

Product: 2005 Canon W8400 Series Printer Service Repair Workshop Manual
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Service Manual

W8400 Series
W8400

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Apr 5 2005

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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.

Corrections

This manual may contain technical inaccuracies or typographical errors due to improvements or changes in products. When changes occur in applicable products or in the contents of this manual, Canon will release technical information as the need arises. In the event of major changes in the contents of this manual over a long or short period, Canon will issue a new edition of this manual.

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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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1.1 Product Overview

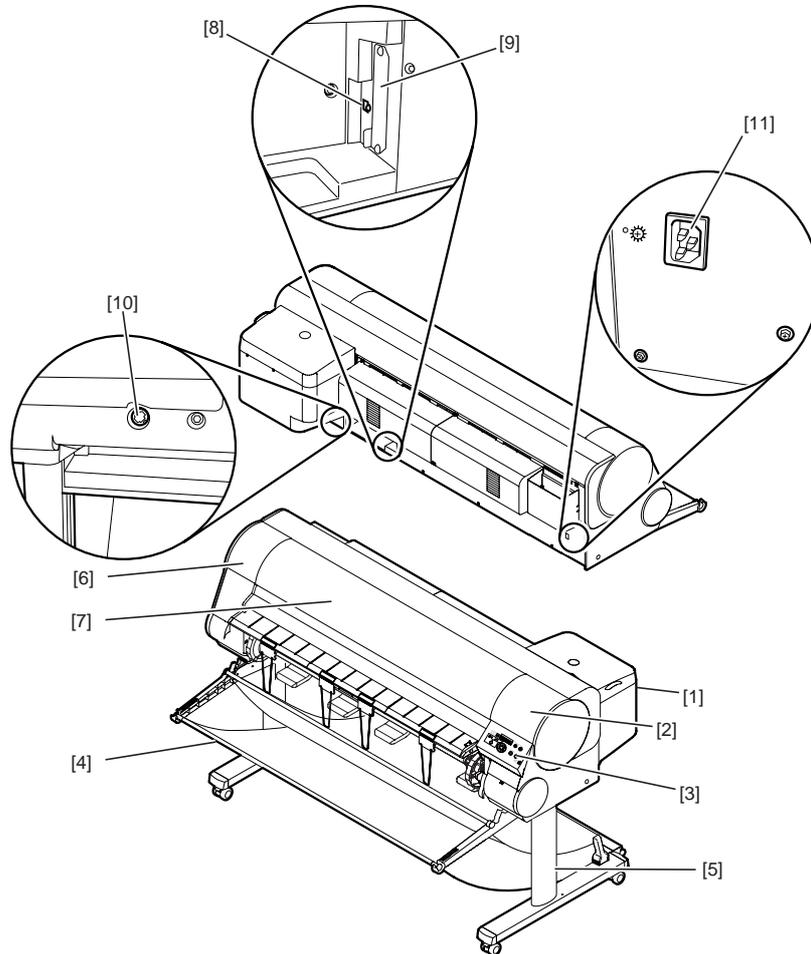
1.1.1 Product Overview

0008-3099

This printer is a large format printer which is capable of high-speed, photo-quality printing on large-size paper up to 44 inches wide (B0 size with index lines).

The printer is a stand-mounted. The printer is capable of output to either roll media or cut sheet.

External View of Printer (1/2)



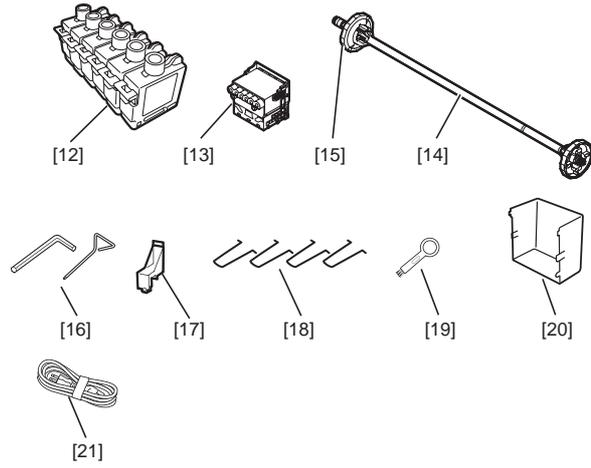
F-1-1

T-1-1

[1]	Right cover	[7]	Upper cover
[2]	Upper right cover	[8]	USB port
[3]	Operation panel	[9]	Expansion board slots (a network interface board or IEEE1394 expansion board. *1)
[4]	Output stacker	[10]	Connector for the Media take-up unit
[5]	Stand (option except for USA model)	[11]	Power supply connector
[6]	Upper left cover		

*1: The Network board is installed as a standard item for USA model.

External View of Printer (2/2)



F-1-2

T-1-2

- [12] Ink tank
- [13] Print head
- [14] Roll holder
- [15] Holder stopper
- [16] Hex key wrench

- [17] Belt stopper
- [18] Snag prevention stay
- [19] Cleaner brush
- [20] Accessory pocket
- [21] Power cord

1.2 Features

1.2.1 Features

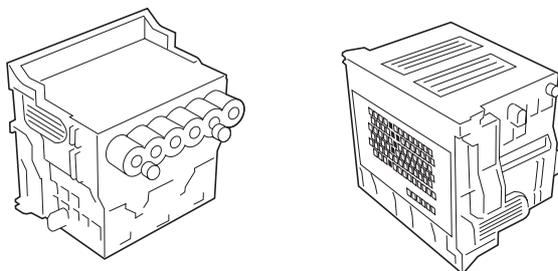
0008-3103

- Reduced size with ink tank placed in rear.
 - Printable on a variety of print media with the use of two types of black ink (replaceable).
- Photo Black: This ink has excellent gloss and black density for glossy media and proof media. Nearly all types of media can be printed, including glossy media.
- Matte Black: This ink has excellent black density for standard paper, fine art media, and matte media. It cannot be used for glossy media.
- Remaining roll media control made possible by barcode printed on roll media.
 - Four-sides borderless printing support (roll media) eliminates tedious cutting and simplifies poster creation.
 - High quality photo finish with 2400 x 1200 dpi maximum resolution using highly lightfast, water-proof, and ozone-proof six color (C, M, Y, Bk, MBk, PC, PM) pigment ink. (Choose either Bk or MBk)
 - High-speed printing with bidirectional print control using 1 inch (1280-nozzles) head for each color.
 - Tubing type ink supply completely separating print head and large capacity ink tank.
 - Support for roll media and cut sheets.
 - Roll media with width from 203.2 to 609.6 mm and length up to 18 m can be used.
 - Standard carriage mounted cutter enables automatic sheet cutting. In addition, optional cutter unit enables cutting of additional types of media.
 - Cut sheet feeding, media discharge, and ink tank replacement can be performed easily from the front.
 - Standard support for high-speed USB2.0 interface. Optional support for 10Base-T/100Base-TX TCP/IP network or IEEE1394.

1.2.2 Printhead

0009-1059

On the carriage, disposable printhead is installed, each of which contains six rows of integrated nozzles. Each row consists of 1280 nozzles, which are arranged in a staggered pattern for printing efficiency. If print quality does not improve despite carrying out cleaning, the printhead should be replaced with a new one. Generally, it is recommended that the print head be replaced about 6 months after you have opened the package.



F-1-3

1.2.3 Ink Tank

0009-1061

The ink tank is disposable.

There are six colors: Black (Bk), Photo Cyan (PC), Cyan (C), Photo Magenta (PM), Magenta (M) and Yellow (Y), each using pigment based ink. Either Black (Bk) or Matte Black (MBk) can be selected for Black.

There are the following features in two kinds of black ink.

- Photo Black

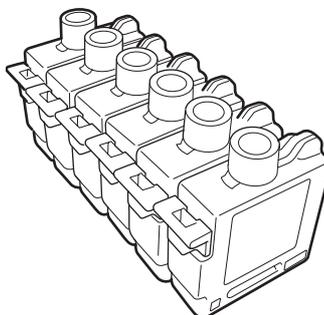
This ink has excellent gloss and black density for glossy media and proof media. Nearly all types of media can be printed, including glossy media.

- Matte Black

This ink has excellent black density for standard paper, fine art media, and matte media. It cannot be used for glossy media.

To install an ink tank, open the right cover of the printer and insert the tank. The printer features a mechanism by which only the correct color ink tank will fit in its given slot.

When the "No Ink" message is displayed, replace the ink tank with a new one. Also, the ink tanks should generally be replaced 6 months after you have opened the package.



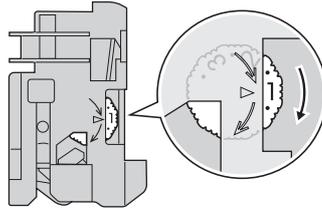
F-1-4

1.2.4 Cutter Unit

0009-1079

A disposable cutter unit is mounted on the carriage.

When the cutter becomes dull, increment the position adjustment dial by 1. If the dial is at 3, replace with a new cutter unit.

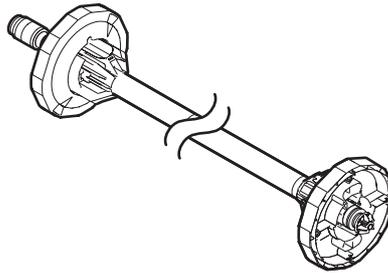


F-1-5

1.2.5 Roll Holder

0009-1094

A roll holder for a 2-inch inner diameter paper tube is included as standard accessory. Roller holders for 2-inch inner diameter paper tube and 3-inch inner diameter paper tube are set as option. Both roll holders lock into the cardboard tube of roll media with an outer diameter not more than 6 inch (150 mm).



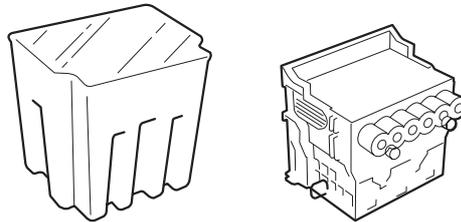
F-1-6

1.2.6 Consumables

0009-1139

Printhead

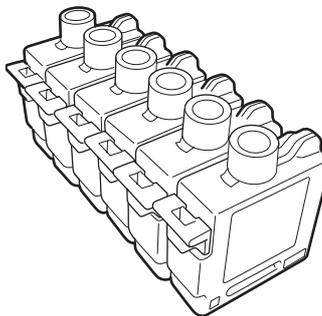
This consumable printhead is the same as the printhead shipped with the printer.



F-1-7

Ink tank

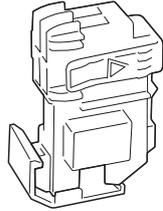
Seven types of consumable ink tank are available in six colors: Black (Bk), Matte Black (MBk), Photo Cyan (PC), Cyan (C), Photo Magenta (PM), Magenta (M), and Yellow (Y). They are all identical with the ink tank shipped with the printer. Each bottle has a life of 6 months from the time the package is opened.



F-1-8

Cutter unit

The consumable cutter unit is the same as the cutter unit shipped with the printer.



F-1-9

1.3 Product Specifications

1.3.1 General Specifications

0008-3121

Type	Bubble jet printer (Desktop type)
Feeding system	Roll media: Manual (rear setting) Cut sheet: Manual (front setting)
Feeding capacity	Roll media: 1 roll (outer diameter: 150 mm or less) Standard roll holder: inner diameter of the paper tube: 50.8 mm (2") Optional roll holder: inner diameter of the paper tube: 50.8 mm (2") Optional roll holder: inner diameter of the paper tube: 76.2 mm (3") Cut sheet: 1 sheet
Delivery method	Delivers the media with its printed side up in the forward direction
Sheet delivery capability	1 sheet (Delivered in outlet stacker)
Cutter	Automated replaceable cartridge-type cutter
Type of media	See to Product Description > Detailed Specification > Type of media.
Supported thickness	70 µm to 800 µm
Media size (Roll media)	Width: 254mm(10") to 1117.6mm(44") Length: 210.0mm(8.27") to 18m(709") *Outer diameter of roll: 150mm or less.
Media size (Cut sheet)	Width: 203.2mm(8") to 1117.6mm(44") Length: 203.2mm(8") to 1574.8mm(62")
Printable area (Roll media)	Area excluding 5 mm from the top, 5 mm from the bottom, and 5 mm from the left and right edges * Printable area may depend on the media.
Printable area (Cut sheet)	Area excluding 5 mm from the top, 23 mm from the bottom, and 5 mm from the left and right edges * Printable area may depend on the media.
Printing assurance area (Roll media)	Inside area excluding 20 mm from the top, 23 mm from the bottom, and 5 mm from the left and right edges
Printing assurance area (Cut sheet)	Inside area excluding 20 mm from the top, 23 mm from the bottom, and 5 mm from the left and right edges
Margins (Roll media)	Leading edge 5mm, Trailing edge 5mm, Left edge 5mm, Right edge 5mm
Margins (Cut sheet)	Leading edge 20mm, Trailing edge 23mm, Left edge 5mm, Right edge 5mm
Emulation	None
Interface	Compliance with USB specification 2.0 standards Network 10 Base-T/100 Base-TX (compliance with IEEE802.3 standards) (option except for USA model) Compliant with IEEE1394-1995 standards and P1394a (Version2.0) (option)
Printhead/Ink Tank type	Printhead and separate ink tanks
Printhead	BCI-1350 Architecture: Six rows of integrated nozzles arranged in parallel One row of nozzles: 1280 nozzles arranged in a staggered pattern
Ink tank	BCI-1421: Bk, PC, C, PM, M BCI-1441: MBk, Y Ink type: Pigment ink Ink capacity: Approx. 330 ml

Detection functions (Cover system)	Covers open/close detection: Yes
Detection functions (Ink passage system)	Ink tank detection: Yes Ink level detection: Yes Maintenance cartridge detection: Yes Waste ink full detection: Yes
Detection functions (Carriage system)	Printhead detection: Yes Carriage position detection: Yes Carriage home position detection: Yes Carriage cover open/close detection: Yes Carriage temperature detection: Yes Carriage head position detection: Yes Non-discharging nozzle detection: Yes Non-discharging nozzles back-up function: Yes
Detection functions (Paper path system)	Paper detection: Yes Paper leading and trailing edge detection: Yes Paper width detection: Yes Skew detection: Yes Paper release lever position detection: Yes Roll media trailing edge detection: Yes Remaining roll media detection: Yes Feed roller rotation detection: Yes
Operating noise	During printing: Approx. 54dB (A) max. (6.9Bels max.) During standby: Approx. 35dB (A) max.
Operating environment	Operating environment: Temperature 5 deg C to 35 deg C Humidity 10 % to 90 % RH
Print quality guaranteed environment	Print quality guaranteed environment: Temperature 15 deg C to 30 deg C Humidity 10 % to 80 % RH
Power supply	AC100 V to 240 V, 50 Hz/60 Hz
Power consumption (Maximum)	Maximum: 160 W max.
Power consumption	Power save mode 100 to 115V: 6 W max. 220 to 240V: 9 W max. Power off: 1 W max. * If an option has been mounted, this may be different.
Printer unit dimensions (WxDxH)	W1,642 mm x D715 mm x H478 mm (not including the stand) W1,642 mm x D971 mm x H1,075 mm (including the stand)
Weight	Weight Approx. 80 kg (without stand) Weight Approx. 98 kg (including stand)

1.4 Detailed Specification

1.4.1 Type of media

0009-8740

T-1-3

Classification	Media Type
Photo	Photo Glossy Paper, Photo Semi-Glossy Paper, Heavyweight Glossy Photo Paper, Heavyweight Semi-Glossy Photo Paper
Art	Fine Art Photo, Fine Art Heavyweight Photo, Fine Art Textured, Canvas Matte, Canvas Semi-Glossy
Japanese Paper Washi	Japanese Paper Washi
Coated Paper	Coated Paper, Heavy Coated Paper, Extra Heavyweight Coated Paper, Colored Coated Paper
Generic	Plain Paper, Plain Paper (High Quality)
CAD	CAD Plain Paper, CAD Tracing Paper, CAD Translucent Matte Film, CAD clear film
Proof	Proofing Paper 2, Newsprint for Proofing
Synthetic Paper	Synthetic Paper, Adhesive Synthetic Paper
Film	Back Light Film
Cloth	Flame-Resistant cloth, Cloth

1.4.2 Printing Speed and Direction

0009-8505

Image is used by enlarging JIS SCID No.5 (ISO) to A0 full size.

T-1-4

Media type	Mode	Print-pass	Printing direction	Print resolution (dpi)	Print speed *1
Plain paper, Plain paper (High Quality)	Draft	2-pass	Bi-directional	1200x1200dpi	Approx. 1.3 min.
	Standard	6-pass		1200x1200dpi	Approx. 3.0 min.
Coated Paper, Heavy Coated Paper, Extra Heavy Coated Paper	Draft	4-pass		1200x1200dpi	Approx. 2.0 min.
	Standard	6-pass		1200x1200dpi	Approx. 3.0 min.
	High	8-pass		2400x1200dpi	Approx. 6.7 min.
Photo Glossy Paper, Photo Semi-Glossy Paper, Photo Glossy Paper (HW), Photo Semi-Glossy Paper (HW), Special1 - 5	Standard	8-pass		1200x1200dpi	Approx. 3.9 min.
	High	8-pass		2400x1200dpi	Approx. 6.7 min.
	Highest	16-pass		2400x1200dpi	Approx. 13.1 min.
Fine Art (Photo), Fine Art (Photo HW), Fine Art (Textured), Canvas (Matte), Canvas (Semi-Glossy)	Draft	8-pass		1200x1200dpi	Approx. 3.9 min.
	Standard	8-pass		2400x1200dpi	Approx. 6.7 min.
	High	16-pass		2400x1200dpi	Approx. 13.1 min.
Japanese Paper, Synthetic Paper, Adhesive Synthetic Paper, Flame-Resistant Cloth, Cloth	Standard	8-pass		1200x1200dpi	Approx. 3.9 min.
	High	16-pass		2400x1200dpi	Approx. 13.1 min.
Back Light Film	Standard	8-pass		2400x1200dpi	Approx. 6.7 min.
	High	16-pass		2400x1200dpi	Approx. 13.1 min.
Proofing Paper 2	Standard	8-pass		1200x1200dpi	Approx. 3.9 min.
	High	8-pass		2400x1200dpi	Approx. 6.7 min.
Newspaper Proofing Paper 1 - 3	Draft	4-pass		1200x1200dpi	Approx. 2.0 min.
	Standard	6-pass	1200x1200dpi	Approx. 3.0 min.	
Color Coated Paper	Draft	4-pass	1200x1200dpi	Approx. 2.0 min.	
	Standard	6-pass	1200x1200dpi	Approx. 3.0 min.	

*1: From the time when carriage starts moving under the following environment until the final band is output. Excluding data transfer, processing, or drying time.

OS: Windows 2000 SP4

PC: Pentium4 2.2GHz/RAM:512MB

Application: Adobe Photoshop 6.0

I/F: USB2.0

Image: ISO JIS-SCID No.5 chart enlarged to A0 size

1.4.3 Interface Specifications

0009-8506

a. USB

1) Interface format

USB 2.0, Full Speed (12Mbit/sec), High Speed (480Mbit/sec)

2) Data transfer

Control transfer

Bulk transfer

3) Signal level

Compliance with USB standards

4) Interface cable

Twisted-pair shielded cable, 5.0 m max.

Compliance with USB standards

Wire materials AWG No. 28, data wire pair (AWG: American Wire Gauge)

AWG No. 20 to No. 28, wire pair

5) Interface connector

Printer side: USB standards, series B receptacle

Cable side: USB standards, series B plug

b. IEEE1394 (option)

1) Interface format

Interface complying with IEEE1394-1995, P1394a (Version 2.0) standards

2) Data transfer

Asynchronous transfer

3) Signal level

Input:

Differential input voltage: S100 During negotiation period +173 mV to +260 mV

During data reception +142 mV to +260 mV

S200 During negotiation period +171 mV to +262 mV

During data reception +132 mV to +260 mV

S400 During negotiation period +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.

Compliance with IEEE1394-1995 standards or P1394a (Version 2.0) standards

5) Interface connector

Printer side: IEEE1394 standards, 6-pin connector (socket)

Cable side: IEEE1394 standards, 6-pin connector (plug)

c. Network (option except for USA model)

1) Interface format

Interface complying with IEEE802.3 standards

2) Data transfer

10Base-T/100Base-TX

3) Signal level

Input : threshold

10 Base-T : max +585mV

min +300mV

100 Base-TX : turn-on +1000mV diff pk-pk

turn-off +200mV diff pk-pk

Output:

10 Base-T : +2.2V to +2.8V

100 Base-TX : +0.95V to +1.05V

4) Interface cable

Category 5 (UTP or FTP) cable, 100 m max.

Compliance with ANSI/EIA/TIA-568A or ANSI/EIA/TIA-568B standards

5) Interface connector

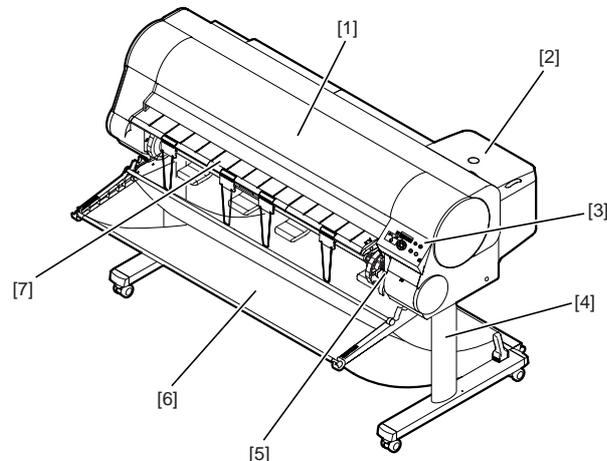
Printer side: IEEE802.3 standards, compliance with ANSI X3.263 standards, and ISO/IEC60603-7 standards

Cable side: Compliance with ANSI/EIA/TIA-568A or ANSI/EIA/TIA-568B standards, RJ-45 type

1.5 Names and Functions of Components

1.5.1 Front

0009-8428



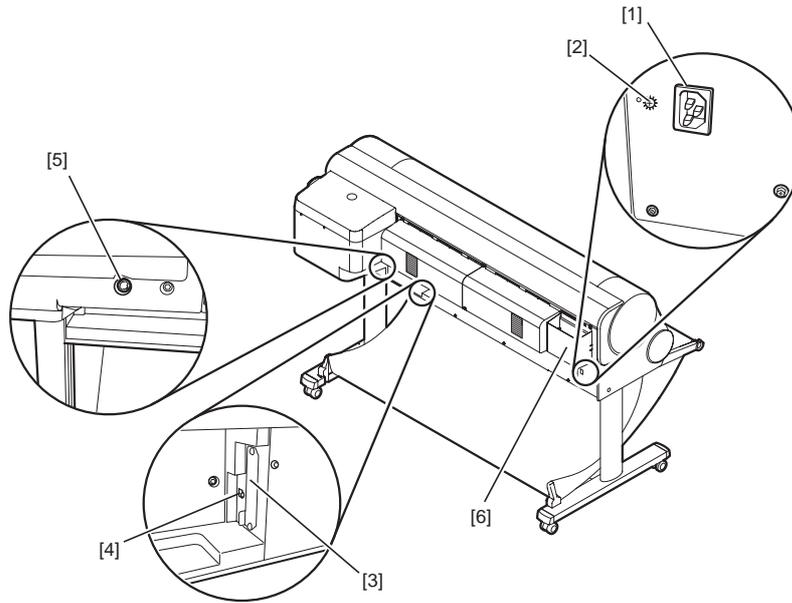
F-1-10

T-1-5

[1]	Upper Cover	Remove this cover to install the print head, to load media, or to remove sheets of paper jammed in the printer.
[2]	Right Cover	Open to replace ink tanks.
[3]	Operation Panel	Provides the display panel and the operation panel buttons.
[4]	Stand	This is a table designed specially for this printer. Casters are attached to the legs to make it easy to move. An optional Media Take-up Unit can also be installed.
[5]	Release Lever	The lever that releases the media. If you are loading or manually feeding paper, pull up this lever and open the paperweight bar.
[6]	Output stacker	A cloth tray that catches print media ejected from the printer.
[7]	Paper Catch Tray	Printed media is delivered to the paper catch tray. Open the paper catch tray to load the roll media.

1.5.2 Rear

0009-8429



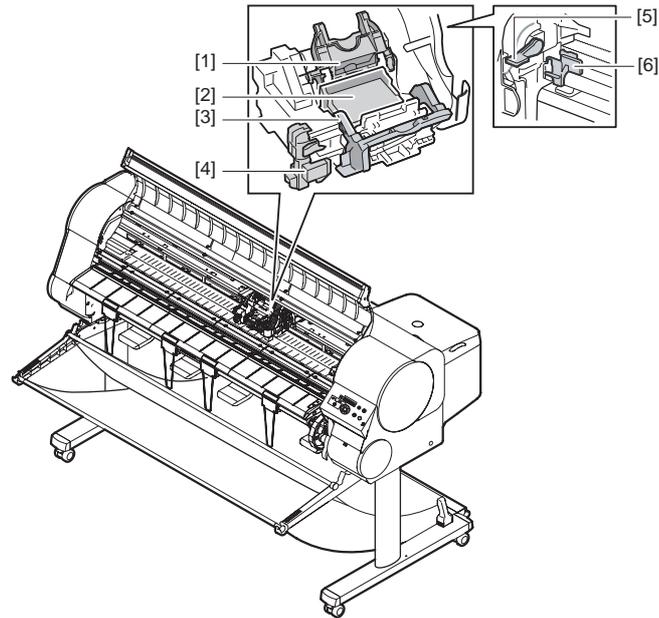
F-1-11

T-1-6

[1]	Power Supply Connector	Provides a connection point for the printer power cord.
[2]	Grounding Wire Connector	Provides a connection point for the grounding wire. (only JP model)
[3]	Expansion Board Slots	Provided for installing a network interface board or IEEE1394 expansion board.
[4]	USB Port	This is the communication port for USB High Speed 2.0. Connect the USB cable here to connect the printer to the computer via USB.
[5]	Media Take-up Unit Connector	Provides a connection point for the optional media take-up unit
[6]	Accessory Pocket	Holds the printer manual, tools for assembly, and extra ink tanks.

1.5.3 Carriage

0009-8430



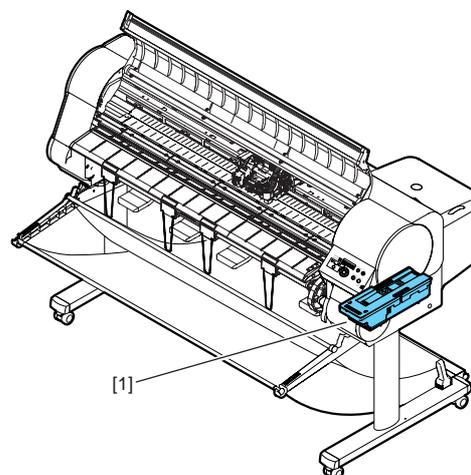
F-1-12

T-1-7

[1]	Print Head Lock Cover	This cover locks and holds the print head in place.
[2]	Print Head	An important component that is equipped with the print nozzles.
[3]	Print Head Lock Lever	This is the lever that locks the printhead lock cover. Open this lever to open the print head cover.
[4]	Cutter Blade	The cutter unit that cuts print media automatically.
[5]	Print Head Height Adjustment Lever	Use to adjust the height of the printhead. You will need to adjust the height of the printhead for high quality printing and printing on special media.
[6]	Shaft Cleaner	The shaft cleaner prevents the carriage shaft from becoming dirty. This cleaner must be replaced at the same time as the maintenance cartridge is replaced.

1.5.4 Internal part

0009-8431



F-1-13

- | | | |
|-----|--------------------------|--|
| [1] | Maintenance
Cartridge | The cartridge that vacuums and collects excess ink.
Replace the maintenance cartridge when a message appears
prompting you to replace the cartridge. |
|-----|--------------------------|--|