SERVICE MANUAL

Color ink jet printer

EPSON Stylus PHOTO 2000P

SEIJ00003

Notice:

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 THE POWER SOURCE AND PERIPHERAL DEVICES PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURES.
2. NOWORK 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 VOLTAGES 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 basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of EPSON Stylus PHOTO 2000P. The instructions and procedures included herein are intended for the experienced repair technicians, and attention should be given to the precautions on the preceding page. The chapters are organized as follows:

CHAPTER 1.   PRODUCT DESCRIPTIONS

Provides a general overview and specifications of the product.

CHAPTER 2.   OPERATING PRINCIPLES

Describes the theory of electrical and mechanical operations of the product.

CHAPTER 3.   TROUBLESHOOTING

Provides the step-by-step procedures for troubleshooting.

CHAPTER 4.   DISASSEMBLY AND ASSEMBLY

Describes the step-by-step procedures for disassembling and assembling the product.

CHAPTER 5.   ADJUSTMENTS

Provides Epson-approved methods for adjustment.

CHAPTER 6.   MAINTENANCE

Provides preventive maintenance procedures and the lists of Epson-approved lubricants and adhesives required for servicing the product.

APPENDIX

Provides the following additional information for reference:

- *Connector Summary*
- *EEPROM Address Map*
- *Circuit Board Component Layout*
- *Exploded Diagrams*
- *Parts List*
- *Electrical Board Circuit Diagrams*

Revision Status

Revision	Issued Date	Description
A	May 11, 2000	First Release

Contents

Chapter 3 TROUBLESHOOTING

Chapter 4 DISASSEMBLY AND ASSEMBLY

Chapter 5 ADJUSTMENT

PRODUCT DESCRIPTIONS

1.1 General Characteristics

☐ High color print quality
- 2880 (H) x 720 (V) dpi printing
- 6 color printing (YMCK)
- Traditional and New Microweave
- Pigment Ink supported

☐ Built-in auto sheet feeder
- A3+paper supported
- Holds 100 cut-sheets (64 g/m^2)
- Holds 10 envelopes
- Holds 30 transparency films

☐ Built-in 2 I/F
- Bi-directional parallel I/F (IEEE-1284 level 1 device)
- USB

☐ Windows/Macintosh exclusive

1.2 Printing specification

1.2.1 Printing specification

☐ Print method   : On demand ink jet

☐ Nozzle Configuration: 48 nozzles x 6 colors
(Black, Cyan, Magenta, Yellow, Light-Cyan, Light-Magenta)

☐ Print direction: Bi-direction with logic seeking

☐ Print speed & Printable columns

Table 1-1. Character Mode

Character pitch	Printable columns	LQ speed
10 CPI (Pica)	127	238 CPS**

* Do not mention in the user's manual.
** This value is the speed of normal-dot printing.

Table 1-2. Raster Graphic Mode

Horizontal resolution	Printable area	Available dot	CR Speed
180 dpi	322.986mm(12.716 inch)	2289	60.452/48.26cm/s(23.8/19 IPS)
360 dpi	322.986mm(12.716 inch)	4578	60.452/48.26cm/s(23.8/19 IPS)
720 dpi	322.986mm(12.716 inch)	9156	48.26cm/s(19 IPS)

☐ Control code   : ESC/P Raster command
: EPSON Remote command

☐ Character tables   : 2 international character sets
- PC 437 (US, Standard Europe)
- PC 850(Multilingual)

☐ Typeface   : Bit map LQ font
- EPSON Courier 10 CPI

1.2.2 Paper feeding

Feeding Method

Friction feed with ASF

Line Spacing

Programmable by 1/6" or 1/360" step

Paper Path

Cut-sheet   ASF (Top entry Front out)

Feed Speed

☐ 110msec (10.16mm feed)

☐ 152.4mm/sec (6.0 inch/sec) (Fast, continuous feed)

ASF Hopper Specification

☐ Paper size
   90mm x 205mm ~ A3+

☐ Thickness
   8mm or less

☐ Number of sheets

Table 1-3. Hopper Capacity

Paper Type	Size	Sheets
Plain paper (65g/m^2)	A4, A3, Letter, Legal	approx. 100 sheets
Envelope	See "Paper specification" on page -25	10 sheets
Premium Semigloss Photo Paper	A3+, A3, A4, Letter, US B	1 sheet
Glossy Paper-Photo Weight	A3+, A3, A4, Letter, US B	1 sheet
Archival Matte Paper	A4, Letter	1 sheet
	A3, A3+, US B	20 sheet
Watercolor Paper-Radiant White	A3+	1 sheet
Super Fine	A3+, A3, A4	approx. 65 sheets

Stacker Capacity

NOTE: *The figures in the table is measured in the normal room condition.*

Table 1-4. Stacker Capacity

Paper Type	Print Type	Stacker Capacity
Plain paper	Text	30 sheet or more
	Graphics	20 sheet or more
Envelope	Text	10 sheet or more
Archival Matte Paper	Graphics	10 sheet or more
Super Fine	Graphics	10 sheet or more
Other special paper	Graphics	1 sheet or more

1.2.3 Input data buffer

: 256KB

1.2.4 Electric specification

120 V version

Rated voltage:	AC 120 V
Input voltage range:	AC 99 - 132 V
Rated frequency range:	50 - 60 Hz
Input frequency range:	49.5 - 60.5 Hz
Rated current:	0.4A
Power consumption:	Approx. 1815W (ISO10561 Letter Pattern) Approx. 3.5W in standby mode Energy Star compliant
Insulation Resistance:	10 M ohms min. (between AC line and chassis, DC 500 V)

Dielectric strength: AC 1000 V rms. 1 minute or
                            AC 1200 V rms. 1 second
                            (between AC line and chassis)

220-240 V version

Rated voltage: AC 220 - 240 V

Input voltage range: AC 198 - 264 V

Rated frequency range: 50 - 60 Hz

Input frequency range: 49.5 - 60.5 Hz

Rated current: 0.2A

Power consumption: Approx. 1815W (ISO10561 Letter Pattern)
                      Approx. 3.5W in standby mode
                      Energy Star compliant

Insulation Resistance: 10 M ohms min.
                      (between AC line and chassis, DC 500 V)

Dielectric strength: AC 1500 V rms. 1 minute
                      (between AC line and chassis)

1.2.5 Environmental condition

Temperature   : 10 to 35 °C (operating *3)

                  : -20 to 60 °C (non-operating, *1)
                   1 month at 40 °C
                   120 hours at 60 °C

Humidity   : 20 to 80% RH (operating, *2,*3)

                  : 5 to 85% RH (non-operating, *1, *2)

Resistance to shock: 1 G, within 1 ms (operating)

                  : 2 G, within 2 ms (non-operating, *1)

Resistance to vibration: 0.15G (operating)

                  : 0.50G (non-operating, *1)

NOTE: *1: with shipment container*
          2: without condensation
          3: Condition is as following figure.
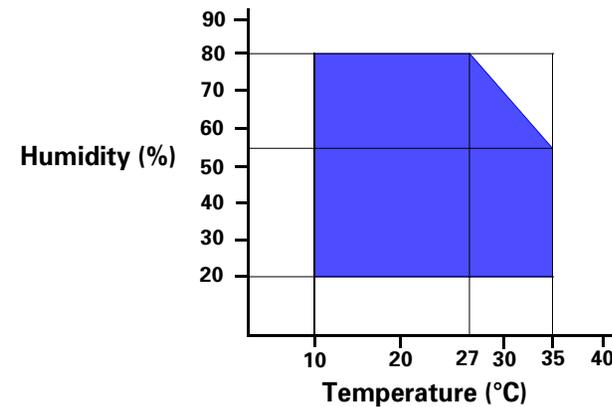
Figure 1-1. Environmental Condition

1.2.6 Reliability

Total print volume : 25,000 pages(Black)/10,000 pages(Color) (A4, Letter)

Print Head Life   : 3000 million dots/nozzle

1.2.7 Safety Approvals

120 V version:

Safety standards	: UL1950
	CSA22.2 No.950
EMI	: FCC part15 subpart B class B
	CSA C108.8 class B

220-240 V version:

Safety standards	: EN 60950(VDE)
EMI	: EN 55022(CISPR Pub.22) class B
	: AS/NZS 3548 class B

1.2.8 Acoustic noise

Level   : Approx. 42 dB(A) (According to ISO 7779)

1.2.9 CE Marking

220-240 V version

Low Voltage Directive 73/23/EEC:	EN60950
EMC Directive 89/336/EEC:	EN55022 class B
	EN61000-3-2
	EN61000-3-3
	EN50082-1
	IEC801-2
	IEC801-3
	IEC801-4

1.3 Interface

1.3.1 Hardware interface

This printer provides USB and parallel interface as standard.

1.3.1.1 Parallel interface

Transmission mode   : 8 bit parallel, IEEE-1284 compatibility mode

Synchronization   : By STROBE pulse

Handshaking   : By BUSY and ACKNLG signal

Signal level   : TTL compatible level

Adaptable connector   : 57-30360(amphenol) or equivalent

BUSY signal is set high before setting either -ERROR low or PE high and held high until all these signals return to their inactive state.

BUSY signal is at high level in the following cases.

   -During data entry (see Data transmission timing)

   -When input data buffer is full

   -During -INIT signal is at low level or during hardware initialization

   -During printer error (See -ERROR signal)

   -When the parallel interface is not selected

ERROR signal is at low level when the printer is in one of the following states.

   -Printer hardware error (fatal error)

   -Paper-out error

   -Paper-jam error

   -Ink-out error

PE signal is at high level during paper-out error.

Data transmission timing
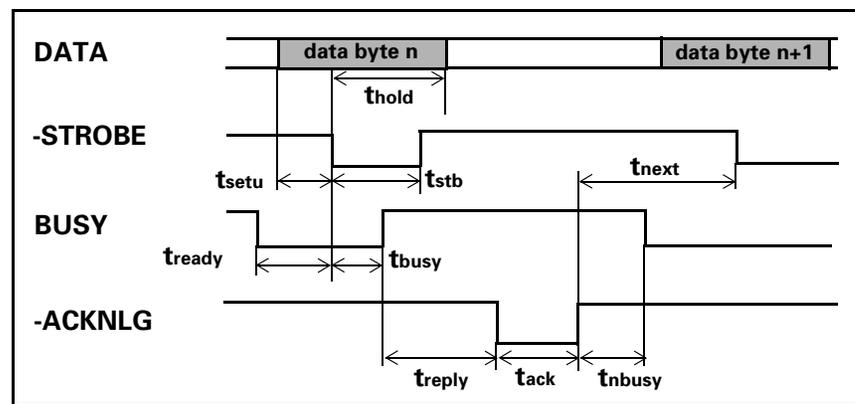
Table 1-5. Parameters

Parameter	Minimum	Maximum
tsetup	500ns	-
thold	500ns	-
tstb	500ns	-
tready	0	-
tbusy	-	500ns
tt-out[*1]	-	120ns
tt-in[*2]	-	200ns
treply	0	-
tack	500ns	10us
tnbusy	0	-
tnext	0	-

*1:Rise and fall time of every output signal.
*2:Rise and fall time of every input signal.

Typical timing for tack is shown below.

Table 1-6. Typical Time of Tack

Parallel I/F Mode	Typical Time of tack
High Speed	0.5us
Normal Speed	2us

Table 1-7.
Signal Level: TTL Compatible (IEEE-1284 level 1 device)

Parameter	Minimum	Maximum	Condition
VOH*	-	5.5V	
VOL*	-0.5V	-	
IOH*	-	0.32mA	VOH = 2.4V
IOL*	-	12mA	VOL = 0.4V
CO	-	50pF	
VIH	-	2.0V	
VIL	0.8V	-	
IIH	-	0.32mA	VIH = 2.0V
IIL	-	12mA	VIL = 0.8V
CI	-	50pF	

* A low logic level on the Logic H signal is 2.0V or less when the printer is
   powered off, and this signal is equal to or exceeding 3.0V when the printer
   is powered on. The receiver shall provide an impedance equivalent to 7.5K
   ohm to ground.

Table 1-8. Connector Pin Assignment and Signals

Pin No.	Signal Name	Return GND pin	In/Out	Functional description
1	-STROBE	19	In	The strobe pulse. Read-in of data is performed at the falling edge of this pulse.
2	DATA0	20	In	The DATA0 through DATA7 signals represent data bits 0 to 7, respectively.
3 -9	DATA1-7	21-27	In	Each signal is at high level when data is logical 1 and low level when data is logical 0.
10	-ACKNLG	28	Out	This signal is a negative pulse indicating that the printer can again accept data.
11	BUSY	29	Out	A high signal indicates that the printer cannot receive data.
12	PE	28	Out	A high signal indicates paper-out error.
13	SLCT	28	Out	Always at high level when the printer is powered on.
14	-AFXT	30	In	Not used.
31	-INIT	30	In	The falling edge of a negative pulse or a low signal on this line causes the printer to initialize. Minimum 50 us pulse is necessary.
32	-ERROR	29	Out	A low signal indicates printer error condition.
36	-SLIN	30	In	Not used.
18	Logic H	-	Out	Pulled up to +5 V via 3.9 K ohm resistor.
35	+5V	-	Out	Pulled up to +5 V via 3.3 K ohm resistor.

Table 1-8. Connector Pin Assignment and Signals

Pin No.	Signal Name	Return GND pin	In/Out	Functional description
17	Chassis GND	-	-	Chassis GND.
16, 33 19-30	GND	-	-	Signal GND.
15, 34	NC	-	-	Not connected.

NOTE: *In/Out refers to the direction of signal flow seen from the printer side.*

1.3.1.2 Parallel Interface (Reverse Channel)

Transmission mode   : IEEE-1284 nibble mode

Adaptable connector   : See forward channel

Synchronization   : Refer to the IEEE-1284 specification

Handshaking   : Refer to the IEEE-1284 specification

Data trans. timing   : Refer to the IEEE-1284 specification

Signal level   : IEEE-1284 level 1 device
                           See forward channel

Table 1-9. Connector pin assignment and signals

Pin No.	Signal Name	Return GND Pin	In/ Out*	Functional description
1	HostClk	19	In	Host clock signal.
2	DATA0	20	In	The DATA0 through DATA7 signals represent data bits 0 to 7,
3	DATA1	21	In	respectively.
4	DATA2	22	In	Each signal is at high level when data is logical 1 and low level when
5	DATA3	23	In	data is logical 0.
6	DATA4	24	In	These signals are used to transfer the 1284 extensibility request values
7	DATA5	25	In	to the printer.
8	DATA6	26	In	
9	DATA7	27	In	
10	PtrClk	28	Out	Printer clock signal.
11	PtrBusy / DataBit-3,7	29	Out	Printer busy signal and reverse channel transfer data bit 3 or 7.

Table 1-9. Connector pin assignment and signals

Pin No.	Signal Name	Return GND Pin	In/ Out*	Functional description
12	AckDataReq / DataBit-2,6	28	Out	Acknowledge data request signal and reverse channel transfer data bit 2 or 6.
13	Xflag / DataBit-1,5	28	Out	X-flag signal and reverse channel transfer data bit 1 or 5.
14	HostBusy	30	In	Host busy signal.
31	-INIT	30	In	Not used.
32	-DataAvail / DataBit-0,4	29	Out	Data available signal and reverse channel transfer data bit 0 or 4.
36	1284-Active	30	In	1284 active signal.
18	Logic-H	-	Out	Pulled up to +5 V via 3.9 K ohm resistor.
35	+5V	-	Out	Pulled up to +5 V via 3.3 K ohm resistor.
17	Chassis GND	-	-	Chassis GND.
16, 33 19-30	GND	-	-	Signal GND.
15, 34	NC	-	-	Not connected.

NOTE: *In/Out refers to the direction of signal flow seen from the printer side.*

Extensibility Request

The printer responds affirmatively when the extensibility request values are 00H or 04H,

00H   : Request Nibble Mode Reverse Channel Transfer.

04H   : Request Device ID;
           Return Data Using Nibble Mode Rev Channel Transfer.

Device ID

World Standard Model

The printer sends following device ID string when it is requested.

☐   When IEEE1284.4 is enabled,

      [00H] [5CH]

      MFG:EPSON;

      CMD:ESCPL2,BDC,D4;

      MDL:Stylus[[SP]Photo[SP]2000P;

      CLS:PRINTER;

      DES:EPSON[SP]Stylus[SP]Photo[SP]2000P;

☐   When IEEE1284.4 is disabled,

      [00H] [59H]

      MFG:EPSON;

      CMD:ESCPL2,BDC;

      MDL:Stylus[SP]Photo[SP]2000P;

      CLS:PRINTER;

      DES:EPSON[SP]Stylus[SP]Photo[SP]2000P;

1.3.1.3 USB interface

Standard   : based on
                      "Universal Serial Bus Specifications Revision 1.0"
                      "Universal Serial Bus Device Class Definition for
                      Printing Devices Version 1.0"

Bit rate   : 12Mbps (Full Speed Device)

Data encoding   : NRZI

Adaptable connector: USB Series B

Recommended cable length: 2 meters

Table 1-10. Connector pin assignment and signals

Pin No.	Signal name	In/Out	Function description
1	VCC	-	Cable power. Maximum power consumption is 2mA
2	-Data	bi-directional	data
3	+Data	bi-directional	data, pull up to +3.3V via 1.5K ohm resistor
4	Ground	-	Cable ground

Pin #2   **Pin #1**
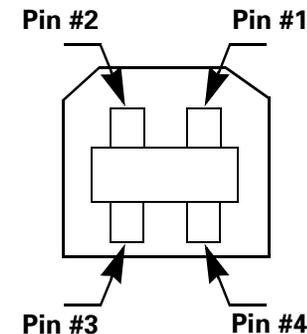
Pin #3   **Pin #4**

Figure 1-2. USB Pin Assignment

1.3.1.4 Prevention Hosts from Data Transfer Time-out

Generally, hosts abandon data transfer to peripherals when a peripheral is in the busy state for dozens of seconds continuously. To prevent hosts from this kind of time-out, the printer receives data very slowly, several bytes per minute, even if the printer is in busy state. This slowdown is started when the rest of the input buffer becomes several hundreds of bytes. Finally, the printer is in the busy state continuously when the input buffer is full.

USB and IEEE1284.4 on the parallel interface do not require this function.

1.3.1.5 Interface Selection

The printer has 2 built-in interfaces; the USB and parallel interface. These interfaces are selected automatically.

- Automatic selection

   In this automatic interface selection mode, the printer is initialized to the idle state scanning which interface receives data when it is powered on. Then the interface that receives data first is selected. When the host stops data transfer and the printer is in the stand-by state for the seconds, the printer is returned to the idle state. As long as the host sends data or the printer interface is busy state, the selected interface is let as it is.

- Interface state and interface selection

   When the parallel interface is not selected, the interface got into the busy state. When the printer is initialized or returned to the idle state, the parallel interface got into the ready state. Caution that the interrupt signal such as the -INIT signal on the parallel interface is not effective while that interface is not selected.

1.3.1.6 IEEE1284.4 protocol

The packet protocol described by IEEE1284.4 standard allows a device to carry on multiple exchanges or conversations which contain data and/or control information with another device at the same time across a single point-to-point link. The protocol is not, however, a device control language. It does provide basic transport-level flow control and multiplexing services. The multiplexed logical channels are independent of each other and blocking of one has no effect on the others. The protocol operate over IEEE1284.

☐ Automatic selection

   An initial state is compatible interface and starts IEEE1284.4 communication when magic strings (1284.4 synchronous commands) are received.

☐ On

   An initial state is IEEE1284.4 communication and data that received it by the time it is able to take synchronization by magic string (1284.4 synchronous commands) is discarded.

☐ Off

   An initial state is compatible interface and never starts IEEE1284.4 communication even if magic strings (1284.4 synchronous commands) are received.

1.4 Operator Controls

1.4.1 Buttons

☐ Operating button

☐ Load/Eject button

☐ Cartridge replacement button

☐ Cleaning

☐ Button
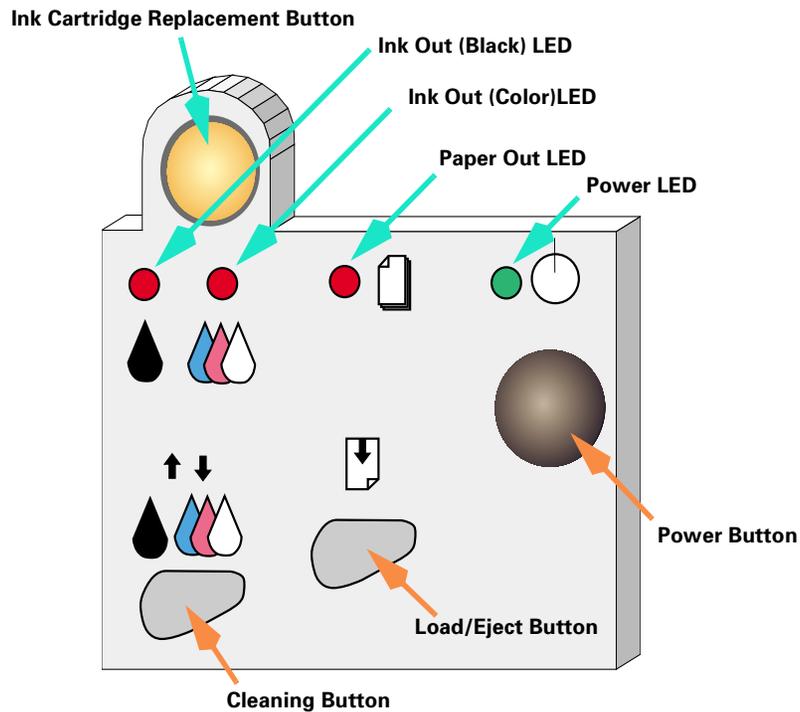
1.4.2 LED Indicators

☐ **Power**
   Lights when the power switch is "ON" and AC power is supplied.

☐ **Paper Out**
   Lights during the paper out condition, and blinks during the paper jam condition.

☐ **Ink Out (Black)**
   Lights during no black ink condition, and blinks during the black ink low condition.

☐ **Ink Out (Color)**
   Lights during no color ink condition, and blinks during the color ink low condition.

1.4.3 Panel Functions

Table 1-11. Panel Functions

Buttons	Function
Load / Eject	• Loads or ejects paper. • Returns the printhead from the ink cartridge replacement position to the capping position.
Ink Cartridge Replacement	• Starts the ink cartridge replacement sequence. • Moves the carriage to the cartridge replacement position. • Returns the carriage from the ink cartridge replacement position.
Cleaning (Push for 3 seconds)	• Starts a head cleaning. • In the condition of "Ink Low", "Ink Out", or "No Ink Cartridge", starts the ink cartridge replacement sequence. • Returns the carriage from the ink cartridge replacement position.

Table 1-12. Power-on Panel Functions

Switch	Pressing with Power On Function
Load / Eject	• Starts status printing. [1]
Cleaning	• Changes code pages / Selects IEEE1284.4 mode for parallel I/F.[2]
Load/Eject + Cleaning	• Enters the special settings mode. (Factory use only). [3]

[1]:One of the actions in Table 1-13 is carried out according to the content of 1BH of EEPROM.
[2]:Not intended for users.
[3]:See Section 1.4.4. (Not intended for users.)

Table 1-13. Content of 1BH of EEPROM

[bit7] [bit6]	Actions
00[1]	Print firmware version, ink counter, selected code page and nozzle check pattern.
11	
01	Hex-dump mode
10	Self test mode

[1]:Factory default setting

1.4.4 Special Setting Mode

To enter the special setting mode, press Load/Eject button and Cleaning button while turning on the printer. The Paper Out LED starts blinking. While it is blinking (for three seconds), press the specified button to activate the desirable setting mode.

NOTE: Special setting modes are not intended for users.

Table 1-14. Special Setting Modes

Switch	Function
Load / Eject	• Resets EEPROM and timer IC.
Cleaning (Push for 10 seconds)	• Resets the ink overflow counter in EEPROM.

☐ EEPROM/Timer IC reset

The following is reset with this operation:

■ Interface selection (04H)

■ Power off timer (6CH, 6DH)

☐ Waste ink counter reset

The following is reset with this operation:

■ Ink counter A0 (50H, 5DH)

■ Ink counter A80 (5EH, 5FH)

1.4.5 Printer Condition and Panel Status

Table 1-15 shows various errors and printer status.

Table 1-15. Printer Condition and Panel Status

Printer Status	Indicators				Priority
	Power	Ink Out (Black)	Ink Out (Color)	Paper Out	
Power on condition	On	--	--	--	9
Ink sequence	Blinks	--	--	--	6
Ink cartridge replacement mode	Blinks	--	--	--	5
Data processing	Blinks	--	--	--	8
Paper out	--	--	--	On	4
Paper jam condition	--	Off	Off	Blinks	3
No ink cartridge or ink end (black)	--	On	--	--	7
Ink level low (black)	--	Blinks	--	--	7
No ink cartridge or ink end (color)	--	--	On	--	7
Ink level low (color)	--	--	Blinks	--	7
Enter EEPROM and Timer IC reset	--	On (for one second only)			-
Maintenance request	Blinks	Blinks	Blinks	Blinks	2
Fatal error	Blinks	On	On	Blinks	1

NOTE: *"--" means "no effect".*

1.4.6 Errors

Ink out

When the printer runs out most of the ink of any color, it warns of an ink low condition and keeps printing. When the ink cartridge is completely empty, the printer stops printing and generates Ink out error. In this condition, the ink cartridge must be replaced with a new one. Note an ink cartridge that is once taken out must not be used again. Reinstalling of ink cartridges whose ink level is not full upsets the ink level detection and may cause serious problems in the printheads.

Paper out

When the printer fails to load a sheet of paper, it goes into the Paper Out error condition.

Paper jam

When the printer fails to eject a sheet of paper, it goes into the Paper Jam error condition.

No ink cartridge

When the printer detects that an ink cartridge is missing, it goes into the No Ink Cartridge error condition.

Maintenance request

When the total quantity of waste ink collected during cleanings and flushing reaches the limit, printer indicates the Maintenance Request error and stops printing. The absorber must be replaced by a service person.

Fatal errors

When the printer detects a carriage control error or CG access error, it goes into a fatal error condition.

1.4.7 Printer Initialization

There are three kinds of initialization methods as explained below:

1. Power on initialization
    It performs the following when the printer is turned on or the printer recognizes the cold reset command (remote RS command):

    (a) Initializes printer mechanism.
    (b) Clears input data buffer.
    (c) Clears print buffer.
    (d) Sets default values.

2. Panel initialization
    Performed if the printer is turned off and back on within 10 seconds or /INIT signal is input. It performs the following:

    (a) Cap the printer head.
    (b) Eject a paper.
    (c) Clears input data buffer.
    (d) Clears print buffer.
    (e) Sets default values.

3. Software initialization
    The ESC@ command also initializes the printer. It performs the following:

    (a) Clears print buffer.
    (b) Sets default values.

1.5 Paper

1.5.1 Paper handling

Do not perform reverse feed more than 9.5 mm(0.38").

1.5.2 Paper specification

1.5.2.1 Cut Sheet

Size: A3 (297mm x 420mm)

                   A4 (210mm x 297mm)

                   A5 (148mm x 210mm)

                   A6 (105mm x 148mm)

                   B (279mm x 432mm)

                   B4 (257mm x 364mm)

                   B5 (182mm x 257mm)

                   Letter (216mm x 279mm)

                   Half letter (139.7mm x 215.9mm)

                   Legal (216mm x 356mm)

                   Executive (184.2mm x 266.7mm)

Quality: Plain paper, Bond paper

Thickness: 0.08mm ~ 0.11mm (0.003 ~ 0.004 inch)

Weight: $64g/m^2$ ~ $90g/m^2$ (17 lb ~ 24 lb, 55kg ~ 78kg)

1.5.2.2 Envelope

Size: #10 (241.3mm x 104.8mm)

                   DL (220mm x 110mm)

                   C6 (162mm x 114mm)

                   220x132 (220mm x 132mm)

Quality: Bond paper, PPC, Air mail

Weight: $45g/m^2$ ~ $75g/m^2$ (12 lb ~ 20 lb)

NOTE: *Envelope printing is only available at normal temperature.*
NOTE: *Keep the longer side of the envelope horizontally at setting.*

1.5.2.3 EPSON special media

Quality: EPSON specifically designed media for pigment
                   ink jet printers

(1) Glossy Paper - Photo Weight

Size: A3+ (329mm x 483mm)

                   A3 (297mm x 420mm)

                   A4 (210mm x 297mm)

(2) Premium Semigloss Photo

Size: A3+ (329mm x 483mm)

                   A3 (297mm x 420mm)

                   A4 (210mm x 297mm)

                   Letter (216mm x 279mm) (only for EAI)

                   B (only for EAI)

                   Roll paper
                   width: 89mm, 100mm, 210mm, 329mm

(3)Archival Matte Paper

Size: A3+ (329mm x 483mm)

                         A3 (297mm x 420mm)

                         A4 (210mm x 297mm)

                         Letter (216mm x 279mm)

                         B

                         Roll paper
                         width: 89mm, 100mm

 (4)Water Paper - Radiant White

Size: A3+ (329mm x 483mm)

(5) Ink Jet Transparencies

Size: A4 (210mm x 297mm)

                         Letter (216mm x 279mm)

(6) Photo Quality Glossy Film

Size: A4 (210mm x 297mm)

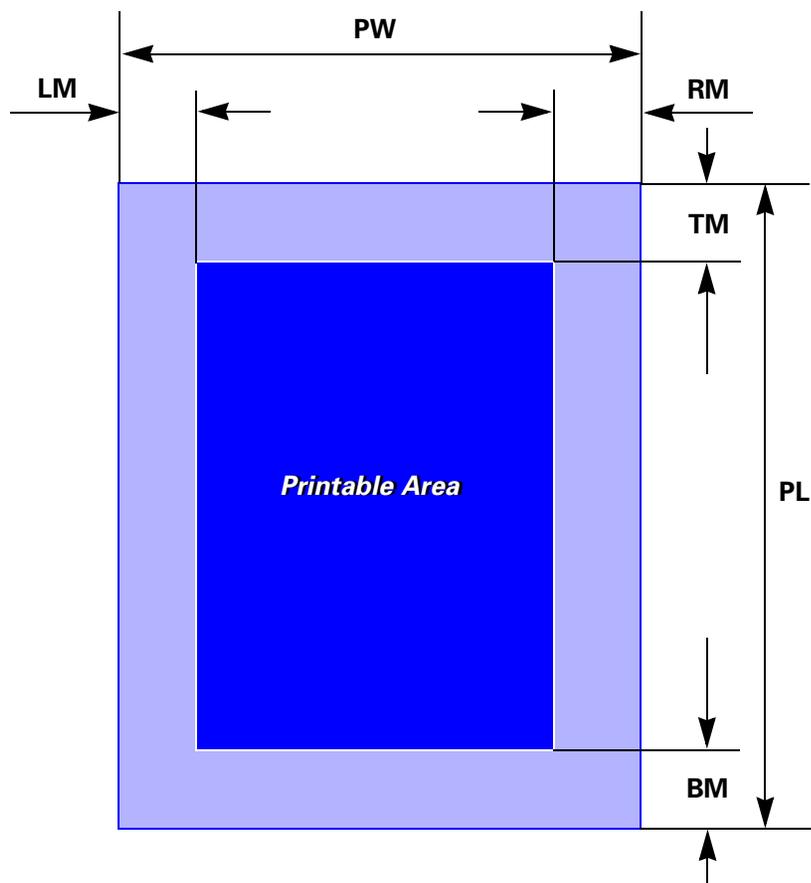   Letter (216mm x 279mm)

1.6 Printing area

1.6.1 Cut Sheet

Figure 1-3. Printable Area for Cut Sheet

Table 1-16. Printing Area - Character Mode

Paper Size	Left Margin (minimum)	Right Margin (minimum)	Top Margin (minimum)	Bottom Margin (minimum)
A3	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
A4	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
Letter	3 mm (0.12")	9 mm (0.35")	3 mm (0.12")	14 mm (0.54")
B5	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
Legal	3 mm (0.12")	9 mm (0.35")	3 mm (0.12")	14 mm (0.54")
Statement	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
Executive	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")

Table 1-17. Printing Area - Raster Graphics Mode

Paper Size	Left Margin (minimum)	Right Margin (minimum)	Top Margin (minimum)	Bottom Margin[1] (minimum)
A3+	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
A3	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
A4	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
Letter	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
B5	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
Legal	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
Statement	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")
Executive	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54")

[1]:Bottom margin can be reduced to 3mm when paper dimension is defined by using command, otherwise it remains 14mm. As for an area between 3mm and 14mm margin, print quality may decline.
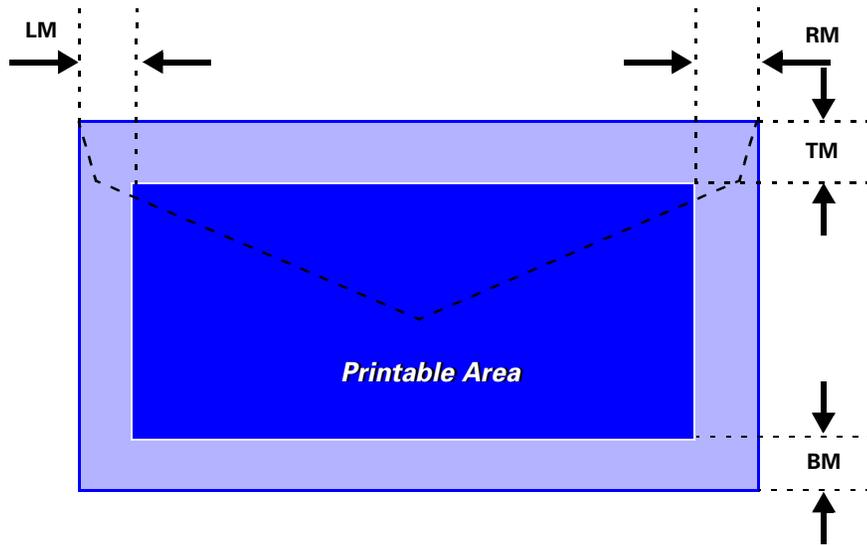
1.6.1.1 Envelopes

Figure 1-4. Printable Area for Envelopes

Table 1-18. Envelope Margin

Size	Left Margin (minimum)	Right Margin (minimum)	Top Margin (minimum)	Bottom Margin (minimum)
#10	3 mm (0.12")	28 mm (1.10")	3 mm (0.12")	14 mm (0.55")
DL	3 mm (0.12")	7 mm (0.28")	3 mm (0.12")	14 mm (0.55")
C6	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.55")

1.7 Ink cartridge

1.7.1 Black ink cartridge

Type   : Exclusive cartridge

Color   : Black

Print capacity   : TBD

Ink life   : 2 years from production date

Storage temperature
              : -20 °C - 40 °C (Storage, within a month at 40 °C)
              : -30 °C - 40 °C (Packing storage, within a month at 40 °C)
              : -30 °C - 60 °C (Transit, within 120 hours at 60 °C
                            and within a month at 40°C)

Dimension   : 20.1 mm(W) x 66.85 mm(D) x 38.5 mm(H)

1.7.2 Color ink cartridge

Type   : Exclusive cartridge

Color   : Magenta, Cyan, Yellow, Light Cyan, Light Magenta

Print capacity   : TBD

Ink life   : 2 years from production date

Storage temperature
              : -20 °C - 40 °C (Storage, within a month at 40 °C)
              : -30 °C - 40 °C (Packing storage, within a month at 40 °C)
              : -30 °C - 60 °C (Transit, within 120 hours at 60 °C
                            and within a month at 40 °C)

Dimension   : 49.1 mm(W) x 84.05 mm(D) x 41.8 mm(H)

NOTE: *Do not refill the ink cartridge. The ink cartridge is a consumable item.*
Do not use a cartridge whose ink life has expired.
Ink freezes below -4 °C; however it will be usable again after keeping
it for more than 3 hours at room temperature.

1.8 Physical specification

Weight   : 8.4kg (without the ink cartridges)

Dimension   : 609 mm(W) x 311 mm (D) x 175 mm (H) (Storage)

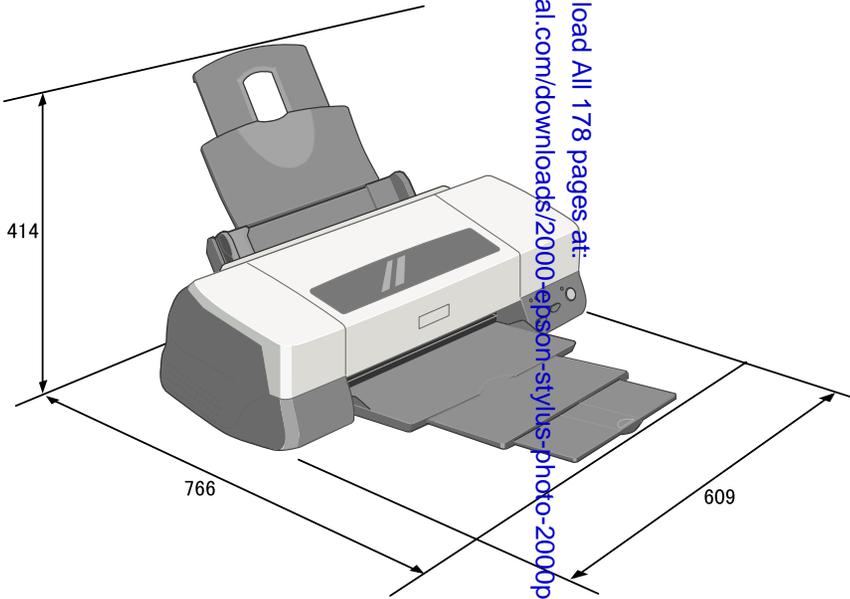   : 609 mm(W) x 766 mm (D) x 414 mm (H) (Printing)
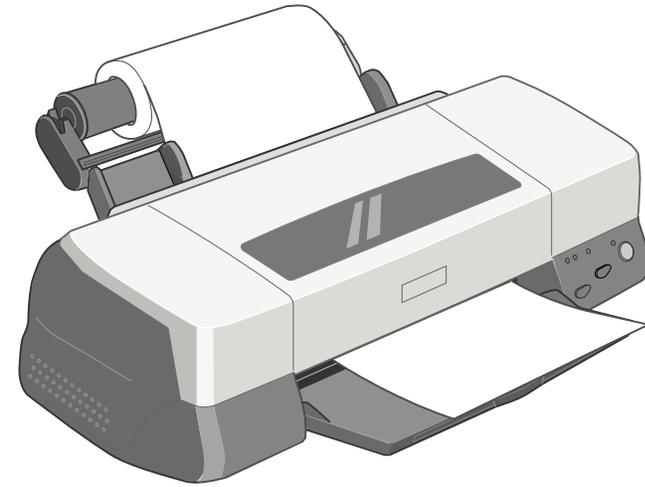
414

766

609

Figure 1-5. Dimension - Printing

Figure 1-6. With Roll Holder