iP1000
SIMPLIFIED SERVICE MANUAL

QY8-13A2-010

Rev. 01

June 18, 2004

Canon Inc.

1. PRODUCT LIST

1-1. Main Units

Product name	Product code	Sales territory	Remarks
Canon Bubble Jet Printer iP1000	9517A003AA	LAM LVT	
	9517A004AA	LAM HVT	
	9517A005AA	EMB	
	9517A005AB	EMB	
	9517A008AA	ASA HVT	
	9517A009AA	AU	
	9517A010AA	KR	
	9517A013AA	TW	
	9517A014AA	HK	
	9517A015AA	CN	
	9517A018AA	MY	
	9517A019AA	TH	

1-2. Options

None

1-3. Consumables

Product name	Product code	Sales territory	Remarks
Canon Ink Tank BCI-24 Black	6881A001AA	JPN	In common with the S200, S200x, S300, S330, i320, i35, i355, i250, and i255
	6881A002AA	EUR	
	6881A003AA	USA/CAN	
	6881A004AA	ASIA/AUST	
Canon Ink Tank BCI-24 Color	6882A001AA	JPN	
	6882A002AA	EUR	
	6882A003AA	USA/CAN	
	6882A004AA	ASIA/AUST	
Canon Ink Tank BCI-24 Black Twin Pack	6881A008AA	JPN	
	6881A009AA	EUR	
	6881A010AA	USA/CAN	
	6881A011AA	ASIA/AUST	
Canon Ink Tank BCI-24 Color Twin Pack	6882A008AA	JPN	
	6882A009AA	EUR	
	6882A010AA	USA/CAN	
	6882A011AA	ASIA/AUST	

2. PRODUCT SPECIFICATIONS

2-1. Printer Main Unit Specifications

Paper feeding method			ASF
Resolution			4,800 x 1,200 dpi (max.)
Printing speed			Measured by throughput patterns Fine_BK and Fine_CL.
	HQ	CL	6.6 ppm (CL throughput pattern)
		BK	11.3 ppm (BK throughput pattern)
	HS	CL	11 ppm (CL throughput pattern)
		BK	14 ppm (BK throughput pattern)
Printing direction			Bi-directional / Uni-directional (automatically switched according to print data and print mode)
Draft mode print duty			50% duty
Print width			203.2 mm (8 inches)
Interface			USB (2.0) Full Speed only
Supported print head			Service part: QY6-0044-000
No. of pages that can be printed			
	CL		CL approx. 170 pages, BK approx. 520 pages (SCID No.5 pattern, default print mode)
	BK		BK approx. 300 pages (1500 character pattern, default print mode)
ASF stacking capacity			Max. 10 mm (Approx. 100 pages of 75 g/m^2)
Paper weight			64 to 105 g/m^2
Plain paper			10 mm or less
High Resolution Paper			10 mm (Approx. 80 sheets) or less
Glossy Photo Paper			10 sheets or less
Photo Paper Pro, Photo Paper Plus Glossy, Matte Photo Paper, Photo Paper Plus Semi-gloss			A4, LTR, 5x7: 10 sheets or less 4x6: 20 sheets or less
Transparency			30 sheets or less
Envelope			10 sheets or less
Photo Stickers			1 sheet
T-shirt Transfer			1 sheet
Borderless printing			4x6 and 5x7 only
Detection function			
Cover open			Available
Presence of print head			Available
Presence of ink tank			Not available
Presence of paper			Available
Paper width			Not available
Waste ink absorber full			Available
Remaining ink amount			Available (Detected by dot counting. Reset by user operation. Enabled at default.)
Print head alignment			Available (6 types)
Acoustic noise level			
Fine (Glossy Photo Paper / Fine mode)			Approx. 48 dB (Sound pressure level ISO9296)
HQ			Approx. 56 dB
HS			Approx. 59 dB
Environmental requirements			
During operation			Temperature: 5C to 35C (41F to 95F) Humidity: 10% to 90%RH (no condensation)
Non-operation			Temperature: 0C to 40C (32F to 104F) Humidity: 5% to 95%RH (no condensation)
Power supply			
Input voltage / Frequency			AC 100 to 127 V, 50/60Hz (LV) AC 220 to 240 V, 50/60Hz (HV)
Power consumption:	During printing		Approx. 8 W
	Stand-by status		Approx. 1 W
External dimensions			
With the paper support extended (no paper output tray)			Approx. 385 (W) x 224 (D) x 268 (H) mm
With the paper support retracted (no paper output tray)			Approx. 385 (W) x 195 (D) x 165 (H) mm
Weight			Approx. 2.3 kg (excluding the print head and ink tanks)
Related standards			
Electromagnetic radiance, Electrical safety			FCC, IC, CE, C-Tick, VCCI, Taiwan PRC, Korea MIC, Gost-R, UL, CUL, CB Report, GS, FT, CCC, Korea EK, SASO, SPRING, CE Mark, IRAM

Note: Not Blue Angel compliant.

2-2. Product Life

Specified print volume or the years of use, whichever comes first.

- 3 years of use
- Print volume: 4,000 pages
  - Black: 2,000 pages (A4, standard mode, 1,500 character pattern)
  - Color: 1,200 pages (A4, 7.5% duty per color pattern)
    120 pages (A4, photo, borderless printing)
    80 pages (4 x 6, photo, borderless printing)
    600 pages (Postcard, photo, borderless printing)

2-3. Print Head Specifications

Type	4-color integrated type (ink tank separate type)
Print head	BK: 320 nozzles in 2 vertical lines C/M/Y: 128 nozzles in 2 vertical lines per color Ink droplet: BK 30 pl, CL 5 pl
Ink color	BK (pigment-based ink) CL: Y, M, C (high brilliance)
Ink tank	BCI-24 Black, BCI-24 Color (In common with the S300, S330, i320, i350, i355, i250, and i255)
Weight	Approx. 60g (excluding ink tanks)
Supply method	Service part (excluding ink tanks) Part number: QY6-0044-000 (In common with the i350, i355, i250, and i255, however, not compatible with the S300 and S330 series.)
Print head life	4,000 pages (Same as the printer main unit)

Note: Although the print head can be physically installed in the S300 and S330 series printers, it is incompatible with and cannot be used in those models.

3. ERROR DISPLAY

Errors are displayed by the LEDs, and ink low warnings are displayed by the Status Monitor.

3-1. Operator Call Error (LED Blinking in Orange)

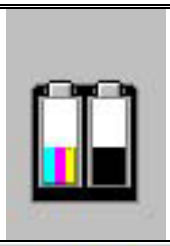
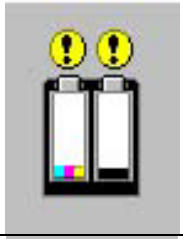
LED blinking	Error	Corrective action
2 times	Paper out	Set paper, and press the Resume/Cancel button to feed the paper.
3 times	Paper jam	Remove the jammed paper, and press the Resume/Cancel button.
4 times	Ink tank not installed	Re-install the ink tanks, and close the access cover.
5 times	Print head not installed or failure has occurred in the print head. (Non-supported print head (see page 4) is installed or print head EEPROM data is abnormal.)	Install the print head, and close the access cover. Or, confirm the print head is “QY6-0044-000” and perform re-installation. If not recovered with the print head installed, power the printer off and on.
8 times	Waste ink absorber full or platen waste ink absorber full warning (approx. 95% of the maximum capacity)	Pressing the Resume/Cancel button will exit the error, and enable printing.

3-2. Service Call Error (LED Blinking in Orange and Green Alternately)

LED blinking	Error	Corrective Action
2 times	Carriage error	Replace the printer as it has failed.
6 times	Internal temperature error	Replace the printer as it has failed.
7 times	Waste ink absorber full or platen waste ink absorber full	Replace the printer as it has failed.
8 times	Print head temperature rise error	Replace the printer as it has failed.
9 times	EEPROM error	Replace the printer as it has failed.
10 times	No print head detected excepting print head replacement (during printing)	Replace the printer as it has failed.

3-3. Ink Low Warning (Ink low warnings are displayed by the Status Monitor only when the remaining ink level detection is enabled, and no Status Monitor display when disabled.)

Note: The Status Monitor display in the table below is for Windows.

Warning	Display by Status Monitor
Ink low warning 1 (approx. half level)	
Ink low warning 2 (low remaining ink)	
Ink low warning 3 (ink level unknown)	

4. SERVICE MODE

To conduct the following functions, a host computer (Windows 98 / ME / 2000 / XP), printer driver and service tool (QY9-0065) for the iP1000 are needed.

If an error has occurred in the printer, the service tool cannot be used as it is. To use the service tool, set the printer in the special mode, following the procedures below.

<Special mode setting procedures>

With the print head installed, while pressing and holding the Power button, connect the AC plug. After the LED lights in green, with the Power button still pressed, press the Resume/Cancel button 2 times, and release both the Power and Resume/Cancel buttons. (Each time the Resume/Cancel button is pressed, the LED lights alternately in orange and green, starting with orange.)

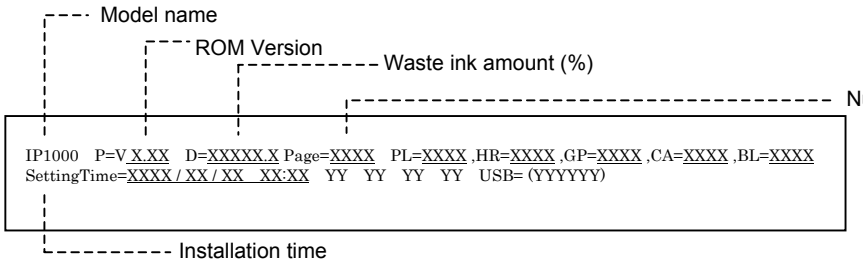
Function	Procedure	Remarks
Print head manual cleaning < For reference > Print head refreshing (deep cleaning) Paper feed roller cleaning	Select “Cleaning” from the printer driver utility. Select “Deep Cleaning” from the printer driver utility. 1. Remove the paper from the ASF. 2. Select “Roller Cleaning“ from the printer driver utility. 3. Following the instruction from the Status Monitor, load 3 sheets of plain paper in the ASF, and feed them.	Cleaning time: Approx. 40 sec. Cleaning time: Approx. 70 sec. Cleaning time: Approx. 2 min.
Test printing 1) Nozzle check pattern printing < For Reference > Print head alignment	Select “Nozzle Check“ from the printer driver utility. 1. Select “Print Head Alignment“ from the printer driver utility. 2. Select the optimal value using the printed head position adjustment pattern.	Nozzle check pattern printing Significant misalignment can be adjusted.
2) Shipment pattern printing - ROM version - Number of pages fed - Waste ink amount	Refer to Shipment inspection pattern*1 below.	Refer to Shipment inspection pattern sample*2 below. Host computer and service tool are required.
EEPROM reset (Reset of waste ink counter etc.)	Refer to EEPROM reset / Destination setting*3 below.	Host computer and service tool are required.
Destination setting	Refer to EEPROM reset / Destination setting*3 below.	Host computer and service tool are required.

*1 Shipment inspection pattern

a. Install the print head (QY6-0044-000), and press the Power button to turn on the printer. (The LED lights in green.)
b. Load A4-sized paper.
c. Connect the printer to the computer. Using the iP1000 service tool (QY9-0065), select “USB PORT”. (Refer to Appendix 2, iP1000 Service Tool.)
d. Select “TEST PATTERN 1.” The printer starts printing the shipment inspection pattern.

*2 Shipment inspection pattern sample

EEPROM contents can be confirmed from the shipment inspection pattern printout (top of the shipment inspection pattern).



Page: Total number of pages fed
PL: Plain paper
PR: PR101, SP101, MP101
CA: Postcard, Inkjet postcard, Glossy postcard
BL: Borderless printing (Counted separately from other media)

*3 EEPROM reset / Destination setting

a. Install the print head (QY6-0044-000), and press the Power button to turn on the printer. (The LED lights in green.)
b. Connect the printer to the computer. Using the iP1000 service tool (QY9-0065), select “USB PORT”. (Refer to Appendix 2, iP1000 Service Tool.)

c. <Destination setting>
Destination can be set by clicking each model name in “SET DESTINATION.”
Confirm the model name by clicking “GET DEVICE ID” after setting change. (If incorrect, it can be changed before turning the unit OFF/ON.)

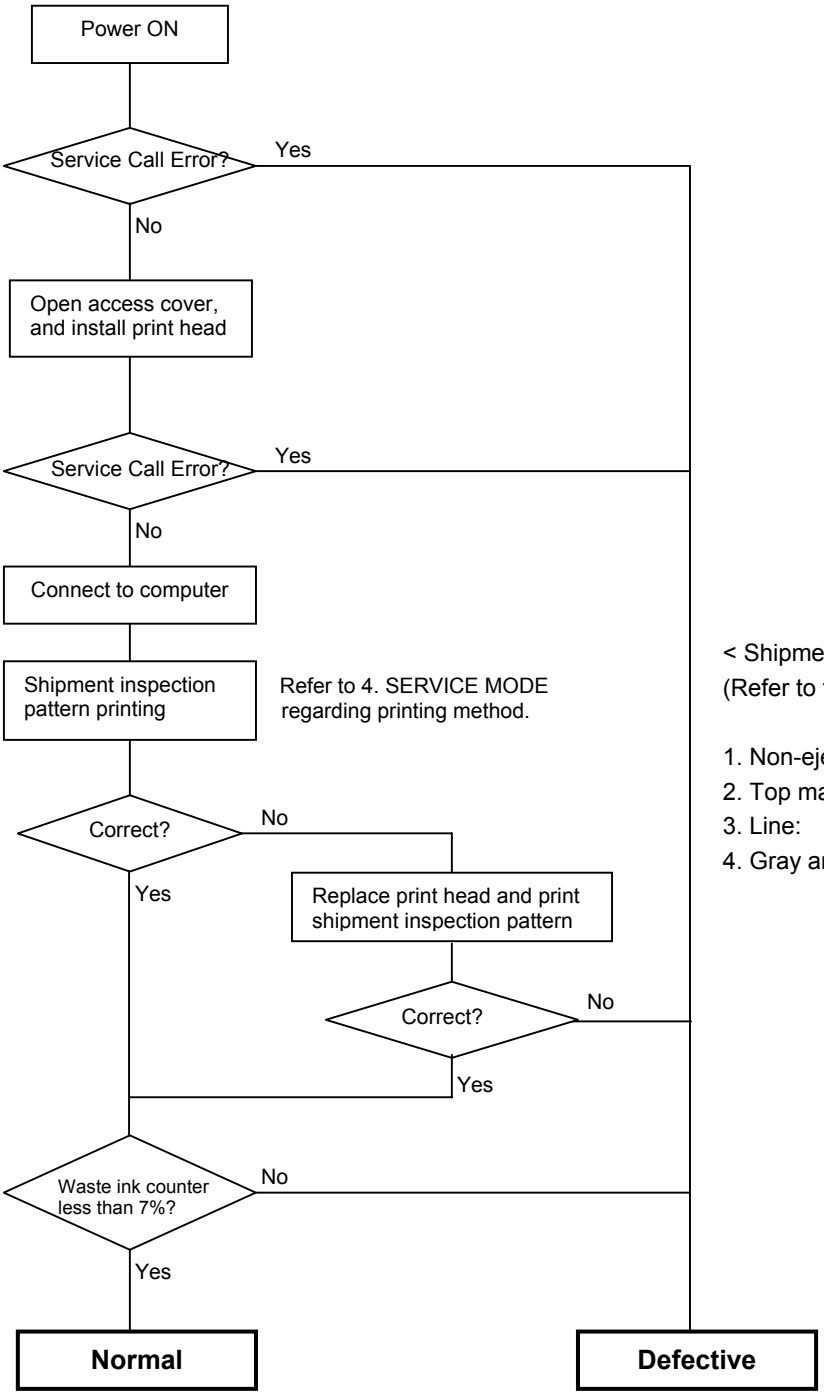
<EEPROM reset>
When ”EEPROM CLEAR” is checked, the EEPROM is reset after the shipment inspection pattern printing.
(At EEPROM reset, the main waste ink counter value is re-set to 3,000mg.)

Parts List

Key	Part Number	Rank	Q'ty	Description	Remark	In common with the i350 / i355
	QY6-0044-000	K	1	PRINT HEAD		Yes

6. TROUBLESHOOTING FLOWCHART

6-1. Printer Main Unit Troubleshooting Flowchart (how to confirm printer operation at refurbishment)



< Shipment inspection pattern check items>
(Refer to the attached print sample.)

1. Non-ejection of ink:	Yes	NG
2. Top margin:	Outside of paper	NG
3. Line:	Not connected	NG
4. Gray area:	White lines / uneven density	NG

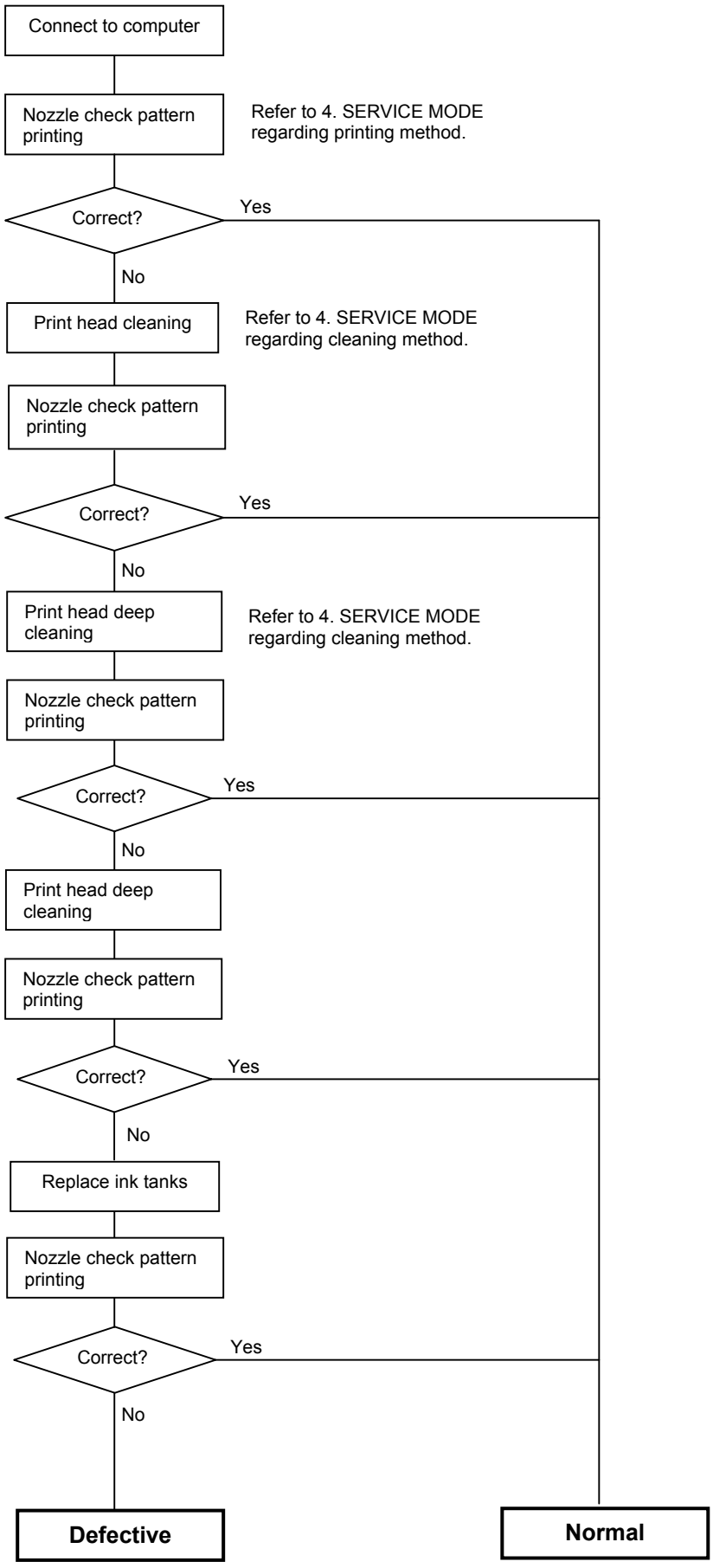
< Note for normal printer refurbishment >

At refurbishment, install the print head, and while pressing and holding the Power button, connect the AC plug. After the LED lights in green, while holding the Power button, press the Resume/Cancel button 2 times, and release the Power button. (Each time the Resume/Cancel button is pressed, the LED lights alternately in orange and green, starting with orange.)

With this condition, print the shipment inspection pattern and reset the EEPROM in accordance with 4. SERVICE MODE, EEPROM reset / Destination setting.

Since the printer enters the shipping mode (carriage in replacement position, paper lifting plate raised) by powering off using the Power button, remove the print head, unplug the power cord, and do not print afterwards.

6-2. Print Head Troubleshooting Flowchart (print head operation confirmation)



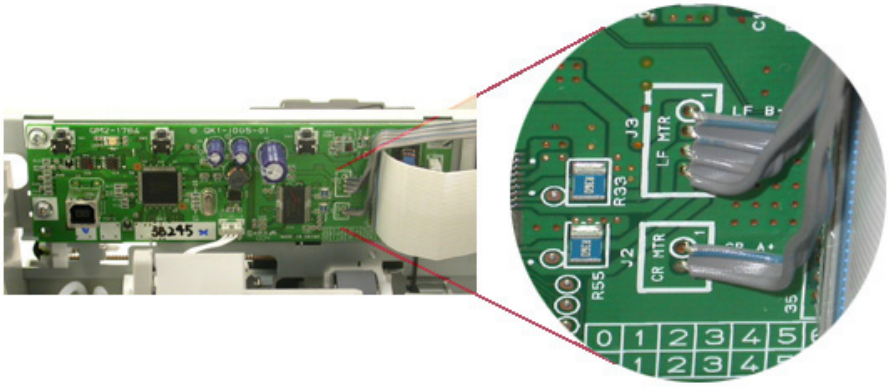
7. SPECIAL NOTES ON SERVICING IN ASIA

- Elimination of Major Component Connectors on the Logic Board Ass'y -

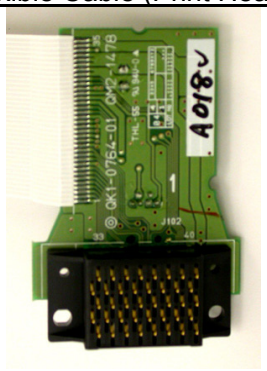
In the iP1000, the LF and CR motors are soldered to the logic board ass'y, and the connectors which were used in prior models are eliminated.
In addition, the CR flexible cable is soldered to the print head to eliminate the connector. (However, in peak periods of production, instead of soldering, the connector may be used for the CR flexible cable on the print head side.)

<Special notes on servicing>
In replacing the logic board ass'y, remove the solder from the backside of the logic board's LF and CR motor cable connections, and re-solder them to the replaced logic board ass'y.
Regarding the CR flexible cable, as there is no service part setting, no solder removal or re-soldering of the cable itself is required.

Logic Board Ass'y



CR Flexible Cable (Print Head Side)



8. PRODUCT TECHNICAL INFORMATION

8-1. FAQ (Problems specific to the iP1000 and corrective actions)

No.	*	Function	Phenomenon	Possible Call / Claim	Corrective action	Cause
1	A	Installation	Carriage error (LED blinks alternately in orange and green 2 times).	- LED blinks alternately in orange and green, 2 times (carriage error).	Remove the packing material fixing the carriage.	The user may not have removed the packing material at unpacking and installation. Although a caution sheet is packaged together with the printer, the user may not have noticed it. Note: Even if the packing material remains, no parts are damaged.
2	A		Ink tank installation error (LED blinks in orange 4 times.)	- LED blinks in orange 4 times (ink tank installation error). (As this occurs at printer installation, the user cannot recognize the error.)	Open the access cover, and install the ink tanks properly.	Since the user did not seat the ink tanks completely at unpacking, installation, and ink tank replacement, the ink tank contacts the main case.
3	B	Paper feeding	No paper feeding when a number of sheets are loaded. (PR-101)	- Paper out error - Paper cannot be fed - Cannot print	1. Reduce the number of pages loaded in the ASF. 2. Flatten curled paper.	When the paper is curled and many sheets are loaded, the loaded page limit level in the ASF creates friction at paper feeding.
4	B		Multi-feeding	- Multiple pages of paper are fed simultaneously. -Blank paper is ejected.	1. Fan the paper and set them in the ASF. 2. In case of PR-101, set the paper sheet by sheet in the ASF.	In the high temperature and high humidity environment, the frictional force between the front and back sides of paper becomes high, and sheets stick to each other, contributing to multi-feeding.
5	B		Envelope not feeding	- Paper out error - Paper cannot be fed - Cannot print	1. Perform roller cleaning from the printer driver. 2. Reduce the number of envelopes loaded in the ASF. 3. Flatten the envelope (with a pen).	The paper feed roller slips on the paper at paper feeding. Note: Depending on the paper lots. This phenomenon may occur in DL envelope.
6	B		Envelope jam at feeding	- Paper jam error - Paper cannot be fed - Cannot print	1. Perform roller cleaning from the printer driver. 2. Reduce the number of envelopes loaded in the ASF.	When the paper is fed by the slightly-slippery paper feed roller, the flap is caught in the return position of the claw.
7	B		Paper jam	- Paper jam error - Paper cannot be fed - Cannot print	1. Remove the jammed paper from the paper pick-up side.	As the LF roller slips on the paper, the paper is not fed, causing the jam error at paper ejecting.

(8-1. FAQ (Problems specific to the iP1000 and corrective actions) cont'd)

No.	*	Function	Phenomenon	Possible Call / Claim	Corrective action	Cause
8	B	Image quality	Smearing on printed side.	- Smear on the printed side of paper - Cannot print properly - Paper edge crease	1. Correct the paper curl. 2. Recommend the user to conduct printing in the print quality assurance area. (In the iP1000, the head-to-paper distance cannot be changed.) Note: In borderless printing (to 4x6 or 5x7), correct the paper curl.	The edge of paper rises due when paper is curled, causing the print head to rub against the printed surface of paper, resulting in smearing.
9	B		Smearing on the backside (or address side) of postcards	<When printing the address side of postcards> - Smears on the address side <When printing the message side of postcards> - Smears on the backside	Clean the ribs on the platen with cotton swabs/buds.	When borderless printing is conducted continuously, ink mist attaches to the ribs on the platen, and is transferred to the backside of the following paper.
10	C		Horizontal lines or uneven print density at the trailing edge of paper	- Cannot print to the bottom edge of paper - Lines or uneven print density appear in the trailing edge of paper - Cannot print properly	Recommend printing in the print quality assurance area.	When the paper end comes off the pinch roller, printing is performed without the paper being held, preventing the ink drops from being ejected in the correct positions, resulting in unevenness. Note: The problem is less noticeable than that of the i320.
11	C		Horizontal lines or uneven print density due to LF roller feeding at small pitch	- Lines or uneven print density (on skin tones and background) - Cannot print properly	Change the print quality from standard to high mode.	As the print media slightly slips while being fed by the LF roller, printed areas overlap, causing the problem.

*Occurrence level:

A: The phenomenon is likely to occur frequently. (Caution required).
B: The phenomenon may occur under certain conditions, but likeliness is assumed very low in practical usage.
C: The phenomenon is unlikely to be recognized by the user, and no practical issues are assumed.

8-2. Major Functions

(1) Borderless printing (4”x6”, 5”x7” size only)

The iP1000 supports borderless printing only for 4”x6” and 5”x7” size paper. Borderless printing is not supported with other paper sizes (A4, LTR, etc.).

< Possible problems with this function >

- Smearing on the address side of postcards in continuous borderless printing on the message side.
  -> Clean the ribs on the platen.
- Smearing on the backside of paper in continuous borderless printing.
  -> Clean the ribs on the platen.
- Ink mist on the platen.
  -> Clean the ribs on the platen

(2) No paper selection lever

The printer does not need adjustment via a paper selection lever. (Adjustment of the head-to-paper distance when printing envelopes is not necessary.)

< Possible problems with this function >

- The head rubs against the paper when the amount of paper curl is large.
  -> Flatten curled paper (to less than 3 mm).
  -> In print modes other than borderless printing, conduct printing in the print quality assurance area of the top and bottom edges. (Top margin 28 mm, bottom margin 26.5 mm)

(3) Quiet mode

The printer has a quiet mode function.
Compared with the normal mode,

Acoustic noise level:	Slightly lower. (HQ, normal: Approx. 48 dB, Quiet: Approx. 47 dB)
Audible overtone level:	Sound quality changes, and sound becomes quieter.
Print speed:	Slows. (BK printing in HQ/HS mode using an acoustic noise measurement pattern: Approx.1.3 times)

(4) Remaining ink level detection function

The printer has a function to detect the remaining ink level. (Default setting: ON)

Detection method: Dot counting (Counted for each BK/CL ink tank)
CL tank: The remaining ink level is detected by total counted dot values of 3 colors of ink.

Display method: Displayed on the Status Monitor (at 3 levels listed below for each BK/CL ink tank)
Level 1: Half level of remaining ink level (Approx. 40% of ink remaining)
Level 2: Indication of “!” mark (Approx. 10% of ink remaining)
Lever 3: Indication of “?” mark (Remaining ink level is unknown, ink may be used up anytime)
Note: Remaining ink detection function displays the status only, and does not cause errors.

Accuracy: The margin of error of detection accuracy is +/-10% in normal printing.
The margin of error is likely to be large in the following specific print patterns:
When printing continuously using any one of the CMY colors of ink
-> As the remaining ink level is calculated by total counted dot values of 3 colors of ink, if any of the C/M/Y inks is heavily consumed, the margin of error for remaining ink increases.
When performing continuous BK solid printing
-> With continuous printing, ink flow from the tank to the ink chamber can be interrupted, after which ink remains unused in the tank.

Reset procedure: Perform the following operations from the printer driver utility.

1. In Low Ink Warning Setting, enable Display low ink warning.
2. In Ink Counter Reset, reset the applicable ink counter(s).

Note: Be sure to reset the ink counter from the printer driver utility after replacing ink tanks.

< Possible problems with this function >

- Due to user error, the actual remaining ink level does not match the indicated remaining ink level, resulting in “ink out”, etc.

  User error: Forgetting to reset the ink counter / ink counter reset other than when replacing ink tanks.

- Due to the specific print pattern, the actual remaining ink level does not match the indicated remaining ink level, resulting in “ink out”.

  Specific print pattern: Continuous printing using any one of the CMY colors of ink / continuous BK solid printing, etc.

(5) Print head deep cleaning

The printer has a print head deep cleaning (refreshing) function.

Print head deep cleaning (refreshing):

This is a deep cleaning function in order to resolve print failure due to ink clogging the print head. (The black ink is pigment-based, and clogs easier than other dye-based ink.)

Perform from the printer driver utility.

< Possible problems with this function >

- Excessive ink consumption when conducting print head deep cleaning repeatedly. (The amount of ink used is approx. 10 to 15 times the normal manual cleaning amount.)

< Reference > Cleaning types, amount of ink used and time required

BK and CL ink drawing is simultaneously performed.

Cleaning type	Amount of ink used	Time required
Manual cleaning Dot count cleaning Timer cleaning (24 hours to 2 weeks)	BK: Approx. 0.12 g CL: Approx. 0.14 g	Approx. 40 sec.
Head replacement Ink tank replacement Cleaning when the print head is not capped at printer power on	BK: Approx. 0.30 g CL: Approx. 0.30 g	Approx. 45 sec.
Cleaning on arrival at user Timer cleaning (2 weeks to 3 months)	BK: Approx. 0.45 g CL: Approx. 0.45 g	Approx. 60 sec.
Print head deep cleaning Timer cleaning (3 months or more)	BK: Approx. 1.5 g CL: Approx. 2.2 g	Approx. 70 sec.

(6) Print head alignment

The printer has a print head alignment function (print head position adjustment function).

Print head alignment: This is a function to correct the displacements between the nozzle lines of the print head, and incorrect print position at bi-directional printing.

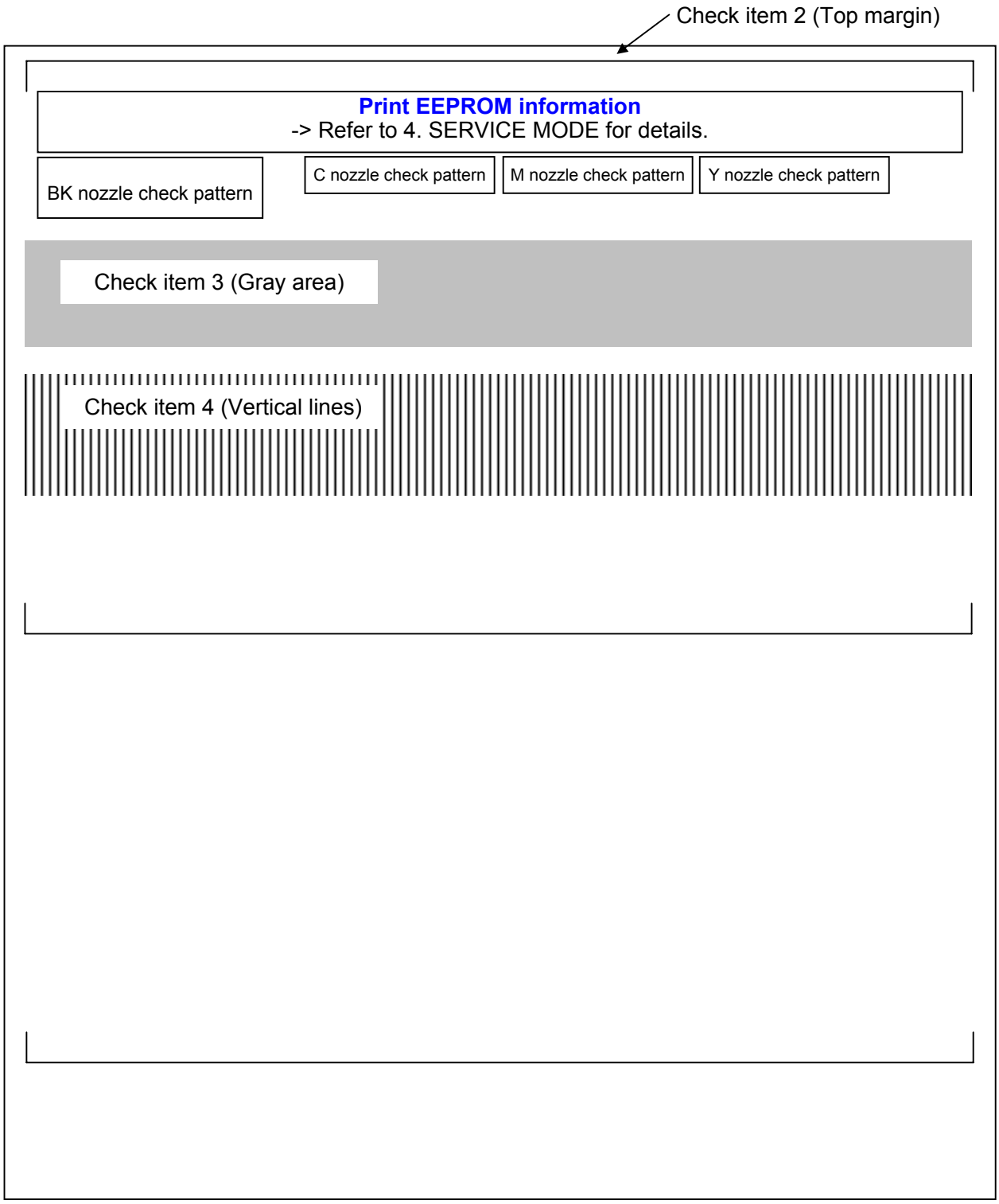
The adjustment is conducted using the printed head position adjustment pattern.

A: Print head alignment between black nozzle lines
B: Print head alignment between cyan nozzle lines
C: Print head alignment between magenta nozzle lines
D: Print head alignment between yellow nozzle lines
E: Print head alignment between black and color printing

F: Print head alignment in bi-directional black printing
G: Print head alignment in bi-directional color printing
Perform from the printer driver utility.
(At initial set-up by the user, notice to perform the print head alignment is displayed in the Status Monitor.)

APPENDIX 1: SHIPMENT INSPECTION PATTERN 1

Check item 1 (Non-ejection of ink): Total area of the sample below



Paper size: A4

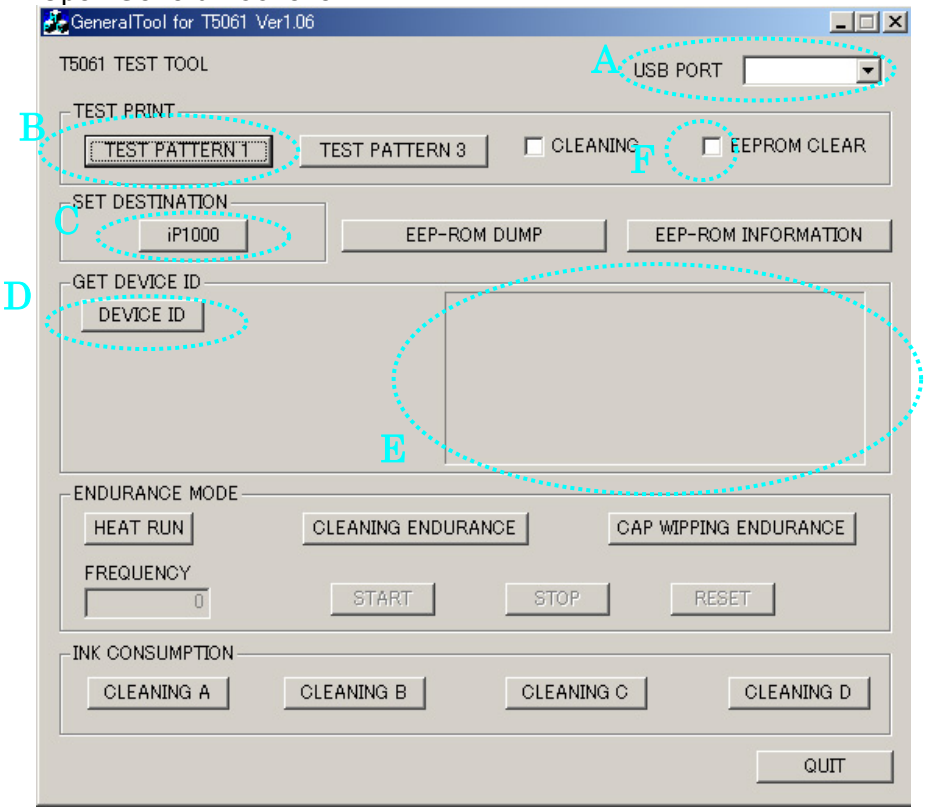
APPENDIX 2: iP1000 SERVICE TOOL

< How to use the iP1000 Service Tool (QY9-0065) >

Usage:	Shipment inspection pattern printing Destination setting in EEPROM EEPROM reset
Supported OS:	Windows 98 / ME / 2000 / XP (J/E version) : QY9-0065
Distribution method:	Provided by SSIS (Download “iP1000 Service Tool” from software download in SSIS.)

< Usage procedures >

1. Unzip **iP1000tool_V100.EXE**. (Double-click to unzip the file.)
2. Open the **iP1000tool_V100** folder created after unzipping.
3. Open **GeneralTool.exe**.



4. Select the connected USB port number from USB PORT (A).

< How to print the shipment inspection pattern >

1. Select TEST PATTERN 1 (B), and the shipment inspection pattern 1 will be printed. (Refer to APPENDIX 1, SHIPMENT INSPECTION PATTERN 1.)

< How to set the destination >

1. In SET DESTINATION (C), select the model name “iP1000” (common to all destinations), and the destination will be set.
2. Click DEVICE ID (D), and confirm the model name indicated in the (E) area. Or, confirm the model name on the shipment inspection pattern printout.

< EEPROM reset >

After marking the EEPROM CLEAR check box, perform the shipment inspection pattern printing. The EEPROM will be reset.

(When the waste ink counter is re-set, it is not re-set to zero, but to 3,000mg.)