SERVICE MANUAL

Color Inkjet Printer

EPSON STYLUS COLOR 680/777/777i

SEIJ00010

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. 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 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

About This Manual

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of EPSON Stylus Color 680/777/777i. 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.

Contents

This manual consists of six chapters and one Appendix.

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 the troubleshooting.

CHAPTER 4.DISASSEMBLY AND ASSEMBLY
Describes the step-by-step procedures for dissaembling 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.

APPENDIXProvides the following additional information for reference:
- Connector pin assignments
- Electric circuit boards components layout
- Exploded diagram
- Electrical circuit boards schematics

Symbols Used in This Manual

Various symbols are used throughout this manual either to provide additional information on a specific topic or to warn of possible danger present during a procedure or an action. Be aware of all symbols when they are used, and always read WARNING, CAUTION or NOTE messages.

WARNING Indicates an operating or maintenance procedure, practice or condition that, if not strictly observed, could result in injury or loss of life.

CAUTION Indicates an operating or maintenance procedure, practice, or condition that, if not strictly observed, could result in damage to, or destruction of, equipment.

CHECK POINT May indicate an operating or maintenance procedure, practice or condition that is necessary to accomplish a task efficiently. It may also provide additional information that is related to a specific subject, or comment on the results achieved through a previous action.

Revision Status

Revision	Issued Date	Description
A	August 10, 2000	First Release
B	August 31, 2000	Revision: ■ Added disassembly and reassembly caution to 4.2.1 Housing Removal ■ Changed the resolution of bit map images when producing PDF files for clearer reading.

Chapter 1 PRODUCT DESCRIPTION

Chapter 2 Operating Principles

Chapter 3 Troubleshooting

Chapter 4 Disassembly and Assembly

Chapter 5 Adjustment

Chapter 6 Maintenance

Chapter 7 Appendix

PRODUCT DESCRIPTION

1.1 FEATURES

The major features of EPSON color inkjet printers EPSON Stylus COLOR 680/777/777i are:

☐ High Color Print Quality

■ 2880 (H) X 720 (V) dpi printing

■ Four Color Printing (YMCK)

■ Traditional and New Microweave

☐ Built-in Auto Sheet Feeder

■ Holds 100 cut-sheets (64g/m^2)

■ Holds 10 envelopes

■ Holds 1 transparency films

☐ Two Built-in Interfaces

■ Bi-directional parallel I/F (IEEE-1284 level 1 device)

■ USB

☐ Windows/Macintosh exclusive
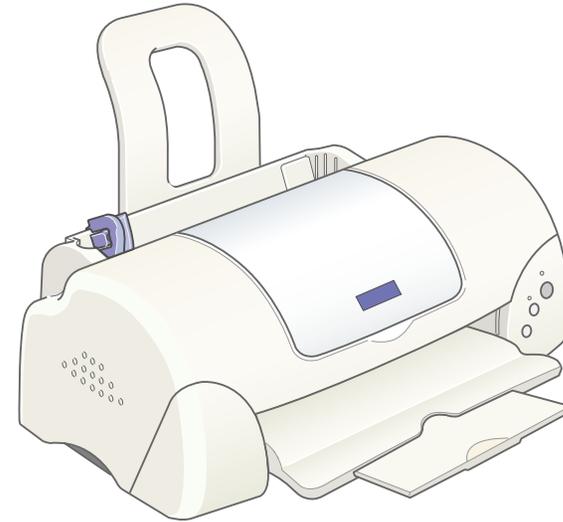
Figure 1-1. External View

1.2 SPECIFICATIONS

This section covers specifications of the printers.

1.2.1 Physical Specification

☐ Weight: 4.1kg (without ink cartridges)

☐ Dimension:
   Storage: 450 mm (W) x 246 mm (D) x 182 mm (H)
   Printing: 450 mm (W) x 547 mm (D) x 279 mm (H)

1.2.2 Printing Specification

☐ Print Method

   ■ On demand ink jet

☐ Nozzle Configuration

   ■ Monochrome 144 nozzles (48 x 3 staggered)

   ■ Color 48 nozzles x 3 (Cyan, Magenta, Yellow)

☐ Print Direction

   ■ Bi-direction with logic seeking

☐ Print Speed & Printable Columns

Table 1-1. Character Mode

Character Pitch	Printable Column	LQ Speed
10 CPI (Pica)	80	238 CPS*

This value is the speed of normal-dot printing.

Table 1-2. Raster Graphics Mode

Horizontal Resolution	Printable Area	Available Dot	CR Speed
360 dpi	8.26 inches	2976	23.8 IPS
720 dpi	8.26 inches	5952	20 IPS
1440 dpi	8.26 inches	11904	20 IPS

☐ Control Code

   ■ ESC/P Raster command

   ■ EPSON Remote command

☐ Character Tables

   ■ Two international character sets:

      - PC 437 (US, Standard Europe)

☐ Typeface

   ■ Bit map LQ font:

      EPSON Courier 10 CPI

1.2.3 Paper Feeding

☐ Feed Method

   ■ Friction feed with ASF

☐ Paper Path

   ■ Cut-sheet ASF (Top entry, Front out)

☐ Feed Speed

   ■ 2.36 inch/sec (Normal, Continuous feed)

   ■ 4.5 inch/sec (Fast, Continues feed)

1.2.4 Input Data Buffer

   ■ 32KB

1.2.5 Electric Specification

[120V Version]

Rated Voltage:	AC120V
Input Voltage Range:	AC99~132V
Rated Frequency Range:	50~ 60Hz
Input Frequency Range:	49.5~ 60.5Hz
Rated Current:	0.4A
Power Consumption:	Approx. 17W (ISO10561 Letter Pattern)
	Approx. 2.5W in standby mode
	Energy Star compliant
Insulation Resistance:	100M ohms min.
	(between AC line and chassis, DC 500V)
Dielectric Strength:	AC 1000V rms. 1 minutes or
	AC 1200V rms. 1 second
	(between AC line and chassis)

[220 ~ 240V Version]

Rated Voltage:	AC220V~240V
Input Voltage Range:	AC198~264V
Rated Frequency Range:	50~60Hz
Input Frequency Range:	49.5~60.5Hz
Rated Current:	0.2 A (for Stylus Color 860)
	0.2 A (for Stylus Color 1160)
Power Consumption:	Approx. 17W (ISO10561 Letter Pattern)
	Approx. 2.5W in standby mode
	Energy Star compliant
Insulation Resistance:	100M ohms min.
	(between AC line and chassis, DC 500V)
Dielectric Strength:	AC 1500V rms. 1 minute
	(between AC line and chassis)

1.2.6 Environmental Condition

☐ Temperature

- ■ Operating: 10 to 35°C (see the figure below for condition)

- ■ Non-operating: -20 to 60°C (with shipment container)
  1 month at 40°C and 120 hours at 60°C

☐ Humidity

- ■ Operating: 20 to 80% RH
  (without condensation / see the figure below for condition)

- ■ Non-operating: 5 to 85% RH
  (without condensation / with shipment container)

☐ Resistance to Shock

- ■ Operating: 1G, within 1 ms

- ■ Non-operating: 2G, within 2 ms (with shipment container)

☐ Resistance to Vibration

- ■ Operating: 0.15G

- ■ Non-operating: 0.50G (with shipment container)
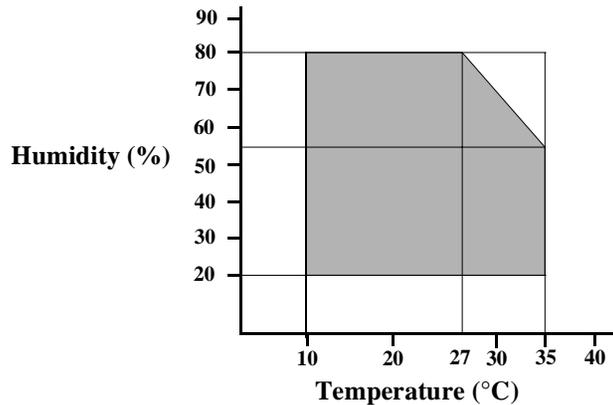
Figure 1-2. Temperature/Humidity Range

1.2.7 Reliability

Total Print Volume: 50,000 pages (A4, Letter)
or 5 years although less than 50.000 pages printing

Print Head Life: 3 billion dots/nozzle

1.2.8 Safety Approvals

[120V Version]
Safety Standards: UL1950
CSA22.2 No.950

EMI: FCC part 15 subpart B Class B
CSA C108.8 Class B

[220~240V Version]
Safety Standards: EN60950 (VDE)

EMI: EN55022 (CISPR Pub.22) Class B
AS/NZS 3548 Class B

1.2.9 Acoustic Noise

Level: Approx. 47dB(A) (According to ISO 7779)
-Used media : Plain Paper
- Print Quality: Fine

1.2.10 CE Marking

[220~240V 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

The EPSON Stylus COLOR 680/777/777i provide USB and parallel interface as standard.

1.3.1 Parallel Interface (Forward Channel)

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.
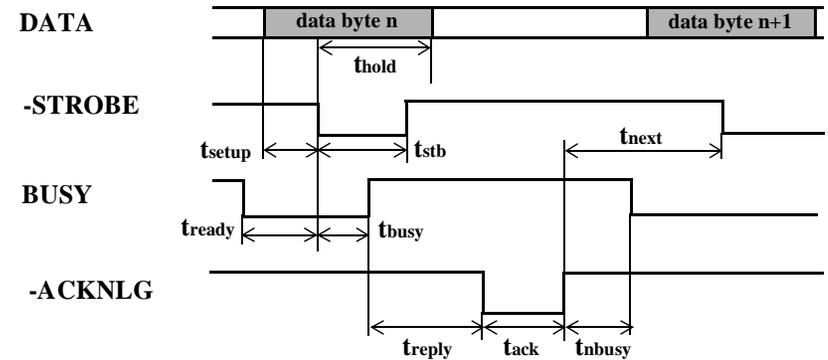
Figure 1-3. Data Transmission Timing

Table 1-3.

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

*   *Rise and fall time of every output signal.*

**   *Rise and fall time of every input signal.*

*** *Typical timing for tack is shown on the following page.*

Table 1-4. Typical Time of tack

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

Table 1-5. 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 1-6. 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. Each signal is at high level when data is logical 1 and low level when data is logical 0.
3	DATA1	21	In	
4	DATA2	22	In	
5	DATA3	23	In	
6	DATA4	24	In	
7	DATA5	25	In	
8	DATA6	26	In	
9	DATA7	27	In	
10	-ACKNLG	28	Out	This signal is a negative pulse indicating that the printer can accept data again.
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 50us 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 +5V via 3.9 K ohm resistor.

Table 1-6. Connector Pin Assignment and Signals (continued)

Pin No.	Signal Name	Return GND Pin	In/Out	Functional Description
35	+5V	-	Out	Pulled up to +5V via 3.3K 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.

1.3.2 Parallel Interface (Reserve 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 1-7. 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	
3	DATA1	21	In	The DATA0 through DATA7 signals represent data bits 0 to 7, respectively.
4	DATA2	22	In	
5	DATA3	23	In	Each signal is at high level when data is logical 1 and low level when data is logical 0.
6	DATA4	24	In	
7	DATA5	25	In	These signals are used to transfer the 1284 extensibility request values 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.
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.

Table 1-7. Connector Pin Assignment and Signals (continued)

Pin No.	Signal Name	Return GND Pin	In/Out	Functional Description
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 +5V via 3.9K ohm resistor.
35	+5V	-	Out	Pulled up to +5V via 3.3K 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 from the printer's point of view.*

Extensibility Request:

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

>   00H: Request Nibble Mode Reverse Channel Transfer.
>   04H: Request Device ID;
>   Return Data Using Nibble Mode Rev Channel Transfer.

Device ID:

The printer sends the following device ID string when requested.

When IEEE1284.4 is enabled,
        [00H] [5AH]
        MFG: EPSON;
        CMD: ESCPL2, BDC, D4;
        MDL: Stylus[SP]COLOR[SP]XXX*;
        CLS: PRINTER;
        DES: EPSON[SP]Stylus[SP]COLOR[SP]XXX*;
When IEEE1284.4 is disabled,
        [00H] [57H]
        MFG: EPSON;
        CMD: ESCPL2, BDC;
        MDL: Stylus[SP]COLOR[SP]XXX*;
        CLS: PRINTER;
        DES: EPSON[SP]Stylus[SP]COLOR[SP]860/1160;
        *XXX is 777 (for EAI spec) or 680 (for EURO/ASIA spec)

Note 1: [00H] denotes a hexadecimal value of zero.

Note2: MDL value depends on the EEPROM setting.

Note3: CMD value depends on the IEEE1284.4 setting.

1.3.3 USB Interface

Standard:	Based on:
	"Universal Serial Bus Specifications Rev. 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 1-8. Connector Pin Assignment and Signals

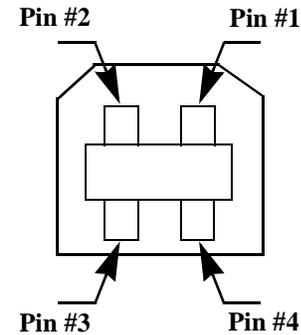| Pin No.	Signal Name	I/O	Function Description
1	VCC	-	Cable power. Max. power consumption is 2mA.
2	-Data	Bi-D	Data
3	+Data	Bi-D	Data, pull up to +3.3 V via 1.5K ohm resistor.
4	Ground	-	Cable ground

Figure 1-4. USB Pin Assignment

1.3.4 Prevention of Data Transfer Time-out

Generally, hosts abandon data transfer to peripherals when the peripheral is in the busy state for dozens of seconds continuously. To prevent this kind of time-out, the printer receives data very slowly, several bytes per minute, even if the printer is in the busy state. The slowdown starts when the remaining input buffer becomes several hundreds of bytes, and the printer finally gets into the busy state continuously when the input buffer is full.
USB and IEEE1284.4 on the parallel interface do not require such function.

1.3.5 Interface Selection

The printer has two 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 while scanning which interface receives data when it is powered on. Then the interface which received data first is selected. When the host stops data transfer and the printer is in the stand-by state for seconds, the printer is returned to the idle state. As long as the host sends data or the printer interface is in the busy state, the selected interface is let as it is.

☐   Interface State and Interface Selection
    When the parallel interface is not selected, the interface gets into the busy state. When the printer is initialized or returned to the idle state, the parallel interface gets into the ready state. Note that the interrupt signal such as the -INIT signal on the parallel interface is not effective while that interface is not selected.

1.3.6 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 operates 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 Operating Switch

Operating switch is located on the control panel.

1.4.2 Control Panel

1.4.2.1 Switches

There are two non-lock type push switches, one lock-type push switch, and two LED lights.
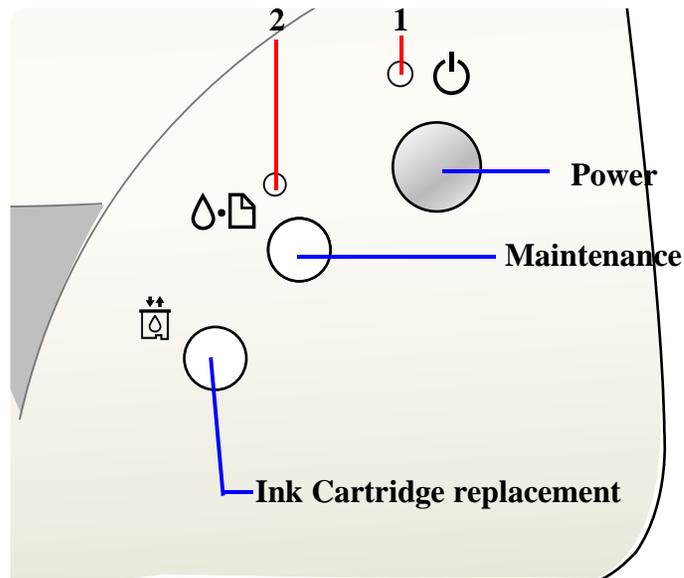

Figure 1-5. Control Panel

1.4.2.2 Indicators

(1) Power
Lights when the operating switch is "ON" and AC power is supplied.

(2) Error
Lights or blinks when some error has occur to the printer.

1.4.3 Panel Functions

Table 1-9. Panel Functions

Switch	Function
Maintenance	• Loads or Ejects the Paper (Pushing within 3seconds). • Starts the Cleaning of head (Pushing for 3seconds). • When carriage is on the Ink Cartridge change position, return carriage from Ink Cartridge change position.
Ink Cartridge replacement	• Starts the Ink Cartridge change sequence. *

* This function is not available in printing status.

Table 1-10. Panel Functions with Power On

Switch	Function
Maintenance	• Start status printings.
Ink Cartridge replacement	• Select IEEE 1284.4 mode for parallel I/F. *1
Maintenance + Ink Cartridge replacement	• Enters the special setting mode (Factory use only). *3

*1 Not described in the user's manual.

*2 See the table

Table 1-11. Special Setting Mode

Switch	Function
Maintenance	• Initialize EEPROM.
Ink Cartridge replacement (10 seconds)	• Reset the ink overflow counter in the EEPROM.

1.4.4 Printer Condition and Panel Status

Table 1-12. Printer Condition and LED Status

Printer Status	Indicators		Priority
	Power	**Error**	
Power ON condition	On	-	10
Ink sequence	Blink	-	6
Ink Cartridge change mode	Blink	-	5
Data processing	Blink	-	9
Paper Out	-	On	4
Paper jam condition	-	On	3
Ink end (Black)	-	On -> Blink	8
Ink level low (Black)	-	Blink	8
Ink end (Color)	-	On -> Blink2	8
Ink level low (Color)	-	Blink	8
Ink end (Black and Color)	-	Blink -> Blink	8
No Ink Cartridge (Black and Color)	-	On	7
Reset, Timer IC reset, EEPROM clear	On (1s)	On (1s)	-
Ink Overflow Counter reset	On (2s)	On (2s)	-
Maintenance request (Ink Overflow Counter error)	Alt Blink	Alt Blink	2
Fatal error	Off	On	1
Special setting	Blink	Blink	-

" - " : Indicator status don't change.

" A -> B " :   A is a indicator condition when carriage is on Home Position.

B is a indicator condition in Ink exchange sequence.

1.4.5 Printer Initialization

There are three kinds of initialization methods, and the following explains each initialization.

1. Power-on Initialization
    This printer is initialized when turning the printer power on, or printer recognized the cold-reset command (remote RS command).

    When printer is initialized, the following actions are performed:
    (a) Initializes printer mechanism.
    (b) Clears input data buffer.
    (c) Clears print buffer.
    (d) Sets default values.

2. Operator Initialization
    This printer is initialized when turning the printer power on again within 10 seconds from last power off, or printer recognized the -INIT signal (negative pulse) of parallel interface.

    When printer is initialized, the following actions are performed:
    (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 initialize the printer.

    When printer is initialized, the following actions are performed:
    (a) Clears print buffer.
    (b) Sets default values.

1.4.6 Errors

☐ **Ink Out**

When the printer runs out most of the ink of any color, it indicates ink-low and keeps printing. When the printer runs out the whole ink of any color, it stops printing and indicates ink-out error. User is then requested to install a new ink-cartridge in this state. An ink-cartridge that has been taken out once should never be used again. Re-installation of the cartridge not filled fully upsets the ink level detection and may eventually cause a serious problem in the print head.

☐ **Paper Out**

When the printer fails to load a sheet, it goes into a paper out error.

☐ **Paper Jam**

When the printer fails to eject a sheet, it goes into a paper jam error.

☐ **No Ink-Cartridge**

When the printer detects that ink-cartridge comes off, or failed to read or write CSIC data, it goes into this error mode.

☐ **Maintenance Request**

When the total amount of ink wasted through cleanings and flushing reaches to the limit, printer indicates this error and stops. In such a case, the absorber in the printer enclosure needs to be replaced with new one by service personnel.

☐ **Fatal Errors**

Carriage control error.

1.5 PAPER

1.5.1 Paper Handling

Do not perform reverse feed more than 1.8mm (0.07").

1.5.2 Paper Specification

1.5.2.1 Cut Sheet

[Size]

A4:	Width 210mm (8.3") x Length 297mm (11.7")
A5:	Width 148mm (5.8") x Length 210mm (8.3")
A6:	Width 105mm (4.1") x Length 148mm (5.8")
Letter:	Width 216mm (8.5") x Length 279mm (11.0")
Half Letter:	Width 139.7mm (5.5") x Length 216mm (8.5")
B5:	Width 182mm (7.2") x Length 257mm (10.1")
Legal:	Width 216mm (8.5") x Length 356mm (14.0")
Executive:	Width 184.2mm (7.25") x Length 266.7mm (10.5")

[Thickness]

0.08mm (0.003") - 0.11mm (0.004")

[Weight]

$64g/m^2$ (17Ib.) - $90g/m^2$ (24Ib.)

[Quality]

Exclusive paper, Bond paper, PPC

[ASF hopper available capacity]

100 sheets

Note1: No wrinkled, scuffing, torn or folded paper be used.

Note2: No curled paper more than 5 mm be used.

1.5.2.2 Transparency, Glossy Paper

[Size]

A4:	Width 210mm (8.3") x Length 297mm (11.7")
Letter:	Width 216mm (8.5") x Length 279mm (11.0")

[Thickness]

0.075mm (0.003") - 0.085mm (0.0033")

[ASF hopper available capacity]

1 sheets

Note: Transparency printing is available only at normal temperature.

1.5.2.3 Envelope

[Size]

No.10:	Width 241mm (9 1/2") x Length 104.8mm (4 1/8")
DL:	Width 220mm (8.7") x Length 110mm (4.3")
C6:	Width 162mm (6.4") x Length 114mm (4.5")

[Thickness]

0.16mm (0.006") - 0.52mm (0.02")

[Weight]

$45g/m^2$ (12Ib.) - $75g/m^2$ (20Ib.)

[Quality]

Bond paper, Plain paper, Air mail

Note1:   Envelope printing is available only at normal temperature.

Note 2:   Keep the longer side of the envelope horizontally at setting.

Note 3:   Envelope printing is available only in the normal temperature.

Note 4:   No wrinkled, scuffing, torn or folded paper be used.

Note 5:   No curled paper more than 5mm be used.

Note 6:   No paper with glue on flap be used.

Note 7:   No double envelops nor with window envelops be used.

Note 8:   Do not print on the back.

1.5.2.4 Index Card

[Size]

A6 Index Card:	Width 105mm (4.1") x Length 148mm (5.8")
A5 Index Card:	Width 148mm (5.8") x Length 210mm (8.3")
5 x 8" Index Card:	Width 127mm (5.0" x Length 203mm (8.0")
10 x 8" Index Card:	Width 127mm (5.0") x Length 203mm (8.0")

[Thickness]

Less than 0.23mm (0.0091")

[ASF hopper available capacity]

30 sheets

1.5.3 Printing Area

1.5.3.1 Cut Sheet

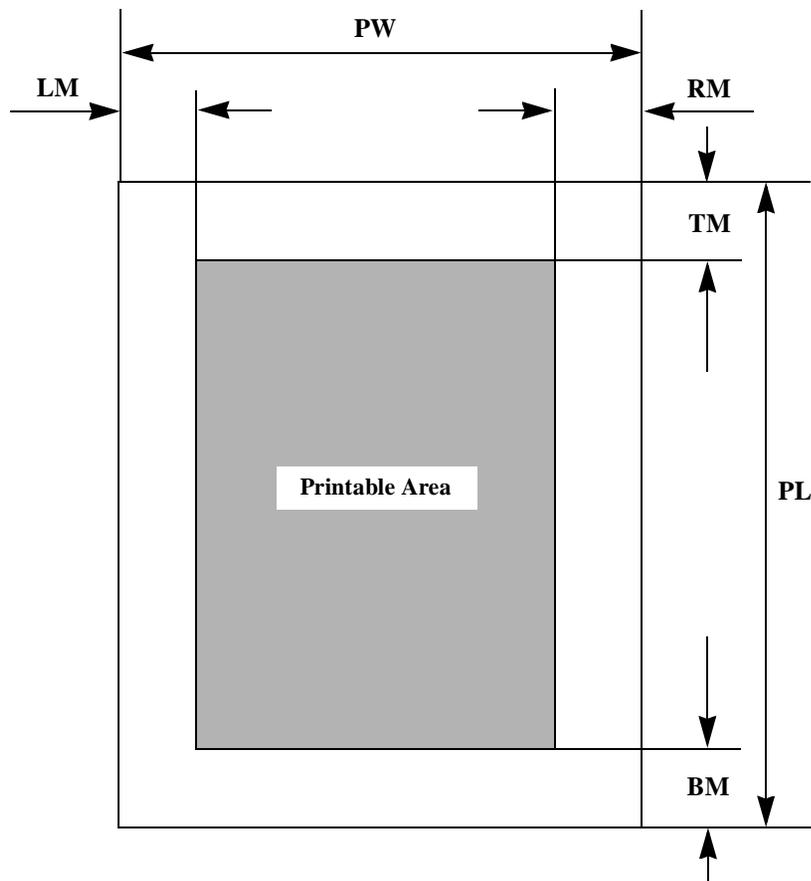See the figure below and tables on the right for printable areas.

Table 1-13. Printing Area

Paper Size	Left Margin (min.)	Right Margin (min.)	Top Margin (min.)	Bottom Margin (min.)
A4	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54") / 3mm (0.12") *
Letter	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54") / 3mm (0.12") *
B5	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54") / 3mm (0.12") *
Legal	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54") / 3mm (0.12") *
Statement	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54") / 3mm (0.12") *
Exclusive	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	14 mm (0.54") / 3mm (0.12") *

*   *Bottom margin can be reduced to 3mm when paper dimension is defined by using command, otherwise it is not reduced (14mm). As for an area between 3mm and 14mm margin, printing quality may decline.*

**   *Refer to 1.5.2 Paper Specification for PW (paper width) and PL (paper length).*

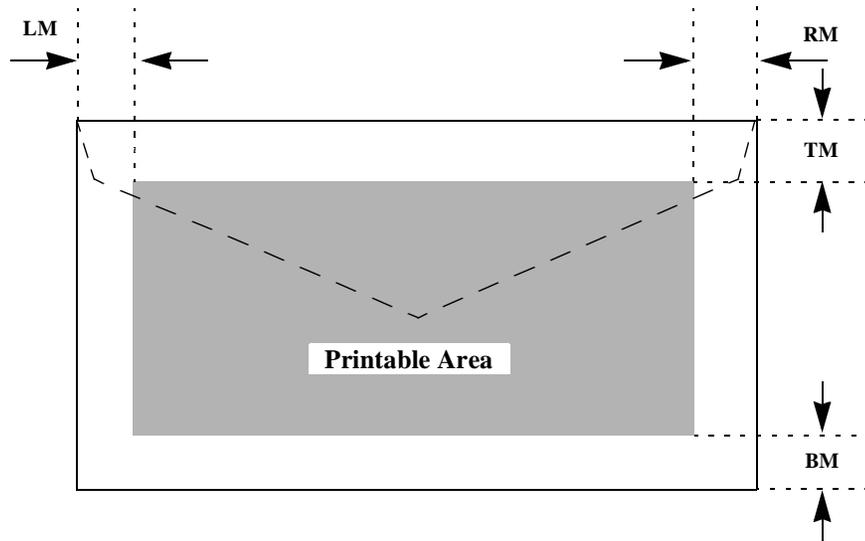**Figure 1-6. Printable Area for Cut Sheet**

1.5.3.2 Envelopes

Figure 1-7. Printable Area for Envelopes

Table 1-14. Envelope Margin

Size	Left Margin (min.)	Right Margin (min.)	Top Margin (min.)	Bottom Margin (min.)
#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")

1.6 INK CARTRIDGE

1.6.1 Black Ink Cartridge

Type: Exclusive Cartridge
Color: Black
Print Capacity: 600 pages/A4
                       (ISO/IEC 10561 Letter Pattern at 360 dpi)
Ink Life: 2 years from date of production
Storage Temperature:
      Storage: -20 ºC to 40 ºC (within a month at 40 ºC)
      Packing: -30 ºC to 40 ºC (within a month at 40 ºC)
      Transit: -30 ºC to 60 ºC (within 120 hours at 60 ºC
                     and within a month at 40 ºC)
Dimension: 28.1 mm (W) x 66.85 mm (D) x 43.3 mm (H)

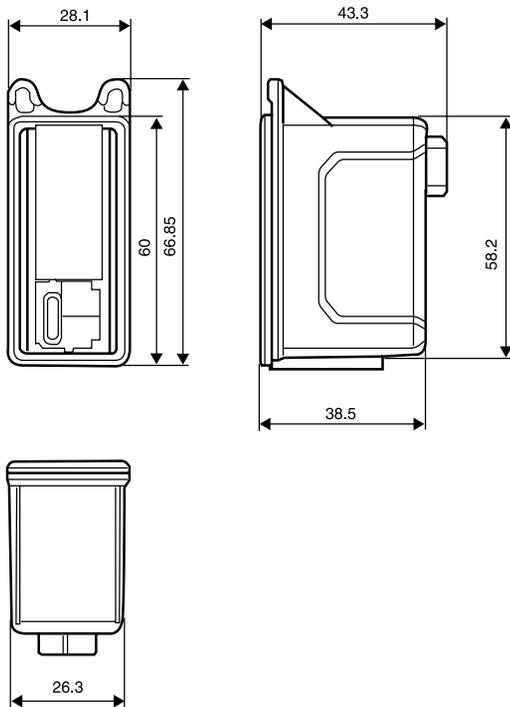**Figure 1-8. Black Ink Cartridge**

1.6.2 Color Ink Cartridge

Type: Exclusive Cartridge
Color: Magenta, Cyan, Yellow
Print Capacity: 300 pages / A4 (360 dpi, 5% duty each color)
Ink Life: 2 years from date of production
Storage Temperature:
      Storage: -20 ºC to 40 ºC (within a month at 40 ºC)
      Packing: -30 ºC to 40 ºC (within a month at 40 ºC)
      Transit: -30 ºC to 60 ºC (within 120 hours at 60 ºC
                     and within a month at 40 ºC)
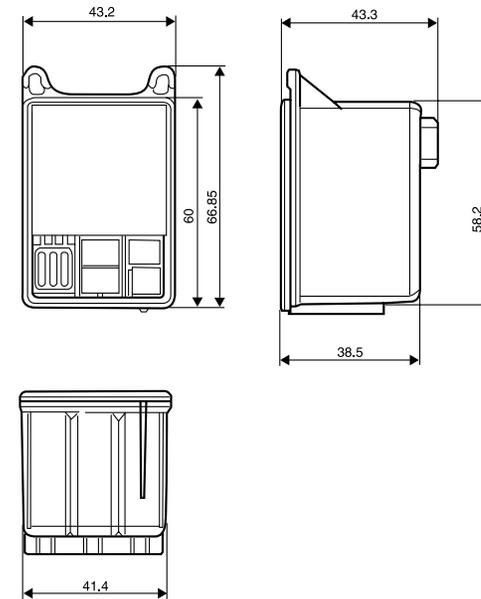Dimension: 43.2 mm (W) x 66.85 mm (D) x 43.3 mm (H)

Figure 1-9. Color Ink Cartridge

Note 1: Ink cartridge can not be refilled. The ink cartridge is prepared only for article of consumption.
Note 2: Do not use the ink cartridge which contains life-expired ink.
Note 3: Ink will be frozen under -4 ºC environment; however, it will be usable after being left at room temperature for more than three hours.

C H A P T E R

2

OPERATING PRINCIPLES

2.1 Overview

This section describes the operating principles of the printer mechanism and electrical circuit boards. The Stylus COLOR 680/777/777i has the following boards:

☐   Main board: C383 MAIN (C383 MAIN-B)

NOTE: C383 MAIN-B is compatible with C383 MAIN. Only some chips or parts are different from each other due to different producers.

☐   Power supply board: C383 PSB/PSE

☐   Panel board: C383 PNL

2.1.1 Printer Mechanism

The printer mechanism for Stylus COLOR 680/777/77i is designed newly. But, the basic component of the printer mechanism is same as previous product.
This printer consists of Print Head, Carriage Mechanism, Paper Feeding Mechanism, Paper Loading Mechanism, Ink System (Pump Mechanism, Cap Mechanism, and Carriage Lock Mechanism).

Like other EPSON ink jet printers, the Stylus COLOR 680/777/777i is equipped with two stepping motors; one for ASF, Paper feeding/ Pump mechanism, and one for CR mechanism. ASF unit uses rear entry front eject system. This ASF unit is also designed newly and single LD roller loads the paper to the printer mechanism.

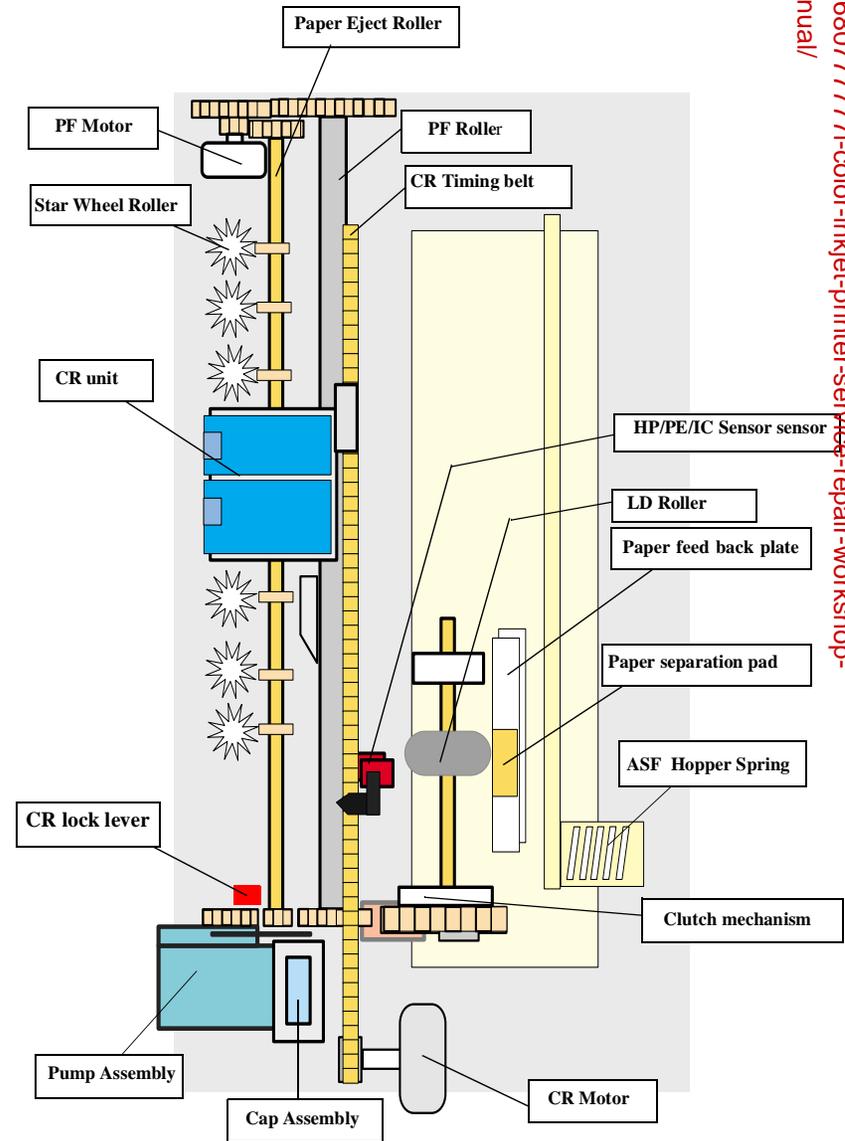For cap assembly, Stylus COLOR 680/777/777i uses valveless mechanism; new design for this model.

Figure 2-1. Printer Mechanism block diagram