

MODEL: BJC-55

No.: PRNT-896
(QK-12E-0129)
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LOCATION: MAIN UNIT

SUBJECT: DIFFERENCES BETWEEN BJC-50 AND BJC-55

DETAIL

This bulletin has been issued to notify of the differences between the **BJC-50/50v** and **BJC-55/BJ M40** for servicing. This has been issued as a substitute for the Service Manual, which will not be issued. C.IWS applies to the **BJC-55/BJ M40**.

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1. PRODUCT OUTLINE

The BJC-55/BJ M40 are mobile, color BJ printers targeting the personal-use market. As a successive model of the BJC-50/50v, the ease of connection has been improved, mobile printer function has been strengthened, and the following functions have been added:

- (1) The high-speed IrDA (Ver.1.1) enables the printer to attain print speed comparable to that of the Centronics interface.
- (2) Direct printing from digital cameras with IrTran-P. (BJ M40 only)
- (3) Support of the USB I/F function.
- (4) Photo printing function.

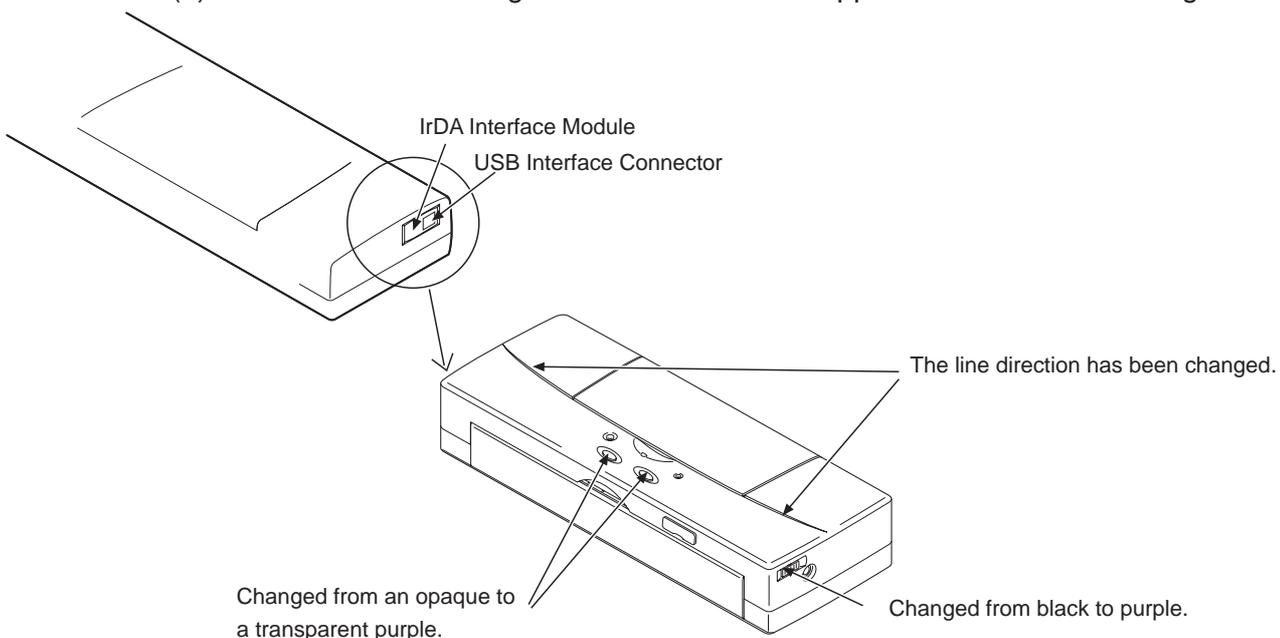
2. CHANGES FROM THE BJC-50/50v

- 1) New adoption of the photo cartridge (Photo printing function has been added.)
- 2) The IrDA version upgrade from Ver. 1.0 to 1.1 has enabled faster transmission.
- 3) New adoption of IrTranP (Direct printing from digital cameras/BJ M40 only).
- 4) Parallel interface has been eliminated. USB I/F has been adopted.
- 5) Button reset of the ink low warning is added.
- 6) Demonstration pattern printing is eliminated.
(The other self test print can be performed by the same operation as with the BJC-50/50v.)
- 7) Various specifications
- 8) A special tool (spur cleaner) is included.

3. EXTERNAL APPEARANCE

The BJC-55/BJ M40 has the same appearance as the BJC-50/50v, except for the following:

- (1) The USB I/F connector has been positioned on the left side of the printer. Along with this, the IrDA module has been moved, and the parallel interface has been eliminated.
- (2) The color of the panel switch has been changed from an opaque to a transparent purple.
- (3) The color of the lock switch has been changed from black to the same purple as the panel switch.
- (4) The line direction along the head cover of the upper cover has been changed.



4. SPECIFICATIONS

4-1. Printer Specifications

Type	Mobile serial color bubble jet printer			
Paper feeding method	Manual sheet feed / Auto sheet feed (when the optional ASF-50 has been installed.)			
Printing speed	Throughput:	High Speed	Standard	High Quality
	BC-10 Bk Cartridge			
	New monochrome pattern (E)	5.5 ppm	5.0 ppm	-----
	New monochrome pattern (J)	5 ppm	5.0 ppm	-----
	BC-11e Color Cartridge			
	New color pattern (E)	2 ppm	1.6 ppm	-----
	New color pattern (J)	2.0 ppm	1.8 ppm	-----
	BC-12e Photo Cartridge	-----	-----	0.1 ppm
	Full address printing			
Printing direction	Unidirectional (automatically selected according to the print data)			
Max. Print Width	203 mm (8 inches)			
Line feed pitch	136 ms/line (128" /360" line feed)			
Built-in print control mode	LQ mode (BJC-55 only) / BJ mode (BJ M40 only) / Native mode / B JL command			
Detection functions	Presence of paper: Available Presence of BJ cartridge: Available Waste ink amount: Available Paper width: Not available Distinction of BJ cartridge: Available Ink low: Available (by using the dot-count)			
Noise	Sound pressure level: conforms to ISO9296 Approx. 43 dB (A) or less during operation (HQ/HS mode)			
Environmental requirements	During operation Temperature 5°C to 35°C (41°F to 95°F) Humidity 10%RH to 90%RH (no condensation) Non operation Temperature 0°C to 35°C (32°F to 95°F) Humidity 5%RH to 95%RH (no condensation)			
Power supply	Input voltage/Frequency: AC100 -240V, 50/60 Hz Power consumption			
	Printing status	Standby status	Soft power off	Charging status
	Approx. 23 W*	Approx. 1.7 W**	Approx. 0.9 W**	Approx. 10 W**
		Approx. 1.8 W***	Approx. 1.0 W***	Approx. 10 W***
		Approx. 2.6 W****	Approx. 1.6 W****	Approx. 10 W****
	*: Approx. 30 W when the AC adapter is used. **: When the input power is AC 100V. ***: When the input power is AC 120V. ****: When the input power is AC 230 - 240V.			
External dimensions	302 mm (W) x 112.5 mm (D) x 50 mm (H)			
Weight	Approx. 0.9 Kg (including BJ cartridge)			

- 2) The installed cartridge is unknown.
- 3) The possibility of ink-low error is displayed only by printer LED. (The information is not displayed on the host computer.)
- 4) The print job cannot be canceled from the host computer when an error has occurred.

After the cause of the error is resolved, the printer can be recovered by pressing the *RESUME* button on the printer's operation panel. The error can then be recovered on the host computer, although the ongoing print job is deleted.

Plug and Play is not supported.

<Possibly occurring problems>

- 1) The host computer occasionally fails to recognize the infrared port of the printer in 4Mbps communication. "Hard power reset," i.e. disconnection of the printer from mains power and removal of the battery, is required to recover from this condition. The frequency of occurrence and the duplication are low. In case of frequent occurrence, however, this problem can be avoided by lowering the communication speed.
- 2) If the cleaning operations, etc., start during printing, the error message "Write error" may be displayed on the host computer. When the cleaning operations, etc. are finished, the error message disappears, and printing operations continue.
- 3) If another operation is executed at the host computer (eg., launching another application) while printing a large file (printing photo images from Photoshop etc.), paper may automatically be ejected, or the printer may reset.

4-4. Interface Specifications

The interface specifications of this printer are shown below.

- 1) Infrared Interface
 IrDA Interface Ver. 1.1 / IrTranP
 ASK Interface
- 2) USB Interface

<Differences from the BJC-50/BJC-50v>

- 1) **The supported version of IrDA has been changed from Ver. 1.0 to 1.1.**
- 2) **IrTranP compliant. (BJ M40 only)**
- 3) **USB interface compliant.**
- 4) **Parallel interface has been eliminated.**

4-4-1. IrDA Interface

- 1) Interface
 IrDA Version 1.1 compatible
- 2) Optical specifications
 Light generation
 Wavelength: 0.85 to 0.90 μm
 Intensity: 100 to 500 m W/Sr
 Light angle: Approx. $\pm 15^\circ$ (along optical axis)

- Light interception
 - Wavelength: 0.85 to 0.90 μm
 - Intensity: $4\mu\text{ W/cm}^2$ to 500m W/cm^2
 $10\mu\text{ W/cm}^2$ to 500m W/cm^2
 (when the communication speed is more than 0.576 MHz.)
 - Light angle: Approx. $\pm 15^\circ$ (along optical axis)
- 3) Transfer speed 9600/19200/38400/57600/115.2k/576k/1.152M/4M bps
- 4) Communication method Half duplex, start/stop system (bidirectional):
 when the transfer speed is less than 115.2kbps
 Half duplex, frame synchronization system (bidirectional):
 when the transfer speed is more than 0.576Mbps
- 5) Communication distance 0 to 1m: when the transfer speed is less than 115.2kbps
 0 to 0.8m: when the transfer speed is more than 0.576Mbps
- 6) Maximum data reception 2048 byte/packet
- 7) Modulation method 3/16 RZI (Return to Zero Invert):
 when the transfer speed is less than 115.2kbps
 1/4 RZI (Return to Zero Invert):
 when the transfer speed is 0.576Mbps and 1.152Mbps
 4 PPM (Pulse Position Modulation):
 when the transfer speed is 4Mbps

4-4-2. USB Interface

<Specifications>

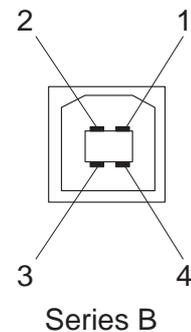
- 1) Device structure Self-powered device
- 2) Data transfer method Half duplex serial interface
 Universal Serial Bus Specification Revision 1.0 compatible
 Universal Serial Bus Device Class Definition for Printing
 Device Version 1.0 compatible
 Signal rate: 12Mbps (full speed)
 Transfer type: Control transfer/Bulk transfer

- 3) Input/output circuit

No.	Signal name	
1	Vcc	
2	-Data	Data signal line
3	+Data	Data signal line
4	GND	

<Signal level>

- Vcc: "H" level input voltage: +2.0V to +5.5V
 "L" level input voltage: +0.0V to +0.8V
- Data, +Data: Differential input sensitivity: Min. 0.2V
 "H" level input voltage: +2.8V to +3.6V
 "L" level input voltage: +0.0V to +0.3V



- 4) Interface cable Material: AWG No.28 or larger
 Full speed device cable (twisted pair shielded cable)
 Less than 5 m
- 5) Interface connector Printer-side: USB (Series B) receptacle
 Cable-side: USB (Series B) plug

4-5. Photo BJ Cartridge Specifications

Photo cartridge BC-12e

BJ cartridge BC-12e: Replaceable color BJ cartridge
(drop modulation adopted)

Ink cartridge BCI-12Bk: Black (64 nozzles)

Ink cartridge BCI-12Color: Yellow, Magenta, Cyan (24 nozzles x 3)

Weight: Approx. 29 g (including both ink cartridges)

Print speed: Approx. 0.1 ppm
(A4 full address printing: reference value)

Nozzle check pattern: Same as the BC-11e

HR-Fine mode

Carriage motion: 3 pass

Printing nozzle: 8 nozzles

Resolution: 360 dpi

Carriage driving frequency: 5.00 kHz

Photo print mode can be used to obtain high level gradation print quality when using the Photo BJ cartridge. These cartridges contain low density ink which achieves a rich gradation and reduced graininess by printing several times over the same dot.

The printer driver divides the pixel data into a maximum of 4-values (not printed, print 1 dot, print 2 dots and print 3 dots) enabling each pixel to be printed in up to 4 gradations.

The printer therefore makes three passes using a maximum of 150% more ink than usual.

This Photo cartridge adopts drop modulation, decreasing granularity of the low density parts by efficiently ejecting large and small ink droplets.

Head ID

Head	Carriage ribbon cable contact part pin No. / Signal name		
	11/ID0	12/ID1	13/HCONT
BC-10	L	L	H
BC-11e	H	L	L
BC-12e	H	H	L
No head installation error	H	H	----

The printer cannot detect ink cartridge type, and the ink cartridges suitable for the BC-11e and BC-12e heads are not incompatible, so that the following installation problem may occur. Regardless if the BCI-12 Bk/Color low density photo ink cartridge is installed in the BC-11e by mistake, the printer recognizes it as the usual BC-11e color cartridge, resulting in low density imaging. Likewise, if the BCI-11 Bk/Color cartridge is installed in the BC-12e head, the opposite occurs and high density image printing takes place.

5. OPERATION

5-1. Function Setting

Default setting

The default settings can be selected by button operation when the power is turned on. When the printer is turned on, hold down the *POWER* button until the beeper sounds the specified number of times for the desired function setting (BJ M40: Table1&2), and release the *POWER* button to set.

Function Setting

Mode	Beeper	Remark
Table 1	7 times	Factory default setting (Japan/CCSI /Canada/low voltage regions)
Table 2	8 times	Factory default setting (Others)
Table 3	9 times	
Table 4	10 times	
Table 5	11 times	
Table 6	12 times	
		BJC-55 only

BJC-55

<Points of difference from the BJC-50>

- 1) No BJ mode setting
- 2) Addition of setting to enable/disable the ink low warning.
- 3) Addition of euro font setting (Code Page 858).

	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
Print mode	HQ	HQ	HQ	HQ	HQ	---
Left Margin	LTR	LTR	A4	A4	A4	---
Text Scale Mode	Disable	Disable	Disable	Disable	Disable	---
Paper Feed Position	8.5 mm	---				
Smoothing	Disable	Disable	Disable	Disable	Disable	---
Reduction	1/1	1/1	1/1	1/1	1/1	---
Automatic Power Off	Enable	Enable	Enable	Enable	Enable	---
Font	Roman	Roman	Roman	Roman	Roman	---
Font Lock	Disable	Disable	Disable	Disable	Disable	---
Input/Download Buffer	25kB/0kB	25kB/0kB	25kB/0kB	25kB/0kB	25kB/0kB	---
Automatic Line Feed	CR	CR	CR	CR	CR	---
International Character Set	USA	USA	USA	USA	USA	---
Character Set	Italics	Italics	Italics	Italics	Graphics	Graphics
Code Page	437	437	437	437	858	858
Ink Low Warning	Disable	Enable	Disable	Enable	Disable	---

Note:

The setting to enable Table 6 changes only "Character Set" and "Code Page." (That is, "Character Set" and "Code Page" are changed to "Graphics" and "858," respectively.)

BJ M40**<Difference from the BJC-50v>****1) No setting regarding the LQ mode****2) The setting to enable/disable the ink low warning is added.**

	Table 1	Table 2
Operation mode change	BJ	BJ
Print mode	HQ	HQ
Automatic power off	Enable	Enable
Smoothing	Disable	Disable
Remaining ink	Disable	Enable
Reduction	1/1	1/1
Paper feed position	8.5 mm	8.5 mm
Receive buffer	23 kB	23 kB
ANK character quality	Normal	Normal
ANK character set	Katakana	Katakana
CR function (+LF)	CR	CR
ANK international character	Japan	Japan

5-2. Ink Low Warning Reset By Button Operation

Ink low warning

This printer detects the remaining ink level by counting the number of ejected ink dots in the same way as the BJC-50/50v. When the setting of the ink low warning is enabled, and the remaining ink gets low, the beeper sounds twice, and the *ERROR INDICATOR* blinks. Pressing the *Cartridge Replacement* button will sound the beeper and move the carriage to the center, and the *ERROR INDICATOR* indicates the ink cartridge for which the remaining ink is low as shown below.

The ink low warning reset function by button operation is added to this printer. The button

Blinks once: when the remaining ink of the BCI-10 / BCI-11Bk / BCI-12Bk is little



Blinks twice: when the remaining ink of the BCI-11Color / BCI-12Color is little



Blinks 3 times: when the remaining ink of the BCI-11 BK & Color / BCI-12 BK & Color is little



operation procedures are shown below. (The ink low warning of the BJC-50/50v can be reset from the host computer only.)

Operation

- 1) Turn on the printer.
- 2) Press the *Cartridge Replacement* button to move the carriage to the center. If the carriage was moved to the center by the driver, the reset operation by the button operation is not possible.
- 3) Make sure that the proper cartridge is installed in the carriage. If not, install the proper one. (The ink dot counter reset is effective only to the ink cartridge type installed in the carriage.)
- 4) Press and hold the *RESUME* button for the number of beeps corresponding to the warned ink type to select the ink type for which the dot counter is to be reset, and release the *RESUME* button. The number of beeps is as follows:

- Once: The dot counter of the BCI-10/BCI-11Bk/BCI-12Bk is reset.
- Twice: The dot counter of the BCI-11Color/BCI-12 Color is reset.
- 3 times: The dot counter of the BCI-11Bk&Color/BCI-12Bk&Color is reset.
- 4 times: The selected ink type is canceled.

- 5) Press the *Cartridge Replacement* button. The dot counter of the ink selected in the procedure 4) and the ink low warning are reset, and at the same time, the carriage returns to the home position.

5-3. DIRECT PRINTING FUNCTION OF THE IMAGE FROM DIGITAL CAMERAS (BJ M40 only)

<Difference from the BJC-50/50v>

The new adoption of IrTranP has enabled the printing of data sent directly from digital cameras compliant to IrTranP standards, not through the host computer, but via IrDA communication.

Specifications

Data communication form:	IrTranP standards compatible
Input image size:	640 x 460 pixels
Input image capacity:	128 Kbyte or less
Output image size:	Landscape: 90 x 68 mm Portrait: 77 x 103 mm Seal printing: 19 x 26 mm x 16 images
Paper size:	Postcard

Operation

<Image printing>

If the printer is powered on and receives print data from digital camera, the printing operation will start.

<Reprinting>

The image data is also maintained in memory after printing, and will not be abandoned until new image data is received from the digital camera, or print data is input from the host computer. Reprinting of data is possible by pressing the *RESUME* button (and releasing before the beeper sounds).

<Printing cancellation>

During the printing of image data, printing is cancelled by pressing the *RESUME* button until the beeper sounds once, then releasing. In this case paper is delivered. The remaining data halfway through printing is abandoned. (As the image data has been maintained, it is possible to reprint the data, without resending the data from the digital camera.)

<Printing position definition>

To select the printing position, press the *POWER* button and *Cartridge Replacement* button simultaneously when the power is on, and release the buttons after the beeper sounds the number of times applicable to the printing position to be selected. This setting returns to the default (Landscape) by powering off. The number of beeps is as follows:

Once:	Portrait
Twice:	16-image seal printing
3 times:	Photo glossy card landscape
4 times:	Photo glossy card portrait
5 times:	Setting completed.

5-4. Flash ROM Writing Operation

<Difference from the BJC-50/BJC-50v>

As the BJC-55/BJ M40 does not have a parallel interface, the firmware of the Flash ROM is written using the "USB Loader."

5-4-1. Writing method

a) Download the USB Loader to the host computer.

- (1) Send the USB Loader from the "Software download" page on QISS to the host computer.

This software will operate only on Windows 98 OS computers.

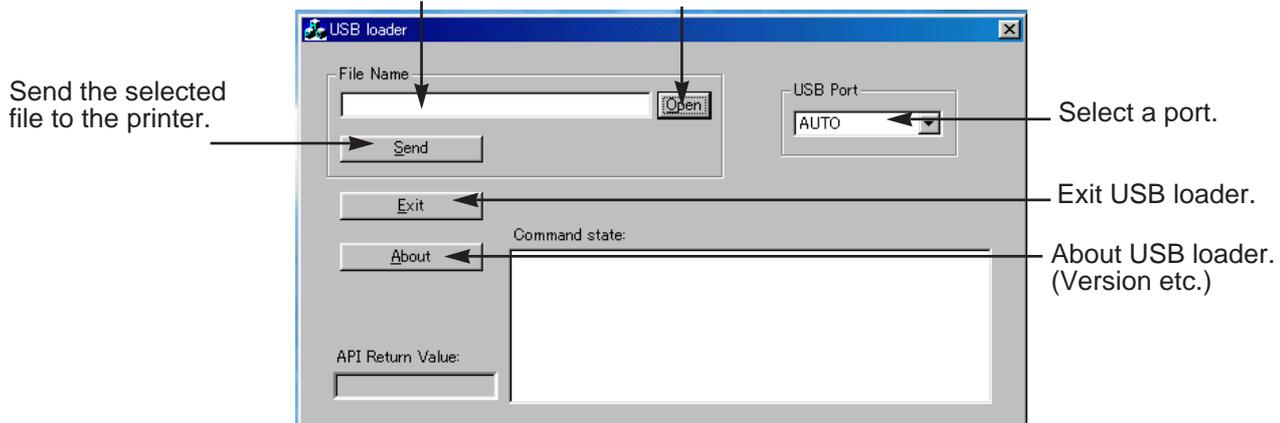
Also, the BJC-55 / BJ M40 printer driver must be installed.

- (2) Connect the printer which the firmware is to be written with the host computer.
Note that the printer should be turned off.

The other USB devices should be unplugged from the host computer.

- (3) Open the USB loader with a double-click.

Select the file to be sent to the printer. Open the dialog box for selecting a file.



<Main Dialog Box of the USB Loader>

b) Enter the writing mode of the printer.

- (1) Remove the DC plug of the universal adapter and the Lithium Ion Battery.
- (2) While pressing the *RESUME* button and *Cartridge Replacement* button, insert the DC plug of the universal adapter and release the buttons after one long beep.
- (3) Press the *RESUME* button, and release the button after one short beep. When the initial sequence finishes, another short beep will sound, the Power LED lights, and the printer will enter the writing mode (stand-by-to-receive state.)

The *RESUME* button does not work while in the writing mode.

Do not turn off the power with the *POWER* button while in the writing mode.

c) Download the firmware.

- (1) Download the firmware for upgrading from the software download page in QISS into the host computer.
- (2) Select "AUTO" from the "USB Port" in the main dialog box of the "USB loader."

5-4-2. Writing error

If a writing error occurs, the following information is indicated on the printer:

Error Condition	Power LED	Error LED	Beeper
Data error	Lights	Blinks	Two long beeps
Flash error	Blinks	Reverse blink with the Power LED	Two long beeps
RAM error	Blinks	Synchronous blink with the Power LED	Two long beeps

If an error occurs, implement the following countermeasure:

Data error occurs:

As error checking is performed with each data set, when the error is been detected, the data has already been written. After also confirming the connection to the computer, re-enter the writing mode and transfer the correct data.

Flash error occurs:

As error checking is performed with each data set, when the error is been detected, the data has already been written. Re-enter the writing mode and transfer the correct data. If the same error occurs, the flash ROM may be damaged. Replace the Control Board.

RAM error:

Occurs when the RAM memory to be used for writing on the printer side is checked. The writing operation is not being performed. Replace the Control Board of the printer.

5-4-3. USB port selection

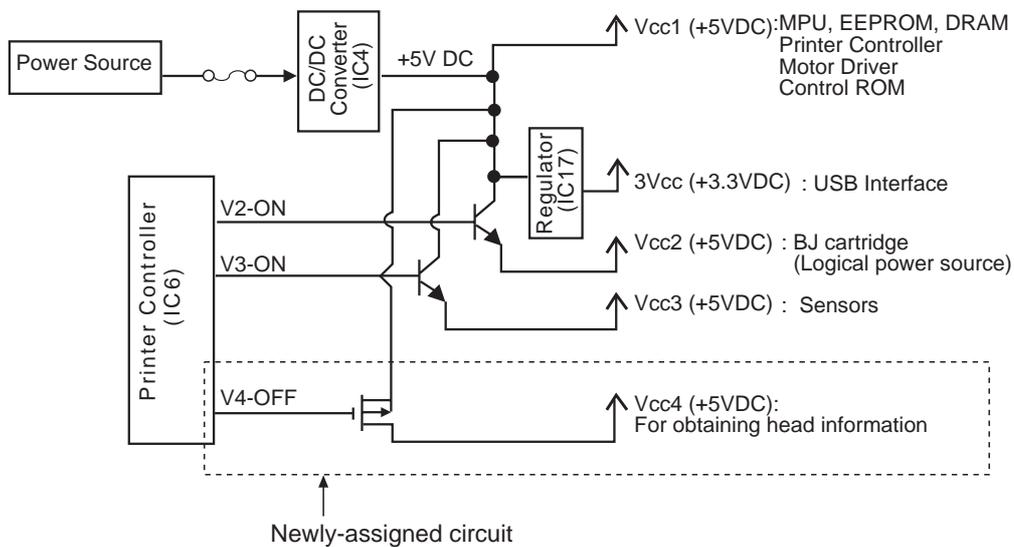
Each machine with a USB I/F has a unique ID, and the USB port of the host computer (USBPRNxx) is exclusively assigned to this. If a new USB device is connected, a USB port for the device is newly assigned. The USB port for the writing mode is assigned in the ROM writing mode of BJC-55/BJ M40. The ports which are enabled by the USB Loader are from 1 to 99. Note that only the USB ports assigned for writing mode from "USBPRN01" to "USBPRN99" are correctly written to.

6. TECHNICAL REFERENCE

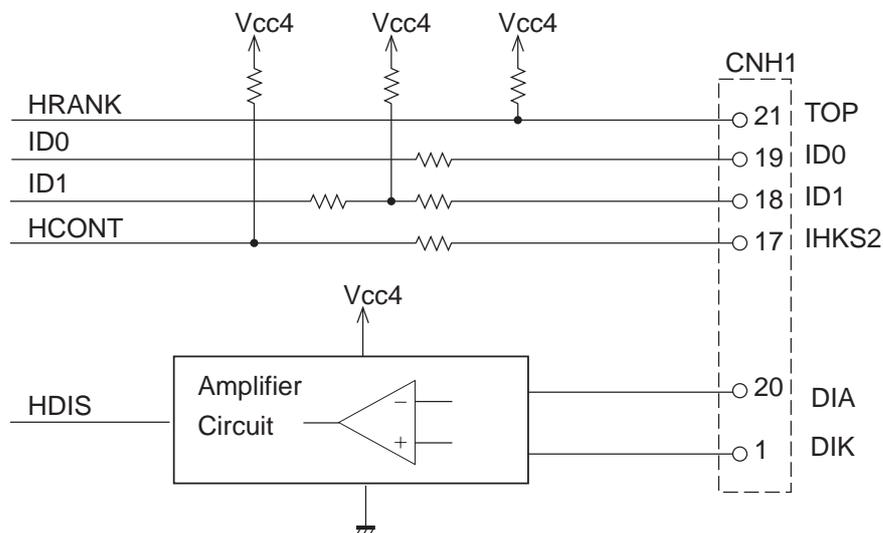
6-1. 5V Power Supply Circuit Change

The signal lines for obtaining head information (HRANK signal, ID0 signal, ID1 signal, HCONT signal, and HDIS signal) are common with the power resource "Vcc1" for the Logic Board IC of the BJC-50/50v. The Vcc4 power resource circuit has newly been added as a 5V power resource of the BJC-55/BJ M40 for the signal lines for obtaining head information.

The Vcc4 is the sequence which goes ON periodically, and only at soft-power-on. As a result, the load to the print head caused by applied voltage has been reduced.



<5V/3V Power Creation Circuit Block Diagram>



<Head Interface (Changed Part)>

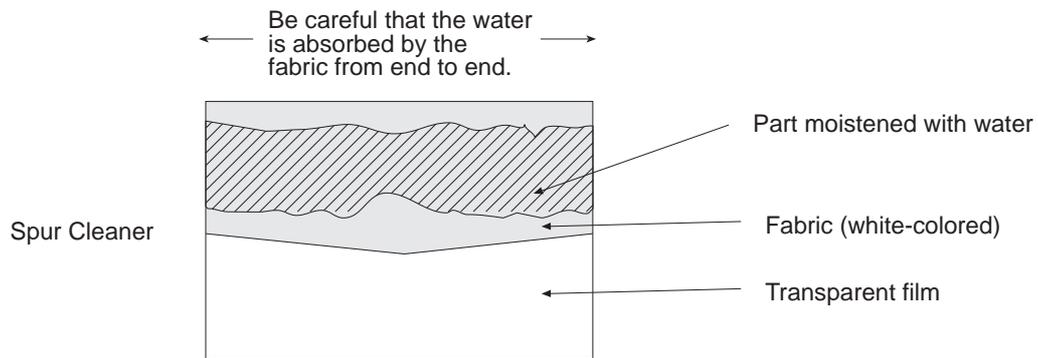
7. SPECIAL TOOLS

If spur marks are left on the print images, the spurs can be cleaned by using the spur cleaner. The spur cleaner is reusable until it loses its' effectiveness.

Special tool (part number)	Remarks
Spur cleaner (QY9-0055-000)	For cleaning spurs

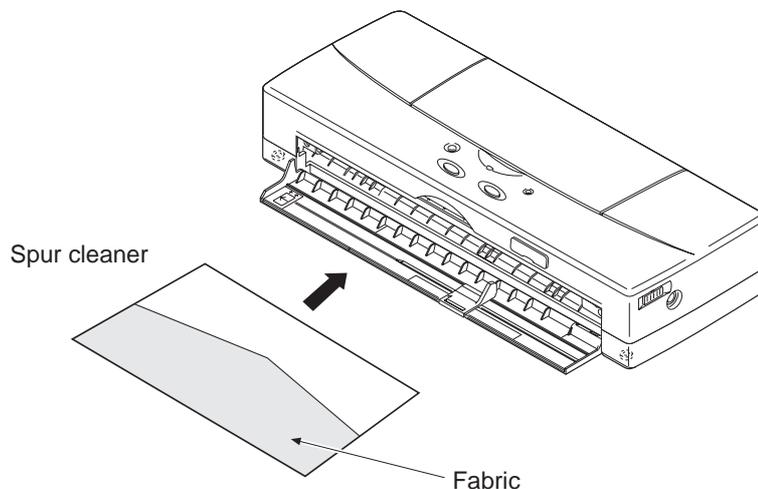
Usage

- 1) Moisten the fabric part of the spur cleaner with Approx. 5cc of water. Moisten the fabric with the water, as shown below, so that the fabric absorbs the water from end to end. Be especially careful that the area contacting the spurs absorbs enough water.



In case too much water is used, there is the possibility that water will be wrung from the spur cleaner when passing through the paper feed roller, spread inside the printer, and cause failure.

- 2) Open the paper feeding tray.
- 3) Set the spur cleaner with the fabric-affixed part of the cleaner face-up and away. When the spur cleaner is set into the paper feeding opening, it is automatically fed into the main unit, and stops at the print start position.



- 4) Press the *RESUME* button, and release it after the beeper sounds once. The spur cleaner is delivered. For heavy soiling, repeat procedures 3) to 4) approx. 5 times.
- 5) Set a single sheet of paper to the ASF and repeat procedures 3) and 4). (To remove the moisture remaining in the paper feeding path.)

8. PARTS LIST

	BJC-55	BJ M40
Upper Case Unit	QG5-1536	QG5-1537
Head Cover	QB1-4700	QB1-4701
Instruction Film	QB1-4763	QB1-4762
Upper Case	QB1-4696	QB1-4697
Control PCB Ass'y	QG2-3208	QG2-3209
Flash ROM	QH8-0893	QH8-0894

Other parts are common with the BJC-55/BJ M40.

For details, refer to the BJC-55/BJ M40 Parts Catalog (QY8-31AT-010).

9. CIRCUIT DIAGRAM

Control Board (Common to BJC-55/BJ M40)

