PIXUS 50i
i70
SERVICE MANUAL

Revision 1

QY8-1388-010

Scope

This manual has been issued by Canon Inc., to provide the service technicians of this product with the information necessary for qualified persons to learn technical theory, maintenance, and repair of products. The manual covers information applicable in all regions where the product is sold. For this reason, it may contain information that is not applicable to your region.

Revision

This manual could include technical inaccuracies or typographical errors due to improvements or changes made to the product. When changes are made to the contents of the manual, Canon will release technical information when necessary. When substantial changes are made to the contents of the manual, Canon will issue a revised edition.

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I. MANUAL OUTLINE

This manual consists of the following three parts to provide information necessary to service the i70:

Part 1: Maintenance
Information on maintenance and troubleshooting of the i70

Part 2: Technical Reference
New technology and technical information such as FAQ's (Frequently Asked Questions) of the i70

Part 3: Appendix
Block diagrams and pin layouts of the i70

Reference:
This manual does not provide sufficient information of disassembly and reassembly procedures. Refer to the graphics in the separate Parts Catalog.

II. TABLE OF CONTENTS

Part 1
MAINTENANCE

1. MAINTENANCE

1.1 Adjustment, Periodic Maintenance, Periodic Replacement Parts, and Replacement Consumables by Service Engineer

(1) Adjustment

Adjustment	Timing	Purpose	Tool	Approx. time
EEPROM initialization	At logic board ass'y replacement	To initialize settings other than the following: - USB serial number - Destination setting - On-arrival cleaning flag - Waste ink counter - Infrared Plug & Play on/off flag (to enable/disable Plug & Play installation of the printer driver for the IrDA I/F)	None.	1 min.
Destination settings	At logic board ass'y replacement	To set the destination.	None.	1 min.
Waste ink counter resetting	When the following 4 items are replaced at the same time: - Drain pack ass'y (QL2-0194) - Ink absorbers (QC1-1210/1211/1212)	To reset the waste ink counter.	None.	1 min.
Print head alignment	At print head or logic board ass'y replacement	To ensure accurate dot placement.	Computer (settings via the printer driver)	2 min.

(2) Periodic maintenance

No periodic maintenance is necessary.

(3) Periodic replacement parts

There are no parts in this printer that require periodic replacement by a service engineer.

(4) Replacement consumables

There are no consumables that require replacement by a service engineer.

1.2 Customer Maintenance

Adjustment	Timing	Purpose	Tool	Approx. time
Print head alignment	At print head replacement	To ensure accurate dot placement.	Computer (settings via the printer driver)	5 min.
Print head cleaning	When print quality is not satisfying.	To improve nozzle conditions.	Printer, or computer (settings via the printer driver)	30 sec. to 1 min.
Print head deep cleaning	When print quality is not satisfying, and not improved by print head cleaning	To improve nozzle conditions.	Computer (settings via the printer driver)	1.5 to 2.5 min.
Ink tank replacement	When an ink tank becomes empty.	-----	-----	2 min.
Paper feed roller cleaning	When paper does not feed properly.	To clean the paper feed rollers.	None.	2 min.
Battery charging	When the battery power becomes low.	To charge the battery.	Battery charger	120 min.

1.3 Product Life

(1) Printer

The value (i) or (ii), whichever comes first.

(i) 10,000 pages of printing (3,500 pages in color + 6,500 pages in black)
- Color: 7.5% duty per color pattern printing
- Black: 1,500 character pattern printing

(ii) 5 years of use

(2) Print head

10,000 pages of printing (3,500 pages in color + 6,500 pages in black)
- Color: 7.5% duty per color pattern printing
- Black: 1,500 character pattern printing

(3) Ink tank

BCI-15Black: 185 pages (1,500 character pattern in black printing, plain paper, standard mode)
390 pages (ISO JIS-SCID No. 5 pattern, plain paper, standard mode)

BCI-15Color: 100 pages (ISO JIS-SCID No. 5 pattern, plain paper, standard mode)

(4) Battery pack (option)

300 times of charging and discharging

1.4 Special Tools

Name	Tool No.	Purpose	Remarks
MOLYKOTE 7508	QY9-0059-000	To be applied to the surface of the mold part at the joint of the purge unit at drain pack ass'y replacement	5g tube
Tape, Yellow	QY9-0060-000	To secure the flexible cable and harness	
Tape, Black	QY9-0061-000	To protect the harness from damaged by the plate edge.	

1.5 Serial Number Location

On the back of the printer unit (the base unit)

2. LIST OF ERROR DISPLAY / INDICATION

Errors are indicated by the LED, and warnings are displayed on the monitor of the computer connected to the printer.

2.1 Operator Call Errors (by LED Blinking in Orange)

LED blinking in orange	Error	Solution	Remarks
2 times	No paper.	Set the paper, and press the Resume/Cancel button.	
3 times	Paper jam.	Remove the jammed paper, and press the Resume/Cancel button.	
6 times	The print head is not installed.	Install the print head, and close the print head cover.	
7 times	The print head is not installed properly. (EEPROM data of the print head is faulty.)	Re-install the print head, or with the print head installed, turn the printer off and on.	
8 times	Warning: The waste ink absorber becomes almost full (to approx. 95% of the maximum capacity).	Pressing the Resume/Cancel button will exit the error, and enable printing. In repair servicing, replace the 4-item set of the drain pack ass'y (QL2-0194) and the 3 ink absorbers (QC1-1210/1211/1212) at the same time.	The service call error, indicating the waste ink absorber is full, is likely to occur soon.
9 times	The black or color ink tank is not installed, or not installed properly.	Install both the black and color ink tanks. If they are installed, reseat them properly.	If the error persists after the ink tanks are seated properly, the ink tank sensor is likely to be faulty.
10 times	Low battery	Charge the battery, or connect the AC adapter to resume printing.	

2.2 Service Call Errors (by LED Blinking in Orange and Green Alternately, or Lit in Orange)

LED alternate blinking in orange and green	Error	Solution
2 times	Carriage error	Replace the logic board ass'y[*1], or the print unit.
4 times	Purge unit error	Replace the print unit, or the door sensor board ass'y. If the guard sheet is not attached, attach the guard sheet, while referring to Service Information (QK-12E-0175)
6 times	Internal temperature error	Replace the print unit.
7 times	Waste ink absorber full	Replace the 4-item set of the drain pack ass'y (QL2-0194) and the 3 ink absorbers (QC1-1210/1211/1212) at the same time[*2].
8 times	Print head temperature rise error	Replace the print head, or the logic board ass'y[*1].
9 times	EEPROM error	Replace the logic board ass'y[*1].
Lights in orange	RAM error	Replace the logic board ass'y[*1].

*1: As the waste ink counter is reset when the logic board ass'y is replaced, also replace the 4-item set of the drain pack ass'y (QL2-0194) and the 3 ink absorbers (QC1-1210/1211/1212) at the same time.

*2: The waste ink absorber full error occurs when either the main waste ink absorber (drain pack ass'y) or the borderless printing waste ink absorber (ink absorber) becomes full. For this reason, all the waste ink absorbers should be replaced at the same time.

2.3 Warnings

(1) Printer (no LED indications)

Displayed warning	Remarks
Low black ink warning 1 (About half of the full amount remains.)	The status is displayed on the monitor of the computer connected to the printer[*1].
Low color ink warning 1 (About half of the full amount remains.)	
Low black ink warning 2 (Little ink remains. "!")	
Low color ink warning 2 (Little ink remains. "!")	
Low black ink warning 3 (An unknown amount remains. "?")	
Low color ink warning 3 (An unknown amount remains. "?")	
Print head temperature rise warning	If the print head temperature is high when the print head cover is opened, the warning is displayed[*2]. When the print head temperature falls, the warning is released.
Protection of excess rise of the print head temperature	If the print head temperature exceeds the specified limit, a Wait is inserted during printing,
Battery low warning	The status is displayed (except under Windows 95/98/Me) on the monitor of the computer connected to the printer, and the warning is indicated by the battery charger LED.

*1: Only when the remaining ink amount detection function is enabled. (When it is disabled, there is no status display.)

*2: At the warning, the carriage does not move to the ink tank replacement position when the print head cover is opened.

(2) Battery charger (indicated by the lighting/blinking of the charger's 3 green LEDs)

LED status	Warning	Remarks
3 LED's light during use of the printer.	Sufficient battery power.	
2 LED's light during use of the printer.	Some battery power used.	
1 LED lights during use of the printer.	Warning of remaining battery power.	The battery needs to be charged.
1 LED blinks during use of the printer.	Low battery error.	The battery needs to be charged. On the printer, the LED blinks in orange 10 times.
3 LED's blinks sequentially during use of the printer.	The battery power is being checked.	
3 LED's blink during charging.	Charging not sufficient.	
3 LED's light during charging.	Charging almost completed. (not full)	When the battery is fully charged, the 3 LED's are extinguished.
2 LED's at both ends blink alternately.	The battery is faulty.	Replace the battery pack.
2 LED's at either end and at the center blink alternately.	Out of the specified operating environment temperature range (5 to 35C), high temperature of the battery pack, faulty battery, or faulty battery charger.	Use the unit in the specified temperature (5 to 35C), remove the AC adapter and wait for a while, replace the battery pack, or replace the battery charger.

2.4 Troubleshooting by Symptom

	Symptom	Solution	Remarks
Faulty operation	The power does not turn on. The power turns off immediately after power-on.	Replace the - AC adapter, - battery pack, - DCDC board ass'y, or - logic board ass'y[*1].	To check the AC adapter, with the AC adapter alone and turned on, connect the tester, and confirm that the output voltage fluctuates regularly between 13.5V to 16.5V.
	The print head is not recognized. The print head does not move to the home position.	Remove and re-install the print head, or replace the print head, or logic board ass'y[*1].	
	A strange noise occurs.	Remove foreign material, or attach a removed part if any.	
	The ink tank is not recognized. (The no ink tank error occurs even when the ink tanks are seated.)	Replace the print unit (the ink tank sensor is faulty).	
	Printing stops mid-way.	Replace the logic board ass'y[*1].	
Paper feed problems	Multiple sheets feed.	Replace the print unit.	
	Paper does not feed.	Remove foreign material, or replace the print unit, or the pressing plate unit.	
	Paper feeds at an angle.	Remove foreign material, adjust the paper guide, or replace the pressing plate unit.	
Unsatisfactory print quality	No printing, or no color ejected.	Replace the - ink tank, - print head[*2], - DCDC board ass'y, - logic board ass'y[*1], or - print unit.	
	Printing is faint, or white lines appear on printouts even after print head cleaning. Line(s) not included in the print data appears on printouts.	Remove and re-install the print head, or replace the - ink tank, - print head[*2], - print unit, or - logic board ass'y[*1].	
	Paper gets smeared.	Feed several sheets of paper, clean the paper path with cotton swab or cloth, or replace the print unit.	
	A part of a line is missing on printouts.	Replace the - ink tank, or - print head[*2].	
	Color hue is incorrect.	Replace the print head[*2].	
	Printing is incorrect.	Replace the - print unit, or - logic board ass'y[*1].	
	No ejection of black ink.	Replace the - ink tank, or - print head[*2].	
	Graphic or text is enlarged on printouts.	Clean grease or oil off the timing slit strip film, or replace the print unit, or logic board ass'y[*1].	

*1: As the waste ink counter is reset when the logic board ass'y is replaced, replace also the 4-item set of the drain pack ass'y (QL2-0194) and the 3 ink absorbers (QC1-1210/1211/1212) at the same time.

*2: Replace the print head only after the print head deep cleaning is performed 2 times, and when the problem persists.

3. REPAIR

3.1 Notes on Service Part Replacement (and Disassembling/Reassembling)

Service part	Notes on replacement[*1]	Adjustment/settings[*2]	Operation check
Print unit (QM2-0290)	- Be careful of the ferrite core position. See page 1-9 (1), for details.	After replacement: - Perform the print head alignment in the user mode.	- Service test print
Logic board ass'y (QM2-0237)	- Also replace the 4-item set of the drain pack ass'y and the 3 ink absorbers. See page 1-12 (3), for details. - The absolute time setting is necessary, as the coin battery unit is removed. See page 1-12 (2), for details.	After replacement: 1. Initialize the EEPROM. 2. Set the destination in the EEPROM. 3. Perform the print head alignment in the user mode. 4. Perform the print head cleaning 1 time.	- Service test print
DCDC board ass'y (QM2-0238)			- Service test print - Printing with the battery power
Coin battery unit (QM2-0292)	- The absolute time setting is necessary. See page 1-12 (2), for details. - Special attention should be paid to disposal of the coin battery unit[*3].	After replacement: 1. Perform the print head alignment in the user mode. 2. Perform the print head cleaning 1 time.	- Service test print
Drain pack ass'y (QL2-0194) Ink absorber (QC1-1210/1211/1212)	- These 4 items should be replaced at the same time. See page 1-12 (3), for details. - Confirm that no ink leakage occurs from the joint point between the drain pack ass'y and the purge unit. See page 1-12 (3), for details.	At replacement: 1. For the drain pack ass'y, apply a thin coat of grease (QY9-0059) to the surface of the mold part at the joint of the purge unit. See page 1-12 (3), for details. After replacement: 2. Reset the waste ink counter.	- Service test print
Pressing plate unit (QM2-0300)	- The spring can be extended only 5mm or less. - In installing the unit, make sure that the paper lifting plate is not under the paper return tab. See page 1-13 (4), for details.		- Service test print
Main case unit (i70: QM2-0287) (PIXUS 50i: QM2-0310)	- In assembling, keep the print head cover closed, to protect the cover sensor from damage. See page 1-14 (5), for details.		

(Notes on Service Part Replacement - cont'd-)

Service part	Notes on replacement[*1]	Adjustment/settings[*2]	Operation check
Base ass'y (QL2-0193)			- Service test print
Door sensor board ass'y (QM2-0240)			- Service test print after the print head cleaning
DCD board ass'y (QM2-0242)			- Direct printing from a digital camera
USB board ass'y (QM2-0312)			- Printing via the USB cable
Timing slit strip film (QC1-1143)	- Upon contact with the film, wipe the film with ethanol. - Confirm no grease is on the film. (Wipe off any grease thoroughly with ethanol.) - Do not bend the film.	- Perform the print head alignment in the user mode.	- Service test print
Print head (QY6-0046)		- Perform the print head alignment in the user mode.	- Service test print

*1: General notes:
- Make sure that the flexible cables and wires in the harness are in the proper position and connected correctly. See page 1-9 (1), for details.
- Do not drop the ferrite core, which may damage it.
- Protect electrical parts from damage due to static electricity.
- Do not touch the timing slit strip film. No grease or abrasion is allowed.
- Protect the units from soiled with ink.
- The blue screws are removable, and do not require any specific adjustment.

*2: If the yellow tape (QY9-0060) or black tape (QY9-0061) is removed, attach the new tape.

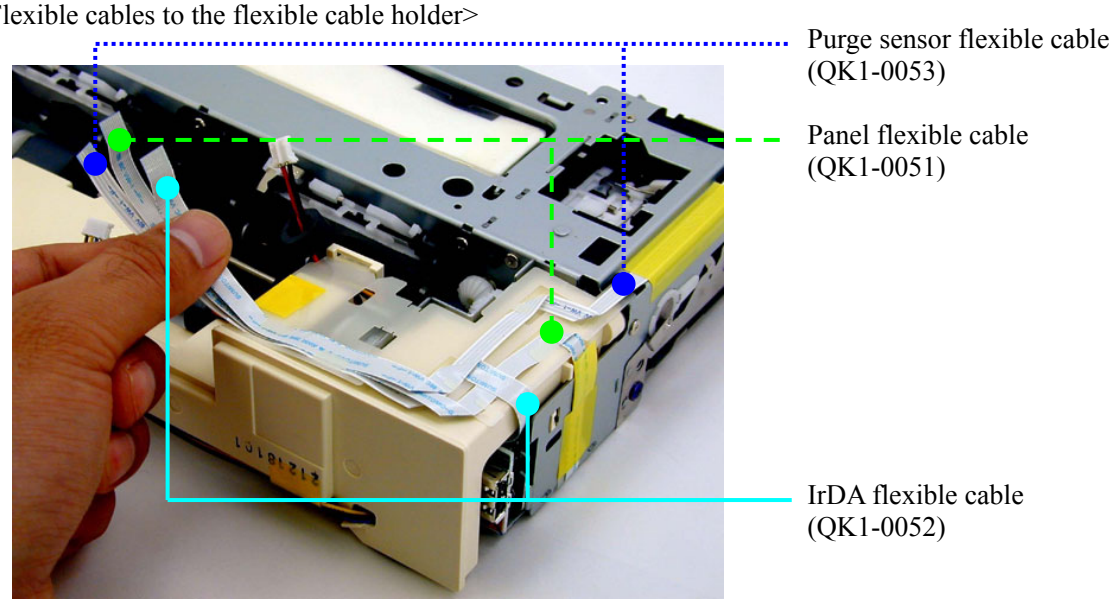
*3: For environment protection, dispose of the coin battery unit's lithium battery according to local regulations.

3.2 Special Notes on Repair Servicing

(1) Flexible cable and harness wiring, connection

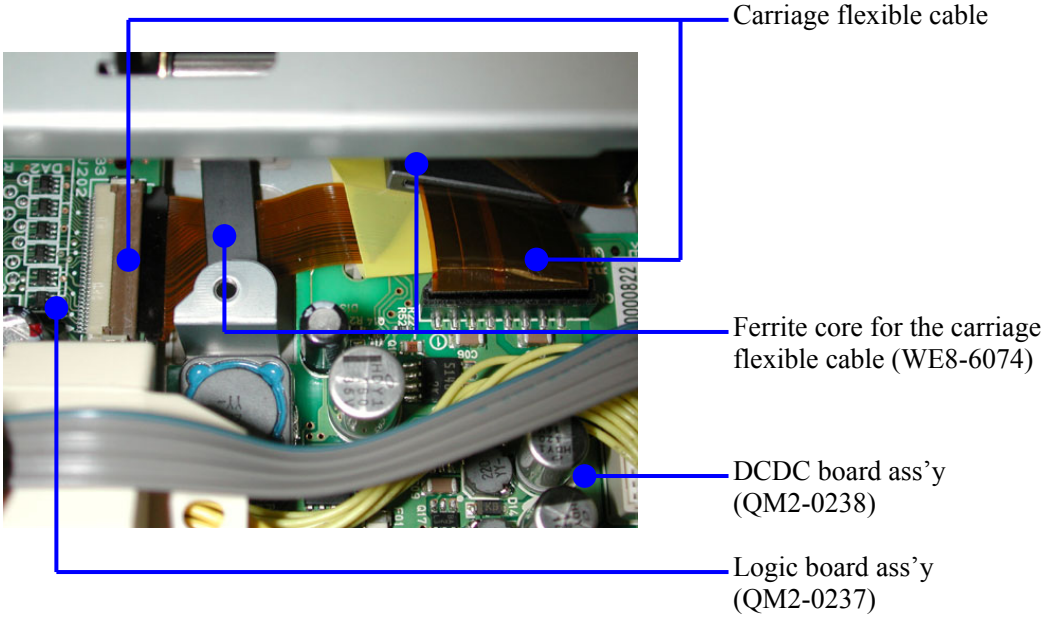
Be careful of wiring of the flexible cables and harness, and positioning of the yellow tape (QY9-0060) to fix the harness and the black tape (QY9-0061) to fix the coin battery unit and to protect the harness from damaged. Improper wiring or connection may cause breakage of a line, leading to ignition or emission of smoke.

<Flexible cables to the flexible cable holder>



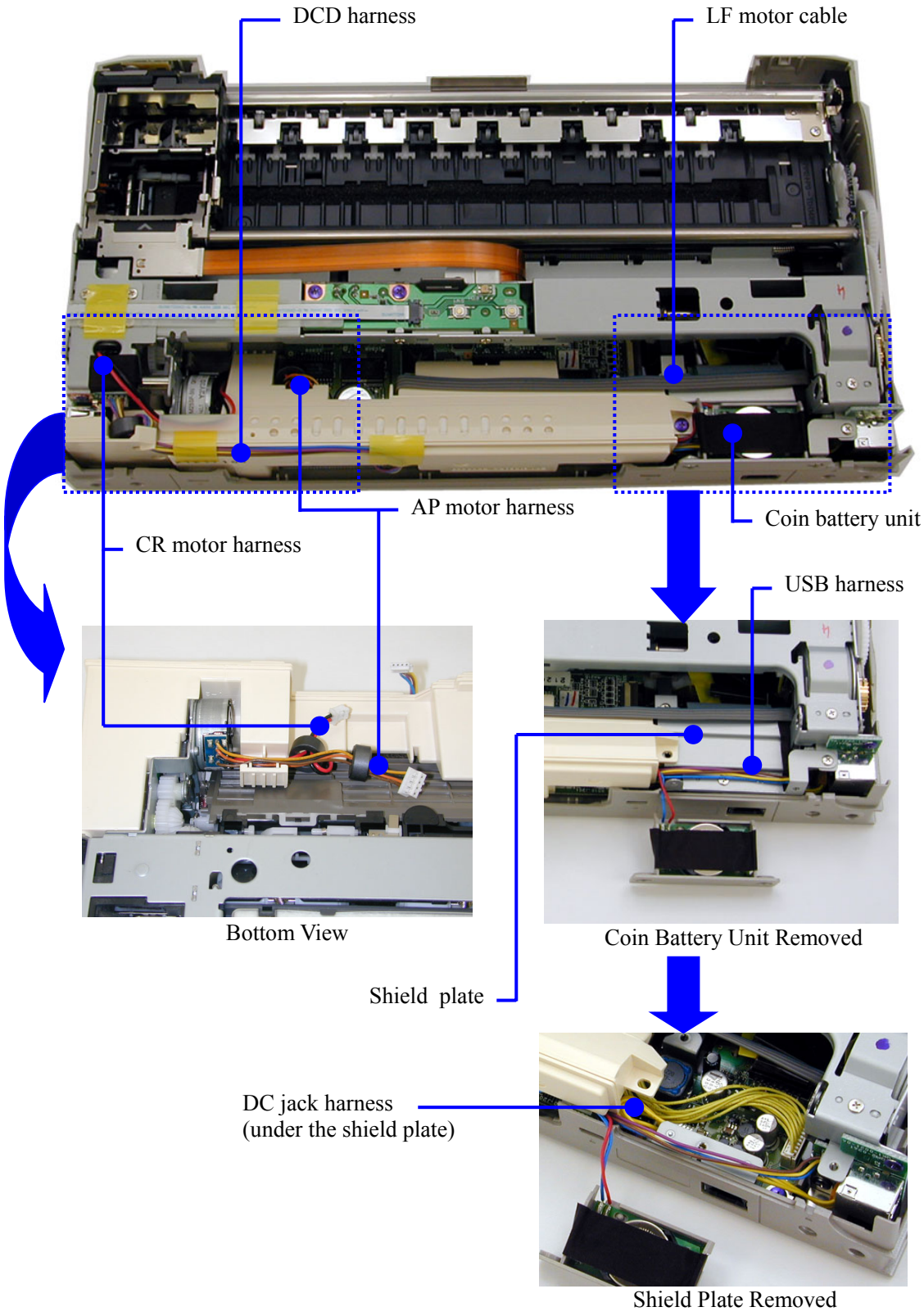
Bottom View

<Carriage flexible cable wiring and connection>

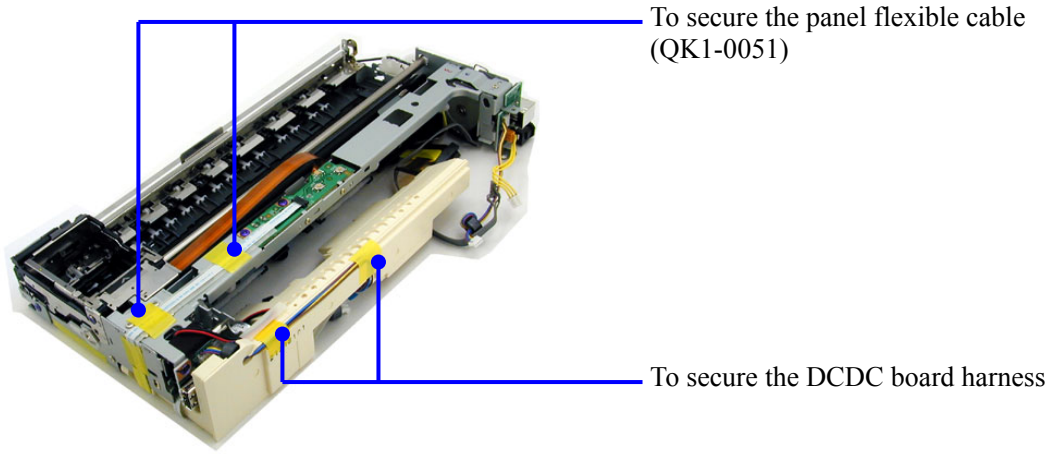


<Harness wiring>

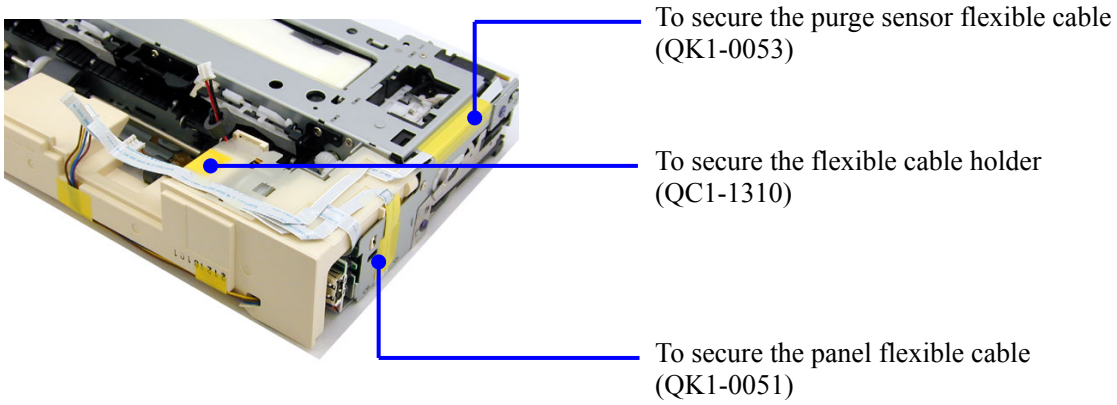
Complete Harness Wiring



<Yellow tape locations>

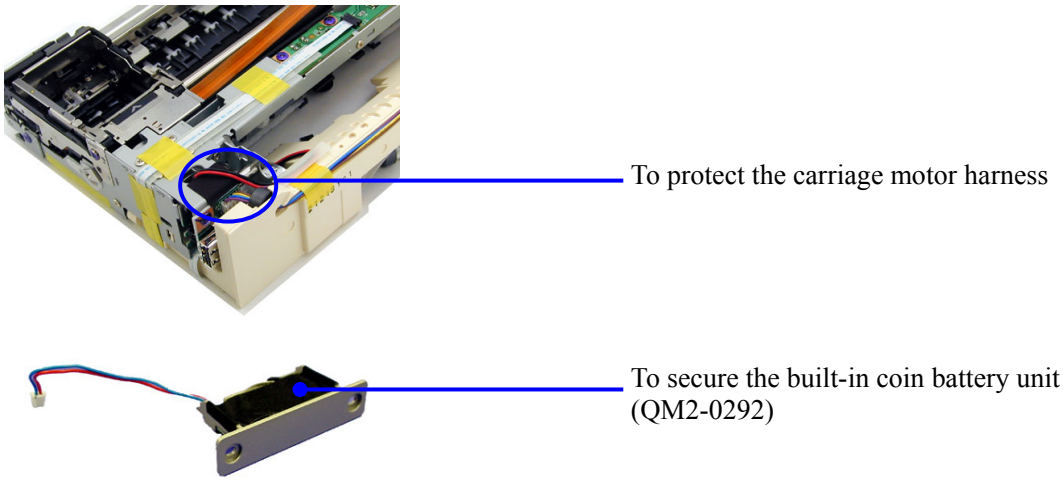


Print Unit and Drain Pack Ass'y Top View



Print Unit and Drain Pack Ass'y Bottom View

<Black tape locations>



(2) Absolute time setting when the coin battery unit is removed

To keep the absolute time, a Real Time Clock (RTC) is built into the coin battery unit (QM2-0292). When the coin battery unit is removed, the RTC is reset. After re-installing the coin battery unit, be sure to set the absolute time to the RTC in the following procedures:

How to set the absolute time:

1) To set the absolute time to the RTC, connect the printer to the computer, and perform the print head alignment from the printer driver utility. (Printing from the connected computer can also set the absolute time.)
2) To set the last cleaning time to the EEPROM, perform the print head cleaning.

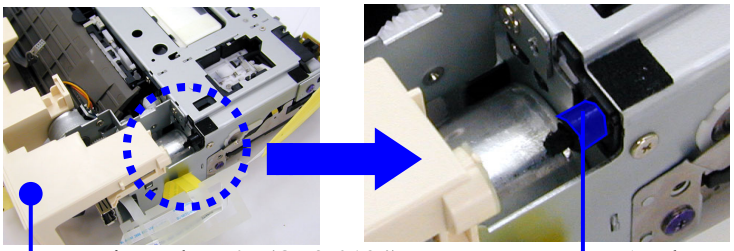
Note: If the absolute time is not set, the long timer cleaning (for more than 2 minutes, with high ink usage) will be performed at start of the second printing after installation of the printer by a customer.

(3) Waste ink absorber (drain pack ass'y, ink absorber) replacement

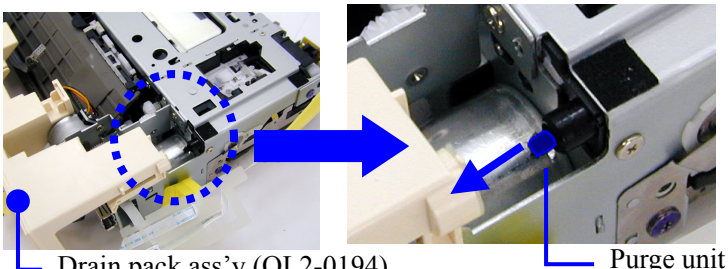
Be sure to replace the 4-item set of the drain pack ass'y (QL2-0194) and 3 ink absorbers (QC1-1210/1211/1212) always when the following occurs:
- when the waste ink counter is reset
- when the logic board ass'y is replaced

Reason for replacement of the 4 items:
When the waste ink counter is reset, the ink amount data of both the main waste ink absorber (the drain pack ass'y) and the borderless print waste ink absorbers (the ink absorbers) are reset.

When installing the drain pack ass'y, take care of the following:
- Apply a thin coat of Molykote 7508 (QY9-0059) to the surface of the cylinder-shaped mold at joint of the purge unit (shown in the figure below). Do not apply the grease to anywhere other than the specified area.



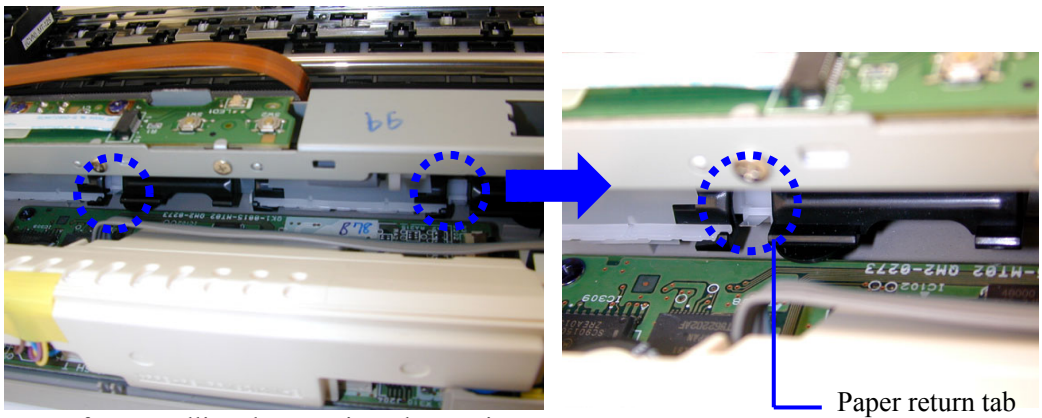
- Pull out the absorber at the joint of the purge unit 2 to 3mm and straighten it (as shown in the figure below), so that it will fit it into the slot of the drain pack ass'y. Make sure that the absorber is not caught between the drain pack ass'y and the purge unit. (If caught, ink leakage is likely to occur.)



(4) Pressing plate unit installation

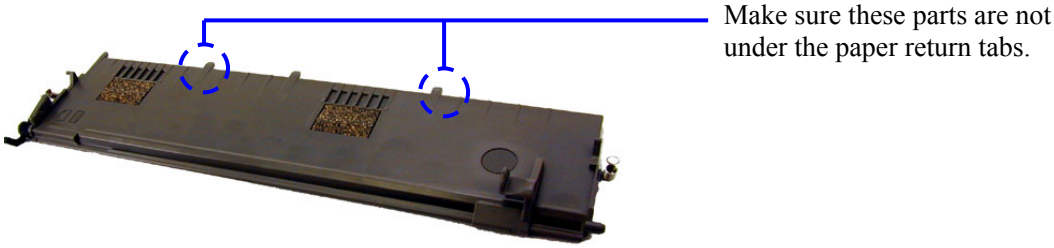
When installing the pressing plate unit (QM2-0300), take care that the paper lifting plate is not under the paper return tabs of the print unit. (If placed under the paper return tabs, the paper lifting plate will not move up and down properly.) With regard to the spring, do not extend it more than 5mm. (If the spring is extended more than 5mm, it may cause skewed paper feeding.)

<Paper lifting plate positioning - not under the paper return tabs ->
- Paper return tab location (2 locations)

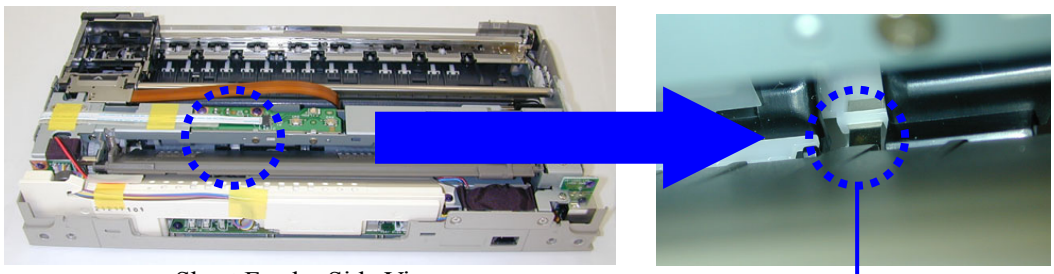


Before Installing the Pressing Plate Unit

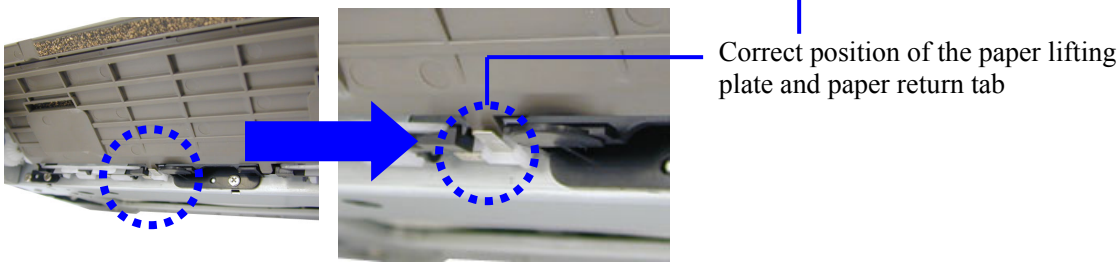
- Pressing plate unit parts should not be set under the paper return tabs



- Correct position of the paper lifting plate and paper return tab



Sheet Feeder Side View



Pressing Plate Unit Back Side View

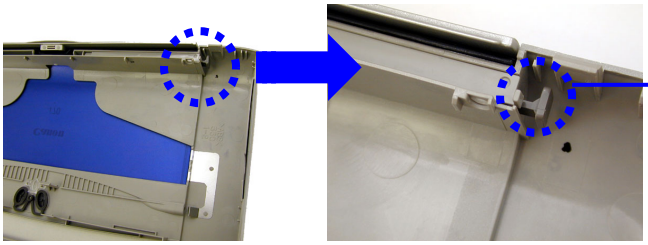
(5) Main case unit assembling

When assembling the main case unit (QM2-0287/0310), assemble with the print head cover in the closed position. If the print head cover is open, the print head cover switch on the back of the main case unit will contact the cover sensor of the door sensor board ass'y (QM2-0240), and the sensor is likely to be damaged.

<Print head cover when assembling the main case unit>

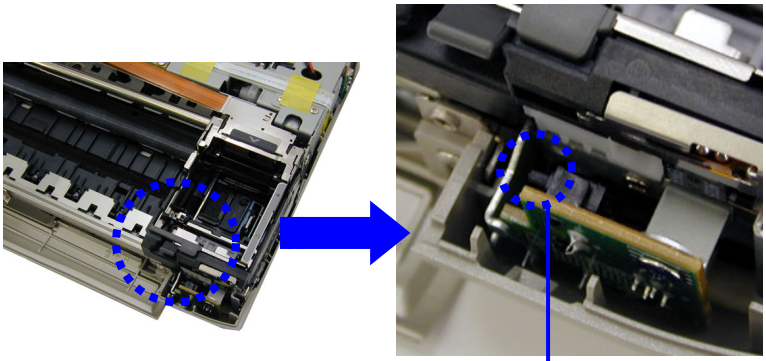
The print head cover should be closed.

<Print head cover switch on the back of the main case unit>



Print head cover switch
(when the print head cover is closed)

<Cover sensor>



Cover sensor:
Special attention should be paid,
as it is easy to bend.

3.3 Adjustment / Settings

(1) User mode

Function	Procedures	Remarks
Print head manual cleaning	- Cleaning both black and color: See "Standalone printer operation" below. - Cleaning black or color separately, or both black and color: Perform from the printer driver utility.	
Print head deep cleaning	- Cleaning black or color separately, or both black and color: Perform from the printer driver utility.	
Paper feed roller cleaning	See "Standalone printer operation" below.	
Nozzle check pattern printing	See "Standalone printer operation" below.	
Print head alignment	1. Perform the print head alignment printing from the printer driver utility. 2. According to the printout, set the optimum values.	
Print head replacement	1. Open the print head cover. (The carriage will move to the ink tank replacement position.) 2. Press and hold the Resume/Cancel button for 2 seconds or longer. (The carriage will move to the print head replacement position.) 3. Replace the print head.	

<Standalone printer operation>

1) Turn on the printer.
2) Press and hold the Resume/Cancel button until the LED blinks the specified number of times listed in the table below, and release it. The operation starts.

LED blinking	Operation	Remarks
1 time	Print head manual cleaning	
2 times	Nozzle check pattern printing	
3 times	Paper feed roller cleaning	
4 times or more	Unspecified	

(2) Service mode

Function	Procedures	Remarks
Service test print Destination ROM version Waste ink amount Number of pages printed	See "Service mode operation procedures" below.	Set a sheet of A4- or larger-sized paper. For print sample, see page 1-20.
EEPROM initialization	See "Service mode operation procedures" below.	The following items are not initialized: - USB serial number (0 to 5) - Destination settings (JPN / Overseas) - Cleaning on arrival flag - Waste ink counter - Infrared PnP on/off flag (the flag to enable/disable Plug & Play installation of the printer driver for the IrDA I/F)
Waste ink counter reset	See "Service mode operation procedures" below.	Both the main and the borderless print waste ink counters are reset at the same time.
Destination settings	See "Service mode operation procedures" below.	Overseas: i70 Japan: PIXUS 50i

<Service mode operation procedures>

1) Close the print head cover, and turn off the printer. While pressing the Resume/Cancel button, press the Power button. (Do not release the buttons. The LED lights in green to indicate that a function is selectable.)
2) While holding the Power button, release the Resume/Cancel button. (Do not release the Power button.)
3) While holding the Power button, press the Resume/Cancel button 3 times, and then release the Power and Resume/Cancel buttons. (Each time the Resume/Cancel button is pressed, the LED lights alternately in either orange or green, starting with orange.) During initialization, the LED blinks in green.
4) When the LED stops blinking and lights in green, press the Resume/Cancel button the specified number of time(s) according to the function listed in the table below. (Each time the Resume/Cancel button is pressed, the LED lights alternately in either orange or green, starting with orange.)

Time(s)	LED	Function	Remarks
0 times	Green	Power off	When the print head is not installed, the carriage returns and locks in the home position.
1 time	Orange	Service test print	
2 times	Green	EEPROM information print	
3 times	Orange	EEPROM initialization	
4 times	Green	Waste ink counter resetting	Both the main and borderless print waste ink counters are cleared.
5 times	Orange	Destination settings	Proceed to the following steps 5) and 6), to set the destination.
6 times	Green	Not used in servicing	
7 times	Orange	Not used in servicing	
8 times	Green	Return to the menu selection	

5) After the function (menu) is selected, press the Power button. The LED lights in green, and the selected function is performed. (When the operation completes, the printer returns to the menu selection mode automatically.)

To set the destination:

6) Press the Resume/Cancel button the specified number of time(s) according to the destination listed in the table below, and press the Power button.

Time(s)	LED	Destination
1 time	Orange	Overseas: i70
2 times	Green	Japan: PIXUS 50i

(3) Flash ROM upgrade

Follow the procedures below to upgrade the flash ROM.

<Procedures for upgrading the flash ROM>

Upgrade the flash ROM by downloading all data to the printer via the USB interface.

1) Connect the printer to the computer via the USB cable, and connect the universal AC adapter.

   Caution: Disconnect all other printers, if connected to the computer.

2) With the print head cover open, while pressing the Resume/Cancel button, press and hold the Power button. (Do not release the buttons.)
3) When the LED lights in green, release the Power and Resume/Cancel buttons. (The printer is in the flash ROM data downloading mode.)

   Caution: When the i70 printer driver is installed to the computer, the Add New Hardware Wizard appears, requesting the PIXUS 50i printer driver.[*1] Click Cancel at the wizard.

4) Using the USB tool[*2], send the download file[*3] to the printer. The LED blinks in green while the flash ROM data is downloaded.

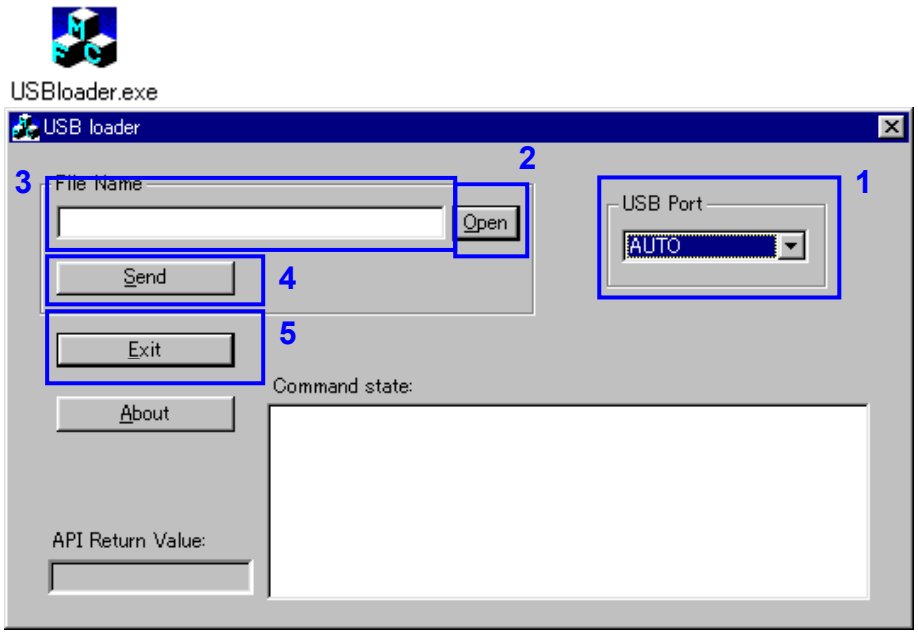
Caution: Do not unplug the power cord while the LED is blinking in green. If the power cord is removed, downloading the flash ROM data fails*4.

5) When the LED stops blinking and lights in green, press the Power button. (The downloading is finished, and the printer is turned off.)

Caution: While the flash ROM data is downloaded, the Resume/Cancel button and the print head cover switch are invalid.

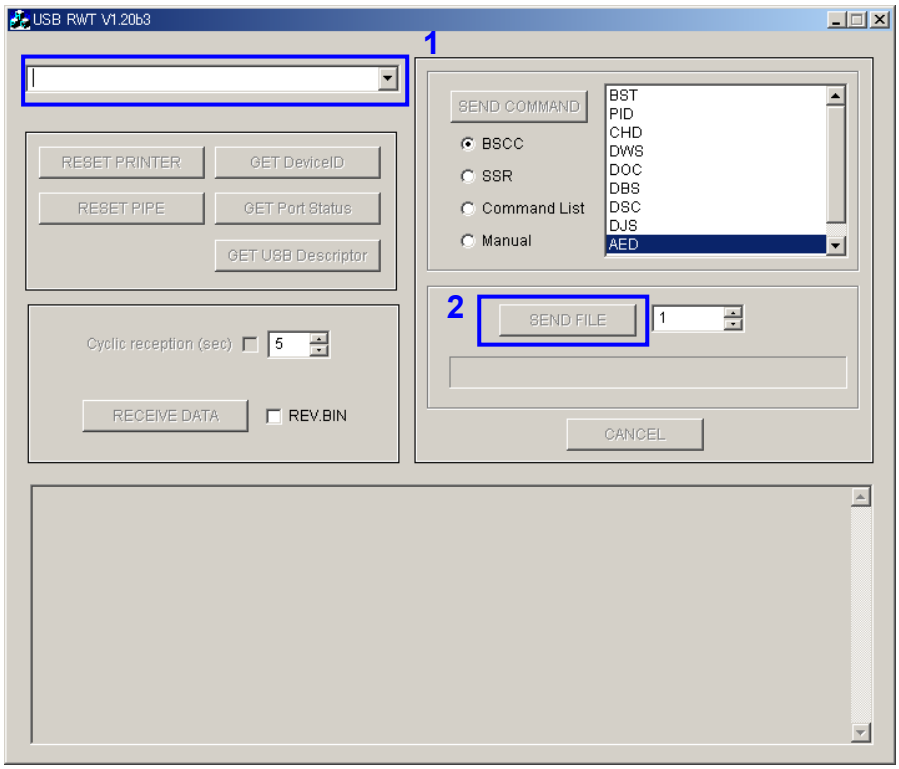
*1: In the flash ROM download mode, the printer ID is automatically set to the PIXUS 50i.
*2: The USB tool will be supplied via the QISS software download. 2 types of the tool will be prepared, for Windows 9x/Me, and for Windows 2000/XP. Use either tool according to the OS used. For procedures for using the USB tool, see "How to use the USB tool" below.
*3: Specific flash ROM download file name(s) will be announced in Service Information, and the file itself will be supplied via QISS, as an upgrade program.
*4: If the flash ROM data download fails, the LED blinks in green and orange alternately. (The Power and Resume/Cancel buttons are invalid.) Return to step 1), and proceed to the following steps.

<How to use the USB tool>
- For Windows 98 or Windows Me (QISS software download: Ref. No. RQ-T01-A20-000004):



1. Select the USB port.
2. Click Open to open the file selection dialog box.
3. Select the download file to send to the printer.
4. Click Send. The selected file will be sent to the printer.
5. When data sending finishes, click Exit to exit USBloader.exe.

- For Windows 2000 or Windows XP (QISS software download: Ref. No. RQ-T01-A20-000011):



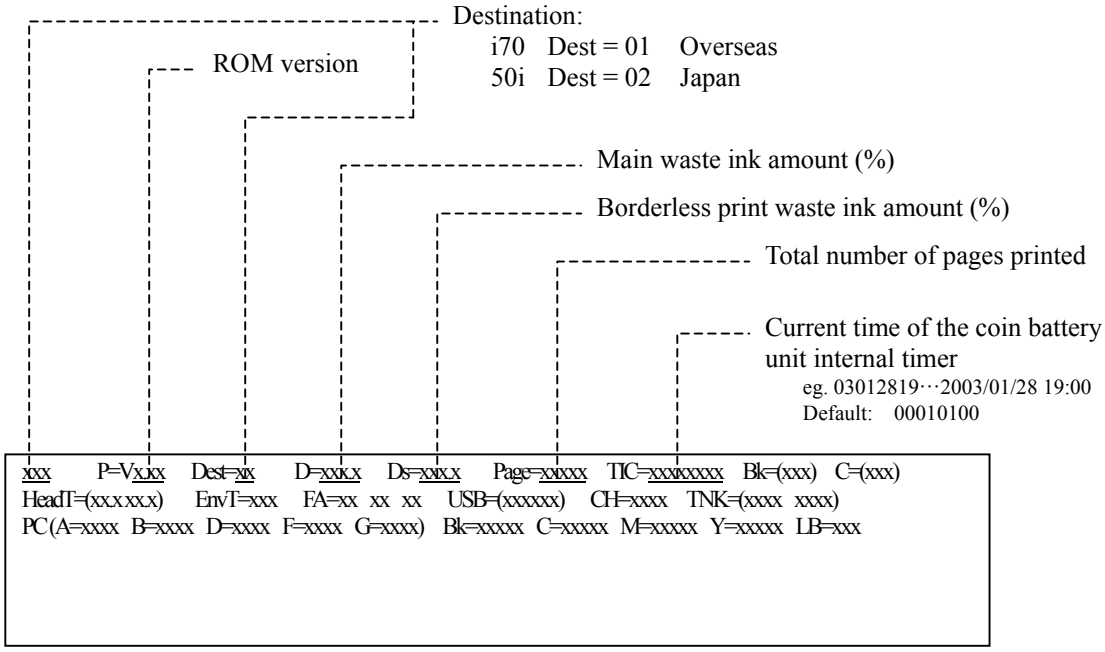
1. Select the USB port.
2. Click Send File to open the file selection dialog box.
3. Select All Files (*.*), and the download file to send to the printer, and send it to the printer.
4. When data sending finishes, exit usbrwt.exe.

3.4 Verification Items

(1) Service test print

<EEPROM information contents>

On the service test print (sample on page 1-20), confirm the EEPROM information as shown below. (The information is given in the upper portion of the printout.)

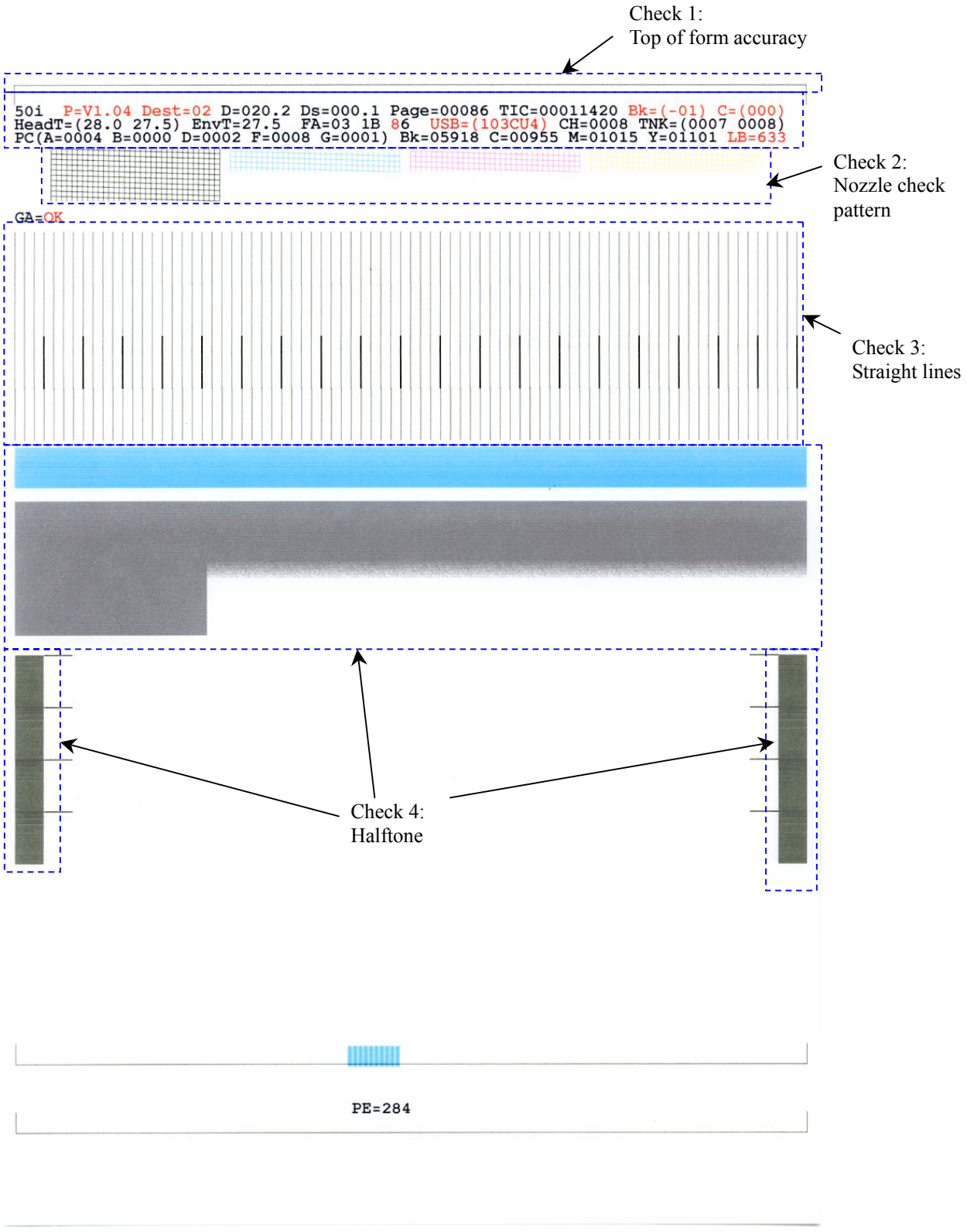


<Print quality items>

On the service test print (sample on page 1-20), confirm the following items:

- Check 1, nozzle check pattern: Ink shall be ejected from all nozzles.
- Check 2, top of form accuracy: The line shall be within the paper.
- Check 3, vertical straight lines: The line shall not broken.
- Check 4, halftone: There shall be no remarkable streaks or unevenness.

<Service test print sample>



4. PRINTER TRANSPORTATION METHOD

This section describes the procedures for transporting the printer (for returning after repair, etc.).

1. Keep the print head and ink tanks installed in the carriage.
2. Turn off the printer, and secure the carriage locks in the home position. (When the printer is turned off, the carriage is automatically locked in place.)

Caution:
If the print head is removed from the printer and left alone by itself, ink (especially the pigment black ink) is likely to dry. For this reason, keep the print head installed in the printer even during transportation. Also, securely lock the carriage in the home position, to prevent the carriage from moving and applying stress to the carriage flexible cable, or causing ink leakage, during transportation.

Note:
If the print head must be removed from the printer and transported alone, perform the following:

1. Install both the black and color ink tanks (to prevent the nozzles from drying).
2. Attach the protective cap (used when the packing was opened) to the print head (to protect the print head face from damage due to shocks).

Part 2
TECHNICAL REFERENCE

1. NEW TECHNOLOGIES

(1) Direct digital camera printing

Printing can be performed directly from a digital camera. During the direct digital camera printing, the following functions are not available:

- Print head alignment*1
- Remaining ink amount detection

*1: If the print head alignment has not been performed via the computer connected to the printer, uni-directional printing is performed, and the print speed is lower than that of bidirectional printing. To enable bidirectional printing, connect the printer to the computer, and perform the print head alignment.

(2) Reduction of waste ink amount

The following technologies prevent unnecessary cleaning of the print head, and reduce the number of times the print head cleaning is performed and the ink amount purged during the cleaning. As a result, the waste ink amount is reduced.

- Ink sensor installed:
  By the ink sensor, the exact timing to perform the cleaning at ink tank replacement is detected. (Previous printers determined the cleaning timing by a period of time the print head cover is open.)
- Separate cleaning of black or color:
  In addition to the conventional cleaning of both black and color, separate cleaning of black or color is now available in any of the following conditions:
  - Manual cleaning (only via the printer driver utility)
  - Deep cleaning
  - At ink tank replacement
  - Timer cleaning
  - If the print head has not been capped for 1 hour or longer until power-on
- Internal structure of the print head and cap:
  The structure of the ink flow path inside the print head and the cap has been changed from that of the previous print heads, to lessen the amount of ink evaporated. As a result, the timer cleaning interval has been increased.

(3) Plug & Play infrared (IrDA) communication (at default settings)

Plug & Play infrared communication has been supported.
For troubleshooting of infrared communication problem(s) with a computer which does not support Plug & Play, the Plug & Play infrared communication can be switched between on (enabled) and off (disabled) in the following procedure:

<How to disable/enable Plug & Play infrared communication>
With the printer power turned on, press and hold the Resume/Cancel button until the LED blinks 8 times, and release it.

2. CLEANING MODE AND AMOUNT OF INK PURGED

To prevent printing problems due to bubbles, dust, or ink clogging, print head cleaning is performed before the start of printing, except in the following cases:

- Cleaning on arrival: Performed when the print head cover is closed.
- Cleaning by dot count: Performed after ejection of paper.
- Manual cleaning / deep cleaning: Performed manually.

<Cleaning mode list>

Condition	Details	Amount of ink used (g)	Est. required time (sec.)
On arrival of the printer (both black and color)	First cleaning after shipped from the plant.	0.315 (black) 0.42 (color)	110
Dot count cleaning*1 (black/color)	When the specified number of dots are printed from the previous black/color cleaning. (Dots are counted by black and color separately.)	0.105 (black) 0.14 (color)	35 (black) 35 (color)
Timer cleaning - 0*2 (black only)	If 24 to 240 hours have elapsed since the previous black cleaning till the start of the next printing.		
Timer cleaning - 1*1 (black/color)	If 240 to 336 hours have elapsed since the previous black/color cleaning till the start of the next printing. (Time is counted by black and color separately.)		
Timer cleaning - 2*1 (black/color)	If 336 to 2,160 hours have elapsed since the previous black/color cleaning till the start of the next printing.	0.21 (black) 0.28 (color)	50 (black) 55 (color)
Timer cleaning - 3 (both black and color)	If 2,160 to 4,320 hours have elapsed since the previous black/color cleaning till the start of the next printing.	0.24 (black) 0.28 (color)	75
Timer cleaning - 4 (both black and color)	If longer than 4,320 hours have elapsed since the previous black/color printing till the start of the next printing.	1.2 (black) 0.28 (color)	130
If the print head has not been capped for 1 hour or longer before power-on (both black and color)		0.21 (black) 0.28 (color)	80 (both black and color) 45 (black) 45 (color)
At ink tank replacement (black/color)			
At print head replacement (both black and color)	When the print head is removed and installed.	0.315 (black) 0.42 (color)	110
Manual cleaning (black/color/both)	- Via the operation panel (both black and color) - Via the printer driver (black, color, or both selectable)	0.105 (black) 0.14 (color)	60 (both black and color) 35 (black) 35 (color)
Deep cleaning (black/color/both)	- Via the printer driver (black, color, or both selectable)	1.2 (black) 0.42 (color)	140 (both black and color) 85 (black) 70 (color)

*1: The period of time from the previous cleaning is counted by black and color separately. For this reason, the cleaning mode may differ according to black or color.

*2: When 24 to 240 hours have elapsed since the previous black cleaning, timer cleaning - 0 is performed. However, this cleaning will be conducted up to 5 times from the printer installation, and no further timer cleaning - 0 will be performed.

3. FAQ (Specific Problems and Solutions)

No.	Occurrence level*	Function	Symptom	Condition	Cause	Solution	Possible call or complaint
1.	B	Paper feeding	Paper jam Paper edge creasing	- Plain paper (soft paper) - When about 30 sheets are loaded. - Paper condition (curled, or cut edge orientation) Depending on combination of the above conditions, the first several pages may not feed properly.	When many sheets of paper are set, paper feed capability can be slightly lowered.	Reduce the number of sheets to set on the sheet feeder, to below the reference mark.	-Paper jam -Paper edge creasing -Paper edge smeared (due to contact with the print head) -Carriage error (service call error) due to contact of the print head to the jammed paper
2.	B	Print speed	Low throughput (approx. 1/2) in direct printing from a digital camera	When the print head alignment has never been performed via the computer before direct camera printing.	Because uni-directional printing is performed to maintain the print quality by avoiding possible inaccurate dot placement in bidirectional printing.	Connect the printer to the computer, and perform the print head alignment. (The print head alignment is available only via the computer.)	-Print speed is low when printing directly from a digital camera.
3	C	Installation, Printing	No infrared communication	When the printer is connected to a certain computer (eg. NEC, Windows 98) which does not support Plug & Play infrared communication.	With default settings, the Plug & Play function is enabled.	Disable the Plug & Play function, and set the port manually. For how to disable/enable Plug & Play infrared communication, see page 2-1, New Technologies, (3).	-Infrared communication is not available.

* Occurrence level:

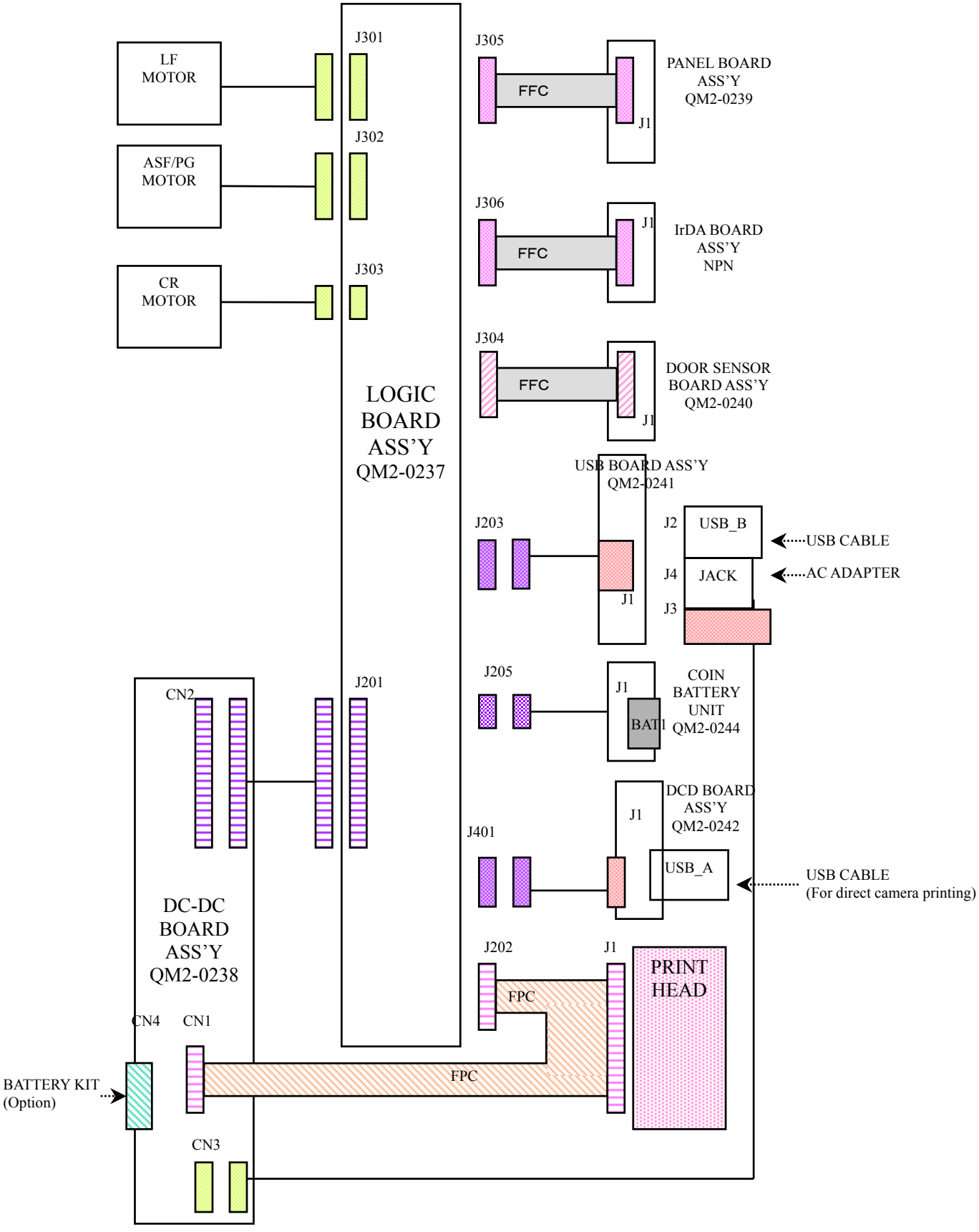
A: The symptom is likely to occur frequently.

B: The symptom may occur under certain conditions, but likeliness is assumed very low in practical usage.

C: The symptom is unlikely to be recognized by the user, and no practical issues are assumed.

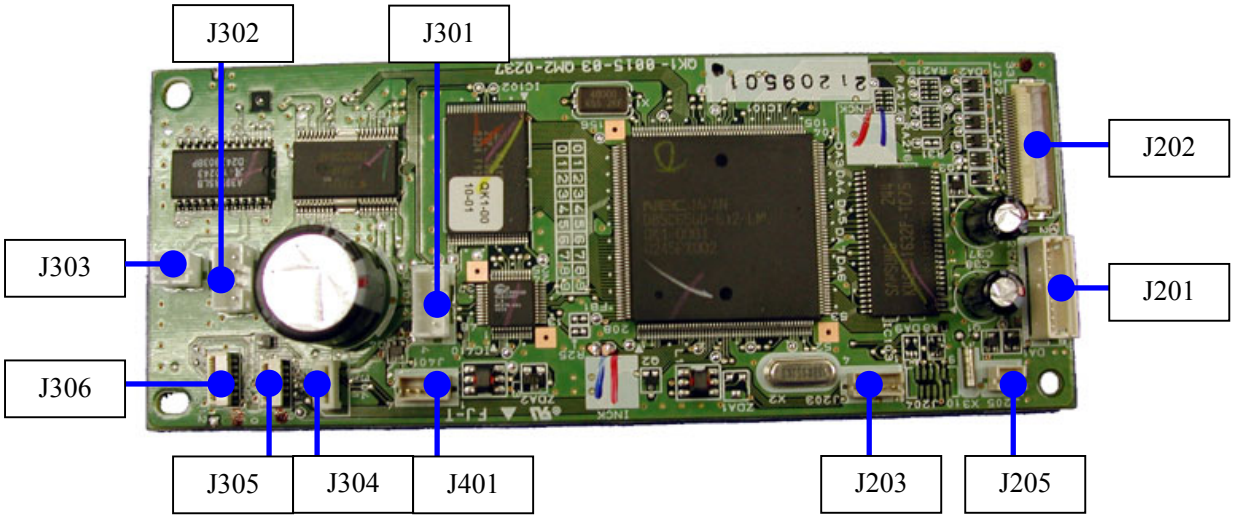
Part 3
APPENDIX

1. BLOCK DIAGRAM



2. CONNECTOR LOCATION AND PIN LAYOUT

2.1 Logic Board Ass'y



J201 (DC-DC board I/F)

No.	Signal name	Function	Input/Output
1	24V	VM motor drive power supply	IN
2	GND	GND	
3	5V	5V logic drive power supply	IN
4	2.5V	2.5V logic drive power supply	IN
5	GND	GND	
6	VIN	Power supply voltage (for printer power supply voltage detection)	IN
7	POWER_ON	DC-DC converter on/off control	OUT
8	VH_ON	Head drive power supply VH output enable	OUT
9	BAT_TXD	Serial sending data to the optional battery charger	OUT
10	POWER_SW	Optional battery output signal	OUT

J202 (Print head FPC I/F)

No.	Signal name	Function	Input/Output
1	TBk	Black ink tank presence sensor	IN
2	TGND	Ink tank sensor GND	
3	TCl	Color ink tank presence sensor	IN
4	ChA	Carriage encoder phase A	IN
5	Vcc_ENCO	Carriage encoder drive power supply	OUT
6	ChB	Carriage encoder phase B	IN
7	TH	Thermistor output	IN
8	Vss	Head logic GND	
9	Vss	Head logic GND	
10	Vss	Head logic GND	
11	Vdd	3.3V head logic drive power supply	OUT
12	Vdd	3.3V head logic drive power supply	OUT
13	A_DIK	Diode sensor 1 cathode	IN
14	A_DIA	Diode sensor 1 anode	OUT
15	B_DIK	Diode sensor 2 cathode	IN
16	B_DIA	Diode sensor 2 anode	OUT
17	E_DI	Head EEPROM data	OUT
18	E_DO	Head EEPROM data	IN
19	E_CS	Head EEPROM chip select	OUT
20	E_SK	Head EEPROM clock	OUT
21	A_DATA_K2	Black data 2	OUT
22	CLK	Head data transfer clock	OUT
23	LT	Head data latch	OUT
24	A_HE	Black heat enable	OUT
25	A_DATA_K1	Black data 1	OUT
26	B_HE_2	Color heat enable 2	OUT
27	B_HE_1	Color heat enable 1	OUT
28	B_DATA_M1	M data 1	OUT
29	B_DATA_C2	C data 2	OUT
30	B_DATA_C1	C data 1	OUT
31	B_DATA_Y2	Y data 2	OUT
32	B_DATA_M2	M data 2	OUT
33	B_DATA_Y1	Y data 1	OUT

J203 (USB/DC board I/F)

No.	Signal name	Function	Input/Output
1	GND	GND	
2	Vbus	Cable power supply	IN
3	D-	Data signal line	I/O
4	D+	Data signal line	I/O

J205 (Coin battery unit I/F)

No.	Signal name	Function	Input/Output
1	Vdd	Real Time Clock (RTC) drive power supply	IN
2	GND	GND	

J301 (LF motor I/F)

No.	Signal name	Function	Input/Output
1	LFB-	LF motor phase B-	OUT
2	LFA-	LF motor phase A-	OUT
3	LFB	LF motor phase B	OUT
4	LFA	LF motor phase A	OUT

J302 (ASF/PG motor I/F)

No.	Signal name	Function	Input/Output
1	APB-	ASF/PG motor phase B-	OUT
2	APA-	ASF/PG motor phase A-	OUT
3	APB	ASF/PG motor phase B	OUT
4	APA	ASF/PG motor phase A	OUT

J303 (CR motor I/F)

No.	Signal name	Function	Input/Output
1	CRA	Carriage motor phase A	OUT
2	CRB	Carriage motor phase B	OUT

J304 (Door sensor board I/F)

No.	Signal name	Function	Input/Output
1	PWC_SENS	PG sensor drive power supply	OUT
2	GND	GND	
3	DOOR	Door sensor detection signal	IN
4	SENS_PG	PG sensor detection signal	IN

J305 (Panel board I/F)

No.	Signal name	Function	Input/Output
1	LED_A	LED drive power supply	OUT
2	LED_RSM	Error LED	OUT
3	LED_PWR	Power LED	OUT
4	POWER	Power key	IN
5	RESUME	Resume key	IN
6	GND	GND	
7	PES	PE sensor detection signal	IN
8	VSEN_5V	PE sensor drive power supply	OUT
9	ASFS	ASF sensor detection signal	IN
10	GND	GND	IN

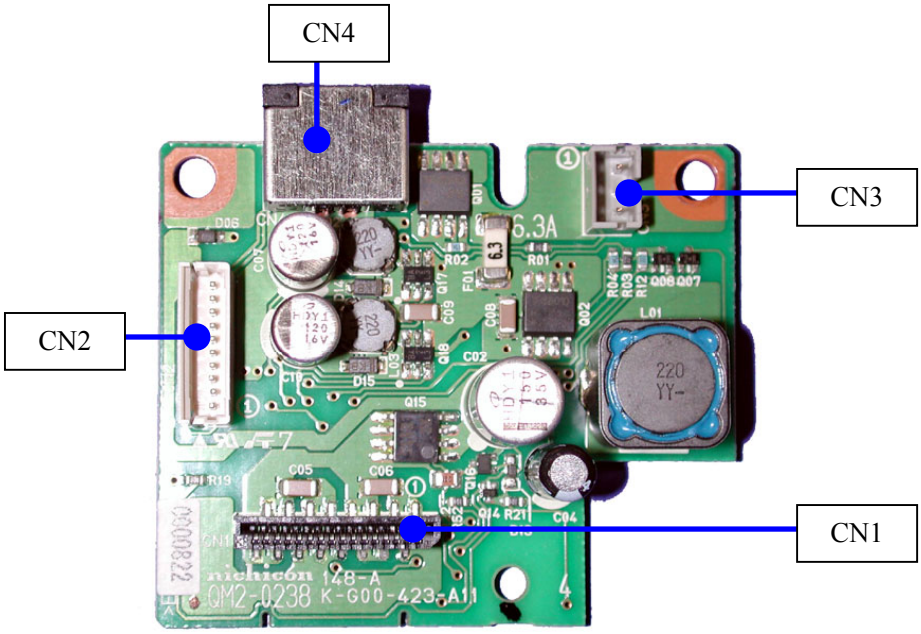
J306 (IrDA board I/F)

No.	Signal name	Function	Input/Output
1	5V	IrDA module LED drive power supply	OUT
2	5V	IrDA module LED drive power supply	OUT
3	GND	GND	
4	IRTXD	IrDA sending data	OUT
5	GND	GND	
6	IRRXD	IrDA receiving data	IN
7	GND	GND	
8	GND	GND	
9	GND	GND	
10	GND	GND	
11	IRMODE	IrDA mode signal	I/O
12	3.3V	IrDA module logic drive power supply	OUT

J401 (DCD board I/F)

No.	Signal name	Function	Input/Output
1	Vbus	Cable power supply	OUT
2	D-	Data signal line	I/O
3	D+	Data signal line	I/O
4	GND	Cable GND	

2.2 DC-DC Board Ass'y



CN1 (Carriage FPC I/F)

No.	Signal name	Function	Input/Output
1	A_VH	Head drive power supply (24V)	OUT
2	A_VH	Head drive power supply (24V)	OUT
3	A_VH	Head drive power supply (24V)	OUT
4	A_VH	Head drive power supply (24V)	OUT
5	A_GNDH	GND	
6	A_GNDH	GND	
7	A_GNDH	GND	
8	A_GNDH	GND	
9	A_GNDH	GND	
10	VHT	Head drive power supply (24V)	OUT
11	B_VH	Head drive power supply (24V)	OUT
12	B_VH	Head drive power supply (24V)	OUT
13	B_VH	Head drive power supply (24V)	OUT
14	B_GNDH	GND	
15	B_GNDH	GND	
16	B_GNDH	GND	

CN2 (Logic board I/F)

No.	Signal name	Function	Input/Output
1	POWER_SW	Optional battery start-up signal	OUT
2	BAT_TXD	Serial sending data to the optional battery charger	OUT
3	VH_ON	Head drive power supply VH output enable	IN
4	POWER_ON	DC-DC converter on/off control	IN
5	VIN	Power supply voltage	OUT
6	GND	GND	
7	2.5V	2.5V logic drive power supply	OUT
8	5V	5V logic driver power supply	OUT
9	GND	GND	
10	VM	24V motor drive power supply	OUT

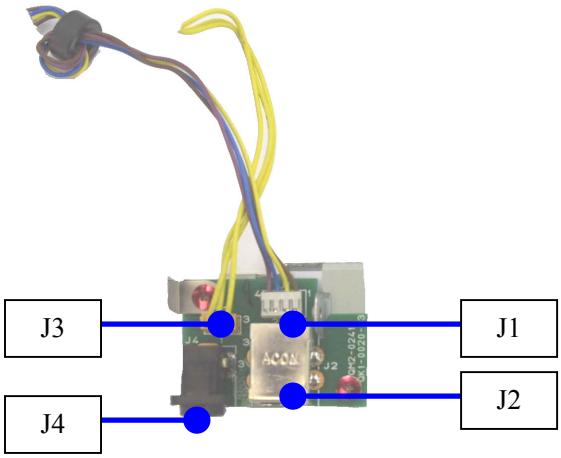
CN3 (USB/DC board I/F)

No.	Signal name	Function	Input/Output
1	GND	AC adapter GND	
2	VIN	AC adapter output	IN
3	CNT	Power supply FET switch control	IN

CN4 (Battery I/F)

No.	Signal name	Function	Input/Output
1	BAT	Optional battery output	IN
2	POWER_SW	Optional battery start-up signal	OUT
3	BAT_TXD	Serial sending data to the optional battery charger	OUT
4	GND	GND	
5	GND	GND	

2.3 USB Board Ass'y



J1 (Logic board I/F)

No.	Signal name	Function	Input/Output
1	GND	Cable GND	
2	Vbus	Cable power supply	IN
3	D-	Data signal line	I/O
4	D+	Data signal line	I/O

J2 (USB I/F: USB connector B)

No.	Signal name	Function	Input/Output
1	Vbus	Cable power supply	IN
2	D-	Data signal line	I/O
3	D+	Data signal line	I/O
4	GND	Cable GND	

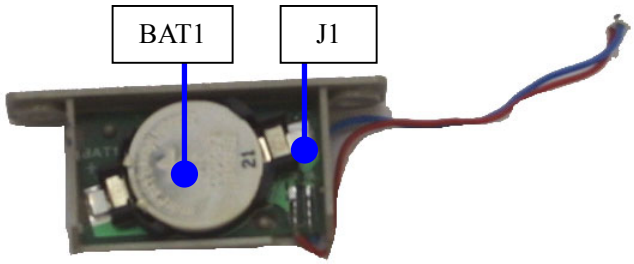
J3 (USB/DC board I/F)

No.	Signal name	Function	Input/Output
1	GND	AC adapter GND	
2	VIN	AC adapter output	IN
3	CNT	Power supply FET switch control	OUT

J4 (AC adapter I/F: DC jack)

No.	Signal name	Function	Input/Output
1	VIN	AC adapter GND	IN
2	GND	AC adapter output	
3	CNT	Power supply FET switch control	IN

2.4 Coin Battery Unit



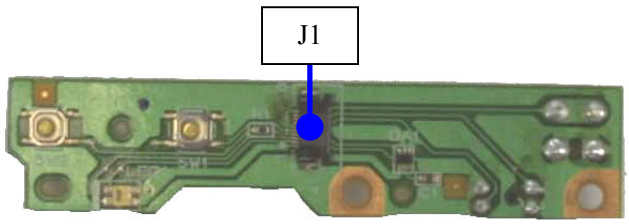
J1 (Logic board I/F)

No.	Signal name	Function	Input/Output
1	Vdd	Real Time Clock (RTC) IC drive power supply	OUT
2	GND	GND	

BAT1 (Coin battery I/F: Battery holder)

No.	Signal name	Function	Input/Output
1	−	Coin battery negative terminal	
2	+	Coin battery positive terminal	IN

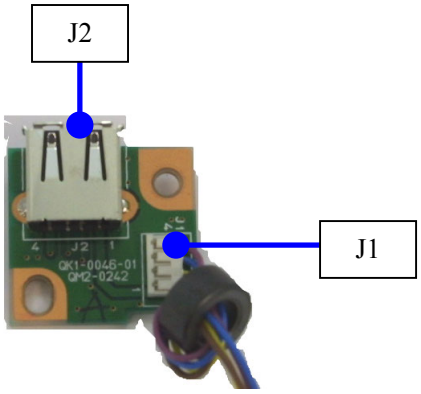
2.5 Panel Board Ass'y



J1 (Logic board I/F)

No.	Signal name	Function	Input/Output
1	LED_A	LED drive power supply	IN
2	LED_RSM	Error LED	IN
3	LED_PWR	Power LED	IN
4	POWER	Power key	OUT
5	RESUME	Resume key	OUT
6	GND	GND	
7	PES	PE sensor	OUT
8	VSEN_5V	PE sensor drive power supply	IN
9	ASFS	ASF sensor	OUT
10	GND	GND	

2.6 DCD Board Ass'y



J1 (Main PWB I/F)

No.	Signal name	Function	Input/Output
1	Vbus	Cable power supply	IN
2	D-	Data signal line	I/O
3	D+	Data signal line	I/O
4	GND	Cable GND	

J2 (Digital camera I/F: USB connector A)

No.	Signal name	Function	Input/Output
1	Vbus	Cable power supply	OUT
2	D-	Data signal line	I/O
3	D+	Data signal line	I/O
4	GND	Cable GND	

i70 / PIXUS 50i Specifications

<Printer>

Type	Serial color bubble jet printer
Paper feeding method	Auto sheet feed (no manual sheet feed)
Resolution	4,800 x 1,200dpi (Max.)
Throughput (reference)	HS / HQ Black 13 / 10.9 Color 9 / 4.8 Photo 0.8 / 0.36
Printing direction	Bidirectional/uni-directional
Print width	Max. 203mm (in borderless printing, 215mm on A4, 220.9mm on LTR)
Interface	USB 2.0 full speed, IrDA 1.1
ASF stacking capacity	Max. 3mm (Approx. 30 sheets of 75g/m2 paper)
Detection functions	- Cover open- Presence of print head - Presence of ink tank - Ink out (by dot count) - Paper out - Waste ink amount
Noise (during printing)	Approx. 40dB (at the highest print quality)
Environmental requirements	During operation: Temperature 5 to 35C; Humidity 10 to 90%RH (no condensation) Non operation: Temperature 0 to 40C; Humidity 5 to 95%RH (no condensation)
Power supply	Input voltage / Frequency / Power consumption / Standby / Power-off AC 100 to 120V / 50/60Hz / Approx. 12W (max.) / Approx. 1W / Approx. 0.1W AC 220 to 240V / 50Hz / Approx. 13W (max.) / Approx. 2W / Approx. 0.1W
External dimensions	310 (W) x 174 (D) x 51.8 (H) mm
Weight	Approx. 1.8kg, not including print head and optional kit
Related standards	Electromagnetic radiance: VCCI, FCC, IC, CE Mark, Taiwan EMC, Korea EMC, CCIB (China EMC), C-tick Electrical safety: Electrical Appliance and Material Control Law (DENTORI), UL, C-UL, CB Report, GS, CE Mark, FIMCO, CCIB, AS, CCEE, PSB, Electrical Safety Regulations of Korea, SASO Environmental regulations: Blue Angel, Energy Star, Environment label
Serial number location	On the back of the printer (base unit)

<Battery pack (option)>

Type	Lithium ion		
Nominal voltage	10.8 VDC		
Nominal capacity	2Ah		
Printable pages	Approx. 450 pages - JEIDA standard pattern J1, plain paper, standard mode - 25C environmental temperature, USB connection, printing immediately after full charge		
Environmental requirements	During operation	Temperature	5 to 35C
		Humidity	10 to 90%RH (no condensation)
	Non operation	Temperature	0 to 40C
		Humidity	5 to 95%RH (no condensation)
External dimensions	213.3 (W) x 20.6 (D) x 28.5 (H) mm		
Weight	Approx. 165g		

<Battery charger (option)>

Input voltage	16VDC		
Time required for charging	Approx. 2 hours		
Power consumption	Approx. 18W		
Environmental requirements	During operation	Temperature	5 to 35C
		Humidity	10 to 90%RH (no condensation)
	Non operation	Temperature	0 to 40C
		Humidity	5 to 95%RH (no condensation)
External dimensions	310.0 (W) x 30.5 (D) x 50.8 (H) mm (projected parts excluded)		
Weight	Approx. 190g		

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