BJC-50

SERVICE MANUAL

REVISION 0

Canon

QY8-1358-000

APR. 1998

0498 AB 2.00-0

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SERVICE MANUAL

Canon

Target Readers

This manual is published by Canon Inc. for qualified persons and contains the necessary technical information for technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, it may contain information that does not apply to your locality.

Revisions

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This manual was produced on an Apple Macintosh™ Power Mac 7300/180 personal computer and Apple LaserWriter™ II NTX-J laser beam printer; final pages were printed on Agfa SelectSet Avantra 25.
A YANO 640MO drive system NJ640MO with MITSUBISHI MO disk cartridge MR230M1 were used for storing large volumes of page layout and graphic data for this manual.
All graphics were produced with MACROMEDIA FREEHAND™ 7.0J.
All documents and all page layouts were created with QuarkXPress™ 3.3J.

I. ABOUT THIS MANUAL

This manual is divided into five parts containing the information required for servicing the BJC-50 printer.

Part 1: Safety and Precautions

This part contains information on how to service the unit safely. It is very important, and must be read.

Part 2: Product Specifications

This part outlines the product and its specifications.

Part 3: Operating Instructions

This part explains how to operate the unit properly, how it is installed, and how to use the service mode.

Part 4: Technical Reference

This part outlines the unit operation giving a technically.

Part 5: Maintenance

This part explains maintenance of the unit. It includes details of disassembly/assembly, adjustments required when assembling, troubleshooting procedures, and wiring/circuit diagrams, etc.

This manual does not contain complete information required for disassembling and assembling the BJC-50 printer. Please also refer to the separate Parts Catalog.

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Part 1

SAFETY AND PRECAUTIONS

1. PERSONAL SAFETY PRECAUTIONS

1.1 Moving Sections of the Printer

Be careful not to let your hair, clothes, accessories, etc., become caught in any of the moving sections of the printer. The moving sections of the printer are the carriage belt, carriage ribbon cable and carriage, which are driven by the carriage motor, and the paper feed gear and roller, pinch roller, eject roller and spurs which are driven by the paper feed motor.

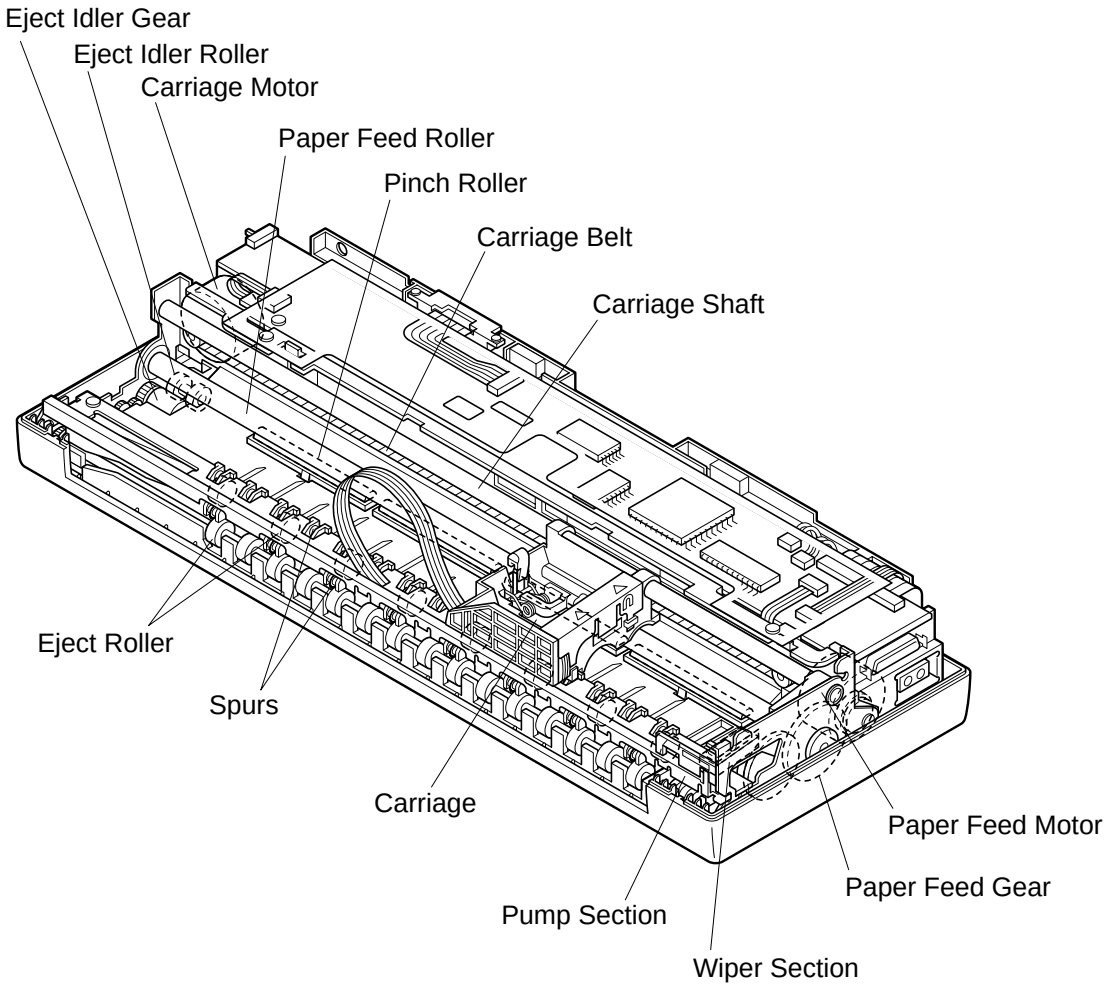


Figure 1-1 Moving Sections of the Printer

1.2 Ink Stains

1.2.1 Ink path

Be careful not to touch the ink path of the printer and get stains on the work table, hands, clothes, etc., during repair.
The ink path is the nozzle section of the BJ cartridge, the head cap, the head wiper, the maintenance jet receiving section and the waste ink absorber.
The ink inlets of the ink cartridge and the joint pipes of the print head body are also part of the ink path, so take the same precautions.

CAUTION

The ink is not a substance harmful to the human body, but it does contain an organic solvent (Black ink: isopropyl alcohol 67-63-0, glycerin 56-81-5, ethyleneglycol 107-21-1, Color ink: isopropyl alcohol 67-63-0). Be careful not to get any ink in your mouth or eyes. If you do get any into your eyes, wash it out with plenty of water and consult a doctor. If you somehow swallow a large amount of the ink, consult a doctor immediately. At that time, please communicate the items written on the BJ cartridge label. Since this ink contains dyes, if you get it on your clothes, etc., it will not come out.

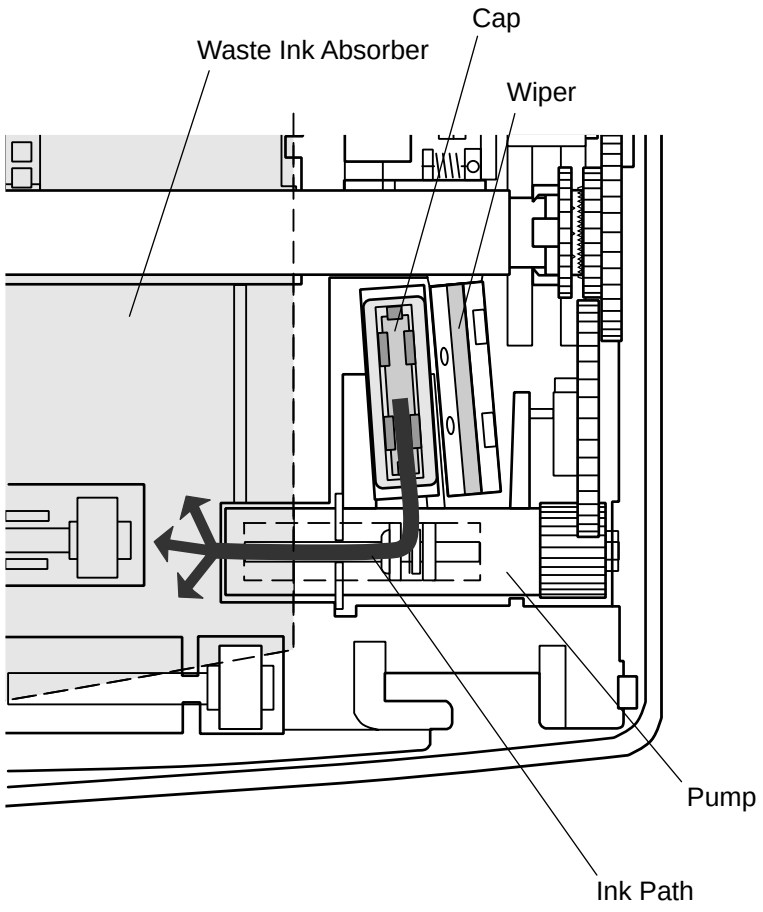
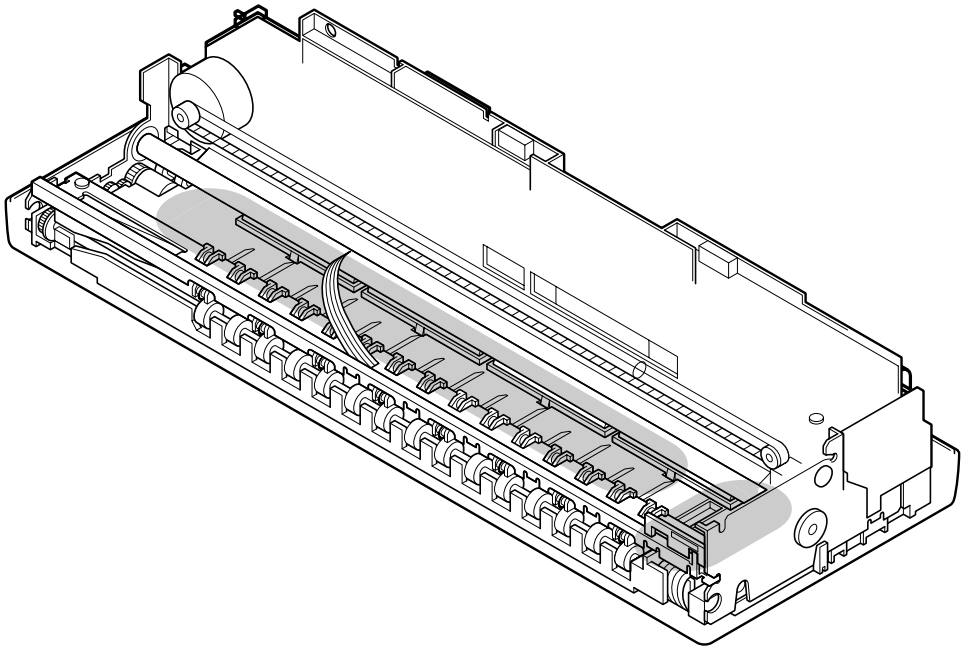
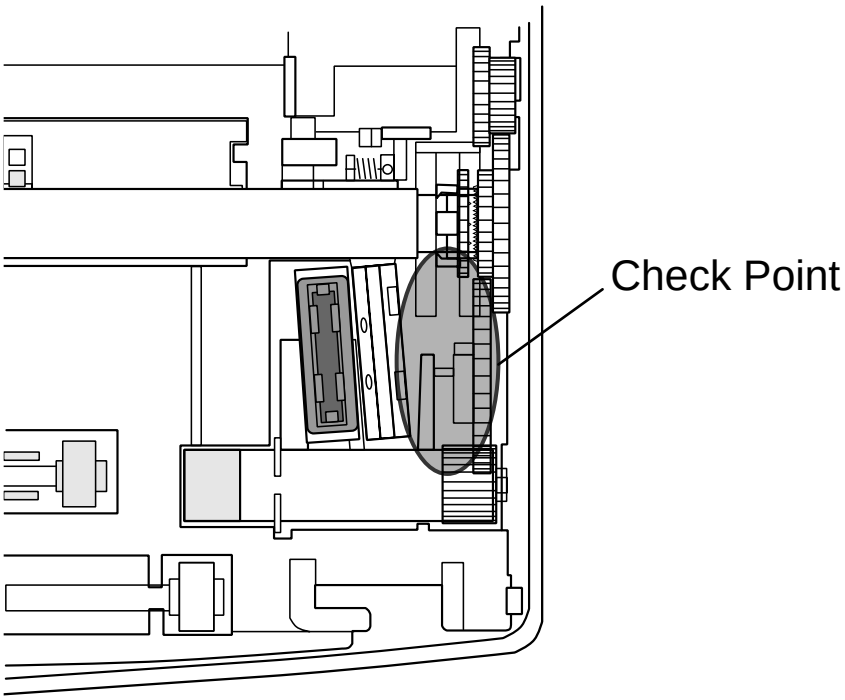


Figure 1-2 Ink Path

1.2.2 Ink mist

The BJ cartridge ejects the ink onto the paper. After the printer has been used for a long time or under heavy duty use, a small amount of ink mist bouncing off the paper during printing may soil the platen section and the purge section.
This soiling may soil the paper or the hands or clothes of service personnel, so wipe it off with a soft cloth or the like dampened with water.





Purge Section

1.3 BJ Cartridge Aluminum Plate

Do not touch the aluminum plate of the BJ cartridge. The aluminum plate heats up during printing and becomes particularly hot during continuous high duty printing. It also heats up if printing is operated after the ink in the cartridge has run out.

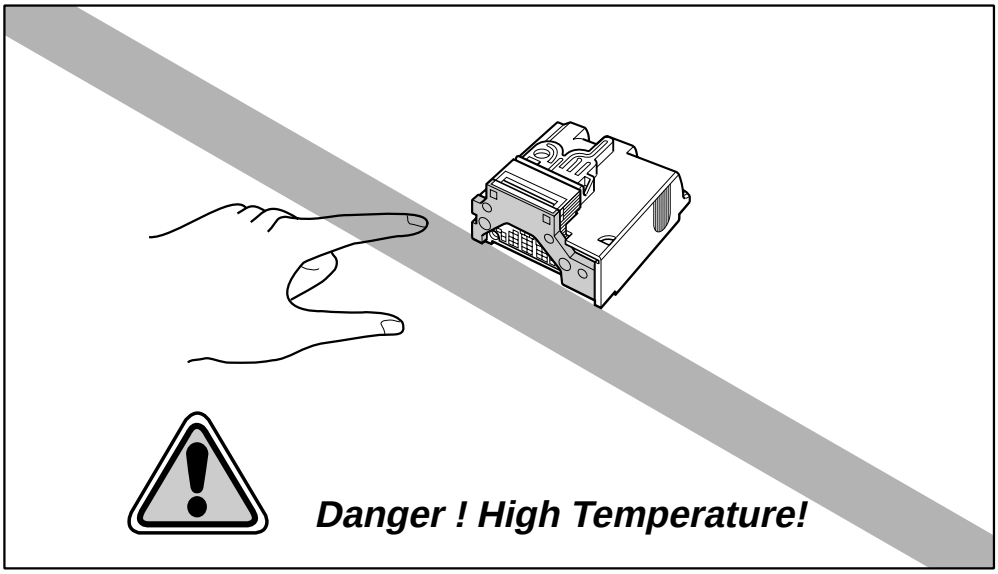


Figure 1-4 BJ Cartridge Aluminum Plate

NOTE

This printer has the following functions to protect against the above temperature rise. The temperature is detected by the head temperature sensor in the BJ cartridge. (ex. approx. 70°c at 100% Duty printing)

1) During printing, if a temperature rise is detected to above a certain temperature, in order to protect the printer, it will print unidirectionally with a wait after each line until the BJ cartridge cools down. Also *ERROR* indicator will blink and printing will slow down. If this temperature continues for more than a certain period of time, the beeper sounds 8 times, the *ERROR* indicator and *POWER* indicator blink to indicate a head temperature error.

Since the same type of temperature rise also occurs if printing is operated after the ink in the cartridge has run out, these protective functions are triggered. Therefore, the criterion for replacing the BJ cartridge or the ink cartridge is non-fire nozzles or diminished dot size during printing or the triggering of these protective functions.

REF.

When printing is stopped by a head temperature error, handle the printer as explained in *Part 5: 5. TROUBLESHOOTING (page 5-5).*

2. MACHINE PRECAUTIONS

2.1 BJ Cartridge

2.1.1 BJ cartridge handling

To prevent clogging at the nozzles due to foreign matters, never touch the nozzle section of the BJ cartridge or wipe it off with tissue paper or the like. For the BJ cartridge, take the same care with the ink filter of the print head body to prevent poor ink suction due to foreign matters. Also, once you have removed the head cap and peeled off the protection tape from a BJ cartridge, either install the BJ cartridge in the printer or store it in the cartridge container to prevent clogging at the nozzles due to ink drying or foreign objects. Do not reinstall the removed print head cap and protection tape on the BJ cartridge. For the BJ cartridge, either install it in the printer with the ink cartridge installed or store it in the cartridge container. If the ink cartridge is not attached, poor ink suction due to ink drying or foreign matters can occur. BJ cartridges cannot be disassembled, assembled, or washed.

NOTE

If clogging at the nozzles or poor ink suction occurs, horizontal white lines appear in part of the printing. If cleaning does not restore proper printing, you must replace the BJ cartridge.

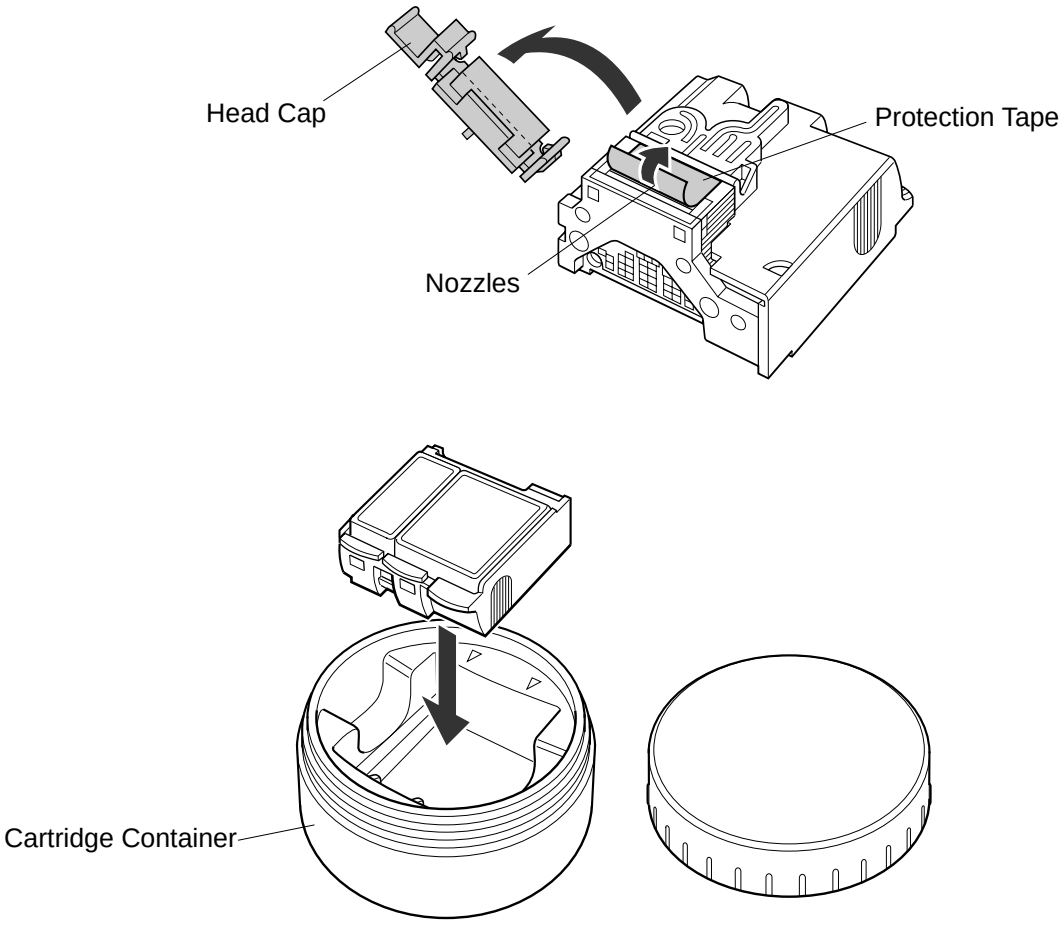


Figure 1-5 BJ Cartridge

2.1.2 Automatically capping

When the power is switched off with the *POWER* button, the printer automatically caps the nozzle section of the BJ cartridge to protect itself and prevent ink leakage. If you unplug the DC plug by mistake and cut off the power supply to the printer, plug the DC plug back in, start up the printer normally, then switch off the power with the *POWER* button.

If the nozzle section is not capped, it may clog at the nozzles due to ink drying, or the ink may leak from the nozzles.

2.1.3 When not using the printer

Even when not using the printer, leave the BJ cartridge installed in the printer or store it in the cartridge container.
Do the same when carrying, shipping or storing the printer.

If you remove the BJ cartridge from the printer and leave it as it is, foreign matters may stick or dry ink may clog the nozzle, making it impossible to use the BJ cartridge.

2.1.4 Ink conductivity

The ink in the BJ cartridge is electrically conductive. If it leaks onto a mechanical section, mop it up with a damp paper towel or the like. If it leaks onto an electrical section, mop it up completely with tissue paper or the like. Especially, if the ink enters as far as to the IC chip of the PCB and it is hard to wipe off completely, a new PCB should be used.

If the Universal adapter is connected to the printer with ink leaked, this may harm the electrical section. Never switch the power on if there has been a leak.

2.2 Ink Cartridge

2.2.1 Ink cartridge handling

To prevent poor ink suction due to foreign matters on the ink filter of the print head body, never touch the ink filter of the ink cartridge. When you remove the cap from an ink cartridge, install the ink cartridge on the print head body immediately to prevent clogging at the nozzles due to ink drying or foreign matters. Do not remove the ink cartridge unless you are replacing it.

Do not use the protection cap removed from the ink cartridge to store the ink cartridge. Install the ink cartridge in the print head immediately after unsealing the pillow bag.

NOTE If clogging at the nozzles or poor ink suction occurs, horizontal white lines appear in part of the printing. If cleaning does not restore proper printing, you must replace the BJ cartridge.

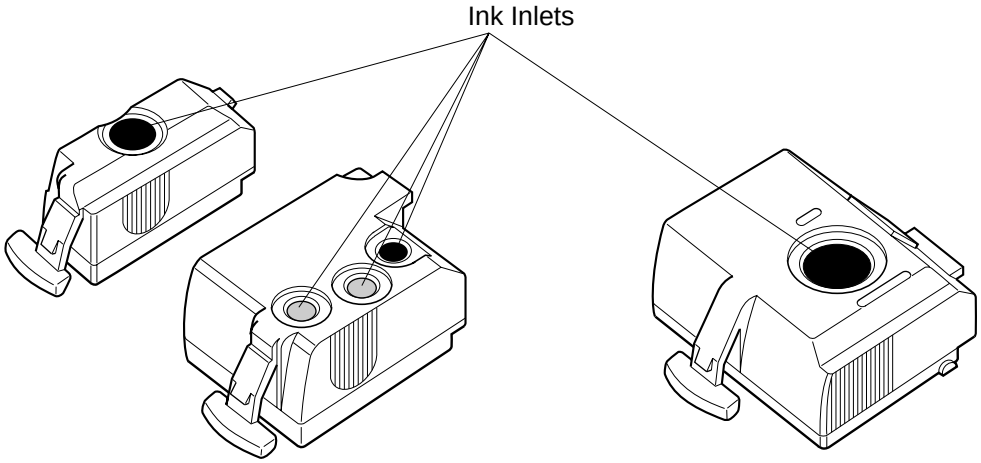


Figure 1-6 Ink Inlet of the Ink Cartridge

2.3 Lithium Ion Battery Handling

2.3.1 Initial precautions

The enclosed lithium ion battery must be installed in the printer and charged prior to its use. To ensure best performance, the lithium ion battery is only charged to 40% of its full capacity at the time of shipping. The battery must be fully charged once it is unpacked.

After connecting the AC adapter and turning on the printer, the installed battery automatically begins charging. However, the battery will not be charged while printing or cleaning. Charging temperature must be between 5 and 35 degrees Celsius otherwise the battery will not be charged.
The *CHARGE* indicator will light while the battery is charging and it will go off when charging is finished.

The lithium ion battery serves both as a battery when the Universal adapter is not connected and a manual paper feed guide. A NO BATTERY ERROR occurs (*ERROR* and *POWER* indicators light and beeper sounds 6 times) if a lithium ion battery is not installed.

2.3.2 Storage precaution

The advantages of a lithium ion batteries compared to Nicd and NiMH batteries are the low rate of self-discharge and the long lasting storage capacity. However, a drawback is that lithium ion batteries are susceptible to over discharge. At high temperatures, the rate of self-discharge is accelerated and the battery is rapidly over discharged.
When storing the unused lithium ion battery, avoid storage in direct sunlight or near heaters.
Also prevent storage at high temperature and make sure not to store the battery for an extended period of time.

2.4 Printer Handling

2.4.1 Precautions to prevent damage from static electricity

The electrical charge accumulated on a person when clothes rub can damage electric elements or change their electrical characteristics. Never touch the contact section of the carriage ribbon cable.

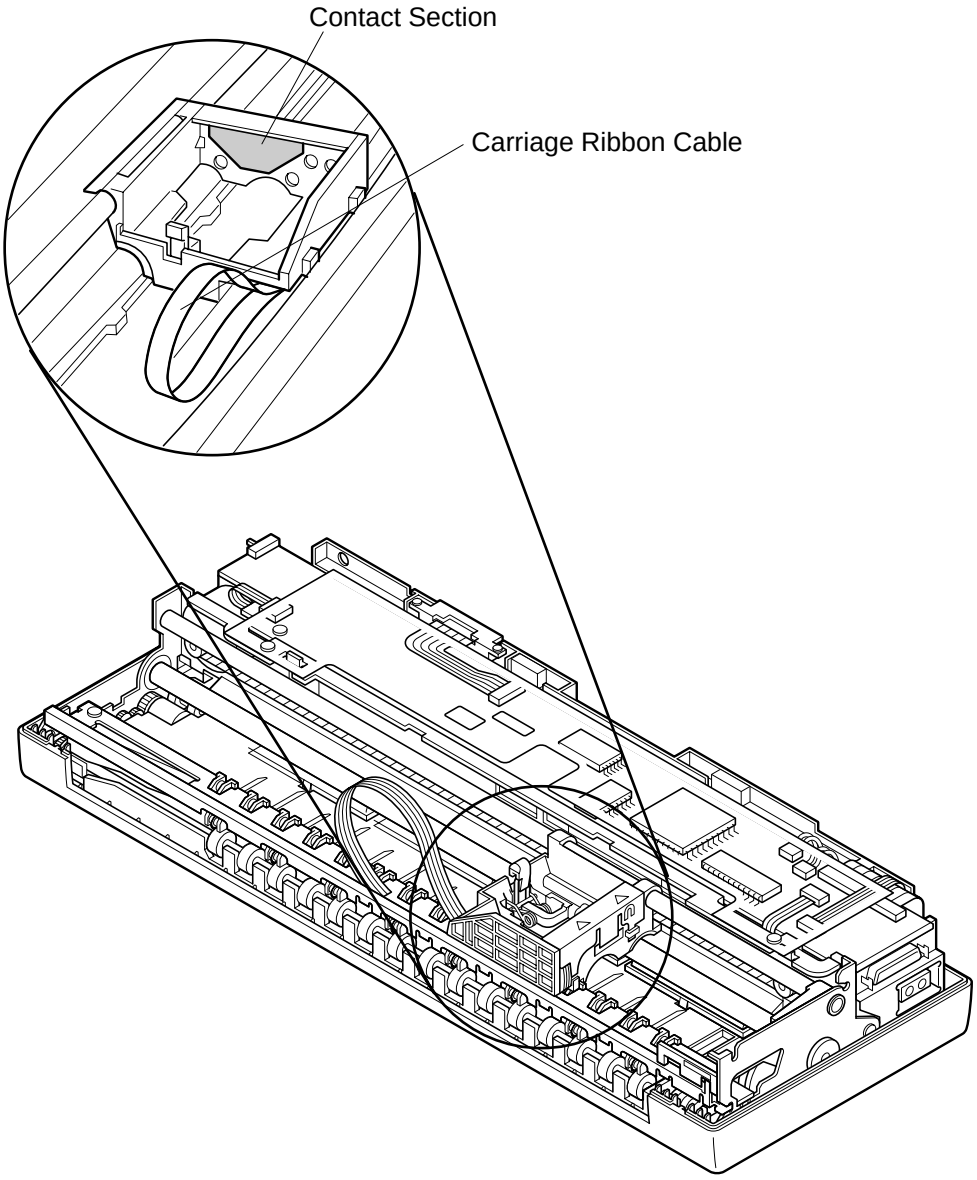


Figure 1-7 Contact Section of the Carriage Ribbon Cable

2.4.2 Ink leakage precautions

Do not carry, pack or store the printer without a BJ cartridge installed. The ink within the cap section will flow back and soil the inside of the printer.

The nozzle section of the BJ cartridge is capped automatically when the power is switched off with the *POWER* button.

When the power is turned off, the carriage is locked so that it does not move from the capping position.

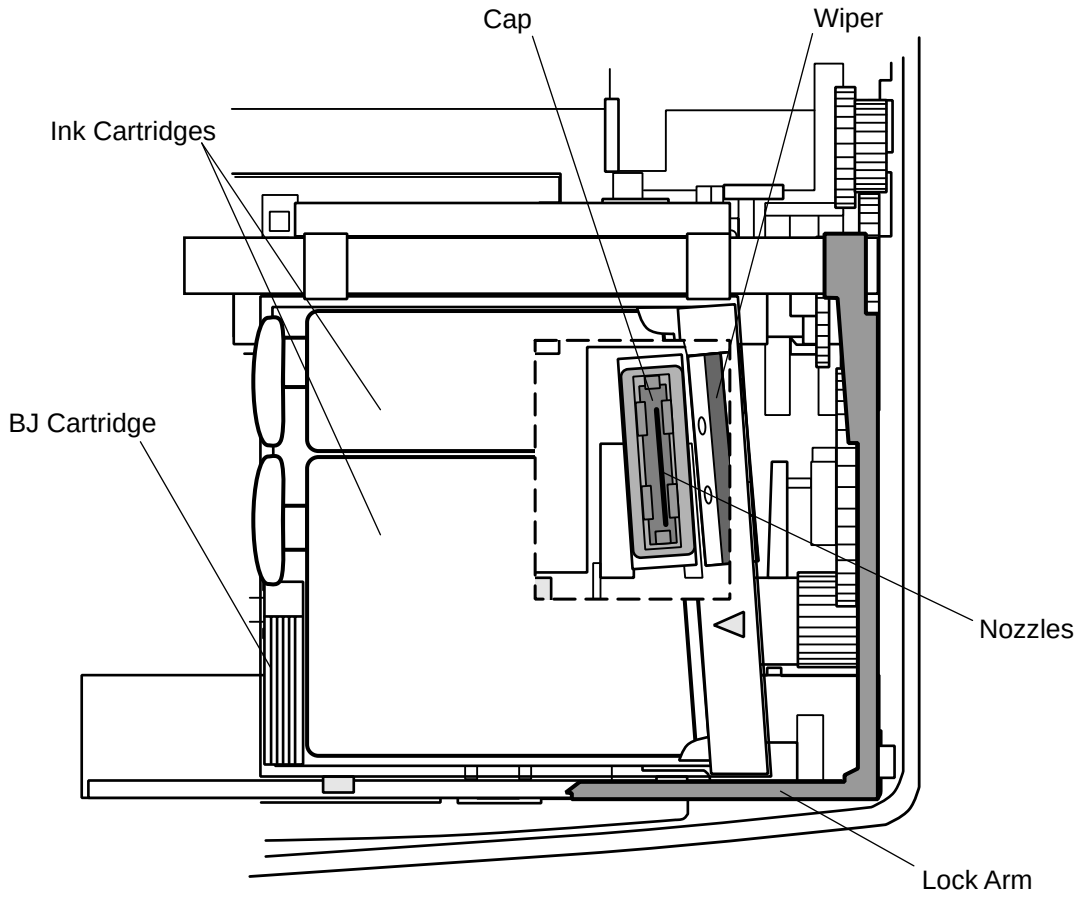


Figure 1-8 Capping Position

3. PRECAUTION FOR SERVICE

3.1 Precautions Concerning the Memory Data

This printer counts the total waste ink amount for the black BJ cartridge and the color BJ cartridge and stores these data in the EEPROM on the control board. Observe the following precautions during servicing.

1) Checking EEPROM data

The number of sheets printed is counted and stored in the EEPROM to show the printer operating status. This data can be printed by test print 3 (Ripple pattern print).

The waste ink quantity data is also stored in the EEPROM. This data is used to indicate a waste ink full error to prevent ink leakage if the amount of waste ink absorbed becomes full.

2) When replacing the control board

If the control board on which the EEPROM is mounted is replaced, the quantity of waste ink absorbed must be set in the EEPROM by visually checking the amount of waste ink absorbed into the absorber from behind the printer base unit.

If it is not set, the waste ink full error is not displayed, and ink may leak.

3) When replacing the printer base unit

If a waste ink full error is displayed and the printer base unit is replaced, the waste ink amount data in the EEPROM must be set to zero. If it is not set to zero, a waste ink full error is displayed and the printer stops operating before the waste ink absorber is filled with waste ink.

After the EEPROM is rest, the data it contained cannot be printed out with a test printout.

If you want to check the stored data, be sure to execute test printout before resetting the EEPROM.

When the stored data is reset, both the total count of printed sheets and the total waste ink amount will be reset together. These settings cannot be reset individually.

4) Rewriting the flash ROM

The flash ROM on the control board serves as the control section of the printer. In earlier models a socket type masked ROM had to be upgraded by physically inserting a new upgraded masked ROM. The flash ROM can be rewritten and hence upgrading has been facilitated.

When flash ROM needs to be upgraded, a FD containing the upgrading program will be distributed. Using this FD in a computer, the flash ROM of the printer can be upgraded. In order to rewrite the flash ROM, both the printer and computer need to be set in the rewrite modes.

For details on checking the memory data with test print and for clearing them, see *Part 3: 3.6 EEPROM Data Setting (page 3-23).*

When operation is stopped for the waste ink full error, handle the printer as explained in *Part 5: 5. TROUBLESHOOTING (page 5-5).*

When rewriting the flash ROM, refer to the settings in *Part 3: 3.7 Rewriting the Flash ROM (page 3-26).*

3.2 Precautions to Prevent Damage from Static Electricity

The electrical charge accumulated on a person when clothes rub can damage electric elements or change their electrical characteristics. In order to prevent static electricity, make sure to touch some metallic part that is grounded to release the static electricity accumulated on your body before disassembling the printer for service.

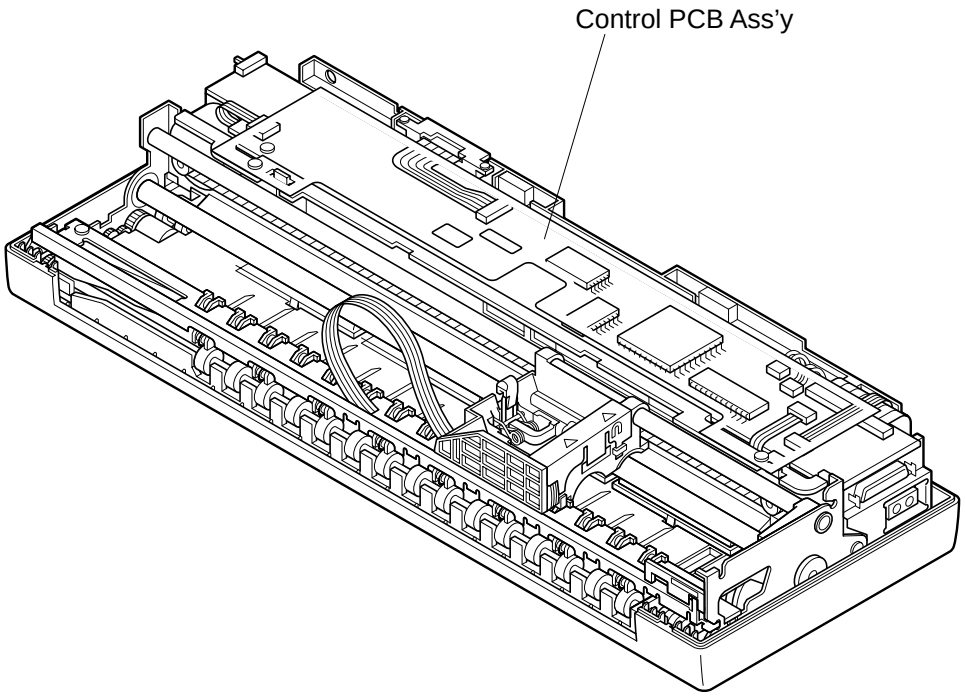


Figure 1-9 Electronic System of the Printer

3.3 Precautions for Disassembly/Assembly

The printer is made by combining many plastic parts. When disassembling the printer, be careful not to brake or bend plastic hooks.
Take special care not to rip or bend the flexible cables when removing and reinserting them on the control board as they are very thin and frail. Also to prevent misconnection, make sure the cable is fully inserted in the connector.
Details of disassembly and reassembly procedures are given in the Parts Catalog.

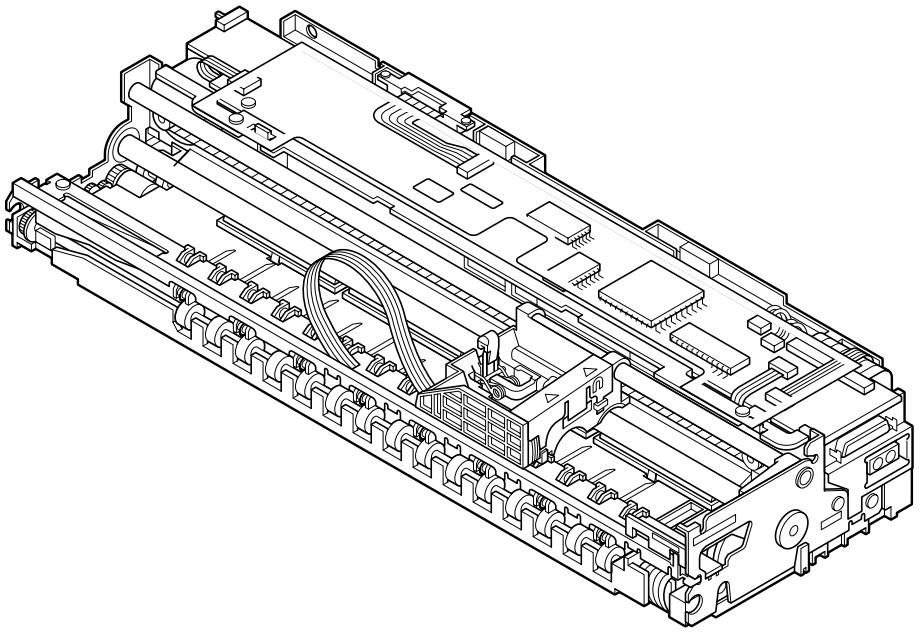


Figure 1-10 Control Board

Some of the plastic parts contain glass fibers for extra rigidity and precision. Due to their inflexible nature these plastic hooks break easily. Use a precision screwdriver or the like for disassembly, and do not apply excessive force to release a hook.

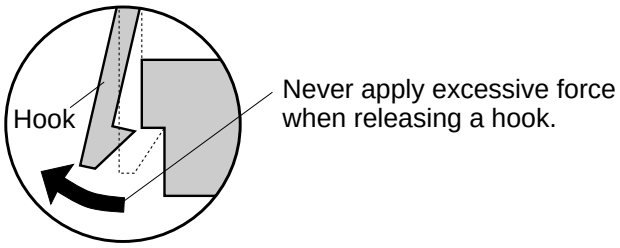


Figure 1-11 Removing Plastic Hooks

When replacing the IrDA unit, be careful not to touch the light emitting and receiving parts. (Touching these parts may offset the optical axis or soil the lens and possibly inhibit infrared communication.)

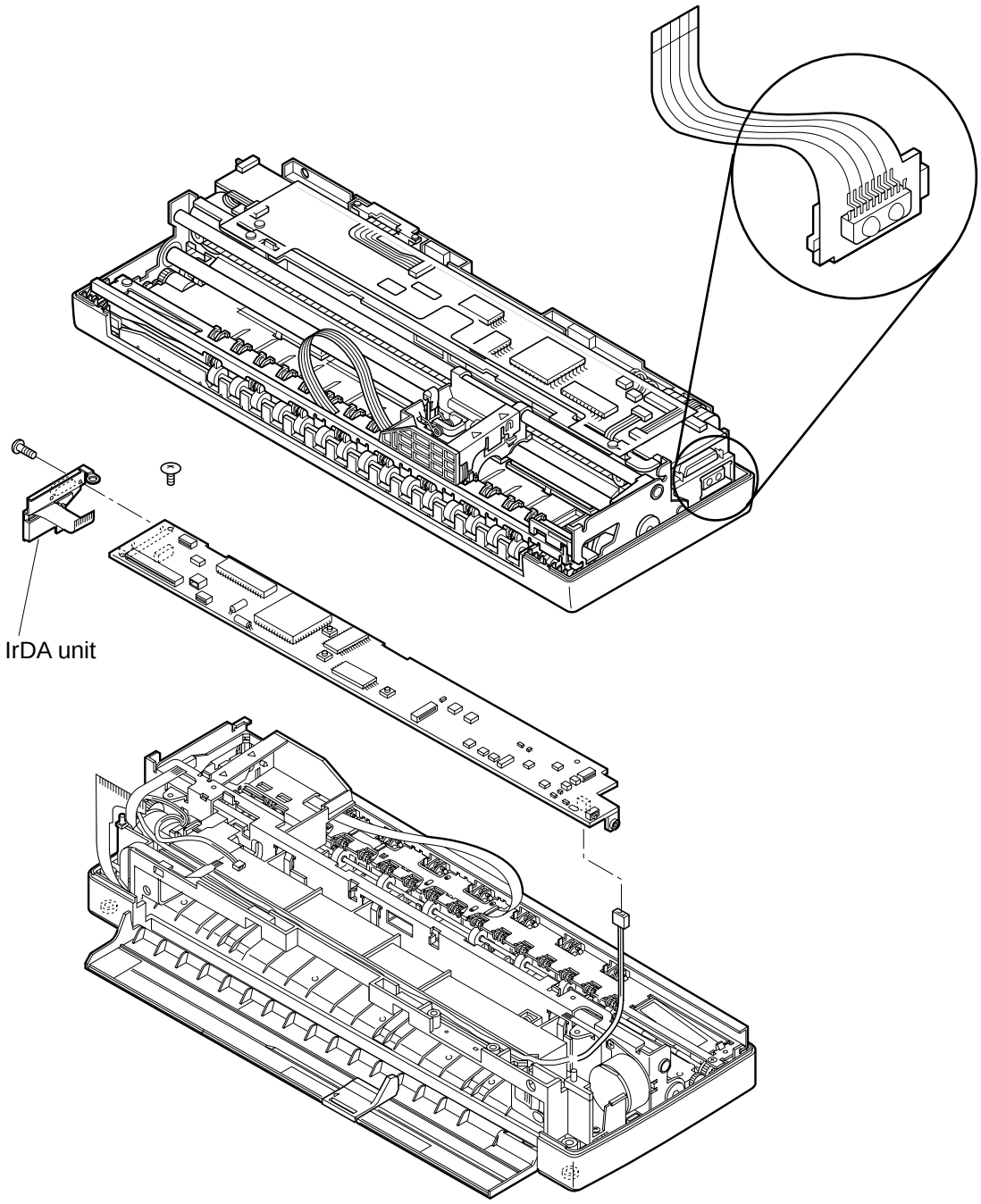


Figure 1-12 IrDA Unit

3.4 Built-in Self-diagnostic Functions

The printer has built-in self-diagnostic functions to judge hardware defects. The results of self-diagnosis are indicated by the indicators and the beeper. For details, see *Part 3: 3.1 Error Indications (page 3-12).*

Part 2

PRODUCT SPECIFICATIONS