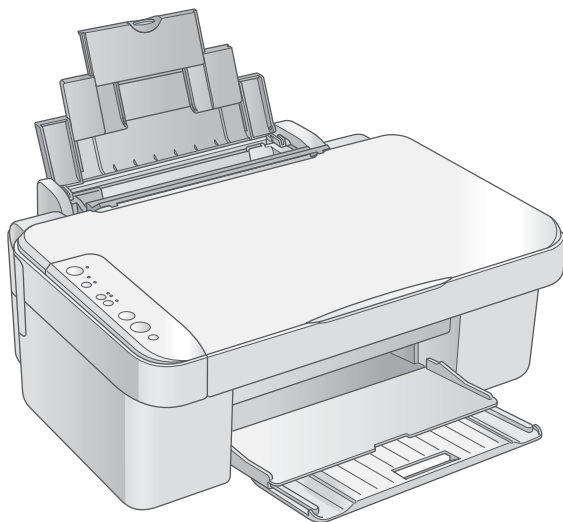


SERVICE MANUAL



Color Inkjet Printer

**EPSON STYLUS CX2800/CX2900/CX2905/
CX3000/CX3000v/ME 200**

**EPSON STYLUS CX3900/CX3905/DX4000/
DX4050**

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PRECAUTIONS

Precautionary notations throughout the text are categorized relative to 1) personal injury and 2) damage to the 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 INJURY 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 MANUFACTURE; 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 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 list of Epson-approved lubricants and adhesives required for servicing the product.

CHAPTER 7. APPENDIX

Provides the following additional information for reference:

- Connector Summary
- 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, and WARNING messages.



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



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 is necessary to maintain the product's quality.



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 2, 2006	First Release

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CHAPTER

1

PRODUCT DESCRIPTION



1.1 Overview

This unit provides the three primary functions; computer-connected printer, scanner, and stand-alone copy machine, 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 papers. 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/m²)
- Borderless printing with EPSON special media
- Fast and thick draft mode with the combination of real black and composite black
- Stylus CX3900/CX3905/DX4000/DX4050 use new pigment ink which is water resistant, light-fast and ozone resistant
- Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 use dye ink, which has a good distinction of the color

□ Scanner functions

This unit provides scan mode so that data is scanned and transferred to a connected computer or to e-mail via application software like EPSON SMART PANEL. CIS sensor requires no warm-up period, which makes scanning more convenient and allows for a more compact scanner. Additional features include the following:

- Maximum optical resolution: 600 x 1200 dpi
- Scan gradations: 48 bits (input), 24 bits (output)

□ Stand-alone copy functions

- Paper size can be selected from two or three options:

Table 1-1. Paper Size

Market	Paper Size
EAI	Letter/4"x6"
Europe/Asia/Pacific	A4/10x15
Latin	Letter/A4/4"x6"

- Enlarge/Reduce factor can be selected from two options; actual size (100%) or "Fit to page"
- Copy margin is automatically selected from two options, related to paper type and paper size; Standard Copy (3mm-margin), Small Margins Copy, or Borderless copy
- Fast and thick draft mode with the combination of real black and composite black
- Simultaneous use of functions
Printer functions and scanner functions are independent and can therefore be operated simultaneously from a connected computer.
- Easy control panel
The unit has a simple control panel equipped with seven buttons including power button and LEDs, and provides basic functions only for easier operation.
- Exterior
Use of a CIS sensor makes the scanner body more compact. Also, the control panel on the left side makes the printer distinctive in appearance but still easier to use.
- Dimension: 430 mm (W) x 345 mm (D) x 172 mm (H)
(including rubber feet, excluding loading tray)
- Weight: 5.7 kg (without ink cartridges)

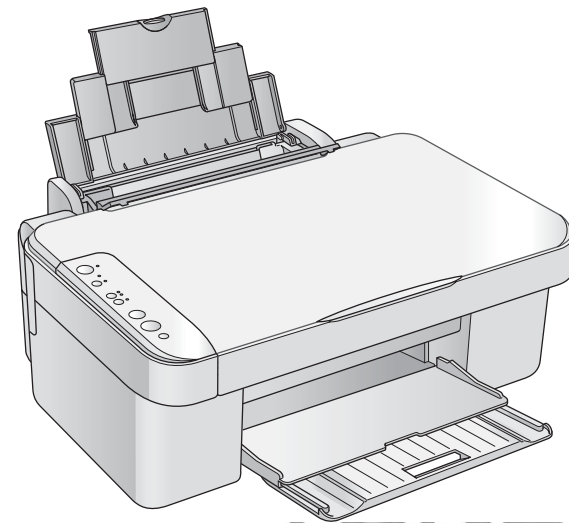


Figure 1-1. External View www.epson.com.ua

1.2 Specifications

1.2.1 Printer Specifications

Table 1-2. Printer Specifications

Item	Specification
Print method	On-demand ink jet
Nozzle configuration	Black: 90 nozzles Color: 29 nozzles x 3 (Cyan, Magenta, Yellow)
Print direction	Bi-directional minimum distance printing (logic seeking)
Print resolution	Horizontal x Vertical (dpi) • 360 x 120 • 720 x 720* • 360 x 360 • 1440 x 720 • 360 x 720* • 5760 x 1440*
Control code	• ESC/P Raster command • EPSON Remote command • ESC/P-R Level-1 command
Internal font	Character code: Alphanumeric with expanded graphics (PC437) ASCII, 20H to 7FH only Font: EPSON original font Alphanumeric font: Courier
Input buffer size	64 Kbytes
Paper feed method	Friction feed, using one ASF (Auto Sheet Feeder)
Paper path	Top feed, front out
Paper feed rates	• High quality mode, 19.05-mm feed 98.8 mm/sec (3.89 inch/sec) • High speed mode, continuous feed 352.8 - 6.35 mm/sec (13.89-0.25 inch/sec)
PF interval	Programmable in 0.0176 mm (1/1440 inch) steps

Note *: Those resolution can only be selected in the printer driver.

□ Print speed & printable width

Table 1-3. Character Mode

Character Pitch	Printable Columns	CR Speed
10 CPI (Pica)	80	165 CPS*

Note *: CPS: Characters per second
This speed is achieved in normal dot printing mode.

Table 1-4. Graphics Mode (Standard)

Horizontal Resolution	Printable Area	Max. Dot Count	CR Speed
360 dpi* ¹	209.8 mm (8.26")	2976	360 CPS
360 dpi	209.8 mm (8.26")	2976	165 CPS
720 dpi	209.8 mm (8.26")	5952	240 CPS
1440 dpi	209.8 mm (8.26")	11904	240 CPS
2880 dpi* ²	209.8 mm (8.26")	23808* ²	240 CPS
5760 dpi* ³		47616* ³	

Note *1: Draft printing

*2: For Stylus CX3900/CX3905/DX4000/DX4050.

*3: For Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200.

Table 1-5. Graphics Mode (Borderless Printing)

Horizontal Resolution	Printable Area	Max. Dot Count	CR Speed
360 dpi* ¹	215.05 mm (8.46")	3048	165 CPS
720 dpi	215.05 mm (8.46")	6096	285 CPS
1440 dpi	215.05 mm (8.46")	12192	285 CPS
2880 dpi* ²	215.05 mm (8.46")	24384* ²	285 CPS
5760 dpi* ³		48768* ³	

Note *1: Except for draft printing

*2: For Stylus CX3900/CX3905/DX4000/DX4050.

*3: For Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200.

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 1-6. Paper Support

Item		Paper Size	Thickness (mm)	Weight	Stylus CX2800/CX2900/CX2905/ CX3000/CX3000V/ME 200	Stylus CX3900/CX3905/DX4000/ DX4050
Plain paper Recycled paper		A4	0.08-0.11	64-90 g/m ² (17-24 lb.)	O	O
		A5			O* ³	O* ³
		A6			O	O
		B5			O* ³	O* ³
		Letter			O	O* ²
		Legal			O	O* ²
		Half Letter			O* ²	O
		User defined			O	O
Envelope* ¹ (Bond paper, Air mail, PPC)		No.10	N/A	45-75g/m ² (12-20 lb.)	O	O
		DL			O* ³	O* ³
		C6			O* ³	O* ³
EPSON special paper	Premium Ink Jet Plain Paper* ¹	A4	0.11	80 g/m ² (21 lb.)	O* ³	O* ³
	Premium Bright White Paper* ¹	Letter	0.11	90 g/m ² (24 lb.)	O* ²	—
	Bright White Ink Jet Paper	A4	0.13	92.5 g/m ² (25 lb.)	O* ³	O* ³
	Premium Photo Paper Glossy (EAI) Premium Glossy Photo Paper (Other)	Letter	0.27	255 g/m ² (68 lb.)	O* ²	O* ²
		A4			O	O
		8" x 10"			O* ²	O* ²
		5" x 7"			O	O* ⁴
		4" x 6"			O	O
		Letter			O* ²	O* ²
	Premium Photo Paper Semi-Gloss (EAI) Premium Semigloss Photo Paper (Other)	A4	0.27	250 g/m ² (66 lb.)	O* ³	O* ³
		4" x 6"			O	O* ³
		Letter			O* ²	O* ²
	Premium Presentation Paper Matte (EAI)* ¹ Matte Paper-Heavyweight (Other)* ¹	Letter	0.23	167 g/m ² (44 lb.)	O* ²	O* ²
		A4			O* ³	O* ³
		8" x 10"			O* ²	O* ²

Table 1-6. Paper Support

Item		Paper Size	Thickness (mm)	Weight	Stylus CX2800/CX2900/CX2905/ CX3000/CX3000V/ME 200	Stylus CX3900/CX3905/DX4000/ DX4050
EPSON special paper	Photo Paper Glossy (EAI)* ¹ Glossy Photo Paper (EUR, Asia)* ¹	Letter	0.25	258 g/m ² (68 lb.)	O* ²	—
		A4			O	—
		5" x 7"			O* ⁵	—
		4" x 6"			O	—
	Ultra Premium Photo Paper Glossy (EAI) Ultra Glossy Photo Paper (Other)	Letter	0.30	290 g/m ² (77 lb.)	O* ²	O* ²
		A4			O* ³	O* ³
		8" x 10"			O* ²	O* ²
		5" x 7"			O* ⁴	O
		4" x 6"			O	O

Note 1: "O": Supported

- 2: For paper width and length, see [Table 1-7, "Paper Width and Length"](#) in the right column.

Note *1: Stand-alone copy not supported.

*2: Only for EAI models.

*3: Except for EAI models.

*4: Except for Asia and Pacific models.

*5: Only for EUR models.

☐ Paper width and length

Table 1-7. Paper Width and Length

Paper Size		Width	Length
Cut sheet	A4	210 mm (8.3")	297 mm (11.7")
	A5	148 mm (5.8")	210 mm (8.3")
	A6	148 mm (5.8")	210 mm (8.3")
	B5	182 mm (7.2")	257 mm (10.1")
	Letter	215.9 mm (8.5")	279.4 mm (11")
	Legal	215.9 mm (8.5")	355.6 mm (14")
	Half Letter	139.7 mm (5.5")	215.9 mm (8.5")
	8" x 10"	203.2 mm	254 mm
	5" x 7"	127 mm	178 mm
	4" x 6"	101.6 mm	152.4 mm
Envelope	User defined	50.8-329 mm (2-12.6")	127-1117.6 mm (5-44")
	No.10	104.8 mm (4.125")	241.3 mm (9.5")
	DL	110 mm	220 mm
	C6	114 mm	162 mm

CAUTION



- 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.

PRINTING AREA

□ Cut sheet (standard printing)

■ Printable area

The print quality is guaranteed for the print area above the 3-mm margin. For paper width (PW) and paper length (PL), refer to “[Paper Support](#)” (p.11).

Table 1-8. Applicable Paper/Printing Area

Paper Type		Left Margin	Right Margin	Top Margin	Bottom Margin
Cut sheet	A4	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")
	A5				
	A6				
	B5				
	Letter				
	Legal				
	Half Letter				
	User defined				
Special paper	Premium Ink Jet Plain Paper	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")
	Premium Bright White Paper* ¹				
	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				
	Photo Paper Glossy				
	Glossy Photo Paper				
	Ultra Glossy Photo Paper				
	Ultra Premium Photo Paper Glossy				

Note *1: Only for EAI models of Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200.

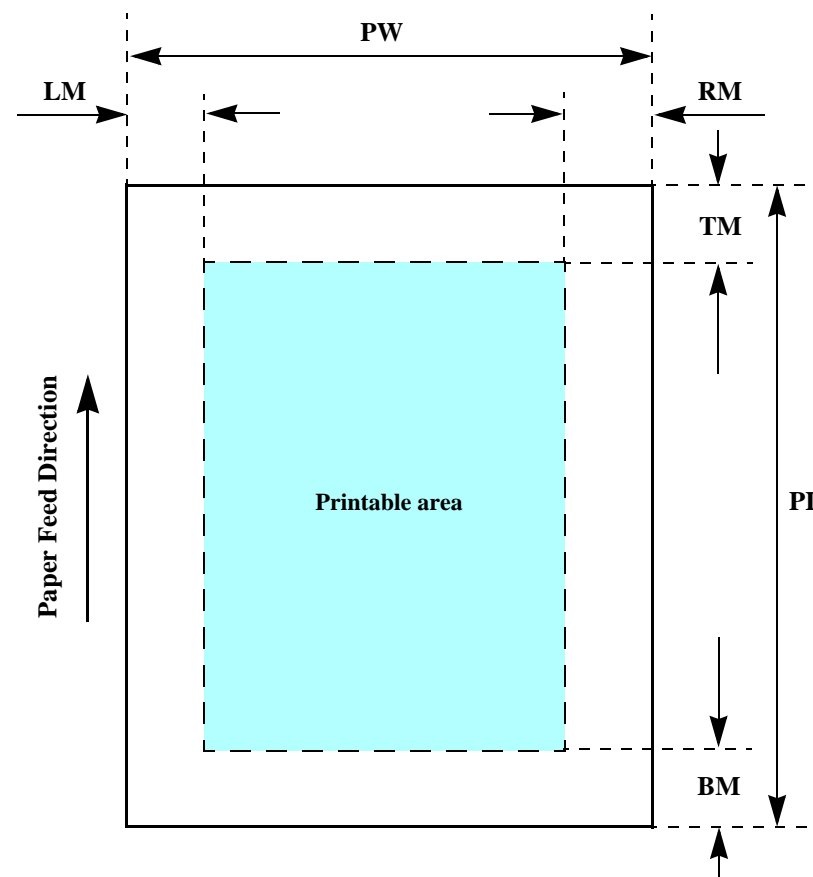


Figure 1-2. Printable Area Cut Sheet (Standard Printing)

□ Cut sheet (borderless printing)

■ Printable area

For paper width (PW) and paper length (PL), refer to “Paper Support” (p.11).

Table 1-9. Applicable Paper/Printing Area (For Printing)

Paper Type		Size	Left Overhang	Right Overhang	Top Overhang	Bottom Overhang
Special paper	Premium Photo Paper Glossy Premium Glossy Photo Paper	Letter	2.54 mm	2.54 mm	2.82 mm/ 2.96 mm ^{*1}	3.60 mm/ 4.02 mm ^{*2}
		A4				
		8" x 10"				
		5" x 7"				
		4" x 6"				
	Premium Photo Paper Semi-Gloss Premium Semigloss Photo Paper	Letter				
		A4				
		4" x 6"				
	Premium Presentation Paper Matte Matte Paper-Heavyweight	Letter				
		A4				
		8" x 10"				
	Photo Paper Glossy Glossy Photo Paper	Letter				
		A4				
		5" x 7"				
	Ultra Glossy Photo Paper Ultra Premium Glossy Photo Paper	4" x 6"				
		5" x 7"				

Note *1: 4" x 6" = 2.82 mm, Other = 2.96 mm

*2: 4" x 6" = 3.60 mm, Other = 4.02 mm

Table 1-10. Applicable Paper/Printing Area (For Copying)

Paper Type		Size	Left Overhang	Right Overhang	Top Overhang	Bottom Overhang
Special paper	Premium Photo Paper Glossy Premium Glossy Photo Paper	4" x 6"	2.54 mm	2.54 mm	2.96 mm	5.08 mm
	Premium Photo Paper Semi-Gloss Premium Semigloss Photo Paper					
	Ultra Glossy Photo Paper Ultra Premium Glossy Photo Paper					

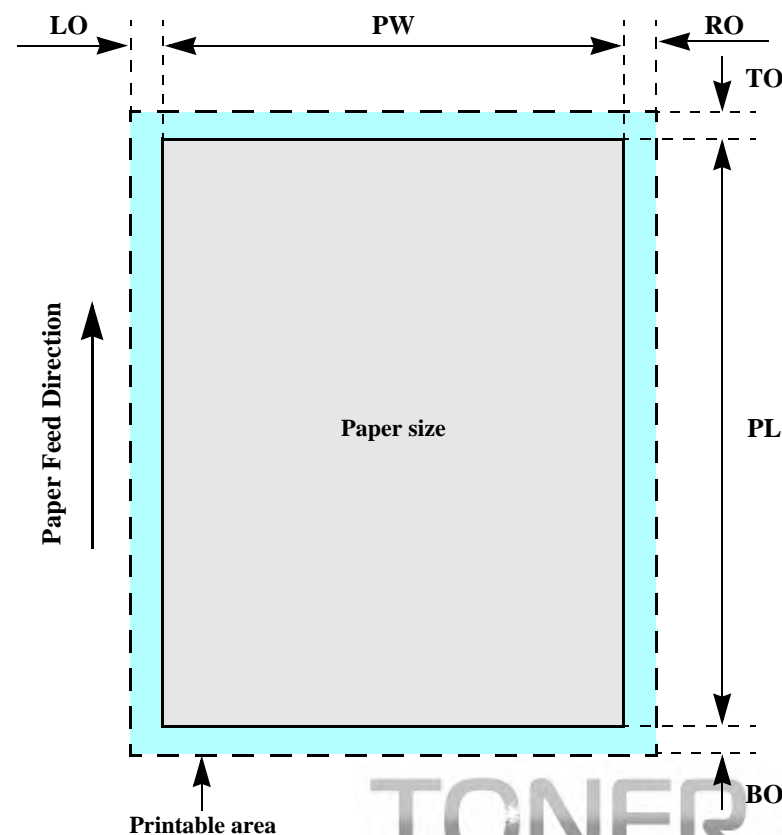


Figure 1-3. Printable Area for Cut Sheet (Borderless Printing)

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□ Envelope

■ Printable area

For paper width (PW) and paper length (PL), refer to “Paper Support” (p.11).

Table 1-11. Applicable Paper/Printing Area

Paper Type	Left Margin	Right Margin	Top Margin	Bottom Margin
No.10	5 mm (0.20")	5 mm (0.20")	3 mm (0.12")	20 mm (0.79")
DL				
C6				

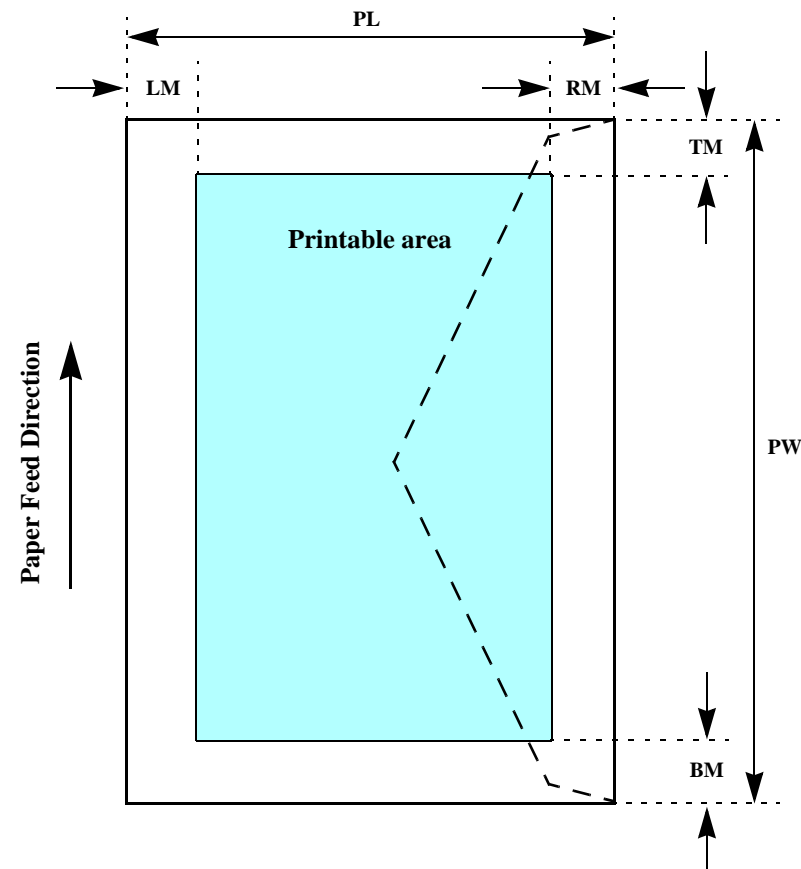


Figure 1-4. Printable Area for Envelopes

INK CARTRIDGE SPECIFICATIONS

- ☐ Type/color: EPSON-brand special ink cartridges

Table 1-12. Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200

Color	ECC, Thailand, Indonesia, India	Asia (Other)	EAI
Black	T0761	T0751	T0741
Cyan	T0762	T0752	T0742
Magenta	T0763	T0753	T0743
Yellow	T0764	T0754	T0744

Table 1-13. Stylus CX3900/CX3905/DX4000/DX4050

Color	Latin, Russia, Asia, Pacific	Europe	EAI
Black	T0731	T0711	T0681
Cyan	T0732	T0712	T0692
Magenta	T0733	T0713	T0693
Yellow	T0734	T0714	T0694

- ☐ Shelf life: Two years from production date (if unopened), six months after opening package.
- ☐ Storage Temperature

Table 1-14. Storage Temperature

Situation	Storage Temperature	Limit
When stored in individual boxes	-30 °C to 40 °C (-22°F to 104°F)	1 month max. at 40 °C (104°F)
When installed in main unit	-20 °C to 40 °C (-4°F to 104°F)	

- ☐ Dimension

- Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200
12.7 mm (W) x 43 mm (D) x 47 mm (H)
- Stylus CX3900/CX3905/DX4000/DX4050
12.7 mm (W) x 68 mm (D) x 47 mm (H)

CAUTION

- The ink cartridge cannot be refilled.
- The ink cartridge that passes the expiration date should not be used.
- The ink in the ink cartridge freezes at -16 °C (3.2 °F). Ink thaws and is usable after approximately three hours at 25 °C (77°F).

1.2.2 Scanner Specifications

Table 1-15. Scanner 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 size	A4 or US letter
Maximum effective pixels	5,100 x 14,040 pixels (600 dpi)
Resolution	Main scan: 600 dpi Sub scan: 1200 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	600 dpi Color: Approx. 15 msec/line Monochrome: Approx. 5 msec/line
Light source	RGB Three Color LED
Control commands	ESC/I D7
Gamma correction	Two user-defined levels

IMAGE SCANNING AREA

Table 1-16. 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 \pm 1 mm	297 mm (11.7")	1.5 mm \pm 1 mm

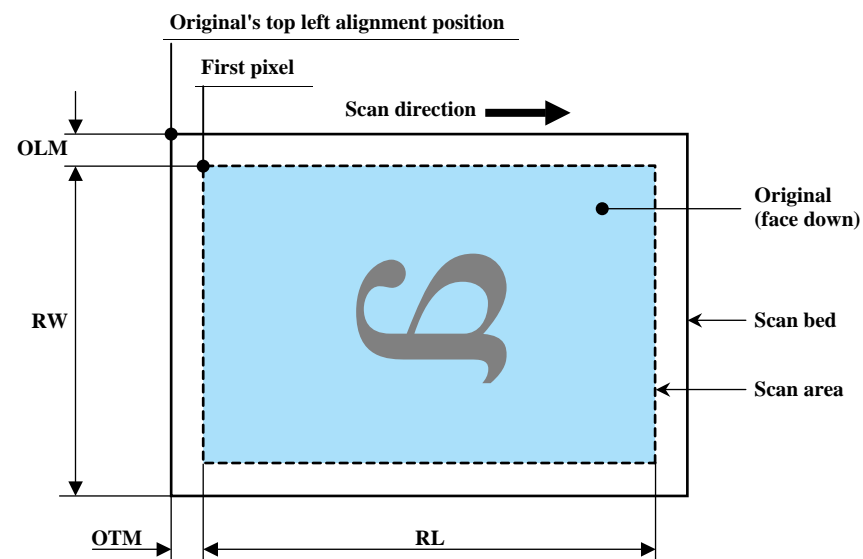


Figure 1-5. Image Scanning Area

1.2.3 Common

ELECTRICAL SPECIFICATIONS

- ☐ Primary power input

Table 1-17. Primary Power Input

	100-120 V model	220-240 V model
Rated power supply voltage (ACV)	100 to 120	220 to 240
Input voltage range (ACV)	90 to 132	198 to 264
Rated current (A)	0.4 (max. 0.7)	0.2 (max. 0.3)
Rated frequency (Hz)	50 to 60	
Input frequency range (Hz)	49.5 to 60.5	
Power consumption (W)	10 (Stand-alone copying)	
	3.0 (Power save mode)	
	3.0 (Sleep Mode)	
	0.2 (Power off mode)	0.3 W (Power off mode)

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

- 2: If the printer is not operated for more than five minutes, the standby function reduces the current to the motor to conserve power.
- 3: If the scanner is not operated for more than five minutes, the standby function reduces the current to the motor to conserve power.
- 4: If the control panel is not operated for more than thirteen minutes, the control panel turns to the power save mode within fifteen minutes.

- ☐ Dielectric strength

- AC1000 Vrms for one minute or AC1200 Vrms for one second (100-120V version)
- AC1500 Vrms for one minute (220-240V version)

ENVIRONMENTAL PERFORMANCE

Table 1-18. Environmental Performance

Condition	Temperature	Humidity ^{*2}	Impact	Vibration
Operating	10 to 35°C (50 to 95°F) ^{*3}	20 to 80% ^{*3}	1G, 1 x 10 ⁻³ seconds	0.15G
Not operating ^{*1}	-20 to 40°C (-4°F to 104°F)	5 to 85%	2G, 2 x 10 ⁻³ seconds	0.50G

Note ^{*1}: After opening package

^{*2}: No condensation

^{*3}: Under the following conditions:

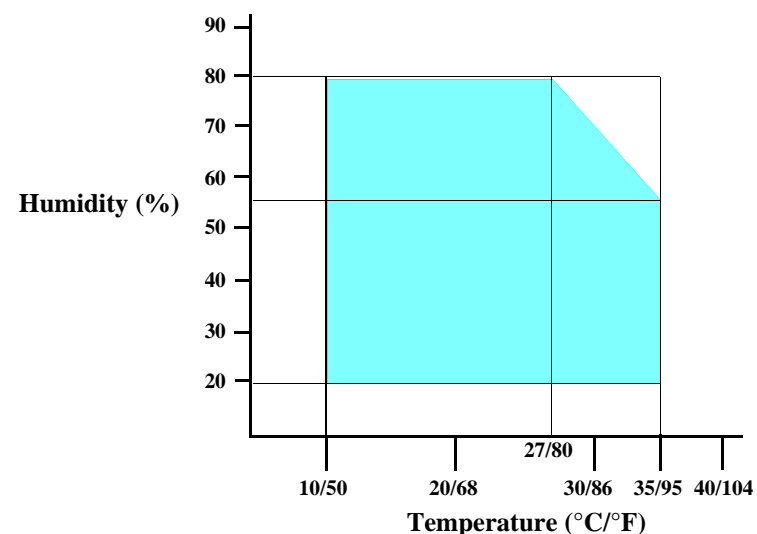


Figure 1-6. Temperature/Humidity Range

DURABILITY

- ☐ Total print life: 10,000 pages (black only, A4), or five years (whichever comes first)
- ☐ Printhead life: Seven billion shots (per nozzle) or five years (whichever comes first)
- ☐ Scanner head: 22,000 cycles (MCBF)

ACOUSTIC NOISE

- ☐ Noise level
Maximum 45 dB (according to ISO7779 for copying)

SAFETY STANDARDS: EMC**Table 1-19. Safety Standards: EMC**

	100-120 V version	220-240 V version
Safety standards	UL60950	EN 60950
	CSA C22.2 No.60950	
EMI	FCC part15 subpart B class B	EN 55022(CISPR Pub.22) class B
	CAN/CSA-CEI/IEC CISPR 22 Class B	AS/NZS CISPR22 class B

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

Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050 provide 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)
- ☐ Transfer rate: 12 Mbps (Full Speed Device)
- ☐ Data format: NRZI
- ☐ Compatible connector: USB Series B
- ☐ Recommended cable length: 2 [m] or less
- ☐ Device ID

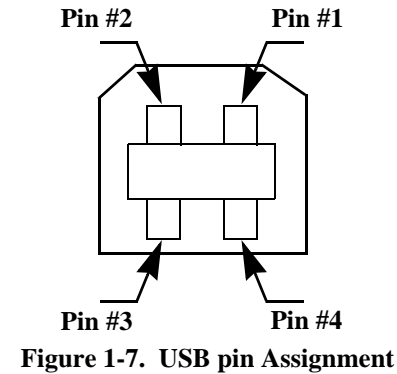
Table 1-20. Device ID

Product Name	Device ID	Product Name	Device ID
CX2800 CX2900 CX2905 ME200	[00H][60H] MFG:EPSON; CMD:ESCPL2,BDC,D4,ESCPR1; MDL:Stylus[SP]CX2900; CLS:PRINTER; DES:EPSON[SP]Stylus[SP]CX2900;	CX3900 CX3905	00H][60H] MFG:EPSON; CMD:ESCPL2,BDC,D4,ESCPR1; MDL:Stylus[SP]CX3900; CLS:PRINTER; DES:EPSON[SP]Stylus[SP] CX3900;
CX3000 CX3000V	00H][60H] MFG:EPSON; CMD:ESCPL2,BDC,D4,ESCPR1; MDL:Stylus[SP]CX3000; CLS:PRINTER; DES:EPSON[SP]Stylus[SP] CX3000;	DX4000 DX4050	00H][60H] MFG:EPSON; CMD:ESCPL2,BDC,D4,ESCPR1; MDL:Stylus[SP]DX4000; CLS:PRINTER; DES:EPSON[SP]Stylus[SP] DX4000;

- ☐ Connector signal layout

Table 1-21. 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



- ☐ Product ID
 - 0x0830 (Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200)
 - 0x082F (Stylus CX3900/CX3905/DX4000/DX4050)
- ☐ Endpoint attribute

Table 1-22. Endpoint Attribute

I/F No.	Endpoint Address	Endpoint Type	Linked Interface
0x00	0x01	Bulk In	Scanner
	0x02	Bulk Out	
0x01	0x03	Bulk In	Printer
	0x04	Bulk Out	

1.4 Stand-alone Copy

1.4.1 Basic Specifications

SUPPORTED PAPER SIZES, TYPES AND QUALITIES

Table 1-23. Supported Paper Sizes, Types and Qualities

Paper type		Panel indication	Quality*1	Paper size and Panel indication
Paper name				
EAI model	Plain Paper	Plain Paper	Plain Paper	Letter
	Recycled Paper			
	Premium Bright White Paper			
	Premium Photo Paper Glossy	Photo Paper	Photo Paper	4" x 6"
	Premium Photo Paper Semi-Gloss			
	Ultra Premium Glossy Photo Paper			
	Digital Photo Paper Glossy			
EUR/Asia/Pacific	Plain Paper	Plain Paper	Plain Paper	A4
	Recycled Paper			
	Bright White Ink Jet Paper			
	Premium Glossy Photo Paper	Photo Paper	Photo Paper	10 x 15*2
	Premium Semigloss Photo Paper			
	Ultra Glossy Photo Paper			
Latin	Plain Paper	Plain Paper	Plain Paper	Letter/A4*3
	Recycled Paper			
	Bright White Ink Jet Paper			
	Premium Glossy Photo Paper	Photo Paper	Photo Paper	4" x 6"
	Premium Semigloss Photo Paper			
	Ultra Premium Glossy Photo Paper			

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

*2: "10 x 15" is the same size as "4" x 6".

*3: Paper size is changed by pressing [Paper Size] button.

ZOOM FUNCTION

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

- ☐ Actual (Default)
The zoom factor is set to 100%.
- ☐ Fit to page
This function will automatically adjust the size of the image sent from the application in accordance with the paper size.

MAXIMUM COPY SIZE

- ☐ 216 mm x 297 mm



COPY LAYOUT

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

- ☐ Standard copy
Provided for ordinary use with 3-mm copy margin from every sides.
- ☐ Borderless copy
Borderless copying 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.

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

Table 1-24. Copy Layout

Zoom		Paper Type	Paper Size	B&W / Color	Layout
EAI	Actual*1	Plain Paper	Letter	B&W, Color	Standard
		Photo Paper	4" x 6"	B&W, Color	Standard
	Fit to page*2	Plain Paper	Letter	B&W, Color	Standard
		Photo Paper	4" x 6"	B&W, Color	Borderless
EUR/Asia/ Pacific	Actual*1	Plain Paper	A4	B&W, Color	Standard
		Photo Paper	10 x 15	B&W, Color	Standard
	Fit to page*2	Plain Paper	A4	B&W, Color	Standard
		Photo Paper	10 x 15	B&W, Color	Borderless
Latin	Actual*1	Plain Paper	Letter, A4	B&W, Color	Standard
		Photo Paper	4" x 6"	B&W, Color	Standard
	Fit to page*2	Plain Paper	Letter, A4	B&W, Color	Standard
		Photo Paper	4" x 6"	B&W, Color	Borderless

Note *1: The zoom factor is set to 100%.

*2: “Fit to page” automatically sets the enlarge/reduce scale so that the entire image fits into the printable area or the borderless area when borderless 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 margins may appear along the bottom and/or right edge.

*3: “10 x 15” is the same size as “4" x 6””.

1.4.2 Copy Speed

Table 1-25. Copy Speed

Model	Mode	Black		Color	
		Fastest Mode*3	Default*4	Fastest Mode*3	Default*4
Stylus CX2800/CX2900/ CX2905/CX3000/ CX3000V/ME 200*1		7 sec.	20 sec.	14 sec.	70 sec.
Stylus CX3900/CX3905/ DX4000/DX4050*2		5 sec.	14 sec.	14 sec.	72 sec.

Note : CPM is not defined as this unit has single copy function only.

Note *1: Plain Paper/e-memo Pattern (A4/Letter)

*2: Plain Paper/e-memo Pattern (A4)

*3: 360 x 120 dpi

*4: 360 x 360 dpi

1.4.3 Configuration for Copying

Table 1-26. 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
Plain Paper	B&W	100 (Default)	360 x 360	VSD1	On	On
	Color	100 (Default)	360 x 360	VSD1	On	On
Photo Paper	B&W*2	100 (Default)	1440 x 720	VSD3	On	On
	Color*2	100 (Default)	1440 x 720	VSD3	On	On
Draft*3 (Plain paper only)	B&W	100 (Default)	360 x 120	Eco	Off	On
	Color	100 (Default)	360 x 120	Eco	Off	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: Composite black will be used in both B&W and color mode.

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



1.4.4 Relation between Original and Copy

STANDARD COPY

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

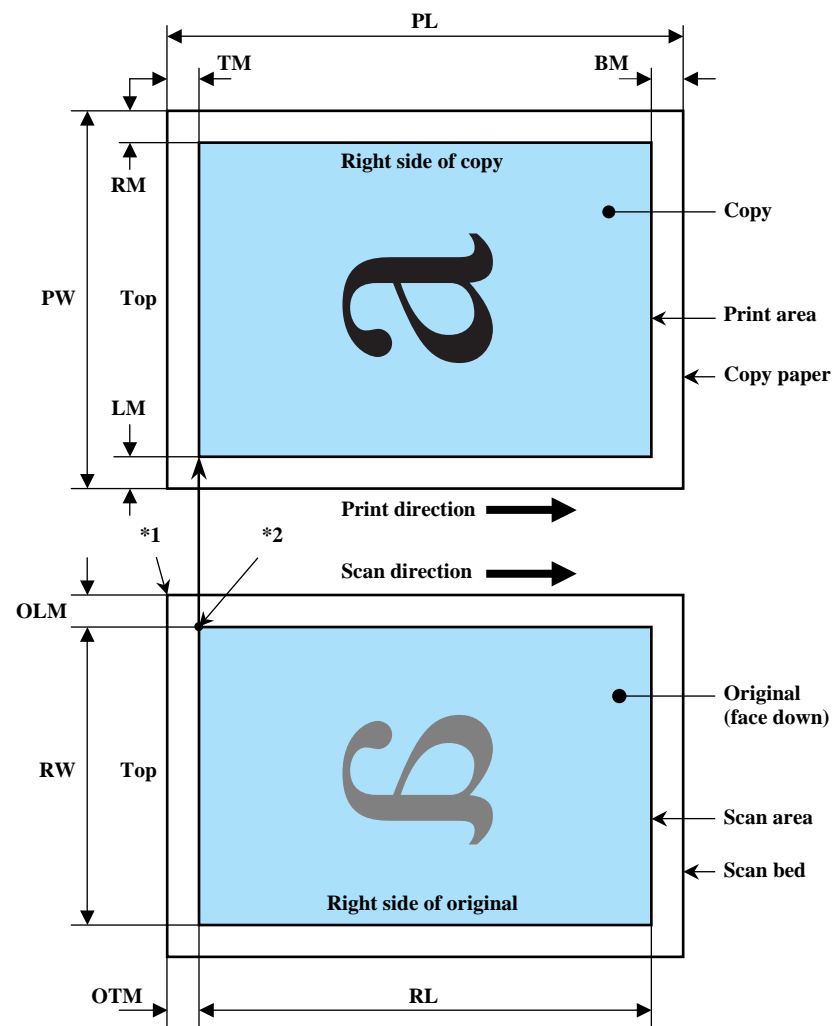
Table 1-27. Original (scanner)

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 1-28. Copy (printer)

RM (readable width)	LM (out-of-range left margin)	TM (readable length)	BM (out-of-range top margin)
3 mm (0.12")	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")

Note : Refer to “[Paper Support](#)” (p.11) 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 1-8. Standard Copy

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BORDERLESS COPY

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

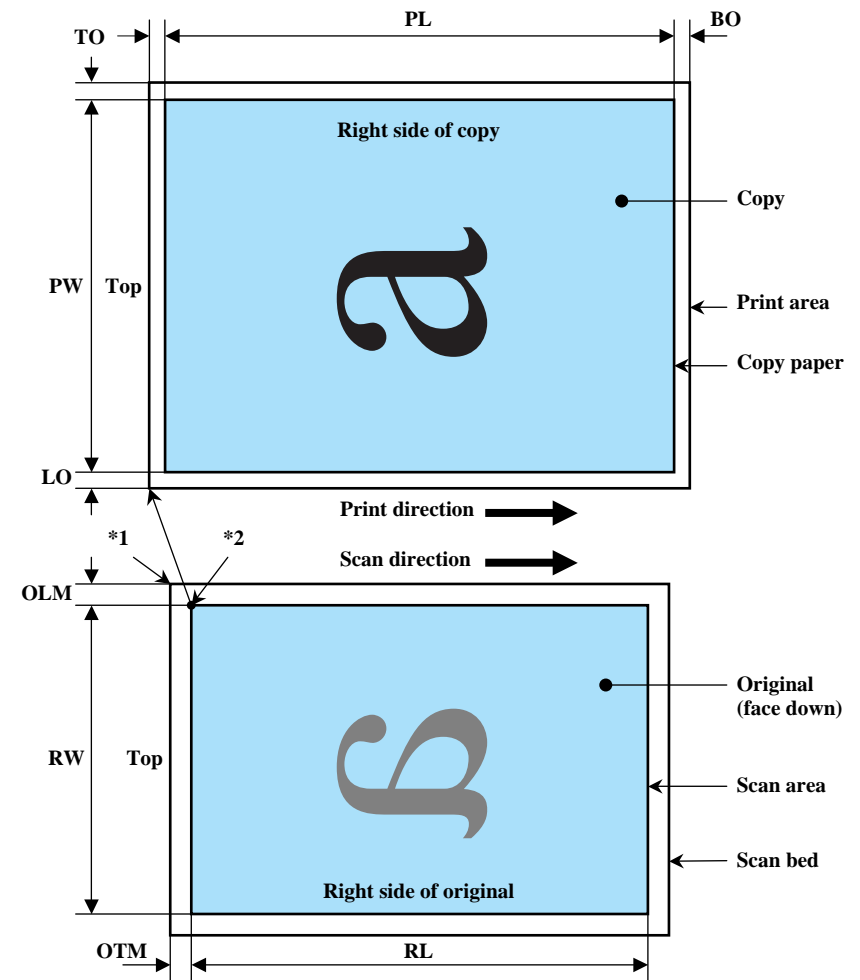
Table 1-29. Original (scanner)

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 \pm 1 mm	297 mm (11.7")	1.5 mm \pm 1 mm

Table 1-30. Copy (printer)

RO	LO	TO	BO
2.5 mm	2.5 mm	3.0 mm	5.0 mm

Note : Refer to “[Paper Support](#)” (p.11) 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 of the print area varies according to the scale setting in the print area.

Figure 1-9. Borderless Copy

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SMALL MARGIN COPY

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

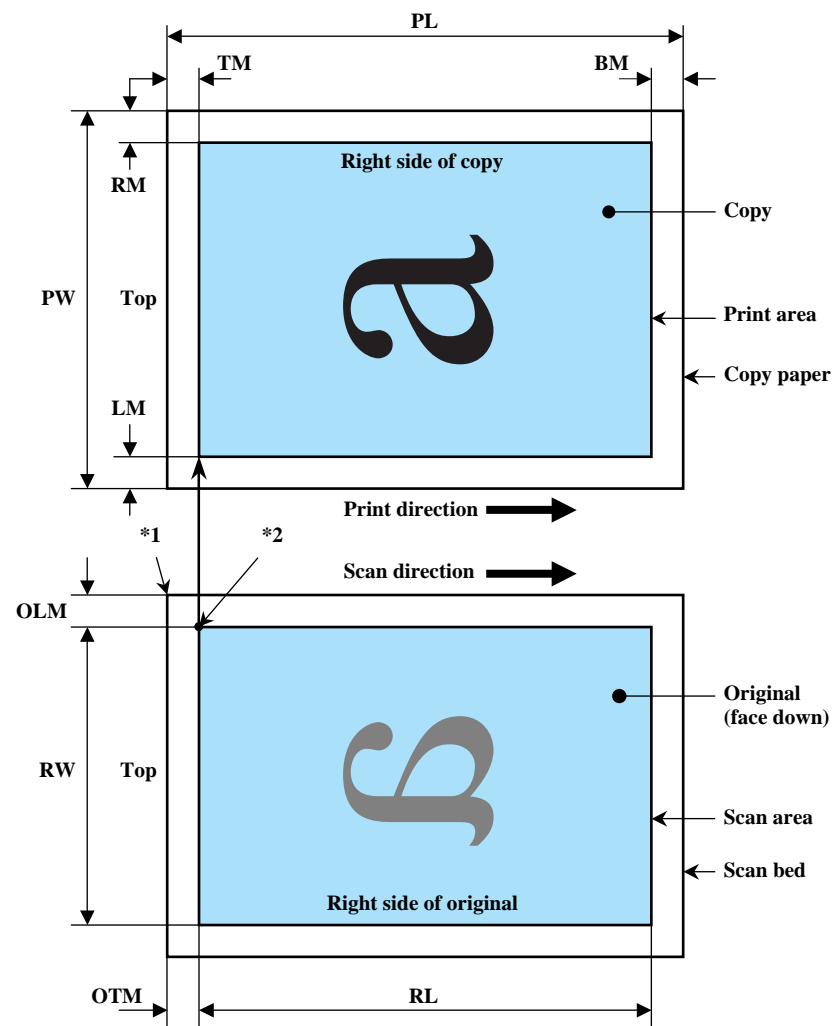
Table 1-31. Original (scanner)

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 \pm 1 mm	297 mm (11.7")	1.5 mm \pm 1 mm

Table 1-32. Copy (printer)

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

Note : Refer to “Paper Support” (p.11) 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 1-10. Small Margin Copy

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1.5 Control Panel

1.5.1 Buttons

The control panel contains following seven buttons, which are used to set and execute various operations. All of them are non-lock type buttons.

Table 1-33. Buttons

Button	Function
Power Button	Turns on/off this unit.
Ink Button	Executes ink cartridges replacement or head cleaning.
Paper Size Button	Selects paper size.
Fit to Page Button	Selects zoom factor from “Fit to page” and “Actual” (Default; 100%).
B&W Start Button	Starts monochrome copy.
Color Start Button	Starts color copy.
Stop Button	Stops copying or printing, sometimes work as shift button.

Refer to “1.5.3 Operations” (p.30) for details about each button.

1.5.2 Indicators

The control panel contains following six LEDs, which are used to indicate various status.

Table 1-34. Indicators

LED	Function	
Power LED [Green] *1	Lights at stand-by. Flashes during some operations. Flashes fast when powering off.	
Error LED [Red]	Light or flash while some error or warning is occurring.	
Ink LED [Red]	Light when some ink is out. Flash when some ink is near empty or in the ink cartridge exchanging procedure.	
Paper Size LED 1,2	Light one of them showing which paper size below is selected.	
1 [Green]	EUR/Asia/Pacific	10 x 15, 4"x6"*2
	EAI	4"x6"
2 [Green]	EUR/Asia/Pacific	A4
	EAI	Letter
	Latin	On: Letter Flashes: A4
Fit to Page LED [Green]	Light when “Fit to Page” function is effective in copy mode.	

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

*2: “10 x 15” is the same size as “4" x 6””.

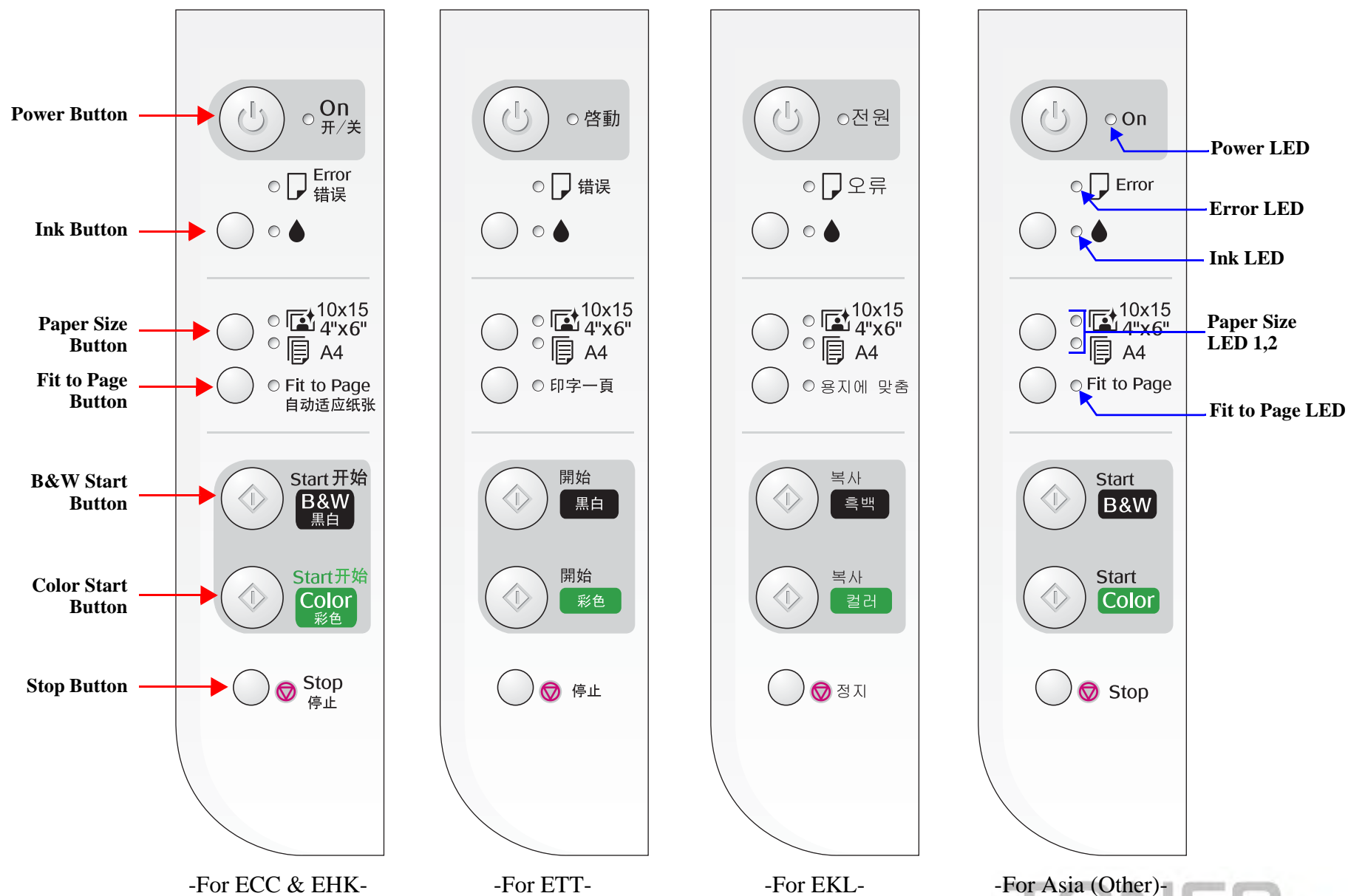


Figure 1-11. Control Panel (Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200)



Figure 1-12. Control Panel (Stylus CX3900/CX3905/DX4000/DX4050)



Figure 1-13. Control Panel (Stylus CX3900/CX3905/DX4000/DX4050)

1.5.3 Operations

STAND-ALONE COPY

The functions of this unit caused by each button in stand-alone copy mode are described in the following table:

Table 1-35. Operations

Button	Function	Remarks
Power Button	Turn on or off this unit.	—
Ink Button	Start or advance ink cartridge exchanging procedure. <input type="checkbox"/> Case <ul style="list-style-type: none"> ■ All inks are enough: Move the carriage to ink cartridge exchange position. ■ Ink low, Replace ink cartridge, No ink cartridge error: Move the carriage to each color's ink check position if that color's ink cartridge is ink low, replace ink cartridge, or not installed. the carriage moves in the order of Cyan, Magenta, Yellow, Black. ■ The carriage is in the ink check position: Move the carriage to next color's ink check position or ink cartridge exchange position. ■ The carriage is in the exchange position: Move the carriage to standby position. 	Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridge, or in error status except for replace ink cartridge error or paper out error.
Ink Button (Holding over 3 sec.)	Start cleaning head procedure.	Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridge, or in error status except for paper out error.
Paper Size Button	Alternate paper size of "Letter (or A4)" and "4"x6" (or 10x15)".	Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridge, or in error status.
Fit to Page Button	Alternate "Fit to Page" status and turn on or off the "Fit to Page" LED.	
B&W Start Button	<ul style="list-style-type: none"> • Start monochrome copy. • Load paper in paper out error or double feed error and eject paper in paper jam error. 	
Color Start Button	<ul style="list-style-type: none"> • Start color copy. • Load paper in paper out error or double feed error and eject paper in paper jam error. 	Invalid while PC scanning, cleaning head and exchanging ink cartridge.
Stop Button	<ul style="list-style-type: none"> • Stop job of copying or printing and reset the number of copies to the beginning. • Eject paper when paper exists or may exist in the paper path. • Clear some of error status. 	
B&W Start Button + Stop Button	Start draft monochrome copy when "Plain Paper" and "Letter (or A4)" are selected.	
Color Start Button + Stop Button	Start draft color copy when "Plain Paper" and "Letter (or A4)" are selected.	Invalid while printing, scanning, cleaning head, stopping printing or copying, exchanging ink cartridge, or in replace ink cartridge error, or without "Letter" or "A4" is selected.

POWER SAVE MODE

Without any panel operation for 15 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 1-36. Power Save Mode

Action	Function
Transition to power save mode	Turn off all the LEDs except for Power LED.
Recovery from power save mode	Recall the panel status as that before moving to low power panel mode.

NOZZLE CHECK PATTERN PRINT

Nozzle check pattern can be printed only with this unit. Left ink quantity of each color is also printed in 10% increments.

To activate this function, turn on this unit while depressing Ink Button. After printing the pattern, this unit moves to ordinary standby status.

The example of nozzle check pattern is explained below.

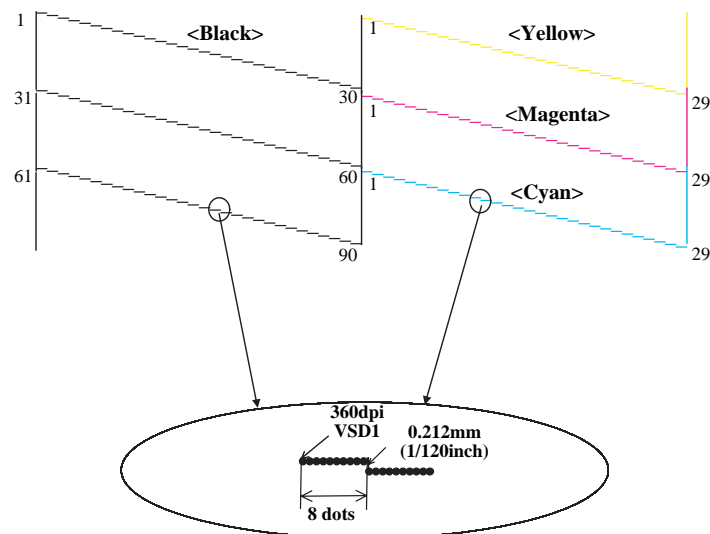


Figure 1-14. Nozzle check pattern

1.5.4 Errors and Panel Status

Followings are the errors that occur on the printer:

- ☐ Fatal error: Mechanical or internal problem has occurred.
- ☐ Maintenance request: Part(s) inside the printer has come to its end of life.
- ☐ Replace Ink Cartridge: Ink has run out.
- ☐ No ink cartridge: Ink cartridge(s) is not installed.
- ☐ Incorrect ink cartridge: Non-genuine ink cartridge(s) is installed.
- ☐ Paper jam: Paper remains in the paper path.
- ☐ Paper out: Failed to load papers.
- ☐ Double feed: Two or more papers have been fed during duplex printing.
- ☐ Ink low (warning): Ink is running low.

Table 1-37. Errors and Panel Status

Printer Status	Indicators						Priority
	Power LED	Error LED	Ink LED	Paper Size LED		Fit to Page LED	
				1	2		
Fatal error	Flashes	Flashes	Flashes	Flashes	Flashes	Flashes	1
Maintenance request	Flashes	On	On	Flashes	Flashes	Flashes	2
Paper jam	—	Flashes	Off	—	—	—	3
Replace ink cartridge No ink cartridge Incorrect ink cartridge	—	Off	On	—	—	—	4
Paper out	—	On	Off	—	—	—	
Double feed	—	On	Off	—	—	—	5
Ink low (warning)	—	—	Flashes	—	—	—	6

Note 1: “—”: No change.

2: When two or more errors occur at the same time, the one with higher priority will be indicated.

1.5.5 Memory Functions

PARAMETERS THAT ARE RETAINED WHEN POWER IS TURNED OFF

The following parameters are retained when the unit's power is off. They are listed along with the corresponding memory functions in the table below.

- ☐ Copy mode is selected when this unit is turned on regardless of the mode when it was turned off before.
- ☐ Paper Type and Paper Size are retained for each mode as default.
- ☐ Zoom is retained for copy mode as default.

Table 1-38. Parameters Retained in Memory

Mode	Parameter retained in memory	Factory setting
Copy	Paper Type	Plain Paper
	Paper Size	Letter or A4
	Zoom (The status of Fit to Page)	100% (OFF)



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
 - C612 Main Board
(Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200)
 - C654 Main Board
(Stylus CX3900/CX3905/DX4000/DX4050)
- CSIC Board
 - C654 Head Board (Stylus CX3900/CX3905/DX4000/DX4050 only)
- Power Supply Board
 - C610 PSB/PSE Board
- Panel Board
 - C612 PNL Board

2.2 Printer Mechanism

2.2.1 Printer Mechanism

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

Like the previous printers, Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050 are 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.

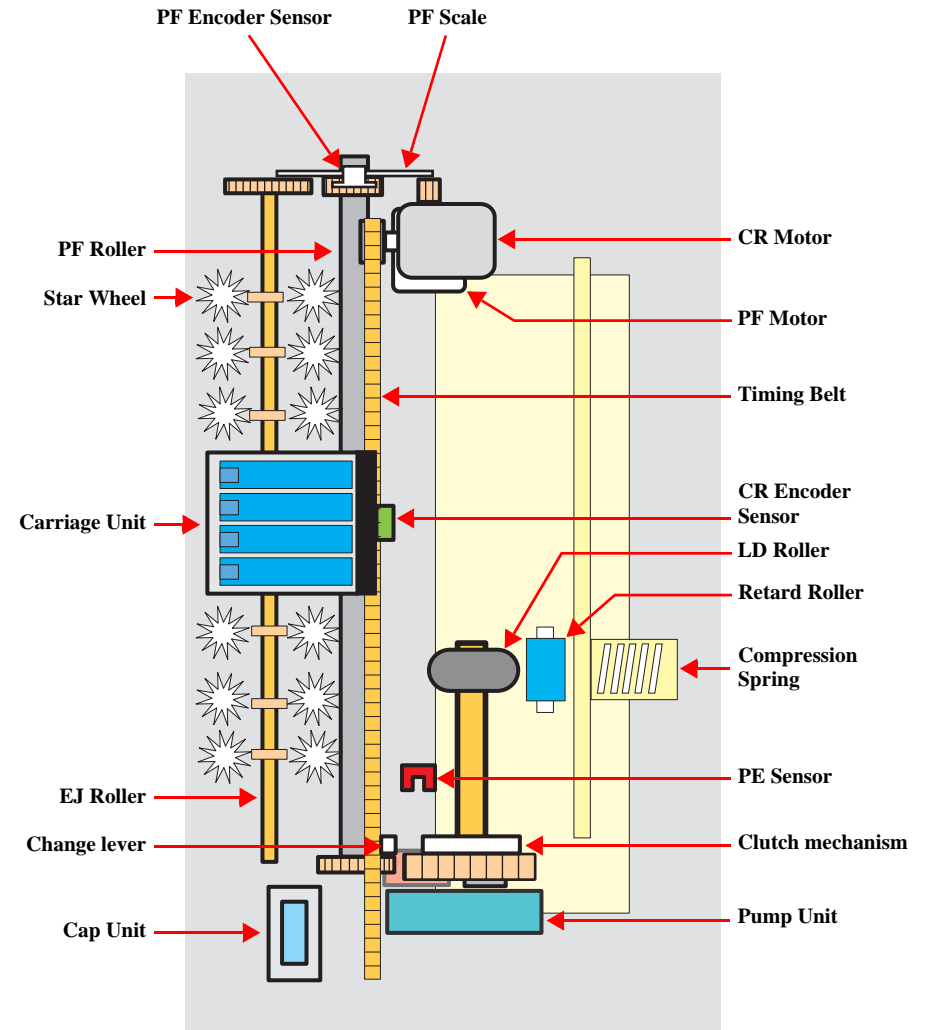


Figure 2-1. Printer Mechanism Block Diagram

2.2.2 Printhead

The Printhead is the same D2-CHIPS type as the previous SPC, and makes it possible to perform economy dot printing and variable dot printing.

The Printhead nozzle configuration is as follows.

☐ Nozzle layout

- Black : 90 nozzles x 1 row
- Color : 29 nozzles x 3 row/color (Cyan, Magenta, Yellow)

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

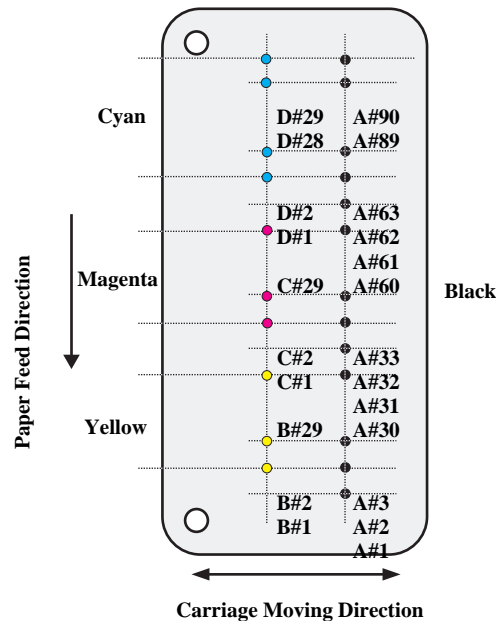


Figure 2-2. Nozzle Layout

The Printhead 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 Printhead, which plays a major role in printing, are the same as the previous printer (Stylus CX3700/CX3800/CX3805/CX3810/DX3800/DX3850); on-demand method which uses PZT (Piezo Electric Element). In order to uniform the ejected ink amount, the Printhead has its own Head ID (11-digit code for Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and 13-digit code for Stylus CX3900/CX3905/DX4000/DX4050) which adjusts PZT voltage drive features.

So, you are required to store the Head ID pasted on the Printhead into the EEPROM by using the Adjustment Program when replacing the Printhead, 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 Printhead.

☐ 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 Printhead 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 Printhead 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 Printhead, 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.

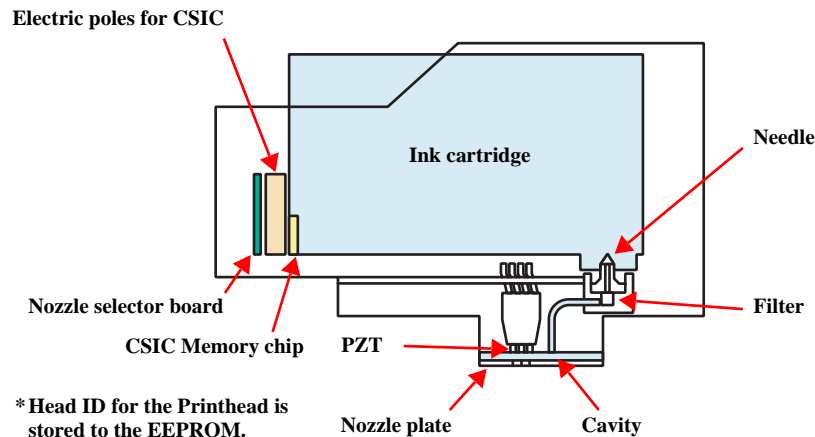


Figure 2-3. Printhead Sectional Drawing

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 (C612/C654 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.36): Normal state)

2. **Ejecting state:**

When the print signal is output from Main Board (C612/C654 Main*), the nozzle selector IC located on the Printhead 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.36): Ejecting state)

Note *: C612 Main: Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200
C654 Main: Stylus CX3900/CX3905/DX4000/DX4050

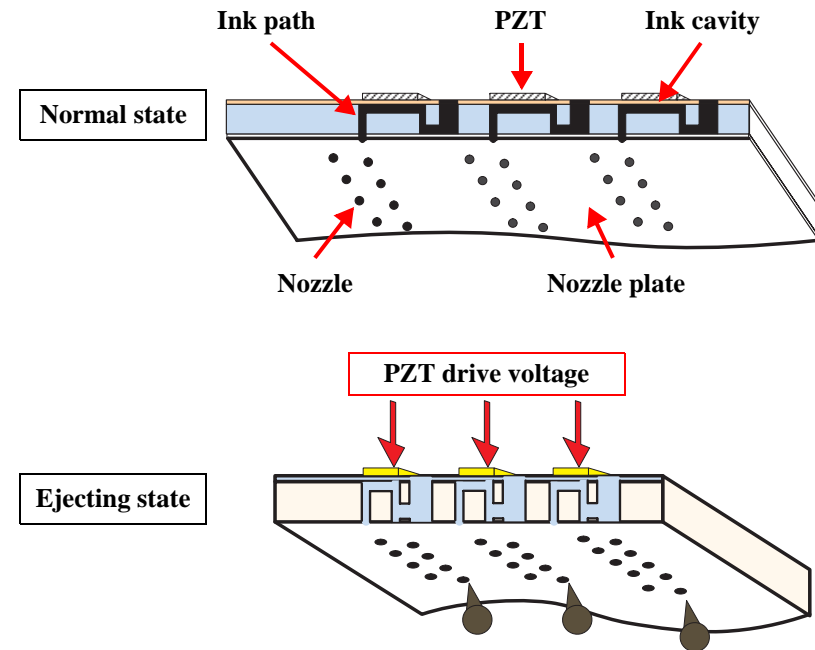


Figure 2-4. Printhead Printing Process

2.2.2.2 Printing Method

The dot printing systems of Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050 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 Printhead and the CR Encoder Board), 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) $\pm 5\%$ (voltage applied to driver)
Armature resistance	28.8 $\Omega \pm 10\%$ (per phase at 25 degrees)
Inductance	20.1mH $\pm 25\%$
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.

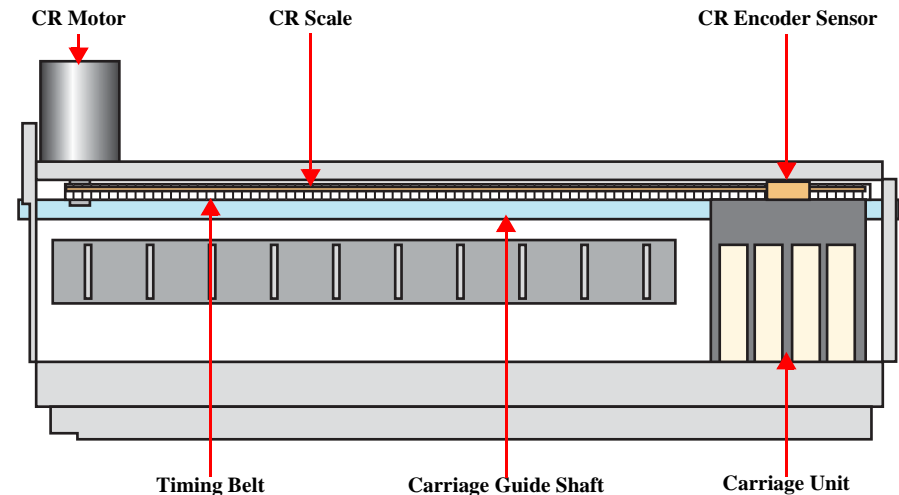


Figure 2-5. Carriage Mechanism

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 MCR motor.
- CR linear encoder failure, CR linear scale defect, etc.

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) \pm 5% (voltage applied to driver)
Armature resistance	27.5 Ω \pm 10% (per phase at 25 degrees)
Inductance	21.4mH \pm 25% (1KH 1Vrms)
Driving method	PWM, constant-current chopping
Driver IC	A6627

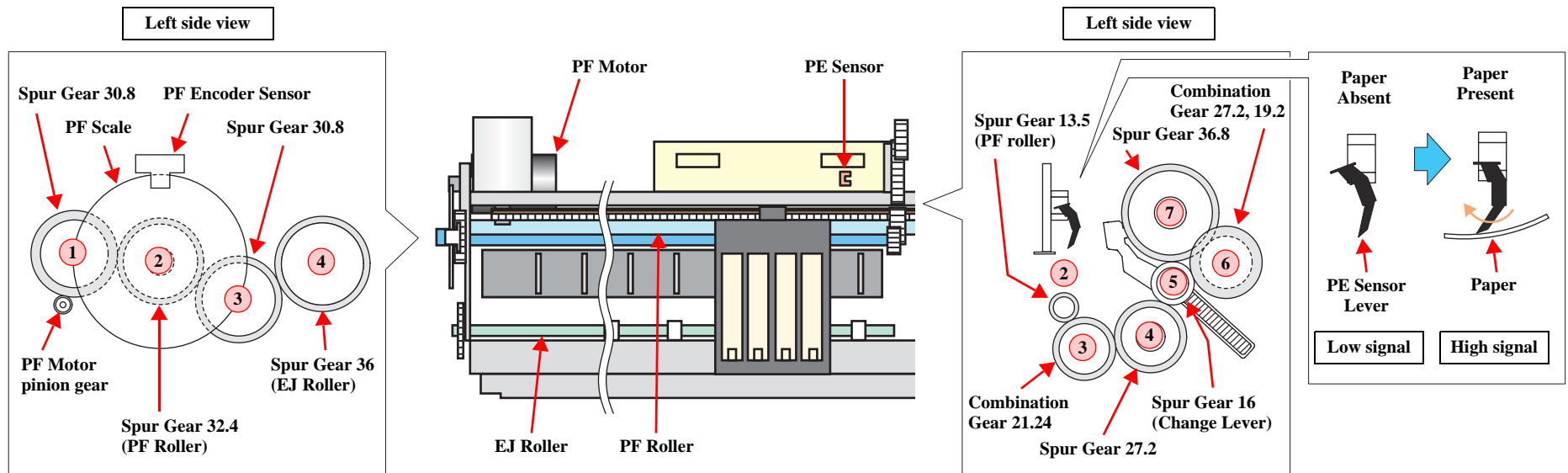
The drive of the PF motor is transmitted to the LD roller shaft and the PF roller through gears for the Paper loading/feeding mechanism. The Paper loading mechanism plays a role in loading a paper from the ASF unit to the PF roller. And also, the Paper feeding mechanism plays a role in feeding a paper 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"> Pick up and feed a paper Set the Change Lever on the Clutch mechanism
Counterclockwise	<ul style="list-style-type: none"> Release the Change Lever from the Clutch mechanism

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”.

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

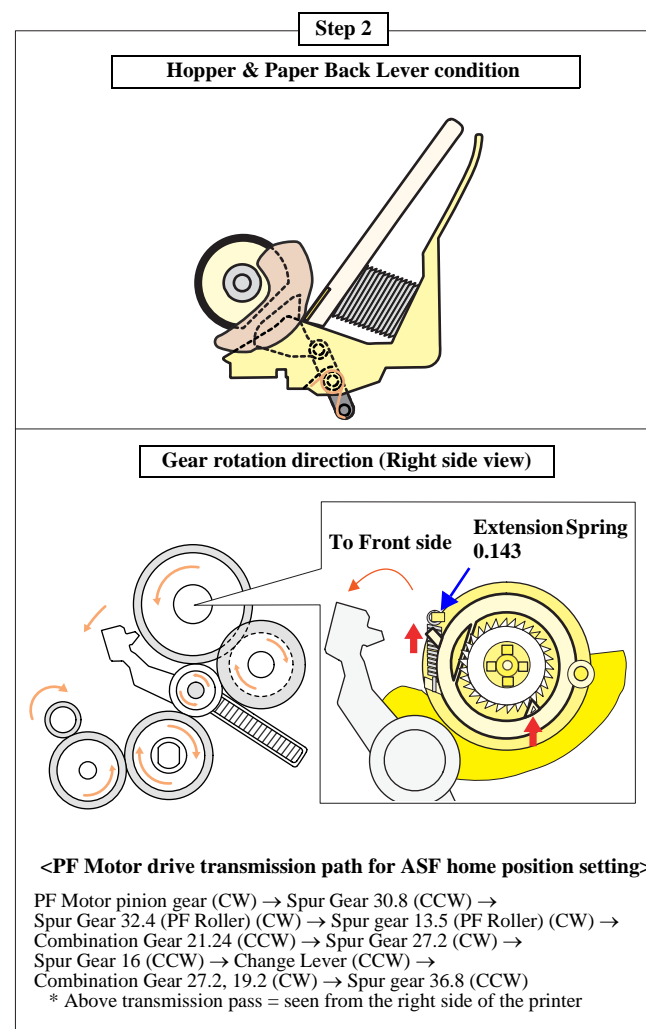
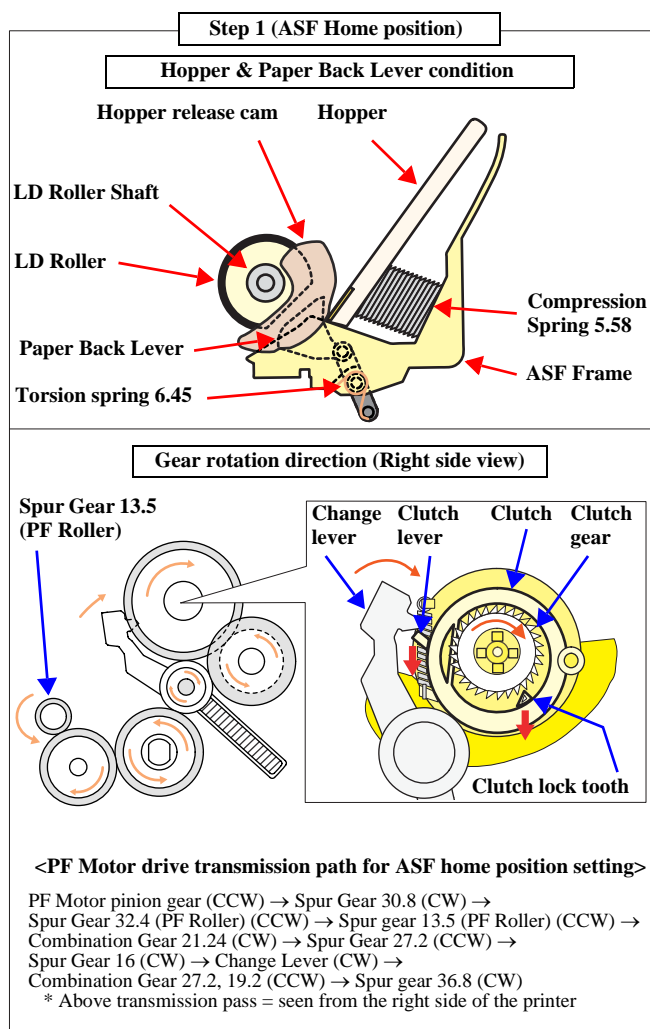
When 1 page paper is loaded, the cams mentioned above prepare the Hopper and Paper Back Lever for the next paper loading operation, and the remaining paper is returned to the standby position.

Figure 2-7 (p.40) and Figure 2-8 (p.41) 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.

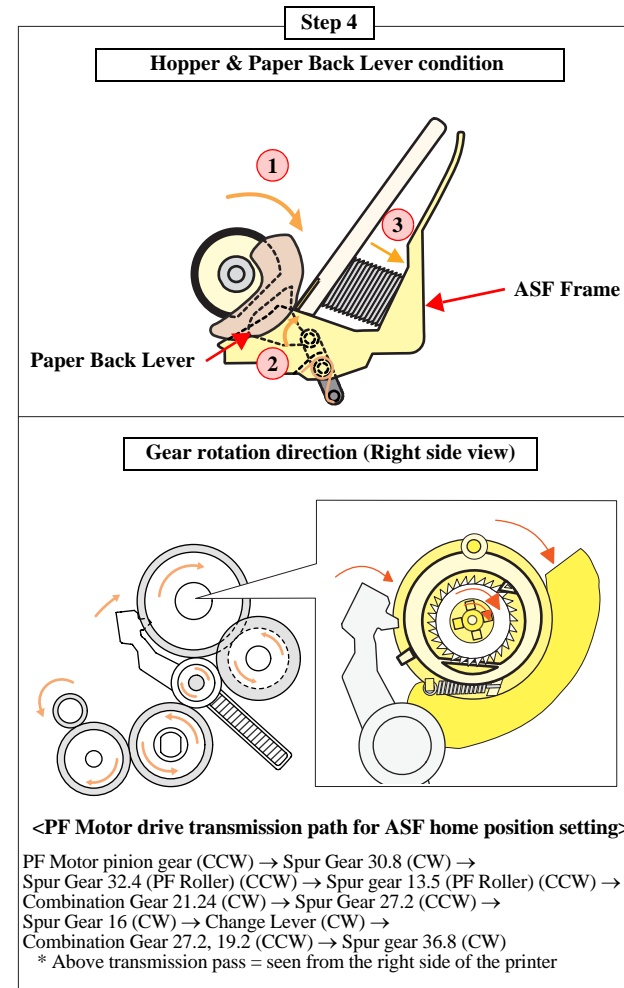
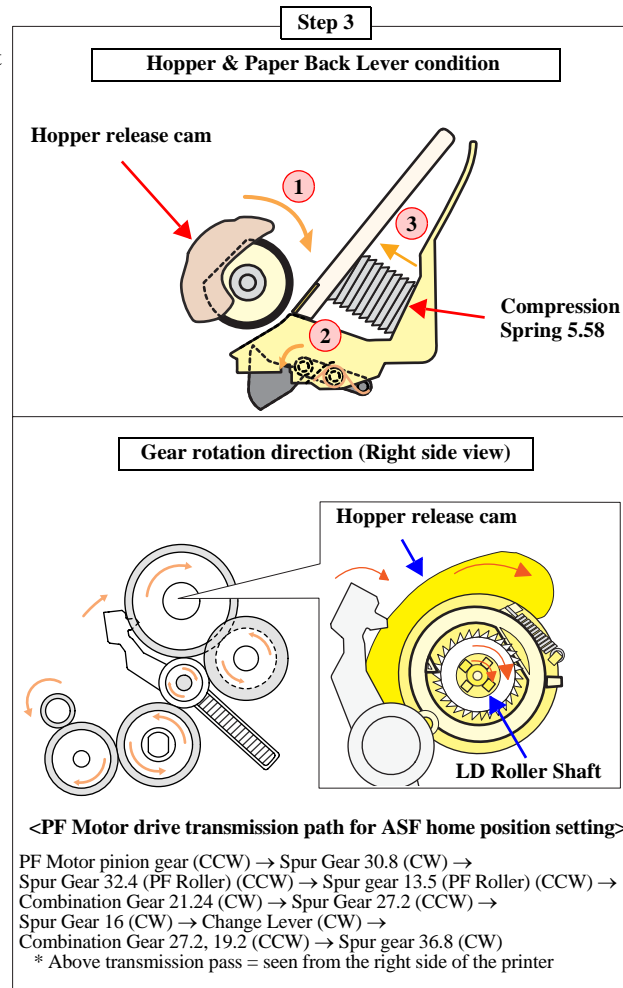
This position is the ASF home position.



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)

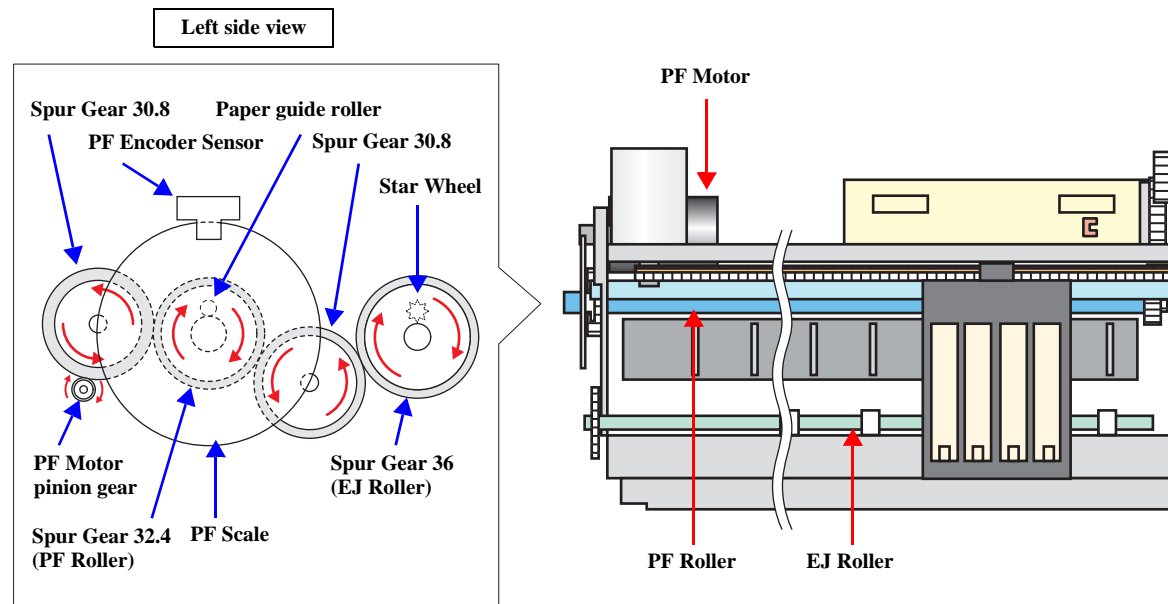
2.2.4.2 Paper Feeding Mechanism

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.

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.



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

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 Printhead 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 Printhead.
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 printer (Stylus CX3700/CX3800/CX3805/CX3810/DX3800/DX3805), 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 Printhead 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.

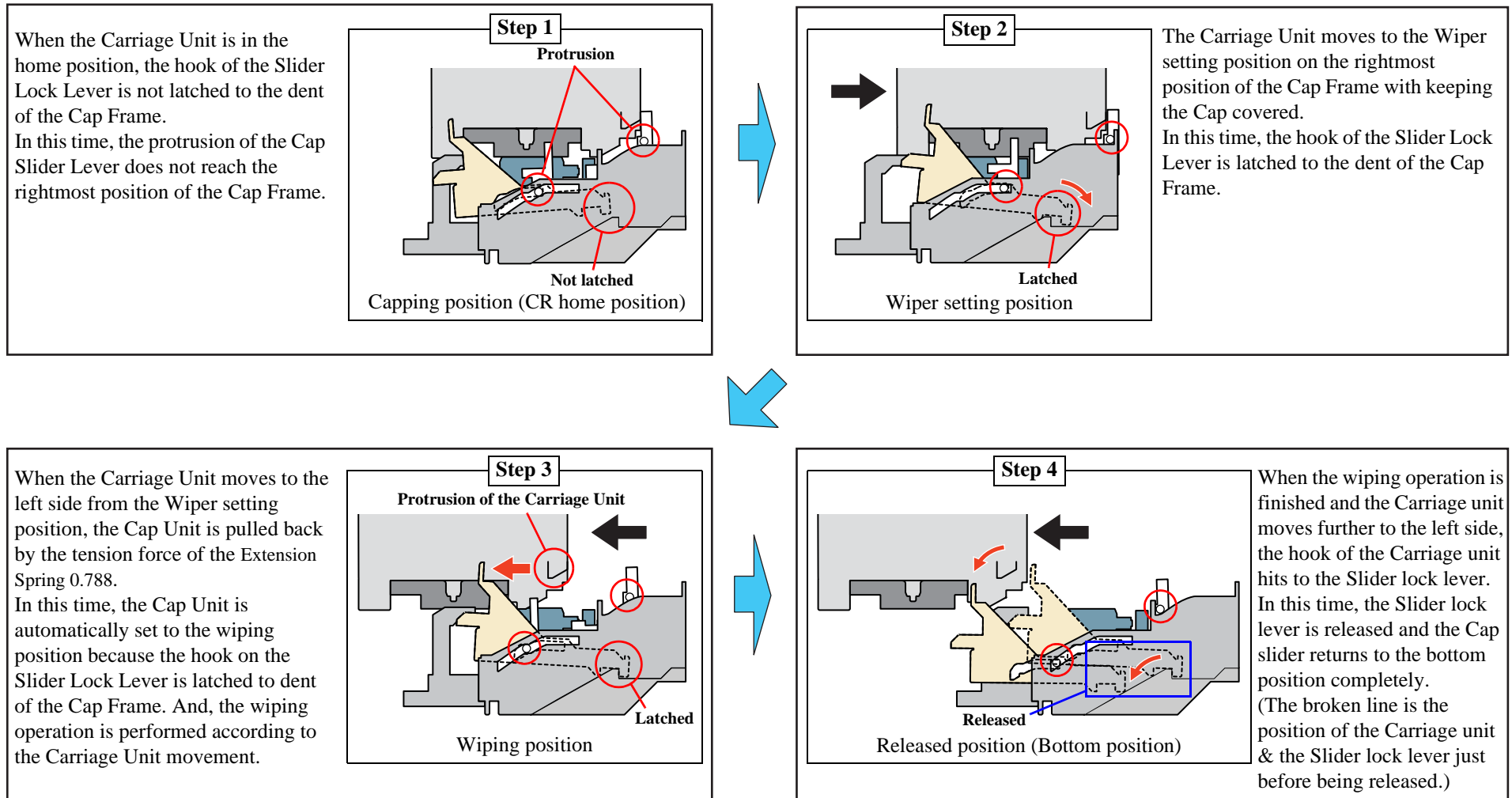


Figure 2-10. Wiper Mechanism

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.

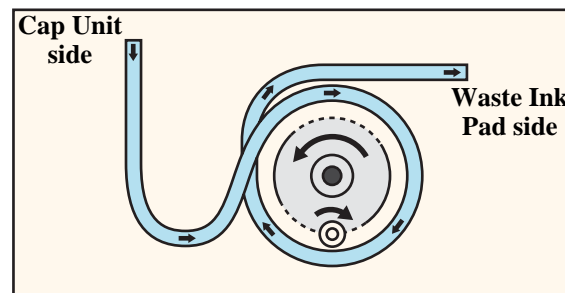
Table 2-5. PF Motor Rotational Direction & Ink System Mechanism

Directions *	Functions
Clockwise	• Pump release
Counterclockwise	• Absorbs the ink • Release the Change Lever from the Clutch mechanism

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

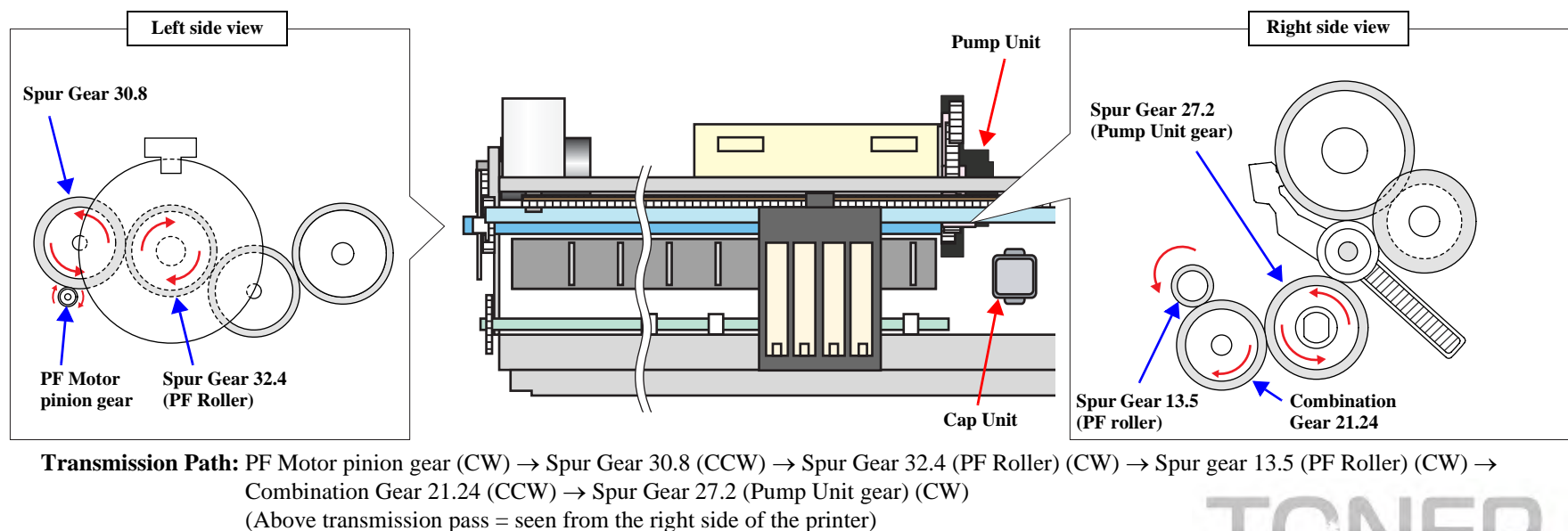


Figure 2-12. PF Motor Drive Transmission Path to the Pump Unit

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 \(p.40\)](#) 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 83 seconds for Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050. If the power is turned off during the Initial Ink Charge, the CL3 will be performed at next power on timing.

□ Manual Cleaning

Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050 provide 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.

■ Each cleaning (CL1, CL2, and CL3) performs the following operations:

- Ink absorption*
- 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.

Note *: The amount of absorbed ink increases in the order of CL1, CL2, and CL3.

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 (Stylus CX3700/CX3800/CX3805/CX3810/DX3800/DX3850), 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.

□ 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 Printhead nozzles.

■ Periodic flushing

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

2.3 Scanner Mechanism

The Scanner Mechanism of Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050 are 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 consists of a CIS Board, Rod Lens Array, LEDs, 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

Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050 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.

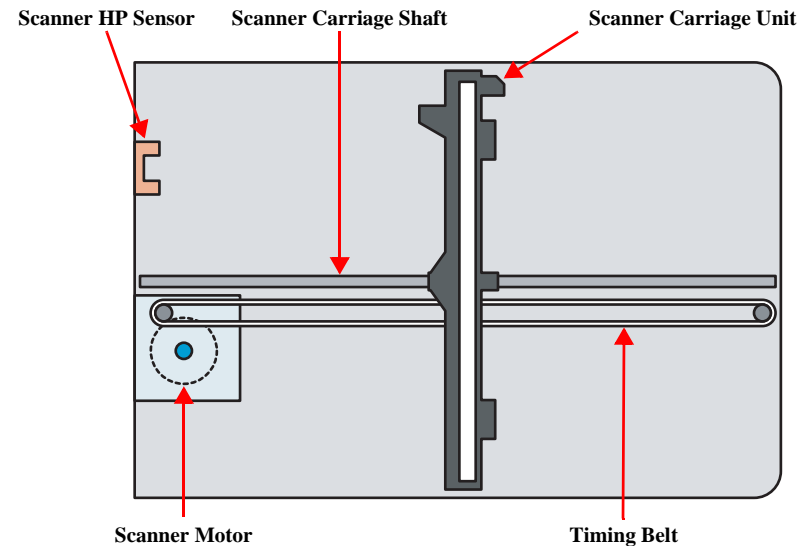


Figure 2-13. Scanner Mechanism

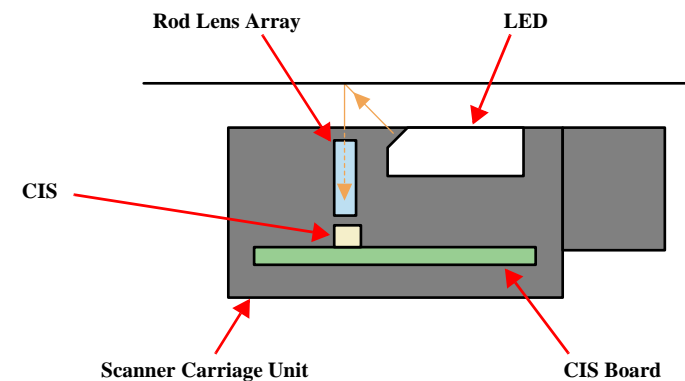


Figure 2-14. Scanning image

2.3.1.2 Scanner Carriage Unit Movement Overview

Image is scanned in the main scanning direction (=1 line) by the CIS board and in the sub-scanning direction (=several lines) combined with Scanner Carriage Unit movement. (See the figure below.)

The CIS board can scan 1 line in main scanning direction (parallel to the Scanner Carriage Unit) at one time. When scanning next lines after the second line in sub-scanning direction, CR driving moves the Scanner Carriage Unit, and scan the lines. The scanned data is sent to the control board. The scanned data for "n" lines and "n-1" line are processed consecutively.

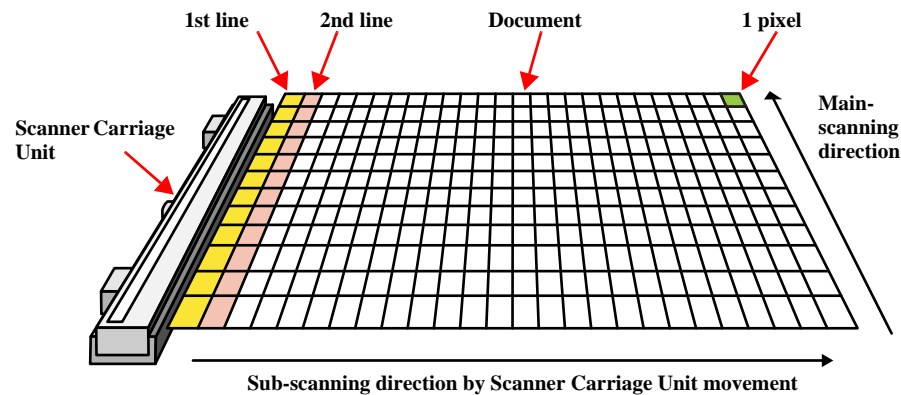


Figure 2-15. Scanner Carriage Unit movement

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	$37\Omega \pm 10\%$ (per phase at 25 degrees)
Inductance	TBDmH \pm TBD%
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.

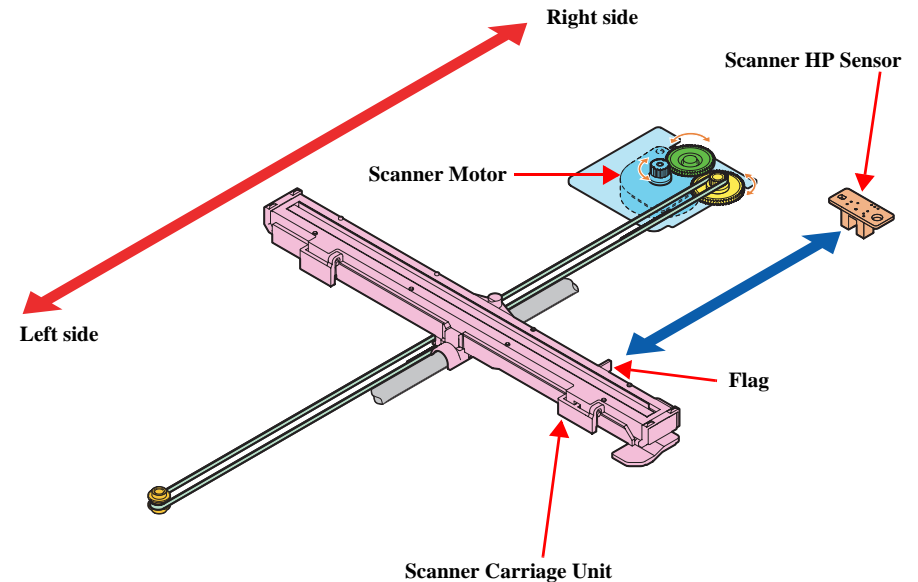


Figure 2-16. Scanner Carriage Unit Mechanism

2.4 Electrical Circuit Operating Principles

The electric circuit of Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050 consist of the following boards.

- ☐ Main Board (CPU-ASIC 2 in 1 + Soldered Flash ROM)
 - C612 Main Board
(Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200)
 - C654 Main Board
(Stylus CX3900/CX3905/DX4000/DX4050)
- ☐ CSIC Board
 - C654 Head Board (Stylus CX3900/CX3905/DX4000/DX4050 only)
- ☐ Power Supply Board
 - C610 PSB/PSE Board

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

This section provides operating principles of C612/C654 Main Board and C610 PSB/PSE Board. For details on connection of each boards and their roles, see

2.4.1 PSB/PSE Board

In the PSB/PSE Board of Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050, the simulated oscillating stimulation flyback converter circuit method is used, and they supply +42VDC to the drive line. The boards turn off by receiving power-off signal from the Main Board. 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"> • Motors (CR Motor, PF Motor, Scanner Motor) • Head driver • Printhead

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 C612/C654 Main Board

The logic circuit of the C612/C654 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
Unlike the previous printer (Stylus COLOR 680), the Lithium battery is not mounted on the Main Board.
- Adoption of 3.3V/1.5V drive logic circuit components
The 5V and 3.3V are formed by the Motor Driver (IC9) of C612/C654 Main Board, and used as drive voltage for many elements. In addition, when the printer shifts to power save mode, the 3.3V is stepped down to 1.5V by the Regulator (IC10) and elements that had been driven by 3.3V are driven by 1.5V for suppression of power consumption.

Table 2-8. Drive Components

5VDC	3.3 VDC	3.3/1.5VDC
• RTC (IC7)	• Flash ROM (IC5) • SDRAM (IC6)	• CPU-ASIC (IC8) • Motor driver (IC9) • Common driver (IC11)

2.4.2.1 Main Elements

Table 2-9 (p.51) shows the function of the main elements on C612/654 Main Board.

Table 2-9. Main Elements

IC	Location	Function
Flash ROM	IC5	8Mbit • Firmware storage
SDRAM	IC6	Bus= 16 bit, 64Mbit DRAM
RTC	IC7	• 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.
Motor Driver	IC9	• CR/PF/Scanner motor drive IC • Adjusts 42V line down to 5V • Adjusts 5V line down to 3.3V
Regulator	IC10	Adjusts 3.3 V line down to 1.5 V
Head Driver	IC11	Head drive control HIC • Generates basic drive waveforms.

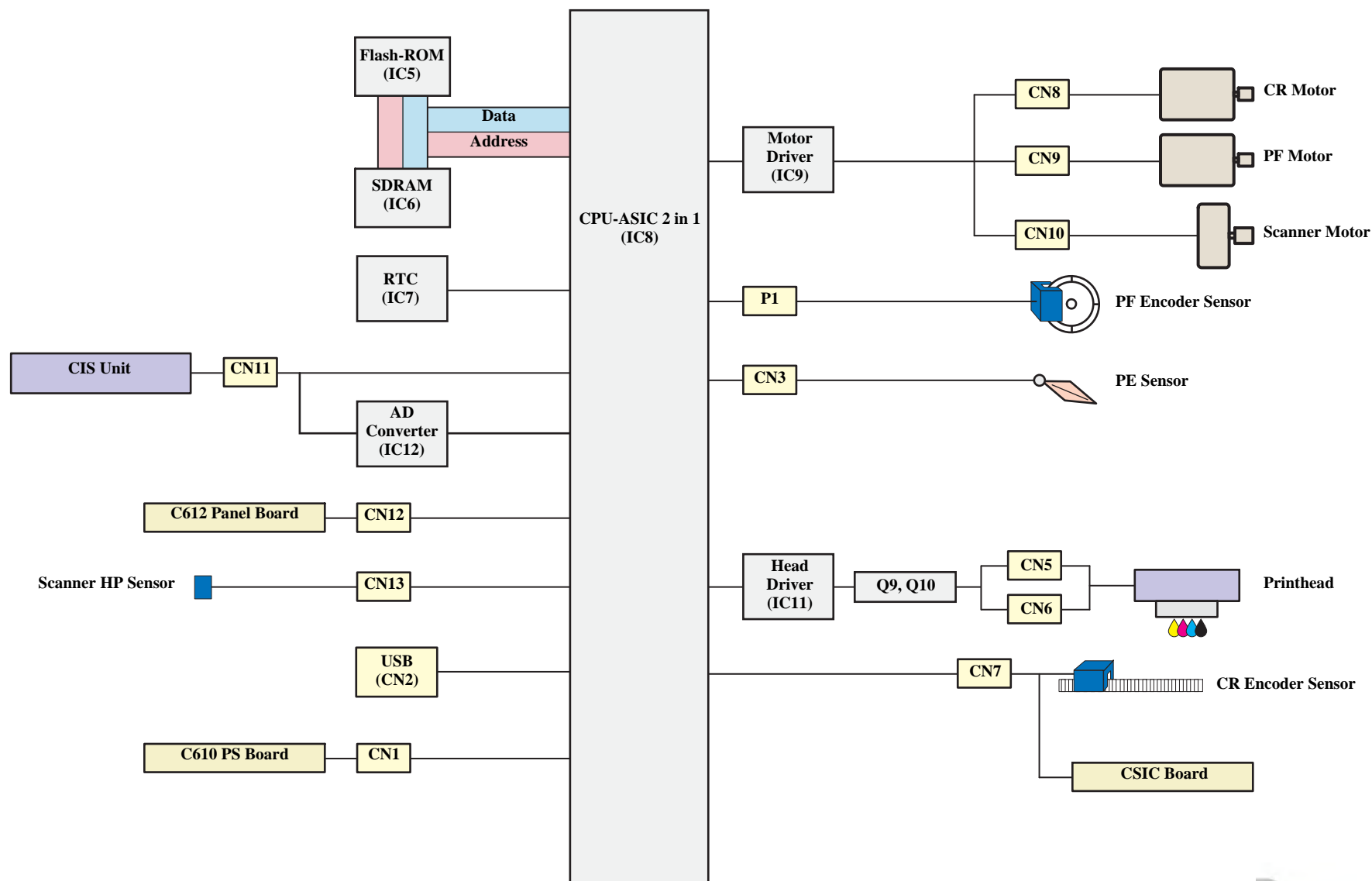


Figure 2-17. Block Diagram For The C612 Main Board

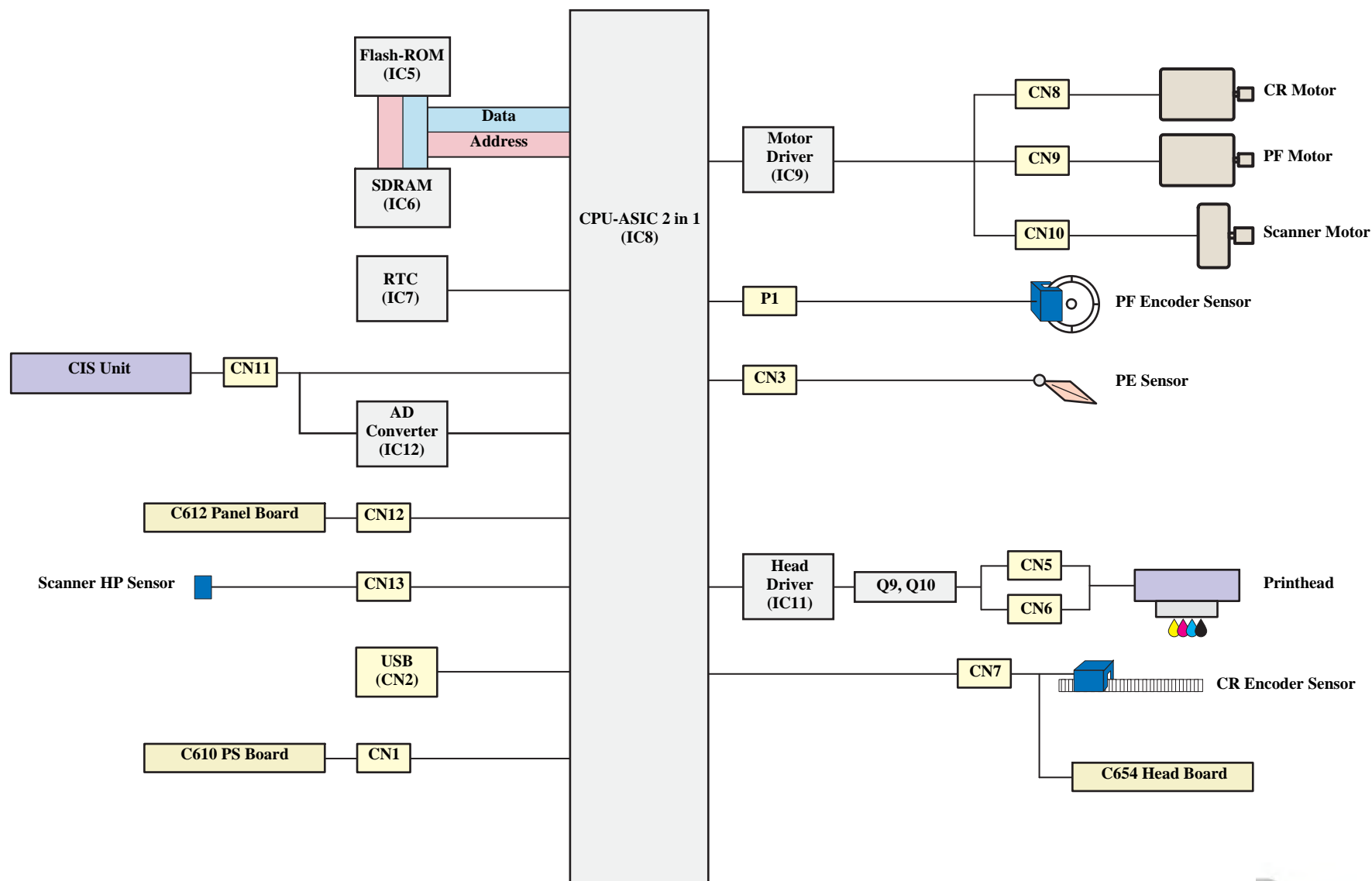


Figure 2-18. Block Diagram For The C654 Main Board

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.

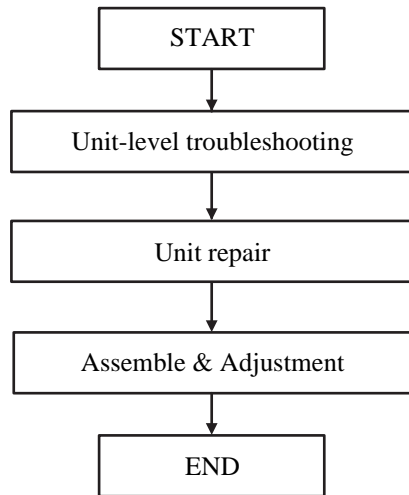


Figure 3-1. Troubleshooting flowchart

Table 3-1. Motor, coil resistance

Motor	Location	Check point	Resistance
Scanner motor	CN10	Pin 1 and 3 Pin 2 and 4	$37\Omega \pm 10\%$

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
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 CX3900/CX3905/DX4000/DX4050, however, other models show almost the same displays as those except the following items:





- 1) Printer model name
- 2) T-code for each ink cartridge (refer to Table 1-12 (p.16))

Table 3-3. Error Indications and Fault Occurrence Causes

Printer Status		Communication Error	Ink Low	Double Feed	Paper Out
Indications	Power	—	—	—	—
	Error	—	—	On	On
	Ink	—	Blink	Off	Off
	Paper Size	1	—	—	—
		2	—	—	—
Fit to Page		—	—	—	—
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 resending 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	Table 3-6, “Check point for communication error according to each phenomenon,” on page 59.	---	Table 3-8, “Check point for double feed error according to each phenomenon,” on page 62.	Table 3-9, “Check point for paper out error according to each phenomenon,” on page 63.	



Note : “_” : No change

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
Indications	Power	—	—	—	—
	Error	Off	Off	Off	Blink
	Ink	On	On	On	Off
	Paper Size	1	—	—	—
	Fit to Page	2	—	—	—
Status monitor 3 message					
Fault Occurrence Cause		<p>This error is detected when;</p> <ul style="list-style-type: none"> The ink consumption amount reaches 100%. The ink cartridge is defective. <p>Note :</p> <p>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.</p>	<p>This error is detected when data from CSIC cannot be read normally or when data cannot be written to CSIC.</p>	<p>This error is detected when;</p> <ul style="list-style-type: none"> An unsupported ink cartridge has been installed. An ink cartridge with a different destination has been installed. 	<p>This error is detected when the PE Sensor cannot properly detect the paper bottom edge during feeding of paper.</p>
Reference Page		Table 3-10, “Check point for no ink cartridge/CSIC error/incorrect ink cartridge according to each phenomenon,” on page 66.	Table 3-10, “Check point for no ink cartridge/CSIC error/incorrect ink cartridge according to each phenomenon,” on page 66.	Table 3-10, “Check point for no ink cartridge/CSIC error/incorrect ink cartridge according to each phenomenon,” on page 66.	Table 3-11, “Check point for paper jam error according to each phenomenon,” on page 67.

Note : “—” : No change

Table 3-5. Error Indications and Fault Occurrence Causes

Printer Status		Maintenance Request	Fatal Error (Mechanism)
Indications	Power	Blink	Blink
	Error	On	Blink
	Ink	On	Blink
	Paper Size	1	Blink
		2	Blink
	Fit to Page	Blink	Blink
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.132).	“3-12 Check point for fatal error according to each phenomenon” (p.70).

Note : “—” : No change

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 the 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

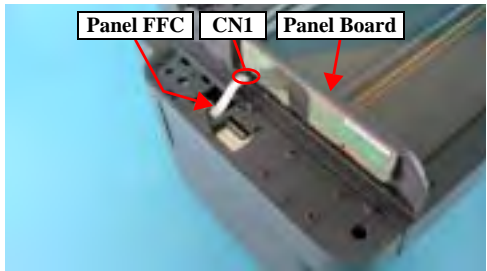
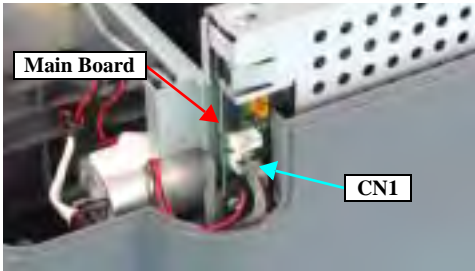
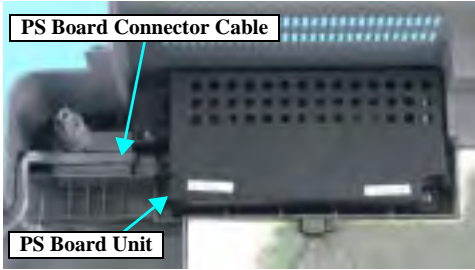
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	When turning on the power, the SPC does not operate at all.	Panel Unit	1. Check if the Panel FFC is connected to the CN1 on the Panel Board.	1. Connect the Panel FFC to CN1 on the Panel Board.
				
			2. Check if the Panel FFC is not damaged.	2. Replace the Panel FFC with new one.
			3. Check if the Panel Board is not damaged.	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"> Power on Anywhere 	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 CN10 on the Main Board.	1. Connect the PS Board Connector Cable to CN1 on the Main Board.
			 <p>2. Check if the PS Board Connector Cable/PS Board is not damaged.</p> 	2. Replace the PS Board Unit with new one. * If the problem is not solved, replace the Main Board with new one.
<ul style="list-style-type: none"> Operation — 	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.	1. Use the Adjustment Program to write the correct value to the EEPROM address.
			2. Check if the Panel FFC is connected to the CN12 on the Main Board.	2. Connect the Panel FFC to the CN12 on the Main Board.

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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"> Power on Inside HP 	The SPC does not perform the initial ink charge and an error is indicated with 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"> Power on Anywhere 	The SPC does not perform the ink replacement CL and an error is indicated with 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 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

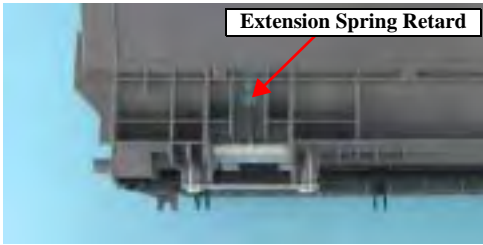
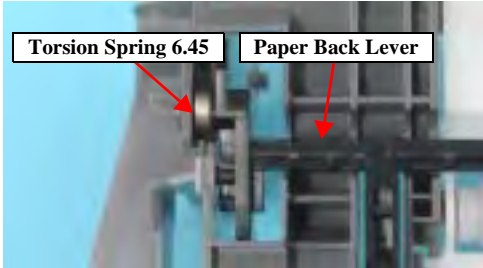
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • – 	After both surfaces were printed, the paper was ejected but an error is displayed.	ASF Unit	1. Check if the Extension Spring Retard operates correctly in the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

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

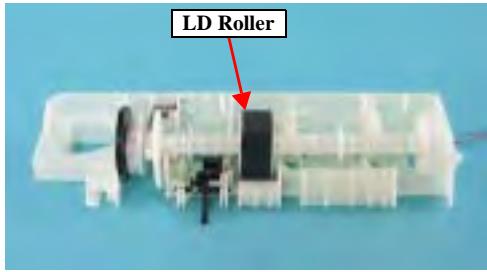
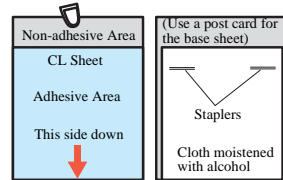
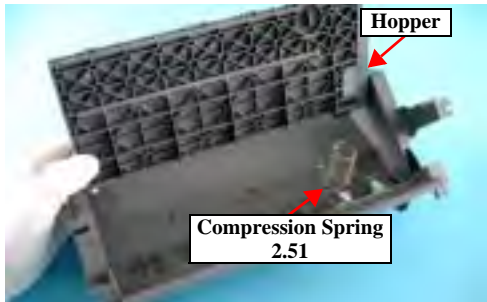
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • — 	The LD Roller cannot pick up paper, although the LD Roller attempt to rotate correctly.	Holder Shaft Unit	1. Check if any paper dust is not adhered to the surface of the LD Roller. 	1. Set a cleaning sheet in the ASF 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. 
<ul style="list-style-type: none"> • Operation • — 	The Hopper does not operate during the paper loading sequence although the LD Roller rotates to load paper from the ASF Unit.	ASF Unit	1. Check if the Hopper operates correctly in the paper loading sequence. 	1. Reassemble the Compression Spring 2.51 between the ASF Frame and the Hopper.

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

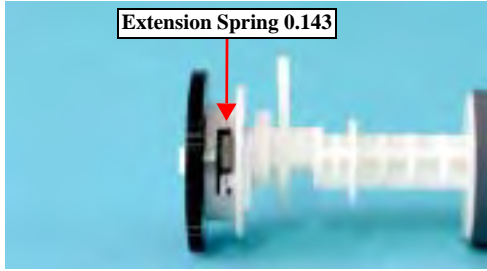
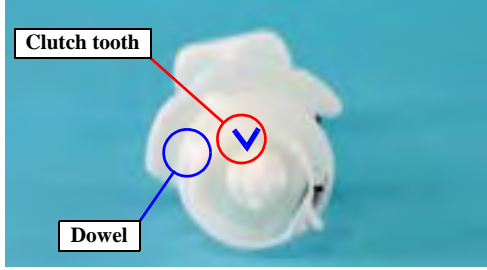
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • — 	The drive of the PF Motor is not transmitted to the LD Roller Shaft.	Holder Shaft Unit	1. Check if the Extension Spring 0.143 does not come off in the Clutch 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

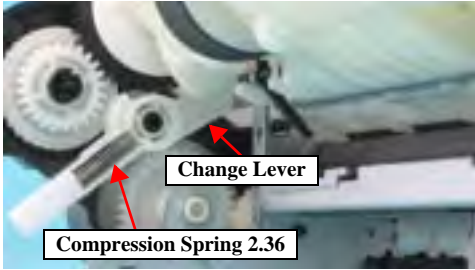
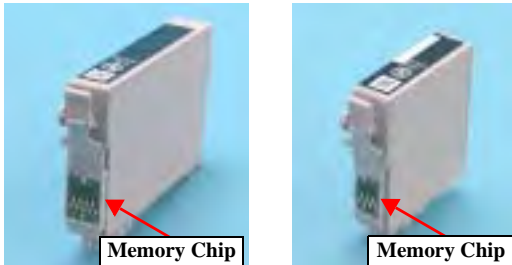
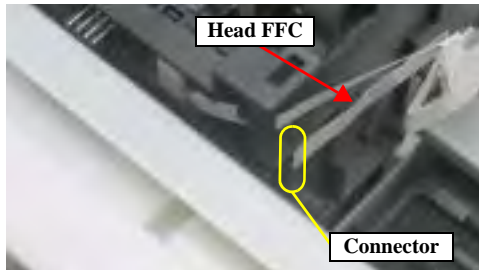
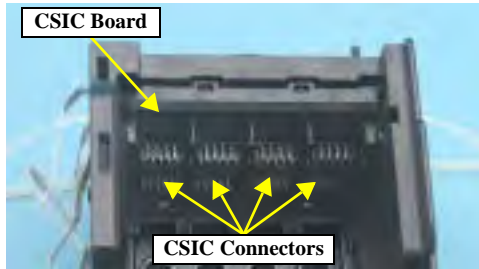
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • – 	The drive of the PF Motor is not transmitted to the LD Roller Shaft.	Ink System Unit	1. Check if the Compression Spring 2.36 does not come off in the Change Lever. 	1. Replace the Ink System Unit with a new one.
<ul style="list-style-type: none"> • Operation • – 	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"> Power on Inside HP 	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. <Stylus CX2800 series*1> <Stylus CX3900 series*2> 	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.

Note *1: Stylus CX2800 series: Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME200

*2: Stylus CX3900 series: Stylus CX3900/CX3905/DX4000/DX4050

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

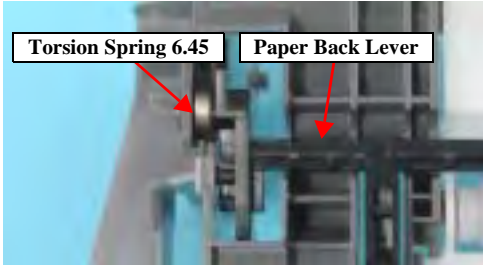
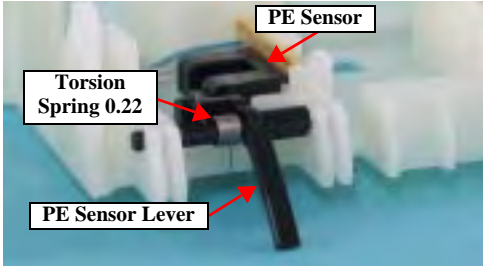
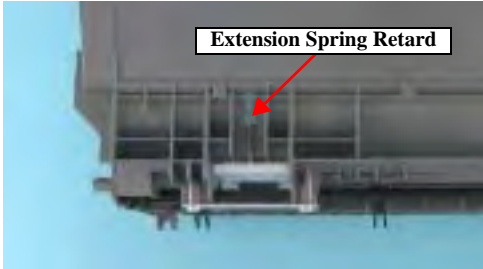

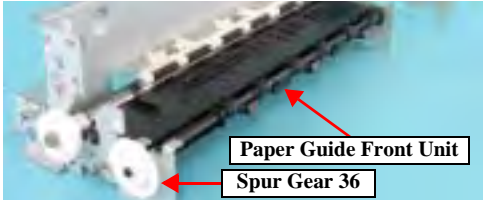
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • Outside HP 	The paper feeding sequence is performed without loading paper in the paper loading sequence.	ASF Unit	1. Check if the ASF Unit is properly installed. 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.

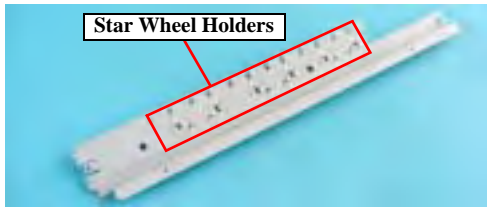
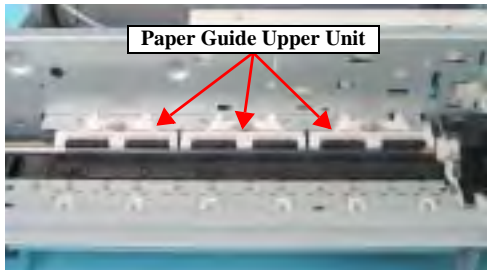
Table 3-11. Check point for paper jam error according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • Outside HP 	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"> • Operation • — 	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"> • Operation • — 	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.
			4. Check if the Spur Gear 36 is not damaged.	4. Replace the EJ Frame Unit with a new one.
	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. 	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

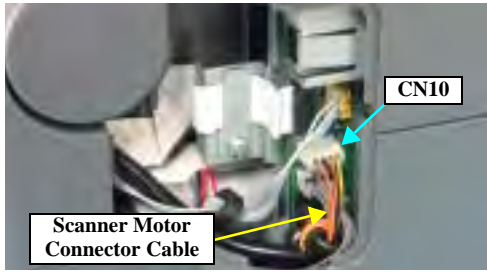
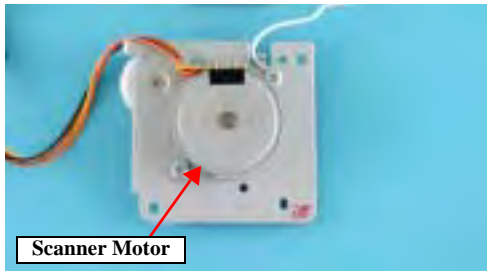
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	The Scanner Unit does not initialize when the power is turned on.	Scanner Motor	1. Check if the Scanner Motor Connector Cable is connected to CN10 on the 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 (<i>refer to Table 3-1</i>). 	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

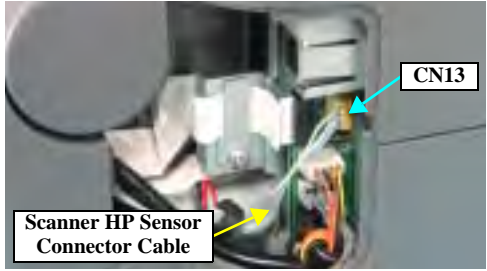
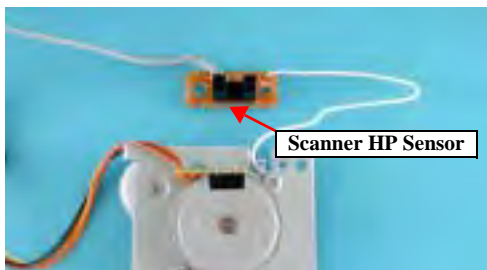
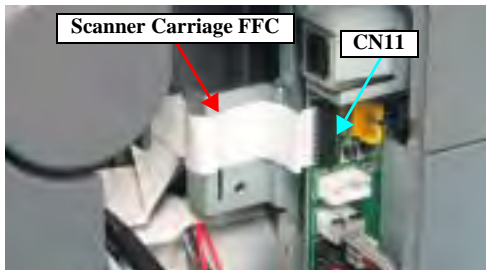
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	The Scanner Unit does not initialize when the power is turned on.	Scanner HP Sensor	1. Check if the Scanner HP Sensor Connector Cable is connected to CN13 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.
		Scanner Carriage FFC	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

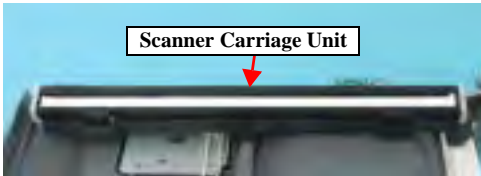
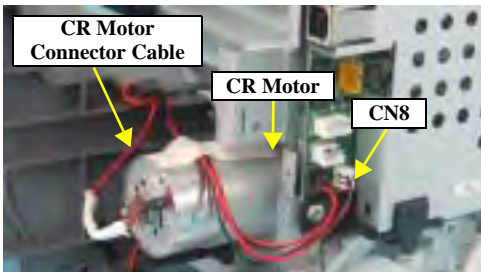
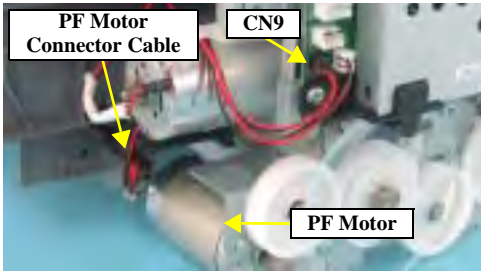
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	The Scanner Unit does not initialize when the power is turned on.	Scanner Carriage Unit	1. Check if the Scanner Carriage Unit is not damaged. 	1. Replace the Scanner Carriage Unit with a new one.
<ul style="list-style-type: none"> Power on Anywhere 	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. 	1. Connect the CR Motor Connector Cable to CN8 on the Main Board.
			2. Check if the CR Motor Connector Cable is not damaged.	2. Replace the CR Motor with a new one.
			3. Check if the CR Motor operates.	3. Replace the CR Motor with a new one.
	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. 	1. Connect the PF Motor Connector Cable to CN9 on the Main Board.
			2. Check if the PF Motor Connector Cable is not damaged.	2. Replace the PF Motor with a new one.
			3. Check if the PF Motor operates.	3. Replace the PF Motor with a new one.

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

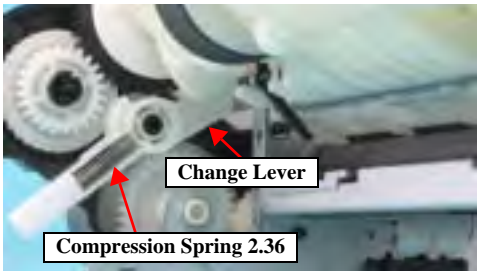
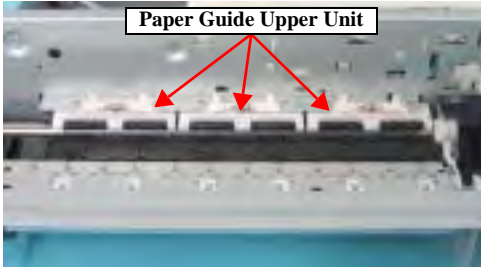
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	When turning on the power, the Carriage Unit collides to the Change Lever located to the front side of the printer.	PF Motor	1. Check if the PF Motor Connector Cable is connected to CN9 on the Main Board.	1. Connect the PF Motor Connector Cable to CN9 on the Main Board.
			2. Check if the PF Motor Connector Cable is not damaged.	2. Replace the PF Motor with a new one.
			3. Check if the PF Motor operates.	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.
<ul style="list-style-type: none"> Power on Anywhere 	The Carriage Unit collides with the Guide Upper Unit when power is turned on.	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

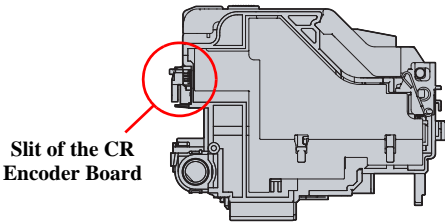
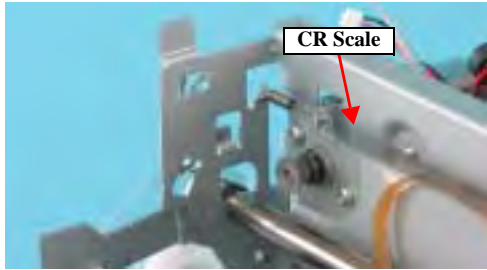
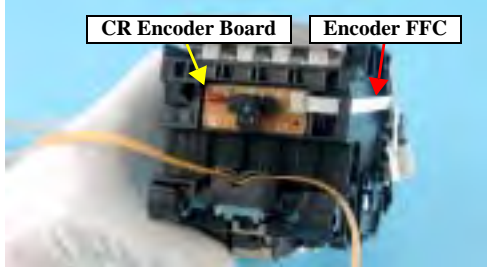
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	When turning on the power, the Carriage Unit collides to the right side of the Main Frame.	CR Scale	1. Check if the CR Scale does not come off or it properly passes through the slit of the CR Encoder Board.  <p>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.  <p>CR Scale</p>	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.  <p>CR Encoder Board Encoder FFC</p>	1. Connect the Encoder FFC to the CR Encoder Board.
			2. Check if the Encoder FFC is not damaged.	2. Replace the Encoder FFC with a new one.
			3. Check if the CR Encoder Board is not damaged.	3. Replace the CR Encoder Board with a new one.

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

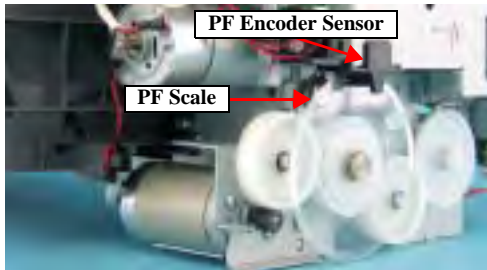
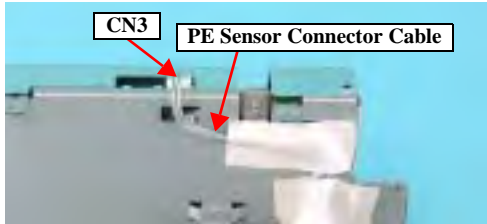
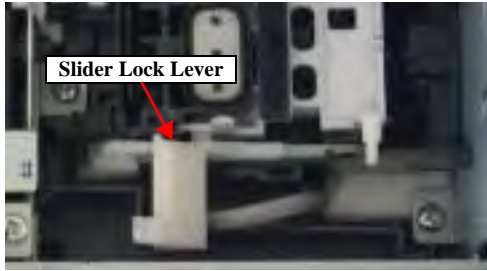
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	The eject rollers are rotating at high speed when power is turned on. (For about 1 cycle.)	PF Scale / Main Board Unit	1. Check if the PF Scale is not damaged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

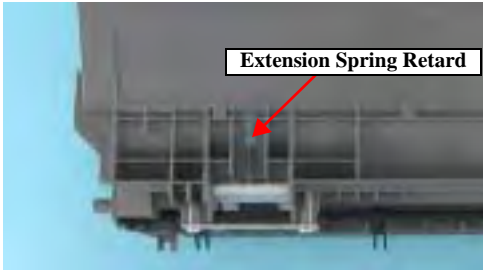
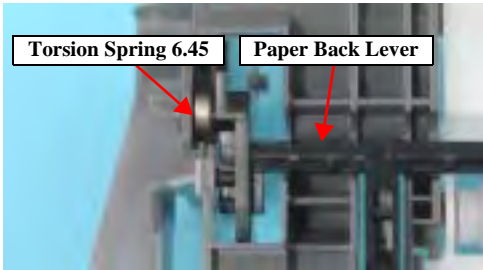
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • – 	The LEDs and STM3 are not indicating error conditions. But, multiple sheets of paper are always loaded from the ASF Unit.	ASF Unit	1. Check if the Extension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

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"> Anytime Anywhere 	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"> Scanned image is not clear. 	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

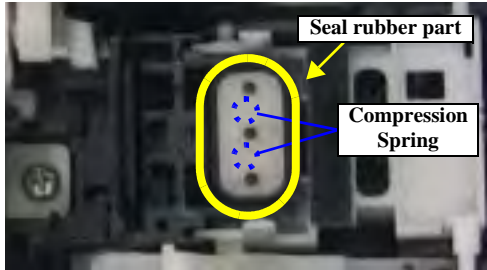
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• Dot missing and mixed colors	Ink is scarcely ejected to the Cap from the Print Head.	Ink System Unit (Cap Unit)	1. Check if there is not any foreign material/damage around the seal rubber part on the Cap Unit.	1. Remove 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

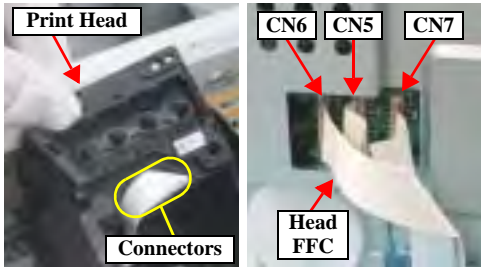
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• White streak / abnormal discharge	Ink is ejected to the Cap from the Print Head, but printing is not done at all after cleaning or ink change, or abnormal discharge occurs.	Head FFC	1. Check if the Head FFC is securely 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	2. Check if the Head FFC is not damaged.	2. Replace the Head FFC with a new one.
		Main Board Unit	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.
			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

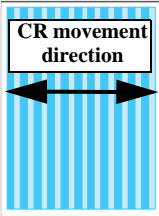


Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• White streak/ color unevenness occurrence	Vertical banding appears against the CR movement direction. And, it looks like uneven printing.  [Note] If the problem is not solved, replace the CR Motor with a new one.	Adjustment	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

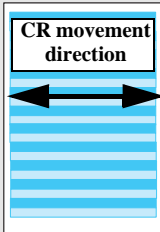
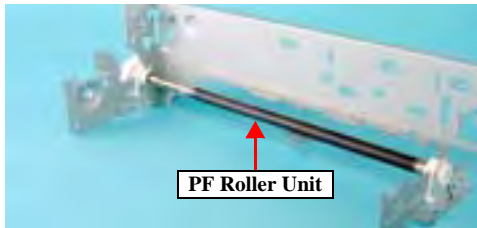
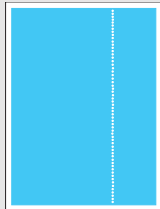
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• White streak/ color unevenness occurrence	Micro banding appears horizontally against the CR movement direction and it appears with the same width.  [Note] If the problem is not solved, replace the PF Motor with a new 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.	1. Use the suitable paper 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

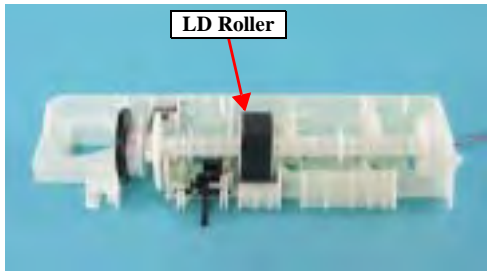
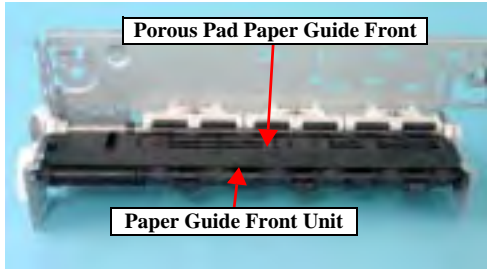
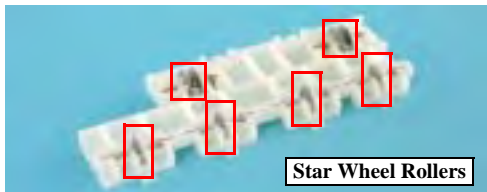
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• Print start position slip	The printing operation is correctly performed. But, the top margin is insufficient than usual one.	Holder Shaft Unit	1. Check if any paper dust is not adhered to the surface of the LD Roller. 	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 page 63 "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 Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050. 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 Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050.



- **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 (p147)” for details.)**
- **Make the specified adjustments when you disassemble the printer. (Refer to Chapter5 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.
Origin Adjustment Jig	EPSON	1401646
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 *: Also 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
	Printhead (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 Models

Some parts installed onto Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 and Stylus CX3900/CX3905/DX4000/DX4050 differ from each other as described in the table below, and for that, there are some procedural differences between the models. See the respective pages for details.

**CHECK
POINT**


Since Stylus CX3900/CX3905/DX4000/DX4050 model is used to create this manual, the appearance of some parts may differ from those on Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 model. The procedures themselves, however, are the same for both models except for the one described in the table below.

Table 4-3. Procedural Differences between Models

Item	Description	Stylus CX2800/CX2900/CX2905/CX3000/ CX3000V/ME 200	Stylus CX3900/CX3905/DX4000/DX4050	Reference Page
Printhead	<p>□ Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200</p> <ul style="list-style-type: none"> ■ You need to cut off the Cartridge Cover Hinge and remove the Cartridge Cover to take out the Printhead. <p>□ Stylus CX3900/CX3905/DX4000/DX4050</p> <ul style="list-style-type: none"> ■ You need to remove the Sub FFC Guide to take out the Printhead. 			<p>For Stylus CX3900/CX3905/DX4000/DX4050, see 4.4.7 Printhead (p96)</p> <p>For Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200, see 4.6.1 Printhead (p127)</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.



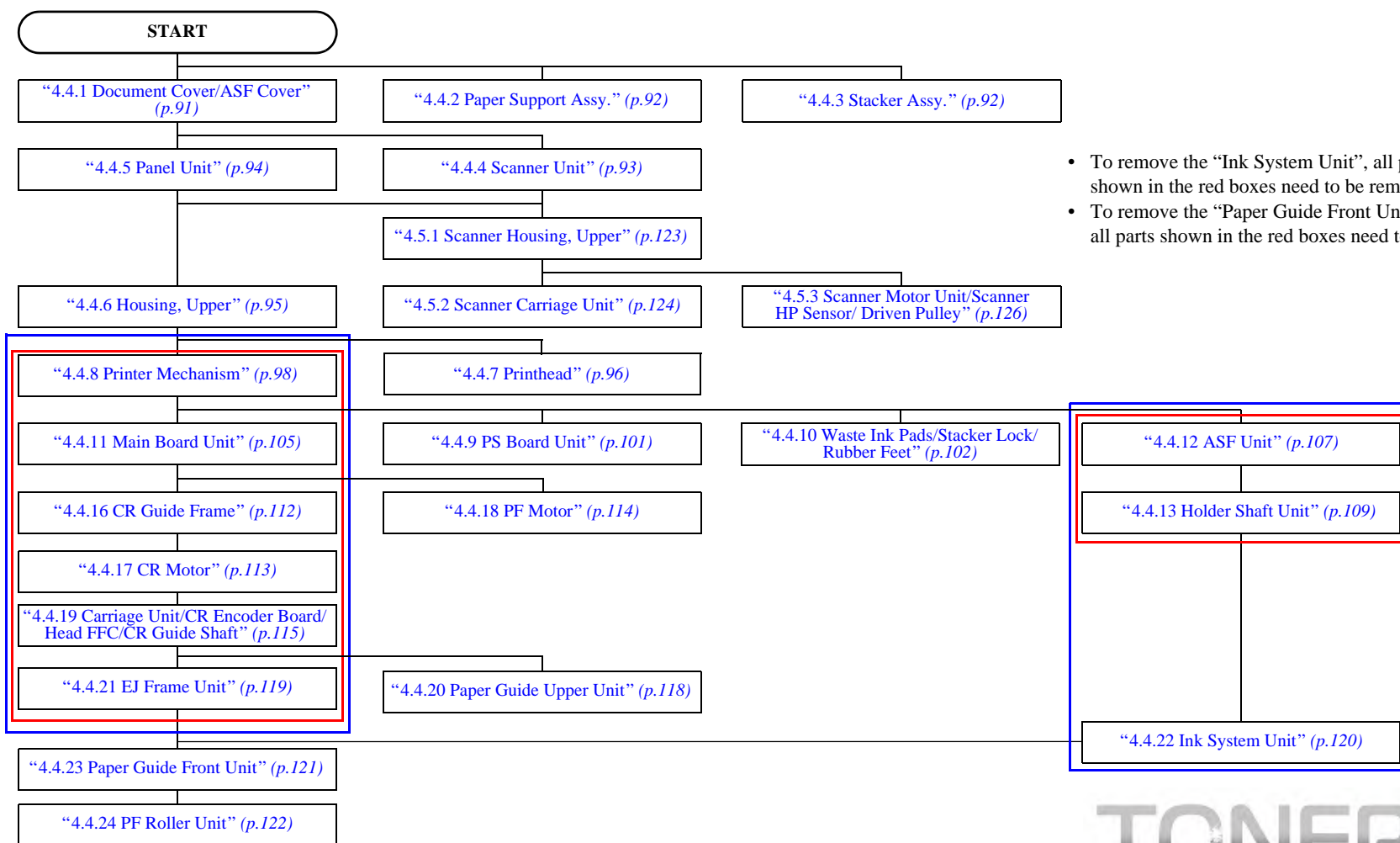
4.3 Disassembly Procedures

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

CHECK
POINT



Since Stylus CX3900/CX3905/DX4000/DX4050 model is used to create this manual, the appearance of some parts may differ from those on Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 model. The procedures themselves, however, are the same for both models except for the procedures for removing printhead.



- To remove the “Ink System Unit”, all parts shown in the red boxes need to be removed.
- To remove the “Paper Guide Front Unit”, all parts shown in the red boxes need to be removed.

Figure 4-1. Disassembling Flowchart

4.4 Printer Section

4.4.1 Document Cover/ASF Cover

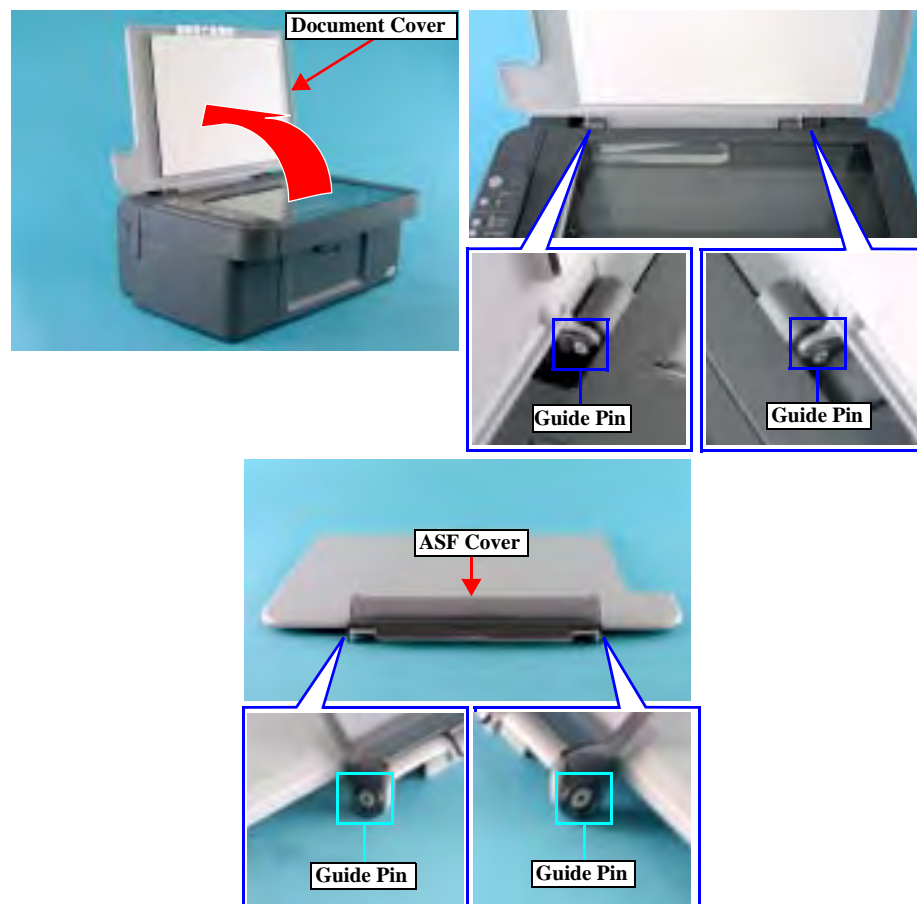


Figure 4-2. Removing Document Cover/Document Cover Mat/
ASF Cover

- Part/Unit that should be removed before removing Document Cover/
ASF Cover

None

- Removal procedure

- Document Cover

1. Open the Document Cover, release the guide pins (x2, □) that secure the Document Cover, and remove the Document Cover.

- 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.

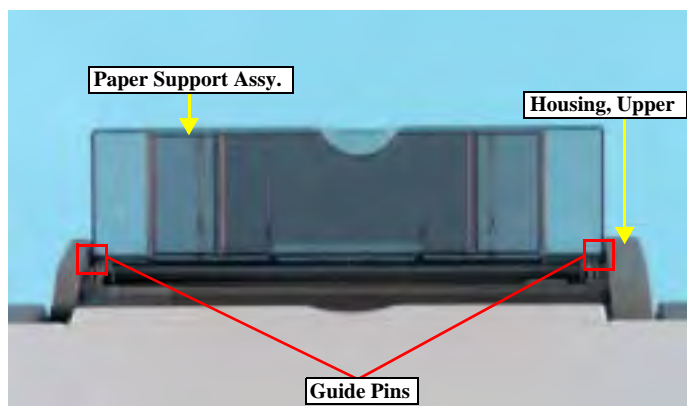



Figure 4-3. Removing Paper Support Assy.

- ☐ **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.

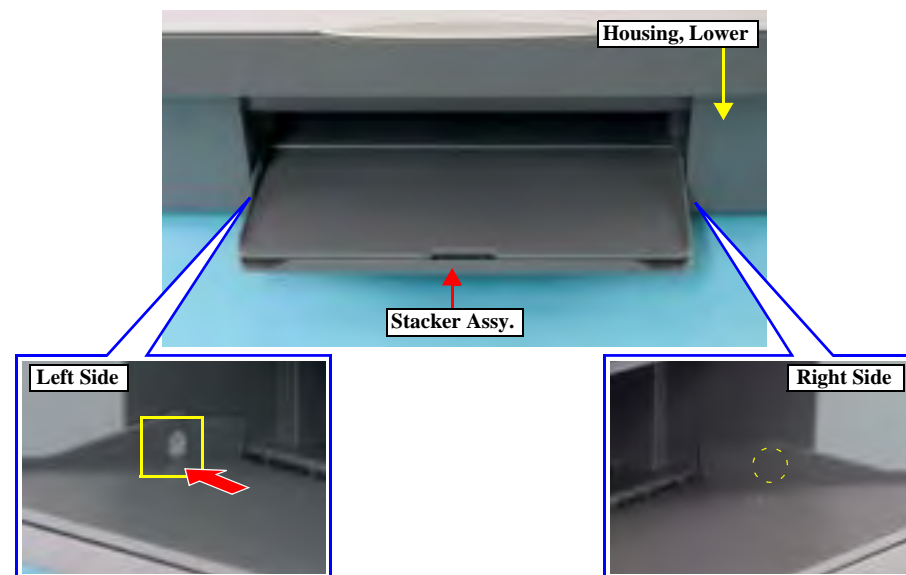



Figure 4-4. Removing Stacker Assy.

- ☐ **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 Scanner Unit

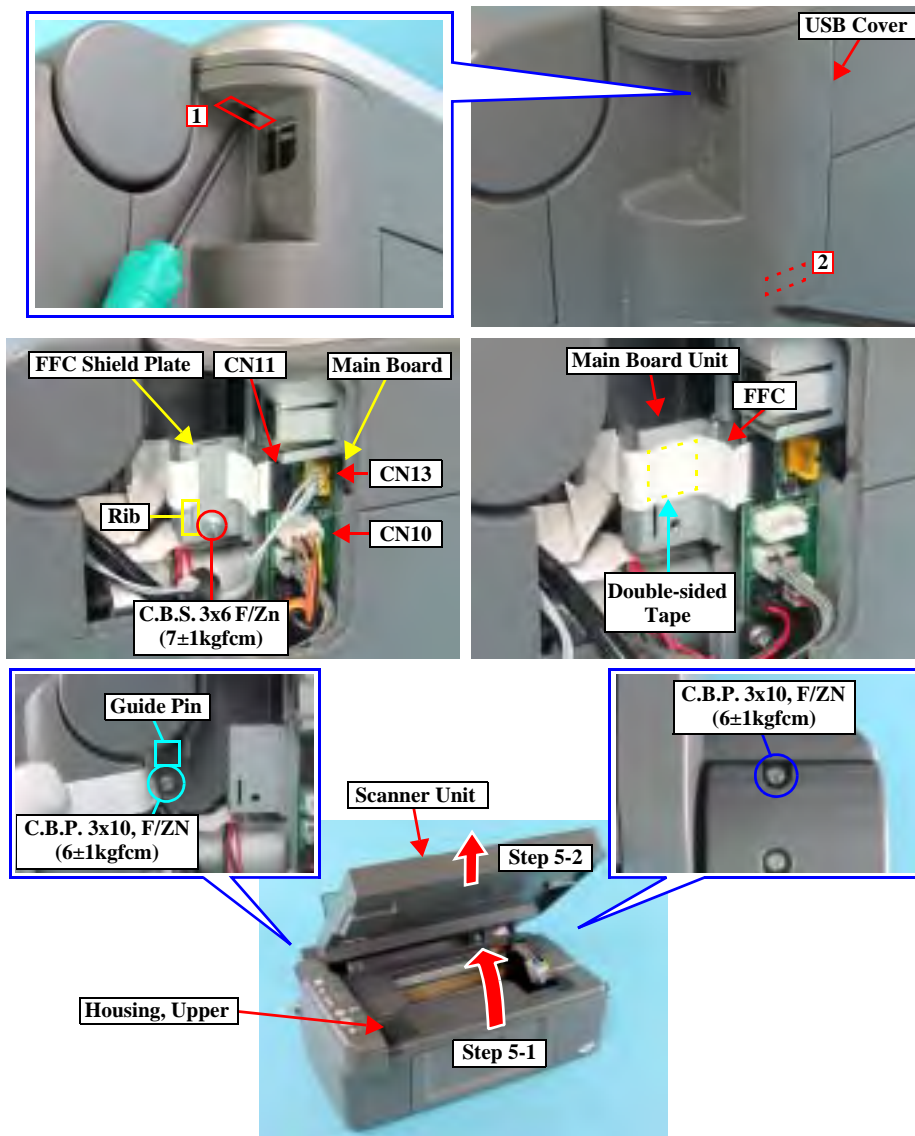


Figure 4-5. Removing Scanner Unit

Part/Unit that should be removed before removing Scanner Unit

Document Cover

Removal procedure

1. Release the tabs (x2, 1, 2) that secure the USB Cover with a precision screwdriver (-), 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

CAUTION



- 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.

REASSEMBLY



- 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 channel of Hinge L.

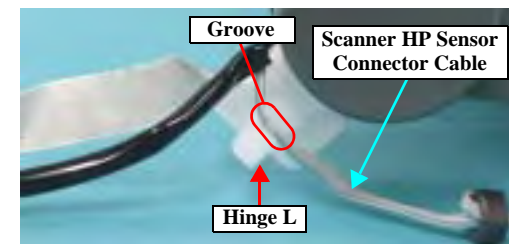


Figure 4-6. Routing Connector Cable

- 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, □).

4.4.5 Panel Unit

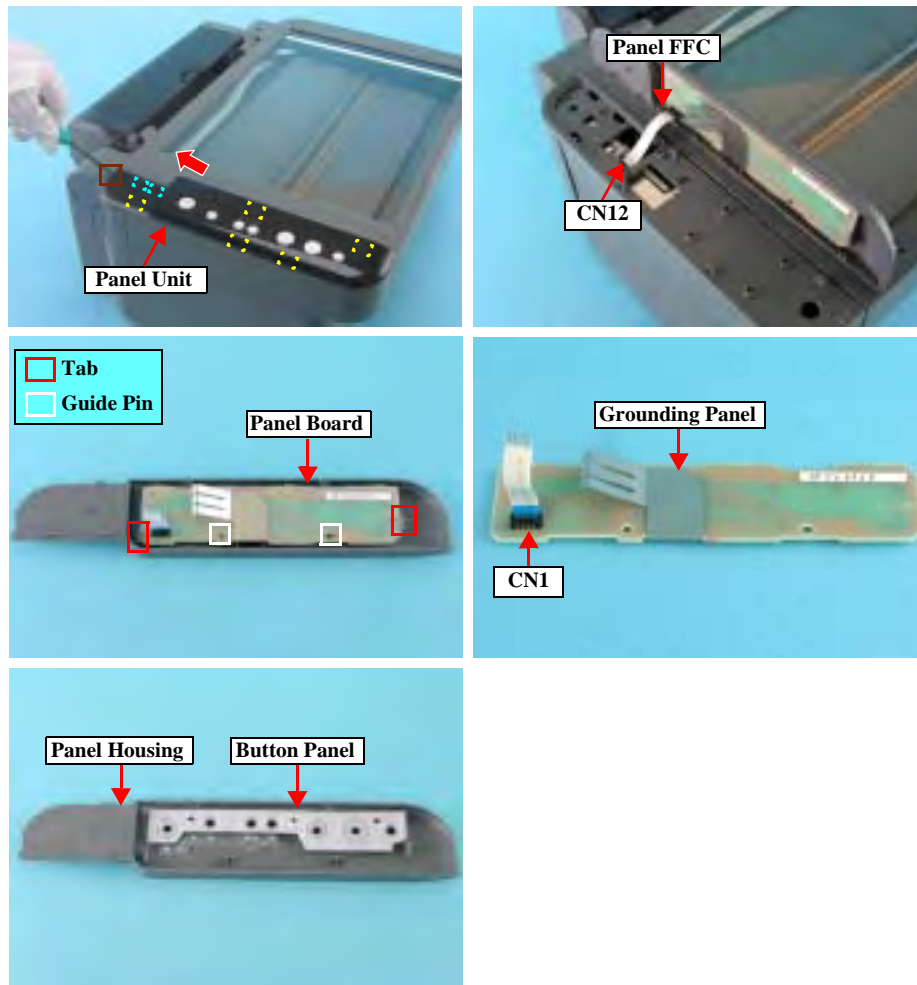


Figure 4-7. Removing Panel Unit


- ❑ Part/Unit that should be removed before removing Panel Unit



Document Cover

- ❑ Removal procedure

CAUTION




When performing the following work, be careful not to bend the tabs (x2, ) of the Panel Unit.

1. Release the tab (x1, ) that secures the Panel Cover with a precision screwdriver (-), release the rest of the tabs (x7, ) while sliding the Panel Cover to the direction of the arrow, and remove the Panel Cover.

CHECK POINT




When removing the Panel Unit, disconnect the Panel FFC from the Main Board side (CN12).

2. Disconnect the Panel FFC from the Main Board Connector (CN12), and remove the Panel Unit.
3. Release the tabs (x2, ) that secure the Panel Board, and remove the Panel Board together with the Panel FFC and the Grounding Panel.
4. Disconnect the Panel FFC from the connector (CN1) of the Panel Board.
5. Remove the Grounding Panel from the Panel Board.
6. Remove the Button Panel from the Panel Housing.

REASSEMBLY



When installing the Panel Board to the Panel Housing, attach the Grounding Panel to the Panel Board, and match the guide pins (x2, ) of the Panel Housing with the positioning holes (x2) of the Panel Board.

4.4.6 Housing, Upper

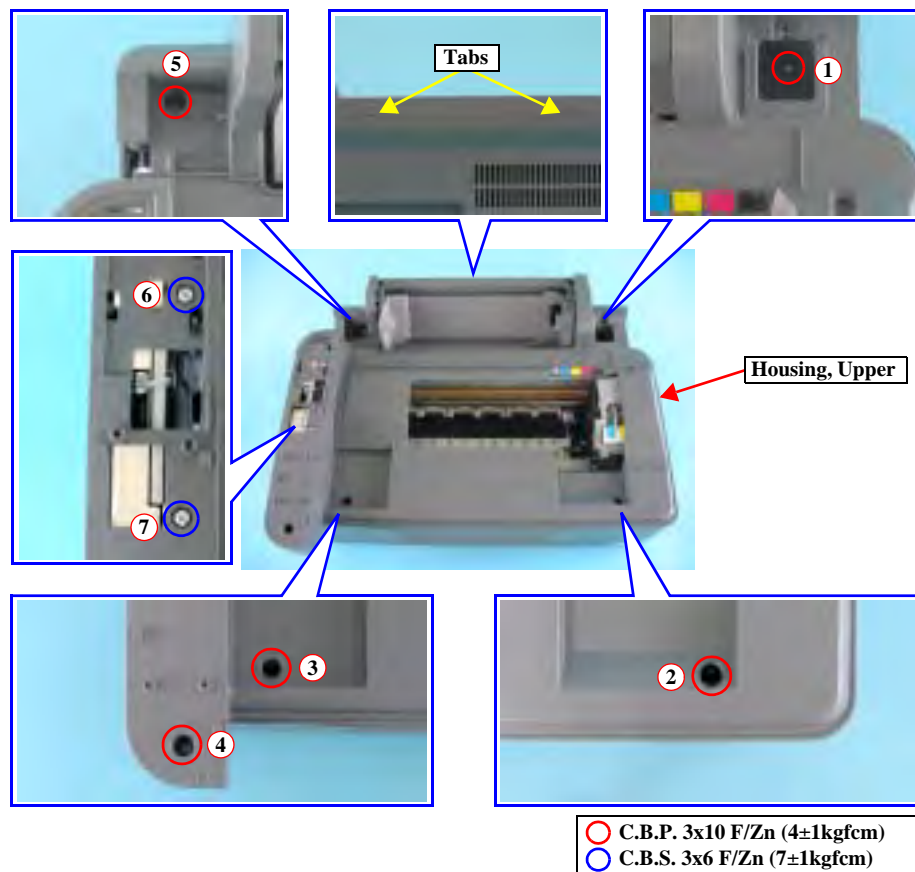


Figure 4-8. Removing Housing, Upper

□ **Part/Unit that should be removed before removing Housing, Upper**

Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit

□ **Removal procedure**

1. Remove the screws (x7,) 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.

4.4.7 Printhead

CHECK POINT

The removal procedures differ depending on the model.
For Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200, see 4.6.1 Printhead (p127).

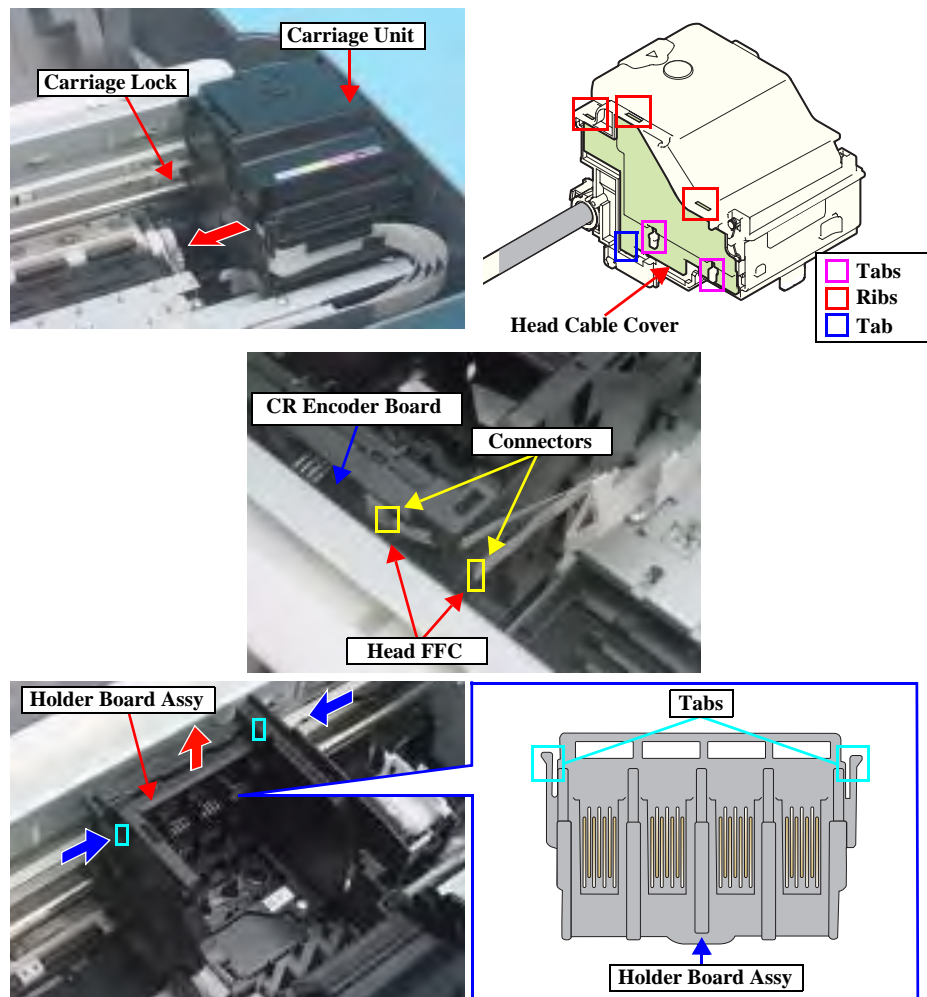


Figure 4-9. Removing Printhead (1)

- Part/Unit that should be removed before removing Printhead

Document Cover / Paper Support Assy. / Scanner Unit / Panel 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.

CAUTION

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. Disconnect the Head FFCs (x2) that are connected to the CSIC Board and the CR Encoder Board.
5. Release the tabs (x2, □) that secure the Holder Board Assy, and remove the Holder Board Assy upward.

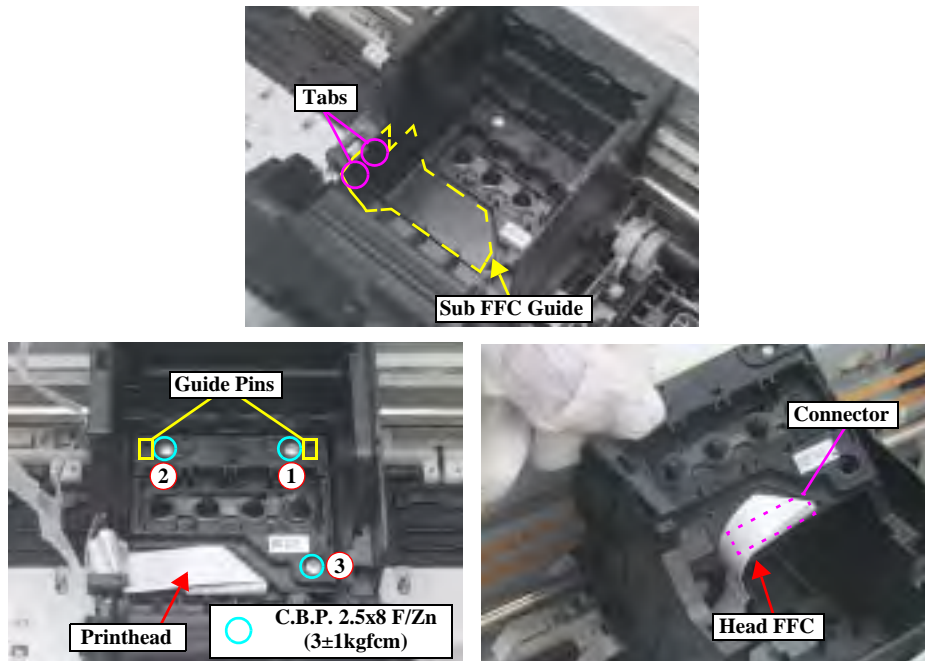




Figure 4-10. Removing Printhead (2)


6. Release the tabs (x2, ) that secures the Sub FFC Guide with a precision screwdriver (-), and remove the Sub FFC Guide.

CAUTION

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

7. Remove the screws (x3, ) that secure the Printhead, and lift up to remove the Printhead with a longnose pliers.
8. Disconnect the Head FFC (x1) from the connector (x1) of the Printhead, 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.

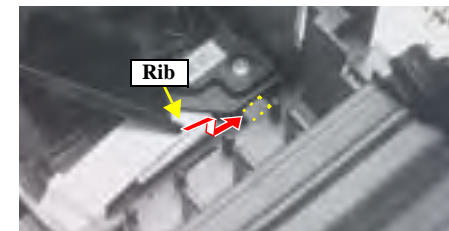


Figure 4-11. Installing Sub FFC Guide

**ADJUSTMENT
REQUIRED**

After removing/replacing the Printhead, perform the adjustment in the following order. (Refer to Chapter 5 “ADJUSTMENT”)

1. “PG Adjustment”
2. “Head ID Input” (only after replacement)
3. “Ink Charge” (only after replacement)
4. “Top Margin Adjustment”
5. “Head Angular Adjustment”
6. “Bi-D Adjustment”
7. “PF Band Adjustment”

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4.4.8 Printer Mechanism

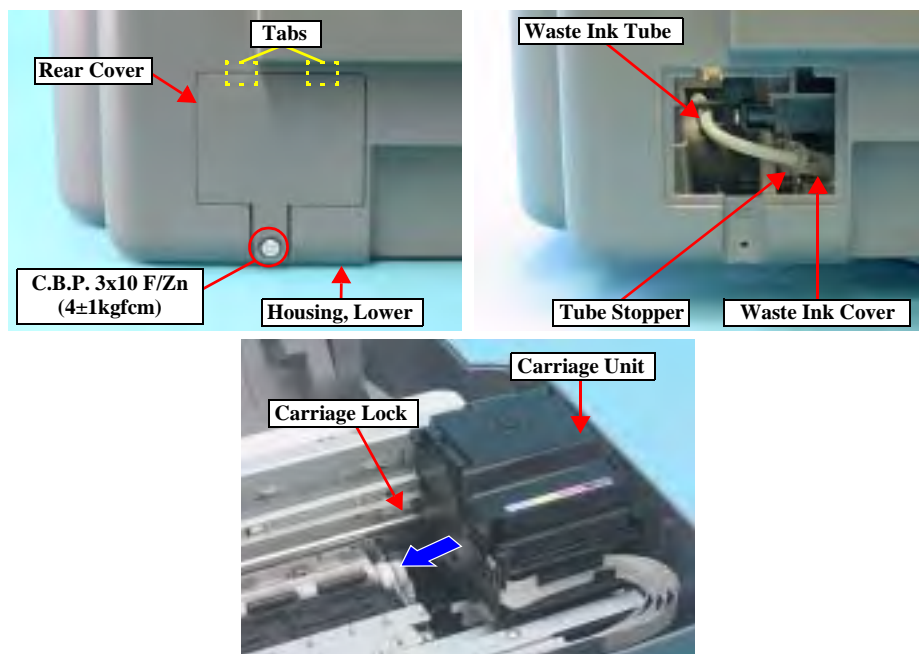



Figure 4-12. Removing Printer Mechanism (1)

□ Part/Unit that should be removed before removing Printer Mechanism

Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit / Housing Upper

□ Removal procedure

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

CAUTION



- The Waste Ink Tube may be broken when it is removed. If it breaks, replace the Ink System Unit.
- 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 Tube Stopper from the Waste Ink Cover, and remove the Waste Ink Tube from the Waste Ink Cover.
3. Release the Carriage Lock with a flathead screwdriver, and move the Carriage Unit to the center of the printer.

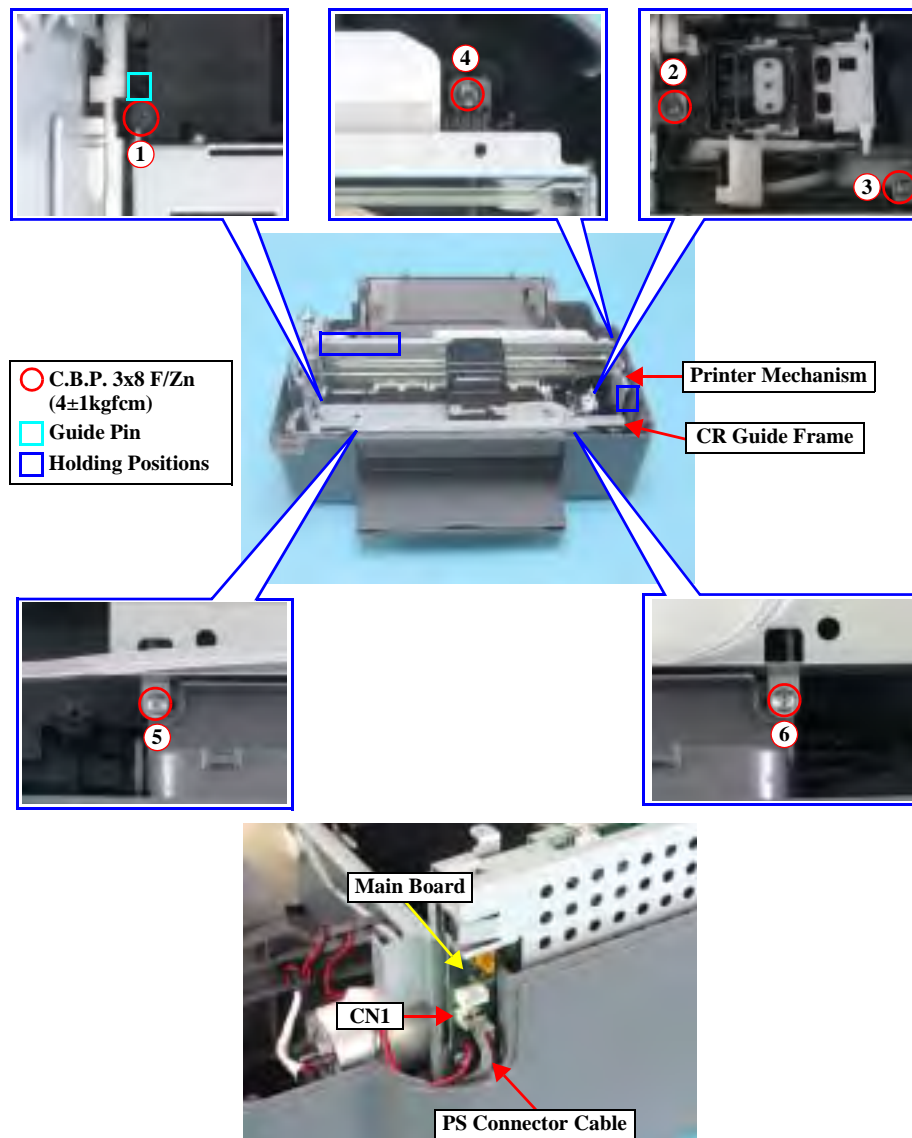


Figure 4-13. Removing Printer Mechanism (2)

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 the Printer Mechanism upward when performing the following step in order to prevent deformation of the Main Frame.

6. Lift up the Printer Mechanism, and remove the whole Printer Mechanism from the Housing, Lower.



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.



- 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 ± 1 mm into the Waste Ink Cover as shown below.

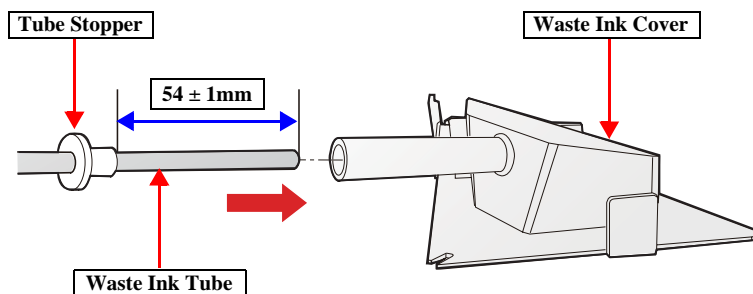


Figure 4-14. Installing Waste Ink Tube



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 dowel (x1) of Housing Lower, and confirm that there is no gap.

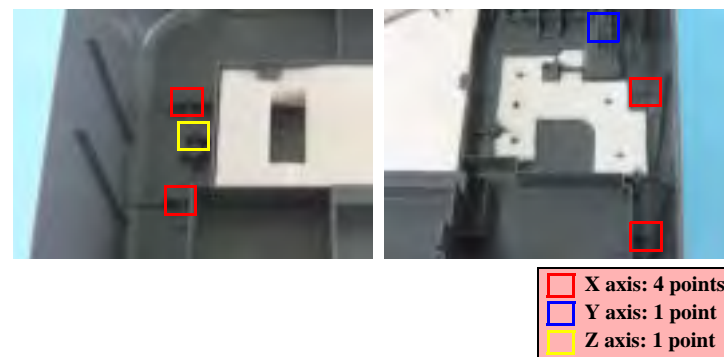


Figure 4-15. Assembled Standard Position of Main Unit

4.4.9 PS Board Unit

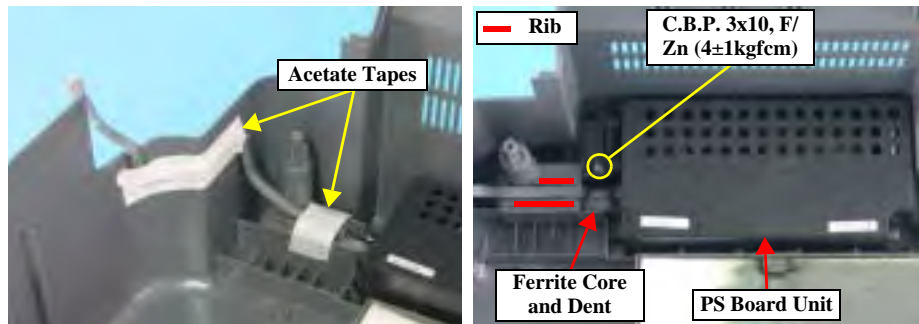



Figure 4-16. Removing PS Board Unit

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

Document Cover / Paper Support Assy. / Scanner Unit / Panel 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 length of the acetate tapes should be 40 ± 5 mm.
 - 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 ± 2 mm.
 - The blue line of the PS Connector Cable should be facing rear of the Housing, Lower.

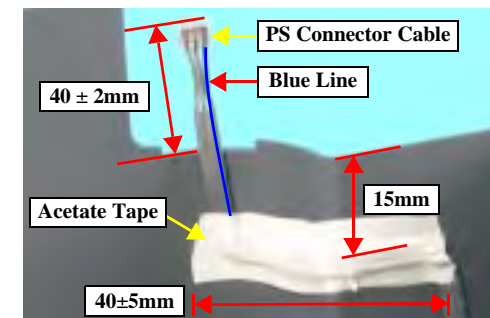


Figure 4-17. Routing PS Connector Cable



After replacing the PS Board Unit, perform the following adjustment. (Refer to Chapter 5 “ADJUSTMENT”)

- “CR Heat Protection Control”



4.4.10 Waste Ink Pads/Stacker Lock/Rubber Feet

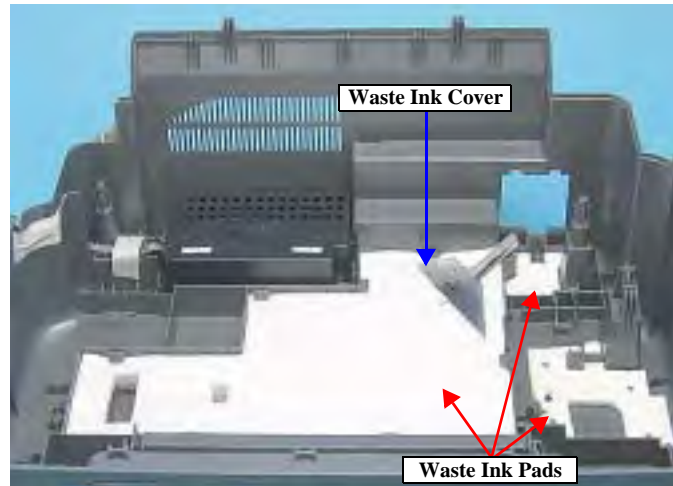


Figure 4-18. Removing Waste Ink Pads

- ☐ **Part/Unit that should be removed before removing Waste Ink Pads/Stacker Lock/Rubber Feet**

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

- ☐ **Removal procedure**

- **Waste Ink Pads Removal**

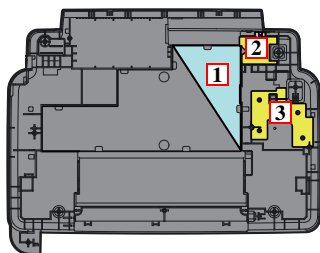
1. Remove five pieces of the Waste Ink Pads, Diffusion Sheet, and Waste Ink Cover from the Housing, Lower.

REASSEMBLY

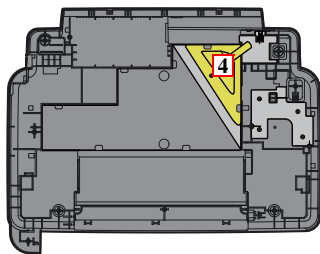


When installing the Waste Ink Pads, be sure to place the Diffusion Sheet **1** and follow the steps below.

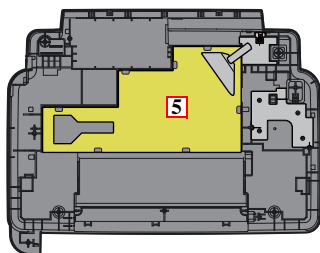
Step 1



Step 2



Step 3



Step 4

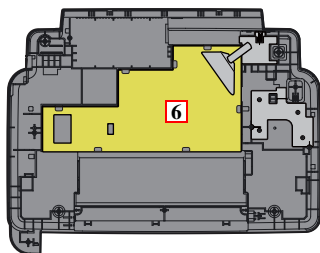


Figure 4-19. Installing Waste Ink Pads

ADJUSTMENT
REQUIRED

After replacing the Waste Ink Pads, perform the following adjustment. (Refer to Chapter 5 “ADJUSTMENT”)

- “Waste Ink Pad Counter”

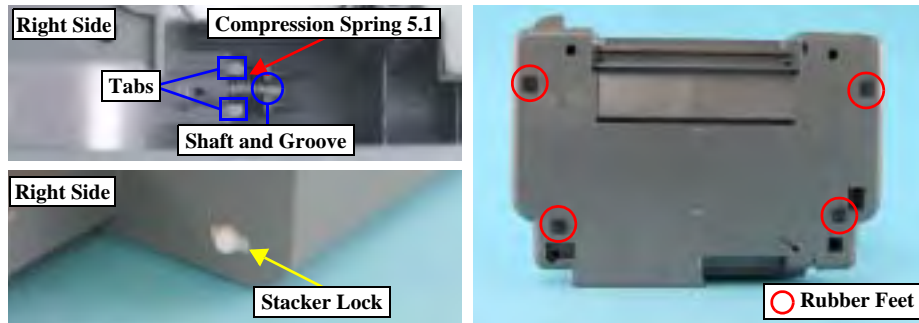



Figure 4-20. Removing Stacker Lock/Rubber Feet

■ 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.

■ Rubber Feet Removal

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

4.4.11 Main Board Unit

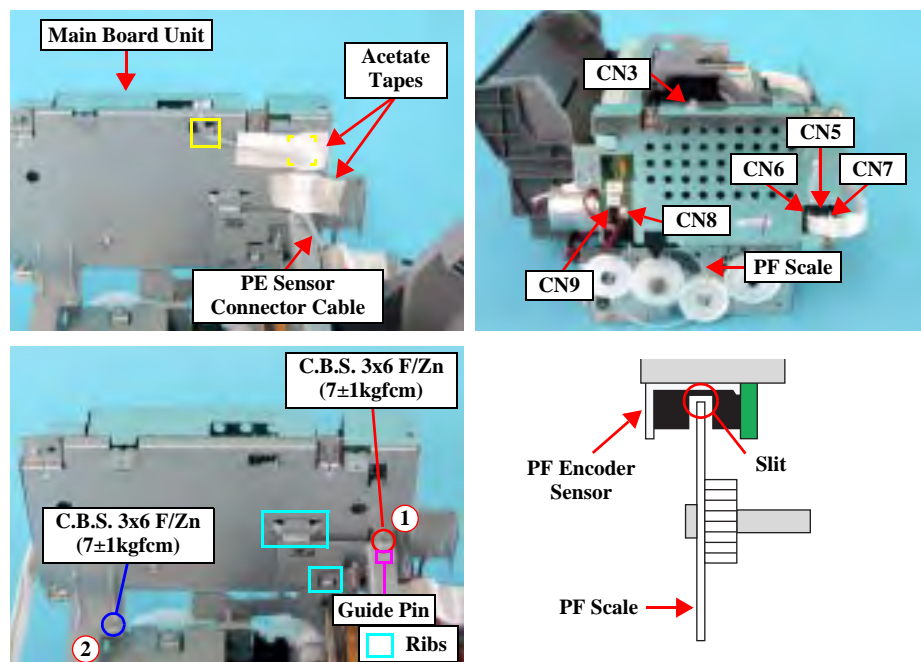





Figure 4-21. Removing Main Board Unit



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

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

□ Removal procedure

1. 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.
2. Disconnect the following connector cables and FFCs from the connectors of the Main Board.
 - CN3: PE Sensor Connector Cable
 - CN5: Head FFC
 - CN6: Head FFC
 - CN7: Head FFC
 - CN8: CR Motor Connector Cable
 - CN9: PF Motor Connector Cable
3. Remove the screws (x2,  ) 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 (x2, ) of the Main Frame into the tabs (x2) of the Main Board Unit.
- 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.

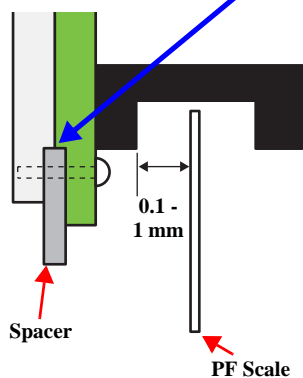
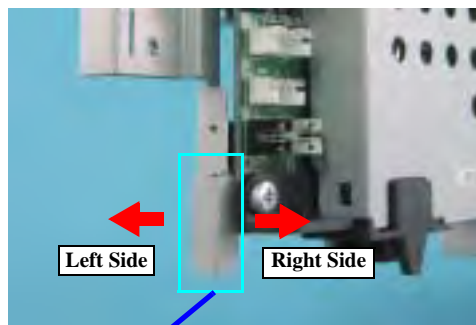
REASSEMBLY



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 PF Scale is positioned in the center of PF Sensor, adjustment is complete. If scale is not positioned in the center of the sensor, adjust the position of PF Scale using spacer(s) (0.5mm thickness each) as shown in the diagram below.



- Place a 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)

NOTE: Be sure to use spacers that are registered as ASP by the name of Spacer, M/B. (Spacer, M/B does not come with Main Board Unit.)

Figure 4-22. PF Scale Sensor Positioning Adjustment

ADJUSTMENT REQUIRED



After removing/replacing the Main Board Unit, perform the adjustment in the following order. (Refer to Chapter 5 "ADJUSTMENT")

- [When it is possible to read data from the old board]
 1. "EEPROM Data Copy"
 2. "PF Scale Sensor Positioning Adjustment"
- [When it is impossible to read from the old board]
 1. "PF Scale Sensor Positioning Adjustment"
 2. "Market Setting"
 3. "Head ID Input"
 4. "Top Margin Adjustment"
 5. "Head Angular Adjustment"
 6. "Bi-D Adjustment"
 7. "First Dot Adjustment"
 8. "PF Band Adjustment"
 9. "CR Heat Protection Control"

In addition, replace the Waste Ink Pads(p 102).

4.4.12 ASF Unit

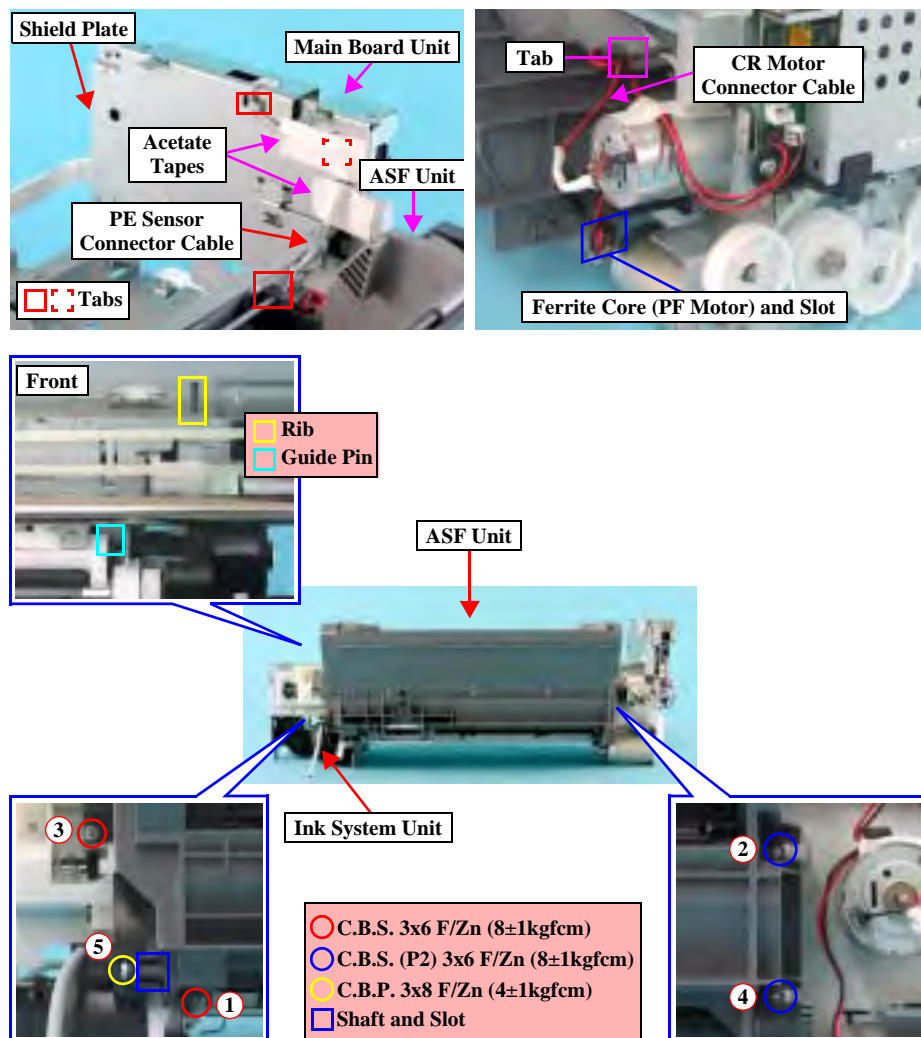







Figure 4-23. Removing ASF Unit (1)



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

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

□ 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.

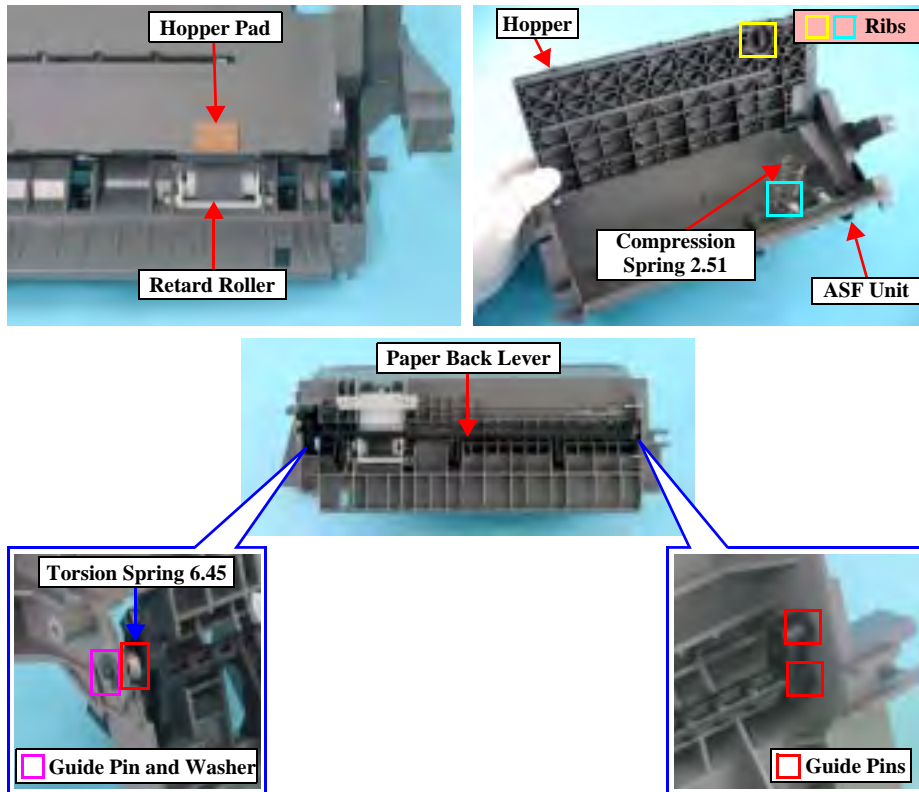



Figure 4-24. Removing ASF Unit (2)

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

CAUTION

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.

REASSEMBLY

- 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.

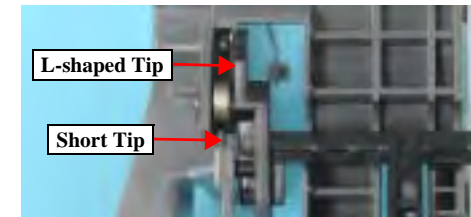




Figure 4-25. Installing Torsion Spring 6.45

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

**ADJUSTMENT
REQUIRED**

- 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 \(p148\)](#) for details.
- After removing/replacing the ASF Unit, perform the adjustment in the following order. (Refer to Chapter 5 “ADJUSTMENT”)
 1. “[Top Margin Adjustment](#)”
 2. “[PF Band Adjustment](#)”

4.4.13 Holder Shaft Unit

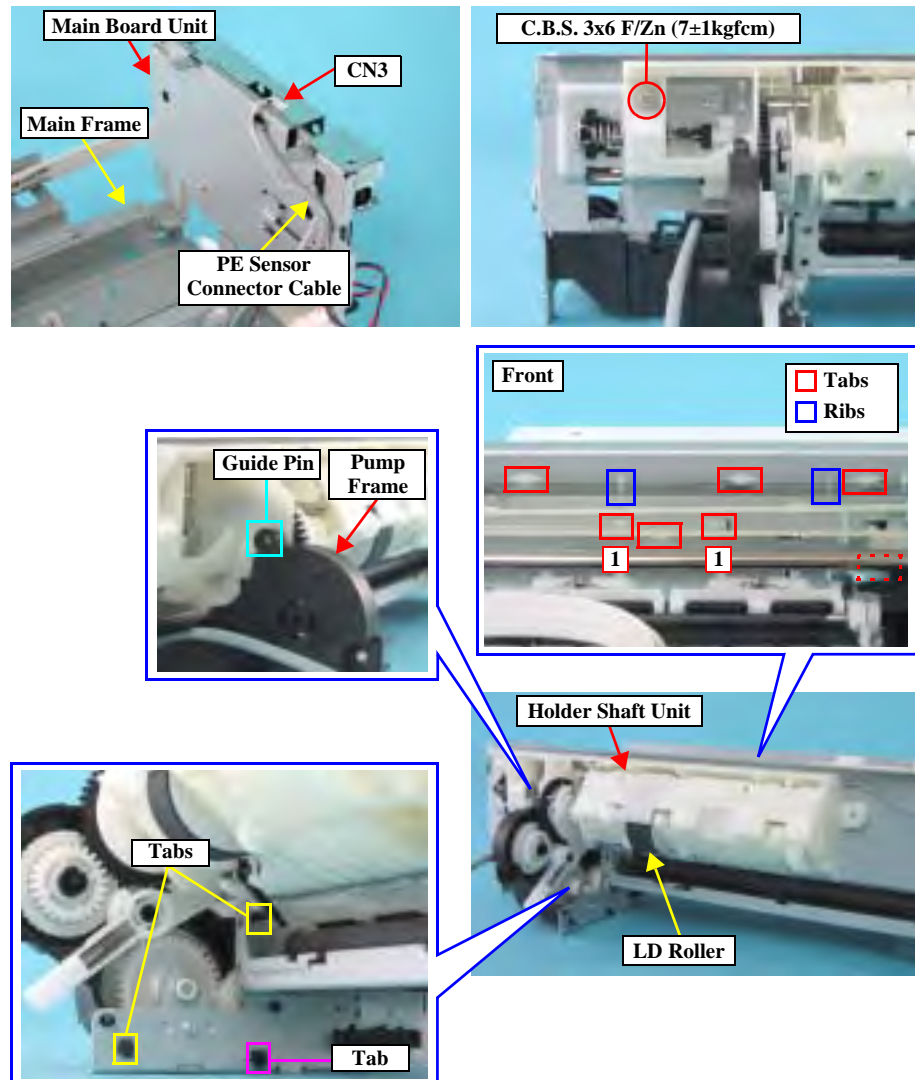



Figure 4-26. Removing Holder Shaft Unit


❑ Part/Unit that should be removed before removing Holder Shaft Unit




Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit /
Housing Upper / Printer Mechanism / 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, ) 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 following adjustment. (Refer to Chapter 5 “ADJUSTMENT”)
- “Top Margin Adjustment”

4.4.14 Spur Gear 36.8/Extension Spring 0.143/Clutch

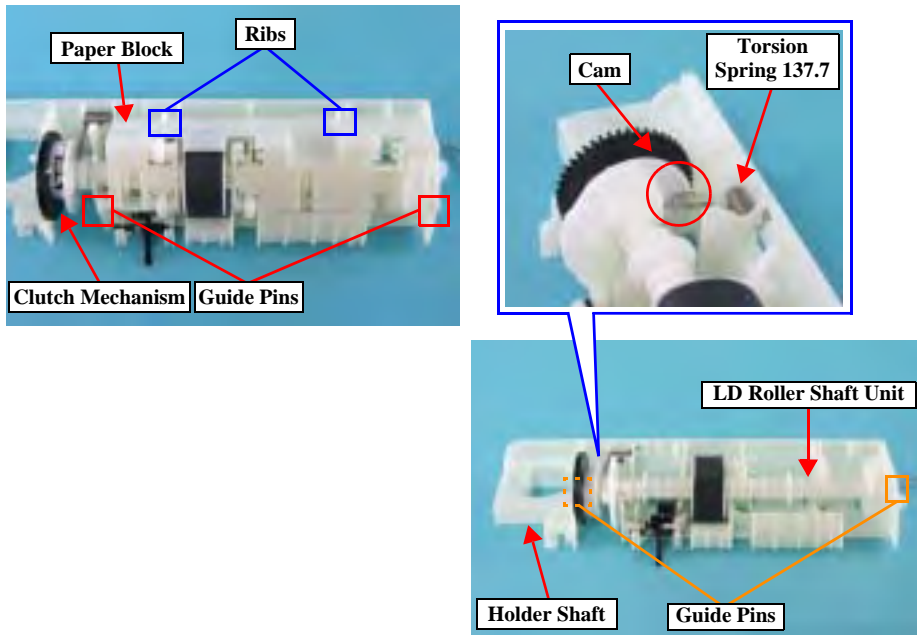


Figure 4-27. Removing Spur Gear 36.8/Extension Spring 0.143/Clutch

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

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

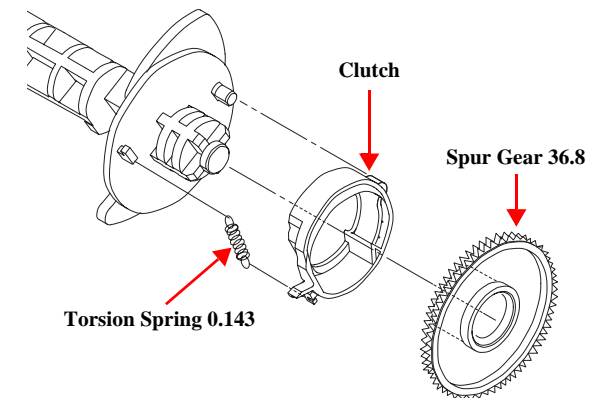


Figure 4-28. Assembling LD Roller Shaft Unit

- 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.

4.4.15 PE Sensor Board/PE Sensor Lever

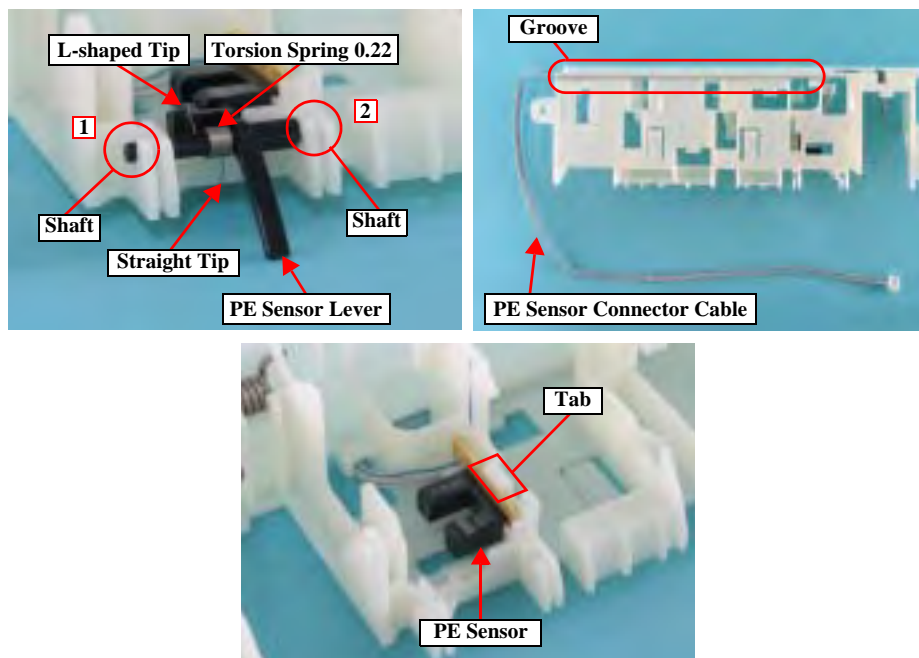



Figure 4-29. Removing PE Sensor Board/PE Sensor Lever

- ❑ **Part/Unit that should be removed before removing PE Sensor Board/ PE Sensor Lever**

Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit / Housing, Upper / Printer Mechanism / 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.**

4.4.16 CR Guide Frame

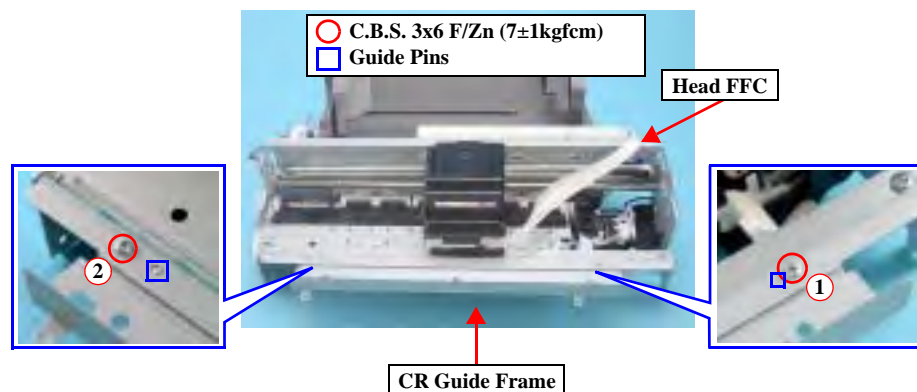


Figure 4-30. Removing CR Guide Frame

- **Part/Unit that should be removed before removing CR Guide Frame**
Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit /
Housing, Upper / Printer Mechanism / Main Board Unit
- **Removal procedure**
 1. Release the Head FFCs (x3) secured with the double-sided tape (x1) from the CR Guide Frame.
 2. 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.

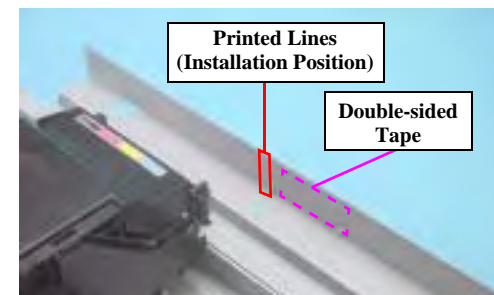


Figure 4-31. Attaching Head FFCs

4.4.17 CR Motor

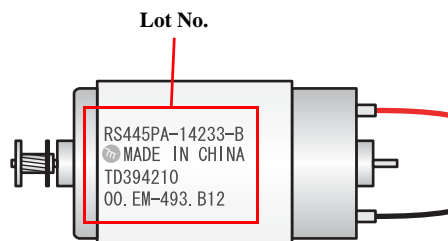
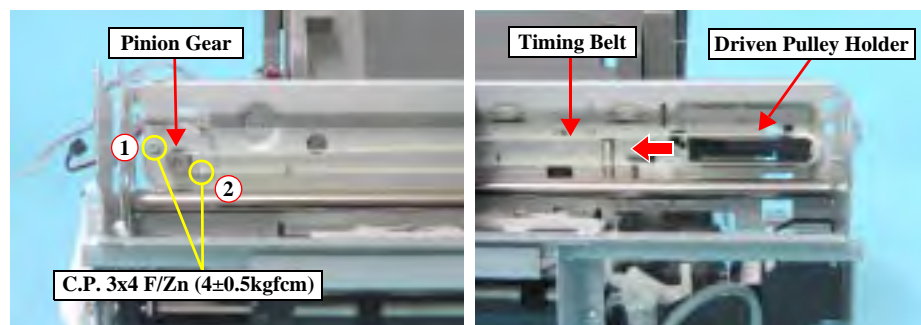
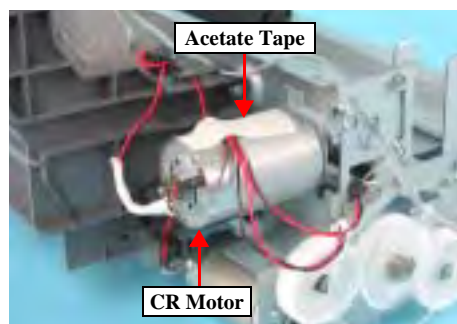


Figure 4-32. Removing CR Motor

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


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



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.



- 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.



After removing/replacing the CR Motor, perform the adjustment in the following order. (Refer to Chapter 5 “ADJUSTMENT”)

1. **“Bi-D Adjustment”**
2. **“CR Heat Protection Control”** (only after replacement)



4.4.18 PF Motor

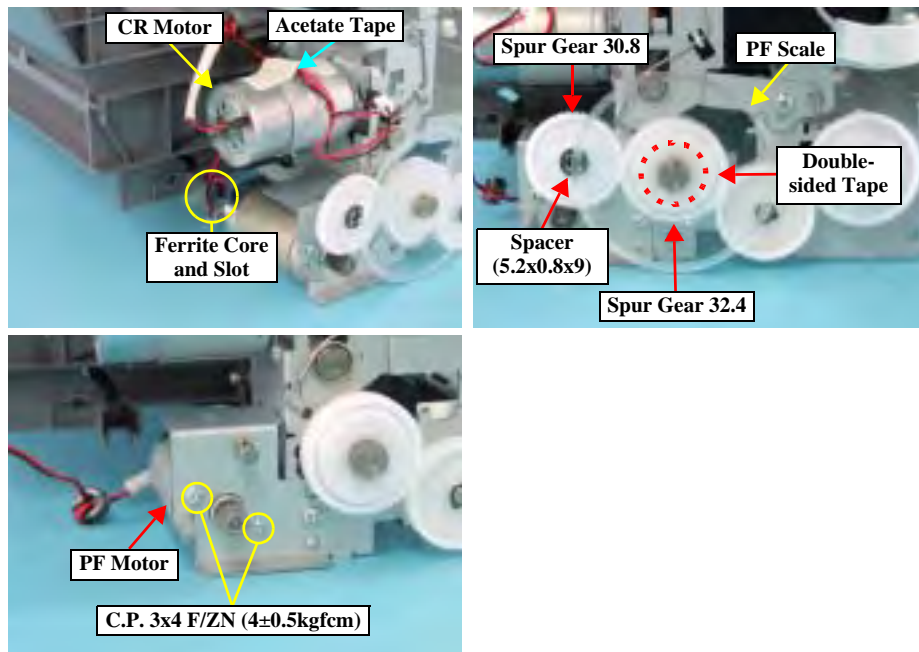


Figure 4-33. Removing PF Motor

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

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

REASSEMBLY



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



Figure 4-34. 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 in the following order. (Refer to Chapter 5 “ADJUSTMENT”)

1. “Top Margin Adjustment”
2. “PF Band Adjustment”

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4.4.19 Carriage Unit/CR Encoder Board/Head FFC/CR Guide Shaft

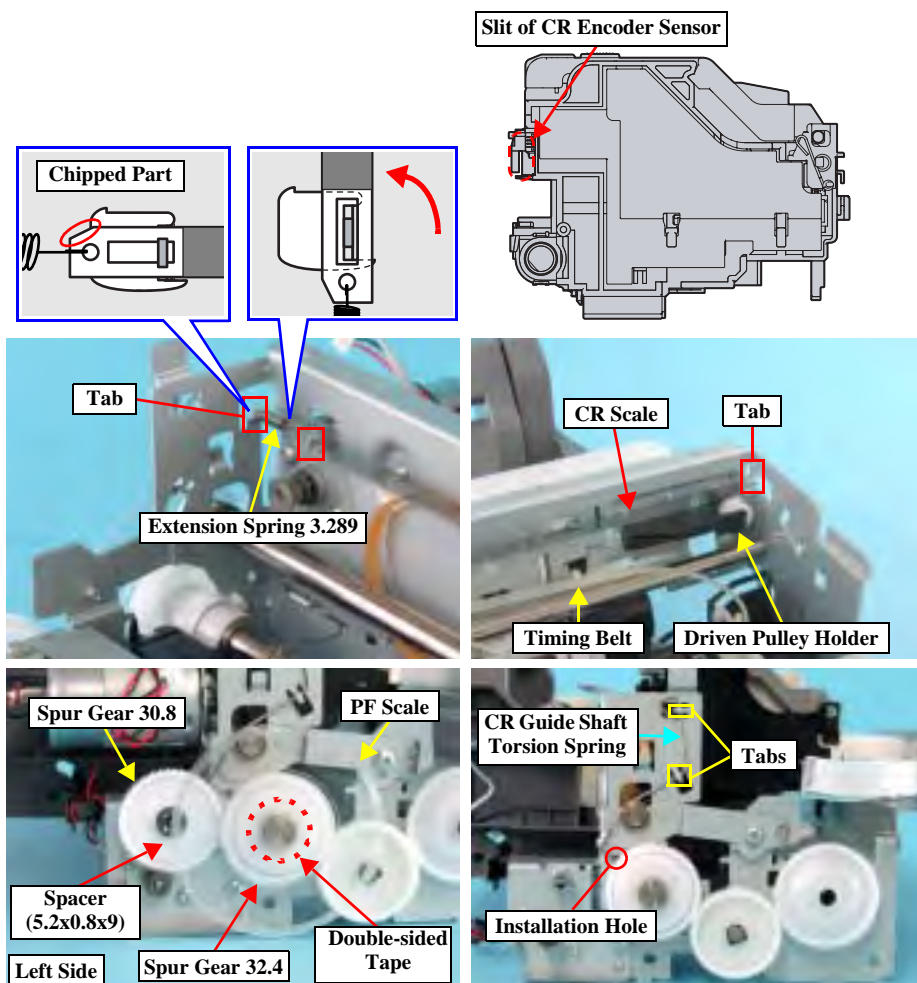


Figure 4-35. Removing Carriage Unit (1)

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

Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit / Housing Upper / Printer Mechanism / Main Board Unit / CR Guide Frame / CR Motor

- Removal procedure

- Carriage Unit and CR Guide Shaft Removal

1. Release Timing Belt from Driven Pulley Holder.

CAUTION



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.

2. Remove the CR Scale from the Main Frame.

CAUTION



Be cautious of the following points.

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

3. Remove the PF Scale that is secured to Spur Gear 32.4 with double-sided tape (x1).
4. Remove Spacer (4.1 x 0.5) that secures Spur Gear 30.8, and remove Spur Gear 30.8 from the Main Frame.
5. 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.

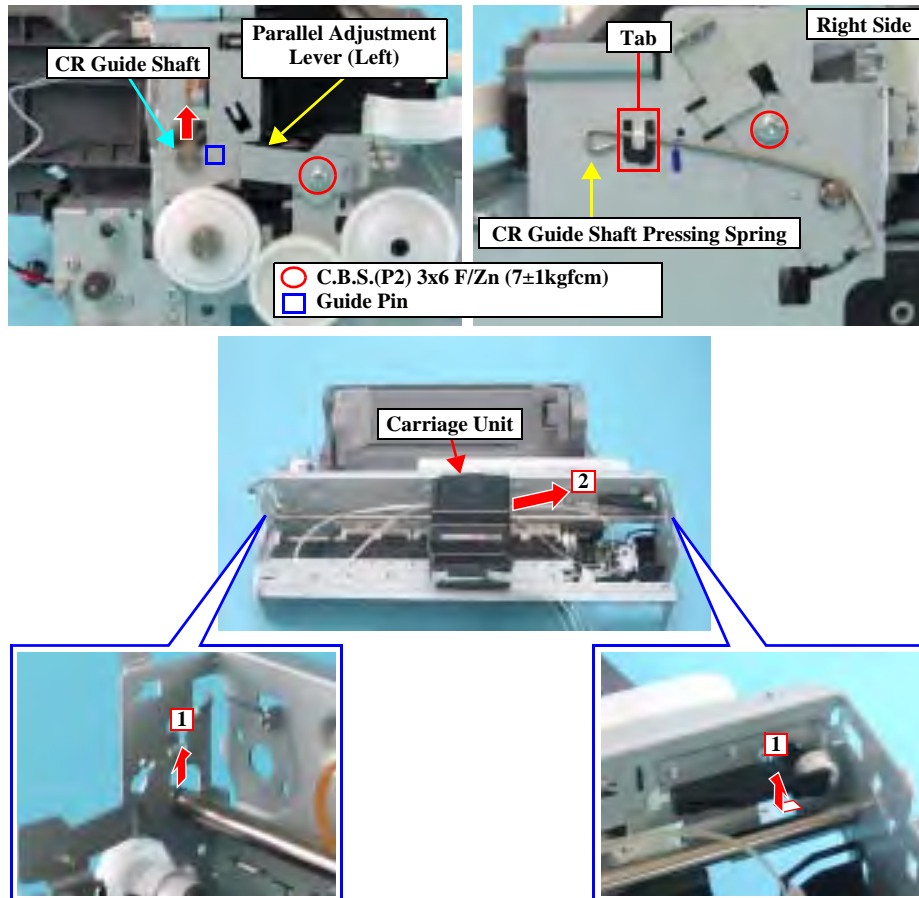




Figure 4-36. Removing Carriage Unit (2)


6. 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.
7. Release the CR Guide Shaft Pressing Spring from the tab (x1, ) of the Main Frame, and remove the CR Guide Shaft Pressing Spring from the Main Frame.
8. 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 in left direction until releasing right end of the Carriage Guide Shaft from the notch of the Main Frame.
 2. Remove the Carriage Guide Shaft along with the Carriage Unit from the Main Frame.



- Do not damage the Carriage Guide Shaft.
- Do not stain the Timing Belt with the grease (G-71 Grease).

9. 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).
- 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.

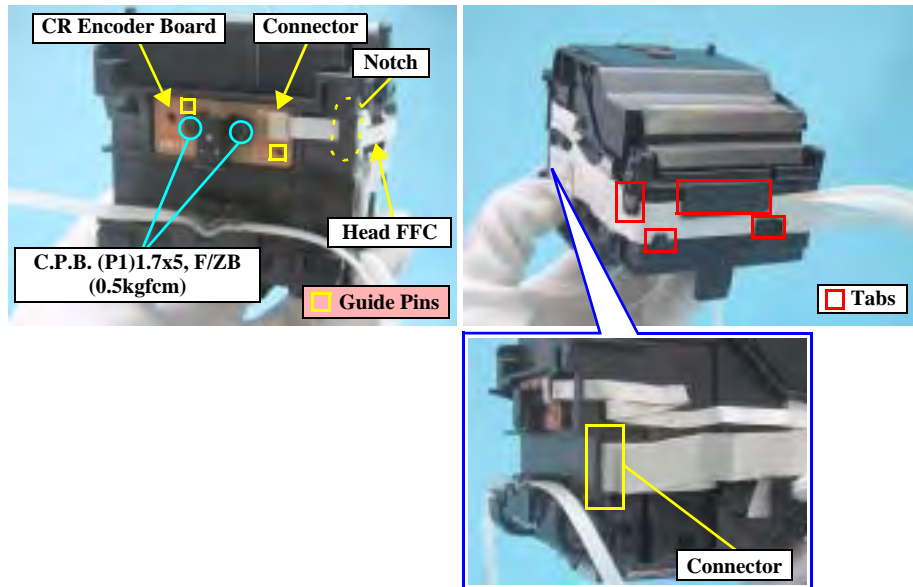



Figure 4-37. Removing Carriage Unit (3)


■ 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 the 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.

■ Head FFC Removal

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



- After replacing the Carriage Unit with a new one, always apply grease G-71 to the specified parts.
 - Refer to [Figure 6-7 \(p148\)](#) for details.
- After replacing the Carriage Unit, perform the adjustment in the following order. (Refer to Chapter 5 “ADJUSTMENT”)
 1. “PG Adjustment”
 2. “Top Margin Adjustment”
 3. “Head Angular Adjustment”
 4. “Bi-D Adjustment”
 5. “PF Band Adjustment”
 6. “CR Heat Protection Control” (only after replacement)
- After replacing the Carriage Guide Shaft, perform the adjustment in the following order. (Refer to Chapter 5 “ADJUSTMENT”)
 1. “Bi-D Adjustment”
 2. “CR Heat Protection Control” (only after replacement)

4.4.20 Paper Guide Upper Unit

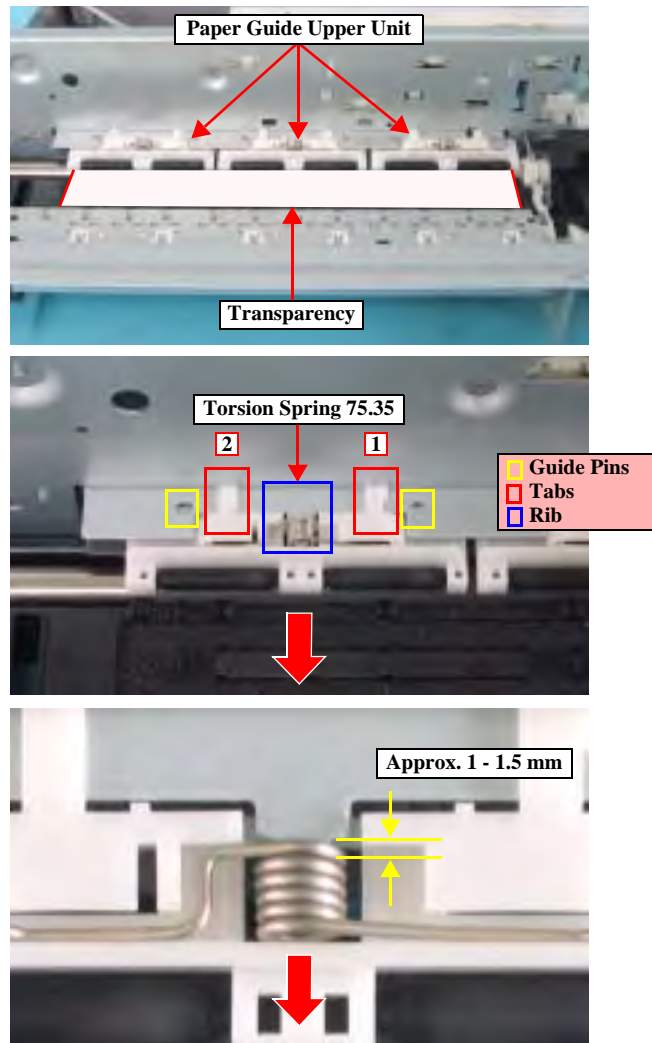



Figure 4-38. Removing Paper Guide Upper Unit

Part/Unit that should be removed before removing Paper Guide Upper Unit



Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit /
Housing Upper / Printer Mechanism / Main Board Unit / CR Guide Frame /
CR Motor / 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 replacing the Paper Guide Upper Unit, perform the adjustment in the following order. (Refer to Chapter 5 "ADJUSTMENT")

1. "Top Margin Adjustment"
2. "PF Band Adjustment"

4.4.21 EJ Frame Unit

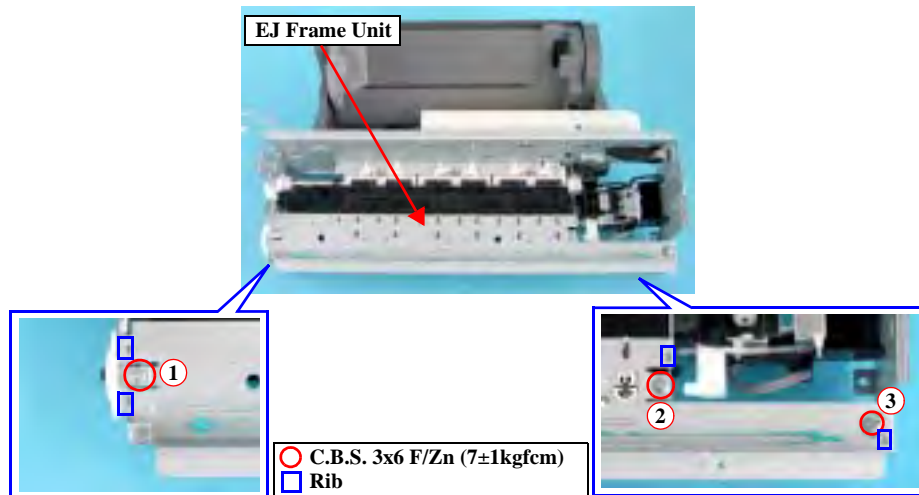


Figure 4-39. Removing EJ Frame Unit

□ Part/Unit that should be removed before removing Front Frame

Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit /
Housing Upper / Printhead / Printer Mechanism / Main Board Unit /
CR Guide Frame / CR Motor / Carriage Unit

□ Removal procedure



- 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. Remove the screws (x3, ○) that secure the EJ Frame Unit, and remove the EJ Frame from the Printer Mechanism.



- Match the ribs (x4, □) 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 EJ Frame Unit with a new one, always apply grease G-71 to the specified parts.
 - Refer to [Figure 6-8 \(p148\)](#) for details.
- After removing/replacing the EJ Frame Unit, perform the adjustment in the following order. (Refer to Chapter 5 “ADJUSTMENT”)
 - “[PF Band Adjustment](#)”

4.4.22 Ink System Unit

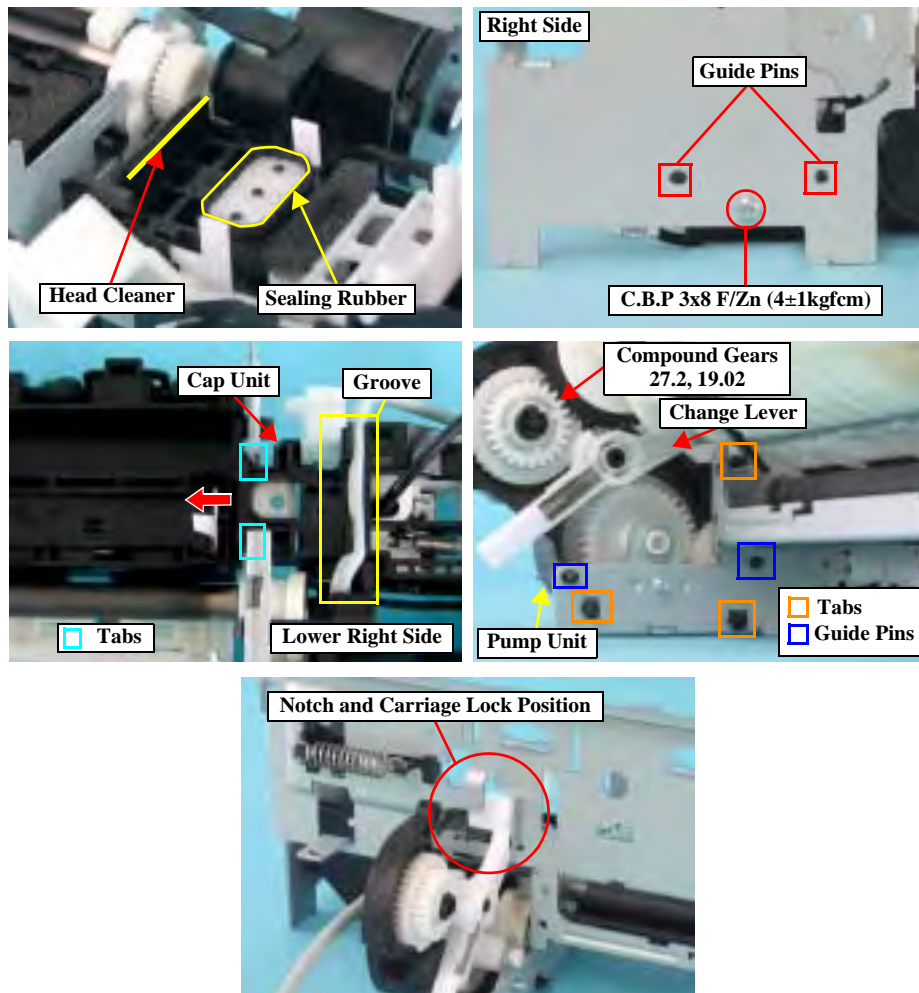


Figure 4-40. Removing Ink System Unit



□ Part/Unit that should be removed before removing Ink System Unit

Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit / Housing Upper / Printhead / Printer Mechanism / Main Board Unit / ASF Unit / Holder Shaft Unit / CR Guide Frame / CR Motor / Carriage Unit / EJ Frame Unit

□ 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), Pump Pulley, and Change Lever.



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.

4.4.23 Paper Guide Front Unit

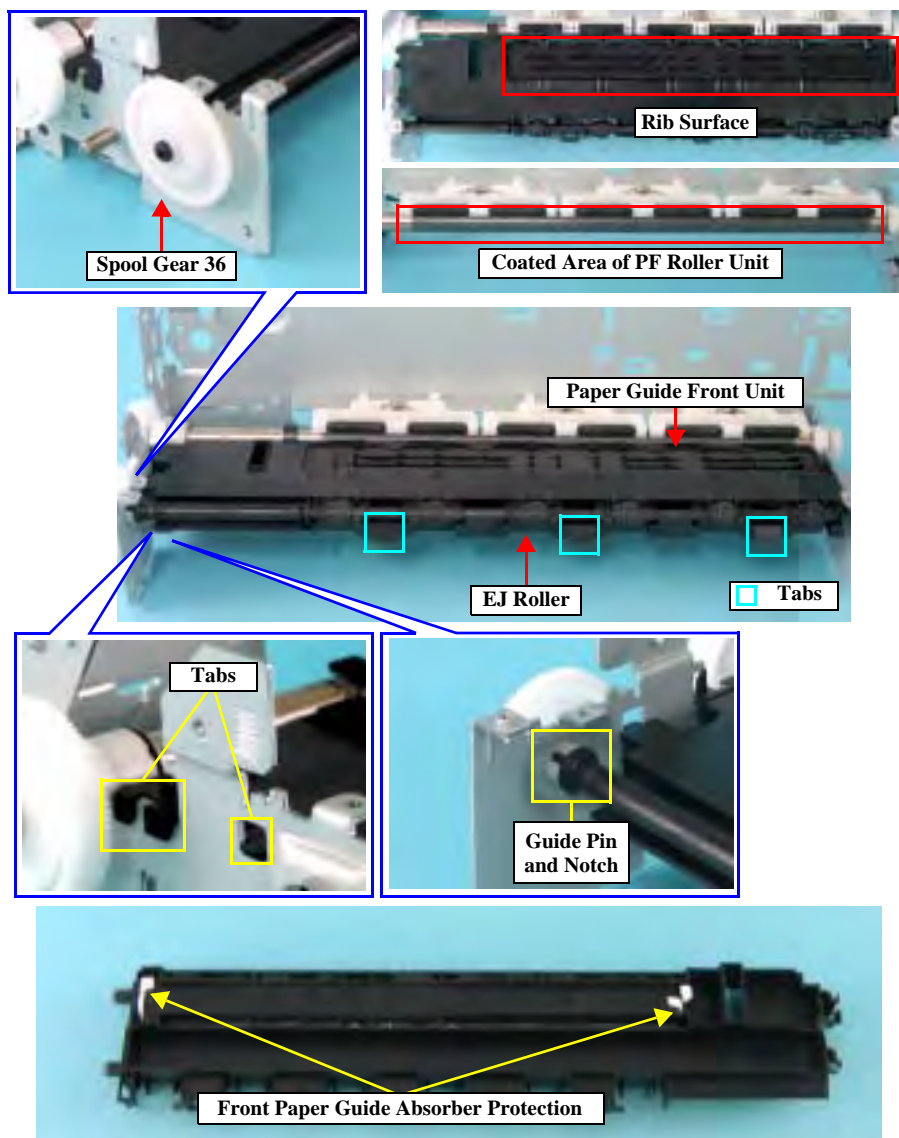


Figure 4-41. Removing Paper Guide Front Unit

Part/Unit that should be removed before removing Paper Guide Front Unit

Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit /
Housing Upper / Printhead / Printer Mechanism / Main Board Unit /
ASF Unit / Holder Shaft Unit / CR Guide Frame / CR Motor / Carriage Unit /
EJ Frame Unit / Ink System Unit



Removal procedure

CAUTION



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
- Do not touch the rubber part of the EJ Roller.
- Be careful not to bend the Front Paper Guide Absorber Protection (x3).

1. Remove Spool Gear 36 from the EJ Roller/
2. Release the EJ Roller from the tabs (x3, ) of the Paper Guide Front Unit, and remove the EJ Roller.
3. Lift up the left side of the Paper Guide Front Unit, release the tabs (x2, ) on the left side of the Paper Guide Front Unit, and remove the Paper Guide Front Unit from the installation hole of the Main Frame.

REASSEMBLY



- Make sure that the Front Paper Guide Absorber Protection (x3) are facing inward. (The model with no card slot has three Front Paper Guide Absorber Protection.)
- 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.
- When installing Spool Gear 36 to the EJ Roller, make sure to match the guide pin and the notch.

ADJUSTMENT REQUIRED



- After replacing the Paper Guide Front Unit with a new one, always apply grease G-26 to the specified parts.
 - Refer to [Figure 6-9 \(p148\)](#) and [Figure 6-10 \(p149\)](#) for details.
- When having removed or replaced Paper Guide Front Unit, implement the following adjustment. (Refer to Chapter 5 "ADJUSTMENT")
 1. "Top Margin Adjustment"
 2. "Head Angular Adjustment"
 3. "Bi-D Adjustment"
 4. "PF Band Adjustment"

4.4.24 PF Roller Unit

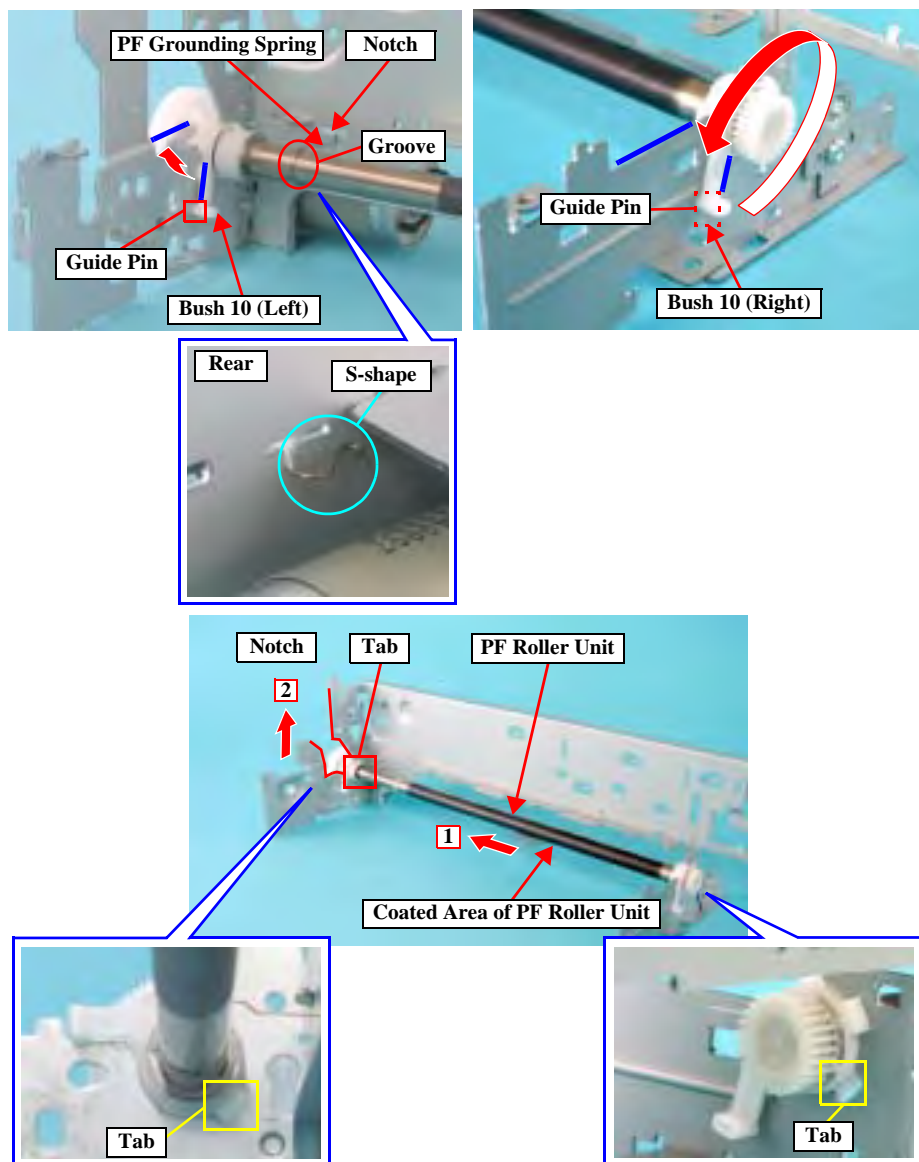


Figure 4-42. Removing PF Roller Unit (1)

Part/Unit that should be removed before removing PF Roller Unit




Document Cover / Paper Support Assy. / Scanner Unit / Panel Unit /
Housing Upper / Printhead/ Printer Mechanism / Main Board Unit /
ASF Unit / Holder Shaft Unit / CR Guide Frame / CR motor / Carriage Unit /
Paper Guide Upper Unit / 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 6-11 \(p149\)](#) and [Figure 6-12 \(p149\)](#) for details.
- After replacing the PF Roller Unit, perform the adjustment in the following order. (Refer to Chapter 5 “ADJUSTMENT”)
 1. “Top Margin Adjustment”
 2. “PF Band Adjustment”

4.5 Scanner Section

4.5.1 Scanner Housing, Upper

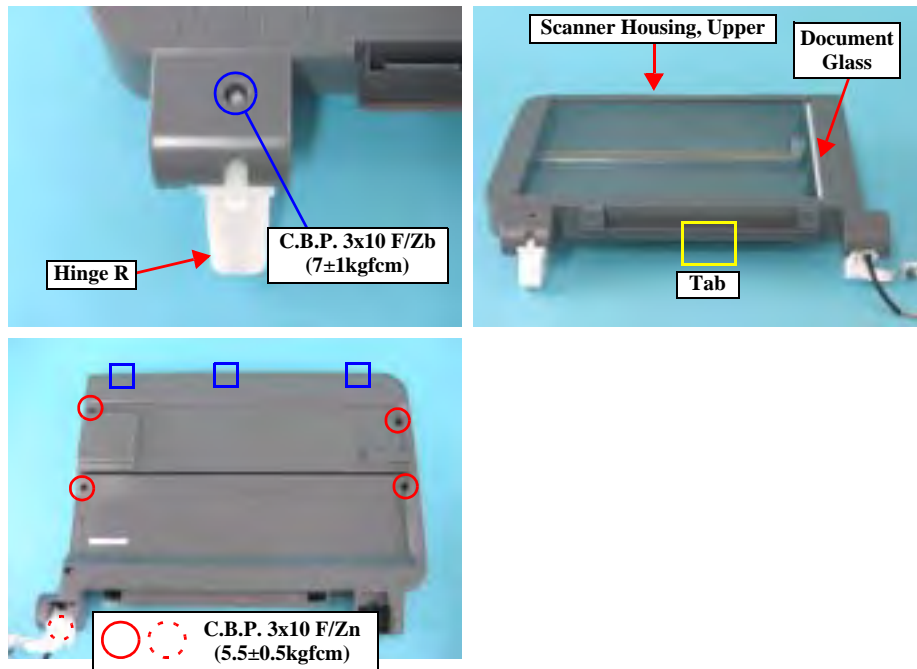


Figure 4-43. Removing Scanner Housing, Upper






- ❑ Part/Unit that should be removed before removing Scanner Housing, Upper
Document Cover / 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.
2. Remove the screws (x5,  ) that secure the Scanner Housing, Upper.
3. Release the tabs (x4,  ) that secure the Scanner Housing, Upper, and remove the Scanner Housing, Upper.



- Match the notch of the Scanner Housing, Upper with the tab (x1, ) of the Scanner Housing, Lower.

4.5.2 Scanner Carriage Unit

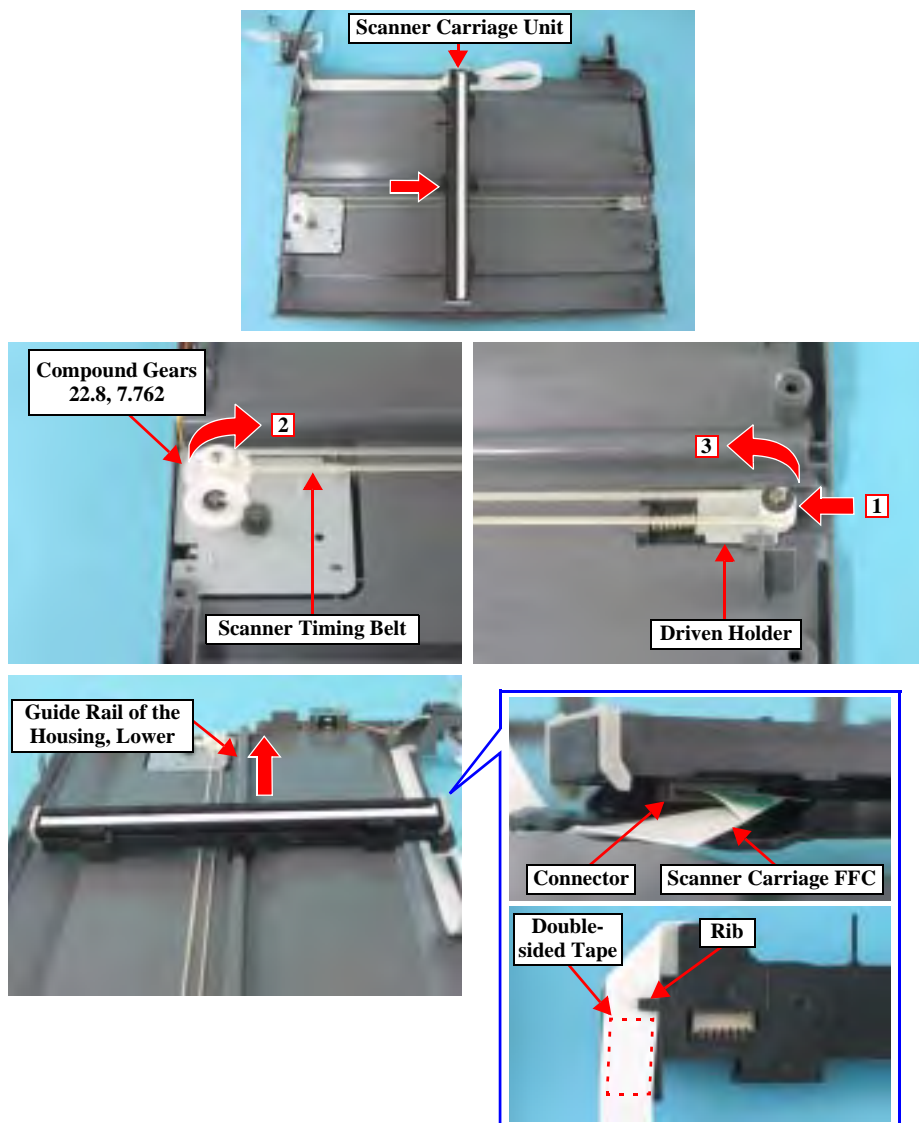


Figure 4-44. Removing Scanner Carriage Unit (1)

- ❑ Part/Unit that should be removed before removing Scanner Carriage Unit
Document Cover / Scanner Unit / Scanner Housing, Upper
- ❑ Removal procedure

CAUTION



Do not scratch the Rod Lens Array when removing the Scanner Carriage Unit.

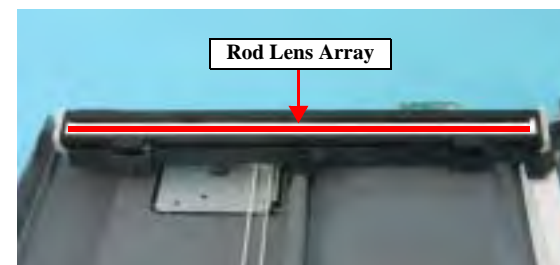


Figure 4-45. Handling Scanner Carriage Unit

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.

CAUTION



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.

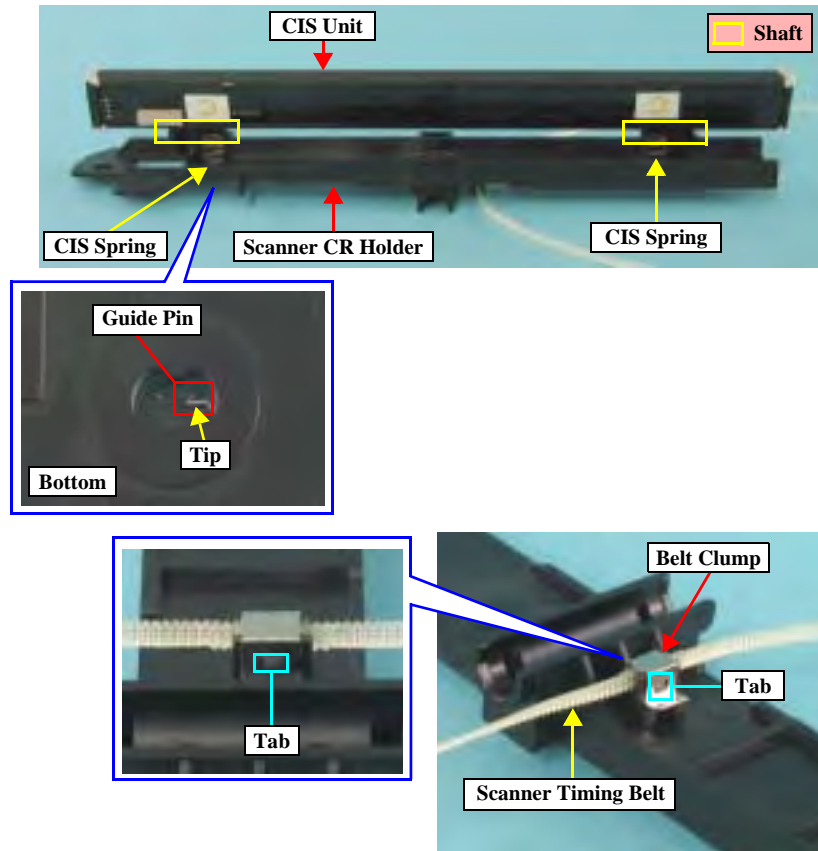



Figure 4-46. Removing Scanner Carriage Unit (2)

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.

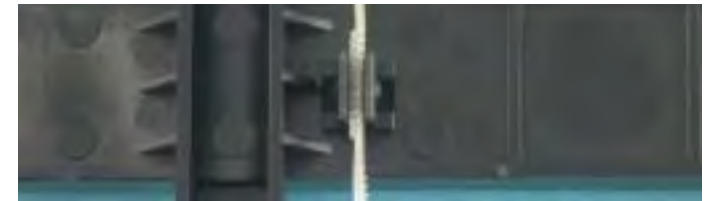




Figure 4-47. Attaching Scanner Timing Belt

- 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

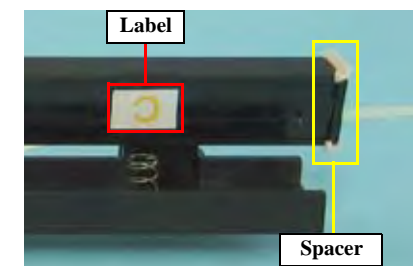


Figure 4-48. Replacing Spacers



After changing the Guide Rail of the Housing, Lower for a new one, always apply grease G-26 to the specified parts.

- Refer to [Figure 6-4 \(p147\)](#) and [Figure 6-5 \(p147\)](#) for details.

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4.5.3 Scanner Motor Unit/Scanner HP Sensor/ Driven Pulley

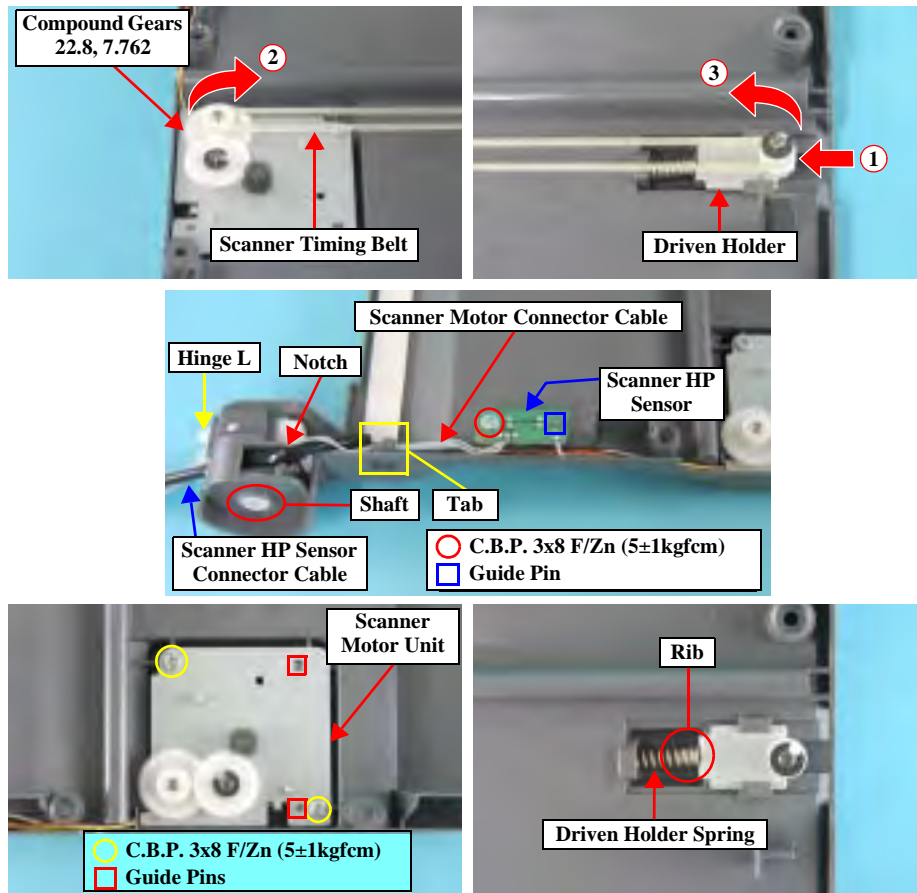




Figure 4-49. Removing Scanner Motor Unit/Scanner HP Sensor/Driven Holder



□ Part/Unit that should be removed before removing Scanner Motor Unit/ Scanner HP Sensor/Driven Holder

Document Cover / Scanner Unit / Scanner Housing, Upper

□ Removal procedure

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.
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 CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200

4.6.1 Printhead

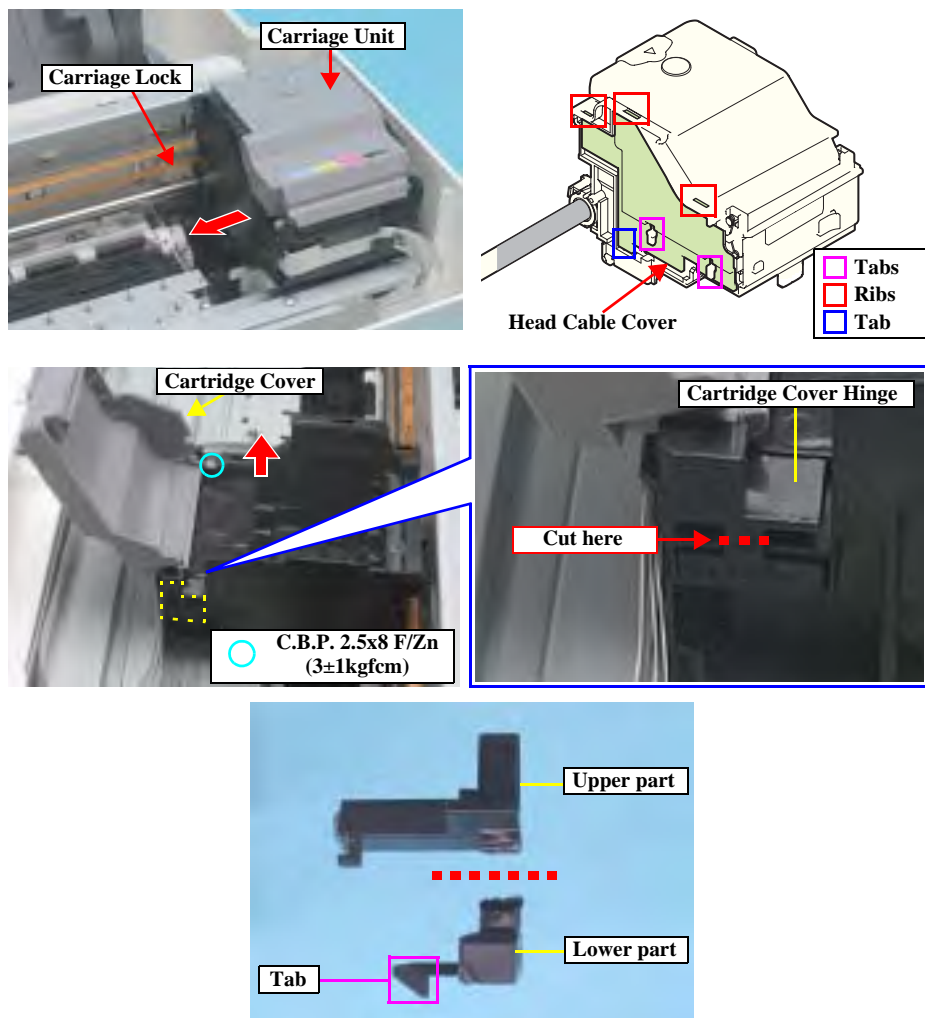


Figure 4-50. Removing Printhead

- ☐ Part/Unit that should be removed before removing Printhead
Document Cover / Paper Support Assy. / Scanner Unit / Panel 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.

CAUTION



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.

CHECK POINT



The cut Cartridge Cover Hinge cannot be reused.

7. Remove the cartridge cover.

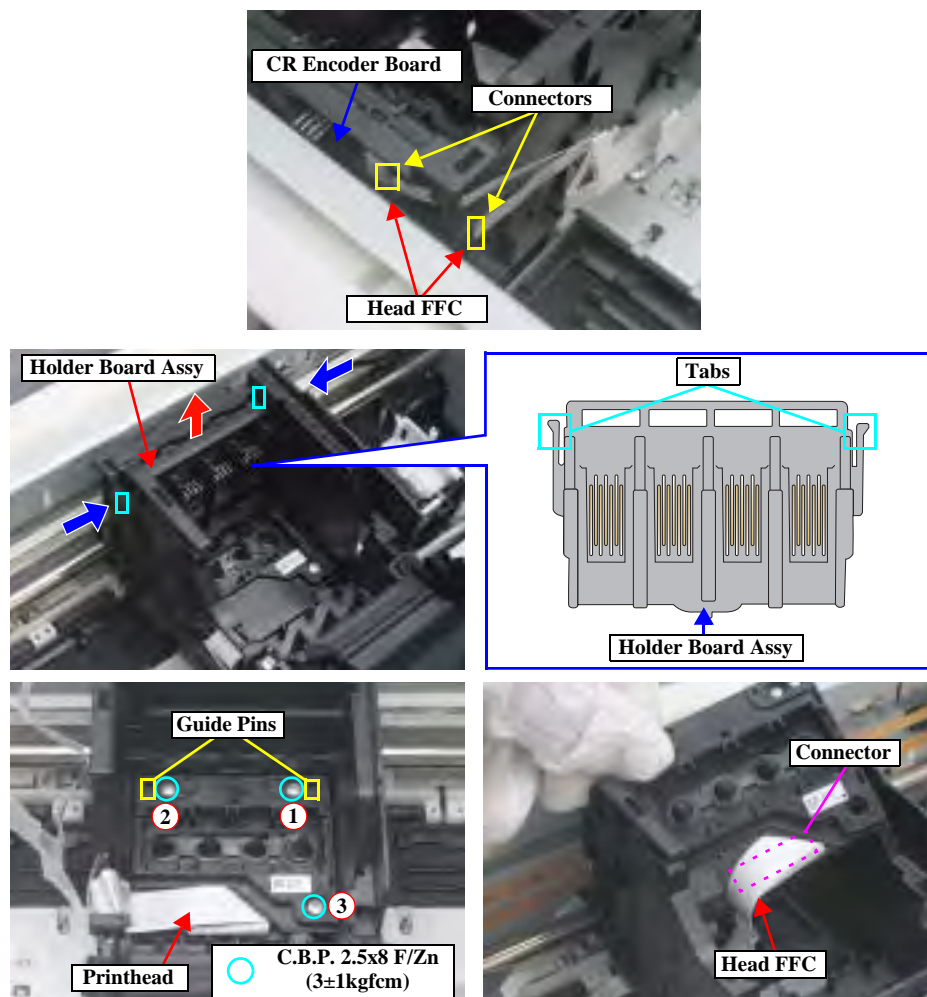




Figure 4-11. Removing Printhead

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. Remove the screws (x3, ) that secure the Printhead, and lift up to remove Printhead with a longnose pliers.
11. Disconnect the Head FFC (x1) from the connector (x1) of the Printhead, and remove the Printhead.

ADJUSTMENT
REQUIRED

After removing/replacing the Printhead, perform the adjustment in the following order. (Refer to Chapter 5 “ADJUSTMENT”)

1. “PG Adjustment”
2. “Head ID Input” (only after replacement)
3. “Ink Charge” (only after replacement)
4. “Top Margin Adjustment”
5. “Head Angular Adjustment”
6. “Bi-D Adjustment”
7. “PF Band Adjustment”

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.



In case that any parts are removed and assembled on the repair product while running the adjustment program, make sure to turn off the printer.

5.1.1 Required Adjustments

If you remove or replace the specific part in your service/repair, you have to perform the appropriate adjustment as listed in Table 5-1 below.

Table 5-1. Required Adjustments

Priority		1	2	3	4	5	6	7	8	9	10	11	12
Adjustment item	Replaced part	EEPROM data copy	Market setting	USB ID input	Waste ink pad counter	Head ID input	Ink charge	Top margin adjustment	Head angular adjustment	Bi-d adjustment	First dot adjustment	PF band adjustment	CR heat protection control
ASF unit	removal	---	---	---	---	---	---	Required	---	---	---	Required	---
	replacement	---	---	---	---	---	---	Required	---	---	---	Required	---
CR motor	removal	---	---	---	---	---	---	---	---	Required	---	---	---
	replacement	---	---	---	---	---	---	---	---	Required	---	---	Required
Paper guide upper	removal	---	---	---	---	---	---	Required	---	---	---	Required	---
	replacement	---	---	---	---	---	---	Required	---	---	---	Required	---
Print head	removal	---	---	---	---	---	---	Required	Required	Required	---	Required	---
	replacement	---	---	---	---	Required	Required	Required	Required	Required	---	Required	---
Main board	removal	---	---	---	---	---	---	---	---	---	---	---	---
	replacement (read OK)	Required	---	---	---	---	---	---	---	---	---	---	---
	replacement (read NG)	---	Required	Required	(Pad replacement)	Required	---	Required	Required	Required	Required	Required	Required
Holder shaft unit	removal	---	---	---	---	---	---	Required	---	---	---	---	---
	replacement	---	---	---	---	---	---	Required	---	---	---	---	---
PS board	removal	---	---	---	---	---	---	---	---	---	---	---	---
	replacement	---	---	---	---	---	---	---	---	---	---	---	Required
Paper guide front	removal	---	---	---	---	---	---	Required	Required	Required	---	Required	---
	replacement	---	---	---	---	---	---	Required	Required	Required	---	Required	---

Table 5-1. Required Adjustments

Priority		1	2	3	4	5	6	7	8	9	10	11	12
Replaced part	Adjustment item	EEPROM data copy	Market setting	USB ID input	Waste ink pad counter	Head ID input	Ink charge	Top margin adjustment	Head angular adjustment	Bi-d adjustment	First dot adjustment	PF band adjustment	CR heat protection control
PF motor	removal	---	---	---	---	---	---	Required	---	---	---	Required	---
	replacement	---	---	---	---	---	---	Required	---	---	---	Required	---
Waste ink pad	removal	---	---	---	---	---	---	---	---	---	---	---	---
	replacement	---	---	---	Required	---	---	---	---	---	---	---	---
CR unit	removal	---	---	---	---	---	---	Required	Required	Required	---	Required	---
	replacement	---	---	---	---	---	---	Required	Required	Required	---	Required	Required
CR guide shaft	removal	---	---	---	---	---	---	---	---	Required	---	---	---
	replacement	---	---	---	---	---	---	---	---	Required	---	---	Required
EJ Frame Unit	removal	---	---	---	---	---	---	---	---	---	---	Required	---
	replacement	---	---	---	---	---	---	---	---	---	---	Required	---
PF roller assy	removal	---	---	---	---	---	---	Required	---	---	---	Required	---
	replacement	---	---	---	---	---	---	Required	---	---	---	Required	---

Note *: Fixed values: address 59 <H> Data 11 <H>
 Basically, this adjustment is not required as the fixed values are already input.
 Perform the adjustment only when it is impossible to read data in the board.

CAUTION

- When the Main board is replaced with new one, you have to replace the waste ink pad 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 the appropriate adjustment.
- If using new main board in the printer mechanism replacement, you need to perform EEPROM initial setting of the main board.
And then, 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
- ☐ Market Setting
- ☐ USB ID Input
- ☐ Waste Ink Pad Counter
- ☐ Head ID Input
- ☐ Ink Charge
- ☐ Top Margin Adjustment
- ☐ Head Angular Adjustment
- ☐ Bi-D Adjustment
- ☐ First Dot Adjustment
- ☐ PF Band Adjustment
- ☐ CR Heat Protection Control

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 Market Setting

☐ Adjustment procedure

1. Select “Destination setting” in the Adjustment Program.
Click the [Destination setting] button to set the market destination setting.

5.2.3 USB ID Input

☐ Adjustment procedure

1. Select “Destination setting” in the Adjustment Program
2. Input the 10-digits serial number from the label applied to the backside of the Housing Lower.

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 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.

5.2.6 Ink Charge

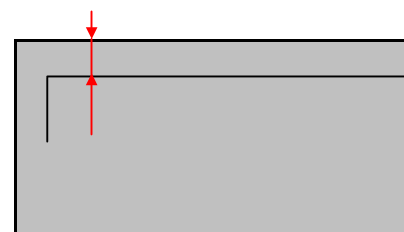
□ Adjustment procedure

1. Select “Ink charge” in the Adjustment Program.
2. Click the [Ink charge] button to perform the initial ink charge

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 Head Angular Adjustment

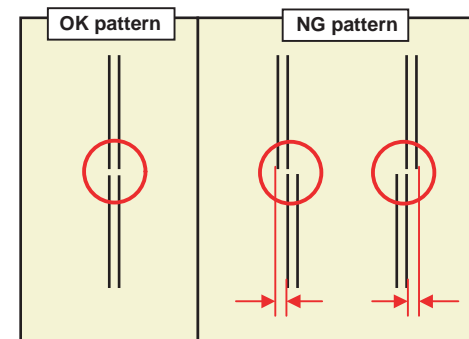
□ Adjustment procedure

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 following two head angular check patterns.
 - Band pattern
 - 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



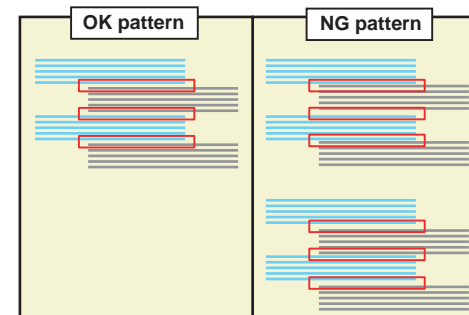
[Judging Standard]

The printed line should be straight line.

[Reference]

Shift length of Head Angular pattern is MAX $\pm 50\mu\text{m}$

■ Raster offset pattern



[Judging Standard]

Spaces between the cyan lines and gray lines should be uniform.

[Reference: Standard value in manufactory]

$\pm 70\mu\text{m}$

Figure 5-2. Head Angular Adjustment Printing Pattern

5.2.9 Bi-D Adjustment



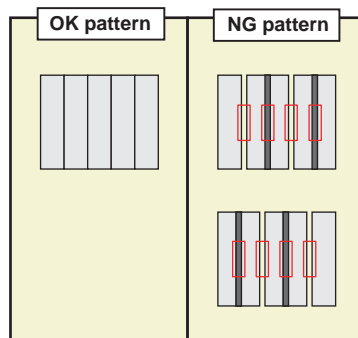
Be sure to close the Scanner unit before performing Bi-D Adjustment.

□ 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.



[Judging Standard]

The block patterns should align without gap and overlapping.

[Reference]

GAP Bi-D for each Dot

- VSD1 BLACK, COLOR: 60μm
- VSD3 BLACK, COLOR: 40μm

Figure 5-3. Bi-D Adjustment Printing Pattern

5.2.10 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 5-4. First Dot Position Adjustment Printing Pattern

5.2.11 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 relatively better group and print the pattern again to repeat the adjustment.

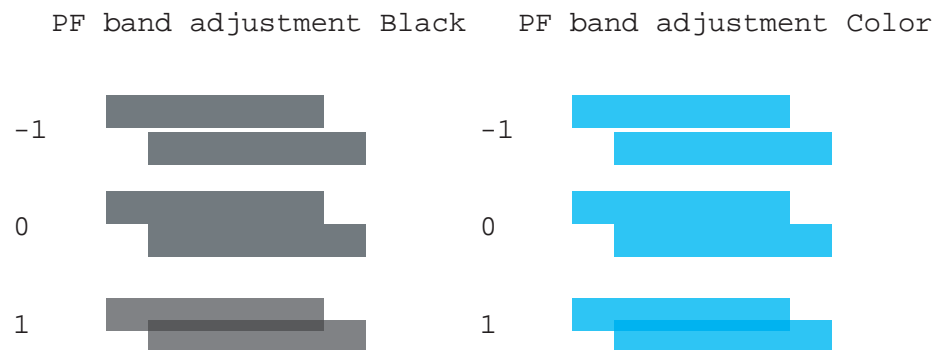
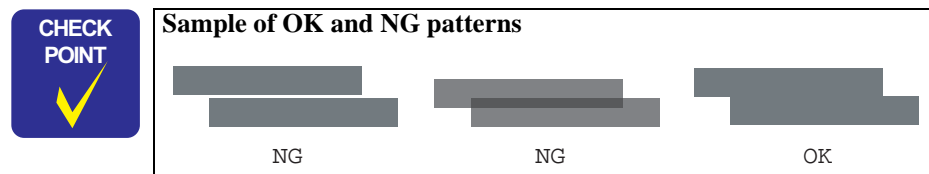


Figure 5-5. PF Band Adjustment Pattern



5.2.12 CR Heat Protection Control

□ Adjustment procedure

1. Select “CR 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 is displayed, click the [OK] button.

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
- Removal and Replacement of Printer Mechanism

□ 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.

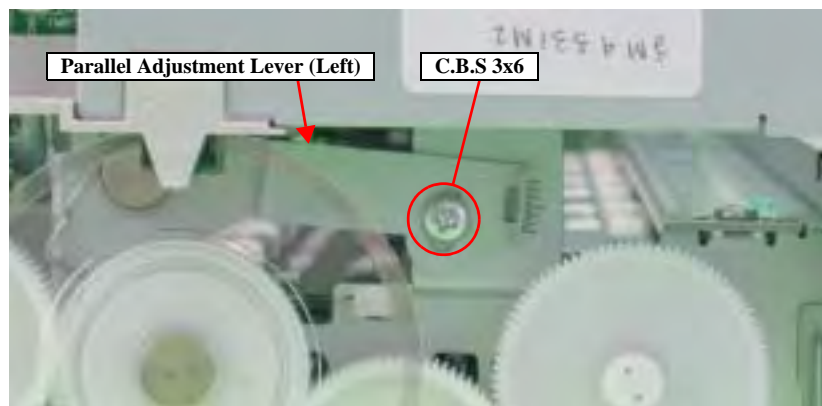


Figure 5-6. Parallel Adjustment Lever (Left) Location

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.

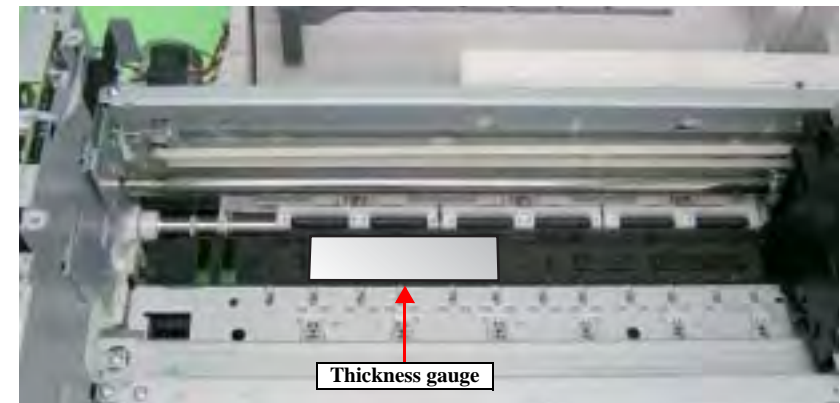


Figure 5-7. Placement Position for Thickness Gauge

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.

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 (Left) operation" and "Platen gap reaction".

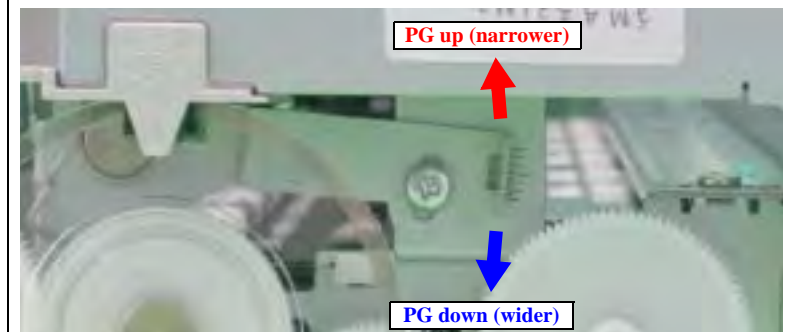


Figure 5-8. Relationship between Parallel Adjustment Lever (Left) Operation & Platen Gap

9. Accede to following steps until you've completed the left side PG adjustment.

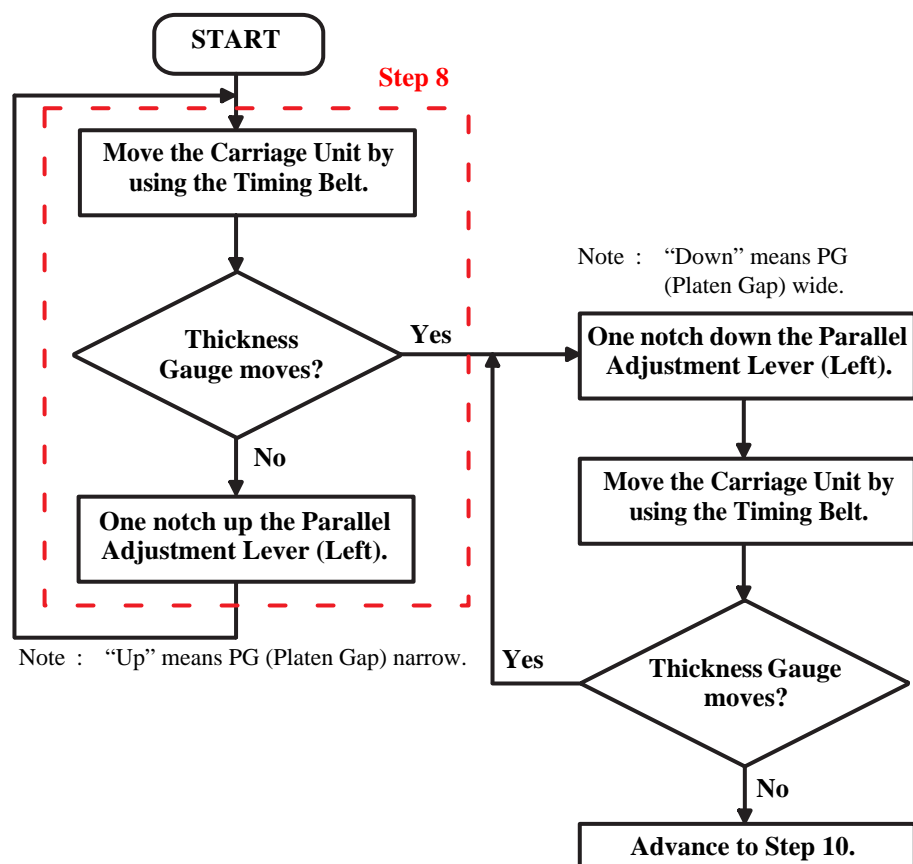


Figure 5-9. Left Side PG Adjustment

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).

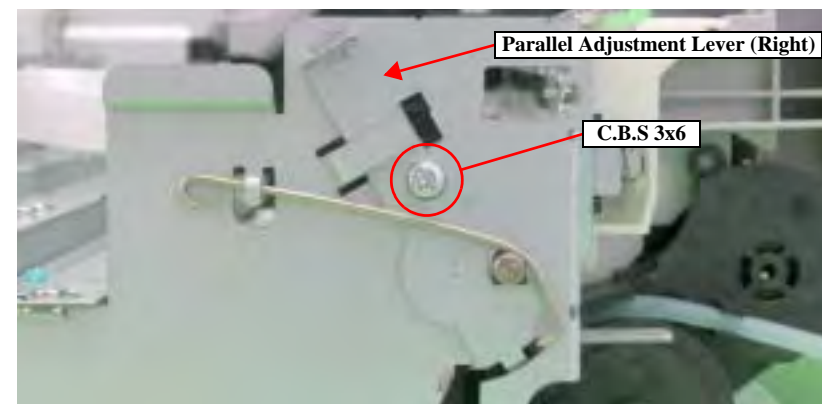


Figure 5-10. Parallel Adjustment Lever (Right) Location

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.

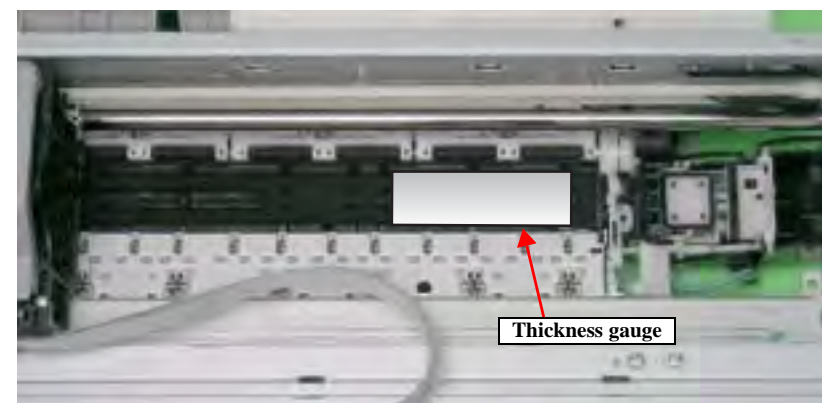


Figure 5-11. Placement Position for Thickness Gauge

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".

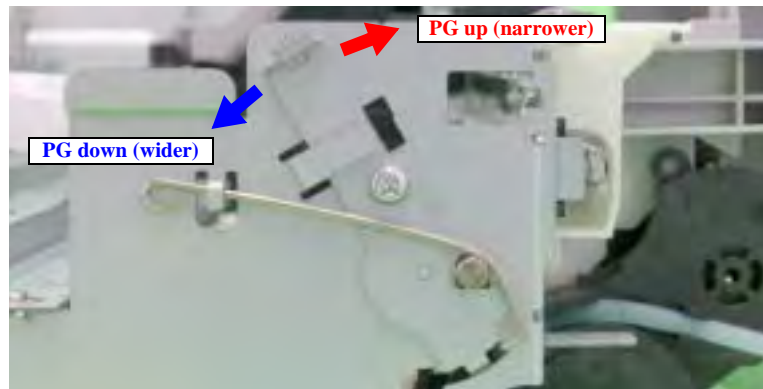


Figure 5-12. Relationship between Parallel Adjustment Lever (Right) Operation & Platen Gap

14. Accede to following steps until you've completed the right side PG adjustment.

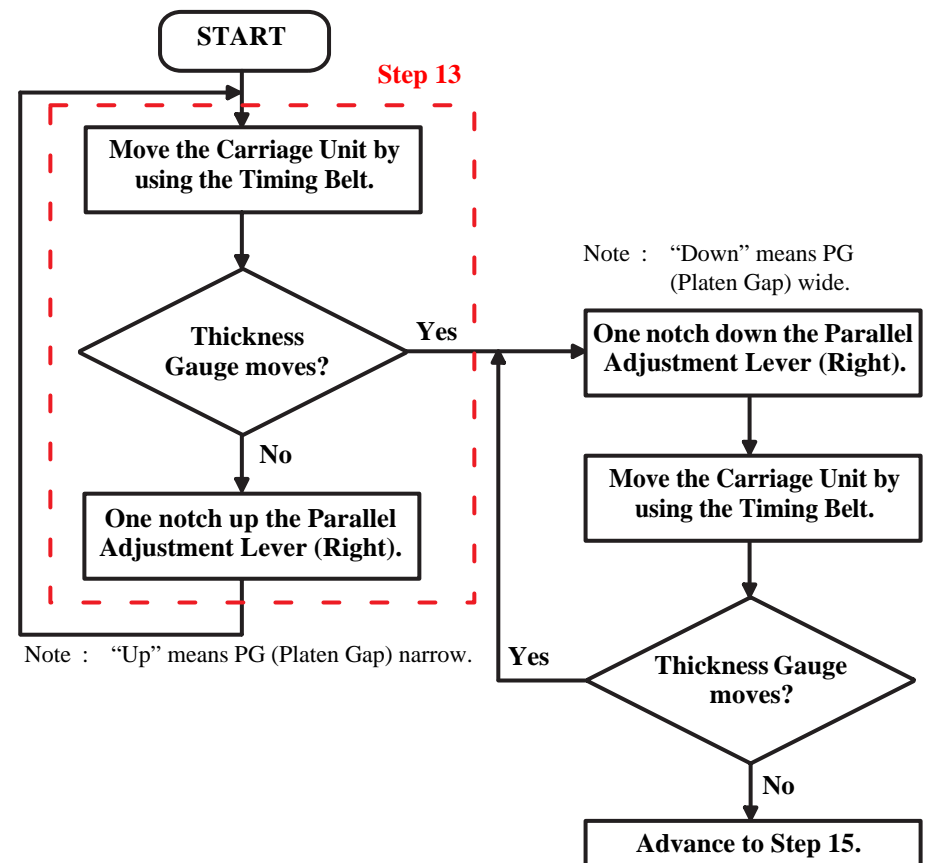


Figure 5-13. Right Side PG Adjustment

15. Tighten the screw securing for Parallel Adjustment Lever (Right) temporary.
16. Set the thickness gauge at position shown by refer to Figure 5-7 again.

17. Accede to following steps to check left side PG again.

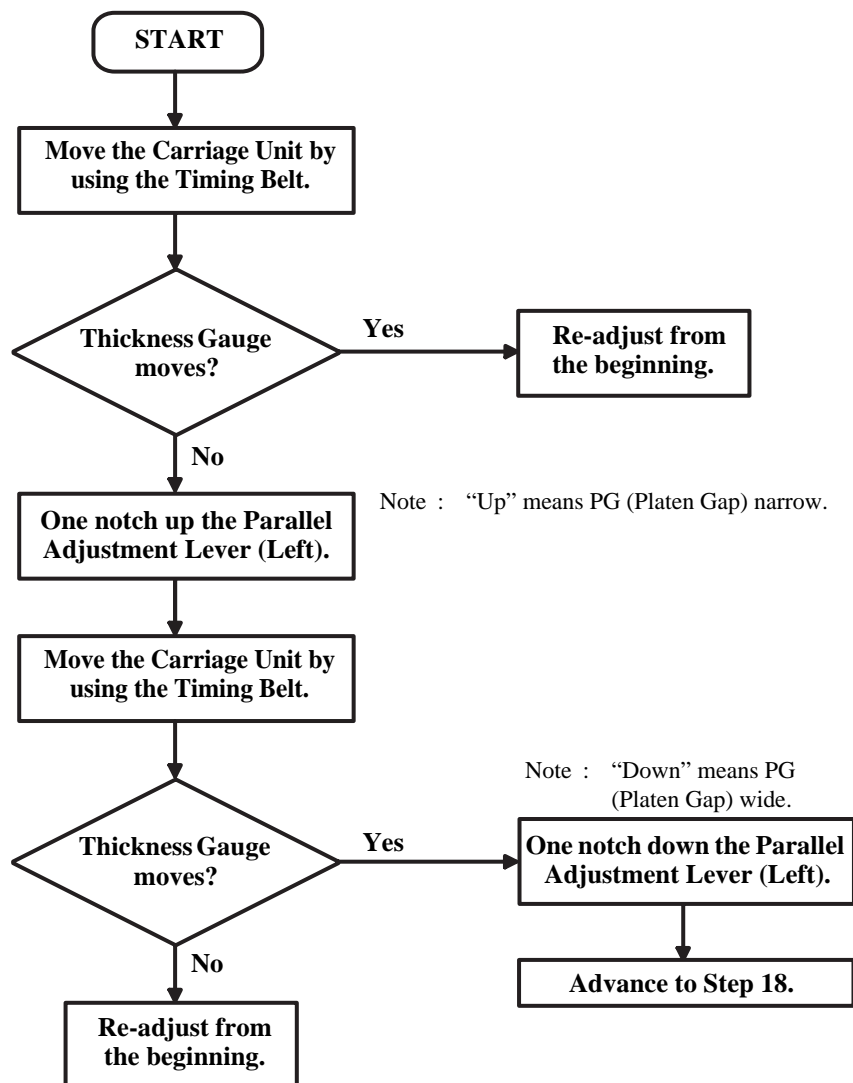


Figure 5-14. Right/Left Sides PG Checking

18. Tighten both screws completely.

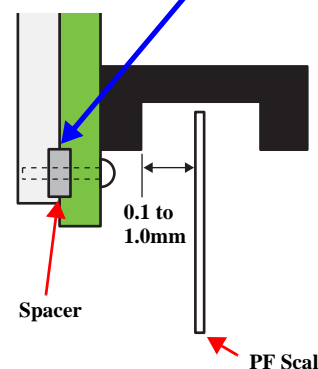
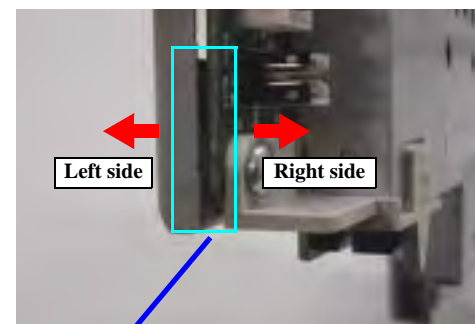
5.3.2 PF Scale Sensor Positioning Adjustment

□ 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 the center of the sensor, adjust the position of PF Scale using spacer(s) (0.5mm thickness each) as shown in the diagram below.



- Place a 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)

NOTE: Be sure to use spacers that are registered as ASP by the name of Spacer, M/B. (Spacer, M/B does not come with Main Board Unit.)

Figure 5-15. PF Scale Sensor Positioning Adjustment

5.3.3 Origin Adjustment

□ Parts to be removed and replaced

- Replacement of Scanner Housing, Upper
- Replacement of Scanner Unit

CAUTION



- 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 could not be completed correctly. In that case, the edge of the Scanner Housing, Upper may be read in during scanning or copying.

CHECK POINT



- Download and install the Origin 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 5-16. Origin Adjustment (1)

3. Open the document cover, and place the origin adjustment jig as shown in the figure below.

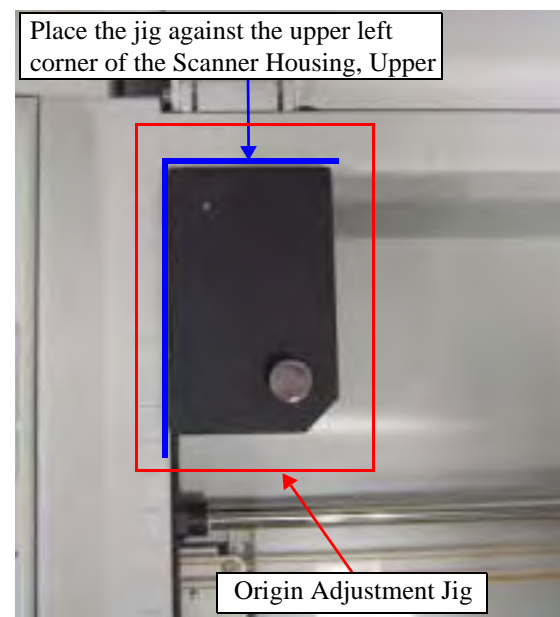


Figure 5-17. Origin Adjustment Jig Setting Position

4. Select "Dijon_Vellum" in the "Select Parameter Set" window, and click [OK].

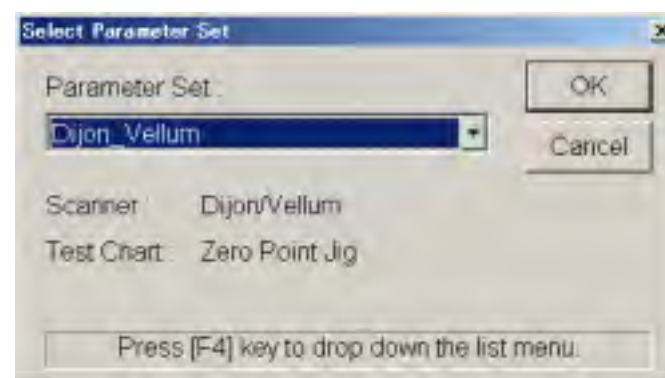


Figure 5-18. Origin Adjustment (2)

- Click the “SGL” icon in the “EPSON Scanner Function Test - WriteZero for service” window.



Figure 5-19. Origin Adjustment (3)

- Enter the product number in the “Single Test” window, select “Write Zero Correction Value”, and press the [Execute] button.

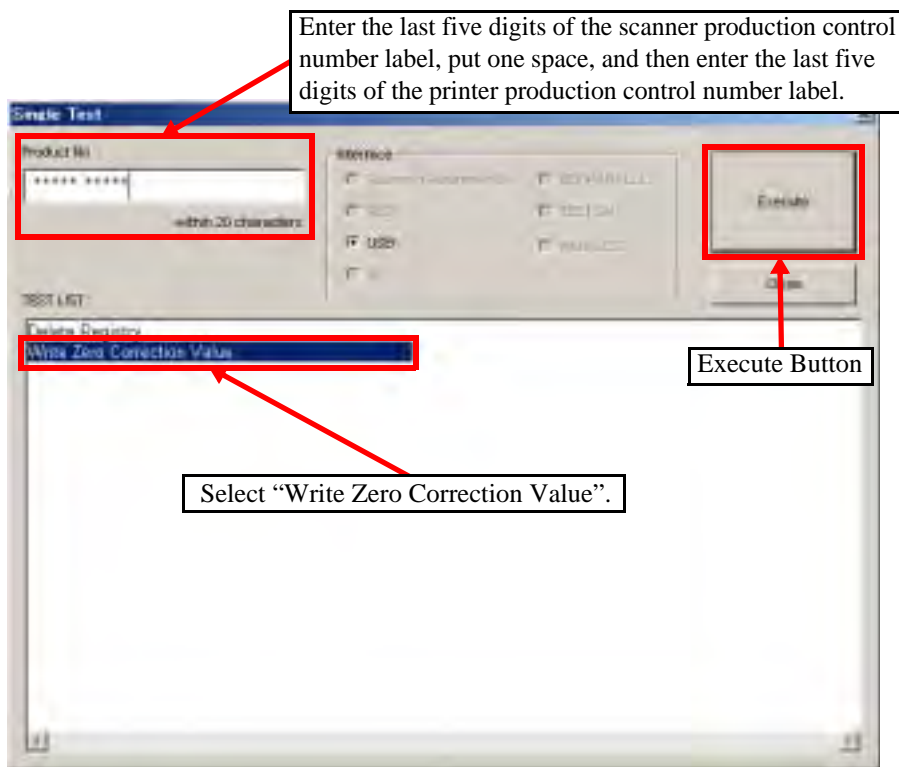


Figure 5-20. Origin Adjustment (4)

- A progress bar will be displayed followed by the window shown below.

<Window displayed when the adjustment is completed successfully>

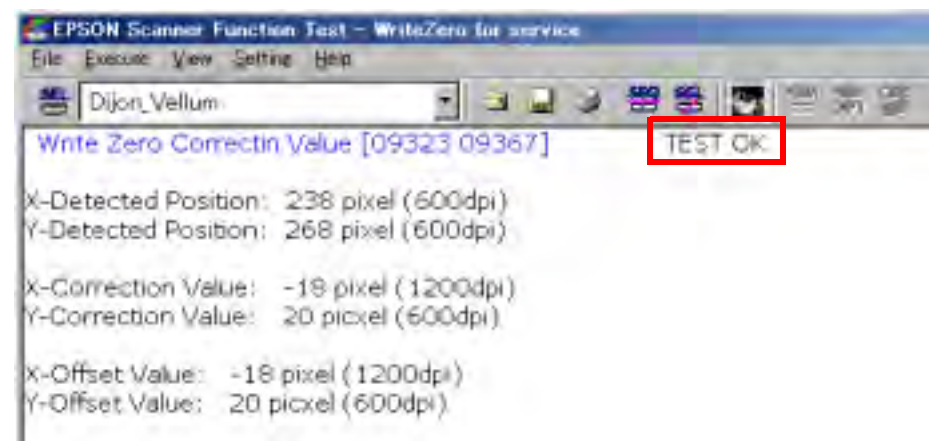


Figure 5-21. Window Displayed when the Adjustment is Completed Successfully (1)

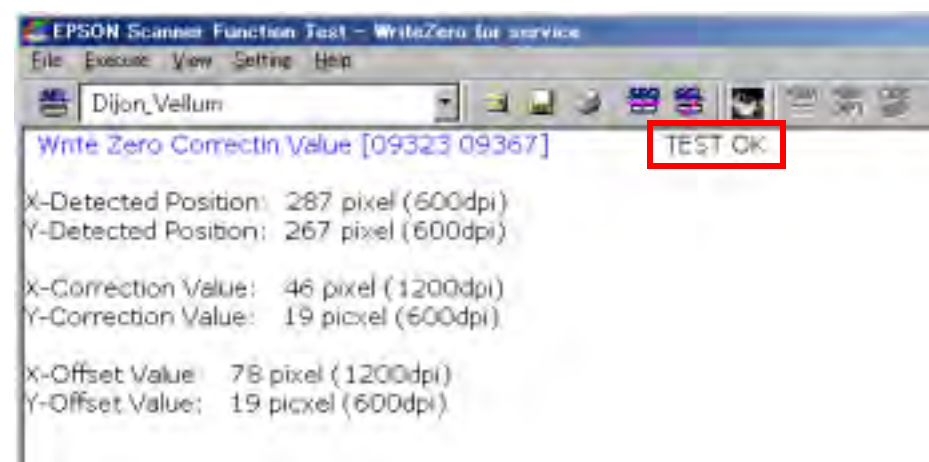


Figure 5-22. Window Displayed when the Adjustment is Completed Successfully (2)

<Window displayed when the adjustment has failed>

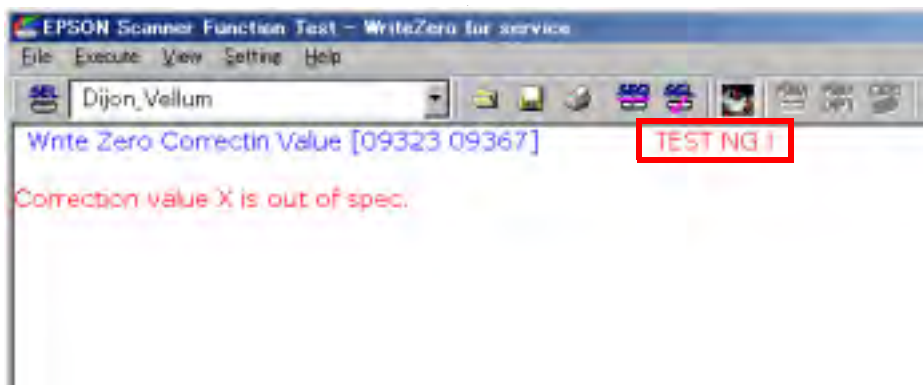


Figure 5-23. Window Displayed when the Adjustment has Failed

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

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: EPSON Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200 Stylus CX3900/CX3905/DX4000/DX4050 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 affects 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.

CAUTION

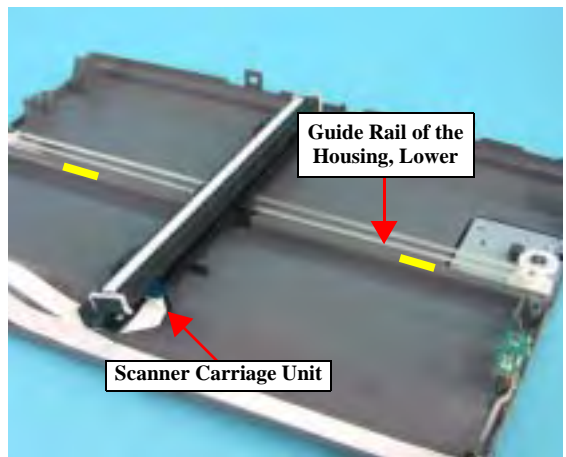

- Never use oil or grease other than those specified in this manual. Use of different types of oil or grease may damage the component or give bad influence on the printer function.
- Never apply larger amount of grease than specified in this manual.

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

CAUTION


When using G-74, it is recommended to use a flux dispenser (1049533) together.

- Refer to the following figures for the lubrication points.



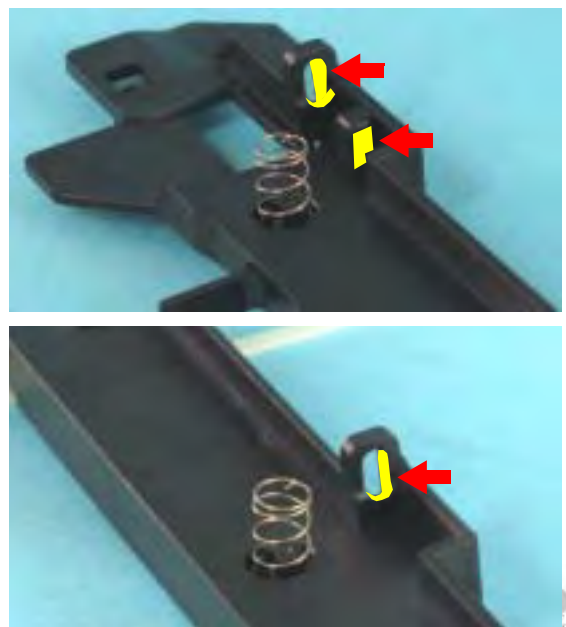
<Lubrication Point>
Guide Rail of the Housing, Lower surface

<Lubrication Type>
G-45

<Lubrication Amount>
0.06g x 2 points

<Remarks>
Use a brush to apply.
• Grease should be applied only to the semicircular section.

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.
• Grease must not be adhered to other parts.

Figure 6-5. Lubrication on CIS Unit Shaft Hole Sections

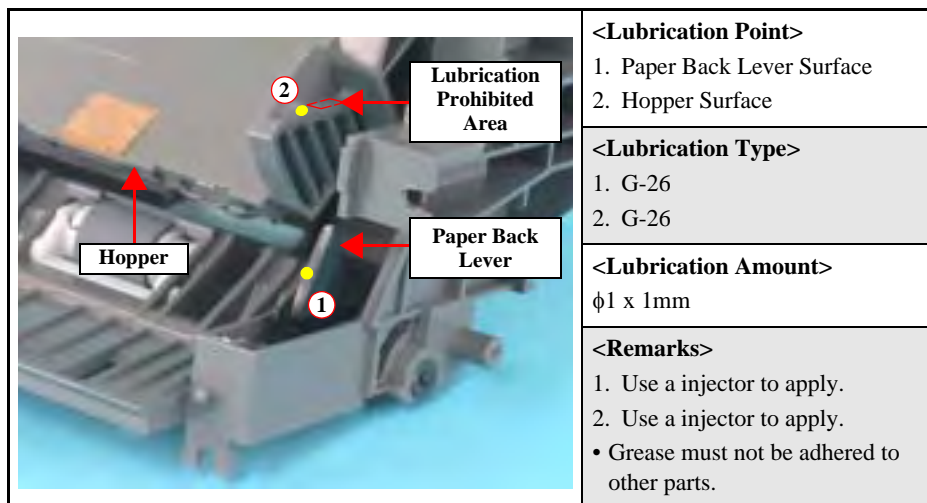


Figure 6-6. Lubrication on ASF Unit

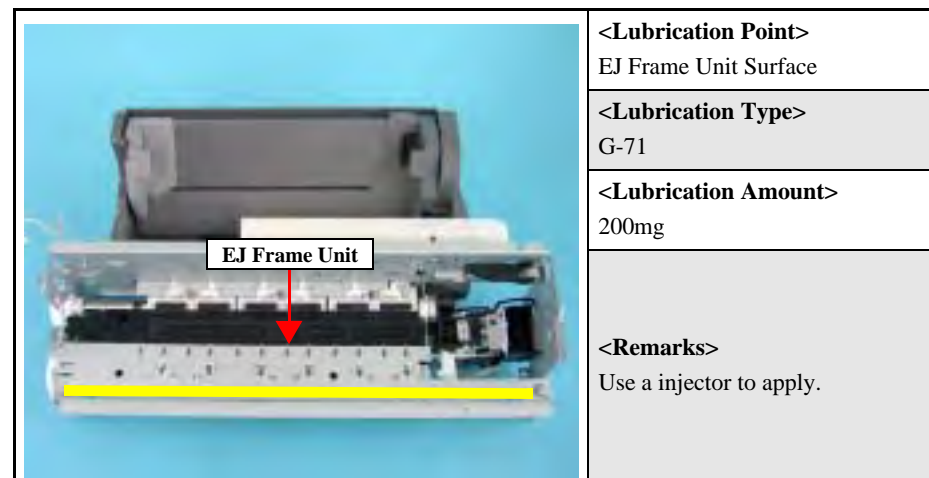


Figure 6-8. Lubrication on EJ Frame Unit

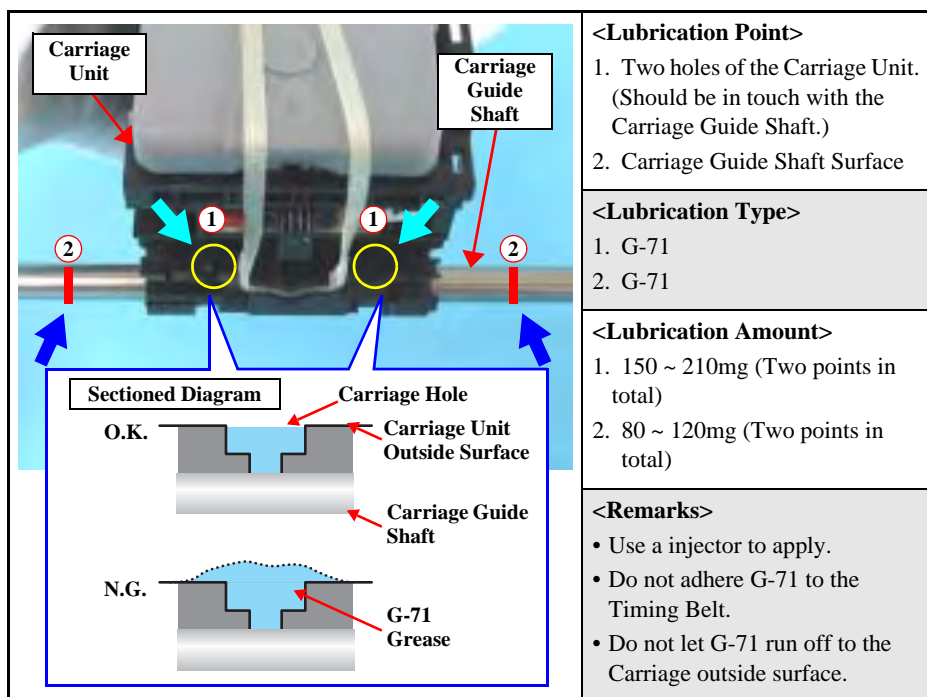


Figure 6-7. Lubrication on Carriage Unit

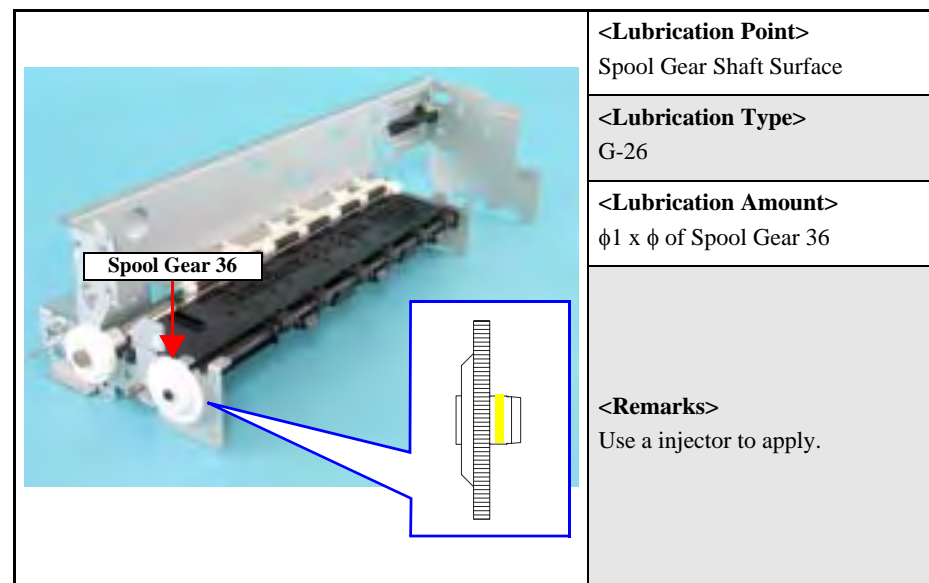


Figure 6-9. Lubrication on Paper Guide Front Unit(1)

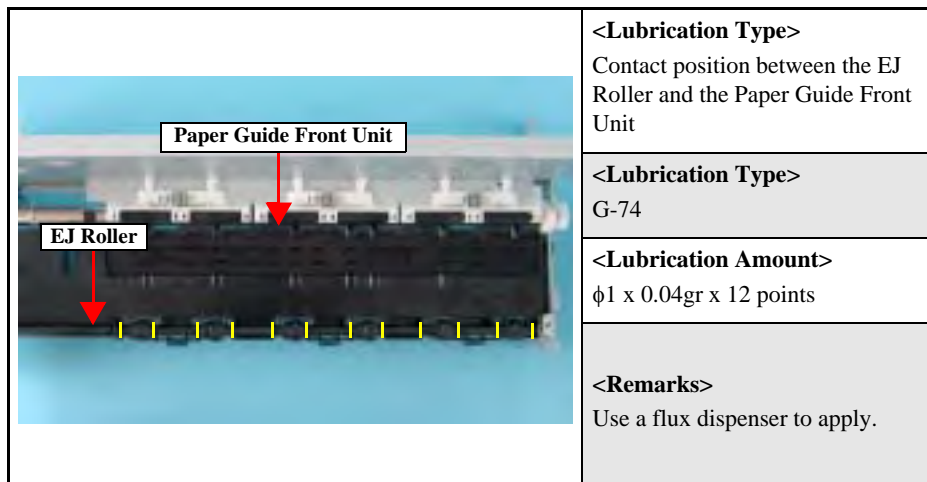


Figure 6-10. Lubrication on Paper Guide Front Unit (2)

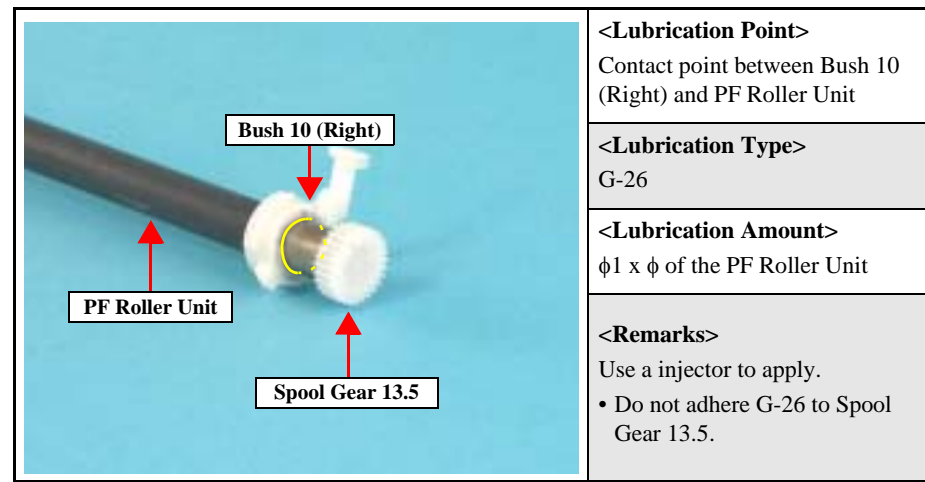


Figure 6-12. Lubrication on PF Roller Unit (2)

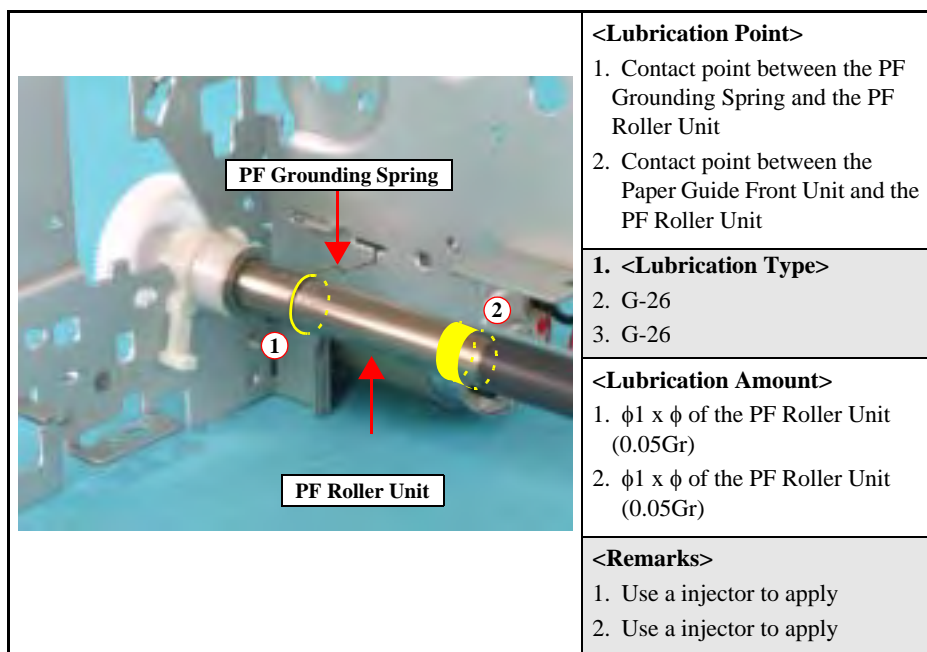


Figure 6-11. Lubrication on PF Roller Unit (1)

CHAPTER

7

APPENDIX



7.1 Connector Summary

7.1.1 Major Component Unit

- Main Board
(C612 Main: Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200
C654 Main: Stylus CX3900/CX3905/DX4000/DX4050)
- Power Supply Board (C610 PSB/PSE)
- Panel Board (C612 PNL)

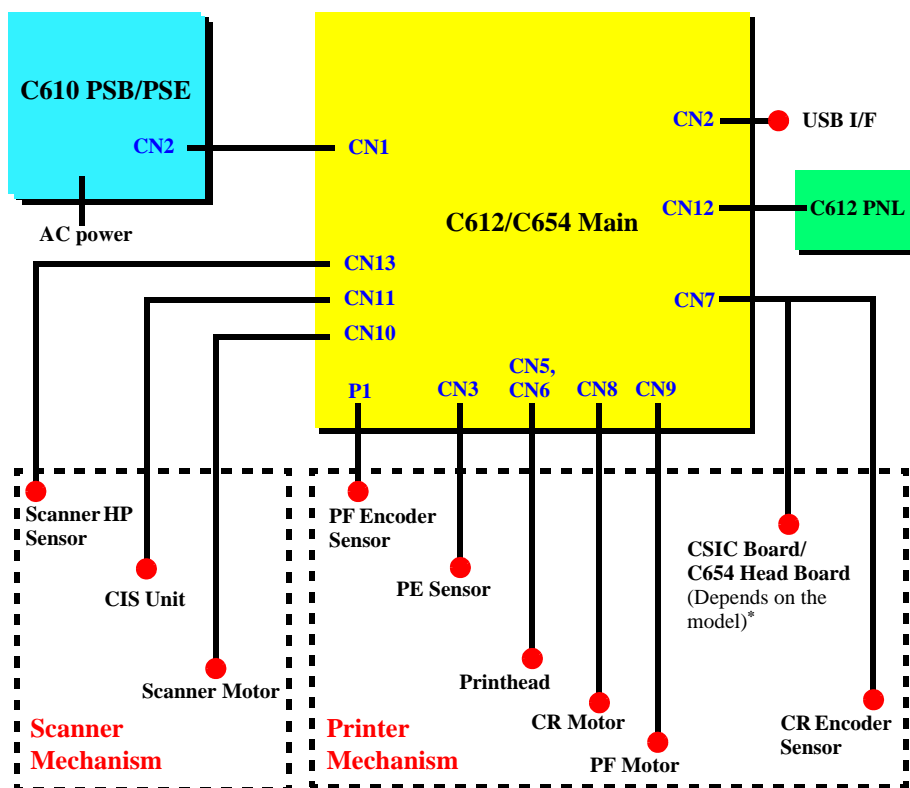


Figure 7-1. Connection of the major components

Note *: Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200: CSIC Board
Stylus CX3900/CX3905/DX4000/DX4050: C654 Head Board

See the following tables for the connector summary of the C612/C654 Main Board and each connector's pin assignment.

Table 7-1. Connector Summary for C612/C654 Main Board

Connector	Function	Table to refer to
CN1	For connection with the Power Supply Board	Table 7-2 (p.152)
CN2	For connection with the USB interface	"1.3.1 USB Interface" (p.20)
CN3	For connection with the PE Sensor	Table 7-3 (p.152)
CN5 CN6	For connection with the Printhead	Table 7-4 (p.152), Table 7-5 (p.152)
CN7	For connection with the CR Encoder Sensor and the CSIC Board. (Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200)	Table 7-6 (p.152)
	For connection with the CR Encoder Sensor and C654 Head Board. (Stylus CX3900/CX3905/DX4000/DX4050)	Table 7-7 (p.153)
CN8	For connection with the CR Motor	Table 7-8 (p.153)
CN9	For connection with the PF Motor	Table 7-9 (p.153)
CN10	For connection with the Scanner Motor	Table 7-10 (p.153)
CN11	For connection with the CIS Unit.	Table 7-11 (p.153)
CN12	For connection with the Panel Board	Table 7-12 (p.154)
CN13	For connection with the Scanner HP Sensor	Table 7-13 (p.154)

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. CN5 - Printhead

Pin	Signal Name	I/O	Function
1	LAT	O	Head data latch pulse output
2	VDD	—	+3.3V
3	CH	O	Charge signal for the trapezoidal waveform
4	GND	—	Ground
5	NCHG	O	All nozzle fire selection pulse
6	VDD2	—	+3.3V
7	XHOT/THM	I	Head temperature signal
8	GND	—	Ground
9	GND2	—	Ground
10	COM	O	Head drive pulse (trapezoid waveform)

Table 7-5. CN6 - Printhead

Pin	Signal Name	I/O	Function
1	GND2	—	Ground
2	COM	O	Head drive pulse (trapezoid waveform)
3	VHV	O	+42V power supply for nozzle selector
4	GND	—	Ground
5	SI2_Col	O	Print data output for color nozzles
6	GND	—	Ground
7	SI1_Bk	O	Print data output for black nozzles
8	GND	—	Ground
9	GND	—	Ground
10	GND	—	Ground

Table 7-6. CN7 - CR Encoder Sensor and CSIC Board
(Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200)

Pin	Signal Name	I/O	Function
1	COI	I	Cartridge detect signal
2	CSDA	I/O	CSIC transmit and receive data
3	CRST	O	Reset signal for address counter of CSIC
4	CGND	—	Ground
5	CVDD	O	Power supply for CSIC
6	CCLK	I/O	Clock signal for CSIC read/write
7	NC	—	Not connected
8	GND	—	Ground
9	ENCB	I	Encoder feed back signal ch.B
10	EVDD	O	Power for CR Encoder
11	ENCA	I	Encoder feed back signal ch.A

**Table 7-7. CN7 - CR Encoder Sensor and C654 Head Board
(Stylus CX3900/CX3905/DX4000/DX4050)**

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	VDD	—	+3.3V
5	CH	O	Charge signal for the trapezoidal waveform
6	Enable	I	General-purpose port
7	COI	I	Cartridge detection
8	CSDA	I/O	CSIC data transmission and reception
9	CRST	O	CSIC reset
10	CGND	—	Ground
11	CVDD	O	Power supply for CSIC
12	CCLK	I/O	CSIC clock transmission and reception
13	NC	—	Not connected
14	GND	—	Ground
15	ENCB	I	Carriage encoder B
16	EVDD	O	Power supply for carriage encoder
17	ENCA	I	Carriage encoder A

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 - CIS Unit

Pin	Signal Name	I/O	Function
1	LED CA	—	Power supply for LED
2	LED B	O	LED cathode (Blue)
3	LED G	O	LED cathode (Green)
4	LED R	O	LED cathode (Red)
5	VDD	—	Power supply for 5V_SW (digital)
6	GND	—	Ground
7	TR	O	Shift pulse
8	RS	O	Reset
9	M	O	Clock
10	GND	—	Ground
11	VAD	—	Power supply for filtered 5V_SW (analog)
12	OS	O	Output signal

Table 7-12. CN12 - Panel Board

Pin	Signal Name	I/O	Function
1	SDI	I	Switch data serial data input
2	SENB	O	LED lamp enable signal
3	SLAT	O	Switch data load signal and LED data latch signal
4	CLK	O	Shift clock for serial data I/O
5	PSW	I/O	TBD
6	SDO	O	Serial data output for LED control
7	+3.3V	—	+3.3V
8	GND	—	Ground

Table 7-13. CN13 - Scanner HP Sensor

Pin	Signal Name	I/O	Function
1	PEV	—	Power supply for Scanner HP Sensor
2	GND	—	Ground
3	SCN_HP	I	Scanner HP Sensor signal

7.2 Exploded Diagram / Parts List

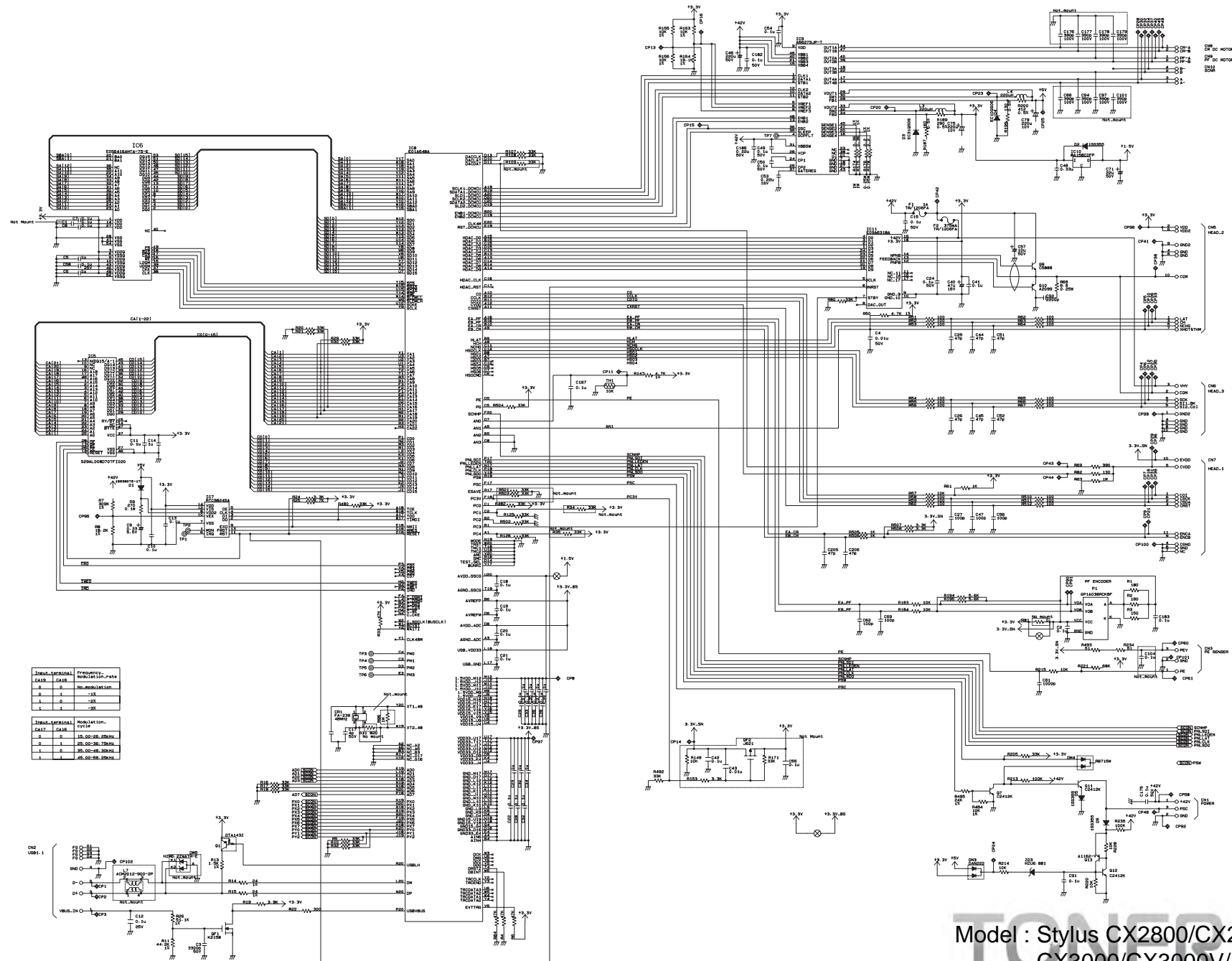
This manual does not provide exploded diagrams or parts list.
For the information, see SPI (Service Parts Information).



7.3 Electrical Circuits

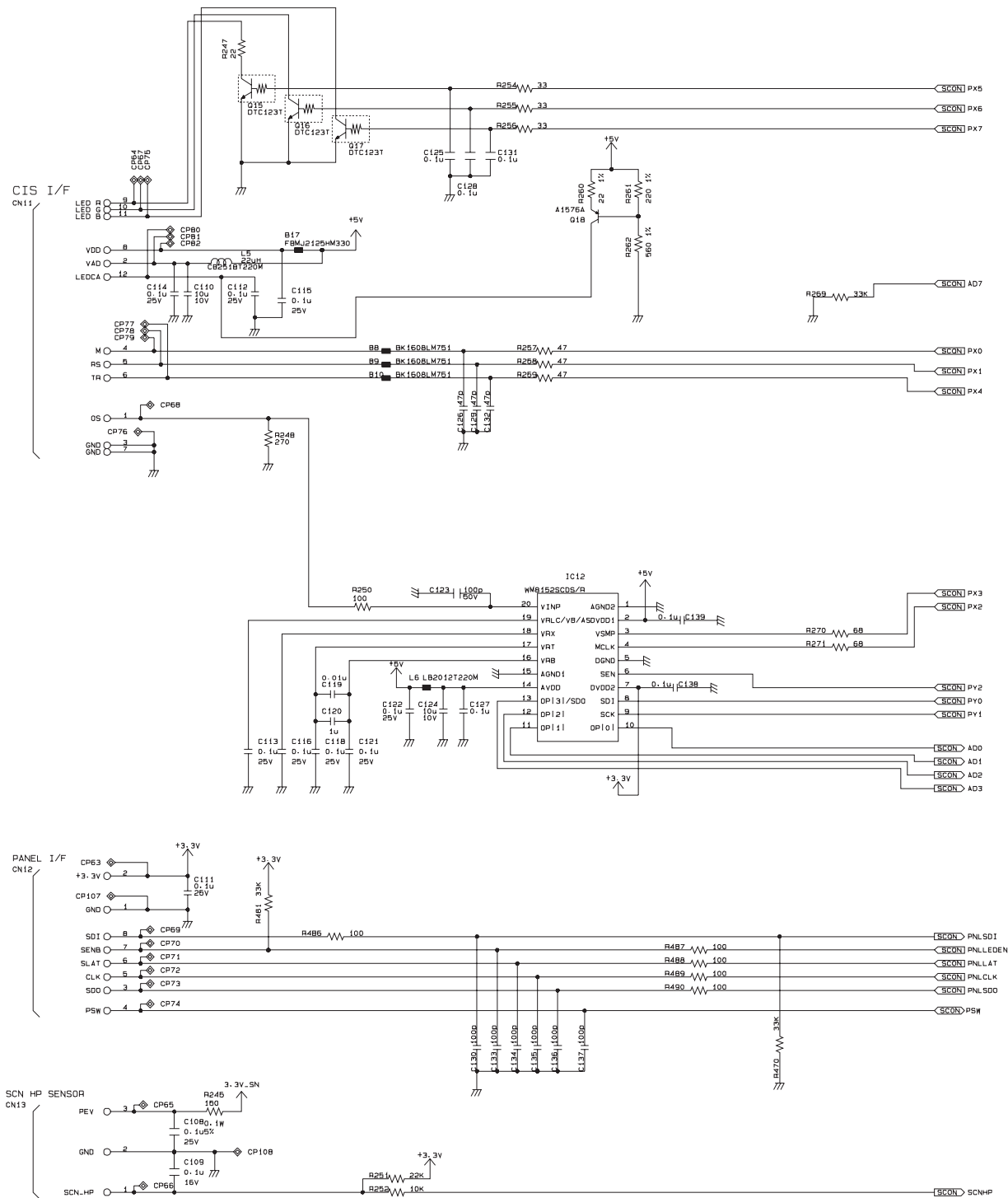
The electric circuit diagrams below are shown at the following pages:

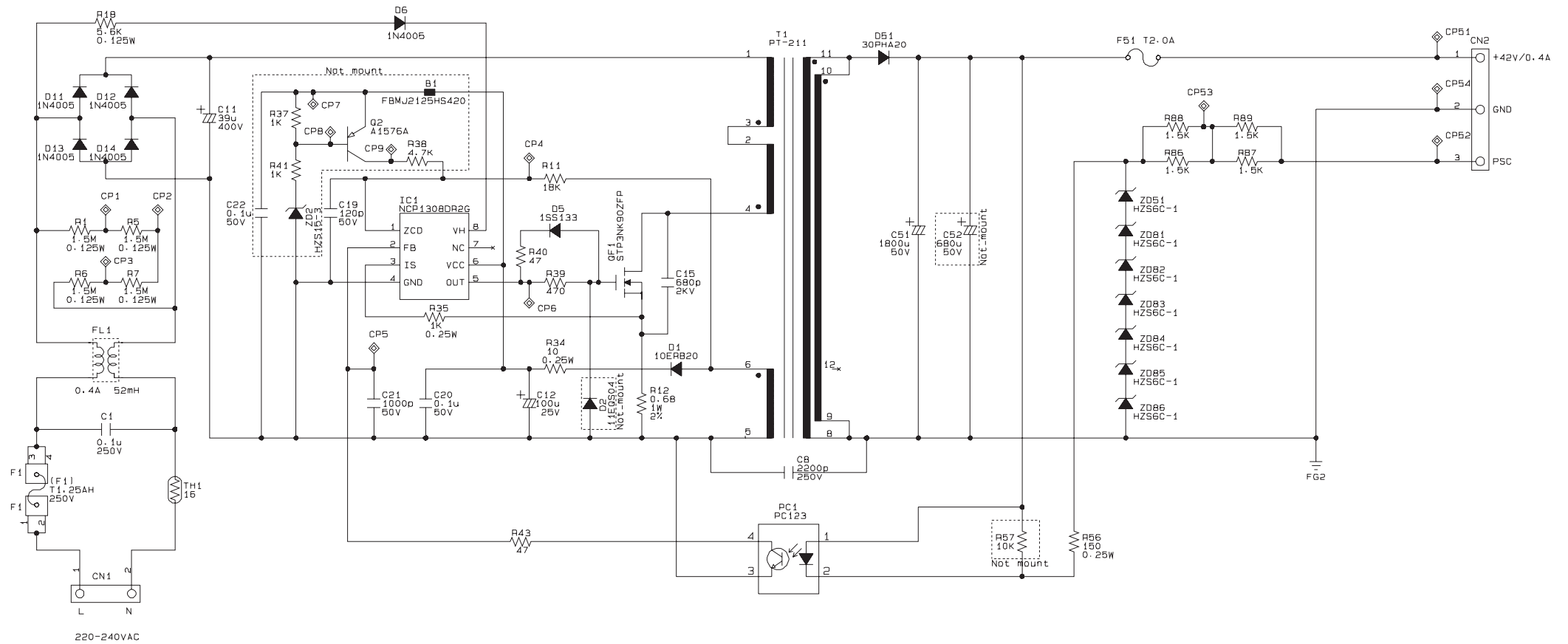
- ☐ C612 Main control circuit board
(For Stylus CX2800/CX2900/CX2905/CX3000/CX3000V/ME 200)
- ☐ C654 Main control circuit board
(For Stylus CX3900/CX3905/DX4000/DX4050)
- ☐ C610 PSB/PSE power supply circuit board
- ☐ C612 Panel circuit board



Model : Stylus CX2800/CX2900/CX2905/
CX3000/CX3000V/ME 200
Board : C612 MAIN
Rev. : F
Sheet : 1/2





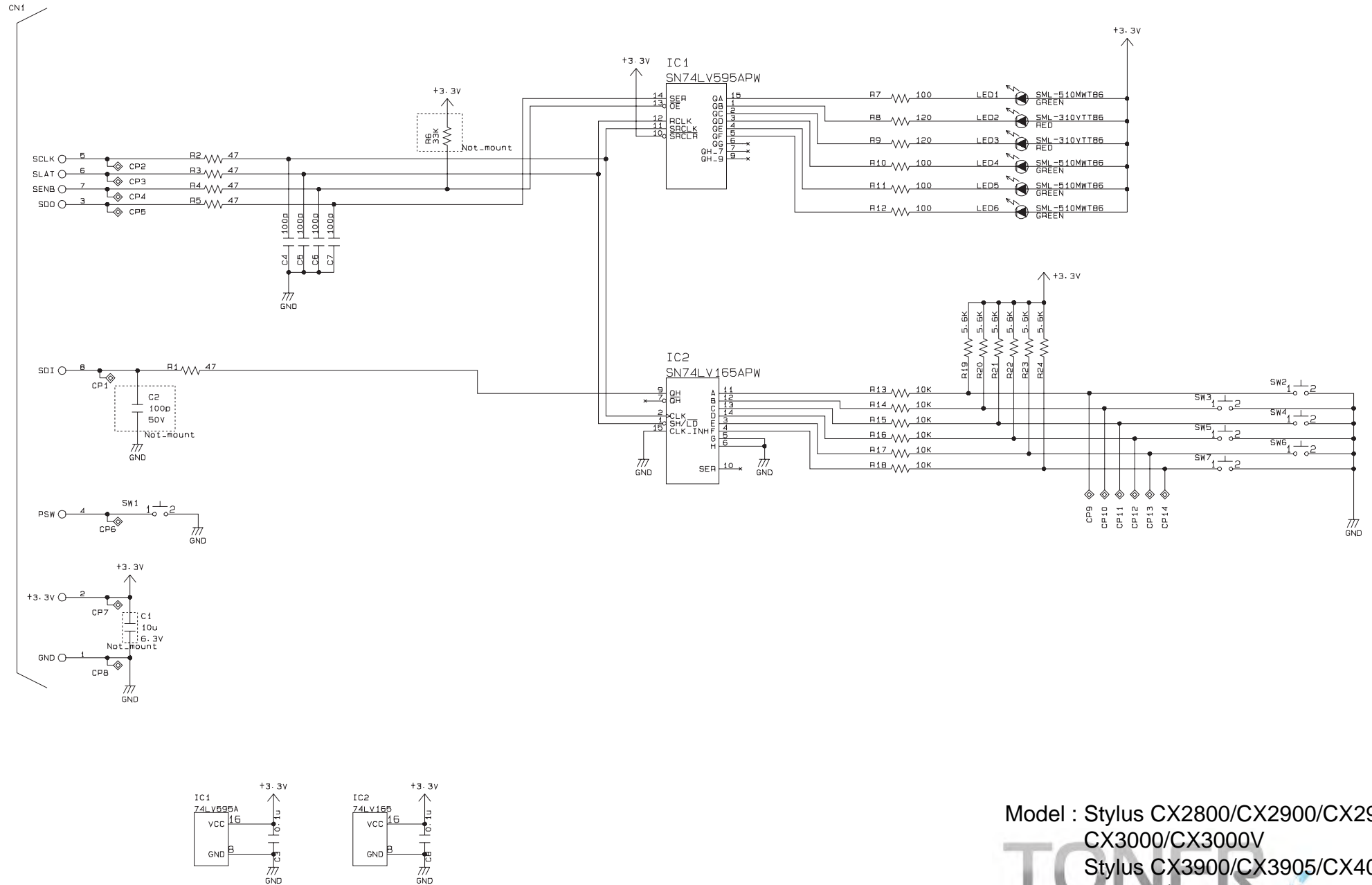


Model : Stylus CX2800/CX2900/CX2905/
CX3000/CX3000V
Stylus CX3900/CX3905/CX4000/
DX4000/DX4050

Board : C610 PSE

Rev. : B

Sheet : 1/1



Model : Stylus CX2800/CX2900/CX2905/
CX3000/CX3000V
Stylus CX3900/CX3905/CX4000/
DX4000/DX4050

Board : C612 PNL

Rev. : A

Sheet : 1/1