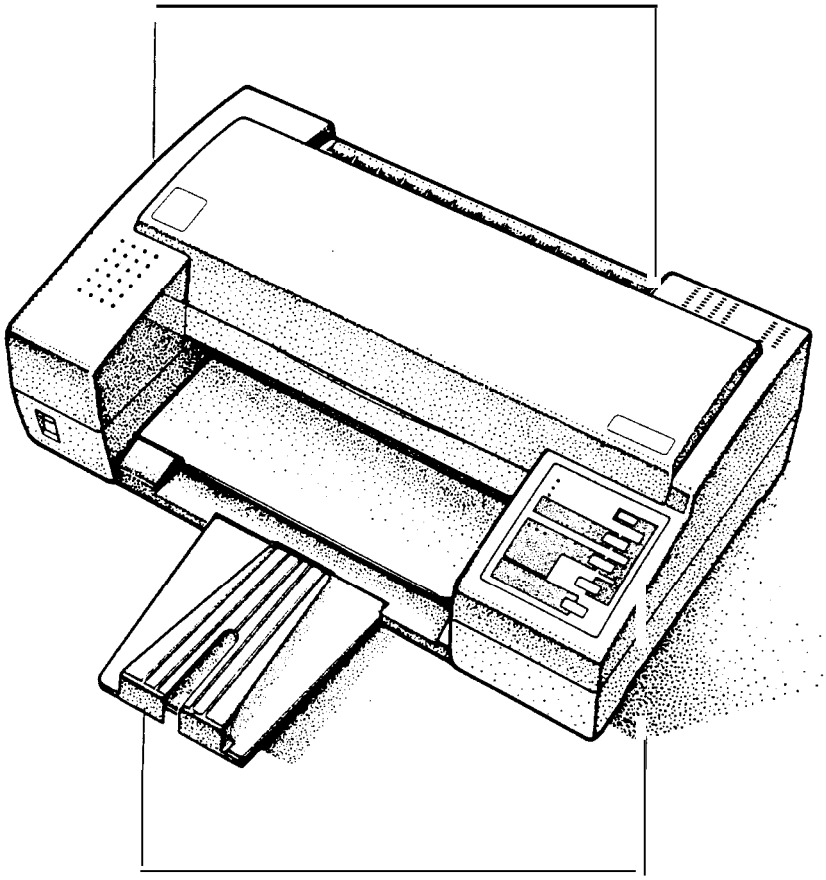
EPSON TERMINAL PRINTER

Stylus™ 800+

SERVICE MANUAL



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NOTICE

The contents of this manual are subjects to change without notice.

All efforts have been made toensure theaccuracyof thecontentsof this manual. However, should any errors be detected, SEIKO EPSON would greatly appreciate being informed of them.

The above notwithstanding SEIKO EPSON can assume no responsibility for any errors in this manual or the consequence thereof.

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PRECAUTIONS

Precautionary notations throughout the text are categorized relative to 1) personal injury and 2) damage to equipment.

DANGER Signals a precaution which, if ignored, could result in serious or fatal personal injury. Great caution should be exercised in performing procedures preceded by DANGER Headings.

WARNING Signals a precaution which, if ignored, could result in damage to equipment.

The precautionary measures itemized below should always be observed when performing repair/ maintenance procedures.

DANGER

1. ALWAYS DISCONNECT THE PRODUCT FROM BOTH THE POWER SOURCE AND PERIPHERAL DEVICES PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURE.

2. NO WORK SHOULD BE PERFORMED ON THE UNIT BY PERSONS UNFAMILIAR WITH BASIC SAFETY MEASURES AS DICTATED FOR ALL ELECTRONICS TECHNICIANS IN THEIR LINE OF WORK.

3. WHEN PERFORMING TESTING AS DICTATED WITHIN THIS MANUAL, DO NOT CONNECT THE UNIT TO A POWER SOURCE UNTIL INSTRUCTED TO DO SO. WHEN THE POWER SUPPLY CABLE MUST BE CONNECTED, USE EXTREME CAUTION IN WORKING ON POWER SUPPLY AND OTHER ELECTRONIC COMPONENTS.

WARNING

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.

2. MAKE CERTAIN THAT THE SOURCE VOLTAGE IS THE SAME AS THE RATED VOLTAGE, LISTED ON THE SERIAL NUMBER/RATING PLATE. IF THE EPSON PRODUCT HAS A PRIMARY AC RATING DIFFERENT FROM AVAILABLE POWER SOURCE, DO NOT CONNECT IT TO THE POWER SOURCE.

3. ALWAYS VERIFY THAT THE EPSON PRODUCT HAS BEEN DISCONNECTED FROM THE POWER SOURCE BEFORE REMOVING OR REPLACING PRINTED CIRCUIT BOARDS AND/OR INDIVIDUAL CHIPS.

4. IN ORDER TO PROTECT SENSITIVE MICROPROCESSORS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.

5. REPLACE MALFUNCTIONING COMPONENTS ONLY WITH THOSE COMPONENTS BY THE MANUFACTURE; INTRODUCTION OF SECOND-SOURCE ICs OR OTHER NONAPPROVED COMPONENTS MAY DAMAGE THE PRODUCT AND VOID ANY APPLICABLE EPSON WARRANTY.

PREFACE

This manual describes functions, theory of electrical and mechanical operations, maintenance, and repair of Stylus 800+.
The instructions and procedures included herein are intended for the experience repair technician, and attention should be given to the precautions on the preceding page. The chapters are organized as follows:

CHAPTER 1. GENERAL DESCRIPTION

Provides a general product overview, lists specifications, and illustrates the main components of the printer.

CHAPTER 2. OPERATING PRINCIPLES

Describes the theory of printer operation.

CHAPTER 3. DISASSEMBLY AND ASSEMBLY

Includes a step-by-step guide for product disassembly and assembly.

CHAPTER 4. ADJUSTMENT

Includes a step-by-step guide for adjustment.

CHAPTER 5. TROUBLESHOOTING

Provides Epson-approved techniques for adjustment.

CHAPTER 6. MAINTENANCE

Describes preventive maintenance techniques and lists lubricants and adhesives required to service the equipment.

APPENDIX

"Describes connector pin assignments, circuit diagrams, circuit board component layout and exploded diagram.

The contents of this manual are subject to change without notice,

REVISION SHEET

Revision	issue Date	Revision Page
Rev. A	April 20, 1994	Ist issue

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Chapter 1 General Description

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1.1 FEATURES

The Stylus 800+ is a serial inkjet printer that uses a newly developed inkjet technology to produce superb quality output with high-speed printing. The major features of this printer are:

- ❑ High print quality from a MACH (Multi-Layer ACtuator Head) inkjet technology.
- ❑ Fast printing of LQcharacters at 165 cps and draft characters at 250 cps.
- ❑ Compact design saves precious work space.
- ❑ Built-in auto sheet feeder with a capacity for a maximum of 100 cut sheets (either A4 or letter).
- ❑ Equipped with4 scalable fonts, 5 bitmap LQ fonts, and 1 draft font, standard.
- ❑ 9 character tables for the standard version
  15 character tables for the NLSP (National Langauage Support) version.

The figure below shows a view of the printer.

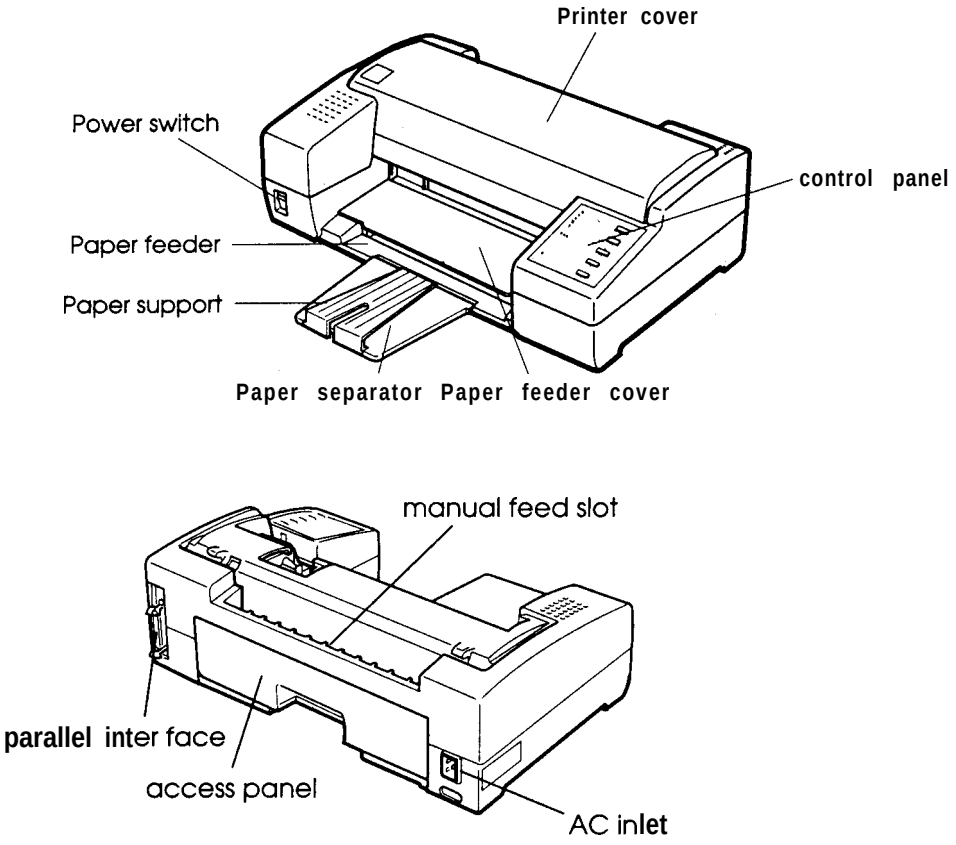

Figure 1-1. View of the Stylus 800+

Table 1-1. Consumable for the Stylus 800+

Part No.	Description	Type
S020025	Ink cartridge	Black ink cartridge

Table 1-2 shows the differences in features for the Stylus 800 and Stylus 800+.

Table 1-2. Feature Comparison

Function/Specification	stylus 800	stylus 800+
LQ Fonts (10 cpi) Printing Speed	150 cps	165 cps
Draft Fonts (10 cpi) Printing Speed	cannot printing	250 cps
Resident Bitmap Fonts	Roman ‘ sane serif Courier Prestige script	Draft Roman Sans Serif Courier Prestige script
Resident Scalable Fonts	Roman Roman T Sans Serif Saris Serif H	Roman Roman T Saris serif Sans Serif H

1.2 SPECIFICATIONS

This section provides detailed statistics for this printer.

1.2.1 Printing Specifications

Print system: On-demand inkjet system

Nozzle configuration: 48 nozzles (12 nozzles x 4 staggered columns)

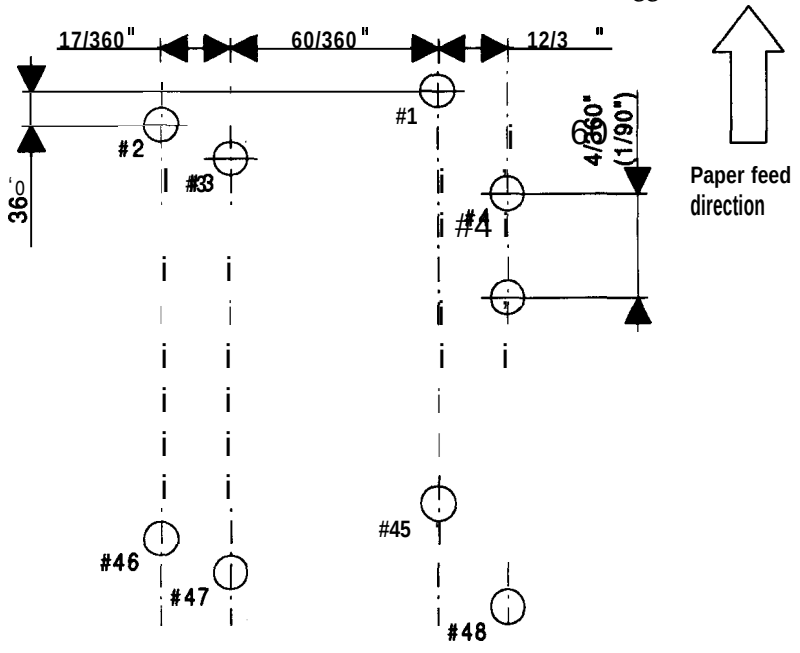

Figure 1-2. Nozzle Configuration

Print direction: Bidirectional printing with logical seeking control

Print speed and printable columns: See table below.

Table 1-3. Print Speed and Printable Columns

Character Pitch	Printable Columns	Print Speed (LQ)	Print Speed (Draft)
10 cpi	80	165 cps	250 cps
12 cpi	96	198 cps	300 cps
15 cpi	120	246 cps	375 cps
17 cpi (10 cpi/ condensed)	137	283 cps	429 cps
20 cpi (12 cpi/ condensed)	160	330 cps	500 cps

Character sets: Legal and 14 international character sets.

Character tables: See the table below.

Table 1-4. Character Tables

Character Table	standard Version	NLSP Version
Italic	o	o
PC437 {IJ.S./Standard Europe)	o	o
PC850 (Multilingual)	o	o
PC860 (Portuguese)	o	x
PC863 (Canadian-French)	o	x
PC865 (Nordic)	o	x
PC861 (Iceland)	o	x
PC437 Greek	x	o
PC851 (Greek)	x	o
PC852 (East Europe)	x	o
PC853 (Turkish)	x	o
PC855 (Cyrillic)	x	o
PC857 (Turkish)	x	o
PC866 (Russian)	x	o
PC869 (Greek)	x	o
Abicomp	o	x
BRASCII	o	x
MAZOWIA (Poland)	x	o
Code MJK (Czecho/Slovakia)	x	o
ISO 8859-7 (Greek)	x	o
ISO Latin IT (Turkish)	x	o
Bulgaria (Bulgaria)	x	o

o supported x Not supported

Fonts:

Bitmap fonts —

- EPSON Draft (10 cpi/12 cpi/15 cpi)
- EPSON Roman (10/12/15/proportional)
- EPSON Sans Serif (10/12/15/proportional)
- *EPSON* Courier (10/12/15)
- EPSON Prestige (10/12/15)
- EPSON Script (10/12/15)

Scalable fonts —

- EPSON Roman 8-32 points (units= 2 points)
- EPSON Sans Serif 8-32 points (units= 2 points)
- EPSON Roman T 8-32 points (units= 2 points)
- EPSON Saris Serif H 8-32 points (units= 2 points)

Print mode:

For bitmap fonts —

Selection and mixture of the following modes are allowed.

- Print quality (LQ)
- Character pitch (10/12/15 cpi or proportional)
- Condensed (not available with 15 cpi character pitch)
- Double width
- Double height
- Emphasized
- Double strike
- Italic
- Underline
- Double underline
- Overscore
- Strike through
- Shadow / outline

For scalable fonts —

- Emphasized
- Double strike
- Italic
- Underline
- Double underline
- Overscore
- Strike through
- Shadow / outline

Control codes: ESC/P2

Input buffer: 32KB or 8KB (selected using the default setting labeled "Mixed text/ graphics mode")

1.2.2 Paper Handling Specification

Feeding system: Friction feed from the built-in sheet feeder or manual insertion slot.

Note: The following operations are not allowed.

1. *Reverse feeding within 3mm (O. 12 inches) from the top edge or 16 mm (0.63 inches) from the bottom edge of the paper.*
2. *Reverse feeding beyond 7.9 mm (0.3 inches).*

Feeding pitch: 1/6 or l&in& feed or programmable in 1/360-inch minimum increments.

Paper path: Built-in sheet feeder (front entry)
Manual insertion slot (top-rear entry)

Feeding speed: 87 rns (at 1/6-inch feed pitch)

1.2.3 Paper Specifications

Usable paper:

cut sheet

With the built-in sheet feeder —

size:	For European/Pacific version: A4 (W x L : 210 mm (8.3") x 297 mm (11.7"))
	For U.S. version: Letter (W x L: 216 mm (85") x279 mm (11.0"))
Thickness:	0.065- 0.14 mm (0.0026 - 0.0055")
weight	64- 90 g/m^2 (18 - 24 lb. / 55- 78 kg)
Quality:	Bond paper, Photocopier paper

With manual insertion —

Width:	182-216 mm (7.2 - 8.5")
Length:	257- 297 mm (10.1 - 11.7")
Thickness:	0.065 ~ 0.11 mm (0.0026 ~ 0.0043")
Weight:	52- 90 g/m^2 (14 - 24 lb / 45- 78 kg)
Quality:	Bond paper, Photocopier paper

Envelope

Size:	#6 (W x L : 166 mm (6⅝") x 92 mm (3⅝")) # 10 (W x L : 240 mm (9½") x 104 mm (4⅛"))
Thickness:	0.16-052 mm (0.0063 - 0.020")

Note: Variations in paper thickness within the printable area must be 0.25 mm (0.0098") or less.

weight:	45- 90 g/m^2 (12- 24 lb.)
Quality:	Bond paper, Air mail

Notes 1. Envelopes are usable only with manual insertion feed.
2. Printing on envelopes is guaranteed only at normal temperature and humidity.
3. Insert envelopes into the manual insertion slot sideways.

Printable area: Cut sheet (with built-in sheet feeder)

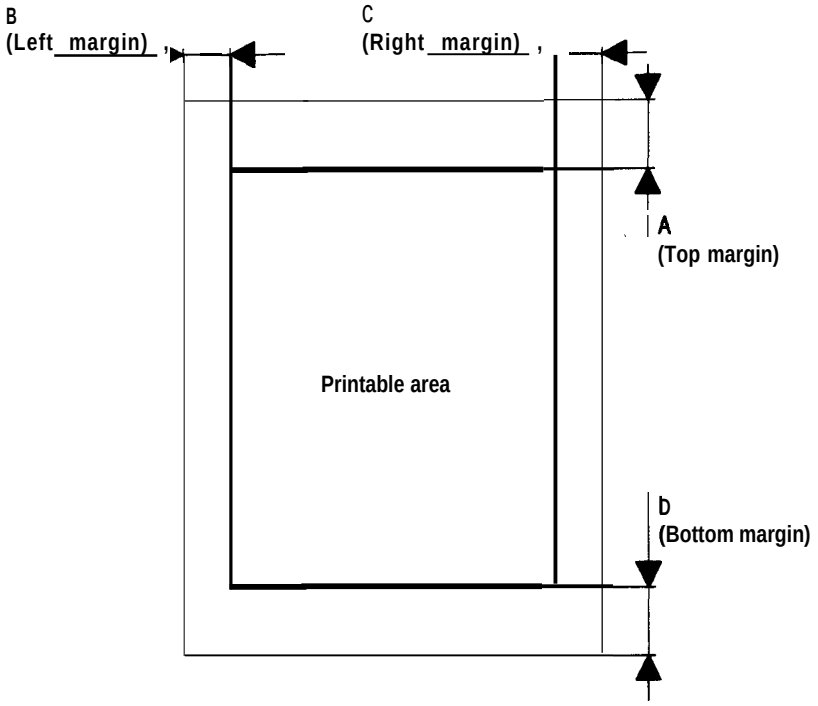

Figure 1-3. Printable Area — Cut Sheet (Built-in Sheet Feeder)

Cut Sheet / envelopes (with the manual insertion slot)

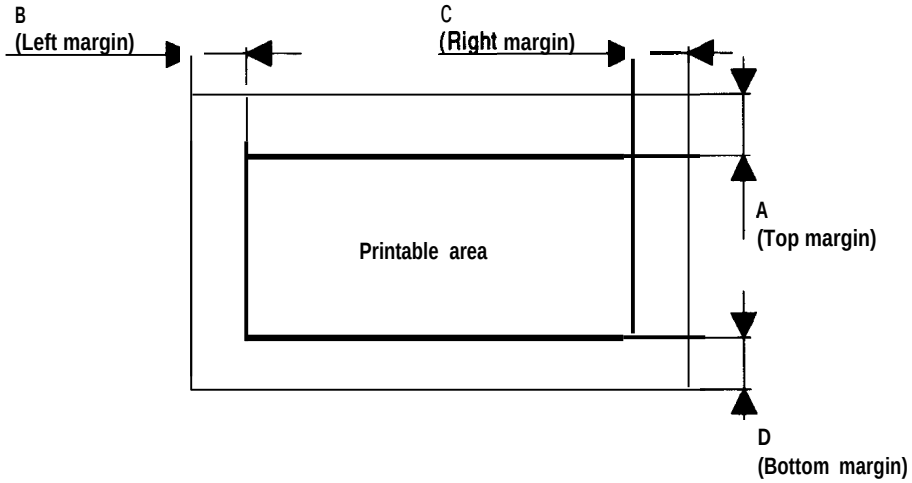

Figure 1-4. Printable Area — Cut Sheet/ Envelope (Manual Insertion Slot)

Notes: A: The minimum top margin= 3 mm (O. 12")
B: The minimum left margin = 3 mm (0.12")
C: The minimum right margin is
A4 size= 3.0 mm (O. 12")
Letter size = 9.0 mm (0.38")
Manual insertion =3 mm (O. 12") (Paper widths A4 (210 mm))
Manual insertion = 'Paper width" 207 mm (8.3") (Paper width ≥ A4 (210 mm))
D: The minimum bottom margin = 13 mm (0.51")

Adjust lever settings: The adjust lever, attached to the carriage unit, must be set to proper position for the paper thickness, as shown below.

Table 1-5. Adjust Lever Settings

Lever Position	Paper Type	Paper Thickness
Left	Cut Sheets	0.065-0.11 nun (0.0026- 0.0056")
Right	Envelopes	0.16- 0.52 mm (0.0063- 0.020")

Plain paper, bond paper Envelopes

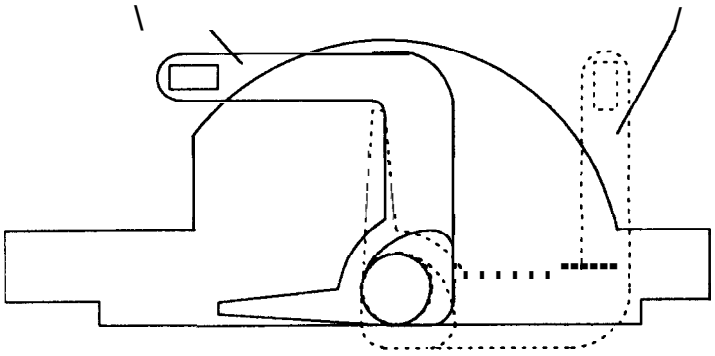

Figure 1-5. Adjust Lever

1.2.4 Ink Cartridge

Type: Exclusive cartridge (S020025)

Ink color: Black

Print capacity: *0.7* million characters (LQ)

Ink capacity: 29.0 +0.5/–1.0 cc

Life: The effective life from the indicated production date is:
2years (total time in package and after unpacking)
6 months (after unpacking)

Temperature conditions:
Storage — -30- 40° c (-22 - 104° F)
(Up to 1 month at 40° C (140° F))
Transport — -30- 60° C (-22 - 140″ F)
(Up to 1 month at 40° C (104° F) or 120 hours at 60° C (140′ P′))

Note: Ink freezes in the ink cartridge if kept below-C (26.6° 9. It requires several hours to unfreeze at mom temperature (25° C(77 9).

Dimensions:
Width 28.5 mm (1.12")
Depth 54.5 mm (215″)
Height 38.5 mm (1.52")

1.2.5 Environmental Conditions

Table 1-6. Requirements for Operation and Storage

Description	Operating	Storage
Temperature	10- 35° C (50 - 95° F)*[1]	-20- 50° c (-4 - 122° F) ● 2
Humidity	20- 80% RH [1],[3]	5- 85 % RH [2],3
Resistance to shock	1 G, within 1 ms	2 G, within 2 ms ● 2
Resistance to vibration	0.15 G, 10-55 Hz	0.50 G, 10-55 Hz ● 2

Note: *1 = Operating conditions must be in this range shown in the figure Mow.
*2= When the printer is in the shipping container.
*3= Without condensation.

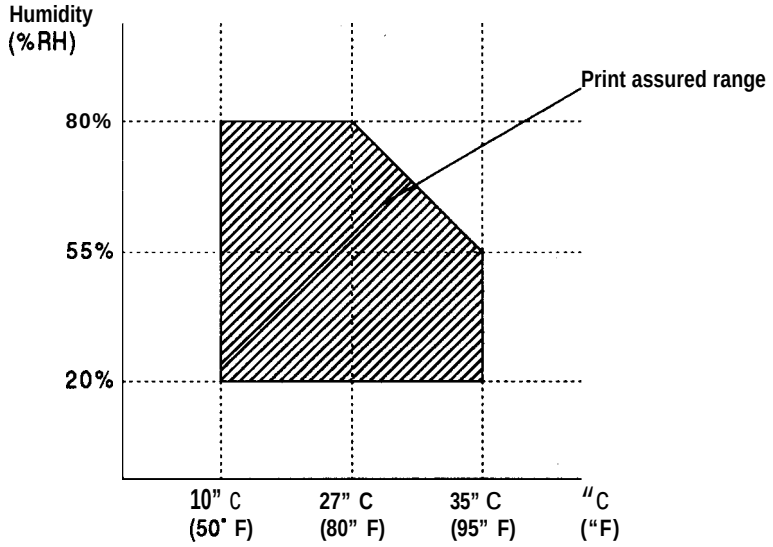

Figure 1-6. Temperature/ Humidity Range

1.2.6 Electrical Specifications

Table 1-7. Electrical Specifications

Item	120 V Version	220-240 V Version
Rated voltage	120 VAC	220-240 VAC
Input voltage range	103.5- 132 V	198-264 V
Rated frequency range	50-60 Hz	50-60 Hz
Input frequency range	49.5 -60.5 Hz	49.5 -60.5 Hz
Rated current	0.5 A	0.3 A
Power consumption	Approx. 13 W (self-test with 10 cpi LQ characters)	Approx. 13 W (self-test with 10 cpi LQ characters)
Insulation resistance	10 MΩ, minimum (applying 500 VDC between AC line and chassis)	10 MΩ, minimum (applying 500 VDC between AC line and chassis)
Dielectric strength	1000 VAC rms -1 minute or 1200 VAC rms -1 second (between AC line and chassis)	1500 VAC rms -1 minute (between ,c line and chassis)

1.2.7 Reliability

MTBF:	4000 power on hours (POH) at a duty cycle of 10'Yo
Printhead life:	1 billion dots per nozzle
Total print volume:	75000 pages (with A4 or letter-size paper)

1.2.8 Safety Approvals

Safety standards:	US. version:	UL1950 with D3 CSA22.2 #220
	European version:	EN 60950 (TÜV) IEC 950 (SEMKO, DEMKO, NEMKO, SETI)

Radio frequency interference (lWI):

US. version:	FCC part 15, subpart B, class B
European version:	Vfg. 243 (VDE 0878 part 3, part 30) EN 55022 (CISPR Pub.22) class B

1.2.9 Physical Specifications

Size (W × Dx H):	*435* × *264* × 154 mm (17.1 x 10.4x 6.1 inches)
Weight	Approximately 4.8 kg, excluding the ink cartridge

1.3 INTERFACE SPECIFICATIONS

The Stylus 800+ is equipped with an 8-bit parallel interface, standard.

Data format:	8 bit parallel
Synchronization:	STROBE pulse synchronization
Handshaking:	By BUSY and ACKNLG signals
Signal level:	TTL-compatible level
Adaptable connector:	36-pin 57-30364) (Amphenol) or equivalent
Data transmission timing:	See Figure 1-7.

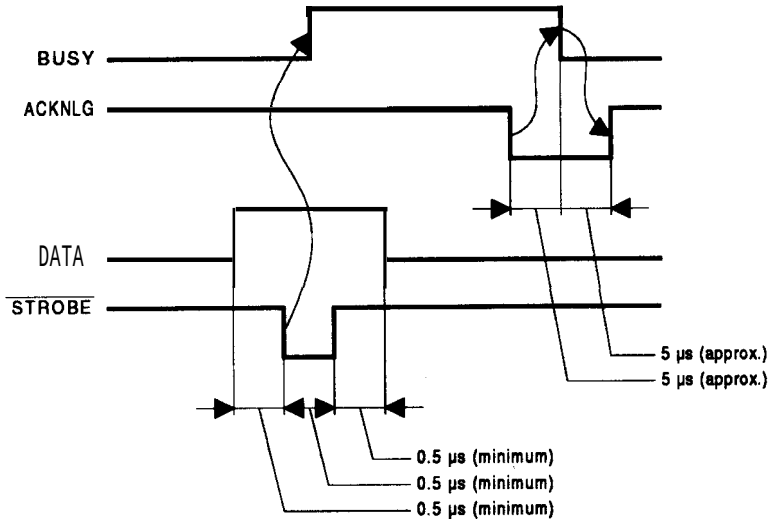

Figure 1-7. Data Transmission Timing

Table 1-8 shows the connector pin assignments and signal functions of the 8-bit parallel interface.

Table 1-8. Signal and Connector Pin Assignments

Pin No.	Signal Name	I/O	Description
1	STROBE	I	The STROBE pulse is used to read data from the host computer. The pulse width must be 0.5µs or more. Normally, it is HIGH, and data is latched with rising edge of this signal.
2-9	DATA 1-8	I	DATA 1-8 are parallel data bits. When one of these signals is HIGH, the data bit is 1; when LOW, the data bit is O. The most significant bit (MSB) is DATA 8. The signal state must be maintained for 0.5 µs on either side of STROBE signal's active edge.
10	ACKNLG	O	ACKNLG is the acknowledge pulse, with a width of approximately 10 p.s. This signal goes LOW on completion of data reception to indicate the printer is ready to receive further data.
11	BUSY	O	The BUSY signal informs the host computer of the printer's status. When this signal is HIGH, the printer cannot accept further data.
12	PE	O	This signal indicates whether paper is available in the printer or not. A HIGH level indicates no paper.
13	SLCT	O	Pulled up to +5 V through a 1.OK S2 resistor in the printer.
14	AFXT	I	If this signal is set to LOW, the printer automatically performs one line feed upon receipt of a CR (carriage return) code. The status of this signal is checked only at power on and initialization
15	NC	—	Not used.

Table 1-8. Signal and Connector Pin Assignments (Continued)

Pin No.	Signal Name	I/O	Description
16	GND	—	Signal ground.
17	CHASSIS-GND	—	Chassis ground. (Both chassis and signal ground are connected in the printer.)
18	NC	—	Not used.
19-30	GND	—	Twisted-pair return signal ground.
31	$\overline{\text{INIT}}$	i	if this signal go& LOW, the printer is initialized. The pulse width of this signal must be 50 µs or more.
32	$\overline{\text{ERROR}}$	o	This signal goes LOW if the printer: • has a fatal error. • runs out of paper.
33	GND	—	Signal ground.
34	NC	—	Not used.
35	+5 V	—	Pulled up to +5V through 1.0KΩ resistor in the printer.
36	—	—	Not used (reserved).

Note: The direction of the signal is as viewed from the printer.

1.4 PRINTER OPERATIONS

This section describes the basic operations of the printer.

1.4.1 Control Panel

The control panel for this printer contains five non-lock type push buttons and nine LED indicators for easy operation of the various printer functions.

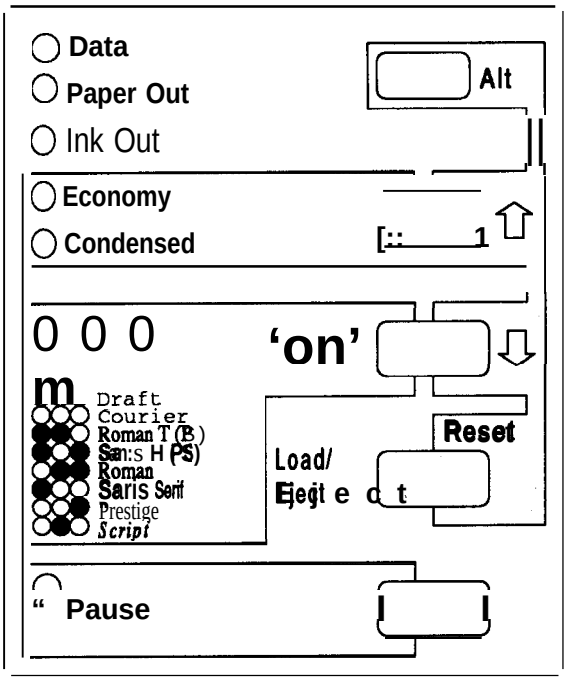

Figure 1-8. Control Panel

Buttons

Pause	Switches printer status between printing and no printing, if there is print data in the input buffer. When you hold down this button and the **Alt** button in pause mode for 2 seconds, the printer initiates printhead cleaning.
Economy/Condensed	Selects economy or condensed printing alternately. Also works as a reverse micro feed button, if the **Alt** button has been pressed.
Font	Selects one of the available fonts. Also works as a forward micro feed button, if the **Alt** button has been pressed.
Load/Eject	When you press this button, the printer either loads new paper into the printer or ejects paper currently in the paper path. Also works as a reset button, if the **Alt** button has been pressed.
Alt	This button alternates functions of certain buttons. When you hold down this button in pause mode for 3 seconds, the printer moves the carriage to the ink cartridge installation/replacement position.

Indicators

Pause	Lights when the printer is in pause mode.
Data	Lights when there is print data in the input buffer.
Paper Out	Lights when the printer is out of paper. Blinks if a paper jam occurs.
Ink Out	Lights when the printer detects an ink end in the ink cartridge. Blinks when the ink level becomes low.
Economy/Condensed	This LED shows the currently selected mode.
Font	Indicates the currently selected font.

1.4.2 Panel Operation at Power On

You can turn on the following functions at power on by holding down buttons on the control panel.

Self-test mode:	Start self-test printing by turning the printer on while holding down the Font button (LQ self-test) or LoadEject button (Draft self-test).
Hex dump mode:	Start the built-m hexadecimal data dump print mode by turning the printer on while holding down the Font and Load/Eject buttons. Once this mode is selected, the printer pMts all received data m hexadecimal format.
Demonstration mode:	Start printing of a demonstration page by turning on the printer while holding down the Alt button.
Smudge prevention mode:	Enter smudge prevention mode by turning on the printer while holding down the Alt and Font buttons. If the paper has a tendency to smudge during high duty printing, you can prevent smudges using this feature. In this mode, the printer waits a few seconds after printing a line to line feed.

Other functions that can be activated from the control panel at power on, such as the default setting mode and the initial ink charge mode, are described in the sections that follow.

1.4.3 Default Setting

The printer lets you set and save some default settings that it will start with after every initialization. You can define the settings in the table below in default setting mode. Start default setting mode by holding down the Economy/Condensed button while turning on the printer.

Table 1-9. Default Setting ttem

Menu Contents	Description	Factory Setting
Character Table	Selects the character table	
Auto Print Direction	ON: Print direction is selected automatically for optimal print quality (alignment). OFF: Depends on the ESC U command.	ON
Network I/F Mode	ON: For netvvorkenvironments, such as LocalTalk. (Time-out printing is disabled.) ON: For normal environments. (Time-out printing is enabled.)	OFF
Mixed Text/ Graphics Mode	ON: To ensure proper printing of images containing graphics and scalable fonts using certain applications, such as MS Word or WordPerfect version 5.1 or earlier. *1 OFF: For normal use.	OFF
Auto Line Feed	ON: Line feed operation is performed automatically upon receipt of the CR code. OFF: No line feed operation with CR code.	OFF

Note: ● *1 = If set to ON, the capacity of input buffer is limited to 8KB.*

1.4.4 Initial Ink Charge

When the printer is setup for the first time, the printer's entire ink supply path must be filled with ink by performing the initial ink charge operation, as described below.

1. Begin initial ink charge by pressing the Alt and Pause buttons and turning on the printer.
2. Install the ink cartridge.
3. Press the Alt button.

The Pause LED blinks while the initial ink charge operation is in progress, and when it completes, the printer automatically becomes ready.

CAUTION

- *The ink cartridge* **must be** *installed immediately* ***after*** *unpacking the package.*
- *Do not* ***perform*** *the initial ink charge operation more than twice on the same printer. Otherwise, the operation consumes too much ink in the cartridge and shortens the life of the waste ink tank.*

1.4.5 Error Conditions

The printer detects various errors and indicates them with the LED indicators and the buzzer.

Table 1-8. Error Codes

Error	Paper LED	Ink End LED	Pause LED	Buzzer	Recovery
Paper end	ON	OFF	OFF	3 short beeps	Load paper and press the following buttons: 1. Pause 2. Load/Eject
Paper jam	BLINKS	OFF	OFF	3 short beeps	Same as above.
Ink low ●1	OFF	BLINKS	—	No beeps	Press Pause and replace the ink cartridge with a new one. Then, press Pause again to resume printing. *2
Ink end	OFF	ON	OFF	3 short beeps	Replace the ink cartridge and press Pause.
No ink cartridge	OFF	ON	OFF	3 short beeps	Install the ink cartridge and press Pause.
Carriage error	OFF	OFF	OFF	5 long beeps	Tum the printer off and back on again.
Waste ink tank over-flow	OFF	ON	BLINKS	3 short beeps	Service maintenance required. (Replace the waste ink absorbing material and reset the protect counters.)

Notes: *1: *This is not treated* ***as an error.***

● 2: *It* **is not** *necessary to replace the ink* ***cartridge until*** *the printer detects the* ***Ink*** *End error.*

1.5 MAIN COMPONENTS

The main components of this printer are:

- Printer mechanism (M-4611)
- Main control board (C134 MAIN Board)
- Power supply unit (C106 PSB-B/C106 PSE-B Board)
- Control panel
- Housing

1.5.1 Main Control Board (C134 MAIN Board)

The C134 MAIN board is the main controller of the Stylus 800+. It takes charge of interfacing with the host computer and processing received print data, as well as control of the whole printer mechanism. This board consists of the following components

CPU (IC1)	16-bit CPU (TMP96C141F-20) 19.6608 MHz operating clock
Gate array (IC3)	E05B00
Program ROM (IC4)	1M-bit EPROM or 1M-bit mask ROM
CG ROM (IC7/8)	4M-bit mask ROM M40B21 (IC8 / for standard version) 8M-bit mask ROM M80A71 (IC7 / for NLSP version)
RAM (IC5)	1M-bit PSRAM
EEPROM (IC10)	1K-bit (64x 16 bit) EEPROM
CR motor driver (IC13)	Hybrid IC SMA7024ME Constant current unipolar drive
PF motor driver (QM1)	Hybrid IC SMA6501 Constant voltage unipolar drive

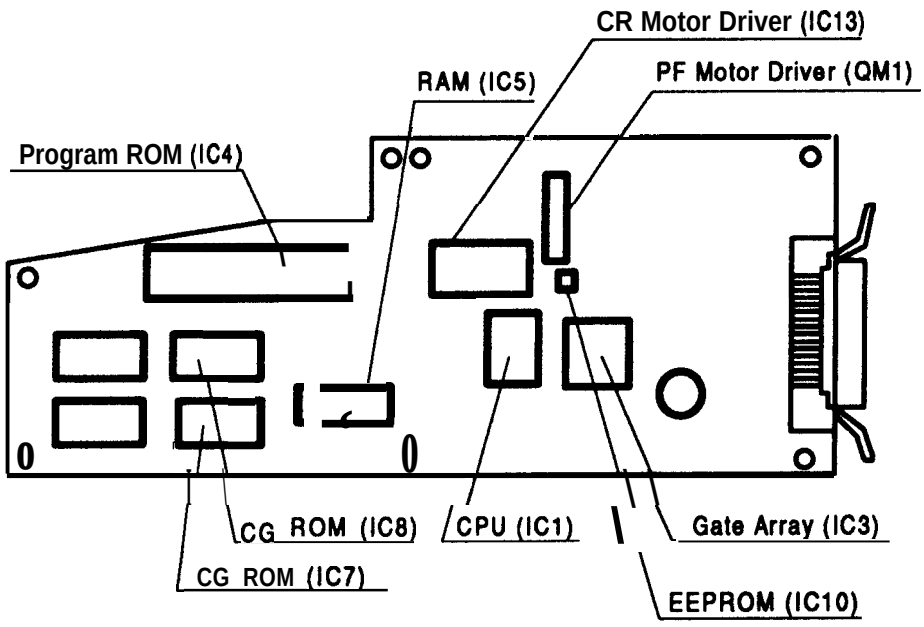

Figure 1-9. C134 MAiN Board Component Layout

1.5.2 Power Supply Unit (C106 PSB-B/C106 PSE-B Board)

The power supply unit converts input AC voltage and generates the different DC voltages required by the printer mechanism and other electrical circuities. The C106 PSB-B board is for 120 VAC input, and the C106 PSE-B board is for 220 to 240 VAC input.

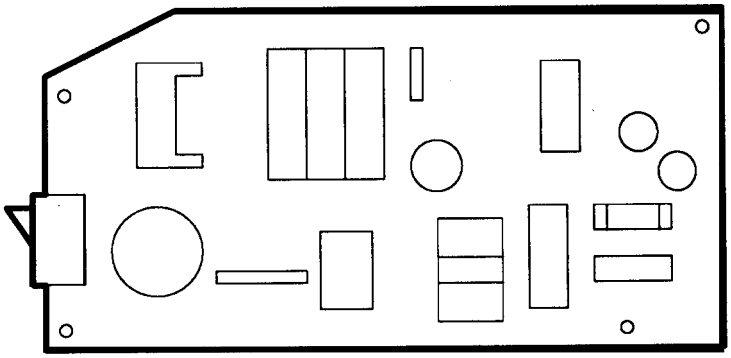

Figure 1-10. C106 PSB-B/PSE-B Board Component Layout

1.5.3 Printer Mechanism (M-4811)

The M-4811 printer mechanism is specifically designed for the Stylus 800+. It consists of the carriage assembly, which includes the printhead and the ink supply system, the carriage motor, the paper feed motor, the paper feeding mechanism, and the pump mechanism.

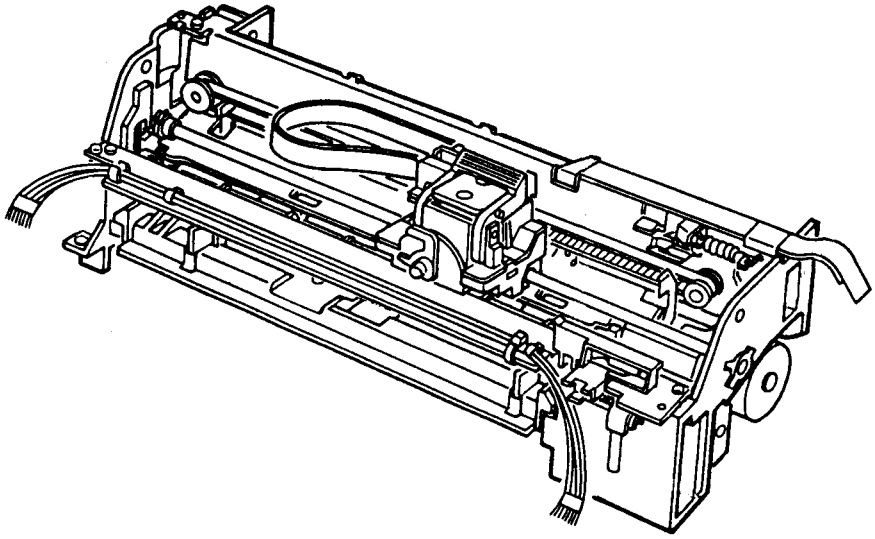

Figure 1-11. Printer Mechanism (M-4811)

Chapter 2 Operating Principles

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2.1 OVERVIEW

This section describes the operating principles for the Stylus 800+ printer mechanism and electrical circuits.

2.2 PRINTER MECHANISM OPERATING PRINCIPLES

The Stylus 800+ printer mechanism is composed of the printhead unit, paper feed mechanism, carriage drive mechanism, pump mechanism, and various sensors. The figure below shows a functional block diagram of the printer mechanism.

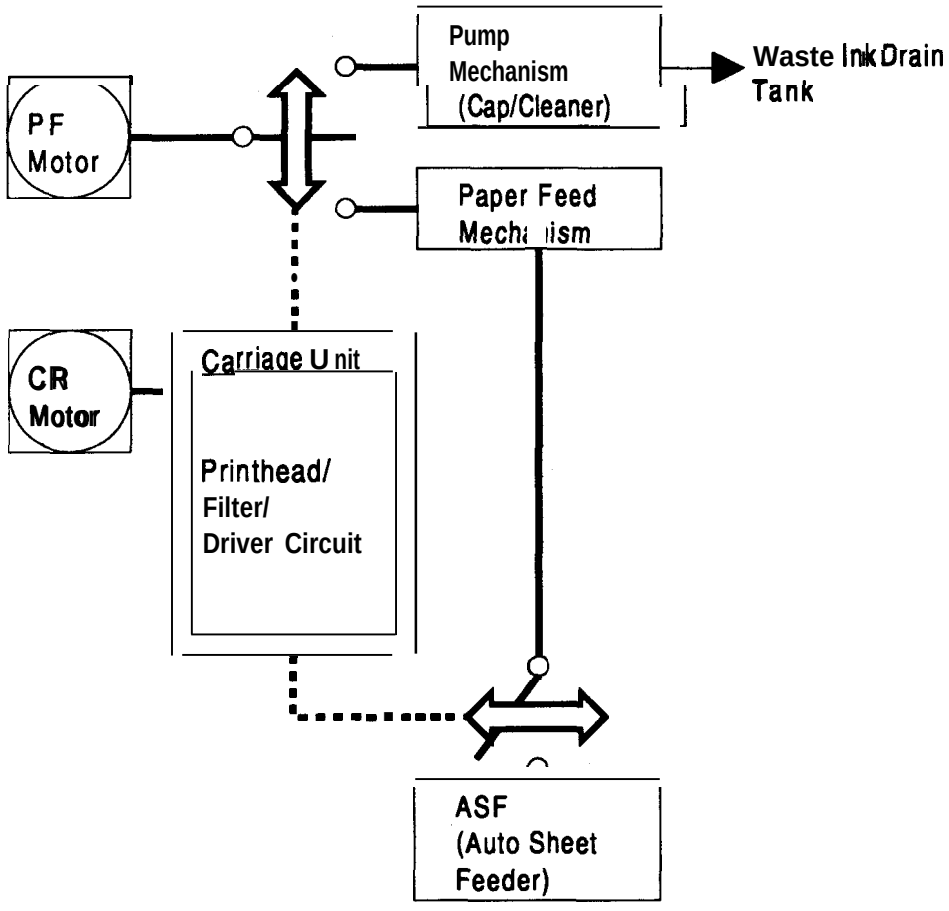

Figure 2-1. Functional Block Diagram of the Printer Mechanism

2.2.1 Printer Mechanism

The printer mechanism for this printer uses a drop-on-demand ink jet system similar to all other EPSON ink jet printers, but the printhead has been completely redesigned to make it compact and highly reliable. The figure below shows the structure of the printhead and ink supply system.

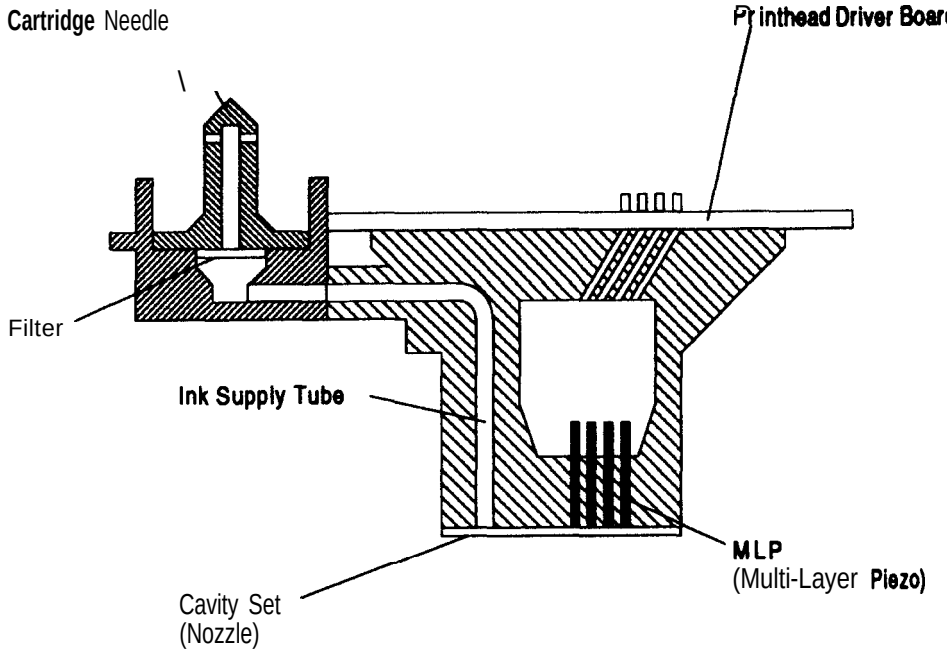

Figure 2-2. Structure of the Printhead 1

MLP — MLP is the abbreviation for Multi-Layer Piezoelectric element- When a drive pulse (voltage) is applied, this element pushes the vibration plate, compressing the cavity for ink ejection from the nozzle.

Cavity — Ink supplied from the ink cartridge is stored in this space and is ejected from the nozzles when the vibration plate compresses this area.

❑ Nozzles — These eject ink against the paper's surface in response to the application of the print signal. There are 48 individual nozzles making up this printhead.

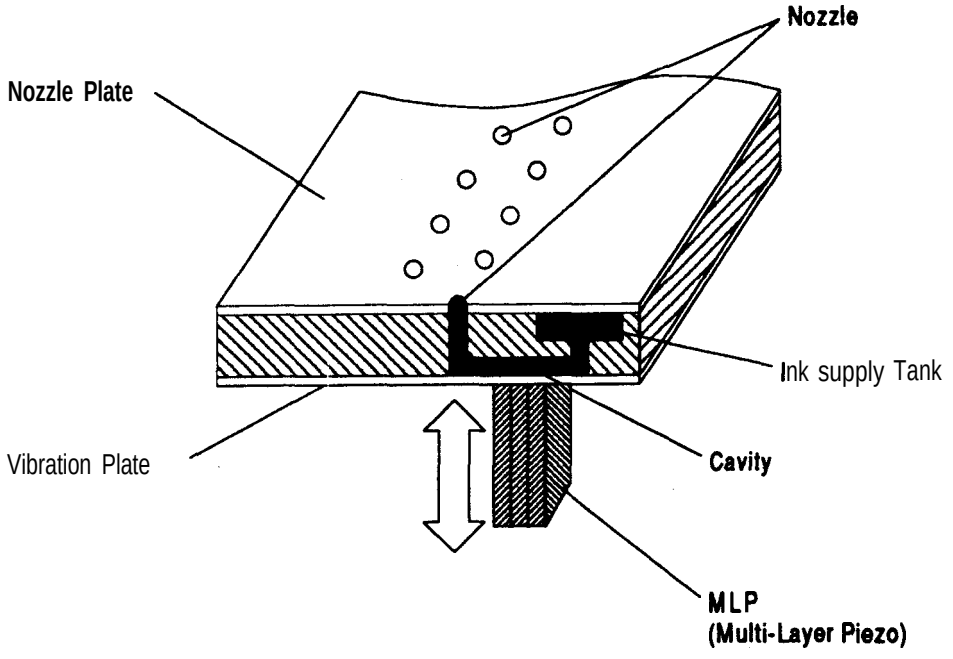

Figure 2-3. Structure of the Printhead 2

Principles of the Printing Operation

The printhead performs the following operations to eject ink from each nozzle:

1. Normal state

No electrical charge is applied to the MLP (Multi-Layer Piezoelectric) element attached to the back of the cavity, and pressure in the cavity is kept at a constant level.

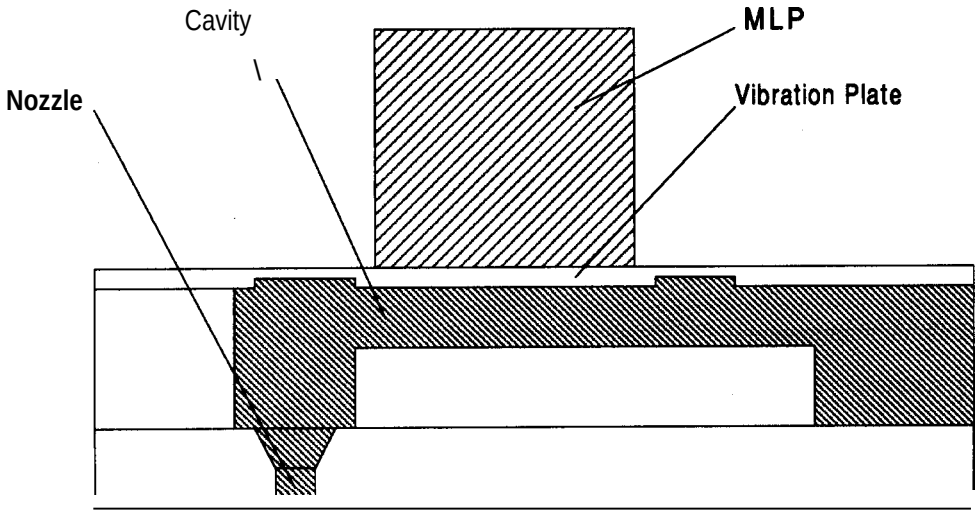

Figure 2-4. Principles of the Printing Operation 1

2. Ejection

The head data signal is applied to the control line of a nozzle to select the active nozzle for printing, and the MLP element is gradually charged with the drive voltage. Charging the MLP element bends the vibration plate to compress the cavity. Then, ink is ejected from the nozzle.

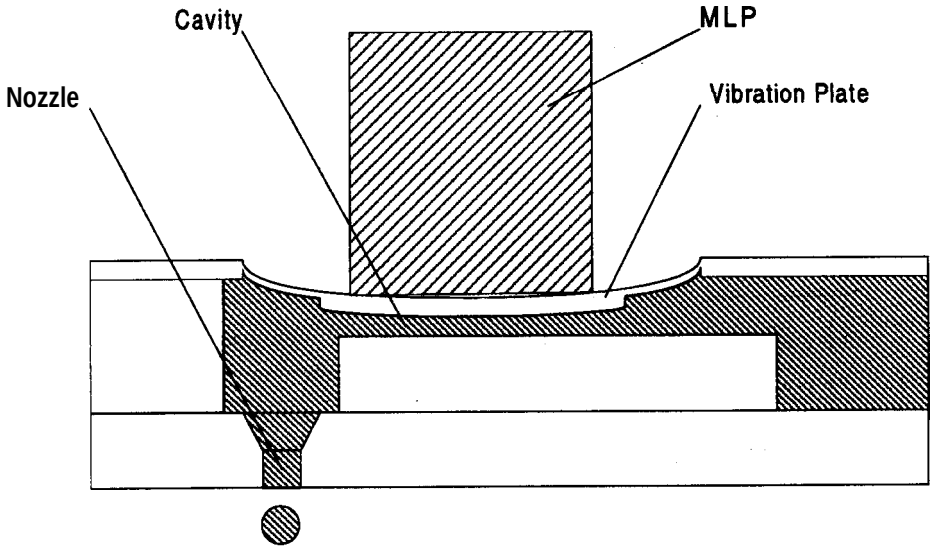

Figure 2-5. Principles of the Printing Operation 2

When the ink charge or printhead cleaning operation is performed, ink in the cavity is vacuumed out with the pump mechanism. During printing, on the other hand, ink is simultaneously supplied from the ink cartridge and ejected from the nozzle, according to the change in the volume of the cavity.

A thermistor is attached to the printhead drive board to monitor the temperature, because the viscosity of the ink varies, depending on the temperature. The detected temperature level is fed back to the printhead drive voltage control circuit to regulate the drive voltage to a proper level.