IJ-6080 Ink-Jet Transaction Printer

User's Guide

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                lj6user.pdf   (PDF)

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Notices: Subject to change without notice.
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Manufacturer's Certification

CE Declaration

This device complies with the requirements of the EEC directives 89/336/EEC with regard to Electromagnetic Compatibility and 73/23/EEC Low Voltage Directive. The CE mark is therefore affixed to the device or packaging.

FCC-Class A Declaration

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment if operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Addmaster is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

Important Notes

The IJ-6080 Printer is designed for use in office environments in combination with typical industry standard computing devices. Operation of the printer in other environmental conditions or uses is not supported.

- The IJ-6080 is shipped with and requires the use of a UL approved power supply. Use the printer only with the provided power supply.

- If the IJ-6080 should require repair, this work MUST be performed by authorized service personnel. Repairs made by unauthorized sources may lead to cancellation of the manufacturer's warranty.

Machine Safety

- Use only the specified ink-jet cartridges. Never force a cartridge into the holder. Many cartridges look similar, but have differing mounting requirements.

- Keep the original packaging. Use this packaging for shipping the printer in the future to insure against shipping damage.

- Condensation can occur when transporting the printer from a cold environment to a hot humid one. Do not operate the printer unless it is completely dry.

- Keep liquids & foreign objects from getting inside the printer mechanism or electronics. This can cause the printer to malfunction or become damaged.

- Dust, moisture, heat can all negatively affect the performance of the printer, but are unlikely to cause lasting damage. Nonetheless, protecting the unit from these factors will insure the best print quality.

Operator Safety

- ALWAYS DISCONNECT THE POWER SUPPLY BEFORE SERVICING. "Disconnect" means unplugging power cord, and not just turning off the power switch.

1   Introduction

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.

The printer is designed for ease of use. It features a small foot-print, automated paper loading, simple intuitive operator controls and indicators, and reliable operation. The IJ-6080 is typically connected to a Host computer through industry standard interfaces. RS-232C serial, USB and Parallel interfaces are available. Printer firmware is stored in "Flash" memory, which supports field updates of firmware, fonts, and logos.

The IJ-6080 may be installed with an "emulation," which is a special set of firmware that allows that printer to operate using the command set of another manufacturer's printer. This facilitates the installation of the IJ-6080 in many applications. Emulations are described also in section 1.2.
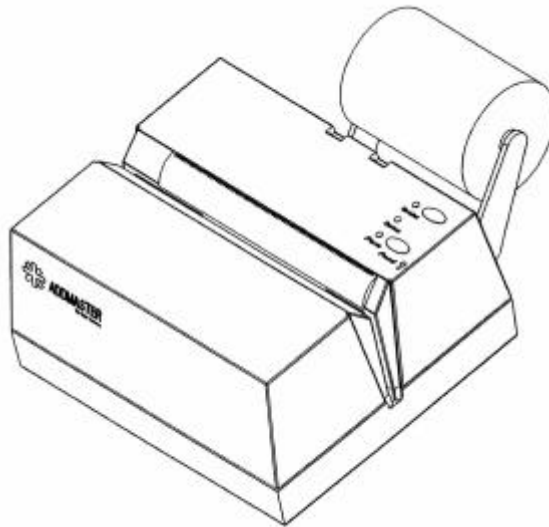

Figure 1.1   Addmaster IJ-6080

1.1 Documentation

The IJ-6000 printer has an associated documentation diskette, which includes three basic items of information useful to users and software vendors:

IJ-6080 User's Guide	This document.
	Supplies the information necessary to allow the set-up and use of the IJ-6080 printer. Proper installation, maintenance, supplies are specified.
IJ-6080 Specification	Describes the programming and other technical details of the printer. This information is critical to applications engineers or others with similar responsibilities.
IJ-6080 Flash Download Guide.	Describes how firmware, fonts, or logos are downloaded into the printer. These items once in Flash memory are non-volatile and are retained even in absence of power.

Additional documentation is provided on the distribution diskette, which pertains to Windows printer drivers and other miscellaneous utilities. See the README file of the distribution diskette.

1.2 Emulations and Printer Models

The model number IJ-6080 as used in this document is used in a generic sense. When optional emulations and hardware elements are added the exact model number changes. Consult the table for the current listing of models.

IJ-6080 Model Family

Model	Emulation	Interface	Options
IJ-6080-01	Addmaster	Serial	
IJ-6080-02	Addmaster	USB & Serial	
IJ-6080-03	Addmaster	Parallel	

1.3 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. Consult Section 5 for specification of the approved supplies.

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   Installation

When installing the IJ-6080 printer, please follow the steps outlined in this section. Some steps may not be required in your application. Please read through the entire chapter once before beginning the installation process.

2.1 Unpacking

After unpacking, please check to see if you have received all components listed in the packing list. Check for any obvious signs of shipping damage. If you are missing any items, please contact your reseller immediately.

All packaging materials should be saved and re-used in the case the printer must be transported in the future. Also, never discard any packaging materials whatsoever, until the printer is completely installed and working properly.

2.2 Setup

The IJ-6080 printer should be installed on a flat surface, protected from extreme environmental conditions such as dust, moisture, and heat. We also recommend against installing the printer in direct sun-light as this can on occasion cause operational errors with the printer's document sensors, especially if attempting to operate the printer with it's front cover (access lid) open.

Remove any protective elements added for shipping. These elements will vary depending on model and shipping method. If included, they will be indicated and specified by color coded instructions packed with the printer.

2.3 Cabling: Power / Communications

Please assure that the power switch is OFF before continuing. Then cable the IJ-6080 printer in the following order:

1.   Plug in the data communications cable. Attach also to proper computer port.
2.   Plug the external power supply into a standard 120V outlet .
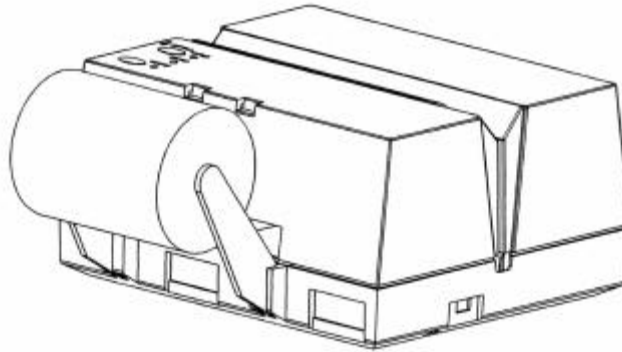3.   Plug the external power supply's power cord into the printer.

Figure 2.1 Rear Panel Connectors

2.4 DIP Switches

Set the DIP switches as required in your application. Your reseller should inform you of the proper settings for your application. However, the defaults are the most common and it is unlikely you will have to change the DIP switches. DIP switches are accessed at the rear of the printer.   The DIP switch usage on the IJ-6080 is:

DIP Switch	Setting	Usage	Default
1	ON OFF	Firmware Download Mode Printing Mode	 *
2	ON OFF	Default Font is Standard Bold Default Font is Standard	 *
3	ON OFF	38400 Baud 9600 Baud	 *
4	ON OFF	Auto-LF on *CR* Enabled Auto-LF on *CR* Disabled	 *

Notes:
- For Parallel attached units, DIP Switch 3 is not used.
- Firmware Download Mode is described in another document.
- The difference between Standard and Standard Bold font is both in stylization and darkness.
- Auto-LF on *CR* usage is described in the IJ-6080 Specification.

2.5 Peripherals

The IJ-6080 Printer supports an optional cash-drawer interface. This interface is found at the rear of the unit and is implemented with an RJ-11 phone-jack type connector.

Please consult with your reseller before using this port to insure that the pin-outs, voltage levels, and other characteristics are compatible with the cash-drawer you are using.

2.6 Ink-Cartridge

Installation of the ink-cartridge is described in the Section 3.2. In addition, please follow any information supplied with the ink-cartridge itself describing the removal of any protective shipping elements.

2.7 Roll Paper: Receipt / Journal

Installation of roll paper is described in the Section 3.3. Use only the proper size paper. The use of paper of smaller than specified width is not supported.

2.8 Default Font

If the Host computer fails to specify the font used, the printer will select its "Default" font. This can be either the Standard Font or the Standard Bold Font, and this is specified by a DIP switch setting.

Standard Font produces draft quality printing and is used to economize on ink usage. Standard Bold is a darker and more modern looking font, easier to read and to image. On average, Standard Font will extend the ink cartridge life by about 1.8X over Standard Bold. The actual number will vary depending on your application and font mix.

In some cases, Standard Font may produce preferable print quality. For example, some recycled papers are very absorbent and regular ink usage may appear overly dark and fuzzy.

3   Printer Operation

The IJ-6080 Printer is simple to operate. Controls and indicators are very intuitive and easy to use. Supplies and consumables are easy to load and remove. New users can typically be trained in a minimum of time, and only the topics presented in this section need to be covered.
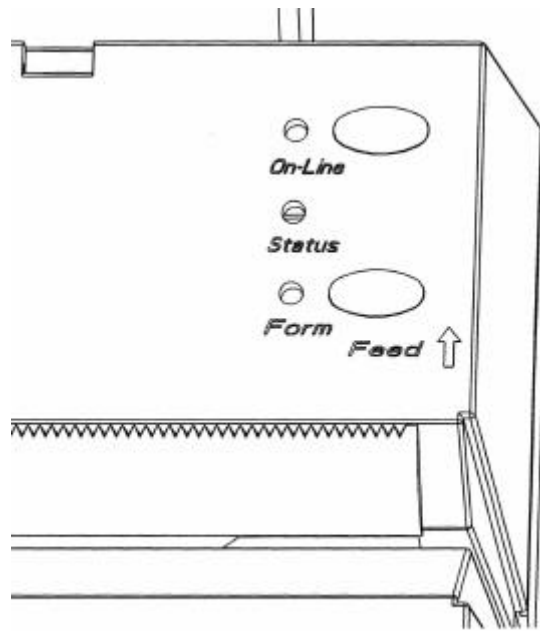

Figure 3.1   IJ-6080 Operator Controls & Indicators

3.1 Operator Controls

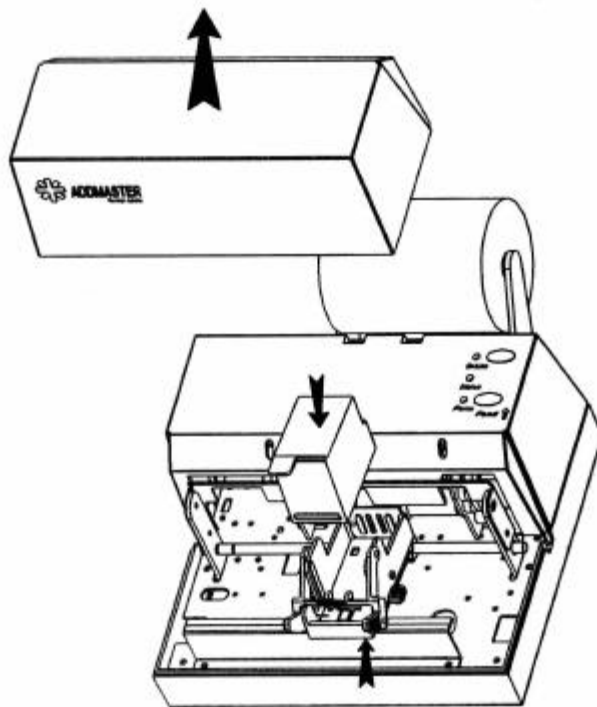| Item	Usage	
Power Switch.	Cuts power to the printer.	
	ALWAYS USE THE POWER SWITCH TO REMOVE POWER.	
Paper-Feed Button.	Feeds paper forwards.	
	Short depression:	Feeds last printed line past tear-bar (about 2 inches).
	Long depression:	Feeds paper continuously while button is depressed. Waits ½ second before beginning to feed.
On-Line Button.	Toggles unit between two modes – On-Line and Off-Line.	
	On-Line:	printer is ready to print and communicate.
	Off-Line:	printing and communications are inhibited.
	Printer goes Off-Line when roll paper is exhausted. Operator must manually put unit On-Line by using this button.	

3.2 Indicators

Indicator	State	Meaning
On-Line LED.	ON	Power is ON. Printer is On-Line and ready to operate.
	FLASH	Printer is Off-Line. Flashing is very low rate.
	OFF	Power is OFF.
Error LED.	FLASH	Error: one of the following Out-Of-Paper. Form requires removal. Print-head Jam.
	OFF	No errors.
Form LED.	ON	Insert form for validation.
	OFF	No form attention required.

3.2 Loading Ink-Cartridges

Follow these steps when loading Ink-Jet Cartridges.

1. Be sure you have obtained the proper replacement ink-cartridge.

2. Open the new ink-cartridge. Follow any instructions packed with the cartridge.

3. Remove the printer's access lid. The lid lifts upwards.

4. Remove used ink-cartridge by pinching release arms as shown.

5. Insert new cartridge. First, tilt the ink-cartridge and insert at a slight angle with the nozzles downwards.

6. Latch ink-cartridge into place by pressing tab forwards.

Figures 3.2 Installing the Ink-Cartridge

3.3 Loading Paper

Before installing a new roll of paper the remains of the old roll must be completely removed. Use the paper feed button to feed out the paper and then remove manually.

Step #1: Preparation.

Install the roll paper with the printer powered ON.

Make sure the paper on the new paper roll is cut or torn evenly at its end. See the illustration.

Locate the paper intake chute. The intake chute extends outwards from the rear of the printer to assist you.
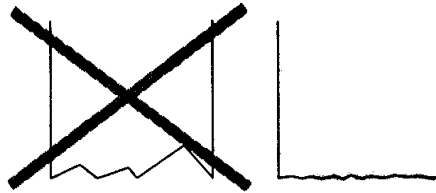

Figure 3.3 Paper Edge

Step #2: Load the Paper.

Position the paper so that the paper unwinds from the bottom.

While holding the roll, guide a length of paper into the paper path. When the paper is inserted far enough into the printer, the feed mechanism is automatically activated and the paper is fed through the machine and its tear-bar.
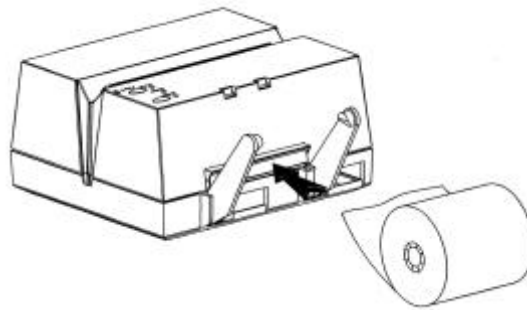

Figure 3.4 Feeding the Paper

Step #3: Finish.

Slide the paper roll on their supports. These supports will snap into place into the core of the roll.

Tear off the excess paper using the Tear-Bar.

Put the printer back "ON-LINE" by depressing the On-Line button.
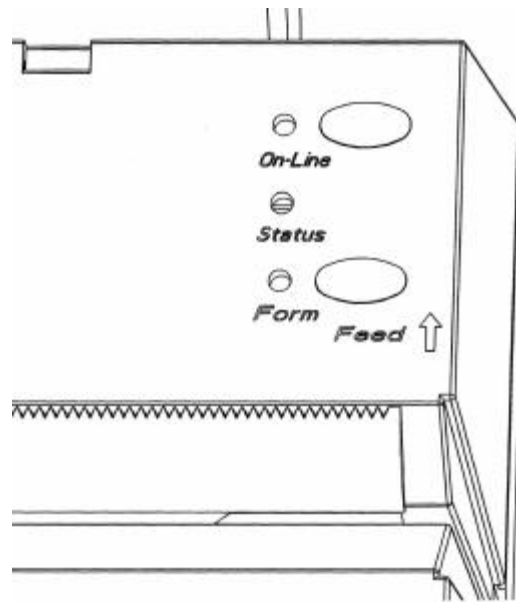

Figure 3.5 Set Printer On-Line

3.4 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 excersices 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.	
7. Turn power off when done.	

IMPORTANT NOTE:

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

4   Troubleshooting, Maintenance & Repair

4.1 Troubleshooting Problems

Consult the proper sub-section below for information on solving the symptom.

Flashing Error LED Indicator

A flashing Error LED indicator informs the operator that one of these 2 conditions is preventing the printer from continuing operation:

- A form is inserted into the printer and the form needs to be removed.
- The print-head is jammed and not moving properly.

If a form is present, then remove it.

Check the print-head to assure it can move back and forth. Try turning the power on and off to observe the print-head.

If everything looks OK, then perhaps there is paper debris confusing the printer's paper sensors. Check for paper debris, and blow out the printer with compressed air if required.

Irregular, Missing, or No Print

- Is ink-cartridge empty? Replace if so.
- Is ink-cartridge properly installed in holder? If not, correct.
- Remove and inspect ink-jet cartridge:
    - Check the electrical contacts on both the cartridge and the carrier for ink. Wipe off any ink or foreign materials found.
    - Check for foreign objects or dried ink build up on the ink-cartridge nozzle plate. Wipe off ink or debris with a moistened paper towel, taking care not to get ink on yourself or other elements of the printer.
- If all else fails, install a new ink-cartridge.

In the unlikely event these problems were not corrected by the above steps then contact a service technician.

"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.

Irregular Paper Feed

If the paper fails to properly feed into the unit, check the following:

- The paper being fed into the unit has a straight edge with no bends,
- The paper roll can rotate freely on its supports.

Potential Validation Document Problems

The validation document needs to properly cover internal sensors before validation can begin. Cut-forms, if designed improperly, may cause problems. Check for these items:

- Is cut-form large enough? If it is too small (less than 6 inches), it may not cover both sensors. The type and use of the chrome form guide will affect this also.

- Are there any holes in the cut-form? These may prevent proper feed.

Computer Interface Not Working, Hung, or Dead

This is the most common problem, probably because so many different set-up problems can cause it.

If the computer interface WAS WORKING, but now is not, then check:

Self-Test Mode	If the unit is in the Self-Test mode, then it will NOT communicate with the computer. Cycle the power OFF and then ON to exit the Self-Test.
Awaiting Cut-form	If the FORM LED is ON, then the unit requires a cut-form to continue.
Form Jam or Mechanism Jam	If the ERROR LED is FLASHING, then either a document is stuck in the unit, or the print-head is jammed and cannot move. Correct the problem. You may have to turn power on and off.
Computer Cable	Insure that the communications cable has not been removed.

If the computer interface HAS NEVER WORKED, then check:

Cabling	Cabling problems are the most common source of error. Typical problems:

- Wrong cable,
- Cabled to wrong port at PC,
- Loose cable connection: make sure you have completely inserted the cables and securely screwed them into their mates.

DIP Switches	These set important communications parameters. If these are in-accurately set, the printer will NOT work. Consult your reseller for the appropriate settings.
Wrong Printer	Possible items:

- You are trying to install a serial printer, but the software is looking for a parallel printer.
- Verify the printer's firmware is correct for your application by running the Self-Test.

Bad Host Software Setup	You have improperly setup the applications software or configured your computer.

4.2 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, we recommend the following:

4.3 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 1.3.

IMPORTANT NOTES: When shipping your IJ-6080

- Always use the original packaging material,
- Always REMOVE the ink-jet cartridge.

5   Supplies & Consumables

5.1 Supplies & Consumables Specifications

Paper Roll Specification

Media Type	Plain paper. Roll stock.
Roll Diameter	3.0 inches maximum
Roll Width	3.00 inches (+0.1/-0.2)
Roll Core I.D.	5/8 inches typical, (no special requirement)
Thickness	0.0015 to 0.03 inches
Recommended Weight	#16
Recommended Stock	Rittenhouse #7055SB

Validation Document Specification

Document Type	1 form, Plain paper stock.
Document Thickness	0.0015 to 0.0180 inches
Document Width	5.5 inches minimum
	6.0 inches recommended minimum
Document Height	2.75 inches minimum
Recommended Weight	#16

Ink-Cartridge Specification

Print Head	Manufacturer: Hewlett-Packard
	Part Number: C6602A
Ink Color	Black
Ink Cartridge Life	Depends on Font
Typical use	6,000,000 characters typical text (approximate) Standard Font
Maximum	Not specified.
Print Contrast Ratio	Constant throughout life of cartridge.

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6   Abbreviated Technical Data

6.1 Printer Operation & Features

Item	Specification
Power Requirements	
Voltage	24 Volts DC (+/- 10%) (Standard)
Power Consumption	
Operating	12 Watts, Typical
Standby	2 Watts
Printer Engine	
Type	Thermal Ink Jet
Ink Cartridge	Hewlett-Packard C6602A
Ink Detection	Ink drop usage counter.
Resolution	144 x 96 DPI (horizontal x vertical)
Speed	200 chars./sec (standard fonts)
Print Media / Paper	
Type	Roll, Plain Paper
Size	3 Inch Diameter
Paper Detection	Paper-Out -- Mechanical arm w/photo sensor. Form Inserted -- Photo sensor.
Paper-Usage	Electronic counter.
Loading	Smart Auto Load.
Options	
Cash Drawer Interface	RJ-11 connector. Actuator & sensor
Emulations	Addmaster Standard. Epson ESC/POS, IBM 4770/4712, DHPrint, NCR, Unisys available.
Communications	
Data Buffer	4K (32K RAM standard)
Interfaces	RS-232C USB & RS-232C Parallel

6.2 Printer Physical Characteristics & Requirements

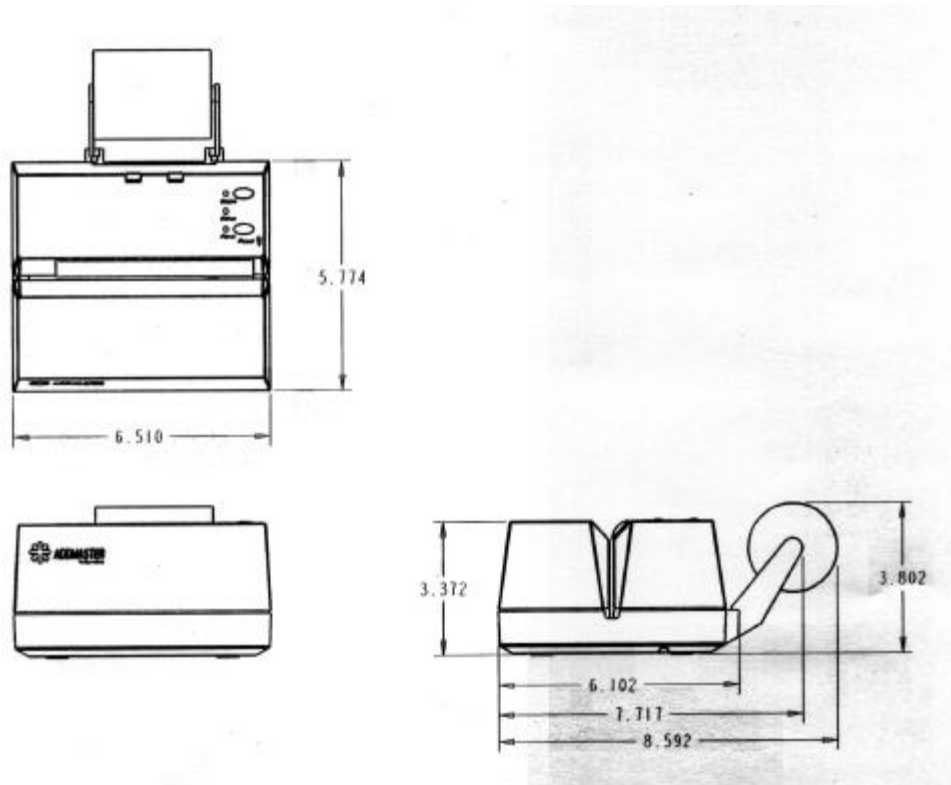| Item	Specification
Operating Environment	
Temperature	10 -> 40 C
Humidity	10 -> 90% RH (non-condensing)
Physical Characteristics	
Dimensions	6.51" (W) by 3.37" (H) by 6.10" (D) See Figure 6.1.
Weight	4.6 lb.
Noise Level	48 db

Figure 6.1 Outline Dimensions: Side View

Notes:
- All dimensions are in inches.
- Dimensions are approximate. Some extra spacing should be allowed.

7   Document Revision Information

Revision	Date	Changes / Modifications
1.0	09-19-2001	Initial release.
1.1	11-27-2001	Correct: • Various typographical errors.