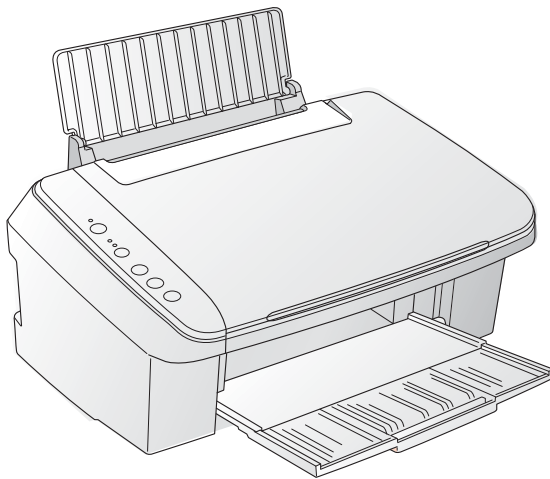


SERVICE MANUAL



Color Inkjet Printer

**EPSON STYLUS CX4300/CX4400/CX5500/
CX5600/DX4400/DX4450**

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SEMF07-004

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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	April 23, 2007	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 80 cut sheets (paper thickness: 0.11 mm)
- Borderless printing with EPSON special media
- This unit use pigment ink which is water resistant, light-fast and ozone resistant

□ 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: 16 bits (input), 1 or 8 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	A4/4"x6"
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), or Borderless copy.
- Simultaneous use of functions
Printer functions and scanner functions are independent and can therefore be operated simultaneously from a connected computer.
- Easy-to-use control panel
The control panel that has five buttons including power button and three LEDs simplifies 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: 452 mm (W) x 347 mm (D) x 203 mm (H)
(including rubber feet with Paper Support and Stacker closed)
- Weight: 5.0 kg (without ink cartridges)

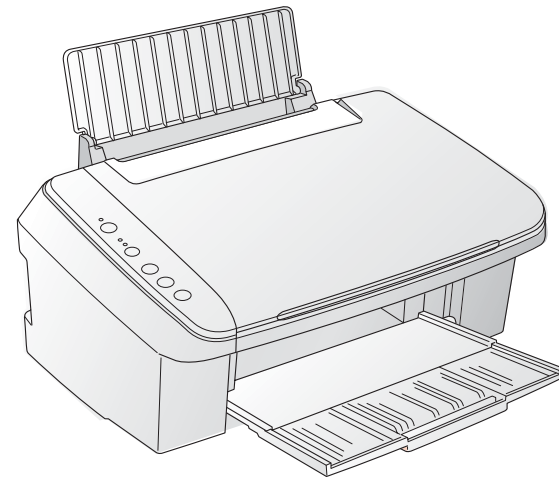


Figure 1-1. External View



1.2 Specifications

1.2.1 Printing Specifications

Table 1-2. Printing 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
Internal font (T.B.D)	Character code: Alphanumeric with expanded graphics (PC437) ASCII, 20H to 7FH only Font: EPSON original font Alphanumeric font: Courier
Input buffer size	32 Kbytes
Paper feed method	Friction feed, using one ASF (Auto Sheet Feeder)
Paper path	Top feed, front out
Paper feed rates (T.B.D)	• 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 0.017 mm (1/1440 inch) steps

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

INK CARTRIDGE SPECIFICATIONS

The product numbers of the EPSON ink cartridges for this printer are shown below.

Table 1-3. Product No. of Ink Cartridges

Color	US	Latin	West Europe	CISMEA	Asia
Black	T0881	T0731 T0901	T0711	T0921	T0731 T0911
Cyan	T0882	T0732 T0902	T0712	T0922	T0732 T0912
Magenta	T0883	T0733 T0903	T0713	T0923	T0733 T0913
Yellow	T0884	T0734 T0904	T0714	T0924	T0734 T0914

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

Table 1-4. Storage Temperature (T.B.D)

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
12.7 mm (W) x 68 mm (D) x 47 mm (H)



- The ink cartridge cannot be refilled.
- Do not use expired ink cartridges.
- The ink in the ink cartridge freezes at -16 °C (3.2 °F). It takes about three hours under 25 °C (77°F) until the ink thaws and becomes usable.



PRINT MODE**Table 1-5. Print Mode (Color)**

Print Mode	Resolution (H x V) dpi	Dot Size (cps)* ¹	Media	Border-less
Fast Economy* ²	360 x 120	Eco (360 cps)	Plain paper	-
Economy	360 x 120	Eco (360 cps)	Plain paper	-
Normal	360 x 360	VSD1 (165 cps)	Plain paper	-
Fine	360 x 720 (Color) 720 x 720 (Black)	VSD2' (240 cps)	Plain paper	-
Super Fine	360 x 720	VSD2 (240 cps)	Premium Glossy Photo Paper Glossy Photo Paper	OK
Photo (720)	720 x 720 (Color) 1440 x 720 (Black)	VSD3' (240 cps)	Plain paper	-
	720 x 720	VSD2 (240 cps)	Premium Glossy Photo Paper Glossy Photo Paper Matte Paper-Heavyweight	OK
Best Photo (1440)	1440 x 720	VSD3 (240 cps)	Ultra Glossy Photo Paper Premium Glossy Photo Paper Premium SemiGloss Photo Paper Glossy Photo Paper Matte Paper-Heavyweight	OK
Photo RPM (5760)	5760 x 1440	VSD3 (240 cps)	Ultra Glossy Photo Paper Premium Glossy Photo Paper Premium SemiGloss Photo Paper Glossy Photo Paper	-

Note *1: CPS: Characters per second

*2: This mode skips a sequence to prevent paper skewing in paper loading sequences.

Table 1-6. Print Mode (Black)

Print Mode	Resolution (H x V) dpi	Dot Size (cps)* ¹	Media	Border-less
Fast Economy* ²	360 x 120	Eco (360 cps)	Plain Paper	-
Economy	360 x 120	Eco (360 cps)	Plain Paper	-
Normal	360 x 360	VSD1 (165 cps)	Plain Paper	-
Fine	720 x 720	VSD2 (240 cps)	Plain Paper	-
Photo (720)	720 x 720	VSD2 (240 cps)	Matte Paper-Heavyweight	OK
Best Photo (1440)	1440 x 720	VSD3 (240 cps)	Matte Paper-Heavyweight	OK

Note *1: CPS: Characters per second

*2: This mode skips a sequence to prevent paper skewing in paper loading sequences.



PAPER SUPPORT

The table below lists the paper type and sizes supported by the printer. The Supported paper type and sizes vary depending on destinations (between EAI, EUR, and Asia).

Table 1-7. Paper Support

Paper Type	Paper Size		Thickness (mm)	Weight	EAI		EUR		Asia	
					P*1	B*1	P*1	B*1	P*1	B*1
Plain paper	Legal	215.9 x 355.6 mm (8.5"x14")	0.08-0.11	64-90 g/m ² (17-24 lb.)	Y	-	Y	-	Y	-
	Letter	215.9 x 279.4 mm (8.5"x11")			Y	-	Y	-	Y	-
	A4	210 x 297 mm (8.3"x11.7")			Y	-	Y	-	Y	-
	B5	182 x 257 mm (7.2"x10.1")			-	-	Y	-	Y	-
	A5	148 x 210 mm (5.8"x8.3")			-	-	Y	-	Y	-
	Half Letter	139.7 x 215.9 mm (5.5"x8.5")			Y	-	-	-	-	-
	A6	148 x 210 mm (5.8"x8.35")			Y	-	Y	-	Y	-
	User Defined	50.8-329 x 127-1117.6 mm (2-12.6" x 5-44")			Y	-	Y	-	Y	-
Premium Inkjet Plain Paper	A4	210 x 297 mm (8.3"x11.7")	0.11	80 g/m ² (21 lb.)	-	-	Y	-	Y	-
Premium Bright White Paper (EAI) Bright White Inkjet Paper (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.11	90 g/m ² (24 lb.)	Y	-	-	-	-	-
	A4	210 x 297 mm (8.3"x11.7")	0.13	92.5 g/m ² (25 lb.)	-	-	Y	-	Y	-
Ultra Premium Glossy Photo Paper (EAI) Ultra Glossy Photo Paper (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.30	290 g/m ² (77 lb.)	Y	Y	Y	-	Y	-
	A4	210 x 297 mm (8.3"x11.7")			Y	Y	Y	Y	Y	Y
	8" x 10"	203.2 x 254 mm			Y	Y	Y	-	Y	-
	5" x 7"	127 x 178 mm			Y	Y	Y	Y	Y	Y
	4" x 6"	101.6 x 152.4 mm			Y	Y	Y	Y	Y	Y
	3.5" x 5"	89 x 127 mm			Y	Y	Y	Y	Y	Y
Premium Photo Paper Glossy (EAI) Premium Glossy Photo Paper (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.27	255 g/m ² (68 lb.)	Y	Y	Y	-	Y	-
	A4	210 x 297 mm (8.3"x11.7")			Y	Y	Y	Y	Y	Y
	8" x 10"	203.2 x 254 mm			Y	Y	Y	-	Y	-
	5" x 7"	127 x 178 mm			Y	Y	Y	Y	Y	Y
	4" x 6"	101.6 x 152.4 mm			Y	Y	Y	Y	Y	Y
	16:9 wide	102 x 181 mm			Y	Y	Y	Y	Y	Y
	3.5" x 5"	89 x 127 mm			Y	Y	Y	Y	Y	Y

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Table 1-7. Paper Support

Paper Type	Paper Size		Thickness (mm)	Weight	EAI		EUR		Asia	
					P*1	B*1	P*1	B*1	P*1	B*1
Photo Paper Glossy (EAI) Glossy Photo Paper (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.25	258 g/m ² (68 lb.)	Y	Y	Y	-	Y	-
	A4	210 x 297 mm (8.3"x11.7")			Y	Y	Y	Y	Y	Y
	5" x 7"	127 x 178 mm			-	-	Y	Y	Y	Y
	4" x 6"	101.6 x 152.4 mm			Y	Y	Y	Y	Y	Y
Premium Photo Paper Semi-Gloss (EAI) Premium Semigloss Photo Paper (Euro, Asia)	Letter	215.9 x 279.4 mm (8.5"x11")	0.27	250 g/m ² (66 lb.)	Y	Y	Y	-	Y	-
	A4	210 x 297 mm (8.3"x11.7")			Y	Y	Y	Y	Y	Y
	4" x 6"	101.6 x 152.4 mm			Y	Y	Y	Y	Y	Y
Premium Presentation Paper Matte (EAI)*1 Matte Paper-Heavyweight (Euro, Asia)*1	Letter	215.9 x 279.4 mm (8.5"x11")	0.23	167 g/m ² (44 lb.)	Y	Y	Y	-	Y	-
	A4	210 x 297 mm (8.3"x11.7")			Y	Y	Y	Y	Y	Y
	8" x 10"	203.2 x 254 mm			-	-	-	-	-	-
Envelopes	#10	104.8 x 241.3 mm (4.125"x9.5")	-	45-75 g/m ² (12-20 lb.)	Y	-	Y	-	Y	-
	#DL	110 x 220 mm			-	-	Y	-	Y	-
	#C6	114 x 162 mm			-	-	Y	-	Y	-

Note 1: "Y" in the "P" column stands for "the paper type/size is Supported".

"Y" in the "B" column stands for "Borderless printing is available".

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

The printing area for this printer is shown below.

Table 1-8. Printing Area (Margins)

Print mode	Paper size	Margin			
		Left	Right	Top	Bottom
Standard print	Any size	3 mm	3 mm	3 mm	3 mm
	Envelope	5 mm	5 mm	3 mm	20 mm
Borderless print	A4/Letter to 2L/5" x 7"	2.54 mm*	2.54 mm*	2.96 mm*	4.02 mm*
	4" x 6"/L			2.82 mm*	3.60 mm*

Note *: The margins for Borderless print are margins that bleed off the edges of paper.

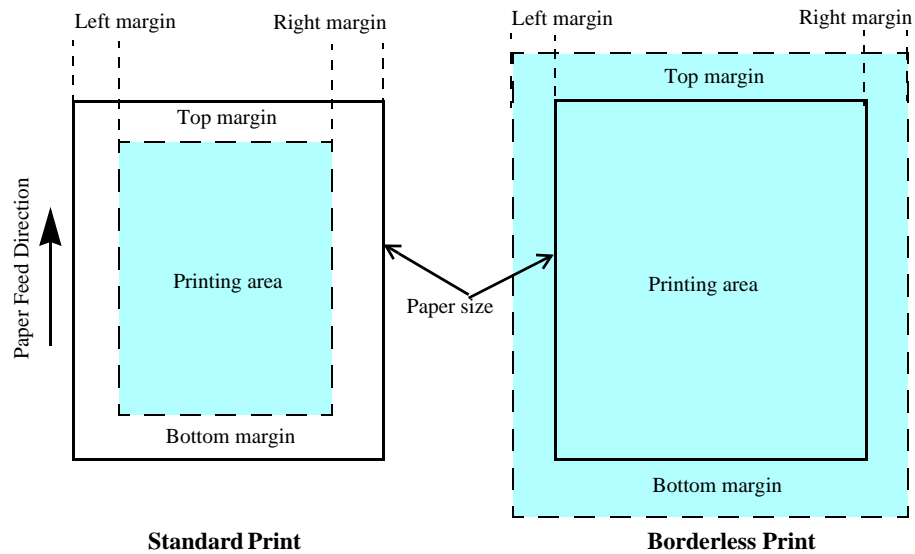


Figure 1-2. Printing Area on Cut Sheet

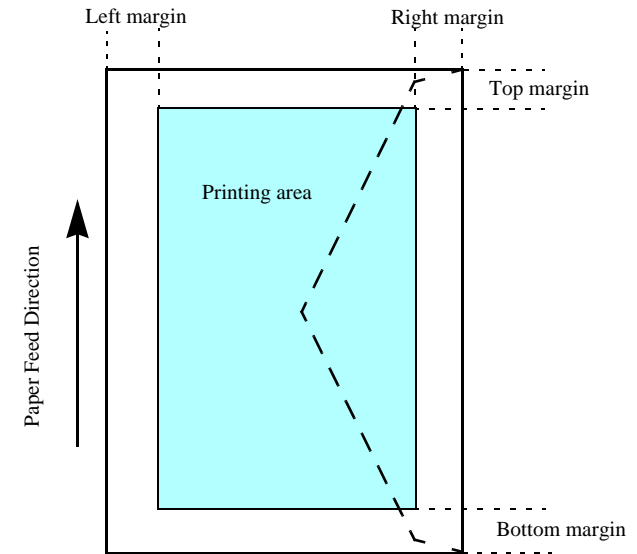


Figure 1-3. Printing Area on Envelopes

1.2.2 Scanning Specifications

Table 1-9. 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

SCANNING AREA

Table 1-10. Image Scanning Area

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

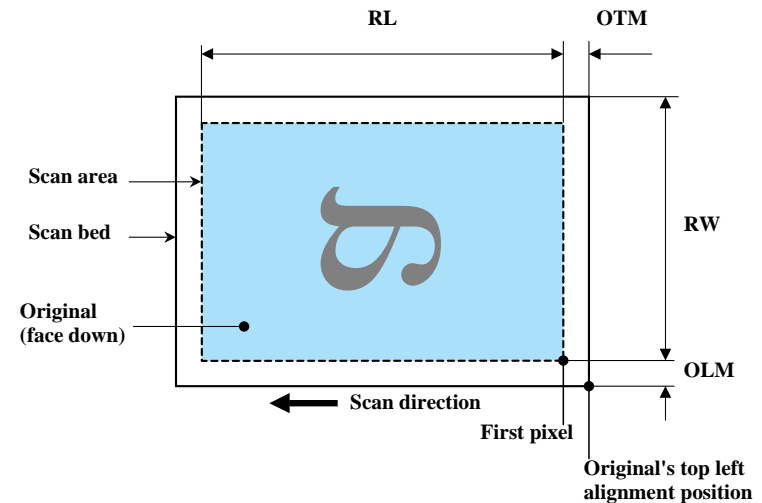


Figure 1-4. Image Scanning Area

1.2.3 Standalone Copying Specifications

SUPPORTED PAPER TYPES AND SIZES

Table 1-11. Supported Paper Types and Sizes

Paper Type		Paper size
UI	Available Paper Type	
Plain Paper	Plain Paper	A4, Letter*
	Bright White Inkjet Paper (Euro/Asia)	
	Premium Bright White Paper (EAI)	
	Premium Ink Jet Plain Paper (Euro/Asia)	
Photo Paper	Glossy Photo Paper (Euro, Asia)	4" x 6" (10 x 15 cm)
	Photo Paper Glossy (EAI)	
	Premium Glossy Photo Paper (Euro/Asia)	
	Premium Photo Paper Glossy (EAI)	
	Premium Semigloss Photo Paper (Euro/Asia)	
	Premium Photo Paper Semi-Gloss (EAI)	
	Ultra Glossy Photo Paper (Euro/Asia)	
	Ultra Premium Glossy Photo Paper (EAI)	

Note*: EAI models: Letter size.

Euro/Asia models: A4 size.

Latin models: Selectable between Letter and A4.

(Turning On the printer while holding down B&W Copy Start button selects Letter size, and turning On the printer while holding down Color Copy Start button selects A4 size.)

COPY MODE

Table 1-12. Print Mode for Copying

Copy Mode		Print Mode			
Mode Name	Paper Type	Mode Name	Resolution	Microwave	Dot Size
Color copy*	Plain Paper	Fast Economy	360 x 120 dpi	OFF	Eco
		Normal	360 x 360 dpi	ON	VSD1
B&W copy*	Plain Paper	Fast Economy	360 x 120 dpi	OFF	Eco
		Normal	360 x 360 dpi	ON	VSD1
Photo copy	Photo Paper	Best Photo	1440 x 720 dpi	ON	VSD3

Note*: Print mode for the Color copy and B&W copy is selectable as described below:

Fast Economy: Press Color Text (or B&W Text for B&W copy) button and Stop button simultaneously.

Normal: Press Color Text (or B&W Text for B&W copy) button.

Table 1-13. Copy Mode (Enlarging/Reducing)

Copy Button	Copy Mode	Enlarge/Reduce	Margins	Description
B&W Text	Standard	100%	3 mm	Copies A4/Letter original to the same size
Color Text	Standard	Fit to page	3 mm	Enlarges or reduces to A4/Letter
Color Photo	Borderless	Fit to page	0 mm	Enlarges or reduces to 4" x 6"/L size

Note*: "Fit to page" automatically sets the enlarge/reduce scale. When an original is smaller than general card size (approx. 54mm x 86mm), the margins will be different from those shown in the table.

COPY SPEED

Table 1-14. Copy Speed

UI Paper Type	Print Mode	Black	Color
Plain Paper (A4/Letter)	Fast Economy	5 sec.* ¹	14 sec.* ¹
	Normal	20 sec.* ¹	72 sec.* ¹
Photo Paper (4" x 6")	Best Photo	-	380 sec.* ²

Note *1: When printing "e-memo Pattern" on Plain Paper.

*2: Borderless printing

COPY AREA

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

Table 1-15. 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 1-16. Copy (printer)

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

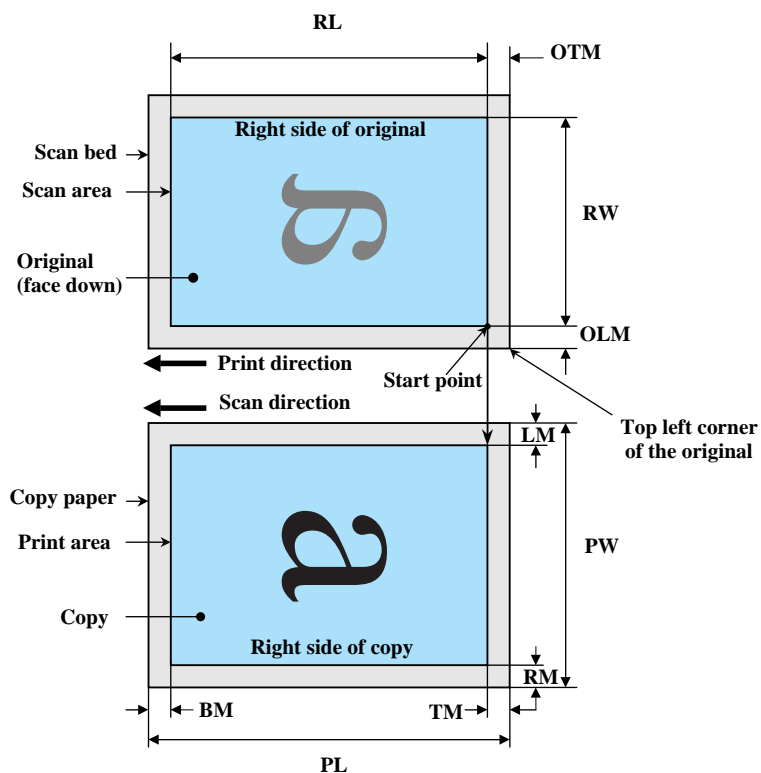


Figure 1-5. Standard Copy

BORDERLESS COPY

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

Table 1-17. 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 1-18. Copy (printer)

RO	LO	TO	BO
2.5 mm	2.5 mm	2.8 mm	3.6 mm

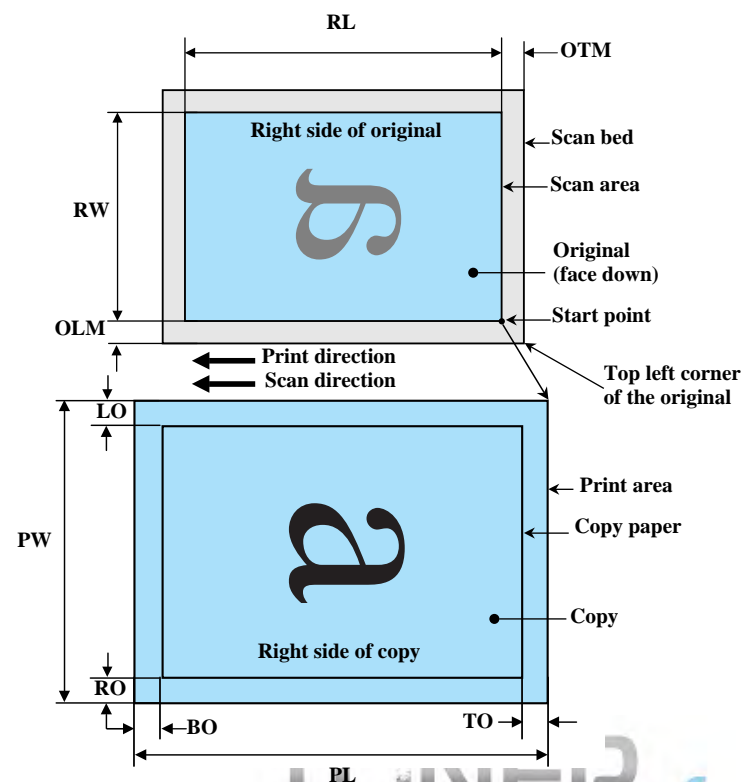


Figure 1-6. Borderless Copy

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1.2.4 Electrical Specifications

□ Primary power input

Table 1-19. Primary Power Input

Item		100-120 V model	220-240 V model
Rated power supply voltage		100 to 120 VAC	220 to 240 VAC
Input voltage range		90 to 132 VAC	198 to 264 VAC
Rated current		0.6A (max. 0.7)	0.3A (max. 0.4)
Rated frequency		50 to 60 Hz	
Input frequency range		49.5 to 60.5 Hz	
Dielectric strength		1500 ACVrms for one minute	
Energy conservation		International Energy Star Program compliant	
Power consumption	Printing (black text on plain paper)	13.3 W	13.8 W
	Printing (color draft on plain paper)	17.9 W	17.7 W
	Copying (normal BK mode)	15.3 W	15.6 W
	Copying (draft BK mode)	21.6 W	22.0 W
	Scanning	10.5 - 13.6 W	10.5 - 14.1 W
	Sleep mode	3.8 W	3.8 W
	Standby mode (power-off)	1 W	1 W

Note 1: If the printer is not operated for more than **five minutes (T.B.D.)**, the standby function reduces the current to the motor to conserve power.

2: If the scanner is not operated for more than **five minutes (T.B.D.)**, the standby function reduces the current to the motor to conserve power.

3: If the control panel is not operated for more than **thirteen minutes (T.B.D.)**, the control panel turns to the power save mode within **fifteen minutes (T.B.D.)**.

1.2.5 Environmental Conditions

Table 1-20. Environmental Performance

Condition	Temperature	Humidity* ²	Shock	Vibration
Operating	10 to 35°C (50 to 95°F)	20 to 80%* ³	1G (1 msec or less)	0.15G (X,Y,Z directions)
Transporting* ¹	-20 to 60°C* ³ (-4°F to 140°F)	5 to 85%	2G (2 msec or less)	1.5G (X,Y,Z directions)

Note *1: Packed in the original package

*2: No condensation

*3: 120 hours at 60°C, One month at 40°C

Note : The combined Temperature and Humidity conditions must be within the blue-shaded range shown below.

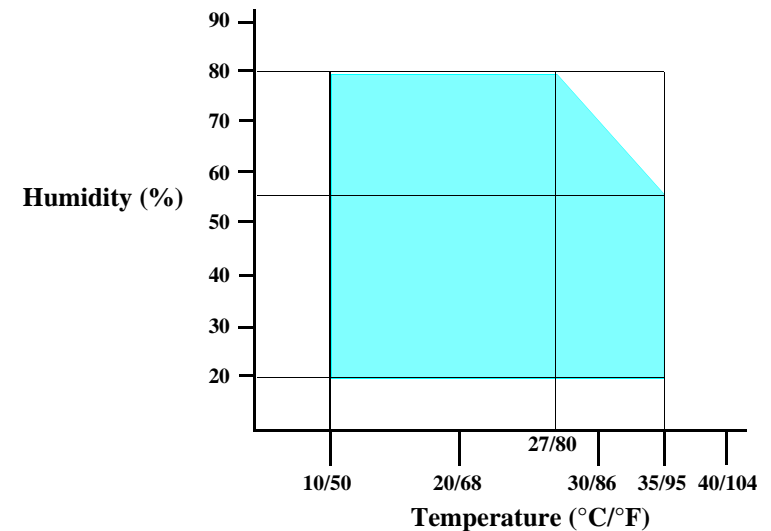


Figure 1-7. Temperature/Humidity Range



1.2.6 Durability

- ☐ Total print life: 10,000 pages (black only, A4), or three years (whichever comes first)
- ☐ Printhead life: Seven billion shots (per nozzle) or five years (whichever comes first)
- ☐ Scanner head: 36,000 cycles (MCBF)

1.2.7 Acoustic Noise

Maximum 47 dB
(printing ECMA pattern on Premium Glossy Photo Paper in Best Photo mode)

1.2.8 Safety approvals (Safety standards/EMI)

USA	UL60950-1 FCC Part15 Subpart B Class B
Canada	CAN/CSA-C22.2 No.60950-1 CAN/CSA-CEI/IEC CISPR 22 Class B
Mexico	NOM-019-SCFI-1998
Taiwan	CNS13438 Class B CNS14336
EU	EN60950-1 EN55022 Class B EN61000-3-2, EN61000-3-3 EN55024
Germany	EN60950-1
Russia	GOST-R (IEC60950-1, CISPR 22)
Singapore	IEC60950-1
Korea	K60950-1 KN22 Class B KN61000-4-2/-3/-4/-5/-6/-11
Hong Kong	IEC60950-1
Argentina	IEC60950-1
Australia	AS/NZS CISPR22 Class B

1.2.9 Interface

The printer has a USB interface of the following specification.

- ☐ 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 1-21. Device ID (T.B.D)

Product Name	Device ID	Product Name	Device ID
CX4300	[00H][60H] MFG:EPSON; CMD:ESCPL2,BDC,D4,ESCPR1; MDL:Stylus[SP]CX4300; CLS:PRINTER; DES:EPSON[SP]Stylus[SP]CX4300;	CX5600	[00H][60H] MFG:EPSON; CMD:ESCPL2,BDC,D4,ESCPR1; MDL:Stylus[SP]CX5600; CLS:PRINTER; DES:EPSON[SP]Stylus[SP]CX5600;
CX4400	[00H][60H] MFG:EPSON; CMD:ESCPL2,BDC,D4,ESCPR1; MDL:Stylus[SP]CX4400; CLS:PRINTER; DES:EPSON[SP]Stylus[SP]CX4400;	DX4400 DX4450	[00H][60H] MFG:EPSON; CMD:ESCPL2,BDC,D4,ESCPR1; MDL:Stylus[SP]DX4400; CLS:PRINTER; DES:EPSON[SP]Stylus[SP]DX4400;
CX5500	[00H][60H] MFG:EPSON; CMD:ESCPL2,BDC,D4,ESCPR1; MDL:Stylus[SP]CX5500; CLS:PRINTER; DES:EPSON[SP]Stylus[SP]CX5500;		



1.2.10 Control Panel

BUTTONS

The five buttons on the control panel functions as shown below.

Table 1-22. Buttons

Button	Function
Power	Turns the power on or off.
Stop	<ul style="list-style-type: none"> • Job cancel • Head cleaning • Ink Cartridge replacement
Color Photo	<ul style="list-style-type: none"> • Photo copy • Recovery from an error state
B&W Text	<ul style="list-style-type: none"> • B&W copy (100% scale with 3 mm margins, or Fit to page) • Recovery from an error state
Color Text	<ul style="list-style-type: none"> • Color copy (100% scale with 3 mm margins, or Fit to page) • Recovery from an error state

Note *: See “1.2.11 Button Functions in Stand-alone Copy” (p.21) for more details.

INDICATORS (LED)

The three LEDs on the control panel indicates printer status as shown below.

Table 1-23. Indicators (LEDs)

LED	Function
Power LED [Green] *1	Flashes during power-on and power-off sequence. Flashes during some operation (printing, scanning, copying or cleaning) is in process. Lights at stand-by.
Ink LED [Orange]	Flashes or lights to indicate an ink-related status or error.*2
Paper LED [Orange]	Flashes or lights to indicate a paper-related status or error.*2

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

*2: See “1.2.12 Errors and Panel Status” (p.21) for more details.

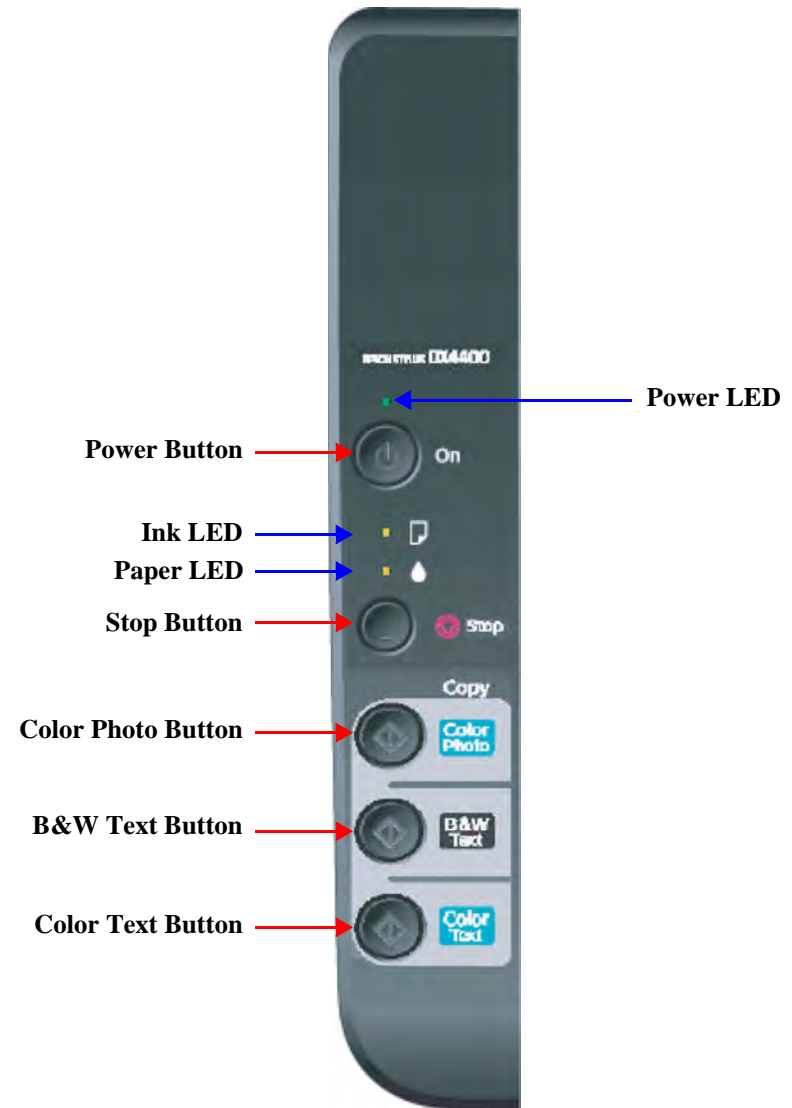


Figure 1-8. Control Panel

Note : Figure 1-8 is the control panel of the model for US/ESP/EAL. The button names or other indications printed on the panel differ depending on the destination.

1.2.11 Button Functions in Stand-alone Copy

The functions of the buttons in stand-alone copy mode are described in the table below.

Table 1-24. Buttons

Button	Function
Power	Turns the power on or off.
Stop	<ul style="list-style-type: none"> • Job cancel Cancels a print or copy job, and ejects paper if paper has been fed inside. • Head cleaning Runs a head cleaning cycle when pressed for three seconds or longer. If there is not enough ink for the cleaning, the cleaning is automatically cancelled and the printer indicates Ink out error. • Ink Cartridge replacement Moves the carriage to the position for replacing an ink cartridge(s) when pressed during Ink out error or No ink cartridge error. Starts ink charging when pressed after replacing the ink cartridge(s).
Color Photo	<ul style="list-style-type: none"> • Photo copy Makes a color copy on 4x6 or L-sized Photo Paper. • Recovery from an error state Executes the remaining job when pressed after the error cause is removed.
B&W Text	<ul style="list-style-type: none"> • B&W copy (100% scale with 3 mm margins) Makes a B&W copy on A4 or Letter-sized Plain Paper. • B&W copy (Fit to page) When pressed for three seconds or longer, makes a B&W copy on A4 or Letter-sized Plain Paper enlarging or reducing the original image to fit it to the paper size. • Recovery from an error state Executes the remaining job when pressed after the error cause is removed.
Color Text	<ul style="list-style-type: none"> • Color copy (100% scale with 3 mm margins) Makes a color copy on A4 or Letter-sized Plain Paper. • Color copy (Fit to page) When pressed for three seconds or longer, makes a color copy on A4 or Letter-sized Plain Paper enlarging or reducing the original image to fit it to the paper size. • Recovery from an error state Executes the remaining job when pressed after the error cause is removed.
B&W Text + Stop	Makes a B&W copy on A4 or Letter-sized Plain Paper in Fast Economy print mode. (100% scale with 3 mm margins)

Table 1-24. Buttons

Button	Function
Color Text + Stop	Makes a color copy on A4 or Letter-sized Plain Paper in Fast Economy print mode. (100% scale with 3 mm margins)
B&W Text + Power	(Only for Latin models) Selects Letter size for B&W and Color copy.
Color Text + Power	(Only for Latin models) Selects A4 size for B&W and Color copy.

1.2.12 Errors and Panel Status

Table 1-25. Errors and Panel Status

Error	LED status	Cause	Recovery	Priority
Fatal error	All LEDs flash	Mechanical trouble	Turn the power Off. Remove the cause and turn the power back on. If the error still occurs, call service.	1
Maintenance request	All LEDs lights	Some internal part needs to be replaced	Call service.	2
Paper jam	Paper LED flashes	A paper jam has occurred	Remove the paper and press B&W or Color Text button to continue, or press Stop button to cancel the job.	3
Paper out	Paper LED lights	Failed to load the paper.	Load paper on the ASF correctly, and press B&W or Color Text button to continue, or press Stop button to cancel the job.	3
Ink out	Ink LED lights	Some cartridge has run out of ink.	Replace the cartridge with EPSON genuine one.	4
No Ink Cartridge	Ink LED lights	Some cartridge was not detected.	Replace the cartridge with EPSON genuine one.	4
Incorrect Ink Cartridge	Ink LED lights	An incorrect cartridge was detected.	Replace the cartridge with EPSON genuine one.	4

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

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1.2.13 Power Save Mode

Without any panel operation for **15 minutes (T.B.D.)** 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 1-26. 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.

1.2.14 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.

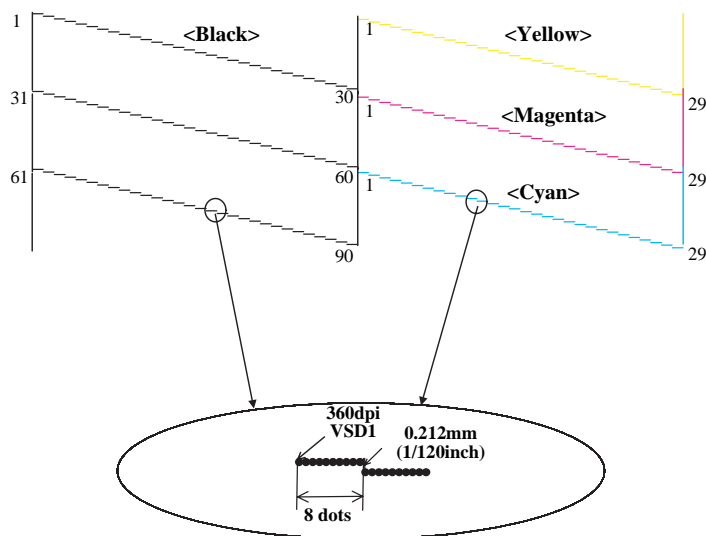


Figure 1-9. Nozzle check pattern

1.2.15 Printer Initialization (T.B.D)

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

1. Power-on initialization

This printer is initialized when turning the printer power on, or printer recognized the cold-reset command (remote RS command).

When printer is initialized, the following actions are performed.

- (a) Initializes printer mechanism
- (b) Clears input data buffer
- (c) Clears print buffer
- (d) Sets default values

2. Operator initialization

This printer is initialized when turning the printer power on again within 10 seconds from last power off, or printer recognized the -INIT signal (negative pulse) of parallel interface.

When printer is initialized, the following actions are performed.

- (a) Cap the printer head
- (b) Eject a paper
- (c) Clears input data buffer
- (d) Clears print buffer
- (e) Sets default values

3. Software initialization

The ESC@ command also initialize the printer.

When printer is initialized, the following actions are performed.

- (a) Clears print buffer
- (b) Sets default values

4. Power-on initialization except I/F

The printer recognized the IEEE 1284.4 "rs" command.

When printer is initialized, the following action is performed.

- (a) Initializes printer mechanism
- (b) Clears input data buffer
- (c) Clears print buffer
- (d) Sets default values except I/F



CHAPTER

2

OPERATING PRINCIPLES

2.1 Overview

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

2.2 Printer Mechanism

Printer mechanism of Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450 consists of printhead, carriage mechanism, paper loading/feeding mechanism, and ink system.

As in the case of conventional models, Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450 has two motors; one is a stepping motor for paper loading/feeding mechanism, and the other is a DC motor for carriage mechanism.

Papers are fed from the backside and ejected from the front side of the printer. Paper feeding mechanism feeds papers using the LD roller and the retard roller.

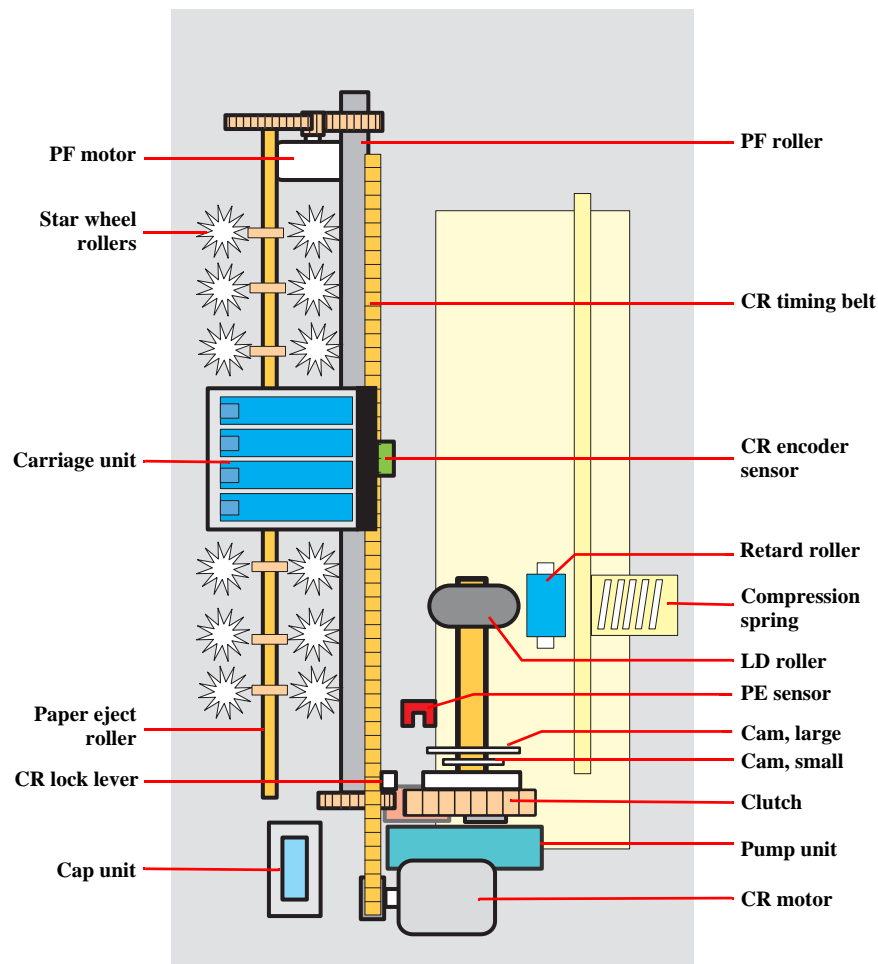


Figure 2-1. Printer Mechanism Outline

2.2.1 Printhead Specifications

The Printhead of this product is a D2-CHIPS type.

□ Nozzle configuration

- Monochrome 90 nozzles
- Color 29 nozzles x 3 (Cyan, Magenta, Yellow)

The following shows the arrangement of the nozzles and the color arrangement of each nozzle line when viewed the printhead from behind.

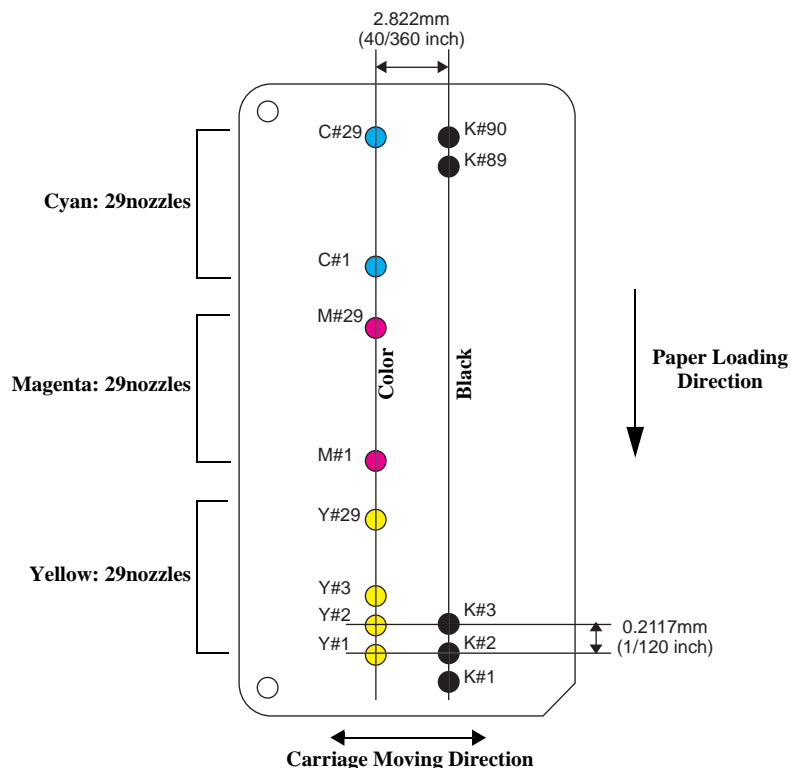


Figure 2-2. Nozzle Rear View

2.2.2 Carriage Mechanism

Main components of the carriage mechanism are carriage unit (including printhead, CR encoder sensor), CR motor, timing belt, and CR scale.

2.2.2.1 CR Motor Specifications

Table 2-1. CR Motor Specifications

Item	Specification
Type	Motor with DC brush
Drive voltage	+42 V \pm 5% (applied voltage to the driver)
Electric resistance	28.8 Ω \pm 10%
Inductance	20.1 mH \pm 25%
Drive method	PWM, constant-current chopping
Drive IC	A6628

2.2.3 Paper Feeding Mechanism

Paper loading/feeding mechanism consist of CR lock lever inside the ink system, LD roller shaft (including clutch mechanism), and ASF unit.

CR lock lever and clutch mechanism play an important role in paper loading mechanism. Refer to [2.2.3.2 Drive Process \(p26\)](#) for details.

2.2.3.1 PF Motor Specifications (For both ASF and Pump motor)

Table 2-2. PF Motor Specification

Item	Specification
Type	4-phase, 48-pole PM stepping motor
Drive voltage	+42 V \pm 5% (applied voltage to the driver)
Wire wound resistance	4.3 Ω +8 / -12% (per one phase at 20 °C)
Inductance	5.5 mH \pm 20% (1KH, 1Vrms)
Drive method	Bipolar drive 2-2 phase, 1-2 phase, W1-2phase, 2W1-2phase, 4W1-2 phase constant-current drive
Drive IC	A6628

2.2.3.2 Drive Process

1. Drive of the PF motor is always transmitted to the paper eject roller and the PF roller, however, it is not transmitted to the LD roller and the retard roller owing to the clutch of the LD roller shaft.
2. The carriage unit moves to the ASF trigger position once the paper loading command is received.
3. PF motor is rotated counter clockwise, and the clutch is released by the CR lock lever.
4. After the clutch is released, the PF motor rotates clockwise. Drive is transmitted to the LD roller and the paper loading operation begins.
5. During paper loading operation, papers are fed from the ASF unit to inside the printer by the rotating movement of the two cams of the LD roller.
 - Cam, large:releases hopper
 - Cam, small:releases paper back lever
6. Once a sheet of paper is fed, the hopper and the paper back lever bring back rest of the papers to the position in readiness by the rotating movement of the two cams mentioned above.
7. When the LD roller is turned a full circle, the CR lock lever release the clutch and the drive to the LD roller is interfered.

2.2.4 Ink System Mechanism

The Ink system mechanism consists of pump mechanism and capping mechanism that includes wiper mechanism.

2.2.4.1 Pump Unit Mechanism

When the PF motor turns, power is always transmitted to the ink system.

Table 2-3. PF Motor Rotational Direction & Ink System Mechanism

Direction*	Function
Counterclockwise	Absorbs the ink by the Pump Unit
Clockwise	Release pump.

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

2.2.4.2 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.

2.3 Scanner Mechanism

The Scanner Mechanism of Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450 are constructed of a Scanner Carriage Unit, Scanner Motor, 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 CX4300/CX4400/CX5500/CX5600/DX4400/DX4450 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.

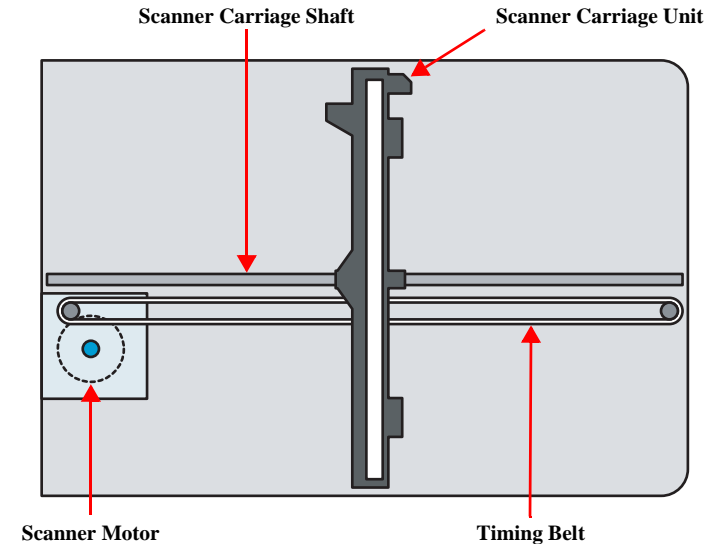


Figure 2-3. Scanner Mechanism

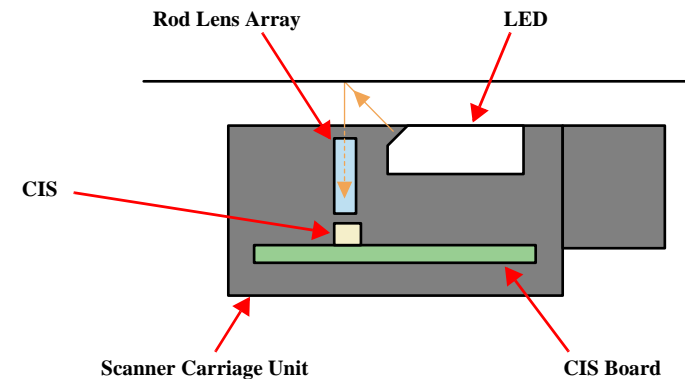


Figure 2-4. Scanning image

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.

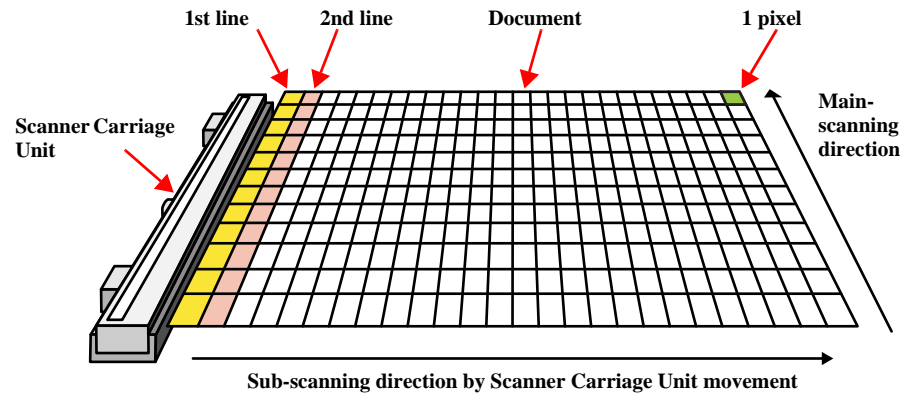


Figure 2-5. Scanner Carriage Unit movement

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

Table 2-4. 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	L6219

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.

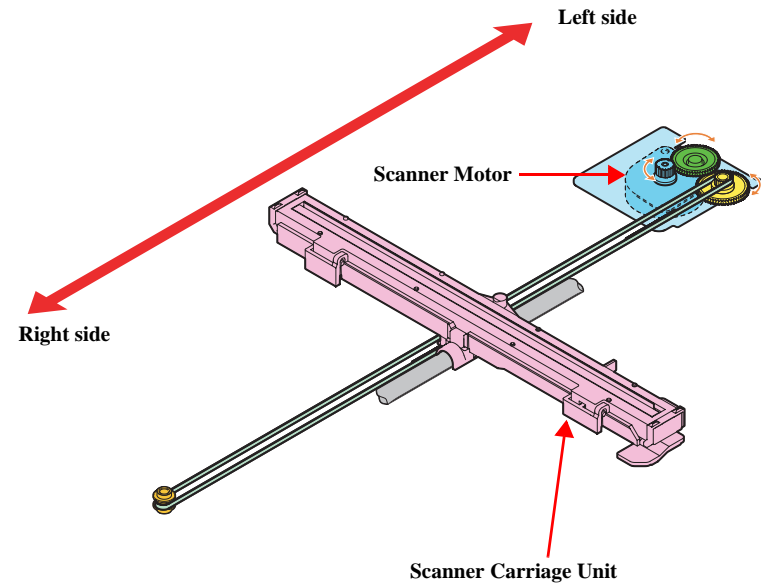


Figure 2-6. Scanner Carriage Unit Mechanism

2.4 Electrical Circuit Operating Principles

The electric circuit of Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450 consists of the following boards:

- Main board: PCBA MB
- Power supply board: ASSY POWER 110V/220V
- Panel board: PCBA PB

The figure below shows the block diagram of this printer.

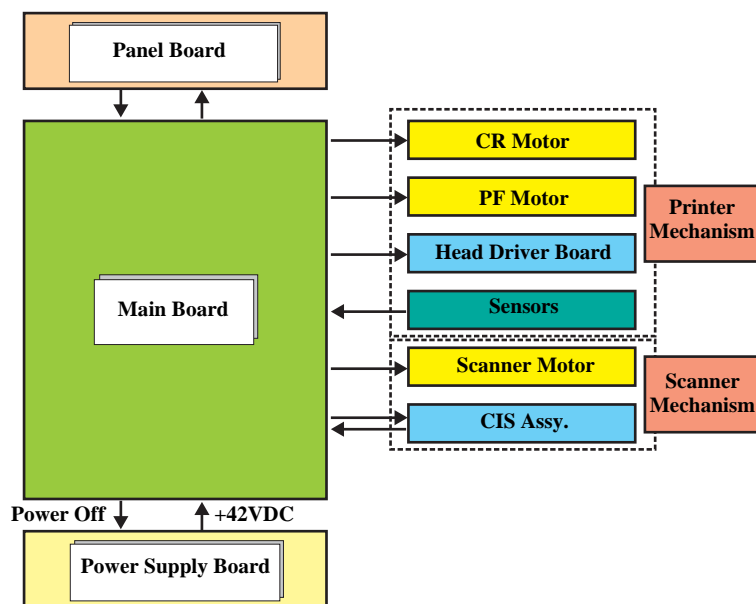


Figure 2-7. Electrical Circuit Block Diagram

2.4.1 Power Supply Board

In the Power Supply Board of Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450, the simulated oscillating stimulation flyback converter circuit method is used, and it supplies +42 VDC to the drive line. The application of the output voltage is described below.

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 led to the switching circuit and FET QF1 performs the switching operation. By the switching operation of the primary circuit, +42VDC is generated and stabilized at the secondary circuit.

2.4.2 Main Board

The logic circuit of the Main Board is composed of the following:

- Logic line (CPU-ASIC 4 in 1, Flash-ROM and so on)
- Motor control/drive circuit (CR Motor, PF Motor, Scanner Motor)
- Head control/drive circuit
- USB I/F circuit
- Sensor circuit
- Reset circuit, EEPROM circuit

Table 2-5. Main Board Major Components and Primary Functions

IC	Location	Function
CPU-ASIC	U3	Drives CPU (H8S/2674 base), internal 8 K byte x 4 RAM, 24 Mhz, 3.3 V/1.8V
SDRAM	U4	3.3 V drive 4M x 16 bit DRAM
Serial Flash	U5	3.3 V drive 4 M bit Serial Flash that stores the program
Motor Driver	U6	Scanner motor drive; adjusts 5 V, drives 42 V
	U7	CR/PF motor drive; adjusts 5 V, drives 42 V
RTC	U9	<ul style="list-style-type: none"> • EEPROM Default settings, backup for all parameters • Reset function • Timer function
DAC	U10	Generates trapezoidal waveform, drives 3.3 V

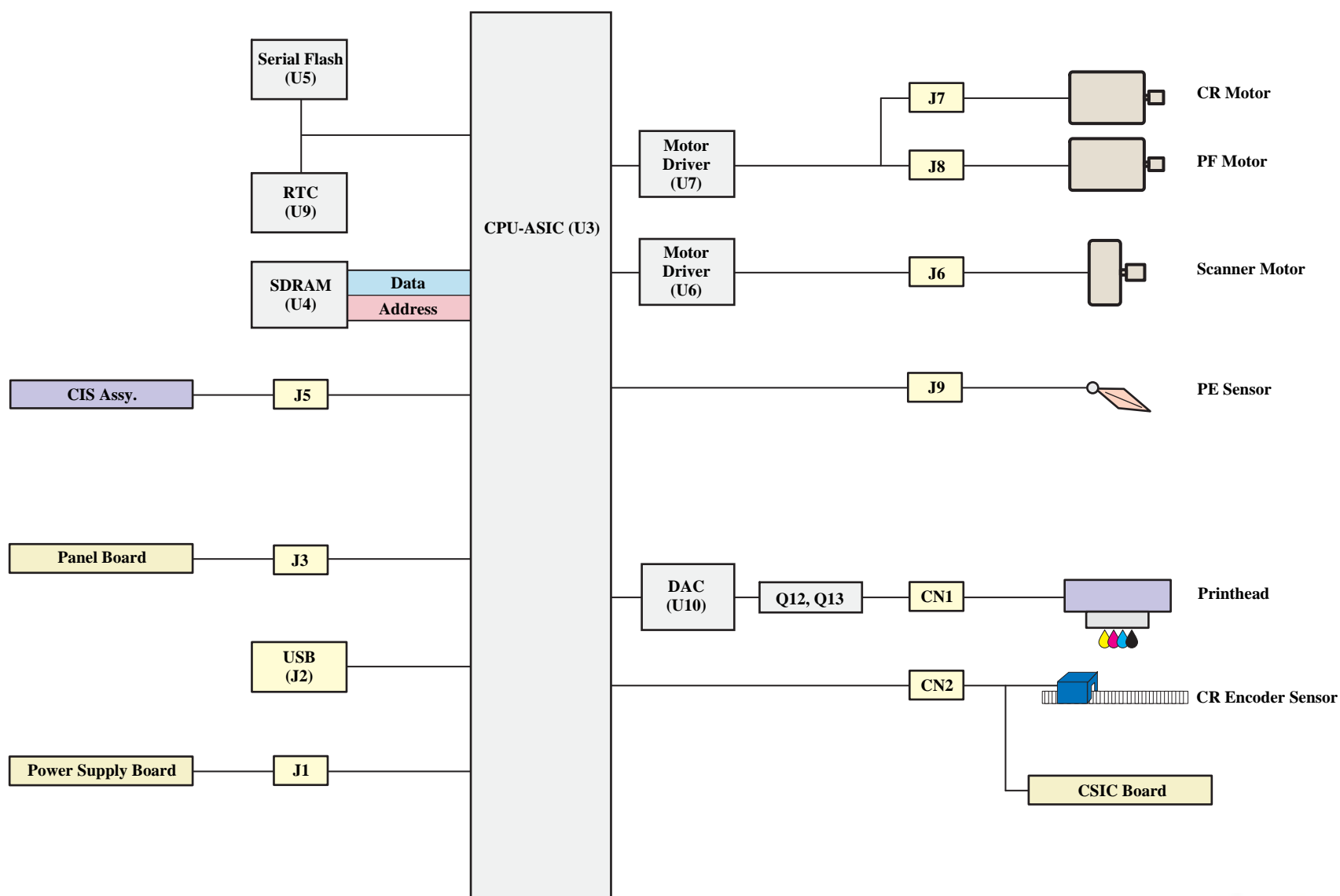


Figure 2-8. Main Board Block Diagram

CHAPTER

3

TROUBLESHOOTING



3.1 Overview

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

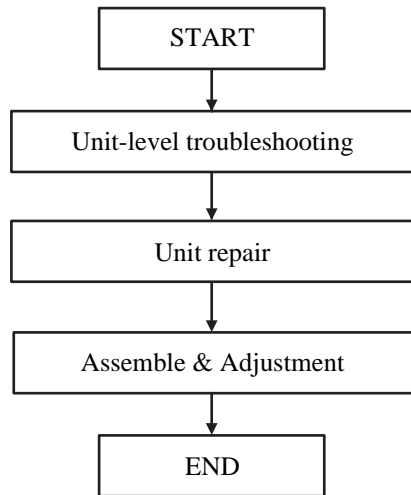


Figure 3-1. Troubleshooting flowchart

Table 3-1. Motor, coil resistance

Motor	Motor Type	Location	Check point	Resistance
Scanner motor	Stepping motor	J6	Pin 1 and 3 Pin 2 and 4	37Ω ± 10% (T.B.D.)
PF motor	4-phase, 48-pole, PM Stepping motor	J8	Pin 1 and 3 Pin 2 and 4	4.3Ω+8/-12% (20°C)

Note : The CR motor is DC motor. Since the resistance of the DC motor varies among the electric poles, resistance value cannot be used to check the DC motor. When a malfunction of the CR motor is suspected, check the motor if it moves normally or not. 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	J9 / Pin 1 and 2	Less than 0.4V	Off: No paper
		More than 2.4V	On : Detect the paper

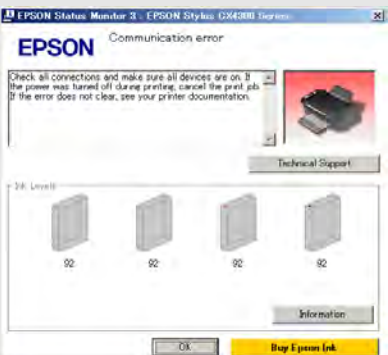
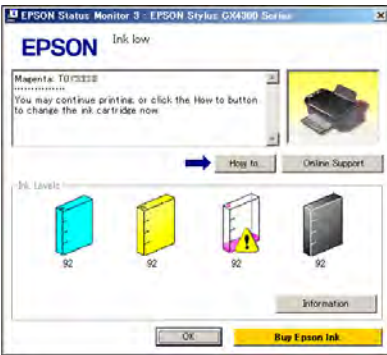

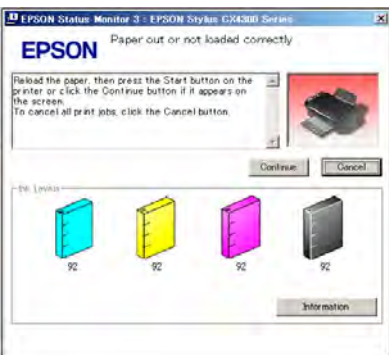
3.2 Error Indications and Fault Occurrence Causes

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 CX4300/CX4400/CX5500/CX5600/DX4400/DX4450, 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 1-3 (p.10))

Table 3-3. Error Indications and Fault Occurrence Causes

Printer Status		Communication Error	Ink Low	Double Feed	Paper Out
Indications	Power	—	—	—	—
	Ink	—	—	—	—
	Paper	—	—	—	On
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 37	---	Table 3-8, "Check point for double feed error according to each phenomenon," on page 39	Table 3-9, "Check point for paper out error according to each phenomenon," on page 40

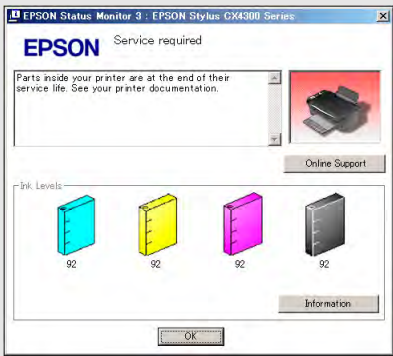

Note : "—" : No change

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	—	—	—	—
	Ink	On	On	On	—
	Paper	—	—	—	On
Status monitor 3 message					
Fault Occurrence Cause		This error is detected when; <ul style="list-style-type: none"> The ink consumption amount reaches 100%. The ink cartridge is defective. Note : The slight amount of the ink is remaining in the I/C even if the Replace Ink Cartridge error is detected. This is to prevent the Print Head nozzle from the printing operation without firing the ink.	This error is detected when data from CSIC cannot be read normally or when data cannot be written to CSIC.	This error is detected when; <ul style="list-style-type: none"> An unsupported ink cartridge has been installed. An ink cartridge with a different destination has been installed. 	This error is detected when the PE Sensor cannot properly detect the paper bottom edge during feeding of paper.
Reference Page		Table 3-10, "Check point for no ink cartridge/CSIC error/incorrect ink cartridge according to each phenomenon," on page 43	Table 3-10, "Check point for no ink cartridge/CSIC error/incorrect ink cartridge according to each phenomenon," on page 43	Table 3-10, "Check point for no ink cartridge/CSIC error/incorrect ink cartridge according to each phenomenon," on page 43	Table 3-11, "Check point for paper jam error according to each phenomenon," on page 44

Note : "—" : No change

Table 3-5. Error Indications and Fault Occurrence Causes

Printer Status		Maintenance Request	Fatal Error (Mechanism)
Indications	Power	On	Blink
	Ink	On	Blink
	Paper	On	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		“5.2.3 Waste Ink Pad Counter” (p.XXX) (T.B.D.).	Table 3-12, “Check point for fatal error according to each phenomenon,” on page 47

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

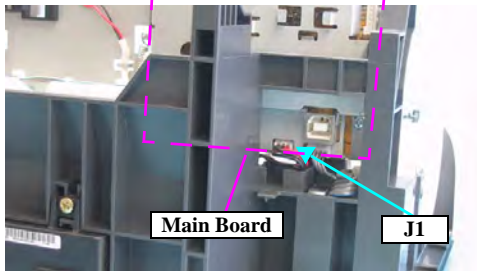
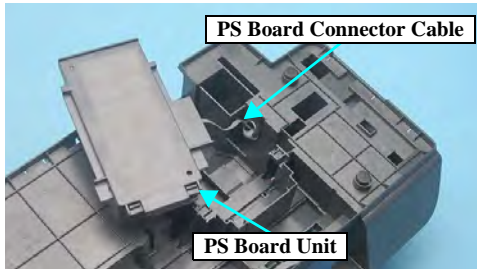
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	When turning on the power, the SPC does not operate at all.	Panel Unit	1. Check if the Panel Board is not damaged.	1. Replace the Panel Board with new one.
<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 J1 on the Main Board. 	1. Connect the PS Board Connector Cable to J1 on the Main Board.
			2. Check if the PS Board Connector Cable/PS Board is not damaged. 	2. Replace the PS Board Unit with new one. * If the problem is not solved, replace the Main Board with new one.

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

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> 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 J3 on the Main Board.	2. Connect the Panel FFC to the J3 on the Main Board.

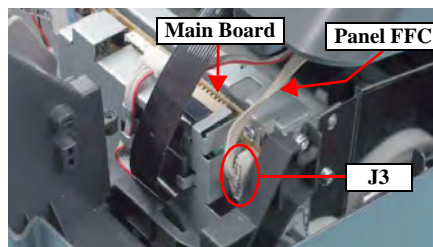


Table 3-7. Check point for error before the initial ink charge according to each phenomenon

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> 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

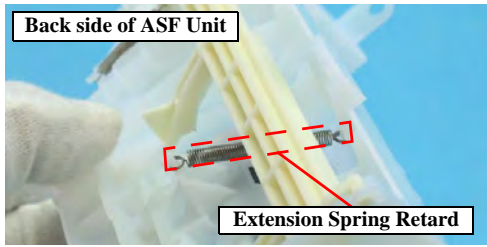
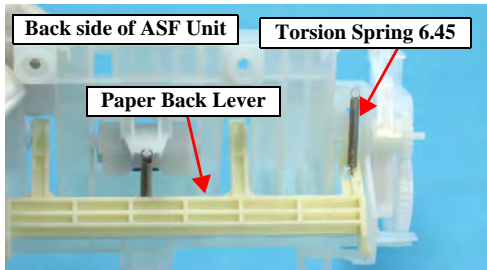
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Operation – 	After both surfaces were printed, the paper was ejected but an error is displayed.	ASF Unit	1. Check if the Extension Spring Retard operates correctly in the paper 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

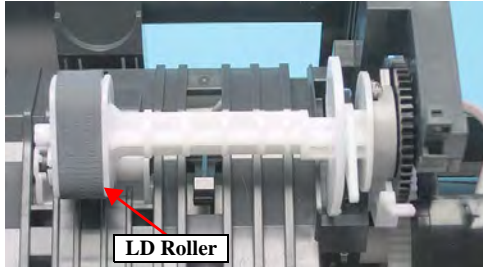
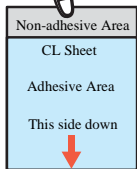
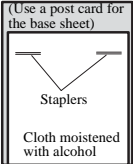
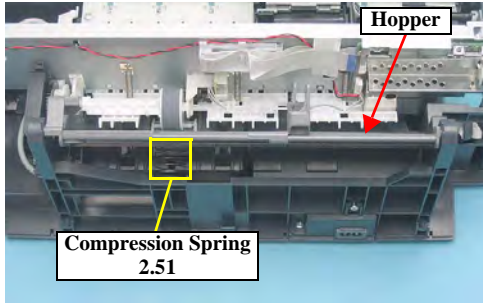
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Operation – 	The LD Roller cannot pick up paper, although the LD Roller attempt to rotate correctly.	LD Roller	<p>1. Check if any paper dust is not adhered to the surface of the LD Roller.</p> 	<p>1. Set a cleaning sheet in the ASF Unit up side down. Then holding the top edge, try to load the paper from the Printer driver. The micro pearl on the LD Roller surface is removed. To remove severe smear, staple a cloth moistened with alcohol to a post card and clean the roller in the same manner.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Non-adhesive Area</p> <p>CL Sheet</p> <p>Adhesive Area</p> <p>This side down</p>  </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>(Use a post card for the base sheet)</p>  <p>Staplers</p> <p>Cloth moistened with alcohol</p> </div> </div> <p>*If the problem is not solved, replace the LD Roller with new one.</p>
<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.	Hopper	<p>1. Check if the Hopper operates correctly in the paper loading sequence.</p> 	<p>1. Reassemble the Compression Spring 2.51 between the ASF Frame and the Hopper.</p>

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

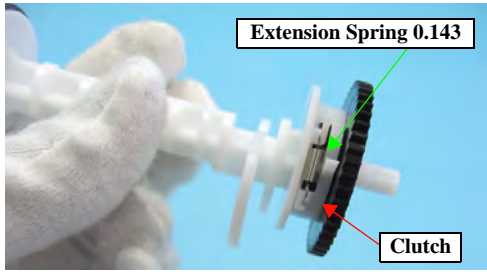
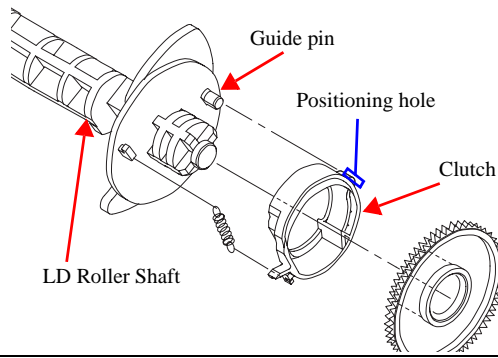
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • – 	The drive of the PF Motor is not transmitted to the LD Roller Shaft.	ASF Unit	1. Check if the Extension Spring 0.143 does not come off in the Clutch mechanism.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

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

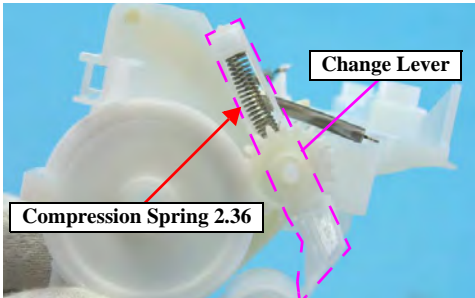
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • – 	The drive of the PF Motor is not transmitted to the LD Roller Shaft.	ASF Unit	1. Check if the Compression Spring 2.36 does not come off in the Change Lever.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

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

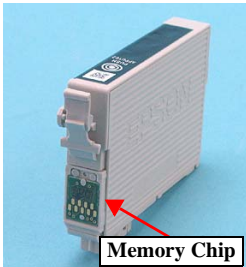
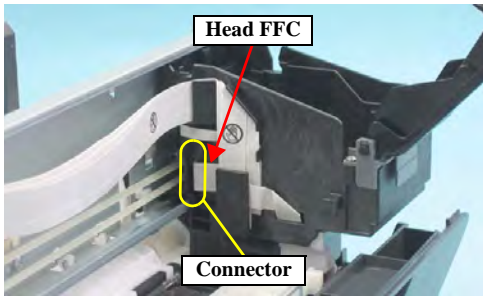
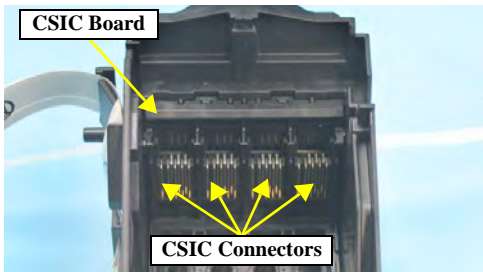
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Inside HP 	After the Carriage has detected the HP, an error is displayed.	Ink Cartridge	1. Check if Ink Cartridge is properly installed. 2. Check if the Memory Chip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

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

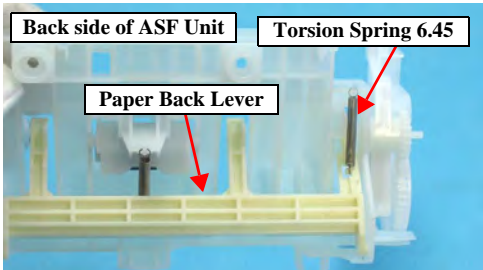
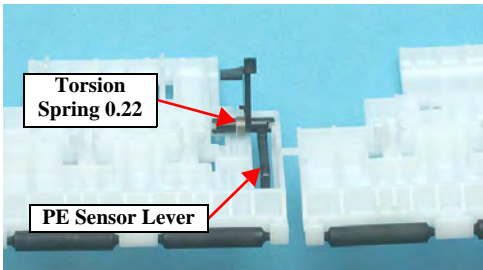
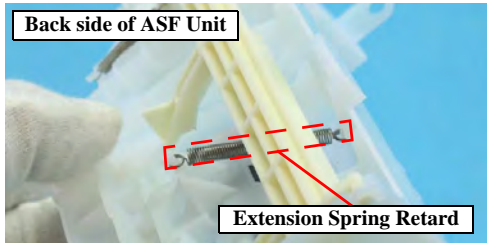

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> • Operation • Outside HP 	The paper feeding sequence is performed without loading paper in the paper loading sequence.	ASF Unit	1. Check if the ASF Unit is properly installed.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

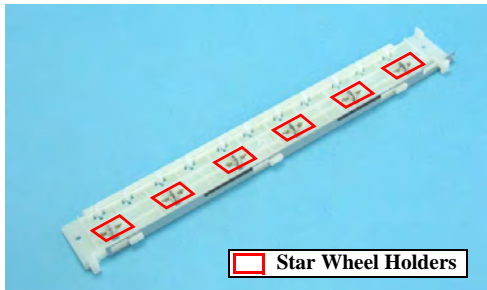
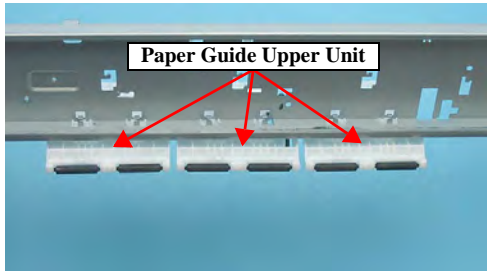
Table 3-11. Check point for paper jam error according to each phenomenon

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.	Paper Guide Upper 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 Assy**	1. Check if the EJ Frame Assy is correctly assembled. 	1. Reassemble the EJ Frame Assy 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 Assy*	2. Check if the Star Wheel Holders does not come off. 	2. Reassemble the Star Wheel Holders correctly.
			3. Check if the Spur Gear 36 is not damaged.	3. Replace the EJ Frame Assy 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.

* 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

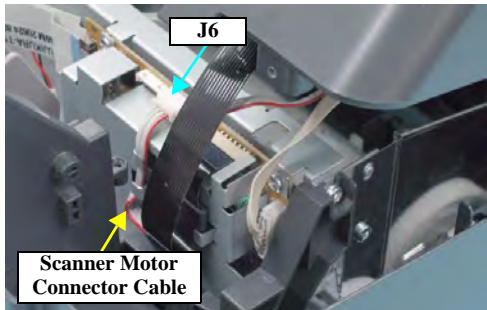
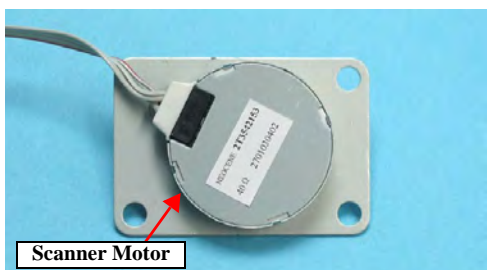
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	The Scanner Unit does not initialize when the power is turned on.	Scanner Motor	1. Check if the Scanner Motor Connector Cable is connected to J6 on the Main Board. 	1. Connect the Scanner Motor Connector Cable to J6 on the Main Board.
			2. Check if the coil resistance of the Scanner Motor is about 37Ω (T.B.D.) 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

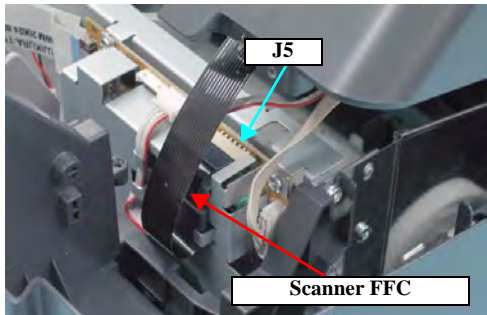

Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	The Scanner Unit does not initialize when the power is turned on.	Scanner FFC	1. Check if the Scanner FFC is connected to J5 on the Main Board. 	1. Connect the Scanner FFC to J5 on the Main Board.
			2. Check if the Scanner FFC is not damaged.	2. Replace the Scanner FFC with a new one.
<ul style="list-style-type: none"> Power on Anywhere 	The Scanner Unit does not initialize when the power is turned on.	CIS Assy.	1. Check if the CIS Assy. is not damaged. 	1. Replace the CIS Assy. with a new one.

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

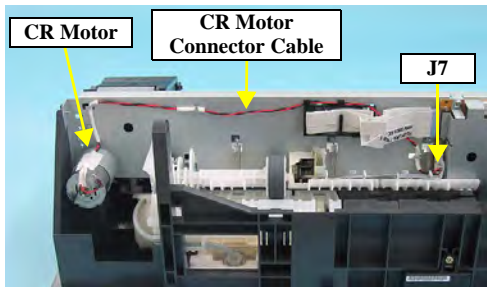
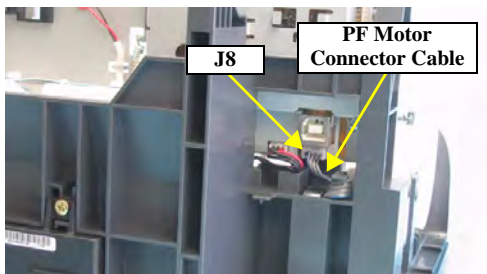
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	When turning on the power, the CR Motor does not operate at all.	CR Motor	1. Check if the CR Motor Connector Cable is connected to J7 on the Main Board.	1. Connect the CR Motor Connector Cable to J7 on the Main Board.
				
			2. Check if the CR Motor Connector Cable is not damaged.	2. Replace the CR Motor with a new one.
	When turning on the power, the PF Motor does not operate at all.	PF Motor	3. Check if the CR Motor operates.	3. Replace the CR Motor with a new one.
			1. Check if the PF Motor Connector Cable is connected to J8 on the Main Board.	1. Connect the PF Motor Connector Cable to J8 on the Main Board.
				
			2. Check if the coil resistance of the PF Motor is about 4.3Ω by using the tester (<i>refer to Table 3-1</i>)	2. Replace the PF Motor with a new one.
			3. Check if the PF Motor Connector Cable is not damaged.	3. Replace the PF Motor with a new one.
			4. Check if the PF Motor operates.	4. Replace the PF Motor with a new one.

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

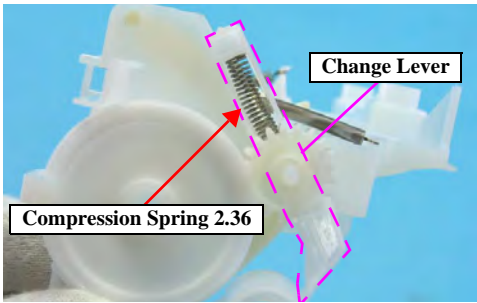
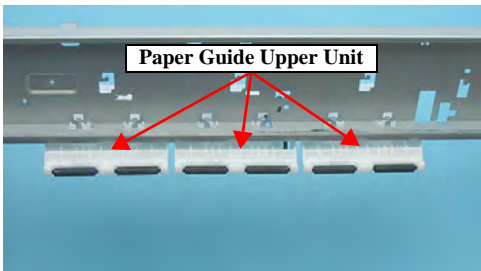
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	When turning on the power, the Carriage Unit collides to the Change Lever located to the front side of the printer.	PF Motor	1. Check if the PF Motor Connector Cable is connected to J8 on the Main Board.	1. Connect the PF Motor Connector Cable to J8 on the Main Board.
			2. Check if the coil resistance of the PF Motor is about 4.3Ω by using the tester (<i>refer to Table 3-1</i>)	2. Replace the PF Motor with a new one.
			3. Check if the PF Motor Connector Cable is not damaged.	3. Replace the PF Motor with a new one.
			4. Check if the PF Motor operates.	4. Replace the PF Motor with a new one.
		ASF Unit	1. Check if the Compression Spring 2.36 does not come off in the Change Lever. 	1. Replace the ASF 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

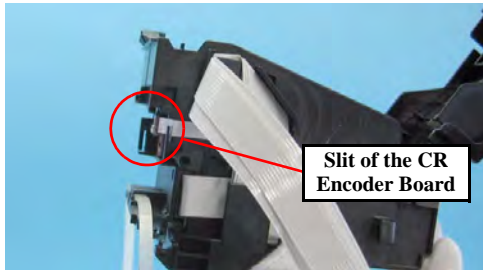
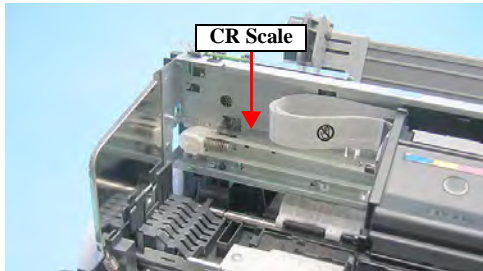
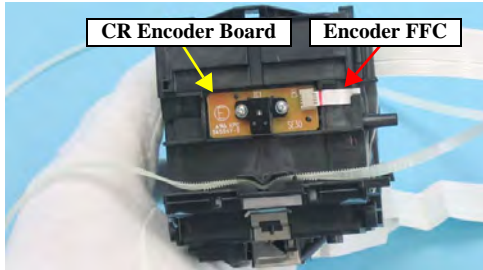
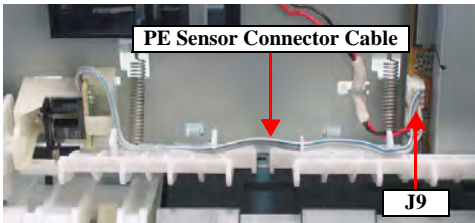
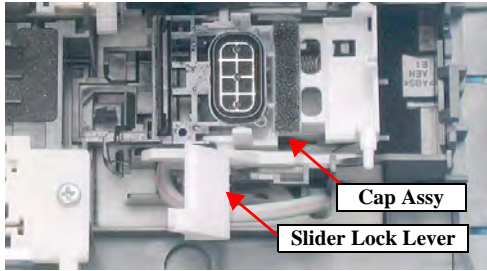
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Power on Anywhere 	When turning on the power, the Carriage Unit collides to the right side of the Main Frame.	CR Scale	1. Check if the CR Scale does not come off or it properly passes through the slit of the CR Encoder Board.	1. Reassemble the CR Scale correctly. * If the problem is not solved, replace the Main Board with a new one.
			 Slit of the CR Encoder Board	
		CR Encoder Board	2. Check if the CR Scale is not damaged or contaminated.	2. Replace the CR Scale with a new one or clean it completely.
			 CR Scale	
			1. Check if the Encoder FFC is connected to the CR Encoder Board.	1. Connect the Encoder FFC to the CR Encoder Board.
			 CR Encoder Board Encoder FFC	
			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"> • Operation • Anywhere 	The CIS Assy. does not operate.	Lower Scanner Housing	1. Check if the grease is enough on the Guide Rail of the Lower Scanner Housing.	1. After wiping the grease on the Guide Rail of the Lower Scanner Housing with a dry, soft cloth, coat it with grease. (Refer to Chapter 6 "MAINTENANCE" (p.116).)
<ul style="list-style-type: none"> • Operation • Anywhere 	The paper feeding sequence is performed without loading a paper in the paper loading sequence.	PE Detector Assy.	1. Check if the PE Sensor Connector Cable is connected to J9 on the Main Board.	1. Connect the PE Sensor Connector Cable to J9 on the Main Board.
				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.
<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.	Cap Assy. (Ink System)	1. Check if the Cap Assy is installed correctly.	1. Install the Cap Assy correctly.
		Base Frame		2. Replace the Ink System with a new one.
			2. Check if the Cap Assy (Ink System) is not damaged.	3. Replace the Printer Mechanism with a new one.
		Base Frame	1. Check if the Base Frame is deformed.	

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

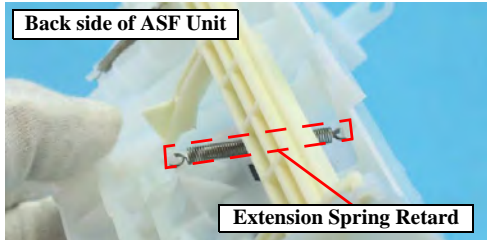
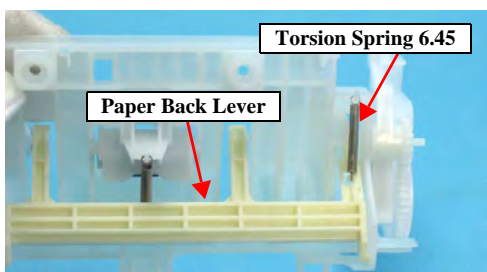
Occurrence timing CR position	Detailed phenomenon	Defective unit/part name	Check point	Remedy
<ul style="list-style-type: none"> Operation – 	The LEDs and STM3 are not indicating error conditions. But, multiple sheets of paper are always loaded from the ASF Unit.	ASF Unit	1. Check if the Extension Spring 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.	Main Frame	1. Check if the grease on the Carriage path is sufficient.	1. Wipe off the remaining grease on the Carriage path and lubricate it on its frame.
		ASF Unit	1. Check if the Change Lever moves smoothly.	1. Replace the ASF Unit with a new one.
	The bottom of the Carriage Unit contacts the surface of the EJ Frame Assy.	EJ Frame Assy	1. Check if the EJ Frame Assy is not bent up.	1. Replace the EJ Frame Assy 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)	Upper Scanner Housing	1. Check if there is not any dust on the Document Glass.	1. Remove the extraneous matter from the Document Glass. (Refer to Chapter 6 “MAINTENANCE” (p.116).)
	There are dusts on the LED in the Rod Lens Array. (vertical stripes appear on the scanned image)	CIS Assy.	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 CIS Assy. does not light up.	CIS Assy.	1. Check if the LED lights up.	1. Replace the CIS Assy. with new one.



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

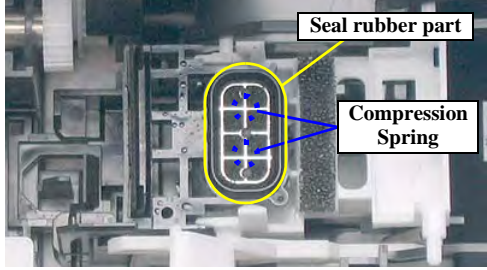
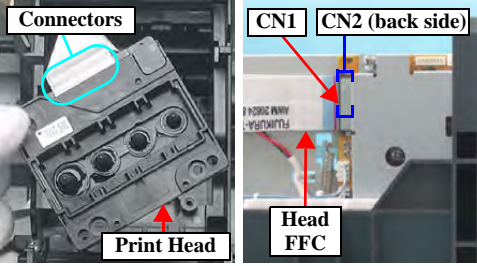

Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• Dot missing and mixed colors	Ink is scarcely ejected to the Cap from the Print Head.	Ink System Unit (Cap Unit)	1. Check if there is not any foreign material/damage around the seal rubber part on the Cap Unit.	1. Remove the foreign material around the seal rubber parts carefully.
				
	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	2. Check if the Compression Spring is correctly mounted on the Cap Unit.	2. Replace the Ink System Unit with a new one.
			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.
		Cleaner Blade	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 (CN1, CN2). 	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.
• White streak/ color unevenness occurrence	Vertical banding appears against the CR movement direction. And, it looks like uneven printing. 	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” (p.106).)
		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” (p.106).) If the problem is not solved, replace the Print Head with a new one.
		Main Frame	1. Check if there is any foreign material on the Carriage path.	1. Remove foreign objects from surface of the Carriage path.
			2. Check if the Main Frame has not been deformed.	2. Replace the Main Frame with a new one.
			3. Check if the grease is enough on the Carriage path of the Main Frame.	3. After wiping the grease on the Carriage path with a dry, soft cloth, coat it with grease. (Refer to Chapter 6 “MAINTENANCE” (p.116).)
		EJ Frame Assy	1. Check if the EJ Frame Assy has not been deformed	1. Replace the EJ Frame Assy with a new one.

[Note]
If the problem is not solved, replace the CR Motor with a new one.

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

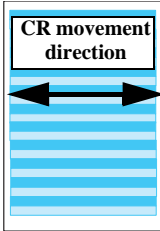
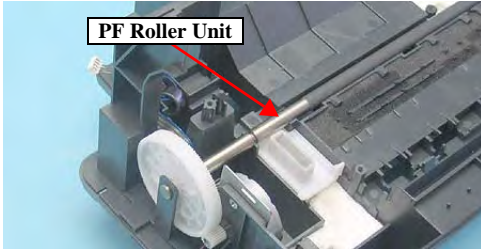
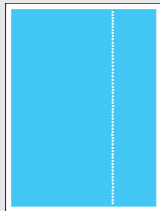
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• White streak/ color unevenness occurrence	Micro banding appears horizontally against the CR movement direction and it appears with the same width. 	Printer driver & exclusive paper	1. Check if the suitable paper is 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" (p.106) .) 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 Assy	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 Assy is flat.	1. Reassemble the Star Wheel Holder correctly. 2. Replace the EJ Frame Assy 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

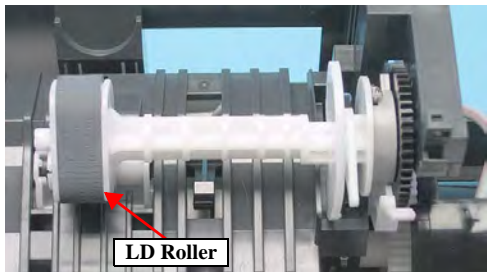
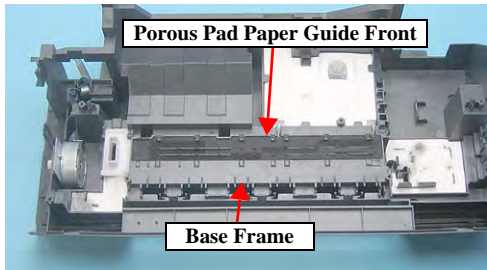
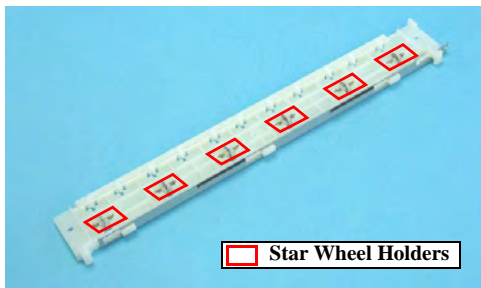
Print Quality State	Detailed phenomenon	Defective unit/part name	Check point	Remedy
• Print start position slip	The printing operation is correctly performed. But, the top margin is insufficient than usual one.	LD Roller	1. Check if any paper dust is not adhered to the surface of the LD Roller. 	1. Set 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 48 "Remedy of the Paper out error" * If the problem is not solved, replace the LD Roller with a new one.
• Ink stain of paper	Ink stain occurs at the back, top end or bottom end of the print paper.	Base Frame	1. Check if the Base Frame is free of ink stain, especially its ribs near the Porous Pad Paper Guide Front. 	1. Clean the Base Frame with a soft cloth.
			2. Check if heaps of ink are not formed on Porous Pad Paper Guide Front on the Base Frame.	2. Replace the Porous Pad Paper Guide Front with a new one. (T.B.D.)
		EJ Roller	1. Check if the EJ Roller does not have the ink stain.	1. Clean the EJ Roller 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 Assy	1. Check if the Star Wheel Rollers does not have the ink stain. 	1. Clean the Star Wheel Rollers with a soft cloth.

CHAPTER

4

DISASSEMBLY/ASSEMBLY

4.1 Overview

This section describes procedures for disassembling the main components of the product. Unless otherwise specified, disassembled units or components can be reassembled by reversing the disassembly procedure.

Procedures which, if not strictly observed, could result in personal injury are described under the heading “WARNING”.

“CAUTION” signals a precaution which, if ignored, could result in damage to equipment.

Important tips for procedures are described under the heading “CHECK POINT”.

If the assembly procedure is different from the reversed disassembly procedure, the correct procedure is described under the heading “REASSEMBLY”.

Any adjustments required after reassembly of components or parts are described under the heading “ADJUSTMENT REQUIRED”.

When you have to remove any components or parts that are not described in this chapter, refer to the exploded diagrams in the appendix.

4.1.1 Precautions

See the precautions given under the handling “WARNING” and “CAUTION” in the following columns when disassembling or assembling Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450.



- **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.**
- **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.**



- **Make sure that there is enough work space for disassembly/reassembly.**
- **Use only recommended tools for disassembling, assembling or adjusting the printer.**
- **Observe the specified torque when tightening screws.**
- **Apply lubricants as specified.**
(See Chapter 6 “[MAINTENANCE \(p108\)](#)” for details.)
- **Since a prototype was used to illustrate these disassembly and reassembly procedures, the appearance of some parts may differ from those on actual product. The procedures themselves, however, are accurate for the retail model.**
- **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 the printer.

Table 4-1. Tools

Name	Supplier	Parts No.
(+) Phillips screwdriver #1	EPSON	1080530
(+) Phillips screwdriver #1	EPSON	1080532
Flathead screwdriver	EPSON	1080527
Tweezer	EPSON	1080561



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	Item	Check Point	Status
Printer Unit	Self-test	Is the operation normal?	Checked Not necessary
	ON-line Test	Is the printing successful	Checked Not necessary
	Printhead	Is ink discharged normally from all the nozzles?	Checked Not necessary
	Carriage Mechanism	Does it move smoothly?	Checked Not necessary
		Is there any abnormal noise during its operation?	Checked Not necessary
		Is the CR Motor at the correct temperature? (Not too hot to touch?)	Checked Not necessary
	Paper Feeding Mechanism	Is paper advanced smoothly? No paper jamming? No paper skew? No multiple feeding? No abnormal noise?	Checked Not necessary
		Is the PF Motor at correct temperature?	Checked Not necessary
		Is the paper path free of any obstructions?	Checked Not necessary
Scanner unit	Mechanism	Is the glass surface free of dirt?	Checked Not necessary
		Is the carriage path free of any obstructions?	Checked Not necessary
			Checked Not necessary

Table 4-2. Work Completion Check

Classification	Item	Check Point	Status
Scanner unit	Carriage mechanism	Does it move smoothly?	Checked Not necessary
		Does it move together with the scanner unit?	Checked Not necessary
		Is there any abnormal noise during its operation?	Checked Not necessary
	LED	Does it normally turn on? Is the white reflection test near home position done correctly?	Checked Not necessary
Adjustment	Specified Adjustment	Are all the adjustment done correctly?	Checked Not necessary
Lubrication	Specified Lubrication	Are all the lubrication made at the specified points?	Checked Not necessary
		Is the amount of lubrication correct?	Checked Not necessary
Function	ROM Version	Version:	Checked Not necessary
Packing	Ink Cartridge	Are the ink cartridges installed correctly?	Checked Not necessary
	Protective materials	Have all relevant protective materials been attached to the printer?	Checked Not necessary
Others	Attachments, Accessories	Have all the relevant items been included in the package?	Checked Not necessary

4.1.4 Caution After Repair (T.B.D)

Before shipping the product after repair, be sure to secure the CR Unit following the procedure below.

HOW TO SECURE THE CR UNIT BEFORE PACKING

- (1) Move the CR Unit to the Home position.
- (2) Lock the Carriage Lock toward the front of the printer with a flathead screwdriver.
(See “4.6.1 Printhead (p75)”)
- (3) Move the CR Unit to the center slightly until it comes in contact with the Carriage Lock.
- (4) Attach the center portion (①) of a strong tape to the Cartridge Cover located on the carriage.
- (5) Attach the right portion (②) of the strong tape to the Upper Housing.
- (6) Attach the left portion (③) of the strong tape to the left side of the carriage.
- (7) Check to see that the CR Unit can move slightly between the Home position and the Carriage Lock position. Then bring the CR unit back into contact with the Carriage Lock, and pack the printer.

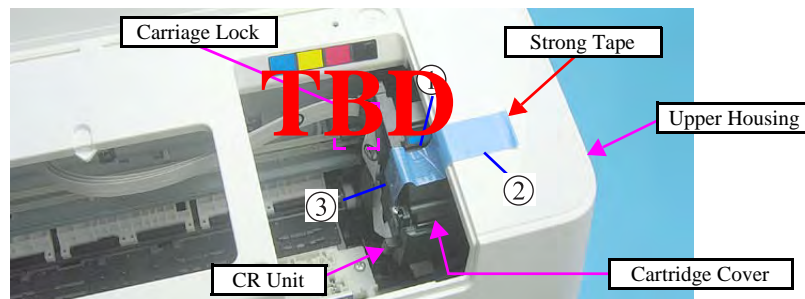


Figure 4-1. Securing CR Unit

4.2 Disassembly Procedures

This section explains the procedures for disassembling the product.

Unless otherwise stated, reassembly should be carried out in the reverse order of the disassembly procedure.

For detailed engagement relations among main components, refer to the exploded diagrams in the Appendix.

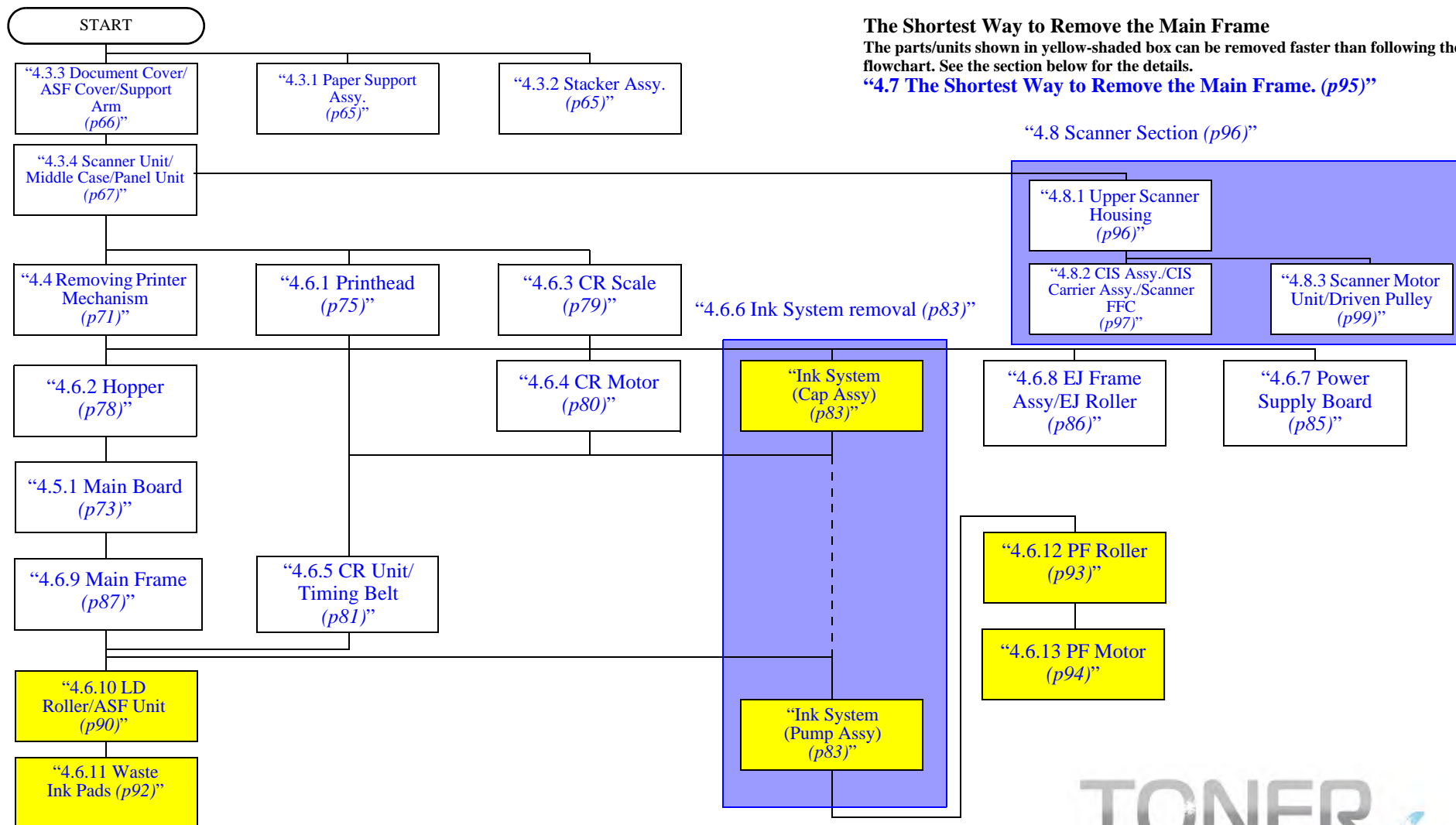


Figure 4-2. Disassembling Flowchart

4.3 Printer Section

4.3.1 Paper Support Assy.

- ☐ **Part/Unit that should be removed before removing Paper Support Assy.**

None

- ☐ **Removal Procedure**

1. Release the Paper Support Assy. from the guide pins (x2) of the Lower Case, and remove the Paper Support Assy. from the Lower Case.

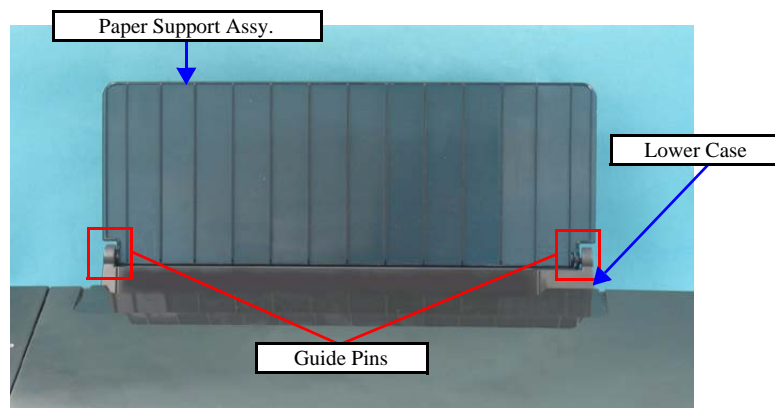


Figure 4-3. Removing Paper Support Assy.

4.3.2 Stacker Assy.

- ☐ **Part/Unit that should be removed before removing Stacker Assy.**

None

- ☐ **Removal Procedure**

1. Open the Stacker Assy.
2. Press in the white pin on the left with a precision screwdriver or a similar tool to release the left side of the Stacker Assy. Then remove the Stacker Assy. pulling out its pin on the right from the Lower Case.

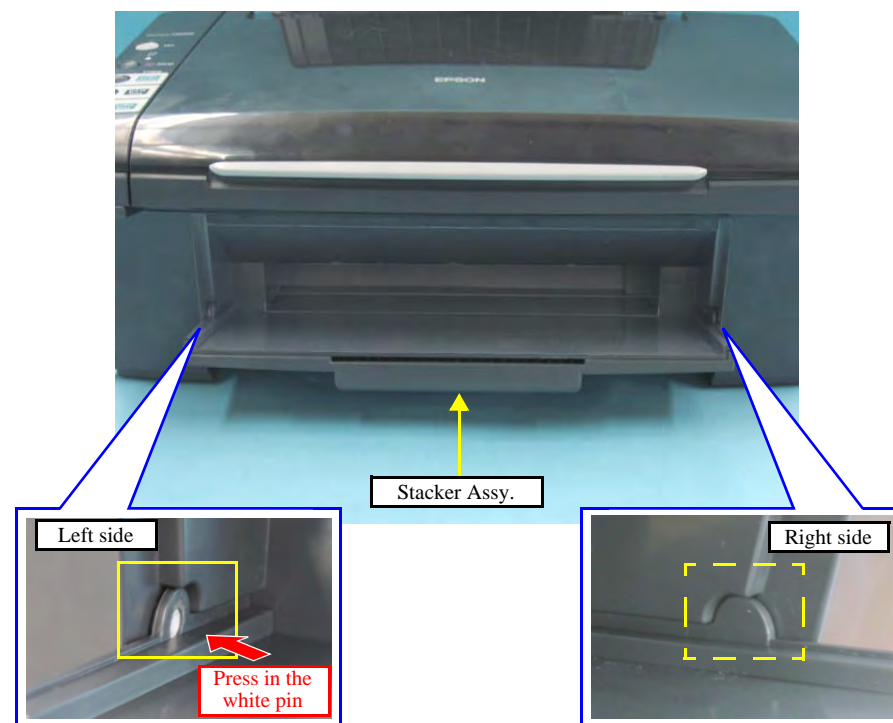


Figure 4-4. Removing Stacker Assy.

4.3.3 Document Cover/ASF Cover/Support Arm

CAUTION


When disassembling/assembling the Scanner Unit after removing the Document Cover, make sure to protect the document glass from damage and dirt. Also, pay extra care to keep the Document Cover mat surface clean.

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

None

- **Removal Procedure**

1. Remove the Document Cover pulling out its left and right guide pins from the holes on the Scanner Unit.

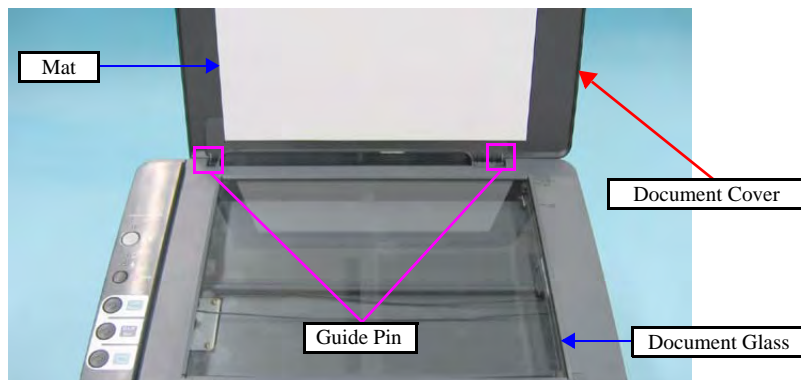


Figure 4-5. Removing Document Cover

2. Remove the ASF Cover pulling out its left and right holes from the guide pins on the Scanner Unit.

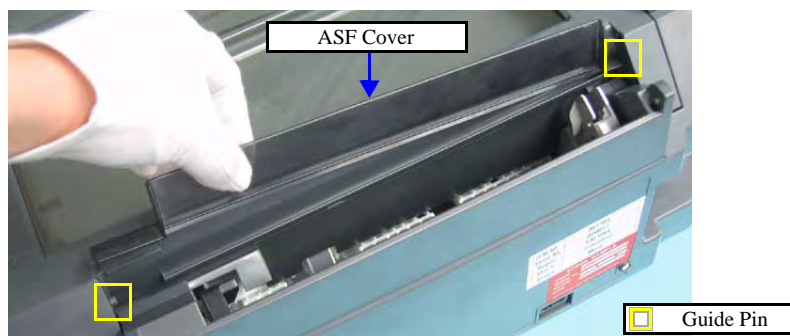


Figure 4-6. Removing ASF Cover

3. Open the Scanner Unit.
4. Press the upper left and right sides of the Support Arm inward to release its upper left and right guide pins from the Scanner Unit.
5. Remove the Support Arm releasing its lower left and right guide pins from the guide rails on the Middle Case.

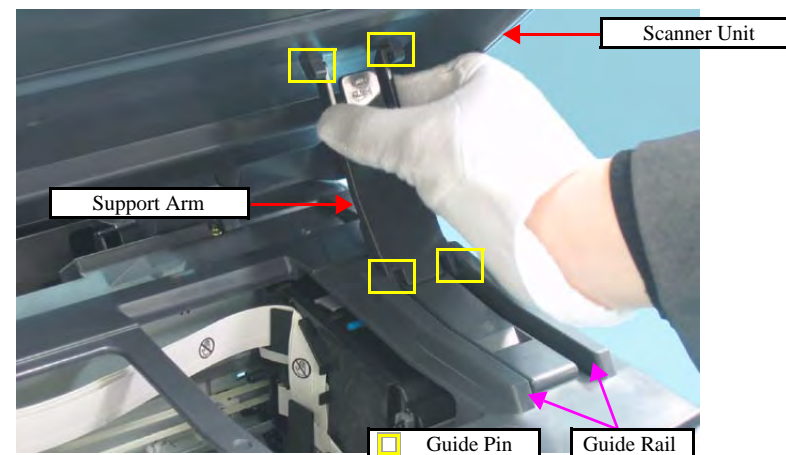


Figure 4-7. Removing Support Arm



Install the Support Arm as shown. Be careful not to install it upside-down or back-to-front.

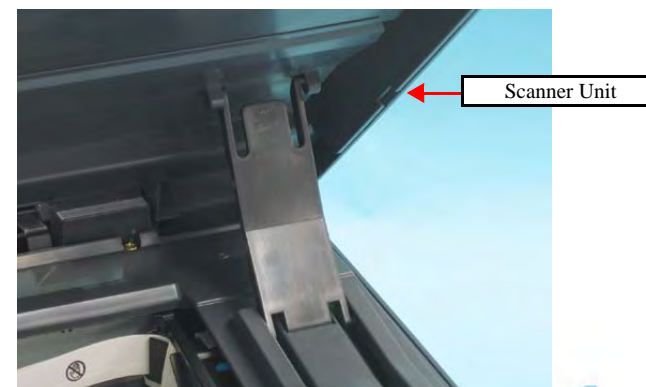


Figure 4-8. Installing Support Arm

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4.3.4 Scanner Unit/Middle Case/Panel Unit

- **Part/Unit that should be removed before removing Scanner Unit /Middle Case /Panel Unit**

Document Cover / ASF Cover / Support Arm

- **Removal Procedure**

1. Remove the screws (x7) that secure the Middle Case.
 - 1-1. Open the Scanner Unit, and remove the screws (x3).



Figure 4-9. Removing Screws securing Middle Case (front side)

- 1-2. Remove the screws (x2) on the rear and the screws (x2) on the both ends of the ASF.

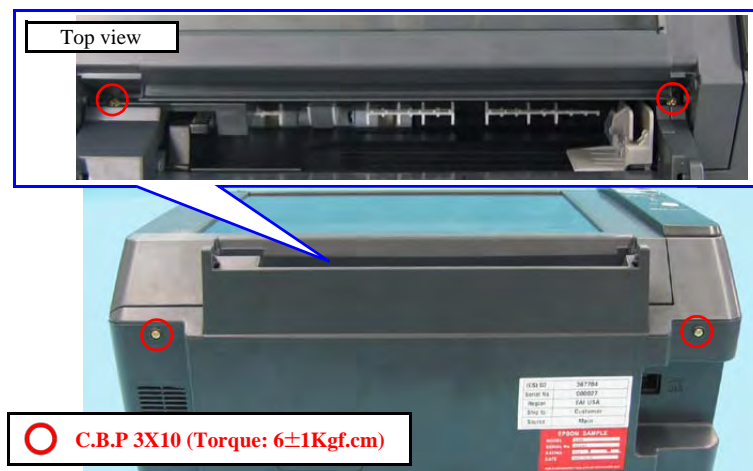


Figure 4-10. Removing Screws securing Middle Case (rear side)

2. While pushing the Lower Case with your thumb in the direction of the arrow, pull the Scanner Unit toward you to release it from the following pin and hook.
 - The left guide pin (x1) on the Lower Case.
 - The hook (x1) on the Middle Case.

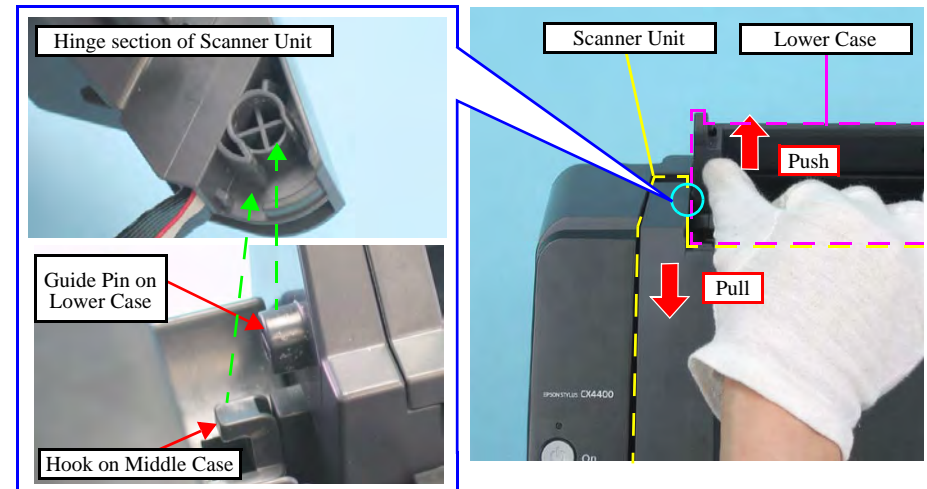


Figure 4-11. Removing Scanner Unit /Middle Case /Panel Unit (1)

3. Push the Scanner in the direction of the arrow to release it from the following pin.
 - The right guide pin (x1) on the Lower Case.

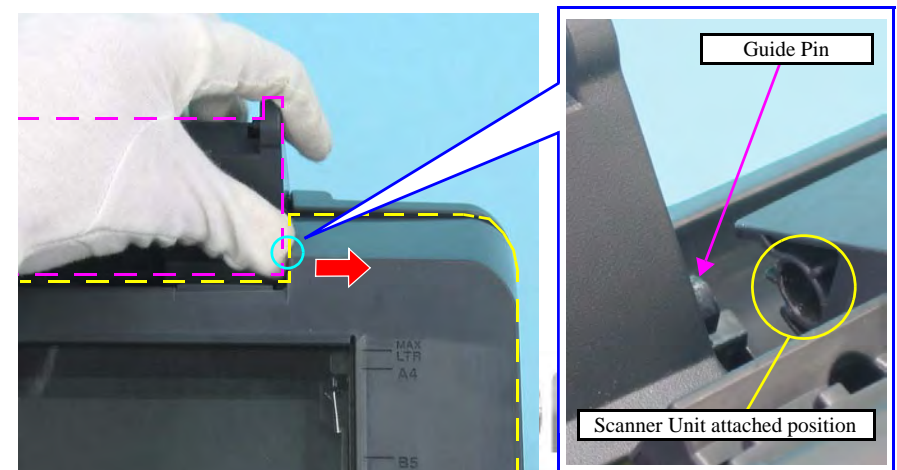


Figure 4-12. Removing Scanner Unit /Middle Case /Panel Unit (2)

4. While pushing outward on the right side of the Lower Case to widen it, disengage its tabs (x2) from the square holes (x2) of the Middle Case, and pull the Middle Case upward.

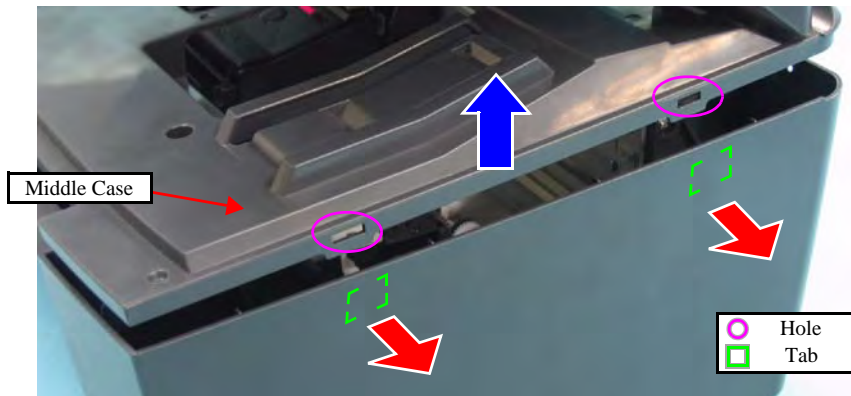


Figure 4-13. Removing Scanner Unit /Middle Case /Panel Unit (3)

5. While pressing the left side of the Middle Case inward (press the “hole” points one by one), disengage the tabs (x2) of the Lower Case from the square holes (x2) of the Middle Case, and pull the Middle Case upward.

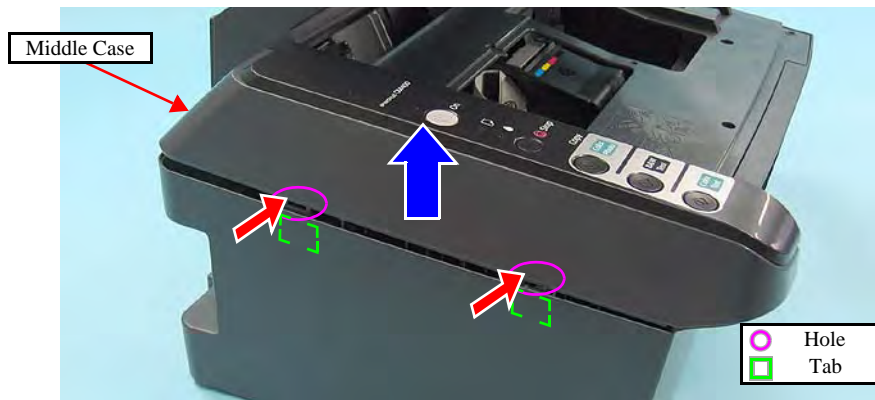


Figure 4-14. Removing Scanner Unit /Middle Case /Panel Unit (4)

CAUTION



The cables/FFC of the Scanner Unit and Panel Unit are connected to the Main Board. When moving the Scanner Unit /Middle Case / Panel Unit at the next step, be careful not to move them too much.

6. Tilt the Scanner Unit /Middle Case /Panel Unit as shown, and slightly move them frontward to disengage the left front tab of the Middle Case.

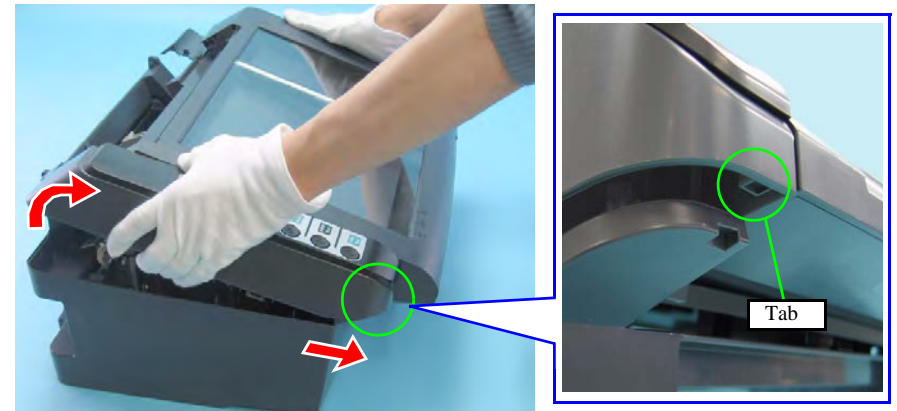


Figure 4-15. Removing Scanner Unit /Middle Case /Panel Unit (5)

7. Disconnect the following cables (x2) and FFC (x1) from the Main Board Assy., and remove the Middle Case, the Scanner Unit and the Panel Unit as a set from the Lower Case.

- J6: Scanner Motor cable
- J5: Scanner FFC (a ferrite core for the FFC is attached to the Shield Plate)
- J3: Panel Board cable

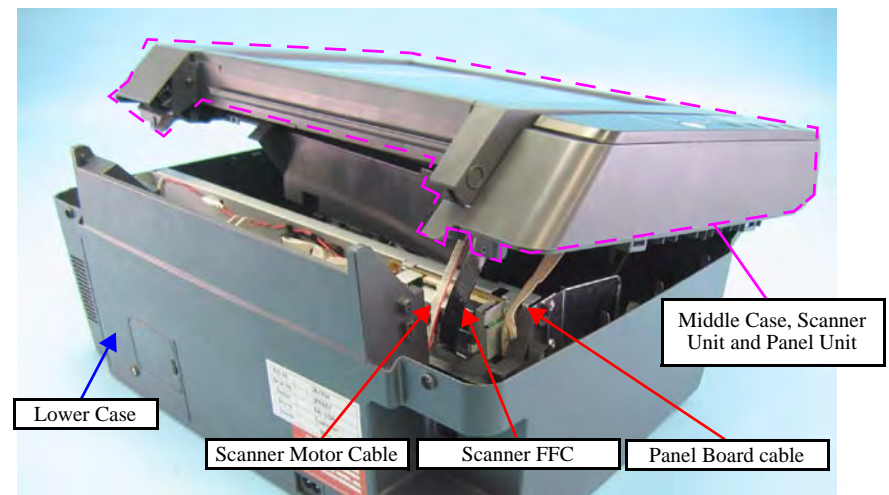


Figure 4-16. Removing Scanner Unit /Middle Case /Panel Unit (6)

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□ Removing the Scanner Unit from the Middle Case

1. Pull out the cable and FFC from the cutout of the Middle Case, and remove the Scanner Unit from the Middle Case.

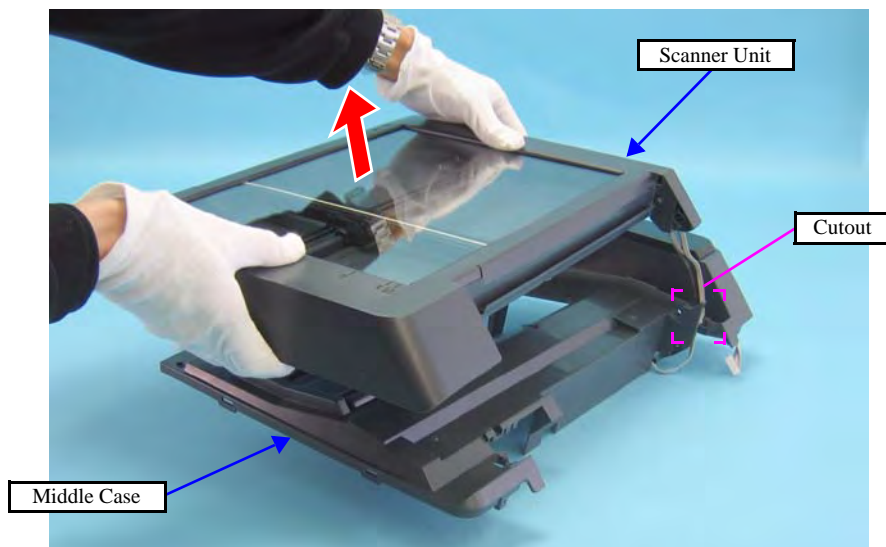


Figure 4-17. Removing Scanner Unit

□ Removing the Panel Unit from the Middle Case



The Panel Unit cable is fixed being routed through the tabs on the backside of the Middle Case. When sliding the Panel Unit at the next step, be careful not to move it too much.

1. Lift the front end of the Panel Unit to release its tab (A). Then slide the Panel Unit in the direction of the arrow to remove it releasing the other tabs (x5) and the hook.

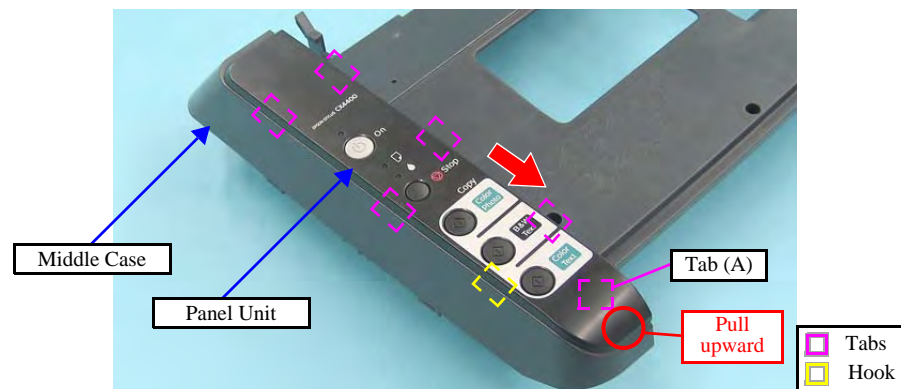


Figure 4-18. Removing Panel Unit (1)

2. Release the Panel Unit cable from the tabs (x4) on the backside of the Middle Case.
3. Pull out the Panel Unit cable through the cutout of the Middle Case to remove the Panel Unit from the Middle Case.

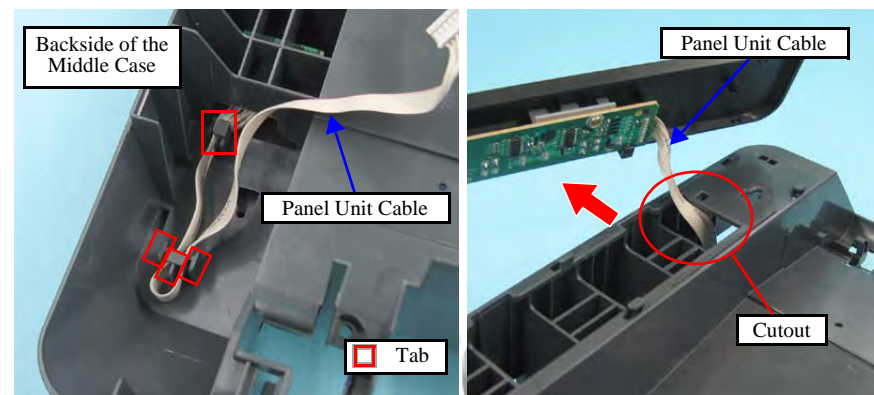


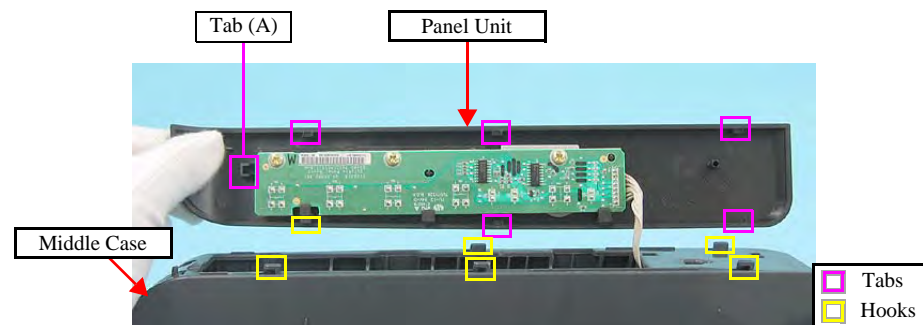
Figure 4-19. Removing Panel Unit (2)

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REASSEMBLY OF SCANNER UNIT /MIDDLE CASE /PANEL UNIT

□ Installing the Panel Unit to the Middle Case

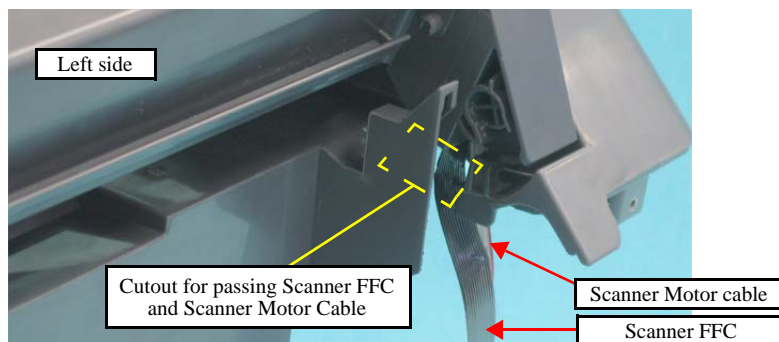
1. Put the Panel Unit cable through the cutout of the Middle Case.
(refer to Figure 4-19)
2. Slide the Panel Unit front-to-rear on the Middle Case engaging the tabs and hooks shown below. Make sure to slide the Panel Unit until the tab A clicks and the unit is secured.

**Figure 4-20. Installing Panel Unit**

3. Route the Panel Unit cable through the tabs (x4) on the backside of the Middle Case. (refer to Figure 4-19)

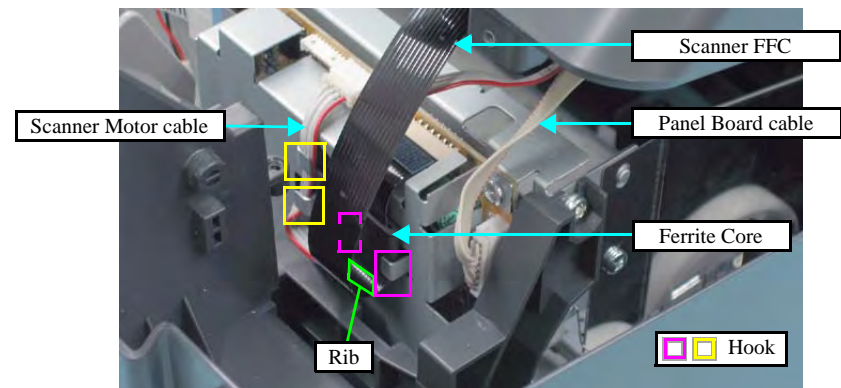
□ Installing the Panel Unit/Scanner Unit/Middle Case to the Lower Case

1. Put the Scanner FFC and the Scanner Motor cable through the cutout of the Middle Case.

**Figure 4-21. Routing Scanner FFC and Scanner Motor Cable**

2. Place the Panel Unit/Scanner Unit/Middle Case as shown in Figure 4-16.
3. Route and connect the cables/FFC to the Main Board Assy. as shown below. Refer to Figure 4-27 for the connector layout on the Main Board.

- Scanner Motor cable: J6 connector on the Main Board
Route through the hooks (□ x2) as shown.
- Scanner FFC: J5 connector on the Main Board
Put it through the ferrite core, and attach the core to the shield plate with double-sided tape. Make sure to put the core under the hooks (□ x2) and on top of the rib (□ x1).
- Panel Board: J3 connector on the Main Board

**Figure 4-22. Connecting Scanner Motor Cable, Scanner FFC, Panel Cable**

4. Secure the Middle Case (with the Panel Unit/Scanner Unit attached) to the Lower Case engaging the left front tab (x1) (refer to Figure 4-15), then the tabs (x4) and square holes (x4) on either sides. (refer to Figure 4-13, Figure 4-14)
5. Engage the right hinge of the Scanner Unit to the Lower Case (refer to Figure 4-12), then engage the left hinge of the Scanner Unit to the Lower Case and the Middle Case. (refer to Figure 4-11)
6. Screw the Panel Unit/Scanner Unit/Middle Case to the Lower Case. (refer to Figure 4-9, Figure 4-10)

4.4 Removing Printer Mechanism

- ❑ **Part/Unit that should be removed before removing Printer Mechanism**
Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit

❑ **Removal Procedure**

1. Remove the screws (x6) that secure the Printer Mechanism to the Lower Case.
2. Move the Paper Guide to the right side.

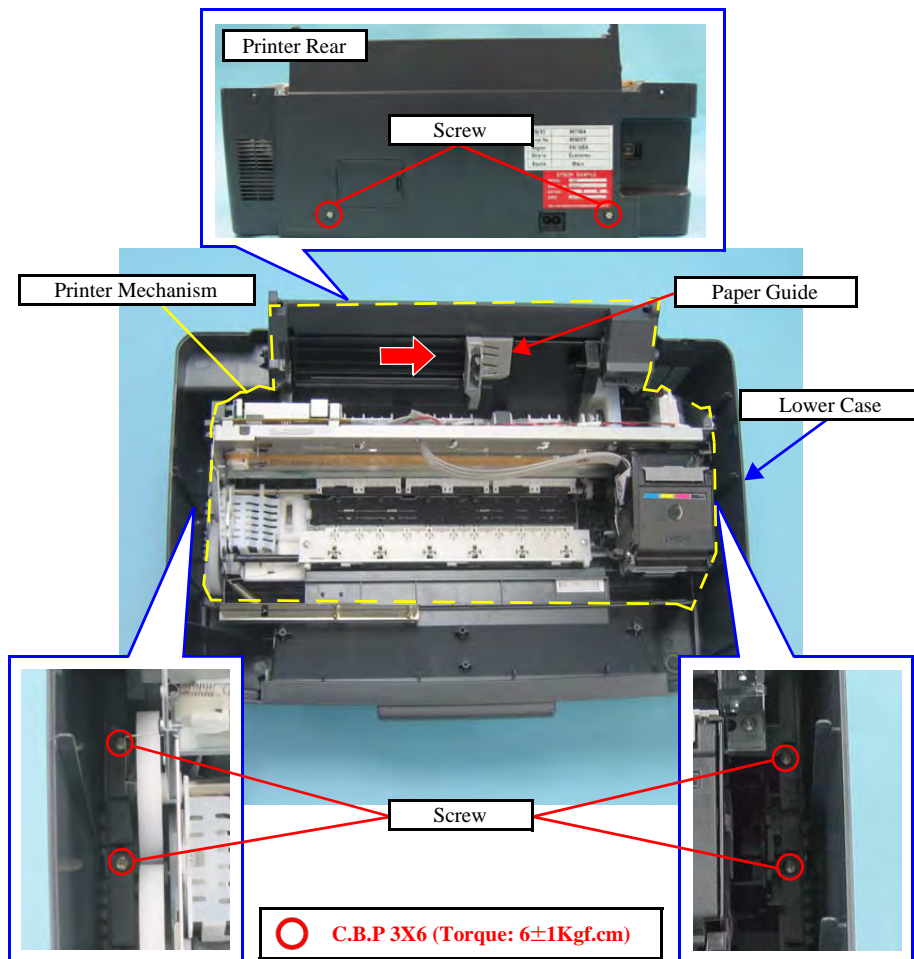


Figure 4-23. Removing Printer Mechanism (1)

3. Release the Grounding Spring from the hooks (x2) and remove it
4. Remove the screws (x2) that secure the Shield Plate, and remove it from the Lower Case.

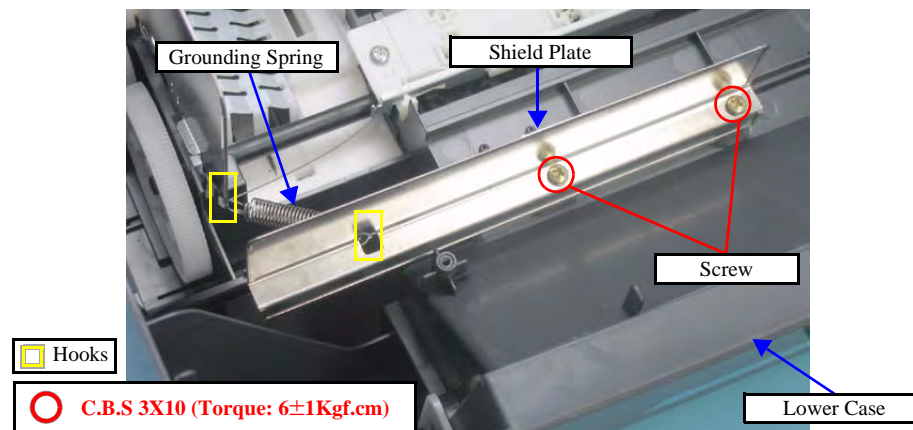


Figure 4-24. Tab Position on Lower Case

5. The tabs (x6) on the Lower Case shown below are securing the Printer Mechanism. Push outward on the left, right, and front sides of the Lower Case to widen it, and release the Printer Mechanism from the tabs (x6).

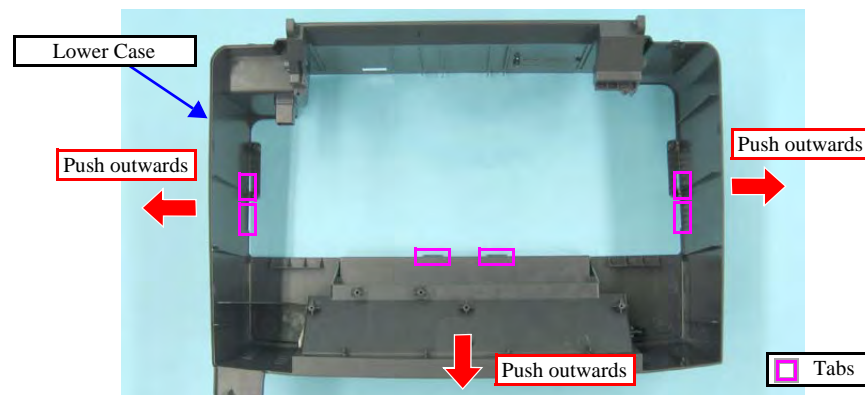


Figure 4-25. Tab Position on Lower Case

6. Carefully lift up the front end of the Printer Mechanism to pull the ASF Unit sections out from the Lower Case, and remove the Printer Mechanism.

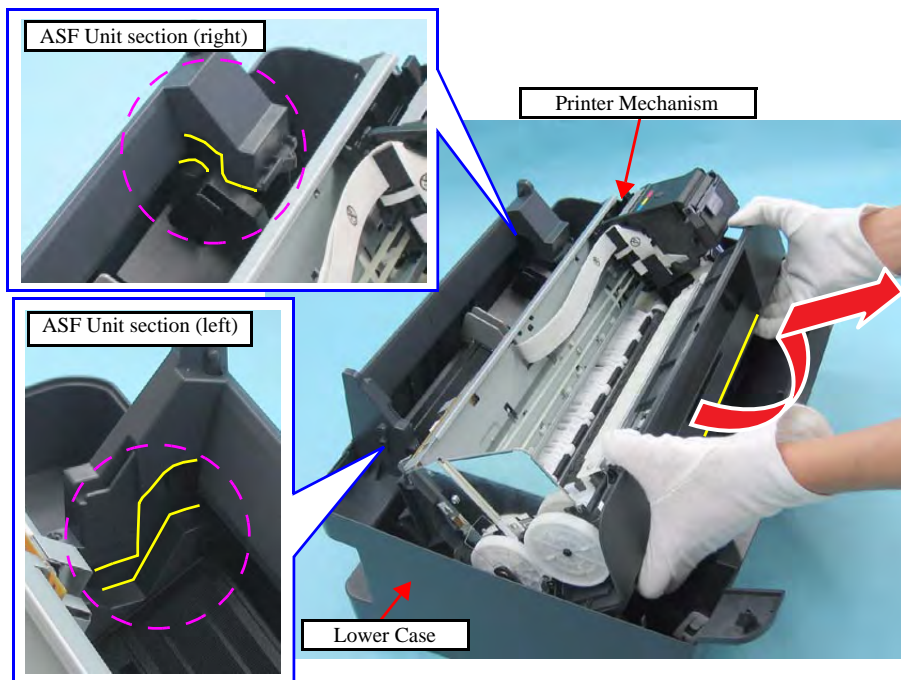


Figure 4-26. Removing Printer Mechanism (2)

4.5 Removing Board

4.5.1 Main Board

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

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism / Hopper

□ Removal Procedure

1. Disconnect the following connector cables (x4) and FFCs (x2) from the connectors on the Main Board Assy.
 - CN1: Head FFC
 - CN2: Head FFC (Backside)
 - J1: Power Supply Board cable
 - J7: CR Motor cable
 - J8: PF Motor cable
 - J9: PE Sensor cable

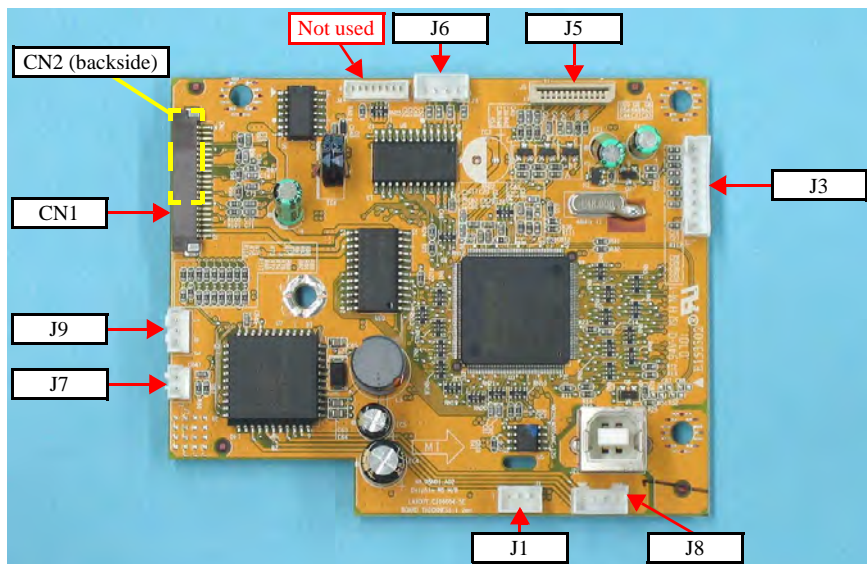


Figure 4-27. Connector Layout of Main Board

2. Remove the screws (x4), and remove the Main Board Assy.

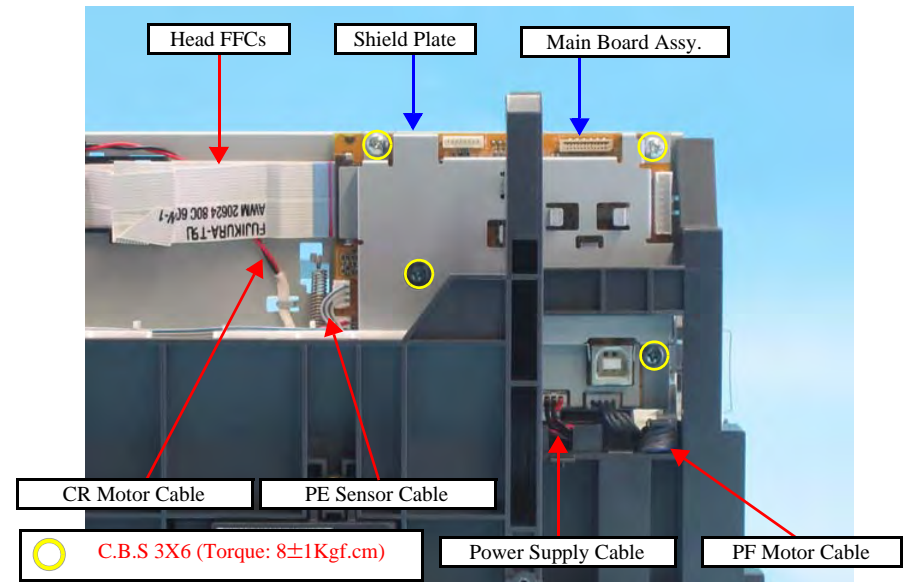


Figure 4-28. Removing Main Board (1)

3. Remove the Grounding Plate Clip from the Main Board Assy.
4. Remove the Shield Plate from the Main Board.

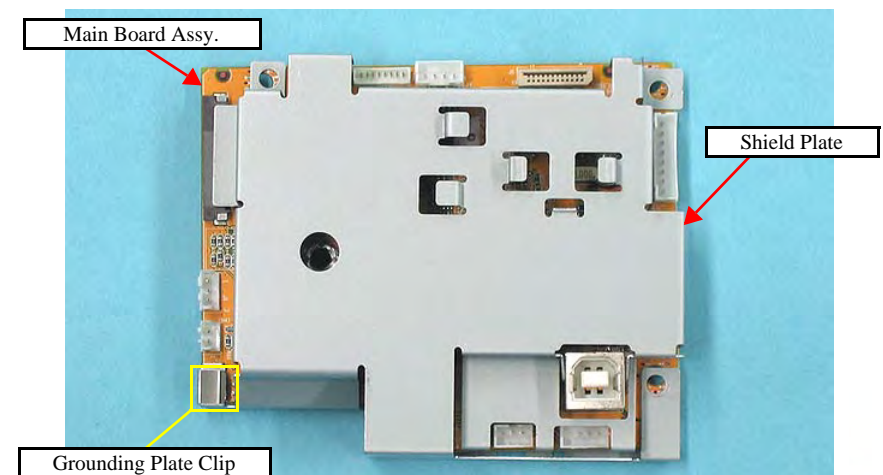


Figure 4-29. Removing Main Board (2)

ADJUSTMENT
REQUIRED

After replacing the Main Board, perform the following adjustments (T.B.D.). (Refer to Chapter 5 “ADJUSTMENT (p100)”)

1. “EEPROM data copy” (only after replacement)
2. “Destination Setting” (only after replacement*)
3. “USB ID Input” (only after replacement*)
4. “Waste Ink Pad Counter” (Ink Pads must be replaced)
5. “Head ID Input” (only after replacement*)
6. “TOP Margin Adjustment” (only after replacement*)
7. “First Dot Adjustment” (only after replacement*)
8. “Head Angular Adjustment” (only after replacement*)
9. “Bi-D Adjustment” (only after replacement*)
10. “PF Band Adjustment” (only after replacement*)
11. “CR Heat Protection Control” (only after replacement*)]

Note *: (EEPROM Copy NG)

4.6 Disassembling Printer Mechanism

4.6.1 Printhead

□ Part/Unit that should be removed before removing Printhead

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit

□ Removal Procedure

1. Unlock the Carriage Lock with a flathead screwdriver or a similar tool, and move the CR Unit to the center of the printer.

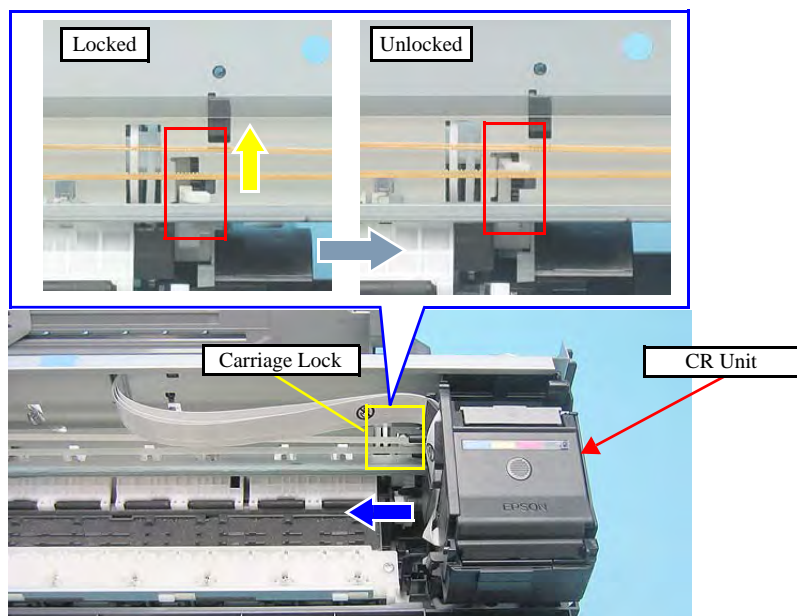


Figure 4-30. Unlocking Carriage Lock and Moving CR Unit to the Center

2. Open the Cartridge Cover and remove all the Ink Cartridges from the CR Unit.
3. Release the FFCs from the tabs.

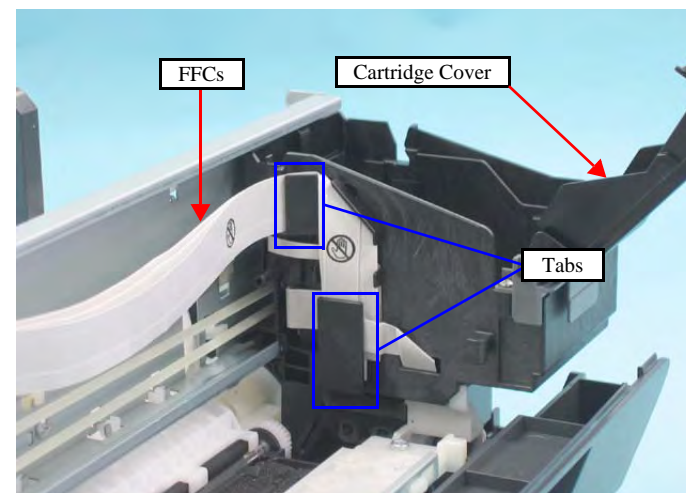


Figure 4-31. Releasing FFCs

4. Disconnect the Head FFCs (x2) that are connected to the CSIC Board and the CR Encoder Board.

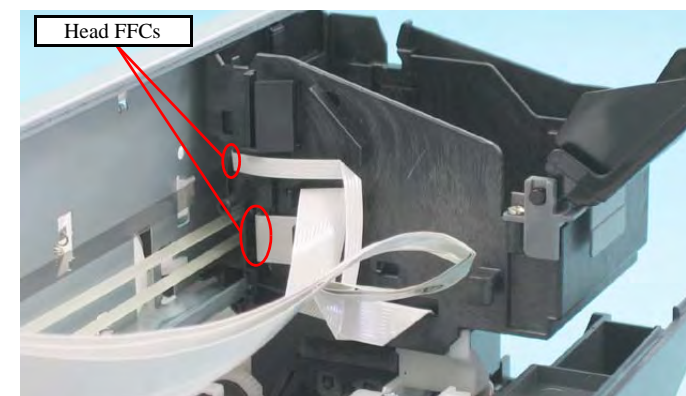


Figure 4-32. Disconnecting Head FFCs

5. Release the tabs (1) and (2) with a flathead precision screwdriver, and remove the Holder Board Assy. upward.

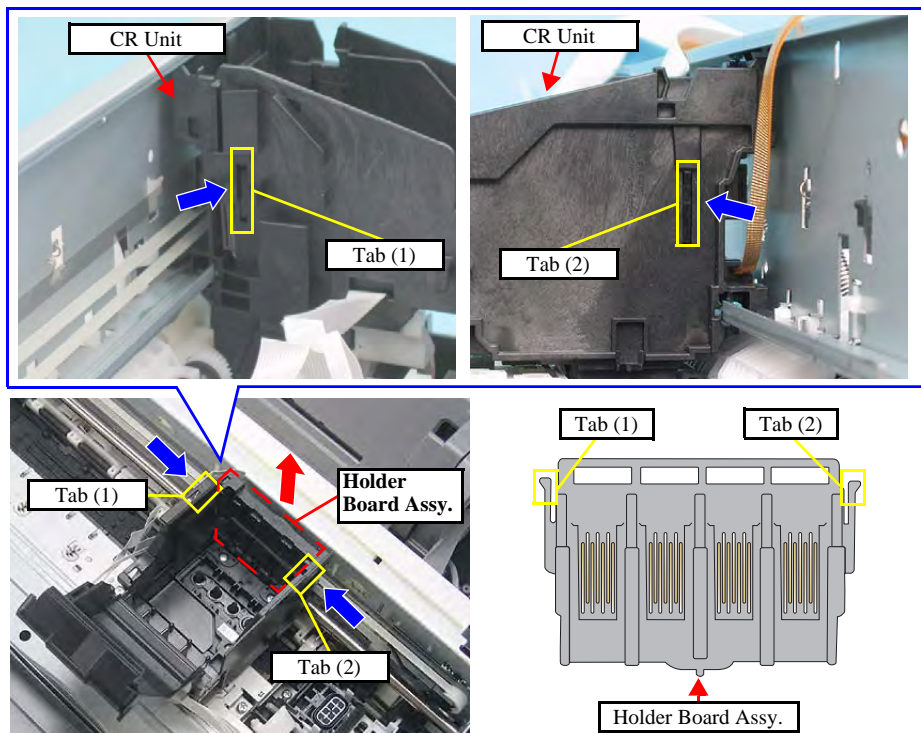


Figure 4-33. Removing Holder Board Assy

6. Release the tab and pull out the blade of the Sub FFC Guide from the slit, and remove the Sub FFC Guide pulling out the guide pin (x1) from the notch.

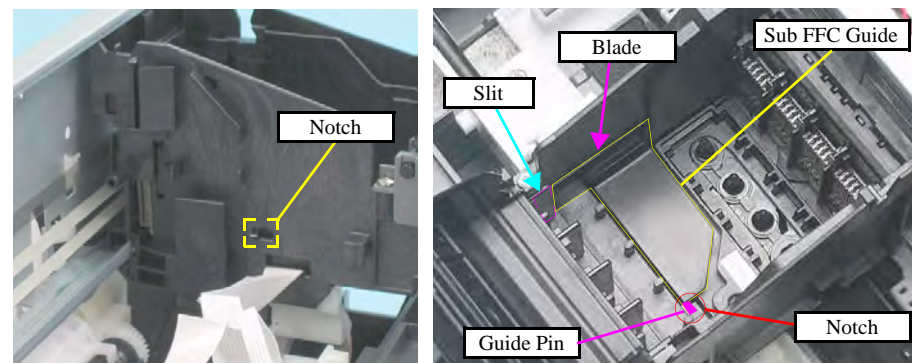


Figure 4-34. Removing Sub FFC Guide

CAUTION

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

7. Remove the screw (x3) and lift up the Printhead with a longnose pliers.

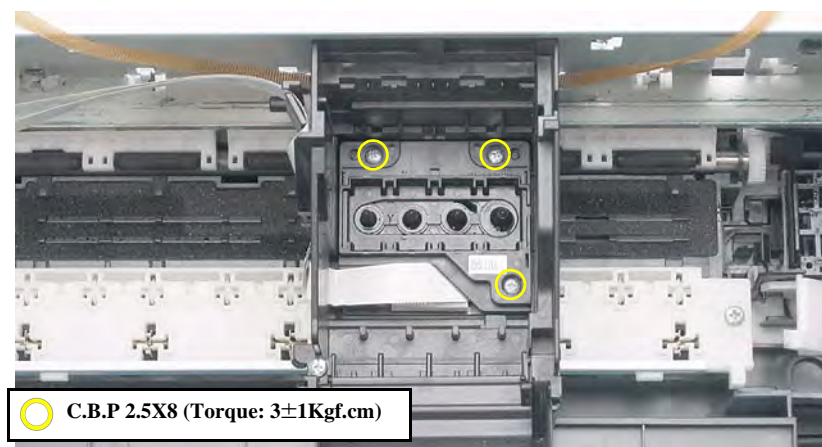


Figure 4-35. Removing Printhead (1)

8. Remove the Head FFC (x1) from the connector (x1), and remove the Printhead.

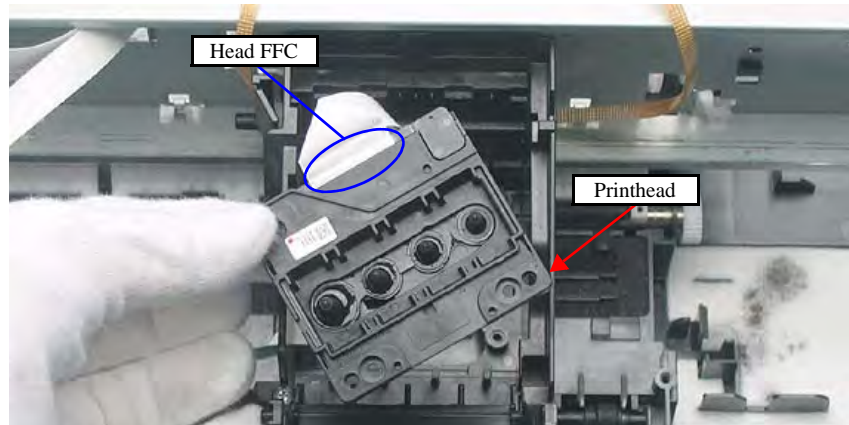


Figure 4-36. Removing Printhead (2)



When installing the Sub FFC Guide, follow the steps below.

1. Insert the blade between the ribs.
2. Insert the guide pin into the notch.
3. Push down and secure the Sub FFC Guide in place.

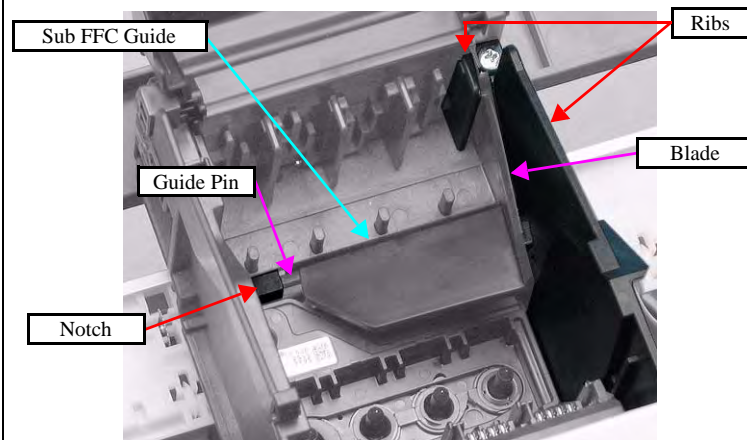


Figure 4-37. Installing Sub FFC Guide



- When installing the Holder Board Assy, make sure to check if the assy is properly installed in the right position. The assy is likely to be installed in the wrong position.
- The Ink Position Label is not included in the Cartridge Cover. When replacing the Cartridge Cover, order the Ink Position Label separately and attach the label as shown below.

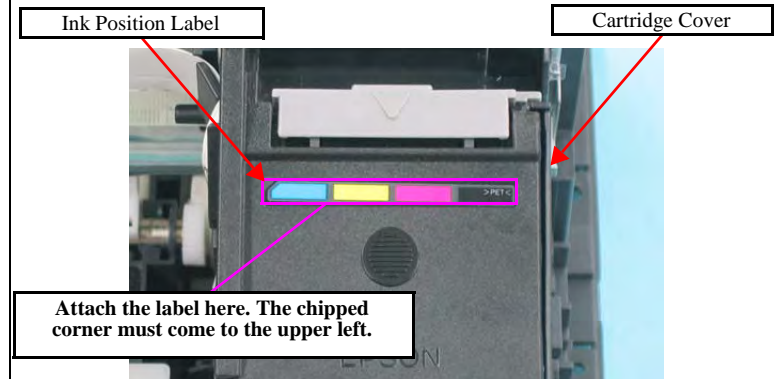


Figure 4-38. Installing Ink Position Label



After removing/replacing the Printhead, perform the adjustment in the following order (T.B.D.). (Refer to Chapter 5 “**ADJUSTMENT (p100)**”)

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



4.6.2 Hopper

□ Part/Unit that should be removed before removing Hopper

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism

□ Removal Procedure

1. Pull open the Bearing slightly (Arrow ①), to release the guide pin (A).
2. Remove the Hopper (Arrow ②) pulling out the guide pin (B).
3. Remove the Compression Spring 1.94.

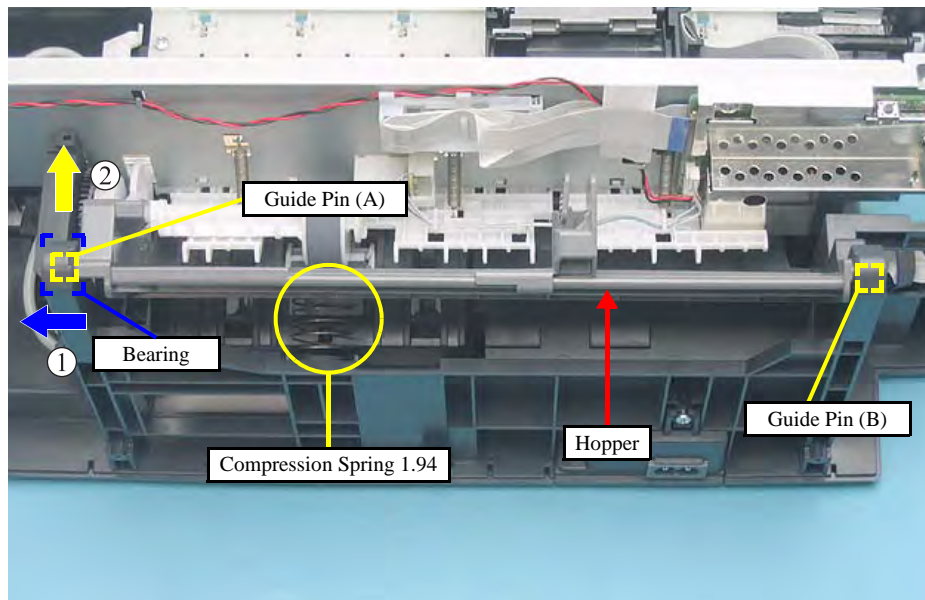


Figure 4-39. Removing Hopper and Compression Spring 1.94



Before installing the Hopper, be sure to adjust the position of the LD Roller following the steps below.

1. Unlock the Carriage Lock. (See “4.6.1 Printhead (p75)”)
 2. Move the CR Unit to the center of the printer.
 3. Adjust the position of LD Roller turning the EJ Roller clockwise.
 - LD Roller position: the flat part facing inward.
 - Paper Back Lever position: inner most.

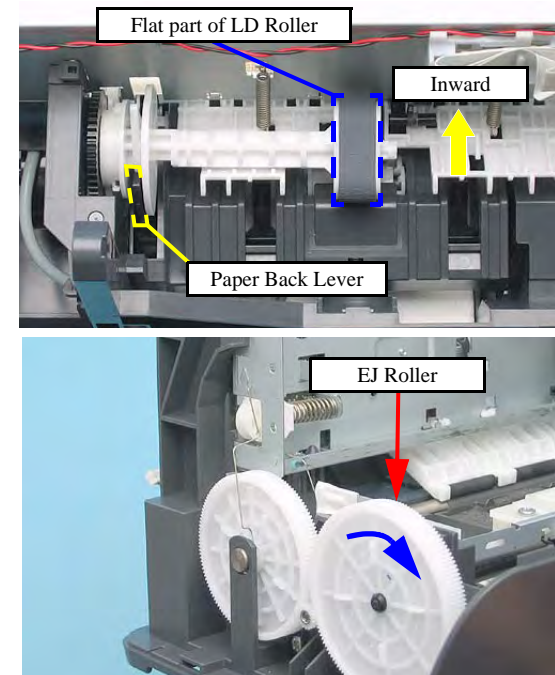


Figure 4-40. Installing Hopper and Compression Spring 1.94



After replacing the Hopper, perform the following adjustment (T.B.D.). (Refer to Chapter 5 “ADJUSTMENT (p100)”)

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

4.6.3 CR Scale

CAUTION


Pay attention to the following instructions:

- Do not touch the CR Scale with bare hands.
- Do not damage the CR Scale.
- Do not stretch Extension Spring 3.289 too much.

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

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit

□ **Removal Procedure**

1. Release the right end of the CR Scale from the tab.
2. Release the CR Scale from the slit of the CR Encoder Sensor.

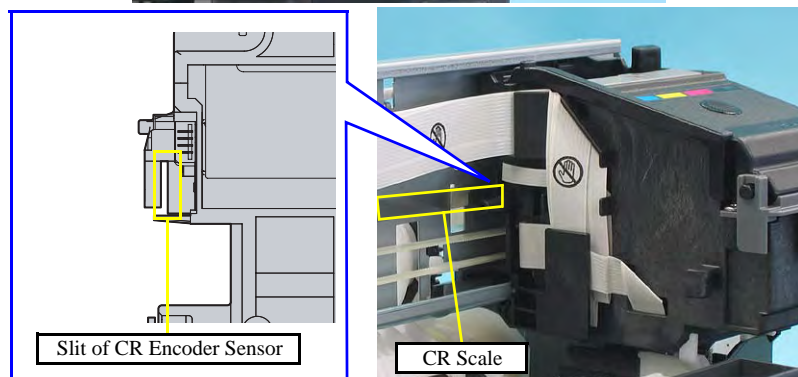
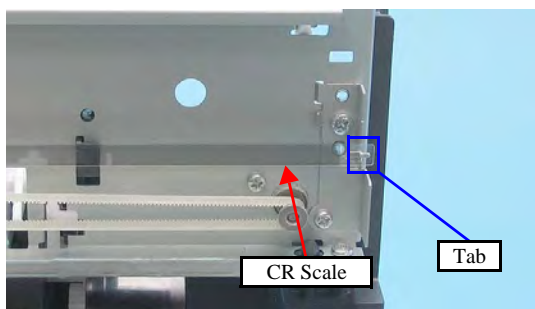


Figure 4-41. Removing CR Scale (1)

3. Release the Extension Spring 3.289 from the hook of the Main Frame.
4. Rotate the CR Scale 90 degrees as shown in the figure and remove the scale from the Main Frame.

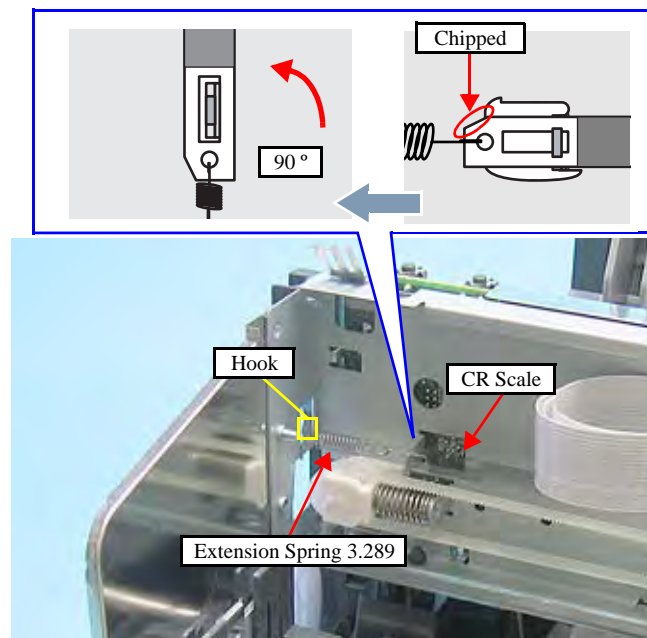


Figure 4-42. Removing CR Scale (3)



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

- The CR Scale must be set between the sides of the CR Encoder Sensor, but not touching either side. If the CR Scale is rubbing against either wall (emitter or receiver), it should be re-installed.
- Chipped part of the CR Scale should be facing upward.
- Extension Spring 3.289 should not be twisted.

4.6.4 CR Motor

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

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism / CR Scale

□ Removal Procedure

1. Disconnect the Head FFCs (CN1,CN2) from the Main Board, and release the CR Motor connector cable from the tabs (x5) on the Main Frame.
2. Disconnect the CR Motor Connector Cable (J7) from the Main Board.

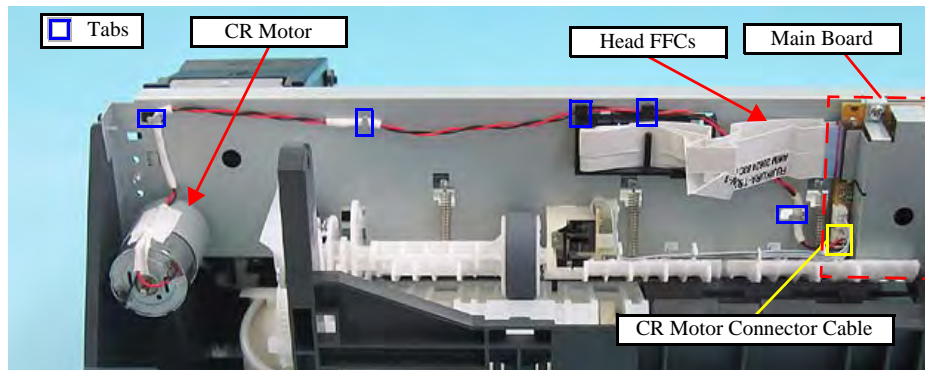


Figure 4-43. Disconnecting CR Motor Connector Cable

CAUTION



After releasing the Timing Belt, temporarily secure the belt to the Cartridge Cover with a tape or the like so as not to allow the grease to come in contact with the Timing Belt. Contaminating the belt with grease can result in malfunction of the printer.

3. 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 release the Timing Belt from the pinion gear of the CR Motor.
4. Remove the screws (x2), and remove the CR Motor from the Main Frame.

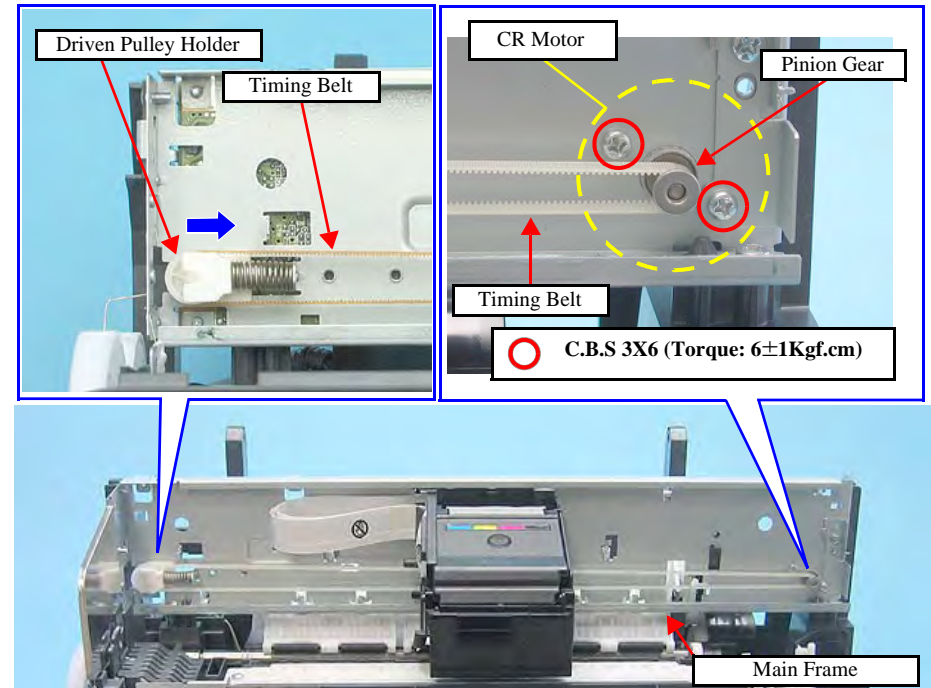


Figure 4-44. Releasing Timing Belt and Removing CR Motor

ADJUSTMENT REQUIRED



After replacing the CR Motor, perform the following adjustment (T.B.D.). (Refer to Chapter 5 “[ADJUSTMENT \(p100\)](#)”)

1. “First Dot Adjustment”
2. “Head Angular Adjustment”
3. “Bi-D Adjustment”
4. “CR Heat Protection Control” (only after replacement)

4.6.5 CR Unit/Timing Belt

□ Part/Unit that should be removed before removing CR Unit/Timing Belt

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism / Print Head / Ink System (Cap Assy) / CR Scale / CR Motor

CAUTION

After releasing the Timing Belt, temporarily secure the belt to the Cartridge Cover with a tape or the like so as not to allow the grease to come in contact with the Timing Belt. Contaminating the belt with grease can result in malfunction of the printer.

□ Removal Procedure

■ CR Unit Removal

1. Remove the screw (x1), and remove the CR Scale Holder.
2. Remove the CR Unit by sliding it in the direction of the arrow.

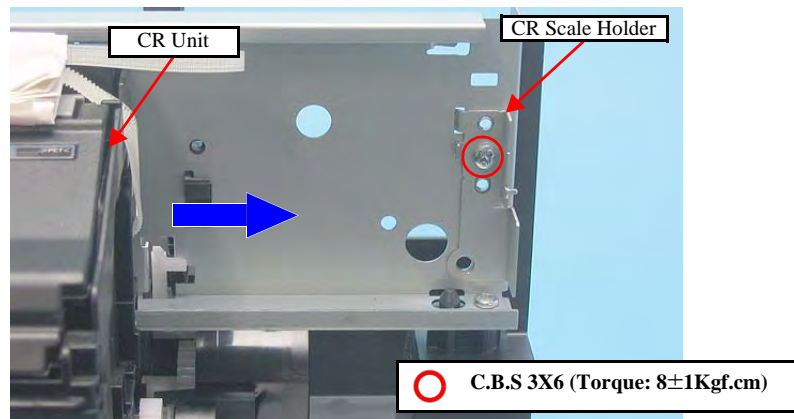


Figure 4-45. Removing CR Scale Holder

■ Timing Belt Removal

1. Remove the Timing Belt from the groove of the CR Unit.

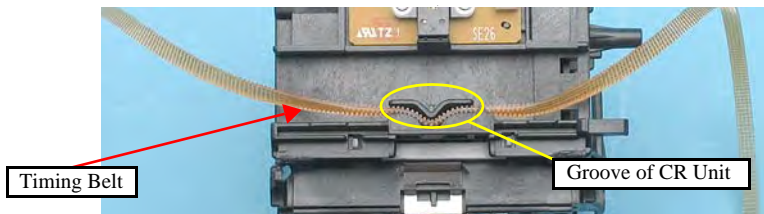


Figure 4-46. Removing Timing Belt



- Insert the wavy-surface part of the Timing Belt into the groove of the CR Unit.

- When installing the Head FFC, follow the steps below.

1. Put the Head FFC through the Hole of the Main Frame.

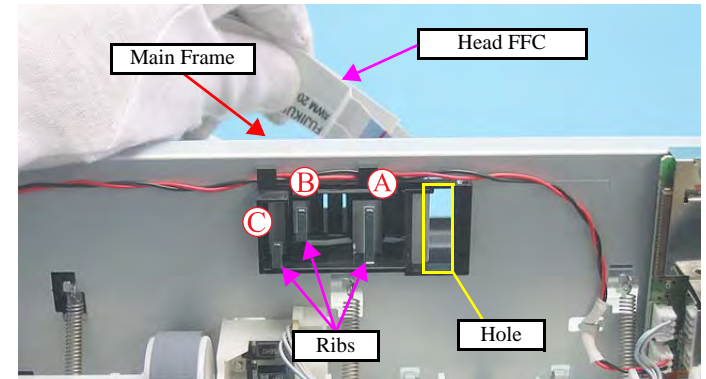


Figure 4-47. Installing Head FFC (1)

2. Secure the Head FFC with Rib A, and C.

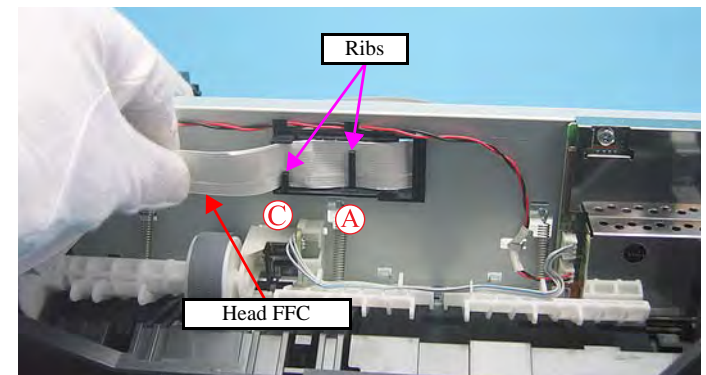


Figure 4-48. Installing Head FFC (2)

>>To be continued to the next page.



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3. Fold back the Head FFC and secure it with Rib A again.

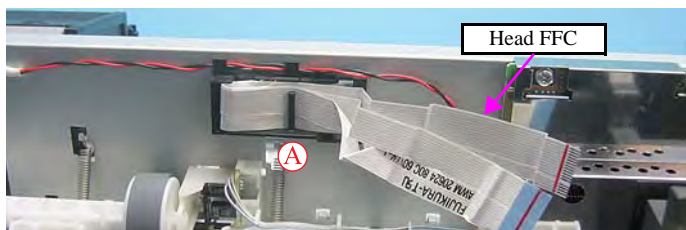


Figure 4-49. Installing Head FFC (3)

4. Connect the Head FFC to CN1, CN2 of the Main Board.
(see “4.5.1 Main Board (p73)”)
5. Arrange FFC1 on top of FFC2.

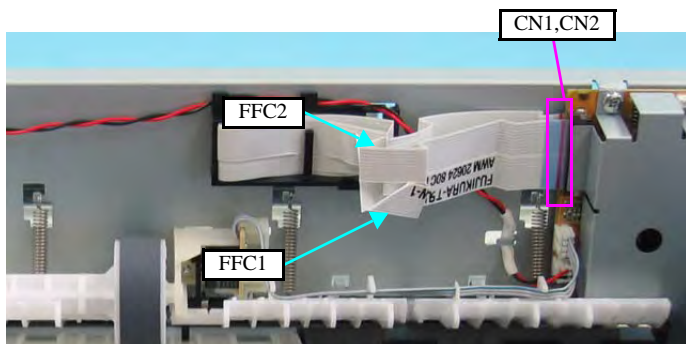


Figure 4-50. Installing Head FFC (4)

4.6.6 Ink System removal

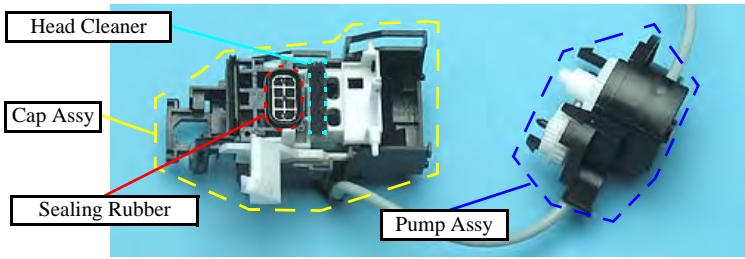
□ Part/Unit that should be removed before removing Ink System

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism

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.
- When removing the Ink System, follow the procedure below.
 1. Detach the Cap Assy.
 2. Detach the Dump Assy.
 3. Remove the whole Ink System



□ Removal procedure

- Ink System (Cap Assy)

CAUTION



The hook A of the Lower Housing is breakable. When releasing the hook to detach the Cap Assy at the next step, be careful not to break it.

1. Release the hook A and B that secure the Cap Assy, and detach the Cap Assy.

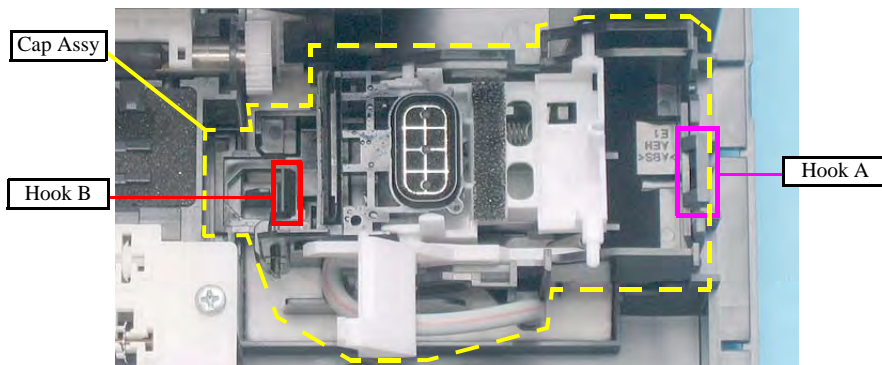


Figure 4-51. Removing Ink System (1)

2. Detach the Ink Tube from the Cap Assy, and remove the Cap Assy.

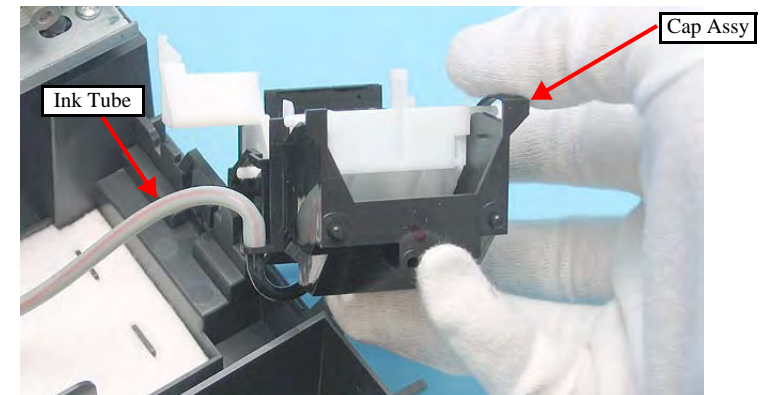


Figure 4-52. Removing Ink System (1)

- Ink System (Pump Assy)

1. Remove the "Main Board (p73)"
2. Remove the "Printhead (p75)"
3. Remove the "CR Scale (p79)"
4. Remove the "CR Motor (p80)"
5. Remove the "CR Unit/Timing Belt (p81)"
6. Remove the "Ink System (Cap Assy) (p83)"
7. Remove the "Main Frame (p87)"
8. Insert a flathead screwdriver between the tab (1) and the rib, and release the tab (1) while pushing it in the direction of the arrow ①.
9. Release the tab (2) in the direction of the arrow ②.

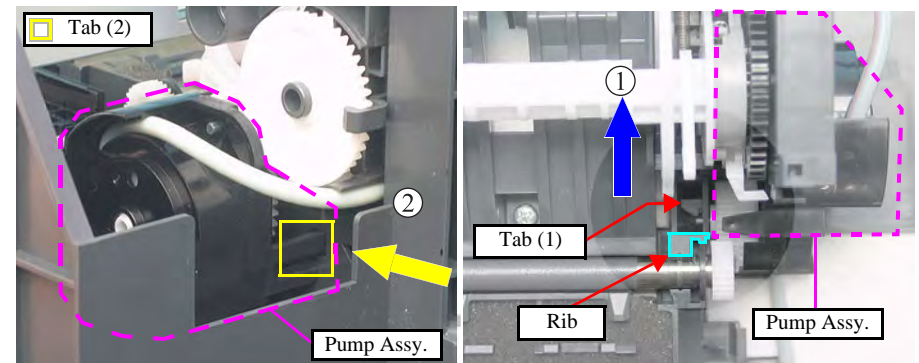


Figure 4-53. Removing Ink System (2)

10. Pull out the Ink Tube and the Tube Stopper from the connector of the Waste Ink Pads, and draw out the tube from the Ink Tube passage.
11. Remove the pump system.

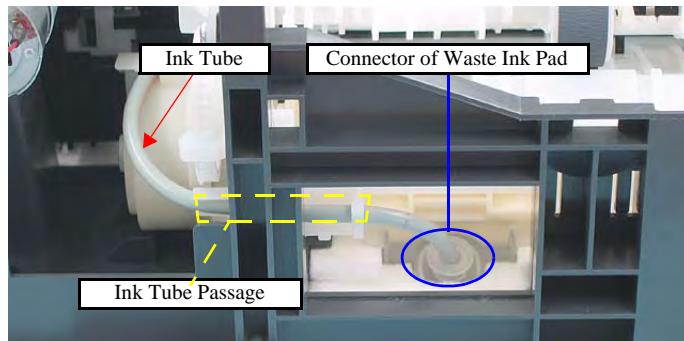


Figure 4-54. Removing Ink System (3)



- When installing the Cap Assy, be sure to attach the Ink Tube up to the edge as shown below without any space between.

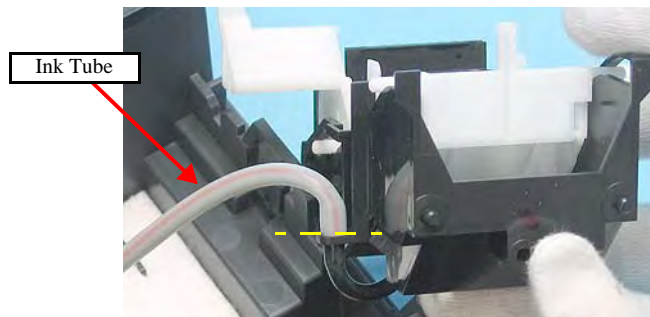


Figure 4-55. Installing Ink Tube

- When inserting the Ink Tube into the connector, be careful not to touch the Paper Back Lever.

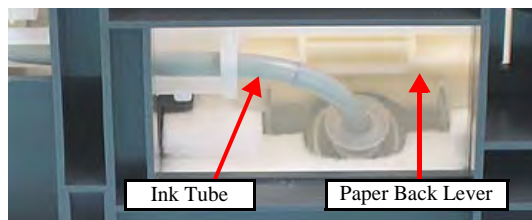


Figure 4-56. Paper Back Lever behind Ink Tube

>>To be continued to the next page.



- When installing the Cap Assy, follow the steps described below.
 1. Arrange the tube between the ribs as shown in the figure below.
 2. Place the Cap Assy and match the tabs (x2) and lock them. (refer to Figure 4-51)
 3. Attach the Ink Tube. (refer to Figure 4-52)

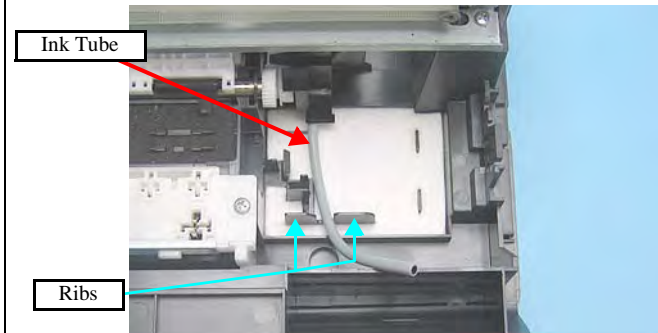


Figure 4-57. Installing Ink System

- When installing the Pump Assy, follow the steps described below.
 1. Match the tabs (x2) of the Pump Assy with the positioning holes (x2) of the Frame Base. (refer to Figure 4-53)
 2. Pass the Ink Tube through the Ink Tube passage, and insert the tube into the connector. (refer to Figure 4-54)
 3. Arrange the tube with the Tube Stopper as shown in the figure.
 4. Attach the Ink Tube into the hole of the connector of Waste Ink Pad.

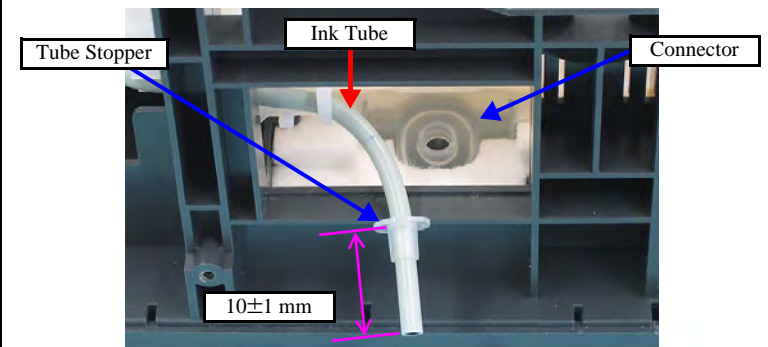


Figure 4-58. Installing Ink Tube (2)

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4.6.7 Power Supply Board

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

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism

□ Removal procedure

1. Disconnect the connector cable from the connector (J1) of the Main Board.

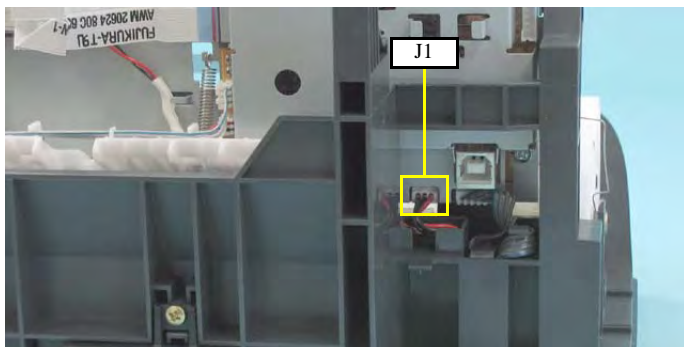


Figure 4-59. Removing Power Supply Board (1)

2. Remove the screw (x1), and remove the Power Supply Board in the direction of the arrow.

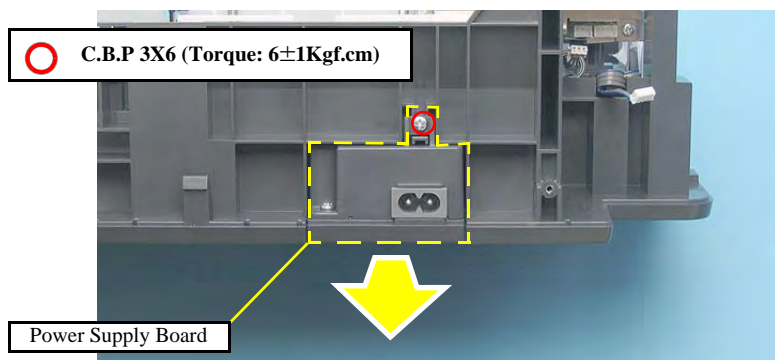


Figure 4-60. Removing Power Supply Board (2)



Do not turn the Power Supply Board upside down as shown in the figure below. This figure is only used to show the location of the parts and the harness arrangement.

3. Pull out the connector cable through the hole of the Frame Base.

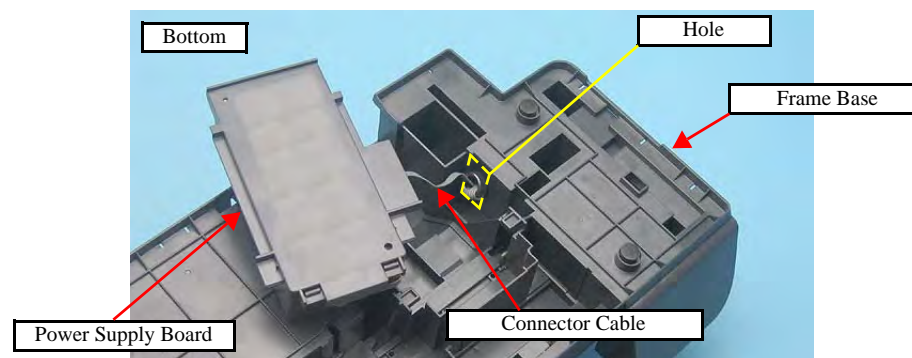


Figure 4-61. Removing Power Supply Board (3)



When installing the Power Supply Board, arrange the connector cable into the slot as shown below.

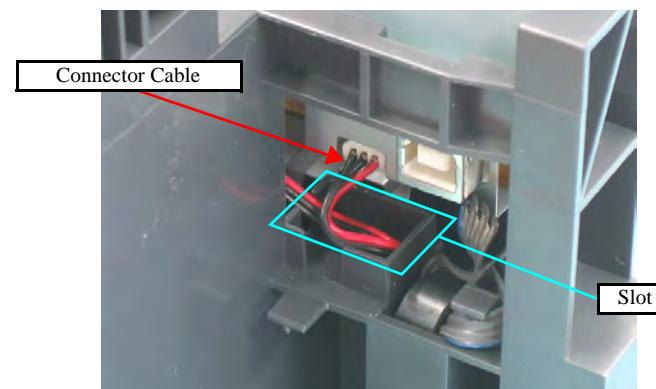


Figure 4-62. Installing Power Supply Board

4.6.8 EJ Frame Assy/EJ Roller

□ Part/Unit that should be removed before removing EJ Frame Assy/EJ Roller

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case /
Panel Unit / Printer Mechanism

CHECK
POINT



When installing Spur Gear, 59. 6 and the EJ Roller, be sure to install new ones. These parts cannot be reused.

□ Removal procedure

■ EJ Frame Assy removal

1. Remove the Grounding Spring from the EJ Frame Assy.
2. Remove the screws (x2) and remove the EJ Frame Assy.

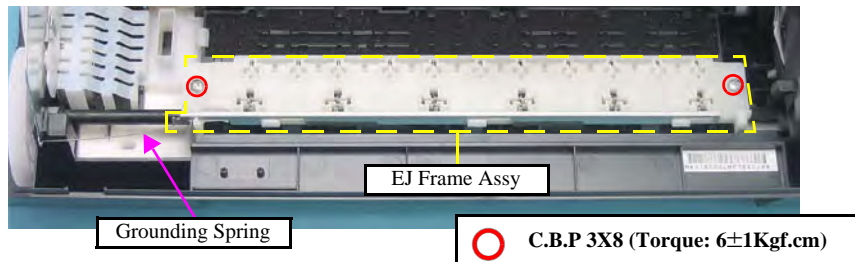


Figure 4-63. Removing EJ Frame Assy.

■ EJ Roller Removal

3. Insert a flathead screwdriver between the rib and the Spur Gear, 59.6 and push the gear in the direction of the arrow, and remove the Spur Gear, 59.6.

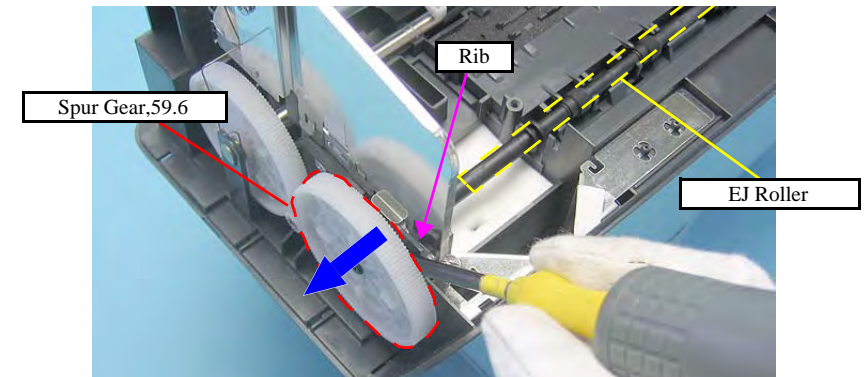


Figure 4-64. Removing EJ Roller (1)

4. Pull the bearing slightly (Arrow ①), and remove the EJ Roller (Arrow ②).

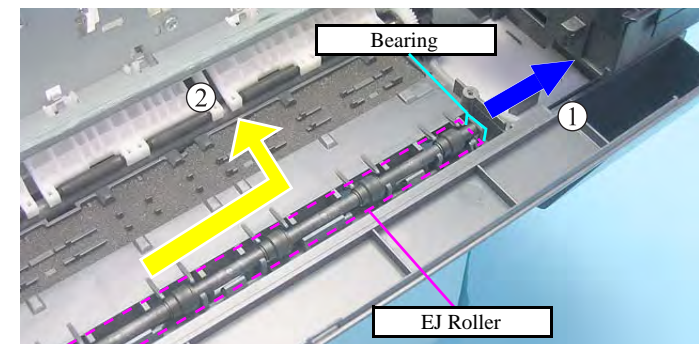


Figure 4-65. Removing EJ Roller (2)

ADJUSTMENT
REQUIRED



■ After replacing the EJ Roller, perform the following adjustment (T.B.D.).

(Refer to Chapter 5 “[ADJUSTMENT \(p100\)](#)”)

1. “Head Angular Adjustment”
2. “Bi-D Adjustment”
3. “PF Band Adjustment” (only after removal)

■ When the EJ Frame Assy or EJ Roller is reassembled, perform the required lubrication.
(Refer to Chapter 6 “[MAINTENANCE \(p108\)](#)”)

4.6.9 Main Frame

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

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism / Hopper / Main Board / Print Head / CR Scale / CR Motor / CR Unit / Timing Belt

□ Removal procedure

1. Remove the screw and the Grounding Spring, and remove the Shield Plate L while releasing the hooks and the positioning holes.

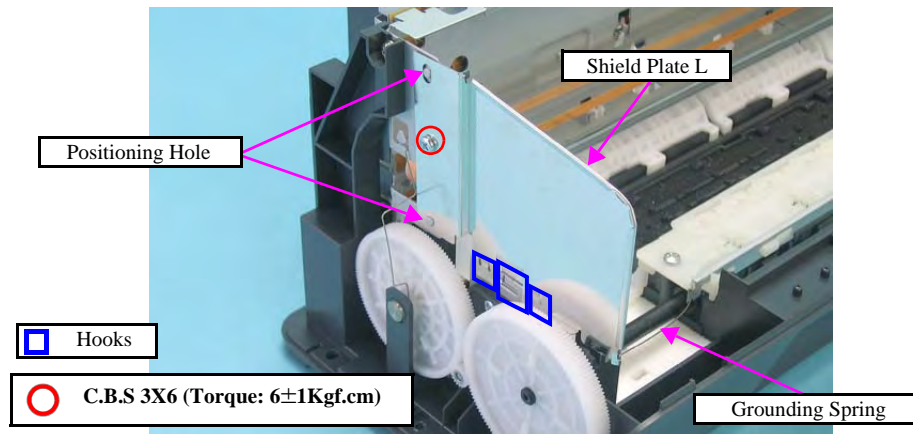


Figure 4-66. Removing Shield Plate L

2. Remove the PF Roller Grounding Spring.
3. Remove the Driven Pulley Holder from the notch of the Main Frame.

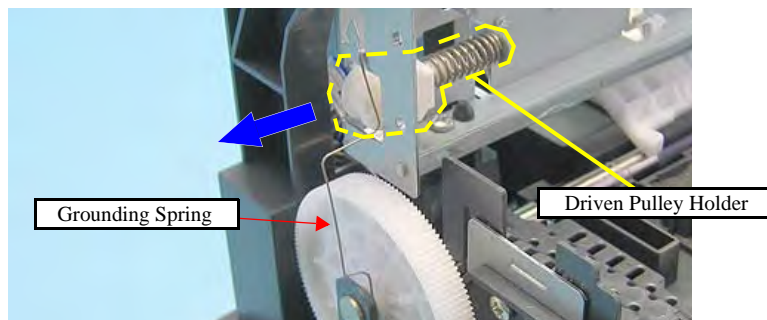


Figure 4-67. Removing Grounding Spring and Driven Pulley Holder

4. Remove the Extension Springs (x3) from the hooks of the Main Frame and the guide pins of the Upper Paper Guide.

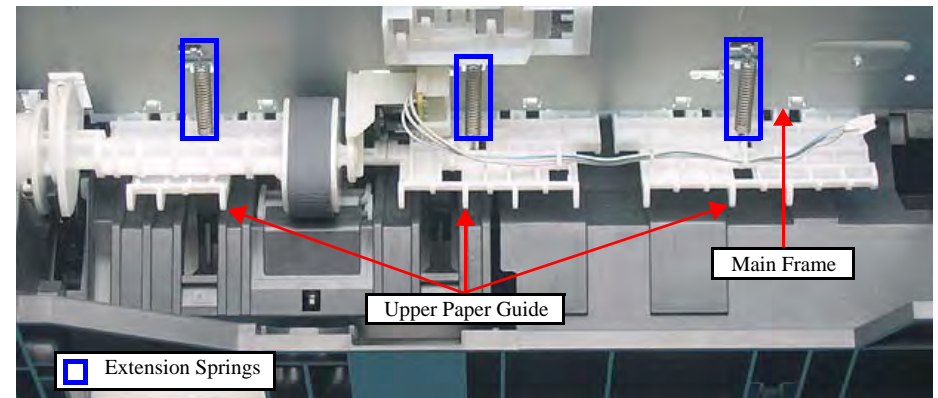


Figure 4-68. Removing Extension Springs

5. Remove the screws (x4) that secure the Main Frame to the Frame Base.

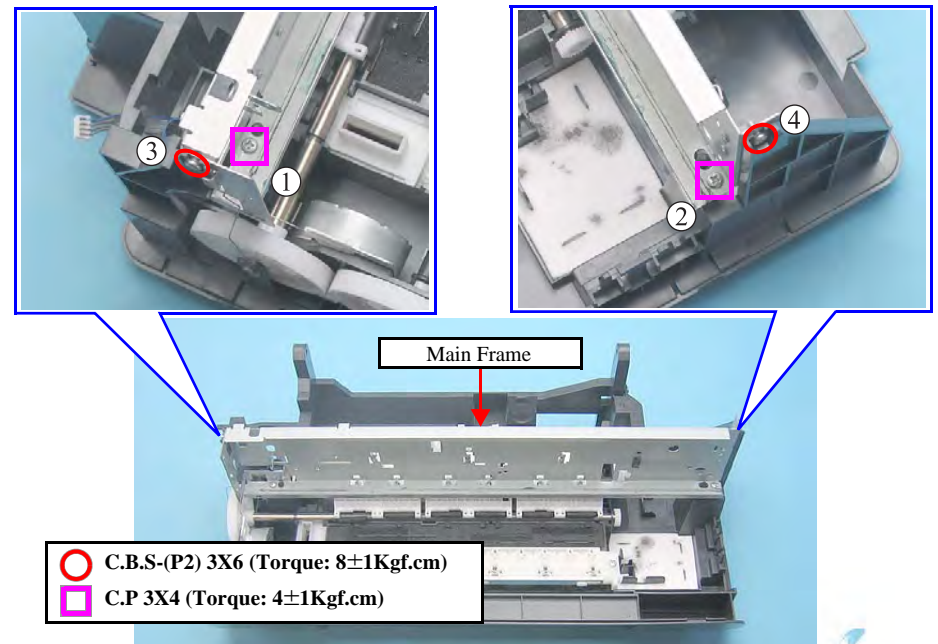


Figure 4-69. Removing Main Frame (1)

6. While detaching the shaft of the LD Roller from the LD Holder Shaft Assy, remove the Main Frame.

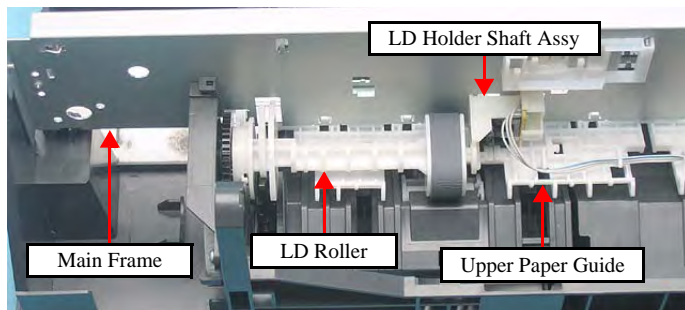


Figure 4-70. Removing Main Frame (2)

7. Release the connector cable of the PE Detector from the tabs (x4).

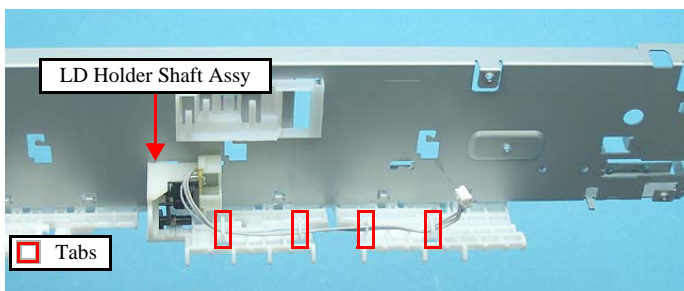


Figure 4-71. Disconnecting Cable

8. Remove the screw (x1) and remove LD Shaft Holder Assy.

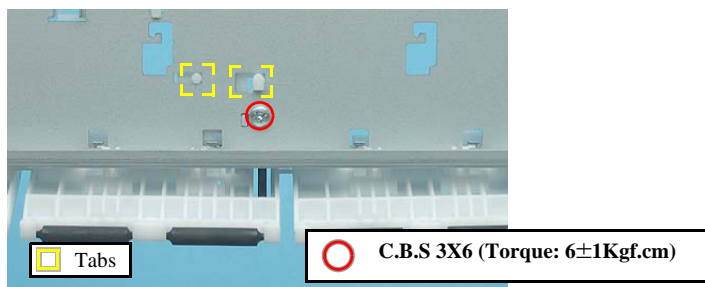


Figure 4-72. Removing LD Shaft Holder Assy

9. Release the tab (x1), and remove the PE Detector Assy.

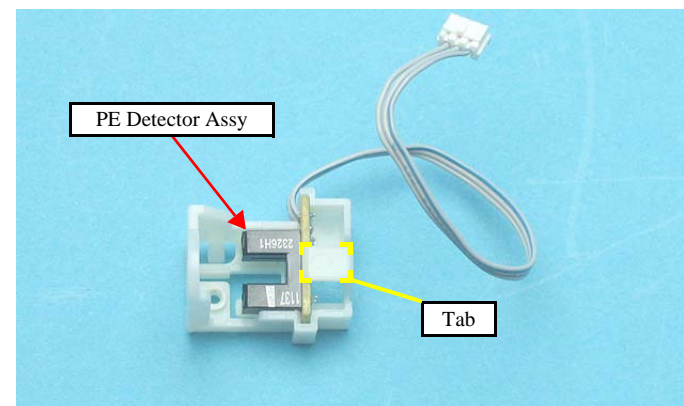


Figure 4-73. Removing PE Detector Assy

10. Release the tabs (x6) and remove the Upper Paper Guide.

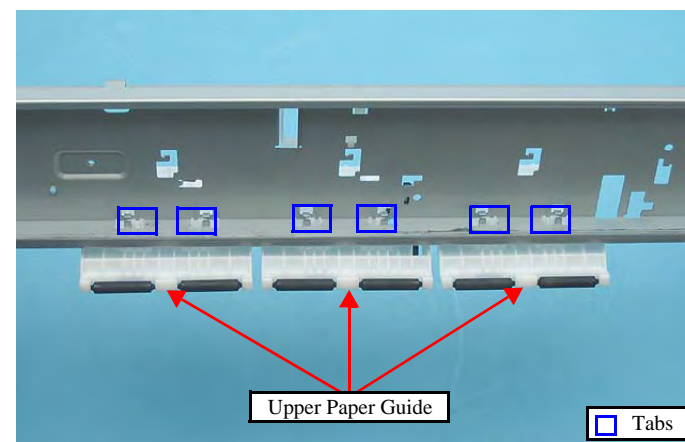


Figure 4-74. Removing Upper Paper Guide

11. Remove the PE Detector Lever and Torsion Spring, 0.222.

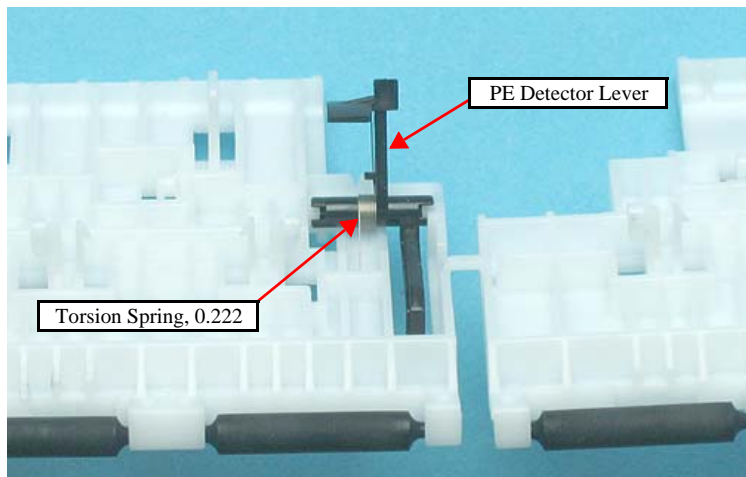


Figure 4-75. Removing PE Detector and Torsion Spring, 0.222



■ When installing the Extension Springs, follow the steps below.

1. Attach one end of the Extension Spring to the guide pin of the Upper Paper Guide.
2. Attach the other end of the Extension Spring to the hook of the Main Frame with the longnose pliers.

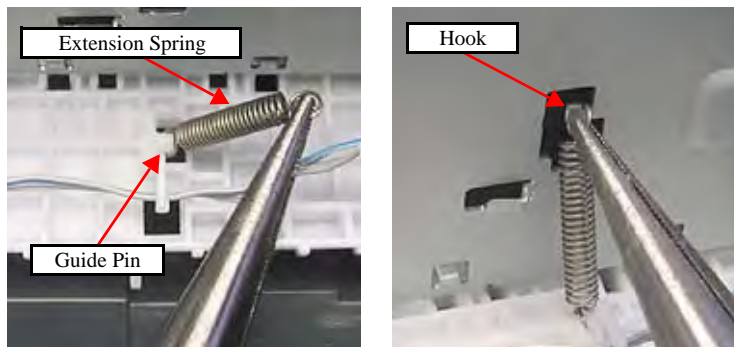


Figure 4-76. Installing Extension Springs



- When securing the Main Frame to the Frame Base with screws, be sure to perform the tightening in the order of the numbers indicated in Figure 4-69 (p.87).
- When installing the Shield Plate L, be cautious not to damage the Spur Gears of the PF Roller and the EJ Roller.
- Install the Grounding Spring attaching the ends to the parts as shown in the figure below.

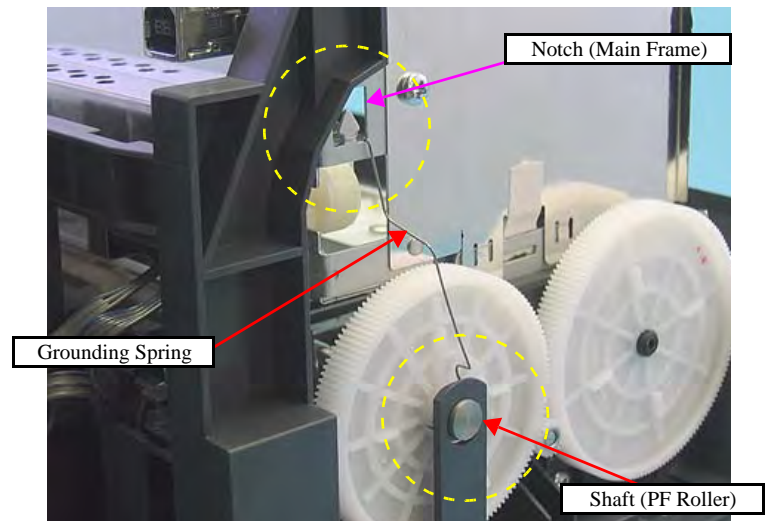


Figure 4-77. Installing Grounding Spring



- After replacing the Waste Ink Pads, perform the following adjustment (T.B.D.).
(Refer to Chapter 5 “ADJUSTMENT (p100)”)
 1. “Waste Ink Pad Counter” (only after replacement)
 2. “Ink Charge”
 3. “TOP Margin Adjustment”
 4. “Head Angular Adjustment”
 5. “Bi-D Adjustment”
 6. “PF Band Adjustment”
- When the Main Frame is reassembled, perform the required lubrication.
(Refer to Chapter 6 “MAINTENANCE (p108)”)

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4.6.10 LD Roller/ASF Unit

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

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism / Hopper / Main Board / Main Frame / EJ Frame Assy. / Print Head / CR Scale / CR Motor / CR Unit / Timing Belt / Ink System

□ Removal procedure

■ Preparation for LD Roller Removal

1. Rotate the LD Roller until the flat part faces upwards.
2. Insert a tweezer or a screwdriver into the slot as shown in the figure to hold the Paper Back Lever outwards.
3. Move the Carriage Lock Lever outwards.

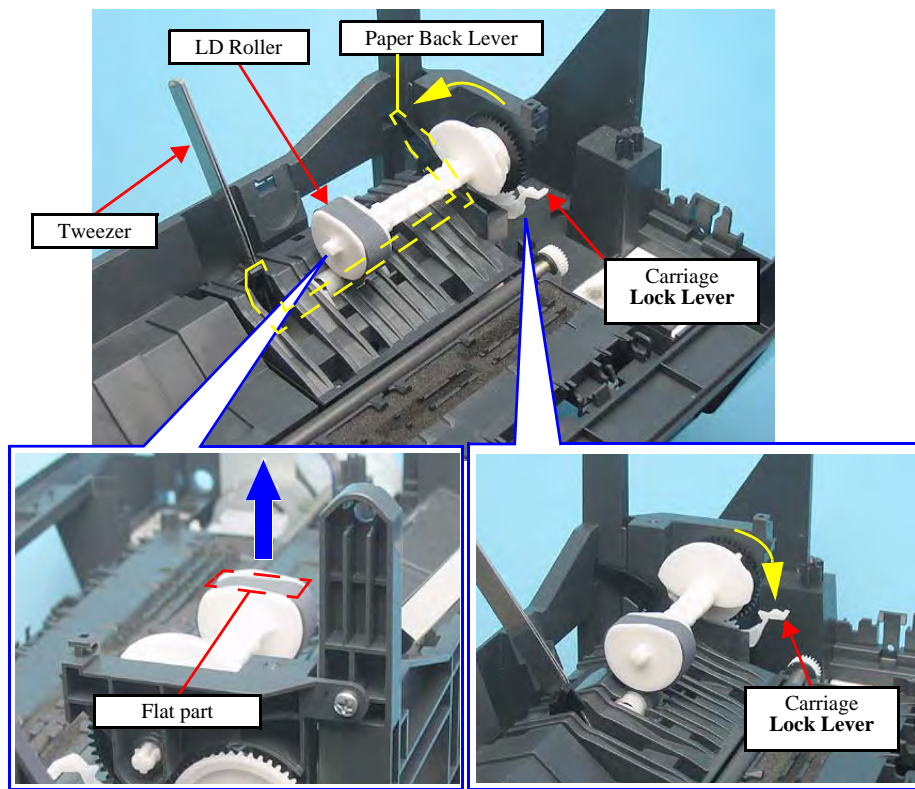


Figure 4-78. Preparation (1)

■ LD Roller Removal

CAUTION

Be cautious of the following points.

- Do not touch the LD Roller with bare hands.
- Do not touch the roller of ASF Unit with bare hands.

4. Release the tabs (x2) of the LD Roller shaft from the bearing, and loosen the shaft.

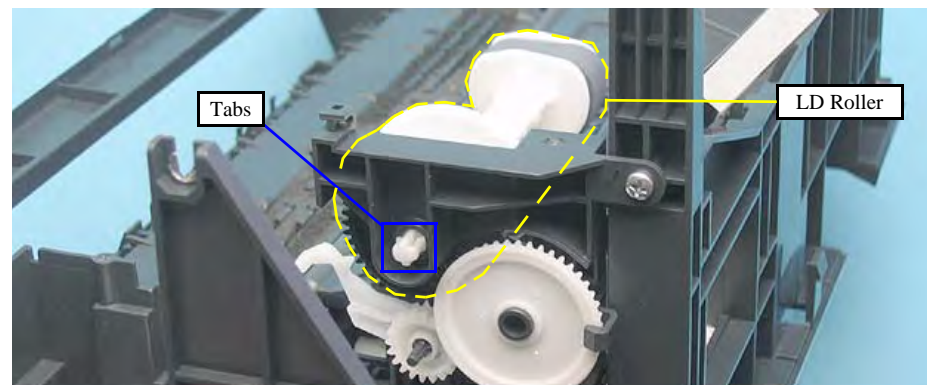


Figure 4-79. Removing LD Roller (1)

5. Pull out the LD Roller shaft from the frame of the ASF Unit and remove the LD Roller.

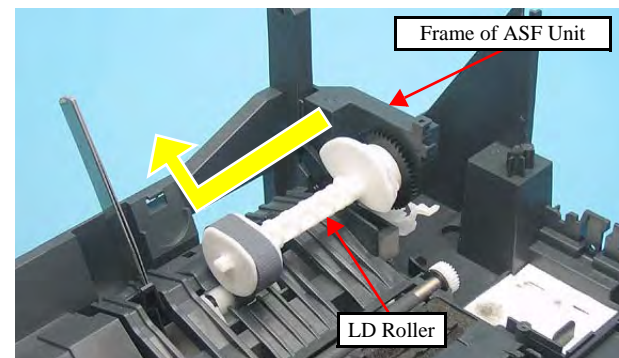


Figure 4-80. Removing LD Roller (2)

■ ASF Unit Removal

1. Remove the screw (x1) from the side of the Frame Base.
2. Remove the screws (x2), and remove the ASF Unit taking care not to scratch it with the positioning tab.

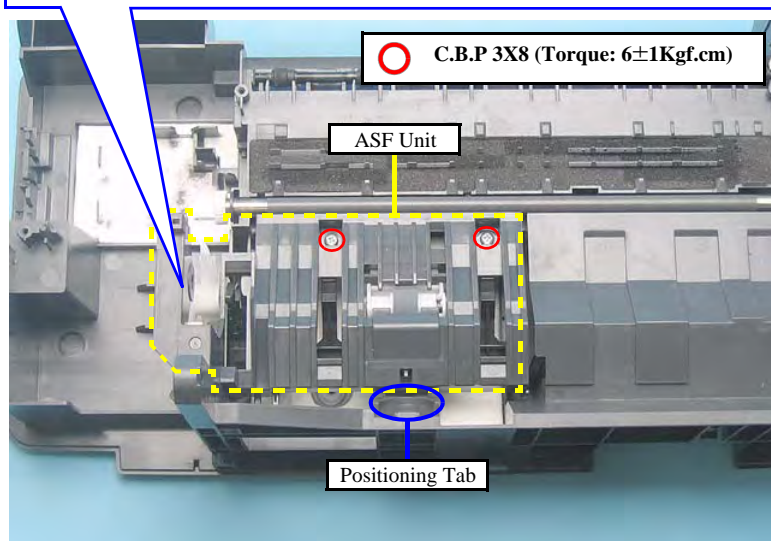
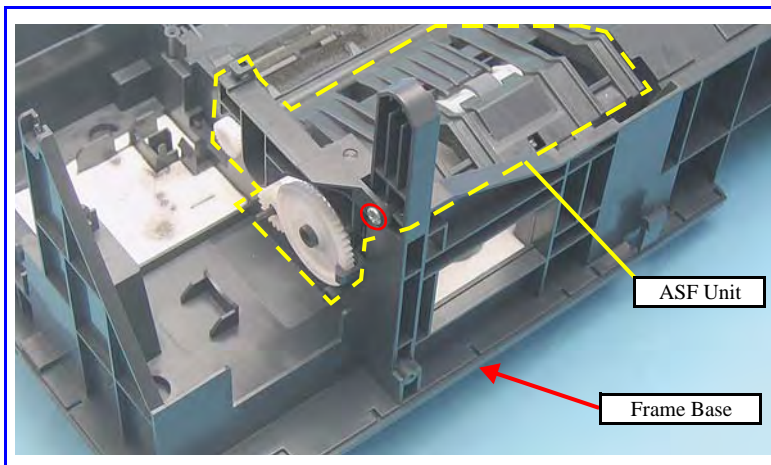


Figure 4-81. Removing ASF Unit



Assemble the LD Roller as shown below.

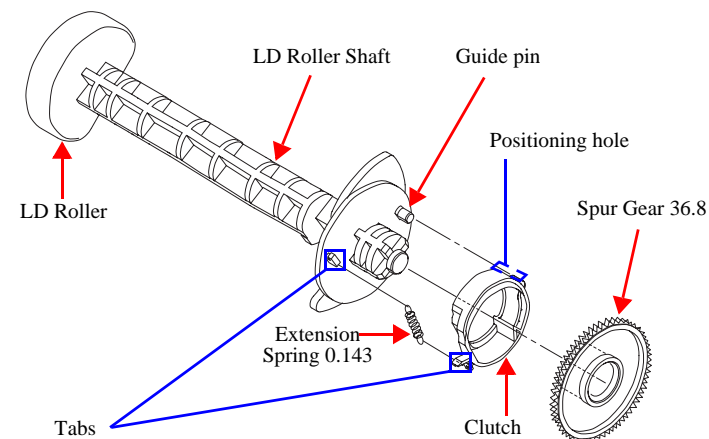


Figure 4-82. Assembling LD Roller (1)

1. Match the guide pin of the LD Roller Shaft with the positioning hole of the Clutch.
2. Attach the tips of the Extension Spring 0.143 to the tab of the LD Roller shaft and the tab of the Clutch.
3. Attach the cam side of the Spur Gear 36.8 to the hole of the Clutch.

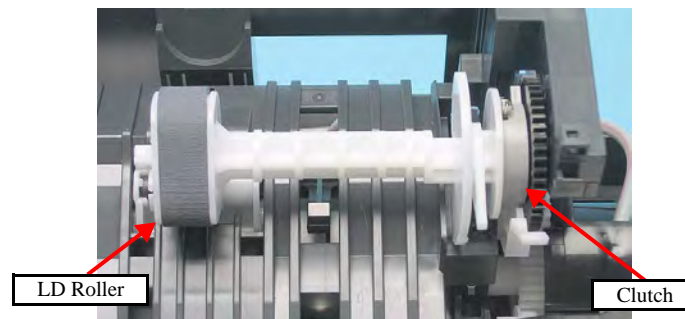


Figure 4-83. Assembling LD Roller (2)



When the LD Roller is reassembled, perform the required lubrication. (Refer to Chapter 6 “[MAINTENANCE \(p108\)](#)”)



4.6.11 Waste Ink Pads

□ Part/Unit that should be removed before removing Waste Ink Pads

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism / Hopper / Main Board / Main Frame / EJ Frame Assy. / Print Head / CR Scale / CR Motor / CR Unit / Timing Belt / Ink System / EJ Frame Assy. / EJ Roller / LD Roller / ASF Unit

□ Removal procedure

1. Remove the Waste Ink Pads (x8) from the sections indicated with (A) to (D) of the Frame Base.

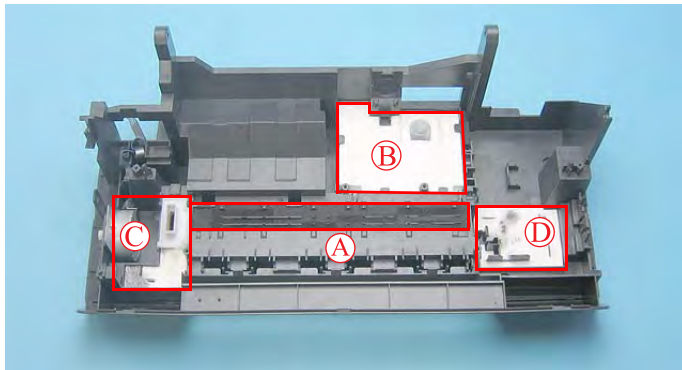


Figure 4-84. Removing Waste Ink Pads



- When installing the Waste Ink Pads on the section (B), be sure to lay the six parts one on top of another in the order shown in the figure.

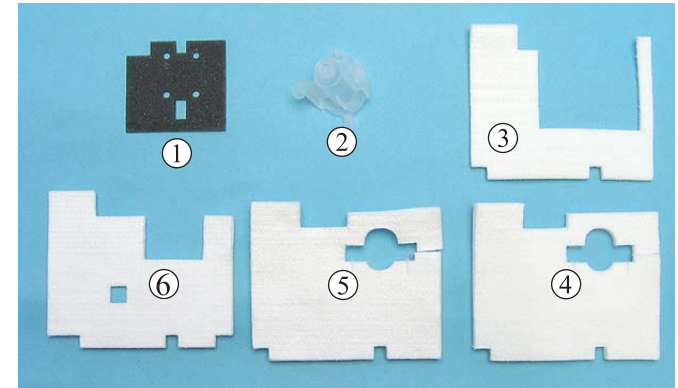


Figure 4-85. Installing Waste Ink Pads (1)

- When installing the Waste Ink Pads on the section (B), make sure to insert the tips of induction paper between the (5) and (6) pads.

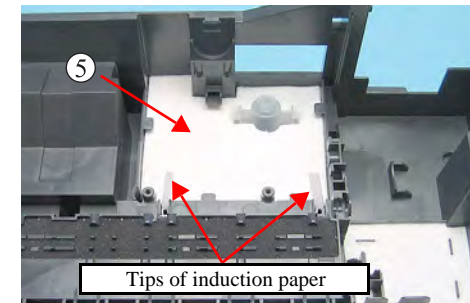


Figure 4-86. Installing Waste Ink Pads (2)

CAUTION



When removing the Waste Ink Pads, be careful not to tear the tip of the induction paper. If it is torn, replace the induction paper.



- When installing the Waste Ink Pads, be sure to insert ribs and tabs of the Frame Base into the slots and notches of the pads.
- When installing (2) in the section (B) (refer to Figure 4-84), be sure to match the positioning tabs and press (2) until it clicks to secure it in the right position.

ADJUSTMENT REQUIRED



After replacing the Waste Ink Pads, perform the following adjustment (TBD). (Refer to Chapter 5 “ADJUSTMENT (p100)”)

1. “Waste Ink Pad Counter” (only after replacement)
2. “Ink Charge”
3. “TOP Margin Adjustment”
4. “Head Angular Adjustment”
5. “Bi-D Adjustment”
6. “PF Band Adjustment”

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4.6.12 PF Roller

CAUTION



- Do not touch or damage the coated area of the PF Roller Assy., when performing the following work.
- When installing the Spur Gear, 13.5, be sure to install a new one. The Spur Gear 13.5 cannot be reused.

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

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism / Hopper / Main Board / Main Frame / EJ Frame Assy. / Print Head / CR Scale / CR Motor / CR Unit / Timing Belt / Ink System

□ Removal procedure

1. Remove the FB Cover.

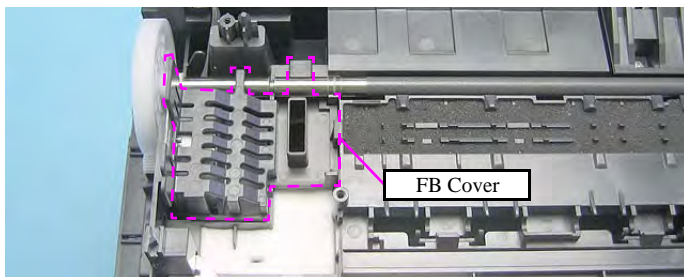


Figure 4-87. Removing PF Roller (1)

CAUTION



When removing (prying) the Spur Gear, 13.5 with a flathead screw driver or the like, do not use the fragile upper half of the bearing as a pivot point, but use the firmer lower half instead.

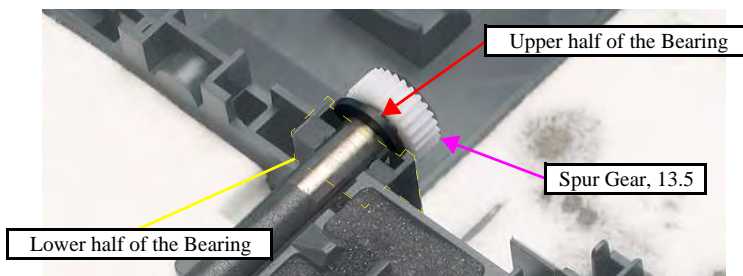


Figure 4-88. Removing Spur Gear, 13.5

2. Remove the Spur Gear, 13.5 from the PF Roller with a flathead screw driver or the like.

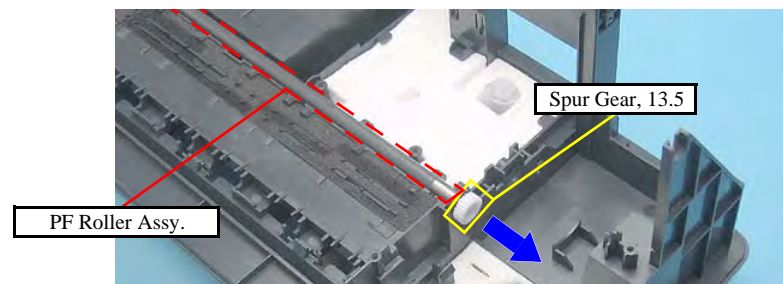


Figure 4-89. Removing PF Roller (2)

3. Pull open the bearing slightly (Arrow ①), and remove the PF Roller Assy (Arrow ②).

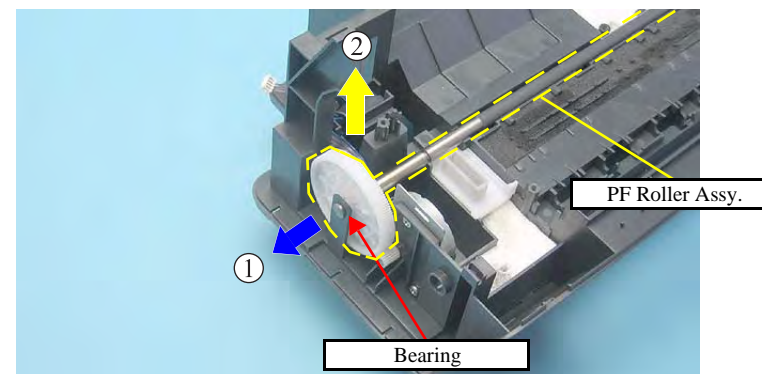


Figure 4-90. Removing PF Roller (3)

ADJUSTMENT REQUIRED



When the PF Roller is reassembled, perform the required lubrication. (Refer to Chapter 6 “[MAINTENANCE \(p108\)](#)”)

4.6.13 PF Motor

□ **Part/Unit that should be removed before removing PF Motor**

Document Cover / ASF Cover / Support Arm / Scanner Unit / Middle Case / Panel Unit / Printer Mechanism / Hopper / Main Board / Main Frame / EJ Frame Assy. / Print Head / CR Scale / CR Motor / CR Unit / Timing Belt / Ink System / PF Roller

□ **Removal procedure**

1. Detach the ferrite core from the Frame Base.

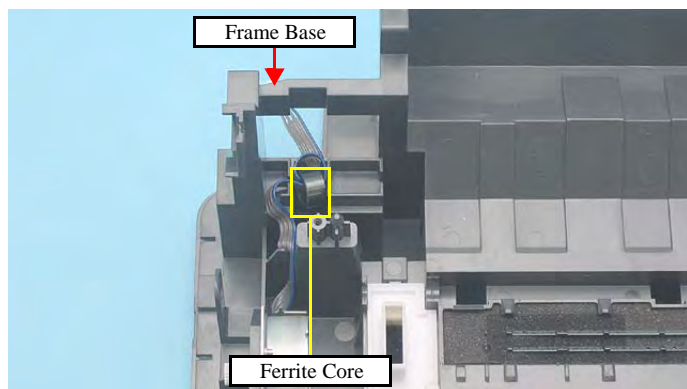


Figure 4-91. Removing PF Motor (1)

2. Remove the screws (x3), and remove the PF Motor.

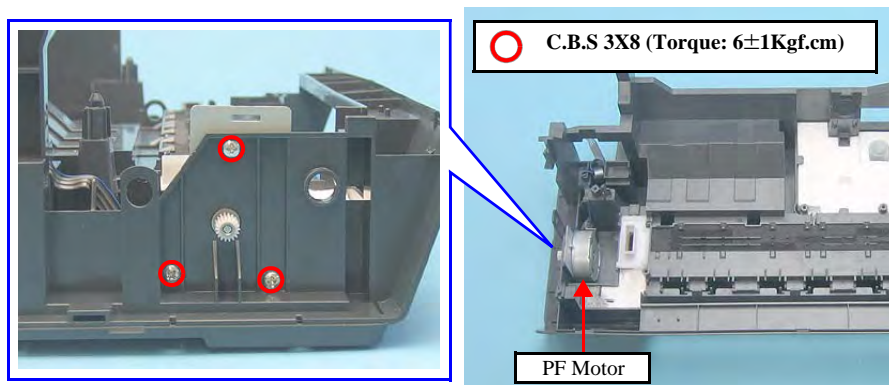


Figure 4-92. Removing PF Motor (2)



When installing the PF Motor, arrange the cable into the slit and the hook, then place the ferrite core into the positioning hole.

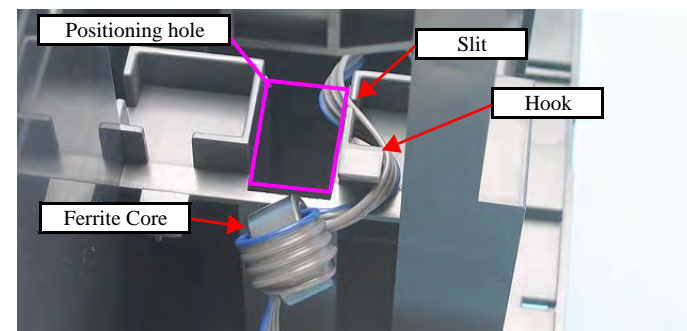


Figure 4-93. Installing the PF Motor

4.7 The Shortest Way to Remove the Main Frame.

If the parts to repair is only the parts after the Main Frame is removed, there's another way to remove the Main Frame together with other parts. (See the following list of "Target Parts of this removal" or the parts marked with "*" in "Figure 4-2. Disassembling Flowchart (p64)")

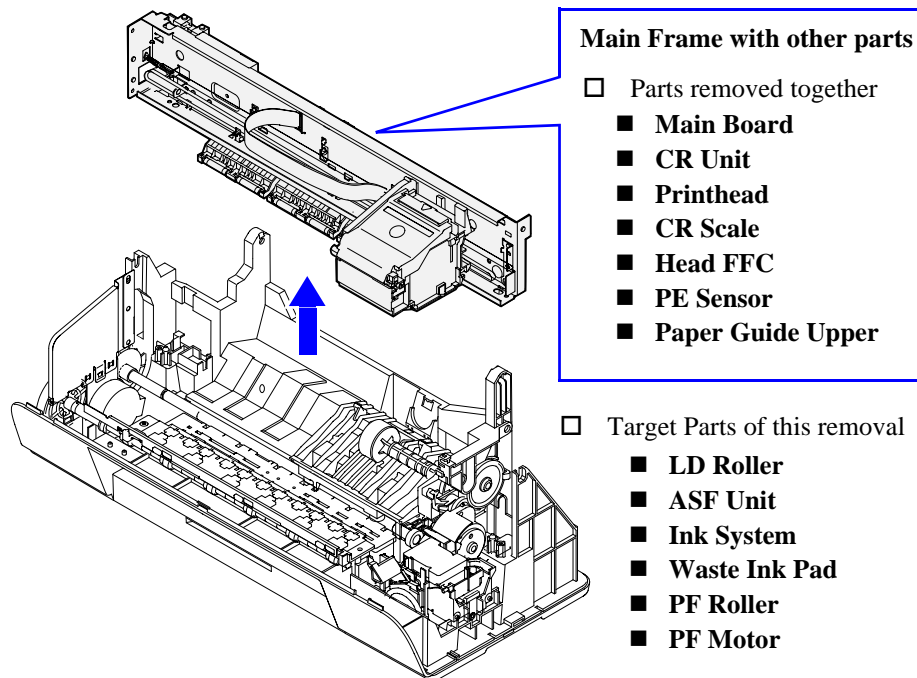


Figure 4-94. Removing Main Frame with Other Parts

□ Removal procedure

1. Remove the "Document Cover/ASF Cover/Support Arm (p66)".
2. Remove the "Scanner Unit/Middle Case/Panel Unit (p67)".
3. Remove the "Hopper (p78)".
4. Disconnect the connector cables of P/S ASSY and PF Motor from J1, J8 of the Main Board. (See "Main Board (p73)")
5. Remove the "CR Motor (p80)".
6. Remove the screw from the Shield Plate L. (The plate is not to be removed. See Step1 in "Main Frame (p87)".)

7. Follow the same steps from Step 2 in "Main Frame (p87)" to Step 6.
8. Remove the Main Frame together with other parts.

CAUTION



- After removing the Main Frame, treat and place the Main Frame with great care while following the next instructions.

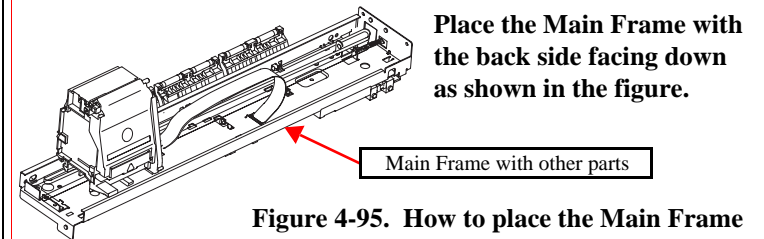


Figure 4-95. How to place the Main Frame

- Be careful not to deform the Main Frame.
- Do not touch or damage the nozzles or the ink supply needles of the Printhead when placing the Main Frame.
- Be careful not to stick the grease around the area, especially not to allow the grease to come in contact with the Timing Belt, which can result in malfunction of the printer.
- Be careful not to lose the rollers of Paper Guide Upper, and do not touch the rollers with bare hands.

REASSEMBLY



- When reassembling the Main Frame, basically follow the removal steps backward. But in some points listed below, be sure to refer to the reassembly instructions.
- Be careful not to bend or damage the Shield Plate L when placing the Main Frame on the Frame Base in Step 5.
- Be careful not to damage the Carriage Lock Lever when placing the Main Frame on the Frame Base in Step 5. (See LD Roller/ASF Unit "Preparation (1) (p90)")
- See "Installing Extension Springs (p89)" and "Installing Grounding Spring (p89)" in Step 5

ADJUSTMENT REQUIRED



- After removing the Main Frame in this removal, perform the required adjustment (T.B.D.). (Refer to Chapter 5 "ADJUSTMENT (p100)")
- When the Main Frame is reassembled, perform the required lubrication. (Refer to Chapter 6 "MAINTENANCE (p108)")

4.8 Scanner Section

4.8.1 Upper Scanner Housing

- ☐ **Part/Unit that should be removed before removing Upper Scanner Housing**
Document Cover / ASF Cover / Support Arm / 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 Upper Scanner Housing.

1. Remove the screws (x2) that secure the Upper Scanner Housing.
2. Release the tabs (x7) that secure the Upper Scanner Housing, and remove the Upper Scanner Housing.

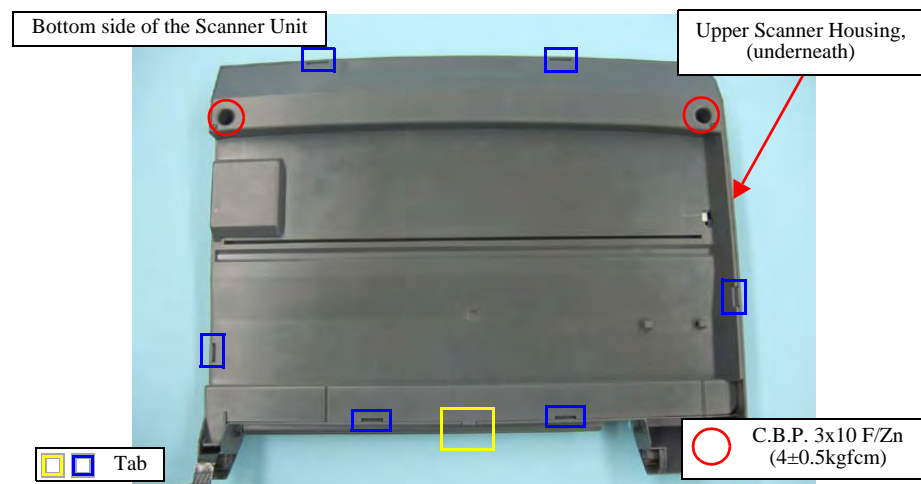


Figure 4-96. Removing Upper Scanner Housing

**ADJUSTMENT
REQUIRED**


When the Upper Scanner Housing is reassembled, perform the required lubrication. (Refer to Chapter 6 “[MAINTENANCE \(p108\)](#)”)



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

4.8.2 CIS Assy./CIS Carrier Assy./Scanner FFC

- **Part/Unit that should be removed before removing Scanner CIS Assy./CIS Carrier Assy./Scanner FFC**

Document Cover / ASF Cover / Support Arm / Scanner Unit / Upper Scanner Housing

- **Removal procedure**

CAUTION



Do not scratch the Rod Lens Array when removing the CIS Assy.

1. Remove the CIS Assy. from the CIS Carrier Assy.
2. Disconnect the Scanner FFC from the CIS Assy., and remove the CIS Assy.

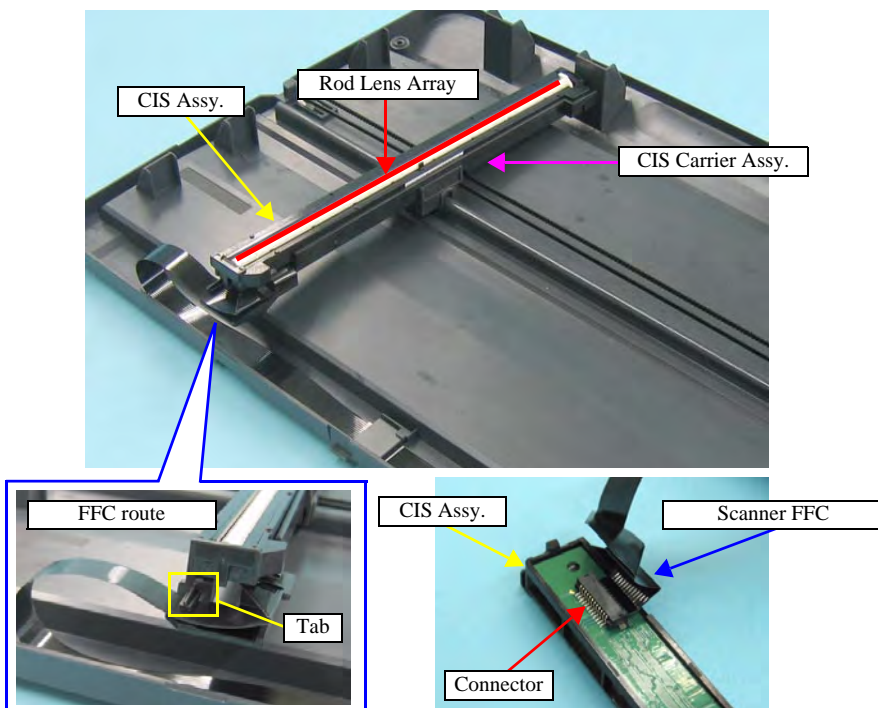


Figure 4-97. Removing CIS Assy.

3. Remove the CIS Carrier Assy. from the Timing Belt and the Guide Rail of the Lower Scanner Housing.

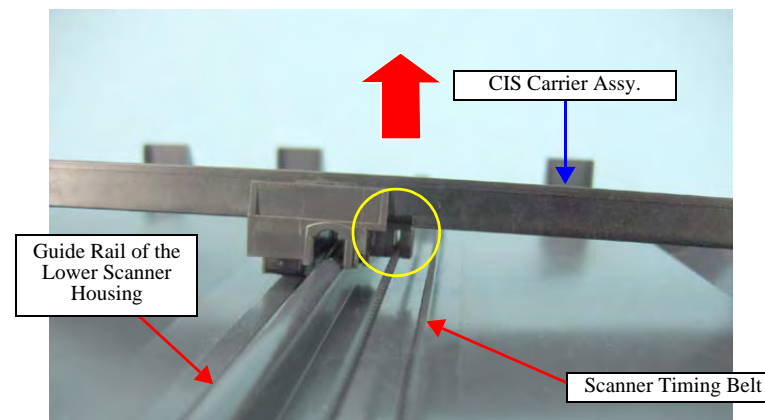


Figure 4-98. Removing CIS Carrier Assy.

CAUTION



Do not damage the Scanner FFC as it is secured with double-sided tape.

4. Shift the Ferrite Core in the direction of the arrow to release it from the tabs (x2), and remove the Scanner FFC from the Lower Scanner Housing.

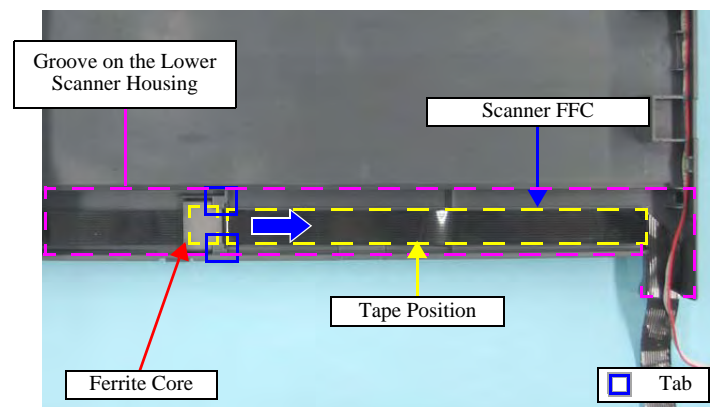


Figure 4-99. Removing Scanner FFC

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- When installing the Scanner FFC to the Lower Scanner Housing, secure it and the ferrite core with double-sided tapes at the specified positions. (refer to Figure 4-99)
- When installing the CIS Carrier Assy., put the Scanner Timing Belt through the slit of the CIS Carrier Assy. (refer to Figure 4-98)
- When installing the CIS Assy. to the CIS Carrier Assy., connect the Scanner FFC and route the FFC under the tab of the CIS Assy. (refer to Figure 4-97)
- When installing the CIS Assy. to the CIS Carrier Assy., match the tab and the notch as shown below.

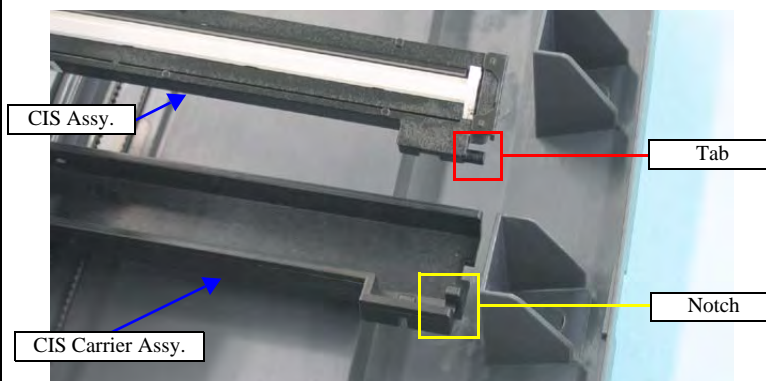


Figure 4-100. Installing CIS Assy. to CIS Carrier Assy.



When the CIS Carrier Assy. is reassembled, perform the required lubrication to the Guide Rail of the Lower Scanner Housing. (Refer to Chapter 6 “[MAINTENANCE \(p108\)](#)”)

4.8.3 Scanner Motor Unit/Driven Pulley

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

Document Cover / ASF Cover / Support Arm / Scanner Unit / Upper Scanner Housing

□ Removal procedure

1. Move the CIS Carrier Assy. to the center of the scanner.
2. Remove the polyslider washer from the Driven Pulley.
3. Push the Driven Pulley in the direction of the arrow to release the Timing Belt, and remove the Driven Pulley.
4. Remove the Scanner Timing Belt from the Pulley.

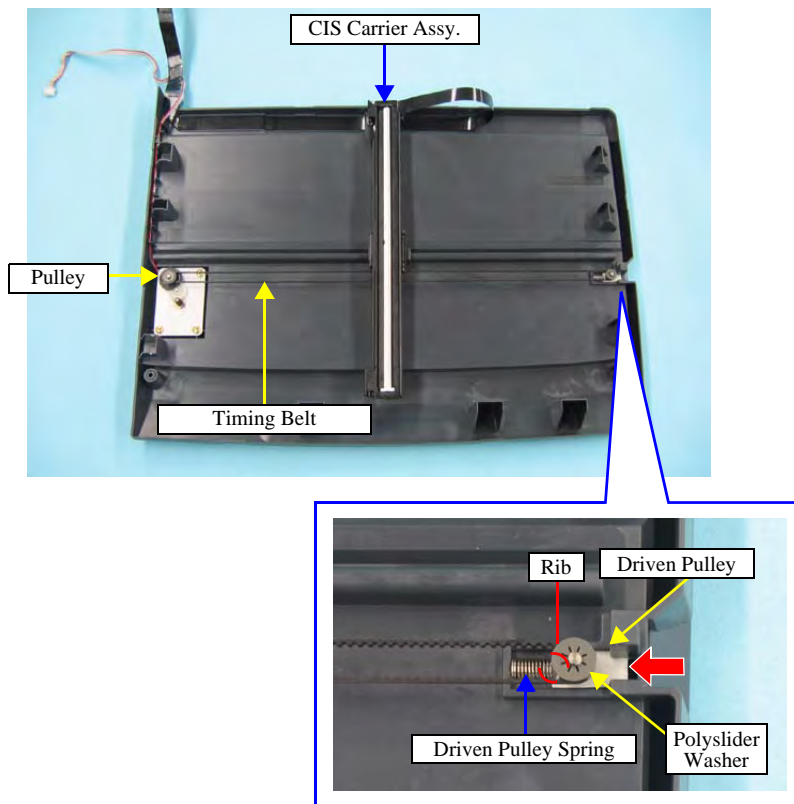


Figure 4-101. Removing Driven Pulley

5. Release the Scanner Motor cable from the tabs (x6) of the Lower Scanner Housing.
6. Remove the screws (x3) that secure the Scanner Motor Unit, and remove the Scanner Motor Unit.

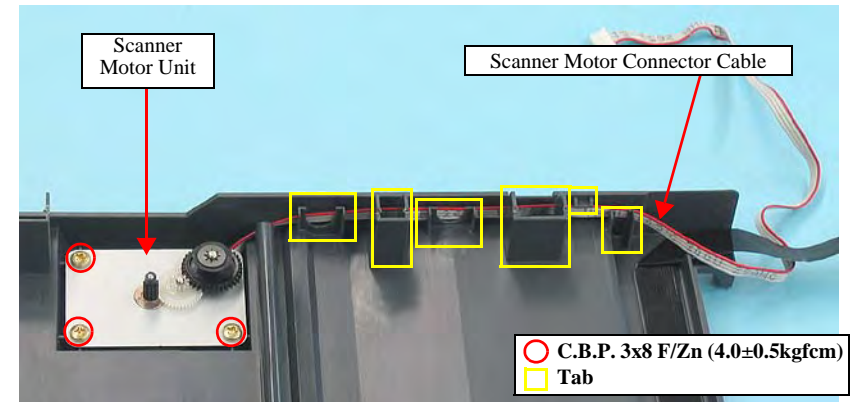


Figure 4-102. Removing Scanner Motor Unit



- Route the Scanner Motor Connector Cable as shown in the figure. (refer to Figure 4-102)
- Insert the Driven Pulley Spring into the rib of the Driven Pulley. (refer to Figure 4-101)
- When installing the Scanner Timing Belt, make sure to face its jagged side inward.



When the Scanner Motor Unit/Driven Pulley is reassembled, perform the required lubrication. (Refer to Chapter 6 “[MAINTENANCE \(p108\)](#)”)

CHAPTER

5

ADJUSTMENT



5.1 Adjustment Items and Overview (T.B.D)

This chapter describes adjustments necessary after the disassembly/reassembly of the printer.

5.1.1 Servicing Adjustment Item List (T.B.D)

The adjustment items of this product are as follows.

Table 5-1. Adjustment Items (T.B.D)

Function Item		Purpose	Method Outline	Tool
Adjustment Items	EEPROM data copy	This function is used to read the necessary data from the EEPROM of the faulty Main Board and write them to the new Main Board in order to reduce the auxiliary adjustment items at the time of Board replacement.	With the old Board installed, use the adjustment program to read out and memorize the EEPROM data, and after exchanging with the new Board, load the memorized data.	• Adjustment Program
	Initial settings	At the time of Main Board replacement, this adjustment is made to write the Board common information on a destination basis.	Use the adjustment program to write the Board information on a destination basis to the Main Board.	• Adjustment Program
	Head ID Input	At the time of Printhead replacement, this adjustment is made to register the head manufacturing variations correction ID to the printer.	Use the adjustment program to input the Head QR Code label ID stuck on the Printhead. (Supplement: Read the QR code label from left to right on the top row and then from top to bottom in due order.)	• Adjustment Program
	TOP Margin Adjustment	Adjust to make the Top Margin the value you wish.	Use the adjustment program, to print the Top margin adjustment pattern, measure the distance from Paper top edge to the TOP line, and adjust so that it becomes within 3 ± 1 mm.	• Adjustment Program • Rule
	First dot adjustment	Correct the print timing by the software to make the start printing position of the main scan direction to the value you wish.	Use the adjustment program to print the adjustment pattern and enter the adjustment value of printed position 5mm from the left edge.	• Adjustment Program • Rule
	Head angular adjustment	Adjust the vertical/horizontal tilt that occur when installing the Head, by the software.	Use the adjustment program to print the adjustment pattern and adjust to meet the standard.	• Adjustment Program
	Bi-D adjustment	This adjustment is made to correct the print timing in the go and return paths in bi-directional printing.	Use the adjustment program to print out the adjustment pattern, and enter the adjustment value of the printed pattern with no black/white streaks in the block. Adjustment items are, each dot sizes (ECO/VSD1/VSD2/VSD3) x Colors (Black/Color), total of 8 types.	• Adjustment Program
	CR heat protection control	Assuming production variation of the CR Motor and the PS Board, operate this to use the motor capacity to the maximum when the CR Motor generates heat.	Select the replaced parts in the adjustment program, then operate this adjustment to automatically write the appropriate adjustment value.	• Adjustment Program
	PF Band adjustment	This adjustment is made to correct the variations of Mechanism, or the paper feeding accuracy.	Use the adjustment program to print out the adjustment pattern, evaluate the pattern based on the criteria, and register the appropriate adjustment value to the printer.	• Adjustment Program



Table 5-2. Maintenance Items (T.B.D)

Function Item		Purpose	Method Outline	Tool
Maintenance Items	Head Cleaning	This function is used to execute Cleaning efficiently when ink is not delivered from the Head properly, e.g. dot missing.	Use the adjustment program to execute Cleaning, then execute nozzle check printing.	• Adjustment Program
	Ink charge	When replacing the Head, this function is used to fill ink in the flow path of the Head in the ASP to make all nozzles printable and stabilize the ink in the Printhead.	Use the adjustment program to execute ink charge, then execute nozzle check printing.	• Adjustment Program
	Waste ink pad counter read out/Initialization	Initialize the Waste ink pad counter for replaced parts after maintenance error occurred. Also, when counter full is close, pad exchange/counter initialization may be executed to prevent re-fixing.	After exchanging the Waste ink pad, initialize the counter by the adjustment program.	• Adjustment Program

Table 5-3. Additional Functions (T.B.D)

Function Item			Purpose	Method Outline	Tool
Additional Functions	Print check pattern	Plain Paper	This printing is executed to check whether all adjustment results are normal.	Select and execute the functions by the adjustment program.	• Adjustment Program
		Photo Quality Ink Jet Paper			
	EEPROM data readout		Read the EEPROM data for analysis.	Select this function in the exclusive servicing program, and save all data of the EEPROM into a file.	• Adjustment Program
	Read printer information	Waste Ink counter	Read the printer operation information.	Select and execute the functions by the adjustment program.	• Adjustment Program
		Manual CL counter			
I/C exchange CL counter					
Timer CL counter					



5.1.2 Replacement Part Adjustment Items (T.B.D)

The following table indicates the adjustment items for replacement parts.

Note: "Required" in this table indicates the adjustment item that must be executed when the corresponding part has been removed/replaced. "Required" indicates the adjustment item that must be executed since the part is related to the corresponding part to be removed/replaced, or the adjustment item that must be executed when the corresponding part has been removed/replaced. "-" indicates that no adjustment is required. When you have removed/replaced two or more parts, refer to the corresponding items of all parts. Also, if there are several adjustment items for one exchanging part, execute the adjustment in the priority order mentioned in the table.

Table 5-4. Adjustment Items

Priority		1	2	3	4	5	6	7	8	9	10	11
Adjustment item		EEPROM data copy	Initial setting	Waste ink pad counter	Ink charge	Head ID input	TOP margin adjustment	First dot adjustment	Head Angular adjustment	Bi-D adjustment	PF band adjustment	CR heat protection control
Replaced parts												
Hopper	Removal	--	--	--	--	--	Required	--	--	--	Required	--
	Replacement	--	--	--	--	--	Required	--	--	--	Required	--
Main Frame	Removal	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	--	Required	Required	Required	Required	Required	Required
Main Board	Removal	--	--	--	--	--	--	--	--	--	--	--
	Replacement	Required	--	--	--	--	--	--	--	--	--	--
	Replacement (EEPROM Copy NG)	--	Required	Ink Pads must be replaced	--	Required	Required	Required	Required	Required	Required	Required
LD roller/ASF unit	Removal	--	--	--	--	--	Required	--	Required	Required	Required	--
	Replacement	--	--	--	--	--	Required	--	Required	Required	Required	Required
Wasted ink Pads	Removal	--	--	--	Required	--	Required	--	Required	Required	Required	--
	Replacement	--	--	Required	Required	--	Required	--	Required	Required	Required	--
Printhead	Removal	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	Required	Required	Required	Required	Required	Required	Required	--
CR Motor	Removal	--	--	--	--	--	--	Required	Required	Required	--	--
	Replacement	--	--	--	--	--	--	Required	Required	Required	--	Required
CR unit/Timing Belt	Removal	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	--	Required	Required	Required	Required	Required	Required
Ink System (Pump)	Removal	--	--	--	Required	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	Required	--	Required	Required	Required	Required	Required	--

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Table 5-4. Adjustment Items

Priority		1	2	3	4	5	6	7	8	9	10	11
Adjustment item		EEPROM data copy	Initial setting	Waste ink pad counter	Ink charge	Head ID input	TOP margin adjustment	First dot adjustment	Head Angular adjustment	Bi-D adjustment	PF band adjustment	CR heat protection control
Replaced parts												
EJ Roller	Removal	--	--	--	--	--	--	--	Required	Required	Required	--
	Replacement	--	--	--	--	--	--	--	Required	Required	--	--
PF Roller	Removal	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	--	Required	Required	Required	Required	Required	--
PF Motor	Removal	--	--	--	--	--	Required	Required	Required	Required	Required	--
	Replacement	--	--	--	--	--	Required	Required	Required	Required	Required	--
Power Supply Board	Removal	--	--	--	--	--	--	--	--	--	--	--
	Replacement	--	--	--	--	--	--	--	--	--	--	Required
EJ Frame Assy	Removal	--	--	--	--	--	Required	--	Required	Required	Required	--
	Replacement	--	--	--	--	--	Required	--	Required	Required	Required	--



5.2 Adjustment by Using Adjustment Program (T.B.D)

This section explains how to judge print samples by using the adjustment program. Follow the instructions of the adjustment program for details of the adjustment methods.

5.2.1 Head angular adjustment

Patterns are printed as shown below.

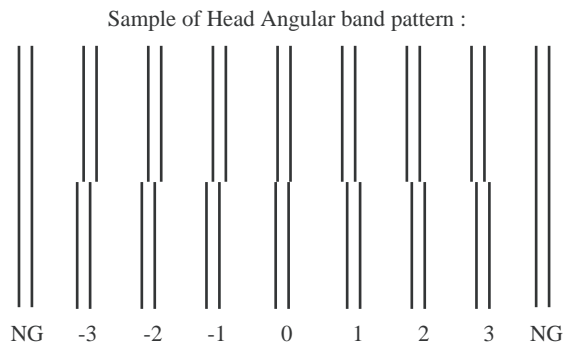


Figure 5-1. Head angular adjustment Pattern Printing

[Judgment method]

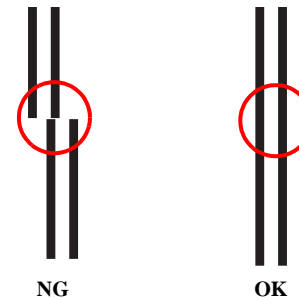
Find the pattern with least vertical displacement between -3 and 3, and enter the value of that pattern.

[Corrective action]

If the “NG” on both ends are the ones with least vertical displacement, reassemble/replace the Head, and carry out the adjustment again.



The diagram below shows the OK and NG patterns.



5.2.2 Top Margin Adjustment

Patterns are printed as shown below.

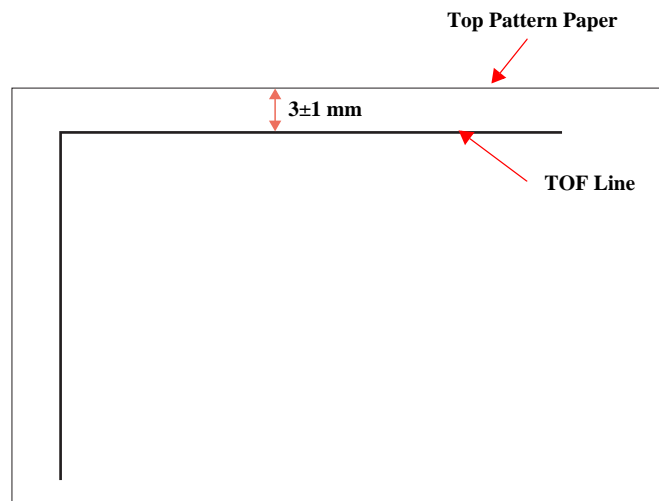


Figure 5-2. Top Margin adjustment Pattern Printing

[Judgment method]

Measure the distance from Paper top edge to the adjustment line, and check that it is within 3 ± 1 mm.

[Corrective action]

With the adjustment program, select adjustment value "+2", "+1", "-1", "-2" and adjust the deviation. (Each adjustment value shifts the line by 0.85 mm.)

5.2.3 Bi-D Adjustment

8 types of the pattern below, each dot size (ECO/VSD1/VSD2/VSD3) x color (Black/Color) are printed.

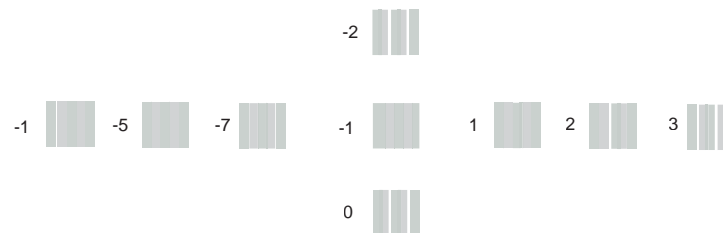


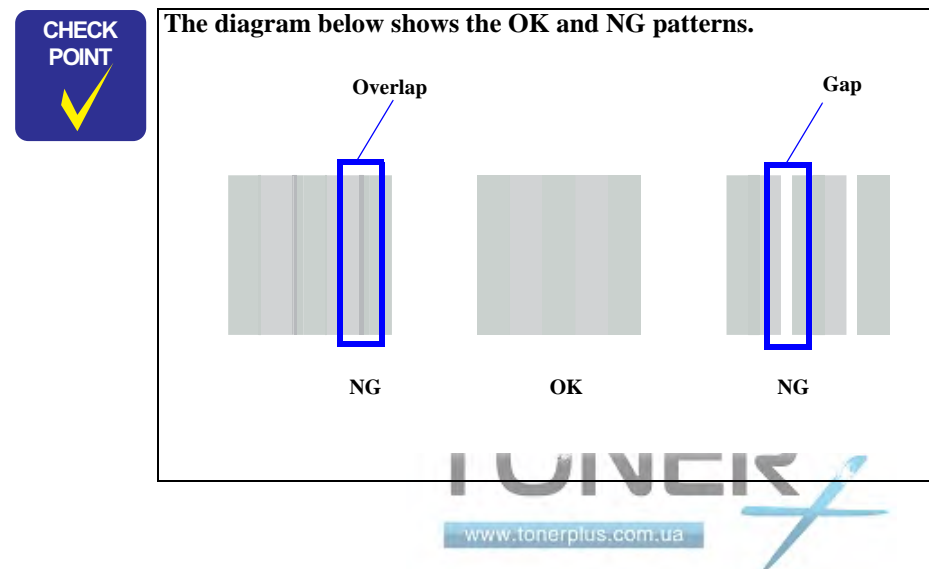
Figure 5-3. Bi-D adjustment Pattern Printing

[Judgment method]

Find the pattern with no gaps or overlaps of the left and right pattern, and enter the value of that pattern.

[Corrective action]

If an appropriate pattern is not printed, enter the nearest value and then print the patterns again.



5.2.4 First Dot Adjustment

Patterns are printed as shown below.

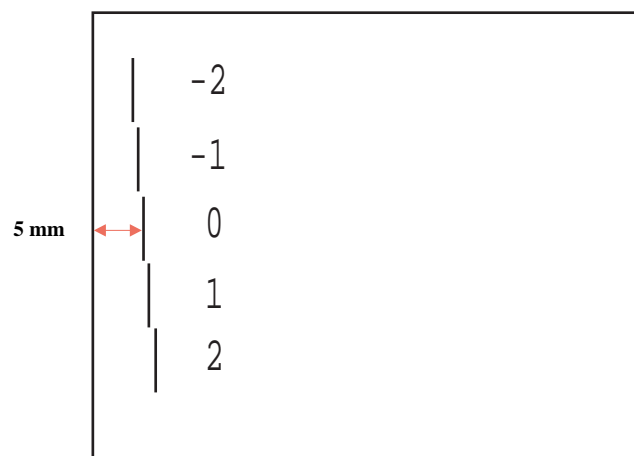


Figure 5-4. Left Right margin adjustment Pattern Printing

[Judgment method]

Measure the distance from Paper left edge to the adjustment line, and enter the value of the patter that it is 5mm away from the left edge.

[Corrective action]

If the an appropriate pattern is not printed, reassemble the parts that was removed/ replaced, and carry out the adjustment again.

5.2.5 PF Band Adjustment

Patterns are printed as shown below.

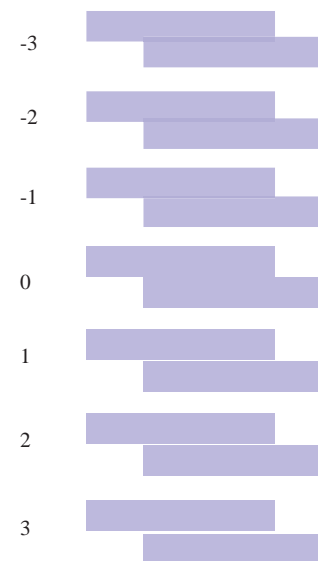


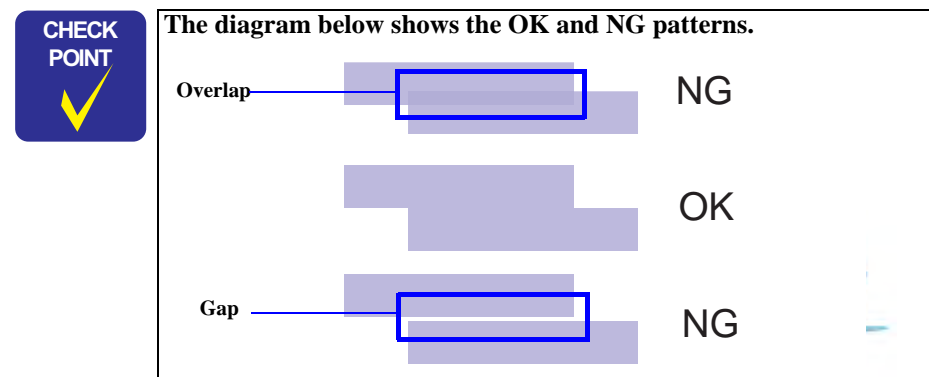
Figure 5-5. PF Band Adjustment Pattern

[Judgment method]

Select the pattern with no gap or overlap.

[Corrective action]

If the an appropriate pattern is not printed, reassemble the parts that was removed/ replaced, and carry out the adjustment 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 Printhead. 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. 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. 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.

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.

- **Printhead cleaning**
When dot missing or banding phenomenon has occurred, you need to perform the printhead cleaning operation*1 by using the printhead 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 Stop button 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 printhead cleaning from the printer driver utility.
As for the operation of the Adjustment program, refer to [Chapter 5 “ADJUSTMENT” \(p.100\)](#).

*1: Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450 have 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.



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.

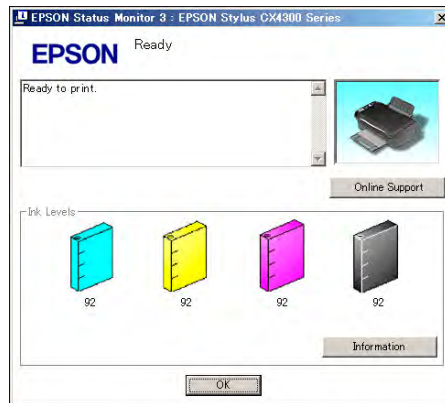


Figure 6-1. Status monitor 3 indication

2. Select the “Head Cleaning” in the printer driver utility, and perform the printhead cleaning operation. After performing the printhead cleaning operation, print a nozzle check pattern by selecting the “Nozzle Check”. If you repeat the printhead cleaning operation without selecting the “Nozzle Check”, CL1, the weakest cleaning, will be repeated.

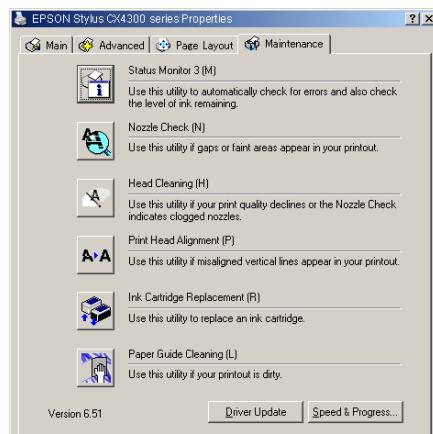


Figure 6-2. Head cleaning function in the printer driver utility

- Maintenance request error (Maintenance call error)
Ink is used for the printhead cleaning operation as well as the printing operation. When the ink is used for the printhead cleaning operation, the ink is drained to the Waste drain ink pad 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 max counter has reached the limit (9000) of the absorbing capability of the Waste drain ink pad, the Maintenance call error is indicated on Status monitor 3 as following figure. But waste ink max counter is changed by usage, therefore waste ink max counter is not necessarily right.

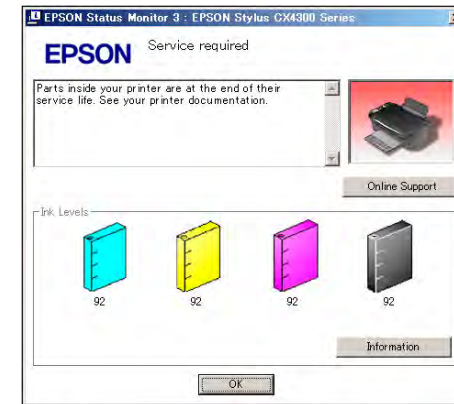


Figure 6-3. Maintenance error indication in STM3

In this case, replace to new Waste drain ink pad 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” \(p.100\)](#). 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 drain ink pad 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

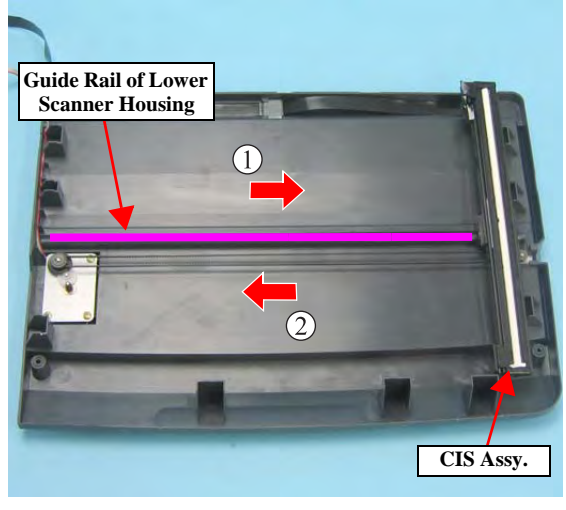
The characteristics of the grease have great affects on the mechanical function and durability, especially does the characteristics about temperature environment. The type and amount of the grease used to lubricate the printer parts are determined based on the results of the internal evaluations. Therefore, 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	TC-55E	1400725	EPSON
Grease	UD-321	1428216	EPSON
Grease	G-58	1432035	EPSON
Grease	G-71	1304682	EPSON
Grease	G-74	1409257	EPSON

- Refer to the following figures for the lubrication points.



<Lubrication Point>
Guide Rail of the Lower Scanner Housing

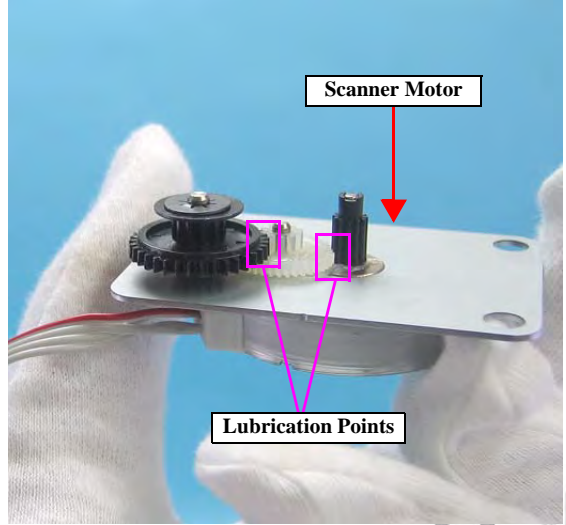
<Lubrication Type>
TC-55E

<Lubrication Amount>
Appropriate amount using a brush

<Remarks>

- Move CIS Assy. to right and lubricate grease on guide rail from left to right.
- Move CIS Assy. to left then lubricate grease on guide rail from right to left.
- If there is dust or grease on CIS Assy., clean it with a wiper.

Figure 6-4. Lubrication on Guide Rail of the Lower Scanner Housing



<Lubrication Point>
Scanner Motor joggle

<Lubrication Type>
TC-55E

<Lubrication Amount>
Each place 0.3-0.5mg, 2--3mm diameter sphere

<Remarks>
Use an injector to apply TC-55E.

Figure 6-5. Lubrication on Scanner Motor

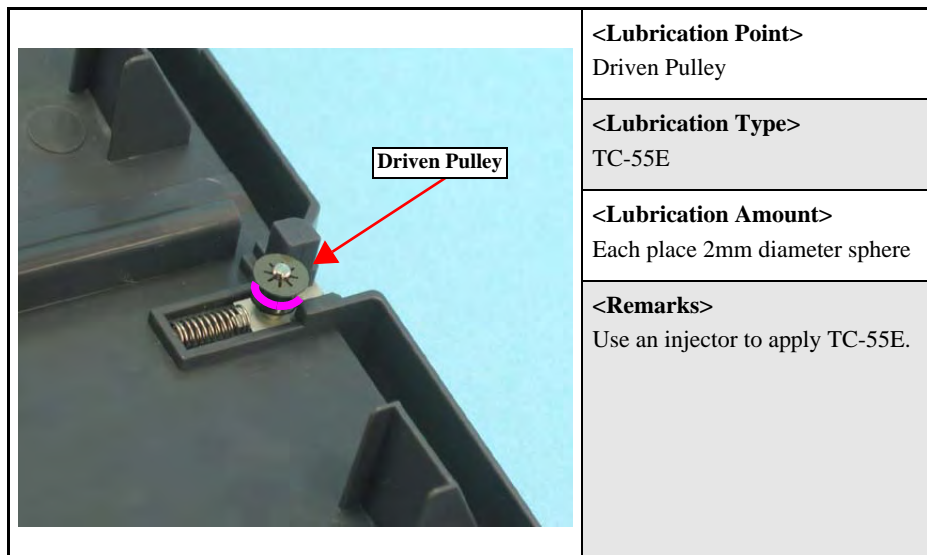


Figure 6-6. Lubrication on Driven Pulley

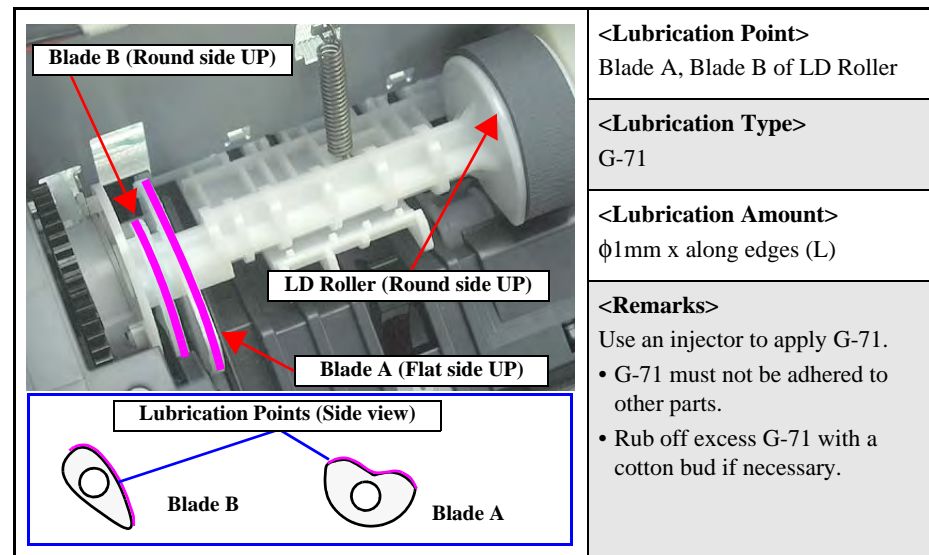


Figure 6-8. Lubrication on LD Roller (1)

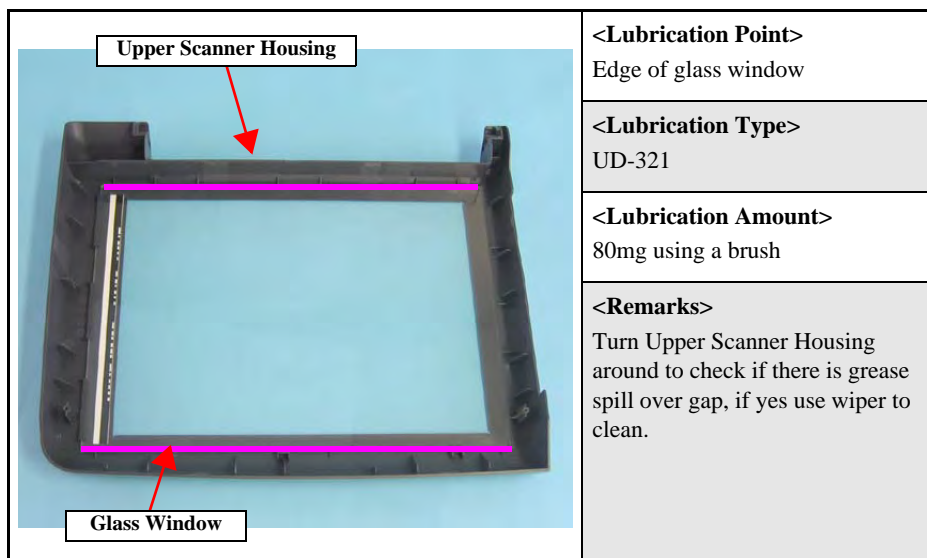


Figure 6-7. Lubrication on Upper Scanner Housing

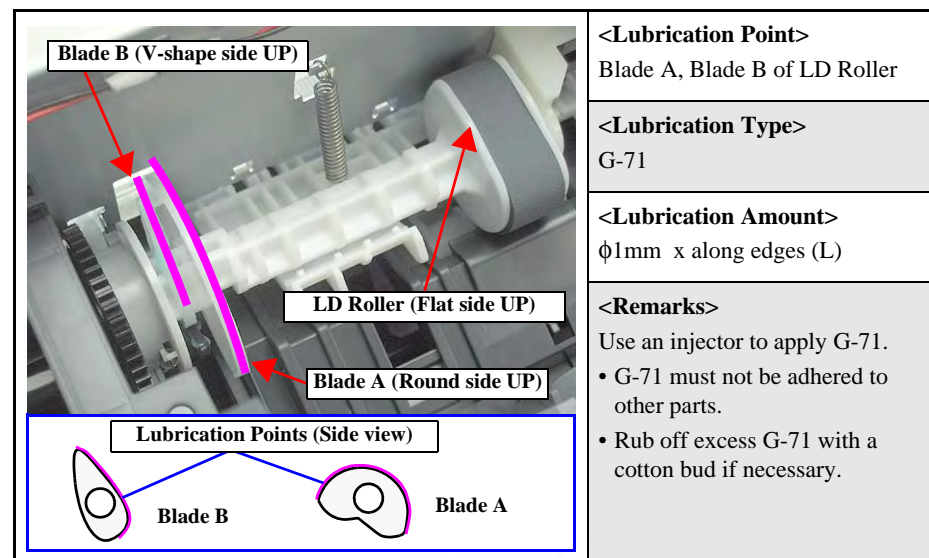


Figure 6-9. Lubrication on LD Roller (2)

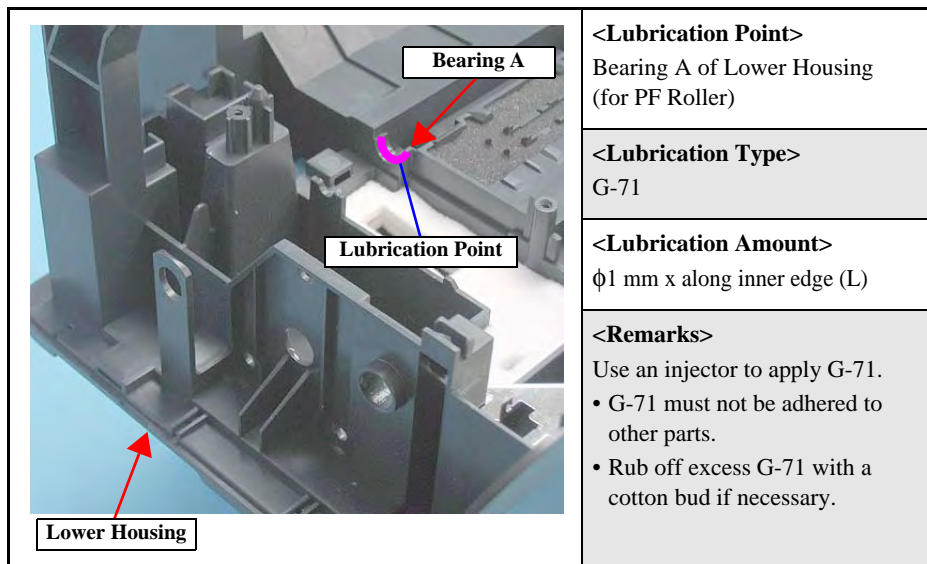


Figure 6-10. Lubrication on PF Roller Bearing (1)

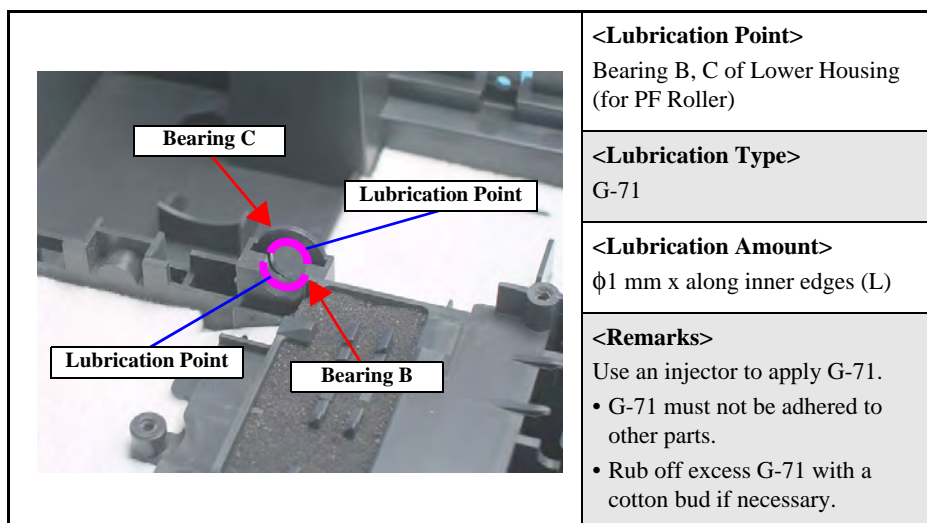


Figure 6-11. Lubrication on PF Roller Bearing (2)

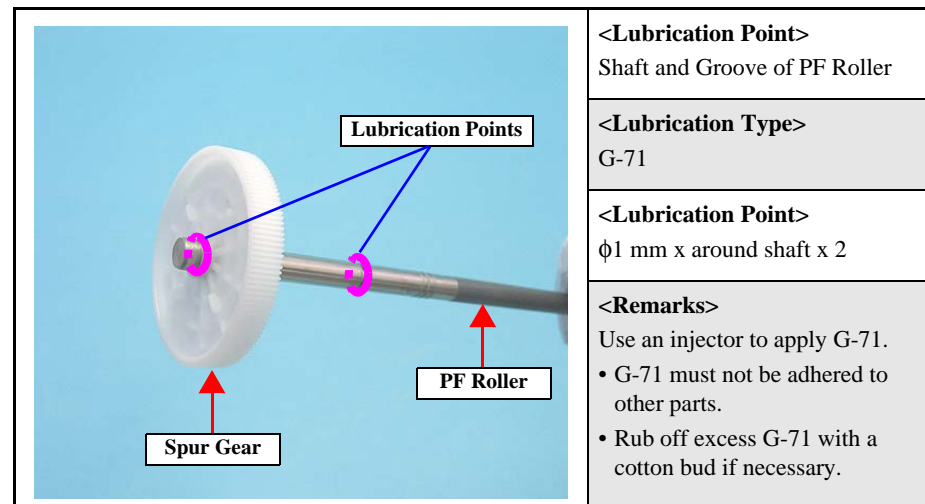


Figure 6-12. Lubrication on PF Roller

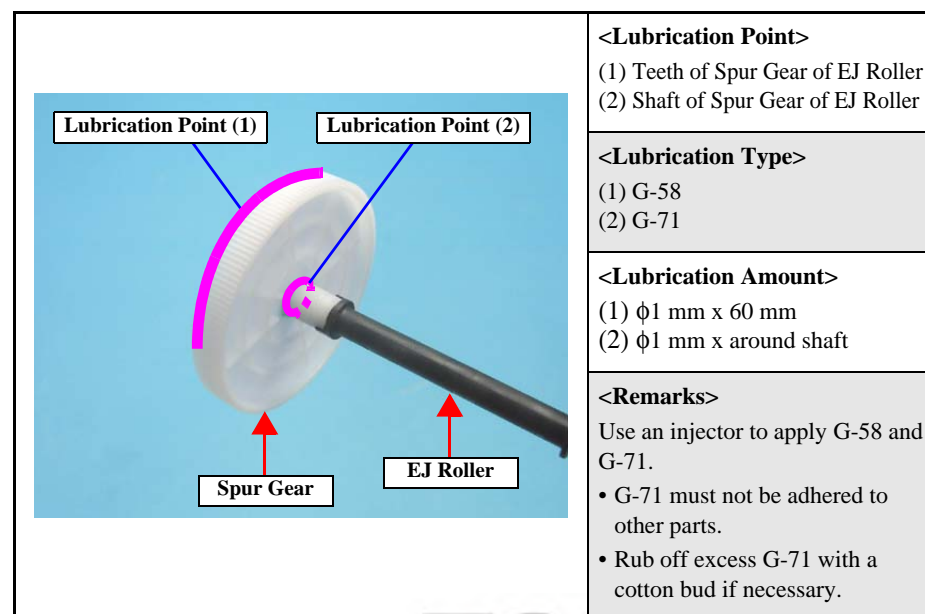


Figure 6-13. Lubrication on EJ Roller (1)

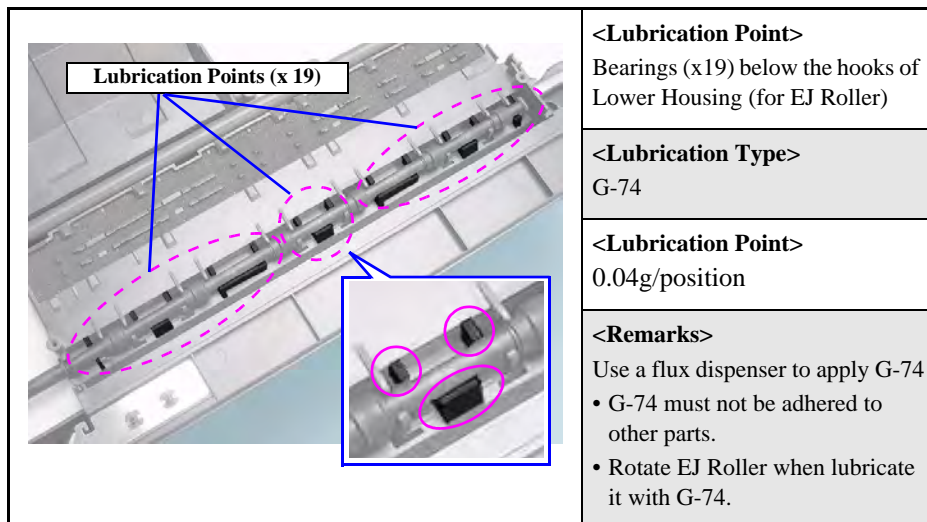


Figure 6-14. Lubrication on EJ Roller (2)

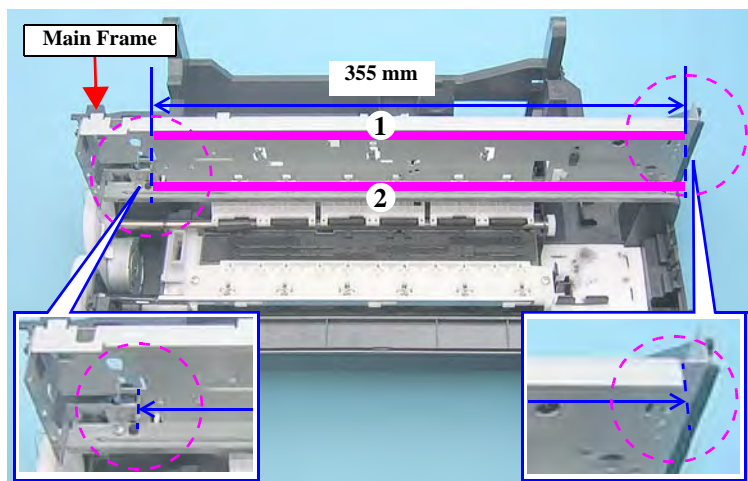


Figure 6-15. Lubrication on Main Frame

There is one lubrication point in the area indicated with 1. See [Figure 6-16](#)

There are four lubrication point in the area indicated with 2. See [Figure 6-17](#)

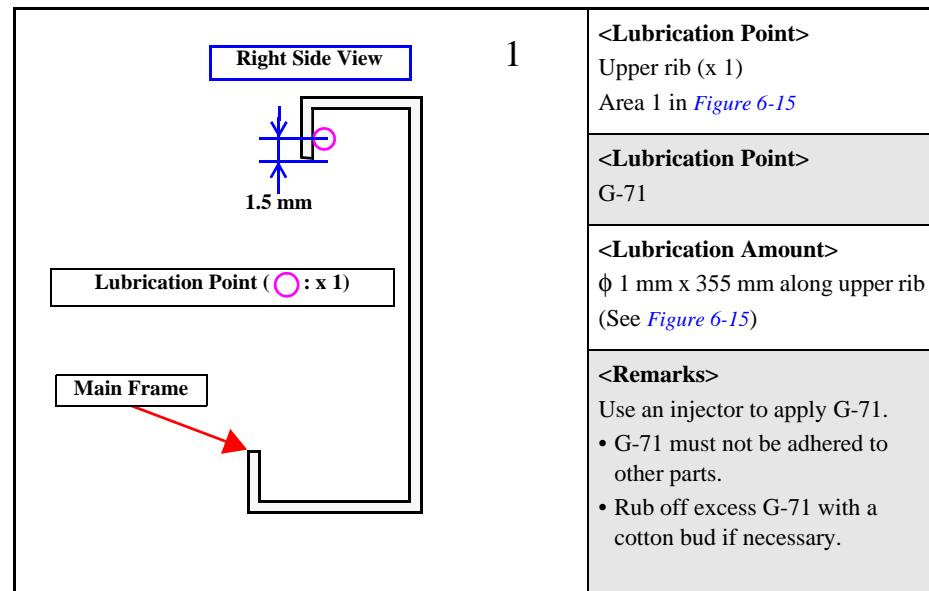


Figure 6-16. Lubrication on Main Frame (1)

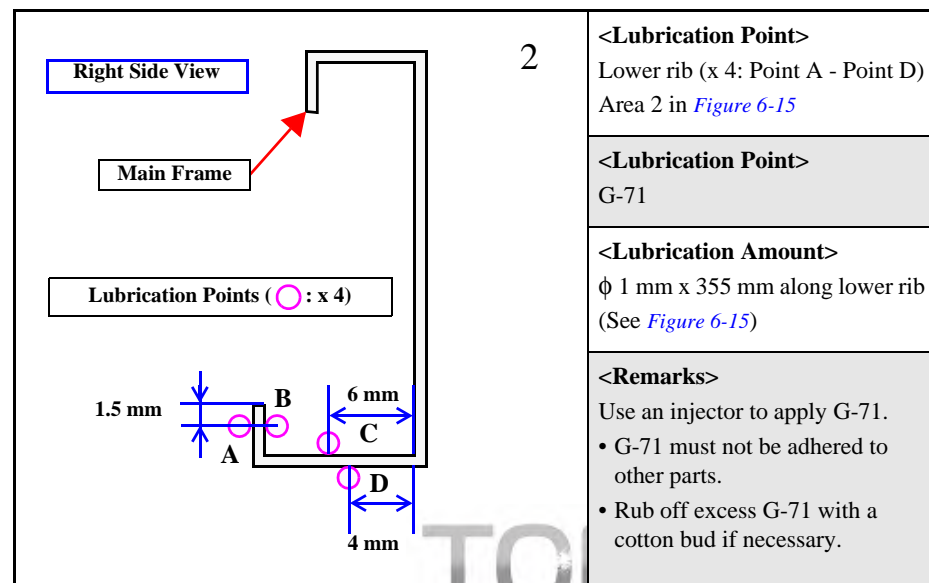


Figure 6-17. Lubrication on Main Frame (2)

CHAPTER

7

APPENDIX



7.1 Connector Summary

7.1.1 Major Component Unit

- ☐ Main Board
- ☐ Power Supply Board
- ☐ Panel Board

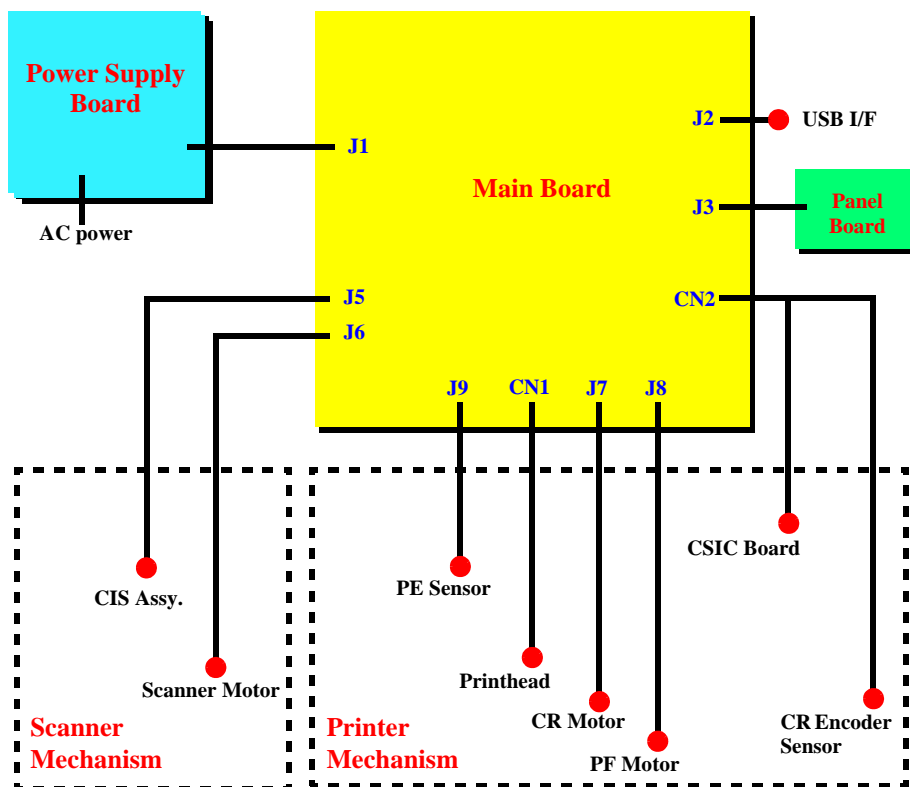


Figure 7-1. Connection of the major components

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

Table 7-1. Connector Summary for Main Board

Connector	Function	Table to refer to
CN1	For connection with the Printhead	Table 7-2 (p.117)
CN2	For connection with the CR Encoder Sensor and the CSIC Board.	Table 7-3 (p.117)
J1	For connection with the Power Supply Board	Table 7-4 (p.117)
J2	For connection with the USB interface	"The printer has a USB interface of the following specification." (p.19)
J3	For connection with the Panel Board	Table 7-5 (p.118)
J4	Not used	N/A
J5	For connection with the CIS Assy.	Table 7-6 (p.118)
J6	For connection with the Scanner Motor	Table 7-7 (p.118)
J7	For connection with the CR Motor	Table 7-8 (p.118)
J8	For connection with the PF Motor	Table 7-9 (p.118)
J9	For connection with the PE Sensor	Table 7-10 (p.118)

Table 7-2. CN1 - Printhead

Pin	Signal Name	I/O	Function
1	COM	O	Head drive pulse (trapezoid waveform)
2	GND2	—	Ground
3	GND	—	Ground
4	XHOT	I	Head temperature signal
5	VDD2	—	+3.3V
6	NCHG	O	All nozzle fire selection pulse
7	GND	—	Ground
8	CH	O	Charge signal for the trapezoidal waveform
9	VDD	—	+3.3V
10	LAT	O	Head data latch pulse output
11	NC	—	Not connected
12	GND	—	Ground
13	SCK	—	Serial clock
14	GND	—	Ground
15	SI1_Bk	O	Print data output for black nozzles
16	GND	—	Ground
17	SI2_Col	O	Print data output for color nozzles
18	GND	—	Ground
19	VHV	O	+42V power supply for nozzle selector
20	COM	O	Head drive pulse (trapezoid waveform)
21	GND2	—	Ground

Table 7-3. CN2 - CR Encoder Sensor and CSIC Board

Pin	Signal Name	I/O	Function
1	ENCA	I	Encoder feed back signal ch.A
2	EVDD	O	Power for CR Encoder
3	ENCB	I	Encoder feed back signal ch.B
4	GND	—	Ground
5	NC	—	Not connected
6	CSCK	I/O	Clock signal for CSIC read/write
7	CVDD	O	Power supply for CSIC
8	CGND	—	Ground
9	CRST	O	Reset signal for address counter of CSIC
10	CSDA	I/O	CSIC transmit and receive data
11	COI	I	Cartridge detect signal
12	Enable	I	General-purpose port
13	CH	O	Charge signal for the trapezoidal waveform
14	VDD	—	+3.3V
15	GND	—	Ground
16	COM	O	Head drive pulse (trapezoid waveform)
17	VHV	O	+42V power supply for nozzle selector

Table 7-4. J1 - Power Supply Board

Pin	Signal Name	I/O	Function
1	GND	—	Ground
2	PSC	I	Power supply control
3	+42V	—	+42V

Table 7-5. J3 - Panel Board

Pin	Signal Name	I/O	Function
1	VCC	—	3.3V
2	GND	—	Ground
3	PSDO	O	Parallel->Serial Output to MB
4	PSDI	I	Serial Input to Parallel from MB
5	PLatch	O	74595 Positive-Edge: Storage to Output 74165 H:Shift; L:Parallel Load
6	PSCK	O	Serial CLK
7	PWR_SAVE	I	Power Save mode: Active Low
8	PWRON_SW	I	Power On Switch: Trigger Low

Table 7-6. J5 - CIS Assy.

Pin	Signal Name	I/O	Function
1	OS	I	Signal OUT
2	MODE	O	Resolution Switch Select
3	VAD	—	Analog Power 5V
4	GND	—	Ground
5	CLK	I	Master Clock
6	VCC	—	Digital Power 3.3V
7	TR	O	Start pulse
8	LED CA	—	LED Common Anode
9	LED B	O	LED cathode (Blue)
10	LED G	O	LED cathode (Green)
11	LED R	O	LED cathode (Red)
12	GND	—	Ground (For LED Shielding)

Table 7-7. J6 - Scanner Motor

Pin	Signal Name	I/O	Function
1	SMOUT1A	O	Phase drive signal (1A)
2	SMOUT1B	O	Phase drive signal (1B)
3	SMOUT2A	O	Phase drive signal (2A)
4	SMOUT2B	O	Phase drive signal (2B)

Table 7-8. J7 - CR Motor

Pin	Signal Name	I/O	Function
1	PMOUT1A	O	CR Motor drive signal (1A)
2	PMOUT1B	O	CR Motor drive signal (1B)

Table 7-9. J8 - PF Motor

Pin	Signal Name	I/O	Function
1	PMOUT3A	O	PF Motor drive signal (3A)
2	PMOUT4A	O	PF Motor drive signal (4A)
3	PMOUT3B	O	PF Motor drive signal (3B)
4	PMOUT4B	O	PF Motor drive signal (4B)

Table 7-10. J9 - PE Sensor

Pin	Signal Name	I/O	Function
1	PAPER_SEN	I	PE Sensor signal
2	GND	—	Ground
3	PEV	—	Power supply for PE Sensor

7.2 Exploded Diagram / Parts List

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



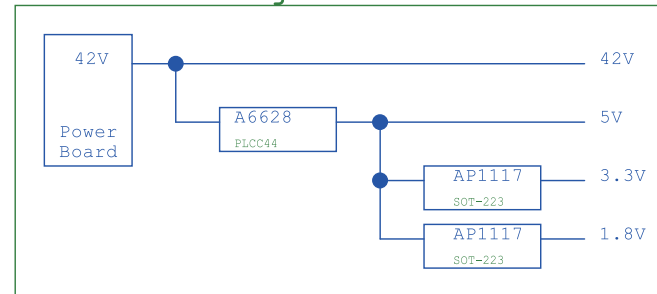
7.3 Electrical Circuits

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

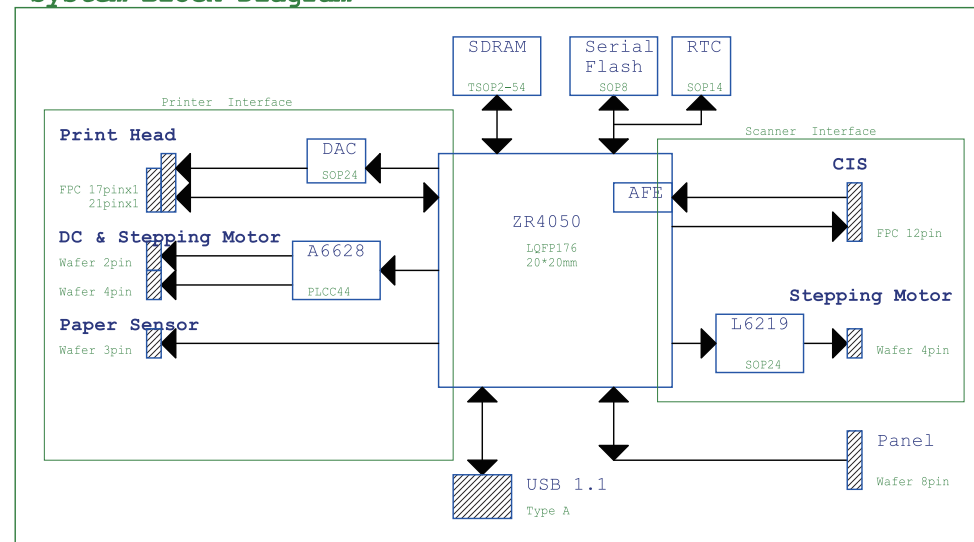
- ☐ Main control circuit board
- ☐ Panel circuit board

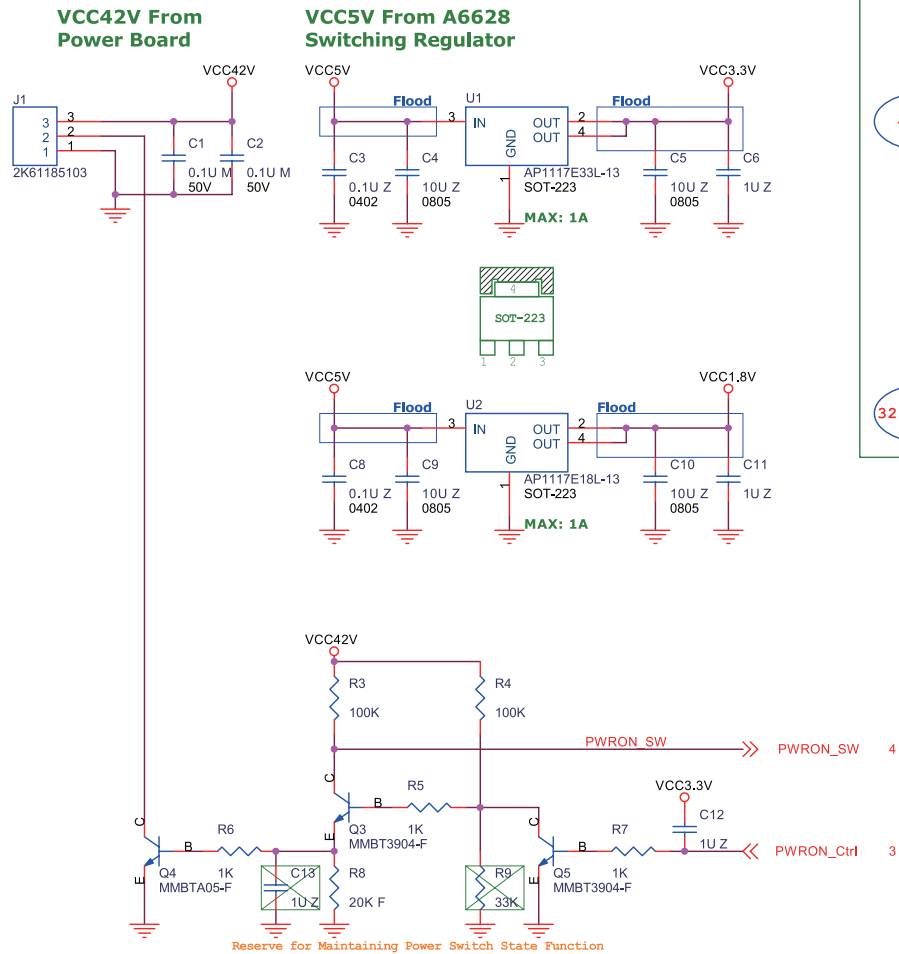


Power Block Diagram

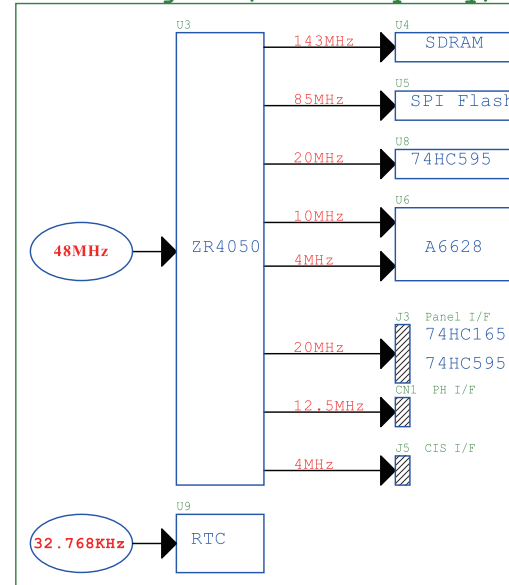


System Block Diagram

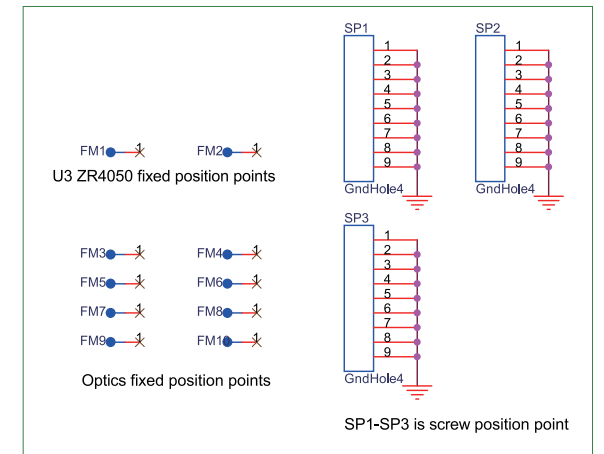
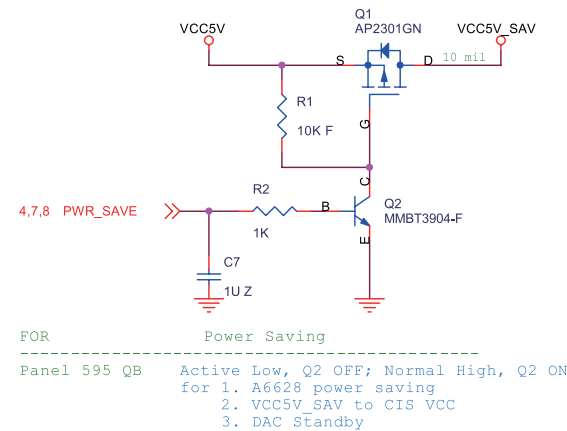
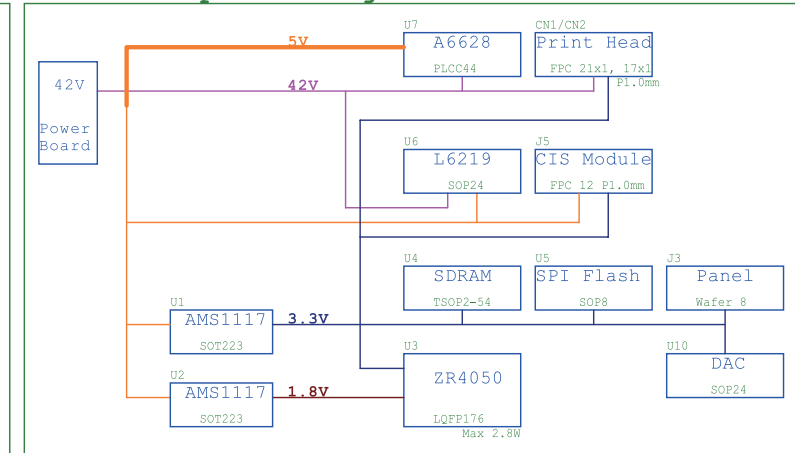




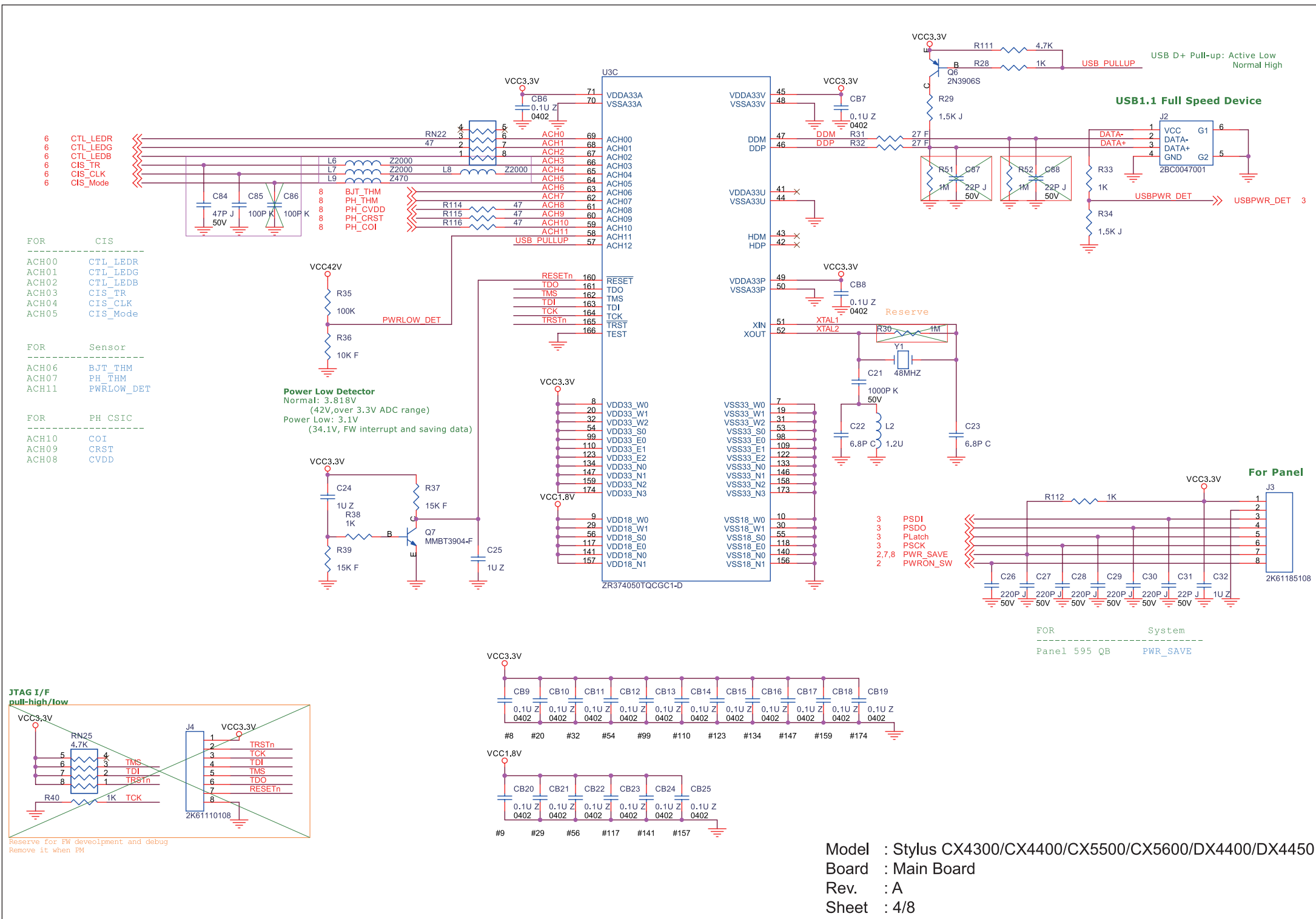
Clock Diagram (Max. frequency)

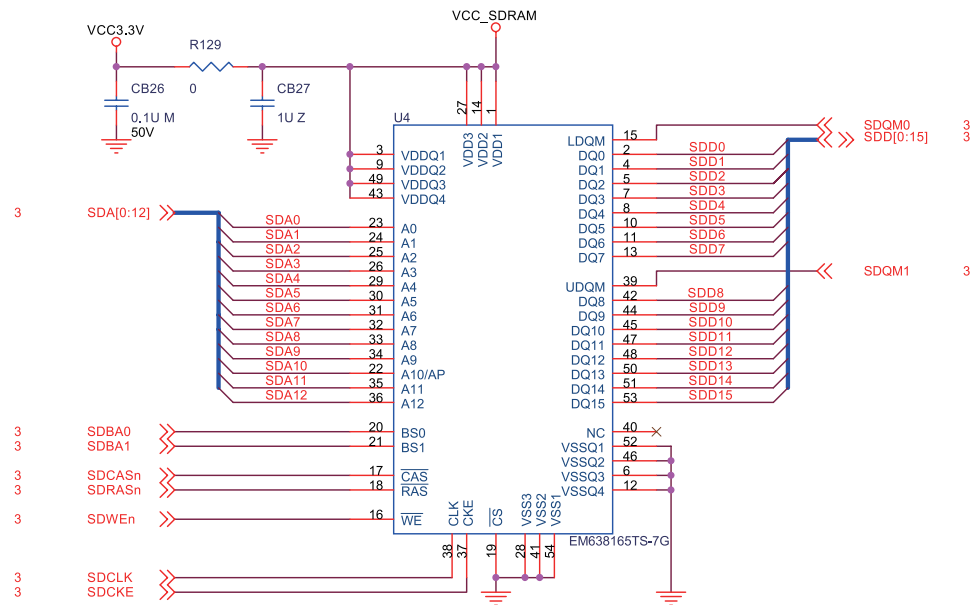


Power Dissipation Diagram

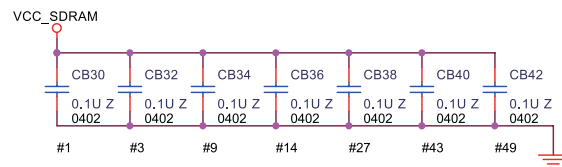
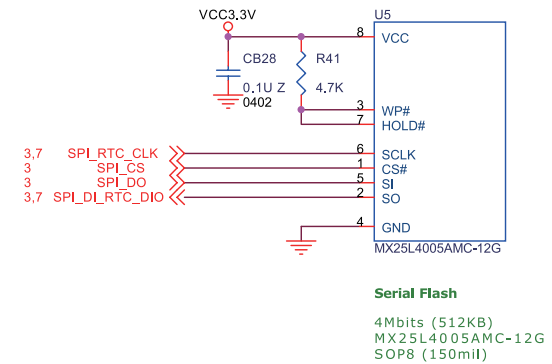


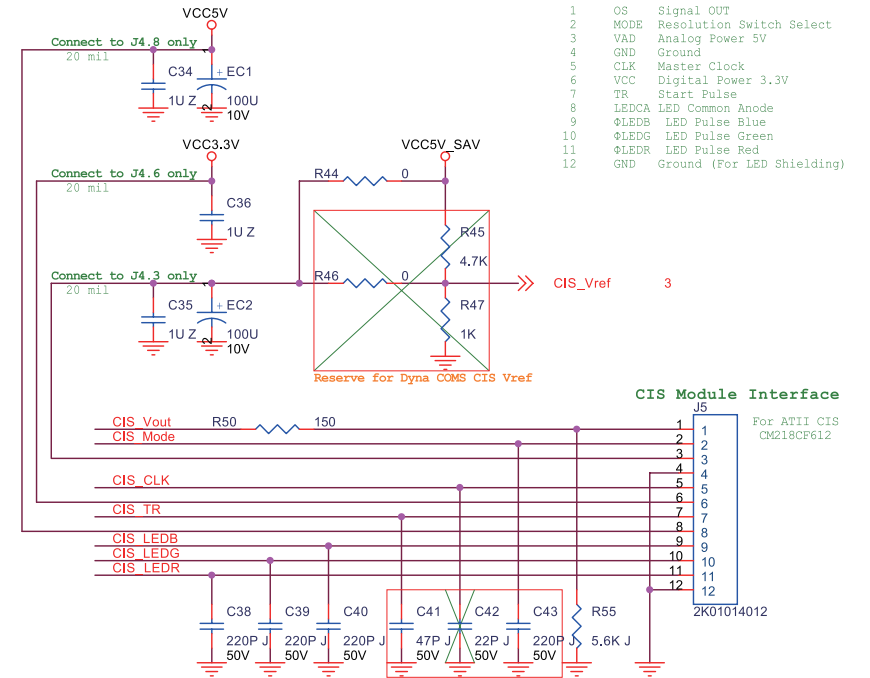
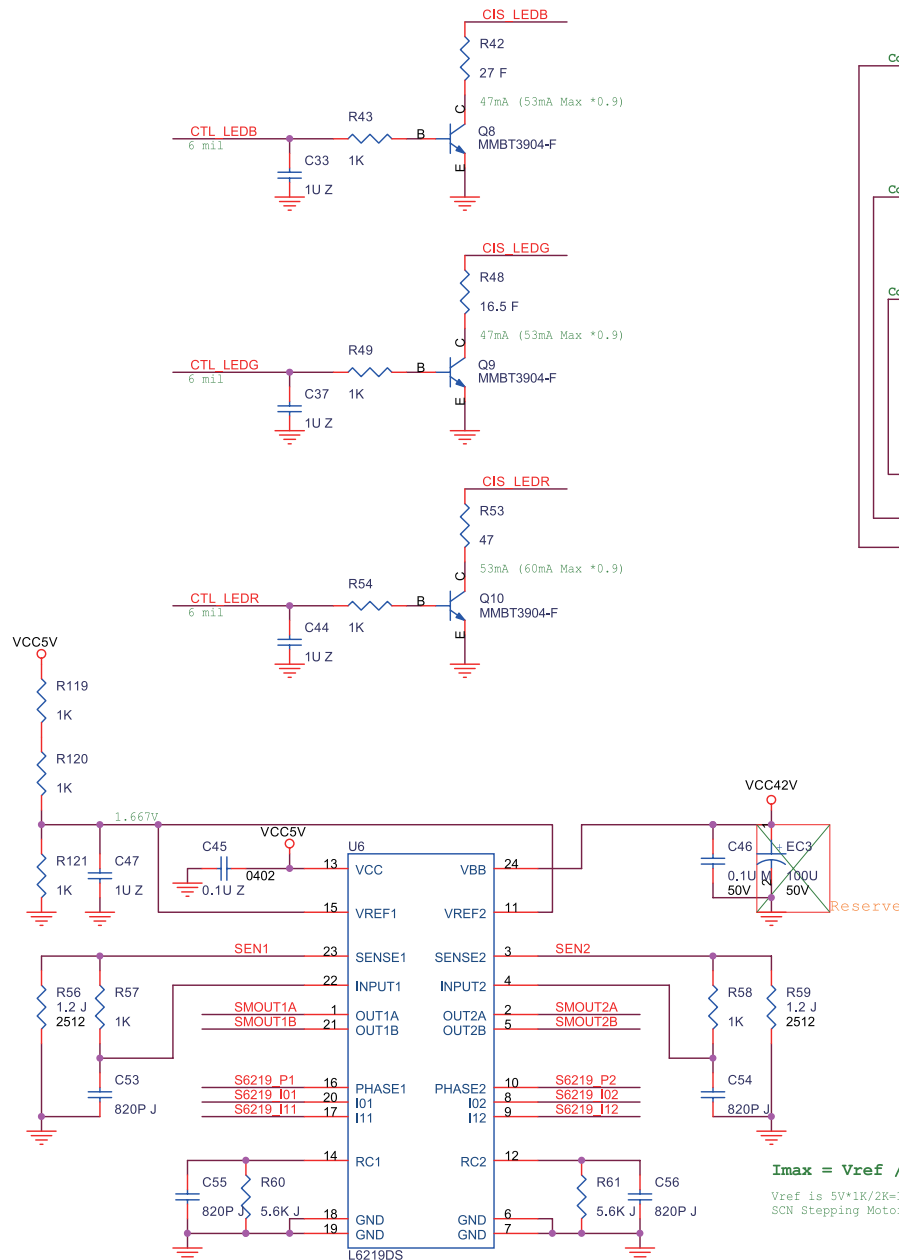
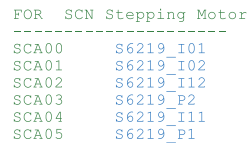
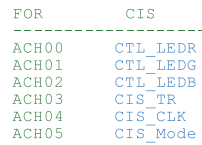
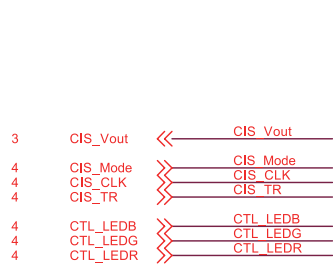
Model : Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450
 Board : Main Board
 Rev. : A
 Sheet : 2/8





SDRAM 1Mx16x4Bank
EM638165TS-7G 4Mx16bit
TSOP2 EtronTech





ATII CM218CF612 CIS (CCD Type)		
No.	Symbol	Function
1	OS	Signal OUT
2	MODE	Resolution Switch Select
3	VAD	Analog Power 5V
4	GND	Ground
5	CLK	Master Clock
6	VCC	Digital Power 3.3V
7	TR	Start Pulse
8	LEDBA	LED Common Anode
9	ΦLEDB	LED Pulse Blue
10	ΦLEDB	LED Pulse Green
11	ΦLEDR	LED Pulse Red
12	GND	Ground (For LED Shielding)

$$I_{max} = V_{ref} / (10 \times R_{sense})$$

Vref is 5V*1K/2K=1.667V.
SCN Stepping Motor Imax is 1.667/(10*1.2)=0.139A

Model : Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450
Board : Main Board
Rev. : A
Sheet : 6/8

FOR A6628

PRIO05 A6628_OSC

FOR A6628 DC Motor

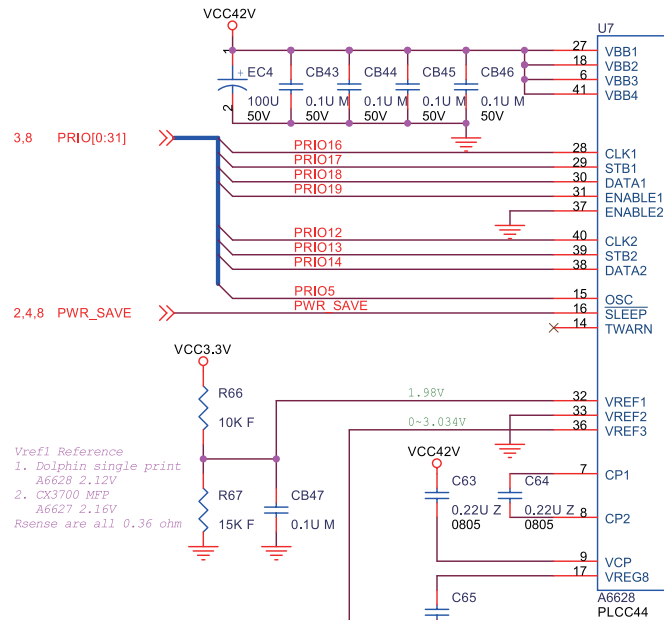
PRIO16 A6628_CLK1
PRIO17 A6628_STB1
PRIO18 A6628_DATA1
PRIO19 A6628_Enable1

FOR A6628 Stepping Motor

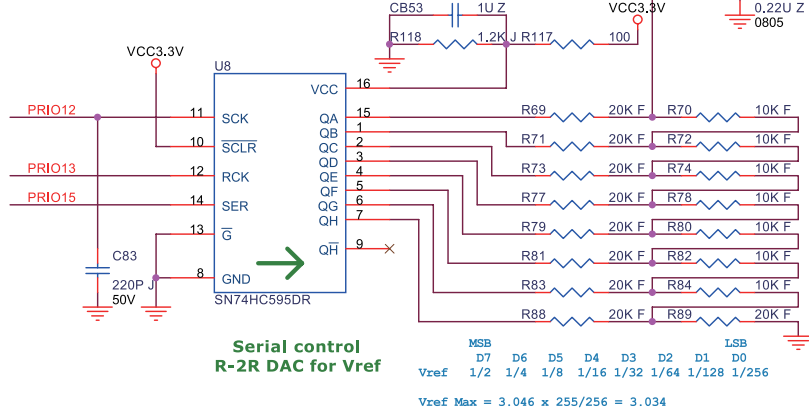
PRIO12 A6628_CLK2
PRIO13 A6628_STB2
PRIO14 A6628_DATA2
PRIO15 A6628_Vref3Data

FOR Sensor

PRIO06 PAPER_SEN

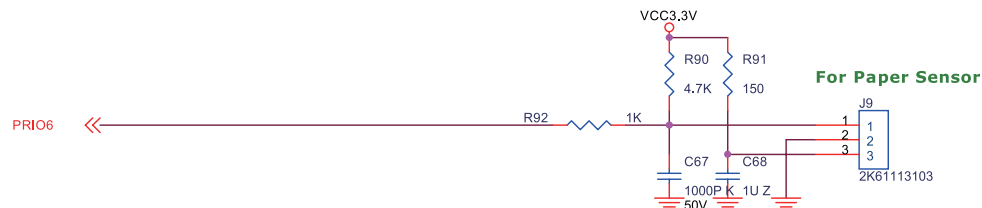


Vref1 Reference
1. Dolphin single print
A6628 2.12V
2. CX3700 MFP
A6627 2.16V
Rsense are all 0.36 ohm

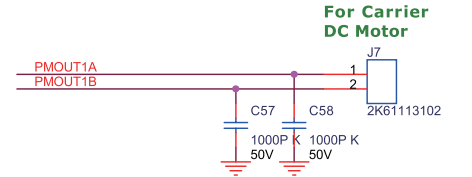
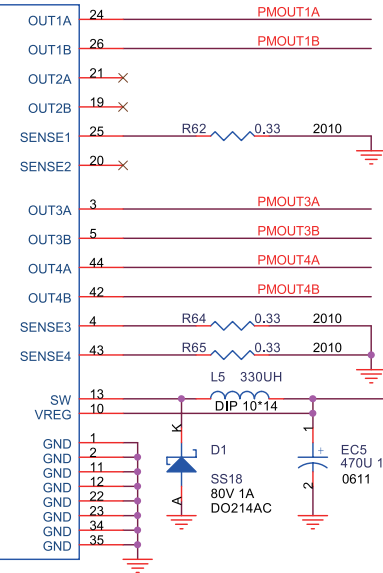


Serial control
R-2R DAC for Vref

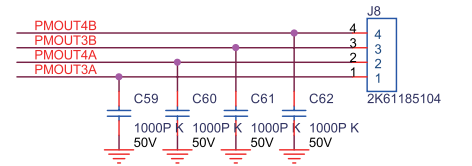
MSB D7 D6 D5 D4 D3 D2 D1 D0 LSB
Vref 1/2 1/4 1/8 1/16 1/32 1/64 1/128 1/256
Vref Max = 3.046 x 255/256 = 3.034



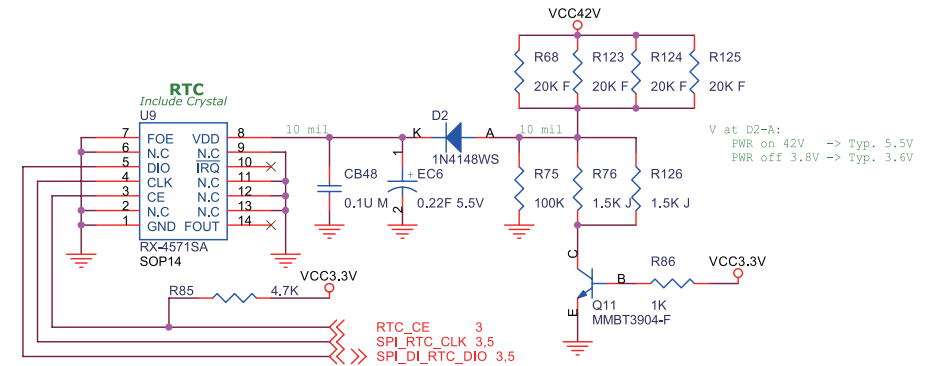
For Paper Sensor



For Paper Feed
Stepping Motor



$I_{trip} = V_{ref} \times \text{Current_Ratio} / (5 \times R_{sense})$
DC Motor Itrip max typical 1.2A [2.16/(5*0.36)]
Our Design: Vref1 1.98V, Rsense 0.33
Itrip max is 1.98/(5*0.33)=1.2A
Stepper Motor Itrip max typical 1.833A [3.3/(5*0.36)]
Our Design: Vref3 range 0~3.034V, Rsense 0.33
Itrip max is 3.034/(5*0.33)=1.839A



RTC_CE 3
SPI_RTC_CLK 3.5
SPI_DI_RTC_DIO 3.5

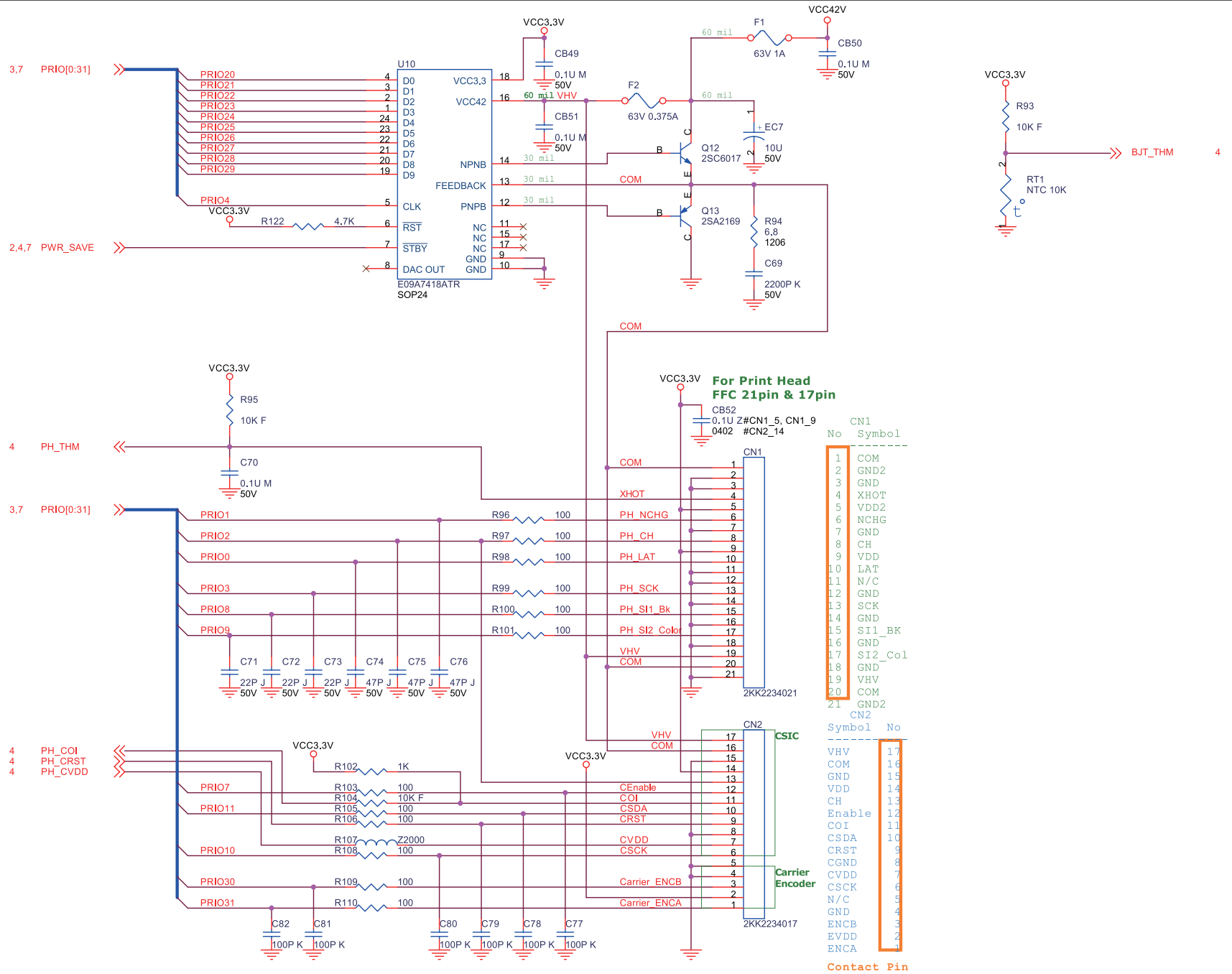
V at D2-A:
PWR on 42V -> Typ. 5.5V
PWR off 3.8V -> Typ. 3.6V

FOR	PH DAC
PRI004	DAC_LAT
PRI020	DAC_D0
PRI021	DAC_D1
PRI022	DAC_D2
PRI023	DAC_D3
PRI024	DAC_D4
PRI025	DAC_D5
PRI026	DAC_D6
PRI027	DAC_D7
PRI028	DAC_D8
PRI029	DAC_D9

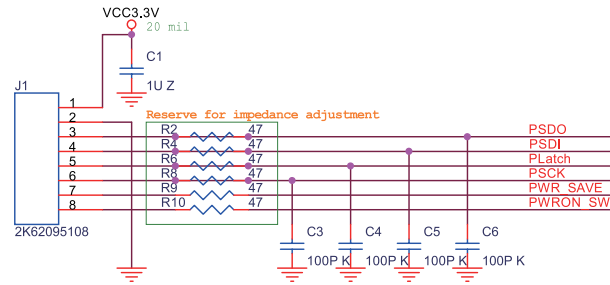
FOR	Print Head
PRI001	PH_NCHG
PRI002	PH_CH
PRI000	PH_LAT
PRI003	PH_SCK
PRI008	PH_SI1_Bk
PRI009	PH_SI2_Color
PRI030	Carrier_ENCB
PRI031	Carrier_ENCA

FOR	PH CSIC
PRI007	CEnable
ACH10	COI
PRI011	CSDA
ACH09	CRST
ACH08	CVDD
PRI010	CSCK

FOR	Sensor
ACH06	BJT_THM
ACH07	PH_THM

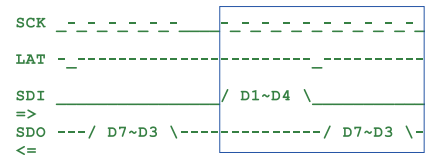


Model : Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450
 Board : Main Board
 Rev. : A
 Sheet : 8/8

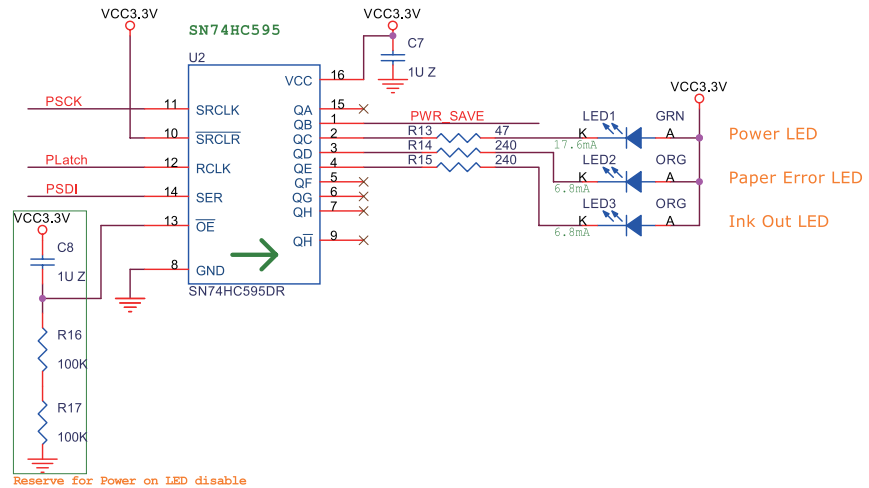
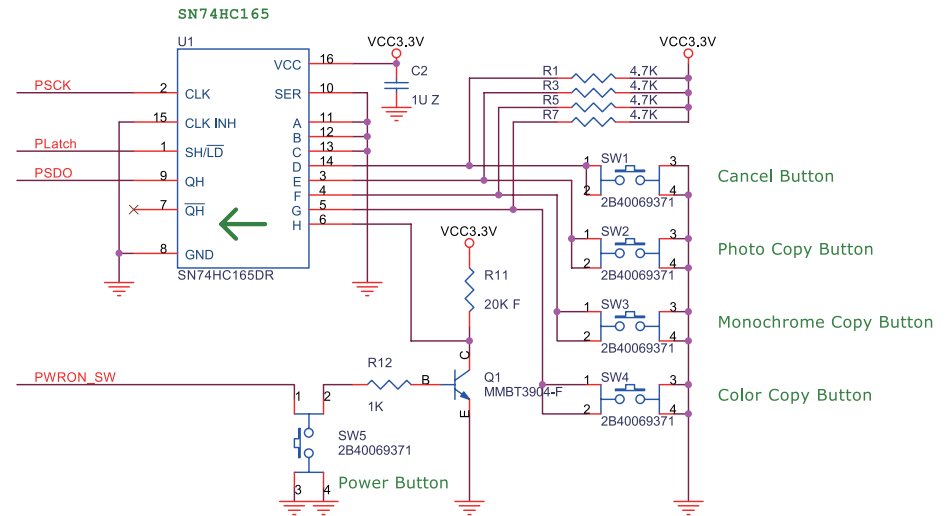
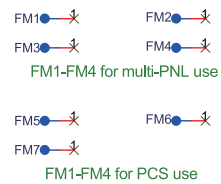


NO	Symbol	Function
1	VCC	3.3V
2	GND	Ground
3	PSDO	Parallel->Serial Output to MB
4	PSDI	Serial Input to Parallel from MB
5	PLatch	74595 Positive-Edge:Storage to Output
6	PSCK	Serial CLK
7	PWR_SAVE	Power Save mode: Active Low
8	PWRON_SW	Power On Switch: Trigger Low

Serial In / Out Timing



Optics Fixed Position



Reserve for Power on LED disable

Model : Stylus CX4300/CX4400/CX5500/CX5600/DX4400/DX4450
 Board : Panel Board
 Rev. : A
 Sheet : 1/1