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BJC-7100

SERVICE MANUAL

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BJC-7100

SERVICE MANUAL

Canon

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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.

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CANON INC.

BJ Products Quality Support Dept.

16-1, Shimonoge 3-chome, Takatsu-ku, Kawasaki, Kanagawa 213, Japan

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-7100 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-5500 printer. Please also refer to the separate Parts Catalog.

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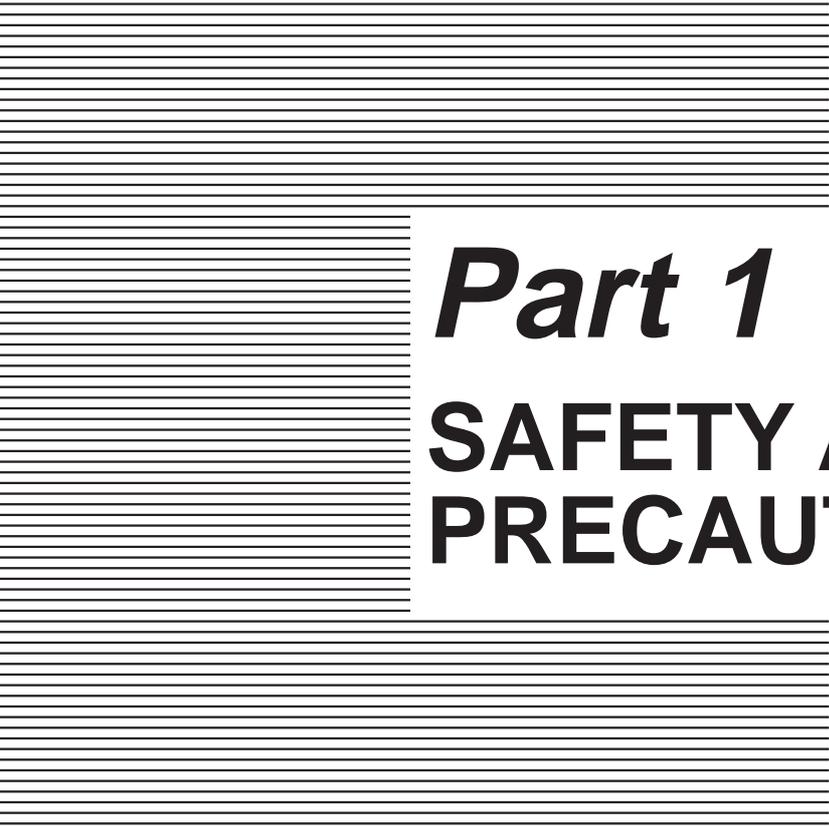
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1. SAFETY PRECAUTIONS

1.1 Moving Parts

Be careful not to let your fingers, hair, clothing, accessories, etc., become caught up in the moving parts of the printer.

There are moving parts associated with the carriage motor and paper feed motor.

Carriage motor

Carriage belt, idler pulleys, and carriage

Paper feed motor

Paper feed roller, pressure rollers, spurs, pick-up roller, slow down gear, paper output guide, and purge unit.

Be sure that the front cover is closed so that there is no risk of contacting the moving parts, except when checking operation during servicing.

Note that the spurs are made of metal with a sharp edge. Be careful not to touch the spurs with your bare hands.

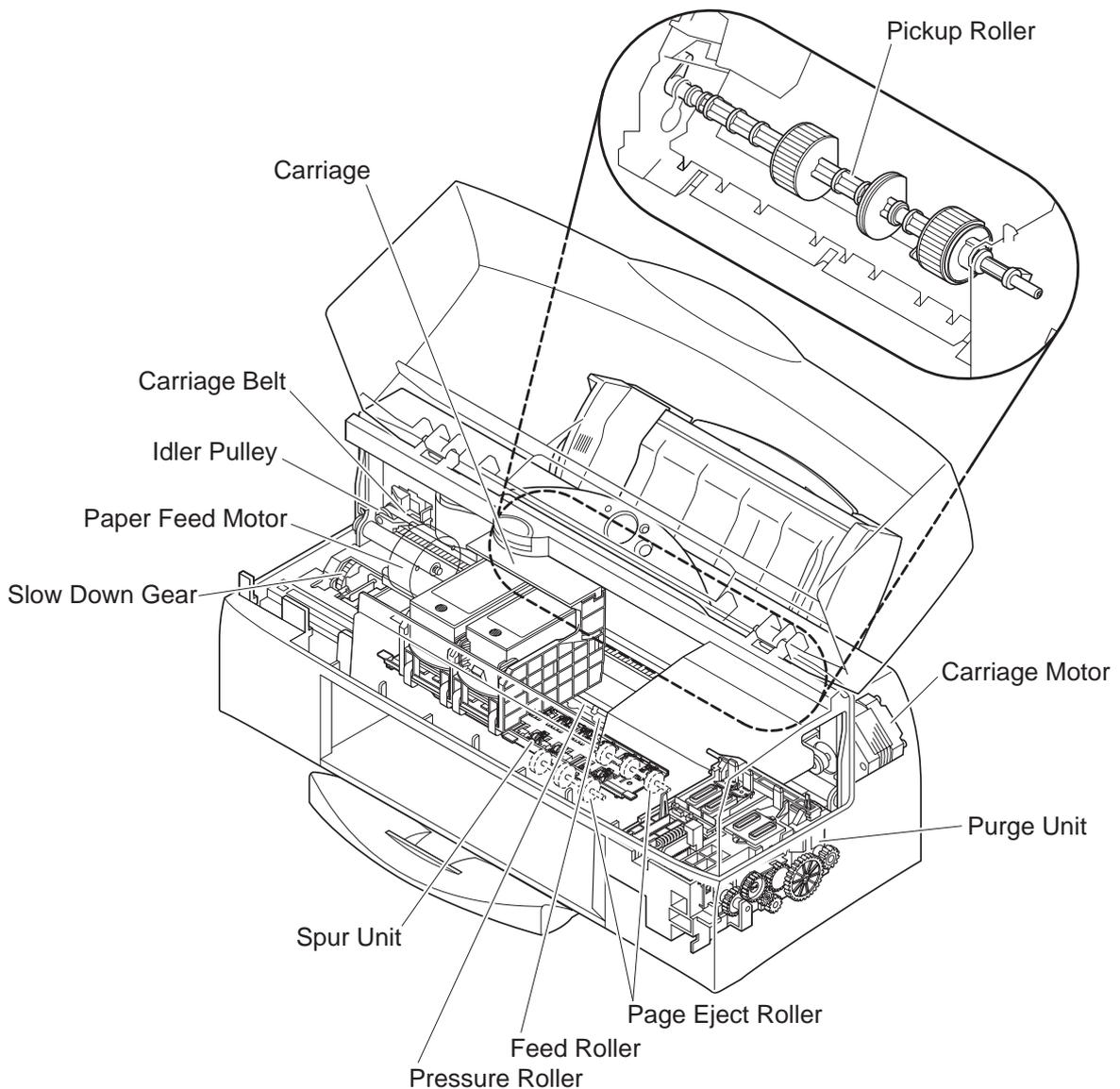


Figure 1-1 The Printer's Moving Parts

1.2 Front Cover

Hold the front part of the front cover to open and close the cover.

Be careful not to pinch your fingers between the front and main cover when closing the front cover.

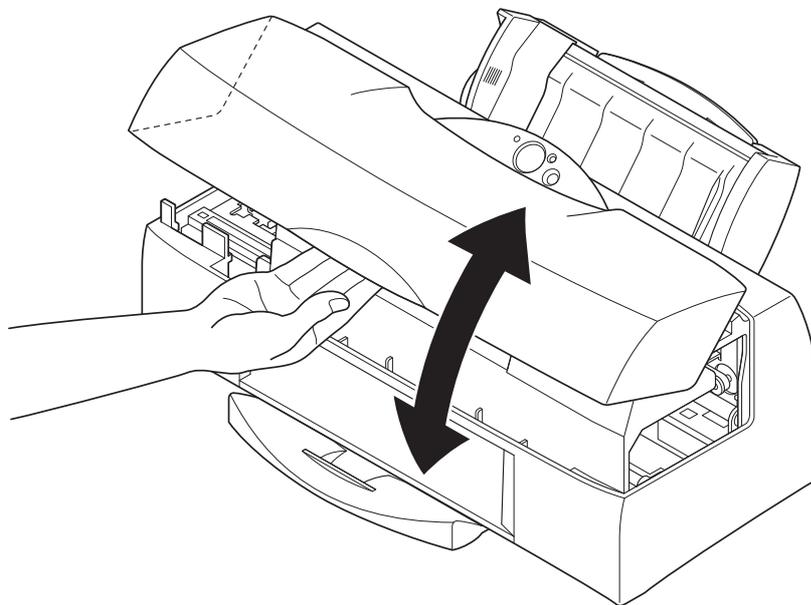


Figure 1-2 Front Cover

1.3 Ink Stains

1.3.1 Ink path

Be careful not to touch the ink path as it may stain your hands, clothes, printer, work table etc., during servicing.

The ink path consists of the BJ cartridge nozzles, head cap, waste ink tube, head wiper, cleaner unit, maintenance jet receiving section, and waste ink absorber.



CAUTION

Although the ink and ink optimizer for plain paper are not harmful to the human body, they contain organic solvents indicated on the package. Avoid getting the ink into your mouth and eyes, and store out of reach of children.

If ink does get into your eyes, wash with plenty of water and consult a doctor. If for some reason a large amount of ink is swallowed, consult a doctor immediately.

Give the doctor the information on the BJ cartridge package.

This ink contains dyes, that cannot be removed from clothing, etc.

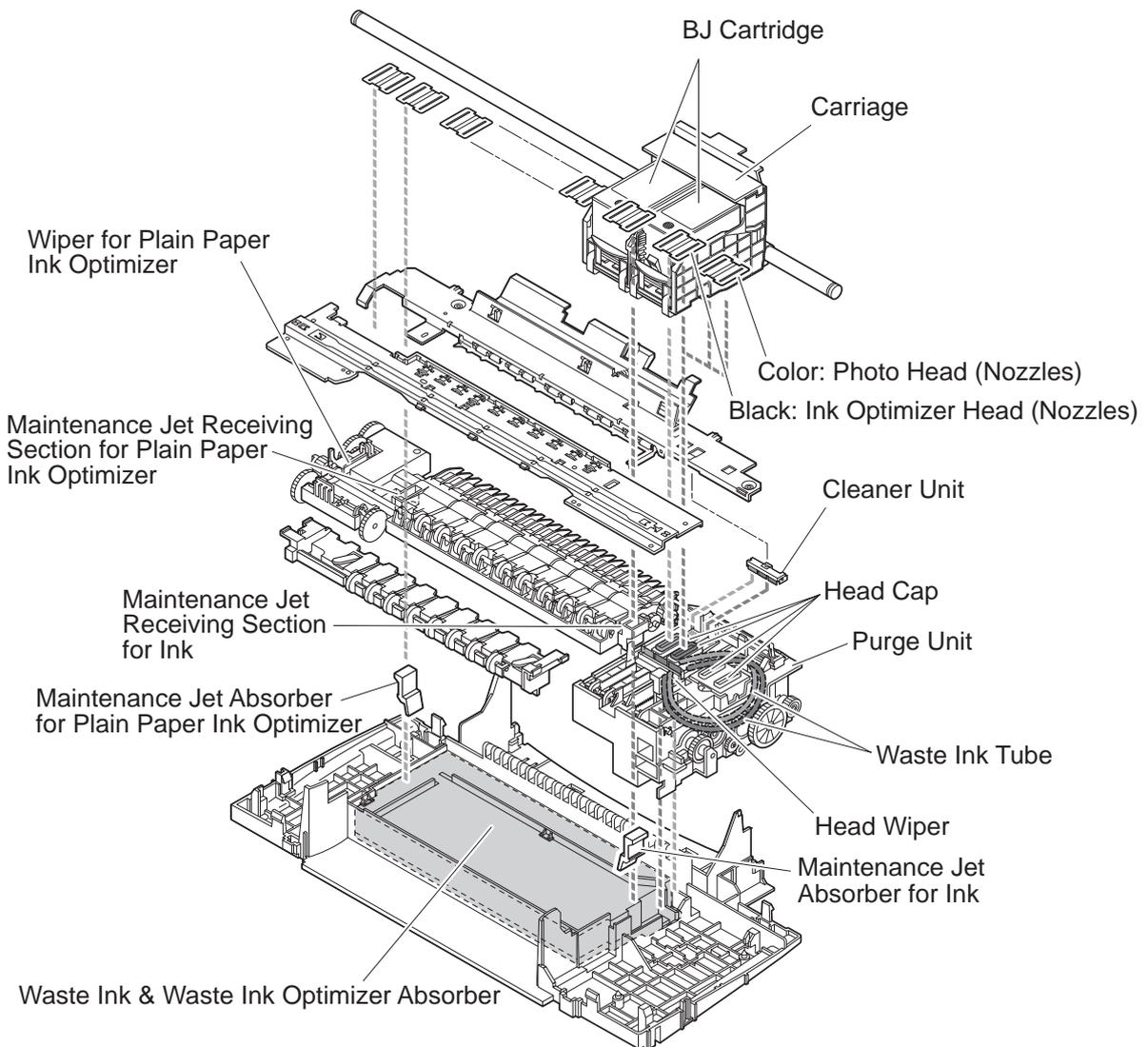


Figure 1-3 Ink Path

The joints and ink outlets of the respective ink tanks of the photo BJ cartridge [BC-62e Photo] and color BJ cartridge [BC-61] are also part of the ink path and must be handled with care.

Unless absolutely necessary, do not remove the ink tanks from a BJ cartridge, since air may enter the ink path and have a negative effect on print quality.

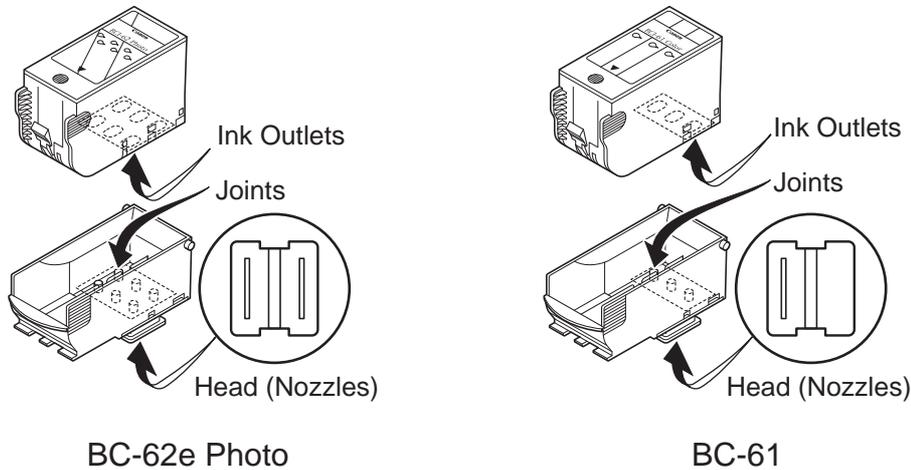


Figure 1-4 BC-62e Photo and BC-61



The BJC-7100 uses a variety of inks and an ink optimizer for printing on plain paper. The ink optimizer is an almost colorless, transparent fluid. We will refer to the ink optimizer for plain paper simply as ink optimizer or just optimizer for simplicity purposes. We will also refer to the various colored inks and the ink optimizer for plain paper simply as "inks".

1.3.2 Ink mist

The BJ cartridge ejects ink onto the paper. After prolonged or heavy-duty use of the printer, a small amount of ink mist splattered during printing can dirty the printer such as the platen.

Turn off the power, open the front cover, and clean the dirty parts with a soft moist cloth. This is to prevent dirtying the paper, your hands, and clothing from touching these parts.

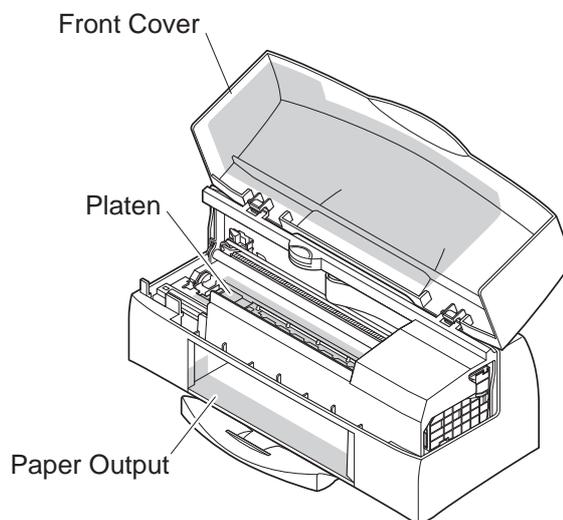


Figure 1-5 Ink Mist

1.4 Live Parts

When the plug of the printer's AC adapter is plugged into a live power outlet, the power supply unit of the printer is live regardless of the power being set to ON or OFF using the *POWER* button.

Be careful not to get on electric shock if you are checking the printer operation with the covers off.



CAUTION

Do not attempt to dismantle the AC adapter. The mains AC voltage is supplied to the primary side of the AC adapter. To prevent risk of electric shock, do not attempt to dismantle the AC adapter to check its operation, etc.

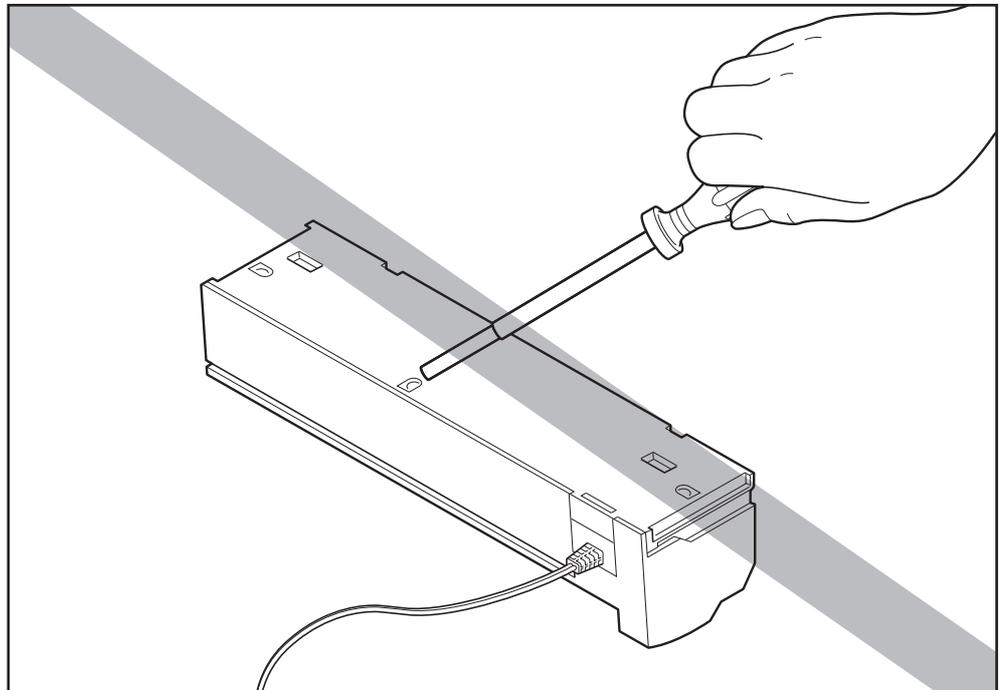


Figure 1-6 AC Adapter



If faulty, the AC adapter must be replaced as one unit (service part). The structural components, including the case, are not available individually as service parts. Do not attempt to dismantle the AC adapter.

1.5 BJ Cartridge Metal Plate

Do not touch the BJ cartridge's metal plate as it may be very hot. The metal plate heats up during printing and becomes particularly hot during heavy duty printing.



CAUTION

Danger! High Temperature!
Do not touch.

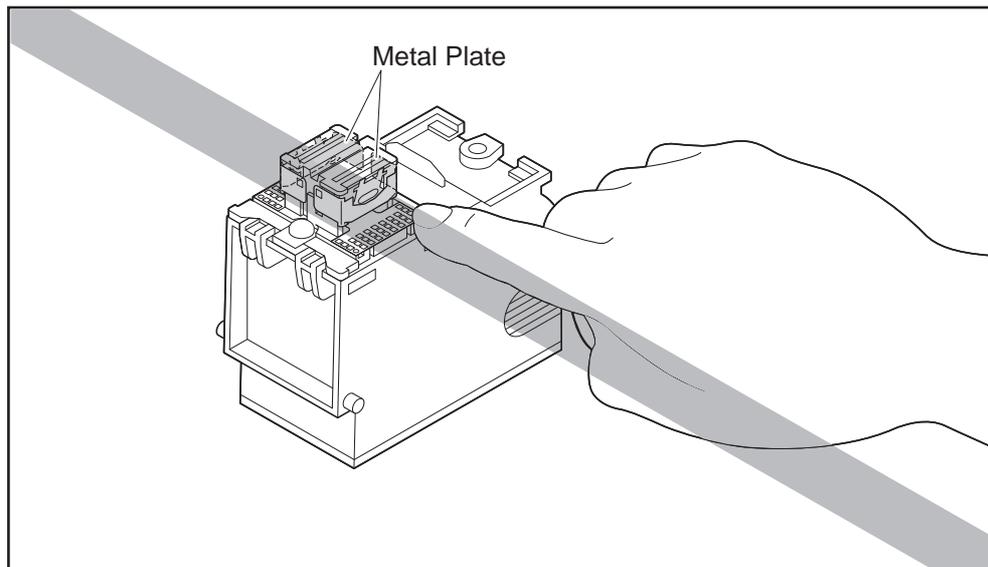


Figure 1-7 BJ Cartridge Metal Plate



The printer has the following protective mechanisms to detect overheating:

1. Overheat detection when replacing cartridge

If overheating is detected, a beeper sounds four times and the carriage does not return to the replacement position. This is to prevent the user from touching the BJ cartridge's metal plate.

Resume the cartridge replacement after leaving the cartridge to cool for several minutes.

2. Overheat detection during normal printing

The carriage movement and the paper eject operation are continued while the printing is stopped. Depending on the outcome of the ink-out detection after completion of printing a page, a beeper sounds to indicate the status of the error.

Ink available: BJ cartridge overheat error (beeper sounds 7 times)

Ink out: Ink-out error (beeper sounds 3 or 4 times)

When a BJ cartridge overheat error occurs, leave the cartridge to cool for several minutes then press the *RESUME* button.

These protective mechanisms are based on the temperatures detected by the sensors in the BJ head.



If the protective mechanism is activated and normal operation cannot be resumed after cooling the head for several minutes, see "Part 5: 6.

TROUBLESHOOTING" (page 5-13).

For details of ink-out detection, see "Part 4: 5.2.3 Ink-out detection" (page 4-48).

2. MACHINE PRECAUTIONS

2.1 BJ Cartridge Handling

2.1.1 Unpacking the BJ cartridge

Do not unpack the BJ cartridge until you are ready to use it.

Before installing the BJ cartridge in the printer, remove the cap protecting the nozzles and gently peel off the protective tape.

Do not attempt to reuse the cap or the tape after they have been removed, as doing so may cause faulty printing.

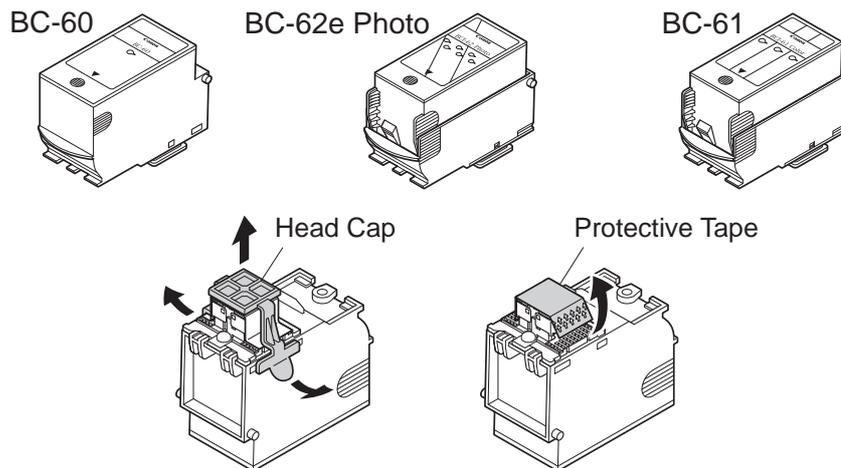


Figure 1-8 Removing the BJ Cartridge Cap and Tape



If you replace the cap on the color BJ cartridge or photo BJ cartridge, the sponge in the cap may cause the colors to bleed into each other. The nozzles may also become clogged.



Always move the carriage to the BJ cartridge replacement position before attempting to remove or install a cartridge. Failure to do so may result in damage to the BJ cartridge.

2.1.2 BJ cartridge protection

To prevent the nozzles from clogging, never touch or wipe the nozzles, joint pipes, or ink tank outlets with your bare hands or with tissue paper, etc. After removing the cap and peeling off the protective tape from a BJ cartridge, promptly install the cartridge in the printer or store it in the cartridge holder. If the BJ cartridge is not capped or stored in the cartridge holder, the nozzles may clog due to dried out ink or dust, etc.

Do not attempt to leave color BJ cartridges or photo BJ cartridges with their ink tanks removed.

BJ cartridges cannot be disassembled, reassembled, or washed.



Clogged nozzles cause faulty printing. If this problem persists even after the nozzles are cleaned, replace the BJ cartridge.

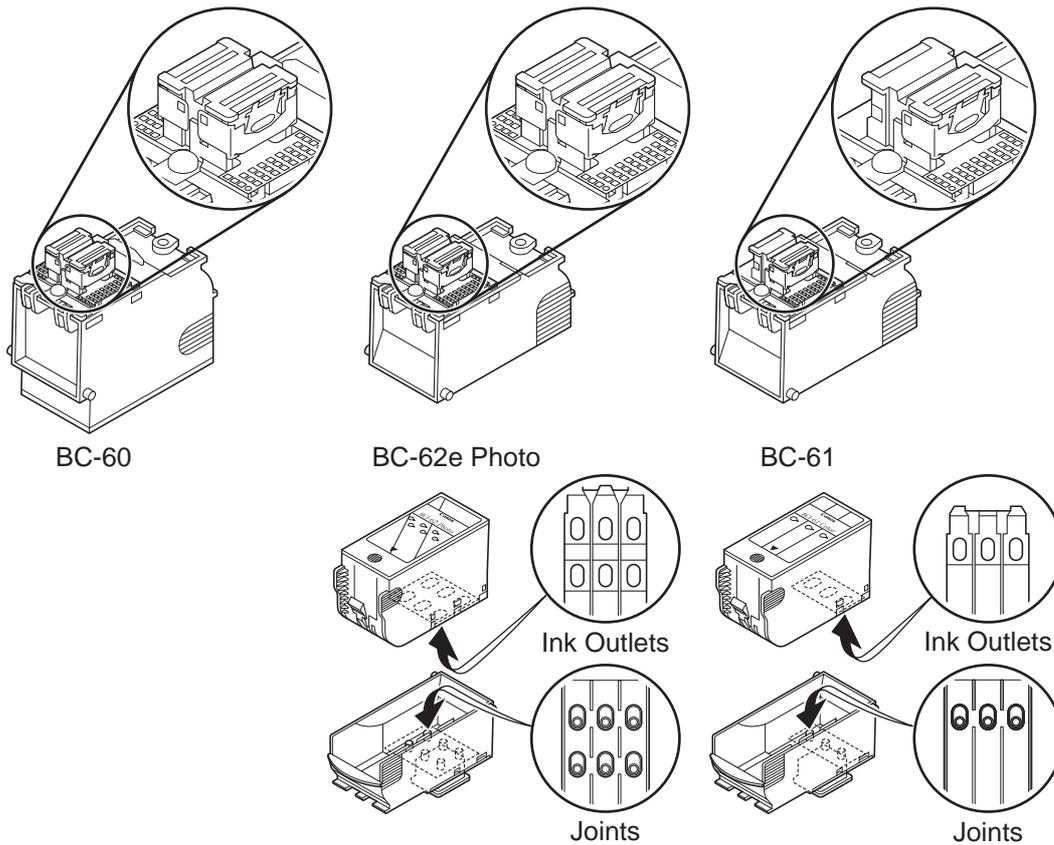


Figure 1-9 BJ Cartridges

2.1.3 Power on/off

When the printer is turned off with the *POWER* button, the printer automatically caps the BJ cartridge's nozzles for protection and to prevent ink leakage.

If the AC adapter is unplugged before the printer is turned off with the *POWER* button, the nozzles may not be capped. In this case, plug the AC adapter again, start up the printer and turn off the printer with the *POWER* button before unplugging the power cord. Note that, if you unplug the power during the recovery operation and then leave the printer, the purge unit may be damaged.



If the nozzles are not capped, the ink might dry out and clog the nozzles or leak from the cartridge.

2.1.4 When not using the printer

Keep the BC-60 BJ cartridge installed in the printer even when the printer is not in use. The BC-62e Photo and BC-61 BJ cartridges can be left installed in the printer or stored in the cartridge holder. This also applies when carrying, transporting, or storing the printer.



If the BJ cartridge is taken out of the printer, dried ink or dust may clog the nozzles, resulting in inconsistent printing.
If the printer is moved or transported with no cartridge installed, ink may leak from the cap mechanism.

2.1.5 Ink electroconductivity

The ink used in the BJ cartridge can conduct electricity. If any ink leaks into the printer's mechanical parts, use paper towels, etc., to wipe clean. If the ink leaks onto the printer's electrical components, use tissue paper, etc., to wipe clean. If the ink gets to the IC chips on the PCB, or if it is too difficult to thoroughly clean off the ink, replace the respective parts.



Never connect the printer's power cord if ink has leaked inside the printer. It may damage the circuitry.

2.2 Ink Tank Handling

2.2.1 Unpacking the ink tank

Do not unpack the ink tank until you are ready to use it.

Before installing it in the color BJ cartridge, remove the cap covering the ink outlets.

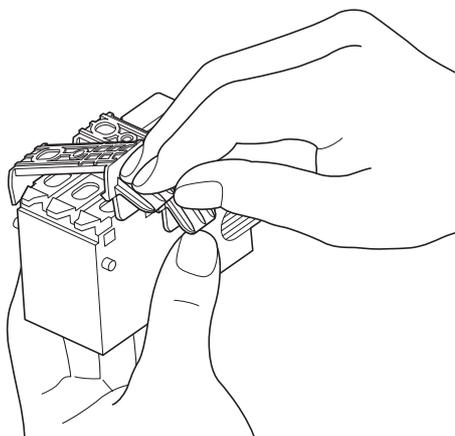
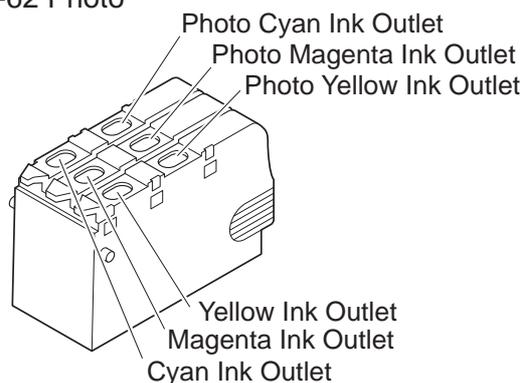


Figure 1-10 Removing the Ink Tank Cap

2.2.2 Preventing clogging

To prevent poor ink suction due to clogging of the joints in the BJ cartridge, never touch the ink tank's ink outlets. After removing the cap from the ink tank, promptly install the ink tank in the BJ cartridge to prevent the nozzles from clogging due to dried-out ink, dust, etc. Do not remove an ink tank from a BJ cartridge unless you are replacing it.

BCI-62 Photo



BCI-61 Color

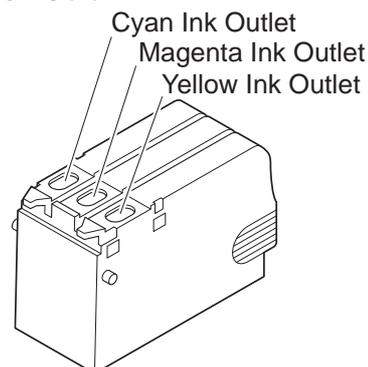


Figure 1-11 The Ink Outlets on Ink Tank

2.3 Printer Handling

2.3.1 Spurs

Take care not to bend the tips of the spurs.

The spurs that transport and eject the paper after printing are very small and can easily be deformed.

If a spur is deformed, its contacting surface with the printed paper increases, creating a dotted line.

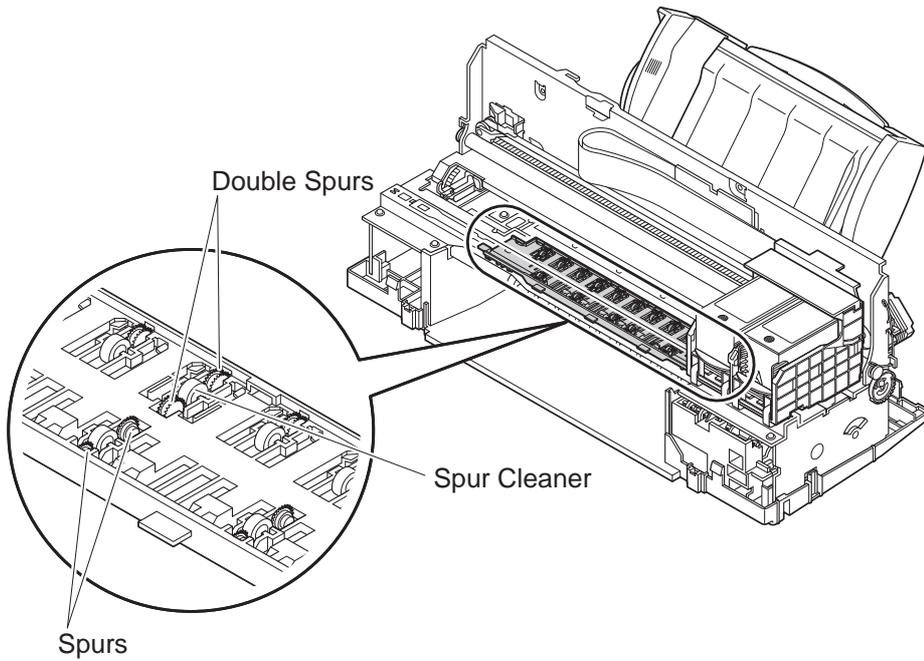


Figure 1-12 Spurs

2.3.2 Damage due to static electricity

The static charge accumulated by your body from clothing can damage electrical components and alter their electrical characteristics.

Never touch the carriage contacts or BJ cartridge contacts.

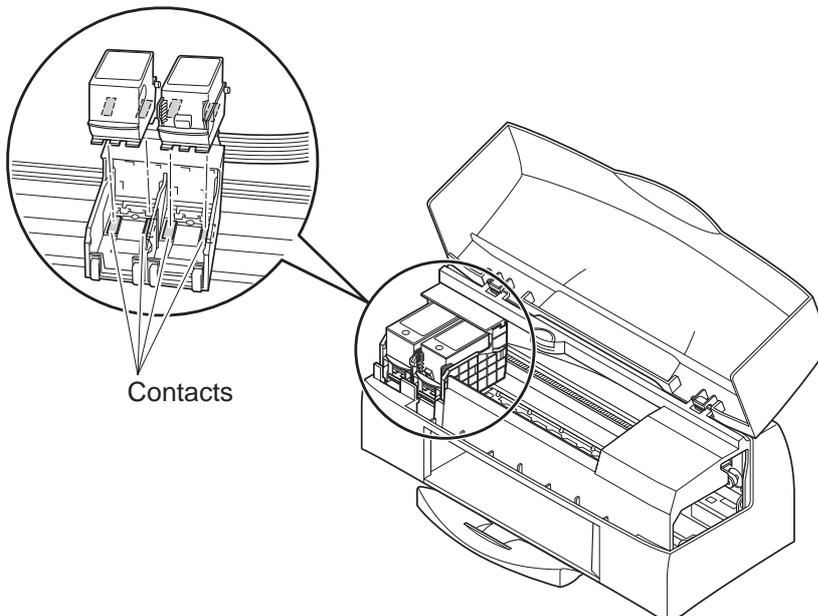


Figure 1-13 Contacts

2.3.3 Ink leakage and dry-out

Make sure a BJ cartridge is installed before turning off the power, using the *POWER* button.

When you turn off the printer using the *POWER* button, the printer automatically performs the following operations:

Cleaning

Any ink left in the purge unit or in the nozzles of the BJ cartridge is removed.

Capping

To prevent ink dry-out, the BJ cartridge's nozzles are capped automatically and the carriage is locked in position.

If you unplug the AC adapter by mistake, plug the power cord again, turn the power on and then off again using the *POWER* button, then unplug the AC adapter.

If you turn the power off or unplug the AC adapter when the BJ cartridge has been removed, the nozzles will not be automatically capped or the carriage locked in position, and hence there is a risk of ink leaking or dry-out.

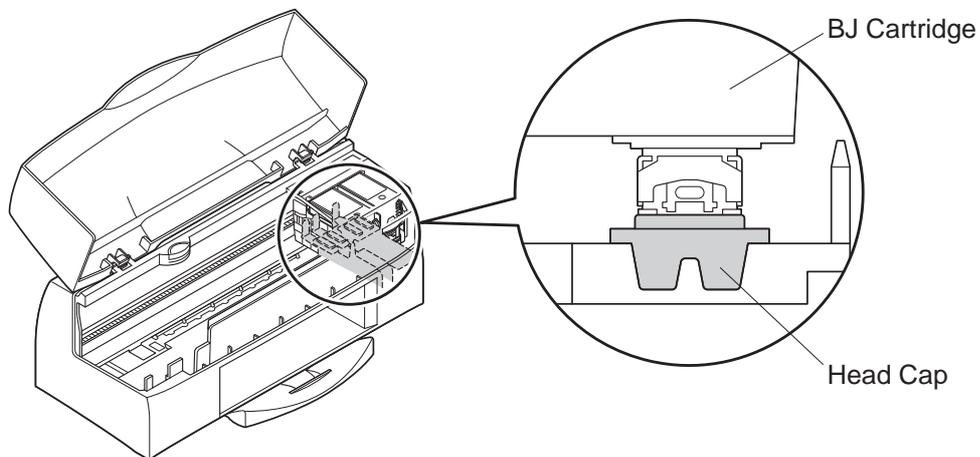


Figure 1-14 Capping Position



If the power cannot be turned on due to some failure, manually move the carriage belt or the carriage itself to the capping position. For details, see "Part 3: 2.2 Manual Capping" (page 3-13).

2.3.4 Carrying the printer

Hold both sides of the bottom of the printer to carry it. Note that inserting your hand into the paper outlet may dislodge or damage the paper guides.

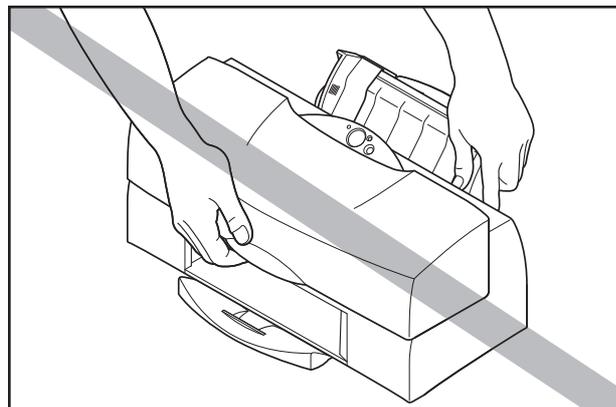


Figure 1-15 Carrying the Printer

3. NOTES ON SERVICING

3.1 EEPROM Data

The printer stores the function settings and keeps track of various information including the total sheets printed, the number of cartridge replacements, the total waste ink amount, and the head position adjustment values. The data is stored in the EEPROM on the logic board.

Note the following precautions during servicing:

1) Before servicing

You can check the EEPROM data with a test print. The total sheets printed can give you an idea of how much the printer has been used.

2) During logic board replacement

Always replace the waste ink absorber when replacing the EEPROM.

If you do not replace the waste ink absorber, the data on waste ink amount will differ from the amount of ink that can be absorbed by the waste ink absorber. There is therefore a risk of ink leaking.

When replacing the logic board, be sure to reset all the data. Because the data on new EEPROMs is undefined, they cannot be used until they are reset. For details of handling EEPROMs, see "*Part 3: 3.4 EEPROM*" (page 3-19).

3) After waste ink absorber replacement

After replacing full waste ink absorbers, reset the EEPROM's waste ink counter.

4) If you accidentally reset the EEPROM's waste ink amount data or all data

Once reset, the EEPROM data cannot be restored. If you accidentally reset the EEPROM, you must take the same steps as when replacing the logic board.



After the EEPROM is reset, the data it contained cannot be printed out with a test print. If you want to check the stored data, be sure to make a test print before resetting the EEPROM.

Note that you cannot reenter the data from the printer's control panel or by using a computer.

If the EEPROM is faulty, or all data is reset, all data is lost. Whenever possible, restore all data such as the head alignment to the user's settings.



During operation, the waste ink amount (EEPROM data) is automatically updated. An error message is displayed and operation halted when the waste ink absorber is nearly full. If this occurs, refer to "*Part 5: 6. TROUBLESHOOTING*" (page 5-13).

See "*Part 3: 3.8.3 Printing EEPROM data*" (page 3-23) for how to make a test print of the stored data.

You can choose to either reset the waste ink counter or all data. See "*Part 3: 3.8.2 Resetting EEPROM data*" (page 3-22) for details.

3.2 Service Mode of Printer Driver

There are certain printer driver control functions, described below, that are, in principle, hidden from the end user. These service mode functions, which must be used with caution, are provided for service purposes only.

See "Part 3: 3.3.2 Service mode of printer driver" (page 3-18) for details.

3.3 Protecting the Power Supply

The power supply for the BJC-7100 printer consists of an AC adapter and a power supply circuit on the logic board. Provided the AC supply is connected, the printer power supply is live whether or not the power is set ON or OFF using the *POWER* button.

Always unplug the AC adapter from the power outlet before connecting it to or disconnecting it from the printer. Ignoring this warning can result in damage and failure of the printer power supply.

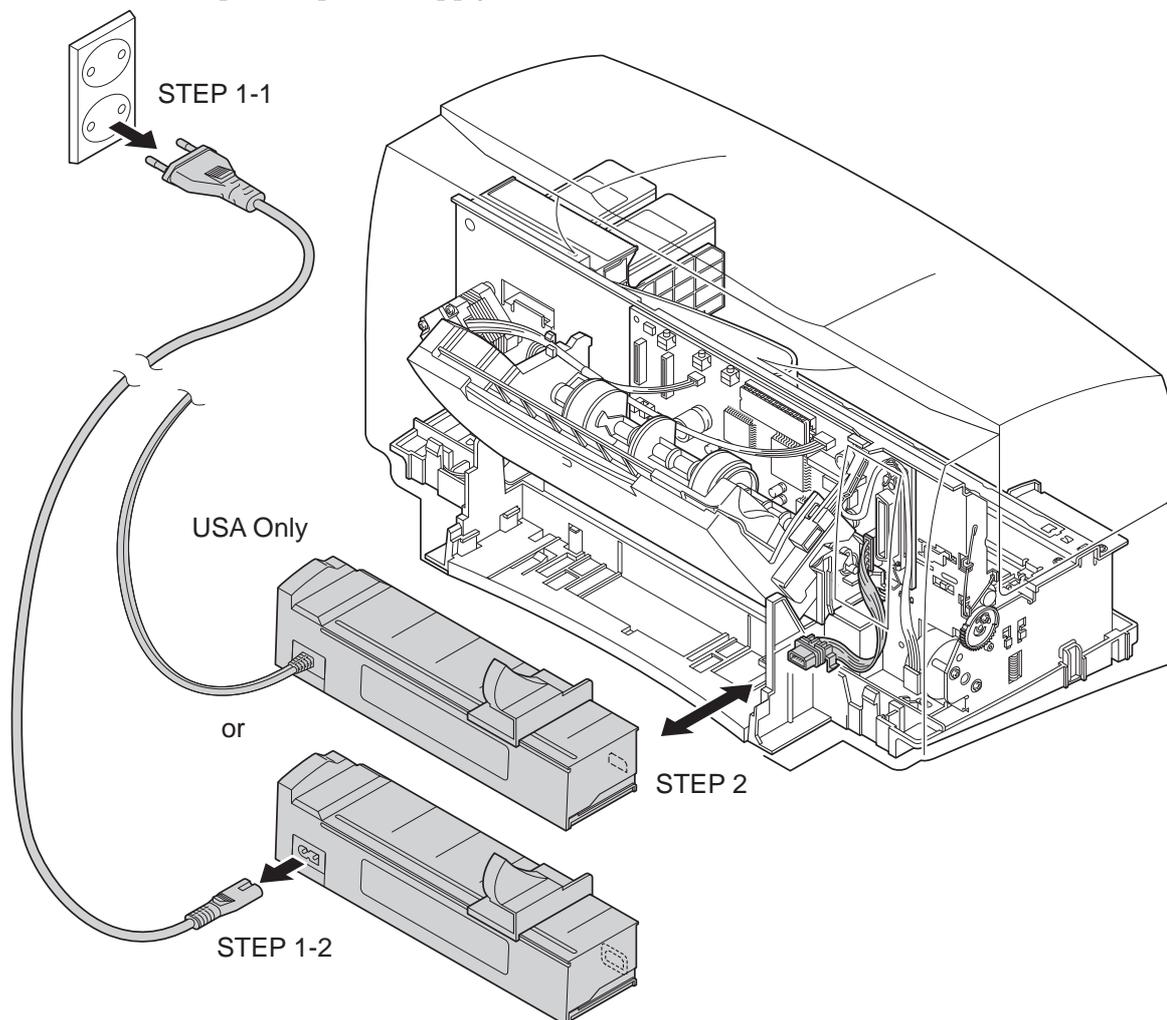


Figure 1-16 Protecting the Power Supply



When moving the carriage by hand when, for example, manually capping the ink nozzles or releasing the carriage lock, do so slowly while paying attention to the operation of the carriage motor; the back electromotive force generated by moving the carriage horizontally may damage the motor control board. If it is necessary to move the carriage horizontally fairly frequently, such as when replacing or adjusting the carriage, temporarily disconnect the carriage motor connector from the control board.

3.4 Static Electricity

The electrostatic charge accumulated in clothing can damage electrical components and alter their electrical characteristics.

Before disassembling the printer to service it, use a wriststrap or other grounded metal object to discharge the static electricity. The following parts must not be touched before you have discharged the static electricity from your body:

- Logic board, carriage board
- Motor control board
- Cable connectors and contacts
- BJ cartridge signal contacts

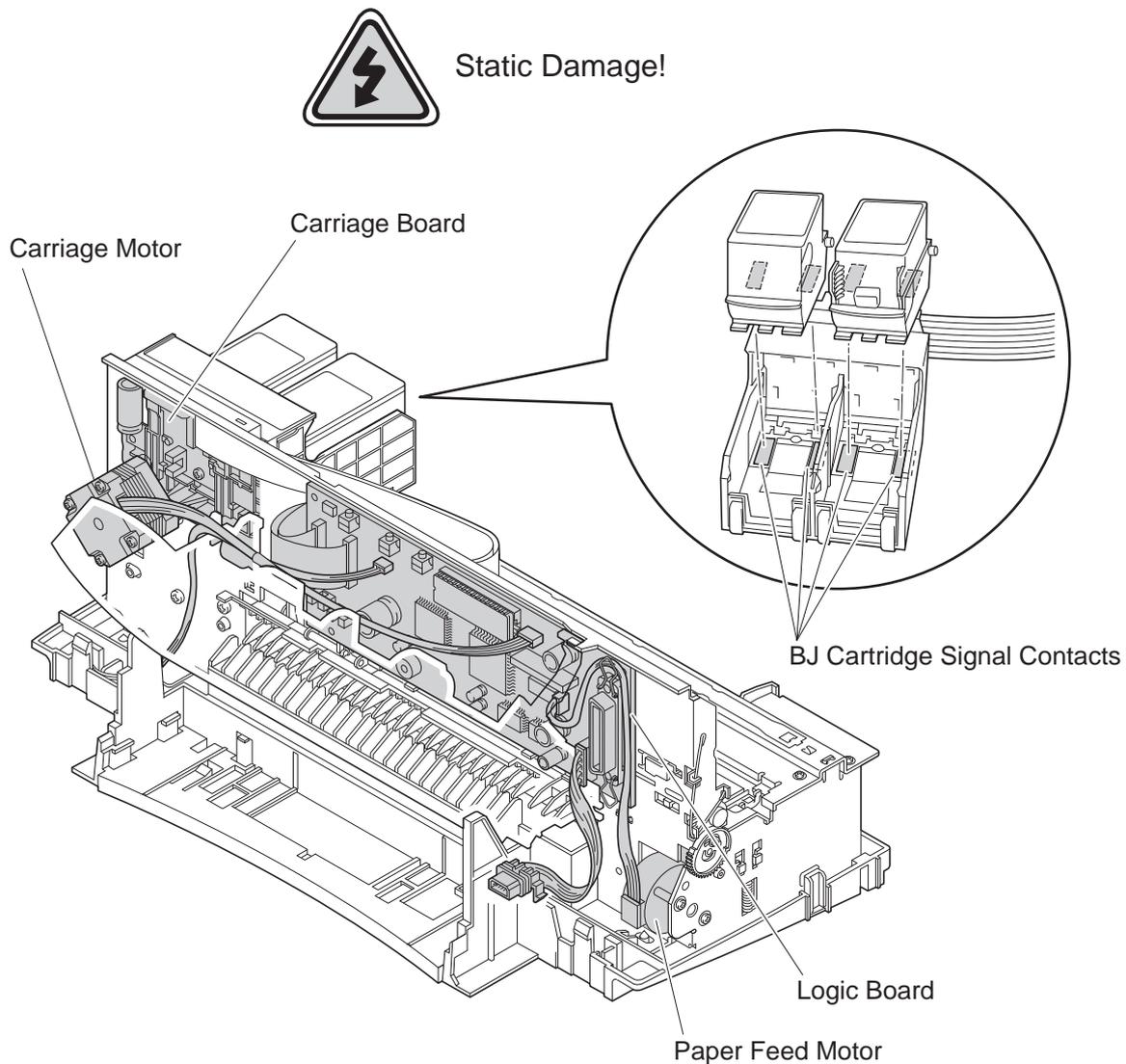


Figure 1-17 Electrical System of Printer