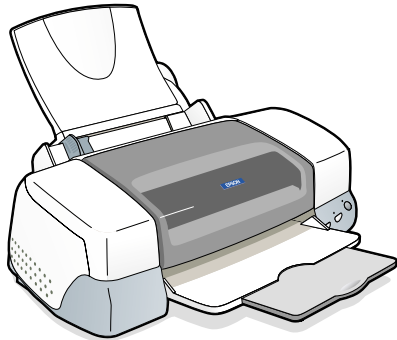
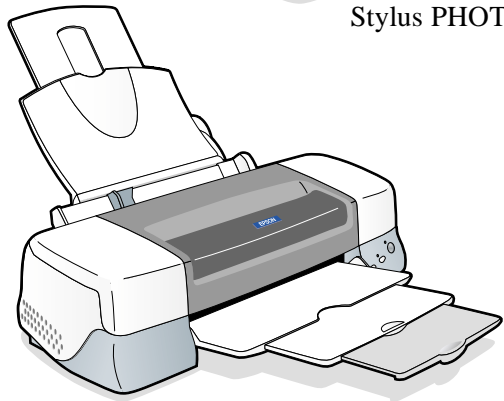


# SERVICE MANUAL



Stylus PHOTO 890



Stylus PHOTO 1290



**EPSON®**

Color ink jet printer

**EPSON Stylus PHOTO 890/1290**

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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. 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.
4. WHEN DISASSEMBLING OR ASSEMBLING A PRODUCT, MAKE SURE TO WEAR GLOVES TO AVOID INJURIES FROM METAL PARTS WITH SHARP EDGES.

## **WARNING**

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.
2. MAKE CERTAIN THAT THE SOURCE VOLTAGE IS THE SAME AS THE RATED VOLTAGE, LISTED ON THE SERIAL NUMBER/RATING PLATE. IF THE EPSON PRODUCT HAS A PRIMARY AC RATING DIFFERENT FROM AVAILABLE POWER SOURCE, DO NOT CONNECT IT TO THE POWER SOURCE.
3. ALWAYS VERIFY THAT THE EPSON PRODUCT HAS BEEN DISCONNECTED FROM THE POWER SOURCE BEFORE REMOVING OR REPLACING PRINTED CIRCUIT BOARDS AND/OR INDIVIDUAL CHIPS.
4. IN ORDER TO PROTECT SENSITIVE MICROPROCESSORS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.
5. DO NOT REPLACE IMPERFECTLY FUNCTIONING COMPONENTS WITH COMPONENTS WHICH ARE NOT MANUFACTURED BY EPSON. IF SECOND SOURCE IC OR OTHER COMPONENTS WHICH HAVE NOT BEEN APPROVED ARE USED, THEY COULD CAUSE DAMAGE TO THE EPSON PRODUCT, OR COULD VOID THE WARRANTY OFFERED BY EPSON.

# **PREFACE**

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of EPSON Stylus PHOTO 890/1290. 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:*

- *EEPROM Address Map*
- *Connector Pin Assignments*
- *Component Layout*
- *Exploded Diagrams*
- *Electrical Board Circuit Diagrams*

# 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 NOTE, CAUTION, or WARNING messages.



Indicates an operating or maintenance procedure, practice or condition that is necessary to keep the product's quality.



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



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.



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

# Revision Status

Revision	Issued Date	Description
A	November 16th, 2000	First Release
B	December 27th, 2000	Revision: <ul style="list-style-type: none"><li>• page -80: A warning message for static electricity added.</li><li>• page -81: Caution messages for torque and ink tube position added</li><li>• page -92&amp; page -94: Caution messages for ink tube installation added.</li><li>• page -123: PG adjustment tool added.</li></ul>

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**CHAPTER**

**1**

# **PRODUCT DESCRIPTIONS**

## 1.1 Overview

The EPSON Stylus PHOTO 890 and EPSON Stylus PHOTO 1290 are designed for both home use and office use. As the enhanced models of Stylus Photo 750 and Stylus Photo 1200, they offer greater performance in both print speed and quality.

### 1.1.1 Features

The main features of the products are:

- ☐ High-quality color print (6 colors)
  - High-speed & image quality bidirectional printing
  - Photo quality print enabled by photo mach technology
  - Supports microweave and super microweave
  - Prints at high resolution (2880x 720 dpi)
- ☐ Two built-in interfaces
  - Bi-directional parallel interface (IEEE-1284 level 1 device)
  - USB I/F
- ☐ Small size requiring less space.
- ☐ Used only in Windows or Macintosh environment.
- ☐ Built-in ASF (auto sheet feeder) supports multiple sizes of paper.
  - Stylus PHOTO 890: From postcard size up to A4
  - Stylus PHOTO 1290: From postcard size up to A3 (W)
- ☐ CSIC keeps track of ink life information on the ink cartridge side.

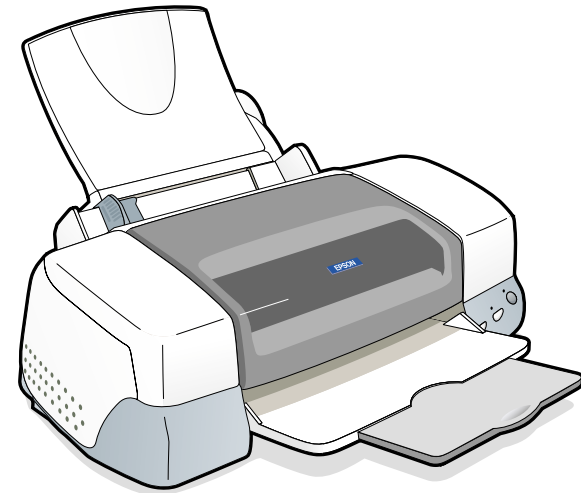


Figure 1-1. Stylus PHOTO 890

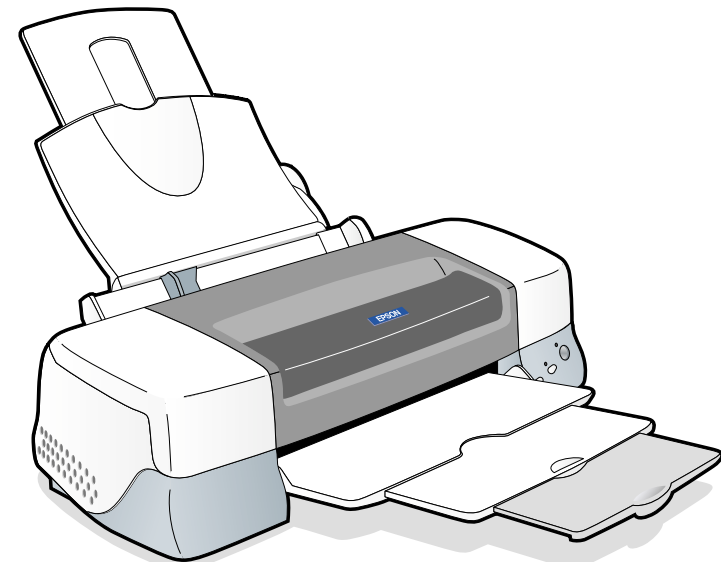


Figure 1-2. Stylus PHOTO 1290

## 1.1.2 Accessories, Consumable Products, and Options

### ACCESSORIES

- ☐ Users Guide
- ☐ Ink cartridge (Black and color)
- ☐ CD-ROM (Printer driver and utilities)

### CONSUMABLE PRODUCTS

**NOTE:** The product codes of the ink cartridges may vary by location.

**NOTE:** The availability of special media varies by location.

**NOTE:** The products with an asterisk (\*) are only available for Stylus PHOTO 1290.

**Table 1-1. Consumable Products**

Product Name	Code
Black ink cartridge	T007
Color ink cartridge (Stylus PHOTO 890)	T008
Color ink cartridge (Stylus PHOTO 1290)	T009
EPSON Premium Ink Jet Plain Paper (A4)	S041214
EPSON 360 dpi Ink Jet Paper (A4)	S041059/S041025
EPSON 360 dpi Ink Jet Paper (Letter)	S041060/S041028
EPSON 360 dpi Ink Jet Paper (A3)*	S041065/S041046
EPSON 360 dpi Ink Jet Paper (Super A3/B)*	S041066/S041047
EPSON Iron-On Cool Peel Transfer Paper (A4)	S041154
EPSON Iron-On Cool Peel Transfer Paper (Letter)	S041153/S041155
EPSON Iron-On Cool Peel Transfer Paper (A3)*	S041238
EPSON Photo Quality Ink Jet Paper (A4)	S041061/S041026
EPSON Photo Quality Ink Jet Paper (Letter)	S041062/S041029
EPSON Photo Quality Ink Jet Paper (Legal)	S041067/S041048
EPSON Photo Quality Ink Jet Paper (A3)*	S041068/S041045
EPSON Photo Quality Ink Jet Paper (Super A3/B)*	S041069/S041043
EPSON Photo Quality Ink Jet Paper (B)*	S041070/S041044

**Table 1-1. Consumable Products (continued)**

Product Name	Code
EPSON Photo Quality Ink Jet Cards (A6)	S041054
EPSON Photo Quality Ink Jet Cards(5x8")	S041121
EPSON Photo Quality Ink Jet Cards(8x10")	S041122
EPSON Photo Quality Self Adhesive Sheet (A4)	S041106
EPSON Ink Jet Note Cards A6 (with envelopes)	S041147
EPSON Ink Jet Greeting Cards 5x8" (with envelopes)	S041148
EPSON Ink Jet Greeting Cards 8x10" (with envelopes)	S041149
EPSON Matte Paper-Heavyweight (A4)	S041256/S041258/ S041259
EPSON Matte Paper-Heavyweight (Letter)	S041257
EPSON Matte Paper-Heavyweight (A3)*	S041260/S041261/ S041262
EPSON Matte Paper-Heavyweight (Super A3/Super B)*	S041263/S041264/ S041265
EPSON Photo Paper (A4)	S041140
EPSON Photo Paper (Letter)	S041141
EPSON Photo Paper (A3)*	S041142
EPSON Photo Paper (Super A3/Super B)*	S041143
EPSON Photo Paper (B)*	S041156
EPSON Photo Paper (4x6")	S041134
EPSON Photo Paper (100 x 150 mm)	S041255
EPSON Photo Paper (200 x 300 mm)	S041254
EPSON Photo Paper (89 mmx 7M)	S041281
EPSON Photo Paper (100 mm x 8M)	S041279
EPSON Photo Paper (210 mm x 10M)	S041280
EPSON Photo Paper (329 mm x 10M)*	S041233
EPSON Panoramic Photo Paper (210 x 594 mm)	S041145
EPSON Photo Paper Cards (A4)	S041177

**Table 1-1. Consumable Products (continued)**

Product Name	Code
Photo Quality Glossy Film (A4)	S041071
Photo Quality Glossy Film (Letter)	S041072
Photo Quality Glossy Film (A3)*	S041073
Photo Quality Glossy Film (Super A3/B)*	S041074
Photo Quality Glossy Film (B)*	S041075
Photo Quality Glossy Film (A6)	S041107
EPSON Photo Stickers 16 (A6)	S041144
EPSON Photo Stickers 4 (A6)	S041176
EPSON Ink Jet Transparencies (A4)	S041063
EPSON Ink Jet Transparencies (Letter)	S041064
EPSON Premium Glossy Photo Paper (A4)	S041287/S041297
EPSON Premium Glossy Photo Paper (Letter)	S041286
EPSON Premium Glossy Photo Paper (A3)*	S041288
EPSON Premium Glossy Photo Paper (B)*	S041290
EPSON Premium Glossy Photo Paper (Super A3/ SuperB)*	S041289
EPSON Ink Jet Back Light Film (A3)*	S041131

**OPTIONS****Table 1-2. Options**

Product Name	Code
Parallel Interface cable (shielded)	C83602*
USB I/F Interface cable (shielded)	C83623*
Roll Paper Holder	C81106*

\* The asterisks are substitutions for the last digits of the product name, which may vary by country.

## 1.2 Basic Specifications

### 1.2.1 Printing Specification

- ☐ Print Method: On demand ink jet
- ☐ Nozzle Configuration
  - Monochrome: 48 nozzles (120 dpi)
  - Color: 48 nozzles x 5 (Cyan, Magenta, Yellow, Light cyan, Light magenta) (120 dpi)

The following figure shows nozzle configuration viewed from the back of the printhead:

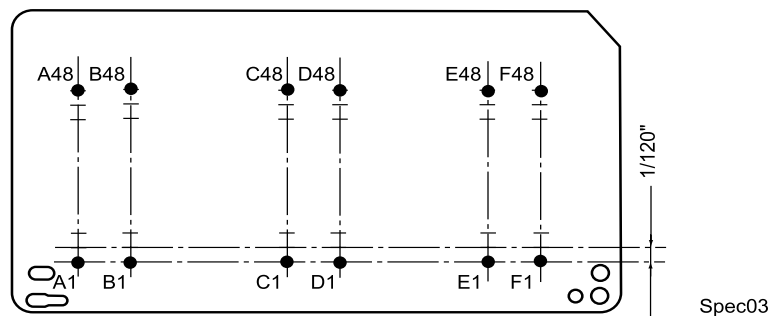


Figure 1-3. Nozzle Configuration

- ☐ Print Direction: Bi-direction with logic seeking
- ☐ Print Speed & Printable Columns
  - Character Mode

Table 1-3. Character Mode

Model	Character Pitch	Printable Columns	LQ Speed
Stylus PHOTO 890	10 CPI (Pica)	80	238CPS*
Stylus PHOTO 1290	10 CPI (Pica)	127	238CPS*

\* The value is the speed of normal-dot printing.

### ■ Raster Graphic Mode

Table 1-4. Raster Graphics Mode

Model	Horizontal Resolution	Printable Area	Available Dot	CR Speed
Stylus PHOTO 890	180 dpi	209.8mm/ 8.26"	1488	23.8/19 IPS
	360 dpi	209.8mm/ 8.26"	2976	23.8/19 IPS
	720 dpi	209.8mm/ 8.26"	5952	19 IPS
Stylus PHOTO 1290	180 dpi	322.986mm/ 12.716"	2289	23.8/19 IPS
	360 dpi	322.986mm/ 12.716"	4578	23.8/19 IPS
	720 dpi	322.986mm/ 12.716"	9156	19 IPS

### 1.2.2 Control Code

ESC/P Raster command

EPSON Remote command

### 1.2.3 Paper Feeding

- ☐ Feeding method: Friction feed with ASF
- ☐ Paper Path: Cut-sheet ASF (top entry, front out)
- ☐ Feed Speed: 110mm/sec (10.16mm feed)  
152.4mm(6.0inch)/sec (Fast, continues feed)

### 1.2.4 Input Data Buffer

- ☐ 256 KB

## 1.2.5 Paper Specifications

The asterisk(\*) indicates Stylus PHOTO 1290 use only.

### CUT SHEET

- ☐ Size: See the table below:

**Table 1-5. Paper Specifications - Cut Sheet**

Size	Specifications (Width x Length)
A3*	297mm (11.7") x 420mm (16.5")
A4	210 mm (8.3") x 297 mm (11.7")
A5	148 mm x 210 mm
A6	148mm x 105 mm
B*	279 mm x 432
Letter	216 mm (8.5") x 279 mm (11.0")
Half Letter	139.7 mm x 215.9 mm
Legal	216 mm (8.5") x 356 mm (14.0")
Executive	184.2 mm (7.25") x 266.7 mm (10.5")
2L	178 mm x 127 mm
L	127 mm x 127 mm
5" x 8"	127 mm x 203 mm
8" x 10"	203 mm x 254 mm
Double Side A4	210 mm x 297 mm
User Defined	89 to 241.3 mm x 89 to 1117.6 mm

- ☐ Quality: Plain paper, Bond paper
- ☐ Thickness: 0.08mm- 0.11mm (0.003"- 0.004")  
(Normal paper)
- ☐ Weight: 64g/m<sup>2</sup> - 90g/m<sup>2</sup> (55kg-78kg, 17lb.- 24lb.)

### ENVELOPE

- ☐ Size (Width x Length):
- |           |                                    |
|-----------|------------------------------------|
| #10       | 241.3mm (9 1/2") x 104.8mm(4 1/8") |
| DL        | 220mm (8.7") x 110mm (4.3")        |
| C6        | 162mm (6.4") x 114mm (4.5")        |
| 220 x 132 | 220mm x 132 mm                     |
- ☐ Thickness: 0.16mm (0.006") - 0.52mm (0.02")
- ☐ Weight: 45g/m<sup>2</sup> (12lb.) - 75g/m<sup>2</sup> (20lb.)
- ☐ Quality: Bond paper, PPC, Air mail

*Note 1: Envelope printing is only available at normal temperature.*

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

### 1.2.5.1 EPSON Special Media

EPSON offers specifically- designed media for ink jet printers.

### PHOTO QUALITY INK JET PAPER

- ☐ Size (Width x Length):
- |          |               |
|----------|---------------|
| A3+*     | 329mm x 483mm |
| A3*      | 297mm x 420mm |
| A4       | 210mm x 297mm |
| A6       | 105mm x 148mm |
| B*       | 210mm x 297mm |
| Letter   | 216mm x 279mm |
| Legal    | 216mm x 356mm |
| 5" x 8"  | 127mm x 203mm |
| 8" x 10" | 203mm x 254mm |

**360 DPI INK JET PAPER**

<input type="checkbox"/> Size (Width x Length):	
A3+*	329mm x 483mm
A3 *	297mm x 420mm
A4	210mm x 297mm
A6	105mm x 148mm
Letter	216mm x 279mm

**INK JET TRANSPARENCIES**

<input type="checkbox"/> Size (Width x Length):	
A4	210mm x 297mm
Letter	216mm x 279mm

**PHOTO QUALITY GLOSSY FILM**

<input type="checkbox"/> Size (Width x Length):	
A3+*	329mm x 483mm
A3 *	297mm x 420mm
A4	210mm x 297mm
A6	105mm x 148mm
B*	210mm x 297mm
Letter	216mm x 279mm

**PHOTO PAPER**

<input type="checkbox"/> Size (width x length):	
+A3*	329mm x 483mm
A3 *	297mm x 420mm
A4	210mm x 297mm
A6*	105mm x 148mm
B*	210mm x 297mm
Letter	216mm x 279mm
Photo Paper Card 2	175.4mm x 113.6mm (cut-line)
Panoramic Photo Paper	210mm x 594mm
152.4mm (6") x 101.6mm (4") (no cut-line)	
100mm x 150mm	

200 x 300mm  
Roll Paper

216mm x 338mm (cut-line)  
(89mm x 7m, 100mm x 8m,  
210mm x 10m, 329mm x 10m\*)

**PHOTO QUALITY ADHESIVE SHEET**

<input type="checkbox"/> Size (Width x Length):	
A4	210mm x 297mm
Letter	216mm x 279mm

**IRON-ON COOL PEEL TRANSFER PAPER**

<input type="checkbox"/> Size (Width x Length):	
A3 *	297mm x 420mm
A4	210mm x 297mm
Letter	216mm x 279mm

**PHOTO STICKERS**

<input type="checkbox"/> Size (Width x Length):	
A6	105mm x 148mm /16
A6	105mm x 148mm /4

**MATTE PAPER-HEAVYWEIGHT**

<input type="checkbox"/> Size (Width x Length):	
A3+*	329mm x 483mm
A3 *	297mm x 420mm
A4	210mm x 297mm
B*	210mm x 297mm
Letter	216mm x 279mm
100mm x 150mm	
Roll Paper	(89mm x 7m, 100mm x 8m, 210mm x 10m, 329mm x 10m*)



**PREMIUM GLOSSY PHOTO PAPER**

□ Size (Width x Length):	
+A3*	329mm x 483mm
A3*	297mm x 420mm
A4	210mm x 297mm
B*	210mm x 297mm
Letter	216mm x 279mm
Roll Paper	(89mm x 7m, 100mm x 8m, 127mm x 8m*, 210mm x 10m, 329mm x 10m*)

**INK JET BACK LIGHT FILM**

□ Size (Width x Length):	
A3*	297mm x 420mm

**1.2.6 Printing Area****1.2.6.1 Cut Sheet**

See the figure below and the following tables for the printing area for Stylus PHOTO 890/Stylus PHOTO 1290.

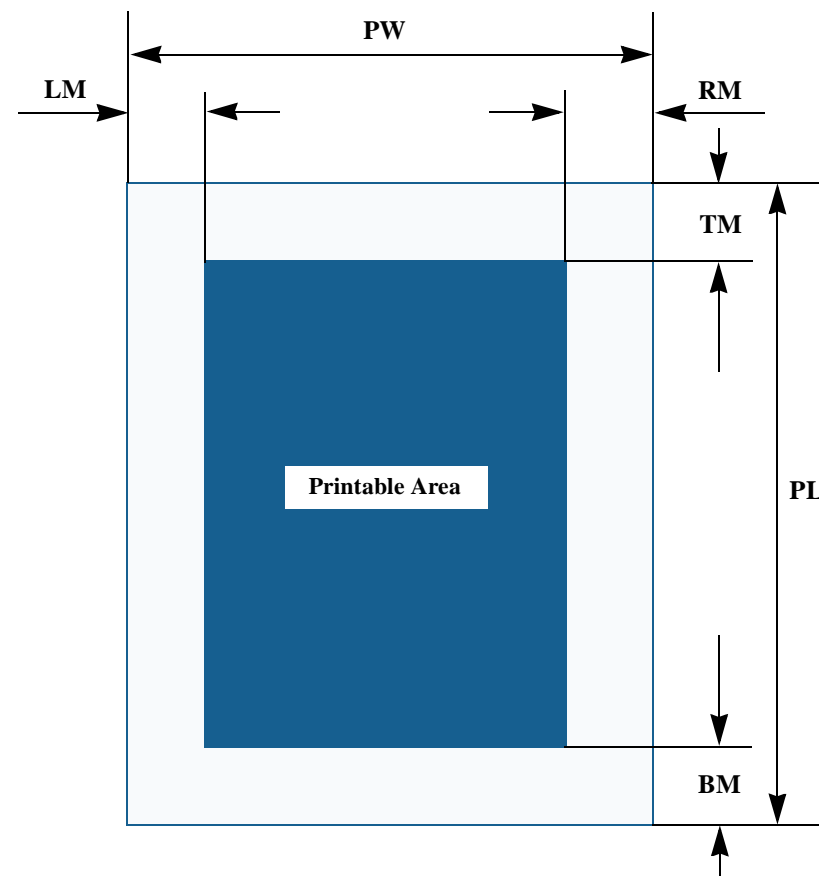


Figure 1-4. Printable Area for Cut Sheet

Table 1-6. Printing Area

Paper Size	Left Margin (min.)	Right Margin (min.)	Top Margin (min.)	Bottom Margin (min.)
A3*	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	14 mm (0.54") / 3mm (0.12") * <sup>1</sup> * <sup>2</sup>
A3+*	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	14 mm (0.54") / 3mm (0.12") * <sup>1</sup> * <sup>2</sup>
A4	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	14 mm (0.54") / 3mm (0.12") * <sup>1</sup> * <sup>2</sup>
Letter	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	14 mm (0.54") / 3mm (0.12") * <sup>1</sup> * <sup>2</sup>
B5	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	14 mm (0.54") / 3mm (0.12") * <sup>1</sup> * <sup>2</sup>
Legal	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	14 mm (0.54") / 3mm (0.12") * <sup>1</sup> * <sup>2</sup>
Statement	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	14 mm (0.54") / 3mm (0.12") * <sup>1</sup> * <sup>2</sup>
Exclusive	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	3 mm (0.12")* <sup>2</sup>	14 mm (0.54") / 3mm (0.12") * <sup>1</sup> * <sup>2</sup>

\*: Stylus PHOTO 1290 only.

\*<sup>1</sup>: 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.

\*<sup>2</sup>: Zero mm can be set by special command.

### 1.2.6.2 Envelopes

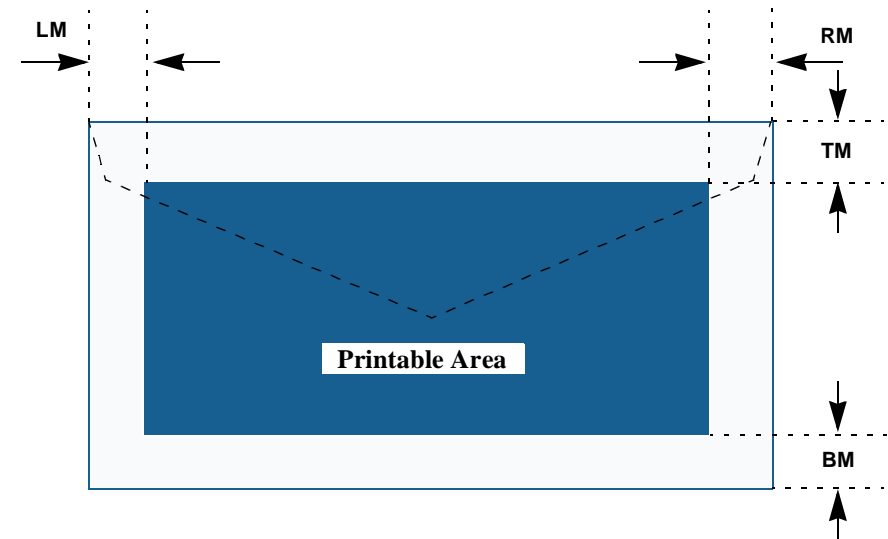


Figure 1-5. Printable Area for Envelopes

Table 1-7. 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")

### 1.2.7 Adjust Lever

Set the adjust lever according to the type of paper as shown in the following table.

Table 1-8. Adjust Lever Setting Position

Paper	Setting Position	Gap
Cut sheet, OHP Sheet, Label, Postcard	Front (0)	0 mm
Envelope	Rear (+)	+0.9 mm

## 1.2.8 Ink Cartridge

### BLACK INK CARTRIDGE

The black ink cartridge specifications for Stylus PHOTO 890 and Stylus PHOTO 1290 are common.

- ☐ Type: Exclusive Cartridge
- ☐ Color: Black
- ☐ Print Capacity: 540 pages/A4  
(ISO/IEC 10561 Letter Pattern at 360 dpi)
- ☐ Ink Life: 2 years from the indicated date of production
- ☐ Storage Temperature
  - Packed (in transit): -30 to 60 °C (within a month at 40 °C, within 120 hours at 60 °C)
  - Packed (storage): -30 to 40 °C (within a month at 40 °C)
  - Installed: -20 °C to 40 °C (within a month at 40 °C)
- ☐ Dimension: 20.1 mm (W) x 66.85 mm (D) x 38.5 mm (H)

### COLOR INK CARTRIDGE

Note some of the color ink specifications for the Stylus PHOTO 890 and Stylus PHOTO 1290 are different as indicated.

- ☐ Type: Exclusive Cartridge
- ☐ Color: Magenta, Cyan, Yellow, Light Cyan, Light Magenta
- ☐ Print Capacity:
  - Stylus PHOTO 890** 220 pages / A4 (360 dpi, 5% duty each color)
  - Stylus PHOTO 1290** 330 pages / A4 (360 dpi, 5% duty each color)
- ☐ Ink Life: 2 years from the indicated date of production
- ☐ Storage Temperature
  - Packed (in transit): -30 to 60 °C (within a month at 40 °C, within 120 hours at 60 °C)
  - Packed (storage): -30 to 40 °C (within a month at 40 °C)
  - Installed: -20 °C to 40 °C (within a month at 40 °C)
- ☐ Dimension:
  - Stylus PHOTO 890** 49.1 mm (W) x 66.85 mm (D) x 38.5 mm (H)
  - Stylus PHOTO 1290** 49.1 mm (W) x 84.05 mm (D) x 41.8mm (H)

## 1.2.9 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(Max0.7A)
- ☐ Power Consumption: Approx. 15W (ISO10561 Letter Pattern)  
Approx. 3W in standby mode  
Energy Star compliant
- ☐ Insulation Resistance: 10M ohms min.  
(between AC line and chassis, DC 500V)
- ☐ Dielectric Strength: AC 1000V rms. 1 minute 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(Max0.35A)
- ☐ Power Consumption: Approx. 15W (ISO10561 Letter Pattern)  
Approx. 3W in standby mode  
Energy Star compliant
- ☐ Insulation Resistance: 10M ohms min.  
(between AC line and chassis, DC 500V)
- ☐ Dielectric Strength: AC 1500V rms. 1 minute  
(between AC line and chassis)

## 1.2.10 Reliability

- ☐ Total Print Volume      Black: 25,000 pages (A4, Letter)  
   Color: 10,000 pages (A4, Letter)
- ☐ Printhead Life: 3000 million dots/nozzle

## 1.2.11 Environmental Condition

### TEMPERATURE

- ☐ Operating: 10 to 35°C<sup>\*2</sup>
- ☐ Non-Operating: -20 to 60°C<sup>\*1</sup>  
Within 1 month at 40°C /120 hours at 60°C

<sup>\*1</sup>: In a shipment container.

<sup>\*2</sup>: Refer to Figure 1-6 "Temperature/Humidity Range" for condition.

### HUMIDITY

- ☐ Operating: 20 to 80% RH (without condensation)<sup>\*2</sup>
- ☐ Not-Operating: 5 to 85% RH (without condensation)<sup>\*1</sup>

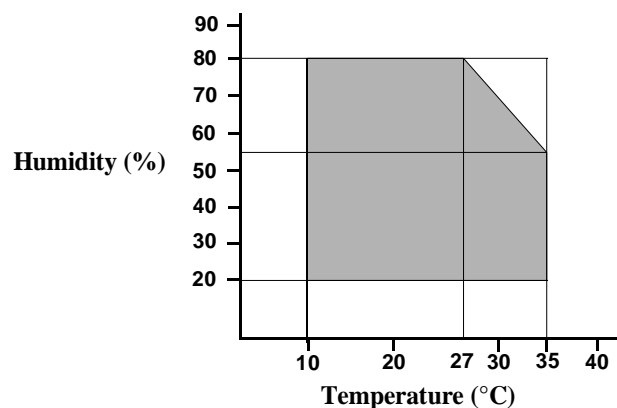


Figure 1-6. Temperature/Humidity Range

<sup>\*1</sup>: In a shipment container.

<sup>\*2</sup>: Refer to Figure 1-6 "Temperature/Humidity Range" for condition.

### RESISTANCE TO SHOCK

- ☐ Operating: 1G, within 1 ms, X, Y, Z directions
- ☐ Non-operating: 2G, within 2 ms, X, Y, Z directions<sup>\*1</sup>

<sup>\*1</sup>: In a shipment container.

### RESISTANCE TO VIBRATION

- ☐ Operating: 0.15G
- ☐ Non-operating: 0.50G<sup>\*1</sup>

<sup>\*1</sup>: In a shipment container.



- When storing the printer, make sure the printhead is capped.
- When transporting the printer, ensure the ink cartridges are installed in the printer and the printhead is capped.
- If the printer power is off with the printhead left uncapped, turn the printer on with the ink cartridges installed, cap the printhead, and turn the printer off.
- Ink freezes at below -4°C. It will be usable again after keeping it for about three hours at 25°C.

## 1.3 Interface

The EPSON Stylus PHOTO 890/1290 provides USB and parallel interfaces 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

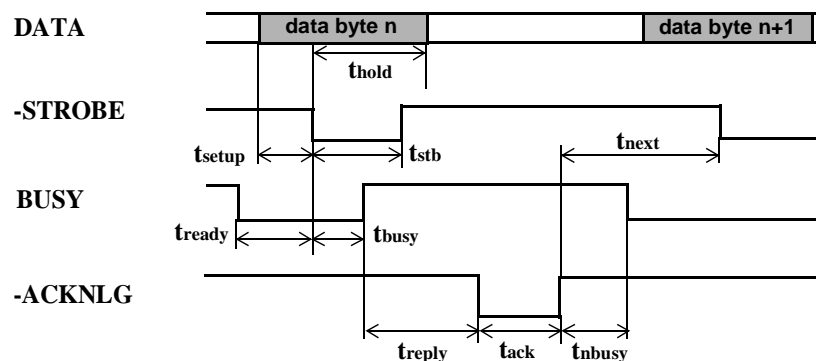


Figure 1-7. Data Transmission Timing

Table 1-9. Parameters

Parameter	Minimum	Maximum
tsetup	500ns	-
tthold	500ns	-
tstb	500ns	-
tready	0	-
tbusy	-	500ns
tt-out*	-	120ns
tt-in**	-	200ns
treply	0	-
tack	500ns	10us
tnbusey	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 1-10. Typical Time of Tack

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

**Table 1-11.****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 turned off, and this signal is equal to or exceeding 3.0V when the printer is turned on. The receiver shall provide an impedance equivalent to 7.5K ohm to ground.

Table 1-12. 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.
2-9	DATA0-DATA7	20-27	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.
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 turned on.
14	-AFXT	30	In	Not used.
17	Chassis GND	-	-	Chassis GND
18	Logic H	-	Out	Pulled up to +5V via 3.9K ohm resistor.
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.
35	+5	-	Out	Pulled up to +5V via 3.3K ohm resistor.
36	-SLIN	30	In	Not used.
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)

- |  |                                      |  |   |
|--|--------------------------------------|--|---|
| <input type="checkbox"/> Transmission Mode:  | IEEE-1284 nibble mode                | <input type="checkbox"/> Handshaking:        | Refer to the IEEE-1284 specification            |
| <input type="checkbox"/> Adaptable Connector | See forward channel.                 | <input type="checkbox"/> Data Trans. Timing: | Refer to the IEEE-1284 specification            |
| <input type="checkbox"/> Synchronization:    | Refer to the IEEE-1284 specification | <input type="checkbox"/> Signal Level:       | IEEE-1284 level 1 device (See forward channel.) |

**Table 1-13. Connector Pin Assignment and Signals**

Pin No.	Signal Name	Return GND Pin	In/Out	Functional Description
1	HostClk	19	In	Host clock signal.
2-9	DATA0-DATA7	20-27	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. These signals are used to transfer the 1284 extensibility request values to the printer.
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.
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.

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Extensibility Request:   | <input checked="" type="checkbox"/> 00H: | Request Nibble Mode Reverse Channel Transfer.                             |
| The printer responds affirmatively when the extensibility request values are 00H or 04H, which means: | <input checked="" type="checkbox"/> 04H: | Request Device ID;<br>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>\*1/ <00H><5CH>\*2

*MFG: EPSON*

*CMD: ESCPL2,BDC,D4*

*MDL: Stylus[SP]Photo[SP]890  
/Stylus[SP]Photo[SP]1290*

*CLS: PRINTER*

*DES: EPSONStylus[SP]Photo[SP]890  
/EPSONStylus[SP]Photo[SP]1290*

- When IEEE1284.4 is enabled,  
<00H><57H>\*1/ <00H> <59H>\*2

*MFG: EPSON*

*CMD: ESCPL2,BDC,D4*

*MDL: Stylus[SP]Photo[SP]890  
/Stylus[SP]Photo[SP]1290*

*CLS: PRINTER*

*DES: EPSONStylus[SP]Photo[SP]890  
/EPSONStylus[SP]Photo[SP]1290*

\*1: Stylus PHOTO 890 only

\*2: Stylus PHOTO 1290 only

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

**NOTE 2:** MDL value depends on the EEPROM setting.

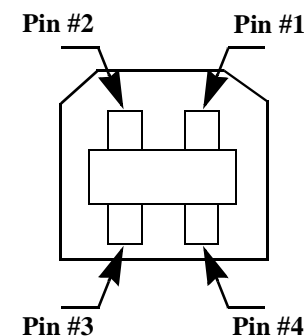
**NOTE 3:** CMD value depends on the IEEE1284.4 setting.

### 1.3.3 USB Interface

- ☐ Standard: Based on:  
“Universal Serial Bus Specifications Rev. 1.1”  
“Universal Serial Bus Device Class Definition for  
Printing Devices Version 1.1”
- ☐ Bit rate: 12Mbps (Full Speed Device)
- ☐ Data encoding: NRZI
- ☐ Adaptable connector: USB Series B
- ☐ Recommended cable length: 2 meters

**Table 1-14. 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 1-8. 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 Operations

### 1.4.1 Buttons

- ☐ Roll Paper button
- ☐ Maintenance button
- ☐ Ink Cartridge replacement button
- ☐ Power button

### 1.4.2 Indicators

- ☐ **Power** ●  
Lights when the operating switch is “ON” and AC power is supplied.
- ☐ **Error** ●  
Lights during the error condition, and blinks during the ink low condition.

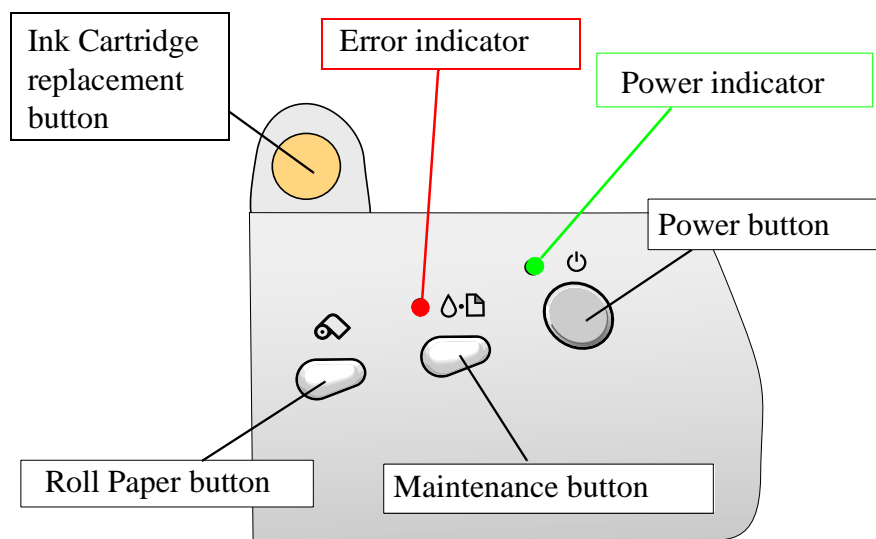


Figure 1-9. Control Panel

### 1.4.3 Panel Functions

Table 1-15. Panel Functions

Buttons	Function
Maintenance	<ul style="list-style-type: none"> <li>• Loads or ejects paper.</li> <li>• Returns a carriage to the home position when the carriage is at the ink cartridge replacement position.</li> <li>• Starts the head cleaning*<sup>1</sup>.</li> <li>• Returns from an error condition.</li> </ul>
Roll Paper	<ul style="list-style-type: none"> <li>• Loads or ejects Roll Paper. (Back Out feed*<sup>1</sup>)</li> <li>• Feeds and returns from the Tear-Off operation.</li> <li>• Returns a carriage to the home position when the carriage is at the ink cartridge replacement position.</li> </ul>
Ink Cartridge Replacement	<ul style="list-style-type: none"> <li>• Starts the Ink Cartridge change sequence. Moves the carriage to the carriage change position.</li> <li>• Returns a carriage to the home position when the carriage is at the ink cartridge replacement position.</li> </ul>

\*<sup>1</sup>: Press the button for 3 seconds.

Table 1-16. Power On Panel Functions

Buttons	Pressing with Power On Function
Maintenance	<ul style="list-style-type: none"> <li>• Starts status printing*<sup>2</sup>.</li> </ul>
Roll Paper	<ul style="list-style-type: none"> <li>• Changes code pages /select IEEE1284.4 mode for parallel I/F*<sup>3</sup>.</li> </ul>
Maintenance + Roll Paper	<ul style="list-style-type: none"> <li>• Enters the special settings mode. (Factory use only).</li> </ul>

\*<sup>2</sup>: According to the content of 1BH of the EEPROM, one of the following actions needs to be carried out. (See Table 1-17 on page 30)

\*<sup>3</sup>: Do not mention the information to the users.

Table 1-17. Content of 1BH of EEPROM

[bit7] [bit6]	Actions
00	Prints firmware version, ink counter, selected code page and nozzle check pattern.
11	
01	Starts the hex-dump mode.
10	Starts the self test mode.

\*4: Factory default setting.

## 1.4.4 Special Setting Mode

To enter the special setting mode, press the Maintenance button and the Roll Paper button while turning on the printer until the Power indicator blinks. While it is blinking (for 3 seconds), press the specified button to activate the desirable setting mode.

**NOTE:** The special setting mode is not described in the user's manual.

Table 1-18. Special Setting Mode

Buttons	Functions
Maintenance	• Initializes the EEPROM and Timer IC.
Roll Paper*1	• Resets the ink overflow counter (Protection Counter) in the EEPROM.

\*1: Pressing the button for 10 seconds.

### ☐ EEPROM/Timer IC Reset

The following will be reset when this operation is executed.

- Interface selection (04H)
- CL Time (68H, 69H)
- Power Off timer (6AH, 6BH)

### ☐ Waste Ink Counter Reset

The following will be reset when this operation is executed.

- Ink counter A0 (6CH, 6DH)
- Ink counter A80 (6EH, 6FH)

## 1.4.5 Printer Initialization

EPSON Stylus PHOTO 890/1290 executes initialization by using 3 methods mentioned below.

### 1. Hard Initialization

The Hard Initialization will be performed when the printer is turned on or recognizes the cold reset command. (remote RS command)

The following will be performed during initialization.

- Initializes printer mechanism.
- Clears input data buffer.
- Clears print buffer.
- Sets default values.

### 2. Software Initialization

The ESC@ command also initializes the printer.

The following will be performed during initialization.

- Clears print buffer.
- Sets default values.

### 3. Panel Initialization

The Panel Initialization will be performed if the printer is turned off and back on within 10 seconds, or \*INIT signal (negative pulse) is input.

The following will be performed during initialization.

- Caps the printer head.
- Ejects paper.
- Clears input data buffer.
- Clears print buffer.
- Sets default values.

## 1.4.6 Initialization Value

When the printer is initialized, it clears the following settings to their initialization values. However, panel setting values, default setting values, and values set by the remote command remain as they are.

<input type="checkbox"/> Top of page	Current TOP
<input type="checkbox"/> Line feed	4.23mm(1/6 inch)
<input type="checkbox"/> Right margin	80 columns (Stylus PHOTO 890) 127 columns (Stylus PHOTO 1290)
<input type="checkbox"/> Left margin	1st column
<input type="checkbox"/> Character pitch	10 cpi
<input type="checkbox"/> Print mode	Text mode (Non graphics mode)

## 1.5 Dimension

### EXTERNAL DIMENSION

#### □ Stylus PHOTO 890

- When stored(mm): 471 (W) x 290 (D) x 175 (H)
- For use(mm): 471 (W) x 613 (D) x 302(H)

#### □ Stylus PHOTO 1290

- When stored(mm): 609(W) x 311(D) x 175 mm (H)
- For use(mm): 609(W) x 766(D) x 414mm (H)

### WEIGHT

- Stylus PHOTO 890: 6.0 kg
- Stylus PHOTO 1290: 8.4 kg

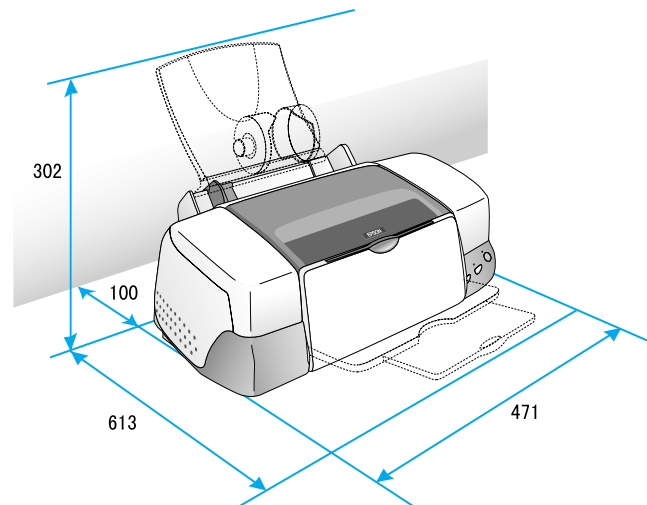


Figure 1-10. Stylus PHOTO 890 in Use

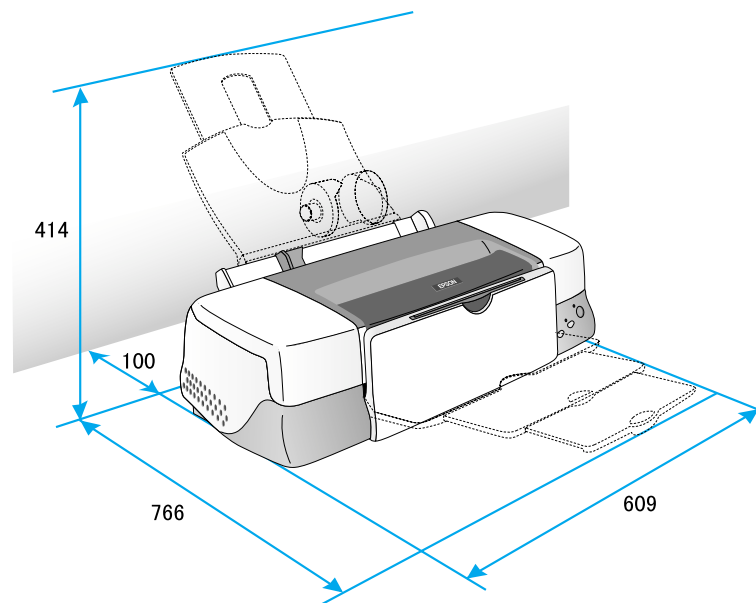


Figure 1-11. Stylus PHOTO 1290 in Use







**CHAPTER**

**2**

## **OPERATING PRINCIPLES**

## 2.1 Overview

This section describes the operating principles of the printer mechanism and electrical circuit boards. The major components of the EPSON Stylus Photo 890/1290 are:

- ☐ Printer mechanism: Stylus Photo 890: M4T12  
Stylus Photo 1290: M4S61
- ☐ Main board:
  - Stylus Photo 890 : C393MAIN-C/C393MAIN-B
  - Stylus Photo 1290: C393MAIN/C393MAIN-B
- ☐ Power supply board: C378PSB/PSE Board

### PRINTER MECHANISM

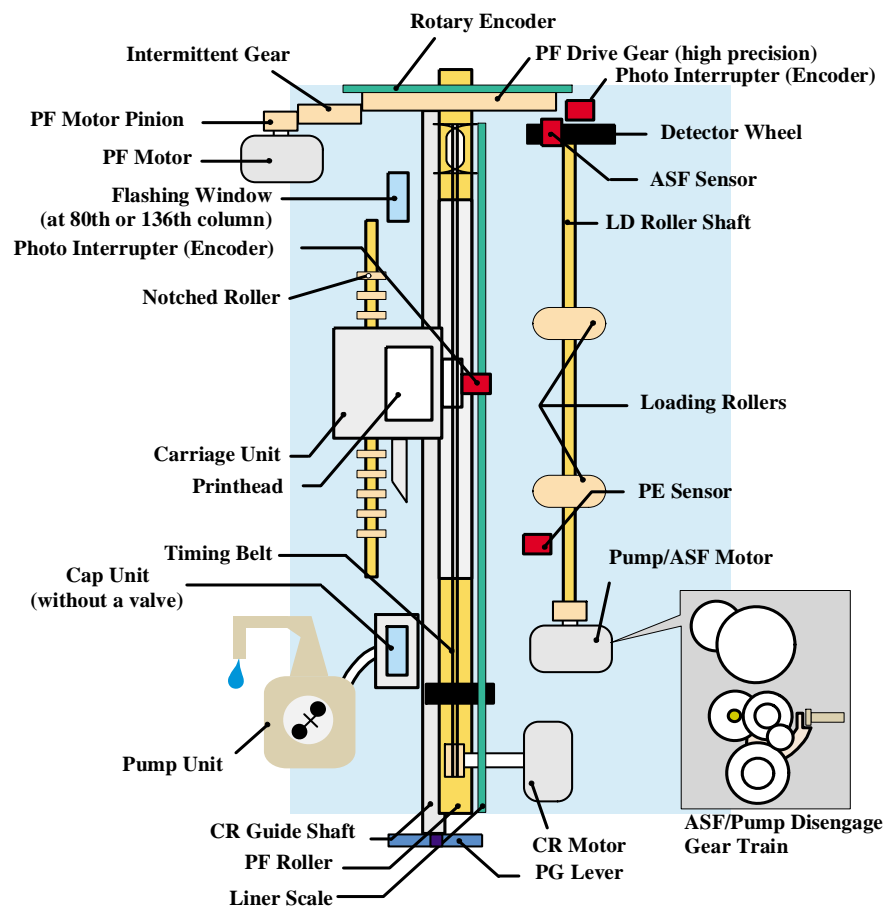
Unlike other EPSON ink jet printers, the EPSON Stylus Photo 890/1290 uses a DC motor as power source. The DC motor enables the printer to lower noise during printing. Table 2-1 shows various motor types used in the printer and their applications.

**Table 2-1. Motor Types and Corresponding Applications**  
**Table 2-2.**

Motor Name	Type	Application / Feature
CR motor	DC motor with brush	Drives the carriage making little noise. Works with a linear scale to monitor motor's operating condition.
PF motor	DC motor with brush	Supplies power to drive paper feeding rollers used to send paper at specified speeds and load/eject paper. To monitor paper feeding pitch, a loop scale is attached beside the high-precision gear.
Pump/ASF motor	4-Phase / 48-pole stepping motor	Sends drive for pump operation and paper feeding from ASF. Since this is a stepping motor, it has no scales or photo sensors that are used to monitor motor's operating condition.

The basic structure of the printer mechanism is mostly common to the Stylus COLOR 400, except that the Stylus Photo 890/1290 uses a Pump/ASF motor. With this motor equipped, the paper loading mechanism and the pumping mechanisms are independently driven, which allows the printer to offer higher throughput.

Figure 2-1 shows the printer mechanism block diagram for the Stylus Photo 890/1290.



op01

**Figure 2-1. Printer Mechanism Block Diagram**

## 2.1.1 Printhead Mechanism

The printhead mechanism operating principles of the Stylus Photo 890/1290 are basically the same as for the previous EPSON ink jet printers. This printer, however, employs a newly developed ink and improved printhead driving method to provide a higher print quality and faster printing speed than ever. Also, an IC called CSIC that stores ink-life data is attached to each ink cartridge. With this IC, ink life of each cartridge can be individually monitored. Note, like for other models, a head voltage must be written with a PC.

The printhead mechanism consists of ink cartridges and printheads. Each printhead is composed of PZT (Piezo Electric Element), nozzle surface, ink supply needle, nozzle selection circuit board, cartridge sensor, CSIC, and CSIC connection circuit. Figure 2-2 shows its component layout.

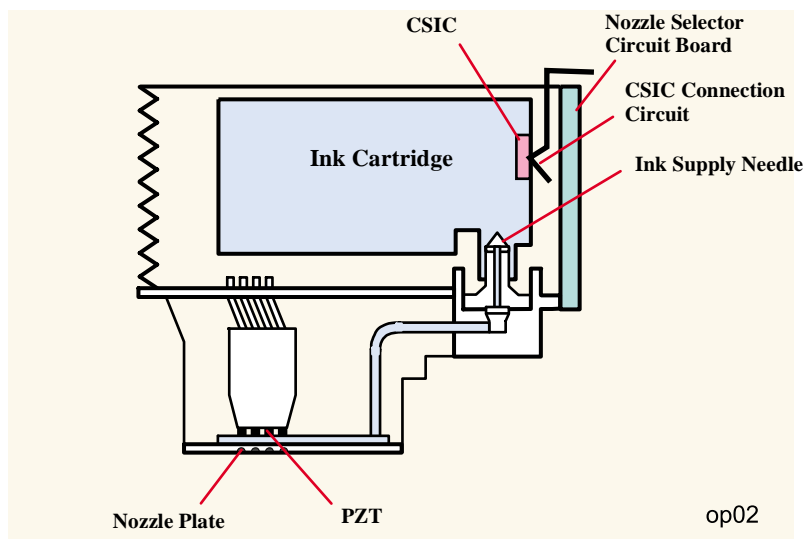


Figure 2-2. Printhead Mechanism

### □ Ink Cartridge

An ink cartridge stores ink to be supplied to the printhead.

#### ■ CSIC:

CSIC is a non-volatile memory EEPROM attached to each black and color ink cartridge. It keeps the following information:

- 1) Ink remaining level
- 2) Number of cleanings performed
- 3) Number of installation of the ink cartridge
- 4) Accumulated installation time of the cartridge
- 5) Model name of the printer in use
- 6) Ink cartridge production information

### □ Printhead

#### ■ PZT

Driven by the print signal from the control circuit board, it ejects ink from the nozzle plate.

#### ■ Nozzle plate

Ink pressured by the PZT is ejected from this plate.

#### ■ Ink supply needle

Connects the ink cartridge and printhead to run ink to the printhead.

#### ■ CSIC connection circuit

Connects the control circuit board and CSIC attached on the ink cartridge. One end of the harness is connected to the control board together with the printhead cable.

#### ■ Nozzle selection circuit board

This circuit, controlled by ASIC on the control circuit board, selects nozzles to be driven for printing. On the other hand, head drive voltage is produced on the controller circuit side.

## 2.1.2 Carriage Mechanism

The carriage mechanism of the Stylus Photo 890/1290 is composed of the carriage motor (CR motor), carriage guide shaft, platen gap adjustment/parallelism adjustment mechanism, carriage lock mechanism, and so on.

### 2.1.2.1 Carriage Motor (CR Motor)

The carriage mechanism of this printer is mostly the same as for other ink jet printers' except it uses a DC motor as power source. See the table below for the carriage motor specifications.

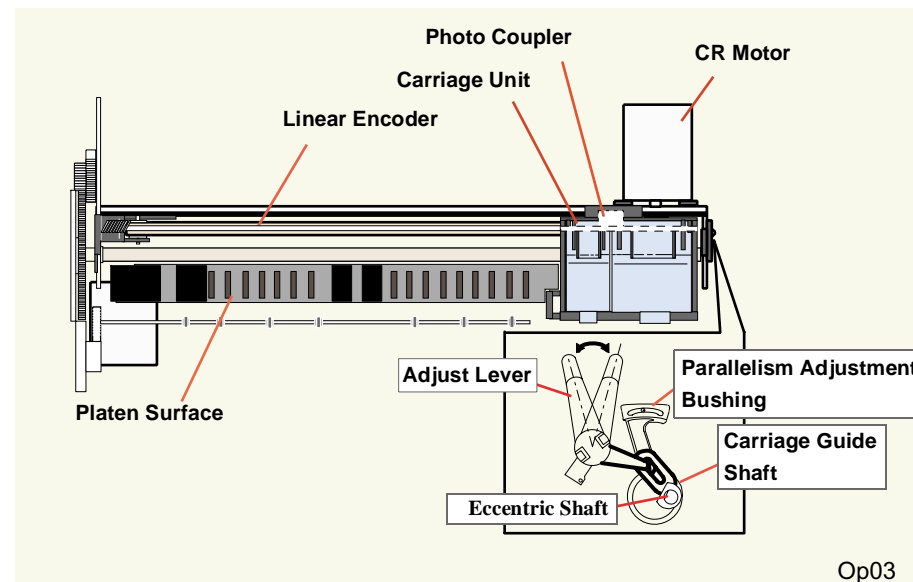
**Table 2-3. Carriage Motor Specifications**

**Table 2-4.**

Items	Specifications
Type	DC Motor with brush
Drive Voltage	+42 V +/- 5% (Applied to the driver)
Coil resistance	29.2 ohms +/- 25%
Inductance	30.0 mH +/- 25%
Drive Method	Constant Current Chopping
Driver IC	LB1947

In previous ink jet printers, since a stepping motor is used as a CR motor, the CR motor controls the carriage position under the open loop system. This printer, however, controls carriage speed and position with the closed loop system enabled by a DC motor and encoder. This system, also used in the Stylus COLOR 900, is applied to maintain a constant print quality. The CR motor also produces the print timing signal (PTS signal) used for an accurate ink ejection timing. (Refer to Section 2.2.2.3 for further information on the CR motor control circuit.)

For printing, the CR motor moves the carriage unit in the printing area along the CR guide shaft.



**Figure 2-3. Carriage Mechanism (Top view)**

### 2.1.2.2 Platen Gap (PG) /Parallelism Adjustment Mechanism

The PG adjust lever is attached to the left end of the carriage guide shaft. When the carriage guide shaft, which has an eccentricity, rotates as the adjustment lever moves, it narrows or widens the distance (=PG: from 1.2 mm to 2.1 mm). This mechanism enables the user to print with a correct PG according to print result or other conditions such as paper curl.

Also, the parallelism adjustment bushings are attached to the right and left ends of the carriage guide shaft. They are used to set the carriage guide shaft parallel with a platen.

**Table 2-5. Platen Gap Adjust Lever Setting**  
**Table 2-6.**

Lever Position	PG adjustment value
Front (0)	0 mm (=PG is 1.2 mm)
Rear (+)	+ 0.9 mm (=PG is 2.1 mm)

### 2.1.2.3 Carriage Home Position (HP) Detection

Unlike previous Epson ink jet printers, the carriage home position is detected with the drive current from the CR motor and speed/position signal from the linear encoder.

### 2.1.3 Paper Feeding Mechanism

The paper feeding mechanism transports paper loaded from ASF using the PF rollers and paper eject rollers. A new type of DC motor is used as the PF motor. See the table below for the PF motor specifications.

**Table 2-7. PF Motor Specifications**  
**Table 2-8.**

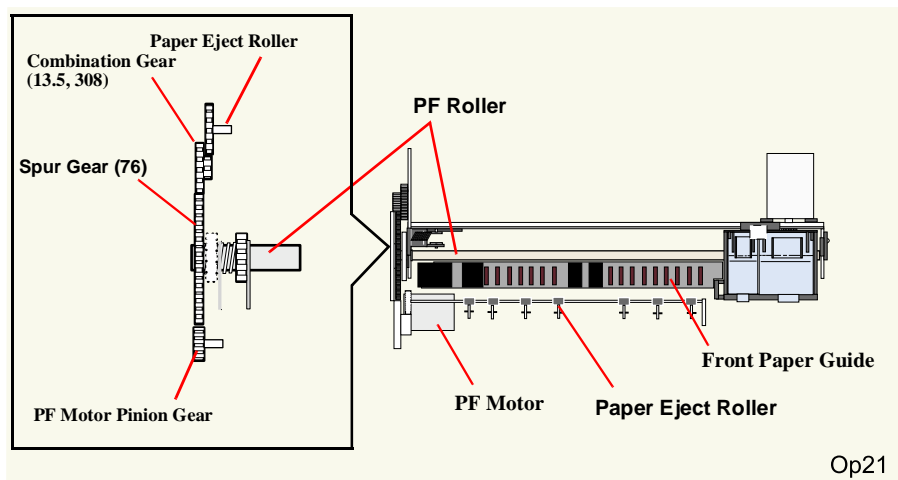
Item	Description
Motor type	DC Motor with Brush
Drive voltage	+42V +/- 5% (Applied to the driver)
Coil Resistance	29.2ohm +/- 25%
Inductance	30.0mH +/- 25%
Control method	Constant current chopping drive

Stepping motor that is used in other printers as the PF motor controls paper feed by the open loop system. On the other hand, this printer controls paper feeding mechanism with the closed loop system by employing the DC motor and rotary encoder for more accurate paper feeding. Therefore, a rotary encoder attached to the left end of the PR roller shaft controls paper feed amount. For detailed information, see Section "PF motor driver circuit".

Drive from the PF motor is sent to the PF rollers and paper eject rollers as described below.

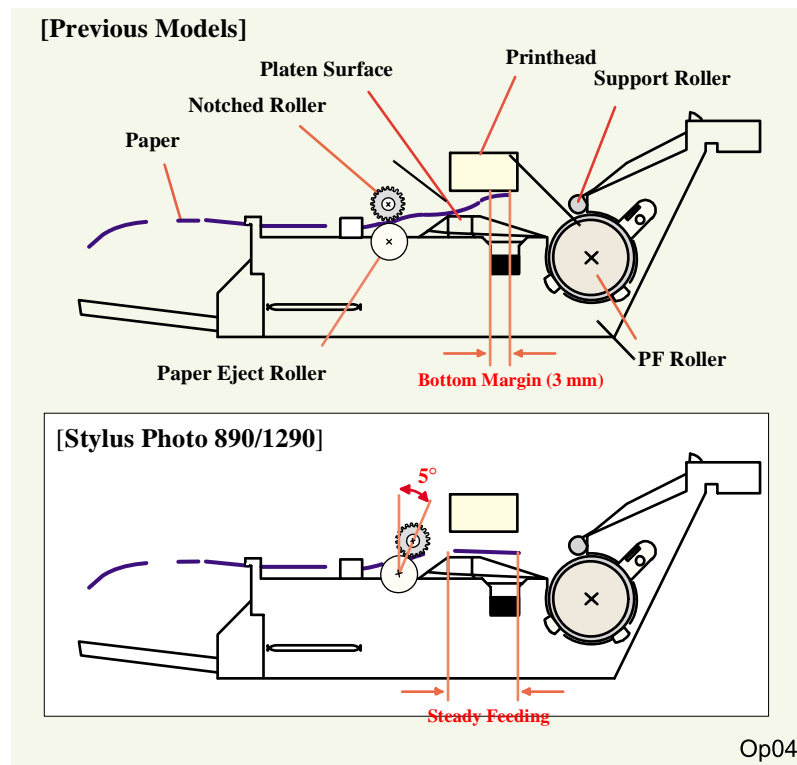
- ☐ Drive transmission to the PF rollers:  
PF motor pinion gear → Spur gear (76) → PF rollers
- ☐ Drive transmission to the eject rollers:  
PF motor pinion gear → Spur gear (76) → Combination gear (13.5, 308) → Spur gear (28) → Paper eject rollers

Figure 2-4 gives the paper feeding mechanism block diagram, showing the parts along the PF motor drive transmission paths.



**Figure 2-4. Paper Feeding Mechanism**

The printer loads paper at the ASF, which is detected by the PE sensor attached to the right side of the top frame, and advances it to send the paper's leading edge to the halfway of the front paper guide. Then, to correct paper deflection, the printer feeds the paper back specified steps toward ASF, and advances the paper again toward the front paper guide and stops it at the specified TOF (Top Of Form) position. Once printing starts, the paper is fed by the PF rollers and sub rollers. For printing or transporting the tailing edge area (14 mm), a notched roller and drive from the paper eject roller are used. Like the Stylus Photo 870/1270, this printer also provides this extra printable range of 14 mm from the bottom edge, excluding the bottom margin of 3mm, by changing the position of the star wheel gear; it has been shifted by 5° from the top of the eject roller toward the front paper guide. Due to this change, the tailing edge of paper is suppressed, and the printer can advance paper steadily. See Figure 2-5 next page that shows how paper is transported and parts involved.



**Figure 2-5. Paper Transportation**

### 2.1.3.1 CR Lock Mechanism

The carriage lock mechanism prevents the carriage from being left uncapped for a long time, which is usually caused by vibration during printer transportation, user's mishandling of the printer, and so on. If the carriage unit is left uncapped for a long time, ink on the printhead surface dries gradually and, eventually, ink can not flow to nozzles. In addition to that, there is a possibility that the nozzles clogged with dried ink can not be recovered by a head cleaning. To avoid this problem, the printer locks the carriage unit under the circumstances below:

☐ After Power-Off

If the printer power is turned off in the middle of printing or other operations, the printer completes the initialization sequence and then performs a carriage lock.

☐ After Power-On

When the printer is turned on, the printer automatically begins a power-on cleaning and then performs a carriage lock.

**[Power-on cleaning]**

The printer runs a power-on cleaning automatically when its power is turned on. Since the timer IC on the main control circuit board is powered by a lithium battery that is also mounted on the board, it keeps counting the printer's power off time. According to the power of time counted, the printer selects the cleaning level to perform.

☐ After paper ejection

If the printer does not receive any print data after Load/Eject button is pressed, it performs a carriage lock and enters a standby status. But if paper is fed into the printer, the printer does not perform it.

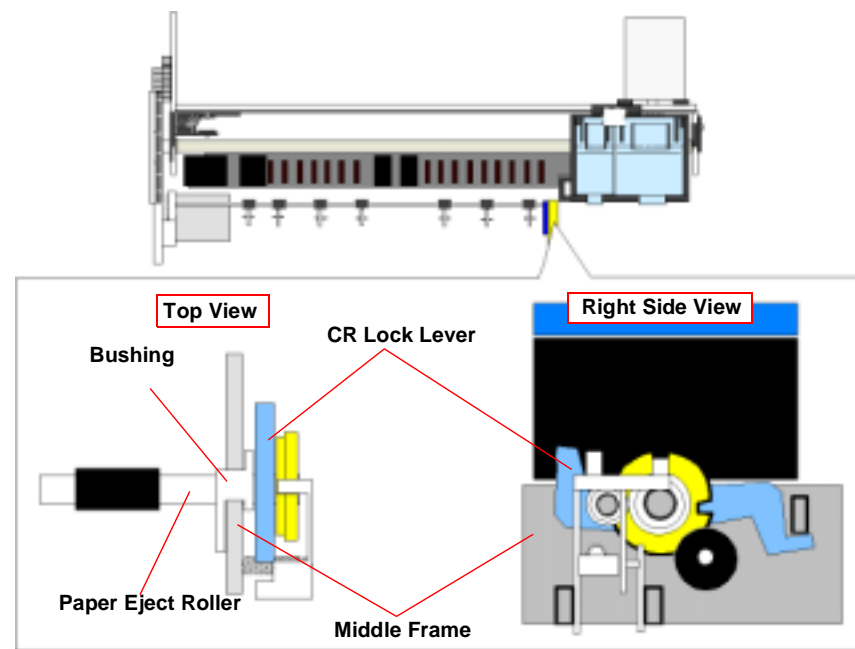


Figure 2-6. CR Lock Mechanism



## 2.1.4 Paper Loading Mechanism

The paper loading mechanism loads paper at the ASF unit and feeds paper to the PF rollers. The ASF unit is the same as in previous models. A 4-phase 48-pole PM type stepping motor is used as the ASF/Pump motor to drive ASF. Drive sent from this motor is transmitted to the ASF side and Pump side via the disengage mechanism (DE mechanism). See Figure for the ASF/Pump motor specifications.

**Table 2-9. ASF/Pump Motor Specifications**

Items	Description
Motor type	4 Phase/ 48-pole /PM type pulse motor
Drive method	Bipolar constant current drive
Drive voltage	+42V +/- 5% (applied to the driver)
Coil Resistance	10.4 ohm +/- 10%
Inductance	15.0 ohm +/- 10%

The rotation directions in order to drive ASF unit/ Pump mechanism are as shown below.

**Table 2-10. Directions of ASF Unit/Pump Mechanism Rotation**

Rotation Direction	ASF Paper Loading Roller Rotation Direction	Pump Rotation Direction*1
CW*2	Reverse Rotation	Normal Rotation
CCW*3	Normal Rotation	Reverse Rotation

\*1: Refer to “Drive Transmission to the ASF Unit” on page -41

\*2: CW refers to clockwise from ASF/Pump Motor Pinion side

\*3: CCW refers to counterclockwise from ASF/Pump Motor Pinion side

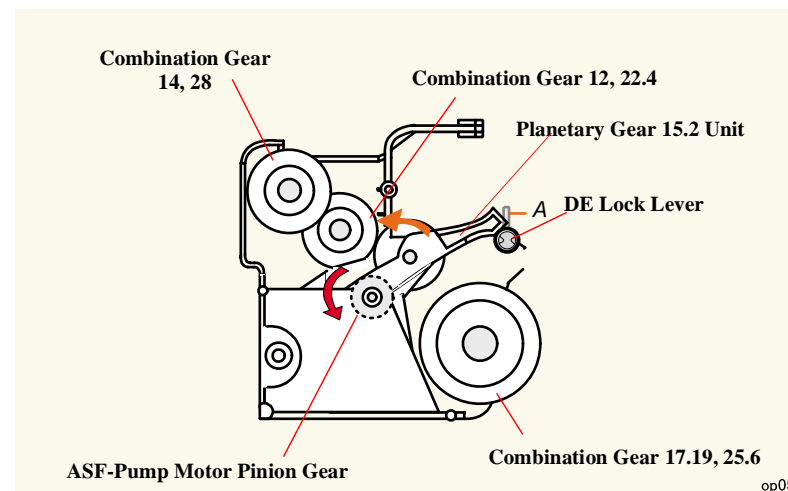
Drive from the ASF/Pump motor is sent to the ASF unit by the switching operation of the carriage unit and the DE mechanism described in the following section.

### 2.1.4.1 Drive Transmission to the ASF Unit

- 1) The CR unit moves to the right end of the CR shaft, which then pushes the DE lock lever to the right end.
- 2) The ASF/Pump motor rotates counterclockwise specified steps (viewed from the motor pinion gear side).
- 3) With the ASF-Pump motor's rotation of step 2), the planetary gear set in the DE unit shifts toward the combination gear (12, 22.4).
- 4) The carriage unit moves from the right end of the CR shaft specified steps, which causes the DE lock lever to fix the planetary gear unit.
- 5) Torque from the ASF/Pump motor is transmitted as described below.

Motor pinion gear → Planetary gear (15.2) → Combination gear (12, 22.4) →  
Combination gear (14, 28) → Spur gear (32) in ASF

Figure 2-7 shows the disengage mechanism and its parts.



**Figure 2-7. Disengage Mechanism**

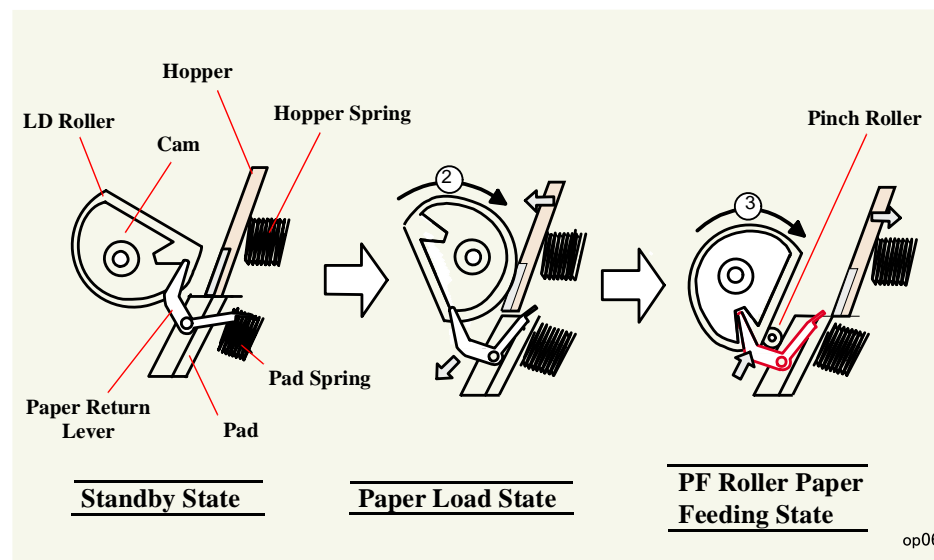
The ASF unit loads paper by the torque sent from the ASF/Pump motor via the DE mechanism as described in the following section.

### 2.1.4.2 Paper Loading Operation

Multiple paper loading prevention mechanism is included in the ASF unit to ensure steady paper loading. To prevent any paper from falling from the paper set position into the paper path, the paper return lever pushes paper that may have fallen off back onto the hopper. After this motion is completed, the LD roller starts loading paper. The paper loading mechanism, including the multiple paper loading prevention mechanism, is described in the following steps.

- 1) When the printer power is turned on, the ASF/Pump motor rotates counterclockwise to detect ASF home position. Then it rotates clockwise specified steps to set the LD roller and paper return lever in their standby status. (See “Standby State” in Figure 2-1.)
- 2) When the paper loading signal is sent from the PC and the Load/Eject button is pressed, the ASF/Pump motor turns counterclockwise to let the LD roller start loading paper. (See “Paper Pick Up State” in Figure 2-1.)
- 3) When the paper is transported to the PF roller, the LD roller stops where it loses friction. (See “PF Roller Paper Feed State” in Figure 2-1.)
- 4) When the next print signal is sent and Load/Eject button is pressed\*, the ASF/Pump motor rotates clockwise specified steps to set the LD roller and the paper return lever in standby status. (See “Standby State” in Figure 2-1.)

\* If the printer does not receive any print signal for TBD seconds in step 4, the LD roller and the paper return lever automatically return to the standby state.



Flowchart 2-1. Multiple Paper Loading Prevention Mechanism

### 2.1.4.3 Pump Mechanism

The pump mechanism absorbs ink from the printhead and the cap assembly. The wiper for head cleaning is included in the cap assembly.

The pump mechanism is driven by the ASF/Pump motor, a 4phase 48-pole PM type stepping motor. See Table for the ASF/Pump motor specifications. When the torque from the ASF/Pump motor is switched to the pump unit side, the pump mechanism acts differently according to the directions of the ASF/Pump motor rotation, as shown in the table below.

**Table 2-11. ASF/Pump Motor Functions**

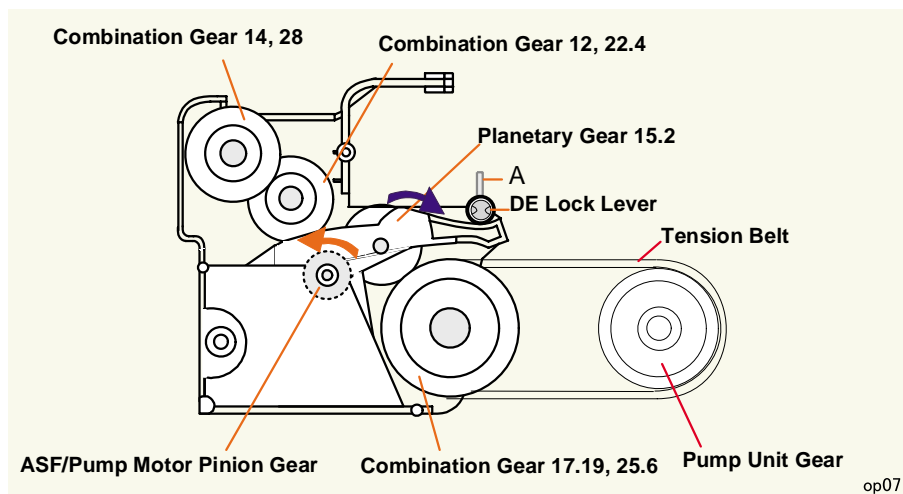
Directions	Corresponding Functions
Counterclockwise	<ul style="list-style-type: none"> <li>Absorbs ink.</li> <li>Sets the wiper.</li> </ul>
Clockwise	<ul style="list-style-type: none"> <li>Releases tube.</li> <li>Resets the wiper.</li> </ul>

#### □ Torque transmission to the pump unit

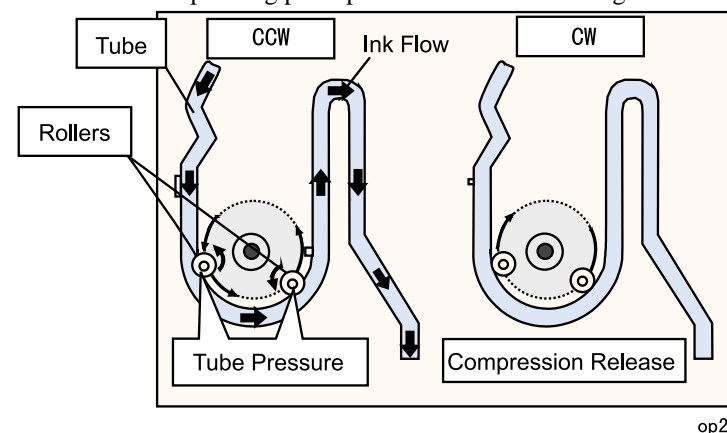
The torque from the ASF/Pump motor is transmitted to the pump mechanism as described below:

- 1) The CR unit moves to the right end of the CR shaft, which then pushes the DE lock lever to the right end.
- 2) The ASF-Pump motor rotates clockwise (viewed from the motor pinion gear side) specified steps.
- 3) With the rotation of step 2), the planetary gear set in the DE unit moves toward the combination gear (17.19, 25.6).
- 4) The CR unit moves specified steps from the right end of the CR shaft to the left. With this motion, the DE lock lever fixes the planetary gear set.
- 5) Torque from the ASF/Pump motor is transmitted as described below.  
Motor pinion gear → Planetary gear (15.2) → Combination gear (17.19, 25.6) → Tension belt → Pump unit gear → Pump unit

DE pump mechanism and operating principle are as shown in the figure below.



**Figure 2-8. Torque to the Pump Mechanism**



**Figure 2-9. Pump Operating Principle**

1. When the pump unit rotates CCW from ASP/Pump motor side, rollers rotates compressing a tube, and the ink in the tube is pressed from the capping unit down to waste ink pads.
- 2) When the pump unit rotates CW, the rollers stop compressing the tube, and the ink is not pressed to the waste in pack.

#### 2.1.4.4 Capping Mechanism

The capping mechanism, which is driven by the pump unit, caps the printhead closely to maintain air tightness inside the cap. This operation is required to vacuum ink from the ink cartridges, printhead, and cap. Also, to moisten the inside of the cap while the printer power is off, this mechanism works to keep the cap and the printhead surface in a tight contact. This function prevents ink from clogging while the printer is not in use.

The capping mechanism of this printer is a newly designed valveless capping mechanism. So, unlike previous printers, it does not integrate an air valve. The air valve is usually equipped to remove bubbles created inside the cap by releasing the negative pressure. However, due to change in the ink sequence, the new valveless capping mechanism enables the printer to maintain the initial ink charge and cleaning effects at the same level as before. Figure 2-10 outlines the valveless capping mechanism.

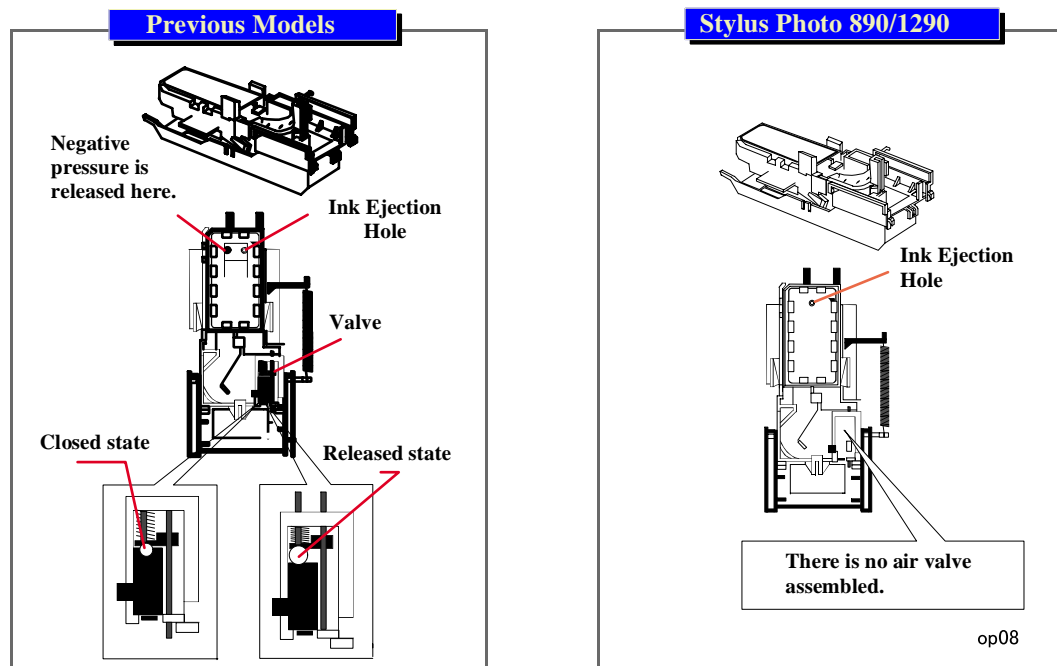


Figure 2-10. Valveless Capping Mechanism

## 2.2 Electrical Circuit Operating Principles

The electric circuit of the Stylus Photo 890/1290 consists of the following:

- ☐ Control circuit board: C393MAIN/C393MAIN-B/C393MAIN-C
- ☐ Power supply board: C378PSB/PSE
- ☐ Panel board: C393PNL

Refer to Figure 2-11 for the major connection of the boards and their roles.

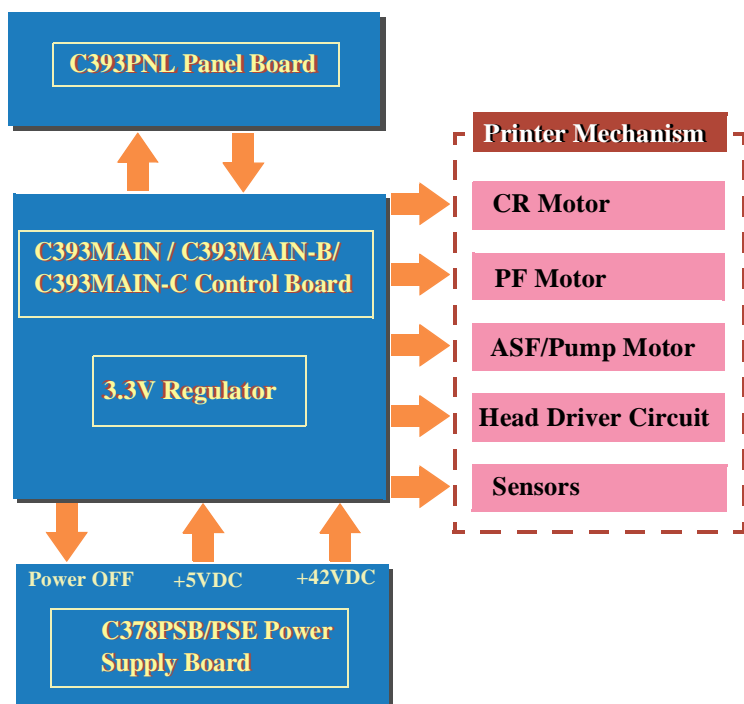


Figure 2-11. Electric Circuit of Stylus COLOR 890/1290

### 2.2.1 C378PSB/PSE Board

The power supply board for the Stylus Photo 890 and Stylus Photo 1290 is C378PSB/PSE. It uses a RCC switching regulator system, and supplies +42VDC and +5VDC to the printer mechanism and control board.

#### 2.2.1.1 Electrical Circuit

The table below shows the voltages produced in this circuit and their applications.

Table 2-12. Application of the DC Voltages  
Table 2-13.

Voltage	Application
+42VDC $\pm$ 2VDC	<ul style="list-style-type: none"> <li>CR Motor</li> <li>ASF/Pump Motor</li> <li>PF Motor</li> <li>Head driving power supply</li> </ul>
+5VDC $\pm$ 0.25VDC	<ul style="list-style-type: none"> <li>Logic sensor circuit</li> <li>Panel LED</li> <li>Nozzle selection circuit (on the printhead)</li> <li>I/F control circuit</li> </ul>

**NOTE:** The 5VDC is only applied to the parts and locations shown in the table above. The C393MAIN uses 3.3V drive chips for most of the logic-line chips (CPU, ASIC, ROM, DRAM). For this reason, those chips are not driven by the +5VDC produced by the but power supply board but the 3.3VDC that is reduced by the 3.3VDC regulator on the C378PSB/PSE.

Figure 2-12 shows the block diagram for the C378PSB/PSE board.

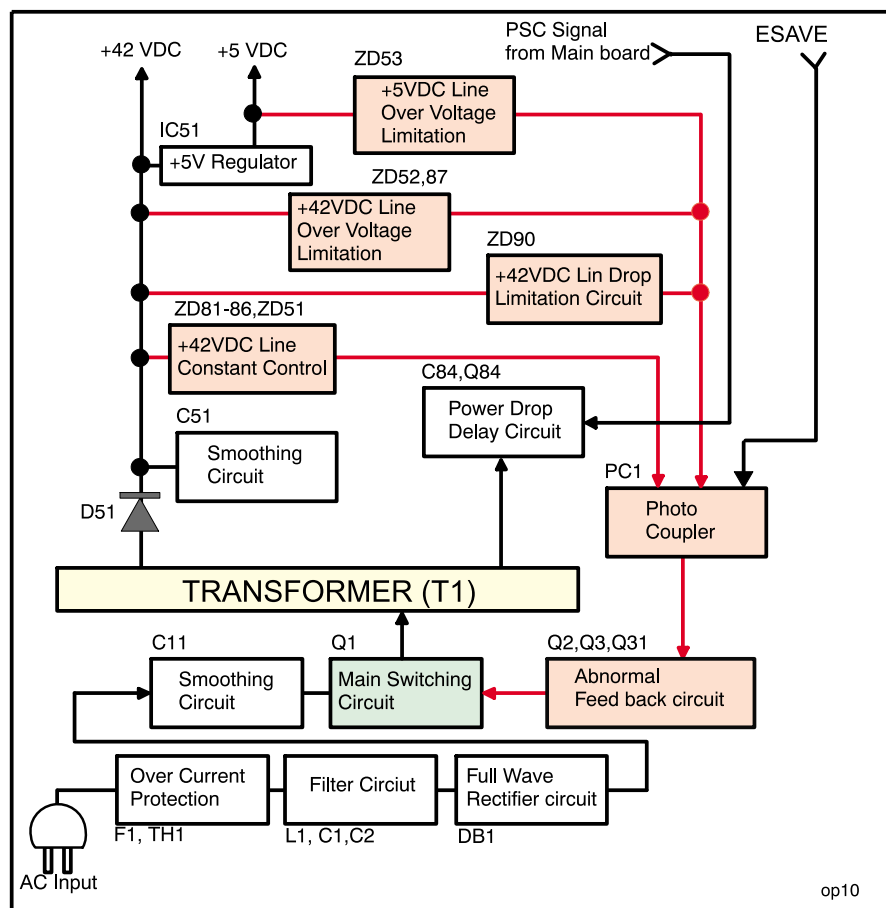


Figure 2-12. C378PSB/PSE Board Block Diagram

The C378PSB/PSE Board produces the +42VDC and +5VDC using AC power as described below:

1. Regardless of the power switch's on/off condition, voltage is always applied to the primary side of the power supply board from the moment or at the state that AC-plug is plugged in. F1, a fuse, prevents AC100V from flowing into the circuit. A power thermistor TH1 also protects the circuit from rush current after power-on. The filter circuit composed of L1, C1, and C2 prevents high harmonic wave noise generated in the switching circuit from going out, and eliminates the noise from outside.
- 2) The AC voltage is full-wave rectified by the diode bridge DB1 and smoothed by C11.
- 3) Switching FET Q1 turns on via starting resistors R18 and R28 that are located on the AC side to begin switching operation. By arranging the starting resistors on the AC side, half waves of the AC voltage are only applied, and power used for this operation is reduced compared with usual serial layout.
- 4) When the primary side is on, because the diode (D51) on the secondary side is installed in the reverse direction, energy (current) led by the electromagnetic induction through the trans (T1) does not flow to the secondary side.
- 5) When the energy charged in the transformer reaches a saturated state, the voltage which keeps Q1 on becomes weak gradually. At the point this voltage drops to a certain level, C13 absorbs the reverse current and Q1 quickly shuts off.
- 6) When the primary side is turned off, the energy charged in T1 is opened according to the diode(D51) direction on the secondary side. +42 V DC is output by these circuit operations and the number of T1 spiral coil.
- 7) +5VDC is generated out of this +42VDC. Forming reference sawteeth waveforms with an external RC integrating circuit, IC51 produces stable +5VDC with a chopping circuit.

### 2.2.1.2 Protection Circuits

The C378PSB/PSE board has the various protection circuits to stop voltage outputs if an abnormal condition relating to the control circuit or the printer mechanism's duty occurs.

- ☐ **+42VDC Line Constant Voltage Control Circuit:**  
The output level of the +42V line is monitored by a detection circuit composed of numbers of Zener diodes, and the information is fed back to the primary side via photo coupler PC1. Along with the fed back signal, the switching FET on the primary side varies the level of the voltage output to the secondary side by changing its frequency to keep the voltage up.
- ☐ **+42VDC line over current protection circuit:**  
If the +42 VDC line is over currented, the output voltage level drops drastically. When the voltage level is 36V or lower, zener diode ZD90 detects that condition and sends information to the primary side via photo coupler PC1. In the primary circuit, then, switching operation stops to protect the electrical circuits and printer mechanism. To reset the circuit, turn the printer off and back on.
- ☐ **+42VDC line over voltage protection circuit:**  
If the voltage level of the +42VDC line exceeds 59V, zener diodes D52 and ZD87 detect it and feed back the information to the primary side via photo coupler PC1. The switching operation in the primary side then stops to protect the electrical circuits and printer mechanism.
- ☐ **+5V line constant voltage/constant current control circuit:**  
Both +5V line output voltage and +5V line output current are monitored by chopper IC (IC51). Detected information is input to the IC's internal comparator and stabilizing circuit. When the IC detects abnormally high current level, it stops outputting voltage. The circuit recovers automatically.
- ☐ **+5V line over voltage protection circuit:**  
If the +5VDC output level exceeds 12V, zener diode ZD53 detects that condition and feeds back the information to the primary side via photo coupler PC1. The switching operation in the primary side then stops to protect the electrical circuits and printer mechanism.

### 2.2.1.3 Power Supply Control Function

Since this printer has the power switch in the secondary circuit, even if its power is turned off through the operation panel, it can continue to supply voltage to the +5VDC line and +42VDC line for about 30 seconds. This extra time allows the printer to complete the following operations:

- ☐ If the printer is in a printing motion and the CR unit is out of its home position, the printer stops printing, returns the CR unit to the home position, and performs CR lock operation. Then the printer power shuts down.
- ☐ If the printer is not printing but paper loaded at ASF remains in the printer, the printer ejects the paper before the printer power shuts down.

### 2.2.1.4 Energy Save Mode

The power supply circuit enters the energy save mode by the signal ESAVE sent from the control circuit. One the circuit is in this mode, it maintains the +42V line level in a range from +20V to +23V.

## 2.2.2 C393MAIN Board Circuit Operation Principles

The C393MAIN board includes the following:

- Logic circuit (CPU, ASIC, DRAM, EEPROM, and so on)
- Various motor control/driver circuits (CR motor, PF motor, and ASF/Pump motor)
- Head control/driver circuits
- Interface circuit (parallel I/F, USB I/F)
- Sensor circuit
- Timer circuit
- Reset circuit

The C393MAIN/C393MAIN-B/C393MAIN-C board is mainly different from other main boards in the following points.

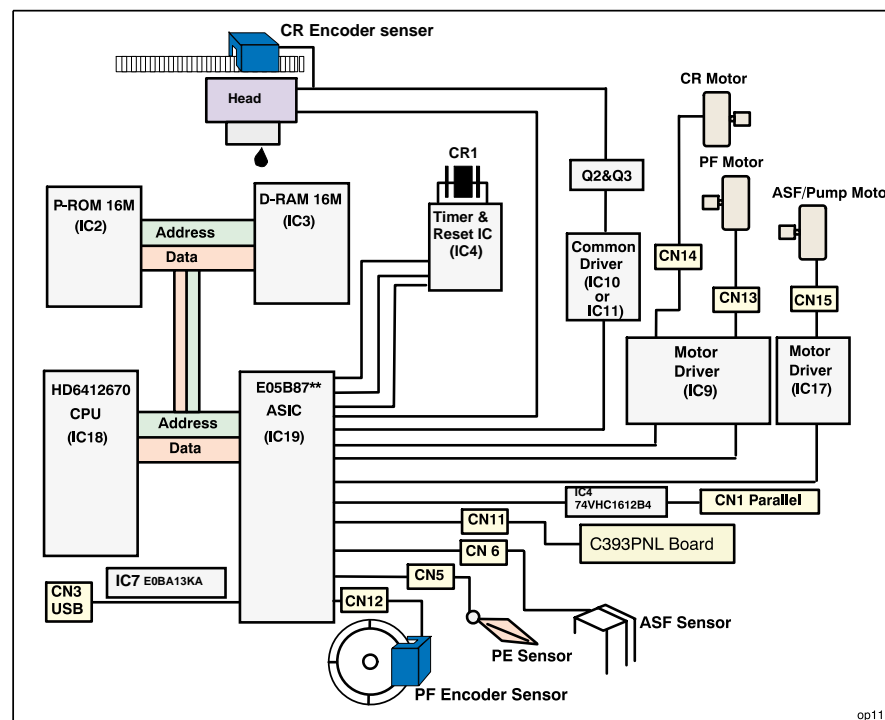
- Use of 3.3V drive logic chips  
IC21, the 3.3 V regulator IC on the C393MAIN, produces 3.3 V by pressuring down the 5.5 VDC generated on the C378PSB/PSE board to drive several chips. These chips are used to reduce power used to drive the logic circuit. See the table below that separately shows the chips driven by the +5V and +3V.

**Table 2-14. 3.3V Drive Chips & 5.5V Drive Chips**

**Table 2-15.**

+5V	3.3V
Sensors	CPU
USB I/F Circuit (Except high speed)	ASIC
PNL Board	P-ROM
	D-RAM
	RTC/Reset/EEPROM
	USB I/F Circuit (During high speed)

There are three kinds of main board installed on EPSON Stylus Photo 890/1290. Stylus Photo 890 is equipped with either C393MAIN-B or C393MAIN-C while Stylus Photo 1290 is equipped with either C393MAIN or C393MAIN-B. Block diagram of each main board are shown in the following figures below.



**Figure 2-13. Block Diagram for the C393MAIN Board  
(For Stylus Photo 1290 only)**



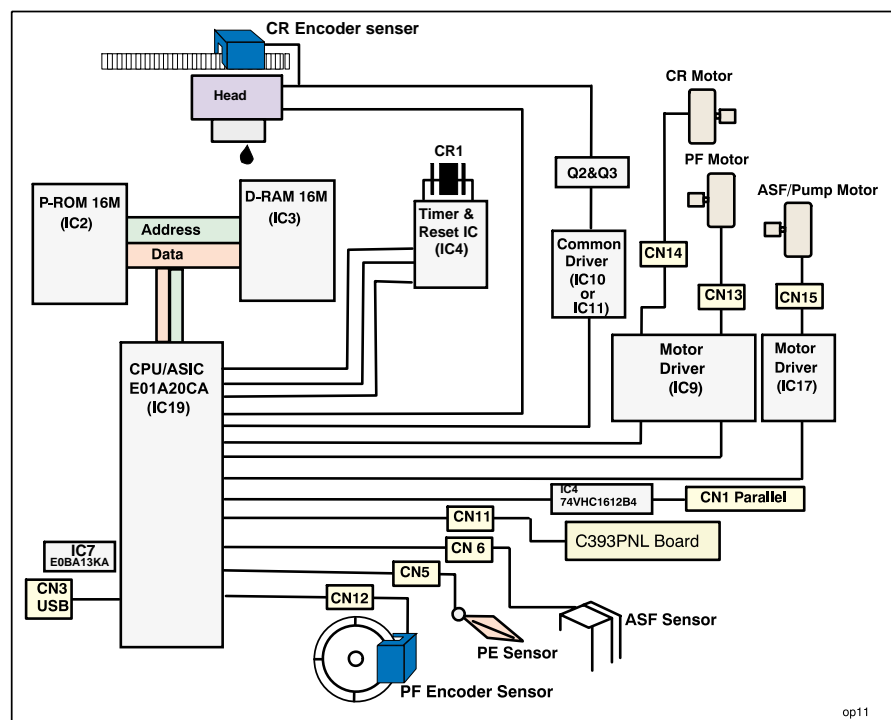


Figure 2-14. Block Diagram for the C393MAIN-B Board  
(For Stylus Photo 890/1290)

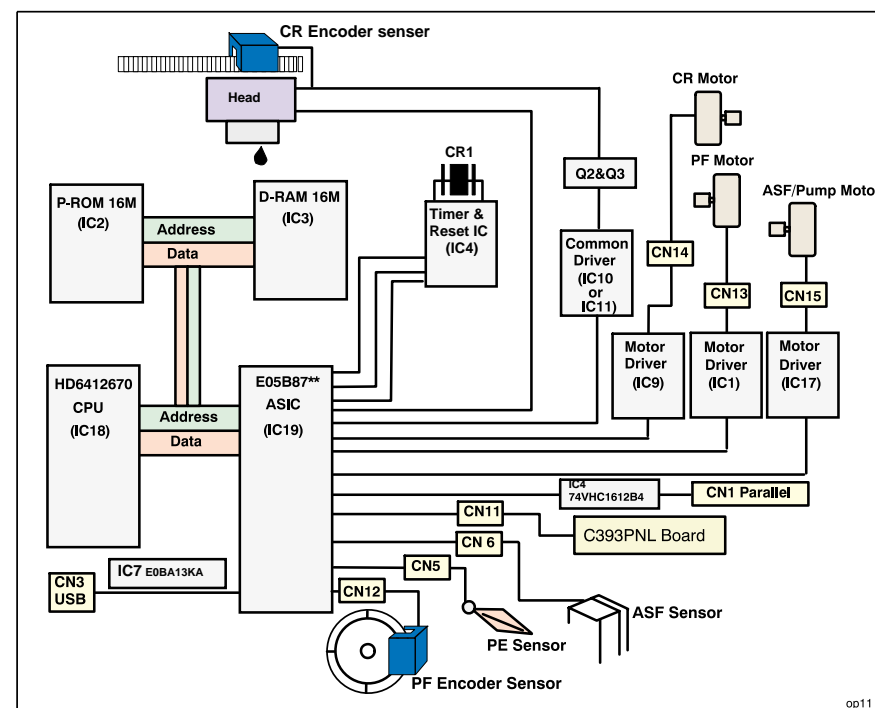


Figure 2-15. Block Diagram for the C393MAIN-C Board  
(For Stylus Photo 890 only)

Table 2-16 shows the major ICs on the C393MAIN Board and their functions.

**Table 2-16. Major Element on C393MAIN**

IC	Location	Functions
CPU (HD6412670) (C393MAIN/ C393MAIN-C)	IC18	<p>A 144-pin QFP package. Operates at 24.0MHz. Power supply voltage is 3.3V.</p> <ul style="list-style-type: none"> <li>• Sets the current value for the ASF/Pump motor.</li> <li>• Measures the printhead temperature.</li> <li>• Several interrupting functions</li> <li>• Outputs the system clock signal.</li> </ul>
ASIC (E05B87**) (C393MAIN/ C393MAIN-C)	IC19	<p>A 240-pin QFP package. Operates at 48.0MHz/24.0MHz/28.0MHz. Power supply voltage is 3.3V.</p> <ul style="list-style-type: none"> <li>• Controls interfaces.</li> <li>• Controls specified motors.</li> <li>• Controls the printhead drive waveform circuit.</li> <li>• Transfers serial data to the printhead.</li> <li>• Controls the ASF/Pump motor</li> <li>• Receives panel control signals and sensor signals</li> <li>• EEPROM</li> <li>• Controls detection of the signals output from the encoder.</li> </ul>
ASIC (E01A20CA**)	IC19	<ul style="list-style-type: none"> <li>• CPU and ASIC are built in in the IC.</li> </ul>
PROM	IC2	<p>8/16Mbit</p> <ul style="list-style-type: none"> <li>• Stores the firmware or firmware +CG</li> </ul>
DRAM	IC5	<p>A 16Mbit DRAM. Power supply voltage is 3.3V.</p> <ul style="list-style-type: none"> <li>• Serves as specified buffers and work area</li> </ul>
RTC IC RTC9822**	IC4	<ul style="list-style-type: none"> <li>• Resets the +5V/+24 VDC line circuits.</li> <li>• Serves as the timer powered by a lithium battery.</li> </ul>

### 2.2.2.1 Printhead Driver Circuit

The printhead driver circuit includes:

- Common driver IC10 (E09A14RA)/IC11 (E09A15KA) directly attached to the C393MAIN board.
- Nozzle selector IC (IR2C95F or SED6125T0A) on the head board.

The common driver generates reference drive waveforms according to the output signals from ASIC on the C393MAIN board. The reference drive waveforms are amplified by the transistors Q2 and Q3 and then transferred to the nozzle selector IC on the head board. Print data is converted to serial data by the ASIC and then also sent to the nozzle selector IC on the head board. Based on the serial data, the nozzle selector IC determines the nozzles to be actuated. The selected nozzles (PZT) are driven according to the drive waveforms produced by the common driver. See Figure 2-16 for the printhead driver circuit block diagram.

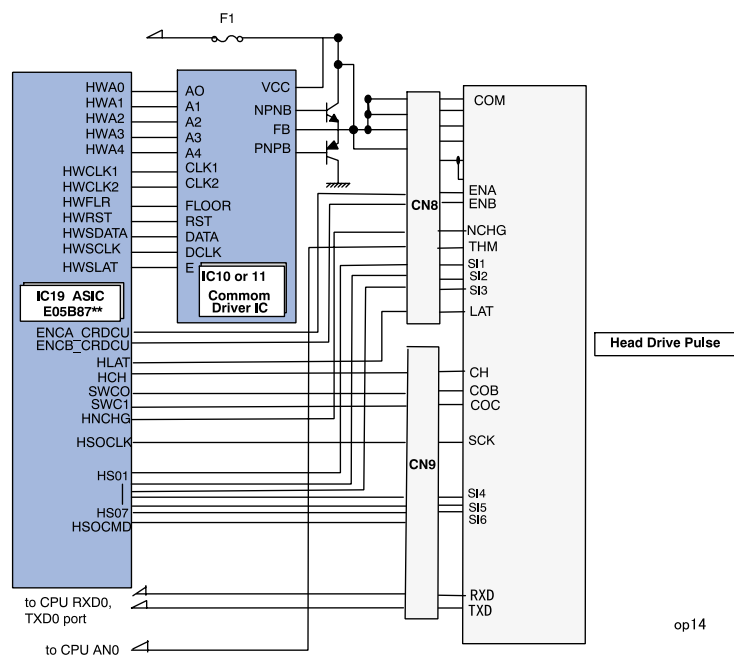


Figure 2-16. Printhead Driver Circuit

#### □ Head common driver circuit

The head common driver IC10 (E09A14RA)/IC11 (E09A15KA) generates reference head drive waveforms according to the output of the following 9 signal lines: A0-A4, CLK1, CLK2, RST, FLOOR, and DATA.

By the DATA signal output from the IC19 ASIC (E01A20CA\*\*), the original data for the head drive waveform is written in the memory in the IC10/IC11. Addresses for the written data are determined by the A0 - A4 signals, and, of among, data used to determine the waveform angles is selected. Then, setting the selected data, producing trapezoid waveform value, and canceling the data are performed by the rising edges of the CLK1 and CLK2 signals.

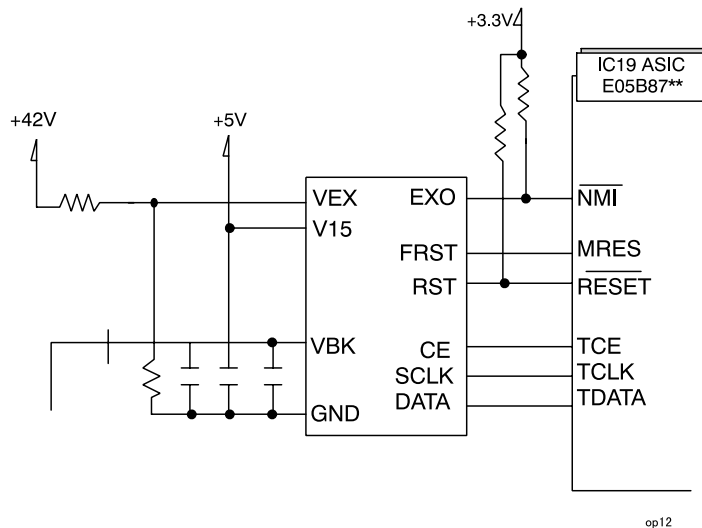
#### □ Head nozzle selector circuit

Print data is converted into serial data by the ASIC (E01A20CA\*\*). Then the converted data is allocated to the six rows, the number of the head nozzle rows, to be transferred to the nozzle selector IR2C95F (Sharp) or SED6125T0A (EPSON) through the six signal lines (HS01 to HS06). Data transmission from IC19 ASIC (E01A20CA\*\*) to the nozzle selector synchronizes with the LAT signal and SCK clock signal. Referring to the transferred data, The nozzle selector IC selects the nozzles to be activated, and the PZTs of the activated nozzles are driven by the drive waveforms output from the head common driver.

### 2.2.2.2 RTC (Real Time Clock)/ Reset/ EEPROM Circuit

RTC9822\*\* includes built-in RTC and EEPROM and functions as a reset. The RTC part has an electric two-layer condenser for backup. The RTC/Reset/EEPROM circuits are attached on the C393MAIN board to monitor two voltages: +5V for the logic line and +42V for the drive line. When each circuit detects abnormality on the corresponding line, it resets CPU and ASIC to prevent the printer from operating abnormally.

IC4 RTC9822\*\* is attached on the main board as a RTC/Reset/ EEPROM circuit IC. EEPROM part backups default setting value and each parameter. IC4 RTC9822\*\* monitors +3.3, +5V, and +45 lines but can reset them independently. See Figure 2-17 for the block diagram for the reset circuits.



**Figure 2-17. RTC/Reset/EEPROM Circuit Block Diagram**

- ☐ **+3.3V Line Reset Circuit**  
The VDD port of IC4 reset IC monitors the +5V line. When the IC detects an abnormal voltage level (2.5 V or lower), it outputs a reset signal from the RST port to CPU and ASIC.
- ☐ **+5V Line Reset Circuit**  
The VDD port of IC4 reset IC monitors the +5V line. When the IC detects an abnormal voltage level (4.2 V or lower), it outputs a reset signal from the RST port to CPU and ASIC.

- ☐ **+42V line reset circuit**  
The VIN port of the IC5 reset IC monitors the +45V line. When the IC detects an abnormal voltage level (36V or lower), it outputs a reset signal from the VDT port to CPU and ASIC.

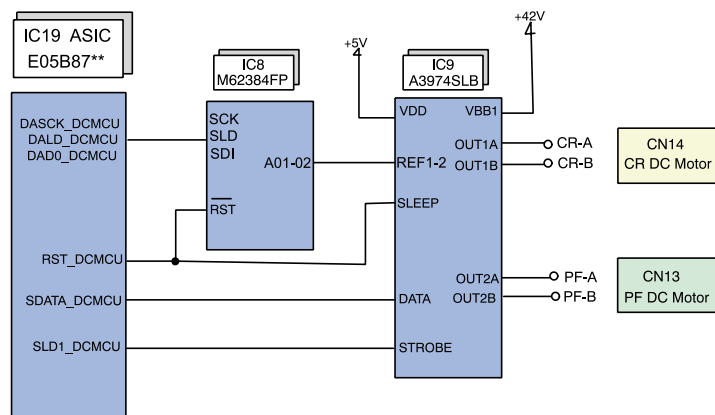
### 2.2.2.3 Motor Driver Circuit

Stylus Photo 890/1290 is equipped with 3 kinds of motors, the CR motor and PF motor that are a DC motor and an ASF/Pump motor, and a stepping motor. The DC motor on the C393MAIN board is used for DC motor control.

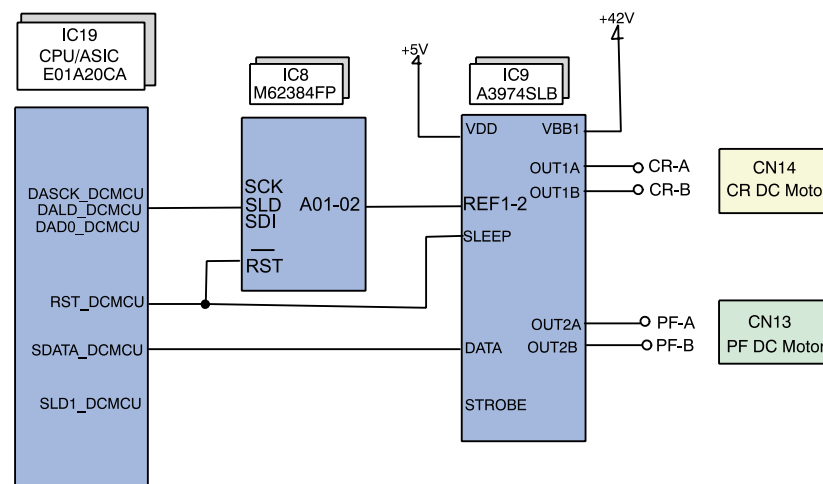
#### CR motor driver circuit

IC9 (A39374SLB) on the C393MAIN/C393MAIN-B board controls the CR and PFDC motor while IC9 (A3958SLB) on the C393MAIN-C board controls the CR motor. ASIC sends signals of IC9 through IC8 and determines current of the CR motor. By setting RST\_DCMCU of ASIC “LOW” level, the motor turns into a “SLEEP” condition for energy saving.

The block diagram of the CR motor driver IC (IC9) is as shown below.



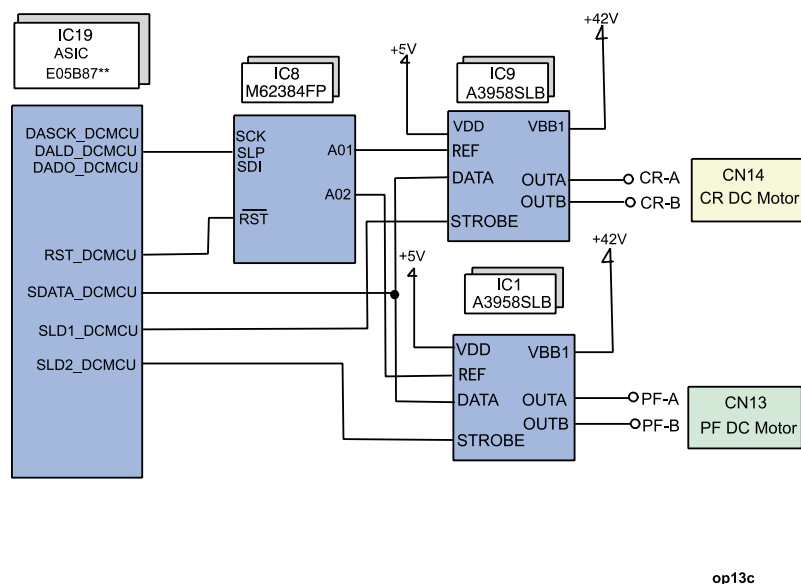
op13a



op13b

Figure 2-19. CR Motor Driver Block Diagram (C393MAIN-B)

Figure 2-18. CR Motor Driver Circuit Block Diagram (C393MAIN)

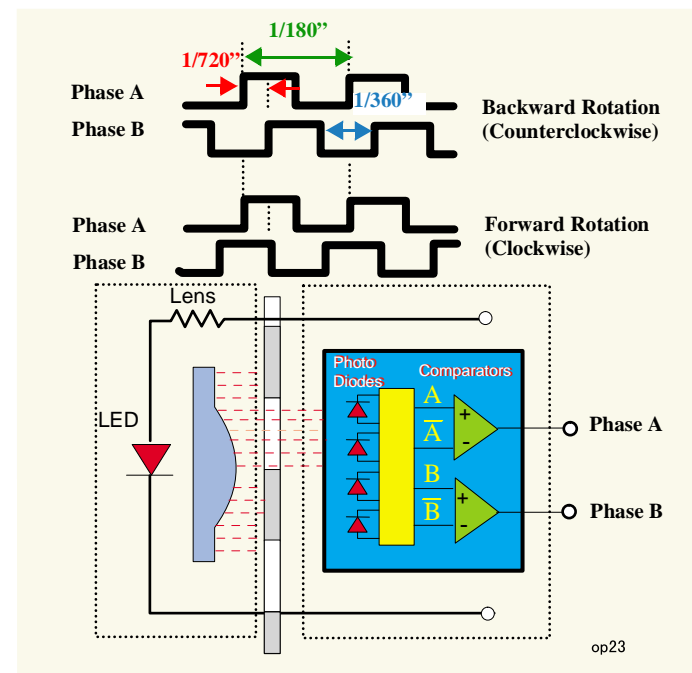


**Figure 2-20. CR Motor Driver Circuit Block Diagram (C393MAIN-C)**

**NOTE:** When C393MAIN-C is installed, ASIC sends signals of IC9 and IC1 through IC8 and determines current of the CR motor.

ASIC (IC19) controls the CR position by referring to the pulses sent from the linear encoder. Based on the data sent from ASIC, the CPU sets an appropriate drive current value used to determine the CR position and the direction in which the CR moves. ASIC outputs specified control signals to the motor driver. The motor driver IC9 then outputs CR motor drive current to the CR motor.

Unlike stepping motors, the DC motor that drives the carriage can not detect the current carriage position by referring to the pulses given. For this reason, a linear scale is attached along the carriage operation range to detect the carriage position. The linear encoder sensor outputs two kinds of TTL level pulses: Phase A and Phase B.



**Figure 2-21. CR Linear Scale Encoder Pulse**

Direction for the CR's current movement is detected based on the pulse waveforms of the shifted Phases A and B. Carriage position is, on the other hand, controlled based on a cycle of Phase A output waveform (1 cycle=1/180 inches). Also, all rising and falling edges of the waveforms in the both phases (1 cycle=720) are used to control the position of the CR that is in its home position for ink system.

#### □ Home position detection

Home position is detected based on the pulses output from the linear scale sensor and DC motor control current value. The basic home position detection sequence is as described below:

- 1) The linear encoder pulse counter in the ASIC (IC19) is reset by an initialization sequence at power-on.
- 2) The CR motor turns forward (clockwise) to move the carriage to the right. ASIC(IC19) assumes that the CR is in contact with the right frame when the following conditions are satisfied:

- ASIC(IC19) detects the motor control current value is 720mA.
- P1 (= number of pulses output during the above carriage movement) is 30\* or less.

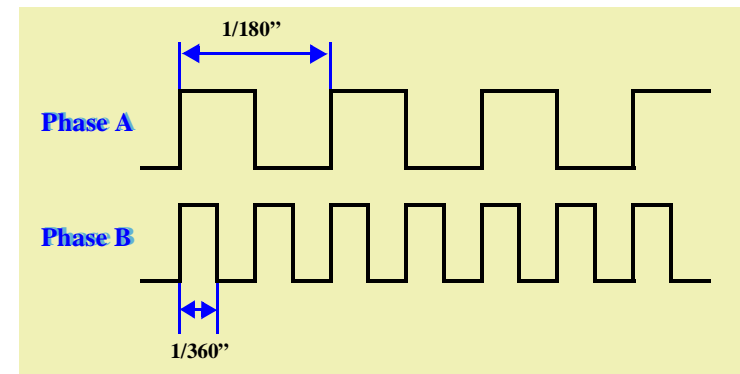
\* Specified value that indicates CR is in the home position. (All edges in the waveform are used in this condition.)

- 3) The CR motor rotates backward (counterclockwise) to move the carriage back to the left, and ASIC(IC19) assumes that the carriage enters the CR lock lever position when the following conditions are satisfied:
  - ASIC(IC19) detects the motor control current value is 500 mA.
  - Difference between P1 and P2 (= number of pulses output while the CR moves from the right frame) is 30 or less.
- 4) The CR motor rotates backward to move the carriage to the right again, and if ASIC (IC19) detects the motor control current value is 720 mA, it assumes that the CR comes in back in contact with the right frame.
- 5) Difference between P1 and P3 (= number of pulses output for the CR's movement from the CR lock lever position to the right frame) is 4 or less.

When all the conditions in the sequence are satisfied, the printer detects the CR is in the home position.

#### □ PTS (Print Timing Signal) production

The circuit produces PTS signal (cycle: 1/360 inches) by dividing waveform cycles of Phase A. The print timing signal is used to eject ink at a correct timing.

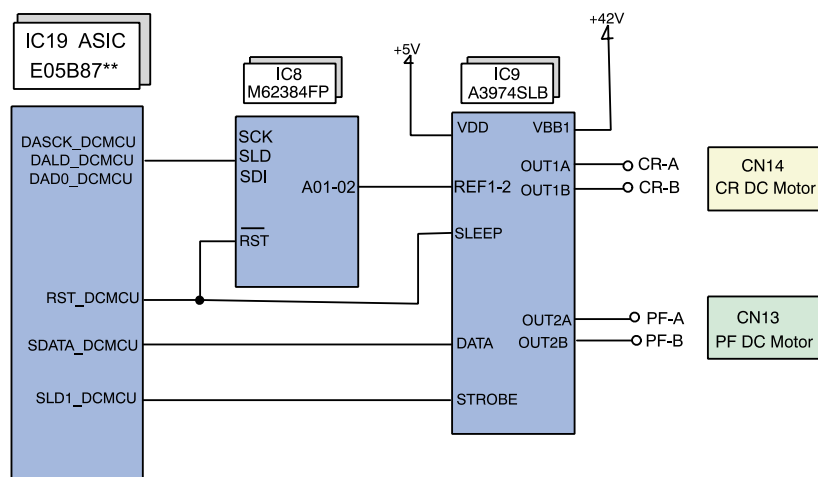


**Figure 2-22. Print Timing Signal and Linear Encoder Phase A**

## PF motor driver circuit

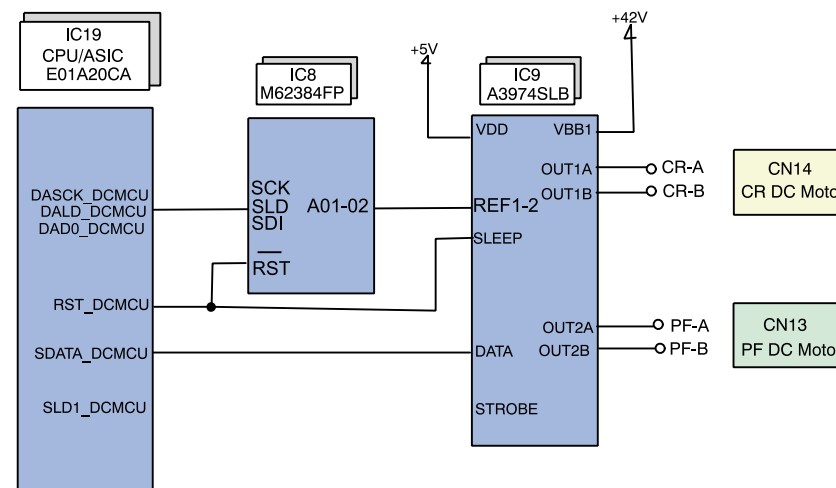
DC motor is used as the PF motor in this printer. IC9 (A39374SLB) on the C393MAIN/C393MAIN-B board controls the CR and PFDC motor while IC9(A3958SLB) on the C393MAIN-C board controls the CR motor.

The block diagram of the PF motor driver circuit is as shown below:



op13a

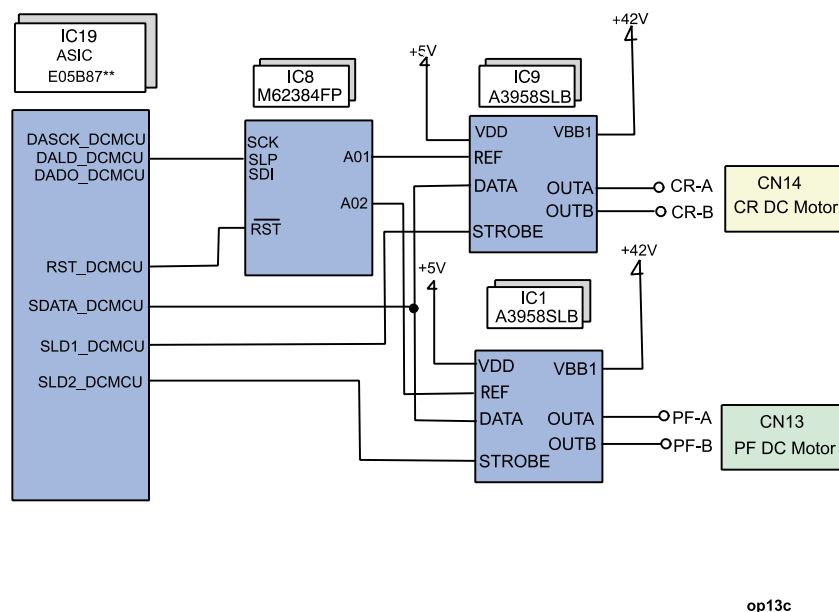
Figure 2-23. PF Motor Driver Circuit Block Diagram (C393MAIN)



op13b

Figure 2-24. PF Motor Driver Circuit Block Diagram (C393MAIN-B)



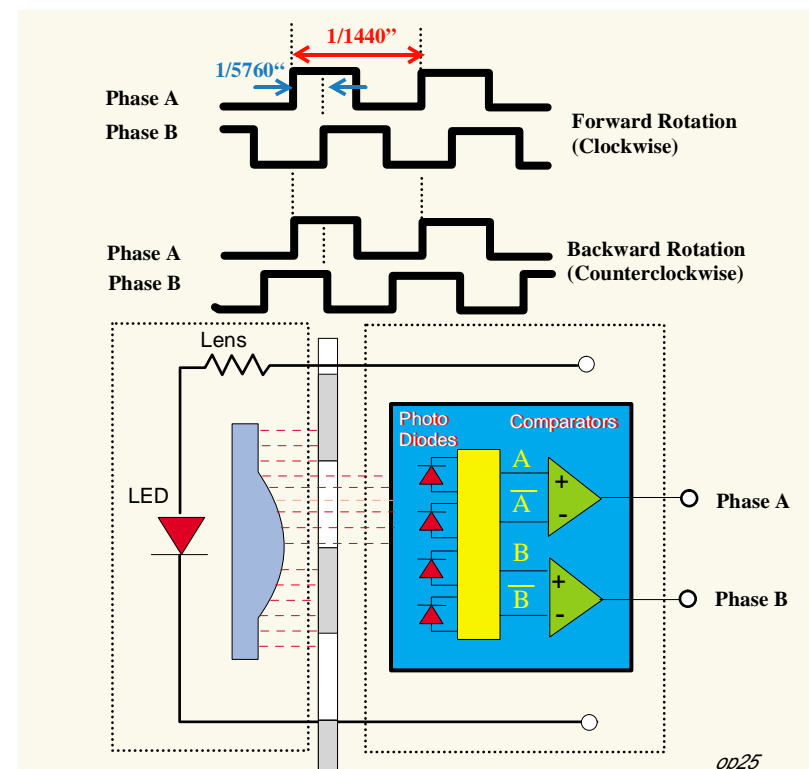


**Figure 2-25. PF Motor Driver Circuit Block Diagram (C393MAIN-C)**

ASIC(IC19)controls paper feeding amount by referring to the encoder pulses. ASIC sends a proper drive current value to the motor driver. Based on the control signal from ASIC, the motor driver (IC9or IC1) outputs drive current to the PF motor.

Unlike a stepping motor, this DC motor can not detect paper feeding amount by referring to the pulses given. For this reason, a loop scale is attached on the Gear 76 to detect paper feed amount.

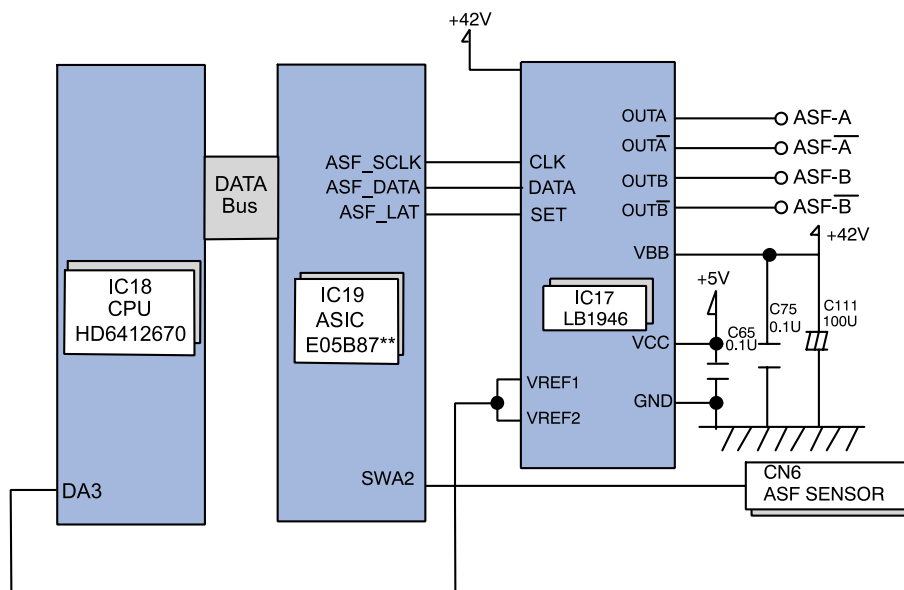
The loop scale encoder sensor outputs two kinds of TTL level pulses Phase A and Phase B to ASIC (IC19). Direction of the PF motor rotation is determined by the phase between the output waveforms from Phase A and the waveforms form Phase B



**Figure 2-26. Loop Scale Encoder Pulse**

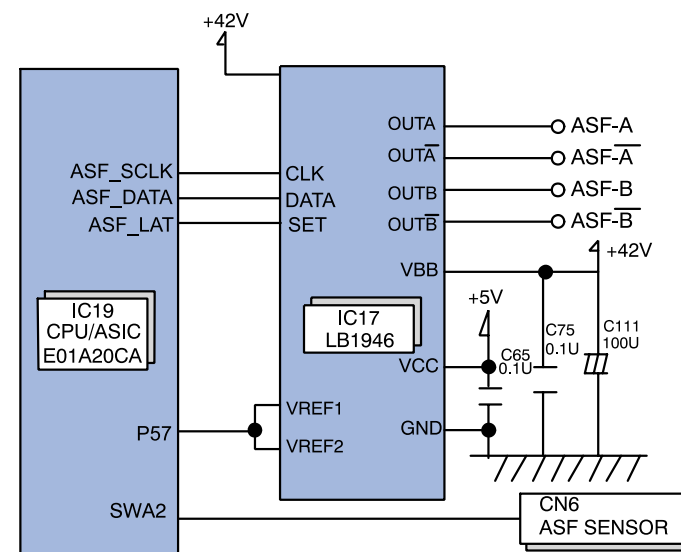
### 2.2.2.4 ASF/Pump Motor Driver Circuit

ASF/Pump motor is a PM type stepping motor. The block diagram for the ASF/Pump motor is as shown below:



op16a

Figure 2-27. ASF/Pump Motor Circuit Block Diagram  
(C393MAIN/C393MAIN-C)



op16b

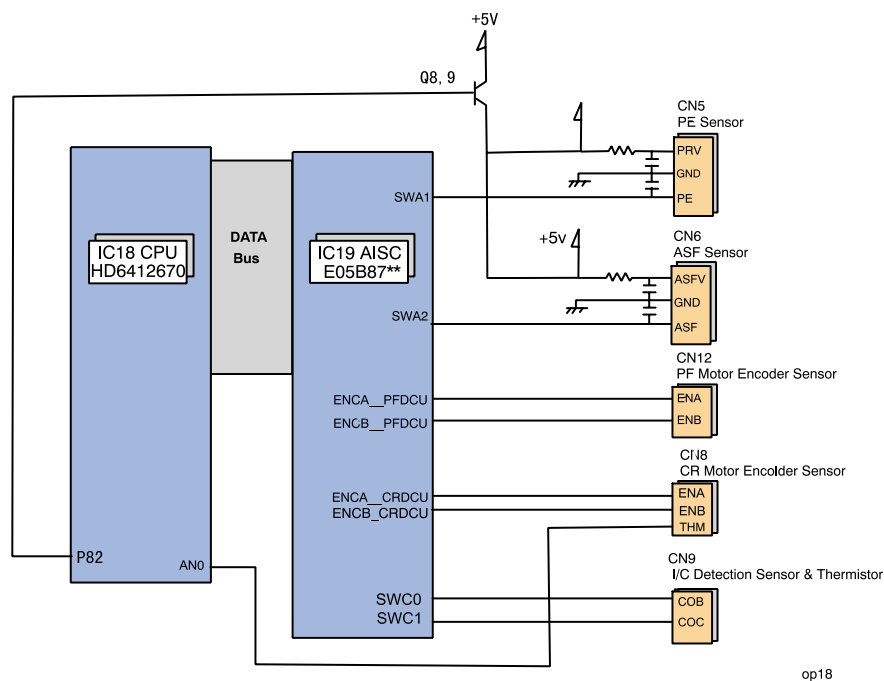
Figure 2-28. ASF/Pump Motor Circuit Block Diagram  
(C393MAIN-B)

### 2.2.2.5 Sensor Circuit

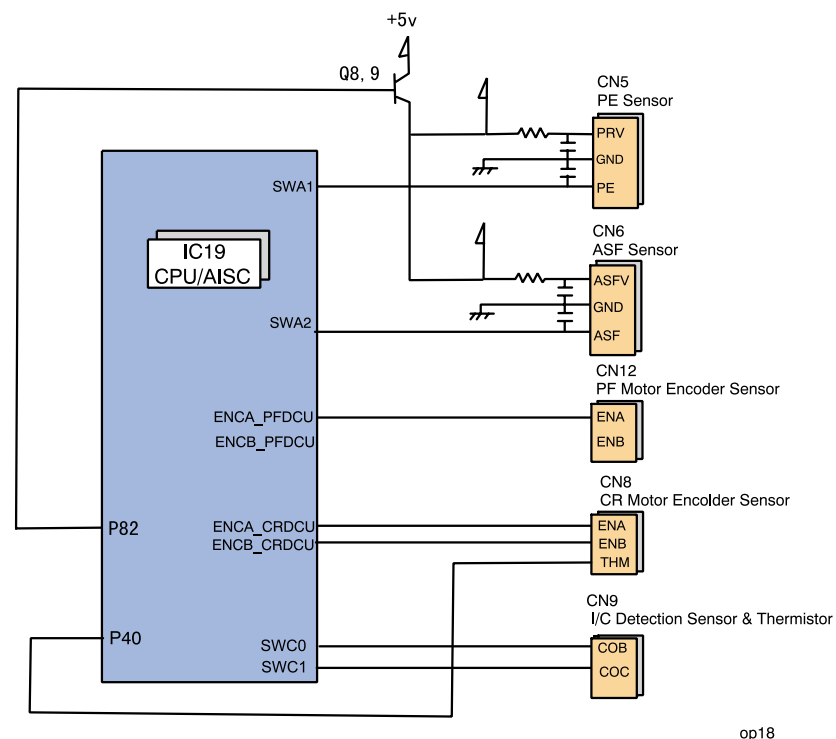
Stylus Photo 890/1290 has the following five sensors to detect printer's status.

- PE sensor
- ASF sensor
- Ink cartridge sensor (CSIC connector on the head board)
- Head thermistor sensor
- PF motor encoder
- CR motor encoder

The block diagram for the sensor circuit is as shown below:



**Figure 2-29. Sensor Circuit Block Diagram  
(C393MAIN/C393MAIN-C)**



**Figure 2-30. Sensor Circuit Block Diagram (C393MAIN-B)**

Each sensor's functions and operating principles are as described below:

- ☐ PE sensor  
The PE sensor is located at the bottom right edge of the top frame in the printer mechanism. It detects paper on the rear paper guide using a photo sensor and PE sensor lever that are included in the sensor. When paper is present, the PE sensor lever does not cut in between the photo sensor terminals. So it outputs a LOW signal to the ASIC. If there is no paper, on the other hand, the lever cuts in between the photo sensor terminals. So it outputs a HIGH signal to the ASIC.
- ☐ ASF sensor  
The ASF sensor, located at the left edge of the ASF, detects ASF home position. This sensor consists of the ASF HP detector wheel and a transmission photo sensor. A small portion of the ASF HP sensor has a cutout, and when the cutout comes into position between the photo diode terminals, that condition is detected as ASF home position. In this status, since the photo diode terminals are not blocked by the wheel, a LOW signal is output to ASIC. Otherwise, a HIGH signal is output. Referring to the ASF home position detected by this sensor, the printer drives the ASF/Pump motor to set the LD roller and paper return lever ready to the paper loading position.
- ☐ Ink cartridge sensor (CSIC connector on the head board)  
Ink cartridge sensor detects whether a black or color ink cartridge is installed. Installation condition is determined depending on the CSIC's connection. When a cartridge is installed, a LOW signal to ASIC is output. On the other hand, a HIGH signal is output when a cartridge is out.
- ☐ Head thermistor  
The head thermistor is directly attached on the head driver board. It monitors the temperature around the printhead and feeds back the temperature to the CPU analog port. The printer refers to this information to control head driver voltage based on the ink viscosity.
- ☐ PF motor encoder  
The PF motor encoder includes the loop scale attached to the left end of the PF roller shaft and the transmission photo sensor. The minimum resolution of the sensor is 1/180 inches. The sensor outputs HIGH signals for the black lines and LOW signals for the transparent parts to the ASIC. The printer controls the PF motor based on the signals output from this sensor.
- ☐ CR motor encoder  
CR motor encoder consists of the transmission photo sensor assembled in the CR unit and the linear scale attached along the CR scanning line. The minimum

resolution of the sensor is 1/180 inch. It outputs HIGH signals for the black bands and LOW signals for the transparent parts of the linear scale to the ASIC. The printer controls the CR motor based on the signals output from this sensor. CR home position is also detected based on the signals from this sensor.



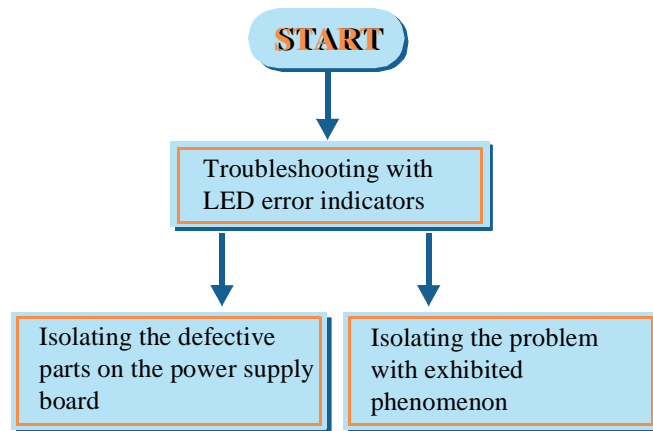
**CHAPTER**

**3**

# **TROUBLESHOOTING**

## 3.1 Overview

This chapter describes how to troubleshoot problems. It consists of the sections shown in the flowchart below. When identifying and troubleshooting problems, be sure to proceed to the correct section specified in the flowchart.



**Figure 3-1. Troubleshooting Flowchart**

Following sections give detailed information on each step in the flowchart. Be sure to perform troubleshooting by following the specified steps without omitting any necessary operations.

Following tables show the checkpoints for each motor and sensor.

**Table 3-1. Motor Resistance and Measurement Procedure**

Motor	Connector to check	Check pins	Coil resistance
CR Motor	CN14	Pin 1 & 2	29.2 $\Omega$ +/- 25%
PF Motor	CN13	Pin 1 & 2	29.2 $\Omega$ +/- 25%
ASF/Pump Motor	CN15	Pin 1 & 3 or Pin 2 & 4	10.4 $\Omega$ +/-10%

**Table 3-2. Sensor Check and Measurement Procedure**

Sensor	Checkpoints	Signal level	Corresponding condition
PE Sensor	CN5, Pin 1 &2	LOW	Paper present
		HIGH	Paper out
ASF Sensor	CN6, Pin 1 &2	LOW	In the ASF home position
		HIGH	Out of the ASF home position

### 3.1.1 Self-Diagnostic Function

The EPSON Stylus PHOTO 890/1290 is equipped with the self-diagnostic function. With this function, the printer can check its operations after power-on, and shows its various conditions using LED indicators.

#### 3.1.1.1 Troubleshooting with LED Error Indicators

1

**Table 3-3. Error Indication of Operation Panel**

Printer Status	Indicators		Priority
	Power	Error	
Power On condition	On	-	11
Ink sequence	Blink	-	7
Ink Cartridge replacement mode	Blink	-	6
Data Processing	Blink	-	10
Paper Out* <sup>1</sup>	-	On	5
Paper Jam* <sup>1</sup>	-	On	5
Double Feed Error* <sup>1</sup>		On	4
Ink End (Black)* <sup>1</sup>	-	On->Blink	9
Ink Level Low (Black)	-	Blink->Blink	9
Ink End (Color)* <sup>1</sup>	-	On->Blink2	9
Ink Level Low (Color)	-	Blink->Blink2	9
Ink End (Black & Color)* <sup>1</sup>	-	Blink->Blink	9
Ink Level Low (Black & Color)	-	Blink->On	9
No Ink Cartridge (Black or Color)	-	On	8
Reset, Timer IC reset, EEPROM clear	On	On	-
Ink Overflow Counter Reset	On	On	

**Table 3-3. Error Indication of Operation Panel**

Printer Status	Indicators		Priority
	Power	Error	
Maintenance Request (Ink Overflow Counter error)	Alt Blink	Alt Blink	2
Fatal Error	Off	On	1
Special setting	Blink2	Blink2	-

#### 3.1.1.2 Error Conditions

This printer indicates an error when detecting the following conditions, and sets the interface signal “/ERROR” to LOW and “BUSY” to HIGH to stop data input. In this condition, the printer automatically enters non-printable status. Note if the printer is establishing communication by IEEE1284.4 protocol, however, it remains in printable status.

Each error condition is described below:

##### ***Ink Out***

When the printer runs out of the most of the ink of any color, it warns Ink Low and keeps printing.

##### ***Ink End***

- ☐ Ink in black/color cartridge ends.
- ☐ Remaining level of ink is low. In this case, the printer warns of the condition with LED indicators. If ink runs out, on the other hand, the printer shows an ink end condition and stops its operation. Note the error occurs if ink of any color in the color ink cartridge runs out.

##### ***Paper Out***

The printer attempts to load paper but fails.



---

**Paper Jam**

---

- ☐ The printer fails to eject remaining paper with the specified number of paper feeding steps at power-on.
- ☐ The printer can not eject paper despite the FF command is sent or Load/Eject button is pressed.

---

**No Ink Cartridge**

---

- ☐ Ink cartridge is not installed or installed incorrectly.
- ☐ Information in CSIC of the ink cartridge is not read or written properly.

---

**Maintenance Request**

---

Total wasted ink amount reaches its capacity by cleaning and flashing. The printer indicates the error and stops operations.

**CAUTION**

**Maintenance request error is not cleared until the waste ink pad is replaced with a new one, and the waste ink counter in EEPROM is reset by the service operation.**

---

**Fatal Error**

---

A fatal error is indicated when a carriage control error or CG access error occurs.

---

**Double Feed Error**

---

If the printer fails to load paper during duplex printing, the error occurs. Refer to

Table 3-4. Error Condition and Possible Causes

No.	Error	Possible Causes	Refer to:
1	Paper Out	<ol style="list-style-type: none"> <li>1. Failure in paper loading</li> <li>2. PE sensor connector is disconnected.</li> <li>3. Sensor actuator is not acting properly or sensor bracket is not installed correctly.</li> <li>4. PE sensor is defective.</li> <li>5. ASF operates abnormally.</li> </ol>	Table 3-5
2	Paper Jam	<ol style="list-style-type: none"> <li>1. Paper length is beyond the specifications.</li> <li>2. The sensor is left on because paper dust or other foreign matter is lodged.</li> <li>3. Sensor actuator is not acting properly or sensor bracket is not installed correctly.</li> <li>4. PE sensor is defective.</li> <li>5. Hopper release lever is not attached properly.</li> </ol>	Table 3-6
3	Ink End / No Ink Cartridge	<ol style="list-style-type: none"> <li>1. CSIC is not connected properly.</li> <li>2. CSIC is defective.</li> <li>3. Head FPC is defective.</li> <li>4. Control board is defective.</li> </ol>	Table 3-7
4	Maintenance Request	Protect counter is showing limit.	Table
5	Fatal Error	<ol style="list-style-type: none"> <li>1. Linear encoder FFC is disconnected from the sensor or liner encoder is not attached to the carriage.</li> <li>2. Linear encoder is dislocated.</li> <li>3. ASF sensor is dislocated or ASF sensor connector is disconnected.</li> <li>4. ASF sensor is defective or it fails to detect ASF home position.</li> <li>5. PF encoder FFC is disconnected from the encoder sensor or the encoder fails to read the slit pattern on the loop scale.</li> <li>6. CR motor coil is discontinued or burned.</li> <li>7. PF motor coil is discontinued or /burned.</li> <li>8. ASF/Pump motor coil is discontinued or burned. Improper engagement of ASF gear (32) and the combination gear (14, 28) in the DE unit.</li> <li>9. Torsion spring (0.618) has come off the DE lock lever or hook in the DE unit.</li> </ol>	Table 3-9

### 3.1.1.3 Remedies for Paper Out Error

This section provides checkpoints and corresponding actions to take when a Paper Out error occurs for either of the following reasons:

- Paper is set in the ASF hopper but not fed.
- Paper is loaded but not detected by the PE sensor actuator.

Be sure to follow the steps in the order listed in the table.

**NOTE:** If the exhibited problem is similar to a problem listed under “Problem”, take the actions in the right column. If not, proceed to the next step.

**Table 3-5. Remedies for Paper Out Error**

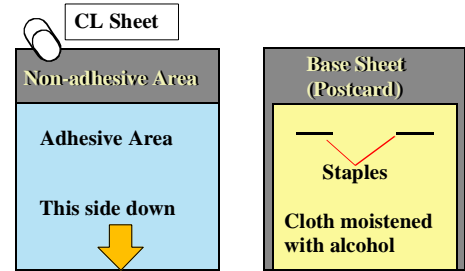
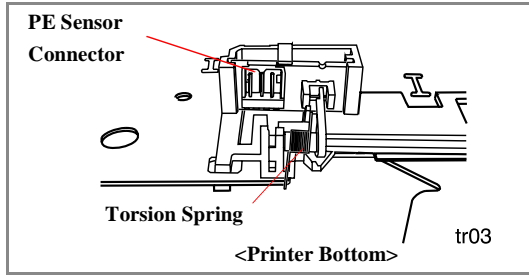
Step	Problem	Check & Actions
1	Load/Eject button is pressed but paper is not loaded even when the ASF LD rollers turn, and a Paper Out error is displayed.	<p>1. Set a cleaning sheet in the ASF up side down.</p> <p>2. Holding the top edge, press the Load/Eject button to remove micro pearl from the paper load roller.</p> <p>To remove severe soiling, staple a cloth moistened with alcohol to a postcard and clean the roller in the same manner.</p> 
2	The Load/Eject button is pressed and the ASF LD rollers turn. But they turn again to send paper beyond TOP position. Then a Paper Out error is displayed.	<p>Check if the connector (yellow, 3-pin) for the PE sensor is connected to PE sensor or CN5 on the Main Board.</p> 
Ditto	Ditto	<ul style="list-style-type: none"> <li>Using your hand, move the actuator as if it were being pushed by incoming paper. Then release the actuator and check if it automatically returns to its original position with the tension of the torsion spring.</li> <li>Referring to the illustration above, check that the sensor base is securely installed to the frame. If the sensor base is loose or installed insecurely, instal it securely.</li> </ul>

Table 3-5. Remedies for Paper Out Error (continued)

Step	Problem	Check & Actions
3	Ditto	Check if the PE sensor is defective. Manually toggling the actuator, measure the voltage at CN5/Pin 3. The correct voltage levels are as follows:
4	The Load/Eject button is pressed and the hopper appears to be working OK. But paper is not loaded. Then a Paper Out error is displayed.	<p>Hand-rotate the shaft in the ASF in the paper feed direction and check if the hopper springs back every time you rotate the shaft.</p> <p><b>NOTE:</b> <i>Even though the ASF HP sensor is working properly, the hopper does not load paper if it is not operating at the correct timing. To solve that problem, disassemble and reassemble the ASF or replace it. In case the ASF HP sensor detects the ASF home position during paper feed sequence, the printer enters a fatal error condition.</i></p>

### 3.1.1.4 Remedies for the Paper Jam Error

This section includes the checkpoints and actions to take to troubleshoot the Paper Jam error when it occurs during paper feeding or after the printer is turned on.

The printer detects the Paper Jam Error in the following condition.

- When the printer is turned on, the PE sensor detects paper and attempts to eject it using the PF roller. But the paper detection signal does no change to HIGH.

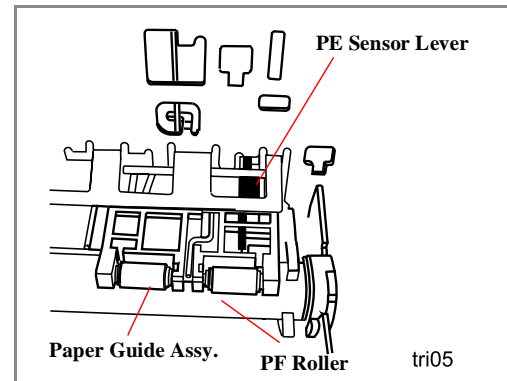
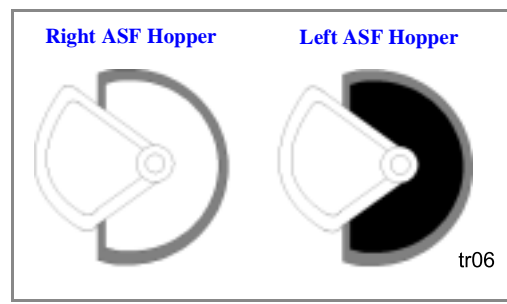
Be sure to follow the steps in the order described in the tables.

**NOTE:** If the exhibited problem is similar to a problem listed under “Problem”, take the actions in the right column. If not, proceed to the next step.

**Table 3-6. Remedies for Paper Jam Error**

Step	Problem	Check & Actions
1	The PF roller turn to eject paper but can not eject it completely. Then a Paper Jam error is displayed.	Explain to the user that a Paper Jam error occurs if the paper whose length is beyond the specifications is used.

**Table 3-6. Remedies for Paper Jam Error**

Step	Problem	Check & Actions
2	The printer is turned on, the PF roller turns continuously for ten seconds, and then a Paper Jam error is displayed.	<p>Check if there is any paper debris or dust lodged on the PE sensor. Also, viewing the PE sensor from the front, check its lever is set in the correct position.</p> 
3	ditto	Referring to Table 3-5 / Step 3, check if the sensor is operating properly.
4	<p>Paper is loaded at the ASF and fed by the PF roller, but its leading edge dose not reach the front paper guide.</p> <p>The ASF repeats paper feeding motion and the Fatal Error is displayed.</p>	<p>Check if the ASF hopper release lever is properly installed to the LD roller shaft.</p> 

### 3.1.1.5 Remedies for No Ink Cartridge Error/Ink Cartridge Problem

This section includes the checkpoints and corresponding actions to take to troubleshoot the No Ink Cartridge Error / Ink Cartridge Problem.

Be sure to follow the steps in the order listed in the table.

**NOTE:** If the exhibited problem is similar to a problem listed under “Problem”, take the actions in the right column. If not, proceed to the next step.

**Table 3-7. Remedies for No Ink Cartridge Error/Ink Cartridge Problem**

Step	Problem	Check & Actions
1	The printer is turned on and then displays a No Ink Cartridge error.	<ul style="list-style-type: none"> <li>Check if any ink cartridges are installed improperly. If so, reinstall them.</li> <li>Try removing the ink cartridges and reinstalling them.</li> </ul>
2	Ditto	Check the level of the ink remaining using the printer driver or progress meter.
3	Ditto	Replace the ink cartridges with new ones. <ul style="list-style-type: none"> <li>CSIC is defective.</li> </ul>
4	Ditto	<ul style="list-style-type: none"> <li>Check if the head FFC is correctly connected to the head.</li> <li>Check if the head FFC is properly connected to the connector on the main board.</li> <li>Check if the main board is defective.</li> </ul>

### 3.1.1.6 Remedies for Maintenance Request Error

If the printer is in this error condition, it stops all operations, including data transfer, except for specified control panel functions.

**Table 3-8. Remedies for Maintenance Request Error**

Step	Actions	LED condition
1	Turn the printer on while pressing the Load/Eject and the Cleaning button. The Paper Out LED starts blinking.	The Paper Out LED blinks for three seconds.
2	While the Paper Out LED is blinking, press the Cleaning button.	The following three red LEDs blink: <ul style="list-style-type: none"> <li>Error</li> <li>Ink End (Color)</li> <li>Paper Out</li> </ul>

**NOTE:** If you press the Load/Eject button in Step 2, you activate the EEPROM initialization mode instead. This mode enables you to return the printer to its normal condition if it is not accepting any data from the PC. This operation clears the following:

- 1) Power-off time: Length of time which the printer has been off since the last power-off.
- 2) I/F selection: Selects an interface from “Auto”, “Parallel” or “USB”. Factory default is “Auto”.

### 3.1.1.7 Remedies for Fatal Error

A fatal error is basically caused by any of the following conditions:

- The printer fails to detect the CR home position.
- The printer fails to detect signals from the linear scale.
- The ASF sensor fails to detect the ASF home position.

The following table shows various causes of the fatal error and corresponding solutions. Be sure to follow the steps correctly to troubleshoot the fatal error.

**NOTE:** If the exhibited problem is similar to a problem listed under “Problem”, take the actions in the right column. If not, proceed to the next step.

**Table 3-9. Remedies for Fatal Error**

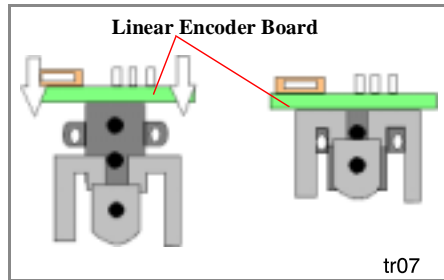
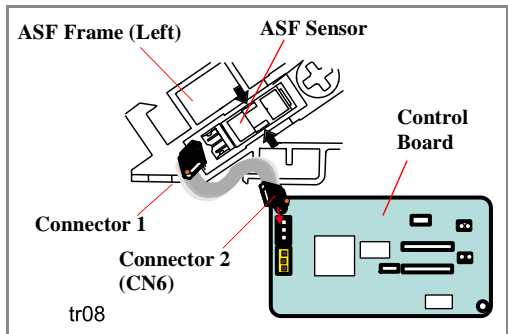
Step	Problem	Check & Actions
1	The printer is powered on and the CR unit leaves its home position and then collides with the right/left frame. After that, a fatal error is displayed.	<p>Check the linear encoder board visually for the following:</p> <ul style="list-style-type: none"> <li>• Is the linear encoder board properly installed to the carriage? If not, install it properly.</li> <li>• Is the encoder FFC connected to the connector? If not, connect it properly.</li> </ul> 
2	Ditto	<ul style="list-style-type: none"> <li>• Check that the linear encoder belt passes through the slot in the sensor.</li> <li>• Check that the sensor is free from dust and paper debris.</li> </ul>
3	When the Printer is turned on, the CR moves a little and you hear the ASF Hopper moving. After that, a fatal error is displayed.	<ul style="list-style-type: none"> <li>• Referring to the figure below, check that the ASF sensor is attached to the correct position.</li> <li>• Check that both connectors 1 and 2 are securely connected.</li> </ul> 

Table 3-9. Remedies for Fatal Error (continued)

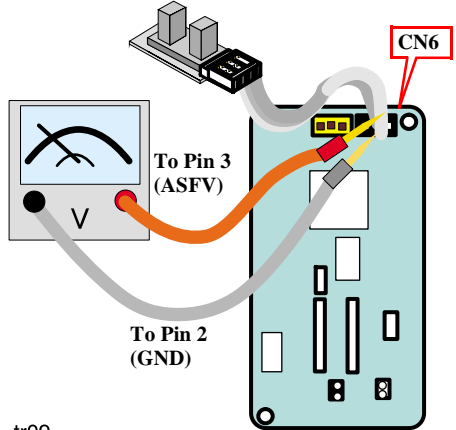
Step	Problem	Check & Actions
4	Ditto	<p>Turn the printer on and check for the correct voltages at the pins shown in the figure below:</p>  <p>tr09</p> <ul style="list-style-type: none"> <li>• When the ASF HP detector wheel is in home position, the voltage is 0.7 V or less.</li> <li>• When the ASF HP detector wheel is out of home position, the voltage is 2.4 V or more.</li> </ul>

Table 3-9. Remedies for Fatal Error (continued)

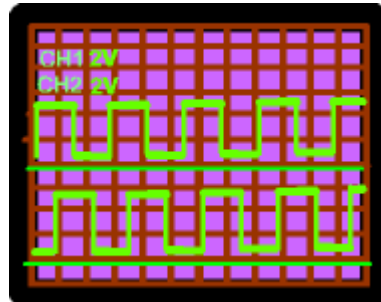
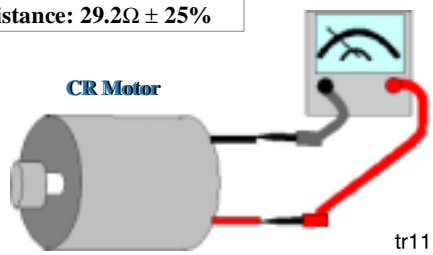
Step	Problem	Check & Actions
5	The printer is turned on and the carriage and the PF motor move a little. After that, a fatal error is displayed.	<p>Check for the signal output from the PF encoder at either pair of the following pins on the main control board:</p> <ul style="list-style-type: none"> <li>• Pin 1 and Pin 4 of CN12</li> <li>• Pin 1 and Pin 2 of CN12</li> </ul> <p>Check for the signal output from the linear encoder at either pair of the following pins on the main control board:</p> <ul style="list-style-type: none"> <li>• Pin 1 and Pin 4 of CN12</li> <li>• Pin 1 and Pin 2 of CN12</li> </ul>  <p>tr10</p> <p>Encoder Output Waveform</p>
6	The printer is turned on but the CR motor does not operate at all. After that, a fatal error is displayed.	<p>Measure the coil resistance of the CR motor using a meter as shown below:</p> <p>Resistance: <math>29.2\Omega \pm 25\%</math></p>  <p>tr11</p>



Table 3-9. Remedies for Fatal Error (continued)

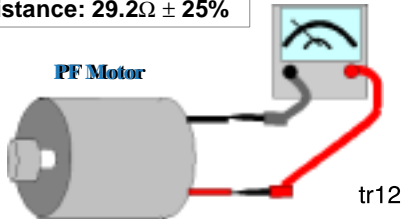
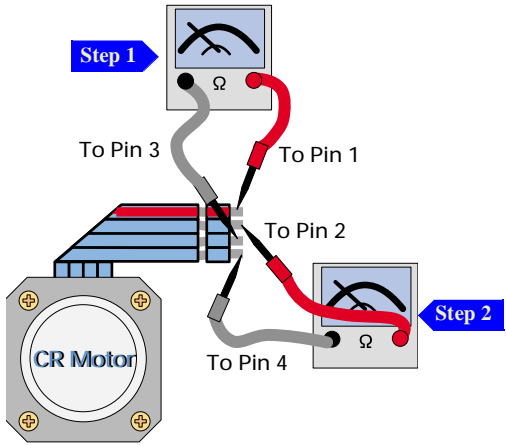
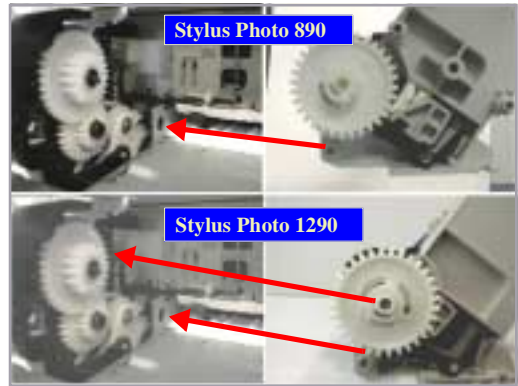
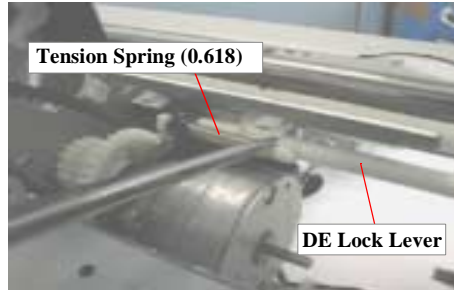
Step	Problem	Check & Actions
7	The printer is turned on but the PF motor does not operate at all. After that, a fatal error is displayed.	<p>Measure the coil resistance of the PF motor using a meter as shown below:</p> <p><b>Resistance: <math>29.2\Omega \pm 25\%</math></b></p> 
8	The printer is turned on but the ASF hopper does not make noises. After that, a fatal error is displayed.	<p>Measure the coil resistance of the ASF/Pump motor.</p> <p><b>Resistance: <math>10.4\Omega \pm 10\%</math></b></p>  <p><b>NOTE:</b> Be sure to measure the resistance at each pair of points shown above.</p>

Table 3-9. Remedies for Fatal Error (continued)

Step	Problem	Check & Actions
9	<p>The Printer is turned on but:</p> <ul style="list-style-type: none"> <li>ASF makes no noises.</li> <li>ASF does not move but its gear is making noises.</li> </ul> <p>After that, a fatal error is displayed.</p>	<p>Check that the ASF unit is properly installed by the correct points as shown below:</p> 
10	The printer is turned on but the ASF dose not move at all. After that, a fatal error is displayed.	<p>Check that the torsion spring is securely attached to the DE lock lever and DE unit.</p> 

### 3.1.2 Isolating the Faulty Part on the Power Supply Board

This section explains how to troubleshoot the following problems:

- The printer is turned on but it does not perform initialization and no LED indicators come on.
- Problems occurs after the printer is turned on.

Be sure to troubleshoot in the order specified since the steps are listed in the disassembly order to facilitate the job.

**NOTE:** If you answer “Yes” to a question listed under “Checkpoint”, take the action described to the right under “Action”. If “No”, proceed to the next step.

**Table 3-10. Isolating the Faulty Part on the Power Supply Board**

Step	Checkpoint	Action
1	Is the Panel FFC disconnected from the connector on the panel board?	The power switch for this printer is in the secondary side. Therefore, if the FFC does not transmit signals, the power supply board is not active despite the main board operates properly.
2	Is the Panel FFC disconnected from CN11 (black, 12-pin) on the Main Board?	The power switch for this printer is in the secondary side. Therefore, if the FFC does not transmit signals, the power supply board is not active despite the main board operates properly.
3	Has the Pin 3 of the panel FFC broken?	Check for the Pin 3 using a circuit tester.
4	Has the fuse (F1) on the power supply board blown out?	Check if the F1 located beside CN1 on the power supply board has blown out.
5	Is CN1 on the power supply board disconnected?	Check if CN1 is properly connected. CN1 supplies AC power to the primary side of the power supply board.
6	Is CN10 on the main board disconnected?	Check if CN10 on the main board is properly connected. CN10 supplies DC voltage to the control circuit.
7	-	Replace the Power Supply Board with a new one.

### 3.1.3 Isolating the Faulty Part according to the Phenomenon

Refer to this section if you could not solve the problem in Section 3.1.1.1 or Section 3.1.2 or need more information to isolate the cause according to the exhibited phenomenon. This section mostly covers the problems relating to the main control circuit and other parts.

**Table 3-11. Phenomenons Exhibited**

No.	Phenomenon Exhibited	Table to refer to
1	CR motor does not rotate.	Table 3-12
2	PF motor does not rotate.	Table 3-13
3	Pump/ASF motor does not rotate.	Table 3-14
4	Cleaning does not solve the print problem.	Table 3-15

Table 3-12. CR Motor does not Work

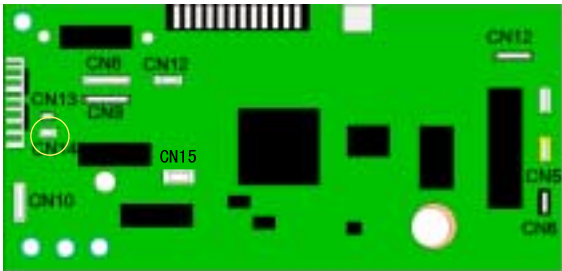
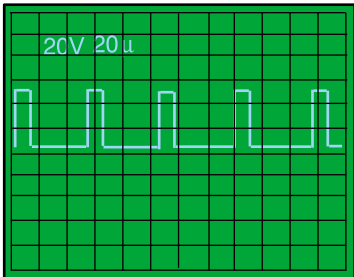
Step	Checkpoint	Action
1	Getting ready for checking waveforms.	<p>Using an oscilloscope, check the output waveform at CN14 (CR motor connector) on the main board. For checking, press the Load/Eject button to drive the CR motor.</p> <p><b>NOTE:</b> Be sure to disconnect the CR motor cable.</p>  <p>tr22</p>
2	Checking the waveforms to solve the problem.	<p>Drive the CR motor and check that the waveform shown below is output from each pin of CN14.</p>  <p>tr23</p> <ul style="list-style-type: none"> <li>• If the waveform appears as shown, replace the CR motor.</li> <li>• If not, replace the main control board.</li> </ul>

Table 3-13. PF Motor does not Work

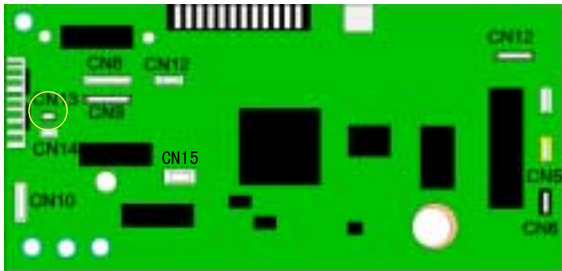
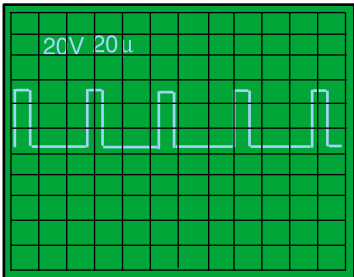
Step	Checkpoint	Action
1	Getting ready for checking waveforms.	<p>Using an oscilloscope, check the output waveform at CN13 (PF motor connector) on the main board. For checking, press the Load/Eject button to drive the PF motor.</p> <p><b>NOTE:</b> Be sure to disconnect the PF motor cable.</p>  <p>tr24</p>
2	Checking the waveform to solve the problem.	<p>Drive the PF motor and check that the waveform shown below is output from each pin of CN13.</p>  <p>tr23</p> <ul style="list-style-type: none"> <li>• If the waveform appears as shown, replace the PF motor.</li> <li>• If not, replace the main control board.</li> </ul>

Table 3-14. ASF/Pump Motor does not Work

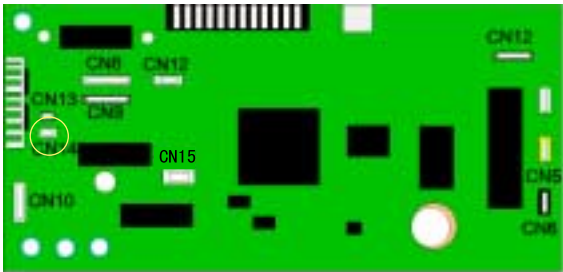
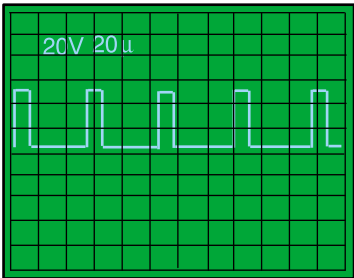
Step	Checkpoint	Action
1	Getting ready for checking waveforms.	<p>Using an oscilloscope, check the output waveform at CN115 (ASF motor connector) on the main board. For checking, press the Load/Eject button to drive the CR motor.</p> <p><b>NOTE:</b> Be sure to disconnect the ASF/Pump motor cable.</p>  <p>tr22</p>
2	Checking the waveforms to solve the problem.	<p>Drive the ASF/Pump motor and check that the waveform shown below is output from each pin of CN15.</p>  <p>tr23</p> <ul style="list-style-type: none"> <li>• If the waveform appears as shown, replace the ASF/Pump motor.</li> <li>• If not, replace the main control board.</li> </ul>

Table 3-15. Cleaning Does not Solve the Problem

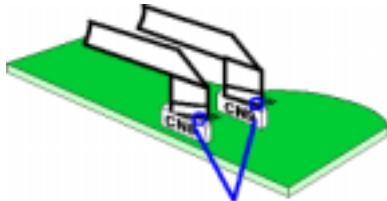
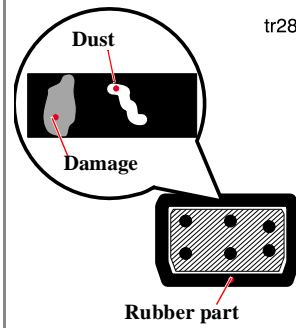
Step	Checkpoint	Action
1	Run the head cleaning 7 or 8 times repeatedly.	Run the head cleaning by pressing the Cleaning button.
2	Perform the initial ink charge operation.	<p>You can perform the initial ink charge operation in the manner described below:</p> <ol style="list-style-type: none"> <li>1. Using the adjustment program, perform the initial ink charge operation (= resets the initial ink charge flag in the EEPROM).</li> <li>2. Turn the printer off and back on.</li> </ol>
3	Printhead FFC is disconnected.	<p>Take out the main board and check if the head FFCs are connected to CN8 and CN9. If they are connected aslant as shown below, reconnect them, and then run a print check.</p>  <p><b>Check that the connectors are not connected aslant.</b></p> <p>tr27</p>
4	Check the cap for any foreign matter, dirt, or damage.	<p>Remove the printer mechanism and release the carriage lock to move the carriage unit away from home position. Then, examine the cap rubber closely for any problem in the figure at right.</p>  <p>tr28</p>

Table 3-15. Cleaning Does not Solve the Problem (continued)

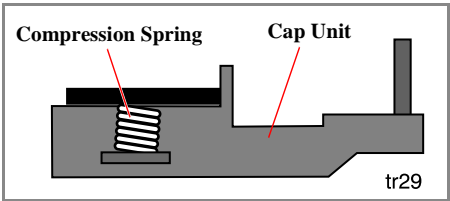
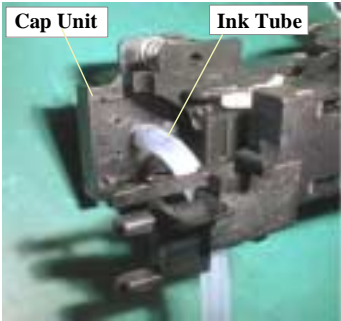
Step	Checkpoint	Action
5	Check if the compression spring has come off the cap unit.	<p>Check if the compression spring is correctly assembled in the cap unit as shown below.</p> <div data-bbox="501 336 947 537"><p>The diagram shows a cross-section of the cap unit assembly. A compression spring is shown on the left, and the cap unit is on the right. Red lines point from the labels 'Compression Spring' and 'Cap Unit' to their respective parts. The text 'tr29' is at the bottom right of the diagram.</p></div> <p>Note if the compression spring has come off the cap unit, the cap can not cover the head closely with enough air tightness, and ink will not be absorbed as a result.</p>
6	Check if any ink tubes are disconnected from the cap unit.	<p>Referring to the figure below, check the following:</p> <ul style="list-style-type: none"><li>• Are all ink tubes securely connected to the cap unit?</li><li>• Are any ink tubes damaged?</li></ul> <div data-bbox="541 826 879 1147"><p>The photograph shows the cap unit and ink tube connection. Yellow lines point from the labels 'Cap Unit' and 'Ink Tube' to their respective parts. The text 'tr30' is at the bottom right of the photograph.</p></div>

Table 3-15. Cleaning Does not Solve the Problem (continued)

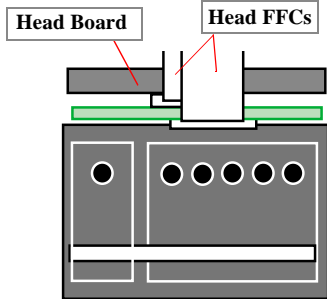
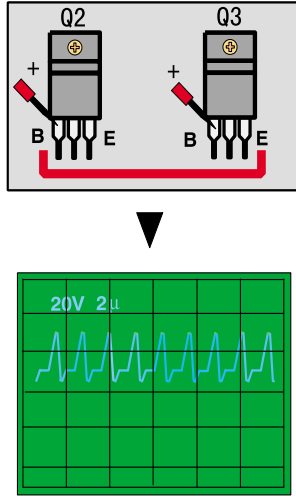
Step	Checkpoint	Action
7	Check if the head FFCs have come off the printhead.	<p>Remove the head FFC holder from the CR unit, and check that both FFCs are properly connected. Even if they appear to be properly connected (not slant), try disconnecting and then connecting them.</p>  <p>tr31</p>
8	Check if the head driver is defective.	<p>The common driver transistors Q2 and Q3 are attached the heat sink on the main board. To check their conditions, check the sawtooth waveform at the emitter terminals the transistors using an oscilloscope.</p>  <p>tr32</p>

Table 3-15. Cleaning Does not Solve the Problem (continued)

Step	Checkpoint	Action
9	Check if the pre-driver IC (IC10 or IC11) is defective.	<p>If the waveform is not output in the previous step, check for the waveform at the base of Q2 and Q3. Check for the sawtooth waveform output from the pre-driver IC.</p> <ul style="list-style-type: none"> <li>• If the correct waveform is output, transistor Q2/Q3 is defective.</li> <li>• If the correct waveform is not output, the pre-driver IC is defective.</li> </ul>

**CHAPTER**

**4**

# **DISASSEMBLY AND ASSEMBLY**

## 4.1 Overview

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This chapter describes procedures for disassembling the main components of the EPSON Stylus Photo 890/1290. Unless otherwise specified, disassembly units or components can be reassembled by reversing the disassembly procedure. Therefore, no assembly procedures are included in this chapter. Precautions for any disassembly or assembly procedure are described under the heading “CAUTION” and “CHECK POINT”. Any adjustments required after disassembling the units are described under the heading “REQUIRED ADJUSTMENT”.

### 4.1.1 Precaution for Disassembling the Printer

See the precautions given under the heading “WARNING” and “CAUTION” in this section when disassembling or assembling EPSON Stylus Photo 890/1290.



- **Disconnect the power cable before disassembling or assembling the printer.**
- If you need to work on the printer with power applied, strictly follow the instructions in this manual.
- **Wear protective goggles to protect your eyes from ink. If ink gets in your eye, flush the eye with fresh water and see a doctor immediately.**
- **Always wear gloves for disassembly and reassembly to avoid injury from sharp metal edges.**
- **To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.**
- **Never touch the ink or wasted ink with bare hands. If ink comes into contact with your skin, wash it off with soap and water immediately. If irritation occurs, contact a physician.**





- Never remove the ink cartridge from the carriage unless this manual specifies to do so.
- When transporting the printer after installing the ink cartridge, be sure to pack the printer for transportation without removing the ink cartridge.
- Use only recommended tools for disassembling, assembling or adjusting the printer.
- Observe the specified torque when tightening screws.
- Apply lubricants and adhesives as specified. (See Chapter 6 for details.)
- Make the specified adjustments when you disassemble the printer.  
(See Chapter 5 for details.)
- When assembling, if an ink cartridge is removed and needs to be installed again, be sure to install a new ink cartridge because of the following reasons;
  1. Once the ink cartridge mounted on the printer is removed, air comes in and creates bubbles in the cartridge. These bubbles clog ink path and cause printing malfunction.
  2. If an ink cartridge in use is removed and is reinstalled, ink quantity will not be detected correctly since the counter to check ink consumption is cleared.
- Because of the reasons above, make sure to return the printer to the user with a new ink cartridge installed.
- Make sure the tip of the waste ink tube is located at correct position when reassembling the waste ink tube. Otherwise it will cause ink leakage.

## 4.1.2 Tools

Table 4-1 lists the tools recommended for disassembling, assembling, or adjusting the printer. Use only tools that meet these specifications.

**Table 4-1. Tool List**

Tools	Commercially Available	Code
(+) Driver No.2	O.K.	B743800200
(+) Driver No.1	O.K.	B743800400
Tweezers	O.K.	B741000100
Hexagon Box Driver (Paired side: 5.5mm)	O.K.	B741700100
Scale PF unit Assembling tool	EPSON exclusive	1050767
Mounting Plate Scale Attachment tool	EPSON exclusive	1051765
ROM Extractor No.F749	EPSON exclusive	2035659
Black Empty Cartridge (Stylus Photo 890/1290)* <sup>1</sup>	EPSON exclusive	1049785 (#F738)
Color Empty Cartridge (Stylus Photo 890 only)* <sup>2</sup>	EPSON exclusive	1049786 (#F741)
Color Empty Cartridge (Stylus Photo 1290 only)* <sup>3</sup>	EPSON exclusive	1049787 (#F742)

**NOTE:** \*<sup>1</sup>: Common cartridge with Stylus Photo 870/1270.

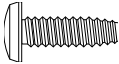
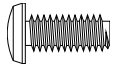
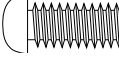
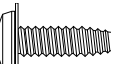

\*<sup>2</sup>: Common cartridge with Stylus Photo 870.

\*<sup>3</sup>: Common cartridge with Stylus Photo 1270.

### 4.1.3 Specifications for Screws

Table 4-2 shows screw specifications. During assembly and disassembly, make sure that the specified types of screws are used at proper locations, referring to the table below.

**Table 4-2. Screw Specifications**

Body	Name	Size
	+Bind S-tite (CBS)	M3x6
	+Bind P-tite (CBP)	M3x6
	+Bind P-tite (CBP)	M3x8
	+Bind P-tite (CBP)	M2.5x5
	+Pan head (C.P.)	M3x6
---	+Pan head B-tite Sems	M3X8
	+Bind S-tight Sems (CBS Sems)	M3x6
	+Bind S-tight (CBS)	M3x10
---	+Pan head B-tite Sems	1.7 x 5

## 4.1.4 Service Checks After Repair

Before returning the printer after servicing, use the check list below, which enables you to keep record of servicing and shipping more efficiently.

**Table 4-3. Inspection Checklist for Repaired Printer**

Category	Component	Item to check	Is Check Required?
Printer units	Self-test	Is the operation normal?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
	On-line test	Was the on-line test successful?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
	Printhead	Is ink ejected normally from all nozzles?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
	Carriage mechanism	Does the carriage move smoothly?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Any abnormal noise during movement?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Any dirt or obstacles around the shaft of carriage guide?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Is the CR motor at the correct temperature (not over heating)?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
	Paper feeding mechanism	Is paper fed smoothly?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Does paper get jammed?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Does paper get skew during paper feeding?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Are papers multi fed?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Does the PF motor get overheated?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Abnormal noise during paper feeding?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Is the paper path clear of all obstructions?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
Adjustment	Specified adjustment items	Are adjusted conditions all right?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
Lubricant	Specified lubricated item	Is lubrication applied to the specified locations?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
		Is the quantity of lubrication adequate?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
Function	ROM version	Newest version:	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
Shipment package	Ink cartridges	are the ink cartridges installed correctly?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
	Protection conditions during transport	Is all the pointed parts firmly fixed?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary
Others	Attached items	Are all attached items from users included?	<input type="checkbox"/> Checked / <input type="checkbox"/> Not necessary

## 4.2 Disassembly Procedures

The flowchart below shows procedures for disassembly.

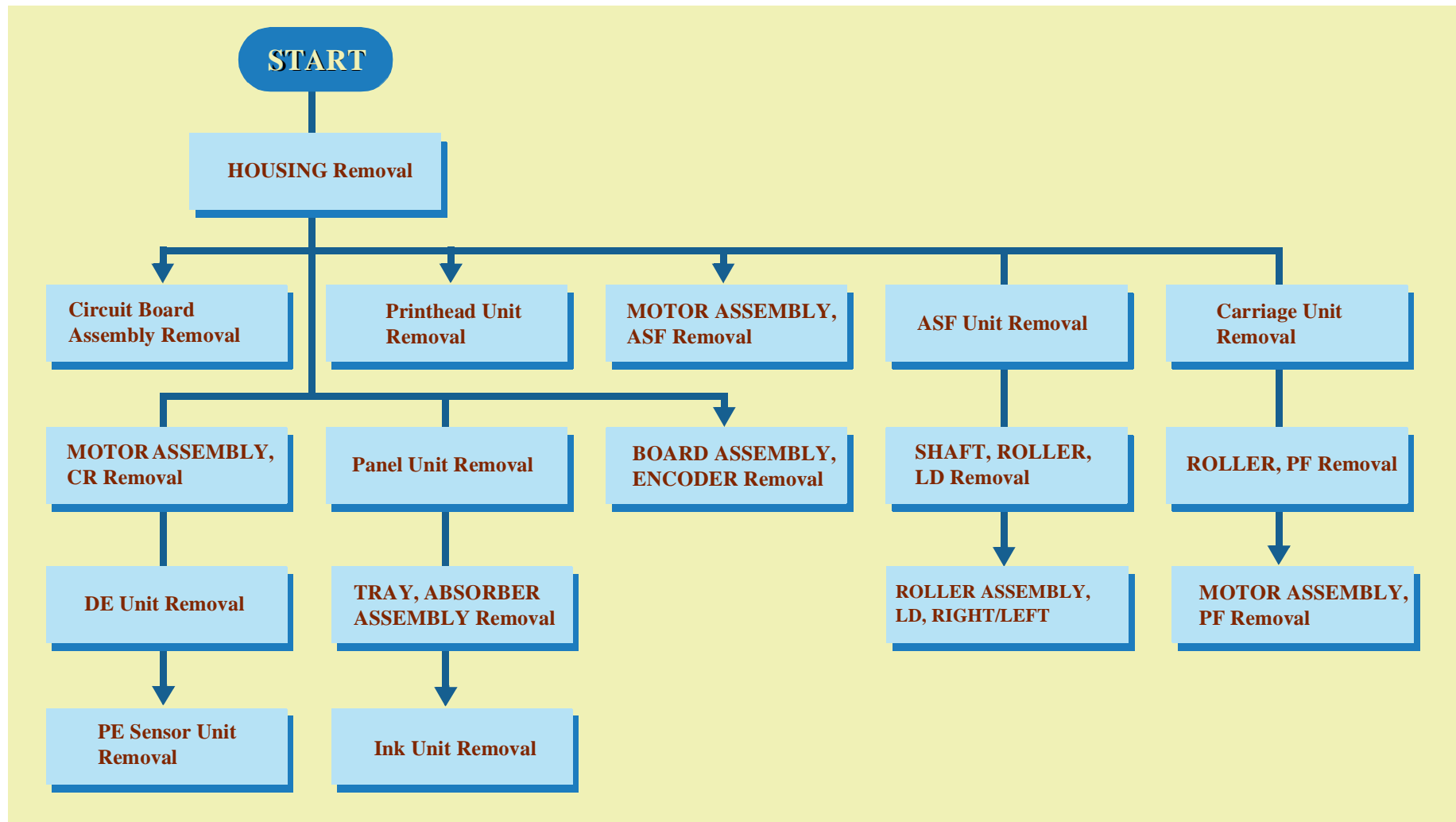


Figure 4-1. Flowchart of Disassembly

## 4.2.1 HOUSING Removal

Since the printer mechanism itself structures the bottom part, it appears just by removing HOUSING.

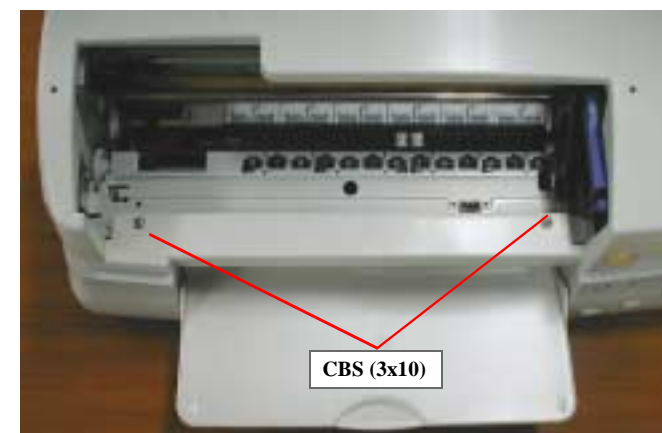
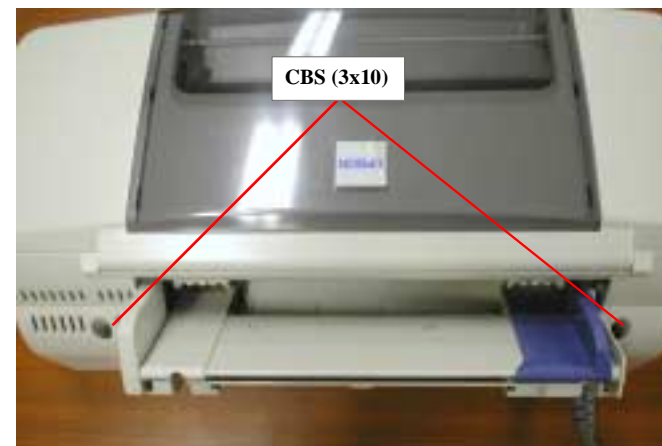
1. Open the printer cover and set the PG adjustment lever to (+).
2. Remove the four screws (CBS, 3x10) securing HOUSING, and remove it.



When removing HOUSING, push it to the rear a little first, and then lift it up.



- When installing HOUSING, make sure the PG adjustment lever is set to (+).
- After assembling HOUSING, ensure the head FFC is not caught in the back of HOUSING.



dis12

Figure 4-2. HOUSING Removal

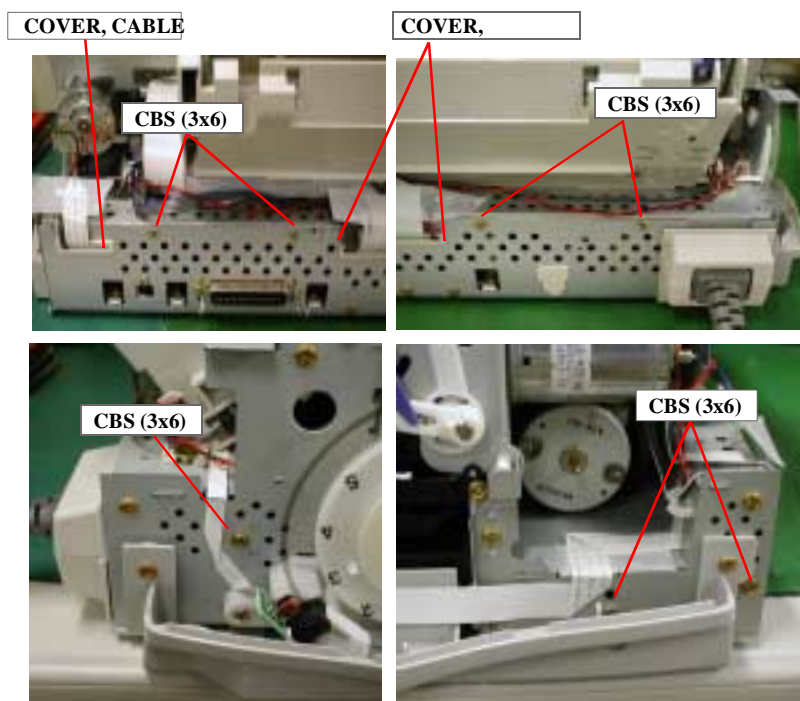
## 4.2.2 Circuit Board Assembly Removal

Since BOARD ASSEMBLY, MAIN and BOARD ASSEMBLY, POWER SUPPLY are built in a bracket separated from the Printer Mechanism, they can be removed as one unit.

1. Remove HOUSING. (Refer to Section 4.2.1.)
2. Remove the screws (CBS, 3x6) securing the M/B Unit to the printer mechanism. Refer to Figure 4-3.

*Stylus Photo 890: 7 screws*

*Stylus Photo 1290: 8 screws*

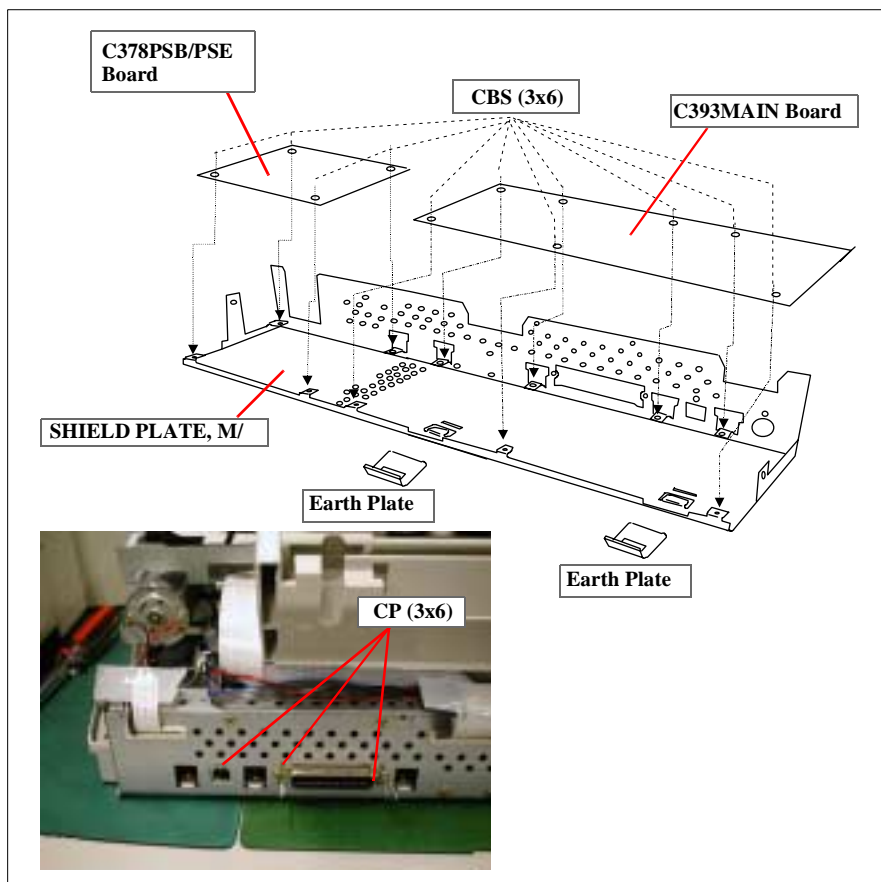


dis03

**Figure 4-3. Removing the M/B Shield Plate**

3. Lifting up SHIELD PLATE, M/B Unit a little, remove COVER, CABLE and COVER, CABLE; B together with the cables.

4. Disconnect all cables from the connectors on the main board and power supply board.
  - CN1(AC Source connector on the power supply board)
  - CN5 (PE sensor)
  - CN6 (ASF sensor)
  - CN15 (ASF/Pump motor)
  - CN8 (Head FFC)
  - CN9 (Head FFC)
  - CN19 (from the secondary side of the PS board)
  - CN11 (Panel Unit)
  - CN12 (PF Encoder Sensor)
5. After removing BOARD ASSY, MAIN without cables, remove SHIELD PLATE, M/B Unit from the printer mechanism.



**Figure 4-4. Circuit Board Removal**

6. For removing each circuit board assembly from the M/B Shield Plate, remove the screws securing each unit and shield plate.

- C393MAIN Board: Total 10 screws  
     7 screws: CBS (3x6)  
     3 screws: CP (3x6)
- C378PSB/PSE Board: Total 4 screws (CBS, 3x6)



- Since the CN10 is a locking connector, be sure to unlock it before disconnecting the cables.
- Since the head FFCs have the same number of pins, be sure to connect them to the right connectors.
- When connecting the cables, connect them to the correct connectors paying attention to the number of the pins.

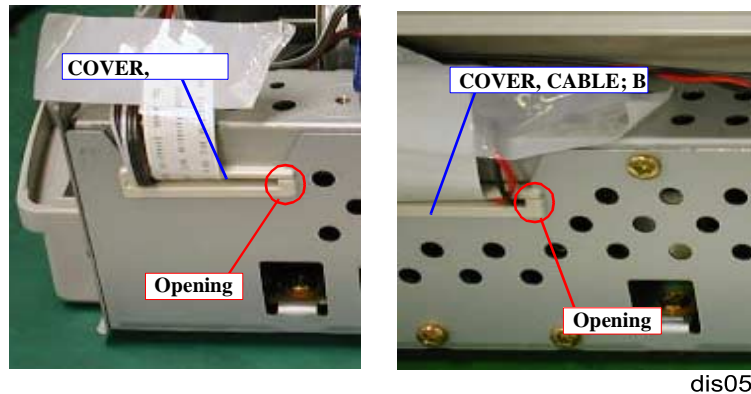


- Be sure to perform the following adjustments when you replace the Main Board:
  1. Head ID input (Refer to Chapter 5.)
  2. Bi-D adjustment (Refer to Chapter 5.)
  3. USB ID input (Refer to Chapter 5.)
- Be sure to replace the following parts when replacing the Main Board:
  1. Waste ink absorbers
  2. Ink cartridge (BK & Color)

Note this part replacement is required since several counters stored in the EEPROM are lost with a Main board replacement.

**CHECK  
POINT**

When installing SHIELD PLATE, M/B to the printer mechanism, set the cables, COVER CABLE, and COVER, CABLE; B as shown in the figure below:



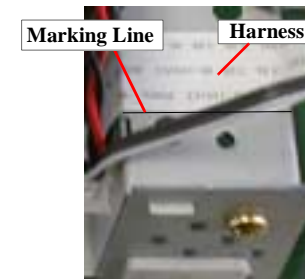
**Figure 4-5. Setting the Cables to the Cable Covers**

### 4.2.3 Panel Unit Removal

1. Remove HOUSING. (Refer to Section 4.2.1.)
2. Remove the harness for the Panel Unit from the frame in the printer mechanism.

**CHECK  
POINT**

When installing the harness to the printer mechanism, be sure to stick it along the marking line on the frame.



3. Remove 4 screws (CBS, 3x6) securing the Panel Unit together with HOUSING, REINFORCING, RIGHT to the printer mechanism.
4. Release the hook for the for HOUSING, REINFORCING, RIGHT from the square cutout in the printer mechanism.



5. Remove 1 screw (CBP, 3x8) securing Panel Unit to the printer mechanism and release the pins fit in the printer mechanism.  
Then remove the Panel Unit along with HOUSING, REINFORCING, RIGHT.

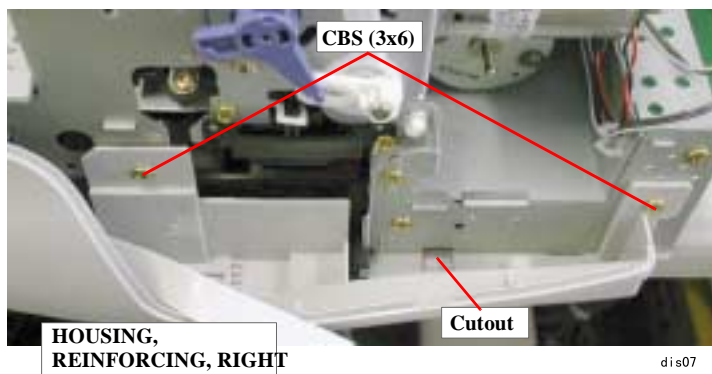
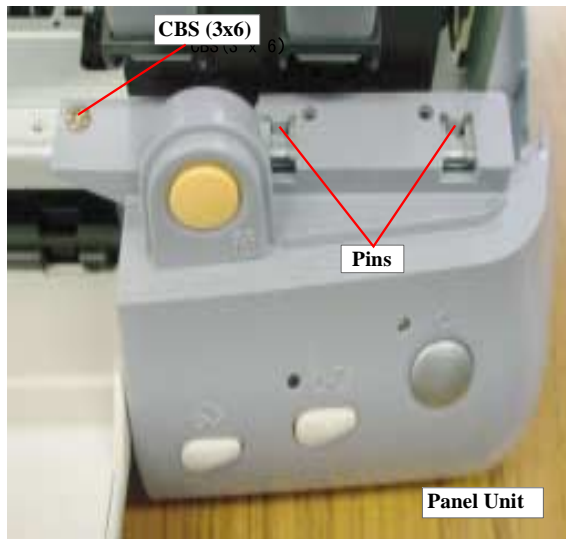
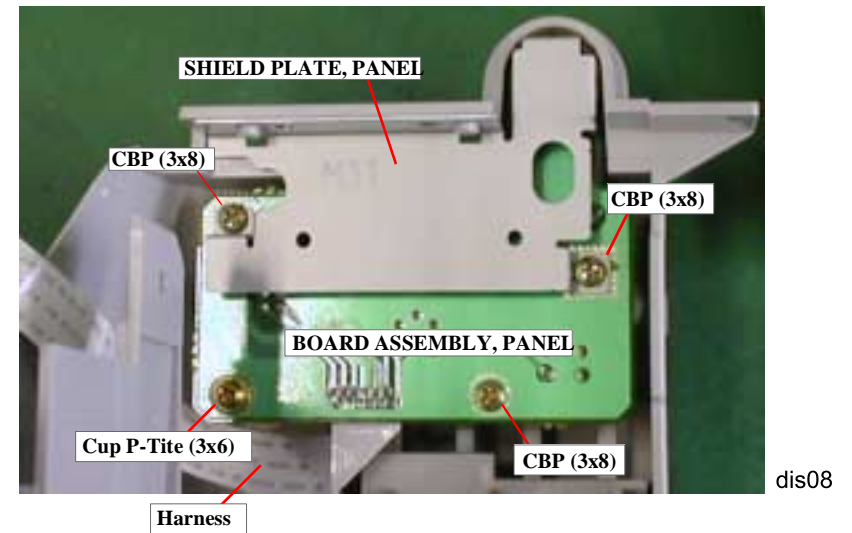


Figure 4-6. Panel Unit Removal

6. Remove 2 screws (CBP, 3x8) securing SHIELD PLAT, PANEL to the Panel Unit, and then remove SHIELD PLATE, PANEL.



dis08

Figure 4-7. BOARD ASSEMBLY, PANEL Removal

7. Remove screws (CBP, 3x8 & Cup P-Tite, 3x6) securing BOARD ASSEMBLY PANEL to the Panel Unit.
8. Disconnect the harness from BOARD ASSEMBLY, PANEL.

**CAUTION**

When removing the Panel Unit, watch out for the stacker assembly. Since the stacker assembly is attached to the Panel Unit and HOUSING, PANEL, LEFT, if you remove the Panel Unit, the stacker assembly will also come off.

## 4.2.4 Printhead Unit Removal

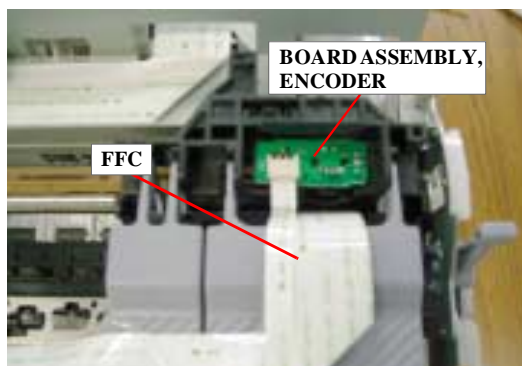
1. Remove HOUSING. (Refer to Section 4.2.1.)
2. Set the PG lever to the rear.
3. Using tweezers, put the CR lock lever down to unlock the carriage.
4. Release the three hooks (A, B, C) fixing HOLDER, CABLE to the carriage, and remove HOLDER, CABLE.



**Figure 4-8. Printhead Removal**

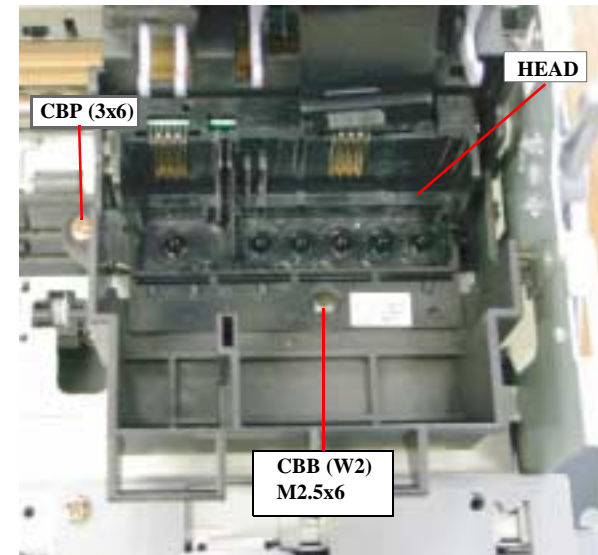
dis09

5. Disconnect the head FFC from the connector on the printhead.
6. Remove the FFC from the BOARD ASSEMBLY, ENCODER.



dis11

**Figure 4-9. Encoder FFC Removal**



**Figure 4-10. HEAD Removal**

7. Move the carriage to the left end of the printer manually.
8. Remove 2 screw (CBP, 3x6 & CCB Sems W2, 2.5x6) securing the printhead to the carriage, and remove the printhead.

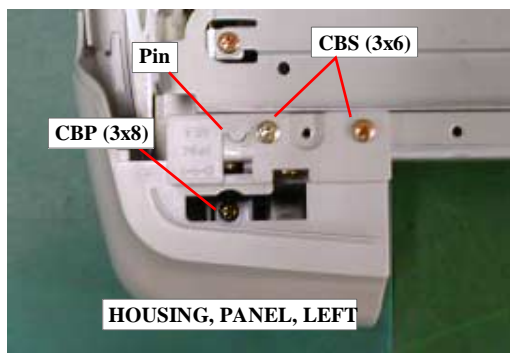


**When you replace the Printhead Unit, perform the following adjustments:**

1. Initial ink charge (Refer to Chapter 5)
2. Head ID Input (Refer to Chapter 5)
3. Bi-D Adjustment (Chapter 5)

## 4.2.5 TRAY, ABSORBER ASSEMBLY Removal

1. Remove HOUSING. (Refer to Section 4.2.1.)
2. Remove the Panel Unit. (Refer to Section 4.2.3.)
3. Remove 2 screws (CBS, 3x6) securing HOUSING, PANEL, LEFT to the front left part of the printer mechanism.



dis13

Figure 4-11. HOUSING, PANEL, LEFT Removal

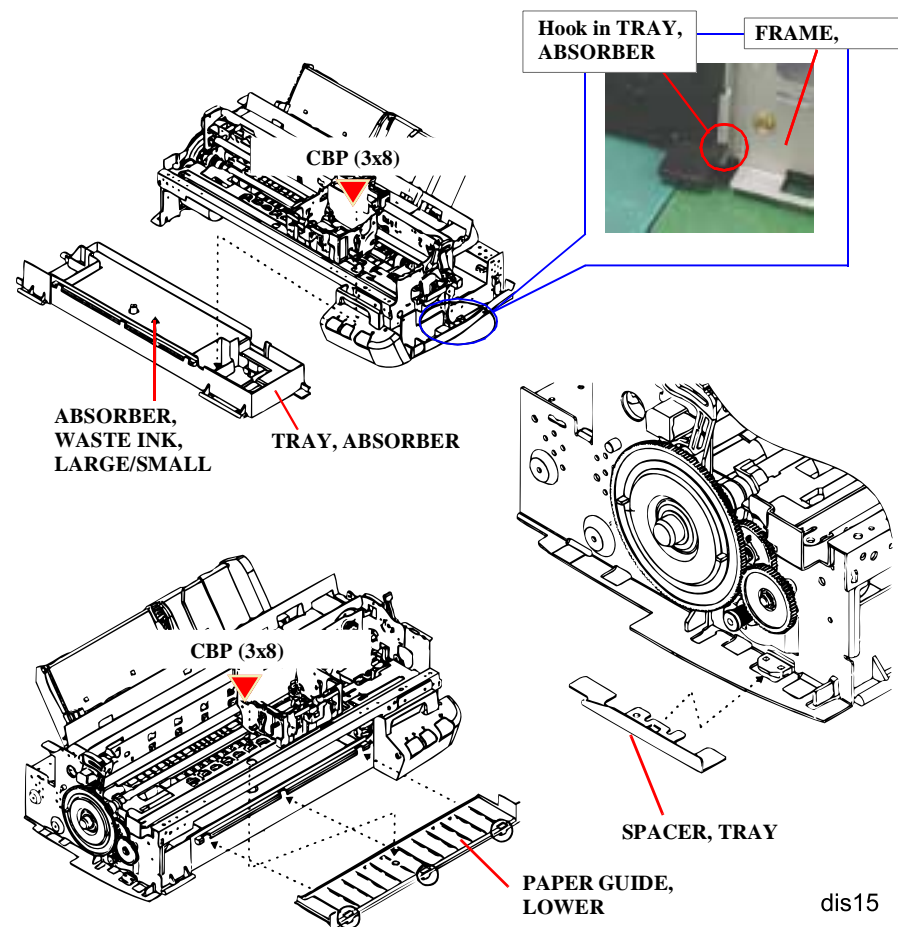
4. Remove 1 screw (CBP, 3x8) securing HOUSING, PANEL, LEFT to the HOUSING, SUB, LEFT.
5. Release the pin fixing HOUSING, PANEL, LEFT to the printer mechanism, and then remove HOUSING, PANEL, LEFT toward the front.

### CAUTION



When removing HOUSING, PANEL, LEFT, watch out for the Stacker Assembly. Since the Stacker Assembly is fixed by the Panel Unit and HOUSING, PANEL, LEFT, it will come off as HOUSING, PANEL, LEFT is removed.

6. Remove 2 screws (CBS, 3x6) securing HOUSING, SUB, LEFT to the printer mechanism.
7. Release 3 hooks (2 at the bottom and 1 in the front) fixing HOUSING, SUB, LEFT to the printer mechanism, and remove HOUSING, SUB, LEFT.
8. Remove 1 or 2 screws (CBP, 3x6: Stylus Photo 890 1 screw, Stylus Photo 1290 2 screws) securing PAPER GUIDE, LOWER to TRAY, ABSORBER ASSEMBLY at the middle of the printer mechanism, and then remove PAPER GUIDE, LOWER.



dis15

Figure 4-12. TRAY, ABSORBER ASSEMBLY Removal

9. Removing 1 screw (CBP, 3x8) securing TRAY, ABSORBER ASSEMBLY to the right part of the printer mechanism.
10. Remove SPACER, TRAY securing TRAY, ABSORBER to the left side of the printer mechanism, and then remove TRAY, ABSORBER by moving it downward.
11. Remove ABSORBER, WASTE INK, LARGE/ SMALL from TRAY, ABSORBER.



- When installing TRAY, ABSORBER ASSEMBLY to the printer mechanism, make sure they are securely jointed with SPACER, TRAY. Refer to Figure 4-12.
- Be careful not to damage SCALE, PF, (loop scale) when installing SPACER, TRAY.
- When installing ABSORBER ASSEMBLY, make sure the Ink Tube is correctly placed in the ABSORBER ASSEMBLY. If not, it may cause an ink leakage.



- If you replace TRAY, ABSORBER ASSEMBLY, be sure to perform the Waste ink counter reset operation. (Refer to Chapter.)
- When installing TRAY, ABSORBER ASSEMBLY to the printer mechanism, make sure it securely joins to FRAME, RIGHT by its hook in the right.

## 4.2.6 Ink Unit Removal

**NOTE:** Ink Unit consists of the Pump Unit, Cleaner Head, and Cap Assembly.

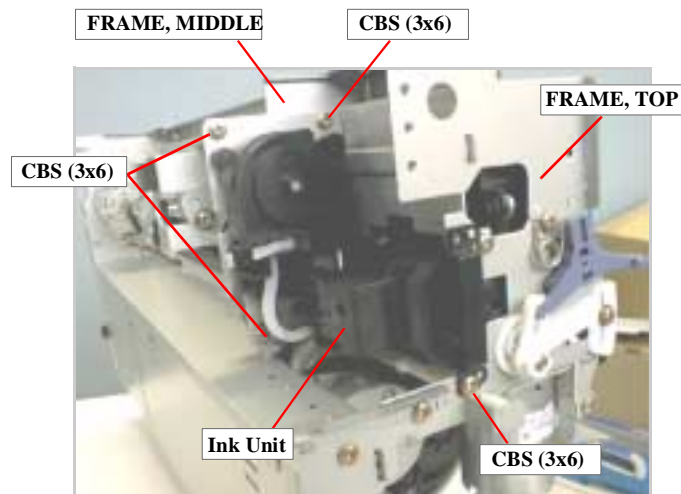
1. Remove HOUSING. (Refer to Section 4.2.1.)
2. Remove the Panel Unit. (Refer to Section 4.2.3.)
3. Remove SHEET, INK STOPPER.



dis76

**Figure 4-13. SHEET, INK STOPPER Removal**

4. Remove TRAY, ABSORBER ASSEMBLY. (Refer to Section 4.2.5.)
5. Remove the three screws (CBS, 3x6) securing the Ink Unit to the FRAME, MIDDLE.
6. Remove 3 screws (CBS, 3x6) securing the Ink Unit to FRAME, TOP. Then remove the Ink System Assembly.
7. Release the hook fixing the Cap Assembly to the Ink Unit, and then remove the Cap Assembly.
8. Disconnect the tube from the Cap Assembly.



dis16

**Figure 4-14. Ink Unit Removal**



**CAUTION**

1. When handling CLEANER, HEAD, note the points below:
  - Do not touch CLEANER, HEAD with your bare hands. Wear gloves or use tweezers.
  - Do not smear CLEANER, HEAD with oil or grease.
  - When installing CLEANER, HEAD, set the rubber side (black side) facing to the right.
2. When replacing the Cap Assembly, do not touch its sealing rubber part.
- When assembling, make sure the Ink Tube is correctly placed at the correct position. If not, it may cause an ink leakage.

**CHECK POINT**

1. When assembling the Cap Assembly to the Ink System Assembly, make sure ABSORBER, SLIDER, CAP is assembled in the cap assembly. ABSORBER, SLIDER, CAP should be set as shown in Figure 4-15 in advance.
2. Check that the ink tube is securely connected to the connection part of the Cap Assembly. (See Figure 4-16.) Also, make sure the tube is not bent or crushed by the connection area. (See Figure 4-17.)
3. Check that the ink tube is placed correctly in the Ink System. (See to Figure 4-16.) Pay special attention in connecting the tube to the Pump Unit. Connect the tube by strictly following the instruction given in Figure 4-18.
4. When assembling, be careful not to crush or leave any stress on the ink tube that connects the Pump Unit and Cap Assembly. Also,
5. After installing the Pump Unit, ensure that CLEANER, HEAD moves back and forth with rotation of the gear.

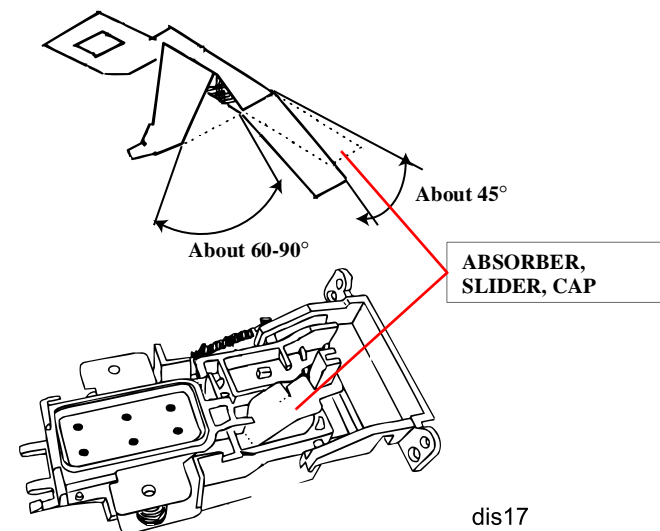


Figure 4-15. Setting the ABSORBER, SLIDER, CAP



Figure 4-16. Ink Tube Installation (1)

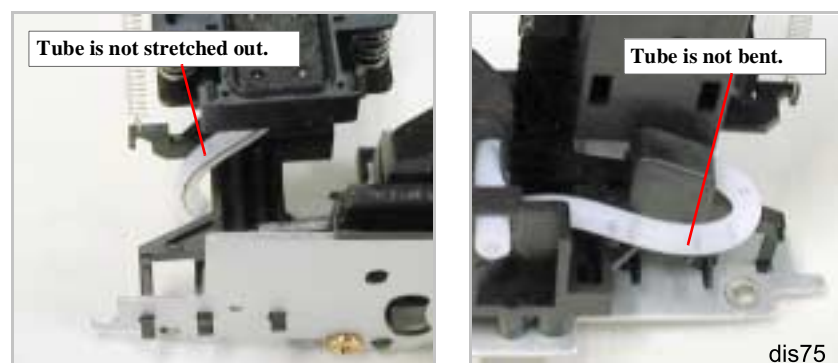


Figure 4-17. Ink Tube Installation (2)

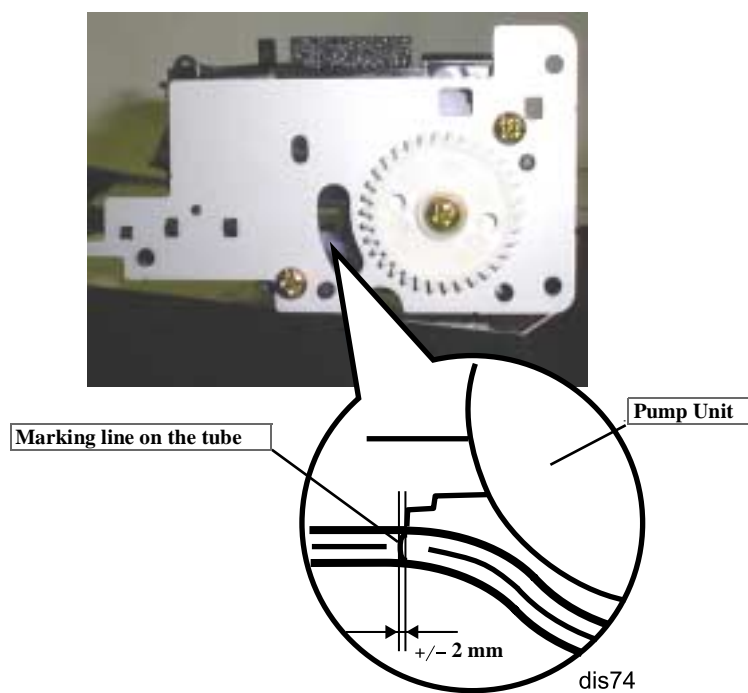
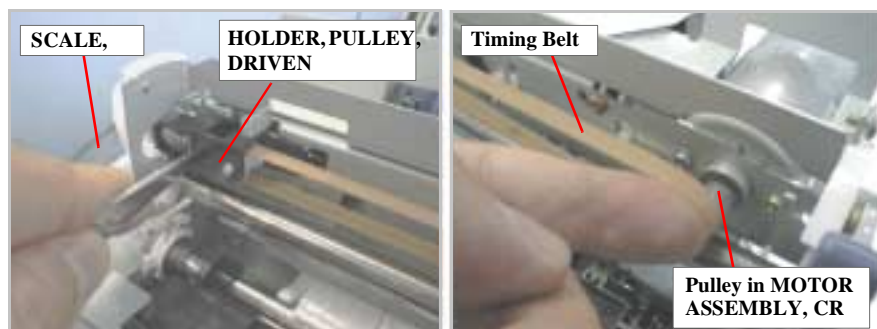


Figure 4-18. Connecting the Tube to the Pump Unit

## 4.2.7 MOTOR ASSEMBLY, CR Removal

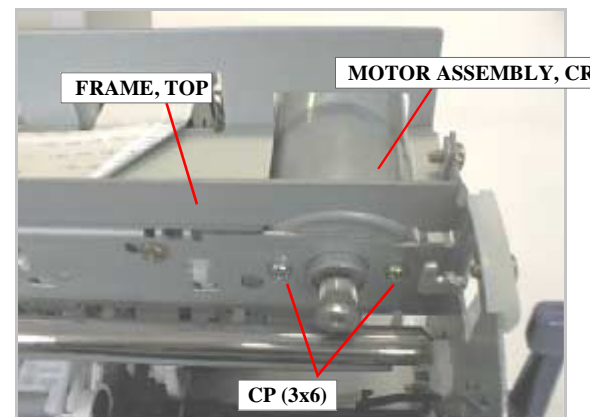
1. Remove HOUSING. (Refer to Section 4.2.1)
2. Using tweezers or a small screw driver, put the carriage lock lever down to the front, and then slide the carriage to the middle of the printer mechanism.
3. Push the HOLDER, PULLEY, DRIVEN to loosen the CR Timing Belt, and then disengage the timing belt from the pulley on the CR motor.



dis19

**Figure 4-19. Timing Belt Removal**

4. Disconnect the connector for MOTOR ASSEMBLY, CR from the connector on the main board. (Refer to Section 4.2.2.)
5. Remove 2 screws (CP, 3x6) securing MOTOR ASSEMBLY, CR to FRAME, TOP, and then remove MOTOR ASSEMBLY, CR.



dis20

**Figure 4-20. MOTOR ASSEMBLY, CR Removal**



- When pushing HOLDER, PULLEY, DRIVEN, be careful not to damage SCALE, PF (loop scale).
- When releasing the timing belt, be careful not to damage SCALE, CR (linear encoder).
- When removing MOTOR ASSEMBLY, CR, be sure not to hit the edge of the installation hole with the motor's pulley.



- When removing MOTOR ASSEMBLY, CR, execute Bi-D adjustment. See "Bi-Directional Adjustment" on page 135.



## 4.2.8 MOTOR ASSEMBLY, ASF Removal

1. Remove HOUSING (Refer to Section 4.2.1.)
2. Remove the harness for MOTOR ASSEMBLY, ASF from the main board. (Refer to Section 4.2.2.)
3. Lower LEVER, PLANETARY UNIT.



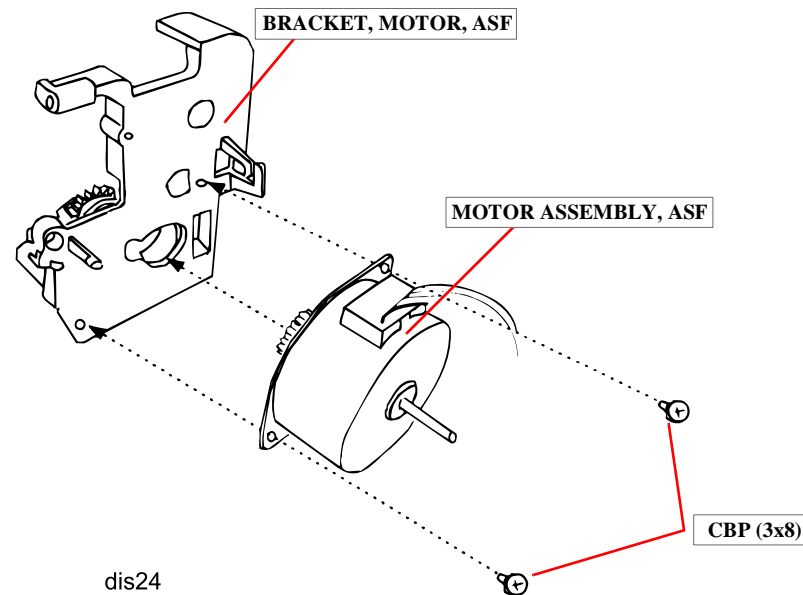
dis23

[Lever is held up.]

[Lever is lowered.]

**Figure 4-21. Setting LEVER, PLANETARY UNIT**

4. Remove 2 screws (CBP, 3x8) securing MOTOR ASSEMBLY, ASF to BRACKET, MOTOR, ASF. Then push the motor assembly to the rear and then to the right to remove it.

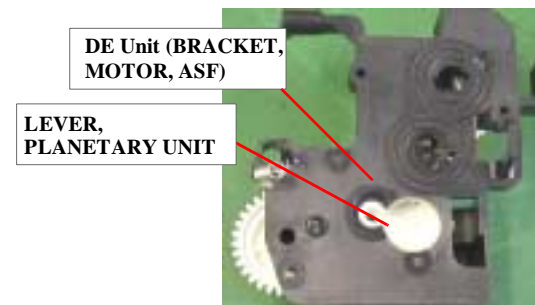


dis24

**Figure 4-22. MOTOR ASSEMBLY, ASF Removal**



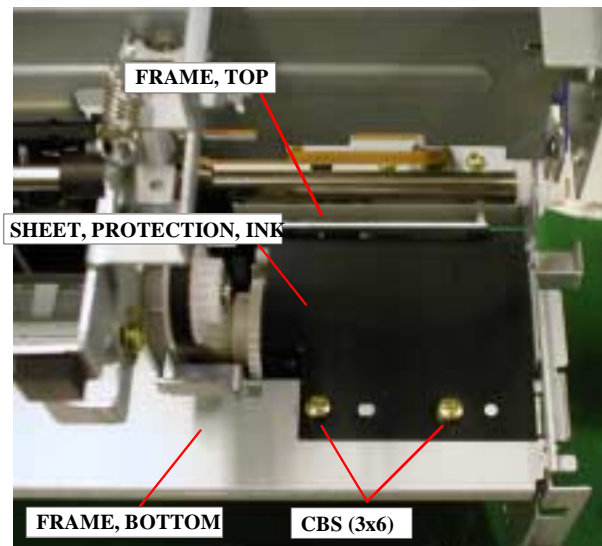
**When installing MOTOR, ASSEMBLY, ASF5, make sure the DE unit and LEVER, PLANETARY UNIT are set as shown below:**



dis28

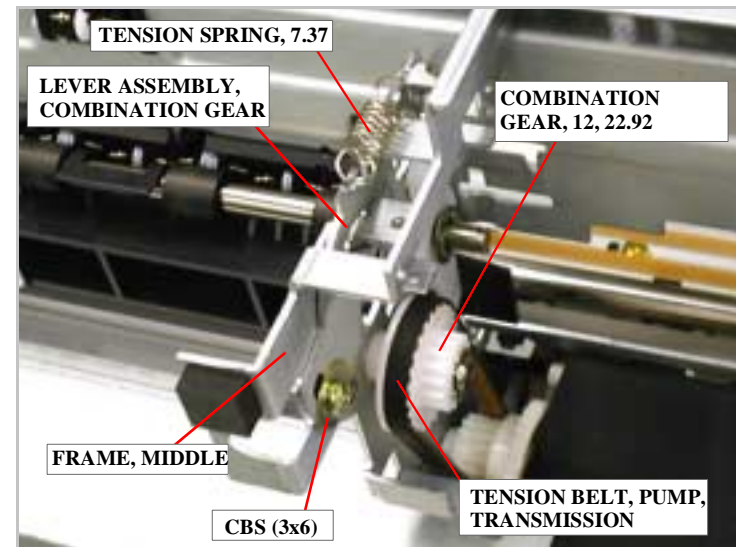
## 4.2.9 DE Unit Removal

1. Remove HOUSING (Refer to Section 4.2.2.)
2. Remove MOTOR ASSEMBLY, CR. (See Section 4.2.7.)
3. Remove the Ink Unit. (Refer to Section 4.2.6.)
4. Remove 2 screws (CBS, 3x6) securing SHEET, PROTECTION INK to FRAME, BOTTOM, and then remove the sheet.
5. Remove MOTOR, CR. (Refer to Section 4.2.7.)
6. Loosen 1 (CBS, 3x6) securing the LEVER ASSEMBLY, COMBINATION GEAR to FRAME, MIDDLE.
7. Remove the tension sprig (7.37) hung to FRAME MIDDLE and LEVER ASSEMBLY, COMBINATION GEAR, and then remove TENSION BELT, PUMP, TRANSMISSION from the combination gear (12, 22.92).



dis22

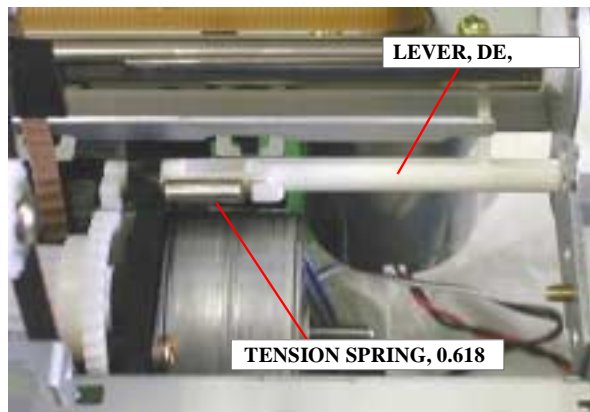
Figure 4-23. SHEET, PROTECTION, INK Removal



dis21

Figure 4-24. TENSION BELT, PUMP, TRANSMISSION Removal

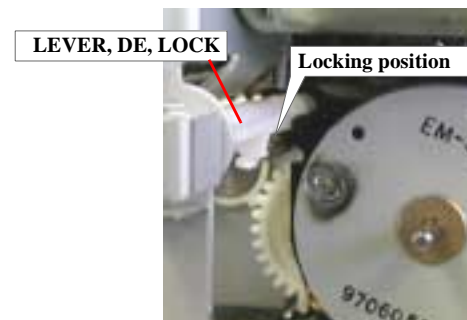
8. Remove the tension spring (0.618) attached to the LEVER, DE, LOCK and DE Unit.



dis27

**Figure 4-25. TENSION SPRING, 0.618 Removal**

9. Release the hook in the DE Unit (BRACKET, MOTOR, ASF) securing LEVER, DE, LOCK. Then push the lever out to the right to release it from the installation hole in the DE Unit and remove it.



**Figure 4-26. LEVER, DE, LOCK Removal**

**CAUTION**



When removing LEVER, DE, LOCK, be careful not to break the hook in the DE Unit.

10. Remove the CBS screw (3x6) and CBP (3x8) screw securing the DE unit to FRAME, MIDDLE and FRAME, TOP, respectively. Then remove DE unit.

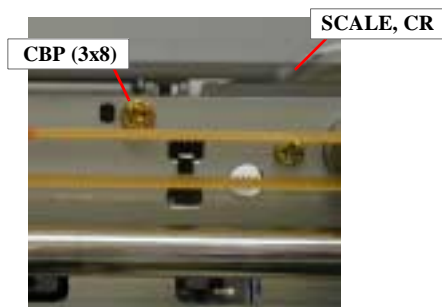


Figure 4-27. DE Unit Removal

11. Remove the harnesses from the harness clamp in the DE Unit.

**CAUTION**



Be sure to remove the screw (CBP, 3x8) carefully so you do not damage the linear encoder (SCALE, CR).



- Check that all gears are assembled in the DE unit correctly as shown in the figure below:

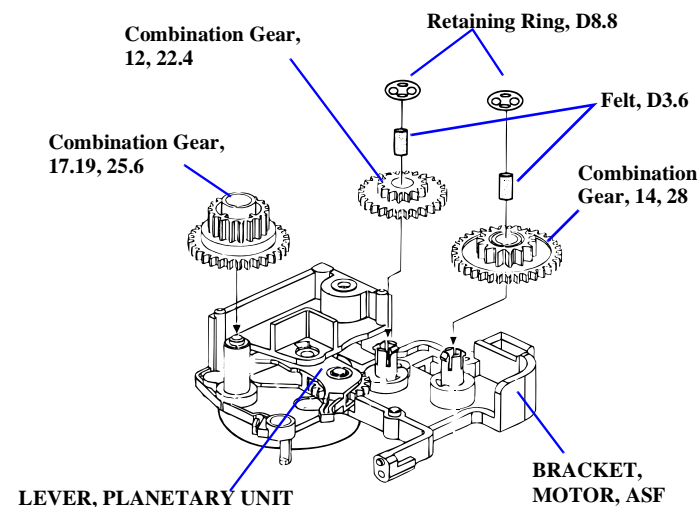
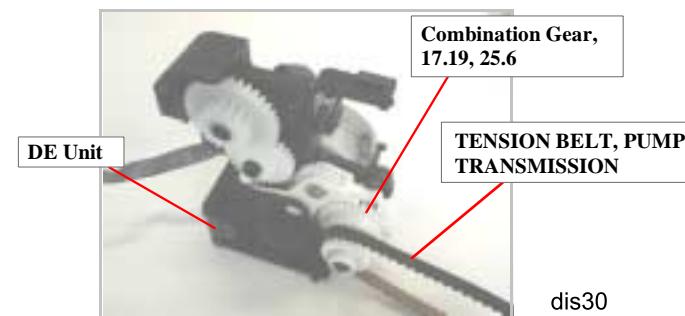


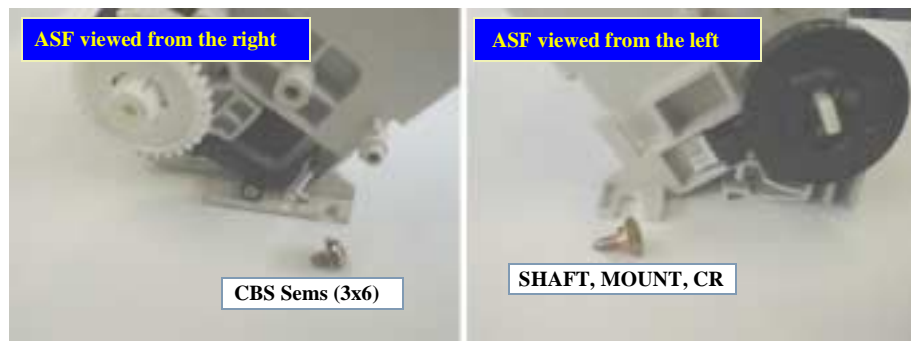
Figure 4-28. Parts Layout in DE Unit

- Before assembling MOTOR ASSEMBLY, ASF to the DE Unit, set LEVER, PLANETARY UNIT to the pump side. (See Figure 4-28.)
- Set TENSION BELT, PUMP, TRANSMISSION to the 17.19 gear of the Combination Gear (17.19, 25.6) before securing the DE unit to FRAME, MIDDLE.



## 4.2.10 ASF Unit Removal

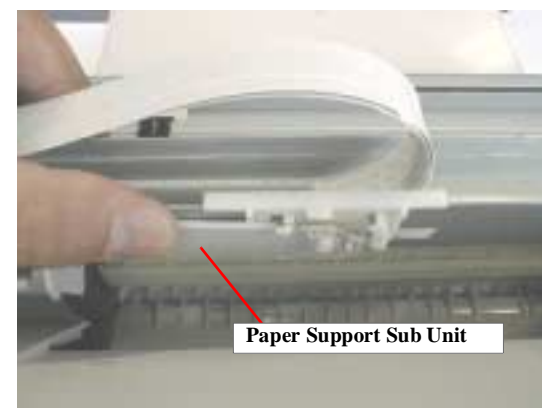
1. Remove HOUSING. (Refer to Section 4.2.1.)
2. Remove the following cables from the cable clamp in the left side of the ASF Assembly.
  - ASF HP sensor cable
  - MOTOR ASSEMBLY, PF cable
3. Disconnect the ASF HP sensor cable from the connector on the sensor.
4. Remove the head FFC from the ASF Unit.
5. Remove 1 screw (CBS Sems, 3x6) and SHAFT, MOUNT, CR that are securing the ASF Unit to FRAME, BOTTOM at the rear right and rear left, respectively.



dis31

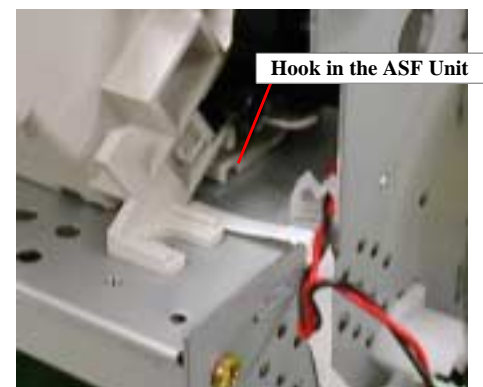
**Figure 4-29. ASF Unit Removal (1)**

6. Tilting the paper support sub unit, release the hook fixing the ASF Unit to FRAME, BOTTOM, and remove the ASF Unit toward the rear.



dis32

**Figure 4-30. ASF Unit Removal (2)**



dis49

**Figure 4-31. ASF Unit Removal (3)**

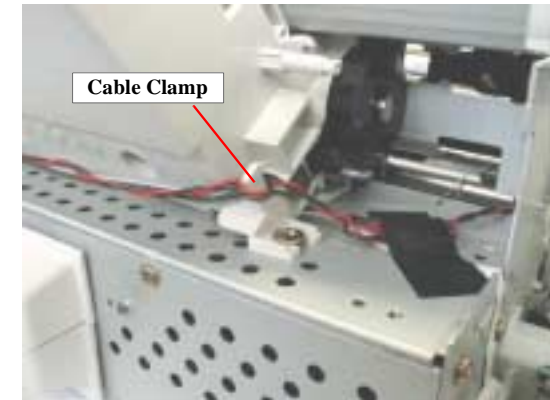


**CHECK  
POINT**

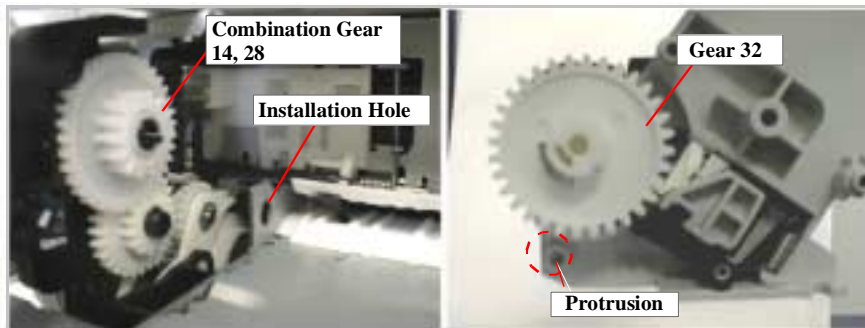
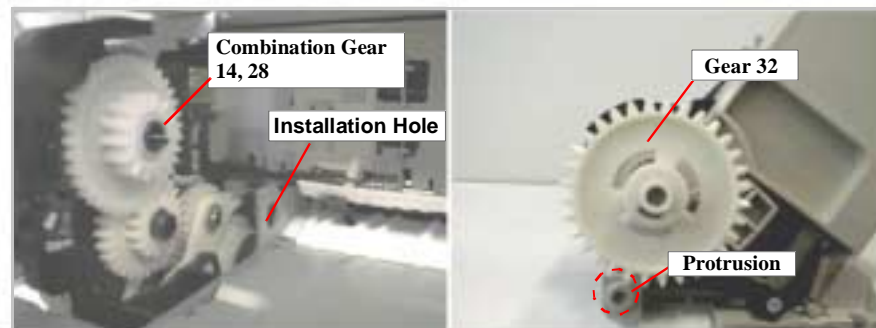
- When installing the ASF assembly to FRAME, BOTTOM, make sure the protrusion on the ASF fits in the installation hole in FRAME, MIDDLE. (See Figure 4-32.)
- When installing the ASF Unit, ensure the spur gear 32 in the ASF Unit and the inner gear of the combination gear (14, 28) in the DE Unit are meshed. (See Figure 4-32.)
- When installing the ASF Unit, make sure the Hopper Assembly is raised.

**CHECK  
POINT**

- When connecting the cables for ASF HP sensor and MOTOR ASSEMBLY, PF, set them in the cable clamp in the rear left part of the ASF Unit as shown in the figure below:



dis34

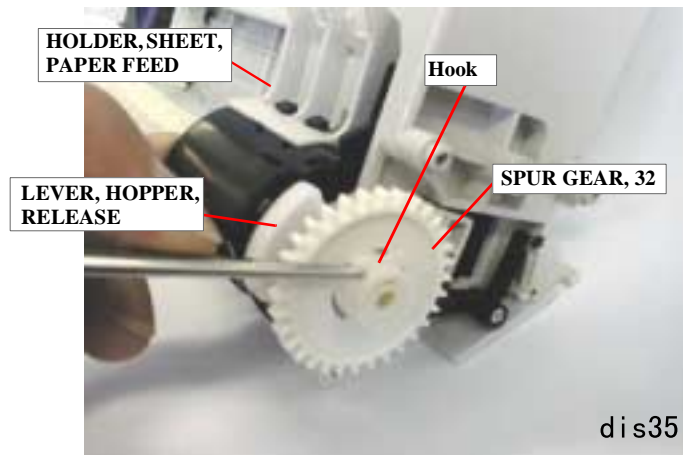
**Stylus Photo 890****Stylus Photo 1290**

dis33

Figure 4-32. Check Points in ASF Assembly

#### 4.2.10.1 SHAFT, ROLLER, LD Removal

1. Remove the ASF Unit. (Refer to Section 4.2.10.)
2. Releasing the hook on Gear, 32, remove the gear from SHAFT, ROLLER, LD.



**Figure 4-33. SPUR GEAR, 32 Removal**

3. Remove LEVER, HOPPER, RELEASE from the right end of SHAFT, ROLLER, LD.
4. Remove HOLDER, SHEET, PAPER FEED from the right and left LD roller units.
5. Move the left LD roller assembly to the middle and then:

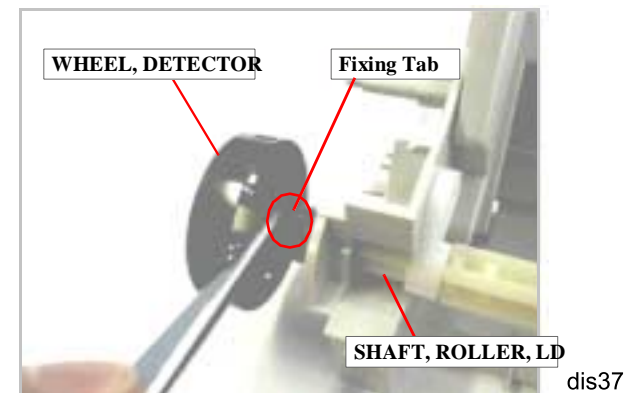
**Stylus Photo 890:** Remove BUSHING, FIXING, LEFT from the left end of SHAFT, ROLLER, LD

**Stylus Photo 1290:** Remove the E-ring from the left end of SHAFT, ROLLER, LD.



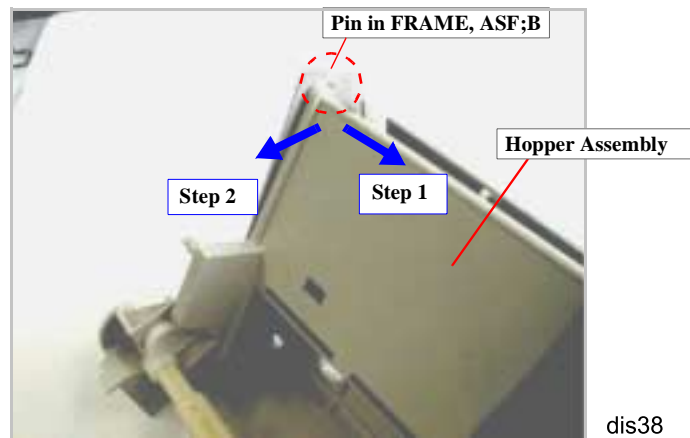
**Figure 4-34. BUSHING, FIXING, SHAFT/E-Ring Removal**

6. Move SHAFT, ROLLER, LD to the left.
7. Release the fixing tab in WHEEL, DETECTOR, and then remove WHEEL, DETECTOR from SHAFT, ROLLER, LD.



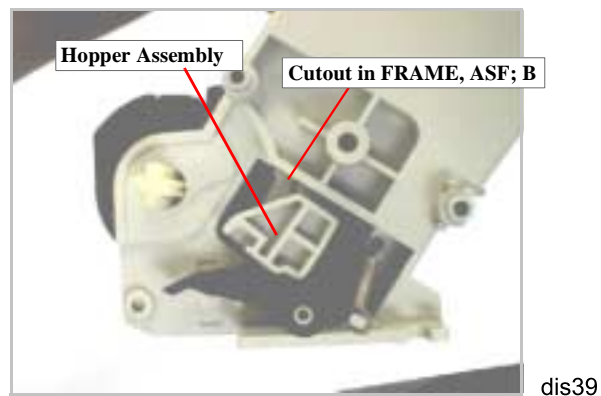
**Figure 4-35. WHEEL, DETECTOR Removal**

8. Release the Hopper Assembly from the pin in the top left corner of ASF, FRAME; B in the order indicated with arrows in the figure below.



**Figure 4-36. Hopper Assembly Removal (1)**

9. Releasing the Hopper Assembly from the protrusion at the top right edge of FRAME, ASF; B, detach the arm of the Hopper Assembly from the square cutout in the right frame of FRAME, ASF; B.



**Figure 4-37. Hopper Assembly Removal (2)**

10. Using tweezers, remove the left and right compression springs (1.961) from the Hopper Assembly and FRAME, ASF; B. (See Figure 4-38.)
11. Lifting up the right edge of SHAFT, ROLLER, LD a little, remove the shaft by pulling it out to the right along with LD rollers. (See Figure 4-38.)
12. Remove the left LEVER, HOPPER, RELEASE from SHAFT, ROLLER, LD. (See Figure 4-38.)
13. Remove the LD roller assemblies from SHAFT, ROLLER, LD. (See Figure 4-38.)



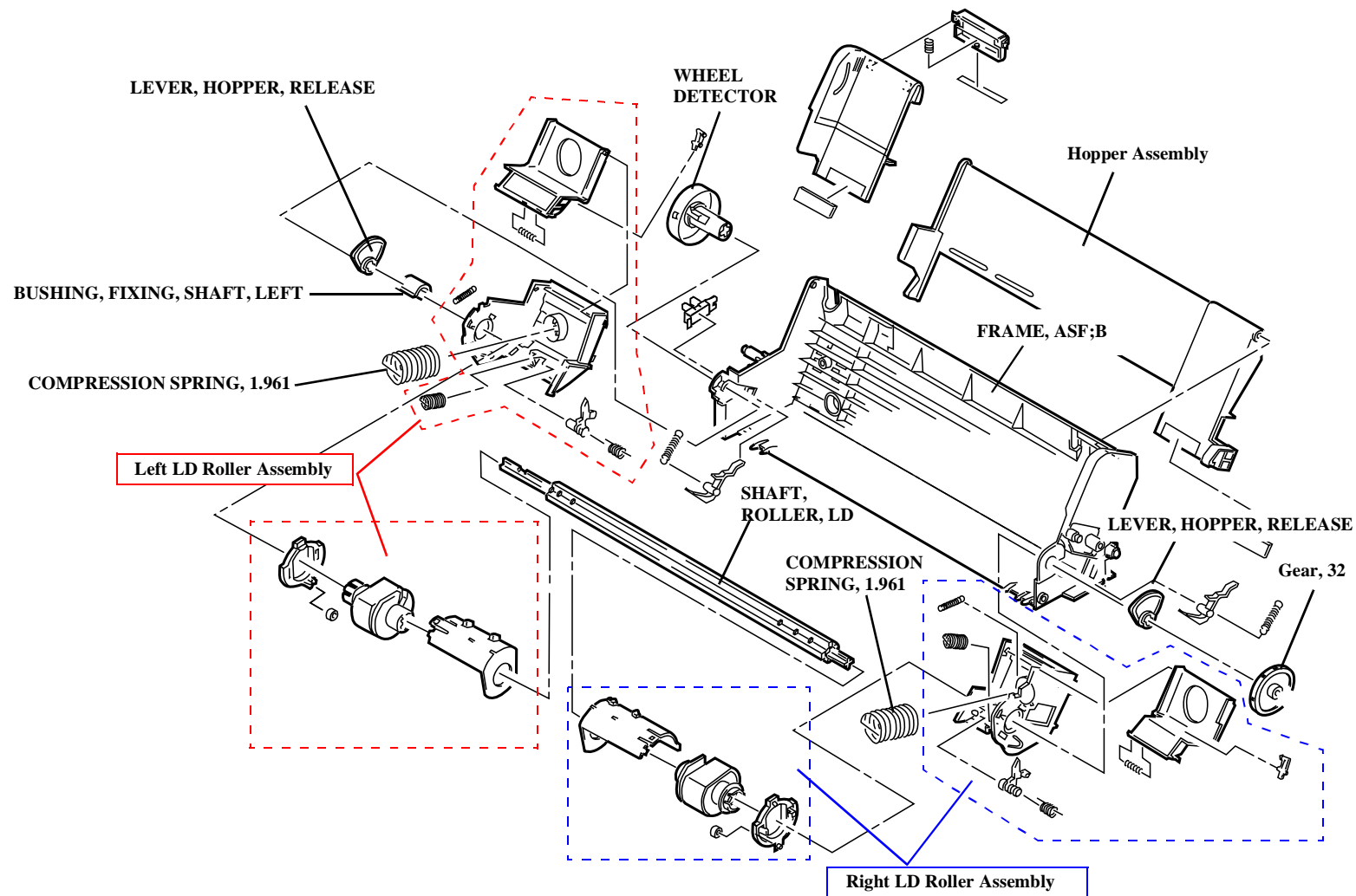
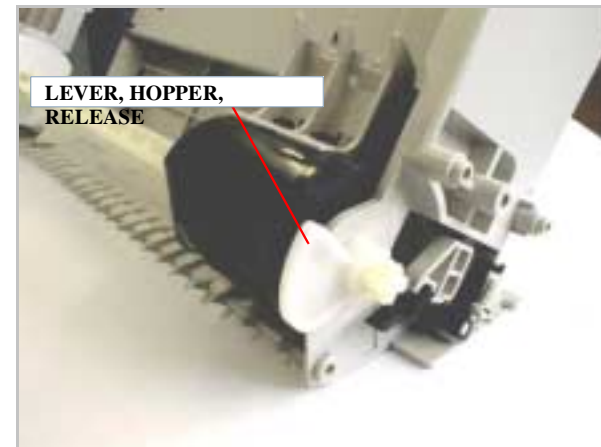


Figure 4-38. Hopper Assembly Removal/ASF Unit Disassembly

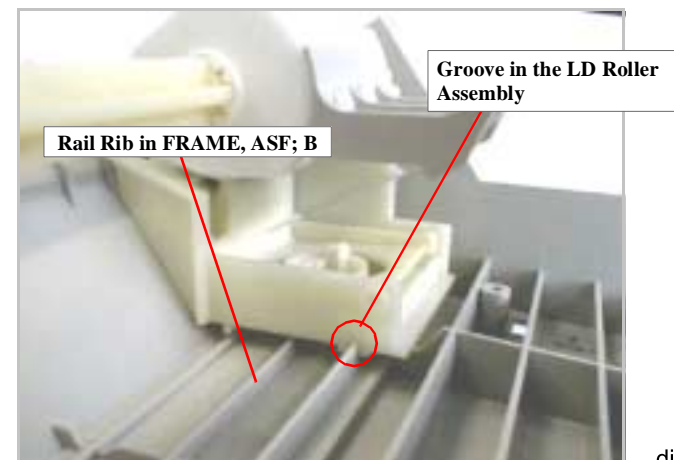
**CHECK  
POINT**

- While assembling the ASF Unit, be careful not to smear any parts with oil on the cam parts. If oil gets other parts, it should be wiped off.
- When installing LEVER, HOPPER, RELEASE, set it in the correct direction. (See Figure 4-39.)
- Be sure to attach the following parts to SHAFT, ROLLER, LD securely. (See Figure 4-38.)
  - BUSHING, FIXING, SHAFT, LEFT (white plastic part)
  - WHEEL, DETECTOR (black plastic part)
- When installing the LD Roller Assemblies to SHAFT, ROLLER, LD, make sure the black one (right LD Roller Assembly) goes to the right.
- When setting the right and left LD Roller Assemblies, align their grooves with the rail rib in FRAME, ASF; B. (See Figure 4-40.)



dis41

Figure 4-39. LEVER, HOPPER, RELEASE Installation

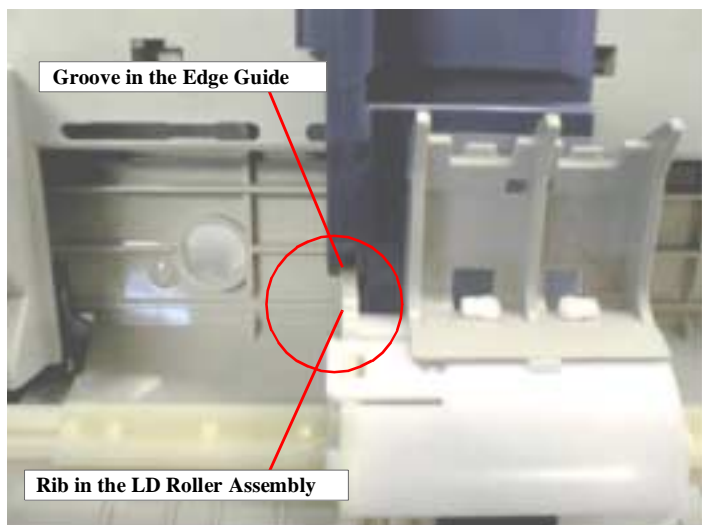


dis42

Figure 4-40. LD Roller Assembly Installation (1)

**CHECK  
POINT**

- When installing the edge guide to the left LD Roller Assembly, ensure that the rib in the LD Roller Assembly fits correctly into the groove in the edge guide. (See Figure 4-41.)
- Make sure that the right LD Roller Assembly is fixed with the hook in FRAME, ASF; B. You can check its condition from the back of the ASF Unit. (See Figure 4-42.)
- Before assembling the ASF Unit, hold each compression spring (1.961) with the hook of the spring bearing in the Hopper Assembly. Then, after attaching the Hopper Assembly to FRAME, ASF; B, release the springs from the hooks through the cutouts in the back of the frame. (See Figure 4-43.)



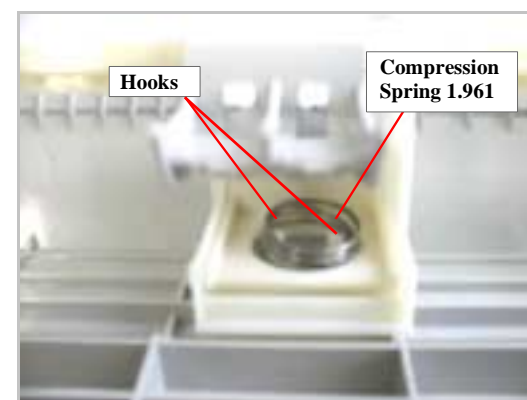
dis43

Figure 4-41. LD Roller Assembly Installation (2)



dis44

Figure 4-42. Hook Fixing the LD Roller Assembly



dis45

Figure 4-43. Holding Compression Spring with the Hooks

#### 4.2.10.2 ROLLER ASSEMBLY, LD, RIGHT/LEFT Removal

1. Remove the ASF Unit. (Refer to Section 4.2.10.)
2. Remove SHAFT, ROLLER, LD. (Refer to Section 4.2.10.1.)
3. Release the hooks in COVER, ROLLER, LD, RIGHT/LEFT (two hooks in each) fixing itself to LD ASSEMBLY, RIGHT/LEFT, and then remove the COVER, ROLLER, LD, RIGHT/LEFT.
4. Release the hooks in ROLLER ASSEMBLY, LD, RIGHT/LEFT (two hooks in each) securing itself to LD ASSEMBLY, RIGHT/LEFT. Then remove ROLLER ASSEMBLY, LD, RIGHT/LEFT.

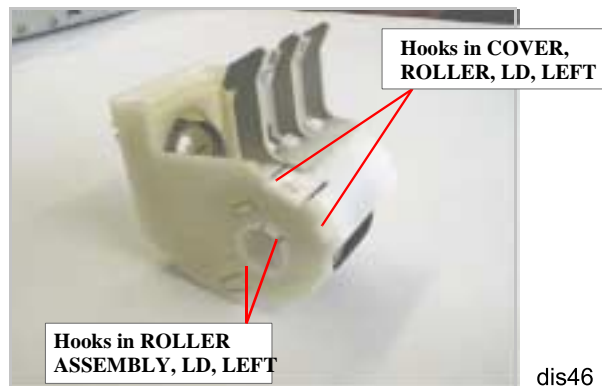


Figure 4-44. Hooks to Release

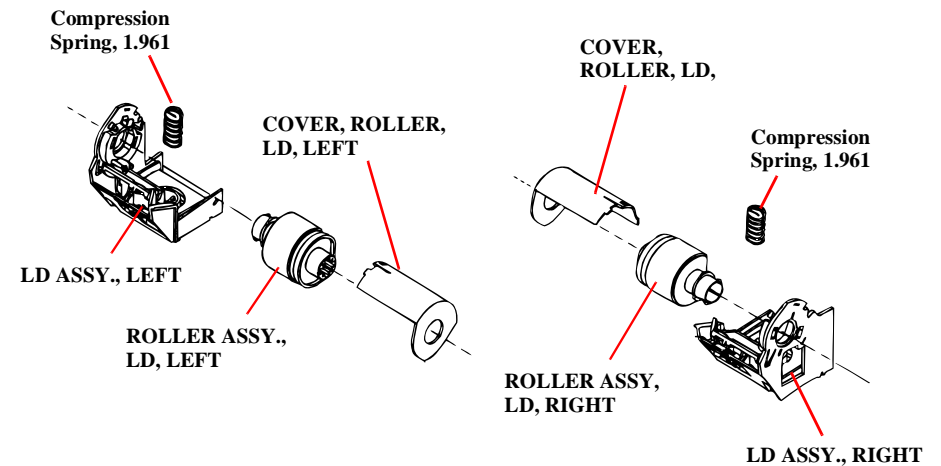


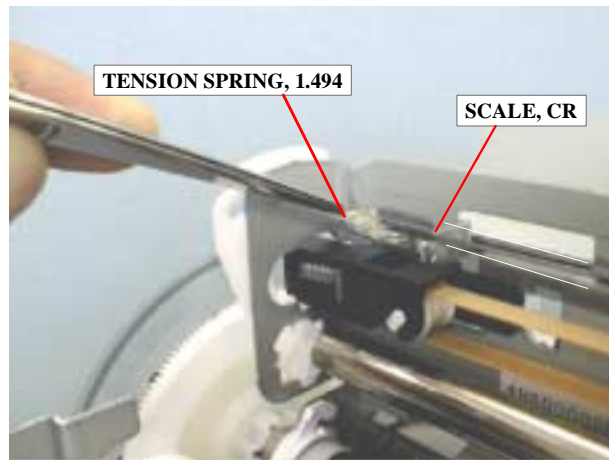
Figure 4-45. ROLLER ASSEMBLY, LD, RIGHT/LEFT Removal



Do not touch the surface of the ROLLER ASSEMBLY, LD with your bare hands.

### 4.2.11 Carriage Unit Removal

1. Remove HOUSING. (Refer to Section 4.2.1)
2. Disconnect the head FFC from the printhead. (Refer to Section 4.2.4.)
3. Remove the Tension Spring 1.494 hanging SCALE, CR to the left side of FRAME, TOP. Then remove SCALE, CR.

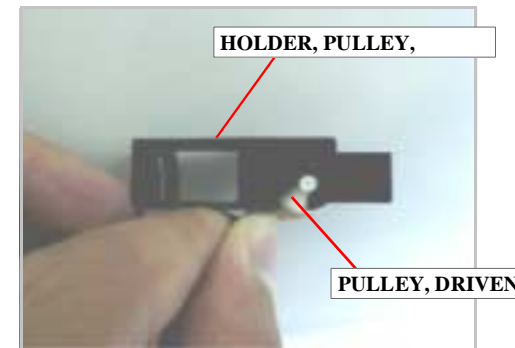


dis50

**Figure 4-46. Remove the Tension Spring 1.491& CR Encoder Slit**

4. Loosen the Timing Belt by pushing HOLDER, PULLEY, DRIVEN and disengage the belt from the pulley of the CR motor. (Refer to Figure 4-20.)

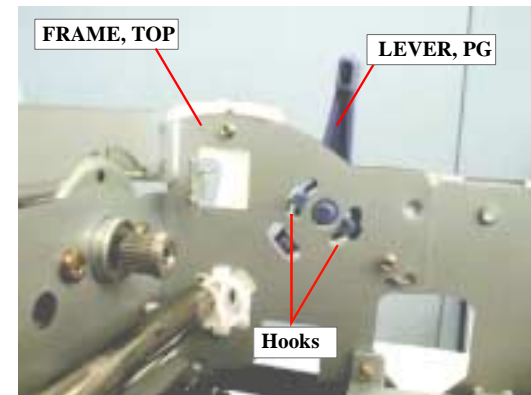
5. Push PULLEY, DRIVEN down and remove it from HOLDER, PULLEY, DRIVEN.



dis50

**Figure 4-47. PULLEY, DRIVEN Removal**

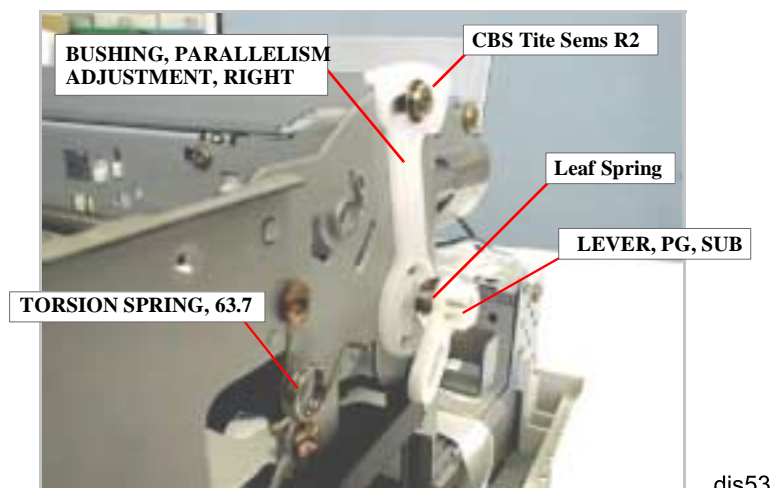
6. Remove the Timing Belt from PULLEY, DRIVEN.
7. Remove LEVER, PG by releasing its hooks from the cutouts in the right side of FRAME, TOP. Then remove the LEVER, PG.



dis52

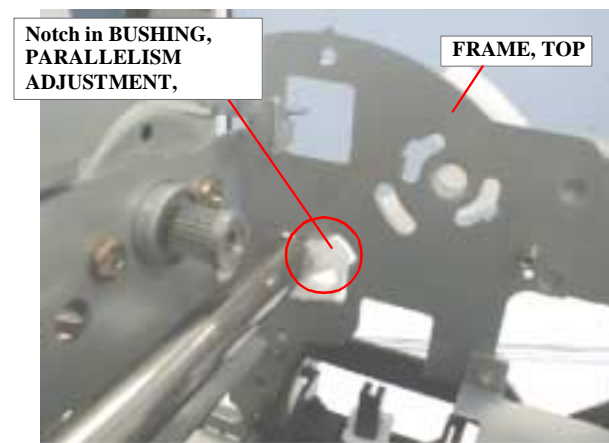
**Figure 4-48. LEVER, PG Removal**

8. Remove the torsion spring (63.7) hung onto FRAME, TOP and LEVER, PG.



**Figure 4-49. LEVER, PG, SUB Removal**

9. Remove LEVER, PG from LEVER, PG, SUB.
10. Release the hook fixing LEVER, PG, SUB to SHAFT, CR, GUIDE. Then remove LEVER, PG, SUB and 1 leaf spring (6.2x0.15x11).
11. Remove 1 screw (CBS Tite Sems R2, 3x6) securing BUSHING, PARALLELISM ADJUSTMENT, RIGHT to FRAME, TOP.
12. Rotate BUSHING, PARALLELISM ADJUSTMENT, RIGHT to align its notch with the cutout in FRAME, TOP. Then remove the bushing.



**Figure 4-50. BUSHING, PARALLELISM ADJUSTMENT, RIGHT Removal**

13. Remove SHAFT, CR, GUIDE from FRAME, TOP together with the Carriage Unit.
14. Remove SHAFT, CR, GUIDE and the oil pad from the Carriage Unit.

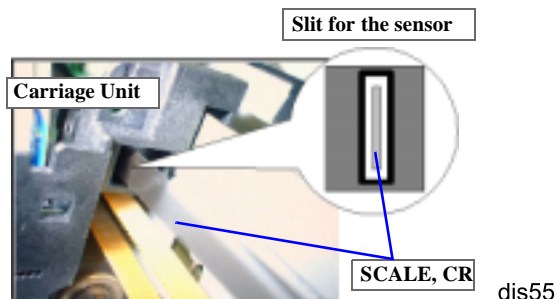


- Do not touch SCALE, CR (linear scale) with your bare hands, because if its surface is dirty or damaged, it will cause the carriage to operate abnormally.
- Do not touch SCALE, PF (loop scale) with your bare hands, because if its surface is dirty or damaged, it will adversely affect paper feeding accuracy.
- If you replace the Carriage Unit, perform the Platen Gap Adjustment.



**CHECK  
POINT**

- When installing the Leaf Spring (6.2x 0.15x11), set it with its convex side facing inward. Refer to Figure 4-49.
- After setting SCALE, CR through the slot for the sensor in the Carriage Unit, ensure that it is not in contact with either side of the slot by viewing them from the side.



- When installing SHAFT, CR, GUIDE, make sure that the oil pad is set in the correct position.

## 4.2.12 BOARD ASSEMBLY, ENCODER Removal

1. Remove the head FFC. (Refer to Section 4.2.4.)
2. Pushing BOARD ASSEMBLY, ENCODER (linear encoder) to the rear, remove it upward.

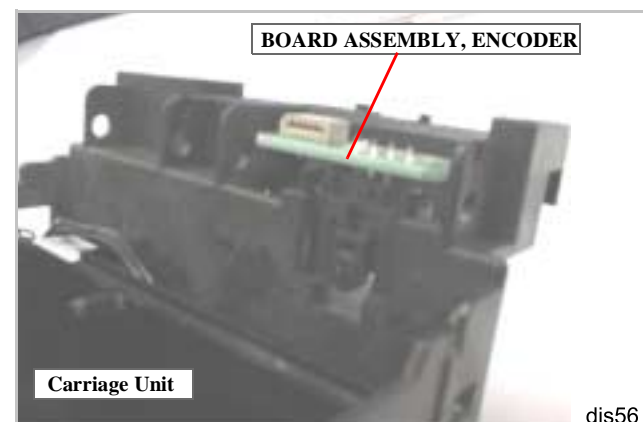


Figure 4-51. BOARD ASSEMBLY, ENCODER Removal

**CAUTION**

- When removing BOARD ASSEMBLY, ENCODER, be sure not to force it out using a screw driver or equivalent. Otherwise, the sensor mounting position in the Carriage Unit may be damaged.
- When installing BOARD ASSEMBLY, ENCODER, be careful not to mar SCALE, CR.
- Make sure SCALE, CR and the sensor are not in contact.



### 4.2.13 ROLLER, PF Removal

1. Remove HOUSING. (Refer to Section 4.2.1)
2. Remove the Panel Unit. (Refer to Section 4.2.3.)
3. Remove HOUSING, PANEL, LEFT. (Refer to Section 4.2.5.)
4. Remove the ASF Unit. (Refer to Section 4.2.10.)
5. Remove the Carriage Unit. (Refer to Section 4.2.11.)
6. Remove the three screws (CBS, 3x6) securing GUIDE PLATE, CR Unit to FRAME, TOP. Then remove GUIDE PLATE, CR Unit.

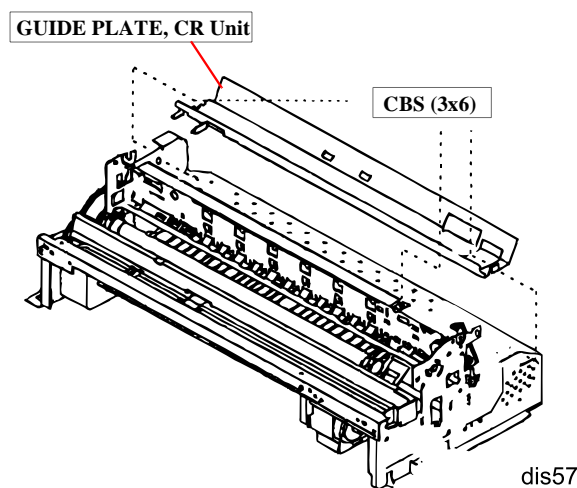


Figure 4-52. GUIDE PLATE, CR Unit Removal

7. Remove PAPER GUIDE, RIGHT Unit and the five PAPER GUIDE, UPPER Unit (eight for Stylus Photo 1290) from FRAME, TOP in the manner described below:

- PAPER GUIDE, UPPER Unit  
Remove the torsion spring (117.6). Then remove the unit to the rear.
- PAPER GUIDE, RIGHT Unit  
Remove the torsion spring (117.6). Then remove the unit to the front.



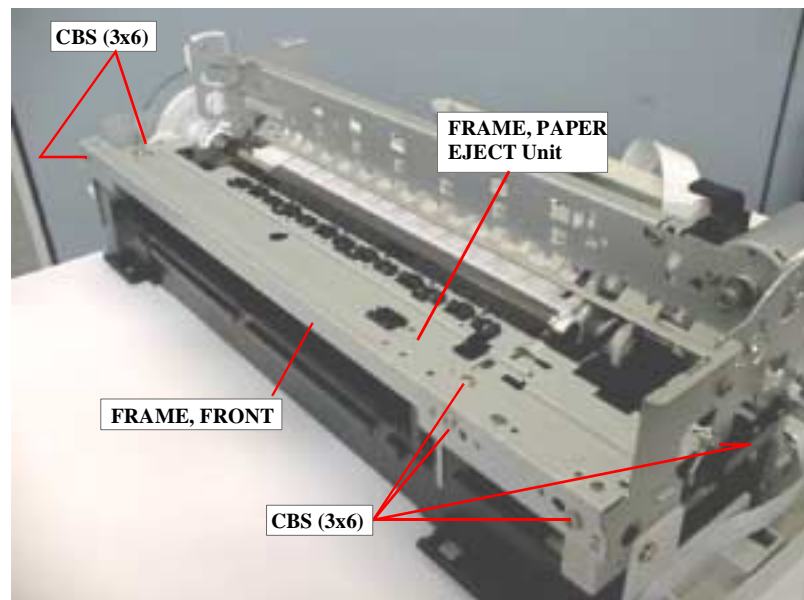
Figure 4-53. PAPER GUIDE, UPPER/RIGHT Unit Removal

8. Release the hook securing PAPER GUIDE, LEFT\* to FRAME, TOP. Then shift the unit to the left first, and remove it to the rear.

\* PAPER GUIDE, LEFT is not assembled in Stylus Photo 1290.



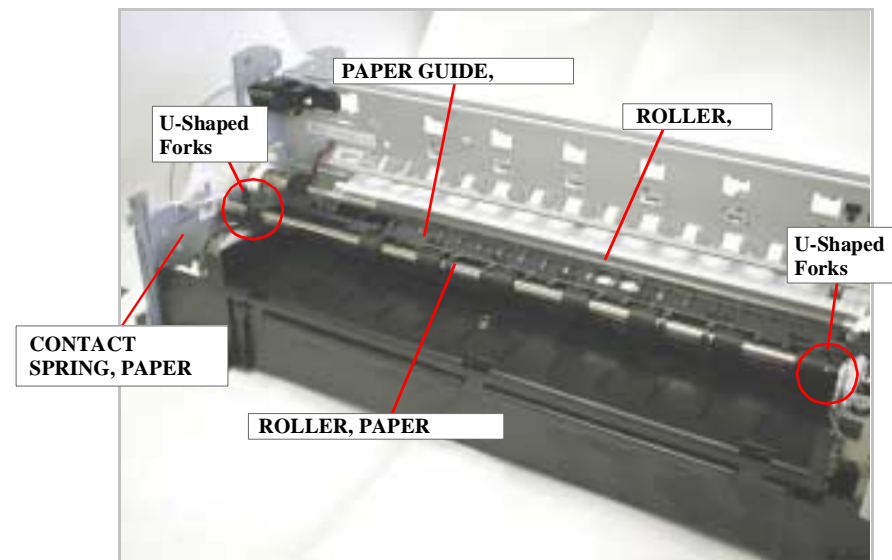
9. Remove the three screws (CBS, 3x6) securing FRAME, TOP to the printer mechanism. Then remove FRAME, TOP.
10. Remove the three screws (CBS, 3x6) securing FRAME, PAPER EJECT Unit to the printer mechanism, and then remove FRAME, PAPER EJECT Unit.



dis60

Figure 4-54. FRAME, FRONT/FRAME, PAPER EJECT Removal

11. Remove PAPER GUIDE, FRONT from ROLLER, PF by releasing its two U-shaped forks fixing ROLLER, PAPER EJECT.
12. Remove CONTACT SPRING, PAPER EJECT hung to FRAME, LEFT and ROLLER, PAPER EJECT.



dis61

Figure 4-55. PAPER GUIDE, FRONT Removal

13. Raise 2 bushings (6) attached to the right and left ends of ROLLER, PAPER EJECT to release them from FRAME, LEFT and FRAME, MIDDLE. Then remove ROLLER, PAPER EJECT.

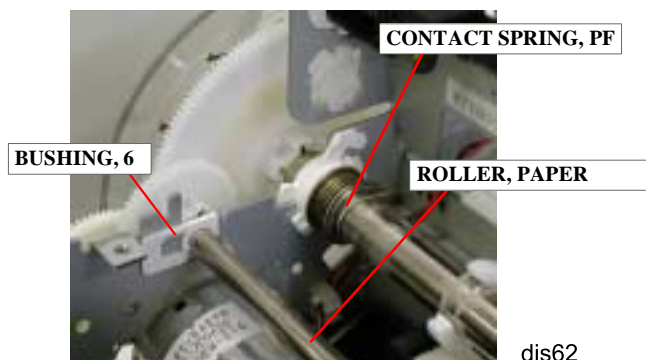


Figure 4-56. ROLLER, PAPER EJECT Removal

14. Remove 1 screw (CBS, 3x6) securing BRACKET, BOARD ASSEMBLY to FRAME, LEFT together with BOARD ASSEMBLY, ENCODER (PF Encoder Sensor). Then remove BRACKET, BOARD ASSEMBLY.

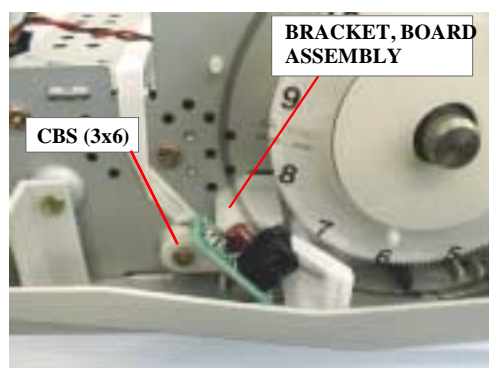


Figure 4-57. PF Encoder Removal

15. Remove CONTACT SPRING, PF hung to ROLLER, PF and FRAME, BOTTOM. (Refer to Figure 4-56.)

16. Unhook BUSHING, 12, LEFT attached to the left end of ROLLER, PF and then turn the bushing until it is aligned with the cutout in FRAME, LEFT.
17. Release ROLLER, PF from the hook in PAPER GUIDE, REAR, and then remove ROLLER, PF.

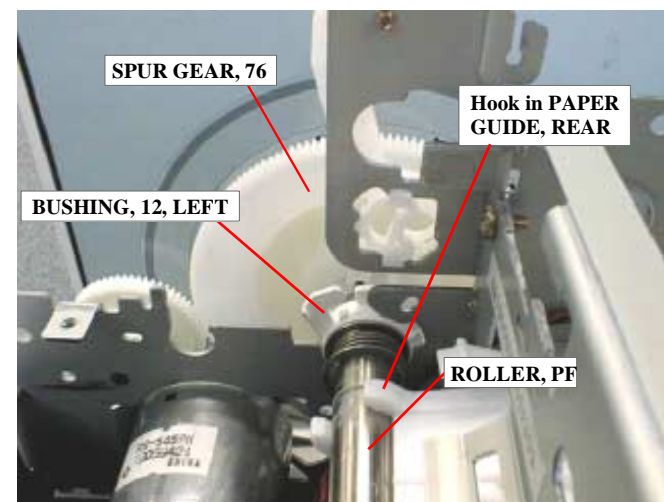


Figure 4-58. ROLLER, PF Removal



- During disassembly/assembly, be careful not to bend or damage SCALE, PF.
- Do not touch SCALE, PF with your bare hands. Also, be careful not to damage its surface since it is coated with special material to improve accuracy in paper feeding.
- Avoid touching the tooth plane of SPUR GEAR 76 attached to the left end of ROLLER, PF. (See Figure 4-58.)



- When installing PAPER GUIDE, RIGHT to FRAME, TOP with the torsion spring, insert PAPER GUIDE, RIGHT Unit from the front making sure the PE sensor lever is set in the hole of the paper guide.

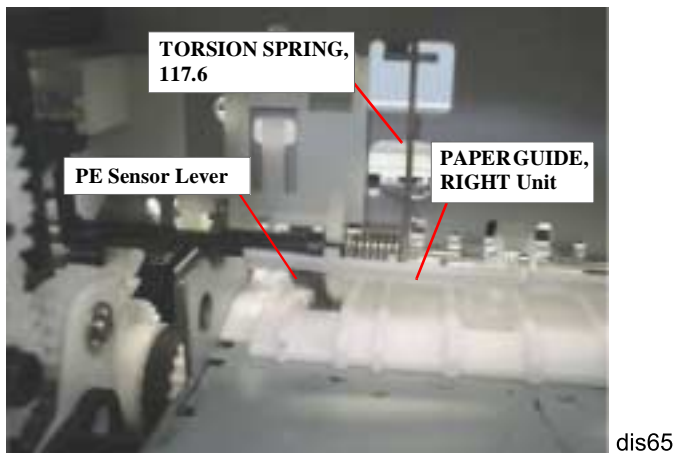


Figure 4-59. PAPER GUIDE, RIGHT Installation

- When mounting the torsion springs (117.6) to PAPER GUIDE, UPPER / PAPER GUIDE, RIGHT, fit the arm of each torsion spring (117.6) in the groove of the corresponding paper guide.
- When installing CONTACT SPRING, PF, fit the loop of the spring in the groove near the left end of ROLLER, PF.
- If you replace SCALE, PF (loop scale) or SPUR GEAR (76), you are required to install a new SCALE, PF using the specified tools. (Refer to the next section.)

#### 4.2.13.1 SCALE, PF Installation

This section describes how to install the following parts:

- SCALE, PF (Loop Scale)
- BRACKET, SCALE
- TAPE, D50 (Double-sided adhesive tape)

1. Get “Mounting Plate Scale Attachment tool”. (AS Tool code: 1051765)
2. Place BRACKET, SCALE on the tool with its taped side facing upward.
3. Peel off the protection sheet from the tape on BRACKET, SCALE.

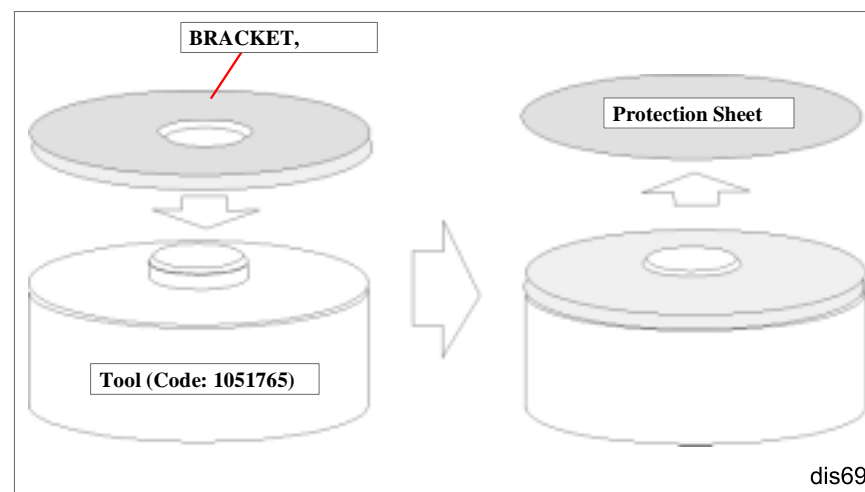
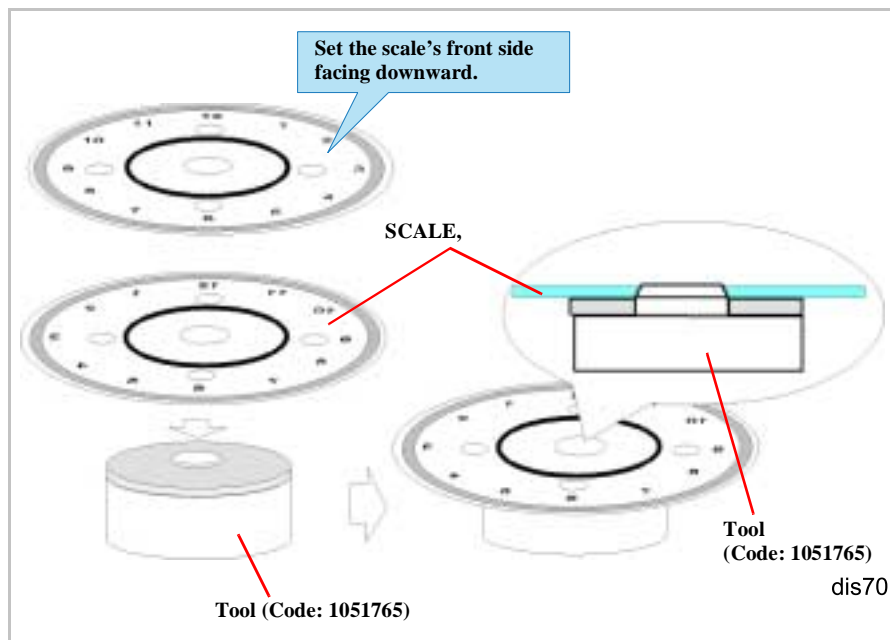


Figure 4-60. Pre-operation for BRACKET, SCALE Installation

4. Set SCALE, PF onto BRACKET, SCALE with its front side facing downward.

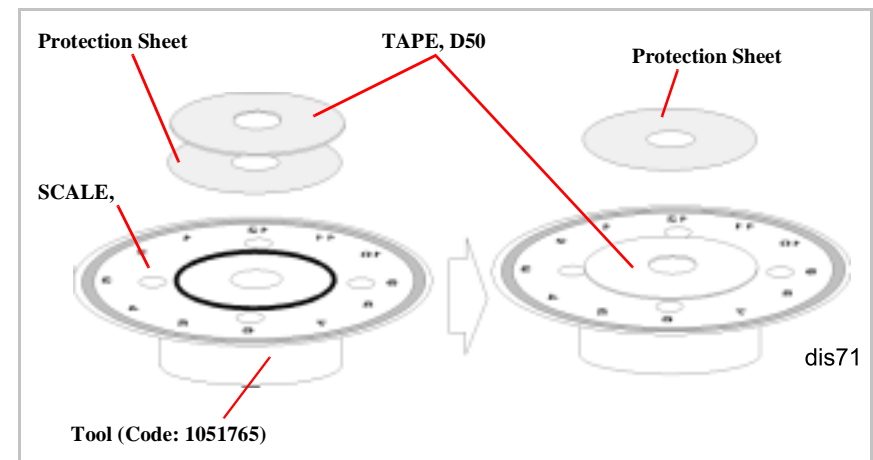


**Figure 4-61. Attaching SCALE, PF**



- **Do not touch the following areas:**
  - Inner side of the SCALE, PF's shaft hole through which the PF Roller Shaft is installed.
  - Printed face of SCALE, PF
- **If BRACKET, SCALE is not aligned with the circle printed on SCALE, PF, it should not be a problem.**

- Remove the base sheet of TAPE, D50 and stick it to SCALE, PF.



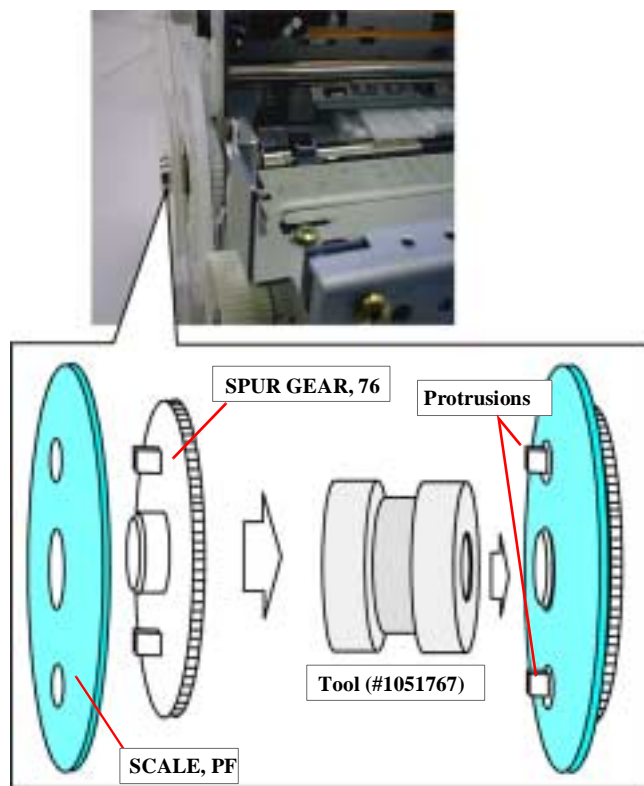
**Figure 4-62. TAPE, D50 Installation**



- If TAPE, D50 is not aligned with the circle printed on SCALE, PF, it should not be a problem.

6. Peel off the protection sheet from TAPE, D50 on SCALE, PF.

7. Fit the round cutouts in SCALE, PF to the protrusions on SPUR GEAR (76) making sure the scale and the gear are parallel. But note you don't attach the scale to the gear yet.
8. Attach SCALE, PF to the gear using "Scale PF unit Assembling tool" (AS tool code: 1051767).

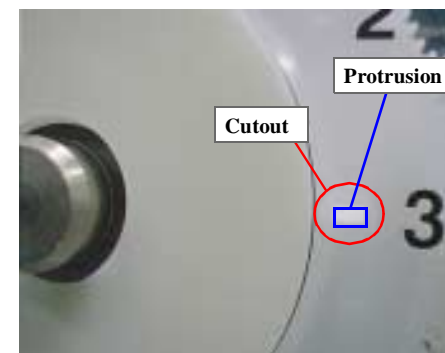


dis72

Figure 4-63. Loop Scale Installation



- Check that the protrusions on the gear (76) are sticking out from the cutouts in the scale.



dis73

- Ensure SCALE, PF is free from any dirt or damage.

## 4.2.14 MOTOR ASSEMBLY, PF Removal

1. Remove HOUSING. (Refer to Section 4.2.1)
2. Remove the ASF Unit. (Refer to Section 4.2.10.)
3. Remove the Carriage Unit. (Refer to Section 4.2.11.)
4. Remove ROLLER, PF. (Refer to Section 4.2.13.)
5. Remove 1 plane washer (4.1x0.5x4.5) fixing the combination gear (13.5, 30) to FRAME, LEFT, and then remove the combination gear.

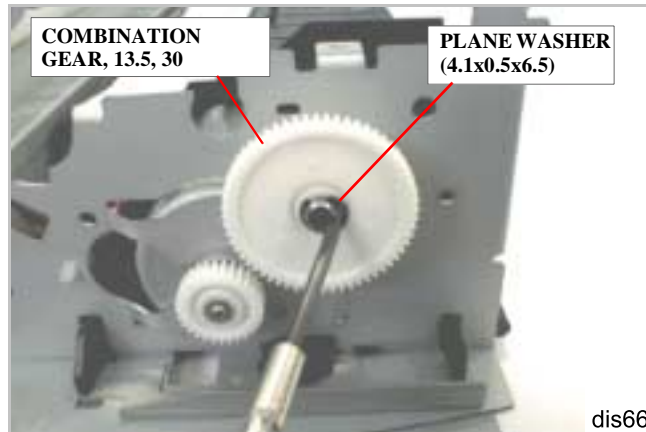
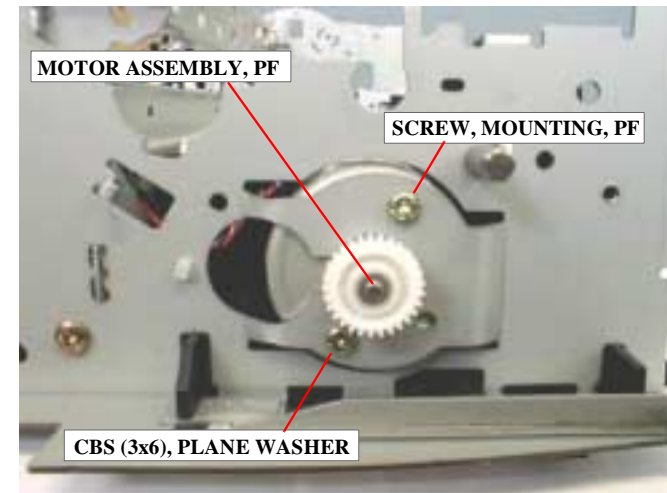


Figure 4-64. Removing COMBINATION GEAR and PLANE WASHER

6. Remove 1 screw (CBS, 3x6), plane washer (3.3x0.5x8), and SCREW, MOUNTING, PF that are securing MOTOR ASSEMBLY, PF to FRAME, LEFT. Then remove MOTOR ASSEMBLY, PF.



dis67

Figure 4-65. PF Motor Removal



Be careful not to damage the teeth of COMBINATION GEAR, 13.5, 30.



If you replace MOTOR ASSEMBLY, PF, adjust backlash for the PF pinion and SPUR GEAR, 76. (See Chapter 5.)



## 4.2.15 PE Sensor Unit Removal

1. Remove HOUSING. (Refer to Section 4.2.1)
2. Remove the ASF Unit. (Refer to Section 4.2.10.)
3. Remove the DE Unit. (Refer to Section 4.2.9.)
4. Remove PAPER GUIDE, RIGHT Unit. (Refer to Section 4.2.13.)
5. Remove the timing belt. (Refer to Section 4.2.11.)
6. Release 2 hooks securing the PE sensor unit to FRAME, TOP, lift up the PE sensor unit, and then remove it to the rear.

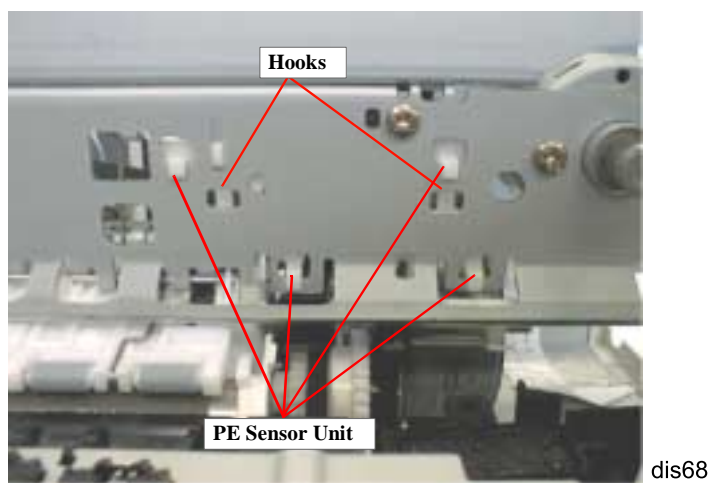


Figure 4-66. PE Sensor Unit Removal

**CHECK  
POINT**



When installing the PE Sensor Unit, ensure that the sensor lever is set in the square hole in PAPER GUIDE, RIGHT Unit. (See Figure 4-59.)

**CHAPTER**

**5**

# **ADJUSTMENT**



## 5.1 Overview

This chapter describes adjustments required if the printer is disassembled and assembled for repair or service.

### 5.1.1 Adjustment Items

Table 5-1 lists the required adjustments for this printer. If any of the services listed in the table below is carried out, all adjustments corresponding to the service items need to be performed to ensure proper operations for this printer.

**Table 5-1. Adjustment Item**

No.	Item	When to perform
1	<b>Parallelism Adjustment</b> (without the adjustment program)	<ul style="list-style-type: none"> <li>When you replace or remove the carriage guide shaft.</li> <li>When you replace or remove the parallelism adjustment bushing.</li> </ul>
2	<b>Backlash Adjustment</b> (without the adjustment program)	<ul style="list-style-type: none"> <li>When you replace the PF motor.</li> <li>When you remove the Gear 76.</li> </ul>
3	<b>Ink Charge</b>	<ul style="list-style-type: none"> <li>When you replace or remove the printhead.</li> </ul>
4	<b>Head ID Input</b>	<ul style="list-style-type: none"> <li>When you replace the printhead.</li> <li>When you replace the main board.</li> </ul> <p><i>NOTE: New head ID is not written until EEPROM is reset.</i></p>
6	<b>Bi-Directional Adjustment</b>	<ul style="list-style-type: none"> <li>When you replace the printhead.</li> <li>When you replace the main board.</li> <li>When you replace the CR motor assembly.</li> <li>When you remove the carriage unit.</li> </ul>
7	<b>Input USB ID</b>	<ul style="list-style-type: none"> <li>When you replace the main board.</li> </ul>
8	<b>Protection Counter Clear</b>	<ul style="list-style-type: none"> <li>When you replace the waste ink pad.</li> </ul>

The table below lists the type of repair and required adjustments in the order to be made.

**Table 5-2. Type of Repair and Required Adjustment**

No.	Type of repair	Required adjustment
1	Printhead removal	<ol style="list-style-type: none"> <li>Head Cleaning</li> <li>Bi-Directional Adjustment</li> </ol>
2	Printhead replacement	<ol style="list-style-type: none"> <li>Head ID Input</li> <li>Ink Charge</li> <li>Nozzle Check</li> <li>Bi-Directional Adjustment</li> </ol>
3	Main board replacement	<ol style="list-style-type: none"> <li>Head ID Input</li> <li>Bi-Directional Adjustment.</li> <li>Input USB ID</li> <li>Protection Counter Clear</li> </ol>
4	Carriage unit replacement or removal	<ol style="list-style-type: none"> <li>Parallelism Adjustment</li> <li>Bi-Directional Adjustment</li> </ol>
5	CR Motor replacement	<ol style="list-style-type: none"> <li>Bi-Directional Adjustment</li> </ol>
6	Printer mechanism replacement	<ol style="list-style-type: none"> <li>Head ID Input</li> <li>Ink Charge</li> <li>Bi-Directional Adjustment</li> </ol>
7	Waste Ink Pad replacement	<ol style="list-style-type: none"> <li>Protection Counter Clear</li> </ol>
8	Replacement or removal of the following parts. 1) PF motor 2) Gear 76 3) PF roller assembly	<ol style="list-style-type: none"> <li>Backlash Adjustment</li> </ol>

## 5.1.2 Adjustment Tools

The table below shows adjustment tools you need for servicing the Stylus Photo 890/1290.

**Table 5-3. Adjustment Tools**

Tool	Type of adjustment	Specifications
Thickness Gauge	<b>Parallelism Adjustment</b>	Thickness: 1.14 mm
Microscope	<b>Backlash Adjustment</b>	Magnified ratio: x 15 Minimum scale: 0.1mm
Service Program	<ul style="list-style-type: none"> <li>• Ink Charge</li> <li>• Head ID Input/Check</li> <li>• Head Cleaning</li> <li>• Refurbishment for DOA</li> <li>• USB ID Input/Check</li> <li>• Bi-Directional Adjustment</li> <li>• Protection Counter Clear</li> <li>• Nozzle Check</li> </ul>	A 3.5- inch HD floppy disk (Choose either Win.95 or 98)



- Never use a deformed (twisted or warped) or rusty thickness gauge.
- Wipe off any dirt, grease, or foreign matter on the thickness gauge before you use it.

## 5.2 Adjustment

This section explains the procedure for each adjustment.

### 5.2.1 Parallelism Adjustment

When you remove/replace the carriage unit, make a parallelism adjustment because you need to remove the parallelism adjustment bushings. This adjustment enables you to provide an appropriate distance between the printhead and platen as well as to set the CR guide shaft in parallel with the paper.

Using the PG adjustment tool is the best way to adjust the PG (Platen Gap) as accurate as possible. You may substitute a thickness gauge (1.14mm) for the PG adjustment tool, however, the accuracy of PG may decline comparing to using the PG adjustment tool.

#### CAUTION

- Do not scratch the special coated surface of the PF roller assembly and rib surface of the front paper guide; B.
- Before starting the adjustment, wipe the PG adjustment tool and thickness gauge with a clean cloth moistened with alcohol.
- Be careful not to damage the printhead surface or leave any dirt on it. (Make sure the PG adjustment tool and thickness gauge is free from any stain, and also do not touch the head surface with the thickness gauge.
- Be sure to perform the Printhead Removal with the ink cartridges installed.

#### 5.2.1.1 Using PG Adjustment Tool

1. Install the right and left Parallel Adjustment Bushings to the printer mechanism by aligning their marks with the notches on the frames.

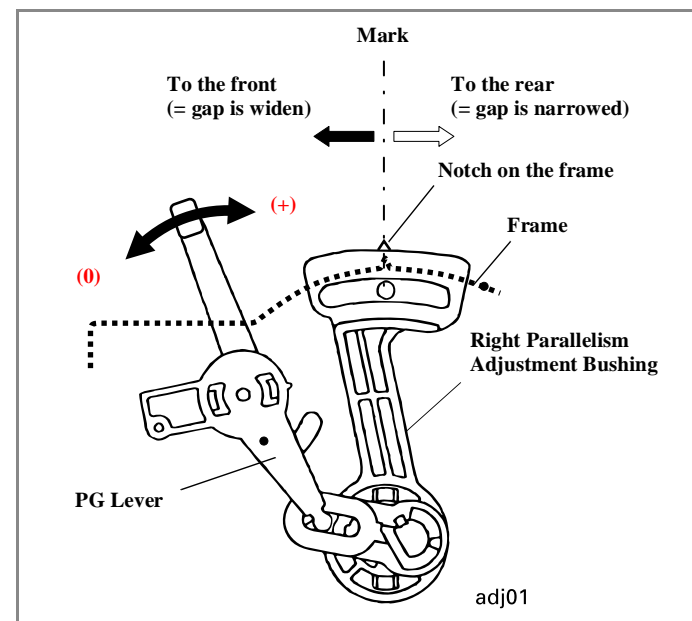


Figure 5-1. Initial Position of the Parallelism Adjustment Bushing

2. Set the PG Lever to the front side (the "0" position).
3. If the Carriage Unit is locked, unlock it by pushing down the lock lever using tweezers.

4. Move the Carriage to the center of the printer mechanism. Put the PG adjustment tool right on the rightmost rib of Paper Guide Front.

CHECK  
POINT



Make sure to align the edge of the PG adjustment tool on the rightmost part of Front Paper Guide with the jut out portion of the tool Part) placed on the rear ditch of Front Paper Guide.

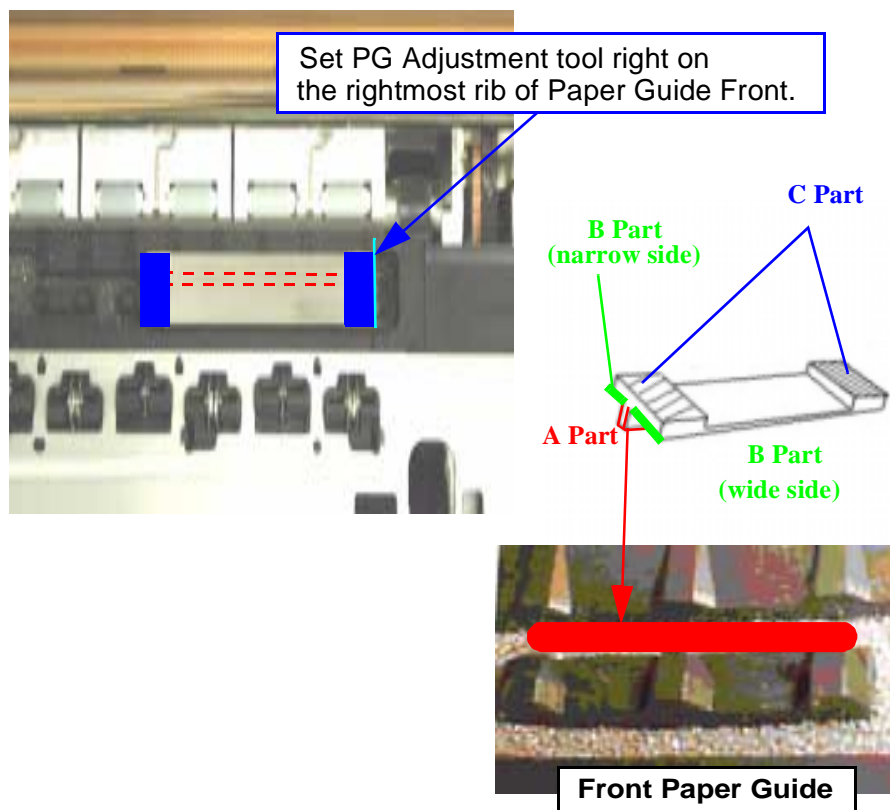


Figure 5-2. Setting PG Adjustment Tool



- To move the Carriage Unit, pull the timing belt with your hand.
- Be careful not to damage the CR scale (linear encoder).

5. Set the PG Lever to the rear side (the “+” position).
6. Move the Carriage to right until it covers the right C part of the PG adjustment tool. Make sure the right edge of the printhead frame is placed right above the C part of the PG adjustment tool.  
Set the PG Lever to the front side (the “0” position).



Table 5-4. Carriage on PG Adjustment Tool

7. Set the Right Parallel Adjustment Bushing forward. By moving the bushing to the back one notch at a time, find the position where the printhead touches the PG adjustment tool. From the touching point, move the bushing forward (Wider PG direction) by one notch.

CHECK  
POINT



- Platen Gap becomes wider when moving the Parallel Adjustment Bushing forward and becomes narrower when moving backward.
- Make a PG adjustment at least 3 times, both sides and repeat one side.
- Make sure a peak portion of the frame engages with a valley portion of Parallel Adjustment Busing.

8. Perform the PG adjustment to the left side.  
Move the Carriage to the center of the printer mechanism. Put the PG adjustment tool right on the leftmost rib of Paper Guide Front.



**Make sure to align the edge of the PG adjustment tool on the leftmost part of Front Paper Guide with the jut out portion of the tool (bottom part) placed on the rear ditch of Front Paper Guide.**

9. Set the Left Parallel Adjustment Bushing forward. By moving the bushing to the back one notch at a time, find the position where the printhead touches the PG adjustment tool. From the touching point, move the bushing forward (Wider PG direction) by one notch
10. Move the PG lever to the rear (+).
11. Move the Carriage Unit over the PG adjustment tool on the left.
12. Bring the PG lever to the front (0).
13. Make the adjustment as in the same manner as in step 6 and 7.
14. Bring the PG lever to the rear (+).
15. Move the carriage back over the PG adjustment tool on the right.
16. Move the PG lever back to the front (0).
17. Make the adjustment again on the Right Parallel Adjustment Bushing. If the result is good, the adjustment is completed.
18. Fasten the bushing screws on both sides.

### 5.2.1.2 Using Thickness Gauge

Using the PG adjustment tool is the best way to adjust the PG (Platen Gap) as accurate as possible. You may substitute a thickness gauge (1.14mm) for the PG adjustment tool, however, the accuracy of PG may decline comparing to using the PG adjustment tool.

1. Follow Step 1 to 3 in 5.2.1.1 "Using PG Adjustment Tool" on page -123.
2. Bring the Carriage to the center of the printer mechanism. Then place the thickness gauges (1.14 mm) on the front paper guide aligning them with the right and left square cutouts in the front paper guide. (See Figure 5-3.)

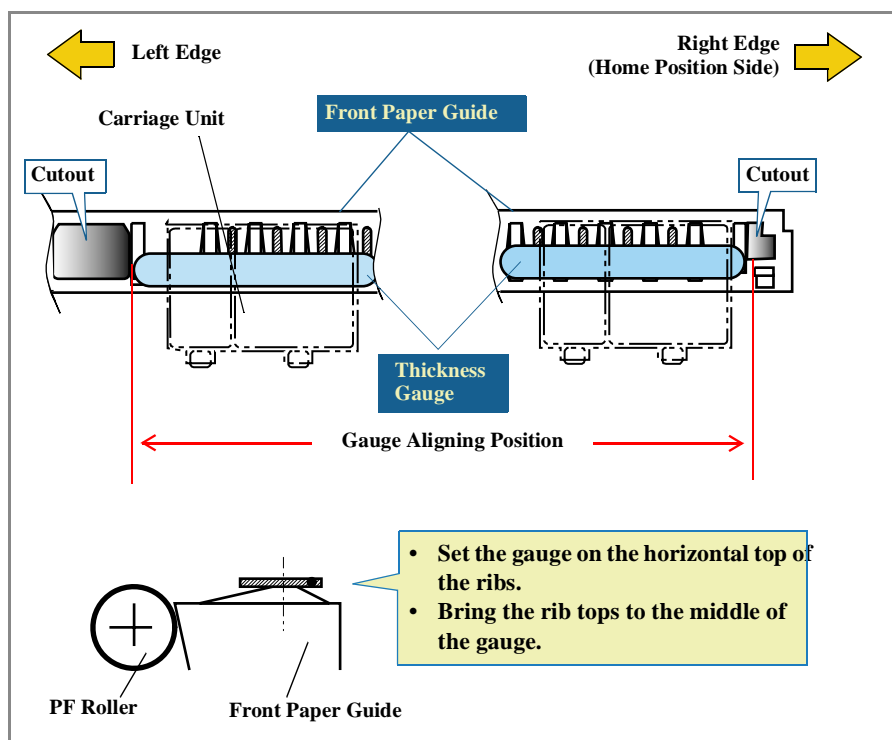


Figure 5-3. Placing the Thickness Gauge



- To move the carriage unit, pull the timing belt with your hand.
- Be careful not to damage the CR scale (linear encoder).

3. Move the Carriage Unit over the gauge on the right.
4. If the printhead does not touch the gauge, turn the bushing to the rear to make the printhead touch the gauge and then, from the touching position, bring the bushing back by one notch. On the other hand, if the printhead already touches the gauge, turn the bushing to the front to make the printhead touch the gauge, and then push the bushing back by one notch.
5. Move the PG lever to the rear (+).
6. Move the carriage unit over the thickness gauge on the left.
7. Bring the PG lever to the front (0).
8. Make the adjustment as in the same manner as in step 4.
9. Bring the PG lever to the rear (+).
10. Move the carriage back over the thickness gauge on the right.
11. Move the PG lever back to the front (0).
12. Make the adjustment again on the right parallelism adjustment bushing. If the result is good, the adjustment is completed.
13. Fasten the bushing screws on both sides.



- Platen Gap becomes wider when moving the Parallel Adjustment Bushing forward and becomes narrower when moving backward.
- Make a PG adjustment at least 3 times, both sides and repeat one side.
- Make sure a peak portion of the frame engages with a valley portion of Parallel Adjustment Busing.

## 5.2.2 Backlash Adjustment

This section describes **Backlash Adjustment** that is to be made after removing the PF motor. This adjustment provides an appropriate backlash (= 0.1 mm or less) for PF motor pinion gear and the gear (76). You need to make this adjustment when you replace any of the following parts:

- PF motor assembly
- Gear 76
- PF roller unit

### CAUTION



Failure in making this adjustment causes the printer to operate abnormally as described below:

- If backlash is too little:
  1. The PF motor does not rotate correctly and paper feeding accuracy declines.
  2. Gear 76 and the PF pinion gear make abnormal noises during printing.
- If backlash is too large, the PF motor does not rotate correctly and paper feeding accuracy declines.

Before you begin, make sure the following parts are removed:

- COMBINATION GEAR, 13.5, 30
- TRAY, ABSORBER ASSEMBLY
- HOUSING, PANEL, LEFT
- HOUSING, REINFORCING, LEFT

See the following figure for locations.

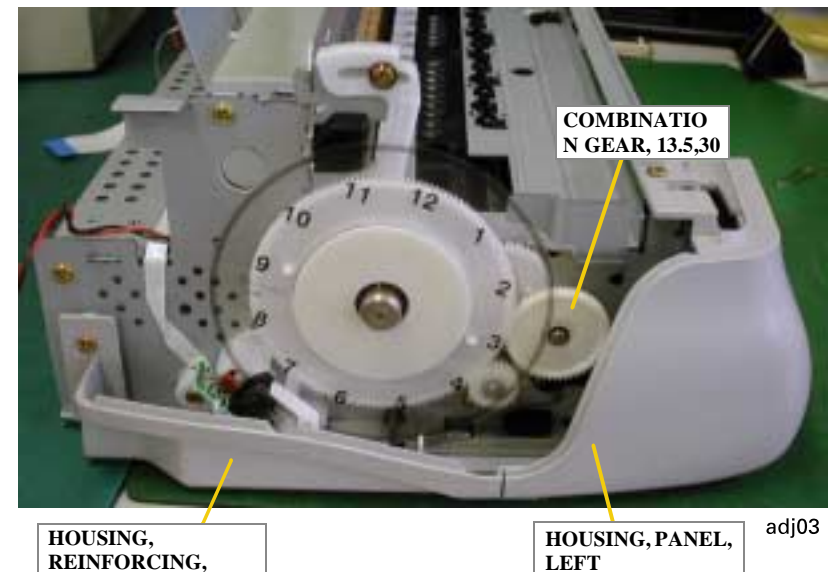


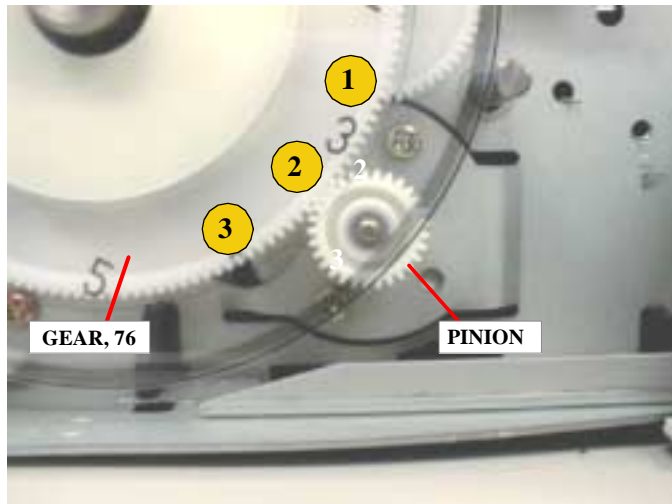
Figure 5-4. Parts to Remove

### CAUTION



Be careful not to damage the PF Loop scale when removing COMBINATION GEAR, 13.5, 30.

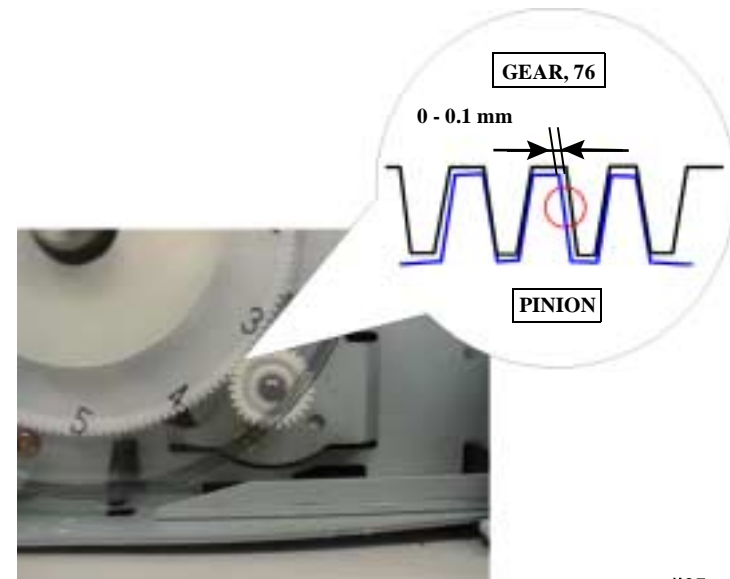
1. Loosen the screw (CBS, 3x6) securing the PF motor assembly to the left frame by rotating it half.
2. Holding the PF motor assembly, get the pinion mesh the gear 76.
3. Press the gear 76 by the point 2 in the figure below lightly and release it to ensure the gear comes back to its original position.



adj04

Figure 5-5. Checking for Gear Engagement

6. Press the gear 76 by the point 2 and release it again to ensure it returns to its original position.
7. Using a microscope, check for a correct backlash. Backlash at its minimum point should be 0 - 0.1 mm. If larger, repeat the adjustment.



adj05

Figure 5-6. Checking for the Backlash

**CAUTION**

When pressing the gear 76 together with the PF scale, be careful not to damage or stain the scale.

- 4) Press the gear by the indicated positions 1 and 3 (each point is 2.5 cm apart from the point 2) and check that the gear squeaks at each point. If not, start over from the step 2.
5. Fasten the screw (CBS, 3x6) to secure the PF motor assembly to the left frame.



### 5.2.3 Adjustment Program Feature

This adjustment program, which is available for both Stylus Photo 890 and Stylus Photo 1290, consists of two independent main programs; Individual Adjustment Program and Sequential Repair Program. The basic adjustment items you can perform using this program are as shown in the following tables:

☐ Individual Adjustment Service Program

This program can independently adjust the service items. The adjustment/maintenance items are shown below.

**Table 5-5. Individual Adjustment Program**

No.	Service Items	Adjustment Items
1	Adjustment	Head ID Input
		Bi-Directional Adjustment
		Input USB ID
2	Maintenance	Head Cleaning
		Ink Charge
		Refurbishment for DOA
		Protection Counter
3	Appendix	CSIC Information
		EEPROM Date
4	Check Pattern Printing	A4 Normal Paper Printing



**Figure 5-7. Independent Adjustment Program Main Menu**

☐ Sequential Repair Service Program

**Table 5-6. Sequential Repair Service Program**

No.	Repair Items	Adjustment Items
1	Printhead Removal	1. Head Cleaning 2. Bi-Directional Adjustment
2	Printhead Replacement	1. Head ID Input 2. Ink Charge 3. Nozzle Check 4. Bi-Directional Adjustment
3	Main Board Replacement	1. Head ID Input 2. Bi-Directional Adjustment 3. Input USB ID 4. Protection Counter Clear
4	Carriage Unit Removal/Replacement	1. Bi-Directional Adjustment
5	CR Motor Replacement	1. Bi-Directional Adjustment

Table 5-6. Sequential Repair Service Program

No.	Repair Items	Adjustment Items
6	Printer Mechanism Replacement	1. Head ID Input 2. Ink Charge 3. Nozzle Check 4. Bi-Directional Adjustment
7	Waste Ink Pads Replacement	1. Protection Counter
8	Clogged Nozzle Recovery	1. Nozzle Check

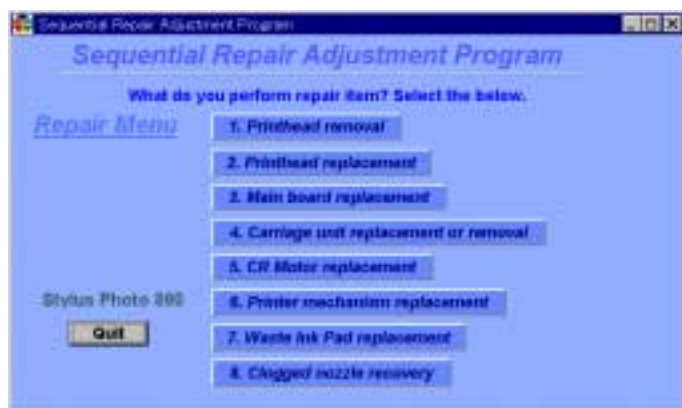


Figure 5-8. Sequential Repair Service Program Main Menu

### 5.2.3.1 How to Install the Program

Before installing the program, note the points below:

- Use Windows 95 or higher.
- Use LPT 1 only as the printer port. (Use a USB interface cable only when performing **Input USB ID**.)

□ Install the program in the order listed below:

1. According to the version of your computer, insert either “Windows 95” or “Windows 98” floppy disk to your computer or select **Service Program** in the CD-ROM.
2. Click **Stylus Photo 870 1270 95 or 98.exe**. The program automatically starts and the initial window appears on the screen.



- While you are running the service program on Windows 95, you can not use EPSON Status Monitor. Therefore, close the printer window on the task bar before you start the program.
- If you can not start the program because LPT1 is set to *ECP Printer Port*, turn it off in the order below:
  1. Delete all printer drivers.
  2. Access *Control Panel>System>Device Manager>Ports* and delete *ECP Printer Port*.)
  3. Reboot the computer.
- If you leave the printer in a non-printing status for 5 minutes or more, the carriage automatically returns to home position. In this case, you need to reboot the computer to run the program.
- Do not change the setting for *Font size* in *Display settings*.
- Be sure to connect a parallel interface cable to the printer before you start the program. Otherwise, the program freezes.
- Do not send any command to the printer during a check pattern print.
- While the service program is running, if the printer is turned off or the interface cable is disconnected, you need to launch the program again.

### 5.2.3.2 How to Uninstall the Program

Access Control Panel> Add/Remove Programs and uninstall the program.

## 5.2.4 Starting the Service Program

### 5.2.4.1 Adjusting Program Initial Setting

In order to start the program, you have to input the following information below:

- ☐ Model Name (Stylus Photo 890/1290)
- ☐ Port Selection (LPT1/2/3)
- ☐ Destination (World only for Stylus Photo 890, World/EAI for Stylus Photo 1290)
- ☐ Program Type (Individual Adjustment Program/ Sequential Repair Service Program)

1. When you start the service program, the initial window appears:



Figure 5-9. Initial Window

2. Select **Model Name**:



Figure 5-10. Model Selection

3. Select **Port**.

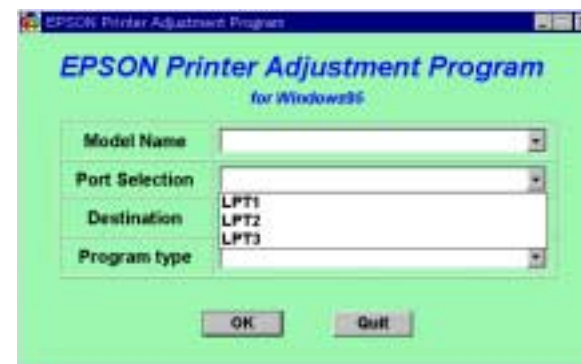


Figure 5-11. Port Selection

4. Select **Destination**.



Figure 5-12. Destination Selection

5. Select **Program Type**.



Figure 5-13. Program Type Selection

6. After choosing four items on the window, click **OK**. If you want to exit the program, click **Quit**.

## 5.3 Individual Adjustment Program

### 5.3.1 Head ID

This adjustment needs to be executed when you replace any of the following parts:

- Printhead
- Main Board
- Printer mechanism

**CAUTION**



- If you replace the printhead, Main Board, or printer mechanism, make this adjustment prior to any other adjustment items.
- This adjustment is very important to keep good printer performance. If an wrong ID is input, the printer will exhibit a dot missing problem or does not print at all.
- After making this adjustment, perform all other necessary adjustments listed in Table 5-2.

**NOTE:** In this section, Stylus Photo 890 program windows are used as examples.

#### 5.3.1.1 Head ID Input

The Head ID is written to the EEPROM on the Main Board with this function.

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 “Adjusting Program Initial Setting” on page -131)
2. Select **Head ID** from the main menu.
3. The **Head ID Adjustment** window appears. Select **Input Head ID** and click **OK**.



Figure 5-14. Head ID Adjustment Window

4. The **Input Head ID** window appears. Enter 13 digit Head ID and click **OK**.



Figure 5-15. Head ID Input

5. The following message appears on the window and the **Head ID Input** is completed.



Figure 5-16. Head ID Input Completed

6. When you exit this window, click Quit. The exit window appears. Click **Quit** and the program is closed. If you want to continue, click **Next**.

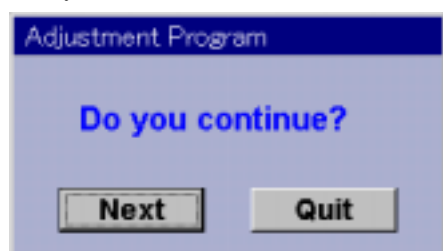


Figure 5-17. Exit Window

### 5.3.1.2 Head ID Check

You can find the Head ID on the following units.

#### □ Where to Find the Head ID

The 13 digit Head ID is written on the label inside the printhead.

The Head ID begins from the upper left to the right. Therefore the Head ID is “W23U3WYXYXOKA” in this case.

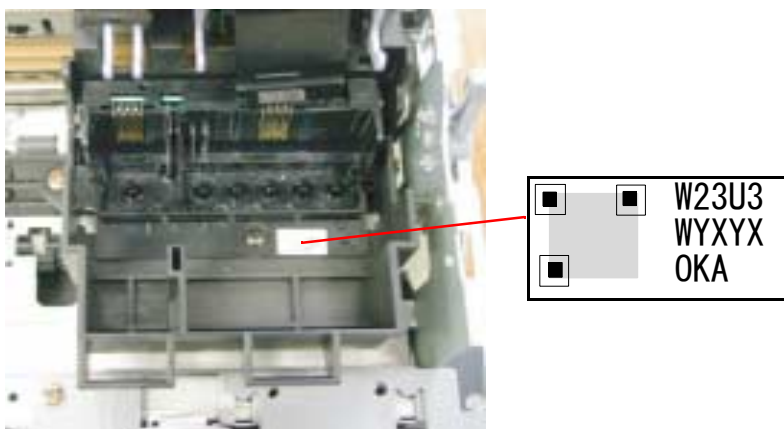


Figure 5-18. Head ID Sample

#### □ Check Current Head ID

You can confirm the present Head ID written in the EEPROM by following the procedures below.

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 “Adjusting Program Initial Setting” on page -131)
2. Select **Head ID** from the main menu.

3. The **Head ID Adjustment** window appears. Select **Check Head ID** and click **OK**.



Figure 5-19. Head ID Adjustment Window

4. The current Head ID is displayed.

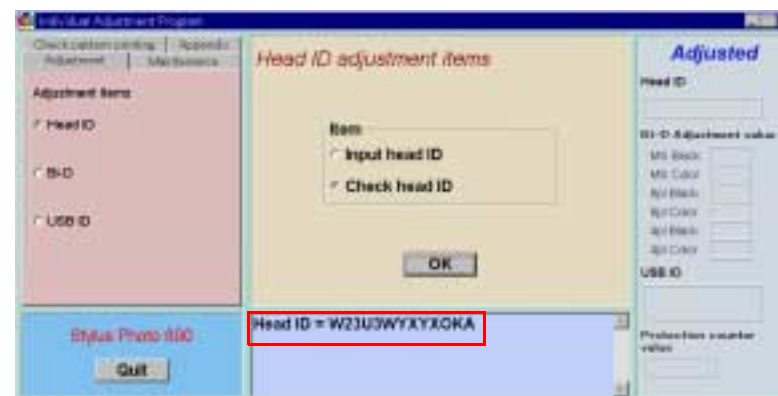


Figure 5-20. Current Head ID Check



- To exit or continue the program, refer to Figure 5-17. "Exit Window" on page -133.



The Head ID Input to EEPROM is not effective until the printer is next turned on.

### 5.3.2 Bi-Directional Adjustment

This adjustment is required when line misalignment (incorrect print timing) between the two directions (from left to right and vice versa) is noticed. The adjustment value is memorized in EEPROM on the main board. You need to make this adjustment under any of the following conditions.

When you:

- Replace the printer mechanism.
- Replace the main board.
- Remove the CR motor.
- Remove the CR unit.

**NOTE:** You are recommended you should make this adjustment if you disassemble the carriage mechanism.

- Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 "Adjusting Program Initial Setting" on page -131)
- Select **Bi-D** from the main menu.

- The **Bi-Directional Adjustment** window appears. Select **Print Bi-D Adjustment Pattern** and click OK.



Figure 5-21. Bi-Directional Adjustment Window

- Click **OK**, and then the **Bi-D Adjustment Patterns** will automatically be printed.



Figure 5-22. Bi-Directional Adjustment Pattern Printing

5. The **Bi-Directional Adjustment patterns** are printed as follows.

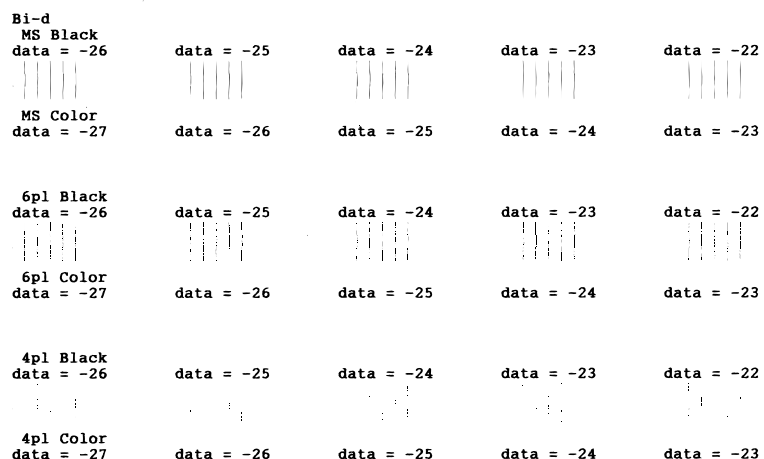


Figure 5-23. First Bi-Directional Adjustment Pattern Sample

**NOTE:** To save sheets of paper during Bi-D Pattern Printing, you can set an initial printing start position by using the track bar on the window. The printing start position can be determined according to the track bar you set. With this function, you can print out the Bi-D Adjustment Patterns twice on an A4 size sheet. (Refer to Figure 5-25)

6. During the adjustment printing, using the track bar is recommended for the second or later test printing to save paper. The track bar can be set to 8 levels. For the second printing, however, setting the bar to the right end is recommended. After setting the bar, click **OK**.

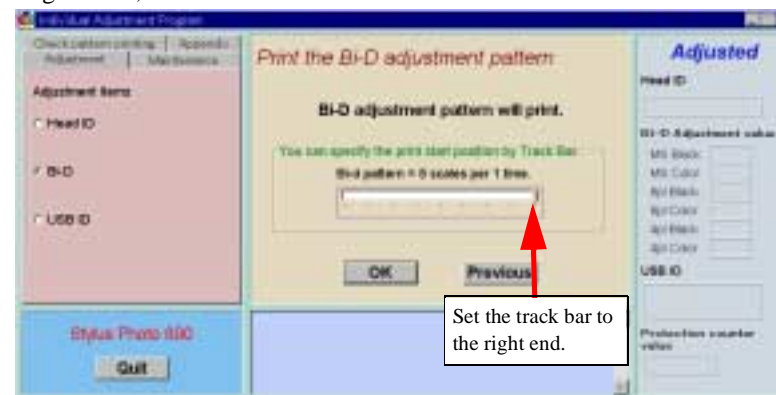
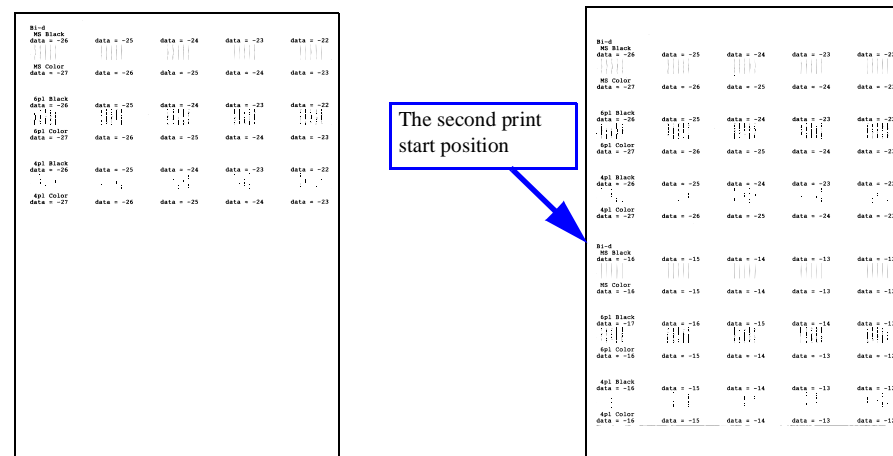


Figure 5-24. Second Bi-Directional Adjustment Pattern Printing

7. The second Bi-D Adjustment Patterns are printed as follows.



After First Pattern Printing

After Second Pattern Printing

Figure 5-25. Second Bi-Directional Adjustment Pattern Sample



8. The following message appears on the window and the **Bi-Directional Adjustment Pattern Printing** is completed.

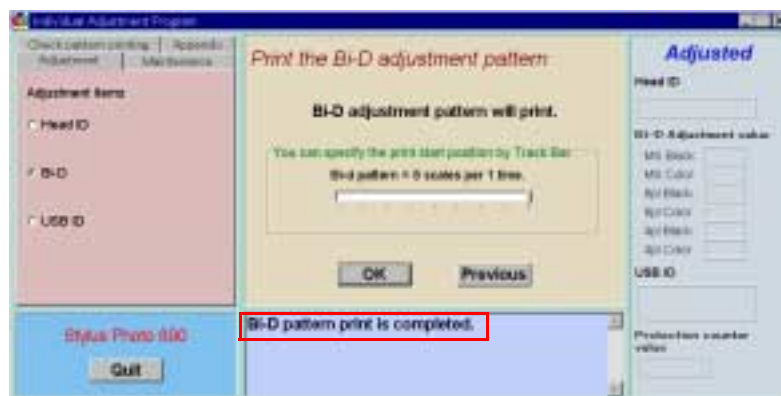


Figure 5-26. Bi-Directional Adjustment Pattern Printing Completed

9. To exit or continue the program, click **Quit** on the lower left. Refer to Figure 5-17, "Exit Window" on page -133.

### 5.3.2.1 Input Bi-D Adjustment Value

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 "Adjusting Program Initial Setting" on page -131)
2. Select **Bi-D** from the main menu.

3. The **Bi-Directional Adjustment** window appears. Select **Input Bi-D Adjustment Value** and click **OK**.



Figure 5-27. Bi-Directional Adjustment Window

4. The **Input Bi-D Adjustment Value** window appears and the current Bi-D Adjustment values are displayed. Referring to the printout, input the setting values using the  $\uparrow$  or  $\downarrow$  key or directly type it in.

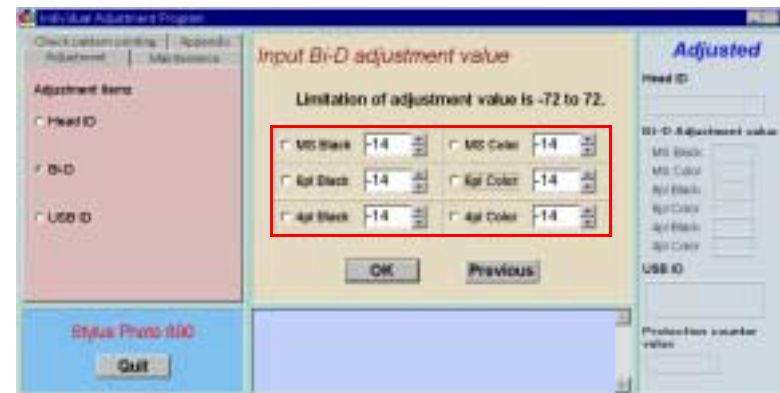


Figure 5-28. Input Bi-D Adjustment Value Window

- When you adjust the setting values, make sure that the Bi-D gap becomes less than 60  $\mu$ m.

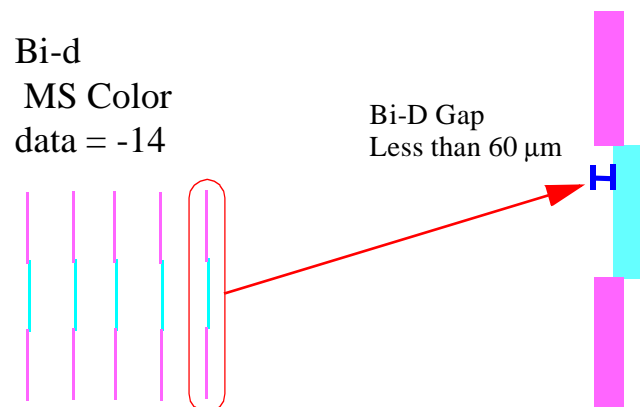


Figure 5-29. Bi-D Adjustment Printing Example

- After changing the values, click **OK**. The following message appears on the window and the **Input Bi-D Adjustment Value** is completed.

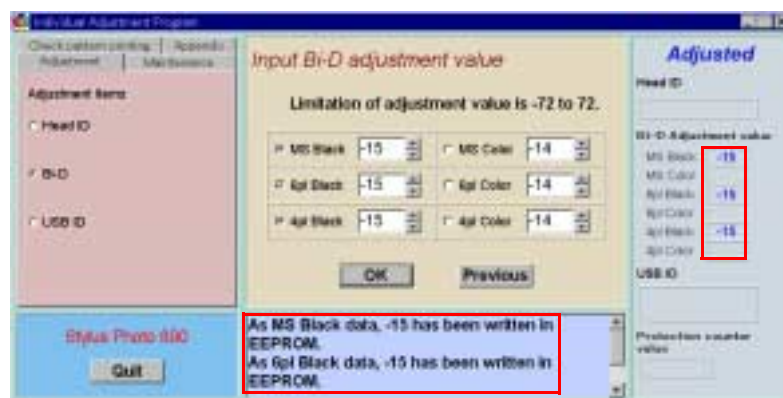


Figure 5-30. Input Bi-D Adjustment Value Completed

- To continue with other mode, click **Previous** and select a different item. Print the Bi-D Adjustment Patterns if necessary.
- Repeat the steps from 1 to 7 until you get the best result.

- To exit or continue the program, click **Quit** on the lower left. Refer to Figure 5-17: "Exit Window" on page -133.

### 5.3.2.2 Check Present Adjustment Data

- Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 "Adjusting Program Initial Setting" on page -131)
- Select **Bi-D** from the main menu.
- The **Bi-Directional Adjustment** window appears. Select **Check Present Adjustment Data** and click **OK**.



Figure 5-31. Bi-Directional Adjustment Window

4. Click **OK** and the present adjustment values are displayed.

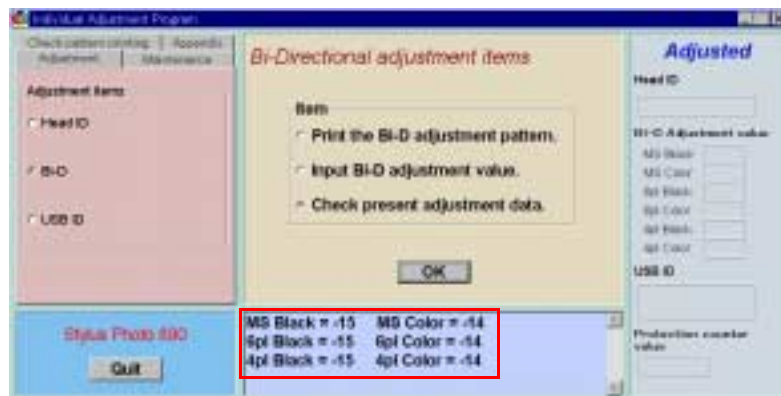


Figure 5-32. Present Adjustment Data Display

5. To exit or continue the program, click **Quit** on the lower left. Refer to Figure 5-17. "Exit Window" on page -133.

**CAUTION**



The setting value is not effective until the printer is turned off and back on. It is because the setting value is stored in EEPROM when the printer is turned off.

### 5.3.3 Input/Check USB ID

You are required to perform **Input USB ID** whenever you replace the main board.

The Stylus Photo 890/1290 is equipped with the USB interface as standard. In the Windows 98 or iMAC environment, the USB port driver controls its device using the USB ID stored in EEPROM. Therefore, you need to input a unique USB ID for a new main board.

During a repair service, a new USB ID is formed with a 10-digit product serial number and the rest (8-digit) produced by the service program. You need to input the new USB ID in EEPROM.

**CAUTION**



You need to input a new USB ID for the following reasons:

1. If the main board is replaced, the ID for the board is no longer used.
2. If the ID is in conflict with an ID used for any other peripheral devices, the printer can not be connected with a USB interface.

### 5.3.3.1 Input USB ID

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 “Adjusting Program Initial Setting” on page -131)
2. Select **USB ID** from the main menu.
3. The **USB ID Adjustment items** window appears. Select **Input USB ID**.



Figure 5-33. Input USB ID Selection

4. Input a 10-digit serial number and click **OK**. The new USB ID number is displayed.

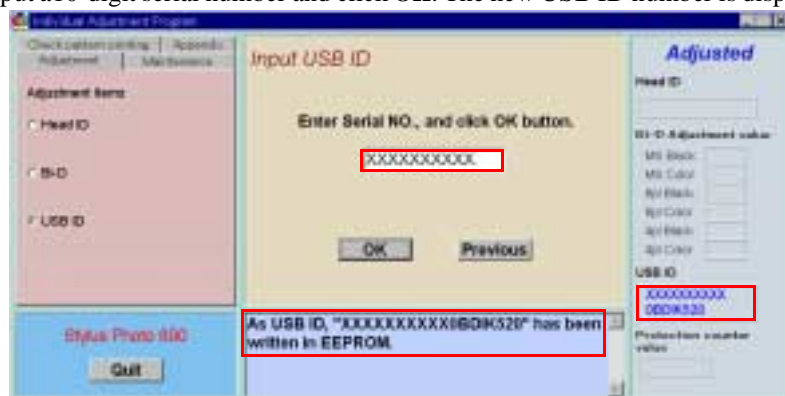


Figure 5-34. USB ID Input Window

5. To exit or continue the program, click **Quit** on the lower left. Refer to Figure 5-17: “Exit Window” on page -133.

### 5.3.3.2 Check USB ID

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 “Adjusting Program Initial Setting” on page -131)
2. Select **USB ID** from the main menu.
3. The **USB ID Adjustment items** window appears. Select **Check USB ID** and click **OK**.



Figure 5-35. Check USB ID Selection

4. A present USB ID is displayed.



Figure 5-36. Present USB ID Displayed

5. To exit or continue the program, click **Quit** on the lower left. Refer to Figure 5-17. "Exit Window" on page -133.

**CAUTION**

- Be sure to input the correct printer serial number. If you input a wrong number, it is still accepted.
- Confirmation of USB port function is effective only under the Windows 98 environment.
- The new ID is not effective until the printer is turned on since the new ID is stored in EEPROM when the printer is turned off.

## 5.3.4 Maintenance

### 5.3.4.1 Head Cleaning Operation

**Head Cleaning** is more powerful than the head cleaning performed by pressing the cleaning button. It is effective when a dot missing problem occurs.

**CAUTION**

Head Cleaning function uses the following amount of ink at a time:

[Stylus Photo 890]

Black ink cartridge: Approximately 1/24

Color ink cartridge: Approximately 1/13

[Stylus Photo 1290]

Black ink cartridge: Approximately 1/24

Color ink cartridge: Approximately 1/20

1. Set A4 Normal Paper on the ASF.
2. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 "Adjusting Program Initial Setting" on page -131)
3. Select **Maintenance Items**.
4. Select **Head Cleaning** from the main menu.
5. The **Head Cleaning** window appears. Click **OK** and then, the printer will start the Head Cleaning operations.



Figure 5-37. Head Cleaning Window



6. When the cleaning is completed, the following message appears on the window.

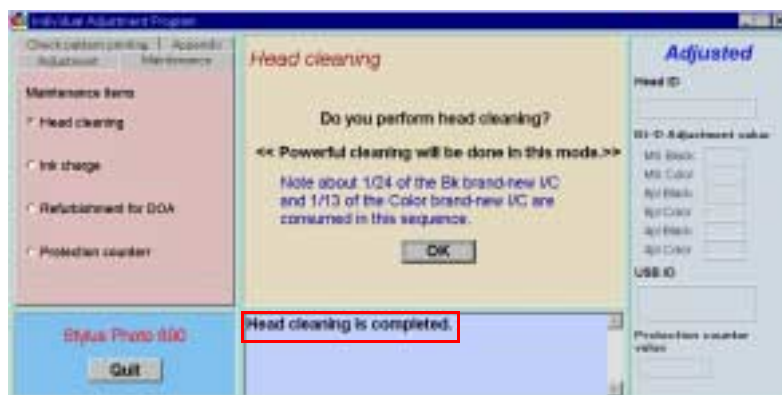


Figure 5-38. Head Cleaning Completed

7. To exit or continue the program, click **Quit** on the lower left. Refer to Figure 5-17, "Exit Window" on page -133.

### 5.3.5 Ink Charge Operation

If the **Head Cleaning** is not powerful enough to solve the dot missing problem, perform **Ink Charge** that consumes more ink.



- The initial ink charge operation consumes the following amount of ink at a time:

[Stylus Photo 890]

Black ink cartridge: Approximately 1/8

Color ink cartridge: Approximately 1/4

[Stylus Photo 1290]

Black ink cartridge: Approximately 1/8

Color ink cartridge: Approximately 1/7

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 "Adjusting Program Initial Setting" on page -131)
2. Select **Maintenance Items**.
3. Select **Ink Charge** from the main menu.
4. The **Ink Charge** window appears. Click **OK** and then, the printer begins the ink charge operation.



Figure 5-39. Initial Ink Charge Window

5. The following message appears. After replacing both black and color I/Cs with new ones, click **Yes**. The printer begins the ink charge operation.

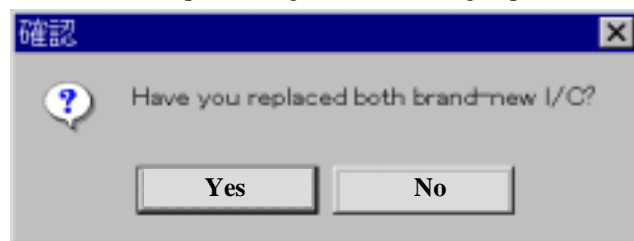


Figure 5-40. I/C Replacement Message

6. When the ink charge is completed, the following message appears on the window.

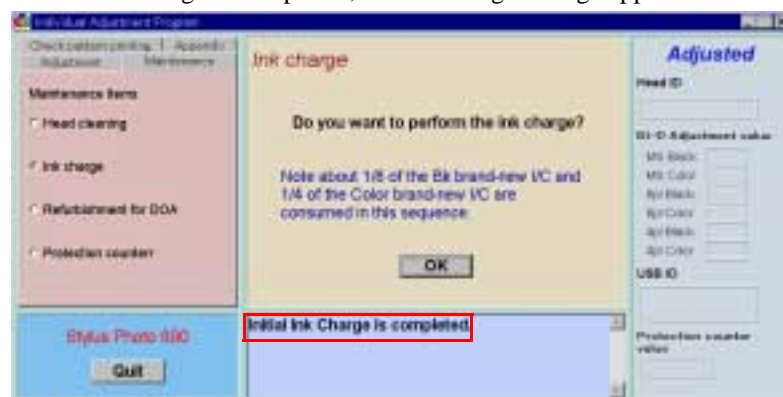


Figure 5-41. Ink Charge Replacement Completed

7. To exit or continue the program, click **Quit** on the lower left. Refer to Figure 5-17, "Exit Window" on page -133.

### 5.3.6 Refurbishment for DOA

This function is used when the cavity of the printhead and cap assembly needs to be cleaned.



- After carrying out this function, replace the Waste Drain Ink Pad with a new one and reset the Waste Drain Ink Pad Counter (Protection Counter). If not, ink or S46 liquid may leak from the ink pad during the transportation.
- Prepare the following tools:
  1. Dummy Ink Cartridges
  2. Injector
  3. S46 Liquid
- This operation is available only once. Do not use this function repeatedly. Repetition of this function may cause overflow of the ink and S46 liquid.
- When you refurbish a repairing product using the program, do it on your responsibility.
- When you charge S46 liquid into dummy ink cartridges with the injector, make sure to full the cartridges up with the S46 liquid. If not, the printhead may not be completely cleaned in this operation.
- Keep the S46 liquid and dummy ink cartridges clean even not in use.

1. Set the dummy cartridges I/Cs filled with S46 to the CR unit.
2. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 "Adjusting Program Initial Setting" on page -131)
3. Select **Maintenance Items**.

4. Select **Refurbishment for DOA** from the main menu and click **OK**.



Figure 5-42. Transportation Liquid Exchange Window

5. Click **OK** and the **Transportation Liquid Exchange Operation** will start.



Figure 5-43. Transportation Liquid Exchange Operation

6. To exit or continue the program, click **Quit** on the lower left. Refer to Figure 5-17. "Exit Window" on page -133.
7. Remove the dummy I/Cs from the CR unit.



## 5.3.7 Protection Counter

This function enables you to check the current value for the protect counter A. The protect counter A monitors the level of waste ink flown into the waste ink absorber. If the wasted ink level exceeds the limit, it will overflow into the printer. To avoid this, the printer indicates “Maintenance Request” when the counter reaches the limit and stops accepting any data except for the power signal from the control panel. During the repair service, you are required to replace the waste ink absorbers and reset the protection counter. For the waste ink absorber replacement procedure, see 4.2.5 “TRAY, ABSORBER ASSEMBLY Removal” on page -91. Note you can also reset the protection counter by the panel operation.

### CAUTION

- **Protection Counter** does not clear “Maintenance Request” but resets the protection counter only.
- To clear “Maintenance Request”, refer to Chapter 1/Section 1.4.4 or Chapter 3/Section 3.1.1.6.

### 5.3.7.1 Check the Present Counter Value

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 “Adjusting Program Initial Setting” on page -131)
2. Select **Maintenance Items**.
3. The **Protection Counter Maintenance** window appears. Select **Check the Present Counter Value** and click **OK**.



Figure 5-44. Protection Counter Maintenance Window

4. The **Check the Protection Counter** window appears. Click **OK**, and the current protection counter value will be displayed.

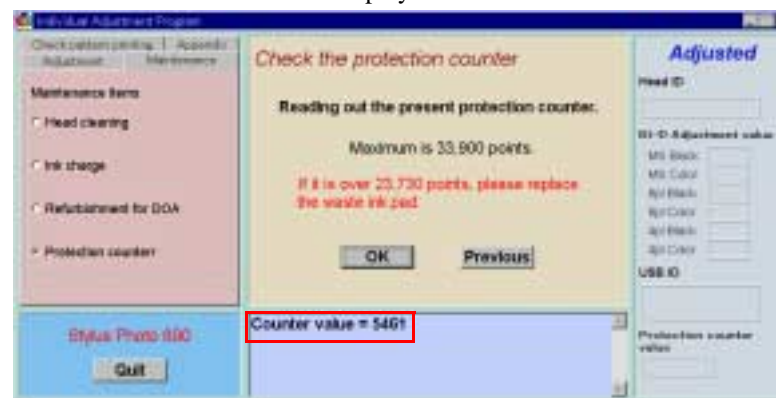


Figure 5-45. Protection Counter Value Displayed

5. To return to the **Check the Protection Counter** window, click **Previous**.
6. To exit or continue the program, click **Quit** on the lower left on the window. (Refer to Figure 5-17. “Exit Window” on page -133.)

### 5.3.7.2 Clear the Protection Counter Value

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 “Adjusting Program Initial Setting” on page -131)
2. Select **Maintenance Items**.

3. The **Protection Counter Maintenance** window appears. Select **Clear the Protection Counter Value** and click **OK**.



Figure 5-46. Protection Counter Maintenance Window

4. The **Clear the Protection Counter** window appears and click **OK**.



Figure 5-47. Clear the Protection Counter Window

5. The following message is displayed. After replacing the Waste Ink Pad with a new one, click **(Y)**.

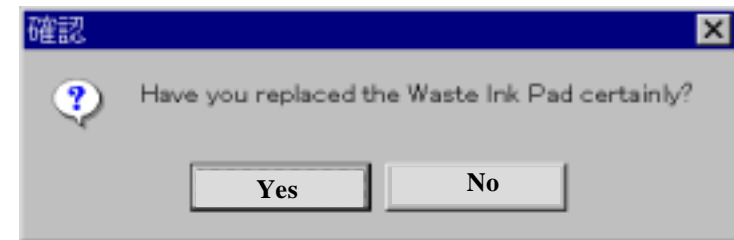


Figure 5-48. Waste Ink Pad Replacement Message

6. The protection counter is cleared and the following message is displayed.



Figure 5-49. Counter Value Display Window

7. To return to the **Check the Protection Counter** window, click **Previous**.
8. To exit or continue the program, click **Quit** on the lower left on the window. (Refer to Figure 5-17. "Exit Window" on page -133.)



- Whenever you reset the protection counter, make sure to replace the Waste Ink Pad with a new one. (Refer to TRAY, ABSORBER ASSEMBLY Removal).

## 5.3.8 Appendix Items

### 5.3.8.1 CSIC Information

CSIC is installed with the data for black and color cartridges in the EEPROM. The EEPROM records the information of black/color ink cartridge life and so on. According to the data in the EEPROM, the information of ink cartridge life and others is displayed on the status windows.

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 “Adjusting Program Initial Setting” on page -131)
2. Select **Appendix Items**.
3. The **Appendix Items** window appears. Select **CSIC Information**.

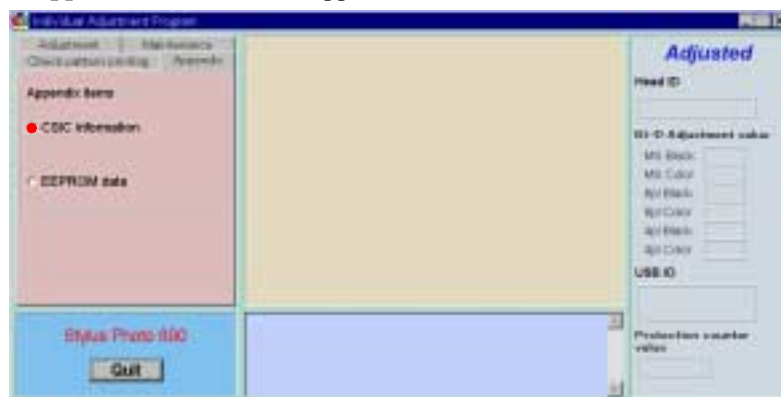


Figure 5-50. CSIC Information Selection

4. Select the necessary item and click **OK**. (e.g. Black Ink Cartridge Unique Information is selected here).  
If you need all of the information listed on the window, select **Print Out All Information**.



Figure 5-51. CSIC Information

5. The selected information is displayed.



Figure 5-52. Black I/C Unique Information

6. To select other items, click **Previous** to return to the **CSIS Information** window.
7. To exit or continue the program, click **Quit** on the lower left on the window. (Refer to Figure 5-17: “Exit Window” on page -133.)

### 5.3.8.2 EEPROM Data Check

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1“Adjusting Program Initial Setting” on page -131)
2. Select **Appendix Items**.
3. The **Appendix Items** window appears. Select **EEPROM Data**.



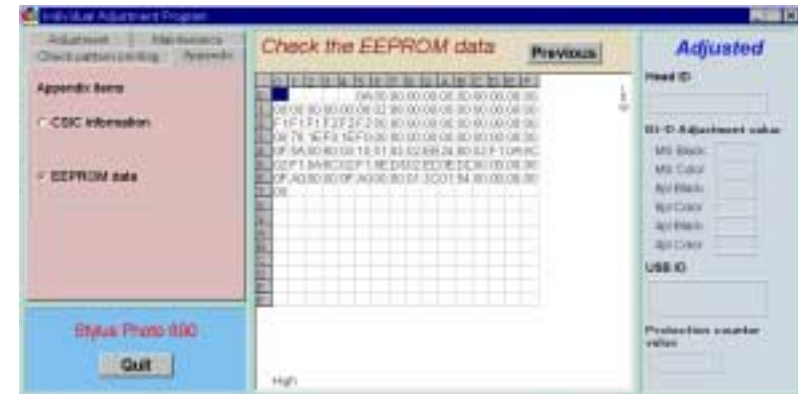
**Figure 5-53. EEPROM Data Selection**

4. Input the reading start address and end address. Click **OK**.



**Figure 5-54. Reading Start/End Address Input**

5. The information of the designated address is displayed as follows.



**Figure 5-55. EEPROM Data Displayed**

- Click **Previous** twice to return to the **EEPROM Data** window.
- To exit or continue the program, click **Quit** on the lower left on the window. (Refer to Figure 5-17, “Exit Window” on page -133.)

### 5.3.8.3 Changing EEPROM Data

1. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 “Adjusting Program Initial Setting” on page -131)
2. Select **Appendix Items**.
3. The **Appendix Items** window appears. Select **EEPROM Data**.

4. The **EEPROM Data** window appears. Select **Change the EEPROM Data**.



Figure 5-56. EEPROM Data Selection

5. Input the EEPROM address and data needs to be changed and click **OK**.



Figure 5-57. EEPROM Data Change Window

6. When the EEPROM data is changed, a new address and data is displayed at the lower left.



Figure 5-58. EEPROM Data Change Completed

7. Click **Previous** twice to return to the **EEPROM Data** window.
8. To exit or continue the program, click **Quit** on the lower left on the window. (Refer to Figure 5-17. "Exit Window" on page -133.)

### 5.3.9 A4 Check Pattern Printing

This function lets the printer to print several test patterns on a A4 paper to allow you to check the adjustment results.

1. Set A4 Normal Paper on the ASF.
2. Start the program and input all the required information on the initial window. Then the main menu appears on the screen. (See 5.2.4.1 "Adjusting Program Initial Setting" on page -131)
3. Select **Check Pattern Printing Items**.



4. The **Check Pattern Printing** window appears. Select **A4 Normal Paper Printing**.



Figure 5-59. A4 Normal Printing Selection

5. Click **OK**. All of the 8 items on the window are printed on A4 Normal sheets.

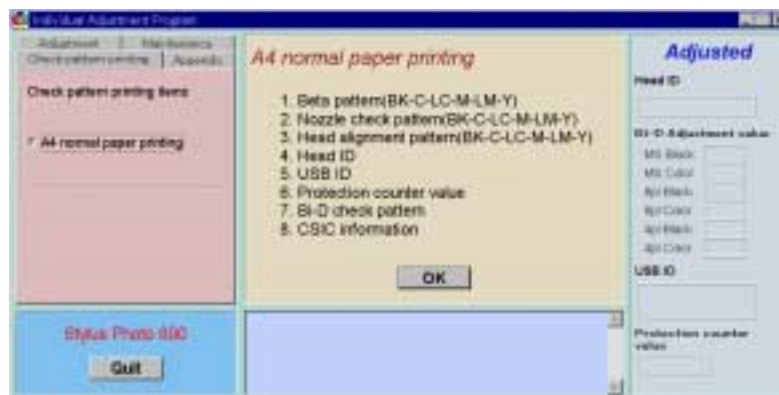


Figure 5-60. A4 Normal Paper Printing

6. When the printing is completed, the following message is displayed on the window.

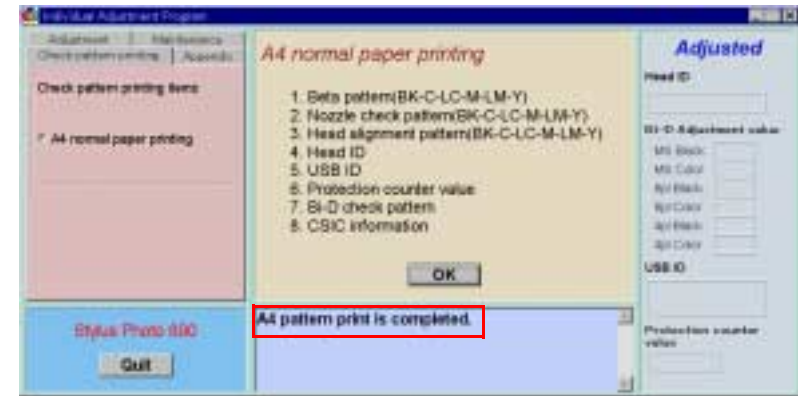


Figure 5-61. A4 Normal Paper Printing Completed

7. To exit or continue the program, click **Quit** on the lower left on the window. (Refer to Figure 5-17. "Exit Window" on page -133.)

## 5.4 Sequential Repair Adjustment Program

This program is common for both Stylus Photo 890 and Stylus Photo 1290.

**NOTE:** In this section, Stylus Photo 890 program windows are used as examples.

### 5.4.1 Function

In this section, the sequential operations needs to be done are explained. This service program provides appropriate adjustment orders for repair, and the following adjustment items are included:

- Printhead Removal
- Printhead Replacement
- Main Board Replacement
- Carriage Unit Replacement/Removal
- CR Motor Replacement
- Printer Mechanism Replacement
- Waste Ink Pad Replacement
- Clogged Nozzle Recovery

#### 5.4.1.1 How to start the program

1. Start the program and input all the required information on the initial window. Make sure to chose **Sequential Repair Adjustment Program** for Program Type. (See 5.2.4.1“Adjusting Program Initial Setting” on page -131)



Figure 5-62. Program Type Selection

2. Select a repair item and click **OK**. The main menu appears.



Figure 5-63. sequential Repair Adjustment Program Main Menu

### 5.4.1.2 Printhead Removal

When you remove the printhead and reinstall it, select this function and execute the operations following the procedures below.

1. Reinstall the printhead to the carriage unit of the under-repair printer mechanism.
2. Select **Printhead Removal** from the main menu.
3. Select **Head Cleaning** and click **OK**. For detailed information on the ink consumption amount during the Head Cleaning operation, refer to 5.3.4.1 "Head Cleaning Operation" on page -141.



Figure 5-64. Head Cleaning Window

4. When the **Head Cleaning** is completed, the following message is displayed on the window.

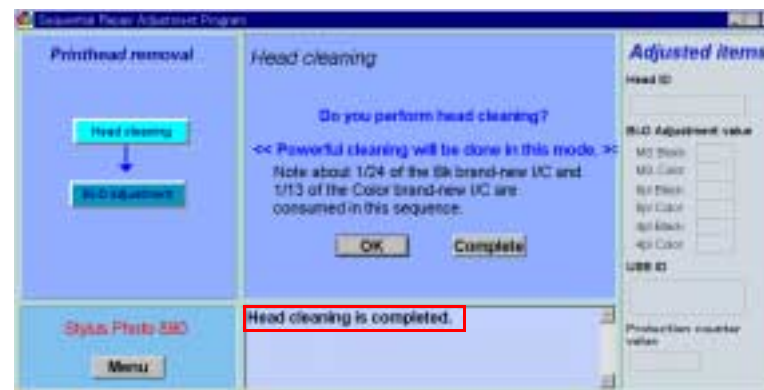


Figure 5-65. Head Cleaning Completed

5. Select **Bi-D Adjustment** and click **Print**. According to the printed Bi-D Adjustment Pattern, continue the adjustment until you get the best result. If you need to change the Bi-D Adjustment values, click **Adjust** and change the adjustment values. Refer to 5.3.2 "Bi-Directional Adjustment" on page -135.



Figure 5-66. Bi-D Adjustment Pattern Printing

**NOTE:** To save sheets of paper during Bi-D Pattern Printing, you can set an initial printing start position by using the track bar on the window. The printing start position can be determined according to the track bar you set. Refer to 5.3.2 "Bi-Directional Adjustment" on page -135.



6. When the Bi-D pattern printing is finished, the following message is displayed. Click **Complete**.

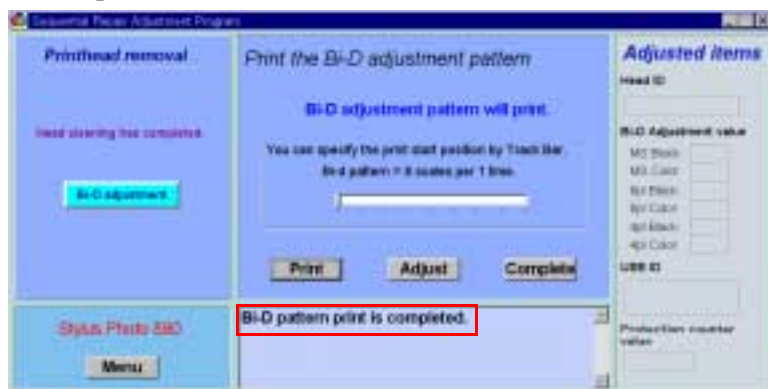


Figure 5-67. Bi-D Pattern Printing Completed

7. The following message appears. All of the Printhead Removal operations are completed.



Figure 5-68. Printhead Removal Operations Completed

8. To return to the main menu, click the **Menu** button at the lower left.

### 5.4.1.3 Printhead Replacement

1. Replace the printhead with a new one. Select **Printhead Replacement** from the main menu.
2. The Head ID window appears. Input a 13-digit Head ID and click **OK**.

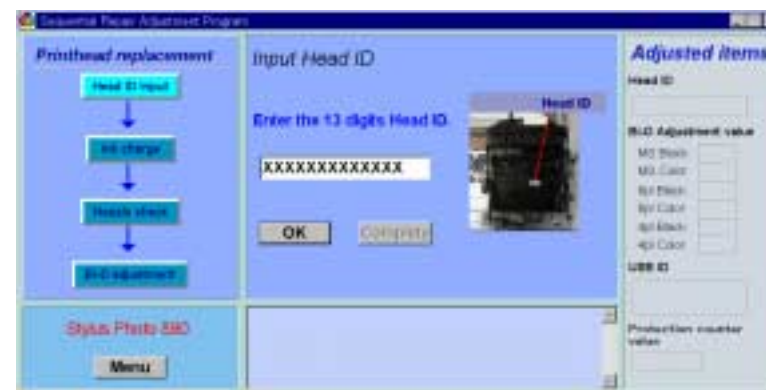


Figure 5-69. Head ID Input Window

3. The following message, "As head ID, 'xxxxxxxxxxxxx' has been written in EEPROM" is displayed. Click **Complete**.
4. Select **Ink Charge**. For the procedures, refer to 5.3.5 "Ink Charge Operation" on page -142.

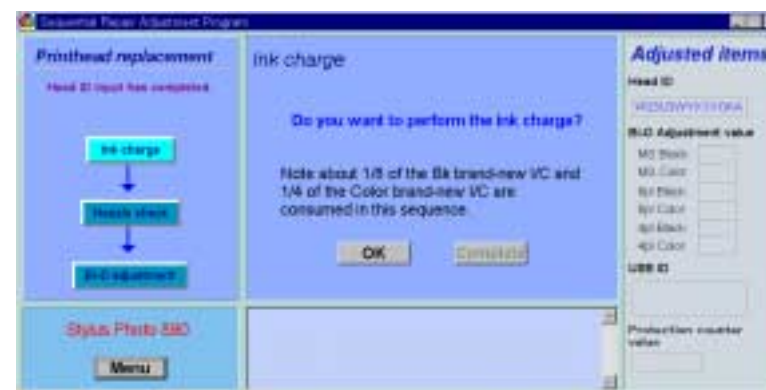


Figure 5-70. Ink Charge Window

5. Execute **Nozzle Check**. Refer to 5.4.1.9“Clogged Nozzle Recovery” on page -154.
6. Execute **Bi-D Adjustment**. Refer to 5.3.2“Bi-Directional Adjustment” on page -135

#### 5.4.1.4 Main Board Replacement

1. Select **Main Board Replacement** from the main menu.
2. Execute **Head ID Input**. Refer to 5.4.1.3“Printhead Replacement” on page -153.
3. Execute **Bi-D Adjustment**. Refer to 5.3.2“Bi-Directional Adjustment” on page -135.
4. Execute **USB ID Input**. Refer to 5.3.3“Input/Check USB ID” on page -139.
5. Execute **Protection Counter Clear**. Refer to 5.3.7“Protection Counter” on page -145.

#### 5.4.1.5 Carriage Unit Replacement/ Removal

1. After removing or replacing the Carriage Unit with a new one, select **Carriage Unit Replacement/Removal** from the main menu.
2. Execute **Bi-D Adjustment**. Refer to 5.3.2“Bi-Directional Adjustment” on page -135.

#### 5.4.1.6 CR Motor Replacement

1. After replacing the CR Motor, select **CR Motor Replacement** from the main menu.
2. Execute **Bi-D Adjustment**. Refer to 5.3.2“Bi-Directional Adjustment” on page -135.

#### 5.4.1.7 Printer Mechanism Replacement

Make this adjustment when you replace the printer mechanism with a new one. Since the Printer Mechanism Replacement Procedures are the same as those of the Printhead Replacement, refer to 5.4.1.3“Printhead Replacement” on page -153.

#### 5.4.1.8 Waste Ink Pad Replacement

When you replace the Waste Ink Pad with a new one, the protector counter needs to be cleared.

1. Select **Waste Ink Pad Replacement** from the main menu.
2. Execute **Protection Counter Clear**. Refer to 5.3.7“Protection Counter” on page -145.

#### 5.4.1.9 Clogged Nozzle Recovery

1. Select **Clogged Nozzle Recovery** from the main menu.
2. Select **Nozzle Check** and click **Print**. If a dot missing problem occurs, click **Cleaning** to execute nozzle cleaning. Repeat the procedures, if necessary, until the nozzle problem is recovered.
3. The **Nozzle Check Patter** is printed as follows.



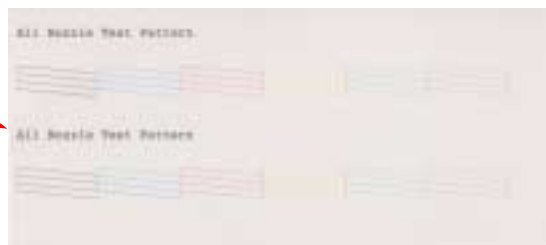
**Figure 5-71. Nozzle Check Pattern Sample**

**NOTE:** To save sheets of paper during Nozzle Check Pattern Printing, you can set an initial printing start position by using the track bar on the window. The printing start position can be determined according to the track bar you set. With this function, you can print out Nozzle Check Printing Patterns multiple times on an A4 size sheet.

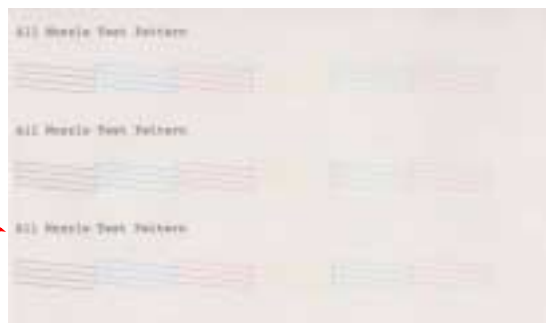
4. For the second or later test printing using, using the track bar is recommended to save paper. The track bar can be set to 8 levels. For the second printing, setting the bar to the first is recommended. After setting the bar, click **OK**.

5. The second or third test printing patterns are printed as follows.

The Second Nozzle Check Pattern starts from here.



The Third Nozzle Check Pattern starts from here.



**Figure 5-72. Second/Third Nozzle Check Pattern Printing Sample**

6. When the Nozzle functions properly, click **Complete**.
7. To return to the main menu, click the **Menu** button at the lower left.

**CHAPTER**

**6**

# **MAINTENANCE**

## 6.1 Overview

This section describes points and procedures for maintaining the printer in its optimum condition.

### 6.1.1 Cleaning

The printer has no mechanical components which require regular cleaning. Therefore, note that the points suggested below are only to check for dirt, and cleaning should be performed upon necessity.

#### CAUTION



- **Never use chemical solvents, such as thinner, to clean the printer. These chemicals can damage the printer components.**
- **Be careful not to damage the components in attempt to clean inside the printer.**
- **Do not scratch the surface of “ROLLER, ASSEMBLY, PF”. (Use a soft brush to wipe off the dust, or use a soft cloth moistened with alcohol.)**

#### □ **Housing:**

Use a soft clean cloth moistened with water to wipe off any dirt. If the housing is stained with ink, use a cloth moistened with neutral detergent to wipe it off.

#### □ **Inside the Printer:**

Use a vacuum cleaner to remove any paper dust.

### 6.1.2 Service Maintenance

If print irregularity (missing dot, white line, etc.) has occurred or the printer indicates “Maintenance Error”, take the following actions to clear the error.

#### 6.1.2.1 Head Cleaning

The printer has a built-in head cleaning function, which is activated through the control panel operation. Run a head cleaning in the following order:

1. Confirm that the printer is in stand-by state. (The power lamp is not blinking.)
2. Hold down the cleaning button on the control panel for 3 seconds or longer. (The power LED blinks during the cleaning.)

#### 6.1.2.2 Maintenance Request Error Clear

Ink is used for cleaning as well as printing. During cleaning, the printer drains some ink into the waste ink pads. The protection counter A in EEPROM on the main board keeps track of the quantity of ink drained into the waste ink pads. When the counter reaches the predefined service limit, the printer assumes the waste ink pad is full of ink and requests ink pad replacement by indicating a maintenance request error.

#### □ **Service limit of the protection counter A:**

The service limit of the protection counter A = 35400

#### □ **Timing for replacing the waste ink pad:**

When the total amount of the waste ink reaches the predetermined limit, a maintenance error occurs. In this condition, the printer does not accept any input but from the power button.

- Current counter value can be found on a status print sheet that also shows the firmware version, selected code page, and nozzle check pattern. During servicing, you are required to check the counter value and if the counter is close to its limit, notify your customer of the situation and recommend that the waste ink pad be replaced (If the waste ink pad is not replaced at that time, there is a possibility that a maintenance error will occur soon after the printer is returned to the customer). Once you have the confirmation of the customer, replace the waste ink pad and reset the counter.
- The counter limit is generally 25000 pages and 10000 pages for black and color, respectively. In normal use, the counter reaches the limit in 5 years.

- ❑ **Replacement procedure:**  
Refer to Section 4.2.5.
- ❑ **Operation after replacement:**  
Perform “Waste ink counter reset”. Refer to Chapter 1/Section 1.4.4 for details.

### 6.1.3 Lubrication

The type and amount of oil and grease used to lubricate the printer parts are determined based on the results of internal evaluations. Therefore, be sure to apply the specified type and amount of oil and grease to the specified part of the printer mechanism during servicing.



- Never use oil and grease other than those specified in this manual. Use of different types of lubricant can damage the printer and its components.
- Never apply larger amount of lubricant than specified in this manual.

**Table 6-1. Specified Lubricants**

Type	Name	EPSON Code	Supplier
Grease	G-26	B702600001	EPSON
Grease	G-56	1059150	EPSON
Oil	O-12	1038991	EPSON

Table 6-2. Lubrication Point

	Lubrication Point	Lubricant Type & Amount	Refer to:
1	<b>COMBINATION GEAR, 12, 22.92, LEVER ASSY</b> <ul style="list-style-type: none"> <li>Using a brush, apply the grease evenly to the inside surface of the bushing except for the part in which E-Ring is installed.</li> </ul>	G-26	Page 161
2	<b>BUSHING, 12, RIGHT</b> <ul style="list-style-type: none"> <li>Using a brush, apply the grease evenly to the inside surface of the bushing.</li> </ul>	G-26 A 3-mm wide bead	Page 161
3	<b>HOLDER, PULLEY, DRIVEN</b>	G-26 φ 1 x 3mm (for each of the 4 points)	Page 161
4	<b>BUSHING, 12, LEFT</b> <ul style="list-style-type: none"> <li>Using a brush, apply the grease to the inside surface of the bushing.</li> </ul>	G-26 A 3-mm wide bead	Page 162
5	<b>BUSHING, 6</b> <ul style="list-style-type: none"> <li>Using a brush, apply the grease to the inside surface of the bushing.</li> </ul>	G-26 A 1-mm wide bead	Page 162
6	<b>PULLEY, DRIVEN</b> <ul style="list-style-type: none"> <li>Apply the grease to the flat surface.</li> </ul>	G-26 φ 1 x 1mm (2 points)	Page 163
7	<b>SHAFT, PULLEY, DRIVEN</b>	G-26 φ 1 x 1mm	Page 163
8	<b>COMBINATION GEAR, 12, 22.4</b> <ul style="list-style-type: none"> <li>Using a dispenser, apply the oil to the entire inside circumference of the gear.</li> </ul>	O-12	Page 163
9	<b>COMBINATION GEAR, 14, 28</b> <ul style="list-style-type: none"> <li>Using a flux dispenser, apply the oil to the entire inside circumference of the gear.</li> </ul>	O-12	Page 163
10	<b>Shaft C</b> <ul style="list-style-type: none"> <li>Using a brush, apply the oil to the whole surface of Shaft C with G-26.</li> </ul>		Page 163

Table 6-2. Lubrication Point (continued)

	Lubrication Point	Lubricant Type & Amount	Refer to:
11	<b>FELT, D3.6 for COMBINATION GEAR 12, 22.4 (set the felt to Shaft B)</b> <ul style="list-style-type: none"> <li>Lubricate the inner all part of the Combination Gear, 12,22.4 with O-12 by brush.</li> <li>Dip the felt in the oil to soak it</li> <li>Insert the Felt, D3.6 with O-12 to Shaft B.</li> </ul> <b>NOTE:</b> 1) Do not use Felt with white core. 2) Do not spill on Lever Planet Unit during insertion of Felt. 3) Do not hang down oil to any part except on the shaft.	O-12 Soak in.	Page 163
12	<b>FELT, D3.6 for COMBINATION GEAR 14, 28 (set the felt to Shaft A)</b> <ul style="list-style-type: none"> <li>Lubricate the inner all part of the Combination Gear, 14,28 with O-12 by brush.</li> <li>Dip the felt in the oil to soak it</li> <li>Insert the Felt, D3.6 with O-12 to Shaft A.</li> </ul> <b>NOTE:</b> 1) Do not use Felt with white core. 2) Do not spill on Lever Planet Unit during insertion of Felt. 3) Do not hang down oil to any part except on the shaft.	O-12 Soak in.	Page 163
13	<b>Groove on "ROLLER, PF"</b> <ul style="list-style-type: none"> <li>Apply the grease to the groove on the Roller PF.</li> </ul>	G-26 φ 1 x 5mm	Page 164
14	<b>Contact area for ROLLER, EJECT and GROUND SPRING, EJECT</b> <ul style="list-style-type: none"> <li>Apply the grease while rotating the shaft.</li> </ul>	G-26 φ 1 x 2mm	Page 164

Table 6-2. Lubrication Point (continued)

	Lubrication Point	Lubricant Type & Amount	Refer to:
15	<b>Contact areas for ROLLER, PF and PAPER GUIDE, REAR</b> <ul style="list-style-type: none"> <li>Apply the grease to the contact area while rotating the shaft.</li> </ul> <p><i>NOTE: Do not get the grease on the specially coated area of ROLLER, PF.</i></p>	G-26 φ 1 x 1/2 of the circumference	Page 164
16	<b>PAPER GUIDE, FRONT (6 points)</b> <ul style="list-style-type: none"> <li>Lubricate slots(4) and hooks(2) of Paper Guide Front with G-26 using syringe.</li> </ul>	G-26 <ul style="list-style-type: none"> <li>φ 1 x 2mm (Eject Roller side-[2])</li> <li>φ 1 x 10mm (PF Roller side[1])</li> <li>φ 1 x 2mm([2] hooks &amp; [1] slot)</li> </ul>	Page 164
17	<b>SHAFT, CR</b> <ul style="list-style-type: none"> <li>Apply G-56 on Shaft, CR (2 spots).</li> <li>After applying the grease, move the Carriage to left to right to distribute the grease evenly on the shaft.</li> </ul>	G-56	Page 165
18	<b>COMBINATION GEAR 13.5, 30 shaft in FRAME, LEFT</b>	G-26 φ 1 x 5mm	Page 165

Table 6-2. Lubrication Point (continued)

	Lubrication Point	Lubricant Type & Amount	Refer to:
19	<b>LD Roller Assy hole in the FRAME, ASF; B</b> <ul style="list-style-type: none"> <li>Using a brush, apply the grease evenly to the entire inside surface of the hole.</li> </ul>	G-26 φ 1 x 1mm	Page 165
20	<b>Latches (right &amp; left) in the Hopper Assy along which the hopper release levers turn (2 spots).</b> <ul style="list-style-type: none"> <li>Use a brush to apply the grease.</li> </ul>	G-26 A 2-mm wide bead for each one.	Page 166
21	<b>GUIDE PLATE, CR</b> <ul style="list-style-type: none"> <li>Apply the grease to the Carriage using the Guide Place CR Lubricating jig.</li> <li>Spread the G-26 evenly by moving the Carriage once.</li> </ul>	G-26 φ 1 x 270mm(See the figure for length.)	Page 166



- Never apply oil directly to the CR guide shaft. This may cause a fatal damage to the main components of the printer.
- Avoid applying too much oil to the oil pad. Otherwise, you may critically damage the main components of the printer.



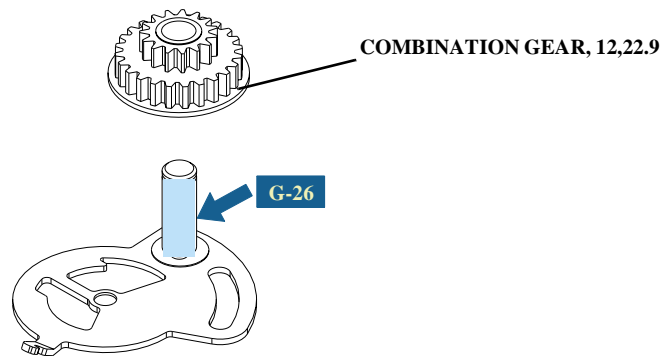


Figure 6-1. Lever Assy, Combination Gear, 12,22.92

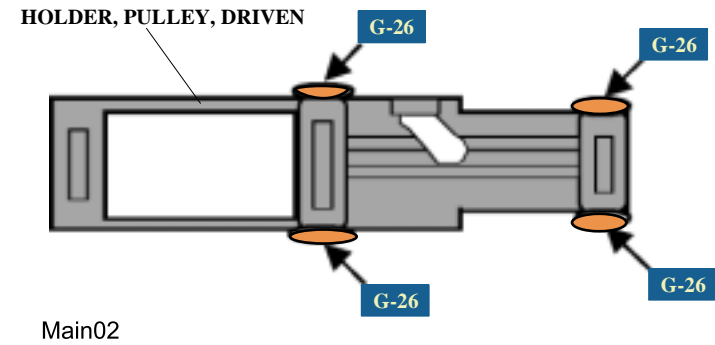
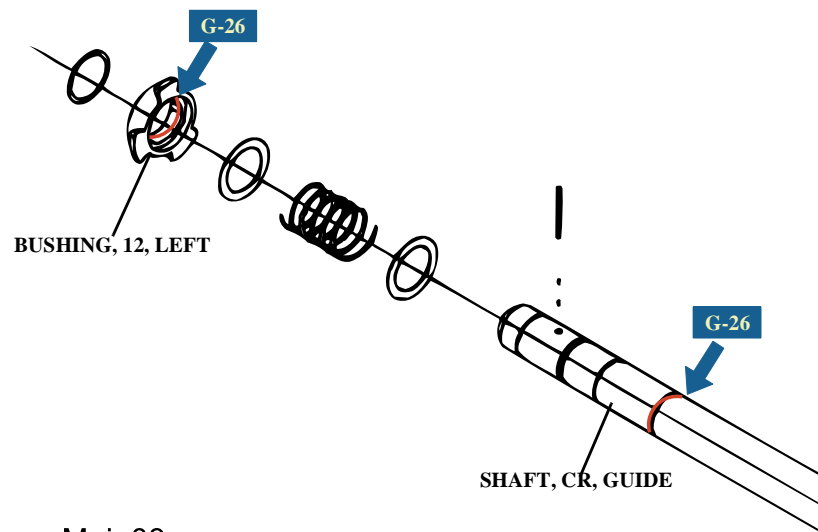


Figure 6-3. Holder, Pulley, Driven



Main01

Figure 6-2. Bushing, 12, Right



Main03

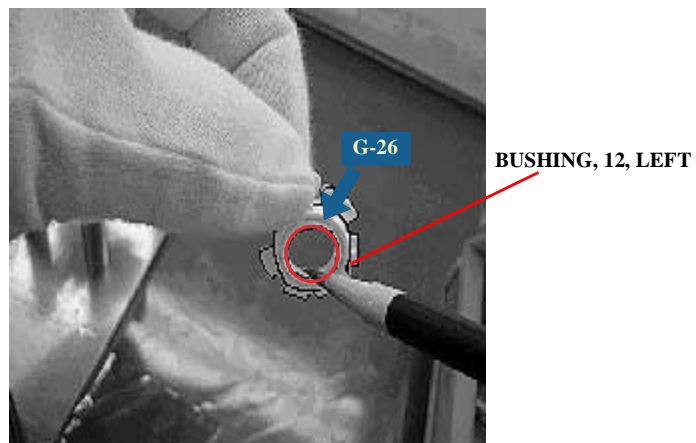
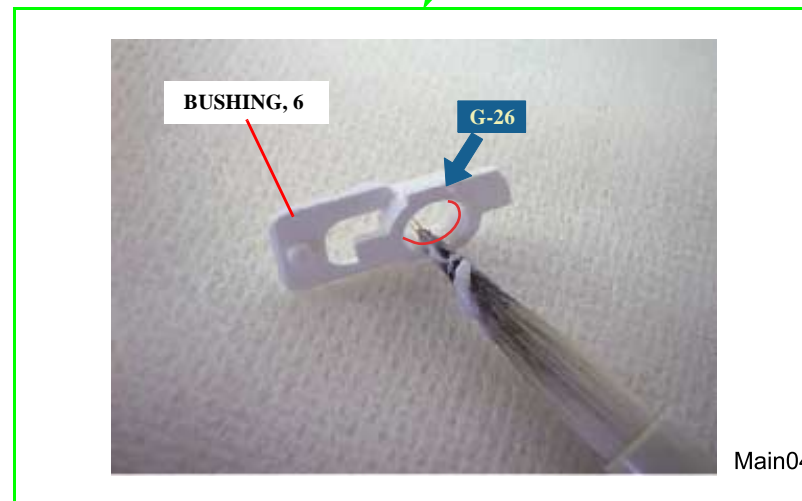
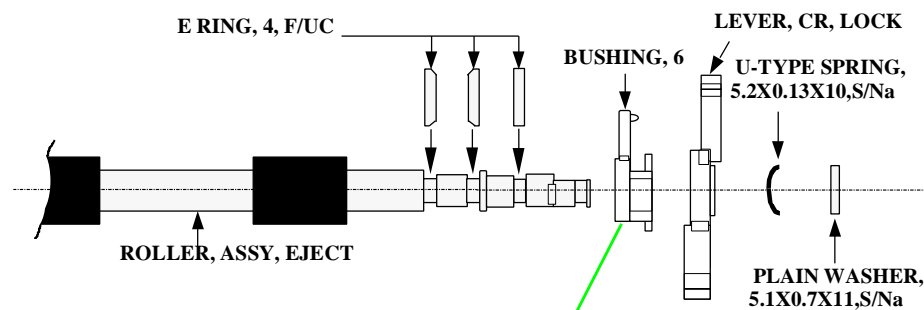


Figure 6-4. Bushing, 12, Left



Main04

Figure 6-5. Bushing, 6

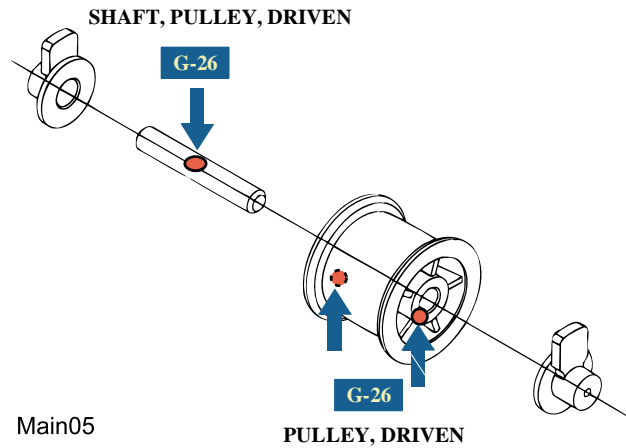


Figure 6-6. Shaft, Pulley, Driven

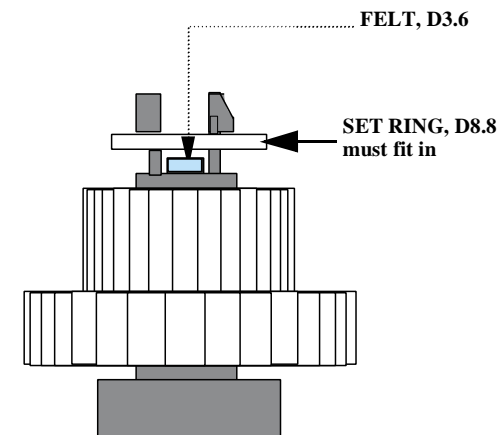
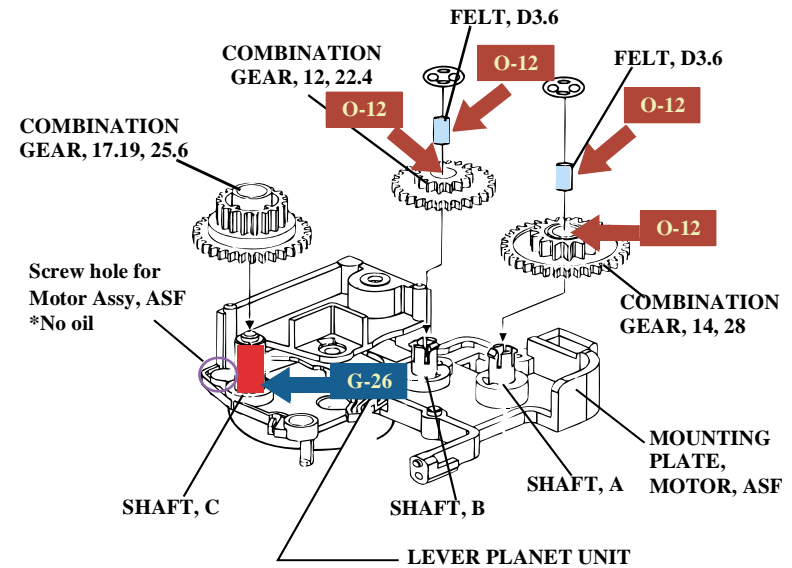


Figure 6-7. Combination Gear, 12,22.4 &amp; 14.28

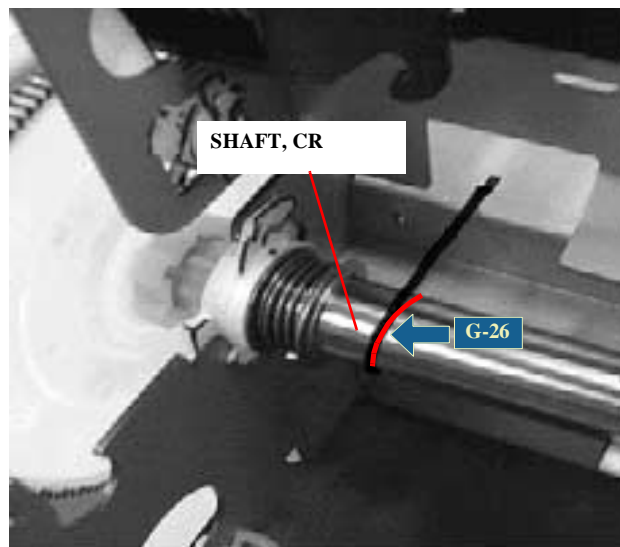
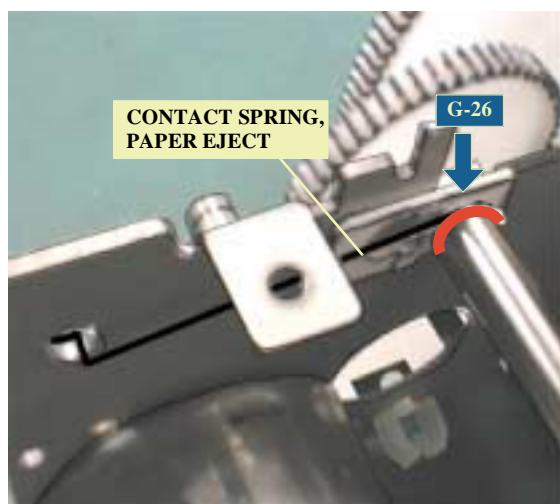
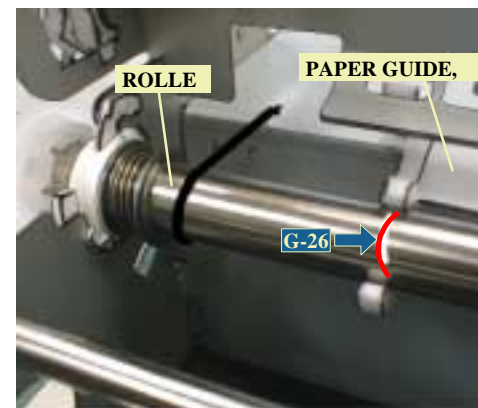


Figure 6-8. Groove on Roller, PF



Main07

Figure 6-9. Roller, Eject &amp; Ground Spring, Eject



Main08

Figure 6-10. Roller, PF

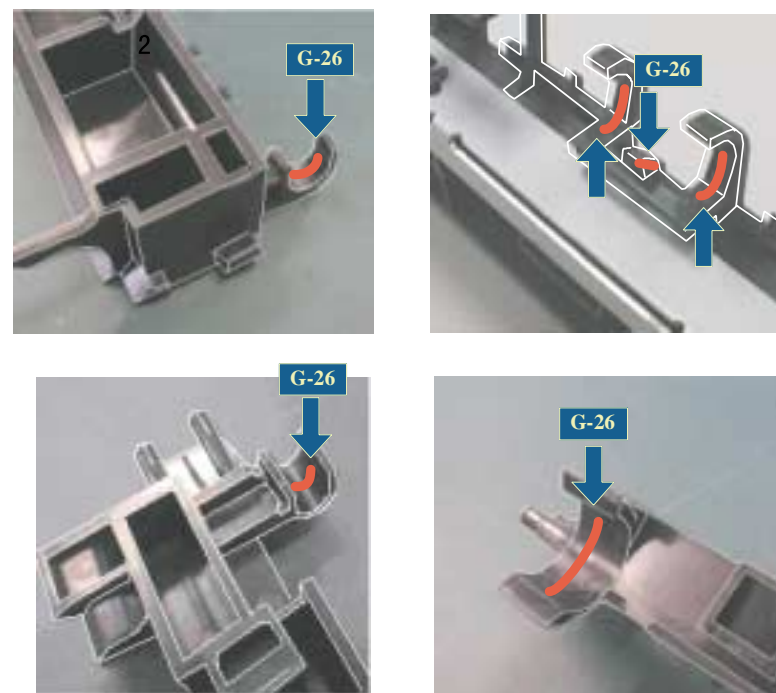


Figure 6-11. Paper Guide, Front (6 spots)

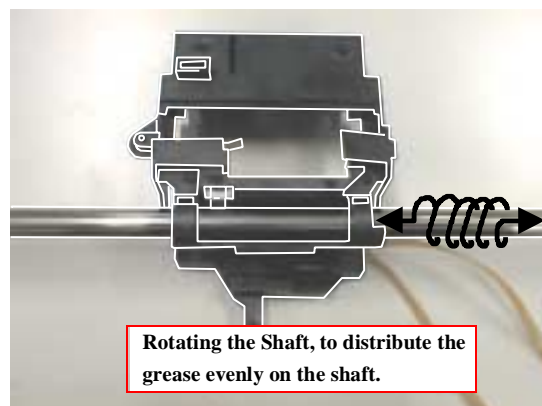
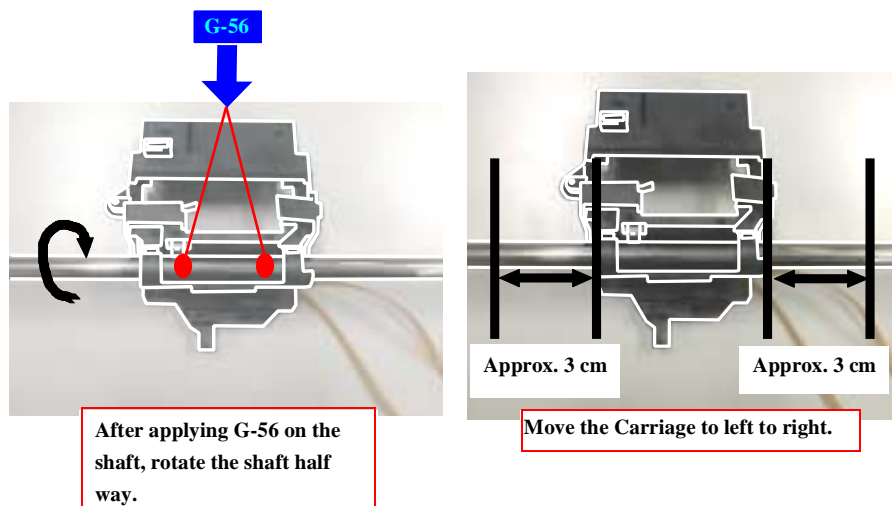


Figure 6-12. Shaft, CR (Carriage Unit)

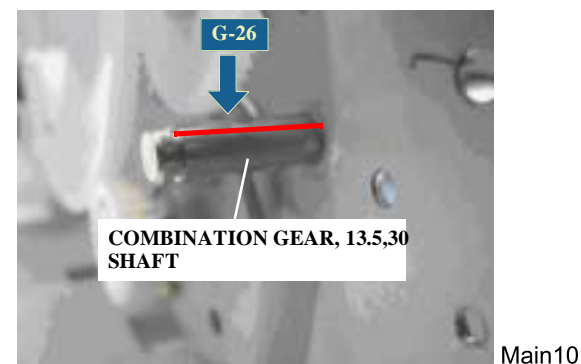


Figure 6-13. Combination Gear, 13.5,30

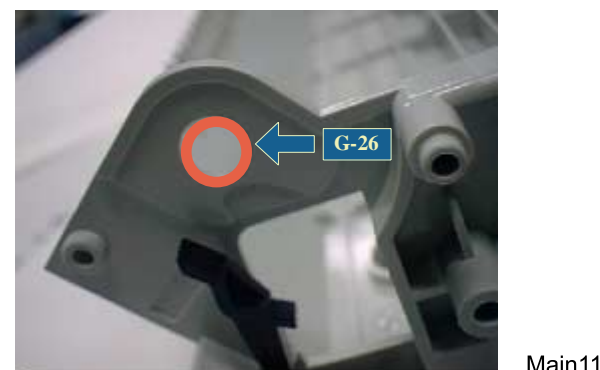


Figure 6-14. Frame, ASF; B

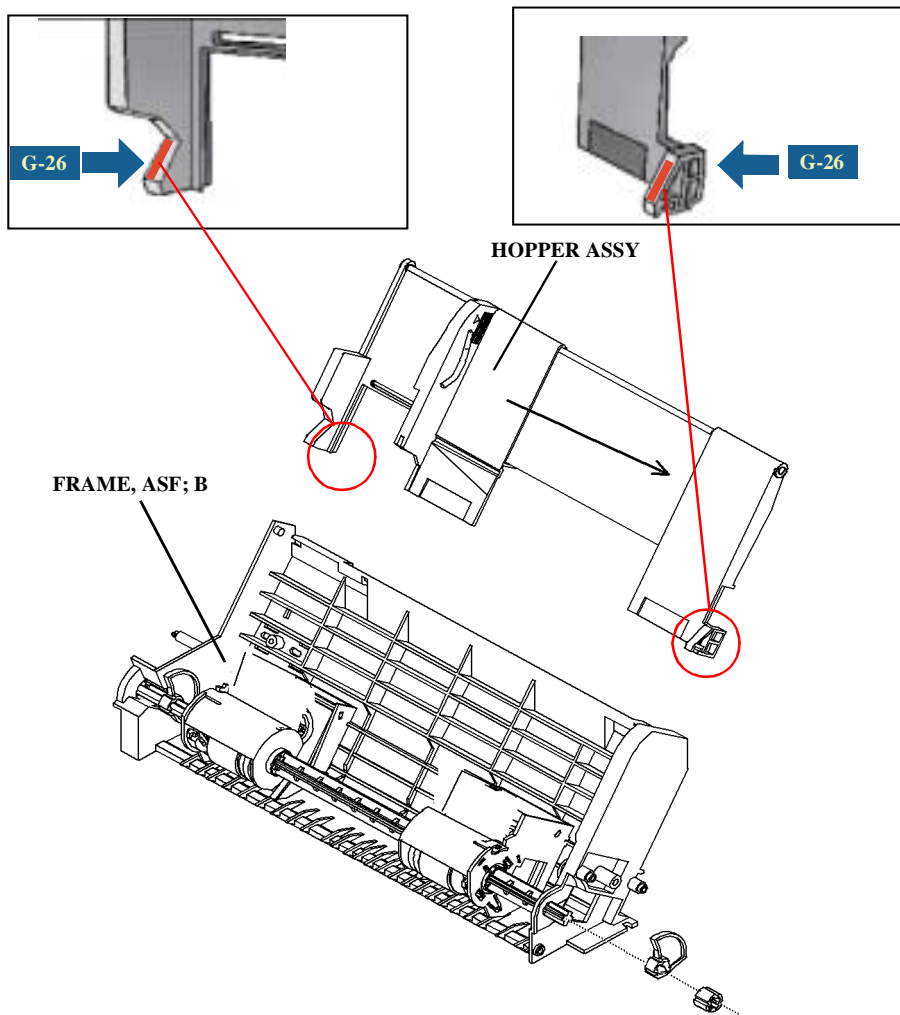


Figure 6-15. Hopper Assy (right and left)

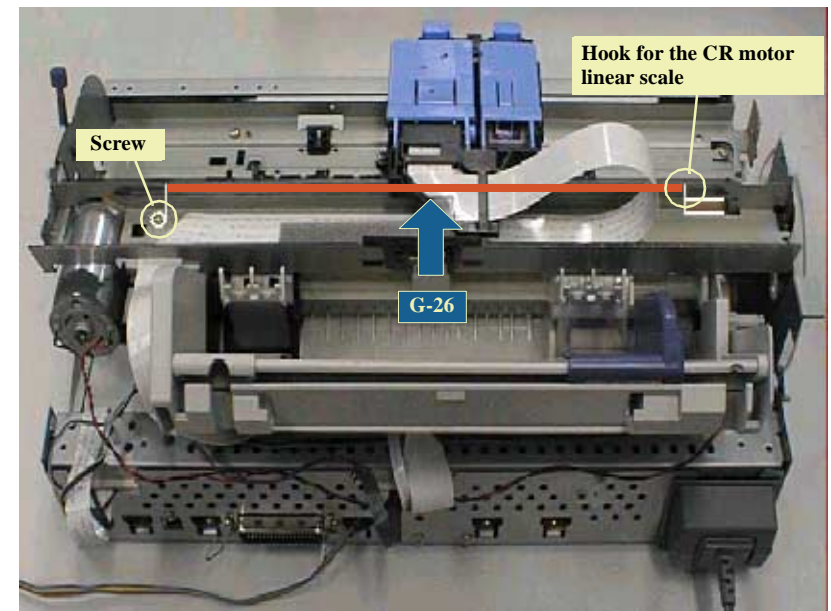


Figure 6-16. Guide Plate, CR

**CHAPTER**

**7**

**APPENDIX**

## 7.1 Connector Summary

### 7.1.1 Connector Alignment

This section provides information on connectors connecting main components of the printer.

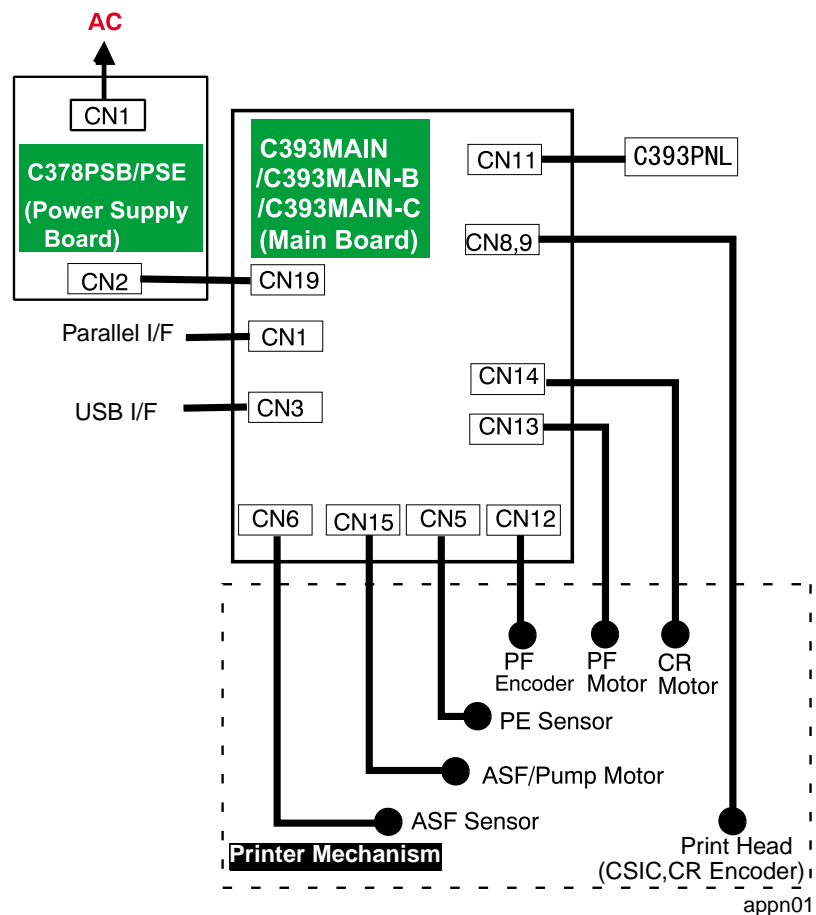


Figure 7-1. Cable Connection

### 7.1.2 Connector Pin Assignment

Table 7-1. Connector Assignment

Connector	Function	Table to refer to
CN1	Parallel interface connector	
CN3	USB interface connector	
CN5	PE sensor connector	Table 7-2
CN6	ASF sensor connector	Table 7-3
CN8	Printhead connector (including the CR encoder input line)	Table 7-4
CN9	Printhead connector (including CSIC communication and head temperature detection)	Table 7-5
CN11	Control panel connector	Table 7-6
CN12	PF encoder connector	Table 7-7
CN13	CR motor connector	Table 7-8
CN14	PF motor connector	Table 7-9
CN15	ASF/Pump Motor	Table 7-10
CN19	Power	Table 7-11



Table 7-2. Connector Pin Assignment - CN5

Pin	Signal Name	I/O	Function
1	PE	I	PE signal
2	GND	–	GND
3	PEV	–	+5V

Table 7-3. Connector Pin Assignment - CN6

Pin	Signal Name	I/O	Function
1	ASF	I	ASF HP detection
2	GND	-	GND
3	ASFV	-	+5V

Table 7-4. Connector Pin Assignment - CN8

Pin	Signal Name	I/O	Function
1	COM	-	Head drive pulse
2	GND	-	Ground
3	COM	-	Head drive pulse
4	GND	-	Ground
5	VHV	-	+42V power supply for nozzle selector
6	GND	-	Ground
7	SEL	I	Command Selection
8	GND	-	Ground
9	VDD	-	+5V
10	LAT	O	Head data latch pulse output
11	GND	-	Ground
12	NCHG	O	Head NCHG
13	THM	I	Thermistor detect signal
14	SI1	O	Head data
15	SI2	O	Head data
16	SI3	O	Head data
17	SP	O	SP signal
18	NC	-	-
19	GND	-	Ground
20	ENA	I	CR encoder output A
21	VDD	-	+5V
22	ENB	I	CR encoder output B
23	GNB	-	Ground

Table 7-5. Connector Pin Assignment - CN9

Pin	Signal Name	I/O	Function
1	SI6	O	Head data
2	SI5	O	Head data
3	SI4	O	Head data
4	GND	-	Ground
5	SCK	O	
6	GND	-	Head NCHG
7	CH	O	Ground
8	COC	I	Clock
9	RXD	O	Ground
10	COB	I	SP signal
11	TXD	I	Head data
12	VDD3.3	-	Head data
13	GND	-	Head data
14	COM	-	Head data
15	GND	-	Head data
16	COM	-	Head data
17	GND	-	Ground

Table 7-6. Connector Pin Assignment - CN11

Pin	Signal Name	I/O	Function
1	SW2	I	Switch signal input
2	LED0	O	LED output
3	GND	-	Ground
4	VCC	-	+5V
5	LED3	O	LED output

Table 7-6. Connector Pin Assignment - CN11

Pin	Signal Name	I/O	Function
6	SW1	I	Switch input
7	PSC	I	Power switch
8	SW0	I	Switch input
9	SW2	I	Switch input

Table 7-7. Connector Pin Assignment - CN12

Pin	Signal Name	I/O	Function
1	GND	-	Ground
2	ENB	I	Rotary encoder Phase B output
3	VCC	-	+5V
4	ENA	I	Rotary encoder Phase A output
5	GND	-	Ground

Table 7-8. Connector Pin Assignment - CN13

Pin	Signal Name	I/O	Function
1	PF-A	O	PF motor Phase A
2	PF-B	O	PF motor Phase B

Table 7-9. Connector Pin Assignment - CN14

Pin	Signal Name	I/O	Function
1	CR-A	O	CR motor Phase A
2	CR-B	O	CR motor Phase B

Table 7-10. Connector Pin Assignment - CN15

Pin	Signal Name	I/O	Function
1	A	O	ASF/Pump Motor Phase A
2	B	O	ASF/Pump Motor Phase B
3	/A	O	ASF/Pump Motor Phase /A
4	/B	O	ASF/Pump Motor Phase /B

Table 7-11. Connector Pin Assignment

Pin	Signal Name	I/O	Function
1	+42V	-	+42V Power
2	+42V	-	+42V Power
3	GND	-	Ground
4	ESAVE	O	Energy saving mode
5	PSC	O	Secondary power ON/OFF
6	GND	-	Ground
7	GND	-	Ground
8	+5V	-	+5V Power

## 7.1.3 EEPROM Address Map

This section provides the EEPROM address map.

Table 7-12. EEPROM Address Map

Address	Explanation	Setting	QPIT Settings	Factory Settings
00H	Pass word		0FH	-
01H			5AH	-
02H	EEPROM mapping revision		41H	-
03H	Reserved		00H	-
04H	Interface selection	0: Auto, 1: Parallel, 2: USB	00H	00H *2
05H	Interface time-out	0 to 255 (by second, value of 0 means 10 seconds)	0AH	0AH
06H	Compatibility speed	0: Fast, 1: Slow, 2: Special-1, 3: Special 2	00H	00H
07H	ECP speed <sup>*a</sup>	0: Fast, 1: Slow	00H	00H
08H	IEEE1284.4 for Parallel	0: Auto, 1: On, 2: Off	00H	01H
09H	IEEE1284.4 for USB	0: Auto, 1: On, 2: Off	00H	01H
0AH	1/F Control flags	bit1: ECP mode (0=Off, 1=On) <sup>*b</sup> bit0: IEEE1284 mode (0=On, 1=Off) <sup>*c</sup>	00H	00H
0BH - 0FH	Reserved		00H	-
10H - 15H	CPSI pass word		00H	00H
16H	Print direction control	0: Bi-D, 1: Uni-D, 2: Auto	02H	02H
17H	CG table	08H: PC437, 0AH: PC850	00H	00H
18H	Font	0: Courier	00H	00H

Table 7-12. EEPROM Address Map (continued)

Address	Explanation	Setting	QPIT Settings	Factory Settings
19H	Pitch	0: 10cpi	00H	00H
1AH	Auto LF, Network I/F mode	bit1: Network I/F mode (0=Off, 1=On) bit0: Auto line feed (0=Off, 1=On)	00H	00H
1BH	Check model control	bit7: Self test mode bit6: Hex dump mode	00H	00H
1CH - 1FH	Reserved		00H	-
20H	Bi-D Adjustment for MultiShot (Bk)	-72<=n<=+72 (by 0.00882mm(1/2880 inch))	00H	*1
21H	Bi-D Adjustment for 6plVSD (Bk)	-72<=n<=+72 (by 0.00882mm(1/2880 inch))	00H	*1
22H	Bi-D Adjustment for 4plVSD (Bk)	-72<=n<=+72 (by 0.00882mm(1/2880 inch))	00H	*1
23H	Bi-D Adjustment for MultiShot (Cl)	-72<=n<=+72 (by 0.00882mm(1/2880 inch))	00H	*1
24H	Bi-D Adjustment for 6plVSD (Cl)	-72<=n<=+72 (by 0.00882mm(1/2880 inch))	00H	*1
25H	Bi-D Adjustment for 4plVSD (Cl)	-72<=n<=+72 (by 0.00882mm(1/2880 inch))	00H	*1
26H	1st Dot Position Adjustment	-72<=n<=+72 (by 0.00882mm(1/2880 inch))	00H	*1
27H	Reserved		00H	-
28H	reserved for CR Phase on Home		00H	-
29H	reserved for Paper Sensor Adjust		00H	-
2AH	Roll paper flag	bit1: Panel Load Mode bit0: Rollpaper Mode	00H	00H

Table 7-12. EEPROM Address Map (continued)

Address	Explanation	Setting	QPIT Settings	Factory Settings
2BH	Error Code		00H	00H
2CH	Error Counter at Initial Fills I/S		00H	*1
2DH	CR Measurement Data		00H	00H
2EH	PF Measurement Data		00H	00H
2FH	Reserved		00H	-
30H	Top margin	42 to 44x360 (by 0.0706 (1/360 inch))	00H	00H
31H			78H	78H
32H	Bottom margin	1244 to 44x360 (by 0.0706 (1/360 inch))	1EH	1EH
33H			F0H	F0H
34H	Page length	1244 to 44x360 (by 0.0706 (1/360 inch))	1EH	1EH
35H			F0H	F0H
36H	Reserved		00H	-
37H			00H-	
38H-3BH	Accumulate page counter	by 1 page	00H	00H
3CH-3FH	Accumulate print pass	by 1 pass	00H	00H
40H	Password		0FH	-
41H			5AH	-

Table 7-12. EEPROM Address Map (continued)

Address	Explanation	Setting	QPIT Settings	Factory Settings
42H	Ink flag1	bit7: CSIC disable bit6: Black one-time bit5: Color one-time bit4: Initial fill required bit3: Reserved bit2: Ink cleaning seq. bit1: Black CL required bit0: Color CL required	00H	10H
43H	Ink flag2	bit7: Reserved bit6: Black 1st cartridge bit5: YMC 1st cartridge bit4: Black CSIC changed bit3: YMC CSIC changed bit2: YMC cartridge changed and cleaned bit1: Black cartridge changed and cleaned bit0: Black cartridge only changed and cleaned	00H	00H
44H	Ink counter Cb		00H	00H
45H			00H	00H
46H			00H	00H
47H			00H	00H
48H	Ink counter Cy		00H	00H
49H			00H	00H
4AH			00H	00H
4BH			00H	00H

Table 7-12. EEPROM Address Map (continued)

Address	Explanation	Setting	QPIT Settings	Factory Settings
4CH	Ink counter Cc		00H	00H
4DH			00H	00H
4EH			00H	00H
4FH			00H	00H
50H	Ink counter Cm		00H	00H
51H			00H	00H
52H			00H	00H
53H	Ink counter Clc		00H	00H
54H			00H	00H
55H			00H	00H
56H			00H	00H
57H	Ink counter Clm		00H	00H
58H			00H	00H
59H			00H	00H
5AH			00H	00H
5BH			00H	00H
5CH			00H	00H
5DH			00H	00H
5EH			00H	00H
5FH	Ink counter Rb0		00H	00H
60H			00H	00H
61H	Ink counter Rb80		00H	00H
62H			00H	00H
63H			00H	00H

Table 7-12. EEPROM Address Map (continued)

Address	Explanation	Setting	QPIT Settings	Factory Settings
64H	Ink counter Ry0		00H	00H
65H			00H	00H
66H	Ink counter Ry80		00H	00H
67H			00H	00H
68H	CL time		00H	00H*2
69H			00H	00H*2
6AH	Power off time		00H	00H*2
6BH			00H	00H*2
6CH	Ink counter A0		00H	00H*3
6DH			00H	00H*3
6EH	Ink counter A80		00H	00H*3
6FH			00H	00H*3
70H	Accumulated printing time		00H	00H
71H			00H	00H
72H	CSIC1_InkName1		00H	00H
73H	CSIC2_InkName2		00H	00H
74H	Reserved		00H	00H
75H			00H	00H
76H			00H	00H
77H			00H	00H
78H	Cleaning KK counter		00H	00H
79H	Cleaning 1 counter		00H	00H
7AH	Cleaning 1 dash counter		00H	00H
7BH	Cleaning 2 counter		00H	00H

Table 7-12. EEPROM Address Map (continued)

Address	Explanation	Setting	QPIT Settings	Factory Settings
7CH	Home out cleaning counter		00H	00H
7DH	Timer cleaning counter		00H	00H
7EH	Bk change cleaning counter		00H	00H
7FH	Color change cleaning counter		00H	00H
80H	Password		0FH	-
81H			5AH	-
82H	Power unit select		00H	*1
83H-9FH	Reserved		00H	-
A0H	Head Actuator Rank ID for VhN	+1<=n<=+201	00H	*1
A1H	Head Actuator Rank ID for VhM	+1<=n<=+201	00H	*1
A2H	Head Actuator Rank ID for VhL	+1<=n<=+201	00H	*1
A3H	Head Actuator Rank ID for VhU	+1<=n<=+201	00H	*1
A4H	Head Actuator Rank ID for VhM2	+1<=n<=+201	00H	*1
A5H	Head Actuator Rank ID for VhB	+1<=n<=+201	00H	*1
A6H	Head Actuator Rank ID for AR		00H	*1
A7H	Microweave ID		00H	*1
A8H	Head Actuator Rank ID for Iw_B	+30<=n<=+70	00H	*1

Table 7-12. EEPROM Address Map (continued)

Address	Explanation	Setting	QPIT Settings	Factory Settings
A9H	Head Actuator Rank ID for Iw_C	+30<=n<=+70	00H	*1
AAH	Head Actuator Rank ID for Iw_M	+30<=n<=+70	00H	*1
ABH	Head Actuator Rank ID for Iw_Y	+30<=n<=+70	00H	*1
ACH	Head Actuator Rank ID for Iw_LC	+30<=n<=+70	00H	*1
ADH	Head Actuator Rank ID for Iw_LM	+30<=n<=+70	00H	*1
AEH			00H	*1
AFH			00H	*1
B0H	CSIC printer name	For Stylus PHOTO 890: 0Fh:R4C7260 (Japan) 8Fh:R4C7260 (World) For Stylus PHOTO 1290: 10h:R4C7260 (Japan) 90h:R4C7260 (World)	00H	*1
B1H-BFH	Reserved		00H	*1
C0H	Password		0FH	-
C1H			5AH	-
C2H - D3H	USB ID		00H	*1
D4H - D7H	Reserved		00H	-

Table 7-12. EEPROM Address Map (continued)

Address	Explanation	Setting	QPIT Settings	Factory Settings
D8H	Custom EEPROM sub number		00H	00H
D9H			00H	00H
DAH			00H	00H
DBH			00H	00H
DCH	Panel mask function	bit7: Entry self-test bit6: Entry Hex-Dump bit5: Extended settings bit4: Reserved	00H	00H
DDH	Reserved		00H	-
DEH			00H	-
DFH	Factory reserved		00H	-
E0H	Market ID	0: World, 1: Japan, 2: Custom	00H	00H
E1H	Reserved		00H	-
E2H - FFH	Model Name		00H	-

\*a: Enable or disable reverse transfer. (When disabled, ignore -SLIN signal.)

\*b: BUSY signal delay time from fall-edge of a -STB signal. (Fast: Maximum 1MB/second, Slow: Maximum 600KB/second)

\*c: Select IEEE1284 transfer mode. (ECP or Nibble)

**NOTE:**

\*1: Adjusted at factory.

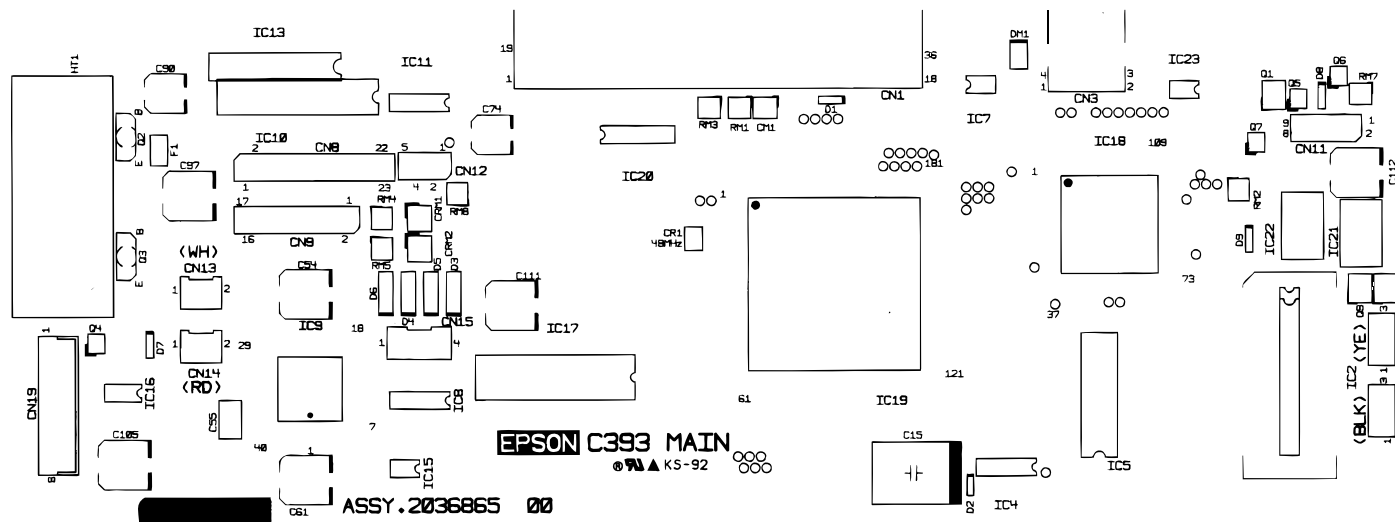
\*2: Initialized by the EEPROM reset of the special setting mode.

\*3: Initialized by the Waste ink counter reset of the special setting mode.

## 7.2 Circuit Board Component Layout

### C393MAIN CONTROL CIRCUIT BOARD

Component Side



Soldered Side

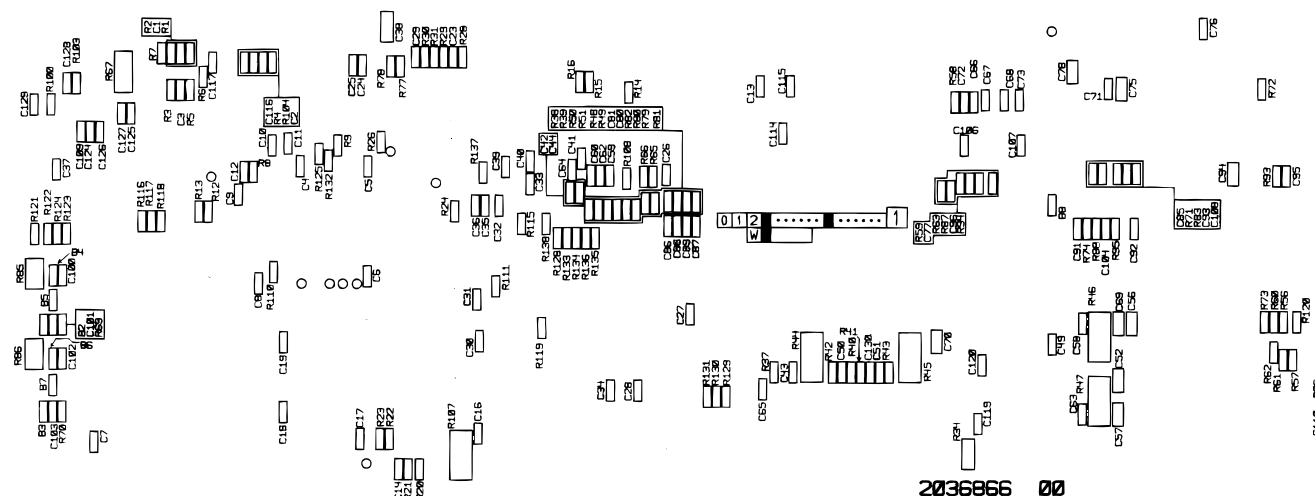
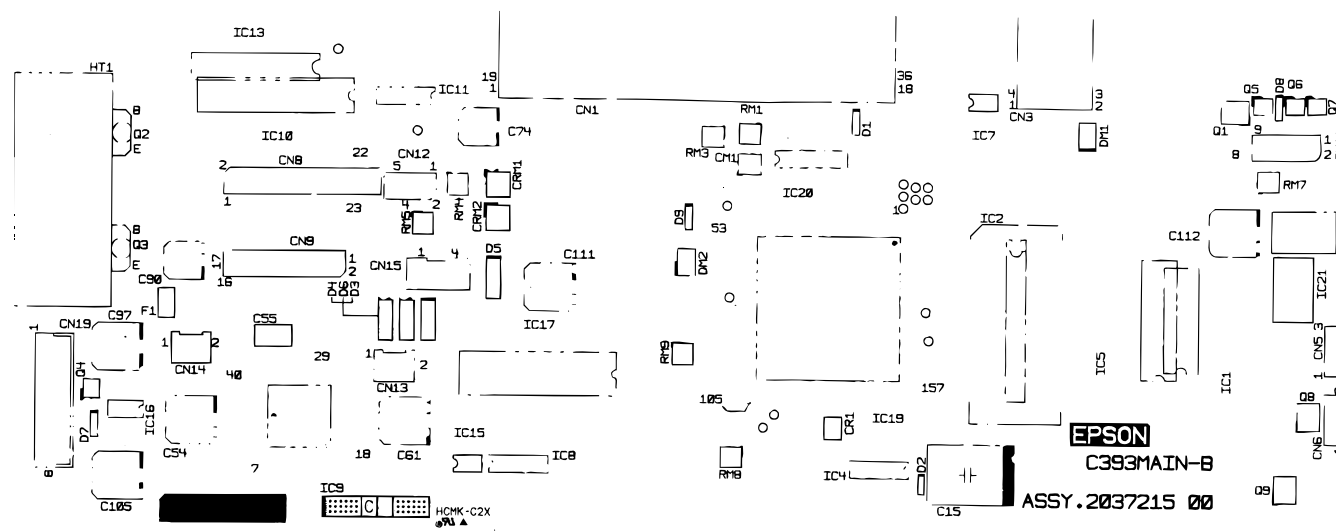


Figure 7-2. Component Layout - C393MAIN



## C393MAIN-B CONTROL CIRCUIT BOARD

Component Side



Soldered Side

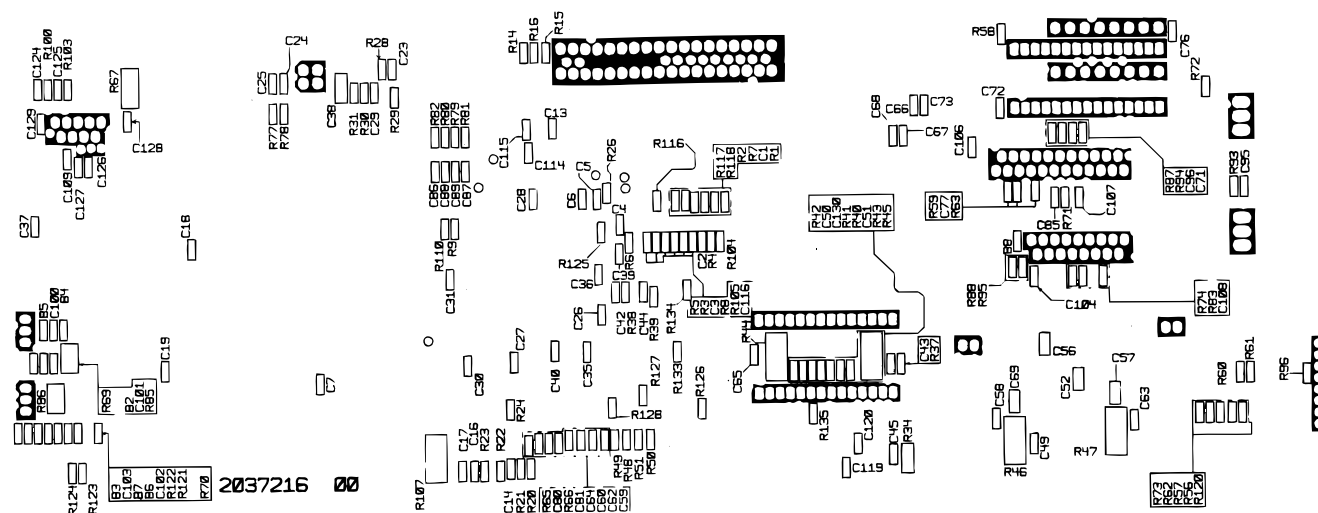
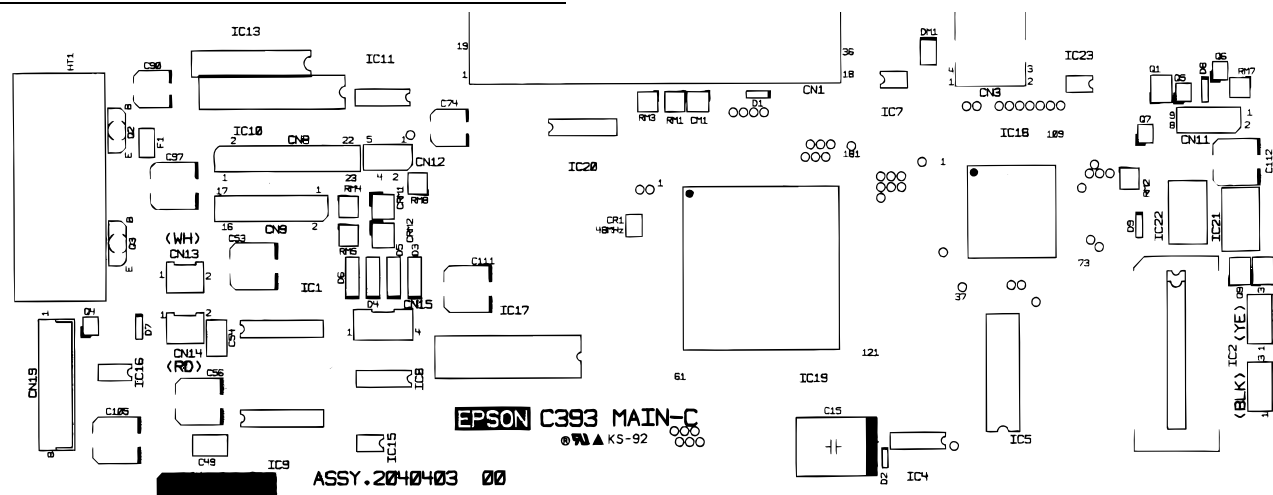


Figure 7-3. Component Layout - C393MAIN-B

## C393MAIN-C CONTROL CIRCUIT BOARD

Component Side



Soldered Side

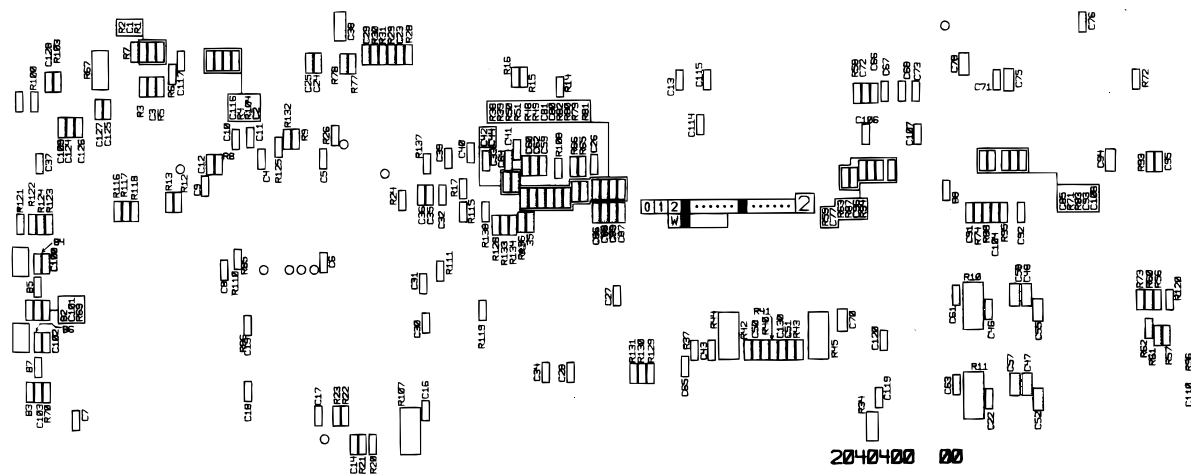


Figure 7-4. Component Layout - C393MAIN-C

## C378PSB/PSE CIRCUIT BOARD

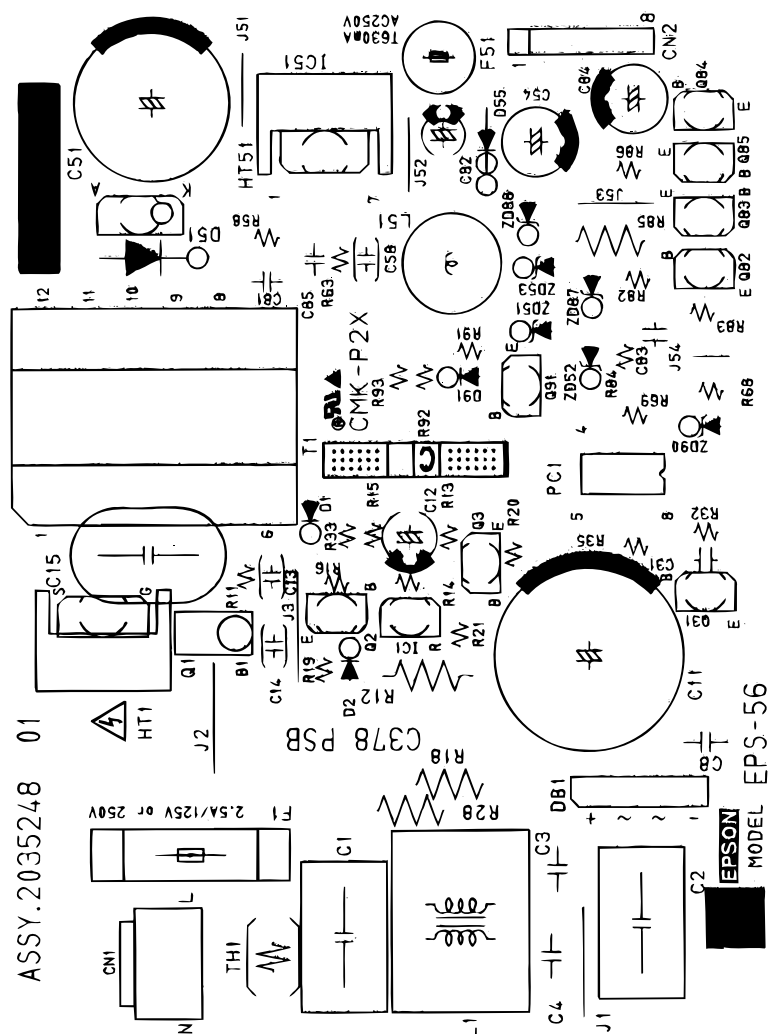


Figure 7-5. Component Layout - C378PSB

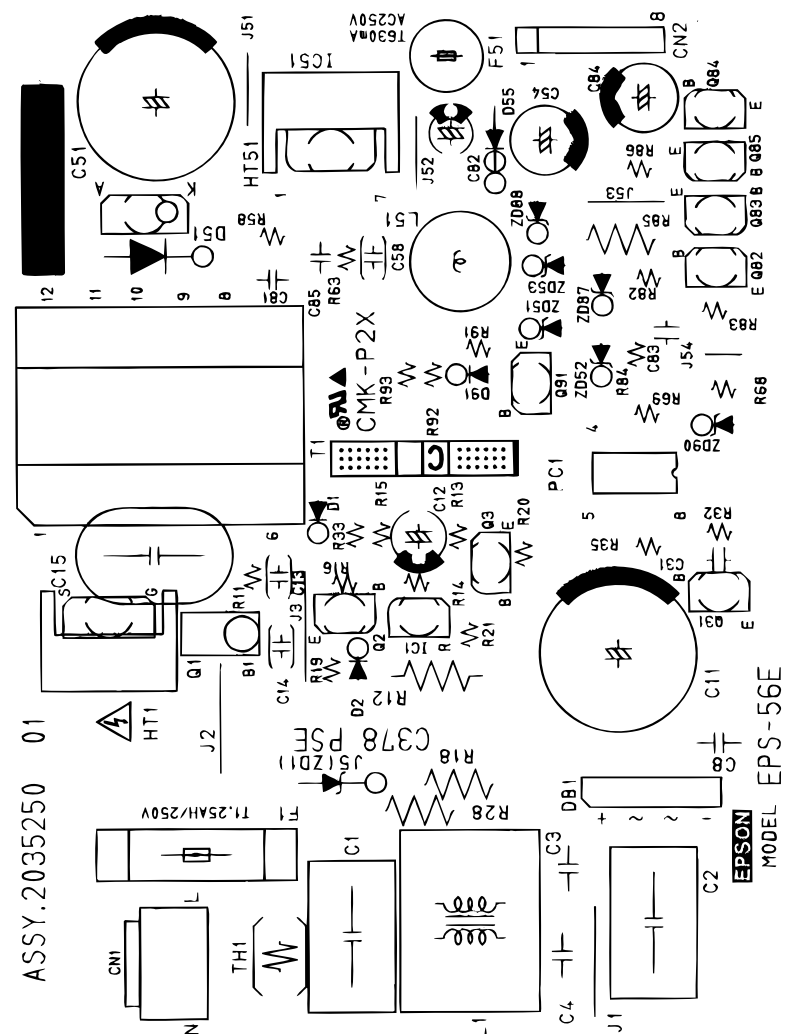
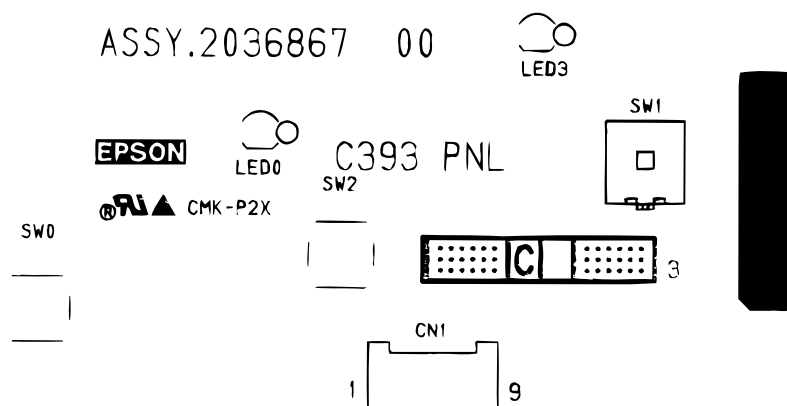


Figure 7-6. Component Layout - C378PSE

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**C393PNL CIRCUIT BOARD**

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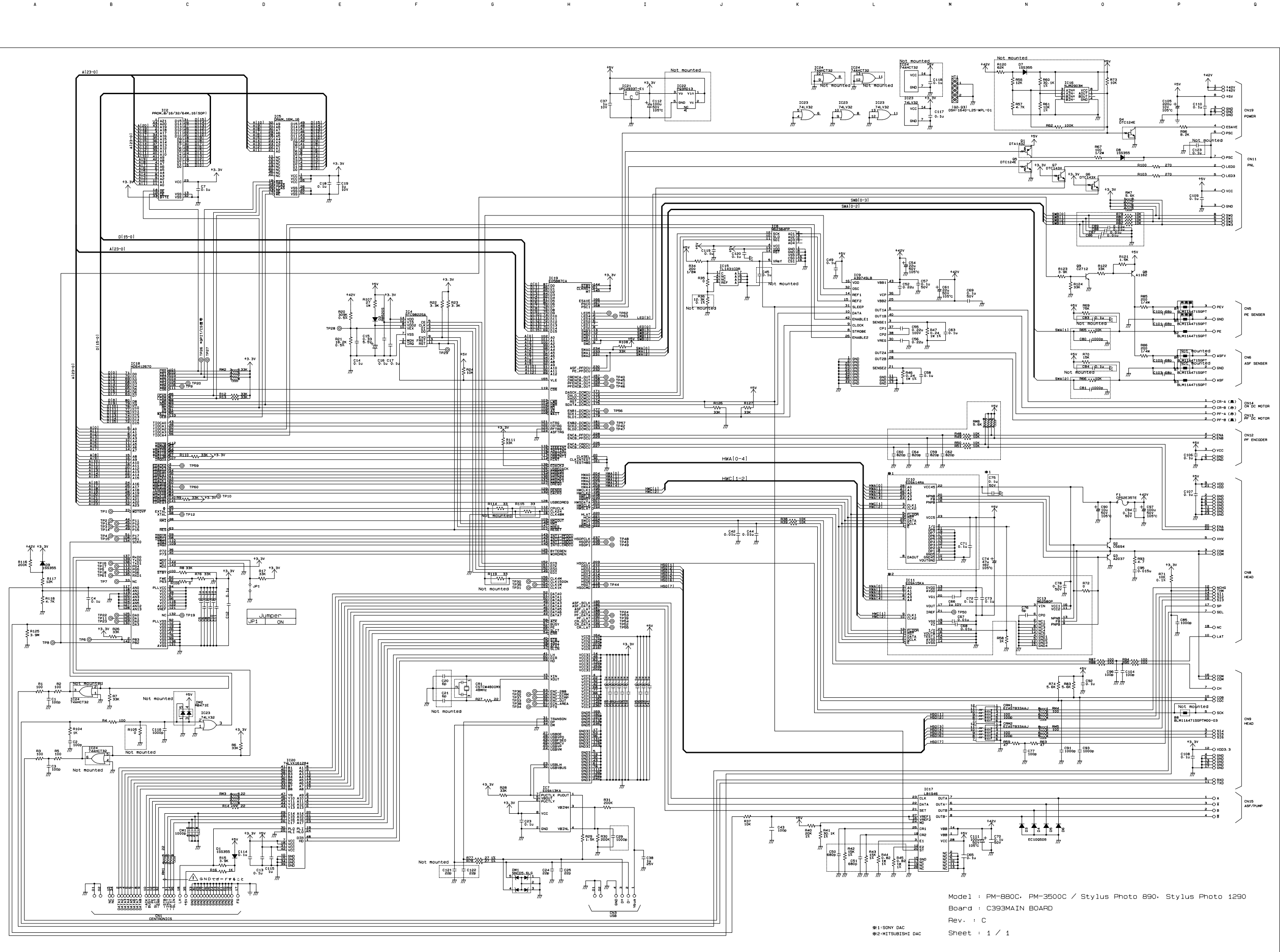
**Figure 7-7. Component Layout - C393PNL**

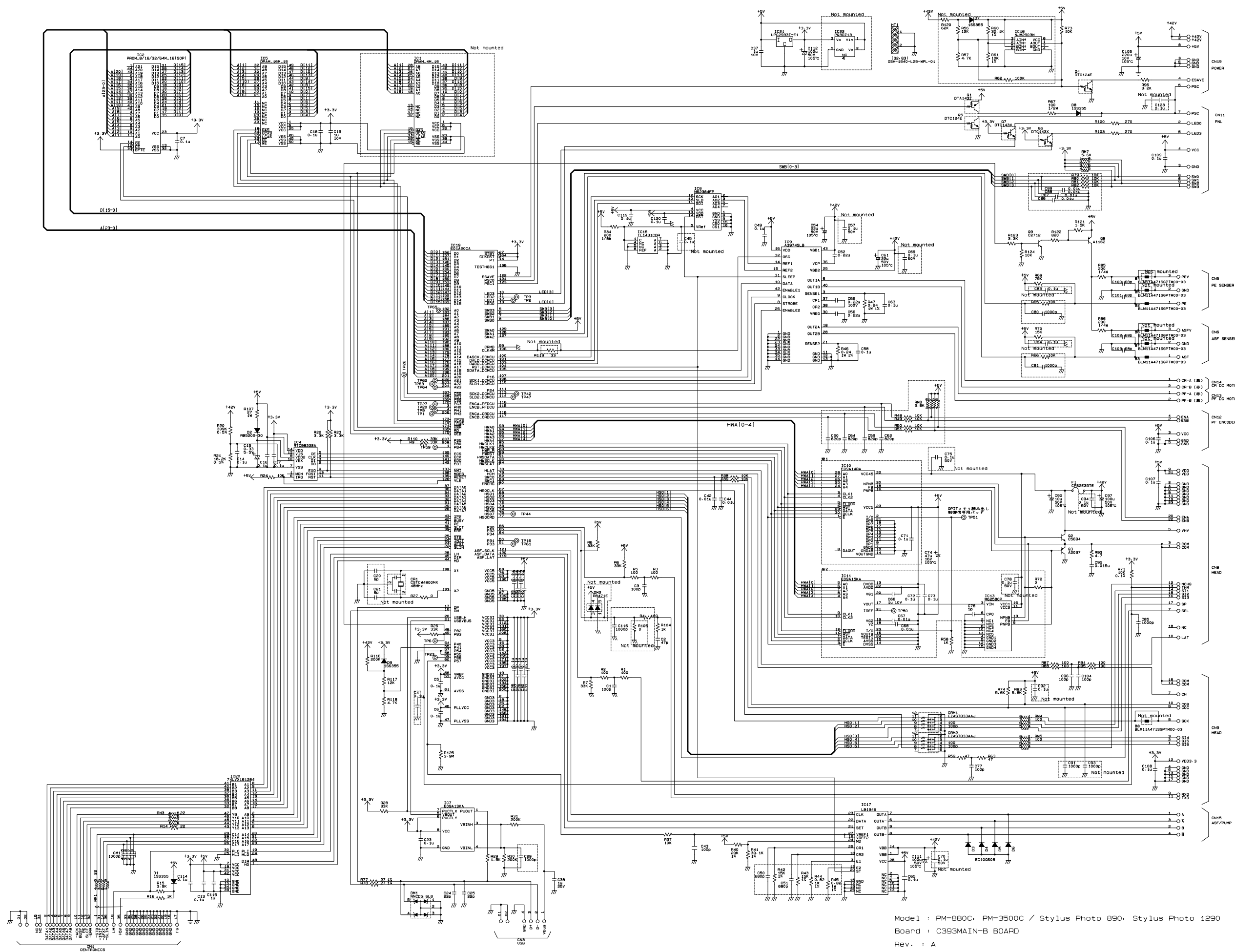
## 7.3 Electrical Circuit Board Diagrams

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See the following pages for the electrical circuit board diagrams below:

- C393MAIN
- C393MAIN-B
- C393PNL
- C378PSB
- C378PSE





Model : PM-800C, PM-3500C / Stylus Photo 890, Stylus Photo 1290  
 Board : C393MAIN-B BOARD  
 Rev. : A  
 Sheet : 1 / 1

1

2

3

4

5

6

A

B

C

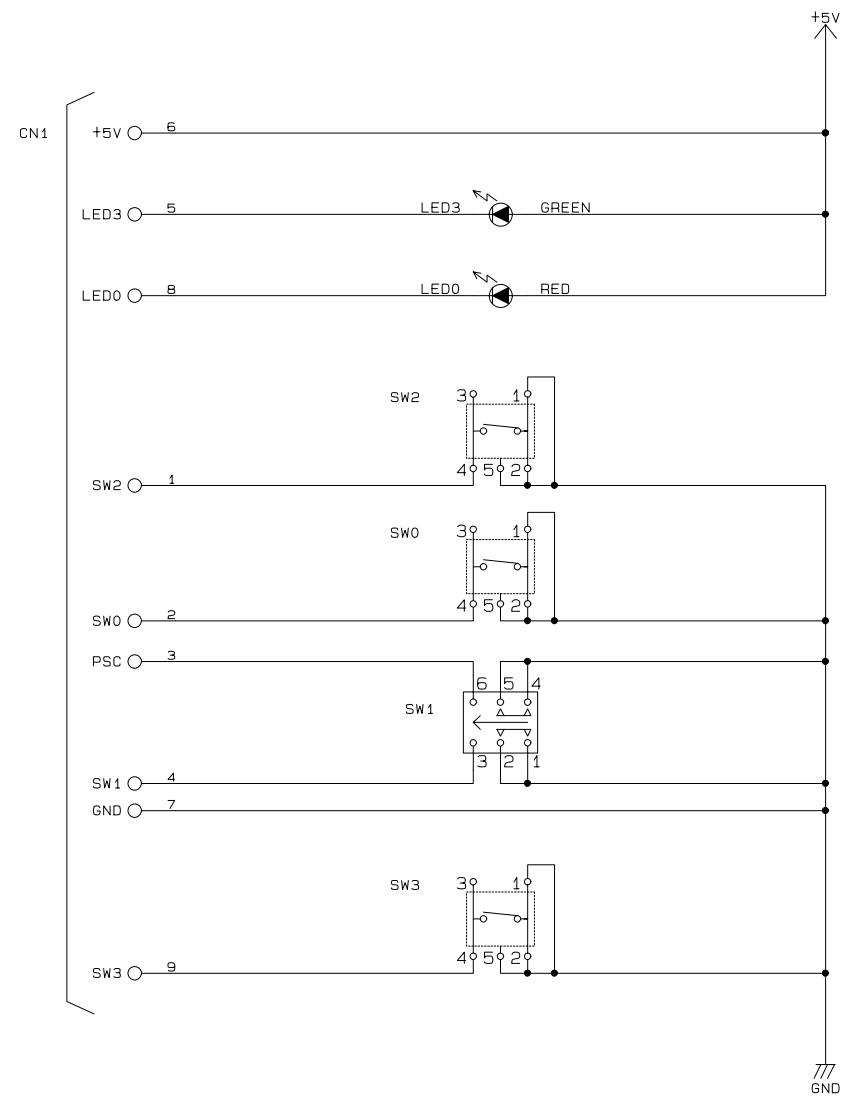
D

E

F

G

H



Model : PM-880C, PM-3500C / Stylus Photo 890, Stylus Photo 1290

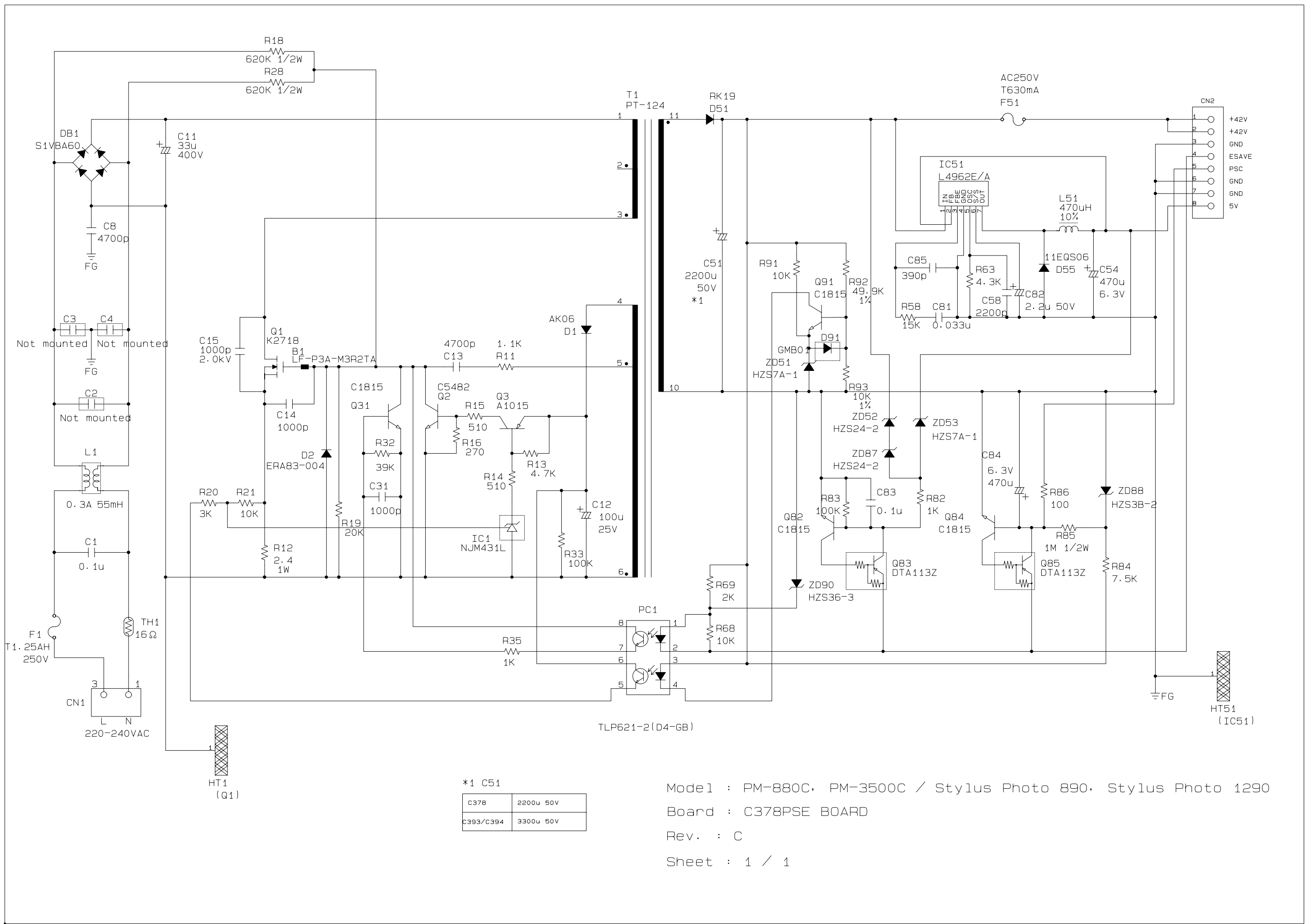
Board : C393PNL BOARD

Rev. : A

Sheet : 1 / 1







## 7.4 Exploded Diagrams

### 7.4.1 Exploded Diagrams for Stylus PHOTO 890

See the following pages for exploded diagrams for Stylus PHOTO 890.

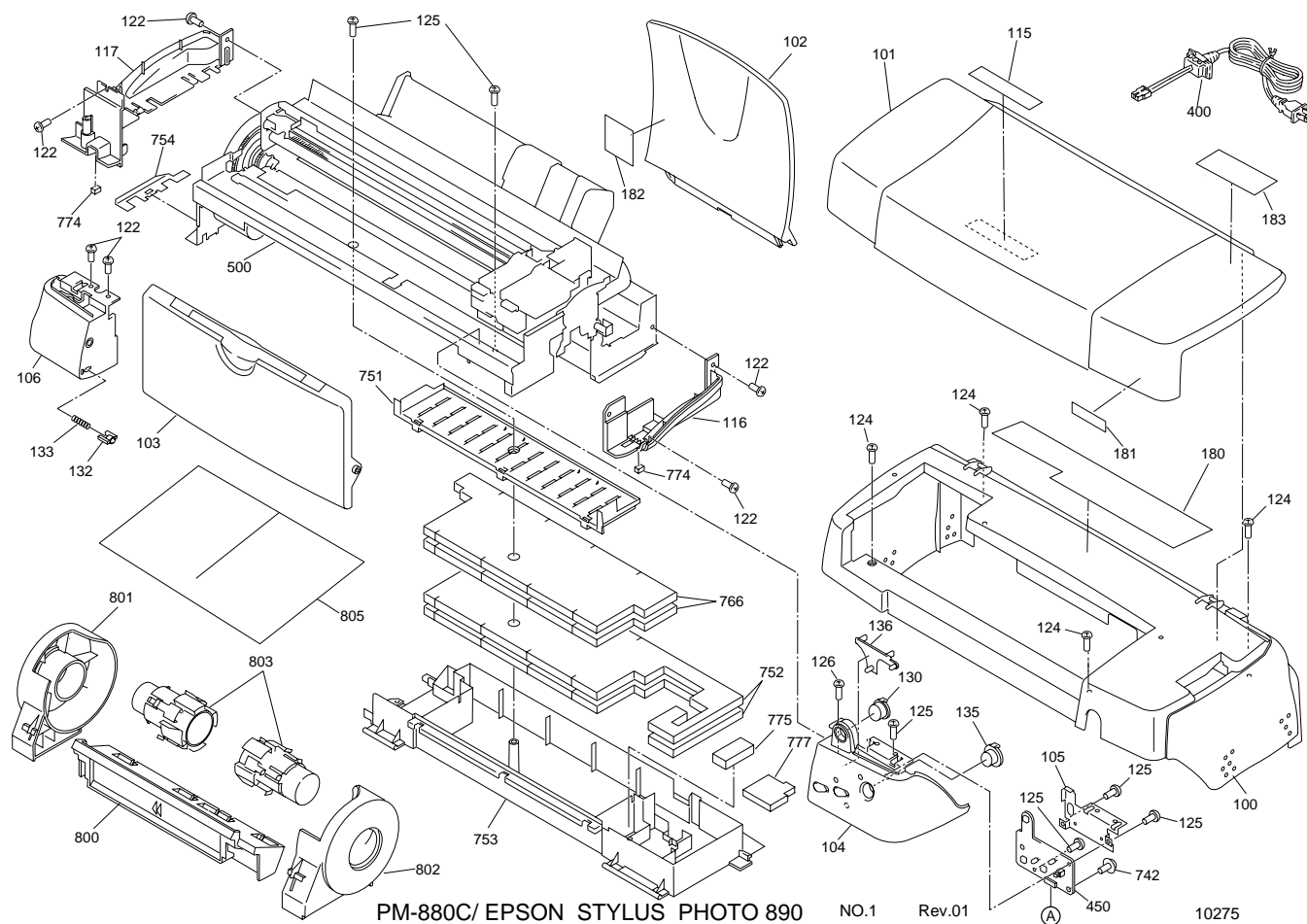


Figure 7-8. Stylus PHOTO 890 - 1

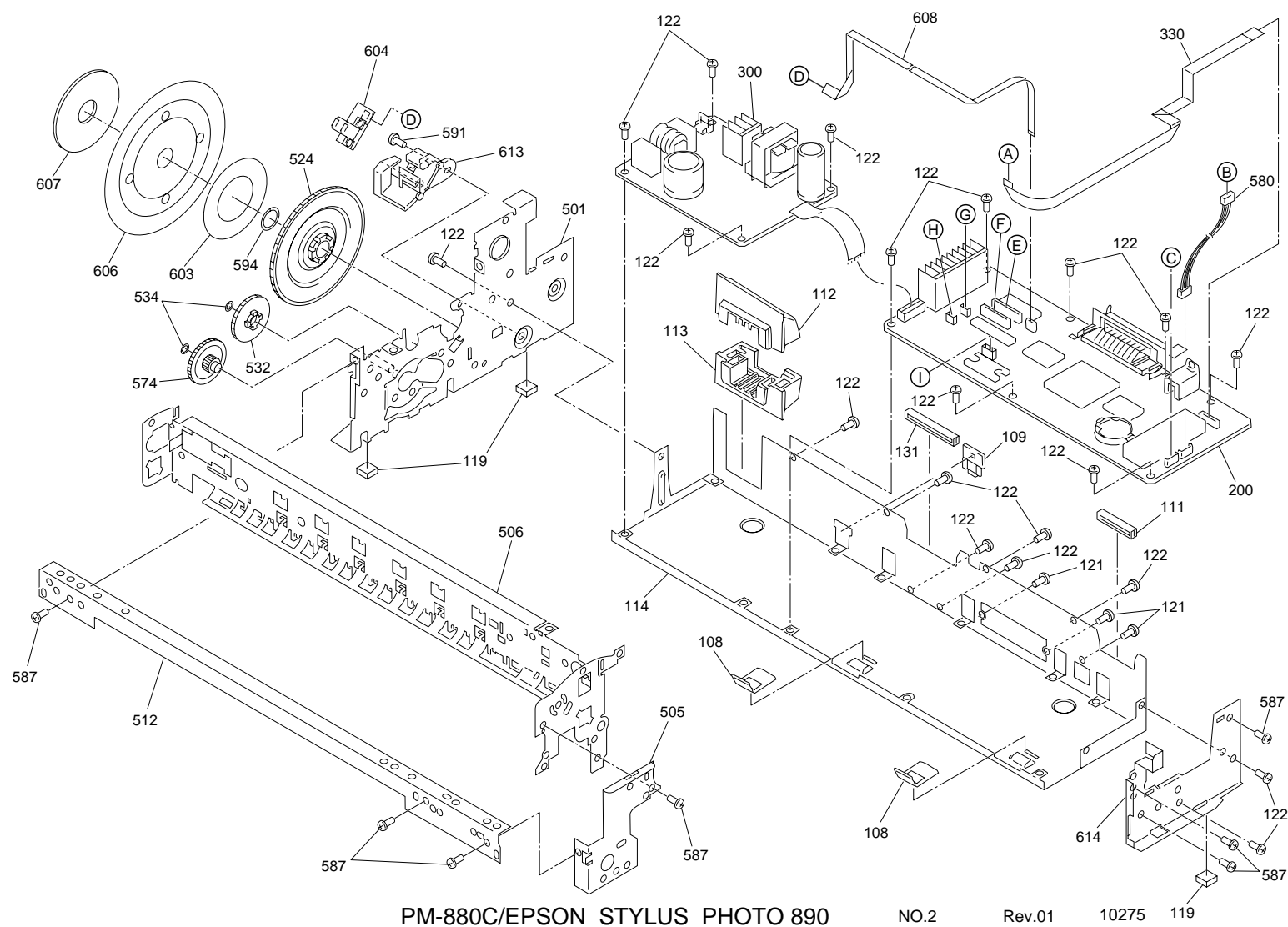
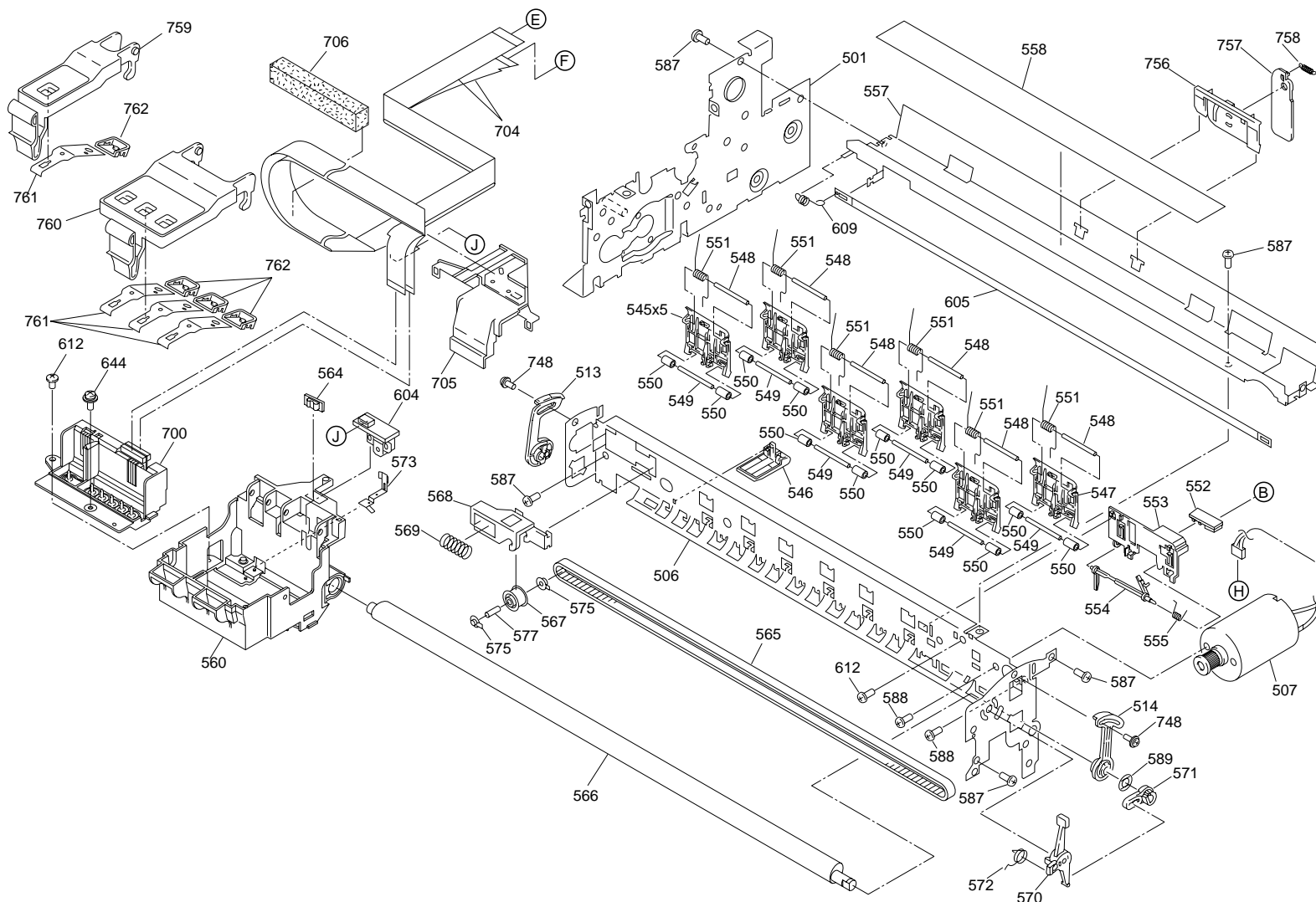


Figure 7-9. Stylus PHOTO 890 - 2



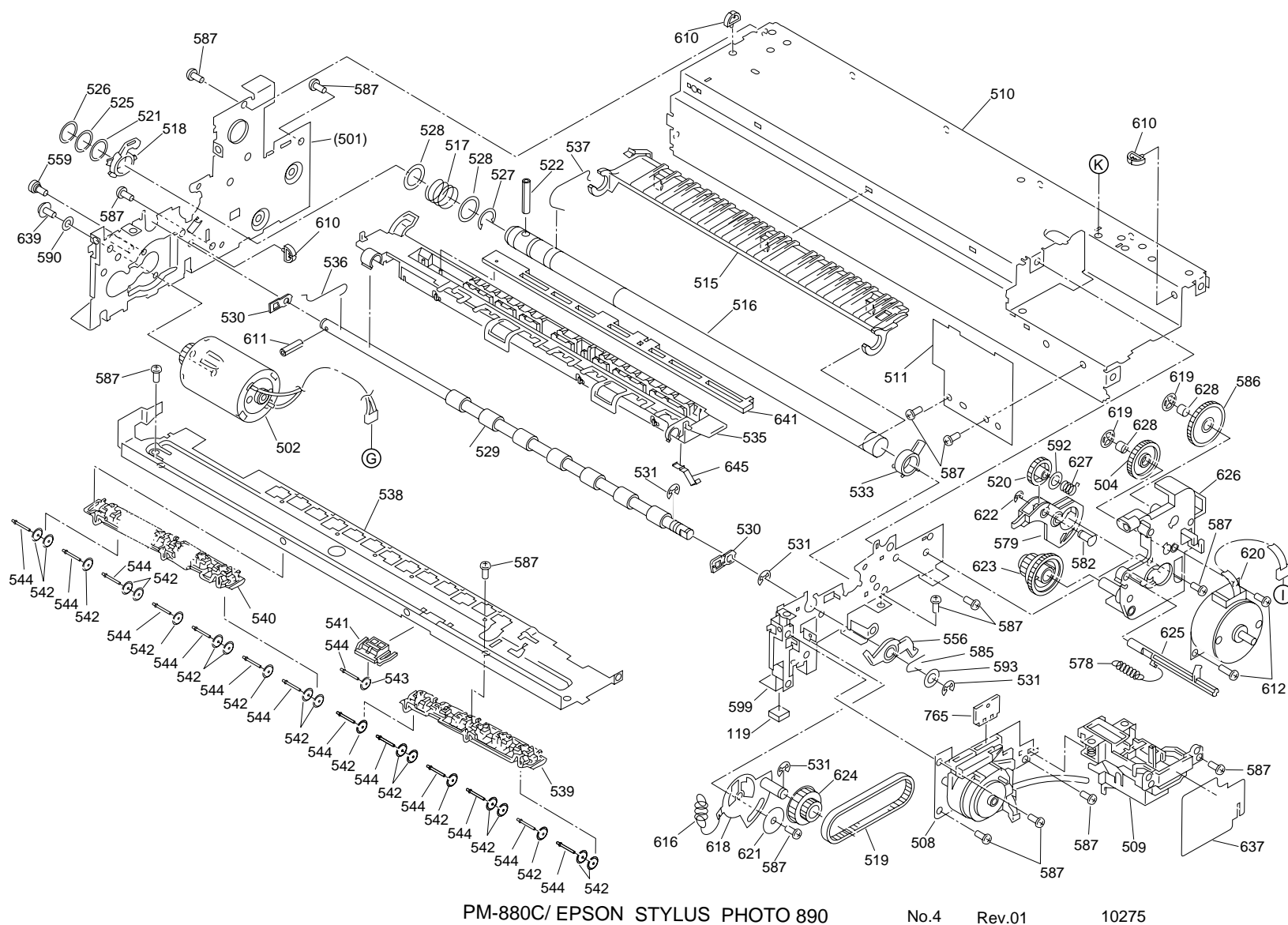
PM-880C/EPSON STYLUS PHOTO 890

No.3

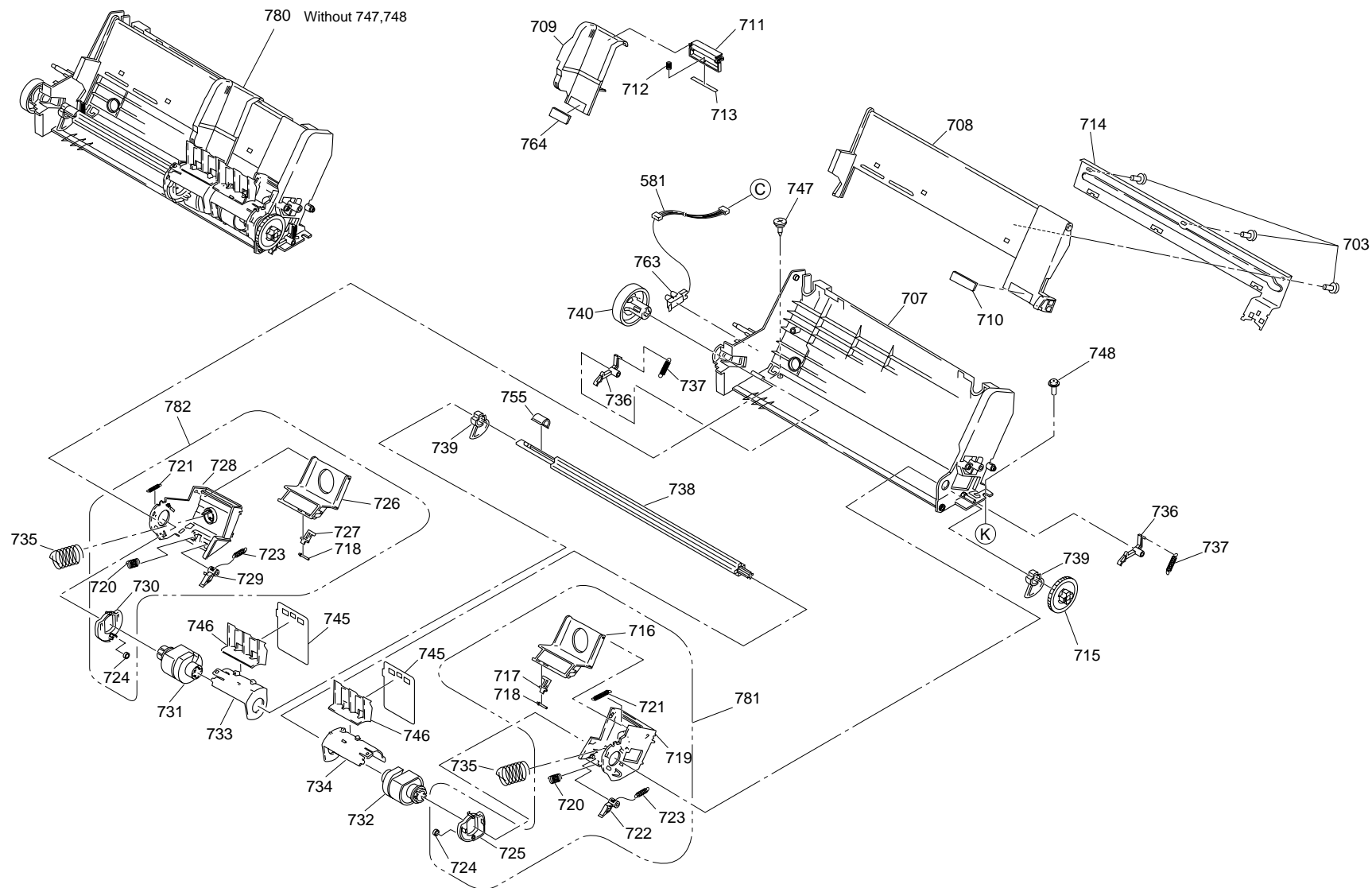
Rev.01

10275

**Figure 7-10. Stylus PHOTO 890 - 3**



**Figure 7-11. Stylus PHOTO 890 - 4**



PM-880C/ EPSON STYLUS PHOTO 890

No.5

Rev.01

10275

Figure 7-12. Stylus PHOTO 890 - 5

## 7.4.2 Exploded Diagrams for Stylus PHOTO 1290

See the following pages for exploded diagrams for Stylus PHOTO 1290.

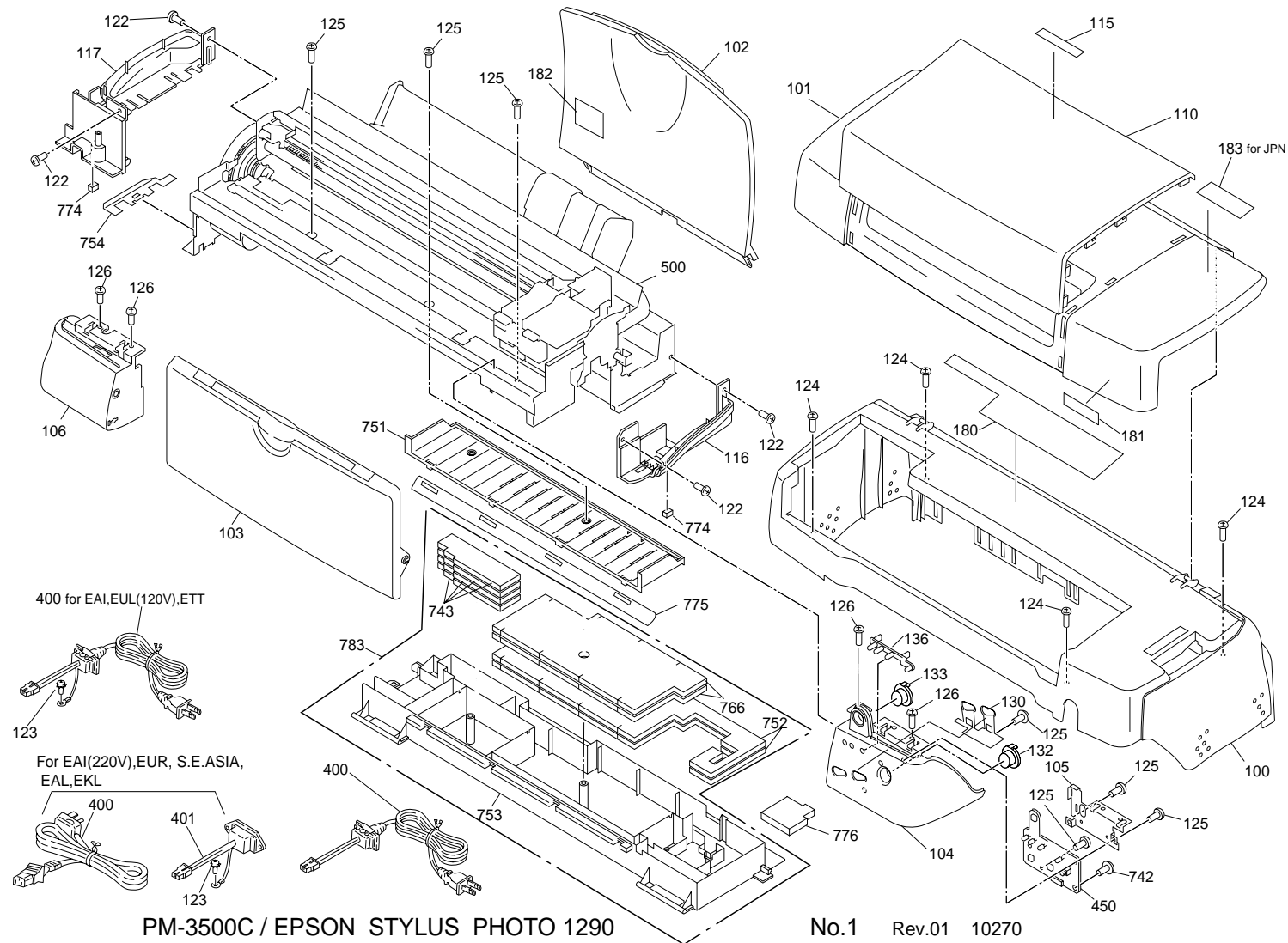


Figure 7-13. Stylus PHOTO 1290 - 1



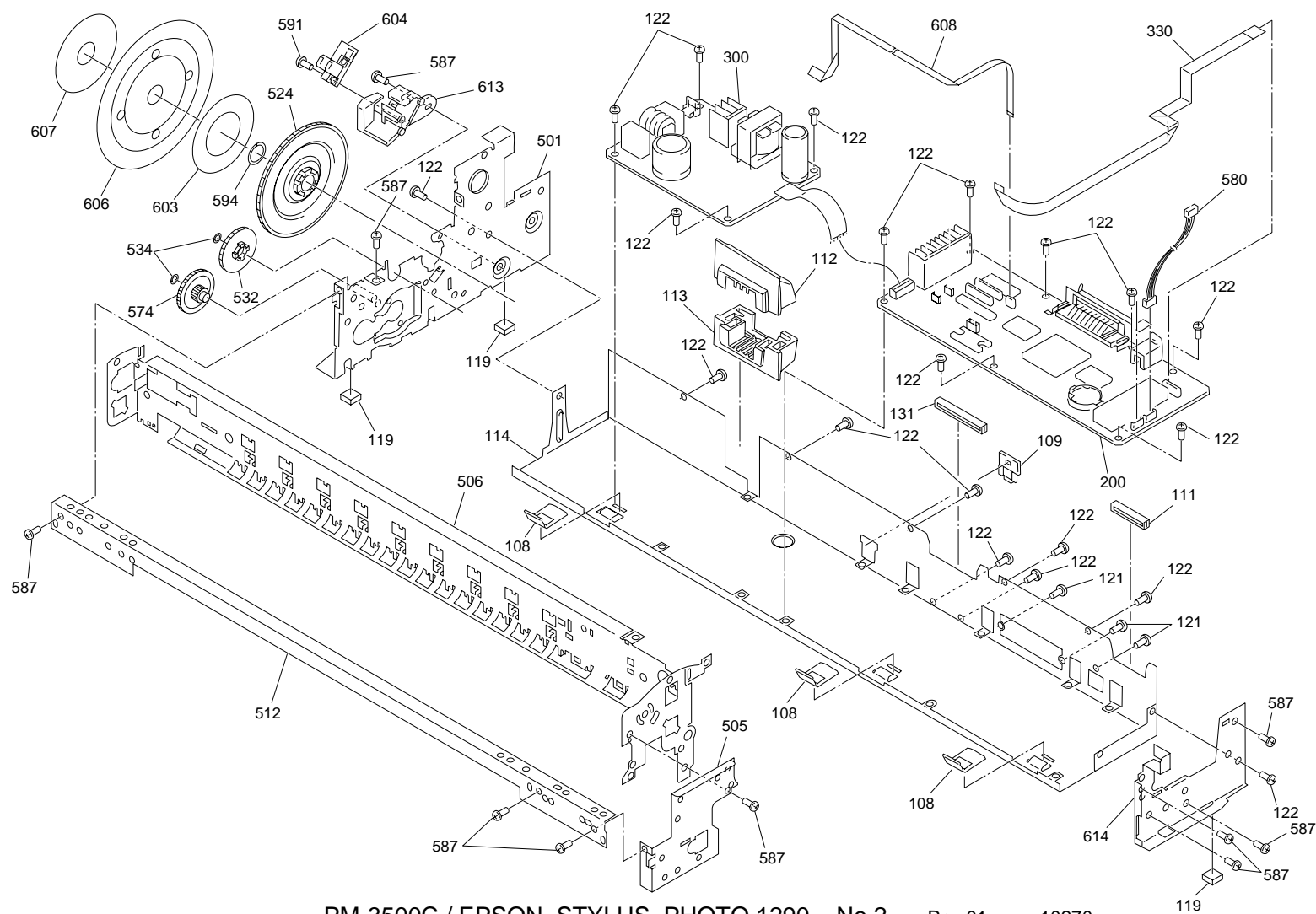
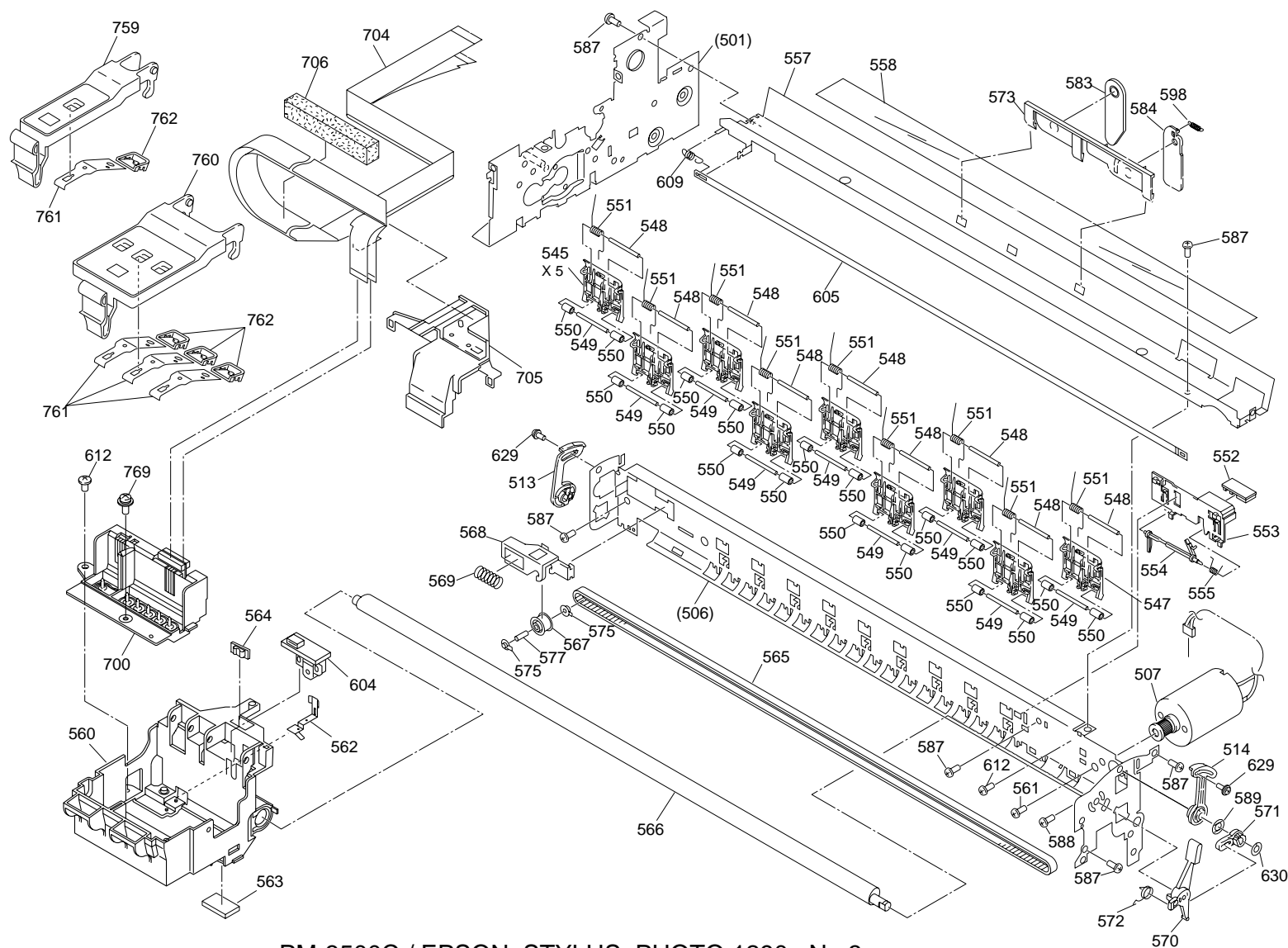


Figure 7-14. Stylus PHOTO 1290 - 2

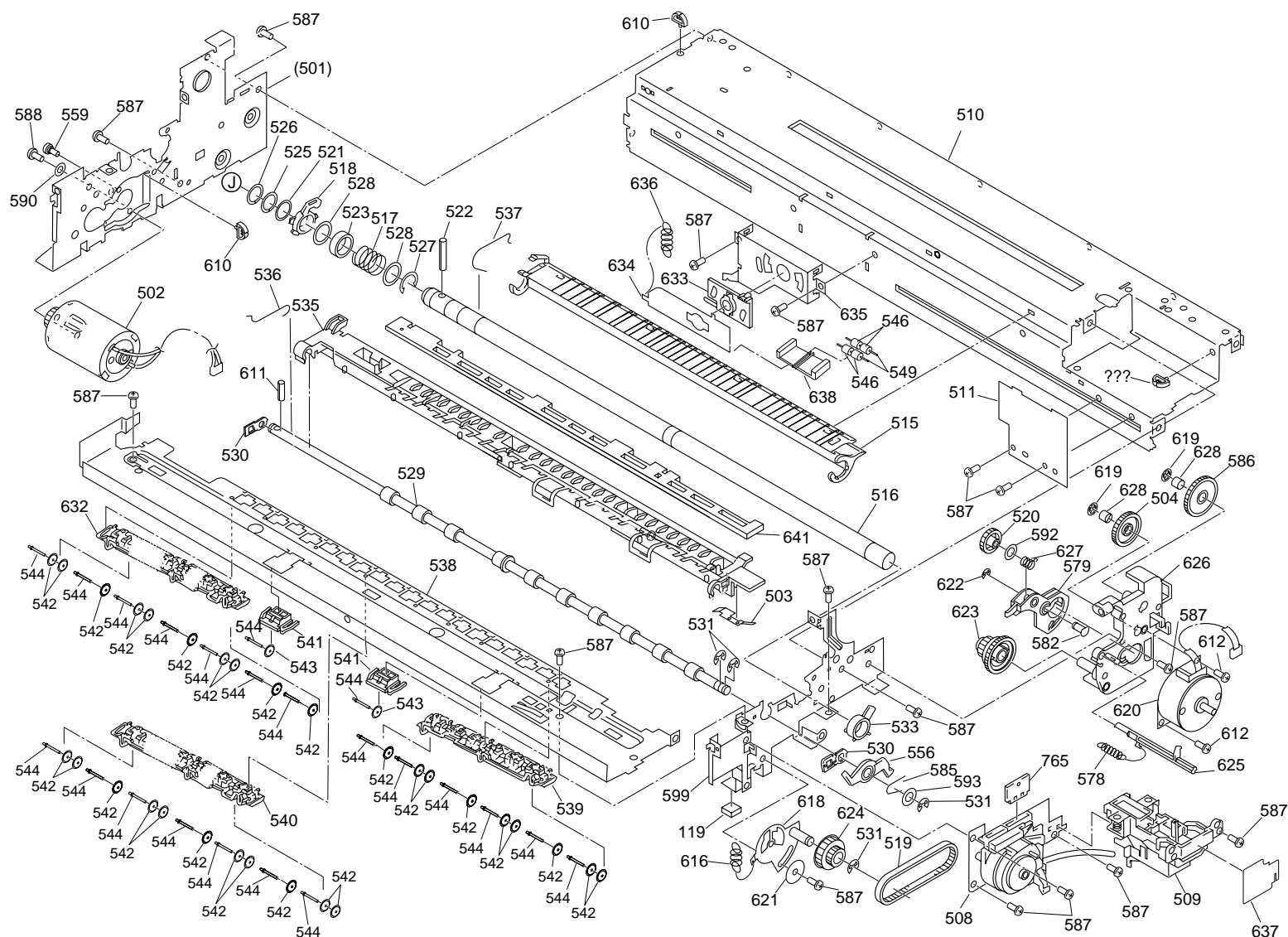


PM-3500C / EPSON STYLUS PHOTO 1290 No.3

Rev.01

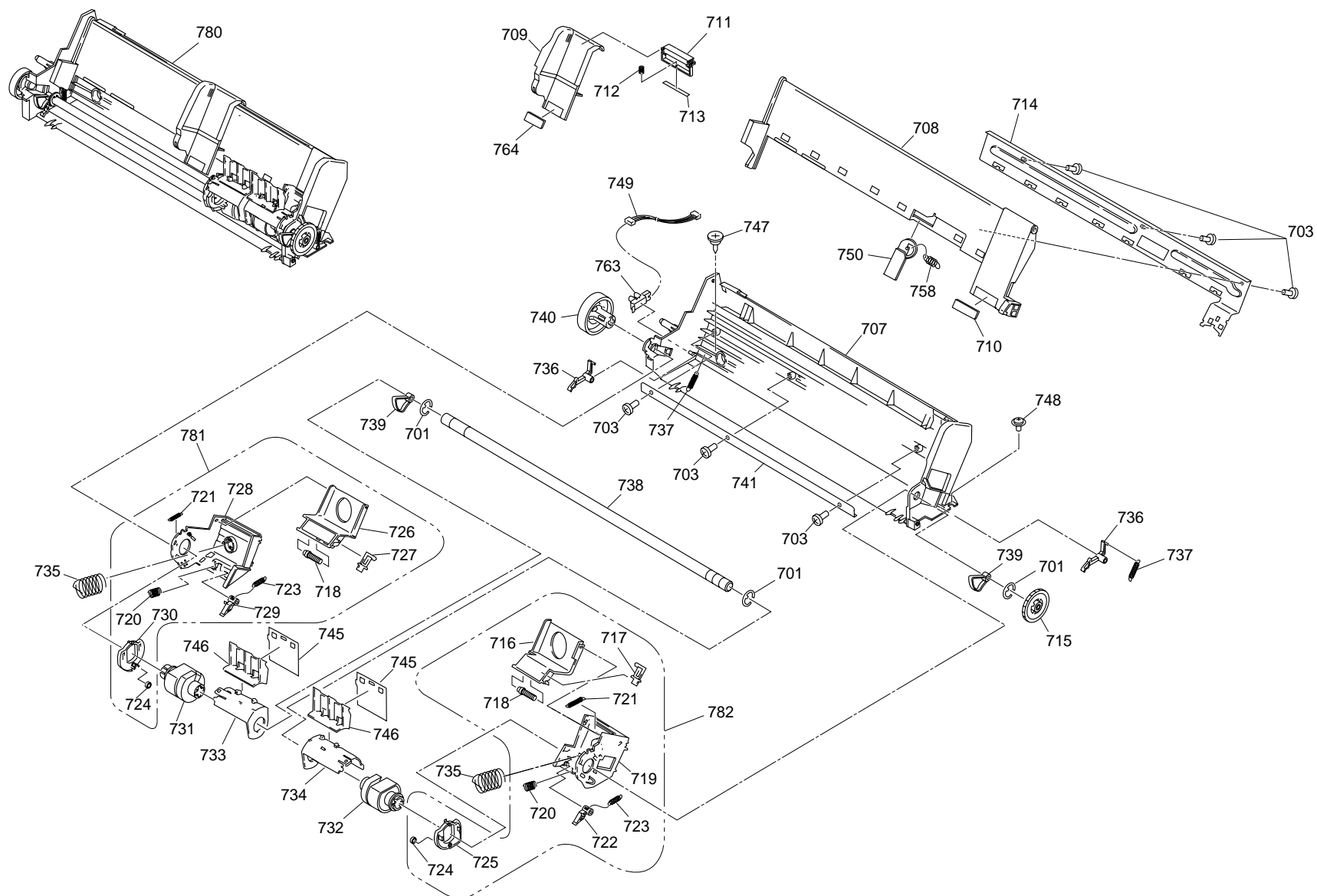
10270

**Figure 7-15. Stylus PHOTO 1290 - 3**



PM-3500C / EPSON STYLUS PHOTO 1290 No.4 Rev.01 10270

Figure 7-16. Stylus PHOTO 1290 - 4



PM-3500C / EPSON STYLUS PHOTO 1290 No.5 Rev.01 10270

Figure 7-17. Stylus PHOTO 1290 - 5

## 7.5 Parts List

### 7.5.1 Parts List for Stylus PHOTO 890

Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
100	HOUSING;B
101	COVER ASSY.
102	PAPER SUPPORT;B
103	STACKER ASSY.;C
104	PANEL ASSY.
105	"SHIELD PLATE,PANEL"
106	"HOUSING,PANEL,LEFT;B"
108	GROUNDING PLATE
109	"COVER,SHIELD PLATE,M/B,RIGHT"
111	"COVER,CABLE"
112	"COVER,INLET,UPPER;B"
113	"COVER,INLET,LOWER;B"
114	"SHIELD PLATE,M/B"
115	LOGO PLATE 10X40;C
116	"HOUSING,SUPPORT,RIGHT;B"
117	"HOUSING,SUPPORT,LEFT;B"
119	FOOT
121	C.P.SCREW
122	C.B.S. SCREW
123	"C.B.(O) SCREW,4X5,F/ZG"
124	C.B.S. SCREW
125	"C.B.P-TITE SCREW,3X8,F/ZN"

Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
126	C.B.S. SCREW
130	"BUTTON,CSIC"
131	"COVER,CABLE;B"
132	"LOCK,STACKER"
133	"COMPRESSION SPRING,2.94"
135	"BUTTON,PS;B"
136	OPTICAL TUBE
180	"LABEL,CAUTION;B"
181	"LABEL,MODEL NAME;B"
184	"LABEL,ACCESSORY"
200	"BOARD ASSY., MAIN"
300	"BOARD ASSY., POWER SUPPLY"
330	HARNESS
400	POWER CABLE ASSY.
450	"BOARD ASSY.,PANEL"
500	PRINTER MECHANISM(ASP)M4T12-100
501	"FRAME ASSY,LEFT;B"
502	"MOTOR ASSY.,PF"
504	"COMBINATION GEAR,12,22.4"
505	"FRAME,RIGHT,FRONT"
506	"FRAME,UPPER"
507	"MOTOR ASSY.,CR"
508	"PUMP,ASSY."
509	CAP ASSY.
510	"FRAME,LOWER"

Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
511	"SHEET,PROTECT,INK"
512	"FRAME,FRONT"
513	"BUSHING,PARALLELISM ADJUST,LEFT"
514	"BUSHING,PARALLELISM ADJUST,RIGHT"
515	"PAPER GUIDE,REAR"
516	"ROLLER,PF"
517	"COMPRESSION SPRING,5.85"
518	"BUSHING,12,LEFT"
519	"TENSION BELT,PUMP TRANSMISSION"
520	"SPUR GEAR,15.2"
521	"SPACER,C-RING"
522	"SCALLOP SPRING PIN-AW,2X16,F/B"
524	"SPUR GEAR,76"
525	"SPACER,FASTEN,ROLLER,PF"
526	"SPACER,FASTEN,ROLLER,PF;B"
527	C-RING
528	"PLANE WASHER,12.2X0.5X17"
529	"ROLLER ASSY.,EJ"
530	"BUSHING,6"
531	RETAINING RING
532	"SPUR GEAR,28"
533	"BUSHING,12,RIGHT"
534	"PLANE WASHER,4.1X0.5X6.5"
535	"PAPER GUIDE ASSY.,FRONT"
536	"GROUNDING WIRE,EJ"

Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
537	"GROUNDING SPRING,PF"
538	"FRAME,PAPER EJECT"
539	"HOLDER,STAR WHEEL,RIGHT;B"
540	"HOLDER,STAR WHEEL,LEFT;B"
541	"HOLDER,STARWHEEL,FRONT"
542	"STARWHEEL ASSY.,8"
543	"STARHWEEL,8;B"
544	"RODSRING,STARWHEEL;B"
545	"PAPER GUIDE,UPPER"
546	"PAPER GUIDE,LEFT"
547	"PAPER GUIDE,RIGHT"
548	"SHAFT,PAPER GUIDE,UPPER"
549	"SHAFT,ROLLER,DRIVEN"
550	"ROLLER,DRIVEN"
551	"TORSION SPRING,117.6"
552	"CIRCUIT ASSY,PE"
553	"HOLDER,PE"
554	"LEVER,PE"
555	"TORSION SPRING,0.22"
556	"LEVER,CR,LOCK"
557	"GUIDE PLATE,CR"
558	"SHEET,CABLE"
559	"SCREW,MOUNT,PF"
560	CARRIAGE
564	"SLIDER,CR"

Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
565	TIMING BELT
566	"SHAET,CR"
567	"PULLEY,DRIVEN"
568	"HOLDER,PULLEY,DRIVEN"
569	"COMPRESSION SPRING,23.52"
570	"LEVER,PG;C"
571	"LEVER,PG,SUPPORT"
572	"TORSION SPRING,63.7"
573	"GROUNDING PLATE,HEAD"
574	"COMBINATION GEAR,13.5,30"
575	"BUSHING,PULLEY,DRIVEN"
577	"SHAFT,PULLEY,DRIVEN"
578	"EXTENSION SPRING,0.618"
579	"LEVER,PLANET"
580	"HARNESS,PE"
581	"HARNESS,ASF"
582	"SHAFT,SPUR GEAR,PLANET"
585	"U-TYPE SPRING,5.2X0.13X10,S/NA"
586	"COMBINATION GEAR,14,28"
587	C.B.S. SCREW
588	C.P.SCREW
589	LEAF SPRING
590	"PLAIN WASHER,3.3X0.5X8,F/UC"
591	"C.B.P-TITE,2.5X5,F/ZN"
592	"PLAIN WASHER,6.2*0.2*9,L/NA"

Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
593	"PLAIN WASHER,5.1X0.7X11,S/NA"
594	"PLAIN WASHER,10.7X0.5X15.5,L/NA"
599	"FRAME,MIDDLE"
603	"TAPE,D50"
604	"BOARD ASSY.,ENCODER"
605	"SCALE,CR"
606	"SCALE,PF"
607	"MOUNTING PLATE,SCALE"
608	"FFC,ENCODER"
609	"EXTENSION SPRING,1.494"
610	"MINI CRAMP,UAMS-05SN"
611	"SCALLOP SPRING PIN-AW,2X10,F/B"
612	"C.B.P-TITE SCREW,3X8,F/ZN"
613	"MOUNTING PLATE,BOARD ASSY."
614	"FRAME,RIGHT,REAR"
616	"EXTENSION SPRING,7.37"
618	"LEVER ASSEMBLY,COMBINATION GEAR"
619	"SET RING,D8.8"
620	"MOTOR ASSY,ASF"
621	"P.W.,3.1X0.5X12,F/ZN"
622	RETAINING RING
623	"COMBINATION GEAR,17.19,25.6"
624	"COMBINATION GEAR,12,22.92"
625	"LEVER,DE,LOCK"
626	"MOUNTING PLATE,MOTOR,ASF"

Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
627	"COMPRESSION SPRING,3.944"
628	"FERUTO,D3.6"
637	"SHEET,INK STOPPER"
639	CUP SCREW
641	"POROUS PAD,PAPER GUIDE,FRONT"
644	"+,BIND B-TITE SEMS W2,2.5X6,F/ZB"
645	"GROUNDING PLATE,PAPER GUIDE,FRONT"
700	PRINT HEAD
703	"C.B.P-TITE SCREW,3X6,F/ZN"
704	"CABLE,HEAD"
705	"HOLDER,CABLE"
706	"SPACER,CABLE HEAD"
707	"FRAME,ASF;B"
708	HOPPER
709	EDGE GUIDE;E
710	CORK
711	"SLIDER,EDGEGUIDE"
712	"COMPRESSION SPRING,3.23"
713	"PAD,BREAK,EDGE GUIDE"
714	"REINFORCEMENT PLATE,HOPPER"
715	"SPUR GEAR,32"
716	"PAD ASSY.,RIGHT"
717	"LEVER,PAD,RELEASE,RIGHT"
718	"ROD SPRING,HOLDER,PAD"
719	"HOLDER,EDGEGUIDE,RIGHT"

Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
720	"COMPRESSION SPRING,1.17"
721	"EXTENSION SPRING,0.62"
722	"LEVER,PAPERRETURN,RIGHT"
723	"EXTENSION SPRING,0.294"
724	"ROLLER,LD,SUPPORT"
725	"HOLDER,ROLLER,LD,SUPPORT,RIGHT"
726	"PAD ASSY.,LEFT"
727	"LEVER,PAD,RELEASE,LEFT"
728	"HOLDER,EDGEGUIDE,LEFT"
729	"LEVER,PAPERRETURN,LEFT"
730	"HOLDER, ROLLER,LD,SUPPORT,LEFT"
731	"ROLLER ASSY.,LD,LEFT"
732	"ROLLER ASSY.,LD,RIGHT"
733	"COVER,ROLLER,LD,LEFT"
734	"COVER,ROLLER,LD,RIGHT"
735	"COMPRESSION SPRING,1.961"
736	"LEVER,FASTEN,EDGEGUIDE;B"
737	"EXTENSION SPRING,0.088"
738	"SHAFT,ROLLER,LD"
739	"LEVER,HOPPER,RELEASE"
740	"WHEEL,DETECT"
742	"C.C.P-TITE SCREW,3X8,F/ZN"
745	"SHEET,PAPERFEED"
746	"HOLDER,SHEET,PAPERFEED"
747	"SHAFT,MOUNT,CR"



Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
748	"C.B.S-TITE(P4),3X6,F/ZN"
751	"PAPER GUIDE,LOWER"
752	"POROUS PAD,INK EJECT,LARGE;B"
753	"TRAY,POROUS PAD"
754	"SPACER,TRAY"
755	"BUSHING,FASTEN,SHAFT,LEFT"
756	"PAPER SUPPORT,SUPPORT,UPPER"
757	"HOLDER,PAPER SUPPORT,SUPPORT,UPPER"
758	"EXTENSION SPRING,0.29"
759	"COVER,CARTRIDGE,BK;B"
760	"COVER,CARTRIDGE,C;B"
761	"PLAT SPRING COVER,CARTRIDGE"
762	"COVER,PLAT SPRING,CARTRIDGE"
763	"DETECTOR,HP;E"
764	CORK;B
765	"CLEANER HEAD,ASP"
766	"POROUS PAD,INK EJECT,SMALL;B"
774	"DUMPER,SUPPORT;B"
775	"POROUS PAD,FRAME,MIDDLE"
777	"POROUS PAD,INK EJECT,PUMP;S"
780	ASF UNIT
781	"PAPER LOADING ASSY.,RIGHT"
782	"PAPER LOADING ASSY.,LEFT"
800	"MOUNTING PLATE,ROLL PAPER,HOLDER"
801	"FRAME,ROLL PAPER,LEFT"

Table 7-13. Stylus PHOTO 890 Parts List

Code	Parts Name
802	"FRAME,ROLL PAPER,RIGHT"
803	"STOPPER,ROLL PAPER"
805	"SHEET,ROLL PAPER"

## 7.5.2 Parts List for Stylus PHOTO 1290

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
100	HOUSING
101	"COVER,PRINTER"
102	"PAPER SUPPOT,ASSY"
103	STACKER ASSY.;C
104	"HOUSING,PANEL,RIGHT"
105	"SHIELD PLATE,PANEL"
106	"PANEL ASSY.,LEFT;C"
108	GROUNDING PLATE
109	"COVER,SHIELD PLATE,M/B,RIGHT"
110	"COVER,PRINTER,SUPPORT"
111	"COVER,CABLE"
112	"COVER,INLET,UPPER;B"
113	"COVER,INLET,LOWER;B"
114	"SHIELD PLATE,M/B"
115	LOGO PLATE 10X40;C
116	"HOUSING,SUPPORT,RIGHT;C"
117	"HOUSING,SUPPORT,LEFT;C"
119	FOOT
121	C.P.SCREW
122	C.B.S. SCREW
123	"C.B.(O) SCREW,4X5,F/ZG"
124	C.B.S. SCREW
125	"C.B.P-TITE SCREW,3X8,F/ZN"
126	C.B.S. SCREW

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
130	BUTTON;C
131	"COVER,CABLE;B"
132	"BUTTON,PS;B"
136	OPTICAL TUBE
133	"BUTTON,CSIC"
180	"LABEL,CAUTION;B"
181	"LABEL,MODEL NAME;C"
182	"LABEL,PAPER SET;B"
200	"BOARD ASSY., MAIN"
300	"BOARD ASSY., POWER SUPPLY"
330	HARNESS
400	POWER CABLE ASSY.
450	"BOARD ASSY.,PANEL"
500	"PRINTER MECHANISM(ASP),M4S61-100"
501	"FRAME ASSY.,LEFT;B"
502	"MOTOR ASSY.,PF"
503	"GROUNDING PLATE,PAPER GUIDE,FRONT"
504	"COMBINATION GEAR,12,22.4"
505	"FRAME,RIGHT,FRONT"
506	"FRAME,UPPER"
507	"MOTOR ASSY.,CR"
508	"PUMP,ASSY."
509	CAP ASSY.
510	"FRAME,LOWER"
511	"SHEET,PROTECT,INK"

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
512	"FRAME,FRONT"
513	"BUSHING,PARALLELISM ADJUST,LEFT"
514	"BUSHING,PARALLELISM ADJUST,RIGHT"
515	"PAPER GUIDE,REAR"
516	"ROLLER,PF"
517	"COMPRESSION SPRING,5.86"
518	"BUSHING,12,LEFT"
519	"TENSION BELT,PUMP TRANSMISSION"
520	"SPUR GEAR,15.2"
521	"SPACER,C-RING"
522	"SCALLOP SPRING PIN-AW,2X16,F/B"
523	"SLEEVE,ROLOR,PF"
524	"SPUR GEAR,76"
525	"SPACER,FASTEN,ROLLER,PF"
526	"SPACER,FASTEN,ROLLER,PF;B"
527	C-RING
528	"PLANE WASHER,12.2X0.5X17"
529	"ROLLER ASSY.,EJECT OUT"
530	"BUSHING,6"
531	RETAINING RING
532	"SPUR GEAR,28"
533	"BUSHING,12,RIGHT"
534	"PLANE WASHER,4.1X0.5X6.5"
535	"PAPER GUIDE ASSY.,FRONT"
536	"GROUNDING WIRE,EJ"

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
537	"GROUNDING SPRING,PF"
537	"GROUNDING SPRING,PF"
538	"FRAME,PAPER EJECT;B"
539	"HOLDER,STAR WHEEL,RIGHT;B"
540	"HOLDER,STAR WHEEL,LEFT;B"
541	"HOLDER,STARWHEEL,FRONT"
542	"STAR WHEEL,8;G"
543	"STARHWEEL,8;B"
544	"RODSRING,STARWHEEL;B"
545	"PAPER GUIDE,UPPER"
546	"ROLLER,DRIVEN"
547	"PAPER GUIDE,RIGHT"
548	"SHAFT,PAPER GUIDE,UPPER"
549	"SHAFT,ROLLER,DRIVEN"
550	"ROLLER,DRIVEN;D"
551	"TORSION SPRING,117.6"
552	"CIRCUIT ASSY,PE"
553	"HOLDER,PE"
554	"LEVER,PE"
555	"TORSION SPRING,0.22"
556	"LEVER,CR,LOCK"
557	"GUIDE PLATE,CR"
558	"SHEET,CABLE"
559	"SCREW,MOUNT,PF"
560	CARRIAGE

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
561	CUP SCREW
562	"GROUNDING PLATE,HEAD"
563	OIL PAD
564	"SLIDER,CR"
565	TIMING BELT
566	"SHAFT ASSY.,CR,GUIDE"
567	"PULLEY,DRIVEN"
568	"HOLDER,PULLEY,DRIVEN"
569	"COMPRESSION SPRING,23.52"
570	"LEVER,PG;B"
571	"LEVER,PG,SUPPORT"
572	"TORSION SPRING,63.7"
573	"HOLDER,PAPER SUPPORT,SUPPORT,UPPER"
574	"COMBINATION GEAR,13.5,30"
575	"BUSHING,PULLEY,DRIVEN"
577	"SHAFT,PULLEY,DRIVEN"
578	"EXTENSION SPRING,0.618"
579	"LEVER,PLANET"
580	"HARNESS,PE"
582	"SHAFT,SPUR GEAR,PLANET"
583	"PAPER SUPPORT,SUPPORT,UPPER,LEFT;B"
584	"PAPER SUPPORT,SUPPORT,UPPER"
585	"U-TYPE SPRING,5.2X0.13X10,S/NA"
586	"COMBINATION GEAR,14,28"
587	C.B.S. SCREW

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
588	C.P.SCREW
589	LEAF SPRING
590	"PLAIN WASHER,3.3X0.5X8,F/UC"
591	"C.B.P-TITE,2.5X5,F/ZN"
592	"PLAIN WASHER,6.2*0.2*9,L/NA"
593	"PLAIN WASHER,5.1X0.7X11,S/NA"
594	"PLAIN WASHER,10.7X0.5X15.5,L/NA"
598	"EXTENSION SPRING,0.29"
599	"FRAME,MIDDLE"
603	"TAPE,D50"
604	"BOARD ASSY.,ENCODER"
605	"SCALE,CR"
606	"SCALE,PF"
607	"MOUNTING PLATE,SCALE"
608	"FFC,ENCODER"
609	"EXTENSION SPRING,1.494"
610	"MINI CRAMP,UAMS-05SN"
611	"SCALLOP SPRING PIN-AW,2X10,F/B"
612	"C.B.P-TITE SCREW,3X8,F/ZN"
613	"MOUNTING PLATE,BOARD ASSY."
614	"FRAME,RIGHT,REAR"
616	"EXTENSION SPRING,7.37"
618	"LEVER ASSEMBLY,COMBINATION GEAR"
619	"SET RING,D8.8"
620	"MOTOR ASSY,ASF"

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
621	"P.W.,3.1X0.5X12,F/ZN"
622	RETAINING RING
623	"COMBINATION GEAR,17.19,25.6"
624	"COMBINATION GEAR,12,22.92"
625	"LEVER,DE,LOCK"
626	"MOUNTING PLATE,MOTOR,ASF"
627	"COMPRESSION SPRIN,3.944"
628	"FERUTO,D3.6"
629	"C.B.S-TITE(P4),3X6,F/ZN"
630	"PLANE WASHER,4.5X0.5X8,L/NA"
632	"HOLDER,STARWHEEL,SUPPORT;B"
633	"BUSHU,ROLLER PF,SUPPORT"
634	"LEVER,ROLLER PF,SUPPORT"
635	"MOUNTIN PLATE,LEVER,ROLLER PF,SUPPORT"
636	"EXTENSION SPRING,10.1"
637	"SHEET,INK STOPPER"
638	"HOLDER,ROLLER PF,SUPPORT"
641	"POROUS PAD,PAPER GUIDE,FRONT"
700	PRINT HEAD
701	RETAINING RING
703	"C.B.P-TITE SCREW,3X6,F/ZN"
704	"CABLE,HEAD"
705	"HOLDER,CABLE"
706	"SPACER,CABLE HEAD"
707	"FRAME,ASF"

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
708	HOPPER;C
709	EDGE GUIDE;E
710	CORK
711	"SLIDER,EDGEGUIDE"
712	"COMPRESSION SPRING,3.23"
713	"PAD,BREAK,EDGE GUIDE"
714	"SUPPORT PLATE,HOPPER;B"
715	"SPUR GEAR,32"
716	"PAD ASSY.,RIGHT"
717	"LEVER,PAD,RELEASE,RIGHT"
718	"ROD SPRING,HOLDER,PAD"
719	"HOLDER,EDGEGUIDE,RIGHT"
720	"COMPRESSION SPRING,1.17"
721	"EXTENSION SPRING,0.62"
722	"LEVER,PAPERRETURN,RIGHT"
723	"EXTENSION SPRING,0.294"
724	"ROLLER,LD,SUPPORT"
725	"HOLDER,ROLLER,LD,SUPPORT,RIGHT"
726	"PAD ASSY.,LEFT"
727	"LEVER,PAD,RELEASE,LEFT"
728	"HOLDER,EDGEGUIDE,LEFT"
729	"LEVER,PAPERRETURN,LEFT"
730	"HOLDER,ROLLER,LD,SUPPORT,LEFT"
731	"ROLLER ASSY,LD,LEFT"
732	"ROLLER ASSY,LD,RIGHT"

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
733	"COVER,ROLLER,LD,LEFT"
734	"COVER,ROLLER,LD,RIGHT"
735	"COMPRESSION SPRING,1.961"
736	"LEVER,FASTEN,EDGEGUIDE;B"
737	"EXTENSION SPRING,0.088"
738	"SHAFT,ROLLER,LD"
739	"LEVER,HOPPER,RELEASE"
740	"WHEEL,DETECT"
741	"STRENGTHEN PLATE,FRAME,ASF"
742	"C.C.P-TITE SCREW,3X8,F/ZN"
743	"POLUS PAD,FL"
745	"SHEET,PAPERFEED"
746	"HOLDER,SHEET,PAPERFEED"
747	"SHAFT,MOUNT,CR"
748	"C.B.S-TITE(P4),3X6,F/ZN"
749	"HARNES,ASF"
750	"PAPER SUPPORT,HOPPER"
751	"PAPER GUIDE,LOWER"
752	"POLUS PAD,LARGE"
753	"TRAY,POROUS PAD"
754	"SPACER,TRAY"
758	"EXTENSION SPRING,0.29"
759	"COVER,CARTRIDGE,BK;B"
760	"COVER,CARTRIDGE,C;B"
761	"PLAT SPRING COVER,CARTRIDGE"

Table 7-14. Stylus PHOTO 1290 Parts List

Code	Parts Name
762	"COVER,PLAT SPRING,CARTRIDGE"
763	"DETECTOR,HP;E"
764	CORK;B
765	"CLEANER HEAD,ASP"
766	"POLUS PAD,SMALL"
769	"+,BIND B-TITE SEMS W2,2.5X6,F/ZB"
774	"DUMPER,SUPPORT;B"
775	"SEAT,PAPER EJECT"
776	"POROUS PAD,INK EJECT,PUMP;S"
780	ASF ASSY.;D
781	"PAPER LOADING ASSY.,LEFT"
782	"PAPER LOADING ASSY.,RIGHT"
783	"TRAY ASSEMBLY,POROUS PAD"
800	"MOUNTING PLATE,ROLL PAPER,HOLDER"
801	"FRAME,ROLL PAPER,LEFT"
802	"FRAME,ROLL PAPER,RIGHT"
803	"STOPPER,ROLL PAPER"
805	"SHEET,ROLL PAPER"