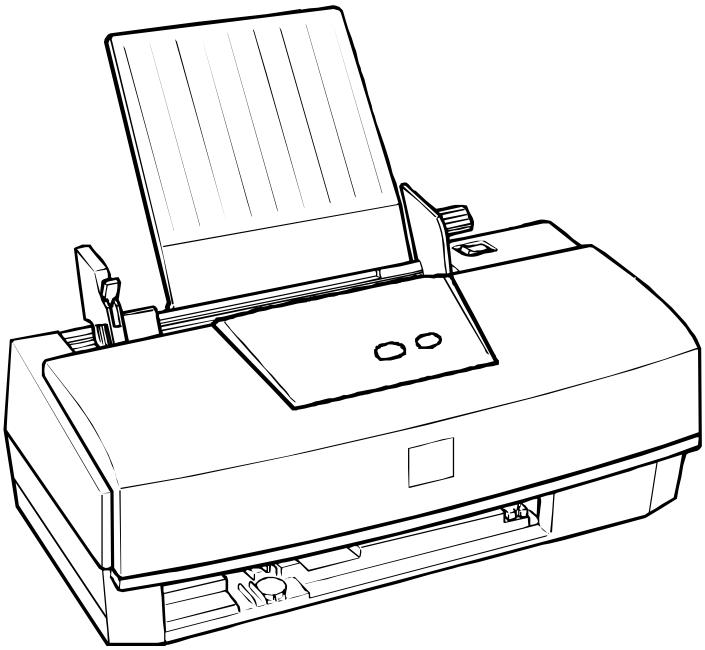
EPSON TERMINAL PRINTER

EPSON Stylus Color 300

SERVICE MANUAL



EPSON

4007996

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 UNFAMILIER 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 Color 300. 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 pin assignments*
- *Electric circuit boards components layout*
- *Exploded diagram*
- *Electrical circuit boards schematics*

REVISION SHEET

Revision	Issued	Contents
A	July 2, 1997	First issue

TABLE OF CONTENTS

CHAPTER 1
PRODUCT DESCRIPTIONS

1.1 FEATURES

The EPSON Stylus Color 300 printer is a color ink jet printer that comes with standard four colors (Black and CMY) printhead. The major features of this printer are:

- Standard four-colors printing.
  Both black and color (CMY) print nozzles are built in one-piece printhead.

- High-quality color printing
  360 dpi (Horizontal/Vertical) printing and semi-720 dpi (Vertical only) printing

- High-speed printing
  200 CPS at 10CPI (Pica) text printing in Black color.

- Standard Bi-directional Parallel Interface (IEEE1284 Nibble mode)

1.2 SPECIFICATIONS

This section describes the product specifications for EPSON Stylus Color 300.

1.2.1 Printing Specifications

Print system: On-demand ink jet printer

Nozzle configuration: Black: 31 nozzles
(11 nozzles x 2 columns and 10 nozzles x 1 column)
Color: 11 nozzles / color

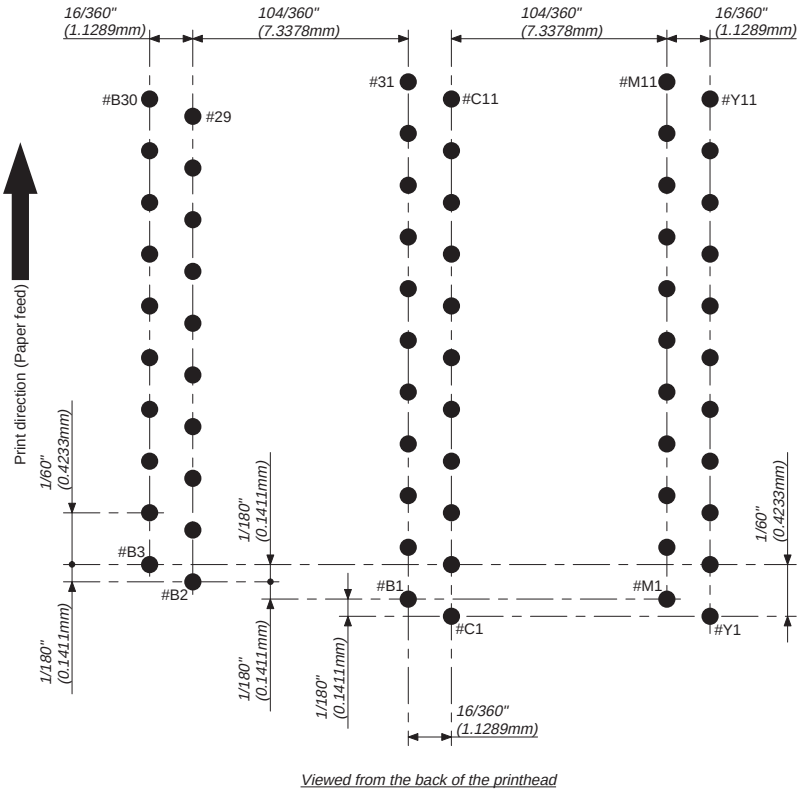


Figure 1-1. Printhead Nozzle Configuration

Print direction: Bi-directional printing with logical-seeking

Print speed: Text: 200 CPS (LQ/10CPI in Black color)
Graphics: 20 IPS (at 360DPI)

Printable column: Text: 80 columns (10CPI)
Graphics: 2880 dot (at 360DPI)

Character Table: No table and include only the following characters:
- Alphabet [A to Z] (code 41H ~ 5AH)
- Number [0 to 9] (code 30H ~ 39H)
- SPACE (code 20H)
- Symbol [#] (code 23H)

Typeface: Bitmap LQ / EPSON Courier (10CPI)

Input data buffer: 25Kbyte

1.2.2 Software Specifications

Printer Language: Exclusive control codes for EPSON Stylus Color 300
EPSON Remote Command

Control Code:

<Character mode>		
General operation:	Initialize printer	ESC @
Paper feeding:	Form feed	FF
	Line feed	LF
Carriage operation	Carriage return	CR
EEPROM Control		ESC |
<Graphics mode>		
General operation:	Initialize printer	ESC @
	Uni-directional printing	ESC U
	CSF Mode control	ESC EM
Paper feeding:	Form feed	FF
	Line feed	LF
	Line spacing	ESC +
Carriage operation:	Carriage return	CR
Page formatting:	Page length	ESC (C
	Top/Bottom margin	ESC (c
Print position control:	Horizontal print position	ESC $, ESC ¥
	Vertical print position	ESC (V, ESC (v
Spacing:	Define unit	ESC (U
Graphics:	Graphics mode	ESC (G
	Raster graphics	ESC . (∗1)
Color control:	Printing color	ESC r (∗2)

Note) *EPSON Stylus Color 300 requires the specific printer driver for proper printing operation and control, and use of other printer driver could result in improper printing.*

∗1: Works only with unique parameters.
∗2: It works only as a print buffer select command.

1.2.3 Paper Handling

Feeding method: Friction feed with built-in ASF
Paper path: Rear-top entrance / Front eject
Line spacing: 1/6 inch or programmable in 1/360 inch minimum increments.
Paper feeding speed: 102 mS (at 1/6 inch paper feed pitch)

1.2.4 Paper Specifications

- ❑ Cut sheet
  - ■ Size:

Table 1-1. Paper Size - Cut Sheet

Type	Width	Length
A4	210 mm (8.3”)	297 mm (11.7”)
LETTER	216 mm (8.5”)	279 mm (11.0”)
B5	182 mm (7.2”)	257 mm (10.1”)
LEGAL	216 mm (8.5”)	356 mm (14.0”)
Statement	139.7 mm (5.5”)	215.9 mm (8.5”)
Executive	184.2 mm (7.25”)	266.7 mm (10.5”)

  - ■ Thickness: 0.08 ~ 0.11 mm (0.003 ~ 0.004”)
  - ■ Weight: 64 ~ 90 g/m² (17 ~ 24 lb.)
  - ■ Quality: Plain paper, Recycled paper, EPSON special medias

- ❑ Envelope
  - ■ Size:

Table 1-2. Paper Size - Envelope

Type	Width	Length
No.10	241 mm ($9\ ^1/_2$”)	104.8 mm ($4\ ^1/_8$”)
DL	220 mm (8.7”)	110 mm (4.3”)

  - ■ Thickness: 0.16 ~ 0.52 mm (0.006 ~ 0.020”)
  - ■ Weight: 45 ~ 90 g/m²
  - ■ Quality: BOND paper, Plain paper, Airmail

Note) *∗Envelope printing is allowed only under normal temperature/humidity condition.*
∗Set the longer side of envelope horizontally at setting.

- Others
  - Size:

Table 1-3. Paper Size - Special Media

Type	Width	Length
Transparency (A4)	210 mm (8.3”)	297 mm (11.7”)
Transparency (LETTER)	216 mm (8.5”)	279 mm (11.0”)
Glossy Paper (A4)	210 mm (8.3”)	297 mm (11.7”)
Glossy Paper (LETTER)	216 mm (8.5”)	279 mm (11.0”)
Index Card (A6 size)	105 mm (4.1”)	148 mm (5.8”)

  - Quality: Exclusive transparency/Glossy Paper
  - Thickness: 0.23 mm (0.0091”) for Index Card

Note) *Set the paper thickness lever to “THICK PAPER” position for index card printing.*

1.2.5 Printable Area

The maximum printable area with each type of paper is summarized in table below.

Table 1-4. Printable Area

Type	PW (typ.)	PL (typ.)	LM (Min.)	RM (Min.)	TM (Min.)	BM (Min.)
A4	210 mm (8.3”)	297 mm (11.7”)	3.0 mm (0.12”)	3.0 mm (0.12”)	3.0 mm (0.12”)	14.0 mm (0.55”)
LETTER	216 mm (8.5”)	279 mm (11.0”)	⇑	⇑	⇑	⇑
LEGAL	216 mm (8.5”)	356 mm (14”)	⇑	⇑	⇑	⇑
A6	105 mm (4.1”)	148 mm (5.8”)	⇑	⇑	⇑	⇑
B5	182 mm (7.2”)	257 mm (10.1”)	⇑	⇑	⇑	⇑
Statement	139.7 mm (5.5”)	215.9 mm (8.5”)	⇑	⇑	⇑	⇑
Executive	184.2 mm (7.25”)	266.7 mm (10.5”)	⇑	⇑	⇑	⇑
No.10	241 mm (9.5”)	105 mm (4.1”)	⇑	33.8 mm (1.33”)	⇑	⇑
DL	220 mm (8.7”)	110 mm (4.3”)	⇑	13.8 mm (0.54”)	⇑	⇑

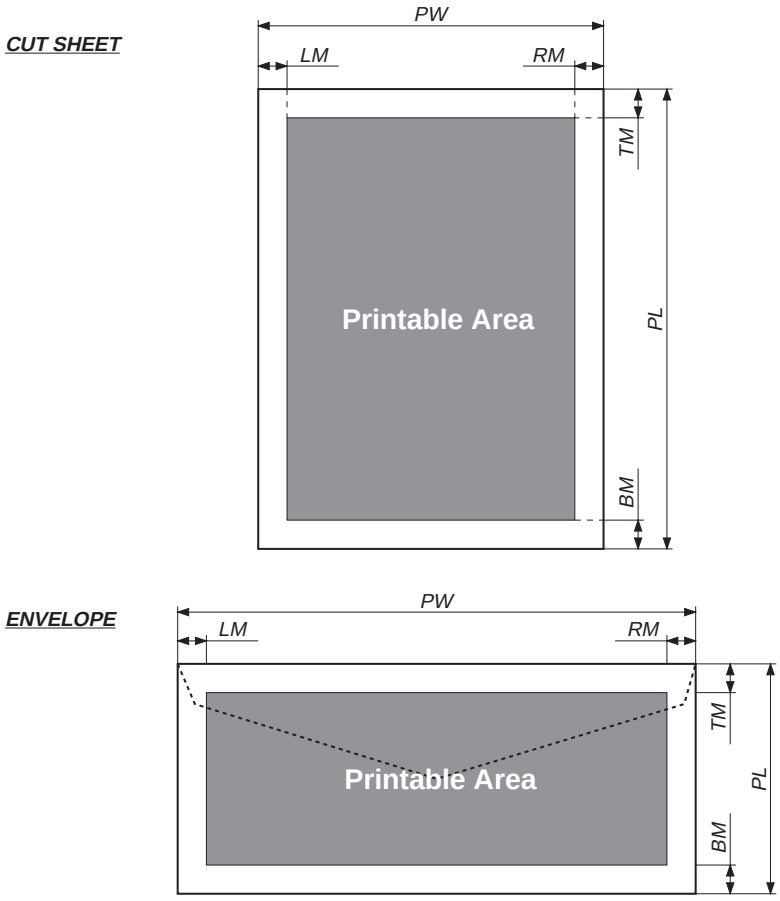


Figure 1-2. Printable Area

1.2.6 PG Adjust Lever Setting

The paper-gap (PG); a space between the printhead nozzle surface annd the paper surface, can be adjusted to the appropriate level by the PG adjust lever which located underneath the printer cover.

Table 1-5. PG Adjust Lever Setting

Paper Type	Lever Position	Gap Setting
Cut Sheet	Front (“0” position)	0 mm
Envelope	Rear (“+” position)	+0.62 mm

1.2.7 Paper Select Lever Setting

The built-in ASF is equipped with the adjust lever and the position of lever should be set to appropriate position according to the type of paper used for the printing.

Table 1-6. Paper Select Lever Setting

Paper Feeding		Paper Type	
Source	Select Lever Position	Cut Sheet	Envelope
ASF	Thick	No	OK
	Normal	OK	No
Manual Insertion	Thick	OK	OK
	Normal	No	No

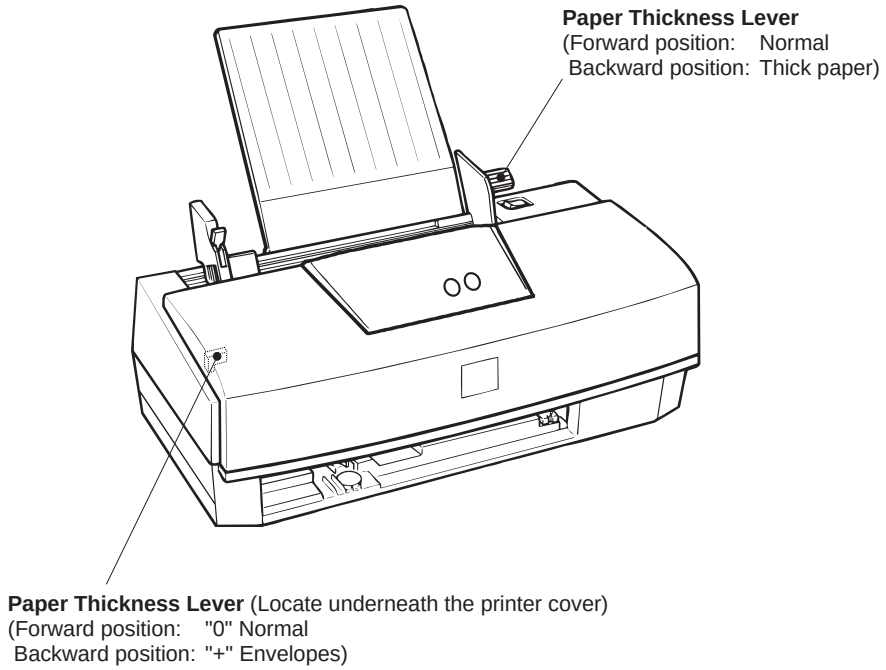


Figure 1-3. PG Adjust Lever and Paper Select Lever

1.2.8 Ink Cartridge Specification

Type:	Exclusive cartridge	
Color:	Black and CMY (Cyan, Magenta, Yellow)	
Print capacity:	220 pages	(360 DPI / 5% duty for each color on A4)
	450 pages	(ISO/IEC10561 LETTER pattern at 360 DPI monochrome printing on A4)
Validity:	2 years (in sealed package) 6 months (out of package)	
Storage conditions:	Transit (Package):	-30 ~ 60 °C (120 hours or less at 60 °C and a month or less at 40 °C)
	Storage (Package):	-30 ~ 40 °C (A month or less at 40 °C)
	After installation:	-20 ~ 40 °C (A month or less at 40 °C)
Weight:	69.3 gram (internal ink amount = 41.1g)	
Dimensions:	45.9 (W) × 56.5 (D) × 38.5 ±0.3 (H) mm	

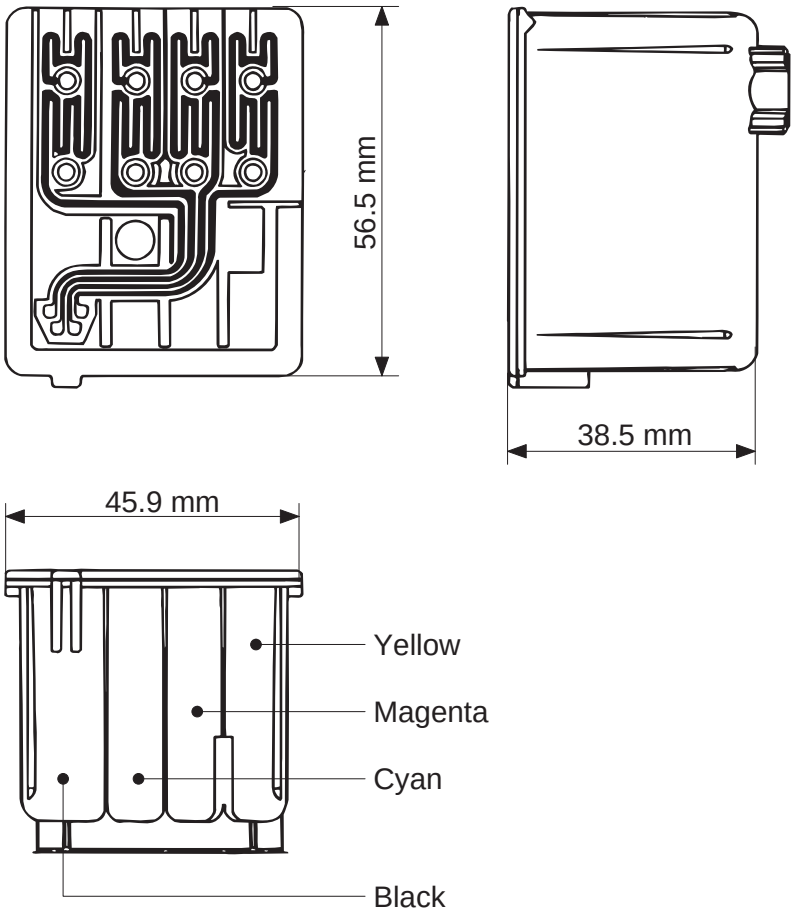


Figure 1-4. Ink Cartridge

1.2.9 Electrical Specifications

Table 1-7. Electrical Specification

Item	120V Version	220 ~ 240V 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 (Max. 0.5 A)	0.3 A (Max. 0.3 A)
Power Consumption	Approx. 15 W (ISO/IEC10561 LETTER pattern)	Approx. 15 W (ISO/IEC10561 LETTER pattern) Energy Star Compliant
Insulation Resistance	10 MΩ, Min. (applying 500 VDC between AC line and chassis)	10 MΩ, Min. (applying 500 VDC between AC line and chassis)
Dielectric Strength	AC 1000 Vrms for 1 min. or AC 1200 Vrms for 1 sec. (between AC line and chassis)	AC 1500 Vrms for 1 min. (between AC line and chassis)

1.2.10 Environmental Conditions

Table 1-8. Environmental Conditions

Condition	Operating	Non operating
Temperature	10 ~ 35 °C ∗3	-20 ~ 60 °C ∗1
Humidity	20 ~ 80 % ∗2/3	5 ~ 85 % ∗1/2
Shock Resistance	1G (within 1 ms)	2G (within 2 ms) ∗1
Vibration Resistance	0.15G	0.50G ∗1

Note) *∗1: Applicable when the unit is in a shipping container.*
∗2: Without condensation.
∗3: The unit should be operated within the range shown in figure below.

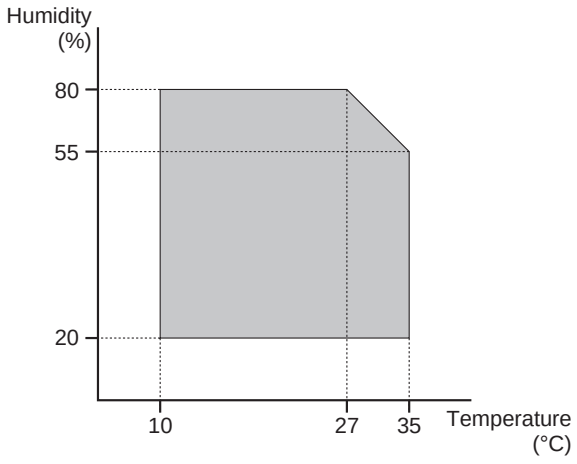


Figure 1-5. Temperature and Humidity Range

1.2.11 Reliability

Total Print Volume: 10,000 pages (A4 / LETTER)
Printhead Life: 1000 million dots / nozzle (Black and CMY)

1.2.12 Acoustic Noise

Level: Approx. 45 dB(A) (according to ISO7779)

1.2.13 Safety Approvals

Table 1-9. Safety Approvals

Item	120V Version	220 ~ 240V Version
Safety Standard	UL1950 with D3 CSA C22.2 No.950 with D3	EN 60950 (TÜV, NEMKO)
EMI	FCC part 15 subpart B class B CSA C108.8 class B	EN55022 (CISPR Pub.22) class B AS/NSZ 3548 class B

1.2.14 CE Marking

[220 ~ 240V Version only]

Low Voltage Directive 73/26/EEC:	EN60950
EMC Directive89/336/EEC:	EN55022 Class B
	EN61000-3-2
	EN61000-3-3
	EN50082-1
	IEC801-2
	IEC801-3
	IEC801-4

1.2.15 Physical Specifications

Dimensions: 397 (W) × 319 (D) × 269 (H) mm
(operating condition)

Weight: 3.9 Kg (exclude the printhead and the ink cartridge)

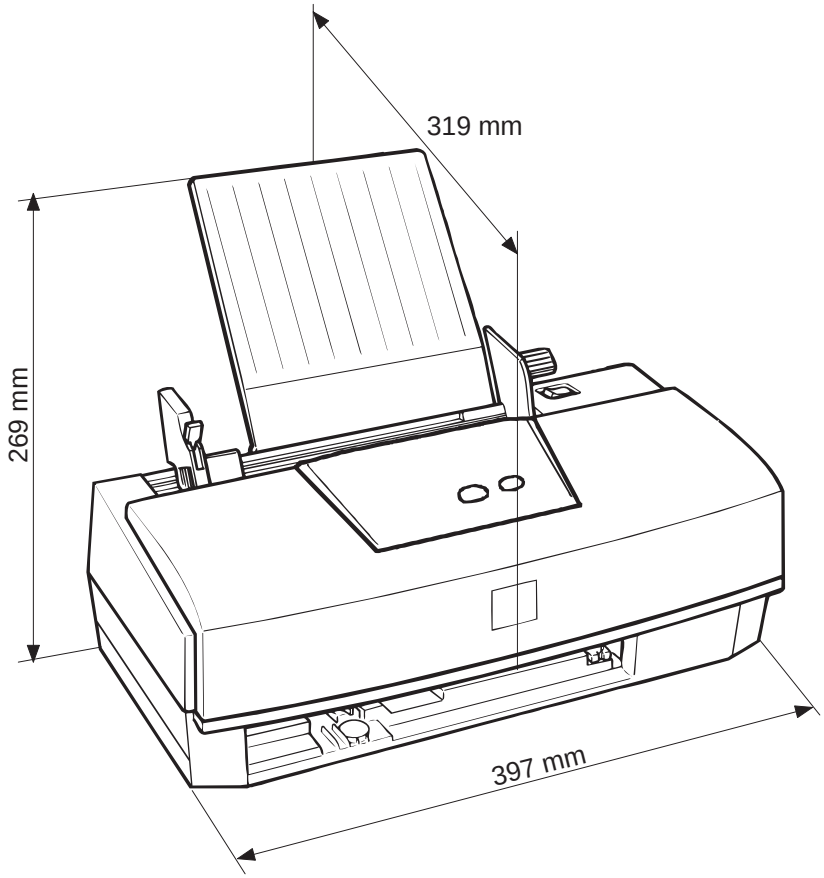


Figure 1-6. Dimensions

1.3 INTERFACE SPECIFICATION

Refer to the service manual of EPSON Stylus Color 200 / Stylus 200 for details.

1.4 OPERATIONS

This section describes the basic operation of the printer.

1.4.1 Control Panel

The control panel is equipped with two non-lock type push buttons and three LED indicators, and operations of each button and LED indicator are described below.

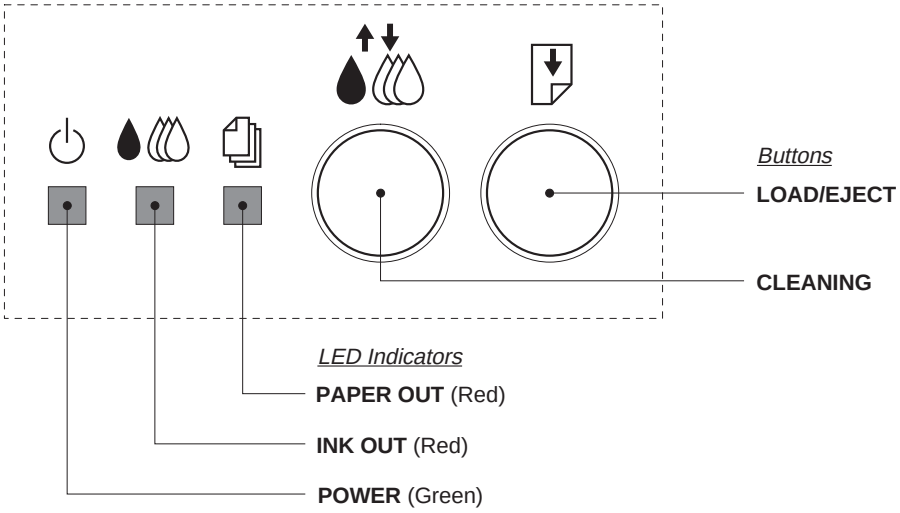


Figure 1-7. Control Panel

1.4.1.1 Buttons

❑ Normal Operation

Table 1-10. Control Panel - Normal Operations

Button	Operation	Function
LOAD/EJECT	Pressed less than 3 sec.	● Loads or ejects the paper. ● When the carriage is at the ink-cartridge replace position, return the carriage to the home position.
	Pressed for 3 sec.	● Starts the ink-cartridge replace operation and the carriage moves to the ink-cartridge replace position.
CLEANING	Pressed less than 3 sec.	● Starts the cleaning operation. ● When the printer is in “Ink Low”, “Ink Out” or “No ink cartridge” status, the printer moves the carriage to the ink-cartridge replace position.
	Pressed for 3 sec.	● When the carriage is at the ink-cartridge replace position, return the carriage to the home position.

❑ Power-On Operation

Table 1-11. Control Panel - Power-on Operations

Button		Function
[1st button] *Hold down at power on*	***[2nd button]*** *Pressed within 3 sec. after power on. ∗2*	*The printer perform the following after performing the control panel operation in left column.*
CLEANING	-----	Self-printing test
LOAD/EJECT	-----	Status printing
LOAD/EJECT + CLEANING	LOAD/EJECT + CLEANING ∗1	EEPROM Initialization

Note) *∗1: Holds down the specified buttons for 10 sec. or more until INK OUT and PAPER OUT LED starts blinking.*

∗2: After the power on, INK OUT and PAPER OUT LED starts blinking and continue for about 3 sec. "Press within 3 sec. after power on" means to press 2nd buttons while these LED are blinking.

❑ **Self-test printing**: The printer prints the self check test pattern. The printer prints a page at a time and pauses between each page. When the printer is in pause state, press LOAD/EJECT button to resume printing and turn the power off to cancel the self-test printing.

❑ **Status printing**: The printer prints; Firmware version, ink counter value and a nozzle check pattern. The printer goes to a pause state after print one page. To cancel the status printing, turn the power off while the printer is in pause state.

❑ **EEPROM Initialization**: Initialize the following addresses of the EEPROM (refer to the EEPROM address map table in Appendix.)

1AH:	Interface selection (00H: Auto)
1BH:	Interface Wait Time (02H: 2 sec.)
2CH/2DH:	Counter A (Protect counter) (00H)
70H - 73H:	4-color head non-installation time (00H)
78H - 7BH:	Power Off Timer (00H)

1.4.1.2 LED Indicators

The LED indicators of the control panel shows the various printer status as below.

Table 1-12. Control Panel - LED Status Indications

Status	POWER	INK OUT	PAPER OUT	Priority
Ink low (printable)	ON	Blink	-----	Low
Ink out (not printable)	ON	ON	-----	
Paper out	ON	-----	ON	
Paper jam	ON	-----	Blink	
No ink cartridge	ON	ON	-----	Medium
No printhead	ON	Blink (Fast)	-----	
• Replacing head/ink cartridge • Printing • During ink sequence	Blink	-----	-----	High
EEPROM initialization	ON	Blink	Blink	
Button(s) is pressed at power on	Blink	Blink (Fast)	Blink (Fast)	
• Carriage control error • Fatal error	Blink	ON	ON	Highest
Maintenance request	Blink (Fast)	Blink (Fast)	Blink (Fast)	

1.5 MAIN COMPONENTS

The EPSON Stylus Color 300 is composed of the following main components:

- ❑ Printer mechanism
- ❑ Main control board (C224 MAIN Board)
- ❑ Power Supply Unit (C160 PSB/PSE Board : Same as EPSON Stylus Color 200 / Stylus 200)
- ❑ Control Panel
- ❑ Housing

1.5.1 Printer Mechanism

The mechanical design of printer mechanism for EPSON Stylus Color 300 is basically the same with EPSON Stylus Color 200/Stylus 200, and is equipped with the detachable 4-colors one-piece printhead unit.

1.5.2 Main Control Board (C224 MAIN Board)

The main control board (C224 MAIN board) is controlled by the M37721S2BFP 16bit CPU (IC2) which driven with 25MHz clock speed. The E05B49KA custom gate array (IC1) controls the memories (ROM and RAM), a built-in parallel interface circuit and the printhead drive voltage generation circuit.

1.5.3 Power Supply Unit (C160 PSB/PSE Board)

The power supply unit of EPSON Stylus Color 300 is exactly the same with EPSON Stylus Color 200/Stylus 200.

1.5.4 Housing

In accordance with the control panel design change, the upper housing is also changed from EPSON Stylus Color 200/Stylus 200.

CHAPTER 2
OPERATING PRINCIPLES

2.1 OVERVIEW

Since most of the printer mechanism design and the electrical circuits of EPSON Stylus Color 300 remains the same with EPSON Stylus Color 200/Stylus 200, this chapter only describes the difference in the printer mechanism.

2.1.1 PRINTER MECHANISM

Based on the printer mechanism for EPSON Stylus Color 200/Stylus 200, a newly designed one-piece 4-color printhead is incorporated on EPSON Stylus Color 300. This section only describes the printhead.

2.1.1.1 Printhead Unit

The printhead unit for EPSON Stylus Color 300 is a new design printhead and has both black and color (CMY) nozzles in one unit. The nozzle arrangement of the printhead is shown below.

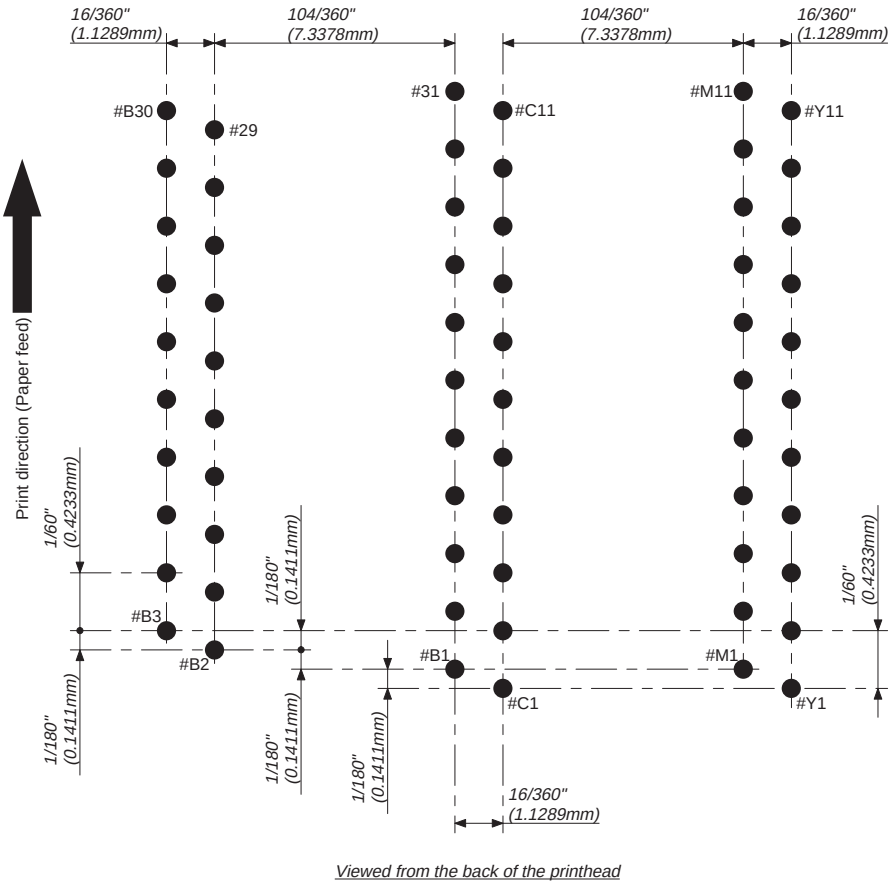


Figure 2-1. Printhead (Nozzle Configuration)

To compensate the electrical characteristics variation of the piezo-electric element used on each printhead unit, the electrical characteristics is measured at the factory and the measured characteristic level is designated as an ID of the printhead. The ID of printhead is recorded on each printedhead by changing a signal line pattern connection on the head drive circuit of the printhead. The main control circuit detect the status of this signal line and determines the printhead ID and adjust the head drive voltage level according to the printhead ID. Therefore, no head ID registration to EEPROM is required on this printer.

CHAPTER 3
DISASSEMBLY AND ASSEMBLY

3.1 OVERVIEW

This section describes procedures for disassembling and assembling the main components of EPSON Stylus Color 300. Since the most of components are the same with EPSON Stylus Color 200/Stylus 200, this manual only describes procedures unique to this printer.

3.1.1 Upper Case Removal

1. Remove the sheet guide from the printer.
2. Move the paper select lever to the backward position, then remove one screw (CBP/M2x6) securing a knob to the paper select lever.
3. Open the printer cover, then remove five screws (one CBB/M4x6 and four CBP/M4x12) securing the upper case to the bottom case.
4. Remove the upper case by lifting it upward.

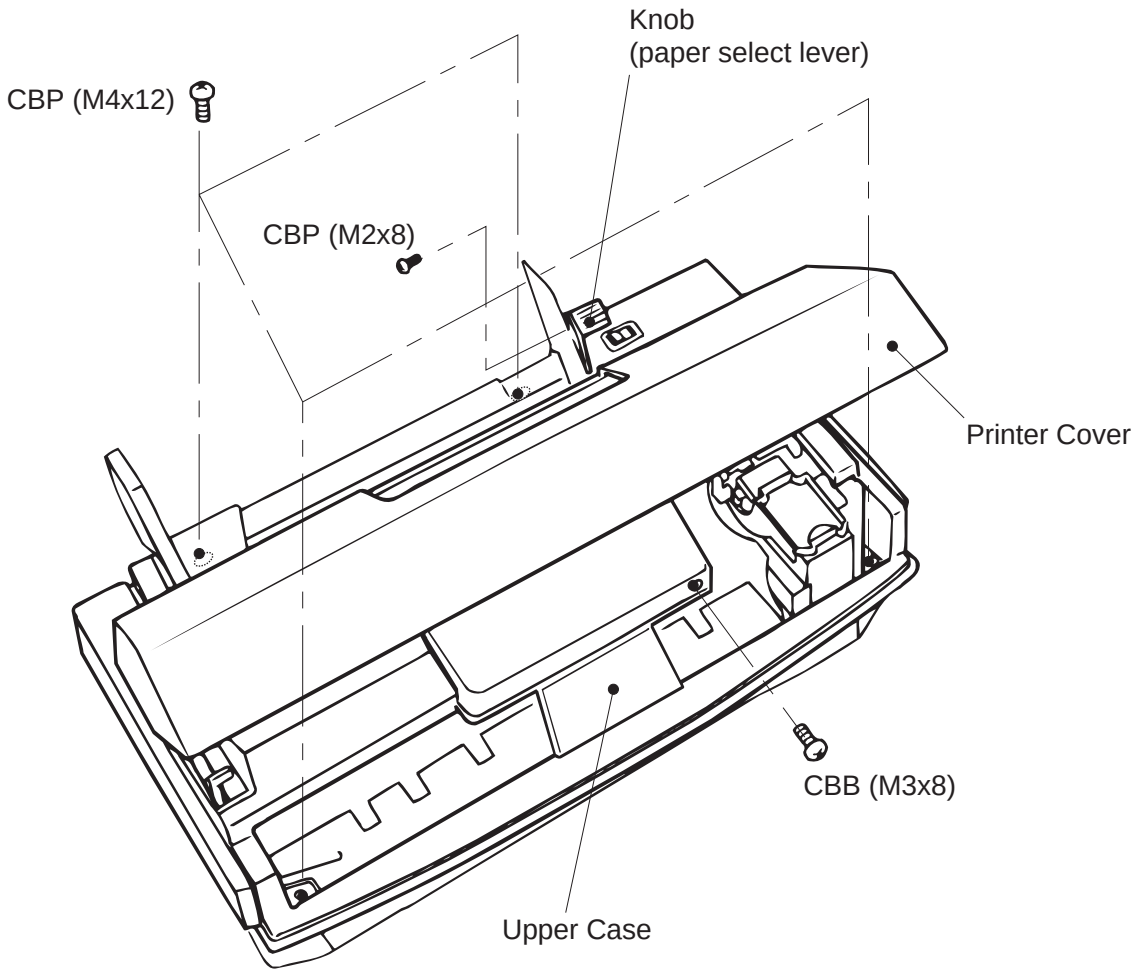


Figure 3-1. Upper Case Removal

3.1.2 C224 MAIN Board Removal

1. Remove the upper case. (See Section 3.1.1).
2. Remove five screws (CBB/M3x6); four screws fixing the shield plate directly to the C224 MAIN Board and one screw fixing the metal bracket to the shield plate.
3. Disconnect all cables connected to the C224 MAIN Board and remove the C224 MAIN Board.

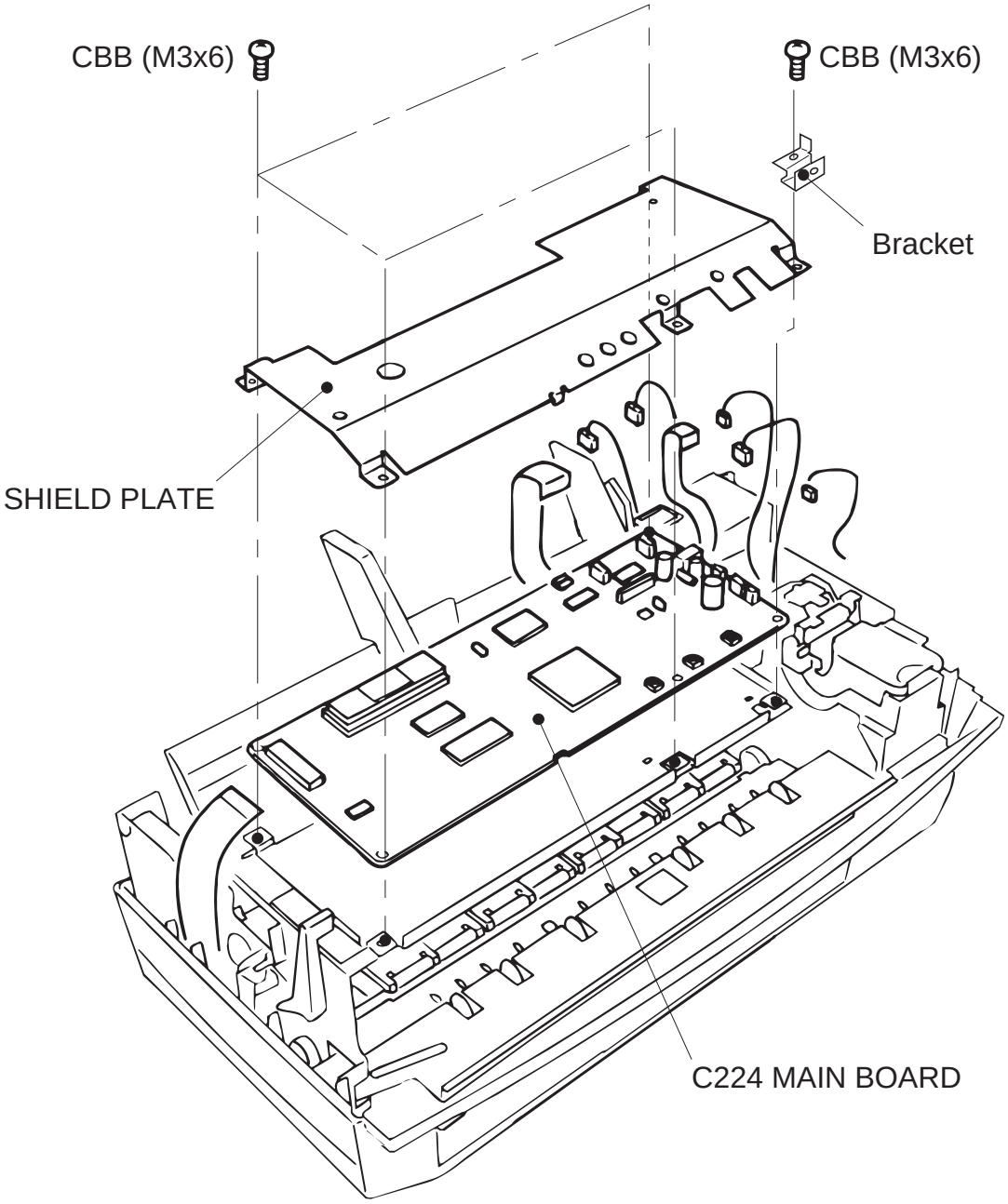


Figure 3-2. C224 MAIN Board Removal

CHAPTER 4
ADJUSTMENT

4.1 OVERVIEW

This section describes procedures for adjustments which required when the printer is disassembled and assembled for repair.

⚠CAUTION

- ***Once the ink cartridge is removed from the printer before ink-end, never re-use it.***
- ***For adjustment and testing, always replace the ink cartridge to new one designed exclusively for service:***
  Description:
  Code:

4.1.1 Adjustment Tools

The table below lists the tools required to make adjustment on EPSON Stylus Color 300.

Table 4-1. Tools for Adjustment

Tool	Code	Applicable Adjustment
Thickness Gauge Set #F518 *1	B776702201	• Platen Gap Adjustment
Adjustment Program Name: CLR300.EXE	-----	• Head Angle Adjustment • Bi-D Adjustment • Zig-Zag Alignment Adjustment • RESET function for: *Ink counter *Initial charge flag *Protect counter (Waste ink counter)

4.1.2 Applicable Repair

An appropriate adjustment have to be made according to the type of repair performed.

Table 4-2. Applicable Adjustment

Repair	Applicable Adjustment
C224 MAIN board is replaced *1	• Zig-Zag Alignment Adjustment • Bi-D Adjustment
Printhead is replaced *2	• Zig-Zag Alignment Adjustment • Head Angle Adjustment
Printer mechanism is replaced *2	• Zig-Zag Alignment Adjustment • Bi-D Adjustment
• CR Motor or timing belt is replaced • Carriage assembly is disassembled	• Bi-D Alignment

Note) *1: Replace the ink cartridge and the waste ink pad to new one and reset ink counter and protect counter.
****2: Replace the ink cartridge to new one and reset initial charge flag and ink counter.***

4.1.3 Adjustment Program

The adjustment program CLR300.EXE is specifically designed for use with the EPSON Stylus Color 300 and the following adjustments can be made with this program.

- ❑ Zig-Zag Adjustment
- ❑ Bi-D Adjustment
- ❑ Head Angle Adjustment
- ❑ Reset operation

To start making adjustment with the program, execute the program on the PC that connected to the target printer and follow the instruction shown on the PC monitor.

⚠CAUTION

Since the mechanism design is the same with the EPSON Stylus Color 200, refer to the service manual for EPSON Stylus Color 200, at Chapter 4 Adjustment, for the detail procedures.

4.1.3.1 Zig-Zag Adjustment

This adjustment is required to specify the print timing control parameter that determines the ink injection timing for each nozzle. If the adjustment is wrong, a vertical line printed within single print pass become jagged.
Verify the check pattern printed by the program and specify the parameter until the check pattern become aligned most properly.

4.1.3.2 Bi-D Adjustment

This adjustment is required to specify the control parameter that determines the print timing in bi-directional printing. If the adjustment is wrong, the print position at each print direction is not aligned each other.
Verify the check pattern printed by the program and specify the parameter until the check pattern become aligned most properly.

4.1.3.3 Head Angle Adjustment

This adjustment is required when the printhead is replaced to new one. Every dot line (raster) need to be parallel each other and the angle of the printhead, at which the printhead is fixed on the carriage assembly, determines a parallel level.
The program prints the check pattern to judge the angle of printhead, and is the angle is not correct, move the head angle adjust lever located at the right hand side of the carriage assembly to a position with which the printed pattern become parallel.

4.1.3.4 RESET Fucntion

Since various ink system management information are stored in EEPROM on the main board, the information integrity need to be kept even after the combination of the printer mechanism and the main board is altered. Therefore, if any of the component (main board, printer mechanism or the printhead) is replaced to new one, reset the appropriate information (counter value or flag).

Table 4-3. RESET Operation

Type of Repair	Required Operation
C224 MAIN board is replaced	• Ink Cartridge replacement • Waste ink pad replacement • [RESET] Ink counter • [RESET] Protect counter
Printer Mechanism is replaced	• [RESET] Initial charge flag • [RESET] Ink counter • Ink Cartridge replacement
Printhead is replaced	• [RESET] Initial charge flag • [RESET] Ink counter • Ink Cartridge replacement

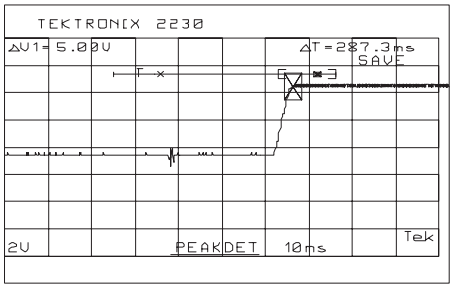
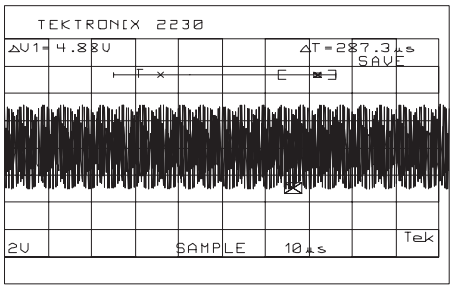
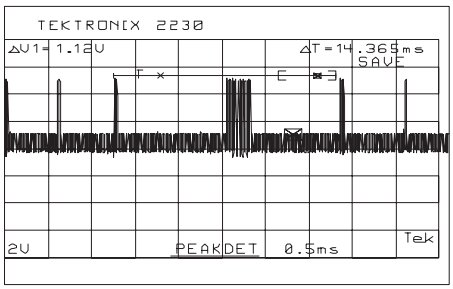
CHAPTER 5
TROUBLESHOOTING

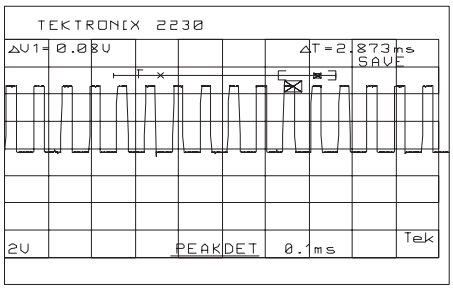
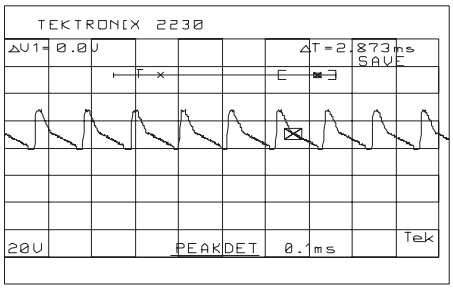
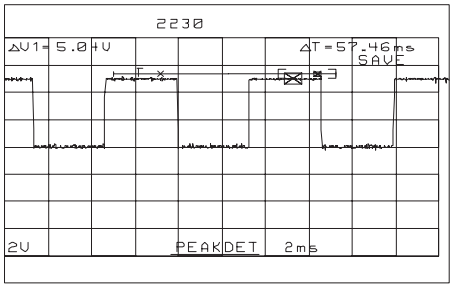
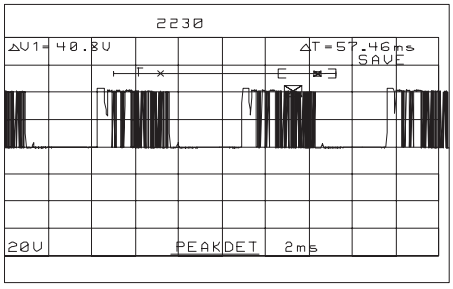
5.1 OVERVIEW

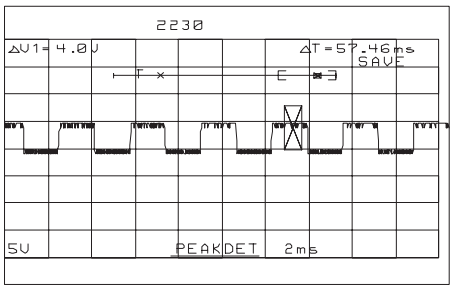
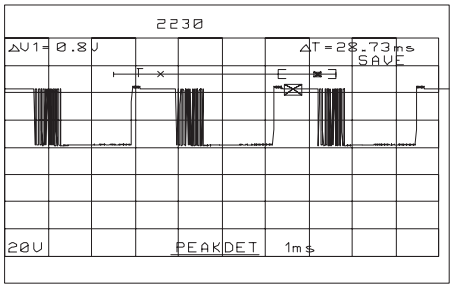
Since the printer mechanism and the power supply unit are remains the same with EPSON Stylus Color 200/Stylus 200, this chapter describes only the checkpoints on the main control circuit; C224 MAIN Board.

5.1.1 Unit Repair - C224 MAIN Board

The table below provides various symptom, likely causes and checkpoint, relating to the C224 MAIN Board.

Symptom	Condition	Cause	Checkpoint	Solution
Printer does not operate at all.	CPU does not operate.	Reset IC (IC9) is defective	Check the signal waveform at pin 6 of IC9: 	Replace IC9
		Oscillator (CR2) or CPU (IC2) is defective	Is the signal waveform output from CR2 correct at pin 37/38? 	Correct: Replace IC2 Incorrect: Replace CR2
	ASIC does not operate.	ASIC (IC1) is defective	Is the signal waveform at pins 52 of IC1 correct? 	Replace IC1

Symptom	Condition	Cause	Checkpoint	Solution
Self-test printing is abnormal.	No printing.	PWM signal is not output.	Is PWM signal waveform correct at pin 140 of IC1? 	Replace IC1
		Head drive voltage generation circuit does not operate.	Check waveform of the signal VO: 	Replace any defective components: Q1/2/4/7/8 or QM1/3/4/5/6/7/8
Carriage does not operate normally.	Drive signals are not output correctly.	CPU (IC2) is defective	Is the signal waveform correct at pin 5/6 of IC2? 	Replace IC2
		CR Motor driver (IC8) is defective	Is the signal waveform correct at pin 3/6/18/21 of IC8? 	Correct: Replace CR Motor Incorrect: Replace IC9

Symptom	Condition	Cause	Checkpoint	Solution
Paper does not advance normally.	Drive signals are not output correctly.	CPU (IC2) is defective	Is the signal waveform correcr at pin 7/8 of IC2? 	Replace IC2
		PF Motor driver (IC16) is defective	Is the signal waveform correct at pin 14/17/20/23 of IC16? 	Correct: Replace PF Motor Incorrect: Replace IC16

CHAPTER 6
MAINTENANCE

6.1 OVERVIEW

This section describes the maintenance points and the procedures specific for EPSON Stylus Color 300.

⚠WARNING

- ***If ink gets in your eyes, flush them immediately with water and seek medical attention.***
- ***Disconnect the printer from the power source when you clean inside the printer.***

⚠CAUTION

- ***Once the ink cartridge is removed from the printer before ink-end, never re-use it.***
- ***For adjustment and testing, use the ink cartridge designed exclusively for service:***
  Description:
  Code:

6.1.1 Maintenance Request

The printer counts total amount of ink drained to the waste ink pad and this information is stored in the EEPROM on the main board, as the protect counter A value for ink system operation management. When the counter value reaches the predetermined value, the printer detects it as “Maintenance Request” error and displays the error status with the control panel LED indicators (see Table 1-12 at Chapter 1, Section 1.4.1.2 LED Indicators). When this error displayed, replace the waste ink pad to new one and reset the counter value with the procedure shown below.

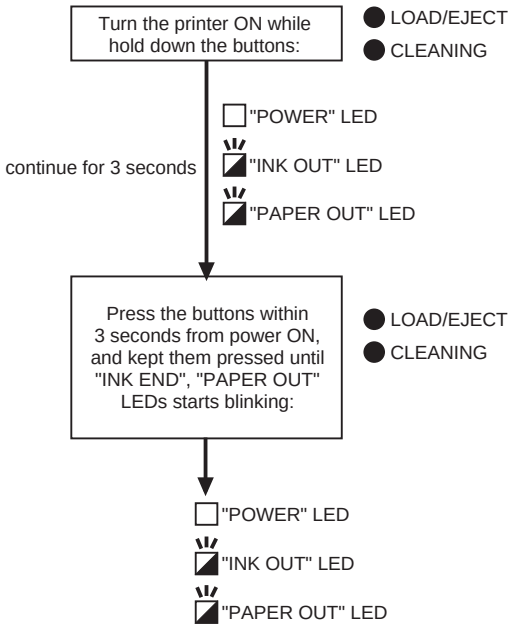


Figure 6-1. “Maintenance Request” Error Clear Operation

APPENDIX

A.1 OVERVIEW

The main board of EPSON Stylus Color 300 is C224 MAIN BOARD and each connector and its pin assignment are the same with the main board for EPSON Stylus Color 200. Therefore, refer to the service manual for EPSON Stylus Color 200 for the details.

A.2 EEPROM Address Map

The table below shows the addresses of EEPROM and the contents stored at each address.

Table A-1. EEPROM Address

Address	Data	Value	Factory Default
00 - 01H	(Reserved)	-----	00H
02H	Market (Model)	0: World 1: Japan 2 - 4: Custom	00H
03 - 11H	Customized model name	• Strings counter • Strings of model field for device ID	00H
12 - 13H	Bi-D Adjustment data	-36 ≤ n ≤ +36 (unit: 1/1440 inch)	*1
14 - 15H	(Reserved)	-----	00H
16H	Fire period adjustment data	-4 ≤ n ≤ +10 (unit: 0.08sec.)	*1
17H	(Reserved)	-----	00H
18H	EEPROM Status	00H: Used (once initialized) other: Not used (to be initialized)	00H
19H	• THICK paper direction • Auto LF • Print direction • Network I/F mode	Bit 7: <Thick paper> 0: Index card (Portrait) 1: Envelope (Landscape) Bit 3: <Auto LF> 0: OFF 1: ON Bit 2: <Network I/F mode> 0: OFF 1: ON Bit 1/0: <Print direction> 0/0: Bi-D 0/1: Uni-D 1/1: Auto	82H
1AH	Interface selection	00H: Auto 02H: Parallel I/F 03H: Serial I.F	00H *2
1BH	Interface wait time	02H: 2sec. 03H: 3sec.	02H *2
1CH	(Reserved)	-----	-----
1DH	Reply printer status control data	Bit 0: <function> 0: ON 1: OFF	00H
1EH	Non-smear print mode	Bit 0: <function> 0: Normal 1: Non-smear print mode	00H
1FH	(Reserved)	-----	-----

Table A-2. EEPROM Address (continued)

Address	Data	Value	Factory Default
20H	CR Motor initial phase		*1
21H	(Reserved)	-----	-----
22 - 23H	YMC Accumulated time		00H
24 - 25H	Counter D		00H
26 - 27H	Counter E (Initial charge flag)	00H: Initial charge required 01H: Initial charge done	00H
28 - 29H	Counter R (Cap flushing counter)		00H
2A - 2BH	Ink status		00H
2C - 2DH	Counter A (Protect counter)		00H
2E - 2FH	Counter C (Number of power ON)		00H
30 - 35H	Fire dot counter K (Black)	1 count = 1ng	00H
36 - 3BH	Fired dot counter Y (Yellow)	1 count = 1ng	00H
3C - 41H	Fired dot counter M (Magenta)	1 count = 1ng	00H
42 - 47H	Fired dot counter C (Cyan)	1 count = 1ng	00H
48 - 6BH	(Reserved)	-----	00H
6C -6FH	Head vacuuming time A	0 to FFFFFFFFH (unit: 10 min.) Start from 1992/01/01 00:00	01H 00H 00H 00H
70 - 73H	4-color head uninstallation time	0 to FFFFFFFFH (unit: 10 min.) Start from 1992/01/01 00:00	00H *2
74 - 77H	(Reserved)	-----	00H
78 - 7BH	Power off time	0 to FFFFFFFFH (unit: 10 min.) Start from 1992/01/01 00:00	00H *2
7CH	(Reserved)	-----	-----
7DH	VH adjust value (KR)	(10000 x KR)	-----
7EH	VH adjust value (Vad-L)	(1000 x VerrAD(L))	-----
7FH	VH adjust value (Vad-H)	(1000 x VerrAD(H))	-----

A.3 CIRCUIT DIAGRAM (C224 MAIN BOARD)

EPSON OVERSEAS MARKETING LOCATIONS

EPSON AMERICA, INC.

20770 Madrona Ave.
P.O. Box 2842
Torrance, CA 90509-2842
Phone: (800) 922-8911
Fax: (310) 782-5220

EPSON UK LTD.

Campus 100, Mayland Avenue,
Hemel Hempstead, Herts,
HP2 7TJ, U.K.
Phone: (+44) 01442 61144
Fax: (+44) 01442 227227

EPSON DEUTSCHLAND GmbH

Zülpicher Straβe 6,
40549 Düsseldorf Germany
Phone: (0211) 56030
Telex: 8584786

EPSON FRANCE S.A.

68 bis, rue Marjolin
92300, Levallois-Perret, France
Phone: 33.1.40.87.37.37
Telex: 610657

EPSON AUSTRALIA PTY. LTD.

70 GIBBES STREET, CHATSWOOD 2067
NSW.
Phone: 2-9903-9000
Fax: 2-9903-9177

EPSON SINGAPORE PTE. LTD.

No.1 Temasek Avenue #36-00
Millenia Tower, Singapore 039192
Phone: (065) 33 77 911
Fax: (065) 33 41 185

EPSON HONG KONG LTD.

Rooms 4706-10, 47/F
China Resources Bldg.,
26 Harbour Road, Wanchai, Hong Kong
Phone: 2585-4300
Fax: 2827-7083

EPSON TAIWAN TECHNOLOGY & TRADING LTD.

10F, No.287 Nanking E. Road, Sec.3,
Taipei, Taiwan, R.O.C.
Phone: (02) 717-7360
Fax: (02) 712-9164

EPSON ITALIA S.p.A.

V. le F. lli Casiraghi 427
20099 Sesto S. Giovanni
MI, Italy
Phone: 2-262331
Fax: 2-2440750

EPSON IBERICA S.A.

Av. de Roma, 18-26
08290 Cerdanyola del Valles
Barcelona, Spain
Phone: 582.15.00
Fax: 582.15.55

EPSON PORTUGAL, S.A.

R. do Progresso, 471, 1° Perafita
4460 Matosinhos, Portugal
Phone: (02) 996 14 02
Fax: (02) 996 14 11

SEIKO EPSON CORPORATION
HIROOKA OFFICE / Imaging & Information Products Division

80 Harashinden, Hirooka
Shiojiri-Shi, Nagano-Ken
399-07 Japan

EPSON

SEIKO EPSON CORPORATION