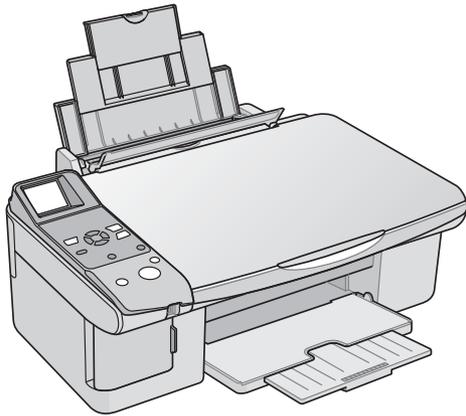
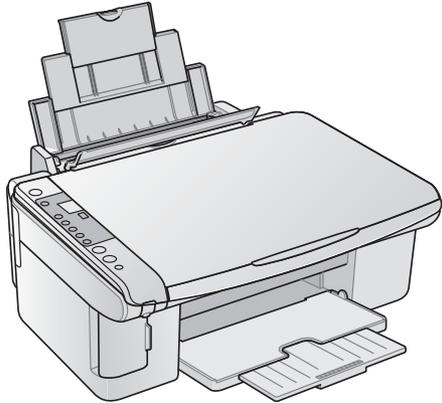


# SERVICE MANUAL



Color Inkjet Printer

**EPSON Stylus CX4900/CX4905/CX5000/  
DX5000/DX5050  
Stylus CX5900/CX6000/DX6000/  
DX6050**

**EPSON**  
EXCEED YOUR VISION

SEMF06-006

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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. REPLACE MALFUNCTIONING COMPONENTS ONLY WITH THOSE COMPONENTS BY THE MANUFACTURER; INTRODUCTION OF SECOND-SOURCE ICs OR OTHER NON-APPROVED COMPONENTS MAY DAMAGE THE PRODUCT AND VOID ANY APPLICABLE EPSON WARRANTY.
6. WHEN USING COMPRESSED AIR PRODUCTS; SUCH AS AIR DUSTER, FOR CLEANING DURING REPAIR AND MAINTENANCE, THE USE OF SUCH PRODUCTS CONTAINING FLAMMABLE GAS IS PROHIBITED.

# About This Manual

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of the printer. 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.

## Manual Configuration

This manual consists of six chapters and Appendix.

### **CHAPTER 1. PRODUCT DESCRIPTIONS**

Provides a general overview and specifications of the product.

### **CHAPTER 2. OPERATING PRINCIPLES**

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

### **CHAPTER 3. TROUBLESHOOTING**

Describes the step-by-step procedures for the troubleshooting.

### **CHAPTER 4. DISASSEMBLY / ASSEMBLY**

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

### **CHAPTER 5. ADJUSTMENT**

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.

### **CHAPTER 7. APPENDIX**

Provides the following additional information for reference:

- Connector Summary
- Exploded Diagram
- Parts List
- Electrical Circuits

## 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, if not strictly observed, could result in injury or loss of life.



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.



Indicates that a particular task must be carried out according to a certain standard after disassembly and before re-assembly, otherwise the quality of the components in question may be adversely affected.

# Revision Status

Revision	Issued Date	Description
A	August 4, 2006	First Release

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CHAPTER

1

**PRODUCT DESCRIPTION**

## 1.1 Overview



**In this manual, unless otherwise specified or noted, the information applies to all of EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050.**

This unit features 4-in-1 functionality (computer-connected printer and scanner, stand-alone copy machine, and stand-alone memory card printing) and is designed for home/personal use. Its main functions are described below.

### 1.1.1 Features

#### □ Printer functions

As a printer, this unit achieves high-quality output at high speed on plain paper, and uses new pigment ink for improved light fastness, water fastness, gas fastness, rubbing fastness. It includes the following features.

- Maximum print resolution 5760 (H) x 1440 (V) dpi
- Separate ink cartridge for each color
- ASF (Auto Sheet Feeder) holds up to 100 cut sheets (64 g/m<sup>2</sup>)
- Border-free printing with EPSON specialty media
- Reduced noise level
- Fast and thick draft mode with the combination of real black and composite black

#### □ Scanner functions

Use of a CIS sensor means no warm-up period is required, which makes scanning more convenient and allows for a more compact scanner. Additional features include the following.

- Maximum optical resolution: 1200 x 2400 dpi
- Scan gradations: 48 bits (input), 24 bits (output)

#### □ Stand-alone copy functions

It benefits from using a more recently developed type of ink which enables photo-quality copies to be made not only on special media but even on plain paper. Only the basic copy functions are provided for easier operation.

- Paper size can be selected from 2, 3 or 4 options.

**Table 1-1. Paper Size**

Model	Paper size	
Stylus CX4900/ CX4905/CX5000/ DX5000/DX5050	EAI	Letter/4"x6"
	EURO/ASIA	A4/10x15
	LATIN	Letter/A4/4"x6"
Stylus CX5900/ CX6000/DX6000/ DX6050	EAI	Letter/4"x6"/5"x7"
	EURO/ASIA	A4/10x15/13x18
	LATIN	Letter/A4/4"x6"/5"x7"

- Paper type can be selected from the following options, which also defines copy quality.

Model	Paper Type
Stylus CX4900/CX4905/CX5000/ DX5000/DX5050	Plain paper/Photo paper
Stylus CX5900/CX6000/DX6000/DX6050	Plain paper/Photo paper/Matte paper

- Enlarge / Reduce factor can be selected from two options; actual size (100%) or "Fit to page".
- Copy margin is automatically selected from three options, related to paper type and paper size; 3mm, "Small Margins Copy", or "Border Free Copy".
- Fast and thick draft mode with the combination of real black and composite black
- Copy functions can be directly alternated from memory card print functions, by operation panel.

#### □ Card reader functions

This unit includes memory card slots that support CompactFlash, Memory Stick, Memory Stick PRO, Micro Drive, SD Memory Card, and xD-Picture Card standards.

- Memory card print functions  
 This unit can print images from the memory card in memory card slots during stand-alone mode.  
 The memory card print features are as follows.
  - Supports “Order sheet printing” whereby images can be selected simply by marking an index sheet. Selecting images is made easy by checking the desired images and scanning the index sheet.
  - Memory card print functions can be directly alternated from copy functions, by the operation panel.
- USB DIRECT-PRINT/PictBridge functions  
 This unit can print from Digital Still Camera that is compliant with “USB DIRECT-PRINT”/ “CIPA DC-001-2003 Digital Photo Solutions for Imaging Devices” and that is connected by USB cable.
- Scan functions  
 This unit provides scan mode so that data can be scanned and transferred to a connected computer or to e-mail via application software like the EPSON SMART PANEL.
- Photo Print Function (Stylus CX5900/CX6000/DX6000/DX6050 only)  
 This unit has function to scan and print photos.
- Simultaneous use of functions  
 Printer functions and scanner functions are independent and can therefore be operated simultaneously from a connected computer.
- Easy operation panel

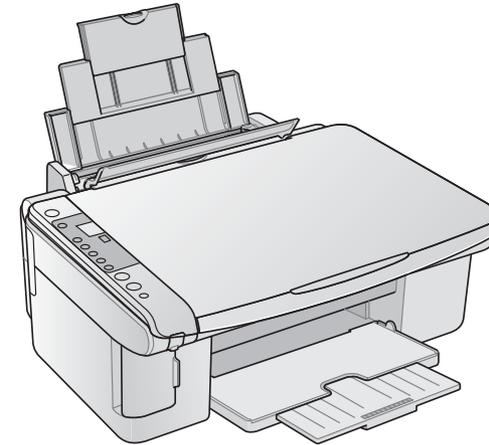
**Table 1-2. Operation Panel**

Model	LED	LCD	Buttons*1
Stylus CX4900/CX4905/CX5000/ DX5000/DX5050	14 LEDs*2	---	10 buttons
Stylus CX5900/CX6000/DX6000/DX6050	15 LEDs	2.0 inch LCD	13 buttons

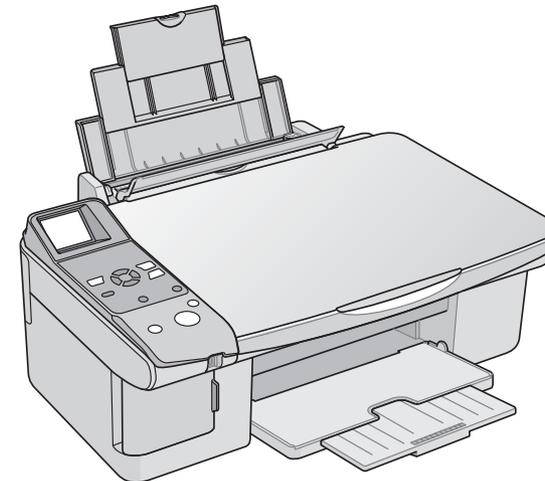
Note \*1: Including power button

\*2: Including 7 Segment LED

- Exterior design  
 Use of a CIS scanner engine has enabled a more compact design.  
 Also, this unit has operation panel on the left side, which becomes more distinctive but still easier to use.



**Stylus CX4900/CX4905/CX5000/DX5000/DX5050**



**Stylus CX5900/CX6000/DX6000/DX6050**

**Figure 1-1. External View**

## 1.2 Specifications

### 1.2.1 Printer specifications

This section covers specifications of the printer.

#### 1.2.1.1 Physical Specification

Model	Weight (kg) <sup>*1</sup>	Dimension (mm) <sup>*2</sup>
Stylus CX4900/CX4905/ CX5000/DX5000/DX5050	6.5	430TBD (W) x 360TBD (D) x 180TBD (H)
Stylus CX5900/CX6000/ DX6000/DX6050	6.9	462.9 (W) x 354.1 (D) x 195.8 (H)

Note \*1: Without ink cartridges

\*2: Including rubber feet, excluding loading tray

#### 1.2.1.2 Printing Specification

- Print Method
  - On-demand ink jet
- Nozzle Configuration
  - Monochrome 90 nozzles
  - Color 90 nozzles x 3 (Cyan, Magenta, Yellow)

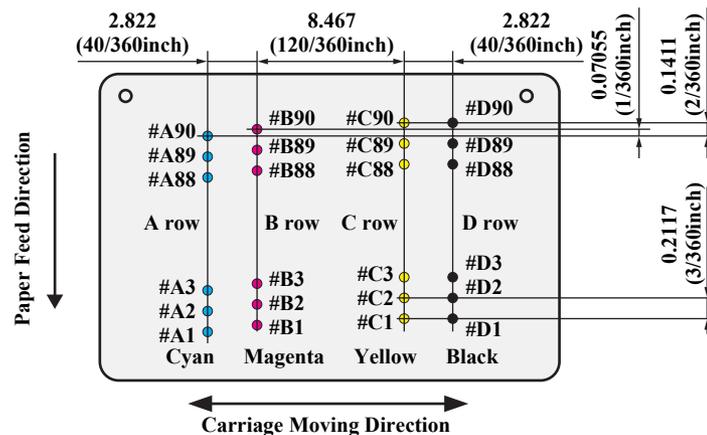


Figure 1-2. Nozzle configuration

- Print Direction
  - Bi-directional minimum distance printing (with logic seeking)
- Print Resolution

Table 1-3. Print Resolution

Horizontal direction (across columns)	Vertical direction (paper feed)
360 dpi	120 dpi
360 dpi	360 dpi
360 dpi	720 dpi
720 dpi	720 dpi
1440 dpi	720 dpi
5760 dpi*	1440 dpi*

Note "\*": Those resolution can only be used with the printer driver.

- Internal fonts
  - Character code: Alphanumeric with expanded graphics (PC437)  
ASCII, 20H to 7FH only
  - Fonts: EPSON original fonts  
Alphanumeric font: Courier
- Input buffer size
  - 64 Kbytes

#### 1.2.1.3 Paper Feed Specifications

- Paper feed method
  - Friction feed, using one ASF (Auto Sheet Feeder)
- Paper path
  - Top feed, front out
- Paper feed rates
  - 98.8 mm/sec: High quality mode, 19.05 mm feed
  - 352.8-6.35 mm/sec (13.89-0.25 inch/sec): High speed mode, continuous feed
- PF interval
  - Programmable in 0.017 mm (1/1440 inch) steps

### 1.2.1.4 Paper Support

Following table shows the paper type and sizes supported by the printer.  
Supported paper type and sizes vary depending on the markets and the models.

**Table 1-4. Paper Support**

Item		Paper Size	Width (mm)	Length (mm)	Thick-ness (mm)	Weight (g/m <sup>2</sup> )	EAI	EUR	ASIA
Cut sheets	Plain paper Recycled paper	Legal	215.9	355.6	0.08-0.11	64-90	O	O	O
		Letter	215.9	279.4			O	O	O
		A4	210	297			O	O	O
		B5	182	257			—	O	O
		A5	148	210			—	O	O
		Half Letter	139.7	215.9			O	—	—
		A6	105	14			O	O	O
		User defined	50.8-329	127-1117.6			O	O	O
Envelope (Bond paper, Air mail, PPC)	No.10	241.3	104.8	N/A	75-90	O	O	O	
	DL	220	110			—	O	O	
	C6	162	114			—	O	O	
EPSON special paper	Premium Ink Jet Plain Paper	A4	0.11	80	0.11	80	—	O	O
	Bright White Ink Jet Paper	A4	0.13	92.5	0.13	92.5	—	O	O
	Premium Photo Paper Glossy (EAI) Premium Glossy Photo Paper (Other)	Letter	215.9	279.4	0.27	255	O	—	—
		A4	210	297			O	O	O
		8" x 10"	203.2	254			O	—	—
		5" x 7"	127	178			O	O	O
		HV	101.6	180.6			O	O	O
	4" x 6"	101.6	152.4	O	O	O			
	Premium Photo Paper Semi-Gloss (EAI) Premium Semigloss Photo Paper (Other)	Letter	215.9	279.4	0.27	250	O	—	—
		A4	210	297			—	O	O
4" x 6"		101.6	152.4	O			O	O	

**Table 1-4. Paper Support**

Item		Paper Size	Width (mm)	Length (mm)	Thick-ness (mm)	Weight (g/m <sup>2</sup> )	EAI	EUR	ASIA
EPSON special paper	Premium Presentation Paper Matte (EAI) Matte Paper-Heavyweight (Other)	Letter	215.9	279.4	0.23	167	O	—	—
		A4	210	297			—	O	O
		8" x 10"	203.2	254			O	—	—
	Photo Paper Glossy (EAI) Glossy Photo Paper (EUR, Asia)	Letter	215.9	279.4	0.25	258	O	—	—
		A4	210	297			O	O	O
		5" x 7"	127	178			—	O	—
		4" x 6"	101.6	152.4			O	O	O
	Photo Quality Inkjet Paper	A4	210	297	0.12	102	—	O	O
	Ultra Premium Photo Paper Glossy (EAI) Ultra Glossy Photo Paper (Other)	Letter	215.9	279.4	0.30	290	O	—	—
		A4	210	297			—	O	O
8" x 10"		203.2	254	O			—	—	
5" x 7"		127	178	O			O	—	
4" x 6"		101.6	152.4	O			O	O	



- Make sure that the paper is not wrinkled, fluffed, torn, or folded.
- The curve of paper must be 5 mm or below.
- When printing onto an envelope, be sure that the flap is on the long edge and is folded.
- Do not use the adhesive envelopes.
- Do not use double envelopes and cellophane window envelopes.

### 1.2.1.5 Printing Area

□ Cut sheet (standard printing)

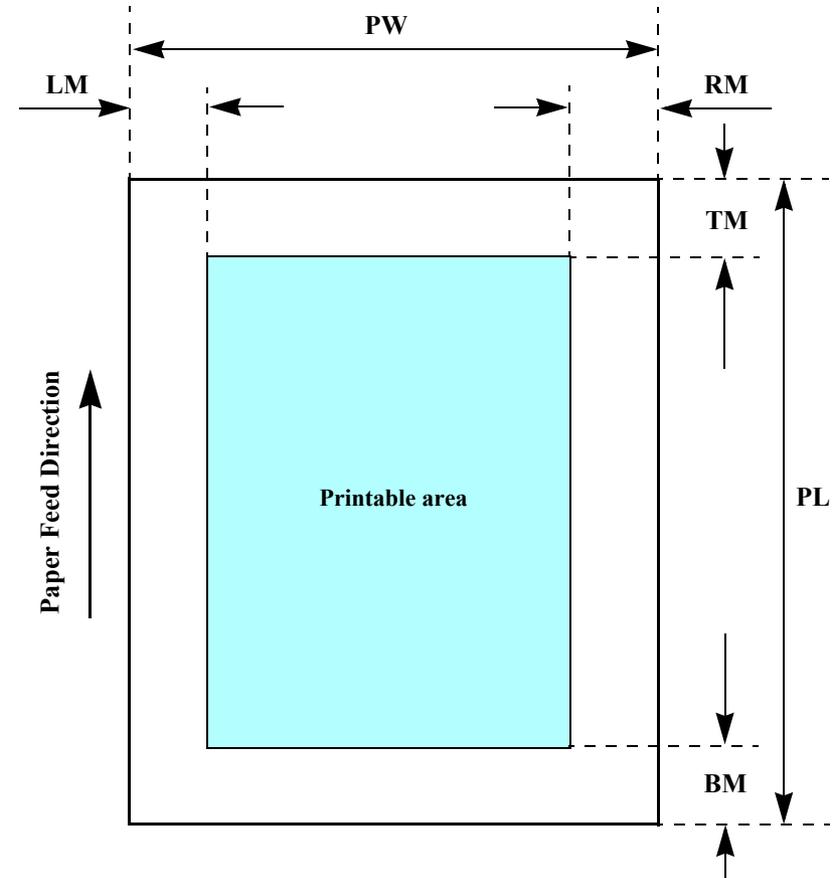
■ Printable area

The print quality is guaranteed for the print area above the 3 mm bottom margin. For paper width (PW) and paper length (PL), refer to “1.2.1.4 Paper Support” (p.13).

Refer to the following table. As for each margin area, refer to Figure 1-3 (p.14).

**Table 1-5. Applicable Paper/Printing Area**

Paper type		Left margin	Right margin	Top margin	Bottom margin
Cut sheets	Legal	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")
	Letter				
	A4				
	B5				
	A5				
	Half Letter				
	A6				
	User defined				
EPSON special paper	Premium Ink Jet Plain Paper	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")
	Bright White Ink Jet Paper				
	Premium Photo Paper Glossy Premium Glossy Photo Paper				
	Premium Photo Paper Semi-Gloss Premium Semigloss Photo Paper				
	Premium Presentation Paper Matte Matte Paper-Heavyweight				
	Ultra Glossy Photo Paper Ultra Premium Glossy Photo Paper				
	Premium Presentation Paper Matte Matte Paper-Heavyweight				
	Ultra Premium Photo Paper Glossy Ultra Glossy Photo Paper				



**Figure 1-3. Printable Area Cut Sheet (Standard Printing)**

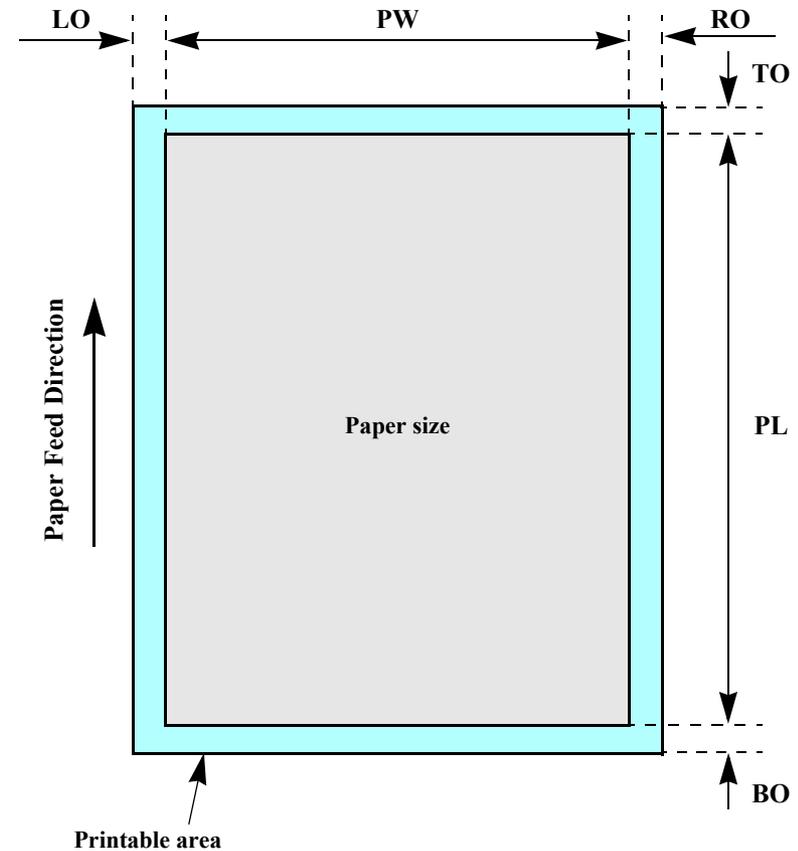
- Cut sheet (border-free printing)
  - Printable area  
 For paper width (PW) and paper length (PL), refer to “1.2.1.4 Paper Support” (p.13).  
 Refer to the following table. As for each overhang area, refer to Figure 1-4 (p.15).

**Table 1-6. Applicable Paper/Printing Area (For Printing)**

Paper Type	Size	LO (mm)	RO (mm)	TO (mm)	BO (mm)
Premium Photo Paper Glossy (EAI) Premium Glossy Photo Paper (Other)	Letter	2.54	2.54	2.96	4.02
	A4				
	8" x 10"				
	5" x 7"				
	HV				
	4" x 6"	1.34*1/2.82*2	2.54*1/3.6*2		
Premium Photo Paper Semi-Gloss (EAI) Premium Semigloss Photo Paper (Other)	Letter	2.54	2.54	2.96	4.02
	A4				
	4" x 6"				
Premium Presentation Paper Matte (EAI) Matte Paper-Heavyweight (Other)	Letter	2.54	2.54	2.96	4.02
	A4				
	8" x 10"				
Photo Paper Glossy (EAI) Glossy Photo Paper (EUR, Asia)	Letter	2.54	2.54	2.96	4.02
	A4				
	5" x 7"				
	4" x 6"				
Ultra Premium Photo Paper Glossy (EAI) Ultra Glossy Photo Paper (Other)	Letter	2.54	2.54	2.96	4.02
	A4				
	8" x 10"				
	5" x 7"				
	4" x 6"				

Note \*1: Stylus CX5900/CX6000/DX6000/DX6050

\*2: Stylus CX4900/CX4905/CX5000/DX5000/DX5050



**Figure 1-4. Printable Area for Cut Sheet (Border-free Printing)**

□ Envelopes

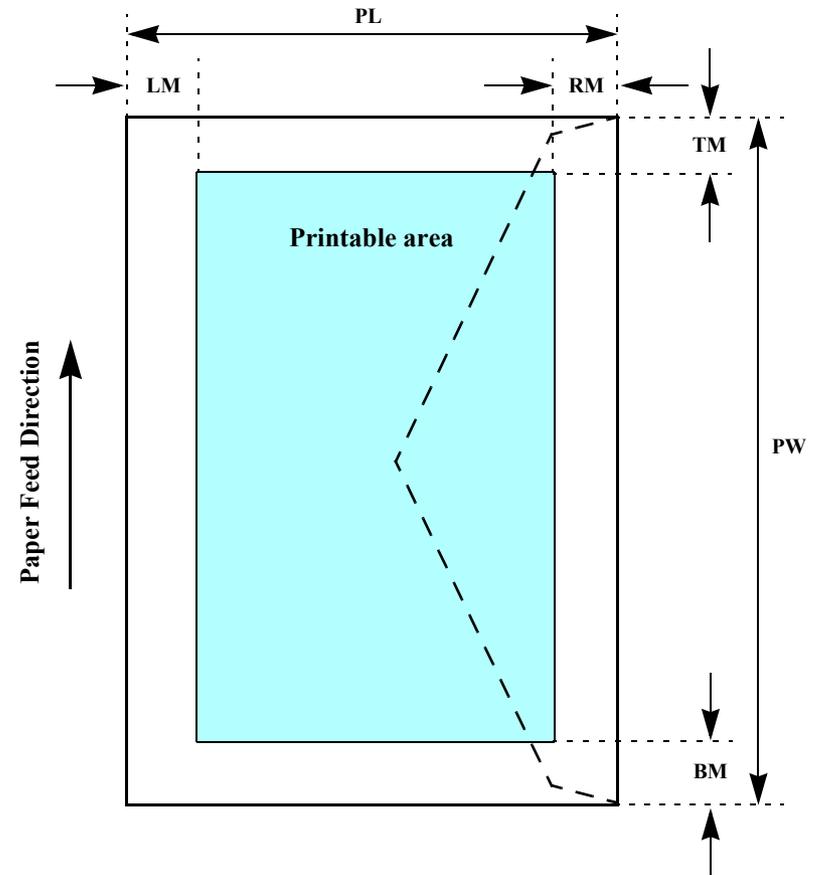
■ Printable area

For paper width (PW) and paper length (PL), refer to “1.2.1.4 Paper Support” (p.13).

Refer to the following table. As for each margin area, refer to Figure 1-5 (p.16).

**Table 1-7. Applicable Paper/Printing Area**

Paper type	Left Margin	Right Margin	Top Margin	Bottom Margin
No.10	5mm (0.12")	5mm (0.12")	3mm (0.12")	20mm (0.79")
DL				
C6				



**Figure 1-5. Printable Area for Envelopes**

### 1.2.1.6 Ink Cartridge Specification

- Type/color: EPSON-brand special ink cartridges

**Table 1-8. Ink Cartridge**

Color	Size	Europe	ASIA/pacific	Latin	EAI
Black	S	---	---	T0731H	T0681
	SS	T0711	T0731	T0731	T0691
Cyan	SSS	T0712	T0732	T0732	T0692
Magenta	SSS	T0713	T0733	T0733	T0693
Yellow	SSS	T0714	T0734	T0734	T0694

- Print Capacity (TBD)
  - Black Ink Cartridge: TBD pages/A4 (ISO/IEC10561 Letter Pattern at 360x720 dpi)  
380 pages/A4 (360x720 dpi, 5% duty)
  - Color Ink Cartridge: TBD pages/A4 (360x720 dpi, 5% duty for each color)
- Shelf life: After packing is opened, it is assumed 6 months, and assumes 2 years including this.
- Storage Temperature

**Table 1-9. Storage Temperature**

Situation	Storage Temperature	Limit
When stored in individual boxes	-30 °C to 40 °C	1 month max. at 40 °C
When installed in main unit	-20 °C to 40 °C	



The ink in the ink cartridge freezes when leaving it in the environment of -16 °C or under. It takes 3 hours that the frozen ink becomes usable when moving it from the environment of -20 °C to the environment of 25 °C.

- Dimension: 12.7mm (W) x 68.0 mm (D) x 47.0 mm (H)

### 1.2.2 Scanner Specifications

This section covers specifications of the scanner.

#### 1.2.2.1 Basic Specifications

- Product type: Flatbed color image scanner
- Scanning method: Scanning of fixed document with mobile scan head
- Sensor: CIS
- Maximum scan area: 8.5" x 11.7" (216 mm x 297 mm)
- Document sizes: A4 or US letter
- Max. effective pixels: 10,200 x 14,040 pixels (1200 dpi)
- Resolution
  - Main scan: 1200 dpi
  - Sub scan: 2400 dpi with Micro Step
- Scanning resolution: 50 to 4800 dpi (selectable in 1-dpi steps), 7200 dpi, 9600 dpi
- Gradations (pixel depth): Each color pixel has 16-bit input and either 1-bit or 8-bit output.
- Scanning speed: 1200 dpi
  - Color: Approx. 30 msec/line
  - Monochrome: Approx. 10 msec/line
- Light source: RGB Three Color LED

#### 1.2.2.2 Detailed Specifications

- Control commands: ESC/I D7
- Gamma correction: Two user-defined levels

### 1.2.2.3 Image Scanning Area

Table 1-10. Image Scanning Area

RW (readable width)	OLM (out-of-range left margin)	RL (readable length)	OTM (out-of-range top margin)
216 mm (8.5")	1.5 mm ± 1 mm	297 mm (11.7")	1.5 mm ± 1 mm

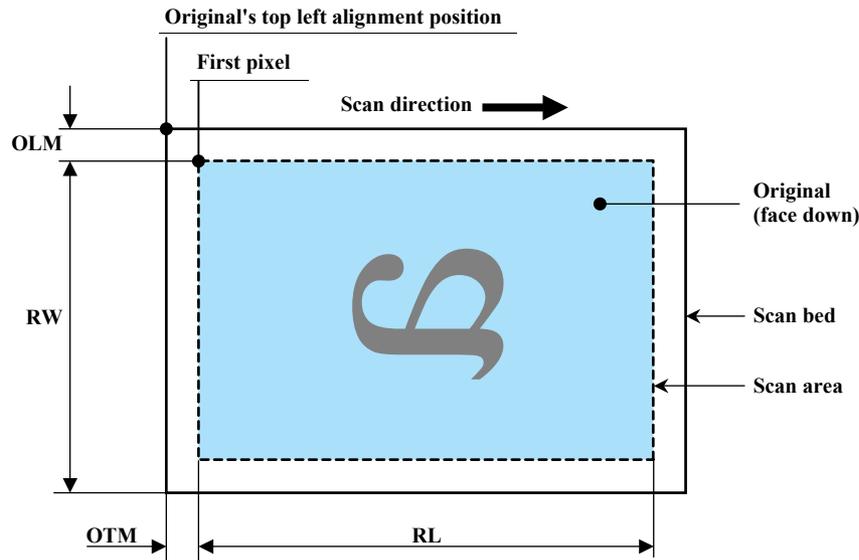


Figure 1-6. Image Scanning Area

### 1.2.3 Common

#### 1.2.3.1 Electric Specification

- Primary power input

Table 1-11. Primary Power Input

	100-120 V model	220-240 V model
Rated power supply voltage (ACV)	100 ~ 120	220 ~ 240
Input voltage range (ACV)	90 ~ 132	198 ~ 264
Rated current (A)	0.4 (max. 0.7)	0.2 (max. 0.4)
Rated frequency (Hz)	50 ~ 60	
Input frequency range (Hz)	49.5 ~ 60.5	
Power consumption (W)	Standalone Copying	Approx. 13 (ISO10561 Letter Patter, Plain Paper - Text)
	Low-power Mode	Approx. 4.0 (Stylus CX4900/CX4905/CX5000/DX5000/DX5050) Approx. 5.0 (Stylus CX5900/CX6000/DX6000/DX6050)
	Sleep Mode	Approx. 3.5
	Power Off Mode	Approx. 0.2
	Approx. 0.2	Approx. 0.3

Note 1: This product complies with the "Energy Star" standards.

- If the printer is not operated at all for at least 3 minutes, the standby function reduces the current to the motor to conserve power.
- If the scanner is not operated at all for at least 3 minutes (Stylus CX5900/CX6000/DX6000/DX6050)/4 minutes (Stylus CX4900/CX4905/CX5000/DX5000/DX5050), the standby function reduces the current to the motor to conserve power.

- Insulation resistance  
10MΩ minimum (tested between AC line and chassis, test voltage: DC500V)
- Dielectric strength
  - AC1000 Vrms for one minute or AC1200 Vrms for one second (100-120V version)
  - AC1500 Vrms for one minute (220-240V version)

### 1.2.3.2 Environmental Performance

Table 1-12. Environmental Performance

Condition	Temperature	Humidity *1	Impact	Vibration
Operating	10 ~ 35°C *2	20 ~ 80% *2	1G, 1 x 10 <sup>-3</sup> seconds	0.15G
Not operating *3	-20 ~ 40°C	5 ~ 85%	2G, 2 x 10 <sup>-3</sup> seconds	0.50G

Note \*1: No condensation

\*2: Under the following conditions

\*3: After unpacking (storage)

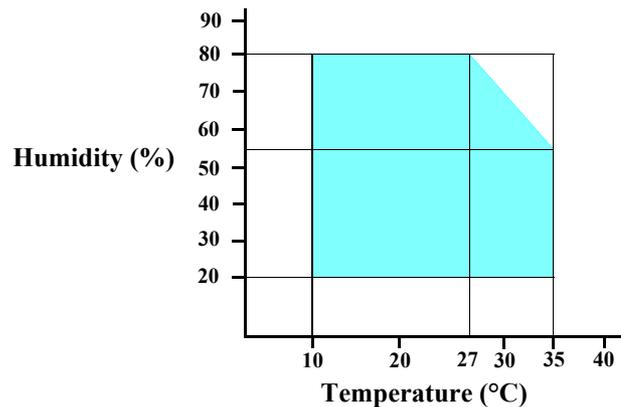


Figure 1-7. Temperature/Humidity Range

### 1.2.3.3 Durability

- Total print life: 10,000 pages (black only, A4), or five years (whichever comes first)
- Print Head Life: Six billion shots (per nozzle) or five years (whichever comes first)
- Scanner head: MCBF (36,000 cycles)

### 1.2.3.4 Safety Standards: EMC

Table 1-13. Safety Standards: EMC

	100-120 V version	220-240 V version
Safety standards	UL60950-1 CNS14336 CSA No.60950-1	EN 60950, EN60950-1 GOST-R (IEC60950-1, CISPR 22) IEC60950-1 K60950-1 NOM-019-SCFI-1998 GB4943* EN55024
EMC	CAN/CSA-CEI/IEC CISPR 22 Class B CNS13438 Class B FCC Part15 Subpart B Class B	KN61000-4-2/-3/-4/-5/-6/-11 EN55022 Class B EN61000-3-2, EN61000-3-3 KN22 Class B AS/NZS CISPR22 Class B * GB9254 Class B, GB17625.1*

Note "\*": Stylus CX5900/CX6000/DX6000/DX6050 only

### 1.2.3.5 Acoustic Noise

- Noise level  
Approx. 45 dB (according to ISO7779 when for copying)

### 1.2.3.6 CE Marking

- 220-240 V version
  - Low Voltage Directive 73/23/EEC: EN60950
  - EMC Directive 89/336/EEC: EN55022 Class B  
EN61000-3-2  
EN61000-3-3  
EN55024

### 1.3 Interface

The EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050 provides the following interface.

#### 1.3.1 USB Interface

- Standards
  - “Universal Serial Bus Specifications Revision 2.0”
  - “Universal Serial Bus Device Class Definition for Printing Devices Version 1.1” (printer unit)
  - “Universal Serial Bus Mass Storage Class Bulk-Only Transport Revision 1.0” (storage unit)
- Transfer rate: 480 Mbps (High Speed Device)
- Data format: NRZI
- Compatible connector: USB Series B
- Recommended cable length: 2 [m] or less
- Device ID

Table 1-14. Device ID

Product Name	Device ID	Product Name	Device ID
CX4900	[00H][5FH] MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCP1; MDL:Stylus[SP] CX4900; CLS:PRINTER; DES:EPSON[SP]Stylus[SP] CX4900;	CX5900	[00H][5FH] MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCP1; MDL:Stylus[SP] CX5900; CLS:PRINTER; DES:EPSON[SP]Stylus[SP] CX5900;
CX4905	[00H][5FH] MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCP1; MDL:Stylus[SP] DX4900; CLS:PRINTER; DES:EPSON[SP]Stylus[SP] DX4900;	CX6000	[00H][5FH] MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCP1; MDL:Stylus[SP] CX6000; CLS:PRINTER; DES:EPSON[SP]Stylus[SP] CX6000;
DX5000 DX5050	[00H][5FH] MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCP1; MDL:Stylus[SP] DX5000; CLS:PRINTER; DES:EPSON[SP]Stylus[SP] DX5000;	DX6000 DX6050	[00H][5FH] MFG:EPSON; CMD:ESCPL2,BDC,D4,D4PX,ESCP1; MDL:Stylus[SP]DX6000; CLS:PRINTER; DES:EPSON[SP]Stylus[SP] DX6000;

- Connector signal layout

Table 1-15. Connector pin assignment and signals

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

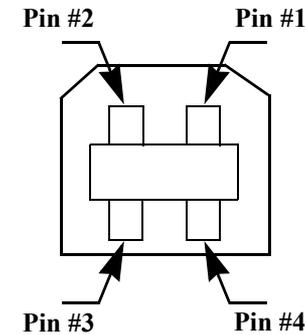


Figure 1-8. USB pin Assignment

- Product ID
  - 0x082B (Stylus CX4900/CX4905/CX5000/DX5000/DX5050)
  - 0x082E (Stylus CX5900/CX6000/DX6000/DX6050)
- Endpoint attribute

Table 1-16. Endpoint Attribute (Card Slot Model)

I/F No.	Endpoint Address	Endpoint Type	Linked Interface
0x00	0x01	Bulk Out	Scanner
	0x02	Bulk In	
0x01	0x04	Bulk Out	Printer
	0x05	Bulk In	
0x02	0x07	Bulk Out	Card
	0x08	Bulk In	

## 1.3.2 Standard Card Slots

### 1.3.2.1 Memory Card

Table 1-17. Memory Card

Memory card standards		Slots	Supported memory cards
Compact Flash	CF+ and CompactFlash Specification Revision 3.0 compliant	CF Type II slot	<ul style="list-style-type: none"> <li>• Compact Flash (memory card only)</li> <li>• Microdrive</li> </ul>
Memory Stick/ Memory Stick Duo	MemoryStick Standard version 1.42-00 compliant	Memory Stick/Memory Stick PRO/ SD/MMC/xD-Picture Card slot	<ul style="list-style-type: none"> <li>• Memory Stick (maximum capacity: 128 MB, including versions with memory select function)</li> <li>• MagicGate Memory Stick (maximum capacity: 128 MB, copy protection function is not supported)</li> <li>• Memory Stick Duo (requires Memory Stick Duo adapter)</li> <li>• MagicGate Memory Stick Duo</li> </ul>
Memory Stick PRO/ Memory Stick PRO Duo	MemoryStick Standard Memory Stick PRO Format Specifications version 1.02-00 compliant		<ul style="list-style-type: none"> <li>• Memory Stick PRO (copy protection function is not supported)</li> <li>• Memory Stick PRO Duo (requires Memory Stick Duo adapter)</li> </ul>
SD	SD Memory Card Specifications / PART1. Physical Layer Specification Version 2.0 compliant		<ul style="list-style-type: none"> <li>• SD (Secure Digital) memory card</li> <li>• miniSD card (requires SD adapter)</li> <li>• microSD card (requires SD adapter)</li> <li>• SDHC memory card (except Class support)</li> <li>• miniSDHC card (requires SD adapter)</li> <li>• microSDHC (requires SD adapter)</li> </ul>
MultiMediaCard	MultiMediaCard Standard Version 4.1 compliant		MultiMediaCard
xD-Picture Card	xD-Picture Card™ Card Specification Version 1.20 type M/type H compliant		<ul style="list-style-type: none"> <li>• xD-Picture Card</li> <li>• xD-Picture Card Type M</li> <li>• xD-Picture Card Type H</li> </ul>



**Note the following caution points when handling the memory card.**

- Since the SD card, Memory Stick and xD-Picture Card share the same slot, only one can be inserted at a time.
- When a memory card is being accessed, be sure to keep the memory card slot's cover closed and do not touch the memory card.

### 1.3.2.2 Supported Power Supply Voltage

- 3.3 V/ 5 V (both)
- 3.3 V (only)

**NOTE** 1: 3.3 V power is supplied to media that support both 3.3 V and 5 V.  
 2: Maximum current to memory card is 500 mA.  
 3: 5V type memory cards are not supported.

### 1.3.2.3 Multi-slot Operations

#### Overview

- There is only one type of card that can be used to simultaneously access both a connected computer and the direct printing function.
- The slots have assigned priority to determine which slot will be accessed first when cards are inserted in several slots at once.
- To select a card that has been inserted in a non-active slot, the card in the active slot must first be removed.

Direct printing	Only the image files in the active slot are valid and have assigned frame numbers. The number of images will not change if a card is also inserted in a non-selected slot.
Connection to computer (Windows)	Only one drive is displayed at a time as a “removable disk” and only the card that is in the active slot can be accessed via the removable disk. A card that has been inserted into a non-selected slot cannot be accessed.
Connection to computer (Macintosh)	Only the card in the active slot can be mounted on the desktop. A card that has been inserted into a non-selected slot cannot be mounted on the desktop.

#### Details

- Access priority  
 The access priority among slots is assigned as:  
 1: Memory Stick (Memory Stick PRO)/SD (MMC)/xD-Picture Card  
 2: CF (Micro Drive)
- Slot selection when power is turned on  
 If cards are inserted in several slots when the power is turned on, the active slot is determined by the priority ranks listed above.  
 Example: If CF and Memory Stick are both inserted at power-on, the xD-Picture Card slot becomes the active slot.
- Slot selection after power is turned on  
 When a card is removed from the active slot, the slot with the next-highest priority becomes the active slot (if a card has been inserted into it). There is no need to re-insert any card before accessing it.

## 1.4 Stand-alone Copy

### 1.4.1 Basic Specifications

#### 1.4.1.1 Supported Paper Sizes, Types and Qualities

Table 1-18. Supported Paper Sizes, Types and Qualities (for EAI)

Paper type		Quality *1	Paper size	
Paper name	Panel indication		Paper size	Panel indication
Plain Paper	Plain Paper	Plain Paper	Letter/A4	
Recycled Paper				
Bright White Paper				
Premium Photo Paper Glossy *2	Photo Paper	Photo Paper	Letter/A4 5" x 7" 4" x 6"	
Premium Photo Paper Semi-gloss*2	Photo Paper	Photo Paper	Letter/A4 4" x 6"	
Photo Paper Glossy*2*3	Photo Paper	Photo Paper	Letter/A4 4" x 6"	
Ultra Premium Photo Paper Glossy*2	Photo Paper	Photo Paper	Letter/A4 5" x 7" 4" x 6"	
Ultra Premium Photo Paper Luster*2*4	Photo Paper	Photo Paper	Letter/A4	
Premium Presentation Paper Matte*5	Matte Paper	Matte Paper	Letter/A4	

Note : Letter/A4: Selectable by Setup mode only for Latin region.

Note \*1: The quality of draft copy is not affected by “Paper type” selection.

\*2: For photo paper: Printing parameter is same as Premium Glossy Photo Paper.

\*3: Printing is available, but Color tone is not secured.

\*4: Stylus CX4900/CX4905/CX5000/DX5000/DX5050 only

\*5: Stylus CX5900/CX6000/DX6000/DX6050 only

Table 1-19. Supported Paper Sizes, Types and Qualities (for EUR/ASIA)

Paper type		Quality *1	Paper size	
Paper name	Panel indication		Paper size	Panel indication
Plain Paper	Plain Paper	Plain Paper	A4	A4
Recycled Paper				
Bright White Paper				
Premium Glossy Photo Paper *2	Photo Paper	Photo Paper	A4 13 x 18 10 x 15	A4 13 x 18/5” x 7”*4 10 x 15/4” x 6”*5
Premium Semigloss Photo Paper*2	Photo Paper	Photo Paper	A4 10 x 15	A4 10 x 15/4” x 6”*5
Glossy Photo Paper*2*3	Photo Paper	Photo Paper	A4 13 x 18 10 x 15	A4 13 x 18/5” x 7”*4 10 x 15/4” x 6”*5
Ultra Glossy Photo Paper*2	Photo Paper	Photo Paper	A4 13 x 18 10 x 15	A4 13 x 18/5” x 7”*4 10 x 15/4” x 6”*5
Matte Paper Heavyweight*6	Matte Paper	Matte Paper	A4	A4

Note \*1: The quality of draft copy is not affected by “Paper type” selection.

\*2: For photo paper: Printing parameter is same as Premium Glossy Photo Paper.

\*3: Printing is available, but Color tone is not secured.

\*4: 13 x 18: The panel indicator only. 13 x 18 is the same size as 5” x 7”

\*5: 10 x 15: The panel indicator only. 10 x 15 is the same size as 4” x 6”

\*6: Stylus CX5900/CX6000/DX6000/DX6050 only

#### 1.4.1.2 Zoom Function

The zoom function provides enlarged or reduced copies of originals. The either of the following can be selected from the operation panel.

- Actual (The state which “Fit to page” is not selected. It is the power-on default.)  
The zoom factor is set to 100%.
- Fit to page  
This function detects the image size of the original and automatically sets the zoom factor of the copy according to the copy paper's printable area.

### 1.4.1.3 Number of Copies Setting

This function sets the number of copies. The setting range is:

- 1 to 9 and 100 (Stylus CX4900/CX4905/CX5000/DX5000/DX5050)
- 1 to 99 (Stylus CX5900/CX6000/DX6000/DX6050)

### 1.4.1.4 Maximum Copy Size

- 216 mm x 297 mm

### 1.4.1.5 Copy Layout

The following copy layout is provided according to “Paper type”, “Paper size” and zoom selections.

- Standard copy  
Provided for ordinary use with 3mm copy margin from every side.
- BorderFree copy  
Border-free printing of copies occurs when the print area is set as larger than the copy paper's size. In such cases, the outer edges of the original image may be omitted in the printed copy.
- Small Margins copy  
This function sets a 1.5mm margin on all four sides when printing in order to make maximum use of the original image and copy paper.

*NOTE: Only “Standard Copy” can be used in draft copy mode.*

Table 1-20. Copy Layout

Zoom	Paper type	Paper size	B&W / Color	Layout
Actual*1	Plain Paper	A4, Letter/A4*	B&W, Color	Standard
		4" x 6" (10 x 15), 5" x 7" (13 x 18)	B&W, Color	Standard
	Photo Paper	Letter*2/A4*3, 4" x 6" (10 x 15), 5" x 7" (13 x 18)	B&W, Color	Small margin
Fit to Page*6	Plain Paper	A4, Letter/A4*	B&W, Color	Standard
		4" x 6" (10 x 15), 5" x 7" (13 x 18)	B&W, Color	Standard
	Photo Paper	Letter*2/A4*3, 4" x 6" (10 x 15), 5" x 7" (13 x 18)	B&W, Color	Border free
	Matte Paper*4	Letter*2/A4*3	B&W, Color	Border free

Note : Letter/A4: Selectable by Setup mode only for Latin region.

Note \*1: Actual is the state that “Fit to page” is not selected.

\*2: For EAI models

\*3: For EUR/Asia/Pacific models

\*4: Stylus CX5900/CX6000/DX6000/DX6050 only

\*5: “Fit to page” automatically sets the enlarge/reduce scale so that the entire image fits into the printable area or the border free area when border free layout is selected. When the original image is smaller than general card size (approx. 54mm x 86mm), the print margins will be different from the one that is defined by each layout. The image placement uses the upper left corner as the origin and any margins that occur during the fitting process occur along the bottom and/or right edge.

### 1.4.1.6 Multiple Copies From an Original

Second and subsequent copies can be printed from an original without scanning. When printing two or more copies, under the following settings the scanned data can be stored in the unit's memory so that the second and subsequent copies can be printed without scanning.

- “Draft” mode (monochrome/color)
- “Text” mode (monochrome)

## 1.4.2 Copy Speed (TBD)

### 1.4.2.1 Black Copy Speed

- Plain Paper – Draft 13.4 cpm (Copy per minute), Plain Paper – 3.0 cpm
- Black e-Memo text A4 size pattern, zoom 100%

The above speed is for the second and subsequent copies (the time between ejection of the first page to ejection of the second page).

### 1.4.2.2 Color Copy Speed

- Plain Paper – Draft 13.4 cpm (Copy per minute), Plain Paper – 1.0 cpm
- Color e-Memo text A4 size pattern, zoom 100%

The above speed is for the second and subsequent copies (the time between ejection of the first page to ejection of the second page)

## 1.4.3 Configuration for copying

Table 1-21. Configuration for Copying

Copy Mode setting			Scan and Print configuration			
Paper type	B&W / Color	Enlarge / Reduce*1 (%)	Print resolution (H x V dpi)	Dot size	MW	High Speed
Draft*2 (Plain paper only)	B&W	100 (Default)	360 x 120	Eco	Off	On
	Color	100 (Default)	360 x 120	Eco	Off	On
Plain Paper	B&W*3	100 (Default)	360 x 360	VSD4	Off	On
	Color*3	100 (Default)	360 x 720	VSD1	On	On
	B&W*3	100 (Default)	720 x 720*4	VSD3	On	On
	Color*3	100 (Default)	720 x 720*4	VSD3	On	On
Photo Paper	B&W	100 (Default)	1440 x 720	VSD3	On	On
	Color	100 (Default)	1440 x 720	VSD3	On	On
Matte Paper*4	B&W*3	100 (Default)	1440 x 720	VSD3	On	On
	Color*3	100 (Default)	1440 x 720	VSD3	On	On

Note \*1: “Default” is the state in which “Fit to page” is not selected. When “Fit to page” is selected, scan resolution will be optimized according to enlarge/reduce scale.

\*2: When printing in draft mode, both real black and composite black will be used for black printing.

\*3: Pure black will be used in both B&W and color mode.

\*4: Stylus CX5900/CX6000/DX6000/DX6050 only

### 1.4.4 Relation between Original and Copy

#### 1.4.4.1 Standard Copy

The following table shows the relative positioning of the original and copy.

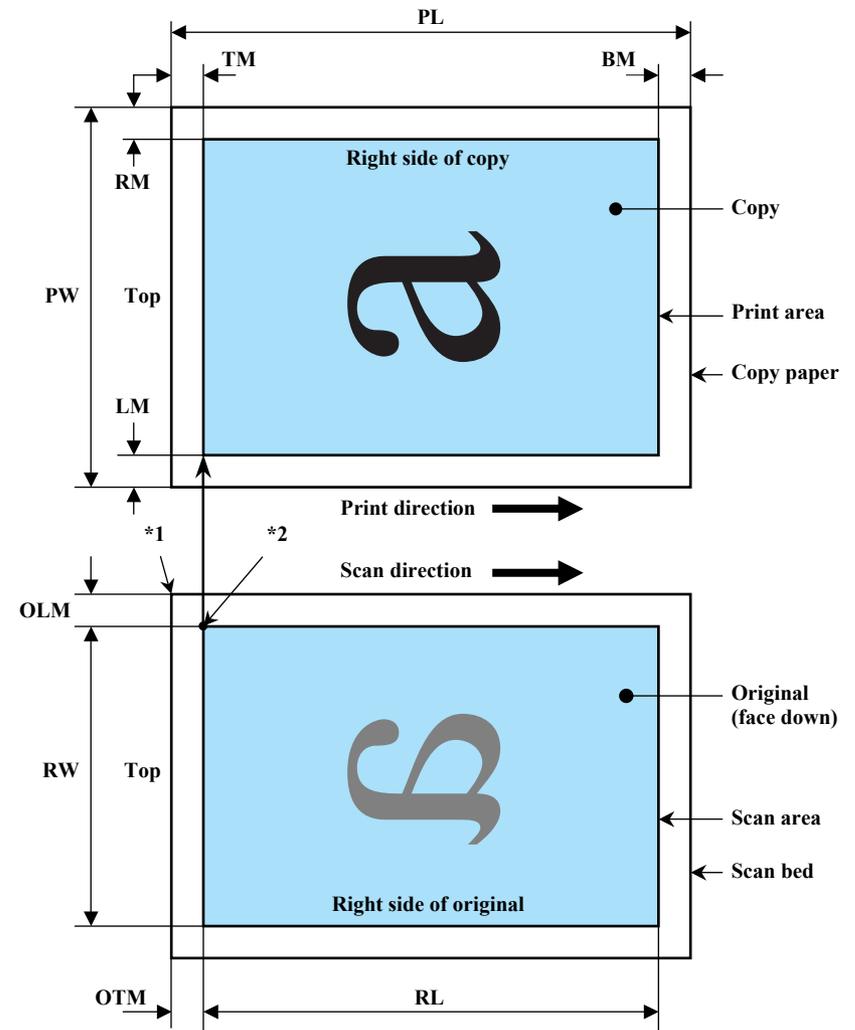
**Table 1-22. Original (scanner)**

RW (readable width)	OLM (out-of-range left margin)	RL (readable length)	OTM (out-of-range top margin)
216 mm (8.5")	3 mm	297 mm (11.7")	3 mm

**Table 1-23. Copy (printer)**

RM	LM	TM	BM
3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")

Note : Refer to "1.2.1.4 Paper Support" (p.13) for paper width (PW) and paper length (PL).



- Note \*1: This indicates the top left corner of the original. Normally, this corner is aligned with the scan bed's top right corner as the reference point.
- \*2: This indicates the scan start position at the top left of the original, which corresponds to the print start position at the top left of the copy. The bottom right corner position of the copy is within the print area but varies according to the enlarge/reduce setting.

**Figure 1-9. Standard Copy**

### 1.4.4.2 BorderFree Copy

The following table shows the relative positioning of the original and copy.

**Table 1-24. Original (scanner)**

RW (readable width)	OLM (out-of-range left margin)	RL (readable length)	OTM (out-of-range top margin)
216 mm (8.5")	1.5 mm ± 1 mm	297 mm (11.7")	1.5 mm ± 1 mm

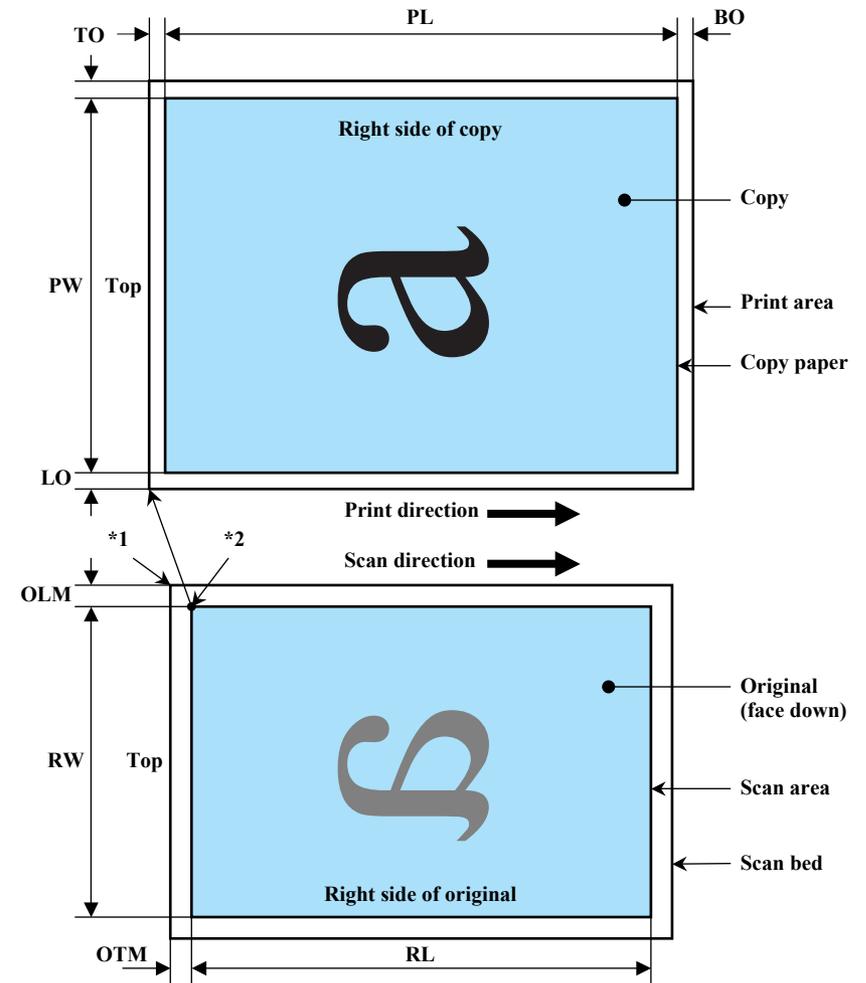
**Table 1-25. Copy (printer)**

Paper size	RO	LO	TO	BO
4" x 6"	2.54 mm	2.54 mm	1.34 mm*1/ 2.82 mm*2	2.54 mm*1/ 3.6 mm*2
Other	2.54 mm	2.54 mm	2.96 mm	4.02 mm

Note : Refer to “1.2.1.4 Paper Support” (p.13) for paper width (PW) and paper length (PL).

Note \*1: Stylus CX5900/CX6000/DX6000/DX6050

\*2: Stylus CX4900/CX4905/CX5000/DX5000/DX5050



- Note \*1: This indicates the top left corner of the original. Normally, this corner is aligned with the scan bed's top right corner as the reference point.
- \*2: This indicates the scan start position at the top left of the original, which corresponds to the print start position at the top left of the copy. The bottom right corner position of the copy is within the print area but varies according to the enlarge/reduce setting.

**Figure 1-10. BorderFree Copy**

### 1.4.4.3 Small Margins copy

The following table shows the relative positioning of the original and copy.

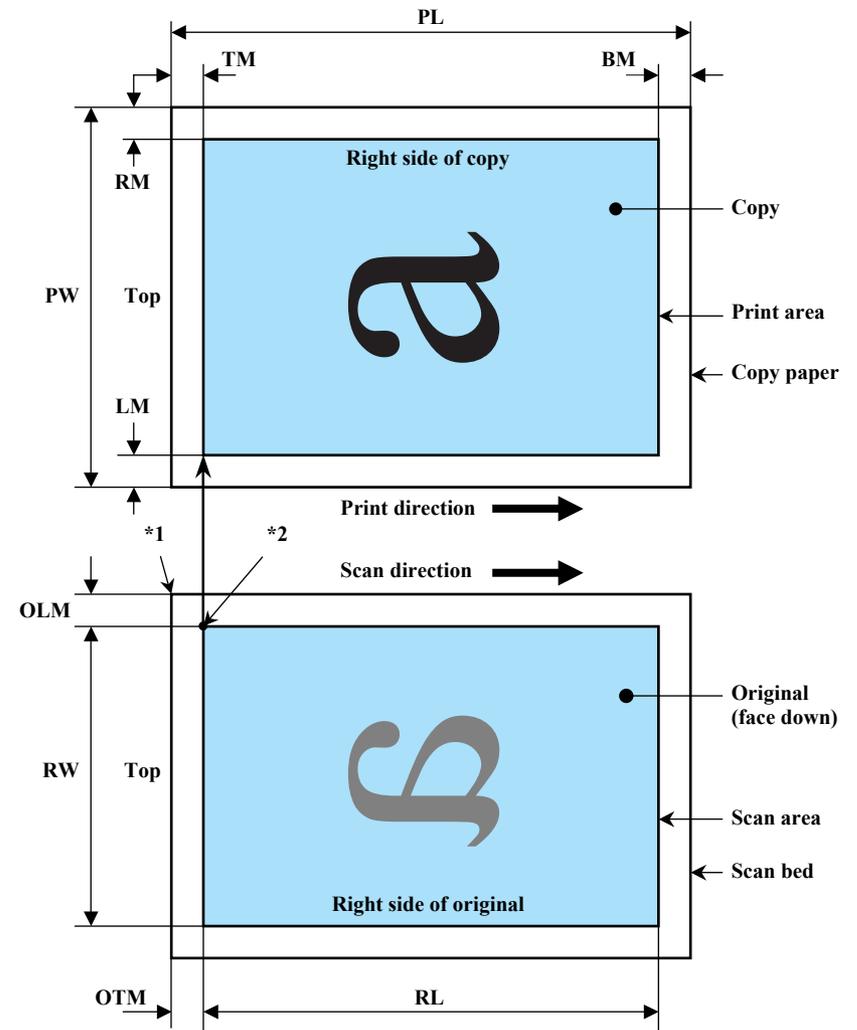
**Table 1-26. Original (scanner)**

RW (readable width)	OLM (out-of-range left margin)	RL (readable length)	OTM (out-of-range top margin)
216 mm (8.5")	1.5 mm ± 1 mm	297 mm (11.7")	1.5 mm ± 1 mm

**Table 1-27. Copy (printer)**

RM	LM	TM	BM
1.5 mm	1.5 mm	1.5 mm	1.5 mm

Note : Refer to "1.2.1.4 Paper Support" (p.13) for paper width (PW) and paper length (PL).



- Note \*1: This indicates the top left corner of the original. Normally, this corner is aligned with the scan bed's top right corner as the reference point.
- \*2: This indicates the scan start position at the top left of the original, which corresponds to the print start position at the top left of the copy. The bottom right corner position of the copy is within the print area but varies according to the enlarge/reduce setting.

**Figure 1-11. Small Margins copy**

## 1.5 Memory Card Print

### 1.5.1 Basic Specifications

#### 1.5.1.1 File System

DCF Version 1.0 or 2.0 is the file system that can be used with this unit's stand-alone printing functions. Operation is not guaranteed when any other file system is used. The file system used by the card reader function depends on the host's specifications. For a detailed description of the DCF specifications, see "Design Rule for Camera File System Standard, DCF Version 2.0, JEIDA-CP-3461".

#### 1.5.1.2 Media Format

- Media must be formatted according to the DCF Version 1.0 or 2.0 standard.
- DOS FAT formats (FAT12, FAT16, FAT32\*1) and single partition (basic partition)

Note \*1: Only the card to which use is permitted by each memory card standard

#### 1.5.1.3 File Formats

The file formats supported by this unit are described below.

- JPEG files (\*.JPG)  
These are photo data files that comply with the Exif Version 2.21. (Exif version 1.0/2.0/2.1/2.2/2.21)
- Camera specification files (\*.MRK)  
These are definition files used when in camera specification mode. An "AUTOPRINT.MRK" file whose full path name is no longer than 32 characters is valid.
- PRINT Image Framer (P.I.F.) definition file (\*.USD)  
(Stylus CX5900/CX6000/DX6000/DX6050 only)  
File to define the layout in accordance with the PRINT Image Framer specifications. Files only in the "¥EPUDL¥" directory are available. Compatible with Print Image Framer Rev.2.1.



However, any file that is saved in the following directories or their sub-directories cannot be included as files to be printed.

- Directories containing system properties or hidden properties
- Directories that contain any double-byte characters in the directory name
- "RECYCLED": Windows directory for deleted files
- "PREVIEW": Directories containing CASIO's DSC thumbnail images
- "SCENE": Directories containing data for CASIO's DSC Best Shot function
- "MSSONY": Directories containing SONY's DSC e-mail image data, voice memos, video files, or non-compressed images
- "DCIM¥ALBUM¥IMAGE": Directories containing CASIO's DSC album data save directory.

#### 1.5.1.4 Valid Image Size

The maximum image size handled by this unit is:

- Horizontal:  $80 \leq X \leq 9200$  (pixels)
- Vertical:  $80 \leq Y \leq 9200$  (pixels)

#### 1.5.1.5 Maximum Number of Photo Data Files

This unit can handle up to 999 photo data files. If the amount of photo data to be recorded exceeds the capacity of one memory card, this unit uses file sorting rules to sort the photo data into valid photo data in frames numbered from 1 to 999. Although it is possible to print photo data files with frame numbers over 999 that have been specified for printing by camera specification files, the maximum number of frames that can be specified is 999 frames.

If you insert a memory card that contains over 999 photo data files, only files up to 999 will be printed by the "Print All" or "Print index sheet" functions.

#### 1.5.1.6 Thumbnail Image Data

This unit handles thumbnail image data in the DCF Version 1.0 or 2.0 format (Exif format, 160 x 120 pixels).

During this unit's Index sheet and memory card printing modes, the layout is 80 thumbnails per sheet (when using plain paper or special paper in high-speed print mode).

### 1.5.1.7 File Sorting

This unit stores all photo data files in the memory, using the photo data files' full-path file names (for example, “¥DCIM¥100EPSON¥EPSN0000.JPG”), and assigned photo frame numbers. Since photo frame numbers are assigned based on this unit's own proprietary file sorting rules, the assigned frame numbers do not necessarily match those indicated by digital cameras.

### 1.5.1.8 File Sorting Rules

This unit sorts photo data files based on the following prioritization rule.

- File name is sorted in ASCII order as full path name.

*NOTE: Sorting results are not guaranteed if two files have matching full-path file names. (Matching full-path file names are not allowed under the DOS specification.)*

### 1.5.1.9 Rules for Acquisition of Date/Time Data

The following priorities are used to fetch date and time information from photo data files.

1. Date/time data that complies with the standard format (Exif) for digital cameras
2. Date/time data that complies with the DOS standard file system (file time stamps)
3. Fixed values (01/01/1980, 00:00:00)

Note that the date/time data assigned to individual photo data files does not necessarily match the date/time when the photo was actually taken. The photo date/time may be modified due to the digital camera's calendar settings (presence/absence of functions, incorrect date/time settings, etc.), processing of the photo data after the photo was taken, or subsequent saving of data. In such cases, this unit performs the relevant processing based on the most recently modified date/time data.

### 1.5.1.10 Number of Sheets which can be Printed in Total

Printing sum total number of sheets presupposes that it is possible to 999 sheets. Moreover, the printing sum total number of sheets per sheet is possible to 99 sheets.

## 1.5.2 Functions

### 1.5.2.1 List of Functions

The memory card print menu and its settings are listed in the following table. The values shown in this table indicate the total number of options and the number of pages or copies that can be printed consecutively.

Table 1-28. List of Functions

Memory card printing	Mode selection	Layout	Paper type	Paper size	Page/copies
Stylus CX4900/CX4905/ CX5000/CX5050*1	Print index sheet	Print Index Sheet	None	Plain Paper	1 1
	Print from index sheet	Print From Index Sheet	• Standard • Border free	• Plain Paper • Photo Paper	2 1 to 3 (according to marking)
	Print all images	Print All / DPOF	• Standard • Border free	• Plain Paper • Photo Paper	2 1
	DPOF *	Print All / DPOF	• Standard • Border free	• Plain Paper • Photo Paper	2 1 to 99
Stylus CX5900/CX6000/ DX6000/DX6050*2	Print selected image	Print Select	• Standard • Border free • Border free	• Plain Paper • Photo Paper • Matte Paper	3 1
	Print all images	Print All / PictBridge	• Standard • Border free • Border free	• Plain Paper • Photo Paper • Matte Paper	3 1
	DPOF *	Print All / DPOF	• Standard • Border free • Border free	• Plain Paper • Photo Paper • Matte Paper	3 1 to 99
	Print index sheet	Print Index Sheet	None	Plain Paper	1 1
	Print from index sheet	Print From Index Sheet	• Standard • Border free • Border free	• Plain Paper • Photo Paper • Matte Paper	3 1 to 3 (according to marking)

Note "1": It is available only DPOF file exists in the memory card.

Note \*1: “Print Index Sheet” will be selected as default function of Memory Card Print. But when DPOF file exists in the memory card, “Print All / DPOF” will be selected as default and DPOF print can be done easily.

\*2: “Print Select” will be selected as default function of Memory Card Print.

**Table 1-29. Supported Paper Sizes, Types and Qualities (for EAI)**

Paper type		Quality *1	Paper size	
Paper name	Panel indication		Paper size	Panel indication
Plain Paper	Plain Paper	Plain Paper	Letter/A4	
Recycled Paper				
Bright White Paper				
Premium Photo Paper Glossy *2	Photo Paper	Photo Paper	Letter/A4 5" x 7" 4" x 6"	
Premium Photo Paper Semi-gloss*2	Photo Paper	Photo Paper	Letter/A4	
Photo Paper Glossy*2*3	Photo Paper	Photo Paper	Letter/A4 4" x 6"	
Ultra Premium Photo Paper Glossy*2	Photo Paper	Photo Paper	Letter/A4 5" x 7" 4" x 6"	
Premium Presentation Paper Matte*4	Matte Paper	Matte Paper	Letter/A4	

Note : Letter/A4: Selectable by Setup mode only for Latin region.

Note \*1: The quality of draft copy is not affected by “Paper type” selection.

\*2: For photo paper: Printing parameter is same as Premium Glossy Photo Paper.

\*3: Printing is available, but Color tone is not secured.

\*4: Stylus CX5900/CX6000/DX6000/DX6050 only

**Table 1-30. Supported Paper Sizes, Types and Qualities (for EUR/ASIA)**

Paper type		Quality *1	Paper size	
Paper name	Panel indication		Paper size	Panel indication
Plain Paper	Plain Paper	Plain Paper	A4	A4
Recycled Paper				
Bright White Paper				
Premium Glossy Photo Paper *2	Photo Paper	Photo Paper	A4 13 x 18 10 x 15	A4 13 x 18 10 x 15
Premium Semigloss Photo Paper*2	Photo Paper	Photo Paper	A4 10 x 15	A4 10 x 15/4" x 6"*4
Glossy Photo Paper*2*3	Photo Paper	Photo Paper	A4 13 x 18 10 x 15	A4 13 x 18/5" x 7"*5 10 x 15/4" x 6"*4
Ultra Glossy Photo Paper*2	Photo Paper	Photo Paper	A4 13 x 18 10 x 15	A4 13 x 18/5" x 7"*5 10 x 15/4" x 6"*4
Matte Paper Heavyweight*6	Matte Paper	Matte Paper	A4	A4

Note \*1: The quality of draft copy is not affected by “Paper type” selection.

\*2: For photo paper: Printing parameter is same as Premium Glossy Photo Paper.

\*3: Printing is available, but Color tone is not secured.

\*4: 10 x 15: The panel indicator only. 10 x 15 is the same size as 4" x 6"

\*5: 13 x 18: The panel indicator only. 13 x 18 is the same size as 5" x 7"

\*6: Stylus CX5900/CX6000/DX6000/DX6050 only

### 1.5.2.2 Memory Card Printing Mode

- Print all images  
This function prints all of the image files stored in the memory card. As shown right, the number of printed pages depends on the number of copies to be printed. The settings are described right.
- DPOF printing  
In this mode, the photo frame numbers previously specified via the camera are printed in the number of pages specified via the camera. Only the paper type and layout are specified on the printer side. If the layout assigned multiple photos per output sheet, photos that have different frame sizes are automatically assigned in the specified number of pages in numerical order (of the specified photo frame numbers). If index print mode was set via the camera, this unit will print in DPOF index layout. (When in DPOF print mode, the mode cannot be switched by writing the print file specification from the host after inserting the memory card.)
- Print selected image  
This function prints selected image file stored in the memory card. The number of printed pages depends on the number of copies to be printed.
- Print index sheet printing  
This function prints thumbnail images (stored in the memory card) onto an Index Sheet (form) that is marked for selecting images. The combinations of paper types and paper sizes are fixed as shown right.
- Print from index sheet printing  
This function prints selected images onto the sheet output by index sheet printing.

Table 1-31. Memory Card Printing Mode

Setting	Memory card printing mode	Description	Option, setting range, etc.
Layout (no menu)	<ul style="list-style-type: none"> <li>• Print from index sheet printing</li> <li>• Print all images</li> <li>• DPOF printing</li> </ul>	Sets print layout	Fixed in combination with paper type and paper size (refer to “1.5.4 Layout and Paper Type, Paper Size” (p.36))
Paper type	Print index sheet printing	Fixed	Plain Paper
	<ul style="list-style-type: none"> <li>• Print from index sheet printing</li> <li>• Print all images</li> <li>• DPOF printing</li> </ul>	Sets paper type	Plain Paper or Photo Paper
Paper size	Print index sheet printing	Fixed	A4 or Letter *1
	<ul style="list-style-type: none"> <li>• Print from index sheet printing</li> <li>• Print all images</li> <li>• DPOF printing</li> </ul>	Sets paper size	A4, 10 x 15*2, or 13 x 18 Letter, 4" x 6", or 5" x 7"
Pages/copies	Print index sheet printing	Fixed	Fixed as 1 page (can vary according to the number of image files)
	Print from index sheet printing	Sets number of printout	1 to 3 (set by the marking to the index sheet)
	Print all images	Sets number of printout	1
	DPOF printing	Sets number of printout	The number of copies specified via the camera is used. The setting range is 1 to 99 copies (default is 1 copy).
Quality	Print index sheet printing	Fixed	Prints it by the quality of 360 x 720dpi of Plain Paper. Only the Color print is supported.
	<ul style="list-style-type: none"> <li>• Print from index sheet printing</li> <li>• Print all images</li> <li>• DPOF printing</li> </ul>	Sets print quality	Fixed according to paper type (refer to “1.5.9 Relation between Paper Type and Quality” (p.40))

Note \*1: Letter size will be used for EAI.  
A4 size will be used for other areas.  
Letter/A4 is selectable by setup mode only for Latin region.

\*2: The panel indicator only. The printer chalks 10 x 15 format to 4" x 6" format.

### 1.5.3 Index Sheet

- ❑ 30 thumbnail images are assigned per index sheet.
- ❑ There are 3 marking areas for each thumbnail and you can set the number of copies up to 3.
- ❑ “Paper type” and “Paper size” can be set from the operation panel.
- ❑ The layout is fixed according to the paper type and it is not indicated on the sheet. (Refer to “1.5.4 Layout and Paper Type, Paper Size” (p.36))
- ❑ Images are arranged in the Index sheet in ascending order (of image file number). (Refer to “1.5.1.7 File Sorting” (p.30) and “1.5.1.8 File Sorting Rules” (p.30))
- ❑ Index sheet will be printed from the last page, in descending order. (The sheet containing first thumbnail comes top of printouts.)
- ❑ The mode transition may occur from “Print index sheet” to “Print from index sheet” when the “Print index sheet” completes successfully.

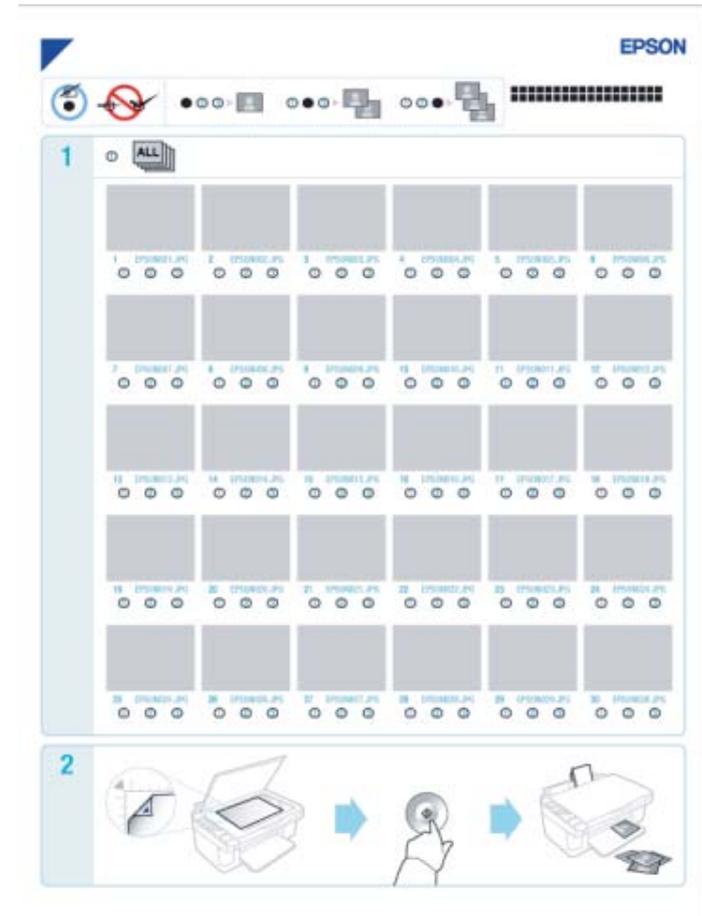


Figure 1-12. Sample of Index Sheet

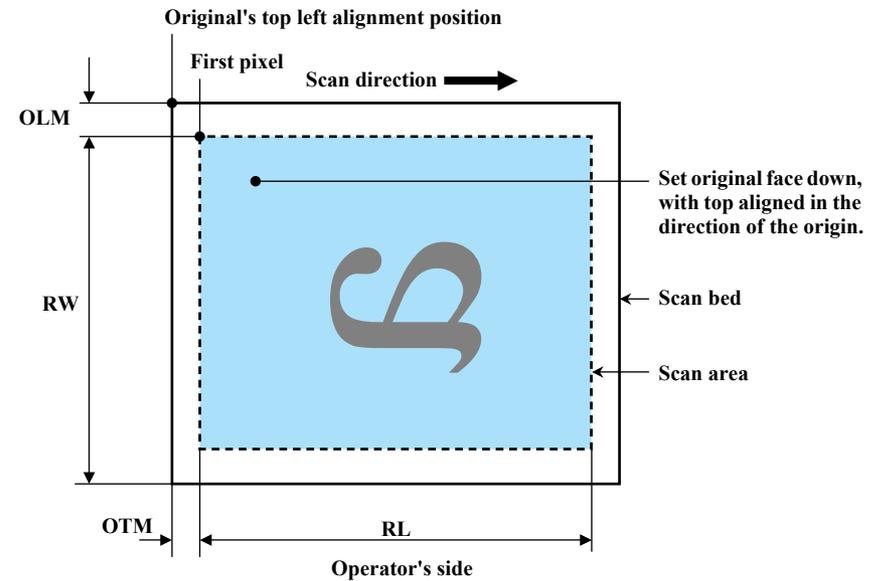
### 1.5.3.1 Rules for Scanning Index Sheets

- Index sheet scan range
  - Set index sheet in scanner
    - Place the side to be scanned face down relative to the scan bed, as described below.  
Align the corner of the sheet to the upper left origin point and make sure the sheet is straight. Angled setting of the sheet is allowed as long as the sheet remains within the scan bed's scan range (the maximum angle on the scan bed is about 2.8°).
    - The cover must be closed on the original to enable scanning. (This is to prevent any shifting of the position marks while scanning).
    - Do not use paper that allows images to “bleed through” to the rear side. (This is to prevent empty bubbles from being filled in by “bleed-through”.)
  - Set scan area and original

**Table 1-32. Set Scan Area and Original**

RW (readable width)	OLM (out-of-range left margin)	RL (readable length)	OTM (out-of-range top margin)
216 mm (8.5")	1.5 mm ± 1 mm	297 mm (11.7")	1.5 mm ± 1 mm

Place the Index Sheet face down with its top edge aligned to the left edge of the scan bed, and with the corner of the paper set to the original's top left position.



**Figure 1-13. Set Scan Area and Original**

□ Basic specifications for scanning of index sheets

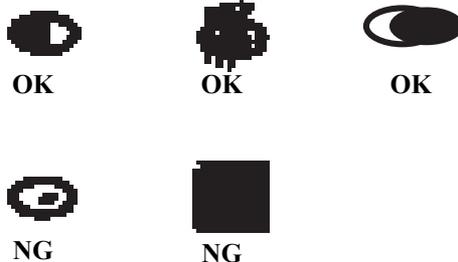
■ Scanning rules for index sheet

The existence of the following recognition factors is judged using the image pattern matching. (Image is binary.)

**Table 1-33. Symbols Check**

Position mark	Image	Description	Remarks
Left and right edges (1 each)		Reference point for index marks	NG if dirty (not scannable)
Block codes (30)		Sheet information (memory card ID, page)	NG if dirty (not scannable)
Image marks (30 x 3)		Determines whether or not to print pixel	Use at least one of these marks
Paper type/Paper size (6)		Select paper	NG if dirty (not scannable)
Layout (2)		Select layout	NG if dirty (not scannable)
Date format		Date format On/Off	Optional

- The marks can be recognized if 50% or more portion of each of them is filled.
- For running out and excessive marking out, the two white/black search patterns shown above are superimposed on the mark, and judgment is made according to this matching ratio.
- The judgment criteria is as follows: Black matching: 80% or more White matching: 50% or more.  
<Marking example>
- If in accordance with the search rule, judgment is made as shown below.



■ Errors during scanning or printing of index sheets

- Stops scanning and returns to the menu screen if the card is removed while an index sheet is being scanned or printed.
- Index sheet error 1 (No index sheet) is displayed if the sheet cannot be scanned because it is dirty, set backwards, etc.
- Index sheet error 2 (Incorrect marking) is displayed if the image bubbles cannot be read because they are not filled in correctly.
- Index sheet error 3 (Incorrect card) is displayed if, after printing an index sheet, you try to print from a non-matching memory card, such as a different (replacement) card or a re-edited version of the same card.

NOTE: For error display, refer to [Figure 1-59 \(p62\)](#)

### 1.5.4 Layout and Paper Type, Paper Size

The layout/paper type and size combinations that can be selected are listed below.

**Table 1-34. Layout and Paper Type, Paper Size**

Layout	Paper type	Paper size	Description
Border free	Photo Paper	EAI: Letter, 4" x 6", 5" x 7" Other: A4, 10 x 15*1, 13 x 18	Prints with no margins along top, bottom and both sides
1-up with borders	Plain Paper	EAI: Letter, 4" x 6", 5" x 7" Other: A4, 10 x 15, 13 x 18	Prints with 3 mm margins along top, bottom and both sides
20-up	—	EAI: 4" x 6" Other: 10 x 15	Prints 20 frames per page, laid out in 5 columns and 4 rows (For DPOF index print only)
30-up	—	EAI: 5" x 7" Other: 13 x 18	Prints 30 frames per page, laid out in 6 columns and 5 rows (For DPOF index print only)
80-up	—	EAI: 4" x 6", 5" x 7" Other: 10 x 15, 13 x 18	Prints 80 frames per page, laid out in 10 columns and 8 rows (For DPOF index print only)

Note \*1: The panel indicator only. The printer chalks the 10 x 15 format up to 4" x 6" format.

### 1.5.5 Options

The functions below will be available by marking to options on the index sheet.

- Prints all photos one by one shown on the index sheet.

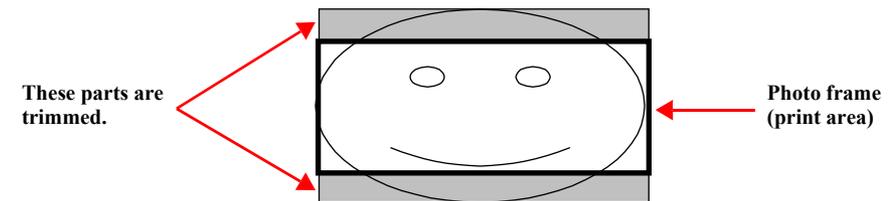
### 1.5.6 Trimming Function

A trimming function is provided as a means of coordinating photo data with the types of photo frames handled by this unit. This function is always activated so that printing photo data is in shapes that fit these photo frames.

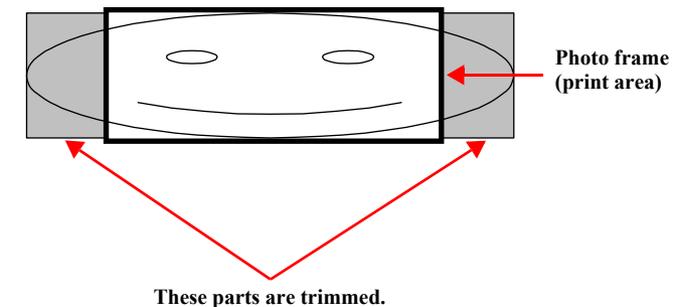
This function is described briefly below.

The printed photo frame and the photo to be printed are matched in length along one side and the photo is resized along the perpendicular side to fit the frame on that side. Any part of the photo that does not fit within the photo frame is trimmed away (not printed).

- The image below shows an example in which the photo data is aligned vertically with the photo frame.



- The image below shows an example in which the photo data is aligned horizontally with the photo frame.



**Figure 1-14. Trimming Function**

### 1.5.7 Assignment Rules for Photo Frame Numbers and Rotation

The rules concerning photo frame numbers that are referred when assigning photos are described below. The numbers shown in each diagram and photo frame below indicate the photo frame numbers used for various types of layout.

The direction of the number shown in each photo frame matches the direction of the printed photo to which the horizontal photo data was allocated. When there are more pixels vertically than horizontally, the vertical photo data is allocated instead, and the number shown in the figure below is then rotated 90° before being printed. In Index printing mode, the numbers are printed as they are shown below, regardless of the shape of the photo data.

However, when the photo data has an equal number of pixels vertically and horizontally the photos are printed without rotation, regardless of the layout. (Note: the vertical photo data refers to when the photo data file itself is set for a vertical (portrait) orientation. Photo data is defined as the vertical photo data if it is taken by a digital camera with a portrait position detecting function.)

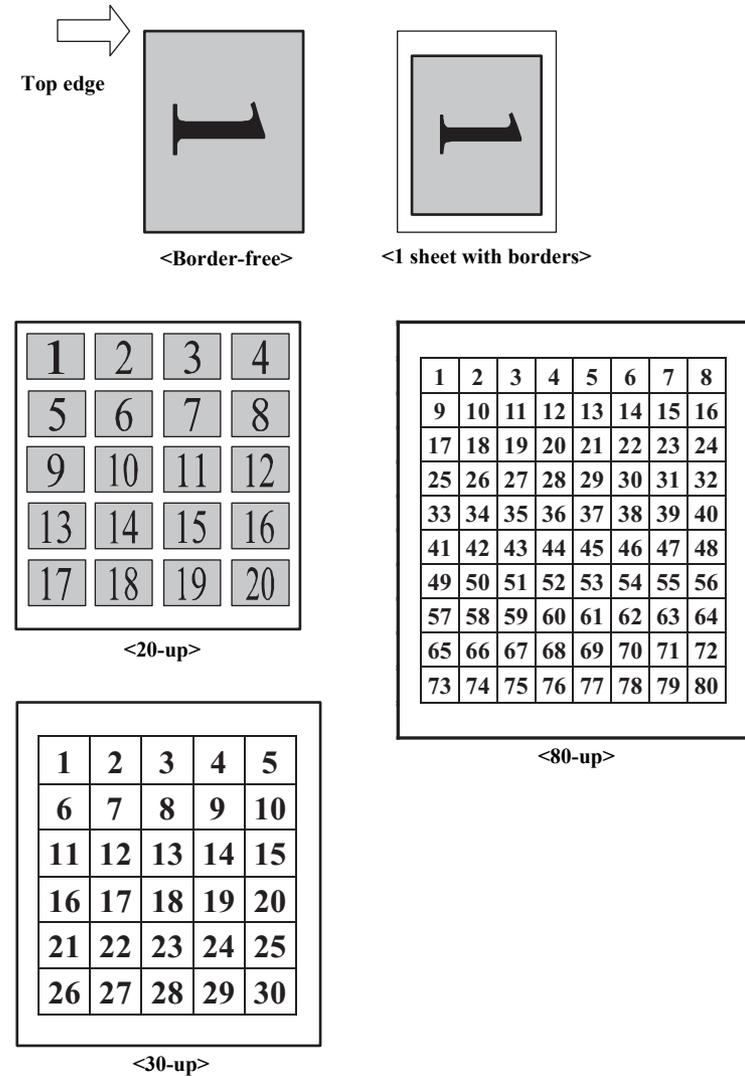


Figure 1-15. Assignment Rules for Photo Frame Numbers and Rotation

### 1.5.8 Layout Drawings

#### 1.5.8.1 Border Free

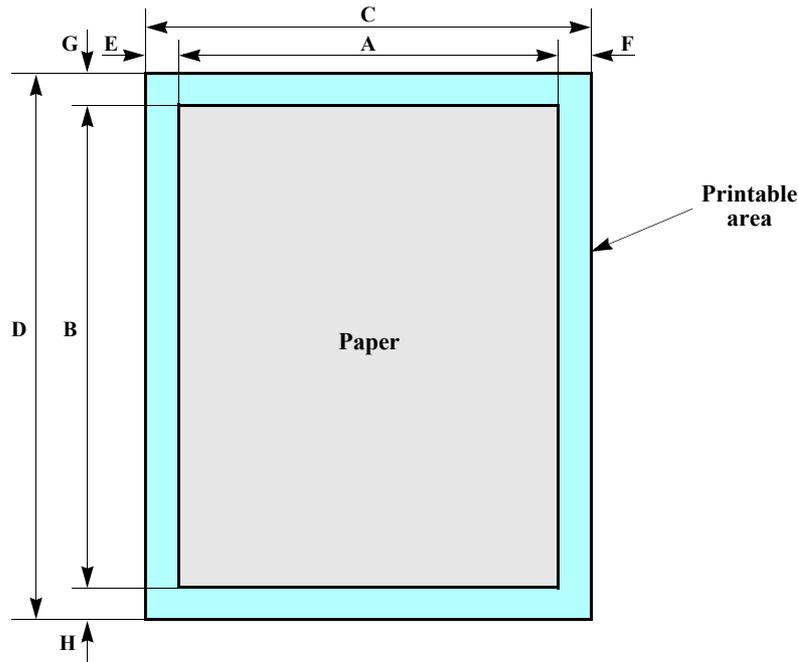


Figure 1-16. Border Free

#### 1.5.8.2 1-up with Borders

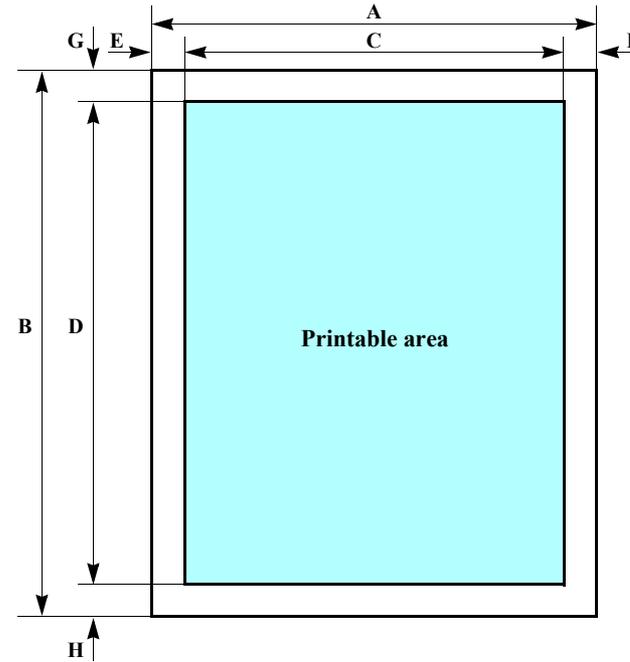


Figure 1-17. 1-up with Borders

Table 1-35. Border Free (unit: mm (inch))

Paper type	A	B	C	D	E	F	G	H
Letter*1	215.90 (8.50)	279.40 (11.00)	220.98 (8.70)	287.53 (11.32)	2.54 (0.10)	2.54 (0.10)	2.96 (0.12)	4.02 (0.16)
4" x 6"*1	101.60 (4.00)	152.40 (6.00)	106.68 (4.20)	160.53 (6.32)	2.54 (0.10)	2.54 (0.10)	2.82 (0.11)	3.60 (0.14)
5" x 7"*1	127 (5.00)	178 (7.00)	132.08 (5.20)	186.04 (7.32)	2.54 (0.10)	2.54 (0.10)	2.96 (0.12)	4.02 (0.16)
A4	210	297	215.08	305.04	2.54	2.54	2.96	4.02
10 x 15*2	101.60	152.40	106.68	160.53	2.54	2.54	2.82	3.60
13 x 18*2	127	178	132.08	186.04	2.54	2.54	2.96	4.02

Note \*1: Letter, 4" x 6", and 5" x 7" size will be used for EAI models.

\*2: 10 x 15, and 13 x 18 size will be used for EMC/Asia, Pacific models.

Table 1-36. Border Free (unit: mm (inch))

Paper type	A	B	C	D	E	F	G	H
Letter*1	215.90 (8.50)	279.40 (11.00)	209.90 (8.26)	273.40 (10.76)	3.00 (0.12)	3.00 (0.12)	3.00 (0.12)	3.00 (0.12)
4" x 6"*1	101.60 (4.00)	152.40 (6.00)	95.60 (3.76)	146.40 (5.76)	3.00 (0.12)	3.00 (0.12)	3.00 (0.12)	3.00 (0.12)
5" x 7"*1	127.0 (5.00)	178.0 (7.00)	121.0 (4.76)	172.0 (6.76)	3.00 (0.12)	3.00 (0.12)	3.00 (0.12)	3.00 (0.12)
A4	210	297	204	291	3.00	3.00	3.00	3.00
10 x 15*2	101.60	152.40	95.60	146.40	3.00	3.00	3.00	3.00
13 x 18*2	127.0	178.0	121.0	172.0	3.00	3.00	3.00	3.00

Note \*1: Letter, 4" x 6", and 5" x 7" size will be used for EAI models.

\*2: 10 x 15, and 13 x 18 size will be used for EMC/Asia, Pacific models.

1.5.8.3 20-up

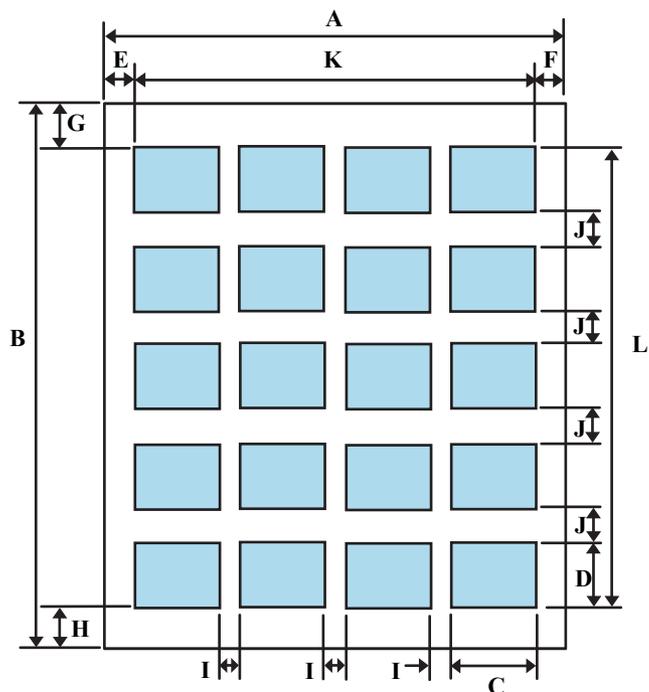


Figure 1-18. 20-up

Table 1-37. 20-up (unit: mm (inch))

Paper type	A	B	C	D	E	F	G	H	I	J	K	L
4" x 6" *1	101.60 (4.00)	152.40 (6.00)	20.00 (0.79)	20.00 (0.79)	6.10 (0.24)	6.30 (0.25)	19.80 (0.78)	20.30 (0.80)	3.00 (0.12)	3.00 (0.12)	89.30 (3.52)	112.30 (4.42)
5" x 7" *1*2	127.00 (5.00)	178.00 (7.00)	29.00 (1.14)	24.60 (0.97)	3.00 (0.12)	3.00 (0.12)	5.00 (0.20)	10.00 (0.39)	1.70 (0.07)	10.00 (0.39)	121.00 (4.76)	163.00 (6.42)
10 x 15 *3	101.60	152.40	20.00	20.00	6.10	6.30	19.80	20.30	3.00	3.00	89.30	112.30
13 x 18 *2*3	127.00	178.00	29.00	24.60	3.00	3.00	5.00	10.00	1.70	10.00	121.00	163.00

Note \*1: 4" x 6" size will be used for EAI models.

\*2: Stylus CX5900/CX6000/DX6000/DX6050 only

\*3: 10 x 15 size will be used for EMC/Asia, Pacific models.

1.5.8.4 30-up

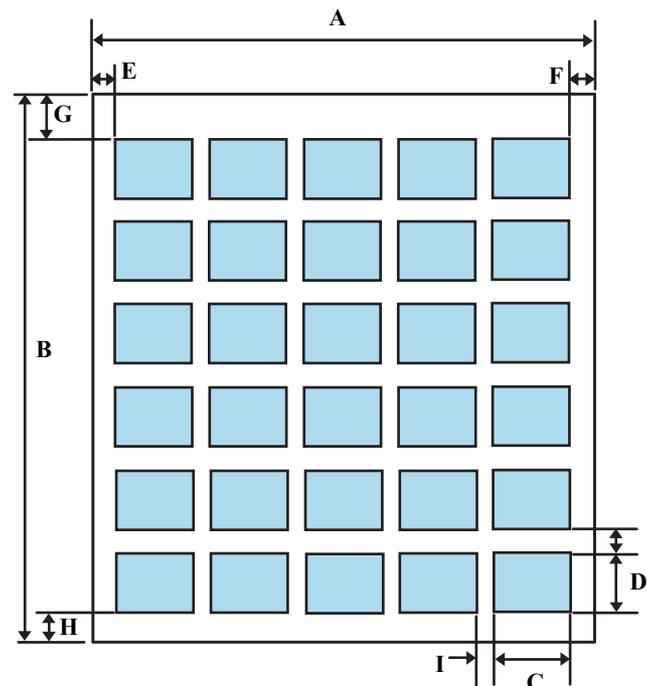


Figure 1-19. 30-up

Table 1-38. 30-up (unit: mm (inch))

Paper type	A	B	C	D	E	F	G	H	I	J
5" x 7"*1	127.00 (5.00)	178.00 (7.00)	20.0 (0.79)	20.0 (0.79)	4.5 (0.18)	4.5 (0.18)	14.0 (0.55)	14.0 (0.55)	4.5 (0.18)	6.0 (0.24)
13 x 18*2	127.00	128.00	20.0	20.0	4.5	4.5	14.0	14.0	4.5	6.0

Note \*1: 4" x 6" size will be used for EAI models.

\*2: 10 x 15 size will be used for EMC/Asia, Pacific models.

1.5.8.5 80-up

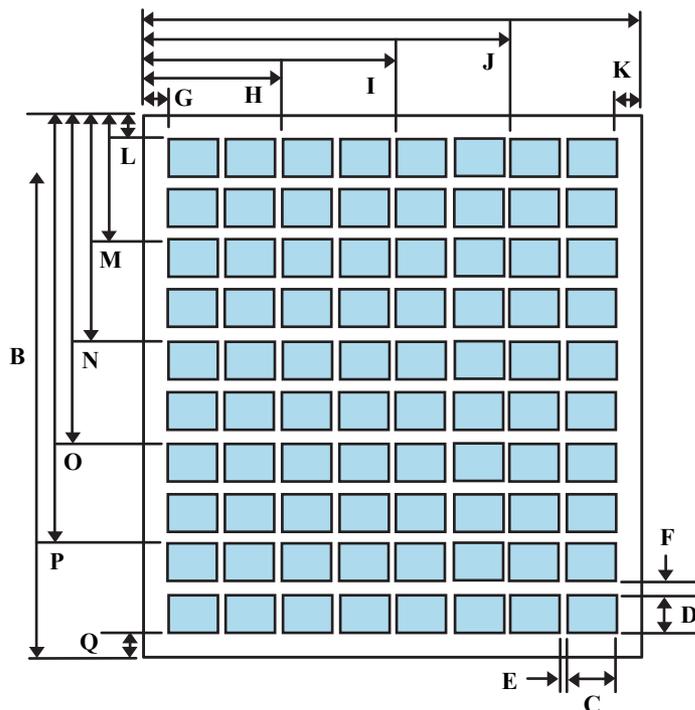


Figure 1-20. 80-up

Table 1-39. 80-up (unit: mm (inch))

Paper type	A	B	C	D	E	F	G	H	I
Letter	215.90 (8.50)	279.40 (11.00)	20.07 (0.79)	20.07 (0.79)	6.10 (0.24)	6.10 (0.24)	6.35 (0.25)	58.67 (2.31)	111.00 (4.37)
A4	210.0	297.0	20.0	20.0	2.0	5.0	18.0	62.0	106.0
Paper type	J	K	L	M	N	O	P	Q	
Letter	163.32 (6.43)	6.35 (0.25)	11.94 (0.47)	64.26 (2.53)	116.59 (4.59)	168.91 (6.65)	221.23 (8.71)	11.94 (0.47)	
A4	150.0	18.0	26.0	76.0	126.0	176.0	226.0	26.0	

1.5.9 Relation between Paper Type and Quality

In this mode, printing is always in color (CMYK), not black ink only.

Table 1-40. Relation between Paper Type and Quality

Paper type	Print resolution (H x V dpi)	Dot size	MW	High speed
Plain Paper	720 x 720	VSD3	On	On
Photo Paper	1440 x 720	VSD3	On	On
Matte Paper*	1400 x 720	VSD3	On	On
Index sheet (Plain Paper)	360 x 720	VSD1	On	On
Print from Index sheet*	1440 x 720	VSD3	On	On

Note "\*": Stylus CX5900/CX6000/DX6000/DX6050 only

## 1.6 Photo Mode (Stylus CX5900/CX6000/DX6000/DX6050 only)

Photo mode is a mode to scan the photo and print with the settings of requested paper size or paper type not involving PC.

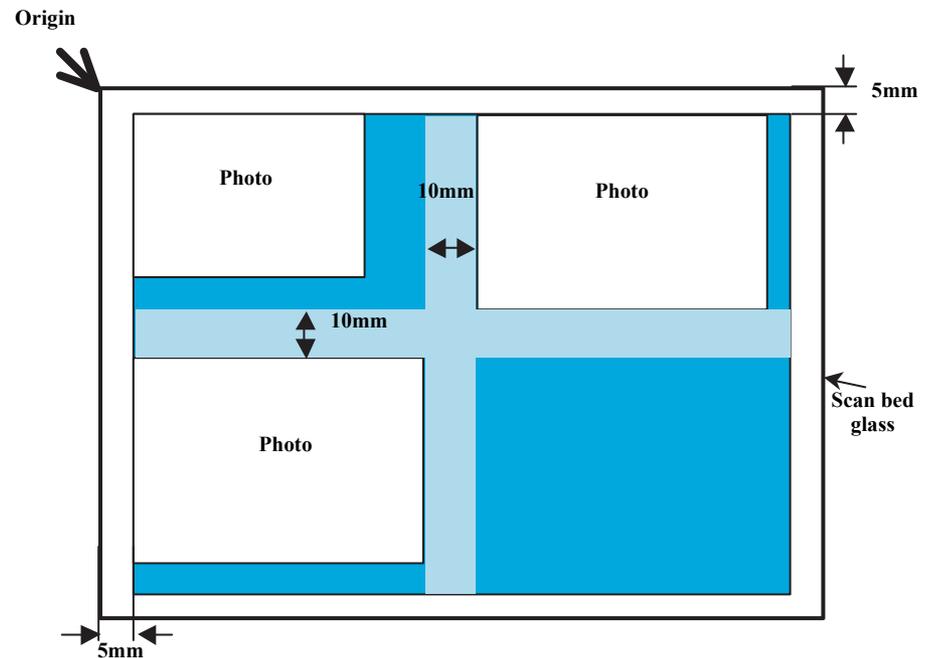
### 1.6.1 Basic Specification

Item	Description
Restoration	Faded images can be restored with this function.
Number of copies setting	This function sets the number of copies. The setting range is 1 to 99.
Maximum copy size	216 x 297 mm
Zoom Function	Fit to page is provided in this mode.

### 1.6.2 Original Photo Setting Specification

When making prints of your photos, place the photos as described below.

- The photograph manuscripts can be set up by side putting, and be set up to three.
- Spaces between the edges of the scan bed glass and the photos should be 5 mm or more, and between each photos should be 10 mm or more.
- The photograph manuscript is vertically set up so that there is no inclination for the manuscript stand.



### 1.6.3 Supported Paper Sizes, Types and Qualities

Table 1-41. Supported Paper Size, Quality, Type

Paper type		Quality *1	EAI		EUR/ASIA		Layout	Resolution (H x V dpi)	Dot size	MW	Print direction
Paper name	Panel indication		paper size	Panel Indication	paper size	Panel Indication					
Plain Paper Recycled Paper Bright White Paper	Plain Paper		Letter/A4*		A4		Standard	720 x 720	VSD3	On	On
Premium Photo Paper Glossy*2 (EAI) Premium Glossy Photo Paper*2(Other)	Photo Paper		Letter/A4* 5" x 7" 4" x 6"		A4 13 x 18*3 10 x 15*4		Boarder free	1440 x 720	VSD3	On	On
Premium Photo Paper Semigloss *2 (EAI) Premium Semigloss Photo Paper*2(Other)	Photo Paper		Letter/A4* 4" x 6"		A4 10 x 15 A4 10 x 15/4" x 6"*4		Boarder free	1440 x 720	VSD3	On	On
Photo Paper Glossy*2*5 (EAI) Glossy Photo Paper*2*5 (Other)	Photo Paper		Letter/A4* 4" x 6"		A4 13 x 18 10 x 15 A4 13 x 18/5" x 7"*3 10 x 15/4" x 6"*4		Boarder free	1440 x 720	VSD3	On	On
Ultra Premium Photo Paper Glossy*2(EAI) Ultra Glossy Photo Paper*2(Other)	Photo Paper		Letter/A4* 5" x 7" 4" x 6"		A4 13 x 18 10 x 15 A4 13 x 18/5" x 7"*3 10 x 15/4" x 6"*4		Boarder free	1440 x 720	VSD3	On	On
Premium Presentation Paper Matte (EAI)	Matte Paper		Letter/A4*		---		Boarder free	1440 x 720	VSD3	On	On
Matte Paper Heavyweight	Matte Paper		---		A4		Boarder free	1440 x 720	VSD3	On	On

Note : Letter/A4: Selectable by Setup mode only for Latin region.

Note \*1: The quality of draft copy is not affected by "Paper type" selection.

\*2: For photo paper: Printing parameter is same as Premium Glossy Photo Paper.

\*3: 13 x 18: The Printer chalks the 13 x 18 format up to the 5" x 7" format.

\*4: 10 x 15: The Printer chalks the 10 x 15 format up to the 4" x 6" format.

\*5: Printing is available, but Color tone is not secured.

## 1.7 Setting Modes

### 1.7.1 Ink Level Check

	Stylus CX4900/CX4905/CX5000/DX5000/DX5050	Stylus CX5900/CX6000/DX6000/DX6050
Ink level indicator	LED	LCD
Management and viewing of ink levels	Ink levels are 100% after initial charge	
	The Indicator shows Ink remaining by 4 steps, from 100% to Ink out	---
	When any of ink is low, Ink LED blinks	When any of ink is low, ink icon is displayed at the upper left of LCD
	When any of ink is out, Ink LED is turned on	When any of ink is out, replace Ink error is displayed

### 1.7.2 Head Cleaning

Head Cleaning can be done from the operation panel to clear away head clogging.

- Stylus CX4900/CX4905/CX5000/DX5000/DX5050:  
By pressing the [Ink] button for over 3 seconds.
- Stylus CX5900/CX6000/DX6000/DX6050:  
By pressing the [Start] button.

### 1.7.3 Ink Cartridge Replacement

- Stylus CX4900/CX4905/CX5000/DX5000/DX5050:  
By pressing the [Ink] button.
- Stylus CX5900/CX6000/DX6000/DX6050:  
Ink cartridge exchanging procedure starts by pressing the [Start] button. Once the Scanner unit is opened and the [Start] button is pressed, the LCD shows the following displays repeatedly.
  1. Current remaining ink level
  2. Promote replace Ink cartridges
  3. Close the scanner unit and press Start button

When the Scanner Unit is closed and the [Start] button is pressed, the Carriage moves to the standby position and the ink cartridge exchanging sequence is executed. Automatically returns to the TOP screen after execution.

### 1.7.4 Nozzle Check Pattern Print

A nozzle check pattern can be printed to check for any ink clogging. Left ink quantity of each color is also printed by the unit of 10%.

To activate this function, turn on this unit while depressing [Ink] button (Stylus CX4900/CX4905/CX5000/DX5000/DX5050)/[Start] button (Stylus CX5900/CX6000/DX6000/DX6050). After printing the pattern, this unit moves to ordinary standby status.

The example of nozzle check pattern is explained below.

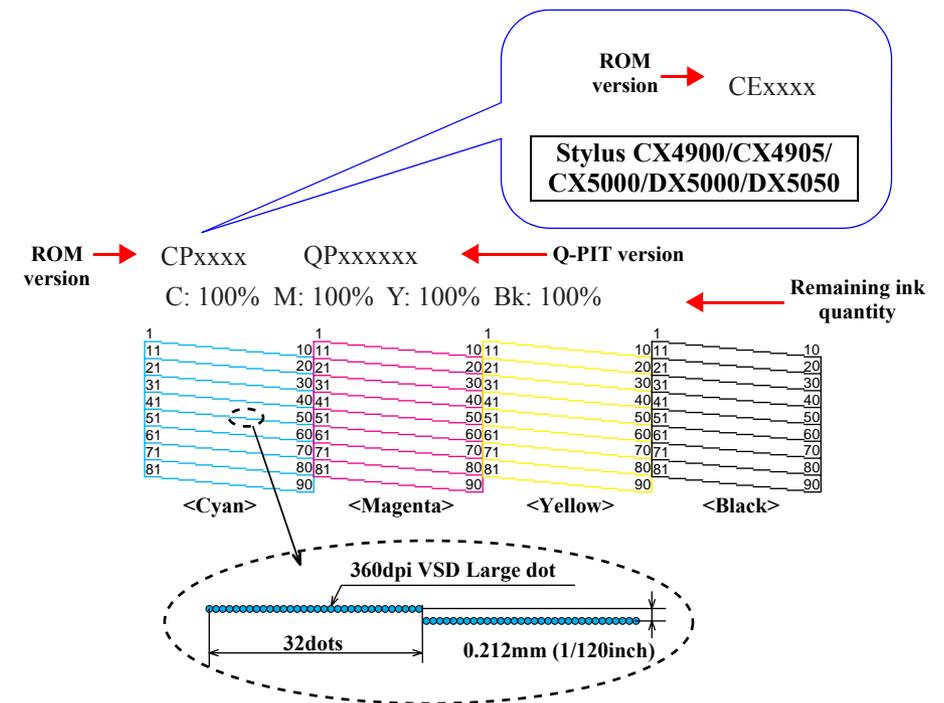


Figure 1-21. Nozzle Check Pattern (Stylus CX5900/CX6000/DX6000/DX6050)

## 1.7.5 Head Alignment

Alignment adjustments can be made to maintain high print quality during bi-directional printing. This function can be used for basic adjustments. For more precise adjustments, we recommend using the head alignment utility that is installed in the connected computer.

	Stylus CX4900/CX4905/CX5000/DX5000/DX5050	Stylus CX5900/CX6000/DX6000/DX6050
To activate this function	By pressing the [Copy mode] button. The pattern will be printed which shows the head alignment at that time, and adjustment can be done regarding to that pattern.	By pressing the [Start] button, the pattern will be printed that shows the head alignment at that time, and adjustment can be done regarding to that pattern.*1
Preparation	1. Set A4 or Letter sized paper to the sheet feeder. 2. Set PG position is close.	
Print Pattern	Turn on this unit while depressing [Copy] button and print the Alignment adjustment pattern.	Turn on this unit while depressing [Start] button and print the Alignment adjustment pattern.
Adjust VSD1 color parameter	1. Select the most appropriate value regarding the printed pattern #1 by pressing [Copy] button.*2 2. Press [B&W Start] button to terminate VSD1 color parameter adjustment. *3	1. Select the most appropriate value regarding the printed pattern #1. *4 2. Press [Start] to terminate VSD1 color parameter adjustment.
Adjust VSD2 color parameter	1. Select the most appropriate value regarding the printed pattern #2 by pressing [Copy] button.*2 2. Press [B&W Start] button to terminate VSD2 color parameter adjustment. *3	1. Select the most appropriate value regarding the printed pattern #2. *4 2. Press [Start] to terminate VSD2 color parameter adjustment.
Adjust VSD3 color parameter	1. Select the most appropriate value regarding the printed pattern #3 by pressing [Copy] button.*2 2. Press [B&W Start] button to terminate VSD3 color parameter adjustment. *3	1. Select the most appropriate value regarding the printed pattern #3. *4 2. Press [Start] to terminate VSD3 color parameter adjustment.
Adjust VSD4 color parameter	1. Select the most appropriate value regarding the printed pattern #4 by pressing [Copy] button.*2 2. Press [B&W Start] button to terminate VSD4 color parameter adjustment. *3	1. Select the most appropriate value regarding the printed pattern #4. *4 2. Press [Start] to terminate VSD4 color parameter adjustment.
Adjust Eco color parameter	1. Select the most appropriate value regarding the printed pattern #5 by pressing [Copy] button.*2 2. Press [B&W Start] button to terminate Eco color parameter adjustment. *3 3. The Eco black adjustment parameter is undergone a change of the color adjustment.	1. Select the most appropriate value regarding the printed pattern #5. *4 2. Press [Start] to terminate Eco color parameter adjustment.
Termination	When all the parameter adjustment is terminated successfully, the adjusted value will be memorized and this unit will be turned off automatically. The adjusted value will be effective from next turning on. To indicate the adjusted values are memorized, all the LEDs except for Card Access LED will be flashing once.	When all the parameter adjustments are completed successfully by pressing the [Start] button, the adjusted values will be memorized and the LCD display returns to the top screen. The adjusted values will be effective from the next power-on.

Note \*1: By returning PG to standard (L), the PG error is released and the PG lever operation is displayed (L) and canceled the processing. The print isn't allowed at PG error. No move to low power mode in Alignment adjustments

\*2: The initial value is "5" indicated on 7 Segment LED and by pressing [Copy button], the value will change from "1" up to "9" incrementally and cyclically.

\*3: Just press that button as well when the initial value is the most appropriate.

\*4: By pressing the [Up] or [Down] button. The initial value that is indicated on the LCD is "5".



- The adjustment procedure will be terminated unsuccessfully in the following cases and no adjustment will be done.
    1. Some error like Paper Out, Paper Jam, PG Open has occurred.
    2. The procedure is terminated by pressing Stop button.
    3. The unit is turned off.

When Paper Out has occurred, the procedure can restart from “Print Pattern” by pressing Color Start button. The error should be removed in advance.
  - Ink maintenance operation like “exchanging I/C” or “cleaning head” can not be done in this mode.
- <Stylus CX4900/CX4905/CX5000/DX5000/DX5050 specific>
- This unit will be turned off automatically when the procedure is terminated by pressing Stop button and when PG open error has occurred and then the adjust lever has been set to close position.
- <Stylus CX5900/CX6000/DX6000/DX6050 specific>
- When PG open error has occurred and then the Paper thickness lever has been set to close position.
  - Stop/Clear button is valid during printing.
  - Stop/Clear button is invalid in the menu.

### 1.7.6 Copy Quality

NOTE: This function is only for Stylus CX5900/CX6000/DX6000/DX6050

The resolution for copy with plain paper can be changed. This setting remains after the printer is turned off.

Default is “Normal”. If the paper size is except A4/Letter, copy quality changes to normal one at a time.

Table 1-42. Copy Quality

Selected value	Resolution
Normal	Monochrome: 360 x 360 Color: 360 x 720 or 360 x 360
Draft	360 x 120
Photo	720 x 720

### 1.7.7 Borderless setting

NOTE: This function is only for Stylus CX5900/CX6000/DX6000/DX6050 (EAI and Latin models)

The width of the overhang for borderless setting can be changed. Default is “Max”. This setting remains after the printer is turned off.

Table 1-43. Borderless Setting

Selected value	Margin volume
Max.	The overhang width is max.
Mid.	The overhang width is half of max.
Min.	The overhang width is quarter of max.

### 1.7.8 Date Stamp

NOTE: This function is only for Stylus CX5900/CX6000/DX6000/DX6050

The captured date is synthesized to the photo and printed based on the Exif information of the photo data. If the photo data does not include the Exif information, the time stamp in DOS is used.

Table 1-44. Date Stamp

Set value	Captured date
No Date	Not printed
mmm.dd.yyyy	Printed in this order
dd.mmm.yyyy	Printed in this order
yyyy.mmm.dd	Printed in this order

### 1.7.9 Viewer Brightness (Photo Viewer Adjustment)

NOTE: This function is only for Stylus CX5900/CX6000/DX6000/DX6050

This utility is used for adjusting the contrast of the LCD (for user adjustment). The adjustable range is assumed to be in 5 stages of “-2” to “+2”.

## 1.7.10 Display

*NOTE: This function is only for Stylus CX5900/CX6000/DX6000/DX6050 (Asia models)*

This utility is used for selecting display message.

**Table 1-45. Display**

Selectable value	Format
Pictograph	Message is icon
English	Message is English

## 1.7.11 Paper size

*NOTE: This function is only for Stylus CX5900/CX6000/DX6000/DX6050 (Latin model)*

This utility is used for selecting paper size.

**Table 1-46. Date Stamp**

Selectable value	Panel Paper size	LED
A4	A4	On
Letter	Letter	On

## 1.8 USB Direct-Print/PictBridge Functions

### 1.8.1 Supported Device

The printer can print from Digital Still Camera that is compliant with the following specifications.

- USB DIRECT-PRINT
- CIPA DC-001-2003 Digital Photo Solutions for Imaging Devices

### 1.8.2 Functions Available from DSC

The following functions are available. Implementation of each function depends on the DSC.

Table 1-47. Items that can be specified from DSC

Item	USB DIRECT-PRINT	DPS (PictBridge)
Picture	O Single picture/DPOF	O Single picture/Multiple picture/ DPOF
Paper type	O Plain paper/Photo paper/Glossy paper	O Plain paper/Photo paper
Paper size	O A4 /5" x 7"/4" x 6"/Letter	
Layout	X Layout is fixed in combination with paper type and paper size. (2up, 4up and 8up are available for DPOF)	X Layout is fixed in combination with paper type and paper size
Date print	O Enable/Disable	
Print quality	X Disable	
Automatic correction	X Disable	

Table 1-47. Items that can be specified from DSC

Item	USB DIRECT-PRINT	DPS (PictBridge)
Cropping	O Any area of rectangle. (This function is available for Single picture print only)	O Any area of rectangle
PRINT Image Framer	O Enable/Disable	---
Status acquisition	O	
Start print	O	
Stop printing	O Immediately/At the end of page	
Reset printer	O	---

### 1.8.3 USB Direct-Print/PictBridge Operations

Standard operations are described below

Note \*1: USB DIRECT-PRINT only

\*2: DPS (PictBridge) only

#### 1.8.3.1 Preparation

Conditions described below are required before starting printing.

- The printer is not printing from the PC.
- The printer is not printing from the memory card slot.
- The printer is not performing the backup of the memory card.
- The error (paper empty, ink end, etc.) is cleared.

### 1.8.3.2 Standard Operations

Standard operations are described below. These operations depend on the DSC.

1. Preparation at the printer
 

Some settings are required before connecting with the DSC. If your DSC can set these settings, preparation at the printer is not required.

  1. Choose the Paper Type, Paper Size and Layout to the desired setting.
2. Preparation at the DSC
 

Some operations are necessary before connecting to the printer.

  1. Set the DPOF (or select pictures\*<sup>2</sup>) if printing multiple picture.
  2. Choose the picture when Single picture print and set area to crop if necessary.
  3. Choose the Paper Type and Paper Size (and Layout\*<sup>2</sup>) if these settings can be specified from DSC.
3. Start printing
  1. Connect the DSC to the printer with a USB cable. The cable that works well with the DSC is recommended.
  2. Start print by operating from the DSC.
  3. The Printer print by printing conditions from DSC, if the DSC dose not designate the printing parameter, the printer prints it by using the printing condition that is registered to the printer.\*<sup>2</sup>

When this unit is connected to a DSC that supports the USB DIRECT-PRINT protocol (Revision 1.0), print settings, image selection, status monitoring, and print start/stop commands can be controlled from the DSC.\*<sup>1</sup>

### 1.8.3.3 Display when DSC is connected

When DSC is connected with the above conditions:

- Stylus CX4900/CX4905/CX5000/DX5000/DX5050: "P" will be displayed with 7 Segment LED.
- Stylus CX5900/CX6000/DX6000/DX6050: "Camera Connected" icon will be displayed on the LDC and the "Print All" LED will be turned on.

### 1.8.3.4 Cancel Print

This unit can be canceled from the DSC. The [Stop] button of the printer is also available.

### 1.8.3.5 Operations when the Print is Completed

To print from the memory card, disconnect the USB cable after printing is complete.

### 1.8.3.6 Exclusive Control Specifications for Paper Type, Size, and Layout

Depending upon the DSC and printer settings, there may be some combinations of paper type, size, and layout settings that are not supported by this printer. In such a case, the paper type is given priority; paper size and layout are changed to settings that will allow printing (the initial settings made on the printer's operation panel for the paper type given priority) and the document is printed.

### 1.8.3.7 Camera direct error executing other processing (error) (Stylus CX5900/CX6000/DX6000/DX6050 only)

When unsupported equipment are connected during the other processing is executed (error), the camera direct error is displayed after other processing execution (error). When the unsupported equipment is connected and other processing ends, it doesn't become a camera direct mode and the camera direct error is not displayed.

## 1.9 Control Panel

### 1.9.1 Control Panel of Stylus CX4900/CX4905/CX5000/DX5000/DX5050

#### □ Buttons

The control panel contains the following buttons, which are used to set and execute various operations.

All of them are non-lock type buttons.

**Table 1-48. Buttons**

Button	*	Function
Power	1	Execute turning on/off this unit.
Memory Card	2	Make transition from “Copy mode” to “Memory Card mode” and selects one of card print mode.
Copy	3	Make transition from “Memory Card mode” to “Copy mode” and sets number of copies.
Paper Type	4	Select paper type.
Paper Size	5	Select paper size.
Ink	6	Execute exchanging ink cartridges or head cleaning.
Fit to Page	7	Alternate zoom of “Fit to page” and default (actual; 100%).
B&W Start *1	8	Start monochrome copy.
Color Start	9	Start card print or color copy.
Stop	10	Stop job of copying or printing or sometimes work as shift button.

Note “\*”: Numbers in the table correspond to the numbers shown in [Figure 1-22 \(p50\)](#).

Note \*1: B&W means “Black and White”.

Refer to “1.9.4.1 Stand-alone Copy / Memory Card Print (Stylus CX4900/CX4905/CX5000/DX5000/DX5050)” ([p.55](#)) for details about each button.

#### □ Indicators

The control panel contains 7-segment LED and 13 LEDs, which are used to indicate various status.

**Table 1-49. Indicators (Stylus CX4900/CX4905/CX5000/CX5050)**

LED	*	Function
Power LED [Green] *1	A	Light at stand-by. Blink while some operation is proceeding.
Error LED [Red]	B	Light or blink while some error or warning is occurring.
Ink LED [Red]	C	Light when some ink is out. Blink when some ink is near empty or in the ink cartridge exchanging procedure.
Memory Card LED 1-3	D	Light one of them while some memory card print function showing below is ready or proceeding.
1st [Green]		Print Index Sheet
2nd [Green]		Print From Index Sheet
3rd [Green] *2		Print All / DPOF
7-seg. LED *3	E	Indicate number of copies, or some error codes in error status.
Decimal Point LED		Blinks slowly in low power panel status.
Paper Type LED 1,2	F	Light one of them showing which paper type below is selected.
1st [Green]		Plain Paper
2nd [Green]		Photo Paper
Paper Size LED 1-3	G	Light one of them showing which paper size below is selected.
1st [Green]		10x15/ 4”x6” (Euro/Asia), 4”x6” (EAI/Latin)
2nd [Green]		13x18/5”x7” (Euro/Asia), 5”x7” (EAI/Latin)
3rd [Green]		A4 (Euro/Asia), Letter (EAI), Letter/A4 (Latin)*4
Fit to Page LED [Green]	H	Light when “Fit to Page” function is effective in copy mode.
Card Access LED [Green] *5	--	Light when available memory card is in a slot. Blink when accessing to the card.

Note “\*”: Numbers in the table correspond to the numbers shown in [Figure 1-22 \(p50\)](#)

Note \*1: All LEDs except for Power LED will be turned off while printing or scanning by PC.

\*2: When DPOF printing is proceeding, this LED is blinking.

\*3: When Memory Card Print mode is selected, those LEDs are turned off.

\*4: Letter, when the LED is light. A4, when the LED is blinking.

\*5: This LED is located near the card slot, not on the control panel.

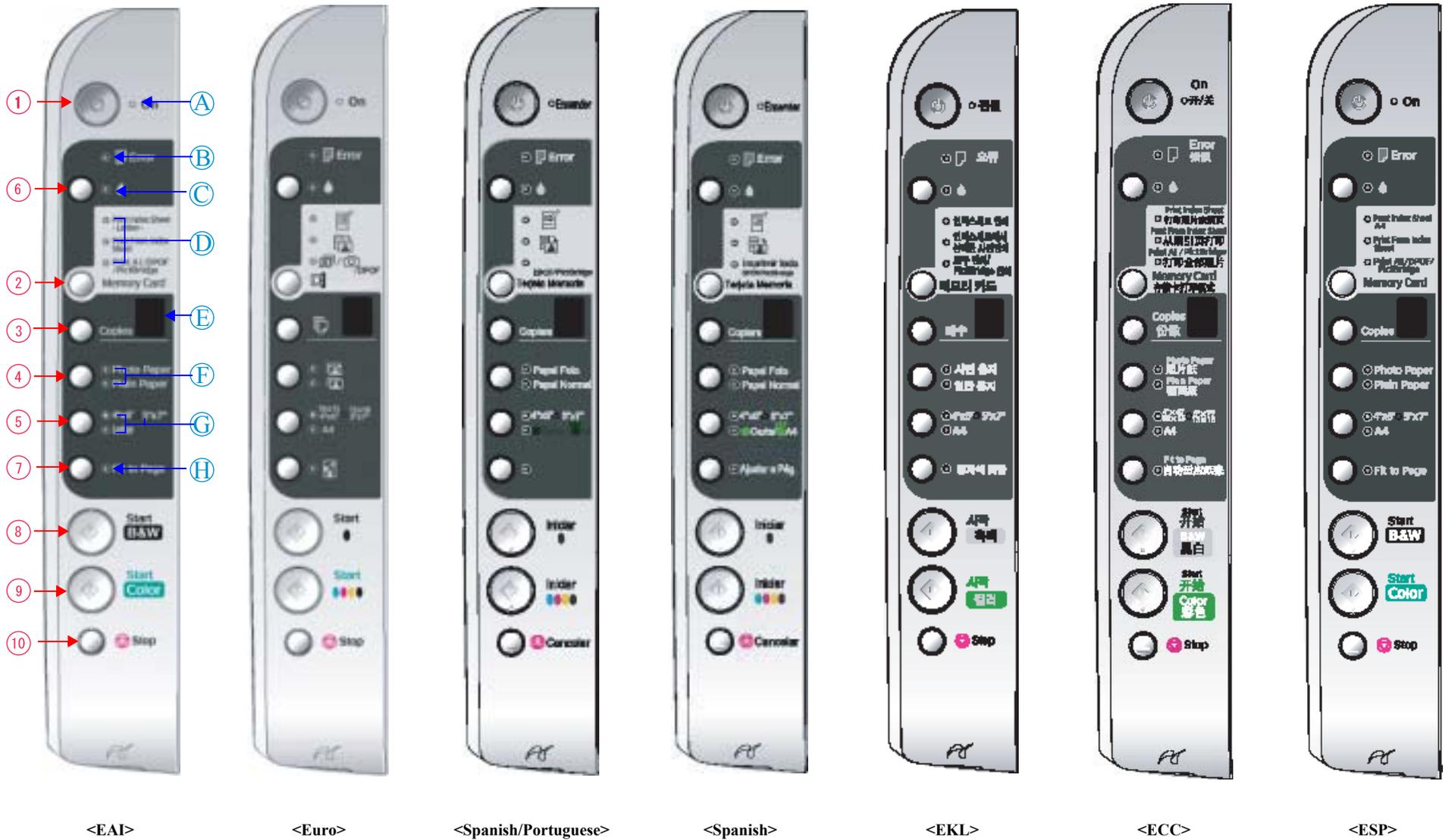


Figure 1-22. Control Panel (Stylus CX4900/CX4905/CX5000/DX5000/DX5050)

## 1.9.2 Control Panel of Stylus CX5900/CX6000/DX6000/DX6050

### □ Buttons

The control panel contains the following buttons, which are used to set and execute various operations.

All of them are non-lock type buttons.

**Table 1-50. Buttons**

Button	*	Function
Power	1	Execute turning on/off this unit.
Memory Card	2	Make transition from “Copy mode” or “Photo mode” or “Setup mode” to “Memory Card mode” and selects one of card print mode.
Copy	3	Make transition from “Memory Card mode” or “Photo mode” or “Setup mode” to “Copy mode” and selects zoom function.
Paper Type	4	Select paper type.
Paper Size	5	Select paper size.
Photo	11	Make transition from “Copy mode” or “Memory Card mode” or “Setup mode” to “Photo mode”.
Setup/Utilities	12	Make transition from “Copy mode” or “Memory Card mode” or “Photo mode” to “Setup mode”.
Up/Down	13	Sets number of copies
Left/Right	14	Select print image
Start	15	Start card print or color copy or scan.
Stop/Clear	16	Stop job of copying or printing or sometimes work at the printing. Clear the setting value at the non-printing.

Note “\*”: Numbers in the table correspond to the numbers shown in [Figure 1-23 \(p52\)](#) and [Figure 1-24 \(p53\)](#)

Refer to “1.9.4.2 Stand-alone Copy / Memory Card Print / Photo / Setup/Utilities (Stylus CX5900/CX6000/DX6000/DX6050)” (p.57) for details about each button.

### □ Indicators

The control panel contains 2.0 inch LCD and 15 LEDs, which are used to indicate various status.

**Table 1-51. Indicators (Stylus CX5900/CX6000/DX6000/DX6050)**

LED	*	Function
Power LED [Green] *1	A	Light at stand-by. Blink while some operation is proceeding.
Memory Card LED 1-4	J	Light one of them while some memory card print function showing below is ready or proceeding.
1 <sup>st</sup> [Green]		Print Select
2 <sup>nd</sup> [Green]		Print All/PictBridge
3 <sup>rd</sup> [Green]		Print Index Sheet
4 <sup>th</sup> [Green]		Print From Index Sheet
Copy LED 1-2	K	Light one of them while copy print function shown below is ready or proceeding.
1 <sup>st</sup> [Green]		Fit to Page
2 <sup>nd</sup> [Green]		100%
Photo [Green]	L	Light while Photo function showing below is ready or proceeding.
Paper Type LED 1-3	M	Light one of them showing which paper type below is selected.
1 <sup>st</sup> [Green]		Plain Paper
2 <sup>nd</sup> [Green]		Photo Paper
3 <sup>rd</sup> [Green]		Matte Paper
Paper Size LED 1,2	N	Light one of them showing which paper size below is selected.
1 <sup>st</sup> [Green]		A4 (Euro/Asia), Letter (EAI), Letter/A4 (Latin)
2 <sup>nd</sup> [Green]		10x15/ 4”x6” (Euro/Asia), 4”x6” (EAI/Latin)
3 <sup>rd</sup> [Green]		13x18/5”x7” (Euro/Asia), 5”x7” (EAI/Latin)
2 inch LCD	O	Display photo, print number, error, settings, etc.
Card Access LED [Green] *2	--	Light when available memory card is in a slot. Blink when accessing to the card.

Note “\*”: Numbers in the table correspond to the numbers shown in [Figure 1-23 \(p52\)](#) and [Figure 1-24 \(p53\)](#)

Note \*1: All LEDs except for Power LED will be turned off while printing or scanning by PC.

\*2: This LED is located near the card slot, not on the control panel.



<EAI>

<Euro>

<Spanish/Portuguese>

<Spanish>

Figure 1-23. Control Panel (Stylus CX5900/CX6000/DX6000/DX6050)(1)

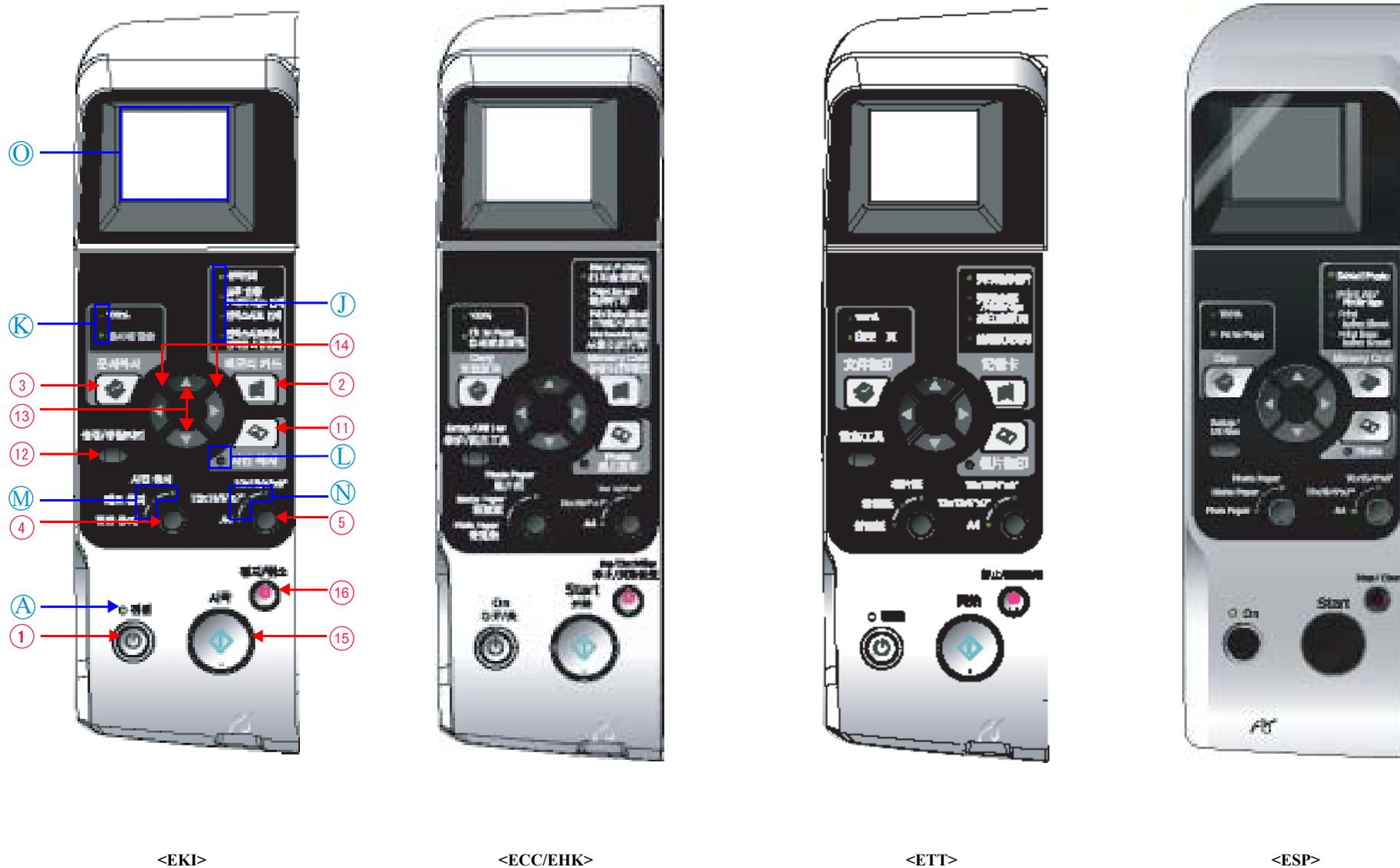


Figure 1-24. Control Panel (Stylus CX5900/CX6000/DX6000/DX6050)(2)

### 1.9.3 Method of Changing Modes

This printer has the following modes:

- Copy mode
- Memory card mode
- Photo mode\*<sup>1</sup>
- Setup mode\*<sup>1</sup>

It is possible to enter respective modes by pressing the button with the same name as each mode. If a memory card is not inserted at power-on, copy mode is selected in default configuration. Factory settings of each mode are shown below.

**Table 1-52. Factory Settings of Each Mode**

Item	Copy mode	Memory card mode	Photo mode* <sup>1</sup>	Setup mode* <sup>1</sup>
Paper Type	Plain paper	Photo Paper	Photo Paper	Plain Paper
Paper Size	A4 or Letter	4" x 6"* <sup>1</sup> or 10 x 15/4" x 6"* <sup>2</sup>	4" x 6" or 10 x 15/4" x 6"* <sup>2</sup>	A4 or Letter
Zoom	100%	---	---	---
Copy Color* <sup>1</sup>	Color	---	---	---
Sheet* <sup>1</sup>	1	1	1	---
Mode* <sup>1</sup>	---	Print select	---	---
Restoration* <sup>1</sup>	---	---	Off	---

Note : Setting items except "sheet" is stored as each mode (except setup mode) setting when pushed the start button, transit to other mode, or the power off timing. The setting will not be stored when the printer is pulled out from the outlet. At the timing of transition to the setup mode, setting items including sheet number are stored.

Note \*1: Stylus CX5900/CX6000/DX6000/DX6050 only

\*2: The panel indicator only. The printer chalks 10 x 15 format up to 4" x 6" format.

## 1.9.4 Operations

- For operations of the Stylus CX4900/CX4905/CX5000/DX5000/DX5050 refer to [Table 1-53 on page 55](#)
- For operations of the Stylus CX5900/CX6000/DX6000/DX6050 refer to [Table 1-54 on page 57](#)

### 1.9.4.1 Stand-alone Copy / Memory Card Print (Stylus CX4900/CX4905/CX5000/DX5000/DX5050)

The functions of this unit caused by each button in stand-alone copy mode or memory card print mode are described in the following table.

**Table 1-53. Operations for Stylus CX4900/CX4905/CX5000/DX5000/DX5050**

Button	Function	
	Stand-alone Copy	Memory Card Print
Power Button	<ul style="list-style-type: none"> <li>• Turn on or off this unit.</li> </ul>	
Ink Button	<ul style="list-style-type: none"> <li>• Start or advance ink cartridge (I/C) exchanging procedure.                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Case                                     <ul style="list-style-type: none"> <li>■ [All inks are enough.] Move carriage (CR) to I/C exchange position.</li> <li>■ [Ink low, Replace ink, Without I/C error] Move CR to each color's ink check position if that color's I/C is ink low or ink out or without I/C. CR moves in the order of Cyan, Magenta, Yellow, Black.</li> <li>■ [CR is in some color's ink check position.] Move CR to next color's ink check position or I/C exchange position.</li> <li>■ [CR is in I/C exchange position.] Move CR to standby position.</li> </ul> </li> </ul> </li> <li>• Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in error status except for ink out error, paper out error, memory card error, index sheet error, PG error.</li> </ul>	
Ink Button (Holding over 3 sec.)	<ul style="list-style-type: none"> <li>• Start cleaning head procedure.</li> <li>• Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in error status except for paper out error, memory card error, index sheet error, PG error.</li> </ul>	
Memory Card Button	<ul style="list-style-type: none"> <li>• Make transition from “Stand-alone copy” mode to “Memory card print” mode and select and light “Print Index Sheet”, or “Print All / DPOF” if DPOF file exists in the card.</li> <li>• Turn off both 7 Segment LED and “Fit to Page” LED.</li> <li>• Select “Plain Paper” and “Letter (or A4)”</li> </ul>	<ul style="list-style-type: none"> <li>• Change to next “Memory card print” function.                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Case                                     <ul style="list-style-type: none"> <li>■ [Print Index Sheet] Change to “Print From Index Sheet”, and change paper type and paper size to the one last set in “Print From Index Sheet” or “Print All / DPOF”.</li> <li>■ [Print From Index Sheet] Change to “Print All / DPOF”.</li> <li>■ [Print All / DPOF] Change to “Print Index Sheet”, and change paper type and paper size to “Plain Paper” and “Letter (or A4)”.</li> </ul> </li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>• Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in error status except for memory card error, index sheet error, PG error.</li> </ul>	
Copy Button	<ul style="list-style-type: none"> <li>• Set number of copies incrementally and indicate it on 7 Segment LED.                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Case                                     <ul style="list-style-type: none"> <li>■ [1 to 8] Add 1 and the number becomes 2 to 9.</li> <li>■ [9] Indicate “-”, which means 100 copies.</li> <li>■ [-] Reset to “1”.</li> </ul> </li> </ul> </li> <li>• Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in error status.</li> <li>• Number decreases one by one after 1 copy is finished and return to the beginning number when all copies are finished. When “-” is indicated, number of copies decreases internally but no change can be seen on 7 Segment LED.</li> </ul>	<ul style="list-style-type: none"> <li>• Make transition from “Memory card print” mode to “Stand-alone copy” mode and set number of copies to “1”.</li> <li>• Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in error status except for memory card error, index sheet error, PG error.</li> </ul>

**Table 1-53. Operations for Stylus CX4900/CX4905/CX5000/DX5000/DX5050**

Button	Function	
	Stand-alone Copy	Memory Card Print
Paper Type Button	<ul style="list-style-type: none"> <li>Alternate paper type of “Plain Paper” and “Photo Paper”.</li> </ul>	<ul style="list-style-type: none"> <li>Alternate paper type of “Plain Paper” and “Photo Paper” which will be used in “Print From Index Sheet” or “Print All / DPOF”.</li> <li>Invalid in “Print Index Sheet”, and then it is fixed to “Plain Paper”.</li> </ul>
	<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in error status.</li> </ul>	
Paper Size Button	<ul style="list-style-type: none"> <li>Alternate paper size of “Letter (or A4)” and “4”x6/10x15” and “5” x 7”/13x18”.</li> <li>(10x15: The panel indicator only. The Printer chalks the 10x15 format up to the 4” x6” format.)</li> </ul>	<ul style="list-style-type: none"> <li>Alternate paper size of “Letter (or A4)” and “4”x 6/10x15” and “5” x 7”/13x18” which will be used in “Print From Index Sheet” or “Print All / DPOF”.</li> <li>(10x15: The panel indicator only. The Printer chalks the 10x15 format up to the 4” x 6” format.)</li> <li>Invalid in “Print Index Sheet”, and then it is fixed to “Letter (or A4)”.</li> </ul>
	<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in error status.</li> </ul>	
Fit to Page Button	<ul style="list-style-type: none"> <li>Alternate “Fit to Page” status and turn on or off the “Fit to Page” LED.</li> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in error status.</li> </ul>	<ul style="list-style-type: none"> <li>Invalid. “Fit to Page” LED is always turned off in this mode.</li> </ul>
B&W Start Button	<ul style="list-style-type: none"> <li>Start monochrome copy.</li> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in ink out error.</li> <li>Move to PG error status when platen gap is large. But when this button is pressed again in that status, that print will start.</li> </ul>	<ul style="list-style-type: none"> <li>Invalid but for clearing some error status.</li> <li>Clear PG error and start print that was suspended by PG error.</li> <li>Clear index sheet error and start “Print from index sheet”.</li> </ul>
	<ul style="list-style-type: none"> <li>Load paper in paper out error or double feed error and eject paper in paper jam error.</li> </ul>	
Color Start Button	<ul style="list-style-type: none"> <li>Start color copy.</li> </ul>	<ul style="list-style-type: none"> <li>Start memory card print.</li> <li>Make transition from “Print Index Sheet” to “Print From Index Sheet” when “Print Index Sheet” finishes successfully, without any error or “STOP” operation.</li> <li>Invalid with no card in slots.</li> <li>Move to memory card error status when incompatible memory card is inserted or no images found in the card.</li> </ul>
	<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in ink out error.</li> <li>Load paper in paper out error or double feed error and eject paper in paper jam error.</li> <li>Move to PG error status when platen gap is large. But when this button is pressed again in that status, that print will start.</li> </ul>	
Stop Button	<ul style="list-style-type: none"> <li>Stop job of copying or printing and reset the number of copies to the beginning.</li> </ul>	<ul style="list-style-type: none"> <li>Stop job of copying or printing.</li> </ul>
	<ul style="list-style-type: none"> <li>Eject paper when paper exists or may exist in the paper path.</li> <li>Invalid while PC scanning, cleaning head and exchanging I/C.</li> <li>Clear some of error status.</li> </ul>	
B&W Start Button + Stop Button	<ul style="list-style-type: none"> <li>Start draft monochrome copy when “Plain Paper” and “Letter (or A4)” are selected.</li> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in ink out error, or without “Letter” or “A4” is selected.</li> <li>Move to PG error status when platen gap is large.</li> </ul>	---
Color Start Button + Stop Button	<ul style="list-style-type: none"> <li>Start draft color copy when “Plain Paper” and “Letter (or A4)” are selected.</li> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging I/C, or in ink out error, or without “Letter” or “A4” is selected.</li> <li>Move to PG error status when platen gap is large.</li> </ul>	---

1.9.4.2 Stand-alone Copy / Memory Card Print / Photo / Setup/Utilities (Stylus CX5900/CX6000/DX6000/DX6050)

The functions of this unit caused by each button in stand-alone copy, memory card print, photo, or Setup/Utilities modes are described in the following table.

Table 1-54. Operations for Stylus CX5900/CX6000/DX6000/DX6050

Button	Function			
	Stand-alone copy	Memory card print	Photo	Setup/Utilities
Power Button	<ul style="list-style-type: none"> <li>Turns on or off this unit.</li> </ul>			
Copy Button	<ul style="list-style-type: none"> <li>Alternates to “Fit to Page” status and lights “Fit to Page” or “100%”.</li> </ul>	<ul style="list-style-type: none"> <li>Makes transition from “Memory card print” mode to “Stand-alone copy” mode and sets number of copies to “1”.</li> </ul>	<ul style="list-style-type: none"> <li>Makes transition from “Photo” mode to “Stand-alone copy” mode and sets number of copies to “1”.</li> </ul>	<ul style="list-style-type: none"> <li>Makes transition from “Setup” mode to “Stand-alone copy” mode and sets number of copies to “1”.</li> </ul>
	<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status.</li> </ul>	<ul style="list-style-type: none"> <li>Select paper type, paper size, zoom function, color/monochrome that are memorized.</li> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status except for memory card error, index sheet error, or PG error.</li> </ul>		
Memory Card Button	<ul style="list-style-type: none"> <li>Makes transition from “Stand-alone copy” mode to “Memory card print” mode, selects and lights “Print Select”, or “Print All / PictBridge” if DPOF file exists in the card.</li> </ul>	<ul style="list-style-type: none"> <li>Changes to next “memory card print” function.</li> <li>□ Case                             <ul style="list-style-type: none"> <li>■ [Print Select]: Changes to “Print All/PictBridge”.</li> <li>■ [Print All/PictBridge]: Changes to “Print Index Sheet”, and changes paper type and paper size to “Plain Paper” and “Letter (or A4)”.</li> <li>■ [Print Index Sheet]: Changes to “Print From Index Sheet”, and changes paper type and paper size to the one last set in “Print From Index Sheet” or “Print All / PictBridge” or “Print Select”.</li> <li>■ [Print From Index Sheet]: Changes to “Print Select”.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Makes transition from “Photo” mode to “Memory card print” mode, selects and lights “Print Select”, or “Print All / PictBridge” if DPOF file exists in the card.</li> </ul>	<ul style="list-style-type: none"> <li>Makes transition from “Setup” mode to “Memory card print” mode, selects and lights “Print Select”, or “Print All / PictBridge” if DPOF file exists in the card.</li> </ul>
	<ul style="list-style-type: none"> <li>Select paper type and paper size that are memorized.</li> </ul>	<ul style="list-style-type: none"> <li>Memorizes selected paper type and paper size.</li> </ul>		
	<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status except for memory card error, index sheet error, or PG error.</li> </ul>			

Table 1-54. Operations for Stylus CX5900/CX6000/DX6000/DX6050

Button	Function			
	Stand-alone copy	Memory card print	Photo	Setup/Utilities
Photo Button	<ul style="list-style-type: none"> <li>Makes transition from “Stand-alone copy” mode to “Photo” mode.</li> </ul>	<ul style="list-style-type: none"> <li>Makes transition from “Memory card print” mode to “Photo” mode.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Before scanning                             <ul style="list-style-type: none"> <li>Invalid.</li> </ul> </li> <li><input type="checkbox"/> After scanning                             <ul style="list-style-type: none"> <li>Returns to top screen and sets number of copies to “1”.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Make transition from “Setup” mode to “Photo” mode.</li> </ul>
	<ul style="list-style-type: none"> <li>Select paper type and paper size that are memorized.</li> </ul>			<ul style="list-style-type: none"> <li>Memorizes selected paper type and paper size.</li> </ul>
<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status except for memory card error, index sheet error, or PG error.</li> </ul>				
Setup/Utilities Button	<ul style="list-style-type: none"> <li>Makes transition from “Stand-alone copy” mode to “Setup” mode, and lights off all the modes LEDs.</li> </ul>	<ul style="list-style-type: none"> <li>Makes transition from “Memory card print” mode to “Setup” mode, and lights off all the modes LEDs.</li> </ul>	<ul style="list-style-type: none"> <li>Makes transition from “Photo” mode to “Setup” mode, and lights off all the modes LEDs.</li> </ul>	<ul style="list-style-type: none"> <li>Returns to the original mode selected before “setup” mode.</li> </ul>
	<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status except for memory card error, index sheet error, or PG error.</li> </ul>			
Left/Right Buttons	<ul style="list-style-type: none"> <li>Alternates color print and monochrome print.</li> </ul>	<ul style="list-style-type: none"> <li>Selects print image.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Before scanning                             <ul style="list-style-type: none"> <li>Selects file type and restoration.</li> </ul> </li> <li><input type="checkbox"/> After scanning                             <ul style="list-style-type: none"> <li>Select print image.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Selects setup menu.</li> </ul>
	<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status.</li> </ul>			
Up/Down Buttons	<ul style="list-style-type: none"> <li>Sets number of copies incrementally/decrementally.</li> </ul>		<ul style="list-style-type: none"> <li><input type="checkbox"/> Before scanning                             <ul style="list-style-type: none"> <li>Invalid.</li> </ul> </li> <li><input type="checkbox"/> After scanning                             <ul style="list-style-type: none"> <li>Sets number of copies incrementally/decrementally.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Selects adjustment value or setting value.</li> </ul>
	<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status.</li> </ul>			
Paper Type Button	<ul style="list-style-type: none"> <li>Alternates paper type of “Plain Paper”, “Photo Paper”, and “Matte Paper”.</li> </ul>	<ul style="list-style-type: none"> <li>Alternates paper type of “Plain Paper”, “Photo Paper”, and “Matte Paper”, which will be used in “Print All/PictBridge” or “Print Select”.</li> <li>Invalid in “Print Index Sheet”, and then fixed to “Plain Paper”.</li> <li>Invalid in “Print from Index Sheet”, and then fixed to selected paper type by Index Sheet.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Before scanning                             <ul style="list-style-type: none"> <li>Invalid.</li> </ul> </li> <li><input type="checkbox"/> After scanning                             <ul style="list-style-type: none"> <li>Alternates paper type of “Plain Paper”, “Photo Paper”, and “Matte Paper”.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Invalid</li> </ul>
	<ul style="list-style-type: none"> <li>Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status.</li> </ul>			

Table 1-54. Operations for Stylus CX5900/CX6000/DX6000/DX6050

Button	Function			
	Stand-alone copy	Memory card print	Photo	Setup/Utilities
Paper Size Button	<ul style="list-style-type: none"> <li>• Alternates paper size of “Letter (or A4)”, “4” x 6”/10x15”, and “5” x 7”/13x18”.</li> </ul>	<ul style="list-style-type: none"> <li>• Alternates paper size of “Letter (or A4)”, “4” x 6”/10x15”, and “5” x 7”/13x18”, which will be used in “Print All/PictBridge” or “Print Select”.</li> <li>• Invalid in “Print Index Sheet”, and then fixed to “Letter (or A4)”.</li> <li>• Invalid in “Print from Index Sheet”, and then fixed to selected paper type by Index Sheet.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Before scanning                             <ul style="list-style-type: none"> <li>■ Invalid.</li> </ul> </li> <li><input type="checkbox"/> After scanning                             <ul style="list-style-type: none"> <li>■ Alternates paper size of “Letter (or A4)”, “4” x 6”/10x15”, and “5” x 7”/13x18”.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Invalid</li> </ul>
	<ul style="list-style-type: none"> <li>• Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status.</li> </ul>			
Start Button	<ul style="list-style-type: none"> <li>• Starts copy.</li> <li>• Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in ink out error.</li> </ul>	<ul style="list-style-type: none"> <li>• Starts memory card printing.</li> <li>• Makes transition from “Print Index Sheet” to “Print From Index Sheet” when “Print Index Sheet” finishes successfully, without any error or “STOP” operation.</li> <li>• Moves to memory card error status when incompatible memory card is inserted or no image is found on the card.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Before scanning                             <ul style="list-style-type: none"> <li>■ Executes previewing</li> </ul> </li> <li><input type="checkbox"/> After scanning                             <ul style="list-style-type: none"> <li>■ Starts copy</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Executes procedure or starts printing.</li> <li>• Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in ink out error status.</li> </ul>
		<ul style="list-style-type: none"> <li>• Invalid if no card is in the slots.</li> </ul>		
	<ul style="list-style-type: none"> <li>• Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridges, or in error status.</li> </ul>			
<ul style="list-style-type: none"> <li>• Loads paper in paper out error or double feed error and ejects paper in paper jam error.</li> <li>• Moves to PG error status when platen gap is large. When this button is pressed again in that status, the printing will be started.</li> </ul>				

Table 1-54. Operations for Stylus CX5900/CX6000/DX6000/DX6050

Button	Function			
	Stand-alone copy	Memory card print	Photo	Setup/Utilities
Stop/Clear Button	<input type="checkbox"/> Not in copying or printing status <ul style="list-style-type: none"> <li>■ Resets the setting value (paper size, paper type, number of copies).</li> <li>■ Lights all the paper type and paper size LEDs for one second.</li> </ul>			
	<input type="checkbox"/> Before scanning <ul style="list-style-type: none"> <li>■ Reset the setting value (paper size, paper type, number of copies).</li> <li>■ Light all paper type and paper size LEDs for 1 second.</li> </ul>			
	<input type="checkbox"/> Not in copying or printing status <ul style="list-style-type: none"> <li>■ Resets the setting value (paper size, paper type, number of copies).</li> <li>■ Lights all the paper type and paper size LEDs for one second</li> </ul>			
<input type="checkbox"/> In copying or printing status <ul style="list-style-type: none"> <li>■ Stops the copying or printing job.</li> <li>■ Ejects paper when paper exists or may exist in the paper path.</li> <li>■ Clears some error status.</li> </ul>				
<ul style="list-style-type: none"> <li>• Invalid while PC scanning, cleaning head, and exchanging ink cartridges.</li> </ul>				

### 1.9.4.3 Memory Card Insertion/Ejection

The functions of this unit caused by memory card insertion or ejection are described in the following table.

**Table 1-55. Memory Card Insertion/Ejection**

Action	Function
Card Insertion	<ul style="list-style-type: none"> <li>Recognize the card and light Card Access LED if it is right.</li> <li>The LED blinks while memory access occurs to the memory card.</li> <li>The Power LED blinks during the card recognition.</li> <li>Return from the low power panel mode.</li> </ul>
Card Ejection	<ul style="list-style-type: none"> <li>Turn off Card Access LED.</li> <li>Stop print job while memory card print is in process and eject paper.</li> <li>Clear memory card error if memory card is wrong.</li> </ul>

### 1.9.4.4 Connection/Removal of DSC

**Table 1-56. Connection/Removal of DSC**

Action	Function
Connect the DSC to this unit with USB cable	<p>This unit moves to a DSC direct mode after a device is confirmed for DSC direct, when a device is connected to EXT. I/F (USB Host). It won't move to DSC direct mode when it shows general printing mode or error. It moves to DSC direct mode when it finished printing or error status has been resolved. (Errors that is related with memory card, index sheet or PG will be automatically canceled and it moves to DSC direct mode. Ink-low status will be also ignored.)</p> <p>“Camera Connected” icon will be displayed with LCD and Change to “Print Select”<sup>*1</sup> when connection was confirmed, not when it moves to DSC direct mode. If the DSC direct device was connected to EXT I/F and any error has occurred on confirmation, it shows DSC direct error.</p> <p>If this unit was on power save mode and DSC direct device was connected, this unit will be back to usual status and then it confirms connection.</p>
Remove the DSC from this unit	<p>This unit moves to “Memory card print” mode and select and light “Print Select”<sup>*2</sup> when condition where device recognition was carried out normally for DSC direct.</p> <p>During the printing from a device for DSC direct, this unit stops a printing and moves to “Memory card print” mode and select and light “Print Select”<sup>*2</sup></p> <p>When this unit is displaying “DSC direct error”, this unit cancel it error and returns it in condition of before connection.</p>

Note \*1: For Stylus CX4900/CX4905/CX5000/DX5000/DX5050; LED panel will show ‘P’ and Change to “Print All/DPFOF”

\*2: For Stylus CX4900/CX4905/CX5000/DX5000/DX5050; “Print All/DPFOF”

### 1.9.4.5 Low Power Panel Mode

Without any panel operation for 13<sup>\*1</sup>/15<sup>\*2</sup> minutes while the printer and scanner unit are in standby status, this unit moves into the low power panel mode in which power consumption for the panel decreases. This unit recovers from that mode by pushing any button but Power Button or printing/scanning by the computer. This unit is turned off by pushing Power Button in that mode.

**Table 1-57. Low Power Panel Mode**

Action	Function
Transition to low power mode	<ul style="list-style-type: none"> <li>Turn off (LCD and <sup>*1</sup>) all LEDs except for Power LED and Card Access LED.</li> <li>Blink Decimal Point LED slowly.<sup>*2</sup></li> <li>No move in error status except for memory card error, index sheet error and PG error.</li> <li>Ejecting of memory card or accessing it by PC has no effect on low power mode.</li> </ul>
Recovery from low power mode	<ul style="list-style-type: none"> <li>Recall the panel status as that before moving to low power panel mode.</li> <li>Inserting or ejecting of memory card or accessing it by PC has no effect on low power mode.</li> </ul>

Note \*1: Stylus CX5900/CX6000/DX6000/DX6050

\*2: Stylus CX4900/CX4905/CX5000/DX5000/DX5050

### 1.9.4.6 Adjust Lever Function

If paper thickness lever is in wrong position, the printer displays “PG position warning”.

**Table 1-58. Adjust Lever Function**

Adjust lever status	Function
PG open (Displayed “H”) <sup>*1</sup> (“H” to “L”) <sup>*2</sup>	<ul style="list-style-type: none"> <li>“H” will be displayed with 7 Segment LED for about 3 seconds just after the adjust lever is changed to “H: Envelope” position.<sup>*1</sup></li> <li>“Paper thickness lever was changed” or this image icon will be displayed with LCD.<sup>*2</sup></li> </ul>
PG close (Displayed “L”) <sup>*1</sup> (“L” to “H”) <sup>*2</sup>	<ul style="list-style-type: none"> <li>“L” will be displayed with 7 Segment LED for about 3 seconds just after the adjust lever is changed to “L: Cut sheet” position.</li> <li>“Paper thickness lever was changed” or this image icon will be displayed with LCD.<sup>*2</sup></li> <li>Clear the PG error and print job suspended by PG error when the adjust lever is changed to “L: Cut sheet position” in the PG error status.</li> </ul>

Note \*1: Stylus CX4900/CX4905/CX5000/DX5000/DX5050

\*2: Stylus CX5900/CX6000/DX6000/DX6050

## 1.9.5 Errors

### 1.9.5.1 Panel Status

Table 1-59. Printer Condition and Panel Status

Printer status	Indicators*1														Indicators*2		Priority*3	
	Power LED	Error LED	Ink LED	Memory Card LED			7-seg. LED	Paper Type LED		Paper Size LED			Fit to Page LED	Card Access LED	LCD	*1	*2	
				1	2	3		1	2	1	2	3						
Fatal error	Blink	Blink	Blink	Blink	Blink	Blink	“E” blink	Blink	Blink	Blink	Blink	Blink	Blink	—	E-90	1	1	
Maintenance request	Blink	On	On	Blink	Blink	Blink	“E” blink	Blink	Blink	Blink	Blink	Blink	Blink	—	E-91	2	2	
Paper jam	—	Blink	Off	—	—	—	—	—	—	—	—	—	—	—	E-04	3	3	
Replace Ink Cartridge/ No Ink Cartridge/ Incorrect ink Cartridge	—	Off	On	—	—	—	—	—	—	—	—	—	—	—	E-01/E-02	4	4	
Paper out	—	On	Off	—	—	—	—	—	—	—	—	—	—	—	E-03	5	5	
Double feed	—	On	Off	—	—	—	—	—	—	—	—	—	—	—	E-05	5	6	
PG open	—	Blinks*	—	—	—	—	“H” blink*	—	—	—	—	—	—	—	W-30	10	7	
DSC Direct error	—	Blinks	Off	—	—	—	“P” blink*	—	—	—	—	—	—	—	W-20	6	8	
Memory card error	—	Blinks*	—	On*	On*	On*	“1” blink*	—	—	—	—	—	—	—	W-11/W-10	6	9	
Index sheet error 1	—	Blinks*	—	—	On*	—	“2” blink*	—	—	—	—	—	—	—	E-10	7	10	
Index sheet error 2	—	Blinks*	—	—	On*	—	“3” blink*	—	—	—	—	—	—	—	E-11	8	11	
Index sheet error 3	—	Blinks*	—	—	On*	—	“4” blink*	—	—	—	—	—	—	—	E-12	9	12	
Pre-scanning error*2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	E-30	—	13	
No memory card*2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	I-10	—	14	
Unable cleaning error*2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	E-50	—	15	
Ink low (warning)	—	—	Blink	—	—	—	—	—	—	—	—	—	—	—	I-01/I-02	11	16	
Maintenance request (Warning)*2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	W-01	—	17	

Note “\*”: Blinks twice continuously

\*3: When 2 or more error occur at the same time, one with smaller number of “Priority” will be indicated.

Note \*1: Stylus CX4900/CX4905/CX5000/DX5000/DX5050 only

\*2: Stylus CX5900/CX6000/DX6000/DX6050 only

### 1.9.5.2 Errors and Occasions

- Fatal error:** Mechanical or internal problem has occurred.
- Maintenance request:** Part(s) inside the printer are at the end.
- Paper jam:** Paper remains in the paper path
- Replace Ink Cartridge/No Ink Cartridge/Incorrect ink Cartridge:**  
Ink is out in some I/C, or no I/C or incorrect I/C is set.
- Paper out:** Failed to load papers.
- Double feed:** Two or more papers have been fed during duplex printing.
- PG open:** Platen gap is at open position while standalone function.
- DSC Direct error:** Unsupported device connected to external memory connection.
- Memory card error (incompatible/no data):**  
Unavailable memory card for this unit, or no image found in the card when memory card printing started.
- Index sheet error (no index sheet/incorrect marking/incorrect card):**  
No index sheet is recognized/  
no marking to index sheet is found/  
the different card or updated card is found for that sheet.
- Pre-scanning error\*:** Failure to find photo placed area.
- Unable cleaning error\*:** Unable head cleaning.
- Ink low (warning):** Ink is running low.

Note "\*": Stylus CX5900/CX6000/DX6000/DX6050 only.

### 1.9.6 Printer Initialization (TBD)

There are four kinds of initialization method, and the following explains each initialization.

1. Power-on initialization  
This printer is initialized when turning the printer power on, or printer recognized the cold-reset command (remote RS command).  
When printer is initialized, the following actions are performed.
  - (a) Initializes printer mechanism
  - (b) Clears input data buffer
  - (c) Clears print buffer
  - (d) Sets default values
2. Operator initialization  
This printer is initialized when turning the printer power on again within 10 seconds from last power off, or printer recognized the -INIT signal (negative pulse) of parallel interface.  
When printer is initialized, the following actions are performed.
  - (a) Cap the printer head
  - (b) Eject a paper
  - (c) Clears input data buffer
  - (d) Clears print buffer
  - (e) Sets default values
3. Software initialization  
The ESC@ command also initialize the printer.  
When printer is initialized, the following actions are performed.
  - (a) Clears print buffer
  - (b) Sets default values
4. Power-on initialization except I/F  
The printer recognized the IEEE 1284.4 "rs" command.  
When printer is initialized, the following action is performed.
  - (a) Initializes printer mechanism
  - (b) Clears input data buffer
  - (c) Clears print buffer
  - (d) Sets default values except I/F

CHAPTER

2

**OPERATING PRINCIPLES**

## 2.1 Overview

This section describes the operating principles of the Printer Mechanism, Scanner Mechanism and Electrical Circuit Boards.

- Main Board
  - C657 Main Board
- Power Supply Board
  - C610 PSB/PSE Board
- Panel Board
  - C571 PNL Board (EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050)
  - C657 PNL Board (EPSON Stylus CX5900/CX6000/DX6000/DX6050)
- I/F Board
  - C610 I/F Board
- Head Board
  - C654 HEAD Board

## 2.2 Printer Mechanism

### 2.2.1 Printer Mechanism

This printer consists of the Print Head, Carriage Mechanism, Paper Loading Mechanism, Paper Feeding Mechanism, Ink System.

Like the previous printers, EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050 is equipped with two DC motors; one for the Paper Loading/Feeding Mechanism and the Pump Mechanism with the CR Lock Mechanism, and one for the CR Mechanism. The ASF Unit for the Paper Loading Mechanism uses rear entry front eject system. The Paper Feeding Mechanism uses the LD Roller and Retard Roller to feed paper to the Printer Mechanism in the same way as previous printers.

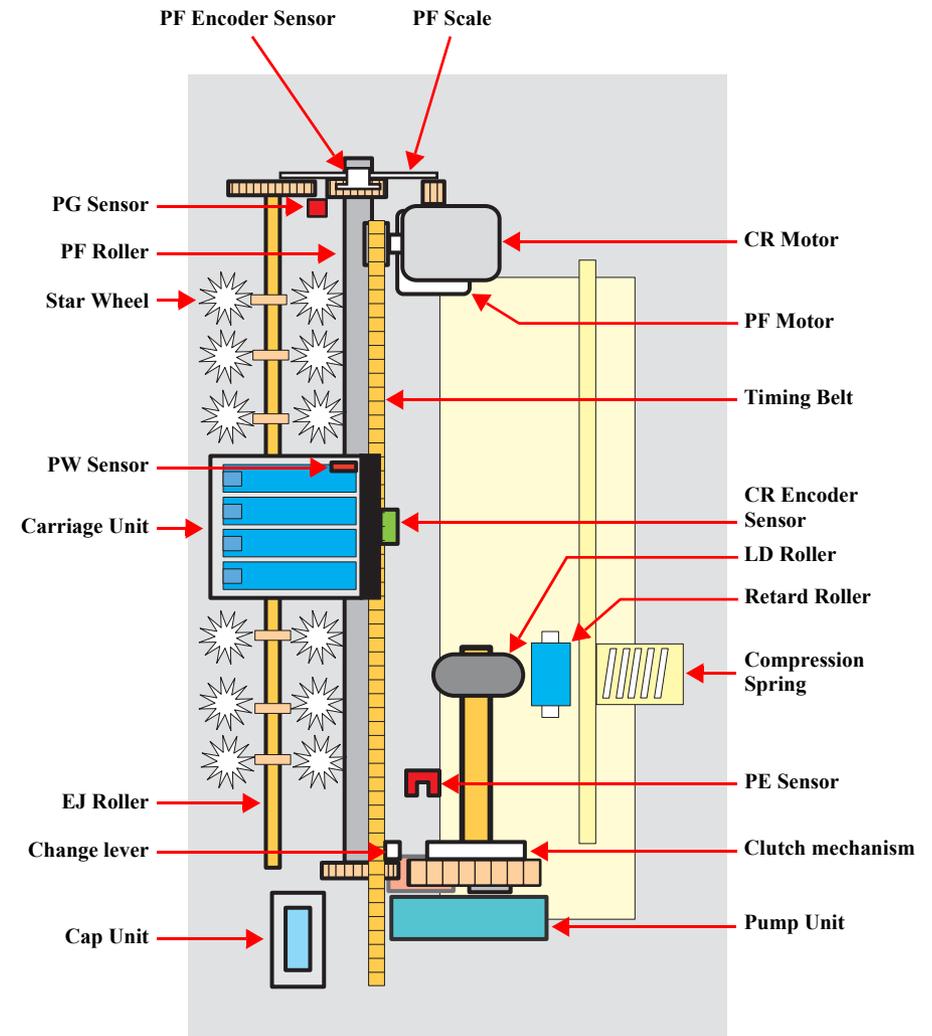


Figure 2-1. Printer Mechanism block diagram

## 2.2.2 Print Head

The Print Head is the same D4-CHIPS type as the previous SPC and makes it possible to perform economy dot printing and variable dot printing.

The Print Head nozzle configuration is as follows.

- Nozzle layout
  - Black: 90 nozzles x 1 row
  - Color: 90 nozzles x 3 row/color (Cyan, Magenta, Yellow)

The nozzle layout when viewed from the back surface of the Print Head is shown below.

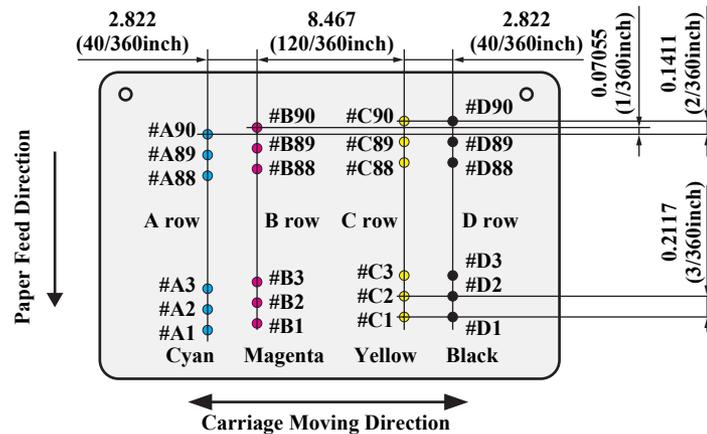


Figure 2-2. Nozzle layout

The Print Head has the Electric Poles (CSIC Connectors) to store the ink consumption amount data into the CSIC chip mounted on the Ink Cartridge. By storing the ink consumption amount data, this printer can detect the ink consumption status, such as Ink Low/Out condition.

The basic operating principles of the Print Head, which plays a major role in printing, are the same as the previous printer; on-demand method which uses PZT (Piezo Electric Element). In order to uniform the ejected ink amount, the Print Head has its own Head ID (13-digits code for this Print Head for EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050) which adjusts PZT voltage drive features.

So, you are required to store the Head ID pasted on the Print Head into the EEPROM by using the Adjustment Program when replacing the Print Head, the Main Board Unit, the Printer Mechanism with new one. (Note: there are no resistor arrays to determine the Head ID on the Main Board.) And then, based on the stored Head ID into the EEPROM, the Main Board generates appropriate PZT drive voltage.

Following explains the basic components for the Print Head.

- PZT
 

PZT is an abbreviation of Piezo Electric Element. Based on the drive waveform generated on the Main Board, the PZT selected by the nozzle selector IC on the Print Head pushes the top of the ink cavity, which has ink stored, to eject the ink from each nozzle on the nozzle plate.
- Electric poles for CSIC
 

This Electric Poles connects the CSIC chip mounted on the Ink Cartridge. By using this poles, current ink consumption amount data is read out from the CSIC chip. And, the latest ink consumption amount data is written into the CSIC chip.
- Nozzle Plate
 

The plate with nozzle holes on the Print Head surface is called Nozzle Plate.
- Filter
 

When the Ink Cartridge is installed, if any dirt or dust around the cartridge needle is absorbed into the Print Head, there is a great possibility of causing nozzle clog and disturbance of ink flow, and alignment failure and dot missing finally. To prevent this problem, a filter is set under the cartridge needle.

□ Ink Cavity

The ink absorbed from the Ink Cartridge goes through the filter and then is stored temporarily in this tank called “ink cavity” until PZT is driven.

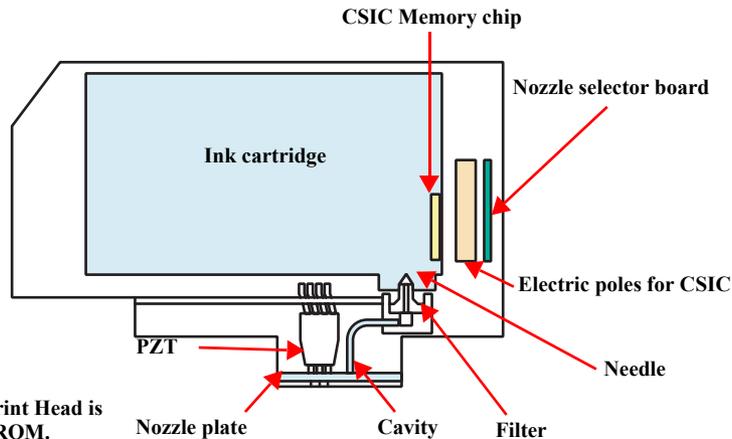


Figure 2-3. Printhead sectional drawing

### 2.2.2.1 Printing Process

This section explains the process which the Printheads of On-Demand inkjet printers eject ink from each nozzle.

1. **Normal state:**

When the printing signal is not output from the Main Board (C657 Main), or the PZT drive voltage is not applied, the PZT does not change the shape. Therefore, the PZT does not push the ink cavity. The ink pressure inside the ink cavity is kept normal. (refer to [Figure 2-4 \(p.67\)](#): Normal state)

2. **Ejecting state:**

When the print signal is output from Main Board (C657 Main), the nozzle selector IC located on the Print Head latches the data once by 1-byte unit. Based on the drive waveform (common voltage) generated on the Main Board, the PZT selected by the nozzle selector IC pushes the top of the ink cavity. By this operation, the ink stored in the ink cavity is ejected from nozzles. (refer to [Figure 2-4 \(p.67\)](#): Ejecting state)

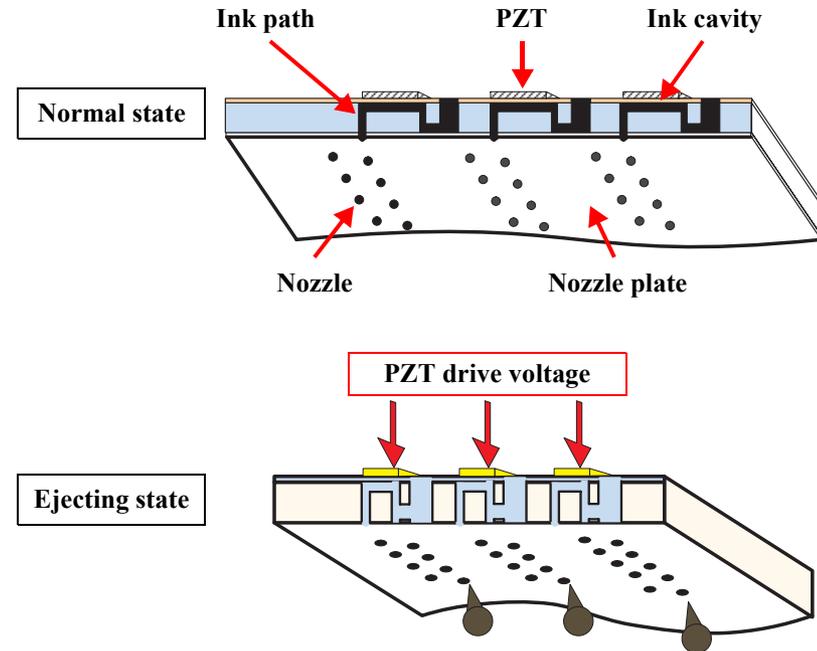


Figure 2-4. Print Head printing process

### 2.2.2.2 Printing Method

The dot printing systems of EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050 are variable dot printing systems.

□ Variable dot printing

This printing mode is developed to improve the print quality on exclusive paper. This mode is basically the same as variable dot printing mode used on other products; micro dot, middle dot and large dot compose this mode. The printing dot size varies according to the print data and this mode enables to output even sharper image on exclusive paper.

### 2.2.3 Carriage Mechanism

The Carriage Mechanism consists of Carriage Unit (including the Print Head, CR Encoder Board and PW Sensor), CR Motor, Timing Belt and CR Scale etc. Following figure shows you each component for the CR Mechanism.

#### 2.2.3.1 Carriage Mechanism

The following DC motor controls the CR Mechanism on this printer.

**Table 2-1. Carriage Motor specification**

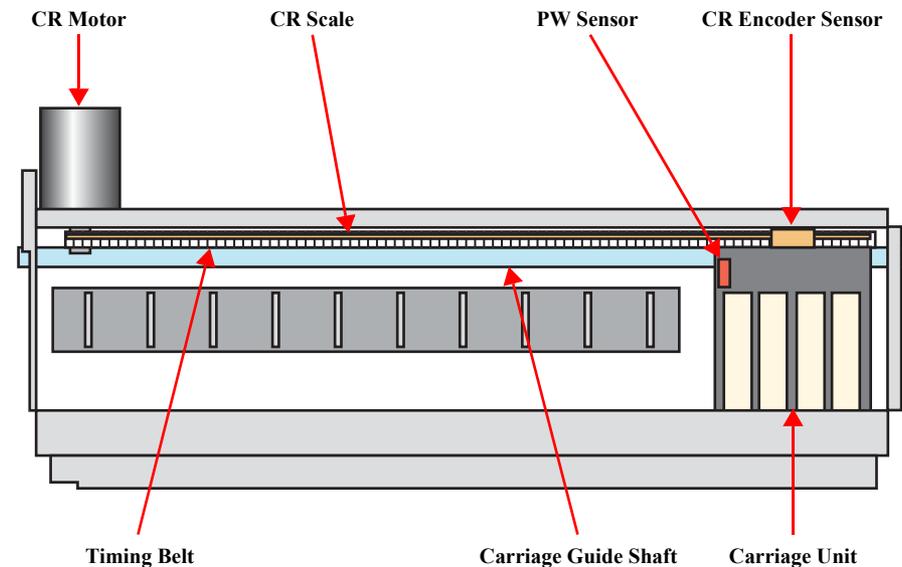
Items	Specifications
Type	DC motor with brushes
Drive Voltage	42V (DC) ± 5% (voltage applied to driver)
Armature resistance	29.1 Ω ± 10%
Inductance	20.1mH ± 25%
Drive Method	PWM, constant-current chopping
Driver IC	A6627

Close loop control based on the CR Motor (DC Motor) and CR Encoder has advantages in stabilized print quality.

- Heat generation control  
Using low-cost DC motors, this product grasps the variations of the torque constants, coil resistances and power supply voltages of the individual DC motors adequately to carry out heat generation control according to individual differences.
- CR variation measurement sequence  
The variations of the torque constant, coil resistance and power supply voltage of the motor are measured in a CR variation measurement sequence when the CR mechanical load is in the initial status and saved into the EEPROM. According to the variations (individual differences) measured in this sequence, the voltage is corrected to make the drive current value constant (without an individual difference).

- CR measurement sequence  
To set the appropriate drive current value according to the variation of the CR mechanical load, the mechanical load is measured in a CR measurement sequence and saved into the EEPROM in a power-on or I/C change sequence. A fatal error will occur if too much load is applied to the CR drive system.

The above control and sequences correct the drive current value of the CR Motor according to not only the mechanical load but also the variations of the motor and like. In addition, the resultant CR drive current value is used to calculate a heating value, and when the specified heating value is reached, wait time is provided per CR path for printing.



**Figure 2-5. Carriage Mechanism**

### 2.2.3.2 Carriage Home Position Detection

1. Current position temporary detection sequence determines if the carriage is in the carriage lock position and releases the carriage if it is locked.
2. The carriage is moved to the left frame hit position and the carriage motor is stopped.
3. The position that is specified steps right from the stopping place is defined as an origin, and from that time, positional information is monitored by the linear encoder.

If the positional information could not be gained during detecting carriage home position due to the following causes, fatal error occurs.

- Obstructions on the carriage path or other factors are giving too much pressure on the CR motor.
- CR linear encoder failure, CR linear scale defect, etc.

### 2.2.3.3 Sequence Used for PW Detection

The PW (paper width detection) Sensor installed on the Carriage Unit bottom is used to control the printer according to various sequences.

The following briefly describes the PW Sensor operating principle.

A dark voltage is measured by the PW Sensor in three places on the right end plane (area without the absorber) of the Front Paper Guide every time power is switched on, and the measurement values are saved into the EEPROM as threshold values.

- Threshold value > detection voltage: Paper present
- Threshold value < detection voltage: Paper absent

The following sequences are performed.

- Paper Left/Right Edge Detection Control  
Before start of printing (immediately after the end of paper locating), or during printing, whether paper is present or not is detected to prevent off-paper printing on the Paper Guide by borderless printing used in a wrong way.
- Paper Top Edge Detection Control  
Detects paper leading edge at start of printing. Also sets the amount of extension for the paper leading edge during borderless printing.
- Paper Bottom Edge Detection Control  
Sets the amount of extension for the paper trailing edge during printing.

### 2.2.4 Paper Loading/Feeding Mechanism

The following DC motor controls the Paper loading/feeding mechanism on this printer.

**Table 2-2. PF Motor specifications**

Item	Description
Motor type	DC motor with brushes
Drive voltage	42V (DC) ± 5% (voltage applied to driver)
Armature resistance	27.5Ω ± 10%
Inductance	21.4mH ± 25%
Driving method	PWM, constant-current chopping
Driver IC	A6627

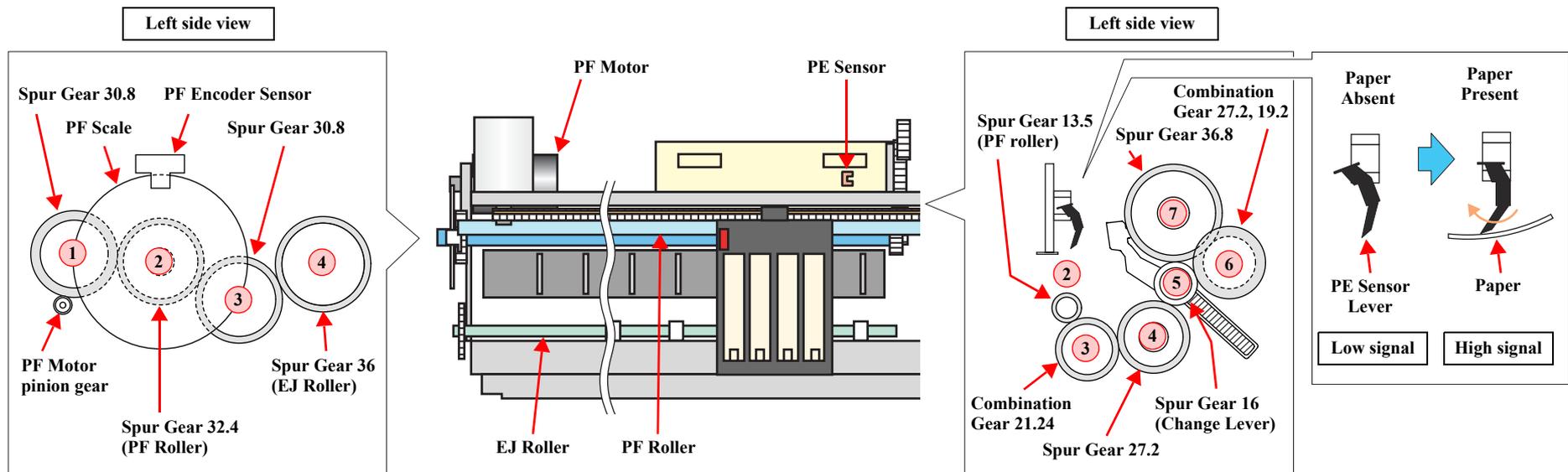
The drive of the PF motor is transmitted to the LD roller shaft and the PF roller through gears for the Paper loading/feeding mechanism. The Paper loading mechanism plays a role in loading a paper from the ASF unit to the PF roller. And also, the Paper feeding mechanism plays a role in feeding a paper loaded from the ASF unit. The functions of the Paper loading/feeding mechanism varies depending on the rotational direction of the PF motor as the table below.

**Table 2-3. ASF unit function & PF Motor rotational direction**

Directions *	Corresponding functions
Clockwise	<ul style="list-style-type: none"> <li>Pick up and feed a paper</li> <li>Set the Change Lever on the Clutch mechanism</li> </ul>
Counterclockwise	<ul style="list-style-type: none"> <li>Release the Change Lever from the Clutch mechanism</li> </ul>

Note "\*": The PF Motor pinion gear rotation direction = seen from the left side of the printer.

Following shows you the transmission path of the PF Motor drive to the LD Roller, the PF Roller and the EJ Roller. (The numbers in the following figure show you the order of transmission path.)



Note : The Clutch gear is molded on the backside of the Spur Gear 36.8 such as Combination gear.

**Figure 2-6. Paper loading/feeding mechanism**

For your reference, the top or the end of a paper is usually detected with the PE Sensor. In case that the PE Sensor cannot detect the top of a paper in the paper loading sequence, the printer indicates the “Paper Out error”. If the PE Sensor cannot detect the end of a paper in the paper feeding sequence, the printer indicates the “Paper Jam error”. As for the details, refer to Chapter 3 “[TROUBLESHOOTING](#)” (p.90).

### 2.2.4.1 Paper Loading Mechanism

The Paper loading mechanism consists of the Change Lever in the Pump Unit, the Holder Shaft Unit (including the Clutch mechanism) and the ASF Unit. The Change Lever and the Clutch mechanism play a major role in the Paper loading mechanism as follows.

1. ASF home position detection function

The ASF Unit on this printer does not have the ASF Home Position Sensor. Instead of the ASF Home Position Sensor, the Change Lever and the Clutch mechanism is used to detect the ASF home position.

When the Change Lever is set on the Clutch mechanism with the counterclockwise rotation of the PF Motor pinion gear, the ASF home position is detected by this lever for the paper loading operation. In this time, the printer cannot load a paper from ASF Unit because the drive of the PF Motor is not transmitted to the LD Roller Shaft.

2. Paper loading function

When the Change Lever is released from the Clutch mechanism with the clockwise rotation of the PF Motor pinion gear, the ASF home position detection function is changed over to the paper loading function. Therefore, the printer can load a paper from ASF Unit because the drive of the PF Motor is transmitted to LD Roller Shaft.

During paper loading, paper is transported from the ASF Unit into the printer by the rotation of the 2 cams of the LD Roller.

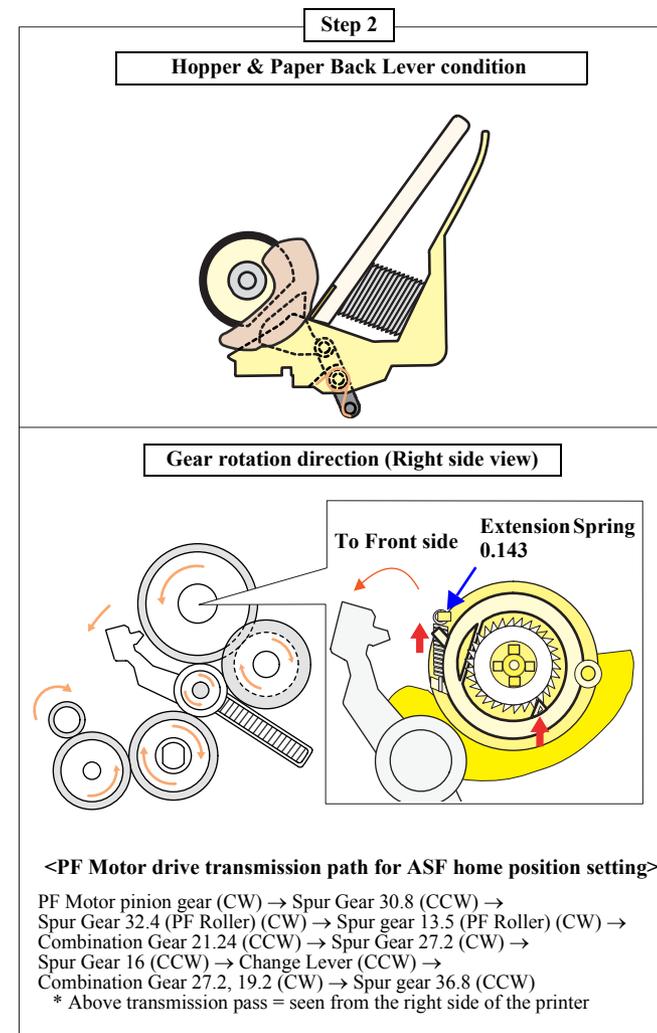
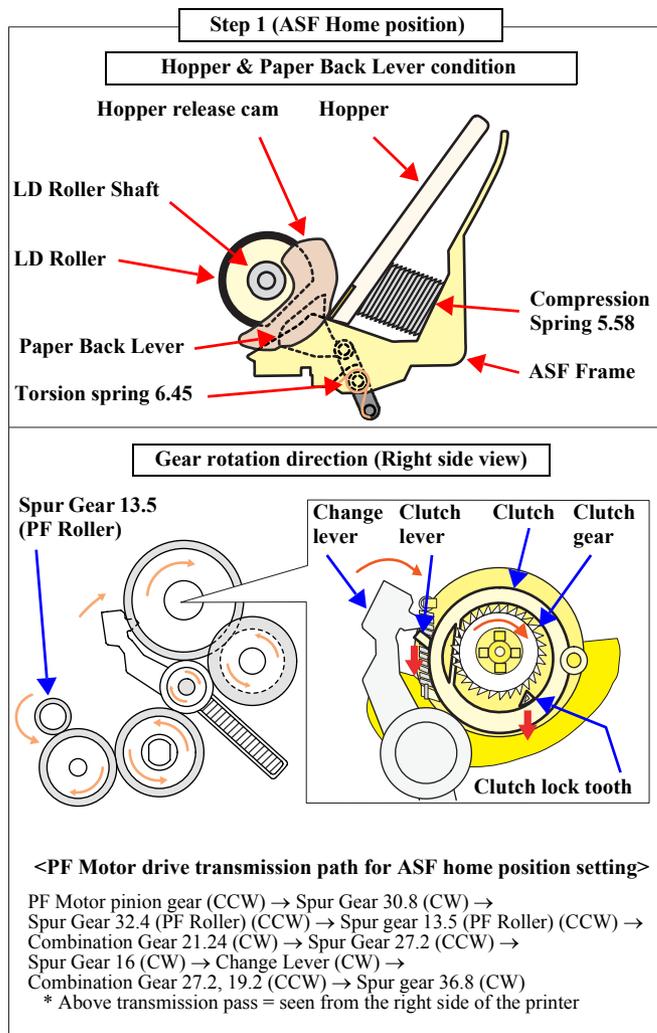
- Cam (Large) : Hopper release
- Cam (Small) : Paper Back Lever release

When 1 page paper is loaded, the cams mentioned above prepare the Hopper and Paper Back Lever for the next paper loading operation, and the remaining paper is returned to the standby position.

[Figure 2-7 \(p.72\)](#) and [Figure 2-8 \(p.73\)](#) show you the ASF paper loading sequence and the operation of each mechanism.

When the PF Motor pinion gear rotates CCW direction (right side view), the Change Lever pushes down the Clutch lever as right figure and the Clutch lock tooth is disengaged from the Clutch Gear. As the result, the LD Roller Shaft dose not rotate at all because the drive of the PF Motor is not transmitted. In this time, the Hopper is also pushed down by the two cams on the LD Roller Shaft, and the Paper Back Lever is set to avoid that papers are slipped down from the paper set position.

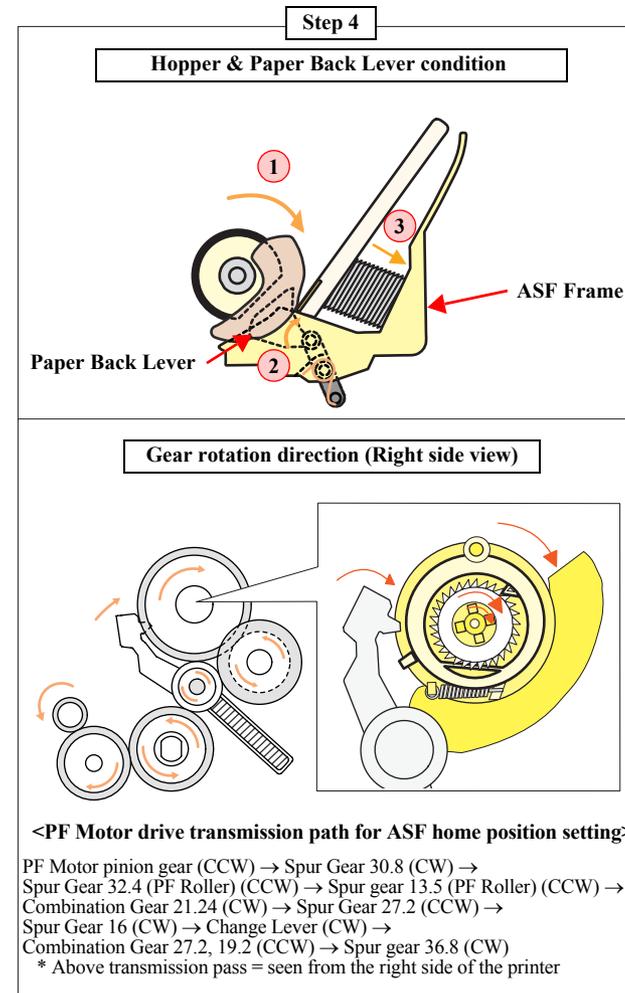
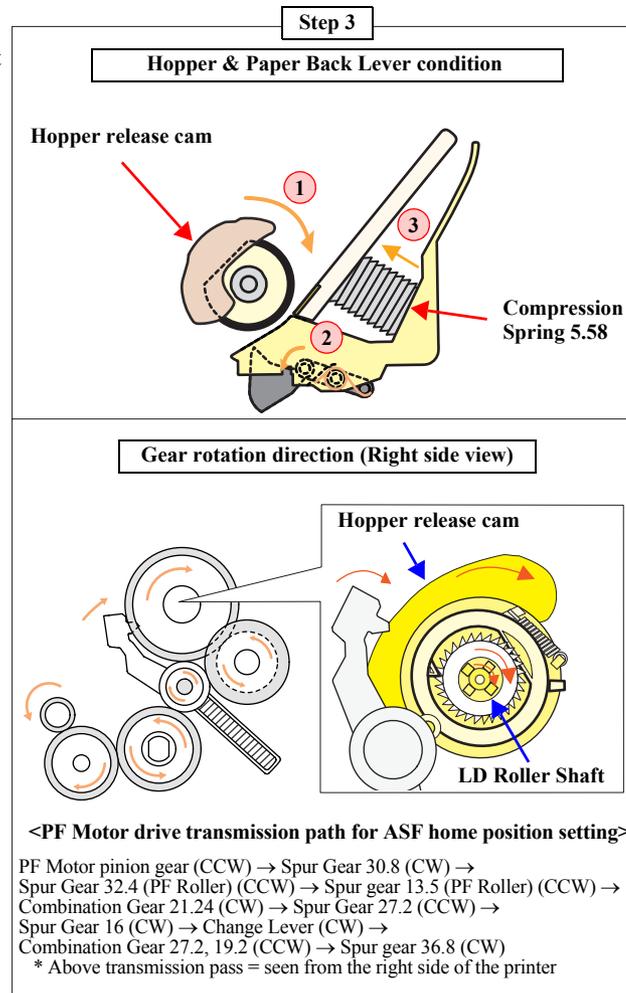
This position is the ASF home position.



When a paper is loaded from the ASF Unit, the Change Lever moves to the front side of the printer with the CW rotation (right side view) of the PF Motor pinion gear and releases the Clutch lever. As the result, the Clutch turns back to the engagement position by the tension force of the Extension Spring 0.143. And, the Clutch gear is engaged with the Clutch lock tooth to transmit the drive of the PF Motor as left figure. In this time, the Change Lever is locked instantaneously by the protrusion on the backside of the Carriage Unit to change over from the ASF home position detection function to the paper loading function surely.

Figure 2-7. ASF paper loading sequence (Step 1, 2)

The PF Motor pinion gear rotates CCW direction (right side view), and the drive of the PF Motor is transmitted to the LD Roller Shaft through the Clutch lock tooth and the Clutch gear. After the LD Roller pushes down the Paper Back Lever into the ASF Frame, the Hopper is released by the tension force of the Compression Spring 5.58. And, a paper is picked up with the frictional force between the LD Roller and the Pad Hopper.



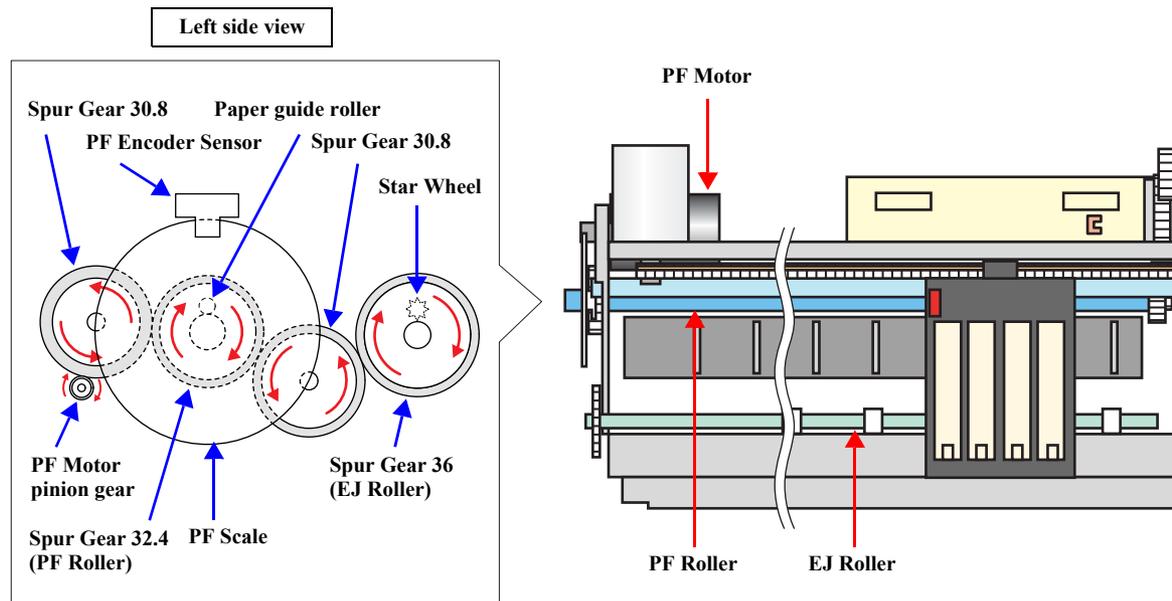
While the LD Roller rotates CCW direction (right side view) continuously, the top of a paper is loaded to the PF Roller. In this rotation, the Hopper returns to the open position and the Paper Back Lever is pushed up by the cam of the LD Roller. In this time, this lever returns papers to the stand-by position in ASF Unit for next paper loading operation. Then, when the rolling LD Roller & the Clutch come at the above "Step1" position, the Clutch lever is locked with the Change Lever again. In this time, the drive of the PF Motor is interrupted and the drive is transmitted only to the PF Roller side for the paper feeding sequence.

Figure 2-8. ASF paper loading sequence (Step 3, 4)

### 2.2.4.2 Paper Feeding Mechanism

The Paper feeding mechanism consists of PF Motor, PF Roller, EJ Roller, PE Sensor, PF Encoder and PF Scale etc. The Paper feeding mechanism feeds a paper loaded from ASF Unit by using pairs of rollers.

1. One pair is the PF Roller and the Paper Guide Roller which is assembled in the Paper Guide Upper Unit. The drive of the PF Motor is transmitted to the Paper Guide Roller through the PF Roller.
2. Another pair is the EJ Roller and the Star Wheel which is assembled on the EJ Frame Unit. The drive of the PF Motor is transmitted to the Star Wheel through the EJ Roller.



Transmission path (left side view)

- PF Motor pinion gear (CW) → Spur Gear 30.8 (CCW) → Spur gear 32.4 (PF Roller) (CW)
- PF Motor pinion gear (CW) → Spur Gear 30.8 (CCW) → Spur gear 32.4 (PF Roller) (CW) → Spur Gear 30.8 (CCW) → Spur Gear 36 (EJ Roller) (CW)

Figure 2-9. Paper feeding mechanism

Following figure shows you the transmission path for the PF Roller & the Paper Guide Roller and the EJ Roller & the Star Wheel.

The top of a paper is loaded to the PF Roller from the ASF Unit in the paper loading sequence. And then, when the PF Motor pinion gear rotates CW direction (left side view), a paper is fed by the PF Roller & the Paper Guide Roller and the EJ Roller & the Star Wheel in the printing operation & the paper feed sequence.

## 2.2.5 Ink System Mechanism

The Ink System Mechanism consists of Pump mechanism with Carriage lock mechanism and Capping mechanism with Wiper mechanism. Following table lists the function for each mechanism.

**Table 2-4. Function for each mechanism**

Mechanism	Function
Capping mechanism *	This is to cover the surface of the Print Head with the cap in order to prevent the nozzle from increasing viscosity.
Wiper mechanism	This is to remove the foreign material and unnecessary ink on the nozzle plate of the Print Head.
Pump mechanism	This is to eject the ink from the Ink Cartridge, the ink cavity and the cap to the Waste Ink Pad.
Carriage lock mechanism	This is to lock the Carriage Unit with the Change Lever while the Carriage Unit is at the home position.

Note : Like the previous printers (Stylus Photo R300/R310), this printer adopts the valveless cap system. The air valve system used for the previous printer (Stylus COLOR 740) have two functions by the CR position in the capping condition as follows.

- 1) Valve closing condition (CL position)  
By closing the air valve, the ink is forcibly absorbed from the Ink Cartridge or the ink cavity by the Pump Unit and is ejected to the Waste Ink Pad while the Carriage Unit is in the CL position.
- 2) Valve opening condition (Ink absorption position)  
By opening the Air valve, the negative pressure is decreased and only the ink inside the Cap is ejected while the Carriage Unit is in the further right side than the CL position. (the ink is not absorbed from the Ink Cartridge or the ink cavity.)

The following shows you the Carriage Unit position for each condition easily.

Printing area	CR home position	CL position (valve closing condition)	Ink absorption position (valve opening condition)
---------------	------------------	--	--

But, on the valveless cap system, the above 2) operation is done outside the capping position. The Carriage Unit moves outside the CR home position and the pump absorbs the ink inside the Cap.

### 2.2.5.1 Capping Mechanism

The Capping mechanism covers the Print Head with the Cap to prevent the nozzle from increasing viscosity when the printer is in stand-by state or when the printer is off.

- Wiper with the Cap unit  
The wiping operation is controlled by the Carriage Unit movement. This operation is usually performed with every CL sequence which is to absorb the ink from the ink cartridge, the ink cavity by the Pump unit. Following figure shows you the mechanism for the wiping operation.

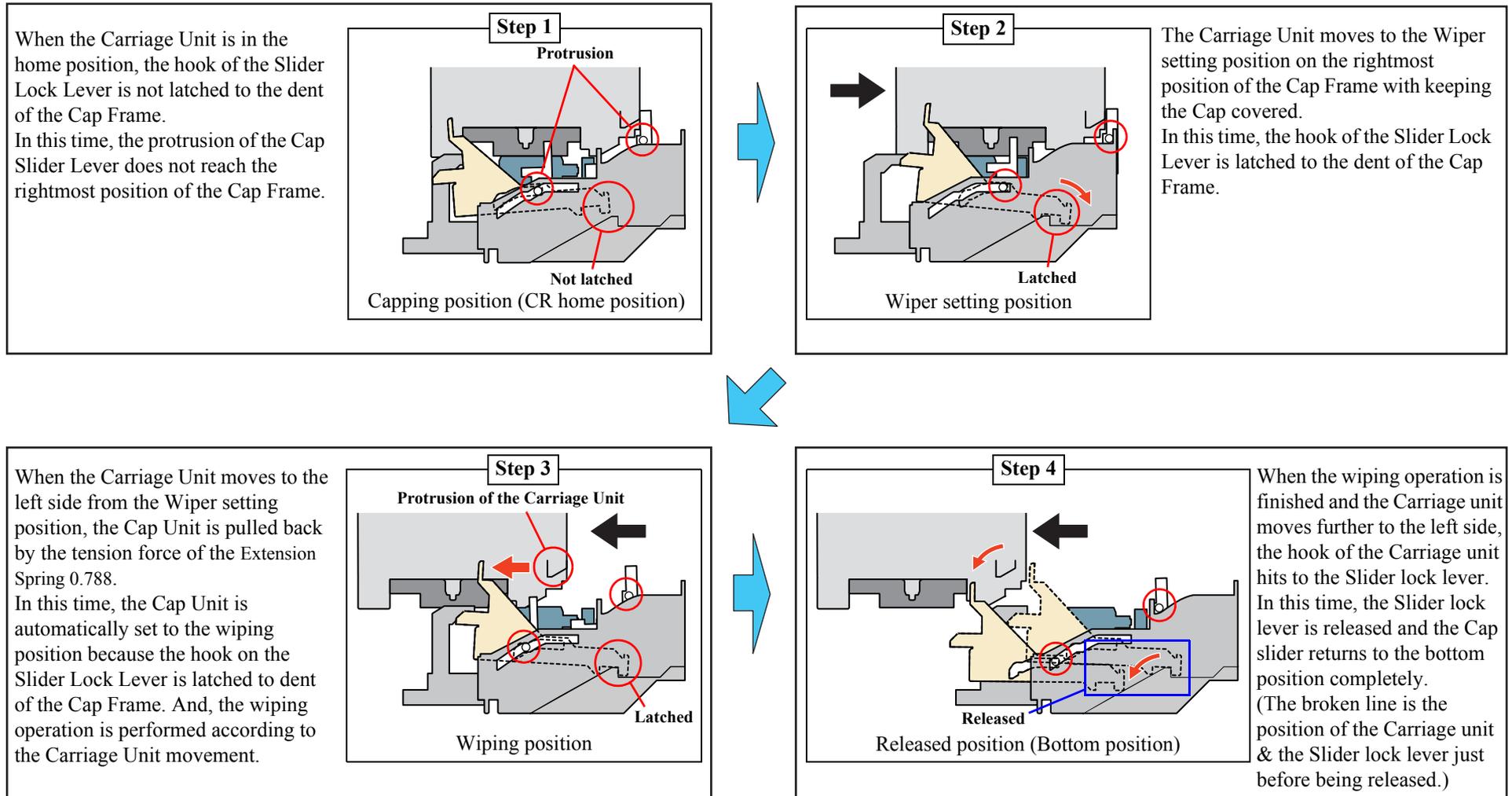


Figure 2-10. Wiper mechanism

### 2.2.5.2 Pump Unit Mechanism

The PF Motor also controls the Pump Unit mechanism (including the Change Lever) as well as the Paper loading/feeding mechanism. The drive of the PF Motor is always transmitted to the Pump Unit. (And also, its drive is transmitted to the LD Roller through the Clutch mechanism & the Change Lever.)

On this printer, the Pump Unit mechanism including the Change Lever plays a major role expecting the ink eject operation. And, these operations control depending on the PF Motor rotational direction as the following table below.

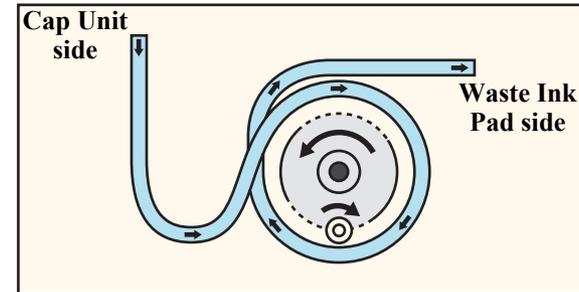
**Table 2-5. PF Motor rotational direction & Ink system mechanism**

Directions *	Functions
Clockwise	<ul style="list-style-type: none"> <li>• Pump release</li> </ul>
Counterclockwise	<ul style="list-style-type: none"> <li>• Absorbs the ink</li> <li>• Release the Change Lever from the Clutch mechanism</li> </ul>

Note "\*": The PF Motor rotational direction = seen from the left side of the printer.

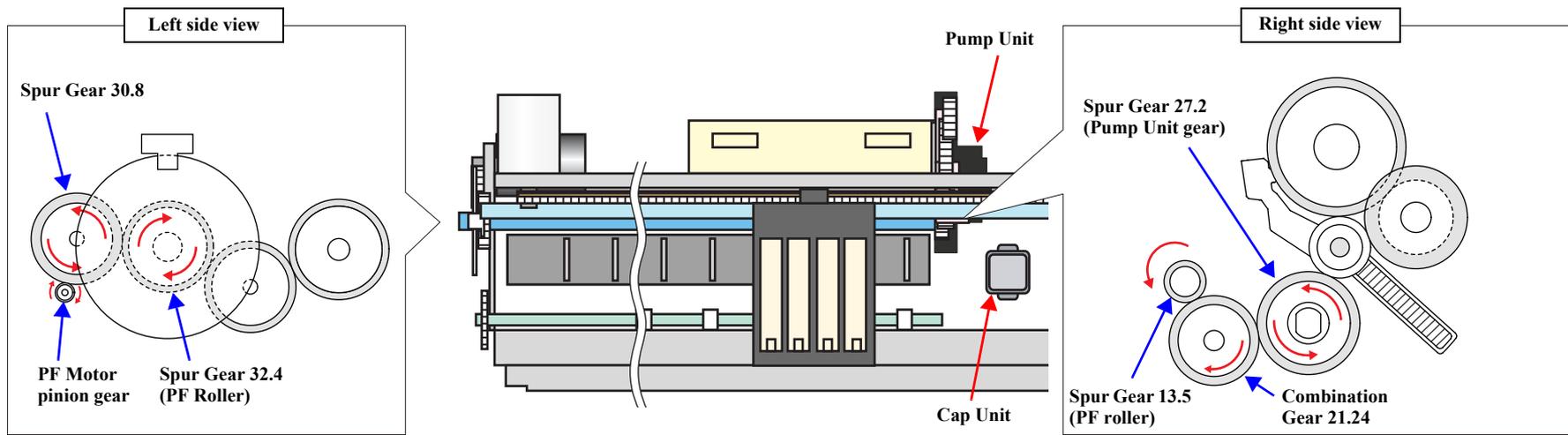
1. Ink eject operation (usual operation)  
The ink is absorbed from the Ink Cartridge, the ink cavity and is ejected to the Waste Ink Pad from the Cap when the Ink Tube is pressed by a roller in the Pump Unit.

Following figure shows you the overview of the Pump Unit mechanism operation.



Note : The PF Motor rotational direction = seen from the right side of the printer.

**Figure 2-11. Pump mechanism**



**Transmission Path:** PF Motor pinion gear (CW) → Spur Gear 30.8 (CCW) → Spur Gear 32.4 (PF Roller) (CW) → Spur gear 13.5 (PF Roller) (CW) → Combination Gear 21.24 (CCW) → Spur Gear 27.2 (Pump Unit gear) (CW)  
(Above transmission pass = seen from the right side of the printer)

**Figure 2-12. PF Motor drive transmission path to the Pump Unit**

## 2. Carriage lock operation by the Change Lever

Unlike the previous printer (Stylus COLOR 680), this printer does not have the Carriage Lock Lever with the Wiper.

Instead of the Carriage Lock Lever, the Change Lever is set to the front side of the printer while the Carriage Unit is in the CR home position.

(As for the detailed mechanism for setting the Change Lever, refer to [Figure 2-7 \(p.72\)](#) Step 2)

## 2.2.6 Ink Sequence

### □ Initial ink charge

After the printer is purchased and the power is turned on for the first time, the printer must perform the Initial Ink Charge to charge the ink inside the ink cavity. When the Initial Ink Charge is completed properly, the printer releases the flag inside the EEPROM. Initial Ink Charge will take about 100 seconds for Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050. If the power is turned off during the Initial Ink Charge, the CL3 will be performed at next power on timing.

### □ Manual Cleaning

The Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050 provides three types of manual cleaning to clean air bubbles, clogged ink with viscosity or foreign substances.

The manual CL can be performed by the Control Panel Operation, the Printer Driver Utility and the Adjustment Program.

#### ■ CL1

- Ink absorption (Maximum)  
Black Ink: 0.181g, Color Ink: 0.543g
- Wiping operation  
Wipes the nozzle plate by the rubber part on the Cap Unit.
- Flashing operation  
Prevents color from mixing, and stabilizes ink surface inside the nozzle.

#### ■ CL2

- Ink absorption (Maximum)  
Black Ink: 0.445g, Color Ink: 1.335g
- Wiping operation  
Wipes the nozzle plate by the rubber part on the Cap Unit.
- Flashing operation  
Prevents color from mixing, and stabilizes ink surface inside the nozzle.

#### ■ CL3

- Ink absorption (Maximum)  
Black Ink: 1.015g, Color Ink: 3.045g
- Wiping operation  
Wipes the nozzle plate by the rubber part on the Cap Unit.
- Flashing operation  
Prevents color from mixing, and stabilizes ink surface inside the nozzle.

Independently of the printing path after the previous CL, perform manual CL from CL1 to CL3 in order if the cumulative printing timer counter is less than 9min. Only when the cumulative printing timer counter is more than 9min, execute only CL1.

Additionally, if the I/C is Ink Low or Out condition, any manual cleaning is prohibited and it is displayed on the LED indicators.

□ Timer Cleaning

Like the previous printers, this printer does not have a Lithium battery which is used for the backup power source for the Timer IC. So, this printer manages the printer off period or cleaning cycle by using the following method.

The Printer Driver sends the timer command to the printer before printing. The timer command is generated based on the PC's timer and it consists of year, month, date, hour, minute and second. As soon as the printer receives the timer command from the Printer Driver, the printer stores its command in address 06<H> and 07<H> in the EEPROM. Then, it is compared with the latest CL time which is stored in address 04<H> and 05<H> in the EEPROM. And, in case that the timer cleaning period is over the specific period, the printer performs the timer cleaning automatically. In this time, the printer stores the timer command in address 04<H>, 05<H>, 06<H>, 07<H> in the EEPROM.

Maximum 3.32g of the ink is consumed in the timer cleaning. (0.830g of black ink and 2.490g of color ink are consumed.)

□ Flashing

Two different flushing operations are executed for the following reasons.

■ Pre-printing flushing

This is done before a start of printing to eliminate ink viscosity in the Print Head nozzles.

■ Periodic flushing

This is done during printing to prevent ink viscosity in the Print Head nozzles from increasing.

## 2.3 Scanner Mechanism

The Scanner Mechanism of Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050 is constructed of a Scanner Carriage Unit, Scanner Motor, Scanner HP Sensor, etc., in the same way as previous A4 size scanners.

### 2.3.1 Scanner Carriage Mechanism

#### 2.3.1.1 Scanner Carriage Unit Overview

The Scanner Carriage Unit is constructed of a CIS Board (including linear CCD), Rod Lens Array, LED (light source), etc.

- CIS Board  
CIS Board contains the sensing elements that are placed across the entire width of an original. The sensing elements, which does not install a color filter, read an original through the Rod Lens Array by turning on red, green, and blue light-emitting diodes (LEDs) alternately. It is not the CIS Board but the Main Board that converts the analog light signal read by the Rod Lens Array into digital signal.
- Rod Lens Array  
A number of rod-shaped lenses, which are arranged on the sensing elements, are also placed across the entire width of an original. These lenses read the light reflected from the original that is produced by the light source (LEDs) and pass the information to the sensing elements. Compared to conventional CCD method, this optical system allows the focal length (distance between sensor and image scanned) to be shallow. Therefore, an original to be scanned should be brought close to the document glass. The optical system, in addition, is 1:1, (there is no optical reduction or enlargement) and this results in a scanner offering the solid performance in terms of accuracy.
- LED  
EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050 use three color LEDs (the three colors being red, green, and blue) to illuminate the line to be scanned in the document. Unlike cold cathode fluorescent lamp used in CCD method, usage of LEDs requires no warm-up time and allows the CIS to be highly power efficient.

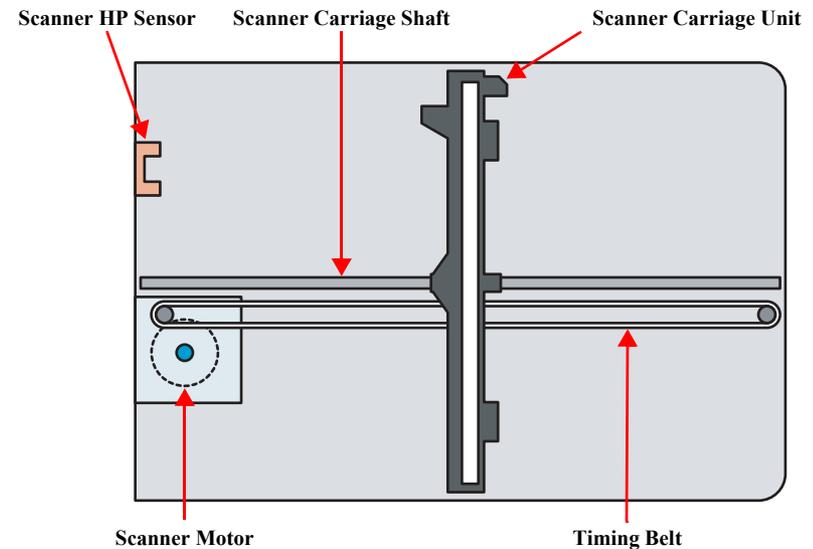


Figure 2-13. Scanner Mechanism

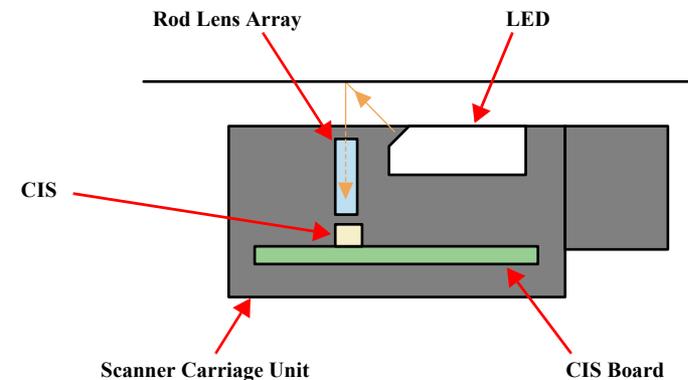


Figure 2-14. Scanning image

### 2.3.1.2 Scanner Carriage Unit Movement Overview

Scanning image is performed in the main scan direction (=1 line) by the CIS board and in the sub-scan direction (=several lines) combined with Scanner Carriage Unit movement. (refer to the figure below) The CIS board can scan 1 line in main scan direction (parallel to the Scanner Carriage Unit) by one time. When scanning next lines after the second line in sub-scan direction, CR driving moves the Scanner Carriage Unit, and scan the other lines. The scanned data is sent to the control board. The scanned data for “n” lines and “n-1” line are processed consecutively.

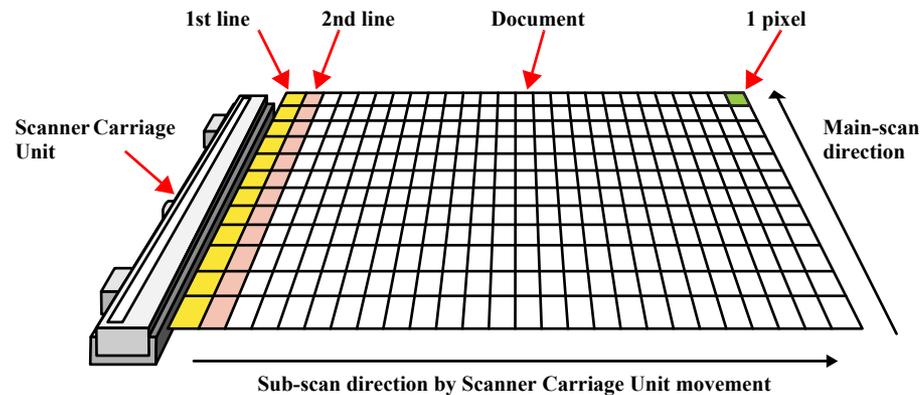


Figure 2-15. Scanner Carriage Unit movement

The table below shows the specifications for the stepping motor that controls the Scanner Carriage Mechanism.

Table 2-6. Scanner Motor specifications

Item	Description
Motor type	PM type stepping motor
Drive voltage	42V (DC)
Coil resistance	37Ω ± 10% (per phase at 25 degrees)
Inductance	TBD mH ± TBD% (1KH 1Vrms)
Driving method	PWM
Driver IC	A6627

Drive of the Scanner Motor is transferred to the Scanner Carriage Unit by the Scanner Timing Belt. The Scanner Carriage Unit slides in the secondary scanning direction. The Scanner Motor uses a stepping motor and drives using open loop control.

When the HP detection flag of the Scanner Carriage Unit disrupts the signal of the Scanner HP Sensor, the Scanner HP Sensor outputs a high signal, and the Scanner Carriage Unit is determined to be in the home position.

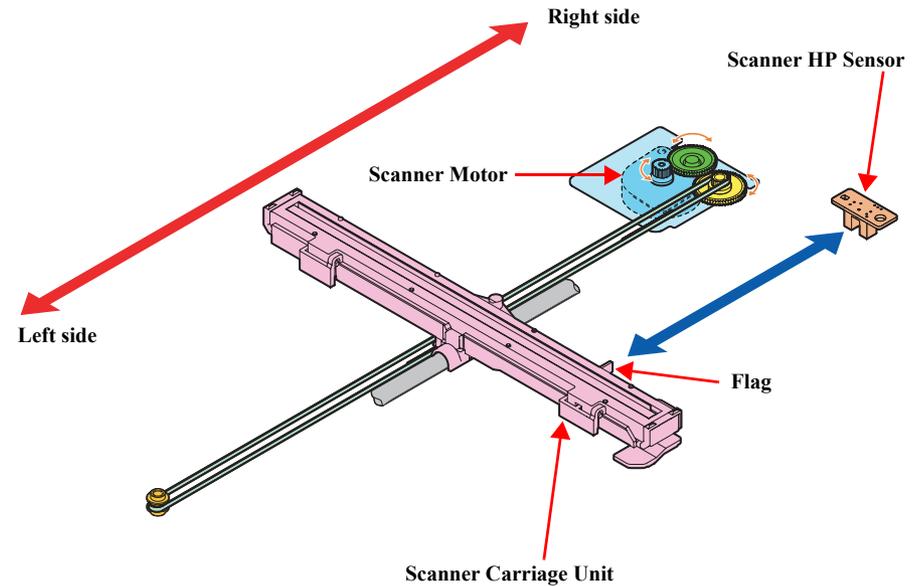


Figure 2-16. Scanner Carriage Unit Mechanism

## 2.4 Electrical Circuit Operating Principles

The electric circuit of the CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050 consists of the following boards.

- Main Board (CPU-ASIC 2 in 1 + Soldering Flash ROM)
  - C657 Main Board
- Power Supply Board
  - C610 PSB/PSE Board
- Panel Board
  - C571 PNL Board (EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050)
  - C657 PNL Board (EPSON Stylus CX5900/CX6000/DX6000/DX6050)
- I/F Board
  - C610 I/F Board
- Head Board
  - C654 HEAD Board

*NOTE: CPU and ASIC is integrated as one chip (IC8) on the Main Board.*

This section provides operating principles of C657 Main Board and C610 PSB/PSE Board.

### 2.4.1 C610 PSB/PSE Board

In the PSB/PSE Board of Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050, the simulated oscillating stimulation flyback converter circuit method is used, and it supplies +42VDC to the drive line. The application of the output voltage is described below.

**Table 2-7. Application Of The DC Voltages**

Voltage	Application
+42VDC	<ul style="list-style-type: none"> <li>• Motors (CR Motor, PF Motor, Scanner Motor)</li> <li>• Print Head common voltage</li> <li>• Print Head nozzle selector 42V drive voltage</li> </ul>

AC voltage input from AC inlet first goes through filter circuit that removes high frequency components and is then converted to DC voltage via the rectifier circuit and the smoothing circuit. DC voltage is then lead to the switching circuit and FET Q1 preforms the switching operation. By the switching operation of the primary circuit, +42VDC is generated and stabilized at the secondary circuit.

## 2.4.2 C657 Main Board

The logic circuit of the C657 Main Board is composed of the follows;

- Logic line (CPU-ASIC 2 in 1, SDRAM, P-ROM and so on)
- Motor control/drive circuit (CR Motor, PF Motor, Scanner Motor)
- Head control/drive circuit
- USB Interface control circuit
- Sensor circuit
- Combination circuit (RTC circuit, Reset circuit, EEPROM circuit)

The printer mechanism is controlled by the above circuits. Following explains the major characteristics of this Main Board.

- Lithium battery is not mounted
- Adoption of 3.3V/1.5V drive logic circuit components  
 The 5V formed by the Combination Motor Driver (IC5) of C657 Main Board is stepped down to 3.3V by the Regulator (IC6), and it is then used as drive voltage for many elements. In addition, when SPC shifts to low power mode, the 3.3V that was stepped down by the Regulator (IC6) is stepped down to 1.5V by the Combination Motor Driver (IC5) and elements that had been driven by 3.3V are driven by 1.5V for suppression of power consumption.

**Table 2-8. 3.3V/1.5V & 5V Drive Components**

5VDC	3.3 VDC	3.3/1.5VDC
• RTC (IC4)	• Flash ROM (IC1) • Card ASIC(IC9) • SDRAM (IC2)	• CPU-ASIC (IC8) • Motor driver (IC5) • Common driver (IC7)

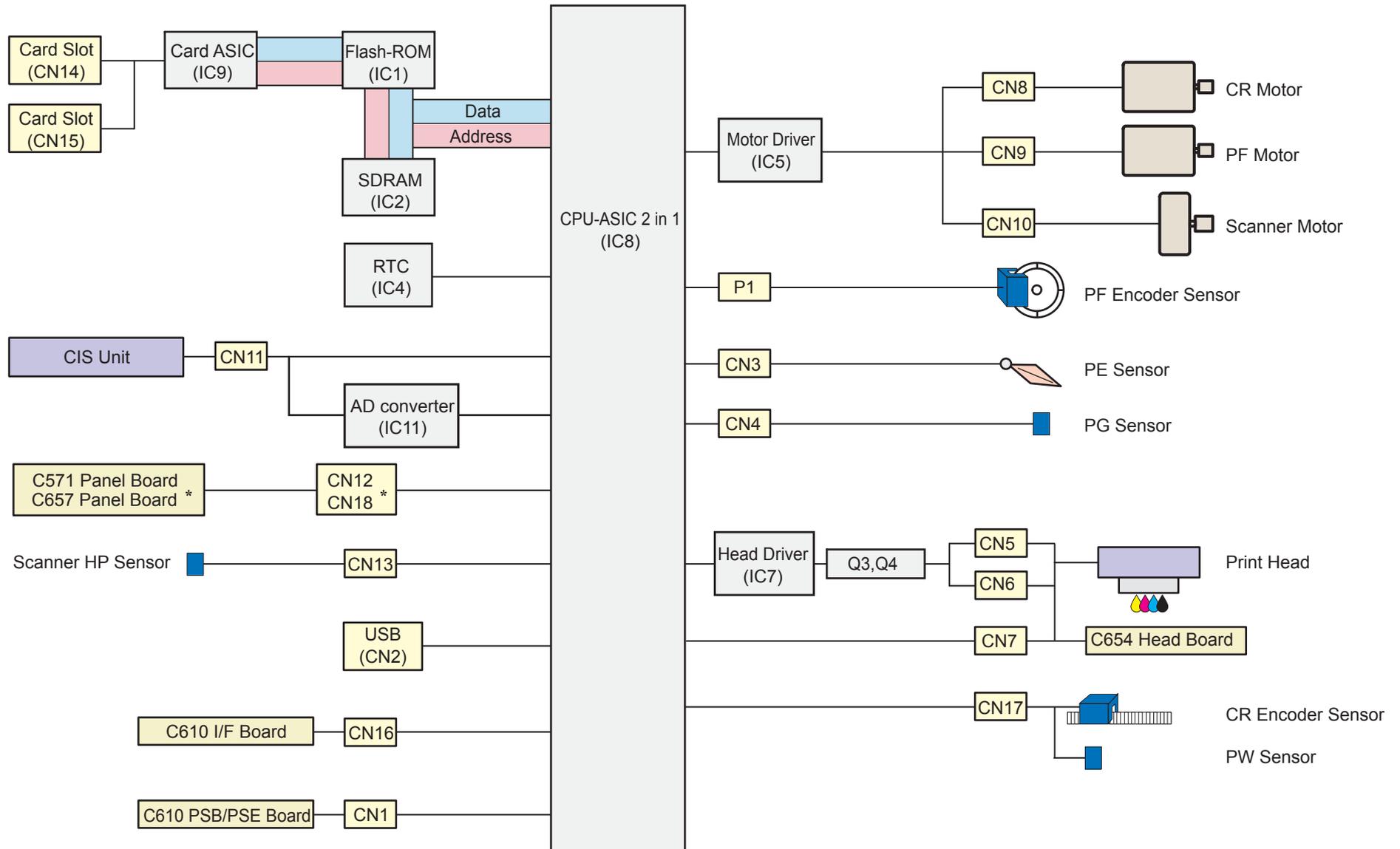
### 2.4.2.1 Main Elements

Table 2-9 (p.83) shows the function of the each main elements on C657 Main Board.

**Table 2-9. Main Elements**

IC	Location	Function
Flash ROM	IC1	16Mbit • Firmware storage
SDRAM	IC2	Bus= 16 bit, 128Mbit DRAM
RTC	IC4	• EEPROM Default settings, backup for all parameters • Reset function • Timer function
CPU-ASIC	IC8	CPU mounted on the MAIN board is driven by clock frequency 48 MHz, 96MHz and controls the printer and scanner, SDRAM.
Motor Driver	IC5	• CR/PF/Scanner motor drive IC • Dropping 42V line to 5V • Dropping 3.3V line to 1.5V
Regulator	IC6	Dropping 5V line to 3.3V
Common Driver	IC7	Head drive control HIC • Generates head common voltage.
AD converter	IC11	Analog data from the scanner unit is converted into digital data.
Card ASIC*	IC9	Control the Memory Card slot.

Note "\*": Only for Stylus CX4700/CX4800/DX4800/DX4850.



Note "\*": EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050: C571PNL (CN12)  
 EPSON Stylus CX5900/CX6000/DX6000/DX6050: C657PNL (CN18)

Figure 2-17. Block Diagram For The C657 Main Board

### 2.4.2.2 Print Head Driver Circuit

The Print Head driver circuit consists of the following two components:

- Head common driver circuit (Common driver IC7 & Wave amplifier transistor Q3, Q4)
- Nozzle selector IC on the Print Head driver

The common driver (IC7) generates a basic drive waveform according to the output signals from CPU (IC8). The basic drive waveform is amplified by the transistors Q3 and Q4 (the amplified one is called drive waveform.) and then transferred to the nozzle selector IC on the Print Head driver board. Print data is converted to serial data by the CPU and then sent to the nozzle selector IC on the Print Head driver board. Based on the serial data, the nozzle selector IC determines the nozzles to be actuated. The selected nozzles are driven by the drive waveforms amplified by the transistor Q3 and Q4. Refer to [Figure 2-18 \(p.85\)](#) for the Print Head driver circuit block diagram.

□ Head common driver circuit

The basic drive waveform is generated in the common driver (IC7) based on the following 13 signal lines output from the CPU (IC8); DATA0-DATA9, LAT, RESET, and PSCNT.

By the DATA signal output from the CPU, the original data for the basic drive waveform is written in the memory in the common driver (IC7). The addresses for the written data are determined by DATA0-DATA9 signals. Then, the necessary data is selected from the address and appropriate basic drive waveform is generated. Generated basic drive waveform is transferred to nozzle selector IC on the Print Head driver board through the transistor Q3 and Q4 and applied to the nozzle PZT specified by nozzle selector IC.

□ Nozzle selector circuit

Printing data is allocated to the four rows (the number of the head nozzle rows) and converted into serial data by the CPU (IC8). Then the converted data is transferred to the nozzle selector IC through the four signals lines (HS01 to HS04). Data transmission from the CPU to the nozzle selector synchronizes with the LAT signal and SCK clock signal. Based on the transmitted data, appropriate nozzle is selected and the PZTs of the selected nozzle are driven by the drive waveform output from the head common driver.

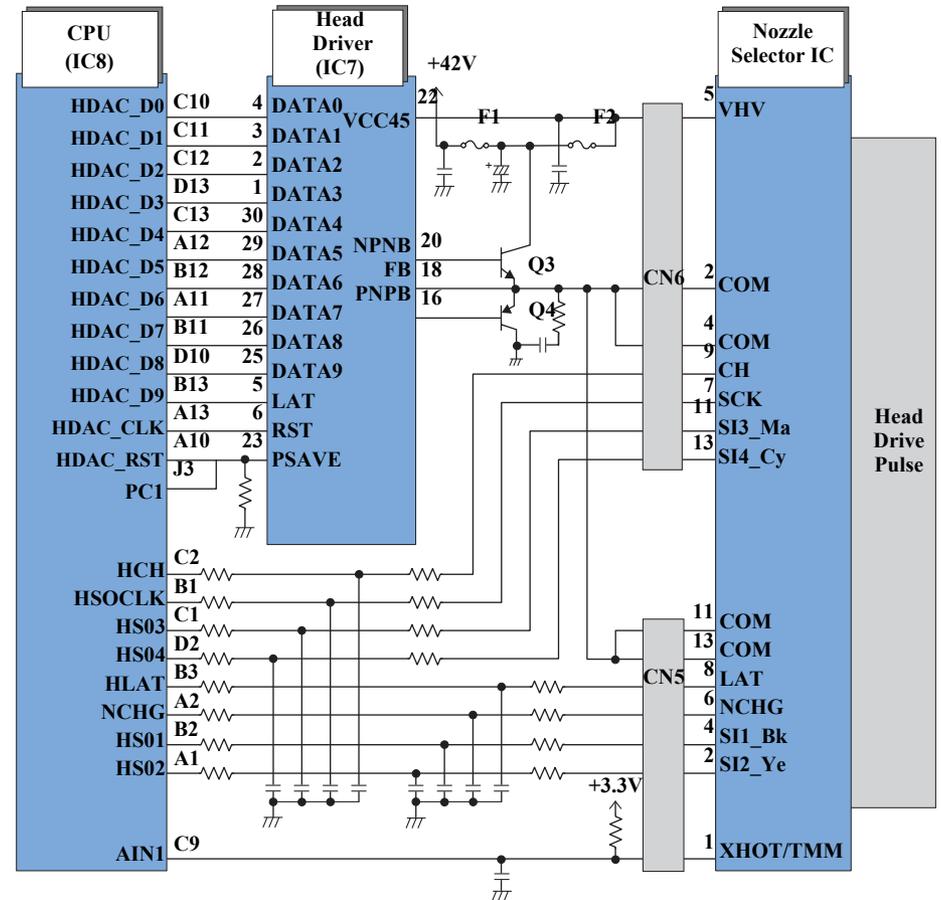


Figure 2-18. Print Head Driver Circuit

### 2.4.2.3 Motor Driver Circuit

#### CR/PF Motor drive circuit

The motor driver IC (IC5) on the Main board drives CR/PF Motor. This product uses DC motor and performs constant current PWM drive. Based on the output pulse (signal) from CR Encoder or PF Encoder, the CPU (IC8) sets the appropriate drive current value for each operational action and outputs the value as a special control signal to the Motor Driver (IC5). Then, based on the signal output from the CPU, the Motor Driver outputs the motor drive current to the CR/PF Motor. When no data has been received for 5 minutes, the CPU sets the Motor Driver current value to 0, turning off the Motor Driver, in order to conserve electricity.

#### Scanner Motor Driver Circuit

The motor driver IC (IC5) on the Main board drives Scanner Motor. This product uses PM type stepping motor and performs constant current bi-polar drive. The Motor Driver IC (IC9) forms the motor drive waveform based on the signal output from the CPU (IC8), controlling the Scanner Motor. When no data has been received for 5 minutes, the CPU sets the Motor Driver current value to 0, turning off the Motor Driver, in order to conserve electricity.

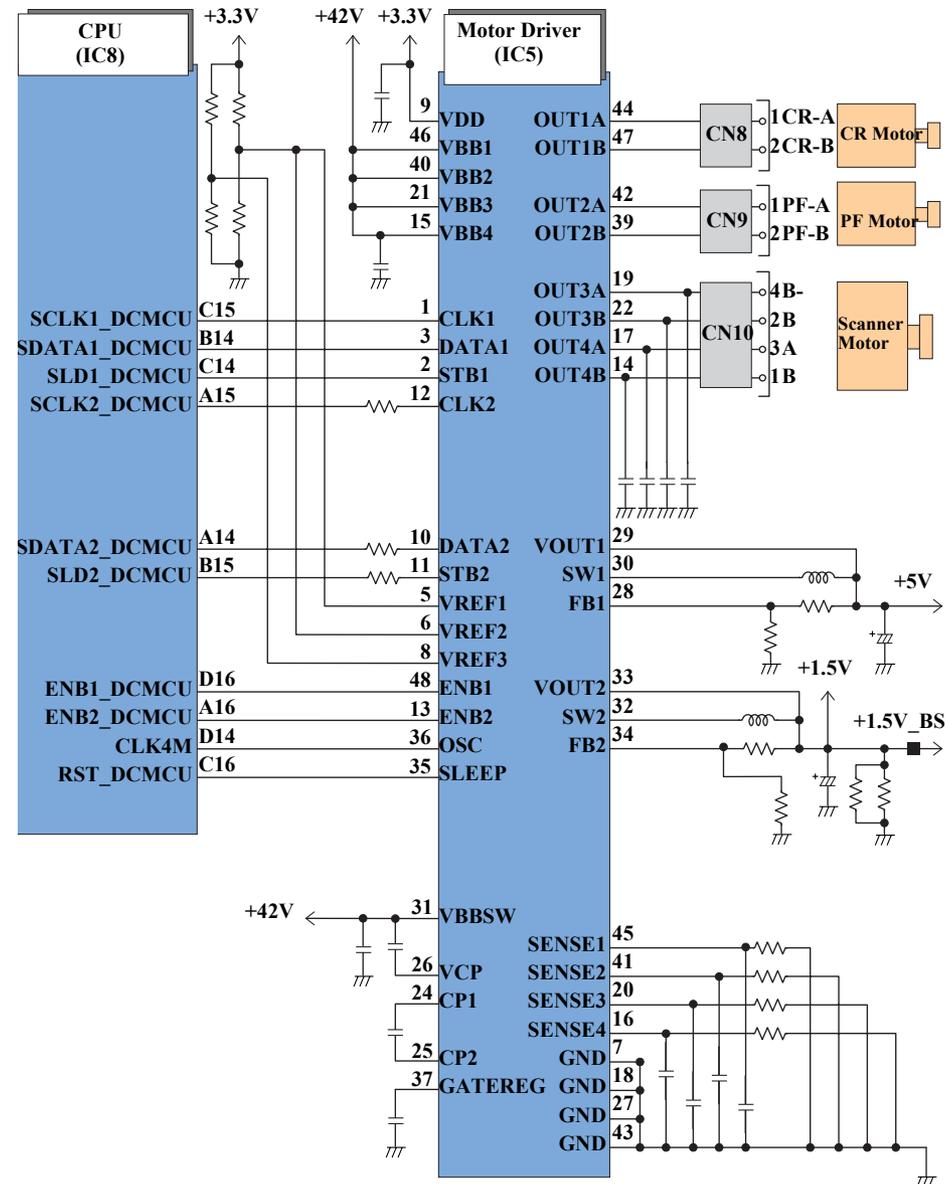


Figure 2-19. Motor Driver Circuit Block Diagram

### 2.4.2.4 Combination Circuit

This printer differs from previous models by using a combination IC that integrates the reset circuit, EEPROM and RTC.

#### Reset Circuit

RTC IC (IC4) on the Main Board monitors the three voltage: +3.3V for the logic line, +5V for the logic line and +42V for the drive line. Reset Circuit outputs the reset signal to CPU (IC8) in the following case.

- +3.3V line reset circuit  
The 3.3V line is monitored at the VDD port of IC4, and if an abnormal voltage is detected, a reset signal for the CPU is output from the FRST port of IC4.
- +5V line reset circuit  
The 5V line is monitored at the VDD2 port of IC4, and if an abnormal voltage is detected, a reset signal for the CPU is output from the RST port of IC4.
- +42V line reset circuit  
The 42V line is monitored at the VEX port of IC4, and if an abnormal voltage is detected, a reset signal for the CPU is output from the EXO port of IC4.

#### EEPROM Control Circuit

When the printer power is turned off, the following information is stored in EEPROM (IC4) which is nonvolatile memory. And, when the printer power is on, CPU (IC8) reads the information from EEPROM.

Information stored in EEPROM is listed below.

- Various ink counter (I/C consumption counter, Waste Ink Pad counter, etc.)
- Mechanical setting value (Head ID, Bi-D Adjustment, USB ID, etc.)

EEPROM is connected to CPU with 4 lines and each line has the following function.

- CE: Chip selection signal
- CLK: Data synchronism clock pulse
- DI: Data writing line (serial data) at power off.
- DO: Data reading line (serial data) at power on.

#### RTC Circuit

By adoption of the large-capacity capacitor (C9) for timer, the Power-off timer can be backed up for about one week after power-off.

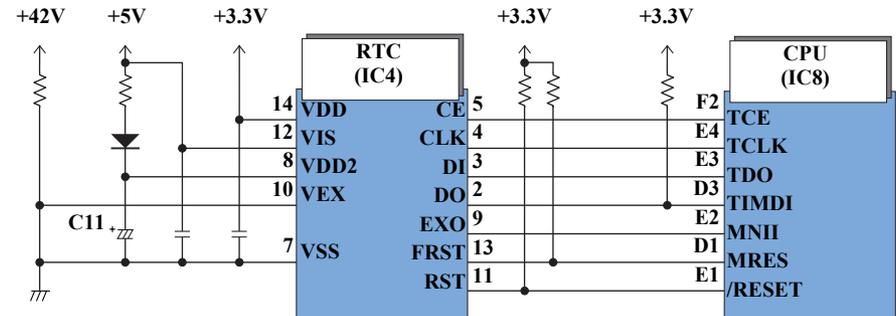


Figure 2-20. RTC Circuit Block Diagram

### 2.4.2.5 Sensor Circuit

CPU (IC8) on the Main Board monitors the status of the printer by several sensors. However, unlike the previous product, ASF Unit on this printer does not have ASF Sensor. Instead of ASF Sensor, Change Lever and the Clutch mechanism is used to detect ASF home position. (As for the ASF home position detection, refer to “2.2.4 Paper Loading/Feeding Mechanism” (p.70).)

#### □ PE Sensor

This sensor is mounted at the right side center of the Printer Mechanism, and it detects the presence/absence of paper when the paper passes through the Paper Guide Rear. The PE Sensor is constructed of a transmissive photosensor and the PE Sensor Lever.

- Paper Absent: Because the PE Sensor Lever does not interfere between the photosensor terminals, a low signal is output to the CPU.
- Paper Present: The PE Sensor Lever interferes between the photosensor terminals, and a high signal is output to the CPU.

#### □ PG Sensor

This sensor is mounted at the left end lower section of the Printer Mechanism, and it detects the condition of PG (Platen Gap). The detection method used by the PG Sensor is mechanical contact points.

- PG Normal: A low signal is output to the CPU.
- PG Large: A high signal is output to the CPU.

#### □ PW Sensor

The sensor is mounted to the bottom of the Carriage Unit. It detects the top and bottom, left and right edges of the paper being fed.

- Paper absent: A low signal is output to the CPU.
- Paper present: A high signal output to the CPU.

#### □ CR Encoder Sensor

The sensor is composed of a transmissive photosensor mounted to the back of the carriage and a linear scale mounted in the CR scan direction. Minimum resolution of 1/180 inch is provided, and output to the CPU is a high signal for the black slits on the linear scale and a low signal for transparent slits. Control of the CR Motor is based on the output signal. The home position of the Carriage Unit is detected by this sensor.

#### □ PF Encoder Sensor

The sensor is composed of a transmissive photo sensors mounted to the loop scale of the PF Roller Unit left side and to the Main Board. Minimum resolution of 1/180 inch is provided, and output to the CPU is a high signal for the black slits on the loop scale and a low signal for the transparent slits on the loop scale. Control of the PF Motor is based on the output signal.

#### □ Thermistor (THM)

The thermistor is directly mounted on the Print Head driver board. It monitors the temperature around the Print Head and determines the proper head drive voltage to uniform the weight of the ink fired from the Print Head. This information is fed back to the CPU analog port. When the temperature rises, the head drive circuit lowers the drive voltage: When the temperature lowers, the head drive circuit rises the drive voltage.

#### □ Scanner HP Sensor

Mounted in the Scanner Unit, this sensor detects whether the CIS Unit is inside or outside the home position

- Inside HP: A high signal output to the CPU.
- Outside HP: A low signal is output to the CPU.

The block diagram for the sensor circuit is shown below.

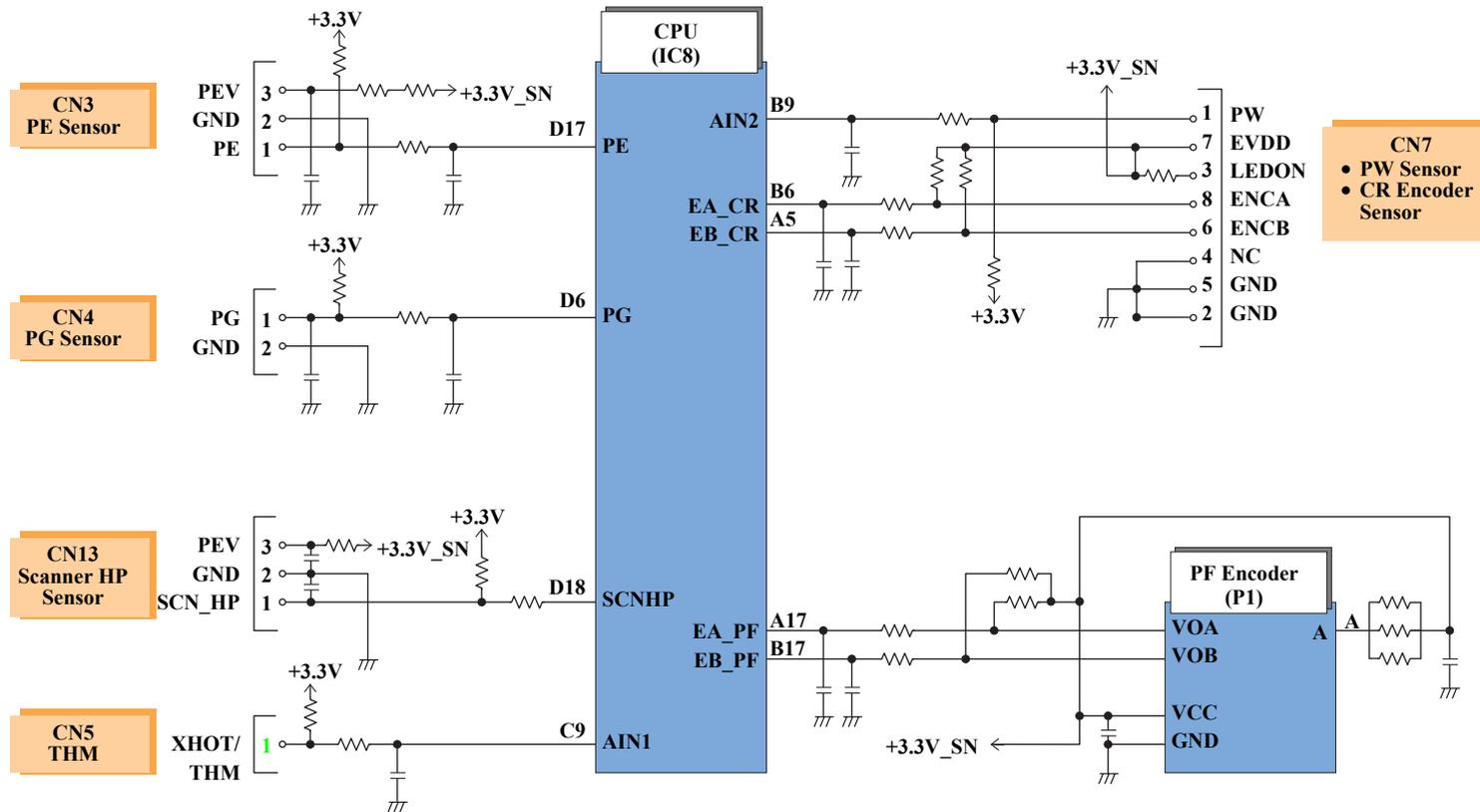


Figure 2-21. Sensor Circuit Diagram

CHAPTER

3

**TROUBLESHOOTING**

### 3.1 Overview

This chapter describes unit-level troubleshooting. Refer to the flowchart in this chapter to identify the defective unit and perform component level repair if necessary. This chapter also explains motor coil resistance, sensor specification and error indication.

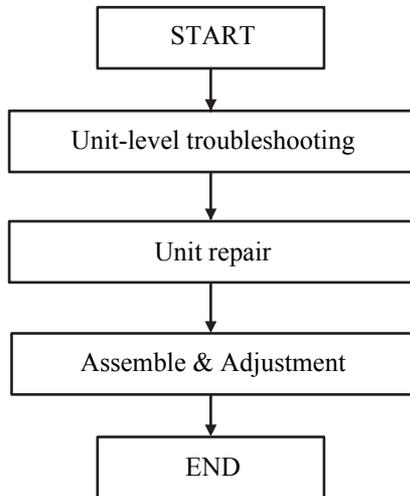


Figure 3-1. Troubleshooting flowchart

Table 3-1. Motor, coil resistance

Motor	Location	Check point	Resistance
Scanner motor	CN10	Pin 1 and 3 Pin 2 and 4	37Ω ± 10%

Note : Since CR Motor and PF Motor are DC motors, the resistance among the electric poles varies. Therefore, judge if it is normal or abnormal based on if there is operation of the motor or not; the resistance values cannot be used to judge the abnormality. However, it is difficult to judge accurately, if it is not clear, replace the motor.

Table 3-2. Sensor check point

Sensor name	Check point	Signal level	Switch mode
PE Sensor	CN3 / Pin 1 and 2	Less than 0.4V	Off: No paper
		More than 2.4V	On : Detect the paper
PG Sensor	CN4 / Pin 1 and 2	—	On : PG large Off: PG normal
Scanner HP Sensor	CN13 / Pin 1 and 2	—	On : Within Scanner Carriage home position Off: Out of Scanner Carriage home position

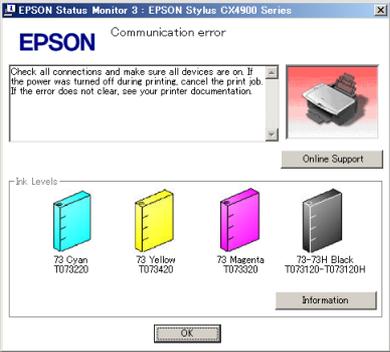
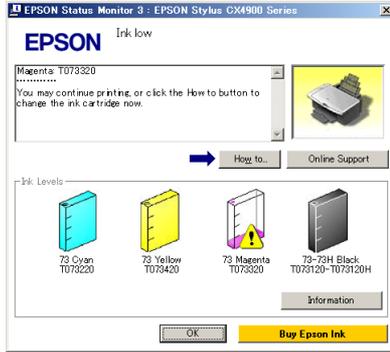
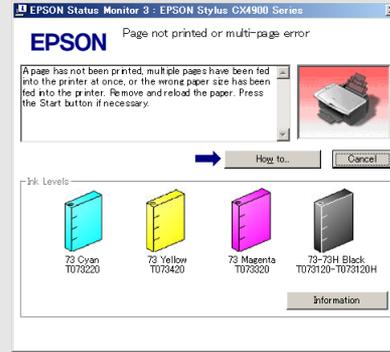
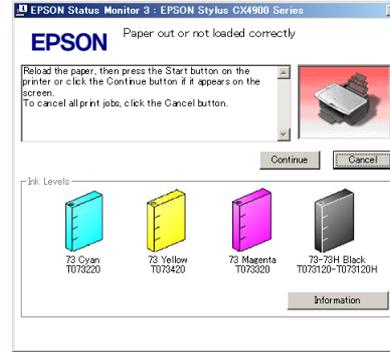
### 3.2 Error Indications and Fault Occurrence Causes

This section describes the LED indications, STM3 messages and fault occurrence causes at occurrence of the following errors during any sequence/operation (e.g. power-on sequence, paper feeding/loading sequence, ink sucking sequence).

NOTE: The STM3 windows shown in the table in the following pages are the ones of Stylus CX4900/CX4905/CX5000/DX5000/DX5050, however, other models show almost the same displays as those except the following items:

- 1) Printer model name
- 2) Printer external view (panel part)

Table 3-3. Error Indications and Fault Occurrence Causes

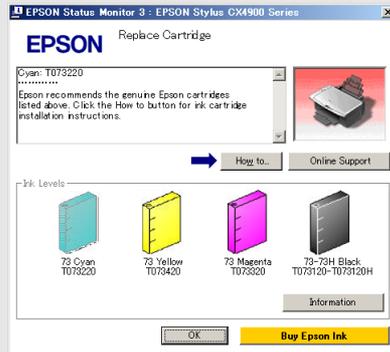
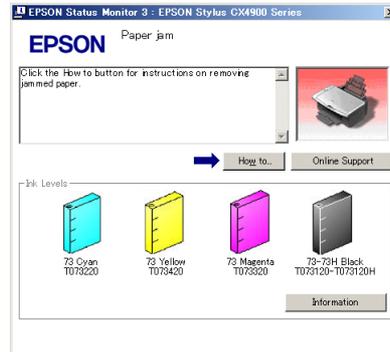
Printer Status		Communication Error	Ink Low	Double Feed	Paper Out	
LEDs*1	Power	—	—	—	—	
	Error	—	—	On	On	
	Ink	—	Blink	Off	Off	
	Memory Card	1	—	—	—	—
		2	—	—	—	—
		3	—	—	—	—
	7-seg.	—	—	—	—	
	Paper Type	1	—	—	—	—
		2	—	—	—	—
	Paper Size	1	—	—	—	—
2		—	—	—	—	
Fit to Page	—	—	—	—		
LCD*2	—	I-01	E-05	E-03		
Status monitor 3 message						
Fault Occurrence Cause	This error is detected when the SPC cannot communicate with the PC correctly.	This error is detected when the ink consumption amount reaches about 90%. Note : Even if this error is indicated on the STM3, you can continue printing until I/C becomes Replace Ink Cartridge condition. However, the Head Cleaning operation cannot be done so that the remaining ink is low condition.	This error is detected at re-sending of paper for double-sided printing when paper length is determined to be other than default value.	This error is detected when the top of a paper is not detected with the PE Sensor in the paper loading sequence.		
Reference Page	“3-6 Check point for communication error according to each phenomenon” (p.95).	---	“3-8 Check point for double feed error according to each phenomenon” (p.99).	“3-9 Check point for paper out error according to each phenomenon” (p.100).		

Note : “—”: No change

Note \*1: Stylus CX4900/CX4905/CX5000/DX5000/DX5050 only

\*2: Stylus CX5900/CX6000/DX6000/DX6050 only

Table 3-4. Error Indications and Fault Occurrence Causes

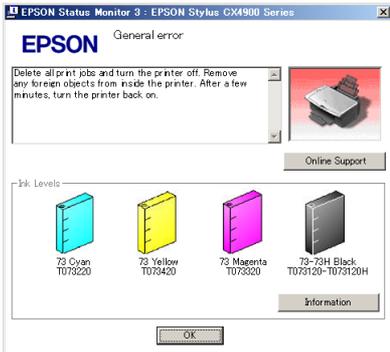
Printer Status		Replace Ink Cartridge or No Ink Cartridge	CSIC Error	Incorrect I/C	Paper Jam	
LEDs*1	Power	—	—	—	—	
	Error	Off	Off	Off	Blink	
	Ink	On	On	On	Off	
	Memory Card	1	—	—	—	—
		2	—	—	—	—
		3	—	—	—	—
	7-seg.	—	—	—	—	
	Paper Type	1	—	—	—	—
		2	—	—	—	—
	Paper Size	1	—	—	—	—
2		—	—	—	—	
Fit to Page	—	—	—	—		
LCD*2	E-01/E-02	E-01/E-02	E-01/E-02	E-04		
Status monitor 3 message						
Fault Occurrence Cause	This error is detected when; <ul style="list-style-type: none"> <li>The ink consumption amount reaches 100%.</li> <li>The ink cartridge is defective.</li> </ul> Note : The slight amount of the ink is remaining in the I/C even if the Replace Ink Cartridge error is detected. This is to prevent the Print Head nozzle from the printing operation without firing the ink.	This error is detected when data from CSIC cannot be read normally or when data cannot be written to CSIC.	This error is detected when; <ul style="list-style-type: none"> <li>An unsupported ink cartridge has been installed.</li> <li>An ink cartridge with a different destination has been installed.</li> </ul>	This error is detected when the PE Sensor cannot properly detect the paper bottom edge during feeding of paper.		
Reference Page	“3-10 Check point for no ink cartridge/ CSIC error/incorrect ink cartridge according to each phenomenon” (p.103).	“3-10 Check point for no ink cartridge/ CSIC error/incorrect ink cartridge according to each phenomenon” (p.103).	“3-10 Check point for no ink cartridge/ CSIC error/incorrect ink cartridge according to each phenomenon” (p.103).	“3-11 Check point for paper jam error according to each phenomenon” (p.104).		

Note : “—”: No change

Note \*1: Stylus CX4900/CX4905/CX5000/DX5000/DX5050 only

\*2: Stylus CX5900/CX6000/DX6000/DX6050 only

Table 3-5. Error Indications and Fault Occurrence Causes

Printer Status		Maintenance Request	Fatal Error (Mechanism)	
LEDs*1	Power	Blink	Blink	
	Error	On	Blink	
	Ink	On	Blink	
	Memory Card	1	Blink	Blink
		2	Blink	Blink
		3	Blink	Blink
	7-seg.	“E” blink	“E” blink	
	Paper Type	1	Blink	Blink
		2	Blink	Blink
	Paper Size	1	Blink	Blink
2		Blink	Blink	
Fit to Page	Blink	Blink		
LCD*2		E-91	E-90	
Status monitor 3 message				
Fault Occurrence Cause		This error is detected when the Waste Ink Counter exceeds the preset counter value.	This error is detected when it is determined that the printer cannot operate properly. (CR error, PF error, etc.)	
Reference Page		“5.2.4 Waste Ink Pad Counter” (p.175).	“3-12 Check point for fatal error according to each phenomenon” (p.107).	

Note : “-”: No change

Note \*1: Stylus CX4900/CX4905/CX5000/DX5000/DX5050 only

\*2: Stylus CX5900/CX6000/DX6000/DX6050 only

### 3.3 Troubleshooting

You can identify the troubles by using the checklist in this section after confirming the LED indication on the SPC. If you connect the SPC to your PC and see an error message on the STM3, you can short the total repair time. And, when you find out the defective parts, replace them by referring to Chapter 4 “DISASSEMBLY AND ASSEMBLY”. The following tables describe the error check points.

Table 3-6. Check point for communication error according to each phenomenon

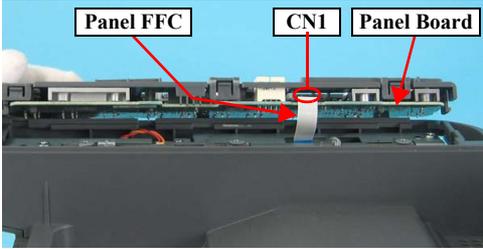
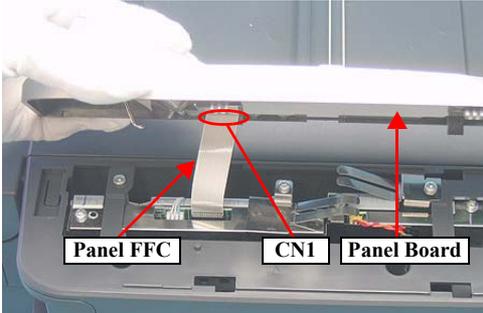
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Anywhere</li> </ul>	When turning on the power, the SPC does not operate at all.	Panel Unit	1. Check if the Panel FFC is connected to the CN1 on the Panel Board. <Stylus CX4900/CX4905/CX5000/DX5000/DX5050> 	1. Connect the Panel FFC to CN1 on the Panel Board.
			<Stylus CX5900/CX6000/DX6000/DX6050> 	
			2. Check if the Panel FFC is not damaged. 3. Check if the Panel Board is not damaged.	2. Replace the Panel FFC with new one. 3. Replace the Panel Board with new one.

Table 3-6. Check point for communication error according to each phenomenon

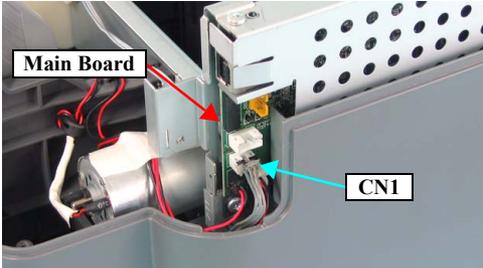
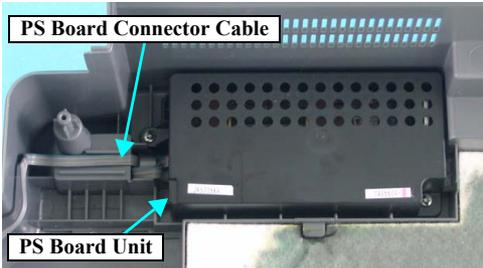
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Anywhere</li> </ul>	When turning on the power, the SPC does not operate at all.	PS Board Unit	1. Check if the PS Board Connector Cable is connected to the CN1 on the Main Board. 	1. Connect the PS Board Connector Cable to CN1 on the Main Board.
			2. Check if the PS Board Connector Cable/PS Board is not damaged. 	2. Replace the PS Board Unit with new one. * If the problem is not solved, replace the Main Board with new one.

Table 3-6. Check point for communication error according to each phenomenon

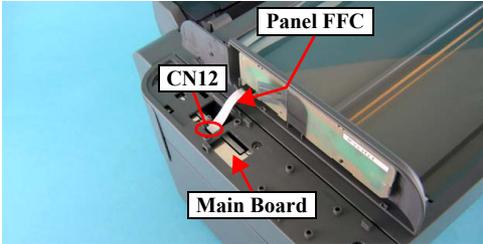
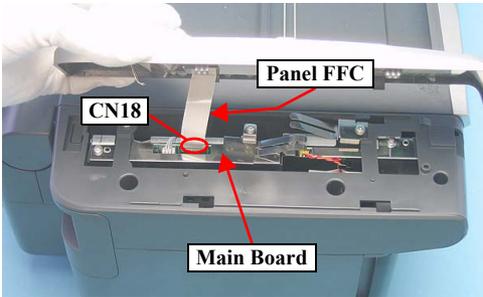
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• -</li> </ul>	When turning on the power, the power on sequence is performed correctly. But, when any printer job is sent to the SPC, a communication error is indicated with STM3.	USB Cable	1. Check if the USB Cable is connected between the SPC and the PC.	1. Connect the USB Cable to the SPC and the PC.
		Main Board Unit	1. Check if an incorrect model name is not stored into the address of the EEPROM on the Main Board. 2. Check if the Panel FFC is connected to the CN12 on the Main Board. <Stylus CX4900/CX4905/CX5000/DX5000/DX5050>  2. Check if the Panel FFC is connected to the CN18 on the Main Board. <Stylus CX5900/CX6000/DX6000/DX6050> 	1. Use the Adjustment Program to write the correct value to the EEPROM address. 2. Connect the Panel FFC to the CN12/CN18 on the Main Board.

Table 3-7. Check point for error before the initial ink charge according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Inside HP</li> </ul>	The SPC does not perform the initial ink charge and an error is indicated with LCD, LEDs and STM3.	Ink Cartridge	1. Check if the Ink Cartridge can be used by installing it to other SPC.	1. Replace the Ink Cartridge with a brand-new one.
		Main Board	1. Check if an incorrect data is not stored into the address of the EEPROM on the Main Board.	1. Set the proper destination by using Adjustment Program.
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Anywhere</li> </ul>	The SPC does not perform the ink replacement CL and an error is indicated with LCD, LEDs and STM3.	Ink Cartridge	1. Check if the Ink Cartridge can be used by installing it to other SPC.	1. Replace the Ink Cartridge with a brand-new one.
	The SPC does not perform the printing operation and an error is indicated with LCD, LEDs and STM3.	Ink Cartridge	1. Check if the ink is remaining in the Ink Cartridge.	1. Replace the Ink Cartridge with a brand-new one.
	2. Check if the Ink Cartridge can be used by installing it to other SPC.		2. Replace the Ink Cartridge with a brand-new one.	

Table 3-8. Check point for double feed error according to each phenomenon

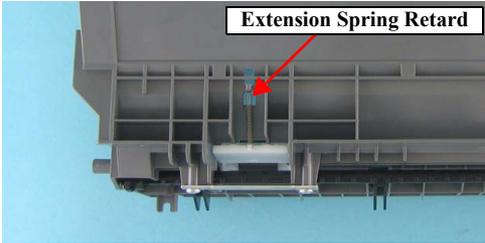
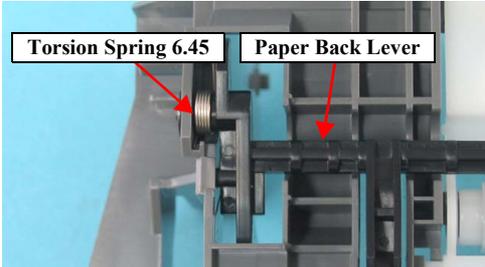
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• -</li> </ul>	<p>After both surfaces were printed, the paper was ejected but an error is displayed.</p>	<p>ASF Unit</p>	<ol style="list-style-type: none"> <li>1. Check if the Extension Spring Retard operates correctly in the paper loading sequence.</li> </ol>  <ol style="list-style-type: none"> <li>2. Check if the Paper Back Lever operates correctly in the paper loading sequence.</li> </ol> 	<ol style="list-style-type: none"> <li>1. Set the Extension Spring Retard between the Retard Roller Unit and the ASF Frame.</li> <li>2. Set the Torsion Spring 6.45 between the ASF Frame and the Paper Back Lever.</li> </ol>

Table 3-9. Check point for paper out error according to each phenomenon

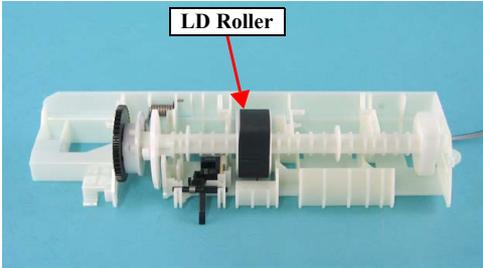
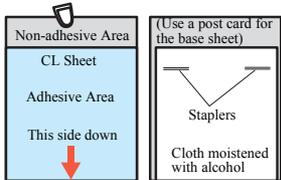
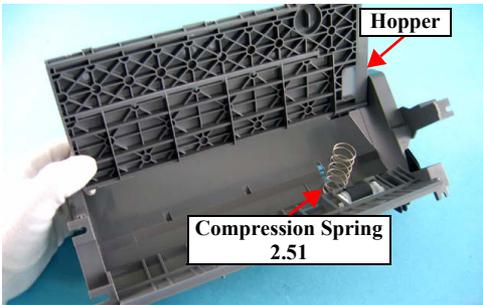
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• -</li> </ul>	<p>The LD Roller cannot pick up paper, although the LD Roller attempt to rotate correctly.</p>	<p>Holder Shaft Unit</p>	<p>1. Check if any paper dust is not adhered to the surface of the LD Roller.</p> 	<p>1. Set a cleaning sheet in the ASF Unit up side down. Then holding the top edge, try to load the paper from the Printer driver. The micro pearl on the LD Roller surface is removed. To remove severe smear, staple a cloth moistened with alcohol to a post card and clean the roller in the same manner.</p>  <p>*If the problem is not solved, replace the Holder shaft unit with new one.</p>
<ul style="list-style-type: none"> <li>• Operation</li> <li>• -</li> </ul>	<p>The Hopper does not operate during the paper loading sequence although the LD Roller rotates to load paper from the ASF Unit.</p>	<p>ASF Unit</p>	<p>1. Check if the Hopper operates correctly in the paper loading sequence.</p> 	<p>1. Reassemble the Compression Spring 2.51 between the ASF Frame and the Hopper.</p>

Table 3-9. Check point for paper out error according to each phenomenon

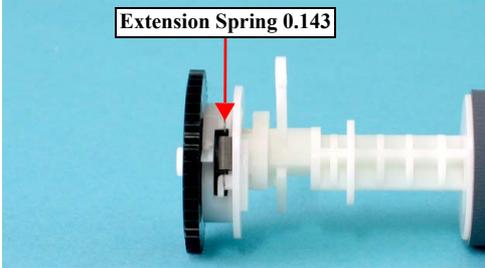
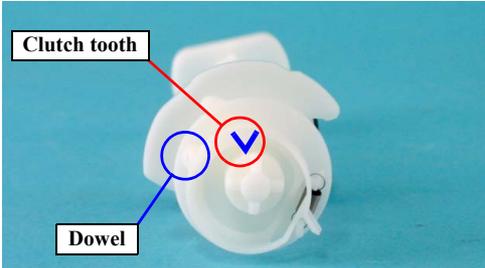
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• –</li> </ul>	The drive of the PF Motor is not transmitted to the LD Roller Shaft.	Holder Shaft Unit	1. Check if the Extension Spring 0.143 does not come off in the Clutch mechanism. 	1. Reassemble the Extension Spring 0.143 in the Clutch mechanism.
			2. Check if the Clutch does not come off from the dowel of the LD Roller Shaft. 	2. Reassemble the round portion of the Clutch on the dowel of the LD Roller Shaft.
			3. Check if the Clutch tooth is not damaged.	3. Replace the Holder Shaft Unit with a new one.
			4. Check if the Clutch is not damaged.	4. Replace the Holder Shaft Unit with a new one.

Table 3-9. Check point for paper out error according to each phenomenon

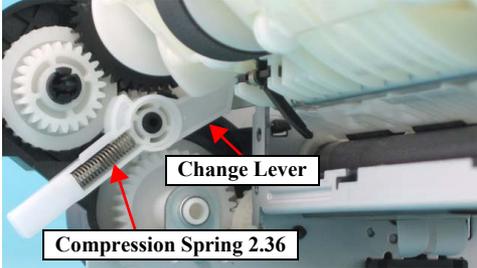
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• –</li> </ul>	The drive of the PF Motor is not transmitted to the LD Roller Shaft.	Ink System Unit	1. Check if the Compression Spring 2.36 does not come off in the Change Lever. 	1. Replace the Ink System Unit with a new one.
<ul style="list-style-type: none"> <li>• Operation</li> <li>• –</li> </ul>	The LD Roller is not set to the ASF home position and paper is always loaded from the ASF Unit during the paper loading sequence.	Ink System Unit	1. Check if the tip of the Change Lever is not damaged.	1. Replace the Ink System Unit with a new one.

Table 3-10. Check point for no ink cartridge/CSIC error/incorrect ink cartridge according to each phenomenon

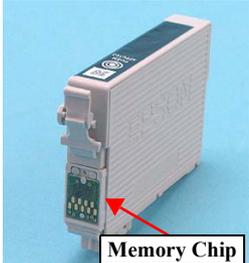
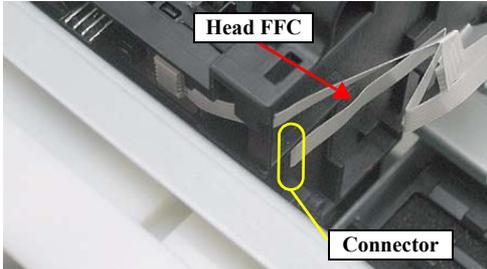
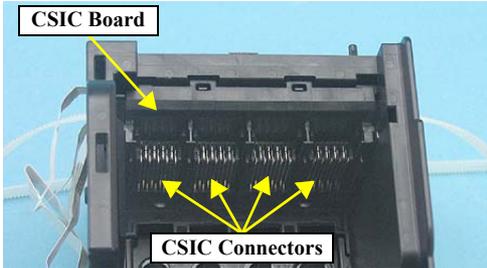
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Inside HP</li> </ul>	After the Carriage has detected the HP, an error is displayed.	Ink Cartridge	1. Check if Ink Cartridge is properly installed. 2. Check if the Memory Chip is not disconnected or not chipped. 	1. Install the Ink Cartridge properly. 2. Replace the Ink Cartridge with a new one.
		CSIC Board	1. Check if the Head FFC is connected to connector on the CSIC Board. 	1. Connect the Head FFC to connector on the CSIC Board.
		CSIC Connector	1. Check if the CSIC Connector is not damaged. 	2. Replace the Carriage Unit with a new one. 1. Replace the Carriage Unit with a new one.

Table 3-11. Check point for paper jam error according to each phenomenon

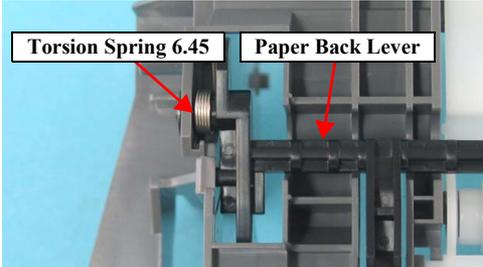
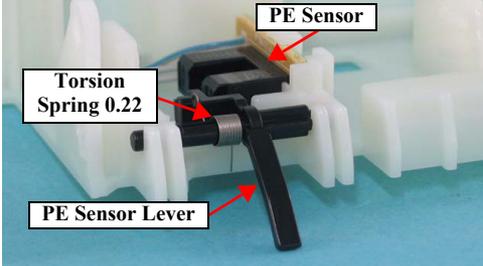
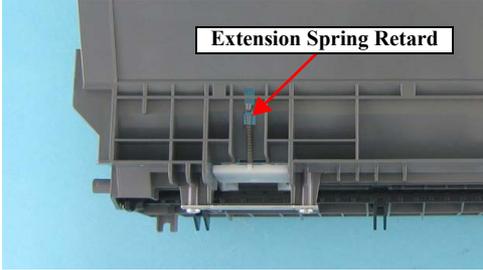
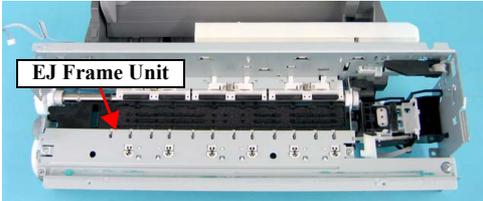
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• Outside HP</li> </ul>	The paper feeding sequence is performed without loading paper in the paper loading sequence.	ASF Unit	1. Check if the ASF Unit is properly installed. 2. Check if the Paper Back Lever operates correctly in the paper loading sequence. 	1. Install the ASF Unit properly. 2. Set the Torsion Spring 6.45 between the ASF Frame and the Paper Back Lever.
		Holder Shaft Unit	1. Check if the Torsion Spring 0.22 is properly installed. 	1. Set the Torsion Spring 0.22 between the Holder Shaft and the PE Sensor Lever.

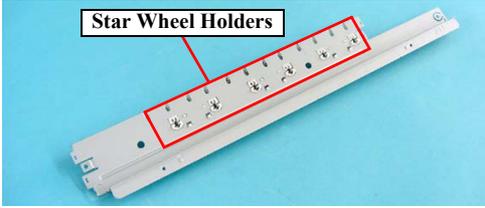
Table 3-11. Check point for paper jam error according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• Outside HP</li> </ul>	Paper is being resent during paper feeding operation.	ASF Unit	1. Check if the Extension Spring Retard operates correctly in the paper loading sequence. 	1. Set the Extension Spring Retard between the Retard Roller Unit and the ASF Frame.
	When turning on the power, the Carriage Unit move to the home position correctly. But, the paper feeding sequence is performed without loading paper in the paper loading sequence.	Holder Shaft Unit*	1. Check if the Torsion Spring 0.22 is properly installed.	1. Set the Torsion Spring 0.22 between the Holder Shaft and the PE Sensor Lever.
<ul style="list-style-type: none"> <li>• Operation</li> <li>• -</li> </ul>	The leading edge of paper does not go through between the EJ Roller Unit and the Star Wheel.	EJ Frame Unit**	1. Check if the EJ Frame Unit is correctly assembled. 	1. Reassemble the EJ Frame Unit correctly.
		Paper Guide Front Unit	2. Check if the Paper Guide Front Unit is correctly assembled. 	2. Reassemble the Paper Guide Front Unit correctly.

\* The Carriage Unit can move to home position even if the Torsion Spring 0.22 comes off. However, the PE Sensor Lever keeps the high signal condition in the next operation. Therefore, the paper jam error is detected.

\*\* In case that the paper jam error occurs in each operation, the jammed paper contacts the nozzle surface of the Print Head and the Print Head may be damaged.

Table 3-11. Check point for paper jam error according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• -</li> </ul>	The leading edge of paper does not go through between the EJ Roller Unit and the Star Wheel.	EJ Frame Unit**	3. Check if the Star Wheel Holders does not come off. 	3. Reassemble the Star Wheel Holders correctly.
	The leading edge of paper is not loaded to the PF Roller Unit.	Paper Guide Upper Unit **	1. Check if the Paper Guide Upper Unit is correctly assembled. 	4. Replace the EJ Frame Unit with a new one. 1. Reassemble the Paper Guide Upper Unit to the Main Frame correctly.

\* The Carriage Unit can move to home position even if the Torsion Spring 0.22 comes off. However, the PE Sensor Lever keeps the high signal condition in the next operation. Therefore, the paper jam error is detected.

\*\* In case that the paper jam error occurs in each operation, the jammed paper contacts the nozzle surface of the Print Head and the Print Head may be damaged.

Table 3-12. Check point for fatal error according to each phenomenon

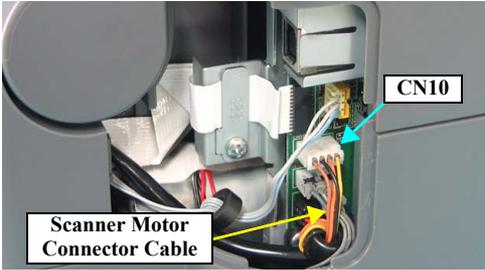
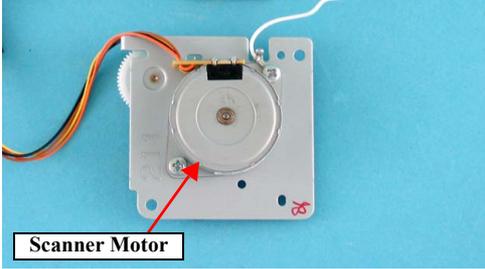
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Anywhere</li> </ul>	The Scanner Unit does not initialize when the power is turned on.	Scanner Motor	1. Check if the Scanner Motor Connector Cable is connected to CN10 on the Main Board. 	1. Connect the Scanner Motor Connector Cable to CN10 on the Main Board.
			2. Check if the coil resistance of the Scanner Motor is about 37Ω by using the tester (refer to Table 3-1). 	2. Replace the Scanner Motor with a new one.
			3. Check if the Scanner Motor Connector Cable is not damaged.	3. Replace the Scanner Motor with a new one.

Table 3-12. Check point for fatal error according to each phenomenon

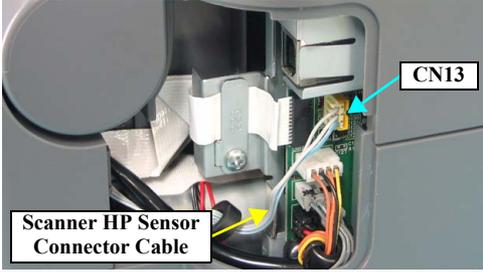
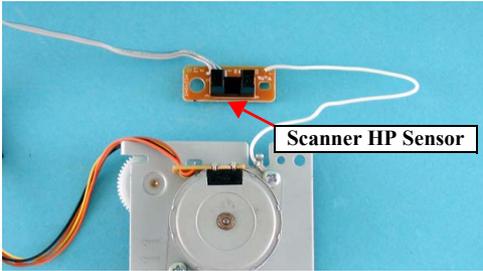
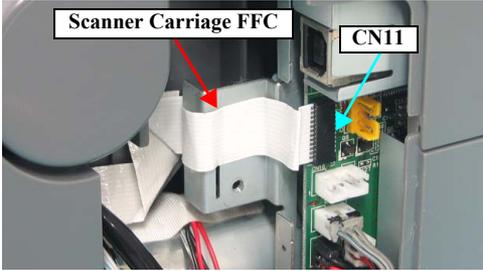
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Anywhere</li> </ul>	The Scanner Unit does not initialize when the power is turned on.	Scanner HP Sensor	1. Check if the Scanner HP Sensor Connector Cable is connected to CN13 on the Main Board. 	1. Connect the Scanner HP Sensor Connector Cable to CN13 on the Main Board.
			2. Check if the Scanner HP Sensor Connector Cable is not damaged.	2. Replace the Scanner HP Sensor with a new one.
		3. Check if the Scanner HP Sensor is not damaged. 	3. Replace the Scanner HP Sensor with a new one.	
		Scanner Carriage FFC	1. Check if the Scanner Carriage FFC is connected to CN11 on the Main Board. 	1. Connect the Scanner Carriage FFC to CN11 on the Main Board.
2. Check if the Scanner Carriage FFC is not damaged.	2. Replace the Scanner Carriage FFC with a new one.			

Table 3-12. Check point for fatal error according to each phenomenon

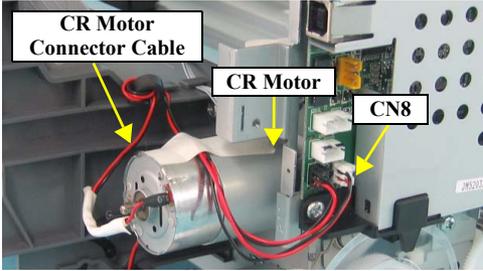
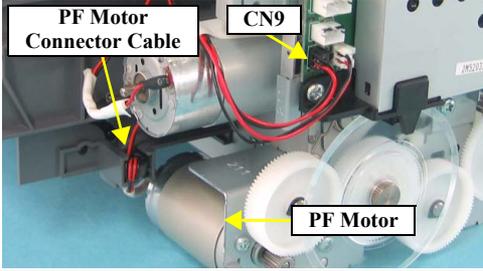
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Anywhere</li> </ul>	The Scanner Unit does not initialize when the power is turned on.	Scanner Carriage Unit	1. Check if the Scanner Carriage Unit is not damaged.  An image showing the scanner carriage unit with a red arrow pointing to it and a label 'Scanner Carriage Unit' above the arrow.	1. Replace the Scanner Carriage Unit with a new one.
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Anywhere</li> </ul>	When turning on the power, the CR Motor does not operate at all.	CR Motor	1. Check if the CR Motor Connector Cable is connected to CN8 on the Main Board.  An image showing the CR motor and its connector cable. Labels include 'CR Motor Connector Cable', 'CR Motor', and 'CN8'. Yellow arrows point to each.	1. Connect the CR Motor Connector Cable to CN8 on the Main Board.
	When turning on the power, the PF Motor does not operate at all.	PF Motor	1. Check if the PF Motor Connector Cable is connected to CN9 on the Main Board.  An image showing the PF motor and its connector cable. Labels include 'PF Motor Connector Cable', 'CN9', and 'PF Motor'. Yellow arrows point to each.	1. Connect the PF Motor Connector Cable to CN9 on the Main Board.
			2. Check if the CR Motor Connector Cable is not damaged. 3. Check if the CR Motor operates.	2. Replace the CR Motor with a new one. 3. Replace the CR Motor with a new one.
			2. Check if the PF Motor Connector Cable is not damaged. 3. Check if the PF Motor operates.	2. Replace the PF Motor with a new one. 3. Replace the PF Motor with a new one.

Table 3-12. Check point for fatal error according to each phenomenon

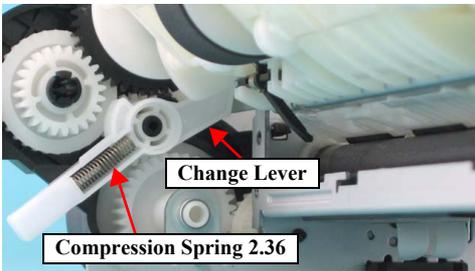
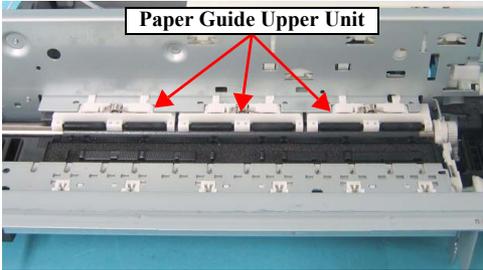
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Anywhere</li> </ul>	When turning on the power, the Carriage Unit collides to the Change Lever located to the front side of the printer.	PF Motor	1. Check if the PF Motor Connector Cable is connected to CN9 on the Main Board. 2. Check if the PF Motor Connector Cable is not damaged. 3. Check if the PF Motor operates.	1. Connect the PF Motor Connector Cable to CN9 on the Main Board. 2. Replace the PF Motor with a new one. 3. Replace the PF Motor with a new one.
		Ink System Unit	1. Check if the Compression Spring 2.36 does not come off in the Change Lever. 	1. Replace the Ink System Unit with a new one.
		Paper Guide Upper Unit	1. Check if the Paper Guide Upper Unit is correctly assembled. 	1. Reassemble the Paper Guide Upper Unit to the Main Frame correctly.

Table 3-12. Check point for fatal error according to each phenomenon

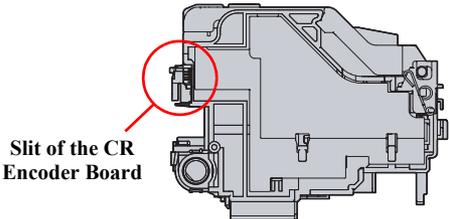
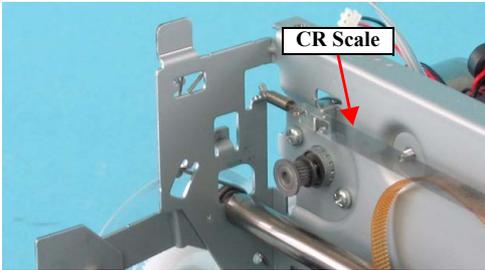
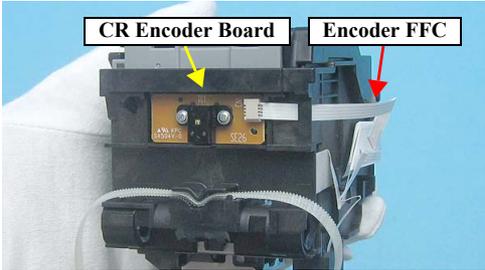
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Power on</li> <li>• Anywhere</li> </ul>	When turning on the power, the Carriage Unit collides to the right side of the Main Frame.	CR Scale	1. Check if the CR Scale does not come off or it properly passes through the slit of the CR Encoder Board.   <p style="text-align: center;">Slit of the CR Encoder Board</p>	1. Reassemble the CR Scale correctly. * If the problem is not solved, replace the Main Board with a new one.
			2. Check if the CR Scale is not damaged or contaminated.  	2. Replace the CR Scale with a new one or clean it completely.
		CR Encoder Board	1. Check if the Encoder FFC is connected to the CR Encoder Board.  	1. Connect the Encoder FFC to the CR Encoder Board.
			2. Check if the Encoder FFC is not damaged. 3. Check if the CR Encoder Board is not damaged.	2. Replace the Encoder FFC with a new one. 3. Replace the CR Encoder Board with a new one.

Table 3-12. Check point for fatal error according to each phenomenon

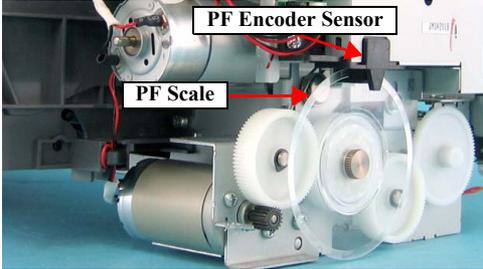
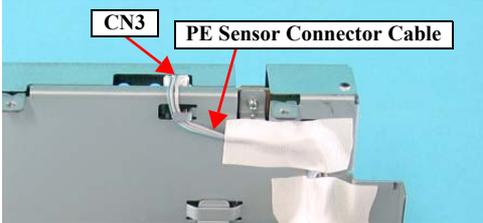
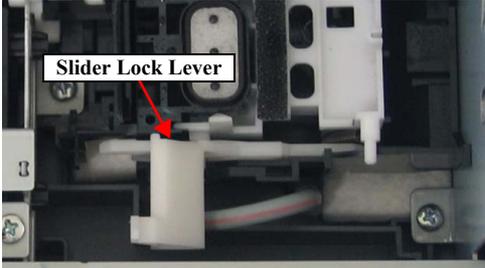
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>Power on</li> <li>Anywhere</li> </ul>	The eject rollers are rotating at high speed when power is turned on. (For about 1 cycle.)	PF Scale / Main Board Unit	1. Check if the PF Scale is not damaged or contaminated. 	1. Replace the PF Scale with a new one.
<ul style="list-style-type: none"> <li>Operation</li> <li>Anywhere</li> </ul>	The Scanner Carriage Unit does not operate.	Scanner Carriage Shaft	1. Check if the grease is enough on the surface of the Scanner Carriage Shaft.  2. Check if the Scanner Carriage Shaft is set correctly.	1. After wiping the grease on the Scanner Carriage Shaft with a dry, soft cloth, coat it with grease. (Refer to Chapter 6 “MAINTENANCE”.)  2. Reassemble the Scanner Carriage Shaft to the Scanner Carriage Unit.
<ul style="list-style-type: none"> <li>Operation</li> <li>Anywhere</li> </ul>	The paper feeding sequence is performed without loading a paper in the paper loading sequence.	Holder Shaft Unit	1. Check if the PE Sensor Connector Cable is connected to CN3 on the Main Board.  2. Check if the PE Sensor Connector Cable is not damaged. 3. Check if the PE Sensor is not damaged.	1. Connect the PE Sensor Connector Cable to CN3 on the Main Board.  2. Replace the PE Sensor with a new one. 3. Replace the PE Sensor with a new one.

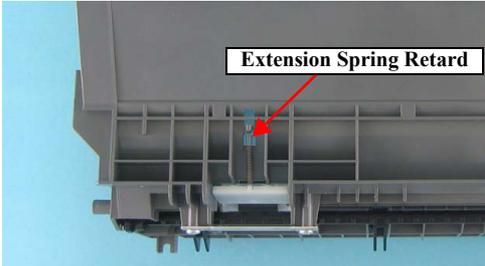
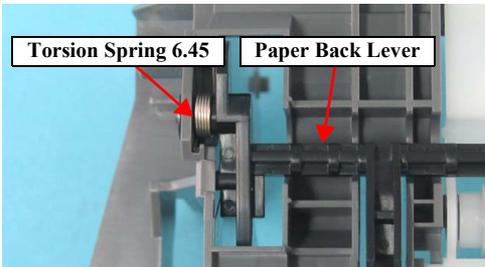
Table 3-12. Check point for fatal error according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• Anywhere</li> </ul>	The Carriage Unit climbs over the Slider Lock Lever set to the wiping position and the Carriage Unit collides to its lever.	Front Frame	1. Check if the Slider Lock Lever is correctly released by the CR movement. 	1. Replace the Front Frame with a new one.
		Main Frame	1. Check if the Slider Lock Lever is correctly released by the CR movement.	1. Replace the Printer Mechanism with a new one.

### 3.3.1 Superficial Phenomenon-Based Troubleshooting

This section explains the fault locations of the error states (print quality and abnormal noise) other than the error states (LED and STM3) in the previous section.

**Table 3-13. Check point for multiple sheets of paper are always loaded without LEDs and STM3**

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Operation</li> <li>• –</li> </ul>	<p>The LEDs and STM3 are not indicating error conditions. But, multiple sheets of paper are always loaded from the ASF Unit.</p>	<p>ASF Unit</p>	<ol style="list-style-type: none"> <li>1. Check if the Extension Spring Retard operates correctly in the paper loading sequence.</li> </ol>  <ol style="list-style-type: none"> <li>2. Check if the Paper Back Lever operates correctly in the paper loading sequence.</li> </ol> 	<ol style="list-style-type: none"> <li>1. Set the Extension Spring Retard between the Retard Roller Unit and the ASF Frame.</li> <li>2. Set the Torsion Spring 6.45 between the ASF Frame and the Paper Back Lever.</li> </ol>

**Table 3-14. Check point for the abnormal noise**

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Anytime</li> <li>• Anywhere</li> </ul>	The abnormal noise occurs at the first power on timing and during each operation although the printing operation is performed.	Carriage Unit	1. Check if the grease on the Carriage Guide Shaft is sufficient.	1. Wipe off the remaining grease on the Carriage Guide Shaft and lubricate it on its shaft.
		Front Frame	1. Check if the grease on the Front Frame is sufficient.	1. Wipe off the remaining grease on the Front Frame and lubricate it on its frame.
		Ink System Unit	1. Check if the Change Lever moves smoothly.	1. Replace the Ink System Unit with a new one.
	The bottom of the Carriage Unit contacts the surface of the EJ Frame Unit.	EJ Frame Unit	1. Check if the EJ Frame Unit is not bent up.	1. Replace the EJ Frame Unit with a new one.
	The Carriage Unit collides to the Paper Guide Upper Unit during each operation.	Paper Guide Upper Unit	1. Check if the Paper Guide Upper Unit is attached securely. (check if it interferes with the Carriage Unit)	1. Reassemble the Paper Guide Upper to the Main Frame.

**Table 3-15. Check point for poor scanned image quality**

Scanned image Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>• Scanned image is not clear.</li> </ul>	There are dusts on the Document Glass. (white dots appear on the scanned image)	Scanner Housing Upper	1. Check if there is not any dust on the Document Glass.	1. Remove the extraneous matter from the Document Glass. (Refer to the Chapter 6 “MAINTENANCE”.)
	There are dusts on the LED in the Rod Lens Array. (vertical stripes appear on the scanned image)	Scanner Carriage Unit	1. Check if there is not any dust on the LED.	1. Remove the extraneous matter from the Document Glass (blow away the dusts).
	The LED of Scanner Carriage Unit does not light up.	Scanner Carriage Unit	1. Check if the LED lights up.	1. Replace the Scanner Carriage Unit with new one.

Table 3-16. Check point for the poor printing quality

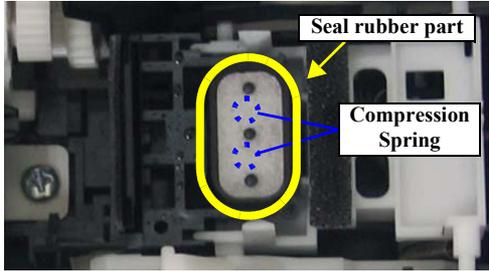
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• Dot missing and mixed colors	Ink is scarcely ejected to the Cap from the Print Head.	Ink System Unit (Cap Unit)	1. Check if there is not any foreign material/damage around the seal rubber part on the Cap Unit.	1. Remove the foreign material around the seal rubber parts carefully.
				
		2. Check if the Compression Spring is correctly mounted on the Cap Unit.	2. Replace the Ink System Unit with a new one.	
	Ink is ejected to the Cap from the Print Head, but the SPC does not recover from the error after cleaning or ink change.	Print Head	1. Check if it returns to normal by performing CL operation or replacing the Ink Cartridge.	1. Perform CL operation and the Ink Cartridge replacement specified times. If it doesn't work, change the Print Head with a new one.
			2. Check if the Print Head is not damaged.	2. Replace the Print Head with a new one.
		Cleaner Blade	1. Check if the Cleaner Blade does not have paper dust or bending.	1. Replace Ink System Unit with a new one.
Main Board	1. Check if the Main Board is not damaged.	1. Replace the Main Board with a new one.		

Table 3-16. Check point for the poor printing quality

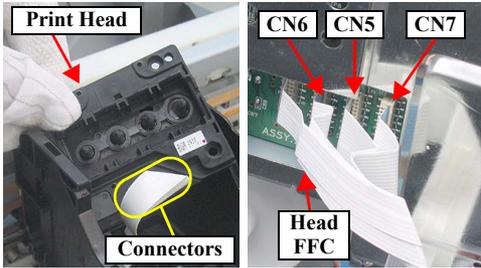
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> <li>White streak / abnormal discharge</li> </ul>	Ink is ejected to the Cap from the Print Head, but printing is not done at all after cleaning or ink change, or abnormal discharge occurs.	Head FFC	1. Check if the Head FFC is securely connected to the Print Head Connectors and the Main Board Connectors (CN5, CN6, CN7). 	1. Connect the Head FFC to the Print Head and the Main Board Connectors.
		Print Head	1. Check if it returns to normal by performing CL operation or replacing the Ink Cartridge.	1. Perform CL operation and the Ink Cartridge replacement specified times. If it doesn't work, change the Print Head with a new one.
		Main Board Unit	1. Check if the Main Board is not damaged.	1. Replace the Main Board Unit with a new one.

Table 3-16. Check point for the poor printing quality

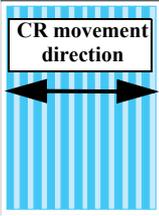
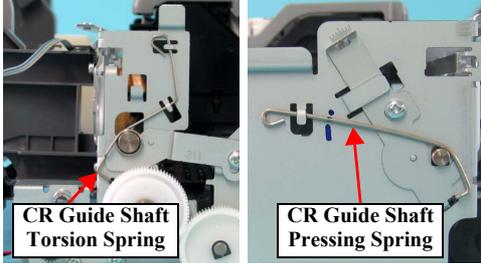
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• White streak/ color unevenness occurrence	Vertical banding appears against the CR movement direction. And, it looks like uneven printing.    [Note] If the problem is not solved, replace the CR Motor with a new one.	Adjustment	1. For printing in the Bi-D mode, check if Bi-D Adjustment has been performed properly.	1. Perform Bi-D Adjustment to eliminate displacements between the upper and lower rules. (Refer to Chapter 5 “ADJUSTMENT”.)
		Print Head	1. Check if each segment is printed correctly in the Nozzle Check Pattern.	1. Perform Head Cleaning and check the Nozzle Check Pattern. (Refer to Chapter 5 “ADJUSTMENT”.) If the problem is not solved, replace the Print Head with a new one.
		Carriage Unit / Carriage Guide Shaft	1. Check if there is not any foreign material on the surface of the Carriage Guide Shaft.	1. Remove foreign objects from surface of the Carriage Guide Shaft.
			2. Check if the Carriage Guide Shaft is properly secured to Main Frame by the CR Guide Shaft Torsion Spring and the CR Guide Shaft Pressing Spring.	2. Reassemble the Carriage Guide Shaft correctly.
				
			3. Check if the grease is enough on the surface of the Carriage Guide Shaft.	3. After wiping the grease on the Carriage Guide Shaft and the Carriage with a dry, soft cloth, coat it with grease. (Refer to Chapter 6 “MAINTENANCE”.)
4. Check if any damage is not observed on the surface of the Carriage Guide Shaft.	4. Replace the Carriage Guide Shaft with a new one.			
EJ Frame	1. Check if there is not any foreign material on the surface of the EJ Frame.	1. Remove foreign matter from the EJ Frame.		
	2. Check if the EJ Frame is lubricated with enough grease.	2. After wiping the grease on the EJ Frame with a dry, soft cloth, coat it with grease. (Refer to Chapter 6 “MAINTENANCE”.)		
	3. Check if the EJ Frame has not been deformed.	3. Replace the EJ Frame with a new one.		

Table 3-16. Check point for the poor printing quality

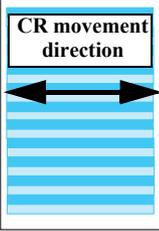
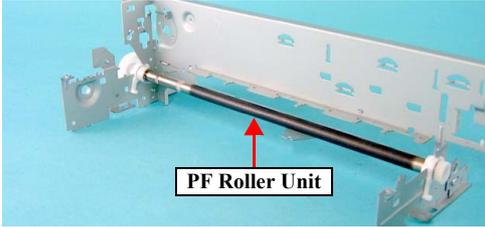
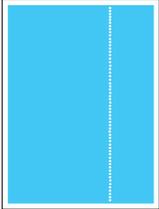
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• White streak/ color unevenness occurrence	Micro banding appears horizontally against the CR movement direction and it appears with the same width.   [Note] If the problem is not solved, replace the PF Motor with a new one.	Printer driver & exclusive paper	1. Check if the suitable paper is used according to the printer driver setting.	1. Use the suitable paper according to the printer driver setting.
		Print Head	1. Check if each segment is printed correctly in the Nozzle Check Pattern.	1. Perform the Head Cleaning and check the Nozzle Check Pattern. (Refer to Chapter 5 “ADJUSTMENT”.) If the problem is not solved, replace the Print Head with a new one.
		PF Roller Unit	1. Check if there is not any foreign material on the surface of the PF Roller Unit.  	1. Clean the surface of the PF Roller Unit carefully with the soft cloth.
	The Star wheel mark against the CR movement direction.  	EJ Frame Unit	2. Check if the PF Roller Unit is not damaged.	2. Replace the PF Roller Unit with a new one.
			1. Check if the Star Wheel Holder does not come off. 2. Check if the surface of the EJ Frame Unit is flat.	1. Reassemble the Star Wheel Holder correctly. 2. Replace the EJ Frame Unit with a new one.
	Printing is blurred.		Printer driver & exclusive paper	1. Check if the suitable paper is used according to the printer driver setting.
Print Head			1. Check if the correct Head ID is stored into the EEPROM by using the Adjustment Program.	1. Input 13 digits code of the Head ID into the EEPROM by using the Adjustment Program.

Table 3-16. Check point for the poor printing quality

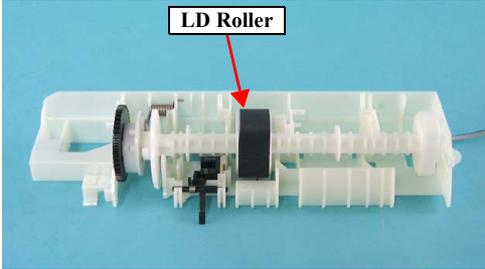
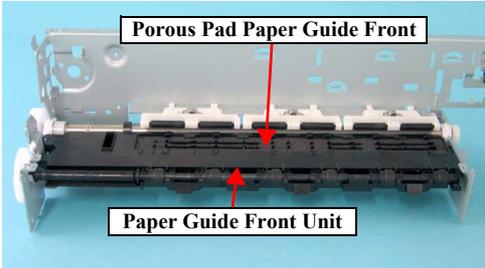
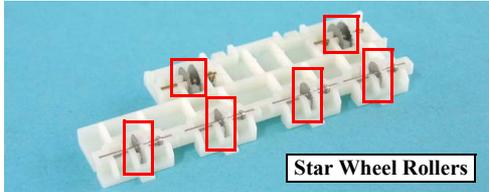
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• Print start position slip	The printing operation is correctly performed. But, the top margin is insufficient than usual one.	Holder Shaft Unit	1. Check if any paper dust is not adhered to the surface of the LD Roller. 	1. Set a cleaning sheet in the ASF up side down. Then holding the top edge, try to load the paper from the Printer driver. The micro pearl on the LD Roller surface is removed. To remove severe smear, staple a cloth moistened with alcohol to a post card and clean the roller in the same manner. As for the cleaning sheet, refer to <a href="#">page 100</a> “Remedy of the Paper out error” * If the problem is not solved, replace the Holder Shaft Unit with a new one.
• Ink stain of paper	Ink stain occurs at the back, top end or bottom end of the print paper.	Paper Guide Front Unit	1. Check if the Paper Guide Front Unit does not have the ink stain. 	1. Clean the Paper Guide Front Unit with a soft cloth.
			2. Check if heaps of ink are not formed on Porous Pad Paper Guide Front.	2. Replace the Paper Guide Front Unit with a new one.
		EJ Frame Unit	1. Check if the EJ Roller Unit does not have the ink stain.	1. Clean the EJ Roller Unit with a soft cloth.
		PF Roller Unit	1. Check if the PF Roller Unit does not have the ink stain.	1. Clean the PF Roller Unit with a soft cloth.

Table 3-16. Check point for the poor printing quality

Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• Ink stain of paper	Ink sticks to other than the print area of the paper, resulting in contamination	Print Head	1. Check if the Print Head Cover does not have the ink drop.	1. Clean the Print Head Cover carefully with a soft cloth.
		Paper Guide Upper Unit	1. Check if the Paper Guide Upper Unit does not have the ink stain.	1. Clean the Paper Guide Upper Unit with a soft cloth.
		EJ Frame Unit	1. Check if the Star Wheel Rollers does not have the ink stain. 	1. Clean the Star Wheel Rollers with a soft cloth.

CHAPTER

4

**DISASSEMBLY/ASSEMBLY**

## 4.1 Overview

This section describes procedures for disassembling the main components of the EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050. Unless otherwise specified, disassembly units or components can be reassembled by reversing the disassembly procedure. Things, if not strictly observed, that could result in injury or loss of life are described under the heading “Warning”. Precautions for any disassembly or assembly procedures are described under the heading “CAUTION”. Tips for disassembling procedures are described under the heading “CHECK POINT”.

If the assembling procedure is different from the reversed procedure of the disassembling, the procedure is described under the heading “REASSEMBLY”. Any adjustments required after reassembling the units are described under the heading “ADJUSTMENT REQUIRED”. When you have to remove any units or parts that are not described in this chapter, refer to the exploded diagrams in the appendix.

Read precautions described in the next section before starting work.

### 4.1.1 Precautions

See the precautions given under the heading “WARNING” and “CAUTION” in the following column when disassembling or assembling EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050.



- **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.**



- **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 as specified. (Refer to “6.1.3 Lubrication (p193)” for details.)**
- **Make the specified adjustments when you disassemble the printer. (Refer to Chapter 5 ADJUSTMENT for details.)**
- **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.**
- **When using compressed air products; such as air duster, for cleaning during repair and maintenance, the use of such products containing flammable gas is prohibited.**

### 4.1.2 Tools

Use only specified tools to avoid damaging of the printer.

Table 4-1. Tools

Name	Supplier*	Part No.
Phillips Screwdriver (No.1)	EPSON	1080530
Phillips Screwdriver (No.2)	EPSON	1080532
Flathead Screwdriver	EPSON	1080527
Precision Screwdriver #1 (-)	EPSON	1080525
Tweezer	EPSON	1080561
Longnose pliers	EPSON	1080564
Acetate Tape	EPSON	1003963
Nipper	---	---

Note \*: Available in the market

### 4.1.3 Work Completion Check

If any service is made to the printer, use the checklist shown below to confirm all works are completed properly and the printer is ready to be returned to the user.

**Table 4-2. Work Completion Check**

Classification	Part	Check Item	Check Column
Printer unit	Self test	Operation is normal?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	On line test	Print is normally done?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Print Head (nozzle check pattern print)	Ink gets out normally from all the nozzles?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	CR mechanism	CR smoothly operates?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		CR makes abnormal sound during its operation?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Paper loading mechanism	Paper is smoothly loaded?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Paper jam does not happen?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Paper does not warp during paper loading?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Multiple papers are not fed?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Abnormal sound is not heard during paper loading?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	There is no obstacles at paper route?	<input type="checkbox"/> OK / <input type="checkbox"/> NG	

**Table 4-2. Work Completion Check**

Classification	Part	Check Item	Check Column
Scanner unit	Mechanism	Glass surface is not dirty?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Alien substance is not mixed in the CR movement area?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	CR mechanism	CR smoothly operates?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		CR operates together with scanner unit?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	CR makes abnormal sound during its operation?	<input type="checkbox"/> OK / <input type="checkbox"/> NG	
	LED	LED normally turns on and white reflection test is done near home position?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
On line test	On line test	Operation is normal?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Copy	Copy	Local copy is normal?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Adjustment	Designated adjustment items	Adjustment condition is suitable?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Lubrication	Designated lubrication items	Lubrication is done at designated place?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
		Lubrication volume is suitable?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Function	Firmware version	The newest version	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Dispatch packing	Ink cartridge	Ink cartridge is normally installed?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Waste Ink Pads	Remaining life of waste ink pads are sufficient?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
	Protection during distribution	Printer CR is in the cap position?	<input type="checkbox"/> OK / <input type="checkbox"/> NG
Others	Attached goods	All of attached goods from users are packed?	<input type="checkbox"/> OK / <input type="checkbox"/> NG

### 4.1.4 Procedural Differences between the Models

Some parts that are installed to Stylus CX4900/CX4905/CX5000/DX5000/DX5050 and Stylus CX5900/CX6000/DX6000/DX6050 differ from each other because of the difference in the Panel Unit.



Since Stylus CX5900/CX6000/DX6000/DX6050 model is used to create this manual, the appearance of some parts may differ from those on Stylus CX4900/CX4905/CX5000/DX5000/DX5050 model. The procedures themselves, however, are the same for both models except for the one described in the table below.

Table 4-3. Differences between Models

Item	Description	Stylus CX5900/CX6000/DX6000/DX6050 (LCD model)	Stylus CX4900/CX4905/CX5000/DX5000/ DX5050 (LED model)	Reference
Panel Unit	You need to follow different steps to remove the Panel Unit.			<p>For Stylus CX5900/CX6000/DX6000/DX6050, see "4.4.4 Panel Unit (p130)"</p> <p>For Stylus CX4900/CX4905/CX5000/DX5000/DX5050, see "4.6.1 Panel Unit (p169)"</p>
Housing, Upper	<ul style="list-style-type: none"> <li><input type="checkbox"/> Stylus CX5900/CX6000/DX6000/DX6050                             <ul style="list-style-type: none"> <li>■ You need to remove 10 screws to take out the Housing, Upper.</li> </ul> </li> <li><input type="checkbox"/> Stylus CX4900/CX4905/CX5000/DX5000/DX5050                             <ul style="list-style-type: none"> <li>■ You need to remove 6 screws to take out the Housing, Upper.</li> </ul> </li> </ul>			<p>For Stylus CX5900/CX6000/DX6000/DX6050, see "4.4.6 Housing, Upper (p132)"</p> <p>For Stylus CX4900/CX4905/CX5000/DX5000/DX5050, see "4.6.2 Housing, Upper (p170)"</p>

## 4.2 Caution regarding Assembling/Disassembling of the Printer Mechanism, and How to Ensure of Quality on Re-assembled Product

On current low end models, we basically forbade to remove Housing Lower from Printer Mechanism in your repair. This is because there is a possibility of Main Frame deformation when a part (such as Ink System Unit) is removed from Printer Mechanism without Housing Lower.

For this reason, we recommend that a new Printer Mechanism be replaced along with the Housing Lower when a part cannot be replaced without removing the Printer Mechanism.

On these models, you have to remove Housing Lower from Printer Mechanism when replacing [Waste Ink Pads] with new one.

Therefore, we clarify caution regarding assembling/disassembling of the Printer Mechanism without Housing Lower, and how to ensure of quality on repaired production this section.

[Caution regarding assembling/disassembling of the Printer Mechanism]

### 1) Main Frame

#### (a) Control of assembled standard position.

[Reason]

- The assembled accuracy of each part composed of Printer Mechanism is based on Housing Lower.

[Service treatment]

- Confirm that there is no gap between Main Frame and Housing Lower.

[Reference]

- To ensure the assembled accuracy, you have to control the assembled standard position of main frame against X/Y/Z-axis direction.

[X-axis direction]

- Make sure that main frame is correctly placed on the groove of Housing Lower.
- Make sure that there is no gap between Main Frame and Housing Lower.

[Y-axis direction]

- Make sure that main frame is correctly placed on the groove of Housing Lower.
- Make sure that there is no gap between Main Frame and Housing Lower.

[Z-axis direction]

- Align dowel of Housing Lower with positioning hole of Main Frame and ensure there is no gap.

#### (b) How to assemble of ASF Unit/Main Board Unit/Paper Guide Upper Unit

[Reason]

- There is a possibility that main frame deformation is caused extra force in assembling. As the result, printing failure/operation failure occurs.

[Service treatment]

- Hold the opposite side by hand while you are installing the above parts.

### 2) CR Guide Frame

#### (a) Control of vertical level

[Reason]

- There is a possibility that printing failure occurs by CR Guide Frame deformation.

[Service treatment]

- Handle Front Frame in assembling/disassembling carefully.

### 3) Carriage Unit

#### (a) Handling of Carriage Unit

[Reason]

- If Carriage Unit is damaged in assembling/disassembling of your repair, there is a possibility that vital problem occur in user's further operation.

[Service treatment]

- Handle Carriage Unit in assembling/disassembling carefully.

[How to ensure of quality on re-assembled product]

We judge that the quality of re-assembled product is ensured if there is no problem about the print result by adjustment program.

### 4.3 Disassembly Procedures

The flowchart below shows step-by-step disassembly procedures. When disassembling each unit, refer to the page number shown in the figure.

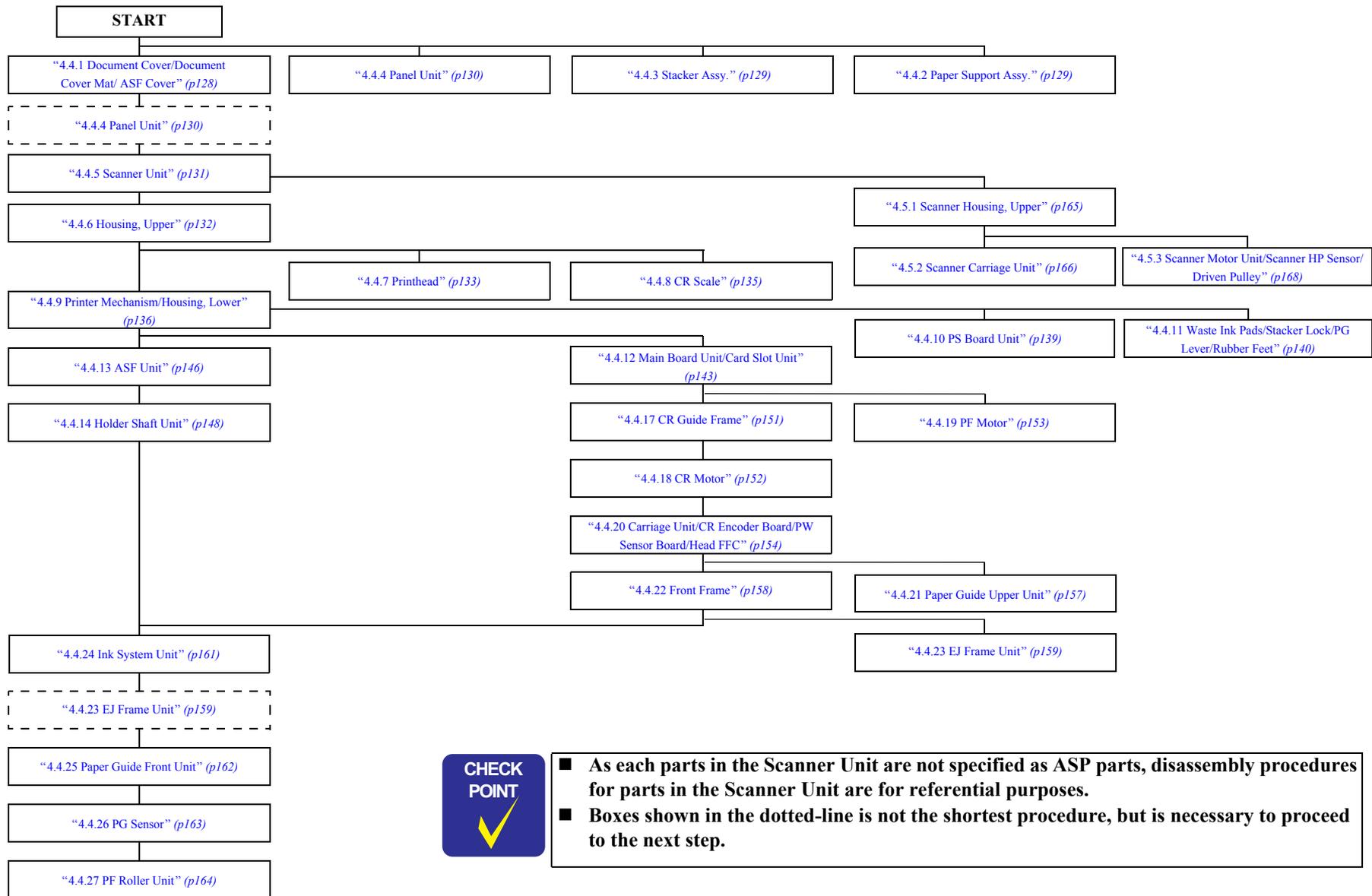


Figure 4-1. Disassembling Flowchart

## 4.4 Printer Section

### 4.4.1 Document Cover/Document Cover Mat/ ASF Cover

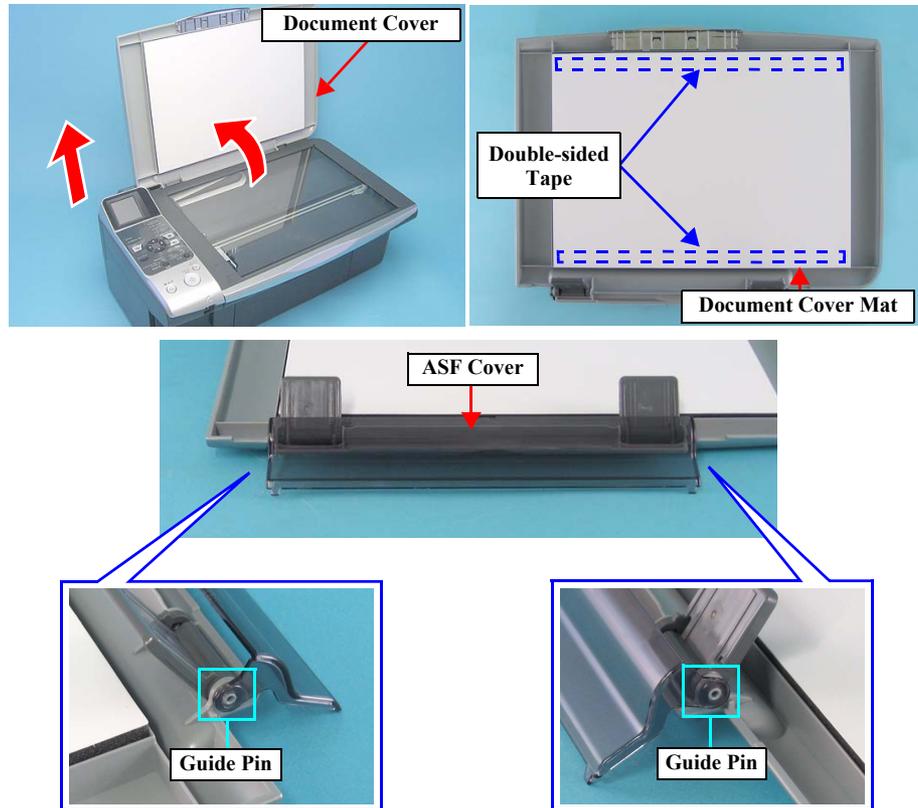


Figure 4-2. Removing Document Cover/Document Cover Mat/  
ASF Cover

- Part/Unit that should be removed before removing Document Cover/  
Document Cover Mat/ASF Cover
  - None
- Removal procedure
  - Document Cover
    1. Open the Document Cover and remove it by pulling out upward.
  - Document Cover Mat
    1. Remove the Document Cover Mat that is secured to the Document Cover with the double-sided tapes (x2).
  - ASF Cover
    1. Release the guide pins (x2, ) that secure the ASF Cover, and remove it from the Document Cover.

#### 4.4.2 Paper Support Assy.

##### □ External view

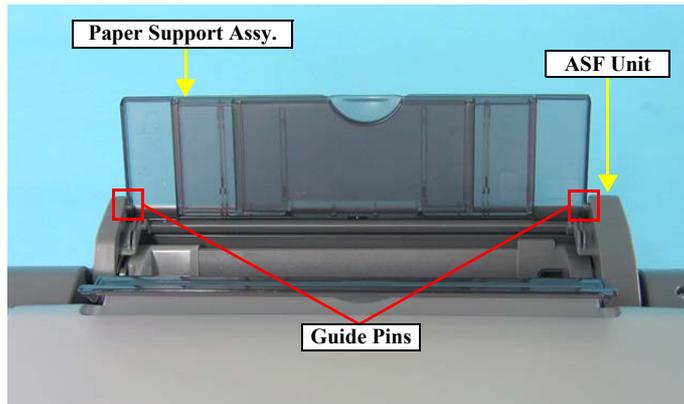


Figure 4-3. Removing Paper Support Assy.

##### □ Part/Unit that should be removed before removing Paper Support Assy.

None

##### □ Removal procedure

1. Release the guide pins (x2, ) that secure the Paper Support Assy, and remove the Paper Support Assy. from the Housing, Upper.

#### 4.4.3 Stacker Assy.

##### □ External view

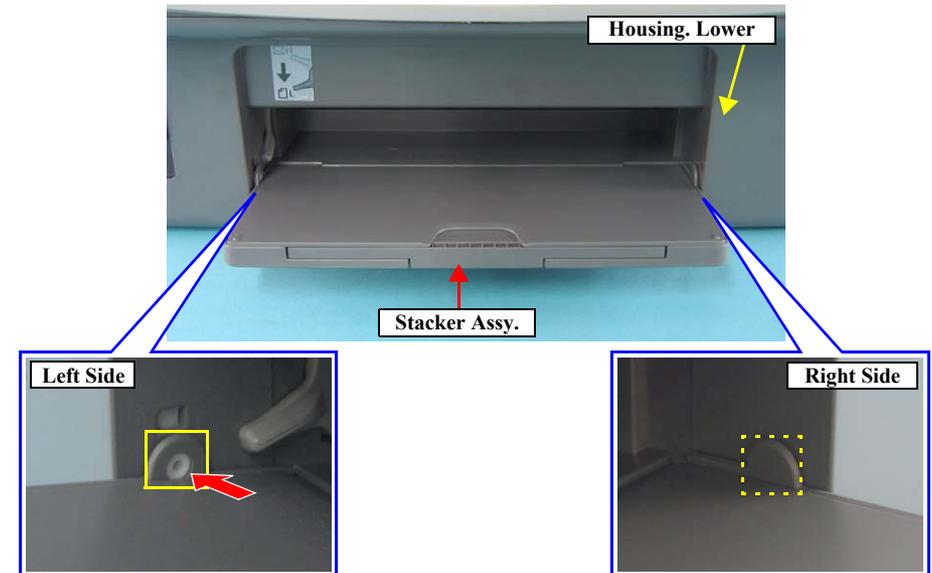


Figure 4-4. Removing Stacker Assy.

##### □ Part/Unit that should be removed before removing Stacker Assy.

None

##### □ Removal procedure

1. Open the Stacker Assy.
2. Release the guide pin (x1, ) that secures the Stacker Assy. with a precision screwdriver (-), and remove Stacker Assy.

### 4.4.4 Panel Unit

External view

**CHECK POINT** 

The removal procedures differ depending on the model.  
For Stylus CX4900/CX4905/CX5000/DX5000/DX5050, see "4.6.1 Panel Unit (p169)".

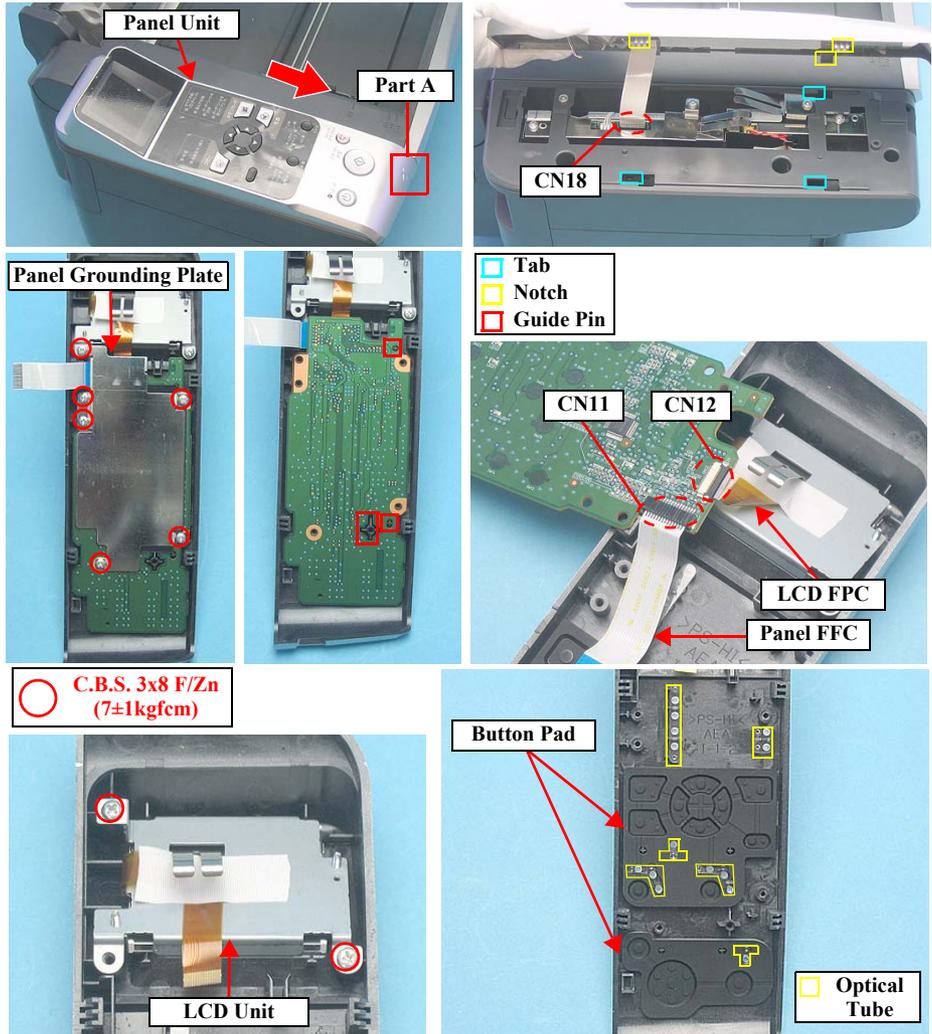


Figure 4-5. Removing Panel Unit

Part/Unit that should be removed before removing Panel Unit

None

Removal procedure

- Lift up Part A, then slide the Panel Unit in the direction of the arrow to remove the Panel Unit from the Housing, Upper.

**CHECK POINT** 

When removing the Panel Unit, disconnect the Panel FFC from the Main Board side (CN18).

- Disconnect the Panel FFC from the Main Board Connector (CN18), and remove the Panel Unit.
- Remove the screws (x6, ) that secure the Panel Grounding Plate and the Panel Board to the Panel Housing, and remove the Panel Grounding Plate and the Panel Board.
- Disconnect the Panel FFC from the connector (CN11) of the Panel Board.

**CHECK POINT** 

To disconnect the FPC, unlock the lock as shown below.

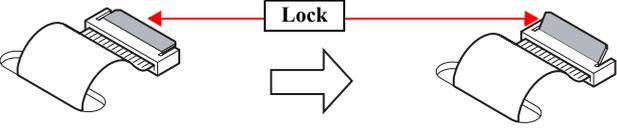


Figure 4-6. Disconnecting the FPC

- Disconnect the LCD FPC from the connector (CN12) of the Panel Board.
- Remove the screws (x2, ) that secure LCD Unit, and remove the LCD Unit.
- Remove the Button Pad (x2) and the Optical Tube (x6, )

**REASSEMBLY** 

- When installing the Panel Board to the Panel Housing, match the guide pins (x3, ) of the Panel Housing with the positioning holes (x3) of the Panel Board.
- When installing the Panel Unit to the Housing, Upper, match the notches (x3, ) of the Housing, Upper with the tabs (x3, ) of the Panel Unit.

### 4.4.5 Scanner Unit

□ External view (1)

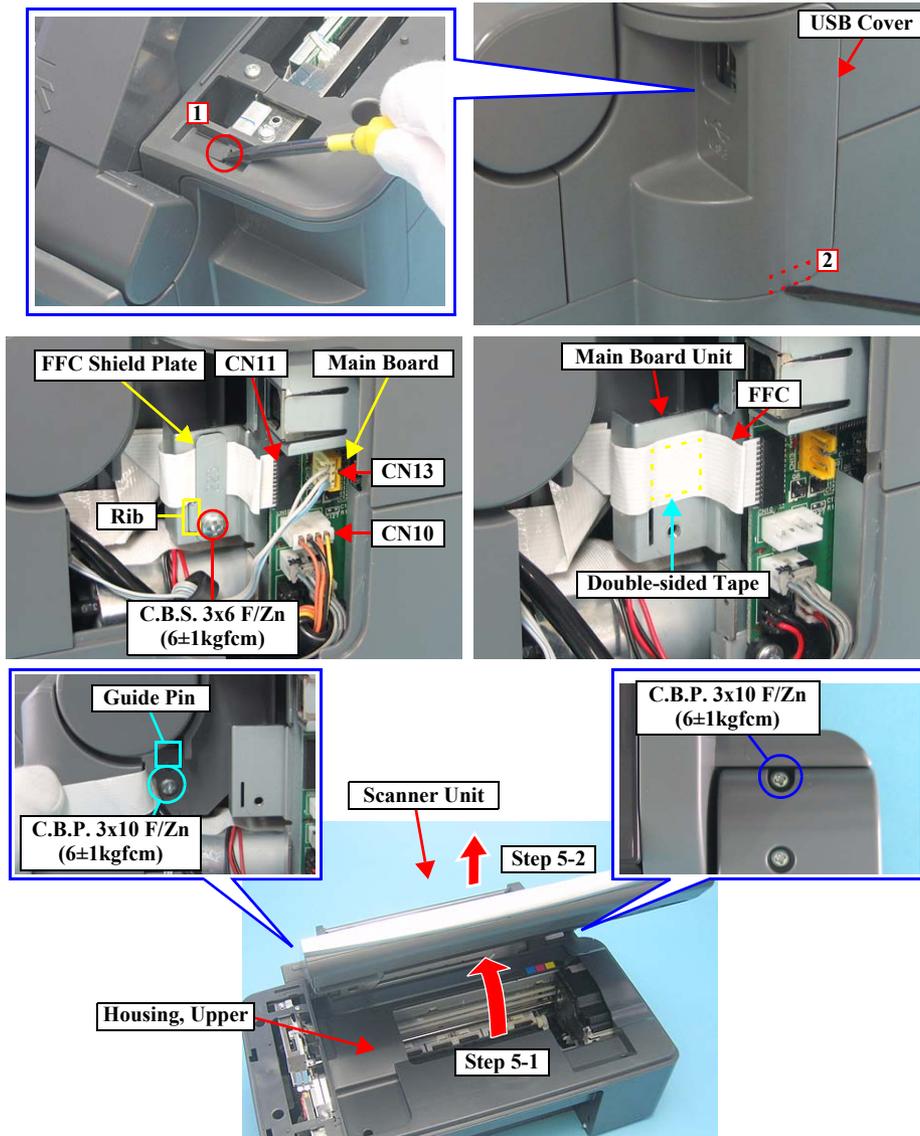


Figure 4-7. Removing Scanner Unit

□ Part/Unit that should be removed before removing Scanner Unit

Document Cover / Panel Unit

□ Removal procedure

1. Lift and release the tab (x1, 1) that secure the USB Cover with a precision screwdriver (-) from the top side, then release the tab (x1, 2) and remove the USB Cover.
2. Remove the screw (x1, ○) that secure the FFC Shield Plate, and remove the FFC Shield Plate.
3. Disconnect the following Connector Cables and FFC from the connectors on the Main Board.
  - CN10: Scanner Motor Connector Cable
  - CN11: Scanner Carriage FFC
  - CN13: Scanner HP Sensor Connector Cable



■ Do not damage the Scanner Carriage FFC when removing/installing the screw (○).  
 ■ The Scanner Carriage FFC is fastened with the double-sided tape, so be careful not to damage the FFC when removing it.

4. Remove the screws (x2, ○○) that secure the Scanner Unit.
5. Open the Scanner Unit, and remove it by pulling out upward.



■ Do not pinch the FFC or any Connector Cables between the Scanner Unit and the Housing, Upper.  
 ■ Route the Scanner HP Sensor Connector Cable around the groove of Hinge L.

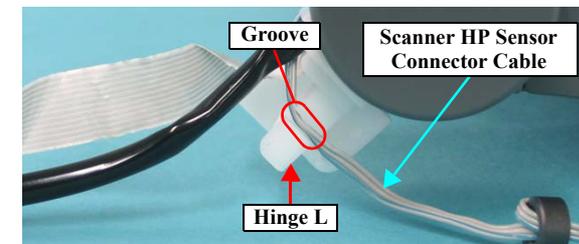


Figure 4-8. Routing Connector Cable

- Align the guide pin (x1, □) of the Scanner Unit and the positioning hole (x1) of the Housing Upper.
- Insert the rib (x1) of the FFC Shield Plate into the notch (x1, □).

### 4.4.6 Housing, Upper

□ External view



The removal procedures differ depending on the model.  
For Stylus CX4900/CX4905/CX5000/DX5000/DX5050, see "4.6.2 Housing, Upper (p170)".

- Part/Unit that should be removed before removing Housing, Upper  
Document Cover / Panel Unit / Scanner Unit

□ Removal procedure



Screw number 9 secure the Housing, Upper as well as a grounding plate.

1. Remove the screws (x10, ) that secure the Housing, Upper.
2. Release the tabs (x2) that secure the Housing, Upper with a flathead screwdriver or a similar tool, and lift up to remove the Housing, Upper.



Tighten the screws in the order as shown in the figure. (T.B.D.)

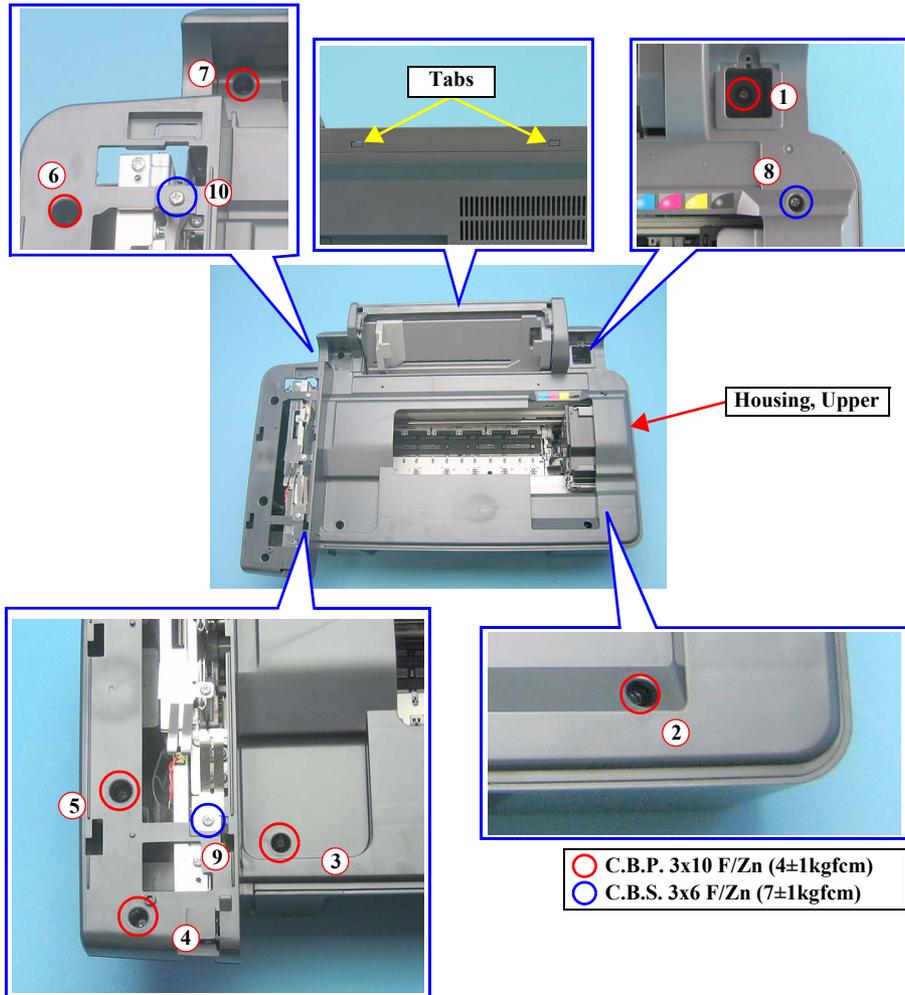


Figure 4-9. Removing Housing, Upper

### 4.4.7 Printhead

□ External view

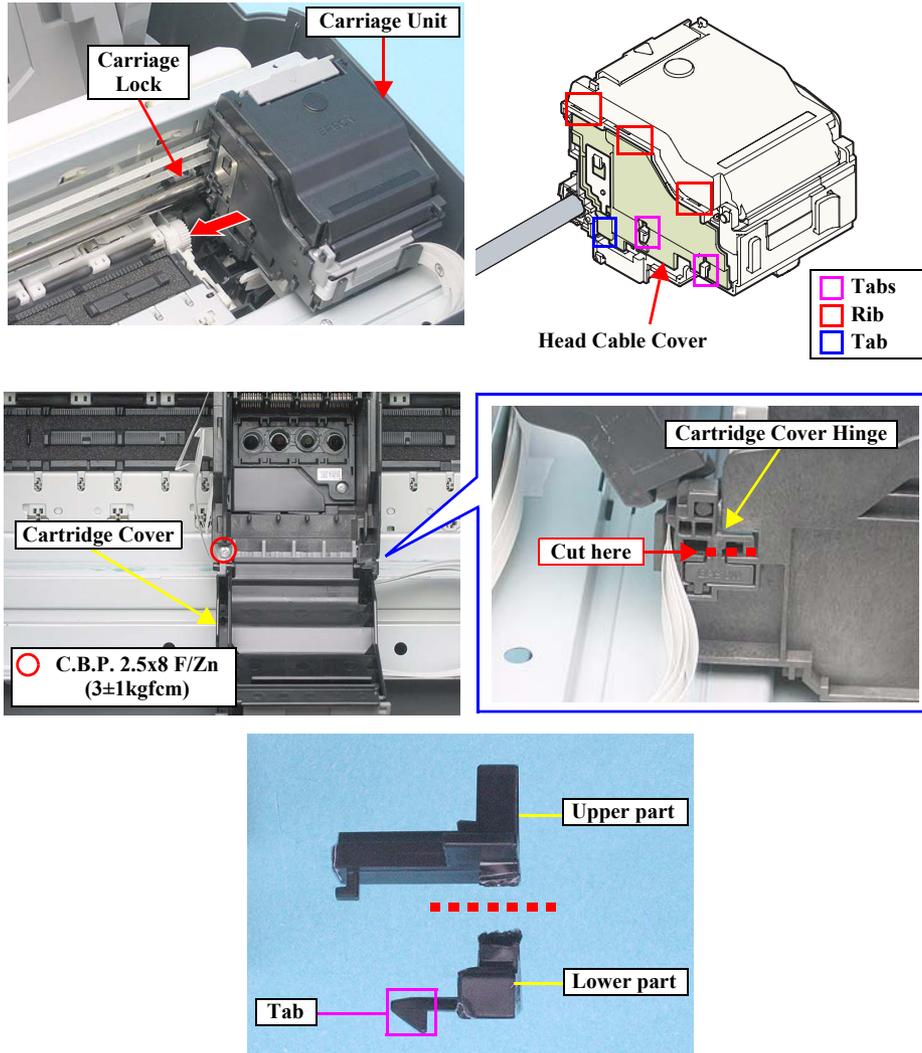


Figure 4-10. Removing Printhead

□ Part/Unit that should be removed before removing Print Head

Document Cover / Panel Unit / Scanner Unit / Housing, Upper

□ Removal procedure

1. Release the Carriage Lock with a flathead screwdriver or a similar tool, and move the Carriage Unit to the center of the printer.
2. Remove all the Ink Cartridges from the Carriage Unit.



**When performing the following work, be careful not to bend the tabs (□) of the Carriage Unit.**

3. Release the tab (x1, □) on the downside of the Head Cable Cover with a precision screwdriver (-), slide the Cover downward, and remove the Head Cable Cover.
4. Open the cartridge cover.
5. Remove the screw (x1, ○) that secures the cartridge cover.
6. Follow the steps below to remove the Cartridge Cover Hinge.
  - 6-1. Cut off the part of the Cartridge Cover Hinge with a nipper as indicated in the figure.
  - 6-2. Remove the upper part of the Cartridge Cover Hinge.
  - 6-3. Release the tab and remove the lower part of the Cartridge Cover Hinge.



**The cut Cartridge Cover Hinge cannot be reused.**

7. Remove the cartridge cover.

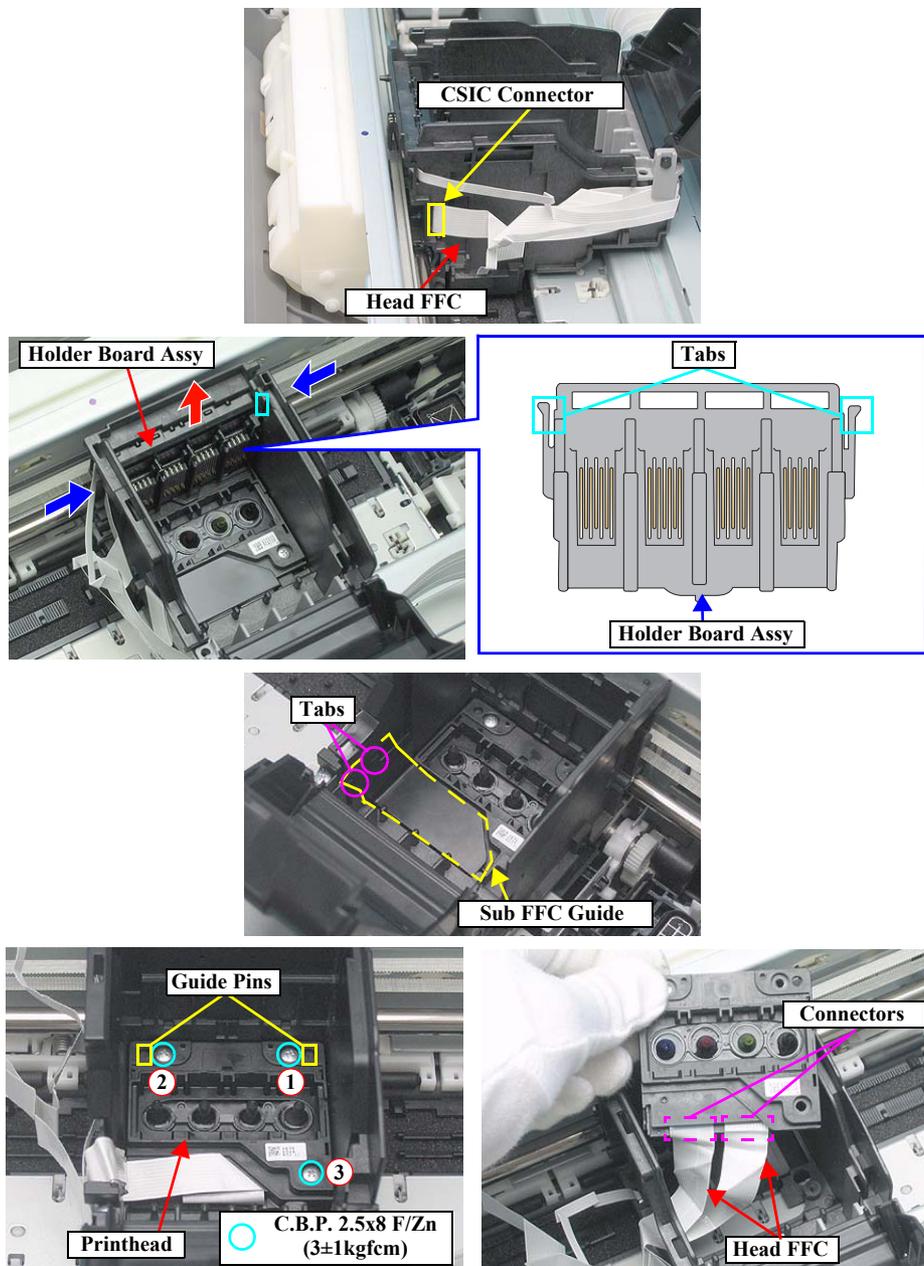


Figure 4-11. Removing Printhead (2)

8. Disconnect the Head FFCs (x2) that are connected to the CSIC Board and the CR Encoder Board.
9. Release the tabs (x2, □) that secure the Holder Board Assy, and remove the Holder Board Assy upward.
10. Release the tabs (x2, ○) that secures the Sub FFC Guide with a precision screwdriver (-), and remove the Sub FFC Guide.



**Do not touch or damage the nozzles or the ink supply needles of the Printhead.**

11. Remove the screws (x3, ○) that secure the Print Head, and lift up to remove Printhead with a longnose pliers.
12. Disconnect the Head FFCs (x2) from the connectors (x2) of the Print Head, and remove the Printhead.



- When installing the Printhead to the Carriage Unit, match the guide pins (x2, □) of the Carriage Unit with the positioning holes (x2) of the Printhead.
- Tighten the screws in the order as shown in the figure.
- When installing the Sub FFC Guide, insert the rib of the Sub FFC Guide to the notch of the Carriage Unit as shown below.

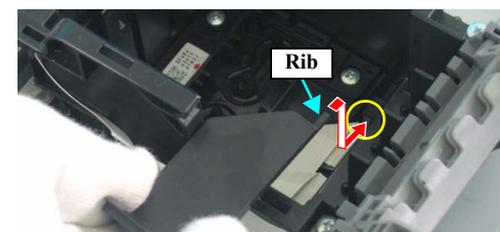


Figure 4-12. Installing Sub FFC Guide

- When installing the Holder Board Assy, insert it vertically, making sure that it does not strand onto the rib of the Printhead.



After removing/replacing the Printhead, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

### 4.4.8 CR Scale

□ External view

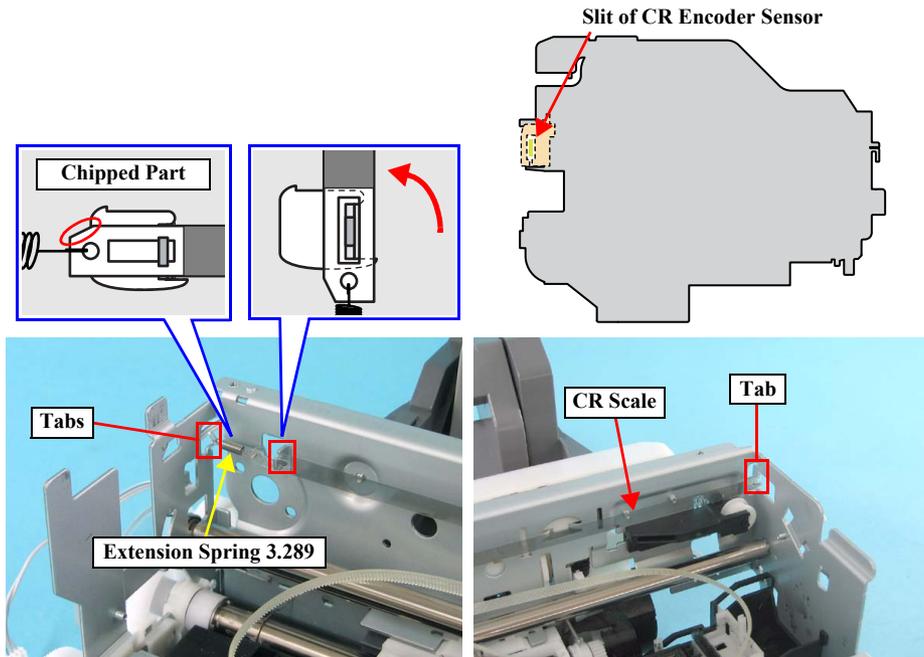


Figure 4-13. Removing Carriage Unit (1)

□ Part/Unit that should be removed before removing CR Scale

Document Cover / Panel Unit / Scanner Unit / Housing, Upper

□ Removal procedure



**Pay attention to the following instructions:**

- Do not touch the CR Scale with bare hands.
- Do not damage the CR Scale.
- Handle the Extension Spring 3.289 in a way that does not extend it.

1. Remove the CR Scale from the Main Frame.



**When installing the CR Scale, pay attention to the following instructions.**

- Pass the CR Scale into the slit of the CR Encoder Sensor.
- Chipped portion of the CR Scale should be facing upward.
- Make sure that Extension Spring 3.289 is not twisted, and hitch one side of Extension Spring 3.289 to the hook of the Main Frame.

## 4.4.9 Printer Mechanism/Housing, Lower

### □ External view (1)

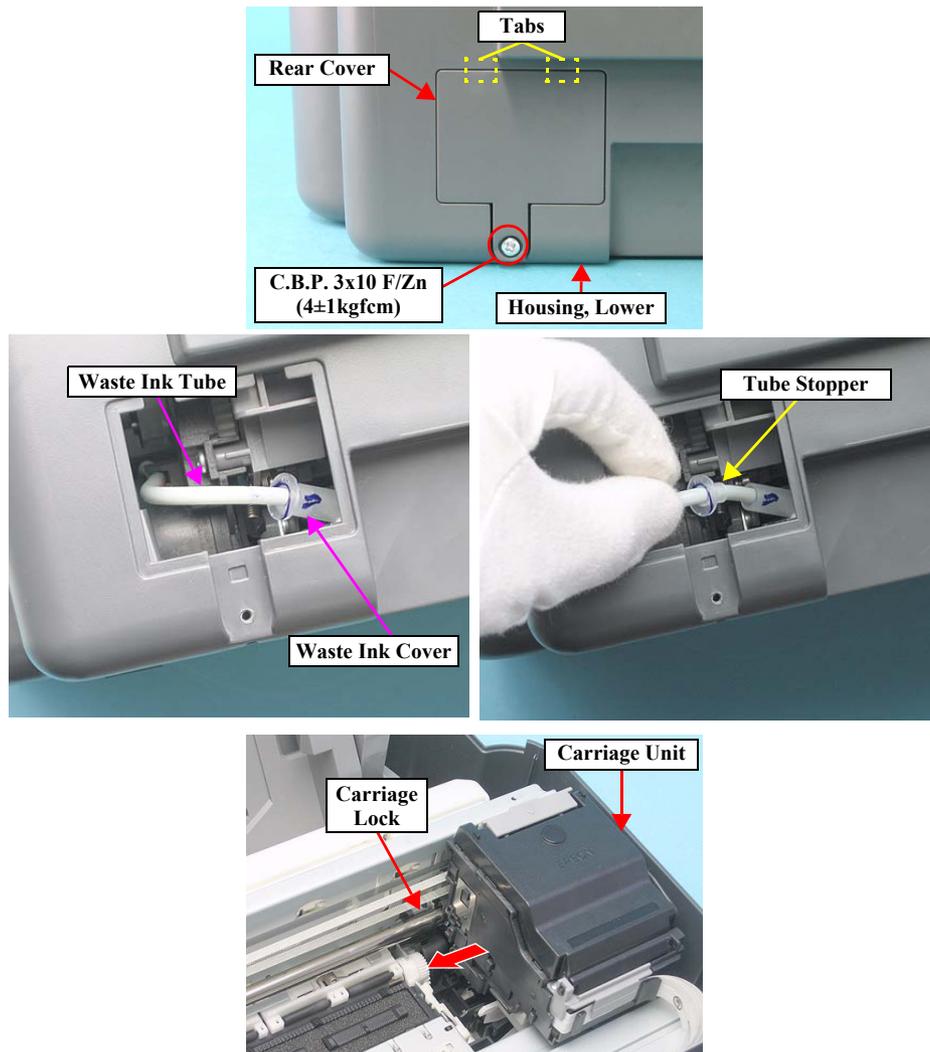


Figure 4-14. Removing Printer Mechanism (1)

- Part/Unit that should be removed before removing Printer Mechanism  
Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Stacker Assy.

### □ Removal procedure

1. Remove the screw (x1, ) that secures the Rear Cover, and remove the Rear Cover.

#### CAUTION



**Ink may leak from the Waste Ink Tube. Prepare cleaning rags beforehand, and be careful not spread ink onto surrounding area.**

2. Pull out the Waste Ink Tube from the Waste Ink Cover together with the Tube Stopper.
3. Release the Carriage Lock with a flathead screwdriver, and move the Carriage Unit to the center of the printer.

□ External view (2)

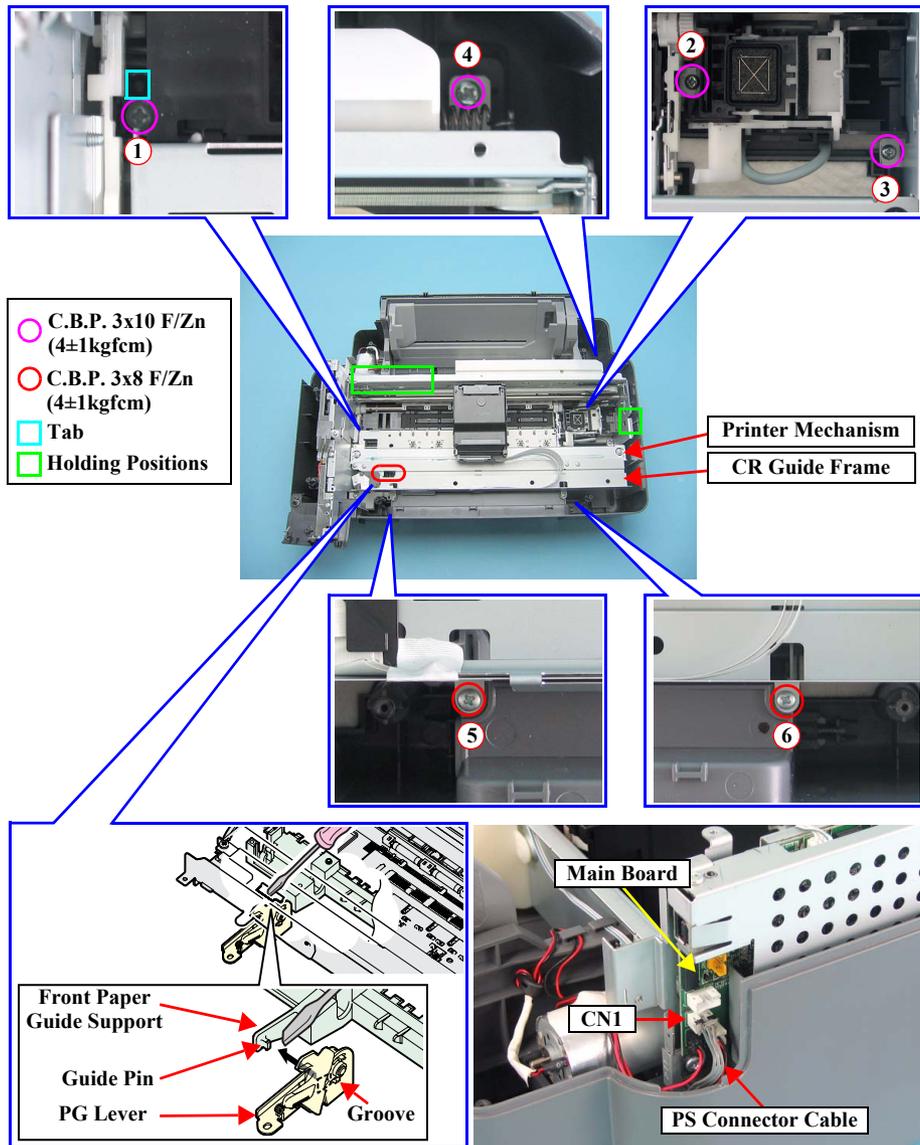


Figure 4-15. Removing Printer Mechanism (2)

4. Remove the screws (x6, ) that secure the Printer Mechanism.
5. Disconnect the PS Connector Cable from the connector (CN1) of the Main Board.

**CAUTION**



**Hold the designated position and lift Printer Mechanism upward when performing the following step in order to prevent warping of Main Frame.**

6. Hold up the left side of the Printer Mechanism while releasing the guide pin of the Front Paper Guide Support from the groove of the PG Lever with a precision screwdriver (-), and remove whole Printer Mechanism from the Housing, Lower.

**WARNING**



**When installing the Printer Mechanism to the Housing, Lower, insert the Waste Ink Tube to the Waste Ink Cover and securely fasten the Waste Ink Tube with the Tube Stopper, or ink may leak from the Tube.**

**REASSEMBLY**



- When installing the Printer Mechanism to the Housing, Lower, match the guide pin (x1, ) of the Housing, Lower with the positioning hole (x1) of the Printer Mechanism.
- Tighten the screws in the order as shown in the figure.
- When installing the Rear Cover, match the tabs (x2, ) of the Rear Cover with the notches (x2) of the Housing, Lower.
- When installing the Waste Ink Tube, insert the tube  $54 \pm 1$  mm (T.B.D) into the Waste Ink Cover as shown below.

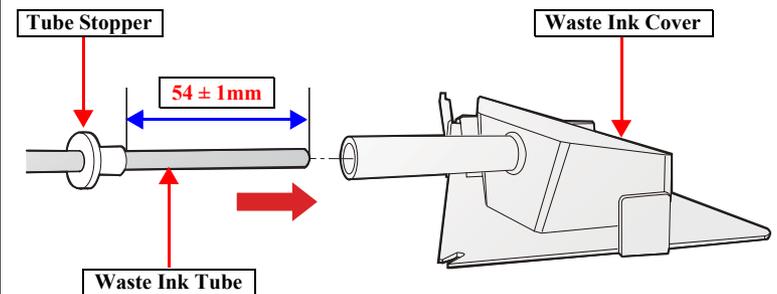


Figure 4-16. Installing Waste Ink Tube



The assembled accuracy of each part composed of Printer mechanism is based on Housing Lower. To ensure the assembled accuracy, you have to control the assembled standard position of main frame against X/Y/Z-axis direction as the following figure.

- [X-axis direction]  
Confirm that Printer Mechanism is properly placed in the channel of Housing Lower and that there is no gap.
- [Y-axis direction]  
Confirm that Printer Mechanism is properly placed in the channel of Housing Lower and that there is no gap.
- [Z-axis direction]  
Align the positioning hole (x1) of Printer Mechanism with the guide pin (x1) of Housing Lower, and confirm that there is no gap.

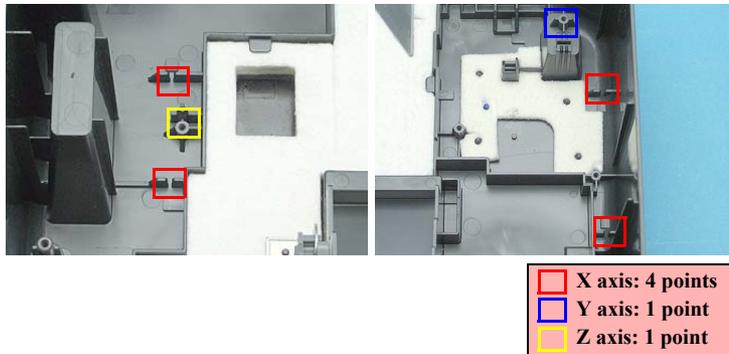


Figure 4-17. Assembled Standard Position of Main Unit

## 4.4.10 PS Board Unit

### □ External view

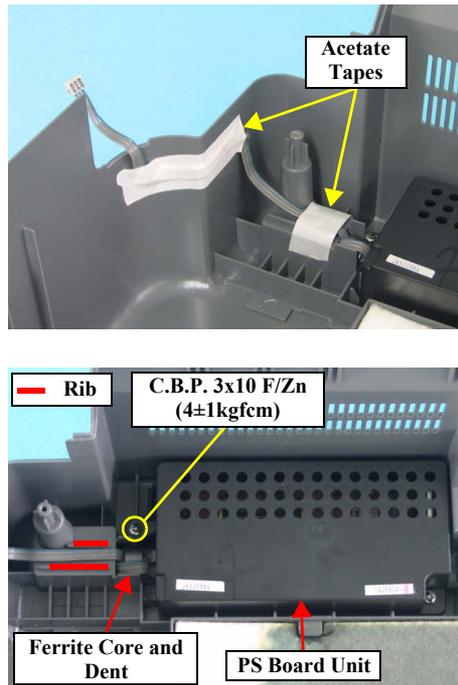


Figure 4-18. Removing PS Board Unit

### □ Part/Unit that should be removed before removing PS Board Unit

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Printer Mechanism

### □ Removal procedure

1. Peel off the acetate tapes (x2) that secure the PS Connector Cable.
2. Remove the screw (x1, ) that secures the PS Board Unit, and remove the PS Board Unit.



- Place the Ferrite Core to the dent of the Housing, Lower.
- Route the PS Connector Cable between the ribs of the Housing, Lower, and secure them with acetate tape.
- When routing the PS Connector Cable between the ribs of the Housing, Lower, pay attention to the following instructions.
  - The gap between the PS Connector Cable and the Edge of the Housing, Lower should be 15 mm.
  - The PS Connector Cable should be run off the edge of the Housing, Lower for  $40 \pm 2$  mm.
  - The blue line of the PS Connector Cable should be facing rear of the Housing, Lower.

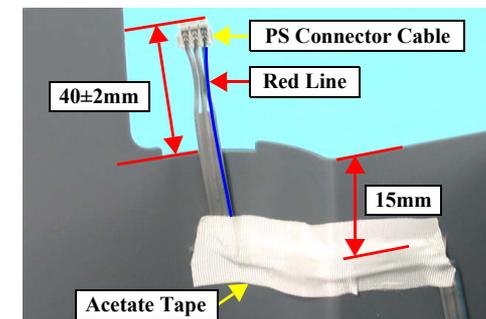


Figure 4-19. Routing PS Connector Cable



After replacing the PS Board Unit, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

#### 4.4.11 Waste Ink Pads/Stacker Lock/PG Lever/Rubber Feet

##### □ External view (1)

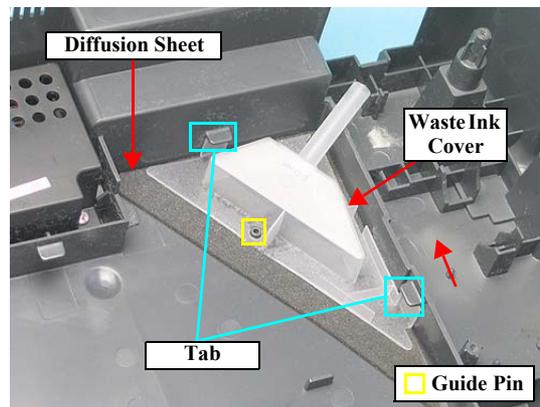
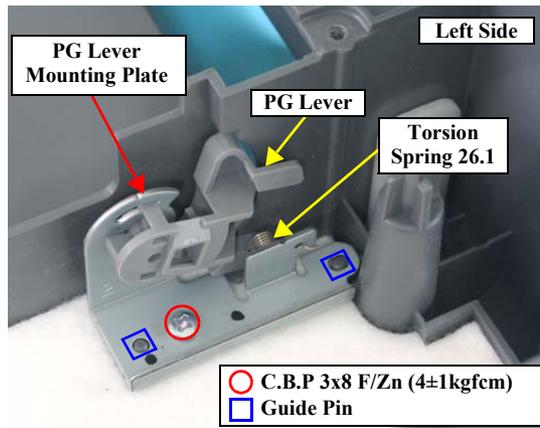


Figure 4-20. Removing Waste Ink Pads

##### □ Part/Unit that should be removed before removing Waste Ink Pads/Stacker Lock/PG Lever/Rubber Feet

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Stacker Assy. / Printer Mechanism

##### □ Removal procedure

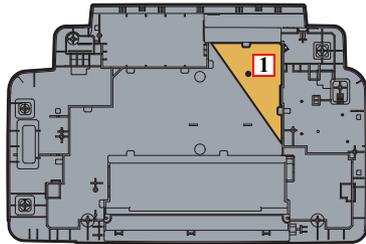
###### ■ Waste Ink Pads Removal

1. Remove the screw (x1, ○) that secures the PG Lever Mounting Plate, and remove the PG Lever, PG Lever Mounting Plate and Torsion Spring 26.1 all together from the Housing, Lower.
2. Remove 6 pieces of the Waste Ink Pads from the Housing, Lower.
3. Release the tabs (x2, □) that secure the Waste Ink Cover, and remove it from the Housing, Lower.
4. Remove the Diffusion Sheet.

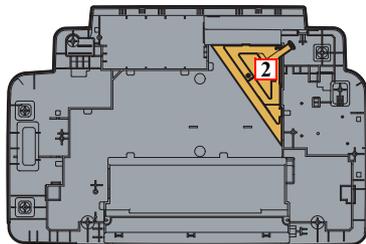


- When installing the Waste Ink Pads, Waste Ink Cover and the Diffusion Sheet, be sure to follow the steps below.

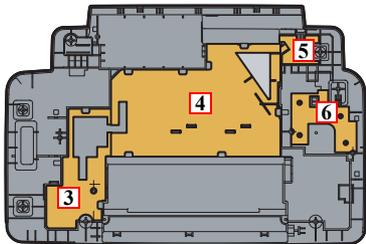
Step 1



Step 2



Step 3



Step 4

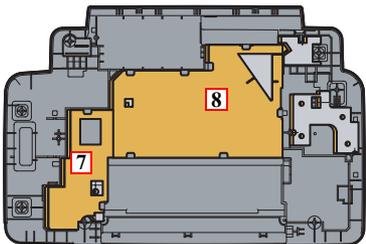


Figure 4-21. Installing Waste Ink Pads



- When installing the Waste Ink Cover to the Housing, Lower, match the guide pin (x1, ) of the Housing, Lower with the positioning hole (x1) of the Waste Ink Cover.
- When installing the PG Lever Mounting Plate to the Housing, Lower, match the guide pins (x2, ) of the Housing, Lower with the positioning holes (x2) of the PG Lever Mounting Plate.



After replacing the Waste Ink Pads, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

□ External view (2)

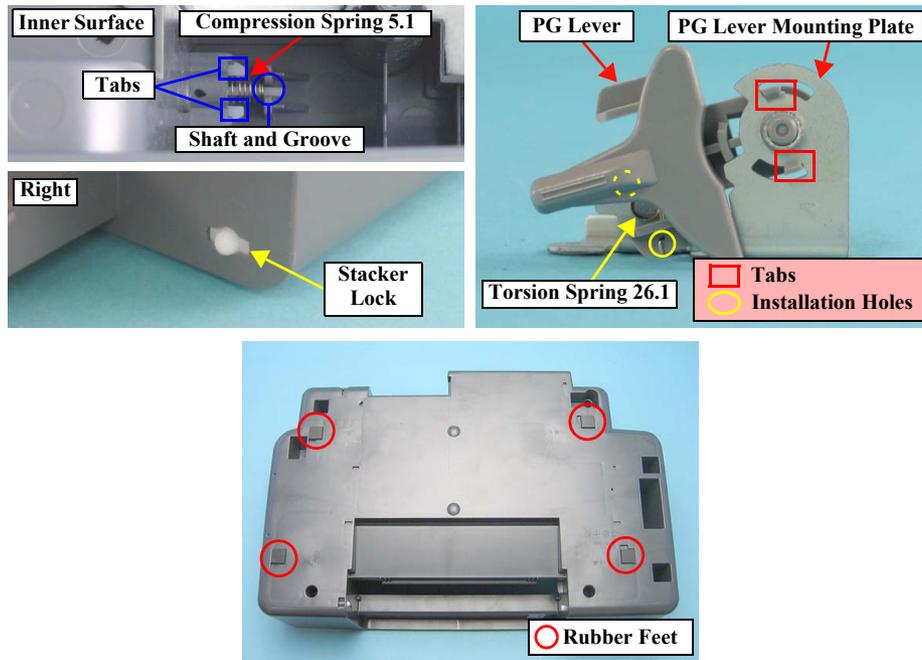


Figure 4-22. Removing Stacker Lock/PG Lever/Rubber Feet

■ Stacker Lock Removal

1. Remove the tabs (x2, □) that secure the Stacker Lock, and remove the Stacker Lock and Compression Spring 5.1 from the Housing, Lower.



Pass the shaft of the Stacker Lock through the groove of the Housing Lower.

■ PG Lever Removal

1. Release the tabs (x2, □) that secure the PG Lever to the PG Lever Mounting Plate.
2. Remove Torsion Spring 26.1 from the installation holes (x2, ○) of the PG Lever and the PG Lever Mounting Plate, and remove the PG Lever.

■ Rubber Feet Removal

1. Remove the rubber feet (x4) from the Housing, Lower.

### 4.4.12 Main Board Unit/Card Slot Unit

□ External view (1)

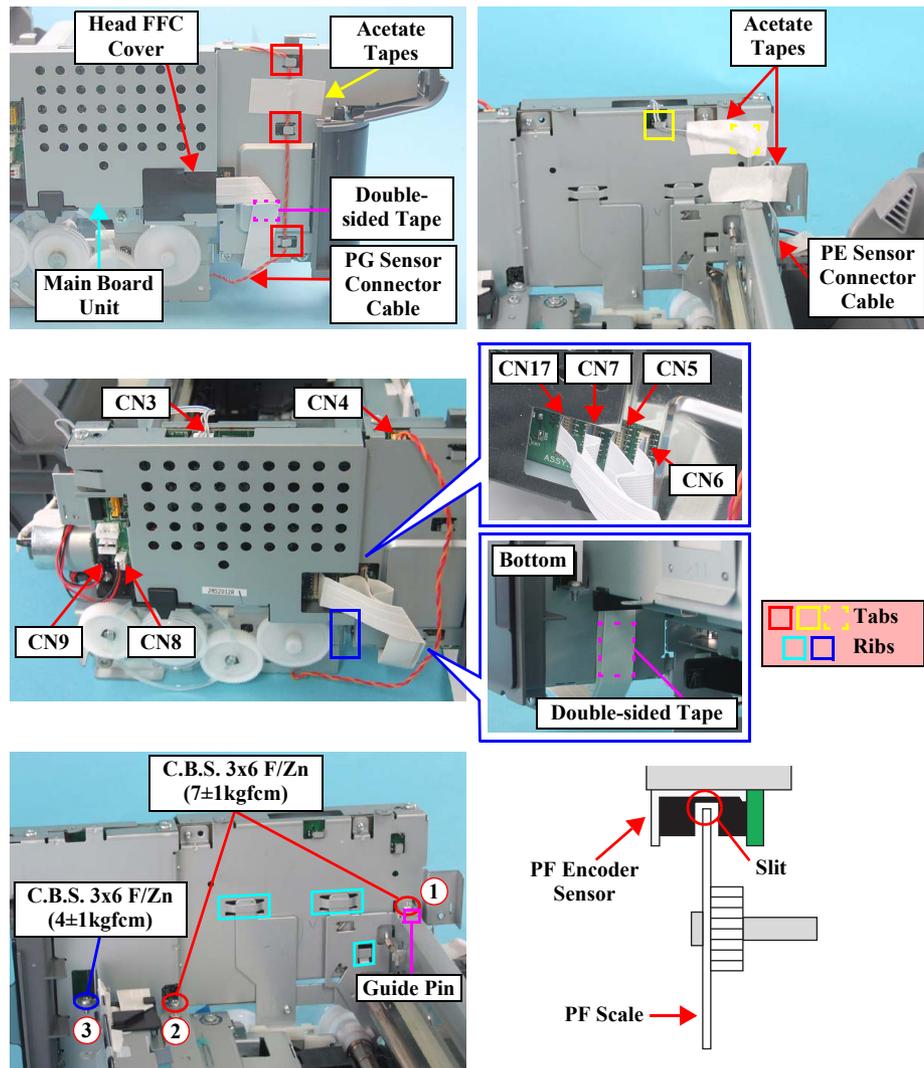


Figure 4-23. Removing Main Board Unit (1)

□ Part/Unit that should be removed before removing Main Board Unit

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower

□ Removal procedure

■ Main Board Removal

1. Remove the Head FFC Cover (x1) that secures the Head FFCs (x4).
2. Peel off the acetate tape (x1) that secures the PG Sensor Connector Cable.
3. Release the PG Sensor Connector Cable from the tabs (x3, □) of the Main Board Unit.
4. Peel off the acetate tapes (x2) that secure the PE Sensor Connector Cable, and release the PE Sensor Connector Cable from the tabs (x2, □) of the Main Board Unit.
5. Disconnect the following connector cables and FFCs from the connectors of the Main Board.
  - CN3: PE Sensor Connector Cable
  - CN4: PG Sensor Connector Cable
  - CN5: Head FFC
  - CN6: Head FFC
  - CN7: Head FFC
  - CN8: CR Motor Connector Cable
  - CN9: PF Motor Connector Cable
  - CN17: Head FFC
6. Remove the screws (x3, ○ ●) that secure the Main Board Unit, and remove the Main Board Unit from the Printer Mechanism.



- Insert the PF Scale into the slit of the PF Encoder Sensor.
- Insert the ribs (x3, □) of the Main Frame into the tabs (x3) of the Main Board Unit.
- Insert the rib (x1, □) of the Main Board Unit into the tab (x1) of the Main Frame.
- Match the positioning hole (x1) of the Main Board Unit with the guide pin (x1, □) of the Main Frame.
- Tighten the screws in the order as shown in the figure.

□ External view (2)

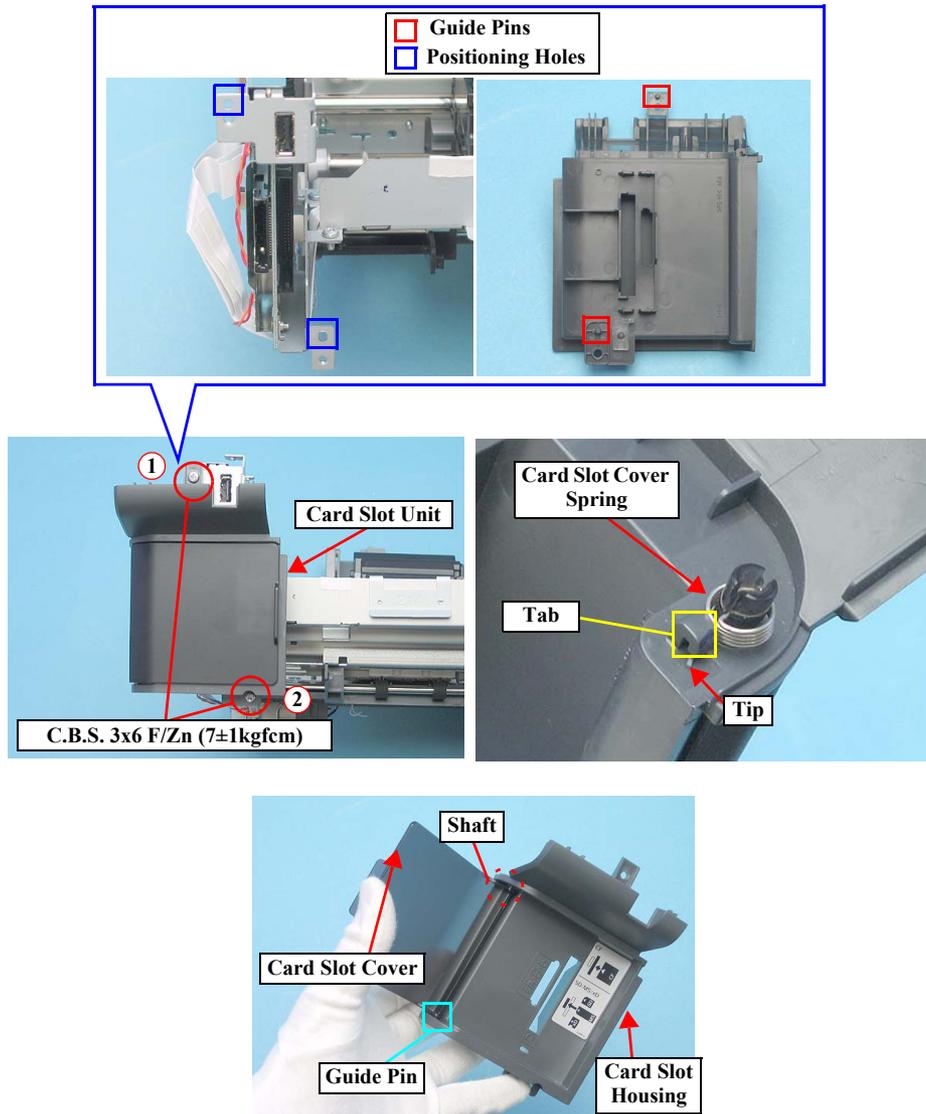


Figure 4-24. Removing Main Board Unit (2)

■ Card Slot Unit Removal

1. Remove the screws (x2, ○) that secure the Card Slot Unit, and remove the Card Slot Unit from the Main Board Unit.
2. Release the tip of the Card Slot Spring from the tab (x1, □) of the Card Slot Housing, and remove the Card Slot Spring.
3. Release the guide pin (x1, □) of the Card Slot Cover from the Card Slot Housing, and remove the Card Slot Cover.



- Set the shaft of Card Slot Cover into the Card Slot Housing and align the guide pin.
- Install the Card Slot Spring as shown below.

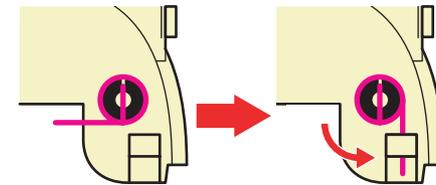
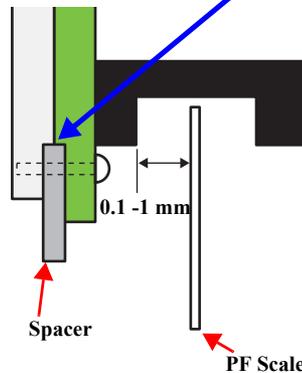
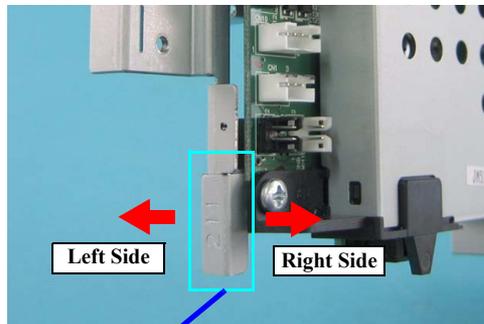


Figure 4-25. Installing Card Slot Spring

- Tighten the screws in the order as shown in the figure below.
- Match the guide pins (x2, □) of the Card Slot Housing with the positioning holes (x2, □) of the Main Board Unit.



- **PF Scale Sensor positioning adjustment**  
Use the following procedure to confirm that the PF Scale is positioned in the center of the PF Encoder Sensor.
1. Test fit the Main Board Unit, and confirm whether or not the PF Scale is positioned in the center of PF Encoder Sensor.
  2. If the PF Scale is positioned in the center of the PF Encoder Sensor, adjustment is complete. If scale is not positioned in center of sensor, adjust position of the PF Scale using spacer (0.5mm thickness) as shown in the figure below.



Spacer is not applied to the Main Board Unit for service part.

- Place spacer between Shield Board and Main Board.
- If PF Scale is off to the left, remove the spacer.
- If PF Scale is off to the right, add an additional spacer. (Total of 2 spacers)

Figure 4-26. PF Scale Sensor Positioning Adjustment



After removing/replacing the Main Board Unit, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

### 4.4.13 ASF Unit

□ External view (1)

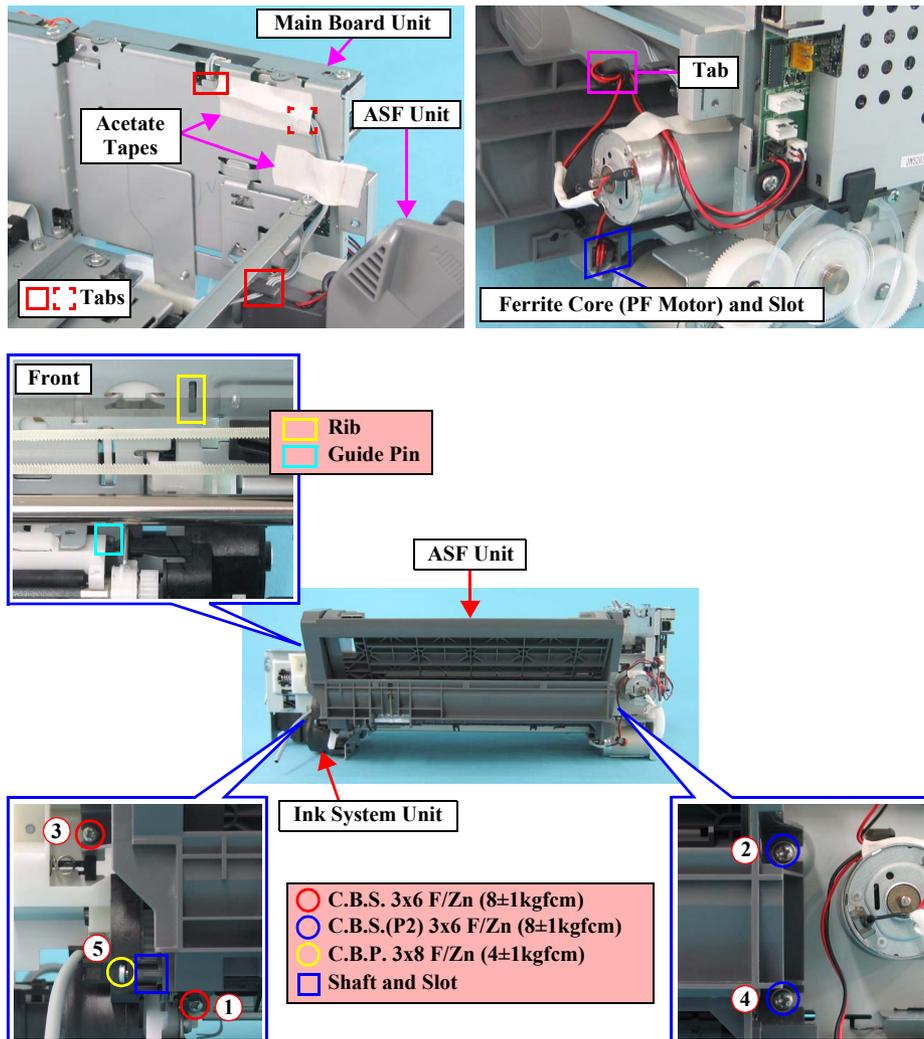


Figure 4-27. Removing ASF Unit (1)

□ Part/Unit that should be removed before removing ASF Unit

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower

□ Removal procedure

1. Peel off the acetate tape (x1) that secures the PE Sensor Connector Cable to the shield plate of the Main Board, and release PE Sensor Connector Cable from the tabs (x3, □) of the ASF Unit and the Main Board Unit.
2. Release the CR Motor Connector Cable from the tab (x1, □) of the ASF Unit.
3. Remove the Ferrite Core of the PF Motor Connector Cable from the slot of the ASF Unit.
4. Remove the screws (x5, ○○●) that secure the ASF Unit, and remove the ASF Unit from the Printer Mechanism.



- Match the guide pin (x1, □) and the rib (x1, □) of the ASF Unit with the positioning holes (x2) of the Main Frame.
- Insert the shaft of the ASF Unit into the slot of the Ink System Unit.
- Tighten the screws in the order as shown in the figure.

□ External view (2)

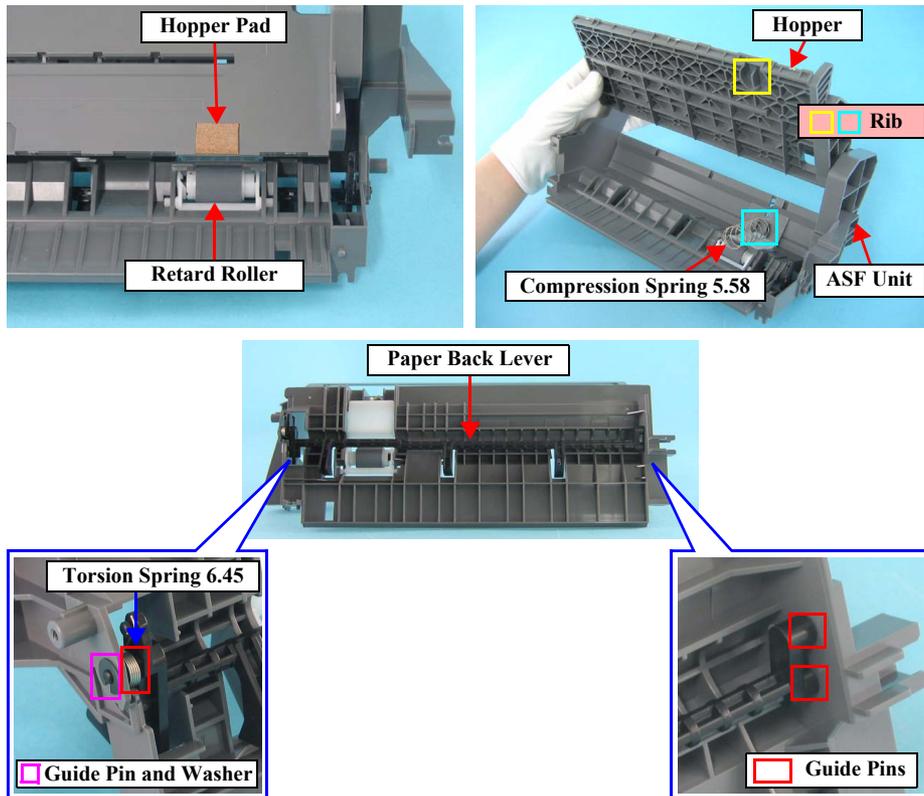


Figure 4-28. Removing ASF Unit (2)

5. Open the Hopper, and remove Compression Spring 5.58.
6. Remove the washer that secures the left shaft of the Paper Back Lever.



**Do not touch the Retard Roller and the Hopper Pad.**

7. Bend the Paper Back Lever, release the guide pins (2 each, □) on both ends from the ASF Unit, and remove the Paper Back Lever and Torsion Spring 6.45.



■ When installing Torsion Spring 6.45, hitch the L-shape tip of Torsion Spring 6.45 to the shaft of the Paper Back Lever, and hitch the short tip to the groove of the ASF Unit.

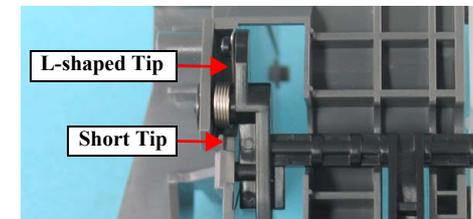


Figure 4-29. Installing Torsion Spring 6.45

■ Compression Spring 5.58 should be hitched to the rib (x2, □) of the ASF Frame and the rib (x1, □) of the Hopper.



■ After replacing the ASF Unit with a new one, always apply grease G-26 and grease G-46 to the specified positions.

- See [Figure 6-6 \(p194\)](#) for details.

■ After removing/replacing the ASF Unit, perform the adjustment referring to [Table 5-1."Required Adjustments" \(p172\)](#)

### 4.4.14 Holder Shaft Unit

□ External view

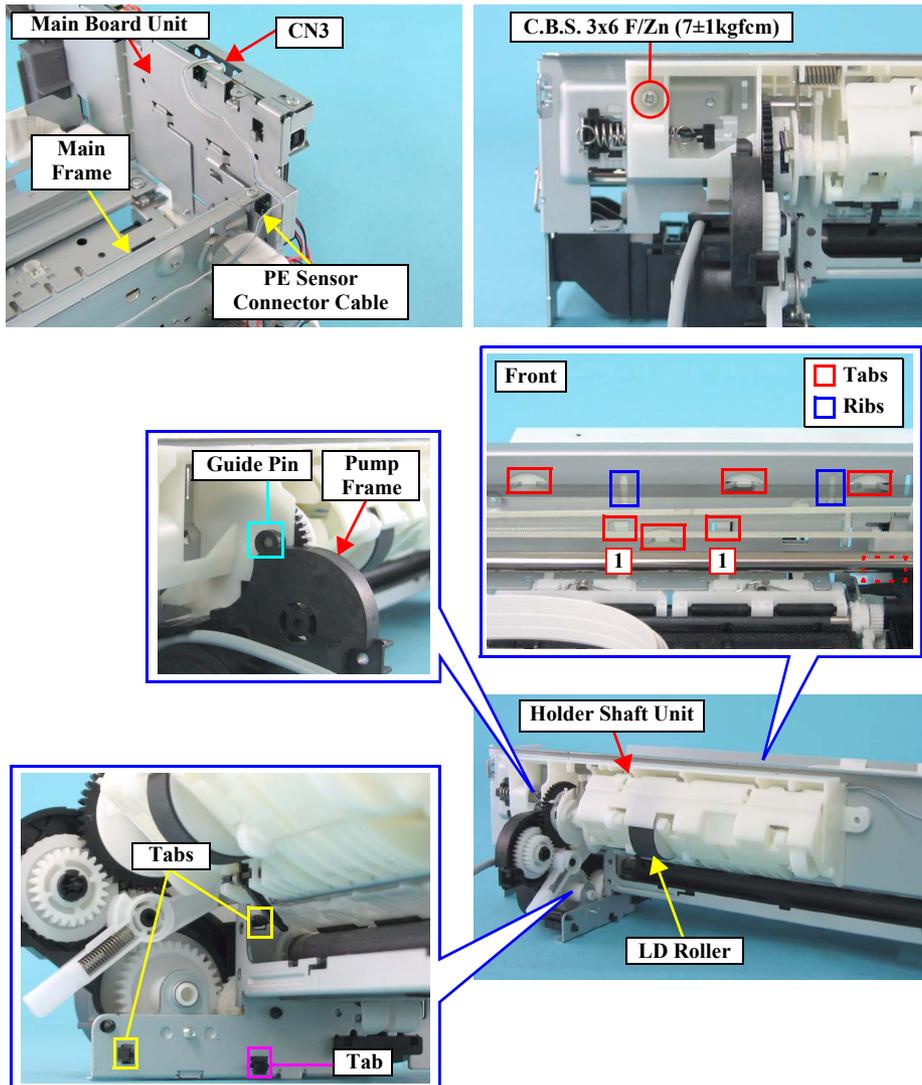


Figure 4-30. Removing Holder Shaft Unit

- Part/Unit that should be removed before removing Holder Shaft Unit  
Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / ASF Unit
- Removal procedure
  1. Slide the Carriage Unit to the center of the printer.
  2. Disconnect the PE Sensor Connector Cable from the connector (CN3) of the Main Board.
  3. Remove the screw (x1, ○) that secures the Holder Shaft Unit.

**CAUTION**

- Do not open the Pump Frame too wide. Doing so may break the tab (x1, □) on the downside of the Pump Frame.
- Never touch the LD Roller.

4. When removing the Holder Shaft Unit from the Main Frame, follow the steps described below.
  1. Release the tabs (x2, □) that secure the Pump Frame to the Main Frame.
  2. Move the Pump Frame to the home position, and release the guide pin (x1, □) of the Holder Shaft Unit.
  3. Push the tabs (x2, 1) of the Holder Shaft Unit, and remove the Holder Shaft Unit upward.

**REASSEMBLY**

- Match the guide pin (x1, □) of the Holder Shaft Unit with the positioning hole (x1) of the Pump Frame.
- Secure the Holder Shaft Unit with the tabs (x6, □) and the ribs (x2, □).

**ADJUSTMENT REQUIRED**

After removing/replacing the Holder Shaft Unit, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

### 4.4.15 Spur Gear 36.8/Extension Spring 0.143/Clutch

□ External view

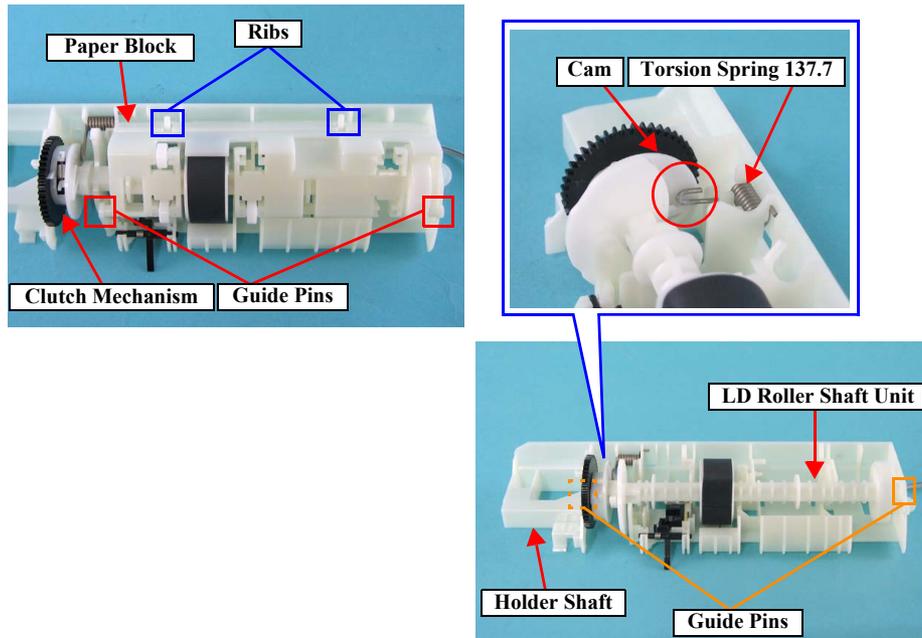


Figure 4-31. Removing Spur Gear 36.8/Extension Spring 0.143/Clutch

- Part/Unit that should be removed before removing Spur Gear 36.8/Extension Spring 0.143/Clutch

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / ASF Unit / Holder Shaft Unit

□ Removal procedure

1. Release the guide pins (x2, □) that secure the Paper Block to the Holder Shaft, and remove the Paper Block.
2. Remove the LD Roller Shaft together with the Clutch Mechanism from the Holder Shaft.
3. Remove the Spur Gear 36.8 from the LD Roller Shaft.
4. Remove the Extension Spring 0.143, and remove the Clutch from the LD Roller Shaft.



■ Assemble the LD Roller Shaft Unit as shown below.

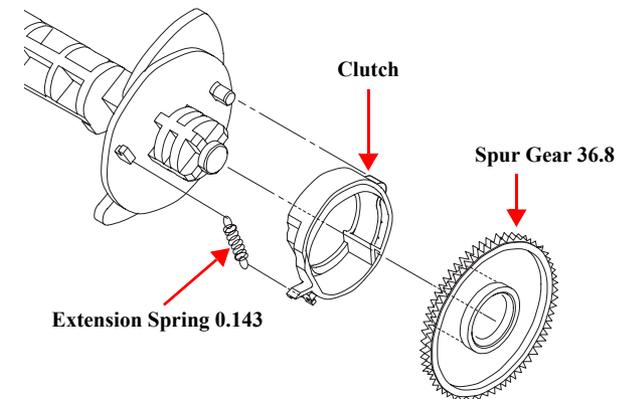


Figure 4-32. Assembling LD Roller Shaft Unit

- Match the guide pins (x2, □) of the LD Roller Shaft with the positioning holes of the Holder Shaft.
- Hold down the Cam of the LD Roller Shaft with the tip of the Torsion Spring 137.7.
- Match the ribs (x2, □) of the Holder Shaft with the notches (x2) of the Paper Block.

## 4.4.16 PE Sensor Board/PE Sensor Lever

### □ External view

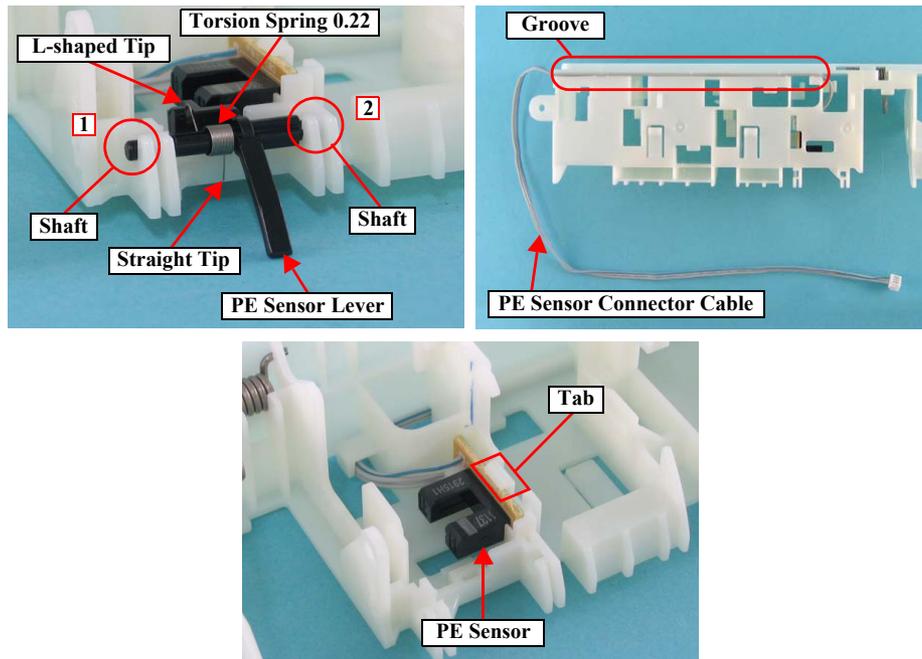


Figure 4-33. Removing PE Sensor Board/PE Sensor Lever

### □ Part/Unit that should be removed before removing PE Sensor Board/PE Sensor Lever

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / ASF Unit / Holder Shaft Unit / Spur Gear 36.8 / Extension Spring 0.143 / Clutch

### □ Removal procedure

1. Remove the shaft of the PE Sensor Lever from the Holder Shaft, and remove the PE Sensor Lever and Torsion Spring 0.22 in the order as shown in the figure.
2. Remove Torsion Spring 0.22 from the PE Sensor Lever.
3. Release the PE Sensor Connector Cable from the groove of the Holder Shaft.
4. Release the tab (x1, □) that secures the PE Sensor, and remove the PE Sensor from the Holder Shaft.



- Fasten the L-shaped tip of Torsion Spring 0.22 to the concave portion of the PE Sensor Lever, and fasten the straight tip to the Holder Shaft.
- Route the PE Sensor Connector Cable to the groove of the Holder Shaft so that the Cable does not run off.

### 4.4.17 CR Guide Frame

□ External view

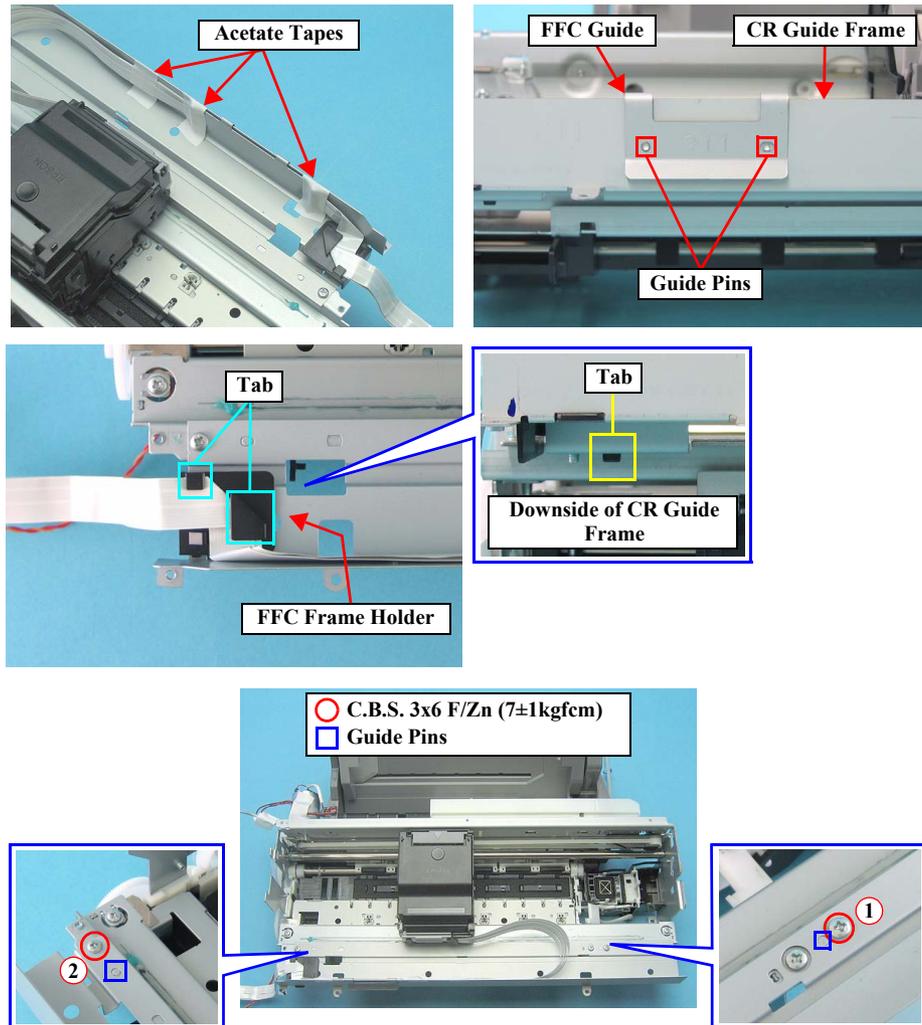


Figure 4-34. Removing CR Guide Frame

- Part/Unit that should be removed before removing CR Guide Frame  
Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / Main Board Unit
- Removal procedure
  1. Peel off the acetate tape (x3) that secure the Head FFCs (x3).
  2. Release the guide pins (x2, □) that secure the FFC Guide, and remove the FFC Guide from the CR Guide Frame.
  3. Release the tab (x1, □) on the bottom of the CR Guide Frame that secures the FFC Frame Holder, and remove the FFC Frame Holder together with the Head FFC.
  4. Release the Head FFC from the tabs (x2, □) of the FFC Frame Holder.
  5. Release the Head FFCs (x3) secured with the double-sided tape (x1) from the CR Guide Frame.
  6. Remove the screws (x2, ○) that secure the CR Guide Frame, and remove the CR Guide Frame from the Printer Mechanism.



- Match the guide pins (x2, □) of the Front Frame with the positioning holes (x2) of the CR Guide Frame.
- Tighten the screws in the order as shown in the figure.
- Attach the Head FFCs (x3) with double-sided tape to the position on the CR Guide Frame indicated with printed lines.

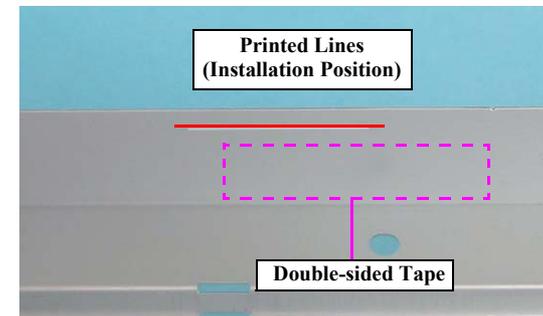


Figure 4-35. Attaching Head FFCs

### 4.4.18 CR Motor

□ External view

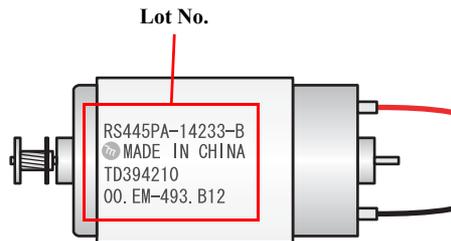
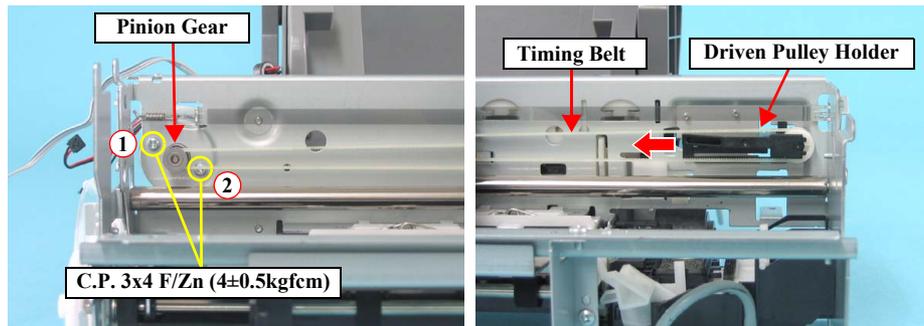
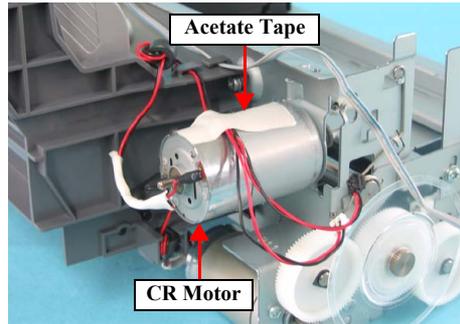


Figure 4-36. Removing CR Motor

□ Part/Unit that should be removed before removing CR Motor

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / Main Board Unit / CR Guide Frame

□ Removal procedure

1. Slide the Carriage Unit to the center of the printer.
2. Peel off the acetate tape (x1) from the CR Motor, and release the CR Motor Connector Cable and the PF Motor Connector Cable.
3. Release the CR Motor Connector Cable from the tab of the ASF Unit.
4. Loosen the tension of the Timing Belt by pressing the Driven Pulley Holder in the direction of the arrow as shown in the figure, and remove the Timing Belt from the pinion gear of the CR Motor.

**CAUTION** Do not damage the pinion gear of the CR Motor.

5. Remove the screws (x2, ) that secure the CR Motor, and remove CR Motor from the Printer Mechanism.

**REASSEMBLY**

- Install the CR Motor so that the Lot Number faces upward.
- Tighten the screws in the order as shown in the figure.
- Make sure that there is no gap between the CR Motor and the Main Frame.

**ADJUSTMENT REQUIRED**

After removing/replacing the CR Motor, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

## 4.4.19 PF Motor

### External view

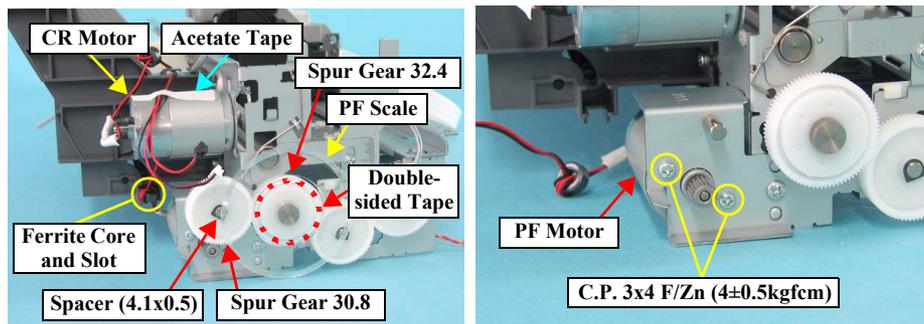


Figure 4-37. Removing PF Motor

### Part/Unit that should be removed before removing PF Motor

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / Main Board Unit

### Removal procedure

1. Peel off the acetate tape (x1) from the CR Motor, and release the CR Motor Connector Cable and the PF Motor Connector Cable.
2. Remove the Ferrite Core (x1) of the PF Motor Connector Cable from the slot (x1) of ASF Unit.
3. Remove the PF Scale that is secured with double-sided tape to the Spur Gear 32.4.
4. Remove the Spacer (4.1 x 0.5) that secures Spur Gear 30.8, and remove Spur Gear 30.8 from the Main Frame.

### CAUTION



Do not damage the following parts.

- Pinion gear of the PF Motor
- PF Scale
- Spur Gear 30.8

5. Remove the screws (x2, ) that secure the PF Motor, and remove the PF Motor from the Printer Mechanism.



- Install the PF Motor so that the Lot Number faces upward.



Figure 4-38. Installing PF Motor

- Make sure that there is no gap between the PF Motor and the Main Frame.

### ADJUSTMENT REQUIRED



After removing/replacing the PF Motor, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

#### 4.4.20 Carriage Unit/CR Encoder Board/PW Sensor Board/Head FFC

##### External view (1)

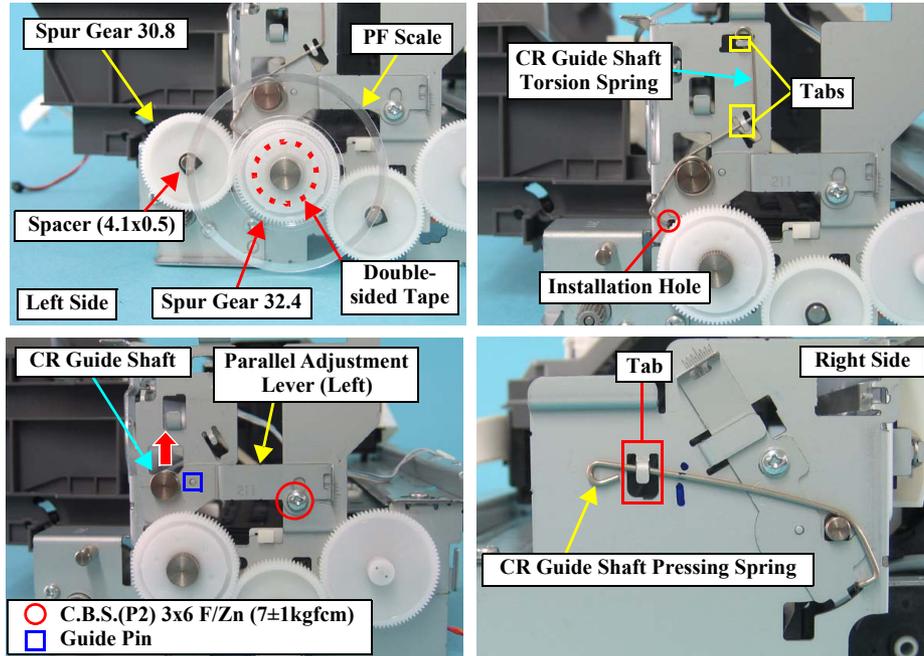


Figure 4-39. Removing Carriage Unit (1)

- Part/Unit that should be removed before removing Carriage Unit/CR Encoder Board/PW Sensor Board/Head FFC

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / Main Board Unit / CR Guide Frame / CR Motor / CR Scale

- Removal procedure

- Carriage Unit Removal

##### CAUTION



Be cautious of the following points.

- Do not touch PF Scale with bare hands.
- Do not damage PF Scale.

1. Remove the PF Scale that is secured to Spur Gear 32.4 with double-sided tape (x1).
2. Remove Spacer (4.1 x 0.5) that secures Spur Gear 30.8, and remove Spur Gear 30.8 from the Main Frame.
3. Release CR Guide Shaft Torsion Spring from the tabs (x2, □) of the Main Frame, and remove CR Guide Shaft Torsion Spring from the Main Frame.
4. Remove the screw (x1, ○) that secures the Parallel Adjustment Lever (Left), and remove the Parallel Adjustment Lever (Left) from Main Frame while lifting left end of the Carriage Guide Shaft upward.
5. Release the CR Guide Shaft Pressing Spring from the tab (x1, □) of the Main Frame.

□ External view (2)

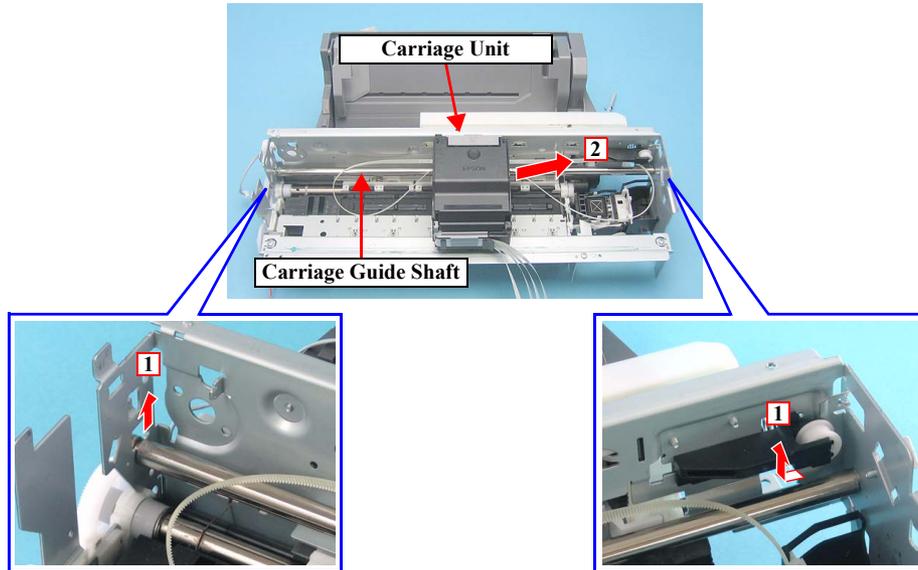


Figure 4-40. Removing Carriage Unit (2)

6. Remove the Carriage Unit and the Carriage Guide Shaft from Printer Mechanism as follows.
  1. Lift up the left end of the Carriage Guide Shaft and shift to the left until the right end is released from the notch of the Main Frame.
  2. Remove the Carriage Guide Shaft and the Carriage Unit from the Main Frame.



- Do not damage the Carriage Guide Shaft.
- Do not stain the Timing Belt with the grease.

7. Pull out the Carriage Guide Shaft from the Carriage Unit.



When installing the Parallel Adjustment Lever to the Main Frame, match the guide pin (x1, □) of the Main Frame with the positioning hole (x1) of the Parallel Adjustment Lever (left).



- After replacing the Carriage Unit with a new one, always apply grease G-71 to the specified parts.
  - Refer to [Figure 6-7 \(p194\)](#) for details.
- After replacing/removing the Carriage Unit, perform the adjustment referring to [Table 5-1."Required Adjustments" \(p172\)](#)
- After replacing/removing the Carriage Guide Shaft, perform the adjustment referring to [Table 5-1."Required Adjustments" \(p172\)](#)

□ External view (3)

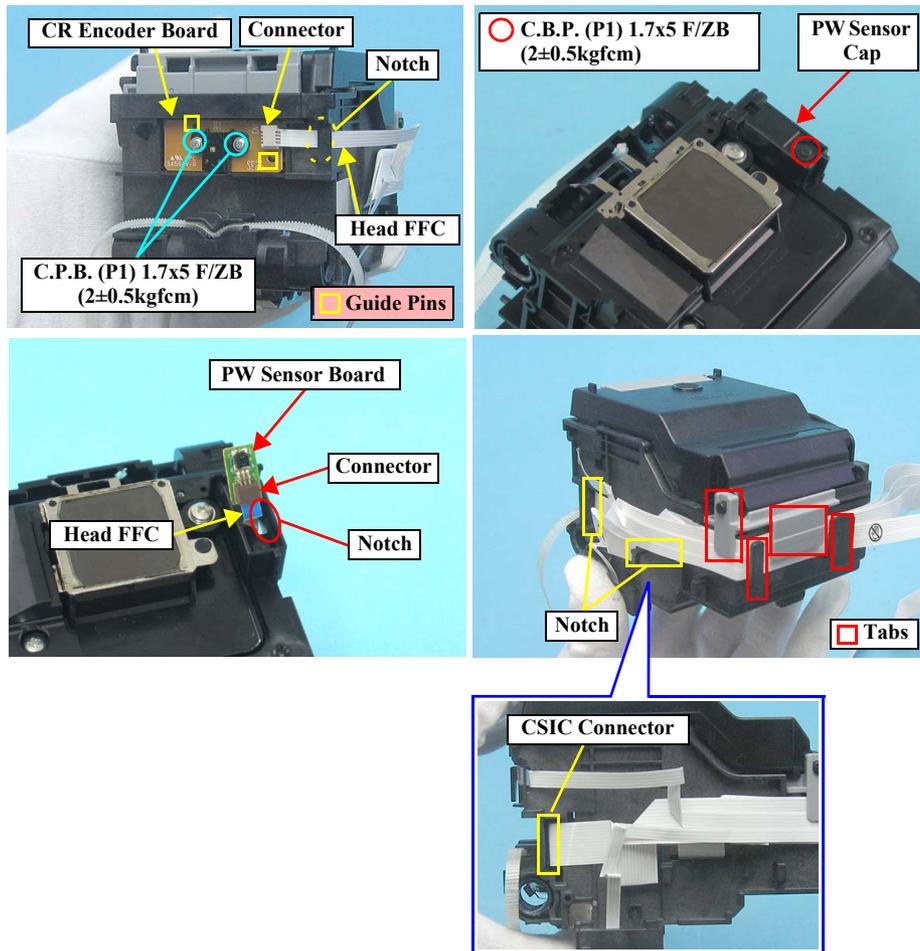


Figure 4-41. Removing Carriage Unit (3)

■ CR Encoder Removal

1. Disconnect the Head FFC from the connector of the CR Encoder Board, and pull out the Head FFC from the notch of Carriage.
2. Remove the screws (x2, ○) that secure the CR Encoder Board, and remove the CR Encoder Board



Match the guide pins of the Carriage (x2, □) with the positioning hole (x2) of the CR Encoder Board.

■ PW Sensor Board Removal

1. Remove the screw (x1, ○) that secures the PW Sensor Cap, and remove the PW Sensor Cap.
2. Disconnect the Head FFC from the connector of the PW Sensor Board, pull out the Head FFC from the notch of the Carriage, and remove the PW Sensor Board.



After removing/replacing the PW Sensor Board, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

■ Head FFC Removal

1. Remove the Printhead from the Carriage Unit.
2. Pull out the Head FFC from the notch of the Carriage.
3. Disconnect the Head FFC from the connector of the CSIC board.
4. Release the Head FFC from the tabs (x4, □) that secure the Head FFC.

## 4.4.21 Paper Guide Upper Unit

### □ External view

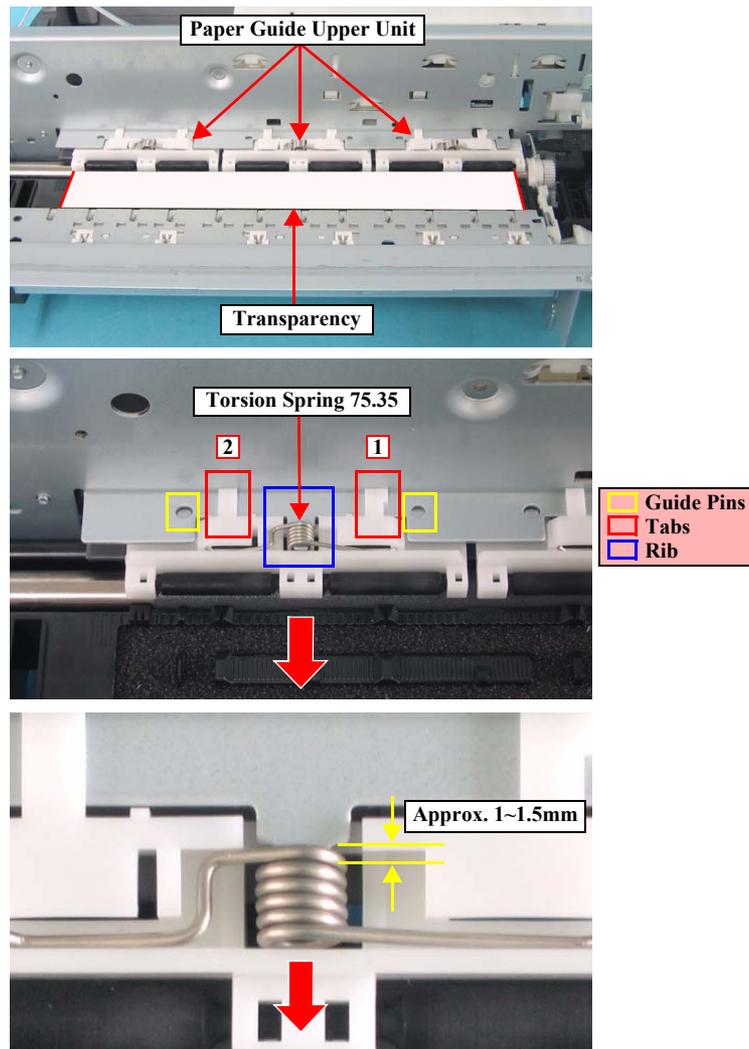


Figure 4-42. Removing Paper Guide Upper Unit

- Part/Unit that should be removed before removing Paper Guide Upper Unit  
Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / Main Board Unit / CR Guide Frame / CR Motor / CR Scale / Carriage Unit

### □ Removal procedure

1. Set a transparency sheet.
2. Release the guide pins (2 each, □) that secure the Paper Guide Upper Unit (x3), and remove the Paper Guide Upper Unit (x3) along with Torsion Spring 75.35 (1 each) from the Main Frame.



### Reassembly of the Paper Guide Upper Unit

1. Set Torsion Spring 75.35 onto the Paper Guide Upper Unit.
2. Temporarily place the tabs (x2, □) of the Paper Guide Upper Unit onto the Main Frame in order as shown in the figure.
3. Insert the coil section of Torsion Spring 75.35 into the rib.
4. Align the positioning holes (x2) of the Main Frame with the guide pins (x2, □) of the Paper Guide Upper Unit, and set the Paper Guide Upper Unit along with Torsion Spring 75.35.
5. Pull the coil section of Torsion Spring 75.35 toward you, hold the margin at approximately 1~1.5 mm, and eliminate the gap with the Paper Guide Upper Unit.



After removing/replacing the Paper Guide Upper Unit, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

### 4.4.22 Front Frame

□ External view

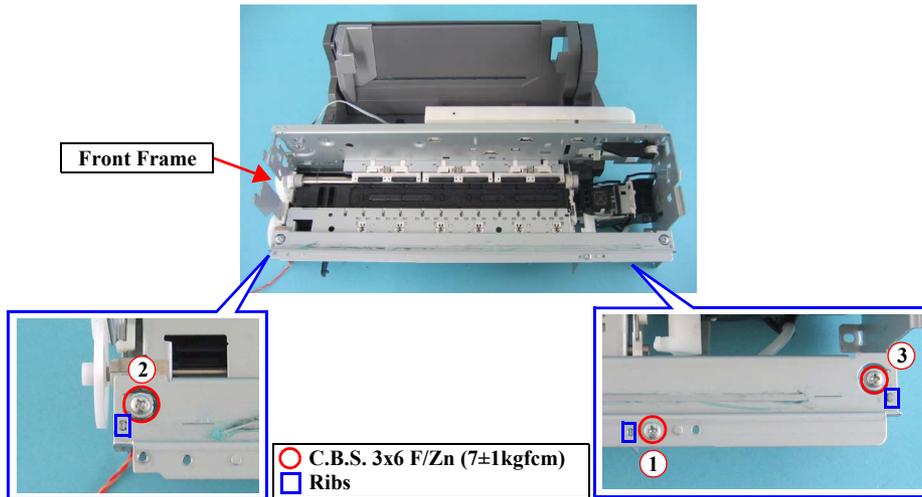


Figure 4-43. Removing Front Frame

□ Part/Unit that should be removed before removing Front Frame

Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / Main Board Unit / CR Guide Frame / CR Motor / CR Scale / Carriage Unit

□ Removal procedure

1. Remove the screws (x3, ○) that secure the Front Frame, and remove the Front Frame from the Printer Mechanism.



- Match the ribs (x3, □) of the Main Frame with the positioning holes of the Front Frame.
- Tighten the screws in the order as shown in the figure.



- After replacing the Front Frame with a new one, always apply grease KEN to the specified parts.
  - Refer to [Figure 6-9 \(p194\)](#) for details.
- After removing/replacing the Front Frame, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

### 4.4.23 EJ Frame Unit

□ External view (1)

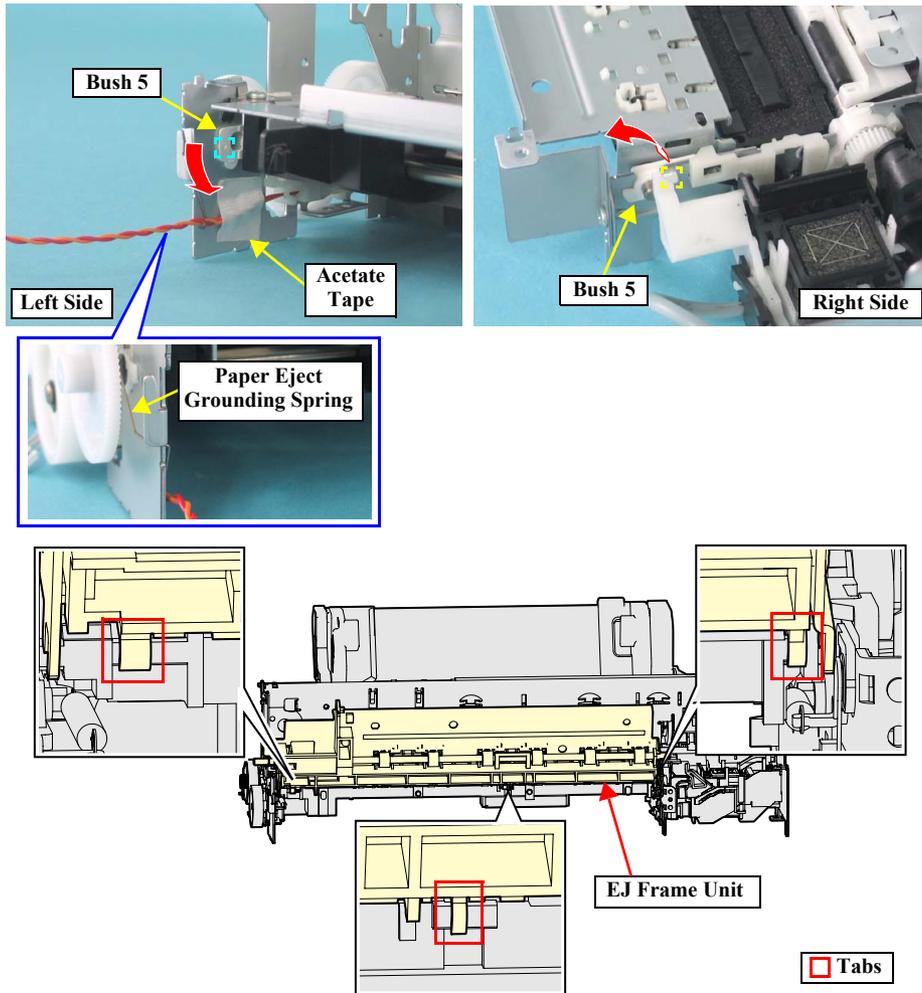


Figure 4-44. Removing EJ Frame Unit

- Part/Unit that should be removed before removing EJ Frame Unit  
Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / Main Board Unit / CR Guide Frame / CR Motor / CR Scale / Carriage Unit / Front Frame
- Removal procedure

**CAUTION**

- Do not hold the EJ Frame Unit while handling the Printer Mechanism in your repair.
- Do not touch the rubber portion of the Eject Roller.

1. Peel off the acetate tape (x1) that secures the PG Sensor Connector Cable.
2. Remove the Paper Eject Grounding Spring from the left side of the EJ Frame Unit.
3. Release the guide pin (x1, ) of Bush 5 on the left side of the EJ Frame Unit, and rotate the Bush 5 downward by 90°.
4. Release the guide pin (x1, ) of Bush 5 on the right side of the EJ Frame Unit, and rotate the Bush 5 upward (or downward) by 90°.
5. Release the tabs (x3, ) that secure the EJ Frame Unit while lifting the near side of the EJ Frame Unit upward.

□ External view (2)

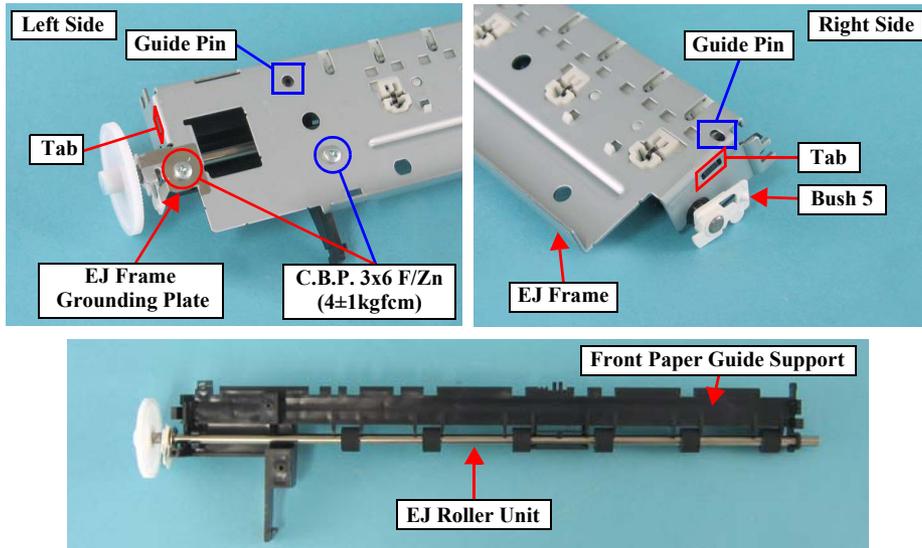


Figure 4-45. Removing EJ Roller Unit

6. Remove the right Bush 5 from the EJ Frame Unit.
7. Remove the screw (x1, ○) that secures the EJ Frame Grounding Plate, and remove the EJ Frame Grounding Plate.
8. Remove the screw (x1, ○) that secures the Front Paper Guide Support.
9. Remove the Front Paper Guide Support together with the EJ Roller Unit while releasing the tabs (x2, □) that secure the Front Paper Guide Support.



- Match the guide pins (x2, □) of the Front Paper Guide Support with the positioning holes (x2) of the EJ Frame.
- Confirm that Bush 5s on both sides are securely inserted into the notches of the Main Frame.

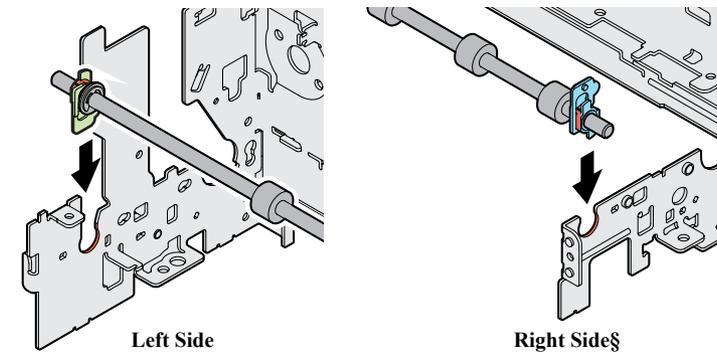


Figure 4-46. Installing Bush 5s

- Make sure that there is no gap between the EJ Frame Unit and the Main Frame.
- Check if the EJ Roller Unit moves smoothly.



- After replacing the Front Paper Guide Support with a new one, always apply grease G-46 to the specified parts.
  - Refer to [Figure 6-8 \(p194\)](#) for details.
- After removing/replacing the EJ Frame Unit, perform the adjustment referring to [Table 5-1. "Required Adjustments" \(p172\)](#)

### 4.4.24 Ink System Unit

□ External view

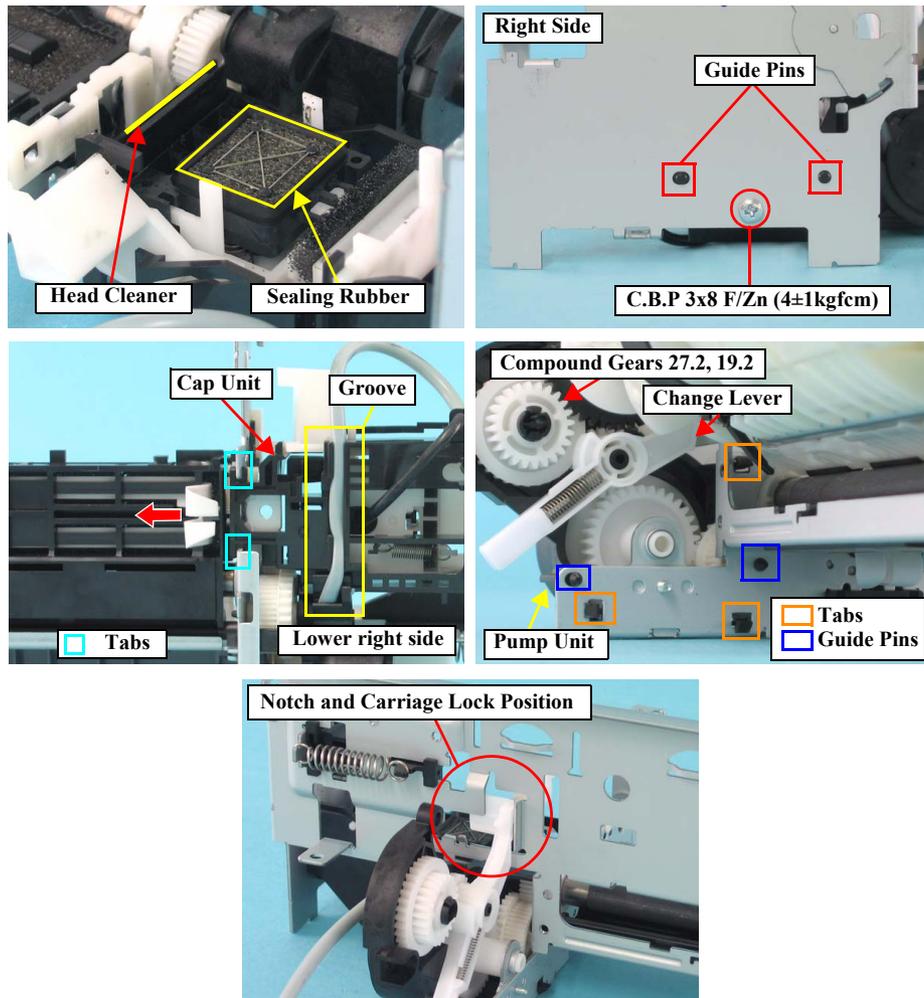


Figure 4-47. Removing Ink System Unit

- Part/Unit that should be removed before removing Ink System Unit  
Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Housing, Lower / Main Board Unit / ASF Unit / Holder Shaft Unit / CR Guide Frame / CR Motor / CR Scale / Carriage Unit / Front Frame

□ Removal procedure

**CAUTION** !

- Do not touch or damage the Sealing Rubber or the Head Cleaner when performing the following work.
- Mark the connection location before removing the Ink Tube.

1. Release the Ink Tube from the groove on the downside of the Cap Frame.
2. Remove the screw (x1, ○) that secures the Cap Unit.
3. Slide the Cap Unit to the inside of the Main Frame, and release the tabs (x2, □) of the Cap Unit from the Main Frame.

**CAUTION** !

When removing the Ink System Unit, be careful not to drop the Change Lever and Compound Gears 27.2, 19.2.

4. Release the Carriage Lock from the notch of the Main Frame.
5. Carefully release the tabs (x3, □) that secure the Pump Unit to the Main Frame, and remove the Pump Unit.
6. Remove the whole Ink System from the Printer Mechanism, and remove the gears (x4) and the Pump Pulley.

**REASSEMBLY** ↺

When installing the Ink System Unit, follow the steps described below.

1. Place the Carriage Lock inside the notch of the Main Frame as shown in the figure.
2. Match the guide pins (x2, □) of the Pump Unit with the positioning holes (x2) of the Main Frame.
3. Match the guide pins (x2, □) of the Cap Unit with the positioning holes (x2) of the Main Frame.
4. Place the Ink Tube into the groove, and install the Ink System Unit.

**ADJUSTMENT REQUIRED** ⚙

After removing/replacing the Ink System Unit, perform the adjustment referring to [Table 5-1."Required Adjustments" \(p172\)](#)

### 4.4.25 Paper Guide Front Unit

□ External view

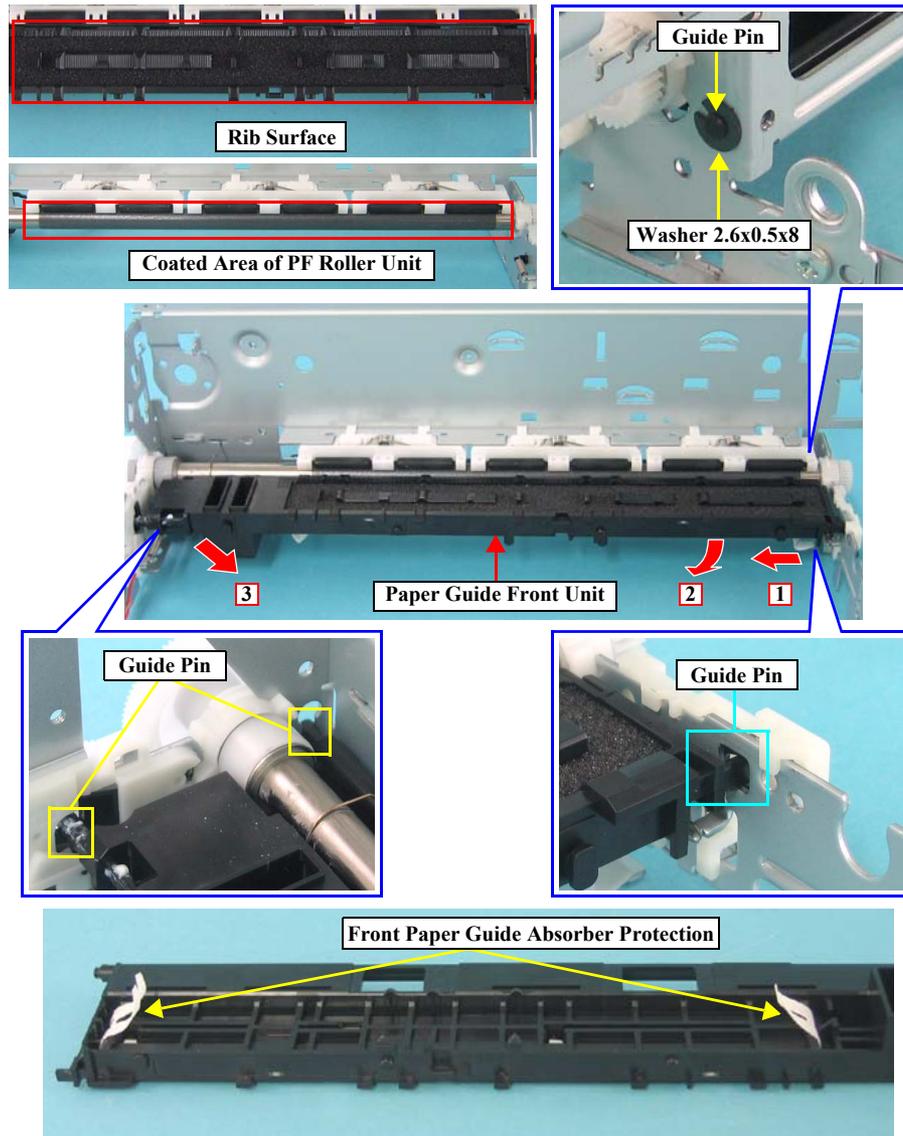


Figure 4-48. Removing Paper Guide Front Unit

- Part/Unit that should be removed before removing Paper Guide Front Unit  
Document Cover / Panel Unit / Scanner Unit / Housing, Upper / Printer Mechanism / Main Board Unit / ASF Unit / Holder Shaft Unit / CR Guide Frame / CR Motor / CR Scale / Carriage Unit / Front Frame / EJ Frame Unit / Ink System Unit

□ Removal procedure



When performing the following work, pay attention to the following instructions.

- Do not damage the ribs on the surface of the Paper Guide Front Unit.
- Do not touch or damage the coated area of the PF Roller Unit
- Be careful not to bend the Front Paper Guide Absorber Protection (x4).

1. Remove the Plain Washer (x1) that secures the Paper Guide Front Unit with a tweezers.
2. Slide the Paper Guide Front Unit toward left while releasing the guide pin (x1, □) from the installation hole of the Main Frame.
3. Release the left guide pins (x2, □) of the Paper Guide Front Unit from the installation holes of the Main Frame while lowering the right end of the Paper Guide Front Unit.



- Make sure that the Front Paper Guide Absorber Protection (x4) are facing inward.
- If ink has spread to the ribs on the upper surface of the Paper Guide Front Unit, clean off the ink with a cotton swab.



- After replacing the Paper Guide Front Unit with a new one, always apply grease G-26 to the specified parts.
  - Refer to [Figure 6-8 \(p194\)](#) for details.
- After removing/replacing the Paper Guide Front Unit, perform the adjustment referring to [Table 5-1."Required Adjustments" \(p172\)](#)

## 4.4.26 PG Sensor

### □ External view

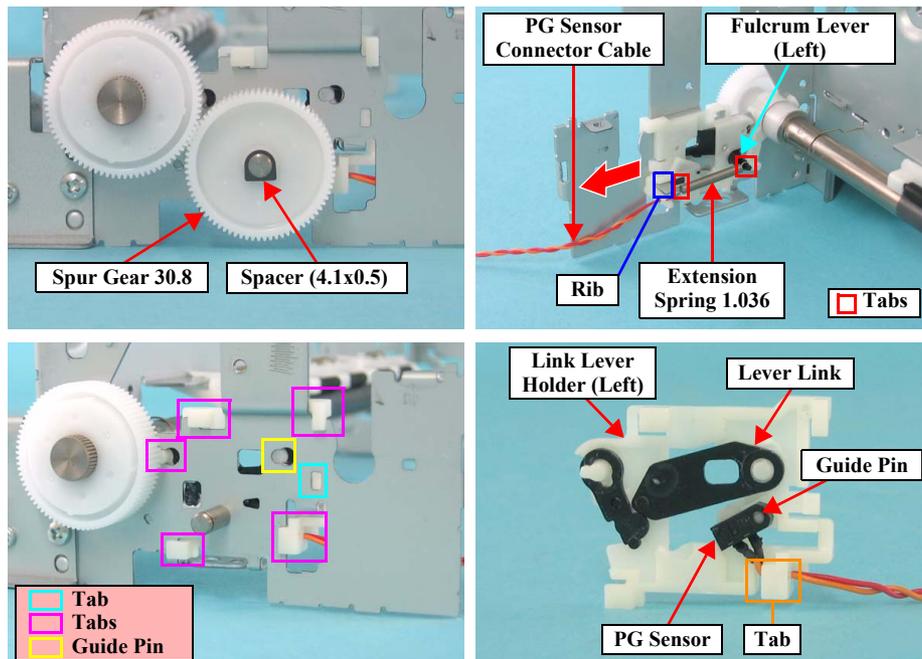


Figure 4-49. Removing PG Sensor

### □ Part/Unit that should be removed before removing PG Sensor

Document Cover / Panel Unit / Scanner Unit /Housing, Upper / Printer Mechanism / Main Board Unit / ASF Unit / Holder Shaft Unit / CR Guide Frame / CR Motor / CR Scale / Carriage Unit / Front Frame / EJ Frame Unit / Ink System Unit / Paper Guide Front Unit

### □ Removal procedure

1. Remove the Spacer (x1) that secures Spur Gear 30.8, and remove Spur Gear 30.8 from the Main Frame.
2. Remove Extension Spring 1.036 from the tabs (1 each, ) of the Main Frame and the Fulcrum Lever (Left).
3. Remove the tab (x1, ) that secures the Link Lever Holder (Left) with a tweezer, and then slide it in the direction of the arrow shown in the figure.
4. Release the Link Lever Holder (Left) from the rib (x1, ) of the Main Frame, and remove the Fulcrum Lever (Left), Lever Link along with the Link Lever Holder (Left).
5. Release the PG Sensor Connector Cable from the tab (x1, ) of the Link Lever Holder (Left), and remove the PG Sensor.



- Install the PG Sensor onto the guide pin of the Link Lever Holder (Left).
- Secure the Link Lever Holder (Left) with the tabs (x6,  ) and the guide pin (x1, )



- After changing the Link Lever and the Link Lever Holder (Left) for new ones, always apply grease G-26 to the specified parts.
- Refer to [Figure 6-10 \(p195\)](#) for details.

### 4.4.27 PF Roller Unit

□ External view (1)

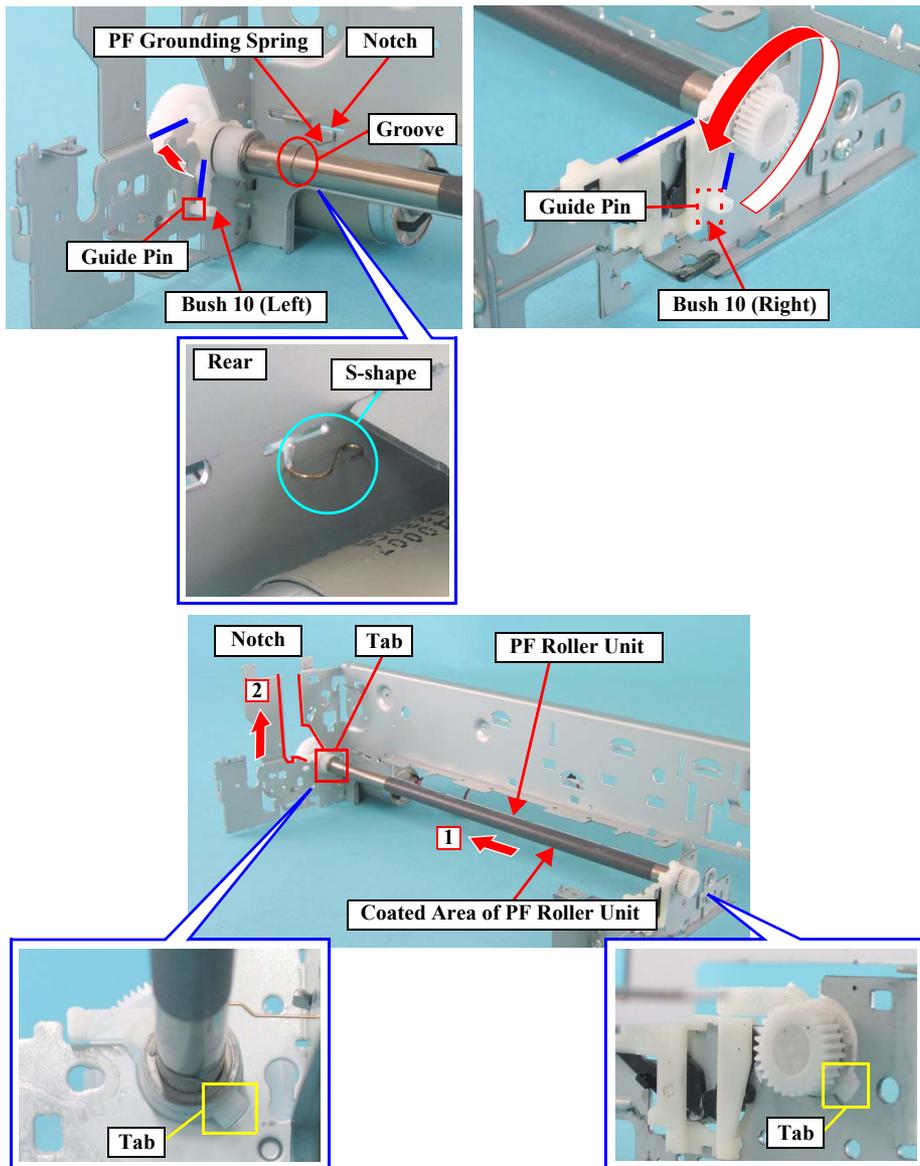


Figure 4-50. Removing PF Roller Unit (1)

□ Part/Unit that should be removed before removing PF Roller Unit

Document Cover / Scanner Unit / Panel Unit / Housing Upper / Printer Mechanism / Main Board Unit / ASF Unit / Holder Shaft Unit / CR Guide Frame / CR motor / CR Scale / Carriage Unit / Paper Guide Upper Unit / Front Frame / EJ Frame Unit / Ink System Unit / Paper Guide Front Unit / PG Sensor

□ Removal procedure

**CAUTION**  
 Do not touch or damage the coated area of the PF Roller Unit when performing the following work.

1. Release the PF Grounding Spring from the notch of the Main Frame with a tweezer, and remove the PF Grounding Spring from the PF Roller Unit.
2. Release the guide pin (x1, ) of Bush 10 (Left) from the Main Frame, and rotate Bush 10 (Left) to the position shown by the figure.
3. Release the guide pin (x1, ) of Bush 10 (Right) from the Main Frame, and rotate Bush 10 (Right) to the position shown by the figure.
4. Slide the PF Roller Unit toward left, and release the tabs (x1, ) of Bush 10 (Left/Right).
5. Remove the PF Roller Unit along the notch at the left end of the Main Frame.

**REASSEMBLY**  
 Hitch the PF Grounding Spring to the groove of the PF Roller Unit.

**ADJUSTMENT REQUIRED**  


- After changing the PF Roller Unit for a new one, always apply grease G-26 to the specified parts.
  - Refer to [Figure 6-12 \(p195\)](#) and [Figure 6-13 \(p195\)](#) for details.
- After removing/replacing the PF Roller Unit, perform the adjustment referring to [Table 5-1."Required Adjustments" \(p172\)](#)

## 4.5 Scanner Section

### 4.5.1 Scanner Housing, Upper

□ External view

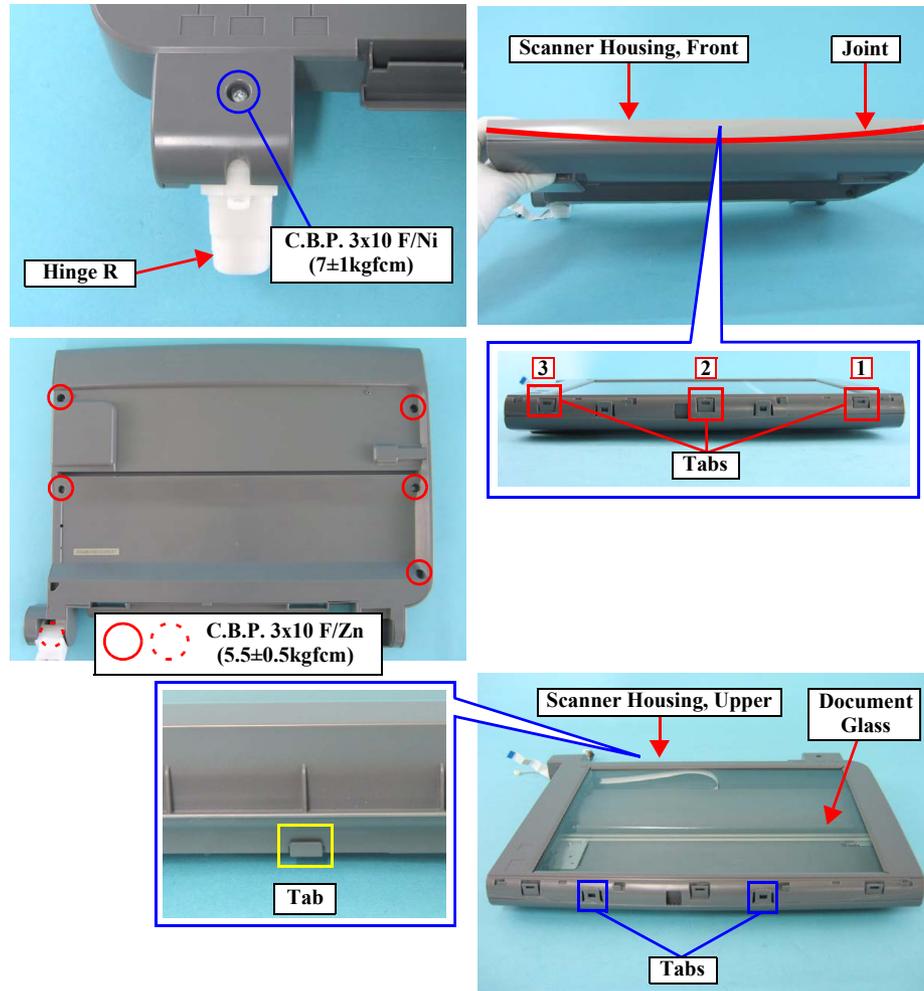


Figure 4-51. Removing Scanner Housing, Upper

- Part/Unit that should be removed before removing Scanner Housing, Upper Document Cover / Panel Unit / Scanner Unit

□ Removal procedure

**CAUTION**



- Following work should be performed in a room where there is a little dust. A clean room or a clean bench would be preferable.
- Do not damage the document glass on the Scanner Housing, Upper.

1. Remove the screw (x1, ○) that secures the hinge R, and remove the hinge R from the Scanner Unit.

**CAUTION**



- Do not scratch the Scanner Housing, Upper and the Scanner Housing, Front with a precision screwdriver (-).

2. Insert a precision screwdriver into the joint of the Scanner Housing, Upper and the Scanner Housing, Front, release the tabs (x3, □) that secure the Scanner Housing, Front in the order shown in the figure, and remove the Scanner Housing, Front.
3. Remove the screws (x6, ○) that secure the Scanner Housing, Upper.
4. Release the tabs (x2, □) that secure the Scanner Housing, Upper, and remove the Scanner Housing, Upper.

**REASSEMBLY**



- Match the notch of the Scanner Housing, Upper with the tab (x1, □) of the Scanner Housing, Lower.
- Place the Scanner Housing, Front onto the Scanner Housing, Upper as shown below, slide the Scanner Housing, Front downward, and install it while pressing the Scanner Housing, Front against the Scanner Housing, Upper.



Figure 4-52. Installing Scanner Housing, Front

### 4.5.2 Scanner Carriage Unit

□ External view (1)

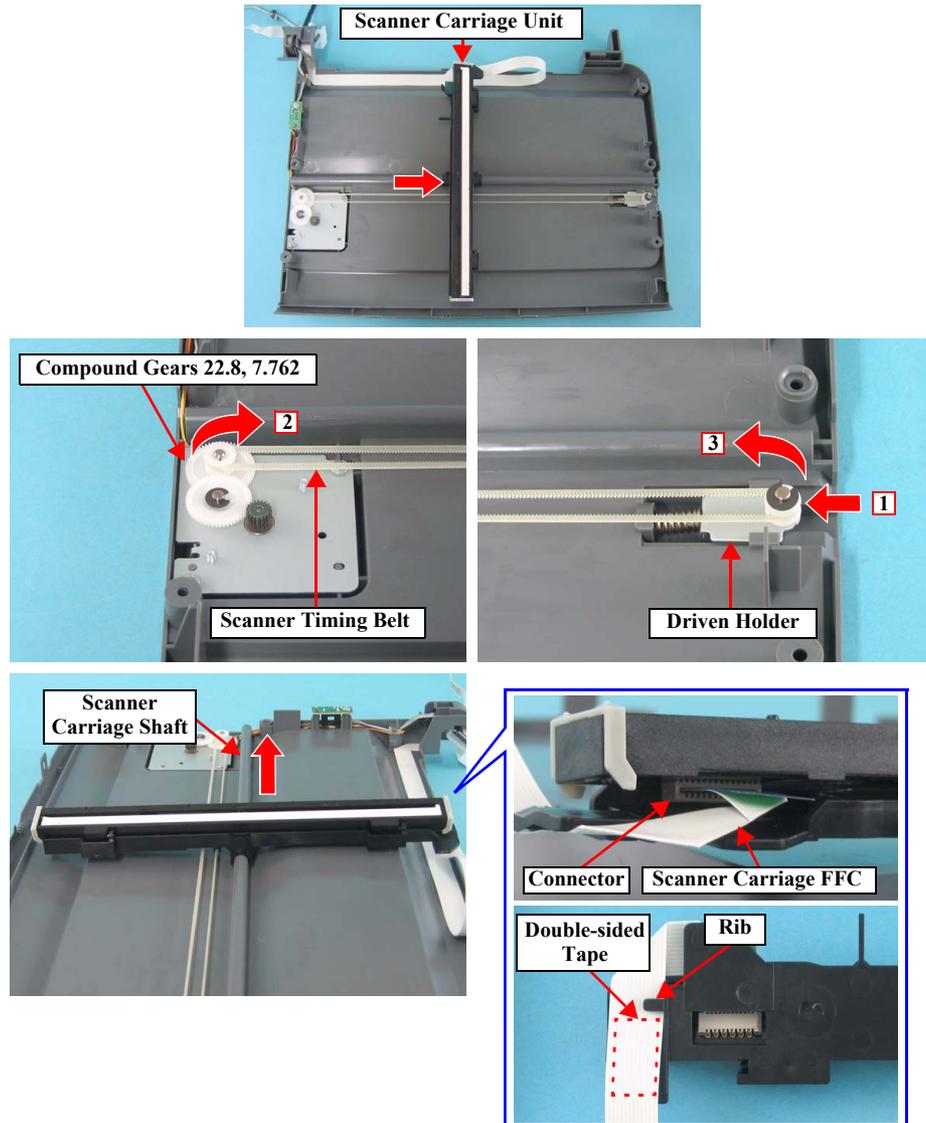


Figure 4-53. Removing Scanner Carriage Unit (1)

- Part/Unit that should be removed before removing Scanner Carriage Unit  
Document Cover / Panel Unit / Scanner Unit / Scanner Housing, Upper

□ Removal procedure



**Do not scratch the Rod Lens Array when removing the Scanner Carriage Unit.**

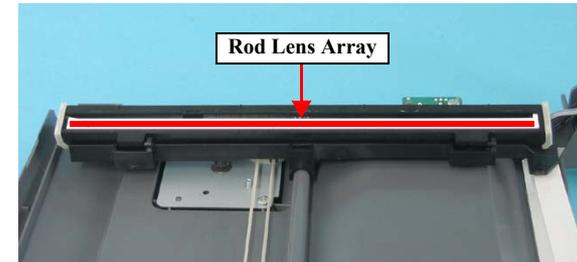


Figure 4-54. Handling Scanner Carriage Unit

1. Move the Scanner Carriage Unit to the center of the printer.
2. Push the Driven Holder to the direction of the arrow, and remove Compound Gears 22.8, 7.762, Driven Holder, and Scanner Timing Belt.



**Do not damage the Scanner Carriage FFC as it is secured with double-sided tape.**

3. Disconnect the Scanner Carriage FFC from the Scanner Carriage Unit, and remove the Scanner Carriage Unit together with the Scanner Timing Belt.

□ External view (2)

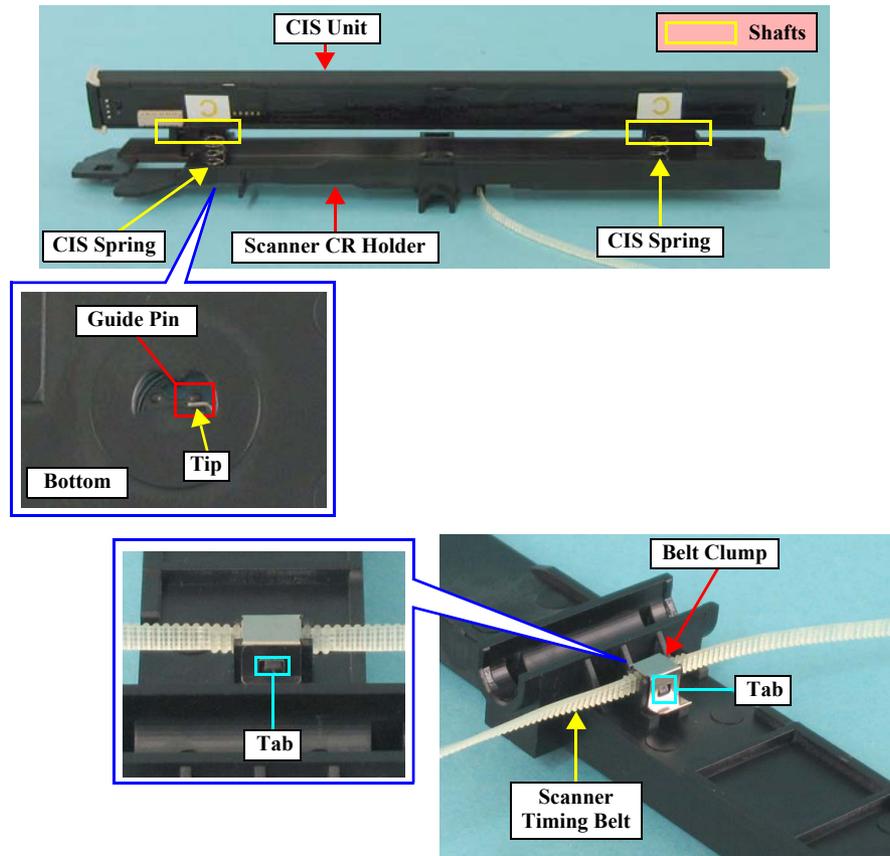


Figure 4-55. Removing Scanner Carriage Unit (2)

4. Open and slide the CIS Unit toward right, and remove the CIS Unit from the Scanner CR Holder.
5. Remove the CIS Spring (x2) from the Scanner CR Holder.
6. Release the tabs (x2, □) that secure the Belt Clump with a tweezer.
7. Remove the Scanner Timing Belt from the Scanner Carriage Unit.



- Attach the Scanner Timing Belt to the Scanner Carriage Unit so that the part where the belt is jagged on both sides is pinched by the groove of the Scanner Carriage Unit.



Figure 4-56. Attaching Scanner Timing Belt

- The CIS Springs (x2, □) should be installed with their tips hitched to the guide pin (x1, □) of the Scanner CR Holder.
- When replacing the CIS Unit, you must also replace the spacers on both ends of the unit. Check the label on the CIS Unit and replace the spacers with appropriate ones as described below.
  - The label is marked “A” .....Use Spacer, cis, A17
  - The label is marked “B” .....Use Spacer, cis, B19
  - The label is marked “C” .....Use Spacer, cis, C21

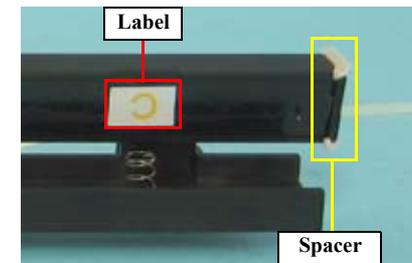


Figure 4-57. Replacing Spacers



After changing the Scanner Carriage Shaft and/or the CIS Unit for a new one, always apply grease G-45/G-74 to the specified parts.

- Refer to [Figure 6-4 \(p193\)](#) and [Figure 6-5 \(p193\)](#) for details.

### 4.5.3 Scanner Motor Unit/Scanner HP Sensor/Driven Pulley

□ External view

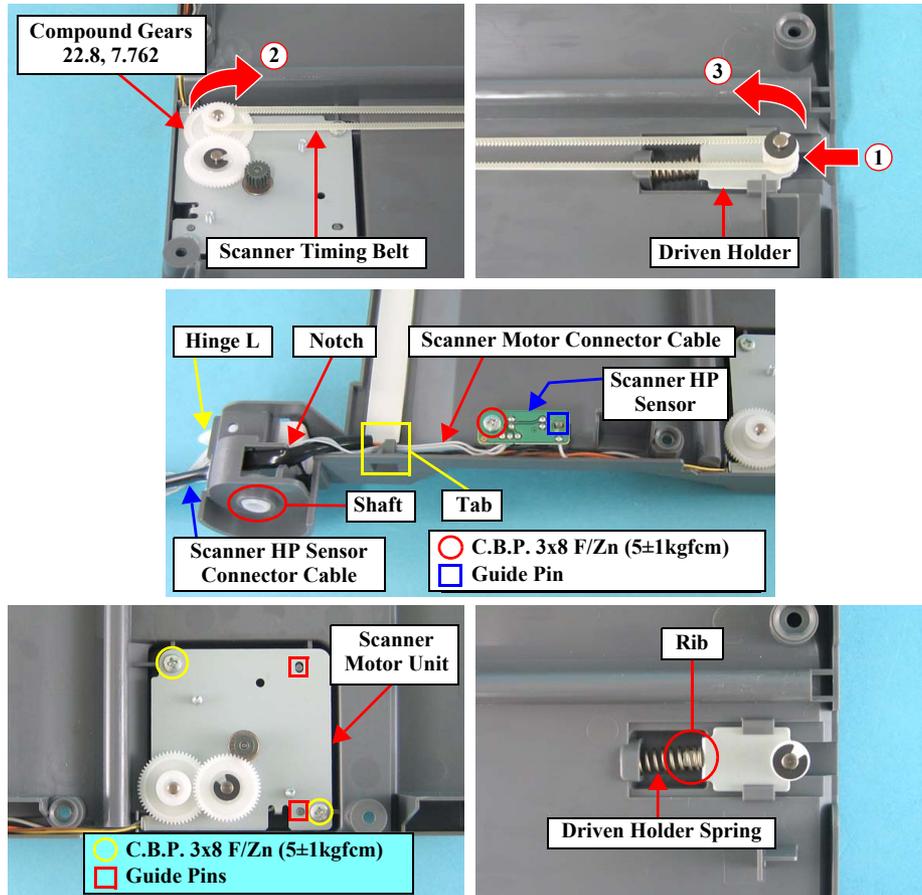


Figure 4-58. Removing Scanner Motor Unit/Scanner HP Sensor/Driven Holder

□ Part/Unit that should be removed before removing Scanner Motor Unit/Scanner HP Sensor/Driven Holder

Document Cover / Panel Unit / Scanner Unit / Scanner Housing, Upper

□ Removal procedure

1. Move the Scanner Carriage Unit to the center of the Scanner Unit.
2. Push the Driven Holder to the direction of the arrow, and remove Compound Gears 22.8, 7.762, Driven Holder, and Scanner Timing Belt.
3. Release the shaft of the hinge L from the bearing of the Scanner Housing, Lower.
4. Disconnect the Scanner Connector Cable and the Scanner HP Sensor Connector Cable from the tab of the hinge L, and pull them out from the notch of the Scanner Housing, Lower.
5. Remove the screw (x1, ○) that secures the Scanner HP Sensor, and remove the Scanner HP Sensor.
6. Release the Scanner Motor Connector Cable and the Scanner HP Sensor Connector Cable from the tab of the Scanner Housing, Lower.
7. Remove the screws (x2, ●) that secure the Scanner Motor Unit, and remove the Scanner Motor Unit.



- When installing the Scanner Motor Unit, match the guide pins (x2, □) of the Scanner Housing, Lower with the positioning holes (x2) of the Scanner Motor Unit.
- When installing the Scanner HP Sensor, match the guide pin (x1) of the Scanner Housing, Lower with the positioning hole (x1, □) of the Scanner HP Sensor.
- Route the Scanner Motor Connector Cable and the Scanner HP Sensor Connector Cable as shown in the figure.
- Insert the Driven Holder Spring into the rib of the Driven Holder.

## 4.6 Removal procedure Specific to Stylus CX4900/ CX4905/CX5000/DX5000/DX5050

### 4.6.1 Panel Unit

□ External view

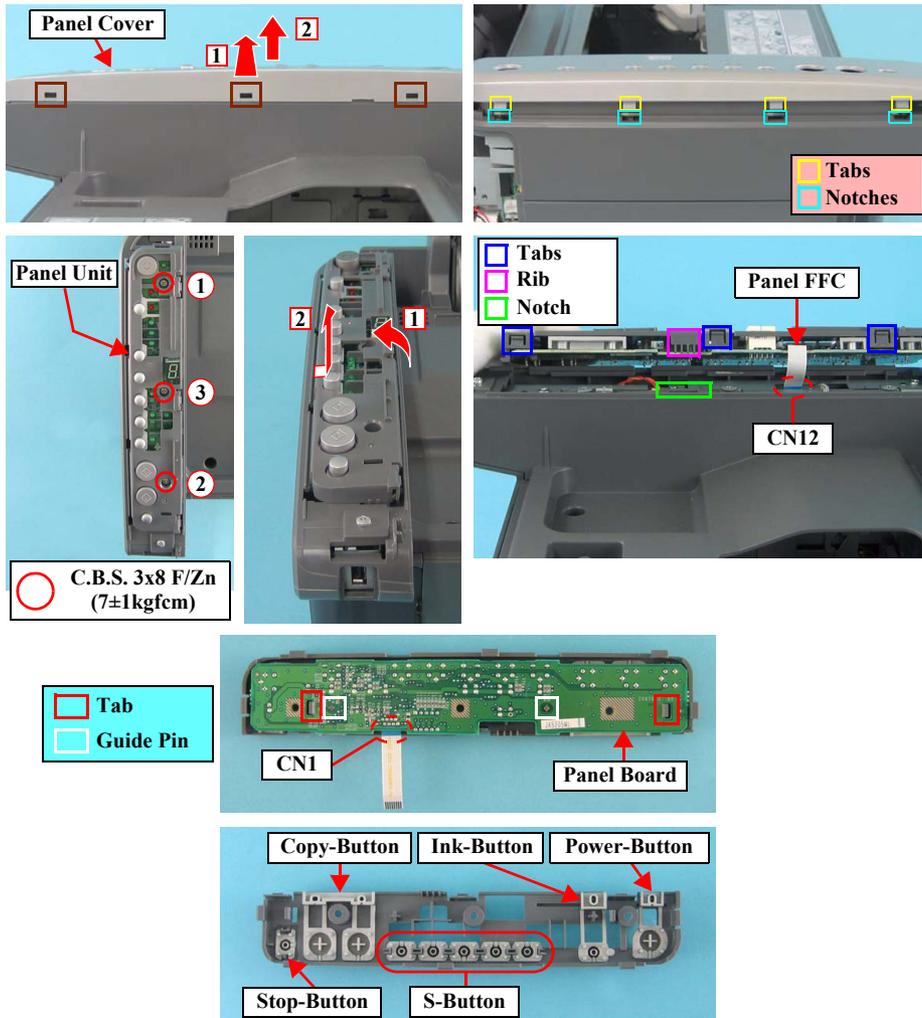


Figure 4-59. Removing Panel Unit

□ Part/Unit that should be removed before removing Panel Unit

None

□ Removal procedure

1. Release the tabs (x3, □) that secure the Panel Cover with a precision screwdriver (-), and remove the Panel Cover in the order shown in the figure.
2. Remove the screws (x3, ○) that secure the Panel Unit.
3. Release the hooks (x3, □) of the Panel Unit in the order shown in the figure.

CHECK POINT



When removing the Panel Unit, disconnect the Panel FFC from the Main Board side (CN12).

4. Disconnect the Panel FFC from the Main Board Connector (CN12), and remove the Panel Unit.
5. Release the tabs (x2, □) that secure the Panel Board, and remove the Panel Board.
6. Disconnect the Panel FFC from the connector (CN1) of the Panel Board.
7. Remove S-Buttons (x5), Copy-Button, Stop-Button, Ink-Button, and Power-Button from the Panel Housing.

REASSEMBLY



- When installing the Panel Board to the Panel Housing, match the guide pins (x2, □) of the Panel Housing with the positioning holes (x2) of the Panel Board.
- When installing the Panel Unit to the Housing, Upper, match the notch (x1, □) of the Housing, Upper with the rib (x1, □) of the Panel Unit. The notches of the Housing, Upper should also be matched with the tabs (x3, □) of the Panel Unit.
- Tighten the screws in the order as shown in the figure.
- When installing the Panel Cover, match the tabs (x4, □) of the Panel Cover and the notches (x4, □) of the Panel Unit.

## 4.6.2 Housing, Upper

### □ External view

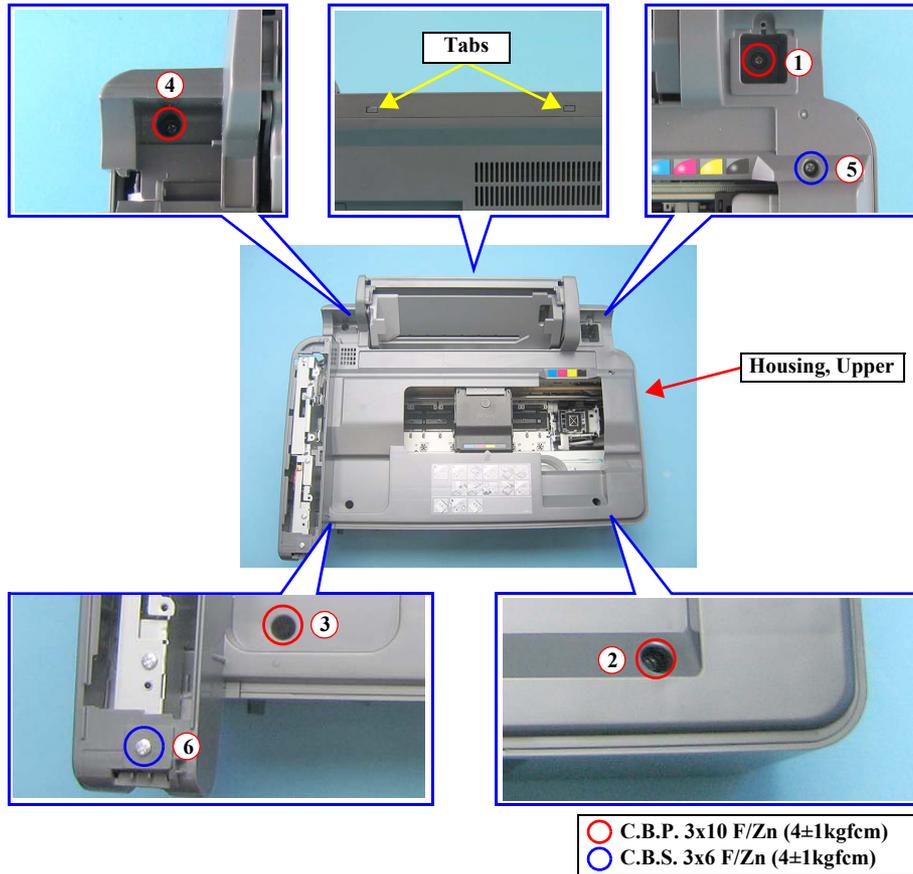


Figure 4-60. Removing Housing, Upper

### □ Part/Unit that should be removed before removing Housing, Upper

Document Cover / Panel Unit / Scanner Unit

### □ Removal procedure

1. Remove the screws (x6,  ) that secure the Housing, Upper.
2. Release the tabs (x2) that secure the Housing, Upper with a flathead screwdriver or a similar tool, and lift up to remove the Housing, Upper.



Tighten the screws in the order as shown in the figure.

CHAPTER

5

ADJUSTMENT

## 5.1 Overview

This section describes the procedure for adjustments required when the printer is disassembled and assembled for repair or service.

### 5.1.1 Required Adjustments

The following table indicates the adjustment items for replacement parts.

Note : “O” in this table indicates the adjustment item that require execution when the corresponding part has been removed/replaced. “O\*” indicates the adjustment item that are recommended to be executed when the corresponding part has been removed/replaced. “---” indicates that no adjustment is required.

When you have removed/replaced two or more parts, refer to the corresponding items of all parts, refer to the corresponding items of all parts. Also, if there are several adjustment items for one exchanging part, execute the adjustment in the priority order mentioned in the table.

**Table 5-1. Required Adjustments**

Priority		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Adjustment item		EEPROM data copy	Initial setting	USB ID input	Waste ink pad counter	Ink charge	Head ID input	Top margin adjustment	First dot adjustment	PW sensor adjustment	Head angular adjustment	Bi-d adjustment	PF deterioration adjustment	CR offset	PF adjustment	PF band adjustment
Replaced part																
ASF unit	removal	---	---	---	---	---	---	O	O	---	---	---	---	---	O	O
	replacement	---	---	---	---	---	---	O	O	---	---	---	---	---	O	O
CR motor	removal	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	replacement	---	---	---	---	---	---	---	---	---	---	---	---	O	---	---
Paper guide upper	removal	---	---	---	---	---	---	O	---	---	---	O*	---	---	O	O
	replacement	---	---	---	---	---	---	O	---	---	---	O*	O Reset to 0	---	O	O
Front frame	removal	---	---	---	---	---	---	O	O*	O*	O	O	---	---	---	---
	replacement	---	---	---	---	---	---	O	O*	O*	O	O	---	---	---	---
Printhead	removal	---	---	---	---	---	---	O	O	O	O	O	---	---	O	O
	replacement	---	---	---	---	O	O	O	O	O	O	O	---	---	O	O

Table 5-1. Required Adjustments

Priority		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Adjustment item		EEPROM data copy	Initial setting	USB ID input	Waste ink pad counter	Ink charge	Head ID input	Top margin adjustment	First dot adjustment	PW sensor adjustment	Head angular adjustment	Bi-d adjustment	PF deterioration adjustment	CR offset	PF adjustment	PF band adjustment
Replaced part																
Main board	removal	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	replacement (read OK)	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	replacement (read NG)	---	O	O	O Ink Pads must be replaced		O	O	O	O	O	O	O Input Max. value (3000)	O	O	O
Holder shaft unit	removal	---	---	---	---	---	---	O	---	---	---	---	---	---	---	---
	replacement	---	---	---	---	---	---	O	---	---	---	---	---	---	---	---
EJ frame unit	removal	---	---	---	---	---	---	---	---	---	---	O*	---	---	O	O
	replacement	---	---	---	---	---	---	---	---	---	---	O*	---	---	O	O
PS board	removal	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	replacement	---	---	---	---	---	---	---	---	---	---	---	---	O	---	---
Paper guide front	removal	---	---	---	---	---	---	O*	O*	O	O	O	---	---	O	O
	replacement	---	---	---	---	---	---	O*	O*	O	O	O	---	---	O	O
PF motor	removal	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	replacement	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Waste ink pad	removal	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	replacement	---	---	---	O	---	---	---	---	---	---	---	---	---	---	---

Table 5-1. Required Adjustments

Priority		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Adjustment item		EEPROM data copy	Initial setting	USB ID input	Waste ink pad counter	Ink charge	Head ID input	Top margin adjustment	First dot adjustment	PW sensor adjustment	Head angular adjustment	Bi-d adjustment	PF deterioration adjustment	CR offset	PF adjustment	PF band adjustment
Replaced part																
PW sensor	removal	---	---	---	---	---	---	---	---	0	---	---	---	---	---	---
	replacement	---	---	---	---	---	---	---	---	0	---	---	---	---	---	---
CR unit	removal	---	---	---	---	---	---	0	0	0	0	0	---	---	0	0
	replacement	---	---	---	---	---	---	0	0	0	0	0	---	0	0	0
CR guide shaft	removal	---	---	---	---	---	---	0*	0*	---	---	0	---	---	---	---
	replacement	---	---	---	---	---	---	0*	0*	---	---	0	---	0	---	---
PF roller assy	removal	---	---	---	---	---	---	0*	---	---	---	0*	---	---	0	0
	replacement	---	---	---	---	---	---	0*	---	---	---	0*	---	---	0	0
Ink system unit	removal	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	replacement	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---



- When the Main board is replaced with a new one, you may have to replace waste drain ink pad also in case the EEPROM parameter back up function is not available on the defective main board.
- After completing the adjustment, check the printing result with A4 check pattern by using the Adjustment program. If the result is not good, perform appropriate adjustment.
- If using new main board in the printer mechanism replacement, you need to perform EEPROM initial setting of main board. And then, please perform the adjustment by usual procedure.

## 5.2 Adjustment by Using Adjustment Program

The procedures of the adjustment items will be explained here. The intended item is as follows.

- EEPROM Data Copy
- Initial Setting
- USB ID Input
- Waste Ink Pad Counter
- Ink Charge
- Head ID Input
- Top Margin Adjustment
- First Dot Adjustment
- PW Sensor Adjustment
- Head Angular Adjustment
- Bi-D Adjustment
- PF Deterioration Adjustment
  - Initialize PF deterioration offset
  - Disenable PF deterioration offset
- CR Offset
- PF Adjustment
- PF Band Adjustment

### 5.2.1 EEPROM Data Copy

#### Adjustment procedure

1. Select “EEPROM Data Copy” in the Adjustment Program.
2. Click the [backup] button to backup the old main board data.
3. When the backup operation is succeeded,
  - 1) Replace the Main Board Unit with a new one.
  - 2) Turn on the printer and click the [restore] button.
  - 3) When the restore operation is succeeded, click the [next] button to perform necessary adjustment.

When the backup operation is failed,

- 1) Click the [next] button to perform necessary adjustment.

### 5.2.2 Initial Setting

#### Adjustment procedure

1. Select “Initial setting” in the Adjustment Program.
2. Click the [Initial setting] button to set the market destination setting.

### 5.2.3 USB ID Input

#### Adjustment procedure

1. Select “USB ID” in the Adjustment Program.
2. Enter the 10-digits serial number from the label applied to the back side of the Printer.

### 5.2.4 Waste Ink Pad Counter

#### Adjustment procedure

1. Select “Waste ink pad counter” in the Adjustment Program.
2. Click the [Read] button, you can see the current or initialized counter value.
3. If you replace the waste ink pad, click the [Initialize] button to clear the current ink pad counter to “zero”. Once you click the [Initialize] button, you can see its completion message, so that click the [OK] button.

## 5.2.5 Ink Charge

### □ Adjustment procedure

1. Select “Ink charge” in the Adjustment Program.
2. Click the [Ink charge] button to perform the initial ink charge setting.

## 5.2.6 Head ID Input

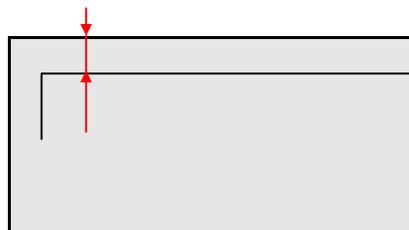
### □ Adjustment procedure

1. Select “Input Head ID” in the Adjustment Program.
2. Input the 13-digits code of the Head ID label applied to the Print Head. Enter the Head ID from left to right on the top row and from top to bottom in due order.

## 5.2.7 Top Margin Adjustment

### □ Adjustment procedure

1. Set Normal Paper A4/Letter on the Paper Support.
2. Select “Top margin adjustment” in the Adjustment Program.
3. Click the [Print] button to print the Top margin adjustment pattern.
4. Confirmed the printed pattern and measure exact distance from Paper top edge to a line.
5. Input your decided parameter to the edit box and click the [Input] button.



#### [Judging Standard]

The distance from a paper top edge to a line is:

- 3.7 to 5.1mm Choose the “-” from a combobox.
- 2.3 to 3.7mm Choose the “0” from a combobox.
- 0.9 to 2.3mm Choose the “+” from a combobox.

Figure 5-1. Top Margin Adjustment Printing Pattern

## 5.2.8 First Dot Adjustment

### □ Adjustment procedure

1. Set Photo Paper A4/Letter on the Paper Support.
2. Select “First dot position adjustment” in the Adjustment Program.
3. Click the [Print] button to print the First dot position adjustment pattern.
4. Check the printed patterns and select a pattern number that has 5mm margin from the paper edge.
5. Click the [Input] button to write the adjustment value of checked item.

### □ [Treatment procedure for NG product]

1. Replace the repaired (replaced) part with new one.
2. Print the check pattern, and check the adjustment result.
3. If the result is NG level, confirm the installation condition of removed parts during disassembly.
4. Perform Step 2 again.



#### [Judging Standard]

Standard: 5mm away from left edge.

Figure 5-2. First dot position adjustment Printing Pattern

### 5.2.9 PW Sensor Adjustment

□ Adjustment procedure

1. Set Photo Paper A4/Letter on the Paper Support.
2. Select “PW adjustment” in the Adjustment Program.
3. Click the [Print] button to print the PW adjustment pattern.
4. Check the printed patterns and select a pattern number that has 5mm margins from the paper edges.
5. Click the [Input] button to write the adjustment value of checked items.

□ [Treatment procedure for NG product]

1. Replace the PW Sensor with new one again.
2. Print the check pattern, and check the adjustment result.
3. If the result is NG level, confirm the installation condition of removed parts during disassembly.
4. Perform Step 2 again.



**[Judging Standard]**  
Top / Bottom / Right / Left: 5mm

Figure 5-3. PW adjustment Printing Pattern

### 5.2.10 Head Angular Adjustment

□ Adjustment procedure

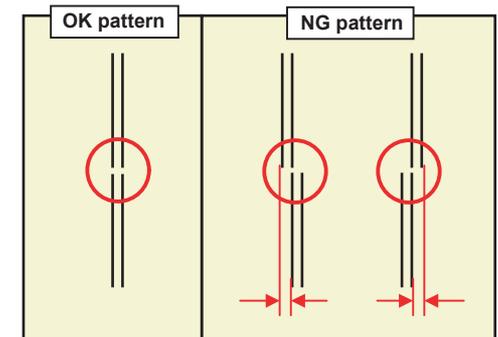
1. Set Normal Paper A4/Letter on the Paper Support.
2. Select “Head angular adjustment” in the Adjustment Program.
3. Click the [Print] button to print the Band pattern and the Raster offset pattern.
4. Check the printed patterns and select a pattern number that has the least amount of misalignment.
5. Click the [Input] button to write the adjustment value of checked items.
6. Print the check pattern again, and check the adjustment result.

□ [Treatment procedure for NG product]

1. Replace the Print Head with new one again.
2. Print the check pattern, and check the adjustment result.
3. If the result is NG level, confirm the installation condition of removed parts during disassembly.
4. Perform Step 2 again.

■ Band pattern

**[Judging Standard]**  
The printed line should be straight line.



■ Raster offset pattern

**[Judging Standard]**  
Spaces between the cyan lines and gray lines should be uniformed.

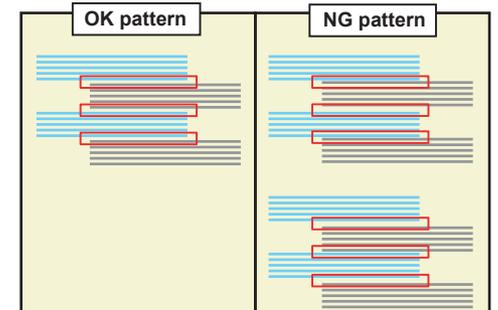


Figure 5-4. Head Angular Adjustment Printing Pattern

## 5.2.11 Bi-D adjustment



Be sure to close the Scanner unit before performing Bi-D Adjustment.

### □ Adjustment procedure

1. Set Normal Paper A4/Letter on the Paper Support.
2. Select “Bi-D adjustment” in the Adjustment Program.
3. Click the [Print] button to print the Bi-D adjustment pattern.
4. Check the printed patterns and select a pattern number that has the least amount of misalignment in each of the VSD dots.
5. Click the [Input] button to write the adjustment value of checked items.
6. Print the check pattern again, and check the adjustment result.

### □ [Treatment procedure for NG product]

1. Replace the Print Head with new one again.
2. Print the check pattern, and check the adjustment result.
3. If the result is NG level, confirm the installation condition of removed parts during disassembly.
4. Perform Step 2 again.

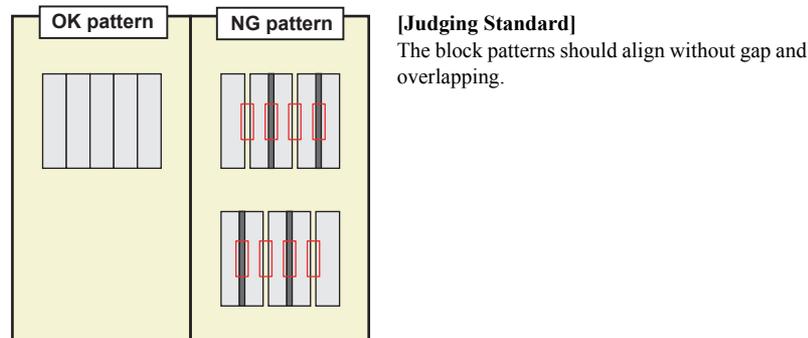


Figure 5-5. Bi-D Adjustment Printing Pattern

## 5.2.12 Initialize PF Deterioration Offset

### □ Adjustment procedure

1. Select “Initialize PF deterioration offset” in the Adjustment Program.
2. Click the [Initialization] button to initialize the PF deterioration offset value.

## 5.2.13 Disable PF Deterioration Offset

### □ Adjustment procedure

1. Select “Disable PF deterioration offset” in the Adjustment Program.
2. Click the [Input] button to input the maximum value (3,000) of the PF deterioration offset value.

## 5.2.14 CR Offset

### □ Adjustment procedure

1. Select “CR motor heat protection control” in the Adjustment Program.
2. Check each box of the replaced parts/units checklist and then click the [Perform] button.
3. A dialogue box will be displayed, and click the [OK] button in the box. Market destination setting

## 5.2.15 PF Adjustment

### □ Adjustment procedure

1. Examine the printed pattern and select a value for each of the top and bottom.
2. Input the value selected in Step 1 and print the PF adjustment check pattern.
3. Check the pattern printed in Step 2 if the correction has been properly reflected.
4. If the result in Step 3 is NG, return to Step 1 and repeat the adjustment procedure.

[SELECTING THE VALUE FOR THE BEST PATCH](#) and [CHECKING THE PF ADJUSTMENT CHECK PATTERN](#) can be found on the following pages.

PF adjustment



Figure 5-6. PF Adjustment Pattern

### SELECTING THE VALUE FOR THE BEST PATCH

#### □ Procedure

1. Examine the printed patches from the left and select a value for the patch with least white oblique lines on its upper (top) area. If two or more patches are found as the best patch, be sure to select a value for the left most one.

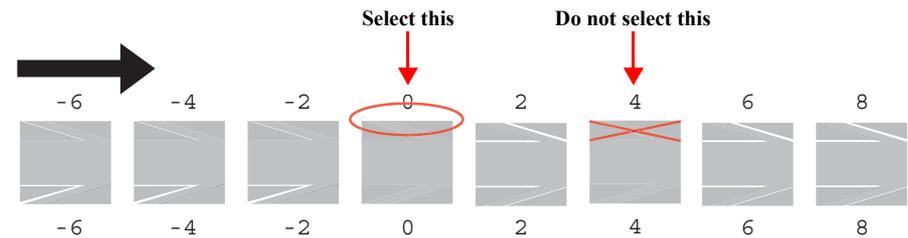


Figure 5-7. PF Adjustment (1)

- If it is difficult to judge, compare the most likely patch with the one on the right. If you still cannot find any differences in the upper area between the two patches, input the mean value of the two.

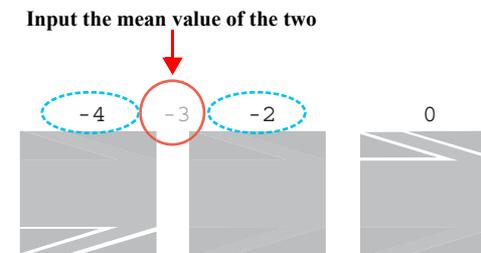


Figure 5-8. PF Adjustment (2)

- Examine the printed patches from the right and select a value for the patch with least white lines on its lower (bottom) area. If two or more patches are found as the best patch, be sure to select a value for the right most one. If it is difficult to judge, compare the most likely patch with the one on the left. If you still cannot find any differences in the lower area between the two patches, input the mean value of the two.

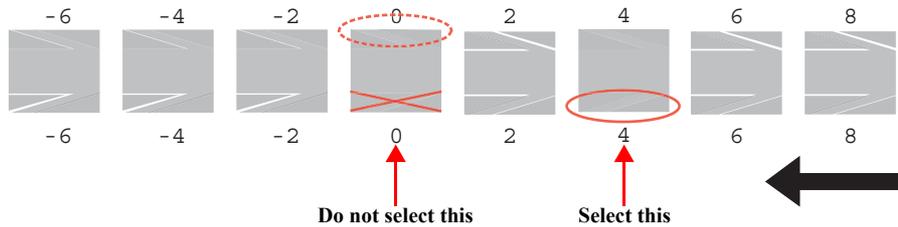


Figure 5-9. PF Adjustment (3)

- Input the selected value for each of the top and bottom in the program, and print a PF adjustment check pattern.

### CHECKING THE PF ADJUSTMENT CHECK PATTERN

OK patterns

- There is a patch with least white lines on its both top and bottom areas.

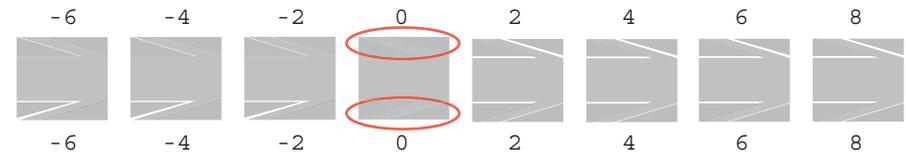


Figure 5-10. OK Pattern Sample (1)

**NOTE:** The patch with least white lines may not appear in the center with "0" value due to mechanical errors. It is still OK even if the best patch is located at other than the center.

- The best patch for the top area and that for the bottom area are different but the two patches are located side by side.

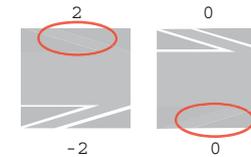


Figure 5-11. OK Pattern Sample (2)

NG patterns

- The best patch for the top area and that for the bottom area are different and the two patches are Not located side by side.

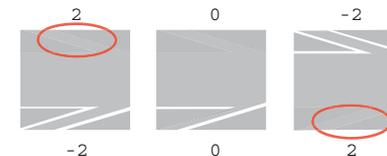


Figure 5-12. NG Pattern Sample



If the check pattern is judged as NG, repeat the adjustment procedure until the OK pattern is printed.

## 5.2.16 PF Band Adjustment

### □ Procedure

1. Load an A4-sized plain paper on the ASF.
2. Select “PF Adjustment” from the adjustment program.
3. Click [Print] to print the PF band adjustment pattern.
4. Examine the printed pattern from the group with a minus value and select a value for the first group of blocks that has no gap or overlap.
5. Click [Input] to write the selected adjustment value.

### □ Supplement

If none of the groups satisfy the OK level, input a value for the least worst group and print the pattern again to repeat the adjustment.

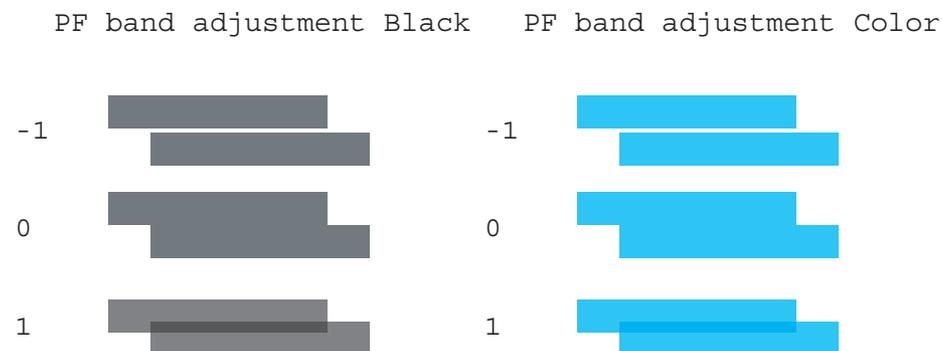
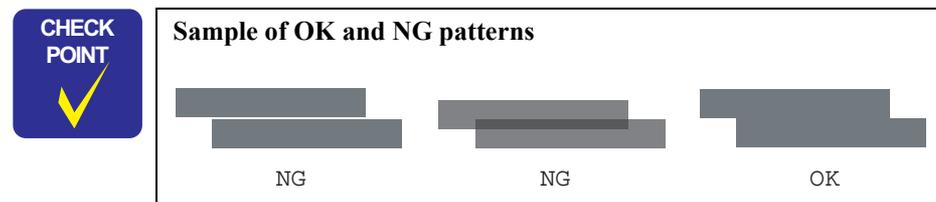


Figure 5-13. PF Band Adjustment Pattern



## 5.3 Adjustment Except Adjustment Program

Following is adjustment except Adjustment Program.

### 5.3.1 PG Adjustment

#### □ Parts to be Removed and Replaced

- Removal and Replacement of Carriage Unit
- Removal and Replacement of Print Head

#### □ Adjustment procedure

1. Make sure that the printer is turned off.
2. Set new ink cartridges in the Carriage Unit.
3. Prepare the thickness gauge. (The thickness should be 1.45mm.)
4. Loosen the screw (C.B.S 3x6) for securing the Parallel Adjustment Lever (Left).

#### CAUTION



- Do not remove a screw completely. (two or three revolution)
- You need not to loosen the screw securing the Parallel Adjustment Lever (Right).
- Make sure to install new ink cartridges during the adjustment as the weight of the cartridges affect PG.

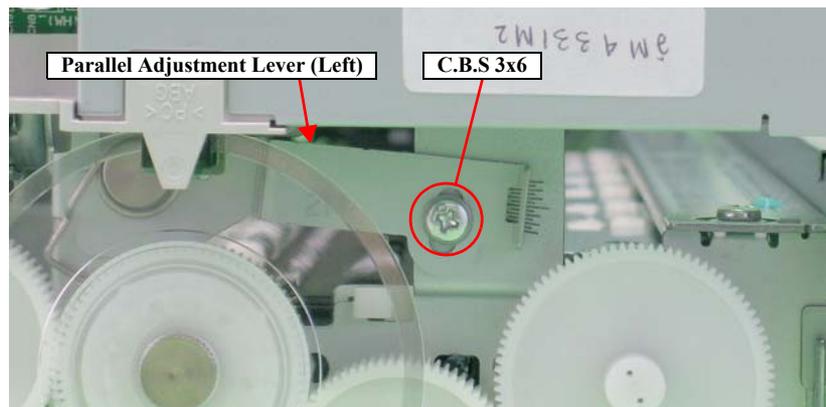


Figure 5-14. Parallel Adjustment Lever (Left) Location

5. Release the Carriage Lock if the Carriage Unit is locked.
6. Set the thickness gauge at the position shown by the figure. The thickness gauge should be placed between the front of the Paper Guide Front Unit and the center ribs.

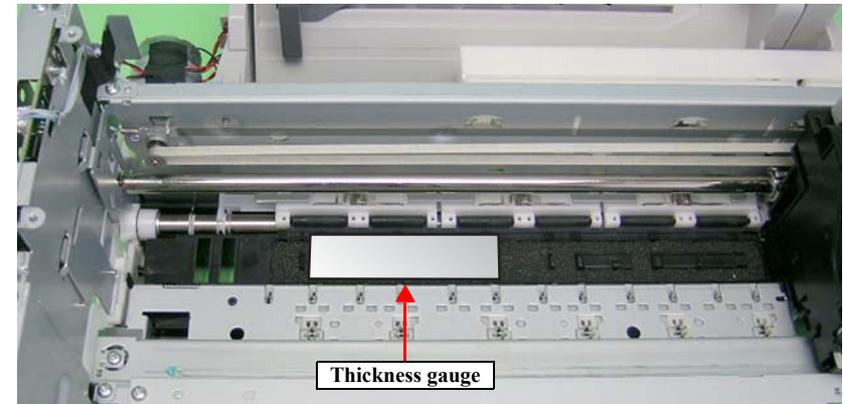


Figure 5-15. Placement position for thickness gauge

7. Confirm that PG Lever is lowered. If PG Lever is raised, lower it.
8. Move the Carriage Unit on the thickness gauge by using the Timing Belt, and check whether the thickness gauge moves or not.



- If you push the Carriage Unit directly, it's possible to damage the Print Head surface by the friction with the thickness gauge.
- Following is the relationship between "Parallel Adjustment Lever (Left) operation" and "Platen gap reaction".

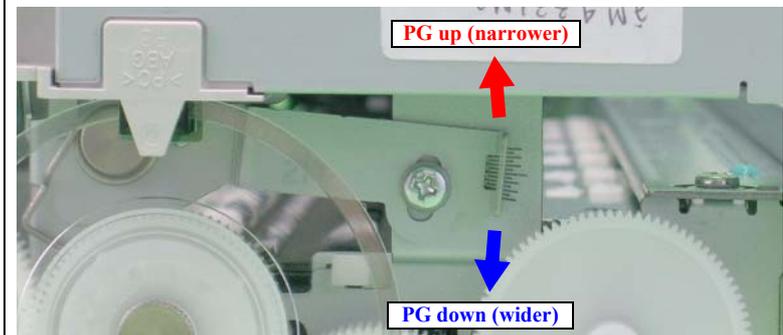


Figure 5-16. Relationship between Parallel Adjustment Lever (Left) Operation & Platen Gap

9. Proceed to following steps until you've completed the left side PG adjustment.

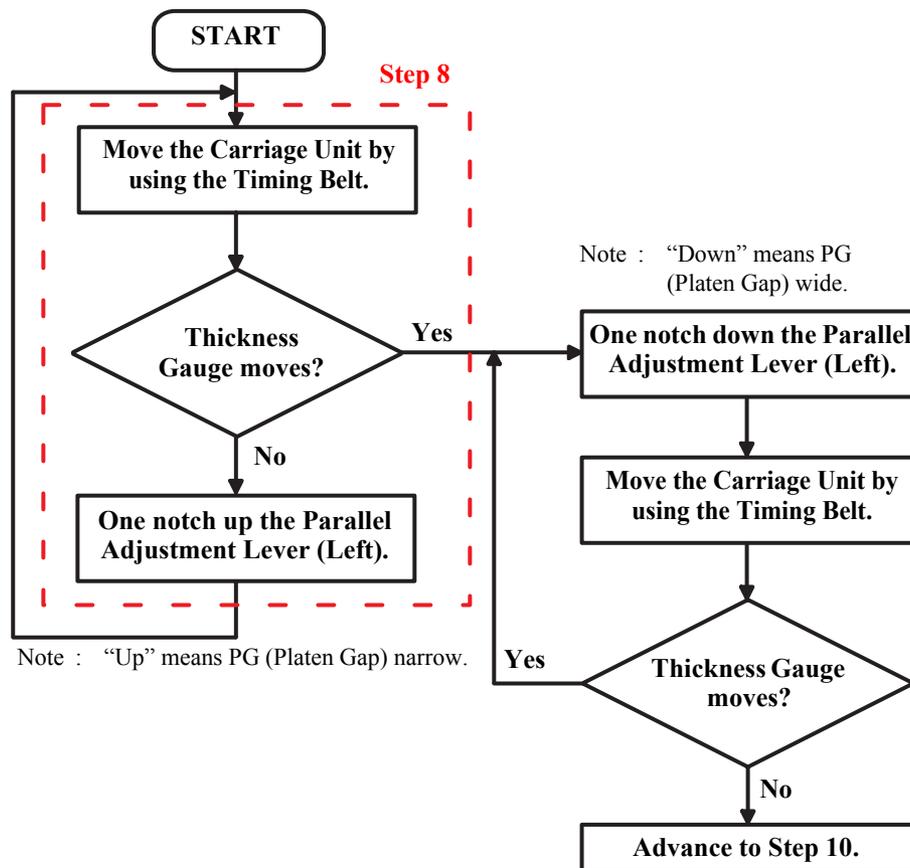


Figure 5-17. Left Side PG Adjustment

10. Tighten the screw for securing Parallel Adjustment Lever (Left) temporary.

11. Loosen the screw (C.B.S 3x6) for securing the Parallel Adjustment Lever (Right).

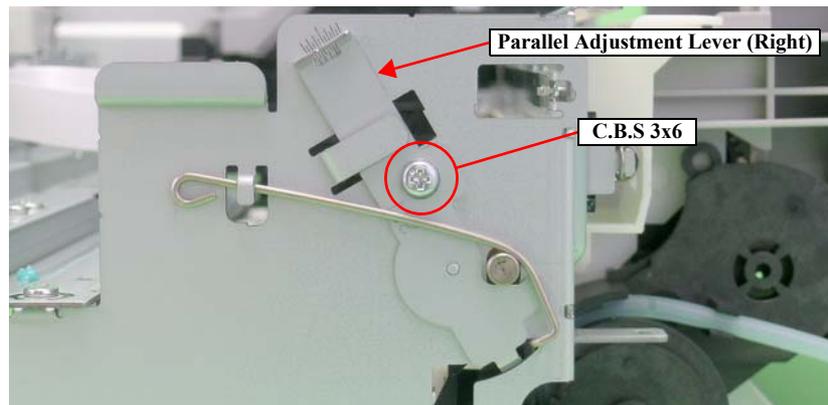


Figure 5-18. Parallel Adjustment Lever (Right) Location

**CAUTION**



- Do not remove a screw completely. (two or three revolution)
- You need not to loosen the screw for securing the Parallel Adjustment Lever (Light).

12. Set the thickness gauge at the position shown by the figure. The thickness gauge should be placed between the front of the Paper Guide Front Unit and the center ribs.

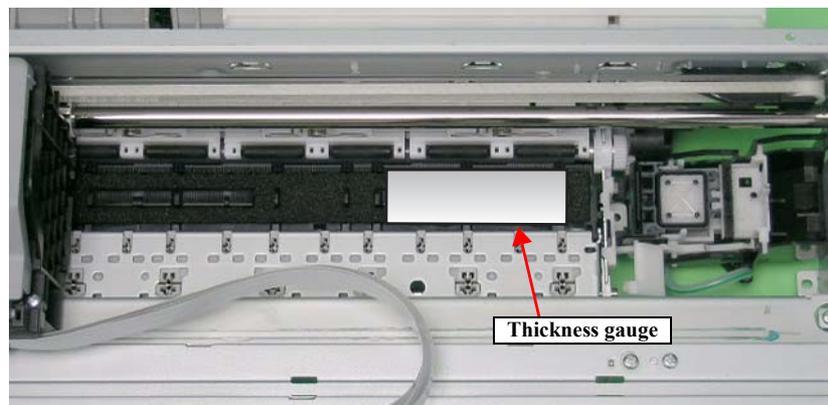


Figure 5-19. Placement position for thickness gauge

13. Move the Carriage Unit on the thickness gauge by using the Timing Belt, and check whether the thickness gauge moves or not.

**CAUTION**



- If you push the Carriage Unit directly, it's possible to damage the Print Head surface by the friction with the thickness gauge.
- Following is the relationship between "Parallel Adjustment Lever (Right) operation" and "Platen gap reaction".

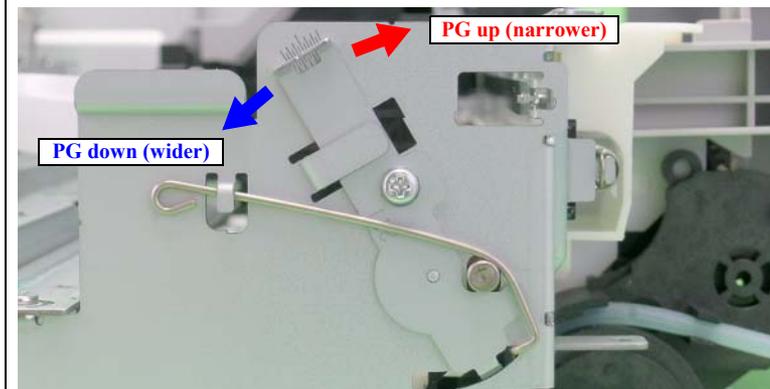


Figure 5-20. Relationship between Parallel Adjustment Lever (Right) Operation & Platen Gap

14. Accede to following steps until you've completed the right side PG adjustment.

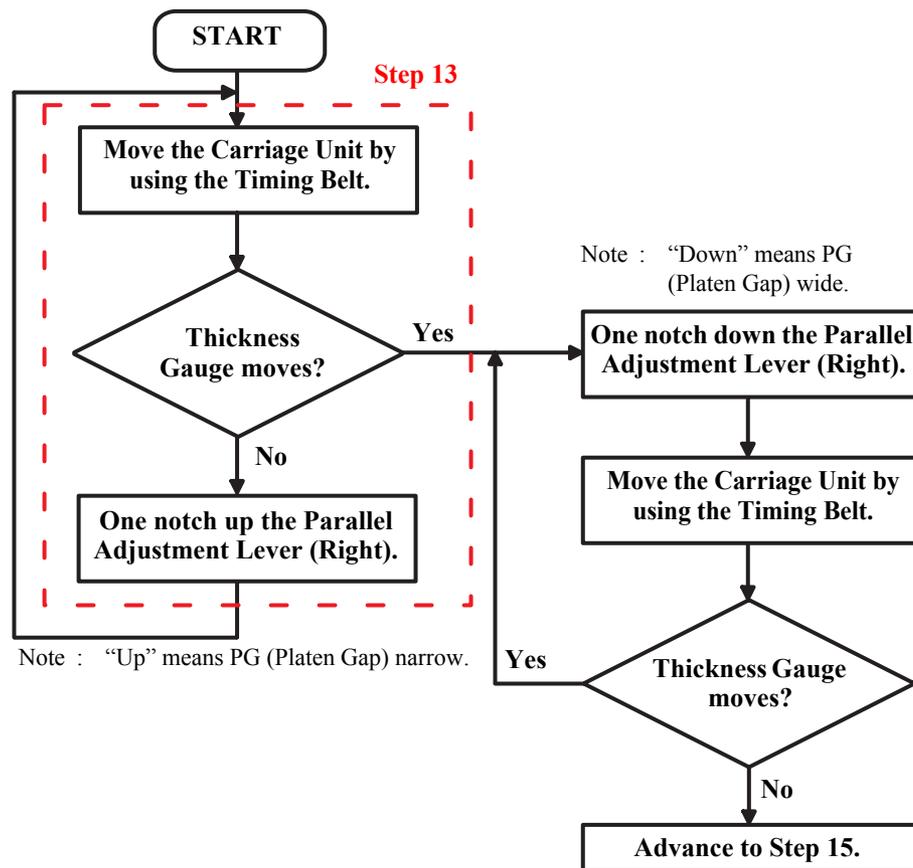


Figure 5-21. Right Side PG Adjustment

15. Tighten the screw securing for Parallel Adjustment Lever (Right) temporary.  
 16. Set the thickness gauge at position shown by Figure 5-15 again.

17. Accede to following steps to check left side PG again.

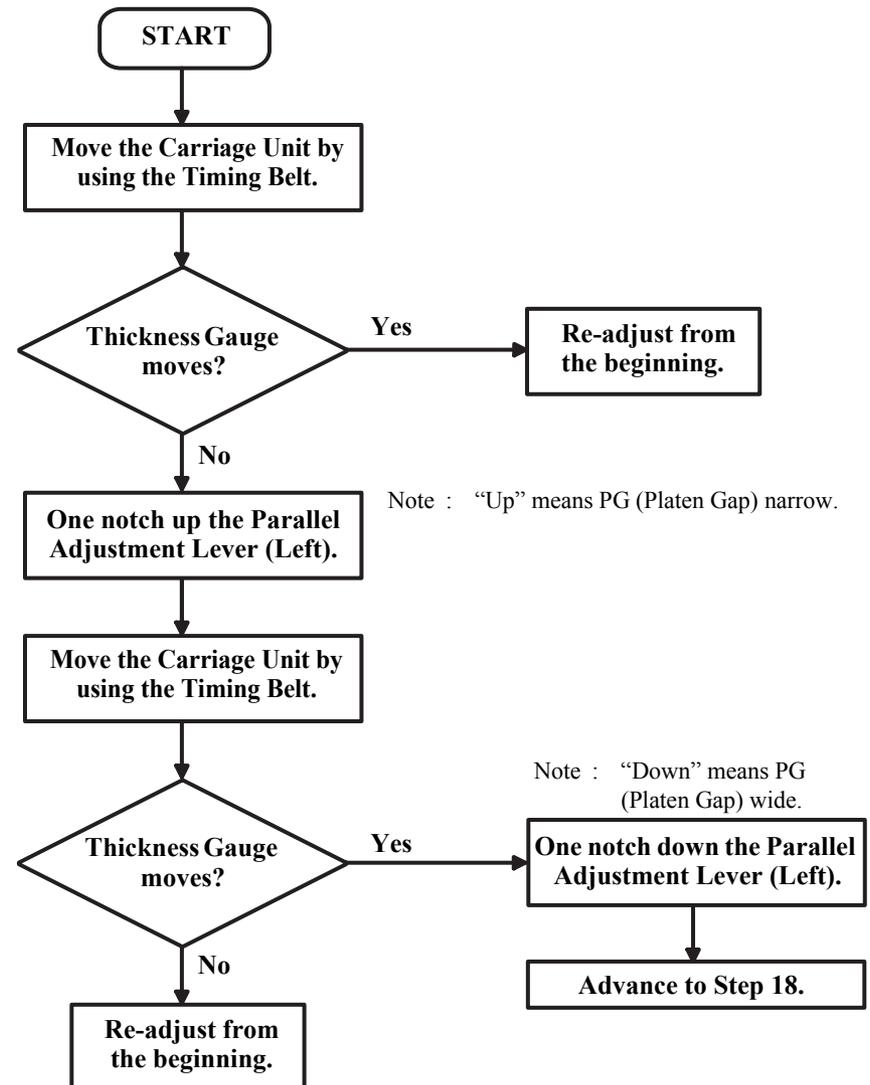


Figure 5-22. Right/Left Sides PG Checking

18. Tighten both screws completely.

### 5.3.2 PF Scale Sensor Positioning Adjustment

#### □ Parts to be Removed and Replaced

- Replacement of Main Board Unit
- Replacement of PF Roller Unit

#### □ Adjustment procedure

1. Test fit Main Board Unit, and confirm whether or not PF Scale is positioned in the center of PF Sensor.
2. If PF Scale is positioned in the center of PF Sensor, adjustment is complete. If scale is not positioned in center of sensor, adjust position of PF Scale using spacer (0.5mm thickness) as shown in diagram below.

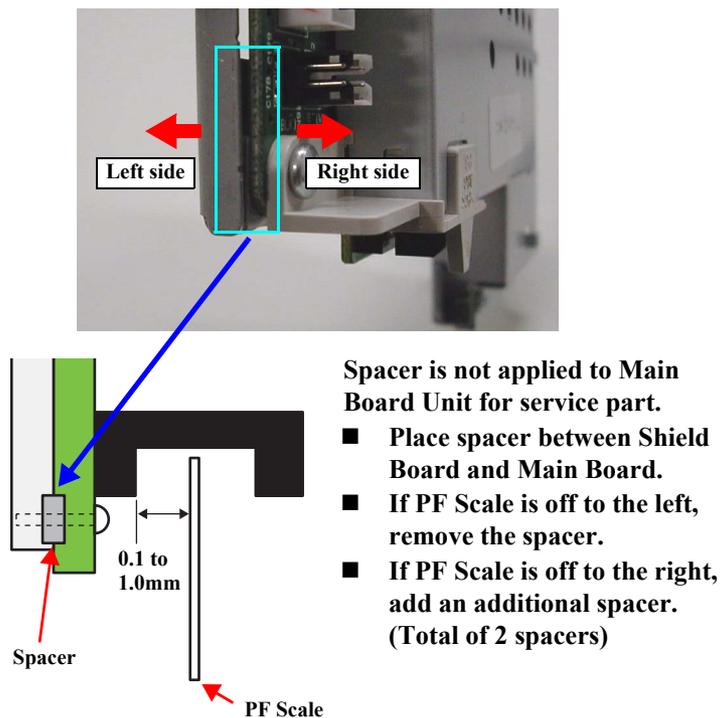


Figure 5-23. PF Scale Sensor positioning adjustment

### 5.3.3 Original Adjustment

□ **Parts to be removed and replaced**

- Replacement of Scanner Housing, Upper
- Replacement of Scanner Unit



■ This adjustment requires the FT (Function Test) program and the exclusive adjustment jig.

■ If the setting of the printer differs from the one mentioned in the following procedure, this adjustment can not be completed correctly. In that case, the edge of the Scanner Housing, Upper may be read in during scanning or copying.



■ Download and install the Original Adjustment program from TechExchange.

■ Before the adjustment is performed, connect the printer to the computer with the adjustment program installed with the USB cable.

□ **Adjustment procedure**

1. Hold down [Color Start] + [Paper Size]+ [Fit to Page] and turn the printer on. Keep pressing those buttons for five seconds, and the printer turns to the scanner mode.

\* This adjustment can be performed by turning on the printer without pressing those buttons. However, following the above approach reduces the time taken to enter ready mode.

2. Run "FT.exe".



Figure 5-24. Original Adjustment (1)

3. Open the document cover, and place the original adjustment jig as shown in the figure below.

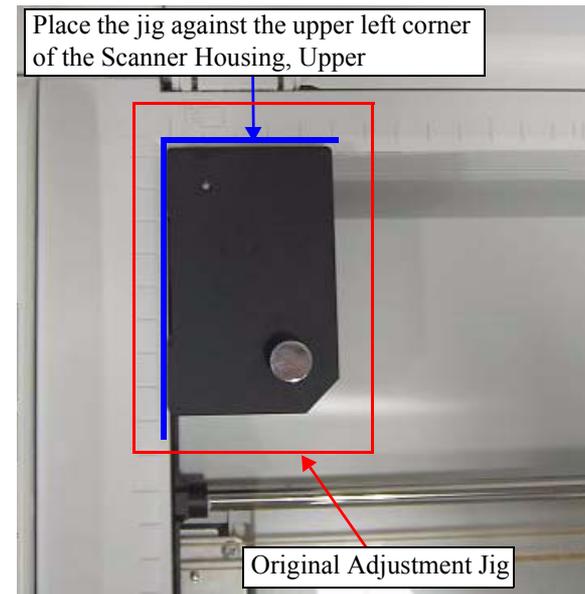


Figure 5-25. Original Adjustment Jig Setting Position

4. Select "Celadon" in the "Select Parameter Set" window, and click [OK].

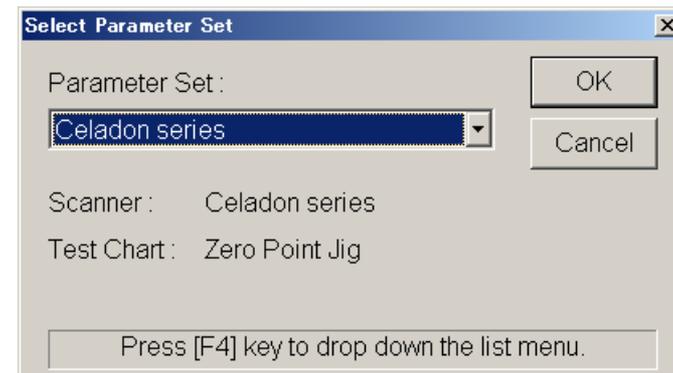


Figure 5-26. Original Adjustment (2)

- Click the “SGL” icon in the “EPSON Scanner Function Test - WriteZero for service” window.

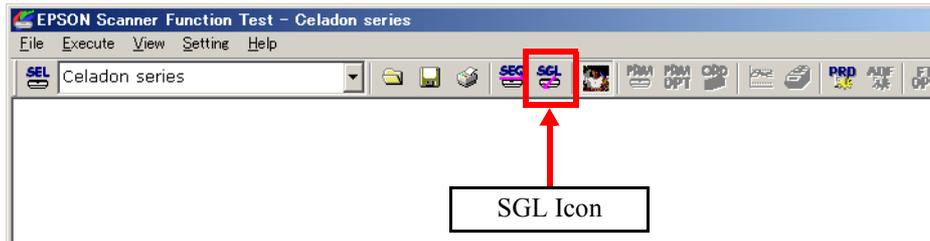


Figure 5-27. Original Adjustment (3)

- Enter the product number in the “Single Test” window, select “Write Zero Correction Value”, and press the [Execute] button.

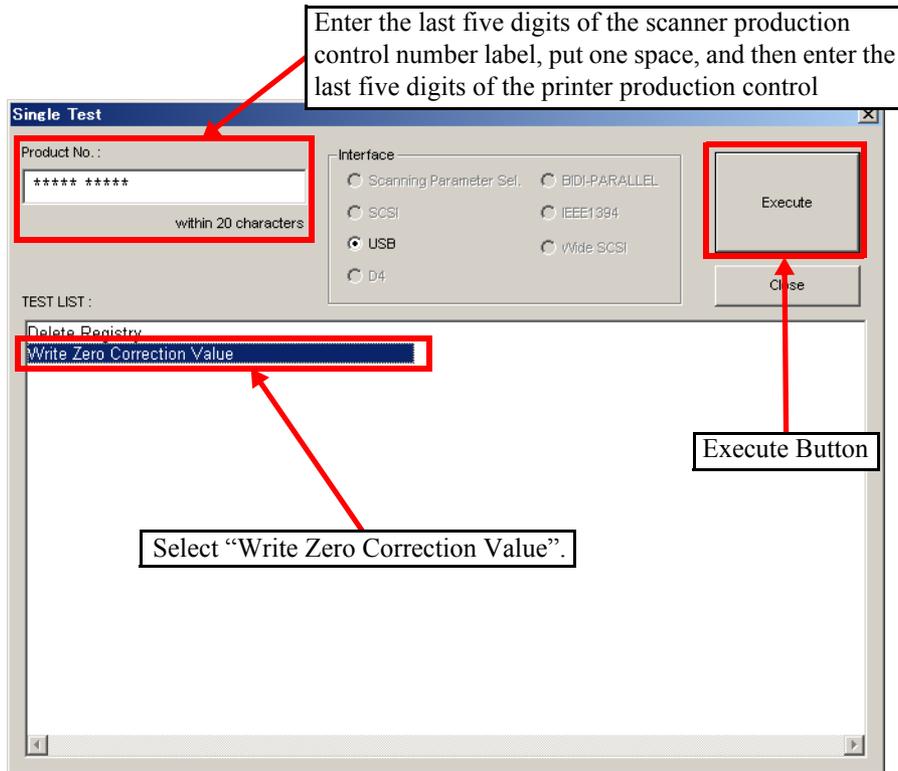


Figure 5-28. Original Adjustment (4)

- A progress bar will be displayed followed by the window shown below.

<Window displayed when the adjustment is completed successfully>

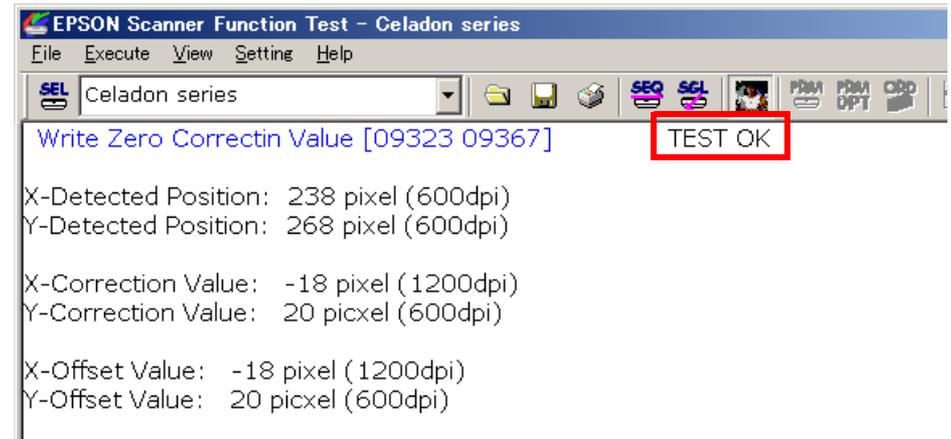


Figure 5-29. Window displayed when the adjustment is completed successfully (1)

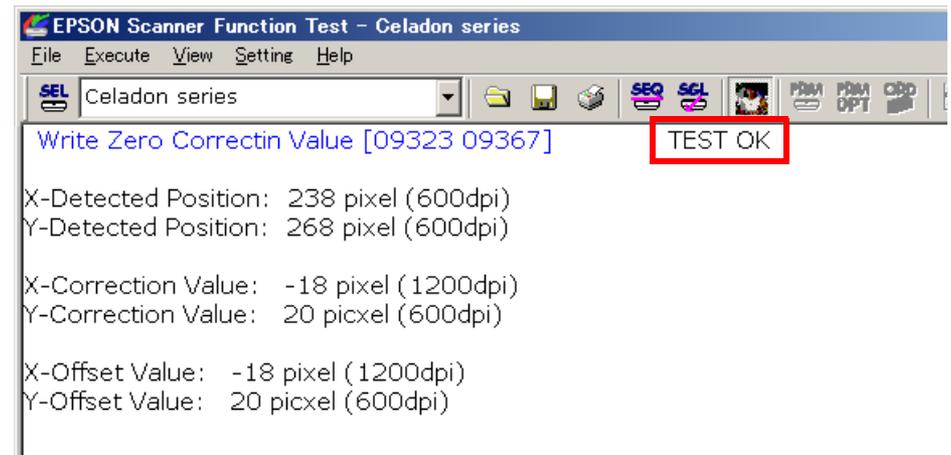
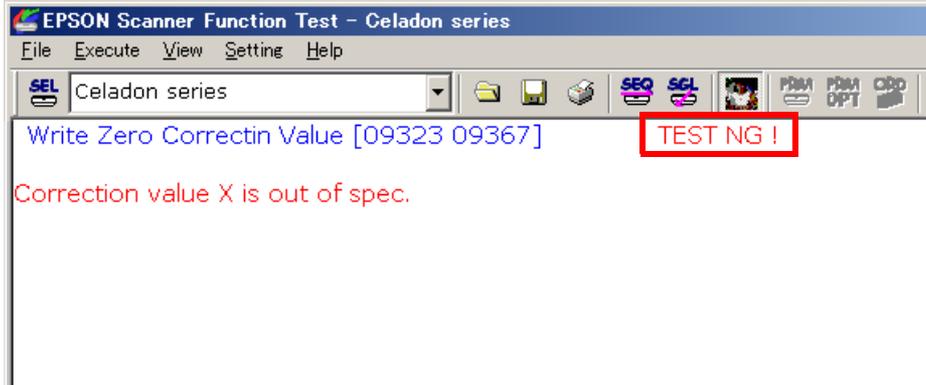


Figure 5-30. Window displayed when the adjustment is completed successfully (2)

<Window displayed when the adjustment has failed>



**Figure 5-31. Window displayed when the adjustment has failed**

If the adjustment cannot be completed successfully, check whether the parts are correctly installed or not. If there is a problem, perform the part replacement once again.

CHAPTER

6

MAINTENANCE

## 6.1 Overview

This section provides information to maintain the printer in its optimum condition.

### 6.1.1 Cleaning

This printer has no mechanical components which require regular cleaning except the Print Head. Therefore, when returning the printer to the user, check the following parts and perform appropriate cleaning if stain is noticeable.

#### CAUTION



- Never use chemical solvents, such as thinner, benzene, and acetone to clean the exterior parts of the printer like the Housing. These chemicals may deform or deteriorate the components of the printer.
- Be careful not to damage any components when you clean inside the printer.
- Do not scratch the coated surface of the PF Roller Unit. Use soft brush to wipe off any dusts. Use a soft cloth moistened with alcohol to remove the ink stain.
- Do not use cleaning sheet included in the media for normal usage. It may damage the coated surface of PF Roller Unit. If the adhesive surface of the cleaning sheet is set to the LD Roller shaft side and used to clean the LD Roller surface, it is no problem.
- When using compressed air products; such as air duster, for cleaning during repair and maintenance, the use of such products containing flammable gas is prohibited.

- Exterior parts  
Use a clean soft cloth moistened with water, and wipe off any dirt. If the exterior parts are stained by the ink, use a cloth moistened with neutral detergent to wipe it off.
- Inside the printer  
Use a vacuum cleaner to remove any paper dust.

- LD Roller  
When paper loading function does not operate because friction of the LD Roller is lowered by any paper dust, set the adhesive side up of the cleaning sheet (included in the media) to remove any paper dust. Repeat loading the cleaning sheet several times.
- Document glass  
Remove dust or any paper with a clean dry cloth. In case dirt is serious or alien substance is stick, wipe it off with a cloth moistened with neutral detergent. In case Stain is remained, wipe again with a dry clean cloth.

### 6.1.2 Service Maintenance

If any abnormal print (dot missing, white line, etc.) has occurred or the printer indicates the “Maintenance request error” (This error is displayed as “Maintenance call error” in the STM3), take the following actions to clear the error.

- Print Head cleaning  
When dot missing or banding phenomenon has occurred, you need to perform the Print Head cleaning operation\*1 by using the Print Head cleaning function. This function can be performed by the control panel operation, the printer driver utility and the Adjustment program.  
In case that the cleaning sequence is performed by the control panel operation, confirm that the printer is in stand-by state (the Power LED is lighting), and hold down the Ink SW on the control panel for more than 3 seconds. Then, the printer starts the cleaning sequence (the Power LED blinks during this sequence).  
In case that you select and perform the manual cleaning by the printer driver utility, the most appropriate cleaning mode is selected. The following is the process to perform the Print Head cleaning from the printer driver utility.  
As for the operation of the Adjustment program, refer to Chapter 5 Adjustment.

Note \*1: The EPSON Stylus CX4900/CX4905/CX5000/DX5000/DX5050/CX5900/CX6000/DX6000/DX6050 has three modes for manual cleaning, and even during printing, the appropriate cleaning mode is automatically selected and performed according to various conditions. Therefore the ink consumption amount for manual cleaning varies depending on each mode (Refer to Chapter 2).

1. Select the “EPSON Status Monitor 3” in the printer driver utility, and make sure that the printer is in stand-by state by using the Status monitor 3. If the printer is in stand-by state, the following figure is indicated on the monitor.

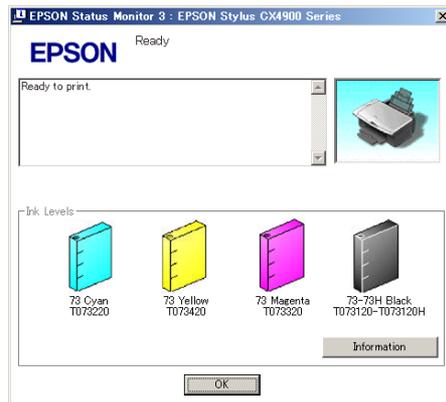


Figure 6-1. Status Monitor 3 Indication

2. Select the “Head Cleaning” in the printer driver utility, and perform the Print Head cleaning operation. After performing the Print Head cleaning operation, print a nozzle check pattern by selecting the “Nozzle Check“. If you repeat the Print Head cleaning operation without selecting the “Nozzle Check“, CL1, the weakest cleaning, will be repeated.

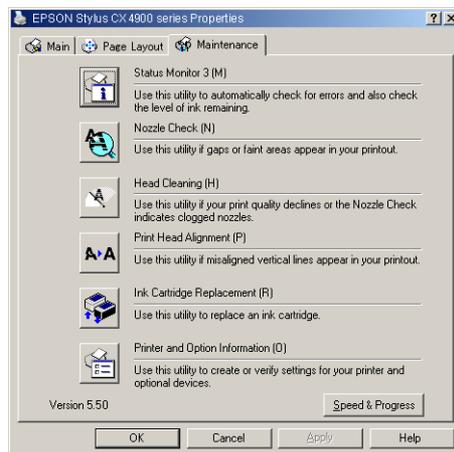


Figure 6-2. Head Cleaning Function in the Printer Driver Utility

- Maintenance request error (Maintenance call error)  
Ink is used for the Print Head cleaning operation as well as the printing operation. When the ink is used for the Print Head cleaning operation, the ink is drained to the Waste ink pads and the amount of the waste ink is stored as the waste ink counter into the EEPROM on the Main Board. Due to this, when the waste ink counter has reached the limit of the absorbing capability of the Waste ink pads, the Maintenance call error is indicated on Status monitor 3 as following figure.

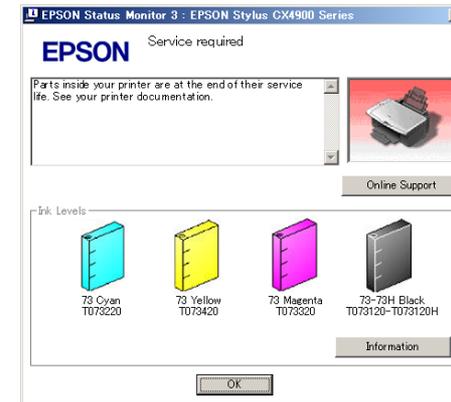


Figure 6-3. Maintenance error indication in STM3

In this case, replace to new Waste ink pads and clear the waste ink counter stored into the EEPROM. The waste ink counter can be reset only from the Adjustment program because this printer dose not have the waste ink counter reset function by the control panel SW. As for the procedure, refer to Chapter 5 Adjustment. In your repair activity, check the waste ink counter along with the firmware version, Main Board checker program version and nozzle check pattern on the nozzle check pattern printing. If the waste ink counter is closed to its limit, recommend that the Waste ink pads will be replaced with new one. This is because the “Maintenance request error” will may occur after returning the repaired product to the customer.

### 6.1.3 Lubrication

The characteristics of the grease have great effects on the mechanical function and durability, especially does the characteristics about temperature environment. The type and amount of the grease used to lubricate the printer parts are determined based on the results of the internal evaluations. Therefore, be sure to apply the specified type and amount of the grease to the specified part of the printer mechanism during servicing.



- Never use oil or grease other than those specified in this manual. Use of different types of oil or grease may damage the component or give bad influence on the printer function.
- Never apply larger amount of grease than specified in this manual.

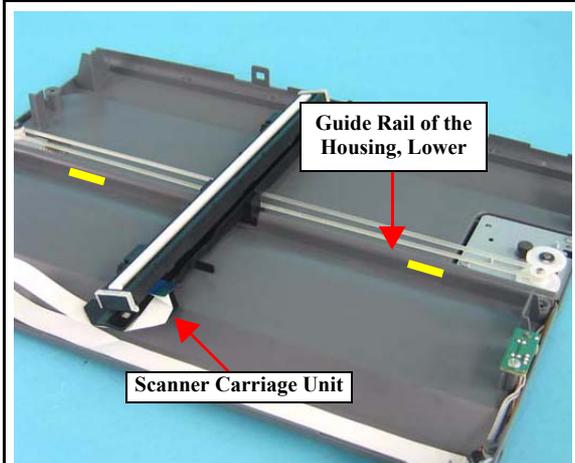
Table 6-1. Specified lubricants

Type	Name	EPSON code	Supplier
Grease	G-26	1080614	EPSON
Grease	G-45	1033657	EPSON
Grease	G-71	1304682	EPSON
Grease	G-74	1409257	EPSON



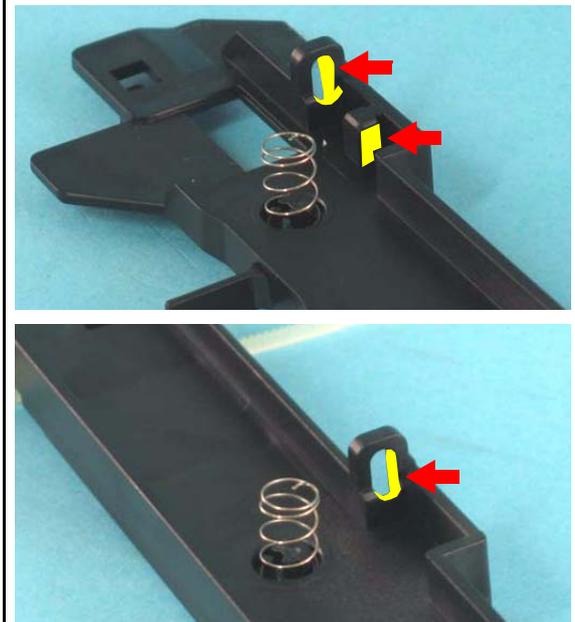
When using G-74, it is recommended to use a flux dispenser (1049533) together.

□ Refer to the following figures for the lubrication points.



<Lubrication Point>	Guide Rail of the Housing, Lower surface
<Lubrication Type>	G-45
<Lubrication Amount>	0.06g x 2 points
<Remarks>	Use a brush to apply. <ul style="list-style-type: none"> <li>Grease should be applied only to the semicircular section.</li> </ul>

Figure 6-4. Lubrication on Guide Rail of the Housing, Lower Surface



<Lubrication Point>	CIS Unit Shaft Hole Sections
<Lubrication Type>	G-74
<Lubrication Amount>	Adequate dose x 3 points
<Remarks>	Use a flux dispenser to apply. <ul style="list-style-type: none"> <li>Grease must not spread to other parts.</li> </ul>

Figure 6-5. Lubrication on CIS Unit Shaft Hole Sections

	<p>&lt;Lubrication Point&gt;</p> <ol style="list-style-type: none"> <li>Paper Back Lever Surface</li> <li>Hopper Surface</li> </ol>
	<p>&lt;Lubrication Type&gt;</p> <ol style="list-style-type: none"> <li>G-26</li> <li>G-26</li> </ol>
	<p>&lt;Lubrication Amount&gt;</p> <p>150mg</p>
	<p>&lt;Remarks&gt;</p> <ol style="list-style-type: none"> <li>Use a brush to apply.</li> <li>Use a injector to apply.</li> </ol> <ul style="list-style-type: none"> <li>Grease must not spread to other parts.</li> </ul>

Figure 6-6. Lubrication on ASF Unit

	<p>&lt;Lubrication Point&gt;</p> <ol style="list-style-type: none"> <li>Two holes of the Carriage Unit. (Should be in touch with the Carriage Guide Shaft.)</li> <li>Carriage Guide Shaft Surface</li> </ol>
	<p>&lt;Lubrication Type&gt;</p> <ol style="list-style-type: none"> <li>G-71</li> <li>G-71</li> </ol>
	<p>&lt;Lubrication Amount&gt;</p> <ol style="list-style-type: none"> <li>150 ~ 210mg (Two points in total)</li> <li>120 ~ 160mg (Two points in total)</li> </ol>
	<p>&lt;Remarks&gt;</p> <ol style="list-style-type: none"> <li>Use a injector to apply.</li> <li>Use a injector to apply.</li> </ol> <ul style="list-style-type: none"> <li>G-71 must not spread to the Timing Belt.</li> <li>Do not let G-71 run off to the Carriage outside surface.</li> </ul>

Figure 6-7. Lubrication on Carriage Unit (1)

	<p>&lt;Lubrication Point&gt;</p> <p>Contact areas between the EJ Roller Unit and the five tabs of the Front Paper Guide Support.</p>
	<p>&lt;Lubrication Type&gt;</p> <p>G-74</p>
	<p>&lt;Lubrication Amount&gt;</p> <p>0.3g x 5 points</p>
	<p>&lt;Remarks&gt;</p> <ul style="list-style-type: none"> <li>Use a flux dispenser to apply.</li> <li>G-74 must not spread to the rubber part of the EJ Roller Unit.</li> </ul>

Figure 6-8. Lubrication on EJ Roller Unit

	<p>&lt;Lubrication Point&gt;</p> <p>From the left edge (left line mark) to the right edge (right line mark) of the Front Frame</p>
	<p>&lt;Lubrication Type&gt;</p> <p>KEN Grease</p>
	<p>&lt;Lubrication Amount&gt;</p> <p>200mg</p>
	<p>&lt;Remarks&gt;</p> <p>Use a injector to apply.</p>

Figure 6-9. Lubrication on Front Frame

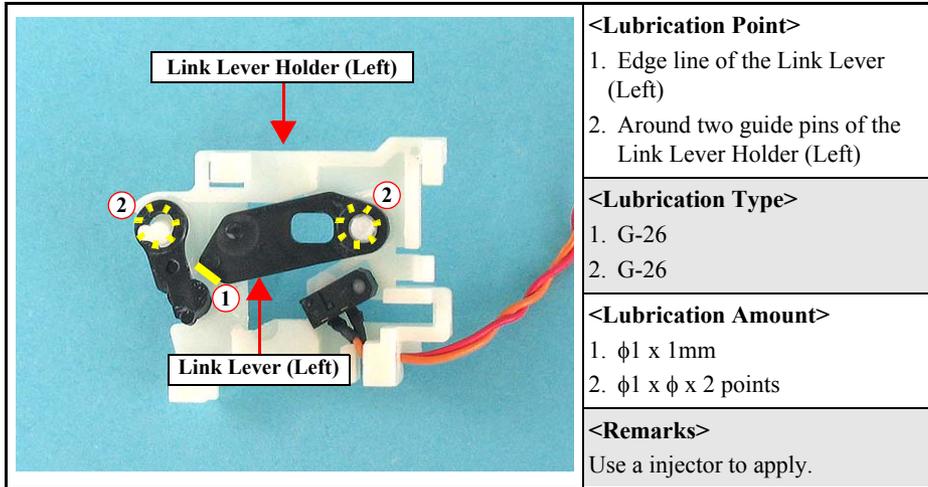


Figure 6-10. Lubrication on Link Lever (Left)

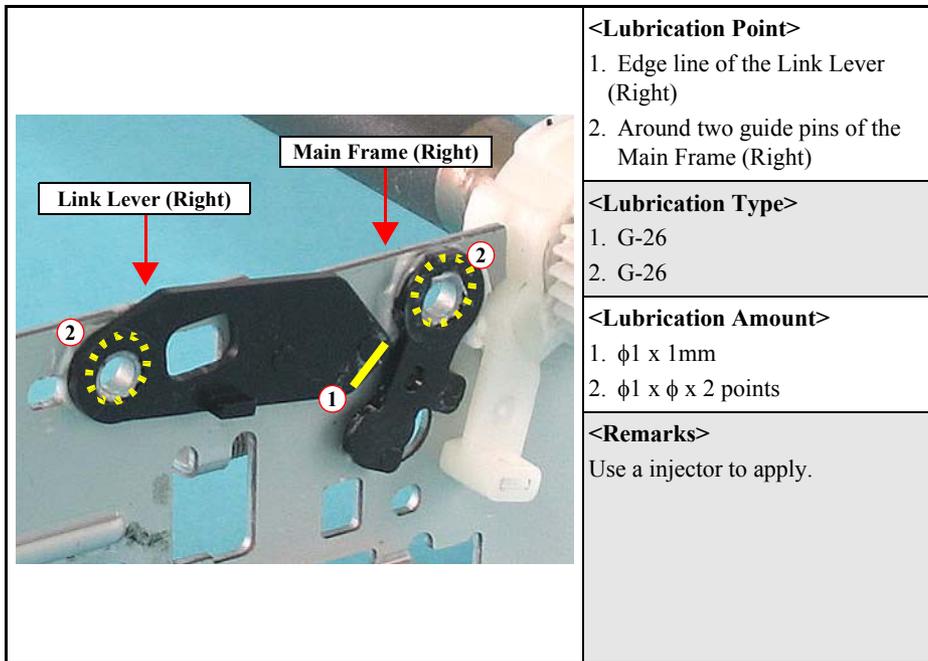


Figure 6-11. Lubrication on Link Lever (Right)

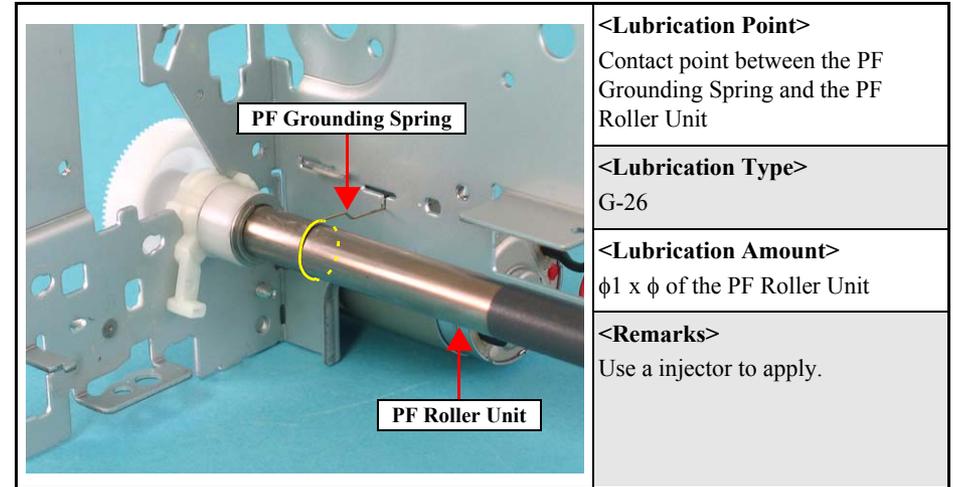


Figure 6-12. Lubrication on PF Roller Unit (1)

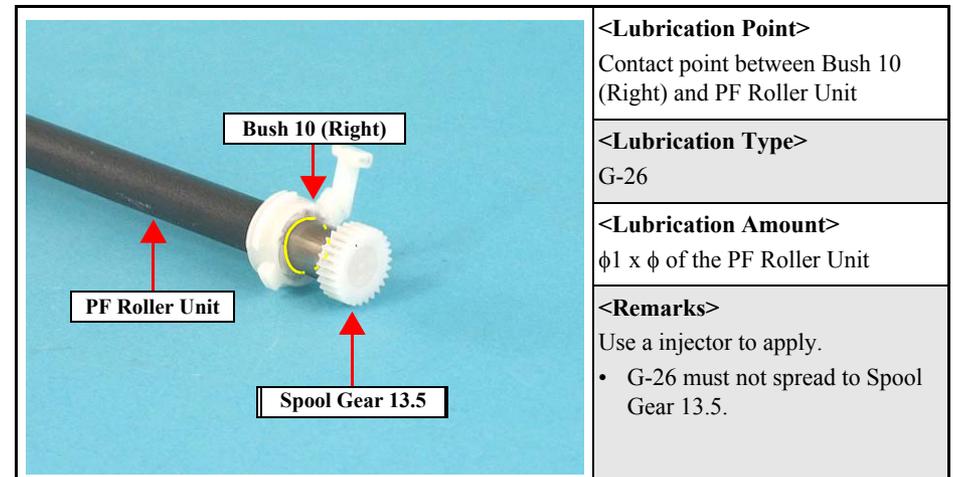


Figure 6-13. Lubrication on PF Roller Unit (2)

**CHAPTER**

**7**

**APPENDIX**

## 7.1 Connector Summary



The Panel Board for Stylus CX4900/CX4905/CX5000/DX5000/DX5050 is different to Stylus CX5900/CX6000/DX6000/DX6050. Note that different panels are connected to different connectors on the Main Board.

- Stylus CX4900/CX4905/CX5000/DX5000/DX5050: C571 PNL (CN12)
- Stylus CX5900/CX6000/DX6000/DX6050: C657 PNL (CN18)

### 7.1.1 Major Component Unit

The major component units of this printer are as follows.

- Main Board (C657 Main)
- Power Supply Board (C610 PSB/PSE)
- Panel Board (C571 PNL/C657 PNL)
- Head Board (C654 HEAD)

The figure below shows how to connect these components.

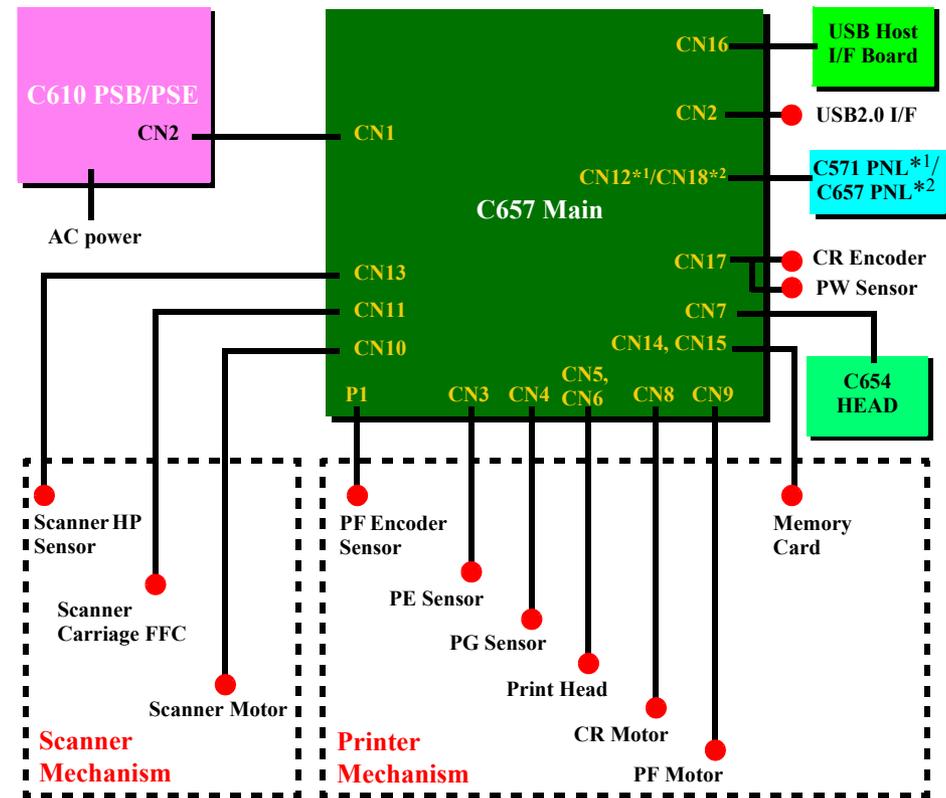


Figure 7-1. Connection of the major components

Note \*1: Stylus CX4900/CX4905/CX5000/DX5000/DX5050 only

\*2: Stylus CX5900/CX6000/DX6000/DX6050 only

See the following tables for the connector summary for the C657 Main board and each connectors pin alignment.

**Table 7-1. Connector Summary for C657 Main Board**

Connector	Function	Table to refer to
CN1	For connection with the Power Supply Board	Table 7-2 (p.198)
CN2	For connection with the USB2.0 interface	“1.3.1 USB Interface” (p.20)
CN3	For connection with the PE Sensor	Table 7-3 (p.198)
CN4	For connection with the PG Sensor	Table 7-4 (p.198)
CN5	For connection with the Print Head	Table 7-5 (p.198)
CN6	For connection with the Print Head	Table 7-6 (p.199)
CN7	For connection with the C654 HEAD Board	Table 7-17 (p.202)
CN8	For connection with the CR Motor	Table 7-8 (p.199)
CN9	For connection with the PF Motor	Table 7-9 (p.199)
CN10	For connection with the Scanner Motor	Table 7-10 (p.199)
CN11	For connection with the Scanner Carriage FFC	Table 7-11 (p.199)
CN12*1	For connection with the Panel Board (C571 PNL)	Table 7-12 (p.200)
CN13	For connection with the Scanner HP Sensor	Table 7-13 (p.200)
CN14	For connection with the Memory Card	Table 7-14 (p.200)
CN15	For connection with the Memory Card	Table 7-15 (p.201)
CN16	For connection with the USB Host I/F Board	Table 7-16 (p.201)
CN17	For connection with the CR Encoder/PW Sensor	Table 7-16 (p.201)
CN18*2	For connection with the Panel Board (C657 PNL)	Table 7-16 (p.201)

Note \*1: Stylus CX4900/CX4905/CX5000/DX5000/DX5050 only

\*2: Stylus CX5900/CX6000/DX6000/DX6050 only

**Table 7-2. CN1 - Power Supply Board**

Pin	Signal Name	I/O	Function
1	+42V	—	+42V
2	GND	—	Ground
3	PSC	I	Power supply control

**Table 7-3. CN3 - PE Sensor**

Pin	Signal Name	I/O	Function
1	PE	I	PE Sensor signal
2	GND	—	Ground
3	PEV	—	Power supply for PE Sensor

**Table 7-4. CN4 - PG Sensor**

Pin	Signal Name	I/O	Function
1	PG	I	PG Sensor signal
2	GND	—	Ground

**Table 7-5. CN5 - Print Head**

Pin	Signal Name	I/O	Function
1	XHOT/THM	I	Head temperature signal
2	SI2_Ye	O	Print data output for Yellow nozzles
3	VDD2	—	+3.3V
4	SI1_Bk	O	Print data output for Black nozzles
5	GND	—	Ground
6	NCHG	O	All nozzle fire selection pulse
7	GND	—	Ground
8	LAT	O	Head data latch pulse output
9	NC	—	Not connected
10	GND2	—	Ground
11	COM	O	Head drive pulse (trapezoid waveform)
12	GND2	—	Ground
13	COM	O	Head drive pulse (trapezoid waveform)

Table 7-6. CN6 - Print Head

Pin	Signal Name	I/O	Function
1	GND2	—	Ground
2	COM	O	Head drive pulse (trapezoid waveform)
3	GND2	—	Ground
4	COM	O	Head drive pulse (trapezoid waveform)
5	VHV	O	+42V power supply for nozzle selector
6	GND	—	Ground
7	SCK	—	Serial clock
8	GND	—	Ground
9	CH	O	Charge signal for the trapezoidal wave-form
10	VDD	—	+3.3V
11	SI3_Ma	O	Print data output for Magenta nozzles
12	GND	—	Ground
13	SI4_Cy	O	Print data output for Cyan nozzles

Table 7-7. CN7 - C654 HEAD Board

Pin	Signal Name	I/O	Function
1	VHV	O	+42V power supply for nozzle selector
2	COM	O	Head drive pulse (trapezoid waveform)
3	GND	—	Ground
4	VDD2	—	+3.3V
5	CH	O	Charge signal for the trapezoidal wave-form
6	Enable	TBD	TBD
7	COI	I	Cartridge detect signal
8	CSDA	I/O	CSIC transmit and receive data
9	CRST	O	Reset signal for address counter of CSIC
10	CGND	—	Ground
11	CVDD	O	Power supply for CSIC
12	CSCK	I/O	Clock signal for CSIC read/write

Table 7-8. CN8 - CR Motor

Pin	Signal Name	I/O	Function
1	CR-A	O	CR Motor drive signal (A)
2	CR-B	O	CR Motor drive signal (B)

Table 7-9. CN9 - PF Motor

Pin	Signal Name	I/O	Function
1	PF-A	O	PF Motor drive signal (A)
2	PF-B	O	PF Motor drive signal (B)

Table 7-10. CN10 - Scanner Motor

Pin	Signal Name	I/O	Function
1	A-	O	Phase drive signal (-A)
2	B	O	Phase drive signal (B)
3	A	O	Phase drive signal (A)
4	B-	O	Phase drive signal (-B)

Table 7-11. CN11 - Scanner Carriage

Pin	Signal Name	I/O	Function
1	OS	O	Output signal
2	VAD	—	Power supply for filtered 5V_SW (analog)
3	GND	—	Ground
4	M	O	Clock
5	RS	O	Reset
6	TR	O	Shift pulse
7	GND	—	Ground
8	VDD	—	Power supply for 5V_SW (digital)
9	LED R	O	LED cathode (Red)
10	LED G	O	LED cathode (Green)
11	LED B	O	LED cathode (Blue)
12	LED CA	—	Power supply for LED

**Table 7-12. CN12 - C571 Panel Board**  
(Stylus CX4900/CX4905/CX5000/DX5000/DX5050 only)

Pin	Signal Name	I/O	Function
1	GND	—	Ground
2	+3.3 V	—	+3.3 V
3	SDO	O	Serial data output for LED control
4	PSW	I/O	TBD
5	CLK	O	Shift clock for serial data I/O
6	SLAT	O	Switch data load signal and LED data latch signal
7	SENB	O	LED lamp enable signal
8	SDI	I	Switch data serial data input

**Table 7-13. CN13 - Scanner HP Sensor**

Pin	Signal Name	I/O	Function
1	SCN_HP	I	Scanner HP Sensor signal
2	GND	—	Ground
3	PEV	—	Power supply for Scanner HP Sensor

**Table 7-14. CN14 - Memory Card**

Pin	Signal Name	I/O	Function
1	GND	—	Ground
2	CD3		Data bus for CF slot (3)
3	CD4		Data bus for CF slot (4)
4	CD5		Data bus for CF slot (5)
5	CD6		Data bus for CF slot (6)
6	CD7		Data bus for CF slot (7)
7	/CE1		Card enable signal
8	CA10		Address bus for CF slot (10)
9	/OE		Output enable signal
10	CA9		Address bus for CF slot (9)
11	CA8		Address bus for CF slot (8)

**Table 7-14. CN14 - Memory Card**

Pin	Signal Name	I/O	Function
12	CA7		Address bus for CF slot (7)
13	VCC	—	Power supply for CompactFlash
14	CA6		Address bus for CF slot (6)
15	CA5		Address bus for CF slot (5)
16	CA4		Address bus for CF slot (4)
17	CA3		Address bus for CF slot (3)
18	CA2		Address bus for CF slot (2)
19	CA1		Address bus for CF slot (1)
20	CA0		Address bus for CF slot (0)
21	CD0		Data bus for CF slot (0)
22	CD1		Data bus for CF slot (1)
23	CD2		Data bus for CF slot (2)
24	WP/IOIS16B		Write protect - I/O port 16 bit
25	/CD2		Card detect signal
26	/CD1		Card detect signal
27	CD11		Data bus for CF slot (11)
28	CD12		Data bus for CF slot (12)
29	CD13		Data bus for CF slot (13)
30	CD14		Data bus for CF slot (14)
31	CD15		Data bus for CF slot (15)
32	/CE2		Card enable signal
33	NC/VS1		Voltage sensing 1
34	/IORD		I/O read
35	/IOWR		I/O write
36	/WE		Write enable signal
37	RDY		Ready
38	VCC	—	Power supply for CompactFlash
39	/CSEL	—	Not connected
40	RPU/VS2		Voltage sensing 2

Table 7-14. CN14 - Memory Card

Pin	Signal Name	I/O	Function
41	RESET		Reset
42	/WAIT		Bus cycle extension
43	INPACK		Input port response
44	/REG		Register select
45	BVD2/SPKA		Battery voltage detect/audio digital waveform
46	BVD1/STSCHG		Battery voltage detect/card status change
47	CD8		Data bus for CF slot (8)
48	CD9		Data bus for CF slot (9)
49	CD10		Data bus for CF slot (10)
50	GND	—	Ground

Table 7-15. CN15 - Memory Card

Pin	Signal Name	I/O	Function
1	GND	—	Ground
2	BS		Serial protocol bus state signal
3	MSD1		Memory Stick Data (Bit 1)
4	MSD0		Memory Stick Data (Bit 0)
5	MSD2		Memory Stick Data (Bit 2)
6	IN5		T.B.D.
7	MSD3	—	Memory Stick Data (Bit 3)
8	SCLK		Stick inserted/removed detect terminal
9	VCC		Power supply for Memory Stick
10	GND	—	Ground
X1	GND	—	Ground
X2	XD_ROY		
X3	XD_OEB		
X4	XD_CEB		
X5	XD_CLE		
X6	XD_ALE		
X7	XD_WEV		

Table 7-15. CN15 - Memory Card

Pin	Signal Name	I/O	Function
X8	XD_WPB		
X9	GND		Ground
X10	XD_DO		xD-Picture Card Data (Bit 0)
X11	XD_D1		xD-Picture Card Data (Bit 1)
X12	XD_D2		xD-Picture Card Data (Bit 2)
X13	XD_D3		xD-Picture Card Data (Bit 3)
X14	XD_D4		xD-Picture Card Data (Bit 4)
X15	XD_D5		xD-Picture Card Data (Bit 5)
X16	XD_D6		xD-Picture Card Data (Bit 6)
X17	XD_D7		xD-Picture Card Data (Bit 7)
X18	XD_VCC	—	
D1	CD/DAT3		
D2	CMD		
D3	GND		Ground
D4	VDD		
D5	CLK		Clock
D6	GND		Ground
D7	DAT0		
D8	DAT1	—	
D9	DAT-D0		
S1	WP	—	Write Protect
S3	DETECT		
S4	XD-CD1	—	

Table 7-16. CN16-USB Host I/F Board

Pin	Signal Name	I/O	Function
1	GND	—	Ground
2	D+	Bi-D	USB D+ Signal
3	D-	Bi-D	USB D- Signal
4	VBUS_IN	—	USB VBUS Input

Table 7-17. CN17 - CR Encoder/PW Sensor

Pin	Signal Name	I/O	Function
1	PW	I	Power Sensor Signal
2	GND	—	Ground
3	LEDON	—	Power supply for PW sensor
4	NC	—	Not connected
5	GND	—	Ground
6	ENCB	I	Encoder feed back signal ch.B
7	EVDD	O	Power for CR Encoder
8	ENCA	I	Encoder feed back signal ch.A

Table 7-18. CN18 - C657 Panel Board  
(Stylus CX5900/CX6000/DX6000/DX6050 only)

Pin	Signal Name	I/O	Function
1	GND	—	Ground
2	+3.3 V	—	+3.3 V
3	SDO	O	Serial data output for LED control
4	PSW	I/O	TBD
5	CLK	O	Shift clock for serial data I/O
6	SLAT	O	Switch data load signal and LED data latch signal
7	SENB	O	LED lamp enable signal
8	SDI	I	Switch data serial data input
9	GND	—	Ground
10	PNLAST		
11	SDATAO		
12	SCLK		
13	SCE		
14	5V_VCC	I	Switch data serial data input

## 7.2 Electrical Circuits

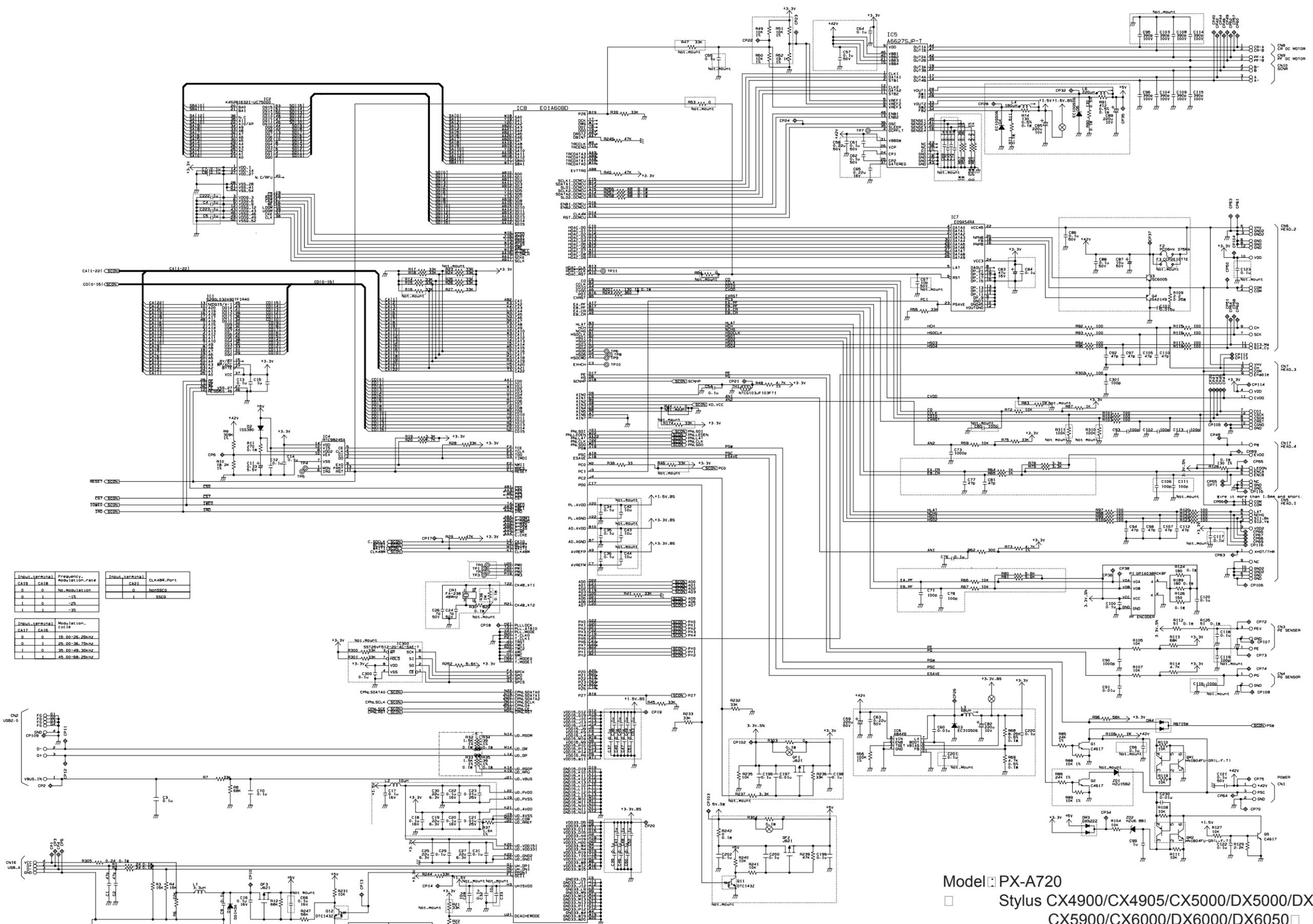
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The electric circuit diagrams below are shown at the following pages:

- C657 Main control circuit board
- C610 PSB/PSE power supply circuit board
- C571\*1/C657\*2 Panel circuit board
- C610 I/F circuit board
- C654 HEAD circuit board

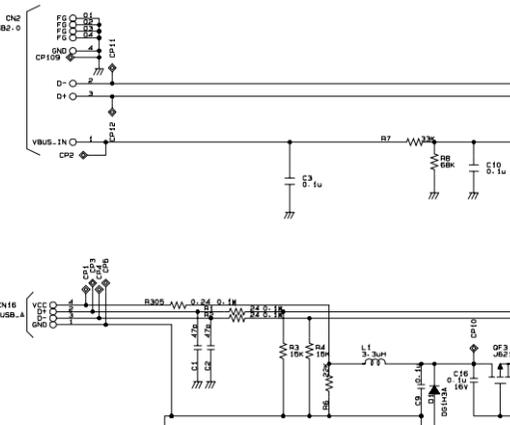
Note \*1: Stylus CX4900/CX4905/CX5000/DX5000/DX5050 only

\*2: Stylus CX5900/CX6000/DX6000/DX6050 only



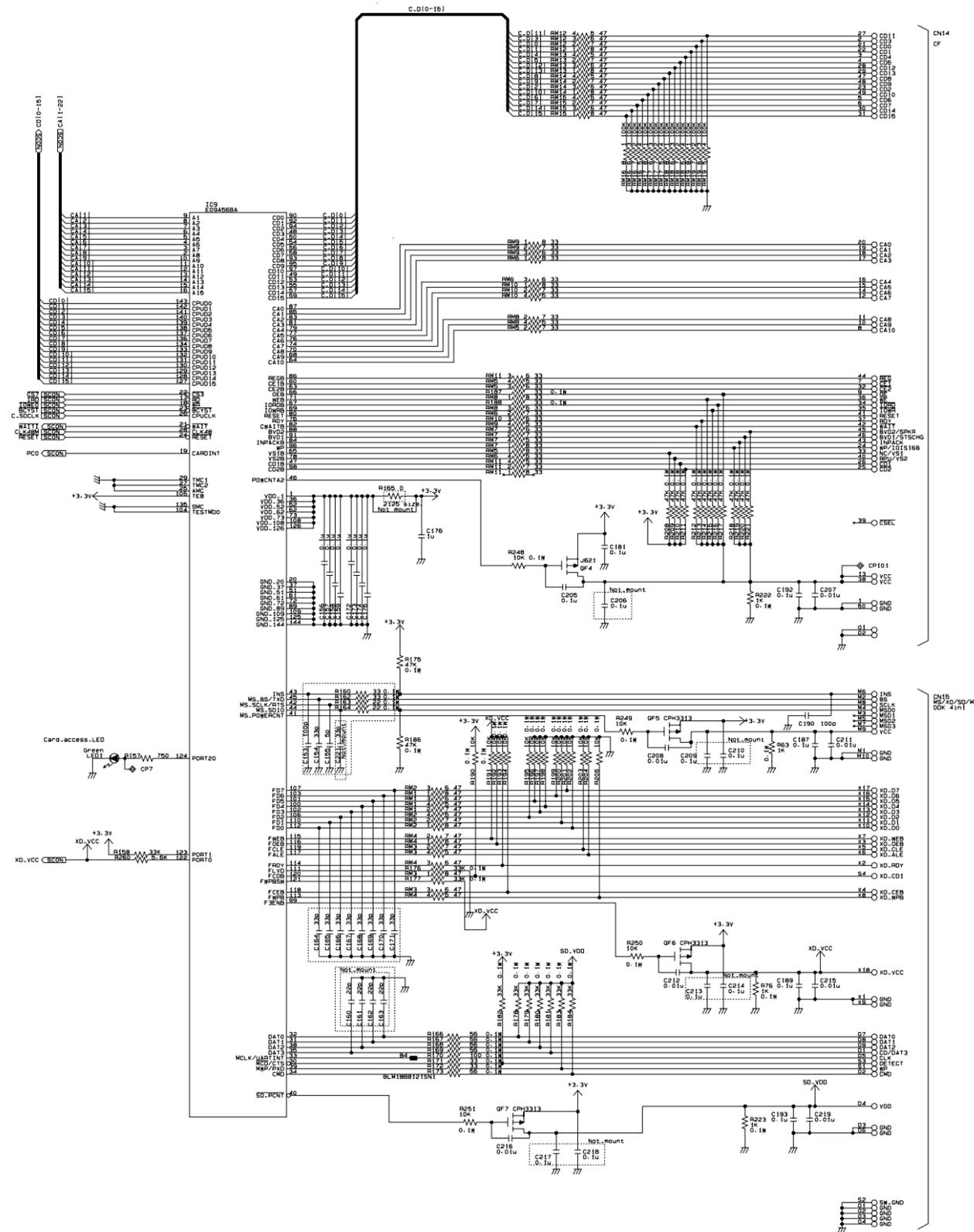
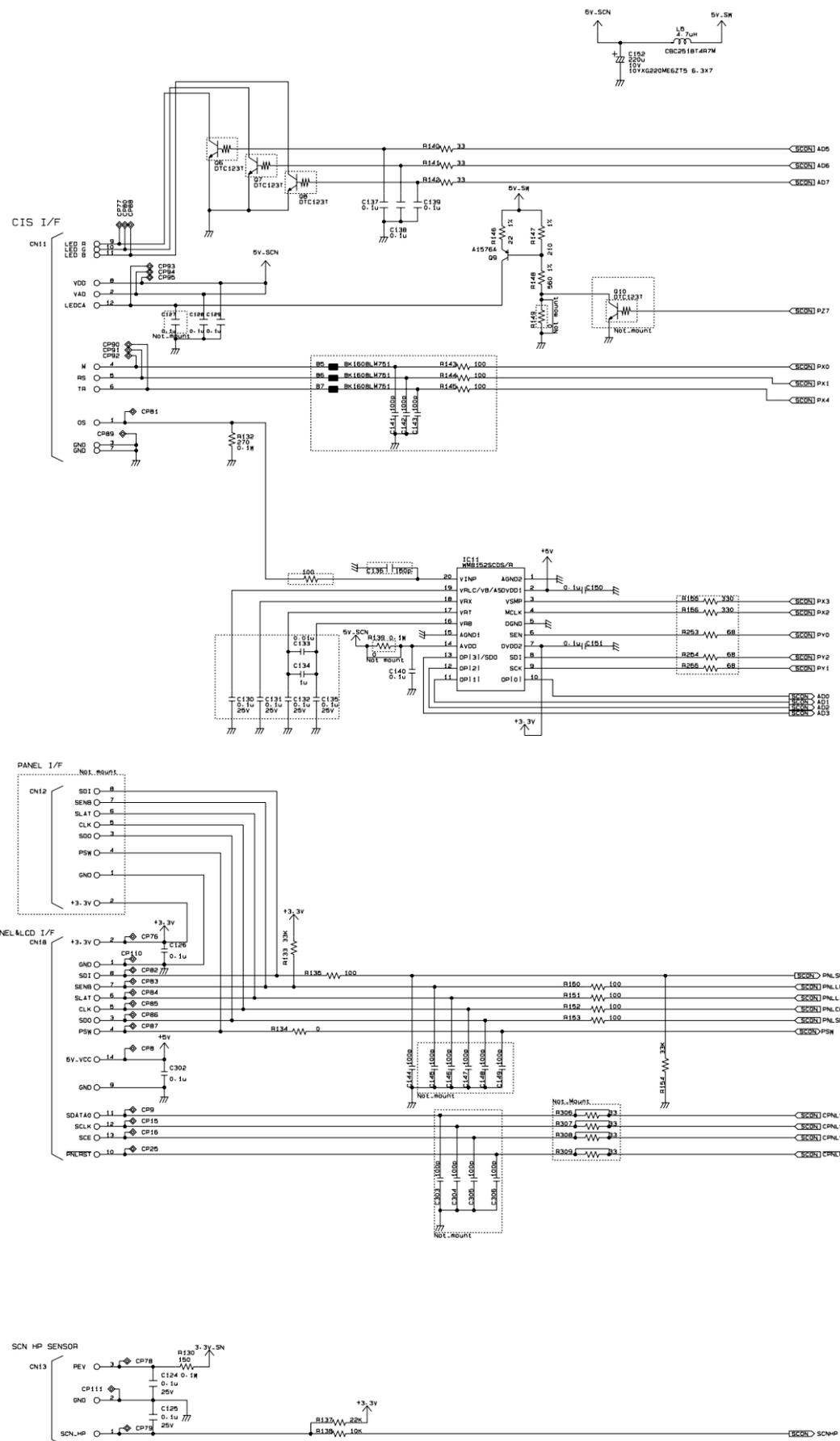
Input Terminal	Frequency Modulation Rate	Input Terminal	CLK48M_Port
CA19	CA18	0	No Modulation
0	1	1	SSCG
1	0	1	SSCG
1	1	1	SSCG

Input Terminal	Modulation Cycle
CA17	CA16
0	0
0	1
1	0
1	1

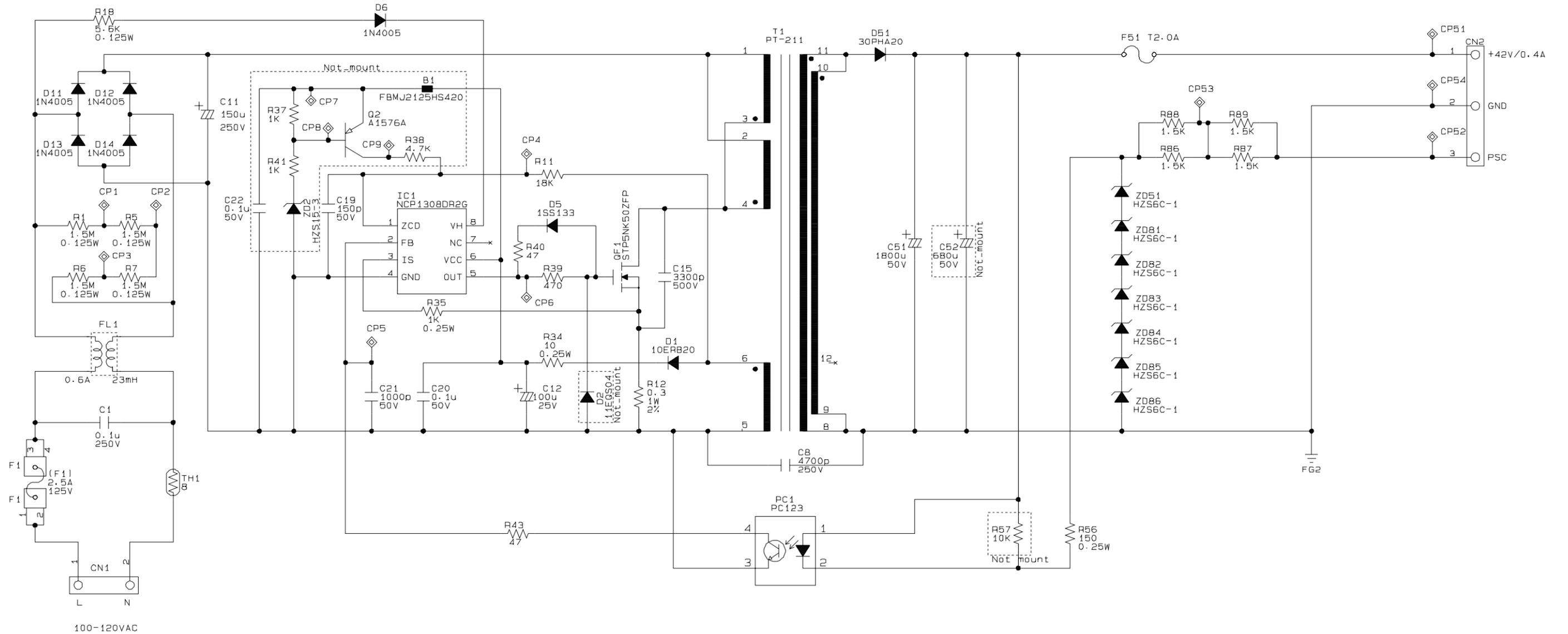


Input Terminal	MODE
DCACHEMODE	0
	1

Model □ PX-A720  
 □ Stylus CX4900/CX4905/CX5000/DX5000/DX5050/  
 CX5900/CX6000/DX6000/DX6050 □  
 Board □ C67 MAIN  
 Rev. □ : D  
 Sheet □ 1/2

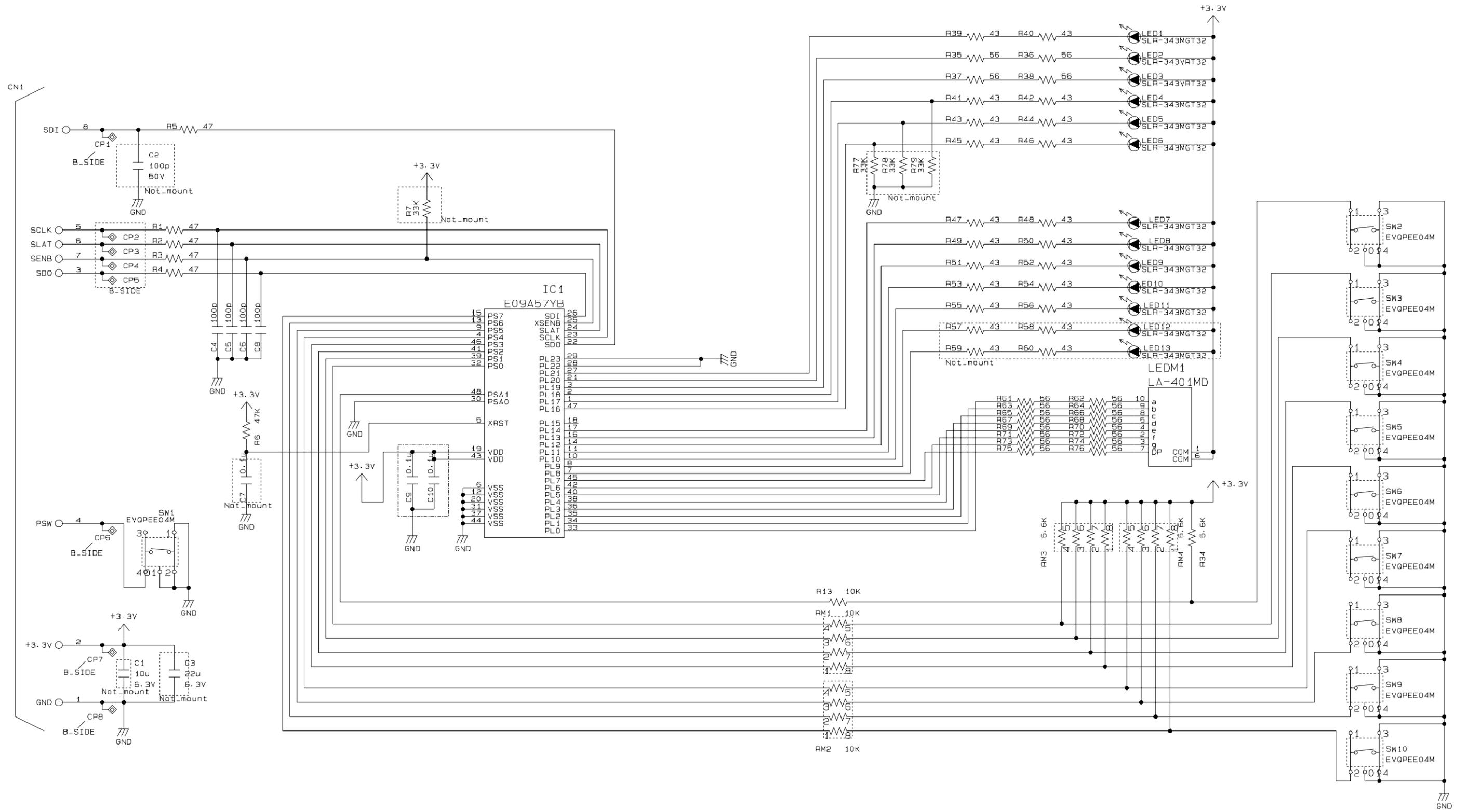


Model □ PX-A720  
 □ Stylus CX4900/CX4905/CX5000/DX5000/DX5050/  
 CX5900/CX6000/DX6000/DX6050 □  
 Board □ C657 MAIN  
 Rev. □ : C  
 Sheet □ 2/2



Model □ PX-A720  
 □ Stylus CX4900/CX4905/CX5000/DX5000/DX5050/  
 CX5900/CX6000/DX6000/DX6050 □  
 Board □ C610 PSB  
 Rev. □ : C  
 Sheet □ 1/1





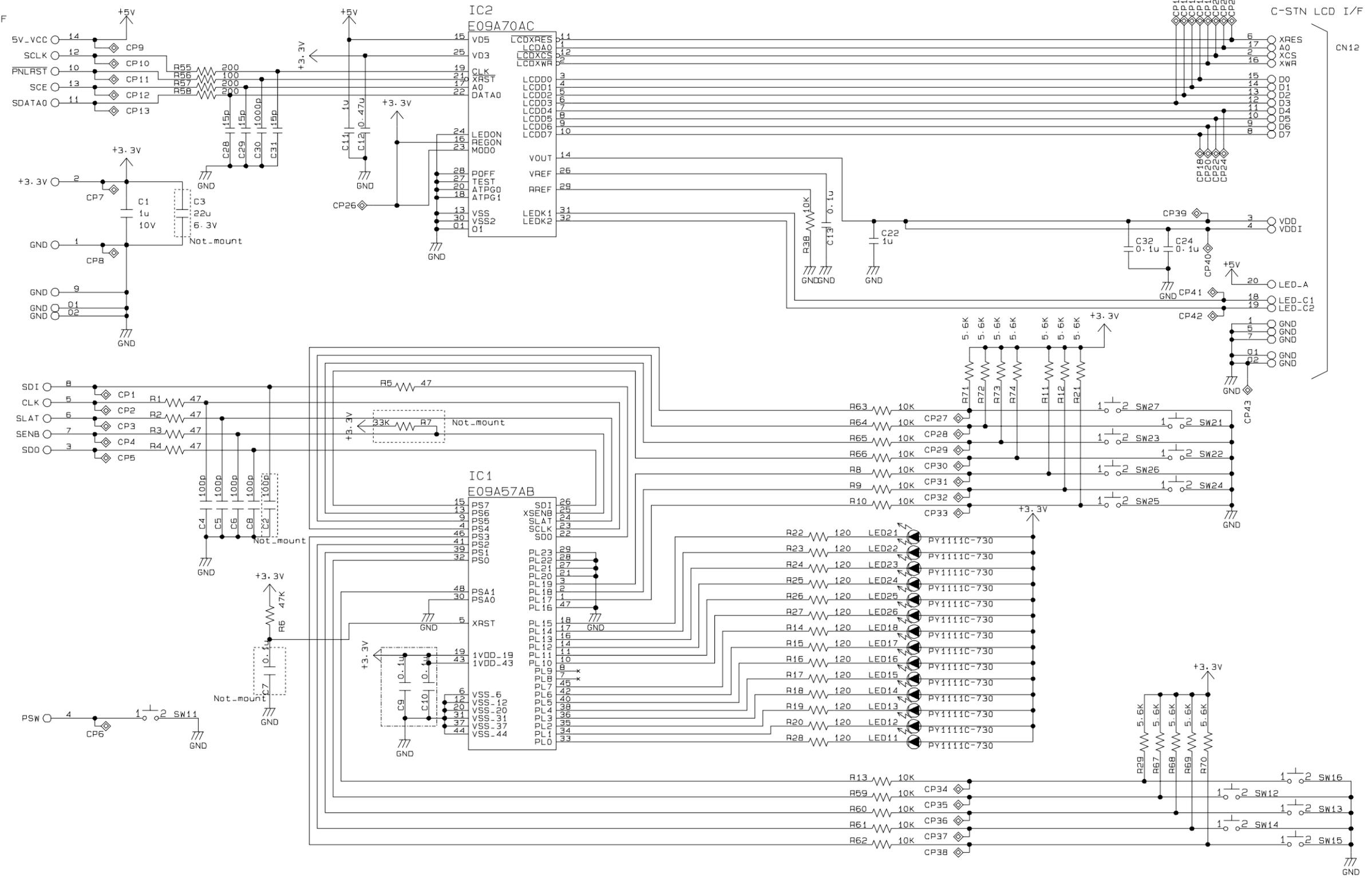
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Board  C571 PNL

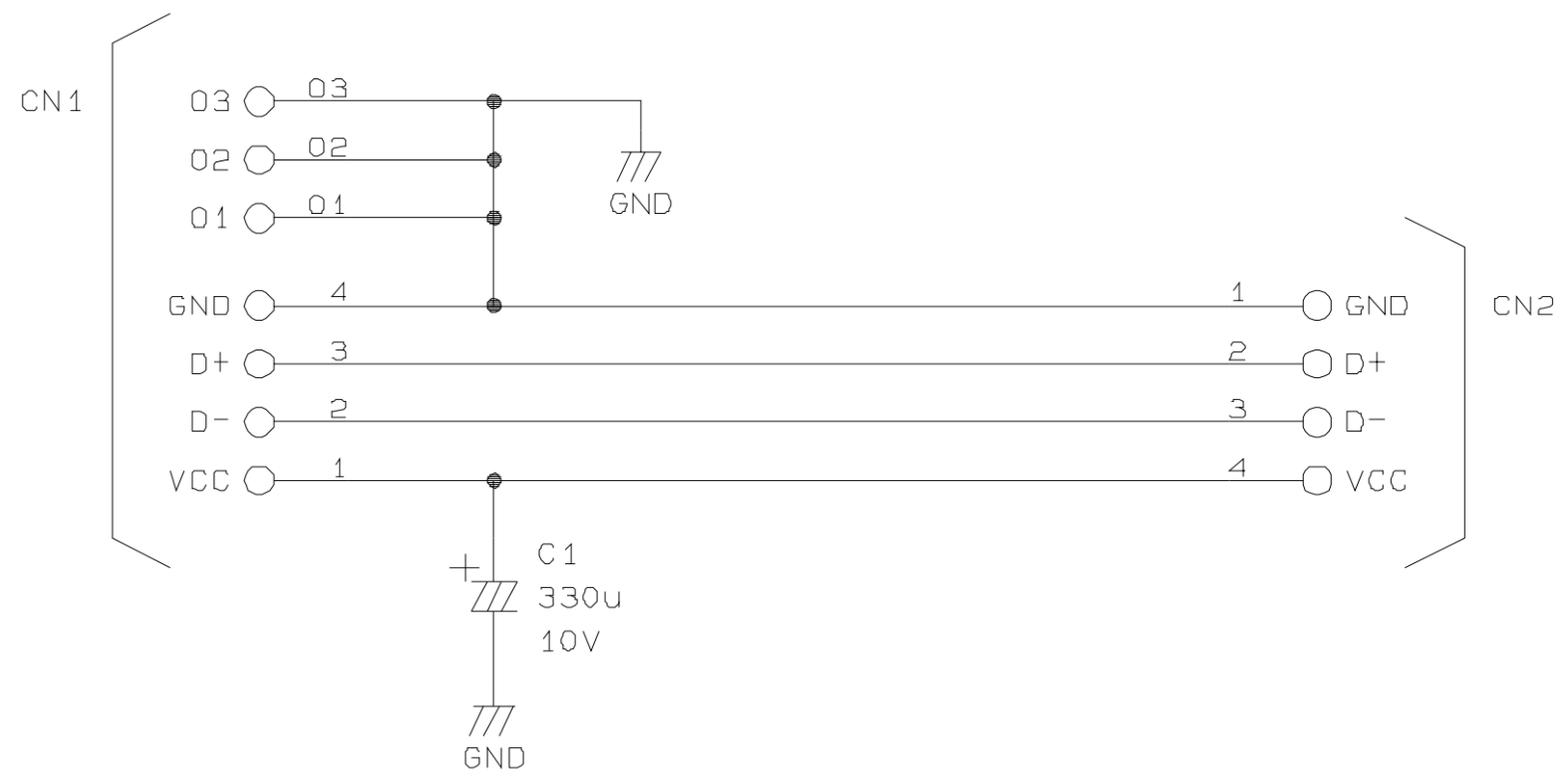
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Sheet  1/1

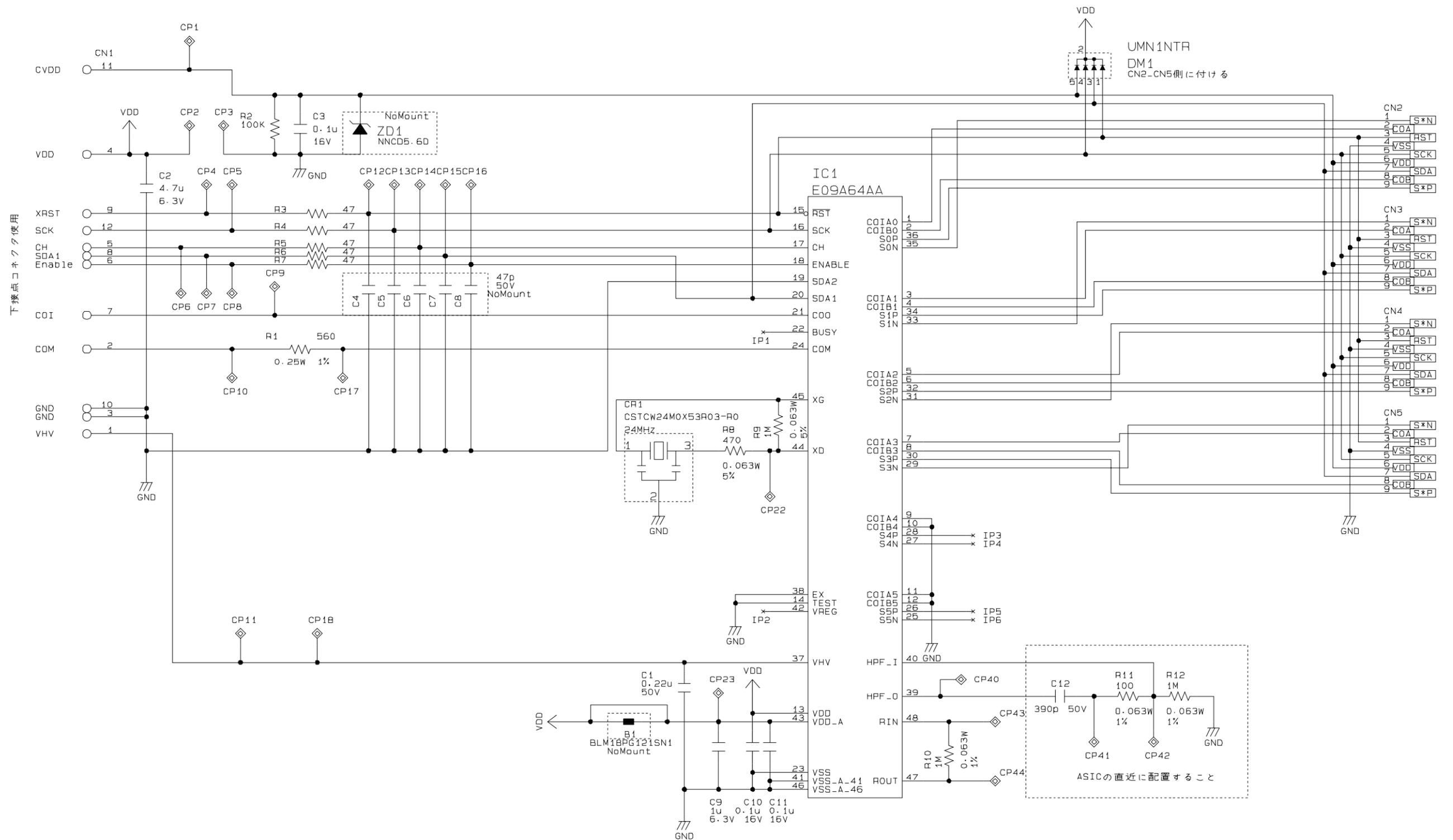
Panel I/F  
CN11



Model  PX-A720  
 Stylus CX5900/CX6000/DX6000/DX6050  
  
Board  C657 PNL  
Rev.  : D  
Sheet  1/1



Model □ PX-A720  
 □ Stylus CX4900/CX4905/CX5000/DX5000/DX5050/□  
 CX5900/CX6000/DX6000/DX6050 □  
 Board □ C610 I/F  
 Rev. □ : B  
 Sheet □ 1/1



Model □ PX-A720  
 □ Stylus CX4900/CX4905/CX5000/DX5000/DX5050/  
 CX5900/CX6000/DX6000/DX6050 □  
 Board □ C654 HEAD  
 Rev. □ : A  
 Sheet □ 1/1

## 7.3 Exploded Diagram/Service Parts List

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This manual does not provide the exploded diagrams and the parts list.  
See SPI (Service Parts Information) for details.