IJ-6080 Ink-Jet Transaction Printer

Troubleshooting & Maintenance Guide

Addmaster Corporation

Address: 225 East Huntington Drive
                Monrovia, CA 91016

Web: www.addmaster.com
Phone: (626) 358-2395
FAX: (626) 358-2784

Document: ij6maintenance.doc   (Source)
                Ij6maintenance.pdf   (PDF)

Revision: 1.0   April 24, 2003

Notices: Subject to change without notice.
                © Copyright 2003, Addmaster Corporation

1   Introduction

1.1 Background

The IJ-6080 Ink-Jet Transaction Printer is a modern, high-reliability transaction printer designed for use in financial, POS and other applications. The IJ-6080 prints on 3 inch wide journal or receipt paper, as well as inserted documents which may be of any size. The printer uses the Hewlett-Packard C6602A Ink-Jet cartridge.
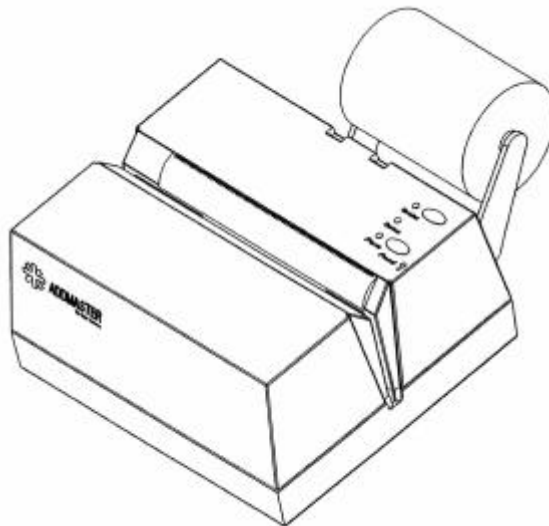

Figure 1.   Addmaster IJ-6080

This document describes general troubleshooting procedures for that can be used by users or by call centers to help diagnose and recover from various problems and conditions.

Related Documents:

- IJ-6080 Ink-jet Transaction Printer User's Guide.
- IJ-6080 Ink-jet Transaction Printer Specification.

These documents are available from Addmaster directly.

1.2 Supplies and Ordering Information

The IJ-6080 printer is designed and tested to work with certain supplies and consumables. Use with other supplies or consumables is not tested nor supported.

Supplies may be ordered directly from the factory. Contact Addmaster at:

> Addmaster Corporation
> 225 E. Huntington Drive
> Monrovia, CA 91016
> USA
>
> Phone: (626) 358-2395
> FAX: (626) 358-2784
>
> Web: *www.addmaster.com*

Please note that phone/FAX area codes change from time to time. Consult Addmaster's web-site for current contact information.

2   Troubleshooting

2.1 General Hints to Troubleshooting

There are typically four steps to the troubleshooting process.

1. Problem Reporting.
2. Problem Resolution for simple issues.
3. Problem Confirmation, Isolation, and Diagnosis.
4. Problem Correction.

Step 1. Problem Reporting.

When attempting to troubleshoot printer problems, two issues are very important: 1) talking with the user who actually experienced the issue, and 2) attempting to correct the problem while it is presently occurring. These are important because different operators will use different language to report similar problems and the description of problems can change substantially when reported second or third hand. Also, questions can be asked to clarify the meaning of various reports. If the problem is presently occurring, the service personnel can request the user to note various status lights and other items that perhaps the user may neglect to note.

Step 2. Problem Resolution for Simple Issues.

Many issues are quite trivial and are only called "problems" by the operator because of lack of training or a simple misunderstanding of how the printer operates. For example, some users are unaware that the ink-jet cartridge is a consumable that eventually runs out of ink. They may hold this belief because the last transaction printer they were familiar with employed thermal paper instead of ink.

Simple problems do not need confirmation. A quick glance at the troubleshooting guide suffices.

If there are a large number of these types of issues, this is indication that the users may require additional training on the operation of the printer. Perhaps, sending the user a copy of the "IJ-6080 User's Guide" would correct the issues on a going forward basis.

Step 3. Problem Confirmation, Isolation, and Diagnosis.

In solving printer issues, it is imperative that the problem is reproducible. The service personnel should determine (with the help of the printer's user) exactly what steps are required to produce the problem and whether these steps always or only intermittently lead to the reported problem. After the problem is addressed, these exact same steps can be used to verify the problem has been corrected (additional testing may also be required).

Printer problems can be classified into four general categories:

1.	User Problems	The user does not understand the proper operation of the printer, or misuses the printer.
2.	Printer Problems	The printer needs a new ink-jet cartridge, the printer has a mechanical failure, etc.
3.	System Problems	The system composed of the combination of the computer and the printer and not working properly together.
4.	Computer Problems	The computer is malfunctioning or is not setup properly.

The first two categories, User and Printer Problems, are addressed in a straightforward manner. The last two categories, System and Computer Problems, are usually the most difficult to rectify and sometimes require the coordinated efforts of the printer and software providers.

The printer provides some means to help isolate the problem into one of the above categories. This is provided by the **Self-Test Procedure.** This diagnostic routine will cause the printer to print and validate forms in a similar manner to the user's typical procedures. The user can examine the results of the Self-Test to help categorize the problems. Usually (not always), we can make these assumptions:

The Self-Test shows a problem similar to the user's original problem.	• The problem is either a User or Printer Problem.
The Self-Test shows no problems.	• The original problem is either fixed, or is a System or Computer Problem.

The Self-Test is described in more detail in Section 2.3.   Almost all problems that are actually printer related should show up on the Self-Test. For example, printing problems

and paper feeding problems should all appear. The Self-Test mode also provides a convenient method for verifying that these types of problems are resolved.

In order to determine whether a problem is Printer or Computer related, use the method of Swapping Printers. This requires a second working combination of printer and computer. To perform this procedure, simply swap the printers between these two workstations. We can *usually* (but not always) draw these inferences:

The problem/issue follows the printer to the new workstation.	• The problem is a Printer Problem with the original printer.
The problem/issue stays with the original workstation.	• The original problem a System or Computer Problem with the original workstation. Perhaps it was not setup properly.

Step 4. Problem Correction.

After the problem has been confirmed, isolated, and diagnosed, it needs to be corrected. The user can correct many problems by simply changing the ink-jet cartridge or removing paper or learning to push the proper buttons at the proper time. The user can perform simple maintenance tasks related to cleaning by blowing out debris with compressed air.

The procedures for determining what steps should be taken are provided in the next section.

However, there are some items that the user will not be able to correct. For example, if the printer needs a mechanical adjustment for whatever reason, this is something the user should not attempt to correct. Users should never disassemble the unit, bend any guides, unscrew any items, or replace any mechanical components. Issues such as these require the units to be shipped to the factory for service.

2.2 Troubleshooting Procedures

Consult the proper sub-section below for information on solving the symptom. For each category of issues, a list is provided giving the most commonly reported symptoms.

Flashing Status LED Indicator	Reported as: • Status Light Flashing • Error Light Flashing or On • Red Light Flashing or On

Notes:

A flashing Status LED indicator informs the operator that the printer is temporarily unable to continue operation. This does not usually indicate a printer problem.

Corrective Action Procedure:

1. Check On-Line LED Indicator	
• Flashing / Blinking	Journal Paper is not loaded. Load roll paper, push On-Line button.
• ON	Continue at step 2.
2. Check for Form in validation slot	
• Form in slot	Printer awaiting form removal. Remove form.
• No Form in slot.	Continue at step 3.
3. Check for mechanical blockage	
• Paper or debris in sensors	Debris blocking the sensors near at bottom left and bottom right of validation slot will cause a fault. Check for and blow out any debris with compressed air.
• Ink-cartridge blockage	Cartridge path blocked and print-head cannot move freely. Turn off printer, move cartridge by hand to find any blockage. If a problem is found, check cartridge installation. If this does not correct problem, contact service.
4. Verify problem persists.	
• Problem continues?	Turn printer off and on.

Printing Issues	Reported as: • Will not print • Missing dots • Line through print • Print blurry or fuzzy

Notes:

Almost all printing related problems are attributable to the ink-cartridge either being empty, mis-installed, or having debris on the nozzles . These problems are user fixable.

"Empty" cartridges still contain some ink. The cartridge cannot use all the enclosed ink, don't try to. For example, if a print job is 10 lines, the first 2 might print and the last 8 might be blank. If the print sits idle for a few minutes, a small amount of ink may bleed upwards to the nozzles to permit another 2 lines or so to be printed. This ink-cartridge is empty and should be replaced.

Corrective Action Procedure:

1.	Check Ink-jet Cartridge Installation	
	• Cartridge installed.	Remove access lid and check for cartridge.
	• Cartridge latch in place.	Blue latching arms should be snapped into place. Unlatch and re-latch.
2.	Check for Empty Cartridge	
	• Cartridge at end-of-life.	Replace cartridge. Cartridge will not print when empty. Expect about 5,000,000 characters of life.
3.	Check for Debris on Nozzles / Contacts	
	• Debris on nozzles of cartridge (the silver plate).	Wipe with a moist paper tissue.
	• Debris or ink on the electrical contacts (the gold pads and dimples on the cartridge and its holder).	Wipe with a moist paper tissue, then wipe dry.
4.	Verify problem persists.	
	• Problem continues?	Replace cartridge anyway, with a known good cartridge from a working machine. Turn printer off and on.
	• Problem continues?	Call service.

Paper Jams	Reported as: • Paper jams. • Paper won't feed • Form stuck or won't eject.

Notes:

There are two potential paper media involved: 1) the Journal Paper Roll, and 2) an inserted Form. Usually, jams are related to Journal Paper Rolls feeding into the printer properly and Forms feeding out of the printer properly.

> **IMPORTANT NOTICE:** *DO NOT ATTEMPT TO CLEAR A PAPER JAM BY PULLING ON THE METAL PLATE GUIDING THE PAPER ROLL. NEVER BEND METAL TO CORRECT ANY PROBLEMS!*

Corrective Action Procedure:

1.	Check Journal Paper Roll Feed.	
	• Paper roll won't feed into unit.	Assure paper roll has a straight edge before inserting into printer. • Back paper roll out of printer. • Cut a clean edge with scissors and try reloading paper.
	• Paper roll won't feed.	Assure paper rolls move freely on its supports. Assure printer is not forced against a wall preventing paper roll from rotating.
	• Paper roll caught in tear-bar.	• Back paper roll out of printer. • Remove any obstructions from tear-bar. • Reload paper.
2.	Check Form Feeding.	
	• Forms will not feed into printer.	• Turn printer off and on and try again. • Assure ink-cartridge is installed properly. • Assure that Form has no folded or torn edges or holes.
	• Forms will not feed out of printer.	• Turn printer off and on and try again. • Assure that Form has no folded or torn edges or holes. • Assure there are no obstructions in validation slot.
	• Forms not feeding uniformly, printing aslant, or overprinting.	Assure operator does not handle form during printing. Assure document is level when first inserted.
3.	Verify problem persists.	
	• Problem continues?	Turn printer off and on.

Power & Setup Issues	Reported as: • Will not print. • Will not power up. • DOA

Notes:

Power, communications, and setup issues are common problems. Usually these result from new installations or cases where printers are moved from one workstation to another.

Corrective Action Procedure:

1.	Check for proper power connections.	
	• On-Line LED On.	Unit is properly powered.
	• On-Line LED Blinking.	Unit is powered, but is Off-Line or in Self-Test mode. • To put On-Line, push the On-Line button once. • To exit Self-Test mode, power off and on.
	• On-Line LED Off.	Unit is off. • Assure power switch is on by sliding switch forward. • Assure power cord is *fully* inserted into its connector. • Assure power supply is plugged into a powered wall outlet. • Assure proper power supply is used. USE ONLY ADDMASTER POWER SUPPLIES.
2.	Check for proper communications connections.	
	• Connection at printer.	For serial units, this is a phone-jack style connector. Assure it is "clicked" into place.
	• Connection at PC.	For serial units, this is a DB-9 pin connector. Assure it is plugged into proper COM port.
3.	Check for proper DIP Switch settings.	
	• Default settings.	Printer default settings have DIP switches all OFF (upwards). Do not change the default settings unless instructed to do so by your applications software provider.
4.	Check for proper printer firmware.	Run Self-Test. Read model and version number and compare with those appropriate for the application.

Communications Issues	Reported as: • Printer hung. • PC hung. • PC says printer Off-Line or Unavailable. • Characters missing from print-line.

Notes:

Communications issues are most commonly found at the first installation of the printer. The set-up procedure is usually specified by the software provider. The actions given here are generic in nature and apply to no particular software program.

Corrective Action Procedure:

If the computer interface WAS WORKING, but now is not.		
1.	Check for Self-Test Mode	
	• On-Line LED blinking, Form LED On.	Assure the unit is not in Self-Test. This mode is only exited by powering off and then on.
2.	Check for waiting for Form	
	• Status LED Flashing	Remove any inserted Form.
	• FORM LED On.	Insert a Form.
3.	Check Journal Roll Paper Out.	
	• On-Line LED blinking, Status LED Flashing.	Reload journal paper and push On-Line button.
4.	Check for Form or Mechanism Jam.	
	• Status LED Flashing	Remove any inserted Form. Power unit off and on.
If the computer interface HAS NEVER WORKED at this workstation.		
1.	Check *ALL* Power & Setup Issues as described earlier.	
2.	Check for proper software setup.	
	• Communications ports.	Assure proper port selected: serial, parallel, USB. Assure proper baud rates, flow control.
	• Printer driver.	Assure proper driver is being used. Assure software not expecting another model printer.
3.	Verify problem persists.	
	• Problem continues?	Turn printer off and on.

2.3 Self-Test Procedure

After the printer is set-up and its supplies are loaded, its operation can be tested by use of the printer's "Self-Test Routine." This self-test exercises most aspects of the machine's operation and provides visual indication that the unit is properly set-up and ready for operation. The following features are tested and verified:

- Identification: Model Number, Firmware & Revision Level, Installed Options
- Operation: Printing, Feeding, Validation Clamping & Ejecting,
- Printing: All fonts and print modes.

To initiate the Self-Test, follow these steps:

Self-Test Procedure	Notes
1. Turn off power.	
2. Hold down Paper-Feed button.	
3. Turn on power.	
4. Release button after printing starts.	
5. A sample tape is printed.	
6. Insert Form to test validation mechanism.	
(continue inserting forms as desired)	
7. Turn power off when done.	

IMPORTANT NOTE:

Printer remains in SELF-TEST routine until power is cycled OFF.

3   Maintenance

The IJ-6080 is designed for use without preventative maintenance. However, print quality may suffer in environments which are very dusty, dirty, or humid. In these environments, periodic maintenance can serve to keep the print quality consistent and high. This section outlines some recommended procedures that can be used.

There are two basic goals to this maintenance:

1. Removal of dust and debris, which may be blocking optical sensors or inhibiting smooth print-head motion.
2. Cleaning and lubrication of print-head guide shaft, which assures smooth print-head motion.

To assist you in this task, Addmaster makes available a kit of necessary components. Use only Addmaster supplied lubricant for this maintenance. This kit can be obtained directly from Addmaster using the contact information in Section 1.2. The kit is described as:

Part Number:	97025
Description:	Maintenance Kit, IJ-6000
Components:	1. Oil Bottle, Silicone Oil, 50cs. 2. Compressed Air Can, 12oz. 3. Ink-jet cartridges (two), HP C6602A. 4. Test form packet, 100 forms. 5. Test paper rolls, 2 rolls. 6. Instructions.

Step 1. Determine maintenance requirement.

Decide if maintenance is appropriate. If print-quality is poor or there are forms handling faults, follow the troubleshooting procedures outlined in Section 2.2. These steps will ask you to perform some of the maintenance steps described below.

You may elect to perform these steps on a preventative schedule. This schedule will depend on the environment, but probably will never need to be more often than every second month.

Step 2. Clean out unit.

This step removes and dust and debris that may have accumulated in the printer. This debris is generally not harmful, but can cause faulty operation if the debris is lodged in the optical sensors. These sensors are used to determine if forms are inserted properly and shards of paper lodged in the sensors can cause faulty sensing.

To clean the unit:

1. Remove the access lid.
2. Using the Compressed Air Can, blow out any accumulated debris. Pay attention to the areas indicated in Figure 2.
    a. Left Form Sensor
    b. Right Form Sensor
    c. Carriage Guide Shaft
3. Be careful when using the Compressed Air. Follow the instructions on the can.

IMPORTANT NOTES:

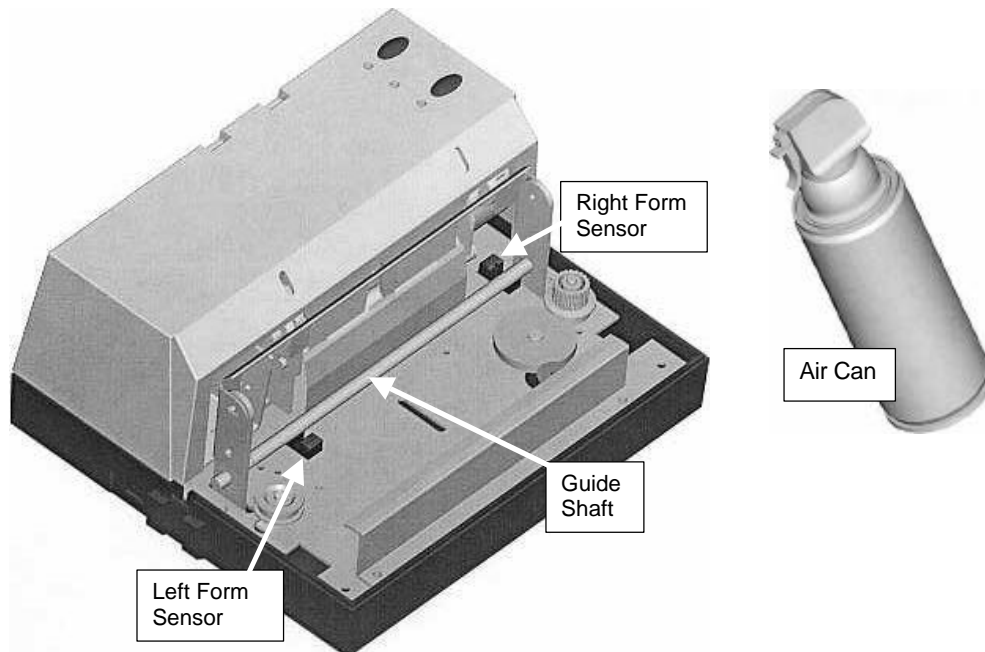- *The ejected air is cold and can be harmful if used improperly.*

Figure 2.   Compressed Air Cleaning

Step 3. Clean cartridge electrical contacts.

Foreign substances on the electrical contacts between the printer and the inkjet cartridge can prevent individual nozzles from firing. These substances are typically introduced into the printer accidentally, but on rare occasions ink may have leaked from the inkjet cartridge onto the electrical contacts. Ink leakage is usually caused by misuse of the cartridge.

If all nozzles are firing properly, no maintenance of these electrical contacts is recommended unless visual observation shows contamination. Refer to Figure 3 and follow these steps to clean the electrical contacts:

1. Remove inkjet cartridge.
2. Wipe contacts on printer and on inkjet cartridge with a most paper tissue.
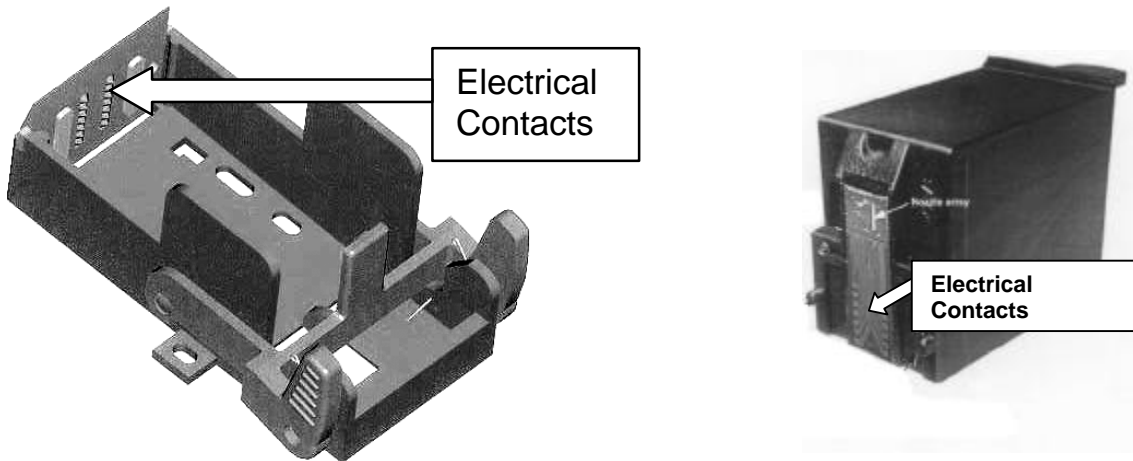3. Wipe dry both sets of contacts.

Figure 3.   Clean Electrical Contacts

Step 4. Clean & Lubricate Guide Shaft

The inkjet carriage moves horizontally supported by a shaft. This shaft is lubricated at the factory and in clean environments will typically not require any maintenance. In other environments, debris or foreign substances may accumulate on and foul the shaft preventing the carriage from moving smoothly while printing. This is turn will cause degraded print quality. If this occurs, follow the steps presented in this section.

1. Clean shaft using a paper tissue wetted with the supplied oil. It is more effective to clean using a wet tissue.
2. Move the print-head manually to the right to clean the left side of the shaft.
3. Using the oil bottle apply a small bead of oil across the shaft. Apply oil sparingly. Oil should not drip.
4. Manually move the print-head back and forth (left and right) a few times to work the oil evenly across the shaft and the carriage's bearings.
5. Visually inspect the shaft to assure that oil has not pooled or is dripping.

IMPORTANT:

- ***Use only Addmaster supplied lubricant.*** Other lubricants may cause faulty operation.
- Apply oil sparingly. Do not over-apply. More is not better.
- Dripping oil can cause faulty operation if the oil interferes with the optical paper sensors.
- Do not get oil on the electrical contacts of the inkjet cartridge or its holder. If you do, clean off using the procedure previously noted.
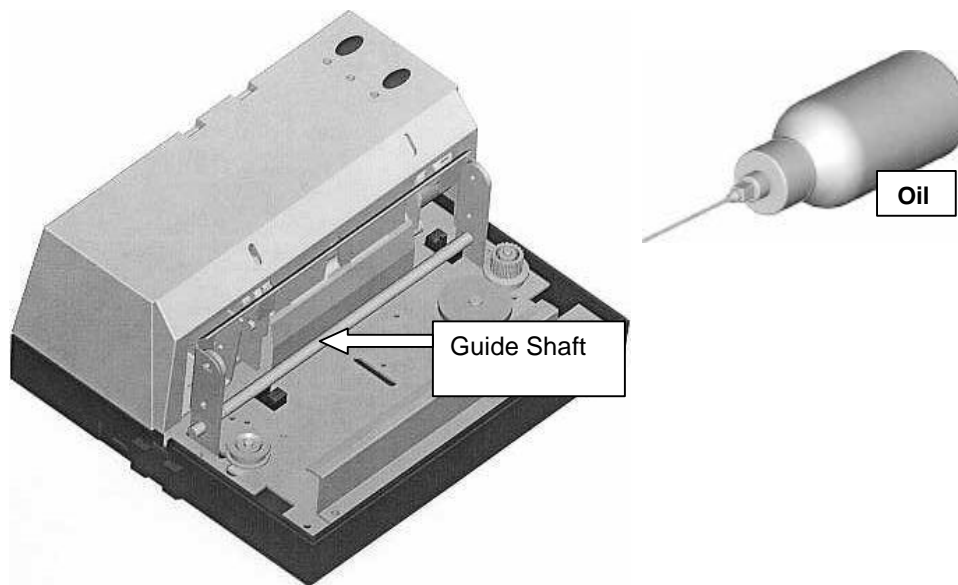

Figure 4.   Clean & Lubricate Guide Shaft

Step 5. Clean Exterior

You may choose to clean the outside of the printer also. This is obviously not required for proper printer operation, but most users elect to keep the printer looking clean and new. To clean the exterior plastic enclosure, you can use either:

1. Water, which is effective in removing any ink that may have smeared on the plastic.

2. Alcohol based cleaners, which are effective in removing oils and other similar contaminates.

When cleaning the enclosures, please keep these in mind:

- Never use any stronger chemicals to clean the plastic enclosures.
- Don't allow any cleaning fluids to leak back inside the printer. If they do, you will have to clean the printer's mechanism once again.

4   Repair

Your first contact for printer repair should always be your reseller, who will arrange for the repair or replacement of your unit, should it prove faulty. If the unit is to be sent to the factory for maintenance or repair, you must first obtain an "RMA" number from the factory. Contact Addmaster at the location given in Section 1.2.

IMPORTANT NOTES:

When shipping your IJ-6080, be sure to ALWAYS included the following items. Use the list as a check-list.

- ❑ **Obtain and reference an RMA number.**
- ❑ **Use the original packaging material.**
- ❑ **Remove the ink-jet cartridge.**
- ❑ **Include a problem description.**
- ❑ **Include an example of the printing problem.**
- ❑ **Include contact information (person and phone number).**
- ❑ **Include return address and billing information.**

5   Document Revision Information

Revision	Date	Changes / Modifications
1.0	04-24-2003	Initial release.