values stored in EEPROM. SDR-SDRAM is used as work memory.

i) The ASIC (IC2) controls the general aspects of drive control by controlling button actuations and message displays on the basis of the firmware installed in flash ROM.

2.1.3 Print Driving

Print and control signals are transferred via the carriage PCB to the printheads to discharge inks from the nozzle assembly at printing. Each printhead has 12 trains of nozzles arranged in a zigzag pattern.

This printer uses one printhead.

(In installed state, from left to right, C, M, Y, MBK, MBK, BK)

Print signals directed at each nozzle train are even-numbered nozzle data (Hx-x-DATA-x-EV) and odd-numbered nozzle data (Hx-x-DATA-x-OD). These are transferred in timing with a data transfer clock (Hx-CLK) and data latch pulses (Hx-LT).

The Heat Enable (Hx-x-HE-x) drive control signal enables inks to be discharged from the nozzles.

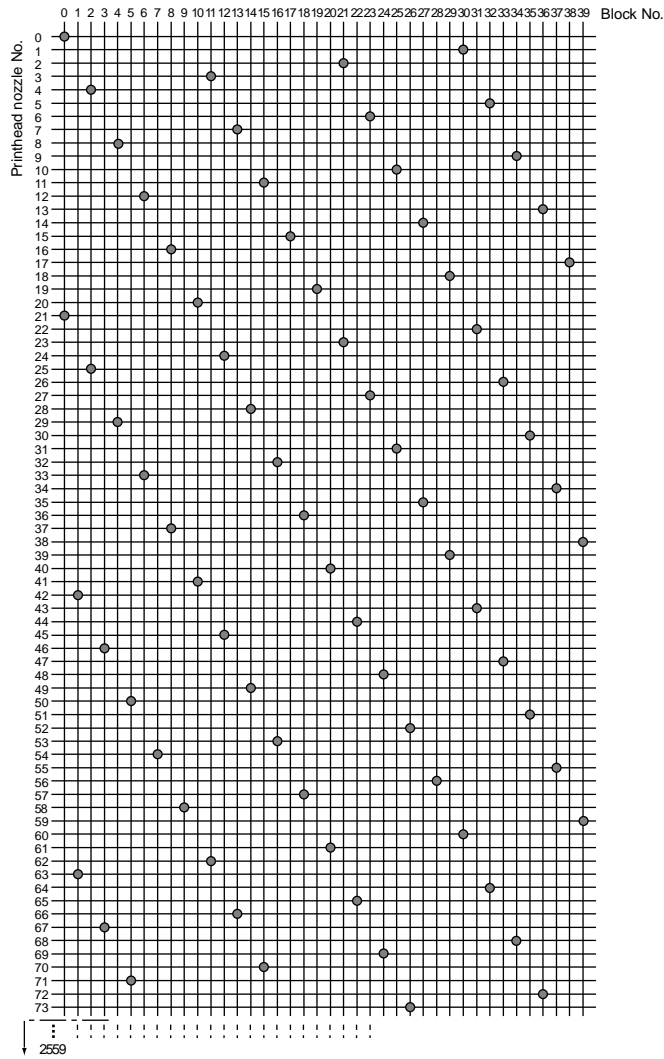
1. Print drive control

Each train of nozzles in a printhead has 2,560 nozzles.

Ink discharge nozzles are selected split in 40-, 20- or 10-nozzle blocks according to the Block Enable information in the even-numbered nozzle data and odd-numbered nozzle data.

Each selected block of nozzles is impressed with a Heat Enable signal generated with variable pulse widths according to the head rank, head temperature and printer temperature for optimized ink discharges. The nozzles are driven by heater boards in the nozzles to discharge inks. Optimal nozzle blocks are selected according to the print path.

The diagram below illustrates the relationship between a 40-block nozzle and nozzles driven.



The pattern is repeated until 2560 nozzles is reached.

F-2-3

2. Print drive timing

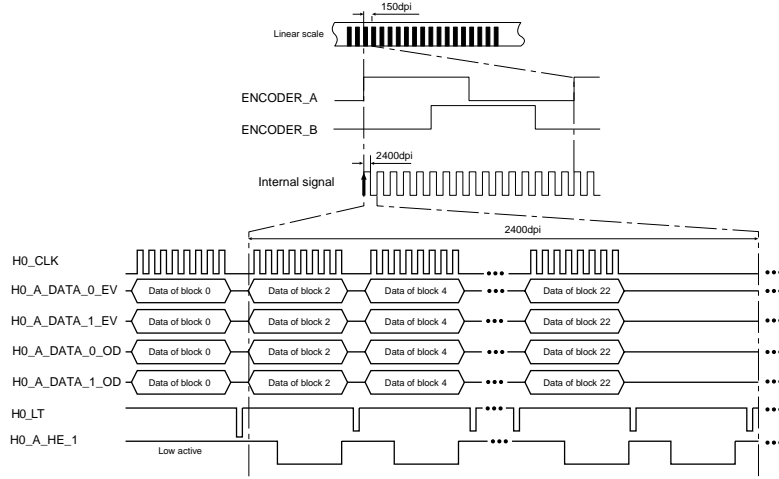
Each printhead houses 12 trains of nozzles, which share the same data transfer clock (Hx-CLK) and data latch pulses (Hx-LT). Even-numbered nozzle data (Hx-x-DATA-x-EV), odd-numbered nozzle data (Hx-x-DATA-x-OD) and the Heat Enable (Hx-x-HE-x) signal are generated for each nozzle train and controlled individually.

Printing is carried out in two ways through reciprocating motion of the carriage.

An encoder sensor mounted on the carriage generates a 150-dpi-pitched linear scale detection signal (ENCODER_A) and a signal (ENCODER_B) shifted 120 degrees in phase. The direction of carriage motion is detected from the status of the ENCODER_B signal relative to the leading edge of the ENCODER_A signal. The printhead is driven using a 2400-dpi timing signal (internal signal), which is generated by dividing the ENCODER_A signal detected at the 150 dpi timing into 16 equal sections.

Printing in the forward direction is triggered at the leading edge of the detection signal (ENCODER_A).

Printing in the backward direction is carried out the same way as printing in the forward direction but at the trailing edge of the detection signal (ENCODER_A), when the order of heated nozzles is reversed depending on the sequence of transfer of even-numbered nozzle data and odd-numbered nozzle data.



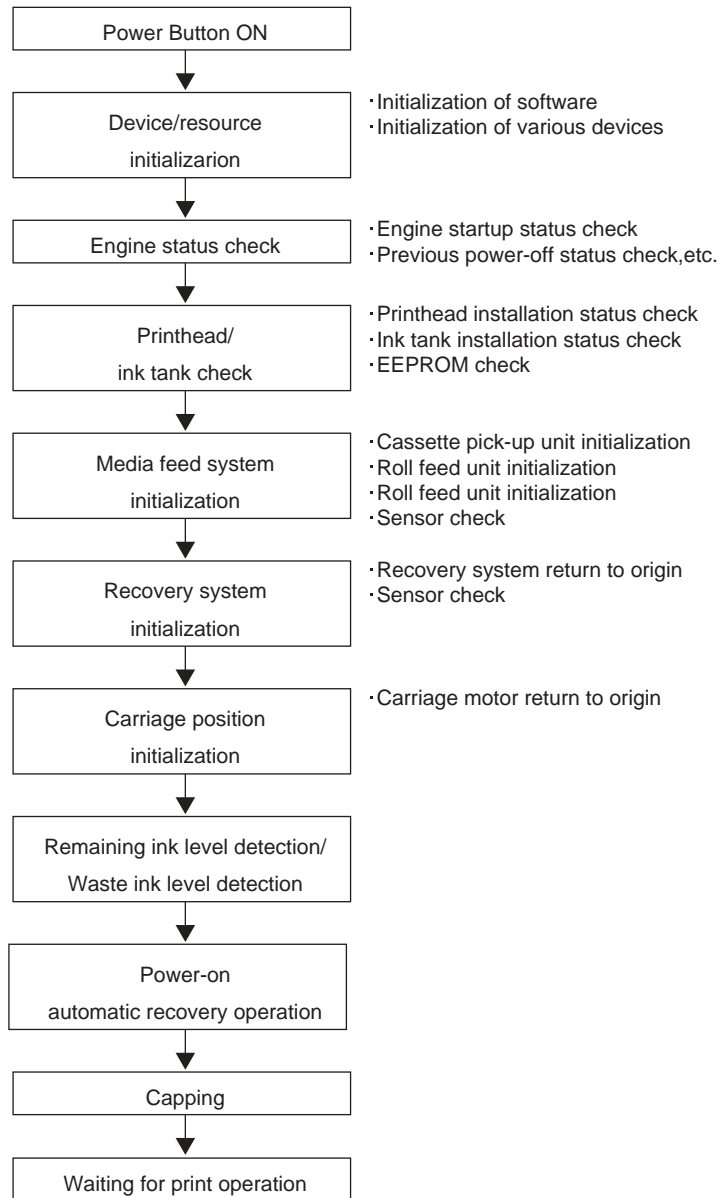
F-2-4

2.2 Firmware

2.2.1 Operation Sequence at Power-on

Shown below is the flowchart of the initialization sequence from the moment the power is turned on to the moment the printer enters the online state. The time required for initialization is less than 1 minute*.

* This time does not include the time required for supplying ink and cleaning which takes place after the printer has been left unused for an extended period of time.



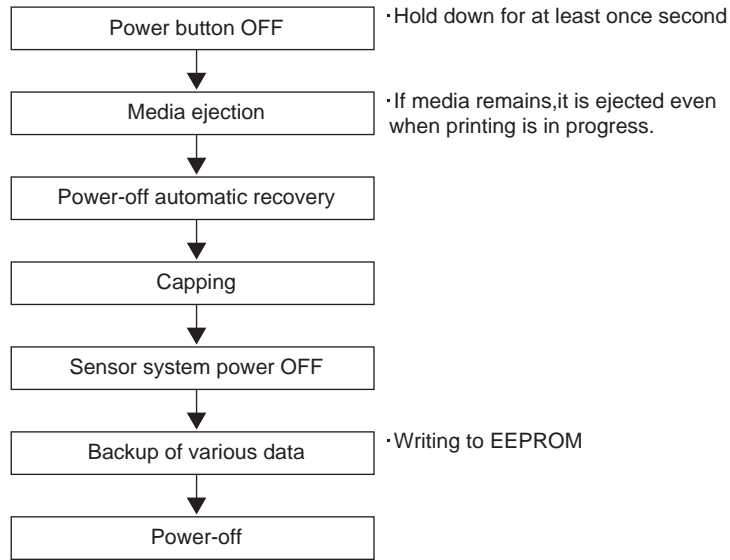
F-2-5

2.2.2 Operation Sequence at Power-off

Turning off the power cuts off the voltage to all drive systems. At this time, the firmware starts the power-off sequence as shown below.



This printer immediately suspends all operations in progress and stops whenever the power cord is unplugged or a cover such as the top cover is opened. In this case, the printer may stop without capping the print head. If the power was turned on by unplugging the power cord, plug the power cord into the outlet, turn on the power again so that the printer enters the online or offline state, and then press the Power button to turn off the power.



F-2-6

2.2.3 Print Control

1. Print mode

This printer is capable of fast, high-quality printing without blur and non-uniform density by changing the carriage operation, media feeding, other printing methods according to the selected media type, print quality, print data and so on.

Printing is performed for each color using a maximum of 16 paths in each print mode according to the selected print quality.

This reduces density irregularities caused by the variation in the amounts of ink discharged from individual nozzles. In addition, it shifts the printing timing so that the current ink layer is nearly fixed before the next ink layer is applied, thus minimizing bleeding.

Even in the same mode, the printer operates in a different way depending on the media setting made using the printer driver.

a) Draft mode

In the draft mode, image data is thinned out and a single band (equivalent to the width of a nozzle array) is printed using one path.

To use this mode, select "Draft" under "Print Quality" in the printer driver.

b) Standard mode

In the standard mode, a single band (equivalent to the width of a nozzle array) is printed using 1-6 (1, 2, 4 or 6) paths.

To use this mode, select "Standard" under "Print Quality" in the printer driver.

c) High quality mode

In the high quality mode, a single band is printed using 2, 4 or 8 paths.

To use this mode, select "High" under "Print Quality" in the printer driver.

d) Highest quality mode

In the high quality mode, a single band is printed using 12 or 16 paths.

To use this mode, select "Highest" under "Print Quality" in the printer driver.

T-2-1

Printing Modes

Media Type		Print Priority	Print Quality	Print-Pass	Printing Direction	Print Resolution (dpi)	Used BK ink	
Plain Paper/ Recycled Paper	Plain Paper	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK	
		Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK	
				1	Bi-directional	1200x1200	MBK	
			Standard	1	Bi-directional	1200x1200	MBK	
				High	2	Single-directional	1200x1200	MBK
			2	Single-directional	1200x1200	MBK		
		Image	Draft	1	Bi-directional	1200x1200	MBK	
			Standard	2	Bi-directional	1200x1200	MBK	
			High	4	Bi-directional	1200x1200	MBK	
	Plain Paper (High Quality)	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK	
			Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK
					1	Bi-directional	1200x1200	MBK
				Standard	1	Bi-directional	1200x1200	MBK
					High	2	Single-directional	1200x1200
		2	Single-directional	1200x1200	MBK			
		Image	Draft	1	Bi-directional	1200x1200	MBK	
			Standard	2	Bi-directional	1200x1200	MBK	
			High	4	Bi-directional	1200x1200	MBK	
4	Bi-directional			1200x1200	MBK			
Plain Paper (High Grade)	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK		
		Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK	
				1	Bi-directional	1200x1200	MBK	
			Standard	1	Bi-directional	1200x1200	MBK	
				High	2	Single-directional	1200x1200	MBK
	2	Single-directional	1200x1200	MBK				
	Image	Draft	1	Bi-directional	1200x1200	MBK		
		Standard	2	Bi-directional	1200x1200	MBK		
		High	4	Bi-directional	1200x1200	MBK		
4			Bi-directional	1200x1200	MBK			
All Plain Paper_Conserve MBK	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK		
		Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK	
				1	Bi-directional	1200x1200	MBK	
			Standard	1	Bi-directional	1200x1200	MBK	
				High	2	Single-directional	1200x1200	MBK
	2	Single-directional	1200x1200	MBK				
	Image	Draft	1	Bi-directional	1200x1200	MBK		
		Standard	2	Bi-directional	1200x1200	MBK		
		High	4	Bi-directional	1200x1200	MBK		
4			Bi-directional	1200x1200	MBK			
Economy Bond Paper	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK		
		Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK	
				1	Bi-directional	1200x1200	MBK	
			Standard	1	Bi-directional	1200x1200	MBK	
				High	2	Single-directional	1200x1200	MBK
	2	Single-directional	1200x1200	MBK				
	Image	Draft	1	Bi-directional	1200x1200	MBK		
		Standard	2	Bi-directional	1200x1200	MBK		
		High	4	Bi-directional	1200x1200	MBK		
4			Bi-directional	1200x1200	MBK			
Universal Bond Paper	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK		
		Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK	
				1	Bi-directional	1200x1200	MBK	
			Standard	1	Bi-directional	1200x1200	MBK	
				High	2	Single-directional	1200x1200	MBK
	2	Single-directional	1200x1200	MBK				
	Image	Draft	1	Bi-directional	1200x1200	MBK		
		Standard	2	Bi-directional	1200x1200	MBK		
		High	4	Bi-directional	1200x1200	MBK		
4			Bi-directional	1200x1200	MBK			
Standard Paper 1569B 80g	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK		
		Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK	
				1	Bi-directional	1200x1200	MBK	
			Standard	1	Bi-directional	1200x1200	MBK	
				High	2	Single-directional	1200x1200	MBK
	2	Single-directional	1200x1200	MBK				
	Image	Draft	1	Bi-directional	1200x1200	MBK		
		Standard	2	Bi-directional	1200x1200	MBK		
		High	4	Bi-directional	1200x1200	MBK		
4			Bi-directional	1200x1200	MBK			
Standard Paper 1570B 90g	Office Document	Standard	1/2	Bi-directional	1200x1200	MBK		
	Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK		
			1	Bi-directional	1200x1200	MBK		

Media Type		Print Priority	Print Quality	Print-Pass	Printing Direction	Print Resolution (dpi)	Used BK ink
Coated Paper	Coated Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK
				1	Bi-directional	1200x1200	BK
			Standard	2	Bi-directional	1200x1200	BK
			High	4	Bi-directional	1200x1200	BK
		Image	Standard	4	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	12	Bi-directional	2400x1200	BK
			Standard	4	Bi-directional	1200x1200	BK
	Heavyweight Coated Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK
				1	Bi-directional	1200x1200	BK
			Standard	2	Bi-directional	1200x1200	BK
			High	4	Bi-directional	1200x1200	BK
		Image	Standard	4	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	12	Bi-directional	2400x1200	BK
			Standard	4	Bi-directional	1200x1200	BK
	Extra Heavyweight Coated Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK
				1	Bi-directional	1200x1200	BK
			Standard	2	Bi-directional	1200x1200	BK
			High	4	Bi-directional	1200x1200	BK
		Image	Standard	4	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	12	Bi-directional	2400x1200	BK
			Standard	4	Bi-directional	1200x1200	BK
Recycled Coated Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK	
			1	Bi-directional	1200x1200	BK	
		Standard	2	Bi-directional	1200x1200	BK	
		High	4	Bi-directional	1200x1200	BK	
	Image	Standard	4	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	12	Bi-directional	2400x1200	BK	
		Standard	4	Bi-directional	1200x1200	BK	
High Resolution Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK	
			1	Bi-directional	1200x1200	BK	
		Standard	2	Bi-directional	1200x1200	BK	
		High	4	Bi-directional	1200x1200	BK	
	Image	Standard	4	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	12	Bi-directional	2400x1200	BK	
		Standard	4	Bi-directional	1200x1200	BK	
Premium Matte Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK	
			1	Bi-directional	1200x1200	BK	
		Standard	2	Bi-directional	1200x1200	BK	
		High	4	Bi-directional	1200x1200	BK	
	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
		Standard	4	Bi-directional	1200x1200	BK	
Matte Photo Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK	
			1	Bi-directional	1200x1200	BK	
		Standard	2	Bi-directional	1200x1200	BK	
		High	4	Bi-directional	1200x1200	BK	
	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
		Standard	4	Bi-directional	1200x1200	BK	
Colored Coated Paper	Image	Standard	4	Bi-directional	1200x1200	MBK	
		High	8	Bi-directional	1200x1200	MBK	
Premium Coated Paper	Line Document/Text	Draft	1	Bi-directional	1200x1200	BK	
			1	Bi-directional	1200x1200	BK	
		Standard	2	Bi-directional	1200x1200	BK	
		High	4	Bi-directional	1200x1200	BK	
	Image	Standard	4	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	12	Bi-directional	2400x1200	BK	
		Standard	4	Bi-directional	1200x1200	BK	

Media Type		Print Priority	Print Quality	Print-Pass	Printing Direction	Print Resolution (dpi)	Used BK ink
Photo Paper	Glossy Photo Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Semi-Glossy Photo Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Photo Paper Plus	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Photo Paper Plus Semi-Gloss	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Photo Paper Pro	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Glossy Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Heavyweight Glossy Photo Paper 2	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Heavywght SemiGlos Photo Paper 2	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Satin Photographic Paper 190gsm	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Premium RC Photo Luster , 10 mil	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
Instant Dry Papers Glossy 200g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Instant Dry Papers Satin 200g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Photo Paper High Glossy 250g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Photo Paper Semi Matt 250g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Photo Paper Satin 240g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Photo Paper Pearl 260g	Image	Standard	6	Bi-directional	1200x1200	BK	
		High	8	Bi-directional	2400x1200	BK	
		Highest	16	Bi-directional	2400x1200	BK	
Proofing Paper	Proofing Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Professional Proof and Photo Glossy 195g	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Professional Proof and Photo Semiglossy 195g	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Professional Proof and Photo Semigloss 255g	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK

Media Type		Print Priority	Print Quality	Print-Pass	Printing Direction	Print Resolution (dpi)	Used BK ink
Synthetic Paper	Synthetic Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Adhesive Synthetic Paper	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
Board	POP Board	Image	Standard	4	Bi-directional	1200x1200	MBK
			High	8	Bi-directional	1200x1200	MBK
Adhesive Matt Paper	High Resolution Graphic Paper Self ADH	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
CAD	CAD Tracing Paper	Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK
				1	Bi-directional	1200x1200	MBK
			Standard	2	Bi-directional	1200x1200	MBK
			High	4	Bi-directional	1200x1200	MBK
				4	Bi-directional	1200x1200	MBK
	CAD Translucent Matte Film	Line Document/ Text	Draft	1	Bi-directional	1200x1200	MBK
				1	Bi-directional	1200x1200	MBK
			Standard	2	Bi-directional	1200x1200	MBK
			High	4	Bi-directional	1200x1200	MBK
				4	Bi-directional	1200x1200	MBK
Special	Special 1	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Special 2	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Special 3	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Special 4	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK
	Special 5	Image	Standard	6	Bi-directional	1200x1200	BK
			High	8	Bi-directional	2400x1200	BK
			Highest	16	Bi-directional	2400x1200	BK

2.2.4 Print Position Adjustment Function

This printer has a printing position adjusting function to adjust the lateral and longitudinal printing positions and bidirectional printing position of the printhead mounted on the carriage as well as the media feed amount.

The printing position can be adjusted in two ways: "automatic adjustment" by which the multi sensor installed at the lower left of the carriage reads the printing position adjusting pattern and "manual adjustment" by which a print position adjusting pattern is printed with the printing conditions changed little by little to allow the user to enter the visually checked adjustment value from the operation panel.

Printing position adjustment requires A4-size or larger roll media or cut sheet.

2.2.5 Head Management

This printer has a nozzle check function to detect any non-discharging nozzle. When a non-discharging nozzle is detected, the printer performs the print head cleaning operation. If the problem persists after completion of the print head cleaning operation, the non-discharged nozzles are automatically backed up by other nozzles.

2.2.6 Printhead Overheating Protection Control

This printer performs printhead overheating protection control when an abnormally high temperature is detected in the printhead.

The printhead can overheat, for instance, when the print operation continues for some time with no ink supplied to the nozzles.

The overheating protection control function prevents a print head nozzle from becoming clogged or damaged due to excessive heat.

Overheating protection control is performed based on the temperatures detected by the head temperature sensors in the nozzle arrays. If overheating is detected in a single nozzle array, overheating protection control is performed at either of the following levels according to the temperature.

Protection level 1:

If the printhead temperature sensor detects a temperature above the limit, the carriage stops at the scan end position printer in the direction of travel according to the carriage's scan status.

Then, wait control is performed to allow the printhead to cool naturally. When the printhead temperature drops below the prescribed value or 30 seconds have lapsed since detection of the abnormal temperature, printing resumes.

Protection level 2:

When the head temperature sensor detects an abnormally high temperature, printing stops immediately, the carriage is moved to the home position, and the printhead is capped. In this case, an error code is shown on the display.

2.2.7 Pause between Pages

To prevent ink blots from forming, this printer has a "pause between pages" function to hang down the printed paper from the platen to dry it and delivers it after lapse of the specified wait time.

The user can set the wait time using the printer drive. This function is particularly useful for printing on film-type sheets that requires extra long time to dry.

For borderless printing, 30 seconds of drying time is automatically set.

2.2.8 White Raster Skip

To improve the printing throughput, this printer has a white raster skip function to skip the carriage scan operation for continuous blank segments in print data.

2.2.9 Sleep Mode

This printer has a Sleep mode to reduce the standby power.

The printer automatically enters the Sleep mode (Power Save mode) when neither user operation nor data reception occurs for a preset period of time in the online or offline mode.

The printer wakes from the Sleep mode when the user presses any button on the operation panel or data is received from the host computer.

The time until the printer enters the Sleep mode can be changed from the operation panel. (Default: 5 minutes)

2.3 Printer Mechanical System

2.3.1 Outline

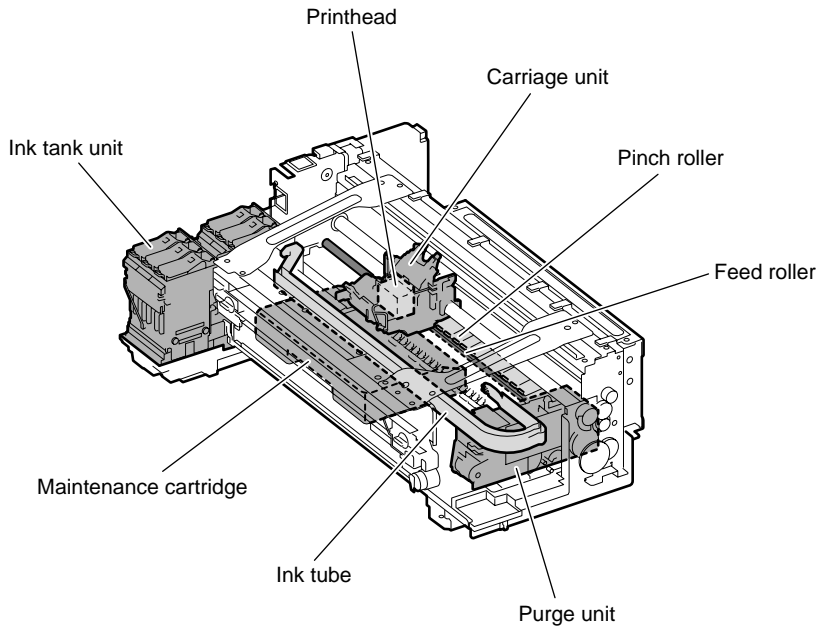
2.3.1.1 Outline

The printer mechanism can be broadly divided into two major components: the ink passage and paper path.

The ink passage consists of an ink tank, a carriage unit having a printhead, a purge unit, and a maintenance cartridge unit which are used to supply, circulate, and suck ink.

The paper path consists of a cassette pick-up unit, roll feed unit, paper feed unit to support four types of media feeding, transport, and ejection.

This section provides an overview of these mechanical components.



F-2-7

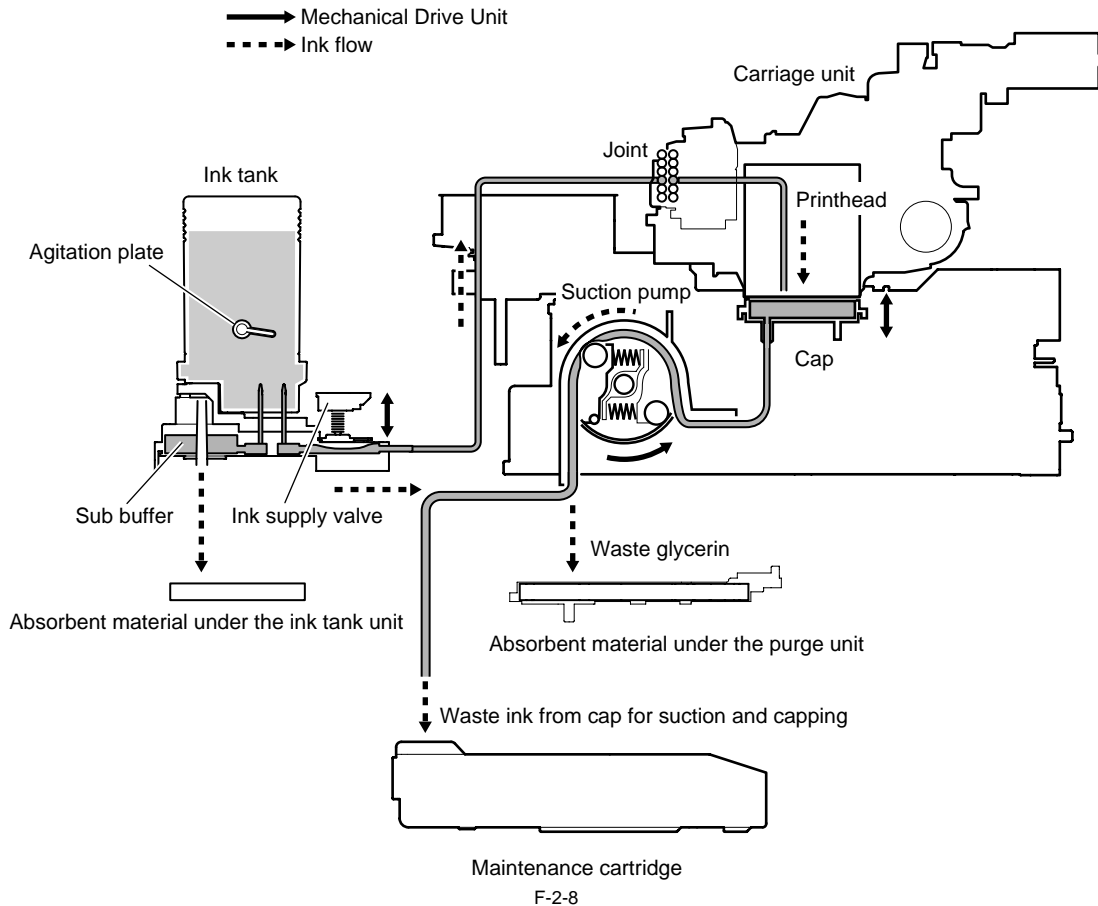
2.3.2 Ink Passage

2.3.2.1 Ink Passage

2.3.2.1.1 Overview of Ink Passage

0017-4721

The ink passage consists of ink tanks, printhead, cap, waste ink collection unit, ink tubes for connecting the mechanical components, and an ink suction pump which is operated to suck ink. These components are used to supply, circulate, and suck ink. A schematic diagram of the ink passage (for one color) and the ink flow are shown below.



a) Ink supply from ink tank to ink supply valve

The ink tank contains ink to be supplied to the printhead. Ink flow from the ink tank to the ink tank supply valve due to the fluid level difference.

b) Ink flow from ink tank to sub-buffer

Ink flows from the ink tank to the sub-buffer due to the fluid level difference, and air enters the ink tank through the air passage of the sub-buffer, maintaining the pressure inside the ink tank constant. If the ink in the sub-buffer exceeds the predetermined level, the excessive ink flows to the absorbent material under the ink tank.

c) Ink supply from ink supply valve to printhead

Ink is supplied from the ink tank to the printhead by opening the ink supply valve, capping the head, and operating the suction pump. The ink sucked from the caps flows to the maintenance cartridge.

d) Ink supply during printing

During printing, the ink supply valve is held open to allow ink to flow from the ink tank to the printhead constantly due to the negative pressure generated by discharging of ink. The waste ink used for printhead cleaning and borderless printing flows to the waste ink absorbent materials under the maintenance cartridge in addition to the waste ink box.



If all of ink passages are opened (no ink tank is installed, the ink supply valve is opened, and the printhead fixer lever is opened) when the ink tube is filled with ink, the ink in the ink tube may reverse-flow due to the fluid level difference and ink may leak from the hollow needle of the ink tank. Do not open all of the ink passages at the same time when the ink tube is filled with ink.

e) Agitation of ink in the ink tank

Ink in the ink tank is agitated to prevent precipitation of pigment-based ink in the ink tank. This function is implemented by reverse-flowing ink to the ink tank by opening and closing the supply valve in succession. Inside the ink tank is provided with an agitation plate to assist agitation of ink. (The agitation plate is also provided in the

- Operation timing: When a new ink tank is installed or when 168 hours have lapsed since the previous agitation (the agitation is performed irrespective of the whether the printer is printing or cleaning its head)
- Ink supply valve opening/closing count: 30 times (every 30 seconds)

If 336 or more hours have lapsed, the ink valve opening/closing count and the time until the next agitation are changed according to the length of the time lapsed.

2.3.2.2 Ink Tank Unit

2.3.2.2.1 Structure of Ink Tank Unit

0013-5200

a) Ink tank

Each ink tank contains 130 ml of ink (the starter ink tank supplied with the printer contains 90 ml of ink) for each color. The amount of ink is memorized in the EEPROM mounted to the ink tank.

The amount of the ink remaining in the ink tank is detected as a dot count according to the data memorized in the EEPROM.

When the electrodes mounted to the hollow needle detect a con-conductive state, a message appears on the display to indicate that the ink is nearly empty. If the dot count reaches the prescribed value, the ink tank is considered to be empty.

b) Ink port

When the ink tank lock lever is pressed down, the hollow needle enters the ink port (covered with a rubber plug), establishing an ink passage between the printer and ink tank.

c) Air passage

When the ink tank lever of the printer is pressed down, the hollow needle enters the air passage (covered with a rubber plug) and thus the internal pressure of the ink tank is released, maintaining the internal pressure constant.

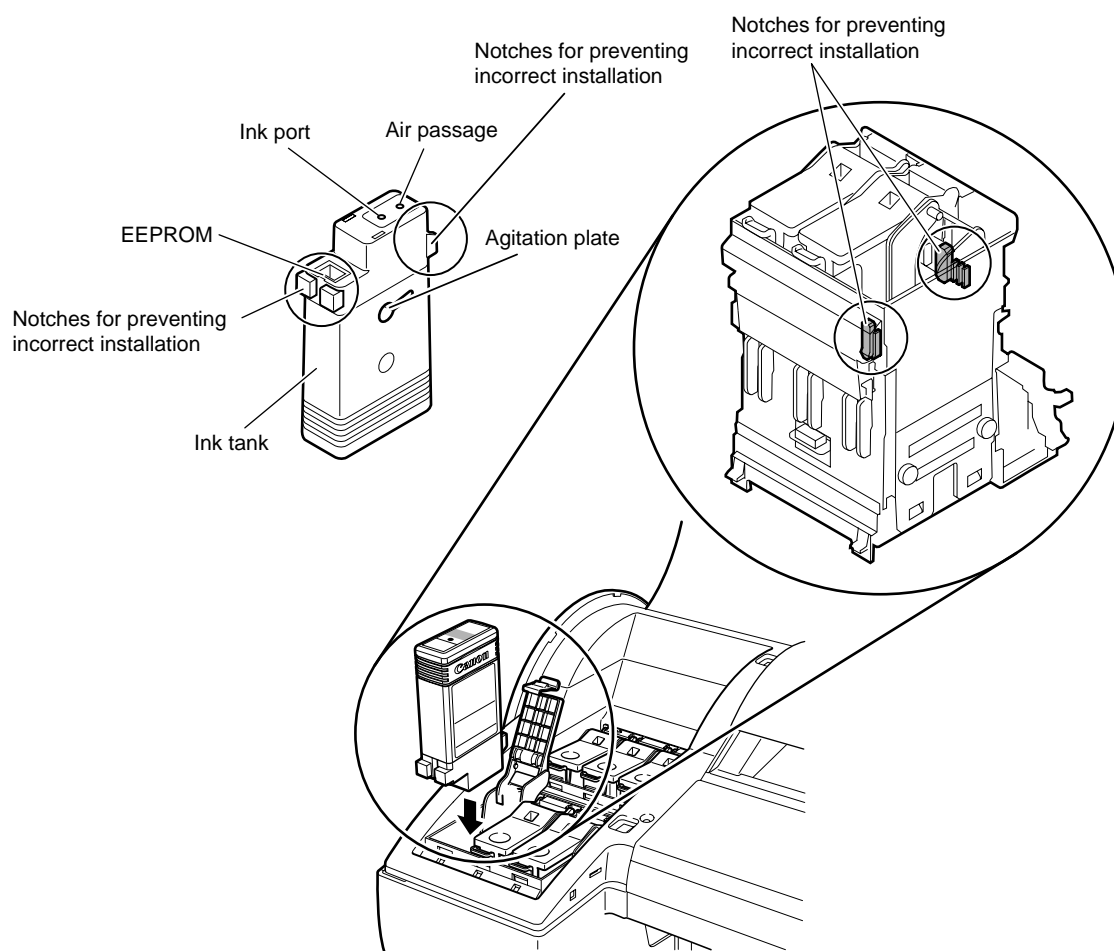
d) Notches for preventing incorrect insertion

The ink tanks have notches for preventing insertion. Wrong ink tanks cannot be installed in place due to these notches.

The ink tank lock lever can lowered to start ink supply only when the ink tank has been installed in place.

e) Agitation plate

The agitation plate assists the ink agitation which is performed to prevent precipitation of ink.



F-2-9

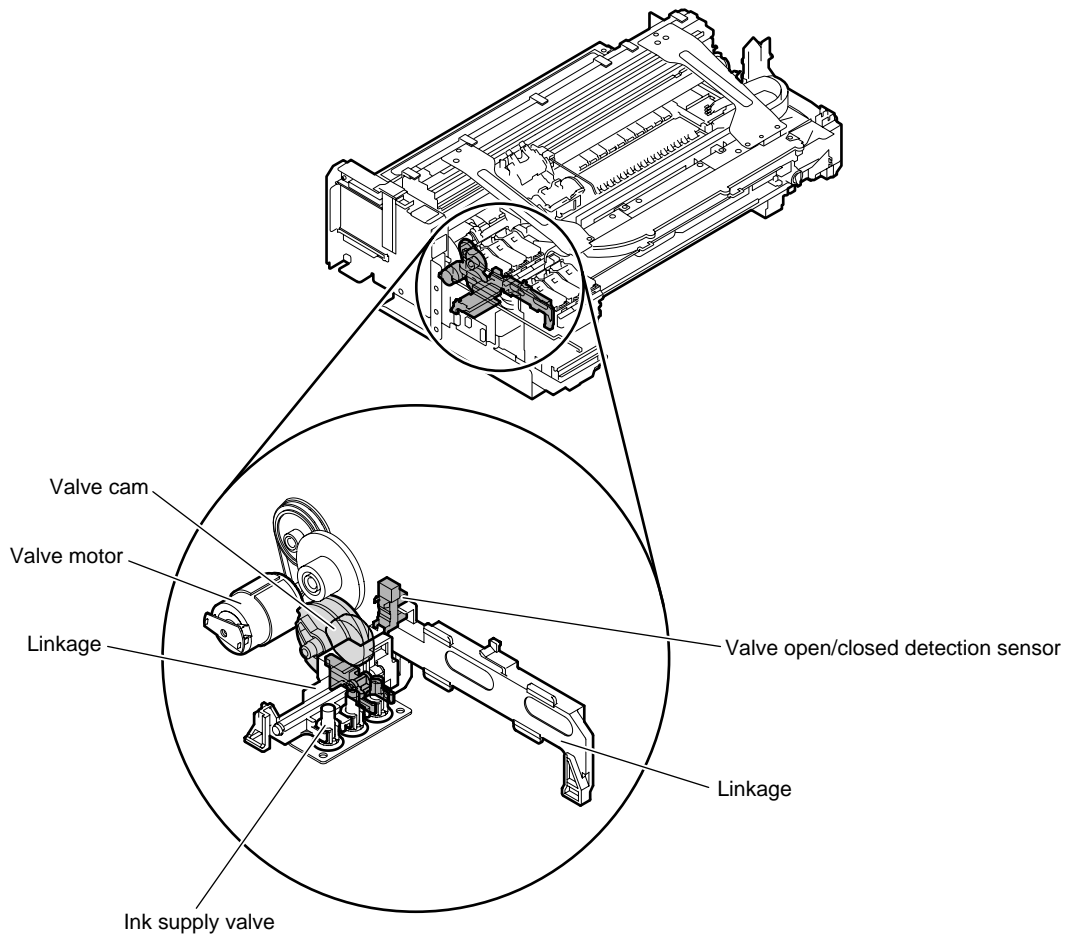
f) Ink supply valve

The ink supply valve is located between the ink tank and ink tube to prevent ink leakage from occurring when the ink tube on the ink tank side is opened during replacement of the ink tank.

The ink supply valve is opened and closed by the valve open/close mechanism which is driven by the valve motor.

The ink tank unit consists of two tank bases each of which contains ink tanks for three colors and the ink tubes for six colors.

The ink supply valve for each color is driven by the valve cam through a link. Ink supply valves for all colors are opened and closed at the same time.



F-2-10

2.3.2.3 Carriage Unit

2.3.2.3.1 Functions of Carriage Unit

0013-4834

a) Printhead mounting function

The carriage mechanically locks the printhead and is connected to the printhead via the terminals on the carriage PCB.

b) Control function

The carriage incorporates a carriage PCB that relays the signal from the main controller, a linear encoder that generates a print timing signal based on the detected carriage position, and a multi sensor that detects the media width and skewing to adjust the registration and height. The carriage PCB and main controller PCB are connected with a flexible cable.

c) Carriage drive function

The carriage motor moves the carriage back and forth on the platen via the carriage belt.

d) Printhead maintenance function

The printer performs the printhead cleaning operation such as printhead wiping and suction at the home position of the carriage.

e) Nozzle check function

The printer detects a non-discharging nozzle using the head management sensor attached to the maintenance jet tray by discharging ink with the carriage stopped at the maintenance jet tray.

f) Media thickness adjustment function

If the gap between the printhead face and the media increases due to the difference in media thickness, cockling, curling, and so on, more ink mist is generated. In reverse, if the gap decreases, the head can touch the media surface more frequently.

To maintain the proper gap, the remote lifter is driven to adjust the head height automatically according to the selected media type, media supply method, printing conditions (borderless/priority print type), environmental conditions (temperature/humidity), and the result of measurement by the multi sensor.

The relationship between media types and head heights (from the platen) is summarized in the table below. Note that the head height is adjusted with priority given to the media gap measured by the multi sensor.

T-2-3

Head height (mm)	Media type (Value in parentheses:mm)
1.4	Glossy paper(0.2),plain paper(line drawing)(0.1)
1.8	Plain paper(0.1)
2	Coated paper(0.5)
2.2	Semi-glossy canvas(0.5)
3.2	Board paper(1.5)

g) Paper leading edge detection function/paper width detection function/skewing detection function

The leading edge, width, and skewing of the paper fed to the platen is detected by the multi sensor mounted at the lower left of the carriage.

h) Auto print head position adjustment function

The adjustment pattern printed on paper is read by the multi sensor mounted at the lower left of the carriage, thus adjusting the printing timings of each printhead automatically.

i) Remaining roll media detection function

The amount of the remaining roll paper can be detected using the multi sensor mounted at the lower left of the carriage by printing a barcode at delivery of the roll media.

j) Internal temperature detection function

The internal temperature around the printhead is detected using the thermistor mounted on the carriage PCB.

2.3.2.3.2 Structure of Carriage Unit

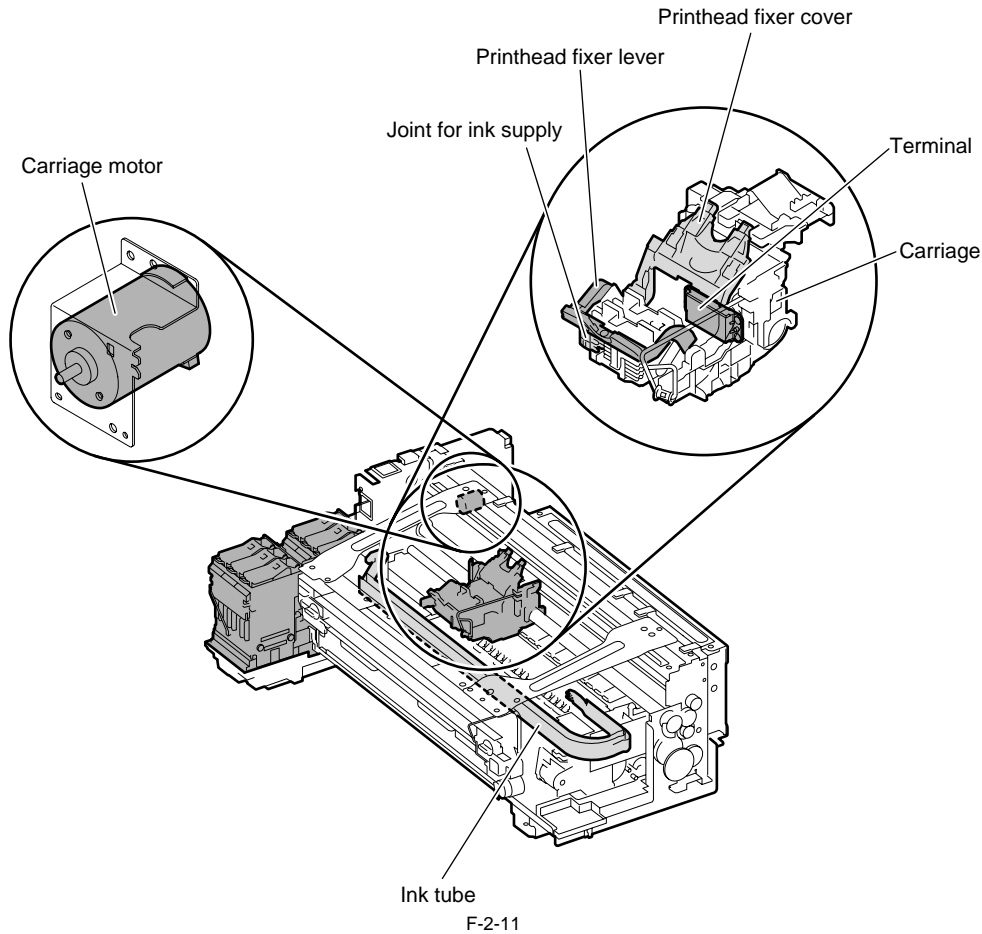
0013-4891

a) Printhead mounting unit

The printhead is secured to the carriage by the printhead fixer lever.

When the printhead is secured to the carriage, the signal contact of the carriage PCB touches the signal contact point of the printhead, allowing print signals to be transmitted.

The ink passage from the ink tank is connected to the printhead through the ink tube and joint.

**b) Ink port**

Ink is supplied to the printhead through the ink tubes.

Ink tube run through the ink tube guide mounted on the carriage and move in conjunction with the carriage.

c) Control unit

The carriage PCB is connected to the main controller PCB with a flexible cable. The flexible cable moves in conjunction with the carriage.

A photo-coupler-type encoder is mounted at the top of the rear of the carriage to detect the slit on the linear scale during carriage movement, thus controlling the print timing.

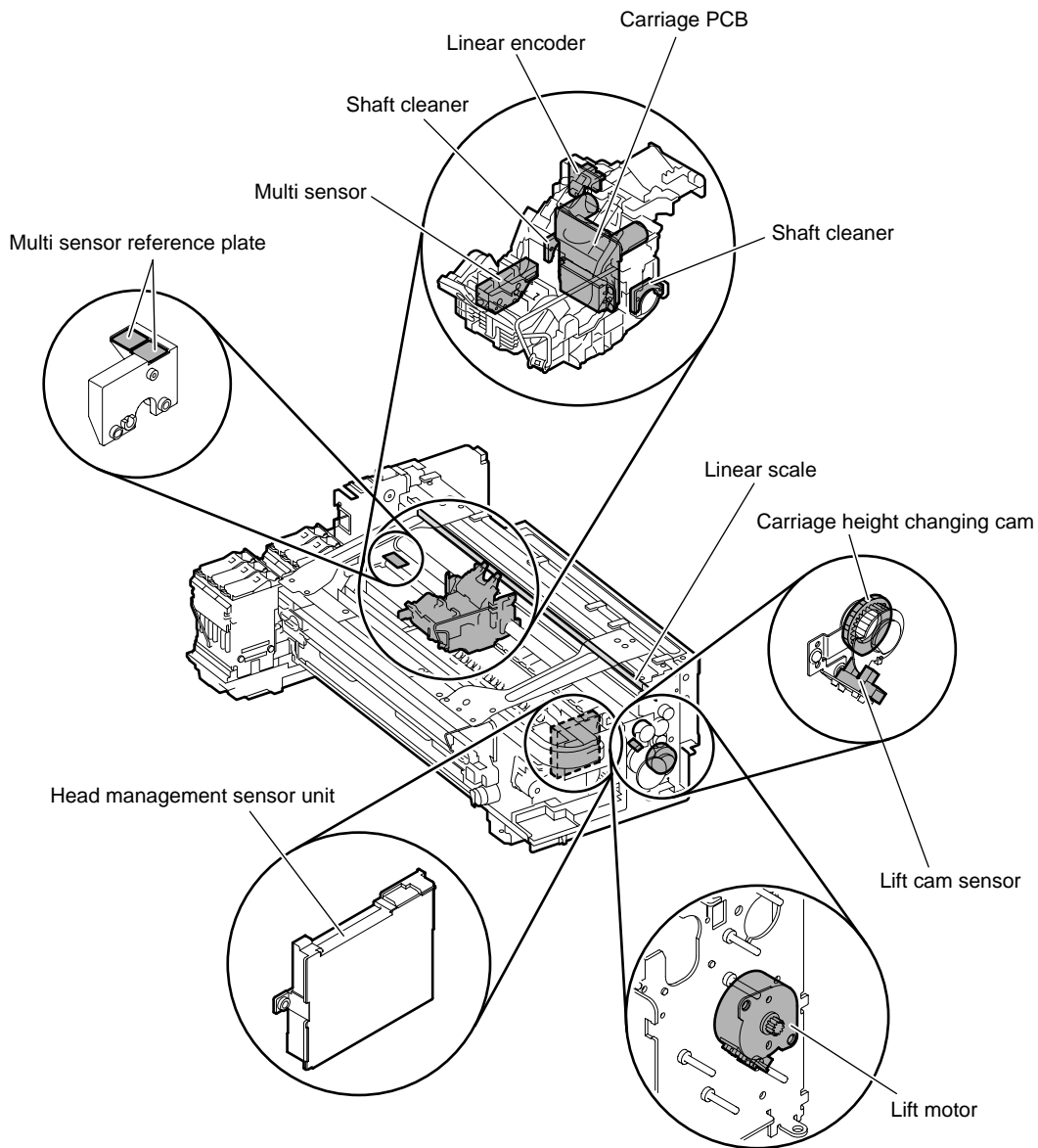
d) Carriage drive unit

Mechanical misalignment of the printhead in the vertical and horizontal direction and in bidirectional printing can be corrected by changing the print timing using the "Adjust Printer" option in the Main menu.

The carriage motor (DC motor) moves the carriage back and forth on the platen via the carriage belt.

The carriage home position is the capping position to which the carriage is slowly moved when the power is turned on.

When the position read on the linear scale is set as the home position for position control, the carriage motor moves based on control signal output from the main controller.



F-2-12

e) Printhead maintenance unit

The printer performs the printhead cleaning operation at the home position of the carriage.

The purge motor is used for wiping. When the carriage is stationary at the home position, the printhead installed in the carriage is wiped with the wiper blade. The wiper blade is pressed against the absorbent material soaked with glycerin so that the wiper blade is moistened with glycerin, thus improving the wiping performance.

Idle ejection of ink is performed on the cap, the borderless ink tray of the platen, and paper.

The suction operation is performed by rotating the pump motor after completion of capping.

f) Media thickness adjustment unit

The gap between the printhead face and media is changed with the rotation of the carriage height changing cam driven by the lift motor.

The height of the printhead is detected by the multi sensor mounted at the lower left of the carriage.

g) Multi sensor unit

The multi sensor mounted at the lower left of the carriage is composed of four LEDs (red, blue, green, infrared) and two light-sensitive elements which are used to detect the leading edge, width, and skewing of paper and adjust the registration and head height.

The multi sensor reference plate is provided with a white plate. By measuring the quantity of the reflected light from the white plate, the reference value for gap measurement is computed.

(Service mode: SERVICE MODE>ADJUST>GAP CALIB)

h) Shaft cleaner units

The shaft cleaners mounted at the left and right of the carriage are used to clean the carriage and apply oil to the shaft.

i) Internal temperature detection

A thermistor for measuring the internal temperature is mounted on the carriage PCB on the rear of the head holder.

2.3.2.4 Printhead

2.3.2.4.1 Structure of Printhead

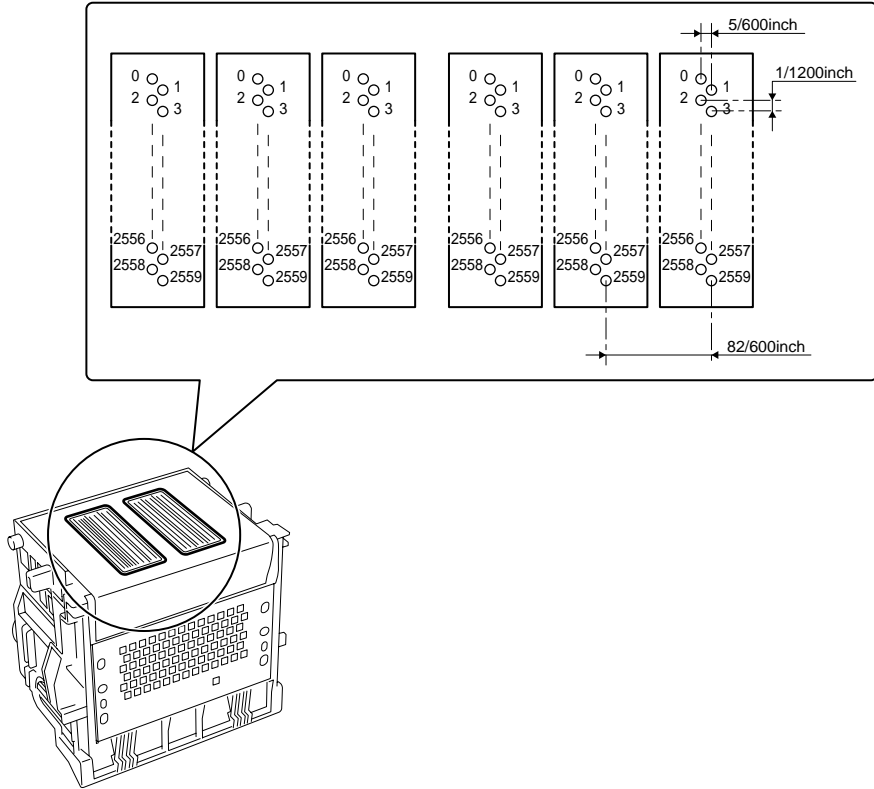
0013-4821

A printhead incorporates six nozzle arrays. Each nozzle can be controlled individually so that a six-color discharge action can be performed by a single printhead.

a) Nozzle arrays

A total of 2560 nozzles are arranged in a two-column staggered pattern.

In each column, 1280 nozzles are arranged in a staggered pattern at intervals of 600 dpi, forming a 2560-nozzle arranged at intervals of 1200 dpi.

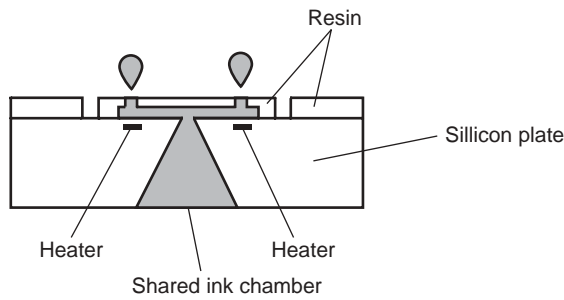


F-2-13

b) Nozzle structure

Ink supplied from the ink tank is filtered by a mesh ink filter, and the supplied to the nozzles.

Ink is supplied from the shared ink chamber to the nozzles. When the head driving current is applied to the nozzle heater, ink boils and form bubbles so that ink droplets are discharged from the nozzles.



F-2-14

2.3.2.5 Purge Unit

2.3.2.5.1 Functions of Purge Unit

0013-5334

To maintain high print quality, the purge unit performs maintenance of the nozzles of the printhead. The purge unit supports a capping function, cleaning function, and ink supply function.

a) Capping function

The capping function presses the cap of the purge unit against the face plate on the nozzle section of the printhead to prevent nozzle drying and dust adhesion. Capping is performed when printing is complete, at the start of the suction operation, and when switching to the standby state due to an error. The capping function also establishes the ink passage between the printhead and purge unit.

b) Cleaning function

The cleaning function restores the printhead to the state where ink can be easily discharged from nozzles. This function includes the following three types of operations.

- Wiping operation

This operation is performed to remove paper fibers and dried ink from the face plate.

- Pumping operation

This operation is performed to remove ink from the nozzles and fill the nozzles with fresh ink.

- Maintenance jet operation

This operation is performed to spray ink from the nozzles to the cap, borderless ink jet tray, an paper to remove bubbles in the nozzles and dust and other foreign particles.

c) Ink supply function

The suction pump of the purge unit operates together with the ink supply valve to supply ink to the printhead during the initial filling and ink level adjustment.

Details of the cleaning function are shown in the table below.

T-2-4

Cleaning mode	Name of Service mode or PRINT INF (Name of Main Menu)	Operation	Description of cleaning
Cleaning 1	CLN-A-1/CLN-M-1 (Head Cleaning A)	Normal cleaning	Removes dried ink from nozzles, thick ink accumulated on the face, and paper particles.
Cleaning 2	CLN-A-2	Ink level adjustment and cleaning	Adjust the ink level in the head by suction, and then performs normal cleaning.
Cleaning 3	CLN-A-3	Initial filling ink	Fills the empty tube (during initial installation) with ink, and then performs normal cleaning.
Cleaning 4	CLN-M-4 (Replace P.head)	Ink drainage for head replacement	Drains ink to replace the head (drains only the ink in the head).
Cleaning 5	CLN-M-5 (Move Printer)	Ink drainage for secondary transport	Drains ink from the head and tube for secondary transport.
Cleaning 6	CLN-A-6/CLN-M-6 (Head Cleaning B)	Normal (strong) cleaning	Performs suction stronger than when adjusting the ink filling amount in the head or normal cleaning to unclog nozzles.
Cleaning 7	CLN-A-7	Aging	Performs idle ejection after replacement of the head.
Cleaning 10	CLN-A-10 (Move Printer)	Ink filling after secondary transport	Fills the empty tube (during installation after secondary transport) with ink, and performs normal cleaning.
Cleaning 11	CLN-A-11	Ink filling after head replacement	Performs normal cleaning after head replacement and ink filling.
Cleaning 15	CLN-A-15	Dot count suction	Performs suction to remove ink adhered to dried nozzles and thick ink accumulated on the face when the dot count reaches the prescribed value.
Cleaning 16	CLN-A-16	Precipitated ink agitation	Performs the agitation (ink supply valve open/close) operation to prevent the ink ingredient from precipitating.
Cleaning 17	CLN-A-17	Cleaning (weak)	Performs cleaning weaker than normal cleaning to unclog nozzles.

Cleaning operation timings are as follows.

T-2-5

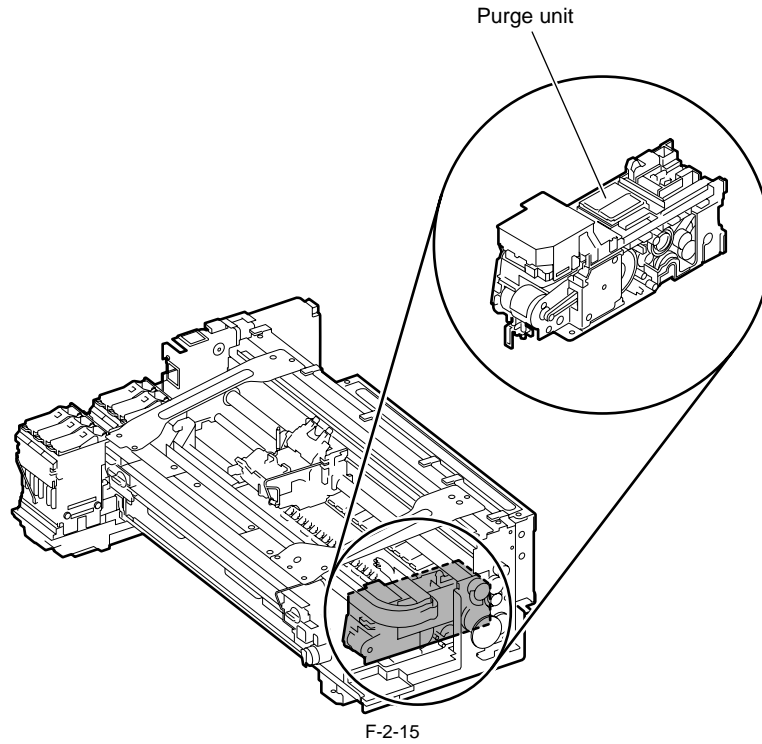
Printer status		Cleaning operation	Consumption (typ.)*1		
Standby	168 hours elapsed capped	Cleaning 1 (Normal Cleaning)	1g		
	At least 720 hours elapsed since the last session of Cleaning 2, 3, 6 or 10 (360 hours after initial installation)	Cleaning 6 (Normal (strong) Cleaning)	5g		
	At initial installation and 96 hours elapsed since the last session of Cleaning 16	Cleaning 16 (Precipitated ink agitation)	-		
	1 hour elapsed capped with a specified number of dots discharged per chip completed after last wiping	Wiping + Idle ejection	0.013g		
Power-on	At initial installation	Cleaning 3 (initial filling ink)	15g		
	Both heads and inks available	The print operation has completed.	168 to 720 hours elapsed capped	Cleaning 1 (Normal Cleaning)	1g
			At least 720 hours elapsed since the last session of Cleaning 2, 3, 6 or 10 (360 hours after initial installation)	Cleaning 6 (Normal (strong) Cleaning)	5g
			At least 96 hours elapsed since the last session of Cleaning 16	Cleaning 16 (Precipitated ink agitation)	-
			At least 1 hour elapsed capped with a specified number of dots discharged per chip completed after last wiping	Wiping + Idle ejection	0.013g
	Print operation aborted (uncapped) and CR error occurring	Up to 72 hours elapsed after an abort	Cleaning 1 (Normal Cleaning)	1g	
		Over 72 hours elapsed after an abort	Cleaning 6 (Normal (strong) Cleaning)	5g	
	Print operation aborted (uncapped) and no CR error occurring		Cleaning 11 (ink filling after head replacement)	10g	
No heads are available		Cleaning 10 (ink filling on secondary transport)	15g		
Power off	Specified number of dots discharged per chip completed since the last session of wiping	Wiping + Idle ejection	0.013g		
Before the start of printing	Less than 168 hours elapsed capped	Idle ejection	0.013g		
	At least 168 hours elapsed capped	Cleaning 1 (Normal Cleaning)	1g		
	Before printing in the wake of an error occurrence	Cleaning 1 (Normal Cleaning)	1g		
Printing	Before scanning while printing	Idle ejection (+Wiping)	- (0.013g)		
After the end of printing	A specified number of dots (color) discharged per chip since the last session of Cleaning 2, 3, 6 or 10	Cleaning 6 (Normal (strong) Cleaning)	5g		
	A specified number of dots discharged per chip after the last session of wiping	Wiping + Idle ejection	0.013g		
	3 minutes elapsed since the last session of capping	Wiping + Idle ejection	0.013g		
	Total 2 hours elapsed uncapped since the last session of Cleaning 1, 2, 3, 6 or 10	Cleaning 1 (Normal Cleaning)	1g		
When the Head Cleaning menu choice is executed	Manual Cleaning (Head Cleaning A)	Cleaning 1 (Normal Cleaning)	1g		
	Manual cleaning (Head cleaning B)	Cleaning 6 (Normal (strong) Cleaning)	5g		
When the Replace Print Head menu choice is executed	After head replacement	Cleaning 2 (ink level adjustment and cleaning) + Cleaning 4 (ink drainage for head replacement)	10g		
When the Move Printer menu choice is executed	After the Move Printer menu choice is executed	Cleaning 5 (ink drainage for secondary transport)	10g		
	After power-on at secondary installation	After power-on at secondary installation	15g		

T-2-6

*1: Quantities of ink consumption by nozzle train

2.3.2.5.2 Structure of Purge Unit

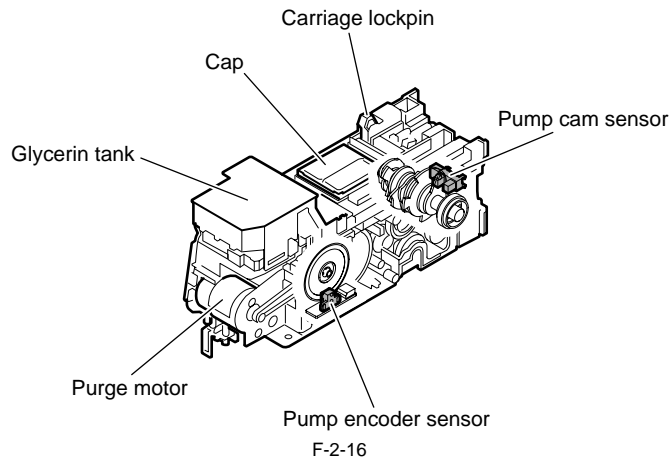
0013-4307

**a) Cap unit**

The cap unit is used to cap the print head nozzles during capping and cleaning. The portion that touches the face plate is made from rubber. Two caps are arranged for the printhead (six arrays of nozzles) installed in the carriage.

During cleaning, the caps used for both suction and capping are used to suck ink from the printhead using the suction pump.

During capping, the caps are raised by the cap cams operated by the purge motor to cover the arrays when the carriage has moved to the home position, thus protecting the nozzles.

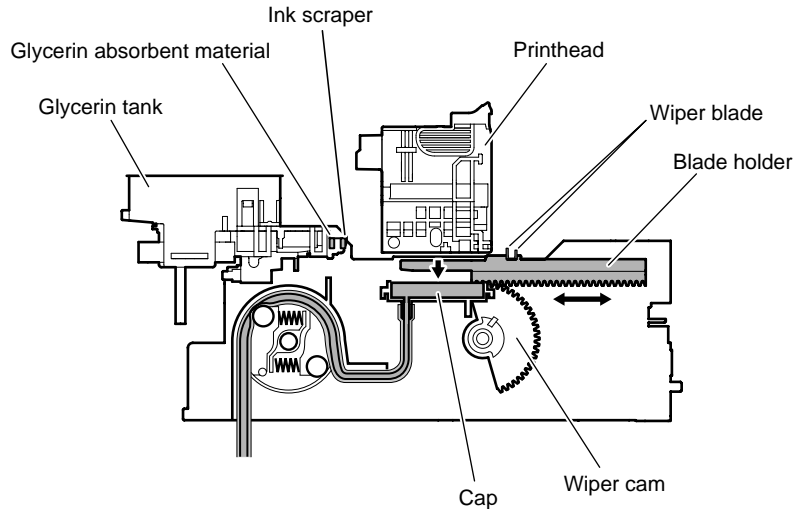


b) Wiper unit

The wiper unit operated by the purge motor wipes the print head face.
 The printer is provided with a pair of wiper blades for better wiping performance.
 The wiping operation is performed by a "slide wipe" method by which the purge motor rotates (in the normal direction) to slide the wiper blade via the wiper cam.
 It is performed by a constant-speed movement toward the front of the printer as viewed from the printer front.
 The wiper blade, which is positioned at right angles to the print head, wipes the entire printhead face, and then the narrow blade is used to wipe the nozzle arrays.
 After wiping, the wiper blades are cleaned before they are set at the wiping position so that the maximum wiping performance is obtained.
 During the wiper blade cleaning, the ink removed from the head is rubbed off by the ink scraper.
 Absorbent material soaked with glycerin is pressed against the wiper blades to enhance the wiping performance. The amount of glycerin used (tank capacity: 50 ml) is managed by counting the number of times the wiper blade is pressed against the absorbent material. When the count reaches the following value, an advance notice of replacement (printing can be continued) or a request for replacement (service call error) is displayed.

T-2-7

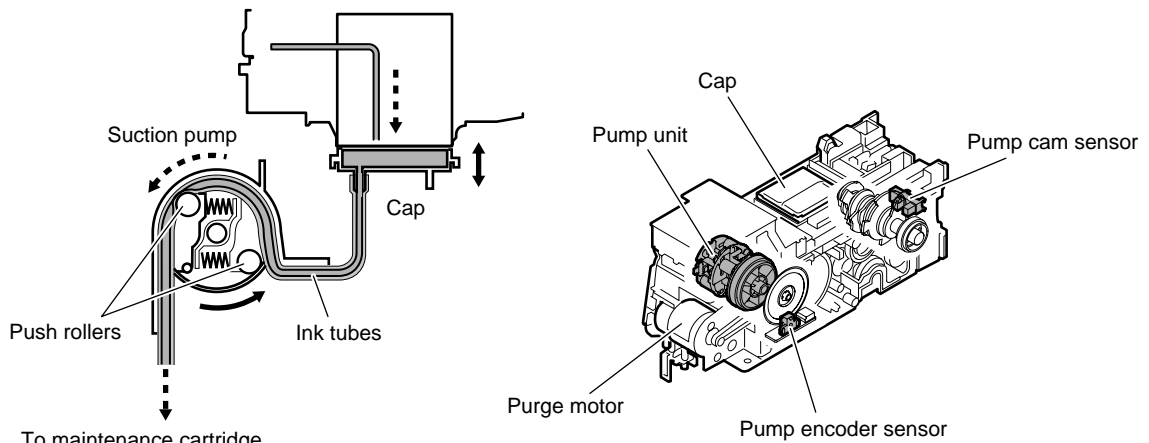
Advance notice of replacement	47,500times
Service call	50,000times



F-2-17

c) Pump unit

This printer uses tube pumps (suction pumps) that press on the ink tubes using rollers to produce negative pressure, thus sucking ink.
 Two rollers are used to press on a single tube one after another to control the amount of ink sucked.
 The roller rotation timing is detected by the pump cam sensor, and the amount of rotation is controlled by the driving of the purge motor.



F-2-18

2.3.2.6 Maintenance Cartridge

2.3.2.6.1 Maintenance Cartridge

0013-4160

a) Maintenance cartridge

The maintenance cartridge can contain up to approximately 778 ml (approx. 830 g) of waste ink (including the moisture evaporation in the waste ink).

b) Detection of waste ink in maintenance cartridge

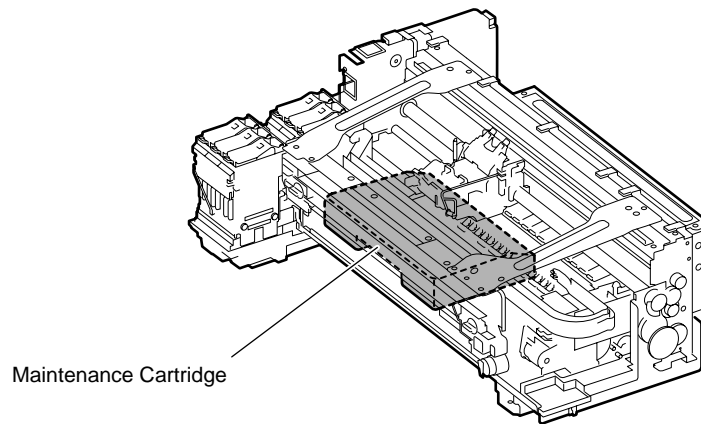
The quantity of waste ink in the maintenance cartridge is measured by counting dots.

When the quantity of waste ink collected in the maintenance cartridge reaches 80% of the cartridge capacity, a warning message "MTCart Full Soon" appears to indicate that the maintenance cartridge is nearly full.

If printing is continued, an error message "Maint Cartridge Replace Cart" appears to indicate that the maintenance cartridge is full.

When this error occurs, the printer judges the maintenance cartridge as being full of waste ink and stops printing immediately. The printer stops even if printing is in progress, and it will not operate until the maintenance cartridge is replaced with a new one.

The maintenance cartridge incorporates an EEPROM. The engine firmware reads and writes the contents of the EEPROM to control the maintenance cartridge status.

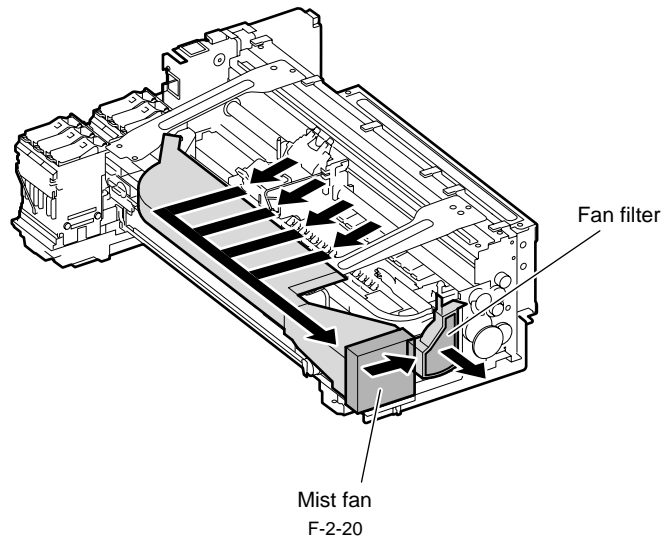


2.3.2.7 Air Flow

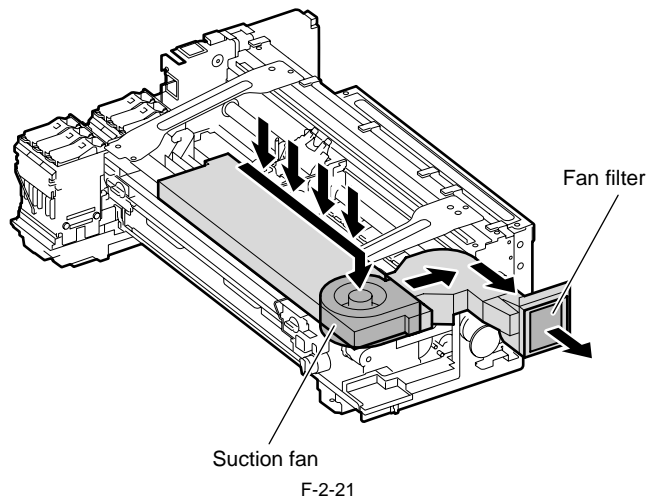
2.3.2.7.1 Air flow

0013-4162

This printer has two fans, a mist fan used to collect mist and a suction fan used to suck media onto the platen. Ink mist that floats inside the printer and ink splashes from the media are collected in the filter through the front duct and the air flow path inside the printer by the driving of the mist fan, thus preventing mist from discharged outside the printer.



During operation of the suction fan, suspended substances are collected in the filter through the airflow path inside the printer, preventing them from being emitted to outside of the printer.



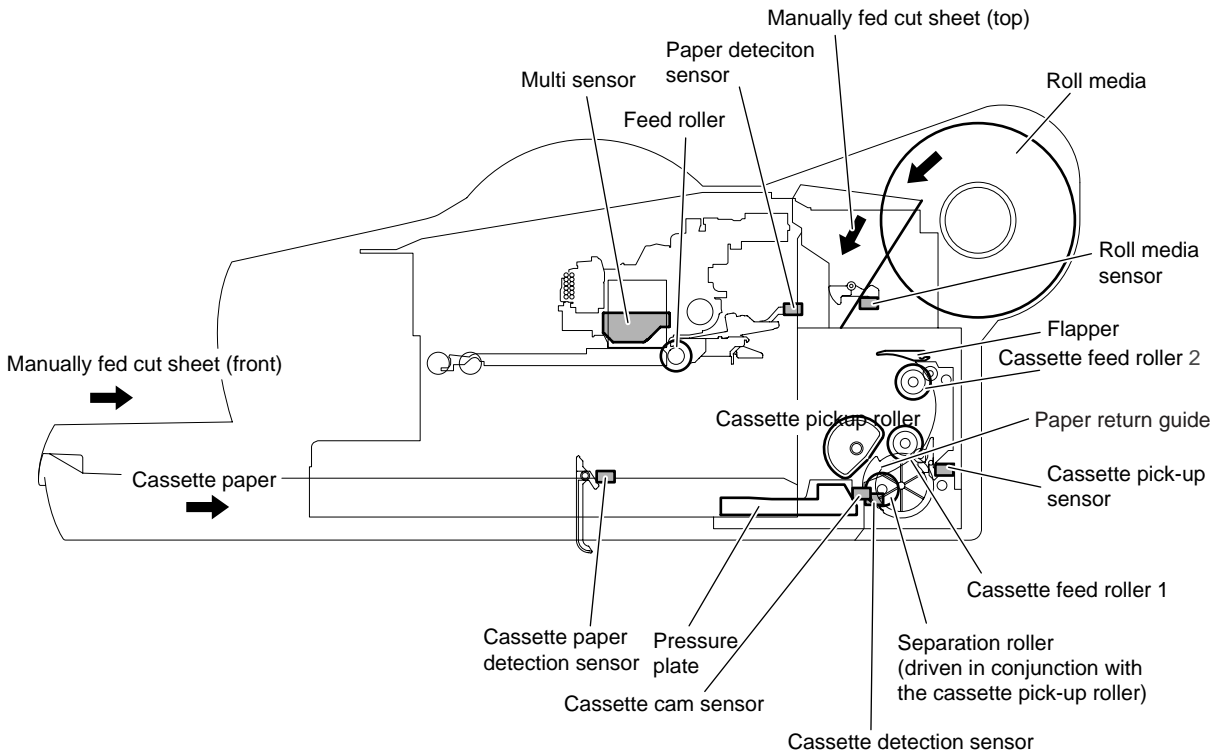
2.3.3 Paper Path

2.3.3.1 Outline

2.3.3.1.1 Overview of Paper Path

0013-4163

The paper path consist of a cassette pick-up unit, roll feed unit, feed roller unit, pinch roller drive unit that applies/releases pressure to/from the pinch roller, spur drive unit that moves the spur up/down, and various sensors that detect the media feed status, allowing media to be fed in four ways, fed, and ejected.



F-2-22

2.3.3.2 Paper Path

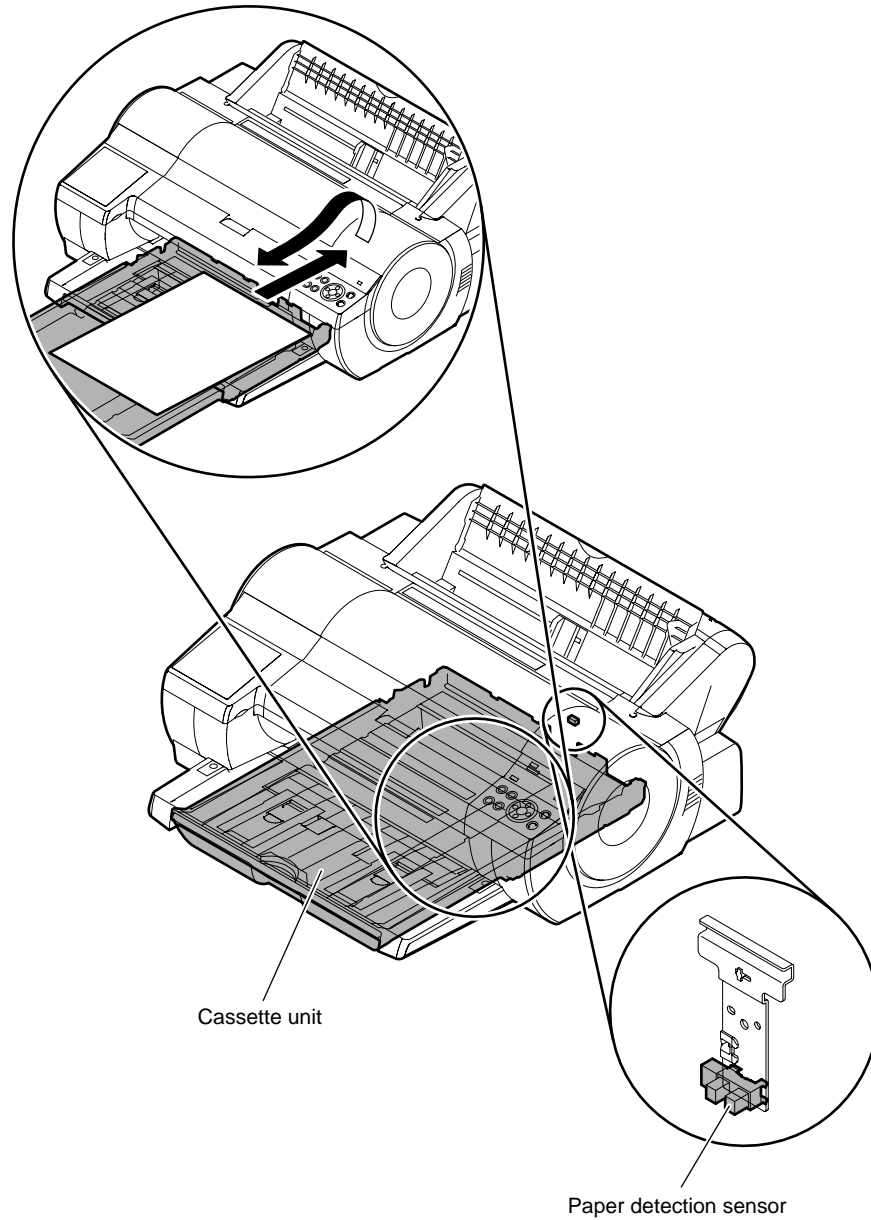
2.3.3.2.1 Structure of Cassette Pick-up Unit

0013-4167

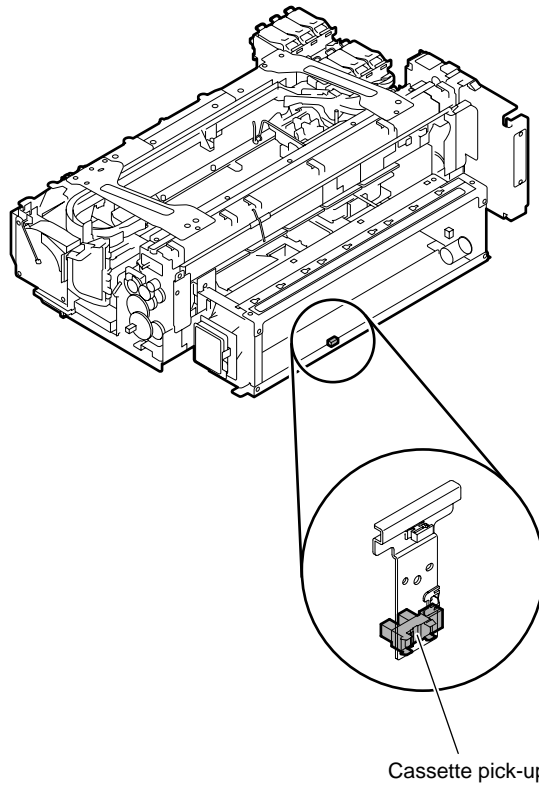
The paper loaded in the cassette is fed by the pick-up roller, and then fed onto the platen via the feed roller.

The pick-up roller unit has a cassette separation roller to prevent multiple sheets from being fed at the same time. The excess sheets separated by the separation roller are returned to the cassette using the sheet return guide.

The sheet supplied from the cassette is detected by the cassette pick-up sensor and paper detection sensor. If no sheet is detected within the specified time, this problem is detected as a paper jam.

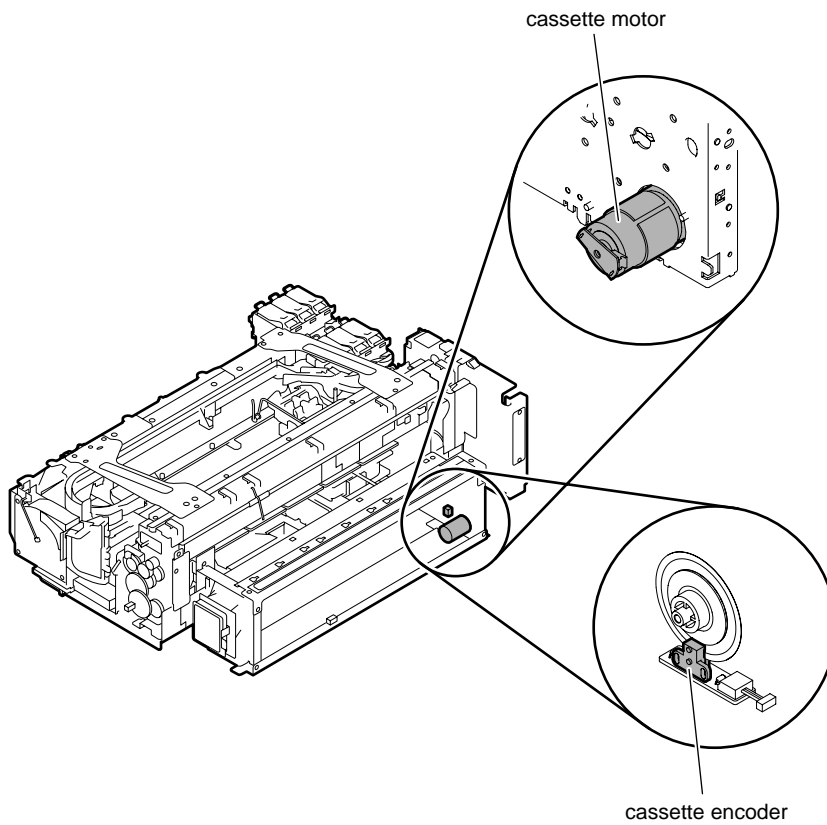


F-2-23



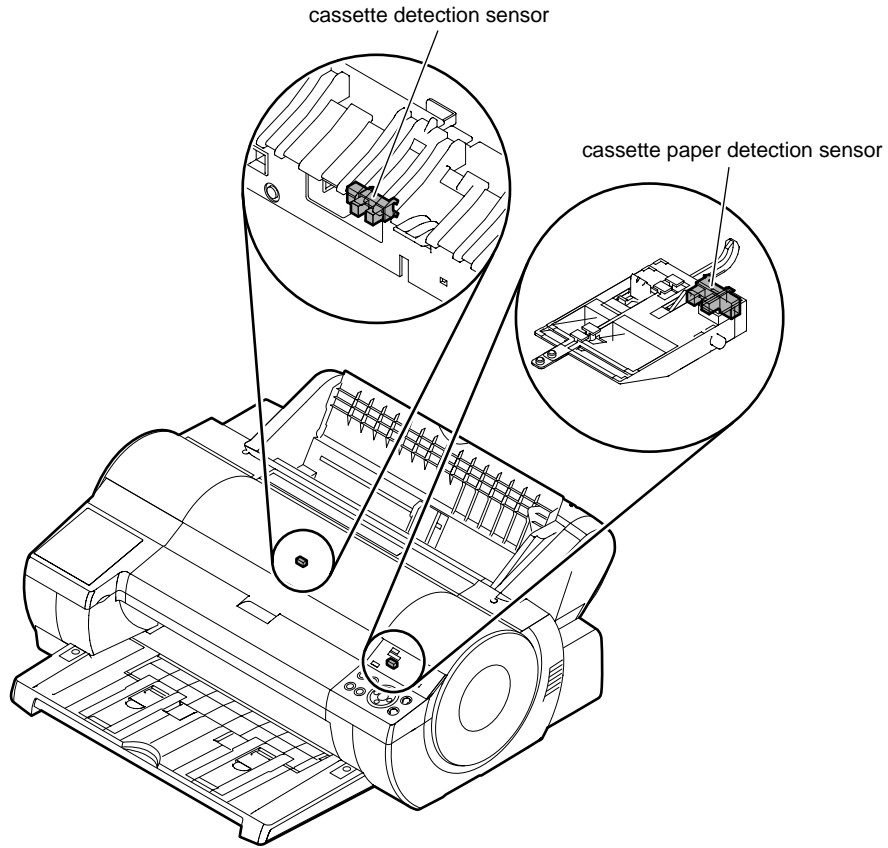
F-2-24

The cassette pick-up roller and cassette feed roller are driven by the cassette motor under the control of the cassette encoder.

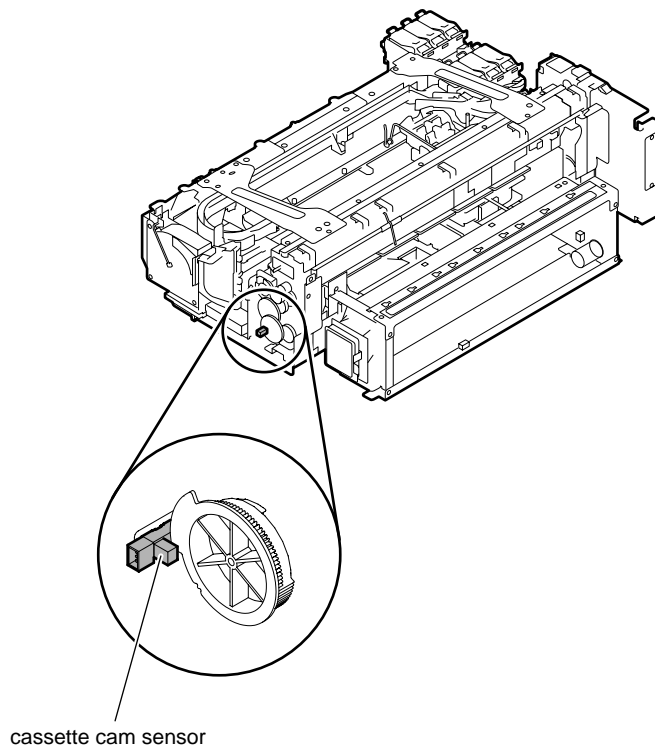


F-2-25

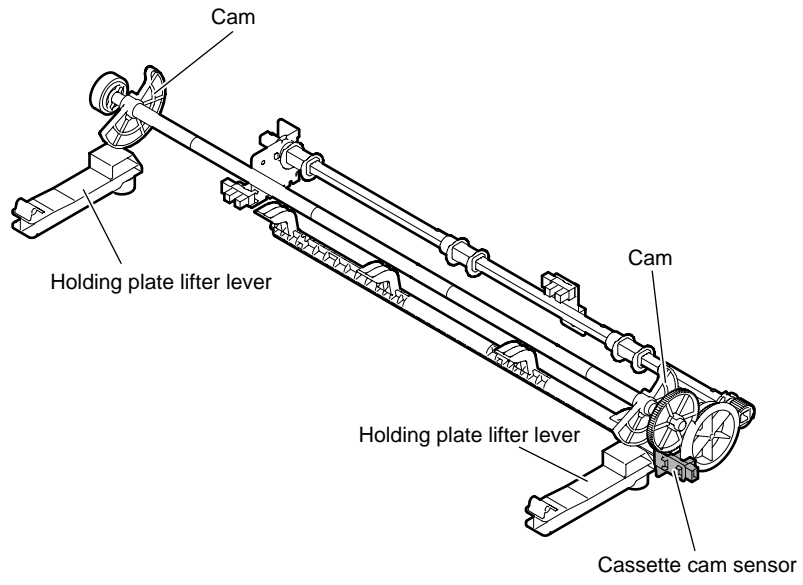
At the bottom of the cassette unit are mounted a cassette detection sensor and a cassette paper detection sensor to check whether a cassette is loaded and whether paper is present in the cassette. The pressure plate is moved up and down by the cam and the movement is detected by the cassette cam sensor.



F-2-26



F-2-27

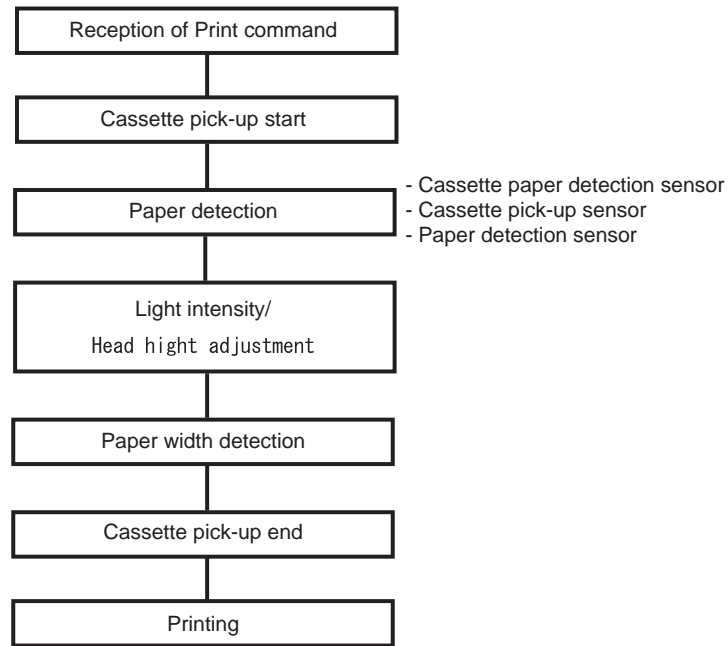


F-2-28

2.3.3.2.2 Cassette Pick-up Sequence

0013-4172

When a Print command is received with paper loaded in the cassette, cassette pick-up operation starts. The paper supplied from the cassette is checked for normal feeding using the sensors provided along the paper feed path. When the paper is fed by the specified length, the multi sensor adjusts the light intensity and the head height, detects the paper width, and then starts printing. During feeding, paper is fed by the cassette pick-up roller and cassette feed roller. During printing, paper is fed by the feed rollers. In paper is fed from the cassette, the multi sensor does not detect the leading edge of paper and skewed feeding of paper.

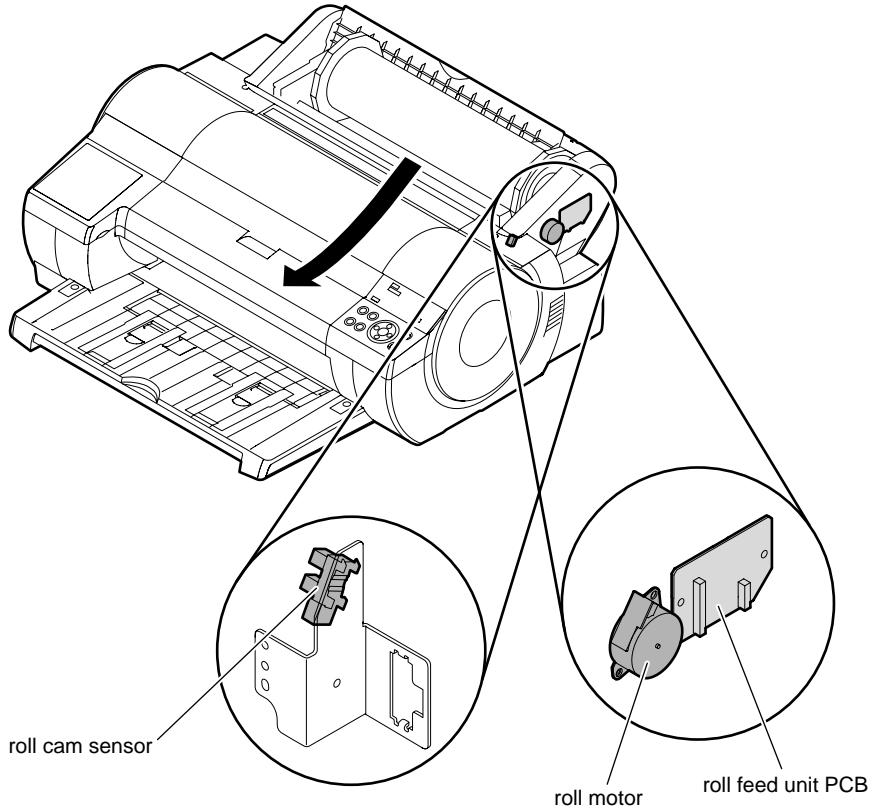


F-2-29

2.3.3.2.3 Structure of Roll Media Pick-up Unit

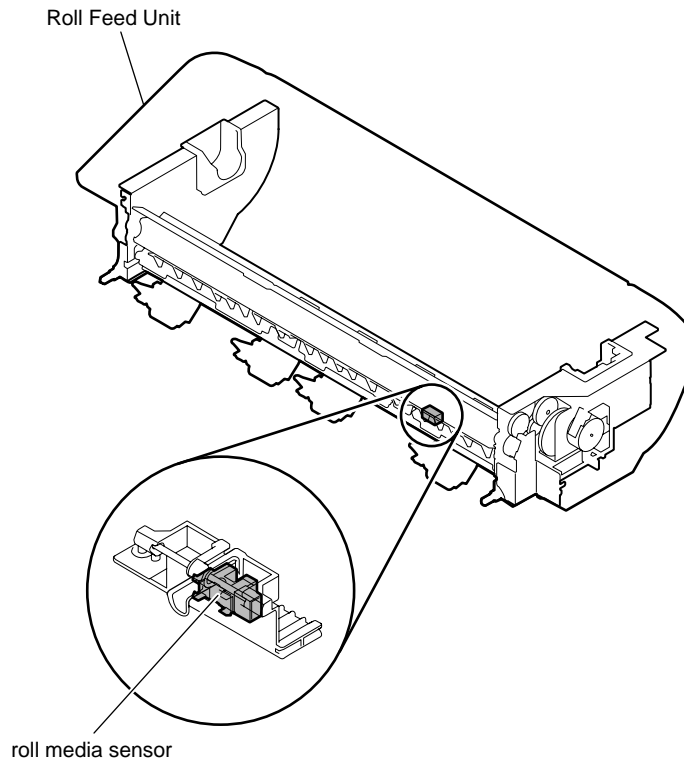
0013-4170

When the roll media sensor detects media loaded with the printer powered, the roll media pick-up roller touches the media to rotate the roll media feed roller, thus feeding the roll media onto the platen. Roll media feeding is controlled by the roll motor and roll feed unit PCB. The roll media pick-up roller is moved up and down by the cam, and the cam movement is detected by the roll media cam sensor. When the printer is turned on with roll media loaded, the roll media pick-up operation starts automatically.



F-2-30

If the roll media sensor detects that there is no roll during roll media pick-up operation, the roll media is ejected.



F-2-31

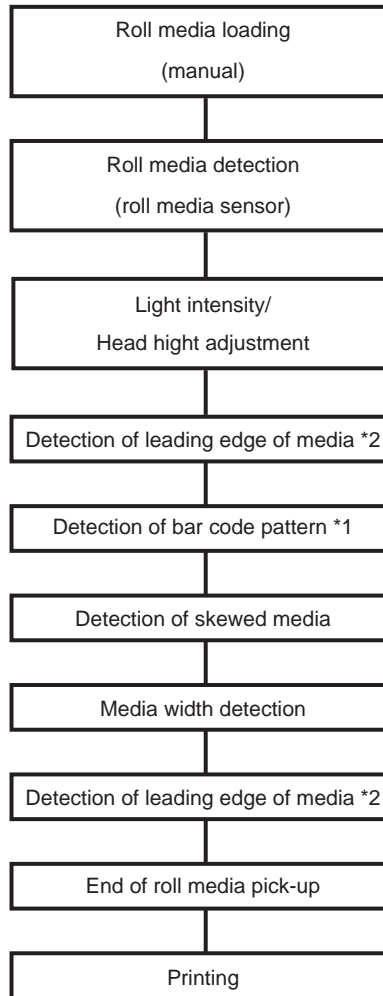
2.3.3.2.4 Roll Media Pick-up Sequence

0013-4173

When the roll media detects the loaded roll media, roll media pick-up operation starts.

When media is fed from the auto roll feed unit by the specified length, the multi sensor performs the adjustments and detection shown below, thus completing the roll media pick-up operation.

Roll media is fed by controlling the roll motor and feed motor of the auto roll feed unit.



*1

- This operation is performed only when "ON" is selected for "Detect Remaining Roll Media".

- If the roll media does not have a bar code pattern on it, enter the length of the roll media using the menu on the operation panel.

*2

- The purpose of the first leading edge detection is to detect presence of media.

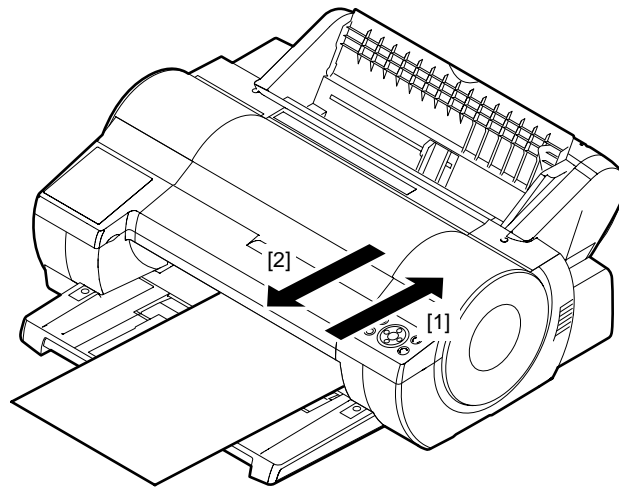
- The purpose of the second leading edge detection is to detect the printing start position.

2.3.3.2.5 Structure of the Manual Feed Unit

0013-4171

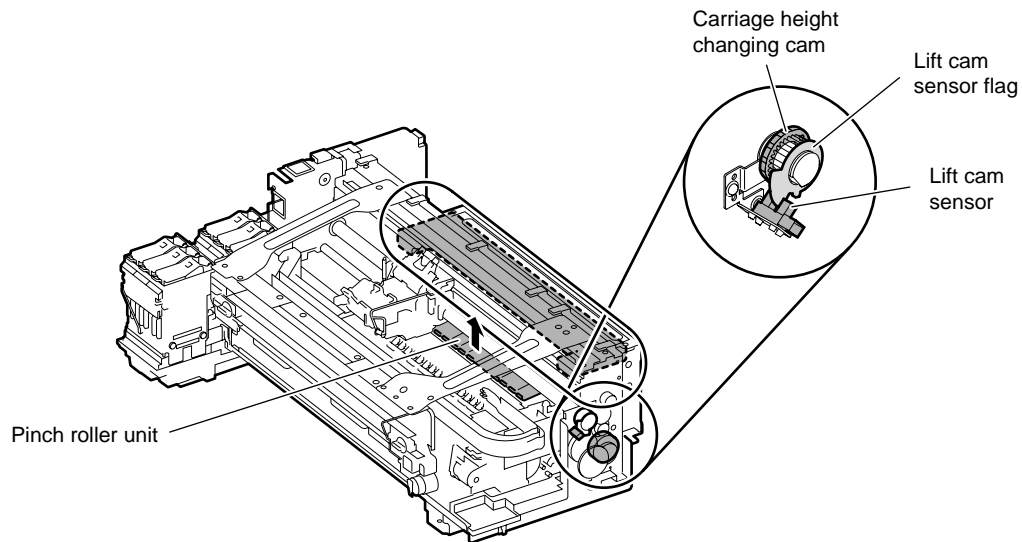
a) Manual feed (from front)

The cut sheet fed from the front (ejection unit) of the printer is fed to the rear of the printer [1], and then fed onto to platen [2] for printing.



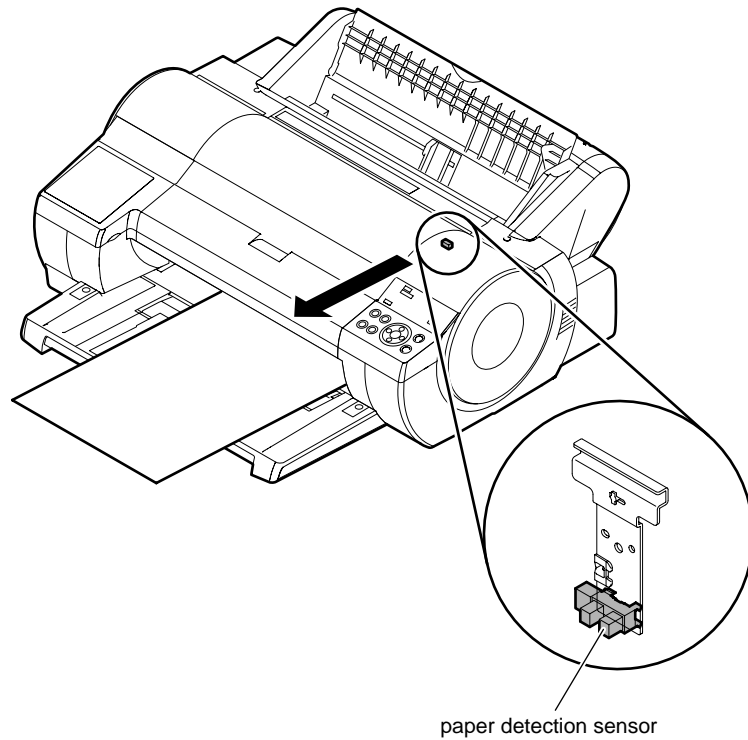
F-2-33

This method of feeding paper can be used only when an accept media type is selected from the Manual Feed menu in the use mode. If you select the Manual Feed menu, the pinch roller unit moves up to allow you to feed paper from the front of the printer according to the message shown on the operation panel. The pinch roller unit is moved up and down by the lift motor. The cam which is also operated by the lift motor via gears moves up and down the pinch roller.



F-2-34

The pick-up timing of the paper fed to the rear of the printer is controlled by the paper detection sensor.

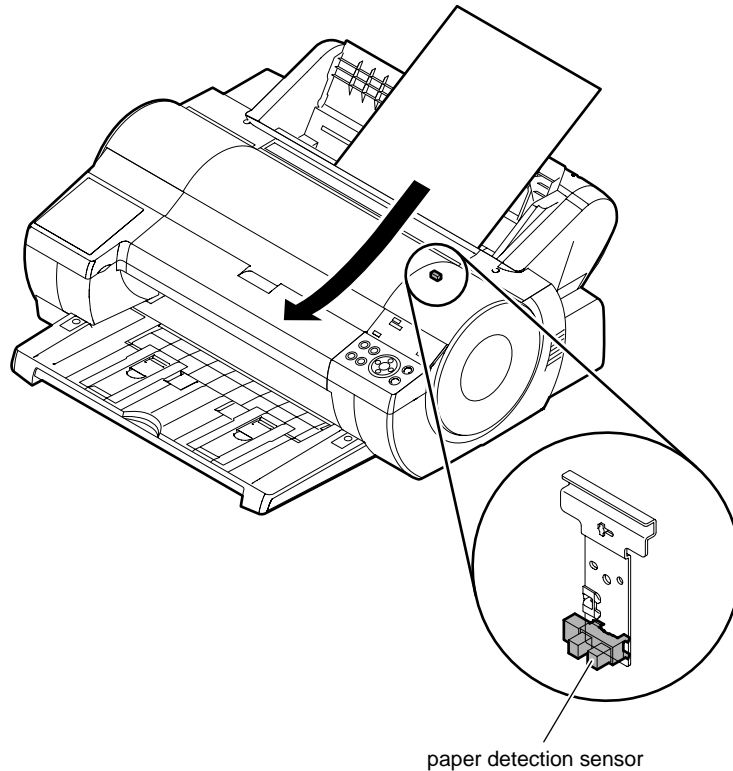


F-2-35

b) Manual feed (from rear)

The paper loaded in the paper tray provided at the rear of the printer is fed onto the platen for printing.

This method of feeding paper can be used only when an acceptable media type is selected from the Manual Feed menu in the user mode. The pick-up timing of the paper loaded in the rear paper tray according to the message shown on the operation panel is controlled by the paper detection sensor.



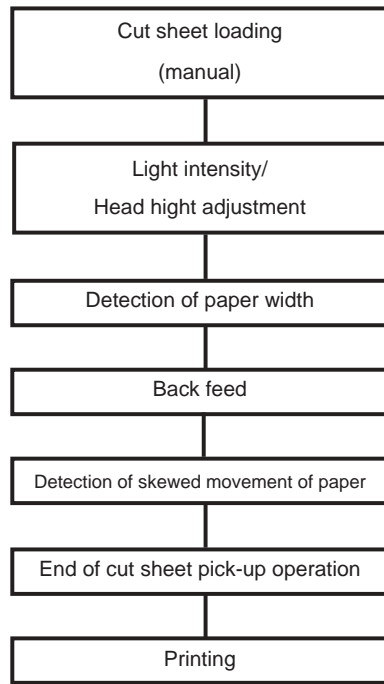
F-2-36

2.3.3.2.6 Manual Feed (from Front) Sequence

0013-4174

This sequence can be performed according to the messages shown on the operation panel only when a specific type of media is selected after selecting the manual feed mode from the menu shown on the operation panel. When a cut sheet is loaded according to the message shown on the operation panel, the printer performs various adjustments and detection using the multi sensor and then feeds the cut sheet to the rear of the printer. At this time, the multi sensor detects skewed feeding and leading edge of the cut sheet, thus completing the paper pick-up operation.

During printing, the cut sheet is fed by controlling the rotation of the feed roller according to the selected print mode.



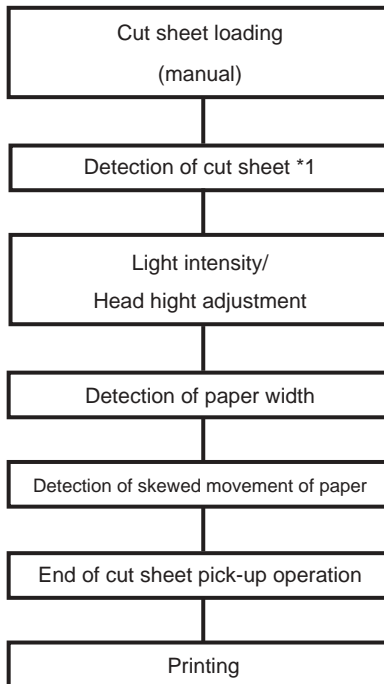
F-2-37

2.3.3.2.7 Manual Feed (from Rear) Sequence

0013-4176

This sequence can be performed according to the messages shown on the operation panel only when a specific type of media is selected after selecting the manual feed mode from the menu shown on the operation panel. When the cut sheet loaded at the back of the printer is detected by the sensor, the printer starts feeding the cut sheet. After this, the printer performs various adjustments and detection using the multi sensor, thus completing the paper pick-up operation.

During printing, the cut sheet is fed by controlling the rotation of the feed roller according to the selected print mode.



*1

The auto roll feed unit starts feeding the cut sheet when the roll media detection sensor detects the media. When the auto roll feed unit is not mounted, the printer starts feeding the media when the paper detection sensor detects the media.

F-2-38

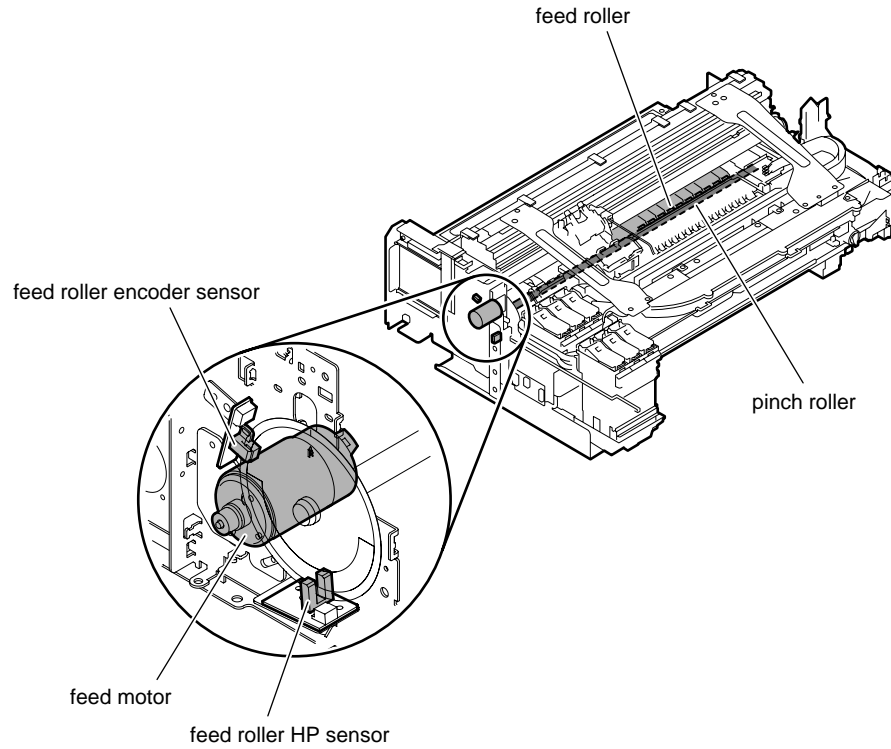
2.3.3.2.8 Structure of Feed Roller Unit

0013-4178

The feed roller unit consists of media feeding mechanisms such as feed rollers driven by the feed motor and the pinch roller unit operating in conjunction with the feed rollers.

While being held flat on the platen, media is fed horizontally under the printhead.

The feed roller unit has a sensor that detects the media feed status and a sensor that detects the status of the mechanisms that constitute the paper path.

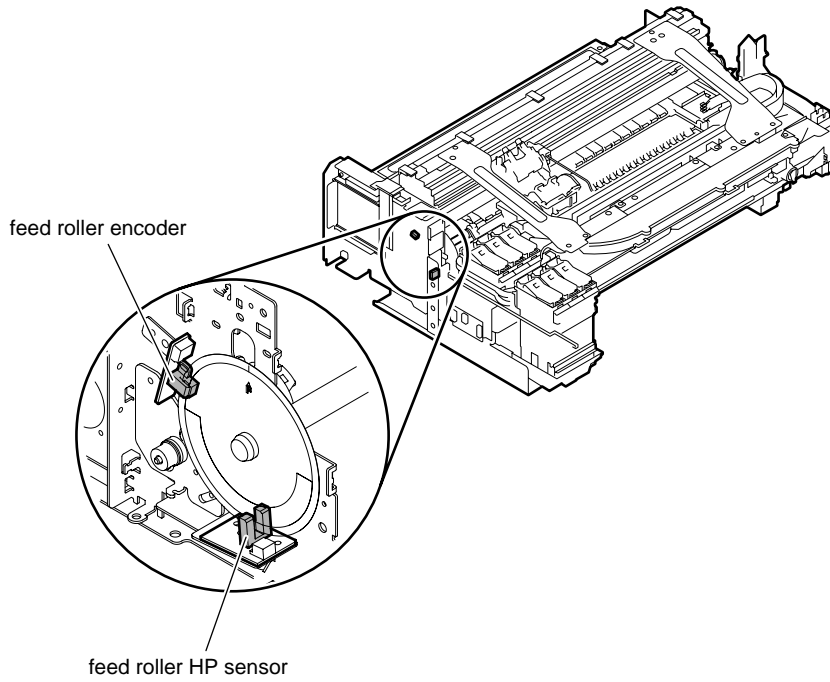


F-2-39

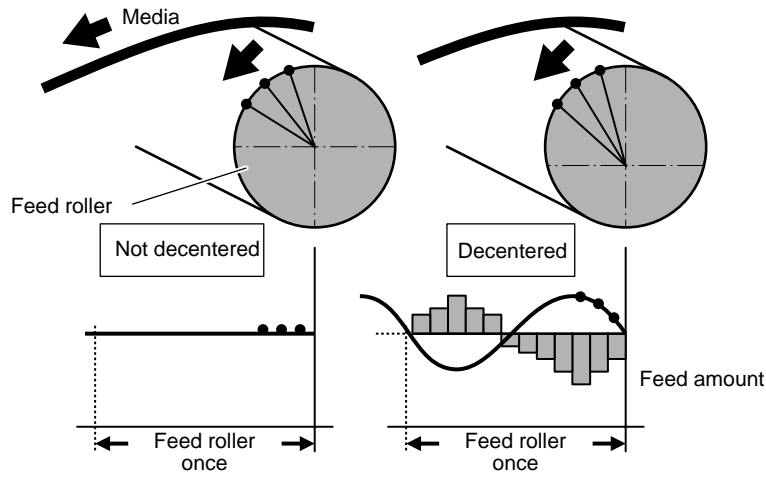
2.3.3.2.9 Feed Roller Eccentricity Detection Function

0013-4206

Media are fed by the feed roller at regular intervals.
Irregular feeding of media due to the feed roller eccentricity problem, irregular printing can occur in the media feeding direction periodically.
To prevent this, the feed error encoder and feed roller HP sensor detect the presence and amount of feed roller eccentricity every rotation of the feed roller.
This function is called the feed roller eccentricity detection function. If eccentricity is detected, the media feed mount is compensated for according to the amount of eccentricity.



F-2-40



F-2-41

2.3.3.2.10 Structure of Ejection Sour

0013-4208

a) Outline

The ejection spur unit consists of a spur, a spur motor that moves the spur, a spur cam sensor, and an eject roller.

b) Spur lift mechanism

The spur must be moved up and down according to the selected media type and feed mode. The spur motor and spur cam sensor are used to control the spur stop position.

- In case of manual feed from front

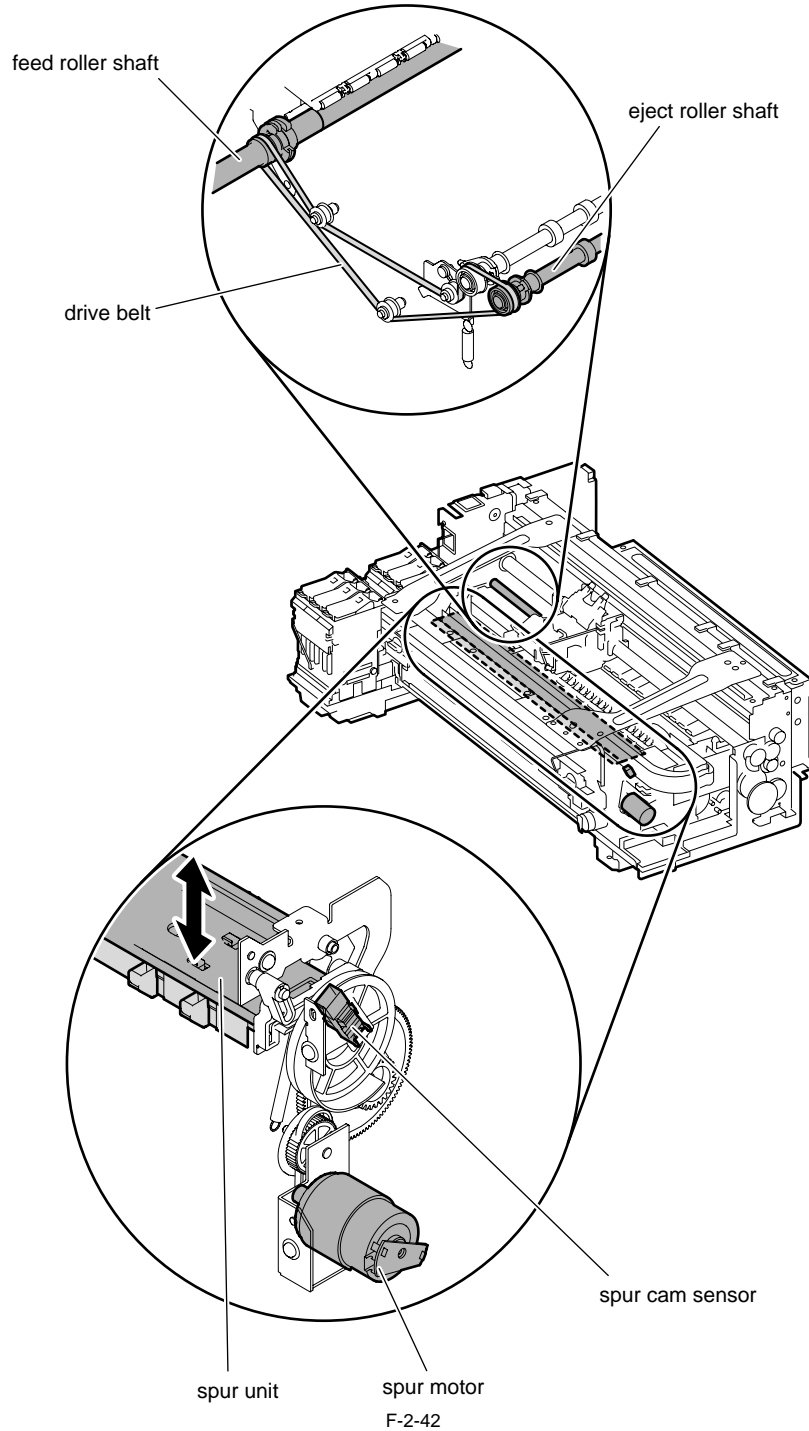
When the above mode is selected in the user mode, the spur moves to the upper limit position and then stops.

- Stop position depending on media type

To prevent the spur from damaging the media, the spur stops at a proper position according to the media type selected in the user mode.

c) Eject roller drive

The drive power of the eject roller is transmitted from the feed roller via the drive belt.



2.3.3.3 Cutter Unit

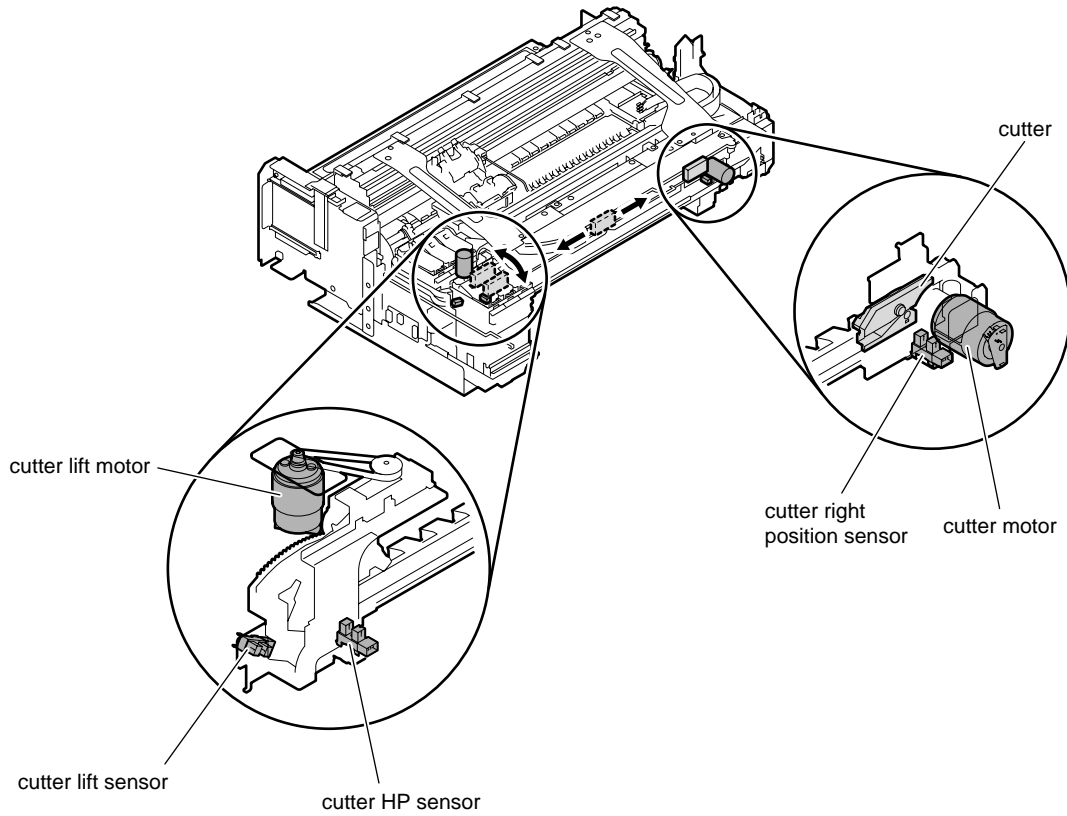
2.3.3.3.1 Structure of the cutter unit

0013-4209

If roll media are used, the cutter unit attached on the front of the spur unit cuts the leading end of the media on loading and cuts the media on ejection. Whether to perform cutting or not is determined by the choice of the main menu and the specifications of the printer driver.

The cutter unit is moved up and down by the cutter lift motor. When cut sheets are used, the cutter unit escapes to the specified position (moves up) to prevent the trailing edge of the ejected cut sheet from remaining in the cutter unit.

The cutter in the cutter unit stands by at the cutter home position, except when it cuts roll media. Power from the cutter drive motor is imparted to the circular belt to move the cutter from left to right for cutting roll media.



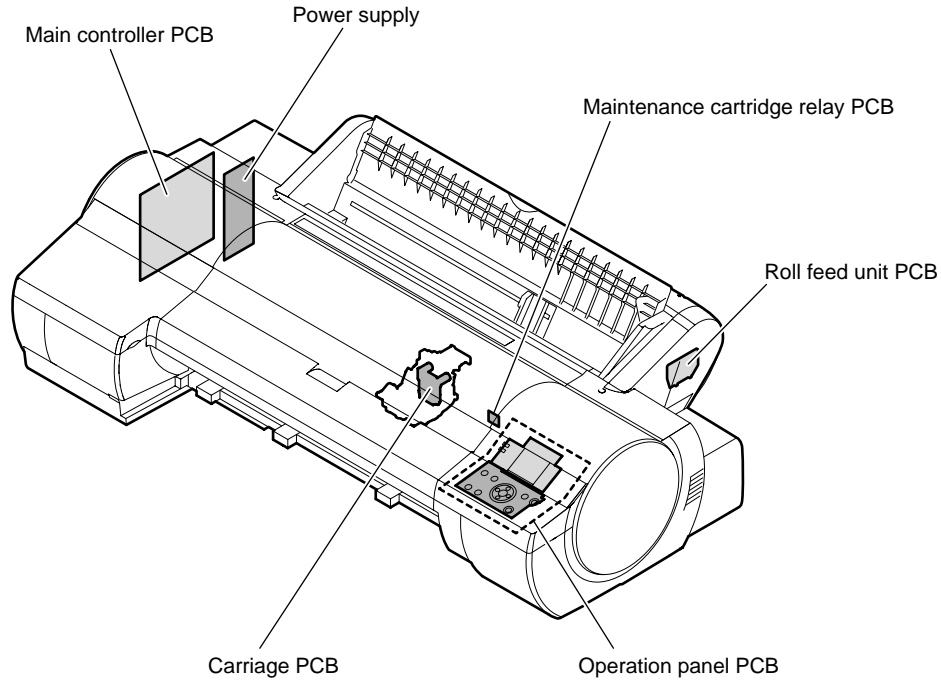
F-2-43

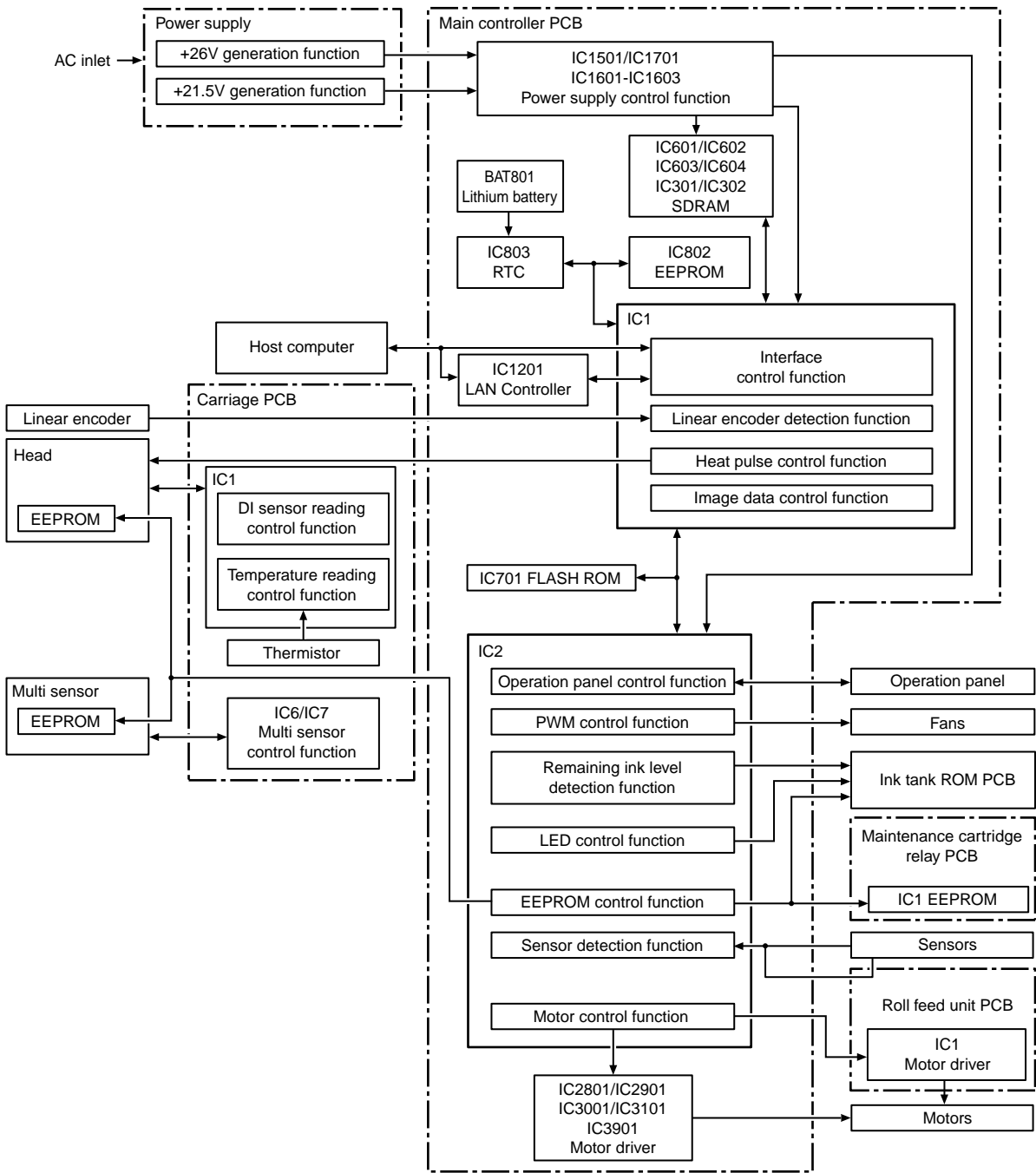
2.4 Printer Electrical System

2.4.1 Outline

2.4.1.1 Overview

The printer electrical system consists of the main controller PCB and power supply PCB which are mounted on the left side of the printer, the carriage PCB and print head which are mounted in the carriage, and other electrical components such as the operation panel, sensors, and motors. The main controller PCB manages the image data processing and the entire electrical system, and controls relay PCBs and driver functions.

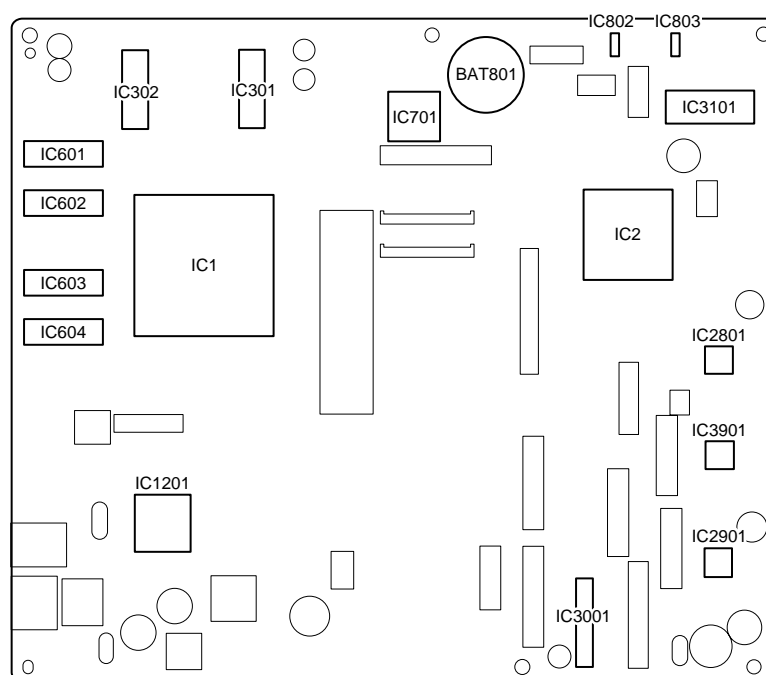




F-2-45

2.4.2 Main Controller

2.4.2.1 Main controller components



F-2-46

a) ASIC (IC1/IC2)

The ASIC with a 16-bit internal bus is driven in sync with the 66 MHz external clock. It supports the following functions:

Image processing unit

This unit converts the RGB multi-value image data or CMYK multi-value data received from the host computer through the interface connector to the binary image data for the ink colors used.

DMA controller

This controller control DMA transfer of the data transferred through the input interfaces such as the USB and expansion card slot as well as DMA transfer of the data stored in the DIMM.

Image data generation/output function

This function generates image data for color printing from the received image data and the mask pattern (corresponding to print mode) stored in the FLASH ROM, and stored the generated image data in DIMM. It also outputs the generated image data to the carriage PCB.

Interrupt controller

This controller receives and processes internal interrupts and external interrupts from the USB, image processing unit, and expansion card slot.

Timer function

Even when the printer is turned off, the timer function is held on using the RTC(IC803) and lithium battery(BAT801) to assist the cleaning function. When the power cord is plugged to the outlet, power is supplied to the RTC and therefore the lithium battery power is not consumed.

Heat Enable signal control function

This function uses the pulse width to perform variable control of the time of application of the Heat Enable signal to the nozzle heater board for each printhead nozzle array.

Linear scale count function

This function reads the linear scale when the carriage moves, thus generating the ink discharge timing. It also counts the linear scale timing cycle using the reference clock to measure the carriage moving speed.

Dot count function

This function controls the discharge dots used as the information for Heat Enable signal control, maintenance jet control, cleaning control, and remaining ink level for each nozzle array.

Operation panel control function

This function controls serial communication with the operation panel.

PWM control function

This function controls driving of the suction fan and mist fan as well as the temperature of the printhead.

Remaining ink level detection function

This function detects the remaining level of each color of ink based on the signal received from the hollow needle mounted in the ink tank unit.

LED control function

This function controls the LEDs on the ink tank unit.

I/O port function

This function controls input signals from sensors.

Power ON/OFF control function

This function controls turning on/off of the drive power (26 V and 21.5 V) supplied from the power supply PCB.

Head DI sensor read control function

This function controls read operation by the head DI sensor.

Multi sensor control function

This function controls the LED, adjusts the gain, and controls obtainment of the reading for the multi sensor.

EEPROM control function

This function controls the EEPROMs of individual ink tanks, the maintenance cartridge EEPROM, the EEPROM on the maintenance cartridge relay PCB, and the head EEPROM in addition to the on-board EEPROM.

Motor control function

This function controls the carriage motor, feed motor, valve motor, spur motor, purge motor, cassette motor, lift motor, cutter motor and cutter lift motor based on the input signals from sensors.

b) Driver IC (IC3101)

This IC generates a carriage motor control signal based on the control signal from the ASIC.

c) Driver IC (IC2801)

This IC generates feed motor and valve motor control signals based on the control signal from the ASIC.

d) Driver IC (IC2901)

This IC generates purge motor, cutter motor and spur motor control signals based on the control signal from the ASIC.

e) Driver IC (IC3001)

This IC generates a lift motor control signal based on the control signal from the ASIC.

f) Driver IC (IC3901)

This IC generates cutter lift motor and cassette motor control signals based on the control signal from the ASIC.

g) DIMMs (IC301,IC302,IC601,IC602,IC603,IC604)

The DIMM comprising a 128-MB DDR-SDRAM and a 128-MB SDR-SDRAM is connected to the 32-bit data bus to be used as a work area. During print data reception, it is also used as an image buffer. It cannot be expanded.

h) FLASH ROM (IC701)

A 16-MB flash ROM is connected to the 8-bit data bus to store the printer control program.

i) EEPROM (IC802)

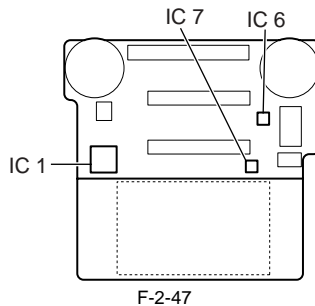
The 128-KB EEPROM stores various setting values, adjustment values, log data, counter values related to the user/servicing.

MEMO:

After replacement of the main controller PCB, the printer must be started up in the service mode to take over the setting and adjustment values to the new PCB properly (the service mode will be switched to the PCB replacement mode automatically).

2.4.3 Carriage Relay PCB

2.4.3.1 Carriage PCB components



a) Latch ICs (IC1)

DI sensor reading control function

This function obtains the DI sensor value in the printhead and head rank for each color and sends it to the main controller PCB based on the control signals from the main controller.

Environmental temperature reading control

This function sends the environmental temperature detected by the thermistor on the board based t the main controller PCB based on the control signals from the main controller PCB.

Image data relay function

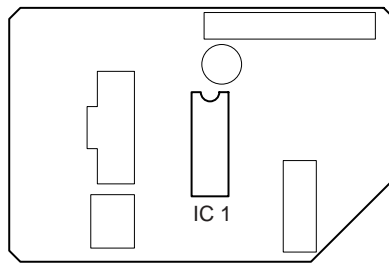
This function relays the image data from the main controller PCB to the printhead. The function for processing image data is not supported.

b) Multi sensor control ICs (IC6 and IC7)

These ICs are used to generate the multi sensor LED control signal and adjust the gain.

2.4.4 Motor Driver

2.4.4.1 Roll feed unit PCB components



F-2-48

a) Driver IC (IC1)

Roll motor drive function

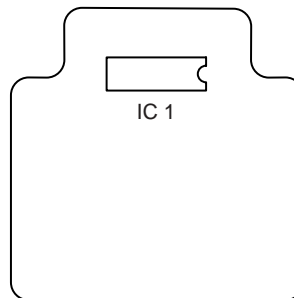
This function controls the roll motor based on the control signals from the main controller.

Sensor relay function

This function relays the input signals from the roll cam sensor and roll media sensor to the main controller PCB.

2.4.5 Maintenance Cartridge Relay PCB

2.4.5.1 Maintenance cartridge relay PCB components



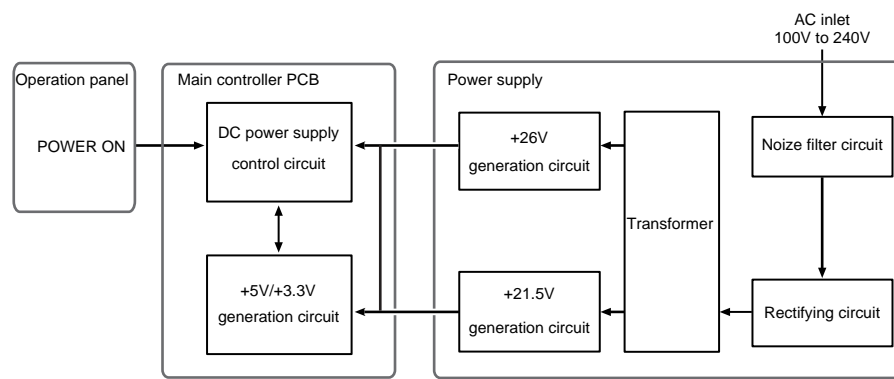
F-2-49

a) EEPROM (IC1)

The 128-KB EEPROM stores all information written to the EEPROM on the main controller PCB.

2.4.6 Power Supply

2.4.6.1 Power supply block diagram



F-2-50

The power supply converts AC voltages ranging from 100 V to 240 V from the AC inlet to DC voltages for driving the ICs, motor, and others.

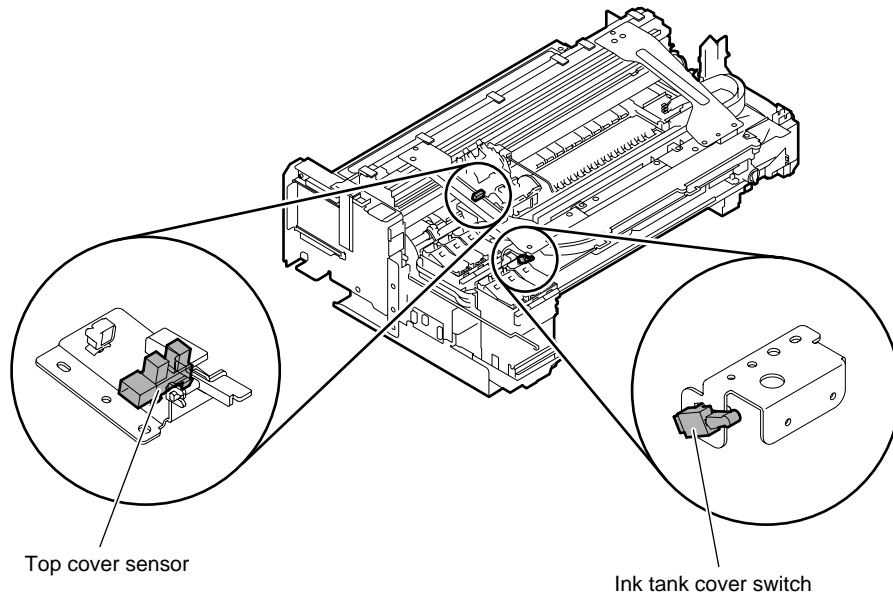
The voltage generator circuits include the +26 V generation circuit for driving motors, fans, and sensors and a +21.5 V generation circuit for driving sensors, heads, logic circuits, and others.

When the power is turned off, +26 V and +21.5 V are reduced to about 12 V and 9 V respectively (power save mode).

Power ON/OFF operation is controlled by the main controller PCB.

2.5 Detection Functions with Sensors

2.5.1 Sensors for covers



F-2-51

Top cover sensor

The photo-interrupter-type top cover sensors detect opening and closing of the top cover.

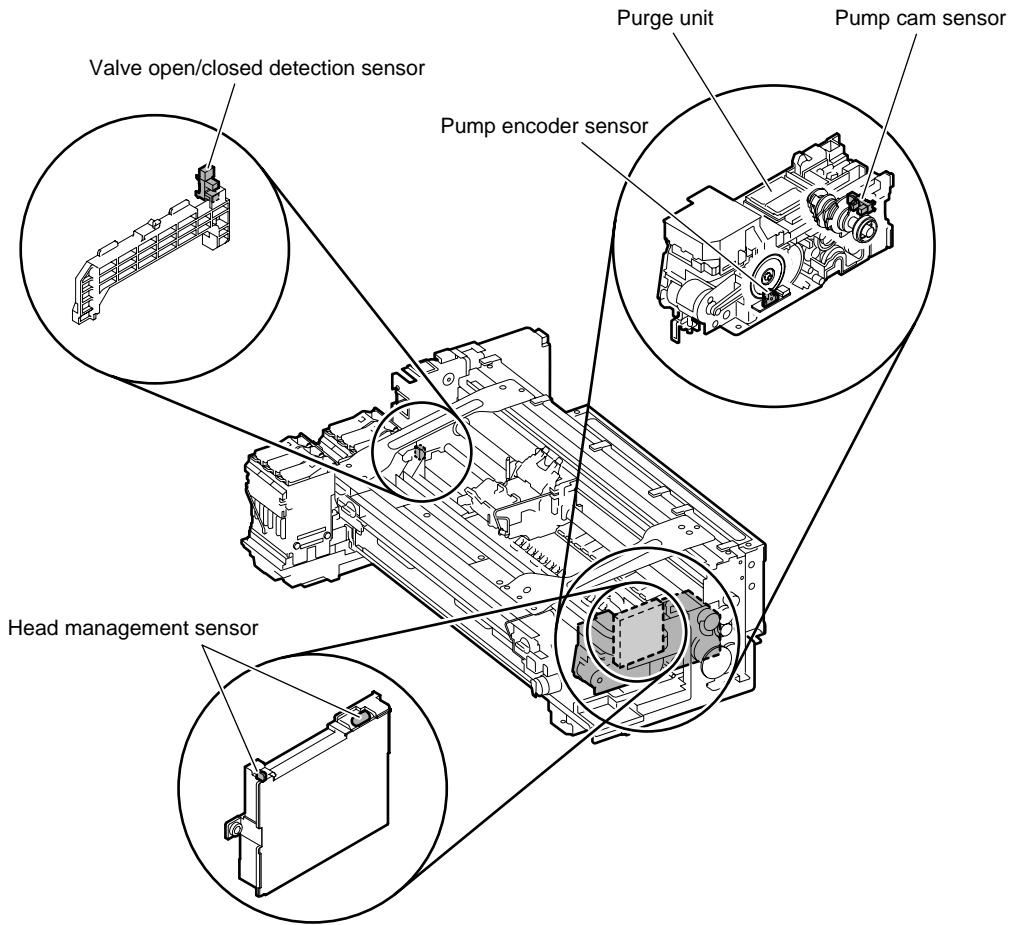
When the top cover is closed, the sensor light is shielded by the sensor arm, thus notifying the sensor of closing the cover.

Ink tank cover switch

The micro-switch-type ink tank cover switch detects opening and closing of the ink tank cover.

When the ink tank cover is closed, the protrusion on the ink tank cover presses the switch, thus detecting closing of the ink tank cover.

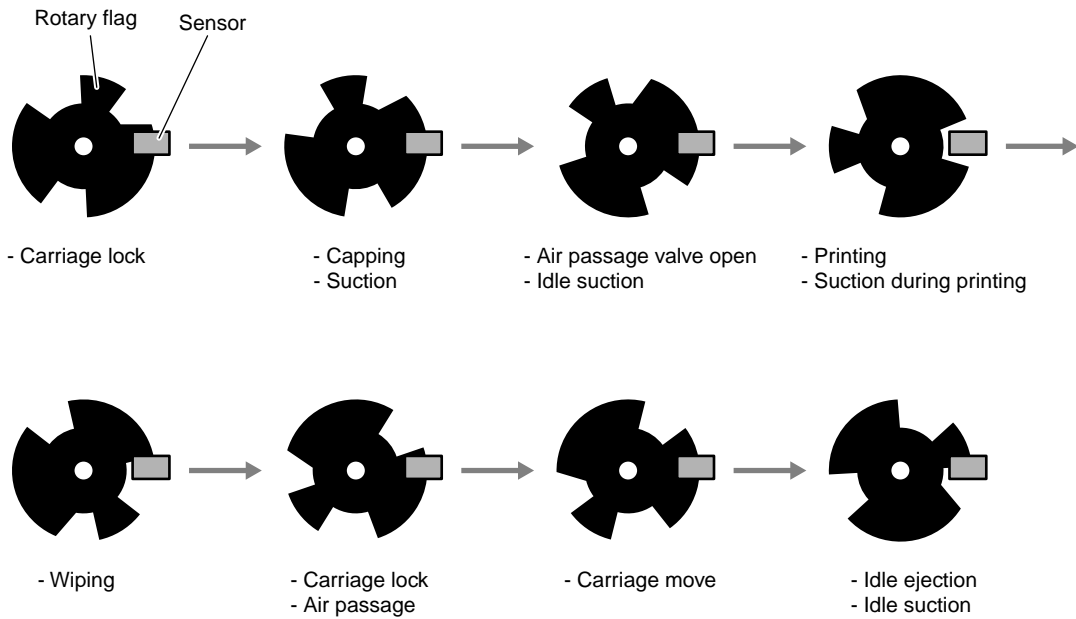
2.5.2 Ink passage system



F-2-52

Pump cam sensor

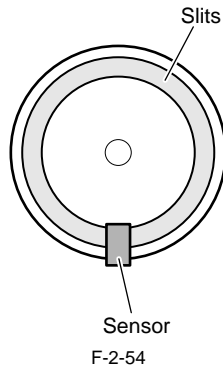
The photo-interrupter-type pump cam sensor detects that the sensor light is shielded or unshielded by the rotary cam. The sensor detects the purge unit capping and wiping states with the combination of the state detected by the pump cam and the state of pump motor rotation control performed by the pump encoder.



F-2-53

Pump encoder sensor

The pump encoder is a photo-interruptive type sensor. It reads the slits on the pump motor's encoder film to control the amount of pump motor rotation.

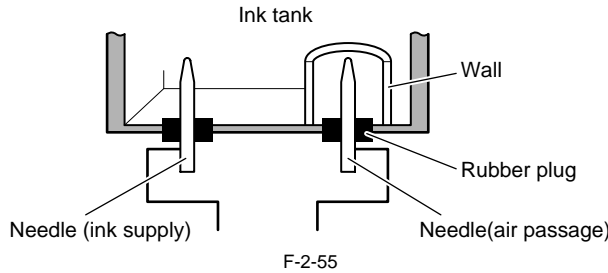


Valve open/closed detection sensor

The photo-interrupter-type valve open/closed detection sensor detects the valve cam state. When the link that operates in conjunction with the valve cam shields light, this sensor detects that the ink supply valve has been opened.

Ink detection sensor

Presence of absence of ink in the ink tank is detected according to whether the two hollow needles are electrically connected. When the ink level in the ink tank lowers below the wall around the needle at the air passage, this hollow needle is electrically disconnected from the hollow needle located on the ink supply side, thus detecting that the printer has run out of ink.



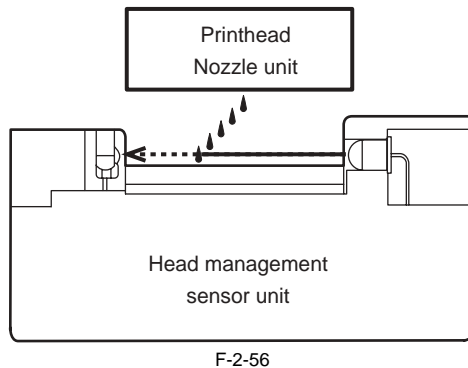
Head management sensor

The photo-transmission-type sensor detects that the printhead is discharging ink. The carriage moves to and stops at the detection positions for individual nozzle arrays. When the carriage is at a stop, nozzles discharge ink one after another. The sensor detects each nozzle due to the voltage change caused when ink discharged from the nozzle blocks the sensor light.

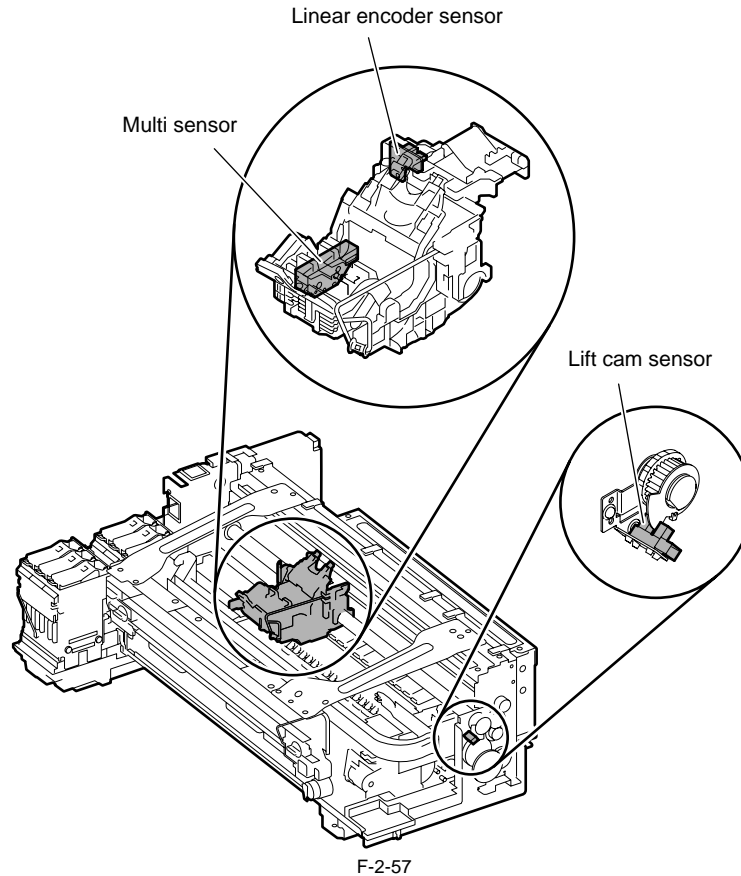
- Non-discharging nozzle detection is carried out at the following timings:
- After the execution of Cleaning 1, Cleaning 2, Cleaning 3, Cleaning 6 or Cleaning 10
 - After the number of copies that has been set by the user menu choice Nozzle Check Frequency have been printed

If more than a specified number of non-discharging nozzles have been located in one session of non-discharging nozzle detection, the normal cleaning sequence is launched before a second session of non-discharging nozzle detection is conducted. If more than a specified number of non-discharging nozzles are located in the second session of non-discharging nozzle detection, the normal (High) cleaning session is launched before a third session of non-discharging nozzle detection is conducted.

If 30 or more non-discharging nozzles and less than 100 non-discharging nozzles per train are located as a result of the third session of non-discharging nozzle detection, the print operation can resume after the message display as needed. If 100 or more non-discharging nozzles are located, a head replacement prompt message is displayed.

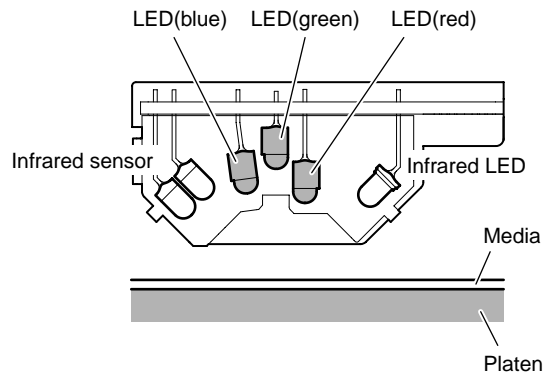


2.5.3 Carriage system



Multi sensor

The photo-reflection-type multi sensor is composed of four LEDs (red, blue, green and infrared) and two light-sensitive sensors. It detects the leading edge, skewing, and width of media and is used for adjustment of the registration, and head height. During head adjustment, the light reflected by the infrared LED is detected by two light-sensitive sensors to calculate the head height from the difference between the measurements.



Service mode: After SERVICE MODE > ADJUST > GAP CALIB. has been carried out, pass paper to make sure that it is detected properly.

Linear encoder sensor

When the carriage moves, the linear encoder located at the rear of the carriage reads the slits on the linear encoder to detect the carriage position.

Lift cam sensor

This is a photo-interrupter-type sensor. The lift motor is driven by a predetermined number of pulses received after blocking of the sensor light by the flag, thus controlling the heights of the head and platen.

Environmental temperature sensor

The environmental temperature sensor installed on the carriage PCB detects the temperature around the carriage. The resistance of the thermistor that changes with the temperature inside the printer is reported to the main controller via the carriage PCB. The environmental temperature is used to calibrate the head sensor and to detect abnormal head temperatures.

Head temperature sensor

The diode-type head temperature sensors installed at the top and bottom of the printhead nozzle unit are used to detect the head temperature. The diode voltage that changes with the nozzle unit temperature is reported to the main controller via the carriage PCB.

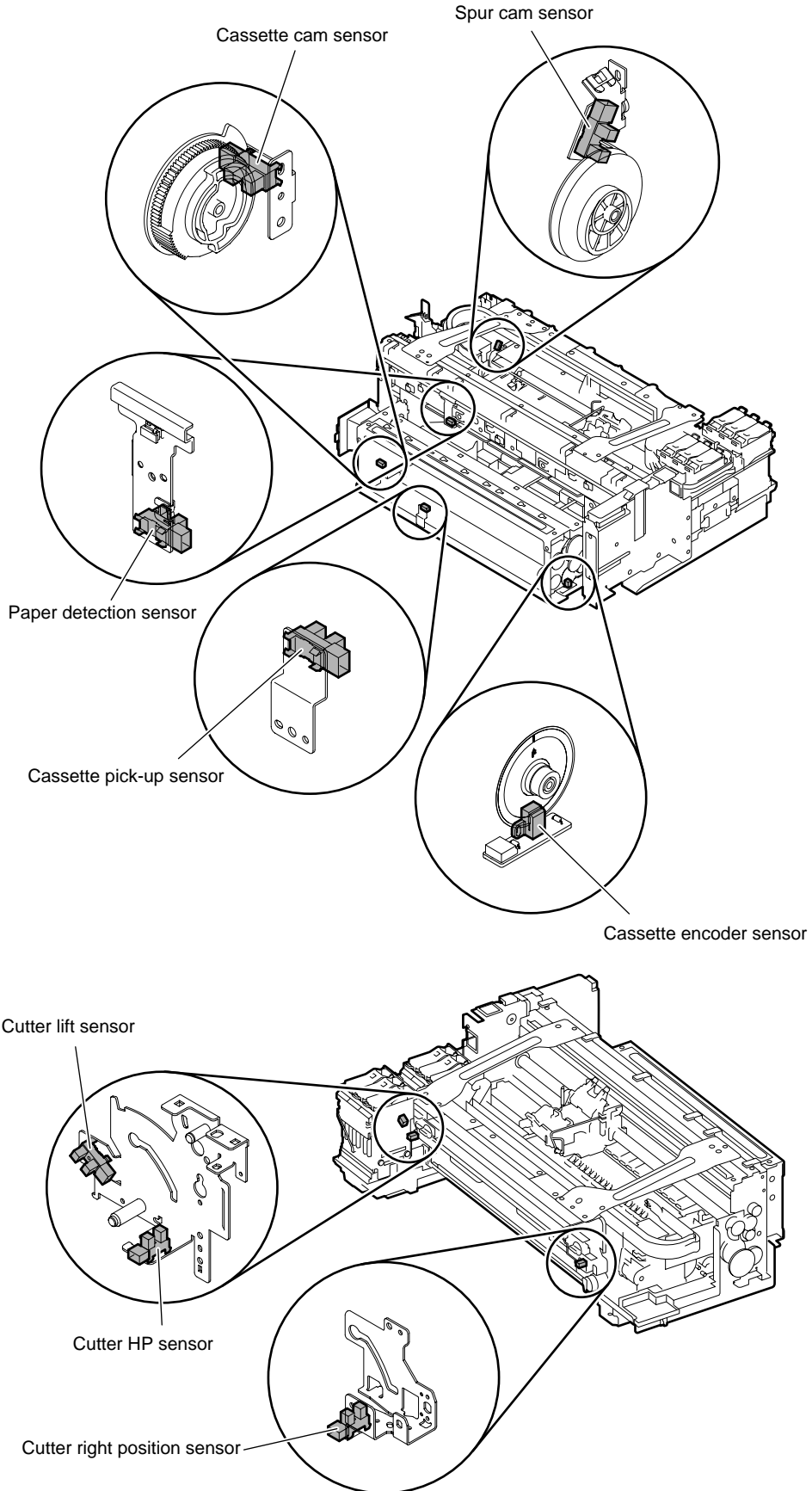
The detected head temperature is used to control the head operation and to detect abnormal head temperatures.

Printhead contact detection

The printhead contact status is detected by testing the electrical conductivity.

It is detected according to the voltage changes at the two terminals of the contact faces, power supply terminals, and GND terminal.

2.5.4 Paper path system



F-2-59

Cassette pick-up sensor

This is a photo-interrupter-type sensor. When paper supplied from the cassette, the sensor light is blocked by the sensor arm, thus detecting paper.

Cassette cam sensor

This is a photo-interrupter-type sensor. When the cassette cam rotates to block the sensor light, lowering of the pressure plate of the cassette is detected.

Cassette encoder sensor

The cassette encoder sensor detects the slits on the encoder film during cassette motor rotation, thus detecting the amount of rotation of the roller.

Paper detection sensor

This is a photo-interrupter-type sensor. When paper is supplied from the cassette, paper tray, or auto roll feed unit, the sensor light is blocked by the sensor arm, thus detecting paper.

Spur cam sensor

This is a photo-interrupter-type sensor.

When the sensor light is shielded by the rotation of the spur motor, the printer detects that the spur unit is at the upper-limit position.

When the sensor light is unshielded by the rotation of the spur motor, the printer detects that the spur unit is at the bottom position.

The spur height is controlled by driving the spur motor with a predetermined number of pulses.

Cutter lift sensor

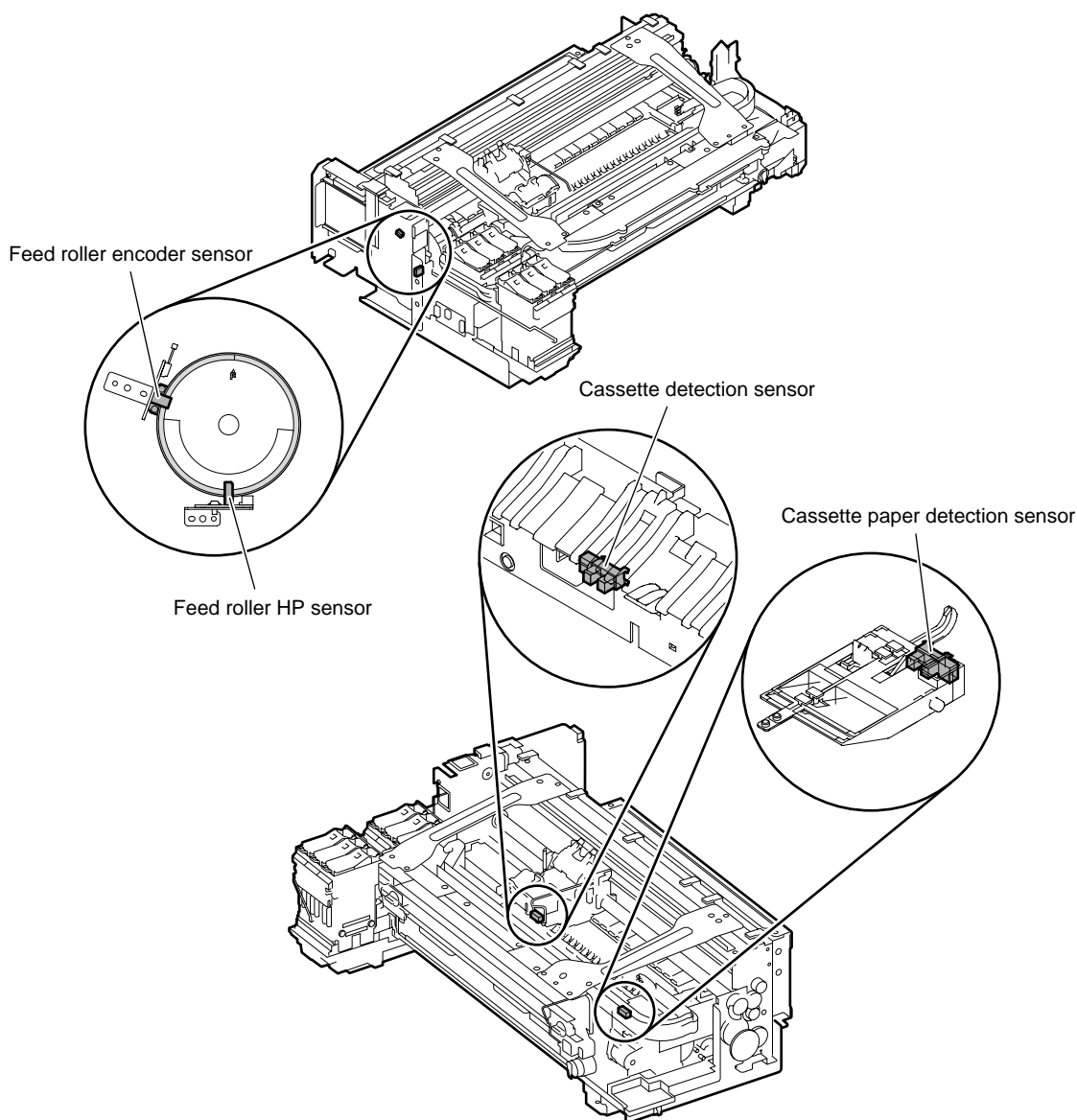
This is a photo-interrupter-type sensor. When the cutter unit ascends, the sensor unit blocks the sensor light, thus detecting that the cutter unit is at the upper-limit position (escaped).

Cutter HP sensor

This is a photo-interrupter-type sensor. This sensor detects that the cutter is at the home position (left end).

Cutter right position sensor

This is a photo-interrupter-type sensor. This sensor detects that the cutter is at the right end.



F-2-60

Cassette detection sensor

This is a photo-interrupter-type sensor. When the cassette is installed, the protrusion at the back of the cassette blocks the sensor light to detect the cassette.

Cassette paper detection sensor

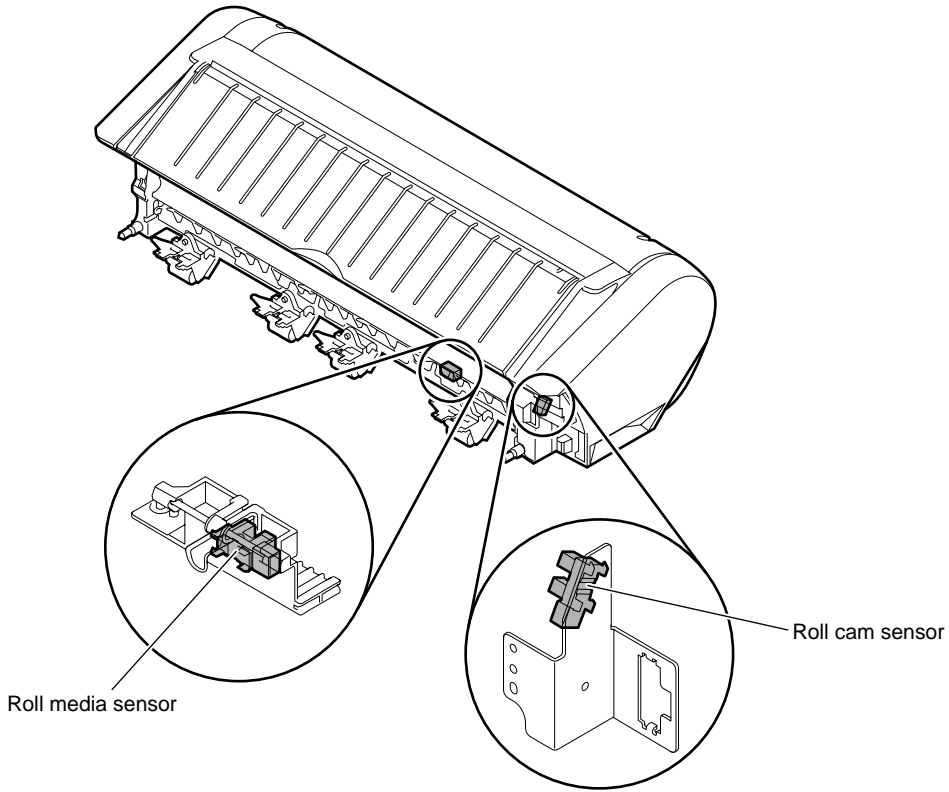
This is a photo-interrupter-type sensor. When media is loaded in the cassette, the sensor arm blocks the sensor light, thus detecting the media.

Feed roller HP sensor

The feed roller HP sensor detects the change from the white portion (unshielded sensor light) to black portion (shielded sensor light) of the encoder film on the feed roller, thus setting the home position for feed roller eccentricity compensation.

Feed roller encoder sensor

The feed roller encoder sensor detects the slits on the encoder film of the feed roller during feed motor rotation, thus detecting the amount of rotation of the feed roller (media feed amount).



F-2-61

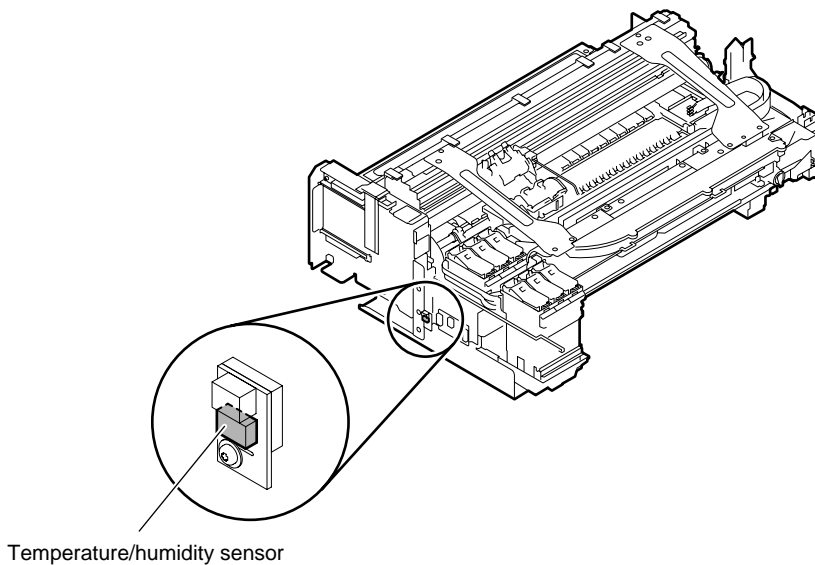
Roll media sensor

This is a photo-interrupter-type sensor. When media is loaded, the the sensor arm blocks the sensor light, thus detecting the media.

Roll cam sensor

This is a photo-interrupter-type sensor. When the roll cam blocks the sensor light, lowering of the transport roller (contact with the roller) is detected.

2.5.5 Others



F-2-62

Temperature/humidity sensor

This sensor detects the temperature and humidity around the printer so that the measured values are used for head height adjustment, idle discharge control, waste ink evaporation amount calculation, and suction fan control.

Chapter 3 INSTALLATION

Contents

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3.1 Installation

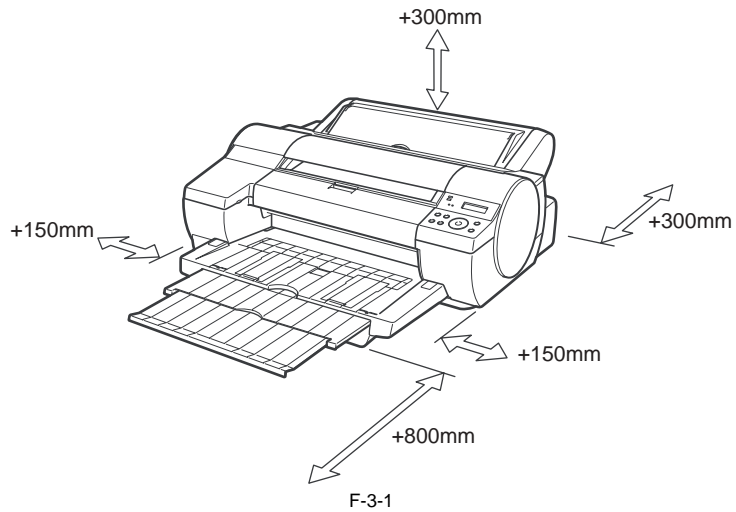
3.1.1 Making Pre-Checks

3.1.1.1 Making Pre-Checks

Carry out the installation work with reference to the "Quick Start Guide" supplied with the printer.

Package dimensions and weight are as follows.

Main body (with a palette): 1140 (W) mm x 914 (D) mm x 675 (H) mm, Approx. 71 kg



Installation space

Main body only: 1297 (W) mm x 1910 (D) mm x 644 (H) mm

When stand is attached: 1297 (W) mm x 1910 (D) mm x 1285 (H) mm



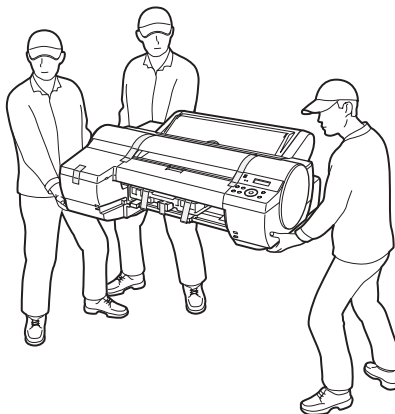
When printing from the Front Paper Feed Slot, leave at least 1,100 mm (43.3 in) of unobstructed space in front of the printer and 700 mm (27.6 in) behind it.

3.1.2 Unpacking and Installation

3.1.2.1 Unpacking and Installation

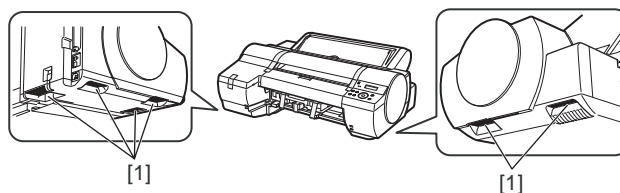


The printer must be moved with it held by three or more persons on both sides. Be careful not to get your lower back and other regions hurt.



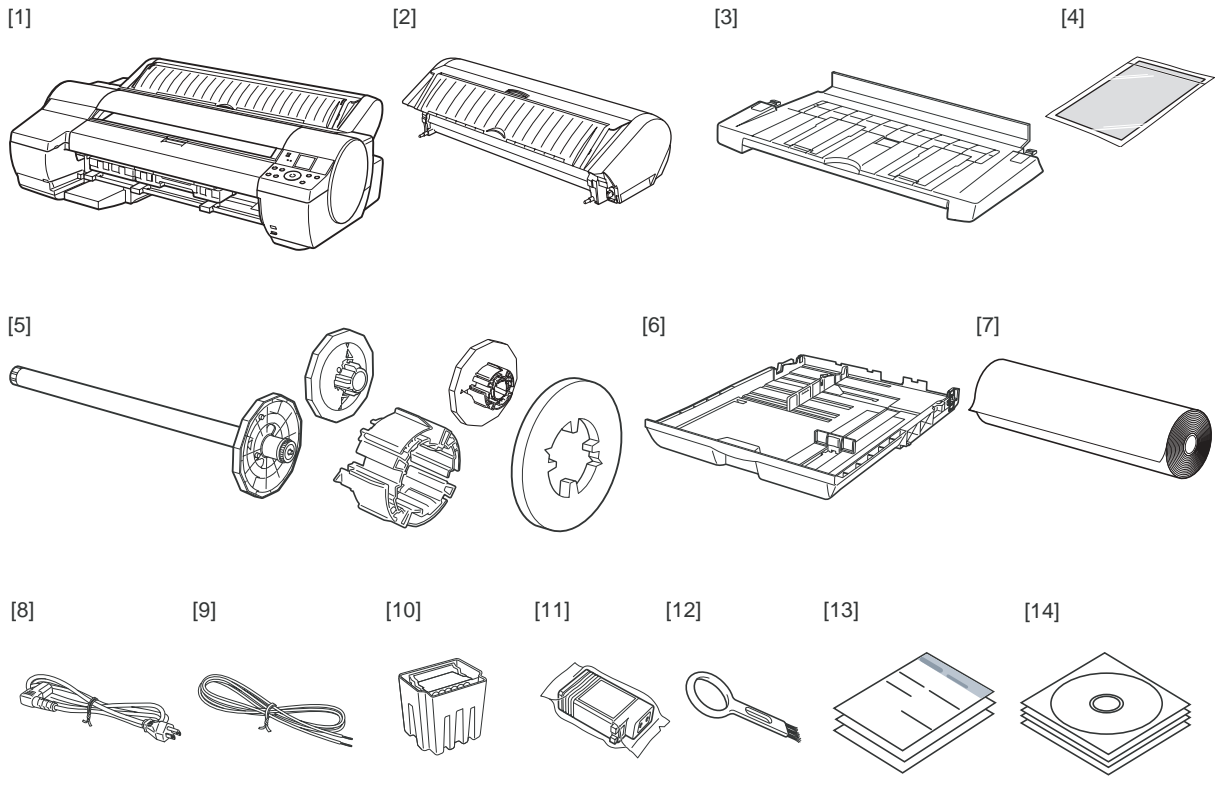
F-3-2

When moving the printer, grasp the carrying handles [1] on the left and right side of the bottom. Holding other portions can drop the printer and you may be injured.



F-3-3

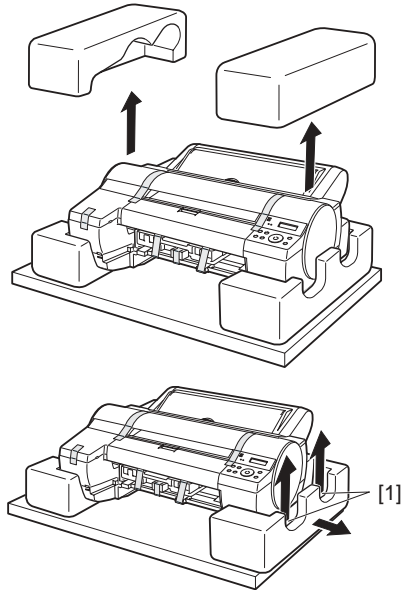
(1) Check to see that none of the accessories is missing.



F-3-4

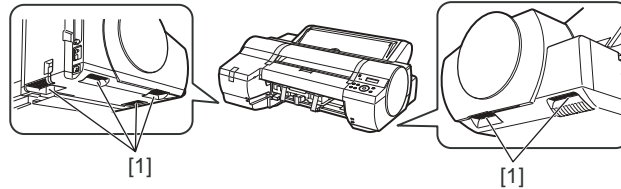
- [1] Printer
- [2] Auto Roll Feed Unit
- [3] Output Tray
- [4] Cleaning sheet
- [5] Roll Holder Set
- [6] Cassette
- [7] Sample paper
- [8] Power Cord
- [9] Printhead
- [10] Starter ink tanks
- [11] Cleaning brush
- [12] Reference Guides
- [13] CD-ROM

(2) Take out the printer and accessories from the shipping box and remove cushioning materials. First remove the cushioning materials at top of the printer. Next, remove the cushioning materials by raising the left and right sides of the printer one after another with your hand inserted in the clearance as indicated in the figure [1].



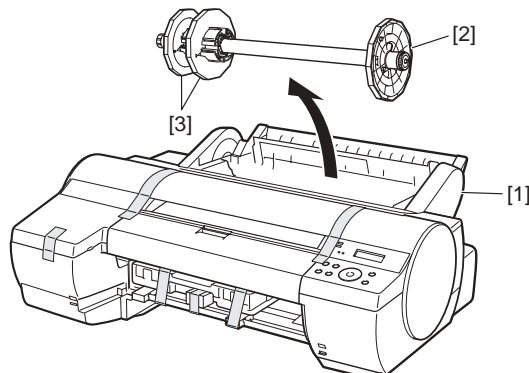
F-3-5

(3) Grasping the carrying handles [1] on the left and right side of the bottom, place the printer on a level place such as a table.



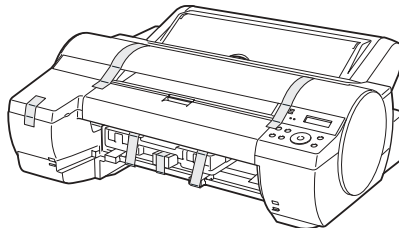
F-3-6

(4) The Roll Feed Unit [1] is preinstalled on the printer. Peel away the tape and remove the Roll Holder [2] and protective material from the Roll Feed Unit. Also remove the tape on the two Holder Stoppers [3] attached to the Roll Holder, and then remove the Holder Stoppers from the Roll Holder.



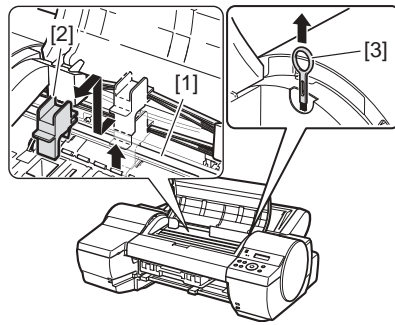
F-3-7

(5) Remove all cushioning materials and tape from the printer and accessories.



F-3-8

(6) Open the top cover, raise the carriage shaft belt stopper [1], and then pull it forward to remove.

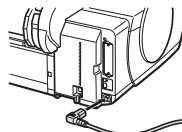


F-3-9

MEMO:

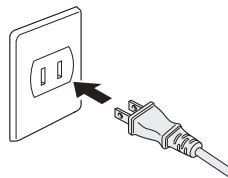
- You will need the Belt Stopper if you move the printer to another location. Do not discard the Belt Stopper you have removed.
- When you open the Top Cover, you will find a Cleaning Brush [3] on the right side. Use this brush to clean inside the Top Cover.

(7) Plug the power cord into the Power Socket on the back of the printer.



F-3-10

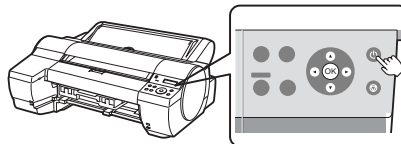
(8) Connect the power cord to the outlet.



F-3-11

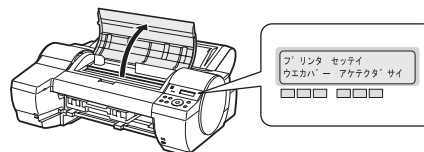
(9) Set the printhead.

Press the Power button to power on the printer.



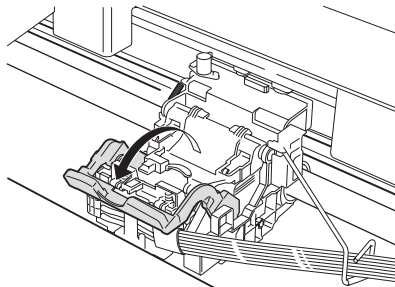
F-3-12

(10) When the message "Open Top Cover" is displayed, open the top cover.



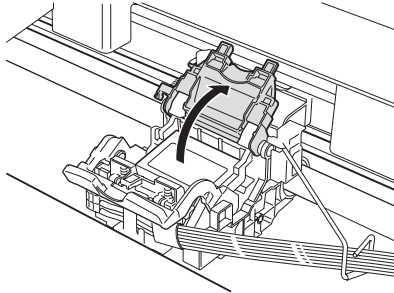
F-3-13

(11) Pull the printhead fixer lever forward to open it fully.



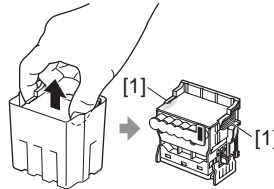
F-3-14

(12) Raise the printhead fixer cover to open it fully.



F-3-15

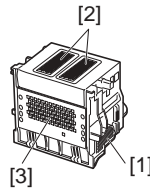
(13) Holding the knobs [1], take out the printhead from the case.



F-3-16

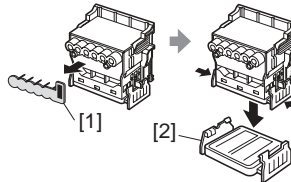


- When handling the Printhead, always hold it by the grips [1].
- Never touch the printhead nozzles [2] or the metal contacts [3]. The printhead can damage or a printing failure can occur. Do not reattach the removed protective caps.
- Dispose of these parts following the local regulation.



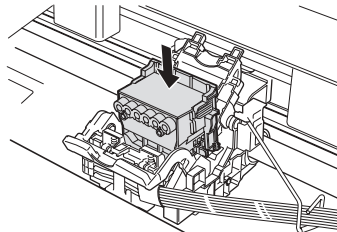
F-3-17

(14) Remove the orange protective cap 1 [1], and then pull the protective cap 2 [2] downward with the knob pressed.



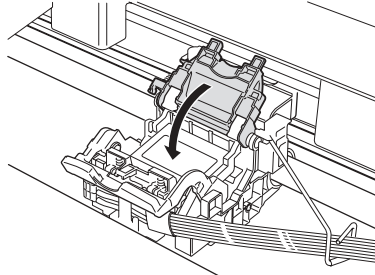
F-3-18

(15) Insert the print head in the carriage with the nozzles down and the contacts in the back. Insert it as far as it will go while taking care that the nozzles and contacts do not touch the carriage.



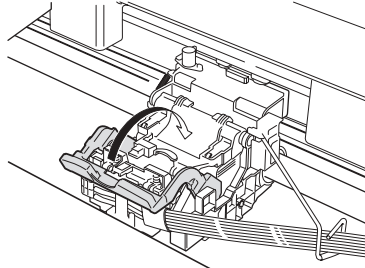
F-3-19

(16) Turn the printhead fixer cover forward to lock the printhead.



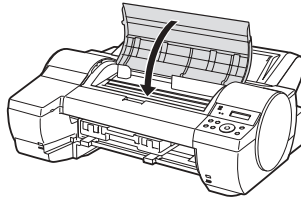
F-3-20

(17) Turn the printhead fixer lever backward until it clicks.



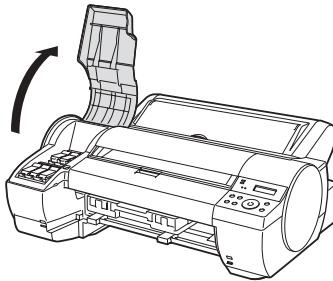
F-3-21

(18) Close the top cover.



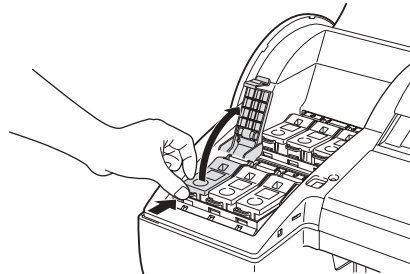
F-3-22

(19) Open the ink tank cover according to the message shown on the display.



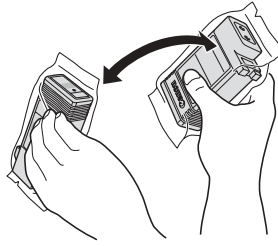
F-3-23

(20) Press the stopper at the top of the ink tank lock lever, and then open the ink tank lock lever upward.



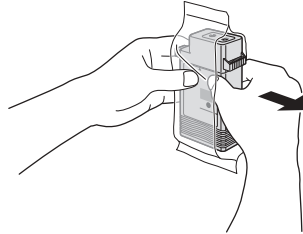
F-3-24

(21) Before unpacking the ink tank you want to install, shake it slowly 7-8 times.



F-3-25

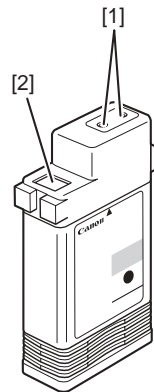
(22) Open the package and take out the ink tank by holding its knobs.



F-3-26



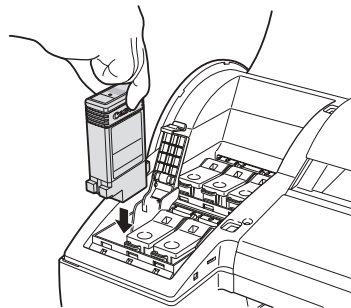
- Never touch the ink port [1] and contacts [2]. The peripheral parts may be stained, the ink tank may be broken, or a printing failure may occur.



F-3-27

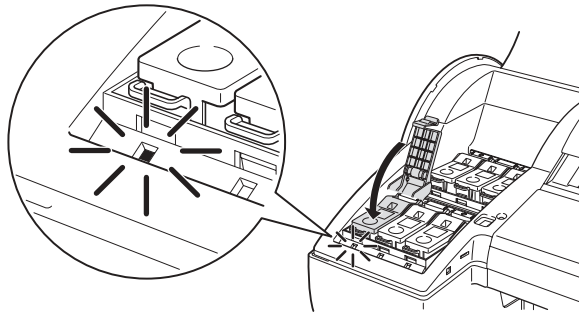
- Be careful not to drop the ink tank once it is unpacked. The leaked ink may stain the peripheral area.
- Do not remove and shake the ink once it is installed. Ink may spatter.

(23) Install the ink tank in the holder with the ink port facing down as shown.



F-3-28

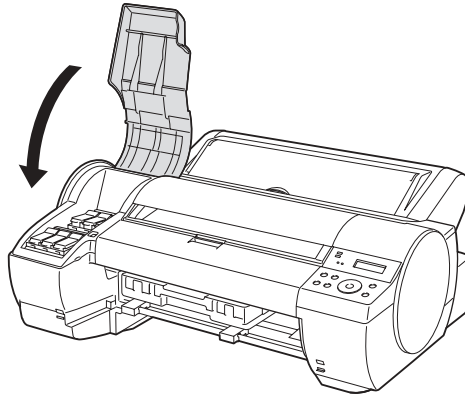
(24) Close the ink tank lock lever until it clicks. Check that the Ink lamp is light in red.



F-3-29

(25) Repeat steps (20) to (24) to install all ink tanks.

(26) Close the ink tank cover.



F-3-30

(27) When the printhead and all ink tanks have been installed, the message "Do Not Open Cover" appears on the display and initial ink filling requires about 14 minutes.

MEMO:

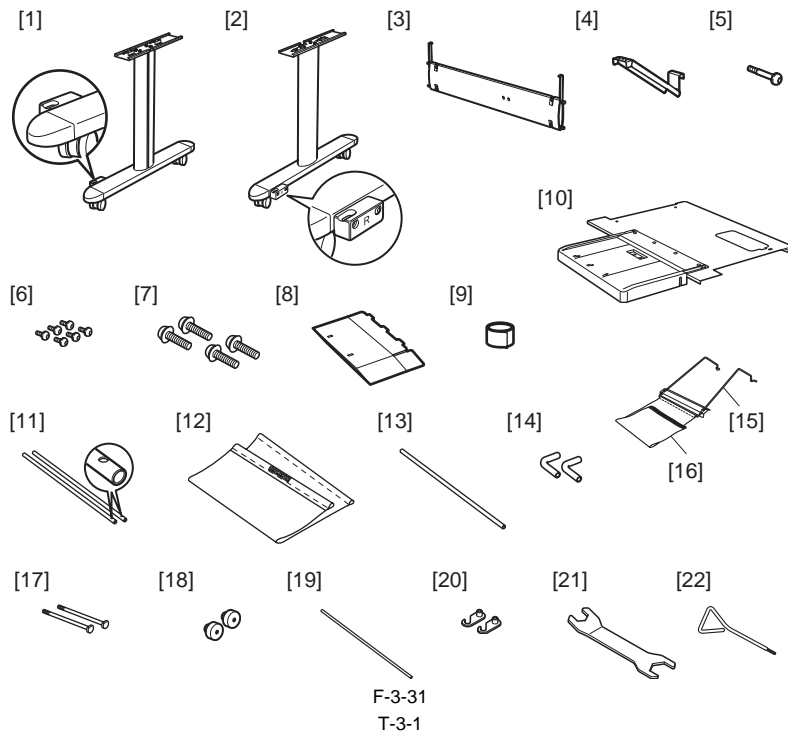
- Initial ink filling performed at printer installation consumes ink between the ink tanks and printhead.
 - "80%" may be displayed as the remaining ink level immediately after initial ink filling. This is not a failure.
-

3.1.2.2 Installing the Stand



Stand assembly requires two or more people.

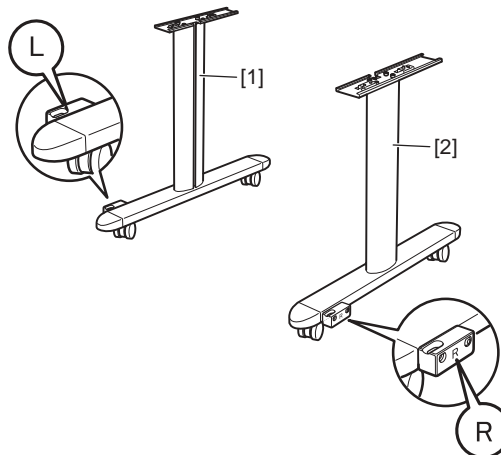
a. Package Contents



- | | |
|------------------------------------|-------------------------------------|
| [1] Stand L | [12] Basket Cloth |
| [2] Stand R | [13] Basket Rod #2 |
| [3] Stand Stay | [14] Basket Rod Caps (2pcs.) |
| [4] Table Stay | [15] Basket Wire #2 |
| [5] Table Stay Bolt | [16] Basket Band, preinstalled |
| [6] Table Bolts (6pcs.) | [17] Basket Bolts (2pcs.) |
| [7] Printer Securing Bolts (4pcs.) | [18] Basket Decorative Nuts (2pcs.) |
| [8] Accessory Box | [19] Basket Rod #3 |
| [9] Velcro Tape | [20] Basket Fastener A (2pcs.) |
| [10] Basket Table | [21] Wrench |
| [11] Basket Rod #1 (2pcs.) | [22] Allen Wrench |

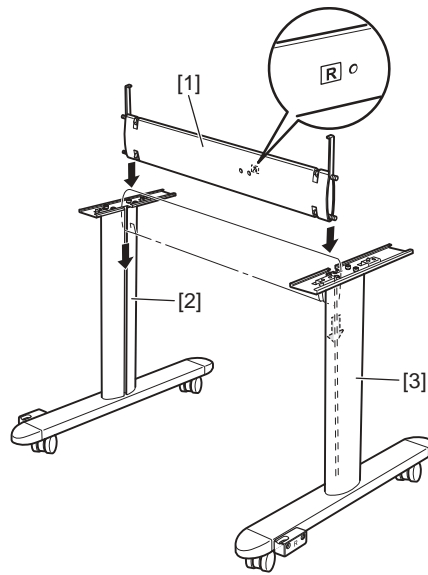
b. Assembling the Stand

(1) Position the Stand L [1] and Stand R [2] so that the "L" and "R" marks are on the outside toward the front.



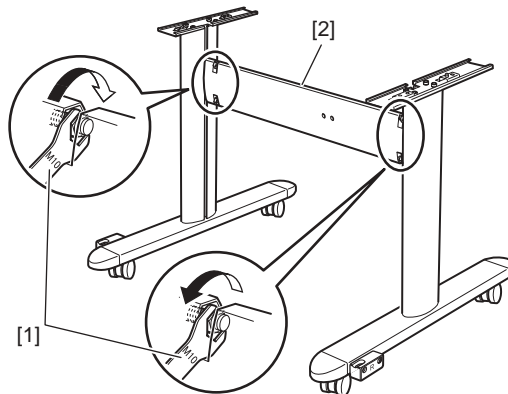
F-3-32

(2) Holding the Stand Stay [1] with the rear side (identified by an "R" sticker) facing back, insert it fully into the grooves of the Stand L [2] and Stand R [3] until it stops.



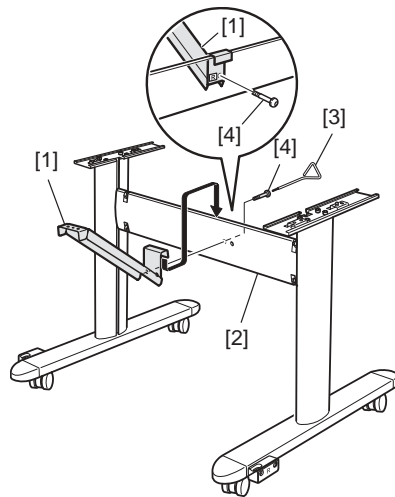
F-3-33

(3) Use the Wrench [1] to tighten the hex screws on both sides and secure the Stand Stay [2].



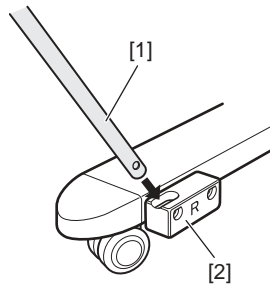
F-3-34

(4) Hook the Table Stay [1] on the Stand Stay [2] and tighten the Table Stay Bolt [4] with the Allen Wrench [3].



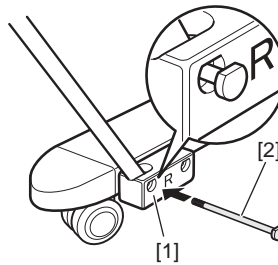
F-3-35

(5) Insert one Basket Rod #1 [1] into the hole of the Basket Fastener R [2] so that the hole of Basket Rod #1 [1] is aligned with the hole of the Basket Fastener R [2].



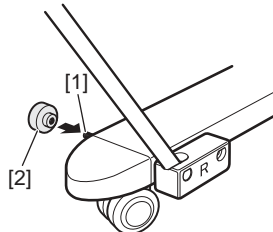
F-3-36

(6) Insert one Basket Bolt [2] into the hole of the Basket Fastener R [1], making the head of the Basket Bolt [2] fit the shape of the hole of the Basket Fastener R [1].



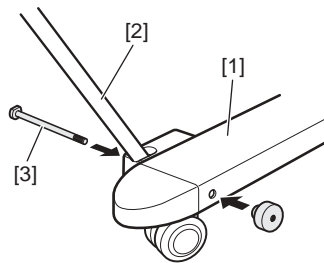
F-3-37

(7) Use one Basket Decorative Nut [2] to secure the Basket Bolt [1].



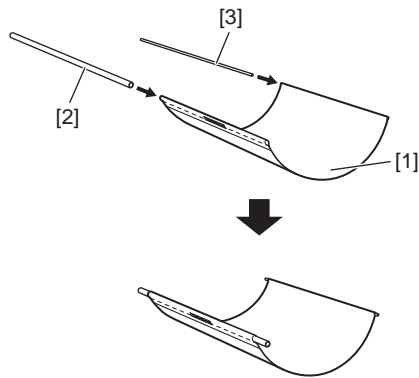
F-3-38

(8) Following steps (5)-(7), insert the other Basket Rod #1 [2] into the Stand L [1] and secure it with the Basket Bolt [3].



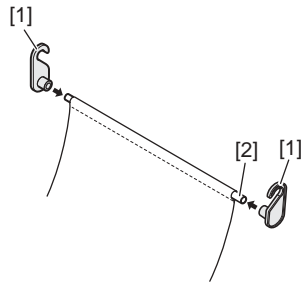
F-3-39

(9) With the Velcro Tape of the Basket Cloth [1] facing down, insert Basket Rod #2 [2] and Basket Rod #3 [3] through the holes on both ends of the Basket Cloth [1].



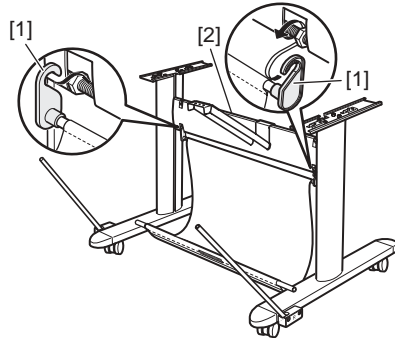
F-3-40

(10) Attach one Basket Fastener A [1] to each end of Basket Rod #3 [2].



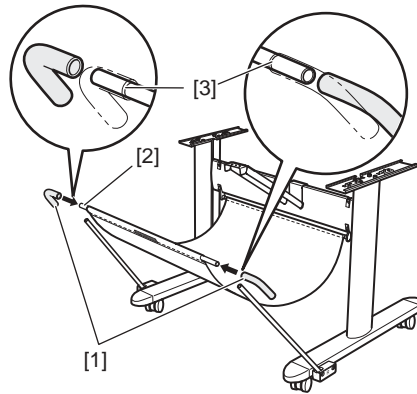
F-3-41

(11) Attach both Basket Fasteners A [1] to the Stand Stay [2].



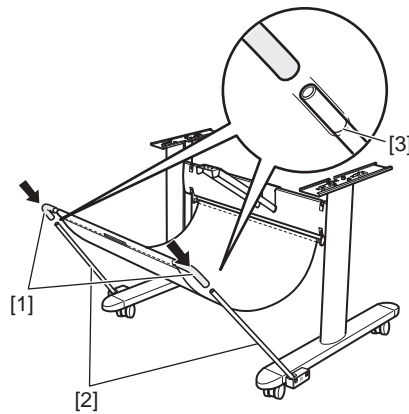
F-3-42

(12) Insert Basket Rod Caps [1] on both ends of Basket Rod #2 [2] until the guide lines [3] are no longer visible.



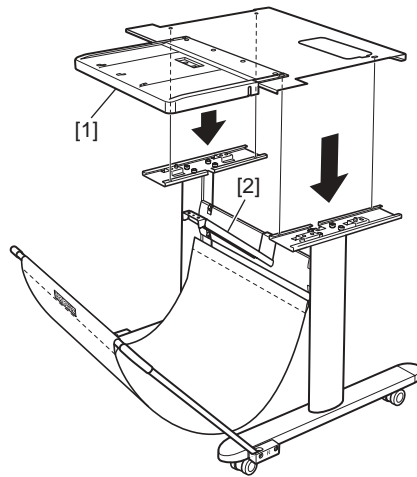
F-3-43

(13) Insert the Basket Rod Caps [1] onto the left and right Basket Rods #1 [2] until the guide lines [3] are no longer visible.



F-3-44

(14) With the holes of Basket Table [1] and the Table Stay [2] aligned, set the Basket Table [1] on the Stand.

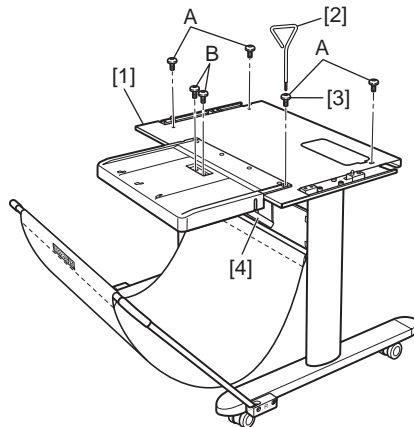


F-3-45



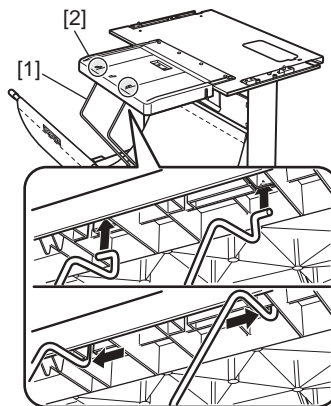
Be careful to avoid pinching your fingers between the Basket Table and Stand.

(15) Use the Allen Wrench [2] to tighten the Table Bolts [3] and secure the Basket Table [1] to the Stand and Table Stay [4]. Tighten the Table Bolts [3] in the order indicated; first at position A, and then at position B.



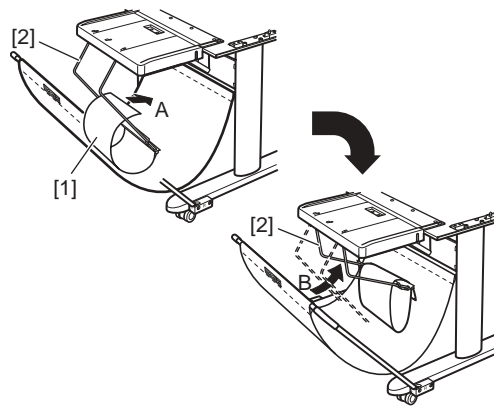
F-3-46

(16) With Basket Wire #2 [1] positioned so that the bend faces forward, insert it in the hole of the Basket Table [2] from below.



F-3-47

(17) Hang the Velcro Tape of the Basket Band [1] on the Basket Wire #2 [2] A. Push Basket Wire #2 [2] toward the back B.

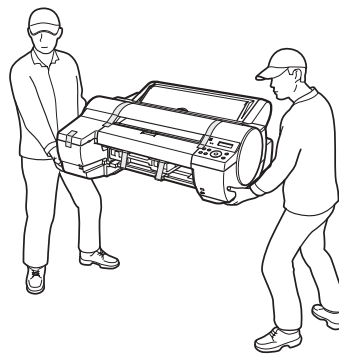


F-3-48

c. Installing the Printer

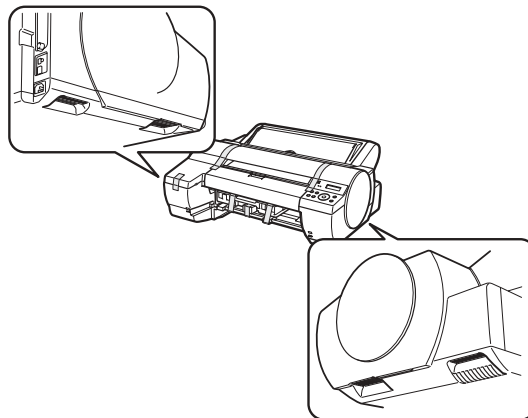


- Moving the printer requires at least two people, one on either side. Be careful to avoid back strain and other injuries.



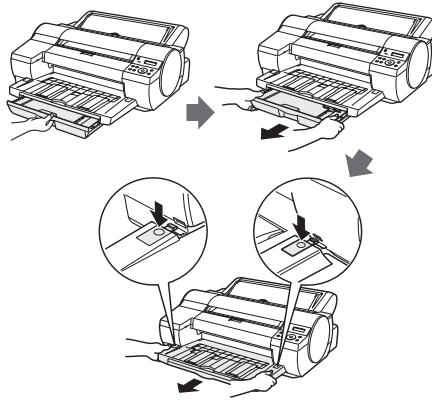
F-3-49

- When moving the printer, firmly grasp the Carrying handles under each side. Holding the printer at other positions is dangerous and poses a risk of injury and damage if the printer is dropped.



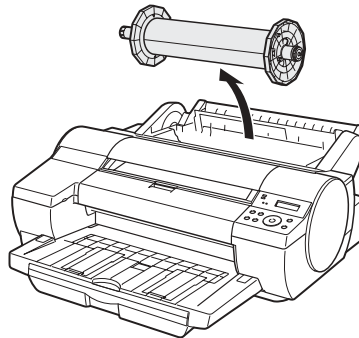
F-3-50

- Be sure to remove the Cassette and Output Tray before installing the printer. Grasp the handle on the front of the Cassette and pull it forward a little. Holding the Cassette on both sides with both hands, remove the Cassette. Holding the Output Tray on both sides by the far end, press the button to release the lock, and then remove the Tray.



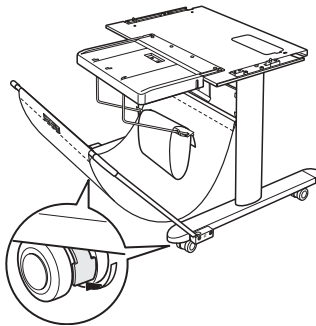
F-3-51

- If a roll is loaded, be sure to remove the roll before this procedure. Remove the Roll Holder from the Auto Roll Feed Unit. Fasten a paper band or the like around the paper to prevent the roll from unwinding.



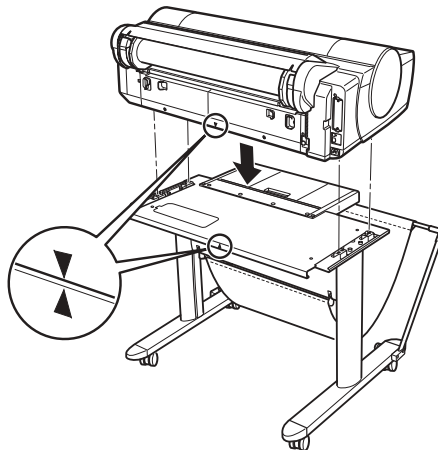
F-3-52

(1) Move the Stand into position and lock the front casters.



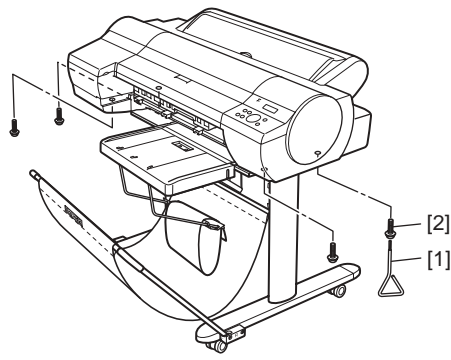
F-3-53

(2) While holding the Carrying handles on both sides, align ▼ on the back of the printer with ▲ of the Output Stacker as you set the printer down on the Stand.



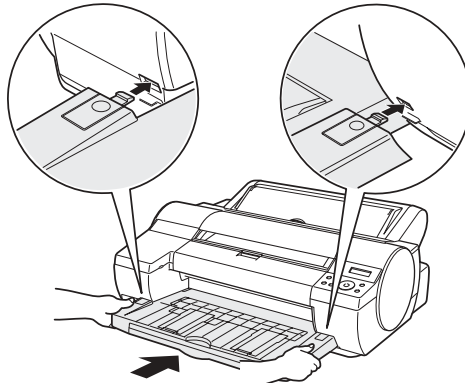
F-3-54

(3) Secure the printer to the stand by firmly tightening the two Printer Securing Bolts [2] on both sides with the Allen Wrench [1] from under the Output Stacker (four bolts in all).



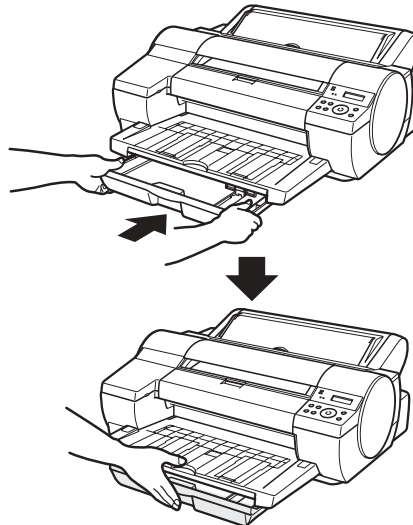
F-3-55

(4) Hold the Output Tray on both sides by the near end. Aligning the Output Tray with the guides, insert it into the printer until it locks in place.



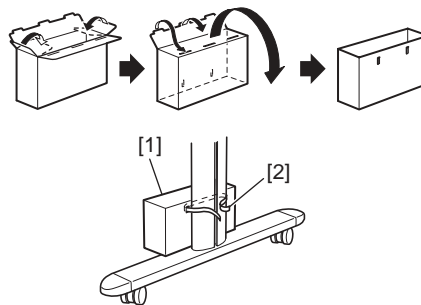
F-3-56

(5) Holding the Cassette on both sides with both hands, insert it firmly into the printer.



F-3-57

(6) Assemble the Accessory Box [1] and attach it to the Stand with Velcro Tape [2].



F-3-58

Chapter 4 DISASSEMBLY/REASSEMBLY

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4.1 Service Parts

4.1.1 Service Parts

The service parts indicated below require careful handling.

1. Keep all packages with the warning not to turn over.

Pay careful attention to all individually packaged service part (carriage unit, purge unit, ink tank unit, and other parts) boxes marked "This side up" and handle appropriately.



F-4-1

4.2 Disassembly/Reassembly

4.2.1 Disassembly/Reassembly

For the procedure for disassembly/reassembly of the components excluding the major components, refer to the parts catalog. Illustrations in the parts catalog are assigned illustration numbers according to the order in which parts are disassembled.

4.3 Points to Note on Disassembly and Reassembly

4.3.1 Note on locations prohibited from disassembly



Assemblies that are prohibited from disassembly and their adjustment outside the factory cannot be conducted are indicated by red screws. Don't ever loosen or remove the red screw, because normal operation and print can't be done if it is loosened or removed.



F-4-2

4.3.2 Moving the carriage manually



Move the carriage as required during disassembly/reassembly to prevent the carriage from contacting the parts to be removed. The carriage does not move when capped. When uncapping moving the carriage, refer to the procedures in DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > Opening the Cap/Moving the Wiper Unit.

4.3.3 Units requiring draining of ink

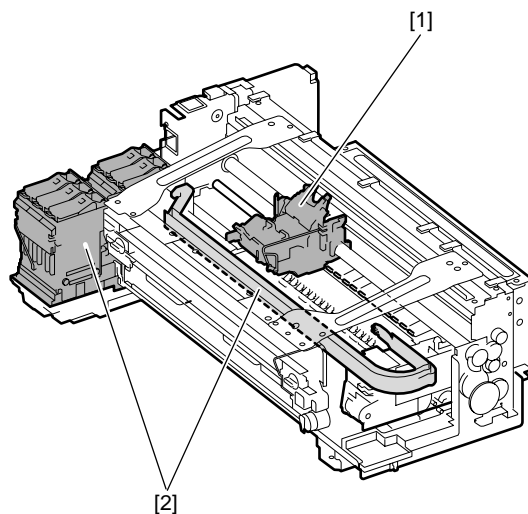
When disassembling the following units of the ink passage, drain ink completely to prevent it from leaking. For how to drain ink, refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > Draining the Ink.

[1] Carriage unit

Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > Carriage Unit.

[2] Ink tank unit

Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > Ink Tank Unit.



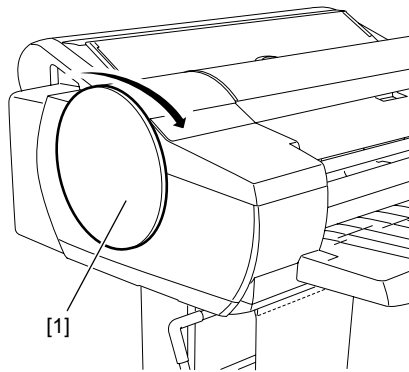
F-4-3

4.3.4 External Covers

a) Left/right circle cover

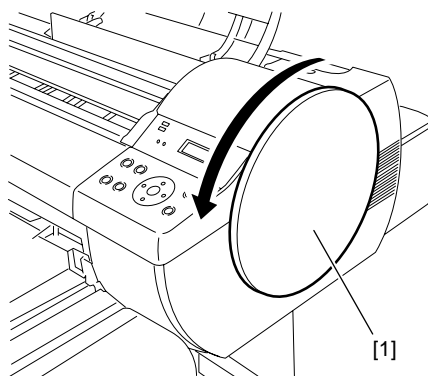
Removing the left/right circle cover

- 1) When removing the left circle cover [1], turn it in the direction of the arrow.



F-4-4

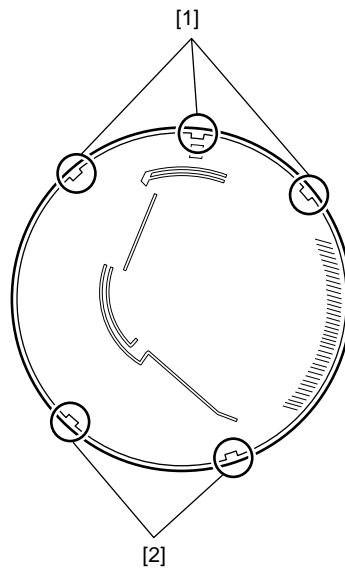
- 2) When removing the right circle cover [1], turn it in the direction of the arrow.



F-4-5

Attaching the left/right circle cover

- 1) When attaching the left circle cover, fit it in place with the three hooks [1] up and turn it toward the rear side of the printer. when attaching the right circle cover, fit it in place with the two hooks [2] up and turn it toward the rear side of the printer.

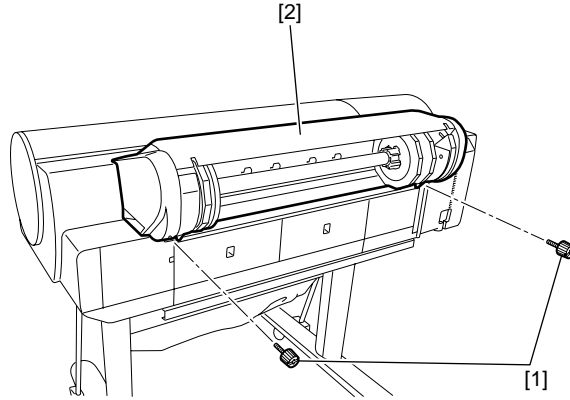


F-4-6

b) Roll Feed Unit

Removing the roll feed unit

- 1) Remove two coin screws[1] to remove roll feed unit [2].



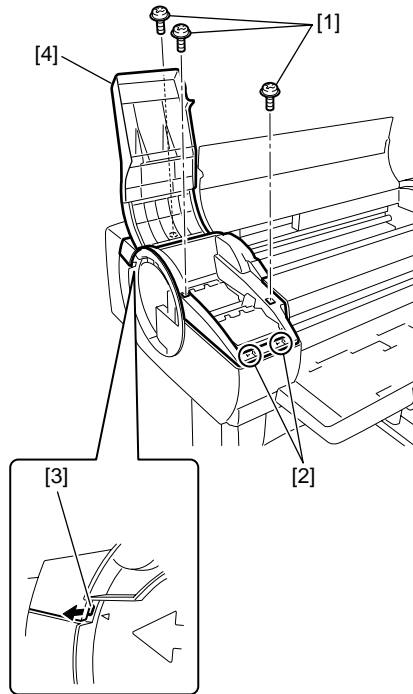
F-4-7

c) Tank cover

Removing the tank cover

- 1) When removing the tank cover[4], remove the left circle cover and then open the top cover.

- 2) Open the tank cover, remove the three screws[1], and then release the two hooks[2] while opening the hook[3] outward.

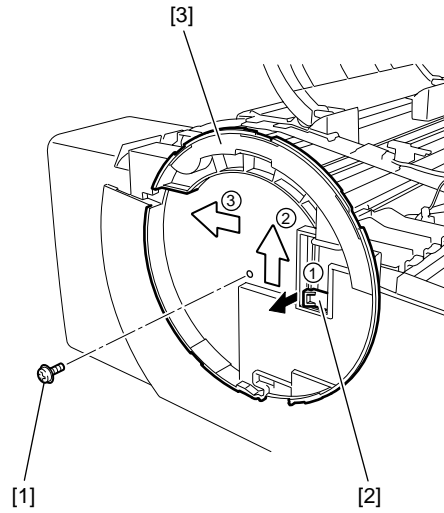


F-4-8

d) Left cover

Removing the left cover

- 1) When removing the left cover[3], remove the left circle cover, open the top cover, and then remove the tank cover.
- 2) Remove the screw[1], remove the hook[2], and slide the tank cover in the direction of arrow 2, and then slide it in the direction of arrow 3.

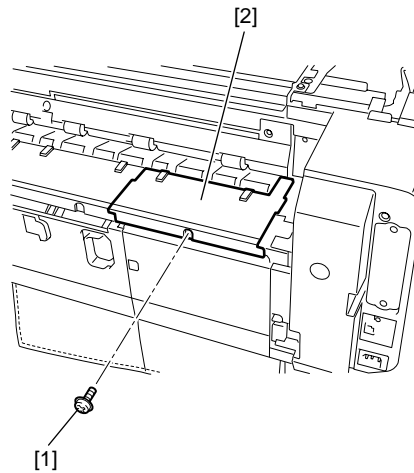


F-4-9

e) Lower rear left cover

Removing the lower rear left cover

- 1) When removing the lower rear left cover[2], remove the screw[1] and then remove it.

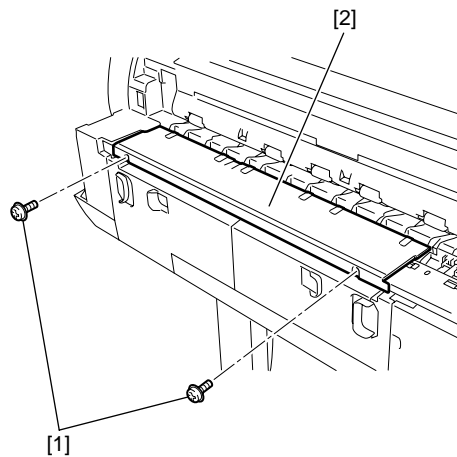


F-4-10

f) Lower rear cover

Removing the lower rear cover

- 1) When removing the lower rear cover[2], remove the two screws[1] and then remove it.

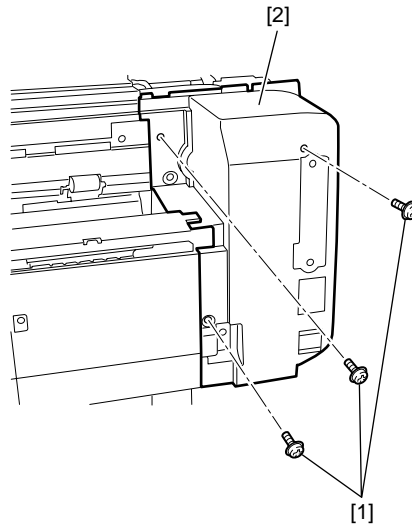


F-4-11

g) Left rear cover

Removing the left rear cover

- 1) When removing the left rear cover[2], open the top cover, and then remove the left circle cover, tank cover, and left rear cover.
- 2) Remove the three screws[1], and then remove the left rear cover[2].

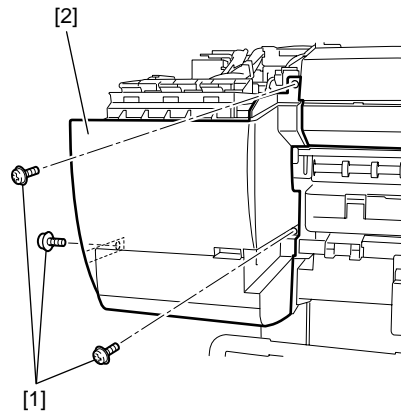


F-4-12

h) Left front cover

Removing the left front cover

- 1) When removing the left front cover[2], open the top cover, and then remove the left circle cover, tank cover, cassette, and output tray unit.
- 2) Remove the three screws[1], and then remove the left front cover[2].

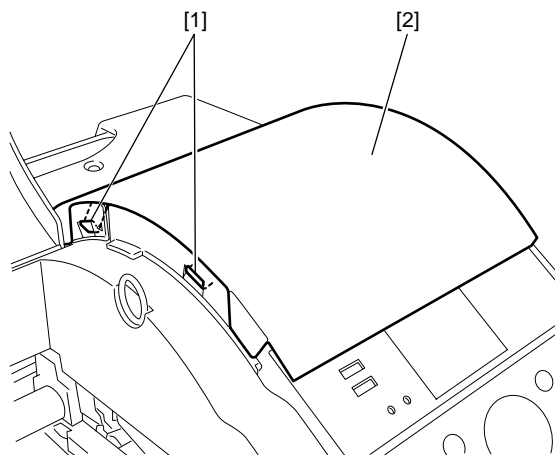


F-4-13

i) Right upper cover

Removing the right upper cover

- 1) When removing the right upper cover[2], open the top cover, and then remove the right circle cover.
- 2) Release the two hooks[1], and then remove the right upper cover[2].

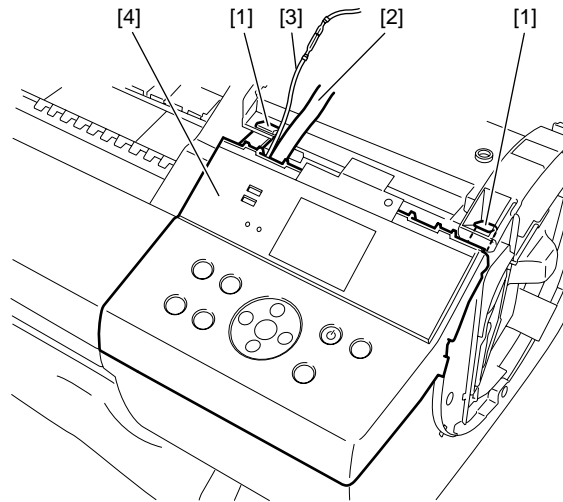


F-4-14

j) Operation panel

Removing the operation panel

- 1) When removing the operation panel[4], open the top cover, and then remove the right circle cover and right upper cover.
- 2) Remove the two hooks[1] and flexible cable[2] and earth cable[3], and then remove the operation panel[4].

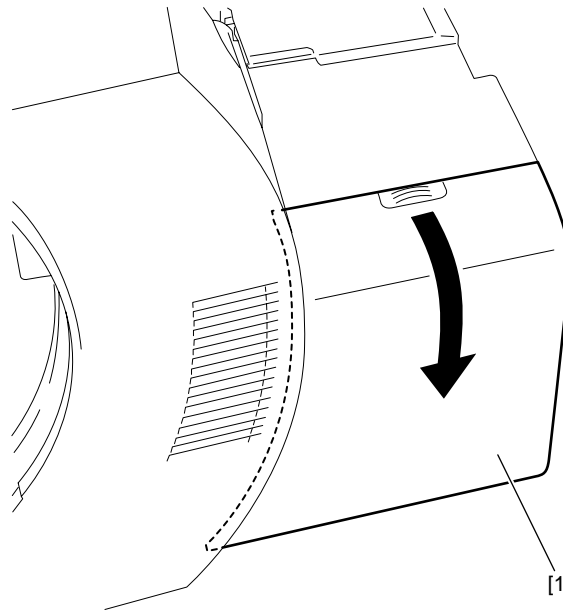


F-4-15

k) Exhaust Filter

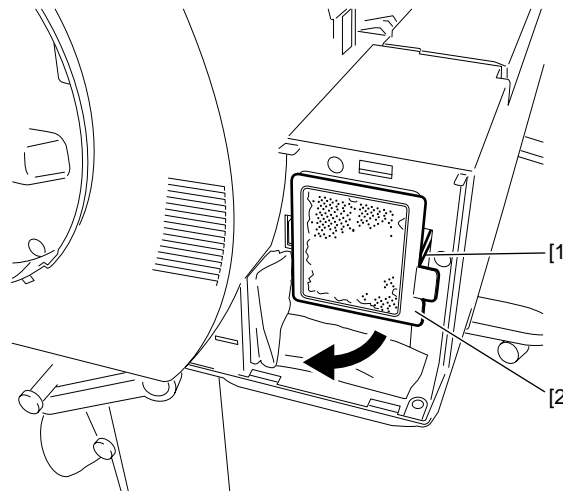
Removing the exhaust filter

- 1) When removing the filter cover[1], push it in the direction of the arrow while pressing on the handhold.



F-4-16

- 2) Remove the exhaust filter[2] while pushing the hook[1].

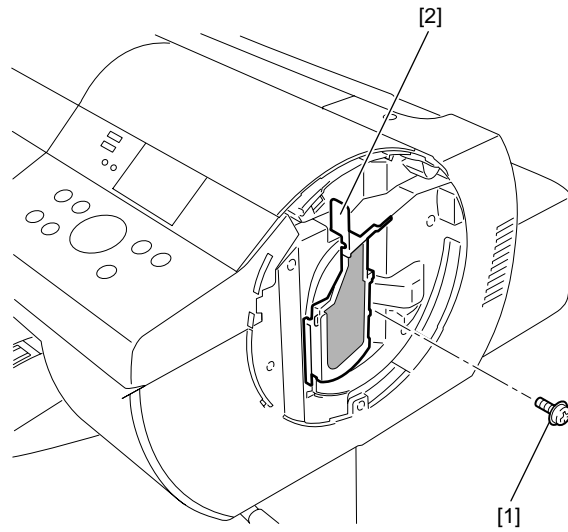


F-4-17

l) Mist filter

Removing the mist filter

- 1) When removing the mist filter[2], open the top cover, and then remove the right circle cover.
- 2) Removing the screw[1], and then remove the mist filter[2].

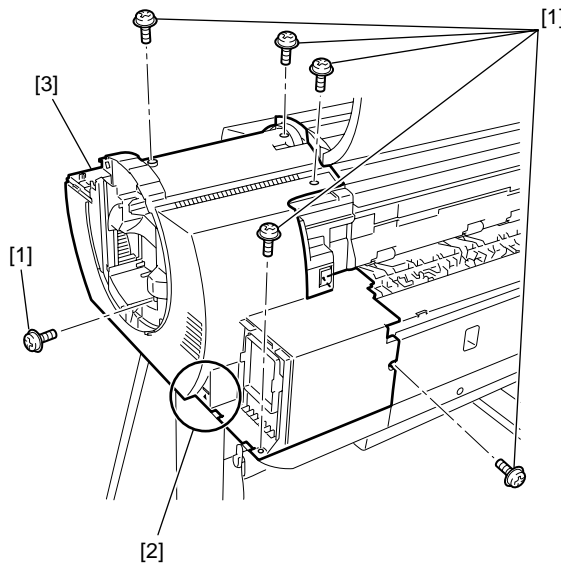


F-4-18

m) Right cover

Removing the right cover

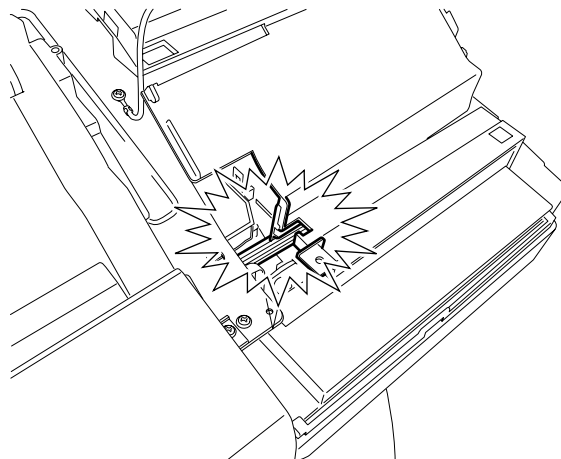
- 1) When removing the right cover[3], open the top cover, and then remove the roll feed unit, right circle cover, right upper cover, operation panel, mist filter, exhaust filter, and lower rear cover.
- 2) Remove the six screws[1] and hook[2], and then remove the right cover[3].



F-4-19

Note on attaching the right cover

Be careful in attaching the right cover not to press the ink tubes with the edges of the cover.

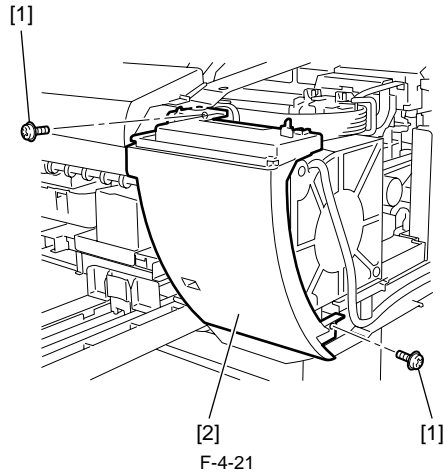


F-4-20

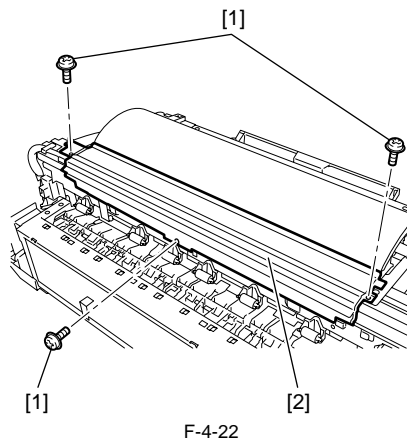
n) Right front cover

Removing the right front cover

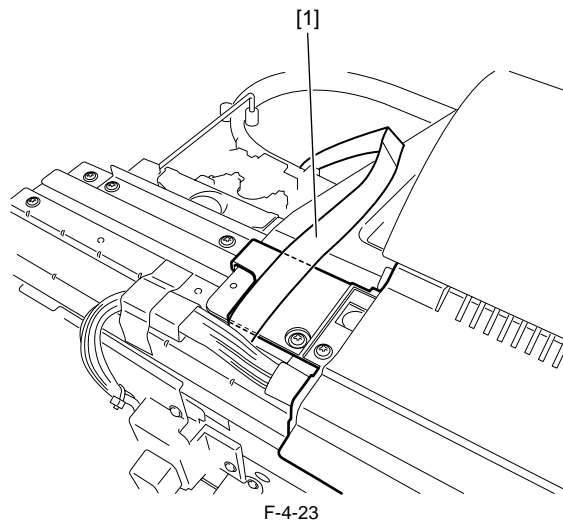
- 1) When removing the right front cover[2], open the top cover, output tray unit, right circle cover, operation panel, mist filter, filter cover, filter, and right cover.
 2) Remove the two screws[1], and then remove the right front cover[2].

**o) Upper rear cover****Removing the upper rear cover**

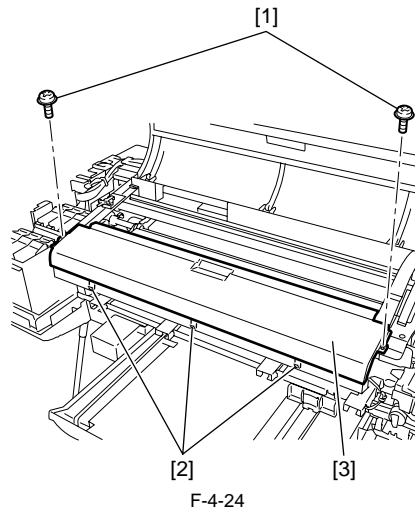
- 1) When removing the upper rear cover[2], open the top cover, and then remove the roll feed unit, left circle cover, tank cover, left cover, right circle cover, right upper cover, operation panel, exhaust filter, right cover, and lower rear cover.
 2) Remove the three screws[1], and then remove the upper rear cover[2].

**Note on attaching upper rear cover**

In attaching the upper rear cover, allow flexible cable[1] in the control area to pass over the cover.

**p) Upper front cover****Removing the upper front cover**

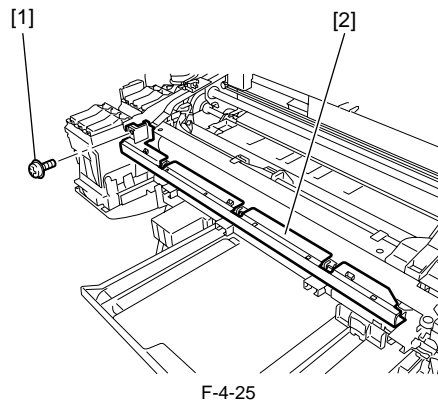
- 1) When removing the upper front cover[3], open the top cover, left circle cover, tank cover, right circle cover, right upper cover, and operation panel.
- 2) Remove the two screws[1], and then remove the upper front cover while releasing the three hooks[2].



q) Lower front cover

Removing the lower front cover

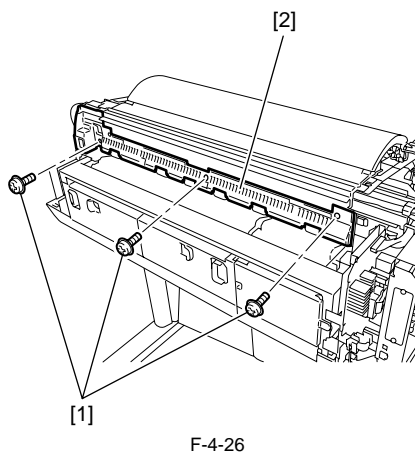
- 1) When removing the lower front cover[3], open the top cover, left circle cover, tank cover, right circle cover, right upper cover, operation panel, and upper front cover.
- 2) Remove the screw[1], and then remove the lower front cover[2].



r) Rear cover

Removing the rear cover

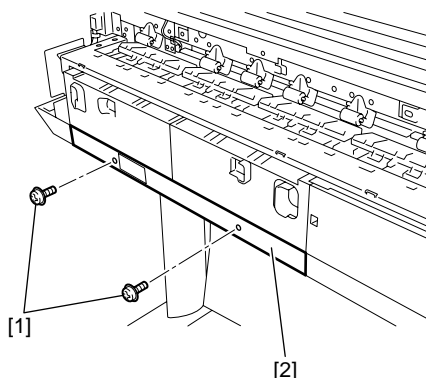
- 1) When removing the rear cover[2], open the top cover, left circle cover, tank cover, left cover, left rear cover, right circle cover, right upper cover, operation panel, mist filter, filter cover, filter, right cover, and lower rear cover.
- 2) Remove the three screws[1], and then remove the rear cover[2].



s) Lower back cover

Removing the lower back cover

- 1) When removing the lower back cover[2], open the top cover, left circle cover, tank cover, left cover, left rear cover, right circle cover, right upper cover, operation panel, mist filter, filter cover, filter, right cover, and lower rear cover.
- 2) Remove the two screws[1], and then remove the lower back cover[2].

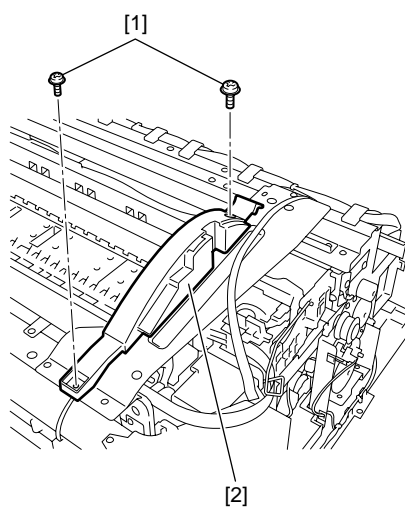


F-4-27

t) Cover guide

Removing the cover guide

- 1) When removing the cover guide[2], open the top cover, left circle cover, tank cover, right circle cover, right upper cover, operation panel, mist filter, filter cover, filter, right cover, and lower rear cover.
- 2) Remove the two screws[1], and then remove the cover guide[2].

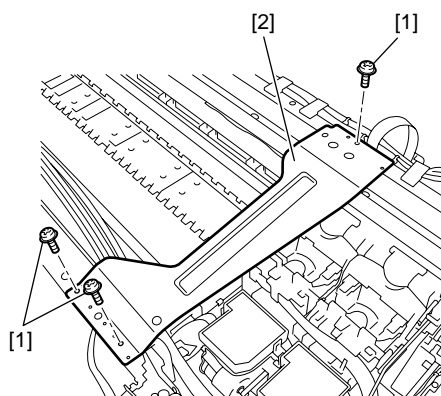


F-4-28

u) Cover support plate (right)

Removing cover support plate (right)

- 1) When removing the cover support plate(right)[2], open the top cover, left circle cover, tank cover, right circle cover, right upper cover, operation panel, mist filter, filter cover, filter, right cover, lower rear cover, cover guide, and upper rear cover.
- 2) Remove the three screws[1], and then remove the cover support plate(right)[2].

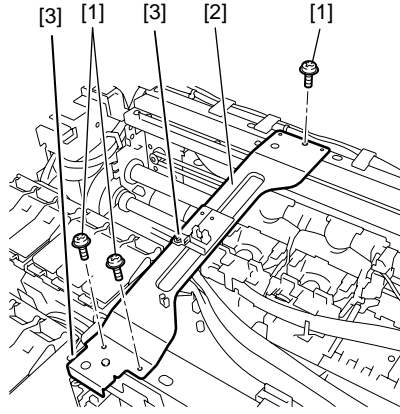


F-4-29

v) Cover support plate (left)

Removing the cover support plate (left)

- 1) When removing the cover support plate (left)[2], open the top cover, left circle cover, tank cover, right circle cover, right upper cover, operation panel, mist filter, filter cover, filter, right cover, lower rear cover, and upper rear cover.
- 2) Remove the three screws [1], and then remove the cover support plate (left)[2].



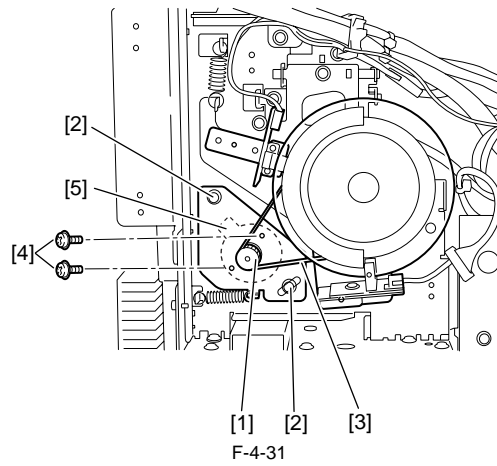
F-4-30

4.3.5 Driving Unit

a) Feed motor

Removing the feed motor

- 1) When removing the feed motor[1], remove the main controller support plate.
Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > PCBs
- 2) Loosen the two screws[2], and then remove the timing belt[3] from the pulley.
- 3) Remove the two screws[4] and connector[5], and then remove the feed motor[1].



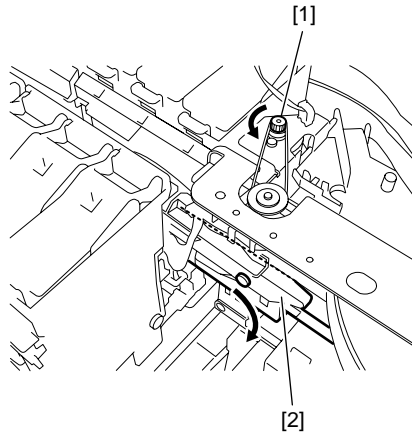
Note on mounting the feed motor

When mounting the feed motor, attach the timing belt[3] on the pulley, and then tighten the two screws[2].

4.3.6 Cutter

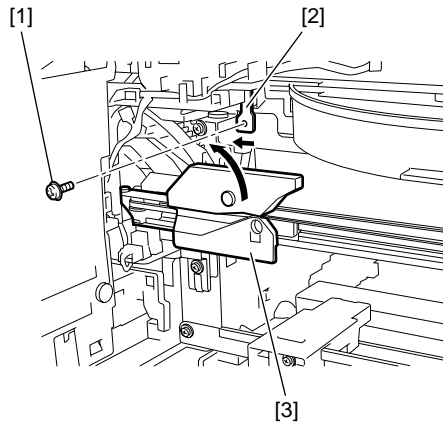
a) Removing the cutter unit

- 1) When removing the cutter unit, open the top cover, and then remove the cassette, output tray unit, left and right circle covers, tank cover, lower rear cover, left and right covers, right upper cover, operation panel, left and right front cover, upper front cover, mist filter, filter cover, filter, and lower front cover. Refer to **DISASSEMBLY/REASSEMBLY > Points to note on Disassembly and Reassembly > External Covers**.
- 2) Turn the motor pulley[1] in the direction of the arrow to lower the cutter unit[2].



F-4-32

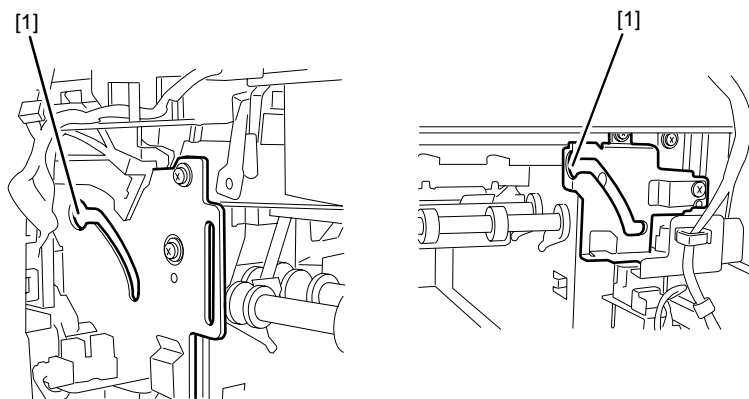
- 3) Remove the screw[1], shift the stopper[2] to the left, and then slide the cutter unit[3] to upper left to remove it.



F-4-33

b) Points to note on Disassembly and Reassembly of Cutter unit

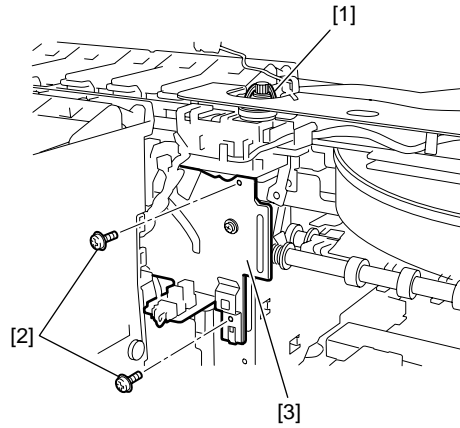
- 1) When disassembling or reassembling the cutter unit, align the cutter unit roller with the grooves[1] in the cutter lifter unit and cutter drive unit.



F-4-34

c) Removing the cutter lifter unit

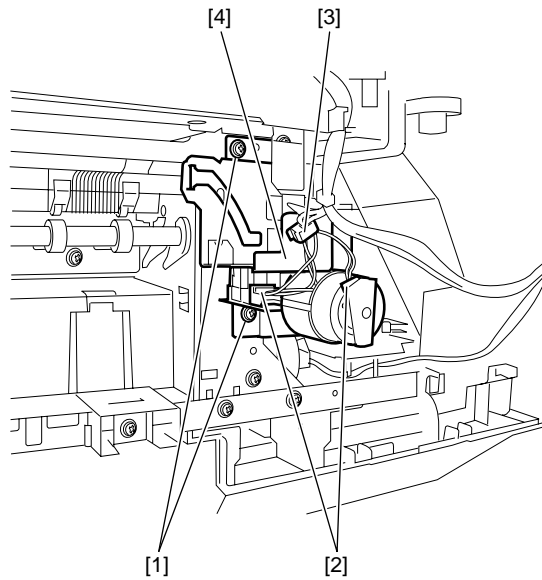
- 1) Remove the cutter unit.
- 2) Remove the belt[1], two screws[2], and harness, and then remove the cutter lifter unit[3].



F-4-35

d) Removing the cutter drive unit

- 1) Remove the cutter unit.
- 2) Remove two screws[1] and two connectors[2] and free the harness from harness guide [3] to remove cutter drive unit[4].



F-4-36

4.3.7 Carriage Unit

a) Removing the carriage unit

1) Drain the ink.

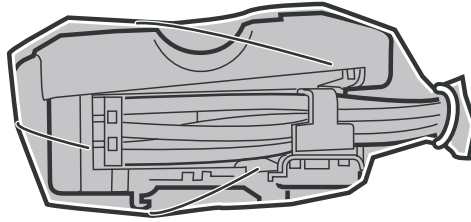
Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > Draining the Ink.

2) Turn off the power, and then move the carriage over the platen.

Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > Opening the Cap/Moving the Wiper Unit.

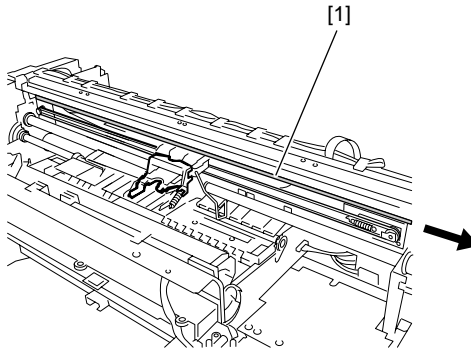
3) Remove the printhead.

4) Remove the joint of the ink tube unit. Wrap the removed joint with a plastic bag or other covering so that ink does not splash, then close the plastic bag.



F-4-37

5) Remove the linear scale[1] from the right clamp plate's spring, and then remove it rightward.

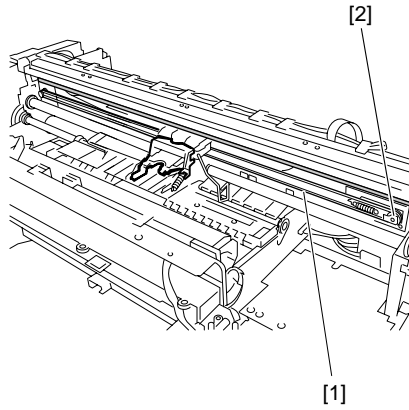


F-4-38



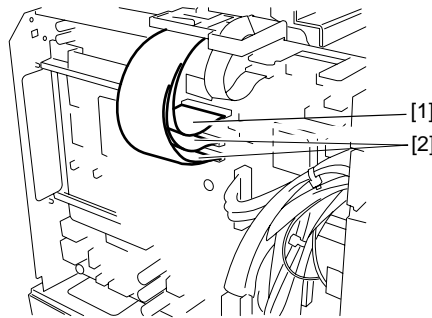
When removing the linear scale, take care not to damage or stain it. The stained or damaged liner plate can cause malfunction.

6) While sliding the pulley[2] to the left, remove the carriage belt[1]. Tie the removed belt lightly on the unit.



F-4-39

7) Disconnect the connector[1] and two connectors[2] of the flexible cables on the main controller PCB.



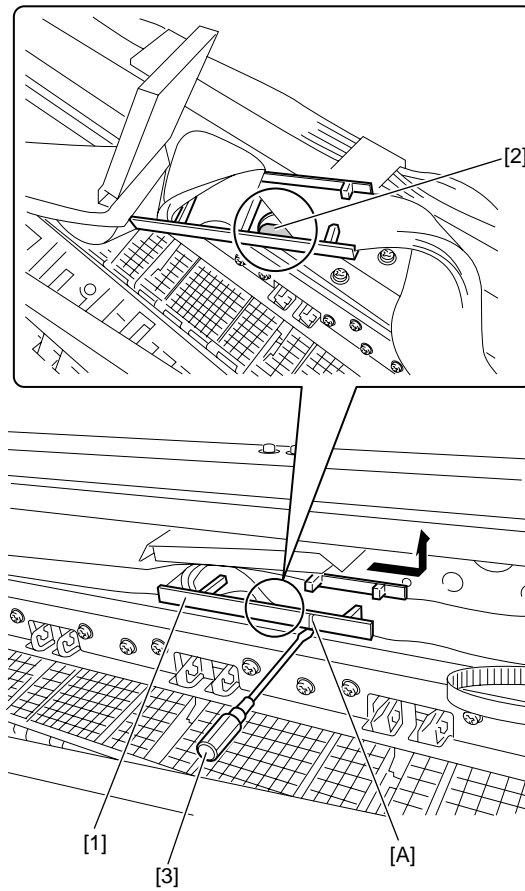
F-4-40



The flexible cable connectors[2] are provided with a locking mechanism. When disconnecting or reconnecting the flexible cable, be sure to release the lock. Oth-

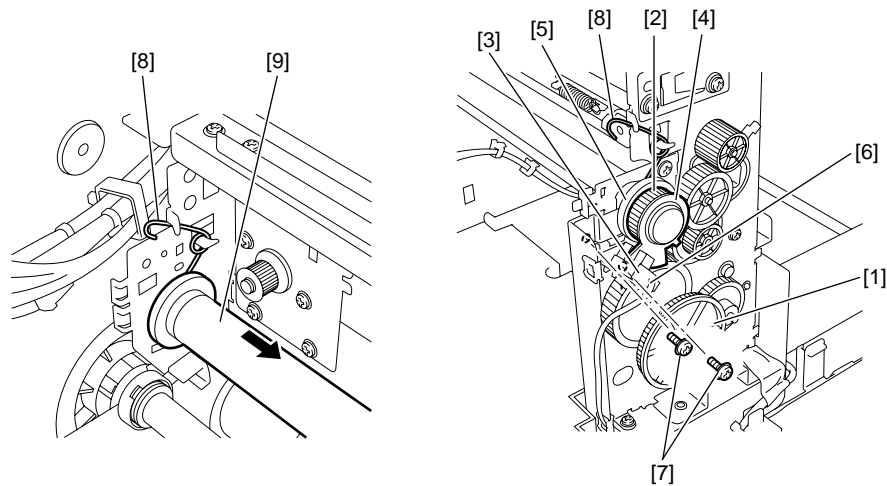
erwise, the flexible cable can damage, resulting in malfunction.

- 8) Insert flat-head screwdriver[3] into the part shown to release hook[2] and then remove flexible cable retainer[1]. (If flexible cable retainer[1] is marked with index[A], insert the flat-head screw driver to meet the index.)



F-4-41

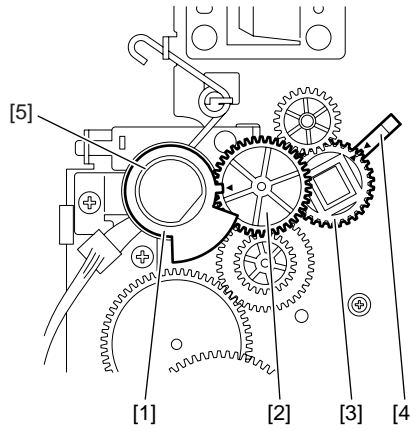
- 9) Turn the gear [1] so that the sensor flag of the lift gear [2] leaves the interrupt position of the lift cam sensor [3], then remove the ring [4], the lift gear [2] and the lift cam [5]. Disconnect the connector [6], remove the two screws [7], and then remove the lift cam sensor [3]. Remove the two torsion springs [8], pull out the carriage rail [9] from the right side of the printer, and then remove the carriage.



F-4-42

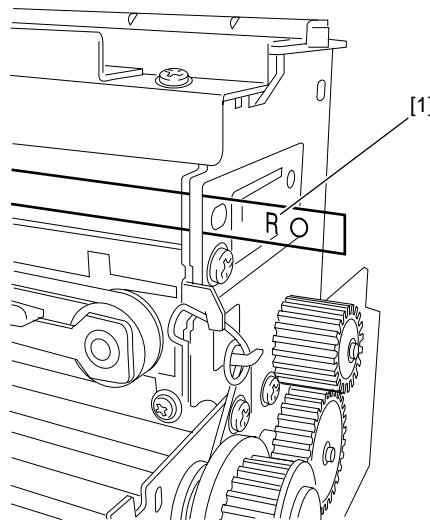
b) Points to Note on disassembly and Reassembly of Carriage Unit

1) Align the mark on the gear[3] with the mark on the bushing[4]. Align the mark on the lift gear[1] with the mark on the gear[2] to remove the ring[5].



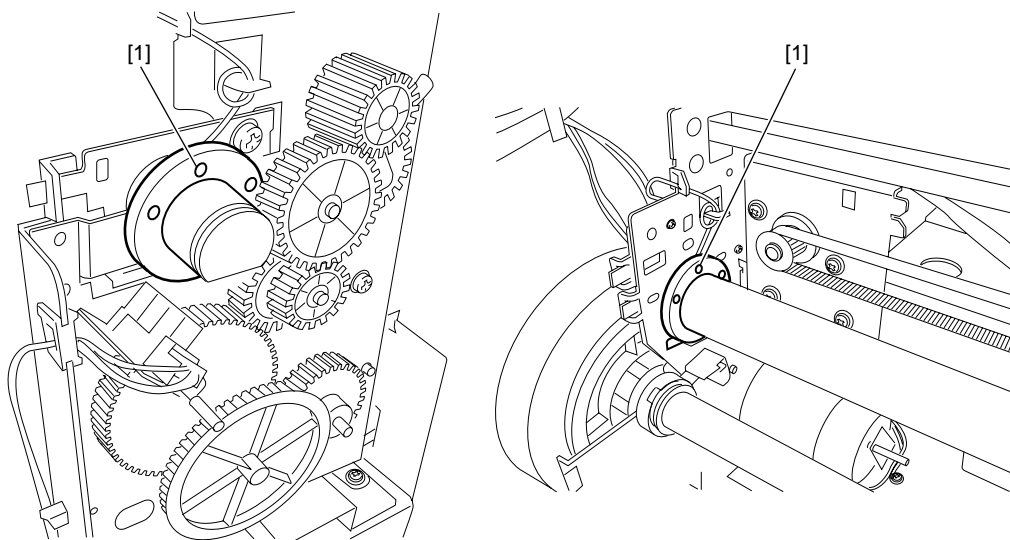
F-4-43

2) Install the linear scale with its R-mark [1] located on the right side of the unit.



F-4-44

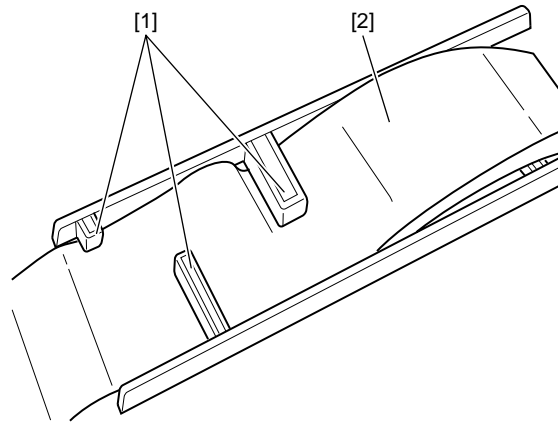
3) Install left right lift cam [1] so its circular dent comes in the direction as shown (right side of the unit).



F-4-45

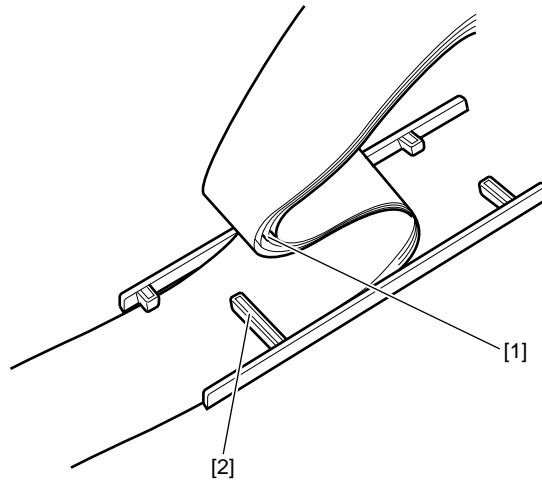
c) Note on attaching the flexible cable

1) Insert flexible cable[2] through three claws[1] in the flexible cable retainer.



F-4-46

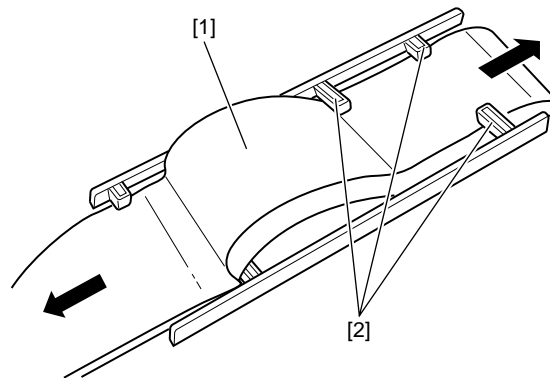
2) Lightly fold the flexible cable in its marked area[1] and pass it through claws[2].



F-4-47

3) Insert folded flexible cable [1] through three claws [2].

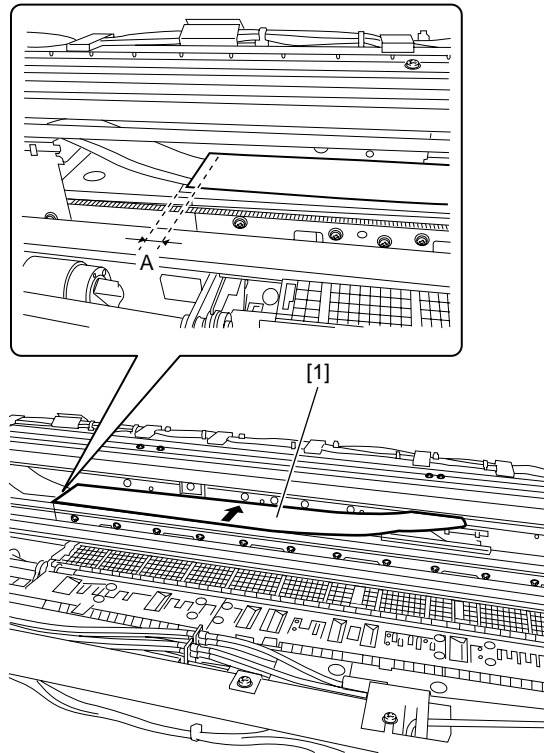
4) Pull flexible cable [1] lightly from both sides to remove slacks in it.



F-4-48

5) Having installed the flexible cable retainer, align and flatten the flexible cables.

6) Attach flexible guide sheet [1] over flexible cable [2] with its left end aligned with the limit position shown and its rear kept in contact with the side plate.



F-4-49

d) Multi Sensor Recalibration

Since multi sensors have individual electrical specificity, the following are recalibrated at the factory, namely, the optical axis of the sensor, the sensor gain for measuring the printhead height and sensor reproduction. Accordingly, carry out the following adjustments in the service mode whenever replacing the carriage unit or multi sensor.

* The multi sensor reference plate must be replaced at the same time whenever the carriage or the multi sensor is being replaced.

- Service mode : SERVICE MODE > ADJUST > GAP CALIB.

- Service mode : SERVICE MODE > ADJUST > PRINT PATTERN > OPTICAL AXIS

Media type : Photo glossy paper

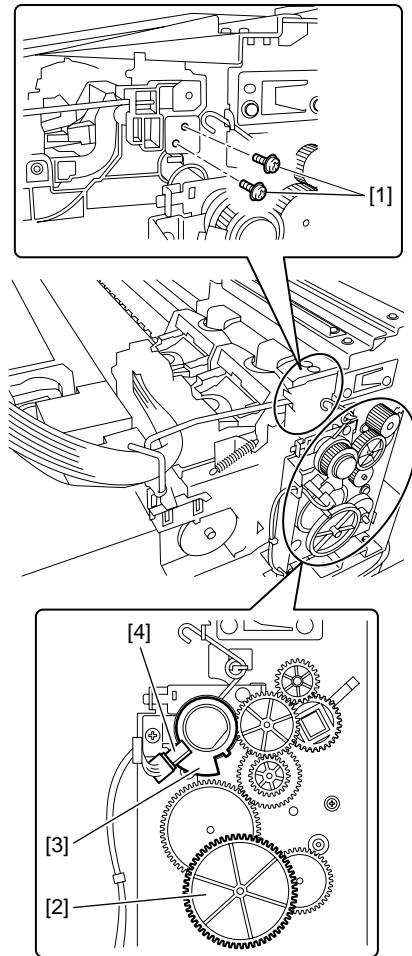
Media size : Media having a width equal to or larger than that of A2-size paper

e) Adjusting the wire roller

To prevent the wire roller mounted on the carriage from contacting the duct and others during carriage operation, perform the following adjustment whenever you have removed or replaced the carriage unit. This adjustment is not required when you have replaced only the multi sensor.

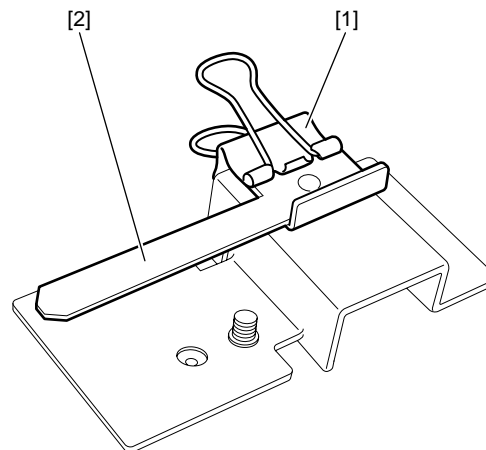
- * Make adjustments with the carriage lock released.
- * Make adjustments with the tube disconnected from the tube guide.

- 1) Remove the ink tube from the wire guide.
- 2) Loosen the two screws [1]
- 3) Turn the gear [2] until the lift cam flag [3] reaches the position shown below.
 - * Bottom position where the sensor [4] light is blocked by the flag (lowest position to which the carriage unit descends)



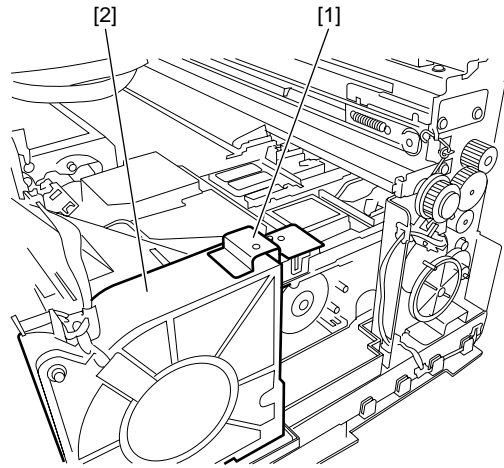
F-4-50

- 4) Remove clip [1] and roller retainer [2] from the carriage wire tool.



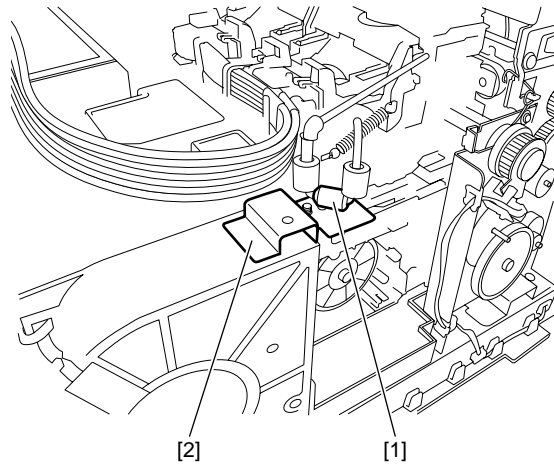
F-4-51

5) Install carriage wire tool [1] in position with its leaf spring being attached to the top of mist fan [2].



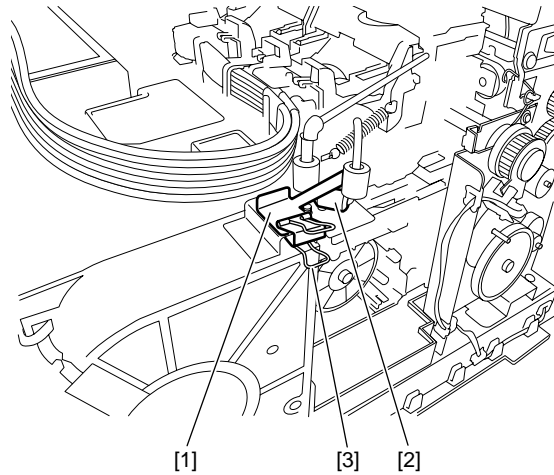
F-4-52

6) Moving the carriage, adjust the height of the wire guide to bring its roller [1] into contact with the top of carriage wire tool [2].



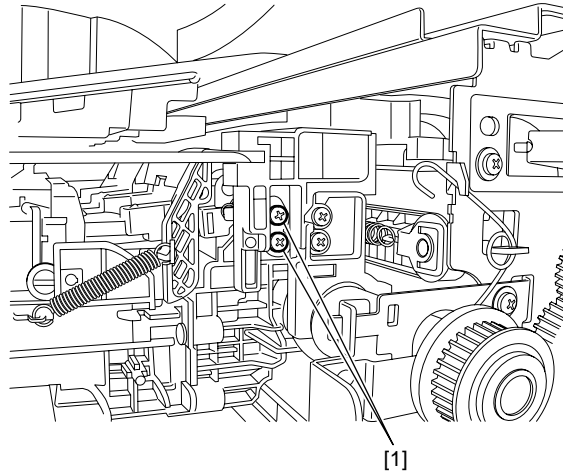
F-4-53

7) Secure roller retainer [1] with clip [3] in contact with the top of roller [2].



F-4-54

8) Retighten two screws [1] loosened in Step 2) to secure the wire guide.



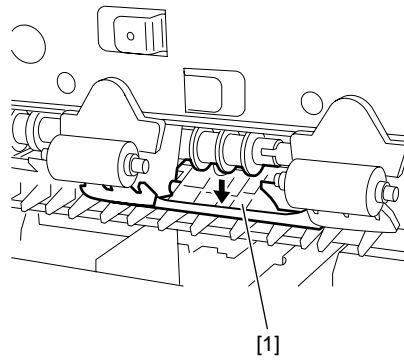
F-4-55

9) Pass the ink tubes through the wire guides.

4.3.8 Pick-Up/Feeder Unit

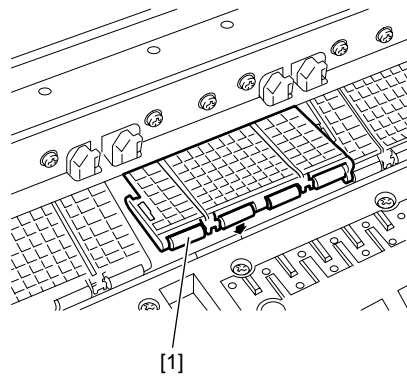
a) Removing the pinch roller

- 1) Remove the rear cover.
- 2) When removing the pinch roller, press down the pinch roller unit[1] in the direction of the arrow.



F-4-56

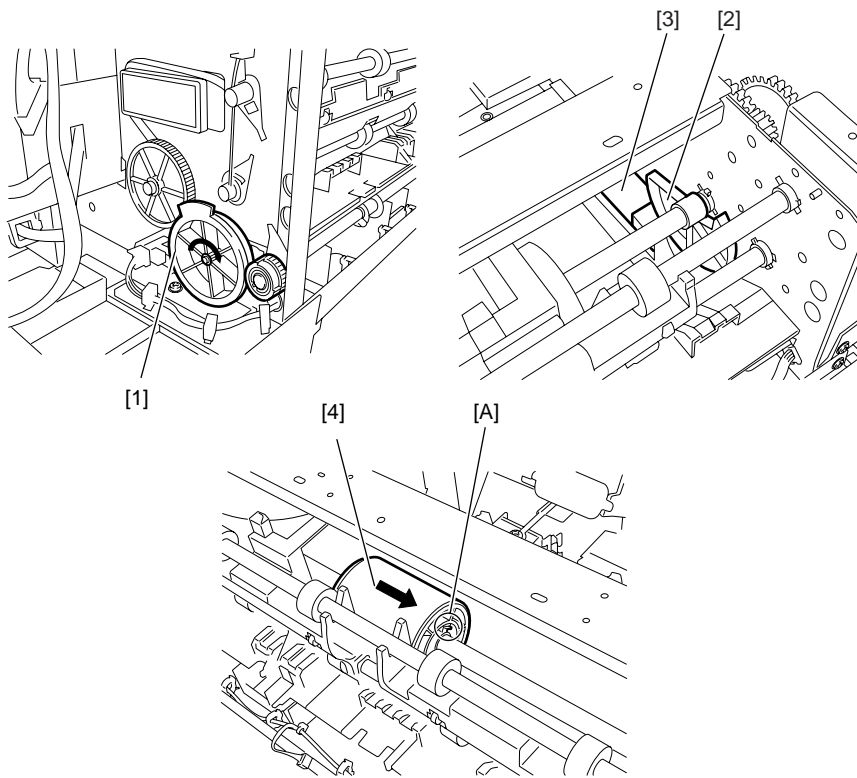
- 3) Remove the pinch roller[1].



F-4-57

b) Removing the cassette pick-up roller

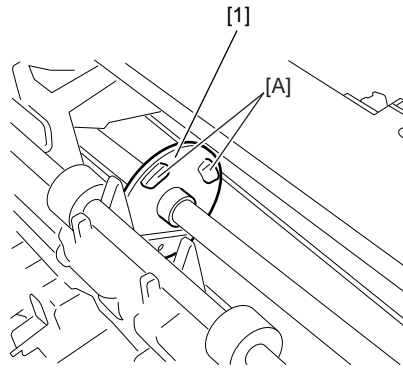
- 1) When removing the cassette pick-up roller, first remove the back cover and cassette.
- 2) Then the gear[1] so that the pick-up cam[2] presses down the arm[3] to the lowest position. Release the hook[A], and then remove the cassette pick-up roller[4] while sliding it in the direction of the arrow.



F-4-58

c) Precaution for mounting the roller

When mounting the cassette pick-up roller, fit the projection[A] on the cassette pick-up roller holder[1] in the grooves in the cassette pick-up roller.

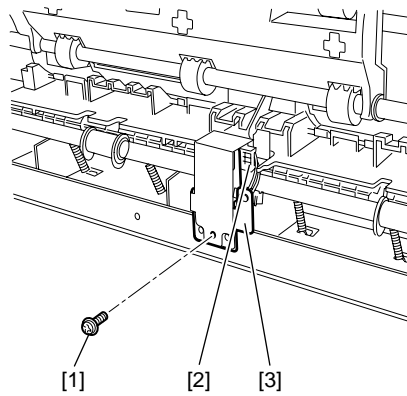


F-4-59

d) Removing the cassette separation roller

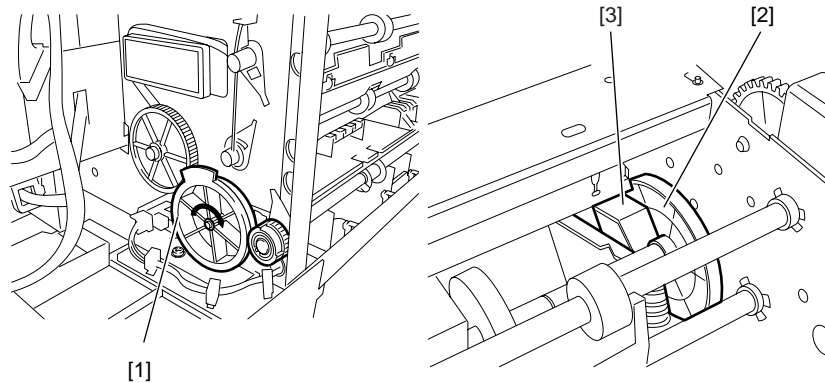
1) When removing the cassette separation roller, first open the top cover, and then remove the back cover, left and right covers, tank cover, right upper cover, operation panel mist filter, filter cover, filter, left and right covers, lower rear cover, and lower back cover.

2) Remove the cassette pick-up sensor[3] by removing the screw[1] and connector[2].



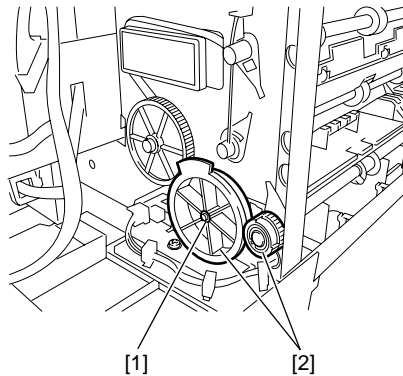
F-4-60

3) Then the gear[1] to make sure that the pick-up cam[2] is at the position shown below (the arm[3] is raised).



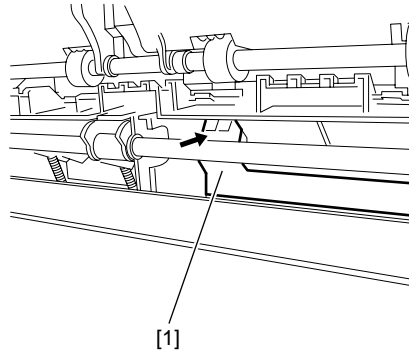
F-4-61

4) Remove one ring[1] and two gears[2].



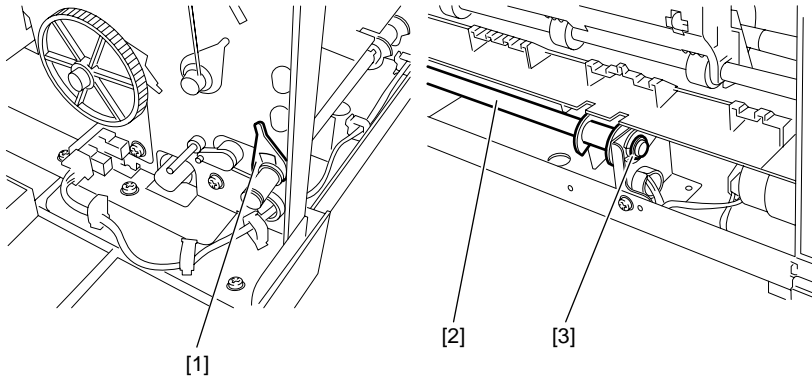
F-4-62

5) Press up the guide[1] in the direction of the arrow.



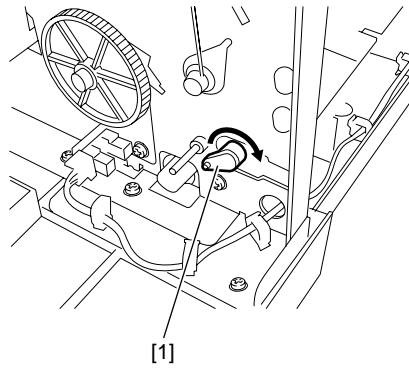
F-4-63

6) Remove the bearing[1] and ring[3], and then remove the separation roller shaft[2].



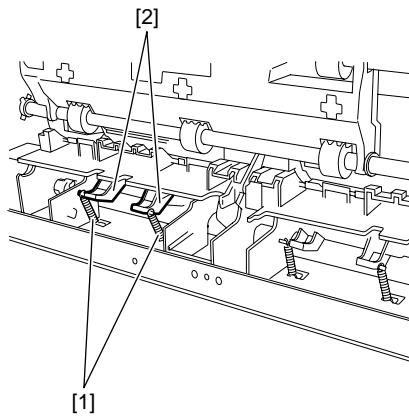
F-4-64

7) Remove the lever[1] while turning it in the direction of the arrow.



F-4-65

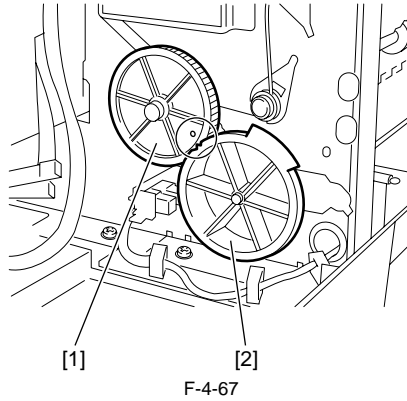
8) Remove the two springs[1], and then remove the cassette separation roller[2].



F-4-66

e) Precaution for mounting the cassette separation roller

1) Align the mark on the gear[1] with the mark on the gear[2].

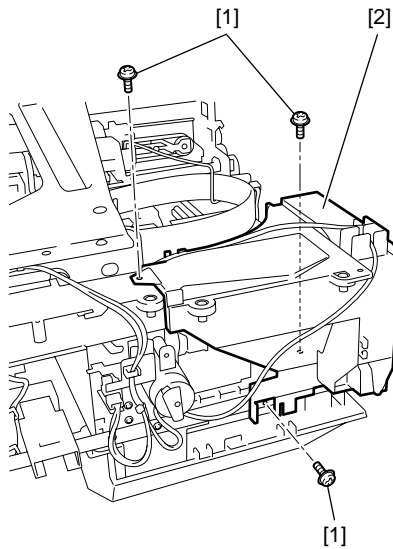


F-4-67

f) Removing the spur unit

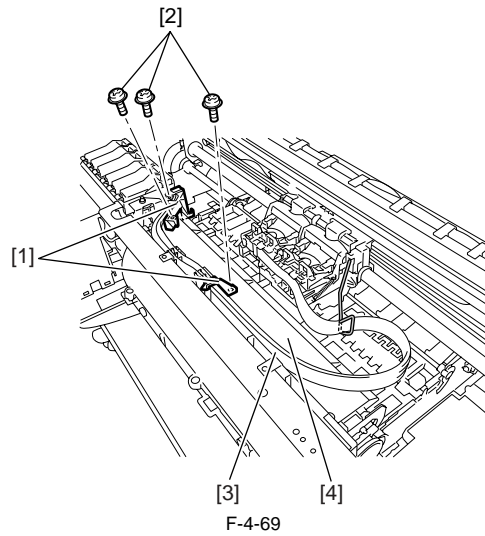
1) When removing the spur unit, first open the top cover, and then remove the left and right circle covers, tank cover, right upper cover, operation panel, lower rear cover, right cover, right front cover, upper front cover, lower front cover, cover guide, upper rear cover, and left and right cover mounting plates. Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > External Covers.

2) Remove the three screws[1], and then remove the mist fan[2].



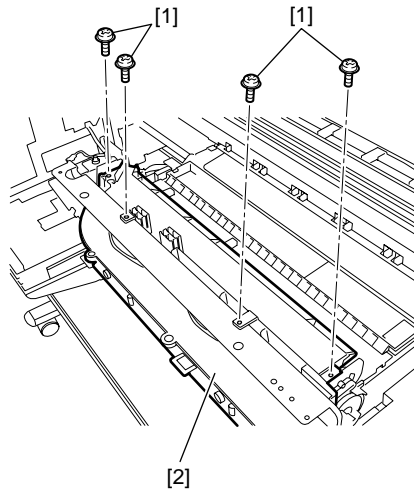
F-4-68

3) Remove the three screws[2], and then remove the two tube guides[1]. Remove the ink tube[3] from the front duct[4].



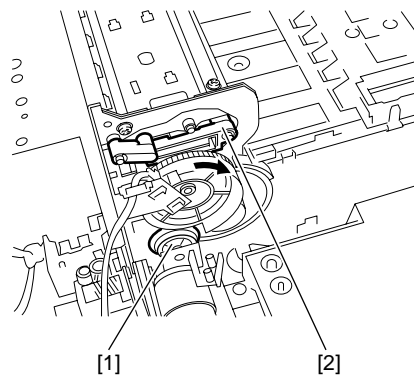
F-4-69

4) Remove the front duct[2] by removing the four screws[1].



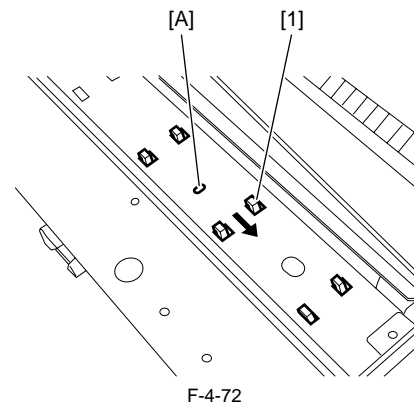
F-4-70

5) Turn the pulley[1] in the direction of the arrow so that the spur unit[2] is at the top position.




F-4-71

6) While pressing down the protrusion[A], slide the spur unit[1] in the direction of the arrow to remove it.



F-4-72

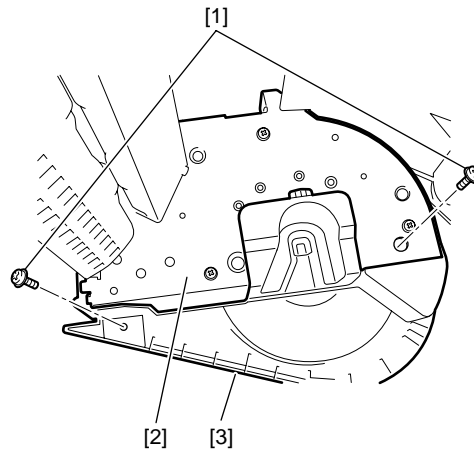
g) Handling the Feed Roller

-  The feed roller is an important mechanical component of the printer. Follow the precaution below when handling it.
- Do not touch the feed roller surface (coated surface).
 - Do not scratch or dent the feed roller.

4.3.9 Roll Feed Unit

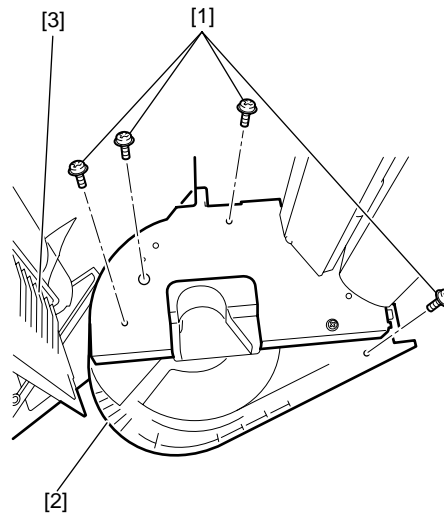
a) Removing the roll motor

- 1) When removing the roll motor, remove the roll feed unit[2] from the main body, and then remove the right cover[3] by removing the two screws[1]



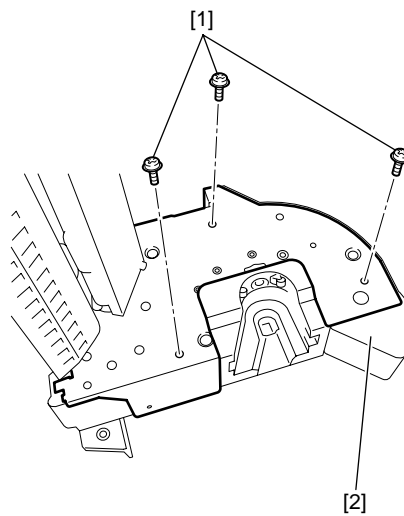
F-4-73

- 2) Remove the four screws[1], and then remove the left cover[2] and paper tray[3].



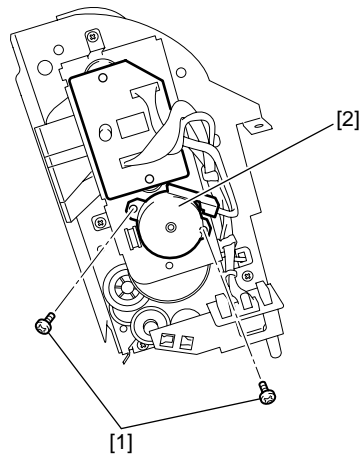
F-4-74

- 3) Remove the three screws[1], and then remove the right inner cover[2].



F-4-75

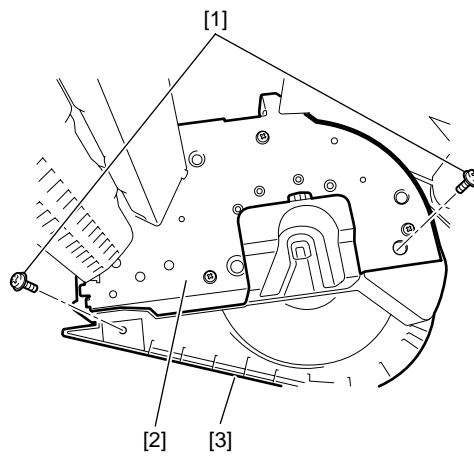
4) Remove the two screws[1], and then remove the roll motor[2].



F-4-76

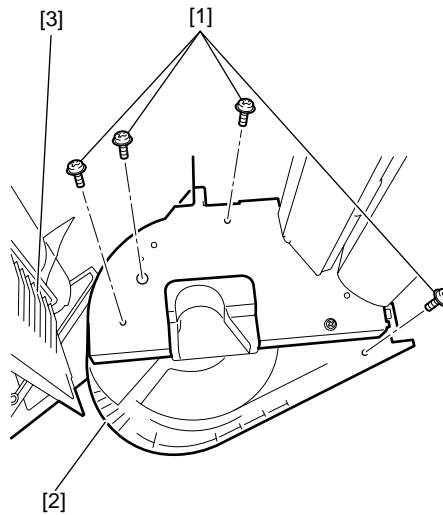
b) Removing the roll feed unit

1) When removing the roll motor, remove the roll feed unit[2] from the main body, and then remove the right cover[3] by removing the two screws[1].



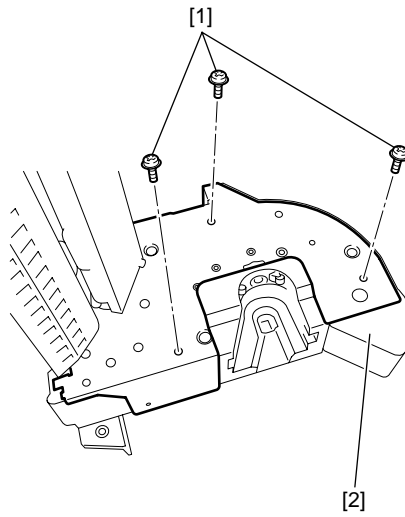
F-4-77

2) Remove the four screws[1], and then remove the left cover[2] and paper tray[3].



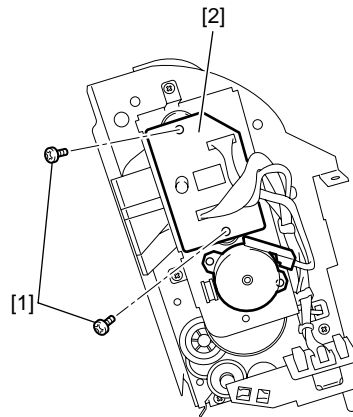
F-4-78

3) Remove the three screws[1], and then remove the right inner cover[2].



F-4-79

4) Remove the two screws[1], and then remove the roll feed unit PCB[2].

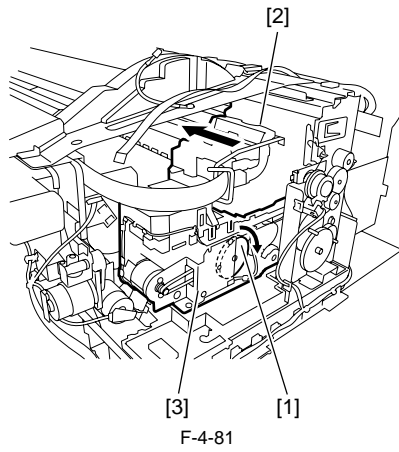


F-4-80

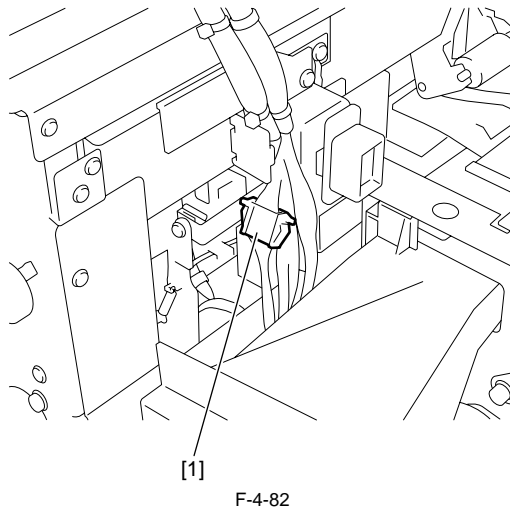
4.3.10 Purge Unit

a) Removing the purge unit

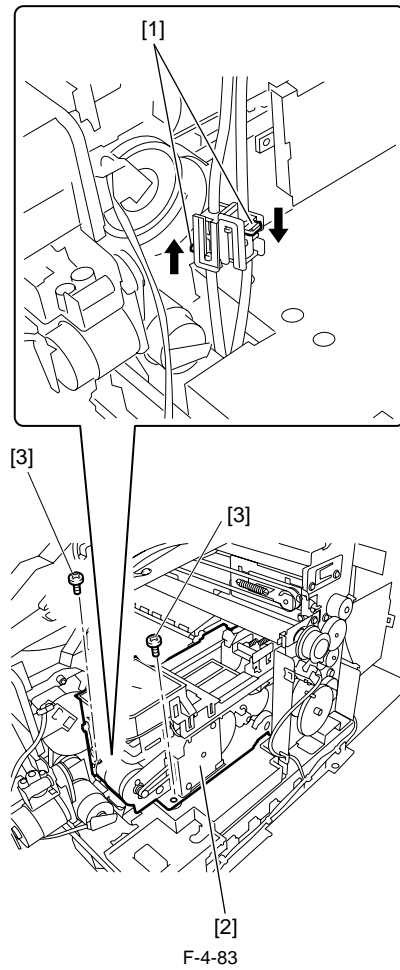
1) Turn the gear [1] of the purge unit [3] in the direction of the arrow to unlock and uncap the carriage. Next, move the carriage [2] onto the platen.



2) Remove connector [1] from the rear of the unit to free the harness from the harness guide.



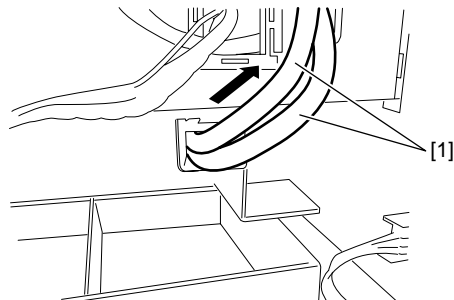
3) Remove three screws[3] and press two claws[1] in the joint of the waste ink tube in the arrow direction to remove purge unit 2].



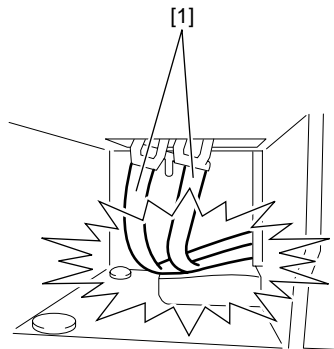
b) Precaution for mounting the purge unit

1) When mounting the purge unit, pull out the waste ink tube[1] from the back of the printer to the position where the marking is visible. If the waste ink tube is not pulled out to the marking position, it may bend and cause ink leakage.

Make sure that there is no break or the twist of the waste ink tube from the front of the printer.



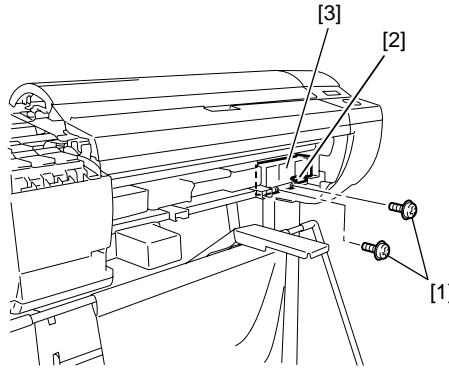
2) Check waste ink tube[1] from the front of the unit to make sure that it is not broken or twisted.



4.3.11 Waste Ink Collection Unit

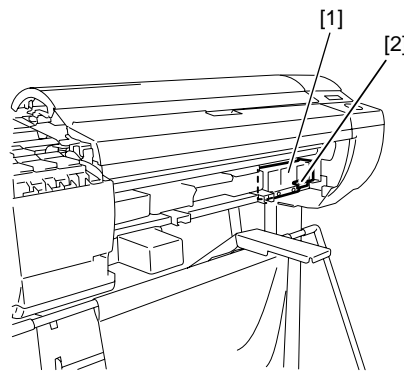
a) Removing the waste ink box

- 1) When removing the waste ink box, first remove the cassette and output tray.
- 2) Remove the two screws[1] and connector cover[2].



F-4-86

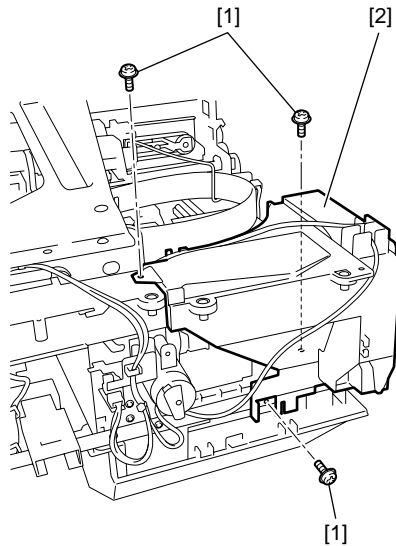
- 3) Disconnect the connector[2], and then remove the waste ink box[1].



F-4-87

b) Removing the mist fan

- 1) When removing the mist fan, first open the top cover, and then remove the output tray, right circle cover, right upper cover, operation panel, mist filter, filter cover, filter, right cover, and right front cover. **Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > External Cover.**
- 2) Remove the three screws[1] and disconnect the connector, and then remove the mist fan[2].

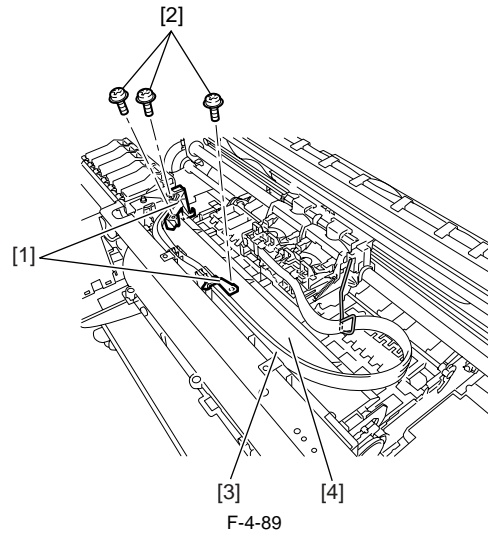


F-4-88

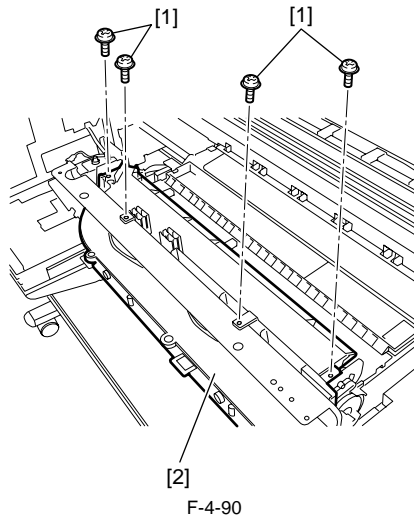
c) Removing the platen duct

- 1) When removing the platen duct, first open the top cover, and then remove the output tray, maintenance cartridge, waste ink box, left and right circle cover, tank cover, right upper cover, operation panel, mist filter, filter cover, filter, right cover, right front cover, and mist fan. **Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > External Cover.**

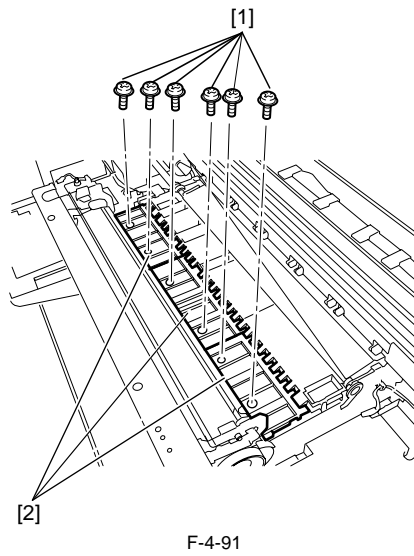
2) Remove the three screws[2], and then remove the two tube guide[1]. Remove the ink tube[3] from the guide of the front duct[4].



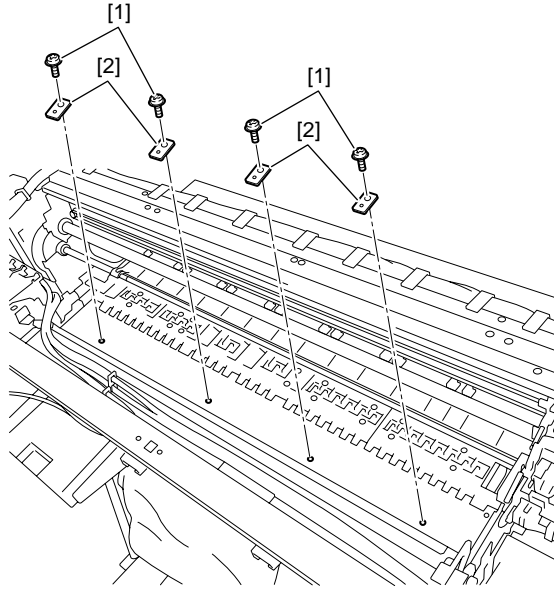
3) Remove the front duct[2] by removing the four screws[1].



4) Remove the platen(front)[2] by removing the six screws[1].

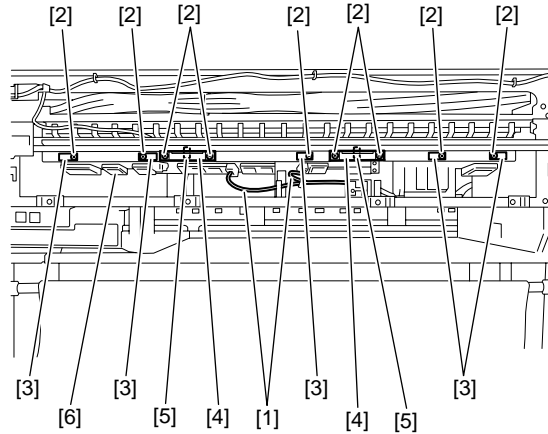


5) Remove the four screws[1] and four bushings[2].



F-4-92

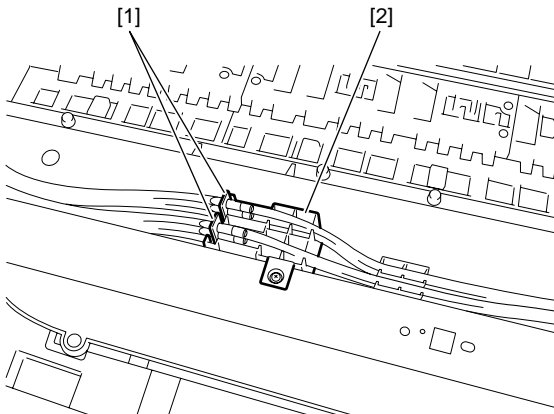
6) Disconnect the two waste ink tubes[3] and remove the nine screws[2] and five bushings[3] and two bushing covers[4] and two springs[5], and then remove the platen duct[6].



F-4-93

d) Note on attaching ink tubes to the front duct

In attaching ink tubes to the front guides, insert joint [1] into guide [2] first and then attach them to the guides, making sure that the tubes are not broken or twisted. The marks appearing on the tubes were used for factory assembly purposes and are not used for servicing.

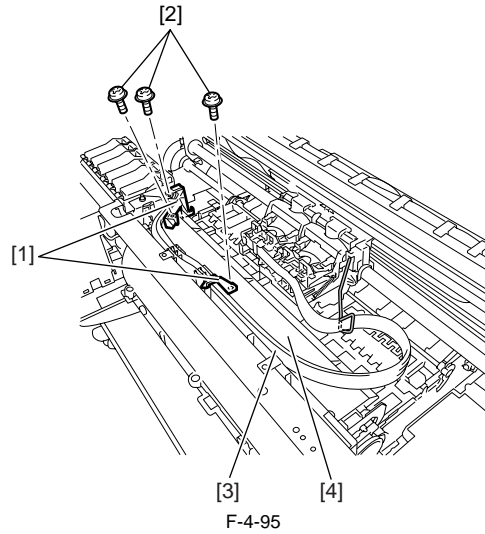


F-4-94

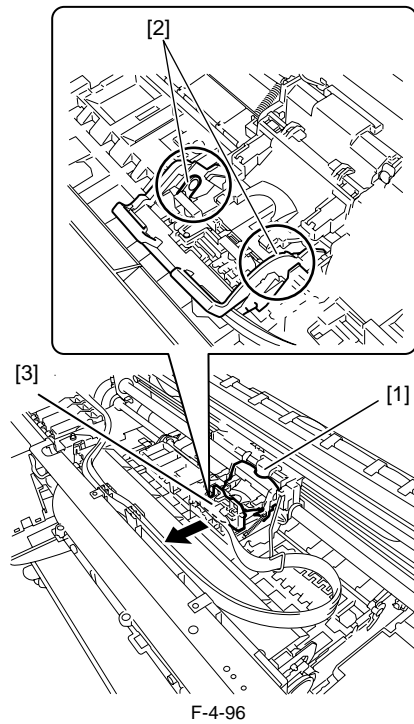
4.3.12 Ink Tank Unit

a) Removing the ink tank unit

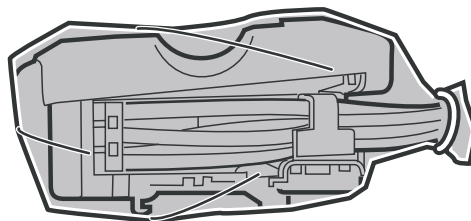
- 1) Drain the ink. Refer to **DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > Draining the ink.**
- 2) Remove the output tray, left and right circle covers, tank cover, left and right covers, left and right front covers, right upper cover, operation panel, mist filter, filter cover, filter, lower rear cover, upper front cover, and lower front cover. Refer to **DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > External Cover.**
- 3) Move the carriage unit to the center. Refer to **1.1.9.a "Removing the Purge Unit"**.
- 4) Remove the three screws[2], and then remove the two tube guide[1].



- 5) Remove the two link levers[2] from the carriage unit[1], and then remove the joint base[3].

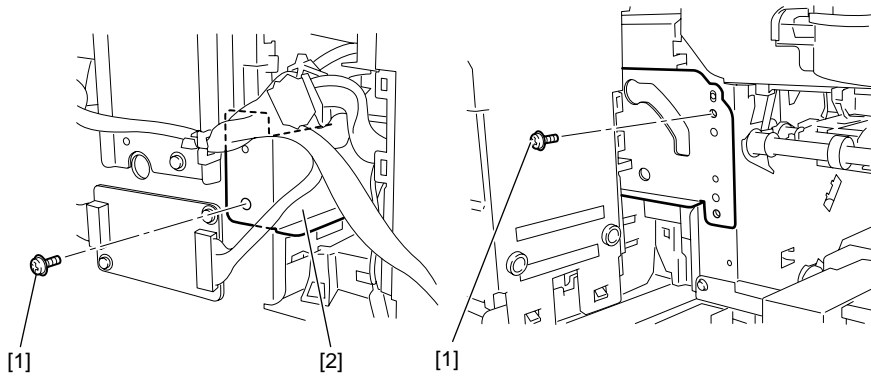


Put the removed joint base in a plastic bag so that ink does not splash.



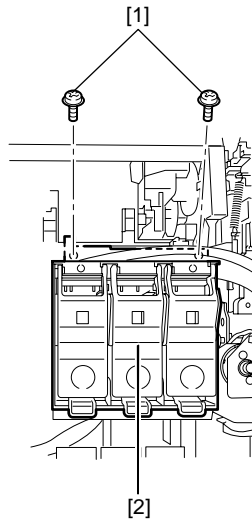
- 6) Remove the cutter unit and cutter lifter unit. Refer to **DISASSEMBLY/REASSEMBLY > Point to Note on Disassembly and Reassembly > Cutter**

7) Remove the two screws[1], and then remove the support plate[2].



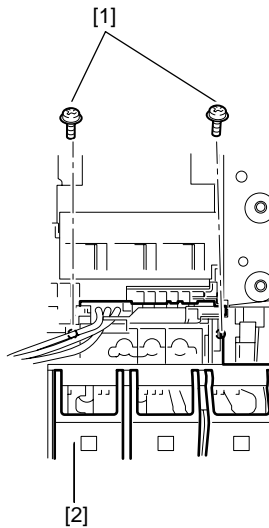
F-4-98

8) Remove the two screws[1] and one joint[3], and then remove the ink tank unit R[2].



F-4-99

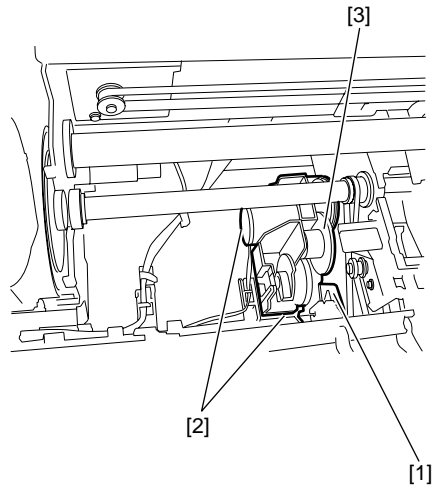
9) Remove the two screws[1] and one joint[3], and then remove the ink tank unit F[2].



F-4-100

b) Removing the valve motor unit.

- 1) When removing the valve motor unit, remove the ink tank cover.
- 2) Remove the two screws[1], disconnect the the two connectors[2], and then remove the valve motor unit[3].

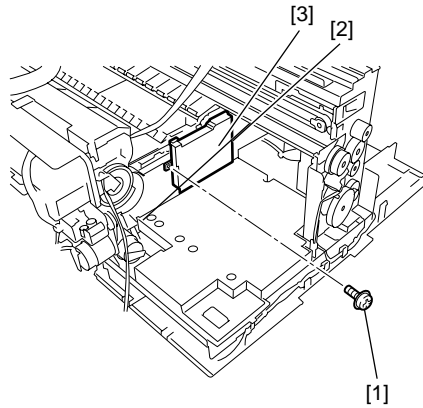


F-4-101

4.3.13 Head Management Sensor

a) Removing the head management sensor

1) Remove the screw[1], disconnect the connector[2], and then remove the head management sensor[3].



F-4-102

b) Procedure after replacing the head management sensor

Since the distance between the head management sensor and the carriage unit varies among printers, the optical axis is factory-adjusted to adjust the non-discharging detection position. When you have replaced the head management sensor or performed assembly/reassembly of surrounding parts that can change the distance between the head management sensor and the carriage unit, readjustment is required.

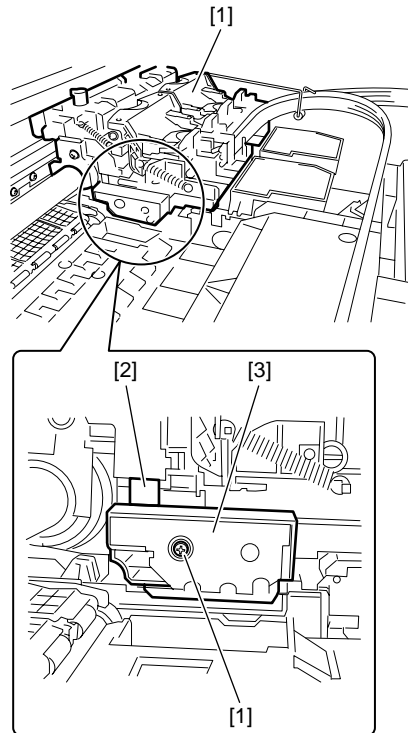
Perform the readjustment in the service mode.

Service mode : SERVICE MODE > ADJUST > NOZZLE CHK POS.

4.3.14 Multi Sensor

a) Removing the multi sensor

1) Remove the screw[1], disconnect the flexible cable[2], and then remove the multi sensor[3].



F-4-103

Since multi sensors have individual electrical specificity, the following are recalibrated at the factory, namely, the optical axis of the sensor, the sensor gain for measuring the printhead height and sensor reproduction. Accordingly, carry out the following adjustments in the service mode whenever replacing the carriage unit or multi sensor.

- * The multi sensor reference plate must be replaced at the same time whenever the carriage or the multi sensor is being replaced.
- * When replacing the carriage unit, refer to Adjustment and Setup > Procedure after Removing or Replacing the Carriage Unit.

- Service mode : SERVICE MODE > ADJUST > GAP CALIB.

- Service mode : SERVICE MODE > ADJUST > PRINT PATTERN > OPTICAL AXIS

Media type : Photo glossy paper

Media size : Media having a width equal to or larger than that of A2-size paper

4.3.15 PCBs

Do not replace the main controller PCB and maintenance cartridge relay PCB(ROM board) at the same time.

These PCBs store important data such as settings and carriage drive time. Before replacement of either PCB, the data stored in it is moved to the other PCB through internal communication so that it can be taken over to the new PCB automatically. This is the reason why the two PCBs should not be replaced at the same time.

If you want to replace both PCBs at the same time, first carry out the procedure "a" and then carry out the procedure "b".

After replacing with the maintenance controller PCB or maintenance cartridge relay PCB which are supplied as service parts, check that the firmware is the latest version.

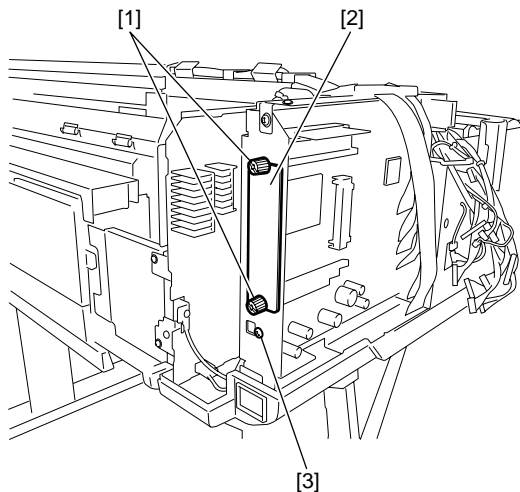
a) Removing the main controller PCB

1) To remove the main controller PCB, open the top cover and remove the roll feed unit, left circle cover, tank cover, left cover, lower rear cover, lower rear left cover and left rear cover.

See DISASSEMBLY/REASSEMBLY > Points to note on Disassembly and Reassembly > External Covers.

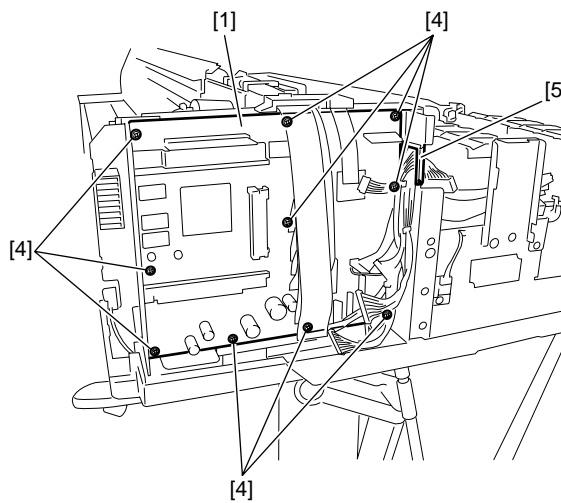
2) Remove all connectors from the main controller PCB.

3) Remove two coin screws[1], interface cover[2] and screw[3] in this order.



F-4-104

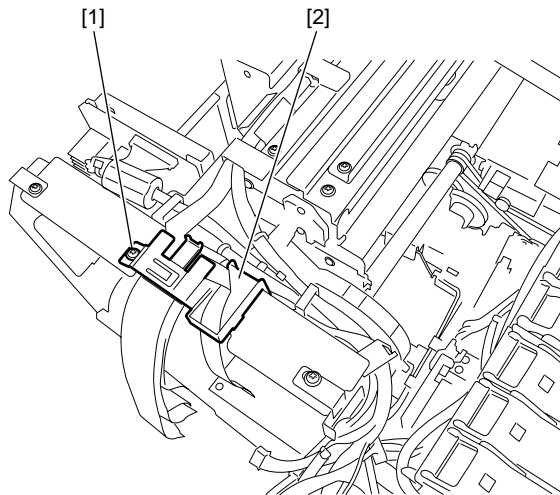
4) Remove the ten screws[4] and free the harness from harness guide[5] to remove the main controller PCB[1].



F-4-105

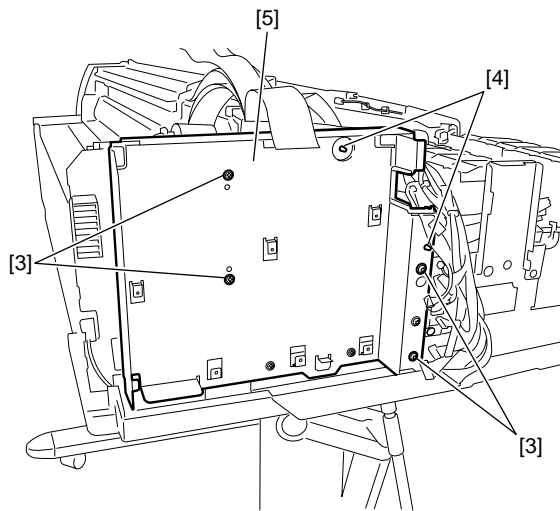
b) Removing the main controller mounting plate

- 1) Remove the main controller PCB.
- 2) Free the harness from the harness guide.
- 3) Remove screw [1] and remove the flexible guide [2].



F-4-106

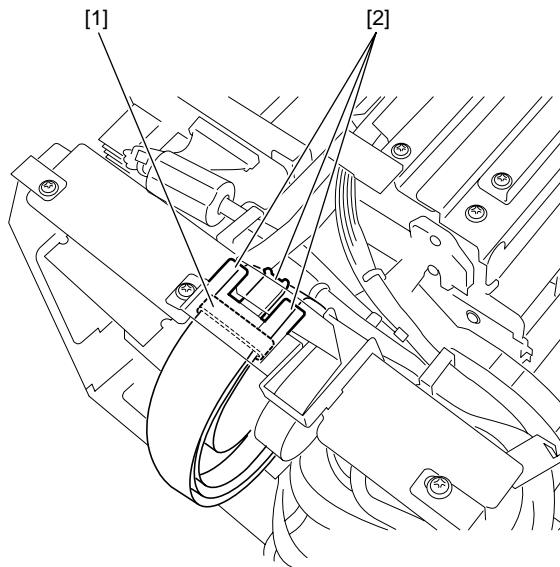
- 4) Remove the four screws [1] and two hooks [2] from the harness guide and remove main controller mounting plate [3].



F-4-107

c) Note on installing the cable holder

In installing the cable holder, secure ferrite core [1] to the flexible cable on the carriage with the cable holder before hooking the flexible cable from the operation panel at three claws [2].



F-4-108

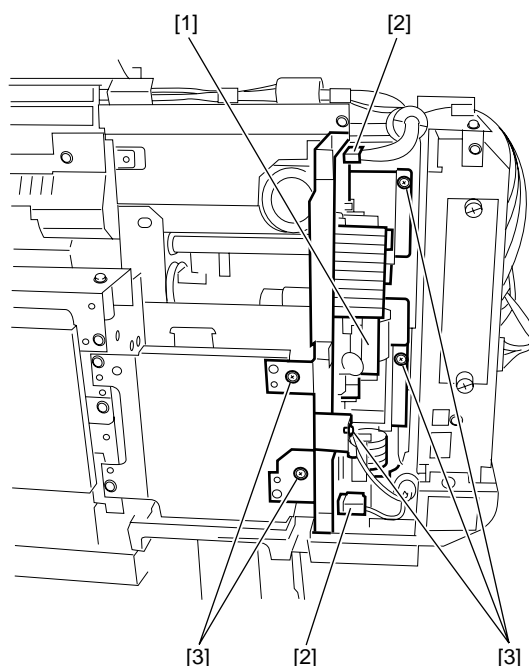
d) Removing the power supply PCB

1) To remove the power supply PCB, open the top cover and remove the roll feed unit, left circle cover, tank cover, left cover, lower rear cover, lower rear left cover and left rear cover.

See DISASSEMBLY/REASSEMBLY > Points to note on Disassembly and Reassembly > External Covers.

2) Disconnect the two connectors[2] from power supply PCB[1].

3) Remove the five screws[3] and remove the power supply PCB[1] together with the mounting plate.



F-4-109

e) Procedure for replacing the maintenance cartridge relay PCB(ROM board)

1) Turn off the printer and unplug the power cord.

2) Replace the maintenance cartridge relay PCB.

3) Plug the power cord to the outlet, and then turn on the printer with the PAPER SOURCE button and INFORMATION button pressed down. (The printer will start up in the PCB Replacement mode.)

4) Check that "Initializing" appears on the display, and then release the buttons. (When the printer enters the PCB Replacement mode, the message lamp goes on.)

5) Wait until "REPLACE MODE" appears on the display.

6) Select "MC BOARD", and then press the ok button

7) Check that "TURN POWER OFF" appears on the display, and then turn off the printer.

8) Turn on the printer.

9) Check the firmware version. If the firmware is not the latest version, update.

f) Procedure for replacing the main controller PCB

1) Turn off the printer and unplug the power cord.

2) Replace the main controller PCB.

3) Plug the power cord to the outlet, and then turn on the printer with the PAPER SOURCE button and INFORMATION button pressed down. (The printer will start up in the PCB Replacement mode.)

4) Check that "Initializing" appears on the display, and then release the buttons. (When the printer enters the PCB Replacement mode, the message lamp goes on.)

5) Wait until "REPLACE MODE" appears on the display.

6) Select "MC BOARD", and then press the ok button

7) Check that "TURN POWER OFF" appears on the display, and then turn off the printer.

8) Turn on the printer.

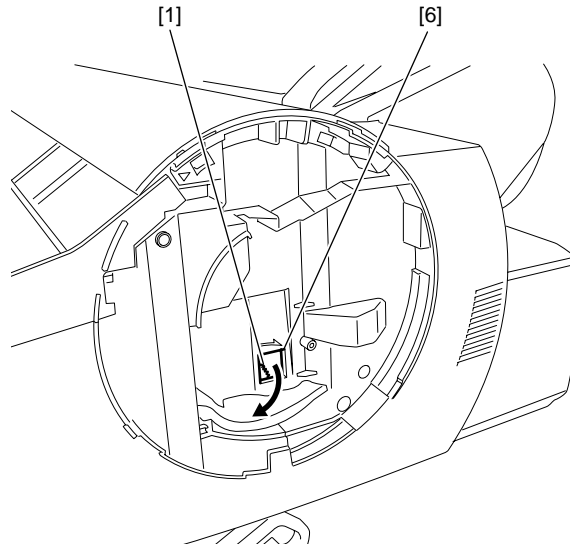
9) Check the firmware version. If the firmware is not the latest version, update.

4.3.16 Opening the Cap/Moving the Wiper Unit

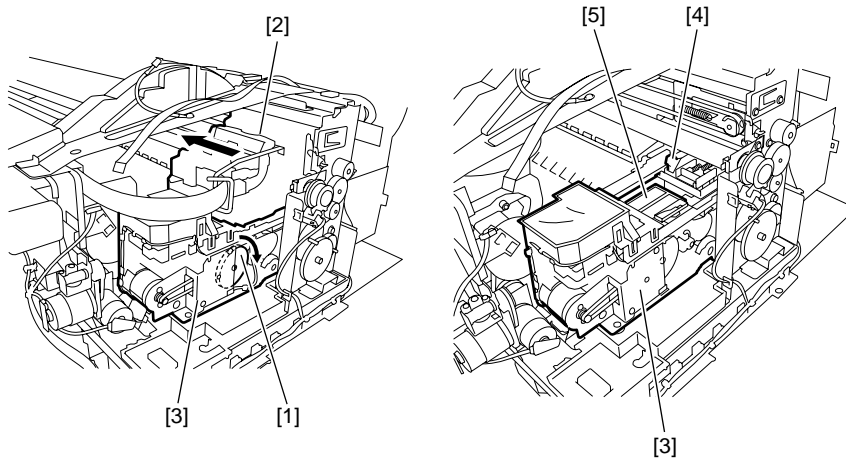
This section explains how to open the cap and ink supply valve manually.
To move the carriage with the power off, you need to release the carriage lock pin and cap manually.

1. Opening the Cap/Releasing the Carriage Lock Pin

- 1) Remove the right circle cover, mist filter. Refer to **DISASSEMBLY/REASSEMBLY > points to Note on Disassembly and Reassembly > External Cover.**
- 2) Turn the gear [1] of the purge unit [3] in the direction of the arrow from the hole [6] of the right cover. The cap [5] and lock pin [4] move down, allowing you to move the carriage [2].



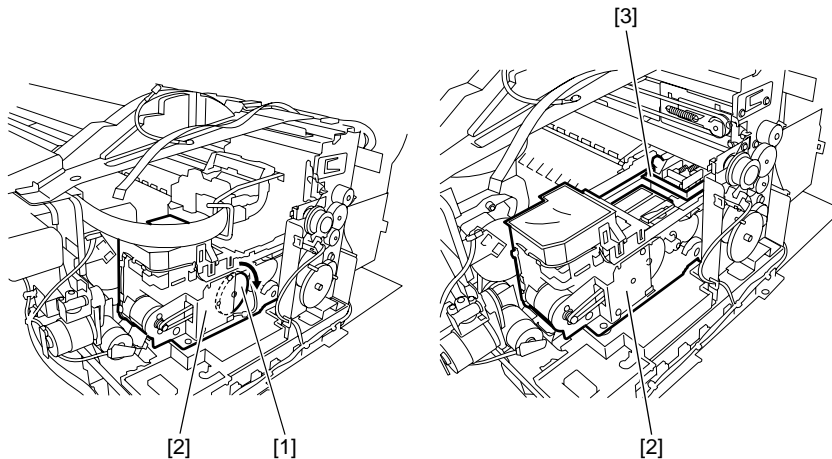
F-4-110



F-4-111

2. Moving the Wiper Unit

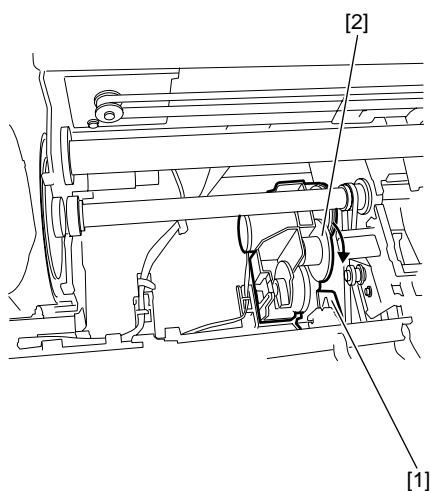
- 1) Open the top cover, and then remove the roll feed unit, output guide, right circle cover, right upper cover, operation panel, mist filter, exhaust filter, right cover, right front cover, cover guide, cover plate(right). Refer to **DISASSEMBLY/REASSEMBLY > points to Note on Disassembly and Reassembly > External Cover.**
- 2) To move the wiper unit [3], turn the gear [1] of the purge unit [2] in the direction of the arrow.



F-4-112

4.3.17 Opening/Closing the Ink Supply Valve

- 1) Open the top cover, and then remove the left circle cover and tank cover.
- 2) To open the ink supply valve, turn the cam [2] in the direction of the arrow and press the link [1].



F-4-113



- If the tube is full of ink, releasing the printhead lock lever with the ink supply valve open can cause the ink to flow back to the ink supply unit, resulting in leakage of ink from the ink supply needle.
- If the ink supply valve is held open due to a problem such as a valve motor error(E02D06), remove the valve motor unit(refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > Ink Tank Unit) and close the ink supply valve.

4.3.18 Draining the Ink

There are two methods of removing the ink, a manual method and an automatic method. There the ink is drained, the ink inside the ink passage totaling about 36g (about 6g x 6 colors) is drained as waste ink.



To prevent ink leakage, be sure to drain the ink inside the ink passage before transporting the printer again.

1. Automatic ink drainage

To perform "automatic ink drainage", select "Main Menu" > "Maintenance" > "Move Printer".



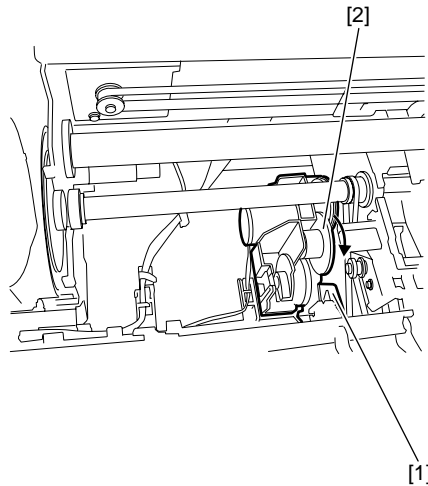
Perform automatic ink drainage again if a power outage or other cause shuts off the power during the operation for automatic ink drainage.

2. Manual Ink Drainage

Perform manual ink drainage when the printer cannot be powered due to a printer's electrical part failure, firmware error, or power supply problem.

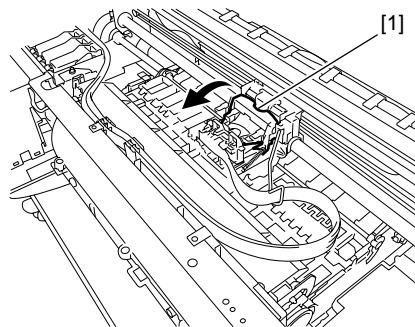
Manual Ink Drainage Procedure

- 1) Open the top cover, and then remove the left and right circle covers, tank cover, right upper cover, operation panel, mist filter, filter cover, filter, and right cover. **Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > External Cover.**
- 2) Move the carriage onto the platen. **Refer to DISASSEMBLY/REASSEMBLY > Points to Note on Disassembly and Reassembly > Opening the Cap/ Move the Wiper Unit.**
- 3) Turn the cam [2] in the direction of the arrow, and then press the link [1] to open the ink supply valve.



F-4-114

- 4) Release both printhead fixer levers [1] to flow the ink from inside the ink tube to the sub-buffer of the ink tank unit.



F-4-115



The sub-buffer can contain 22g of ink. About 6g of ink flows into the sub-buffer each time manual ink drainage is performed.

- 5) Make sure that the ink has been drained completely, turn the cam to close the ink supply valve.

4.4 Applying the Grease

4.4.1 Applying the Grease

Some parts require application of grease when replaced. Apply the grease(special tool) listed below. Smear the grease lightly and evenly with a flat brush or the like.

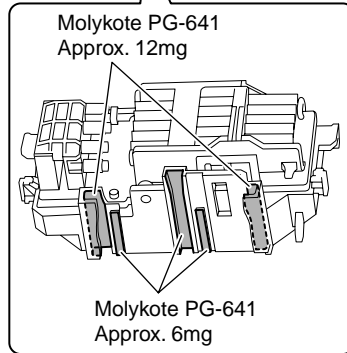
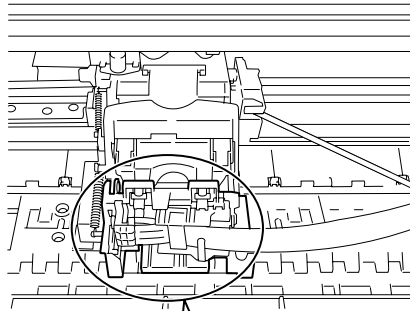
For the printer disassembly/reassembly method, refer to "DISASSEMBLY/REASSEMBLY" and "parts catalog".



Do not apply the grease to locations in which not designated grease may cause poor print quality. Take particular care that grease do not get onto the wiper, cap, and linear scale.

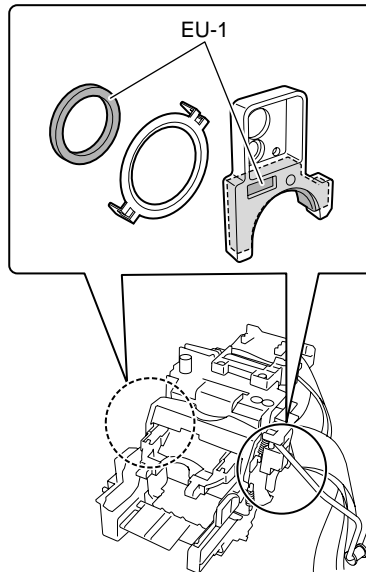
No.	Location	Grease type	Quantity
1	Joint base	Molykote PG-641	Approx.6/12mg
2	Shaft cleaner/oil pad	EU-1	soaks enough.
3	Eject roller bearing	Molykote PG-641	Approx.12mg
4	Eject roller center bearing	Molykote PG-641	Approx.12mg
5	Spur cam	Molykote PG-641	Approx.20mg
6	Pick-up cam	Molykote PG-641	Approx.12mg
7	Separation cam gear	Molykote PG-641	Approx.20mg
8	Release lever	Molykote PG-641	Approx.12mg
9	Return lever arm	Molykote PG-641	Approx.12mg
10	Paper feed inner guide	Molykote PG-641	Approx.12mg
11	Pinch roller unit release shaft	Molykote PG-641	Approx.12mg

a) Carriage unit
1) Joint base



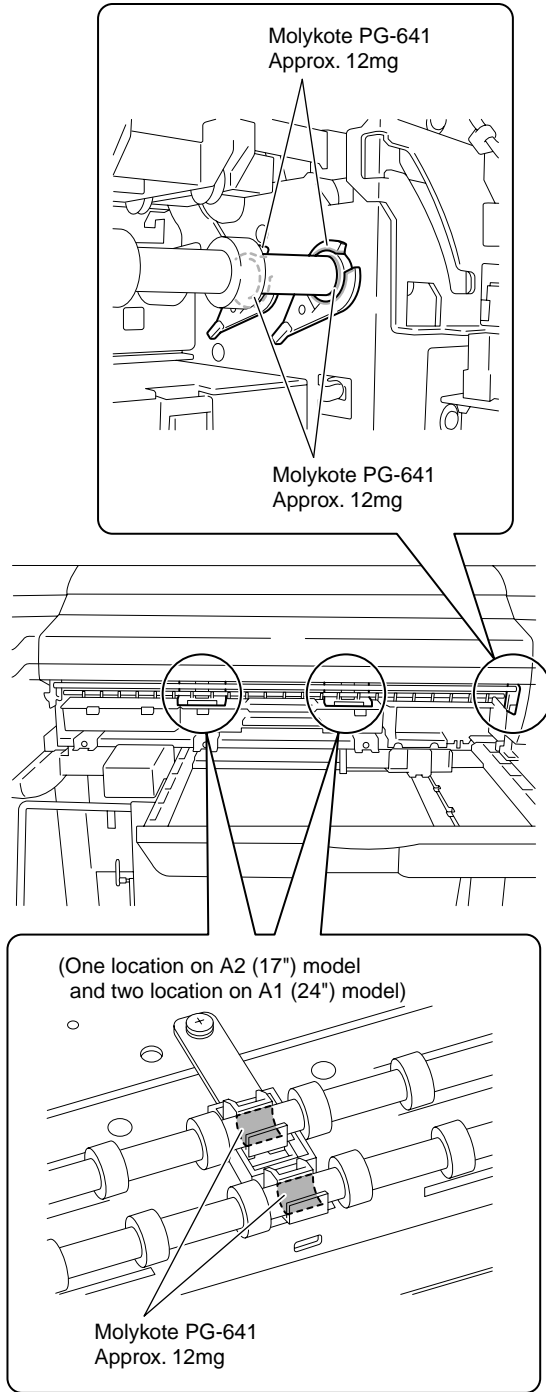
F-4-116

2) Shaft cleaner/oil pad



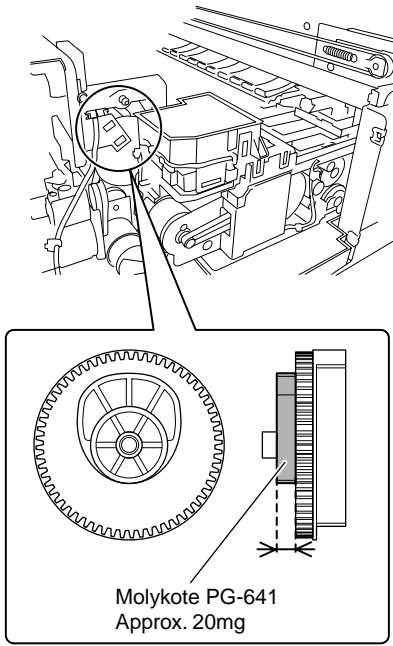
F-4-117

- b) Eject roller unit
- 3) Eject roller bearing
- 4) Eject roller center bearing



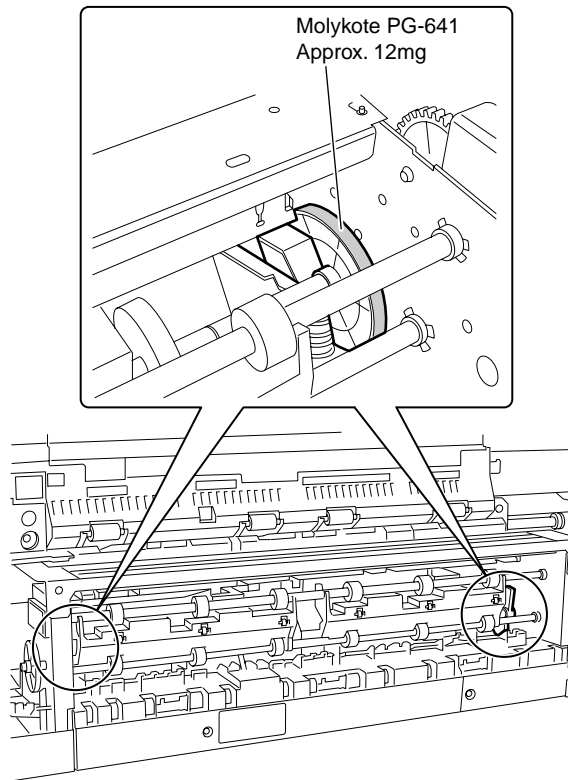
F-4-118

- c) **Spur unit**
- 5) Spur cam



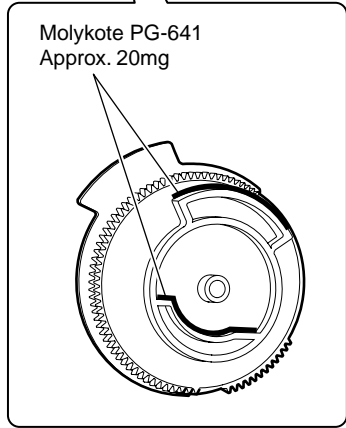
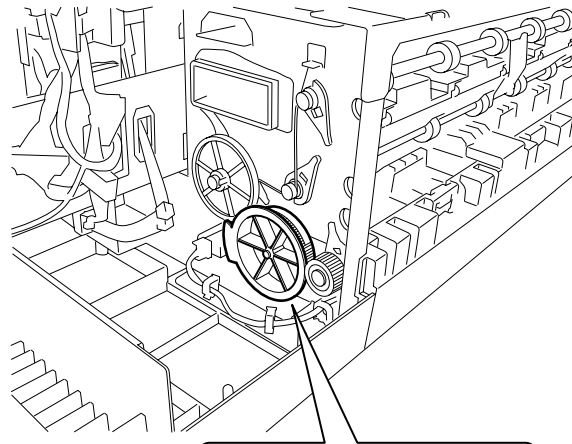
F-4-119

- d) **Pick-up unit**
- 6) Pick-up cam



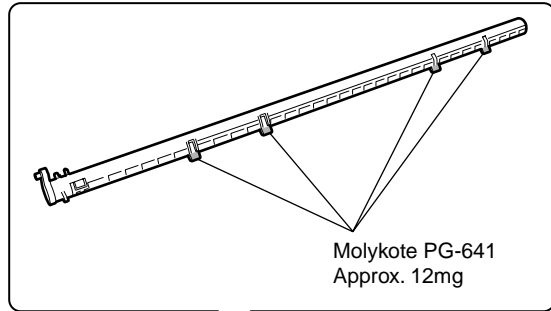
F-4-120

7) Separation cam gear

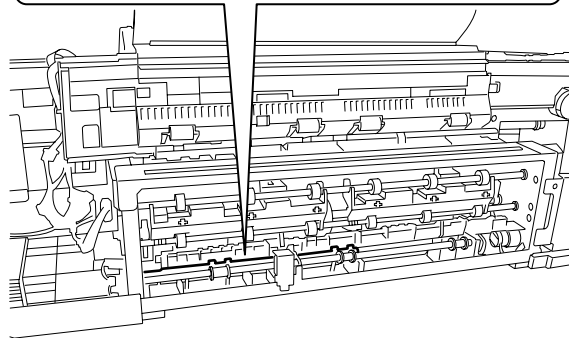


F-4-121

8) Release lever

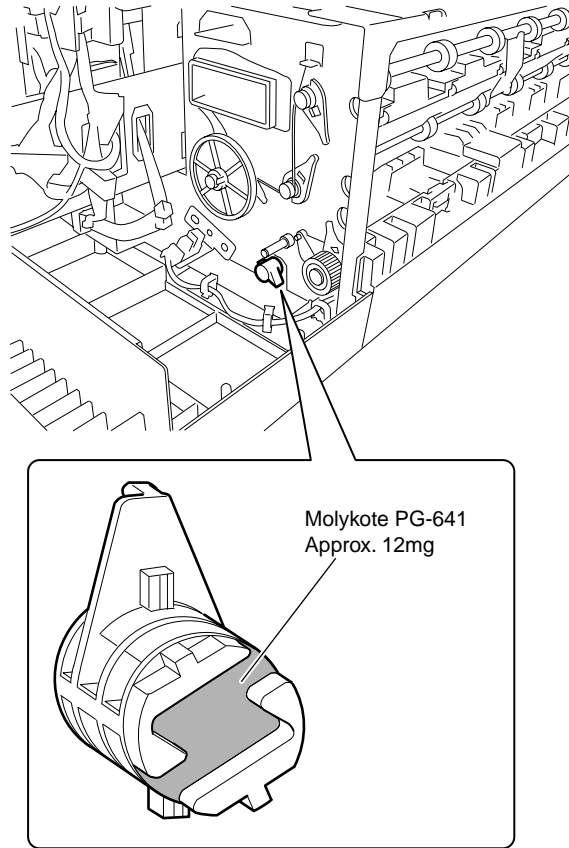


Molykote PG-641
Approx. 12mg



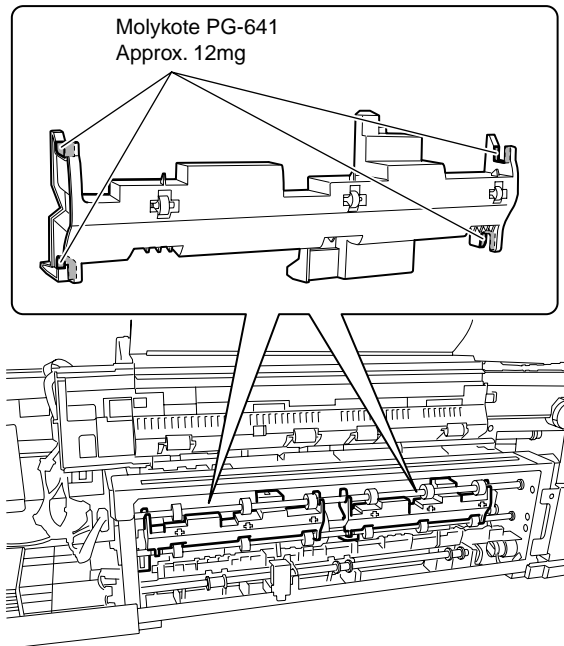
F-4-122

9) Return lever arm



F-4-123

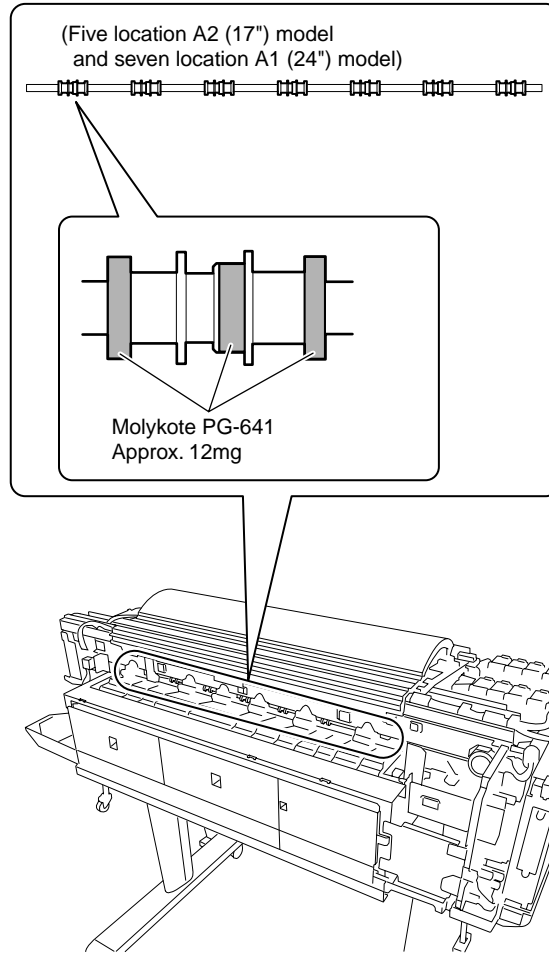
10) Paper feed inner guide



F-4-124

e) Pinch roller unit

11) Pinch roller unit release shaft



F-4-125

4.5 Adjustment and Setup Items

4.5.1 Adjustment Item List

The following adjustment procedures need to be performed when parts have been replaced or removed and then reinstalled:

T-4-1

Adjustment item	Adjustment timing
Multi sensor recalibration	Multi sensor replacement/removal
	Carriage unit replacement/removal
Adjusting wire roller	Wire guide replacement/removal
	Carriage unit replacement/removal
Head management sensor recalibration	Head management sensor replacement/removal
	Carriage unit replacement/removal

4.5.2 Procedure after Replacing the Carriage Unit or Multi Sensor

a) Multi Sensor Recalibration

Since multi sensors have individual electrical specificity, the following are recalibrated at the factory, namely, the optical axis of the sensor, the sensor gain for measuring the printhead height and sensor reproduction. Accordingly, carry out the following adjustments in the service mode whenever replacing the carriage unit or multi sensor.

- Service mode : SERVICE MODE > ADJUST > GAP CALIB.
- Service mode : SERVICE MODE > ADJUST > PRINT PATTERN > OPTICAL AXIS
 - Media type : Photo glossy paper
 - Media size : Media having a width equal to or larger than that of A2-size paper



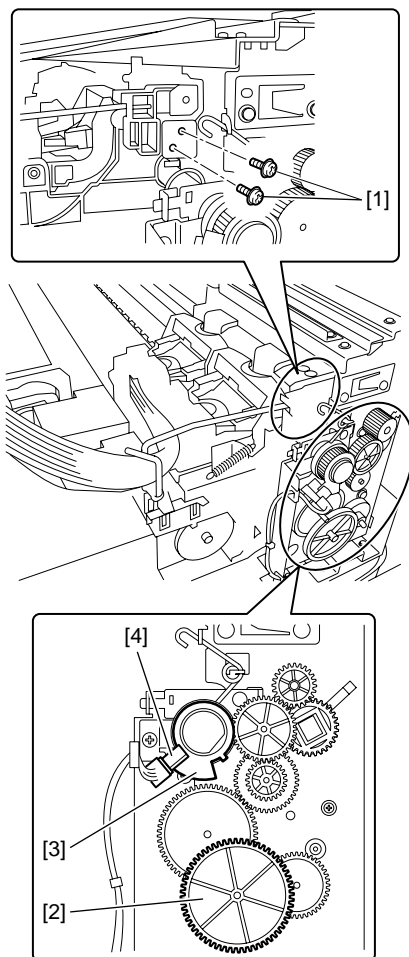
The multi sensor reference plate must be replaced at the same time whenever the carriage or the multi sensor is being replaced.

b) Adjusting the wire roller

To prevent the wire roller mounted on the carriage from contacting the duct and others during carriage operation, perform the following adjustment whenever you have removed or replaced the carriage unit. This adjustment is not required when you have replaced only the multi sensor.

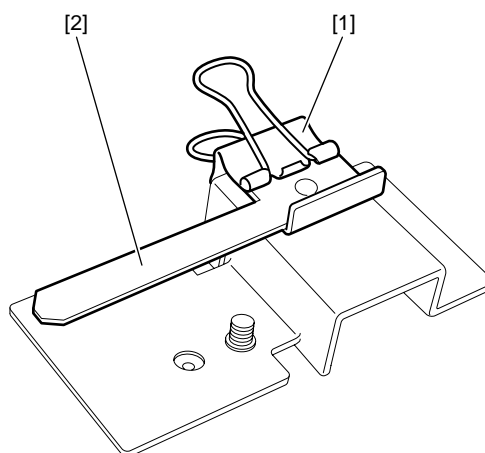
- * Make adjustments with the carriage lock released.
- * Make adjustments with the tube disconnected from the tube guide.

- 1) Remove the ink tube from the wire guide.
- 2) Loosen the two screws [1]
- 3) Turn the gear [2] until the lift cam flag [3] reaches the position shown below.
 - * Bottom position where the sensor [4] light is blocked by the flag (lowest position to which the carriage unit descends)



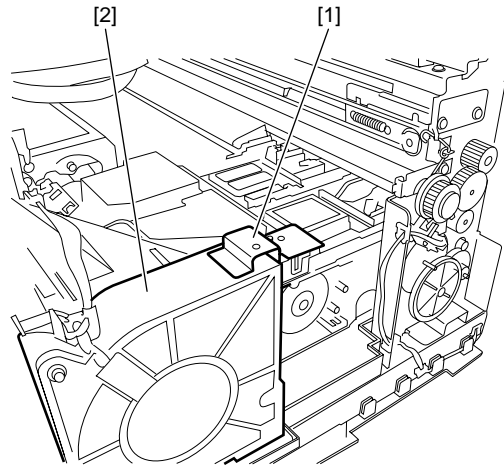
F-4-126

- 4) Remove clip [1] and roller retainer [2] from the carriage wire tool.



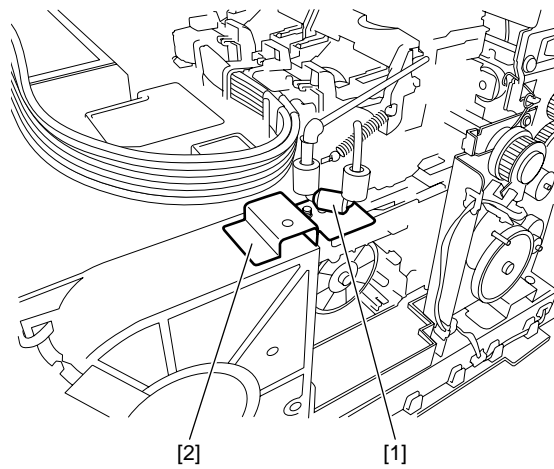
F-4-127

5) Install carriage wire tool [1] in position with its leaf spring being attached to the top of mist fan [2].



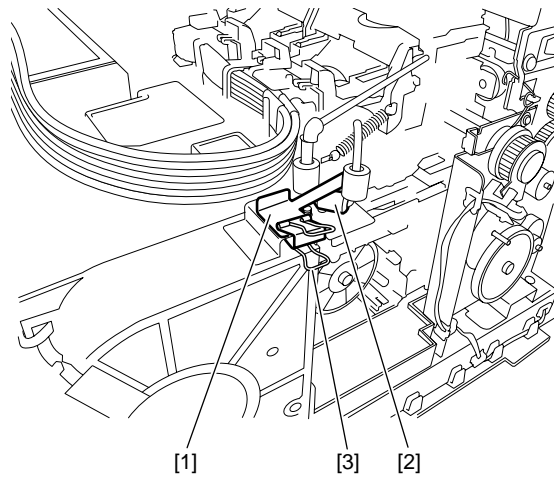
F-4-128

6) Moving the carriage, adjust the height of the wire guide to bring its roller [1] into contact with the top of carriage wire tool [2].



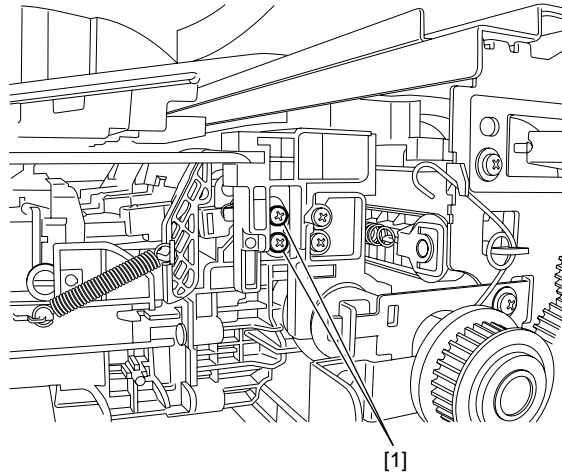
F-4-129

7) Secure roller retainer [1] with clip [3] in contact with the top of roller [2].



F-4-130

8) Retighten two screws [1] loosened in Step 2) to secure the wire guide.



F-4-131

9) Pass the ink tubes through the wire guides.

4.5.3 Procedure after Replacing the Head Management Sensor

Since the distance between the head management sensor and the carriage unit varies among printers, the optical axis is factory-adjusted to adjust the non-discharging detection position. When you have replaced the head management sensor or performed assembly/reassembly of surrounding parts that can change the distance between the head management sensor and the carriage unit, readjustment is required. Perform the readjustment in the service mode.

Service mode : SERVICE MODE > ADJUST > NOZZLE CHK POS.

Chapter 5 MAINTENANCE

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5.1 Periodic Replacement Parts

5.1.1 Periodic Replacement Parts

T-5-1

Level	Periodic Replacement part
User	None
Service Personnel	None

5.2 Consumable Parts

5.2.1 Consumable Parts

T-5-2

	Consumables				Service Mode			
	Name	Part number	Q'ty	Life sheets/ A1	PARTS xx	COUNTER x	States (Error Code)	
Service	SUCTION FAN UNIT	QM3-0701-000	1	15000	A1	A	OK/W1/E146-4001	
	DUCT UNIT, PLATEN	QM3-0801-000	1	15000	B1	B	OK/W1/E146-4001	
	CARRIAGE UNIT	QM3-0804-000	1	15000	D1	D	OK/W1/W2	
	LEVER, L, INK TUBE	QC2-0660-000	1	15000				
	LINK, LEVER, TUBE	QC2-0661-000	2	15000				
	SPRING, TENSION	QC2-1396-000	1	15000				
	PAD, OIL	QC2-0664-000	2	15000				
	HOLDER, WIRE(MECH)	QC2-0663-000	1	15000				
	TUBE GUIDE UNIT	QM3-0704-000	1	15000				
	CLEANING UNIT, R, RAIL, CARRIAGE	QM3-0543-000	1	15000				D1/D3
	CLEANING UNIT, L, RAIL, CARRIAGE	QM3-0542-000	1	15000				D1/D3
	FLEXIBLE CABLE ASS'Y	QM3-0806-000	1	15000				D2
	ENCODER SENSOR UNIT	QM2-3421-000	1	15000	D3			
	SCALE, LINEAR	QC2-6052-000	1	15000				
	CAM, LIFTER	QC2-0675-000	2	15000	D4			
	INK SUPPLY UNIT	QM3-0568-040	1	15000	F1	F	OK/W1/E141-4047	
	PURGE KIT	QM3-0653-040	1	15000	H1	H	OK/W1/E141-4046	
	SENSOR UNIT	QM3-0529-000	1	15000	L1	L	OK/W1/E194-404A	
	MOTOR, 26.4V, DC	QK1-0447-000	1	15000	P1	P	OK/W1/W2	
	ROLLER, PICK-UP	QM3-0619-000	2	15000	Q1	Q	OK/W1/W2	
CAM, ROWEL	QC2-1027-000	1	15000	R1	R	OK/W1/W2		
MIST FAN UNIT	QM3-0799-000	1	15000	V1	V	OK/W1/E146-4001		
MIST FILTER UNIT	QM3-0212-030	1	15000					
User	See "Product Overview> Features> Consumables"							

- After supplies have been replaced, execute [INITIALIZE] > [PARTS COUNTER] > [PARTS xx] in service mode to initialize (clear) the parts counter information.

5.3 Periodic Maintenance

5.3.1 Periodic Maintenance

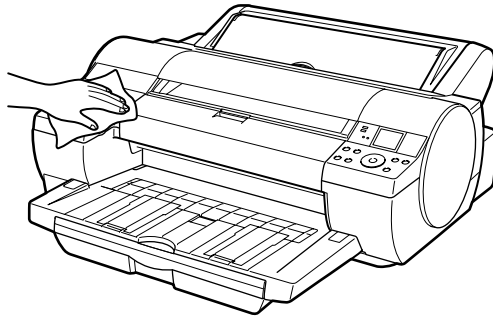
T-5-3

Level	Periodic maintenance
User	Cleaning of ink mist and other substances(about once each month)
Service personnel	None

a) Printer cleaning

To keep up with print quality and prevent troubles, clean the printer about once each month.

1) Wipe the external surfaces of the printer with a cloth moistened with water and then wrung tight and then dry them finally with a dry cloth.



F-5-1

2) Press the [MENU] button to display the main menu.

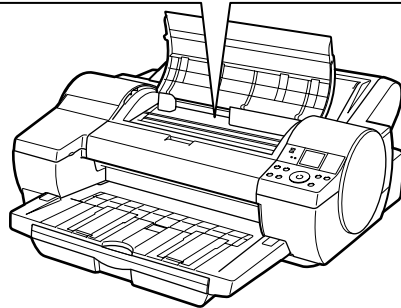
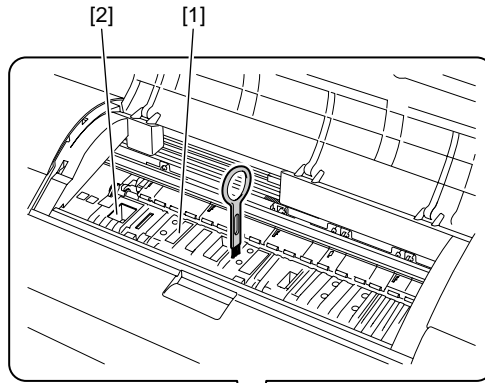
3) Press the ▲ and ▼ buttons to select [Maintenance] and then press the ► button.

4) Press the ▲ and ▼ buttons to select [Platen Cleaning] and press the ► button.

5) Press the ▲ and ▼ buttons to select [Yes] and press [OK] button.

6) Open the top cover.

7) If chad has deposited on suction port [1] on the platen or in borderless printing ink receiving channel [2], wipe it off with the cleaner brush.

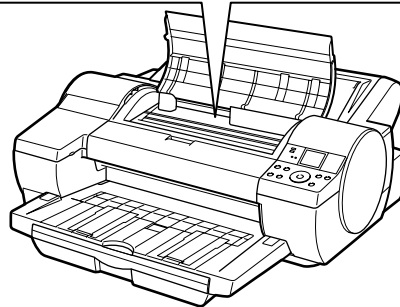
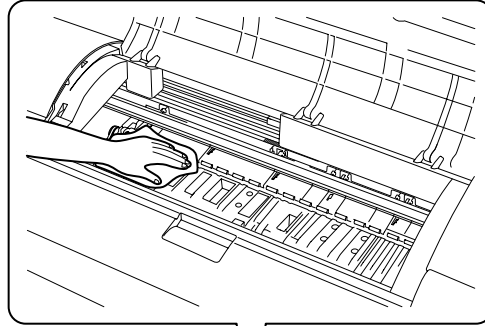


F-5-2

MEMO:

Rinse the cleaner brush with water when it gets dirty.

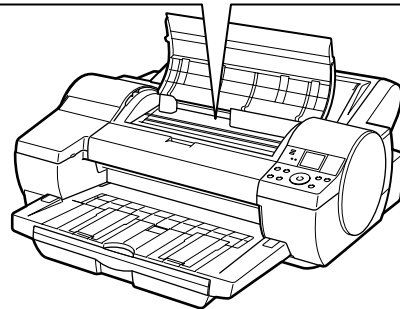
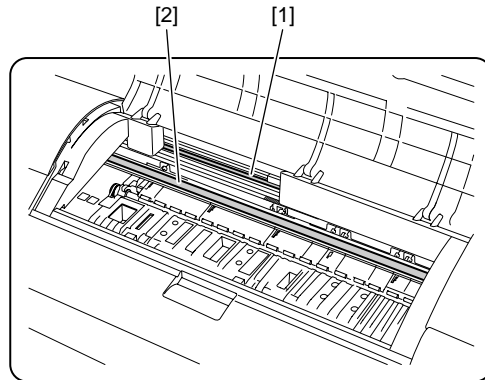
8) Wipe off dirt inside the top cover with a cloth moistened with water and then wrung tight. Wipe off ink smears from the entire surface of the platen, the pinch roller unit, borderless printing ink receiving channel and else.



F-5-3

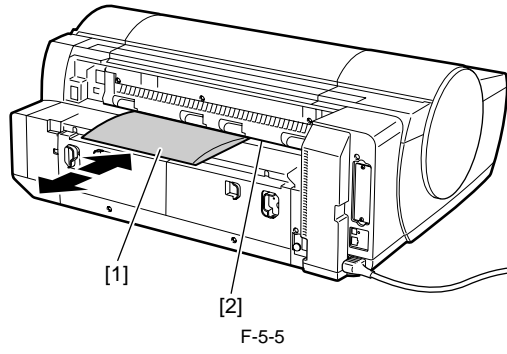


- Do not dry the interiors of the top cover with a dry cloth. Electrostatic charges could make the internal components susceptible to dirt, resulting in degraded print quality.
- Do not use flammable solvents, such as thinner and benzine, on the printer. Solvents coming into contact with any electrical parts inside the printer could result in fires or electrical shock hazards.
- Do not touch linear scale [1] and carriage shaft [2].



F-5-4

9) Remove the roll feed unit and fold plain paper [1] two to three times and then insert through the printer rear into the underside [2] of the pinch roller unit to wipe off dirt on the pinch roller unit.



Chapter 6 TROUBLESHOOTING

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J1001			
Pin Number	Signal name	IN/OUT	Function
7	+3.3V	OUT	Power supply (+3.3V)
8	+3.3V	OUT	Power supply (+3.3V)
9	+3.3V	OUT	Power supply (+3.3V)
10	N.C.	-	N.C.
11	GND	-	GND
12	PME#	IN	Power management enable signal
13	INTA#	IN	interrupt signal
14	GND	-	GND
15	RST#	OUT	PCI reset signal
16	CLK	OUT	PCI clock signal
17	GNT#	OUT	Grant signal
18	GND	-	GND
19	REQ#	IN	Request signal
20	AD31	IN/OUT	Address and data signal 31
21	AD30	IN/OUT	Address and data signal 30
22	AD29	IN/OUT	Address and data signal 29
23	AD28	IN/OUT	Address and data signal 28
24	GND	-	GND
25	AD27	IN/OUT	Address and data signal 27
26	AD26	IN/OUT	Address and data signal 26
27	AD25	IN/OUT	Address and data signal 25
28	AD24	IN/OUT	Address and data signal 24
29	CBE3#	IN/OUT	Bus command and byte enable signal 3
30	IDSEL	OUT	Initialization device select signal
31	GND	-	GND
32	GND	-	GND
33	AD23	IN/OUT	Address and data signal 23
34	AD22	IN/OUT	Address and data signal 22
35	AD21	IN/OUT	Address and data signal 21
36	AD20	IN/OUT	Address and data signal 20
37	GND	-	GND
38	AD19	IN/OUT	Address and data signal 19
39	AD18	IN/OUT	Address and data signal 18
40	AD17	IN/OUT	Address and data signal 17
41	AD16	IN/OUT	Address and data signal 16
42	CBE2#	OUT	Bus command and byte enable signal 2
43	GND	-	GND
44	FRAME#	IN/OUT	Cycle frame signal
45	IRDY#	IN/OUT	Initiator redy signal
46	TRDY#	IN/OUT	Target redy signal
47	DEVSEL#	IN/OUT	Device select signal
48	GND	-	GND
49	STOP#	IN/OUT	Stop signal
50	LOCK#	IN/OUT	Lock signal
51	PERP#	IN/OUT	Parity error signal
52	SERR#	IN/OUT	System error signal
53	PAR	IN/OUT	Parity signal
54	CBE1#	IN/OUT	Bus command and byte enable signal 1
55	GND	-	GND
56	GND	-	GND
57	AD15	IN/OUT	Address and data signal 15
58	AD14	IN/OUT	Address and data signal 14
59	AD13	IN/OUT	Address and data signal 13
60	AD12	IN/OUT	Address and data signal 12
61	GND	-	GND
62	AD11	IN/OUT	Address and data signal 11
63	AD10	IN/OUT	Address and data signal 10
64	AD9	IN/OUT	Address and data signal 09
65	AD8	IN/OUT	Address and data signal 08
66	CBE0#	IN/OUT	Bus command and byte enable signal 0
67	GND	-	GND
68	AD7	IN/OUT	Address and data signal 07
69	AD6	IN/OUT	Address and data signal 06
70	AD5	IN/OUT	Address and data signal 05

J1001			
Pin Number	Signal name	IN/OUT	Function
71	AD4	IN/OUT	Address and data signal 04
72	GND	-	GND
73	AD3	IN/OUT	Address and data signal 03
74	AD2	IN/OUT	Address and data signal 02
75	AD1	IN/OUT	Address and data signal 01
76	AD0	IN/OUT	Address and data signal 00
77	GND	-	GND
78	HDD_LED	-	N.C.
79	+5V	OUT	Power supply (+5V)
80	+5V	OUT	Power supply (+5V)
81	+5V	OUT	Power supply (+5V)
82	+3.3V	OUT	Power supply (+3.3V)
83	+3.3V	OUT	Power supply (+3.3V)
84	+3.3V	OUT	Power supply (+3.3V)
85	GND	-	GND
86	GND	-	GND
87	GND	-	GND
88	GND	-	GND

T-6-3

J1201			
Pin Number	Signal name	IN/OUT	Function
1	TX+	OUT	Ethernet data TX line (+)
2	TX-	OUT	Ethernet data TX line (-)
3	RX+	IN	Ethernet data RX line (+)
4	-	-	Not used
5	-	-	Not used
6	RX-	IN	Ethernet data RX line (-)
7	-	-	Not used
8	-	-	Not used
9	GREEN_LED_C	OUT	Link LED (green:100Mb/s) cathode terminal
10	GREEN_LED_A	OUT	Link LED (green:100Mb/s) anode terminal
11	YELLOW_LED_C	OUT	Link LED (yellow:10Mb/s) cathode terminal
12	YELLOW_LED_A	OUT	Link LED (yellow:10Mb/s) anode terminal

T-6-4

J1801			
Pin Number	Signal name	IN/OUT	Function
1	HD1_VHFB+	OUT	VH feedback voltage +
2	HD1_VHFB-	OUT	VH feedback voltage -
3	VH	IN	Power supply (+21.5V)
4	GND	-	GND
5	VH	IN	Power supply (+21.5V)
6	GND	-	GND
7	RGV20(VCC)	IN	Power supply (+21.5V)
8	GND	-	GND
9	VM	IN	Power supply (+26V)
10	GND	-	GND
11	VM2	IN	Power supply (+26V)
12	GND	-	GND
13	VH_ENB	OUT	VH power supply ON/OFF signal
14	PW_CONT	OUT	Normal/power saving switch signal

T-6-5

J2511			
Pin Number	Signal name	IN/OUT	Function
1	+3V	OUT	Power supply (+3.3V)
2	GND	-	GND

J2511			
Pin Number	Signal name	IN/OUT	Function
3	CUTTER_R_SNS_R	IN	Cutter right detection sensor signal
4	CUTTER_OUTA	OUT	Cutter motor driver signal A
5	CUTTER_OUTB	OUT	Cutter motor driver signal B
6	+3V	OUT	Power supply (+3.3V)
7	GND	-	GND
8	HAKUSHA_CAM_SNS_R	IN	Spur cam sensor output signal
9	HAKUSHA_MOTOR_AM	OUT	Spur motor drive signal AM
10	HAKUSHA_MOTOR_AP	OUT	Spur motor drive signal AP
11	FAN_VM	OUT	Power supply (+26V)
12	MIST_FAN_LOCK	IN	Mist fan lock signal
13	MIST_FAN_PWM	OUT	Mist fan duty control signal
14	GND	-	GND

T-6-6

J2512			
Pin Number	Signal name	IN/OUT	Function
1	FAN_VM	OUT	Power supply (+26V)
2	PLATEN_FAN_LOCK	IN	suction fan lock signal
3	PLATEN_FAN_PWM	OUT	suction fan duty control signal
4	GND	-	GND
5	MENT_SDA	IN/OUT	Maintenance cartridge rom control signal (data)
6	MENT_SCL	IN/OUT	Maintenance cartridge rom control signal (clock)
7	GND	-	GND
8	MENT_3V		Power supply (+3.3V)
9	SNS_3V	OUT	Power supply (+3.3V)
10	GND	-	GND
11	CST_PAPER_NONE_SNS	IN	Cassette paper detection sensor output signal
12	SNS_3V	OUT	Power supply (+3.3V)
13	GND	-	GND
14	PE_SNS	IN	Paper detection sensor output signal
15	SNS_3V	OUT	Power supply (+3.3V)
16	GND	-	GND
17	LIFT_CAM_SNS	IN	Lift cam sensor output signal

T-6-7

J2601			
Pin Number	Signal name	IN/OUT	Function
1	POWER_ON	IN	Power switch signal
2	PM_START	OUT	Power supply (+5V)
3	BUZZER	OUT	Buzzer control signal
4	PDODATA	OUT	Panel IC control signal
5	+3.3V	OUT	Power supply (+3.3V)
6	PDI_DATA	IN	Panel IC data signal
7	GND	-	GND
8	/PANEL RESET	OUT	Panel reset signal
9	GND	-	GND
10	PDOPCLK	OUT	Panel IC clock signal
11	PANEL_5V	OUT	Power supply (+5V)
12	/PDOCS_L	OUT	Panel supply chip select signal

T-6-8

J2703			
Pin Number	Signal name	IN/OUT	Function
1	OPT_5V	OUT	Power supply (+5V)
2	GND	-	GND
3	ROLL_CAM_SNS	IN	Roll cam sensor signal
4	ROLL_PAPER_SNS	IN	Roll media sensor signal
5	ROLL_UNIT	IN	Roll unit detection signal

J2703			
Pin Number	Signal name	IN/OUT	Function
6	VM2	OUT	Power supply (+26V)
7	VM2	OUT	Power supply (+26V)
8	/ROLL_SLEEP	OUT	Roll motor driver sleep signal
9	ROLL_STB	OUT	Roll motor driver strobe signal
10	ROLL_DAT	OUT	Roll motor driver data signal
11	ROLL_CLK	OUT	Roll motor driver clock signal
12	GND	-	GND
13	GND	-	GND

T-6-9

J2712			
Pin Number	Signal name	IN/OUT	Function
1	CST_OUTB	OUT	Cassette motor drive signal B
2	CST_OUTA	OUT	Cassette motor drive signal A
3	GND	-	GND
4	CST_ENCA	IN	Cassette encoder output signal A
5	SNS_5V	OUT	Power supply (+5V)
6	CST_ENCB	IN	Cassette encoder output signal B
7	SNS_3V	OUT	Power supply (+3.3V)
8	GND	-	GND
9	CST_CAM_SNS		Cassette cam sensor output signal
10	SNS_3V	OUT	Power supply (+3.3V)
11	GND	-	GND
12	CST_EARLY_SNS	IN	Cassette pick-up sensor output signal
13	SNS_3V	OUT	Power supply (+3.3V)
14	GND	-	GND
15	CST_UNIT_SNS	IN	Cassette detection sensor output signal

T-6-10

J2801			
Pin Number	Signal name	IN/OUT	Function
1	LF_OUTB	OUT	Feed motor drive signal B
2	LF_OUTA	OUT	Feed motor drive signal A

T-6-11

J3011			
Pin Number	Signal name	IN/OUT	Function
1	LIFT_OUTCOM	OUT	Lift motor Power supply
2	LIFT_OUTAP	OUT	Lift motor drive signal AP
3	LIFT_OUTAM	OUT	Lift motor drive signal AM
4	LIFT_OUTBP	OUT	Lift motor drive signal BP
5	LIFT_OUTBM	OUT	Lift motor drive signal BM
6	GND	-	GND
7	FUTO_CLMP	OUT	Head management sensor unit clamp signal
8	FUTO_XLEDON	OUT	Head management sensor unit LED ON/OFF signal
9	SNS_5V		Power supply (+5V)
10	FUTO_XCMP0	IN	Head management sensor unit skew detection signal
11	PUMP_OUTB	OUT	Pump motor drive signal B
12	PUMP_OUTA	OUT	Pump motor drive signal A
13	GND	-	GND
14	PUMP_ENCA	IN	Pump encoder output signal A
15	SNS_5V		Power supply (+5V)
16	PUMP_ENCB	IN	Pump encoder output signal B
17	PUMP_CAM_3V	OUT	Power supply (+3.3V)
18	GND	-	GND
19	PUMP_CAM_SNS	IN	Pump cam sensor output signal

T-6-12

J3101			
Pin Number	Signal name	IN/OUT	Function
1	CR_HWP	IN	Carriage motor hole device W-phase + signal
2	CR_HWM	IN	Carriage motor hole device W-phase - signal
3	CR_W	OUT	Carriage motor W-phase drive signal
4	CR_HVM	IN	Carriage motor hole device V-phase - signal
5	CR_U	OUT	Carriage motor U-phase drive signal
6	GND	-	GND
7	CR_V	OUT	Carriage motor V-phase drive signal
8	SNS_5V		Power supply (+5V)
9	N.C.	-	N.C
10	CR_HVP	IN	Carriage motor hole device V-phase + signal
11	CR_HUM	IN	Carriage motor hole device U-phase - signal
12	CR_HUP	IN	Carriage motor hole device U-phase + signal

T-6-13

J3202			
Pin Number	Signal name	IN/OUT	Function
1	TANK_DAT0	IN/OUT	Ink tank data signal 0
2	TANK_DAT1	IN/OUT	Ink tank data signal 1
3	TANK_3V	OUT	Power supply (+3.3V)
4	TANK_DAT2	IN/OUT	Ink tank data signal 2
5	GND	-	GND
6	TANK_CLK	OUT	Ink tank clock signal
7	TANK_DAT3	IN/OUT	Ink tank data signal 3
8	TANK_DAT4	IN/OUT	Ink tank data signal 4
9	TANK_3V	OUT	Power supply (+3.3V)
10	TANK_DAT5	IN/OUT	Ink tank data signal 5
11	GND	-	GND
12	TANK_CLK	OUT	Ink tank clock signal
13	GND	-	GND
14	INK_SNS0	IN	Ink detection sensor output signal 0
15	INK_SNS1	IN	Ink detection sensor output signal 1
16	INK_SNS2	IN	Ink detection sensor output signal 2
17	GND	-	GND
18	INK_SNS3	IN	Ink detection sensor output signal 3
19	INK_SNS4	IN	Ink detection sensor output signal 4
20	INK_SNS5	IN	Ink detection sensor output signal 5

T-6-14

J3211			
Pin Number	Signal name	IN/OUT	Function
1	SNS_3V	OUT	Power supply (+3.3V)
2	GND	-	GND
3	VALVE_DETECT_SNS	IN	Valve open/closed detection sensor output signal
4	VALVE_MOTOR_AM	OUT	Valve motor drive signal AM
5	VALVE_MOTOR_AP	OUT	Valve motor drive signal AP
6	LF_HP_SNS_3V	OUT	Power supply (+3.3V)
7	GND	-	GND
8	LF_HP_SNS	IN	Feed roller HP sensor output signal
9	GND	-	GND
10	LF_ENCA	IN	Feed roller encoder output signal A
11	RGV5	OUT	Power supply (+5V)
12	LF_ENCB	IN	Feed roller encoder output signal B

T-6-15

J3402			
Pin Number	Signal name	IN/OUT	Function
1	GND	-	GND
2	GND	-	GND
3	GND	-	GND
4	GND	-	GND
5	GND	-	GND
6	GND	-	GND
7	VH	OUT	Power supply (+21.5V)
8	VH	OUT	Power supply (+21.5V)
9	VH	OUT	Power supply (+21.5V)
10	VH	OUT	Power supply (+21.5V)
11	VH	OUT	Power supply (+21.5V)
12	VH	OUT	Power supply (+21.5V)
13	VH	OUT	Power supply (+21.5V)
14	VH	OUT	Power supply (+21.5V)
15	VH	OUT	Power supply (+21.5V)
16	VH	OUT	Power supply (+21.5V)
17	VH	OUT	Power supply (+21.5V)
18	VH	OUT	Power supply (+21.5V)
19	VH	OUT	Power supply (+21.5V)
20	VH	OUT	Power supply (+21.5V)
21	VH	OUT	Power supply (+21.5V)
22	HD1_VHFBH	IN	VH feed back voltage +
23	HD1_VHFBG	IN	VH feed back voltage -
24	GND	-	GND
25	GND	-	GND
26	GND	-	GND
27	GND	-	GND
28	GND	-	GND
29	GND	-	GND
30	GND	-	GND

T-6-16

J3411			
Pin Number	Signal name	IN/OUT	Function
1	TH2_OUT	IN	Thermistor output signal
2	GND	-	GND
3	RHV_OUT	IN	Humidity sensor output signal
4	SNS_5V		Power supply (+5V)

T-6-17

J3701			
Pin Number	Signal name	IN/OUT	Function
1	H1-D-DATA-7-OD	OUT	Odd head L data signal 7(D)
2	GND	-	GND
3	H1-E-HE-8	OUT	Head L heat enable signal8(E)
4	GND	-	GND
5	H1-E-DATA-8-OD	OUT	Odd head L data signal 8(E)
6	GND	-	GND
7	H1-F-DATA-10-OD	OUT	Odd head L data signal 10(F)
8	GND	-	GND
9	H1-E-DATA-9-OD	OUT	Odd head L data signal 9(E)
10	GND	-	GND
11	H1-F-HE-10	OUT	Head L heat enable signal10(F)
12	GND	-	GND
13	H1-F-DATA-11-OD	OUT	Odd head L data signal 11(F)
14	GND	-	GND
15	H1-F-HE-11	OUT	Head L heat enable signal11(F)
16	GND	-	GND

J3701			
Pin Number	Signal name	IN/OUT	Function
17	H1-F-DATA-11-EV	OUT	Even head L data signal11(F)
18	GND	-	GND
19	H1-F-DATA-10-EV	OUT	Even head L data signal10(F)
20	GND	-	GND
21	H1-E-HE-9	OUT	Head L heat enable signal9(E)
22	GND	-	GND
23	H1-E-DATA-9-EV	OUT	Even head L data signal9(E)
24	H1-DLD LICC2	OUT	Head L analogue switch latch signal
25	H1-DATA LICC2	OUT	Head L analogue switch data signal
26	H1-DASLK LICC2	OUT	Head L analogue switch clock signal
27	GND	-	GND
28	H1-DSOUT2	IN	Head L temperature output 2
29	H1-DSOUT1	IN	Head L temperature output 1
30	GND	-	GND
31	PWLED4_ON	OUT	Multi sensor LED 4 drive signal
32	PWLED3_ON	OUT	Multi sensor LED 3 drive signal
33	PWLED2_ON	OUT	Multi sensor LED 2 drive signal
34	PWLED1_ON	OUT	Multi sensor LED 1 drive signal
35	GND	-	GND
36	MLT_SNS_1IN	IN	Multi sensor signal 1
37	MLT_SNS_2IN	IN	Multi sensor signal 2
38	GND	-	GND
39	H1-B-DATA-2-OD	OUT	Odd head L data signal 2(B)
40	GND	-	GND
41	H1-B-DATA-3-OD	OUT	Odd head L data signal 3(B)
42	GND	-	GND
43	H1-C-HE-4	OUT	Head L heat enable signal8(E)
44	GND	-	GND
45	H1-C-DATA-4-OD	OUT	Odd head L data signal 4(C)
46	SNS_5V	OUT	Power supply (+5V)
47	ENCODER_B	IN	Carriage encoder output signalB
48	SNS_5V	OUT	Power supply (+5V)
49	ENCODER_A	IN	Carriage encoder output signalA
50	GND	-	GND

T-6-18

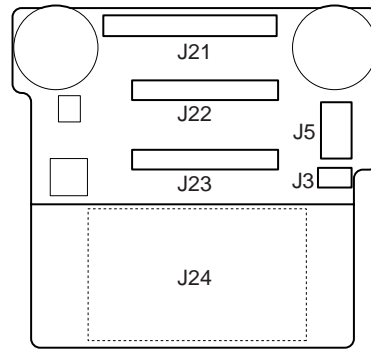
J3801			
Pin Number	Signal name	IN/OUT	Function
1	H1-E-DATA-8-EV	OUT	Even head L data signal 8(E)
2	GND	-	GND
3	H1-D-HE-7	OUT	Head L heat enable signal 7(D)
4	GND	-	GND
5	IO-ASIC_SDA	IN/OUT	Head ROM control signal (data)
6	GND	-	GND
7	H1-D-DATA-7-EV	OUT	Even head L data signal 7(D)
8	GND	-	GND
9	H1-D-DATA-6-EV	OUT	Even head L data signal 6(D)
10	GND	-	GND
11	H1-D-DATA-6-OD	OUT	Odd head L data signal6(D)
12	GND	-	GND
13	IO-ASIC_SCL	IN/OUT	Head ROM control signal (clock)
14	GND	-	GND
15	H1-D-HE-6	OUT	Head L heat enable signal 6(D)
16	GND	-	GND
17	H1-C-HE-5	OUT	Head L heat enable signal 5(C)
18	GND	-	GND
19	H1-C-DATA-5-OD	OUT	Odd head L data signal5(C)
20	GND	-	GND
21	H1_CLK	OUT	Head L clock signal
22	GND	-	GND
23	HEAD_3V	OUT	Power supply (+3V)
24	HEAD_3V	OUT	Power supply (+3V)

J3801			
Pin Number	Signal name	IN/OUT	Function
25	H1_LT	OUT	Head L latch signal
26	H-DASH_LIICC2_B	OUT	Analogue switch/AD trigger
27	H1-C-DATA-5-EV	OUT	Even head L data signal 5(C)
28	GND	-	GND
29	H1-B-HE-3	OUT	Head L heat enable signal 3(B)
30	GND	-	GND
31	H1-C-DATA-4-EV	OUT	Even head L data signal 4(C)
32	GND	-	GND
33	H1-B-DATA-3-EV	OUT	Even head L data signal 3(B)
34	GND	-	GND
35	H1-B-DATA-2-EV	OUT	Even head L data signal 2(B)
36	GND	-	GND
37	H1-A-DATA-1-EV	OUT	Even head L data signal 1(A)
38	GND	-	GND
39	H1-A-HE-1	OUT	Head L heat enable signal 1(A)
40	GND	-	GND
41	H1-A-DATA-0-EV	OUT	Even head L data signal 0(A)
42	GND	-	GND
43	H1-A-HE-0	OUT	Head L heat enable signal 0(A)
44	GND	-	GND
45	H1-A-DATA-0-OD	OUT	Odd head L data signal0(A)
46	GND	-	GND
47	H1-A-DATA-1-OD	OUT	Odd head L data signal1(A)
48	GND	-	GND
49	H1-B-HE-2	OUT	Head L heat enable signal 2(B)
50	GND	-	GND

T-6-19

J3911			
Pin Number	Signal name	IN/OUT	Function
1	TANK_COVER_SW	IN	Ink tank cover switch output signal
2	GND	-	GND
3	SNS_3V	OUT	Power supply (+3.3V)
4	GND	-	GND
5	TOP_COVER_SNS	IN	Top cover sensor output signal
6	SNS_3V	OUT	Power supply (+3.3V)
7	GND	-	GND
8	CUTTER_L_SNS	IN	Cutter HP sensor signal
9	SNS_5V		Power supply (+5V)
10	GND	-	GND
11	CUTTER_POS1_SNS	IN	Cutter lift sensor output signal
12	CUTTER_OUT_SC-	OUT	Cutter lift motor drive signal SC-
13	CUTTER_OUT_SC+	OUT	Cutter lift motor drive signal SC+

6.2.2 Carriage PCB

F-6-2
T-6-20

J3			
Pin Number	Signal name	IN/OUT	Function
1	ENCODER_B	IN	Linear encoder detection signal B
2	GND	-	GND
3	ENCODER_A	IN	Linear encoder detection signal A
4	H1_5V	OUT	Power supply (+5V)

T-6-21

J5			
Pin Number	Signal name	IN/OUT	Function
1	3.3V	OUT	Power supply (+3V)
2	SCL	OUT	EEPROM control signal (clock)
3	SDA	IN/OUT	EEPROM control signal (data)
4	GND	-	GND
5	PWLED1	OUT	Multi sensor LED1 drive signal
6	PWLED2	OUT	Multi sensor LED2 drive signal
7	PWLED3	OUT	Multi sensor LED3 drive signal
8	PWLED4	OUT	Multi sensor LED4 drive signal
9	VH	OUT	Power supply (+21.5V)
10	OUT1	IN	Multi sensor input signal 1
11	OUT2	IN	Multi sensor input signal 2
12	H1-5V	OUT	Power supply (+5V)

T-6-22

J21			
Pin Number	Signal name	IN/OUT	Function
1	GND	-	GND
2	GND	-	GND
3	GND	-	GND
4	GND	-	GND
5	GND	-	GND
6	GND	-	GND
7	GND	-	GND
8	HD1_VHFBG	OUT	VH feed back voltage -
9	HD1_VHFBH	OUT	VH feed back voltage +
10	VH	IN	Power supply (+21.5V)
11	VH	IN	Power supply (+21.5V)
12	VH	IN	Power supply (+21.5V)
13	VH	IN	Power supply (+21.5V)
14	VH	IN	Power supply (+21.5V)
15	VH	IN	Power supply (+21.5V)
16	VH	IN	Power supply (+21.5V)
17	VH	IN	Power supply (+21.5V)
18	VH	IN	Power supply (+21.5V)

J21			
Pin Number	Signal name	IN/OUT	Function
19	VH	IN	Power supply (+21.5V)
20	VH	IN	Power supply (+21.5V)
21	VH	IN	Power supply (+21.5V)
22	VH	IN	Power supply (+21.5V)
23	VH	IN	Power supply (+21.5V)
24	VH	IN	Power supply (+21.5V)
25	GND	-	GND
26	GND	-	GND
27	GND	-	GND
28	GND	-	GND
29	GND	-	GND
30	GND	-	GND

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J22			
Pin Number	Signal name	IN/OUT	Function
1	GND	-	GND
2	ENCODER_A	OUT	Linear encoder output signalA
3	SNS_5V	IN	Power supply (+5V)
4	ENCODER_B	OUT	Linear encoder output signalB
5	SNS_5V	IN	Power supply (+5V)
6	H1-C-DATA-4-OD	IN	Odd head L data signal 4(C)
7	GND	-	GND
8	H1-C-HE-4	IN	Head L heat enable signal8(E)
9	GND	-	GND
10	H1-B-DATA-3-OD	IN	Odd head L data signal 3(B)
11	GND	-	GND
12	H1-B-DATA-2-OD	IN	Odd head L data signal 2(B)
13	GND	-	GND
14	MLT_SNS_2IN	OUT	Multi sensor signal2
15	MLT_SNS_IIN	OUT	Multi sensor signal1
16	GND	-	GND
17	PWLED1_ON	IN	Multi sensor LED 1 drive signal
18	PWLED2_ON	IN	Multi sensor LED 2 drive signal
19	PWLED3_ON	IN	Multi sensor LED 3 drive signal
20	PWLED4_ON	IN	Multi sensor LED 4 drive signal
21	GND	-	GND
22	H1-DSOUT1	OUT	Head L temperature output 1
23	H1-DSOUT2	OUT	Head L temperature output 2
24	GND	-	GND
25	H1-DASLK LICC2	IN	Head L analogue switch clock signal
26	H1-DATA LICC2	IN	Head L analogue switch data signal
27	H1-DLD LICC2	IN	Head L analogue switch latch signal
28	H1-E-DATA-9-EV	IN	Even head L data signal9(E)
29	GND	-	GND
30	H1-E-HE-9	IN	Head L heat enable signal9(E)
31	GND	-	GND
32	H1-F-DATA-10-EV	IN	Even head L data signal10(F)
33	GND	-	GND
34	H1-F-DATA-11-EV	IN	Even head L data signal11(F)
35	GND	-	GND
36	H1-F-HE-11	IN	Head L heat enable signal11(F)
37	GND	-	GND
38	H1-F-DATA-11-OD	IN	Odd head L data signal 11(F)
39	GND	-	GND
40	H1-F-HE-10	IN	Head L heat enable signal10(F)
41	GND	-	GND
42	H1-E-DATA-9-OD	IN	Odd head L data signal 9(E)
43	GND	-	GND
44	H1-F-DATA-10-OD	IN	Odd head L data signal 10(F)
45	GND	-	GND
46	H1-E-DATA-8-OD	IN	Odd head L data signal 8(E)

J22			
Pin Number	Signal name	IN/OUT	Function
47	GND	-	GND
48	H1-E-HE-8	IN	Head L heat enable signal8(E)
49	GND	-	GND
50	H1-D-DATA-7-OD	IN	Odd head L data signal 7(D)

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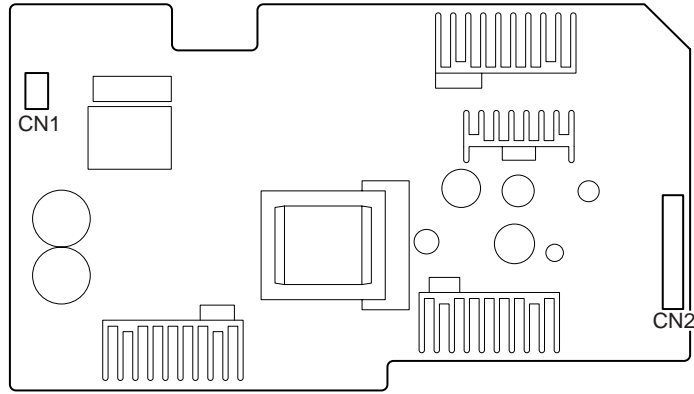
J23			
Pin Number	Signal name	IN/OUT	Function
1	GND	-	GND
2	H1-B-HE-2	IN	Head L heat enable signal 2(B)
3	GND	-	GND
4	H1-A-DATA-1-OD	IN	Odd head L data signal 1(A)
5	GND	-	GND
6	H1-A-DATA-0-OD	IN	Odd head L data signal 0(A)
7	GND	-	GND
8	H1-A-HE-0	IN	Head L heat enable signal 0(A)
9	GND	-	GND
10	H1-A-DATA-0-EV	IN	Even head L data signal 0(A)
11	GND	-	GND
12	H1-A-HE-1	IN	Head L heat enable signal 1(A)
13	GND	-	GND
14	H1-A-DATA-1-EV	IN	Even head L data signal 1(A)
15	GND	-	GND
16	H1-B-DATA-2-EV	IN	Even head L data signal 2(B)
17	GND	-	GND
18	H1-B-DATA-3-EV	IN	Even head L data signal 3(B)
19	GND	-	GND
20	H1-C-DATA-4-EV	IN	Even head L data signal 4(C)
21	GND	-	GND
22	H1-B-HE-3	IN	Head L heat enable signal 3(B)
23	GND	-	GND
24	H1-C-DATA-5-EV	IN	Even head L data signal 5(C)
25	H-DASH_LICC2_B	IN	Analogue switch/AD trigger
26	H1_LT	IN	Head L latch signal
27	HEAD_3V	IN	Power supply (+3V)
28	HEAD_3V	IN	Power supply (+3V)
29	GND	-	GND
30	H1_CLK	IN	Head L clock signal
31	GND	-	GND
32	H1-C-DATA-5-OD	IN	Odd head L data signal 5(C)
33	GND	-	GND
34	H1-C-HE-5	IN	Head L heat enable signal 5(C)
35	GND	-	GND
36	H1-D-HE-6	IN	Head L heat enable signal 6(D)
37	GND	-	GND
38	IO-ASIC_SCL	IN/OUT	Head ROM control signal (clock)
39	GND	-	GND
40	H1-D-DATA-6-OD	IN	Odd head L data signal 6(D)
41	GND	-	GND
42	H1-D-DATA-6-EV	IN	Even head L data signal 6(D)
43	GND	-	GND
44	H1-D-DATA-7-EV	IN	Even head L data signal 7(D)
45	GND	-	GND
46	IO-ASIC_SDA	IN/OUT	Head ROM control signal (data)
47	GND	-	GND
48	H1-D-HE-7	IN	Head L heat enable signal 7(D)
49	GND	-	GND
50	H1-E-DATA-8-EV	IN	Even head L data signal 8(E)

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J24			
Pin Number	Signal name	IN/OUT	Function
1	VH	OUT	Power supply (+21.5V)
2	VH	OUT	Power supply (+21.5V)
3	VH	OUT	Power supply (+21.5V)
4	VHT2	OUT	Head L transistor drive power supply
5	H1-F-DATA-10-EV	OUT	Even head L data signal10(F)
6	EEPROM_SDA	IN/OUT	EEPROM control signal (data)
7	EEPROM_SCL	OUT	EEPROM control signal (clock)
8	HEAD_3V	OUT	Power supply (+3V)
9	H1-C-DIA1	IN	Head L DI sensor signal 1(C)
10	H1-A-HE-1	OUT	Head L heat enable signal 1(A)
11	VH	OUT	Power supply (+21.5V)
12	VH	OUT	Power supply (+21.5V)
13	VH	OUT	Power supply (+21.5V)
14	VH	OUT	Power supply (+21.5V)
15	VH	OUT	Power supply (+21.5V)
16	H1-E-DATA-9-OD	OUT	Odd head L data signal 9(E)
17	H1-F-HE-11	OUT	Head L heat enable signal11(F)
18	H1-E-DIA1	IN	Head L DI sensor signal 1(E)
19	H1-D-DIA1	IN	Head L DI sensor signal 1(D)
20	HEAD_3V	OUT	Power supply (+3V)
21	HEAD_3V	OUT	Power supply (+3V)
22	H1-B-DATA-3-EV	OUT	Even head L data signal 3(B)
23	H1-A-DATA-0-EV	OUT	Even head L data signal 0(A)
24	H1-B-HE-2	OUT	Head L heat enable signal 2(B)
25	VH	OUT	Power supply (+21.5V)
26	VH	OUT	Power supply (+21.5V)
27	H1-D-DIA2	IN	Head L DI sensor signal 2(D)
28	H1-E-HE-8	OUT	Head L heat enable signal8(E)
29	H1-E-DIA2	IN	Head L DI sensor signal 2(E)
30	H1-F-DIA2	IN	Head L DI sensor signal 2(F)
31	H1-E-HE-9	OUT	Head L heat enable signal9(E)
32	H1-D-DATA-7-EV	OUT	Even head L data signal 7(D)
33	H1-D-HE-6	OUT	Head L heat enable signal 6(D)
34	H1-C-DATA-5-OD	OUT	Odd head L data signal 5(C)
35	H1-C-DATA-4-EV	OUT	Even head L data signal 4(C)
36	H1-A-DATA-1-EV	OUT	Even head L data signal 1(A)
37	H1-A-DIA2	IN	Head L DI sensor signal 2(A)
38	H1-B-DIA2	IN	Head L DI sensor signal 2(B)
39	H1-C-HE-4	OUT	Head L heat enable signal8(E)
40	H1-D-DATA-7-OD	OUT	Odd head L data signal 7(D)
41	H1-E-DATA-8-OD	OUT	Odd head L data signal 8(E)
42	H1-F-HE-10	OUT	Head L heat enable signal10(F)
43	H1-F-DATA-11-EV	OUT	Even head L data signal11(F)
44	H1-F-DATA-8-EV	OUT	Even head L data signal 8(F)
45	H1-D-DATA-6-EV	OUT	Even head L data signal 6(D)
46	H1-C-DIA2	IN	Head L DI sensor signal 2(C)
47	H1-C-DATA-5-EV	OUT	Even head L data signal 5(C)
48	H1-B-DIA1	IN	Head L DI sensor signal 1(B)
49	H1-A-HE-0	OUT	Head L heat enable signal 0(A)
50	H1-B-DATA-2-OD	OUT	Odd head L data signal 2(B)
51	H1-B-DATA-3-OD	OUT	Odd head L data signal 3(B)
52	H1-C-DATA-4-OD	OUT	Odd head L data signal 4(C)
53	GND	-	GND
54	GND	-	GND
55	GND	-	GND
56	H1-F-DATA-11-OD	OUT	Odd head L data signal 11(F)
57	H1-E-DATA-9-EV	OUT	Even head L data signal9(E)
58	GND	-	GND
59	H1-D-DATA-6-OD	OUT	Odd head L data signal6(D)
60	H1-C-HE-5	OUT	Head L heat enable signal 5(C)
61	H1-B-HE-3	OUT	Head L heat enable signal 3(B)
62	H1-A-DIA1	IN	Head L DI sensor signal 1(A)

J24			
Pin Number	Signal name	IN/OUT	Function
63	H1-A-DATA-1-OD	OUT	Odd head L data signal1(A)
64	GND	-	GND
65	GND	-	GND
66	GND	-	GND
67	GND	-	GND
68	H1-F-DATA-10-OD	OUT	Odd head L data signal 10(F)
69	H1-F-DIA1	IN	Head L DI sensor signal 1(F)
70	H1-D-HE-7	OUT	Head L heat enable signal 7(D)
71	GND	-	GND
72	H1-CLK	OUT	Head L clock signal
73	H1-LT	OUT	Head L latch signal
74	H1-B-DATA-2-EV	OUT	Even head L data signal 2(B)
75	H1-A-DATA-0-OD	OUT	Odd head L data signal0(A)
76	GND	-	GND
77	GND	-	GND
78	GND	-	GND

6.2.3 Power supply



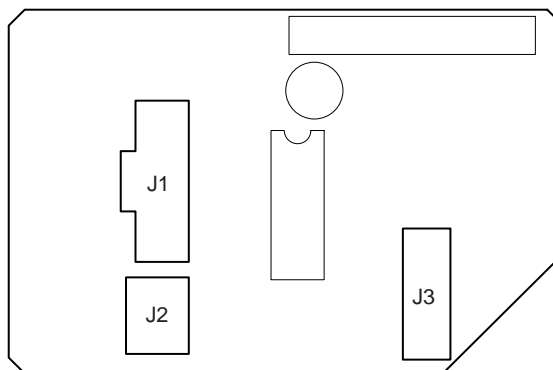
F-6-3
T-6-26

CN1			
Pin Number	Signal name	IN/OUT	Function
1	AC(H)	-	Power supply (AC 120V or AC 230V)
2	AC(H)	-	Power supply (AC 120V or AC 230V)

T-6-27

CN2 (Connect to main board)			
Pin Number	Signal name	IN/OUT	Function
1	HD1_VHFBH	IN	VH feedback voltage +
2	HD1_VHFBG	IN	VH feedback voltage -
3	VH	OUT	Power supply (+21.5V)
4	GND	-	GND
5	VH	OUT	Power supply (+21.5V)
6	GND	-	GND
7	RGV20(VCC)	OUT	Power supply (+21.5V)
8	GND	-	GND
9	VM	OUT	Power supply (+26V)
10	GND	-	GND
11	VM2	OUT	Power supply (+26V)
12	GND	-	GND
13	VH_ENB	IN	VH power supply ON/OFF signal
14	PW_CONT	IN	Normal/power saving switch signal

6.2.4 Roll feed unit PCB



F-6-4
T-6-28

J1 (Connect to main board)			
Pin Number	Signal name	IN/OUT	Function
1	GND	-	GND
2	GND	-	GND
3	ROLL_CLK	IN	Roll motor driver clock signal
4	ROLL_DAT	IN	Roll motor driver data signal
5	ROLL_STB	IN	Roll motor driver strobe signal

J1 (Connect to main board)			
Pin Number	Signal name	IN/OUT	Function
6	/ROLL_SLEEP	IN	Roll motor driver sleep signal
7	VM	IN	Power supply (+26V)
8	VM	IN	Power supply (+26V)
9	ROLL_UNIT	OUT	Roll unit detection signal
10	ROLL_PAPER_SNS	OUT	Roll media sensor signal
11	ROLL_CAM_SNS	OUT	Roll cam sensor signal
12	GND	-	GND
13	OPT_5V	IN	Power supply (+5V)

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J2 (Roll media sensor)			
Pin Number	Signal name	IN/OUT	Function
1	+5V	OUT	Power supply (+5V)
2	GND	-	GND
3	ROLL_PAPER_SNS	IN	Roll media sensor signal

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J3 (Roll cam sensor, roll motor)			
Pin Number	Signal name	IN/OUT	Function
1	+5V	OUT	Power supply (+5V)
2	GND	-	GND
3	ROLL_CAM_SNS	IN	Roll cam sensor signal
4	GND	-	GND
5	ROLL_OUTAP	OUT	Roll motor drive signal AP
6	ROLL_OUTAM	OUT	Roll motor power supply AM
7	ROLL_OUTBP	OUT	Roll motor drive signal BP
8	ROLL_OUTBM	OUT	Roll motor power supply BM

6.3 Version Up

6.3.1 Firmware Update Tool

Use of the following tools allows you to update the firmware of the main controller incorporated in the printer.

- GARO Firmware Update Tool
- L Printer Service Tool

1. GARO Firmware Update Tool

GARO Firmware Update Tool is the same as that for user.

Procedure:

- 1) Start CARO Firmware Update Tool.
- 2) Place the printer in the online mode.
- 3) Transfer the firmware data to the printer according to the instructions shown on the display.
- 4) The data shown on the LCD on the operation panel changes and the firmware is updated automatically.
- 5) When firmware update is completed, the printer will start again.

File transfer route:

USB, IEEE1394, network

2. L Printer Service Tool

Procedure:

- 1) Start L Printer Service Tool.
- 2) Place the printer in the online mode.
- 3) Specify the firmware file(jdl) and then transfer it.
- 4) The data shown on the LCD on the operation panel changes and the firmware is updated automatically.
- 5) When firmware update is completed, the printer will start again.

File transfer route:

USB, IEEE1394, network

6.4 Service Tools

6.4.1 Tool List

T-6-31

General-purpose tools	Remarks
Long Phillips screwdriver	Inserting and removing screws
Phillips screwdriver	Inserting and removing screws
Flat-head screwdriver	Removing the E-ring
Needle-nose pliers	Inserting and removing the spring parts
Hex key wrench	Inserting and removing hexagonal screws
Flat brush	Applying grease
Lint free paper	Wiping off ink
Rubber gloves	Preventing ink stains

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Special-purpose tools	Remarks
Carriage Wire Tool (AY3-4493-000)	Adjusting carriage wire height
Grease MOLYKOTE PG-641 (CK-0562-000)	Applying to specified locations
EU-1 (QY9-0037-000)	Soaks to specified locations

Chapter 7 SERVICE MODE

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7.1 Service Mode

7.1.1 Service Mode Operation

a) How to enter the Service mode

Enter the Service mode following the procedure below.

- 1) Turn off the printer.
- 2) Turn on the printer while holding down the [Paper Source] button and [Information] button.
- * Keep pressing the above buttons until "Initializing" appears on the display.
- 3) "S" is displayed in the upper right corner of the display showing the version.
- 4) After display of "Online", pressing the [Menu] button displays the SERVICE MODE top menu and the MESSAGE LED flashes.

* The Service mode is added to the options in the Main menu. The Service mode can be entered even in the error status (when an error message is shown on the display) by turning the power off and then using the above key operation.

b) How to exit the Service mode

Turn off the printer.

c) Key operation in the service mode

- Selecting menus and parameters: [◀] or [▶] button
- Going to the next lower-level menu: [▲] button
- Going to the next higher-level menu: [▼] key
- Determining a selected menu or parameter: [OK] button

7.1.2 Map of the Service Mode

The hierarchy of menus and parameters in the Service mode is shown below.

T-7-1

First Level	Second Level	Third Level	Fourth Level	Fifth Level		
DISPLAY	PRINTINF	YES/NO	: Select YES to execute print			
		SYSTEM	S/N			
			TYPE			
			LF TYPE			
			TMP			
			SIZE LF			
			SIZE LF			
			SIZE CR			
			SIZE CR			
	HEAD	S/N				
		LOT				
	INK	C				

		BK				
	WARNING	1				

	20					
ERROR	1					

	20					
INK CHECK	000000					
I/O DISPLAY	I/O DISPLAY 1					
	I/O DISPLAY 2					
ADJUST	PRINT PATTERN	NOZZLE 1	: Press the [OK] button to execute			
		NOZZLE 2	: Press the [OK] button to execute			
		NOZZLE 3	: Press the [OK] button to execute			
		OPTICAL AXIS	: Press the [OK] button to execute			
		LF & HAKUSYA				
		SENSOR CHECK				
	HEAD ADJ.	MANUAL HEAD ADJ	DETAIL		: Press the [OK] button to execute	
			BASIC		: Press the [OK] button to execute	
		ADJ. SETTING	A		A-1	: Adjustment value entry

			A-24		A-24	: Adjustment value entry

			F		F-1	: Adjustment value entry
SAVE SETTINGS		YES/NO				
RESET SETTINGS		YES/NO				
NOZZLE CHK POS.	YES/NO					
GAP CALIB.	YES/NO					
REPLACE	CUTTER	YES/NO				

T-7-2

First Level	Second Level	Third Level	Fourth Level	Fifth Level	
COUNTER	PRINTER	LIFE TTL			
		LIFE ROLL			
		LIFE CUTSHEET			
		LIFE CASSETTE			
		LIFE A			

		LIFE F			
		POWER ON			
		W-INK			
		CUTTER			
		WIPE			
		CARRIAGE	PRINT		
			CR COUNT		
	CR DIST.				
	PRINT COUNT				
	PURGE	CLN-A-1			
		CLN-A-2			
		CLN-A-3			
		CLN-A-6			
		CLN-A-7			
		CLN-A-10			
		CLN-A-11			
		CLN-A-15			
		CLN-A-16			
		CLN-A-17			
		CLN-A-TTL			
		CLN-M-1			
		CLN-M-4			
		CLN-M-5			
		CLN-M-6			
		CLN-M-TTL			
		CLEAR	CLR-INK CONSUME		
	CLR-CUTTER EXC.				
	CLR-MTC EXC.				
	CLR-HEAD EXC.				
	CLR-UNIT A EXC.				
	CLR-UNIT B EXC.				
	CLR-UNIT D EXC.				
	CLR-UNIT F EXC.				
	CLR-UNIT H EXC.				
	CLR-UNIT L EXC.				
	CLR-UNIT P EXC.				
	CLR-UNIT Q EXC.				
	CLR-UNIT R EXC.				
	CLR-UNIT V EXC.				
	CLR-FACTORY CNT.				

First Level	Second Level	Third Level	Fourth Level	Fifth Level
COUNTER	EXCHANGE	CUTTER EXC.		
		MTC EXC.		
		HEAD EXC.		
		BOARD EXC.(M/B)		
		UNIT A EXC.		
		UNIT B EXC.		
		UNIT D EXC.		
		UNIT F EXC.		
		UNIT H EXC.		
		UNIT L EXC.		
		UNIT P EXC.		
		UNIT Q EXC.		
		UNIT R EXC.		
		UNIT V EXC.		
		DETAIL-CNT	MOVE PRINTER	
	N-INK CHR(C)			

	N-INK CHR(BK)			
	MEDIACONFIG-CNT			
	INK-USE1	INK-USE1(C)		

		INK-USE1(BK)		
		INK-USE1(TTL)		
		N-INK-USE1(C)		

		N-INK-USE1(BK)		
		N-INK-USE1(TTL)		
	INK-USE2	INK-USE2(C)		

		INK-USE2(BK)		
		INK-USE2(TTL)		
		N-INK-USE2(C)		

		N-INK-USE2(TTL)		
	INK-EXC	INK-EXC(C)		

		INK-EXC(BK)		
		INK-EXC(TTL)		
		N-INK-EXC(C)		

		N-INK-EXC(BK)		
		N-INK-EXC(TTL)		

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First Level	Second Level	Third Level	Fourth Level	Fifth Level
COUNTER	MEDIA 1	NAME		
		TTL		
		TTL		
		ROLL		
		ROLL		
		CUTSHEET		
		CUTSHEET		
		CASSETTE		
		CASSETTE		

	MEDIA 7	NAME		
		TTL		
		TTL		
		ROLL		
		ROLL		
		CUTSHEET		
		CUTSHEET		
		CASSETTE		
		CASSETTE		
		MEDIA OTHER	NAME	
	TTL			
	TTL			
	ROLL			
	ROLL			
	CUTSHEET			
	CUTSHEET			
	CASSETTE			
	CASSETTE			
	MEDIASIZE1 ROLL		P-SQ 24-36	
		P-SQ 24-36		
		P-SQ 17-24		
		P-SQ 17-24		
		P-SQ -17		
		P-SQ -17		
		P-CNT 24-36		
		P-CNT 17-24		
		P-CNT -17		
		MEDIASIZE2 ROLL	D-SQ 24-36	
	D-SQ 24-36			
	D-SQ 17-24			
	D-SQ 17-24			
	D-SQ -17			
	D-SQ -17			
	D-CNT 24-36			
	D-CNT 17-24			
	D-CNT -17			
	MEDIASIZE1 CUT		P-SQ 24-36	
P-SQ 24-36				
P-SQ 17-24				
P-SQ 17-24				
P-SQ -17				
P-SQ -17				
P-CNT 24-36				
P-CNT 17-24				
P-CNT -17				

First Level	Second Level	Third Level	Fourth Level	Fifth Level	
COUNTER	MEDIASIZE2 CUT	D-SQ 24-36			
		D-SQ 24-36			
		D-SQ 17-24			
		D-SQ 17-24			
		D-SQ -17			
		D-SQ -17			
		D-CNT 24-36			
		D-CNT 17-24			
		D-CNT -17			
		HEAD DOT CNT. 1			C

		BK			
		TTL			
	HEAD DOT CNT. 2	C			

		BK			
		TTL			
	PARTS CNT.	COUNTER A		OK/W1/W2/E	
				PARTS A1	1:00
					2:00
				3:00	
		4:00			

COUNTER V			OK/W1/W2/E		
			PARTS V1	1:00	
			2:00		
			3:00		
	4:00				
SETTING	Pth	ON/OFF			
	RTC	DATE	XXXX/XX/XX	: Date entry	
		TIME	XX:XX	: Time entry	
	PV AUTO JUDGE	ON/PFF			
CAS.PRE PRINT	ON/OFF				
INITIALIZE	WARNIG	: Press the [OK] button to clear			
	ERROR	: Press the [OK] button to clear			
	ADJUST	: Press the [OK] button to clear			
	W-INK	: Press the [OK] button to clear			
	PURGE	: Press the [OK] button to clear			
	INK-USE CNT	: Press the [OK] button to clear			
	CUTTER-CHG CNT	: Press the [OK] button to clear			
	W-INK-CHG CNT	: Press the [OK] button to clear			
	HEAD-CHG CNT	: Press the [OK] button to clear			
	PARTS-CHG CNT	PARTS A1		: Press the [OK] button to clear	

	PARTS V1	PARTS V1		: Press the [OK] button to clear	

	PARTS COUNTER	PARTS A1		: Press the [OK] button to clear	

PARTS V1	PARTS V1		: Press the [OK] button to clear		

7.1.3 Details of Service Mode

This section provides details of the Service mode menu.

a) DISPLAY

Displays and prints the printer information.

1) PRINF INF

Prints adjustment values in the User menu, [DISPLAY] and [COUNTER] parameters on A4-size or larger paper. When a roll media is used, the layout is optimized according to the media width.

2) SYSTEM

Displays the printer information shown below.

T-7-6

Display	Description	Unit
S/N	Serial number of printer	-
TYPE	Type setting on main controller PCB * iPF610/600 is represented by 24.	-
LF TYPE	Feed roller type: 0 or 1	-
TMP	Ambient temperature	degrees C
SIZE LF	Detected size of loaded media (feed direction) 0 is always detected for the roll media.	mm
SIZE LF	Detected size of loaded media (feed direction) 0 is always detected for the roll media.	inch
SIZE CR	Detected size of loaded media (carriage scan direction)	mm
SIZE CR	Detected size of loaded media (carriage scan direction)	inch

3) HEAD

Displays the following EEPROM information of the printhead.

T-7-7

Display	Description
S/N	Serial number of printhead
LOT	Lot number of printhead

4) INK

Displays the numbers of days passed since installation of the following ink tanks.

T-7-8

Display	Description	Unit
BK	Number of days passed since the BK ink tank was installed	Day(s)
MBK	Number of days passed since the MBK ink tank was installed	Day(s)
MBK2	Number of days passed since the MBK2 ink tank was installed	Day(s)
C	Number of days passed since the C ink tank was installed	Day(s)
M	Number of days passed since the M ink tank was installed	Day(s)
Y	Number of days passed since the Y ink tank was installed	Day(s)

5) WARNING

Displays the warning history (up to 20 events). The newest event has the smallest history number.

6) ERROR

Displays the error history (up to 20 events). The newest event has the smallest history number.

7) INK CHECK

Displays the history of execution of turning off the remaining ink level detection (by using the refilled ink tank) in the order of C, M, Y, MBK, MBK, BK.

0: No execution

1: Executed at least once

c) ADJUST

Performs adjustments and prints the adjustment and check patterns necessary for adjusting the printer parts.

1) PRINT PATTERN

T-7-12

Display	Description
NOZZLE 1	Prints the nozzle check pattern by single direction/ single pass without using the non-discharging back up. It is used to check for the non-discharging nozzles. - Media size: A4 - Media type: any
NOZZLE 2	Print a 100% solid print pattern (used to check the ink reaction that cannot be checked with "NOZZLE 1") in the single path direction. Use this method when checking blocked nozzles. - Use paper with a height equal to or longer than that of A4-sized paper (in portrait orientation). - Any media type is acceptable.
NOZZLE 3	Print a 100% solid print pattern (used to check the ink reaction that cannot be checked with "NOZZLE 1") in the single path direction. Use this method when checking blocked nozzles. (The print drive control method is different from that for "NOZZLE 2".) - Use paper with a height equal to or longer than that of A4-sized paper (in portrait orientation). - Any media type is acceptable.
OPTICAL AXIS	Prints the pattern and adjusts the optical axis of the multi sensor. For details, refer to "Disassembly/Reassembly" > "Adjustment and Setup Items" > "Procedure after replacing the carriage unit or multi sensor". - Media type: photo glossy paper
LF & HAKUSHA	* For Factory
SENSOR CHECK	* For Factory



LF & HAKUSYA and SENSOR CHECK are intended for factory adjustment purposes.
No adjustment by service personnel is required.

2) HEAD ADJ.

Set or initialize the registration adjustment values of each printheads.

T-7-13

Display		Description
MANUAL HEAD ADJ	DETAIL	Prints the detail patterns for the manual head adjustment. After printing, the mode will change to [ADJ. SETTING]. Check the printed patterns and input the set values.
	BASIC	Prints the basic patterns for the manual head adjustment. After printing, the mode will change to [ADJ. SETTING]. Check the printed patterns and input the set values.
ADJ. SETTING	A to F	This mode is to input the registration adjustment values. It is possible to return the values to the former one by printing the status print before changing the value.
	A-1 to F-1	
	SAVE SETTINGS	Save the registration adjustment values that has been input.
RESET SETTINGS		Initialize the registration adjustment values (to 0).

3) NOZZLE CHK POS.

This mode for adjusting the optical axis of the head management sensor. For details, refer to "Disassembly/Reassembly" > "Adjustment and Setup Items" > "Procedure after replacing the head management sensor".

4) GAP CLIB.

This mode measures the gap between the printhead and media by multi sensor and corrects the calibration value.

d) REPLACE

1) CUTTER

This mode is for replacing the cutter unit.

e) COUNTER

Displays the life (operation frequency and time) of each unit, print counts for each media type, and else. The count values can be printed from [PRINT INF].

1) PRINTER: Counters related to product life

T-7-14

Display	Description	Unit
LIFE TTL	Cumulative number of printed media (equivalent of A4)	sheets
LIFE ROLL	Cumulative number of printed roll media (equivalent of A4)	sheets
LIFE CUTSHEET	Cumulative number of printed cut sheets (equivalent to A4)	sheets
LIFE CASSETTE	Cumulative number of printed cut sheets at cassette pick-up (equivalent to A4)	sheets
LIFE A-F	Cumulative number of printed media for environments A to F	sheets
POWER ON	Cumulative power-on time (excluding the sleep time)	Hours
W-INK	Remaining capacity of the maintenance cartridge	%
CUTTER	Number of cutting operations (count as 1 by moving back and forth)	Times
WIPE	Number of wiping operations	Times

2) CARRIAGE: Counters related to carriage unit

T-7-15

Display	Description	Unit
PRINT	Cumulative printing time	Hours
CR COUNT	Cumulative carriage scan count (count as 1 by moving back and forth)	Times
CR DIST.	Cumulative carriage scan distance (count as 1 by moving 210mm)	Times
PRINT COUNT	Cumulative print end count (count as 1 by capping)	Times

3) PURGE: Counters related to purge unit

T-7-16

Display	Description	Unit
CLN-A-1	Cumulative number of automatic cleaning 1 (normal suction) operations	Times
CLN-A-2	Cumulative number of automatic cleaning 2 (ink level adjusting) operations	Times
CLN-A-3	Cumulative number of automatic cleaning 3 (initial filling) operations	Times
CLN-A-6	Cumulative number of automatic cleaning 6 (strong normal suction) operations	Times
CLN-A-7	Cumulative number of automatic cleaning 7 (aging) operations	
CLN-A-10	Cumulative number of automatic cleaning 10 (ink filling after secondary transportation) operations	Times
CLN-A-11	Cumulative number of automatic cleaning 11 (ink filling after head replacement) operations	Times
CLN-A-15	Cumulative number of automatic cleaning 15 (dot count small suction) operations	Times
CLN-A-16	Cumulative number of automatic cleaning 16 (sedimented ink agitation) operations	Times
CLN-A-17	Cumulative number of automatic cleaning 17 (small suction) operations	Times
CLN-A-TTL	Total number of automatic cleaning operations	Times
CLN-M-1	Cumulative number of manual cleaning 1 (normal suction) operations	Times
CLN-M-4	Cumulative number of manual cleaning 4 (ink draining from head after head replacement) operations	Times
CLN-M-5	Cumulative number of manual cleaning 5 (ink draining from head and tube before transportation) operations	Times
CLN-M-6	Cumulative number of manual cleaning 6 (normal strong suction) operations	Times
CLN-M-TTL	Total number of manual cleaning operations	Times

4) CLEAR: Counters related to counter initialization

T-7-17

Display	Description	Unit
CLR-INK CONSUME	Cumulative count of ink section consumption amount clearing	Times
CLR-CUTTER EXC.	Cumulative count of cutter replacement count clearing	Times
CLR-MTC EXC.	Cumulative count of maintenance cartridge replacement count clearing	Times
CLR-HEAD EXC.	Cumulative count of printhead replacement count clearing	Times
CLR-UNIT A EXC.	Cumulative count of unit A(waste ink system) replacement count clearing	Times
CLR-UNIT B EXC.	Cumulative count of unit B(platen duct) replacement count clearing	Times
CLR-UNIT D EXC.	Cumulative count of unit D(carriage unit) replacement count clearing	Times
CLR-UNIT F EXC.	Cumulative count of unit F(ink supply system) replacement count clearing	Times
CLR-UNIT H EXC.	Cumulative count of unit H(purge) replacement count clearing	Times
CLR-UNIT L EXC.	Cumulative count of unit L(head management sensor) replacement count clearing	Times
CLR-UNIT P EXC.	Cumulative count of unit P(feed motor) replacement count clearing	Times
CLR-UNIT Q EXC.	Cumulative count of unit F(cassette pick-up system) replacement count clearing	Times
CLR-UNIT R EXC.	Cumulative count of unit R(spur cam) replacement count clearing	Times
CLR-UNIT V EXC.	Cumulative count of unit V(mist fan unit) replacement count clearing	Times
CLR-FACTORY CNT.	For factory	Times

5) EXCHANGE: Counters related to parts replacement

T-7-18

Display	Description	Unit
CUTTER EXC.	Cutter replacement count (Count of executing cutter replacement mode)	Times
MTC EXC.	Maintenance cartridge replacement count	Times
HEAD EXC.	Printhead replacement count	Times
BOARD EXC.(M/B)	Main controller PCB replacement count	Times
UNIT A EXC.	Unit A (waste ink system) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS A])	Times
UNIT B EXC.	Unit B (waste ink system) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS B])	Times
UNIT D EXC.	Unit D (carriage unit) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS D])	Times
UNIT F EXC.	Unit F (ink supply system) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS F])	Times
UNIT H EXC.	Unit H (purge unit) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS H])	Times
UNIT L EXC.	Unit L (head management sensor) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS L])	Times
UNIT P EXC.	Unit P (feed unit) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS P])	Times
UNIT Q EXC.	Unit Q (cassette pick-up system) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS Q])	Times
UNIT R EXC.	Unit R (pick-up system) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS R])	Times
UNIT V EXC.	Unit V (mist fan unit) replacement count (Count of executing [INITIALIZE] > [PARTS COUNTER] > [PARTS V])	Times

6) DETAIL-CNT: Other counters

T-7-19

Display	Description	Unit
MOVE PRINTER	Count of [Move Printer] operations	Times
N-INKCHK(XX)	XX: Ink color Count of turning off the ink remaining level detection for each color	Times
MEDIACONFIG-CNT	Count of media registered by media editor	Times

7) INK-USE1: Counters related to ink consumption

T-7-20

Display	Description	Unit
INK-USE1(XX)	XX: Ink color Cumulative consumption amount of generic ink	ml
INK-USE1(TTL)	Total amount of the cumulative consumption of generic ink	ml
N-INK-USE1(XX)	XX: Ink color Cumulative consumption amount of refilled ink	ml
N-INK-USE1(TTL)	Total amount of the cumulative consumption of refilled ink	ml

8) INK-USE2: Counters related to ink consumption

T-7-21

Display	Description	Unit
INK-USE2(XX)	XX: Ink color Consumption amount of generic ink of the currently installed ink tank.	ml
INK-USE2(TTL)	Total consumption amount of generic ink of the currently installed ink tanks	ml
N-INK-USE2(XX)	XX: Ink color Consumption amount of refilled ink of the currently installed ink tank	ml
N-INK-USE2(TTL)	Total consumption amount of refilled ink of the currently installed ink tanks	ml

9) INK-EXC: Counters related to ink tank replacement

T-7-22

Display	Description	Unit
INK-EXC(XX)	XX: Ink color Cumulative count of generic ink tank replacement	ml
INK-EXC(TTL)	Total amount of the cumulative count of generic ink tank replacement	ml
N-INK-EXC(XX)	XX: Ink color Cumulative count of refilled ink tank replacement	ml
N-INK-EXC(TTL)	Total amount of the cumulative count of refilled ink tank replacement	ml

10) MEDIA x (x: 1 to 7): Counters related to media

One to seven media types are displayed individually in order with large cumulative print area.

T-7-23

Display	Description	Unit
NAME	Media type	-
TTL	Total amount of cumulative print area of roll media and cut sheet (metric)	m2
TTL	Total amount of cumulative print area of roll media and cut sheet (inch)	Sq.f
ROLL	Cumulative print area of roll media (metric)	m2
ROLL	Cumulative print area of roll media (inch)	Sq.f
CUT SHEET	Cumulative print area of cut sheet (metric)	m2
CUT SHEET	Cumulative print area of cut sheet (inch)	Sq.f
CASSETTE	Cumulative print area of cut sheet at cassette pick-up (metric)	m2
CASSETTE	Cumulative print area of cut sheet at cassette pick-up (inch)	Sq.f

11) MEDIA OTHER: Counters related to media

Displays the total amount of cumulative print area of the other media type than the above-mentioned

T-7-24

Display	Description	Unit
NAME	Media type	-
TTL	Total amount of cumulative print area of roll media and cut sheet (metric)	m2
TTL	Total amount of cumulative print area of roll media and cut sheet (inch)	Sq.f
ROLL	Cumulative print area of roll media (metric)	m2
ROLL	Cumulative print area of roll media (inch)	Sq.f
CUT SHEET	Cumulative print area of cut sheet (metric)	m2
CUT SHEET	Cumulative print area of cut sheet (inch)	Sq.f
CASSETTE	Cumulative print area of cut sheet at cassette pick-up (metric)	m2
CASSETTE	Cumulative print area of cut sheet at cassette pick-up (inch)	Sq.f

12) MEDIASIZE1 ROLL: Counters related to roll media printing

T-7-25

Display	Description	Unit
P-SQ 24-36	Cumulative print area of paper equal to or larger than 24 inches but less than 36 inches (physical size)	m2/Sq.f
P-SQ 17-24	Cumulative print area of paper equal to or larger than 17 inches but less than 24 inches (physical size)	m2/Sq.f
P-SQ -17	Cumulative print area of paper less than 17 inches (physical size)	m2/Sq.f
P-CNT 24-36	Cumulative number of sheets of A4-equivalent paper equal to or larger than 24 inches but less than 36 inches (physical size)	sheets
P-CNT 17-24	Cumulative number of sheets of A4-equivalent paper equal to or larger than 17 inches but less than 24 inches (physical size)	sheets
P-CNT -17	Cumulative number of sheets of A4-equivalent paper less than 17 inches (physical size)	sheets

13) MEDIASIZE2 ROLL: Counters related to roll media printing

T-7-26

Display	Description	Unit
D-SQ 24-36	Cumulative print area of paper equal to or larger than 24 inches but less than 36 inches (data size)	m2/Sq.f
D-SQ 17-24	Cumulative print area of paper equal to or larger than 17 inches but less than 24 inches (data size)	m2/Sq.f
D-SQ -17	Cumulative print area of paper less than 17 inches (data size)	m2/Sq.f
D-CNT 24-36	Cumulative number of sheets of A4-equivalent paper equal to or larger than 24 inches but less than 36 inches (data size)	sheets
D-CNT 17-24	Cumulative number of sheets of A4-equivalent paper equal to or larger than 17 inches but less than 24 inches (data size)	sheets
D-CNT -17	Cumulative number of sheets of A4-equivalent paper less than 17 inches (data size)	sheets

14) MEDIASIZE1 CUT: Counters related to cut sheet printing

T-7-27

Display	Description	Unit
P-SQ 24-36	Cumulative print area of paper equal to or larger than 24 inches but less than 36 inches (physical size)	m2/Sq.f
P-SQ 17-24	Cumulative print area of paper equal to or larger than 17 inches but less than 24 inches (physical size)	m2/Sq.f
P-SQ -17	Cumulative print area of paper less than 17 inches (physical size)	m2/Sq.f
P-CNT 24-36	Cumulative number of sheets of A4-equivalent paper equal to or larger than 24 inches but less than 36 inches (physical size)	sheets
P-CNT 17-24	Cumulative number of sheets of A4-equivalent paper equal to or larger than 17 inches but less than 24 inches (physical size)	sheets
P-CNT -17	Cumulative number of sheets of A4-equivalent paper less than 17 inches (physical size)	sheets

15) MEDIASIZE2 CUT: Counters related to cut sheet printing

T-7-28

Display	Description	Unit
D-SQ 24-36	Cumulative print area of paper equal to or larger than 24 inches but less than 36 inches (data size)	m2/Sq.f
D-SQ 17-24	Cumulative print area of paper equal to or larger than 17 inches but less than 24 inches (data size)	m2/Sq.f
D-SQ -17	Cumulative print area of paper less than 17 inches (data size)	m2/Sq.f
D-CNT 24-36	Cumulative number of sheets of A4-equivalent paper equal to or larger than 24 inches but less than 36 inches (data size)	sheets
D-CNT 17-24	Cumulative number of sheets of A4-equivalent paper equal to or larger than 17 inches but less than 24 inches (data size)	sheets
D-CNT -17	Cumulative number of sheets of A4-equivalent paper less than 17 inches (data size)	sheets

16) HEAD DOT CNT.1: Counter related to dot count

T-7-29

Display	Description	Unit
XX	XX: Ink color Dot counts of each colors of the currently installed printhead	(x 1,000,000) dots
TTL	Total dot counts of each colors of the currently installed printhead	(x 1,000,000) dots

17) HEAD DOT CNT.2: Counter related to dot count

T-7-30

Display	Description	Unit
XX	XX: Ink color Cumulative dot counts of each colors	(x 1,000,000) dots
TTL	Total cumulative dot counts of each colors	(x 1,000,000) dots

18) PARTS CNT. : Counter related to consumable parts

T-7-31

Display	Description	Unit
COUNTER x	x: Unit number of consumable parts (For detail, refer to "Maintenance and Inspection" > "Consumable Parts") Display the status and the days passed since the counter resetting. - Status OK: Use rate (until part replacement) of all consumable parts included in each unit are below 90%. W1: Use rate (until part replacement) of either of the consumable parts included in each unit has reached 90% or more. W2: Use rate (until part replacement) of either of the consumable parts included in each unit has reached 100%, but no need to stop the printer. E : Use rate (until part replacement) of either of the consumable parts included in each unit has reached 100%, and the printer needs to be stopped.	Day(s)
PARTS yy	1: yy: Unit number of consumable parts (For detail, refer to "Maintenance and Inspection" > "Consumable Parts") Counter of the consumable part (current)	
	2: Life of the consumable part	
	3: Use rate until part replacement	%
	4: Counter of the consumable part (accumulate)	

f) SETTING

Make various settings.

1) Pth

Turn on or off the head pulse rank control function.

Default: OFF

2) RTC

Set RTC (real time clock) after replacing the lithium battery on the main controller PCB.

T-7-32

Display		Description
DATE	yyyy/mm/dd	Set date
TIME	hh:mm	Set time

3) PV AUTO JUDGE

Sets ink saver mode.

Default: OFF

4) CAS. PRE PRINT

Turn on to perform preprinting on cassette pickup.

Default: OFF

g) INITIALIZE

Clear the [DISPLAY] histories, [ADJUST] settings, [COUNTER] values, and other parameters.

T-7-33

Display		Description
WARNING		Initialize the history of WARNING. (All displayed contents of [DISPLAY] > [WARNING] will be initialized.)
ERROR		Initialize the history of ERROR. (All displayed contents of [DISPLAY] > [ERROR] will be initialized.)
ADJUST		Initialize the value of band adjustment (by user) and head adjustment. The automatically adjusted value will not be initialized.
W-INK		Initialize the remaining capacity (%) of the maintenance cartridge. (Clear [COUNTER] > [PRINTER] > [W-INK])
PURGE		Initialize the counter related to purge unit. (Clear [COUNTER] > [PURGE])
INK-USE CNT		Initialize the consumption amount of ink. (Clear [COUNTER] > [INK-USE2], and count up [COUNTER] > [CLEAR] > [CLR-INK CONSUME])
CUTTER-CHG CNT		Initialize the cutter unit replacement frequency. (Clear [COUNTER] > [EXCHANGE] > [CUTTER EXC.], and count up [COUNTER] > [CLEAR] > [CLR-CUTTER EXC.]
W-INK-CHG CNT		Initialize the maintenance cartridge replacement frequency. (Clear [COUNTER] > [EXCHANGE] > [MTC EXC.], and count up [COUNTER] > [CLEAR] > [CLR-MTC EXC.]
HEAD-CHG CNT		Initialize the printhead replacement frequency. (Clear [COUNTER] > [EXCHANGE] > [HEAD EXC.], and count up [COUNTER] > [CLEAR] > [CLR-HEAD EXC.]
PARTS-CHG CNT	PARTS xx	xx: Unit number of consumable parts (For details, refer to "Maintenance and Inspection" > "Consumable Parts") Initialize the consumable part replacement frequency. (Clear [COUNTER] > [EXCHANGE] > [UNIT x EXC], and count up [COUNTER] > [CLEAR] > [CLR-UNIT x EXC.]
PARTS COUNTER	PARTS xx	xx: Unit number of consumable parts (For details, refer to "Maintenance and Inspection" > "Consumable Parts") Initialize the counter amount of the consumable parts. (Clear [COUNTER] > [PARTS CNT.] > [PARTS x]) * After replacing the consumable part, be sure to execute this menu.

7.1.4 Sample Printout

a) PRINTINF

A sample printout that is produced by executing [SERVICE MODE] > [DISPLAY] > [PRINTINF] is shown below, along with instructions about how to interpret it.

(1) xxxx PRINT INF
 Firm:00.49 Boot:00.31 MIT(DBF):9303 MIT(DB):1.02 S/N:DF029090

(2) SYSTEM
 TYPE:DF029090 24 0 TMP:26 SIZE_LF: 0.0 SIZE_CR: 514.3
 HEAD S/N:39410000
 HEAD LOT:166L09A0
 INK
 C :0 M :0 Y :0 MBK :0MBK2 :0 BK :0
 WARNING
 01:0000 02:0000 03:0000 04:0000 05:0000
 06:0000 07:0000 08:0000 09:0000 10:0000
 11:0000 12:0000 13:0000 14:0000 15:0000
 16:0000 17:0000 18:0000 19:0000 20:0000
 ERROR
 01:03060A00-2E01 02:0000 03:0000 04:0000 05:0000
 06:0000 07:0000 08:0000 09:0000 10:0000
 11:0000 12:0000 13:0000 14:0000 15:0000
 16:0000 17:0000 18:0000 19:0000 20:0000
 INK CHK: C:0 M:0 Y:0 MBK:0 MBK2:0 BK:0

(3) COUNTER
 PRINTER
 LIFE TTL:0
 LIFE ROLL:0 LIFE CUTSHEET:0 LIFE CASSETTE:0
 LIFE CASSETTE:0

MEDIA 7		MEDIA OTHER		OTHER	
NAME		NAME		OTHER	
TTL	: 0.0 m2	0.0 sq.f	TTL	: 0.0 m2	0.0 sq.f
ROLL	: 0.0 m2	0.0 sq.f	ROLL	: 0.0 m2	0.0 sq.f
CUTSHEET	: 0.0 m2	0.0 sq.f	CUTSHEET	: 0.0 m2	0.0 sq.f
CASSETTE	: 0.0 m2	0.0 sq.f	CASSETTE	: 0.0 m2	0.0 sq.f

	(a)	(b)	(c)	(d)	(e)	(f)
PARTS COUNTER						
COUNTER A :	OK	36	0.0	36.1	0%	0.0
PARTS A1 :						
COUNTER B :	OK	36	0.0	64.0	0%	0.0
PARTS B1 :						
COUNTER D :	OK	36				
PARTS D1 :			1362	13028571	0%	1362
PARTS D2 :			377	6700000	0%	377
PARTS D3 :			2238	16500000	0%	2238
PARTS D4 :		33		60000	0%	33
COUNTER F :	OK	36				
PARTS F1 :			377	4000000	0%	377
COUNTER H :	OK	36				
PARTS H1 :		15		50000	0%	15
COUNTER L :	OK	36				
PARTS L1 :			4	12500	0%	4
COUNTER P :	OK	36				
PARTS P1 :			0	750	0%	0
COUNTER Q :	OK	36				
PARTS Q1 :			0	750	0%	0
COUNTER R :	OK	36				
PARTS R1 :			0	27500	0%	0
COUNTER V :	OK	36				
PARTS V1 :			0.0	15.2	0%	0.0

(4) PV AUTO JUDGE ON(NORMAL) 1
 (a) (b)

(1) Version numbers of the firmware installed in the printer, boot ROM, and MIT DB format

(2) Printer information

For more item details, see "Detail of Service Mode" > "a) Display".

(3) Counter information

For more item details, see "Detail of Service Mode" > "e) Counter".

(a) Consumables status

(b) Number of days elapsed since the counter was last reset

(c) Counter value

(d) Value with which consumables reach their replacement timing

(e) Ratio of the current count to the replacement timing

(f) Cumulative counter value

(4) Ink saver mode setting

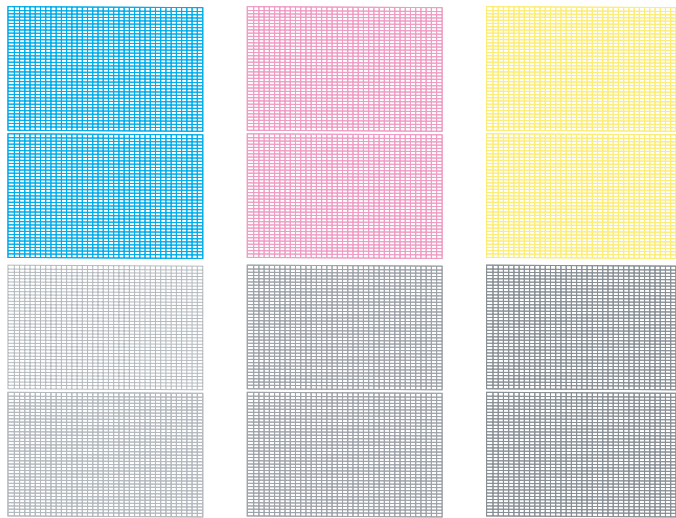
(a) Ink saver mode status

(b) Number of times ink save mode has been executed (unit: times).

b) NOZZLE 1

A sample printout that is produced by executing [SERVICE MODE]> [ADJUST]> [PRINT PATTERN]> [NOZZLE 1] is shown below.

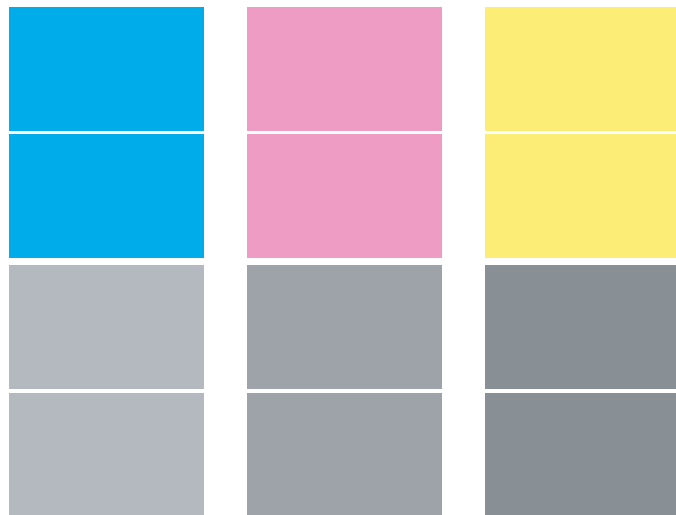
Nozzle Check Pattern SERVICE



F-7-2

c) NOZZLE 2/NOZZLE 3

A sample printout that is produced by executing [SERVICE MODE]> [ADJUST]> [PRINT PATTERN]> [NOZZLE 2] or [NOZZLE 3] is shown below.



F-7-3

d) OPTICAL AXIS

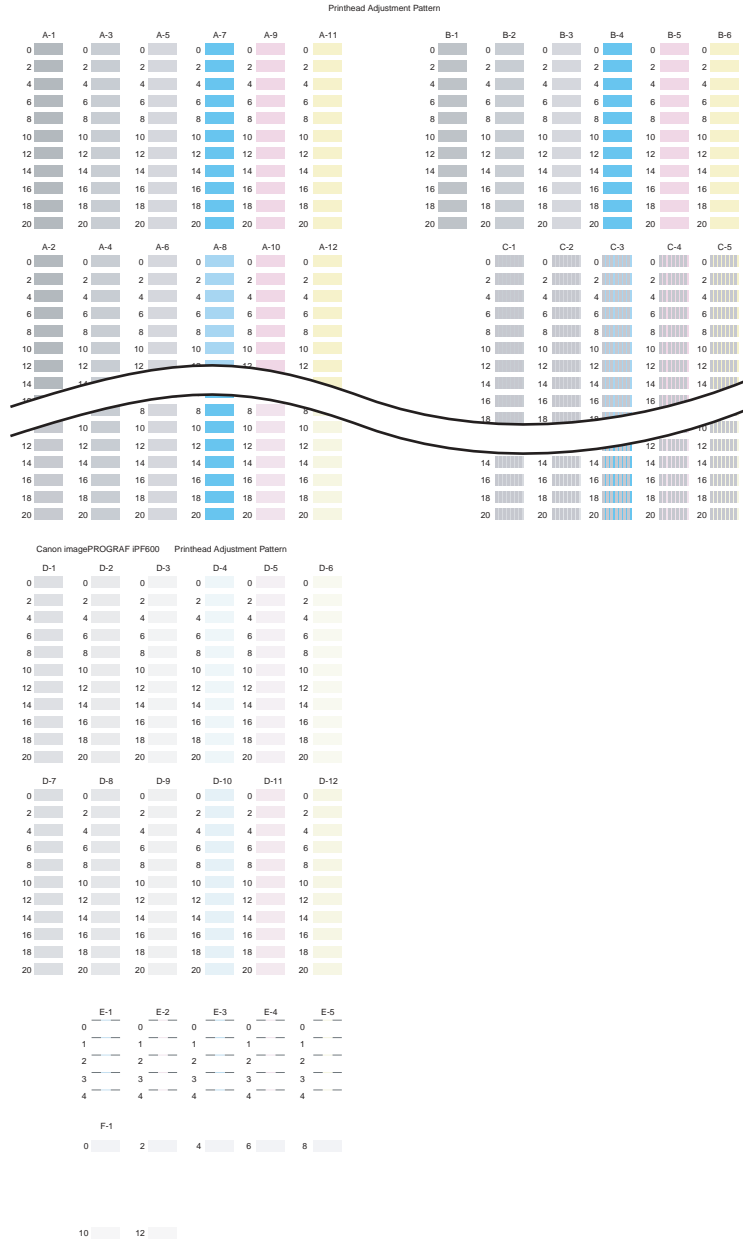
A sample printout that is produced by executing [SERVICE MODE]> [ADJUST]> [PRINT PATTERN]> [OPTICAL AXIS] is shown below.



F-7-4

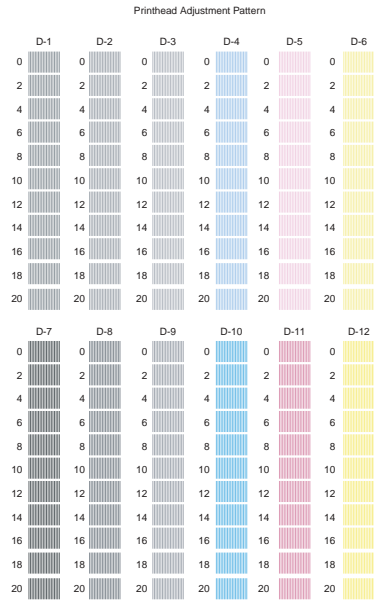
e) **DETAIL**

A sample printout that is produced by executing [SERVICE MODE]> [ADJUST]> [HEAD ADJ.] > [AUTO HEAD ADJ]> [DETAIL] is shown below.



f) BASIC

A sample printout that is produced by executing [SERVICE MODE]> [ADJUST]> [HEAD ADJ.] > [AUTO HEAD ADJ]> [BASIC] is shown below.



F-7-6

7.2 Special Mode

7.2.1 Special Modes for Servicing

This printer supports the following special modes in addition to the service mode:

- **PCB replacement mode**
- **Download mode**
- **Counter display mode**

1. PCB replacement mode

This mode is used when replacing the main PCB or MC relay PCB.

By executing this mode,

- Backup data of the settings and counter values stored in the MC relay PCB are moved to the new main PCB.
- The data such as the settings and counter values are copied to the MC relay PCB.

a) Entering the PCB replacement mode

Follow the same procedure as that for entering the service mode.

(With the "Paper Source" button and "Information" button pressed down, turn on the "Power" button.)

When the printer starts up, compare the serial number memorized in the main PCB's EEPROM with that memorized in the MC relay PCB's EEPROM. If they do not match, or no serial number is memorized in either EEPROM, enter the PCB replacement mode.

While you are in the PCB replacement mode, the MESSAGE LED, roll media LED, and ONLINE LED are lit.

b) Procedure

Select "CPU BOARD" or "MC BOARD" using the [◀] and [▶] buttons, and then press the [OK] button to determine it.

- CPU BOARD

Select this after replacing the main PCB.

The data in the MC relay PCB is copied to the main PCB.

- MC BOARD

Select this before replacing the main PCB.

The data in the main PCB is copied to the MC relay PCB.

Use this when the MC relay PCB is a new one.

c) Exiting the PCB replacement mode

Turning off the Power button of the printer allows you to exit the PCB replacement mode.

For details on how to replace the PCB, see Parts Replacement Procedure > Disassembly/Reassembly > Points to Note on Disassembly and Reassembly > Boards.

2. Download mode

Use this mode only when updating the firmware without performing initialization.

a) Entering the download mode

1) Turning off the Power button of the printer.

2) With the "Stop" and "Information" buttons pressed down, turn on the Power button of the printer.

* Keep pressing the above buttons until "Initializing" appears on the display.

b) Procedure

When "Download Mode/Send Firmware" is shown on the display, transfer the firmware.

When downloading of the firmware is completed, the printer is turned off automatically.

3. Counter display mode

Use this mode to view only printer counter information.

a) Invoking counter display mode

1) Press the [MENU] button to keep [Information] > [System Info] selected.

2) Press the [▲] button while holding down the [MENU] button + [OK] button to invoke counter display mode.

b) How to view counter display mode

- S/N: Unit serial number

- CNT: Number of copies printed in A4 terms (unit: copies)

Chapter 8 ERROR CODE

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8.1 Outline

8.1.1 Outline

The printer indicates errors using the display and LEDs.

If an error occurs during printing, the printer status is also displayed on the status monitor of the printer driver.

The following three types of errors are displayed on the display:

- Warning

Status where the print operation can be continued without remedying the cause of the problem. This can, however, adversely affect the printing results.

- Error

Status where the print operation is stopped, and the regular operation cannot be recovered until the cause of the problem is remedied.

- Service call error

When a service call error occurs, the error is not cleared and the error indication remains on the operation panel even if the printer is powered off and on again.

(Occurrence of the service call error is indicated again at power-on.)

This measure is taken to prevent user's recovery of the service call error and damages to the printer.

Service call errors can be cleared, however, by starting up the printer in the service mode.

For how to take actions against warnings and errors, refer to "Troubleshooting".

Overview of warnings and error codes

T-8-1

Code*	Diagnosis
0181010x-100x	Ink warning
01841001-1100	Waste ink warning
0134122x-103x	GARO warning
01800500-1010	Printhead warning
03xxxxxx-20xx,24xx	Media feeding error Data mismatch error
03xxxxxx-2Exx	Cover open error
03xxxxxx-25xx	Ink error
03xxxxxx-280x	Printhead error
03xxxxxx-281x	Maintenance cartridge error
03xxxxxx-282x	Adjustment error
03xxxxxx-2Fxx,26xx	Head management sensor unit error Other errors
Exxx-40xx	Service call error

* "x" stands for a numeric or letter.

8.2 Warning Table

8.2.1 Warnings

The codes correspond to the numbers shown on the DISPLAY in the service mode.

T-8-2

Code	Display message	Status
1000	Ink Lv1: Chk	BK ink tank is almost empty
1001	Ink Lv1: Chk	Y ink tank is almost empty
1002	Ink Lv1: Chk	M ink tank is almost empty
1003	Ink Lv1: Chk	C ink tank is almost empty
1006	Ink Lv1: Chk	MBK ink tank is almost empty
1007	Ink Lv1: Chk	MBK2 ink tank is almost empty
100F	Feed Limit...	Force feed limit
1010	Check printed document.	Ink non discharging
1100	Check maint cartridge capacity.	Maintenance cartridge is almost full
1221	GARO W1221	Unsupported command in GARO image mode
1222	GARO W1222	Invalid number of parameters in GARO image mode (no parameter)
1223	GARO W1223	Required item was omitted in GARO image mode
1225	GARO W1225	Other warning in GARO image mode
1231	GARO W1231	Unsupported command in GARO setting mode
1232	GARO W1232	Invalid number of parameters in GARO setting mode
1233	GARO W1233	Required item was omitted in GARO setting mode
1234	GARO W1234	Data out of range in GARO image mode
1235	GARO W1235	Other warning in GARO setting mode
	Prepare for parts replacement. Call for service.	Parts counter warning level 1
	Parts replacement time has passed. Call for service.	Parts counter warning level 2

8.3 Error Table

8.3.1 Error Code List

*The codes correspond to the numbers shown on the DISPLAY in the service mode.

T-8-3

Code*	Description
03010000-200C	Media leading edge not detected
03010000-200D	Cut sheet end cannot be detected
03010000-2017	Media right edge not detected
03010000-2018	Media left edge not detected
03010000-2820	Head resistration improper adjustment
03010000-2821	LF improper adjustment
03010000-2822	Eccentricity improper adjustment
03010000-2823	Printhead check error
03010000-2E1F	To print internal, a small form was set.
03010000-2E25	Feed error
03010000-2E27	Media became misaligned during printing
03010000-2F33	Transparent media was loaded and cannot adjust
03016000-2010	Media skewed
03030000-2E21	IEEE1394 error
03060000-2E14	Media width mismatch
03060000-2E16	Form kind and size mismatch(Only the cassette)
03060200-2E03	The cut sheet is not set in the cassette though the data of the cassette specification was received.
03060200-2E0B	When hand difference cut sheet had been loaded, the data of the cassette specification was received.
03060A00-2E00	Roll media was not loaded even though the received data indicated roll media.
03060A00-2E01	When the test is printed, it is the roll paper none.
03060A00-2E0E	Roll paper unit uninstillation
03060A00-2E1B	End of roll media
03061000-2E15	Media type mismatch
03130031-291B	Lift movement time-out
03130031-291D	Lift cam sensor detection failure
03130031-2E23	Cutter unit breakdown
03130031-2F13	A/D converter outside trigger output stop
03130031-2F14	ASIC register writing error
03130031-2F16	Mist fan error
03130031-2F17	Platen fan error
03130031-2F20	Purge motor error
03130031-2F22	Pump movement time-out
03130031-2F23	Pump cannot operate
03130031-2F24	Cutter movement time-out
03130031-2F25	Unable to detect carriage motor home position
03130031-2F26	Carriage motor driving error
03130031-2F27	Carriage motor time-out
03130031-2F28	Purge sensor error
03130031-2F2A	Feed roller HP sensor error
03130031-2F2D	Cassette driving error
03130031-2F2E	Roll media feeding motor time-out
03130031-2F32	Multi sensor error
03130031-2F3A	Valve motor error
03180003-2E22	MIT error
03180101-2E17	Cassette uninstillation
03800200-2802	Incorrect printhead was installed
03800300-2801	Unable to correct printhead DI
03800400-2803	Printhead EEPROM error
03800500-280C	Many nozzle on printhead did not inject ink
03800500-2F2F	No ink ejection detection error
03800500-2F30	No ink ejection detection position adjustment error
03810101-2501	No ink (Y)
03810102-2502	No ink (M)
03810103-2503	No ink (C)
03810104-2500	No ink (BK)
03810106-2506	No ink (MBK)
03810106-2507	No ink (MBK2)
03810201-2581	Remaining ink low (Y)
03810201-2591	Remaining ink low (Y)

Code*	Description
03810202-2582	Remaining ink low (M)
03810202-2592	Remaining ink low (M)
03810203-2583	Remaining ink low (C)
03810203-2593	Remaining ink low (C)
03810204-2580	Remaining ink low (BK)
03810204-2590	Remaining ink low (BK)
03810206-2586	Remaining ink low (MBK)
03810206-2587	Remaining ink low (MBK2)
03810206-2596	Remaining ink low (MBK)
03810206-2597	Remaining ink low (MBK2)
03830101-2521	Ink tank not installed (Y)
03830102-2522	Ink tank not installed (M)
03830103-2523	Ink tank not installed (C)
03830104-2520	Ink tank not installed (BK)
03830106-2526	Ink tank not installed (MBK)
03830106-2527	Ink tank not installed (MBK2)
03830201-2541	Ink tank ID error (Y)
03830202-2542	Ink tank ID error (M)
03830203-2543	Ink tank ID error (C)
03830204-2540	Ink tank ID error (BK)
03830206-2546	Ink tank ID error (MBK)
03830206-2547	Ink tank ID error (MBK2)
03830301-2561	Ink tank EEPROM error (Y)
03830302-2562	Ink tank EEPROM error (M)
03830303-2563	Ink tank EEPROM error (C)
03830303-2572	Remaining ink low (M)
03830304-2560	Ink tank EEPROM error (BK)
03830304-2570	Remaining ink low (BK)
03830306-2566	Ink tank EEPROM error (MBK)
03830306-2567	Ink tank EEPROM error (MBK2)
03830306-2576	Remaining ink low (MBK)
03830306-2577	Remaining ink low (MBK2)
03830312-2571	Remaining ink low (Y)
03830313-2573	Remaining ink low (C)
03841001-2819	Maintenance cartridge tank full
03841001-281B	Empty capacity of the maintenance cartridge when cleaning it various is insufficient.
03841101-2818	Maintenance cartridge not installed
03841201-2816	Maintenance cartridge EEPROM error
03841201-2817	Maintenance cartridge ID error
03860002-2E0A	Manually fed cut sheet was already loaded even though received data indicated roll media
03861001-2405	The form set position is unsuitable to the print of edge none.
03861001-2406	Data is unsuitable to the print of edge none.
03862000-2E09	Roll paper running out
03870001-2015	Cut error
E194-4034	Sensor calibration error(not generated in the user mode.)

8.4 Service Call Table

8.4.1 Service call errors

*Codes correspond to the numbers shown on the DISPLAY in the service mode.

T-8-4

Code*	Description
E141-4046	Recovery system rotation count reached 50,000.
E144-4047	Feed system counting error
E146-4001	Borderless/idle ejection/mist recovery count full
E161-403E	Abnormally high printhead temperature
E194-404A	No ink ejection counting error
E196-4040	Checksum error
E196-4041	Flash memory clearing error
E196-4042	Flash memory write error
E196-4043	Main controller error
E196-4045	EEPROM write error
E196-4049	Forwarding ROM data machine kind difference
E198-401C	RTC error

Code*	Description
E198-401D	RTC low battery error
E198-401E	RTC clock stopped

Jul 3 2007

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