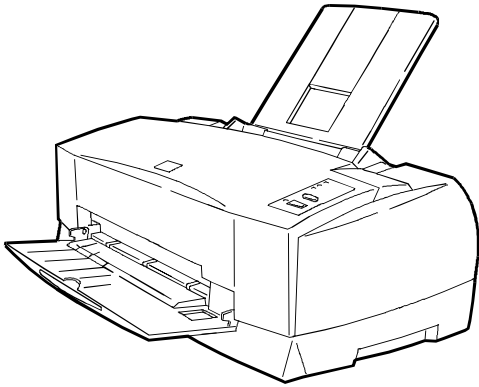


# SERVICE MANUAL



Color Ink Jet Printer  
**EPSON Stylus Color 850**



**EPSON®**

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# PRECAUTIONS

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

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

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

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

## **DANGER**

1. ALWAYS DISCONNECT THE PRODUCT FROM 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 Stylus Color 850. 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 STATUS

Rev.	Date	Page(s)	Contents
A	1998/04/9	All	First release

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**CHAPTER**

**1**

**PRODUCT DESCRIPTIONS**

## 1.1 FEATURES

The EPSON Stylus COLOR 800/850 are a high-performance color ink jet printer designed for the small office/home office (SOHO) market. The main features of this printer are:

- High print quality for color graphics
  - High resolution 1440 (H) x 720 (V) dpi printing
  - Colors Cyan, Magenta, Yellow, Black
  - Printing method Traditional and new Microweave printing
  - Smaller dot diameter Stylus Color 800 uses Normal and Micro dot.  
Stylus Color 850 uses Normal, Micro, Super micro dot.
  
- High-speed printing
  - 400 cps in LQ mode
  - 533 cps in Draft mode
  
- Built-in auto sheet feeder with a wide page capability and high capacity  
This printer holds: 100 cut-sheets (55 g/m<sup>2</sup>)
  - 10 envelopes
  - 20 sheets of glossy paper
  - 30 index cards
  - 50 transparency film sheets
  - 70 sheets of special paper
  
- Two interfaces built-in and one optional Type-B interface card slot
  - Mac serial interface (up to approximately 900Kbps)
  - Bi-directional parallel interface (IEEE-1284 level 1 device)
  - Optional Type-B interface card slot
  
- High speed paper loading and ejecting.  
Printing speed is same as Stylus Color 800, but paper eject speed is improved for Stylus Color 850.
  
- 4 scalable fonts and 5 LQ fonts
  - Scalable fonts Roman T, Sans Serif H, Roman, Sans Serif
  - LQ fonts Roman, Sans Serif, Courier, Prestige, Script
  
- 9 usable character tables (NLSP version)  
Italic, PC437, PC850, PC437 Greek, PC852, PC853, PC855, PC857, PC866, PC869,  
MAZOWIA, Code MJK, ISO 8559-7, Latin ISO Latin 1T, Bulgaria, PC774, Estonia, ISO 8859-2,  
PC866 LAT, PC866 UKR, PCAPTEC, PC708, PC720, PCAR864, PC860, PC865, PC861,  
Hebrew7\*1, Hebrew8\*2, PC862(Hebrew)\*1.



***Character with “\*1” in the character table above is the hidden character table which is not mentioned in the user’s guide and is also not able to set on the default setting.***



## 1.1.1 Options

**Table 1-1. Options**

Part Number	Description
C82305/C82306	Serial interface card
C82307/C82308	32KB serial interface
C82310*	32KB parallel interface card
C82313*	32KB EEE-488 interface card
C82315*	TWAIN interface card
C82314*	Coax interface card
C82312*	LocalTalk™ interface card
C82331*	Ethernet interface card
C82345*	Type B bi-directional parallel interface card
C836021*	Parallel interface cable (shielded) (D-SUB 25-pin to Amphenol 57)
C83603*/C83604*	Serial interface cable (D-SUB 25-pin to D-SUB 25-pin)
C83605* C83606*	Serial interface cable (D-SUB 9-pin to D-SUB 25-pin)
S020108	Black ink cartridge
S020089	Color ink cartridge
S041059	EPSON 360 dpi ink jet paper (A4) / 100 sheets pack
S041025	EPSON 360 dpi ink jet paper (A4) / 200 sheets pack
S041060	EPSON 360 dpi ink jet paper (Letter) / 100 sheets pack
S041061	EPSON photo-quality Ink jet paper (A4) / 100 sheets pack
S041026	EPSON photo-quality Ink jet paper (A4) / 200 sheets pack
S041062	EPSON photo-quality ink jet paper (Letter) / 100 sheets pack
S041067	EPSON photo-quality ink jet paper (Legal) / 100 sheets pack
S041054	EPSON photo-quality ink jet card (A6) / 50 sheets pack
S041121	EPSON photo-quality ink jet card (5.8 inches)
S041122	EPSON photo-quality ink jet card (10.8 inches)
S041071	EPSON photo-quality glossy film (A4) / 15 sheets pack
S041072	EPSON photo-quality glossy film (Letter) / 15 sheets pack
S041107	EPSON photo-quality glossy film (A6) / 10 sheets pack
S041126	EPSON photo-quality glossy paper (A4)
S041124	EPSON photo-quality glossy paper (Letter)
S041063	EPSON ink jet transparencies (A4) / 30 sheets pack
S041064	EPSON ink jet transparencies (Letter) / 30 sheets pack
S041106	EPSON photo-quality self-adhesive sheets (A4) / 10 sheets pack

*Note)* Asterisk in a part number replaces the last digit of the part number, which varies by country.

## 1.2 HARDWARE SPECIFICATIONS

### 1.2.1 Printing Specifications

- Print method: On-demand ink jet
- Nozzle configuration: Monochrome (Black) 128 nozzles (32 x 4 staggered)  
Color (magenta, cyan, yellow) 64 nozzles (32 X 2 staggered, each color)

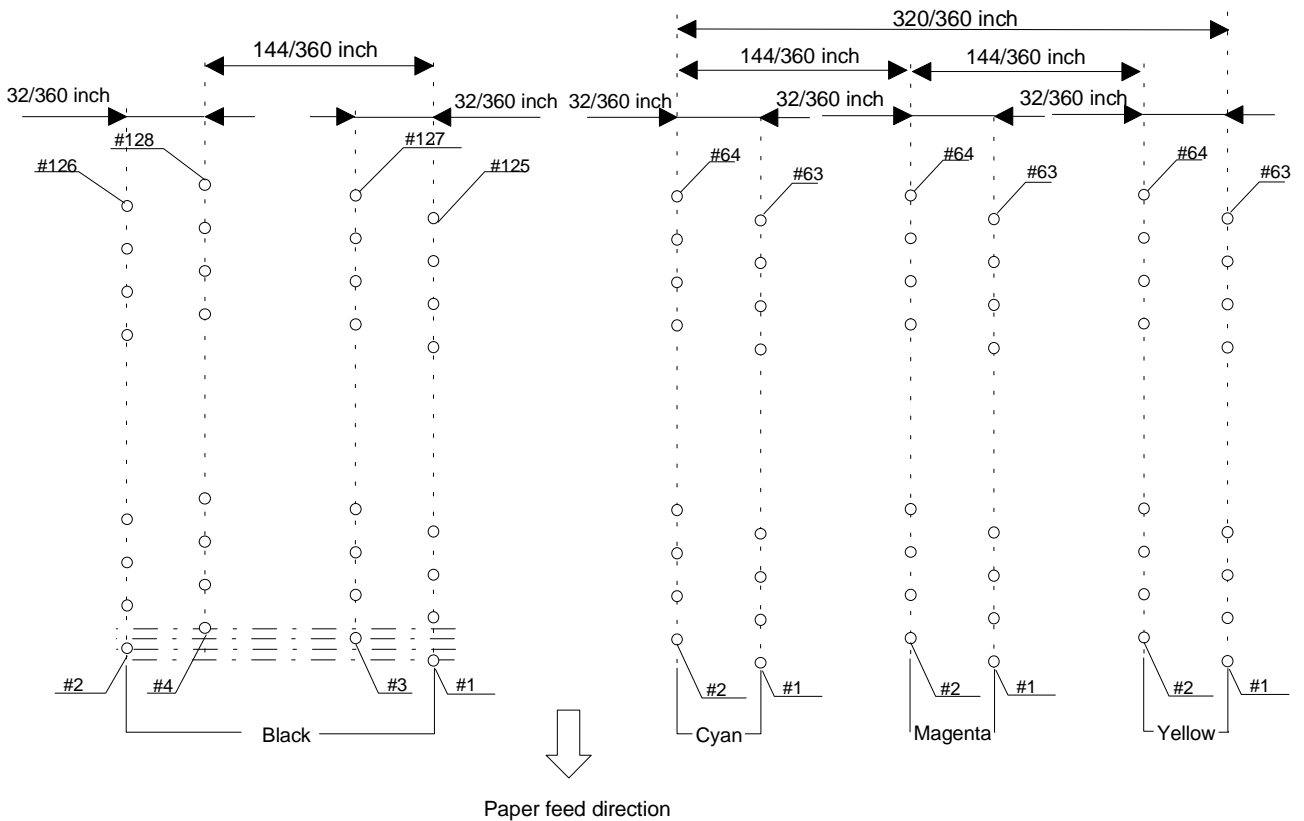


Figure 1-1. Nozzle Configuration

- Print direction: Bi-directional with logic-seeking

**CAUTION**

***Heads of Stylus Color800 and Stylus Color850 has compatibility each other. However, since the head of Stylus Color850 is able to discharge for super micro dot, the parts code number and price are different from the head of Stylus Color800. Therefore, when you need to order head, order each head exclusively made for that model. As the head of Stylus Color 850, the lot number which is written on the side (opposite side to the side head ID is written), is ended with "J".***

## 1.2.2 Print Speed and Printable Columns

**Table 1-2. Print Speed and Printable Columns in Character Mode**

<b>Character Pitch</b>	<b>Printable Columns</b>	<b>LQ Speed</b>	<b>Draft Speed</b>
10 cpi (Pica)	80	400 cps	533 cps
12 cpi (Elite)	96	480 cps	640 cps
15 cpi	120	600 cps	800 cps
17 cpi (Pica condensed)	137	684 cps	912 cps
20 cpi (Elite condensed)	160	800 cps	1067 cps

**Table 1-3. Print Speed and Printable Area for Raster Graphics Mode**

<b>Print Mode</b>	<b>Printable Area</b>	<b>Available Dots</b>	<b>CR Speed</b>
180 dpi x 180 dpi	8.27 inch	1488	26.7 ips
360 dpi x 360 dpi	8.27 inch	2976	20 ips
720 dpi x 720 dpi	8.27 inch	5952	20 ips
1440 dpi x 720 dpi *1	8.27 inch	5952 *2	10 ips

Note)

\*1: *Printing at 1440 x 720 dpi is available only using the driver microweave.*

\*2: *Can be printed by sending following command sequence:*

- 1) *Print 360 x 180 raster image.*
- 2) *Paper feed 15/720 inch.*
- 3) *Move 1/1440 inch print position.*
- 4) *Print 360 x 180 raster image.*
- 5) *Paper feed 15/720 inch.*
- 6) *Move 2/1440 inch print position.*
- 7) *Print 360 x 180 raster image.*
- 8) *Paper feed 15/720 inch.*
- 9) *Move 3/1440 inch print position.*
- 10) *Print 360 x 180 raster image.*
- 11) *Paper feed 15/720 inch.*
- 12) *Repeat 1) to 11).*

## 1.3 MAIN COMPONENTS

The main components of the Stylus COLOR 800/850 are:

- |  |                    |
|--|--------------------|
| <input type="checkbox"/> Main control board  | C202 MAIN board    |
| <input type="checkbox"/> Power supply board  | C202 PSB/PSE board |
| <input type="checkbox"/> Control panel board | C202 PNL board     |
| <input type="checkbox"/> Printer mechanism   |                    |
| <input type="checkbox"/> Housing             |                    |

The following figure shows the main component layout of the Stylus COLOR 850.

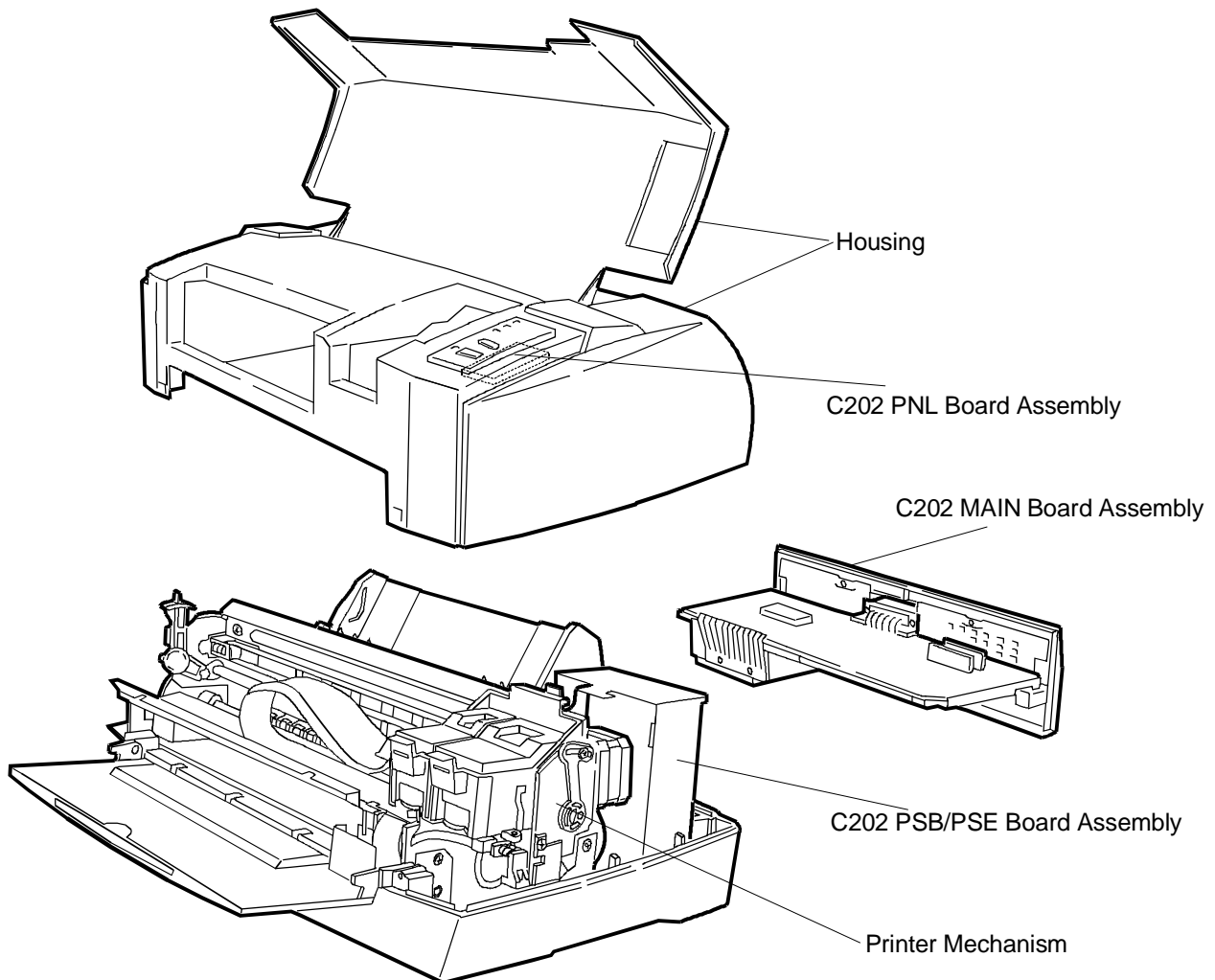


Figure 1-2. Stylus COLOR 800/850 Main Components

**CAUTION**

*Main control boards for Stylus Color800 and Stylus Color850 are same C202 main control board. However, the version of the board for Stylus Color850 is different and code number is also different from the one of Stylus Color800. The content of ROM and Gate Array are changed.*

**CHAPTER**

**2**

**OPERATING PRINCIPLES**

## **2.1 OVERVIEW**

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Compared with printing mechanism parts and electric circuit parts of Stylus Color800, following differences can be found in Stylus Color 850.

- **Printing Mechanism:** By registering same 5 digits head ID as Stylus Color800 to EEPROM, using exclusive program, ID for super micro dot can be calculated and registered automatically.
  
- **Electric Circuit:** C202PSB/E power supply boards of Stylus Color850 has compatibility with boards of Stylus Color800. Also, although board name "C202 Main control board" are same for both Stylus Color 800 and 850, code numbers are different for each model because of following reasons.
  - 1) **Program ROM:**  
Each mechanism sequence is changed and can deal with higher speed through put than Stylus Color800.
  - 2) **Gate Array(IC2):**  
Program for controlling head, which is registered in the Gate Array, is changed and various data to generate trapezoidal waveform for super micro dot is already registered.

Except for differences mentioned above, the basic components about printer mechanism and electric circuit are same as ones of Stylus Color 800, refer to Service Manual of Stylus Color 800 for more details.

**CHAPTER**

**3**

## **DISASSEMBLY AND ASSEMBLY**

Since basic component of Stylus Clor850 is same as the one of Stylus Color800, refer to Service Manual of Stylus Color 800 for disassembly and assembly procedure.

**CHAPTER**

**4**

**ADJUSTMENT**



## 4.1 OVERVIEW

Note following points, although adjustment item is same as Stylus Color 800.

- ❑ Since the program is not Basic but made by “C” Language and designed for the purpose of repairing, it differs from the one on the manufacture line. Symptom of fatal error does not occur, even if adjustment item is freely selected. Also, even if the waste ink sequence is activated, important data such as various adjustment values or RIP Module are not cleared.
- ❑ Unlike Stylus Color 800, there is no selection on the screen for setting the destination, and only confirmation of the model name appears on the initial menu.
- ❑ There is no Uni-D adjustment in Stylus Color 800, it is necessary to perform this for Stylus Color 850. There is no rule that which adjustment (Bi-d adjustment or Uni-D adjustment) should be done first. However, like the previous models, following adjustments should be done for the mechanism around the head;(Refer to Table4-1 on the Service Manual of Stylus Color800 for more details)
  - 1) Initial Ink Charge→2)Head ID Input→3)Head Angular Adjustment→4)Head Linear(height) adjustment→5)Head Gap Adjustment, then perform Bi-D adjustment or Uni-D adjustment.
- ❑ Since the adjustment for Stylus Color850 supports Bi-d Communication, there are following benefits.
  - Current Head ID value can be checked on the PC screen.
  - Current protection counter value can be checked on the PC screen.
  - Current adjustment values of Bi-D, Uni-D and Head Gap Adjustment can be checked on the PC screen.
- ❑ Although the pattern, which is mixed with black and magenta is printed and checked for the head gap adjustment in many of the previous models, please note that magenta portion is mixture of magenta and cyan in the Stylus Color 850. There are some cases that the speed of fired ink differs because of difference of color material even when the same amount of energy is put through PZT. Therefore, color head itself can be checked by this pattern. If you find a head that magenta and cyan are not mixed and each color can be distinguished respectively, exchange the color head. Also, the head gap adjustment that a user can perform through utility in the built-in function and printer driver, the pattern is printed out by black and magenta, as it is same as in the previous models.
- ❑ The printer can print printing patterns 3 times in A4 size sheet for the Head Angular Adjustment(Bk or CMY). After third printing is completed, the printer ejects the paper automatically. If you can not complete the adjustment in one sheet, select “Head Angular Adjustment” again and feed another paper sheet.
- ❑ 2 A4 size sheets are necessary for A4 check pattern.

**CHAPTER**

**5**

## **TROUBLESHOOTING**

Since the basic component of Stylus Color850 is same as the one of Stylus Color800, refer to Trouble shooting in Service Manual of Stylus Color 800 for actual procedure.

**CHAPTER**

**6**

## **MAINTENANCE**

Since the basic component of Stylus Color850 is same as the one of Stylus Color800, refer to “Maintenance” in Service Manual of Stylus Color800.

**CHAPTER**

**7**

## **APPENDIX**

Since the basic component of Stylus Color850 is same as the one of Stylus Color800, refer to “Appendix” in Service Manual of Stylus Color800.